START

Title: OFFICIAL GAZETTE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE. PATENTS.

Volume: 1165 **Issues:** 1 - 5
Patents: 5,333,321 - 5,343,560

Date: AUGUST 2 - 30, 1994

UMI No: 10,426.00 REEL NO. 9

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VOL
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ISS
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Vol. 1165 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 2, 1994



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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Trademark
Office

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1165

ISS
1

AG
2

1994

UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 2, 1994 Volume 1165 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1165 OG 3
Status of Appeal Cases	1165 OG 3
Notice of Maintenance Fees Payable	1165 OG 4
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee	1165 OG 4
Notification of Acceptance of Delayed Payment of Maintenance Fee	1165 OG 10
Reissue Applications Filed	1165 OG 10
Requests for Reexaminations Filed	1165 OG 10
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1165 OG 11
Registration To Practice	1165 OG 13
Registration To Practice	1165 OG 13
Notice of a Change in Procedure Regarding Requests	1165 OG 13
Patent Certificates of Correction	1165 OG 13
Summary of Final Decisions Issued by the Trademark Trial and Appeal Board	1165 OG 15
Special Boxes for Mail	1165 OG 18
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1165 OG 19
Patent Examining Corps	1165 OG 21
Condition of Trademark Applications	1165 OG 22
Reexaminations	1
Statutory Invention Registrations	3
Reissue Patents Granted (34,678)	5
Plant Patents Granted (8,850)	9
Patents Granted	
General and Mechanical (5,333,321)	11
Chemical (5,334,224)	331
Electrical (5,334,794)	493
Design Patents Granted (349,179)	697
Index of Patentees	PI 1
Indices of Reissue, Reexaminations, Design and Plant Patents	PI 96
Classification of	
Patents (Including Reissues and Reexaminations)	PI 97
Designs and Plants Applications	PI 101
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 103
Designs and Plant Applications	PI 105
Change of Address Form	PI 107
Subscription Order Form	PI 109

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VOL
1165
ISS
1
AG
2
1994
UMI

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel for A Decision Without a Hearing as of June 30, 1994.

Chemical Discipline -	September 14, 1992
Mechanical Discipline -	December 2, 1993
Electrical Discipline -	June 1, 1993

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of June 30, 1994.

Chemical Discipline -	March 24, 1992*
Mechanical Discipline -	September 12, 1993
Electrical Discipline -	October 22, 1991*

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals

VOL 1165 ISS 1 AG 2 1994 UMI

During the Month of June, 1994.

Affirmed	136
Affirmed-in-Part	33
Reversed	99
Total Decided	268

* These cases were just recently received from the examining group.

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 30, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,037,998 through 5,036,546
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 28, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,683,371 through 4,683,591
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 26, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,394,781 through 4,395,780
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 22, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,071	07/140,659	09/26/89
(4,590,001)	(06/593,725)	(05/20/86)
Re. 33,293	07/195,854	08/07/90
(4,589,767)	(06/777,028)	(05/20/86)
Re. 34,117	07/605,077	10/27/92
(4,927,405)	(07/214,520)	(05/22/90)
Re. 34,379	07/744,112	09/14/93
(4,928,283)	(07/160,657)	(05/22/90)
Re. 34,551	07/886,230	02/22/94
(4,927,324)	(07/294,780)	(05/22/90)
4,330,938	06/262,198	05/25/82
4,330,981	06/240,571	05/25/82
4,330,995	06/215,914	05/25/82
4,331,125	06/246,867	05/25/82
4,331,249	06/242,196	05/25/82
4,331,253	06/243,389	05/25/82
4,331,257	06/217,686	05/25/82
4,331,338	06/219,425	05/25/82
4,331,468	06/256,420	05/25/82
4,331,480	06/221,119	05/25/82
4,331,517	06/250,499	05/25/82
4,331,519	06/222,672	05/25/82
4,331,539	06/242,303	05/25/82
4,331,544	06/226,401	05/25/82
4,331,560	06/255,693	05/25/82
4,331,566	06/232,058	05/25/82

Patent Number	Serial Number	Issue Date
4,331,616	06/217,123	05/25/82
4,331,621	06/245,503	05/25/82
4,331,643	06/216,351	05/25/82
4,331,652	06/219,790	05/25/82
4,331,681	06/221,118	05/25/82
4,331,688	06/215,802	05/25/82
4,331,700	06/258,433	05/25/82
4,331,730	06/260,124	05/25/82
4,331,736	06/232,129	05/25/82
4,331,746	06/238,790	05/25/82
4,331,776	06/265,402	05/25/82
4,331,789	06/260,947	05/25/82
4,331,799	06/239,754	05/25/82
4,331,809	06/220,592	05/25/82
4,331,810	06/220,593	05/25/82
4,331,811	06/243,166	05/25/82
4,331,813	06/232,605	05/25/82
4,331,820	06/222,982	05/25/82
4,331,843	06/220,497	05/25/82
4,331,943	06/218,894	05/25/82
4,331,977	06/216,692	05/25/82
4,589,147	06/354,826	05/20/86
4,589,150	06/734,551	05/20/86
4,589,151	06/512,090	05/20/86
4,589,152	06/529,333	05/20/86
4,589,154	06/661,665	05/20/86
4,589,156	06/696,787	05/20/86
4,589,167	06/714,871	05/20/86
4,589,168	06/661,670	05/20/86
4,589,169	06/570,131	05/20/86
4,589,171	06/592,993	05/20/86
4,589,173	06/633,253	05/20/86
4,589,183	06/644,280	05/20/86
4,589,188	06/715,969	05/20/86
4,589,190	06/593,013	05/20/86
4,589,192	06/667,699	05/20/86
4,589,195	06/692,134	05/20/86
4,589,198	06/749,972	05/20/86
4,589,199	06/734,731	05/20/86
4,589,203	06/638,622	05/20/86
4,589,204	06/674,029	05/20/86
4,589,210	06/605,208	05/20/86
4,589,212	06/722,851	05/20/86
4,589,213	06/710,362	05/20/86
4,589,214	06/595,452	05/20/86
4,589,215	06/671,605	05/20/86
4,589,218	06/624,844	05/20/86
4,589,219	06/646,313	05/20/86
4,589,220	06/759,672	05/20/86
4,589,221	06/607,284	05/20/86
4,589,223	06/634,169	05/20/86
4,589,224	06/646,799	05/20/86
4,589,225	06/474,354	05/20/86
4,589,226	06/641,341	05/20/86
4,589,228	06/732,128	05/20/86
4,589,231	06/694,445	05/20/86
4,589,232	06/618,216	05/20/86
4,589,234	06/595,265	05/20/86
4,589,243	06/608,389	05/20/86
4,589,257	06/678,439	05/20/86
4,589,273	06/671,448	05/20/86
4,589,277	06/629,839	05/20/86
4,589,281	06/653,028	05/20/86
4,589,289	06/494,789	05/20/86
4,589,291	06/537,891	05/20/86
4,589,300	06/641,701	05/20/86
4,589,304	06/657,543	05/20/86
4,589,305	06/558,133	05/20/86
4,589,306	06/578,367	05/20/86
4,589,308	06/707,737	05/20/86
4,589,309	06/649,864	05/20/86
4,589,312	06/582,463	05/20/86
4,589,313	06/739,606	05/20/86
4,589,314	06/737,712	05/20/86
4,589,315	06/559,400	05/20/86
4,589,318	06/696,636	05/20/86
4,589,325	06/560,373	05/20/86
4,589,326	06/440,228	05/20/86
4,589,328	06/697,061	05/20/86
4,589,331	06/626,885	05/20/86
4,589,335	06/551,412	05/20/86
4,589,338	06/654,085	05/20/86
4,589,342	06/706,825	05/20/86
4,589,344	06/452,957	05/20/86
4,589,346	06/535,406	05/20/86
4,589,347	06/463,080	05/20/86
4,589,348	06/544,731	05/20/86
4,589,350	06/598,304	06/20/86
4,589,352	06/694,528	05/20/86
4,589,362	06/473,607	05/20/86
4,589,363	06/779,491	05/20/86
4,589,366	06/641,758	05/20/86
4,589,367	06/656,754	05/20/86
4,589,369	06/714,098	05/20/86
4,589,370	06/750,666	05/20/86
4,589,371	06/670,151	05/20/86
4,589,372	06/707,523	05/20/86
4,589,373	06/631,623	05/20/86
4,589,375	06/597,656	05/20/86
4,589,377	06/637,691	05/20/86
4,589,387	06/751,170	05/20/86
4,589,394	06/738,075	05/20/86
4,589,395	06/560,511	05/20/86
4,589,400	06/649,398	05/20/86
4,589,403	06/653,828	05/20/86
4,589,407	06/608,377	05/20/86
4,589,411	06/699,664	05/20/86
4,589,413	06/515,979	05/20/86
4,589,421	06/589,430	05/20/86
4,589,422	06/576,708	05/20/86
4,589,424	06/525,182	05/20/86
4,589,426	06/641,848	05/20/86
4,589,432	06/613,321	05/20/86
4,589,440	06/588,951	05/20/86
4,589,446	06/729,982	05/20/86
4,589,447	06/722,974	05/20/86
4,589,451	06/635,740	05/20/86
4,589,454	06/710,369	05/20/86
4,589,456	06/676,000	05/20/86
4,589,457	06/688,803	05/20/86
4,589,459	06/694,431	05/20/86
4,589,461	06/625,080	05/20/86
4,589,462	06/562,112	05/20/86
4,589,464	06/634,368	05/20/86
4,589,465	06/560,899	05/20/86
4,589,466	06/738,688	05/20/86
4,589,468	06/547,720	05/20/86
4,589,471	06/665,901	05/20/86
4,589,472	06/613,632	05/20/86
4,589,474	06/540,899	05/20/86
4,589,475	06/490,531	05/20/86
4,589,484	06/659,633	05/20/86
4,589,485	06/666,699	05/20/86
4,589,486	06/605,756	05/20/86
4,589,490	06/669,418	05/20/86
4,589,491	06/749,137	05/20/86
4,589,492	06/659,489	05/20/86
4,589,495	06/601,938	05/20/86
4,589,500	06/588,872	05/20/86
4,589,501	06/596,638	05/20/86
4,589,502	06/607,166	05/20/86
4,589,509	06/665,984	05/20/86
4,589,511	06/620,467	05/20/86
4,589,512	06/540,422	05/20/86
4,589,514	06/758,286	05/20/86
4,589,516	06/703,368	05/20/86
4,589,527	06/555,968	05/20/86
4,589,528	06/526,534	05/20/86
4,589,532	06/473,217	05/20/86
4,589,534	06/463,830	05/20/86
4,589,536	06/647,310	05/20/86
4,589,538	06/515,372	05/20/86
4,589,540	06/660,562	05/20/86
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VOL
1165
ISS
1
AG
2
1994
UMI

Patent Number	Serial Number	Issue Date
4,589,567	06/763,142	05/20/86
4,589,570	06/643,048	05/20/86
4,589,572	06/506,203	05/20/86
4,589,575	06/552,070	05/20/86
4,589,584	06/696,821	05/20/86
4,589,588	06/658,011	05/20/86
4,589,589	06/622,418	05/20/86
4,589,590	06/680,662	05/20/86
4,589,593	06/735,064	05/20/86
4,589,595	06/581,688	05/20/86
4,589,599	06/543,766	05/20/86
4,589,602	06/559,867	05/20/86
4,589,604	06/554,379	05/20/86
4,589,605	06/685,317	05/20/86
4,589,612	06/640,461	05/20/86
4,589,613	06/598,555	05/20/86
4,589,621	06/567,702	05/20/86
4,589,630	06/711,380	05/20/86
4,589,638	06/625,460	05/20/86
4,589,640	06/780,245	05/20/86
4,589,648	06/663,715	05/20/86
4,589,649	06/633,094	05/20/86
4,589,661	06/637,130	05/20/86
4,589,662	06/666,660	05/20/86
4,589,663	06/643,439	05/20/86
4,589,664	06/563,571	05/20/86
4,589,667	06/661,544	05/20/86
4,589,670	06/503,704	05/20/86
4,589,671	06/678,716	05/20/86
4,589,675	06/585,928	05/20/86
4,589,679	06/615,347	05/20/86
4,589,680	06/572,020	05/20/86
4,589,682	06/755,715	05/20/86
4,589,684	06/540,324	05/20/86
4,589,687	06/513,300	05/20/86
4,589,689	06/600,662	05/20/86
4,589,692	06/620,340	05/20/86
4,589,693	06/530,205	05/20/86
4,589,694	06/644,015	05/20/86
4,589,696	06/630,306	05/20/86
4,589,697	06/655,094	05/20/86
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4,589,701	06/637,256	05/20/86
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Patent Number	Serial Number	Issue Date
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4,927,178	07/259,058	05/22/90
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4,927,181	07/370,327	05/22/90
4,927,183	07/317,075	05/22/90
4,927,188	07/278,018	05/22/90
4,927,193	06/868,851	05/22/90
4,927,196	07/259,584	05/22/90
4,927,197	07/246,352	05/22/90
4,927,198	07/293,061	05/22/90
4,927,206	07/367,610	05/22/90
4,927,210	07/337,695	05/22/90
4,927,212	07/273,072	05/22/90
4,927,214	07/208,074	05/22/90
4,927,226	07/329,160	05/22/90
4,927,237	07/203,496	05/22/90
4,927,239	07/300,192	05/22/90
4,927,240	07/236,293	05/22/90

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4,927,241	07/411,792	05/22/90
4,927,245	07/238,123	05/22/90
4,927,246	07/231,470	05/22/90
4,927,251	07/205,926	05/22/90
4,927,255	07/317,602	05/22/90
4,927,258	07/268,793	05/22/90
4,927,261	07/251,898	05/22/90
4,927,265	07/187,789	05/22/90
4,927,266	07/283,474	05/22/90
4,927,272	07/355,262	05/22/90
4,927,274	07/370,607	05/22/90
4,927,283	07/344,330	05/22/90
4,927,284	07/368,810	05/22/90
4,927,286	07/221,583	05/22/90
4,927,305	07/240,151	05/22/90
4,927,313	07/313,128	05/22/90
4,927,316	07/219,587	05/22/90
4,927,320	07/379,821	05/22/90
4,927,329	07/260,645	05/22/90
4,927,330	07/212,049	05/22/90
4,927,332	06/852,714	05/22/90
4,927,336	07/129,703	05/22/90
4,927,349	07/118,827	05/22/90
4,927,351	07/393,150	05/22/90
4,927,356	07/088,124	05/22/90
4,927,359	07/331,717	05/22/90
4,927,361	07/595,321	05/22/90
4,927,364	07/213,294	05/22/90
4,927,370	07/385,963	05/22/90
4,927,372	07/312,831	05/22/90
4,927,377	07/282,624	05/22/90
4,927,378	07/290,460	05/22/90
4,927,380	07/289,546	05/22/90
4,927,384	07/339,900	05/22/90
4,927,385	07/380,314	05/22/90
4,927,391	06/677,569	05/22/90
4,927,397	07/314,823	05/22/90
4,927,399	07/300,856	05/22/90
4,927,400	07/370,636	05/22/90
4,927,401	07/390,773	05/22/90
4,927,416	07/230,796	05/22/90
4,927,427	07/414,396	05/22/90
4,927,435	07/332,647	05/22/90
4,927,449	07/289,947	05/22/90
4,927,452	07/277,529	05/22/90
4,927,453	07/238,108	05/22/90
4,927,454	07/268,419	05/22/90
4,927,455	07/091,864	05/22/90
4,927,457	07/272,806	05/22/90
4,927,468	07/278,068	05/22/90
4,927,475	07/265,147	05/22/90
4,927,476	07/212,349	05/22/90
4,927,478	07/352,027	05/22/90
4,927,481	07/306,966	05/22/90
4,927,483	07/272,713	05/22/90
4,927,484	07/259,395	05/22/90
4,927,486	07/356,938	05/22/90
4,927,488	07/208,538	05/22/90
4,927,499	07/286,517	05/22/90
4,927,500	06/764,962	05/22/90
4,927,501	07/225,686	05/22/90
4,927,508	07/307,397	05/22/90
4,927,511	07/271,649	05/22/90
4,927,512	07/190,552	05/22/90
4,927,515	07/295,237	05/22/90
4,927,521	07/238,678	05/22/90
4,927,522	07/292,206	05/22/90
4,927,547	07/262,775	05/22/90
4,927,548	07/315,963	05/22/90
4,927,549	07/204,254	05/22/90
4,927,552	07/380,464	05/22/90
4,927,555	07/225,617	05/22/90
4,927,573	07/407,430	05/22/90
4,927,574	07/287,218	05/22/90
4,927,579	07/179,346	05/22/90
4,927,593	07/275,983	05/22/90
4,927,594	07/230,393	05/22/90
4,927,596	07/390,456	05/22/90
4,927,608	07/139,904	05/22/90
4,927,609	06/772,672	05/22/90
4,927,613	07/418,818	05/22/90
4,927,614	07/157,840	05/22/90
4,927,615	07/260,719	05/22/90
4,927,622	07/131,594	05/22/90
4,927,624	07/123,007	05/22/90
4,927,627	07/248,875	05/22/90
4,927,641	07/355,352	05/22/90
4,927,642	07/237,903	05/22/90
4,927,647	07/277,464	05/22/90
4,927,649	07/245,890	05/22/90
4,927,650	07/314,290	05/22/90
4,927,653	07/366,294	05/22/90
4,927,668	07/226,617	05/22/90
4,927,677	07/187,297	05/22/90
4,927,694	07/200,633	05/22/90
4,927,696	07/225,542	05/22/90
4,927,697	07/276,841	05/22/90
4,927,699	07/141,610	05/22/90
4,927,700	07/293,877	05/22/90
4,927,705	07/229,609	05/22/90
4,927,712	07/197,170	05/22/90
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4,927,717	07/332,086	05/22/90
4,927,740	07/262,629	05/22/90
4,927,749	06/849,819	05/22/90
4,927,750	07/049,863	05/22/90
4,927,751	06/882,349	05/22/90
4,927,752	07/031,470	05/22/90
4,927,756	07/159,146	05/22/90
4,927,760	07/366,726	05/22/90
4,927,761	07/162,579	05/22/90
4,927,762	07/281,974	05/22/90
4,927,766	06/866,810	05/22/90
4,927,774	07/423,691	05/22/90
4,927,778	07/228,654	05/22/90
4,927,784	07/250,207	05/22/90
4,927,794	06/749,614	05/22/90
4,927,802	07/282,429	05/22/90
4,927,816	07/087,320	05/22/90
4,927,823	07/278,054	05/22/90
4,927,824	07/324,948	05/22/90
4,927,827	07/195,977	05/22/90
4,927,833	07/299,911	05/22/90
4,927,834	07/230,946	05/22/90
4,927,835	07/317,601	05/22/90
4,927,844	07/269,938	05/22/90
4,927,845	07/377,835	05/22/90
4,927,846	07/275,465	05/22/90
4,927,848	07/246,393	05/22/90
4,927,851	07/242,667	05/22/90
4,927,857	07/298,875	05/22/90
4,927,865	07/350,863	05/22/90
4,927,875	07/442,748	05/22/90
4,927,887	07/234,105	05/22/90
4,927,896	07/375,034	05/22/90
4,927,899	07/328,240	05/22/90
4,927,902	07/400,057	05/22/90
4,927,913	07/318,777	05/22/90
4,927,917	07/287,501	05/22/90
4,927,920	07/271,661	05/22/90
4,927,929	07/226,866	05/22/90
4,927,932	07/300,462	05/22/90
4,927,935	07/268,264	05/22/90
4,927,936	07/285,907	05/22/90
4,927,946	07/345,918	05/22/90
4,927,958	07/169,570	05/22/90
4,927,963	07/346,425	05/22/90
4,927,964	07/295,510	05/22/90
4,927,965	07/266,609	05/22/90
4,927,966	07/058,035	05/22/90
4,927,980	07/146,259	05/22/90
4,927,984	07/256,303	05/22/90
4,927,993	07/277,977	05/22/90
4,927,995	07/314,936	05/22/90
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VOL 1165 ISS 1 AG 2 1994 UMI

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4,928,041	07/306,985	05/22/90
4,928,046	07/340,856	05/22/90
4,928,055	07/316,512	05/22/90
4,928,067	07/286,545	05/22/90
4,928,069	07/245,379	05/22/90
4,928,070	07/317,098	05/22/90
4,928,076	07/425,457	05/22/90
4,928,077	07/235,322	05/22/90
4,928,078	07/288,686	05/22/90
4,928,088	07/321,708	05/22/90
4,928,094	07/148,421	05/22/90
4,928,099	07/162,697	05/22/90
4,928,108	07/319,738	05/22/90
4,928,109	07/257,691	05/22/90
4,928,121	07/271,910	05/22/90
4,928,136	07/251,666	05/22/90
4,928,145	07/178,344	05/22/90
4,928,148	07/416,971	05/22/90
4,928,150	07/184,502	05/22/90
4,928,151	07/223,333	05/22/90
4,928,159	07/279,888	05/22/90
4,928,164	07/393,037	05/22/90
4,928,171	07/115,145	05/22/90
4,928,173	07/369,831	05/22/90
4,928,185	07/149,171	05/22/90
4,928,198	07/225,812	05/22/90
4,928,199	07/405,409	05/22/90
4,928,201	07/274,455	05/22/90
4,928,217	07/308,634	05/22/90
4,928,221	07/179,685	05/22/90
4,928,225	07/240,747	05/22/90
4,928,241	07/096,283	05/22/90
4,928,253	07/005,776	05/22/90
4,928,258	07/349,558	05/22/90
4,928,262	07/269,049	05/22/90
4,928,270	07/368,814	05/22/90
4,928,280	07/187,718	05/22/90
4,928,282	07/276,448	05/22/90
4,928,293	07/100,164	05/22/90
4,928,303	07/291,897	05/22/90
4,928,311	07/070,104	05/22/90
4,928,312	07/262,946	05/22/90
4,928,319	07/328,761	05/22/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,503,383	06/337,836	03/05/85	01/07/82	01/29/94
4,506,318	06/487,817	03/19/85	04/22/83	05/12/94
4,530,758	06/578,990	07/23/85	02/13/84	05/24/94
4,539,560	06/448,827	09/03/85	12/10/82	05/25/94
4,543,164	06/485,006	09/24/85	04/14/83	05/20/94
4,554,475	06/617,240	11/19/85	06/05/84	06/03/94
4,573,642	06/607,648	03/04/86	05/07/84	04/06/94
4,796,820	06/764,389	01/10/89	08/12/85	05/23/94
4,817,874	06/794,234	04/04/89	10/31/85	05/17/94
4,880,130	07/222,570	11/14/89	07/21/88	05/20/94
4,896,794	07/303,030	01/30/90	01/27/89	05/17/94
4,902,418	06/927,849	02/20/90	11/06/86	05/25/94
4,909,205	07/298,737	03/20/90	01/19/89	05/25/94
4,912,877	07/312,112	04/03/90	02/17/89	05/25/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,104,644, Re. S.N. 08/226,965, Apr. 13, 1994, Cl. 424/53, MOUTHRINSE COMPOSITION, Jerry A. Douglas, Owner of Record: *7-L Corporation, Harrisburg, Ill.*, Attorney or Agent: Paul I.J. Fleischut, Ex. Gp.: 1205

5,108,980, Re. S.N. 08/231,751, Apr. 25, 1994, Cl. 503/226, REVERSIBLE THERMOSENSITIVE RECORDING MATERIAL, Yoshihiro Hotta, et. al., Owner of Record: *Ricoh Company Ltd., Tokyo, Japan*, Attorney or Agent: Norman F. Oblon, Ex. Gp.: 1513

5,113,213, Re. S.N. 08/237,891, May 3, 1994, Cl. 353/22, COMPUTER-GENERATED AUTOSTEREOGRAPHY METHOD AND APPARATUS, Ellen R. Sandor, et. al., Owner of Record: *Phscologram Venture Inc., Chicago, Ill.*, Attorney or Agent: Aslan Baghdadi, Ex. Gp.: 2102

5,122,535, Re. S.N. 08/252,905, June 2, 1994, Cl. 514/415, METHOD OF SOLUBILIZING MELATONIN IN WATER, Franco Fraschini, et. al., Owner of Record: *Inventor*, Attorney or Agent: Fernanda M. Fiordalisi, Ex. Gp.: 1205

5,221,226, Re. S.N. 08/243,586, May 16, 1994, Cl. 446/353, MOVABLE TOY, Dal Ho Park, Owner of Record: *Inventor*, Attorney or Agent: Eugene Lieberstein, Ex. Gp.: 3301

5,251,984, Re. S.N. 08/242,928, May 16, 1994, Cl. 384/47, LINEAR MOTION GUIDE UNIT HAVING A SYNCHRONIZED RETAINER, Tatsuo Mottate, Owner of Record: *Nippon Thomson Co. Ltd., Tokyo, Japan*, Attorney or Agent: David R. Graham, Ex. Gp.: 2405

5,266,422, Re. S.N. 08/211,000, Mar. 21, 1994, Cl. 429/192, BRANCHED POLYHYDROXY ALKANATE POLYMER SALT ELECTROLYTIC COMPOSITIONS AND METHOD OF PREPARATION, Rosetta N. Reusch, et. al., Owner of Record: *Board of Trustees Operating Michigan State University, East Lansing, Michigan*, Attorney or Agent: Ian C. McLeod, Ex. Gp.: 1111

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,798,465, Reexam. No. 90/003,299, Jan. 7, 1994, Cl. 356/336, PARTICLE SIZE DETECTION DEVICE HAVING HIGH SENSITIVITY IN HIGH MOLECULAR SCATTERING ENVIRONMENT, Robert G. Knollenberg, Owner of Record: *Particle Measuring System, Inc., Boulder, Colo.*, Attorney or Agent: Robert E. Harris, O'Rourke & Harris, Boulder, Colo., Ex. Gp.: 2505, Requester: Owner

4,812,643, Reexam. No. 90/003,190, Cl. 250/222.100, DETECTOR DEVICE FOR A BLADE TRACKING SYSTEM HAVING TWO SENSORS, Richard Talbot, Romsey, Gt. Britain, Owner of Record: *Stewart Hughes, Ltd., Hampshire, Gt. Britain*, Attorney or Agent: David W. Heid, Skjerven, Morrill, MacPherson, Franklin & Friel, San Jose, Calif., Ex. Gp.: 2509, Requester: Owner

4,846,138, Reexam. No. 90/003,074, May 26, 1993, Cl. 123/657, LOW PROFILE INTERNAL COMBUSTION ENGINE, Tony E. Vallejos, Owner of Record: *Alto Automotive, Inc., Deerfield, Ill.*, Attorney or Agent: John B. Conklin, Leydig, Voit & Mayer, Chicago, Ill., Ex. Gp.: 3402, Requester: Owner

4,983,767, Reexam. No. 90/003,268, Nov. 29, 1993, Cl. 562/528.0, PREPARATION OF ALIPHATIC CARBOXYLIC ACIDS BY OXIDATION OF MONOCYCLIC KETONES, Jean-Marie Bregeault, et. al., Owner of Record: *Rhone-Poulenc Chimie, Courbevoie, France*, Attorney or Agent: Norman H. Stepno, Burns, Doane, Swecker & Mathis, Alexandria, Va., Ex. Gp.: 1204, Requester: Owner

5,033,639, Reexam. No. 90/003,266, Nov. 30, 1993, Cl. 220/604.0, BUNGED VESSEL, Dietmar Przytulla, Owner of Record: *Mauser-Werke, Gmbh., Bruhl, Fed'l Republic of Germany*, Attorney or Agent: Harry C. Jones, III, Pennie & Edmonds, New York, N.Y., Ex. Gp.: 3104, Requester: Owner

5,073,129, Reexam. No. 90/002,961, Feb. 11, 1993, Cl. 439/585, COAXIL CABLE END CONNECTOR, Andrew Szedga, Owner of Record: *John Mezzalingua Assocs., Manlius, N.Y.*, Attorney or Agent: Maurice E.G. Gauthier, Samuels, Gauthier & Stevens, Boston, Mass., Ex. Gp.: 3202, Requester: Weingarten, Schurgin, Gagnebin & Hayes, Boston, Mass.

5,095,770, Reexam. No. 90/003,255, Nov. 9, 1993, Cl. 074/551.100, STEERING BEARING ASSEMBLY FOR WHEELED VEHICLE, Homer J. Rader III, Owner of Record: *Inventor*, Attorney or Agent: David Safran, Sixbey, Friedman, Leedom & Ferguson, McLean, Va., Ex. Gp.: 3504, Requester: Owner

5,149,794, Reexam. No. 90/003,249, Nov. 5, 1993, Cl. 424/450.0, COVALENT LIPID-DRUG CONJUGATES FOR DRUG TARGETING, Milton B. Yatvin, et. al., Owner of Record: *State of Oregon, Portland, Oreg.*, Attorney or Agent: Kevin E. Noonan, Allegretti & Witcoff, Ltd., Chicago, Ill., Ex. Gp.: 1803, Requester: Milton B. Yatvin, Portland, Oreg.

5,178,133, Reexam. No. 90/003,028, Apr. 20, 1993, Cl. 128/020.0, LAPAROSOPIC RETRACTOR AND SHEATHES, Louis T. Pena, Owner of Record: *Inventor, Houston, Tex.*, Attorney or Agent: Neal J. Moseley, Tucson, Ariz., Ex. Gp.: 3303, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED MAY 30, 1994
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
93,179	71/069,357	08/26/1913
93,184	71/069,920	08/26/1913
93,247	71/047,753	08/26/1913
305,534	71/336,903	08/22/1933
305,536	71/336,872	08/22/1933
305,545	71/336,622	08/22/1933
305,550	71/335,565	08/22/1933
305,557	71/336,744	08/22/1933
305,558	71/337,186	08/22/1933
305,563	71/337,170	08/22/1933
305,568	71/337,011	08/22/1933
305,592	71/329,701	08/22/1933
305,602	71/326,210	08/22/1933
305,609	71/337,558	08/22/1933
305,616	71/330,611	08/22/1933
305,656	71/332,854	08/22/1933
305,672	71/334,466	08/22/1933
305,678	71/334,596	08/22/1933
305,687	71/333,533	08/22/1933
305,698	71/335.913	08/22/1933
305,702	71/335,675	08/22/1933
305,708	71/335,674	08/22/1933
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578,972	71/553,968	08/25/1953
578,988	71/602,373	08/25/1953
578,990	71/602,842	08/25/1953
578,991	71/605,661	08/25/1953
578,994	71/606,843	08/25/1953
579,002	71/611,997	08/25/1953
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579,011	71/618,697	08/25/1953
579,015	71/619,744	08/25/1953
579,019	71/622,307	08/25/1953
579,033	71/623,668	08/25/1953
579,039	71/624,994	08/25/1953
579,043	71/626,561	08/25/1953
579,045	71/626,868	08/25/1953
579,052	71/627,626	08/25/1953
579,058	71/628,250	08/25/1953
579,059	71/628,511	08/25/1953
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579,065	71/629,247	08/25/1953
579,088	71/633,182	08/25/1953
579,092	71/633,664	08/25/1953
579,093	71/633,665	08/25/1953
579,095	71/634,407	08/25/1953
579,099	71/634,668	08/25/1953
579,104	71/635,210	08/25/1953
579,107	71/635,505	08/25/1953
579,108	71/635,566	08/25/1953
579,113	71/635,716	08/25/1953
579,116	71/635,882	08/25/1953
579,121	71/636,143	08/25/1953
579,122	71/636,364	08/25/1953
579,126	71/636,753	08/25/1953
579,128	71/636,786	08/25/1953
579,131	71/637,029	08/25/1953

VOL
1165
ISS
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1994
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Reg. Number	Serial Number	Reg. Date
579,132	71/637,096	08/25/1953
579,145	71/637,531	08/25/1953
579,150	71/637,951	08/25/1953
579,173	71/639,747	08/25/1953
579,177	71/639,978	08/25/1953
579,184	71/640,509	08/25/1953
579,203	71/625,000	08/25/1953
579,207	71/634,228	08/25/1953
579,211	71/621,998	08/25/1953
579,215	71/596,908	08/25/1953
579,225	71/624,692	08/25/1953
964,924	72/431,365	07/24/1973
966,316	72/409,082	08/21/1973
966,318	72/423,065	08/21/1973
966,326	72/438,712	08/21/1973
966,327	72/411,274	08/21/1973
966,330	72/424,243	08/21/1973
966,332	72/426,905	08/21/1973
966,337	72/434,974	08/21/1973
966,338	72/445,376	08/21/1973
966,339	72/389,064	08/21/1973
966,341	72/420,507	08/21/1973
966,343	72/426,960	08/21/1973
966,347	72/418,707	08/21/1973
966,349	72/408,889	08/21/1973
966,351	72/419,189	08/21/1973
966,354	72/423,299	08/21/1973
966,355	72/423,507	08/21/1973
966,356	72/425,329	08/21/1973
966,357	72/425,473	08/21/1973
966,361	72/418,749	08/21/1973
966,362	72/424,704	08/21/1973
966,365	72/428,507	08/21/1973
966,366	72/428,508	08/21/1973
966,367	72/428,806	08/21/1973
966,368	72/428,807	08/21/1973
966,369	72/429,866	08/21/1973
966,371	72/432,562	08/21/1973
966,374	72/423,451	08/21/1973
966,380	72/419,169	08/21/1973
966,381	72/419,170	08/21/1973
966,382	72/419,173	08/21/1973
966,385	72/434,883	08/21/1973
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966,398	72/416,312	08/21/1973
966,402	72/434,717	08/21/1973
966,405	72/433,210	08/21/1973
966,407	72/411,147	08/21/1973
966,409	72/422,129	08/21/1973
966,411	72/426,548	08/21/1973
966,412	72/428,607	08/21/1973
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966,417	72/382,599	08/21/1973
966,423	72/428,711	08/21/1973
966,425	72/387,786	08/21/1973
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966,431	72/427,052	08/21/1973
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966,444	72/397,372	08/21/1973
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966,458	72/370,635	08/21/1973
966,462	72/384,695	08/21/1973
966,465	72/421,593	08/21/1973
966,466	72/432,771	08/21/1973
966,467	72/439,176	08/21/1973
966,473	72/403,783	08/21/1973
966,474	72/416,653	08/21/1973
966,475	72/428,654	08/21/1973
966,476	72/420,811	08/21/1973
966,479	72/416,595	08/21/1973
966,482	72/422,484	08/21/1973
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966,548	72/415,919	08/21/1973
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966,570	72/428,203	08/21/1973
966,571	72/428,925	08/21/1973
966,573	72/432,023	08/21/1973
966,574	72/432,291	08/21/1973
966,575	72/432,635	08/21/1973
966,576	72/433,891	08/21/1973
966,579	72/435,195	08/21/1973
966,584	72/433,169	08/21/1973
966,585	72/433,170	08/21/1973
966,586	72/433,171	08/21/1973
966,589	72/418,484	08/21/1973
966,590	72/423,177	08/21/1973
966,593	72/427,977	08/21/1973
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966,602	72/429,465	08/21/1973
966,604	72/430,216	08/21/1973
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966,608	72/433,698	08/21/1973
966,609	72/434,804	08/21/1973
966,611	72/435,385	08/21/1973
966,613	72/443,118	08/21/1973
966,614	72/406,835	08/21/1973
966,616	72/435,120	08/21/1973
966,623	72/414,975	08/21/1973
966,624	72/414,976	08/21/1973
966,628	72/438,857	08/21/1973
966,631	72/371,165	08/21/1973
966,633	72/406,000	08/21/1973
966,638	72/410,139	08/21/1973
966,640	72/412,787	08/21/1973
966,643	72/418,422	08/21/1973
966,644	72/418,567	08/21/1973
966,645	72/418,568	08/21/1973
966,646	72/419,429	08/21/1973
966,651	72/426,700	08/21/1973
966,654	72/426,985	08/21/1973
966,657	72/429,226	08/21/1973
966,660	72/431,647	08/21/1973
966,661	72/431,667	08/21/1973
966,666	72/435,575	08/21/1973
966,682	72/441,904	08/21/1973
966,684	72/446,448	08/21/1973
966,685	72/446,899	08/21/1973
966,686	72/451,239	08/21/1973
966,688	72/402,702	08/21/1973
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966,698	72/404,628	08/21/1973
966,699	72/408,530	08/21/1973
966,702	72/418,338	08/21/1973
966,705	72/426,889	08/21/1973
966,708	72/432,960	08/21/1973
966,711	72/384,834	08/21/1973
966,712	72/402,174	08/21/1973
966,714	72/403,173	08/21/1973
966,716	72/407,789	08/21/1973
966,717	72/407,936	08/21/1973
966,719	72/418,694	08/21/1973
966,725	72/404,908	08/21/1973
966,728	72/417,149	08/21/1973
966,729	72/419,243	08/21/1973
966,732	72/425,368	08/21/1973
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966,742	72/415,670	08/21/1973
966,744	72/416,842	08/21/1973
966,746	72/418,386	08/21/1973
966,752	72/426,243	08/21/1973
966,755	72/429,192	08/21/1973
966,756	72/429,193	08/21/1973
966,761	72/418,886	08/21/1973
966,764	72/424,442	08/21/1973
966,768	72/412,544	08/21/1973
966,769	72/430,380	08/21/1973
966,776	72/369,759	08/21/1973
966,777	72/385,721	08/21/1973
966,786	72/406,942	08/21/1973
966,790	72/400,444	08/21/1973
966,794	72/412,851	08/21/1973
966,799	72/384,893	08/21/1973
966,806	72/392,579	08/21/1973
967,616	72/433,875	09/04/1973

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before September 16, 1994.

Chun, Debra A., 3674 Barham Blvd., #L311, Los Angeles, Calif. 90068

Hook, Gregory R., 8276 Caminito Maritimo, La Jolla, Calif. 92037

Zazworsky, John, 2733 S. Grant St., Arlington, Va. 22202

July 7, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held Oct. 13, 1993. Final approval for registration is subjected to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before September 16, 1994.

Cherichetti, Cindy A., 202 E. Mason Ave., #301, Alexandria, Va. 22301

July 7, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Notice of a Change in Procedure Regarding Requests for Certification Services

The purpose of this notice is to inform the trademark community of a change of address for all requests for certification services and to amend in part a previous notice entitled "Expedited Services for Certified Copies of Trademark Registration" published at 1070 TMOG 4 (Sept. 16, 1986).

All requests for certified and uncertified copies of trademark documents pertaining to applications and registrations (i.e., application files, file wrappers, trademark title and status reports, registrations, etc.) must now go to the Certification Division, Office of Public Records, at the following **mailing address:**

Commissioner of Patents and Trademarks
Box 10, Certification Division
Washington, D.C. 20231

Requests can also be **hand-carried** to any of the following three locations:

Attorney's Window
Crystal Plaza 4, First Floor
Arlington, Virginia 22202

Attorney's Window
South Tower, Second Floor
2900 Crystal Drive
Arlington, Virginia 22202

Office of Public Records
North Tower, Tenth Floor
2800 Crystal Drive
Arlington, Virginia 22202

In addition, requests with deposit account orders can be transmitted by **facsimile transmission** to (703) 308-7048.

There will no longer be a limit on the number of requests for certified trademark documents.

Turnaround times for all requests, except requests for regular service for certified copies of trademark registrations, will remain unchanged and will be based upon the date of receipt by the Certification Division. Requests for certified copies of trademark registrations will be processed and mailed back to the requester within ten calendar days from the date of receipt by the Certification Division from the Patent and Trademark Office mail room. Requests for expedited services for certified copies of trademark registrations will continue to be processed and mailed back to the requester within three working days after they are received by the Certification Division from the Patent and Trademark Office mail room.

Requests for **negative certificates** will continue to be handled by the Post Registration Section of the Office of Trademark Services.

Requests mailed to the prior address will be forwarded to the Certification Division. General inquires should be made to the above mailing address or to the Special Handling Section, Certification Division, at (703) 308-9726.

July 1, 1994 PHILIP G. HAMPTON, II
Assistant Commissioner
for Trademarks

Certificates of Correction
Week of August 2, 1994

D. 302,203	D. 340,744	D. 343,267	D. 345,451
D. 327,012	D. 341,897	D. 343,638	P. 8,445
D. 331,018	D. 342,167	D. 345,001	Re. 34,496

VOL
1165
ISS
1
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1994
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4,274,422	5,156,840	5,233,627	5,258,645	5,272,135	5,284,097	5,292,445	5,302,065
4,411,833	5,157,018	5,233,755	5,259,005	5,272,349	5,284,445	5,292,553	5,302,111
4,558,120	5,159,424	5,235,343	5,259,367	5,273,698	5,284,649	5,292,916	5,302,162
4,652,581	5,163,368	5,235,543	5,259,693	5,273,746	5,284,708	5,293,852	5,302,257
4,762,919	5,164,844	5,235,590	5,259,765	5,273,994	5,284,743	5,293,940	5,302,341
4,771,285	5,166,294	5,235,983	5,259,856	5,274,223	5,284,806	5,294,663	5,302,714
4,842,888	5,167,313	5,236,474	5,260,106	5,274,326	5,284,849	5,294,732	5,302,981
4,870,370	5,168,049	5,237,878	5,260,111	5,274,902	5,285,159	5,295,244	5,303,054
4,899,826	5,174,944	5,238,311	5,260,511	5,275,005	5,286,030	5,295,518	5,303,116
4,910,128	5,177,455	5,238,748	5,260,680	5,275,858	5,286,363	5,295,519	5,303,306
4,919,955	5,184,998	5,239,165	5,260,994	5,275,894	5,286,437	5,295,704	5,303,689
4,935,201	5,187,940	5,239,419	5,261,463	5,275,980	5,286,090	5,295,890	5,303,751
4,938,201	5,188,939	5,240,180	5,261,485	5,276,181	5,286,450	5,296,034	5,303,864
4,985,702	5,190,173	5,240,265	5,261,721	5,276,524	5,286,739	5,296,090	5,303,884
4,992,111	5,190,795	5,240,888	5,261,722	5,276,792	5,287,022	5,296,395	5,303,926
4,995,595	5,191,249	5,241,026	5,261,766	5,277,065	5,287,099	5,296,667	5,303,930
5,018,749	5,192,125	5,241,209	5,263,050	5,277,176	5,287,451	5,296,740	5,303,943
5,021,817	5,192,157	5,241,596	5,263,230	5,277,747	5,287,488	5,296,998	5,304,143
5,023,819	5,192,569	5,242,281	5,263,759	5,277,847	5,287,535	5,297,110	5,304,336
5,025,443	5,194,626	5,244,087	5,263,934	5,277,855	5,287,792	5,297,278	5,304,484
5,031,954	5,195,530	5,244,316	5,264,551	5,278,080	5,287,876	5,297,284	5,304,495
5,034,045	5,196,752	5,245,035	5,264,835	5,278,296	5,287,937	5,297,591	5,305,080
5,050,049	5,196,990	5,245,770	5,264,955	5,278,564	5,288,066	5,298,194	5,305,107
5,050,464	5,197,656	5,246,145	5,265,011	5,278,931	5,288,101	5,298,255	5,305,245
5,053,399	5,198,380	5,246,769	5,265,035	5,279,248	5,288,122	5,298,315	5,305,319
5,053,818	5,200,733	5,246,957	5,265,408	5,279,296	5,288,196	5,298,320	5,305,421
5,053,871	5,202,526	5,247,352	5,266,400	5,279,320	5,288,218	5,298,574	5,305,603
5,070,092	5,202,929	5,247,546	5,266,441	5,279,494	5,288,310	5,298,854	5,305,694
5,072,264	5,204,576	5,247,843	5,266,533	5,279,731	5,288,526	5,298,859	5,305,792
5,072,726	5,206,019	5,249,025	5,266,999	5,280,160	5,288,666	5,298,970	5,305,803
5,079,169	5,206,022	5,249,082	5,267,136	5,280,486	5,288,829	5,298,991	5,306,035
5,079,352	5,206,051	5,249,102	5,267,145	5,280,545	5,288,891	5,299,141	5,306,278
5,082,834	5,209,829	5,249,113	5,267,897	5,280,930	5,289,011	5,299,743	5,306,447
5,089,249	5,210,235	5,250,792	5,268,705	5,281,005	5,289,729	5,300,002	5,306,541
5,091,478	5,211,687	5,250,847	5,268,744	5,281,081	5,289,946	5,300,014	5,306,564
5,097,102	5,211,886	5,252,038	5,268,784	5,281,282	5,290,235	5,300,017	5,306,568
5,098,719	5,212,009	5,252,948	5,268,863	5,281,375	5,290,342	5,300,211	5,306,599
5,099,029	5,213,205	5,253,319	5,268,864	5,281,402	5,290,532	5,300,384	5,306,810
5,110,283	5,215,897	5,253,716	5,268,976	5,281,477	5,290,534	5,300,475	5,306,981
5,112,789	5,218,510	5,253,765	5,269,106	5,281,862	5,290,624	5,300,505	5,307,557
5,117,248	5,222,502	5,253,847	5,269,538	5,281,987	5,290,914	5,300,551	5,308,068
5,119,010	5,224,810	5,254,690	5,269,845	5,282,050	5,290,973	5,300,630	5,308,253
5,120,774	5,224,985	5,254,889	5,269,867	5,282,216	5,290,988	5,300,679	5,308,569
5,125,735	5,225,539	5,255,567	5,269,993	5,282,611	5,291,034	5,300,922	5,308,677
5,126,027	5,226,316	5,255,754	5,270,280	5,283,199	5,291,073	5,301,050	5,309,006
5,132,867	5,226,483	5,255,900	5,270,297	5,283,312	5,291,264	5,301,256	5,309,196
5,134,185	5,226,641	5,256,162	5,270,777	5,283,566	5,291,306	5,301,285	5,309,218
5,136,867	5,227,868	5,257,680	5,270,580	5,283,583	5,291,806	5,301,534	5,309,388
5,142,079	5,228,217	5,257,774	5,270,844	5,283,823	5,291,963	5,301,643	5,311,166
5,151,214	5,228,845	5,258,372	5,270,848	5,283,922	5,292,283	5,301,863	5,313,650
5,152,021	5,230,262	5,258,477	5,271,164	5,284,048	5,292,300	5,302,027	
5,152,829	5,232,191	5,258,479	5,271,454				

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
June 13-17, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Recommended for Publication
6-13	EX	74/101,439	UCC Industries, Inc.	2(d)	Refusal Affirmed	No
				Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney
					"THE UCC WAY TO 'WIPE OUT'" [cleaner for cleaning leather, vinyl, velour, upholstery, fabric, carpeting, canvas in cars, trucks, boats, planes, motorcycles and motor homes]	"WIPEOUTS" [wet tissue cleaner for automotive use]
6-14	EX	74/137,992	Sports World Ministries	2(d)	Refusal Reversed	No
					"SPORTS WORLD" [presentation by professional and like athletes for promoting positive moral values and a drug-free lifestyle]	"SPORTSWORLD" [entertainment services, namely, live and recorded sports and sports related programs exhibited through television and other media]
6-14	EX	74/190,309	Charles Greiner & Co., Inc.	whether the matter presented for registration functions as a trademark for the recited goods; whether the matter presented for registration may be registered under Section 2(f)	Refusal Reversed	No
					"1/4 [cervical collars]	

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

UMI
1994
AG
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VOL
1165

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-14	EX	74/195,512	VIP Foods	2(e)(1)	Refusal Affirmed		"CHERRY BERRY BLEND" [frozen foods, namely, a variety of whole berries, including cherries]		No
6-14	EX	74/296,327	Athens Pastries & Frozen Foods, Inc.	2(d)	Refusal Affirmed		"GOLDEN FLAKE" [pita bread; fillo dough (thin pastry dough) and uncooked kataifi sold in frozen sheet form for making pastries]	"GOLDEN FLAKE" (and design) [potato chips, corn chips, tortilla chips, beef jerky, pork skins, smoked meat sticks and processed peanuts; cheese flavored corn snacks, crackers flavored fillings, pastries, and popped pop corn]	No
6-17	EX	74/161,890	Olin Corp.	2(d)	Refusal Reversed		"HYPURE" [hypochlorous acid and salts thereof, namely, sodium hydrochlorite and potassium hydrochlorite, sold directly to industrial purchasers for use in sanitizing, bleaching and oxidizing applications]	"HI-PURE" [metal drums designed for shipment of chemicals and sold containing various chemicals]	No
6-17	EX	74/215,432	Grain Processing Corp	2(d)	Refusal Reversed		"MALTRIN QD" [starch hydrolysates for use as a source of complex carbohydrates in foods, and as carriers and bulking agents in the manufacture of food products]	"QD" [fumaric acid used as a flavoring agent in foods]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-17	EX	73/741,719	Ira S. Krieger	whether matter asserted for registration is capable of registration on the Supplemental Register	Refusal Affirmed		"TIDAL CHRONOMETER" [watches]		No
6-17	OPP	86,404	Merck & Co., Inc. v. Viral Response Systems, Inc.	2(d)	Opposition Dismissed	"NOROXIN" [antibacterial preparation for pharmaceutical use] and "CHIBROXIN" [pharmaceutical preparations, namely, opthalmological preparations]	"VIROXIN" [topical analgesic]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

VOL
1165
ISS
1
AG
2
1994
UMI

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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

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GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	08/09/93
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SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING. GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/18/93
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SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	02/12/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING. GROUP 3500—A.L. SMITH, Director	308-1021	07/15/93

*A communication from the examiner should have been received in most applications filed prior to this date

Expiration of Patents: The patents within the range of numbers indicated below expire during July 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,032,989 to 4,038,696 inclusive
Plant Patents.....4,069 to 4,085

VOL
1165
ISS
1
AUG
2
1994
UMI

TRADEMARK OPERATION

Bruce Lehman, Commissioner
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Robert M. Anderson, Deputy Assistant Commissioner
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Condition of Trademark Applications as of July 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/16/94	05/23/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/08/94	01/21/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	03/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/02/94	03/09/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	05/02/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/07/94	04/19/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.	02/22/94	04/28/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/94	04/01/94
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Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/10/94	04/20/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/23/94	03/03/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/01/94	—0—
Renewals (All Classes)	03/24/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

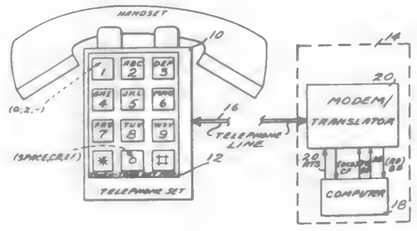
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3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

AUGUST 2, 1994

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in *italics* indicates additions made by reexamination.

B1 4,427,848 (2347th)
TELEPHONIC ALPHANUMERIC DATA TRANSMISSION SYSTEM
Peter J. Tsakanikas, Arlington, Va., assignor to Telephone Lottery Company, Inc., Johnstown, Pa.
Reexamination Request No. 90/003,075, May 27, 1993
Reexamination Certificate for Patent No. 4,427,848, issued Jan. 29, 1984, Ser. No. 335,516, Dec. 29, 1981
Int. Cl.[5] H04M *11/06, 11/08*
U.S. Cl. 379—88



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–52** is confirmed.

38. A system for converting supervisory signals from a telephone set into a computer compatible code, comprising:

memory means, responsive to address signals applied thereto, and including at least one individual addressable location corresponding to each symbol in said computer compatible code and containing indicia of the corresponding code symbol, for generating an output signal indicative of the contents of an addressed location therein in accordance with said address signals;

means, responsive to said memory means output signals and strobe signals applied thereto, for selectively transmitting indicia of said symbol code to said computer;

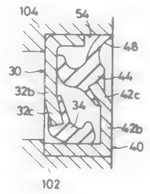
decoder means, responsive to said supervisory signals, for generating a first code word inidcative of the identity of partiuclar supervisory signals from said telephone set;

means for applying said first code word to said memory means as a portion of said address signal;

counter means, responsive to signals indicative of a predetermined first particular supervisory signal, for generating a count indicative of the number of sequential occurrences of said first particular supervisory signal in said signal from said telephone set, said count being applied to said memory means as a portion of said address signal; and

means, reponsive to signals indicative of a predetermined set of particular supervisory signals not including said predetermined first particular supervisory signal, for generating said strobe control signal to said means for selectively transmitting in accordance with the occurrence of any of said set of supervisory signals in the signal from said telephone set, to effect transmission of the instantaneously addressed location in said storage means.

B1 4,516,783 (2348th)
SEAL ASSEMBLY WITH RADIALLY OVERLAPPING SEAL
Naoki Mitsue, and Hideki Takahashi, both of Fujisawa, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Reexamination Request No. 90/003,075, May 27, 1993.
Reexamination Certificate for Patent No. 4,516,783, issued May 14, 1985, Ser. No. 618,555, Jun. 8, 1984.
Continuation of Ser. No. 575,763, Feb. 1, 1984, abandoned.
Claims priority, application Japan, Feb. 12, 1983, 58-21842
Int. Cl.[5] F16J *15/32, 15/38;* **F16C** *33/72*
U.S. Cl. 277—50



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2** and **3** is confirmed.

Claims **4** and **5** are cancelled.

Claim **1** is determined to be patentable as amended.

New claims **6–9** and **10** are added and determined to be patentable.

1. A seal assembly for sealing a chamber formed between radially inner and outer members disposed coaxially and spaced apart radially from each other, the members being **[**rotatably**]** *rotatable* relative to each other *and defining an interior portion therebetween,*

the seal assembly comprising:

a first radial member extended radially inwardly from the outer member toward the outer periphery of the inner member,

a second radial member disposed axially outside from the first radial member and extended radially outwardly from the inner member toward the outer member so that the first and second radial members may oppose **[**to**]** each other, *with the second radial member extending in a plane between the interior portion and an exterior portion and having a contiguous axial portion extending in the axial direction,*

a first seal means disposed between **[**the**]** *a* tip end of the first radial member and the inner member, *the first seal means contacting the tip end and the axial portion of the second radial member,*

a second seal means disposed between a side surface of the first radial member and the second radial member, *with the second seal means secured to the second radial member and extending into contact with the side surface of the first radial member,*

a third seal means disposed between the outer member and the second radial member, *said third seal means secured to the second radial member and extending toward an inner periphery of the outer member,* and

the first, second and third seal means each including a resilient

VOL 1165 ISS 1 AG 2 1994 UMI

seal member with a tip end curved toward the exterior portion of the chamber such that the first, second and third seal means [being so formed that] *permit* leak of lubricant contained in the chamber [may be permitted,] *to the exterior portion* while *preventing* flow of foreign material from *the* exterior [may be prevented] *portion.*

B1 4,925,541 (2349th)

ELECTRODEIONIZATION APPARATUS AND METHOD

Anthony J. Giuffrida, N. Andover; Anil D. Jha, and Gary C. Ganzi, both of Lexington, all of Mass., assignors to Millipore Corp., Bedford, Mass.

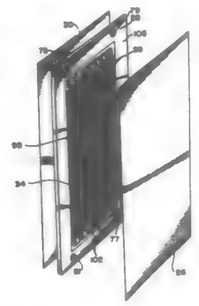
Reexamination Request No. 90/003,087, Jun. 7, 1993.

Reexamination Certificate for Patent No. 4,925,541, issued May 16, 1990, Ser. No. 908,913, Sep. 18, 1986.

Division of Ser. No. 762,804, Aug. 2, 1985, Pat. No. 4,632,745, which is a continuation of Ser. No. 628,930, Jul. 9, 1984, abandoned the portion of the term of this patent subsequent to Dec. 30, 2003, has been disclaimed.

Int. Cl.[5] **B01D** *61/48, 61/50, 61/46, 61/42*

U.S. Cl. 204—182.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. The process for removing ions from a liquid in an electrodeionization apparatus adapted to remove ions from a liquid which include:

a cathode compartment at a first end of said apparatus,

an anode compartment at an end of said apparatus opposite said first end,

a plurality of alternating ion depletion compartments and ion concentration compartments positioned between said cathode compartment and said anode compartment,

each of said ion depletion compartments comprising a spacer and a plurality of subcompartments formed by a plurality of ribs extending along the length of each of said ion depletion compartments, each of said subcompartments containing a mixture of anion exchange resin and cation exchange resin,

each of said subcompartments having a width between about 0.3 and 4 inches and a thickness between about 0.05 and 0.25 inches and wherein the thickness of said subcompartments is defined by an anion permable membrane and a cation permeable membrane being bonded to each of said ribs along the length of said ribs and to said space,

each of said concentration compartments being free of ion exchange solid composition,

means for passing a first liquid to be purified through said ion depletion compartments,

means for passing a second liquid for accepting ions from said first liquid, through said concentration compartments,

means for applying an electrical voltage between an anode in said anode compartment and a cathode in said cathode compartment and,

means for recovering purified liquid from said depletion compartment,

which comprises passing a first liquid to be purified through said depletion compartments, passing a second liquid adapted to accept ions through said concentration compartments, passing an electrolyte through each of said anode and cathode compartments and recovering purified liquid from said ion depletion compartments.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED AUGUST 2, 1994

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1341

HIGH ENERGY PROPELLANT FORMULATION

Charles W. Hughes, 3594 Brighton Point Dr.; James H. Godsey, 7268 S. 2220 East, and Robert F. Keller, 2071 Renoir Cir., all of Salt Lake City, Utah 84121

Filed Dec. 14, 1990, Ser. No. 627,169

Int. Cl.[5] **C06B** *45/10*

U.S. Cl. 149—19.4 **18 Claims**

1. A propellant composition comprising:

polyethylene glycol;

a nitrate ester;

the biuret trimer of hexamethylene diisocyanate;

2-nitrodiphenylamine;

N-methyl-p-nitroaniline;

an organo-bismuth compound;

a metal selected from aluminum, boron and beryllium;

cyclotetramethylene tetranitramine;

ammonium perchlorate; and,

optionally at least one crosslinking agent selected from the group consisting of trimethylol propane, glycerin, cellulose acetate butyrate, cellulose acetate and cellulose butyrate alone, or said acetate and butyrate in combination.

H1342

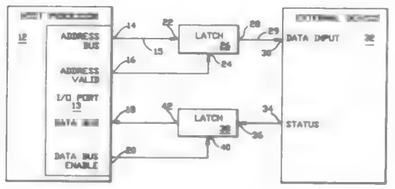
EFFECTUATING FULL DUPLEX DIGITAL DATA TRANSFER

Eric J. Whitesell, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1990, Ser. No. 624,377

Int. Cl.[5] **G06F** *13/00*

U.S. Cl. 395—275 **3 Claims**



1. A method for transferring digital data between devices, comprising the steps of:

executing a first instruction in a digital processor, having address and data lines which fetches m-bit output data from a memory into a data register, where "m" is a positive integer;

executing a second instruction in said digital processor which fetches an address reference of an external device from said memory into an address register of said digital processor, said external device having n-bit external data on external data lines, where "n" is a positive integer; and

executing a third instruction in said digital processor which places said output data and said address reference onto said address lines, and causes said output data from said address lines of said digital processor and said external data from said external data lines to be sampled by a plurality of data latches, and causes transference of said output data to said external device and transference of said external data to said digital processor from said plurality of data latches substantially simultaneously.

H1343

DIRECT POSITIVE SILVER HALIDE EMULSION AND A COLOR DIFFUSION TRANSFER PHOTOGRAPHIC FILM UNIT HAVING THE EMULSION

Mitsuo Saitou; Katsumi Hirano; Ashita Murai, and Seiji Akiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 982,441

Claims priority, application Japan, Nov. 27, 1991, 3-312669; May 28, 1992, 4-136713

Int. Cl.[5] **G03C** *1/005*

U.S. Cl. 430—567 **11 Claims**

1. A color diffusion transfer photographic film unit comprising:

1) a light-sensitive sheet comprising a transparent support, an image receiving layer, a white reflection layer, a light shielding layer, and at least one silver halide emulsion layer combined with at least one dye image-forming material,

2) a transparent cover sheet comprising at least a neutralization layer and a neutralization timing layer on a transparent support, and

3) a light-shielding alkali treating-composition spread between the above light-sensitive sheet and transparent cover sheet,

wherein one or more of the at least one silver halide emulsion layers comprises a direct positive silver halide emulsion containing a core/shell type grain in which 60% or more of the projected area of all grains is shared by monodispersed parallel twin crystal-containing type tabular grains having an aspect ratio of 1.5 or more and two or three twinning planes, wherein the shell of the core/shell grain is formed by adding a silver salt in which at least 30 mole % or more of the silver salt is a non-twin crystal silver halide fine grain emulsion having an average grain size of 0.12 μm or less.

H1344

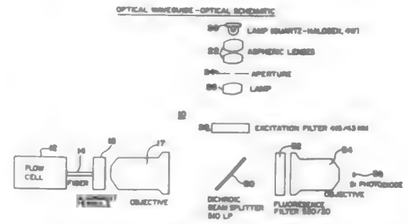
PORTABLE AUTOMATIC SENSOR FOR TOXIC GASES

Frederick C. Baldauf; Brent R. Busey, both of Bel Air, Md., and Kenneth E. Thames, Aiken, S.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 594,456, Oct. 9, 1990, abandoned. This application Sep. 30, 1991, Ser. No. 767,755

Int. Cl.[5] **C12Q** *1/46*

U.S. Cl. 435—20 **6 Claims**



1. A method for the analysis of an aqueous sample for the presence of acetylcholinesterase inhibitors consisting essentially of simultaneously:

monitoring the presence and concentration of an acetylcho-

VOL 1165 ISS 1 AG 2 1994 UMI

linesterase inhibitor by measuring the fluorescence of a chemical in an acetylcholinesterase-mediated reaction; carrying out the reaction in an automated reagent flow and mixing apparatus with small volumes of reagents; and measuring the concentration of said chemical in solution by an optical fiber or rod through which the emitted fluorescent light travels to an optical detector.

H1345

METHOD FOR PREVENTING OR TREATING HEPATITIS D

Scott A. Biller, Ewing, N.J., assignor to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Oct. 28, 1992, Ser. No. 968,079
Int. Cl.[5] A61K *31/66*
U.S. Cl. 514—108 **7 Claims**

1. A method for treating and/or preventing hepatitis D, which comprises administering to a mammalian species in need of treatment a therapeutically effective amount of a protein-prenyl transferase inhibitor.

H1346

FUNCTIONALIZATION OF POLYKETONE POLYMERS

Robert Q. Kluttz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1992, Ser. No. 894,486
Int. Cl.[5] C08G *67/02*; C08K *3/32*
U.S. Cl. 524—417 **13 Claims**

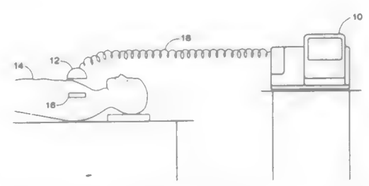
1. A method of producing functionalized polyketone polymers consisting essentially of reacting a linear alternating polymer of carbon monoxide and an ethylenically unsaturated hydrocarbon with at least one primary aromatic amine.

H1347

AUDIO FEEDBACK FOR IMPLANTABLE MEDICAL DEVICE INSTRUMENTS

Daniel R. Greeninger, Coon Rapids, and David L. Thompson, Fridley, both of Minn., assignors to Medtronic Inc., Minneapolis, Minn.

Filed Nov. 9, 1992, Ser. No. 973,358
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—30 **22 Claims**



18. A method of operating an analyzer to be used in conjunction with a medical device implanted within a patient, said analyzer being controlled by an operator and having capabilities of testing and measuring status of said medical device and simulation and sensing requirements of said medical device in said patient, said analyzer also generating acoustic signals representative of said status or said measured data, said method comprising:

(a) storing in analyzer memory signals indicative of said medical device status, said analyzer status and said measured data;

(b) assembling signals indicative of said status or said measured data from said analyzer memory; and

(c) reproducing an audible representation of said assembled signals indicative of said status or said measured data.

REISSUES

AUGUST 2, 1994

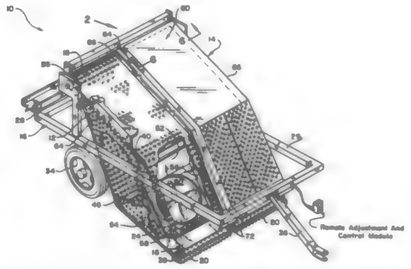
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,678

HARVESTING APPARATUS FOR LEAFY VEGETABLES

Rich Fischer, Aromas, and Michael T. Jones, Dixon, both of Calif., assignors to Fresh Choice Produce, Inc., Salinas, Calif.

Original No. 4,967,545, dated Nov. 6, 1990, Ser. No. 418,237, Oct. 6, 1989. Application for reissue Nov. 5, 1992, Ser. No. 972,320
Int. Cl.[5] A01D *46/00*
U.S. Cl. 56—12.9 **16 Claims**



1. Apparatus for harvesting leafy produce, comprising:

a [wheeled] frame for ground based movement having a front end, a rear end and sides, said frame carrying [first and second harvesting sections, each section including] *at least one harvesting section that includes,*

cutter means [mounted on] *located adjacent* the front end of the frame for severing produce from the ground;

a belt arranged in a closed loop and presenting an upwardly directed surface extending from a point just rearward of the cutter means to a point farthest to the rear, said belt on reaching the point farthest to the rear reverses its direction on the loop presenting its outer surface downwardly from the point farthest to the rear until the point just rearward of the cutter means, said belt having a large number of openings uniformly distributed over the belt surface;

side walls located adjacent the belt loop forming a plenum with the belt upwardly directed surface;

fan means mounted under the belt upwardly directed surface for removing air from the plenum and forming a vacuum region adjacent the belt upwardly directed surface; and

drive means interconnected to the fan means and belt.

Re. 34,679

LEVEL MEASURING DEVICE

Hugo A. Ritzenthaler, Rochester Hills, and Scott Polando, Lake Orion, both of Mich., assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Original No. 4,939,932, dated Jul. 10, 1990, Ser. No. 330,594, Mar. 28, 1989. Application for reissue Jul. 9, 1992, Ser. No. 911,144
Int. Cl.[5] G01F *23/32, 23/36*
U.S. Cl. 73—317 **11 Claims**

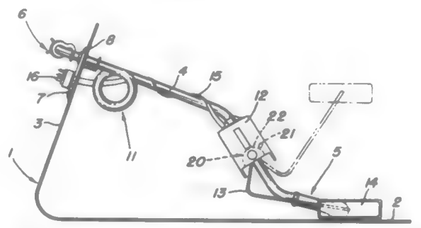
10. Apparatus operative with liquid in a container, comprising:

an elongated support which extends within the container and includes a first end and a second end opposite the first end, the support being fastened at its first end to the container, the second end of the support resting under spring pressure against a bottom of the container;

a carrier fixed to the support between the first and the second ends of the support;

a mechanical-electrical device operative with the liquid and supported by the carrier;

wherein the support is formed as an elongated member, the elongated member being bent in the manner of a coil having at least one turn in a region between the carrier and said first



end of the support, the coil functioning as an elastic spring; and

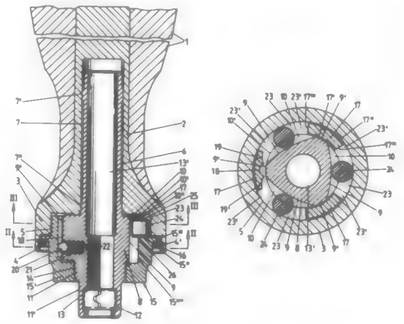
said at least one turn lies approximately in a plane which is vertical with respect to a surface of the liquid and contains said first and said second ends of the support.

Re. 34,680

SCREW TOOL

Karl Lieser, Wuppertal, Fed. Rep. of Germany, assignor to Wera Werk Hermann Werner GmbH & Co., Wuppertal, Fed. Rep. of Germany

Original No. 4,884,478, dated Dec. 5, 1989, Ser. No. 98,374, Sep. 17, 1987. Application for reissue Aug. 9, 1991, Ser. No. 742,886
Int. Cl.[5] B25B *13/00*
U.S. Cl. 81—59.1 **26 Claims**



16. In a screw tool with direction-reversible catch, the tool comprising an outer ring part, and an inner core part of approximately polygonal cross section;

a rotatable switch member having a plurality of drivers extending therefrom and arranged circumferentially around said core part, said switch member being lockable in a plurality of switch positions;

plural clamping members disposed around said core part, said clamping members being located in wedge-shaped clamping spaces between said outer ring part and said inner core part, said clamping members being displaceable by said rotatable switch member, each of said wedge-shaped clamping spaces

VOL 1165 ISS 1 AUG 2 1994 UMI

having two clamping positions at opposite ends of a clamping space for receiving and clamping one of the clamping members; and

wherein said drivers act on the clamping members to limit passage of each clamping member within one of its two clamping positions;

in two switch positions of the switch member, each of said clamping members is loosely disposed in a separate one of said clamping spaces and is displaceable into a clamping position therein by rotation of the ring part;

in a central switch position of said switch member, each of said clamping bodies is located substantially centrally of a corresponding side of said core part;

vertices of said core part are arranged concentrically about said core part to define said clamping spaces, said drivers being located at respective ones of said vertices and being translatable in circumferential direction relative to said vertices upon rotation of said switch member about said core part; and

said drivers limit movement in circumferential direction within each of said clamping spaces of said clamping members to a predetermined region of unobstructed movement, a circumferential length of said predetermined region of unobstructed movement being greater than approximately twice the diameter of a clamping member.

Re. 34,681

Patent Not Issued For This Number

Re. 34,682

AQUEOUS DISPERSIONS OF POLYESTER AND POLYESTERAMIDES CROSS-LINKED WITH METALLIC IONS AND CASTS MADE THEREFROM

Mohan Vishnupad, Monroe, and Jose Ramirez, Trumbull, both of Conn., assignors to Imaginative Research Associates, Inc., Bridgeport, Conn.

Original No. 4,992,508, dated Feb. 21, 1991, Ser. No. 367,183, Jun. 16, 1989. Application for reissue Feb. 11, 1993, Ser. No. 16,806

Int. Cl.[5] C08L *67/00*

U.S. Cl. 524—601 3 Claims

1. A cross linked aqueous dispersion composition comprising:

a water dissipatable polymer in an amount from 18 to 30 percent by weight based on the total weight of the compositions;

water in an amount from [67] *30* to 80 by weight based on the total weight of the composition;

a source of multivalent metallic ions in an amount of 0.1 to 5 percent by weight on the total weight of the composition; and

humectant in an amount from 0.1 to 40 percent by weight based on the total weight of the composition.

Re. 34,683

CONTROL OF MICROWAVE INTERACTIVE HEATING BY PATTERNED DEACTIVATION

Patrick L. Maynard, Combined Locks; Michael A. Schmelzer, Appleton; Thomas D. Pawlowski; David H. Hollenberg, both of Neenah, all of Wis.; Leon Katz, Stamford, Conn., and Gerald J. VanHandel, Neenah, Wis., assignors to James River Corporation of Virginia, Richmond, Va.

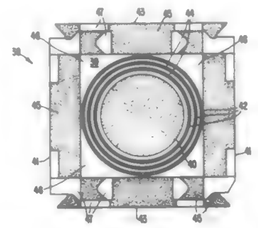
Original No. 4,883,936, dated Nov. 28, 1989, Ser. No. 239,264, Sep. 1, 1988. Continuation-in-part of Ser. No. 206,961, Jun. 10, 1988, Pat. No. 4,865,921, which is a continuation of Ser. No. 24,063, Mar. 10, 1987, abandoned. Application for reissue Feb. 28, 1991, Ser. No. 673,405

The portion of the term of this patent subsequent to Sep. 12, 2006, has been disclaimed.

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—703 28 Claims

28. A microwave interactive heating element capable of converting microwave radiation to heat energy to heat a food product proximate to said heating element, wherein said element is formed of a layer of microwave interactive material supported on a substrate and said element includes a first area having a reduced capability to generate heat in response to microwave radiation and a second area having an unaltered capability to generate heat in response to microwave radiation arranged in a predetermined pattern, wherein said pattern is formed by selectively deactivating



without removing a selected area of said microwave interactive material from said substrate in the predetermined pattern to form said first area and by leaving the remainder of said predetermined pattern untreated to form said second area.

Re. 34,684

DRIVE MOTOR FOR MAGNETIC DISKS, OPTICAL DISKS, AND MAGNETO-OPTICAL DISKS

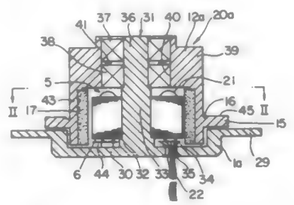
Haruo Kitahara, and Takeshi Ohshita, both of Nagano, Japan, assignors to Nagano Nidec Corporation, Japan

Original No. 4,900,958, dated Feb. 13, 1990, Ser. No. 223,895, Jul. 25, 1988. Continuation-in-part of Ser. No. 106,626, Oct. 6, 1987, Pat. No. 4,760,298. Application for reissue Feb. 4, 1992, Ser. No. 830,597

Claims priority, application Japan, May 8, 1987, 62-110786

Int. Cl.[5] H02K *11/00*

U.S. Cl. 310—67 R 54 Claims



11. A motor, suitable for driving a magnetic disk, an optical disk, or a magneto-optical disk, which comprises:

a. a frame having a planar bottom member;

b. an upstanding shaft on said planar bottom member, said upstanding shaft including a lower portion having a central bore and a post having upper and lower portions, said post lower portion being secured within said central bore, and said post upper portion having an outer surface having two spaced apart circumferential recesses for providing bearing inner races;

c. an apertures in said planar bottom member;

d. upper and lower spaced apart bearings mounted on said post upper portion and in said recesses proximate said planar bottom member;

e. a cup shaped rotor having a central hub mounted on said bearings to allow said rotor to rotate about said upstanding shaft, said central hub including a depending cylindrical wall portion mounted on said lower bearing;

f. an upstanding cylindrical wall on said planar bottom member, spaced from and encircling said depending cylindrical wall portion of said rotor central hub;

g. a core mounted on the outside surface of said upstanding cylindrical wall;

h. an armature wound on said core and energizable by receiving electrical energy from wires passing to said armature through said aperture;

i. a depending outer cylindrical wall on said rotor, spaced from and encircling said armature; and,

j. [a plurality of] *at least one* permanent [magnets] *magnet* mounted on the inside surface of said rotor outer cylindrical wall proximate to and spaced from said armature in magnetic engagement, whereby said rotor rotates about said upstanding shaft and armature when said armature is energized.

Re. 34,685

FORM FEEDING CONTROL DEVICE

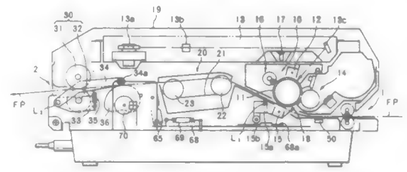
Kiyoshi Negishi; Ikuo Negoro, and Masahiro Kita, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Original No. 4,963,941, dated Oct. 16, 1990, Ser. No. 434,104, Nov. 9, 1989. Application for reissue Oct. 15, 1992, Ser. No. 962,519

Claims priority, application Japan, Nov. 14, 1988, 63-286992

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—206 18 Claims



11. A printer for printing on a continuous form, said printer comprising:

means for sensing an abnormal state of the printer;

means for feeding the continuous form by at least one page in a direction in which the continuous form is discharged, when said sensing means senses that said abnormal state of the printer exists; and

means for applying toner to the continuous form, wherein said abnormal state is an error relating to the toner.

VOL
1165
ISS
1
AG
2
1994
UMI

PLANT PATENTS

GRANTED AUGUST 2, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,850

MINATURE ROSE PLANT NAMED 'JACIMIN'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Apr. 2, 1993, Ser. No. 42,135
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—8.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its small, white, hybrid tea-shaped blooms produced in abundance; its deep green, glossy, disease-resistant foliage; its vigorous, dwarf, upright habit of growth; its production of flowers in large clusters; and its ease of production from softwood cuttings.

8,851

JONAGOLD APPLE TREE: JORED VARIETY

Johan Nicolai, Sint-Truiden, Belgium, assignor to N.V. Jo Nicolai & Co., Sint-Truiden, Belgium

Filed Aug. 16, 1993, Ser. No. 106,600
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—34.1 **1 Claim**

1. The new and distinct variety of Jonagold Apple Tree, Jored, substantially as herein shown and described, characterized particularly by the clear, bright red color of its fruit over about 70–90% of the fruit surface, on a bright yellow-green background, substantially without stripes or bands; by the early finish color development of its fruit; by the conical contour of its fruit; and by the prominence of its lenticels.

8,852

CHERRY ROOTSTOCK GI 148/8

Werner Gruppe, Linden, and Hanna Schmidt, Ahrensburg, both of Fed. Rep. of Germany, assignors to Inter-Plant Patent Marketing, Inc., Niagara-on-the-Lake, Canada

Filed Jul. 29, 1992, Ser. No. 921,171
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of cherry hybrid tree as shown and described herein.

8,853

JUNE-BEARING STRAWBERRY NAMED CHAMBLY

Deborah Buszard, Montreal West, and Khanizadeh Shahrokh, Baie d'Urfé, both of Canada, assignors to McGill University, Montreal, Canada

Filed Jul. 13, 1992, Ser. No. 912,350
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—48 **1 Claim**

1. A new and distinct cultivar of *Fragaria*×*ananassa*, named Chambly, as herein shown and described, characterized particularly as to uniqueness by the combined characteristics of cold-hardiness, adaptability to various soil conditions, vigor and strength, absence of suckering and its high yield of firm, deep red fruit with raised neck, elevated calyx and uniform well-colored flesh.

8,854

POINSETTIA PLANT '585'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Dec. 7, 1993, Ser. No. 162,991
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—86.2 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its unusual bract formation and presentation, dark green foliage, and self-branching characteristics.

8,855

POINSETTIA PLANT 'F-29'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Dec. 7, 1993, Ser. No. 163,475
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—86.3 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its unique peach pink flower bracts and unusual bract formation and presentation.

VOL
1165
ISS
1
AG
2
1994
UMI

PATENTS

GRANTED AUG. 2, 1994

ERRATA

For CLASS	See PATENT NO.
002-422	5,333,328
002-424	5,333,329
015-029	5,333,337
297-301	5,333,368
172-003	5,333,479
100-093	5,333,556
601-033	5,333,604
601-040	5,333,605
141-263	5,333,660
074-331	5,333,709
180-009	5,333,710
242-007	5,333,800
242-555	5,333,803
297-219	5,333,921
404-084	5,333,966
401-139	5,333,967
418-032	5,334,002
433-132	5,334,013
439-164	5,334,023
433-173	5,334,024
439-188	5,334,025
452-016	5,334,080
452-035	5,334,081
450-031	5,334,082
452-106	5,334,083
452-157	5,334,084
445-051	5,334,085
445-062	5,334,086
476-008	5,334,097
482-106	5,334,113
606-022	5,334,181
606-046	5,334,183
606-063	5,334,184
604-132	5,334,197
623-001	5,334,201
095-012	5,334,248
118-500	5,334,257
117-102	5,334,277

VOL 1165 ISS 1 AG 2 1994 UMI

ERRATA—CONTINUED

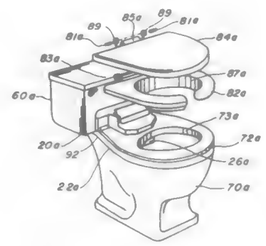
111-057	5,334,278
419-053	5,334,341
505-500	5,334,557
502-084	5,334,564
523-100	5,334,623
514-311	5,334,628
273-235	5,334,673
527-300	5,334,685
548-110	5,334,740
505-211	5,334,964
347-065	5,334,999
347-082	5,335,000
347-044	5,335,004
348-082	5,335,006
348-674	5,335,068
348-630	5,335,069
348-031	5,335,070
348-392	5,335,071
348-232	5,335,072
348-738	5,335,073
348-537	5,335,074
348-298	5,335,075
348-794	5,335,076
242-347	5,335,131
364-400	5,335,332
395-700	5,335,351
395-800	5,335,352

PATENTS

GRANTED AUGUST 2, 1994

GENERAL AND MECHANICAL

5,333,321
ENVIRONMENTALLY CONTROLLED COMMERCIAL/PUBLIC TOILET
Daniel S. Redford, 5270 Elvira Rd., Woodland Hills, Calif. 91364
Division of Ser. No. 746,934, Aug. 19, 1991, Pat. No. 5,210,884.
This application May 10, 1993, Ser. No. 59,640
Int. Cl.[5] E03D *9/05*
U.S. Cl. 4—348 **4 Claims**



1. An environmentally controlled commercial/public toilet comprising.

a) a standard commercial/public flushing toilet bowl adapted to be connected to a sewer line and having a water seal, an upper rim, a bowl top, and a center,

b) a detachable circular bowl-skirt, positioned on top of the said rim extending downwardly into said bowl and forming within said bowl, and air-trapping cavity between said detachable bowl-skirt and said bowl,

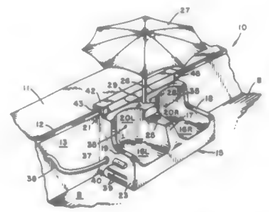
c) a bowl flushing means permitting water to enter said bowl and flush matter therefrom,

d) an air circulating means for generating a flow of air into said bowl through at least one exhaust opening positioned inside said air-trapping cavity, moving air inside said bowl, and returning the air from said air-trapping cavity to said air circulation means through at least one inlet opening positioned inside said air trapping cavity, wherein the moving air inside said bowl resembles a cyclone-type air circulation that generates secondary air currents that move radially from the center of said bowl, carrying airborne contaminants from the bowl center to said air-trapping cavity, and mixing them with the air sweeping tangentially inside said air-trapping cavity thus lowering the temperature of the air carrying the airborne contaminants to prevent their escape from the bowl during the toilet use, and

e) a sanitizer/conditioning means for dispensing odor conditioning and sanitizing agents into recirculating air returning to said bowl.

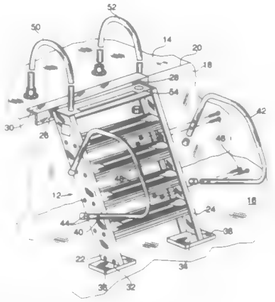
5,333,322
ADD-ON SEAT MODULE FOR SWIMMING POOL
Donald H. Weir, York, Pa., assignor to Fox Pool Corporation, York, Pa.
Filed Sep. 21, 1992, Ser. No. 947,443
Int. Cl.[5] E04H *4/04*
U.S. Cl. 4—496 **13 Claims**

1. A swimming pool occupant seat modular unit comprising a molded seat portion and a seat back portion which portions are a fixed integrated part of the modular unit and wherein the modular unit includes side portions, each having a vertical rear edge, and wherein said modular unit to be lowered into a shallow end of a pre-existing swimming pool in overlapping relation to a pre-existing, planar swimming pool sidewall such that said rear edges abut said sidewall, said modular unit being provided with flange means to securely fasten the modular unit against dislodgement over said vertical swimming pool sidewall in a position such that the seat portion, side portions and back portions are located and secured in a fixed position below



a swimming pool water level and such that a top of the modular seat unit does not extend substantially above a peripheral deck of the swimming pool and, said flange means being mounted across a top edge of the unit and adapted to be secured to a deck of the swimming pool.

5,333,323
SWIMMING POOL WITH LADDER
Doniel G. Aymes, P.O. Box 1783, New Brunswick, N.J. 08902
Filed Sep. 21, 1992, Ser. No. 948,124
Int. Cl.[5] E04H *4/00*
U.S. Cl. 4—496 **5 Claims**



1. A swimming pool structure comprising:

a swimming pool sidewall defining a pool area;

an elevated deck attached to said sidewall along an upper rim thereof;

a pair of ladder side rails extending from said deck into a water-holding pool area defined by said sidewall, said side rails being connected at upper ends to at least one of said sidewall and said deck;

angling means connected to said side rails for ensuring that said side rails are oriented at an acute angle with respect to said sidewall;

a pair of hand rails connected to respective ones of said side rails and extending inwardly therefrom into said pool area;

a plurality of steps disposed between and connected to said side rails; and

a pair of platform guard rails connected to said deck in parallel with said side rails;

wherein each of said guard rails is connected to an uppermost step of said plurality of steps.

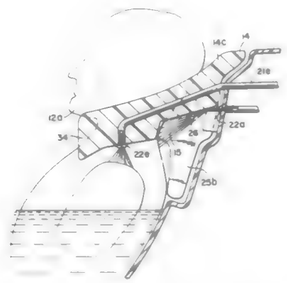
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,324

HYDROTHERAPY HOT TUB STRUCTURE FOR NECK AND SHOULDER MASSAGE

John Pinciaro, 451 Moose Hill Rd., Monroe, Conn. 06468

Filed Nov. 6, 1992, Ser. No. 972,943
Int. Cl.[5] A47K *3/02*
U.S. Cl. 4—567 7 Claims



1. A hydrotherapy hot tub having a station consisting of a generally vertical wall portion having an upper edge for supporting the back, head and neck of a person at said station,

a conduit from a source of fluid under pressure for directing a stream of said fluid through a nozzle which is on an end of said conduit and which is mounted through said wall portion for directing said stream toward the head and neck of a person at said station,

a surface adapted to be interposed in said stream and angularly disposed relative thereto for deflecting said stream to impinge at an acute angle on the neck of a person at said station,

a housing, said housing adapted to be mounted on said upper edge, said housing having substantially flat top and bottom surfaces, said housing further shaped to form wing portions which are adapted to extend over respective shoulders of a person, and additional conduits having first and second ends, respectively, said first ends of said additional conduits in connection with said source of fluid under pressure, said second ends of said additional conduits extending into said wing portions and in connection with a plurality of nozzles, respectively, at spaced intervals in said bottom surface of said wing portions,

said nozzles being disposed to direct streams of said fluid downward onto the shoulders of a person at said station.

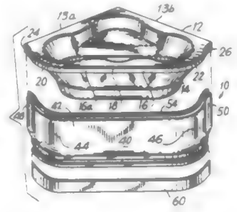
5,333,325

BATHTUB APRON SYSTEM

Robin H. Levien, London, United Kingdom, and Adam R. Schmidt, Leonardo, assignors to American Standard Inc., New York, N.Y.

PCT No. PCT/US91/04816, § 371 Date Jul. 15, 1993, § 102(e) Date Jul. 15, 1993
PCT Filed Jul. 10, 1991, Ser. No. 90,164
Claims priority, application United Kingdom, Jan. 17, 1991, 9101034
Int. Cl.[5] A47K *3/02, 3/16*
U.S. Cl. 4—584 8 Claims

1. A bathtub apron system for use with either one of two differently shaped bathtubs, comprising an apron having an essentially planar central section with first and second ends, concave rounded sections each having a first end and an opposite second end, said first end of said convex rounded sections extending from and connected to said first and second ends of said central section and concave rounded sections each having a first end connected to and extending from said second ends of said concave rounded sections respectively, said apron being adapted to fit one of said differently shaped bathtubs wherein said one of said differently shaped bathtubs has an outer periphery identical to the shape of said apron with said central, convex and concave sections, said concave rounded sections of said apron being removable at said first ends thereof from said second ends of said concave rounded sections to form a second



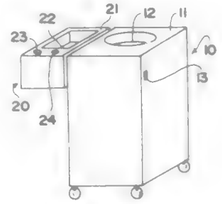
shaped apron adapted to fit the other of said differently shaped bathtubs wherein said other of said differently shaped bathtubs has an outer periphery identical to the shape of said second apron with said central and convex sections.

5,333,326

METHOD AND APPRATUS FOR PRODUCING SURGICAL SLUSH AND HEATED STERILE LIQUID

Durward I. Faries, Jr., McLean, Va., and Bruce R. Heymann, Silver Spring, Md., assignors to O. R. Solutions, Inc., Reston, Va.

Filed Mar. 16, 1993, Ser. No. 33,639
Int. Cl.[5] F24J *1/00*
U.S. Cl. 4—639 7 Claims



1. A method for providing sterile surgical slush comprising the steps of

providing said sterile surgical slush in a selectively cooled cooling basin;

providing warmed sterile liquid in a selectively heated warming basin; and

disposing said warming and cooling basins in close adjacency to provide simultaneous access to said sterile surgical slush and said warm sterile liquid.

5,333,327

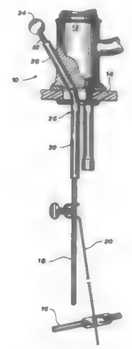
APPARATUS FOR OPENING AND CLOSING A DRAIN

John C. Redding, Oostburg, and Douglas J. Brouwer, Sheboygan, both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Feb. 17, 1993, Ser. No. 18,651
Int. Cl.[5] E03C *1/23*
U.S. Cl. 4—693 10 Claims

1. In an apparatus for opening and closing a drain that does so by mechanically transmitting motion from a drive member positioned adjacent one end of a passageway to a drain linkage member positioned adjacent another end of the passageway, of the type wherein the passageway has a bend in it, the improvement comprising:

a flexible rod positioned in the passageway and linked at one end to the drive member and at another end to the drain linkage member, the rod having a first region which is positioned proximate to the bend and a second region having a larger cross-sectional area than the first region that is positioned in the passageway between the first region and the drain linkage member, whereby an enlarged void is formed between the rod and the passageway at the bend; and



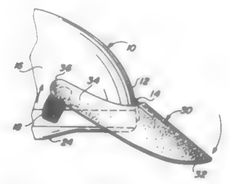
a protective sleeve positioned in the passageway between the drive member end and the bend and extending to a point adjacent to the bend, a portion of the drive member extending into the sleeve wherein the sleeve has an end portion adjacent the bend and the end portion is obliquely configured such that the sleeve has a longer portion which is adjacent to an inside curve of the bend.

5,333,328

ADJUSTABLE VISOR APPARATUS FOR BICYCLE HELMET

Samuel E. Roberts, 422 North Loquat Ave., Tucson, Ariz. 85710

Filed Feb. 5, 1993, Ser. No. 14,873
Int. Cl.[5] A42B *1/24*
U.S. Cl. 2—422 4 Claims



1. Visor apparatus for a bicycle helmet comprising in combination:

visor means, including a center portion and a right wing and a left wing extending outwardly from the center portion;

first fastener means secured to the center portion;

second fastener means secured to the right wing;

third fastener means secured to the left wing;

a helmet having a front portion, a right side portion and a left side portion;

helmet fastener means, including

fourth fastener means secured to the front portion of the helmet,

fifth fastener means generally vertically elongated and secured to the right side portion of the helmet, and

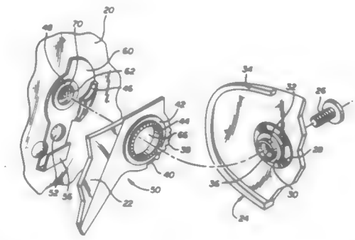
sixth fastener means generally vertically elongated and secured to the left side portion of the helmet, the fourth, fifth, and sixth fastener means for matingly engaging the respective first, second, and third fastener means to secure the visor means to the helmet, the mating engagement of the first and the fourth fastener means defining a pivot point by mating at other than a face to face engagement, and the vertical elongation of the fifth and sixth fastener means comprising a plurality of locations for the mating engagement of the second fastener means and the third fastener means respectively with the elongated fifth and sixth fastener means for pivoting the visor means relative to the helmet.

5,333,329

RATCHET SYSTEM FOR MOTORCYCLE HELMET SHIELD

Scott S. Hong, Cerritos, Calif., assignor to Hong Jin Crown America, Santa Fe Springs, Calif.

Filed Jan. 6, 1993, Ser. No. 1,313
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—424 8 Claims



1. A bi-directional ratchet system for a motorcycle or bicycle helmet comprising:

an outer shell having a front opening for forward viewing; a face shield; and

bi-directional ratchet means for incrementally raising the face shield when it is in a lowered position over the front opening, and for incrementally lowering the face shield over the front opening when the shield is in a raised position; wherein:

the face shield further comprises an arched middle portion and end tabs on either side of the middle portion; and

the means for incrementally raising and lowering the face shield comprises:

a. side plates which are fixedly mounted to the outer shell, the end tabs of the face shield being rotatably mounted onto the side plates;

b. shield tab covers which cover the end tabs and which are attached to the outer shell;

c. a projecting ring of upraised teeth disposed at each of said end tabs;

d. teeth disposed within said shield tab covers which interconnect with grooves of the projecting rings of upraised teeth;

e. additional teeth extending radially outwardly from an edge of the end tabs; and

f. a leaf spring having a central point that interconnects with the grooves between the radially extending teeth of the end tabs.

5,333,330

FEMININE URINARY DEVICE

Daniel S. Murtagh, 433 Brookside Dr., Toledo, Ohio 43615

Filed Sep. 4, 1992, Ser. No. 940,533
Int. Cl.[5] A47K *11/00*
U.S. Cl. 4—144.3 5 Claims

1. A blank for forming a disposable urinary funnel receptacle, comprising:

A. a main body portion formed of a flexible, fluid resistent sheet material, said body portion including,

(1) a discharge edge;

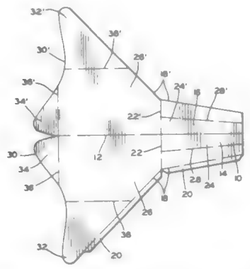
VOL 1165 ISS 1 AG 2 1994 UMI

(2) a receiving edge spaced from said substantially parallel to said discharge edge;

(3) a longitudinal scored centerline extending from a midpoint of said discharge edge to a midpoint of said receiving edge, said main body folded along the centerline to divide said body portion into two substantially symmetrical halves, each symmetrical half including;

(a) a longitudinal edge spaced from said centerline, said longitudinal edge including a first segment extending from said discharge edge, diverging from said centerline at a first angle, and terminating in a second segment, the second segment extending from the termination of the first segment to said receiving edge at a second angle diverging from said centerline, the second angle being greater than the first angle;

(b) said receiving edge including a curved segment extending from the termination of the second segment of said longitudinal edge to said centerline;



(c) a scored transverse fold line extending between an intermediate point on said centerline to the termination of the first segment of said longitudinal edge;

(d) a scored longitudinal flex line located approximately midway between said centerline and the first segment of said longitudinal edge, and extending from said discharge edge to said scored transverse fold line whereby the longitudinal flex line and the first segment of said longitudinal edge both terminate at the transverse fold line;

(e) a scored longitudinal fold line extending from said receiving edge to the second segment of said longitudinal edge; and

B. a first foldable tab extending along the first segment and a second foldable tab extending along the second segment of one of said longitudinal edges for attachment along the other of said longitudinal edges in assembling the urinary device.

5,333,331

FLUSH REGULATOR

John R. Battle, 11306 W. Pool Ct., Crystal River, Fla. 32629

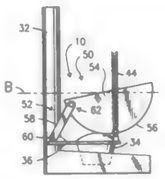
Division of Ser. No. 907,649, Jul. 2, 1992, Pat. No. 5,237,710. This application Aug. 13, 1993, Ser. No. 105,966

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] E03D *1/33, 9/03*

U.S. Cl. 4—324 **5 Claims**

1. A flush regulator selectively operable in a partial flush mode or a full flush mode for use with a water closet including a water storage tank having an overflow tube disposed therein and a flush drain aperture formed in a lower portion thereof and a buoyant flapper valve pivotally coupled to the overflow tube by an interconnecting member about a pivot axis disposed to selectively seal the flush drain aperture and movable between a closed position and an open position by a flush handle movable between a first and second position to selectively control the flow of water from the water storage tank through the flush drain aperture, said flush regulator comprising a flush control member including mounting means for pivotally coupling the flush control member to the overflow tube to be movable between an upper position and a lower position, said flush control member adapted to be disposed within the water storage tank to selectively engage the buoyant flapper valve such that when the flush handle is moved from the first position to the second position and released said flush control member engages the buoyant flapper valve in the open position to force the buoyant flapper valve to prematurely return to the closed position to operate in the partial flush mode to discharge a first volume of water and when the flush handle is moved



from the first position to the second position and held in the second position the buoyant flapper valve is held in the open position to operate in the full flush mode to discharge a second volume of water, said mounting means comprises at least one pivot arm including a first pivot means at one end for pivotally coupling said pivot arm to a mounting tab formed on the interconnecting member in substantially concentric alignment with the pivot axis of the buoyant flapper valve and a second pivot means for pivotally coupling a second opposite end of said pivot arm to said flush control member.

5,333,332

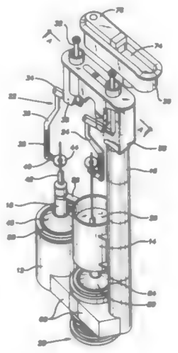
DUAL FLUSH SYSTEM

Mok S. Kam, Selangor, Malaysia, assignor to Vogue Vanity SDN BHD, Malaysia

Filed Mar. 23, 1992, Ser. No. 855,315

Int. Cl.[5] E03D *1/35, 3/12*

U.S. Cl. 4—326 **6 Claims**



1. A selective volume liquid flush apparatus for use in a cistern having a floor and a drain, said apparatus comprising:

a first flush valve having an outlet communicating with said drain and an inlet, said first valve inlet being positioned at a predetermined height from the cistern floor;

a first valve seal, configured to sealingly engage said first valve inlet;

a first lifting means attached to said first valve seal for lifting said first valve seal from sealing engagement with said first valve inlet;

a second flush valve having an outlet communicating with said discharge outlet, an inlet, and a hollow upper portion having a closed base with an opening therethrough, said second valve inlet being positioned at a predetermined height from the cistern floor less than the predetermined height of said first valve inlet;

a second valve seal configured to sealingly engage said second valve inlet;

a slidingly movable buoyant body having a lower and upper surface, said buoyant body being received in said upper hollow portion, said lower surface of said buoyant body being fastened at one end of a tubular member, said tubular member being slidably movable through the opening in the closed base and fastened at a second end to said second flush valve seal; and

a second lifting means fastened to said upper surface of said buoyant body for lifting said second valve seal from sealing engagement with said second valve inlet.

5,333,333

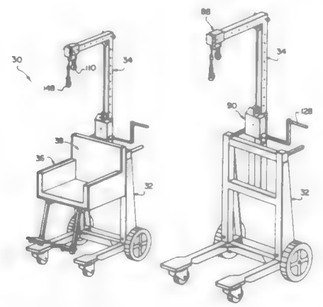
TRANSPORTATION, SANITATION AND THERAPY SYSTEM FOR HANDICAPPED PEOPLE

Gordon B. J. Mah, P.O. Box 431, Palo Alto, Calif. 94302

Filed Jan. 6, 1993, Ser. No. 1,307

Int. Cl.[5] A61G *7/10*

U.S. Cl. 5—81.1 **17 Claims**



1. A system of apparatus for use in assisting a handicapped or disabled patient with transportation, sanitation or therapy procedures, the system comprising the combination of mobile platform means for movement over a floor or other surface, patient support means for supporting the patient, lift module means for lifting and lowering the patient relative to the support means, mounting means for mounting the lift module means on the platform means, attachment means for attaching or detaching the support means to the platform means whereby with the support means removed the platform means is enabled for movement into close relationship with a bed or other structure for positioning the lift module means relative to the bed or other structure for lifting or lowering the patient from or to the bed or other structure.

5,333,334

HUMAN BODY MOVING APPARATUS

Kenzou Kasai, 14-9, Higashishinsaibashi 1-chome, Chuo-ku, Osaka, Japan

Filed Jun. 4, 1993, Ser. No. 72,143

Claims priority, application Japan, Jun. 15, 1992, 4-040757; Sep. 30, 1992, 4-261941; Oct. 13, 1992, 4-071204

Int. Cl.[5] A61G *7/10, 7/14*

U.S. Cl. 5—85.1 **14 Claims**

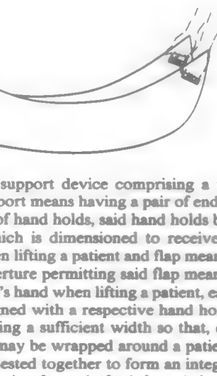
1. A human body moving apparatus comprising:

a pair of upright bars upwardly extending with a prescribed space therebetween;

a coupling bar for coupling upper ends of said pair of upright bars with each other;

a pair of base members provided on lower end portions of said pair of upright bars respectively;

a support member, for supporting a human body, being mounted to be movable along said upright bars and stoppable in a moved position and including two parallel side bars extending across said pair of upright bars respectively; and



a plurality of rotatable wheels being mounted on each said base member;;

wherein said support member comprises driving members being driven to be moved along said upright bars and driven members being placed on said driving members to be separable therefrom for holding said two side bars.

5,333,335

PATIENT SUPPORT DEVICE

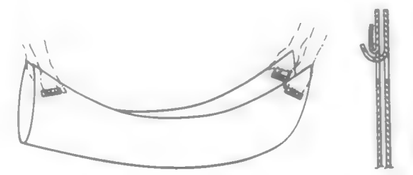
Thomas H. Gastle; James E. Gastle, both of P.O. Box 430, Lakefield, Ontario, Canada K0L 2H0 , and Clarence Farrow, RR #3, Lakefield, Ontario, Canada K0L 2H0

Continuation-in-part of Ser. No. 889,964, May 29, 1992, Pat. No. 5,214,813. This application Mar. 10, 1993, Ser. No. 29,166

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[5] A61G *1/00*

U.S. Cl. 5—625 **7 Claims**



1. A patient support device comprising a flexible support means, said support means having a pair of ends each of which includes a pair of hand holds, said hand holds being formed by an aperture which is dimensioned to receive the palm of a user's hand when lifting a patient and flap means hinged to one edge of said aperture permitting said flap means to engage the palm of the user's hand when lifting a patient, each of said hand holds being aligned with a respective hand hold and said support means having a sufficient width so that, during use, said support means may be wrapped around a patient and said flap means may be nested together to form an integral handle, said support means being formed of reinforced sheet material hav-

VOL 1165 ISS 1 AG 2 1994 UMI

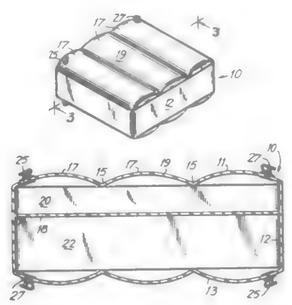
ing sufficient rigidity to enable said integral handle to resist collapse, said support means being dimensioned to position said hand holds above a floor surface in order to minimize discomfort experienced by a user when lifting a patient.

5,333,336

INFLATABLE BOOSTER SEAT

Robin L. Langsam, 28 Limestone Rd., Armonk, N.Y. 10504

Filed Oct. 15, 1993, Ser. No. 137,945
Int. Cl.[5] A47C *27/10*
U.S. Cl. 5—654 14 Claims



1. An inflatable booster seat comprising an air holding envelope and at least one air inflation/deflation valve, and providing, when inflated, bottom support for a child sitting thereon and raising the child above seat level so that the child's eye level is about adult eye level, said booster seat, when inflated, fitting between adjacent arm rests of a stadium type seat and, when deflated, being foldable into a volume significantly less than the size of its inflated volume, said booster seat having a top seating section substantially of the same size and shape as a separate bottom support section, said top seating section and bottom support section extending substantially in a horizontal plane, from edge to edge, side to side and front to back; said top seating section being raised above said bottom support section by separate, substantially vertical support walls vertically formed throughout their entire extent and extending around the perimeter of said top seating section and bottom support section and providing substantially all of the height to said booster seat, when inflated; and the width of said top seating section being about equal to its length.

5,333,337

APPARATUS FOR REMOVING A DEPOSIT OF CHEWING GUM FROM AN UNDERLYING SURFACE

Jim Markley, 4597 Westridge Dr., Oceanside, Calif. 92056

Filed Apr. 12, 1993, Ser. No. 44,740
Int. Cl.[5] A46B *13/04*
U.S. Cl. 15—29 20 Claims

1. Apparatus for removing a deposit of gum or other sticky substance from a carpet or other flat surface comprising, in combination:

a) a body adapted for upright use and terminated by spaced-apart top and bottom ends;

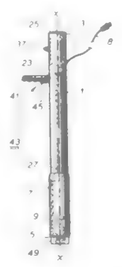
b) an electric drive motor including a rotatable drive shaft mounted in said upright body;

c) a flat bottom brush interconnected said drive shaft and extending below said lower body terminal end;

d) a fluid reservoir for holding an inventory of liquid gum remover attached to said body including a conduit extending toward said brush and means for delivering a controllable charge of liquid to said deposit;

e) handle means extending outward form the upper half of said body to manipulate said body in upright position over the deposit, including means for energizing said motor to spin said brush; and,

f) a sleeve slidably mounted coaxial with said bottom end of said body and arranged to extend outward and beyond said brush, having a planar bottom parallel to the plane of



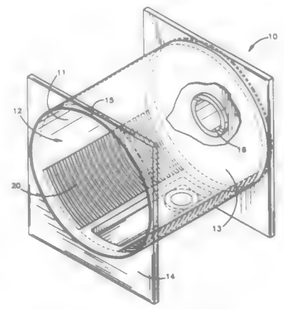
said brush and biased to extend beyond said brush, to contact the carpet about the deposit, as said body is lowered and said rotating brush and fluid cooperate to remove the deposit, to contain the washing action within the confines thereof.

5,333,338

PROCESS FOR TREATING TEXTILES

Constantin Anastase; Jay H. Daily, and William C. Nehren, all of Wichita Falls, Tex., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Division of Ser. No. 943,495, Sep. 11, 1992, Pat. No. 5,272,893.
This application Aug. 9, 1993, Ser. No. 104,490
Int. Cl.[5] D06F *39/04*
U.S. Cl. 8—158 8 Claims



1. A method of treating textiles with enzymes having a predetermined narrow temperature range of effectiveness and an upper temperature limit above which the enzyme is denatured comprising:

producing a bath containing said enzyme at a temperature within said predetermined range,

treating textiles in said bath,

providing a heat exchanger with a surface in contact with said bath while said bath is in contact with the textiles, and operating said heat exchanger so that the temperature of said surface does not exceed said temperature limit while said heat exchanger compensates for heat loss to the environment and maintains said bath within said temperature range, and

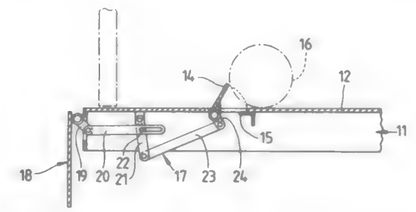
continuously agitating said bath at a sufficient rate to maintain the distribution of said enzymes in a substantially uniform manner throughout said bath, and to maintain the entire bath at a substantially uniform temperature.

5,333,339

DOCK LEVELER WITH WHEEL BARRIER

Kurt K. Larsen, Pell City, Ala., assignor to Blue Giant Equipment Corporation, Pell City, Ala.

Filed Jan. 19, 1993, Ser. No. 5,984
Int. Cl.[5] E01D *1/00*
U.S. Cl. 14—71.1 20 Claims



18. An improvement for a dock leveler assembly to be used with a loading dock having an overhead door wherein said dock leveler assembly includes a platform affixed to said loading dock and movable to preselected heights and a ramp hingedly affixed to said platform at an end thereof distal said loading dock, said ramp being movable between a pendant stored position and an operative position substantially parallel to said platform, wherein the improvement comprises:

(a) a barrier means, movable between a raised and lowered position, for preventing movement of a wheeled apparatus across said platform when in said raised position or for allowing such movement across said platform when in said lowered position, said barrier means being hingedly attached to said platform and spaced from said end of said platform defining a door receiving region therebetween, such that said overhead door abuts said door receiving region of said platform when said door is closed; and

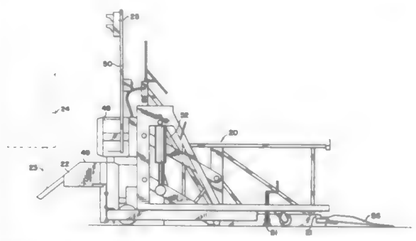
(b) means, operatively attached to said barrier means, for controlling the raising and lowering of said barrier means responsive to the positions of said platform and ramp.

5,333,340

MOBILE TRUCK FREIGHT DOCK WITH IMPACT AND RESTRAINT MEANS

John F. Moseley, 767 N. Beach St., Ormond Beach, Fla. 32174

Filed Feb. 9, 1993, Ser. No. 15,146
Int. Cl.[5] B65G *69/22, 69/28*
U.S. Cl. 14—72.5 2 Claims



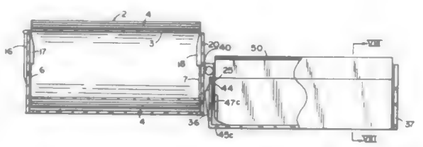
2. In a mobile freight transfer dock for trucks having an ICC bumper and wherein the dock is a mobile elevatable platform apparatus including a front side with a first folding bridge adapted to form an access walkway between the truck and the platform and having another apparatus side with a second folding bridge adapted to form an access walkway from the platform to a freight assembly surface, the improvement which comprises a truck impact absorbing bumper and a truck restraining hook mechanism attached to the front side of said apparatus and adapted, respectively, to receive the impact of a docking truck and to grasp the ICC bumper of said truck; said first folding bridge comprising a plate pivotally attached to said elevatable platform adjacent said truck restraining hook mechanism and adapted to pivot to a horizontal position as said platform is elevated and to span over said hook mechanism to the bed of said truck, said plate being pierced by at least one slot adjacent said plate perimeter being directly above said hook mechanism when said plate is in position as a horizontal bridge, said slot being adapted to receive and guide an elongated rod member for manipulating the hook of said hook mechanism.

5,333,341

ENCASED LINT ROLLER WITH COLLAPSIBLE COVER/HANDLE

William R. Heneveld, 431 Adaway Dr., Grand Rapids, Mich. 49546

Filed Mar. 31, 1993, Ser. No. 40,861
Int. Cl.[5] A47L *25/00*; B25G *1/06*
U.S. Cl. 15—104.002 20 Claims



1. A combination of lint roller and an encasement therefor comprising:

first and second elongated clam shell elements pivotally connected together;

an adhesive roller formed into the shape of a tube with ends having cylindrical openings, said roller having a tacky outer surface for picking loose material off a surface upon contact therewith;

said first clam shell element including an elongated molded roller holder having a first base, a first pair of spaced side walls extending from the sides of said base, and a first pair of spaced end walls extending from ends of said base and connected between the ends of said first pair of spaced side walls;

means on said first pair of end walls for supporting said adhesive roller therebetween;

said second clam shell element including a cover/handle having a second pair of side walls and a second pair of end walls connected between the ends of said second pair of side walls; said roller holder and cover/handle being pivotally connected together at one of each of the ends thereof to form an enclosure for said adhesive roller;

said first pair of side walls and first pair of end walls being shaped and dimensioned to engage said second pair of side walls and said second pair of ends walls, respectively, when said second clam shell element is pivoted to a closed position over said first clam shell element to thereby enclose said adhesive roller and when open, said second clam shell element providing a handle to grasp when operating the adhesive roller; and

said pair of side walls of said second clam shell element having collapsible sections which are hinged and pivot inwardly so as to collapse and form a smaller and more comfortable handle to grasp when said handle is in the opened use position.

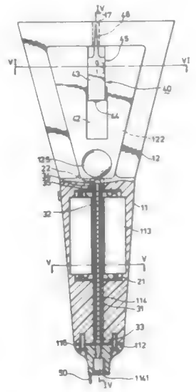
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,342

MULTI-PURPOSE SNOW SCRAPPER

Tien-Tsai Huang, No. 4, Lane 30, Wu-Chang St., Pan Chiao City, Taiwan

Filed Jan. 15, 1993, Ser. No. 6,024
Int. Cl.[5] A47L *13/02*; B25F *1/00*; B60C *23/02*
U.S. Cl. 15—105 7 Claims



1. A multi-purpose snow scraper, comprising:
a transparent main body having an elongated hand grip portion with a first end and a second end;
a blade member formed integrally with and extending from said first end of said hand grip portion, said blade member having an upper surface, a lower surface, and a front portion having an inclined shoveling edge and a plurality of claws, said blade member further having a recess which is formed in said upper surface and which extends from said front portion to said hand grip portion, and a cavity which is formed in said lower surface of said blade member and which extends from said front portion to said hand grip portion;
a light bulb intermediate said hand grip portion of said transparent main body and said blade member;
said hand grip portion further including a dry cell receptacle for receiving a cell unit therein and for connecting electrically said cell unit and said light bulb, and an elongated bore which extends through said hand grip portion so as to communicate with said cavity; and
a pressure indicating unit provide din said elongated bore wherein a portion of said pressure indicating unit is visible to a user by way of said cavity and said recess.

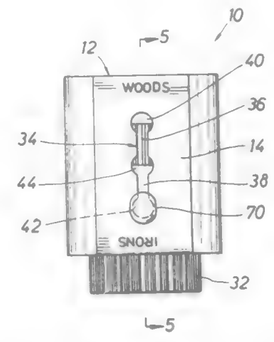
5,333,343

GOLF CLUB BRUSH FOR WOODS AND IRONS

Michael P. Nichols, and Philip Dunn, both of League City, Tex., assignors to No No, Inc., League City, Tex.

Filed May 20, 1992, Ser. No. 886,054
Int. Cl.[5] A47L *13/12*
U.S. Cl. 15—106 8 Claims

1. A double brush mechanism for cleaning the striking face grooves of wood and iron golf clubs, comprising:
(a) a generally rectangular housing being of integral construction and having generally planar and parallel related upper and lower side walls and opposed curved end walls interconnecting said side walls, said housing further defining first and second oppositely directed brush openings, said upper side wall defining an elongate generally straight brush carrier actuator slot having generally circular locking enlargements at each extremity thereof and a generally circular locking enlargement intermediate the extremities thereof;
(b) a brush carrier being movably positioned within said housing and defining a locking receptacle therein;
(c) a brush carrier actuator being movably received within said locking receptacle of said brush carrier and being disposed in registry with said elongate brush carrier actuator slot, said brush carrier actuator being manually movable along the length of said elongate brush carrier actuator slot to induce selective movement of said brush carrier within said housing, said brush carrier actuator further having a locking element thereon of greater width than said elongate brush carrier actuator slot and being of a dimension for selective locking engagement within said extremity and intermediate locking enlargements of said elongate brush carrier actuator slot to lock said brush carrier at selected positions within said housing, said brush carrier actuator further defining an internal spring guide;
(d) an actuator stem extending from said brush carrier actuator through said brush carrier actuator slot and having a button thereon for manual manipulation;
(e) a first brush being fixed to one side of said brush carrier and adapted to be extended through said first brush opening of said housing upon selected positioning of said brush



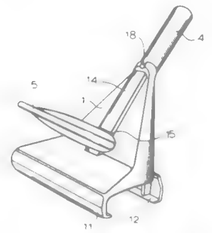
carrier within said housing, said first brush being defined by polymer cleaning bristles suitable for cleaning the striking face grooves of wood golf clubs;
(f) a second brush being fixed to said brush carrier and oriented in opposed relation with said first brush and being positioned for extension through said second brush opening of said housing upon selective positioning of said brush carrier within said housing, said second brush being defined by metal cleaning bristles suitable for cleaning the striking face grooves of iron golf clubs, the combined length of said brush carrier and said first and second brushes being substantially equal to spacing of said first and second brush openings of said housing; and
(g) a spring being disposed within said locking receptacle and being received by said internal spring guide and continuously urging said locking element toward the locking position thereof and moving said locking element outwardly into a selected one of said locking enlargements upon being positioned in registry therewith, said locking element selectively locking sand brush carrier relative to said housing at a first position where said first selected brush is exposed for use, a second position where said second selected brush is exposed for use, and an intermediate position where both said first and second brushes are positioned within said generally rectangular housing.

5,333,344

JAW-TYPE HOLDER FOR CLEANING TOOL

Viktor Frieb, Vienna, Austria, assignor to Eduard Frieb Gesellschaft m.b.H, Vienna, Austria

Filed Dec. 24, 1992, Ser. No. 996,717
Claims priority, application Austria, Feb. 11, 1992, A 229/92
Int. Cl.[5] B25G *3/24*
U.S. Cl. 15—146 6 Claims



1. A holder for a cleaning device, the holder comprising:
a pair of jaws defining a holding space and displaceable between a retaining position relatively close to each other and restricting the space and a releasing position spaced apart relatively far from each other, the jaws normally assuming the holding position and being elastically deformable into the releasing position, so that the cleaning device is movable into and out of the space when the jaws are in the releasing position and is snugly engaged by the jaws when in the space in the retaining position;
a pin traversing both of the jaws along a pin axis and rotatable about the pin axis, the pin having one end bearing axially in one direction on one of the jaws and an opposite end formed unitarily with an elongated crosspiece and bearing axially oppositely on the other jaw, the crosspiece being rotatably movable about the pin axis between first and second angularly offset positions, respectively corresponding to the releasing and retaining positions; and
means including a retaining surface formed with a crosswise recess and with formations offset from the recess on the other jaw for, in cooperation with the pin and crosspiece, moving the jaws from the releasing position into the retaining position on movement of the crosspiece from the first to the second position and for moving the jaws from the retaining position into the releasing position on movement of the crosspiece from the second to the first position, the crosspiece lying in the recess in the first position corresponding to the releasing position of the jaws and being displaced from the recess upon displacement of the crosspiece out of the first position toward the second position and engaging the formations in the second position.

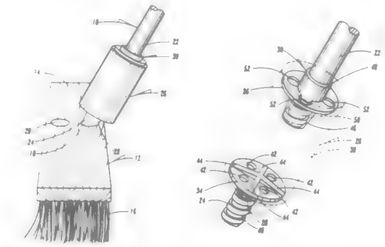
5,333,345

CLEANING IMPLEMENT INCLUDING BRACE OF ELASTOMERIC MATERIAL

Jerry L. O'Donnell, 3906 Onawa, Waterloo, Iowa 50701

Filed Mar. 30, 1992, Ser. No. 859,818
Int. Cl.[5] A46B *5/00*
U.S. Cl. 15—159.1 17 Claims

7. A broom, having a head with bristles and a handle, made by the process of:
encapsulating a portion of a connection member in each end of an elongated elastomeric material;
releasably connecting the handle in one connection member and releasable connecting the head to the other connection member;



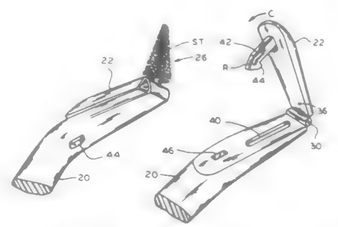
so that the broom is substantially rigid yet resilient regarding forces tending to displace the head relative to the handle.

5,333,346

TOOTHBRUSH

Emanuel B. Tarrson; Dane Maric, and Lew Blahuta, all of Chicago, Ill., assignors to John O. Butler Company, Inc., Chicago, Ill.

Continuation of Ser. No. 875,627, Apr. 28, 1992, abandoned, which is a division of Ser. No. 575,229, Aug. 30, 1990, Pat. No. 5,201,091, which is a continuation-in-part of Ser. No. 475,724, Feb. 6, 1990, Pat. No. 5,027,467. This application Jan. 19, 1993, Ser. No. 6,663
The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 17 Claims



1. A toothbrush for holding a twisted wire brush, said toothbrush comprising an elongated handle member having a hinged locking retainer at one end thereof, said locking retainer and said handle having locking means in the form of a cantilever latch in one of said retainer and said handle and a complimentary keeper hole in and extending through the other of said retainer and said handle, an outer end of said cantilever forming said latch and lying within said keeper hole when said locking retainer is swung on said hinge to a closed position on said handle member, a hole formed in one of said handle and said locking retainer near said hinged end, said hole having a dimension for receiving and holding the stem of a twisted wire brush, and a groove formed in the other of said handle and said locking retainer, said groove having a dimension for receiving and holding the twisted wire stem, and contours on said outer end of said cantilever for releasing said latch in response to a pressure applied thereto.

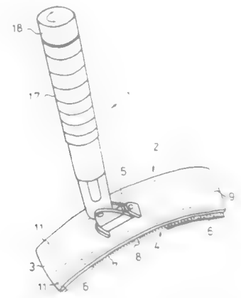
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,347

DEVICE FOR CLEANING THE INNER SURFACES OF THE FRONT AND REAR WINDOWS OF AUTOMOBILES

Rolf Stranders, Kirchweg 39, CH-8102 Oberengstringen, Switzerland

PCT No. PCT/CH92/00077, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO92/19142, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 22, 1992, Ser. No. 962,805
Claims priority, application Switzerland, Apr. 24, 1991, 1231/91
Int. Cl.[5] A47L *1/06*
U.S. Cl. 15—220.1 8 Claims



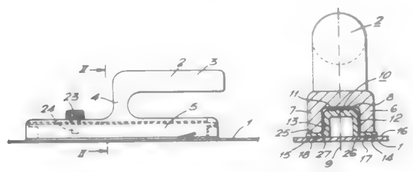
1. In a device for cleaning a concave inner surface of at least one of a windshield and a rear window of an automobile comprising a cleaning part (2) and a handle (1), said cleaning part (2) connected to said handle (1), the improvement comprising: said cleaning part (2) comprising an exchangeable cleaning cloth (6) and a flexible plate (3), said flexible plate (3) being longitudinally concave on one face and correspondingly convex on the opposite face, said handle (1) connected to a central portion of said convex face by a knuckle joint (5), and said flexible plate (3) further comprising means for removably connecting said exchangeable cleaning cloth (6) to said flexible plate (3).

5,333,348

SMOOTHING TOOL HANDLE MOUNTING ASSEMBLY

Gustav Schumacher, II, and Günther Schumacher, both of Gartenstrasse 8, D-5231 Eichelhardt, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 986,857
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1991, 4140278
Int. Cl.[5] B05C *17/10;* B06F *75/34;* E04F *21/16*
U.S. Cl. 15—235.4 10 Claims



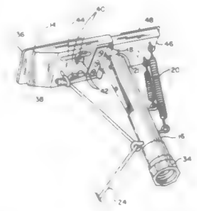
1. A distributing and smoothing tool comprising:
a trowel blade, said trowel blade having a first smoothing and distributing face and a second face remote from said first face;
a fastening rail secured to said second face of said trowel blade, said fastening rail extending in a longitudinal direction of the trowel blade, said fastening rail having a top hat shape in cross section with a web facing a grip, parallel limbs extending from the web and directed towards said second face of said trowel blade and flanges extending outwardly from the ends of the limbs remote from the web, each of said flanges being welded to said second face of the trowel blade;
said grip having a base and a groove provided in said base, said groove engaged over the fastening rail and supported on the flanges of said fastening rail; and
fastening means releasably fastening said grip base to said fastening rail.

5,333,349

APPARATUS FOR PATCHING A BREAK IN THE SIDEWALL OF A CHIMNEY

David M. Lister, 3380 Blacklick Eastern Rd., Baltimore, Ohio 43105

Filed Apr. 15, 1991, Ser. No. 685,050
Int. Cl.[5] B05C *17/00*
U.S. Cl. 15—235.8 6 Claims



1. Apparatus for patching a break in a masonry wall, said wall being generally vertically disposed and said break being remote and beyond arm's length from the location of a user of the apparatus, comprising,
an elongated handle having two opposite ends, at least a part of said handle extending generally vertically when in operative position, said handle having a trowel engaging surface at one of said ends and the other said end being engagable by the hands of the user, said trowel, engaging surface being stationary with respect to said handle,
a trowel having a flat support surface to support break patching material, said trowel being pivotally attached to said handle adjacent the trowel engaging surface, means for biasing connected between at least part of said handle and said trowel, whereby said trowel is in engagement with said trowel engaging surface to a position where said flat trowel surface is generally perpendicular to at least a part of said handle.
means for pivoting said trowel from engagement with said trowel engaging surface to a position where said flat trowel surface is substantially parallel with at least a part of said handle
said pivoting means comprising a manually operable connecting link extending from a portion of said trowel to near the hand engageable end of said handle.

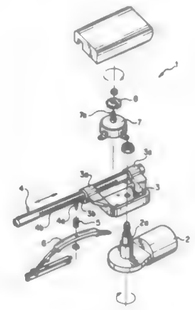
5,333,350

UNIDIRECTIONAL WIPER APPARATUS FOR A VEHICLE

Masayoshi Shirato, Kiryu, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Kiryu, Japan

Filed Mar. 10, 1993, Ser. No. 29,223
Claims priority, application Japan, Mar. 10, 1992, 4-086376
Int. Cl.[5] B60S *1/36, 1/34*
U.S. Cl. 15—250.21 8 Claims

1. A wiper apparatus for a vehicle comprising:
an elongated slide bar having a wiper blade attached thereto;
a housing slidably supporting the slide bar for sliding displacement in a longitudinal direction of the slide bar, the slide bar having two longitudinally opposed end of travel positions each defining a wiping position of the wiper blade;
unidirectional blade rotating means coupled with said housing for unidirectionally rotating the housing through a rotational angle of 360° said unidirectional blade rotating means including a motor with an output shaft which supports said housing;
a blade moving motor mounted on the housing and coupled with the slide bar for forcibly sliding the slide bar to bring the wiper blade to the wiping positions;
rotation angle detection means for detecting a wiping rotation angle of the wiper blade;



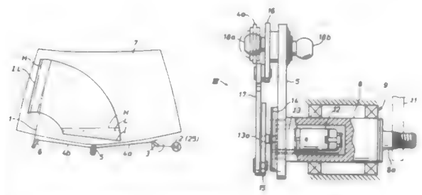
displacement position detection means for detecting a longitudinal displacement position of the wiper blade; and
drive control means connected to the rotation angle detection means and the displacement position detection means outputting a drive control command to the blade rotating motor to control the rotation of said slide bar and for outputting a slide control command to the blade moving motor, to control the displacement of said slide bar upon detection that the wiper blade has reached a sliding rotation range from a wiping rotation range;
wherein the blade moving motor causes the slide bar to slide to an opposite end of travel position upon receiving the slide control command.

5,333,351

WIPER SYSTEM

Katsutoshi Sato, Takasaki, Japan, assignor to Mitsuba Electric Mfg. Co., Ltd., Gumma, Japan

Filed Aug. 6, 1993, Ser. No. 103,486
Claims priority, application Japan, Aug. 27, 1992, 4-066272[U]
Int. Cl.[5] B60S *1/06, 1/18*
U.S. Cl. 15—250.13 8 Claims



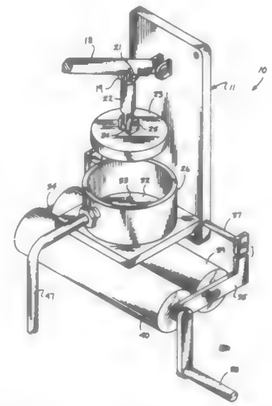
1. A wiper system, comprising:
a wiper motor means including an output end for actuating a wiper arm;
the wiper arm being elongated and having a base end pivotally supported by a vehicle body and a free end carrying a wiper blade;
linkage means, including a first pivot lever pivotally driven by said wiper motor means, for transmitting movement of the output end of said wiper motor means to said wiper arm so as to achieve a desired wiping movement of said wiper blade over a range of angle; and
a wiper angle varying assembly included within said linkage means for varying the range of angle of said wiping movement of said wiper blade;
said wiping angle varying assembly comprising actuator means including an actuator motor for moving an eccentric cam means pivotally attached to said first pivot lever for transmitting said movement of said output end of said wiper motor means to said wiper arm, and control means for activating said actuator motor upon a change in operational mode of the wiping system so as to move said eccentric cam means and thereby vary said range of angle of said wiping movement;
said control means activating said actuator means only when a first force resultant from pivotal movement of said first pivot lever to move said wiper arm does not substantially oppose a second force produced by said actuator means to pivotally move said eccentric cam means and vary said range of angle.

5,333,352

CHAMOIS WATER EXTRACTION APPARATUS

William H. McDonald, Jr., 431 Necoui St., Bonner Springs, Kans. 66012

Filed Sep. 7, 1993, Ser. No. 116,707
Int. Cl.[5] A47L *13/59;* B30B *9/32*
U.S. Cl. 15—261 2 Claims



1. A chamois water extraction apparatus, comprising,
a base plate, the base plate including a front wall, a rear wall, a top wall spaced from a bottom wall, and spaced side walls, wherein the front wall includes an articulate linkage pivotally mounted thereto, the articulate linkage includes a bifurcated support extending from said front wall having a first axle, with an actuator lever mounted to the first axle and to the bifurcated support, and
the actuator lever includes a pivot boss, the pivot boss having a second axle, and a drive link, the drive link including a drive link first end and a drive link second end, the drive link first end pivotally mounted about the second axle, and the drive link second end including a third axle directed therethrough, and a piston, the piston including a bifurcated piston rod, with the third axle directed through the bifurcated piston rod, with the first axle, the second axle,

VOL 1165 ISS 1 AG 2 1994 UMI

and the third axle arranged in a parallel relationship relative to one another, and

a support plate fixedly mounted to the front wall in adjacency to the bottom wall, with the support plate removably mounting a container, the support plate having support plate apertures, the container having a container floor, with the container floor having container floor apertures, with the piston complementarily received within the container to permit a fluid to be directed through the support plate apertures and the container floor apertures, and

a mounting bore directed into each side wall, wherein said bores are coaxially aligned with one another, wringer means for additional removal of water from a chamois member, wherein the wringer means includes first and second L-shaped support flanges arranged in a parallel spaced relationship, wherein the first L-shaped support flange includes a first mounting rod, the second L-shaped support flange includes a second mounting rod, the first mounting rod is received within one of said mounting bores, and the second mounting rod is received into the other one of said mounting bores, and a first roller axle rotatably mounted between and to the first and second L-shaped support flanges, and a second roller axle parallel to the first roller axle, with the second roller axle rotatably mounted between and to the first and second L-shaped support flanges, the first roller axle having a first gear mounted thereon, the second roller axle having a second gear mounted thereon, and a plurality of meshing intermediate gears mounted to one of the L-shaped support flanges and in meshing engagement with the first gear and the second gear, the second roller axle having a crank handle attached thereto.

5,333,353

MOP WRINGERS AND BUCKETS

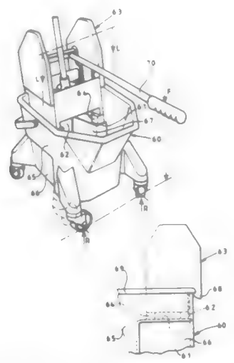
Michael Taylor, Lower Norton, England, assignor to Scot Young Research Limited, West Midlands, United Kingdom

Continuation-in-part of Ser. No. 655,326, Feb. 12, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 964,774

Claims priority, application United Kingdom, Feb. 13, 1990, 9003175.8

Int. Cl.[5] **A47L** *13/58*

U.S. Cl. 15—264 **8 Claims**



1. A mop wringer arrangement comprising:

a bucket having a rear wall, side walls, and a front wall, each of said walls having a respective internal surface, an external surface and an upper edge;

a wringer for removable mounting on said rear wall of said bucket, the wringer including pressure applying means operatively connected to as lever-type handle which is movable from a generally upright resting position to a forwardly projecting wringing position so that, in use, movement of the handle from said resting position to said wringing position applies a squeeze pressure to a mop inserted in the wringer from above;

the wringer further comprising spaced side flanges which, when the wringer is mounted on the rear wall of the bucket, extend downwardly into the bucket and lie closely adjacent the side walls respectively of the bucket, the flanges having a respective rear edges which then lie closely adjacent the rear wall of the bucket;

the wringer being further provided with downward projections, spaced rearwardly of said rear edges of the side flanges, which projections, when the wringer is mounted on the bucket, extend downwardly adjacent the external surface of the rear wall of the bucket;

support ledges integrally formed on the internal surfaces of the side walls respectively of the bucket and spaced substantially below said upper edges of the side walls;

said side flanges of the wringer having lower edges which, when the wringer is mounted on the rear wall of the bucket, engage and rest on said support ledges, whereby the wringer is partly supported by said ledges.

5,333,354

DEVICE FOR COLLECTING DUST AS FIBER WASTE AND THE LIKE ON CREEL STAND

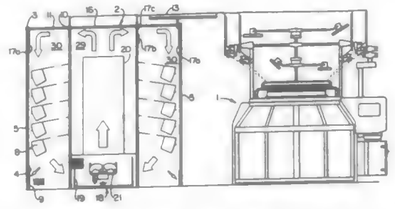
Sumio Takemoto, and Kiyoshi Hayashi, both of Hyogo, Japan, assignors to Precision Fukuhara Works, Ltd., Japan

Filed Apr. 16, 1992, Ser. No. 869,305

Claims priority, application Japan, Apr. 19, 1991, 3-116850

Int. Cl.[5] **B65H** *49/14*

U.S. Cl. 15—301 **12 Claims**



1. Apparatus for collecting fiber waste from a creel stand having a substantially empty inner section and an outer section containing yarn bobbins and yarn guiding means;

filter means mounted for rotation in the lower portion of said inner section of said creel stand;

air suction and blowing means located in said inner section adjacent said filter means for blowing air upwardly in the inner section of the creel stand and for creating a suction on said filter means;

an exhaust duct located in said inner section of said creel stand above said air suction and blowing means for directing the upwardly blowing air to the top of the creel stand;

a ceiling plate adjacent the top of said creel stand above said exhaust duct and in the path of the air passing through said exhaust duct, said ceiling plate substantially blocking further upward movement of the air and changing the direction of air currents passing upwardly through said inner section to said ceiling plate to cause the air currents to move outwardly into the outer section of the creel stand;

drive means for imparting rotation to said filter means; and

means located around the upper portion of the outer section of the creel stand at an elevation substantially above that of the uppermost yarn bobbins for blocking further outward movement of the air and causing the air to flow downwardly across bobbins and yarn guiding means in the outer section to said filter means.

5,333,355

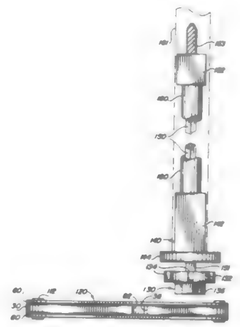
ADJUSTABLE AUTOMATIC DOOR CLOSURE APPARATUS AND METHOD FOR USE THEREOF

Duane Beswick, 2489 N. Burlingham Pl., Simi Valley, Calif. 93063, and Robert Enriquez, 13302 Kamloops, Arleta, Calif. 91331

Filed Oct. 15, 1992, Ser. No. 961,586

Int. Cl.[5] **E05F** *1/08*

U.S. Cl. 16—300 **16 Claims**



1. An apparatus for automatically closing a door mounted in a door frame, said automatic door closing apparatus comprising:

a base member for installation in the door frame at the bottom of the door frame and adjacent a first side of the door frame;

a display pivot member mounted on and engaged by said base member;

means for pivotally mounting the door by a first side thereof in the door frame adjacent the first side of the door frame, whereby the door pivots between an open position and a closed position, said display pivot member being located intermediate said base member and the door;

means for biasing the door from said open position to said closed position, said biasing means being operatively connected between the door and said display pivot member, whereby the preloading bias of said biasing means is adjusted by rotating said display pivot member with respect to said base member; and

means, located in said base member, for ordinarily allowing rotation of said display pivot member with respect to said base member in a single direction only, wherein rotation of said display pivot member in said single direction acts to increase the preloading bias of said biasing means, which preloading bias of said biasing means in turn tends to pivot the door from said open position to said closed position; and

wherein said base member comprises:

a base member housing; and

a first member mounted for rotation in said base member housing with respect to said base member housing, said first member including means for engaging said display pivot member; and

wherein said means for engaging said display pivot member comprises:

a passage extending through said first member which passage is machined to engage therein a member having a predetermined configuration; and

wherein said display pivot member comprises:

an engagement member located on the side of said display pivot member facing toward said base member, said engagement member having said predetermined configuration for engagement with said passage of said first member; and

wherein said base member housing is arranged and configured to allow said engagement member to engage said passage of said first member from either side of said base member housing.

5,333,356

ASSEMBLY FOR CONTROLLING TURN OF A HINGE PIVOT

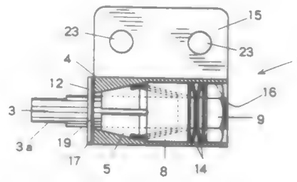
Takashi Katagiri, Oe, Japan, assignor to Santo Industries Co., Ltd., Osaka, Japan

Filed Oct. 28, 1992, Ser. No. 967,825

Claims priority, application Japan, Nov. 1, 1991, 3-315419; Aug. 24, 1992, 4-248633

Int. Cl.[5] **E05C** *17/64;* **E05D** *11/08*

U.S. Cl. 16—340 **6 Claims**



1. A control assembly for a hinge connection between a first segment and a second segment, said assembly comprising: a pivot member mounted to the first segment; a brake sleeve disposed around the pivot member; a socket member disposed around the pivot member for engaging an edge portion of the brake sleeve, said socket member being slidable along the pivot member, said socket member with said brake sleeve being rotatable about the pivot member; adjusting means for urging the socket member against the sleeve so that the socket member compresses the sleeve radially into friction contact with the pivot member; and connecting means for connecting either the brake sleeve or the socket member with the second segment, said connecting means including a housing disposed around the sleeve and at least one stop mounted to the housing and extending into an opening defined by the sleeve, said connecting means preventing relative rotational movement between the sleeve or the socket member and the second segment.

5,333,357

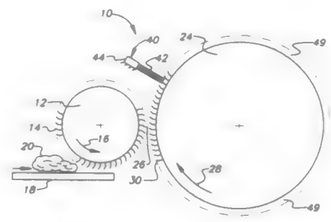
CARDING MACHINE HAVING A FINE-FIBER BRUSH

Richard N. Duncan, 21740 SE. Edward Dr., Clackamas, Oreg. 97015

Filed Jun. 4, 1993, Ser. No. 72,510

Int. Cl.[5] **D01G** *15/76*

U.S. Cl. 19—99 **23 Claims**



1. A cylinder carding machine, comprising:

a frame,

a first carding cylinder rotatably mounted on the frame,

a second carding cylinder rotatably mounted on the frame

VOL 1165 ISS 1 AG 2 1994 UMI

adjacent the first carding cylinder to define therebetween a transfer region,

drive means for rotating the first and second carding cylinders,

means for feeding fiber stock to the carding machine, the first carding cylinder including means for carrying forward the fiber stock to the transfer region, the second carding cylinder including means coacting with the carrying forward means at the transfer region for carding the fiber stock, a batt of carded fibers accumulating on the second carding cylinder, and

stationary means mounted on the frame for inhibiting, during operation of the carding means as the batt of carded fibers accumulates, accumulation of the fibers on the outer portion of the second cylinder by forcing the fibers protruding from the batt of carded fibers onto the second carding cylinder.

5,333,358

FEEDING DEVICE FOR A FIBER TUFT CLEANING AND OPENING APPARATUS

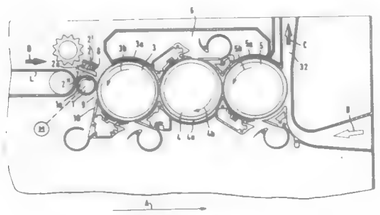
Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

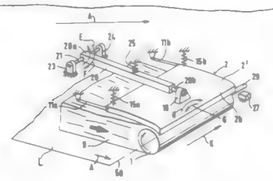
Filed Mar. 19, 1992, Ser. No. 854,064

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1991, 4108920; Jan. 10, 1992, 4200394

Int. Cl.[5] D01G *15/40*

U.S. Cl. 19—105 **21 Claims**





1. A feeding device for advancing a fiber lap to a fiber processing machine, comprising:

(a) a feed roll;

(b) means for rotating said feed roll about a rotary axis thereof;

(c) a feed tray cooperating with said feed roll and defining a nip therewith for advancing the fiber lap in a feed direction by a clamping effect exerted to the fiber lap in said nip by said feed roll and said feed tray; said feed tray having a working face oriented towards said feed roll and an outer face being opposite said working face; said feed tray further having a first end adjacent said feed roll and a second end remote from said feed roll;

(d) support means for supporting said feed tray for tilting movements about at least two non-parallel axes towards and away from said feed roll; and

(e) a force-exerting means connected to said feed tray for urging said working face of said feed tray towards said feed roll.

5,333,359

NON-CIRCULAR SLIVER CONTAINER

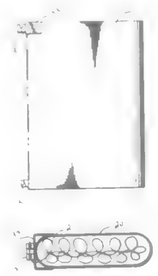
Petr Kroupa, Liberec, Czechoslovakia, assignor to Elitex Ústí nad Orlicí Ústí nad Orlicí , Czechoslovakia

Filed Sep. 18, 1992, Ser. No. 947,525

Claims priority, application Czechoslovakia, Sep. 23, 1991, 2895-91

Int. Cl.[5] D04H *11/00*

U.S. Cl. 19—159 R **1 Claim**



1. A container for deposition and transport of a sliver, the container comprising:

a pair of elongated side walls;

a pair of front walls connected to the elongated side walls, the side walls and the front walls defining a space for depositing the sliver, and at a top of the side walls and the front walls defining an upper rim;

a bottom situated between the side walls and the front walls below the space; and

a support table fixed to one of the front walls below the upper rim at an outer side of the front wall, the support table having a groove thereon, the groove substantially parallel with a plane of the upper rim, the support table having a recess intersecting with the groove and the recess being deeper than the groove.

5,333,360

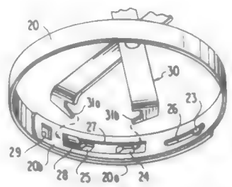
EXPANDABLE CLAMP STRUCTURE OF THE EARLESS TYPE

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Mashinen- und Apprate-fabrik, Switzerland

Filed Oct. 9, 1992, Ser. No. 958,765

Int. Cl.[5] F16L *33/02*

U.S. Cl. 24—20 R **36 Claims**



1. A clamp structure adapted to provide holding forces by expansion of the diametric dimensions thereof, comprising clamping band means including outer and inner overlapping band portions, mechanical connecting means for connecting the overlapping band portions including aperture means in the inner band portion and hook-like means extending inwardly from the outer band portion for engagement with said aperture means in the inner band portion, said aperture means including an elongated opening in the inner band portion, first inwardly projecting tool-engaging means in the inner band portion located adjacent said elongated opening, second inwardly projecting tool-engaging means in the outer band portion, said second tool-engaging means being located adjacent said hook-like means so that applying a force to the first and second tool-engaging means seeking to draw the same toward each other causes the clamp structure to expand its diametric dimension and thereby produce said holding forces.

5,333,361

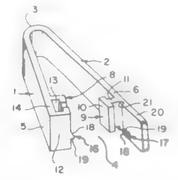
KEEPER CLIP

Peter Schaede, Carrum Downs, Australia, assignor to W. A. Deutsher Pty. Ltd., Moorabbin, Australia

Filed Dec. 18, 1992, Ser. No. 995,412

Int. Cl.[5] A44B *1/04*

U.S. Cl. 24—182 **20 Claims**



1. A keeper clip for attachment to a belt or strap, comprising:

two arms;

means connecting one end portion of each one of said arms to the corresponding end portion of the other one of said arms;

a gate which is opened or closed by relative movement of the other end portions of said arms in a first direction; and

releasable locking means, operable to hold said gate closed when said releasable locking means is disposed in a locked state and permitting said gate to be opened when said releasable locking means is disposed in an unlocked state, provided upon said other end portions of said arms and movable with respect to each other only in a direction transverse to said first direction so as to achieve said locked and unlocked states,

whereby said clip forms a closed loop when said gate is closed so as to retain a section of said belt or strap within the space surrounded by said closed loop, and said section of said belt or strap can be moved into or out of said space surrounded by said loop when said gate is open.

5,333,362

LEAD-IN DEVICE FOR A SLIDE FASTENER

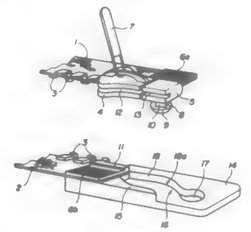
Marc Gillioz, Sentier du Lycée 4, CH - 1009 Pully, Switzerland

PCT No. PCT/CH92/00086, § 371 Date Dec. 22, 1992, § 102(e) Date Dec. 22, 1992, PCT Pub. No. WO92/19120, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 29, 1992, Ser. No. 958,363

Int. Cl.[5] A44B *19/00*

U.S. Cl. 24—433 **11 Claims**



1. A lead-in device for a slide fastener consisting of two strips with tabs along the edge, one of these strips carrying a slider and being provided with an end part affixed to its end, and the other strip being provided with a leader which provides the first tap thereof and which is arranged so that it can be introduced into the opening of the slider, the device comprising means for guiding the positioning of the leader and of the opening of the slider in front of each other; means for entering said leader into the opening of the slider and then into the groove of said end part; and further comprising at least two components, namely a first component affixed to the end of the strip carrying the end part and a second component affixed to the end of the strip carrying the leader, one of these components forming a male coupling member and the other comprising a corresponding female member, these two members being arranged so that, after engagement in the female member, the male member is free to move along a guided trajectory while pulling the end of the strip to which it is affixed, in such a manner as to place the leader and the opening of the slider, into which it is to be introduced, in front of each other, at a position enabling the subsequent introduction of the leader inside the opening of the slider, wherein said male coupling member is formed of a pin consisting of a rod and of a head having a cross-sectional width greater than the rod and in that the second component is formed of a plate, the female member consisting of an opening made perpendicularly to the plane of the plate, comprising a circular hole arranged in such a manner as to allow the passage of the head of the pin and an elongated channel starting at the hole and extending to beneath the leader.

5,333,363

TIGHTENING DEVICE FOR SKI BOOT

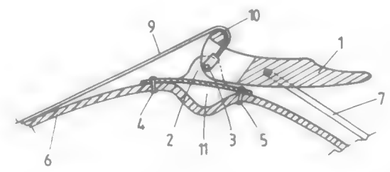
Giovanni Artusi, Pianiga, and Stelio Simonetti, Noale, both of Switzerland, assignors to Lange International S.A., Fribourg, Switzerland

Filed Dec. 2, 1992, Ser. No. 984,906

Claims priority, application Switzerland, Jan. 29, 1992, 252/92

Int. Cl.[5] A43C *11/00*

U.S. Cl. 24—685 K **6 Claims**



1. A tightening device for a ski boot, acting on first and second traction members (**7**, **9**; **15**, **19**) and comprising a tensioning lever (**1**; **12**) having a time of opening and being articulated on a seat and connected to at least said firsts traction member (**7**; **15**), which comprises means (**10**; **16**) which bring about a delayed tensioning action of the tensioning lever on the second traction member (**9**; **19**) from the time of opening of the tensioning lever.

5,333,364

METHOD FOR PRODUCING RANDOM YARN DENIER VARIATIONS ON DRAW WARPING MACHINES

Jeffrey J. Enfield; William S. Harmon, both of Greensboro, and McDaniel L. Beard, Burlington, all of N.C., assignors to Guilford Mills, Inc., Greensboro, N.C.

Filed Dec. 4, 1991, Ser. No. 803,324

Int. Cl.[5] D02J *1/06*

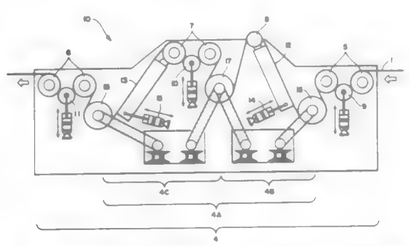
U.S. Cl. 28—172.2 **9 Claims**

1. A method of draw warping a plurality of partially ori-

VOL 1165 ISS 1 AG 2 1994 UMI

ented synthetic continuous filaments traveling in parallel side-by-side relation to produce denier variations randomly along the length of each filament and randomly from filament to filament, said method comprising the steps of:

(a) transporting the plurality of filaments collectively through a draw zone defined between first and second filament engaging members;



(b) simultaneously stretching the plurality of filaments within said draw zone while heating the plurality of filaments; and

(c) effecting slippage of the plurality of filaments on at least of each filament and randomly from filament to filament to cause the plurality of filaments to draw non-uniformity and thereby to produce random denier variations both along each filament and from filament to filament.

5,333,365

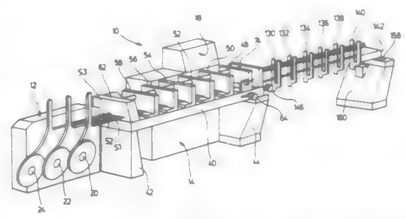
APPARATUS FOR THE MANUFACTURE OF BLINDS

Norbert Marocco, 46 Pennygrass Ct., Woodbridge, Ontario, and Ronald W. E. Ingram, 194 Clendenan Avenue, Toronto, Ontario, both of Canada

Continuation of Ser. No. 681,957, Apr. 8, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,436

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—24.5 28 Claims



1. Apparatus for the manufacture of blinds of the type having a headrail, a plurality of ladder tapes suspended from said headrail, a plurality of blind slats supported by said ladder tapes, and raise cord means passing through openings in said blind slats, whereby said blind slats may be drawn upwardly toward said headrail, and said apparatus comprising;

die support means defining a predetermined axis for passage of strip material therealong for the formation of said blind slats;

a plurality of die means mounted on said die support means, at least some of said die means being moveable therealong, said die means being aligned with one another along said strip axis whereby a said strip of said material may pass therealong;

scissors linkage means interconnecting said moveable die means, whereby movement of one of said moveable die means is communicated to all of the remaining said connected moveable die means such that each of said moveable die means moves a distance different than that moved by its adjacent said moveable die means, whereby at least selected ones of said moveable die means may be precisely positioned along said support means;

die movement means for moving said one of said moveable die means;

die operating means operable to procure selective simultaneous operation of selected ones of said die means while leaving others of said die means inactive;

die control means for selecting those said die means to be operated whereby to simultaneously form openings in said strip material at pre-selected spaced points therealong by simultaneous operation only of those said die means selected by said die control means;

cut off die means for cutting off a pre-selected length of said strip material to form a said slat for a said blind, and,

slat threader means, located downstream of said die support means, for supporting said ladder tapes and defining a pre-determined slat threading path for threading a said slat through said ladder tapes.

5,333,366

INSTALLATION FOR MANUFACTURE OF HOT ROLLED STEEL STRIPS

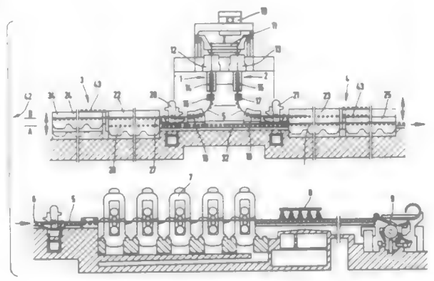
Rudolf Guse, Ratingen, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 24, 1993, Ser. No. 83,109

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1992, 4220605

Int. Cl.[5] B21B *1/46;* B22D *11/12*

U.S. Cl. 29—33 C 8 Claims



1. An installation for the manufacture of hot rolled steel strips, comprising:

a hot finishing rolling train having a feed roller table;

two thin slab casters facing each other and having opposite thin slab conveyances;

two cutter arrangements located each downstream of a respective thin slab caster;

a two-high furnaces having each superimposed roller tables and each being located downstream of a respective cutter arrangement;

two transfer furnaces located each downstream of a respective two-high furnace and having each a height-adjustable roller table adjustable to a height of one of the superimposed roller table of the respective two-high furnace; and

an intermediate roller table extending beneath said two thin slab casters for connecting lower roller tables of the two two-high furnaces, the lower roller tables of the two-high furnaces being connected with the feed roller table of the hot finishing roller train by the height-adjustable roller table of one of the transfer furnaces.

5,333,367

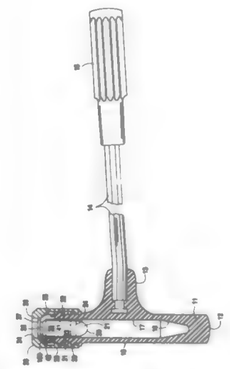
BULLET PULLER

Clifford L. Ashbrook, Spicewood, Tex., assignor to Quin Tics Corporation, San Antonio, Tex.

Filed Oct. 27, 1992, Ser. No. 967,214

Int. Cl.[5] B25B *27/14*

U.S. Cl. 29—275 10 Claims



1. A bullet puller, comprising:

a carrier having an opening at its upper end adapted to receive a cartridge and head means at its lower end adapted to be struck against a hard surface;

annular segmented support means;

disposed about said upper end of said carrier arranged to form a collar for engaging said cartridge;

said annular segmented support means comprising a plurality of adjacent segments which are flexibly connected at all but one of their respective adjacent edges, to permit inward and outward movement of said plurality of segments;

means movably mounted over said opening at said upper end of said carrier for forcing said plurality of annular segments radially inward;

handle means connected at one end to said carrier for imparting motion to said carrier for striking it against a hard surface.

5,333,368

CHAIR CONTROL WITH FORWARD TILT

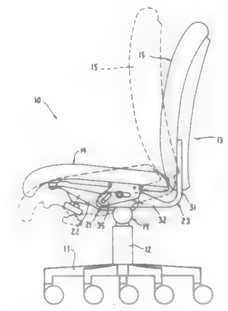
Michael Kriener, Ahlen; Johannes Uhlenbrock, Drensteinfurt, both of Fed. Rep. of Germany; Larry A. Wilkerson, Comstock Park, and Richard N. Roslund, Jr., Georgetown Township, Ottawa County, both of Mich., assignors to Haworth, Inc., Holland, Mich.

Continuation-in-part of Ser. No. 940,923, Sep. 8, 1992, abandoned. This application Nov. 6, 1992, Ser. No. 972,951

Int. Cl.[5] A47C *1/024*

U.S. Cl. 297—301 20 Claims

1. In an office-type chair having a base, a cantilevered pedestal assembly projecting upwardly from substantially a center of said base, and a seat/back arrangement connected to an upper end of said pedestal assembly, said seat/back arrangement including a generally horizontally enlarged seat assembly and a back assembly projecting upwardly from and adjacent a rear edge of said seat assembly, said seat/back arrangement also including a main tilt control mechanism for permitting downwardly tilting of at least a rear portion of the seat assembly while simultaneously synchronously vertically tilting the back assembly rearwardly against the urging of a resilient biasing element, the improvement comprising a forward tilt mechanism cooperating between said pedestal assembly and said seat/back arrangement for permitting the entire seat/back arrangement to be vertically tilted forwardly away from a normal upright position into a selected one of a plurality of forward tilt positions so that said seat assembly declines in a forward direction, said forward tilt mechanism including locking means for maintaining the seat/back arrangement in the



selected forward tilt position, said forward tilt mechanism being independent of said main tilt control mechanism so that the rear portion of said seat assembly and said back assembly can be synchronously downwardly and rearwardly tilted respectively away from said selected forward tilt position.

5,333,369

METHOD AND APPARATUS FOR POSITIONING DIES

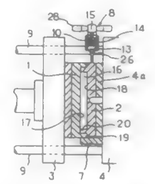
Kazuki Miyairi, and Akira Iijima, both of Sakakimachi, Japan, assignors to Nissei Plastic Industrial Co., Ltd., Japan

Filed Mar. 4, 1993, Ser. No. 26,514

Claims priority, application Japan, Mar. 5, 1992, 4-083101; Mar. 5, 1992, 4-083102

Int. Cl.[5] B23Q *3/00;* B29C *33/20*

U.S. Cl. 29—405 9 Claims



1. A method for positioning dies on a plastic molding machine, one of said dies being a movable die mounted on a movable platen and the other of said dies being a stationary die mounted on a stationary platen, the movable and stationary dies being mounted to form a cavity therebetween by fitting a convex portion of the stationary die into a concave portion of the movable die formed on the facing surfaces of the dies into spigots, respectively, the method comprising the steps of:

securing the movable die in a home position on the movable platen with the movable platen at a retreat position;

temporarily clamping the stationary die at a home position on the stationary platen by pressing the stationary die in a lateral direction by a repulsive member of a temporarily clamping apparatus;

die matching the stationary and movable dies by advancing the movable platen against the stationary platen and fitting the convex portion of the movable die to the concave portion of the stationary die; and

positioning the stationary die according to the die matching before permanently clamping the stationary die to the stationary platen while both dies are fastened together by the movable platen,

wherein the stationary die has a coupler on a first side serv-

VOL 1165 ISS 1 AG 2 1994 UMI

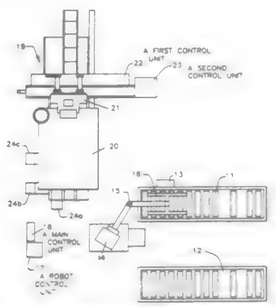
ing as a doorway of a heating medium path, and a rod-shaped handle on a second side parallel with and opposite to the first side, and a clamping member of the temporarily clamping apparatus is contacted to the handle and pressed against a die catching member at the first side.

5,333,370

AUTOMATIC CONTROL SYSTEM OF A NUMERICAL CONTROL ROUTER

Yukitomo Suzaki, Shizuoka, Japan, assignor to Heian Corporation, Shizuoka, Japan

Filed Nov. 4, 1991, Ser. No. 787,680
Claims priority, application Japan, Nov. 7, 1990, 2-301385; Nov. 7, 1990, 2-301386; Nov. 30, 1990, 2-337314
Int. Cl.[5] B23Q *1/18*
U.S. Cl. 29—563 **16 Claims**



1. An automatic processing system of a numerical control router comprising:

a suction table having at least two sides;

a rule stopper provided at each of at least two sides of the suction table;

moving means for moving each said rule stopper, said moving means including first cylinder means for moving each said rule stopper in a first direction up and down relative to said suction table and second cylinder means for moving each said rule stopper inwardly toward and outwardly away from said suction table, each said second cylinder means including a driving shaft movable toward and away from said suction table, and each said rule stopper is mounted to one said driving shaft;

supply conveyor means for carrying a pallet on which a process board and a sacrifice board fitting a process board are stacked, to a supply position;

robot means for:

removing the sacrifice board from the supply conveyor means,

pressing the sacrifice board against the rule stoppers by means of an arm of the robot means so as to position the sacrifice board on the suction table,

subsequently removing the process board from the supply conveyor means, and

pressing the arm of the robot means against the rule stoppers so as to position the process board on the sacrifice board; and

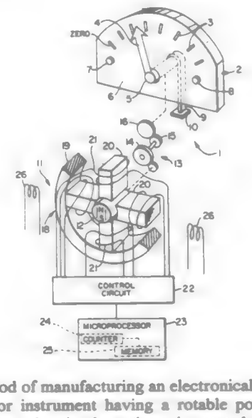
numerical control router means for automatically processing the process board on the sacrifice board when the sacrifice board is on the suction table.

5,333,371

METHOD FOR THE MANUFACTURE OF AN INDICATING INSTRUMENT

Karl-Heinz Mittenbühler, Griesheim, and Heinrich-Jochen Blume, Darmstadt, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt, Fed. Rep. of Germany

Filed Aug. 3, 1993, Ser. No. 101,373
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1992, 4226017
Int. Cl.[5] G01R *3/00*
U.S. Cl. 29—595 **7 Claims**



1. A method of manufacturing an electronically synchronizable indicator instrument having a rotable pointer movable along a scale, wherein the pointer is rotated by a stepping motor operatively coupled to a shaft of the pointer via a multistep gearing between a zero position and a full scale position, the instrument having a stop at the zero position, and wherein the stepping motor has a two-pole rotor of magnetizable material, two coils arranged perpendicular to the rotor, and a housing surrounding the coils, the motor being controlled by a microprocessor; the method comprising steps of:

providing the stepping motor with the rotor in a non magnetized state, coupling the rotor to the pointer shaft via the gearing, and connecting to the pointer shaft a torsion spring which acts in the direction towards the full scale end of the scale;

rotating the pointer to rest against the zero stop by means of a moment of rotation applied from outside the instrument in opposition to a restoring force of the torsion spring;

turning the rotor of the stepping motor in a direction towards the zero stop of the pointer by means of a rotating magnetic field, rotation of the rotor imparting rotation to gear wheels of the gearing to terminate any gearing play upon attainment of a reference position of the rotor; and

holding the rotor in the reference position, and then magnetizing the rotor in a predetermined angular direction.

5,333,372

METHOD OF MANUFACTURING A MAGNETIC HEAD

Yoshiharu Fujioka, Yamato; Shintaro Nagatsuka, and Shoji Tsutaki, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 665,763, Mar. 8, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,399
Claims priority, application Japan, Mar. 15, 1990, 02-66250
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 **6 Claims**

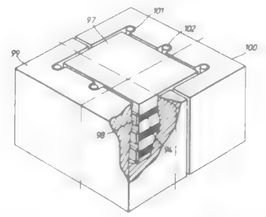
1. A method for manufacturing a magnetic head having a laminated core formed by alternately laminating metal magnetic layers and oxide layers on a non-magnetic substance base to a prescribed thickness, comprising the steps of:

positioning the laminated core in a frame of oxide magnetic substance to form a laminated core block;

fusing the laminated core and the frame into one body;

cutting the fused body to form a complementary pair of laminated core blocks;

forming a groove for coil windings on one of the complementary pair of the laminated core blocks;



applying a non-magnetic substance film between the laminated cores of the laminated core blocks to form a magnetic gap;

joining the complementary pair of the laminated core blocks together to form a magnetic head block; and

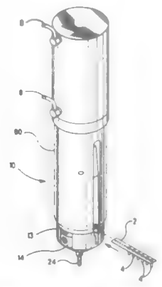
finishing a surface of the magnetic head block to form a prescribed head surface around the magnetic gap.

5,333,373

SOCKET INSERTION TOOL HAVING INDEXABLE SOCKET GUIDE

Edwin Camsell, Harrisburg; Leo V. Schuppert, Jr., York, and Kerry J. Stakem, Hummelstown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 12, 1993, Ser. No. 135,608
Int. Cl.[5] H05K *13/04*
U.S. Cl. 29—739 **9 Claims**



1. A tool for inserting electrical sockets mounted on a carrier strip into holes in a circuit board, each of the sockets having a length which extends to a lowermost end, each of the lengths being one of several possible known lengths, the tool comprising:

a tool body defining a carrier strip feed track and a feed station along the feed track;

an advancing mechanism operable on the carrier strip to feed the carrier strip along the feed track such that the sockets are fed successively to the feed station in a vertical orientation;

a ram mounted to the body for movement through the feed station along a path between a first position above the feed station and a second position below the feed station, wherein one of the sockets of given length in the feed station is driven from the carrier strip to an insertion station by a stroke of the ram moving from the first to the second position;

a guide tube connected to the body below the feed station, the guide tube defining a tubular bore through which the ram passes for guiding said one socket when driven by the ram from the carrier strip to the insertion station; and,

a socket guide disposed between the feed station and the guide tube for guiding said one socket between the feed station and the guide tube, the socket guide having several portions each associated with a respective one of the possible known lengths, each of the portions having an upwardly facing surface defining a plane and a guide hole extending through each said portion perpendicular to the plane, the socket guide being indexable to move a selected one of said portions such that its respective guide hole is aligned with the path of the ram and the plane of its respective upwardly facing surface is immediately below the lowermost end of said one socket;

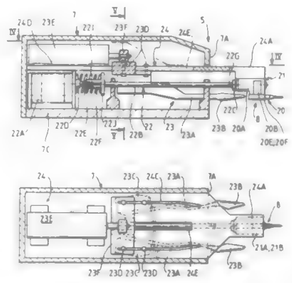
whereby the guide hole of the selected portion receives said lowermost end upon engagement of said one socket by the ram and immediately constrains said lowermost end against horizontal movement such that said one socket remains vertically aligned prior to entering the guide tube.

5,333,374

DEVICE FOR CONNECTING CONNEXION ELEMENTS INTO CONNECTORS

Serge F. Pittau, Aubagne, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Sep. 16, 1992, Ser. No. 945,623
Claims priority, application France, Sep. 26, 1991, 91 11867
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—748 **13 Claims**



1. A device for inserting connexion elements of electrical conductors, into connector housings, which comprises:

(a) a body (7) which can be displaced toward the corresponding housing of said connector (4);

(b) at least one insertion member (8) provided with means (20) for grasping said connexion element (2) to be inserted into the corresponding housing (4A) of the connector;

(c) means (21) for fixing said insertion member to said body, allowing locking or unlocking of said member relative to said body;

(d) means (22) for controlling said grasping means (20), associated with said body and capable of assuming, when said insertion member (8) is locked, a first position, in which said grasping means (20) holds said connexion element (2) and enables it to be inserted into the corresponding housing of the connector, and a second position, in which the grasping means release said connexion element which is then connected in the connector housing; and

(e) said fixing means (21) being removable and comprising a tenon (21A) and mortise (21B) assembly allowing said insertion member (8) to slide on the body (7), and a ball

VOL 1165 ISS 1 AG 2 1994 UMI

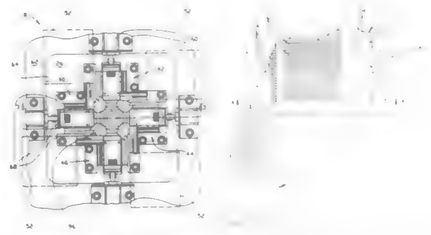
lock (21C) enabling the insertion member to be immobilized in position relative to said body.

5,333,375

SUBSTRATE LEAD STRIP MOUNTING MACHINE AND METHOD

Richard K. Dennis, Etters; Wade D. Myers, York, and James A. Riddle, Red Lion, all of Pa., assignors to Die Tech, Inc., York Haven, Pa.

Filed Sep. 16, 1993, Ser. No. 122,389
Int. Cl.[5] H01R *43/00;* B23P *23/00*
U.S. Cl. 29—827 49 Claims



1. Apparatus for simultaneously mounting lead strip segments of the type having a carrier strip and a plurality of leads extending from one side of the carrier strip to contact portions on the free ends of the leads on the edges of rectangular integrated circuit substrates with the contact portions of the leads engaging contact pads spaced along the edges of the substrates, the apparatus including,

a) an integrated circuit substrate support located on a central axis;

b) a plurality of transport assemblies spaced around the central axis with each transport assembly located outwardly of the substrate support, each transport assembly including a transport head movable between a loading position away from the axis and a mounting position adjacent the axis, lead strip segment clamp means for securing a lead strip segment to the head at a location facing the axis for mounting on the edge of an integrated circuit substrate on the substrate support;

c) lead strip segment feed means for feeding a lead strip segment to each transport head when in the loading position;

d) a transport head drive for moving said transport heads simultaneously between said loading position and said mounting position, said transport head drive including an extendable and retractable first drive member, first drive means for extending and retracting the first drive member and first operative connections joining the first drive member and each transport head; and

e) clamp drive means for releasing the clamp means in each transport assembly simultaneously when the transport heads are in the mounting position.

36. The method of mounting lead strip segments on the edges of rectangular integrated circuit substrates, comprising the steps of:

a) positioning a rectangular integrated circuit substrate on a central substrate support, the substrate having edges with spaced contact pads extending along the edges;

b) feeding a lead strip segment having free lead ends to each of a plurality of transfer heads spaced around the integrated circuit substrate, the free cnds of the leads in such segments extending toward an adjacent edge of the integrated circuit substrate;

c) clamping each lead strip segment in position on its respective transfer head;

d) simultaneously moving the transfer heads toward the integrated circuit substrate to position the free ends of the leads in the lead strip segments clamped on the transfer heads over the contact pads on the adjacent edges of the integrated circuit substrate;

e) forming physical connections between the lead ends and the contact pads on the substrates; and

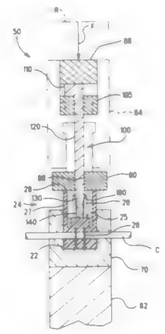
f) releasing the lead strip segments from the transfer heads.

5,333,376

CABLE HARNESS CONNECTOR TERMINATION AND TESTING APPARATUS

Stephen P. Lawruk, Middletown, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 19, 1993, Ser. No. 93,216
Int. Cl.[5] H01R *43/04;* B23P *21/00*
U.S. Cl. 29—861 16 Claims



1. Apparatus for terminating a connector having terminals to conductors of a multi-conductor cable, and for testing a resulting connector and multi-conductor cable assembly, the apparatus comprising:

means to support the cable during termination to the connector thereto;

means for driving the connector relatively toward the cable so as to terminate the terminals of the connector to the conductors within the cable, wherein said means for driving includes means for electrically shorting together at least two of the terminals of the connector; and,

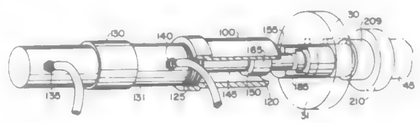
means for testing continuity of the conductors which are terminated to the at least two terminals.

5,333,377

CHANGE GEAR APPARATUS AND METHOD

Allyn E. Phillips, Simpsonville, S.C., assignor to Reliance Electric Industrial Company, Greenville, S.C.

Filed May 25, 1993, Ser. No. 66,889
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—893.2 24 Claims



11. A method of pressing a gear onto a shaft including the steps of:

a) attaching a shaft adapter member to the shaft upon which the gear is to be pressed, said shaft adapter member including a portion adapted to matingly engage an actuator rod adapter and being dimensioned so that a gear can be loosely received thereover;

b) providing a pressing actuator with a body portion and a movable actuator rod, said body portion including a pressing sleeve thereon adapted to receive at least a portion of said actuator rod therewithin;

c) attaching said actuator rod adapter member to said actuator rod, said actuator rod adapter member being adapted to couple with said shaft adapter member;

d) loosely placing said gear to be pressed onto the shaft adapter member and positioning said gear with the shaft adjacent a gear bore defined by said gear;

e) coupling said shaft adapter member to said actuator rod adapter member; and

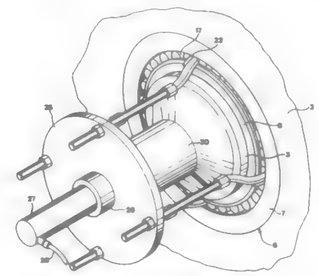
f) forcing said gear onto the shaft by pulling said shaft toward said actuator by a retraction of said actuator rod while said pressing sleeve engages a face of said gear.

5,333,378

METHOD FOR PULLING BEARINGS, A BEARING PULLER AND USE THEREOF

Börje Sjöbom, Bällstavägen 23, S-864 00 Matfors, Sweden

PCT No. PCT/SE91/00918, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO92/11976, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 30, 1991, Ser. No. 930,502
Claims priority, application Sweden, Jan. 2, 1991, 9100004
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—898.08 12 Claims



1. A method for pulling roller bearings having a plurality of circumferentially spaced rolling elements disposed around a shaft and between an inner ring and an outer ring which is firmly stuck in a retainer, comprising:

inserting a gripping device having a gripping means with a circumferentially directed projection into a space between first and second circumferentially consecutive rolling elements of the bearing and generally parallel to the axis of the shaft;

moving said projection circumferentially behind said first rolling element to pullingly engage a rear side thereof;

pressing a wedgable support member into said space between said gripping means and said second rolling element so that said support comes to bear substantially in the circumferential direction of the rings against said second rolling element as well as said gripping means and by abutment on said second rolling element holds said gripping means to bear against and with said projection behind said first rolling element, so that said projection cannot leave the bearing action thereof against said rear side of said first rolling element on application of said compressive force thereon; and

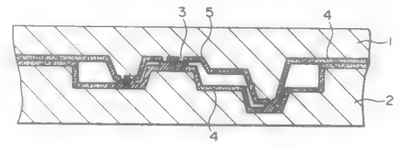
applying a pulling force on said gripping means directed away from said retainer and generally parallel to said shaft, so that this pulling force is transformed through said gripping means into a compressive force acting on said rear side of the rolling element and consequently on the bearing so that the bearing is removed from said retainer.

5,333,379

METHOD OF PRODUCING A THREE-DIMENSIONAL WIRING BOARD

Hiroshi Odaira, Chigasaki, and Yoshizumi Sato, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Apr. 6, 1992, Ser. No. 863,904
Claims priority, application Japan, Apr. 8, 1991, 3-074848
Int. Cl.[5] B29C *67/22;* H05K *3/30*
U.S. Cl. 29—841 8 Claims



1. A method of producing a three-dimensional wiring board, comprising the steps of:

selectively forming conductor layers at a plurality of positions on a molding surface of one die half of an upper die half and a lower die half constituting a molding die with projections disposed on said molding surface to form a plurality of conductor circuits each including the projections,

forming conductor layers on a molding surface of a die half of the upper and lower die halves other than said one die half of said molding die at a plurality of positions corresponding to the positions on said molding surface of said one die half to form a plurality of conductor circuits,

bringing the molding surfaces of both of said die halves in pressure contact with each other to electrically connect the projections of the conductor circuits on the molding surface of said one die half to the corresponding conductor circuits on the other die half of the molding die and to leave a hollow space surrounding the projections, and

filling the hollow space between both the die halves with a resin while the conductor circuits on both the die halves are electrically connected to each other via the projections at said plurality of positions, and transferring and securing to a surface of a product the conductor circuits on the molding surfaces of both of the die halves.

5,333,380

METHOD OF SHAFT MOUNTING A SINGLE TAPERED BUSHING

Byron M. Patz, Naperville, and Glenn R. Schwartz, DesPlaines, both of Ill., assignors to Regal-Beloit Corporation, Beloit, Wis.

Division of Ser. No. 495,422, Mar. 19, 1990, Pat. No. 5,211,488.
This application May 11, 1993, Ser. No. 60,393
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—898.07 4 Claims

1. A method for shaft-mounting a bushing for connecting a rotating member to a driven shaft having an axis, said method comprising, the steps of:

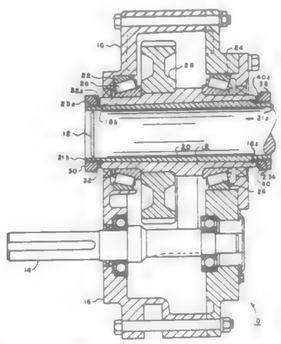
providing a frame;

rotatably mounted in a hub to said frame, said hub having an opening at one end thereof for receiving said driven shaft generally coaxially therein, said hub having a radially inwardly facing surface which tapers inwardly toward the other end of said hub;

mounting a sleeve in said hub between said inwardly facing surface and said haft with said sleeve being received within said hub from said one end of said hub, said sleeve having a radially outwardly facing surface which tapers inwardly toward said other end of said hub;

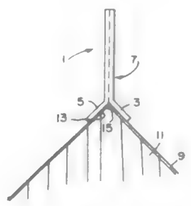
VOL 1165 ISS 1 AG 2 1994 UMI

drawing said sleeve into said hub from said other end of said hub; and,



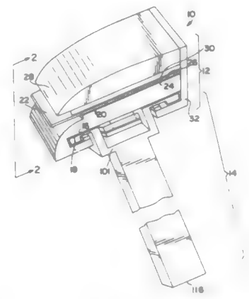
connecting said rotatable hub to an external device remote from said frame.

5,333,381
WRAP CUTTER
Paul J. Gelardi, P.O. Box 127, Cape Porpoise, Me. 04014; David A. Capotosto, Kennebunk; James R. Dussault, Kennebunkport, both of Me., and Christopher C. Capotostop, East Greenwich, R.I., assignors to Paul J. Gelardi, Kennebunkport, Me.
Filed Oct. 21, 1992, Ser. No. 964,000
Int. Cl.[5] B67B *7/00*; B26B *29/06*
U.S. Cl. 30—2 15 Claims



1. A wrap cutter apparatus comprising a pair of first and second collapsible wings transportable in a flat condition to hide a cutting blade held within the wings, the wings converging at an angular relationship to form a body when a pressure is applied on the apparatus, and the blade having a sharp portion which extends into an angle as prescribed by the first and second wings, wherein the wings embrace a corner edge of an article to be de-wrapped with the wings conforming to the angle of the edge when pressure is applied to the wings, the sharp portion of the blade extending into and cutting the wrap around the article at the edge as the cutter slides around the edge, wherein each wing is rotatable over a 45 degree angle with respect to the blade when the apparatus is pushed on the edge of the article to force open the wings, further wherein the wings and the body are integrally molded of a material which provides elasticity and resilience to the wings.

5,333,382
BROW SHAVER
Ligaya H. Buchbinder, Boca Raton, Fla., assignor to Ligaya Corporation, Boca Raton, Fla.
Continuation-in-part of Ser. No. 844,105, Mar. 2, 1992, abandoned. This application Jul. 20, 1992, Ser. No. 916,655
Int. Cl.[5] B26B *21/56*
U.S. Cl. 30—47 19 Claims



1. A shaver adapted to be used to trim eyebrows comprising:
a handle;
a lower holding member mounted on the handle adjacent a lower surface of the lower holding member and having an upper surface opposite the lower surface and distal from the handle;
a blade member fixedly mounted on the lower holding member along a first surface of the blade member so that the first surface of the blade member is adjacent to at least a portion of the upper surface of the lower holding member and wherein the blade member further includes a second surface opposite the first surface and distal from the lower holding member, the blade member also includes a razor edge, a covered edge opposite the razor edge and two side edges that join the razor edge and the covered edge and wherein the distance between the razor edge and the covered edge is greater than the distance between the two side edges;
an upper holding member mounted adjacent the blade member so that at least a portion of a downward surface of the upper holding member abuts the second surface of the blade member and wherein the lower holding member, the blade member and the upper holding member form a blade complex.

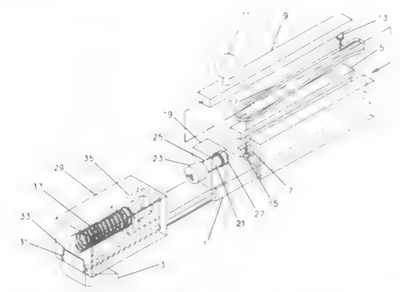
5,333,383
RAZOR HANDLE MECHANISM WITH CONVEX-CONCAVE SLIDABLE CARTRIDGE SUPPORT
Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of Ser. No. 939,203, Sep. 1, 1992, which is a continuation-in-part of Ser. No. 507,425, Apr. 10, 1990, Pat. No. 5,157,834. This application Nov. 30, 1992, Ser. No. 983,014
Int. Cl.[5] B26B *21/14*
U.S. Cl. 30—87 17 Claims

1. A razor handle for a flexible, wet-shaving razor unit comprising:
means for movably supporting said razor unit on said handle, said supporting means operable between a supporting position wherein said razor unit is supported for flexing during shaving and a loading position for loading and unloading said razor unit;
a cartridge support providing support to the center of said razor unit during shaving, said cartridge support operable between a normal position wherein said razor unit is oriented in a substantially linear configuration and an advanced position wherein said razor unit is oriented in a substantially convex configuration to enhance the shaving of concave body surfaces; and
a selector dial operatively connected to said cartridge support for operating said cartridge support between said normal position and said advanced position;



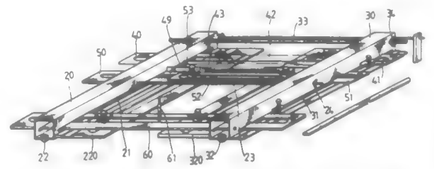
wherein said selector dial comprises a control slot having an arcuate portion and a linear portion, said arcuate portion continuous with and terminating in said linear portion; and
wherein said cartridge support includes an advancing pin engageable with said control slot such that said control pin travels within said control slot when said selector dial is operated.

5,333,384
NUTCRACKER
Gerald E. Graves, 3650 Silverside Rd., Box 1, Wilmington, Del. 19810
Filed Nov. 1, 1993, Ser. No. 144,246
Int. Cl.[5] A47J *43/26*
U.S. Cl. 30—120.2 1 Claim



1. A manual nutcracker comprising:
a base rail having two ends, a top, a bottom and two sides;
a stop block affixed to one end of said bottom;
two ram guides having two ends which are mounted to the top and sides of the base rail corresponding to one another at the end of the base rail opposite the end on which the stop block is affixed, each ram guide contains a way and the two ways face each other;
a ram having top and bottom, and two sides, said sides interact with the ways in the two ram guides;
a handle attached to the top of the ram;
a plunger block mounted to the top of the base rail between the two ram guides and the end of the base rail where the stop block is affixed, said plunger block contains a hole therethrough which is parallel to the base rail;
a hook attached to the bottom of the ram;
a fixed hook mounted to the top of base rail between the ram guides at the end of the ram guides closest to the plunger block;
a biasing means having two ends with one end attached to the hook on the ram and the other end attached to the fixed hook;
a plunger having a head at one end, a face at the other end and a shaft between the head and the face, the head and the face each having a diameter greater than the diameter of the shaft, the shaft interacts acts with the hole in the plunger block, and the length of the shaft is greater than the length of the hole in the plunger block, such that the plunger can not be removed from the plunger block but can move longitudinally within the hole in the plunger block;
a pair of tongues are formed longitudinally into each side of the base rail from the end of the base rail with the stop block to where the plunger block is mounted to the base rail;
a chamber housing having grooves which interact with the tongues on the base rail such that the chamber housing slides along the base rail from the end with the stop block to the plunger block, the chamber housing contains a cracking chamber which slides within the chamber housing and is biased by an anti-crushing spring such that it is biased toward the end of the chamber housing which is closest to the plunger block.

5,333,385
MOVABLE AUTOMATIC SAWING AND CLAMPING FRAMEWORK
Chen-Wen Chou, 4F., No. 6, Lane 69, Min-Jyh Street, Yeong-Her City, Taipei Hsien, Taiwan
Filed Apr. 27, 1993, Ser. No. 54,413
Int. Cl.[5] B27B *9/04*
U.S. Cl. 30—371 8 Claims



1. A movable and automatic sawing and clamping framework for wood comprising:
two hollow pipe-like frame portions parallel to and separated from each other by an adjustable distance, a bottom of each of the frame portions being provided with a roller and a bottom base plate;
two sets of adjustable horizontal pieces, each horizontal piece extending through slots in a respective one of said frame portions in a direction perpendicular to the frame portions and being provided with a portion between said pipe-like frame portions, a sawing tool being clamped between said horizontal pieces;
said framework being movable for cutting a workpiece; and
wherein a stabilizing piece is provided adjacent to said pipe-like frame portions and is connected to top surfaces of said bottom base plates, and two separate L-shaped pieces attached to a vertical portion of said stabilizing piece, said L-shaped pieces each having a horizontal portion with an adjusting piece thereon which is provided with a roller for abutting against said workpiece.

VOL 1165 ISS 1 AG 2 1994 UMI

5,333,386

METHOD OF MEASURING THE EFFECTIVE INSTANTANEOUS POSITION OF A SLIDE-MOUNTED PROBE ELEMENT OR TOOL

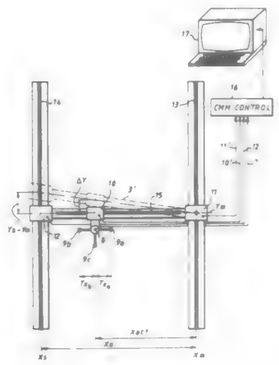
Karl-Hermann Breyer, Heidenheim; Eugen Aubele; Günter Grupp, both of Bohmenkirch; Peter Ebersbach, Esingen, and Wolfgang Wiedmann, Aalen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Oct. 6, 1992, Ser. No. 957,398

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1991, 4134371

Int. Cl.[5] G01B *7/03*

U.S. Cl. 33—1 M 21 Claims



1. A method of measuring the effective instantaneous position of a probe element (9*a, b, c, d*) or tool borne by a moving carriage (portal **3, 4, 5**), the carriage being provided with a first and more-precise length-measurement system and with a second and less-practice length-measurement system, which method comprises:

(a) using only the more-precise length-measurement system (**13**) for measuring absolute-position measurement values in the length-measuring direction;

(b) using the less-precise length-measurement system (**14**) only to determine dynamic deviation from the position determined by the more-precise length-measurement system (**13**), the use of this step (b) being only for a predetermined interval of time prior to and including an instant at which the effective instantaneous position of the probe element or tool is to be determined; and

(c) correctively neutralizing error attributable to carriage oscillation, by relating the determined dynamic deviation at said instant to the position determined at said instant by the more-precise length-measuring system.

5,333,387

COLOR DRAWING TOY

James B. Ankenbruck, Bryan, Ohio; Jose V. Antolin, Addison, Ill.; Horst D. Herbstler, Bolingbrook, Ill.; Bruce D. Lund, Chicago, Ill.; Anne K. Vahcic, Chicago, Ill., and Lowell T. Wilson, Bryan, Ohio, assignors to The Ohio Art Company, Bryan, Ohio

Filed Jul. 21, 1993, Ser. No. 93,964

Int. Cl.[5] B43L *13/00*

U.S. Cl. 33—18.1 6 Claims

1. A sketching device comprising:

a) an open top base box,

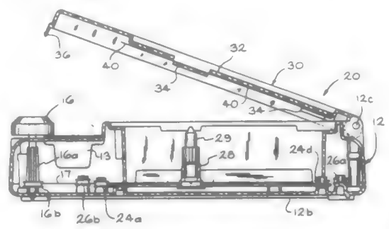
b) means within said box for moving a socket orthogonally around the open top of said box,

c) a marker replaceable in said socket,

d) a cover for said top of said box,

e) a transparent window in said cover,

f) a translucent replaceable sheet on the inside of said window, and



g) means under said cover adjacent said window for holding said translucent sheet adjacent the inside surface of said window whereby said marker contacts the underside of said translucent sheet when said cover closes said open top of said box.

5,333,388

PROBES

Clive Butler, Kings Langley, and Iden Shams, Finchley Central, both of England, assignors to British Technology Group Limited, London, England

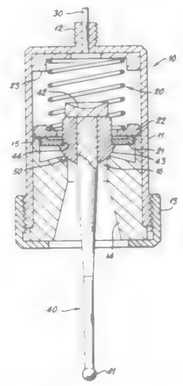
PCT No. PCT/GB91/00059, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO91/10887, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 16, 1991, Ser. No. 119,820

Claims priority, application United Kingdom, Jan. 16, 1990, [illegible]

Int. Cl.[5] G01B *11/03, 5/03*

U.S. Cl. 33—559 11 Claims



1. A probe for position-determining apparatus, said probe comprising:

a housing having a sensing space and an aperture to said sensing space;

a stylus extending out of said sensing space through said aperture;

stylus support means at said aperture;

means for constraining said stylus into low-friction engagement with said support means and generally towards a neutral axis while permitting position-determining displacement of said stylus, said stylus being linked to said constraining means through a lever arrangement, said lever arrangement including:

i.) a first lever extending sideways from and around said stylus;

ii.) a second lever from said first lever to transfer a displacement of said stylus to said constraining means and to transfer a constraint from said constraining means to said stylus; and

iii.) said lever arrangement including an abutment engageable by said second lever.

5,333,389

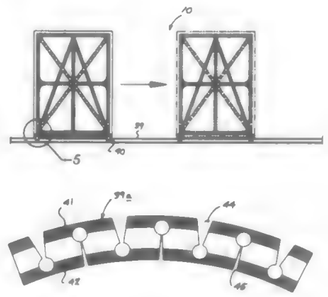
LETTER GUIDE APPARATUS

Robert P. Carroll, 9409 Sharondale Rd., Calimesa, Calif. 92320

Filed Oct. 4, 1993, Ser. No. 130,704

Int. Cl.[5] B43L *13/20*

U.S. Cl. 33—564 1 Claim



1. A letter guide apparatus, comprising,

a board member, having a top wall spaced from a bottom wall, a first side spaced from a second side, and a first end spaced from a second end, including a first linear track having first openings directed therethrough, with said first linear track extending along said first side, the apparatus further including a second linear track, a third linear track, a fourth linear track, a fifth linear track, and a sixth linear track,

the third linear track parallel to said first linear track and coextensive therewith extending along said second side coextensive with said first linear track, and

the second linear track extending along said first end orthogonally oriented relative to said first track and said third track, and

the fourth linear track extending along said second end parallel to said second track, with said fourth track extending between said first track and said third track, and

a first arcuate track extending between said first linear track and said second linear track, and a second arcuate track extending from said second linear track to said third linear track, and a third arcuate track extending from said third linear track to said fourth linear track, and a fourth arcuate track extending from said fourth linear track to said first linear track, said second linear track having second openings projecting therethrough, said third linear track having third openings directed therethrough, and said fourth linear track having fourth openings therethrough, and said first arcuate track having first arcuate track openings directed therethrough, said second arcuate track having second arcuate track openings directed therethrough, said third arcuate track having third arcuate track openings directed therethrough, and said fourth arcuate track having fourth arcuate track openings directed therethrough, and

the fifth linear track oriented parallel to and positioned between said first linear track and said third linear track, with said fifth linear track medially oriented orthogonally between said second linear track and said fourth linear track, and

the sixth linear track extending orthogonally between said first linear track and said third linear track, and

a fifth arcuate track and a sixth arcuate track extending from said sixth linear track, with said fifth arcuate track and said sixth arcuate track extending to and intersecting the first linear track defining a first T-shaped configuration with said sixth linear track, and

a seventh arcuate track and an eighth arcuate track extending from said sixth linear track and intersecting the third linear track, with the seventh arcuate track and the eighth arcuate track defining a second T-shaped configuration with said sixth linear track, and

a seventh linear track extending from a first intersection of said fifth linear track with said second linear track, with the seventh linear track extending from said first intersection medially intersecting the fourth arcuate track, and an eighth linear track extending from said first intersection and medially intersecting the third arcuate track, and a ninth linear track extending from and intersecting the first arcuate track and extending to and intersecting the third arcuate track and the eighth linear track, and a tenth linear track extending from and medially intersecting the second arcuate track directed through and medially intersecting the fourth arcuate track, and

the fifth linear track includes fifth openings, the sixth linear track includes sixth openings, the seventh linear track includes seventh openings, the eighth linear track includes eighth openings, the ninth linear track includes ninth openings, the tenth linear track includes tenth openings, the fifth arcuate track includes fifth arcuate track openings, the sixth arcuate track includes sixth arcuate track openings, the seventh arcuate track having seventh arcuate track openings, and the eighth arcuate track having eighth arcuate track openings directed therethrough, and

the board member second end has a plurality of wheel support flanges, with each of said wheel support flanges rotatably mounting a wheel member thereon, and a guide track, with each wheel member received within said guide track in a rotative relationship, and

said guide track includes a guide track first side and a guide track second side, with the guide track first side including a row of first keyhole slots directed into said guide track from said guide track first side, and a row of second keyhole slots directed into the guide track from the guide track second side.

5,333,390

ABSOLUTE MEASUREMENT SCALE SYSTEM

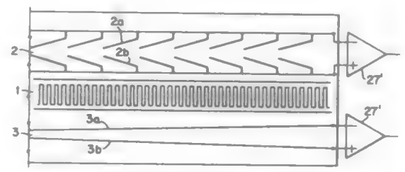
Bo Petterson, Torshälla, and Carl E. Gustafsson, Eskilstuna, both of Sweden, assignors to C E Johansson AB, Eskilstuna, Sweden

Filed Jun. 25, 1993, Ser. No. 82,455

Claims priority, application Sweden, Jun. 29, 1992, 9202005-6

Int. Cl.[5] G01B *3/02*

U.S. Cl. 33—706 10 Claims



1. A scale system comprising: at least one scale extending

VOL 1165 ISS 1 AG 2 1994 UMI

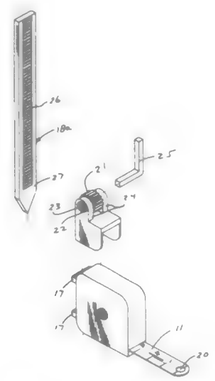
along a measuring length, at least one measuring slide which is movable in relation to the scale along a direction of movement, a fine sensor for measuring absolute position values within distance intervals lying along the scale, a coarse sensor for measuring the absolute position values with regard to an interval within which the fine sensor is located at a particular moment, and a signal processing unit for receiving position signals, wherein each scale includes scale electrodes which are disposed in a predetermined pattern and which coact with measuring electrodes mounted for movement with the measuring slide, and including a power supply for providing a supply voltage to measuring electrodes carried by the measuring slide for capacitive measurement of position, wherein each scale further includes at least one rough scale having a plurality of scale electrodes that extend at a predetermined acute angle relative to the direction of movement of the measuring slide, wherein the measuring electrodes extend at the same predetermined acute angle relative to the direction of slide movement as the scale electrodes, whereby a given linear displacement of the slide in said slide movement direction results in a corresponding linear displacement of the measuring slide electrodes relative to the scale electrodes of the rough scale in a direction perpendicular to the acute angle between the scale electrodes and the direction of movement of the slide.

5,333,391

GARDEN MARKER APPARATUS

Ann Eldridge, and Henry V. Eldridge, both of 385 Otis Rd., Coldwater, Mich. 49036

Filed Sep. 13, 1993, Ser. No. 120,065
Int. Cl.[5] G01B *3/10*
U.S. Cl. 33—760 **1 Claim**



1. A garden marker apparatus, comprising,

a flexible tape housing having a front wall spaced from a rear wall, a top wall spaced from a bottom wall, with a flexible measuring tape retractably mounted within the housing through the front wall, with the measuring tape having a free distal end, the free distal end including an opening directed therethrough,

[and]

the housing rear wall including a plurality of spaced, parallel rigid loops,

[and]

a first flat post slidably directed through the rigid loops, and

a second round post slidably received through said opening, [and]

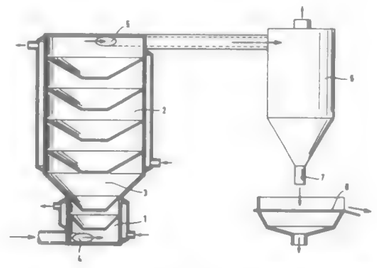
spaced support plates fixedly mounted to the top wall extending orthogonally therefrom, with an axle rotatably mounted through the support plates, with the axle having a drive socket received into said axle, and a drive tool arranged for reception within said drive socket, and a rotatable gear member fixedly mounted to said axle rotatable therewith, with the first flat post including a first post front wall in facing relationship relative to the gear member, and the first post front wall including spaced parallel ribs arranged for engagement with the gear member.

5,333,392

PROCESS AND APPARATUS FOR THERMAL TREATMENT OF A MIXTURE OF SOLID SUBSTANCES AND GASES

Christoph Heiaze, Burghausen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 21, 1992, Ser. No. 994,203
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1991, 4142926
Int. Cl.[5] F26B *3/10*
U.S. Cl. 34—363 **10 Claims**



1. A process for thermally treating a mixture of solids and gases comprising the steps of tangentially introducing gases into an axially symmetrical vessel at a lower part of the vessel, adding solids to the gases immediately after or before entry of the gases into the vessel to thereby form a mixture of solids and gases, heating the mixture of solids and gases by a heated shell surrounding the vessel, directing a stream of solids and gases within the vessel from bottom to top in at least two substantially closed horizontal stacked flow rings, transporting the stream of solid substances and gases from one flow ring to the next flow ring above in a concentric internal zone of the flow rings, withdrawing the mixture of solids and gases from an upper part of the vessel, and wherein the mixture of solids and gases is introduced as a pneumatically transportable mixture into a zone having high radial velocity and subsequently transporting the mixture into a zone having reduced radial velocity.

5,333,393

SHOE RETAINING APPARATUS AND METHOD

Tyrone Hill, 2213 W. Spaulding, Dixmoor, Ill. 60426, and Larry D. Franklin, 19427 Oak Ave., Country Club Hills, Ill. 60478

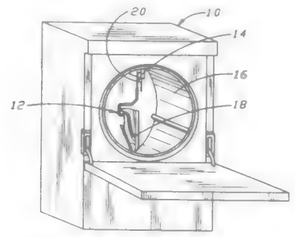
Filed Jun. 11, 1993, Ser. No. 75,661
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—440 **20 Claims**

16. A method for releasably securing a shoe within a clothes dryer having a rotatable chamber, comprising the steps of:

inserting at least a portion of a shoe holder in an inside portion of the shoe;

placing a toe member in an inner toe region of the shoe;

placing a heel member at an inner heel region of the shoe; and



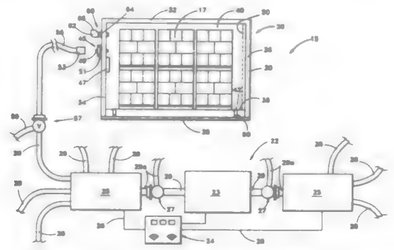
releasably securing the shoe holder to the rotatable chamber of the clothes dryer.

5,333,394

CONTROLLED ATMOSPHERE CONTAINER SYSTEM FOR PERISHABLE PRODUCTS

Robert W. Herdeman, Loveland; Taras A. Kowalczyn, Cincinnati, both of Ohio; Charles R. Graham, Long Beach, Miss., and John Herzstein, Harleysville, Pa., assignors to Chiquita Brands, Inc., Cincinnati, Ohio

Filed Jun. 17, 1993, Ser. No. 79,357
Int. Cl.[5] F26B *3/00, 21/00*
U.S. Cl. 34—467 **21 Claims**



1. A controlled atmosphere container system for shipping and storing perishable products, wherein said container system comprises a plurality of individual, transportable containers to be connected from time to time with a central source for providing a controlled atmosphere to connected containers, said system further comprising in combination:

a central source of controlled atmosphere to be supplied to at least one container;

each container further comprising a housing defining a storage volume for perishable products which is substantially air tight, at least one door member which can be opened for loading/unloading procedures and sealed for storage and shipping procedures, and an input port on said housing for detachably and selectively providing fluid connection between said storage volume and said central source for providing a controlled atmosphere thereto; and

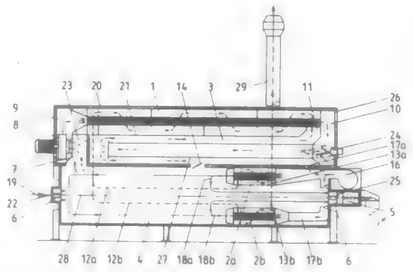
a distribution control unit having means for controlling the distribution of said controlled atmosphere from said central source to at least one connected container in accordance with a predetermined supply control program, said supply control program including subroutines for implementing a plurality of predetermined control modes, including at least two of Pull-Down High Priority Mode, Pull-Down Low Priority Mode, Maintenance Mode, Quick Cycle Low Priority Mode, and Quick Cycle High Priority Mode.

5,333,395

DRYING APPARATUS

Istvan Bulcsu, Langenfeld, Fed. Rep. of Germany, assignor to VITS Maschinenbau GmbH, Langenfeld/Rhld., Fed. Rep. of Germany

Filed Jul. 30, 1993, Ser. No. 100,576
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1992, 4226107
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—79 **8 Claims**



1. A drying apparatus for continuous product webs which contain solvents becoming volatile during drying, the drying apparatus comprising a dryer having means for transporting a treatment medium, an inlet slot and an outlet slot, and nozzle boxes provided at both sides of said inlet slot and said outlet slot; a cooling tunnel directly connected with said dryer; a combustion chamber for thermal combustion of a solvent which becomes volatile during drying; a first heat exchanger and a second heat exchanger, each having a primary side and a secondary side; a chimney; a waste gas channel extending from said dryer through said secondary side of said first heat exchanger to an inlet of said combustion chamber and then from an outlet of said combustion chamber through said primary side of said first heat exchanger and said primary side of said second heat exchanger to said chimney; a suction tube extending from said cooling tunnel; a conduit connected with said nozzle boxes through said secondary side of said second heat exchanger provided for pre-heated treatment air, said outlet of said combustion chamber being provided with a connection to said dryer, and said suction tube being provided with a suction blower which is connected at a pressure side with said secondary side of said second heat exchanger.

5,333,396

DRYING APPARATUS HAVING A ROTARY SPIRAL BLADE AND A BAFFLE PLATE IN OPPOSITION THERETO

Masao Kanai, 18-10 Nagatasannoudai, Minami-ku Yokohama-shi, Japan

Filed Oct. 13, 1992, Ser. No. 959,657
Claims priority, application Japan, Oct. 16, 1991, 3-092556[U]
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] F26B *17/12*
U.S. Cl. 34—166 **16 Claims**

1. A drying apparatus for removing moisture content from a substance to be dried, comprising:

a drying vessel to contain said substance, said vessel having an inner wall, a heat conduction surface on said inner wall for transmitting heat to said substance;

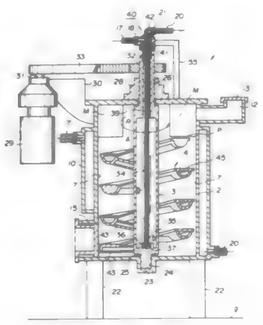
circulating rotary means for moving said substance within said vessel, thereby increasing the efficiency with which said substance can be brought into contact with said heat conduction surface, said circulating rotary means including:

VOL 1165 ISS 1 AG 2 1994 UMI

a rotary shaft vertically extending in said vessel in the direction of gravity, and

a spiral blade integrally connected to and wound around said rotary shaft, said spiral blade having a flat upper surface, on which said substance is conveyed from the lower end of said spiral blade to the upper end thereof, and means for permitting heating medium to flow inside the hollow space of said spiral blade,

whereby rotation of said rotary shaft and hence said spiral



blade may cause said substance to rise up in the direction of gravity while sliding on said flat upper surface of said spiral blade and said substance may come in contact with said heat conduction surface while being circulated in said drying vessel; and

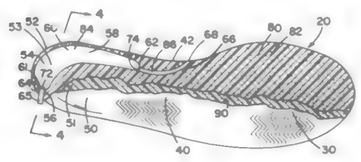
means provided in opposition to an upper end of said flat upper surface of said spiral blade for forcing said substance off the upper end of said flat upper surface to fall down through a falling space defined by said circulating rotary spiral blade.

5,333,397

INFLATABLE VENTILATING INSOLE

Duane D. Hausch, Red Wing, Minn., assignor to Red Wing Shoe Company, Inc., Red Wing, Minn.

Filed Feb. 12, 1993, Ser. No. 16,964
Int. Cl.[5] A43B *7/06*
U.S. Cl. 36—3 B 5 Claims



1. An insole for ventilating a shoe for a person having a heel, the show having an inner and an outer environment, said insole comprising:

(a) fore, arch, and heel portions, the heel portion having a generally centrally located heel support area, a peripheral edge, and peripheral area extending therebetween the peripheral area of the heel portion including rear and inner peripheral portions;

(b) an inflatable elastic bladder formed primarily along the peripheral area substantially along the rear and inner peripheral portions and being generally of a kidney shape in a plane extending through the peripheral edge of the heel portion, the bladder having an inlet port and a discharge port and being constructed and arranged to be compressed by the heel of the person, and to reinflate when the heel is lifted;

(c) an air intake passage in fluid communication with the inflatable elastic bladder at the inlet port and vented to the outer environment of the shoe;

(d) at least one air exhaust passage in fluid communication with the inflatable elastic bladder at the discharge port;

(e) at least one ventilating capillary opening from the air exhaust passage to the inner environment of the shoe; and

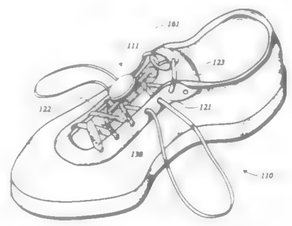
(f) valve means for controlling air flow from the outer environment to the ventilating capillary, the valve means cooperating with the inflatable elastic bladder to pump air out of the ventilating capillary upon compression of the bladder and to draw air n through the air intake passage upon reinflation of the bladder.

5,333,398

LACE FASTENING CLEAT AND SHOE

Young S. Seo, 2800 Smith Rd., Fortson, Ga. 31808

Continuation-in-part of Ser. No. 780,714, Oct. 21, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 972,963
Int. Cl.[5] A43B *11/00*
U.S. Cl. 36—50.1 11 Claims



1. A fastening cleat for securing laces of a shoe, said fastening cleat comprising:

a first portion adapted to be secured over the shoe;

a second portion mounted over said first portion for defining a lace receiving opening between said first and second portions;

a lace retaining member positioned on one of said first and second portions and extending toward the other of said first and second portions; and

said second portion being flexible relative to said first portion to allow said first and second portions to move apart from one another adjacent said lace retaining member in response to the laces being pulled for winding and unwinding the laces about said fastening cleat;

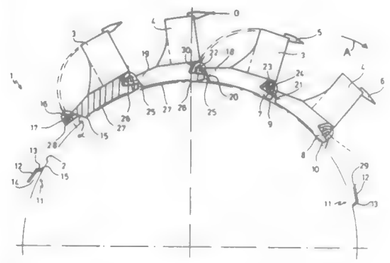
wherein said first portion is generally elongate and is adapted to be positioned substantially between the vamps of the shoe and wherein said first portion comprises at least one opening transverse to the elongation for receiving a lace therethrough for securing said fastening cleat over the tongue of the shoe.

5,333,399

FASTENING OF THE BUCKETS AND POSSIBLY ALSO THE SKIM CUTTERS ON CUTTING WHEELS

Joachim Mett, Lübeck, Fed. Rep. of Germany, assignor to O&K Orenstein & Koppel AG, Berlin, Fed. Rep. of Germany

PCT No. PCT/EP90/01969, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO91/13219, PCT Pub. Date Sep. 5, 1991
PCT Filed Nov. 17, 1990, Ser. No. 779,010
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1990, 4005617
Int. Cl.[5] E02F *9/28, 5/08*
U.S. Cl. 37—455 9 Claims



1. A digging wheel assembly comprising

(a) a supporting wheel having a peripheral zone and a rotary working direction;

(b) a plurality of receiving elements affixed to said supporting wheel in said peripheral zone in a spaced, circumferential distribution; each said receiving element including means for defining a receiving pocket and a receiving slot;

(c) a plurality of digging tool components disposed along the peripheral zone of said supporting wheel in a circumferential distribution; each said digging tool component being disposed between two circumferentially adjoining said receiving elements; one of said two adjoining receiving elements being a leading receiving element and one of said two adjoining receiving elements being a trailing receiving element as viewed in said rotary working direction; each said digging tool component including

(1) a leading part extending from a front end of the digging tool component in said rotary working direction and being accommodated in the receiving pocket of said leading receiving element; and

(2) a trailing part extending from a rear end of said digging tool component against said rotary working direction and being accommodated in said receiving slot of said trailing receiving element; said receiving elements forming securing means for removably affixing said digging tool components to said supporting wheel.

5,333,400

COUPLING OF DRIVE SYSTEMS TO AN ACCESSORY OR AN EXCAVATOR OF THE LIKE

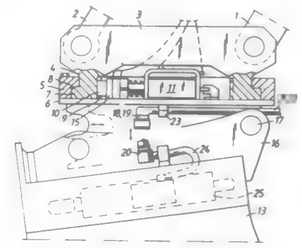
John T. Sonerud, Vinterviigen 30, S-824 00 Hudiksvall, Sweden

PCT No. PCT/SE90/00495, § 371 Date Jan. 13, 1992, § 102(e) Date Jan. 13, 1992, PCT Pub. No. WO91/01414, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 17, 1990, Ser. No. 809,481
Claims priority, application Sweden, Jul. 18, 1989, 8902561-3
Int. Cl.[5] B66C *23/00*
U.S. Cl. 37—468 3 Claims

1. The combination of an accessory for an excavator and a coupling device which is attachable to an arm of an excavator for connecting the accessory to the excavator,

said accessory including a first support member which includes first and second mounting means and first hydraulic lines having first hydraulic coupling means, and

said coupling device including a base element which includes third and fourth mounting means and second hydraulic lines having second hydraulic coupling means, means for immovably mounting said second hydraulic lines on said base element, said third and fourth mounting means of said coupling device being cooperable with said first and second mounting means of said accessory and said second hydraulic coupling means of said coupling device being cooperable with said first hydraulic coupling means of said accessory such that said first mounting



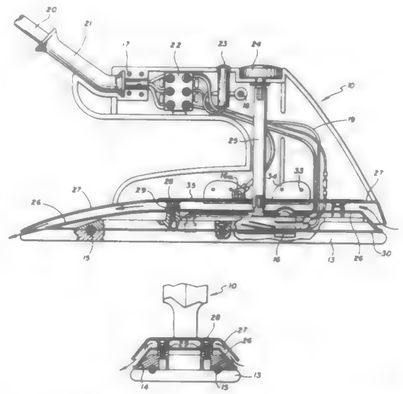
means of said accessory can be pivotably connected to said third mounting means of said coupling device and thereafter said accessory can be pivoted about said third mounting means until said second mounting means becomes connected to said fourth mounting means, wherein said first hydraulic coupling means will become connected to said second hydraulic coupling means, thereby enabling drive fluid to be delivered from said coupling means to said accessory.

5,333,401

CARPET SEAMING IRON WITH AIR GAP BETWEEN COOLING PLATES

James H. Klein, Fontana, Calif., assignor to Roberts Consolidated Industries, Inc., City of Industry, Calif.

Filed Feb. 1, 1993, Ser. No. 11,753
Int. Cl.[5] D06F *75/30*
U.S. Cl. 38—89 2 Claims



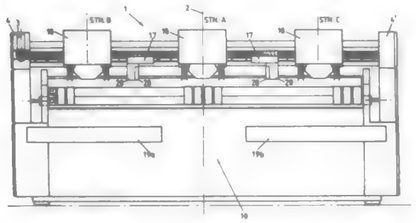
1. A cooling structure for an electric carpet seaming iron having a sole plate, a heater carried at the sole plate, an electric circuit for the heater, and a housing mounted on the sole plate, including in combination:

a lower flow path defining sheet;

VOL 1165 ISS 1 AG 2 1994 UMI

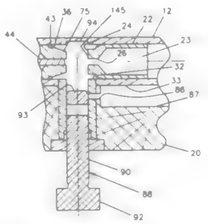
an upper flow path defining sheet; and
means for mounting said lower and upper sheets on said sole plate with a substantially uniform spacing between said lower and upper sheets,
width said lower sheet spaced upward from said sole plate and engaging said sole plate around the periphery of said lower sheet,
with the periphery of said upper sheet overlying the periphery of said lower sheet defining an air flow path over the entire lower sheet,
with said sheets being generally flat from front to rear and side to side, with downwardly sloping leading, side and trailing edges,
with said sole plate and lower and upper sheets rectangular in plan form,
with the length to width ratio of said sheets in the range of about 3 to 1 to about 4 to 1,
with the ratio of the overall height of said iron to the height of said sole plate and lower and upper sheets in the range of about 3 to 1 to about 4 to 1,
with the ratio of the overall width of said sole plate and lower and upper sheets to the width of said housing in the range of about 1½ to 1 to about 3 to 1, and
with said housing unit having a neck portion of reduced width where said housing joins said upper sheet.

5,333,402
SHEET CORNER TRANSFER SYSTEM
Henry J. Weir, Chepstow, England, assignor to Wecotec, Ltd., Chepstow, England
Filed Jun. 29, 1992, Ser. No. 905,935
Claims priority, application United Kingdom, Jun. 28, 1991, 9114002; Dec. 20, 1991, 9127314; Jun. 10, 1992, 9212275
Int. Cl.[5] B65H *7/02;* **D06F** *67/04*
U.S. Cl. 38—143 **26 Claims**



1. A sheet spreader for a sheet feed apparatus comprising:
at least one pair of sheet clamps each having a pair of separable jaws to receive lengths of the upper extremities of the side edges of a sheet adjacent one of the corners of the sheet to be spread;
means for moving each pair of clamps between adjacent positions at a transfer station where said sheet edges are received and spaced apart locations to spread the sheet therebetween;
a pair of clipping means at a loading station for suspending said sheet adjacent the upper corners thereof, with said upper extremities of the side edges of the sheet located for transfer to the open jaws of a pair of said clamps, each of said sheet clipping means including at least a first section with sheet gripping means for releasably holding a portion of said sheet adjacent a corner thereof and spaced from the side edges of the sheet, and a second section for releasably presenting the associated side edge of the sheet to the spaced apart jaws of the associated clamp; and
means for effecting the transfer of said upper extremities of the side edges adjacent the corners of a sheet to the separated jaws of a pair of said clamps at said transfer station while the associated first sections of the clipping means hold said sheet portions and for releasing said first section of each clipping means after the associated clamp jaws are closed, to allow the end of the sheet to be spread by the clamps for entry to the sheet feed apparatus; and
means for opening each pair of said clamp jaws when delivered to a transfer station and closing the clamp jaws when the upper extremities of the side edges of a sheet are delivered thereto.

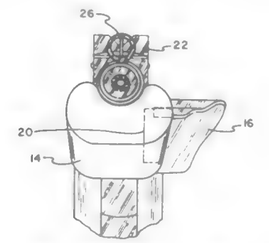
5,333,403
MUZZLE LOADING RIFLES
Ralph D. Peifer, R.R. 2, Box 155A, Nokomis, Ill. 62075
Continuation-in-part of Ser. No. 995,140, Dec. 22, 1992. This application Jul. 9, 1993, Ser. No. 89,371
Int. Cl.[5] E41A *35/00*
U.S. Cl. 42—69.02 **5 Claims**



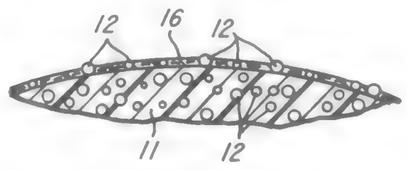
1. A gun comprising in combination
a tubular barrel having an outer wall and an inner axial bore,
a hammer movable from a cocked position to a fired position,
spring means for urging said hammer toward said fired position,
said outer wall of said barrel having an aperture therein opening into said bore, said aperture having a given diameter,
a primer holder having an elongate body and having a first end and having an annular groove around said first end,
means for retaining a primer on said first end of said primer holder,
said elongate body and said first end each having a width having dimensions less than said diameter of said aperture,
a wall transverse at an end of said barrel,
said wall having a flash hole extending therethrough, and
a nipple extending rearwardly of said wall and having an outer dimension less than a width of said groove such that said nipple will fit within said groove to retain said primer holder within said aperture.

5,333,404
LONG GUN STABILIZER
Linda S. Lingyak, 117 Kenilworth Dr., Greenwood, S.C. 29649
Filed Jul. 12, 1993, Ser. No. 89,282
Int. Cl.[5] F41C *23/12*
U.S. Cl. 42—72 **8 Claims**

1. A new and improved stabilizer for a gun that has a stock, said apparatus comprising:
a rigid panel element connected to a side of the stock, said rigid panel element projecting outward from the side of the stock, said rigid panel element positioned on the side of the stock such that a hand of a user can be placed under said rigid panel element, and such that said rigid panel element can rest on the hand of the user, whereby the gun is stabilized on the hand of the user, and
means for connecting said rigid panel element to the stock, wherein said means for connecting said rigid panel element to the stock include a channel in the stock which receives an edge portion of said rigid panel element, said channel having a contour complimentary to the contour of said rigid panel element, said contour of said rigid panel element and said channel being irregular ergonomically conform to the curvature of a portion of the human hand.

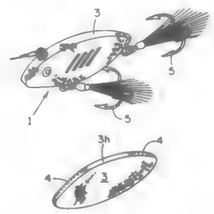


5,333,405
SOFT PLASTIC FISHING LURES CONTAINING MICROENCAPSULATED LIQUID FISH ATTRACTANT
Thomas J. Bowles, P.O. Box 6034, Dayton, Ohio 45405
Filed Jan. 8, 1993, Ser. No. 2,207
Int. Cl.[5] A01K *85/01*
U.S. Cl. 43—42.06 **12 Claims**



11. A soft heavily plasticized molded fishing lure containing a major proportion of a heavily plasticized vinyl plastisol and a minor proportion of particulate individual microcapsules having a particle size ranging from about 5 microns to about 100 microns and comprised of a cell wall of coacervated natural or synthetic polymer containing liquid fish attractant associated in a tacky, viscous, continuous, water-soluble polymeric binder.

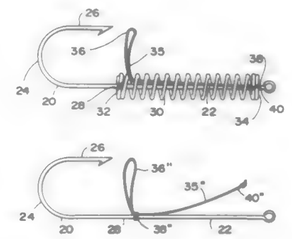
5,333,406
REPLACEABLE COVER FOR FISHING LURES
David Wylie, Rte. 1, Box 400, Devine, Tex. 78016
Filed Jun. 2, 1993, Ser. No. 71,072
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.09 **1 Claim**



1. A fishing lure comprising a non-decorated bait-shaped body;

a resilient cloth covering for snugly enclosing said bait body;
said cloth covering have a shade generally conforming to all the surfaces of said bait body but sufficiently smaller than said bait body to resiliently expand said cloth covering when applied over said bait body;
said cloth covering having a limited length slit formed therein to permit said bait body to be inserted into, or removed from, said cloth covering by resilient expansion of said cloth covering:
the external surface of said cloth covering being decorated in a fish attracting covering;
said bait body having opposed side walls, a top wall and a bottom wall, and said cloth covering comprises a single sheet of resilient cloth cut along its edges to define two side panels foldable about a center panel to define side wall portions, top wall portions and bottom wall portions generally shaped to snugly cover said side walls, top wall and bottom walls of said bait body; and
means for securing only a limited length of one of said bottom wall portions and said top wall portions together, thereby defining said slit permitting insertion and removal of said bait body relative to said resilient cloth covering.

5,333,407
LIVE BAIT FISH HOOK
Selma J. Merritt, 489 Waccamaw Shores Rd., Lake Waccamaw, N.C. 28450
Filed Jul. 2, 1993, Ser. No. 85,075
Int. Cl.[5] A01K *83/06*
U.S. Cl. 43—44.4 **7 Claims**



1. In a fish hook having a shank and a barbed curved end connected to the shank with the barbed end positioned directly opposite a first location on said shank, the improvement comprising:
a coil spring axially positioned on said shank and defining first and second ends;
said first end of said spring fixedly attached to said shank at substantially said first location on said shank; and
a flexible line positioned axially within said spring and defining a looped end and first and second ends, said looped end of said line projecting through and between predetermined adjacent coils of said spring substantially at said first location on said shank and said first and second ends of said line connected to said second end of said spring.

5,333,408
TACKLE BOX WITH INTERIOR ILLUMINATION
David O. Simmons, 16609 Black Kettle Dr., Leander, Tex. 78641
Filed Mar. 4, 1993, Ser. No. 26,529
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—54.1 **20 Claims**

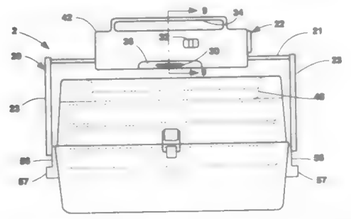
7. A portable container having an interior illuminating light for illuminating the interior of said container and a flashlight for illuminating the path of a person carrying the portable container, said portable container comprising:

VOL 1165 ISS 1 AG 2 1994 UMI

a box having facing front and rear walls, facing end walls, and a bottom, said walls being integral to said bottom,

a lid having means for hinging said lid to a wall, wherein said lid is movable between a container closed position where said lid overlies and closes said box, and an open position where said lid is disposed such that access may be had to the interior of said container, said box and said lid jointly defining a substantially enclosed storage compartment when said lid is in the closed position,

a pivotal handle attached to said box for carrying the box and attached lid, said handle including a housing,



said housing containing an interior illuminating light, a flashlight, and a power supply for said lights,

said interior illuminating light emitting a beam of light generally transverse to said handle, said interior illuminating light directly illuminating the storage compartment of said container when said lid is in an open position,

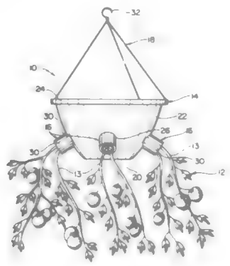
said flashlight emitting a beam of light generally parallel to said handle, said flashlight illuminating the path of a person carrying the portable container.

5,333,409

HANGING POT FOR GROWING PLANTS

Frank P. Mendes, 905 N. Main Rd., P.O. Box 678, Jamestown, R.I. 02835

Filed Dec. 15, 1992, Ser. No. 990,431
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—67 **7 Claims**



1. A hanging pot for growing plants comprising:

a cultivating pot having an outer wall;

a plurality of spaced apertures formed in said outer wall;

a plurality of tubing segments mounted in said apertures, each of said tubing segments having a first portion projecting inwardly into said pot beyond the inner surface thereof and a second portion projecting outwardly of said pot; said second portion of said tubing segments also extending downwardly from said pot;

means for hanging said pot from an overhead structure,

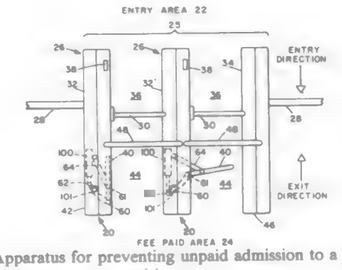
said plants including a root portion and a stalk portion, said root portion being located within said pot, and said stalk portion extending outwardly of said pot through one of said tubular inserts so as to hang downwardly from said pot.

5,333,410

CONTROLLABLE BARRIER SYSTEM FOR PREVENTING UNPAID ADMISSION TO A FEE-PAID AREA

Cyril F. Tetherton, Poway, Calif., assignor to Cubic Automatic Revenue Collection Group, San Diego, Calif.

Continuation of Ser. No. 633,602, Dec. 19, 1990, abandoned. This application Jan. 21, 1993, Ser. No. 6,979
Int. Cl.[5] E05B *65/00*
U.S. Cl. 49—35 **13 Claims**



1. Apparatus for preventing unpaid admission to a fee-paid area, the apparatus comprising:

an elongate passageway through which persons seeking to gain admittance to the fee-paid area must pass in an entry direction and through which persons seeking to exit the fee-paid area must pass in an exit direction, the passageway having opposite, first and second ends;

a turnstile positioned in said passageway;

turnstile locking means for normally locking said turnstile against rotation in said entry direction;

automatic fee collecting means for collecting fees from persons seeking to gain admittance to the fee paid area, including means for producing a control signal indicating that the required fee has been paid;

said turnstile locking means being responsive to a control signal from said fee collecting means to release the turnstile locking means on detection of payment of the required fee;

barrier means in said passageway behind said turnstile and spaced a predetermined distance from said turnstile in said entry direction for preventing entry to the fee-paid area in the event that no fee is paid, the barrier means including:

a normally open movable physical barrier that controllably blocks said passageway, the physical barrier extending from a height sufficiently low that persons cannot crawl under the physical barrier to a height sufficiently high that persons cannot vault over the physical barrier; the barrier being movable between an open position in which it does not block the passageway and a closed position in which it blocks the passageway, and normally being located in the open position;

a barrier actuator system that automatically moves the physical barrier from the open position in which it does not block the passageway to the closed position in which it does block the passageway;

sensor means in the passageway between the turnstile and the physical barrier for detecting the presence of a person in the passageway to detect attempted entry into the fee-paid area through the passageway without payment of the required fee; and

control means for operating the barrier actuator to move the barrier from the open position to the closed position, the control means requiring at least two control conditions to operate, the at least two control conditions including a signal from the sensor means indicating the

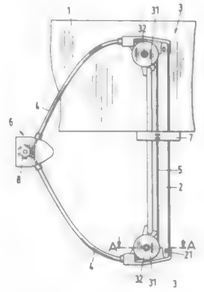
presence of a person in the passageway between the turnstile and the physical barrier and an absence of a control signal from the automatic fee collecting means indicating that the required fee has been paid.

5,333,411

CABLE WINDOW WINDER, PARTICULARLY FOR INSTALLATION IN MOTOR VEHICLES

Herbert Tschirschwitz, Coburg, and Wolfgang Jäger, Untersiemau, both of Fed. Rep. of Germany, assignors to Brose Fahrzeugteile GmbH & Co. KG, Coburg, Fed. Rep. of Germany

Filed Dec. 28, 1992, Ser. No. 996,910
Int. Cl.[5] E05F *11/48*
U.S. Cl. 49—352 **19 Claims**



1. Cable window winder, particularly for installation in vehicle for raising and lowering a window pane of a vehicle, the vehicle having a vehicle body, the vehicle body comprising at least one sheet metal plate forming a part of the vehicle body, and said window winder consisting of:

at least one guide rail with a slide element guided therein and connectable with the window pane;

at least two holding angles connected to the guide rail and each supporting a guide pulley; and

fastening means for fastening the cable window winder directly to the sheet metal vehicle plate, wherein the fastening means are each mounted in the rotary axis of the guide pulley and are configured to be connected directly to the sheet metal vehicle plate to mount the guide pulley directly to the sheet metal vehicle plate.

5,333,412

APPARATUS FOR AND METHOD OF OBTAINING PROCESSING INFORMATION FOR FITTING LENSES IN EYEGLASSES FRAME AND EYEGLASSES GRINDING MACHINE

Yoshinori Matsuyama, Gamagori, Japan, assignor to Nidek Co., Ltd., Gamagori, Japan

Continuation-in-part of Ser. No. 741,899, Aug. 8, 1991, abandoned. This application Dec. 21, 1992, Ser. No. 994,160
Claims priority, application Japan, Aug. 9, 1990, 02-213416
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.71 **9 Claims**

1. An apparatus for obtaining processing information for fitting lenses in an eyeglass frame, comprising:

(a) a measurement means for measuring the three-dimensional configuration of the eyeglass frame,

said measurement means including a holder means for holding the eyeglass frame, a gauge head to be closely fitted in a groove portion of the eyeglass frame, and a detection means for detecting a radius vector direction of the gauge head and displacements thereof in the radius vector direction and the vertical direction;

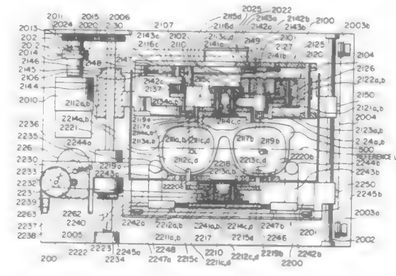
(b) a first calculation means for calculating a distance between the geometrical centers of left and right lens frame portions of the eyeglass frame from the results of detection by said detection means;

(c) an input means for inputting information in relation to an adjustment amount, which includes a pupillary distance measured by a device;

(d) a second calculation means for calculating an apparent adjustment amount of the optical centers of the lenses to be processed from the distance between the geometrical centers obtained by said first calculation means and the information inputted by said input means;

(e) a third calculation means including contact elements to abut against the front and rear surfaces of the lenses to be processed so as to obtain the lens curve from movement amounts of the contact elements at at least four points on the lenses to be processed;

(f) a correction means for correcting errors of said apparent adjustment amount, which are caused by fitting conditions



of the lenses to be processed, on the basis of the following data:

(i) displacement data measured by said measurement means;

(ii) position data of the lens front surface under an apparent fitting condition of the lenses to be processed with respect to the eyeglass frame, the position data being determined based on said displacement data and the apparent adjustment amount calculated by said second calculation means;

(iii) the lens curve obtained by said third calculation means, and

(iv) the pupillary distance inputted by said input means; and

(g) a conversion means for converting the results of detection by said detection means into a predetermined form of processing information on the basis of the corrected adjustment amount obtained by said correction means.

5,333,413

AUTOMATIC WAFER LAPPING APPARATUS

Hiromasa Hashimoto, Fukushima, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 991,797
Claims priority, application Japan, Dec. 18, 1991, 3-353129
Int. Cl.[5] B24B *7/04, 7/22*
U.S. Cl. 51—165.75 **2 Claims**

1. An automatic wafer lapping apparatus comprising:

a lapping assembly consisting of an upper lapping plate, a lower lapping plate and wafer carriers,

a loader assembly provided adjacent to said lapping assembly,

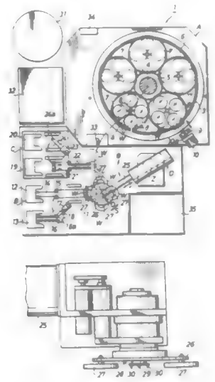
an unloader assembly provided adjacent to said lapping assembly, and

a robot having wafer holder means for holding a plurality of wafers and for transferring the wafers between the loader

VOL 1165 ISS 1 AG 2 1994 UMI

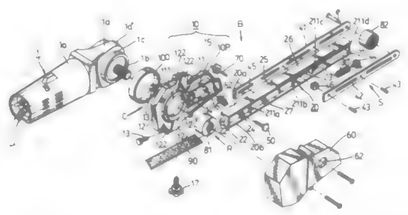
assembly and the unloader assembly and the lapping assembly,

said lapping assembly further includes a position sensor means for detecting the position of the carriers and a means for cleaning the wafer holder means, said robot consists of a single arm member with the wafer holder means being supported at a free end of said single arm member of the robot, said wafer holder means including means to selectively and individually hold a plurality of



wafers wherein said wafer holder means comprises: a rotary disk plate capable of rotating and having a plurality of wafer chucks arranged along a circumference of the disk plate equiangularly about the center thereof; a sensor provided in said rotary disk plate adjacent to said wafer chucks for detecting an angular phase of one of said carriers; and a pair of sensors provided in said rotary disk plate adjacent to said wafer chucks for detecting the center of said one carrier.

5,333,414
SAND BELT DEVICE
Tai-Wang Lee, No. 68-57, Yung-Li Rd., Tai-Ping Hsiang, Tai-chung Hsien, Taiwan
Filed Mar. 1, 1993, Ser. No. 24,603
Int. Cl.[5] B24B *23/06*
U.S. Cl. 51—170 EB **8 Claims**



1. A sand belt device which can be mounted detachably on a body portion of a portable grinding machine, said body portion including a casing, a rotatable shaft which extends out from said casing, and an annular flange which protrudes from said casing and which is disposed around said rotatable shaft, said sand belt comprising:

a positioning member having a front part and a rear part which is fitted tightly and detachably around said annular flange of said body portion of said portable grinding machine, said rear part having a hole through which said rotatable shaft of said body portion passes;

a roller unit including a driven roller and a driving roller which is mounted detachably on said rotatable shaft of said body portion and which is rotatable with said rotatable shaft;

an elongated belt frame having a front end and a rear end that is attached stationary and detachably to said front part of said positioning member, said elongated belt frame further having an elongated first face which extends from said rear end to said front end, and an elongated second face which is opposite to and spaced from said elongated first face;

means for supporting said driven roller so as to position said driven roller in front of said elongated belt frame, said supporting means being mounted movably and detachably to said elongated belt frame; and

an endless sand belt passing over said driving and driven rollers of said roller unit and said elongated first and second faces of said elongated belt frame, said endless sand belt being actuated to rotate by said driving roller;

wherein said rear part of said positioning member includes a clamp mechanism which has a substantially semicircular first member and a substantially semicircular second member, said first member having a front convex side and a rear concave side, said second member being attached adjustably and detachably to said first member in order to clamp tightly said annular flange of said body portion when said first and second members are sleeved around said annular flange, said first and second members defining cooperatively said hole of said rear part therebetween.

5,333,415
PROCESS FOR SEALING A PERFORATED WEB MATERIAL
Bryan E. Humphreys, Heads Nook, England, assignor to Aerospace Systems & Technologies Ltd., Durham, England
Filed Feb. 25, 1992, Ser. No. 841,975
Claims priority, application United Kingdom, Mar. 1, 1991, 9104179.6
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—281 R **9 Claims**

1. A process for shaping a porous sheet of a metal selected from the group comprising titanium and stainless steel, which process comprises blocking the pores of said porous sheet with a particulate material selected from the group comprising yttrium oxide and magnesium oxide, shaping said sheet by heating it and applying a gaseous pressure thereto, and thereafter removing the particulate material by dissolving it in acid, whereby to unblock said pores.

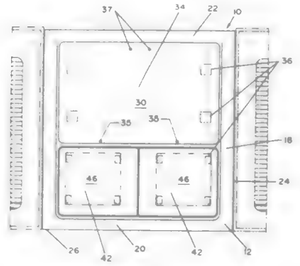
5,333,416
MODULAR WALL-FORMING, SHROUD-ENCLOSING PANEL FOR MOUNTING INTO THE INTERIOR OF AIRCRAFT
Edward D. Harris, Converse; Fred J. Schimmelpfennig, Jr., San Antonio; James F. Badgett, San Antonio, and Jeffrey O. Bonner, San Antonio, all of Tex., assignors to Pat Pyka Design Consultants, Inc., San Antonio, Tex.
Filed Jan. 10, 1992, Ser. No. 819,487
Int. Cl.[5] E04F *19/00*
U.S. Cl. 52—27 **19 Claims**

1. A wall-forming panel for inserting into the interior of an aircraft, the panel comprising:

a frame having a top edge, side edges, and a bottom edge, said frame including an inner surface and an outer surface and defining a cavity therein;

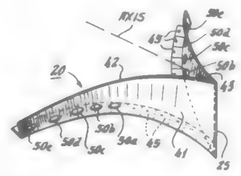
a first shroud dimensioned to fit within at least a portion of the cavity of said frame, movable between a closed position, the closed position for containing said first shroud substantially within the cavity and an open position, the open position for substantially removing said first shroud from the cavity, said first shroud for enclosing a first monitor therein;

a first axle, mountable to said first shroud, for rotatably mounting said first shroud substantially within the cavity of said frame; and



first latch means for positively retaining said first shroud in closed position when said first shroud is in the closed position and for positively retaining said first shroud when said first shroud is in said opened position, said latch means further including release means for releasing said first shroud when positively retained.

5,333,417
LAMINAR FLOW GENERATION DEVICES
Robert J. Demartini, Flat Rock, N.C., assignor to Drainage Products, Inc., John's Island, S.C.
Filed May 14, 1993, Ser. No. 61,022
Int. Cl.[5] E04D *13/00*
U.S. Cl. 52—11 **20 Claims**



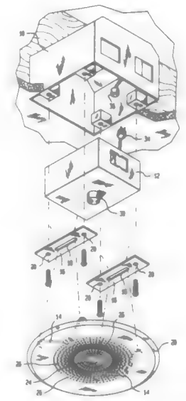
9. A laminar flow generation device comprising

two elongated water redirection surfaces, each of which is joined at one of its ends to an end of the other to form a common leading edge, and the opposite ends of which are spaced apart from each other, said surfaces being substantially symmetrical with respect to a median line between them and being at progressively increasing angles with respect to said median line at corresponding successive points along said median line moving away from said common leading edge,

affixation means for affixing said device to the upper surfaces of associated rain deflectors devices with said median line aligned substantially to the flow path of water traversing said deflector devices and in the flow path of such water,

said redirection surfaces being angularly disposed with respect to said upper surfaces when said device is so affixed to the upper surfaces of associated rain deflectors.

5,333,418
RECESSED SMOKE DETECTOR
Ronald Chambers, 298 Division St., Tuckerton, N.J. 08087
Filed Sep. 2, 1992, Ser. No. 939,134
Int. Cl.[5] G12B *9/00*; **G08B** *17/10*
U.S. Cl. 52—39 **4 Claims**



1. An apparatus for installing a smoke detector substantially flush within a ceiling comprising:

a housing, said housing is a junction box attached within said ceiling, said smoke detector being received in said junction box,

a cover including a plurality apertures therein for allowing smoke to reach said smoke detector;

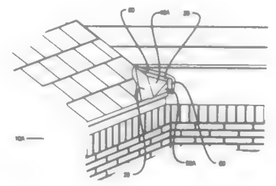
at least two plates, each of which includes a slot therein;

screw means for attaching said two plates to said housing; and

at least two spring-bias, V-shaped clips attached to said cover, said two clips each including two free ends,

wherein the free ends of said clips can be squeezed together and inserted respectively into said slots of said plates after which said clips tend to move in a direction to return to their original shape and wherein said cover is substantially flush with said ceiling and said smoke detector is substantially completely concealed from view when said smoke detector is installed within said ceiling.

5,333,419
WATER DIVERTER FOR SLOPED ROOF FLASHINGS
Andrew J. Hickner, 1271 N. Hwy. 288-B, Richwood, Tex. 77531
Filed May 24, 1993, Ser. No. 65,408
Int. Cl.[5] E04D *13/14*
U.S. Cl. 52—58 **17 Claims**



1. A flashing material for the juncture of a vertical wall and a sloping roof, said flashing material comprising a vertical wall flange for placement on a vertical wall, a sloping roof flange for placement on a sloping roof, and a substantially triangular diverter part,

VOL 1165 ISS 1 AG 2 1994 UMI

said vertical wall flange and sloping roof flange having, when considered as being in an installed position, upper portions and lower portions for placement along the juncture of a vertical wall and a sloping roof,

said vertical wall flange and sloping roof flange lying in planes which are essentially normal to each other and meeting in leak-proof manner at their upper portions along a juncture which extends down to the said diverter part,

said triangular diverter part spanning, in leak-proof manner, the lower portions of the vertical wall flange and the sloping roof flange, in a plane which lies at an obtuse angle to both the planes of the vertical wall flange and the sloping wall flange, with its upper corner joined in leak-proof manner with the lower end of the juncture where said wall flange and roof flange are joined,

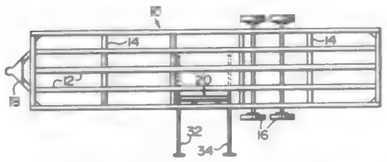
and the two lower corners of the diverter part extending to the lower portions of the wall flange and the roof flange, with one edge of the diverter joined in leak-proof manner to the wall flange and another edge of the diverter joined in leak-proof manner to the roof flange.

5,333,420

RACK AND GEAR MODULAR ROOM EXTENDER

Edward J. Eden, Jackson, Mich., assignor to Barker Manufacturing Co., Inc., Battle Creek, Mich.

Filed Jul. 6, 1992, Ser. No. 908,042
Int. Cl.[5] E04B *1/346*
U.S. Cl. 52—67 **8 Claims**



1. A pre-assembled modular extender for installation as a unit comprising, in combination, a support bracket adapted to be separately mounted as a unit upon primary support structure, said bracket including a pair of substantially parallel elongated spaced guides each having a longitudinal axis, reinforced braces transversely extending between and affixed to said guides maintaining said guides in a substantially rigid parallel spaced relationship and alignment, an elongated slide rod supported within each guide for axial movement therein, each slide rod having a free inner end and an outer end, a slide rod operator affixed to each slide rod, and a reversible slide rod actuator operatively connected to each slide rod operator for selectively translating the associated slide rod in a predetermined axial direction, whereby said support bracket comprises a separate structurally integral unit with respect to the primary support structure maintaining the assembly, rigidity and alignment of said spaced guides.

5,333,421

HOUSING UNIT

John T. McKenna, 352 Atlantic Ave., Clayton, N.J. 08312

Filed Jul. 9, 1993, Ser. No. 87,515
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—86 **14 Claims**

1. A house unit comprising two ends and a length along two sides, the unit comprising:

(A) a skeletal structure comprising:

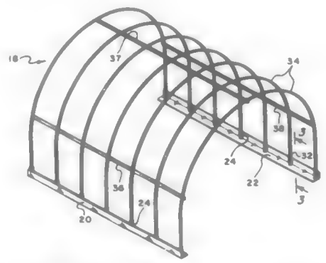
(i) a pair of longitudinal base members aligned lengthwise along each side of the unit, wherein each longitudinal base member comprises an upstanding section along its length,

(ii) a multiplicity of vertical tubular members attached to the upstanding section of the longitudinal base members at intervals spaced apart along the length of the longitudinal base members, each vertical tubular member comprising an open top and an open bottom, wherein the vertical tubular members are spaced apart forming complementary pairs across from each other laterally positioned equidistant along the length of opposite longitudinal base members, and

(iii) a multiplicity of arch shaped rib members each having one end inserted in an open top of a first vertical tubular member and an opposite end inserted in an open top of a second vertical tubular member that is paired with the first vertical tubular member,

(B) two vertical end walls each having a bottom edge and an arch shaped side and top edge, each end wall comprising:

(i) a plurality of integral composite wall sections each comprising:



(a) an outside surface facing outwardly, an inside surface facing inwardly, and a peripheral edge, and

(b) a peripheral flange extending inwardly from the peripheral edge, wherein the peripheral flange comprises at least one vertical section when the composite wall section is disposed vertically, and

(ii) attachment means to attach adjacent vertical sections of juxtaposed composite wall sections,

(C) connection means to connect the end walls to two arch shaped ribs positioned proximate opposite ends of the unit,

(D) a flexible sheet bent in an arch shape to conform against the rib members, the sheet comprising two first edges of a length proximate that of the base members and a width proximate the length of the arch shaped rib members, and

(E) holding means to attach the first edges of the flexible sheet to the skeletal frame proximate opposite base members.

5,333,422

LIGHTWEIGHT EXTENDABLE AND RETRACTABLE POLE

John L. Warren, and James E. Brandt, both of Santa Barbara, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 2, 1992, Ser. No. 984,598
Int. Cl.[5] B66F *11/04*
U.S. Cl. 52—115 **20 Claims**

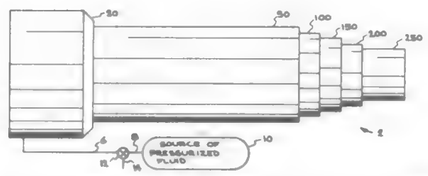
1. A lightweight extendable and retractable telescopic pole apparatus comprising:

(a) a plurality of non-metallic telescoping cylinders comprising a largest cylinder, a smallest cylinder, and one or more intermediate cylinders, and an interior within said telescoping cylinders, with sliding and sealing surfaces between the cylinders;

(b) an end cap and a first plug member in an upper end of said smallest cylinder to thereby seal off said upper end of said smallest cylinder;

(c) a second plug member in a lower end of said largest cylinder to thereby seal off said lower end of said largest cylinder;

(d) means for admitting a fluid pressure into said largest cylinder to thereby cause said telescoping cylinders to slide relative to one another causing said pole apparatus to extend; and



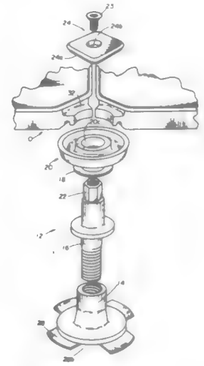
(e) elastomeric means connecting said end cap to a base portion in a bottom portion of one of said one or more intermediate cylinders to urge at least a portion of said plurality of cylinders back into a collapsed position when said fluid pressure in said cylinders is vented.

5,333,423

FLOOR SYSTEM

Robert L. Propst, 18845 NE. 49th Pl., Redmond, Wash. 98052

Filed Dec. 23, 1992, Ser. No. 995,720
Int. Cl.[5] E04B *5/00*
U.S. Cl. 52—126.6 **18 Claims**



1. A floor system comprising:

a pedestal including a base member and a column screw-mounted on said base member for up and down movement responsive to turning of said column relative to said base member about a vertical axis, said column having a head portion adapted to receive a tool for turning said column;

coplaner horizontal panels partly supported on said column, and leaving a top access area to the top of said column such that said column can be turned by said tool for height adjustment relative to said panels and base member, the upper surface of said panels being at a level higher than the upper end of said head portion;

a removable cap overlapping portions of said panels in said access area and flush at the top with surfaces of said panels,

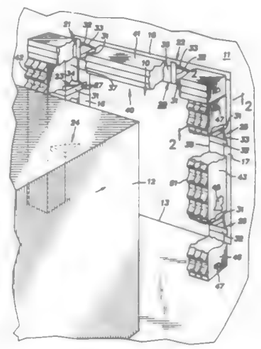
and a hold-down screw extending through said cap into said head portion of the column.

5,333,424

LOADING DOCK DOOR SEAL EXTENDER

Jeffrey R. Chalfant, Olmsted Falls, Ohio, and Kenneth Harvey, Conway, Ak., assignors to Chalfant Sewing Fabricators, Inc., Cleveland, Ohio

Filed Jan. 27, 1993, Ser. No. 9,649
Int. Cl.[5] E04H *14/00*
U.S. Cl. 52—173.2 **4 Claims**



1. In a loading dock seal structure supported along the outside top and sides of a door frame adjacent a loading dock doorway, said structure including a top member and two parallel side members to sealingly engage the top and sides of the end of a truck cargo body backed into loading and unloading position relative to said doorway, the improvement which comprises means for supporting the seal structure in a position spaced from the plane of the outside wall adjacent the doorway, said means including

a plurality of brackets, at least two of which are attached to each of the top and sides of the door frame

each bracket having a longitudinal leg and a lateral leg perpendicular to the longitudinal leg, the longitudinal leg extending perpendicular to the doorway and outwardly therefrom and the lateral leg extending outwardly parallel to the outside wall adjacent the doorway from the outward end of the longitudinal leg,

the lateral legs being adapted to support the top member and side members in their respective position to engage the truck cargo body, and

a top seal strip and two side seal strips attached to the longitudinal legs of said brackets to close and seal the gaps defined by the space between the top and side members of the seal structure and the doorway of the loading dock.

5,333,425

TENSION MEMBRANE STRUCTURE WRINKLE ELIMINATION

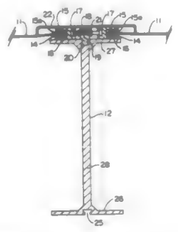
David C. Nickerson, Sanford, Me., and Gregory Parker, Huntington Beach, Calif., assignors to Rubb, Inc., Sanford, Me.

Filed Jan. 7, 1993, Ser. No. 1,439
Int. Cl.[5] E04B *1/12*
U.S. Cl. 52—222 **6 Claims**

1. A construction system for a tension membrane structure provided with a plurality of semi-elastic membranes adjacent to each other, and comprising at least one structural member whose length is greater than said structural member's width and which has a side extending along the length of said structural member comprising two oppositely disposed substantially parallel edges and a centrally disposed slot extending along said side, an adjustable membrane support positioned on said side of said structural member between one edge thereof and

VOL 1165 ISS 1 AG 2 1994 UMI

said centrally disposed slot, said adjustable membrane support having a portion adapted to support and hold the side of a membrane section which is positioned adjacent to a side of said structural member, and said support being provided with adjustable means to draw that portion of said membrane support



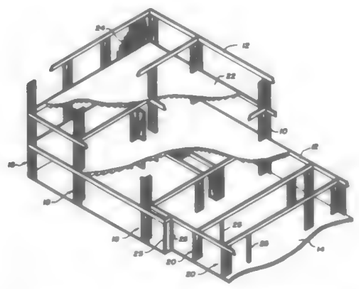
which is supporting and holding the side of said membrane section toward, but not into, said centrally disposed slot in said structural member between said structural member's two sides so that said membrane section will become tightened and wrinkles therein will be minimized or eliminated.

5,333,426

WOOD FRAME CONSTRUCTION SYSTEM WITH PREFABRICATED COMPONENTS

Erol Varoglu, Vancouver, Canada, assignor to Forintek Canada Corporation, Vancouver, Canada

Filed Jan. 6, 1993, Ser. No. 2,354
Int. Cl.[5] E04B *1/18*
U.S. Cl. 52—236.7 **18 Claims**



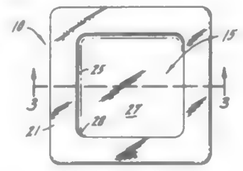
1. A wood frame construction system comprising:
a plurality of prefabricated column components, all having the same height for one storey of construction, the components spaced apart and supporting laminated beams;
each component having at least two laminated vertical column members extending from top to bottom of the component, the vertical column members spaced apart and joined at the top and at the bottom of the component by laminated horizontal members;
at least two laminated diagonal members, each extending from the top of the component adjacent to and attached to a vertical column member, downwards and away from the vertical column member to the bottom of the component, and
the column components attached to the laminated beams by bolts and steel strap connections.

5,333,427

DECORATIVE UTILITARIAN GLASS BLOCK

James M. Uhlik, Wexford, Pa., assignor to Anchor Hocking Corporation, Freeport, Ill.

Filed Nov. 3, 1992, Ser. No. 970,764
Int. Cl.[5] E04C *1/42*
U.S. Cl. 52—306 **5 Claims**



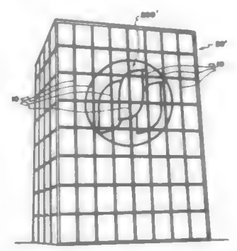
1. A glass block,
said glass block having a one-piece construction,
said glass block being homogeneous in composition,
said glass block comprising only
a continuous central panel, the two surfaces of the central panel being generally parallel to one another; and
a wall peripherally enclosing the central panel,
the central panel and the enclosing wall being disposed substantially perpendicularly to one another,
said central panel being located at the midportion of the enclosing wall,
said enclosing wall having an interior surface extending inwardly substantially perpendicularly to opposite sides of said central panel,
the interior surface of said enclosing wall disposed around the central panel forming a shelf on both said sides of the central panel,
whereby said shelf is accessible by hand from both said sides of the central panel.

5,333,428

METHOD AND APPARATUS FOR CREATING DESIGN INSULATED GLASS

George S. Taylor, and Barry Benedict, both of Salt Lake City, Utah, assignors to Big Unlimited, Salt Lake City, Utah

Continuation-in-part of Ser. No. 703,218, May 20, 1991, abandoned. This application Oct. 28, 1992, Ser. No. 967,584
Int. Cl.[5] E04C *1/42*
U.S. Cl. 52—308 **19 Claims**



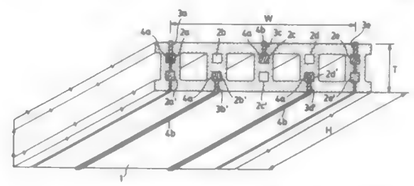
13. In combination, a building defining an array of openings and a plurality of IG units and/or spandrel units collective presenting a decorative image, each unit being secured in at least some of the openings;
each unit comprising:
a periphery;
an exterior lite;
an interior lite spaced from the exterior lite;
an isolated dead air space between the exterior and interior lites, the dead air space bordering directly against both lites and comprising a perimeter;
seal structure between the exterior and interior lites at the periphery bordering against and sealing the perimeter of the dead air space against influent and effluent fluid flow;
at least one lite of several juxtaposed units comprising a plurality of glass sections collectively comprising a continuous asymmetrical pattern comprising said decorative image and substantially disposed in a common plane in spaced edge-to-edge orientation and one-piece preformed H-shaped connectors bridging between and receiving in opposed recesses said spaced glass section edges, at least a plurality of ends of the connectors abutting building structure at the openings;
resilient hinge-forming material interposed between said spaced edges and said recesses, said material comprising a deflectable elastic bonding and sealing interface which resiliently creates and preserves a hermetic seal between the connectors and the associated glass edges continuously preventing influent and effluent fluid flow between the connectors and the associated glass section edges notwithstanding periodic imposition on the glass sections of wind loads and other environment stresses.

5,333,429

MODULAR PANEL OF EXPANDED SYNTHETIC MATERIAL PROVIDED WITH STAGGERED LONGITUDINAL "T"-SHAPED CHANNELS, RECEIVING "T"-SHAPED WOODEN POSTS USEFUL FOR ERECTING WALLS

Piero Cretti, Morbio Superiore, Switzerland, assignor to Plastedil, S.A., Chiasso, Switzerland

PCT No. PCT/EP91/01270, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO93/01371, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 8, 1991, Ser. No. 982,734
Int. Cl.[5] E04C *1/00*
U.S. Cl. 52—309.7 **3 Claims**



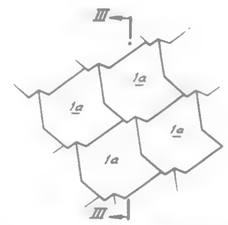
1. A panel for constructing walls comprising a substantially parallelepiped body of an expanded synthetic material, having a standardized thickness, a modularly standardized width and a customized height and having a plurality of channels which extend longitudinally for the entire height of the panel, disposed at regular intervals along said modularly standardized width of the panel, characterized by the fact that the panel is provided with a plurality of channels, regularly spaced and staggered along said width and thickness of the panel and having a T-shaped cross section, open on the adjacent major surface of the panel; said T-shaped open channels receiving therein a wooden post having a mating T-shaped cross section, the stem portion of which projects out of the panel's surface.

5,333,430

PAVING AND WALL TILE

Francisco J. L. Vidal, Urgell, 237, 08036 Barcelona, Spain

Filed Dec. 30, 1992, Ser. No. 998,521
Claims priority, application Spain, Dec. 31, 1991, 9103954
Int. Cl.[5] E04C *2/30*; E04F *13/08*
U.S. Cl. 52—311.2 **9 Claims**



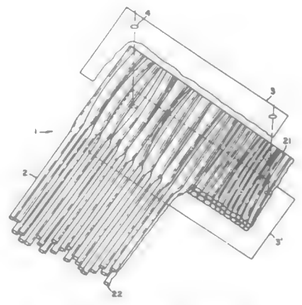
1. A tile for arranging in a plurality of patterns, the tile comprising:
a first and second surface opposite each other, a perimeter of said first and second surfaces being defined by a first side, a second side, a third side, a fourth side, a fifth side, a sixth side, a seventh side, an eighth side, a ninth side, a tenth side, and an eleventh side, said first and second sides being parallel, said third and fourth sides being parallel, said fifth and sixth sides being parallel, junctions between said first through eleventh sides forming a first recess, a second recess, a third recess, and a fourth recess.

5,333,431

ROOF COVERING ELEMENT COMPRISING PLASTIC STALKS

Friedhelm Houpt, Nördeltstr. 18, D-5778 Meschede, Fed. Rep. of Germany

Filed Jul. 6, 1992, Ser. No. 908,324
Int. Cl.[5] E04D *9/00*
U.S. Cl. 52—314 **5 Claims**



1. A flatly shaped roof covering element comprising a plurality of plastic stalks being arranged approximately parallel adjacent to each other and one above the other, their upper end regions being joined together by heat bonding, the stalks having irregular lengths and being irregularly shaped at their free ends, and the stalks having a helical cross-section, characterized in that, the roof covering element comprises a layer of paper on both sides of the bonded upper region of the stalks, the paper being bonded thereto, wherein the bonded upper region is not flat.

VOL 1165 ISS 1 AUG 2 1994 UMI

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DEVICE FOR FORMING AN EXPANSION JOINT IN A FLOOR COVERED WITH CERAMIC TILES

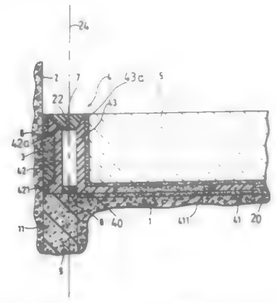
Werner Schlüter, Iserlohn, Fed. Rep. of Germany, assignor to Schluter Systems GmbH, Iserlohn, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 985,888

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141138

Int. Cl.[5] E04F *15/14*

U.S. Cl. 52—396.1 7 Claims



1. A device for forming an expansion joint in the transition zone between a wall and a floor with said floor covered with ceramic tiles, said expansion joint being adjacent to said wall, comprising:

a first floor angle section having a fastening leg for securing the section to the floor and having a terminating leg, said terminating leg having a top surface;

a second wall section for being fastened in use to a wall, said second wall section having a top surface;

an upper elastic soft plastic bridge and a lower elastic soft plastic bridge connecting said second wall section with the terminating leg of said first floor angle section;

said second wall section comprising a strip having an outer side with an interlocking element on said outer side;

said upper soft plastic bridge covering said second wall section top surface and said terminating leg top surface while connecting them with one another;

said lower bridge being a predetermined tearing bridge or comprising a support bridge bonded on only one side;

said device having a longitudinal axis; and

said second plastic wall section having a height.

5,333,433

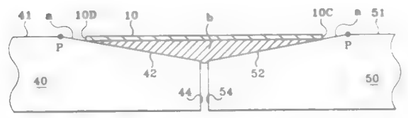
SELF-ADHESIVE WALLBOARD FINISHING TAPE AND TAPE-AND-WALLBOARD PANEL SYSTEM

Bernard A. Porambo, P.O. Box 14, West Baden Springs, Ind. 47469, and Carolyn L. Usrey, 4331 Kinser Dr., Bloomington, Ind. 47408

Filed Sep. 22, 1992, Ser. No. 949,065

Int. Cl.[5] E04B *2/72*; E04G *21/00*

U.S. Cl. 52—417 16 Claims



1. A wallboard assembly comprising:

at least two wallboard panels disposed adjacent one another, each said wallboard panel having a face surface and a tapered margin surface adjacent its edge adjacent the opposing wallboard panel so that the tapered margin surfaces of the adjacent wallboard panels collectively define a shallow V-shaped recessed area along the joint between said wall board panels;

a substrate having opposing first and second surfaces and terminating in opposing side edges and having a central portion disposed between said opposing side edges, said substrate having a width slightly narrower than the dimension of the recessed area in the plane of the face surfaces of the wallboard panels;

a first layer of a first adhesive disposed on the first surface of the substrate adjacent at least one said side edge, said first adhesive comprising an aqueous gypsum compound;

a second layer of said first adhesive disposed on the first surface of the substrate adjacent the opposite said side edge; and

a second adhesive disposed along the central portion of the first surface of said substrate between the first and second layers of said first adhesive,

said substrate applied to the joint between said adjacent wallboard panels with a portion of said first layer of said first adhesive extending out from beneath said first side edge to occupy an area between said first side edge of the substrate and an intersection point of the face surface and the tapered margin surface on the adjacent wallboard panel, and a portion of said second layer of said first adhesive extending out from beneath said second side edge to occupy an area between said second side edge and an intersection point of the face surface and the tapered margin surface on the adjacent wallboard panel, and the second adhesive disposed on the central portion of the first surface of said substrate occupies an area between the substrate and the tapered margin surfaces of each said wallboard panels, thereby bonding the tape and the wallboard panels in a substantially permanent fixed relationship.

5,333,434

COMPACT TRUSS SYSTEM

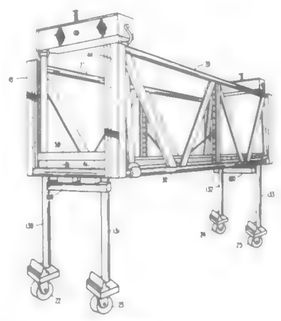
Dave Oberman, 3609 Paseo del Campo, Palos Verdes Estates, Calif. 90274, and Christopher L. Teuber, 919 Palms Blvd., Venice, Calif. 90291

Continuation-in-part of Ser. No. 947,161, Sep. 18, 1992, Pat. No. 5,237,792. This application Jun. 29, 1993, Ser. No. 86,173

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] E04H *12/18*

U.S. Cl. 52—645 6 Claims



1. A truss system comprising

first and second lateral members;

mounting element for allowing the attachment of components to the truss system;

guide and attachment means, including a first arm and a second arm connecting the mounting element and the lateral members, for allowing relative vertical sliding movement between the mounting element and the lateral members;

means for absorbing shock mounted between one of said arms and the mounting element whereby forces acting on said lateral members are damped or eliminated before reaching the components; and

locking element supported by and engaging the arms for preventing relative movement between the mounting element and the lateral members.

5,333,435

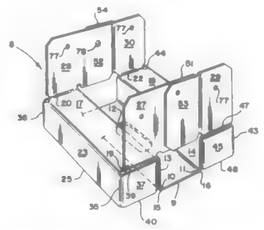
POST TO FOUNDATION CONNECTION

William F. Leek, Anaheim, Calif., assignor to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Filed Oct. 14, 1992, Ser. No. 960,784

Int. Cl.[5] E04B *1/38*

U.S. Cl. 52—704 6 Claims



1. A post to foundation connection comprising:

a. a concrete foundation having an upper support surface;

b. a wood member mounted in an upright position having first and second sides and a base;

c. a unitary foundation connector constructed from a sheet metal blank of uniform thickness including:

1. a base member disposed in registration with said upper support surface of said concrete foundation having first and second side edges and formed with a bolt opening,

2. first and second inner leg members joined respectively to said first and second side edges of said base member and positioned in a generally upright manner providing first and second inner foot edges in registration with said upper support surface of said concrete foundation,

3. first and second post support seat members elevated above said base member and joined respectively to said first and second inner leg members and disposed in registration with said base of said wood member, and having first and second end edges,

4. first and second outer leg members joined respectively to said first and second post support seat members and having first and second outer foot edges in contact with said upper support surface of said concrete foundation,

5. first and second post connection members respectively joined to said first and second end edges of said first post support seat member and disposed upwardly in registration respectively with said first and second sides of said wood member,

6. third and fourth post connection members respectively joined to said first and second end edges of said second post support seat member and disposed upwardly in registration respectively with said first and second sides of said wood member,

d. an anchor bolt embedded in said concrete foundation and having a threaded end inserted through said bolt opening in said base member;

e. a threaded nut dimensioned for threadable attachment to said threaded end of said anchor bolt for clamping registration with said base member; and

f. fastener means joining said first and second post connection members and said third and fourth post connection members to said wood member.

5,333,436

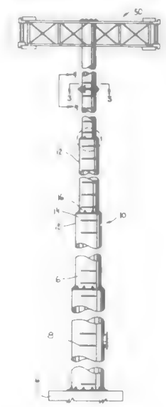
MODULAR ANTENNA POLE

Myron C. Noble, Plymouth, Ind., assignor to PlRod, Inc., Plymouth, Ind.

Filed Sep. 14, 1992, Ser. No. 944,258

Int. Cl.[5] E04H *12/00*

U.S. Cl. 52—726.3 6 Claims



1. A modular pole comprising a series of aligned cylindrical sections of upwardly decreasing diameters whereby adjacent cylindrical sections are attached one to the other by flanges which include an upper and a lower ring,

the lower ring being secured to the interior upper rim of the adjacent of the cylindrical sections which is lower, and

the upper ring being secured to the exterior lower rim of the adjacent of the cylindrical sections which is above said lower cylindrical section,

both rings provided with complementary mating bolt bores, and bolts through said mating bores to secure said cylindrical sections together.

5,333,437

ROTATIVE INSERTING UNIT FOR DOCUMENTS AND SHEETS OF PAPER, IN PARTICULAR FOR AUTOMATIC EQUIPMENT FOR THE PRINTING AND INSERTING OF SAID MATERIALS INTO ENVELOPES

Romano Conti, Via Piero della Francesca, 37 - Prato, Italy

Filed Nov. 25, 1992, Ser. No. 981,494

Claims priority, application Italy, Nov. 26, 1991, FI91A/278

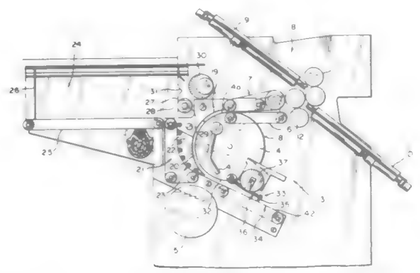
Int. Cl.[5] B65B *5/08, 35/26*

U.S. Cl. 53—284.3 9 Claims

1. Rotative inserting unit for documents and sheets of paper, for automatic equipment for the printing and inserting of said materials into envelopes, comprising means for feeding folded sheets and means for feeding the envelopes to receive said sheets, said means for feeding the sheets comprising a drum (**14**) rotating intermittently, said drum including a side surface (**14***a*) having at least three delimited transport seats for the sheets arranged on subsequent angular portions of the side surface, as well as fixed guide means (**19**) in which said surface rotates, said means for feeding the envelopes comprising an envelope conveyor (**21**), placed at an exit of an automatic distributor box (**24**) of the envelopes, said envelope conveyor

VOL 1165 ISS 1 AG 2 1994 UMI

(21) converging towards an exit of said guide means (19) in a position substantially tangent to the side surface (14*a*) of said drum (14) and in correspondence to an entry of a mobile temporary collecting pocket (33) of the envelopes, means (41)



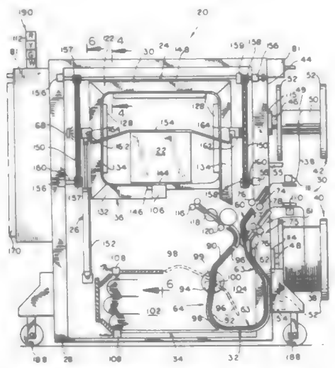
being provided for lifting at least one edge delimitating a mouth of the envelope periodically contained in said pocket (33), so as to allow insertion of a sheet exiting from said guide means (19).

5,333,438

DUAL COIL POWER STRAPPING MACHINE

Ronald W. Gurak, Fox River Grove; Allan J. Bobren, Streamwood; Frank A. Clochon, Mundelein; Janusz Figiel, Mount Prospect; Kenneth W. Lesner, Island Lake; Timothy B. Pearson, Anitoch; Kendall K. Raczek, Chicago; Mark B. Renz, Northbrook, and Allen D. Sordyl, Wheeling, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Nov. 6, 1992, Ser. No. 972,524
Int. Cl.[5] B65B *13/02*
U.S. Cl. 53—399 45 Claims



1. A machine for strapping articles, comprising:

a support;

strap positioning means mounted upon said support for guiding a strap around an article to be strapped;

strap applying means mounted upon said support for feeding strap to said positioning means and then tightening said strap;

strap guiding means mounted upon said support for selectively, alternately guiding a plurality of separate straps from a plurality of sources of supply toward said strap applying means;

said guiding means including at least two branches converging to a point and a third branch extending from said point toward said applying means, and a gate element shiftable between a first and a second position for selectively allowing only a single strap, of said plurality of straps, at any one time to pass through said point and into said third branch;

means for sensing the position of said gate element and thereby identifying the particular one of said straps passing through said point; and

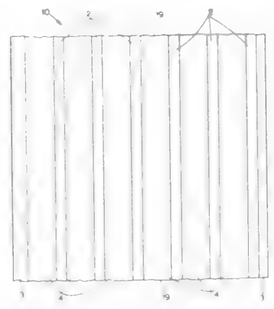
means responsive to said means for sensing for feeding the identified strap toward said strap applying means.

5,333,439

HOT-MELT PRESSURE SENSITIVE ADHESIVE PACKAGING, PREFORM, AND METHOD

Frank Bozich, Clarendon Hills, and Charles J. King, Stickney, both of Ill., assignors to Croda Apex Adhesives, Inc., Itasca, Ill.

Filed Sep. 22, 1992, Ser. No. 949,465
Int. Cl.[5] B65B *9/00;* B65D *57/00*
U.S. Cl. 53—450 34 Claims



21. A method for releasably packaging a hot-melt pressure sensitive adhesive composition comprising the steps of:

a. providing a preform comprising a continuous sheet of heat sealable film having two opposing longitudinal edges, said continuous sheet being pattern coated with silicone on at least one face such that an area along the first edge of the coated face remains uncoated and capable of forming a heat seal with a second uncoated area in proximity with the opposite edge on either face;

b. heat sealing the uncoated area along the first edge of the preform to an uncoated area along the opposite edge of the preform to form a continuous tubular film capable of releasably receiving an extruded hot-melt pressure sensitive adhesive therein, and

c. extruding a hot-melt pressure sensitive adhesive into said continuous tubular film at a predetermined rate; and

d. crimping said continuous tubular film at a predetermined distance such that a predetermined amount of the hot-melt pressure sensitive adhesive is isolated between at least two of the crimps, whereby upon cooling, the isolated predetermined amount of hot-melt pressure sensitive adhesive is releasably packaged between at least two of said crimps.

5,333,440

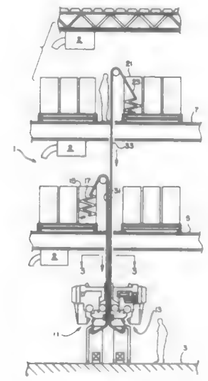
AUTOMATED SPINNING APPARATUS AND PROCESS

Kiyohiro Tsuzuki, Greenville, S.C., assignor to TNS Mills, Inc., Greenville, S.C.

Continuation of Ser. No. 934,877, Aug. 21, 1992, abandoned. This application Oct. 5, 1993, Ser. No. 134,461
Int. Cl.[5] D01H *13/04*
U.S. Cl. 57—90 8 Claims

1. In an open-end spinning apparatus having means to receive sliver for the spinning thereof into yarn, the improvement comprising:

a sliver feed tube for feeding sliver to said open-end spinning apparatus, said sliver originating form a sliver source disposed two floors above said open-end spinning apparatus; and



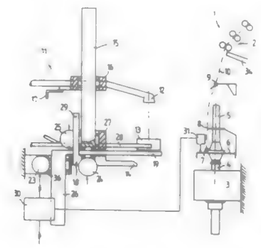
said sliver feed tube having a vertical portion, an obtuse portion forming an obtuse angle with said vertical portion at a lower end of said vertical portion, and a horizontal portion; such that said sliver travels downwardly through the vertical portion, then through said obtuse portion, and then through said horizontal portion.

5,333,441

METHOD AND APPARATUS FOR RESTARTING A TEXTILE SPINNING MACHINE WINDING OPERATION FOLLOWING A YARN BREAK

Ewald Naegele, Goeppingen-Bartenbach, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Jun. 12, 1992, Ser. No. 898,024
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1991, 4119382
Int. Cl.[5] D01H *13/26, 9/00, 13/14*
U.S. Cl. 57—262 16 Claims



3. Apparatus for the restarting of a winding operation on a textile spinning machine, the winding operation being an operation in which yarn supplied from a supply package is drafted through a drafting device and wound on a tube to form a full package and the restarting of the winding operation being performed to restart the winding of yarn onto the tube following a break in the yarn being fed from the drafting device to the tube wherein the break in the yarn results in a leading end of unwound yarn which has been drafted through the drafting device but not yet wound on the tube and a trailing end of wound yarn on the tube, the apparatus comprising:

means for applying suction to the tube to draw the trailing end of wound yarn therefrom, the suction applying means being positionable in a tube addressing position at which it applies suction to the tube;

means for delivering a length of auxiliary yarn to a tube for subsequent winding of the length of auxiliary yarn thereon, the auxiliary yarn length delivering means being positionable in a tube addressing position at which it delivers the length of auxiliary yarn to the tube;

means supporting the suction applying means and the auxiliary yarn length delivery means for simultaneous lateral movement thereof from laterally outward positions toward the tube into their respective tube addressing positions;

means operable during restarting of winding operation after a yarn break for controlling the operation of the suction applying means and the auxiliary yarn length delivery means for sequential operation to first apply suction by the suction applying means to draw in the trailing end of wound yarn on the tube to cause the trailing wound yarn to extend from the tube to the suction applying means and, then, in the event of and following a failure of the suction applying means to draw in the trailing end of wound yarn from the tube, to deliver a length of auxiliary yarn from the auxiliary yarn length delivery means to the tube to cause auxiliary yarn to extend from the tube to the auxiliary yarn length delivery means; and

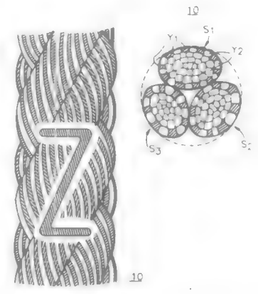
means for moving at least the respective one of the suction applying means and the auxiliary yarn length delivery means from its tube addressing position to a yarn extending position in which the respective trailing yarn or auxiliary yarn extending from the tube is disposed generally at a predetermined location for subsequent handling thereof whether the yarn extends to the tube from the suction applying means or from the auxiliary yarn length delivery means.

5,333,442

METHOD FOR PRODUCING A ROPE HAVING SUPERIOR FRICTION AND WEARING RESISTANCE

George A. Berger, Lafayette, La., assignor to American Manufacturing Company, Inc., Lafayette, La.

Division of Ser. No. 833,611, Feb. 13, 1992, Pat. No. 5,199,253, which is a continuation of Ser. No. 553,883, Jul. 16, 1990, abandoned. This application Nov. 9, 1992, Ser. No. 973,733
Int. Cl.[5] D02G *3/02, 3/36*
U.S. Cl. 57—314 9 Claims



1. A method for producing a multi-strand, all-nylon rope having superior resistance to abrasion and particularly wet abrasion, comprising the steps of:

(a) forming a predetermined number of a first type of nylon filaments of a first cross-sectional shape;

VOL 1165 ISS 1 AG 2 1994 UMI

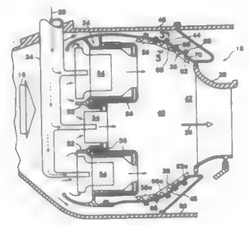
(b) twisting a group of filaments formed in step (a) into a first yarn;
(c) forming a predetermined number of nylon filaments of a second cross-sectional shape different from said first cross-sectional shape;
(d) twisting a group of filaments formed in accordance with step (c) into a second yarn;
(e) forming a strand central portion from a plurality of said first yarns wherein said strand central portion has a substantially circular cross-section and is comprised of a central portion of first yarns formed of only said first type of filament;
(f) forming a cover layer about the central portion by arranging first and second yarns in alternating fashion around the periphery of said central portion thereby forming a cover layer; and
(g) joining a plurality of strands formed by steps (a) through (f) into a multi-strand rope.

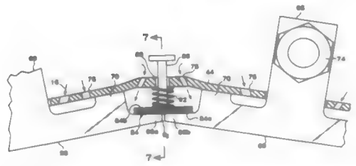
5,333,443

SEAL ASSEMBLY

Ely E. Halila, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 14,949, Feb. 8, 1993. This application May 13, 1993, Ser. No. 60,626
Int. Cl.[5] F02C *7/20*
U.S. Cl. 60—39.31 **10 Claims**





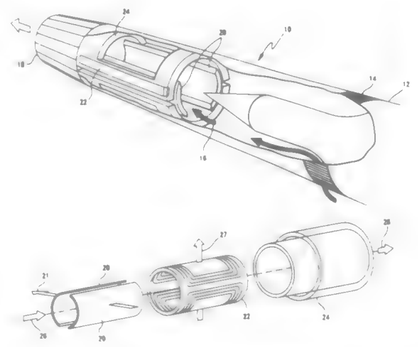
1. A seal assembly for an annular gas turbine engine comprising:
a stationary frame;
a first segment spaced radially from said frame;
a second segment spaced radially from said frame, and spaced laterally from said first segment to define an elongate lateral gap G_1 therebetween;
a plurality of radially adjoining leaf seals bridging said lateral gap G_1;
a plurality of spaced apart pins supporting said leaf seals and extending radially through said frame, each having an enlarged head on one side of said frame, and a root on an opposite side of said frame fixedly joined to a bottom one of said leaf seals, said pins extending slidingly through the remainder of said leaf seals; and
a plurality of compression springs each disposed in compression between said frame and a top one of said leaf seals for urging said top leaf seal toward said bottom leaf seal to seal flow radially therebetween and between adjacent ones of said support pins, and for urging said bottom leaf seal in scaling contact with said first and second segments to seal flow radially therebetween through said lateral gap G_1.

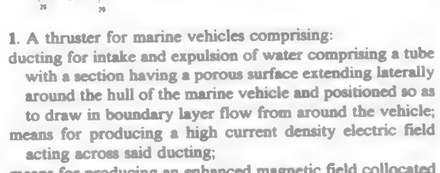
5,333,444

SUPERCONDUCTING ELECTROMAGNETIC THRUSTER

James C. S. Meng, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1993, Ser. No. 16,324
Int. Cl.[5] B63H *11/00*
U.S. Cl. 60—221 **3 Claims**





1. A thruster for marine vehicles comprising:
ducting for intake and expulsion of water comprising a tube with a section having a porous surface extending laterally around the hull of the marine vehicle and positioned so as to draw in boundary layer flow from around the vehicle;
means for producing a high current density electric field acting across said ducting;
means for producing an enhanced magnetic field collocated with and oriented so as to provide a magnetic field vector perpendicular to said electric field;
means for supercooling said means for producing a magnetic field thereby allowing superconductivity and the generation of a strong magnetic field tailored to generate a uniform Lorentz force field; and
means for mounting said thruster on a marine vehicle.

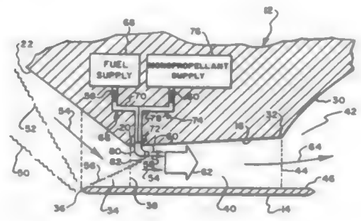
5,333,445

SCRAMJET ENGINE HAVING IMPROVED FUEL/AIR MIXING

George A. Coffinberry, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 471,588, Jan. 29, 1990, Pat. No. 5,202,525. This application Nov. 6, 1990, Ser. No. 609,686
Int. Cl.[5] C06D *5/04*
U.S. Cl. 60—270.1 **4 Claims**

1. A scramjet engine for powering an aircraft at supersonic velocity comprising:
an inlet for receiving supersonic compressed airflow;
a combustor in flow communication with said inlet for receiving said compressed airflow;
means for supplying fuel to said compressed airflow in said combustor;
means for supplying a monopropellant in said combustor adjacent to said compressed airflow and said fuel, said monopropellant being effective for expanding in said combustor for mixing said airflow and said fuel for combustion of said airflow and said fuel to generate combustion gases; and



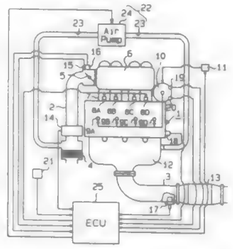
an exhaust nozzle in flow communication with said combustor for discharging said combustion gases from said combustor for powering said aircraft.

5,333,446

DIAGNOSTIC SYSTEM FOR A SECONDARY AIR SUPPLIER IN AN ENGINE

Tokiji Itoh, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 31, 1993, Ser. No. 40,816
Claims priority, application Japan, Apr. 14, 1992, 4-094490; May 15, 1992, 4-123968
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 **17 Claims**



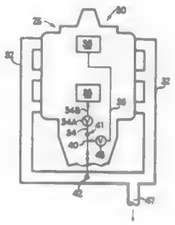
1. A diagnostic system for a secondary air supplier in an engine, the engine including an intake passage and an exhaust passage, the secondary air supplier including an air supply unit for supplying secondary air from the intake passage to the exhaust passage, for mixing with existing exhaust gas, and for changing an air-fuel ratio of the exhaust gas; a detection unit for detecting a condition of the engine; and a control unit for controlling the air supply unit in accordance with the engine condition, the diagnostic system comprising:
command means for instructing the secondary air supplier to supply air to the exhaust passage for a predetermined period of time;
first detection means for detecting the air-fuel ratio (A/F) of the exhaust gas within the exhaust passage;
second detection means for detecting whether said air-fuel ratio indicates a lean condition of the exhaust gas;
measuring means for measuring a lean period, during which said second detection means continuously detects said lean condition, while the secondary air supplier supplies air in response to an instruction from said command means;
diagnostic means for determining the condition-of the secondary air supplier, said diagnostic means determining that the air supplier is malfunctioning, when a ratio of said lean period to said predetermined period of time is smaller than a predetermined ratio.

5,333,447

INTEGRATED AIR INJECTION AND EXHAUST GAS RECIRCULATION SYSTEM

Michael R. Goodrich, West Chicago, Ill., assignor to Senior Engineering Investments, B.V., Amsterdam, Netherlands

Filed Dec. 28, 1992, Ser. No. 997,585
Int. Cl.[5] F02M *25/06;* **F01N** *3/10*
U.S. Cl. 60—278 **10 Claims**



1. An apparatus for integrating an air injection system and an exhaust gas recirculation (EGR) system, into an internal combustion engine, for directing air which is at a temperature less than an operating temperature of said engine into an exhaust system of said engine exclusively during periods of deceleration or idling, and for alternatively directing exhaust gases into an intake system of said engine exclusively during periods of acceleration and cruising, said apparatus for integrating air injection and EGR comprising:
pressurized air source means for supplying said air which is at said temperature less than said operating temperature of said engine, said pressurized air source means being operably configured to supply said air for addition into said exhaust system only during said periods of deceleration or idling of said engine, said air from said pressurized air source means being isolation from said exhaust system during said periods of acceleration and cruising;
conduit means operably connecting said pressurized air source means to one or more locations along said exhaust system,
said conduit means further operably connecting said exhaust system of said engine to said intake system of said engine; and
flow control means operably disposed along said conduit means between said pressurized air source means and said exhaust system, for preventing the flow of exhaust gases from said exhaust system toward and into said pressurized air source means, during said periods of acceleration and cruising, and in turn, facilitating the flow of exhaust gases from said exhaust system toward said intake system of said internal combustion engine.

5,333,448

FLUID CONTROL NOZZLE FOR CONDUIT CLEANER

Roy W. Salecker, Mendota, Ill., assignor to Spartan Tool Div. of Pettibone Corp., Mendota, Ill.

Filed Apr. 13, 1993, Ser. No. 46,441
Int. Cl.[5] F16D *31/00;* **B08B** *1/00*
U.S. Cl. 60—325 **19 Claims**

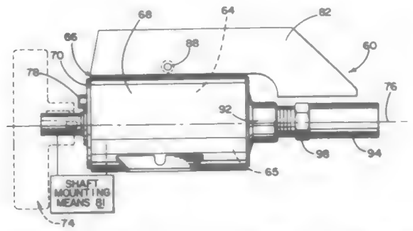
1. A power unit for a conduit cleaner, said power unit comprising:
a motor having a housing, a shaft, and means for mounting the shaft to the housing for rotation relative thereto about an axis,
said motor including first means responsive to a pressurized fluid for rotating said motor shaft,
said housing further defining an inlet for admitting pressurized fluid to the first means for operation thereof and an outlet to permit the discharge of fluid used to operate the first means away from the first means;
a nozzle including a second means for directing fluid from a

VOL 1165 ISS 1 AUG 2 1994 UMI

pressurized supply in a leading direction to the housing inlet and a third means for directing fluid discharged from the outlet out of the power unit; and

means for connecting the nozzle to the motor,

wherein the nozzle has a body with a substantially cylindrical outer surface and axially spaced ends and the second and third means do not project radially beyond the outer surface of the nozzle, to permit an overall compact construction for the power unit,



there being at least one jet orifice defined in said nozzle for directing fluid from a pressurized supply thereof away from said nozzle,

said nozzle including fourth means for communicating fluid from a supply in the second means to and through the jet orifice in a trailing direction to externally of the nozzle within the axial extent of the nozzle.

5,333,449

PRESSURE COMPENSATING VALVE ASSEMBLY

Kinya Takahashi, Tsuchiura; Yusaku Nozawa, Ibaraki, and Kazuyuki Ino, Shimodate, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

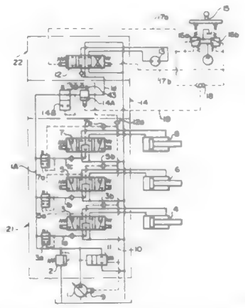
PCT No. PCT/JP92/01120, § 371 Date Apr. 27, 1993, § 102(e) Date Apr. 27, 1993, PCT Pub. No. WO93/05301, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 2, 1991, Ser. No. 39,339

Claims priority, application Japan, Sep. 2, 1991, 3-246441

Int. Cl.[5] F16D *31/02*; **F15B** *11/08*

U.S. Cl. 60—427 **4 Claims**



1. In a hydraulic drive system having a hydraulic pump of variable displacement type, at least one first hydraulic actuator driven by a hydraulic fluid delivered from said hydraulic pump, a first directional control valve of closed center type for controlling a flow of the hydraulic fluid supplied from said hydraulic pump to said first hydraulic actuator, transmission means for introducing a load pressure of said first hydraulic actuator therethrough, a regulator for controlling a displacement volume of said hydraulic pump based on the load pressure introduced through said transmission means to perform load sensing control, a second hydraulic actuator driven by the hydraulic fluid delivered from said hydraulic pump, and a second directional control valve of open center type for controlling a flow of the hydraulic fluid supplied from said hydraulic pump to said second hydraulic actuator, wherein the improvement comprises a pressure compensating valve assembly including:

(a) an inlet chamber connected to said hydraulic pump and an outlet chamber connected to said second directional control valve of open center type;

(b) flow control valve means including a spool having an opening disposed between said inlet chamber and said outlet chamber, an extent of the opening being changed when said spool is displaced, and manually operable adjuster means adapted to abut against said spool for setting the extent of said opening;

(c) pressure compensating valve means for holding a differential pressure across said extent of the opening constant;

(d) spring means disposed in said flow control valve means for urging said spool in a direction to close said opening; and

(e) operating pressure introducing means to which an operating pressure is introduced for displacing said spool against said spring in a direction to open said opening until said spool comes into abutment against said adjuster means.

5,333,450

APPARATUS FOR ADJUSTING THE WORKING FLUID PRESSURE

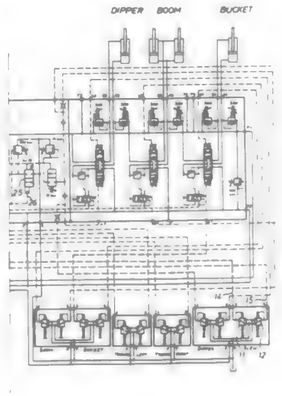
Herbert Blendinger, Haibach; Günter Fertig, Wertheim, and Armin Stellwagen, Lohr, all of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Dec. 7, 1992, Ser. No. 986,337

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1991, 4140423

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—459 **7 Claims**



1. Apparatus for adjusting a pressure of working fluid supplied to a load via a hydraulically actuatable control valve (2), said apparatus comprising:

comparator means (25) for comparing a given control pressure for the control valve (2) with actual load pressure, resulting in a pressure differential and forming a signal for adjusting said control valve, said given control pressure determining a desired value for load pressure,

wherein said comparator means (25) comprises a 2-way directional valve having a spool, said control pressure for the control valve is applied in one direction of displacement of the spool of said directional valve and the load pressure is applied in an opposite direction of displacement of said spool, and an input of the 2-way directional valve is connected to a control side of the control valve (2) whereas an output of the two-way directional valve is connected to a reservoir.

5,333,451

OIL PRESSURE CONTROL VALVE ASSEMBLY FOR HYDROSTATIC TRANSMISSIONS

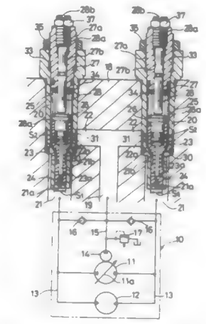
Shigenori Sakikawa, Itami, and Shinya Sakakura, Amagasaki, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Mar. 31, 1993, Ser. No. 40,884

Claims priority, application Japan, Apr. 24, 1992, 4-034476[U]

Int. Cl.[5] F16D *31/02*; **F16K** *31/12*

U.S. Cl. 60—468 **2 Claims**



1. An oil pressure control valve assembly for a vehicle hydrostatic transmission which comprises: a first port (21) connected to an oil path connecting between a hydraulic pump and hydraulic motor of the hydrostatic transmission; a second port (22) connected to an oil-charging path from a charging pump for supplementing working oil to the hydrostatic transmission; a differential piston (23) operable as a relief valve member for relieving oil from said first port (21) to said second port (22), said differential piston having at the side of said first port (21) a first pressure-applied surface area (S_1) and at the opposite side a second pressure-applied surface area (S_2) which is larger than said first surface area (S_1); a throttled oil passage (24) for conducting oil pressure at said first port (21) to said opposite side of said differential piston (23) having said second surface area (S_2); a control piston (26) disposed co-axially with said differential piston (23); and a valve spring (25) adapted to bias said differential piston (23) through said control piston (26) to move toward said first port (21), characterized in:

that there are provided a spring-receiving member (27) for receiving an end of said valve spring (25) at the side opposite to said control piston (26) and a stopper member (28) for limiting a movement of said control piston (26) in a direction away from said differential piston (23) such that said spring-receiving member (27) and said stopper member (28) are adjustable in position independently of each other in a direction toward and away from said control piston (26).

5,333,452

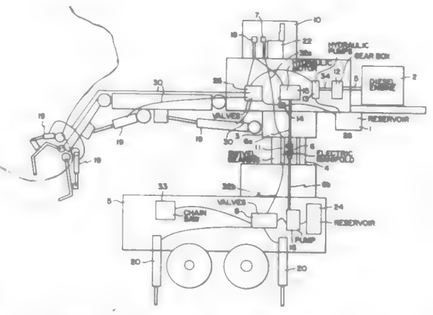
SHAFT DRIVE HYDRAULIC SYSTEM AND ISOLATED HYDRAULIC SYSTEM

Tony Dameron, P.O. Box 7892, Gulfport, Miss. 39506

Filed Aug. 31, 1992, Ser. No. 937,978

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—484 **24 Claims**



1. A system for operating hydraulic equipment run by hydraulic fluid, comprising:

a first location positioned on a first elevation comprising:

a first motor generating first power;

a first pump connected to said first motor pumping first hydraulic fluid responsive to the first power generated by said first motor;

a first actuator performing a first action responsive to the first hydraulic fluid pumped by said first pump; and

a second motor generating second power;

a swivel connected to said first location and including a drive shaft transferring the second power generated by said second motor in said first location; and

a second location rotatably mounted on a second elevation different than the first elevation of the first location via said swivel and receiving the second power via said drive shaft, said second location comprising:

a second pump receiving the second power from said second motor via said drive shaft and pumping second hydraulic fluid responsive to the second power generated by said second motor; and

a second actuator performing a second action responsive to the second hydraulic fluid pumped by said second pump,

wherein said second motor in said first location selectively generates the second power transferred to said second pump in said second location producing periods of inactivity for said second pump.

5,333,453

HIGH-EFFICIENCY REDUCED-NOISE SWASH-PLATE-TYPE HYDRAULIC DEVICE

Akihito Okuda; Yoshihiro Kanamaru; Toshiaki Tane, all of Tochigi, and Hirohisa Ogawa, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1992, Ser. No. 834,925

Claims priority, application Japan, Feb. 14, 1991, 3-042549; Feb. 14, 1991, 3-042550; Feb. 14, 1991, 3-042551

Int. Cl.[5] F16D *39/00*

U.S. Cl. 60—487 **23 Claims**

1. A swash-plate plunger-type hydraulic device, comprising

a rotatable cylinder block with an odd number of cylinder bores arranged annularly around an axis of rotation of the cylinder block,

plungers slidably fitted in the cylinder bores, and

a distribution valve plate with inlet and outlet ports defined in the distribution valve plate,

VOL 1165 ISS 1 AG 2 1994 UMI

the cylinder block and the distribution valve plate being held in slidable contact with each other in such a manner that each of the cylinder bores is alternately connected to the inlet port and the outlet port as the cylinder block rotates through a complete rotation,

the inlet and the outlet ports being arranged in such a manner that, during any complete rotation of said cylinder block, each particular cylinder bore is held out of connection with both of the inlet and outlet ports for a rotational distance $\theta 1$ after connection with one of the inlet and the outlet ports, is held out of connection with both of the inlet and outlet ports for a rotational distance $\theta 2$ after



connection with the other of the inlet and the outlet ports, and travels a rotational distance $\theta 3$ between first connecting with one of said inlet and outlet ports and the other of said inlet and outlet ports, and

$\theta 1$, $\theta 2$, and $\theta 3$ are defined according to the following relationships:

$$\theta 1 = \theta 2 = (360°/Z) \times k$$

$$\theta 3 = 180°$$

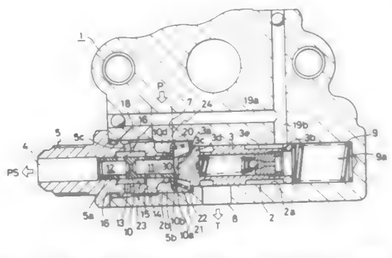
where Z is the number of cylinder bores and k is an integer greater than or equal to 1.

5,333,454

FLOW CONTROL VALVE UNIT

Masaya Nikaido, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 17,809
Claims priority, application Japan, Mar. 6, 1992, 4-082983
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—459 **4 Claims**



1. A flow control valve unit including an orifice formed in a supply passage which supplies hydraulic fluid discharged from a pump to a hydraulic instrument and in which a pressure differential across the orifice is effective to open a normally closed flow controlling spool valve to return part of the hydraulic fluid to a return passage, comprising:

a pump housing having a spool valve receiving bore therein and to which is connected said supply passage and said return passage;

a connector secured within a spool valve receiving bore and having an axial bore therethrough and an outlet for delivering a hydraulic fluid to the hydraulic instrument, said axial bore having an annular groove therein;

a valve sleeve slidably fitted in said axial bore, said valve sleeve having an axial passage therethrough and means defining an orifice in said axial passage which divides the axial passage into an upstream side and a downstream side;

means for continually yieldably urging said valve sleeve into said axial bore away from said spool valve;

a variable orifice oriented on said valve sleeve upstream of the fixed orifice, a communication path extending through said valve sleeve downstream of the fixed orifice and connected in fluid circuit with said hydraulic instrument, said variable orifice and said communication path normally communicating with each other through said annular groove;

a flange formed on an end of the valve sleeve which is adjacent the spool valve, and

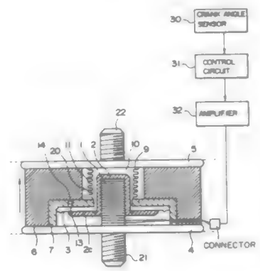
a restriction defined between an outer periphery of the flange and an inner peripheral surface of the valve receiving bore for restricting the flow rate of a fluid which is introduced into the valve receiving bore from the pump to cause a sliding movement of the valve sleeve from a first position toward a second position whenever a pressure differential thereacross is at or exceeds a given value and against a yieldable force provided by said means for continually yieldably urging said valve sleeve into said axial bore, the valve sleeve in the first position thereof and the normally closed flow controlling spool valve effectively blocking fluid flow to said return passage, an increased pressure on the hydraulic fluid from the pump causing the flow controlling spool valve to open to facilitate a return of part of the hydraulic fluid to the return passage and to cause an increased pressure differential across the restriction to thereby cause an increased pressure drop across the orifice to limit the flow of hydraulic fluid to the hydraulic instrument.

5,333,455

DISPLACEMENT MAGNIFIER FOR PIEZOELECTRIC ELEMENT

Shigeki Yoshioka, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 22, 1992, Ser. No. 948,489
Claims priority, application Japan, Sep. 26, 1991, 3-247533
Int. Cl.[5] F15B *7/00*; F16F *15/03*
U.S. Cl. 60—533 **6 Claims**



1. A displacement magnifying device for magnifying the displacement of a piezoelectric element according to an applied voltage and transmitting it to a displacement transmitting member, comprising:

a supporting member for supporting one end of the piezoelectric element,

a first elastic sealing member which moves together with the other end of the piezoelectric element,

a second elastic sealing member connected to said displacement transmitting member, and

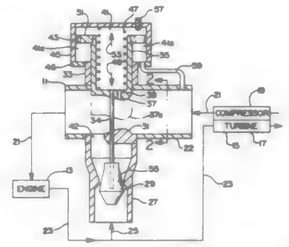
a sealed chamber sealed by said first and second elastic sealing members and containing a non-compressible fluid, said chamber including a first sub-chamber sealed by said first elastic sealing member and a second sub-chamber sealed by said second elastic sealing member, said first and second sub-chambers being communicated with each other and said first sub-chamber having a larger cross-sectional area perpendicular to the direction of said displacement than said second sub-chamber.

5,333,456

ENGINE EXHAUST GAS RECIRCULATION CONTROL MECHANISM

Steven R. Bollinger, Chesterfield, Mo., assignor to Carter Automotive Company, Inc., Southfield, Mich.

Filed Oct. 1, 1992, Ser. No. 955,072
Int. Cl.[5] F02M *25/07*
U.S. Cl. 60—605.2 **16 Claims**



1. An exhaust gas recirculation system for an engine having an air intake passage adapted to receive pressurized air from a compressor and an exhaust gas recirculation passage connected to said air intake passage, said system comprising:

a movable venturi throat disposed in said air intake passage for generating a reduced pressure as a function of intake air flow rate through said throat while minimizing restriction to air flow;

a metering valve disposed in said exhaust gas recirculation passage; and

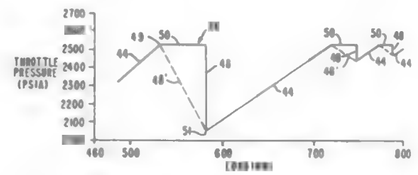
control means operated by said reduced pressure generated by said movable venturi throat for actuating said metering valve.

5,333,457

OPERATION BETWEEN VALVE POINTS OF A PARTIAL-ARC ADMISSION TURBINE

George J. Silvestri, Jr., Winter Park, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 772,505, Oct. 7, 1991, Pat. No. 5,136,848. This application May 29, 1992, Ser. No. 891,338
Int. Cl.[5] F01K *13/02*
U.S. Cl. 60—646 **4 Claims**



1. A method for improving operational efficiency of a steam turbine power plant during power output variations, the plant including a partial-arc steam turbine selectively operable in a sliding pressure mode and a constant pressure mode, power variation in the constant pressure mode being effected by gradual valve closing and opening to vary steam flow to selected arcs of admission to thereby vary steam volume flow into the turbine, each arc of admission being defined by adjacent valve points corresponding to a fully open and a fully closed valve controlling steam admission to a respective one of the arcs of admission, sliding pressure operation being affected by varying steam pressure into a steam chest of the turbine, and efficiency being improved by using sliding pressure operation during at least some part of the power variation and constant pressure operation during another part of the power variation, the method comprising the steps of:

determining impulse chamber pressure at each of a plurality of valve points during operation of the steam turbine at constant pressure;

computing for each adjacent pair of valve points, an optimum constant pressure transition point between each pair of adjacent valve points for transitioning from a sliding pressure mode to a constant pressure mode;

converting the optimum constant pressure transition point to a corresponding sliding pressure transition value;

transitioning from sliding pressure operation to constant pressure operation when the impulse chamber pressure reaches the sliding pressure transition value; and

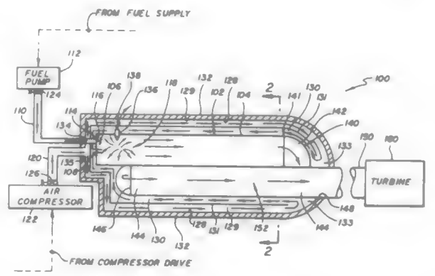
increasing steam pressure concurrently with control valve closing beginning at the step of transitioning.

5,333,458

LIQUID FUEL POWER PLANT

Ronald E. Loving, Simi Valley, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 14, 1993, Ser. No. 4,375
Int. Cl.[5] F02C *1/00*
U.S. Cl. 60—722 **9 Claims**



1. A liquid fuel power plant comprising:

a tubular combustion chamber having an ignition region for receiving combustible liquid fuel and an oxidizer, and having means for igniting said fuel in said ignition region, the combustible fuel being ignited in said ignition region to produce hot pressurized gases in said combustion chamber;

means for delivering said combustible liquid fuel to said ignition region;

means for delivering said oxidizer to said ignition region,

a tubular extension chamber having a first end and a second end, said tubular-shaped chamber being coupled at the first end to the tubular combustion chamber to receive said hot pressurized gases from said combustion chamber, said tubular-shaped chamber providing a reaction region for further combustion of said hot pressurized gases received from said combustion chamber, said further combusted hot pressurized gases being exhausted at the second

VOL 1165 ISS 1 AG 2 1994 UMI

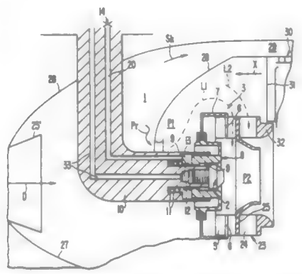
end of said tubular extension chamber, said tubular extension chamber being folded to be disposed parallel to and side-by-side to said tubular combustion chamber means for using said further combusted hot pressurized gases being exhausted at the end of said tubular extension chamber to perform useful work.

5,333,459

DEVICE FOR OPERATING A SWIRLER WHICH CONTROLS COMBUSTION AIR OF A BURNER FOR GAS TURBINE ENGINES

Johann Berger, Moosburg, Fed. Rep. of Germany, assignor to MTU Motoren- Und Turbinen-Union Muenchen GmbH, Fed. Rep. of Germany

Filed Jun. 17, 1993, Ser. No. 77,460
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1992, 4220060
Int. Cl.[5] F02C *3/14, 9/16*
U.S. Cl. 60—723 20 Claims



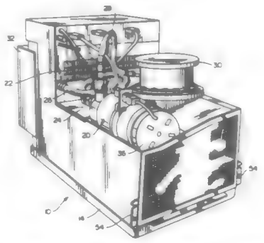
1. A device for selectively opening and closing ducts of at least one first swirling device on a burner supplying combustion air to a combustion chamber of a gas turbine engine, said burner having a central fuel nozzle and including at least one second stationary swirling device for providing a constant supply of combustion air, said first and second swirling devices being arranged coaxially in a ring-shape with respect to the axis of the central fuel nozzle and having tangential ducts uniformly distributed along said ring shape, the device comprising:
a ring arranged to be axially displaceable in said ducts on an outer circumference of said first swirling device, said ring including inwardly bent fingers which extend into said ducts of the first swirling device;
a housing supporting the fuel nozzle;
a control piston connected with said ring, said control piston being arranged in an axially adjustable manner on said housing, wherein said housing has an annulus at a downstream end coaxial to said fuel nozzle, a section of said control piston being axially adjustable inside said annulus;
a spring arranged inside said annulus coupled at one end to said section of the control piston to load the control piston, wherein a downstream end of the control piston projects out of the housing, said downstream end of the control piston being free of said housing and being acted upon on an upstream side by a primary air pressure existing on a head end and a downstream side by a chamber pressure existing at the burner;
a shut-off valve coupling to a line in the housing;
openings in the housing for communicating the spring side portion of the annulus with the head end and said line from the shut-off valve;
wherein the control piston is actuated by a pressure difference, controlled by the shut-off valve, in the spring portion of the annulus between an ambient pressure and the primary air pressure such that, in a closed position of the shut-off valve, the openings are exposed by said section of the control piston and in an open position of the shut-off valve the openings are predominantly closed by said section of the control piston.

5,333,460

COMPACT AND SERVICEABLE PACKAGING OF A SELF-CONTAINED CRYOCOOLER SYSTEM

Russell G. Lewis, Manlius, and Howard H. Fraser, Jr., Lafayette, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 21, 1992, Ser. No. 993,570
Int. Cl.[5] F25B *9/00;* F25D *19/00, 19/02*
U.S. Cl. 62—6 9 Claims



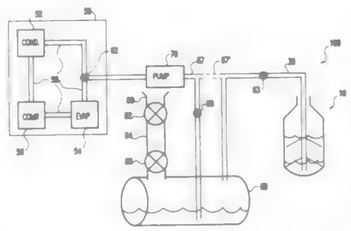
1. A self-contained, portable cryogenic cooling system for an Electronic Industry Association (EIA) enclosure generating a nominal 250 watts of heat lifting capacity, capable of maintaining a constant low temperature of 77° K. and fitting within a 24.5 in.×17.5 in.×29.5 in. space in an EIA enclosure wherein said cooling system includes:
an integral Stirling cryocooler having a compressor section and an expander/regenerator section including a cold head; and
heat rejection means for rejecting heat generated by said cryocooler including fan means for passing air over said cryocooler where said air is heated, and then through a heat exchanger and away from said cooling system.

5,333,461

LIQUID TRAP FOR GASEOUS OR LIQUID PHASE MATERIALS

Douglas A. Cobb, Box 128, Great Falls, Va. 22066

Filed Nov. 25, 1992, Ser. No. 981,253
Int. Cl.[5] F25J *3/00;* F25B *47/00, 45/00*
U.S. Cl. 62—11 21 Claims



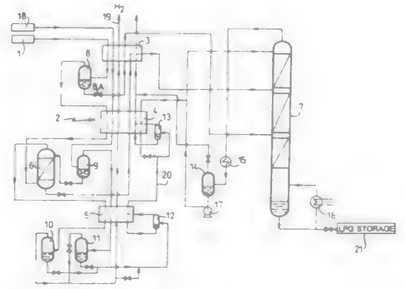
1. A method of collecting a liquid or gaseous phase material including the steps of
introducing said material into liquid cryogenic material within an enclosure,
evaporting a portion of said liquid cryongenic material while at least condensing said liquid or gaseous phase material to a density greater than that of said liquid cryogenic material, and
venting evaporated cryogenic material.

5,333,462

PROCESS AND APPARATUS FOR THE PURIFICATION OF HYDROGEN BY CRYOGENIC TREATMENT OF A GAS CONTAINING THE SAME

Corinne Garot, Chennevieres sur Marne, and Pierre Gauthier, Fresnes, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Dec. 30, 1992, Ser. No. 998,906
Claims priority, application France, Jan. 9, 1992, 92 00150
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 7 Claims



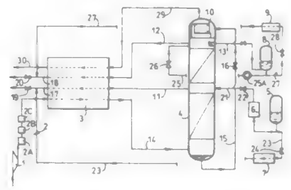
1. Process for the purification of hydrogen by cryogenic treatment of a gas containing also nitrogen oxides and unsaturated hydrocarbons, said nitrogen oxides and unsaturated hydrocarbons comprising respectively two types of constituents which react together in an undesirable fashion when cooling achieves an intermediate temperature higher than the low temperature of the treatment, the process comprising
cooling the gas to a first temperature higher than said intermediate temperature;
eliminating from the gas one of said two types of constituents at said first temperature; and
continuing the cooling of the gas to said low temperature.

5,333,463

PRODUCTION AND INSTALLATION FOR THE PRODUCTION OF GASEOUS NITROGEN AT SEVERAL DIFFERENT PURITIES

Catherine Garnier, Paris, France, and Francois Venet, Walnut Creek, Calif., assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Jun. 22, 1993, Ser. No. 81,813
Int. Cl.[5] F25J *3/00, 3/02*
U.S. Cl. 62—24 11 Claims



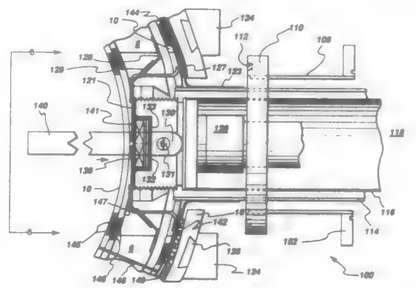
1. A process for the production of gaseous nitrogen having different gas flows exhibiting respectively different purities, including a medium purity on the order of 1 ppm and at least one high purity on the order of 1 ppb to 100 ppb, with a variable demand for said gas flows, comprising the steps of:
distilling in a column having a sufficient number of theoretical plates so as to obtain high purity nitrogen at a head of the column air that is purified to be free of water, carbon dioxide, carbon monoxide and hydrogen;
withdrawing from production at an intermediate level of the column a stream of gaseous nitrogen whose purity is of medium production purity;
withdrawing from at least one level of the column higher than the said intermediate level gaseous nitrogen of high purity; and
injecting into the column substantially at said intermediate level during at least a part of those periods when the demand for high purity nitrogen is below a predetermined value, liquid nitrogen having a medium purity, free of carbon monoxide and derived from a source external to the column, withdrawing at said higher level of the column an equivalent stream of high purity liquid nitrogen and sending the withdrawn stream of high purity liquid nitrogen to a storage reservoir.

5,333,464

COLD HEAD SLEEVE AND HIGH-TC SUPERCONDUCTING LEAD ASSEMBLIES FOR A SUPERCONDUCTING MAGNET WHICH IMAGES HUMAN LIMBS

Evangelo T. Laskaris; Kenneth G. Herd, both of Schenectady, and Bizham Dorri, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 4, 1993, Ser. No. 303
Int. Cl.[5] F25B *19/00;* H01F *7/22*
U.S. Cl. 62—51.1 14 Claims



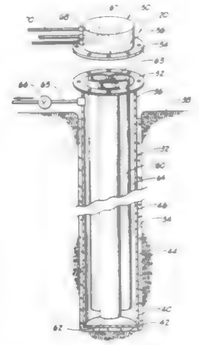
1. A cold head sleeve and superconducting lead assembly, wherein said assembly is comprised of:
a cryocooler means;
a tube means operatively connected to said cryocooler means;
a first and second heat station means operatively connected to said cryocooler means;
a magnet cartridge means operatively connected to said first heat station means;
a thermal shield means operatively connected to said second heat station means;
a thermal connector means operatively connected to said magnet cartridge means and said thermal shield means; and
a superconducing lead means operatively connected to said thermal connector means.

VOL 1165 ISS 1 AG 2 1994 UMI

5,333,465
UNDERGROUND STORAGE SYSTEM FOR NATURAL GAS

Terry R. McBride, 7500 N.W. 103rd St., Oklahoma City, Okla. 73162

Filed Apr. 30, 1992, Ser. No. 876,250
Int. Cl.[5] F17C *1/00, 13/08*
U.S. Cl. 62—53.1 28 Claims



1. A system for receiving, storing and dispensing compressed natural gas comprising:
- a first conduit for receiving natural gas from a sales line;
- a gas compressor for compressing the gas received from the sales line through the first conduit;
- an underground storage facility for storing compressed gas received from the gas compressor;
- wherein the underground storage facility comprises:
  - a vessel having a lower closed end, a body portion and an upper open end, wherein at least the lower closed end and a portion of the body portion are adapted to be installed underground; and
  - a cap assembly adapted to removably close the open end of the vessel; such cap assembly comprising an internal conduit connecting the inside of the vessel and the outside of the cap assembly;
- a second conduit for conducting compressed gas from the gas compressor into the vessel through the internal conduit of the cap assembly;
- a dispenser for dispensing gas received from the underground storage facility;
- a third conduit for conducting gas from the vessel through the internal conduit of the cap assembly to the dispenser.

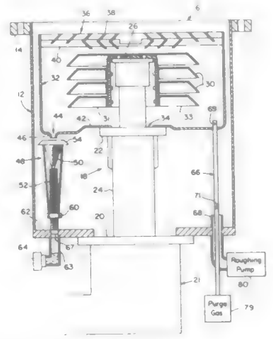
5,333,466
CRYOPUMP WATER DRAIN

James E. Harrington, Acton, and Arthur J. Camerlengo, Woburn, both of Mass., assignors to Helix Technology Corporation, Mansfield, Mass.

Division of Ser. No. 870,443, Apr. 16, 1992, Pat. No. 5,228,299.
This application Jun. 1, 1993, Ser. No. 69,534
Int. Cl.[5] B01D *8/00*
U.S. Cl. 62—55.5 17 Claims

1. A filter assembly for placement in a cryopump vacuum vessel having a cryogenic refrigerator and cryopumping surfaces cooled by the cryogenic refrigerator for condensing gases, the filter assembly comprising:

a drain filter screen controlling the flow of liquid released from the cryopumping surfaces; and



a standpipe filter spaced underneath the drain filter screen for receiving liquid therefrom, the standpipe filter being adapted to extend above a vacuum vessel floor.

5,333,467
APPARATUS AND METHOD OF PREVENTING FLUID ESCAPE FROM A CONDUIT

David S. Pearl, II, Fort Lauderdale; Louis H. Webb, III, Dania; Shaheed Mohammed, Davie, and Dragan Bukur, Ft. Lauderdale, all of Fla., assignors to Uniweld Products, Inc., Fort Lauderdale, Fla.

Division of Ser. No. 881,191, May 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 795,995, Nov. 22, 1991, abandoned. This application Oct. 25, 1993, Ser. No. 140,981
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—77 7 Claims

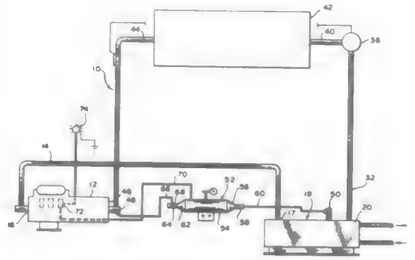


1. A method of servicing air conditioner or refrigeration systems comprising:
- manipulating a conduit having a first end and a second end with means for blocking and unblocking flow located adjacent said second end of said conduit, said conduit interconnecting a fluid source and a service connector, wherein said second end is connected to the service connector and said first end is connected to the fluid source; said manipulating comprising the steps of:
- blocking flow through said conduit with said means for blocking and unblocking flow when a predetermined amount of fluid has passed through said conduit; and
- disconnecting said second end from the service connector without substantial loss of fluid from said conduit;
- wherein said flow blocking step is completed prior to beginning said disconnecting step.

5,333,468
APPARATUS FOR PREVENTION OF LOSS OF REFRIGERANT

Harold D. Rice, 3762 Old Washington Rd., Waldorf, Md. 20602

Filed Nov. 2, 1993, Ser. No. 144,526
Int. Cl.[5] F25B *41/00*
U.S. Cl. 62—174 12 Claims

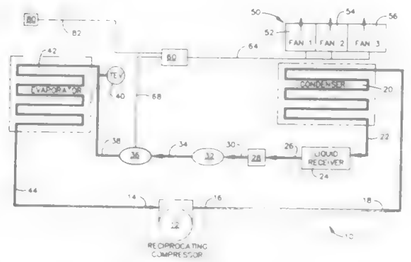


1. A refrigerant recovering apparatus for cooling equipment having a compressor, an evaporator, and a condenser having a relief valve thereon, the apparatus comprising:
- a chamber having connecting means to the relief valve at one end and connecting means to the compressor at the other end;
- means on the chamber for conveying refrigerant therein to the compressor; and
- means for deactivating the compressor upon a predetermined refrigerant pressure in the chamber.

5,333,469
METHOD AND APPARATUS FOR EFFICIENTLY CONTROLLING REFRIGERATION AND AIR CONDITIONING SYSTEMS

Gordon C. Hullar, Cincinnati, Ohio, and Jerry F. Justice, Ft. Thomas, Ky., assignors to EnviroSystems Corporation, Cincinnati, Ohio

Division of Ser. No. 855,614, Mar. 20, 1992, Pat. No. 5,230,223.
This application Jun. 25, 1993, Ser. No. 83,709
Int. Cl.[5] F25B *39/04*
U.S. Cl. 62—181 5 Claims

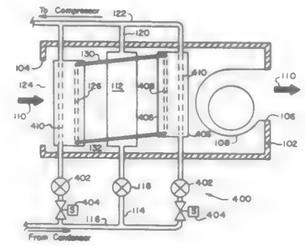


1. A method of controlling the operation of a refrigeration system of the type that includes a compressor, a condensor, a liquid receiver, an evaporator, at least one constant speed fan associated with said condensor, and at least one refrigerant line, said method comprising the steps of:
- (a) monitoring the presence of flashgas bubbles in a liquid refrigerant of the refrigeration system and creating an electrical signal upon the sensing of flashgas bubbles in said refrigerant line;
- (b) communicating said electrical signal to a system controller; and
- (c) selectively controlling the operation of said at least one constant speed fan by controlling its staging on or off, in response to said electrical signal communicated to said system controller so as to reduce or eliminate said flashgas bubbles in the liquid refrigerant, while simultaneously limiting energy consumption to an optimal or near-optimal rate.

5,333,470
BOOSTER HEAT PIPE FOR AIR-CONDITIONING SYSTEMS

Khanh Dinh, Alachua, Fla., assignor to Heat Pipe Technology, Inc., Alachua, Fla.

Filed May 9, 1991, Ser. No. 698,165
Int. Cl.[5] F25J *1/00*; F28D *15/02*; F25B *5/04*
U.S. Cl. 62—333 4 Claims



1. An apparatus comprising:
- (A) a housing having an inlet and an outlet;
- (B) means for drawing air through said housing from said inlet to said outlet;
- (C) primary cooling means, located within said housing, for cooling said air as said air flows through said housing;
- (D) means for cooling said air before said air reaches said primary cooling means;
- (E) means for reheating said air after said air is cooled by said primary cooling means; and
- (F) means for selectively at least partly neutralizing at least said means for reheating;
- wherein
  - said means for cooling comprises an evaporator located between said inlet and said primary cooling means and
  - said means for reheating comprises a condenser located between said primary cooling means and said outlet;
- wherein said means for neutralizing comprises a secondary evaporator located between said condenser and said outlet;
- wherein said secondary evaporator and said condenser are connected by fins which provide a thermal bond between said secondary evaporator and said condenser and said evaporator and said condenser are operatively connected to each other to form a heat pipe.

5,333,471
ADSORPTION COOLING SYSTEM

Yasuo Yamada, Isesaki, Japan, assignor to Sanden Corp., Isesaki, Japan

Filed May 25, 1993, Ser. No. 66,984
Claims priority, application Japan, May 26, 1992, 4-133778; May 26, 1992, 4-133785; May 26, 1992, 4-133798; May 26, 1992, 4-133802; Aug. 11, 1992, 4-214263; Aug. 13, 1992, 4-215836; Aug. 25, 1992, 4-226055
Int. Cl.[5] F25B *9/14*
U.S. Cl. 62—476 6 Claims

1. An improved adsorption cooling system having a pair of adsorbers, each containing adsorbent,

VOL 1165 ISS 1 AG 2 1994 UMI

a cooling vessel containing an adsorbate,

a pair of adsorbate outgoing passages, one allowing the adsorbate to shift from the cooling vessel to one adsorber therethrough and the other allowing the adsorbate to shift from the cooling vessel to the other adsorber therethrough, and

means for cooling each of the adsorbers alternatively, and means for heating each of the adsorbers alternatively,

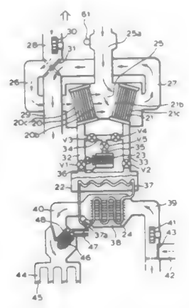
the system performing

an adsorption process for adsorbing the adsorbate in one of the adsorbers (defined as "adsorbing adsorber") by cooling the adsorber and, simultaneously,

a desorption process for desorbing and separating the adsorbate in the other adsorber (defined as "desorbing adsorber") by heating the adsorber and returning the separated adsorbate to the cooling vessel,

wherein

each of the two adsorbers has a first side and a second side,



the two adsorbers are disposed opposing each other with an intervening central plenum therebetween, said first side of each of the adsorbers facing said central plenum,

the means for cooling the adsorbers comprises an air supply means for supplying a low temperature ambient air to the adsorbing adsorber from the second side thereof and thereby cooling the adsorbing adsorber while the air is passing therethrough into the central plenum,

the means for heating the adsorbers comprises a gas supply means including a high temperature gas inlet passage for supplying a high temperature gas into said central plenum therethrough, and

the air having passed the adsorbing adsorber advances toward the desorbing adsorber confluxing with the high temperature gas supplied into said central plenum so that a blend of the high temperature gas and the air passes through the desorbing adsorber from the first side to the second side thereof, thereby heating the desorbing adsorber.

5,333,472

AIR CONDITIONER WITH HEATER FOR HEATING LIQUIFIED REFRIGERANT

Young D. Bae, Suwon, and Jin B. Kim, Chungchongbuk-Do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

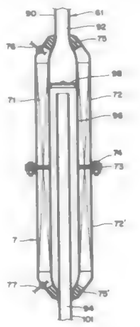
Filed Jun. 25, 1993, Ser. No. 81,162

Claims priority, application Rep. of Korea, Jun. 29, 1992, 1992-11749[U]

Int. Cl.[5] F25B *43/00*

U.S. Cl. 62—503 **2 Claims**

1. In an air conditioning apparatus for heating and cooling, wherein refrigerant is circulated during a heating cycle through a compressor and through indoor and outdoor heat exchangers, and then through secondary and main accumulators disposed between said outdoor heat exchanger and said compressor; said secondary accumulator comprising an conductor portion elongated in a longitudinal direction and having a refrigerant inlet and a refrigerant outlet, said outlet spaced longitudinally from said inlet by a space which is wider than either of said inlet and outlet so that refrigerant travels at a reduced speed from said inlet to said outlet; a covering mounted on, and encircling, said conductor portion and being space from said conductor portion in a direction laterally with



respect to said longitudinal direction to form a chamber around said conductor portion; opposite longitudinal ends of said covering being sealed against said conductor portion; electric heating coils disposed in said chamber and wound around said conductor portion along a region thereof that includes said space in order to heat refrigerant traveling at reduced speed to cause such refrigerant to evaporate.

5,333,473

SINKER MECHANISM FOR FLAT KNITTING MACHINES

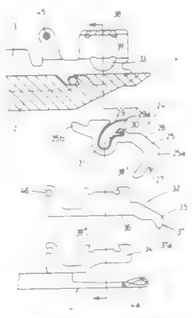
Masaki Miyamoto, Wakayama, Japan, assignor to Shima Seiki Mfg., Ltd., Wakayama, Japan

Filed Jul. 9, 1993, Ser. No. 88,690

Claims priority, application Japan, Jul. 9, 1992, 4-182649

Int. Cl.[5] D04B *15/06*

U.S. Cl. 66—106 **2 Claims**



1. A sinker mechanism for a flat knitting machine, the knitting machine having at least one front needle bed and one rear needle bed, each of the needle bed having needle plates which are arranged at equal intervals on the needle bed and knitting needles which are disposed between any two adjacent needle plates for advancing and retracting movement, the needle plates on the front needle bed and the needle plates on the rear needle bed facing each other in close relationship forming an intermediate space, comprising:

a row of sinker assemblies, each sinker assembly comprising a needle plate, a swingable sinker next to a front region of the needle plate, and a yarn guide sheet fixedly mounted to a needle bed, the swingable sinker having at a front end thereof a yarn holding portion, the yarn guide sheet having at a front end thereof a yarn guide edge, wherein, when the swingable sinker swings forward with the yarn holding portion moving downward from the needle plate, the yarn guide edge of the yarn guide sheet occupies a position above the yarn holding portion of the swingable sinker and projects outwardly of the front end of the sinker towards the intermediate space between the front ends of the opposite needle beds.

5,333,474

WASHING MACHINE

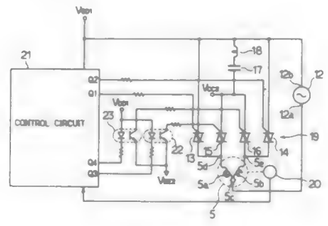
Masahiro Imai, Seto, and Yoshiyuki Makino, Nagoya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1993, Ser. No. 120,243

Claims priority, application Japan, Sep. 14, 1992, 4-244741

Int. Cl.[5] D06F *33/02*

U.S. Cl. 68—12.16 **12 Claims**



1. A washing machine comprising:

a) a rotational tub;

b) a single-phase induction motor driving the rotational tub in a dehydrating operation and having a main and an auxiliary coils;

c) speed detecting means for detecting a speed of the motor, thereby generating a detection signal;

d) output changeover means for changing between an operation mode wherein both of the main and auxiliary coils are excited and the other operation mode wherein either the main or auxiliary coil is excited; and

e) speed control means for feedback controlling the motor by controlling the output changeover means in a stage of increase of the motor speed in the dehydrating operation, based on the detection signal from the speed detecting means and a control program stored therein, the control program including data of a first control pattern wherein both of the main and auxiliary coils of the motor are excited in low and medium speed ranges, a second control pattern wherein only the auxiliary coil of the motor is excited in the low and medium speed ranges, a third control pattern wherein both of the main and auxiliary coils of the motor are excited in a high speed range, and a fourth control pattern wherein either the main or auxiliary coil is excited in the motor high speed range, the speed control means executing the first control pattern in the low and medium speed ranges and further selectively executing the second control pattern in the low and medium speed ranges when necessary and executing either the third or fourth control pattern in the high speed range.

5,333,475

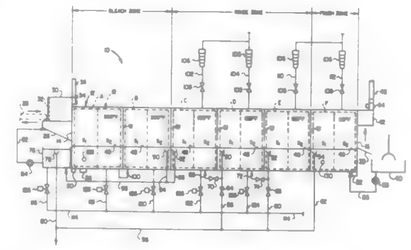
COMMERCIAL BLEACHING APPARATUS

Donald J. Edmundson, 4327 Grants Glen St., Wichita Falls, Tex. 73609, and Sherman H. Sheppard, Rte. 2 - Box 279, Pinnacle, N.C. 27043

Filed May 24, 1993, Ser. No. 67,516

Int. Cl.[5] D06F *23/02*

U.S. Cl. 68—27 **20 Claims**



16. Commercial bleaching apparatus comprising:

a horizontally disposed drum structure having an open inlet end into which textile goods to be bleached may be inserted, and an open outlet end through which bleached textile goods may be discharged,

said drum structure having stationary hollow cylindrical outer wall means, and perforated hollow cylindrical inner wall means concentrically disposed within said outer wall means and being operatively drivable relative thereto in a manner alternatively oscillating said inner wall means through a rotational arc of approximately 240° and then rotating said inner wall means through a full 360° arc,

the interior of said outer wall means being axially divided into a bleach zone positioned at said inlet end, a finish zone positioned at said outlet end, and a rinse zone positioned between said bleach and finish zones, and the interior of said inner wall means being divided into axial sections received in said bleach, rinse and finish zones,

said inner wall means, in response to successive rotations thereof through full 360° arcs, being operative to axially shift textile goods from section to section thereof, toward said open outlet end, and then outwardly through said open outlet end;

drive means for operatively driving said inner wall means relative to said outer wall means at a rotational speed of approximately 5 RPM;

makeup means for continuously flowing water through said rinse and finish zones to waste in a manner maintaining essentially constant, equal heights of water in lower side portions of said rinse and finish zones and in the sections of said inner wall means disposed therein;

recirculating means for maintaining an essentially constant height of water in said bleach zone essentially equal to the water heights in said rinse and finish zones,

said makeup means and said recirculating means being operative to maintain volumes of water in said bleach, rinse and finish zones equal to from about 25% to about 30% of the total volumes of said bleach, rinse and finish zones,

said recirculating means including a makeup water tank mounted on said inlet end of said drum structure, means for draining water from said bleach and rinse zones into said makeup water tank, and means for periodically transferring water from said makeup water tank back into said bleach zone;

heating means for heating water disposed in said bleach, rinse and finish zones, said heating means being operative to maintain water temperatures within said drum structure that progressively decrease from said bleach zone to said finish zone;

VOL 1165 ISS 1 AG 2 1994 UMI

means for selectively adding a bleaching agent to said bleach zone; and

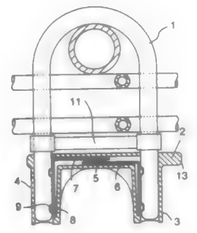
means for selectively adding a finishing agent to said finish zone.

5,333,476

U-LOCK WITH STRENGTH ENHANCING HEADER EXTENSIONS

Richard H. Byrd, Jr., 949 Steiner St., San Francisco, Calif. 94117

Filed Sep. 9, 1992, Ser. No. 942,578
Int. Cl.[5] E05B *67/24*
U.S. Cl. 70—38 A 3 Claims



1. A U-lock apparatus comprising a U-shaped shackle with two substantially straight and parallel shackle arms coupled to one another by a curved bow wherein the substantially straight and parallel arms may be longer than an object being locked therein and a detachable header having a first dimension parallel to the shackle arms and the detachable header comprises a base and two extension arms wherein the extension arms have a second dimension parallel to the shackle arms and are at least twice the first dimension, the extension arms for accepting and sliding onto the shackle arms when locking the shackle to the header for providing additional strength to the shackle arms for resisting breaking under application of lateral forces, wherein the header can be attached to the U-shaped shackle either in a first regular position with the base of the header at the end of the parallel shackle arms and the extension arms positioned between the base of the header and the curved bow or in a second inverted position with the base of the header secured between the ends of the parallel shackle arms and the curved bow and the extension arms positioned between the base of the header and the ends of the parallel shackle arms wherein the header is locked to the U-shaped shackle, in either the first regular position or the second inverted position, by a locking mechanism comprising:

a. a key receiver in the base of the header for allowing insertion of a key into the locking mechanism;

b. a first L-shaped bar coupled to the key receiver on one leg of the bar and on the opposite leg of the bar having two protrusions extending away from the L-shaped bar, for sliding into cutouts in a parallel shackle arm of the U-shaped shackle, thereby securing the header to the U-shaped shackle when the key is inserted into the key receiver and turned; and

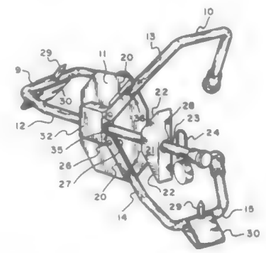
c. a second L-shaped bar coupled to the key receiver on one leg of the bar and on the opposite leg of the bar having two protrusions extending away from the L-shaped bar, for sliding into cutouts in a parallel shackle arm of the U-shaped shackle, thereby securing the header of the U-shaped shackle when the key is inserted into the key receiver and turned.

5,333,477

VEHICLE PARKING BOOT

Phillip Davis, 336 S. 19th St., Philadelphia, Pa. 19103

Filed Jul. 20, 1993, Ser. No. 95,089
Int. Cl.[5] B62H *5/16*
U.S. Cl. 70—226 7 Claims



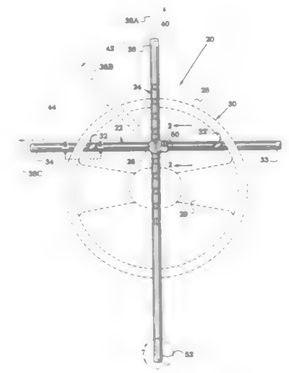
1. In a lightweight vehicle immobilization device useful to prevent theft of a vehicle or to prevent driving of said vehicle by its owner having a hub shield, an adjustable arm, housing integral with said hub shield for slidably mounting said adjustable arm, a upper arm and a lower arm, each of said arms having ends which are adapted to traverse the tread of a tire of said vehicle and engage the inside of said tire so as to prevent removal of said device when said device is adjusted to the circumference of said tire; the improvement comprising means on said hub shield to limit the degree of outward rotation of said upper arm and lower arm to about 120 degrees when engaged on said tire, a wedge shaped member having two surfaces which are about 120 degrees from each other, said wedge shaped member adapted to slide on said adjustable arm and, when locked in position functioning to prevent inward rotation of said upper arm and said lower arm and to prevent movement of said adjustable arm, and means disposed on said adjustable arm to lock said wedge against said upper arm and said lower arm.

5,333,478

STEERING WHEEL SECURITY DEVICE

Keh-Shih K. Chuang, P.O. Box 2-53, Hsinchu, Taiwan 30043

Filed Jul. 13, 1993, Ser. No. 90,505
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 11 Claims



1. A security device for attachment to a vehicle steering wheel, comprising:

a first elongate member;

a spinner carried by said first member to rotate about an axis arranged transversely with said first member;

a second elongate member carried by said spinner, said second member arranged transversely with said axis and axially spaced from said first member to receive the rim of said steering wheel between said first and second members with said spinner within said rim, said first and second members thus having an adjustable angular relationship;

a first boss defined by one of said members, directed transversely towards the other of said members and longitudinally spaced from said axis;

a first spring urged detent disposed between said spinner and said first member;

a plurality of circumferentially spaced indentations defined in one of said spinner and said first member to each receive said first spring urged detent to define one of a plurality of angular relationships between said first and second members; and

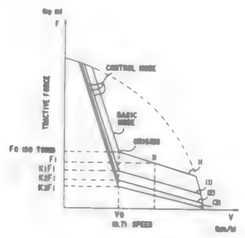
a lock having a pawl to abut and prevent movement of said first detent from any selected one of said indentations.

5,333,479

ADAPTIVE ENGINE OUTPUT MODE SETTING METHOD BASED ON SHOE SLIP

Shigeru Yamamoto, Osaka, and Hideki Yamada, Kyoto, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Division of Ser. No. 457,782, Mar. 16, 1990, Pat. No. 5,219,411. This application Apr. 7, 1993, Ser. No. 43,554
Claims priority, application Japan, May 16, 1988, 63-118932; May 27, 1988, 63-131181
Int. Cl.[5] A01B *67/00*
U.S. Cl. 172—3 5 Claims



1. An adaptive engine power output mode setting method based on shoe slip of a crawler vehicle provided with an engine, for performing an effective working operation of said crawler vehicle, comprising the steps of:

classifying operation modes of said engine into at least two groups according to conditions of the ground when ripping operations of said vehicle are performed on the ground in which each of said ripping operations a power output of said engine is set at a predetermined value;

classifying operation modes of said engine into a plurality of groups according to the conditions of the ground when bulldozing operations of said vehicle are performed on the ground or operations of said vehicle are performed in reverse on the ground in which each of said operations a power output of said engine is set at a predetermined value; and

presetting said operation modes of said engine with respect to a power output thereof according to a tractive force/-traveling speed diagram of said vehicle,

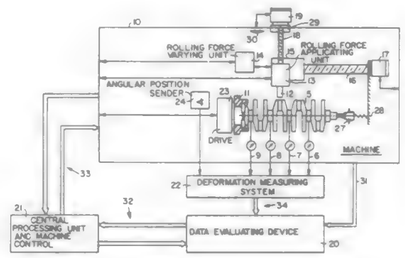
wherein optimum shoe slip rates of said vehicle are automatically obtained during said ripping and bulldozing operations of said crawler vehicle without conducting any additional manual operations of said vehicle.

5,333,480

METHOD FOR STRAIGHTENING OUT OF TRUE WORK PIECES, ESPECIALLY CRANKSHAFTS

Garri Berstein, Erkelenz, Fed. Rep. of Germany, assignor to W. Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 826,651, Jan. 22, 1992, Pat. No. 5,235,838, which is a continuation of Ser. No. 594,829, Oct. 9, 1990, abandoned, which is a continuation of Ser. No. 217,552, Jul. 11, 1988, Pat. No. 5,001,917. This application Jul. 23, 1993, Ser. No. 96,677
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1987, 3723097.2; European Pat. Off., Sep. 24, 1987, 87113938.2
Int. Cl.[5] B21H *7/00*; B21D *3/16*
U.S. Cl. 72—110 20 Claims



1. A method for straightening a work piece having cross-sections along its length with fillets forming transition areas between neighboring cross-sections, said cross-sections having a work piece diameter (D1), said work piece having a rotational axis and a bend relative to said rotational axis, said bend being determined by three values, namely as to its location by an axial coordinate value, as to its direction by an angular coordinate value, and as to its size by an eccentricity magnitude value, comprising the following steps:

(a) first introducing into said fillets of said work piece first residual compressive stresses in a complete circumferential surface layer for increasing a fatigue strength of said work piece,

(b) determining from said three values a respective control signal which represents a circumferentially limited angular range ($\beta 1$) within about 5° to about 160° around a portion of at least one of said fillets requiring the introduction of further residual compressive stress for said straightening, and

(c) second introducing additive second residual compressive stresses in response to said control signal, for adding said second residual compressive stresses to said first residual compressive stresses only in said range ($\beta 1$) of said surface layer zone, by a rolling tool having a diameter (D2) substantially smaller than said work piece diameter (D1) by applying to said rolling tool a straightening force only in said limited angular range ($\beta 1$) of said surface layer zone of said at least one fillet to introduce said second additive residual compressive stresses only to a radial depth (D3) short of a depth where said second residual compressive stresses tend to become subtractive, for increasing said first residual compressive stresses by said second residual compressive stresses only in said limited angular range ($\beta 1$) of said surface layer, thereby avoiding reducing said fatigue strength and simultaneously reducing or eliminating said bend.

VOL 1165 ISS 1 AG 2 1994 UMI

5,333,481

APPARATUS FOR SPATIAL UNCOILING AND STRETCH-BENDING PROCESS IN COMBINATION WITH A BENDING MANDREL STATION

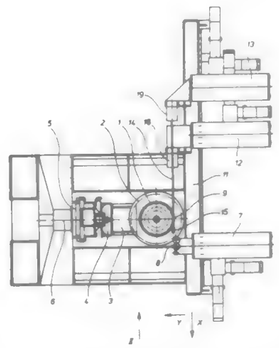
Walter Späth, Hardstrasse 8, D-7705 Steisslingen, Fed. Rep. of Germany

Filed Oct. 16, 1991, Ser. No. 776,068

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1990, 4033031

Int. Cl.[5] B21D *7/04*

U.S. Cl. 72—150 6 Claims



1. An apparatus for a spatial uncoiling and stretch-bending process, in combination with at least one mandrel of a mandrel bending station, comprising:

a clamping device for a section being bent;

a bending tool against which the section being bent is fitted;

means for movably mounting said bending tool;

at least one section roller pressing against the section being bent; and

a section roller bending station including means for repositioning said at least one section roller corresponding to movement of said bending tool;

wherein (a) the mandrel bending station moves the at least one mandrel so that it follows all movements of the at least one section roller as said at least one section roller is repositioned along three spatial axes and (b) the at least one mandrel is mounted rotatably.

5,333,482

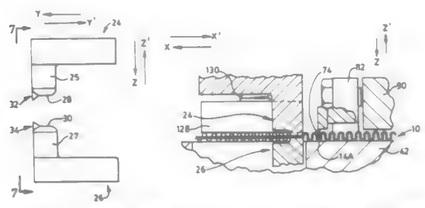
METHOD AND APPARATUS FOR FLATTENING PORTIONS OF A CORRUGATED PLATE

Donald L. Dunlap, Pekin, and Douglas R. Ervin, Metamora, both of Ill., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Oct. 30, 1992, Ser. No. 968,653

Int. Cl.[5] B21D *22/10, 13/02*

U.S. Cl. 72—307 21 Claims



1. Method for crushing a portion of a corrugated plate's corrugations comprising:

feeding a corrugated plate having first and second, opposed sides with alternating ridges and grooves therein a predetermined distance in a first direction, said first direction being transverse to a second direction which is parallel to the axis of the ridges and grooves;

engaging a pair of the corrugation grooves on the first side and a corrugation groove on the second side in a transition zone with a first and second die member, respectively;

crushing a ridge disposed between the engaged groove pair and associated with the single engaged groove to a predetermined height in a crush zone said crush zone being adjacent said transition zone in said second direction, with said transition zone being formed with corrugations gradually extending from said predetermined height of said crush zone to a full height of the corrugations which have not been deformed; and

guiding deformation of the ridge by said first and second die members in a direction parallel to the second direction in the transition zone to form said gradually extending corrugations.

5,333,483

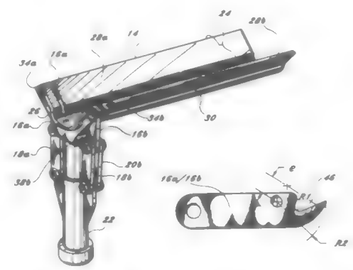
BULL NOSE APPLICATOR

Steven W. Smith, 1077 NE. 35th St., Oakland Park, Fla. 33334

Continuation of Ser. No. 867,169, Apr. 10, 1992, abandoned. This application May 26, 1993, Ser. No. 68,574

Int. Cl.[5] B23P *11/00*

U.S. Cl. 72—325 4 Claims



1. An apparatus for applying a bull nose corner bead to adjacent dry wall panels, the bull nose corner bead having a curved position, comprising:

an elongated channel member having a bull nose application surface defined by a central, partially curved portion intersected by a pair of mutually perpendicular flat side portions, said curved portion of the channel member sized corresponding to the curved portion of the bull nose corner bead, said channel member including a pair of transversely disposed slots near one end thereof;

a pair of opposed crimping members disposed within said slots and pivotally attached to said channel member, said crimping members comprising a generally planar structure of nominal wall thickness defined by first and second ends, respectively, said first end including a cutting surface defined in planform by a partial curved knife edge which blends into a straight knife edge terminating at an apical juncture with a peripheral curve surface extending from the apical juncture and having a peripheral radius less than the radius defined by the distance between said apical juncture and said pivotal connection between said crimping member and said channel member, said peripheral radius having a center eccentrically disposed relative to said pivotal connection, said partially curved and straight knife edges defined in cross section by the intersection of symmetrical radii, and further whereby said crimping members may pivot between a first, stored position and a second, crimping position, said crimping members able to cut and deform a portion of said perpendicular flat side portions in a plurality of directions into the dry wall to provide a sufficient bond between the bull nose corner bead and the dry wall; and

means for reciprocating said crimping members between said first and second positions, respectively, whereby said bull nose corner bead may be placed and oriented against said adjacent dry wall panels and secured thereto by successively reciprocating said crimping members between said first and second positions along varying longitudinal locations thereof, thereby forming a plurality of gripping tongues in said bull nose corner bead which locally cut, deform and engage said dry wall panels, each of said gripping tongues cut, deform and engage said dry wall panels.

5,333,484

METHOD OF IRONING CYLINDRICAL WORKPIECE OF AUSTENITE STAINLESS STEEL, WITH CONTROLLED THICKNESS REDUCTION

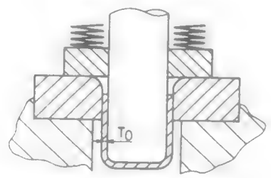
Kohichi Mine, Aichi, and Norio Itoh, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 2, 1992, Ser. No. 942,162

Claims priority, application Japan, Sep. 4, 1991, 3-252949

Int. Cl.[5] B21D *22/28*

U.S. Cl. 72—349 7 Claims



1. A method of minimizing diametral variation in wall thickness as a result of ironing a cylindrical portion of an austenite stainless steel workpiece, comprising the steps of,

providing a workpiece of austenite stainless steel having a cylindrical portion of a first thickness; and

ironing the cylindrical portion of the austenite stainless steel workpiece in an axial direction of the cylindrical portion to provide a cylindrical portion of a second thickness in a range of 35% to 45% less than the first thickness.

5,333,485

PROCESS FOR FLATTENING THE END SECTION OF A TUBE

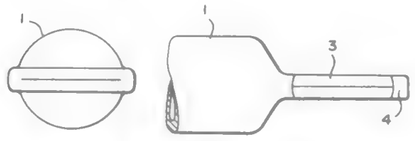
Peter Ublacker, Bürmoos, Austria, assignor to Austria Metall Aktiengesellschaft, Braunau am Inn, Austria

Filed Feb. 24, 1993, Ser. No. 22,006

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1992, 4205598

Int. Cl.[5] B21D *41/04*

U.S. Cl. 72—367 16 Claims



1. Process for flattening the end section of a cylindrical tube, comprising the steps of making two recesses or notches in a hollow cylindrical tube wall of the end section at opposite sides thereof, and then pressing the hollow cylindrical wall together with a force oriented essentially parallel to the sides of the cylindrical wall in which the recesses or notches have been made so as to cause lines along which folding or bending of the tube wall occurs to run through said recesses or notches as the hollow cylindrical wall is flattened.

5,333,486

SHEET METAL DRAWING EQUIPMENT

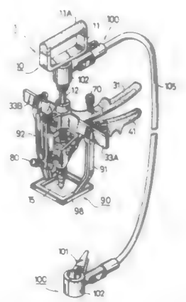
Kosei Ishihara, No. 2221-10, Nekoyamachi, Takasaki-shi, Gunma-ken, Japan

Filed Nov. 23, 1992, Ser. No. 979,839

Claims priority, application Japan, Nov. 24, 1991, 3-104265[U]

Int. Cl.[5] B21D *1/12*

U.S. Cl. 72—391.2 23 Claims



1. A sheet metal drawing equipment comprising:

a first operation means provided at a distal end thereof with a bit weldable to a surface of a sheet metal material to be drawn, including a shaft formed with threads and a handle provided on one end of said shaft for rotating said shaft, said bit is fixedly mounted on a distal end of said shaft;

a second operation means including a support section for rotatably supporting said first operation means and manually operated to pull up said first operation means, said support section is formed with a first threaded through-hole via which said threads of said shaft are threadedly inserted; and

a leg means for supporting said second operation means, said leg means is provided with a contact surface abutted against the surface of the sheet metal material.

5,333,487

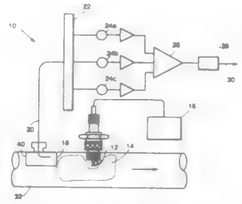
SPARK-EXCITED FLUORESCENCE SENSOR

Hiroshi Kimura, Northridge; Tetsuo Hadeishi, deceased, late of Kensington by Chikako Hadeishi, Administrator ; Harold M. Olsen, W. Covina, and Chan S. Bak, Newberry Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 15, 1991, Ser. No. 793,052

Int. Cl.[5] G01N *30/02*

U.S. Cl. 73—23.31 11 Claims



1. A spark-excited flourescence sensor for detecting at least

VOL 1165 ISS 1 AG 2 1994 UMI

one gaseous species in vehicular exhaust gas flowing in an exhaust pipe of a vehicle, comprising:

(a) a spark plug to excite molecules in said vehicular exhaust gas from a ground state to excited states, whereby said molecules in said excited states emit fluorescence upon decay to said ground state, said spark plug installed in a portion of said exhaust pipe;

(b) a guard housing provided with an optical fiber window to collect said fluorescence emitted, said guard housing installed in a portion of said exhaust pipe and positioned to receive said fluorescence generated by said spark plug through said optical fiber window;

(c) an optical fiber bundle to transmit said collected fluorescence as an optical signal, a portion of said fiber optic bundle installed in said guard housing and positioned to receive said fluorescence transmitted through said optical fiber window;

(d) a plurality of bandpass filters, each bandpass filter set to pass a unique band associated with a pre-determined gaseous species and adapted to receive said optical signal from said optical fiber bundle;

(e) a plurality of detectors for converting said optical signals to corresponding electrical signals, each detector operatively associated with one of said bandpass filter; and

(f) signal processing means to provide output signals corresponding to the concentration of each gaseous species detected.

5,333,488

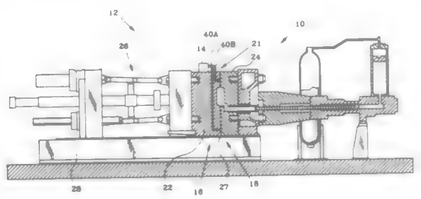
GAUGING SYSTEM WITH IMPROVED SETUP AND OPERATING METHOD

Charles R. Ramsey, Dunkirk; Russell E. Holcomb, and Brian L. Backus, both of Muncie, all of Ind., assignors to Matrix Technologies, Inc., Muncie, Ind.

Continuation-in-part of Ser. No. 487,954, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 727,329, Jul. 3, 1991, Pat. No. 5,213,726. This application Apr. 16, 1992, Ser. No. 869,620

Int. Cl.[5] F15B *5/00*

U.S. Cl. 73—1 J **23 Claims**



1. A gauging system for providing a measurement of the distance of a surface from a first orifice through a range of distances, said system comprising:

a source of fluid under controlled pressure;

first outlet means for providing a first outlet for said fluid remote from said pressure source, said first outlet means comprising a first fluid line and said first orifice, said first fluid line connecting said pressure source and said first orifice;

a first transducer communicating with said first fluid line for monitoring the pressure in said first fluid line and for providing an output signal; and

means for calculating from said output signal, the distance of said surface from said first orifice;

means for calibrating said system through the range of distances and providing a plurality of data points corresponding to discrete distances; and

adjusting means for adjusting said system for different outlet means, whereby the calibration for the first outlet means can be accurately applied to a second outlet means having a second fluid line.

5,333,489

CIRCUIT ARRANGEMENT TO DETECT KNOCKING

Adolf Dreyer, Hemmingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

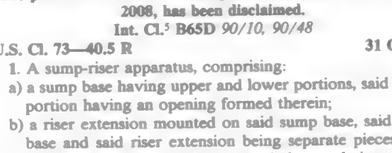
PCT No. PCT/DE91/00171, § 371 Date Oct. 18, 1991, § 102(e) Date Oct. 18, 1991, PCT Pub. No. WO91/14163, PCT Pub. Date Sep. 19, 1991

PCT Filed Feb. 28, 1991, Ser. No. 768,895

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1990, 4008284

Int. Cl.[5] G01L *23/22*

U.S. Cl. 73—35 **21 Claims**



1. Circuit arrangement for detecting and evaluating knocking in an internal combustion engine, said circuit arrangement comprising a knock sensor located in said internal combustion engine to generate a knock sensor signal having a plurality of knock signal frequency components at plurality of knock signal frequencies when knocking is occurring; oscillator means for producing an oscillator signal having a constant frequency and means for superposing said oscillator signal and said knock sensor signal to produce a mixed signal including a plurality of mixed signal frequency components at mixed signal frequencies less than said knock signal frequencies; level stabilizing circuit means for adjusting said knock sensor signal to a constant amplitude level despite changes in an operating state of said internal combustion engine, said level stabilizing circuit means connecting said knock sensor and said means for superposing; filter means connected to said means for superposing to filter said mixed signal and to produce a filtered mixed signal including filtered mixed signal components at said mixed signal frequencies; and evaluating circuit means connected to said filter means for evaluating said filtered mixed signal.

5,333,490

SECONDARY CONTAINMENT SYSTEM USING FLEXIBLE PIPING

Michael C. Webb, Exton, Pa., assignor to Total Containment, Inc., Oaks, Pa.

Continuation of Ser. No. 921,377, Jul. 30, 1992, abandoned, which is a continuation of Ser. No. 713,984, Jun. 12, 1991, abandoned, which is a continuation of Ser. No. 611,435, Nov. 13, 1990, Pat. No. 5,060,509, which is a continuation of Ser. No. 348,396, May 8, 1989, Pat. No. 5,040,408, Division of Ser. No. 254,021, Oct. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 103,206, Oct. 1, 1987, Pat. No. 4,805,444. This application Jan. 22, 1993, Ser. No. 7,906

The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.

Int. Cl.[5] B65D *90/10, 90/48*

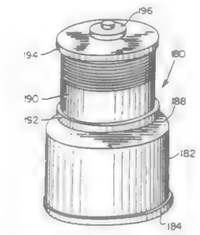
U.S. Cl. 73—40.5 R **31 Claims**

1. A sump-riser apparatus, comprising:

a) a sump base having upper and lower portions, said upper portion having an opening formed therein;

b) a riser extension mounted on said sump base, said sump base and said riser extension being separate pieces, said riser extension being of a size and shape relative to said sump base such that when said riser extension is inverted for compact shipping at least a portion of said riser extension is receivable within said sump base;

c) said riser extension includes an annular lip which rests on said upper portion of said sump base when said riser extension is mounted thereon; and,



d) a cover mounted on said riser extension, said cover being of a size and shape relative to said annular lip such that said cover rests in said annular lip when said riser extension is inverted for compact shipping.

5,333,491

METHOD FOR REDUCING TEST CYCLE TIME AND FOR IMPROVING MEASURING ACCURACY AT A LEAK TESTING PROCESS

Martin Lehmann, Obere Farnbuhlstr 1,, CH-5610 Wohlen, Switzerland

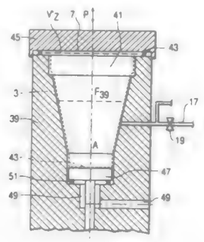
Continuation of Ser. No. 696,917, May 8, 1991, Pat. No. 5,199,296, which is a continuation-in-part of Ser. No. 469,398, Jan. 24, 1990, Pat. No. 5,042,291. This application Feb. 10, 1993, Ser. No. 15,839

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1989, 3902435

The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.

Int. Cl.[5] G01M *3/32*

U.S. Cl. 73—49.3 **9 Claims**



1. Test chamber for leak testing of a container, said container having a cross-sectional area diminishing along the direction of a traverse axis through said container, said test chamber comprising:

a closeable test cavity for introducing said container;

means for installing a pressure difference as an initial value between the inside of said container and the remaining volume of said test cavity, once said container is introduced therein;

means for measuring a pressure value being dependent from said pressure difference installed and from leakage of said container;

whereby the shape of said cavity being at least substantially geometrically similar to the shape of said container, so as to minimize said remaining volume; and whereby

said means for installing and said means for measuring communicate with said remaining volume so as to test a closed container without destroying its closed integrity and further comprising an ejection piston provided at the bottom of said cavity, said ejection piston being controllably driveable into said cavity to eject a container therefrom.

5,333,492

PROCESS AND APPARATUS FOR LEAK-TESTING A PACKAGE

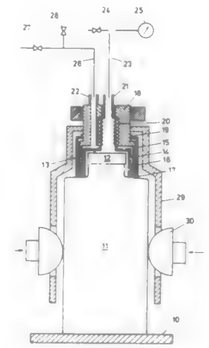
Mathias L. C. Aarts, Bilthoven, Netherlands, assignor to Product Suppliers AG, Zug, Switzerland

Continuation of Ser. No. 946,783, Sep. 18, 1992, abandoned, which is a continuation of Ser. No. 672,677, Mar. 20, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 111,965

Claims priority, application Netherlands, Mar. 20, 1990, 9000641

Int. Cl.[5] G01M *3/34*

U.S. Cl. 73—49.3 **14 Claims**



1. A method for leak testing a container having a body with an external surface and a closing element for an opening through said surface, which closing element has a perimetrical interface thereabout with said body, while said container contains fluid having a first pressure,

said method comprising:

(a) establishing an annular seal with said surface of said container body perimetrically surrounding said closing element, using an axial end of a tubular wrapper made of flexible material;

(b) while maintaining said seal, closely fitting said tubular wrapper against said closing element on an axially opposite end of said closing element from said seal, by applying a greater pressure to an outer side than to an inner side of said tubular wrapper whereby the wrapper between said axial end and said axially opposed end is closely fit against said external surface of the container body and said closing element, so as to define between said surface, said closing element, said seal and said inner side of said tubular wrapper, a measuring space to which said perimetrical interface is exposed, and whereby said greater pressure presses said axial end of the wrapper in sealing engagement with said external surface of the container body;

(c) hermetically sealing said measuring space at a first time, at which said measuring space is fluid pressurized at a second pressure which is different from said first pressure; and

(d) monitoring fluid pressure within measuring space until a second time, later than said first time, has come, and thereby looking for a change in pressure within said measuring space as an indication of fluid pressure leakage through said perimetrical interface.

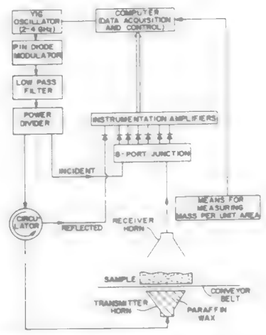
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,493

MOISTURE CONTENT BY MICROWAVE PHASE SHIFT AND MASS/AREA

Nicholas G. Catmore, Woronora Heights, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Australia

PCT No. PCT/AU90/00351, § 371 Date Feb. 13, 1992, § 102(e) Date Feb. 13, 1992, PCT Pub. No. WO91/02966, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 15, 1990, Ser. No. 834,573
Claims priority, application Australia, Aug. 15, 1989, PJ 5784
Int. Cl.[5] G01N *23/00*; G01R *23/00, 25/00*
U.S. Cl. 73—73 20 Claims



1. An apparatus for the determination of the moisture content of a sample of varying thickness on a conveyor belt, said apparatus comprising:

oscillator means to sequentially generate microwave signals at a plurality of discrete frequencies selected to compensate for frequency dependent cyclic variation in propagation characteristics within the sample;

a first antenna, coupled to the oscillator means, located below said conveyor belt to direct said microwave signals through the sample;

a second antenna disposed above said belt to receive the microwave signals transmitted through the sample;

measurement means coupled to the second antenna and oscillator means for measuring the phase shift of the microwave signals transmitted through the sample; and

computing means coupled to the oscillator means and to the measurement means for logging phase shifts of the respective received microwave signals with respect to the transmitted signals at each of said discrete frequencies and for calculating a moisture content of the sample from said phase shifts and a measure of mass per unit area of the sample.

5,333,494

MATERIAL STRENGTH MEASURING APPARATUS

Yoshio Kishima, Saitama, and Itsuo Nishiyama, Hyogo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Dainippon Plastics Co., Ltd., Osaka, both of Japan

Filed Jul. 8, 1992, Ser. No. 910,438
Claims priority, application Japan, Sep. 19, 1991, 3-239060
Int. Cl.[5] G01N *3/58, 3/56, 3/40, 33/00*
U.S. Cl. 73—104 9 Claims

1. A material strength measuring apparatus for measuring strength of a material comprising:

a supporting stand for fixing a specimen thereon, said specimen being made from at least said material;

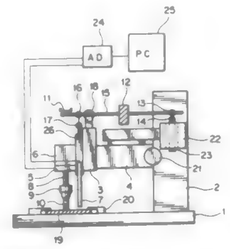
a guide member fixed on said supporting stand so as to be vertical with respect to said supporting stand;

a moving member moving linearly and vertically with respect to a measured surface of said specimen along said guide member;

a rotating blade urged toward said measured surface of said specimen;

a rotating blade supporting body moving with said moving member linearly and vertically with respect to said measured surface of said specimen;

a rotating blade rotating means fixed to an end of said rotating blade supporting body;



an urging force adjusting means for adjusting an urging force of said rotating blade toward said measured surface of said specimen;

a torque detector for detecting cutting resistance against said rotating blade;

a vertical displacement detector fixed to said moving member for detecting vertical displacement of said rotating blade; and

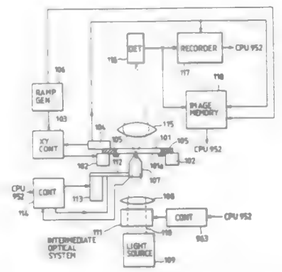
a recording means for recording outputs of said torque detector and said vertical displacement detector to indicate the strength of said material.

5,333,495

METHOD AND APPARATUS FOR PROCESSING A MINUTE PORTION OF A SPECIMEN

Hiroshi Yamaguchi, Fujisawa; Minori Noguchi, Yokohama; Makiko Kohno, Kawasaki, and Toshihiko Nakata, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 707,774, May 30, 1991, Pat. No. 5,214,282.
This application Mar. 11, 1993, Ser. No. 12,758
Claims priority, application Japan, May 30, 1990, 2-138197; Sep. 28, 1990, 2-256892
Int. Cl.[5] G01B *5/28*; G01N *23/00, 21/31*; C21K *1/00*
U.S. Cl. 73—105 8 Claims



1. A method for detecting a photoacoustic signal comprising the steps of:

modulating the intensity of light obtained from a light source at a predetermined modulation frequency;

exciting a specimen by directing said intensity-modulated light onto the specimen, thereby generating a photoacoustic effect in the specimen;

detecting the photoacoustic effect generated in the specimen and producing a detection signal indicative of the detected photoacoustic effect; and

extracting information about the surface and interior of the specimen from said detection signal;

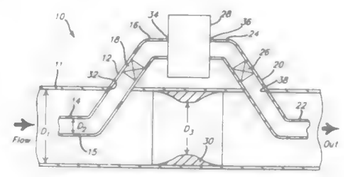
wherein the intensity-modulated light is emitted from an aperture of a near-field optical scanning microscope used in directing said intensity-modulated light onto the specimen while a distance between the aperture of the near-field optical scanning microscope and the surface of the specimen in maintained constant irrespective of the photoacoustic effect generated in the specimen.

5,333,496

IN-LINE PARALLEL PROPORTIONALLY PARTITIONED BY-PASS METERING DEVICE AND METHOD

Paul J. Fenelon, 13 Inverary, Nashville, Tenn. 37215

Filed Mar. 9, 1992, Ser. No. 848,053
Int. Cl.[5] G01F *5/00*
U.S. Cl. 73—202 13 Claims



1. A method for measuring total fluid flow within a closed conduit system utilizing a reduced size flowmeter comprising the steps of:

providing an inlet tube with a first portion within a main conduit and aligned substantially parallel with the fluid flow and a second portion extending from inside the main conduit to outside the main conduit and in communication with a reduced size flowmeter;

extracting via said inlet tube a measurable proportional amount of fluid from said fluid flow within said main conduit;

measuring the flow of said extracted portion of said fluid with said reduced size flowmeter external to said fluid flow;

providing a outlet tube with a first and second portion, said second portion being in communication with said reduced size flowmeter and said first portion disposed within said main conduit and aligned substantially parallel to said fluid flow;

returning via said outlet tube said extracted portion of fluid to said fluid flow within said main conduit;

promoting said extraction of fluid from said fluid flow within said main conduit by providing a reduced cross-sectional area within said main conduit substantially equally between the points of extracting and returning said proportional amount of said fluid flow said reduced cross-sectional area having a venturi configuration with a length and a height, said length being approximately three to five times said height;

determining the proportion of said extracted fluid flow; and

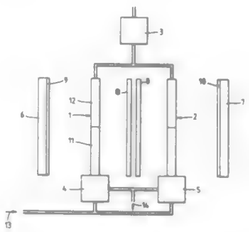
determining total fluid flow within said main conduit.

5,333,497

METHOD AND APPARATUS FOR CONTINUOUS MEASUREMENT OF LIQUID FLOW VELOCITY

Br nd Dag A., Trondheim; Knut Bonvik, Gjoime, and Svein Wognild, Heil, all of Norway, assignors to Metron AS, Trondheim, Norway

Filed Nov. 2, 1992, Ser. No. 970,374
Claims priority, application Norway, Nov. 5, 1991, 914330
Int. Cl.[5] G01F *13/00*
U.S. Cl. 73—219 6 Claims



2. Apparatus for continuously measuring the velocity of flow of a liquid in a liquid stream in a pipe line, comprising:

(a) two vertically oriented tubular risers made of transparent material;

(b) serving each riser at its base a respective three-way valve which is operable for alternatively:

(i) in a first position thereof connecting the respective riser at its base with said liquid stream but isolating said riser at its base from a drain, and

(ii) in a second position thereof connecting the respective riser at its base with the respective said drain and isolating said riser at its base from said liquid stream;

(c) tubular structure functionally interconnecting said risers at respective upper ends thereof so as to interconnect headspaces thereof;

(d) said three-way valves being operable so as to fill both of said risers with liquid from said liquid stream, up to like levels, which are intermediate said bases and said upper ends, and leave said interconnected headspaces filled with a gas;

(e) a first vertically extending light source, for substantially uniformly illuminating one of said risers throughout the height thereof from one side thereof;

(f) at least one vertically extensive light sensor arranged for sensing light transmitted through respective of said risers at each of a plurality of closely vertically spaced sites and thereby providing at least one information stream of sensations indicative of transmitted light at levels corresponding to each of said sites;

(g) a microprocessor functionally connected with each said light sensor for receiving said at least one stream of sensations;

(h) said three-way valves further being operable for:

(i) disposing the three-way valve for one of said risers in said first position thereof and the three-way valve for the other of said risers in said second position thereof, whereby hydraulic pressure due to liquid flow in said pipe line causes liquid to rise above said like level in said one riser, said gas to compress in said interconnected headspaces and force liquid downwards below said like level in said other riser and some to leave said other riser via the respective said drain, until the liquid level in said one riser has risen to a predetermined upper limit level, and

(ii) continuously while said liquid level is rising in said one riser, sensing light from said vertically extending light source as transmitted through said one riser at each of a plurality of closely vertically spaced sites using a re-

VOL 1165 ISS 1 AG 2 1994 UMI

spective said vertically extending light sensor, to thereby provide said at least one information stream of sensations indicative of transmitted light at levels corresponding to each of said sites, and

(iii) continuously processing said stream of information in said microprocessor to thereby provide an indication of the rising level of the interface between gas and liquid in said one riser, and the rate of rise of said rising level in said one riser as an indication of fluid flow in said liquid stream in said pipe line; and

(i) said three-way valves further being operable when the liquid level in said one riser has risen to said predetermined upper limit level, and while substantially uniformly illuminating the other of said risers throughout the height thereof from one side thereof using a respective vertically extending light source, for:

(i) disposing the three-way valve for said one riser in said second position thereof and the three-way valve for said other riser in said first position thereof, whereby hydraulic pressure due to liquid flow in said pipe line causes liquid to rise above said like level in said other riser, said gas to compress in said interconnected headspaces and force liquid downwards below said like level in said one riser and some to leave said one riser via the respective said drain, until the liquid in said other riser has risen to a level corresponding to said predetermined upper limit level, and

(ii) continuously while said liquid level is rising in said other riser, sensing light from the respective said vertically extending light source as transmitted through said other riser at each of a plurality of closely vertically spaced sites using a respective said vertically extending light sensor, to thereby provide said at least one information stream of sensations indicative of transmitted light at levels corresponding to each of said sites, and

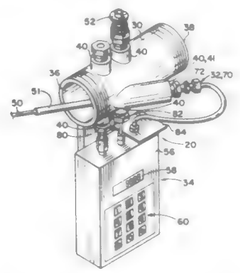
(iii) processing said stream of information in said microprocessor to thereby provide an indication of the rising level of the interface between gas and liquid in said other riser, and the rate of rise of said rising level in said other riser as an indication of fluid flow in said liquid stream in said pipe line.

5,333,498

APPARATUS AND METHOD FOR MEASURING PHYSICAL CHARACTERISTICS OF A LIQUID

Anne W. Brackett; Marcus O. Durham, both of Tulsa; Lynn K. Perkins, Skiatook, and Gregory E. Thoman, Tulsa, all of Okla., assignors to W. L. Walker Co., Inc., Tulsa, Okla.

Filed Jun. 19, 1992, Ser. No. 901,563
Int. Cl.[5] G01F *23/00*
U.S. Cl. 73—304 R **44 Claims**



1. Apparatus for measuring the quantity of a liquid, such as crude oil, transferred to or from a storage tank with all measurements being taken through an opening near the bottom of the tank, comprising:

a conduit having a first open end connectable to the opening in the tank, a second open end, and a plurality of connections for accessing the interior of the conduit;

detecting means for detecting the presence of contaminants in the tank and generating a detection signal, the detecting means having a sensor connected to a connection of the conduit so that the sensor extends through the opening into the tank; and

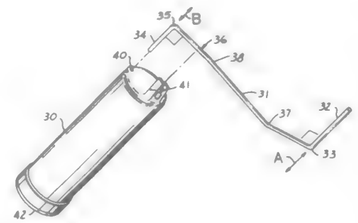
measuring means, connected to a connection of the conduit, for measuring and indicating the quantity of liquid transferred.

5,333,499

LIQUID MEASURING FLOAT AND FLOAT ROD ASSEMBLY

Robert D. Gaston, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 405,720, Sep. 11, 1989, abandoned. This application Jan. 22, 1992, Ser. No. 825,453
Int. Cl.[5] G01F *23/32*
U.S. Cl. 73—317 **7 Claims**



1. A floating mechanism comprising:

a float body having a rod receiving tunnel therein oriented along an axis and having a snap-in retainer comprised of a pair of projections extending from said float body parallel and noncolinear with said axis, said projections forming a recess oriented perpendicular to said axis; and

a float rod having a substantially straight first end slidably received in said rod receiving tunnel and an intermediate portion substantially perpendicular to said first end and snapped into said recess simultaneously in a single linear motion with said first end being slidably received in said rod receiving tunnel.

5,333,500

METHOD OF BALANCING A TORQUE CONVERTER ASSEMBLY

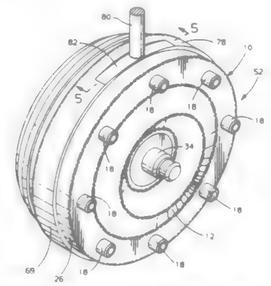
Gregory F. O'Daniel, Farmington Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 26, 1993, Ser. No. 23,494
Int. Cl.[5] G01M *1/16*
U.S. Cl. 73—468 **1 Claim**

1. A method of balancing a torque converter assembly comprising the steps:

providing a torque converter assembly having an end cover welded to an impeller with the end cover having an axially extending annular wall disposed at a position outboard of the weld with respect to the end cover;

determining the balance condition of the torque converter assembly; and



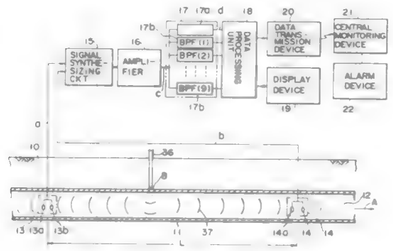
removing a circumferentially extending segment of the annular end wall to perfect any imbalance condition in the torque converter assembly.

5,333,501

ABNORMALITY MONITORING APPARATUS FOR A PIPELINE

Masumi Okada, Yokohama; Shingo Nagashima; Kazuo Nakamachi, both of Tokyo; Kazuo Hattori; Yoji Takanashi, both of Tokyo; Masaru Yasuda; Masami Ishikawa, both of Tokyo, and Yoshiyasu Murata, Tokyo, all of Japan, assignors to Tokyo Gas Co., Ltd. and NKK Corporation, both of Tokyo, Japan

PCT No. PCT/JP90/01155, § 371 Date Mar. 17, 1992, § 102(e) Date Mar. 17, 1992, PCT Pub. No. WO91/04477, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 11, 1990, Ser. No. 838,788
Claims priority, application Japan, Sep. 19, 1989, 1-242842; May 30, 1990, 2-140218; Aug. 13, 1990, 2-214148
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—592 **1 Claim**



1. An abnormality monitoring apparatus for identifying a type of abnormality on a pipeline through which a fluid passes, comprising:

detector means, arranged in the pipeline, for detecting a sound wave generated at a position of occurrence of an abnormality and propagating with the fluid as a medium;

abnormality waveform memory means for storing abnormal waveforms of sound waves caused by a plurality of typical abnormalities;

a plurality of unit bandpass filters, having respective different frequency passbands, each for eliminating a noise component generated by the fluid in the pipeline and contained in the sound wave detected by said detector means, and outputting a filtered sound wave; and

display means for displaying, on a same image screen, a waveform of the filtered sound wave which is output by at least one of said plurality of unit bandpass filters, and an abnormal waveform read out of said abnormality waveform memory means; and

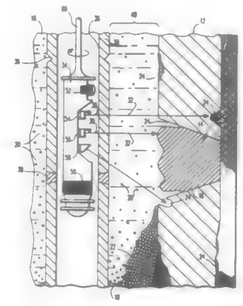
wherein respective frequency passbands of said unit bandpass filters have center frequencies which are set for each ⅓ octave band frequency within a frequency range of from 200 Hz to 500 Hz.

5,333,502

METHOD AND APPARATUS FOR MONITORING THE ENVIRONMENT OF A VESSEL

William C. Clark, Jr.; Richard J. Jacko, both of Murrysville Boro, Westmoreland County, and Lee W. Burtner, Elizabeth Twp., Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 16, 1992, Ser. No. 945,788
Int. Cl.[5] G01N *29/04*
U.S. Cl. 73—623 **12 Claims**



8. An apparatus for monitoring the environment of a vessel, characterized in that the apparatus comprises:

A) a hollow member having walls through which ultrasonic waves and electromagnetic fields can pass and which is insertable in a liquid disposed in a vessel having containment walls,

B) at least one robotic device disposed in the hollow member, said device having means for selectively monitoring at least one of: properties of the contained liquid, and hollow member and containment wall flaws, where the robotic device can travel within the length of the hollow member and is adapted to selectively emit and receive, through the wall of the hollow member and through the liquid, at least one of ultrasonic waves of a selected low frequency, ultrasonic waves of a selected high frequency, and electromagnetic fields,

C) a measuring device capable of measuring the differences in the absorptions of any emitted and received ultrasonic waves and electromagnetic fields; and capable of producing output signals effective to determine properties of any particles in liquid suspension and flaws in the hollow member and vessel containment walls.

5,333,503

ACOUSTIC LENS SYSTEM

Akira Hasegawa, Mitaka; Masayoshi Omura, Moroyama; Shinichi Imade, Iruma, and Eishi Ikuta, Sagamihara, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

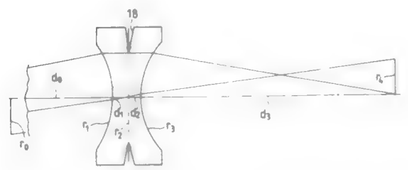
Filed Apr. 3, 1991, Ser. No. 680,235
Claims priority, application Japan, Apr. 4, 1990, 2-89319
Int. Cl.[5] G01N *29/06, 29/24*
U.S. Cl. 73—642 **7 Claims**

1. An acoustic lens system for imaging acoustic waves emitted from an object,

wherein at least one lens surface of acoustic of acoustic lenses constituting said acoustic lens system is asphericall

VOL 1165 ISS 1 AG 2 1994 UMI

shaped such that curvature thereof moderates progressively in separating from an axis of said acoustic lens system, and



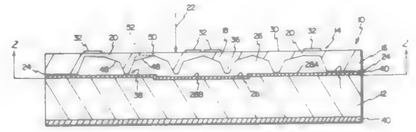
wherein said acoustic lens system comprises a single biconcave lens, whose incidence and emergence surfaces are substantially spheroidal, and an acoustic beam stop having a groove shape at a periphery of said biconcave lens.

5,333,504

HIGH OVERPRESSURE LOW RANGE PRESSURE SENSOR

Mark A. Lutz, Minneapolis, and William B. Krueger, Bloomington, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Sep. 1, 1992, Ser. No. 938,954
Int. Cl.[5] G01L *7/08, 9/06*
U.S. Cl. 73—727 **11 Claims**



1. A pressure sensor comprising a base plate, a diaphragm plate including a rim secured to the base plate, and a central diaphragm web section that is deflectable under force toward the base plate comprising;

a plurality of posts formed on one of said plates in registry with the deflectable web section, and forming stops when the deflectable web section is deflected toward the base plate a preselected amount, said plurality of posts being integrally formed with said deflectable web section of said diaphragm and having ends which engage the base plate for forming the stops.

5,333,505

SEMICONDUCTOR PRESSURE SENSOR FOR USE AT HIGH TEMPERATURE AND PRESSURE AND METHOD OF MANUFACTURING SAME

Yoshiharu Takahashi; Tetsuya Hirose; Hiroshi Otani, and Seiji Takemura, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 12, 1993, Ser. No. 3,437
Claims priority, application Japan, Jan. 13, 1992, 4-003730; Feb. 19, 1992, 4-032008; Aug. 25, 1992, 4-225942
Int. Cl.[5] G01L *9/06, 9/08*
U.S. Cl. 73—727 **19 Claims**

4. A semiconductor pressure sensor comprising:

a semiconductor pressure sensor chip having an obverse surface and a reverse surface;

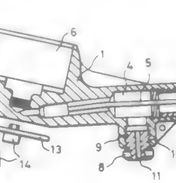
at least one piezoresistor formed on the obverse surface of the semiconductor pressure sensor chip;

a diaphragm formed on the reverse surface of the semiconductor pressure sensor chip;

a base on which the semiconductor pressure sensor chip is placed;

a stem on which the base is placed;

a sheathing resin which is molded on the stem in such a manner as to cover a proximity of a side of the semiconductor pressure sensor chip and a side of the base;



a bonding-area enlarging means provided on an area where the stem is bonded with the sheathing resin; and

a dam formed on an outer periphery of the obverse surface of the semiconductor pressure sensor chip for preventing the sheathing resin from flowing into the diaphragm portion.

5,333,506

GAUGE FOR MEASURING THE ATOMIZATION AIR PRESSURE IN A PAINT SPRAY GUN

Rowland C. Smith, Wimborne; Neville T. Pettit, Lymington, and Angelo Guttoriello, Weymouth, all of United Kingdom, assignors to ITW Limited, Windsor, United Kingdom

Filed Apr. 22, 1993, Ser. No. 52,071
Claims priority, application United Kingdom, Apr. 24, 1992, 9208872.3; Dec. 21, 1992, 9226626.1
Int. Cl.[5] G01L *7/00*
U.S. Cl. 73—756 **7 Claims**

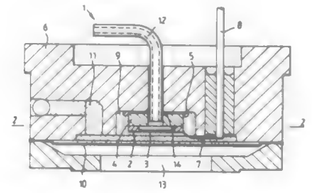
1. A gauge for measuring the atomization air pressure at a discharge orifice in a nozzle on a paint spray gun comprising a body having an air inlet, means surrounding said inlet for engaging a nozzle on a paint spray gun to form a sealed connection between the atomization air discharge orifice on the spray gun and said air inlet, means mounted in said body defining a calibrated metering hole vented to atmosphere, passage means connecting said air inlet to said metering hole, means mounted in said body for measuring and indicating the air pressure in said passage means.

5,333,507

PRESSURE SENSOR AND A METHOD FOR THE MANUFACTURE THEREOF

Jes V. Vogler, Sydals, and Jürgen W. Adelheim, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 31,636, Mar. 15, 1993, abandoned. This application Nov. 16, 1993, Ser. No. 153,481
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1992, 4211816
Int. Cl.[5] G01L *7/00*
U.S. Cl. 73—756 **6 Claims**



1. A pressure sensor, comprising,

a metal housing defining a chamber, said housing having a flat abutment surface forming a wall for said chamber,

a plate member of a semiconductor material having a central diaphragm region,

a plate support member of a glass substrate material between said housing abutment surface and said plate member,

spacing means separating said support member from said housing abutment surface in a direction normal thereto,

said support member having a flat surface in spaced (parallel) relation to said housing flat abutment surface to form a transversely extending space therebetween,

said plate support member having a second surface in abutting engagement with said plate member, and

an adhesive disposed in said transversely extending space having the moving thereof limited in a direction transverse to the plane of said housing abutment surface and to said plate member diaphragm region.

5,333,508

VELOCITY MEASUREMENT SYSTEM

Alan M. Petroff, and Larry W. Fullerton, both of Huntsville, Ala., assignors to ADS Environmental Services, Inc., Huntsville, Ala.

PCT No. PCT/US90/05721, § 371 Date Sep. 10, 1991, § 102(e) Date Sep. 10, 1991, PCT Pub. No. WO90/05721, PCT Pub. Date May 31, 1990
PCT Filed Oct. 5, 1990, Ser. No. 752,560
The portion of the term of this patent subsequent to Jul. 13, 2000, has been disclaimed.
Int. Cl.[5] G01F *1/66*
U.S. Cl. 73—861.25 **10 Claims**

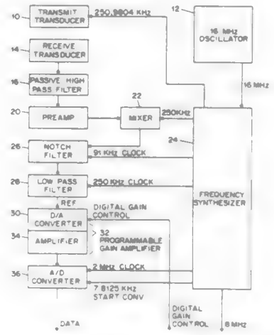
1. A fluid flow velocity measurement system comprising:

acoustic emission means disposed within a body of moving fluid for transmitting an acoustic signal of a discrete frequency into a volume of moving fluid;

acoustic reception means disposed within the body of moving fluid including a transducer position to receive a plurality of Doppler shifted signals of differing frequencies related to said acoustic signal from fluid borne objects, and said Doppler shifted signals being received over a discrete time interval and comprising a time domain signal train;

frequency-responsive means responsive to said time domain signal train for detecting Doppler frequency shifted signals and producing a plurality of corresponding signals;

signal-generating means responsive to said frequency-responsive means for generating a signal which corresponds to the frequency range of said Doppler frequency shifted signals; and



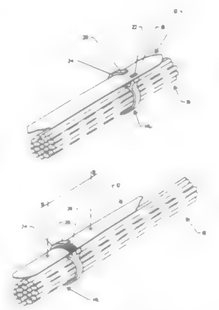
velocity computation means responsive to said signal-generating means for providing an output signal representative of an average velocity of said fluid flow.

5,333,509

TENSION GAUGE

Michael Dimen, 145 W. 27th St., New York, N.Y. 10001

Filed Nov. 12, 1992, Ser. No. 975,395
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.391 **16 Claims**



1. A device for measuring the tension of a cable or other linear element which comprises:

(a) a measuring stick having first and second ends, and scale indicia disposed toward the second end, the scale indicia sized for measuring the elongation of the cable;

(b) means for attaching the first end of the measuring stick to the cable in fixed longitudinal relation with the cable and substantially parallel thereto the attaching means comprising a first clip which comprises interlocking jaw means for securing the clip around the cable;

(c) measuring means attached to the cable at a distance from the attaching means, the measuring means supporting the second end in movable longitudinal relation with the cable, the measuring means comprising a reference edge which overlies the scale indicia whereby the distance between the attaching means and the measuring means will vary when the cable is elongated and cause the measuring means to move relative to the measuring stick, the distance of movement being measurable by the change in position of the reference edge relative to the scale indicia, the measuring means comprising a second clip comprising

VOL 1165 ISS 1 AG 2 1994 UMI

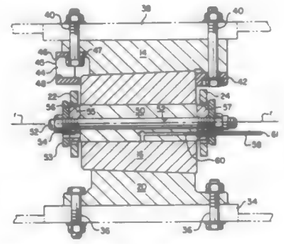
interlocking jaw means for securing the clip around the cable, and a clip arm for slidably securing the measuring stick, the measuring stick further comprising an attachment cutout disposed toward the first end, the first clip further comprising an attachment shoulder wherein the first clip is attached to the measuring stick by engaging the clip attachment shoulder with the attachment cutout.

5,333,510

ROLLER LOAD MEASURING DEVICE

Robert N. Anderson, Galion, and Mark R. Bentley, Lexington, both of Ohio, assignors to Indresco Inc., Dallas, Tex.

Filed Jun. 19, 1992, Ser. No. 901,244
Int. Cl.[5] G01L 5/00
U.S. Cl. 73—862.581 20 Claims



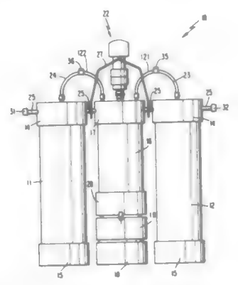
17. A device for measuring applied load and a roller bearing assembly according to claim 16 wherein at least one fluid cavity is in communication with at least one fluid conduit.

5,333,511

PORTABLE CONTROLLED AIR SAMPLER

Gerald A. Boyum, Eugene, Oreg., and Jon W. Schweiss, Edmonds, Wash., assignors to The United States of America as represented by the United States Environmental Protection Agency, Washington, D.C.

Continuation-in-part of Ser. No. 579,625, Sep. 7, 1990, abandoned. This application Mar. 23, 1993, Ser. No. 35,875
Int. Cl.[5] G01N 1/24; G06F 15/20
U.S. Cl. 73—864.34 26 Claims



1. Apparatus for obtaining gas samples from a monitored environment during differing time intervals comprising plural sample holders, means for drawing gas from the environment, valve means for supplying the drawn gas to the different sample holders at mutually exclusive times, and

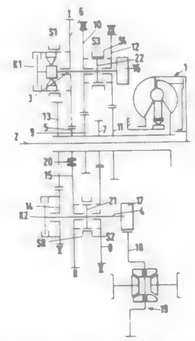
means for programming the valve means on a chronological basis, said programming means including means for independently controlling for each of the different sample holders the time when said valve means starts supplying drawn gas to the sample holder, the time when said valve means stops supplying drawn gas to the sample holder, and the sample interval between when said valve means starts and stops supplying said drawn gas to the sample holder.

5,333,512

MULTISTAGE TRANSMISSION WITH AN AUTOMATIC LOAD-SHIFT SPUR GEAR

Ludwig Prüss, Braunschweig, and Reinhard Kappel, Wolfsburg, both of Fed. Rep. of Germany, assignors to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Dec. 3, 1992, Ser. No. 985,591
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1991, 4141395
Int. Cl.[5] F16H 3/08
U.S. Cl. 74—331 8 Claims



1. An automatic multistage transmission for a vehicle comprising a drive shaft connectable by a first clutch to a drive motor, first and second output shafts mounted parallel to the drive shaft and connected through corresponding pinions with the drive wheels of the vehicle, a plurality of pairs of gears providing corresponding transmission gear stages, each gear pair including one spur gear mounted as a fixed gear on one of the driveshaft and the first and second output shafts and another spur gear rotatably supported on another of the driveshaft and the first and second output shafts and being connectable with its supporting shaft for the purpose of engaging the corresponding transmission gear stage, at least one clutch arranged to connect a rotatably supported gear with the shaft on which it is supported, two of the transmission gear stages being engagable by friction engagement and the other transmission gear stages being engagable by gear tooth engagement, the first transmission gear stage being constantly in engagement during pull operation by means of a rotatably supported freewheel gear capable of being coupled by a first sliding bushing, the fixed gear of the first transmission gear stage being coupled through a reversing pinion to a rotatably supported gear of a reverse transmission gear stage which is mounted on one of the first and second output shafts and is capable of being coupled to that output shaft by a second sliding bushing.

5,333,513

AVERAGING HALF-NUTS

Douglass L. Blanding, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1993, Ser. No. 336
Int. Cl.[5] F16H 1/18, 55/17
U.S. Cl. 74—424.8 A 7 Claims

1. A drive nut for transferring motion from a lead screw to a connector member comprising a pair of half-nuts arranged to engage the thread of said lead screw,

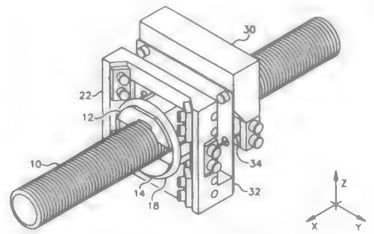
an intermediate member connected to said half-nuts,

a connector member,

said intermediate member being connected to said connector member to permit movement of said intermediate member relative to said connector member by rotation about a pivot axis perpendicular to said lead screw and lying in a plane which extends between said half-nuts, and

means for connecting each of said half-nuts to said intermediate member to locate said intermediate member with respect to said half-nuts along said lead screw and to prevent rotation of said half-nuts about the lead screw axis,

whereby uneven advance of the two half-nuts along said lead screw causes the intermediate member to rotate about said pivot axis to provide uniform motion along said lead screw axis to said connector member.

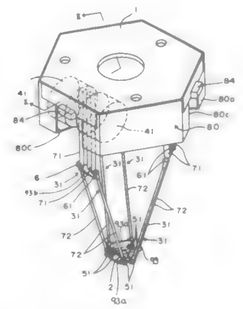


5,333,514

PARALLEL ROBOT

Osamu Toyama, Kariya; Masaru Uchiyama, 22-9, 4-chome, Kamo, Izumi-ku, Sendai-shi, Miyagi-ken, both of Japan, and Francois Pierrot, 261, rue Ampere A1/N. 5, 34070 Montpellier, France, assignors to Toyoda Koki Kabushiki Kaisha, Kariya; Masaru Uchiyama, Sendai, both of Japan and Francois Pierrot, Montpellier, France

Filed Mar. 26, 1993, Ser. No. 37,594
Claims priority, application Japan, Apr. 24, 1992, 4-027352[U]; Apr. 24, 1992, 4-106568
Int. Cl.[5] B25J 17/02; G05G 11/00
U.S. Cl. 74—479 BW 5 Claims



1. A parallel robot comprising:

a base;

three arm assemblies disposed on said base at a predetermined spacing to surround the center of said base; and

a bracket member connected to said three arm assemblies to support an end effector, wherein

each of said arm assemblies comprises:

a pair of motors mounted on said base to face each other with a predetermined clearance;

a pair of first arm portions supported by said pair of motors to be swung; and

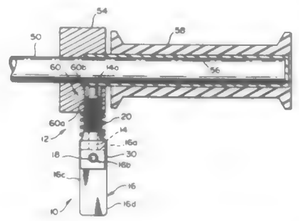
a pair of second arm portions, one ends of said second arm portions being connected with said first arm portions through first joint means and the other ends of said second arm portions being connected to said bracket through second joint means.

5,333,515

MOTORCYCLE THROTTLE CONTROL

William C. Schneider, P.O. Box 158, Superior, Mont. 59872

Filed Jun. 3, 1993, Ser. No. 70,895
Int. Cl.[5] G05G 11/00, 5/06
U.S. Cl. 74—489 8 Claims



1. Hand grip throttle control apparatus for use with a motorcycle of the type having a motorcycle handlebar, a throttle housing mounted on the handlebar and having a mounting passage for the hand grip throttle control app ratus that communicates with a throttle drum, the throttle drum being rotatably mounted on the handlebar and operably extending into the throttle housing, and a hand grip mounted on the throttle drum, said hand grip throttle control apparatus comprising:

a) a body, a plunger rod slidably mounted within said body, and a cam lever pivotally mounted to said body;

b) said body having

i) a threaded section for for threadably mounting said body in the motorcycle throttle housing, and

ii) a cam lever mounting section for pivotally mounting said cam lever,

iii) the body threaded section being provided with an axial longitudinal passage for said plunger rod, the body longitudinal passage having inner and outer ends, the inner end of which being communicable with the motorcycle throttle housing mounting passage;

c) said cam lever having

i) an inner end with a cam surface thereon for contacting said plunger rod to shift said plunger rod relative to said body;

d) said plunger rod being

i) slidably positioned within the body longitudinal passage, and

ii) having an outer end juxtaposed with the cam lever cam surface at the outer end of the body longitudinal passage, and

iii) having an inner end juxtaposed with, and having a length sufficient to extend beyond, the inner end of the body longitudinal passage;

e) said plunger rod, said cam lever, and said cam surface being so constructed and arranged with respect to one another such that, when said hand grip throttle control apparatus is mounted in the motorcycle throttle housing,

i) pivoting said cam lever effects the engagement of the cam lever cam surface with the plunger rod outer end to force the plunger rod inward so as to extend the plunger rod inner end a predetermined distance beyond the inner end of the body longitudinal passage,

ii) whereby the plunger rod inner end is extendable through the motorcycle throttle housing mounting passage into engagement with the motorcycle throttle

VOL 1165 ISS 1 AG 2 1994 UMI

drum so as to bind the motorcycle throttle drum as a result of the pivoting of said cam lever;

f) said cam lever being pivotally mounted to rotate over a 180° range so as to be rotatable from a straight-out position to a position at 90° to either side of the straight-out position; the cooperative construction among said plunger rod, said cam lever, and said cam surface being such that extension of said plunger rod is effected when said cam lever is rotated from the straight-out position to either 90° position;

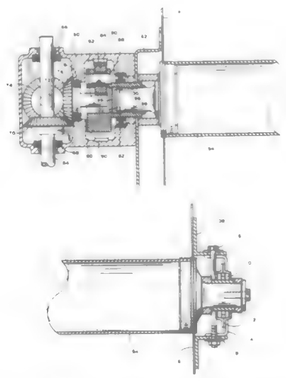
g) body securing spring means enclosing the outside of said body threaded section and abutting said cam lever mounting section, said spring means being so constructed and arranged to compressively engage the motorcycle housing when said threaded section is threaded thereinto whereby said body is securable in position against vibratory forces that would tend to cause said body to unscrew.

5,333,516

APPARATUS FOR DRIVING TRANSVERSE SHAFTS OF A BALER

Wallace L. Edwards, Stockton, Mo.; Kenneth R. McMillen, Loda, Ill., and Edward L. Briggs, Stockton, Mo., assignors to Vermeer Manufacturing Company, Pella, Iowa

Filed May 28, 1991, Ser. No. 705,783
Int. Cl.[5] F16H *37/06;* **A01F** *15/18;* **B30B** *5/06*
U.S. Cl. 74—665 GC **5 Claims**



1. A drive system for a baler having opposite sidewalls and a plurality of transverse driven rollers extending between said sidewalls, comprising:

(a) gear box means drivably engaged to each of the driven rollers;

(b) rotational power means;

(c) a drive shaft interconnecting said rotational power means and said gear box means;

(d) first longitudinal drive surfaces on the driven rollers;

(e) second longitudinal drive surfaces in said gear box means slidably engaged with said first longitudinal drive surfaces; and

(f) retention means for holding said first and second longitudinal drive surfaces in mating operational relationship, whereby the driven rollers can be slidably disengaged from said gear box means and the baler when said retention means is released.

4. A method for replacing at least one damaged belt forming belt of a baler, having a plurality of idler rollers a plurality of driven rollers drivably connected at one end to power transmission means, comprising the steps of:

(a) releasing retention means from the ends of the driven shafts opposite to the transmission means;

(b) slidably disengaging the driven rollers from the transmission means;

(c) removing the idler rollers;

(d) removing the one or more damaged belts from the idler and driven rollers and replacing each of them with an endless bale forming belt;

(e) replacing the idler rollers;

(f) sliding the driven rollers into driving engagement with the transmission means; and

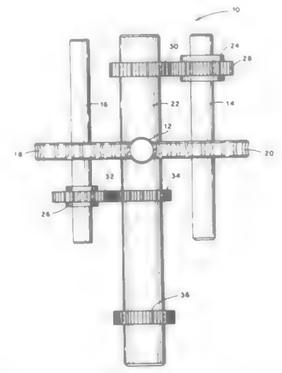
(g) reengaging said retention means.

5,333,517

DRIVE SYSTEM FOR PROVIDING A MULTIPLE SPEED OUTLET IN A SINGLE ROTATIONAL DIRECTION FROM A REVERSIBLE INPUT

Rodney Bryson, Murfreesboro, and Milton H. Borgman, Spring Hill, both of Tenn., assignors to Standex International Corporation, Salem, N.H.

Continuation of Ser. No. 939,118, Sep. 2, 1992, abandoned. This application May 11, 1993, Ser. No. 63,162
Int. Cl.[5] F16H *5/52*
U.S. Cl. 74—810.1 **12 Claims**



1. A drive system for providing a multiple speed output in a single direction of rotation from a reversible input comprising:

a motor having a forward and a reverse drive direction;

a drive shaft to be driven by said motor having a first end connected to said motor and a second end;

a worm disposed on said second end of said drive shaft and rotated by the rotation of said drive shaft;

a first auxiliary shaft disposed near said second end of said drive shaft and substantially perpendicular to said drive shaft, having a first worm wheel disposed thereon and located adjacent to and engaging said worm such that said first auxiliary shaft is driven by the rotation of said drive shaft;

a second auxiliary shaft disposed near said second end of said drive shaft, substantially perpendicular to said drive shaft and substantially parallel to said first auxiliary shaft, having a second worm wheel located adjacent to and engaging said worm such that said second auxiliary shaft is driven by the rotation of said drive shaft in a direction opposite the direction of rotation of said first auxiliary shaft;

an output shaft;

a first drive path disposed between said first auxiliary shaft and said output shaft;

a second drive path disposed between said second auxiliary shaft and said output shaft;

a first one way roller clutch disposed in said first drive path such that, when said first auxiliary shaft is driven in a first direction, said output shaft is driven and rotates with said first auxiliary shaft and, when said first auxiliary shaft is driven in a second direction, opposite said first direction, said output shaft is not driven by said first auxiliary shaft;

a second one way roller clutch disposed in said second drive path such that, when said second auxiliary shaft is driven in the first direction, said output shaft is driven and rotates with said second auxiliary shaft and, when said second auxiliary shaft is driven in said second direction opposite said first direction, said output shaft is not driven by said second auxiliary shaft;

said first worm wheel and said first drive path providing a first overall gear ratio; and

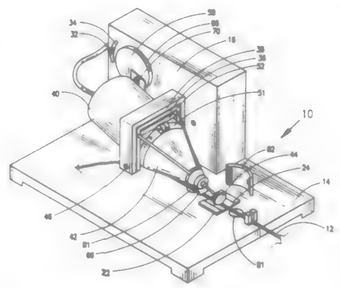
said second worm wheel and said second drive path providing a second overall gear ratio that is different from the first overall gear ratio such that, when said first auxiliary shaft is driven in the first direction at a first input speed, said first auxiliary shaft drives said output shaft in an output direction at a first output speed and, when the second auxiliary shaft is driven in the first direction at said first input speed, said second auxiliary shaft drives the output shaft in said output direction at a second output speed that is different from the first output speed, whereby reversing the drive direction of the motor but maintaining the same motor speed will change the speed of the output shaft but will maintain the same direction of output shaft rotation.

5,333,518

SAW BLADE SHARPENING APPARATUS

Earl Shriver, 502 Barclay, Dewey, Okla. 74029

Filed Jun. 16, 1993, Ser. No. 76,955
Int. Cl.[5] B23D *63/12*
U.S. Cl. 76—40 **10 Claims**



1. A saw blade sharpening apparatus for sharpening an elongated blade having a plurality of aligned cutting teeth, which apparatus comprises:

grinding means to sharpen said teeth having a body and a rotating grindstone, said grindstone having an axis aligned with said blade;

means to continuously circulate said rotating grindstone to move the grindstone across the surface of one of the teeth to grind the entire surface of said tooth; and

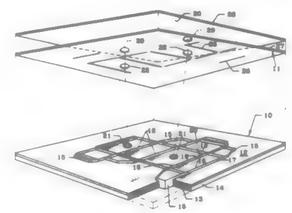
means for said rotating grindstone to advance said blade linearly from said tooth being ground to the next tooth in succession.

5,333,519

STEEL RULE DIE AND METHOD

George L. Holliday, Greensboro; Brightman K. Holliday, High Point, and Herbert G. Shimer, Jr., Greensboro, all of N.C., assignors to Ameritek, Inc., Greensboro, N.C.

Continuation of Ser. No. 879,944, May 8, 1992, Pat. No. 5,211,084, which is a continuation of Ser. No. 201,322, May 25, 1988, Pat. No. 5,140,872, which is a continuation of Ser. No. 701,659, Feb. 15, 1985, abandoned, which is a continuation of Ser. No. 567,942, Jan. 4, 1984, abandoned, which is a continuation-in-part of Ser. No. 299,672, Sep. 8, 1981, abandoned. This application May 11, 1993, Ser. No. 60,610
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] B26D *7/00*
U.S. Cl. 76—107.8 **27 Claims**



1. The method of forming a steel rule die counter plate comprising the steps of:

(a) selecting a desired width for a finished elongated, precision slot in a rigid plate;

(b) adjusting the width of a laser beam for cutting a slot in the rigid plate with a width less than the desired finished slot width;

(c) focusing the laser beam on the surface of the rigid plate;

(d) cutting the rigid plate surface in parallel and overlapping oscillations with the laser beam in increments of width during each oscillation less than the desired finished slot width; and

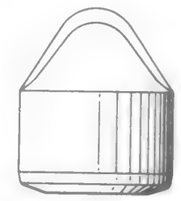
(e) continually cutting the rigid plate with the laser beam until the desired finished slot width is achieved.

5,333,520

METHOD OF MAKING A CEMENTED CARBIDE BODY FOR TOOLS AND WEAR PARTS

Udo K. Fischer, Vällingby; Jan Akerman, Stockholm; Bengt A. Åsberg, Gävle, and Stig E. Lagerberg, Sandviken, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Continuation of Ser. No. 687,676, Apr. 19, 1991, abandoned. This application May 18, 1993, Ser. No. 62,715
Claims priority, application Sweden, Apr. 20, 1990, 9001409 3
Int. Cl.[5] B22F *7/06*
U.S. Cl. 76—108.2 **21 Claims**

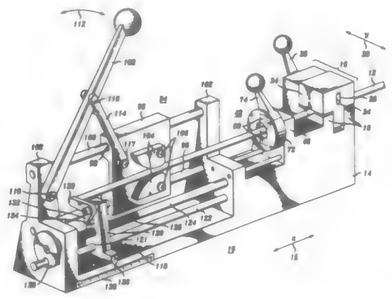


1. A method of making a cemented carbide cutting tool, rock drilling tool or wear part, comprising placing first and second precompacted bodies consisting essentially of metallic carbide powder and a small amount of metal powder upon each other such that the first precompacted body is only on one side of the

VOL 1165 ISS 1 AG 2 1994 UMI

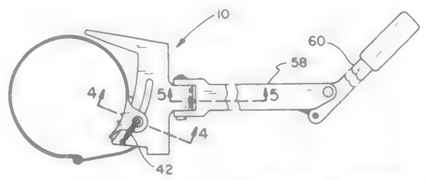
second precompacted body and sintering the first and second precompacted bodies to form a sintered cemented carbide body.

5,333,521
WIRE STRIPPER
Charles Dunsenko, Jr., Somerset, N.J.; Ivan Pawlenko, Holland, and Larry P. Samson, Langhorne, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Aug. 24, 1993, Ser. No. 111,344
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.51 8 Claims



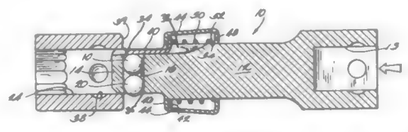
1. Apparatus for stripping a cable having an outer insulative jacket, comprising:
a frame;
a cable clamp carried, in part, by the frame for releasably engaging the cable;
slitting means carried by the frame for circumferentially slitting the outer jacket of the cable, the slitting means including:
a blade carrier rotatably journalled to the frame a distance from the cable clamp, the blade carrier having a first face through which a central opening extends so as to allow the cable to pass through, and extend beyond, the blade carrier, and the first face of the blade carrier having a pair of diametrically opposed slots, each slot extending radially from the blade carrier central opening;
at least one pair of blades, each blade slidably mounted in a separate one of the blade carrier slots for movement to and from the blade carrier central opening; and
means for rotating the blade carrier in a first and second direction and for urging the blades radially inwardly towards each other as the blade carrier is rotated in the first direction so that the blades extend at least partially into the blade carrier opening to cut into the outer insulative jacket of that portion of the cable received through the blade carrier central opening;
at least one first rail carried by the frame so as to extend generally parallel to that portion of the cable extending beyond the blade carrier;
means slidably mounted to the rail for releasably gripping the insulation layer on that portion of the cable received through, and extending beyond, the blade carrier; and
lever means pivotally connected to both the frame and the gripping means for displacing the gripping means along the first rail to cause the gripping means to pull the outer insulative jacket, severed by the blades, off the cable.

5,333,522
OIL FILTER WRENCHES WITH SELF TIGHTENING CAPABILITIES
Don G. Prather, and Hugh M. Prather, both of 5933 Westminster Dr., Austin, Tex. 78723
Filed Nov. 12, 1993, Ser. No. 150,993
Int. Cl.[5] B25B *13/52*
U.S. Cl. 81—64 5 Claims



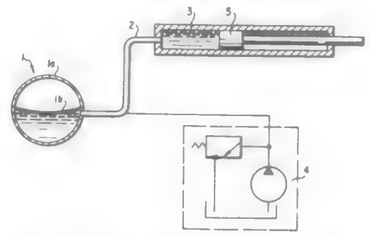
1. An oil filter wrench with self tightening capabilities for grasping and rotating a cylindrical oil filter can comprising, in combination:
a strap fabricated of a flexible inextensible material having a fixed end and a free end;
a ring platform with the fixed end of the strap slidably coupled thereto;
an arcuate guide slot formed in the ring platform with a roller slidable therealong, the roller being coupled to the fixed end of the strap to allow limited sliding movement of the roller and the fixed end of the strap with respect to the ring platform;
a spring resiliently coupling the roller and the fixed end of the strap to the ring platform;
a flexible cable having a first end and a second end coupled at its first end to the free end of the strap and guide means to control the movement of the cable with respect to the free end of the strap;
a major handle coupled to the ring platform to effect rotation of the strap with respect to an oil filter can when held by the strap; and
a minor handle coupled to the second end of the cable, the minor handle pivotable with respect to the major handle for pulling the cable to tighten the strap around the oil filter can whereby continued pulling of the cable by the minor handle will grasp and rotate the oil filter can.

5,333,523
SNAP-ON QUICK RELEASE EXTENSION AND DRIVERS
Bernhard Palm, 17420 Continental Dr., Brookfield, Wis. 53005
Continuation-in-part of Ser. No. 642,462, Jan. 17, 1991, abandoned. This application Dec. 10, 1991, Ser. No. 806,834
Int. Cl.[5] B25B *23/16;* B25G *1/04*
U.S. Cl. 81—177.85 9 Claims



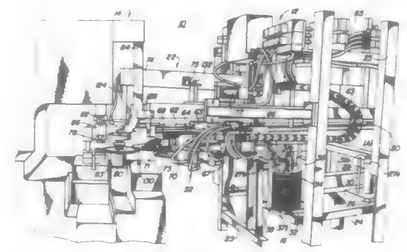
1. A socket wrench driver provided with a push-on/quick release locking arrangement comprising,
a drive end on said driver having an even number of flat drive surfaces and having a longitudinal axis,
a cross bore through said drive end and intersecting opposed flat surfaces, said cross bore having an axis,
lock means mounted in said bore and having a length generally equal to the distance between said opposed surfaces,
an axial groove in one of said opposed flat surfaces,
means retaining said lock means in said bore for movement relative to said bore between a release position in which said lock means is confined within said bore between said opposed flat surfaces and a lock position in which said lock means has limited projection beyond one of said opposed flat surfaces,
an axially movable sleeve mounted on said driver for movement between a first position and a released position,
said sleeve having an inturned front wall,
control means mounted on said drive end and including a key lying in said groove and movable between a first position in which it overlies said lock means to urge said lock means to its said lock position and a release position in which it has moved away from the end of said driver to allow said lock means to move to its said release position in which it retracts into said cross bore,
said control means also including an annular spring seat integral with said key and mounted inside said sleeve adjacent said front wall for movement with and with respect to said sleeve,
a spring coiled around and mounted on said driver end inside said sleeve to act against said drive end and said spring seat to bias said spring seat against said front wall of said sleeve to urge said control means and said key towards said end,
said control means and said key being slidably movable, along said longitudinal axis of said drive end, with and with respect to said sleeve,
said control means having enough clearance relative to said drive end and relative to said sleeve to allow rocking movement of the control means whereby said key can be raised by said lock means when said lock means is moved from its said lock position to its said release position.

5,333,524
PRESSURE STABILIZER FOR BARFEED APPARATUS
Henry E. Goforth, Hendersonville, N.C., assignor to Spego, Inc., Asheville, N.C.
Filed Aug. 31, 1992, Ser. No. 937,261
Int. Cl.[5] B23B *13/08;* B23Q *5/26*
U.S. Cl. 82—127 2 Claims



1. In a machine tool feed apparatus having means including a non-compressible fluid circuit for feeding bar stock to a machine tool having a headstock which moves in opposing directions, the improvement comprising:
a fluid containing chamber in communication with said fluid circuit containing a volume of non-compressible fluid flowing in communication with said fluid circuit, the chamber further containing a compressible fluid acting on said non-compressible fluid to supply said non-compressible fluid to said fluid circuit during motion of said headstock in one said direction and for storing non-compressible fluid from said fluid circuit during motion of said headstock in the other said direction.

5,333,525
APPARATUS AND METHOD FOR PRODUCING MOTOR LAMINATIONS FROM A BLANK
Mark D. Schlegel, Erie, Pa., assignor to General Electric Company, Erie, Pa.
Filed Jun. 5, 1992, Ser. No. 894,401
Int. Cl.[5] B26D *3/14*
U.S. Cl. 83—23 37 Claims



1. An apparatus for producing notched laminations from a blank having a location aperture, the apparatus comprising:
first carrier means for securing the blanks about the location aperture;
means for linearly transporting the blank from the first carrier means to a notching means wherein the linear transport means moves a fixed stroke distance to facilitate transport of the blank to the notching means irrespective of the blank diameter the notching means including means for locating the blank about the location aperture and punch means for producing the notched lamination, wherein the locating means remains laterally fixed and the punch means is adjustable to accommodate a plurality of blank diameters; and
means, operatively connected to the linear transport means, for removing the notched lamination from the notching means and for placing the notched lamination on a second carrier means.

5,333,526
RUNNING SAW SYSTEM
Yukitomo Suzuki, Tokyo, Japan, assignor to Heian Corporation, Shizuoka, Japan
Continuation of Ser. No. 942,921, Sep. 10, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 159,050
Int. Cl.[5] B26D *1/18*
U.S. Cl. 83—256 7 Claims

1. A running saw system for cutting a large rectangular piece into a plurality of smaller rectangular pieces, comprising:
a carry portion including:
a plurality of rails, each having a plurality of rollers and carry conveyor means for carrying a large rectangular piece from an entrance port of the carry portion to the rails, the carry conveyor means being arranged adjacent to the entrance port of the carry portion;
truing means for truing at least one edge of the large rectangular piece, said truing means including:
rule plate means arranged at one side of the carry portion in parallel with the rails, for contact with one edge of the large rectangular piece, moving hook portion means, having hooks for engaging a rear edge of the large rectangular piece, and for intermittently moving the large rectangular piece on the rails by a predetermined distance;
clamp means for clamping the large rectangular piece carried by the moving hook portion means, when the large rectangular piece has said one edge in contact with said rule plate means and cut saw means for traverse cutting a front edge of the large rectangular piece at a predeter-

VOL 1165 ISS 1 AG 2 1994 UMI

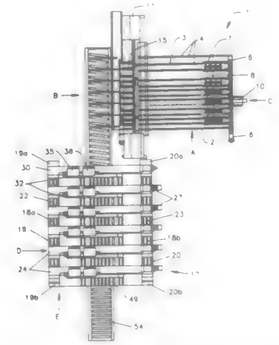
mined width, at a right angle to said one edge of the large rectangular piece, to form a cut piece;

sending conveyor means for carrying the trued piece in a carrying direction, said sending conveyor means being arranged adjacent to clamp means;

traverse conveyor means for carrying the cut piece in a direction traverse to the carrying direction of the sending conveyor means, said traverse conveyor means being arranged adjacent to the sending conveyor means; and

a plural cut portion including:

carry conveyor means for moving the cut piece into contact with a stopper means at a positioning portion,



rule plate means, movable vertically at one side of the plural cut portion, for setting one edge of the cut piece,

pushing cylinder means for pushing the cut piece against the rule plate means,

clamping means for clamping the trued piece by lowering with a lowering cylinder means,

means for independently setting predetermined cutting distances between a fixed frame means and a moving frame means, and

cut means mounted on the fixed frame means and the moving frame means for cutting the trued piece into a plurality of small rectangular pieces of lengths corresponding to the predetermined cutting distances.

5,333,527

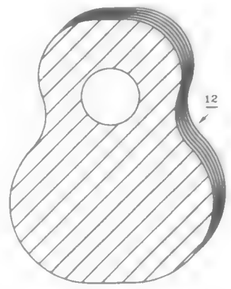
COMPRESSION MOLDED COMPOSITE GUITAR SOUNDBOARD

Richard Janes, 11730 N. 91st Pl., Scottsdale, Ariz. 85260, and William R. Cumpiano, 31 Campus Plaza Rd., Hadley, Mass. 01035

Continuation of Ser. No. 749,599, Aug. 26, 1991, abandoned.
This application Mar. 8, 1993, Ser. No. 28,725
Int. Cl.[5] B29C *43/18, 67/14;* G10D *1/02, 1/08*
U.S. Cl. 84—291 4 Claims

1. A guitar soundboard comprising:

a compression molded layup of layers, each layer containing graphite fibers impregnated with epoxy resin in a ratio which is approximately 33% resin to 67% fiber by weight with the layup of graphite fiber orientation being approximately three to four times as many fibers in the longitudinal direction as in the latitudinal direction, the layup including spaced layers consisting of woven graphite fabric, the layers between the spaced layers consisting of unidirectional graphite tape, and with the layup being cured in a compression molding operation at uniform temperature and pressure, the soundboard having raised portions forming waves molded into the molded layup for improved sound capabilities.

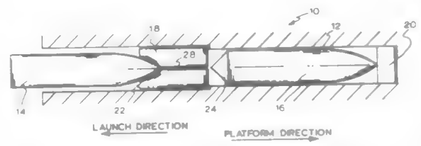


5,333,528

MULTIPLE MISSILE EJECTION SYSTEM

Ralph H. Klestadt, Sherman Oaks, and Richard R. Finn, Palmdale, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 28, 1992, Ser. No. 937,251
Int. Cl.[5] F41F *3/042*
U.S. Cl. 89—1.51 7 Claims



1. A multiple missile ejection system comprising:

a launch tube for storing at least a first and a second guided missile and

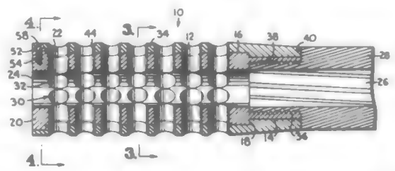
gas bag mans for ejecting each of said missiles from said launch tube said gas bag means including at least one gas bag mounted between said first and second missiles and said first missile being mounted for forward ejection from said launch tube and said second missile being mounted for rearward ejection from said launch tube.

5,333,529

CONVERTIBLE MUZZLE BRAKE

James W. Brockman, Alpine, Tex., assignor to Rott & Company, Clay Center, Kans.

Filed Jan. 8, 1993, Ser. No. 2,477
Int. Cl.[5] F41A *21/38*
U.S. Cl. 89—14.3 10 Claims



1. A muzzle brake for a firearm, said muzzle brake comprising:

a tubular member adapted to be mounted to the muzzle of a firearm in forwardly projecting longitudinal extension of the firearm barrel, said member having an axially extending passage aligned with the bore of the firearm barrel when the member is mounted on said muzzle, the passage being disposed to permit a projectile from the barrel to pass through the member, said member having a plurality of gas escape openings extending transversely through the sidewall of the member and communicating with said passage, there being openings disposed at spaced intervals substantially entirely around said member;

a tubular sleeve telescoped over said member, the sleeve having a plurality of holes disposed for alignment with said openings of the member to permit gas escaping from said openings to exit the brake when the sleeve is in one position with respect to the member, there being a hole for each opening, respectively, the member having areas without holes which areas are alignable with said openings to prevent escape of gas through said openings when the sleeve is in a second position with respect to the member; and

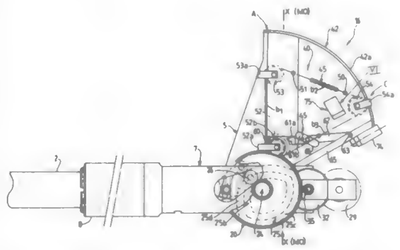
means mounting the member and the sleeve in said telescoped relationship for selective manual movement of the sleeve between said one position and said second position.

5,333,530

SYSTEM FOR LOADING A ROUND INTO A PIVOTING CHAMBER OF A GUN

Georges Simon, Saint-Germain-Du-Puy, and Michel Baubois, Bourges, both of France, assignors to Giat Industries, Versailles, France

Filed May 20, 1993, Ser. No. 64,956
Claims priority, application France, May 21, 1992, 92 06198
Int. Cl.[5] F41A *9/45*
U.S. Cl. 89—13.1 20 Claims



1. A system for loading a round into a pivoting chamber of a gun, comprising:

a support frame;

an oscillating mass pivotally mounted to said support frame for movement about a substantially horizontal trunnion axis;

a recoil mass mounted for movement relative to said oscillating mass; said recoil mass including a gun barrel, a sleeve at one end of said gun barrel, and a pivoting chamber mounted to said sleeve for pivoting movement between a firing position and a loading position, wherein said firing position and said loading position are angularly offset by an angle a between 0° to 90°;

a control device cooperating with said chamber for controlling pivoting of the chamber between said firing position and said loading position;

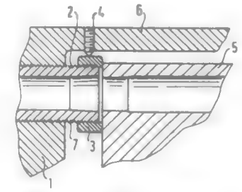
a feed device for feeding rounds, said feed device being carried by said recoil mass and comprises a feed station in which the new round is aligned on an axis substantially parallel to the trunnion axis of the gun, a loading section secured to said recoil mass and in which the new round is aligned on the axis of said chamber when the chamber is in said loading position, said feed station and said loading station being offset angularly relative to each other by an angle b which is substantially complementary to the pivot angle a of the chamber, and means for transferring the round by pivoting from the feed station to the loading station.

5,333,531

REVOLVER FIREARM WITH GAS SEALING

Roger Field, Eisenbahn Str. 5A, 7570 Baden Baden, Fed. Rep. of Germany

Continuation of Ser. No. 836,530, Feb. 18, 1992, abandoned.
This application Feb. 19, 1993, Ser. No. 22,745
Int. Cl.[5] F41A *3/76*
U.S. Cl. 89—26 4 Claims



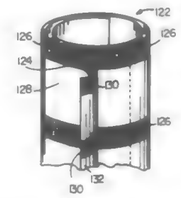
1. A revolver firearm having a barrel with a longitudinal axis, a cylinder for storing and firing cartridges, and a frame for supporting said barrel and said cylinder, said barrel having an outside circumference, said outside circumference having a rear section, said rear section extending behind a rear face of a forward portion of said frame, said cylinder having a given length with a front and a rear face, said cylinder being positioned on an axle, said axle being positioned parallel to said longitudinal axis of said barrel, with a gap between said rear section of said barrel and said front face of said cylinder, the improvement comprising a sleeve (3) positioned around said rear section of said outside circumference of said barrel (2), said sleeve (3) being brought toward said front face of said cylinder (5) along said longitudinal axis of said barrel (2) to reduce the effects of said gap (10) to a minimum against gas pressure when firing a cartridge of said firing cartridges.

5,333,532

SURVIVABILITY ENHANCEMENT

Martin E. Smirlock, Concord; William A. Ribich, Lexington; Paul J. Marinaccio, East Orleans, all of Mass., and Bernard E. Sawaf, Nashua, N.H., assignors to Foster-Miller, Inc., Waltham, Mass.

Division of Ser. No. 529,196, May 25, 1990, Pat. No. 5,170,690, which is a continuation-in-part of Ser. No. 202,218, Jun. 3, 1988, Pat. No. 4,928,575. This application Dec. 2, 1992, Ser. No. 984,336
Int. Cl.[5] F41H *5/16*
U.S. Cl. 89—36.02 6 Claims



1. A blast container comprising a flexible sheet of high tensile strength material, separable fastener structure of a first type secured on one surface of said sheet, separable fastener structure of a second type secured on the other surface of said sheet, one of said separable fastener structures having a multi-

VOL 1165 ISS 1 AG 2 1994 UMI

plicity of hooking elements and the cooperating other fastener structure having complementary structure that is releasably interengageable with said hooking elements, said sheet being wound in a spiral to form the peripheral wall of said blast container such that said one and other surfaces mate with said separable fastener structures in engagement.

5,333,533

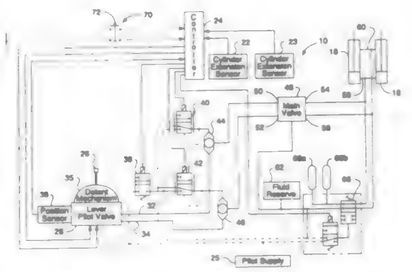
METHOD AND APPARATUS FOR CONTROLLING AN IMPLEMENT

Javad Hosseini, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 759,390, Sep. 13, 1991. This application May 28, 1992, Ser. No. 889,571

Int. Cl.[5] F15B *13/16*

U.S. Cl. 91—361 25 Claims



1. An apparatus for controllably raising and lowering an implement which is connected to a work vehicle and movable between maximum raised and lowered positions in response to the extension and retraction of a hydraulic cylinder, comprising:

a hydraulic accumulator;

a sensor adapted to sense the position of the implement with respect to the work vehicle and responsively produce an implement position signal;

kickout means for selecting a kickout position and responsively producing a kickout position signal;

a control lever being normally biased to a neutral position and being movable between raise and lower detent positions;

a lever position sensor adapted to sense the position of the control lever and responsively produce a lever position signal;

a lever operated pilot valve connected to the control lever and being adapted to produce a lever pilot pressure responsive to the position of the control lever;

a detent mechanism being adapted to maintain the control lever at either of its detent positions when the control lever is manually moved to a respective detent position, the detent mechanism being further adapted to receive a detent release signal and release the control lever from the detent position in response to the detent release signal;

a controller being adapted to receive the implement and control lever position signals, produce a detent signal in response to the control lever position signal indicating that the control lever is in one of the detent positions, produce a difference signal in response to a difference between the implement and kickout position signals, produce an open signal and the detent release signal when the difference signal between first and second thresholds, and produce a control signal in response to production of the detent signal, the control signal having a magnitude responsive to the difference signal;

an accumulator control means for receiving the open signal and permitting hydraulic fluid flow between the hydraulic cylinder and the accumulator in response to the open signal and preventing hydraulic fluid flow between the hydraulic cylinder and the hydraulic accumulator in the absence of the open signal;

first valve means for receiving the control signal and producing an electrohydraulic pilot pressure in response to the control signal; and

second valve means for receiving the lever and electrohydraulic pilot pressures and controlling the extension of the hydraulic cylinder in response to the greater of the two pressures.

5,333,534

BOOSTER

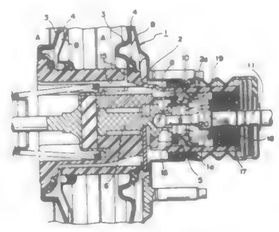
Shintaro Uyama, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed May 25, 1993, Ser. No. 66,896

Claims priority, application Japan, Jun. 19, 1992, 4-185811

Int. Cl.[5] F15B *9/10*

U.S. Cl. 91—376 R 7 Claims



1. A booster including a valve body containing a valve mechanism therein and having a tubular portion formed at its rear side which provides a pressure passage, an input shaft inserted into the tubular portion for movement together with the valve mechanism, and a coiled spring disposed between the tubular portion of the valve body and the input shaft for urging the input shaft rearward to return it to its inoperative position, the coiled spring including a helical body and a seat section located at a rear end of the helical body and disposed for abutment against the input shaft; characterized in that the helical body of said coiled spring includes a constant inner diameter from the rear end to a front end thereof so as to define a generally cylindrical space from said rear end to said front end, and the seat section of said coiled spring includes an outer diameter less than the inner diameter of the helical body at a location immediately adjacent to and located forwardly of the seat section, whereby the seat section and the helical body portion are radially spaced apart to define an arcuate space therebetween which serves as the pressure passage.

5,333,535

RODLESS CYLINDER

Michikazu Miyamoto; Hideho Koyama, and Naoki Hoshi, all of Ibaraki, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 53,675

Claims priority, application Japan, Jul. 21, 1992, 4-194286; Jul. 21, 1992, 4-194287; Jul. 22, 1992, 4-051465[U]; Aug. 21, 1992, 4-223006; Aug. 31, 1992, 4-060911[U]; Sep. 24, 1992, 4-066510[U]

Int. Cl.[5] F01B *29/00*

U.S. Cl. 92—88 16 Claims

1. A rodless cylinder comprising:

a cylinder having a cylinder tube with a bore defined therein and a piston reciprocally movably disposed in said bore;

said cylinder tube having a slit defined therein and extending longitudinally therealong, said slit communicating between said bore and an exterior space;

a slide table;

a first seal member engaging said piston;

a second seal member engaging said piston;

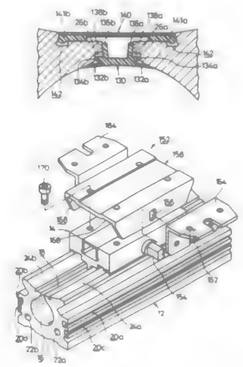
a second seal member engaging said slide table, said cylinder tube having a pair of retaining grooves disposed on respective opposite sides of said slit for receiving therein said second seal member;

said slit being closed by said first and second seal members;

said piston having a separator for separating said first and second seal members from each other;

said cylinder tube having a pair of slanted first surfaces positioned on respective opposite sides of said slit, and disposed outwardly from said retaining grooves with respect to said slit, said slanted surfaces being inclined upwardly away from said respective retaining grooves; and

at least a pair of slide members disposed on said slide table and having respective second surfaces engaging said



slanted first surfaces, respectively, for guiding said slide table when said piston reciprocally moves in said bore and bearing a load applied to said slide table.

15. A rodless cylinder comprising:

a cylinder tube;

a piston movably disposed in said cylinder tube;

a slide table coupled to said piston for movement therewith in a direction along said cylinder tube; and

a floating mechanism mounted on said slide table for allowing displacements substantially perpendicular to said direction, wherein said floating mechanism comprises a bracket fixed to said slide table and a pair of joints having workpiece support surfaces projecting upwardly of said bracket, said joints being coupled to said slide table by respective pins, and wherein said workpiece support surfaces are displaced substantially perpendicularly to said direction.

5,333,536

PISTON AND METHOD OF MANUFACTURE

Lawrence F. Yuda, P.O. Box 499, Westminster, S.C. 29693

Continuation of Ser. No. 568,223, Aug. 16, 1990. This application Apr. 23, 1992, Ser. No. 873,666

Int. Cl.[5] F01B *31/10;* B23P *15/10*

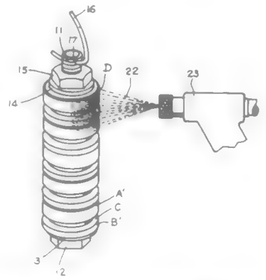
U.S. Cl. 92—155 3 Claims

1. The method of manufacturing a piston having a cylindrical outer wear surface on each side of an annular groove and an axial bore therethrough for receiving a piston rod comprising the steps of:

suspending a plurality of cylindrical metallic members in stacked relation upon a rod passing through respective axial bores of said cylindrical metallic members;

treating an outer surface of each of said cylindrical metallic members, each of said members including said surfaces and said annular groove, for receiving a spray of plastic material;

spraying said plastic material on said outer surface after so treating said outer surface and while so suspending said



cylindrical members in stacked relation upon said rod forming a coating defining spaced wear surfaces; and

hardening in situ said plastic material on said outer surface while so suspending said cylindrical members in said stacked relation upon said rod.

5,333,537

DEVICE FOR EJECTION OF GROUND COFFEE PRESSED INTO A CAKE FROM A BREWING APPARATUS OF A COFFEE MACHINE

André Lüssi; Hans Zurbuchen, both of Wabern, and Jürg von Gunten, Grosshöchstetten, all of Switzerland, assignors to Sintra Holding AG, Switzerland

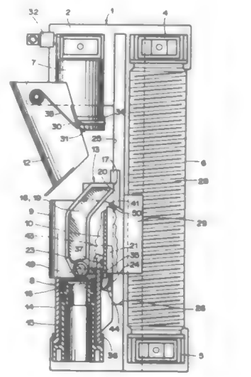
PCT No. PCT/CH92/00156, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO93/02606, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 28, 1992, Ser. No. 30,315

Claims priority, application Switzerland, Jul. 30, 1991, 02 283/91-7

Int. Cl.[5] A47J *31/34, 31/00*

U.S. Cl. 99—287 10 Claims



1. Device for ejection of ground coffee pressed into a cake from a brewing apparatus of a coffee machine having a frame for supporting said brewing apparatus, a brewing cylinder having a cylindrical bore and a first end, first and second pistons mounted within and closing the cylindrical bore to form a brewing chamber, said brewing cylinder and said second piston being displaceable relative to one another and said

VOL 1165 ISS 1 AG 2 1994 UMI

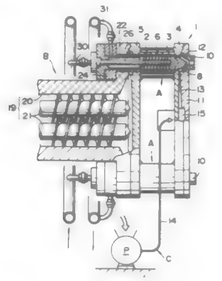
first piston along a brewing cylinder axis, said first piston being fixed to said frame, a drive spindle for displacing said brewing cylinder away from said first piston to space said first end of the brewing cylinder from a face of said first piston facing the brewing cylinder a distance equal to at least a thickness of said cake of ground coffee, and means for displacing said second piston toward said brewing cylinder at least until a face of said second piston facing said brewing cylinder is flush with said first end of the brewing cylinder for ejecting said cake of ground coffee out of said brewing cylinder, wherein said device comprises an ejection part disposed on said brewing cylinder and means for swiveling said ejection part about a swivel axis at right angles to said brewing cylinder axis and spaced from said first end of the brewing cylinder to eject said cake of ground coffee off of said face of said second piston, and wherein said first end of the brewing cylinder and said face of said second piston have a curvature corresponding to a swiveling path described by said ejection part.

5,333,538

FOOD EXTRUDER MACHINE

Kiyohiko Sawa, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 2, 1991, Ser. No. 694,915
Int. Cl.[5] A22C *25/00*
U.S. Cl. 99—353 5 Claims



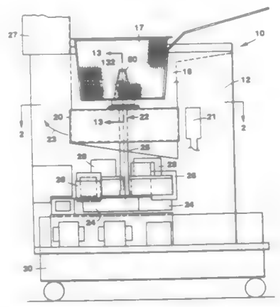
1. A food extruder assembly including a food extruder comprising:
a molding barrel;
a core having an axis and a periphery and being fitted in the molding barrel, at least one of the molding barrel and core defining a plurality of axial passages spaced circumferentially about the core periphery, said core having a conical part at an end thereof;
a die head positioned in facing relation to said cone part so as to define an annular clearance therebetween, said die head having a die hole communicating with said axial passages via said annular clearance;
means for passing a main material through said passages to said annular clearance; and
means for supplying a molten sub-material to said annular clearance for mixing with said main material,
whereby the mixed main material and sub-material may be extruded through said die opening.

5,333,539

MICROWAVE ENHANCED DEEP FAT FRYER

James R. Hurley, Weymouth; Paul J. Childs, Swampscott, and Timothy J. Norman, Wayland, all of Mass., assignors to Tecogen, Inc., Waltham, Mass.

Continuation of Ser. No. 893,591, Jun. 2, 1992, abandoned, which is a continuation of Ser. No. 494,588, Mar. 16, 1990, abandoned. This application Nov. 10, 1993, Ser. No. 150,279
Int. Cl.[5] A47J *37/12;* A23L *1/025*
U.S. Cl. 99—403 15 Claims



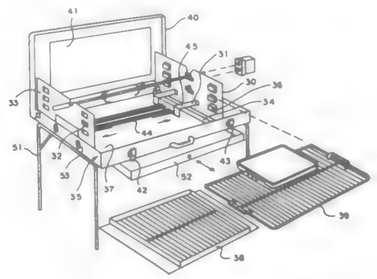
12. A microwave frying apparatus comprising:
a fry tank for containing cooking oil;
a plurality of cooking vessels, each of which can be positioned in said fry tank immersed in cooking oil adjacent each other at the same time;
means for separately introducing microwave energy into the interior of each cooking vessel, from within each said vessel; and
means for confining microwave energy within each said vessel.

5,333,540

PORTABLE BARBEQUE

Carlos Mazzocchi, 239 Doncaster Ave., Kingsford NSW 2032, Australia

PCT No. PCT/AU91/00275, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO92/00034, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 27, 1991, Ser. No. 960,443
Claims priority, application Australia, Jun. 29, 1990, PK0912
Int. Cl.[5] A47J *37/07;* F24B *3/00*
U.S. Cl. 99—421 H 23 Claims



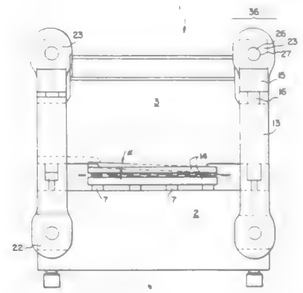
1. A free standing collapsible, portable barbeque which is moved between a folded configuration, thereby assuming the character of a portable suitcase, and an assembled configuration; said barbeque comprising:
a substantially cubic receptacle including a base supported by legs pivotally attached to an underside of said base of said receptacle so that said legs fold inwardly to a plane parallel with the underside of said base of said receptacle,
a lid pivotally connected to said receptacle which when open is a rear baffle and when closed is a cover for said receptacle,
first and second side baffles which move independently of said lid, each of said side baffles being pivotally connected to said base of said receptacle adjacent a sidewall of the receptacle,
a well formed within said receptacle defining a cooking waste trap, said well including a releasable drawer which forms a base in said well and when released, facilitates removal of cooking waste,
supporting means on said first and second side baffles to provide adjustable support of one or more cooking trays or a rotisserie,
means to enable an injection of a gas operated heat source or means to receive dry combustibles as a heat source within said receptacle,
fastening means on said lid or receptacle to secure said receptacle when said barbeque is in the folded configuration.

5,333,541

METHOD FOR GUIDING STEEL BANDS OF A CONTINUOUSLY WORKING PRESS BY ALTERING A POSITION OF A PRESSING RAM TO APPLY A VARYING PRESSURE PROFILE TO A MATERIAL BEING PRESSED

Friedrich B. Bielfeldt, and Detlef Kroll, both of Eppingen, Fed. Rep. of Germany, assignors to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany

Continuation of Ser. No. 26,216, Mar. 1, 1993, Pat. No. 5,253,571, which is a continuation of Ser. No. 672,650, Mar. 21, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 128,293
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017791
Int. Cl.[5] B30B *11/22, 5/04*
U.S. Cl. 100—41 4 Claims



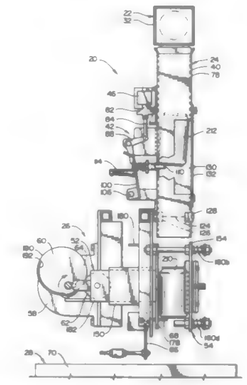
1. A method of guiding first and second endless steel bands about a longitudinal axis of a continuously working press for the manufacture of pressed boards, the continuously working press having short-stroke pressure cylinders and multiple pressure regions of varying pressure and said bands transmitting pressing pressure to the material to be pressed and drawing said material through said press, said method comprising the steps of:
(A) guiding said first and second bands, via driving drums and return drums, around a pressing ram and a pressing table, respectively;
(B) supporting said steel bands, with an adjustable pressing gap formed therebetween, on a plurality of co-rotating steel rods which are guided, with their axes of rotation extending transversely to the direction of travel of said bands, against abutment lugs of said table and said pressing ram; and
(C) altering a position of said pressing ram; and a part of said pressing ram is inclined at an angle α relative to a horizontal plane; and
(D) applying a varying pressure profile to the material to be pressed via the inclined pressing ram along a direction transverse to the longitudinal axis; and
(E) altering an angle of at least one of said drums through an angle β at least at a beginning of step C).

5,333,542

APPARATUS FOR COLLECTING AND COMPACTING ALUMINUM CANS

Lorne S. Lewis, 1597 Despard Avenue, Victoria, B.C., Canada V8S 1T2 , and Gary W. Lewis, #206 555 Songhees, Victoria, B.C., Canada V9A 6T3

Filed Jan. 22, 1993, Ser. No. 7,544
Int. Cl.[5] B30B *9/32, 15/30*
U.S. Cl. 100—45 24 Claims



1. Apparatus for collecting and storing empty aluminum containers, said apparatus comprising:
a reciprocating ram having a first crushing platen mounted at a first end thereof;
a second crushing platen mounted in opposition to said first crushing platen so as to define a vertically extending crushing zone intermediate said platens, said second crushing platen comprising:
a generally planar plate member having a first face for receiving a crushing force exerted by said reciprocating ram; and
first and second guide plates mounted to said plate member and extending from said first face thereof into said crushing zone;
said guide plates being angled outwardly from said plate member along their vertically extending outer edges and inwardly along their vertically extending inner edges so as to form a V-shaped channel for guiding and holding a container which falls vertically into said crushing zone;
means for reciprocating said ram between a retracted position in which said crushing zone is opened to receive a container therein and an extended position in which said platens are brought together so as to crush a container received in said zone;
a feed chute for holding a plurality of said containers, said chute having a discharge end positioned vertically above said crushing zone;

VOL 1165 ISS 1 AG 2 1994 UMI

means for releasing said containers individually from said chute in response to said ram moving to said retracted position, so that said containers fall vertically one-by-one into said opened crushing zone; and

means for retaining an empty container within said zone for crushing, and for releasing a container after crushing so that said crushed container falls vertically out of the bottom of said crushing zone.

5,333,543

RAM LOCKING DEVICE FOR A CHIPLESS PRESS WITH STATICALLY CUSHIONED AND PRESSURE-RELIEVABLE TENSION ROD

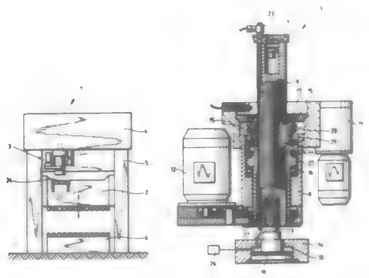
Werner Reifenrath, Betzdorf, and Eduard Braun, Wissen, both of Fed. Rep. of Germany, assignors to Optima Spanntechnik GmbH, Scheuerfeld, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 975,195

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139537; Jul. 10, 1992, 4222714

Int. Cl.[5] B30B *15/00*

U.S. Cl. 100—53 **10 Claims**



1. A device for locking a tool-carrying ram of a chipless press, said locking device comprising:

a tensioned rod having a head for supporting the tool-carrying ram;

means for axially displacing said tension rod;

means for providing a cushion for said tension rod in a locked position thereof; and

means for relieving the cushion to thereby provide for release of a locking engagement of said head with the tool-carrying ram.

5,333,544

MOBILE PLATFORM FOR OPERATORS OF CALENDERS

Hans-Rolf Conrad, Dormagen, Fed. Rep. of Germany, assignor to Sulzer Papertec Krefeld GmbH, Krefeld, Fed. Rep. of Germany

Filed Jun. 4, 1993, Ser. No. 72,543

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1992, 9207852[U]

Int. Cl.[5] B30B *3/04;* **D21G** *9/00*

U.S. Cl. 100—53 **9 Claims**

1. A web treating machine comprising:

a battery of rolls having a first side and a second side, each of said rolls being disposed at different elevations;

at least one guide roller being disposed adjacent to said first side of said battery of rolls, said battery of rolls and said at least one guide roller defining an elongated path for a running web;

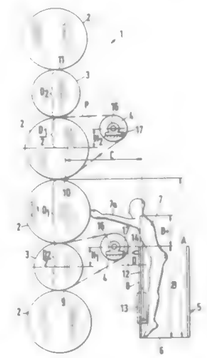
a platform comprising a support, said platform being disposed adjacent to said first side of said battery of rolls;

a parapet being disposed on said support;

means for moving said support up and down along said first side between a plurality of levels;

a breastwork being disposed on said support adjacent to said parapet; and

means for raising and lowering said breastwork relative to said parapet between a plurality of positions including an uppermost and a lowermost position, said breastwork



extending beyond said parapet in at least one of said plurality of positions to prevent a person occupying said support from reaching over said parapet and contacting said battery of rolls irrespective of the level of said support.

5,333,545

SHEET-FED ROTARY OFFSET PRINTING PRESS WITH A REMOVABLE IMPRINTING OR FINISHING UNIT

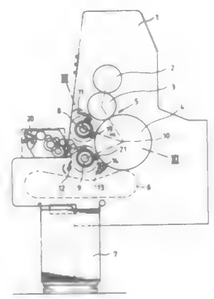
Udo Ganter, Hirschbeg-Leutershausen, and Norbert Rodi, Kronau, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 4, 1993, Ser. No. 72,524

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1992, 4218422

Int. Cl.[5] B41F *5/02*

U.S. Cl. 101—76 **8 Claims**



1. Sheet-fed rotary offset printing press having a printing unit including a plate cylinder, a rubber-blanket cylinder and an impression cylinder double the size of the plate and the rubber-blanket cylinders, respectively, at least one auxiliary unit selected from an imprinting unit and a finishing unit removably disposed on a tool-carrier shaft extending transversely to a sheet-transport direction and being mounted in a frame of the printing press, and drive elements for connecting the auxiliary unit to a drive for the printing press and for bringing the auxiliary unit into engagement with the sheet as it

is being guided on the impression cylinder, comprising another tool-carrier shaft extending transversely to the sheet-transport direction and being mounted in a frame of the printing press, both of the tool-carrier shafts being disposed parallel to one another in the printing unit and offset from one another by a phase angle having a vertex on a central axis of the impression cylinder, and driving elements for the respective auxiliary unit disposed on each of the two tool-carrier shafts.

5,333,546

BLANKET TO BLANKET TYPE PRINTING PRESS EMPLOYING DIVIDED PLATE CYLINDER

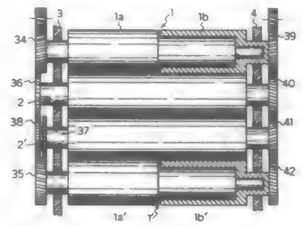
Masahiko Miyoshi, Ayase; Kiyohisa Asanuma, Kawasaki, and Kazuharu Soutome, Zama, all of Japan, assignors to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Division of Ser. No. 890,551, May 28, 1992, Pat. No. 5,267,512. This application May 6, 1993, Ser. No. 58,463

Claims priority, application Japan, Nov. 16, 1991, 3-354122

Int. Cl.[5] B41F *5/00*

U.S. Cl. 101—216 **3 Claims**



1. A blanket-to-blanket type printing press comprising:

a pair of plate cylinders respectively carrying printing plates, on each of which a pattern to be printed is formed, each of said plate cylinders being separated into axially aligned first plate cylinder component and second plate cylinder component for rotation at independently adjustable rotational phase;

a pair of blanket cylinders respectively carrying blankets, to which the patterns on said printing plates are transferred for printing on a printing medium and associated with said plate cylinders for receiving printing pattern of said printing plates to transfer onto both sides of a printing medium, said blanket cylinders having slightly different finished diameters from that of said plate cylinders, said blanket cylinders being provided slightly greater finished diameters than that of said plate cylinders; and

a drive gear train for driving said plate cylinders and said blanket cylinders in synchronism with each other with maintaining desired phase relationship therebetween, said drive gear train establishing a path for power transmission so that the driving power is initially transmitted to said cylinders having smaller finished diameter and subsequently to the other cylinders having larger finished diameter, said driving power transmission path is established so that driving power is initially provided for said first plate cylinder components and then transferred to said second plate cylinder components through shafts of said plate cylinders and to said blanket cylinders, said driving gear train comprising:

respective shafts supporting said first plate cylinder components;

a pair of engaged first transfer gears rigidly mounted on respective first axial ends of the shafts of said first plate cylinder components;

a pair of engaged second transfer gears rigidly mounted on respective second axial ends of the shafts of said first plate cylinder components;

respective shafts supporting said blanket cylinders;

a pair of first driven gears rigidly mounted on respective first axial ends of the shafts of said blanket cylinders, and said first driven gears engaged with the first transfer gears respectively;

respective shafts supporting said second plate cylinder components;

a pair of second driven gears rigidly mounted on respective second axial ends of the shafts of said second plate cylinder components; and

an intermediate gear connectable to a driving torque power source and engaged with one of said first transfer gears and also engaged with one of the first driven gears; and

said driving power transmission path being established by transferring the driving torque on said one of said first transfer gears and to one of said second transfer gears through said shaft of one of said first plate cylinder components, transferring the driving torque on said one of the first driven gear to the other of said first transfer gears through said intermediate gear, transferring the driving torque on the other of said first transfer gears to the other of said first driven gears and to the other of said second transfer gears through said shaft of the other first plate cylinder components; and transferring driving torque on respective of said second transfer gears to respective of said second driven gears.

5,333,547

GRIPPER APPARATUS ON SHEET-PROCESSING MACHINES

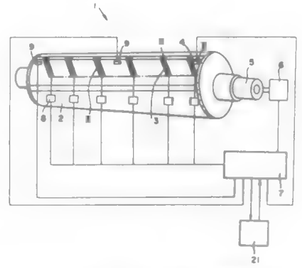
Alexander Pfisterer, Eppelheim, and Anton Rodi, Leimen, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jan. 11, 1993, Ser. No. 3,106

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1992, 4200406

Int. Cl.[5] B41F *1/30*

U.S. Cl. 101—409 **15 Claims**



1. Gripper apparatus on a sheet-processing machine, comprising a pair of cooperative gripper members, a control device including a computer for controlling said pair of gripper members, at least one data transmitter connected to said computer for inputting data therein, and means for performing at least one function selected from a group thereof consisting of opening and closing said pair of gripper members in response to an output of said computer, said function-performing means being operatable at predetermined positions of the sheet-processing machine, an input device for inputting values of parameters selected from the group thereof consisting of sheet-specific and printing press-specific parameters to said computer of said control device, said pair of gripper members being actuatable by said control device in accordance with a sheet-width parametric value.

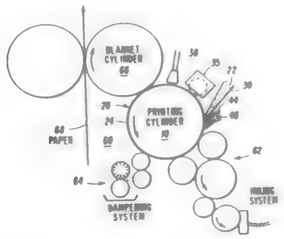
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,548

DIRECT-TO-PRESS IMAGING SYSTEM FOR USE IN LITHOGRAPHIC PRINTING

Thomas A. Fadner, LaGrange, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 875,909, Apr. 30, 1992, Pat. No. 5,188,033, and Ser. No. 726,614, Jul. 19, 1991, Pat. No. 5,129,321. This application Dec. 15, 1992, Ser. No. 991,165
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] B41C *1/10*
U.S. Cl. 101—467 2 Claims



2. A direct-to-press imaging system for use in lithographic printing wherein a master-image printing device is used with separate application of ink and water onto its surface to enable repetitive conveyance of image-formatted ink films onto substrates for printing purposes, said imaging system comprising:

a master-image printing device having a magnetizable surface;

means for applying a magnetically active hydrophilic powder onto the surface of said master-image printing device to form a layer of hydrophilic powder on said surface;

means for forming an oleophilic surface on said device in an image-formatted pattern to form a durable lithographic master printing image structure on said master-image printing device having separate water and ink receptive areas corresponding to non-image and image areas of the format to be printed; and

means for erasing said master printing image structure by removing at least said hydrophilic powder layer from said master-image printing device.

5,333,549

METHOD FOR PRODUCING PRINTED IMAGES ON FOIL-COVERED SURFACES

William Feldman, Arlington, Tex., assignor to Playoff Corporation, Grand Prairie, Tex.

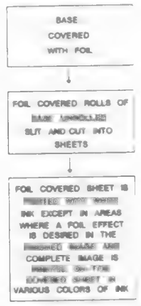
Filed Sep. 14, 1992, Ser. No. 944,481
Int. Cl.[5] B41F *17/22*
U.S. Cl. 101—483 13 Claims

1. A method of creating a printed image on a boxboard base, comprising the steps of:

covering said boxboard base with foil using vacuum metalizing or glue lamination, over all or a portion of one surface:

printing one coat of opaque white ink on said foil-covered surface of said boxboard base in a single pass through said waterless offset printing press, such that less than the total surface area of said foil-covered surface of said boxboard base is coated with said opaque white ink; and

printing transparent ink on said foil-covered boxboard base in a single pass through a waterless offset printing press, such that an image is defined wherein at least a portion of said image is printed on said portions of said boxboard base which are coated with said opaque white ink and at least a portion of said image is printed on said portions of



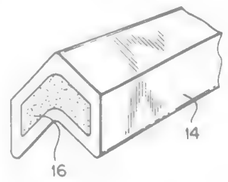
said boxboard base which are not coated with said opaque white ink.

5,333,550

TIN ALLOY SHEATH MATERIAL FOR EXPLOSIVE-PYROTECHNIC LINEAR PRODUCTS

Stanley Rodney, and Larry H. Barr, both of Hollister, Calif., assignors to Teledyne McCormick Selph, Hollister, Calif.

Filed Jul. 6, 1993, Ser. No. 86,260
Int. Cl.[5] F42B *3/00*; C06C *5/09*
U.S. Cl. 102—331 13 Claims



1. A lead-free, tin alloy ignition cord comprising:

a) a tin alloy sheath having the following percentage weight proportions:

Tin	approximately 96.5–98%
Antimony	approximately 2 to 3%, and

b) a fuel/oxidizer pyrotechnic mix core load within said sheath.

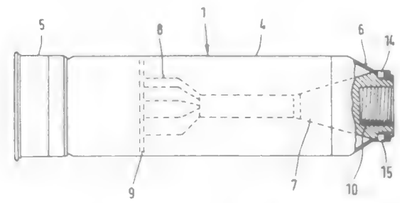
5,333,551

DRIVE MEMBER FOR A LARGE-CALIBER MULTI-PURPOSE CARTRIDGE AND USE OF SUCH A DRIVE MEMBER FOR THE PRODUCT OF DIFFERENT TYPES OF CARTRIDGES

Thomas Heitmann, Düsseldorf; Jürgen Böcker, Oberhausen, and Ulf Hahn, Ratingen-Hösel, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Ratingen, Fed. Rep. of Germany

Filed Jan. 29, 1993, Ser. No. 10,813
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 4202780
Int. Cl.[5] F42B *5/02*
U.S. Cl. 102—439 14 Claims

1. A drive member for a projectile head of a large-caliber multi-purpose live cartridge or multi-purpose training cartridge, said drive member comprising: a propelling charge casing; means disposed at a front end of said charge casing for providing a threaded form-locking connection between the drive member and a projectile head of a multi-purpose cartridge; and, at least two bores, which are directed radially inwardly from an outer circumference of said charge casing,



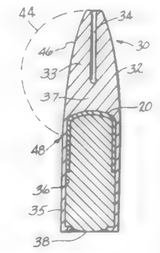
which extend into said means for providing a threaded form-locking connection, and which serve to fix a holding and clamping device for the drive member during the form-locking connection of the projectile head to the drive member, provided at said front end of said charge casing.

5,333,552

HUNTING BULLET WITH REINFORCED CORE

Alan J. Corzine, Marine, and Gerald E. Eberhart, Bethalto, both of Ill., assignors to Olin Corporation, East Alton, Ill.

Filed Apr. 30, 1993, Ser. No. 56,146
Int. Cl.[5] F42B *12/34*
U.S. Cl. 102—509 10 Claims



1. A controlled expanding small caliber bullet, comprising:

a unitary metal body of generally H-shaped axial cross section having an ogival nose portion, a generally cylindrical heel portion behind said nose portion and an integral partition therebetween along a central axis therethrough, said nose portion having an empty hollow point formed by a rearwardly extending forwardly open central bore and said heel portion having a rearwardly open cavity therein;

a dense core filling the rear cavity and of a material more dense and of lower tensile strength than said metal body; and

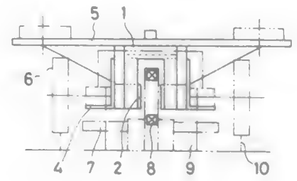
a tubular metal insert of higher tensile strength than the metal body located in at least the forward portion of the rear cavity between the dense core and the integral partition.

5,333,553

CARRIERS FOR LINEAR MOTOR VEHICLE-BORNE FIELD MAGNETS WHICH STRADDLE GROUND-SIDE COILS

Kazumi Matsui, Yokohama; Kouichi Matsuoka, Kokubunji, and Shigeru Nakagawa, Tokyo, all of Japan, assignors to East Japan Railway Company; Railway Technical Research Institute and Magnetic Transportation System Engineering Company, all of Tokyo, Japan

Continuation of Ser. No. 921,582, Jul. 30, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 151,046
Claims priority, application Japan, Sep. 9, 1991, 3-229089
Int. Cl.[5] B60L *13/02*
U.S. Cl. 104—290 5 Claims



1. A carrier for linear motor vehicle-borne field magnets, comprising:

a carrier frame mounted beneath a vehicle support and having legs directed substantially downward from said vehicle support, said carrier further having field magnets respectively attached to said downwardly directed legs, wherein said carrier frame straddles over ground-side coils arranged along a track, and moves along adjacent permanent magnets located along the track in such a way that north and south poles of said field magnets are alternately opposite each other with said ground-side coils positioned therebetween for allowing currents flowing through said ground-side coils and said permanent magnets to interact so as to produce driving power,

wherein said carrier frame is made of an aluminum-profiled material of a gate shape in section and has first legs with recesses at equal intervals,

and wherein said recesses receive permanent magnet portions of said field magnets attached to iron core portions of said field magnets so that spatial magnetic fields can be produced by the alternation of the north and south poles between the first legs of the carrier frame of the aluminum-profiled material and of a gate shape in section.

5,333,554

VEHICLE AND METHOD OF PRODUCING THE SAME

Toshihisa Yamada; Toshiharu Miyamoto; Kazuo Hayashi, all of Kudamatsu; Ryoichi Takayama, Yamaguchi; Shinji Kobayashi, and Keizi Ohmura, both of Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 873,182
Claims priority, application Japan, Apr. 26, 1991, 3-096749; Nov. 20, 1991, 3-304519
Int. Cl.[5] B61D *17/08*, *17/12*
U.S. Cl. 105—397 6 Claims

1. A vehicle comprising: a pair of side blocks forming sides of the vehicle, each of said side blocks having a post member, an exterior plate connected to an outside surface of said post member and an interior plate spaced inwardly from and connected to said post member;

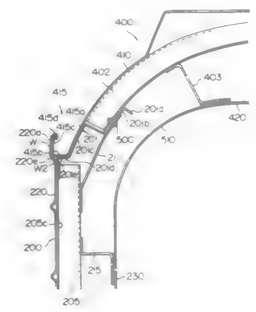
a roof block forming a roof of the vehicle between said side blocks and having a lateral beam, an exterior plate connected to an outside surface of said lateral beam and an interior plate spaced inwardly from and connected to said lateral beam;

outer connecting means connecting an end portion of the exterior plate of said roof block to an end portion of the

VOL 1165 ISS 1 AG 2 1994 UMI

exterior plate of each of said side blocks between longitudinal ends of the vehicle;

inner connecting means connecting an inside surface of an end portion of said lateral beam of said roof block to an



inside surface of an end portion of the post member of each of said side blocks; and

a third interior plate extending between the interior plate of said roof block and the interior plate of each of said side blocks.

5,333,555

PALLET CONSTRUCTED WITHOUT NAILS

Bruce A. McPhee, Chandlers Lane, Wyong Creek, Wyong, NSW 2259, Australia

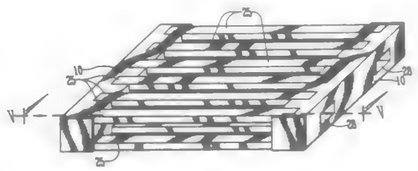
PCT No. PCT/AU91/00058, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO91/13009, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 19, 1991, Ser. No. 920,504

Claims priority, application Australia, Feb. 20, 1990, PJ8728/90

Int. Cl.[5] B65D *19/00*

U.S. Cl. 108—51.1 **9 Claims**



1. A pallet comprising a pair of elongate bearers separated by an upper array of planks or slats and a lower array of planks or slats, each plank or slat having its longitudinal direction at right angles to the elongate direction of the bearers, characterised in that:

(a) each bearer is a hollow metal member of rectangular cross section, having an upper wall, a lower wall, an inner wall and an outer wall;

(b) each bearer has an upper and a lower linear array of openings formed in the corners of the bearer at (i) the junction of the upper wall and the inner wall and (ii) the junction of the lower wall and the inner wall, each of the openings in the upper array extending into the upper wall and into the adjacent inner wall of the bearer, and each of the openings in the lower array extending into the lower wall and into the adjacent inner wall of the bearer; each of said openings having a width such that it receives one end of one of said slats or planks; and

(c) each slat or plank has a pair of slots formed in one face thereof, each slot extending at right angles to the elongate direction of the slat or plank and having a thickness substantially equal to the thickness of the inner wall of a bearer, each slot being a distance from a respective end of its slat or plank which is equal to or less than the distance between the faces within a bearer of its inner and outer walls; the vertical distance between the level of the inside face of the upper wall and the level of the lowermost horizontal edge of an opening in said upper array of openings being equal to the vertical distance between the level of the inside face of the lower wall and level of the uppermost horizontal edge of an opening in said lower array of openings, which is slightly less than the distance between the bottom of a slot in a slat or plank and the face of such slat or plank in which a slot is not formed; each of said upper array of planks or slats being positioned so that each of their slots is engaged by a respective lowermost edge of an opening in said upper array of openings, and each of said lower array of planks or slats being positioned so that each of their slots is engaged by a respective uppermost edge of an opening in said lower array of openings.

5,333,556

DOUBLE PRESS SCREW

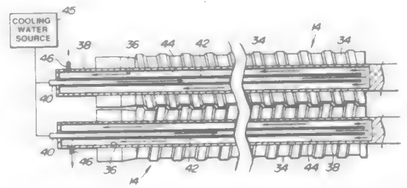
Seiichiro Isobe; Akinori Noguchi, and Kunihiko Uemura, all of Ibaragi, Japan, assignors to Director of National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries, Japan

Continuation of Ser. No. 497,622, Mar. 23, 1990, abandoned. This application Mar. 31, 1992, Ser. No. 860,120

Claims priority, application Japan, Mar. 24, 1989, 1-72379

Int. Cl.[5] B30B *15/34, 9/16*

U.S. Cl. 100—93 S **4 Claims**



1. A double screw press for separating a liquid from a two-phase, solid-liquid material, comprising:

a hollow barrel having a feed inlet at an upstream end thereof, for feeding a material into the hollow barrel, a cake outlet at a downstream end thereof, for discharging a cake produced after the material is pressed, and a plurality of slits between said upstream and downstream ends, for passing therethrough a liquid which is expressed from the material;

a pair of screws disposed side by side in said barrel and operable in coaction with each other for moving the material therealong while crushing and mixing the same; and

actuator means for rotating said screws,

said barrel comprising a plurality of barrel plates having respective openings through which said screws extend;

a plurality of spacer means disposed between said barrel plates and cooperating with said barrel plates in defining said slits;

said spacer means having a thickness which is progressively smaller from said upstream end to said downstream end of said barrel.

5,333,557

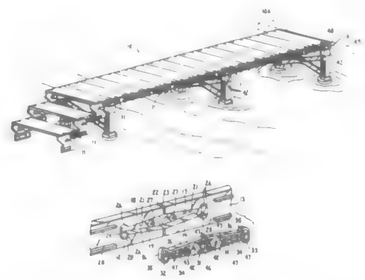
SIDE RAIL CONNECTOR FOR A PLATFORM ASSEMBLY

Jon H. Eickhoff, Kalamazoo, Mich., assignor to Ronningen Research & Development Company, Vicksburg, Mich.

Filed Sep. 28, 1992, Ser. No. 952,045

Int. Cl.[5] A47B *96/00;* **B61G** *5/00;* **E04G** *7/20*

U.S. Cl. 108—65 **7 Claims**



1. A platform assembly comprising the following in combination:

an elongated first side rail, said first side rail comprising at least one end and an end surface thereat and a first side facing surface, means defining an elongated sidewardly opening recess in said first side facing surface adjacent said at least one end thereof, said recess comprising a bottom wall and a plurality of upstanding sidewalls, said recess also opening outwardly at said end surface, said plurality of upstanding sidewalls extending at a first angle relative to said bottom wall that is greater than 90°, an end of said recess remote from said one end including means defining an enlargement having a width dimension in a direction transverse of a longitudinal axis of said elongated recess so that at least a sidewall section in said recess faces away from said one end, said upstanding sidewalls in said recess between said enlargement to a width dimension and said one end increasing in spacing along a length of said recess from said enlargement toward said one end;

a bracket member, said bracket member comprising at least one end, said bracket member having at said one end thereof an enlarged portion and at another end thereof an attachment means for facilitating an attachment of said bracket member to an object, said enlarged portion and said attachment means being connected by a central section, said bracket member having at least one second side facing surface extending parallel to said bottom wall of said recess in said first side rail and a plurality of edge facing surfaces extending at a second angle relative to said second side facing surface that is generally equal to said first angle, said edge facing surfaces of said central section conforming to and opposing said sidewalls between said enlargement of said recess and said one end of said first side rail, said enlarged portion including an edge surface section that conforms to and opposes said sidewall section in said enlargement of said recess;

at least one embossment upstanding from said bottom wall of said recess and hang an exterior wall surface and means defining a first hole through said embossment and said bottom wall;

a pocket in said at least one second side facing surface of said bracket member, said pocket having an interior wall surface and a bottom wall and receiving therein said embossment, said exterior wall surface of said at least one embossment conforming to said interior wall surface of said pocket, said bottom wall of said pocket having means defining a second hole extending therethrough; and

fastening means received in aligned first and second holes for drawing said bracket member into said recess to bring said at least one second side facing surface, said edge facing surfaces and said edge surface section of said bracket into fact-to-fact engagement with said bottom wall, said plurality of sidewalls and said sidewall section in said recess to cause a licking fit of said bracket member in said recess and to said first side rail, said attachment means extending beyond said one end of said side rail ready for attachment to the object.

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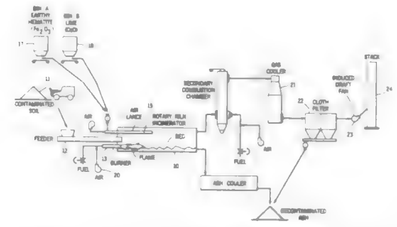
METHOD OF CAPTURING AND FIXING VOLATILE METAL AND METAL OXIDES IN AN INCINERATION PROCESS

John N. Lees, Jr., Brookfield, Wis., assignor to Svedala Industries, Inc., Waukesha, Wis.

Filed Dec. 7, 1992, Ser. No. 986,331

Int. Cl.[5] F23G *5/00*

U.S. Cl. 110—346 **8 Claims**



1. The process for removing hazardous material from a contaminated feed in an incineration system consisting of:

a combustion chamber, a cooler, a filter, and a fan for causing gas to flow from said chamber through said cooler and then through said filter before being discharged to atmosphere. Said process comprising:

feeding material containing both organic and inorganic contaminants into said chamber

heating said material with a combustion gas to above the volatilization temperature of said contaminants to transform said contaminants into a gas which mixes with the combustion gas

maintaining the temperature of the combustion gas in said chamber to above the burning temperature of said organic contaminants

injecting finely powdered reagents into the combustion gas containing said volatized contaminants above the material in said chamber to interact with said volatized inorganic contaminants to form solid particles

cooling said combustion gas

capturing said particles in said filter for disposal

discharging said purified gas to atmosphere.

5,333,559

ROW CROP CULTIVATOR AND SEEDING ATTACHMENT

Gary D. Hodapp, Mankato; James A. Johnson, Cologne, and Vincent J. Tomlonovic, North Mankato, all of Minn., assignors to Hiniker Company, Mankato, Minn.

Filed Sep. 14, 1992, Ser. No. 944,683

Int. Cl.[5] A01C *5/00*

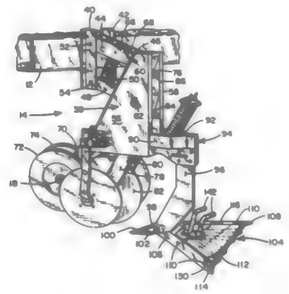
U.S. Cl. 111—152 **4 Claims**

1. In combination with a row crop cultivator of the type having a plurality of stages mounted on an agricultural tool bar to be pulled by a tractor, each stage including a frame suspended from said tool bar and spring biased downwardly therefrom, a pair of gauge wheels mounted in slightly spaced-apart relation to define a gap therebetween, said gauge wheels being on at least one rotational axle for supporting said frame at a selectable elevation relative to the ground and a soil-treat-

VOL 1165 ISS 1 AG 2 1994 UMI

ing implement suspended from said frame by a shank having opposed side surfaces and located aft of and aligned with said gap between gauge wheels, said soil-treating implement including a sweep with first and second lay shares attached to said shank and flaring outwardly and rearwardly from opposing side surfaces of said shank;

(a) a seed delivery manifold attached to and positioned between said first and second lay shares of said sweeps on said plurality of stages, said seed-delivery manifolds, each including



(i) a generally triangular plate having a base and first and second adjacent sides, said sides flaring outwardly and rearwardly for abutting said lay shares, said plate having at least first and second channels extending at an angle to one another from said base to intersect at a point inward of said base; and

(ii) a planar cover plate attached to said triangular plate in covering relation relative to said first and second channels, said cover plate including a first aperture overlaying said point of intersection for receiving a stream of seeds therethrough.

5,333,560

PROGRAMMED LOCK STITCH SEWING MACHINE HAVING DISPLAY

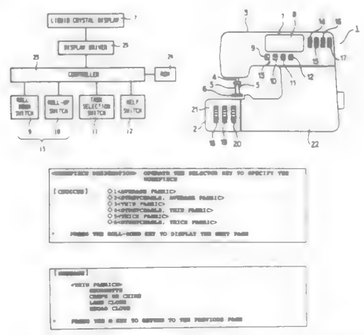
Noriyuki Yoshida, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 12, 1993, Ser. No. 30,862

Claims priority, application Japan, Apr. 22, 1992, 4-102727

Int. Cl.[5] D05B *19/00, 57/08*

U.S. Cl. 112—121.11 **5 Claims**



1. A lock stitch machine for sewing seams, comprising:

a sewing needle;

a read only memory storing data including types of seams, kinds of workpieces, operating instructions, troubleshooting, and help data;

display means having a display screen for displaying the data as choices including types of seams and kinds of workpieces, operating instruction messages providing machine settings for selected types of seams and kinds of workpieces, troubleshooting choices of potential malfunctions, instructional messages for explaining procedures to overcome the malfunctions, and explanation messages as help messages explaining an immediately preceding displayed screen, said malfunctions including a seam trouble and a machine trouble;

display control means for presenting a plurality of pages respectively containing the choices, the operating instruction messages, the troubleshooting choices and instructional messages, and the explanation messages, wherein a one of said plurality of pages is displayed on said display screen;

a help switch for immediately displaying the explanation messages upon activation as help messages;

selecting means for selecting one of the choices contained in the choice page displayed on the display means; and

page scrolling means for scrolling the pages displayed on the display means, said scrolled pages being presented by said display control means in sequence based upon the selected choice.

5,333,561

APPARATUS FOR SHIFTING SEWING POSITION IN A SEWING MACHINE

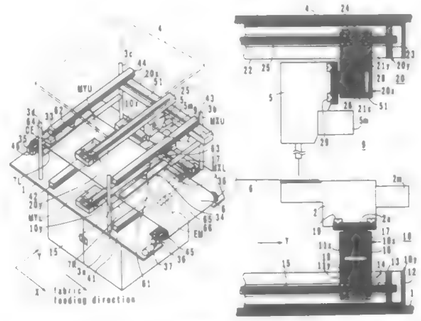
Yutaka Katou, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 14, 1993, Ser. No. 91,130

Claims priority, application Japan, Jul. 14, 1992, 4-186795

Int. Cl.[5] D05B *21/00*

U.S. Cl. 112—121.14 **7 Claims**



1. An apparatus for shifting a sewing position in a sewing machine comprising:

lower shifting means mounted on a base and having a movable support which is disposed for movement along a pair of axial directions in a horizontal plane;

machine bed means supported by movable support of the lower shifting means and including at least a shuttle race, a shuttle bobbin and a lower shaft;

overhead support means mounted on top of the base by means of four stanchions disposed at four corners of a rectangle;

upper shifting means supported by the overhead support means and having a movably support which is disposed for movement in a pair of axial directions in a horizontal plane;

machine arm means supported by the movable support of the upper shift means and including at least a needle, a needle bar and an upper shaft;

means for supporting an object to be sewn which is disposed between the machine bed means and the machine arm means; and

alignment control means for controlling the travel of the lower and the upper shifting means for aligning the machine bed means and the machine arm means with respect to each other;

wherein said lower shifting means includes at least shifting means for shifting said machine bed means in one axial direction and being arranged to move with said machine bed means as a single unit when said machine bed means is moved along another axial direction; and

wherein said upper shifting means includes at least a shifting means for moving said machine arm means in one axial direction and being arranged so as to move with said machine arm means as a single unit when said machine arm means is moved in another axial direction.

5,333,562

METHOD OF STITCHING A PIECE OF FABRIC, A PIECE OF FABRIC OBTAINED THEREBY, AND A COMPOSITE FIBER-MATRIX PIECE OBTAINED USING SAID PIECE OF FABRIC

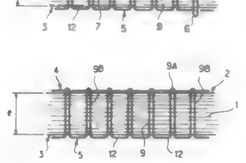
Etienne LeMaire, Saint Medard En Jalles, and Lucien Fantino, Merignac, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Dec. 21, 1992, Ser. No. 993,704

Claims priority, application France, Jan. 24, 1992, 92 00761

Int. Cl.[5] D05B *93/00*

U.S. Cl. 112—262.1 **4 Claims**



1. A method of stitching a piece of fabric with a thread of technical fiber for the purpose of making a composite fiber-matrix piece, comprising, at each stitch, the steps of:

(a) inserting into said piece of fabric, by a needle, a needle thread constituted by a flexible thread that is strong in traction, said needle being driven with reciprocating motion and passing, during its go stroke, through said piece of fabric, penetrating through a first face thereof and coming out through a second face opposite to the first;

(b) engaging a shuttle thread of technical fiber with said needle thread on said second face side, and then during the return stroke of said needle, the shuttle thread is pulled by said needle thread into said piece of fabric to form a loop of the shuttle thread; and

(c) adjusting the tension of the shuttle thread to a relatively low level, adjusting the tension of the needle thread to a relatively high level, pulling the loop of the shuttle thread until the end of the loop projects outside of the fabric on the first side thereof, simultaneously moving the needle thread until the needle thread lies completely outside of said piece of fabric on said first face thereof.

5,333,563

SEWING METHOD AND APPARATUS

Yoshiaki Yamanoi, 25-1-805, Shinjuku 1-Chome, Shinjuku-ku, Tokyo, Japan

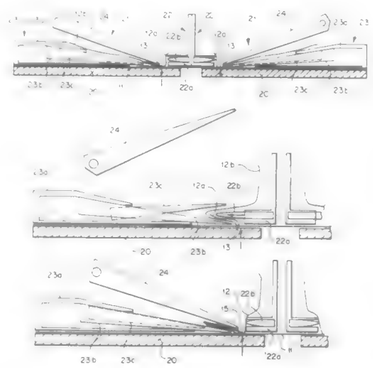
PCT No. PCT/JP91/00906, § 371 Date Feb. 27, 1992, § 102(e) Date Feb. 27, 1992, PCT Pub. No. WO92/01106, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 5, 1991, Ser. No. 835,445

Claims priority, application Japan, Jul. 6, 1990, 2-177391; Jul. 3, 1991, 3-162981

Int. Cl.[5] D05B *35/00, 39/00*

U.S. Cl. 112—262.3 **6 Claims**



1. A sewing method comprising the steps of pressing a patch cloth against a base cloth material, stitching said patch cloth over said base cloth material along one edge portion of the patch cloth so as to form a first seam line while maintaining along said one edge portion a space approximately equal to the width of a piping to be formed, said space being located between said first seam line and the outer edge of said one edge portion, folding said one edge portion of the patch cloth toward the opposite edge portion thereof along the first seam line as a folding axis, folding the opposite edge portion of the patch cloth over said one edge portion along said outer edge of the folded patch cloth as a folding axis, stitching the opposite edge portion of folded patch cloth and the base cloth material together at a region close to and parallel to the first seam line to form a second seam line, and folding the portion of the base cloth material, which is positioned on a side of said first seam line which is opposite to the side of said first seam line on which the second seam line is located, over the second seam line along the first seam line as a folding axis whereby the base cloth material and the patch cloth are triply superimposed at both sides of said first and second seam lines.

5,333,564

METHOD OF CONTROLLING STOPPING OPERATION OF A SEWING MACHINE AND SYSTEM THEREOF

Kazuhisa Ito, Aichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 19, 1992, Ser. No. 853,838

Claims priority, application Japan, Mar. 20, 1991, 3-56802

Int. Cl.[5] D05B *69/26*

U.S. Cl. 112—275 **23 Claims**

10. A system for controlling the stopping operation of a sewing machine, comprising:

a speed detecting unit for detecting a rotational speed of a main shaft of the sewing machine which is driven to be rotated by a motor of the sewing machine;

a position detecting unit for detecting a position of a needle

VOL 1165 ISS 1 AUG 2 1994 UMI

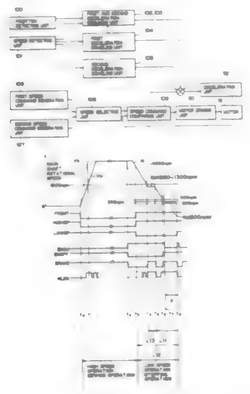
of the sewing machine which is operatively coupled to the main shaft;

a command producing unit for producing a decelerating command for decelerating the motor;

a decelerating unit for receiving the decelerating command and decelerating the motor in response thereto;

first deceleration disabling means for disabling the deceleration operation of said decelerating unit irrespective of the decelerating command, at a first disable time when the rotational speed becomes equal to a predetermined middle rotational speed, after said decelerating unit receives the decelerating command, to thereby allow the motor to continue rotating the main shaft at the middle rotational speed from the first disable time until a first deceleration time when the position detecting unit detects that the needle first reaches a predetermined first position after the first disable time;

first deceleration resuming means for resuming the deceleration operation of said decelerating unit in accordance with the decelerating command, at the first deceleration time, to thereby decrease the main shaft rotational speed from the middle rotational speed via a stop permission rotational speed which is lower than the middle rotational speed toward a low rotational speed which is lower than the stop permission rotational speed, the middle rotational



speed and the first position of the needle being determined to allow said decelerating unit to decelerate the motor in such a manner as to prevent the needle from reaching a predetermined second position while the rotational speed decreases from the stop permission rotational speed toward the low rotational speed;

second deceleration disabling means for disabling the deceleration operation of said decelerating unit irrespective of the decelerating command, at a second disable time when the rotational speed reaches the low rotational speed, to thereby allow the motor to continue rotating the main shaft at the low rotational speed from the second disable time until a second deceleration time when the position detecting unit detects that the needle first reaches a predetermined second position after the speed detecting unit detects that the rotational speed reaches the stop permission rotational speed; and

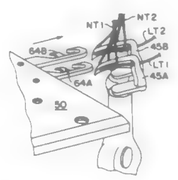
second deceleration resuming means for resuming the deceleration operation of said decelerating unit in accordance with the decelerating command, at the second deceleration time, to thereby completely stop the motor, at the second deceleration time when said position detecting unit detects that the needle first reaches the second needle position while the main shaft is rotating at the low rotational speed.

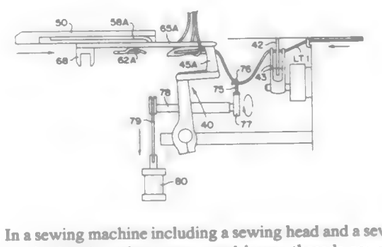
5,333,565

THREAD CUTTING VIA RECIPROCATING ARM WITH POCKETS AND A TRIMMING PLATE

Ricky J. Frye, Miamisburg, Ohio, assignor to MIM Industries, Inc., Miamisburg, Ohio

Filed Oct. 30, 1992, Ser. No. 969,028
Int. Cl.[5] D05B *65/02*
U.S. Cl. 112—291 **12 Claims**





1. In a sewing machine including a sewing head and a sewing plate and wherein at least upper and lower threads are separately supplied to the sewing head of the machine, a lower orbiting looper head beneath said sewing plate and receiving a lower thread, and a reciprocably driven needle mounted above and movable through said sewing plate and receiving a separate upper thread and cooperating with the looper head to sequentially form loops of the upper thread around the looper head and to move the lower thread through such loops of the upper thread, thereby providing a succession of stitches in a work piece presented to said sewing plate;

said machine including an improved cutoff mechanism comprising

a stationary trimming plate including a guideway extending beneath said trimming plate along a path which crosses the loops of the upper and lower threads,

a slide movable in reciprocating fashion along said guideway and including at least one arm extending therefrom and having first and second pocket means formed on one side of said arm, said pocket means being spaced apart along said arm corresponding to the spacing of the upper and lower threads in the looper head whereby motion of said slide in one direction toward said looper head will cause said pocket means to move past the lower thread and the loop of the upper thread by pushing aside the upper thread and adjacent portion of the lower thread,

means for reciprocating said slide at completion of a stitching operation to move said pocket means in said slide into alignment with the upper and lower threads and to engage the upper thread and the lower thread within said pocket means end then to reverse direction of said plate to draw said threads between said trimming plate and said slide, and

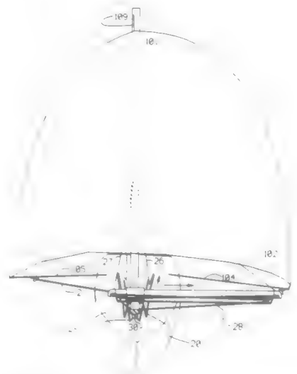
cooperating knife means on said trimming plate and said slide for severing the lower and upper threads upon completion of the reverse motion of said slide to free the previously formed stitches from the portions of the threads still engaged respectively by the needle and the loop forming means.

5,333,566

SPINNAKER GYBING APPARATUS

Stanley F. Wasowski, Jr., 716 Holly Dr. North, Annapolis, Md. 21401

Filed May 13, 1993, Ser. No. 60,641
Int. Cl.[5] B63H *5/08*
U.S. Cl. 114—102 **11 Claims**



10. An apparatus for controlling, manipulating, and storing a spinnaker pole for use on sailing vessels having a vertical mast comprising:

a spinnaker pole of constant cross section;

a spinnaker pole shell disposed around said spinnaker pole for slidably receiving said spinnaker pole said shell comprising;

a plurality of sections joined along line segments substantially parallel to the longitudinal axis of said shell;

means for joining said sections around said spinnaker pole;

roller means disposed between the inner surface of said shell and the outer surface of said spinnaker pole for facilitating the longitudinal movement of said spinnaker pole with respect to said shell; and

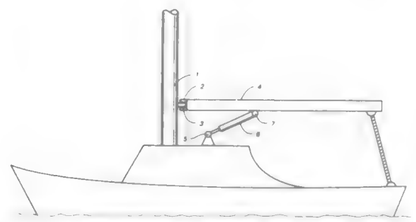
means for attaching said shell to said mast.

5,333,567

JIBE CONTROLLER

Gustave J. Danzer, 2308 San Antonio Ave., Alameda, Calif. 94501

Filed Jun. 1, 1993, Ser. No. 69,624
Int. Cl.[5] B63H *9/04*
U.S. Cl. 114—102 **5 Claims**



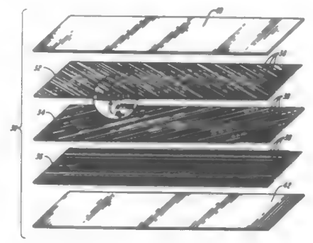
1. In a sailing vessel having a mast and a swingable boom extending rearward from said mast and a sail supported between the mast and the boom, a device for controlling the boom during jibing, comprising: a passive resistance means for resisting the swing of the boom during the jibe, a connecting means between said passive resistance means and the boom of said vessel, and a connecting means between said passive resistance means and a fixed point on said vessel.

5,333,568

MATERIAL FOR THE FABRICATION OF SAILS

Heiner Meldner, Burlingame, Calif., and Roland J. Downs, Mesa, Ariz., assignors to America[3] Foundation, West Palm Beach, Fla.

Filed Nov. 17, 1992, Ser. No. 978,095
Int. Cl.[5] B63H *9/04*
U.S. Cl. 114—103 **16 Claims**



1. A sail comprising:

a number of panels of material, each panel comprising

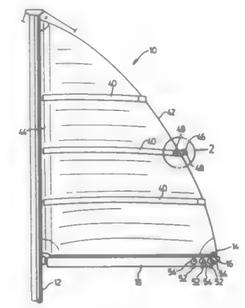
a laminate including a unitary film and crossed monofilaments in a flexible elastomeric polymer matrix bonded to said film, said panels together forming a sail having a head, a tack and a clew.

5,333,569

INFLATABLE SAIL BATTENS

Robert J. Henderson, 56 Hillsmount Road, London, Ontario, Canada N6K 1W2

Filed Dec. 23, 1992, Ser. No. 997,309
Int. Cl.[5] B63H *9/04*
U.S. Cl. 114—103 **5 Claims**



1. A sail comprising:

a sail having a luff, a foot and a leech extending therebetween;

an elongate batten pocket having an opening adjacent to the leech of the sail;

an inflatable batten slidably located in said pocket, said batten being formed of an elongate, hollow, fluid-impervious, flexible tube sealed at both ends and having an inlet tube communicating with the interior of the flexible tube, the inlet tube having an inlet end located adjacent to said pocket opening;

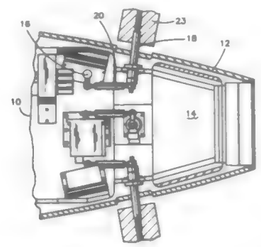
means for retaining the batten in said pocket;

a valve operatively connected to the inlet tube; and

VOL 1165 ISS 1 AG 2 1994 UMI

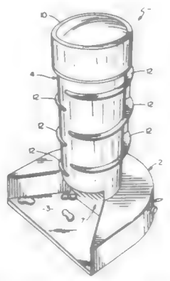
a supply tube located in the leech of the sail and coupled between the inlet tube and the valve.

5,333,570
DAMPED LINKAGE FOR TORPEDO STEERING ACTUATOR
Neil J. DuBois, Cranston, and Stanley J. Polhemus, Wakefield, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 18, 1992, Ser. No. 884,813
Int. Cl.[5] B63H *25/00*
U.S. Cl. 114—144 R **15 Claims**



1. A damped actuator linkage for use on an underwater vehicle for providing torque from an actuator to a utility device, said linkage comprising:
a first linkage member connected to said actuator;
a second linkage member connected to said utility device;
said utility device comprising a control shaft for causing movement of a control fin on said underwater vehicle; and
means for reducing noise and attenuating vibrations positioned between said first and second linkage members and forming the sole connection between said first and second linkage members, said noise reducing and vibration attenuating means surrounding said first linkage member so as to prevent direct contact between said first and second linkage members and thereby substantially eliminate any path for acoustic energy and vibrations from the actuator to flow through said linkage members and said control shaft into water surrounding said vehicle.

5,333,571
AUTOMATIC ANIMAL FEEDING DEVICE
John Re, P.O. Box 379, Jamesport, N.Y. 11947, and Robert Cuomo, P.O. Box 9, East Quogue, N.Y. 11942
Filed Dec. 24, 1992, Ser. No. 996,799
Int. Cl.[5] A01K *5/02*
U.S. Cl. 119—56.1 **3 Claims**



1. An automatic animal feeding apparatus for dispensing food to an animal in measured amounts at pre-determined intervals, comprising:
a base member defining a trough therein, which trough receives said animal food and from which said food may be consumed;
a food storage tower disposed vertically above said base member defining an internal space therein and further defining a bottom discharge opening communicating between said internal space and said food receiving trough;
a plurality of flow control disks mounted within said tower, spaced vertically apart and forming a plurality of vertically spaced chambers within said tower, said disks being removable from said tower through slots defined therein; and
means for sequentially removing said disks from said tower starting with the lowest disk and moving upwards such that any food contained in the chamber above and directly adjacent to the removed disk is discharged into said trough.

5,333,572
THERMOSTATIC ANIMAL FEEDER
A. D. Nutt, 8503 Stanton Dr., Little Rock, Ark. 72209
Filed Aug. 2, 1993, Ser. No. 100,767
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—57.91 **20 Claims**

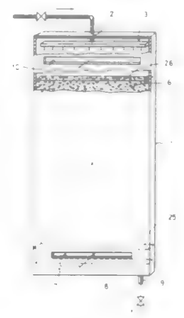


1. A game feeder comprising:
a container for storing feed to be dispensed;
a plurality of feed discharge orifices defined in said container;
a rotary impeller for deflecting feed through said orifices; and,
a bimetallic spring for torsionally driving said impeller in response to temperature changes, whereby said impeller dispenses feed through said feed discharge orifices.

5,333,573
STEAM GENERATOR FOR A STEAM BATH
Hidemi Tsutsumi, Tokyo, Japan, assignor to Mitsui Mining Company, Ltd., Tokyo, Japan
Division of Ser. No. 960,233, Oct. 13, 1992, Pat. No. 5,215,043, which is a continuation of Ser. No. 656,943, Feb. 19, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 36,284
Int. Cl.[5] F22B *27/00*
U.S. Cl. 122—39 **3 Claims**

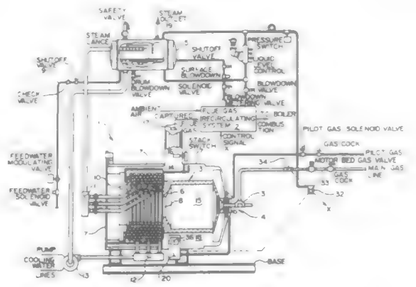
1. A steam generator for a steam bath, comprising:
a closed main part having a hot-water supply port, an air inlet, a warm-water discharge port and a steam outlet, said steam outlet opening into a room comprising the steam bath to create a steam sauna atmosphere therein;
a hot-water distributing member provided in said main part for receiving hot water from said hot-water supply port and distributing the received hot water;
a steam vertical generating member made of a plurality of coiled wires forming a three-dimensional vertical network structure and disposed in said main part immediately

below said distributing member, such that the distributed hot water flows down through said steam generating member, said steam generating member having a large surface area, steam being generated from the hot water flowing down through said steam generating member



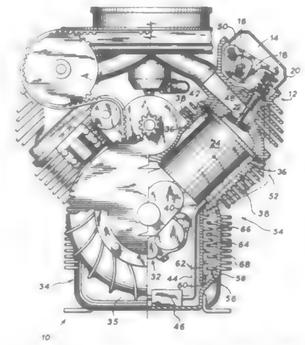
with the generated steam being discharged from said steam outlet together with air introduced through said air inlet; and
a warm water reservoir to collect discharge from a lowermost portion of said steam generating member.

5,333,574
COMPACT BOILER HAVING LOW NOX EMISSIONS
Robert T. Brady, Elmhurst, and Joseph H. Werling, Mundelein, both of Ill., assignors to Mark IV Transportation Products Corporation, Niles, Ill.
Continuation-in-part of Ser. No. 760,023, Sep. 11, 1991, Pat. No. 5,259,342. This application Nov. 5, 1992, Ser. No. 972,358
Int. Cl.[5] F22B *23/06*
U.S. Cl. 122—367.1 **17 Claims**



1. In combination, a compact fluid heater comprising:
a combustor for generating heat including high temperature combustion products, comprising:
an essentially cylindrical chamber having oppositely disposed ends;
a centrally located vent at one said chamber end;
a burner in the other said chamber end comprising:
an essentially cylindrical outer shell having inlet and outlet ends;
means mounting said shell outlet end in said chamber adjacent said chamber burner end, said mounting means and shell outlet end defining secondary air inlet to said burner;
a gas supply tube coaxially disposed in said shell, said tube having first and second ends, said second tube end adjacent said secondary air inlet;
means supplying gaseous fuel to said first supply tube end;
an annular orifice defined by said shell outlet end and gas supply tube second end;
a plurality of gas ports in said gas supply tube second end, and said orifice, said ports circumferentially disposed in said annular orifice;
means supplying primary combustion air to said outer shell inlet end; and,
means supplying combustion air to said primary and secondary inlets;
a coaxially disposed heat exchanger having internally flowing fluid for absorbing said combustor generated heat by flow of combustion products therethrough, and heating said fluid thereby, said combustion products collected in an outlet;
stack means in fluid communication with said exchanger outlet for exhausting said gases to the atmosphere;
means in said stack means capturing a controlled amount of said exhaust gases;
means injecting said captured gas into said combustor supply means;
means in said supply means, proportioning said captured gas among said primary and secondary combustion air inlets.

5,333,575
INTERNAL COMBUSTION ENGINE USING LUBRICATING OIL FOR EFFECTIVE AND UNIFORM COOLING
Jaroslav J. Olmr, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jun. 18, 1993, Ser. No. 78,994
Int. Cl.[5] F01P *3/00*
U.S. Cl. 123—41.42 **6 Claims**



1. An internal combustion engine which employs oil for lubrication, comprising:
(a) a cylinder structure including a sleeve having an inner surface defining a cylinder cavity for receiving a piston sliding within it and an outer surface;
(b) a jacket wall having an inner surface defining a jacket space substantially surrounding the cylinder sleeve and an outer surface which is exposed to the atmosphere and which is enclosed except for an inlet port and an outlet port;
(c) a crankcase having walls defining a reservoir for containing the oil;
(d) a pump capable of moving the oil from the reservoir into the jacket space through the inlet port, maintaining the jacket space substantially full of oil during the operation of the engine, and expelling the oil out of the jacket space through the outlet port;
(e) a path for returning the oil to the reservoir; and

VOL 1165 ISS 1 AG 2 1994 UMI

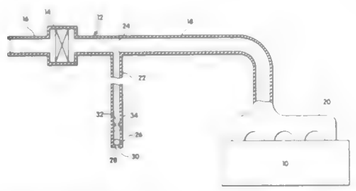
(f) an intermeshed heat exchange structure located in the return path, including at least two substantially horizontally oriented and vertically spaced apart members formed on and extending inwardly from at least one of the crankcase walls and at least two substantially horizontal and vertically spaced apart outwardly extending members located within the crankcase and which overlap and intermesh with the inwardly extending members to form a maze-like passage through which the oil flows, whereby the returning oil alternately flows inwardly over an inwardly extending member and onto and outwardly over the outwardly extending member below it, which directs it back onto the next lower inwardly extending member, and so forth.

5,333,576

NOISE ATTENUATION DEVICE FOR AIR INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Ronald L. Verkleeren, Belle Vernen, Pa., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 31, 1993, Ser. No. 44,438
Int. Cl.[5] B60K *13/02*
U.S. Cl. 123—184.53 **16 Claims**



1. A noise attenuation device for an air induction system for an internal combustion engine, comprising:

a quarter-wave tube having an open first end for fluid communication with an air intake passage of the air induction system; and

a tuning body movable within the quarter-wave tube by vacuum developed within the air induction system during operation of the internal combustion engine, from a first position establishing a first operative length for the quarter-wave tube effective to attenuate noise at a first frequency range at a first operating level of the internal combustion engine, to a second position corresponding to a second operating level of the internal combustion engine.

5,333,577

VARIABLE VALVE OPERATION TIMING CONTROL DEVICE

Masaaki Shinojima, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 22, 1993, Ser. No. 124,554
Claims priority, application Japan, Sep. 25, 1992, 4-256368; Jul. 26, 1993, 5-183686
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.15 **5 Claims**

1. An intake valve operation timing control device for an internal combustion engine having a crankshaft, comprising:

a crankshaft side member made rotatable in synchronism with said crankshaft for establishing a driving force;

a camshaft made rotatable in response to said driving force;

a hydraulic piston arranged axially movably between said crankshaft side member and said camshaft for varying a phase between said crankshaft side member and said camshaft;

an oil pressure chamber formed in the axial direction of said hydraulic piston;

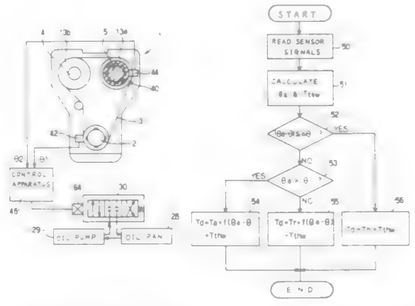
an oil pressure passage communicating with said oil pressure chamber;

a valve disposed in said oil pressure passage for adjusting the quantity of oil to be fed to said oil pressure chamber, in accordance with an opening of said valve;

drive means for adjusting the opening of said valve in accordance with a drive signal inputted from a control apparatus;

relative rotational angle detecting means for detecting a relative rotational angle between said crankshaft and said camshaft;

target relative rotational angle calculating means for calculating a target relative rotational angle between said camshaft and said crankshaft in accordance with operating conditions of said engine;



control means for calculating the drive signal of said drive means for equalizing said relative rotational angle to said target relative rotational angle, in accordance with said relative rotational angle and said target relative rotational angle; and

learning means for detecting the operating condition of said hydraulic piston in terms of the relative rotational angle which is detected by said relative rotational angle detecting means, to learn the drive signal of said drive means for bringing said hydraulic piston into a predetermined operating state, and to correct the drive signal which is calculated by said control means in accordance with the value of the learned drive signal.

5,333,578

FOUR-CYCLE ENGINE

Yasuo Shimura, Saitama; Takahiro Kudoh, and Jiro Shimizu, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 773,046, Oct. 7, 1991, Pat. No. 5,199,395.
This application Jan. 25, 1993, Ser. No. 8,665
Claims priority, application Japan, Oct. 18, 1990, 2-280151; Nov. 20, 1990, 2-120810
Int. Cl.[5] F16H *7/22*; F01L *1/34*
U.S. Cl. 123—90.17 **3 Claims**

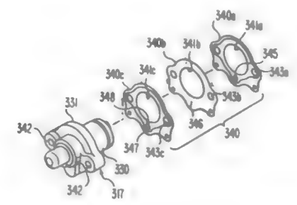
1. A chain tensioner for an internal combustion engine, comprising

a case having a first oil feed passage;

a tensioner cylinder fixed to the outer surface of said case and provided with a second oil feed passage communicating with said first oil feed passage;

a pressure plunger for applying pressure to a chain, fitted in said tensioner cylinder;

a gasket inserted between said case and said tensioner cylinder and having an orifice of an area smaller than the



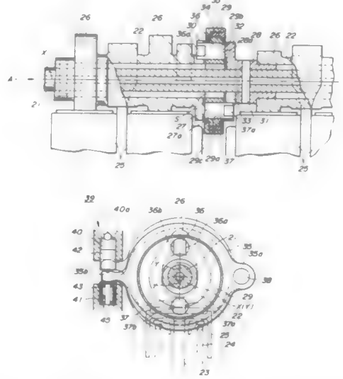
sectional area of said first and said second feed passages and aligned therewith.

5,333,579

CONTROL DEVICE FOR CONTROLLING INTAKE AND EXHAUST VALVES OF INTERNAL COMBUSTION ENGINE

Seinosuke Hara; Yoshiko Yamada, both of Atsugi, and Makoto Nakamura, Yokosuka, all of Japan, assignors to Unisia Jecs Corporation, Atsugi and Nissan Motor Co., Ltd., Yokohama, both of Japan

Filed Jan. 27, 1993, Ser. No. 8,801
Claims priority, application Japan, Jan. 27, 1992, 4-011591
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **11 Claims**



1. In an internal combustion engine having a drive shaft, a cam shaft coaxially disposed about said drive shaft, and at least one cam formed about said cam shaft for operating at least one of an intake and an exhaust valve,

a timing control device comprising:

a first flange provided by said cam shaft, said first flange having a first elongate slit which extends radially;

a second flange facing said first flange with a certain clearance therebetween and being secured to said drive shaft to rotate therewith, said second flange having a second elongate slit which extends radially;

an annular member disposed within said clearance and rotatable about an axis of said drive shaft;

first and second pins held on opposed sides of said annular member respectively, said first and second pine being positioned at opposed positions with respect to a center of said annular member and slidably engaged with said first and second elongate slits respectively; and

drive means for pivoting said annular member about a pivot axis eccentric to the axis of said drive shaft in accordance with an operating condition of the engine,

wherein said first and second pins are rotatable about respective longitudinal axes of said first and second pins within said annular member.

10. In an internal combustion engine having a drive shaft, a cam shaft coaxially disposed about said drive shaft, and a plurality of cams formed about said cam shaft for operating intake and exhaust valves,

a control device comprising:

a first flange provided by said cam shaft, said first flange having a first elongate slit which extends radially;

a second flange facing said first flange with a certain clearance therebetween and being secured to said drive shaft to rotate therewith, said second flange having a second elongate slit which extends radially;

an annular member disposed within said clearance and rotatable about an axis of said drive shaft;

first and second pins rotatably held by opposed sides of said annular member respectively, said first and second pins being positioned at diametrically opposed positions with respect to a center of said annular member and slidably engaged with said first and second elongate slits respectively; and

drive means for pivoting said annular member about a pivot axis eccentric to said axis of said drive shaft in accordance with an operating condition of the engine,

wherein each of said first and second Dins has at diametrically opposed portions thereof flat parallel surfaces which are slidably engaged with opposed parallel side walls of each of said first and second elongate slits,

wherein said first flange is formed about an axial end of said cam shaft and in which said second flange is formed about a sleeve which is secured to said drive shaft by means of a connecting pin, and

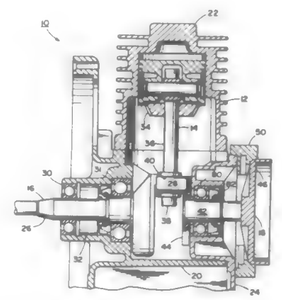
wherein said sleeve has a reduced end portion rotatably disposed in a hollow shaft which is a separated part of said cam shaft.

5,333,580

STARTER INPUT SHAFT

John W. Hopkins, Charlotte, N.C., assignor to Textron Inc., Providence, R.I.

Filed Jan. 29, 1993, Ser. No. 11,266
Int. Cl.[5] F02N *3/02*
U.S. Cl. 123—185.3 **17 Claims**



1. An internal combustion engine comprising:

a crankcase;

an output crankshaft having an output shaft section and an offset crankpin section;

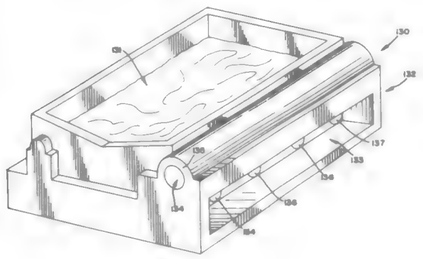
a piston assembly connected to the offset crankpin section;

an input shaft assembly comprising an input shaft and a crank plate fixedly connected to the input shaft, the crank plate being located in the crankcase with an at least two

VOL 1165 ISS 1 AG 2 1994 UMI

offset slots, one of the slots having an end of the crankpin section located therein.

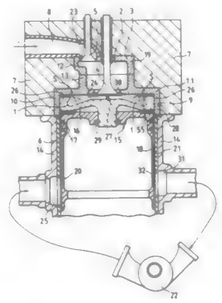
5,333,581
CYLINDER HEAD CASTING
Billy J. Cagle, Indianapolis, Ind., assignor to Navistar International Transportation Corp., Chicago, Ill.
Continuation of Ser. No. 47,542, Mar. 9, 1993, abandoned, which is a division of Ser. No. 843,786, Feb. 28, 1992, Pat. No. 5,197,532, which is a division of Ser. No. 490,809, Mar. 7, 1990, Pat. No. 5,119,881. This application Nov. 19, 1993, Ser. No. 155,075
Int. Cl.[5] F02M *1/00*
U.S. Cl. 123—193.5 **7 Claims**



1. A cylinder head casting adapted to cooperate with a plurality of cylinders formed in a block of an internal combustion engine, comprising:
a long cylinder block closing portion adapted to close and to provide air intake to, and exhaust from, a plurality of cylinders formed in the block of an internal combustion engine;
said cylinder block closing portion having a plurality of spaced head portions adapted to close said plurality of cylinders of the block;
said cylinder block closure portion also forming a plurality of transverse air intake passageways traversing the long cylinder block closing portion and communicating with said plurality of spaced head portions;
a cylinder head side portion forming an air intake manifold cavity extending longitudinally in the cylinder head casting between the plurality of transverse air intake passageways and the side of the cylinder head casting; and
a further cylinder head casting portion forming an uninterrupted uniform wall of casting metal defining a hydraulic fluid reservoir cavity that extends longitudinally in the cylinder head casting, said wall being of sufficient thickness to contain hydraulic pressure on the order of 3000 psi.

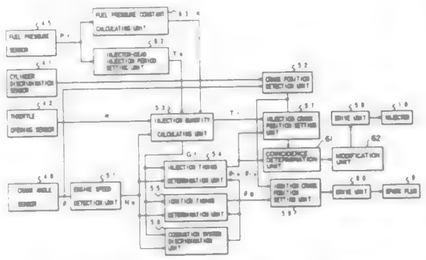
5,333,582
PRE-COMBUSTION CHAMBER GAS ENGINE
Hideo Kawamura, Kanagawa, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa, Japan
Filed Sep. 28, 1993, Ser. No. 127,884
Claims priority, application Japan, Sep. 29, 1992, 4-282223
Int. Cl.[5] F02B *19/02*
U.S. Cl. 123—254 **17 Claims**

1. A pre-combustion chamber gas engine comprising a cylinder block provided with cylinders, a cylinder head fixed to said cylinder block, combustion chamber walls provided in cavities formed in said cylinder head, pre-combustion chambers formed in said combustion chamber walls, primary chambers formed in the portions of said combustion chamber walls which are on the side of said cylinders, communication ports formed in said combustion chamber walls and allowing communication between said primary chambers and said pre-combustion chambers, pistons adapted to be moved reciprocatingly in said cylinders, fuel inlets formed in said combustion chamber walls so as to supply a gas fuel to said pre-combustion chambers, fuel valves provided in said fuel inlets so as to open and close said fuel inlets, control valves which are provided on valve seats formed in said communication ports, so as to open



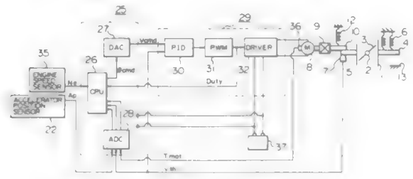
and close said communication ports, and which are adapted to be actuated by an electromagnetic force, and lift amount varying means for controlling a lift amount of said control valve by an electro-magnetic force resisting the resilient force thereof.

5,333,583
FUEL INJECTION CONTROL METHOD AND A CONTROL APPARATUS FOR A CYLINDER DIRECT-INJECTION ENGINE
Takashi Matsuura, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 22, 1993, Ser. No. 124,646
Claims priority, application Japan, Oct. 8, 1992, 4-298030
Int. Cl.[5] F02B *17/00*; F02D *41/34*
U.S. Cl. 123—295 **14 Claims**



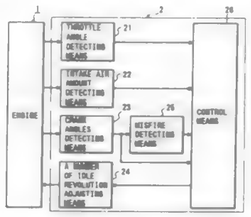
1. A fuel injection control method for a cylinder direct-injection engine which includes a plurality of cylinders and a plurality of injectors for directly injecting fuel into the cylinders, said method comprising the steps of:
calculating beginnings of fuel injection for injecting the fuel into the cylinders;
calculating the beginnings of threshold voltage impression at which a threshold voltage for starting to inject the fuel from the injectors is applied, corresponding to the fuel injection beginnings, and calculating the ends of the threshold voltage impression;
determining whether or not a first period between the beginning and end of threshold voltage impression for a preceding cylinder is coincident with a second period between the beginning and end of threshold voltage impression for a succeeding cylinder; and
modifying the second period so as to be earlier or later than the first period, if the two periods are coincident with each other.

5,333,584
THROTTLE CONTROL SYSTEM
Shigeru Kamio, Nagoya, and Katsuya Sakita, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Sep. 3, 1993, Ser. No. 115,774
Claims priority, application Japan, Sep. 4, 1992, 4-237449
Int. Cl.[5] F02D *11/10*
U.S. Cl. 123—399 **17 Claims**



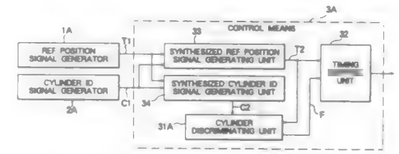
1. A throttle control system comprising:
a throttle valve disposed within an air intake duct of an engine;
a direct current motor connected to said throttle valve and driving said throttle valve to open and close by power supply from a battery;
a throttle angle sensor for detecting an open angle of said throttle valve;
throttle open angle command value deriving means for deriving an open angle command value for said throttle valve;
motor load condition detecting means for detecting a load condition on said direct current motor;
rounding means for moderating variation of said open angle command value depending upon the load condition of the direct current motor detected by said motor load condition detecting means;
direct current motor drive control means for controlling driving of said direct current motor so that the throttle valve open angle detected by said throttle angle sensor becomes consistent with said open angle command value.

5,333,585
CONTROL DEVICE FOR IDLE ROTATION OF ENGINE
Toshiki Kuroda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 17, 1993, Ser. No. 32,317
Claims priority, application Japan, Mar. 23, 1992, 4-064939
Int. Cl.[5] F02D *41/16, 43/00*
U.S. Cl. 123—339 **5 Claims**



1. An apparatus for controlling idle revolutions of an engine, comprising:
means for detecting a number of revolutions of said engine;
means for adjusting idle revolutions of said engine;
means for detecting a misfire of said engine; and
means for controlling said adjusting means to adjust the idle revolutions detected by said engine revolution detecting means to a predetermined number of idle revolutions, wherein said controlling means fixes said adjusting means to a predetermined condition during a misfire condition of said engine detected by said misfire detecting means.

5,333,586
CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE
Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 14, 1993, Ser. No. 76,136
Claims priority, application Japan, Jun. 25, 1992, 4-167556
Int. Cl.[5] F02P *7/067*
U.S. Cl. 123—414 **6 Claims**



1. An apparatus for controlling operation of a four-cycle internal combustion engine including an odd number of cylinders, comprising:
reference position signal generating means for generating a reference position signal in synchronism with rotation of a crank shaft of said internal combustion engine, said reference position signal including a number of constant interval pulses generated periodically at a predetermined constant time interval during a single rotation of said crank shaft, said number of the constant-interval pulses being selected equal to a number of said cylinders multiplied by N, where N represents a natural number;
cylinder identification signal generating means for generating a cylinder identification signal in synchronism with rotation of a shaft interlocked to said crank shaft and having a rotational speed equal to a half of that of said crank shaft, said cylinder identification signal including a number of different-interval pulses generated at different time intervals, said number corresponding to that of said cylinders; and
control means for controlling said odd number of cylinders, including:
synthesized reference position signal generating means for generating a synthesized reference position signal by dividing frequency of said reference position signal by $\frac{1}{4}$N and on the basis of a level of said cylinder identification signal at edges of said constant-interval pulses;
cylinder discrimination means for generating a cylinder discrimination signal for identifying discriminatively each of said cylinders on the basis of the level of said cylinder identification signal at the edges of said constant-interval pulses; and
timing control means for controlling operation of each of said cylinders on the basis of said synthesized reference position signal and said cylinder discrimination signal.

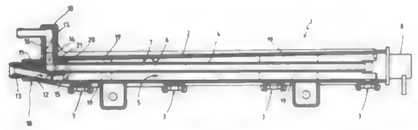
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,587

MANIFOLD FOR A SYSTEM FOR SUPPLYING FUEL TO AN INTERNAL-COMBUSTION ENGINE

Maurizio DiSilvestro, Bologna, and Flavio Giovannini, Casalecchio Di Reno, both of Italy, assignors to Weber S.r.l., Turin, Italy

Filed May 20, 1993, Ser. No. 63,805
Claims priority, application Italy, May 21, 1992, 000138
Int. Cl.[5] F02M *55/02, 41/00*
U.S. Cl. 123—456 20 Claims



1. A manifold for an internal combustion engine to supply fuel under pressure to a series of fuel atomizing valves, said manifold comprising:

a) a first tubular body having a longitudinal axis and a series of connections fluidly connectable to fuel atomizing valves;

b) a second tubular body disposed approximately coaxially inside said first tubular body and defining between said first and second tubular bodies a channel for supplying the fuel to said connections;

c) a member disposed adjacent to and closing off a first axial end of said first tubular body;

d) said member including a pressure regulator operably connected to said channel and said second tubular body;

e) said first tubular body including an integral wall closing off a second axial end of said first tubular body;

f) said first tubular body including a tubular extension projecting from said integral wall and substantially coaxially with said first tubular body;

g) said tubular extension including an inlet duct fluidly connecting with said channel;

h) said integral wall including an outlet duct fluidly communicating with said second tubular body;

i) said tubular extension being configured for connection to a fuel tank; and

j) said inlet duct including a first section having an axis extending substantially parallel to the longitudinal axis of said first tubular body, and a second section having an axis extending at an angle relative to the axis of said first section, and a third section having an axis extending substantially coaxial with the longitudinal axis of said first tubular body.

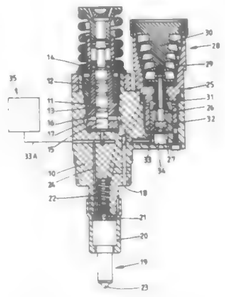
5,333,588

PUMP/INJECTOR

Eric J. Cananagh, Surbiton, England, assignor to Lucas Industries public limited company, Solihull, England

Filed Jan. 19, 1993, Ser. No. 5,634
Claims priority, application United Kingdom, Jan. 21, 1992, 9201204
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—506 1 Claim

1. A pump/injector for supplying fuel to an internal combustion engine comprising: a reciprocable pump plunger housed within a bore defined in a housing, the bore and plunger forming a pumping chamber from which fuel is expelled during an inward stroke of the plunger; means for filling the pumping chamber with fuel during outward movement of the plunger; a valve controlled fuel injection nozzle secured to the housing, the nozzle having an inlet which is in communication with the pumping chamber and an outlet through which fuel flows when, during the inward movement of the plunger, the valve member of the nozzle is lifted from its seating; a first passage communicating with said pumping chamber and with a drain; a first electromagnetically actuated spill valve in said first passage and which can be operated to allow fuel to flow to the drain from the pumping chamber, during the inward movement of the pumping plunger; and at least a second electromagnetically actuated spill valve operating simultaneously with the first spill valve, said second spill valve controlling flow of fuel through a second passage communicating with the pumping chamber and said drain, said first and second spill valves and said first and second passages being identical to each other.

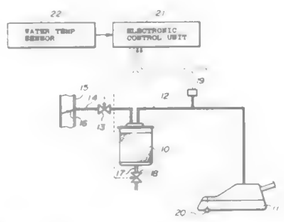


5,333,589

APPARATUS FOR DETECTING MALFUNCTION IN EVAPORATED FUEL PURGE SYSTEM

Takayuki Otsuka, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 895,102, Jun. 8, 1992, abandoned. This application Nov. 25, 1992, Ser. No. 982,280
Claims priority, application Japan, Jun. 10, 1991, 3-138002
Int. Cl.[5] F02M *25/08;* F02D *41/22*
U.S. Cl. 123—520 8 Claims



1. An apparatus for detecting a malfunction in an evaporated fuel purge system, said evaporated fuel purge system including a canister for absorbing fuel vapor fed from a fuel tank to the canister via a vapor passage, a purge passage for connecting the canister to an intake passage of an engine, and a purge control valve provided in the purge passage, said purge control valve being opened when the engine is operating under a predetermined operating condition, whereby fuel vapor is fed from the canister to the intake passage via the purge passage, said apparatus comprising:

first means for subjecting said system to a negative pressure in the intake passage by opening the purge control valve thereby connecting the canister to the intake passage via the purge passage, and for subsequently closing the purge control valve to maintain said negative pressure in said system for a predetermined time period by disconnecting the purge passage from the intake passage and disconnecting the canister from the atmosphere during the predetermined time period,

pressure sensing means for sensing a pressure in said system independently of the operation of said first means; and

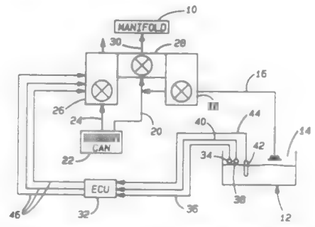
discrimination means for detecting whether or not a malfunction has occurred in said system, in response to a difference between pressures sensed by said pressure sensing means respectively at a beginning of said predetermined time period and at an end thereof.

5,333,590

DIAGNOSTIC SYSTEM FOR CANISTER PURGE SYSTEM

Jon Thomson, Jackson, Mich., assignor to Pilot Industries, Inc., Dexter, Mich.

Filed Apr. 26, 1993, Ser. No. 55,662
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 13 Claims



1. For use in conjunction with a fuel system for an internal combustion engine having an intake manifold, a fuel tank and an evaporative emission control system, said evaporative emission control system having a fuel vapor canister having a vent port and a vapor port and a canister purge valve fluidly connected between said canister vapor port and said intake manifold, a system for detecting leaks in the evaporative emission control system comprising;

a vent valve fluidly connected in series with the canister vent port,

means for closing said vent valve and opening said purge valve to thereby create a partial vacuum in said purge system,

means for measuring said partial vacuum in said purge system,

means for generating a fault signal when the change in the partial pressure after said closure of said purge valve exceeds a leakage threshold value over a predetermined time period,

means for measuring the temperature of fluid in the purge system,

means for measuring the volume of liquid in the fuel tank,

wherein the leakage threshold value is a function of the vacuum droop rate of the purge system and is calculated in accordance with the following equation:

$$R1=((Dp-Edt)-Erup)*Vv$$

where

R1 equals the leakage threshold value

Dp=pressure change

Edt=effect of temperature change

Erup=effect of evaporation of fuel

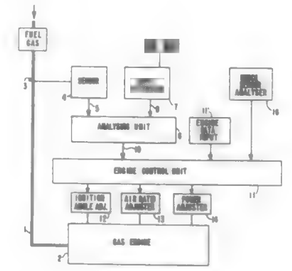
Vv-vapor volume.

5,333,591

DEVICE TO CONTROL A GAS-FIRED APPLIANCE

Wilhelm Korsmeier, Recklinghausen; Dieter Wolf; Manfred Hoppe, both of Dorsten, and Holms J. Schollmeyer, Raesfeld, all of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Mar. 10, 1993, Ser. No. 28,249
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1992, 9203528[U]
Int. Cl.[5] F02M *21/04*
U.S. Cl. 123—527 13 Claims



1. A device to control a gas-fired appliance as a function of the composition of a gaseous fuel, said device comprising:

a thermal conductivity sensor to supply a measurement signal dependent upon the thermal conductivity of the gaseous fuel,

an analyzing unit connected to said thermal conductivity sensor to receive the measurement signal and to develop from said measurement signal a control signal dependant upon the composition of the gaseous fuel, and

a control unit to receive the control signal and to control at least one of the operating parameters of the gas-fired appliance, in particular at least one of the parameters of air/fuel ratio and output, as a function of the control signal.

5,333,592

IGNITION COIL FOR IGNITION SYSTEMS IN COMBUSTION ENGINES

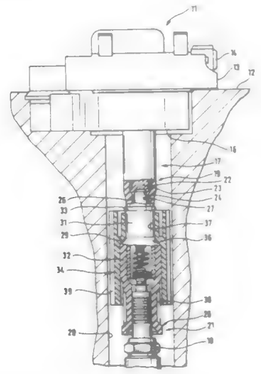
Walter Benedikt, Korawestheim; Dieter Betz, Vaihingen/Enz; Werner Grewe, Leonberg, and Gerhard Haist, Freiberg/Neckar, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00773, § 371 Date May 13, 1993, § 102(e) Date May 13, 1993, PCT Pub. No. WO93/09345, PCT Pub. Date May 13, 1993
PCT Filed Sep. 12, 1992, Ser. No. 50,453
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1991, 9113753
Int. Cl.[5] F02P *11/00*
U.S. Cl. 123—634 8 Claims

1. An ignition coil for ignition systems of internal combustion engines of motor vehicles, comprising at least one primary connection part connectable with a voltage source; at least one secondary connection part having at least one connection dome, a pin and a spark plug terminal connected with said pin

VOL 1165 ISS 1 AG 2 1994 UMI

and attachable to a spark plug mountable in a spark plug recess; and a centering sleeve adapted to the shape of the spark plug



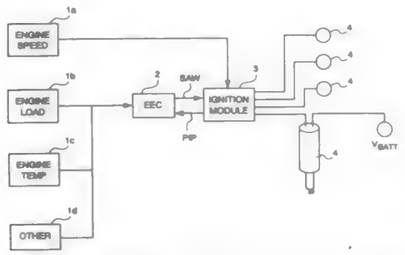
recess and allowing for movement clearance, said centering sleeve being undetachably fastened to said spark plug terminal.

5,333,593

ENERGY-ON-DEMAND IGNITION COIL

Carl R. Morganti, Farmington Hills; Gitanjli Singh, Canton, and Benjamin D. Sweet, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 15, 1993, Ser. No. 4,008
Int. Cl.[5] F02P *5/15*
U.S. Cl. 123—637 **11 Claims**



1. In a multicylinder, reciprocating internal combustion engine having a spark ignition generator for each combustion chamber within a respective cylinder, and an ignition coil element electrically coupled with at least one spark ignition generator for repeatedly passing to the ignition generator a voltage sufficient to cause within each said combustion chamber a combustion event of predetermined ignition energy;

control means repetitively charging and discharging said ignition coil element during the initial stage of any combustion event occurring within 0% mass fraction burn to about 2% mass fraction burn within said respective cylinder;

said ignition coil element having a single strike discharge energy output sufficient to cause substantially complete combustion at operating conditions exceeding idle speed and light load conditions;

said ignition coil element having a secondary voltage charge time sufficient to allow said coil to be discharged repeatedly during the initial stage of a single combustion event; and

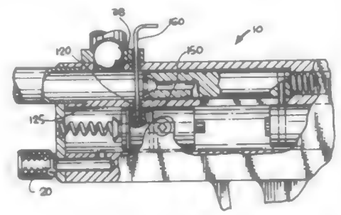
the maximum and minimum energy levels deliverable by said coil element during the initial stage of any combustion event being at a ratio of at least approximately 2:1, with said maximum energy level being established over a period of 2–8 discharges.

5,333,594

GUN WITH VARIABLE GAS POWER

Robert Robinson, 695 Blaine Way, Hayward, Calif. 94544

Filed Aug. 12, 1993, Ser. No. 105,381
Int. Cl.[5] F41B *11/00*
U.S. Cl. 124—73 **20 Claims**



10. A gas powered gun of the type having a projectile barrel with a reciprocating, tubular, ammunition-contacting bolt and having an external gas supply feeding into an actuator barrel aligned parallel to the projectile barrel, the actuator barrel in gas flow communication with the projectile barrel through an orifice, the actuator barrel holding a trigger responsive shuttle which discharges gas from the external supply to the orifice, the orifice in gas flow communication with a bore extending into the tubular bolt, the improvement comprising:

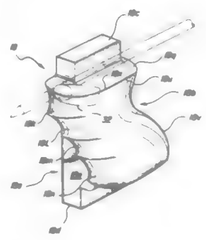
a variable gas flow valve disposed within the actuator barrel, the valve defining a gas flow passageway adjustable by a screw, the screw aligned with the orifice and with an opening in the projectile barrel opposite the orifice, whereby the gas flow through the valve may be increased or decreased in-situ as the screw is rotated by a tool inserted through the opening in the projectile barrel.

5,333,595

ARCHERY BOW ASSEMBLY

Duane Heffron, 6655 N. Lucas, Manton, Mich. 49663

Filed Apr. 14, 1992, Ser. No. 869,146
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—88 **7 Claims**



1. A central handle section for connection to upper and lower limb sections to form an archery bow, said central handle section including:

a generally planar main body portion adapted to be secured at its upper end to the lower end of the upper limb section and adapted to be secured at its lower end to the upper end of the lower limb section; and

a handle portion formed integrally with said main body portion and defining an oblique grasping surface positioned laterally of the plane of the main body portion and extending downwardly and outwardly with respect to the said plane so that the first finger of an archer's hand, proximate the thumb, is positioned in relative proximity to said plane and each successive finger is positioned further away from said plane so as to rotate the forearm of the archer away from the path of a bow string attached to the limb sections, the handle portion further defining an arrow rest surface extending laterally from a location proximate said plane to a juncture with the upper edge of said grasping surface.

3. An archery bow assembly comprising:

upper and lower limb sections lying in a plane; and

a central handle section interconnecting said upper and lower limb sections and defining a grasping surface for the hand of the archer,

said grasping surface extending downwardly and outwardly with respect to the plane of the limb sections,

said handle section including a generally planar main body portion having a central plane generally coinciding with the plane of said limb sections;

said handle being connected at its upper end to the lower end of said upper limb section and being connected at its lower end to the upper end of said lower limb section;

said handle section further including a handle portion integral with said main body portion and defining said grasping surface; and

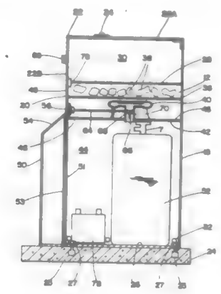
said handle portion including an upper arrow rest surface extending laterally from a location proximate said central plane to a juncture with an upper edge of said grasping surface so as to laterally displace the uppermost portion of said grasping surface, which uppermost portion is adapted to receive the first finger of the archer's hand proximate the thumb, from said central plane and thereby laterally displace the archer's forearm away from the path of the bow string.

5,333,596

OUTDOOR COOKING GRILL PROVIDED WITH VENDING APPARATUS

Todd W. Clifford, 6359 W. Devonshire, Cincinnati, Ohio 45140

Filed Mar. 23, 1992, Ser. No. 856,347
Int. Cl.[5] A47J *37/00;* **F24C** *3/00*
U.S. Cl. 126—41 R **12 Claims**



1. In a cooking grill equipped with a food-positioning rack, a burner disposed below the rack for distributing a flame, a conduit for conveying a cooking fuel to the burner and a coupling for connecting the conduit to a source of cooking fuel, that improvement which comprises:

a) an electrically actuated fuel shut-off valve interposed on the conduit between the coupling and the burner;

b) a control circuit electrically connected to the fuel shut-off valve;

c) money-receiving means electrically connected to the control circuit;

d) connective means for electrically connecting the control circuit to a source of electricity; and

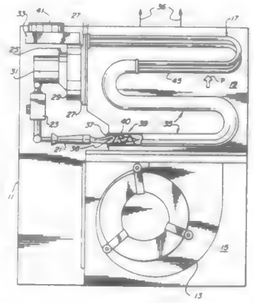
e) a housing adapted to protect the aforesaid components from theft and vandalism.

5,333,597

ABATEMENT MEMBER AND METHOD FOR INHIBITING FORMATION OF OXIDES OF NITROGEN

Michael E. Kirkpatrick, and Paul M. Haydock, both of West Lafayette, Ind., assignors to Consolidated Industries Corp., Lafayette, Ind.

Filed Apr. 30, 1993, Ser. No. 55,977
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 R **6 Claims**



1. In a gas-fired furnace comprising a heat exchanger comprising at least one heat exchange conduit having a flame inlet region for receiving a combustion flame and hot combustion products from a gas burner, the improvement comprising a porous abatement member disposed in the flame inlet region of the conduit, the abatement member comprising a body portion having a serpentine configuration establishing a plurality of sections disposed transversely to the direction of flow of the combustion products in the conduit, whereby the combustion flame and combustion products therein pass through the abatement member, for abating the formation of oxides of nitrogen.

5,333,598

UNIT HEATER AND HEAT EXCHANGER THEREFOR

Richard A. Mielke, Franksville; Norman E. Mattson, Racine, and Robert S. Cooley, Oconomowoc, all of Wis., assignors to Modine Manufacturing Co., Racine, Wis.

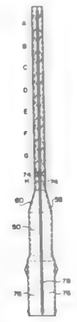
Filed May 19, 1992, Ser. No. 885,546
Int. Cl.[5] F24H *3/00*
U.S. Cl. 126—116 R **5 Claims**

1. A furnace including a housing having an air inlet; an air outlet;

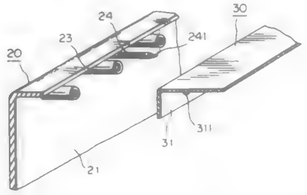
a fan or blower for driving air from the inlet to the outlet through a flow path, a plurality of parallel, spaced burners within the housing just below the flow path burners and including a plurality of flattened, generally vertical tubes, one for each burner, each tube having a relatively wide, open lower end overlying the associated burner and a narrower upper end in said flow path and characterized by space, generally parallel sides, the improvement wherein at least one side as a plurality of dimples directed toward the other side, the dimples contacting or almost contacting the other side and substantially filling said one said above said relatively wide lower end, each of said

VOL 1165 ISS 1 AG 2 1994 UMI

lower ends, on both sides thereof, including a convex dimple extending toward and nominally engaging a corresponding convex dimple on the adjacent side of the adjacent tube.

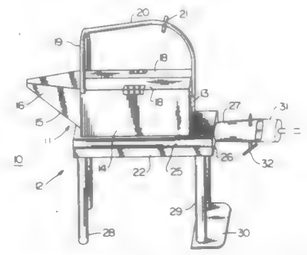


5,333,599
EXTERNAL BODY OF SMOKE EXHAUSTER
Sun-Sing Jang, 650, Yuan-Huan E. Rd., Fong-Yuan, Taichung Hsien, Taiwan
Filed Jul. 13, 1993, Ser. No. 90,948
Int. Cl.[5] F24C *15/20*
U.S. Cl. 126—299 D 10 Claims



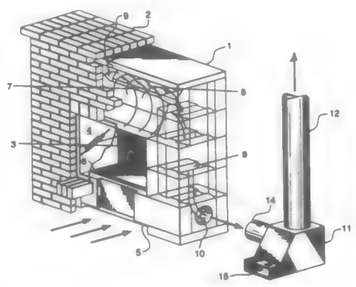
1. An external body of a smoke exhauster comprising:
a top plate having left and right sides individually bent downwardly to form a vertical plate portion each having a plurality of through holes respectively;
two side members respectively engaged to said left and right sides of said top plate, each of said two side members including a main portion having a plurality of abutment rods disposed on a top section of an internal wall of said main portion corresponding in location and number to said through holes,
each of aid two side members having a top portion extending inwardly in a plane of said top plate from a top edge of said main portion, axes of said abutment rods being parallel to a plane of said top portion,
each of said abutment rods respectively further having an axial threaded hole respectively corresponding in location to each of said through holes; and
a plurality of bolts passing through said through holes and threaded in said threaded holes of said abutment rods to engage each said top portion against said top plate and ends of said abutment rods against said left and right sides of said top plate.

5,333,600
PORTABLE TAR MELTING KETTLE ASSEMBLY
Martin Fitzpatrick, 12652 Bethel Rd., Martville, N.Y. 13111
Filed Nov. 17, 1993, Ser. No. 153,027
Int. Cl.[5] E01C *19/45;* F24H *1/00*
U.S. Cl. 126—343.5 A 7 Claims



1. A tar melting assembly for use with a portable heat torch comprising a tar kettle that includes a body having a front, a back, sides, and a spout that extends from the front of the body; a plurality of heat exchanger tubes within the body adjacent said bottom and each of which has an opening through said front and an opening through said back; and means for tipping the kettle to pour melted tar out from said spout; and also comprising a stand for the tar kettle that includes a bottom, a front wall, a back wall and sides that define an interior of the stand, with an upper opening into which said tar kettle is seated so that the openings of the heat exchanger tubes are within the interior of the stand, and a torch receptacle for receiving a torch head for injecting flame into the interior of said stand such the flame enters said heat exchanger tubes for rapid melting of tar in said tar kettle.

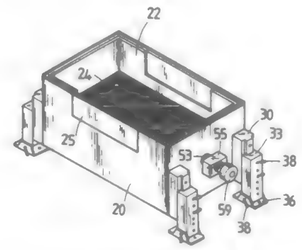
5,333,601
MASONRY HEATER
Kerry Hill, Wainfleet, Canada, assignor to Christy Brianna Hill and Andrea Kirsty Lee Hill, Wainfleet, Canada
Filed Mar. 5, 1993, Ser. No. 27,493
Int. Cl.[5] F24B *1/188*
U.S. Cl. 126—523 15 Claims



1. A contra-flow masonry heater comprising:
a firebox having a front opening, an air intake communicating with a source of fresh air and an upper flue outlet;
at least one vertical contra-flow heat exchange channel communicating between the flue outlet and an exhaust port,
the firebox and channel having walls of refractory material for mass absorption of heat energy from a burning fuel and combustion gases contained therein and subsequent radiant release of heat energy to an adjacent space,

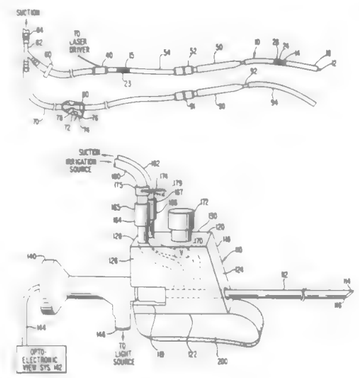
a down draft hood communicating between the exhaust port and outside air, the down draft hood having a plenum communicating among an exhaust inlet, a chimney and a relief port, the relief port being located below the elevation of the exhaust inlet and communicating with the source of fresh air;
an air tight door secured to the front opening of the firebox;
a gas burner housed within the firebox, the burner communicating with a source of fuel gas via a gas supply valve;
burner control means for actuating the gas supply valve;
thermostat means in contact with the refractory material and the burner control means, for stimulating the burner control means to ignite, extinguish, and vary the quantity of gas supplied to the burner; and
temperature sensor means, within the relief port of the down draft hood and communicating with the burner control means, for stimulating the burner control means to extinguish the burner when a temperature higher than a prescribed valve is detected.

5,333,602
SOLAR COLLECTOR ASSEMBLY
Shao-Kuang Huang, No. 4, Sec. 2, Ching-Tao Rd.,, Taichung, Taiwan
Filed Sep. 9, 1993, Ser. No. 118,251
Int. Cl.[5] F24J *2/38*
U.S. Cl. 126—608 2 Claims



1. A solar collector assembly comprising:
a collector unit, said collector unit comprising a rectangular housing internally heat insulated and covered with a transparent top cover plate and two opposite transparent side cover plates, a solar collector panel disposed inside said housing for the absorption of solar radiation passing through said transparent top cover plate and said transparent side cover plates;
an elevation adjustment unit for adjusting the angle of elevation of said collector unit, said elevation adjustment unit being consisted of four sets of elevation adjustment devices, each elevation adjustment device being comprised of a sliding bar fastened to either corner of said housing on the outside, a base frame, and a supporting bar pivoted to said base frame to support said sliding bar, and screw devices to fix said sliding bar and said supporting bar in the adjusted position, said sliding bar having a series of vertically spaced screw holes on a longitudinal dovetail tongue thereof, said supporting bar having a dovetail groove engaged with said dovetail tongue, and a series of vertically spaced screw holes corresponding to the vertically spaced screw holes on said sliding bar, into which said screw devices are alternatively threaded; and
a focusing adjustment unit for adjusting the angle of inclination of said solar collector panel sideways, said focusing adjustment unit comprising two graduated bushings fastened in holes on two opposite short sides of said housing, each graduated bushing having a series of pin holes around a respective outer end edge, a collector tube fastened to said solar collector panel and turned to oscillate said solar collector panel sideways, two adjustment blocks respectively mounted around said collector tube on two opposite ends thereof outside said housing and made to slide on said collector tube longitudinally, said adjustment block having plug pins alternatively inserted into the pin holes on either graduated bushing, stop means to prevent said adjustment blocks from rotary motion relative to said collector tube, two locknuts fastened to two opposite ends of said collector tube through screw joints, and two spring elements mounted around said collector tube and respectively retained between said adjustment blocks and said locknuts.

5,333,603
ENDOSCOPE WITH PALM REST
Daniel Schuman, 3790 Kings Way, Boca Raton, Fla. 33434
Division of Ser. No. 841,053, Feb. 25, 1992, abandoned. This application Dec. 22, 1992, Ser. No. 994,730
Int. Cl.[5] A61B *1/30*
U.S. Cl. 128—7 11 Claims



1. An endoscope having:
a first port adapted to be coupled to an optical, electronic viewing system;
an elongated, hollow stem having a lumen and a distal end, said distal end adapted to be inserted into a body cavity such that an optical sensor, coupled to said optical, electronic viewing system, is adapted to optically sense said body cavity;
an irrigation port and a suction port fluidly connected to said lumen of said stem;
wherein the improvement comprises:
a palm sized enclosure at a proximal end region of said stem, said enclosure having a top, a bottom and four adjoining sides;
a form-fitted palm rest attached to the bottom of the enclosure, said palm rest being shaped as a form-fitted rest for the base of a palm of an operator's hand; and,
at least two flow control valves respectively controlling suction and irrigation and disposed between corresponding suction and irrigation ports and said stem lumen;
respective operator interface controls, for corresponding control valves, protruding above said top of said palm sized enclosure, and said top and said operator interface controls being vertically freely accessible by at least one finger of an operator, without interference and obstruction by all other elements atop said palm sized enclosure, when said palm sized enclosure is placed in said palm of an operator;
whereby suction and irrigation flow through said control valves is effected by actuation of said operator interface control caused by the unobstructed vertical movement of

VOL 1165 ISS 1 AG 2 1994 UMI

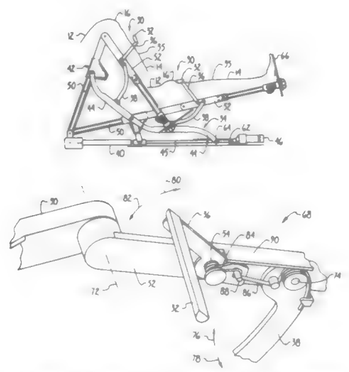
said at least one finger of said operator over said interface controls.

5,333,604

PATELLA EXERCISING APPARATUS

Robert S. Green, and Louise M. Focht, both of San Diego, Calif., assignors to Sutter Corporation, San Diego, Calif.

Filed Sep. 16, 1992, Ser. No. 945,535
Int. Cl.[5] A61H *1/02*
U.S. Cl. 601—33 20 Claims



15. A patella exercising device useful for continuously moving and decompressing a patella of a knee joint of a patient and for preventing patella baja, comprising:

a continuous passive motion device for continuously moving the patient's knee joint in flexion and extension;

a patella contact pad mounted to a support bracket pivotally attached to the continuous passive motion device for contacting the patella during flexion and extension of the knee and for shifting the patella from a neutral anatomical position so that the patella may be pushed and decompressed by the patella contact pad during flexion and extension of the knee by the continuous passive motion device;

a cam member drivably mounted to the continuous passive motion device for driving the patella contact pad; and

a follower member connected to the support bracket for the patella contact member adapted to be contacted and driven by the cam member for moving the patella contact pad into and out of contact with the patella.

5,333,605

REMEDIAL DEVICE FOR HAND INSUFFICIENCY

Mitsuma Matsumura, Tokyo; Kenji Mizuno, Sakado, and Atsuki Hashimoto, Tokyo, all of Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,236
Claims priority, application Japan, May 11, 1992, 4-037967; May 11, 1992, 4-144845
Int. Cl.[5] A61F *5/00*
U.S. Cl. 601—40 11 Claims

1. A remedial device for the hand, said device comprising:

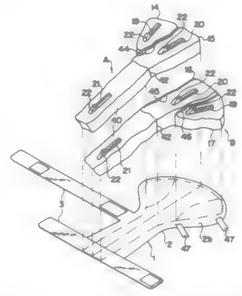
a glove trank including a foundation having a front side on which the palm of a user of the device is to rest and a rear side, thumb and finger stops by which the thumb and fingers of a user of the device are secured to the foundation, and an arm stopper by which the wrist of a user of the device is secured to the foundation;

a plurality of first bags disposed on the front side of said foundation;

air sacks accommodated within said first bags;

a pair of second bags disposed on the rear side of said foundation, each of said second bags comprising a one-piece foundation and having a concavity at which the one-piece foundation is folded about itself, a long rectangular portion located to one side of said concavity, and a triangular portion located to the other side of said concavity adjacent an end of the rectangular portion, the triangular portion having a height that is smaller than the length of the rectangular portion;

air sacks accommodated in the rectangular and the triangular portions of each of said second bags; and



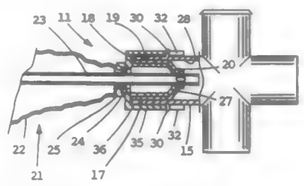
a compressed air feed line system by which compressed air can be fed into and discharged from said air sacks, the air sack accommodated within said first bags being located between where the fingers of a user will be secured to the foundation of the glove trank by the finger stoppers such that the fingers will be spread apart when air is fed into said air sacks accommodated within the first bags through said compressed air feed line system, and the air sacks accommodated within the second bags being so positioned on the rear side of the foundation of the glove trank as to cause joints of the hand of user of the device to be extended and dorsiflexed when air is fed into the air sacks accommodated within the second bags through said compressed air feed line system.

5,333,606

METHOD FOR USING A RESPIRATOR ACCESSORY ACCESS PORT AND ADAPTOR THEREFORE

James Schneider, and Kok-Hiong Kee, both of St. Louis, Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Division of Ser. No. 873,470, Apr. 24, 1992, abandoned. This application Jun. 23, 1993, Ser. No. 81,722
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.24 12 Claims



1. A method of attaching an adaptor for a respiration system accessory to a respiration system, said respiration system including a manifold having an accessory access port which includes a normally closed valve therein, and a locking mechanism, said method including the steps of:

inserting the adaptor into the accessory access port of the manifold of the respiration system,

forcing the normally closed valve in the accessory access port open with the adaptor as the adaptor is inserted into the accessory access port, and

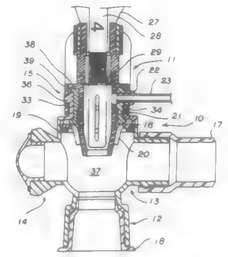
locking the adaptor to the manifold by operation of the locking mechanism which allows locking of the adaptor to the manifold in only a single relative orientation.

5,333,607

VENTILATOR MANIFOLD WITH ACCESSORY ACCESS PORT

Kok-Hiong Kee; James G. Schneider, both of St. Louis, Mo., and Robert H. Bruno, Avon, Conn., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Oct. 19, 1992, Ser. No. 962,755
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.18 17 Claims



1. A ventilator manifold adapted for use with a respiratory support system, including a respiratory system accessory device having an adaptor, said manifold comprising:

a fluid flow connection port for fluid flow connection between a patient and a ventilator circuit, and

an accessory access port for allowing attachment of the adaptor to said manifold, said accessory access port being normally closed against fluid flow therethrough into said manifold,

a locking device for locking the adaptor to said accessory access port, said locking device including means to allow locking of said adaptor and said manifold in only a single relative orientation,

wherein, the adaptor further provides means for opening the accessory access port in response to attachment of the adaptor to said accessory access port to allow fluid flow access between said manifold and the respiratory system accessory device.

5,333,608

ENDOTRACHEAL TUBE FOR FACE, CHIN AND NECK SURGERY

Christopher K. M. Cummins, Tullamore, Ireland, assignor to Sherwood Medical Company, St. Louis, Mo.

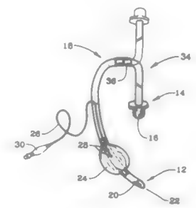
Filed Sep. 30, 1992, Ser. No. 954,182
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.14 12 Claims

1. An endotracheal tube comprising:

a) an elongated tube having a distal and a proximal end and a central lumen extending from said distal to said proximal end of said tube, said distal end formed having substantially the curvature of a human trachea, said distal end placeable in a patient's trachea, said tube also having at least one bend between said distal end and said proximal end, said bend formed to position said proximal end to exit the patient through the patient's mouth when said distal end is positioned in the patient's trachea;

b) means for fluidly communicating said central lumen with the exterior of said tube at said distal end of said tube; and,

c) means for positioning said proximal end of said tube to selectively expose a patient's neck, chin or face during



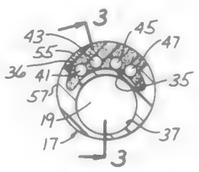
surgery, said means for positioning comprising a swivel for rotating said proximal end relative to said distal end, said swivel located along said tube between said distal and said proximal ends, said swivel located along said tube distal to or approximately at said bend in said tube.

5,333,609

CATHETER AND PROBE-CATHETER ASSEMBLY

William Bedingham, Maplewood; Joel R. Dufresne, St. Paul, both of Minn., and David F. Wirt, Prescott, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 19, 1992, Ser. No. 885,713
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—632 31 Claims



1. An assembly for insertion into a blood vessel of a patient comprising:

an elongated extruded catheter having first and second lumens and a distal port, said first lumen opening at a proximal end and opening at the distal port so as to allow the flow of fluid through said catheter and so as to provide fluid communication between said first lumen and the blood vessel of the patient, said second lumen having a closed end to prevent the flow of blood into said second lumen; and

a probe including an optical sensor responsive to a constituent of the blood for providing a signal which is related to the constituent of the blood and said transmission means comprising an optical fiber;

said probe, including said optical sensor and said optical fiber, being received in the second lumen such that said optical sensor is within the catheter but outside the first lumen and not in contact with the blood in the blood vessel of the patient; and

said catheter including means for allowing the constituent of the blood to pass from the blood to the optical sensor in the second lumen while substantially preventing at least some other components of the blood from passing from the blood to the optical sensor.

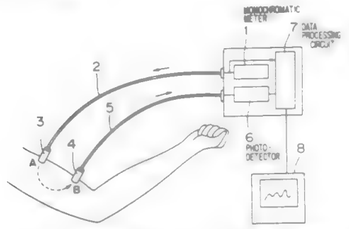
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,610

ABSORPTION SPECTRUM DETERMINING METHOD AND SPECTROMETRIC MEASURING APPARATUS FOR LIGHT-DIFFUSIVE OBJECT USING THE METHOD

Konomu Hirao, Osaka, Japan, assignor to Otsuka Electronics Co., Ltd., Osaka, Japan

Filed Mar. 26, 1992, Ser. No. 857,954
Claims priority, application Japan, Mar. 27, 1991, 4-63308
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—633 4 Claims



1. A method of determining an absorption spectrum, comprising the steps of:

(a) applying light to a light applying point on a surface of an object;

(b) receiving light which has passed through inside of said object at a light receiving point of said object;

(c) detecting the intensity I(λ) of light received at the light receiving point at various wavelengths to obtain the percentage absorption %ABS(λ) with the reference light intensity being $I_o(\lambda)$ according to an equation as follows:

$$\%ABS(\lambda)=\{I_o(\lambda)-I(\lambda)\}/I_o(\lambda);$$

and

(d) determining a constant n such that the calculated result of a spectrum waveform S(λ) using the equation

$$S(\lambda)=exp\,[n\cdot\%ABS(\lambda)]$$

is about the same as the spectrum waveform of the inherent percentage absorption of said object;

thereafter, when said object or a similar object calls for having its percentage absorption measured, substituting the calculated result of the spectrum waveform S(λ) in step (d) to determine the spectrum waveform of the inherent percentage absorption of said object or said similar object at the time of measuring.

5,333,611

Patent Not Issued For This Number

5,333,612

VOLUMETRIC BREAST INTEROGATION DEVICE

John J. Wild, 4262 Alabama Ave. S., Minneapolis, Minn. 55416

Filed Aug. 26, 1993, Ser. No. 112,148
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—660.9 6 Claims

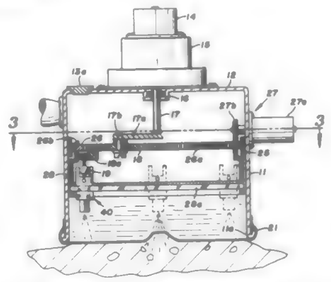
1. A device for the detection of tissue abnormalities through the use of pulse-echo ultrasonic energy, including:

a. a circumferential housing providing at least an upstanding side and of a diameterto sufficiently extend over an anatomical area, such as a women's breast, for which examination and detection of such abnormalities is desired;

b. an ultrasound transducer mounted and arranged in said housing and being shiftable therein to transmit and receive energy from the anatomical area to be interrogated as to the presence of abnormalities;

c. means for driving said transducer across said housing in a diametric, straight line path;

d. means for circumferentially indexing said straight line path of said transducer wherein each path in which said transducer is driven will cross the central area of said housing; and,



e. means for delivering to and receiving ultrasonic energy to and from said transducer.

5,333,613

MICROPARTICLES AS ULTRASONIC CONTRAST MEDIA

Ernest G. Tickner, Coulterville; Robert E. Short, Los Gatos, and David H. Rammler, Woodside, all of Calif., assignors to Delineate, Menlo Park, Calif.

Filed Mar. 23, 1993, Ser. No. 35,466
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—662.02 6 Claims

1. In a method for ultrasonic scanning comprising introducing an echogenic material into a liquid containing chamber; isonating said chamber with ultrasonic sound; and detecting echoes from said chamber as a result of said echogenic material to determine characteristics of the walls of said chamber or of the fluid in said chamber, the improvement which comprises:

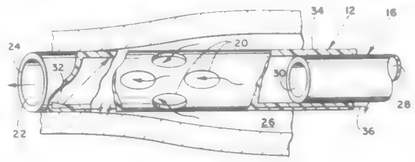
said echogenic material being individual matrix particles, characterized by being comprised of low molecular weight physiologically acceptable amino acids capable of forming microparticles with entrapment of gas as microtubules, microchambers, and/or microcracks; and either capable of rapid dissolution in said liquid with release of microbubbles which retain a size to be visualized by standard ultrasonic techniques; or by slow dissolution in said liquid.

5,333,614

MEASUREMENT OF ABSOLUTE VASCULAR FLOW

Andrew J. Feiring, 4454 N. Murray Ave., Milwaukee, Wis. 53211

Filed Sep. 28, 1992, Ser. No. 952,428
Int. Cl.[5] A61B 8/06
U.S. Cl. 128—662.06 25 Claims



1. A catheter for measuring total volumetric vascular flow at a location in a vessel of interest comprising:

(a) a flow-measurement catheter including a relatively long, hollow tubular member having distal and proximal ends and describing a continuous lumen having a distal measurement lumen segment of known geometric cross section, the distal end of the distal segment of the lumen having one or more end access ports and one or more sidewall access ports at a point close to but spaced from the distal end thereof and providing side access to the interior of the measurement lumen, the measurement lumen thereby being capable of carrying the full flow of the vessel of interest between the one or more end ports and the one or more side access ports when the catheter is situated at the location of interest, the flow-measurement catheter further extending into and being sealably connected to a handle means at the proximal end thereof;

(b) an obturator catheter comprising a relatively long, hollow tubular member having a distal and a proximal end and describing a continuous lumen therein and further being designed to be coaxially combined with the flow-measurement catheter and be longitudinally movable with respect to the flow-measurement catheter, the obturator catheter having the ability to occlude the one or more sidewall access ports in the flow-measurement catheter sidewall when the distal end of the obturator catheter is advanced so as to cover the one or more sidewall ports in the flow-measurement catheter;

(c) transducer means associated with the distal measurement segment of the flow-measurement catheter means for generating and receiving a beam of ultrasonic energy in the lumen of the outer catheter, the transducer means being disposed in fixed relation to the longitudinal axis of the distal measurement segment of the lumen of the flow-measurement catheter such that the total volumetric blood flow between the one or more side access ports and the one or more distal end access ports in the flow-measurement catheter lumen can be accurately sensed;

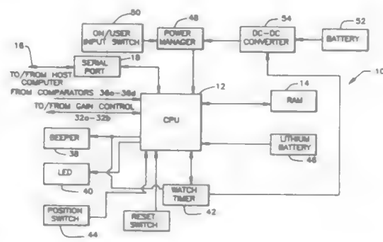
(d) means for energizing and communicating with the transducer means.

5,333,615

APPARATUS FOR DIGITALLY RECORDING AND ANALYZING ELECTROCARDIAL AND OTHER BIOELECTRIC SIGNALS

William Craelius, and Nicki A. Newby, both of 13 Cortland Dr., Somerset, N.J. 08873-1713

Filed Jun. 22, 1992, Ser. No. 901,891
Int. Cl.[5] A61B 5/0468
U.S. Cl. 128—696 20 Claims



1. Apparatus for processing electrocardial and other bioelectric signals received from an external measuring device, comprising:

port means connectable to said external measuring device;

input channel means adapted to receive a data signal from said measuring device;

compression circuit means for compressing the data signal from said input channel means so that the compressed data signal includes only changes in amplitudes at particular points;

memory means for storing said compressed data signal; and

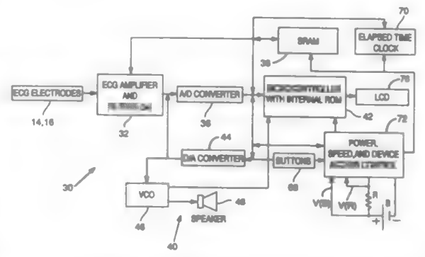
microprocessor means for controlling the storage of said compressed data signal in said memory.

5,333,616

WRIST-WORN ECG MONITOR

Gary N. Mills, Gladstone, and Habib Homayoun, Aloha, both of Oreg., assignors to Instromedix, Inc., Hillsboro, Oreg.

Division of Ser. No. 816,389, Dec. 26, 1991, Pat. No. 5,289,824.
This application Jan. 7, 1993, Ser. No. 2,161
Int. Cl.[5] A61B 5/0402
U.S. Cl. 128—696 3 Claims



1. A high functional-density cardiac monitoring system comprising:

a pair of dry skin electrodes for contacting the skin surface or a cardiac patient;

an ECG signal amplifier coupled with said electrodes for producing an analog signal representative of an electrical field therebetween;

analog-to-digital signal conversion means connected with said amplifier for producing digital data representing the patient's ECG waveform over a defined interval of time;

memory means for recording said digital data;

means for wirelessly communicating said data recorded in said memory means by producing a modulated ECG data carrier for telephonic transmission to a remote site; and

a housing containing said electrodes, said amplifier, said conversion means, said memory means and said communicating means;

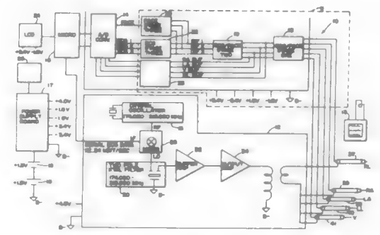
said housing having an exterior predetermined volume not exceeding approximately 1.5 inches^3.

5,333,617

CARDIAC MONITORING METHOD AND APPARATUS

Curtis R. Hafner, Cedarburg, Wis., assignor to Marquette Electronics, Inc., Milwaukee, Wis.

Continuation of Ser. No. 422,126, Oct. 16, 1989, abandoned.
This application Apr. 12, 1991, Ser. No. 685,996
Int. Cl.[5] A61B 5/04
U.S. Cl. 128—697 20 Claims



1. A patient monitoring system for monitoring a patient at a first location and including a monitor and a central station receiver located at a second location remote from the first location, said monitor including signal generating means, means for coupling said signal generating means to patient

VOL 1165 ISS 1 AG 2 1994 UMI

leads so that said signal generating means may be connected to a patient at the first location for sensing individual ECG voltage signals, said signal generating means comprising means for generating ECG signals functionally related to the individual ECG voltage signals, digitizing means coupled to said signal generating means for digitizing means for receiving said digitized signals and for serializing the same, transmitting means for transmitting an RF signal and including oscillator means for generating an RF carrier signal and phase modulating means for phase modulating means being coupled to said oscillator means for receiving said RF carrier signal and to said control means for receiving said digital serialized ECG signals and comprising means for phase modulating said RF carrier signal with the serialized ECG signals, said transmitting means further comprising means for transmitting the phase modulated RF carrier signals by far field electromagnetic transmission from the first patient location to said central station receiver located at the second location.

5,333,618

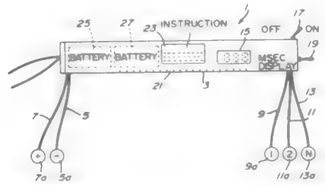
PORTABLE SELF-CONTAINED INSTRUMENT FOR THE MEASUREMENT OF NERVE RESISTANCE OF A PATIENT

Gregory Lekhtman, 1550 Dr. Penfield Ave., Apt. PH.3, Montreal, Quebec, Canada H3G 1B6 , and Roy Stephan, 3550 Ridgewood, Apt. 40, Montreal, Quebec, Canada H3V 1C2

Filed Jun. 30, 1993, Ser. No. 85,585

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—734 **7 Claims**



1. A portable, self-contained instrument for the measurement of nerve resistance of a patient, comprising:

a hollow elongated housing;

stimulator circuit means disposed in said housing;

receptor circuit means disposed in said housing;

stimulator connection means, connected to said stimulator circuit means, extending from said housing;

receptor connection means, connected to said receptor circuit means, extending from said housing;

display means; and

stimulator circuit activator means;

wherein, when said stimulator connection means are connected to stimulator electrodes mounted at a first position on said patient, and said receptor connection means are connected to receptor electrodes, mounted at a second position on said patient, said first position being spaced from said second position, each said first and second positions being disposed on a nerve of said patient, a suspected damaged portion of said nerve being between said first and second positions, and said stimulator circuit activator means is activated, a stimulator pulse is applied, via said stimulator connection means and said stimulator electrodes, to said nerve at said first position, and is transmitted along said nerve from said first position to said second position, and is received at said second position by said receptor circuit, via said receptor electrodes and said receptor connector means, the time of travel of said pulse from said first position to said second position being measured and displayed on said display means to provide a measure of the resistance of said nerve;

wherein said stimulator connection means comprise a first conductive stimulator lead for connection to a positive stimulator electrode and a second conductive stimulator lead for connection to a negative stimulator electrode;

and wherein said receptor connection means comprise a first conductive receptor lead for connections to a positive receptor electrode, a second conductive receptor lead for connection to a negative receptor electrode and a third conductive receptor lead for connection to a neutral receptor electrode;

and wherein said stimulator circuit means comprises a pulse generator having first output means connected to said conductive stimulator leads, and second output means;

and including a first battery providing power to said pulse generator;

said stimulator circuit activation means comprising a switch connecting said first battery to said stimulator circuit means;

and wherein said receptor circuit means comprises a pulse sensor arrangement having first output means connected to said conductive receptor leads and second output means;

and further including a second battery providing power to said pulse sensor arrangement.

5,333,619

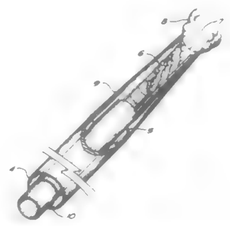
METHOD FOR RIGID TISSUE BIOPSY

Vito L. Burgio, Via Nomentana, 44, Rome, Italy

Filed Aug. 9, 1993, Ser. No. 103,982

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—754 **11 Claims**



1. A method for obtaining a biopsy of rigid tissue comprising the steps of:

inserting a needle into the rigid tissue such that said needle contains a biopsy in a distal end, said needle being tapered at said distal end;

inserting a plate into a proximal end of said needle, said plate having a thinness suitable for fitting between an internal surface of said needle and an external surface of said biopsy;

passing said plate along an internal surface of a tapered portion of said needle until the plate pushes the biopsy against an opposite internal surface of said needle; and

rotating said needle until said biopsy is separated from said rigid tissue.

5,333,620

HIGH PERFORMANCE PLASTIC COATED MEDICAL GUIDEWIRE

Timothy E. Moutafis, Gloucester, Mass.; Richard K. Elton; Thomas C. DuBois, both of Glens Falls, N.Y., and Bruce N. MacMore, South Glen Falls, N.Y., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Continuation of Ser. No. 784,921, Oct. 30, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 118,131

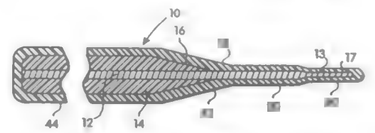
Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—772 **31 Claims**

1. A medical guidewire comprising:

an elongated metal core; and

a plastic layer surrounding said elongated metal core at least partially along its length thereof, said plastic layer having a flexural modulus which does not degrade below 150,000



p.s.i. after exposure to an aqueous environment at a temperature of approximately 37° C., such as human blood, and an elongation at yield of at least 2%.

5,333,621

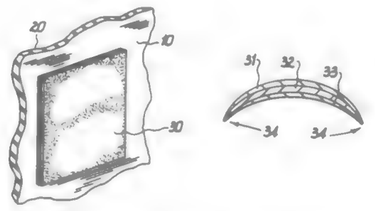
CONDOM WITH TRANSDERMAL VASODILATOR

Eric Denzer, 34 Stiles Dr., Melville, N.Y. 11747

Filed May 28, 1993, Ser. No. 69,976

Int. Cl.[5] A61F *6/04, 6/02*

U.S. Cl. 128—844 **6 Claims**



1. A male stimulating condom having a pharmaceutical vasodilator therein for producing and maintaining erection of the male sex organ during sexual intercourse, comprising:

a suitable flexible sheath having an inside with an inside surface and an outside with an outside surface, and an open end and a closed end;

an effective dose of pharmaceutically suitable vasodilator contained within the confines of a transdermal patch located on the inside of said condom, wherein the vasodilator penetrates the skin of the penis transdermally for producing and maintaining erection of the penis;

wherein the transdermal patch containing the vasodilator is applied to the inside surface of the condom during manufacture;

wherein the vasodilator is contained in a pharmaceutically suitable vehicle within said transdermal patch and said vasodilator is applied as a coating to the inside surface of said transdermal patch, said patch located within said condom for effective transdermal contact with the skin of the penis when the condom is applied thereto;

wherein said transdermal patch of said condom is a suitably thin and flexible transdermal patch adhered to the inside of said condom, said transdermal patch having at least one tapered edge, wherein said patch and tapered edge together present a substantially smooth profile and will produce substantially no friction or mechanical interference when said transdermal patch undergoes movement relative to an adjacent surface with which the patch is in slidable contact; and wherein

said transdermal patch contains the vasodilator for dispensing to the skin of the penis when the condom is applied thereto;

wherein said transdermal patch comprises three substrate layers, including an outer adhesive layer for contact with and adhesive bonding to the inside surface of said condom, a middle layer containing said vasodilator, and an inner adhesive layer for contact with and adhesive bonding to the skin of the penis; wherein

said middle layer is capable of releasing said vasodilator for transdermal application to a male penis; and

said inner adhesive layer for contact with and adhesively bonding to a penis is capable of transmitting said vasodilator from said middle layer to the skin of a penis in contact with said inner adhesive layer during use of the condom; and further wherein

said outer adhesive layer provides substantially weaker adhesive bonding to said inside surface of said condom and said inner adhesive layer provides a substantially stronger adhesive bonding to the skin of a penis, such that in use, the bonding of said inner adhesive layer to the skin of a penis results in release of the bond between said outer adhesive layer and said inside surface of said condom, thus releasing said transdermal patch from attachment to said inside surface of said condom and permitting said transdermal patch to move slidably relative to said inside surface of said condom as the penis skin surface moves in a normal, slidable motion relative to the condom during use.

5,333,622

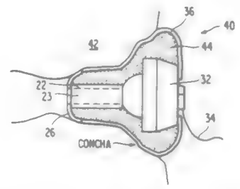
EARPLUG AND HEARING DEVICES FORMED IN-SITU

John G. Casali, Blacksburg, and Daniel W. Mauney, Richmond, both of Va., assignors to The Center for Innovative Technology, Herndon, Va.

Continuation-in-part of Ser. No. 569,812, Aug. 20, 1990, Pat. No. 5,131,411. This application Jul. 17, 1992, Ser. No. 916,220 The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[5] A61F *11/00*

U.S. Cl. 128—864 **8 Claims**



1. An in the ear, custom-fit, electronic device, comprising:

a body member positionable within an ear canal of a person; an electronic device; and

a foaming material in a non-foamed state carried by said body member, said foaming material in said non-foamed state being activatable to fill said ear canal with a foam material, said body member and said electronic device being positioned within said foam material after activation of said foaming material in said non-foamed state.

5,333,623

BACK TRACTION DEVICE FOR USE WITH CHAIRS

Ernest Fuller, Walled Lake, Mich., assignor to Life Support, Inc., Birmingham, Mich.

Continuation of Ser. No. 314,970, Feb. 24, 1989, Pat. No. 4,898,185. This application Jan. 22, 1990, Ser. No. 468,889

Int. Cl.[5] A61F *5/37*

U.S. Cl. 128—875 **5 Claims**

1. An apparatus for relieving some of the pressure on the disc of the lower back of a person comprising;

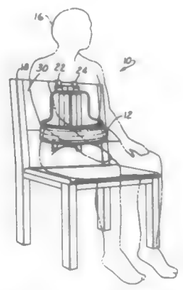
a halter member adapted to be worn by a person around the person's waist;

a traction member having means adapted to be fitted and secured to a chair or the like having a seat;

said halter member having first hook and loop fastener portions at a back position thereof which face outwardly of said halter member when the halter member is worn around the person's waist;

VOL 1165 ISS 1 AUG 2 1994 UMI

said traction member having mating second hook and loop fastener portions located on a front portion of the chair above the seat that faces the halter member's first hook and loop fastener portions when the person is seated in the seat, said second hook and loop fastener portions being engagable with said first hook and loop fastener portions provided on said halter member to provide an adjustable hook and loop fastener connection between the members to thereby adjustably secure said halter member at any one of a variety of positions on said traction member;



said adjustable hook and loop fastener connection being easily broken when the person removes himself or herself from the seat, thereby separating the halter member worn on the person from the traction member; and

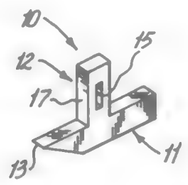
said halter member having support ribs extending along an elongate back section thereof, said first hook and loop fastener portions on said back portion of said halter member overlying said support ribs to aid in better transferring pressure from said halter member to said traction member and therethrough to the chair.

5,333,624

SURGICAL ATTACHING APPARATUS

H. Jonathan Tovey, Milford, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 24, 1992, Ser. No. 840,455
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—897 62 Claims



1. Surgical attaching apparatus comprising:

anchor means adapted to engage a surgical implant; and

attachment means attached to said anchor means having an aperture formed therein adapted to receive at least one securing device, said attachment means being attached to said anchor means so as to form a substantial "T" shape.

5,333,625

SUTURING WITH CORROSION AND BREAKAGE RESISTANT FLEXIBLE WIRE

Harvey A. Klein, Brooklyn, N.Y., assignor to Rikki Brezak, Brooklyn, N.Y.

Continuation of Ser. No. 488,726, Mar. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 233,534, Aug. 18, 1988, abandoned. This application Dec. 4, 1991, Ser. No. 803,707
Int. Cl.[5] A61B *19/00, 17/60;* C22F *1/00*
U.S. Cl. 128—898 1 Claim



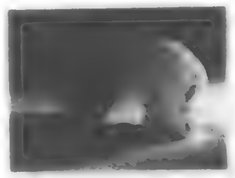
1. A method for improving suturing of soft tissue and bone with surgical wire, comprising the steps of: a) suturing separated soft tissue or bone together with wire consisting essentially of stainless steel, comprising from 17 to 19% chromium, 12 to 14% nickel and at least about 61% iron and having a maximum carbon content of about 0.03%, said stainless steel wire having been formed in a substantially oxygen free furnace under conditions of low vacuum melting, then cold drawn into an elongated wire of the desired gage and then annealed; whereby said wire provides a uniform tensile strength of about 130–105 ksi for wires of 0.010 to 0.05 (0.25 to 1.25 mm) inch diameters; b) tightening the wire whereby adjacent separated portions of the soft tissue or bone are brought into close proximate contact to facilitate healing; and c) twisting the ends of the wire into a tie whereby the sutured portions of the soft tissue or bone are kept in said close proximate contact during healing.

5,333,626

PREPARATION OF BONE FOR TRANSPLANTATION

Brenda S. Morse, Chamblee, Ga., and Edward Shanbrom, Santa Ana, Calif., assignors to Cryolife, Inc., Marietta, Ga.

Filed Dec. 31, 1991, Ser. No. 815,394
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—898 45 Claims



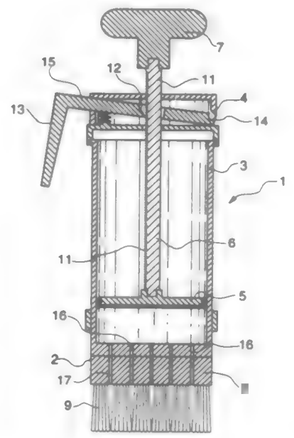
1. A method of providing bone suitable for transplantation into a human comprising the step of contacting, under a high pressure washing condition, the internal matrix of said bone with a solution comprising a decontaminating agent or a detergent.

5,333,627

DISPENSER DEVICE FOR HUMAN HAIR

Ricardo F. Mehringer, Chaco 137, Don Bosco - Buenos Aires; Hugo A. Bardon, De Pinedo 839, and Augusto P. Pozzetti, De Pinedo 791, both of Berual - Buenos Aires, all of Argentina

Filed Jun. 2, 1993, Ser. No. 74,025
Claims priority, application Argentina, Jun. 2, 1992, 322.463
Int. Cl.[5] A45D *24/22, 24/26*
U.S. Cl. 132—108 8 Claims



1. Dispenser for applying a fluid to human hair, the dispenser comprising:

a housing containing the fluid and having a mouth end and a dispenser end;

a plunger means movably mounted in said housing and for moving the fluid toward said dispenser end of said housing;

a rod connected to said plunger means and having an end extending out of said mouth end of said housing, said end of said rod having a knob means for manually moving the rod in an axial direction by an operator

an expulsion base mounted on said dispenser end of said housing, said expulsion base defining a plurality of container channels;

a removable dispenser head having one end mounted on said expulsion base, said dispenser head defining a plurality of head channels, said head channels being substantially aligned with said container channels at said one end, said head channels being distributed along another end of said dispenser head;

spreading means positioned at said another end of said dispenser head and for receiving the fluid from said dispenser head and spreading the fluid on the hair;

a removable cover positioned at said mouth end of said container and said rod passing through said removable cover;

pushing means positioned in said cover and for axially pushing said rod and said plunger means to move the fluid out of the container and into said spreading means, said pushing means selectively engaging with said rod and axially moving said rod to move said plunger means toward said dispenser end, said pushing means also selectively engaging with said rod to block axial movement of said rod away from said dispenser end;

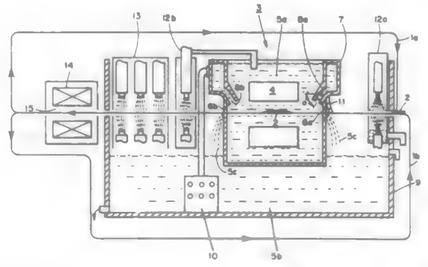
lock positioning means for positioning locks of hair during application of the fluid to the hair.

5,333,628

CONTINUOUS ULTRASONIC CLEANING APPARATUS

Akihiro Ogata, Ushiza; Yoshihiro Hirakawa; Masakatsu Soichi, both of Saga, and Fumiyasu Kitano, Hyogo, all of Japan, assignors to Kyushu Sumitoku Electronics Co., Ltd., Japan

Filed Apr. 28, 1992, Ser. No. 849,391
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—64 R 16 Claims



16. A continuous ultrasonic cleaning apparatus comprising:

a cleaning bath for containing a cleaning agent to clean a product-to-be-cleaned passed in contact therewith, said cleaning bath having an inlet hole and an outlet hole formed therein;

net conveyor means comprising a lower net conveyor and upper net conveyor moving synchronously with said lower net conveyor, said net conveyor means passing in a path of movement into and out from said cleaning bath, said path of movement comprising a single substantially straight line through said inlet hole and said outlet hole respectively, for carrying a product-to-be-cleaned;

heating means for heating cleaning agent;

pre-cleaning means positioned in said path of movement before said inlet hole to said cleaning bath for pre-cleaning of the product-to-be-cleaned;;

post-cleaning means positioned after said outlet hole from said cleaning bath for post-cleaning of the product-to-be-cleaned;

blower means for applying air pressure to the product-to-be-cleaned disposed in said path of movement after said outlet hole;

drying means for applying heat to the product-to-be-cleaned disposed in said path of movement after said outlet hole;

at least a pair of ultrasonic oscillators, with a member of said pair being positioned adjacent the path of said net conveyor means on each side thereof inside said cleaning bath;

distance controlling means for controlling the distance between the product-to-be-cleaned and said ultrasonic oscillator when said product-to-be-cleaned is carried through said cleaning bath;

a cleaning agent receiving/storage bath positioned below said cleaning bath to receive and store a cleaning agent flowing from said net conveyor means, said receiving/storage bath comprising a substantially closed structure;

means for supplying an inert gas to said receiving/storage bath for purging air therefrom;

recirculating means for supplying a cleaning agent from said cleaning agent receiving/storage bath to said cleaning bath; and

means for spraying the cleaning agent downwardly into said cleaning bath, said means for spraying being provided in a vicinity of said inlet and outlet holes.

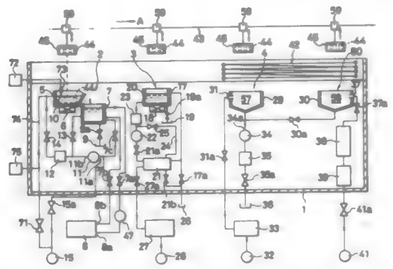
VOL 1165 ISS 1 AUG 2 1994 UMI

5,333,629

APPARATUS FOR CLEANING METAL ARTICLES

Morio Higashino, Nagano, Japan, assignor to Mineben Co., Ltd., Nagano, Japan

Filed Feb. 12, 1993, Ser. No. 17,397
Claims priority, application Japan, Mar. 10, 1992, 4-086195
Int. Cl.[5] B08B *3/12*
U.S. Cl. 134—76 9 Claims



1. An apparatus for cleaning metal articles, comprising at least one washing reservoir and containing alkaline washing water for washing metal articles in said washing reservoir, at least one rinsing water deoxidizing device for producing deoxidized rinsing water, at least one rinsing reservoir containing said deoxidized rinsing water supplied from said rinsing water deoxidizing device, said deoxidized rinsing water being for rinsing said metal articles in said rinsing reservoir, at least one boiler for producing dry vapor, at least one water-removing reservoir to which said dry vapor for removing water from said metal articles in said water-removing reservoir is supplied from said boiler, and at least one drying reservoir in which a heated atmosphere is maintained for drying said metal articles in said drying reservoir, and wherein said washing reservoir, said rinsing reservoir, said water-removing reservoir and said drying reservoir being arranged in this order.

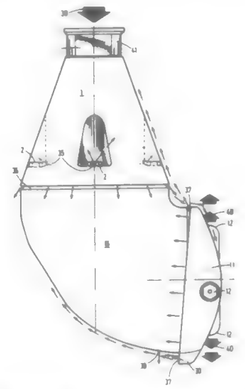
5,333,630

APPARATUS FOR THE CLEANING OF A CLOSED COMPARTMENT

Erik L. Jepsen, Bringekrogen, and Jørgen F. Nielsen, Pinjevangen, both of Denmark, assignors to Toftejorg A/S, Isboj, Denmark

PCT No. PCT/DK91/00284, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO92/04994, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 20, 1991, Ser. No. 30,212
Claims priority, application Denmark, Sep. 20, 1990, 2274/90
Int. Cl.[5] B01B *3/02*
U.S. Cl. 134—104.1 10 Claims

1. Apparatus for cleaning a closed compartment by means of a sprayed liquid, comprising a housing having a stationary part to which the liquid is supplied, a rotatable part mounted thereon having a hub with spray nozzles suspended in bearings therein, a turbine driven by the liquid and having a planet gear mounted in the stationary part for turning the rotatable part and the nozzles in such a manner that the liquid sprayed out through the nozzles during the rotation sweeps the closed compartment interior, the planet gear being externally in engagement with a first toothed rim mounted on the stationary part of the housing, the first toothed rim being in engagement with a second toothed rim on the hub, both toothed rims being surrounded by the housing, both toothed rims and the bearings therebetween extending into a part of the liquid flow, and, slots provided between the stationary part and the rotatable part, and between the rotatable part and the hub such that after



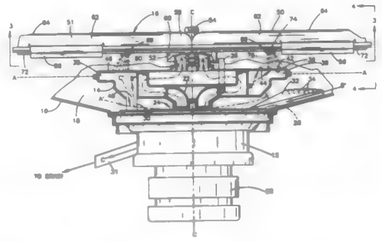
passing through the apparatus, a portion of the liquid is led out through the slots.

5,333,631

CLEANING WASH-ARM FOR DISHWASHING FILTER

Daniel R. Kirkland, Winterville, N.C., and Mark A. Sublette, Columbus, Ind., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed May 4, 1993, Ser. No. 56,996
Int. Cl.[5] A47L *15/23*
U.S. Cl. 134—104.1 20 Claims



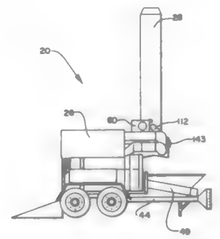
1. A dishwasher comprising:
a tub adapted to receive dishes to be washed and providing a sump to temporarily retain a quantity of wash water;
pump means for circulating wash water from said sump throughout the tub;
means for filtering debris from said wash water; and,
a rotatably mounted wash arm having a generally vertical axis of rotation and first and second oppositely directed arm portions with a common center line, said wash arm being generally hollow and receiving a portion of the wash water circulated by the pump means, said wash arm including at least one downwardly directed opening which is laterally spaced from the center line of the wash arm and adapted to spray at least one stream of wash water onto the filter means to rinse debris therefrom, said at least one stream creating a reaction force which rotatably drives the wash arm about its axis of rotation.

5,333,632

SOIL ROASTER FOR CLEANING HYDROCARBON CONTAMINATED SOIL

Allen L. Weerts, 907 N. 21st St., Superior, Wis. 54880, and Richard E. Ledin, Rte. 1, Box 247, Maple, Wis. 54854

Filed Apr. 16, 1992, Ser. No. 870,048
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—105 18 Claims



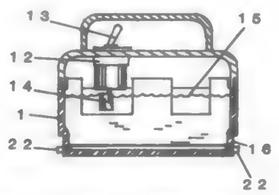
1. A batch-type mobile apparatus for processing and cleaning contaminated materials so that contaminants are removed upon intense heating of said material and clean air is discharged, comprising:
a) tumbler means for containing and rotating said contaminated material;
b) heat means positioned within said tumbler means for heating said contaminated material such that contaminants are evaporated from said contaminated material;
c) filter means having a first end and a second end for cleaning and separating said material from said evaporated contaminants with a liquid substance, said filter means operably coupled to said tumbler means at said first end;
d) burner means operably coupled to said second end of said filter means for receiving said separated evaporated contaminants from said filter means and substantially burning said separated evaporated contaminants so as to obtain clean air;
e) passage means operably coupled to said filter means and said burner means for conducting said evaporated contaminants to said filter means and to said burner means; and
f) discharge means having a first end and a second end, said discharge end being operably coupled to said burner means at said first end, said second end including structure defining a restricted opening for increasing dwell time of the contaminants within said discharge means for completely burning and emitting said clean air.

5,333,633

ANIMAL GROOMING CLEANING DEVICE

Kim Laube, 15041 Broadmoor St., Sepulveda, Calif. 91343

Filed Feb. 19, 1993, Ser. No. 19,910
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—182 4 Claims



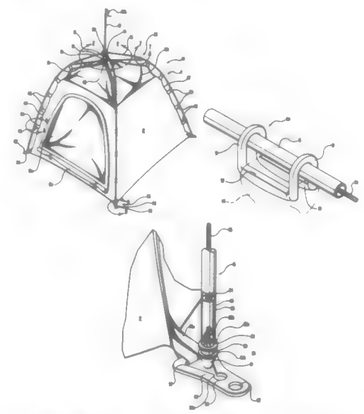
1. An improved animal grooming clipper blade assembly cleaning and storage device comprising:
a. a cylindrical base with an interior compartment having an opening defined therein;
b. a top that fits and locks to the base by a twisting movement and seals to the base sufficiently to prevent chemicals placed inside the interior of the base from escaping and which top has a handle;
c. a separation unit that fits into the cylindrical base that allows separation of animal grooming clipper blades placed inside the separation unit which separation unit is formed by a plurality of vertical walls each spaced sufficiently apart to allow an animal grooming blade assembly to be placed between the walls and having sufficient apertures defined therein between the walls to allow the easy flow of chemicals placed inside the sealed device and having sufficient apertures in each wall to allow the clipper blade to be grasped by the use's fingers; and
d. a bottom of the cylindrical base locks to the opening of another similar base such that a plurality of cylindrical bases may be stacked.

5,333,634

INVERSE UMBRELLA TENT

Delbert Taylor, 395 S. 600 East, Salt Lake City, Utah 84102

Filed Oct. 30, 1992, Ser. No. 969,063
Int. Cl.[5] E04H *15/28*
U.S. Cl. 135—98 21 Claims



1. A collapsible shelter comprising, a sheet of material formed into cover; a frame that mounts said cover and, when erected, supports said cover, forming an enclosed shelter, said frame including a plurality of tent poles each capable of flexing to a bowed attitude and which are each connected on a top end by a pivotal coupling to a crown means that contains pivot seats spaced therearound that each receive a tent pole pivot means that is mounted to a top end of each of said tent poles, forming an apex of said frame, and said crown means is arranged to receive a center pole that is fixed axially to slide freely therethrough, which said center pole is also fitted axially, in sliding arrangement, through an erecting ring means that contains a plurality of pivot seats spaced therearound that each receive a first pivot means that is mounted to an end of one of a plurality of ribs, and each of said ribs has an opposite end that is mated by a second rib pivot means to one of said tent poles, each of which said tent pole pivot means and each said rib first pivot means mountings in said crown means and said erecting ring means seats prohibit side to side movement of each said tent pole and each said rib as they are extended outwardly along radials from said crown means and erecting ring means during tent frame erection; slide means for connection to individual loop means that extend at intervals from said

VOL 1165 ISS 1 AG 2 1994 UMI

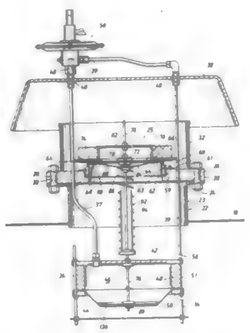
sheet of material and are fitted to slide along one of said tent poles that each consist of a pair of parallel U-shaped segments having ends that are interconnected by identical straight parallel bars, with aligned openings through said U-shaped segments for receiving a tent pole fitted therethrough in sliding arrangement, and said parallel bars are for receiving a loop strap of the cover fitted therethrough; and a plurality of web strap means that individually extend at intervals from around a bottom edge of said cover, each for receiving and releasable connecting to a foot that is secured to a lower end of each said tent pole.

5,333,635

FLUID PRESSURE RELIEF SYSTEM FOR PRESSURE VESSELS

Thomas F. Higgins, Houston, and Michael D. McNeely, Katy, both of Tex., assignors to Keystone International Holdings Corp., Houston, Tex.

Continuation of Ser. No. 906,559, Jun. 29, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 72,700
Int. Cl.[5] F16K *17/10*
U.S. Cl. 137—12 23 Claims



8. A method of providing a fluid pressure relief system for a pressure vessel comprising the following steps:

providing a relatively large diameter emergency vent on said pressure vessel;

mounting a safety relief valve including a main valve member and pilot control valve on said pressure vessel for said large diameter emergency vent for opening of said safety relief valve under control of said pilot control at a first predetermined pressure in said pressure vessel;

providing means for opening of said safety relief valve independently of and overriding said pilot control valve at a second predetermined pressure within said pressure vessel above said first predetermined pressure under emergency conditions; and

providing a counterweight for said main valve member for holding said main valve member in a closed position under normal operating fluid pressures in said pressure vessel.

5,333,636

CONTROLLED HIGH PRESSURE RELIEF FOR SMALL VOLUMES

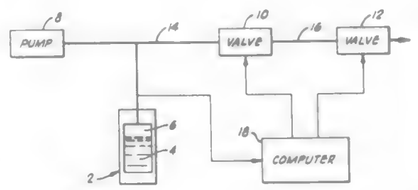
Bary J. Nusz; Robert K. Payne, and Leslie A. Perez, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 46,257, Apr. 13, 1993, Pat. No. 5,269,341. This application Jul. 15, 1993, Ser. No. 93,411
Int. Cl.[5] G05D *16/20*
U.S. Cl. 137—12 8 Claims

1. A method of reducing pressure in a container pressurized with a fluid provided to the container from a pressurizing fluid source, said method comprising:

(a) communicating the pressurizing fluid with a receptacle between an opened first valve and a closed second valve;

(b) closing the first valve so that a portion of the pressurizing fluid is contained in the receptacle; and



(c) opening the second valve so that at least part of the portion of the pressurizing fluid is released from the receptacle under action solely of the pressurizing fluid in the receptacle upon the opening of the second valve;

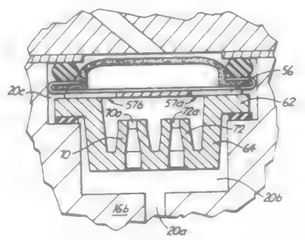
(d) repeating steps (a), (b), and (c) until an actual pressure of the pressurizing fluid in the container is not greater than a desired pressure.

5,333,637

PNEUMATIC INSTRUMENT PARTICLE TRAP

James L. Gravel, Prior Lake, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Jun. 11, 1993, Ser. No. 76,820
Int. Cl.[5] G05D *16/00*
U.S. Cl. 137—83 15 Claims



1. A transducer which receives a pressurized gas supply and an electric control input to provide a regulated pneumatic output as a function of the electric control input, comprising:

a housing having a passage therein, the passage including an inlet for receiving at least a portion of the pressurized gas supply and an outlet;

a gas regulator including a regulator nozzle receiving gas from the outlet and a displaceable deflector responsive to the electric control input and cooperating with the regulator nozzle to provide the regulated pneumatic output; and

a particle trap disposed in the passage and including a trap plate and a trap nozzle, the trap nozzle directing gas against the trap plate.

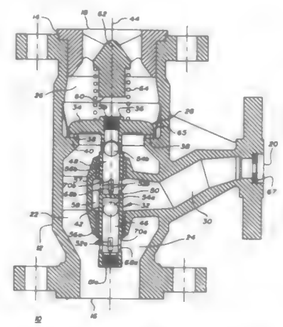
2. The transducer of claim 1, wherein the trap nozzle is sized to separate undesired entrained particles from the gas by depositing them on the trap plate such that a reduced number of such particles reach the gas regulator.

5,333,638

AUTOMATIC RECIRCULATION VALVE

Horace J. Maxwell, Langhorne, Pa., assignor to Keystone International Holdings Corp., Wilmington, Del.

Filed Jan. 21, 1993, Ser. No. 6,934
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—116 14 Claims



1. An automatic recirculation valve comprising:

an inlet;

a main outlet;

a recirculation outlet;

a main valve element responsive to flow between said inlet and said main outlet; and

a bypass valve element responsive to movement of said main valve element for regulating the flow of fluid between said inlet and said recirculation outlet, said bypass element comprising an orifice opening; and

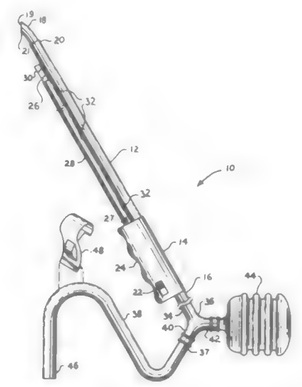
means for counterbalancing the fluid pressure forces acting on said orifice opening, said counterbalancing means comprising a second orifice opening in said bypass element.

5,333,639

ILLUMINATED SIPHON

Monte G. Nelson, 170 E. 100 South, American Fork, Utah 84003

Continuation-in-part of Ser. No. 985,923, Dec. 4, 1992, abandoned. This application Jul. 8, 1993, Ser. No. 87,375
Int. Cl.[5] F04F *10/00*; F21V *33/00*
U.S. Cl. 137—150 17 Claims



1. An illuminated siphon for use in the removal of water, sediment and other contaminates from fuel tanks, said siphon comprising:

an elongate, rigid liquid transfer pipe having an outer surface and an inner surface and an upper first end and an opposite second end, with a light source secured to said second outer surface of said liquid transfer pipe near said first end of said rigid liquid transfer pipe;

elongate light transmission means secured axially parallel to said rigid liquid transfer pipe, extending along said outer surface to strengthen said liquid transfer pipe, and having a first end cooperating with said light source and an opposite second end disposed adjacent said second end of said rigid liquid transfer pipe with said second end of said light transmission means providing for radiation of transmitted light within said fuel tank to facilitate removal of water, sediment, and other contaminates therefrom;

an elongate, flexible liquid transfer outlet hose having a first end and an opposite distal second outlet end;

a fitting providing connection means for said liquid transfer pipe and said flexible liquid transfer outlet hose with one another;

a distal inlet hose secured to said second end of said rigid liquid transfer pipe;

said distal inlet hose has an inlet opening having an obtuse angle relative to said distal inlet hose, whereby;

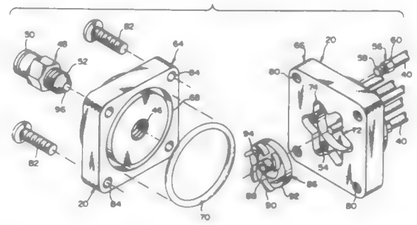
said rigid liquid transfer pipe second end is inserted within a fuel tank and said light source is activated, said rigid liquid transfer pipe is maneuvered to observe any contaminate collections in the fuel tank by means of light emitted by said light transmission means second end, and a siphoning action is initiated to withdraw the observed contaminates from the fuel tank by means of said rigid liquid transfer pipe and said flexible liquid transfer outlet hose.

5,333,640

FLOW DIVIDER TO RECEIVE, SPLIT, AND DISTRIBUTE A SUBSTANCE, CONSISTING OF MULTIPLE SMALL UNITS, BEING MOVED VIA FLOW GAS UNDER PRESSURE INTO RESPECTIVE PASSAGEWAYS

Steven M. Swift, 17822 Driftwood Dr., Sumner, Wash. 98390, and Jon C. Houghton, 16205 Auburn Black Diamond Rd., Auburn, Wash. 98002

Filed May 24, 1993, Ser. No. 67,728
Int. Cl.[5] F16N *7/30*
U.S. Cl. 137—262 28 Claims



23. A flow divider to receive and then to split and to distribute machining lubricants arriving in a passageway, wherein the lubricants are being uniformly moved via flowing air under pressure, yet the machining lubricants are not being atomized, instead remaining in droplets, and then this arriving flow of machining lubricants and of pressurized air is evenly split for flowing into multiple passageways, to be thereafter distributed equally to multiple locations, where machining operations are being undertaken comprising:

a. housing having: a central portion, in turn having a cavity; a centrally located input port passageway to receive and to direct the arriving flow of machining lubricants and of pressurized air to the cavity of the central portion of this

VOL 1165 ISS 1 AG 2 1994 UMI

housing; a shaft receiving means centered in this cavity, whereby a shaft will in turn receive a rotor; and spaced multiple output port passageways to receive, to direct, and to distribute, equal flows of the combined machining lubricants and pressurized air leaving the cavity;

b. said shaft centered in the cavity and mounted on the shaft receiving means; and

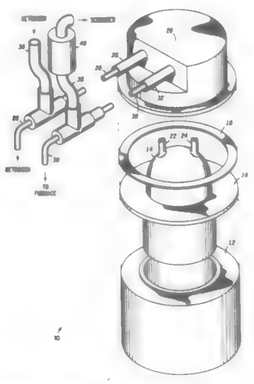
c. said rotor mounted on the shaft having peripheral spaced fluid turbine blades, spaced sufficiently to allow the passage of the flow of the combined machining lubricants and pressurized air, into the respective spaced multiple output port passageways.

5,333,641

CONTAINMENT VESSEL FOR ENVIRONMENTALLY SEALING A CHEMICAL COMPOUND

Mario E. Cota, and Richard L. Johnson, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 3, 1993, Ser. No. 160,763
Int. Cl.[5] B65D *90/24*
U.S. Cl. 137—264 19 Claims



1. A containment vessel, comprising:

a bottle containing a chemical compound, said bottle having an inlet and an outlet;

an enclosure vessel forming a cavity for housing said bottle and providing an environmental seal of said bottle; and

first and second coaxial conduits having an inner and an outer conduit, said inner conduits of said first and second coaxial conduits being coupled to said inlet and outlet of said bottle respectively for transporting said chemical compound, said outer conduits of said first and second coaxial conduits being connected to said cavity to purge any of said chemical compound that may escape from said bottle into said cavity.

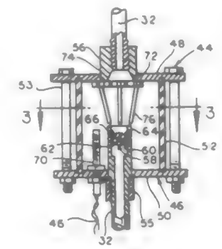
5,333,642

SAFETY VALVE MONITORING APPARATUS

George Kemp, Chatham, and David M. Kemp, Jr., Pawnee, both of Ill., assignors to Kemp Industrial Refrigeration, Inc., Chatham, Ill.

Filed Aug. 6, 1993, Ser. No. 103,072
Int. Cl.[5] F16K *37/00*
U.S. Cl. 137—557 17 Claims

1. In combination with a normally closed fluid pressure safety valve having a vent, a sensor for detecting opening of said valve, said sensor comprising a fluid conduit connected with said vent, a shiftable element within said conduit moveable from a home position by fluid under pressure upon opening of said safety valve, a structure preventing return of said



element to said home position upon subsequently closing of the safety valve.

5,333,643

SOLENOID VALVE

Jon P. Gilchrist, South Bend, Ind., and William C. Klebusch, Nashua, N.H., assignors to South Bend Controls, Inc., South Bend, Ind.

Filed Mar. 24, 1993, Ser. No. 36,143
Int. Cl.[5] F16K *31/06*
U.S. Cl. 137—605 3 Claims

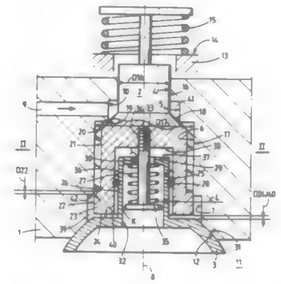
1. A solenoid valve comprising a valve body having a valve cavity, said valve body having a first port defining a first passageway communicating with said valve cavity, and a second port defining a second passageway communicating with said valve cavity and said first passageway, a valve seat disposed between said first and second ports and aligned with said valve cavity, electrically operated solenoid means mounted on said valve body for alternatively opening and closing said valve, said solenoid means including a solenoid coil and an armature including a poppet disposed in said cavity for movement between a retracted open position spaced from said valve seat and an extended closed position adjacent said valve seat, elastomeric diaphragm means mounted in said valve body and disposed between said poppet and said valve seat for sealing said valve cavity from said first and second passageways, said valve seat having an obliquely angled contact face, said poppet having an obliquely angled contact face substantially complemental with said valve seat contact face, and means for urging said armature means into said closed position wherein upon deactivation of said solenoid means said poppet and diaphragm means are urged into contact with said valve seat to wipe fluid from said valve seat contact face, said diaphragm means including an outer peripheral portion and a central portion of lesser thickness than said outer peripheral portion.

5,333,644

DUAL SEALING VALVE ASSEMBLY

Eddy F. M. G. Heyden, Fontainebleau; Christian LaCour, Vanves; Michel M. A. A. Lechevalier, Bombon, and Christophe N. Riou, Savigny Le Temple, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Filed Jan. 12, 1994, Ser. No. 180,277
Claims priority, application France, Jan. 20, 1993, 93 00509
Int. Cl.[5] F16K *1/00*
U.S. Cl. 137—614.18 9 Claims



1. A fluid valve assembly comprising:

a) a valve body defining a flow passageway therethrough, an edge portion forming a first valve seat in the fluid flow passageway, and an annular surface having a generally spherical configuration forming a second valve seat in the fluid flow passageway;

b) a primary valve member located in the fluid flow passageway so as to be movable between closed and open positions along an axis, the primary valve member defining a first sealing surface configured to contact the first valve seat when the primary valve member is in its closed position;

c) a secondary valve member located in the fluid flow passageway so as to be movable between closed and open positions along the axis, the secondary valve member defining a second sealing surface having a generally spherical configuration so as to contact the second valve seat when the secondary valve member is in its closed position; and,

d) connecting means connecting the primary and secondary valve members.

5,333,645

HEIGHT CONTROL VALVE AND DUMP VALVE THEREFOR

Gregory T. Galazin, Montague, Mich., assignor to NAI Neway, Inc., Muskegon, Mich.

Filed Jun. 7, 1993, Ser. No. 72,714
Int. Cl.[5] B60G *11/26*
U.S. Cl. 137—627.5 17 Claims

1. In a height control valve comprising:

an inlet port adapted to communicate with a source of fluid pressure;

a discharge port open to atmosphere;

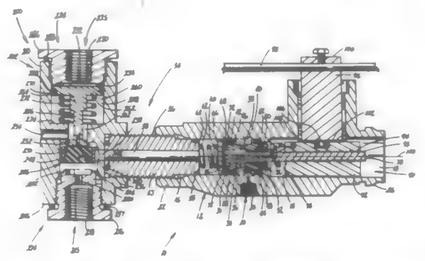
a device port adapted to communicate with a height control member expandable by fluid pressure;

sensing means adapted for connection to a height control member for sensing the height thereof; and

control means connected to the sensing means for sealing the device port from the inlet port and the discharge port when the sensing means senses a predetermined height, for placing the device port into communication with the inlet port when the sensing means senses a height less than the predetermined height, and for placing the device port into communication with the discharge port when the sensing means senses a height greater than the predetermined height;

the improvement comprising a dump valve interposed between the source of fluid pressure and the inlet port and in communication with the inlet port, the dump valve comprising:

a body having a supply port adapted to communicate with a source of fluid pressure, a connection port in communication with the inlet port, and an exhaust port open to atmosphere;



the dump valve having a supply condition wherein the exhaust port is sealed from the connection port and the connection port is in communication with the supply port, and an exhaust condition wherein the supply port is sealed from the connection port and the connection port is in communication with the exhaust port; and

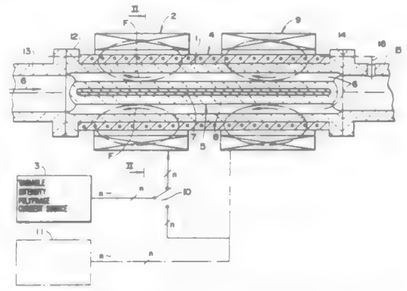
diverting means in the valve body for selectively alternating the dump valve between the supply and exhaust conditions, whereby when the dump valve is in the exhaust position, air exhausts from the inlet port of the height control valve through the exhaust port.

5,333,646

ELECTROMAGNETIC VALVE FOR CONTROLLING THE FLOW OF A FLUID IN A PIPE

Jose Delot, Sens, France, assignor to Delot Process, S.A., Trappes Cedex, France

PCT No. PCT/FR90/00380, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO90/15279, PCT Pub. Date Dec. 13, 1990
PCT Filed May 31, 1990, Ser. No. 776,369
Claims priority, application France, Jun. 2, 1989, 89 07296
Int. Cl.[5] F15C *1/04*
U.S. Cl. 137—827 17 Claims



1. An electromagnetic valve for controlling flow of a liquid metal or metal alloy in a pipe under load, comprising:

a tubular body composed of a material permeable to a mag-

VOL 1165 ISS 1 AG 2 1994 UMI

netic field, said tubular body having a longitudinal axis and an internal wall;

at least one polyphase field coil positioned around said tubular body capable of generating a magnetic field which is slidable along said longitudinal axis; and

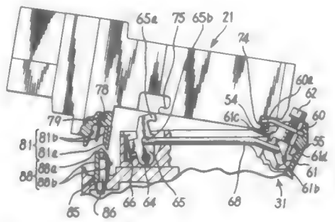
a core comprising a magnetic material, said core extending axially within said tubular body to ensure looping of the magnetic field generated by said at least one polyphase field coil and defining a substantially annular passage with said internal wall for flow of the liquid metal or metal alloy.

5,333,647

MANIFOLD VALVE

Yoshihiro Fukano; Shoichi Makado, and Yoshitada Doi, all of Soka, Japan, assignors to SMC Corporation, Tokyo, Japan

Continuation of Ser. No. 813,687, Dec. 27, 1991, abandoned.
This application Jul. 23, 1993, Ser. No. 95,988
Claims priority, application Japan, Dec. 29, 1990, 2-417645
Int. Cl.[5] F15B 13/08
U.S. Cl. 137—884 20 Claims



1. A manifold valve used on a valve mounting surface of one of a sub-soleplate and a manifold base having openings corresponding to ports therein in which:

(a) a valve port is provided in a valve body of the manifold valve to slidably accommodate a spool that switches passages of a pressurized fluid flowing therethrough;

(b) walls on both sides of the valve port have no holes to pass bolts to fasten the valve body to the one of a sub-soleplate and a manifold base; and

(c) means for connecting the valve body to the one of a sub-soleplate and a manifold base are provided without utilizing bolts on said both sides of the valve port such that said side walls can be made thinner as compared with walls having bolts holes, while the limit in which the strength to withstand the pressure of the fluid passing therethrough remains unimpaired, wherein the valve body is fastened to the valve mounting surface of the one of a sub-soleplate and a manifold base by clamping at the front and rear ends thereof; and

wherein the one of a sub-soleplate and a manifold base has a metal clamp at a front end of the valve mounting surface thereof, a metal lock switchable between the locking and releasing positions at a rear end thereof, and means to switch the position of the metal lock by operation from the front end of the valve mounting surface, and the valve mounted on the valve mounting surface has a pair of engaging recesses to engage with the metal clamp and the metal lock in the locking position.

5,333,648

VARIABLE PRESSURE REDUCING DEVICE

Richard R. Henszey, Oconomowoc, and Bruce W. Weiss, Whitefish Bay, both of Wis., assignors to Sentry Equipment Corp., Oconomowoc, Wis.

Filed Oct. 13, 1992, Ser. No. 959,068
Int. Cl.[5] F15D 1/02
U.S. Cl. 138—26 17 Claims



1. A variable pressure reducing device comprising:

a barrel;

a pair of tubes joined to one end of the barrel;

a pair of rods adjustably insertable within the tubes with each rod having a relatively wide diameter at an upper end of the rod, a relatively narrow diameter at a lower end of the rod, and a smooth tapered outer surface extending from the upper end to the lower end;

a rotatable guide screw and complementary threaded ring within the barrel for adjusting the rods;

a valve gland, including an internal annular ridge seat with a central opening therein, placed over the other end of the barrel;

the threaded guide screw having an annular shoulder complementary to the ridge seat and having a stem portion projecting through the central opening of the gland;

a low friction thrust washer between the shoulder of the guide screw and the ridge seat of the gland;

an annular seal jacket between the stem portion of the guide screw and an inner wall of the gland;

a spring for biasing an inner wall portion of the jacket against the stem portion of the guide screw and for biasing an outer wall portion of the jacket against the inner wall of the gland;

a back-up washer abutting against the seal jacket;

annular centering means for centering the stem portion of the guide screw within the gland; and

a nut with a central opening placed over the stem portion of the guide screw and threaded over the gland.

5,333,649

PLUG FOR BLOCKING A BRANCHED PIPE OPENING

Shinji Shimokawa, Osaka, and Katsuo Kita, Kadoma, both of Japan, assignors to Ashimori Kogyo Kabushiki Kaisha, Osaka, Japan

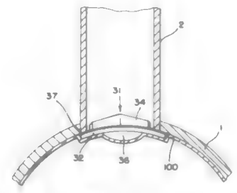
Continuation of Ser. No. 566,454, Aug. 24, 1990, abandoned.
This application Sep. 30, 1992, Ser. No. 953,289
Int. Cl.[5] F16L 55/16
U.S. Cl. 138—89 4 Claims

1. A plug for blocking a branched pipe opening from an interior of the pipe, comprising:

a disc-shaped body having an outer peripheral flange of a diameter slightly larger than an inside diameter of said opening;

a projecting portion formed on a side of said disc-shaped body facing an interior of the pipe, said projecting portion being shaped so as to engage with an inner peripheral edge of said opening via frictional force; and

a convex portion formed within the outer peripheral flange of said disc-shaped body and of a smaller diameter than a



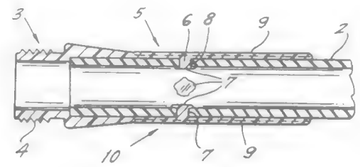
diameter of said opening, on a side opposite to the side on which said projecting portion is formed and the convex portion extending toward the interior of said pipe, said projecting portion and said convex portion being formed integrally of a plastic material.

5,333,650

HOSE COUPLING WITH A STIFFENING SLEEVE

Alex Folkman, Brooklyn, N.Y., assignor to Flexon Industries Corporation, Newark, N.J.

Filed Mar. 17, 1993, Ser. No. 32,676
Int. Cl.[5] F16L 47/00, 9/16
U.S. Cl. 138—109 5 Claims



1. A hose coupling attached to the end of a hose, the hose coupling comprising:

a coupling portion attached at one end of the hose, the coupling portion projecting beyond the hose end for joining the hose coupling with an external mateable coupling; and

a generally tubular sleeve portion integrally formed with the coupling portion and extending rearward from the coupling portion along the outer surface of the hose, the sleeve portion being molded onto the outer surface and configured and dimensioned so as to provide an elongated handle for griping the hose coupling with the hand, when joining the hose coupling with the external mateable coupling, and to discourage bending of the hose along the length of the sleeve portion, the sleeve portion having an inner surface in contact with the outer surface of the hose;

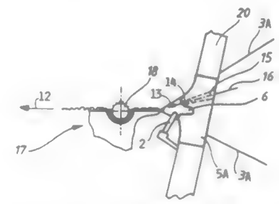
the inner surface of the sleeve portion including a plurality of tabs, and a plurality of through holes being formed in the hose, the plurality of tabs extending from the inner surface of the sleeve portion through the plurality of through holes formed in the hose so as to secure the coupling to the hose, wherein the plurality of tabs are integrally formed by molding the sleeve portion onto the outer surface of the hose.

5,333,651

PNEUMATIC WEFT GUIDE IN AN AUXILIARY REED

Rudolf Riezler, Nonnenhorn, Fed. Rep. of Germany, assignor to Lindauer Dornier GmbH, Lindau, Fed. Rep. of Germany

Filed Apr. 22, 1993, Ser. No. 52,131
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213754
Int. Cl.[5] D03D 47/48
U.S. Cl. 139—435.5 8 Claims



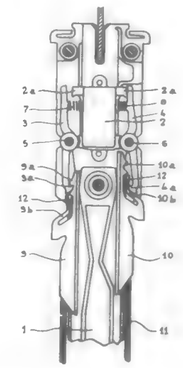
1. An apparatus for pneumatically guiding a turbulent weft thread end in an air nozzle loom, comprising a reed and a weft air insertion channel passing through said reed, an auxiliary reed section (5A) for forming an auxiliary selvage, said auxiliary reed section being positioned to form an exit end of said weft air insertion channel, an auxiliary air blowing nozzle cooperating with said auxiliary reed section downstream of said auxiliary selvage as viewed in a weft threaded insertion direction, said auxiliary blowing nozzle having an air supply channel, said auxiliary blowing nozzle having a nozzle exit opening for blowing an air stream onto weft thread ends substantially in a fabric withdrawal direction, said nozzle exit opening having a contour corresponding to a contour of said auxiliary reed section.

5,333,652

MOBILE HOOK OF ELECTROMAGNETIC SHED-FORMING DEVICE

Dario Bassi, Chaponnay, and Pierre Montibert, Peronnas, both of France, assignors to Staubli-Verdol SA, Chassieu, France

Filed May 21, 1993, Ser. No. 64,381
Claims priority, application France, May 25, 1992, 92 06590
Int. Cl.[5] D03C 3/20
U.S. Cl. 139—455 3 Claims



1. In a shed-forming device in a weaving loom which includes systems wherein each systems includes two movable hooks, an electromagnet and two retaining hooks which are cooperatively engagable with the movable hooks and which are controlled by the electromagnet, the improvement com-

VOL 1165 ISS 1 AG 2 1994 UMI

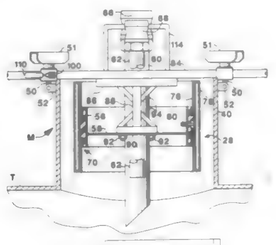
prising, each movable hook being formed of a plastic material and having a notch in which said retaining hooks are engagable, said notch defining an outwardly projecting heel, each movable hook having a face portion below said heel, a supple tongue spaced from and opposing said heel, and a spring means; and each movable hook having means for mounting said spring means to said face portion thereof so as to be in opposing relationship with respect to said supple tongue whereby said spring means urges said supple tongue outwardly from said face portion of said movable hook.

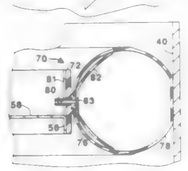
5,333,653

INFLATABLE MANHOLE SEALING DEVICE

Michael P. Rzesutock, Fayetteville, and Neal A. Clevenger, Cincinnati, both of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Jun. 23, 1993, Ser. No. 81,563
Int. Cl.[5] B65B *1/28*
U.S. Cl. 141—1 16 Claims





12. A method of installing a vapor recovery sealing device in a manhole in a tank into which liquid is to be discharged, wherein

the manhole has

a vertically disposed tubular portion,

the upper end of the tubular portion disposed in a horizontal plane,

a hatch cover swingable between an open position in which the hatch cover is wholly to one side of the tubular portion and a closed position in which the hatch cover overlies and seals the tubular portion, and

means, including screws mounted on said tubular portion, for clamping the hatch cover in its closed position, and

wherein

said device comprises

a generally horizontal plate,

liquid conduit means extending through said plate for the passage of liquid therethrough in filling said tank,

vapor conduit means extending through said plate for the passage of liquid vapors therethrough as such vapors are displaced from the tank as it is filled with liquid,

sealing means

mounted on said plate and

selectively actuable to sealingly engage the inner wall of said tubular portion,

a lock-down bar adapted to be support by the upper end of the tubular portion, and

means for suspending said horizontal plate, generally centrally from said lock-down bar,

said method comprising the steps of

positioning the lock-down bar so that it is supported by the upper end of the tubular portion, with the sealing means disposed below the upper end of the tubular portion and engageable with the inner diameter of the tubular portion,

inflating the gasket means to sealing engage the inner diameter of the tubular portion and thereby, under a condition of pressure equilibrium, centering the sealing device with respect to the manhole, and

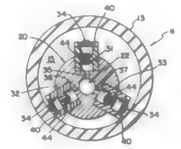
thereafter clamping the lock-down bar with respect to the upper end of the tubular portion, to thereby provide a sealing of the manhole opening that is resistant to displacement by forces generated internally of the tank.

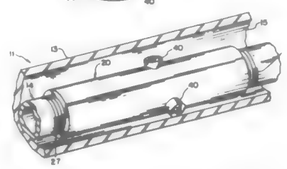
5,333,654

VAPOR PASSAGE FUEL BLOCKAGE REMOVAL

Warren P. Faeth, Fort Wayne, Ind., assignor to Tokheim Corporation, Fort Wayne, Ind.

Division of Ser. No. 893,226, Jun. 3, 1992, Pat. No. 5,240,045, which is a division of Ser. No. 704,332, May 23, 1991, Pat. No. 5,129,433, which is a division of Ser. No. 531,041, May 31, 1990, Pat. No. 5,040,576, which is a division of Ser. No. 330,149, Mar. 29, 1989, Pat. No. 4,967,809, which is a division of Ser. No. 98,453, Sep. 18, 1987, Pat. No. 4,842,027, which is a division of Ser. No. 113,372, Oct. 23, 1987, Pat. No. 4,749,009, which is a continuation of Ser. No. 803,152, Dec. 2, 1985, abandoned. This application Jun. 28, 1993, Ser. No. 83,358
The portion of the term of this patent subsequent to Jun. 7, 2005, has been disclaimed.
Int. Cl.[5] B67D *5/06*
U.S. Cl. 141—1 4 Claims





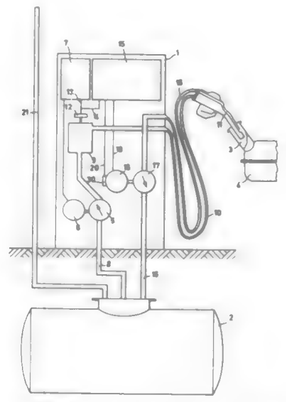
1. In a method of making a hose assembly for dispensing fuel to a nozzle which is adapted to be inserted into the fill pipe of a vehicle fuel tank, said hose assembly comprising an inner tube means having opposed outer ends and defining a fuel conduit and a tubular outer sleeve means having opposed outer ends which defines with said inner tube means an annular passage for recovering fuel vapors from said fuel tank, the improvement comprising the steps of forming said inner tube means to comprise two inner tube sections having flexible portions and having adjacent ends, disposing said inner tube sections so as to respectively have passages therethrough leading from said adjacent ends thereof toward said opposed outer ends of said inner tube means, forming said inner tube means to also comprise a venturi means disposed intermediate said inner tube sections within said outer sleeve means and including passage means therein respectively connected to said passages of said inner tube sections, and forming said venturi means to have inlet means which communicates with said annular vapor passage so that liquid fuel collected in said annular vapor passage is adapted to be drawn through said inlet means due to suction adapted to be produced in said venturi means upon the flow of fuel through said inner tube means.

5,333,655

SYSTEM FOR EFFECTIVE VAPOR RECOVERY WITHOUT SEAL MEMBERS IN FUEL FILLING INSTALLATIONS

Giorgio Bergamini, and Ernesto Paris, both of Bari, Italy, assignors to Nuovopignone Industrie Meccaniche e Fonderia SpA, Florence, Italy

Filed Sep. 15, 1992, Ser. No. 945,222
Int. Cl.[5] B65B *3/18*
U.S. Cl. 141—59 2 Claims



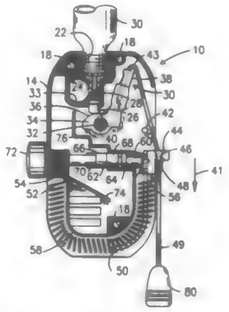
1. A system for effective vapor recovery without seal members in a fuel filling installation that has a delivery gun for insertion into the filler pipe for a motor vehicle and which draws fuel from an underground tank, comprising fuel delivery means of variable volumetric delivery rate, measurement means for providing electrical pulses of a frequency proportional to said variable volumetric delivery rate, and vapor recovery means of adjustable volumetric draw-in rate having a pipe for returning to the underground tank vapor from the delivery gun when the delivery gun is inserted into the filler pipe of the motor vehicle to be refuelled, control means responsive to said measurement means electrical pulses to adjust the volumetric draw-in rate of said adjustable volumetric vapor recovery means to be always greater than the volumetric delivery rate of said fuel delivery means, said control means having a positive displacement pump, a pulse converter fed at its input by electrical pulses provided by said measurement means to give at the pulse converter output a corresponding series of electrical pulses having the same frequency as said measurement means electrical pulses but of equal and adjustable pulse duration, an operational unit responsive to said pulse converter electrical pulses, said operational unit generating a first output signal that is a mean value indicative of the volumetric rate of delivery of said fuel delivery means, a comparator responsive to said operational unit output signal, a pump drive motor for said positive displacement pump for generating a second analog signal indicative of the speed of rotation of said positive displacement pump and hence indicative of the volumetric flow rate of the drawn-in vapor, said second analog signal and said output signal being coupled to said comparator to generate a signal that is indicative of the difference between said second analog signal and said output signal, a control unit responsive to said comparator generated difference signal to maintain said pump drive motor speed constant when said two input signals to the comparator are of equal value and to increase and reduce said speed when said operational unit output signal is greater and less, respectively, than said second analog signal.

5,333,656

AUTO INFLATOR HAVING DISSOLVABLE ELEMENT UNDER LOW PRESSURE

Glenn H. Mackal, 2586 25th Ave. North, St. Petersburg, Fla. 33713

Filed May 26, 1993, Ser. No. 67,656
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—330 14 Claims



1. An inflator, comprising:

a hollow housing;

a lever arm pivotally mounted in said hollow housing;

said lever arm having a cocked position and a position of repose;

a bias means for urging said lever arm into said position of repose;

said lever arm including a head and said head having a cammed surface;

a puncture pin being slidably mounted in said hollow housing;

said puncture pin having a head and a shank, said puncture pin head disposed in abutting relation to said cammed surface of said lever arm head when said lever arm is in its cocked position and when said lever arm is in its position of repose, said shank being adapted to puncture a membrane of a cartridge introduced into said hollow housing when said lever arm is in its position of repose;

said puncture pin being retracted into said hollow housing when a cartridge having an unpunctured membrane is introduced into said hollow housing;

said puncture pin head bearing against said cammed surface of said lever arm head when a cartridge having an unpunctured membrane is introduced into said hollow housing;

said lever arm being rotated into said cocked position when said puncture pin head bears against said cammed surface of said head of said lever arm;

said lever arm remaining in said position of repose when no cartridge is connected to said hollow housing and when a cartridge having a punctured membrane is installed in said hollow housing;

an inspection opening formed in said hollow housing, said inspection opening having a preselected position so that said lever arm is visible through said inspection opening when said lever arm is in its position of repose and so that said lever arm is not visible through said inspection opening when said lever arm is in said cocked position;

whereby the presence of a cartridge having a punctured membrane and the absence of a cartridge are both indicated by the visibility of said lever arm through said inspection opening and the presence of a cartridge having an unpunctured membrane is indicated by an absence of visibility of said lever arm through sad inspection opening.

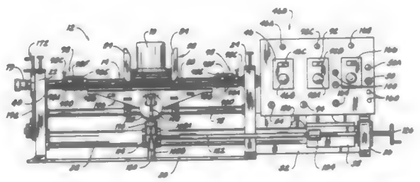
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,657

WORKPIECE TURING AND MILLING APPARATUS

Larry Hart, 5421 Golden Dr., Columbia, Mo. 65202

Filed Oct. 13, 1992, Ser. No. 959,678
Int. Cl.[5] B23C *3/32;* B23B *5/46*
U.S. Cl. 142—24 21 Claims



1. Apparatus for turning and, by attachment of a milling device thereto, simultaneously milling a workpiece to form the workpiece with predetermined designs including a generally spiral cut, the apparatus comprising:

a frame having a front, a back and laterally opposite sides, and including a chuck and a spindle spaced laterally of the chuck, the chuck and the spindle mounting respective opposite ends of the workpiece for rotation generally about its longitudinal axis;

carriage means adapted for mounting the milling device thereon;

means for supporting said carriage means on the frame for movement generally side-to-side of the frame and longitudinally of the workpiece;

a first variable speed electric motor operatively connected to the chuck for driving the rotation of the workpiece about its longitudinal axis;

a first control for controlling the first motor to selectively set the rotational speed of the workpiece;

a second variable speed electric motor operatively connected to said carriage means for driving movement of said carriage means side-to-side of the frame and generally longitudinally of the workpiece; and

a second control for controlling the second motor to selectively set the speed of said carriage means as it moves longitudinally of the workpiece such that spiral cuts of different predetermined configurations may be automatically made in the workpiece by the milling device by setting the appropriate relative speeds of the first motor and second motor with the first and second controls;

the first control comprising means for connecting the first motor to a power supply and means for selectively controlling the voltage applied to the first electric motor from the power supply and the second control comprising means for connecting the second electric motor to a power supply and means for selectively controlling the voltage applied to the second electric motor from the power supply, said means for selectively controlling the voltage applied to the first electric motor being operable for selecting the speed of the first electric motor over a substantially continuous range of speeds, and said means for selectively controlling the voltage applied to the second electric motor being operable for selecting the speed of the second electric motor over a substantially continuous range of speeds;

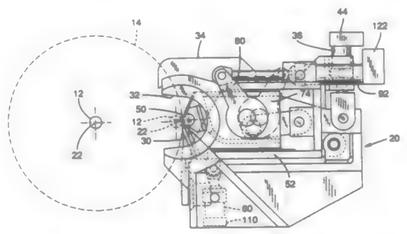
said carriage means comprising a seat for mounting and supporting the milling device, the seat being mounted on said carriage means for pivoting generally about an axis extending generally front to back of the frame.

5,333,658

VENEER LATHE

Stephen R. Albion, Salem, Oreg.; Douglas C. Mackintosh, Vernon, Canada, and James F. Uhl, Gresham, Oreg., assignors to Premier Gear & Machine Works, Portland, Oreg.

Filed Aug. 26, 1993, Ser. No. 111,926
Int. Cl.[5] B27L *5/02;* G06F *15/46*
U.S. Cl. 144—213 7 Claims



5. A veneer lathe having opposed spindles with a common rotational axis, a carriage movably mounted on the lathe for supporting and feeding a peeling blade and a pressure roll toward the rotational axis for peeling a continuous strip of veneer off a log supported and rotated in the opposed spindles and a control for controlling the operation of the lathe, and the improvement comprising:

a holder pivotally mounted on the carriage;

a blade mounted on the holder;

a motor mounted on the carriage and directly connected to the holder for pivoting the holder on the carriage;

a programmable computer connected to the motor and programmed to adjust the angle of the holder according to a prescribed program;

a carrier pivotally mounted on the carriage;

a slide movably mounted on the carrier;

a pressure roll mounted on the slide;

a second motor mounted on the carriage and connected to the carrier for pivoting the carrier on the carriage to adjust the vertical position of the pressure roll; and

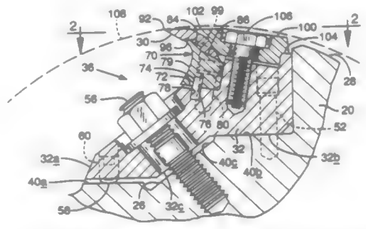
a third motor mounted on the carrier and connected to the slide for moving the slide on the carrier to adjust the lateral position of the pressure roll.

5,333,659

KNIFE HOLDER

Charles T. Carpenter, and Robert M. Bayly, both of Lake Oswego, Oreg., assignors to Key Knife, Inc., Portland, Oreg.

Filed Jul. 21, 1993, Ser. No. 94,240
Int. Cl.[5] B27G *13/00;* B26D *1/12*
U.S. Cl. 144—231 12 Claims



1. A chipping cutter head including a body and shaft extensions extending from opposite ends of the body, the shaft extensions having a common axis and providing for rotation of the cutter head about said axis,

a pocket disposed in said body adjacent the periphery thereof and a knife disposed in said pocket with a cutting edge which substantially parallels said axis,

support structure for the knife supporting the knife on said body,

mechanical interfitting structure joining the knife to said support structure and said support structure to said body providing for positive interlocking engagement of the knife relative to the cutter head body preventing shifting of the knife in an axial direction relative to said body, and

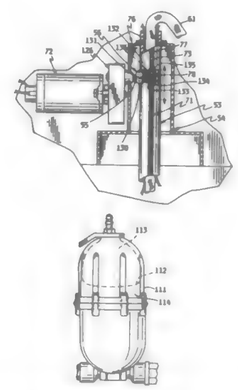
said interfitting structure including opposed shoulders engaging opposite ends of the knife, and a screw fastener extending from the support structure into the body and joining the support structure and body.

5,333,660

PURIFIED WATER DISPENSING APPARATUS AND METHOD

Michael J. Kohlmann, 5105 W. 58th St., Edina, Minn. 55436, and Randall W. Williams, 5582 Oak Glen Rd., Edina, Minn. 55439

Filed Mar. 11, 1992, Ser. No. 849,189
Int. Cl.[5] B65B *3/00*
U.S. Cl. 141—263 13 Claims



1. A purified water dispensing apparatus for self-service use by consumers, comprising:

a supporting frame;

a source of water;

a dispensing spout movably attached to said supporting frame by a rack mechanism to permit movement in a generally vertical direction relative to said supporting frame;

a delivery platform attached to said supporting frame in a generally horizontal disposition beneath said dispensing spout, for supporting containers having an aperture therein to receive purified water therethrough from said dispensing spout;

first means for raising and lowering said dispensing spout comprising drive gears engaging said rack mechanism;

second means for sensing a force that exceeds a predetermined magnitude acting against said dispensing spout in a direction generally opposed to movement thereof, and for stopping movement of said dispensing spout upon sensing such a force, comprising an adjustable slip clutch, operably connected to said drive gears, which may be adjusted to operate in response to force exceeding a predetermined magnitude;

an accumulator tank comprising a sealed chamber containing pressurized gas and also a flexible bladder, for receiving water through an intake port fluidly connected to said source of water, and for discharging water through an exit port;

third means, operably interposed between said source of water and said accumulator tank, for pumping water from said source to said dispensing spout and for purifying water from said source;

fourth means for measuring the pressure of gas within said sealed chamber of said accumulator tank;

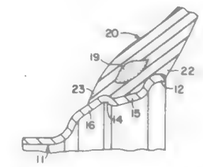
fifth means for activating said pump means whenever the gas pressure within said accumulator tank reaches a value indicating that a predetermined amount of water is present within said accumulator tank.

5,333,661

VEHICLE WHEEL WITH A RIM

Carl-Gustav B. C. Victor, Höllviksnäs, Sweden, assignor to Trelleborg Tyre Aktiebolag, Trelleborg, Sweden

Filed Oct. 26, 1992, Ser. No. 966,088
Claims priority, application Sweden, Nov. 1, 1991, 9103256-5
Int. Cl.[5] B60C *15/024;* B60B *21/10*
U.S. Cl. 152—379.3 17 Claims



1. A vehicle wheel comprising:

a wheel rim and a tire fitted on said wheel rim;

said tire comprising a pair of tire beads;

said wheel rim comprising a pair of rim flanges, each said rim flange being disposed about a periphery of said wheel rim;

each said rim flange comprising a rim seat for receiving a corresponding one of said tire beads;

each said rim seat comprising an elevated ridge spaced apart from a corresponding one of said rim flanges;

said wheel rim comprising a pair of seat surfaces, each of said seat surfaces being disposed between a corresponding one of said rim flanges and a corresponding one of said elevated ridges;

each said elevated ridge being configured to divide its corresponding seat surface into two seat portions;

a first of said two seat portions of each said seat surface being disposed between the corresponding elevated ridge and the corresponding rim flange;

said vehicle wheel being configured to rotate about a rotational axis;

said first seat portion being oriented at an angle of about 15° with respect to the rotational axis of said vehicle wheel;

a second of said two seat portions of each said seat surface being disposed on a side of the corresponding elevated ridge away from the corresponding rim flange;

said second seat portion being oriented at an angle of between about 15° and about 35° with respect to the rotational axis of said vehicle wheel;

each said elevated ridge comprising a crown portion, each said crown portion representing a maximum protrusion of each said elevated ridge;

said second seat portion extending rectilinearly in an inward direction away from said crown portion;

each said tire bead comprising a tire toe; and

each said tire toe being disposed to:

embrace and surround each said elevated ridge; and

be engaged with and sealingly pressed against each said second seat portion.

VOL 1165 ISS 1 AG 2 1994 UMI

5,333,662

TIRE INNERLINER COMPOSITION

Bernard J. Costemalle, St. Genese, Belgium, and James V. Fusco, Red Bank, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 840,675, Feb. 21, 1992, abandoned, which is a continuation of Ser. No. 554,747, Jul. 18, 1990, abandoned. This application Jul. 21, 1992, Ser. No. 917,556

Int. Cl.[5] **B60C** *5/02;* **C08L** *27/00;* **C08F** *210/10*

U.S. Cl. 152—510 **13 Claims**

1. A tire innerliner prepared from a composition comprising:

(a) about 40 to about 70 weight percent of a halogen-containing random copolymer of a C_4 to C_7 isomonoolefin and a para-alkylstyrene, said paraalkylstyrene comprising about 0.5 to about 20 weight percent of said copolymer, said halogen selected from the group consisting of chlorine, bromine and mixtures thereof;

(b) about 20 to about 45 weight percent of carbon black;

(c) about 0 to about 25 weight percent plasticizer oil; and

(d) about 1 to about 6 weight percent of a curing agent.

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CASSETTE-TYPE AWNING

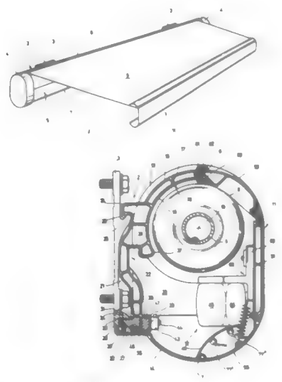
Heinz Eger, Biesingen-Ochsenwang, Fed. Rep. of Germany, assignor to MHZ Sonnenschutztechnik GmbH, Kirchheim/-Teck, Fed. Rep. of Germany

Filed Jan. 16, 1993, Ser. No. 78,141

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 4219832

Int. Cl.[5] **E04F** *10/00*

U.S. Cl. 160—22 **22 Claims**



1. Cassette-type awning (1) comprising:

a cassette housing (2) attached to wall holders (3) and having a wall side and a front side, remote from said wall holders (3);

a cassette opening (5) at said front side extending essentially over the entire length of said cassette housing (2) and delimited by a top rim (6), a bottom rim (7) and two side rims,

a winding shaft (8) rotatably mounted in said cassette housing (2) and having an edge of an awning cloth (9) attached to it,

articulated arms (12) accommodated when in the closed state, in said cassette housing (2), and having hinging means (23) for hinging inner ends thereof at the wall side to said cassette housing,

said articulated arms (12) having front ends remote from said inner ends at the wall side and pivoting out of said cassette opening (5) when said awning (1) is extended,

a drop rail (11),

said drop rail forming a multipart structure having a main part (51) having an edge of said awning cloth (9) remote from said winding shaft (8) attached to it and being hinged to said front ends of said articulated arms (12), and at least one flap (53, 55), hinged to said main part (51) and having essentially the same length as said main part (51), said drop rail (11) essentially closing said cassette opening (5) completely when said awning (1) is fully retracted, and said at least one flap (53, 55) moving in the direction towards said awning cloth (9) when said awning (1) is being extended.

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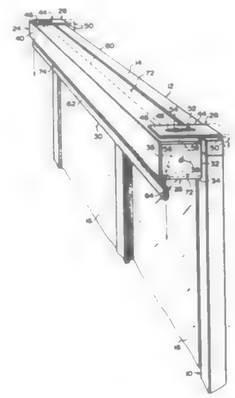
SHOWER DOOR PROTECTOR SHADE

Richard Sirianni, 90 San Juan Ave.; Thomas Minutillo, 140 Wentworth Ave., both of Albertson, N.Y. 11507; John Yaworski, 59 Peninsula Blvd., Valley Stream, N.Y. 11581, and Robert Maurer, 30 Forset Ave., Valley Stream, N.Y. 11580

Filed May 17, 1993, Ser. No. 61,554

Int. Cl.[5] **E06B** *9/08*

U.S. Cl. 160—23.1 **15 Claims**



1. A protector shade for a sliding glass door assembly having a frame with a top rail and two sliding glass doors for a bathtub which comprises:

a) an elongate housing;

b) means for attaching said elongate housing behind the top rail of the frame of the sliding glass door assembly;

c) an elongate shade roller rotatably mounted within said elongate housing; said housing comprising:

d) a rear wall;

e) a bottom wall connected to and extending from said rear wall;

f) a pair of side walls, each having a central hole and connected to and extending from said rear wall and said bottom wall;

g) an elongate L-shaped lid; and

h) a hinge between said rear wall and said elongate L-shaped lid, whereby when said elongate shade roller is pulled down it will keep slime, soap and dirty water off the two sliding glass doors, said elongate shade roller can fit in said central holes of said side walls to be rotatably mounted, and when said elongate L-shaped lid is closed it will cover the top and front of said elongate housing, to enclose said elongate shade roller therein.

i) wherein said attaching means includes al pair of adjustable brackets, spaced apart and connected to said elongate L-shaped lid, so that said adjustable brackets can clip onto the top rail of the frame.

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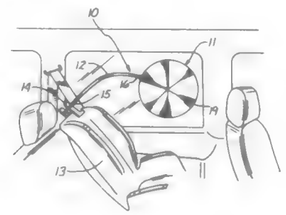
PORTABLE SHADE SYSTEM

Samir H. Safar, 13675 Tradition St., San Diego, Calif. 92128

Filed Oct. 1, 1993, Ser. No. 131,083

Int. Cl.[5] **E06B** *9/06*

U.S. Cl. 160—84.1 D **4 Claims**



1. A foldable shade member, comprising:

a sheet of foldable material having opposite first and second end portions and opposite first and second marginal edge portions extending between the first and second end portions;

first and second rigid end pieces, each of the end pieces having a first end portion and each of the end pieces being attached to a respective one of the first and second end portions of the sheet of foldable material such that the first end portion of the first end piece and the first end portion of the second end piece are disposed adjacent the first marginal edge portion of the sheet of foldable material without the first end portions of the first and second end pieces engaging one another; and

an elastic member strung through the first end portion of each rigid end piece and through the first marginal edge portion of the sheet of foldable material to enable a user to rotate the end pieces from a closed configuration in which the sheet of foldable material is folded between the end pieces and an open configuration in which the sheet of foldable material is unfolded in a circularly shaped arrangement such that the first and second marginal edge portions of the sheet of foldable material are circularly shaped with the elastic member restraining the first marginal edge portion of the sheet of foldable material between the first end portions of the first and second end pieces so that the first marginal edge portion of the sheet of foldable material can unfold somewhat but only substantially less than the second marginal edge portion.

5,333,666

METHOD FOR MANUFACTURING A RESIN PATTERN, AND A METHOD FOR VACUUM SEALED MOLDING PROCESS USING RESIN PATTERN SAME

Hideo Ootomo; Hiroshi Takeda, and Shunichiro Yachi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1992, Ser. No. 968,410

Claims priority, application Japan, Oct. 29, 1991, 3-282673

Int. Cl.[5] **B22C** *7/00*

U.S. Cl. 164—45 **1 Claim**

1. A method for manufacturing a resin pattern for vacuum sealed molding process, which comprises the steps of:

covering a side of molding plane of an original pattern with a covering film,

making said covering film contact tightly to the original pattern by vacuum suction of said covering film,

packing a predetermined amount of particle bodies onto said covering film in a surrounding flask under a condition that said covering film tightly contacts to the original pattern,

covering upper portion of said flask with another covering film,

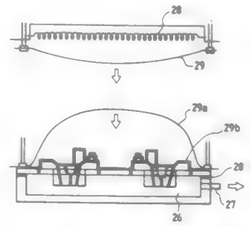
returning said covering film contacting tightly to the original pattern to normal pressure for releasing the tight contact,

reducing internal pressure of the packed particle bodies and maintaining the reducing pressure condition,

removing the original pattern from said packed particle bodies under the reducing pressure condition,

turning said packed particle bodies which forms a mold cavity by removing the original pattern reversely so as to be the mold cavity up side,

setting a predetermined number of double solid bodies composed of cores and external covers for covering thereon in the mold cavity,



pouring and hardening an amount of resin into the mold cavity in said packed particle bodies,

forming a predetermined number of through holes by withdrawing the cores of the double solid bodies, and

taking out a resin pattern for vacuum sealed molding process having the same shape as the original pattern by returning the reduced internal pressure of said packed particle bodies to normal pressure for breaking down said packed particle bodies.

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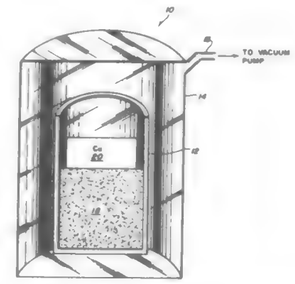
SUPERSTRENGTH METAL COMPOSITE MATERIAL AND PROCESS FOR MAKING THE SAME

Norman P. Loust, Alexandria, Va.; Virgil Provenzano, Bethesda, Md.; M. Ashraf Imam, Annadale, and Kuntimaddi Sadananda, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 31, 1992, Ser. No. 828,630

Int. Cl.[5] **B22D** *19/14*

U.S. Cl. 164—97 **12 Claims**



4. A process for producing a strengthened metal composite material of hard particles surrounded by a metallic matrix material, comprising the steps of:

(a) placing particles of a powdered particulate material having an average particle size of less than one micron inside a hollow cylinder of a metallic matrix material, the matrix material being significantly more ductile than the particles, the particles and the matrix material being essen-

VOL 1165 ISS 1 AG 2 1994 UMI

tially immiscible in the solid state, the particles comprising greater than 50% by volume of the mixture of the particles and the matrix material, and the powdered particulate material having a melting point higher than the melting point of the matrix material;

(b) capping the hollow cylinder with a piece of the matrix material;

(c) wrapping the cylinder in a foil having a melting point higher than the melting points of the particles and the matrix material;

(d) placing the foil wrapped cylinder inside a jacket which is resistant to vacuum conditions at high temperature;

(e) evacuating air from the jacket to form a vacuum inside the jacket;

(f) hot isostatically pressing the evacuated jacket at a temperature above the melting point of the matrix material, and below the melting point of the powdered particulate material, so as to produce a metal composite in which said particles of said powdered particulate material are surrounded by a metallic matrix; and

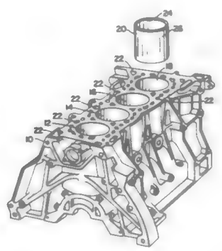
(g) removing the metal composite material from the jacket and foil.

5,333,668

PROCESS FOR CREATION OF METALLURGICALLY BONDED INSERTS CAST-IN-PLACE IN A CAST ALUMINUM ARTICLE

John L. Jorstad; Richard A. Morley, both of Richmond; William H. Overbagh, Chesterfield, and George W. Steele, Glenn Allen, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Dec. 9, 1991, Ser. No. 803,846
Int. Cl.[5] B22D *19/08*
U.S. Cl. 164—100 **23 Claims**



1. A process for producing a product having a ferrous article metallurgically bonded to an aluminum casting wherein molten aluminum alloy is poured around the coated ferrous article, said process comprising:

a. pretreating a surface to be coated of a ferrous article to remove impurities, oxides, and foreign material;

b. preheating the pretreated ferrous article to a temperature of about 250° F.;

c. providing a molten metallic bonding material of substantially pure zinc having a melting temperature lower than the melting temperature of the ferrous material and lower than the melting temperature of an aluminum alloy to be poured around the article, the ferrous material being soluble in the zinc bonding material and the zinc bonding material and the aluminum alloy being mutually soluble in each other and capable of forming intermetallic compounds with the ferrous material and metallurgically bonding to the outer surface of the ferrous article;

d. immersing the ferrous article in the molten zinc bonding material for a predetermined time to cause the molten zinc bonding material to contact and to wet the pretreated outer surface of the ferrous article to provide an outer surface coating of zinc bonding material on the ferrous article; and

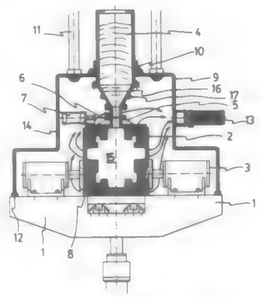
e. cooling the externally coated ferrous article to solidify the zinc bonding material.

5,333,669

CORESHOOTERS FOR SELF-SETTING PROCESS WITH VACUUM SYSTEM

Agustin Erana, Poligono Industrial Ali-Gobeo, Zorrostea, 4, 01010 Vitoria (Alava), Spain

Filed Mar. 15, 1993, Ser. No. 33,318
Claims priority, application Spain, Mar. 16, 1992, 9200572
Int. Cl.[5] B22C *13/12, 15/22*
U.S. Cl. 164—160.1 **2 Claims**



1. A coreshooter for self-setting molding process with a vacuum system, comprising a blowing cartridge, a blowing plate attached to said cartridge, a table, a corebox disposed on said table for receiving a sand discharge from said blowing cartridge through said blowing plate positioned on said corebox, a bell positioned on said table and enclosing said corebox and part of said cartridge coaxial therewith so as to form a chamber in said bell, said bell being tightly connected to said blowing cartridge and said table, respectively, and being fitted with a connection to a vacuum source to as to produce vacuum in said chamber of said bell, said corebox having gauged holes for communicating said chamber with an interior of said corebox for air to leave said corebox during a blowing stage, a valve fitted at said blowing plate to isolate said corebox from said blowing cartridge while airblast applied to said cartridge is released, at which point said valve is opened and sand discharge from said cartridge is enhanced by a thrust of air-blast in combination with vacuum provided in said corebox through said holes.

5,333,670

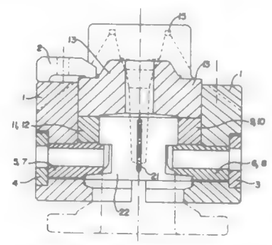
VITREOUS FUSED SILICA

Gilbert Brandy, Feignies; Jean-Claude Compagnon, Hautmont, and Jean-Marie Vignot, Mairieux, all of France, assignors to Vesuvius Crucible Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 671,723, Mar. 28, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 45,014
Claims priority, application France, Sep. 30, 1988, 88 12832
Int. Cl.[5] B22C *1/02*; C04B *35/14*
U.S. Cl. 164—364 **5 Claims**

1. A mold for use in casting metal shapes comprising a plurality of mold elements for defining the contour of the cast shape, each of said mold elements made from a refractory composition including at least 30% by weight up to 100% by weight vitreous fused silica to obtain a selected coefficient of thermal conductivity in each said mold elements of between about 0.5 and about 10 W/m°C.,

and wherein selected mold elements adjacent a portion of said cast shape having a first, thinner cross section are of a refractory composition having a lower selected coefficient of thermal conductivity than that of other selected mold elements adjacent portions of said cast shape having a second, heavier cross section whereby heat is extracted



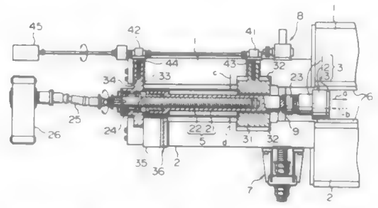
from said casting during solidification in a selected manner.

5,333,671

THICKNESS ADJUSTABLE MOLD FOR CONTINUOUS CASTING

Taizo Sera; Takashi Mitsuhiro; Koichi Ozawa, all of Fukuyama, and Yutaka Sakata, Niihama, all of Japan, assignors to Sumitomo Heavy Industries, Ltd. and NKK Corp., both of Tokyo, Japan

Filed Jun. 28, 1993, Ser. No. 83,939
Claims priority, application Japan, Jun. 29, 1992, 4-051731
Int. Cl.[5] B22D *11/04*
U.S. Cl. 164—436 **2 Claims**



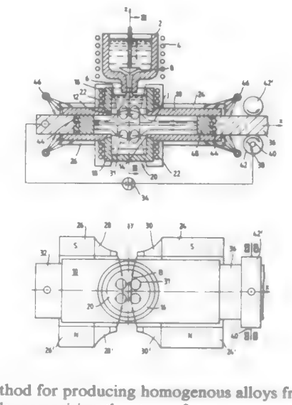
1. A thickness adjustable mold for continuous casting, comprising a fixed wide face unit, a movable wide face unit which is located in parallel to said fixed wide face unit and designed such that the distance from said fixed wide face unit can be adjusted, a pair of narrow face units each having a width corresponding to the distance between said wide face units, which narrow face units are held between said wide face units and can be wholly replaced, and narrow face unit carriage devices which include spindles attached to said respective narrow face units and move said narrow face units in the wide face-wise directions of said wide face units so as to adjust positions of the narrow face units in the wide face-wise directions, wherein said adjustable mold further includes center alignment mechanisms each comprising a guide mechanism which supports the spindle of said narrow face unit carriage device slidably in the wide face-wise directions and a driving mechanism which moves said guide mechanism in the narrow face-wise directions of said narrow face unit.

5,333,672

METHOD AND DEVICE FOR PRODUCING HOMOGENEOUS ALLOYS

Yuri Gelfgat, Beer Sheva; Arie El-Boher, Metar, and Herman Branover, Omer, all of Israel, assignors to Ontec, Ltd., Beer-Sheva, Israel

Filed Nov. 23, 1992, Ser. No. 980,563
Claims priority, application Israel, Nov. 24, 1991, 100136
Int. Cl.[5] B22D *27/02*
U.S. Cl. 164—468 **16 Claims**



1. A method for producing homogenous alloys from immiscible metals, comprising the steps of:

melting down the components of said alloy by heating them in a crucible to at least the temperature required for the formation of a molecular solution and pouring said molten components into a homogenizer unit and crystallizer communicating with each other unit;

maintaining said temperature at least until said components are fully homogenized;

simultaneously applying to the melt in said homogenizer unit and said crystallizer unit a D.C.-current-generated electric field and a magnetic field of predetermined intensities, which fields are oriented to cross one another, to the effect of agitating and homogenizing said melt in said homogenizer unit on the one hand, and modifying the effect of the gravitational force acting on said components, on the other, and

cooling down said melt, at a predetermined rate, to the solidification temperature thereof and withdrawing the solidified alloy from the crystallizer unit, while maintaining said cross electric and magnetic fields.

7. A device for continuous casting of a homogeneous alloy consisting of immiscible metals, comprising:

crystallizer means having two ends and being fillable with a melt prepared from said metals;

homogenizer means incorporated in, and communicating with, said crystallizer;

feeder means located on eitner end of said crystallizer means for passing a D.C. current through the melt in said crystallizer means to produce therein an electric field of predeterminable intensity;

at least one electromagnet having pole pieces straddling said crystallizer means and adapted to produce therein a magnetic field of predeterminable induction;

nozzle means adapted to direct jets of a coolant at selected regions of said crystallizer to cause said melt to solidify within a predeterminable period of time, and

puller means to extract solidified portions of said alloy melt from said crystallizer,

wherein said electric field and said magnetic field cross one another, and wherein the interaction between the electric

VOL 1165 ISS 1 AG 2 1994 UMI

field produced by said D.C. current passing through said melt and the magnetic field produced by said at least one electromagnet modifies the effect of gravity, producing an indifferent equilibrium of the components of said alloy, thus preventing the liquational sedimentation, due to gravity, of the heavier one of the metals constituting said alloy.

5,333,673

METAL CASTING IN A SAND MOLD HAVING A SODIUM BENTONITE CLAY BINDER MIXTURE

John Hughes, Arlington Hgts., Ill., assignor to American Colloid Company, Arlington Heights, Ill.

Division of Ser. No. 336,095, Apr. 11, 1989, Pat. No. 5,275,114. This application Sep. 27, 1993, Ser. No. 127,195

Int. Cl.[5] B22C *1/18, 9/02*

U.S. Cl. 164—528 5 Claims

1. A method of manufacturing a cast metal part including forming a foundry sand mixture comprising sand and a binder, shaping the foundry sand mixture into a shape having at least one surface with a desired configuration and thereafter pouring molten metal in contact with said shaped surface of the foundry sand mixture to solidify while in contact with said shaped surface of the foundary sand mixture, said binder comprising a combination of at least two sodium bentonite clays each present in an amount of 25% by weight to 75% by weight of total clay binders in the foundry sand mixture, obtained from different deposits and having different values for green compressive strength, dry compressive strength or surface finish, such that in combination, the green compressive strength, the dry compressive strength or the surface finish is greater than for each sodium bentonite clay alone.

5,333,674

METHOD FOR MEASURING THE CLEANING EFFECTIVENESS OF CLEANING BODIES ON HEAT EXCHANGERS

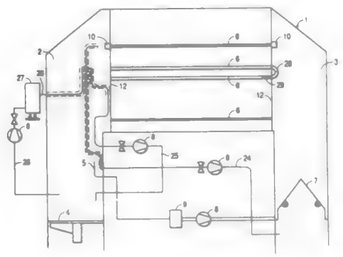
Wolfgang Czolkoss, Dortmund, Fed. Rep. of Germany, assignor to Taprogge GmbH, Fed. Rep. of Germany

Division of Ser. No. 760,478, Sep. 16, 1991, Pat. No. 5,176,199. This application Apr. 23, 1992, Ser. No. 872,411

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1990, 4029196

Int. Cl.[5] G01F *1/712*

U.S. Cl. 165—11.1 18 Claims



1. A heat exchanger, said heat exchanger comprising:

a plurality of heat exchange tubes extending from an inlet manifold of said heat exchanger to an outlet manifold of said heat exchanger;

said heat exchange tubes being adapted for passing water and cleaning bodies between said inlet manifold and said outlet manifold for cleaning said heat exchange tubes, said cleaning bodies being forced through said heat exchange tubes by said water and having a cleaning effect on said heat exchange tubes;

recirculation means, including a conduit for receiving said cleaning bodies, coupled between said inlet manifold and said outlet manifold for recirculating said water and said cleaning bodies through said heat exchange tubes;

measuring means coupled to said exchanger tubes for receiving some of said water and said cleaning bodies, said measuring means being adapted to receive a source of heat for raising the temperature of said water within said measuring means;

temperature measuring means coupled to said measuring means for measuring the temperature change of said water in said measuring means when one of said cleaning bodies pass said temperature measuring means, the cleaning effectiveness of said cleaning bodies being monitored on the basis of said measured temperature change.

8. In a heat exchanger system comprising a fluid inlet manifold and a fluid outlet manifold, at lease one heat exchange tube having an inlet end coupled to said inlet manifold for receiving said fluid and an outlet end coupled to said outlet manifold for discharging said fluid, the improvement comprising:

first temperature measuring means coupled to said inlet end of said exchange tube for measuring the temperature of said fluid entering said exchange tube;

second temperature measuring means coupled to said outlet end of said exchange tube for measuring the temperature of said fluid discharged from said exchange tube;

cleaning body inlet means for receiving at least one cleaning body; and

processing means coupled to said first and said second temperature measuring means for performing a cross-correlation analysis for determining the flow velocity of said fluid through said exchange tube in response to a comparison in temperature measurements between said first temperature measuring means and said second temperature measuring means.

5,333,675

APPARATUS AND METHOD FOR PERFORMING AUTOMATED AMPLIFICATION OF NUCLEIC ACID SEQUENCES AND ASSAYS USING HEATING AND COOLING STEPS

Kary B. Mullis, La Jolla; Larry Johnson, San Jose; Richard A. Leath, Berkley; Timothy J. Wenanberg, Mariposa, all of Calif.; Louis M. Mezei, Madison, Wis., and Joseph T. Widunas, Freemont, Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 709,374, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 899,061, Aug. 22, 1986, abandoned, and a continuation-in-part of Ser. No. 449,136, Dec. 11, 1989, abandoned, said Ser. No. 899,061, is a continuation-in-part of Ser. No. 833,368, Feb. 25, 1986, abandoned, said Ser. No. 449,136, is a continuation of Ser. No. 833,368, Feb. 25, 1986. This application Feb. 22, 1993, Ser. No. 21,624

The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.

Int. Cl.[5] G01N *35/02;* G05B *17/00*

U.S. Cl. 165—12 57 Claims

1. An apparatus for automatically performing the polymerase chain reaction, comprising:

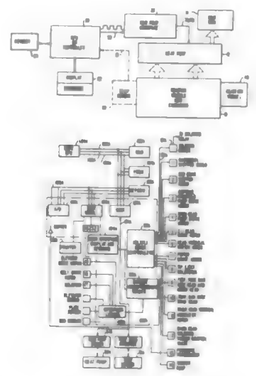
a reaction chamber for containing a reaction mixture suitable for performing the polymerase chain reaction;

a heat exchanger medium in thermal contact with said reaction chamber;

a temperature alteration system in thermal contact with said heat exchanger medium;

a programmable thermal controller coupled to said temperature alteration system for receiving data defining the desired polymerase chain reaction protocol and for controlling said temperature alteration system so as to alter the temperature of said heat exchanger medium in accordance with said desired polymerase chain action protocol;

wherein said heat exchanger medium is a metal block having fluid flow channels therein and wherein said temperature alteration system includes at least two temperature controlled fluid baths holding fluids therein at at least two different temperatures suitable for performing the polymerase chain reaction denaturation, hybridization and



extension reactions, and a pump and valve mechanism coupled to said programmable thermal controller such that fluid from said at least two baths could be alternately pumped through said metal block heat exchanger.

5,333,676

COOLING ABNORMALITY DETECTION SYSTEM FOR ELECTRONIC EQUIPMENT

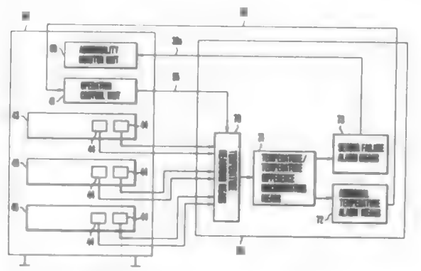
Tsukasa Mizuno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 945,629, Sep. 16, 1992, which is a division of Ser. No. 802,694, Dec. 5, 1991, Pat. No. 5,174,364, which is a continuation of Ser. No. 409,742, Sep. 20, 1989. This application Nov. 8, 1993, Ser. No. 148,863

Claims priority, application Japan, Sep. 21, 1988, 63-234880; Jan. 11, 1989, 1-4491; Mar. 28, 1989, 1-77219

Int. Cl.[5] F28D *15/00;* G01K *17/00;* H02B *1/00;* H05K *7/20*

U.S. Cl. 165—13 1 Claim



1. A cooling abnormality detection system for external electronic equipment, including a heat exchanger for performing heat exchange of a liquid coolant supplied from the external electronic equipment, a coolant tank for absorbing expansion of the liquid coolant supplied from said heat exchanger, a pump for supplying the liquid coolant stored in the coolant tank to the external electronic equipment again, and a protection unit for detecting a cooling abnormality of the liquid coolant in said electronic equipment, said protection unit being arranged to stop power supply to a given electronic equipment when the cooling abnormality of said given electronic equipment is detected, thereby preventing reliability degradation and breakdown of said electronic equipment, and said protection unit comprising:

temperature measuring means for causing a plurality of temperature sensors arranged in each of said electronic equipment to measure temperatures of powered electronic equipment;

temperature/temperature difference measuring means for receiving a measured temperature from said temperature measuring means, for outputting a sensor failure signal when a difference between measured temperatures of said plurality of temperature sensors exceeds a first predetermined value, and for outputting an abnormal temperature signal when the difference between the measured temperatures from said plurality of temperature sensors falls within the first predetermined value and all of the measured temperatures from said plurality of temperature sensors exceed a second predetermined value;

sensor failure alarm means for receiving the sensor failure signal and transmits the sensor failure signal to said electronic equipment; and

abnormal temperature alarm means for receiving the abnormal temperature signal and transmits the abnormal temperature signal to said electronic equipment.

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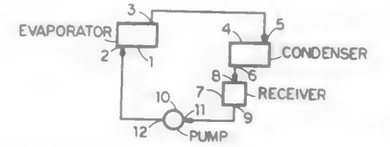
EVACUATED TWO-PHASE HEAD-TRANSFER SYSTEMS

Stephen Molivadas, 5403 Greystone St., Chevy Chase, Md. 20815

Continuation-in-part of Ser. No. 815,642, Jan. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 374,707, May 4, 1982, abandoned, Ser. No. 362,148, Mar. 26, 1982, abandoned, Ser. No. 361,784, Mar. 25, 1982, abandoned, Ser. No. 355,520, Mar. 5, 1982, abandoned, and Ser. No. 235,980, Feb. 19, 1981, abandoned, said Ser. No. 374,707, said Ser. No. 362,148, said Ser. No. 361,784, said Ser. No. 355,520, each is a continuation-in-part of Ser. No. 252,206, Apr. 8, 1981, abandoned, Ser. No. 252,205, Apr. 8, 1981, abandoned, Ser. No. 144,275, Apr. 28, 1980, Pat. No. 4,358,929, and Ser. No. 902,950, May 5, 1978, Pat. No. 4,340,030, said Ser. No. 144,275, said Ser. No. 902,950, each is a continuation-in-part of Ser. No. 457,271, Apr. 2, 1974, Pat. No. 4,211,207, said Ser. No. 235,980, is a division of Ser. No. 902,950, Feb. 19, 1981, May 5, 1978. This application Aug. 30, 1989, Ser. No. 400,738

Int. Cl.[5] F28D *15/02;* F28F *27/00*

U.S. Cl. 165—32 184 Claims



1. A heat-transfer system, in a gravitational field, for absorbing heat from one or more heat sources and for transferring the absorbed heat to one or more heat sinks; the system including a refrigerant-circuit configuration comprising:

(a) a refrigerant for absorbing heat from the one or more heat sources at least in part by changing from a liquid to a vapor, and for releasing the absorbed heat to the one or more heat sinks at least in part by changing from a vapor back into a liquid;

(b) one or more hot heat exchangers for transmitting heat from the one or more heat sources to the refrigerant, the one or more hot heat exchangers including an evaporator for transmitting heat from a first heat source of the one or more heat sources to the refrigerant and for evaporating liquid refrigerant; the evaporator having one or more refrigerant passages wherein at least a portion of liquid refrigerant entering the one or more evaporator refrigerant passages is evaporated;

VOL 1165 ISS 1 AG 2 1994 UMI

(c) one or more cold heat exchangers for transmitting heat from the refrigerant to the one or more heat sinks, the one or more cold heat exchangers including a condenser for transmitting heat from the refrigerant to a first heat sink of the one or more heat sinks and for condensing refrigerant vapor; the condenser having one or more condenser refrigerant passages wherein refrigerant vapor is condensed, the highest pressure at which condensation occurs in the one or more condenser refrigerant passages, at an instant in time, not exceeding the lowest pressure at which evaporation occurs in the one or more evaporator refrigerant passages at the selfsame instant in time;

(d) one or more evacuated refrigerant circuits containing refrigerant partly in the liquid phase and partly in the vapor phase while the refrigerant-circuit configuration is active and essentially no air while the refrigerant-circuit configuration is active and while the refrigerant-circuit configuration is inactive, the one or more evacuated refrigerant circuits comprising a refrigerant principal circuit around which the refrigerant circulates, not excluding intermittently, while the refrigerant-circuit configuration is active; the refrigerant principal circuit including

(1) the one or more evaporator refrigerant passages and the one or more condenser refrigerant passages,

(2) refrigerant-vapor transfer means for transferring refrigerant vapor from the one or more evaporator refrigerant passages to the one or more condenser refrigerant passages, and

(3) liquid-refrigerant principal transfer means for transferring liquid refrigerant from the one or more condenser refrigerant passages to the one or more evaporator refrigerant passages; and

(e) one or more refrigerant pumps for circulating refrigerant around at least one of the one or more evacuated refrigerant circuits;

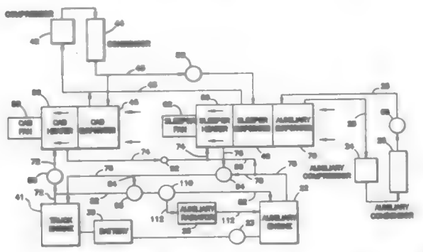
the improvement in combination therewith comprising means for ensuring—for a preselected range of refrigerant evaporation rates which includes at least two refrigerant evaporation rates differing significantly from each other—that each of the one or more refrigerant pumps has, while the refrigerant-circuit configuration is active, an available net positive suction head high enough to prevent, under steady-state conditions, each of the one or more refrigerant pumps cavitating.

5,333,678

AUXILIARY POWER UNIT

Ronald J. Mellum, Delano; Peter M. Hawkins, Jr., Mounds View; Gleanard M. Kline, Anoka; Deborah A. Klinkert, St. Louis Park, all of Minn.; Ronald G. McFarlane, Seattle, and Gary P. Hansen, Federal Way, both of Wash., assignors to Onan Corporation, Minneapolis, Minn.

Filed Mar. 6, 1992, Ser. No. 847,946
Int. Cl.[5] B60H *3/00*
U.S. Cl. 165—42 **22 Claims**



1. An auxiliary power unit, for use with a vehicle, the vehicle having a main engine, a driving area, an alternative use area, a driving area fan, a driving area evaporator, a compressor, a condenser, an alternative use area fan, an alternative use area evaporator, interconnected by a plurality of refrigerant lines and driven by the vehicle's main engine to provide air conditioning to the driving area and alternative use area; the auxiliary power unit comprises:

a housing containing an auxiliary engine, auxiliary compressor, and auxiliary condenser;

an auxiliary evaporator, wherein the auxiliary evaporator is arranged in series with the alternative use area fan, and the alternative use area evaporator such that the alternative use area fan causes air flow through both the alternative use area evaporator and the auxiliary evaporator; and

a plurality of auxiliary refrigerant lines interconnecting the auxiliary condenser to the auxiliary evaporator, the auxiliary refrigerant lines from the auxiliary compressor and the auxiliary condenser being separate and distinct form the refrigerant lines which connects to the vehicle's condenser when the auxiliary engine is in use, so that refrigerant from the auxiliary compressor and the auxiliary condenser does not flow to the vehicle's condenser;

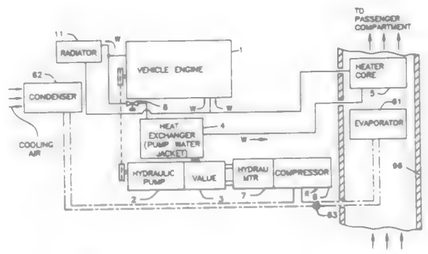
whereby when the auxiliary engine is in use, the alternative use area fan and auxiliary compressor, the auxiliary condenser and the auxiliary evaporator can be activated by a user and powered by the auxiliary engine to provide air conditioning.

5,333,679

CLIMATE CONTROL SYSTEM FOR MOTOR VEHICLE

Shigeru Suzuki; Tatsuyuki Hoshino; Osamu Hiramatsu, and Kunifumi Goto, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jun. 18, 1993, Ser. No. 79,674
Claims priority, application Japan, Jun. 19, 1992, 4-160690
Int. Cl.[5] F25B *29/00;* **B60H** *1/20*
U.S. Cl. 165—43 **5 Claims**



1. A climate control system for a motor vehicle having a drive engine and a climate-controlled compartment, comprising:

a hydraulic pump means operatively connected to and driven by said engine so as to deliver a working oil under pressure;

a heat conversion means hydraulically connected to said hydraulic pump means for receiving the working oil under pressure from said hydraulic pump means and for converting a pressure energy of the received working oil into a thermal energy thereof;

a heat radiating means operatively connected to said heat conversion means for radiating the thermal energy of the working oil to the climate-controlled compartment by means of air supplied to the climate-controlled compartment;

an air-conditioning system including therein a refrigerant compressor means;

a hydraulic motor means operatively connected to both said hydraulic pump means and said refrigerant compressor means of said air-conditioning system, said hydraulic motor means being supplied with the working oil under pressure by said hydraulic pump means, thereby being operated so as to drive said refrigerant compressor means; and

a flow control means for controlling a direction of flow of the working oil under pressure from said hydraulic pump means toward one of said heat conversion means and said hydraulic motor means the flow control means comprising:

a hydraulic-flow control valve hydraulically connected to said hydraulic pump means, said hydraulic-flow control valve having a first oil outlet hydraulically connected to said hydraulic motor means and a second oil outlet; and

a hydraulic relief valve having an oil inlet connected to the second oil outlet of said hydraulic flow control valve, said hydraulic relief valve being operative as said heat conversion means, and hydraulically connected to a heat exchanger means comprising:

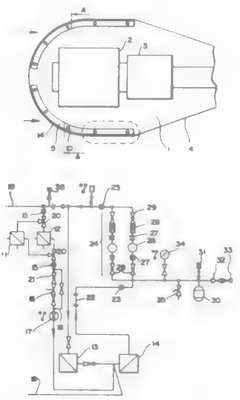
a water jacket means arranged around said hydraulic pump, and permitting a part of the engine cooling water to be heated therein, said water jacket means being hydraulically connected to said heat radiating means, to thereby supply said heat radiating means with cooling water heated by said water jacket means.

5,333,680

COOLING SYSTEM FOR THE CHAMBER OF A GENERATOR/TRANSMISSION UNIT

Franz Sinhuber, Vienna, Austria, assignor to Elin Energieversorgung GmbH, Vienna, Austria

Continuation of Ser. No. 659,299, Jun. 11, 1991, abandoned. This application Sep. 28, 1993, Ser. No. 127,474
Claims priority, application Austria, Nov. 10, 1988, 2759/88
Int. Cl.[5] F01D *5/08;* **F03B** *13/08, 13/10;* **H02K** *9/12*
U.S. Cl. 165—47 **12 Claims**



1. A cooling system for a generator positioned in a chamber and surrounded by running water and having a turbine, comprising:

a primary coolant loop having a primary coolant therein for cooling the generator, and

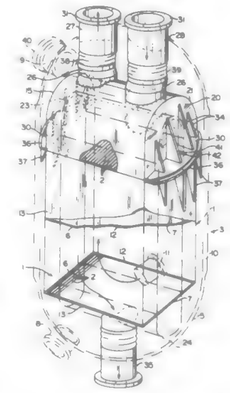
a secondary coolant loop having a secondary coolant therein for re-cooling the primary coolant in a heat exchanger present in the secondary coolant loop, said secondary coolant loop comprising an oil/water cooler and an air/-water cooler, means for flowing said secondary coolant through both said oil/water cooler and said air/water cooler, said secondary coolant loop further comprising cooling radiators formed on a wall of said chamber, for cooling said secondary coolant.

5,333,681

HEAT EXCHANGER OF THE PLATE TYPE

Claude Jullien, Puteaux, and Yves Couillard, Fourqueux, both of France, assignors to Packinox SA, Louveciennes, France

PCT No. PCT/FR91/01046, § 371 Date Oct. 20, 1992, § 102(e) Date Oct. 20, 1992, PCT Pub. No. WO92/11500, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 20, 1991, Ser. No. 937,830
Claims priority, application France, Dec. 21, 1990, 90 16060
Int. Cl.[5] F28F *7/00*
U.S. Cl. 165—82 **12 Claims**



1. A plate heat exchanger having an upper end and a lower end comprising a stack (1) of plates (2) for heat exchange between fluids which circulate longitudinally between each of two adjacent ones of said plates, said stack being within a pressure vessel (3), wherein said heat exchanger comprises: a rigid means for suspension of said stack by at least a first plate (30), the first plate providing a rigid coupling between a shell which defines the vessel (3), the first plate and a first connecting box (21; 23) at the upper end of the stack (1), said first connecting box (21; 23) constituting a first collector circuit which guides a first of said fluids circulating through said stack between said upper end of the stack (1) and the exterior of the vessel (3).

5,333,682

HEAT EXCHANGER TUBE

Xin Liu, Syracuse; Steven J. Spencer, Liverpool; Neelkanth S. Gupte, Syracuse; Robert H. L. Chiang, Liverpool, and Daniel Gaffaney, Chittenango, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 13, 1993, Ser. No. 120,197
Int. Cl.[5] F28F *1/26*
U.S. Cl. 165—133 **10 Claims**

1. An improved heat exchanger tube (10) for transferring heat between a fluid flowing through the interior of said tube and a boiling fluid that is in contact with the exterior surface (12) of said tube of the type having

at least one fin convolution (21) formed on said exterior surface,

said fin convolution extending

helically along the longitudinal axis of said tube and radially from said exterior surface and having

a root (22) joined to said exterior surface,

a body (23) extending from said root and having two opposite shoulders (25) and

a distal tip (24) extending from said body, and

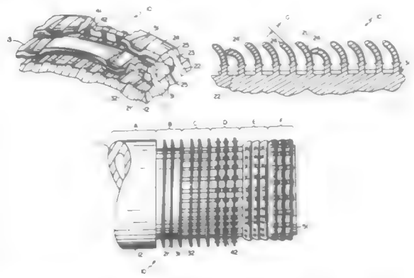
a groove (31) portion of said exterior surface formed be-

VOL 1165 ISS 1 AG 2 1994 UMI

tween adjacent turns of said fin convolution in which the improvement comprises:

notches (41) in said shoulders,

raised teeth (32) extending from said external surface in said groove portion and



said distal tip being inclined so that said tip overlies an adjacent groove to form a subsurface channel having an opening between said distal tip and an adjacent turn of said fin convolution.

5,333,683

INDIRECT HEAT EXCHANGER

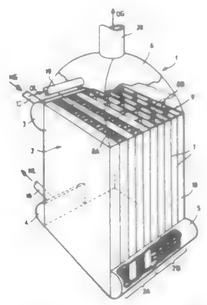
Pascal Arrinlou, Saint Maurice; Alain Greland, La Queue En Brie, and Francois Venet, Paris, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Dec. 11, 1992, Ser. No. 989,387

Claims priority, application France, Dec. 11, 1991, 91 15381

Int. Cl.[5] F17C *9/02*

U.S. Cl. 165—166 10 Claims



1. An indirect heat exchanger comprising a series of parallel plates delimiting between themselves passages of generally flat form containing undulant spacers, a first series of said passages constituting thermal exchange passages, inlet/outlet means for inlet and outlet of fluids adapted to exchange heat with each other; and further comprising over at least a portion of its length and of its width, added passages in reduced or no heat exchange relation with the thermal exchange passages and fulfilling at least one fluid handling function within the heat exchanger.

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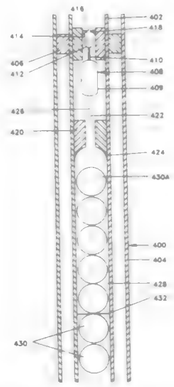
DOWNHOLE GAS SEPARATOR

James C. Walter, Austin; Billy R. Bruton, Longview, and George E. Walter, Jr., Tyler, all of Tex., assignors to James C. Walter, Austin, Tex.

Continuation-in-part of Ser. No. 480,952, Feb. 16, 1990, Pat. No. 5,127,803. This application Apr. 2, 1992, Ser. No. 862,424

Int. Cl.[5] E21B *43/38*

U.S. Cl. 166—54 9 Claims



2. A tool for separating gas and water in a natural gas well, comprising:

a body defining an upper chamber, a lower chamber and a channel interconnecting the upper and lower chambers;

a member in the lower chamber of the body having a density less than the water in the gas well;

a seal surface formed on the body about the channel, the member floating against the seal surface to seal the channel from the lower chamber when the level of water exceeds a predetermined height and floating away from the seal surface to release the seal, permitting gas to flow from the lower chamber to the upper chamber through the channel when the level of water decreases below the predetermined height, said member being a plurality of balls having a density less than that of the water within the well, the balls stacked vertically so that the uppermost ball moves into contact with the seal surface on the body.

5,333,685

WIRELINE SET AND TUBING RETRIEVABLE PACKER

Bruce Gilbert, 5208 Bluridge Ct., Fort Worth, Tex. 76112

Filed May 14, 1993, Ser. No. 61,437

Int. Cl.[5] E21B *23/00, 33/00*

U.S. Cl. 166—123 19 Claims

1. A retrievable packer for releasably securing to a setting tool in an unset position, running into a wellbore on a wireline and urging into a set position within a casing string, and securing to a tubing string and urging into a released position for retrieval from said wellbore, said retrievable packer comprising:

a mandrel having a tubular body and a central bore extending longitudinally therethrough;

a means for securing said mandrel to said tubing string;

a sleeve concentrically disposed about and slidably moveable in a longitudinal direction along said mandrel;

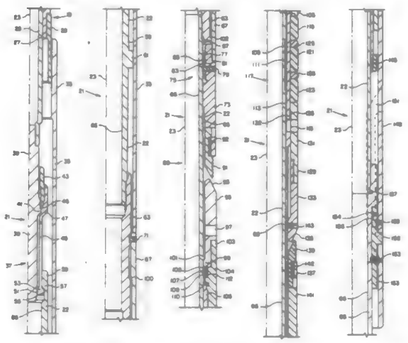
a packing means which extends concentrically about an exterior of said sleeve for urging to sealingly engage between said sleeve and said casing string when said retrievable packer is in said set position;

at least one slip assembly for urging to grippingly engage said casing string to secure said retrievable packer within said wellbore at said downhole position, said at least one slip assembly including a plurality of slips and a slip housing;

at least one ramped exterior surface for engaging said ramped inner surfaces of said slips and wedging between said mandrel and said slips for urging said slips radially outward to grippingly engage said casing string when said retrievable packer is urged into said set position.

a plurality of surfaces adjacent to said packing means for, when said retrievable packer is urged into said set position, pressing against said packing means to urge said packing means to sealingly engage between said casing string and said sleeve for preventing a wellbore fluid from flowing therethrough;

a setting sleeve concentrically coupled to said setting tool,



and releasably disposed about said mandrel for transferring a setting force from said setting tool to said retrievable packer for urging said retrievable packer into said set position, in which said retrievable packer grippingly and sealingly engages said casing string;

a positive locking means carried about said mandrel for positively locking said slip housing against upward movement relative to said mandrel while said setting sleeve is urging said retrievable packer to said set position;

a packer release latch carried about said mandrel for releasably securing said mandrel to said at least one slip assembly; and

a sealing means for sealing between said sleeve and said mandrel to prevent a wellbore fluid from passing therethrough when said retrievable packer is in said set position.

5,333,686

MEASURING WHILE DRILLING SYSTEM

Susanne F. Vaughan, Pflugerville, Tex., and Henry S. More, Los Altos, Calif., assignors to Tensor, Inc., Austin, Tex.

Filed Jun. 8, 1993, Ser. No. 73,785

Int. Cl.[5] E21B *47/00*

U.S. Cl. 166—250 24 Claims

1. Apparatus for producing positive pressure pulses in the downward flow of pressurized drilling mud by momentarily restricting the mud flow contained in an operating well drill string, comprising, in combination:

a tubular drill string segment serially mounted in the drilling string at a downhole location in the vicinity of the drilling tool;

a plurality of serially connected, tubular housings insertable within said tubular drill string segment;

a plurality of vertically spaced centralizing means mounted in said tubular drill string segment between the bore of said tubular drill string segment and the periphery of said serially connected tubular housings, thereby defining an annular passage for downward flow of pressurized drilling mud around the exterior of said tubular housings;

an orifice sleeve secured within the lower portion of said tubular drill segment below the lowermost one of said tubular housings;

said orifice sleeve defining a passage for downward flow of the pressurized drilling mud;

a hollow central plug projecting downwardly out of the downhole end of said lowermost tubular housing and being axially shiftable relative to the downhole end of said lowermost housing between a first position axially spaced from said orifice sleeve and a second position adjacent said orifice sleeve and thereby momentarily restricting the drilling mud flow through said orifice sleeve to produce a pressure pulse detectable at the well head;

a tubular shaft secured at one end to said plug and extending upwardly through said lowermost tubular housing;

an annular piston formed on the top end of said tubular shaft;

said piston having a downhole facing surface and an uphole facing end surface;

means in one of the lower tubular housings defining a cylinder surface sealingly cooperable with the periphery of said annular piston;

a first radial port means in said lower tubular housing for supplying pressured drilling mud to said piston's down-

hole facing surface, thereby urging said annular piston and said hollow central plug upwardly to said first position;

a compression spring engaging said uphole facing end surface of said annular piston to bias said annular piston and said central hollow plug downwardly;

a mud intake port means in said tubular housings for supplying pressurized drilling mud to said uphole facing end surface of said annular piston to combine with said spring bias to move said annular piston and said central hollow plug downwardly to said second position, thereby momentarily restricting the flow of pressurized drilling mud to produce an upward fluid pressure pulse detectable at the well heat;

a valve means for controlling the flow of pressurized drilling mud from said mud intake port means to said upwardly facing end surface of said annular piston;

a battery powered controller in the upper portions of said tubular housing;

a plurality of sensors in said upper portion of said tubular housings for respectively providing signals to said controller representing environmental conditions of the downhole drilling string; and

actuator means for said valve means receiving from said controller a positive pressure pulse command sequence for

VOL 1165 ISS 1 AG 2 1994 UMI

cycling said valve means between open and closed positions;

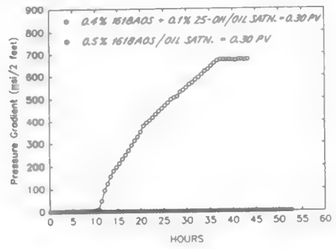
thereby producing a sequence of upward fluid pressure pulses detectable at the well head to transmit said well environmental conditions.

5,333,687

LONG CHAIN ALCOHOL ADDITIVES FOR SURFACTANT FOAMING AGENTS

William T. Osterloh, Missouri City, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 24, 1992, Ser. No. 996,265
Int. Cl.[5] F21B *43/18, 43/22, 43/24*
U.S. Cl. 166—272 8 Claims



1. In a steam flood or carbon dioxide flood in an underground hydrocarbon formation, wherein a surfactant foaming solution is injected to foam and reduce the permeability of swept zones, forcing steam or carbon dioxide into unswept zones, the improvement which comprises:

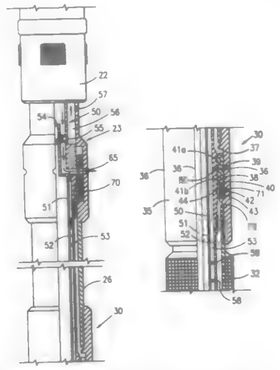
adding a long chain alcohol having about 8 to about 20 carbon atoms to the surfactant foaming solution in a concentration such that the ratio of alcohol to surfactant in the foaming solution is between about 1:6 and about 1:2.

5,333,688

METHOD AND APPARATUS FOR GRAVEL PACKING OF WELLS

Lloyd G. Jones, Dallas, and Tommy J. Yates, Coppell, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 7, 1993, Ser. No. 1,605
Int. Cl.[5] E21B *43/04, 43/08*
U.S. Cl. 166—278 11 Claims



4. Apparatus for gravel packing an interval of a wellbore, said apparatus comprising:

a plurality of gravel screen units connected together, each of said screen units comprising:

a gravel screen; and

a valve-outlet assembly connected to said screen, said assembly having at least one outlet and a valve which allows flow through said outlet when in an open position and blocks flow through said outlet when in a closed position; and

means for delivering gravel slurry through the interior of said gravel screen units to each of said at least one outlet in each said valve-outlet assembly; and

means for closing each said valve.

5,333,689

GRAVEL PACKING OF WELLS WITH FLUID-LOSS CONTROL

Lloyd G. Jones, Dallas, and Tommy J. Yates, Coppell, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Feb. 26, 1993, Ser. No. 23,454
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—278 12 Claims

1. A method of completing a well including installing a gravel pack completion adjacent a formation in a well, said method comprising:

flowing a fluid-loss agent into contact with said formation to form a barrier to flow into said formation wherein said fluid-loss agent is selected from the group consisting of crosslinked hydroxyethyl cellulose (HEC); calcium carbonate, and benzoic acid flakes;

positioning a screen in said well adjacent said formation; and

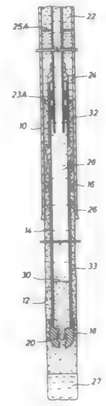
flowing a gravel slurry into said well and around said screen to deposit gravel around said screen, said gravel slurry including a removal agent which reacts with said fluid-loss agent to remove said barrier to flow into and from said formation while said gravel is being placed around said screen.

5,333,690

CEMENTING WITH BLAST FURNACE SLAG USING SPACER

James J. W. Nahm, and Reece E. Wyant, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 31, 1992, Ser. No. 999,750
Int. Cl.[5] E21B *33/16*
U.S. Cl. 166—291 19 Claims



18. A method for cementing a pipe in a wellbore comprising:

introducing a blast furnace slag cementitious slurry into said wellbore;

thereafter introducing a spacer fluid comprising granulated water-quenched blast furnace slag and water into said wellbore in direct fluid contact with said blast furnace slag cementitious slurry, said spacer fluid being essentially free of activators for said blast furnace slag; and

thereafter introducing a Portland cement cementitious slurry into said wellbore in direct fluid contact with said spacer fluid.

19. A method for drilling a well, comprising:

drilling a borehole with a drill string utilizing a drilling fluid, thus producing a used drilling fluid;

removing said drill string and disposing a pipe within said borehole, said used drilling fluid thus being disposed in said pipe and in an annulus surrounding said pipe;

introducing a spacer fluid comprising granulated water-quenched blast furnace slag and water into said pipe;

thereafter passing a cementitious slurry comprising water and blast furnace slag into said pipe; and

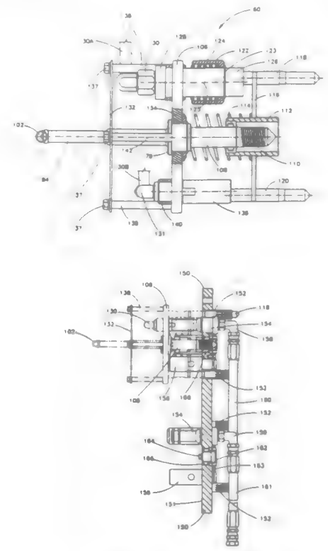
thereafter displacing said cementitious slurry into at least a portion of said annulus surrounding said pipe.

5,333,691

ROV INSTALLABLE JUNCTION PLATE AND METHOD

James L. Dean, Spring; Rodney K. Seto, Missouri City, and Sheldon L. Kovit, Houston, all of Tex., assignors to BHP Petroleum Pty Ltd. and FSSL, Incorporated, Melbourne, Australia

Filed May 25, 1993, Ser. No. 66,877
Int. Cl.[5] E21B *41/04;* F16L *35/00, 37/08*
U.S. Cl. 166—341 20 Claims



1. In a system including a movable junction plate assembly for interconnection with a fixed junction plate assembly of a subsea petroleum recovery tree, the movable junction plate assembly having one or more movable coupling components each supported on a movable junction plate, the movable coupling components being connected to a control pod assembly by one or more flexible lines, the fixed junction plate assembly having a corresponding one or more fixed coupling components each supported on a fixed junction plate for mated engagement with the movable coupling components transmitting communications between the control pod assembly and one or more tree components, the improvement comprising:

movable junction plate assembly having a connecting handle with a movable securing member at one end thereof for engagement with the fixed junction plate, one or more of alignment pins for positioning within respective apertures within the fixed junction plate for alignment of the respective movable and fixed coupling components, a locking member for securing the connecting handle to the movable junction plate when in a locked position while permitting rotation of the connecting handle with respect to the movable junction plate when in an unlocked position, and a biasing member for biasing the locking member to a locked position; and

the fixed junction plate assembly having a fixed securing member for engagement with the movable securing member on the connecting handle to interconnect the movable junction plate assembly and the fixed junction plate assembly, and one or more apertures within the fixed junction plate each for receiving a respective one of the plurality of alignment pins.

16. A method of connecting subsea coupling components in a system including a movable junction plate assembly for interconnection with a fixed junction plate assembly of a subsea petroleum recovery tree, the movable junction plate assembly having a connecting handle with a movable securing member at one end thereof, the movable junction plate assembly further having one or more movable coupling components each supported on a movable junction plate, the movable coupling components being connected to a control pod assembly by one or more flexible lines, the fixed junction plate assembly having a corresponding one or more fixed coupling components each supported on a fixed junction plate for mated engagement with the movable coupling components for transmitting communications between the control pod assembly and one or more tree components, the method comprising:

securing one or more alignment pins to the movable junction plate;

biasing a locking member supported by the movable junction plate assembly to a locked position for securing the connecting handle to the movable junction plate;

positioning the movable junction plate assembly for insertion of the one or more alignment pins within respective apertures provided in the fixed junction plate;

while the one or more alignment pins are within the respective apertures within the fixed junction plate, moving the locking member to an unlocked position; and

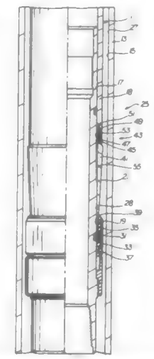
thereafter rotating the connecting handle to interconnect the movable securing member with a mating fixed securing member on the fixed junction plate assembly.

5,333,692

STRAIGHT BORE METAL-TO-METAL WELLBORE SEAL APPARATUS AND METHOD OF SEALING IN A WELLBORE

John L. Baugh, Houston, and George J. Melenyzer, Humble, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jan. 29, 1992, Ser. No. 827,411
Int. Cl.[5] E21B *33/128*
U.S. Cl. 166—387 22 Claims



1. A seal apparatus for use in a subterranean wellbore having

VOL 1165 ISS 1 AG 2 1994 UMI

a wellbore tubular disposed therein, said wellbore tubular defining a wellbore surface, comprising:

a conveyance tubular positionable within said subterranean wellbore at a selected location relative to said wellbore surface;

a sealing ring, disposed about at least a portion of said conveyance tubular, said sealing ring having a first surface proximate said conveyance tubular and a second surface, said second surface being a sealing surface with a plurality of portions, with selected ones of said plurality of portions of said sealing ring extending radially from said conveyance tubular in at least one radial dimension and defining at least one metal seal point for selective sealing engagement with said wellbore surface;

wherein said seal apparatus is operable in a plurality of modes of operation, including:

running mode of operation wherein said sealing ring is maintained in a radially-reduced position, out of engagement with said wellbore surface;

a sealing mode of operation, wherein said at least one metal seal point of said sealing ring in sealing metal-to-metal engagement with said wellbore surface, providing a fluid-tight seal at a selected location between said conveyance tubular and said wellbore tubular;

a layer of resilient material disposed over at least a portion of said sealing surface of said sealing ring, said layer of resilient material having an inner surface in engagement with said plurality of portions of said sealing ring, with said selected ones of said plurality of portions of said sealing ring extending radially outward and into said layer of resilient material, and in gripping engagement therewith, to prevent said layer of resilient material from swabbing-off during said running mode of operation;

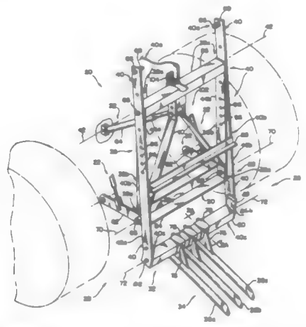
an actuator member, selectively and remotely actuable, for urging said sealing ring between said running and sealing modes of operation.

5,333,693

TRACTOR MOUNTED IMPLEMENT FOR REMOVING TREE STUMPS AND THE LIKE BURIED IN THE GROUND

Donald R. Severeid, 12512 164th St. East, Puyallup, Wash.

Filed Jul. 10, 1992, Ser. No. 911,911
Int. Cl.[5] A01G *23/06*
U.S. Cl. 171—82 19 Claims



1. A multiple use tractor mounted implement for removing objects buried below the surface of the ground for attachment to tractors of the type having a conventional three point connection, the implement comprising:

a first elongate component having a first end, a second end, and a body disposed therebetween, the first end of the first component being adapted to pivotally connect to a conventional three point connection of a tractor for pivotal movement about a horizontal axis;

a second elongate component having a first end, a second end, and a body disposed therebetween the second component being pivotally connected to the first component such that first and second components so connected pivot about a horizontal axis, the first and second components being so attached to form an articulating structure that can shift between a first, retracted position, and a second extended position; a forked assembly fixedly attached to the second end of the second component, the forked assembly having at least two tines;

the forked assembly so attached being disposed to releasably engage the buried object while the articulating structure is in the retracted position, wherein forward movement of the tractor shifts the articulating structure to the second extended position, wherein the forked assembly rotates and lifts the buried object from the ground responsive to the articulating structure shifting to the second extended position; and

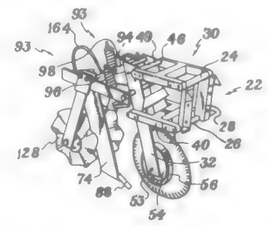
wherein the forked assembly is rotatably adjustable to preselected positions about a horizontal axis that extends normal to the direction of the tines.

5,333,694

STRIP-TILL SEED BED PREPARATION APPARATUS

David C. Roggenbuck, 4595 Curry Rd.; Paul Roggenbuck, 575 Germania, and Vincent Roggenbuck, 645 N. Germania Rd., all of Snover, Mich. 48472

Filed May 1, 1992, Ser. No. 877,216
Int. Cl.[5] A01B *49/02, 61/00*
U.S. Cl. 172—156 36 Claims



1. Strip-till seed bed preparation apparatus for preparing longitudinal, laterally spaced apart parallel rows of surface soil in a residue laden field for the planting of seeds comprising:

a main frame adapted to be coupled to a draft vehicle;

a plurality of laterally spaced apart gang assemblies;

each of said gang assemblies comprising;

a chassis

means mounting said chassis for swinging movement on said main frame;

rotatable wheel means rotatably mounted on said chassis for supporting said chassis on the soil surface so that said chassis follows the contour of the soil being transversed as the chassis is forwardly moved by said draft vehicle and including

disk means for cutting said soil surface to a predetermined depth below the surface of the soil;

soil loosening means mounted on said chassis for movement therewith including soil lifting means receivable below the surface of said soil, said soil lifting means including

blade means mounted on said chassis rearwardly of but in longitudinal alignment with, said disk means for movement on said chassis,

said blade means having an above surface portion and a sub-surface portion for penetrating the soil to a depth greater than said predetermined depth below the surface of said soil;

said soil lifting means being mounted on the lower end of said blade means for lifting and loosening a longitudinal strip of surface soil as said soil lifting means forwardly moves; and

soil pulverizing means for working and crumbling the lifted soil to prepare a seed bed including

a pair of rotatable, disk means on laterally opposite sides of said blade means in longitudinally overlapping relation with said blade means for laterally holding and sandwiching, the lifted soil between said above surface portion of said blade means and said rotatable disk means to pulverize said lifted soil;

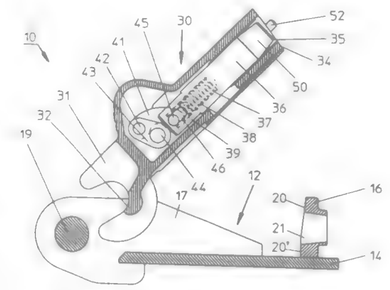
said rotatable wheel means including depth control means for controlling the depth of penetration of said blade means below said soil surface.

5,333,695

QUICK CHANGE DEVICE

Karl-Heinz Walter, Baden-Baden, Fed. Rep. of Germany, assignor to Lehnhoff Hartstahl GmbH & Co., Baden-Baden, Fed. Rep. of Germany

Filed Jul. 9, 1992, Ser. No. 911,185
Claims priority, application Fed. Rep. of Germany, May 8, 1992, 4214569
Int. Cl.[5] A01B *51/00;* B25G *3/00;* B60C *23/00*
U.S. Cl. 172—272 7 Claims



1. A quick change device for changing working implements separably connectable to an earth moving machine by means of an adaptor housing mounted on a jib of the earth moving machine to be releasably coupled with an adaptor plate arranged on each working implement, said quick change device comprising:

a. coupling surfaces rigidly arranged on the adaptor housing and the adaptor plate being formed as spaced apart and oppositely confronting;

b. a cylindrical pair of the coupling surfaces being formed by a coupling spindle rigidly arranged on the adaptor plate and a cylindrically shaped abutment surface rigidly arranged on the adaptor housing;

c. the cylindrically shaped abutment surface on the adaptor housing being arranged between a pair of holding claws, and the coupling spindle on the adaptor plate being disposed so that the holding claws can engage at least partially around the coupling spindle on the adaptor plate so that the cylindrically shaped abutment surface on the adaptor housing can engage an outside surface of the coupling spindle on the adaptor plate;

d. a plane pair of the coupling surfaces having flat faces disposed at an angle to an imaginary plane passing through both pairs of coupling surfaces;

e. the adaptor housing containing movable locking bolts disposed to be movable through apertures in the plane coupling surface of the adaptor housing; and

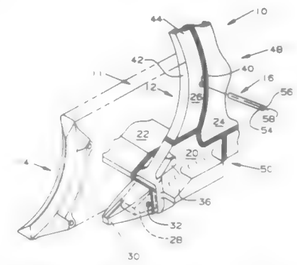
f. the plane coupling surface of the adaptor plate being formed on a locking bolt plate having a pair of apertures disposable in registry with the apertures in the adaptor housing for receiving the locking bolts when the plane coupling surfaces of the adaptor housing and the adaptor plate are juxtaposed.

5,333,696

REVERSIBLE PROTECTOR FOR A WORK MEMBER

Erwin D. Cornelius, Bloomington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Nov. 2, 1992, Ser. No. 970,458
Int. Cl.[5] A01B *15/00;* E02F *9/28*
U.S. Cl. 172—772 12 Claims



1. A reversible protector adapted to mount on and protect a work member having a leading edge and side surfaces, the work member has a transverse hole defined therein for receiving a retaining mechanism and at least one protuberance spaced from the transverse hole and located on one side thereof to aid in securing the reversible protector to the work member, the reversible protector comprising:

a front wall;

a pair of laterally spaced side walls each having an upper end portion, a lower end portion, an outer side, and an inner side and being connected to the front wall;

a channel being defined in the reversible protector by the front wall and the laterally spaced side walls;

a recess being defined in the lower end portion of one of the side walls on the inner side thereof adjacent the channel, the recess in the lower end portion of the one of the side walls being adapted, when assembled, to receive, overlie, and protect the protuberance located on the work member;

another recess being defined in the upper end portion of the other of the side walls on the inner side thereof adjacent the channel and operative to permit the protector to be assembled in the reverse direction;

an opening being defined in the upper end portion of one of the side walls, the opening in the upper end portion of the one of the side walls being adapted, when assembled, to substantially align with the transverse hole in the work member and to receive the retaining mechanism; and

another opening being defined in the lower end portion of one of the side walls and operative to align with the transverse hole in the work member to receive the retaining mechanism when the protector is assembled in the reverse direction.

5,333,697

FLIP BLOCK ASSEMBLY FOR CHANGING DOZER BLADE PITCH

Claude M. Frisbee, Schofield, and Ronald H. Werner, Edgar, both of Wis., assignors to Case Corporation, Racine, Wis.

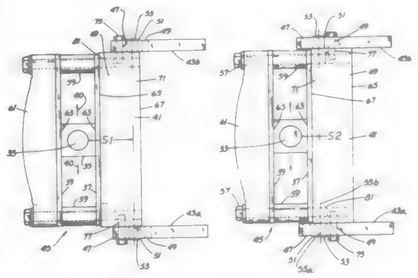
Filed Dec. 17, 1992, Ser. No. 992,465
Int. Cl.[5] E02F *3/815*
U.S. Cl. 172—821 11 Claims

1. In a dozer blade pitch adjustment assembly having a blade pivot pin spaced from a reference line on a dozer blade assembly, the improvement comprising:

a single flip block mounted to the blade assembly for pivot-

VOL 1165 ISS 1 AG 2 1994 UMI

ing movement about a pivot axis, such movement being between a first position and a second position,
and wherein:



the spacing maintained between the pivot pin and the reference line is changed by pivoting the block from one position to the other position.

5,333,698

WHITE MINERAL OIL-BASED DRILLING FLUID

Donald C. Van Slyke, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 21, 1993, Ser. No. 65,644
Int. Cl.[5] E21B *43/00*
U.S. Cl. 175—65 100 Claims

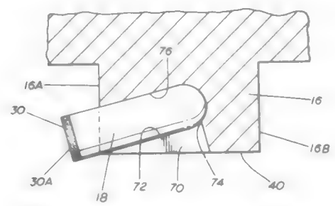
1. A wellbore fluid comprising:
(a) at least one additive selected from the group consisting of emulsifiers, wetting agents, viscosifiers, weighting agents, fluid loss control agents, proppants for use in hydraulically fracturing subterranean formations, and particulate agents for use in forming a gravel pack; and
(b) a white mineral oil having (i) an API gravity at 15.6° C. (60° F.) greater than 35, (ii) a content of compounds containing 14 or more carbon atoms of at least about 95 weight percent, and (iii) a pour point of at least about −30° C. (−22° F.).

5,333,699

DRILL BIT HAVING POLYCRYSTALLINE DIAMOND COMPACT CUTTER WITH SPHERICAL FIRST END OPPOSITE CUTTING END

Gary M. Thigpen, County of Harris, and William H. Sherwood, both of County of Harris, Tex., assignors to Baroid Technology, Inc., Houston, Tex.

Filed Dec. 23, 1992, Ser. No. 995,814
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—431 28 Claims



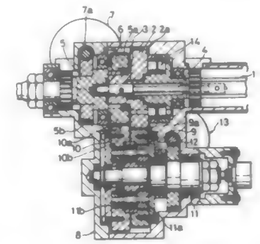
1. A drag bit for drilling oil and gas wells, comprising:
a hard metal body having an end face, said end face defining a plurality of upsets each having a top surface and a leading edge surface, at least one of said top surfaces having at least one pocket milled therein, said at least one pocket having a semi-spherical first end and a second end intersecting said leading edge surface, the shape in cross-section of said second end being semi-circular at the intersection of said second end of said pocket with said leading edge surface; and
a cutting structure brazed into said at least one pocket, said cutting structure having a spherical first end at least partially conforming to the said first end of said pocket and a second end defining a polychrystalline diamond compact cutting face.
11. A cutting structure for a drag bit, comprising:
a tungsten carbide, cylindrically-shaped center portion having a spherical first end and a second end defining a polycrystalline diamond compact cutting surface, said cutting surface being in a plane orthogonal to the longitudinal axis of said cutting structure.

5,333,700

STEERING SYSTEM FOR A MOTOR VEHICLE

Toyohiko Mouri, Ohta City, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 928,775
Claims priority, application Japan, Aug. 26, 1991, 3-238809
Int. Cl.[5] B62D *6/00*
U.S. Cl. 180—79.1 3 Claims



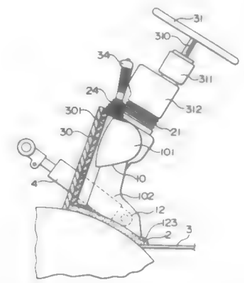
1. A steering system for a motor vehicle having, an input shaft connected with a steering wheel via a first torque sensor for steering said motor vehicle, an output shaft coaxially connected to said input shaft for transmitting a steering force from said steering wheel to a pinion shaft via a second torque sensor, and an assist motor meshed with said output shaft via a worm gear for assisting said steering force, an improvement of the system which comprises:
an input shaft sleeve coaxially interposed between said input shaft and said output shaft for transmitting said steering force to said output shaft;
a first gear formed on an outside periphery of said sleeve;
a second gear formed on an outside periphery of said output shaft;
an input ring gear meshed with said first gear and provided in a gear ratio changing mechanism;
an inside input gear formed inside said input ring gear;
an input planetary gear meshed with said inside input ring gear and supported by a carrier;
an output planetary gear supported by said carrier and being coaxial with said input planetary gear;
an output ring gear meshed with said second gear and being coaxial with said input ring gear;
an inside output gear formed inside said output ring gear and meshed with said output planetary gear;
stopper means formed between said input shaft and said output shaft for restricting a rotational and relative movement therebetween; and
a motor connected with said carrier via a reversible gear for changing a gear ratio of said input and output planetary gears so as to stop said gear ratio changing motor when said steering torque is larger than a predetermined value and to rotate said gear ratio changing motor when a steering torque based on said steering force is smaller than said predetermined value;
said gear ratio changing motor becoming free to rotate when said steering torque is larger than said predetermined value so as to effectively absorb a shock exerted from said output shaft and to be widely and easily used for any types of said steering system.

5,333,701

INSTRUMENT PANEL FOR INDUSTRIAL VEHICLE

Akira Izumi, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Dec. 17, 1992, Ser. No. 992,457
Claims priority, application Japan, Dec. 27, 1991, 3-360147
Int. Cl.[5] B60K *37/00*
U.S. Cl. 180—90 16 Claims



1. An instrument panel for a fork-lift truck which truck has a driver's seat in front of which is: a toe board, left and right side pillars, and right and left actuating cylinders for tilting a mast assembly; said cylinders being mounted above said toe board respectively adjacent said left and right side pillars; said instrument panel being mountable between said pillars in front of the driver's seat extending upwardly from a lower end which is adjacent said toe board, said instrument panel comprising:
a switch portion which is formed integral with said instrument panel and in which switches are arranged;
a respective cylinder cover formed integral with said instrument panel for covering at least a portion of each of said actuating cylinders that faces said driver's seat;
a noise insulating seal member for disposition at said lower end of said instrument panel for engaging said toe board to establish a seal therebetween; and
a rigid protecting panel for mounting at the rear of said instrument panel as viewed from said driver's seat and extending between said pillars.

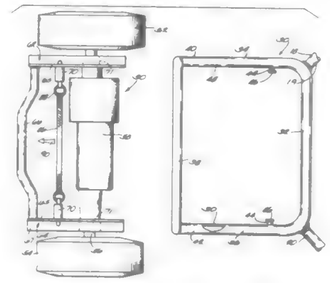
5,333,702

THREE WHEEL SCOOTER WITH QUICK RELEASE REAR MOTOR AND WHEEL ASSEMBLY

Edward J. Gaffney, Pewaukee, and Jhy-hong Lin, Milwaukee, both of Wis., assignors to Ortho-Kinetics, Inc., Waukesha, Wis.

Continuation of Ser. No. 559,301, Jul. 30, 1990, abandoned. This application Aug. 20, 1993, Ser. No. 110,617
Int. Cl.[5] B62D *61/00*; B62K *15/00*
U.S. Cl. 180—208 9 Claims

1. A personal mobility vehicle comprising
a frame having spaced, generally parallel rear frame members,
a drive assembly positioned beneath the rear frame members, and
means for detachably connecting the drive assembly beneath the rear frame members, the means including spaced, parallel vertically oriented brackets secured to either the drive assembly or the rear frame members,
a flat surface on the top of the drive assembly on which a portion of the rear frame members can be supported, and



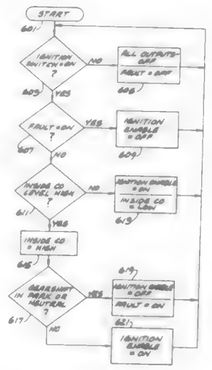
quick release means comprising spring loaded retractable pin means that extend through aligned apertures passing through the brackets and into the rear frame members for releasably fastening the drive assembly to the frame to afford easy installation and removal of the drive assembly.

5,333,703

CARBON MONOXIDE SENSOR AND CONTROL FOR MOTOR VEHICLES

Robert C. James, Bonita Springs, Fla., and Dale M. Cherney, Howards Grove, Wis., assignors to The Thames Group Ltd., Bonita Springs, Fla.

Filed Jan. 7, 1993, Ser. No. 1,641
Int. Cl.[5] B60K *28/10, 28/00*
U.S. Cl. 180—271 50 Claims



1. A system for monitoring carbon monoxide (CO) levels produced by a vehicle having an engine and having a passenger compartment, the operation of the engine producing CO as a by-product, said system comprising:
a detector in the passenger compartment for detecting the concentration of CO inside the compartment;
means for generating a HIGH CO signal when the detected concentration of CO inside the compartment is greater than a predetermined level;
means for disabling the operation of the engine in response to the HIGH CO signal and preventing re-enabling of the operation of the engine during periods when the HIGH CO signal is present;

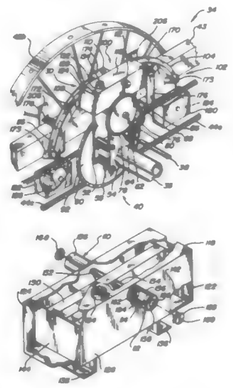
VOL 1165 ISS 1 AG 2 1994 UMI

means for sensing a status condition of the vehicle; and
means for inhibiting the disabling of the engine when the sensing means senses the status condition.

5,333,704
ROTATING LUBRICATING TECHNIQUE FOR EQUIPMENT

John Hoff, 10661 South Hoff La., Idaho Falls, Id. 83406

Filed Apr. 1, 1993, Ser. No. 41,697
Int. Cl.[5] F16N 7/16
U.S. Cl. 184—11.4 25 Claims

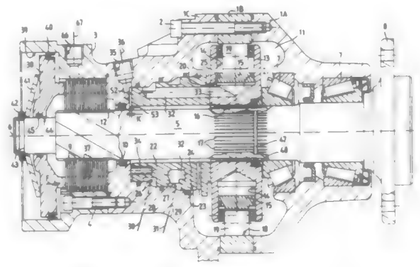


1. A lubrication device for applying lubricant to a lubrication point of a machine having a rotating component, comprising:
a reservoir having an internal volume of a predetermined size to contain lubricant within the reservoir;
an emitter connected in a fluid communication path with the reservoir and having an internal volume of a predetermined size substantially smaller than the internal volume of the reservoir, the emitter having an inlet through which lubricant enters the internal volume of the emitter an da drain port to allow the lubricant to drain from the emitter;
means connected to the emitter for moving the emitter through a movement path having a first portion of a second portion;
a lubricant delivery receptacle connected in the fluid communication path between the reservoir and the emitter and which is filled with a deliverable amount of the lubricant within the reservoir during movement of the emitter through the movement path, the lubricant delivery receptacle supplying the deliverable amount of lubricant to the emitter while segregating the lubricant within the receptacle from the remaining lubricant within the reservoir as the emitter moves through the first portion of the movement path;
the inlet of the emitter allowing the lubricant to enter the emitter only during the first portion of the movement path and preventing lubricant from draining from the emitter during the second portion of the movement path;
the drain port of the emitter allowing the lubricant within the emitter to drain from the emitter substantially only during the second portion of the movement path and inhibiting lubricant from draining from the emitter during the first portion of the movement path; and
the drain port located in the emitter relative to the position of the emitter during the second portion of the movement path to deliver the lubricant to the lubrication point.
21. A method of applying lubricant to a lubrication point of a machine having a rotating component, comprising the steps of:
containing lubricant within a reservoir having an internal volume of a predetermined size;
utilizing an emitter having an internal volume of a predetermined size substantially smaller than the internal volume of the reservoir, the emitter having an inlet through which lubricant enters the internal volume of the emitter and a drain port to allow the lubricant to drain from the emitter;
rotating the emitter in a circular movement path, the circular movement path having a first portion and a second portion;
filling a lubricant delivery receptacle with a deliverable amount of the lubricant within the reservoir during movement of the emitter through the circular movement path;
segregating the lubricant within the receptacle from the remaining lubricant within the reservoir during the first portion of the movement path;
flowing lubricant from the lubricant delivery receptacle into the emitter through the inlet while the emitter is in the first portion of the circular movement path;
draining lubricant from the internal volume of the emitter through the drain port while the emitter is in the second portion of the circular movement path; and
delivering the lubricant drained from the emitter to the lubrication point.

5,333,705
ASSEMBLY OF A HYDRAULIC MOTOR AND BRAKE

Gilles Lemaire, Margny Les Compiegne, and Marc Perot, Eve, both of France, assignors to Poclain Hydraulics, Verberie, France

Filed Nov. 5, 1992, Ser. No. 972,245
Claims priority, application France, Nov. 20, 1991, 91 14339
Int. Cl.[5] B60T 1/06; B60K 7/00
U.S. Cl. 188—71.5 15 Claims

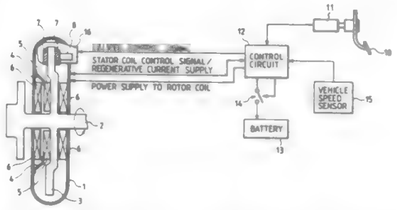


1. An assembly of a hydraulic motor and a brake comprising:
a motor frame,
a rotatable brake shaft,
a hydraulic motor including a cylinder-block connected for common rotation with said brake shaft, fluid distributor valve means for controlling flow of fluid to and from said cylinder-block to operate said hydraulic motor and comprising jack means for urging a distribution face on said valve means against a communication face of said cylinder-block,
a bearing between said frame and said cylinder-block, said bearing receiving a thrust force from said jack means via said valve means and said cylinder-block, said thrust force acting in a direction substantially parallel to an axis of rotation of said brake shaft,
two groups of braking members, one group secured to said frame, and the other group secured to said brake shaft,
means for producing relative axial movement between said brake shaft and said frame to engage the two groups of braking members during a braking operation,
brake release means for producing relative axial movement between said brake shaft and said frame to disengage the two groups of the braking members when the brakes are released, and
means connecting the brake shaft and the cylinder-block for common axial movement by said brake release means, when the brakes are released, to produce an axial force acting on said cylinder-block in a direction opposite said thrust force to relieve the effect of the thrust force acting on said bearing.

5,333,706
BRAKE APPARATUS FOR A VEHICLE

Masatomo Mori, Chiba, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research and Development Centre Ltd., Saitama, both of Japan

Filed Oct. 16, 1992, Ser. No. 962,099
Claims priority, application Japan, Oct. 22, 1991, 3-273899; Jan. 13, 1992, 4-004141
Int. Cl.[5] B60T 8/50
U.S. Cl. 188—156 16 Claims



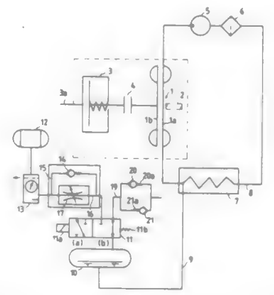
1. A brake apparatus for a vehicle having a brake pedal, a wheel, and a shaft connected to the wheel, the brake apparatus comprising:
a stator;
a rotor fixed on the shaft;
a rotor coil mounted by said rotor;
a stator coil mounted by said stator;
a brush having an end contacting said rotor coil and a base part fixed to said stator;
a first sensor coupled with the brake pedal for producing a first signal indicative of a depressing force exerted on the brake pedal by a vehicle driver;
an electrical actuator operable, upon activation, to press a pad against a surface of said rotor and thereby produce frictional braking of the vehicle wheel; and
control means electrically connected to said first sensor, said actuator, and one of said stator and rotor coils, said control means selectively applying electrical power to activate said actuator and electrical power to energize said one of said stator and rotor coils to produce electromagnetic braking of the vehicle wheel, such as to coordinate frictional braking and electromagnetic braking in a manner to decelerate the vehicle according to a braking demand of the driver indicated by said first signal.

5,333,707
CONTROLLER FOR RETARDER

Naoki Kaneda, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 691,972, Apr. 26, 1991, abandoned.
This application Dec. 18, 1992, Ser. No. 5,426
Claims priority, application Japan, Apr. 27, 1989, 2-110550
Int. Cl.[5] B60T 10/02; F16D 57/02
U.S. Cl. 188—296 6 Claims

1. A controller for a retarder in a vehicle having a front and rear wheels, said controller comprising:
a fluid-storage-type retarder having a stator and a rotor, said rotor attached to a rotary shaft which is rotated together with the rear wheels of the vehicle for generating a braking torque, said retarder always storing a fluid;
a reservoir tank in fluid communication with said retarder;
means for producing a plurality of stationary levels of pressure in said reservoir tank;
means for selecting one of said plurality of stationary levels of pressure to be produced in said reservoir tank; and
pressure regulation means in atmospheric communication

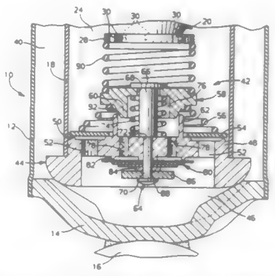


with said reservoir tank for imparting a predetermined restriction to pressurized air which flows into said reservoir tank in accordance with the selected stationary level of pressure which is produced in said retarder, wherein said restriction to pressurized air flow causes a pressure in said reservoir tank to be higher than said selected stationary level of pressure for a predetermined period associated with the selected stationary level of pressure starting when said braking torque is initially generated by said retarder.

5,333,708
COMPRESSION CUT-OFF VALVE FOR A HYDRAULIC DAMPER

Eric L. Jensen, Dayton; Rachel J. Belvo, Miamisburg, and Randall L. Derr, Bellbrook, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1993, Ser. No. 2,554
Int. Cl.[5] F16F 9/49
U.S. Cl. 188—322.14 7 Claims

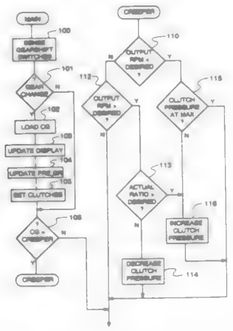


1. A compression valve assembly for a vehicular suspension damper having a fluid-filled cylinder tube, the valve assembly comprising:
(a) a cylinder end sealing a lower end of the cylinder tube;
(b) a first plurality of openings in the cylinder end for fluid flowing into the cylinder tube;
(c) means for controlling fluid flow through the first set of openings;

VOL 1165 ISS 1 AG 2 1994 UMI

(d) a second plurality of openings in the cylinder end for fluid flow out of the cylinder tube;
(e) means for controlling fluid flow through the second set of openings including a cap sprung away from the second set of openings in an open position;
(f) means for moving the cap to a second position to selectively reduce fluid flow through the second set of openings;
(g) an annular wall formed on the cylinder end; and
(h) a conical portion formed on the cap complementary to and receivable into the annular wall as the cap is moved to a second position.

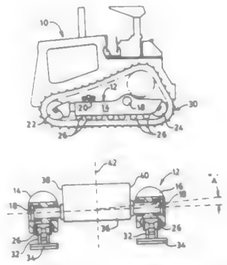
5,333,709
SLIPPING CLUTCH CREEPER
Garth H. Bulgrien, Ephrata, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.
Filed Dec. 17, 1992, Ser. No. 992,095
Int. Cl.[5] F16H *59/46;* B60K *41/02*
U.S. Cl. 74—335 11 Claims



1. In a transmission system having gears and a plurality of clutches for transmitting torque from an input member to an output member said clutches selectively connecting a rotatable input shaft to a rotatable output shaft at one of a plurality of output shaft to input shaft speed ratios including a lowest speed ratio, a method of driving said output shaft at a desired creeper speed such that the ratio of output shaft speed to input shaft speed is less than said lowest speed ratio, said method comprising the steps of:
a) establishing a value representing said desired creeper speed;
b) actuating said clutches to select said lowest speed ratio;
c) sensing the speed of said output shaft to develop an output shaft speed indication;
d) comparing said value representing said desired creeper speed to said output shaft speed indication; and,
e) in response to said comparison, controlling one of said clutches so that the torque transmitted by the clutch is reduced when said output shaft speed indication is greater than said value representing said desired creeper speed.

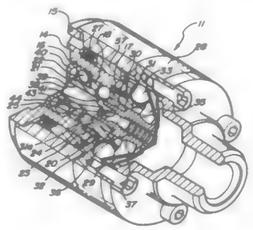
5,333,710
UNDERCARRIAGE FOR TRACK-TYPE MACHINE
Thomas E. Oertley, Dunlap, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Nov. 24, 1993, Ser. No. 157,765
Int. Cl.[5] B62D *55/00*
U.S. Cl. 180—9.5 13 Claims

1. An undercarriage structure for a tracktype machine having a main frame with said main frame having first and second sides and a vertically oriented centerline when said machine is viewed in a vertically oriented plane, said structure comprising:
a first roller frame assembly spaced from and positioned adjacent a first side of said main frame;
a second roller frame assembly spaced from and positioned adjacent a second side of said main frame;



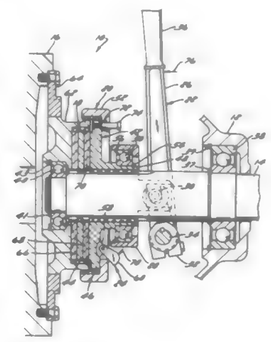
a first pivot shaft pivotally connecting said first roller frame assembly to said first side of said main frame;
a second pivot shaft pivotally connecting said second roller frame assembly to said second side of said main frame; and
means for positioning said first and second roller frame assemblies at an angle relative to said centerline of said main frame in said vertically oriented plane.

5,333,711
FREEWHEELING DEVICE FOR FOUR WHEEL DRIVE VEHICLES
Wolfgang Beigang, Ruppichteroth, Fed. Rep. of Germany, assignor to GKN Automotive AG, Siegburg, Fed. Rep. of Germany
Filed Jan. 21, 1993, Ser. No. 7,632
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1992, 4202086
Int. Cl.[5] F16D *11/00, 15/00, 41/04, 43/04*
U.S. Cl. 192—71 11 Claims



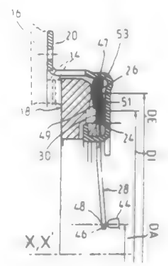
1. A lockable freewheeling device, for providing a driving connection between non-permanently driven wheels of a rear axle and wheels of a permanently driven front axle of a motor vehicle, the freewheeling device comprising:
two freewheeling parts, one of said parts being driven and other one intended to pass on the rotational movement, one of said freewheeling parts including a sleeve-shaped portion with circumferentially distributed apertures, locking members are held in said apertures in a radially displaceable way, the other freewheeling part including circumferentially distributed recesses corresponding to said apertures, a switching element being axially displaceable and being coupled with said sleeve-shaped portion, a spring pushing said switching element into a position where said locking members are held in said recesses and, as a function of speed, said locking members may be moved into a releasing position via a switching device moving against the force of the spring, said switching device including a switching cage and centrifugal masses, said masses being radially displaceable as a function of speed and being supported on supporting faces of one of the freewheeling parts and said switching cage, said faces being inclined relative to one another in such a way that, under the effect of the centrifugal force, the switching cage being axially adjusted relative to the freewheeling part being rotatable relative to one another and said switching cage and other freewheeling part being rotatable relative to one another to a limited extent between two end positions, in one end position, via said spring loading the switching cage, said switching cage and freewheeling part being pushed into a non-rotating, form-fitting connection relative to one another and, in the other end position, being axially supported relative to one another in a force-locking way.

5,333,712
SYNCHRONIZED CLUTCH
Janet M. Sabee, Franksville, and Joseph C. Terranova, New Berlin, both of Wis., assignors to Twin Disc, Incorporated, Racine, Wis.
Filed Apr. 14, 1993, Ser. No. 47,223
Int. Cl.[5] F16D *23/04, 23/10, 43/24*
U.S. Cl. 192—53 B 25 Claims



1. A system comprising:
(A) a drive element;
(B) a synchronized clutch for selectively coupling said driven element to said drive element, said synchronized clutch including
(1) a driven element,
(2) a non-positive coupling, responsive to external actuation forces, which nonpositively couples said driven element to said drive elements to accelerate said driven element;
(3) a positive coupling which positively couples said driven element to said drive element; and
(4) a velocity controlled actuator which employs centrifugal forces to actuate said positive coupling to positively couple said driven element to said drive element only upon acceleration of said driven element above a designated velocity.

5,333,713
FRICTION CLUTCH
Raymon Hagnere, and Pierre Warnke, both of Amiens, France, assignors to Valeo, Saint-Ouen Cedex, France
Filed Aug. 20, 1993, Ser. No. 109,523
Claims priority, application France, Aug. 21, 1992, 92 10194
Int. Cl.[5] F16D *13/44*
U.S. Cl. 192—89.22 10 Claims



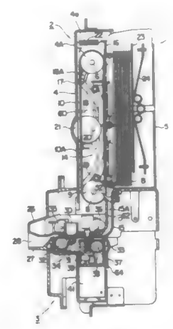
1. A friction clutch comprising: a cover plate; a pressure plate; and a resilient diaphragm between the said cover plate and pressure plate, the said diaphragm comprising an outer peripheral portion of substantially annular shape, defining a Belleville ring, and a series of resilient fingers extending radially inwardly from the said outer peripheral portion, the said fingers having free ends, the cover plate, pressure plate and diaphragm together defining an axis of the clutch, the said free ends of the diaphragm fingers being arranged for cooperation with a clutch maneeuvring member displaceable parallel to the said clutch axis, the said outer annular peripheral portion of the diaphragm having two opposed thrust faces, the pressure plate defining a first engagement element in facing relationship with the diaphragm for cooperation with one said thrust face, and the cover plate having an internal face defining a second engagement element in facing relationship with the diaphragm for cooperation with the other said thrust face, wherein the clutch further includes a sheath at least partly enveloping the said outer annular peripheral portion of the diaphragm, the sheath having two annular flanks positioned against the respective opposed thrust faces of the diaphragm, each said flank defining an annular projecting element which projects axially and defines a convexity oriented axially towards a respective one of the said first and second engagement elements, these engagement element are surface portions defined respectively on the pressure plate and on the said internal face of the cover plate in facing relationship with the corresponding said projecting elements of the sheath.

5,333,714
BILL DISCRIMINATING APPARATUS
Masayuki Watabe, Moroyama; Yoshinori Maruyama, Kawagoe, and Takashi Ono, Sakado, all of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan
Filed Sep. 10, 1992, Ser. No. 943,431
Claims priority, application Japan, Sep. 12, 1991, 3-233414
Int. Cl.[5] G07D *7/00*
U.S. Cl. 194—206 6 Claims

1. A bill discriminating apparatus of the type comprising:
a bill discriminating unit including a feed conveyer for receiving and conveying bills, and bill discriminating means arranged in the vicinity of the feed conveyer, the feed conveyer having a drive pulley with a drive shaft and a driven pulley and an endless belt extending between the drive pulley and the driven pulley;
drive means for driving the drive pulley of the feed conveyer;
a bill stacking unit including stacking means for stacking bills, a stack conveyer for conveying bills to the stacking

VOL 1165 ISS 1 AG 2 1994 UMI

means and having a drive pulley with a drive shaft, and guide means for receiving bills from the feed conveyer and for guiding the bills to the stack conveyer, the bill stacking unit being adapted for detachable attachment to the bill discriminating unit at both an up-stacking position and a down-stacking position, wherein: at the up-stacking position the stacking means is arranged at a position higher than the bill discriminating unit; and at the down-stacking position the stacking means is arranged at a position lower than the bill discriminating unit;



detachably attaching means for detachably attaching the bill stacking unit to the bill discriminating unit at both the up-stacking position and the down-stacking position; and

torque transmitting means for transmitting a torque from the drive means to the drive pulley of the stack conveyer, said torque transmitting means comprising a first spur gear mounted around the drive shaft of the drive pulley of the feed conveyer, a second spur gear mounted around the drive shaft of the drive pulley of the stack conveyer, and a gear train adapted to mesh with the first and second spur gears for transmitting the torque from the first spur gear to the second spur gear.

5,333,715

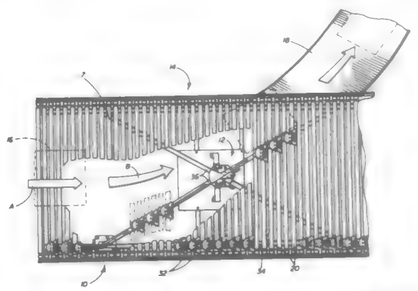
SORTING CONVEYOR SYSTEM AND DIVERT SWITCH AND CROSSOVER SWITCH FOR SAID SYSTEM

Gordon K. Sapp, Danville, Ky., assignor to FKI Industries, Inc., Fairchild, Conn.

Continuation-in-part of Ser. No. 807,493, Dec. 16, 1991, Pat. No. 5,217,105. This application Nov. 20, 1992, Ser. No. 980,195

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—372 **15 Claims**



1. A divert switch for a sorting conveyor system having pusher elements that selectively engage and direct articles from a main conveyor to a lateral takeaway conveyor, comprising:

a base for attachment to the main conveyor;

a switch arm connected to said base and movable between a home position for straight-through travel of said pusher elements and a divert position for directing said pusher elements to engage and direct said articles to said takeaway conveyor; and

means defined by rotary driving operation, but operative without linear-to-rotary motion conversion, for selectively actuating the movement of said switch arm to both said home and divert positions,

said selective actuating means comprising a rotary actuator energizable through a single-phase coil to generate limited rotary motion.

5,333,716

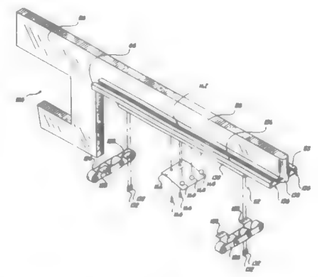
LINEAR FEEDER FOR VARYING SIZE ARTICLES

Kurt H. Hoppmann, Falls Church; Charles Vaughn, Stafford; Phillip S. Anderson, Sumerduck, and Werner H. Schmitt, Falls Church, all of Va., assignors to Hoppmann Corporation, Chantilly, Va.

Continuation-in-part of Ser. No. 956,662, Oct. 2, 1992, Pat. No. 5,236,077. This application Jun. 24, 1993, Ser. No. 82,284

Int. Cl.[5] B65B *47/24*

U.S. Cl. 198—380 **20 Claims**



1. An apparatus for producing an oriented single file of articles comprising:

a conveyor having a plurality of transverse grooves;

a plurality of vanes received in the grooves of said conveyor to form pockets therebetween for receiving articles, portions of said vanes extending beyond an edge of said conveyor;

a lateral support surface disposed beneath said extending vane portions and spaced apart from said conveyor edge to provide a drop zone therebetween;

switch means actuable by articles aligned in said pockets in a first direction; and

means, responsive to said switch means, for moving articles aligned in said first direction toward said transversely extending vane portions and onto said lateral support surface.

5,333,717

APPARATUS FOR SEPARATING CUVETTES

Burkard Rosenberg, Horw, and Gottlieb Schacher, Ebikon, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 19, 1993, Ser. No. 49,754

Claims priority, application Switzerland, Apr. 30, 1992, 1391/92

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—389 **12 Claims**

1. An apparatus for separating a plurality of cuvettes supplied in bulk form to an analytical instrument, the cuvettes being suitable for the performance of photometric measurements on samples contained in the cuvettes, and each cuvette being made in one piece from light-transmitting plastic and having a tubular body with two plane-parallel walls, and each plane-parallel wall having a flange attachment which extends outwards and at right angles to the plane-parallel walls, the flange attachments of the two plane-parallel walls being symmetrical with one another relative to the longitudinal axis of the cuvette, which apparatus comprises:

a) a receiving station for receiving cuvettes;

b) a device for separating the cuvettes, said device having an inlet through which the cuvettes are inserted into the device and an outlet through which the individual cuvettes successively leave the device, said device having:

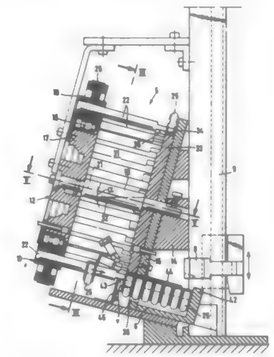
i) a base plate;

ii) a fixed plate mounted on the base plate and disposed at a predetermined angle to a vertical line;

iii) a bearing rod mounted on the fixed plate and disposed at right angles thereto, the bearing rod being inclined at a predetermined angle to a horizontal line;

iv) a rotatable disc rotatably mounted on the bearing rod and disposed parallel to the fixed plate, said disc having a peripheral edge;

v) a cylindrical arrangement of a plurality of equal-sized rods having two ends, the rods being equally spaced from each other around a circumference concentric



with the bearing rod, the rods being aligned parallel to the bearing rod and inclined at the same angle to a horizontal line as is the bearing rod, one end of each rod being permanently secured to the rotatable disc and the other end of the rod being free and separated from the fixed plate by a predetermined gap, and the distance between adjacent rods being just sufficient for the tubular body of the cuvette to enter between the adjacent cylindrical rods when the plane-parallel walls of the cuvette are parallel to the longitudinal axis of the rods, said fixed plate, rods and rotatable disc forming a cage-like structure;

vi) motor-driven means for rotating the rotatable disc at a predetermined speed;

vii) a fixed annular disc mounted on the fixed plate and having a central aperture for receiving the bearing rod, the peripheral edge of the disc being configured and dimensioned to be inside the arrangement of rods, and the distance between the rods and the peripheral edge of the fixed annular disc being slightly greater than the thickness of the flange attachment on the cuvettes; and

viii) a first opening in the fixed plate, positioned above the lowest portion of the fixed annular disc with respect to the vertical line of the fixed annular disc, the opening serving as the inlet for inserting cuvettes; and

c) means for conveying cuvettes from the receiving station to the inlet of the device.

5,333,718

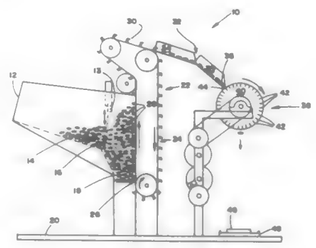
APPARATUS FOR HANDLING PLASTIC EATING UTENSILS

Lorris O. Pannell, 927 Belvedere Ct., Winston-Salem, N.C. 27127, and W. C. Faircloth, Jr., Rte. 13, Box 3075, Lexington, N.C. 27292

Filed Aug. 24, 1993, Ser. No. 111,129

Int. Cl.[5] B65G *47/22*

U.S. Cl. 198—397 **5 Claims**



1. An apparatus for handling plastic eating utensils comprising: a hopper for holding a plurality of elongated nonuniform eating utensils stacked upon one another in a substantial parallel relationship; means operable with the hopper for removing utensils from the hopper and moving the utensils in a substantially parallel relationship to a different location; feed means receiving the utensils from the removing means and directing the utensils to another location in a substantially parallel relationship; deposit means receiving the utensils from the feed means and selectively and singularly depositing the utensils at a remote location thereafter; and a selectively operable feed rate device positioned proximate the circular drum to regulate the rate of release of utensils from the circular drum, the feed means including means sensing the movement of a utensil and thereby operating the movement of the deposit means to receive the utensil, the hopper including means to vary the rate of removal of utensils from the hopper by the removing means, the utensil removing means including a conveyor having a first vertical directional portion and a second differing directional cooperating portion positioned adjacent the first portion to receive utensils therefrom and cause the received utensils to progress singularly to the feed means, and the deposit means including a circular drum rotatable about a horizontal axis having a plurality of utensil-receiving slots along its outer periphery.

5,333,719

DEVICE FOR POSITIONING NEBULIZER PUMPS DESTINED TO BE SCREWED TO LIQUID CONTAINERS

Gastone Piazza, Marmirolo, Italy, assignor to Alfa Costruzioni Meccaniche S.p.A., Mantova, Italy

Filed May 28, 1993, Ser. No. 69,284

Claims priority, application Italy, Sep. 24, 1992, PR92 A 000041

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—399 **6 Claims**

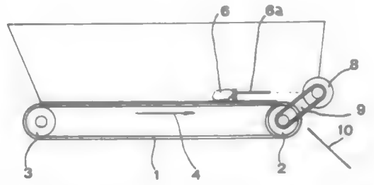
1. A device for positioning nebulizer pumps to be screwed to liquid containers comprising:

a conveyor belt being wound around a pair of drums one of said drums being rotatably driven by a motor, a plurality of pumps being loosely deposited on said conveyor belt;

a roller having a rotational axis that is parallel to a rotational axis of the drums, said roller being disposed in a position spaced above and forward of the drums, said roller being

VOL 1165 ISS 1 AUG 2 1994 UMI

disposed adjacent to one of said drums, in an unloading position of the pumps, such that a slit opening is disposed between said roller and said one of said drums to permit the pumps to pass through said slit opening when said



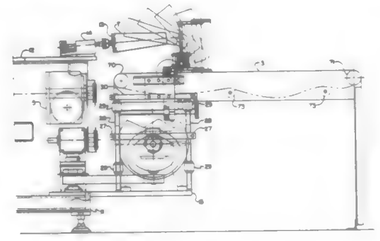
pump is disposed on said conveyor belt in an acceptable orientation and, when said pump is disposed on said conveyor belt in an unacceptable orientation, to cause said pump to interfere with said roller and be lifted up and tipped over into an acceptable orientation.

5,333,720

APPARATUS TO MANIPULATE WORKPIECES

John M. Zwigart, New Brighton; Mark R. Tweedy, Valencia, and Gary W. McCoy, Evans City, all of Pa., assignors to Carl Strutz & Co., Inc., Mars, Pa.

Filed May 14, 1992, Ser. No. 882,939
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—409 15 Claims



1. An apparatus to manipulate workpieces, the apparatus including the combination of:

means for delivering a workpiece at a first orientation to a workpiece receiving site;

gripper means including at least one displaceable gripper for supporting a workpiece at the workpiece receiving site;

pivot means supporting the gripper means for movement between the workpiece receiving site and a workpiece transfer site;

means for moving the displacement gripper into a workpiece gripping position and for moving the displaceable gripper into a workpiece release position at the workpiece transfer site thereby changing the workpiece orientation;

means for conveying the workpiece in a second orientation at the workpiece transfer site along a path of travel; and

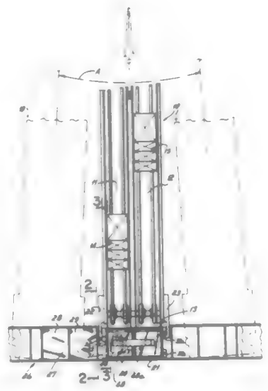
means to position said pivot means to a preselected position between and relative to each of said means for delivering and said means for conveying by moving said pivot means toward or away from said means for delivering, said pivot means being moved by said means to position said gripper relative to the workpiece on said means for delivering to compensate for varying length workpieces while the workpieces are manipulated between said first and second orientations and without damaging impact with said means for transferring and without changing the distance between the means for delivery and the means for conveying.

5,333,721

POUCH TRANSFER APPARATUS AND METHOD

John W. Stevie, Covington, Ky., assignor to R. A. Jones & Co., Inc., Covington, Ky.

Filed Oct. 29, 1992, Ser. No. 969,716
Int. Cl.[5] B65G *47/30*
U.S. Cl. 198—418.6 29 Claims



1. In a transfer apparatus for transferring pouches into a bucket conveyor, said transfer apparatus having at least one pouch conveyor for conveying pouches toward a bucket conveyor and oscillating between return strokes and operating strokes in intermittent registration with respective buckets of said bucket conveyor for introducing pouches into said buckets, wherein the improvement comprises:

accumulation means operationally disposed at the downstream end of said pouch conveyor for receiving pouches discharged from said conveyor, accumulating pouches from said pouch conveyor in stacked form, and for intermittently dropping formed stacks of pouches into registered buckets of said bucket conveyor.

24. A method of transferring groups of shingled pouches from a first conveyor onto a second conveyor wherein said first conveyor has a discharge end oscillating in intermittent registration with predetermined pouch receiving locations on said second conveyor, said method comprising the steps of:

(a) receiving pouches from said first conveyor;

(b) accumulating said pouches into a stack;

(c) oscillating said conveyor and said stack with an operating stroke of oscillation in timed registered movement with a predetermined pouch location on said second conveyor; and,

(d) dropping said stack onto said second conveyor during said period of registered movement.

5,333,722

APPARATUS FOR DIVERTING A LANE OF SUCCESSIVE ARTICLES TO PLURAL LANES

Joseph F. Ouellette, Glendale, Mo., assignor to Ouellette Machinery Systems, Inc., Fenton, Mo.

Filed Nov. 13, 1992, Ser. No. 975,873
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—436 22 Claims

1. An apparatus for supporting, conveying, and steering articles, the apparatus comprising;

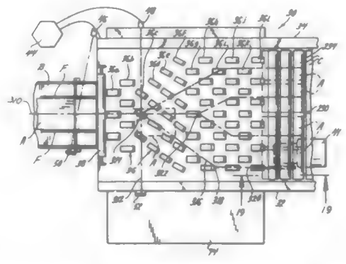
a plurality of axle support assemblies, each assembly comprising a generally vertical stem portion and a generally horizontal axle portion positioned above the stem portion;

supporting-arranging means for supporting the axle support assemblies so each axle portion is pivotable about an axis disposed through the stem portion and for arranging the stem portions in an array which includes a plurality of transverse rows, with longitudinal spacing between adjacent rows and transverse spacing between adjacent stem portions of the same row;

rollers rotatably mounted on the axle portions, the rollers providing rolling surfaces upon which the articles can be supported and conveyed;

driving means powered by a power source for positively driving at least some of the rollers;

a plurality of row-pivoting means each corresponding to a predetermined transverse row or rows of stem portions, each row-pivoting means having means for pivoting the axle portions associated with the stem portions of said predetermined row or rows through a range of angular positions; and



detector-selector means for detecting the infeed of the articles onto the rollers and selectively activating the row-pivoting means to steer the articles along prescribed paths;

each axle support assembly further comprises a slotted link portion below and fixed relative to the axle portion; and

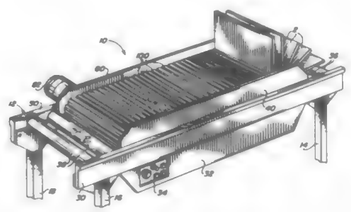
each row-pivoting means comprises a transverse rod extending past the slotted link portions of the axle support assemblies of that row, and being supported for translatory motion; each row-pivoting means further comprises a plurality of pins for interengaging the plurality of slotted link portions of that row with the rod so that translatory changes of position in the rod cause angular changes of position in the axle portions of the axle support assemblies of that row.

5,333,723

ACCUMULATOR PADDLE APPARATUS

Dennis E. Rich, 8050 S. 1300 West, West Jordan, Utah 84088

Filed Jun. 28, 1993, Ser. No. 82,483
Int. Cl.[5] B65G *15/44*
U.S. Cl. 198—484.1 17 Claims



1. Accumulator paddle apparatus for printed circuit panels comprising in combination:

a paddle having a top and a bottom,

a plurality of ribs on the paddle for providing friction for holding a printed circuit panel,

notch means extending upwardly into the paddle from the bottom for engaging a belt, and

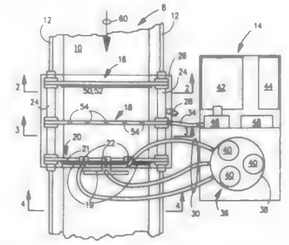
finger means adjacent to the top for engaging a printed circuit panel.

5,333,724

OVEN-CONVEYOR CLEANING APPARATUS AND METHOD

William R. Wingfield, 11032 Thorncroft; Dr., Glen Allen, Va. 23060; Leslie A. Childs, 8602 Queensmere Pl., Richmond, Va. 23294, and Clarence L. Pilaczynski, 800 Boulder Springs Dr., Richmond, Va. 23225

Filed Apr. 14, 1993, Ser. No. 46,288
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—495 23 Claims



1. A cleaning apparatus for a conveyor belt that is employed to convey foods through an oven for baking of said foods, there being defined an upstream location in respect to the conveyor intake to the oven and a downstream location in respect to the delivery end of the oven, the cleaning apparatus comprising:

carrier-supported equipment;

a carrier to carry said carrier-supported equipment;

a pair of rails being attached to the structure of said oven in said upstream location and in said downstream location;

a cleaning head assembly including means for mounting thereof selectively in said upstream location and in said downstream location on said pair of rails, said cleaning head assembly including means for spraying liquid onto said conveyor belt and means for vacuuming the moving conveyor belt, said means for vacuuming including at least one vacuum head for applying vacuum over a region that extends substantially across the surface width of the belt in the proximity of said downstream location, said mean for vacuuming being mounted on said means for mounting when said mounting means is mounted on said pair of rails in said downstream location, said means for vacuuming being disposed downstream in respect to said means for spraying liquid in relation to the direction of motion of said belt; and,

means for connecting said carrier-supported equipment with said cleaning head assembly, said carrier being selectively movable at least between locations in the vicinity of said upstream and said downstream locations, respectively, said means for connecting being quick-disconnectable;

wherein said means for spraying liquid is fed cleaning solution while said cleaning head assembly is mounted on said pair of rails in said upstream location and whereby said means for spraying liquid is fed rinsing solution while said cleaning head assembly is mounted on said pair of rails in said downstream location.

VOL 1165 ISS 1 AG 2 1994 UMI

5,333,725

FOLDABLE FRAMEWORK FOR BELT CONVEYOR

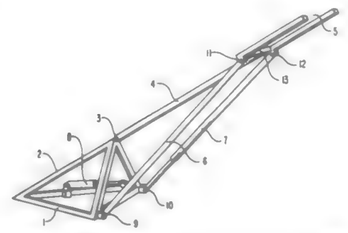
Patrick J. Douglas, No. 2 School Lane Santon, Isle of Man, United Kingdom

Continuation of Ser. No. 861,972, Aug. 3, 1992, abandoned. This application Jul. 2, 1993, Ser. No. 88,990

Claims priority, application United Kingdom, Dec. 22, 1989, 8929011

Int. Cl.[5] B65G *21/10*

U.S. Cl. 198—632 20 Claims



1. A foldable framework for supporting a belt conveyor, said framework comprising:

(a) a fixed sloping support frame having a base and an upper end;

(b) a moveable support frame connected to said upper end of said fixed frame with a first universal-type connection;

(c) a primary support leg having an upper end and a lower end, said lower end of said primary support leg being connected to said fixed frame with a second universal-type connection, and said upper end of said primary support leg being connected to said moveable frame; and

(d) a power-operated device connected directly or indirectly between said fixed frame and said moveable frame, said power-operated device thereby being operative to cause said moveable frame to pivot about said first universal-type connection between an operative conveyor-support position and a laterally-displaced inoperative conveyor-support position suitable for storage and transport of said framework and a conveyor supported thereby.

5,333,726

MAGNETRON SPUTTERING SOURCE

Daniel M. Makowiecki, Livermore, Wash.; Mark A. McKernan, Livermore, Calif.; R. Fred Grabner, Brentwood, Calif., and Philip B. Ramsey, Livermore, Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jan. 15, 1993, Ser. No. 5,122

Int. Cl.[5] C23C *14/35*

U.S. Cl. 204—298.09 37 Claims

1. A magnetron sputtering source for coating substrates, comprising:

a sputter target assembly;

a magnetically permeable material contained in said sputter target assembly;

a mounting plate;

a magnetically permeable pole piece located parallel to said mounting plate;

a cylindrical inner core permanent magnet centrally supported and magnetically attached to said magnetically permeable pole piece;

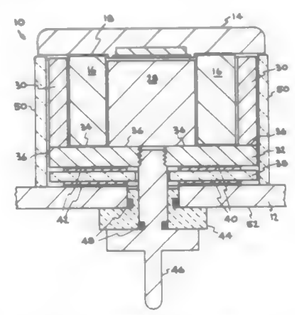
a cylindrical outer permanent magnet ring surrounding said cylindrical inner core permanent magnet supported and magnetically attached to said magnetically permeable pole piece;

wherein said sputter target assembly is positioned adjacent said cylindrical outer permanent magnet ring and retained by magnetic attraction between the magnetically permeable material in said target and the pole piece, inner core magnet, and outer cylindrical permanent magnet ring;

a thermally conductive cylindrical ring located between said inner core permanent magnet and said cylindrical outer permanent magnet ring;

a thermally conductive electrically insulating ceramic washer disposed between said sputter target assembly and said mounting plate;

wherein said ceramic washer, thermally conductive cylindrical ring, pole piece and mounting plate constitute a heat conduction means to conduct heat away from said sputter target assembly and electrically insulate the sputter target assembly from said mounting plate;



a' sputter shield surrounding said cylindrical outer permanent magnet ring, said magnetically permeable pole piece, and said ceramic washer, and in contact with said mounting plate;

a threaded power feedthrough for energizing said sputter target assembly with an electrical current and for attaching the pole piece to the mounting plate; and

an electrical insulator located between said power feedthrough and said mounting plate for insulating the power feedthrough from the mounting plate.

5,333,727

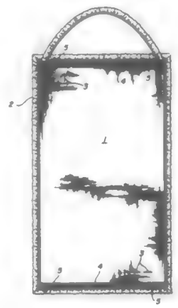
ACCESSORY ORGANIZER

Donna T. Hoppe, 14765 Natchez Ave. S., Savage, Minn. 55378

Filed Aug. 9, 1993, Ser. No. 103,225

Int. Cl.[5] B65D *73/00*

U.S. Cl. 206—6.1 1 Claim



1. An orgainzer for fashion accessories which is hung on a vertical support wall, comprising:

a. a thin, flexible base constructed of burlap and having a predetermined rectilinear configuration and a periphery, said base further having a plurality of button hole apertures therein, each of which has a reinforced periphery;

b. a trim member constructed of a lace material disposed about and attached to said base periphery;

c. a hanger attached to said base at said periphery thereof, said hanger being for attachment to hanger means attached to the vertical support wall, said hanger being constructed of a lace material, said lace material having a pair of ends each of which is attached to said base at separate points such that a loop is formed for engagement with the hanger means;

d. a pair of wooden rods attached to said base via glue at two predetermined points on the same side of said base, said rods having a diameter of approximately one half centimeter such that said base is spaced apart from the support wall; and

e. at least one protection pad attached to each said rod to prevent said rod from scratching the support wall, whereby the organizer is hung in a substantially flat, uncurled configuration on the support wall, and whereby fashion accessories are insertable through said burlap base and said button hole apertures thereon and are securely held in a visible and easily accessible orientation thereon.

5,333,728

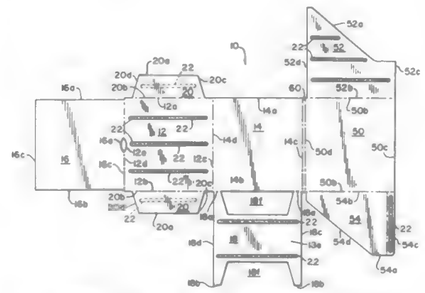
COMPACT DISC JACKET AND BLANK THEREFOR

Patrick J. O'Brien, Hackensack, N.J., and Ronald W. Womack, Fullerton, Calif., assignors to Ivy Hill Corporation, New York, N.Y.

Filed Aug. 30, 1993, Ser. No. 113,984

Int. Cl.[5] B65D *85/57*

U.S. Cl. 206—232 32 Claims



1. A paperboard blank for a double-walled jacket for a compact disc, comprising:

(A) a front panel having a pair of opposed sides and a pair of opposed ends;

(B) a back panel having a pair of opposed sides and a pair of opposed ends, one of said front panel ends being contiguous to one of said back panel ends;

(C) a front inner liner panel contiguous to the other of said opposed ends of said front panel;

(D) a back inner liner panel contiguous to one of said opposed sides of said back panel; and

(E) a pair of glue flaps, each of said glue flaps being contiguous to an opposed side of said front panel;

said front, back and front inner liner panels being of generally the same configuration and dimensions, and said back inner liner panel and said pair of glue flaps being cooperatively configured and dimensioned to define a composite back inner liner panel of generally the same configuration and dimensions as the other panels when said panels and glue flaps are appropriately folded relative to one another and said glue flaps are glued to said back panel.

24. A double-walled paperboard jacket for a compact disc, comprising:

(A) a front panel having a pair of opposed sides and a pair of opposed ends;

(B) a back panel having a pair of opposed sides, a pair of opposed ends and a pair of opposed faces, one of said front panel ends being contiguous to and folded relative to one of said back panel ends;

(C) a front inner liner panel contiguous to and folded relative to the other of said opposed ends of said front panel;

(D) a back inner liner panel contiguous to and folded relative to one of said opposed sides of said back panel;

(E) a pair of glue flaps, each of said glue flaps being contiguous to and folded relative to an opposed side of said front panel, and each of said glue flaps being glued to said back panel to define a chamber intermediate said front inner liner and said back inner liner adapted to receive a CD;

(F) an additional panel contiguous to the other of said opposed ends of said back panel and having a pair of opposed sides and a pair of opposed ends; and

(G) a pair of extension flaps for said additional panel, each of said extension flaps being contiguous to an opposed side of said additional panel and appropriately folded and secured relative to one another to form a composite extension panel, each of said composite extension panel and said additional panel being of generally the same configuration and dimensions as said front, back and front inner panel, said additional panel and said composite extension panel being cooperatively configured and dimensioned to releasably receive an insert;

said front, back, front inner liner and back inner liner panels being of generally the same configuration and dimensions, and said back panel having said glue panels on one of said opposed faces thereof and said back inner liner panel of the other of said opposed faces.

5,333,729

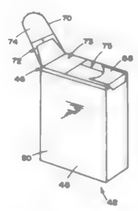
PACKAGED CIGARETTES

Patricia K. Wolfe, Colfax, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Sep. 14, 1992, Ser. No. 945,315

Int. Cl.[5] B65D *85/10*

U.S. Cl. 206—268 7 Claims



1. A package containing cigarettes including an outer paper label wrap and an inner metal foil/paper laminate wrap, the package having top, bottom, front, back and two side walls, the package comprising a closure tab composed of a metallized thermoplastic material.

5. A package having a top wall and two sides and containing cigarettes, the package including an inner container and an outer sealing film, the outer sealing film having a region of weakness in the top of the package, the package further including a closure tab adhered to the top wall of the package at least over the region of weakness, the closure tab also being adhered to one side of the package having a separable pressure sensitive adhesive in a region thereof which overlies a top wall of the package.

7. A package having a top wall and two sides and containing cigarettes, the package including an inner container and an outer sealing film, the outer sealing film having a region of weakness in the top of the package, the package further including a closure tab adhered to the top wall of the package at least over the region of weakness, the closure tab being adhered to one side of the package and a region which overlies a top side edge of the package, the closure tab is perforated in the region thereof which overlies the top side edge of the package.

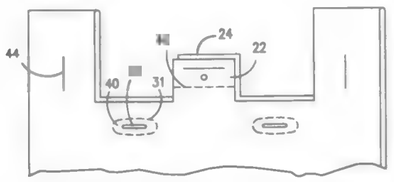
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,730

BAG PACK AND SYSTEM FOR SUSPENDING AND DISPENSING BAGS

Dana M. Boyd, Rushville, N.Y., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 31, 1993, Ser. No. 40,172
Int. Cl.[5] B65D *27/10*
U.S. Cl. 206—554 13 Claims



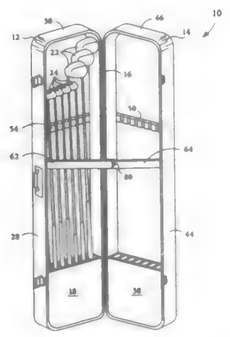
1. A pack of thermoplastic film bags, said bags being in at least approximate registration, each bag comprising a bottom, front and rear walls connected by way of gusseted side walls, a bag mouth, double film loop handles at opposite ends of the bag mouth and a pair of header tabs extending from the center of each bag mouth, said handles comprising integral extensions of said walls and said bags being secured together by way of a bonded region in said header tabs; each bag further including at least one easily severable, comparatively small, area with an adhesive in contact with a severable area of an adjacent bag, the aggressiveness of said adhesive to said severable area of an adjacent bag being greater than the force sufficient to sever said easily severable area such that on movement of a lead bag away from said pack, the next following bag will at least partially open before, or simultaneously with, severance of said easily severable area.

5,333,731

GOLF CASE FOR SEPARATE RETENTION OF CLUBS DURING TRAVEL

Kenneth W. McCuaig, 55 Oak Dr., Orinda, Calif. 94563

Filed Jun. 15, 1993, Ser. No. 78,453
Int. Cl.[5] A63B *55/00*
U.S. Cl. 206—315.6 15 Claims



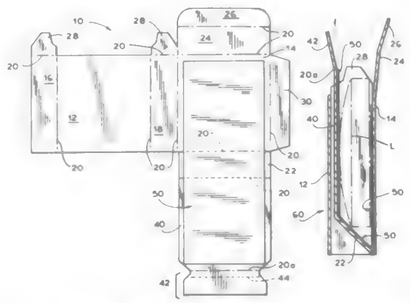
1. A case for transporting a set of golf clubs and for presenting said golf clubs during play comprising:
a first door;
a second door;
means for pivotally connecting said second door to said first door, said first and second doors each having a major inner surface, said first and second doors having a closed condition in which an enclosed chamber is defined between said inner major surfaces of said first and second doors;
first support means coupled to said first door and second support means coupled to said second door for supporting a plurality of golf clubs aligned in parallel side-by-side relationship along said major inner surfaces;
a first bar mechanism operatively associated with said first door and a second bar mechanism operatively associated with said second door, each of said bar mechanisms having a play position in which said first and second doors are open and having means for selectively fixing said bar mechanism in a lock position, each bar mechanism disposed to apply a compressive force on said side-by-side golf clubs when said bar mechanism is in said lock position, displacement of each of said bar mechanisms from said lock position to said play position spacing apart said bar mechanism from said major inner surface to which the bar mechanism is operatively associated by a distance sufficient to permit removal and insertion of said side-by-side golf clubs, each bar mechanism having a first end and a second end;
means for securing said second end of each bar mechanism to the respective first and second door with which said bar mechanism is operatively associated; and
means coupled to said first and second bar mechanisms for selectively fixing together said first and second bar mechanisms at regions of said bar mechanisms spaced apart from said second ends when said bar mechanisms are in said play positions, wherein said first and second doors are selectively secured in an open condition at a selected angle by said means for fixing together said bar mechanisms.

5,333,732

LENS PACKAGE

Thomas F. Budny, Novato; Anthony G. Scheuna, Santa Monica, both of Calif., and Larry D. Durham, Terre Haute, Ind., assignors to Ivy Hill Corporation, New York, N.Y.

Filed Jun. 17, 1993, Ser. No. 78,573
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—316.1 25 Claims



1. A lens blank package comprising a parallelepiped carton defining:
(A) front and back major side panels;
(B) a pair of minor side panels connected to said major side panels by foldlines;
(C) at a bottom end of said carton, a bottom major end panel connected to said back major side panel by a foldline;
(D) at a top end of said carton:
(i) a top major end panel connected to one of said back or front major side panels by a foldline;
(ii) a tuck flap connected to said top major end panel by a foldline; and
(iii) a pair of dust flaps connected to said pair of minor side panels by foldlines;

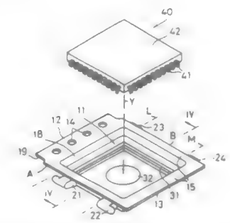
(E) an internal major side panel connected to said bottom major end panel by a foldline and extending generally parallel and adjacent to said front major side panel; and
(F) an internal major end flap connected to said internal major side panel by a given foldline.

5,333,733

LINKED CONTAINER FOR TRANSPORTING PRECISION DEVICES

Kentaro Murata, Yao, Japan, assignor to Gold Industries Co., Ltd., Osaka, Japan

Filed May 7, 1993, Ser. No. 57,965
Claims priority, application Japan, May 13, 1992, 4-148231; Dec. 25, 1992, 4-358444; Dec. 25, 1992, 4-358445; Dec. 25, 1992, 4-358446; Dec. 25, 1992, 4-358447
Int. Cl.[5] B65D *73/02*
U.S. Cl. 206—330 2 Claims



1. A linked container for transporting precision devices, the container comprising:
a row of repeating adjacent units (**10**) made of plastics and shaped to receive transported articles;
each unit having along at least one of opposite lateral sides (**12, 13**) a row of apertures (**14**) arranged at regular intervals, with the apertures being engageable with and disengageable from driving lugs of a stepping driver;
each unit (**10**) defining at least one recess (**11**) and having first and second opposite transverse sides (A and B), the container further comprising:
junctions formed between the first side (A) of one unit (**10**) and the second side (B) of an adjacent unit (**10**);
each junction being a hinge which allows juxtaposed adjacent first and second sides (A and B) to rotate relative to and in parallel with each other, each hinge between adjacent units (**10**) is composed of a first pair of arms (**21, 21**) pair of arms extending to extending perpendicularly outwardly from the first opposite transverse side of one unit and a second pair of arms (**23, 23**) extending perpendicularly outwardly from the second opposite transverse side of an adjacent unit;
a short columnar and transverse protrusion (**22**) formed integral with an end portion of each arm (**21**) of said first pair of arms with said transverse protrusions extending in opposite directions; and a transverse opening (**24**) formed through an end portion of each of said second pair of arms (**23**) so that the respective transverse protrusions (**22**) snap into the respective transverse openings (**24**).

5,333,734

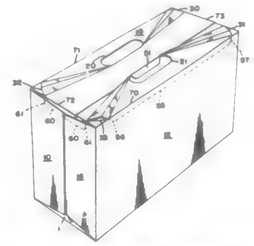
HEAVY DUTY ARTICLE CARRIER FOR CANS ARRANGED IN A HORIZONTAL POSITION

James T. Stout, Ellijay, and James B. DeMaio, Marietta, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Aug. 19, 1993, Ser. No. 109,165
Int. Cl.[5] B65D *71/34*
U.S. Cl. 206—427 5 Claims

1. An article carrier for packaging a plurality of articles and comprising a bottom wall having opposed side and end edges, a bottom end flap foldably joined to each end edge of said bottom wall, side walls having opposed end edges and having top and bottom edges foldably joined along their bottom edges to side edges of said bottom wall, an end wall panel foldably joined along a side edge thereof to each end edge of each of said side walls, a composite top wall having opposed side and end edges foldably joined along its side edges to the top edges of said side walls respectively, a top end flap foldably joined to each end edge of said top wall and secured in flat face contacting relation to each adjacent end wall panel, finger receiving hand hole aperture means formed in said top wall, a weakened diagonal severance line formed in said top wall and disposed astride each corner thereof, an end score line formed in each of said top end flaps adjacent the end of the top wall, a weakened severance line in each top end flap and extending from one end of each of said end score lines to the end edge of said top wall to intersect the adjacent weakened diagonal severance line.

2. An article carrier for packaging a plurality of articles and comprising a bottom wall having opposed side and end edges, a bottom end flap foldably joined to each end edge of said bottom wall, side walls having opposed end edges and having



top and bottom edges foldably joined along their bottom edges to side edges of said bottom wall, an end wall panel foldably joined along a side edge thereof to each end edge of each of said side walls, a composite top wall having opposed side and end edges foldably joined along its side edges to the top edges of said side walls respectively, a top end flap foldably joined to each end edge of said top wall and secured in flat face contacting relation to each adjacent end wall panel, finger receiving hand hole aperture means formed in said top wall, a weakened diagonal severance line formed in said top wall at each corner thereof, an end score line formed in each of said top end flaps adjacent the end of the top wall, a weakened severance line in each to end flap and extending from one end of each of said end score liens to the end edge of said top wall to intersect the adjacent weakened diagonal severance line, a side score line formed in each side wall near the top edge thereof, and a weakened severance line formed in each side wall at each end of each of said side score lines and intersecting the end of the adjacent diagonal weakened severance line formed in said top wall.

5,333,735

SOFT PACK, ESPECIALLY CUBOID PAPER TISSUE PACK

Heinz Focke, Verden, and Harald Gosebruch, Hanover, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Jun. 24, 1992, Ser. No. 903,735
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1991, 4121217; Oct. 19, 1991, 4134567
Int. Cl.[5] B65D *65/28*
U.S. Cl. 206—494 20 Claims

1. A cuboid paper tissue soft pack with an outer wrapper, wherein the outer wrapper has a narrow end panel (**16**) and a corresponding bottom panel (**15**), a wide front panel (**11**) adjacent the end panel (**16**), and a corresponding rear panel (**12**), and side panels (**13, 14**); said pack comprising:
a tear-open flap (**18, 38, 42**) which is defined in the outer

VOL 1165 ISS 1 AG 2 1994 UMI

wrapper by first weakening lines (20, 36), and which is formed in a region of the narrow end panel (16) and extends therefrom up to the adjacent front panel (11);

an adhesive strip (22, 39), which is disposed on the outer wrapper, which at least partially covers the tear-open flap and the weakening lines, which partially projects beyond the tear-open flap, and by means of which the tear-open flap is movable between an open and a closed position, the

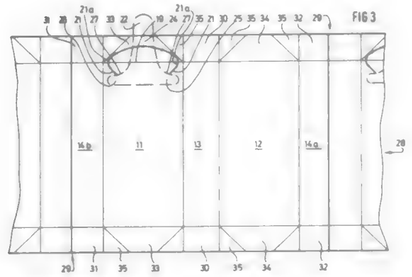


FIG 3

adhesives strip and the tear-open flap being connected to one another,

wherein the weakening lines (20, 36) have opposite end regions which are not covered by the adhesive strip; and

reinforcement means (25, 26, 40), which are respectively located in said front panel (11) adjacent opposite free ends (21, 37) of said end regions of the weakening lines, for forming local reinforcements which locally increase the tearing resistance of the wrapper.

5,333,736

SELF-SEALING COMPRESSION PACKAGING BAG AND COMPRESSION PACKAGING BAG

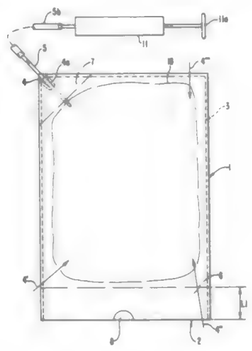
Yoshihisa Kawamura, Tokyo, Japan, assignor to VIP Kokusai Kyumei Center, Inc., Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 974,739

Claims priority, application Japan, Nov. 14, 1991, 3-101331

Int. Cl.[5] B65D *81/20*

U.S. Cl. 206—524.8 **12 Claims**



1. A self-sealing compression packaging bag comprising:

an opening part and an evacuating port, wherein said bag is comprised of a film material exhibiting self-adherent properties as sealing means on at least an inner surface of said opening part and in a portion of said evacuating port at a length sufficient to maintain self-sealing.

5,333,737

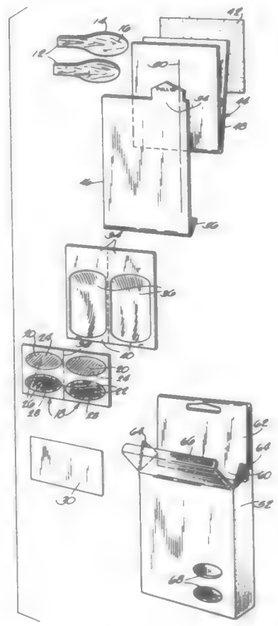
PACKAGING SYSTEM FOR TWO PART EPOXY ADHESIVES AND THE LIKE

Bryan J. Clark, Brookfield, Wis., assignor to Power Poxy Adhesives, Inc., New Berlin, Wis.

Filed Aug. 19, 1992, Ser. No. 932,442

Int. Cl.[5] B65D *69/00*

U.S. Cl. 206—568 **13 Claims**



1. A package for adhesives having first and second parts, said package comprising:

a dispensing and mixing paddle having a peripheral shape at one end thereof;

a sheet having first and second depressions formed therein, each of said depressions having a cross-sectional shape conforming to said peripheral shape of said dispensing and mixing paddle;

a quantity of said first part of said adhesive in said first depression;

a quantity of said second part of said adhesive in said second depression, said quantities of said first and second parts of said adhesive being in a ratio of said first part to said second part;

a removable cover membrane overlying said sheet and forming a removable seal over each of said first and second depression; and

means for removably retaining said dispensing and mixing paddle with said sheet;

said cross-sectional shapes of said first and second depressions and said peripheral shape of said dispensing and mixing paddle being such that substantially the entire contents of each of said first and second depressions can be removed with a single pass of said dispensing and mixing paddle along said first and second depressions.

5,333,738

PROCESS AND INSTALLATION FOR RECOVERING VALUABLE MATERIALS, IN PARTICULAR FROM WASTE MATERIAL ON BUILDING SITES

Dieter Fuchs, Waldburg, and Peter Strohhäcker, Ravensburg, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Bezner GmbH & Co. KG, Ravensburg, Fed. Rep. of Germany

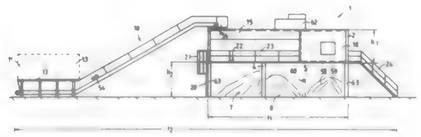
PCT No. PCT/DE90/00062, § 371 Date Oct. 4, 1991, § 102(e) Date Oct. 4, 1991, PCT Pub. No. WO90/08601, PCT Pub. Date Aug. 9, 1990

PCT Filed Oct. 1, 1990, Ser. No. 741,468

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1989, 3903325

Int. Cl.[5] B07B *9/00*

U.S. Cl. 209—38 **20 Claims**



17. A system for separating valuable materials from construction site wastes or industrial trash, comprising:

a prescreening device having a course mesh for prescreening out large items over a predetermined size from a substance mixture;

an ascending conveyor for transporting the substance mixture from said prescreening device;

an elevated sorting device for receiving the substance mixture from said ascending conveyor, said sorting device including a screening machine followed by a sloping sorter and a manual sorting station, respectively, whereby the screening machine, said sloping sorter and said manual sorting station are arranged relative to the direction of the feed of the substance mixture, and wherein said screening machine has plural screens arranged sequentially in the direction of the feed of the substance mixture, each said screen separating by size a fraction of the substance mixture, the remaining substance mixture being fed to a subsequent processing station;

a transportable foundation having at least two vertically intersecting walls forming at least four chambers underneath said sorting device, said sorting device being disposed on said transportable foundation, each said fraction being subsequently thrown into a respective chamber for temporary storage and later recovery; and

a transportable, closed container for housing said elevated sorting device.

5,333,739

METHOD AND APPARATUS FOR SORTING BULK MATERIAL

Norbert Stelte, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Geräitechnik GmbH, Bodensee, Fed. Rep. of Germany

Filed Mar. 24, 1993, Ser. No. 35,480

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1992, 4210157

Int. Cl.[5] B07C *5/342*

U.S. Cl. 209—582 **9 Claims**

1. A device for sorting individual parts of bulk material, said device comprising:

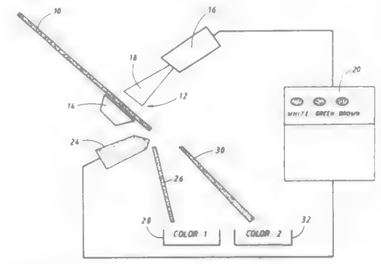
feeding means for feeding said bulk material;

serializing means, coupled to said feeding means, for serializing said bulk material to provide consecutive, individual parts;

sensor means for measuring characteristics relevant for the classification of the parts and for generating measuring data indicative of said characteristics;

computer means, coupled to said sensor means, for classifying said parts on the basis of said measuring data in accordance with adjustable classification parameters and for generating control signals depending on said classification;

effector means, coupled to said computer means and controlled by said control signals, for sorting said parts;



means for determining values of said classification parameters from measuring data of fractions of the bulk material supplied to said sorting device; and

means for automatically setting the classification parameters to the values thus determined.

5,333,740

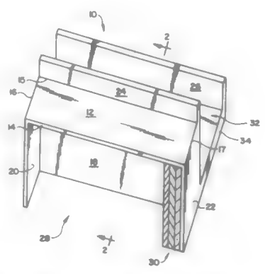
STORAGE/DISPLAY RACK FOR DISCS AND CASSETTES

Richard A. Freund, 3207 Norwood Dr., Fair Lawn, N.J. 07410, and Allen E. Peller, 6650 S. Sandhill #106, Las Vegas, Nev. 89120

Filed Aug. 14, 1992, Ser. No. 929,530

Int. Cl.[5] B65D *85/57*

U.S. Cl. 211—40 **4 Claims**



1. A storage/display rack useful as an insert and as an open-surface unit comprising:

a center wall;

a substantially horizontal shelf disposed at a front face of the center wall;

first and second side walls disposed under the shelf, such that the shelf, the center wall and the side walls at least partially enclose a first storage volume;

means for delimiting a second storage volume, an edge of the second storage volume fixed at a separation distance from a rear face of center wall.

VOL 1165 ISS 1 AG 2 1994 UMI

5,333,741

DISPLAY CASE FOR COMPACT DISCS

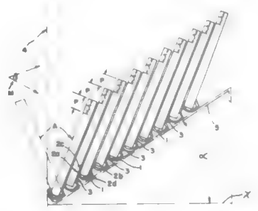
Kyung H. Yang, Ischang-Dong Daemyung Apt. 6-202, Guri-shi, Kyungi-Do, Rep. of Korea

Filed Jun. 7, 1993, Ser. No. 71,986

Claims priority, application Rep. of Korea, Sep. 17, 1992, 93-17671

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—40 4 Claims



1. A display case for compact discs, comprising:

a plurality of album seat grooves for receiving compact disc albums, each of said plurality of album seat grooves including,

a slanted connecting support having approximately a 30° rearward slant from a vertical line,

a lower hook,

a lower support, and

an upper hook having approximately a 15°–20° forward slant from the vertical line, and a straight base for receiving said album thereon, the straight base having an incline of about 30°, whereby it is easy for the user to read the title and name of the albums displayed therein.

5,333,742

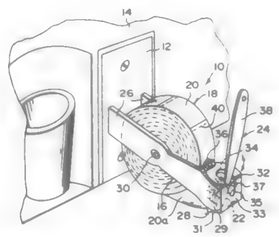
MODIFIED SANITARY TOOTHBRUSH HOLDER

Gregory H. Piedmont, 13792 Old Hwy. 80, #44, El Cajon, Calif. 92021, and George Spector, 233 Broadway, Rm. 702, New York, N.Y. 10279

Filed Jun. 21, 1993, Ser. No. 79,451

Int. Cl.[5] A47B *81/02*

U.S. Cl. 211—65 1 Claim



1. A sanitary toothbrush holder which comprises:

a) a plate for mounting said holder to a flat vertical surface;

b) a bracket extending outwardly from said plate;

c) a receptacle formed on a forward end of said bracket;

d) a roll of sanitary disposable plastic bags rotatably carried in said bracket, in which a leading bag of said roll of sanitary disposable plastic bags can be opened and positioned manually within said receptacle, adapted to receive a bristle head of a toothbrush, so that when the leading bag with the bristle head of the toothbrush is removed, it will protect the bristle head from collecting germs, dust and dirt when not in use; wherein said bracket includes:

e) a pair of arms, spaced apart and connected at one end in a side by side parallel relationship to said plate;

f) a shaft extending between said pair of arms behind said receptacle to allow said roll of bags to rotate toward said receptacle, so that the leading bag can be pulled into said receptacle; wherein said receptacle includes:

g) a pair of side walls integral with said arms of said bracket and having an inside width slightly larger than the width of said roll of bags;

h) a bottom wall extending under said side walls;

i) a front wall extending across said side walls, said front wall having a slot extending downwardly from a top edge, so that said receptacle will receive the leading bag of said roll of bags with a portion of the leading bag extending through said slot in said front wall to be gripped by fingers of a person; further including:

j) a lid having a slot extending inwardly from a forward edge, whereby said lid fits over the top of said receptacle to retain the leading bag within said receptacle; and

k) a hinge between a rearward edge of said lid and across the top edges of said side walls, so that said lid can be flipped up from the top of said receptacle adapted to receive the bristle head of the toothbrush and then flipped down to cover the top of said receptacle with the handle of the toothbrush extending through said slot in said lid.

5,333,743

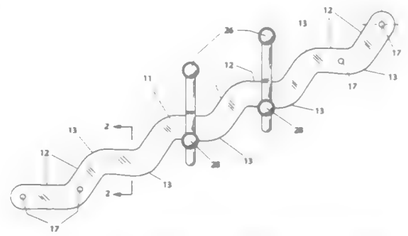
CLOTHES HOOK ASSEMBLY

Eunice R. Loewke, P.O. Box 344, Kenwood, Calif. 95452, and Daniel D. Loewke, 3060 NE. Wheeler St., Poulsbo, Wash. 98370

Filed Dec. 4, 1992, Ser. No. 986,079

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—87 8 Claims



1. A clothes hook assembly, including a web member extending longitudinally and having a longitudinal axis; a plurality of hooks, each having a nominal vertical plane; means for securing said web member to a vertical surface with said longitudinal axis defining any one of a plurality of angles with respect to horizontal; and means for securing said hooks to said web with said nominal vertical plane of each hook disposed vertically when said longitudinal axis of said web is disposed at any of said plurality of angles with respect to horizontal, said web including a plurality of segments arrayed serially, and said segments defining a serpentine arrangement extending along said longitudinal axis.

5,333,744

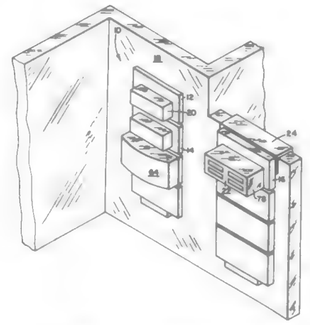
MODULAR EQUIPMENT SUPPORT SYSTEM

Rai-Ann LoCicero, Chelmsford; Stuart Morgan, both of Westford; Michael Romm, Brighton, all of Mass.; Matthew Bantly, Nashua, N.H., and Edward O. Mangan, Southboro, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 10, 1993, Ser. No. 16,094

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—87 7 Claims



1. A modular system for supporting equipment on a wall comprising

support panels, each panel comprising

a sheet having columns of keyholes, and

a rear support surface lying in a plane

parallel to and spaced behind the sheet, the rear support surface including keyholes near the top of the panel and first fastener elements near the bottom of the panel, first fastener elements having the same spacing as the keyholes near the top of the panel, the first fastener elements projecting from the plane of the rear support surface toward the sheet to permit fastening with the keyholes near the top of another panel being hung below it.

5,333,745

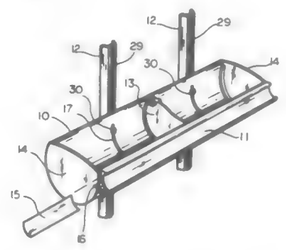
MERCHANDISING DISPLAY UNIT

Paul F. Lehmann, 1855 N. Custer Rd., Monroe, Mich. 48161

Filed Feb. 23, 1993, Ser. No. 21,070

Int. Cl.[5] A47F *5/08*

U.S. Cl. 211—88 10 Claims



1. A merchandising display unit, comprising: an elongated channel of uniform diameter having an arcuate wall cross-section extending at least 180 degrees about a horizontal axis to form a partial enclosure having a front longitudinal channel edge and at least one arcuate aperture; and

vertical mans for supporting said channel, said vertical support means including a rise formed integral with said support means and projecting from said support means through said aperture to support said channel.

5,333,746

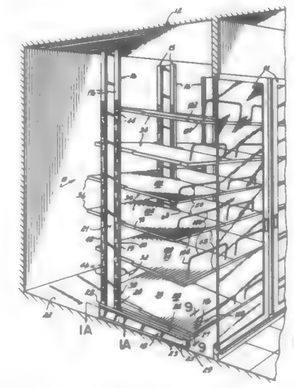
ARC SYSTEM COOLER DISPLAY RACK

Rafael T. Bustos, Alpharetta, Ga., assignor to L&P Property Management Company, Chicago, Ill.

Filed Feb. 11, 1993, Ser. No. 16,783

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—187 18 Claims



1. A display rack for providing access to merchandise supported thereon comprising:

a plurality of generally upright posts having a top end, a bottom end, a front edge, a rear edge, and a pair of lateral spaced sides;

base means attached to the bottom end of each said post for bracing said post in a generally vertical orientation, said post and said base means forming a generally L-shaped frame section;

connecting means for joining in spaced and generally parallel relation each said frame section to an adjacent said frame section; and

a plurality of shelves extending between an adjacent pair of said posts, each said shelf being secured by attachment means for mounting said shelf in a generally cantilever manner between said adjacent pair of posts, said attachment means facilitating the selective vertical positioning of said shelf between said post top end and bottom end, horizontal positioning of said shelf relative to said post front edge and rear edge, and angular inclination of said shelf relative to a horizontal plane, said attachment means permitting the selective vertical, horizontal and angular inclination positioning of said shelf irrespective of the vertical, horizontal and angular inclination position of said shelf.

5,333,747

METHOD AND APPARATUS FOR SECURING A DRAW BAND TO A DRUM

John R. Wike, 7227 Poplar Pke, Germantown, Tenn. 38138

Filed May 24, 1993, Ser. No. 67,360

Int. Cl.[5] B65D *45/32*

U.S. Cl. 220—320 11 Claims

1. In combination:

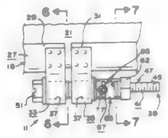
(a) a drum, said drum including a body having an open mouth and including a lid for removably closing said open mouth of said body, said open mouth of said body having a lip, said lid having an outer edge for engaging said lip of said open mouth of said body;

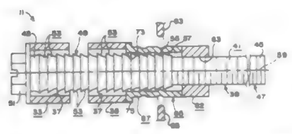
VOL 1165 ISS 1 AG 2 1994 UMI

(b) a draw band for encircling at least a portion of said outer edge of said lid of said drum and said lip of said open mouth of said body of said drum, said draw band including a body having a first end and a second end and including a first lug attached to said first end of said body thereof and a second lug attached to said second end of said body thereof, each of said lugs having an aperture therethrough; and

(c) a tamper proof draw band bolt apparatus for securing said draw band to said drum, said tamper proof draw band bolt apparatus comprising:

(i) bolt means for extending through said apertures in said first and second lugs of said draw band, said bolt means including a shaft having a first end and a second end,





said shaft of said bolt means having a threaded portion and a fettered portion, said lettered portion having no angular pitch, said bolt means including an enlarged head attached to said first end of said shaft thereof;

(ii) a nut having a threaded aperture for screwably receiving said threaded portion of said shaft of said bolt means and for allowing said bolt means and said nut to coact with one another to draw said first and second lugs of said draw band toward one another; and

(iii) sleeve defining means for crimping to said fettered portion of said shaft of said bolt means after said first and second lugs of said draw band have been drawn together by the coaction between said bolt means and said nut and for preventing undetected subsequent separation of said first and second lugs of said draw band.

5,333,748

CONTAINER DOOR FOR AN OXYGEN SUPPLY UNIT

Christian Schnoor, Lübeck; Roderich Thometschek, Stockelsdorf, and Wolfgang Rittner, Bad Swartau, all of Fed. Rep. of Germany, assignors to Dragerwerk AG, Lubeck, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 986,444

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1991, 4140264

Int. Cl.[5] B65D *43/14*

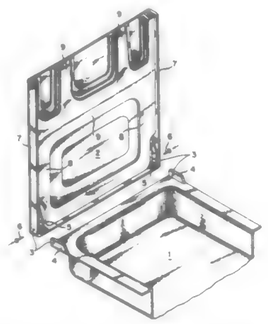
U.S. Cl. 220—343 **8 Claims**

1. An aircraft oxygen supply unit housing container and container door, comprising:

a door member pivotable around a hinge for closing the oxygen supply unit housing, said door member including a container door flat surface connected to a door edge, said door edge extending in the direction of the container;

a reinforcing element extending adjacent said door edge and extending above said container and container door; and

fastening means for fastening said profile-like reinforcing element to said container and container door and said door edge, said reinforcing element including individual rectangular webs which connect spaced apart portions of said door edge, said fastening means including a first fastening fold folded in parallel to said door edge and a second fastening fold extending from said reinforcing element toward said flat surface of said container door, a first adhesive layer being provided between said door edge and said first fastening fold and a second adhesive



layer being provided between said flat surface of said container door and said second fastening fold, said reinforcing element and said first fastening fold forming together with the door edge a rectangular hollow profile.

5,333,749

PACKING CONTAINER

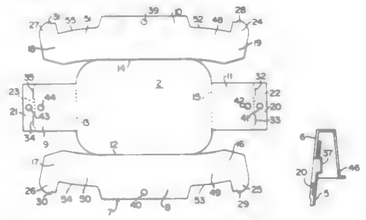
Walter Schellenberg, Diepoldsau, Switzerland, assignor to Rundpack AG, Diepoldsau, Switzerland

Filed May 13, 1993, Ser. No. 61,832

Claims priority, application Switzerland, May 18, 1992, 01579/92

Int. Cl.[5] B65D *5/56*

U.S. Cl. 220—462 **5 Claims**



1. A packing container comprising:

an outer container shaped from a one-piece cardboard blank, the outer container having a bottom part and four side parts which are bent away from the bottom part and form side walls of the container, the bottom part being defined by linear bending edges, and the side walls running linearly up to rounded transition areas;

an inner container deep drawn from a plastic sheet, the inner and outer containers stackable with respect to each other;

individual wall cutouts providing for a detachable connection between the inner container and the outer container, the cutouts being formed near an outer edge of the side parts;

bulges shaped into the inner container; and

a cross-sectionally U-shaped marginal area defined by the inner container passing outwards from an opening rim and extending over the bulges of the inner container.

5,333,750

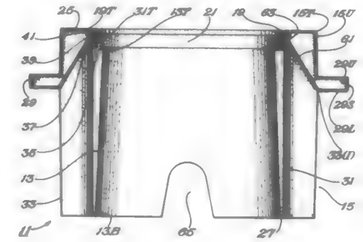
DURABLE LIGHTWEIGHT METER BOX

Robert M. McKinnon, P.O. Box 648, Bedford, Tex. 76021-0648

Filed Sep. 24, 1993, Ser. No. 126,237

Int. Cl.[5] B65D *6/38*

U.S. Cl. 220—484 **4 Claims**



1. An apparatus for receiving a meter and for supporting a cover, comprising:

an inside wall defining a cavity and having upper and lower ends, with upper and lower openings respectively leading to said cavity whereby said cavity may receive a meter by way of said lower opening,

an outside wall spaced from and surrounding said inside wall, said outside wall having upper and lower ends,

a receptacle wall coupled between said upper ends of said inside and outside walls for receiving and supporting a cover,

said outside wall having alternate inner and outer wall sections spaced from each other,

said outer wall sections having intermediate ends located between said upper and lower ends of said outside wall,

said inner wall sections having upper ends located below and next to said receptacle wall for supporting said receptacle wall, and

support wall sections coupled to said intermediate wall ends of said outside wall and to said upper ends of said inner wall sections of said outside wall for providing support for said receptacle wall.

5,333,751

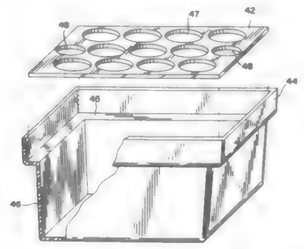
MUSHROOM DISPLAY TRAY AND PACKAGE

Vincent J. Santucci, Sr., West Grove, Pa., assignor to Elite Mushroom Company, Inc., Avondale, Pa.

Filed Sep. 23, 1992, Ser. No. 949,722

Int. Cl.[5] B65D *1/24, 85/50*

U.S. Cl. 220—512 **20 Claims**



1. A display tray of mushrooms, said tray comprising:

a) container means accommodating a plurality of contiguously disposed mushrooms and including an upper portion displaying mushroom crowns and a lower portion containing mushroom stems extending from said mushroom crowns,

b) the upper portion including an outer peripheral edge section and an upper surface disposed around each of a plurality of holes which receive stems of said contiguously disposed mushrooms,

c) the outer peripheral edge section including an upwardly extending flange means that defines a matrix around the upper surface,

d) said plurality of holes defining a mushroom weight-correlated hole design whereby a preselected total net weight of the mushrooms is substantially consistently maintained from tray to tray when filled with a same arrangement of mushrooms,

e) said lower portion including closed, liquid impervious wall means defining chamber means that receive each mushroom stem extending through each said hole of the weight-correlated hole design from a mushroom crown disposed contiguously to the upper surface,

f) said mushrooms and container means being overwrapped by a thin, flexible transparent wrapping material.

5,333,752

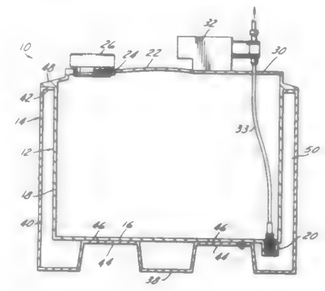
STORAGE CONTAINER UNIT FOR HAZARDOUS LIQUIDS

Robert A. Harding, Jr., Clarkston, Mich., assignor to Clawson Tank Company, Clarkston, Mich.

Filed Feb. 18, 1993, Ser. No. 19,106

Int. Cl.[5] B65D *90/24*

U.S. Cl. 220—565 **1 Claim**



1. An above ground storage container unit for hazardous liquids which comprises:

(a) an inner tank having a bottom wall and an annular side wall extending upwardly therefrom;

(b) an open top outer tank having a bottom wall and an annular side wall extending upwardly therefrom, said inner tank being disposed within said outer tank with said bottom wall of said inner tank adjacent said bottom wall of said outer tank and said side wall of said inner tank spaced radially inwardly from said side wall of said outer tank to provide an annular air chamber between said side walls, and

(c) an enclosing top wall of said inner tank to contain hazardous liquids in said inner tank, said side wall of said outer tank having an annular, radially inwardly extending flange along its upper edge, said inner tank having a radially outwardly extending lip in overlying sealing contact with said flange of the side wall of said outer tank to close and prevent contamination of said air chamber,

(d) said bottom wall of said outer tank being shaped to provide laterally spaced, downwardly opening channels and upwardly opening channels between said downwardly opening channels, said downwardly opening channels being adapted to receive the fork of a fork lift truck

VOL 1165 ISS 1 AG 2 1994 UMI

whereby said storage container unit can be moved, said downwardly opening channels each having a base, the bottom wall of said inner container being supported on the bases of said downwardly opening channels, said upwardly opening channels communicating with said annular air chamber to provide an enlarged air chamber, said outer tank and said enlarged air chamber providing a secondary dike against the escape of hazardous liquids,

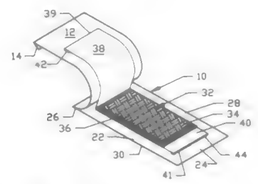
(e) said bottom wall of said inner tank having a sump extending downwardly into one of said upwardly opening channels, a suction line from said sump extending through the top wall of said inner tank, and a pump mounted on said top wall for withdrawing liquid through said suction line.

5,333,753

FINGER BANDAGE PACKAGE AND DISPENSER

Robert W. Etheredge, Natick, Mass., assignor to The Kendall Company, Mansfield, Mass.

Filed Dec. 6, 1993, Ser. No. 162,244
Int. Cl.[5] B65H *1/00*
U.S. Cl. 221—33 3 Claims



1. A finger bandage package and dispenser comprising:

a finger bandage having opposed ends and consisting essentially of an elongated backing carrying on one side thereof a layer of a medical grade pressure-sensitive adhesive and an absorbent pad adapted for placement over a wound substantially centrally disposed on the adhesive layer intermediate the opposed ends of the bandage;

a first release sheet having opposed first and second end edges covering the adhesive layer on one side of the pad;

a second release sheet having opposed first and second end edges and covering the adhesive layer on the opposite side of the pad;

a first sheet material having first and second opposed end edges and opposed first and second side edges;

a second sheet material having first and second opposed end edges and first and second opposed side edges;

the ends of the finger bandage being folded inwardly whereby to make a significantly smaller package;

the first and second sheet materials being placed in superposition with the first end edge of each sheet material in superposition and the finger bandage being contained between the superposed sheet materials with the second end edges of the release sheets adjacent the superposed second end edges of the sheet materials;

the superposed sheet materials being lightly sealed together around their opposed side edges and their first end edges, their respective second end edges being unsealed, the superposed sheet materials defining an outer wrapper for the bandage contained therebetween;

the first end edge of the first release sheet being secured to the first sheet material nearest the first end edge of the first sheet material;

the second end edge of the second release sheet being secured to the second sheet material nearest the second end edge of the second sheet material; and

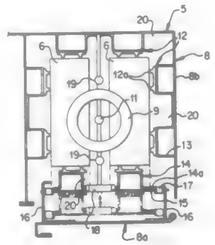
means at the opposed unsealed end edges of the sheet materials for gripping the sheet materials to strip them apart to gain access to the finger bandage contained therein, whereby continued pulling apart of the two sheet materials will remove the release sheets from the bandage as well as to separate the outer wrapper to free the finger bandage from within.

5,333,754

SHELF FOR HOUSING PRODUCTS IN AN AUTOMATIC FROZEN-PRODUCT VENDING MACHINE

Tatsuya Kobayashi, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Aug. 3, 1993, Ser. No. 101,028
Claims priority, application Japan, Aug. 19, 1992, 4-242694
Int. Cl.[5] G07F *11/46*
U.S. Cl. 221—75 5 Claims



1. A shelf for housing frozen products in an automatic frozen-product vending machine, comprising:

a rack made of metal and having a rack wall surface,

a plurality of fitting supports fixed to the rack wall surface to define a space for the frozen products, and

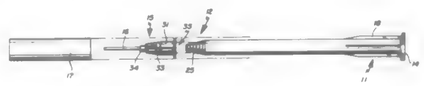
plastic guide pieces fixed to the fitting supports at sides facing the space, said guide pieces having ribs to directly contact with the frozen products to guide the same, and being located away from the rack wall surfaces so that ice accumulated on the rack wall surface does not contact and interfere with the frozen products.

5,333,755

METHOD OF MANUFACTURE OF A STATIC MIXING DISPENSER

Scott G. Wang, 846 Harborview Rd., Hudson, Wis. 54016, and Bruce A. Wang, 505 Valley View Trail, Houlton, Wis. 54082

Filed Sep. 21, 1992, Ser. No. 948,226
Int. Cl.[5] B67B *7/00*; G01F *11/00*
U.S. Cl. 222—1 8 Claims



1. A method of assembling a low volume applicator for compounds having a viscosity greater than 20,000 centipois having a static mixing member with a input and an output end and a nozzle member disposed at the output end of the mixing member, comprising the steps of:

a) providing a static mixing member;

b) providing a nozzle member having a body member and a needle member with a length of at least 12.7 mm. and an orifice diameter not greater than 3.17 mm.;

c) depositing a predetermine amount of an adhesive on the output end of the static mixing member;

d) connecting the nozzle member to the output end of the static mixing member;

e) positioning a heat shrink sleeve having a distal end and a proximal end over a predetermined segment of the mixing member and the nozzle member so that the distal end of the sleeve is aligned with an output end of the nozzle body member;

f) heating the applicator for a predetermined time period sufficient to cause the positioned sleeve to form a tight, semi-flexible retaining and stabilizing skin structure around the mixing member and nozzle body member; and

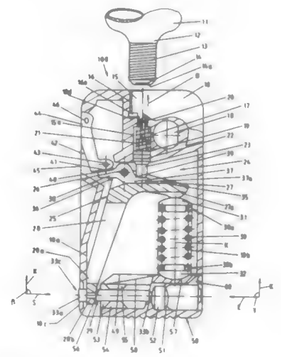
g) curing the applicator by allowing it to set for a predetermined time period.

5,333,756

DEVICE FOR THE INFLATION OF, MORE PARTICULARLY, A CONTAINER OR A FLOATING BODY OF AN ITEM OF LIFESAVING EQUIPMENT

Stefan Glass, Hamburg, Fed. Rep. of Germany, assignor to Bernhardt Apparatebau GmbH u. Co., Fed. Rep. of Germany

Filed Aug. 10, 1993, Ser. No. 104,864
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1992, 9210848[U]
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—5 17 Claims



1. A device for the inflation of a container or a floating body of an item of lifesaving equipment with compressed gas from a compressed gas container sealed by a diaphragm, the inflation device comprising:

a housing having a receiving aperture into which a neck of the compressed gas container can be placed;

an opening striker disposed in the housing and movable therein so as to engage the diaphragm when the compressed gas container is placed within the housing receiving aperture, to release the gas content of the container;

hand lever means at least partially positioned within the housing, for moving the opening striker against a diaphragm;

spring means positioned within the housing, for moving the opening striker against the diaphragm, the spring means being retained in a pretensioned position with the aid of an automatic element which loses its solidity in water; and

a lever drive which acts upon the opening striker, the lever drive including a swiveling lever provided with an intermediate member, wherein the intermediate member is acted upon the hand lever means to move the opening striker against the diaphragm,

characterized in that:

the swiveling level is swivelable about an axis of rotation which is integral with the housing, the swiveling lever including a first arm and a second arm, wherein a free end of the first arm is supported upon the spring means, and wherein the second arm, in a non-tensioned and not-as-yet-released position of the lever drive, is supported upon a housing stop, and further wherein a free end of the second arm, in the tensioned and not-as-yet-released position of the lever drive, can be supported upon the automatic element; and

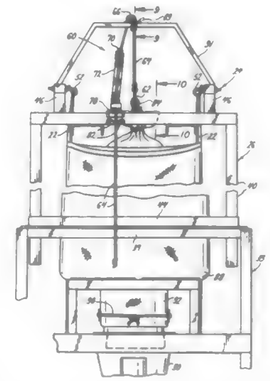
the intermediate member is swivelable about an axis of rotation which is integral with the housing, the intermediate member including two arms, wherein the first arm of the intermediate member can be caused to bear against a shoulder-like bearing edge of the first arm of the swiveling lever, and wherein the opening striker can be acted upon by a free end of the first arm of the intermediate member.

5,333,757

HOIST FOR RETRACTING A LINER FROM A BULK BAG AS MATERIAL IS DISPENSED THEREFROM

Benjamin L. Volk; Joseph A. Volk, Jr., both of Creve Coeur, and Mark R. Kniepmann, Florissant, all of Mo., assignors to Beta Raven Inc., Earth City, Mo.

Continuation-in-part of Ser. No. 698,307, May 10, 1991, Pat. No. 5,257,725, which is a continuation-in-part of Ser. No. 629,157, Dec. 18, 1990, Pat. No. 5,141,135. This application Dec. 24, 1992, Ser. No. 996,672
Int. Cl.[5] B65D *35/22*
U.S. Cl. 222—94 18 Claims



1. A hoist for suspending a liner, said liner containing a quantity of dry material within a bulk bag, said liner having a pour spout at its bottom through which said dry material is dispensed, said hoist comprising a hook for supporting an upper end of said liner as said bulk bag is supported, and means for biasing said hook upwardly so that said liner is prevented from interfering with said dispensing of dry material through said pour spout.

5,333,758

MULTI-OUTLET FLUID DISPENSER POUCH

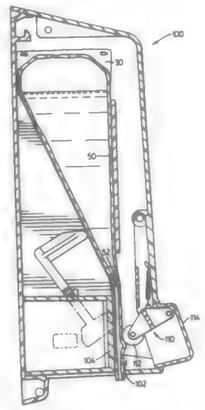
Mark D. Jamison, Zion, Ill.; Stewart Banks, Brantford; Nicholas Williamson, Burington, both of Canada, and George W. Roders, Kenosha, Wis., assignors to Marlingford Holdings Limited, Guernsey, Channel Islands

Filed Jan. 4, 1993, Ser. No. 257
Int. Cl.[5] B65D *35/28*
U.S. Cl. 222—101 11 Claims

7. In a fluid pouch having tow superposed sheets sealed together in liquid tight relation to form a flexible storage compartment in flow communication with a flexible shot-chamber for dispensing a fluid from a dispenser which comprises, a dispenser station through which the fluid is to be dispensed along a dispenser path that extends therethrough, backstop on one side of the dispenser path, cam means confronting the backstop and located on the other side of the dispenser path, means for actuating said cam means to move said cam means

VOL 1165 ISS 1 AG 2 1994 UMI

downwardly along said backstop with sad flexible shot-chamber positioned between said cam means and said backstop to expel a quantity of fluid from said dispenser, the improvement of the fluid pouch comprising at least two spaced serpentine outlet passageways each leading from the flexible shot-chamber to a separate associated discharge opening at a peripheral



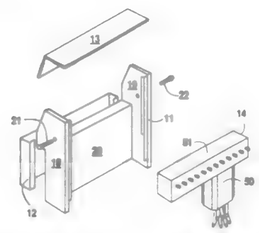
edge of said pouch, said at least two spaced serpentine outlet passageways each including a passageway portion extending substantially upwardly and away from said associated liquid discharge opening, and wherein said serpentine outlet passageways are suitably sized so that finger or hand pressure alone is generally not sufficient to expel fluid from said pouch.

5,333,759

MODULAR DISPENSING TOWER

Robert S. Deering, San Antonio, Tex., assignor to Lancer Corporation, San Antonio, Tex.

Filed Jan. 14, 1993, Ser. No. 4,529
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—129.1 15 Claims



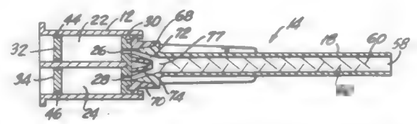
1. A modular dispensing tower, comprising:
a housing;
dispensing means mounted on said housing;
a plurality of product conduits each having an inlet thereto and an outlet therefrom which communicates with said dispensing means;
a mixing fluid conduit having an inlet thereto, an outlet therefrom to allow the circulation of said mixing fluid, and a plurality of outlets communicating with said dispensing means, wherein said mixing fluid conduit contacts each of said plurality of product conduits to produce heat exchange directly therebetween; and
a manifold disposed in said housing, said manifold comprising an insulating material which encapsulates said plurality of product conduits and said mixing fluid conduits.

5,333,760

DISPENSING AND MIXING APPARATUS

Christen Simmen, Brooklyn, N.Y., assignor to Coltene/Whaledent, Inc., Mahwah, N.J.

Filed Dec. 28, 1992, Ser. No. 997,679
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—137 18 Claims



1. A dispensing and mixing apparatus for mixing at least two components which react with one another after contact, comprising:
a cartridge having elongated, parallel, separate chambers for holding the respective components, each chamber having an open end for receiving a piston therein for extruding the component and an outlet orifice in an opposing end of the chamber, separator means at an outer end of the cartridge including the outlet orifices of said chambers and separating them into laterally spaced apart outlet openings so as to prevent contacting of the components at the outer end of the cartridge;
a disposable mixing element having an inlet end and an outlet end, and including a mixing chamber and adapter means provided at said inlet end and connected to said mixing chamber to be disposed therewith after use, said adapter means having inlet orifices spaced apart for alignment with the outlet orifices of the chambers, said adapter means providing passages communicating with said inlet orifices so as to remote said mixing chamber from said inlet orifices so that the components first contact each other inside the mixing chamber at a point spaced from the inlet orifices;
and means for aligning and removably locking the adapter means onto the separator means of said cartridge such that the outlet orifices of the chambers and the inlet orifices of the chambers and the inlet orifices of the adapter means of the mixing element are in alignment, so that during extrusion of the components through the outlet orifices the components go directly into the passageways without contacting each other.

5,333,761

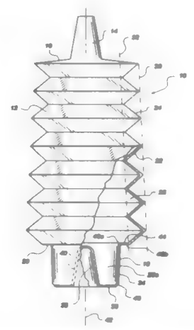
COLLAPSIBLE BOTTLE

Richard C. Davis, Palm Harbor, Fla., and Terrance L. Domin, Crystal Lake, Ill., assignors to Ballard Medical Products, Draper, Utah

Filed Mar. 16, 1992, Ser. No. 852,004
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—212 9 Claims

2. A manually collapsible container comprising:
a pleated bellows section comprising a plurality of stacked pleated bellows segments, the pleated bellows section having an extended position defining a predetermined interior volume and a collapsed position comprising a predetermined collapsed longitudinal distance;
a top nozzle section comprising a hollow discharge nozzle;
a two position manually invertible non-pleated bottom section comprising an annular sidewall extending downwardly beyond the bellows section, a transversely disposed disc-shaped bottom wall and an upwardly directed male projection disposed in alignment with and sized and shaped to selectively extend into the hollow discharge nozzle;

one of said non-pleated bottom section positions comprising a position extending longitudinally beyond the pleated bellows section, the non-pleated bottom section defining a second but non-pleated storage cavity in addition to the pleated volume of the pleated bellows section, the second non-pleated storage cavity being disposed between the annular sidewall, the disc-shaped bottom wall and the male projection;



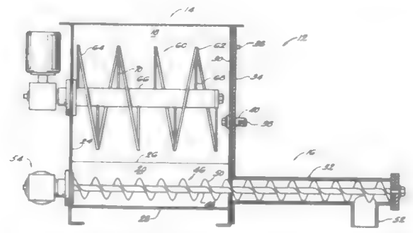
The other of said non-pleated bottom section positions comprising a manually longitudinally inverted inwardly-extending position disposed within the pleated bellows section whereby the second storage cavity is eliminated due to inversion and whereby the male projection becomes positioned within the hollow discharge nozzle when the bellows section is in its collapsed position.

5,333,762

SCREW FEEDER WITH PROGRESSIVELY DECREASING SCREW CONFINEMENT

Robert L. Andrews, Plymouth, Mass., assignor to Hyer Industries, Inc., Pembroke, Mass.

Filed May 7, 1993, Ser. No. 60,198
Int. Cl.[5] G01F *11/20*
U.S. Cl. 222—238 12 Claims



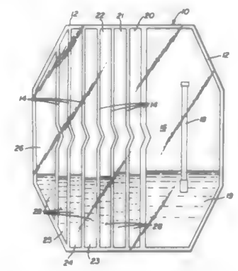
1. A screw feeder for particulate solids having, in combination,
a trough section comprising a first chamber having front and back walls and an elongate trough shaped side wall open at the top, closed at its ends by the front and back walls and converging downwardly to a lengthwise tapered aperture, the width of said aperture progressively increasing from the back wall toward the front wall,
a screw chamber having a member enclosing a space below said aperture, said member having a lower portion substantially conforming to a half cylinder and an upper portion opening progressively from the back wall toward the front wall and terminating at said tapered aperture,
a feeder section comprising full cylinder having an end attached to and communicating through the front wall coaxially with said half cylinder,
a feed screw having helical flights and extending coaxially through the screw chamber and feeder sections,
said member confining the circumference of the screw flights adjacent the back wall over a portion of the circumference substantially exceeding 180 degrees, such confined portion decreasing progressively in the longitudinal direction of the screw,
and means to rotate the feed screw.

5,333,763

PRESSURE ACTIVATION DEVICE

Wallace E. Lane, Moses Lake, Wash.; Michael L. Lane; Lowell T. Whitney, both of Arvada, Colo., and Michael D. Gerstenkorn, Golden, Colo., assignors to Quoin Industrial Inc., Golden, Colo.

Filed Oct. 30, 1992, Ser. No. 968,834
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—386.5 20 Claims



13. The improved method of activating a trigger in a pressure generating system used in combination with a dispensing container for flowable product, containing a trigger enclosure and an at least two-component gas generating system, in which the dispensing container holds at least a first component of the gas generating system externally of the trigger enclosure, and the trigger enclosure houses a second component of the gas generating system; comprising:
providing a trigger enclosure that is at least semi-rigid and defines an external opening therethrough and a housing internal volume therein;
placing in said housing internal volume a relatively lesser volume of said second component of the gas generating system, thereby providing a headspace;
selecting a membrane of material capable of rupturing under a preselected externally applied pressure when covering an opening of the size of said opening in the trigger enclosure and with the headspace provided therein;
sealing said opening in the trigger enclosure with said membrane;
locating the trigger enclosure in said dispensing container;
sealing the dispensing container; and
supplying pressure into the dispensing container in quantity sufficient to deform the membrane into the housing internal volume and thereby rupture the membrane.

5,333,764

LADLE STOPPER ROD CONTROL ARRANGEMENT

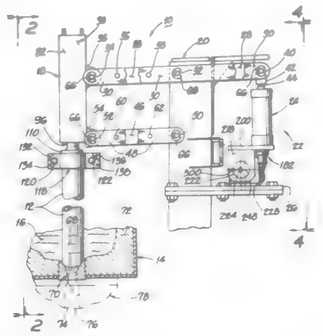
Steven M. Kassuba, Gaylord, Mich., assignor to CSI Industrial Systems, Corp., Grayling, Mich.

Filed May 19, 1993, Ser. No. 64,835
Int. Cl.[5] B22D *41/20*
U.S. Cl. 222—602 12 Claims

1. Apparatus for controllably pouring molten material from a ladle having a pouring nozzle, comprising a stopper rod for opening and closing said nozzle, a stopper rod support struc-

VOL 1165 ISS 1 AG 2 1994 UMI

ture, wherein said support structure comprises manual adjustment means for adjusting the position of said stopper rod relative to said support structure, pressure responsive piston and cylinder means operatively connected to said support structure and effective to move said support structure and said stopper rod to a preselected opened position relative to said nozzle, a driving motor, camming means operatively interposed between said driving motor and said piston and cylinder means, wherein prior to said piston and cylinder means moving said support structure said support structure and stopper rod are in a position wherein said stopper rod is closed against said nozzle and said piston of said piston and cylinder means is situated a preselected distance away from an end travel of said



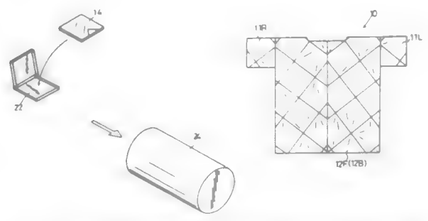
piston, further comprising electrical means for sensing the position of said piston within said cylinder, said electrical means being effective to sense when said piston is at said preselected distance and produce an output signal indicative thereof, wherein initial pouring of said molten material from said ladle occurs when said piston moves said preselected distance within said cylinder to said end travel of said piston, and wherein the pouring of said molten material following said initial pouring is accomplished by said drive motor driving said camming means and having said camming means move said support structure and stopper rod by moving said piston and said cylinder means while said piston remains at said end travel within said cylinder.

5,333,765

METHOD OF PLEATING GARMENTS

Naoki Takizawa, Tokyo, Japan, assignor to Kabushiki Kaisha Miyake Design Jimusho, Tokyo, Japan

Continuation-in-part of Ser. No. 845,694, Mar. 4, 1992, abandoned. This application Mar. 22, 1993, Ser. No. 36,146
Claims priority, application Japan, Aug. 22, 1991, 3-233768
Int. Cl.[5] A41H *43/00*; D06C *3/00*; B31B *1/25*
U.S. Cl. 223—28 **4 Claims**



1. A method of pleating an unfinished garment, comprising the steps of:

folding a sewed unfinished garment around a core plate made of material having rigidness and air-permeability;

placing the folded unfinished garment in a case made of material having rigidness and air-permeability;

inserting the case containing the folded

garment into a heat-treatment apparatus filled with saturated steam; and unfinished

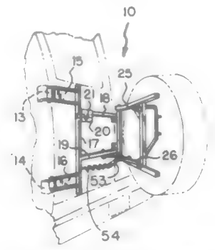
simultaneously heat-treating and pleating the folded unfinished garment in the heat-treatment apparatus filled with saturated steam which permeates deep into the folded garment through the case and the core plate, thereby pleating the garment.

5,333,766

SWING LOCK SPARE TIRE CARRIER

Jerald Fisher, 5551 N. Sabel Dr., Milton, Wis. 53563

Filed May 10, 1993, Ser. No. 58,142
Int. Cl.[5] B62D *43/02*
U.S. Cl. 224—42.21 **4 Claims**



1. A swing lock spare tire carrier arranged for mounting to a vehicular van, wherein the vehicular van includes a van door, and the vehicular van includes a first hinge and a second hinge pivotally mounting the van door, and wherein the apparatus comprises,

a first hinge plate and a second hinge plate arranged in a parallel coextensive relationship relative to one another, with the first hinge plate arranged for securement to the first hinge, and the second hinge plate arranged for securement to the second hinge, and

a first support bar fixedly and orthogonally mounted to the first hinge plate and the second hinge plate, with the first hinge plate pivotally mounted to the first hinge at a first hinge plate first end, and the second hinge plate pivotally mounted to the second hinge at a second hinge plate first end, and

a first hinge plate second end and a second hinge plate second end are fixedly mounted to the first support bar, and

a first leg and a second leg, the first leg having a first leg first end and the second leg having a second leg first end, with the first leg first end and the second leg first end fixedly mounted to the first support bar in an orthogonal relationship, with the first leg and the second leg parallel to the first hinge plate and the second hinge plate, and

a second support bar fixedly and orthogonally mounted to the first leg and the second leg spaced from the first support bar, and

a first mounting plate and a second mounting plate fixedly mounted to the second support bar arranged for abutment with the van door, and

the first support bar and the second support bar are orthogonally oriented relative to the first leg and the second leg, and

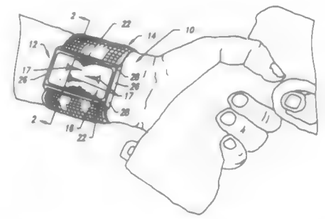
bracket means pivotally mounted to the second support bar for support of a tire member thereon.

5,333,767

WRIST MOUNTED MAGNETIC HOLDER

Steven P. Anderson, 6666 Reseda Blvd. #204, Reseda, Calif. 91335

Continuation-in-part of Ser. No. 860,166, Mar. 30, 1992, Pat. No. 5,196,818. This application Feb. 16, 1993, Ser. No. 18,296
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—183 **14 Claims**



1. A magnetic holder for releasably supporting magnetically attractable objects comprising:

a generally rectangular shaped housing formed of non-magnetic material and having longitudinal sides laterally spaced by interconnected end walls, said housing having a generally rectangular cavity formed therein;

a generally rectangular shaped magnet mounted within said cavity and having a generally flat upper face and a generally flat lower face, said magnet being divided laterally into two regions of reverse polarity with substantially one half of said upper face having one polarization and the other half having the opposite polarization;

a generally rectangular shaped concentrator plate of ferrous material disposed within said cavity between said lower face of said magnet and said housing; and

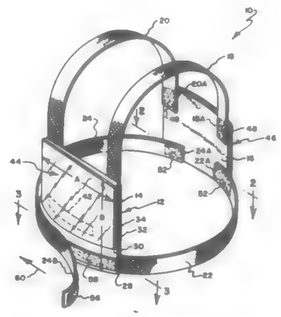
a cover plate having a generally flat upper surface dimensioned to overlie said upper surface of said magnet and said cavity, said cover plate secured to said housing to retain said magnet and said concentrator plate within said cavity, said cover plate forming a support surface for supporting objects magnetically attracted to said holder.

5,333,768

ADJUSTABLE CHEST POUCH

Douglas J. Krentz, 2827 Coventry Green, Hamburg, N.Y. 14075

Filed Jan. 19, 1993, Ser. No. 5,279
Int. Cl.[5] A45F *3/04*
U.S. Cl. 224—215 **8 Claims**



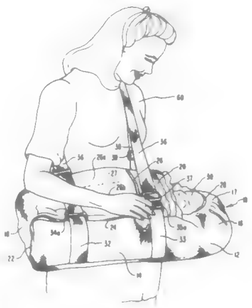
1. A chest pouch garment comprising a pouch means, a pair of shoulder straps each composed of an elastic material and having a front end portion and a back end portion, a pair of chest straps each composed of an elastic material and having a front end portion and a back end portion, means for fixedly attaching the back end portions of the shoulder straps and the back end portions of the chest straps to a back member, means for fixedly attaching the front end portions of the shoulder straps and one of the chest straps to the pouch means, first means for releasably attaching the front end portion of the other of the chest straps to the pouch means so that when the front end portion of the other chest strap is released from the pouch means, a length of the other chest strap sufficient to extend between the back member and the pouch means is free to hand from the back member such that the other chest strap does not interfere with inserting a chest and head into the chest pouch garment for donning the garment, and means for adjusting the length of the other chest strap extending between the back member and the pouch means to enable the chest pouch garment to be worn by people having various chest sizes.

5,333,769

INFANT CARRIER APPARATUS AND METHOD

Mitchell E. Skroski, 8 Hunter's Ridge Dr., Ashville, N.C. 28803

Filed Jul. 29, 1993, Ser. No. 99,736
Int. Cl.[5] A61G *1/013*
U.S. Cl. 224—158 **21 Claims**



1. An infant carrier comprising:

a transportable bed, said transportable bed including an external periphery and a head end and a foot end;

a raised sidewall around said external periphery of said transportable bed, said raised sidewall including a right sidewall, a left sidewall, a head end sidewall, and a foot end sidewall;

a cover for said transportable bed, said cover being formed as an extension of said foot end sidewall, said cover being removably attached to an incremental length of each of said right sidewall and said left sidewall;

a left carrying strap and a right carrying strap, said left carrying strap being formed as a left loop having a first left end and a second left end, said first left end being attached to said transportable bed adjacent said head end, said second left end being attached to said transportable bed adjacent said foot end, said right carrying strap being formed as a right loop having a first right end and a second right end, said first right end being attached to said transportable bed adjacent said head end, said second right end being attached to said transportable bed adjacent said foot end;

a board pocket underneath said transportable bed;

a support board removably inserted into said board pocket, said support board providing a stiffener for said transportable bed; and

a canopy across a portion of said head end, said canopy extending inwardly an incremental distance from said

VOL 1165 ISS 1 AUG 2 1994 UMI

raised sidewall and forming an opening between said canopy and said cover.

5,333,770

SYSTEM FOR CONTROLLING TAPE TRAVELING HEIGHT AND TAPE GUIDE WITH TAPE EDGE DETECTOR THEREFOR

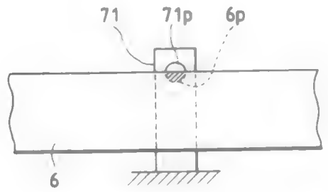
Kiyoshi Kano, and Kichizaemon Okazaki, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 662,627, Feb. 27, 1991. This application Oct. 25, 1993, Ser. No. 140,967

Claims priority, application Japan, Mar. 1, 1990, 2-47227; Mar. 28, 1990, 2-76860

Int. Cl.[5] B65H *23/35*

U.S. Cl. 226—15 3 Claims



3. A tape edge detector disposed in a tape traveling path of a recording/reproducing apparatus using a tape for detecting a position of a tape edge of the tape in the width direction of the tape, the tape edge being an edge of a portion of the tape engaged with a tape guide, the tape guide defining a portion of the tape traveling path when engaged with the tape, wherein said tape guide includes a transparent member having a tape-engaging surface for engaging said tape in sliding contact when said tape guide is engaged with said tape, and wherein said tape edge detector is disposed inside said tape guide such that said tape edge detector and said tape are on opposite sides of said transparent member and a detecting surface of said tape edge detector is spaced a predetermined distance from said tape-engaging surface of said transparent member.

5,333,771

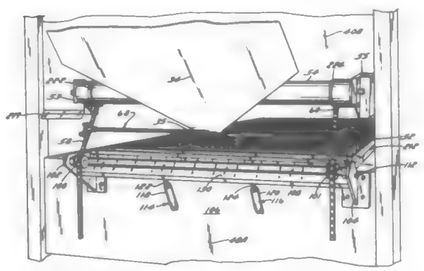
WEB THREADER HAVING AN ENDLESS BELT FORMED FROM A THIN METAL STRIP

Donald C. Cesario, Green Bay, Wis., assignor to Advance Systems, Inc., Green Bay, Wis.

Filed Jul. 19, 1993, Ser. No. 93,530

Int. Cl.[5] B65H *20/16*

U.S. Cl. 226—92 31 Claims



1. An apparatus comprising:
a. a machine having a web path;
b. an endless threader belt extending along said web path, said belt including (1) means for detachably receiving a leading edge of a continuous web and (2) a thin flexible metal strip having perforations evenly spaced along its length;
c. guide means for guiding said belt along said web path;
d. a sprocket having protrusions which engage said perforations; and
e. driver means for driving said sprocket, said sprocket driving said belt through said driver along said web path and carrying said web therewith.

5,333,772

MULTIPLE FIRE ENDOSCOPIC STAPLING MECHANISM

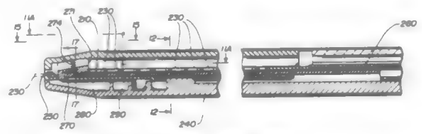
Robert G. Rothfuss, Bellevue, Ky.; Livyn O. Okorocha, Cincinnati; Gregory D. Bishop, Hamilton, both of Ohio; Narinderjit S. Sambi, Maineville; James J. Bedi, Cincinnati, both of Ohio; Salvatore Privitera, Sharonville, and Michael Sherrill, Cincinnati, both of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 759,014, Sep. 12, 1991, Pat. No. 5,246,156. This application Jan. 29, 1993, Ser. No. 11,069

The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[5] A61B *17/068*

U.S. Cl. 227—176 4 Claims



1. An endoscopic cartridge comprising:
a firing mechanism capable of moving along a longitudinal path and defining a longitudinal axis and containing a driver and an anvil;
a stack of staples placed along said longitudinal axis;
a transfer mechanism engageable with said firing mechanism and capable of transferring a staple from said staple stack and into said path, and comprising a lifter positioned in said cartridge and moveable transverse to said longitudinal axis, said lifter having a sloped surface, and the distalmost staple in said stack engageable with said sloped surface to move from said stack and into said path; and
wherein
said cartridge is circular and is capable of being placed in a trocar tube 10 mm in diameter.

5,333,773

SEALING MEANS FOR ENDOSCOPIC SURGICAL ANASTOMOSIS STAPLING INSTRUMENT

Lauren O. Main, Loveland, and Richard L. Grant, Cincinnati, both of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

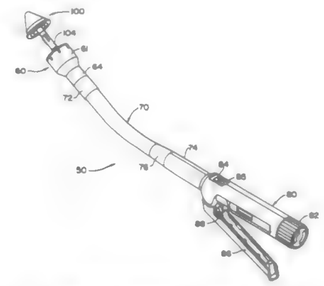
Continuation-in-part of Ser. No. 938,982, Sep. 1, 1992, Pat. No. 5,205,549, which is a division of Ser. No. 749,393, Aug. 23, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,787

Int. Cl.[5] A61B *17/068*

U.S. Cl. 227—179 14 Claims

14. A surgical stapling instrument for applying one or more surgical staples to tissue, comprising:
a stapling head assembly including a staple holder for receiving one or more surgical staples, an anvil for clamping the tissue against said staple holder, and driver means for driving the staples from said staple holder;
an actuator handle assembly for actuating said staple driver;
a shaft assembly with a generally hollow interior and including a support shaft for mounting said stapling head assembly on said actuator handle assembly;

a connector for supporting said stapling head assembly, on said handle assembly;
a ferrule overlapping said support shaft and said connector;



said ferrule being compressed radially inward over said support shaft and said connector; and
an o-ring place between said ferrule and said shaft assembly.

5,333,774

VAPOR REFLOW SOLDERING APPARATUS

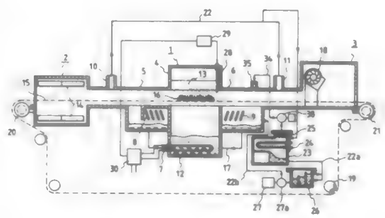
Haruo Mishina, Ushiku, and Shinya Yamama, Abiko, both of Japan, assignors to Hitachi Techno. Engineering Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 31,878

Claims priority, application Japan, Mar. 16, 1992, 4-055797

Int. Cl.[5] B23K *1/015*

U.S. Cl. 228—46 4 Claims



1. A vapor reflow soldering apparatus having means for delivering an article to be processed to a vapor generating tank for generating saturated vapor of thermal medium, means for allowing the article to be processed to come in contact with the saturated vapor, and means for heating and melting solder of the article to be processed so as to solder the article, and wherein said vapor reflow soldering apparatus further comprises means for blowing a as containing mist, which is obtained by cooling the thermal medium in vapor phase state, on the article to be processed in an outletside delivery path for delivering the article to be processed from said vapor generating tank, so that said gas containing mist rapidly cools the article by the heat of vaporization of the mist when the air containing the cooled mist is blown on the article.

5,333,775

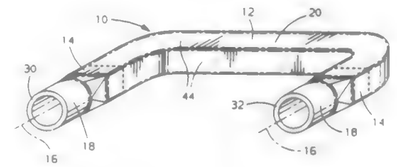
HYDROFORMING OF COMPOUND TUBES

Charles J. Bruggemann, Rochester Hills; Michael G. Poss, St. Clair Shores, and Sanjay M. Shah, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 16, 1993, Ser. No. 49,693

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—157 4 Claims



1. A method of making a tubular structural member having a selectively localized longitudinal variation in at least one of a wall thickness and a perimeter comprising the steps of:
forming a first tube having a first diameter and a first wall thickness and a longitudinal axis;
forming a second tube having a second diameter and a second wall thickness and a longitudinal axis;
at least one of the first diameter and the first wall thickness being different from the corresponding one of the second diameter and the second wall thickness,
welding the first tube to the second tube to form a longitudinal tube blank having a longitudinal axis passing through a first end and a second end of the tube blank;
enclosing the tube blank in a die having cooperating die sections defining a longitudinal cavity; and
hydraulically pressurizing the tube blank from inside thereof thereby forcing the tube blank radially outward relative to the longitudinal axis of the tube blank into conformance with the longitudinal cavity of the die.

5,333,776

ATMOSPHERES FOR BRAZING ALUMINUM AND ALUMINUM ALLOYS

Diwakar Garg, Macungie; Kerry R. Berger, Lehighton, and Donald P. Eichelberger, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 30, 1993, Ser. No. 129,896

Int. Cl.[5] B23K *1/008, 35/38*

U.S. Cl. 228—219 6 Claims



1. A method for brazing aluminum or aluminum alloys comprising the steps of
juxtaposing the parts to be brazed with a brazing alloy and low loading of a non-corrosive flux therebetween;
heating said juxtaposed parts in a furnace heated to a temperature of at least 500° C.;
simultaneously injecting into said furnace non-cryogenically produced nitrogen gas having a dew point less than −40° C. and an oxygen control of between 0.05 and 15% by volume; and

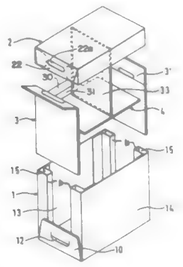
VOL 1165 ISS 1 AG 2 1994 UMI

maintaining said parts at temperature and under atmosphere until said brazing is complete.

5,333,777
CONTAINER FOR STACKS OF SHEETS

Oscar Roth, Reblandstrasse 17, CH-5622 Waltenschwil, Switzerland

Filed Jun. 19, 1992, Ser. No. 903,086
Claims priority, application Switzerland, Jun. 19, 1991, 1812/91-3
Int. Cl.[5] B65D *5/32, 5/48*
U.S. Cl. 229—117.16 22 Claims

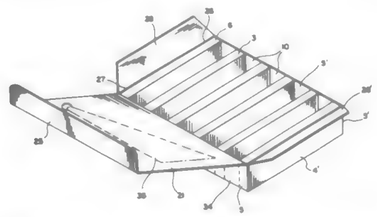


1. A container comprising:
a square or rectangular bottom wall having first and second side edges and first and second end edges;
a pair of sidewalls, each of said sidewalls being attached to and upwardly extending from one of said side edges of said bottom wall, each of said sidewalls having a first height as measured from said bottom wall; and
at least one end wall attached to and extending upwardly from one of said end edges of said bottom wall, said at least one wall having a second height less than said first height, each of said sidewalls further having a flap overlapping with and affixed to said at least one end wall, said flaps being spaced apart from each other, and said at least one end wall having an opening forming a handgrip portion.

5,333,778
PACKAGING WITH INTEGRATED PARTITIONING

Erich Specker, Altstätten, Switzerland, assignor to Dividella AG, Grabs, Switzerland

Filed Feb. 16, 1993, Ser. No. 18,199
Claims priority, application Switzerland, Mar. 16, 1992, 820/92-4; Sep. 7, 1992, 2793/92/4
Int. Cl.[5] B65D *25/04*
U.S. Cl. 229—120.24 16 Claims

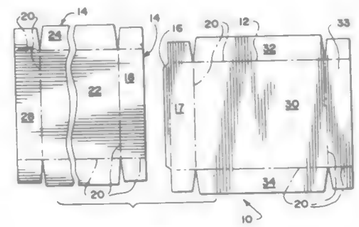


1. A package for accommodating elongate items, said package comprising
a support blank (1) having a bottom wall, a pair of parallel side walls (4, 4'), and at least one transverse wall (5') connected to the side walls,
a shaped blank (2) glued to the bottom wall of the support blank, said shaped blank having parallel corrugations (3), with rectangular cross-sections, extending parallel to the side walls and to the bottom wall, and including outermost full corrugations (6, 6') having respective outer walls (7, 7') which bear against the side walls of the support blank, but are not connected to the support blank.

5,333,779
FLAT BLANK FOR CONTAINERS AND METHOD CASE II

John M. Sykora, Palos Hills, and Graham Hough, Lake Villa, both of Ill., assignors to Field Container Company, L.P., Elk Grove Village, Ill.

Filed Feb. 17, 1993, Ser. No. 18,684
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[5] B65D *5/32*
U.S. Cl. 229—125.08 13 Claims

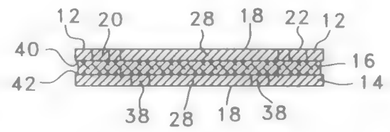


1. A paperboard flat blank, scored for folding to form a container, which flat blank comprises:
at least first and second flat paperboard blank portions sealed together along seal line means to form the entire flat blank, each flat blank portion having a portion thereof that is free of contact with the other flat blank portion;
said first flat blank portion exhibiting at least one physical property that is different from the corresponding physical property of said second flat blank portion, other than the scoring, and the shape and size in the plane of said flat blank by having a different physical property of strength based on the organic macromolecules present in said paperboard that relates at least to one of the properties that include amount of macromolecules and type of macromolecules present in the paperboard of the blank portion; and each flat blank portion having at least one minor wall that is the mirror image of a corresponding minor wall on the other flat blank portion and disposed in juxtaposition with said seal line connecting said mirror imaged walls.

5,333,780
PRINTABLE DISKETTE ENVELOPE FORM

John C. Scott, P.O. Box 1066, Greenwich, Conn. 06830

Filed Feb. 9, 1993, Ser. No. 15,410
Int. Cl.[5] B65D *27/04*
U.S. Cl. 229—75 9 Claims

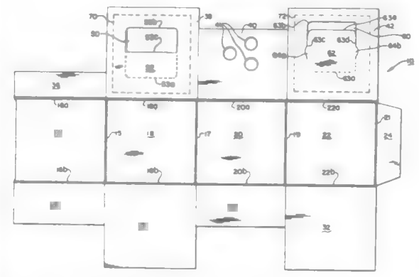


1. A printable diskette envelope form capable of being processed by standard computer printers and comprising a flat laminated sheet of printable material having at least two layers of printable stock sandwiching an adhesive layer, said sheet being imperforated or scored to define an envelope pattern, said envelope pattern having a larger back panel, a smaller front panel of shape corresponding with that of the back panel and tab means to secure said back panel to said front panel to be manually assemblable into a pocket for a diskette said envelope form presenting a print area within said envelope pattern to receive a directory listing of files stored on said diskette, said laminate providing one or more said tabs in one layer and an adhesive protective strip in another layer, said adhesive layer furnishing adhesive for said self-adhesive tab.

5,333,781
RECLOSEABLE CARTON WITH POURING SPOUT

Harry I. Roccaforte, Chicago, Ill., assignor to Waldorf Corporation, St. Paul, Minn.

Division of Ser. No. 798,924, Nov. 27, 1991, Pat. No. 5,205,480.
This application Jan. 13, 1993, Ser. No. 3,544
Int. Cl.[5] B65D *5/70*
U.S. Cl. 229—229 18 Claims

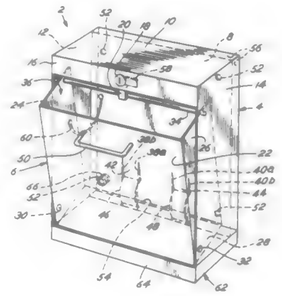


1. A tamper-evidencing, recloseable pouring spout structure for a wall of a product dispensing carton, comprising:
a first wall panel connected to the carton at a first fold line, said first wall panel having a first, generally central aperture therein, a removable tamper-evidence tab closing a portion of the first aperture, wherein the first aperture of the first wall panel has an aperture perimeter defined in part by a generally U-shaped line of perforations with two ends and in part by an opposed, generally U-shaped cut line with two ends, the line of perforations and the cut line being connected to each other at their respective ends, said removable tamper-evidence tab having a free edge and closing the portion of the aperture having the aperture perimeter defined by the generally U-shaped line of perforations, said free edge extending between the ends of the line of perforations;
a second wall panel connected to the carton at a second fold line generally parallel and opposite to the first fold line, said second wall panel lying interior to said first wall panel and having an opener tab therein defined by a leader edge that is generally parallel to the second fold line, a pair of generally parallel opposed side edges extending from the leader edge to a hinge line generally parallel to the leader edge, and at least one locking tab on one of said side edges intermediate the leader edge and the hinge line, said locking tab extending in a direction generally perpendicular to the extension direction of the leader tab and positioned to underlie and engage an edge of the first aperture when the locking tab is in the plane of the second wall panel; and
a third wall panel connected to the carton at a third fold line generally perpendicular to the first and second fold lines, said third wall panel lying interior to the first and second wall panels and having one or more product dispensing apertures therein.

5,333,782
MAILBOX

Andreas Frauenberger, Grossburgwedel, Fed. Rep. of Germany, assignor to Frauenberger & Co. mbH, Fed. Rep. of Germany

Filed Mar. 4, 1993, Ser. No. 26,526
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1992, 9203060
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—28 11 Claims

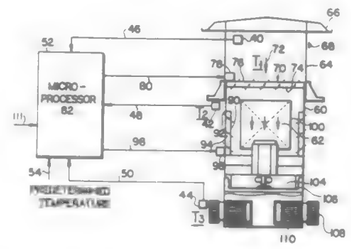


1. A mailbox comprising
a housing having a rear wall, two side walls and a top wall,
a box disposed within said housing having a front wall, a bottom wall and two side walls, said bottom wall having a rear edge, said side walls of said box being hinged to the side walls of said housing near the bottom thereof to permit pivoting said box to provide a slot between the upper edge of said front wall and the top wall of the housing,
a bar connecting the side walls of said box at the upper ends of said side walls,
a stop pivotally mounted on said housing which pivots into the path of said connecting bar to limit the pivoting range of said box, and
a spring in the rear wall of said housing which bears against said rear edge normally to urge said box bottom downwardly thereby swivelling said box into said housing and closing said slot.

5,333,783
AUTOMATED AIR MIXING SYSTEM

Robert S. Catan, 10 Westbrook Ct., Greenlawn, N.Y. 11740

Filed Feb. 22, 1993, Ser. No. 20,364
Int. Cl.[5] G05D *23/00*
U.S. Cl. 236—13 11 Claims



1. Apparatus for a construction having inside and ambient

VOL 1165 ISS 1 AG 2 1994 UMI

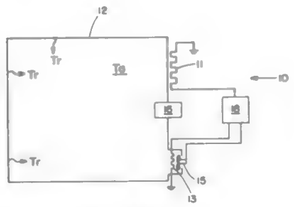
air and including means for controllably exhausting variable amounts of said inside air from within said construction, said apparatus comprising a system including first air guiding means defining a principle flow path for air, second air guiding means for admitting said ambient air into said principle flow path, first control means for controlling the rate of flow of said ambient air into said principle flow path, means for admitting said inside air into said principle flow path, second control means for controlling the rate of flow of said inside air into said principle flow path, discharge means for enabling the discharge of air from said principle flow into the interior of said construction at a pre-determined rate, sensing means to measure the temperatures of said inside and ambient and discharged air, processing means responsive to the amount of air being exhausted from within said construction and to said sensing means to generate signals to control said first and second control means to adjust the rates of flow of said inside and ambient air to make up for the amount of air being exhausted from within the construction.

5,333,784

RADIATION DETECTOR WITH THERMOCOUPLE CALIBRATION AND REMOTE TEMPERATURE REFERENCE

Francesco Pompei, Boston, Mass., assignor to Exergen Corporation, Newton, Mass.

Filed Mar. 2, 1993, Ser. No. 25,089
Int. Cl.[5] G01J *5/00*; G01K *7/00*
U.S. Cl. 236—91 C **22 Claims**



1. A radiation detector comprising:
- a thermopile, the thermopile sensing radiation emitted from a target area;
- a thermocouple electrically connected in series with the thermopile, the thermocouple sensing a local temperature and generating an output signal indicative of the local temperature; and
- a calibrator for weighting the thermopile and thermocouple output signals such that the output signals combine to provide a combined output signal indicative of radiant heat flux and local temperature, individual changes in radiant heat flux and in local temperature resulting in significant changes in the combined output signal.

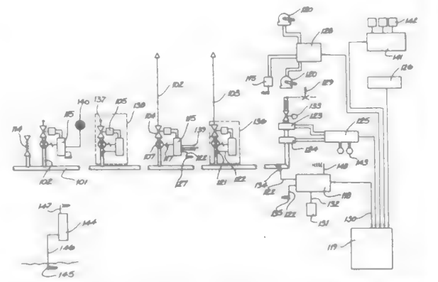
5,333,785

WIRELESS IRRIGATION SYSTEM

Graeme C. Dodds, 2 Frensham Place, Dural, Australia 2158 , and Peter G. McNeil, 18 Darmody Street, Weetangera, Australia 2614

Filed Dec. 18, 1992, Ser. No. 992,914
Claims priority, application Australia, Dec. 19, 1991, PL0120
Int. Cl.[5] B05B *12/04*
U.S. Cl. 239—69 **10 Claims**

1. A wireless irrigation system for controlling the operation of a plurality of control valves each of which controls the flow of water in a corresponding branch pipe leading from a common supply pipe, said system being characterised by a control data generator, a purality of control units and a plurality of power generating means corresponding to each of said control valves and being located adjacent thereto, for generating power in response to the flow of water in a corresponding branch pipe said control units being connected to the corresponding control valve and to the corresponding power generating means, and including decoding means to detect data transmitted from said control data generator which identifies a predetermined one of said control units, and switch means



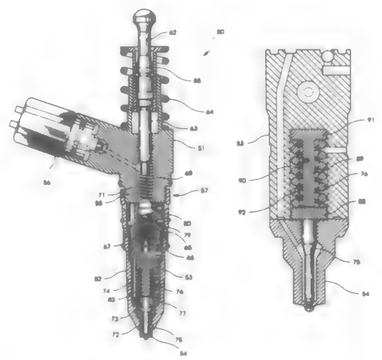
activatable by said decoding means to connect said control valve and said power generating means to operate said corresponding control valve, wherein said control unit has sensing means to sense operational data, and said control unit includes means for transmitting sensed operational data to said data control generator.

5,333,786

FUEL INJECTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Gary L. Gant; George L. Muntean, and Jeffrey C. Osborn, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 3, 1993, Ser. No. 71,514
Int. Cl.[5] F02M *47/02*
U.S. Cl. 239—89 **22 Claims**



1. A fuel injector for an internal combustion engine comprising:
- a main body having an axially-extending timing bore;
- a timing plunger disposed within said axially-extending timing bore;
- a nozzle member having an axially-extending needle bore;
- an injection needle disposed in said axially-extending needle bore;
- an adapter positioned between said nozzle member and said main body, said adapter including an axially-extending metering bore and a needle spring cavity;

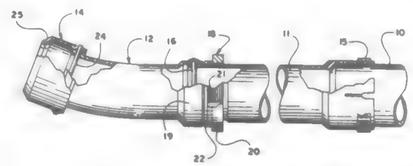
- a retainer disposed about said nozzle member and said adapter and attached to said main body;
- a metering plunger disposed within said axially-extending metering bore;
- a biasing spring disposed within said needle spring cavity; and
- control means for limiting the upward travel of said needle in response to the fuel pressure in said axially-extending needle bore.

5,333,787

NOZZLE WITH SELF CONTROLLED OSCILLATION

Leary W. Smith, 3665 Keswick Dr., Chamblee, Ga. 30341, and Clifford H. Boylston, 1892 Surry Trail, Conyers, Ga. 30208

Continuation-in-part of Ser. No. 831,420, Feb. 5, 1992, abandoned. This application Jan. 25, 1993, Ser. No. 8,660
Int. Cl.[5] B05B *3/16*
U.S. Cl. 239—227 **9 Claims**



1. A nozzle for providing an oscillating fluid flow, said nozzle being connected for receiving fluid from a fluid source which provides a fluid stream, said nozzle comprising a stationary segment having an outlet end for delivering said fluid stream therefrom, an oscillating segment pivotally connected to said stationary segment at said outlet end of said stationary segment, said oscillating segment having an inlet end for receiving said fluid stream and an outlet end through which said fluid stream is discharged, said oscillating segment being substantially rigid, pivot means for pivotally connecting said oscillating segment to said stationary segment, said pivot means being located adjacent to said inlet end of said oscillating segment, and an inwardly turned lip on said oscillating segment, said inwardly turned lip causing oscillation of said oscillating segment and said fluid stream, wherein said inwardly turned lip is adjacent to said outlet end of said oscillating segment for directly receiving fluid force to cause said oscillation of said oscillating segment so that one portion of said inwardly turned lip moves out of said fluid stream and causes another portion of said lip to move into said fluid stream.

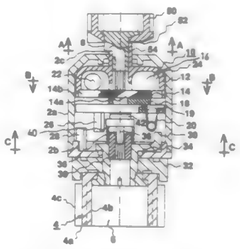
5,333,788

BALL-TYPE WATER SPRINKLER

Yoram Hadar, Haifa, Israel, assignor to Lego M. Lemelsbtrich Ltd, Natania, Israel

Filed Mar. 22, 1993, Ser. No. 34,983
Claims priority, application Israel, Mar. 23, 1992, 101334
Int. Cl.[5] B05B *3/04*
U.S. Cl. 239—241 **14 Claims**

1. A ball-type water sprinkler, comprising:
- a mounting device for mounting the sprinkler to a water supply pipe;
- a rotor mounted for rotation with respect to said mounting device and to receive water therefrom;
- a chamber formed in said rotor and having a first water inlet oriented to direct the water to flow circumferentially of the chamber in a first direction, a second water inlet oriented to direct the water to flow circumferentially thereof in the opposite direction, and an outlet from said chamber;
- a ball freely movable within the chamber according to the direction of flow of the water therethrough;
- an impact element fixed to the rotor within said chamber so as to be impacted by the ball and to rotate the rotor according to the direction of rotation of the ball therein;
- a fixed stop extending axially of the sprinkler and fixed with respect to said mounting device;
- a presettable stop also extending axially of the sprinkler and circumferentially presettable with respect to said fixed stop;
- a shutter normally coupled to said rotor and to rotate therewith but movable with respect thereto to a first position covering said first inlet and uncovering said second inlet, or to a second position covering said second inlet and uncovering said first inlet;
- and actuator means rotatable with said shutter;



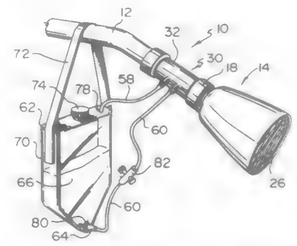
- said presettable stop being carried by a rotatable ring interposed between said mounting device and said rotor;
- said shutter being of a T-configuration, including a first leg adapted to cover and uncover said first inlet, a second leg adapted to cover and uncover said second inlet, and a third leg pivotally mounting said shutter to said actuator means;
- said actuator means including an actuator element extending axially of the sprinkler and engageable with said fixed stop to move the shutter to said first position and with said presettable stop to move the shutter to said second position.

5,333,789

SOAP DISPENSER INSERT FOR A SHOWER HEAD

David Garneys, 1310 Pinecrest Road, Apt. #605, Ottawa, Ontario, K2C 3N8, Canada

Filed Aug. 21, 1992, Ser. No. 932,942
Int. Cl.[5] B05B *7/28*
U.S. Cl. 239—318 **10 Claims**



1. An insert for dispensing a liquid additive into a water inlet stream in a conventional shower assembly wherein the assembly includes a water inlet pipe and a shower head assembly, said insert comprising:
- a cylindrical body member having a wall, said member adapted for attaching at one end to said inlet pipe and at an opposite end to said shower head assembly;
- a baffle within and intermediate the ends of said body, said baffle dividing said body into an inlet and an outlet cham-

VOL 1165 ISS 1 AG 2 1994 UMI

ber and having a longitudinal passage therethrough from said inlet to said outlet chamber; and

first and second passages through said wall, respectively from each of said inlet and outlet chambers;

a dispenser for holding a liquid to be added to a water stream flowing through said body;

a first tubular member extending from said first passage to said dispenser and opening into said dispenser at a level above the highest level to be reached by a liquid in said dispenser;

said dispenser having an opening adjacent a bottom section thereof; and

a second tubular member extending from said opening in said dispenser to said second passage.

5,333,790

QUICK DISCONNECT NOZZLE APPARATUS

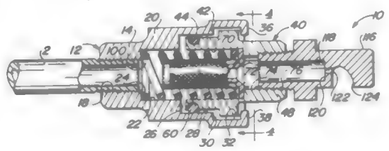
Gilman O. Christopher, 924 W. 11th Pl., Mesa, Ariz. 85201

Filed Apr. 20, 1992, Ser. No. 871,101

The portion of the term of this patent subsequent to Aug. 2, 2010, has been disclaimed.

Int. Cl.[5] B05B *15/06*

U.S. Cl. 239—391 **12 Claims**



1. Quick disconnect nozzle apparatus comprising, in combination:

base housing means connected to a flow of fluid, including bore means through which the fluid flows;

nozzle assembly means secured to the base housing means, including,

a first portion extending into the bore means of the base housing means,

a spring bore communicating with the bore means of the base housing means for receiving fluid from the base housing means, and

an exit bore communicating with the spring bore for receiving fluid from the spring bore;

a nozzle connected to the nozzle assembly means for receiving the flow of fluid from the exit bore; and

means for removably securing the nozzle assembly means to the base housing means, including,

lock tab means including a generally rectangular locking tab on the base housing means,

a front face portion on the first portion of the nozzle assembly means movable adjacent to the lock tab means for securing the nozzle assembly means to the base housing means, and movable away from the lock tab means to disconnect the nozzle assembly means from the base housing means, and

a semi-circular locking slot extending axially rearwardly from the front face for receiving the lock tab means, wherein the rectangular/circular engagement prevents relative rotation of the locking tab and the locking slot in their locked configuration.

5,333,791

NOZZLE FOR EMISSION OF A MIXTURE OF WATER AND AIR FOR HYDROMASSAGE

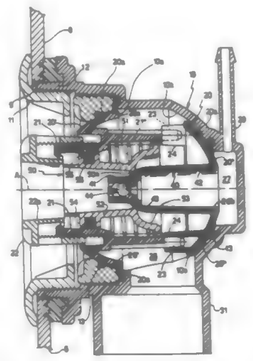
Leoni Carlo, Milan, Italy, assignor to American Standard Inc., New York, N.Y.

Filed Jun. 21, 1993, Ser. No. 80,426

Claims priority, application Italy, Jun. 29, 1992, RE92 U [illegible]

Int. Cl.[5] A61H *33/02*

U.S. Cl. 239—428.5 **4 Claims**



1. An improved nozzle for emission of a mixture of water and air for hydromassage, capable of being fixed to a wall of a tub, comprising:

an outer housing capable of being fixed to a hole in the wall of the tub, said outer housing having a concave and substantially spherical inner surface facing the inside of said tub;

an inner housing having a convex and substantially spherical outer surface fitted within said inner surface of said outer housing so that the orientation of said inner housing with respect to said outer housing can be varied, said inner housing having an inner duct opened towards the interior space of the tub, said inner housing in combination with said outer housing defining a posterior first chamber in communication with an air supply duct, and a second lateral and annular chamber separated from said first chamber, said second chamber in communication with a water supply duct and an anterior mouth of said inner duct;

a tubular member joined to said inner housing and communicating posteriorly with said first chamber, said tubular member having an anterior mouth arranged inside said inner duct, said anterior mouth of said tubular member having an inside and outside diameter smaller than the inside and outside diameter respectively, of a posterior portion of said tubular member, the diameter of said tubular member decreasing sharply from said posterior portion to said anterior mouth, and said anterior mouth of said tubular member and said posterior portion being connected by an intermediate portion;

a one-way valve means applied to said anterior mouth of said tubular member capable of closing the passage through said mouth of said tubular member when the pressure in the space anterior to said mouth of said tubular member is greater than the pressure in an interior space of said posterior portion, said one-way valve means comprising a spherical obturator lodged inside a cavity of said anterior mouth of said tubular member, said anterior mouth of said tubular member having a posterior tapered seat for said spherical obturator, said posterior tapered seat defining an air passage hole, and said anterior mouth of said tubular member also having radial anterior elevations to retain said spherical obturator, said spherical obturator having a diameter smaller than the diameter of said cavity of said anterior mouth of said tubular member and being capable, by resting against said seat, of closing said passage hole; and

a tubular obturator slidable with a seal inside said inner duct.

5,333,792

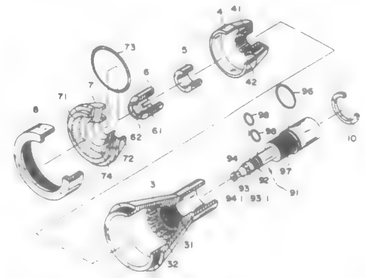
A SPRAY GUN INCLUDING A GOVERNING RING ASSEMBLY TO PROVIDE SEVERAL DIFFERENT WATER FLOW PATTERNS

King-Yuan Wang, No. 1, Lane 288, Sec 1, Lu ha Road, Lu Kan Town, Changhua, Taiwan

Filed Jul. 8, 1993, Ser. No. 87,253

Int. Cl.[5] B05B *1/16, 1/32*

U.S. Cl. 239—440 **7 Claims**



1. A spray gun for providing a plurality of liquid flow patterns, comprising:

a handle having a main body, the handle defining a hollow channel to allow liquid to pass through the spray gun;

a valve stem disposed in the hollow channel to stop liquid flow through a main opening defined in the main body of the handle;

a trigger connected to the handle and to the valve stem, the trigger driving the valve stem so as to allow liquid to pass through the main opening when the valve stem is in a first position and to stop liquid flow when the valve stem is in a second position;

a governing ring attached to an end of the main body of the handle which includes the main opening, the governing ring including plural guiding ribs;

a valve body attached to the governing ring, the valve body including a center stem extending beyond a portion of the valve body where the valve body is attached to the governing ring, based on a direction of liquid flow, wherein an outlet is defined between two stop rings on the center stem;

a netted water flow room arranged in the governing ring such that a bottom end of the netted water flow room is positioned at the guiding ribs of the governing ring, the netted water flow room being provided with an outlet;

a water stop room arranged in the netted water flow room beyond the outlet in the netted water flow room in the direction of liquid flow;

a foggy water flow room arranged beyond the water stop room in the direction of liquid flow, the foggy water flow room defining a coning opening; and

a netted cover connected to the netted water flow room, wherein the position of the outlet in the valve body and the two stop rings of the valve body may be adjusted with respect to the governing ring, the outlet in the netted water flow room, and the coning opening in the foggy water flow room so as to change the liquid flow pattern from the nozzle.

5,333,793

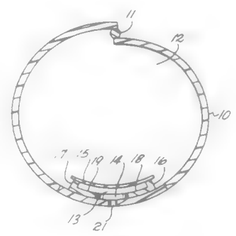
DRIP IRRIGATION HOSE WITH PRESSURE COMPENSATION AND METHOD FOR ITS MANUFACTURE

Michael DeFrank, Temecula, Calif., assignor to T-Systems International, Inc., San Diego, Calif.

Filed Jul. 21, 1993, Ser. No. 96,013

Int. Cl.[5] B05B *1/30, 15/00*

U.S. Cl. 239—533.1 **6 Claims**



1. A drip irrigation hose comprising:

an elongated water supply passage having a large cross sectional area;

an elongated flow regulating passage secured to the water supply passage, the flow regulating passage having a small flow regulating cross sectional area formed by spaced apart longitudinal rails, radially extending from spaced apart longitudinal sidewalls which extend in a direction parallel to that of the rails;

a plurality of spaced inlets to the flow regulating passage from the water supply passage;

a plurality of spaced outlets from the flow regulating passage to the exterior of the hose;

a laminar flow section formed along the length of the flow regulating passage by smooth interior surfaces on the rails;

a turbulent flow section formed along the length of the flow regulating passage by chevron-shaped interior surfaces on the side walls; and

means responsive to the pressure in the water supply passage for reducing the cross sectional area of the laminar flow section with increasing pressure so as to compensate for the effect of pressure changes on the drip flow rate of the hose.

5,333,794

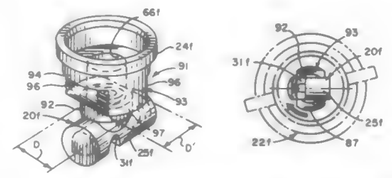
SPRAY NOZZLE WITH RECESSED DEFLECTOR SURFACE AND MOUNTING ASSEMBLY THEREOF

James Haruch, Naperville, Ill., assignor to Spraying Systems Co., Wheaton, Ill.

Continuation-in-part of Ser. No. 987,001, Dec. 7, 1992, Pat. No. 5,275,340, which is a continuation-in-part of Ser. No. 715,438, Jun. 14, 1991, Pat. No. 5,190,222. This application Sep. 20, 1993, Ser. No. 123,876

Int. Cl.[5] B05B *15/06*

U.S. Cl. 239—600 **6 Claims**



1. A spray nozzle assembly comprising a stem defining a

VOL 1165 ISS 1 AG 2 1994 UMI

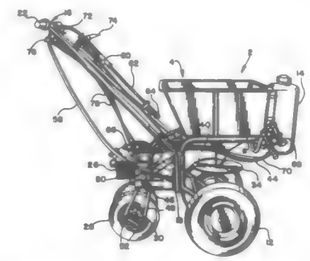
passage through which a supply of liquid is directed, a spray tip, and a tubular cap for mounting said spray tip on said stem, said cap having a lower end with a vertically extending opening therethrough, said opening having a long dimension along one horizontal coordinate and a significantly shorter dimension along a perpendicular horizontal coordinate, said spray tip having upper and lower plastic body sections molded integrally with one another, said upper body section being at least partially disposed within said cap in communication with said passage and having integral means for preventing said tip from falling downwardly out of said cap through said opening, said lower body section being located below said lower end of said cap and having a long horizontal dimension substantially longer than the shorter dimension of said opening, said tip being oriented angularly in said cap such that the long dimension of said lower body section extends along the same horizontal coordinate as the shorter dimension of said opening, said lower body section having an elongated expansion chamber communicating with said upper body section and extending along the same horizontal coordinate as the long dimension of said lower body section, and a downwardly directed discharge orifice formed in said lower body section for spraying liquid from said expansion chamber.

5,333,795

GRANULAR AND LIQUID TREATMENT MATERIAL SPREADER

Thomas F. Jessen, 855 W. Harrison Blvd., Valparaiso, Ind. 46384

Filed Oct. 21, 1993, Ser. No. 140,674
Int. Cl.[5] A01C *7/06, 19/04*
U.S. Cl. 239—663 **25 Claims**



1. A self-propelled granular and liquid material spreader, comprising:
a chassis frame having a leading edge, a trailing edge and opposed sides,
a first pair of wheels attached to said frame adjacent the leading edge thereof, each of said wheels being in spaced apart relation and having a first axle therebetween,
a granular storage compartment mounted to said frame, said compartment having a top portion, a bottom portion, and opposed side walls, said top portion being provided with an opening therein through which the granular material may be delivered, said bottom portion forming an angled trough and being provided with an opening and a movable cover disposed therebelow, said bottom portion extending below a plane formed by said opposed sides of said chassis frame and said top portion extending above the plane formed by said opposed sides of said chassis frame,
a liquid storage tank mounted adjacent said granular storage and positioned forward of said leading edge of said chassis frame, said tank having a filling opening near the top thereof and a hose connector near the bottom thereof,
a second pair of wheels attached to said chassis frame adjacent the trailing edge thereof, each of said wheels being in spaced apart relation and having a second axle therebetween, at least one of said second pair of wheels having at least one roller positioned generally parallel to and radially outwardly from said second axle,
a mounting bracket attached to said trailing edge of said chassis frame, said mounting bracket adapted to carry a motor, said motor operably connected to said second pair of wheels through said second axle,
a handle attached to said trailing edge of said chassis frame, said handle extending angularly upward with respect to a plane formed by said opposed sides of said chassis frame, said handle equipped with grips,
a granular activation control attached to said handle, said control operably connected to said movable cover of said bottom portion of said storage compartment to permit said cover to be moved from a closed position to an open position and back,
a rotatable disc positioned on a rotatable shaft, one end of said rotatable shaft connected to said first axle through a gear arrangement and the other end of said rotatable shaft connected to said bottom portion of said storage compartment, said rotatable disc having a plurality of ribs positioned on the surface thereof nearest said bottom portion of said storage compartment, said rotatable disc being aligned to receive granular material that falls through said opening of said bottom portion of said storage compartment when said cover is in the open position,
a flexible pump hose, one end of which is connected to a hose fitting and the other end of which is attached to an inlet of a manifold, said pump hose positioned to be peristaltically contacted by said at least one roller on said at least one of said second pair of wheels, said manifold also having a first outlet, a second outlet, and a first valve in line with said second outlet,
a supply hose communicating with said liquid tank, through said hose connector, and with said inlet of said manifold through said hose fitting and said pump hose,
a flexible hose, one end of which communicates with said first outlet of said manifold and the other end of which is connected to a second valve carried on a hand manipulated spray wand, said spray wand having a spray nozzle on the leading end thereof, said spray wand removably attached to said handle,
an outlet hose, one end of which communicates with said second outlet of said manifold and the other end of which is connected to a splitter valve, said splitter valve having at least one outlet port in communication with an area spray nozzle having a spray head, said area spray nozzle being carried forward of said rotatable disc,
a motor controller and a valve actuation control attached to said handle, said motor controller communicating with said motor to control the speed thereof, and said valve actuation control communicating with said first valve of said manifold to control the operation thereof.

5,333,796

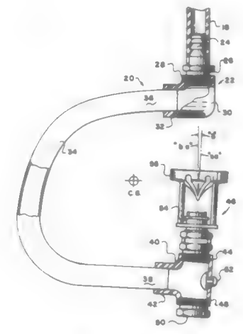
AGRICULTURAL IRRIGATION

Rufus J. Purtell, and Forest M. Hoch, both of P.O. Box 1152, Brownfield, Tex. 79316

Filed Nov. 23, 1993, Ser. No. 156,454
Int. Cl.[5] A01G *25/09;* **B05B** *15/06*
U.S. Cl. 239—734 **8 Claims**

6. In an agricultural system having
a) an elevated horizontal elongated pipe adapted to carry water under pressure,
b) vehicle means attached to said horizontal pipe for supporting said pipe above growing crops and for moving the horizontal pipe transversely of its length,
c) a plurality of sprinklers,
d) a flexible hose fluidly and structurally connected to said horizontal pipe and depending vertically therefrom,
e) a hose barb inserted into a bottom end of the hose,
f) a rigid plastic top fitting attached by a threaded inlet to a threaded bottom of the hose barb,

g) the inlet and the hose barb vertically aligned with said hose,
h) the top fitting having at least one horizontally oriented outlet,
i) a rigid thermosetting plastic tube having a top connected by an adhesive slip joint to a outlet of the top fitting,
j) said tube curved to have a bottom end approximately horizontal,
k) the bottom end of the tube below the top end,
l) a rigid plastic sprinkler fitting attached by an adhesive slip joint to the bottom end of the tube,



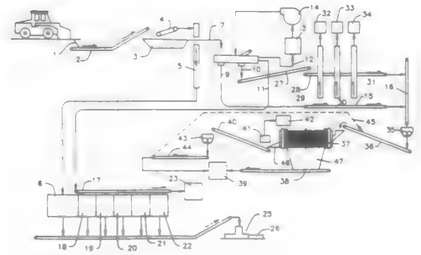
m) said sprinkler fitting having at least one threaded outlet extending vertically upward,
n) a first sprinkler attached to the vertically upward extending outlet of the sprinkler fitting, and
o) a drain valve in said sprinkler fitting,
p) said sprinkler fitting having a second threaded outlet extending vertically downward,
q) a second sprinkler threadedly connected to said second outlet.

5,333,797

COMMINGLED RECYCLABLES RECOVERY AND RECYCLING PROCESS AND RELATED APPARATUSES

John C. Becker, 12 Ella St., Valley Steam, N.Y. 11580; John D. Cameron, Jr., 59 Royal Ct., Rockville Center, N.Y. 11570; William L. Cameron, 241 W. Pine St., Long Beach, and Bryan W. Sinram, 7 Bucknell La., Stony Brook, both of N.Y. 11561

Filed Apr. 3, 1992, Ser. No. 863,044
Int. Cl.[5] B02C *23/40*
U.S. Cl. 241—19 **7 Claims**



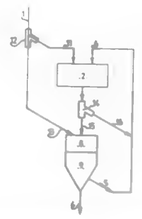
1. A recycling process, comprising the steps of:
receiving a stream of commingled materials;
transporting the commingled materials stream along a conveyer means by vibrating the conveyor means;
transporting said commingled materials stream beneath a magnetic belt means suspended above said conveyor means and magnetically extracting ferrous materials from the commingled materials stream and depositing the ferrous material at a location away from said conveyor means and leaving a non-magnetic materials stream upon the conveyor means;
transporting said non-magnetic materials stream over a finger screen defining apertures of a size effective in allowing small glass particles to fall through the same, thereby splitting off from said non-magnetic materials stream a particulate substream comprising small glass particles;
transporting said non-magnetic materials stream across a fluidizing bed, said fluidizing bed directing upward a flow of air to lift low-density materials away from dense materials;
applying an air knife to said non-magnetic materials stream to split said non-magnetic materials stream into a dense substream comprising glass, and a low-density substream comprising bulk plastics, aluminum, paper, plastic films, and light weight fragments by carrying materials in said low-density substream away from the materials in said dense substream in a stream of air;
optimizing separation of low-density and dense materials by splitting said non-magnetic materials stream with a splitter control which has been optimized by swinging it up or down through an arc, said splitter control having been set in a position effective in providing optimal separation of low-density and dense materials;
splitting said low-density into an ultralight substream comprising said paper, plastic films, and light weight fragments, and a light substream, by slowing said stream of air to a speed effective in allowing said light substream comprising said bulk plastics and aluminum to fall out of said stream of air by virtue of said bulk plastic's and aluminum's greater density.

5,333,798

METHOD AND SYSTEM FOR POUNDING BRITTLE MATERIAL

Maurice Paliard, Saint Etienee, and Jacques Duputs, Chazay d'Azergues, both of France, assignors to CLE, Courbevote, France

Filed Dec. 6, 1991, Ser. No. 804,125
Claims priority, application France, Dec. 6, 1990, 90 15316
Int. Cl.[5] B02C *23/10*
U.S. Cl. 241—24 **7 Claims**



1. A method of fine crushing solid particles of brittle materials, comprising the steps of crushing a brittle raw material in a slow crushing zone under conditions of at least partial build-up of aggregates, said brittle raw material being in the form of starting elementary grains, said aggregates comprising particles having a passing size of a desired fine product and particles greater than said passing size, said crushing being followed by controlled disaggregating of said aggregates in a disaggregation zone and by separating and withdrawing particles having said passing size which constituted the the desired fine product and recycling particles greater than said passing size to the crushing zone, and maintaining the rate of said controlled disaggregating between 10 and 60% in the disaggregation

VOL 1165 ISS 1 AG 2 1994 UMI

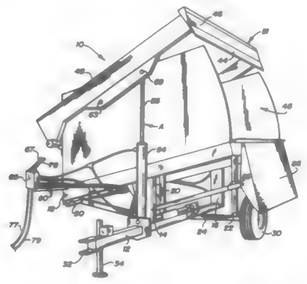
zone, the disaggregating rate being defined by the weight ratio of the amount of particles having said passing size released from said aggregates during said disaggregating to the amount of particles having said passing size present in said aggregates before said disaggregating.

5,333,799

BALE CUTTING MACHINE

Albert Posthumus, Stephenville, Tex., assignor to A & P Mfg., Inc., Stephenville, Tex.

Filed Feb. 9, 1993, Ser. No. 15,149
Int. Cl.[5] B02C *18/02*
U.S. Cl. 241—27 7 Claims



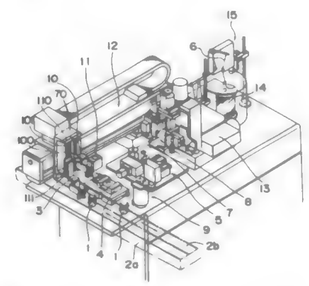
7. The method of cutting down compressed bales of hay comprised of loading bales sequentially into a lower end of a bale cutting machine having a canted flat bed and a pair of opposed sidewalls, pushing the bales incrementally through a length of the bed with a hydraulically powered bale pusher, cutting the bales incrementally with a hydraulically powered single-blade knife cantilevered over an elevated discharge end of the bed and discharging cut sections of the bales over a chute extending from the elevated discharge end of the bed.

5,333,800

APPARATUS FOR WINDING WIRE INTO A COIL ON THE INNER SURFACE OF A CYLINDRICAL BODY

Toshihiro Takahata; Hiroshi Kawazoe; Toshiichi Murakoshi, and Masataka Tokunaga, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 738,904, Aug. 1, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,821
Claims priority, application Japan, Aug. 4, 1990, 2-207477
Int. Cl.[5] H01F *41/06*
U.S. Cl. 242—7.01 5 Claims



1. Apparatus for winding wire into a coil in an annular groove defined at the inner surface of a cylindrical body which also has an axially extending groove intersecting the annular groove, said apparatus comprising:

a positioning section including positioning means for positioning a cylindrical body at a predetermined relative rotary position;

a winding section including a wire supply nozzle through which wire is supplied, a roller, and XYZ table means for moving said wire supply nozzle and said roller in three dimensions relative to a cylindrical body set at the winding section, whereby wire can be supplied along the annular groove of a cylindrical body set at the winding section by moving the supply nozzle along the annular groove and whereby the wire can be pressed by said roller against a surface of the cylindrical body defining the bottom of said annular groove as it is being wound into a coil;

a robot operative to move a cylindrical body at least from said positioning section to said winding section, whereby a cylindrical body positioned at said positioning section can be moved to and set at said winding section by said robot;

a tensioning device associated with said supply nozzle so as to apply tension to the wire being supplied by said supply nozzle, said tensioning device being operative to selectively adjust the tension applied to the wire while the coil is being formed; and

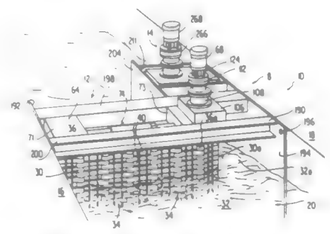
inspection means for determining whether a coil wound in the cylindrical body is in an acceptable state.

5,333,801

ROTARY SCREEN DIVERTER AND SOLID WASTE HANDLING SYSTEM USING SAME

Joseph W. Chambers, Sr., Rancho Mirage, and Craig J. Fennessy, Huntington Beach, both of Calif., assignors to Disposable Waste Systems, Inc., Santa Ana, Calif.

Continuation of Ser. No. 696,409, May 6, 1991, abandoned, which is a continuation of Ser. No. 461,509, Jan. 5, 1990, Pat. No. 5,060,872, which is a continuation of Ser. No. 125,951, Nov. 27, 1987, Pat. No. 4,919,346. This application Jan. 21, 1993, Ser. No. 6,589
The portion of the term of this patent subsequent to Apr. 24, 2007, has been disclaimed.
Int. Cl.[5] B02C *18/22, 18/40, 23/36*
U.S. Cl. 241—46.02 14 Claims



1. A solid waste handling system for screening and grinding solids entrained in an influent liquid stream, said system comprising:

at least one solids diverter horizontal rotating screen unit fixedly mounted in said liquid stream such that the flow moves through it and partially immersed in said influent liquid stream, said screen unit comprising a rigid frame assembly, and a screen member mounted for rotation on said rigid frame assembly such that the screen member moves horizontally relative to the liquid stream,

means for rotating said screen member to cause solids of the influent stream larger than openings in the screen to impact upon an upstream face of said screen to be moved horizontally in the direction of screen movement to one ;side of side liquid stream,

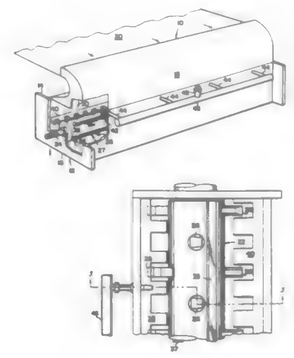
and a solid waste grinder fixedly mounted adjacent to said screen unit whereby solids diverted from the influent stream are conveyed from the screen to said solid waste grinder, and finely ground prior to discharge through an outlet of said at least one solid waste grinder.

5,333,802

METHOD AND APPARATUS FOR PRODUCING CHUNKS OR KIBBLES OF A FOODSTUFF

David L. Seelig, Palmerton, and Kevin S. McAfee, Alburtis, both of Pa., assignors to Conec, Inc., Palmerton and Air Products and Chemicals, Inc., Allentown, both of Pa.

Filed Jan. 24, 1992, Ser. No. 825,236
Int. Cl.[5] B02C *13/06, 18/06, 18/16*
U.S. Cl. 241—65 6 Claims



1. An apparatus for producing random discrete shapes from solid foodstuffs while retaining the characteristics of the foodstuff comprising in combination:

a housing having a first or feed end and second or product discharge end, a rotatable shaft disposed within said housing, said shaft mounted for rotation in a transverse direction between said first and second end of said housing, said shaft having a plurality of randomly spaced cutting devices disposed around the periphery of said shaft, said cutting devices comprising at least three rows of teeth of equal length but varying positions, each row placed circumferentially around said shaft in a common plane perpendicular to said shaft, said teeth including means to grab said foodstuff and direct it into engagement between said teeth and a comb-like plate;

at least one comb-like plate mounted within said housing and adapted to mesh with said cutting devices without touching said cutting devices as they rotate;

means on said shaft to remove product build-up from said comb-like plate;

means disposed on said first end of said housing for directing foodstuffs into said housing and into contact with said cutting devices;

means for introducing a liquid cryogen into said housing, said means adapted to direct said liquid cryogen simultaneously into said cutting device, said comb-like plate and said foodstuff as it enters said hopper prior to contacting said cutting devices; and

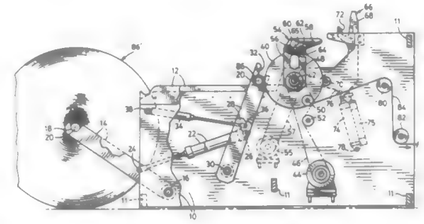
means to rotate said shaft at varying speeds.

5,333,803

STRIP UNWINDING MACHINE

Mirek Planeta, 170 Traders Blvd., Mississauga, Ontario L4Z 1W7, Canada

Filed Dec. 22, 1992, Ser. No. 995,093
Int. Cl.[5] B65H *19/18*
U.S. Cl. 242—555.3 4 Claims



1. A strip unwinding machine for supplying a continuous strip of thin flexible material by unwinding strip from successive rolls thereof, comprising:

a pair of laterally spaced tracks for receiving opposite end portions of a shaft on which a roll of strip is mounted,

a transfer assembly for moving a roll and shaft along said tracks from a loading position to an unwinding position,

a rotatable unwinding roller at the unwinding position,

means for rotating the unwinding roller, said transfer assembly also being operable to urge the roll against the unwinding roller and cause the roll to be rotated thereby with consequent unwinding of the strip from the roll,

at least one guide roller to guide the unwound strip around a portion of the unwinding roller and then out of the machine,

a raising assembly operable to raise the roll and shaft at the unwinding position upwardly from said tracks and from said transfer assembly, when said roll is nearly empty, while maintaining engagement of the roll with the unwinding roller to enable a new roll and shaft to be brought to the unwinding position by the transfer assembly, and

a cutting assembly operable to cut the strip from the nearly empty roll when the new roll is brought into engagement with the unwinding roller by the transfer assembly to cause the last portion of the strip unwound from the nearly empty roll to adhere to an initial portion of the strip on the new roll so as to continuously feed strip from the machine, the cutting assembly being carried by the raising assembly, and the raising and cutting assemblies being mounted for rotation around the unwinding roller so as to rotate completely therearound to effect changeover of strip feed from the nearly empty roll to the new roll.

5,333,804

AGITATOR MILL

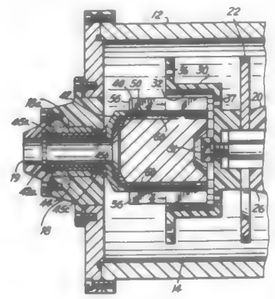
Gregory R. Liebert, Pottstown, Pa., assignor to Premier Mill Corp., Reading, Pa.

Filed Aug. 20, 1993, Ser. No. 110,285
Int. Cl.[5] B02C *17/16*
U.S. Cl. 241—69 24 Claims

1. An agitator mill comprising a housing having first and second ends defining a milling chamber adapted to hold a grinding media, said housing having an inlet to introduce product into said milling chamber to be ground and an outlet for the discharge of the ground product, an agitator shaft having a first end rotatably supported on a first end of said milling chamber, said agitator shaft including a plurality of spaced agitation elements thereon, said agitator shaft having a second free end, separating means freely rotatably supported on the second end of said housing and having a leading end which extends to proximate said second end of said agitator

VOL 1165 ISS 1 AG 2 1994 UMI

shaft, said ground product flowing through said separator means into said outlet, said separating means being caused to



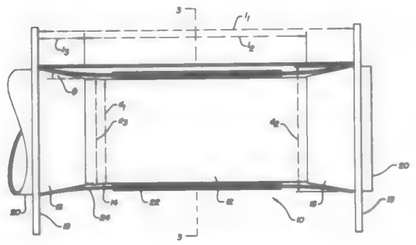
rotate by the fluid coupling of said agitator shaft with said separating means.

5,333,805

WOUND SPOOL OF WEB MATERIAL

Donald W. Burns, Jr., Henrietta, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 12, 1992, Ser. No. 898,113
Int. Cl.[5] B65H *75/18*
U.S. Cl. 242—160.3 2 Claims



1. A wound spool of film, comprising:

a film strip having a lead end with longitudinally extending edges and a transverse edge; and

a spool comprising:

a core;

means for attaching said lead end to said core with said transverse edge close to said core;

a pair of radially extended end flanges at respective opposite ends of said core;

a pair of circumferentially and axially extended shoulders between said end flanges and said core for supporting at least a portion of said longitudinally extending edges of said lead end, said film strip being wound about said core;

each of said shoulders having an axially extended frusto-conical portion adjacent to and extended from said end flange toward said core, each said frusto-concial portion having an axial length and a cone angle and being positioned for supporting one of said longitudinally extending edges of said lead end;

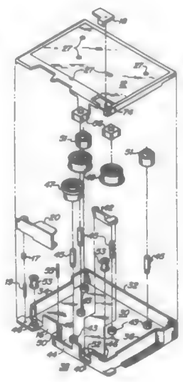
said means for attaching, said axial length and said cone angle being sufficient for winding said lead end with said longitudinally extending edges supported on and about said frusto-conical portions and for causing a first convolution of said film strip to bow inwardly toward said core thereby radially spacing the first convolution from at least an axially central portion of a second convolution of said film strip.

5,333,806

MAGNETIC TAPE CARTRIDGE

Donald Stanley; Kenneth Sheppard, and Leif Skaar, all of San Diego, Calif., assignors to Verbatim Corporation, Charlotte, N.C.

Filed Jun. 3, 1992, Ser. No. 892,762
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—342 2 Claims



1. The tape cartridge for operation with a single drive capstan, the cartridge comprising:

a base plate of polymeric material having an external surface forming a reference plane and including a plurality of bosses integrally formed at selected locations thereon and having internal apertures for supporting pins therein in perpendicular orientation relative to the reference plane;

a plurality of sidewalls integrally formed on said base plate near perimeter boundaries along side edges and rear and forward edges thereof, one of said sidewalls on a forward edge of the base plate including an aperture therein and including a recess in said sidewall on the forward edge adjacent the aperture for receiving a tape transducer therein in operative engagement with a length of tape within the cartridge;

a drive roller rotatably carried on a first pin disposed in a boss adjacent the aperture and having a periphery disposed to protrude through said aperture for operatively engaging a drive mechanism to move a length of tape within the cartridge;

a pair of mounting pegs integrally formed on said base plate near opposite corners formed by said forward sidewall and opposite sidewalls for supporting tape guides thereon, each of said mounting pegs being disposed on a boss having a selected reference elevation and parallel planar orientation relative to said reference plane, and including rigidly attached to said mounting peg a substantially cylindrical tape guide having radially outward flanges of selected thickness integrally formed substantially symmetrically on opposite ends thereof for guiding tape between flanges and for positioning the flange at one end of the cylindrical tape guide on said selected reference elevation of the associated boss in substantially perpendicular orientation with respect to said reference plane;

a pair of hubs rotatably mounted on second and third pins disposed in bosses positioned intermediate the sidewalls for selectively coiling a length of tape thereon which traverses a path from one hub, around a tape guide, past said recess, around another of said tape guides, to the other of said hubs;

a pair of belt rollers rotatably disposed on fourth and fifth pins in bosses positioned near corners of the sidewalls remote from the tape guides for supporting a continuous drive belt thereon along a path which traverses the drive roller, the pair of belt rollers, and contacts the perimeter of each coil of tape on a hub; and

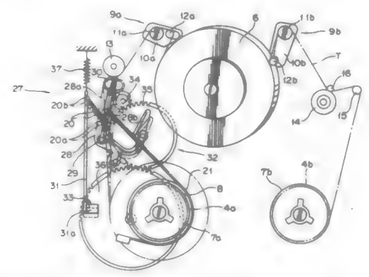
a rigid top plate of polymeric material rigidly adhered substantially continuously along the entire perimeter thereof to mating upper edges of all of the sidewalls for forming with the base plate and sidewalls a rigid structure that encloses a length of tape therein which is movable between said hubs along the tape path that traverses said recess in the forward sidewall in response to rotation of said drive roller, said top plate receiving and supporting therein an upper end of at least the first pin to transfer lateral force exerted on the periphery of the drive roller to the base plate and top plate.

5,333,807

RECORDING AND REPRODUCING APPARATUS HAVING A TAPE TENSION CHANGING MECHANISM

Masanori Machara; Yoshio Kusui; Akira Kumano, all of Kanagawa, and Shuji Yoshida, Saitama, all of Japan, assignors to Sony Corporation, Japan

Filed Dec. 7, 1992, Ser. No. 986,251
Claims priority, application Japan, Dec. 20, 1991, 3-338716
Int. Cl.[5] G11B *15/00*
U.S. Cl. 242—334.6 10 Claims



1. A tape tension mechanism for a recording and reproducing apparatus having a supply reel table and a take-up reel table, a tension arm rotatably provided at a supply reel side, and a brake mechanism for the supply reel table coupled to the tension arm, the tension arm being biased by a tension spring so that the brake mechanism performs a braking operation, said tape tensioning mechanism comprising:

a movable operation member to which a fixed end of the tension spring for biasing the tension arm is coupled, wherein the fixed end of the tension spring is moved closer to and further apart from a pivot of the tension arm;

wherein said movable operation member has an end coupled to the fixed end of the tension spring and mounted to be slidable with respect to a chassis.

5,333,808

WIRE UNREELING DEVICE

Joe Klumpjan, 1334 Sunset Dr., Rte. 3, Campbellsport, Wis. 53010

Division of Ser. No. 46,205, Apr. 12, 1993, abandoned. This application Aug. 4, 1993, Ser. No. 101,963
Int. Cl.[5] B65H *49/18*
U.S. Cl. 242—598.3 1 Claim

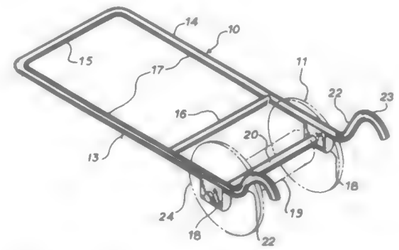
1. A method for laying over the surface of the ground wire wound on a rimmed spool with a hollow hub comprising the steps of:

(1) providing a rigid frame having a main frame portion including an upper end having a handle to allow the frame to be grasped and a lower end having demountable shaft means extending into the spool hub for rotatable attachment of said spool to the frame;

(2) providing said rigid frame with a ground-engaging support adjacent the cross shaft and extending laterally away from one side of the main frame portion beyond the rims of the spool;

(3) supporting the frame above the surface of the ground on the rims of the spool with said one side of the main frame portion facing generally upwardly;

(4) securing an end of the wire;



(5) pulling the device by the handle to cause the rims of the spool to roll over the surface of the ground and to cause a selected initial amount of the wire to be unwound from the spool and laid on the ground surface;

(6) inverting the device to place the ground-engaging support in contact with the surface of the ground and to support the spool above the surface of the ground; and,

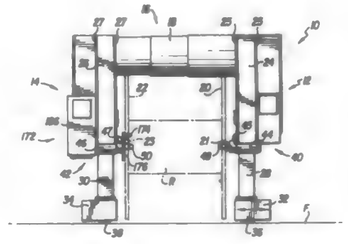
(7) pulling the inverted device by the handle to cause the ground-engaging support to slide over the surface of the ground and to cause a selected additional amount of wire to be unwound from the spool and laid on the ground surface.

5,333,809

REEL SUPPORT WITH HORIZONTAL AND VERTICAL ADJUSTMENT

William M. Berry, III, Newnan; Doyle B. Charles, Carrollton, and Michael F. Flagg, Newnan, all of Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 812,383, Dec. 23, 1991, Pat. No. 5,246,180. This application Apr. 8, 1993, Ser. No. 43,676
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] B65H *75/00*
U.S. Cl. 242—578.1 20 Claims



1. Apparatus for winding and reeling cable upon a reel having reel openings disposed on a reel axis, said apparatus being adapted to rest upon a support surface and comprising:

first and second masts;

VOL 1165 ISS 1 AG 2 1994 UMI

first and second spaced housing assemblies, each supported for vertical movement on a respective mast;

means connected to said housing assemblies for laterally moving the housing assemblies toward and away from one another;

first power means connected between said masts and said housing assemblies for raising and lowering said housing assemblies on said masts;

first and second pintles each supported on a respective housing assembly;

a pair of second power means each operative independently of the first power means, supported by a respective housing assembly and connected to a respective pintle for moving such pintle vertically relative to the housing assembly associated therewith, each second power means comprising a pair of support shafts for supporting its associated pintle, a drive nut connected to the support shafts and a drive screw threadably engaged with the drive nut for vertically moving the first pintle; and

a pair of third power means operative independently of the first and second power means, supported by a respective housing assembly and connected to a respective pintle for moving such pintle horizontally relative to the housing assembly associated therewith.

5,333,810

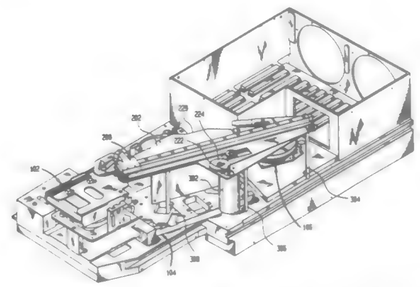
RAISED LINEAR THREADING MECHANISM FOR A TAPE TRANSPORT SYSTEM

David T. Hoge, Westminster, and John C. Owens, Arvada, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed May 13, 1993, Ser. No. 60,663

Int. Cl.[5] **G11B** *23/04*

U.S. Cl. 242—332.4 **13 Claims**



1. A linear threading apparatus for threading a tape through a predetermined path in a tape transport mechanism having an elevator assembly to receive a single-reel tape cartridge having a tape with a leader block, a tape drive assembly for reading and writing data on the tape, and a take-up reel assembly for receiving the tape, the apparatus comprising:

a platform positioned above the predetermined path;

a cam track in said platform;

linear bearing means, having a first end and a second end, attached to said platform, for providing a substantially linear path from a first point at said first end of said linear bearing means proximate to the elevator assembly to a second point at said second end of said linear bearing means proximate to the take-up reel;

linear arm means, slidably attached to said linear bearing means, for traveling along said substantially linear path established by said linear bearing means;

threading arm means, having a first portion pivotally coupled to said linear arm means and a second portion moveable along said cam track, said threading arm means adapted to be coupled with the leader block; and

drive means for moving said linear arm means along said linear bearing means.

5,333,811

SPINNING REEL HAVING ANTI-REVERSE MECHANISM THAT FACILITATES BAIL SWITCHING

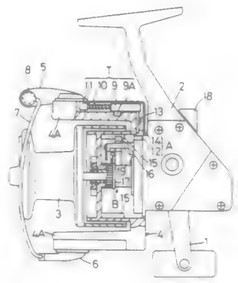
Yasuhiro Hitomi, Hashimoto, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Aug. 20, 1992, Ser. No. 932,694

Claims priority, application Japan, Aug. 26, 1991, 3-067147[U]

Int. Cl.[5] **A01K** *89/027*

U.S. Cl. 242—232 **4 Claims**



1. A spinning reel comprising:

a reel body;

a rotor rotably supported on said reel body;

a bail pivotally connected to said rotor through a pair of oscillatable arms to be switchable between a line takeup position and a line release position;

anti-reverse means operable by a lever mounted on said reel body to be switchable between a position to allow free rotation of said rotor, and a position to prevent backward rotation thereof and allow rotation only in a line winding direction, said anti-reverse means including:

a plurality of engaging teeth provided on an inner surface of said rotor, and

a pawl member supported on said reel body, said pawl member being pivotable between an operative position engaged into one of said engaging teeth and an inoperative position disengaged therefrom;

switching means mounted on one end of said rotor, said switching means including a control member for switching said bail between said line takeup position and said line release position, and a cam formed integral with said reel body for contacting said control member, said switching means being operable, through interaction between said control member and said cam occurring with rotation in said line winding direction of said rotor, to switch said bail from said line release position to said line takeup position; and

means for allowing said rotor to rotate in a line unwinding direction, said allowing means being provided between said engaging teeth at a region where said control member contacts with said cam.

5,333,812

CLUTCH STRUCTURE FOR A FISHING REEL

Jun Sato, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed May 28, 1992, Ser. No. 889,286

Claims priority, application Japan, Jun. 7, 1991, 3-042615[U]; Dec. 17, 1991, 3-103876[U]

Int. Cl.[5] **A01K** *89/033*

U.S. Cl. 242—261 **2 Claims**

1. A clutch structure for a fishing reel comprising:

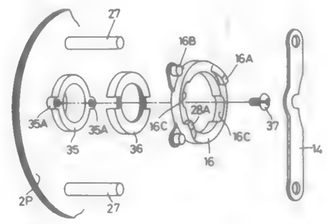
a spool;

a handle;

a transmission shaft for transmitting drive from said handle to said spool;

a clutch member mounted on said transmission shaft to be movable axially thereof between an operative position to rotatably engage said transmission shaft for unitary rotation therewith and an inoperative position to rotate relative to said transmission shaft;

a yoke for engaging said clutch member;



a cam operable through said yoke to switch said clutch member between said operative position and said inoperative position;

a raised annular support portion formed integral with a reel body for rotatably supporting said cam, said support portion projecting away from said spool, said cam being disposed to surround said support portion; and

a smoothing support member disposed between said support portion and said cam, said smoothing support member being formed of an annular material fitted on said support portion.

5,333,813

FISHING LINE RETAINING DEVICE IN REEL FOR FISHING

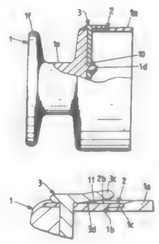
Kazuo Hirano, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 917,192

Claims priority, application Japan, Aug. 6, 1991, 3-69726

Int. Cl.[5] **A01K** *89/01*

U.S. Cl. 242—322 **8 Claims**



1. A fishing line retaining device adapted to retain in place a fishing line wound on a spool, said retaining device comprising:

an aperture in said spool;

an inner retaining member fitted in said aperture, said inner retaining member including a first retaining face surrounding a hole therethrough, said hole being relatively smaller than said aperture; and

an outer retaining member fitted through said hole, said outer retaining member including a second retaining face confronting said first retaining face, wherein said fishing line is adapted to be retained between said first and second retaining faces.

5,333,814

TOWED AERODYNAMIC BODIES

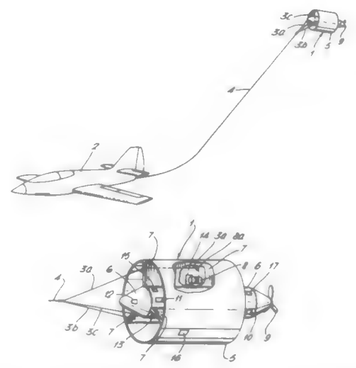
Graham P. Wallis, Stevenage, Great Britain, assignor to British Aerospace Public Limited Co., Faraborough, England

Filed Apr. 23, 1993, Ser. No. 51,383

Claims priority, application United Kingdom, Apr. 25, 1992, 9209017

Int. Cl.[5] **B64D** *3/00*

U.S. Cl. 244—1 TD **11 Claims**



1. A body for towing by a vehicle, said body including a plurality of control lines each for connection between a two cable and an associated actuation mechanism mounted on said body, each said actuating mechanism including a system for reeling out and reeling in said control lines thereby to laterally manoeuvre said body with respect to a path of the vehicle, whereby the body can intercept a projectile.

5,333,815

IMAGING SYSTEM FOR A MISSILE

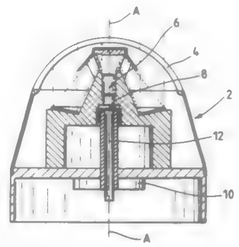
Wladimir Sardanowsky, München, Fed. Rep. of Germany, assignor to Deutsche Aerospace AG, Munich, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,223

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1992, 4208516

Int. Cl.[5] **F41G** *7/22;* **H04N** *3/30*

U.S. Cl. 244—3.16 **22 Claims**



1. An imaging system for a missile rotating about a missile principal axis comprising:

an imaging lens arrangement,

a detector arrangement situated in the focal plane of the imaging lens arrangement for generating electric image signals, said detector arrangement comprising at least one

VOL 1165 ISS 1 AG 2 1994 UMI

detector row extending transversely with respect to the missile principal axis,

said detector arrangement and imaging lens arrangement being arranged to carry out the same rotating motion as the missile about the missile principal axis,

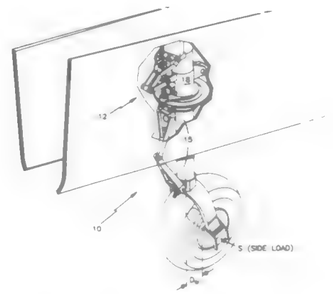
and a polar signal image processing system which utilizes the distance of individual detector elements from the missile principal axis as a radius vector and the respective angle of rotation of the missile as a polar angle for generating a non-rotating two-dimensional image from the electric image signals of the detector arrangement.

5,333,816

AIRCRAFT LANDING GEAR SWIVEL LOCKING PIN HAVING AUTOMATIC RELEASE AND REENGAGE

Berardino Del Monte, Monroe, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 30, 1992, Ser. No. 954,135
Int. Cl.[5] B64C 25/50
U.S. Cl. 244—50 15 Claims



1. A locking pin for an aircraft landing gear, the landing gear having an upper portion and a lower portion mounted to said upper portion, said lower portion being mounted for rotation with respect to said upper portion, said locking pin comprising:

a bushing adapted to be mounted to one of said portions;

a lock pin assembly adapted to be mounted to the other of said portion, said assembly having a bushing engaging member mounted thereto for engagement with said busing, said lower portion adapted to being held in fixed relation to said upper portion in response to said locking pin being in an engaged position wherein said member is engaged with said bushing, said lower portion adapted to being free to rotate with respect to said upper portion in response to said locking pin being in a released position wherein said member is not engaged with said bushing;

actuator means for applying a force to said lock pin assembly for urging said member in contract with said bushing;

said locking pin automatically repositioning from said engaged position to said released position in response to a lateral force applied to said lower portion in excess of a threshold force, the magnitude of said threshold force being related to said actuator means force applied to said lock pin assembly, and

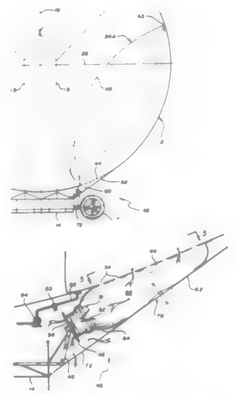
a wear ring for engagement with said busing engaging member in response to the automatic repositioning of said locking pin from said engaged position to said released position.

5,333,817

BALLONET SYSTEM FOR A LIGHTER-THAN-AIR VEHICLE

John B. Kalisz, Newhall, and Mark H. Wexler, Studio City, both of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Nov. 22, 1993, Ser. No. 155,363
Int. Cl.[5] B64B 1/62
U.S. Cl. 244—97 6 Claims



1. A ballonet system for a lighter-than-air-vehicle, the vehicle having a lift producing gasbag having a longitudinal, vertical and lateral axis, the ballonet system comprising:

a plurality of ballonets located within the gasbag positioned along the longitudinal axis and on each side of the vertical axis in equal numbers, each of said ballonets comprising a flexible sheet joined at its periphery thereof to a portion of the wall of the gasbag;

a ballonet pressurization system coupled to each ballonet for pressurizing said ballonets with air, said pressurization system comprising;

said portion of the wall of the gasbag forming said ballonet having a plurality of holes therethrough;

a manifold having an inlet port, said manifold joined to said wall covering said holes therein and adapted to diffuse the pressurized air entering therein;

at least one fan having an inlet port coupled to ambient atmosphere and an outlet port coupled to said inlet port of said manifold for providing pressurized air to the interior thereof; and

a check valve located in said outlet port of said fan for preventing air from flowing from said interior of said manifold out said inlet port of said fan; and

a ballonet venting system for venting the interior of said ballonet to ambient atmosphere.

5,333,818

AIRCRAFT BERTHING SEAT

David E. Brandt, Marinette, Wis.; Ronald L. Young, Menominee, Mich., and Timothy B. Pryor, Marinette, Wis., assignors to ERDA, Inc., Peshtigo, Wis.

Filed Jul. 19, 1993, Ser. No. 94,310
Int. Cl.[5] B64D 11/06
U.S. Cl. 244—118.6 22 Claims

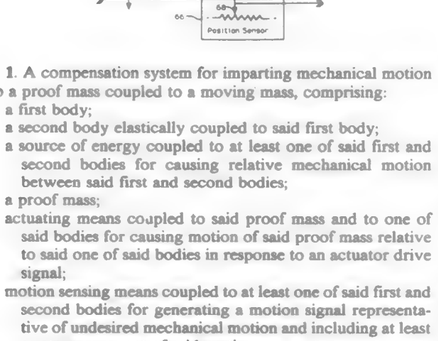
1. An aircraft berthing seat comprising:

a seat base;

a support assembly borne by the seat base, the support assembly having an unsupported distal end and being moveable along a predetermined path of travel;

a leg rest assembly borne by the support assembly and moveable to predetermined supporting positions relative to the support assembly;

a seat cushion assembly borne by the base and disposed in spaced relation relative to the support assembly; and



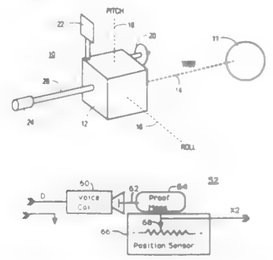
a seat back assembly borne by the seat base and moveable along a path of travel from an upright position into a substantially coplanar position relative to the seat cushion assembly and the leg rest assembly, thereby forming an aircraft berthing seat.

5,333,819

SELF TUNING MOTION/VIBRATION SUPPRESSION SYSTEM

John B. Stetson, Jr., New Hope, Pa., assignor to General Electric Company, East Windsor, N.J.

Filed Mar. 12, 1993, Ser. No. 31,252
Int. Cl.[5] B64G 1/38
U.S. Cl. 244—164 5 Claims



1. A compensation system for imparting mechanical motion to a proof mass coupled to a moving mass, comprising:

a first body;

a second body elastically coupled to said first body;

a source of energy coupled to at least one of said first and second bodies for causing relative mechanical motion between said first and second bodies;

a proof mass;

actuating means coupled to said proof mass and to one of said bodies for causing motion of said proof mass relative to said one of said bodies in response to an actuator drive signal;

motion sensing means coupled to at least one of said first and second bodies for generating a motion signal representative of undesired mechanical motion and including at least a rate component of said motion;

motion energy determination means coupled to said motion sensing means, and to said compensation means for squaring said rate component of said motion signal to produce a motion energy signal representative of the energy contained in said motion, for integrating said motion energy signal to produce a integrated energy signal representative of the time window average of the total motion energy, and for generating a compensation correction factor which tends to minimize said integrated energy signal; and

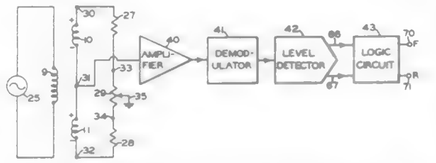
compensation and amplification means coupled to said motion energy determination means and to said actuating means, for generating said actuating signal, and for using the said compensation correction factor to continuously change the magnitude of said actuator drive signal in a manner which tends to maintain said integrated energy signal near said minimum.

5,333,820

RAILWAY VEHICLE WHEEL DETECTOR UTILIZING MAGNETIC DIFFERENTIAL BRIDGE

Heinz Gilcher, Export, Pa., assignor to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Feb. 18, 1993, Ser. No. 19,019
Int. Cl.[5] B61L 13/04
U.S. Cl. 246—249 16 Claims



1. A railway vehicle detector device for sensing a passing railway vehicle wheel traveling along an elongated rail, said device comprising:

(a) means for supplying alternating current energy having a preselected frequency;

(b) primary winding means excitable by said alternating current energy for producing a time-varying magnetic transmission flux;

(c) secondary winding means including first and second receiver coils arranged in a differential bridge configuration for producing a differential voltage change as said wheel is traveling adjacent said detector due to a magnetic coupling with said primary winding means; and

(d) processing means for receiving said differential voltage change and responsively producing an output signal indicative of the presence and direction of movement of said wheel.

5,333,821

DEVICE FOR MOUNTING AN INDUCED-DRAFT FAN PIPE ON AN ELECTRIC SOLDERING IRON

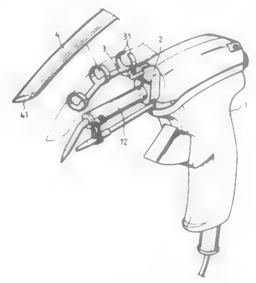
A-Ying Lee, 19, Lane 156, Sec. 1, Ling-Yun Rd., Wu-Ku Village, Taipei, Taiwan

Filed Jun. 9, 1993, Ser. No. 73,483
Int. Cl.[5] F16L 3/00
U.S. Cl. 248—52 2 Claims

1. A combination comprising an electric soldering iron, a mounting device, and a pipe holder fastened to said electric soldering iron by said mounting device to hold an induced-draft fan pipe for allowing said induced-draft fan pipe to be disposed adjacent a soldering bit of said electric soldering iron, wherein said pipe holder comprises a longitudinal holder body and pairs of symmetrical ribs bilaterally and perpendicularly

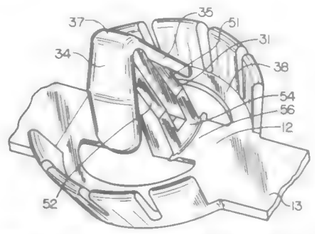
VOL 1165 ISS 1 AG 2 1994 UMI

extended from said body, said pairs of symmetrical ribs being spaced longitudinally along said body and being bent into



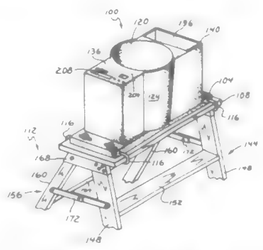
respective open-end loops for holding said induced-draft fan pipe flexible, heat resisting material.

5,333,822
ATTACHMENT SYSTEM
James C. Benoit, Needham, and Charles L. Deschenes, North Attleboro, both of Mass., assignors to Avery Dennison Corporation, Pasadena, Calif.
Filed Apr. 30, 1992, Ser. No. 876,369
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—71 11 Claims



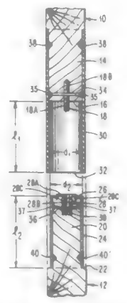
1. A locator tie for use in attaching an element to a wall, the wall having a near surface, a far surface and an aperture communicating between said near surface and said far surface, said locator tie comprising:
a. a cable tie having a longitudinal axis and including:
i. a head strap, and
ii. a tail strap, and
b. a pushmount fastener coupled to and disposed between said head strap and said tail strap, said pushmount fastener comprising:
i. a support having a base portion and an upper end portion, the base portion being shaped to define a pair of downwardly extending legs and being attached to the cable tie, the upper end portion having two separate arms, each arm being attached to both legs, and
ii. a unitary arrowhead, said unitary arrowhead comprising two blades extending upward from said support, each blade having a top, and a hinge connecting the two blades at their tops, each of said blades being attached to a separate one of the two arms of the support, each blade having a longitudinal axis, the longitudinal axes of said two blades defining a plane orthorgonal to the longitudinal axis of said cable tie.

5,333,823
DETACHABLE DEVICE-HOLDING APPARATUS FOR A STEPLADDER
Thomas J. Joseph, 290 Wilbraham Rd., Hampden, Mass. 01036-9705
Filed Jun. 16, 1993, Ser. No. 77,851
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—146 17 Claims



1. Apparatus that attaches to a top platform of a stepladder, the apparatus being used to hold various items in a secure manner therewithin and to provide access to the items for a person standing on the stepladder, the apparatus comprising:
a. a horizontal planar plate, having a planar under surface disposed to rest on the top platform of the stepladder;
b. means for securing the plate to the top platform of the stepladder;
c. a cylindrical bucket receptacle disposed on a top surface of the plate and having a cylindrical side wall surrounding the receptacle, the side wall being of a height sufficient to enclose a majority of the height of a standard one-gallon size paint container; and
d. one or more side receptacles disposed on the top surface of the plate adjacent to the bucket receptacle.

5,333,824
EXTENSION POLE HAVING STABILIZER MEANS FOR SECURELY ATTACHING THE EXTENSION POLE TO THE MAIN POLE
Emanuel Dubinsky, 3 Cross Ridge Rd., Chappaqua, N.Y. 10514
Filed May 4, 1993, Ser. No. 57,081
Int. Cl.[5] F16N *13/00*; A45B *25/00*
U.S. Cl. 248—159 10 Claims



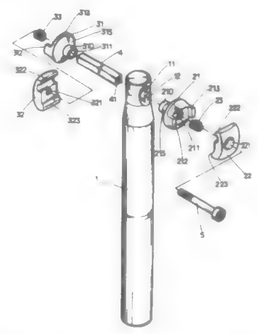
1. A pole extension system for tightly connecting a main pole to an extension pole, comprising:
a main pole having a cylindrically shaped connecting end portion having a longitudinal axis, including a first screw means securely mounted at said connecting end portion in axial alignment with the longitudinal axis thereof;
an alignment sleeve made of a hollow rigid tube which covers said connecting end portion of said main pole and is attached thereto, said alignment sleeve having a length which extends axially out from said connecting end portion of said main pole and said first screw means by a length L1;
an extension pole having at one end an alignment shaft comprising a cylindrically shaped connecting end portion having a longitudinal axis, said alignment shaft having a diameter that is slightly smaller than the interior diameter of said alignment sleeve to provide said alignment shaft to be received in said alignment sleeve in a close fitting relationship, including a second screw means securely mounted at said connecting end portion of said extension pole in axial alignment with said longitudinal axis of said extension pole, said second screw means adapted to screw onto and lockingly engage with said first screw means as said alignment shaft is received in said alignment sleeve and said extension pole is rotated relative to said main pole, said alignment shaft having a length L2 equal to said alignment sleeve length L1, and shoulder abutment means at the end of said alignment shaft located said length L2 from said second screw means and adapted to abut with said alignment sleeve at the point where said first screw means is screwed onto said second screw means;
whereby the combination of said first and second screw means, said tight fit of said alignment shaft in said alignment sleeve, and said shoulder abutment means for engaging with said alignment shaft, provides a rigid and stable connection between said main pole and pole extension.

5,333,825
FURNITURE ELEVATING DEVICE
Emeron P. Christensen, 806 Rachel Pl., Onalaska, Wis. 54650
Filed Sep. 25, 1992, Ser. No. 951,585
Int. Cl.[5] F16M *11/24*
U.S. Cl. 248—188.2 17 Claims



1. An elevating device for elevating furniture equipped with legs by placing the device beneath the legs of legged furniture to elevate the furniture thereby, said device comprising:
A) adjustable radial arms with said arms being individually equipped with an elongated arm terminated by a pedestal section having a socket for separately engaging onto and supporting a leg of the legged furniture; and
B) a radial arm restraining assembly for restraining the radial arms in an immobilized position with said radial arm restraining assembly including a top plate member for engaging onto an upper surface region of said arms, a bottom plate member for engaging onto a lower surface region of said arms and means for firmly clamping said arms between said bottom plate member and said top plate member and thereby firmly restraining said radial arms in the immobilized position therebetween.

5,333,826
SADDLE SUPPORT MECHANISM
Ten-Yi Lai, Taichung Hsien, Taiwan, assignor to Accord Enterprise Corporation, Taipei, Taiwan
Filed Jan. 21, 1994, Ser. No. 183,765
Int. Cl.[5] B62J *1/08*
U.S. Cl. 248—229 3 Claims



1. A saddle support mechanism comprising:
a post including a hole laterally formed therein and having two end portions,
two bases each including a stub formed thereon for engaging with said end portions of said hole, and each including a pair of ears extended away from said post for supporting saddle wires thereon, each of said bases including a lower portion having a first tapered surface formed therein,
two clamping members slidingly disposed between said ears of said bases respectively and each including an upper portion having a flange formed thereon for engaging with said saddle wires and a lower portion having a second tapered surface formed therein for engaging with said first tapered surfaces of said bases,
a bolt engaged through said clamping members, said bases and said hole of said post in order to force said clamping members toward each other so as to fix said clamping members and said bases to said post, and
means biased between said bases and said clamping members respectively,
said clamping members being caused to move downward relative to said bases when said first tapered surfaces are engaged with said second tapered surfaces, respectively, and when said clamping members are forced toward each other by said bolt,
whereby, said flanges of said clamping members are forced to move downward relative to said bases in order to fix said saddle wires in place.

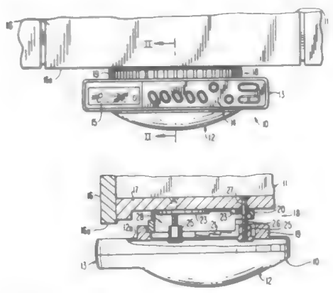
5,333,827
MOUNTING ASSEMBLY FOR SUSPENDING AN ELECTRICAL APPLIANCE FROM AN ELEVATED CABINET
Richard Gioscia, Mahwah, N.J., assignor to Sony Electronics, Inc., Park Ridge, N.J.
Filed Jul. 14, 1992, Ser. No. 913,026
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—289.1 17 Claims

1. A mounting assembly for suspending an electrical appliance from a bottom wall of an elevated cabinet, comprising:
first and second concentric substantially circular members which are turnable and axially movable relative to each other, and one of which is fixed to the electrical appliance;
cooperating means on said first and second members for adjusting the axial position of the other of said first and second members which is not fixed to the electrical appli-

VOL 1165 ISS 1 AG 2 1994 UMI

ance relative to said one member which is fixed to the electrical appliance in response to turning of said members relative to each other to a predetermined angular extent about an axis at their centers; and

a plurality of fastening means spaced radially about said centers of said first and second members, each fastening means extending through the bottom wall of the cabinet,



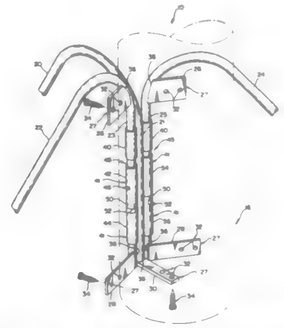
through a selected one of a plurality of holes in said other member and into engagement with said one member for securing said one member to the bottom wall of the cabinet and preventing relative turning of said members so that the adjusted axial position of said other member relative to said one member establishes a vertical position of the appliance in respect to the cabinet.

5,333,828

FOLDABLE CHRISTMAS TREE STAND

Donald R. Severeid, 12512 164th St. East, Puyallup, Wash. 98374

Filed May 6, 1992, Ser. No. 879,980
Int. Cl.[5] A47G *33/12*
U.S. Cl. 248—519 7 Claims



1. A Christmas tree stand that is permanently assembled, yet is foldable, when unfolded it supports a Christmas tree in an upright position, and when folded it occupies a compact planar space for convenient handling, storage, and shipping, the Christmas tree stand comprising:

a central leg formed to define and lie wholly within a single plane, the central leg having a substantially vertical shaft disposed about a substantially vertical axis;

a first side leg formed to define and lie wholly within a single plane, the first side leg having a substantially vertical axis, wherein the shaft of the first side leg is disposed in parallel adjacent relation to the shaft of the central leg, and wherein the shaft of the first side leg is pivotally attached to the shaft of the central leg, thereby allowing the first side leg to pivot relative to the central leg;

a second side leg formed to define and lie wholly within a single plane, the second side leg having a substantially vertical shaft disposed about a substantially vertical axis, wherein the shaft of the second side leg is disposed in parallel adjacent relation to the shaft of the central leg, wherein the shaft of the second side leg is pivotally attached to the shaft of the central leg, thereby allowing the second side leg to pivot relative to the central leg;

a fastener assembly fixedly attached to one or more of the legs of the Christmas tree stand, the fastener assembly adapted to releasably engage the trunk of a tree;

a locking assembly disposed about the shafts of the first and second side legs, the locking assembly further comprising:

(a) a first sleeve having a substantially vertical axis, the first sleeve being co-axially disposed around the shaft of the first side leg, wherein a first sleeve so disposed is fixedly attached to the shaft of the first side leg;

(b) a second sleeve having a substantially vertical axis, the second sleeve being co-axially disposed around the shaft of the first side leg, vertically adjacent the first sleeve, wherein a second sleeve so disposed is fixedly attached to the shaft of the central leg, wherein the first sleeve interlocks with the second sleeve to prevent relative rotation between the first and second sleeves when the first sleeve is urged from a first unlocked position to a second locked position while the stand is in the unfolded position therein locking the first side leg against pivotal rotation relative to the central leg when the first side leg is in the unfolded position;

(c) a third sleeve having a substantially vertical axis, the third sleeve being co-axially disposed around the shaft of the second side leg, wherein a third sleeve so disposed is fixedly attached to the shaft of the second side leg; and

(d) a fourth sleeve having a substantially vertical axis, the fourth sleeve being co-axially disposed around the shaft of the second side leg, vertically adjacent the third sleeve, wherein a fourth sleeve so disposed is fixedly attached to the shaft of the central leg, wherein the third sleeve interlocks with the fourth sleeve to prevent relative rotation between the third and fourth sleeves when the third sleeve is urged from a first unlocked position to a second locked position while the stand is in the unfolded position therein locking the second side leg against pivotal rotation relative to the central leg when the second side leg is in the unfolded position.

5,333,829

HOLDER FOR PISTOLS, RIFLES, CAMERAS AND THE LIKE

Dennis L. Bell, Greeley, Colo., and Ray C. Millett, Huntington Beach, Calif., assignors to Millett Industries, Huntington Beach, Calif.

Filed Aug. 6, 1992, Ser. No. 925,998
Int. Cl.[5] F41A *23/02*
U.S. Cl. 248—634 8 Claims

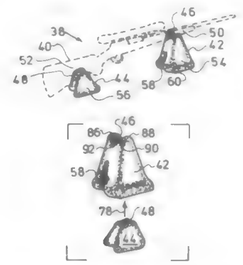
1. A support, having an outside, for supporting an item and for positioning the support on top of a separate flat surface so that the support may be positioned and moved on the separate flat surface but is not fastened thereto, comprising:

(a) at least one rectangular shaped flat lower base portion which may be positioned on top of the separate flat surface but is not fastened to the separate flat surface,

(b) at least one upper portion formed of a single material with the base portion,

(c) at least one exterior surface formed on the outside of the support, the exterior surface being formed from a polyurethane material and being formed of the same single material as the upper portion and the base portion,

(d) means, formed in the upper portion of the support, defining a cradle area for supporting the item being supported so that the item may be supported and moved in multi-directions within the cradle area but not clamped within the cradle area, the cradle area of the support permitting the item that is supported by the support to be used and



moved as desired, but not to be restrained and clamped, while being supported by the device and while the item is positioned on the support device, and

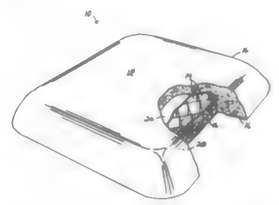
(e) the support being formed from a semi-rigid, pre-shaped polyurethane material with a microcellular core.

5,333,830

COMPOSITE EQUIPMENT SUPPORT PAD

Frank Millen, Gaffney, S.C., assignor to Pacolet Concrete Company, Gaffney, S.C.

Filed Jun. 24, 1992, Ser. No. 903,717
Int. Cl.[5] F16M *5/00*
U.S. Cl. 248—679 10 Claims



1. A composite support pad having an equipment support surface for supporting heavy equipment, comprising:

a cellular core component, said cellular core component further comprising a network of generally hollow cells;

a cementitious shell material generally surrounding said cellular core component, said cellular core component being non-movably set in said shell material, whereby an outer surface of said shell material forms said equipment support surface with said cellular core component being disposed generally beneath said equipment support surface and set in said shell material and;

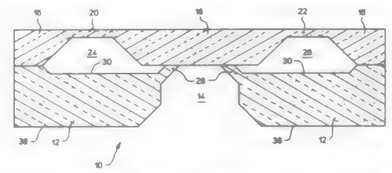
wherein at least one of said cells of said core component is at least partially filled with said cementitious shell material thereby ensuring said core component is securely set in said shell material.

5,333,831

HIGH PERFORMANCE MICROMACHINED VALVE ORIFICE AND SEAT

Phillip W. Barth, Portola Valley, and Gary B. Gordon, Saratoga, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 19, 1993, Ser. No. 19,945
Int. Cl.[5] F16K *31/02, 7/14*
U.S. Cl. 251—11 12 Claims



1. A microminiature valve for controlling the flow of a fluid comprising,

a unitary crystalline substrate having opposed first and second major surfaces and a flow via extending through said unitary substrate to said second major surface, said unitary substrate further having an integral valve seat structure extending from said first major surface to a side of said first major surface opposite to said second major surface, said valve seat structure having a bearing surface having an inner perimeter defining an orifice to said flow via,

an armature having a planar face, said armature having a closed position wherein said planar face is in contact with said bearing surface of said valve seat structure to obstruct fluid flow through said orifice to said flow via, said armature further having an open position, and

means for selectively displacing said armature between said closed and open positions,

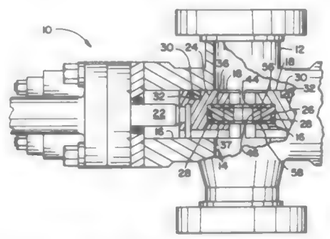
wherein said valve seat structure has a sloped interior such that said flow via increases in cross sectional area upon departure from said bearing surface.

5,333,832

BLOWOUT PREVENTER WITH REMOVABLE PACKER

Leroy E. Bartholomew, 15130 Forest Lodge, Houston, Tex. 77070; Eric G. Childs, 1703 Breezy Bend, Katy, Tex. 77494, and David M. Callahan, 22230 Prince George, Katy, Tex. 77449

Filed Oct. 4, 1993, Ser. No. 131,132
Int. Cl.[5] E21B *33/06*
U.S. Cl. 251—1.3 8 Claims



1. A ram-type blowout preventer comprising

a body with a vertical bore therethrough and opposed guideways extending radially away from said bore,

a ram in each of said guideways,

means for moving each of said rams in said guideways between a position closing said bore and a position withdrawn into said guideways with said bore open,

each of said rams having a front face recess,

VOL 1165 ISS 1 AG 2 1994 UMI

a resilient packer in said front face recess of each of said [illegible],

said resilient packer having

upper and lower retainer plates having a front face and sides,

resilient end elements bonded between said plates and having facing side surfaces extending from the front face of said packer to the rear of said packer adjacent said ram recess,

a resilient insert having a shape mating with the facing sides surfaces of said end elements and sized to be received between said plates, and

means for securing said resilient packer within the front face of its ram.

5,333,833

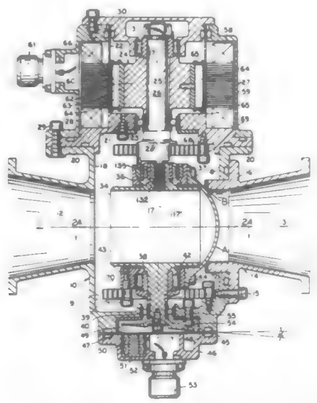
ROTARY BALL VALVE WITH LIFTING BALL

Robert H. Reinicke, Mission Viejo, Calif., assignor to Marotta Scientific Controls, Inc., Montville, N.J.

Continuation-in-part of Ser. No. 868,023, Apr. 13, 1992, Pat. No. 5,228,645. This application Jul. 8, 1993, Ser. No. 89,116

Int. Cl.[5] F16K *3/22, 31/04*

U.S. Cl. 251—77 **21 Claims**



1. A rotary valve, comprising a valve body with inlet and outlet ports and a rotatable valve member for determining fluid flow from the inlet port to the outlet port, one of said ports having an annular seat about and normal to a central axis of fluid flow, said valve member having a truncated convex spherical outer surface of greater radius than the radius of said annular seat, a drive shaft journalled in said body for rotation about a first rotary axis through and transverse to said central axis, selectively operable means for driving said shaft within angular limits spaced approximately π radians apart, eccentric means on said shaft on one side of said central axis to the exclusion of the other side of said central axis, said eccentric means mounting said valve member on a second rotary axis for eccentric gyration in a conical orbit that is incrementally inclined in angular offset from said first rotary axis, the mounting of said valve member on said second rotary axis being on a diameter of the geometric sphere of the outer surface of said valve member, whereby a full drive of said shaft between said limits will impart. approximately π radians of eccentrically gyrated displacement to said second rotary axis, and angular lost-motion means connecting said shaft in a first phase to impart rotation to said valve member for substantially only $\pi/2$ radians from one of said limits and in a second phase of substantially only the remaining $\pi/2$ radians to impart rio rotation to said valve member.

5,333,834

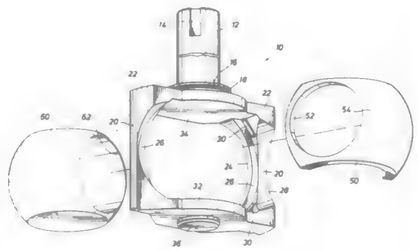
VALVE DRIVER

Paul B. Soderberg, Montgomery, Tex., assignor to Soderberg Research & Development, Inc., Montgomery, Tex.

Filed Mar. 29, 1993, Ser. No. 38,535

Int. Cl.[5] F16K *5/06*

U.S. Cl. 251—86 **29 Claims**



1. An improved valve, comprising:

a valve housing having a fluid inlet, a fluid outlet, a fluid path through said housing from said inlet to said outlet, and an actuator port;

a valve seat disposed about said fluid path between said inlet and said outlet;

a rotatable valve member including a curved sealing surface for cooperation with said valve seat for opening and closing said fluid path, said member having an opening therethrough for alignment with said fluid path in an open position and a solid section for blocking said fluid path in a closed position;

means for actuating said valve member through said actuator port;

means for sealing said actuator port; and

a driver for operatively connecting said actuator means to said rotatable valve member, said driver comprising:

a drive shaft operatively connected at one end to said actuator means;

a yoke operatively connected to said drive shaft and having at least two arms extending on opposite sides of said fluid path, each arm including means for contacting said valve member to rotate said valve member between said open and closed positions, none of said means for contacting being rigidly connected with said rotatable valve member; and

said means for contacting comprising at least one set screw extending through at least one said arm toward said rotatable valve member for engaging a cooperating bore on said valve member, the diameter of said set screw being smaller than the diameter of said cooperating bore so that said arm and said valve member are not rigidly connected and said set screw is free to move within said bore.

5,333,835

ELECTRIC MOTOR DRIVEN AIR VALVE

Ronald R. Smith, Indianapolis; Richard D. Foreman, Connersville; Todd S. Graf, New Castle, all of Ind., and Joseph D. Redden, Waco, Tex., assignors to American Standard Inc., New York, N.Y.

Filed Jul. 22, 1993, Ser. No. 95,889

Int. Cl.[5] F16K *31/04*

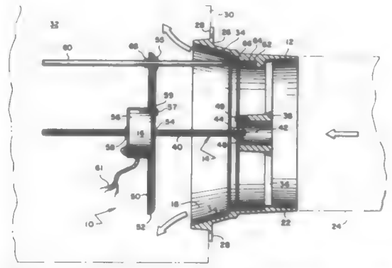
U.S. Cl. 251—129.12 **4 Claims**

1. An air valve comprising:

a generally cylindrical inlet section, said inlet section defining a seating surface;

support means cantilevered from said inlet section, said support means including a threaded rod extending downstream form said inlet section;

a damper assembly, including a damper plate and a bidirectional electric motor, said motor including a rotatable portion, both said damper plate and said rotatable portion of said motor being penetrated by said threaded rod and said damper plate being mounted to said motor, the weights of said motor and said damper plate being generally symmetrically distributed with respect to the axis of said threaded rod and said damper plate defining a seating surface configured to cooperatively seat on said inlet section seating surface, said damper plate positionable between (i) a fully closed position in abutment with said seating surface and (ii) a fully open position downstream of said inlet section and out of the path of air flowing into and through said inlet section, said motor selectively bidirectionally positioning said damper assembly on said threaded rod;



a first and a second guide rod, each penetrating said damper plate and projecting generally parallel to said threaded rod, said first and said second guide rods restraining the rotation of said damper plate so that torque created by the rotation of the rotor of said motor is transmitted through said rotatable portion of said motor to the threads of said threaded rod so as to cause the axial movement of said damper plate on said threaded rod;

a stiffener member for maintaining said first and said second guide rods and said threaded rod generally parallel; and

switch means operable to (i) de-energize said motor when said damper plate moves into said fully closed position by contact of said switch means with said inlet section and (ii) to de-energize said motor when said damper plate moves into said fully open position by contact of said switch means with said stiffener member.

5,333,836

SOLENOID VALVE

Kei Fukuyo, and Shintaro Kawaishi, both of Shizuoka, Japan, assignors to Nisshinbo Industries Inc., Nihonbashi, Japan

Filed Sep. 2, 1993, Ser. No. 115,096

Claims priority, application Japan, Sep. 9, 1992, 4-265547

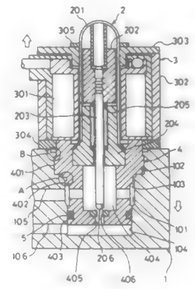
Int. Cl.[5] F16K *31/06;* **B21K** *1/24*

U.S. Cl. 251—129.15 **8 Claims**

1. A solenoid valve comprising:

a housing having at least one cavity,

a core assembly including a body, a sleeve attached to said body, and an armature assembly sliding in said sleeve, said core assembly being mounted in said at least one cavity of said housing having a lower portion of said body between a segment of said body exposed to atmosphere and a segment exposed to fluid pressure in use being affixed to said housing by a primary caulked joint inside said at least one cavity and a secondary caulked joint at a mouth of said housing cavity, and



a coil assembly mounted on an exterior of the core assembly magnetically influencing said armature assembly.

5,333,837

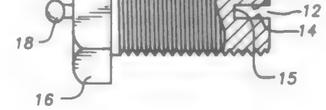
VALVE PLUG

Michael R. Reese, Humble, Tex., assignor to MRGR Plugs, Inc., Humble, Tex.

Continuation of Ser. No. 662,566, Feb. 28, 1991, abandoned. This application May 20, 1992, Ser. No. 886,684

Int. Cl.[5] F16K *31/50, 51/00*

U.S. Cl. 251—216 **19 Claims**



1. A valve plug capable of providing a fluid tight seal in systems with pressure of up to 6,000 psi when said valve plug is completely threaded into the fluid system, comprising a threaded, cylindrical body having a flat front face at one end, said front face comprising a shallow fluid expansion channel centrally located in said face, and extending across said face, each end of said fluid expansion channel extending to the outer periphery of said cylindrical body, said channel extending along a minor length of said cylindrical body for allowing fluid to pass past said cylindrical body when a major length of said cylindrical body extends outside of a fluid system, said threaded cylindrical body having a sufficiently large diameter such that threads on said cylindrical body form a fluid tight seal, around the outer circumference of said cylindrical body along the major length thereof, past which fluid of the fluid system cannot flow in most positions of said cylindrical body within a fluid system.

5,333,838

BLADE DAMPER WITH EXTENSIONS TO REDUCE BOUNDARY LEAKAGE

Juan A. Garcia-Mallol, Morristown, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Sep. 11, 1992, Ser. No. 943,619

Int. Cl.[5] F16K *1/22*

U.S. Cl. 251—305 **5 Claims**

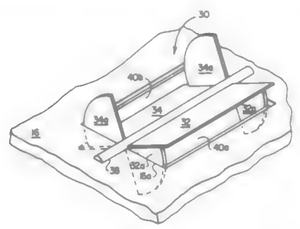
1. A damper blade assembly for controlling the flow of fluid

VOL 1165 ISS 1 AG 2 1994 UMI

between two regions separated by a partition having a rectangular opening extending therethrough for permitting said flow, said assembly comprising:

at least one rectangular damper blade corresponding in size to said opening and having at least on leading edge and two side edges extending perpendicular to said leading edge;

means for pivoting said damper blade about an axis spaced from said leading edge between a closed position in which said damper blade extends in said orifice to prevent said



flow and an open position in which said leading edge and at least a portion of each of said side edges are spaced from the corresponding potions of said partition defining said orifice to permit said flow; and

means extending from said side edges and perpendicular to said damper blade for preventing fluid flow through the spaces between said side edges and their respective partition portions, so that the relationship between said pivoting, and therefore the degree of opening of said damper blade, and the amount of fluid flow through said orifice is substantially linear.

5,333,839

MACHINE FOR BORING A TAP HOLE OF A SHAFT FURNACE

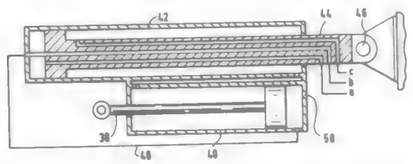
Emile Losardi, Bascharage, Luxembourg; Philippe Malivoir, Thionville, France; Jean Metz, Luxembourg, Luxembourg; Fernand Roemen, Luxembourg-Cents, Luxembourg, and Patrick Miles, Fennange, Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Oct. 30, 1992, Ser. No. 968,984

Claims priority, application Luxembourg, Oct. 31, 1991, 88029; Aug. 5, 1992, 88157

Int. Cl.[5] **C21B** *7/12*

U.S. Cl. 266—45 **15 Claims**



1. A device for piercing a taphole for a shaft furnace having previously been plugged with taphole clay, the device comprising:

a rod having a front end and a rear end, the front end of said rod being driveable into an unhardened taphole clay;

a mount having a front and a rear;

a front support for supporting the rod at the front of said mount;

a sliding rear support for supporting the rod at the rear of said mount;

a first clamp, mounted in a sliding manner on the mount, the rod passing axially through said first clamp, said first clamp including means for releasably gripping the rod at any place between its front end and its rear end and for transmitting an axial pushing force to said rod in order to drive it into the taphole clay;

a first hydraulic jack slidably disposed on said mount, said first hydraulic jack having a stroke L which is shorter than the length of said rod, said first clamp being connected to said first hydraulic jack;

a drive means for moving said first hydraulic jack along said mount from a front position to a rear position and vice versa, said drive means being disposed on said mount; and

a coupling means for engaging the rear end of said rod, said coupling means being adapted for transmitting an axial pulling force to said rear end of the rod for pulling said rod out of a hardened taphole clay and said coupling means being securely attached to said clamp means during removal of said rod from the taphole clay.

5,333,840

BLAST PIPE AND TUYERE ARRANGEMENT FOR A BLAST FURNACE AND METHOD

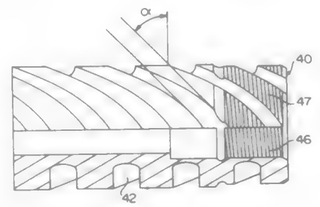
Bror E. Sköld, Luleå; Nils O. Lindfors, Gammelstad, and Jan O. Wikström, Luleå, all of Sweden, assignors to SSAB Tunnplåt AB, Borlänge, Sweden

Filed Jul. 14, 1993, Ser. No. 91,671

Claims priority, application Sweden, Jan. 17, 1991, 9100143-8

Int. Cl.[5] **C21B** *7/16*

U.S. Cl. 266—47 **27 Claims**



1. In a blast furnace, an injection arrangement for injecting at least fuel and gas into the blast furnace, the blast furnace having an exterior wall, the arrangement comprising:

a blast pipe;

a tuyere disposed at a first end of the blast pipe;

the blast pipe and tuyere forming a blast pipe-tuyere arrangement;

the blast pipe-tuyere arrangement defining a first passage therewithin, and the blast pipe-tuyere arrangement being disposed through the exterior wall of the blast furnace for carrying at least hot air into the blast furnace;

lance means for injecting fuel into the first passage of the blast pipe-tuyere arrangement, said lance means having a first end disposed within said first passage; and

said lance means comprising:

an outer tube and an inner tube, the inner tube being disposed within the outer tube;

said inner and outer tubes defining a second passage between said inner and outer tubes, said second passage for conducting a gas into said first passage, the gas being for enhancing combustion in the blast furnace;

said inner tube defining a third passage therewithin, said third passage for conducting fuel into said first passage;

tip means disposed at said first end of said lance means; and

said tip means comprising:

a longitudinal bore therethrough, said longitudinal bore being disposed to provide a continuation of said third passage; and

a plurality of helical passages separated from and disposed helically about said longitudinal bore, said helical passages being disposed to provide a continuation of said second passage.

5,333,841

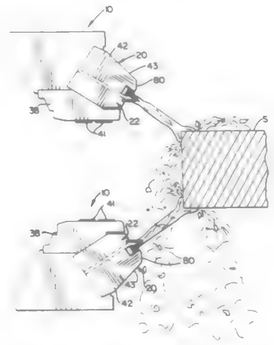
NOZZLE INSERT FOR USE IN METAL SCARFING APPARATUS

Michael S. Showalter; John G. Dawson, Jr., both of Florence, and Frank J. Gusky, Quinby, all of S.C., assignors to The ESAB Group, Inc., Florence, S.C.

Continuation-in-part of Ser. No. 805,111, Dec. 9, 1991, Pat. No. 5,234,658, and a continuation-in-part of Ser. No. 948,027, Sep. 21, 1992. This application Dec. 10, 1992, Ser. No. 988,450

Int. Cl.[5] **B23K** *7/06*

U.S. Cl. 266—51 **7 Claims**



1. An insert adapted for forming a nozzle when mounted in a cylindrical opening in a supporting member and comprising

a generally cylindrical body member composed of a unitary piece of metallic material and defining a longitudinal axis and a forward discharge end and a rear end,

a central bore extending through said body member along said longitudinal axis,

an externally threaded portion formed at said rear end of said body member so as to be adapted to engage a mating threaded portion in the cylindrical opening of the supporting member, and with said externally threaded portion defining an outside diameter,

a plurality of longitudinally extending substantially parallel flutes formed at said forward discharge end of said body member and spaced about the exterior surface of said body member and along a portion of the length thereof adjacent said forward discharge end, said flutes having outer extremities which collectively define a cylinder which has a diameter greater than said outside diameter of said threaded portion and

said body member including a pair of longitudinally spaced apart shoulders positioned between said flutes and said externally threaded portion and forming an annular channel therebetween which is adapted to received a resilient sealing O-ring, with one of said shoulders including a frusto-conical surface portion which faces toward said rear end and is adapted to form a metal to metal seat with a mating portion in the cylindrical opening of the supporting member,

whereby the insert may be axially inserted into the cylindrical opening in the supporting member and then rotated to thread the externally threaded portion into the mating threaded portion in the cylindrical opening and so as to secure the insert in an operating position wherein a high speed gas flow may be directed through said central bore and a substantially concentric stream may be directed through the channels which are formed between said flutes and the cylindrical opening, and whereby the insert may be removed by rotation thereof in the opposite direction.

5,333,842

APPARATUS FOR SUPPLYING MEDIA TO A BLOWING LANCE

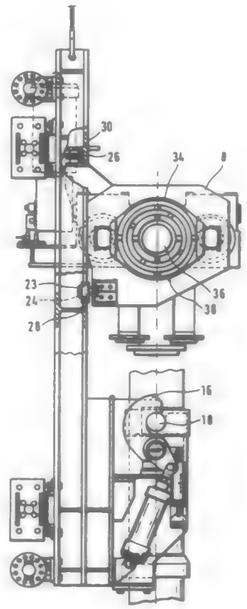
Hubert Stomp, Luxembourg-Howald; Andre Kremer, Leudelange; Daniel Fries, Arlon; Marc Reichert, Schifflange, and Serge Devillet, Burden, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jan. 11, 1993, Ser. No. 3,232

Claims priority, application Luxembourg, Jan. 24, 1992, 88056

Int. Cl.[5] **C21C** *5/30*

U.S. Cl. 266—226 **9 Claims**



1. Apparatus for coupling a blowing lance to a media supply, said lance having a top part with a first lateral connection surface for said media, said apparatus comprising:

vertically movable lance carrier means for receiving and vertically moving said lance;

fastening means on said lance carrier means for rigidly locking said top part of said lance to said lance carrier means before the actual coupling operation, wherein said first connection surface defines a substantially horizontal coupling direction on said lance carrier means;

movable carriage means;

guiding means on said lance carrier means for guiding said movable carriage means in a direction which is parallel to said substantially horizontal coupling direction;

a second connection surface for said media, said second connection surface matching said first connection surface and being supported on said movable carriage means so that it can be brought in mated contact with said first connection surface by moving said guided carriage means in said substantially horizontal coupling direction; and

connection means on said movable carriage means for connecting said second connection surface to said media supply for the lance.

VOL 1165 ISS 1 AG 2 1994 UMI

5,333,843

DEVICE FOR INSTALLING AND REMOVING GAS PURGING PLUGS FOR METALLURGICAL VESSELS

Leopold Kneis, Grimmenstein, and Manfred Slamenik, Trofaiach, both of Austria, assignors to Veitscher-Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

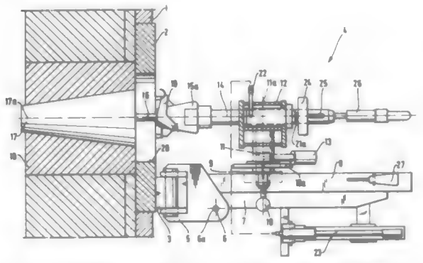
PCT No. PCT/AT91/00101, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO92/04998, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 4, 1991, Ser. No. 989,022

Claims priority, application Austria, Sep. 14, 1990, 1870/90

Int. Cl.[5] B22D *1/00*; C21C *7/072*

U.S. Cl. 266—271 14 Claims



1. Device for installing and removing gas purging plugs (17) for metallurgical vessels, comprising a guide (7) for axially displacing the gas purging plug (17), a first hinge (6) having an axis (6*a*) for pivoting the gas purging plug into a maintenance position, and a second hinge (11), whose axis (11*a*) extends essentially at right angles to the axis (6*a*) of the first hinge (6).

5,333,844

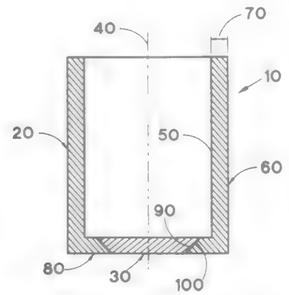
NON-GRAPHITE CRUCIBLE FOR HIGH TEMPERATURE APPLICATIONS

Cressie E. Holcombe, Knoxville, and William A. Pfeiler, Norris, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Sep. 25, 1992, Ser. No. 951,742

Int. Cl.[5] C21B *3/00*

U.S. Cl. 266—275 24 Claims



1. A multi-piece crucible for containing a melt of a material for high temperature applications comprising: a tubular member and a bottom member, said tubular member having a centerline, an inner side wall, a lower portion, a thickness, and a lip, said lip being located on said inner side wall of said lower portion of said tubular member, said lip having a tapered side tapered in a downward direction toward said centerline of said tubular member, said bottom member having an outer side tapered in an upward direction toward said tubular member at an angle that provides a matching fit with said tapered side of said lip for enclosing said lower portion of said tubular member to form said crucible for containing said melt of said material in high temperature casting operations, said outer side of said bottom member contacting said tapered side of said lip forming a seal sufficient to contain said melt of said material used in said high temperature casting operations, said lip of said tubular member supporting said bottom member, said crucible being made of a material chemically inert to said melt and having structural integrity at the melting point temperature of said melt.

5,333,845

DAMPER DEVICE

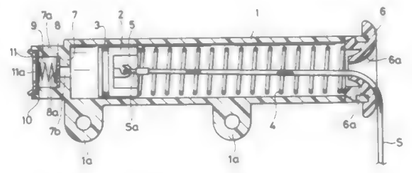
Sato Seiichi, Yokohama, Japan, assignor to Kato Hatsuji Kaisha, Ltd., Yokohama, Japan

Filed Jan. 27, 1993, Ser. No. 9,633

Claims priority, application Japan, Mar. 25, 1992, 4-025040[U]

Int. Cl.[5] B60R *7/06*

U.S. Cl. 267—711 15 Claims



1. A damper device, comprising:

a cylinder body having a front terminal opening;

a piston slidably disposed inside said cylinder body;

a string member having one end connected to said piston within said cylinder body and an other end extending out of said cylinder body through said front terminal opening;

a cap on said front terminal opening of said cylinder body, said string member extending from said piston to said other end thereof through said cap, and said cap having a curved peripheral guide face defining an opening through which said string member extends, said guide face guiding said string member in movement in and out of said cylinder and defining said opening such that said string member can be pulled out of said cylinder from directions that are substantially non-axial with respect to said cylinder; and

a spring member disposed inside said cylinder body biasing said piston in a direction tending to pull said string member into said cylinder body.

5,333,846

ELASTIC MOUNT HAVING FLUID CHAMBER PARTIALLY DEFINED BY OSCILLATING PLATE ACTUATED BY MOVING COIL IN ANNULAR GAP BETWEEN TWO YOKES CONNECTED TO PERMANENT MAGNET, AND METHOD OF MANUFACTURING THE ELASTIC MOUNT

Katsuhiro Goto, Komakis; Akiyoshi Ide, Inuyama; Yutaka Ishioka, Nagoya; Rentaro Kato; Tetsu Matsui, both of Kasugai; Ryouji Kanda, Komaki; Atsushi Muramatsu, Komaki; Keiichi Ishiba, Komaki, and Yoshiki Funahashi, Iwakura, all of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Nov. 23, 1992, Ser. No. 979,934

Claims priority, application Japan, Nov. 28, 1991, 3-339876; Nov. 29, 1991, 3-341930; Dec. 6, 1991, 3-349585

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] F16F *9/44*; H01F *7/06*

U.S. Cl. 267—140.14 28 Claims

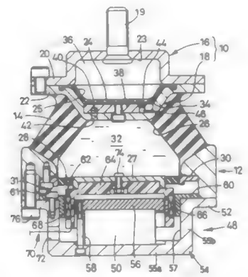
1. A fluid-filled elastic mount comprising:

a first and a second support which are spaced apart from each other;

an elastic body which is interposed between said first and second supports for elastically connecting the first and second supports and which partially defines a fluid chamber filled with a non-compressible fluid;

an oscillating plate which partially defines said fluid chamber and which is displaceable to change a pressure of said fluid in said fluid chamber;

a permanent magnet disposed on one of opposite sides of said oscillating plate remote from said fluid chamber;



a first and a second yoke member which are connected to respective opposite magnetic pole faces of said permanent magnet and which cooperate with said permanent magnet to define a closed magnetic circuit, said first and second yoke members defining therebetween an annular gap in said magnetic circuit;

an annular moving coil received in said annular gap and fixed to said oscillating plate, said moving coil being displaced in said annular gap in an axial direction thereof, to oscillate said oscillating plate upon energization of said moving coil.

5,333,847

ELASTIC MOUNT HAVING AT LEAST TWO ORIFICES FORMED BY RUBBER FILLER ON ORIFICE-DEFINING STRUCTURE WHICH EXTENDS ALONG AT LEAST ONE OF TWO FLUID CHAMBERS

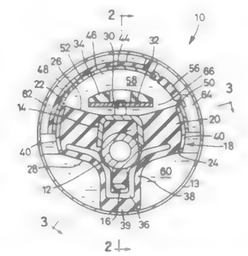
Ryouji Kanda, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Japan

Filed Nov. 10, 1992, Ser. No. 973,391

Claims priority, application Japan, Nov. 13, 1991, 3-325326

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—140.12 23 Claims



1. A fluid-filled cylindrical elastic mount comprising:

an inner and an outer sleeve which are radially spaced apart from each other;

an elastic body interposed between said inner and outer sleeves, for elastically connecting the inner and outer sleeves, said elastic body having a first and a second pocket formed in respective diametrically opposite circumferential portions thereof, said first and second pockets being open in an outer circumferential surface of said elastic body;

said first and second pockets cooperating with said outer sleeve to define a first and a second fluid chamber, respectively, said first and second fluid chambers being filled with a non-compressible fluid;

an orifice-defining structure interposed between said outer sleeve and said elastic body, and extending in a circumferential direction of said outer sleeve, so as to cover at least one of said first and second pockets, said orifice-defining structure having a circumferential recess open in a radially outward direction of said outer sleeve, said orifice-defining structure having a first and a second window formed through said circumferential wall;

a rubber filler provided in said circumferential recess, and having a first and second groove which extend from said first and second windows, respectively;

a flexible diaphragm formed integrally with said rubber filler and closing said second window;

said first groove and said first window cooperating with said outer sleeve to define a first orifice passage for fluid communication between said first and second fluid chambers; and

said second groove cooperating with said outer sleeve to define a second orifice passage which permits said fluid to flow between a region of said second orifice passage adjacent said flexible diaphragm and said second fluid chamber, through elastic displacement of said flexible diaphragm, said second orifice passage having a higher ratio S/L than said first orifice passage, where S and L respectively represent a cross sectional area and a length of said first and second orifice passages.

5,333,848

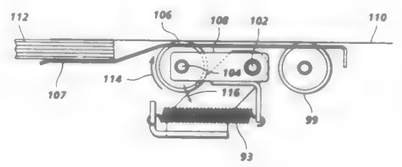
RETARD FEEDER

Robert F. Rubscha, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1993, Ser. No. 128,183

Int. Cl.[5] B65H *3/06*

U.S. Cl. 271—3.1 1 Claim



1. An apparatus for moving documents in a recirculating path from a stack of documents to an imaging station, including:

means for supporting the stack of documents;

means for advancing documents from the stack thereof to the imaging station, said advancing means comprising a movable frame, a nudger roll mounted rotatably on said frame, said nudger roll in an operative position, being in engagement with a document of the stack of documents to advance the documents from the stack thereof, a rotatably mounted retard roll, and a feed roll mounted rotatably on said frame, said feed roll, in the operative position, being in engagement with said retard roll to define a nip therebetween for separating any overlapped documents reaching the nip, said frame being movable from the operative position to an inoperative position spacing said nudger roll from the document of the stack documents and said feed roll from said retard roll enabling an operator to remove

VOL 1165 ISS 1 AG 2 1994 UMI

jammed sheets, means for resiliently urging said retard roll to pivot toward said feed roll, means for applying a torque on said retard roll of a magnitude and direction that rotates said retard roll in a first direction in response to a plurality of documents entering the nip to move the document toward the stack and permits said retard roll to rotate in a second direction opposite to the first direction, in response to a document entering the nip to move the document away from the stack of documents, said applying means comprises a gear coupled to said retard roll, and a slip clutch coupled to said gear to prevent said retard roll from rotating if a plurality of documents pass through the nip and enable said retard roll to rotate if a single document passes through the nip; and

means for returning the document from the imaging station to the stack of documents being supported by said supporting means.

5,333,849

ROTATABLE CASSETTE TYPE FEEDING APPARATUS

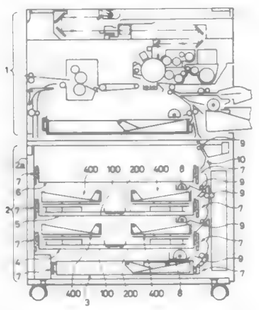
Hirotaka Toki, Kashihara; Hiranaga Yamamoto, Nara; Osamu Wakuda, Yamatotakada, and Hiroyuki Nagao, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 872,772, Apr. 23, 1992, abandoned. This application Dec. 24, 1992, Ser. No. 996,522

Claims priority, application Japan, Apr. 23, 1991, 3-092108

Int. Cl.[5] **B65H** *3/44*

U.S. Cl. 271—9 **7 Claims**



1. A rotatable cassette-type feeding apparatus, comprising:

base means for carrying said rotatable cassette-type feeding apparatus;

storing means for storing copy material on which an image on a document is to be copied and for feeding the copy material from a predetermined feeding position;

carrying means installed on said base means for carrying said storing means, said storing means being rotatable and movable forward and backward in a first direction on said carrying means, and wherein the first direction is a radial direction of rotation of said carrying means;

first rotation driving means installed between said base means and said carrying means for rotating said carrying means;

second rotation driving means installed between said storing means and said carrying means for rotating said storing means;

moving means installed between said storing means and said carrying means for moving said storing means in the first direction, said moving means being level with said second rotation driving means;

first rotation controlling means which controls said first rotation driving means to align the center of the copy material with a transport center line when the copy material is fed;

second rotation controlling means which controls said second rotation driving means to switch a position of the copy material with respect to a second direction in which the copy material is fed and to position a leading edge of the copy material fed from said storing means at right angles to the second direction;

movement controlling means which controls said moving means to move said storing means to the feeding position; and

wherein said second rotation driving means is mounted on said moving means and is moved in the first direction together with said storing means.

5,333,850

SHEET FILM LOADING APPARATUS

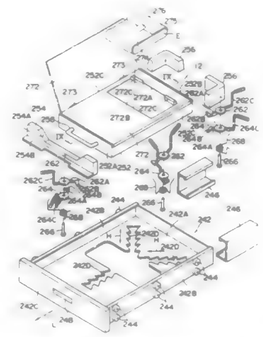
Hiroshi Kushima, and Mikio Tsuyuki, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 773,004, Oct. 8, 1991, Pat. No. 5,201,506, which is a continuation-in-part of Ser. No. 478,399, Feb. 12, 1990, Pat. No. 5,080,343. This application Oct. 28, 1992, Ser. No. 967,737

Claims priority, application Japan, Feb. 14, 1989, 1-34153; Mar. 3, 1989, 1-24677

Int. Cl.[5] **B65H** *1/04*

U.S. Cl. 271—164 **7 Claims**



1. A sheet film loading apparatus for loading a magazine, and for taking out a sheet film accommodated in the magazine and for loading the sheet film into a cassette, said sheet film loading apparatus comprising:

a loading apparatus body for accommodating said magazine;

a movable carriage for accommodating said magazine inside said loading apparatus body;

guiding means for rendering said movable carriage slidable from a position where said movable carriage is accommodated in said loading apparatus body to a position where said movable carriage is made to project from said loading apparatus body in a cantilevered manner, whereby a magazine is loaded on said movable carriage and the sheet film accommodated inside said magazine is in a state where said movable carriage is projecting from the loading apparatus body in the cantilevered manner; and

a stopper for fixing said magazine accommodated in said movable carriage, said stopper being disposed on said movable carriage,

wherein said stopper includes adjusting means for altering a magazine-mounting position relative to said movable carriage without requiring removal of said stopper from said carriage.

5,333,851

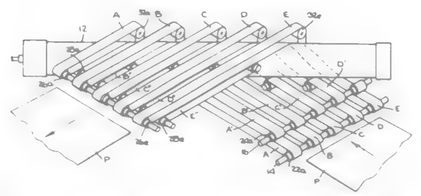
DOCUMENT CORNER TURNING BELT TRANSPORT APPARATUS AND METHOD

Walter J. Kulpa, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 30, 1992, Ser. No. 998,504

Int. Cl.[5] **B65H** *5/00*

U.S. Cl. 271—225 **9 Claims**



1. Apparatus for guiding and controlling a discrete item through a turn in the feed direction, comprising:

a stationary cylinder;

a transport belt having an input end and an output end for conveying said discrete item halfway around the circumference of said stationary cylinder, the feed direction of said transport belt being oriented at an angle to the axis of said stationary cylinder, and wherein an intermediate portion of said transport belt wraps around the half of the cylinder remote from both the input and output ends of said transport belt;

means to support said transport belt and provide a gap between said transport belt and said stationary cylinder wherein said cylinder includes a pattern of holes helically aligned on said cylinder adjacent said transport belt, wherein said supporting means comprises a film of air between said transport belt and said cylinder; and

a blower for supplying said air through said holes in said cylinder, whereby said discrete item is turned in the feed direction when conveyed by said transport belt half way around said stationary cylinder.

5,333,852

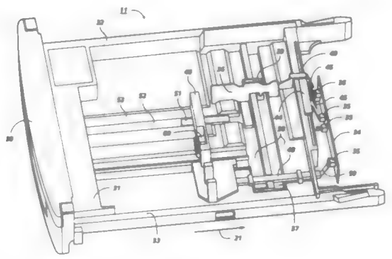
AUTO PAPER SIZE SENSING MECHANISM FOR AN ADJUSTABLE CASSETTE

William D. Milillo, Ontario, and Gregory P. Miller, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 19, 1993, Ser. No. 93,025

Int. Cl.[5] **B65H** *1/00*

U.S. Cl. 271—171 **18 Claims**



1. An adjustable sheet cassette for use in the main body of a machine, said cassette comprising means for feeding sheets therefrom and being movable in said machine from a sheet feeding position to a nonsheet feeding position, said adjustable sheet cassette comprising a sheet stack support platform capable of supporting stacks of sheets of a plurality of length and width dimensions, at least one sheet edge guide movable in a path in said cassette to accommodate stacks of sheets of different length or width dimensions, said sheet edge guide having attached thereto an actuator arm having a plurality of flexible spring switch actuators for selectively actuating a plurality of switches on a circuit board on the main body of the machine when said cassette is in sheet feeding position in said machine, said actuators being located to selectively actuate the switches on the main body of the machine which represent one of a plurality of sheet sizes, whereby when each of said switches is actuated it generates a unique resistance in the circuit on the circuit board, the resultant of these unique resistances determining a resultant voltage signal to a controller on the main body of the machine which allows the controller to interpret the length or width dimension of the sheets in the sheet cassette.

5,333,853

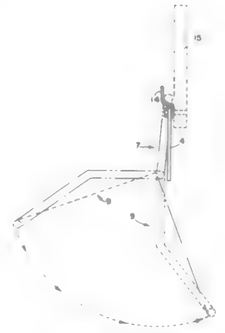
APPARATUS FOR RETURNING BASKETBALLS TO FREETHROW LINE

Otto L. Hektor, 205 E. Old Elm Rd., Lake Forest, Ill. 60045

Filed Nov. 9, 1993, Ser. No. 149,626

Int. Cl.[5] **A63B** *69/00*

U.S. Cl. 273—1.5 A **9 Claims**



1. An apparatus for returning basketballs from a position under or adjacent to a basketball hoop having a hoop bracket and mounted on a backboard in a direction toward a corresponding freethrow line, which apparatus comprises (1) a closed frame comprising a proximal member, two side members and a distal member; (2) a return surface; and (3) a main hang brace; the proximal member having a side-to-side dimension which is about the same as the side-to-side dimension of the backboard; the side members, proceeding from the proximal member to the distal member, contain an angle in a downward direction; the distal member having the shape of a rounded "V"; the return surface being a single continuous member having a central axis and being connected on all sides to the closed frame so that, when in the operating position, the return surface slopes downwardly from the sides to the central axis and slopes downwardly from the proximal end to the distal end under the weight of the basketball; and the main hanging frame comprises an upper member and two side members, the upper member being above and parallel to the proximal member of the closed frame; the two side members having upper and lower ends, the lower ends being "J"-shaped and capable of holding the proximal member of the closed frame, the lower ends of the side members of the hanging frame and the proximal member of the closed frame being provided with openings which are aligned to provide access by a locking device.

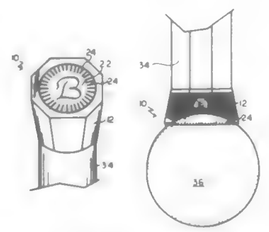
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,854

TENNIS BALL RETRIEVER AND RACQUET

Howard W. Woollard, P.O. Box 263, Barnstable, Mass. 02630, and David C. Hart, Barnstable, Mass., assignors to Howard W. Woollard, Barnstable, Mass.

Filed Aug. 2, 1993, Ser. No. 100,752
Int. Cl.[5] A63B *49/08*
U.S. Cl. 273—73 R 11 Claims



1. A tennis ball retriever device, for use at the handle end of a tennis racquet, for retrieval of tennis balls having a nap surface, which device removably grasps a tennis ball by contacting a tennis ball with the tennis ball retriever device, and which device comprises:

a) a cap, adapted to be secured to the handle end of a tennis racquet, and having an axis and having an open end with a recess defined by a peripheral wall of the cap;

b) teeth means to grasp removably the surface nap of a tennis ball, and which teeth means comprises a plurality of teeth elements, extending inwardly a short distance toward the axis of the cap from the peripheral wall of the cap and generally positioned perpendicular to the axis of the cap to grasp or catch the nap of a tennis ball in use; and

c) a compressible means within the recess of the cap and extending generally to the teeth means, the compressible means adapted to move between an extended screening position which prevents casual contact of the teeth means with objects, and an inwardly compressed position created by a tennis ball to expose the teeth means and to permit the teeth means to grasp the nap of a tennis ball.

5,333,855

BASEBALL PITCHING ANALYZER

Connie J. Silin, 326 E. Bridlespur Dr., Kansas City, Mo. 64114, and David E. Fowler, Overland Park, Kans., assignors to Connie J. Silin, Kansas City, Mo.

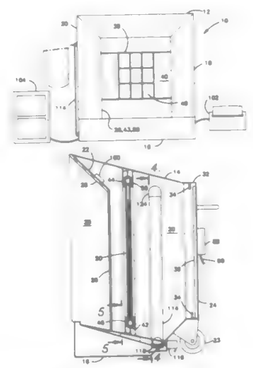
Filed Jul. 20, 1992, Ser. No. 916,514
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 A 4 Claims

1. In a pitching analyzer including a sensor frame having a central opening which an object to be detected will pass through, a plurality of light emitters directed across said central opening to define a light grid substantially normal to an anticipated flight path for the object, and a light detector associated with each of said emitters and located at a position substantially opposite to its associated one of said emitters with respect to said opening, the improvement comprising:

a housing defining an interior cavity and including a front panel having an opening extending therethrough for passage of the object to be detected, said front panel having a funnel configuration about at least a portion of its extent such that at least a portion of the periphery of said opening is located a predetermined distance from the largest peripheral dimension of said funnel configuration, whereby the objects to be detected will be deflected through said opening at the smallest peripheral dimension of said funnel configuration upon impact with said portion of said extent of said front panel, said housing further including a back wall upon which the objects will impact after passing through said opening;

said sensor frame being resiliently mounted to said housing within said cavity at a position intermediate said front panel and said back wall, with said central opening of said sensor frame being substantially aligned with said front panel opening, said sensor frame including a single one of said light grids;

a sensor guard mounted to said housing within said cavity in proximity to said sensor frame and having at least a portion intermediate said sensor frame and said front panel, said sensor guard portion having an outer peripheral extent greater than that of said sensor frame to thereby extend peripherally outward of said sensor frame, and a sensor guard opening substantially coaxial to, and having



a smaller peripheral length than, said opening of said sensor frame, whereby said sensor guard opening extends peripherally inward of said opening of said sensor frame; and

further including control means operatively connected to said detectors, said control means including a timer, memory and calculation means, said control means activating said timer during the period the object passes through the light grid, as detected by said detectors, and said calculating means automatically calculates a velocity of the object by dividing the known size of the object, stored in said memory, by the output of said timer.

5,333,856

PITCHING PRACTICE APPARATUS

Jonathan S. Gery, 6549 Mission Gorge Rd., #400, San Diego, Calif. 92120

Filed Apr. 19, 1993, Ser. No. 47,893
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 A 3 Claims

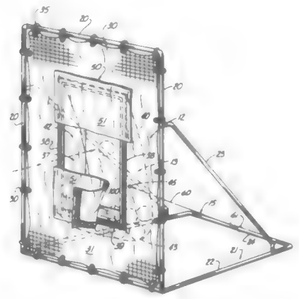
1. A pitching practice apparatus comprising:

a framework unit including a vertically disposed generally rectangular main framework member;

a backstop unit including a generally enlarged rectangular backstop member having an enlarged generally rectangular central opening formed therein; wherein, the backstop member is supported by the main framework member which is further provided with a rearwardly projecting base framework member;

a generally flaccid strike zone unit including an enlarged generally rectangular strike zone member whose dimensions are significantly greater than the dimensions of the enlarged opening in the backstop member; wherein, the peripheral edges of the strike zone member are attached to the periphery of the backstop member adjacent said opening; such that the strike zone member forms a pouch; and, wherein the strike zone member is further provided with an anchor element;

a strike zone obscuring unit including at least one obscuring member including a generally rectangular panel suspended at a selected height on the back stop member to obscure a portion of the opening in the backstop member; and,



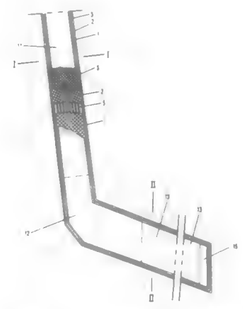
an auxiliary tensioning unit associated with the strike zone member for stretching the strike zone member into a tensioned state; wherein, the tensioning unit comprises an elasticized cord element having hooks formed on both ends; wherein, one hook engages the anchor element on the strike zone member and the other hook engages the base framework member.

5,333,857

HOCKEY STICK

Alain Lallemand, Boecourt, Switzerland, assignor to Composites-Busch & Cie, Switzerland

Filed Dec. 30, 1992, Ser. No. 998,519
Claims priority, application Switzerland, Oct. 15, 1992, 3220/92-6
Int. Cl.[5] A63B *59/12*
U.S. Cl. 273—67 A 40 Claims



1. A hockey stick, in particular for ice hockey, hockey on earth or on grass, skater hockey or roller hockey, comprising

a shaft having a core of synthetic foam of a first density; a thin extended blade having a core material of a second density higher than the first density; and a heel forming the connection between the blade and the shaft and having a core of synthetic foam of a third density less than the second density, wherein the first, second and third densities are selected in order to adapt the resistance and the characteristics of the shaft, blade and heel to the particular local stresses of the hockey stick; and

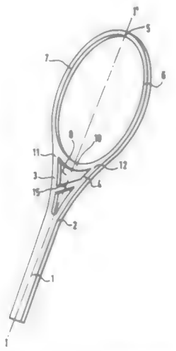
at least three layers of woven materials covering the cores of the shaft, blade and heel.

5,333,858

RACKET FOR TENNIS OR THE LIKE

Jacques Fagot, Saint Jean de Moirans, France, assignor to Skis Rossignol S.A., France

Filed May 12, 1993, Ser. No. 59,678
Claims priority, application France, May 14, 1992, 92 06085
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 G 10 Claims



1. A racket for hitting a ball, comprising:

a head frame for receiving strings to contact a ball;

a neck joined to and extending from said head frame and comprising two converging branches joined together at a joining region spaced from said head frame;

a longitudinal handle shaft extending from said joining region of said branches in alignment with a median longitudinal axis of said head frame and said racket as a whole;

a main tie portion of said head frame located at a junction of each said branch with said head frame and linking said two branches of said neck; and

means for damping vibrations transmitted from said head frame to said handle shaft, said means consisting of one secondary tie located between said main tie and the joining region of said branches, said secondary tie being inclined with respect to a plane perpendicular to said median longitudinal axis and attached to each said branch at points asymmetric with respect to said median longitudinal axis.

5,333,859

CONSTANT SWING GOLF CLUB SET BY VARIED CLUB LENGTH

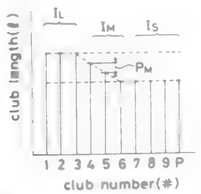
Mitsutake Teramoto, Kamakura; Takaharu Okumoto, Chigasaki; Teruo Goto, Tokyo; Shinkichi Saito, Tokyo, and Hideyo Asabuki, Tokyo, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Division of Ser. No. 784,678, Oct. 29, 1991, Pat. No. 5,121,918, which is a continuation of Ser. No. 531,091, May 31, 1990. This application May 11, 1992, Ser. No. 881,083
Claims priority, application Japan, Jun. 13, 1989, 1-68111
Int. Cl.[5] A63B *53/00*
U.S. Cl. 273—77 A 5 Claims

1. An iron golf club set of consecutively numbered clubs comprising a long iron golf club group, a middle iron golf club group and a short iron golf club group, each group consisting of two or more iron golf clubs, all of the iron golf clubs having a club number that increases from a first club in the long iron group to a last club in the short iron group, said golf clubs in said long iron group having a constant club length, said golf clubs in said middle iron group having a club length that decreases with increasing club number from the longest club in said middle iron group to the shortest club in said middle iron group and said golf clubs in said short iron group having a

VOL 1165 ISS 1 AG 2 1994 UMI

constant club length, the length of the short iron golf clubs being shorter than the length of the long iron golf clubs and the length of the middle iron golf clubs being no longer than the length of the long iron golf clubs and no shorter than the

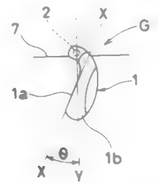


length of the short iron golf clubs wherein the length of the iron golf club having the smallest club number in said middle iron group is shorter than the iron golf club having the largest number in said long iron group.

5,333,860
GOLF CLUB SETS

Shinkichi Saito; Hideyo Asabuki, both of Tokyo; Atsushi Onozato, Hiratsuka; Toshinori Nishimura, Hiratsuka; Kazuo Kawada, Hiratsuka, and Shinji Yamamoto, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 996,641, Dec. 24, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 118,772
Claims priority, application Japan, Dec. 27, 1991, 3-346414; Dec. 27, 1991, 3-346425; Dec. 27, 1991, 3-346434
Int. Cl.[5] A63B *53/00*
U.S. Cl. 273—77 A **16 Claims**



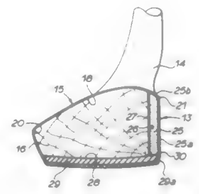
1. A golf club set comprising a plurality of golf clubs having a series of individual club numbers, characterized in that an angle of centroid, defined as an angle subtended by a toe-heel line at the bottom of a striking face of a club head and a vertical plane containing a center axis of a club shaft attached to the club head when the club shaft is supported horizontally with the club head thereof being suspended freely, increases in the order of decreasing club numbers among the plurality of said golf clubs.

5,333,861
GOLF CLUB

Peter B. Mills, 505 Greenlaurel Dr., Atlanta, Ga. 30342

Filed May 14, 1993, Ser. No. 61,681
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—78 **7 Claims**

1. A golf club of the type having:
(a) a shaft;
(b) a head having a heel portion, a toe portion and a face;
(c) a neck on said head having a hosel therein fixedly receiving an end portion of said shaft;
(d) a resilient panel in said head for forming a substantial portion of said face and for providing a striking surface for engaging a golf ball when said club is used;
(e) said panel being composed of shoe sole leather;
(f) said panel having an outer surface and including a polyurethane layer adhered to said outer surface of said panel; and

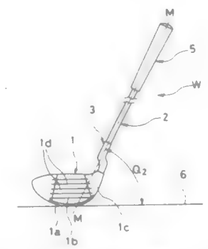


(g) said polyurethane layer having a thickness of between 2 mils and 9 mils.

5,333,862
WOOD TYPE GOLF CLUB

Mitsutake Teramoto; Shinkichi Saito, and Hideyo Asabuki, all of Tokyo, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1993, Ser. No. 102,803
Claims priority, application Japan, Aug. 10, 1992, 4-56078[U]
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—80 C **5 Claims**



1. A wood type golf club comprising a club head provided with a sole at a bottom portion thereof, a ball striking face at a front side thereof and a hosel at a heel side thereof, and a club shaft joined to said hoset of said club head, characterized in that a face angle θ_1 measured on the basis of a direction square with the direction in which a ball is to be driven by said face, toward the side of a closed face of said club head is set to 0°–5° closed face, a lie angle θ_2 defined as an angle of inclination of the axis of said club shaft with respect to a horizontal line and measured with said sole of said club head contacting a horizontal ground surface being set to 58°–62°, an angle of center of gravity θ_3 defined as an angle which is formed between an extension line of said face of said club head and a straight line crossing the axis of said club shaft at right angles to the axis of said shaft when said club shaft is placed on a horizontal plane with said club head being is directed freely downward from said plane and viewed from said sole along the axis of said club shaft being set to 27°–33°.

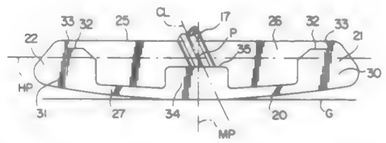
5,333,863
SYMMETRICAL GOLF PUTTER

James L. Shenoha, Lockport, and Dean E. Meyer, LaGrange Park, both of Ill., assignors to Wilson Sporting Goods Co., Chicago, Ill.

Filed May 7, 1993, Ser. No. 55,798
Int. Cl.[5] A63B *53/02*
U.S. Cl. 273—80.2 **10 Claims**

1. A golf putter comprising a clubhead and a shaft attached to the clubhead, the clubhead having a face portion which includes a flat face for striking a golf ball and top and bottom

edges, a sole, a toe portion, a heel portion, a central flange portion between the toe and heal portions which extends rearwardly from the bottom edge of the face portion, the flange having a top surface which is spaced below the top edge of the face portion, the weight of the clubhead being distributed substantially symmetrically on both sides of a first plane which

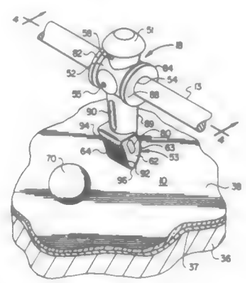


extends through the center of the clubhead perpendicularly to the face, the shaft having a centerline which passes through the intersection between said first plane and a second plane which is perpendicular to said first plane and which extends through the point on the face which is intended to contact the golf ball, the shaft being attached to the flange portion rearwardly of the face portion and below the top edge of the face portion.

5,333,864
TABLE SOCCER PLAYING FIGURE

Calvin E. McCloud, 4959 Rendon Rd., Fort Worth, Tex. 76140

Continuation of Ser. No. 626,023, Dec. 12, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,678
Int. Cl.[5] A63F *7/06*
U.S. Cl. 273—85 D **5 Claims**

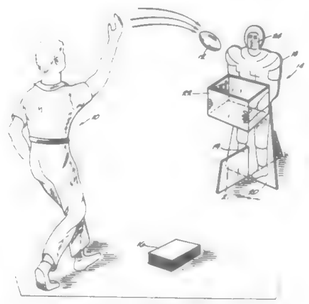


1. Table soccer game apparatus comprising:
a playing figure having a body portion with a passage extending therethrough along an axis and adapted for coaxial insertion therethrough of an elongated actuation rod to align and position a predetermined longitudinal portion of the rod within said passage; and
connection means for releasably anchoring said aligned body portion to said rod portion for rotation and axial translation therewith, said connection means including:
first means for creating between an interior side surface of said passage and an outer side surface of said rod portion a static frictional force essentially uniformly distributed around the interior side surface periphery of said passage and of sufficient strength to strongly inhibit relative rotational and translational movement between said body portion and said rod portion, said first means including a lateral size differential between said passage and said rod portion which, in response to movement of said rod portion into said passage, creates a press-fit engagement between said body portion and said rod portion, and
second means for mechanically blocking relative rotational and translational movement between said body portion and said rod portion extending through said body portion, said second means, during operative use thereof, maintaining, firstly, said alignment of said body portion to said rod portion and, secondly, said uniform static frictional force distribution around said interior side surface periphery of said passage.

5,333,865
FOOTBALL GAME

Gregory A. Holmes, 720 W. Becher St., Milwaukee, Wis. 53215

Filed Oct. 28, 1993, Ser. No. 144,632
Int. Cl.[5] A63F *7/06*
U.S. Cl. 273—94 **3 Claims**

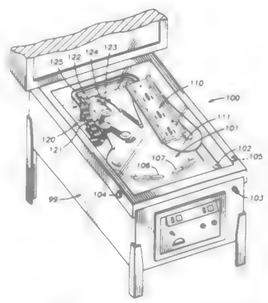


1. Amusement apparatus simulating the game of football comprising:
a simulated playing field;
a deck of cards bearing instructions for offensive football plays of designated types;
a toy football made of soft material; and
a receiving figure comprising a flat vertical member, a base to which said flat upright member is attached, a receiving receptacle attached to a forward side of said vertical member, said receiving receptacle having enclosed side, bottom and forward sidewalls and an open top, said receptacle being of a size sufficiently large to receive said football.

5,333,866
PINBALL MACHINE HAVING AN INTERACTIVE PLAYFIELD

Raymond C. Tanzer, Naperville, and Peter J. Hanchar, Chicago, both of Ill., assignors to Premier Technology, Bensenville, Ill.

Filed Jul. 12, 1993, Ser. No. 90,807
Int. Cl.[5] A63F *7/38*
U.S. Cl. 273—118 R **26 Claims**



9. A pinball machine comprising, in combination:

VOL 1165 ISS 1 AG 2 1994 UMI

a main playfield having ball-deflecting components mounted thereon;

means operable by a player for projecting a ball over said main playfield to contact said components;

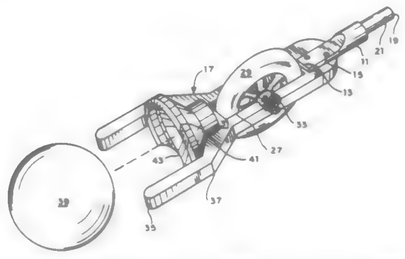
a playfield section mounted to said main playfield for movement with respect to said main playfield, said playfield section having ball deflecting-components mounted thereon for deflecting said ball when said ball rolls over said playfield section; and

means operable by said player and connected between said playfield section and said main playfield for selectively moving said playfield section with respect to said main playfield to cause said ball to be deflected to selected locations by said ball-deflecting components mounted on said playfield section.

5,333,867
BALL-DRIVING DEVICE

Anthony J. DiVito, 4932 Farrington Dr., Virginia Beach, Va. 23455

Filed Nov. 22, 1993, Ser. No. 155,626
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—129 M **6 Claims**



1. A ball-driving device for driving a ball over and upon a playing surface, said ball-driving device comprising: an elongated handle having a proximal end and a distal end, a bracket having a proximal end and a distal end, a chassis having a proximal end, an elongated slot therethrough, and a distal end; the proximal end of the chassis fixedly carrying the distal end of the bracket, the distal end of the handle and the proximal end of the bracket having cooperating means both connecting the handle and bracket, and providing adjustable and lockable clevis mounting of the handle relative to the chassis, the chassis having axle means freely mounting wheel means for rolling movement of the device upon the playing surface, the distal end of the chassis being Y-branched for cradling the ball preparatory to the ball being driven forwardly, and the distal end of the chassis fixedly carrying a drive cup for physically contacting the cradled ball upon forward thrust of the handle to drive the ball forwardly upon and over the playing surface.

5,333,868
METHOD OF PLAYING A GAME OF CHANCE AT LOCATIONS REMOTE FROM THE GAME SITE

Simon Goldfarb, 525 S. Ardmore St. #254, Los Angeles, Calif. 90020

Filed Mar. 1, 1993, Ser. No. 24,361
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—138 A **5 Claims**

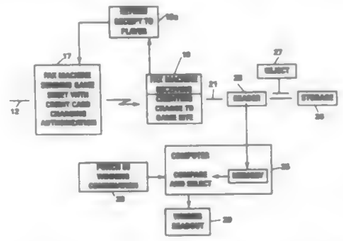
1. A method of participation in playing a game of chance prediction of a winning combination, wherein the game players are in various locations remote from the game site, said method comprising the steps of:

a. a game player manually completing a game sheet so that the sheet includes, in machine readable form, at least the game player's identity, credit card number, and predicted winning combination,

b. the game player inserting the completed game sheet into a facsimile phone machine at a location remote from the game site, whereby the game sheet information is transmitted over the phone line to the game site;

c. the game site operator removing a facsimile of the game sheet from a receiving facsimile phone machine located at the game site;

d. the game site operator charging the cost of the game participation to the game player's credit card number;



e. the game site operator transmitting a written receipt from the game site to the game player, confirming the details of the player's participation in the game;

f. the game site operator sending the facsimile of the game sheet through an electronic reader at the game site;

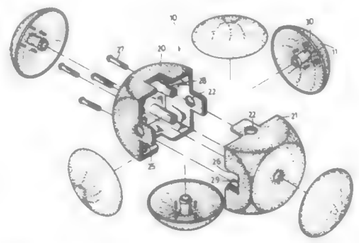
g. transmitting the reader electronic output to a computer memory at the game site; and

h. comparing the game winning combination with player combinations stored in the computer to select the player having the winning combination.

5,333,869
GAME APPARATUS

Yan-Ju Hsun, 58, Ma Yuan West St., Taichung, Taiwan

Filed May 10, 1993, Ser. No. 60,217
Int. Cl.[5] A63F *9/08*
U.S. Cl. 273—153 S **1 Claim**

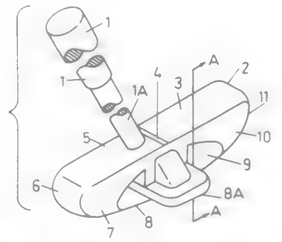


1. A game apparatus comprising a body including three pairs of parallel and opposite surfaces, an opening formed in each of said surfaces, six caps each including a shaft extended therefrom for engaging with said openings of said surfaces such that said caps are rotatable about said shafts respectively, said body including two halves each having at least one post provided therein, said posts of said two halves being coupled together so as to couple said two halves together, said two halves including a first half having a pair of first lugs formed thereon and a pair of first notches formed therein, and a second half having a pair of second lugs formed thereon for engaging with said first notches of said first half and a pair of second notches formed therein for engaging with said first lugs of said first half so as to further couple said two halves together, and a pattern formed on an outer peripheral surface of each of said caps.

5,333,870
AIRBORNE OVERSPIN PUTTER IMPROVING BALL ACCURACY

Verne W. Stevenson, Jr., 2802 6th Ave., Rock Island, Ill. 61201

Filed Jan. 11, 1993, Ser. No. 2,793
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—164.1 **6 Claims**



1. A golf putter comprising a shaft, a grip being positioned to an uppermost portion of said shaft and a putter head securely affixed to a lowermost portion of said shaft, said putter head comprising a face, a top surface, a backside, a narrow sole, a wide wold, a toe, a heel, an alignment mark, a hole in said top surface to affix said shaft and a rectangular cross-sectional area contained within said head;

said golf putter head formed of at least one material and having a body member defining said face in a substantially vertical plane with said putter in an operative position, said face facing left of a right handed operator, said face being used as a golf ball striking surface and defining the front foremost boundary of said head, said face having an uppermost edge and a lower edge and a positive loft of at least one degree, said face being flat and slanted rearwardly adjacent said uppermost edge and forwardmost adjacent said lower edge;

said top surface being generally flat and rectangular with a front and a back and defining a surface in a substantially horizontal plane with said head is in an operative position, said top surface being essentially perpendicular to said vertical face, said heel being the boundary of said head closest to a golfer and said toe being the boundary of said head furthest from a golfer, said hole for receiving said shaft being slightly off-center toward said heel of said top surface, said top surface forming a rectangular shape from adjacent said face toward said backside and longest from said heel to said toe, said alignment mark being generally centered between said heel and said toe, said alignment mark being perpendicular to said top edge of said face and positioned coincident with and directly in line with the center of percussion of said head;

said backside forming an angular surface connecting the rearmost boundary of said top surface to a lower boundary of said face and forming an end view shape that is right triangular when viewed straight way from said heel to said toe, said angular surface forming an angle with a vertical plane, an uppermost boundary of said angular backside joining a rearmost boundary of said top surface and forming a narrow edge across the back of said top surface from said heel to said toe, a lower boundary of said backside joining the lower boundary of said face and also forming a narrow lower boundary across the lower edge of said face from said heel to said toe, said narrow lower boundary defining said narrow sole, said narrow sole being made wider by use of said wide sole being positioned adjacent the lower boundary of said backside, said wide sole being no longer than 2 inches long when measured from said toe toward said heel, said wide sole as measured from said face to said rearmost boundary being less than the width of said top surface from said face to said rearmost boundary of said top surface, said wide sole being generally centered between said heel and said toe, said wide sole having a bottom surface aligned with a lowermost boundary of said narrow sole, said bottom of said wide sole extending rearwardly in substantially a horizontal plane and being essentially perpendicular to said face, said wide sole being at least as light in weight as the lightest material contained in said head, said wide sole not being visible to a golfer in an operative position just prior to striking a golf ball;

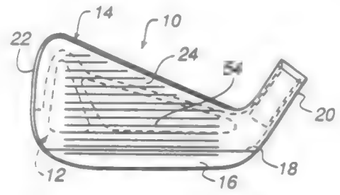
said rectangular cross-sectional area in said head being located upwardly and forwardly into the apex of the right angle formed by said face and said top surface, said rectangular cross-sectional area being dimensionally formed by both one half the height of said face as measured in a vertical direction from said top surface to said narrow sole and one half the width of said top surface as measured from said face to said backside, two opposite sides of said rectangular cross-sectional area being dimensionally equal in size, said rectangular cross-sectional area being 100 percent filled with material from said head to said toe, said material filling said rectangular cross-sectional area being at least as heavy as other material present in said head,

whereby, the weight distribution of said head is such that said head is increasingly heavier forwardly toward said face and increasingly heavier upwardly toward said top surface.

5,333,871
GOLF CLUB HEAD

Thomas W. Wishon, Newark, Ohio, assignor to Dynacraft Golf Products, Inc., Newark, Ohio

Filed Feb. 5, 1992, Ser. No. 831,853
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—169 **18 Claims**



5. An ironhead for a golf club, comprising: a relatively heavy inner core member and a relatively light weight outer member of material selected from thermoplastic elastomer and engineered plastic formed over the inner core member by injection molding; wherein the inner core member comprises a lower body member which forms a soleplate, an integral toe member and an integral hosel; the toe member and the hosel extending upwardly from the lower body member; wherein the outer member is formed over the lower body member and around the hosel, thereby defining a striking face between the hosel and the lower body member; and wherein the striking face has a designed impact point inside its peripheral boundary, and wherein the inner core member further comprises an integral frame member which extends between the toe member and the hosel and peripherally within the striking face circumscribing said impact point for increasing the impact strength of the ironhead and providing distributed weight about the periphery of the striking face removed from said impact point.

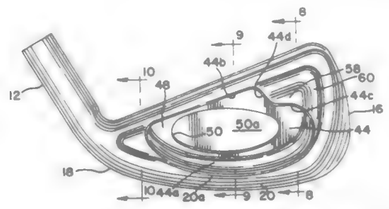
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,872

GOLF CLUB IRONS HAVING IMPROVED WEIGHTING

George E. Manning; Brian E. Fortini, both of Prospect, Ky., and Vincent R. Reymann, Jr., Hendersonville, Tenn., assignors to Hillerich & Bradsby Co., Inc., Jeffersonville, Ind.

Filed Jan. 21, 1993, Ser. No. 6,328
Int. Cl.[5] A63B 53/04
U.S. Cl. 273—169 20 Claims



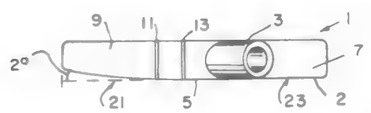
1. A golf club head of the iron type comprising a body defining a substantially planar ball-striking face extending between a heel portion and a toe portion and having a lower marginal edge intersecting a lower sole surface, said face having a plurality of parallel grooves or score lines formed therein so that the grooves are disposed substantially horizontally when the club head is in a normal ball-addressing position, said body being of substantially uniform density metal throughout and having a back surface and a hosel enabling attachment of the club head to a shaft, said back surface having a generally convex envelope and having a single uninterrupted cavity formed therein configured so that a substantial portion of the weight of the head is distributed about the perimeter of the cavity and creates an optimum ball impact point centrally on the ball-striking face, said perimeter weight distribution creating a plurality of theoretical substantially elliptical force lines on said face concentric with said central impact point and with the major axis of said elliptical force lines parallel to said grooves.

5,333,873

BULGE PUTTER

Alan W. Burke, 5524 Cedar Break Dr., Centreville, Va. 22020

Continuation of Ser. No. 757,617, Sep. 11, 1991, abandoned. This application Aug. 6, 1992, Ser. No. 925,292
Int. Cl.[5] A63B 53/04
U.S. Cl. 273—175 14 Claims



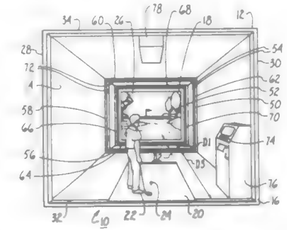
1. A putter comprising a putter head, an elongated thin blade putter face on the putter head, and a hosel attached to the putter head, a shaft receiver on the hosel for receiving a shaft, the putter having an elongated putter head with a heel portion at one end and a toe portion at the other end, the putter face having a preferred striking area at a substantially medial portion of the face, the putter face being substantially flat from the heel portion to the striking area, and the putter face having a receded facial area extending from the preferred striking area at the substantially medial portion of the face to the toe portion for impacting a ball toward an intended line of roll when the putter is moved along a line nearer a user than an intended line of movement.

5,333,874

SPORTS SIMULATOR

Floyd L. Arnold, 3925 Tierra Vista Pl., Escodido, Calif. 92064; Carl J. Bair, 5565 Diane Ave., San Diego, Calif. 92117; Christopher M. Kiraly, San Diego, Calif.; William P. Norgren, San Diego, Calif., and George V. Wintriss, Encintas, Calif., assignors to Floyd L. Arnold, Escondido and Carl J. Bair, Poway, both of Calif.

Filed May 6, 1992, Ser. No. 881,393
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—185 B 53 Claims



1. A sports simulator, comprising:
a launch area from which an object can be accelerated;
a screen distanced from the launch area in the direction of travel of the object;
first and second emitters for transmitting electromagnetic radiation, the emitters being distanced from the launch area in the direction of travel of the object;
a first array of receivers distanced from the launch area in the direction of travel of the object and interposed between the launch area and the screen, at least some of the receivers in the first array being positioned to receive radiation from the first emitter and generating respective signals in response thereto, the first array of receivers being arranged in a first plane;
a second array of receivers arranged in a second plane and interposed between the screen and the first array of receivers in the direction of travel of the object, at least some of the receivers in the second array being positioned to receive radiation from the second emitter and generating respective signals in response thereto; and
a computer electrically connected to both arrays of receivers for producing an estimate of the projected position of the object based on the translational velocity of the object which is determined from first and second signals from the receivers indicative of first and second positions of the object detected by the first and second arrays of receivers respectively, and upon the rotational velocity of the object which is determined from the second signal indicative of the second position, from a third signal indicative of the position of the object relative to the second array of receivers after the object has rebounded from the screen, and from at least one rotational velocity value selected from a plurality of rotational velocity values stored in the computer.

5,333,875

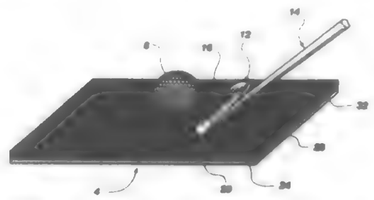
ALIGNMENT SYSTEM FOR GOLF BALL DRIVING AND HITTING MAT

Donald A. Wilson, Salt Lake City, Utah, assignor to Optronics, Ltd., Salt Lake City, Utah

Filed Dec. 7, 1992, Ser. No. 987,453
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—187.1 6 Claims

1. A golf ball driving and hitting system comprising a golf ball, and a mat consisting of a pad of resilient material having a periphery, a predetermined thickness, a bottom surface for placement on a support surface, a top surface on which the golf ball is to be placed for hitting,

first and second stripes defined in the top surface on the pad in a side-by-side, generally parallel relationship at the location at which the golf ball is to be placed, for enabling the visual alignment of a golf club head relative to the stripes and the golf ball, the first and second stripes being



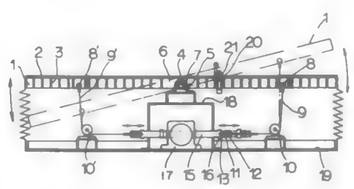
spaced apart a distance of less than the diameter of the golf ball, and
a third stripe positioned between the first and second stripes for spacing apart the first and second stripes, the third stripe being of a color different from that of the first and second stripes.

5,333,876

GOLF PRACTICE APPARATUS

Kyohei Goto, Osaka, Japan, assignor to Kaisei Engineering Co., Ltd., Osaka, Japan

Filed Jun. 22, 1993, Ser. No. 79,781
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—195 B 10 Claims



1. A golf practice apparatus comprising a table having an upwardly facing playing surface, a supporting shaft member disposed along the latitudinal centerline of the underside of said table, means for fixedly attaching said table to said shaft member, means journaling said shaft member for pivotal movement, and table-inclining means including a slide device disposed along the underside of the table mounted for slidable movement in a horizontal direction, a plurality of chains have first ends pivotally attached to the underside of the table at connecting points symmetrical about the shaft member and second ends fixed to said slide device, and a roller beneath each of said connecting points for guiding each of said chains.

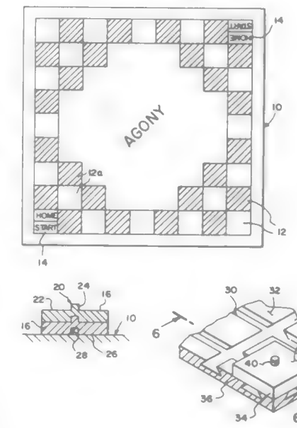
5,333,877

METHOD OF PLAYING A BOARD GAME

Jay G. Pridgeon; Patricia Green, both of 42 Nicholson Dr., Pasadena, Md. 21122, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Jun. 1, 1993, Ser. No. 69,216
Int. Cl.[5] A63F 3/00
U.S. Cl. 273—248 1 Claim

1. An improved board game apparatus which comprises:
a) a game board having only one continuous path, said continuous path being rectangular in shape and formed around the perimeter of said game board, said continuous path divided into only one lane of consecutive square playing spaces of alternate colors with each of two diagonal corner spaces being a start/home space and every corner having only three additional inner square playing spaces located within said continuous path and adjacent each corner space, in every corner space, said three additional inner corner square playing spaces form two diagonal paths which bypass said respective corner space for providing direct diagonal movement of a player's piece from a space on a first side of said rectangular path to a space on a second side of said rectangular path which is perpendicular to said first side in order to take off another player's piece occupying said space on said second side while bypassing said respective corner space;
b) a plurality of playing pieces for each of the game players, with said playing pieces being of a size to fit within each of the playing spaces and are stackable one upon the other;
c) a die operable by the game players for determining the possible number of spaces, said playing pieces shall move counterclockwise along the continuous path of said game board from the start/home space back to the start/home space; further including means for stabilizing said playing pieces when in a stacked relationship; wherein said stabilizing means includes:
d) each said playing piece having a first surface with a pin extending therefrom;



e) some of said playing pieces having a second opposite surface with an aperture extending therein, so that when said playing pieces are stacked together during the play of the game, said pins will fit into said respective apertures for stabilizing said stacked playing pieces; further including
f) said game board having a plurality of similarly sized intersecting undercut tracks at right angles to each other on its top surface; wherein one of said tracks is parallel to said continuous path and cuts through said playing spaces contiguous with said path; and
g) wherein said playing pieces further comprise adjustable blocks having on its bottom surface a single central follower, shaped to snuggly fit into all said tracks and slide within the undercut tracks, parallel to and at right angles to said path so that the position of said block can be altered to play the game and whereby said location of said track parallel to said path is such that said blocks can be positioned to fit within each said playing space and wherein each said block further includes a pin on its surface, so that said pin can receive an aperture from one of said playing pieces and also be utilized to move the block guided by the follower along the undercut tracks.

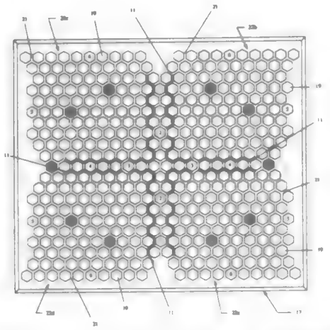
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,878

MAZE TYPE BOARD GAME

Christopher A. Calhoun, 14513 Old Courthouse Way #8, Newport News, Va. 23602

Filed Oct. 25, 1993, Ser. No. 142,903
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—283 19 Claims



1. A maze game for at least two players comprising:

a game board formed with a plurality of means to receive a partition, said means being formed so as to define a playing area divided into at least two segments and areas between said segments, each said segment and said area having a plurality of spaces over which a search piece is moved, said spaces comprising a plurality of starting spaces with an identifying means for a means of determining search piece placement, and a plurality of transport spaces with a transport indicia to indicate that search pieces are to be moved to said starting spaces,

a plurality of partitions being formed so as to be removably insertable into said game board means between adjacent spaces within said segments and the area between said segments so the insertable partition is placed therein where a plurality of inserted partitions define a maze on the game board,

a plurality of marked elements, each having marked means which is not visible when placed on the game board, each for a particular player and each are searched for by the other player or player's search pieces,

a plurality of decoy elements, each having marked means which is not visible when placed on the game board, each having the identical appearance with the exception of the marked means to the marked elements, each for possibly decoying the other player or player's search pieces into moving on to the decoy's elements occupied space,

a plurality of individual search pieces, each movable from space-to-space to designate a respective player's position on said game board,

a chance means for determining the number of spaces over which a player may move his search piece from space-to-space on said game board.

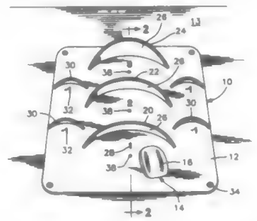
5,333,879

TARGET BOARD FOR BAG PITCHING GAME

Thomas D. Barnes, 1409 Avenue J, Scottsbluff, Nebr. 69361

Filed Feb. 17, 1993, Ser. No. 18,548
Int. Cl.[5] A63B *63/02*
U.S. Cl. 273—400 5 Claims

1. A game device comprising a target pad and at least one pitching bag to be tossed toward said pad for scoring points when the bag comes to rest on particular areas of said pad, said pad comprising a generally rectangular planar upwardly facing surface, a plurality of spaced upwardly projecting targets on said surface, each of said targets including an arcuately curved member having a concave, generally vertically extending surface facing an edge of said pad, said pitching bag comprising a flexible cover enclosing a quantity of granular material to enable the bag to be tossed onto the pad without substantial rebound with points being scored when the bag comes to rest adjacent the concave surface of one of said targets on the pad, certain of said targets being arranged in longitudinally spaced



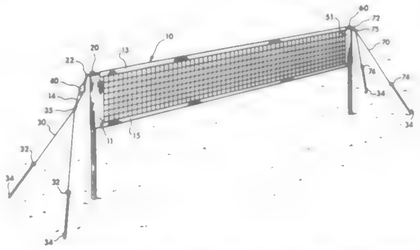
relation along the center line of said pad with the height of the arcuately curved members increasing progressively from one edge of said pad to increase the degree of difficulty of a bag coming to rest in front of a particular arcuate member, and score indicating indicia adjacent each of the target members along the center line with the score value increasing with the degree of difficulty and the height of the target members.

5,333,880

SYSTEM FOR SUPPORTING AND TENSIONING A VOLLEYBALL NET

Edwin T. Allbright, 3130 Lowell Blvd., Denver, Colo. 80211

Filed Dec. 28, 1993, Ser. No. 174,128
Int. Cl.[5] A63B *61/04*
U.S. Cl. 273—411 13 Claims



1. A tensioning and support system for a sports net assembly comprising:

two standards spaced a predetermined distance apart;

a net suspended between said standards, said net having an upper edge and two opposing lateral edges adjacent to said standards;

a net rope extending from said net toward at least one of said standards;

at least one guy rope supporting each of said standards;

means for temporarily fastening said guy rope to said net rope to maintain tension placed on said net rope;

means for adjustably fixing the position of said standard relative to said net rope; and

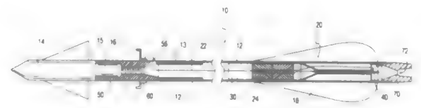
means for securing said guy rope to said standard after said position of said standard has been fixed relative to said net rope.

5,333,881

GAME TRACKING AND WEAPON LOCATING DEVICE

Gregory A. Cugliari, 675 Case Rd., Neshanic Station, N.J. 08853

Filed Jan. 15, 1993, Ser. No. 5,884
Int. Cl.[5] F42B *6/04*
U.S. Cl. 273—416 14 Claims



1. An arrow having means for activating a device, said device being connected to the arrow and being exposed to the outside of the arrow and said activating means comprising:

(a) clip means movably connected to the exterior of the arrow for catching engaging an object when the arrow penetrates such object,

(b) a trigger line, said trigger line connected at one end to said clip means and connected at the other end to the device,

(c) means for removably securing the trigger line to the device,

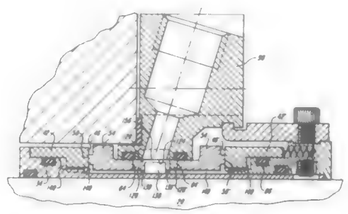
(d) whereby when said arrow penetrates an object said clip means engages the object and as the arrow continues to penetrate the object the clip means pulls the trigger line and the trigger line pulls the device causing said device to activate.

5,333,882

BALANCED MECHANICAL SEAL ASSEMBLY AND FLOW RING THEREFOR

Henri V. Azibert, Windham; Margaret B. Willbrant, Derry, both of N.H., and Ann T. Attenasio, Revere, Mass., assignors to A.W. Chesterton Company, Stoneham, Mass.

Division of Ser. No. 779,104, Oct. 18, 1991, Pat. No. 5,203,575, which is a continuation-in-part of Ser. No. 619,207, Nov. 28, 1990, abandoned. This application Jul. 14, 1992, Ser. No. 913,292
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—1 13 Claims



1. A double balanced double mechanical seal assembly having a predetermined pressure balance for sealing process fluid in a first fluid environment at an inboard seal within a stuffing box of equipment concentric to a shaft of said equipment and having an outboard seal for sealing a second fluid environment between itself and said inboard seal, the seal assembly comprising relatively rotatable primary seal members defining said inboard and outboard seals and mounted substantially concentrically to said shaft, a plurality of secondary seals sealing said primary seal members with respect to said equipment within said seal assembly for sealing said first fluid environment from said second fluid environment, wherein

each said primary seal member has an axial seal face side extending between an inner and outer diameter thereof defining a respective radially extending sealing face, said seal faces of a first pair of said primary seal members being mated to form said inboard seal over a first primary seal face contact area extending between first inner and outer primary seal face contact area diameters, said seal faces of a second pair of said primary seal members being mated to form said outboard seal over a second primary seal face contact area extending between second inner and outer primary seal face contact area diameters,

bias means located only outside of said first fluid environment and applying a biasing force only against primary seal members forming said outboard one of said seals, thereby biasing all of said seal faces in one direction.

each said primary seal member comprising, a side opposite said radial seal face side thereof, each said opposite side extending between an intermediate diameter thereof and one of said inner and outer diameters thereof, and comprising a fixedly predetermined generally radially extending piston area associated therewith,

each said primary seal member piston area being defined as extending radially between said intermediate diameter of said primary seal member with which it is associated and one of said inner or outer primary seal face contact area diameters, and

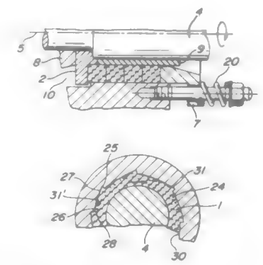
each said piston area being a predetermined fixed area equal to a major portion of said contact area, independent of thickness or location of said secondary seals.

5,333,883

STUFFING BOX SEAL

Michael Piper; Reimund Rienecker, both of Heidenheim; Rudi Kleinert, Herbrechtingen, and Walter Schneider, Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 792,101, Nov. 14, 1991, abandoned. This application May 28, 1993, Ser. No. 70,592
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4036217
Int. Cl.[5] F16J *15/18*
U.S. Cl. 277—102 8 Claims



1. A stuffing box seal, providing a sealing action between a shaft and a stationary wall of a housing, comprising:

(a) at least two rings of stuffing box packing arranged in an annular space formed about said shaft;

(b) a collar mounted on said shaft having an exposed axial surface generally perpendicular to the axis of rotation of said shaft against which said stuffing box packing bears in the direction of the axis of said shaft; and

(c) said housing having a surface facing said stuffing box packing which has grooves arranged in a zigzag manner thus forming teeth and surface irregularities parallel to the axis of rotation of said shaft, each of said irregularities having an angular sharp edge leasing in the direction of rotation.

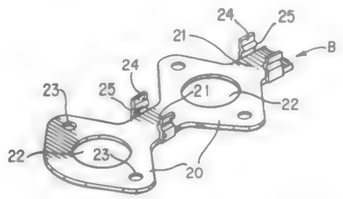
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,884

GASKET WITH AUXILIARY ATTACHING MECHANISM

Yoshio Miyaoh, and Minoru Nakaya, both of Tokyo, Japan, assignors to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 775,529, Oct. 15, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 990,945
Claims priority, application Japan, Oct. 25, 1990, 2-111079
Int. Cl.[5] F16J *15/10*
U.S. Cl. 277—235 B 11 Claims



1. A manifold gasket engageable to a manifold having a plurality of holes, flanges formed around the respective holes, manifold bolt holes formed in the flanges near corners opposite to each other, and at least one manifold connecting portion for connecting adjacent two flanges, comprising,

a metal plate for constituting at least a part of the gasket, and having a plurality of gasket portions, each gasket portion having an outer edge corresponding to an outer configuration of each flange of the manifold, a plurality of first holes formed in the gasket portions to be sealed therearound and corresponding to the holes of the manifold, gasket bolt holes situated near the respective first holes to correspond to the manifold bolt holes, and at least one gasket connecting portion for connecting adjacent two gasket portions with each other, said gasket connecting portion corresponding to the manifold connecting portion and having side edges, and

at least two auxiliary attaching devices integrally connected to the side edges of the gasket connecting portion, said auxiliary attaching devices projecting outwardly from the gasket connecting portion so that when the gasket is pushed onto the manifold for attachment, the auxiliary attaching devices engage the manifold connecting portion to locate the gasket on the manifold without directly engaging to the flanges of the manifold.

5,333,885

FISHING CART APPARATUS

Gene A. Pullman, 51 Boones Dr., Lothian, Md. 20711

Filed Jun. 9, 1993, Ser. No. 31,707
Int. Cl.[5] B62B *1/12, 1/16*
U.S. Cl. 280—47.19 4 Claims

1. A fishing cart apparatus, comprising,

a first side wall spaced from and parallel to a second side wall, with the first side wall and the second side wall arranged in a coextensive relationship, and a rear wall, the first side wall and the second side wall each having a floor plate extending orthogonally between the first side wall and the second side wall, and

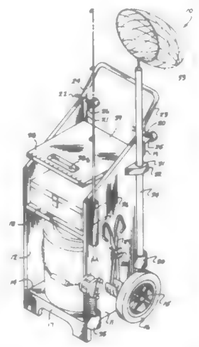
a first shelf plate mounted in a spaced parallel relationship orthogonally between the first side wall and the second side wall spaced from the floor plate, and

a second shelf plate mounted orthogonally between the first side wall and the second side wall spaced from the first shelf plate, and wherein the second shelf plate includes a second shelf plate axle pivotally mounting the second shelf plate between the first side wall and the second side wall, with the second shelf plate axle extending through the first side wall and the second side wall in an orthogonal relationship, and

a wheel axle member positioned in adjacency to the floor and the rear wall and parallel to the second shelf axle, with the wheel having a plurality of wheel members rotatably mounted about the wheel axle extending beyond the floor plate, and the floor plate further including a positioning flange orthogonally mounted to the floor plate permitting support of the cart apparatus in a first vertical orientation, and

the second shelf plate further includes respective first and second support pegs arranged in a coaxially aligned and facing relationship relative to one another, with the first support peg orthogonally and fixedly mounted to the first side wall, and the second support peg fixedly and orthogonally mounted to the second side wall permitting support of the second shelf plate in a parallel relationship relative to the intermediate shelf plate, and

the first side wall having a first handle tube mounted to a first rear edge portion of the first side wall in adjacency to the rear wall, and the second side wall having a second handle tube fixedly mounted to a second rear edge portion of the second side wall in adjacency to the rear wall, With the first handle tube arranged parallel relative to the second handle tube in a coextensive relationship, and a U-shaped handle having a U-shaped first leg slidably received within the first handle tube, and a U-shaped handle second leg slidably received within the second handle tube, with a first lock pin directed through the first handle



tube and the U-shaped handle first leg, and a second lock pin slidably received through the second handle tube and the U-shaped handle second leg permitting removal of the U-shaped handle relative to the first handle tube and the second handle tube, and a first abutment leg fixedly and orthogonally mounted to the first handle tube projecting orthogonally beyond the rear wall, and a second abutment leg fixedly and orthogonally mounted to the second handle tube projecting beyond the rear wall, with the first abutment leg and the second abutment leg arranged in a parallel coextensive relationship, and

a spring clamp leg mounted to the second side wall for support of a towel member thereon, and

a support leg is mounted fixedly and parallel to the first side wall in a spaced parallel relationship, and a tong member pair mounted between the support leg and the first side wall, and

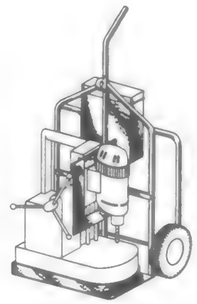
a first socket mounted to the first side wall in adjacency to the floor plate, and an alignment bore flange orthogonally mounted to the first side wall spaced from the first socket, with the alignment bore flange having an alignment bore directed therethrough, with the alignment bore coaxially aligned with the first socket, and a fish net having a fish net handle, wherein the fish net handle is slidably received through the first alignment bore and mounted within the first socket.

5,333,886

HAND TRUCK FOR MAGNETIC BASE TOOLS

David Sanders, 141 Buena Vista Dr., Brevard, N.C. 28712

Filed Jun. 30, 1993, Ser. No. 85,584
Int. Cl.[5] B62B *1/06*
U.S. Cl. 280—47.28 3 Claims



1. A hand truck for transporting portable magnetic base drill presses or the like, comprising

a handle and a generally vertically oriented frame composed of three vertical uprights joined together at the upper portion to form a handle portion;

a generally horizontally oriented axle mounted to the lower portion of said frame, having two wheels rotably mounted to the axle;

a lower platform generally perpendicular to said vertical frame extending forward of said frame;

a vertical ridge disposed on said lower platform shaped to receive a specified magnetic base drill;

a central cross brace provided with a horizontal slot;

a generally U shaped securing frame, comprising a lower arm, two vertical arms, and a movable upper retaining arm rotably attached to the upper portion of one of said vertical arms by a bolt or pin, and adapted to be attached at the outer end of said movable upper retaining arm to the upper portion of the other vertical arm by a removable bolt;

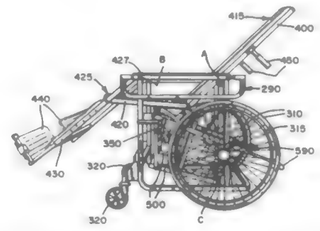
said U shaped securing frame having affixed thereto an L shaped bracket, the unattached arm of which is pierced to receive a bolt, which bolt is the appropriate size to secure said securing frame to said central cross brace through said slot.

5,333,887

WHEELCHAIR/GURNEY

Harry M. Luther, Portsmouth, Ohio, assignor to Joe Sharp, Rancho Cucamonga, Calif.

Filed Nov. 16, 1993, Ser. No. 152,522
Int. Cl.[5] A61G *1/017*; A47C *1/035*
U.S. Cl. 280—250.1 2 Claims



1. A combination wheelchair-gurney apparatus comprising:

a wheelchair support frame made of metal tubing shaped to form two rectangular shaped frame sides designated as a left side and a right side, each said frame left and right side having a top frame horizontal member, a front frame vertical member, a bottom frame horizontal member and a rear frame vertical member, said left and right frame sides being parallel and spaced apart and rigidly connected to each other by horizontal metal tubular cross members for strength;

an articulated back, seat and leg rest assembly comprising a back support panel pivotally connected to a seat support panel which in turn is pivotally connected to a leg support panel, said back support panel being mounted pivotally between said frame left and right side top horizontal members at a location near the back end of said top horizontal members, said leg support panel having extended portions which are mounted pivotally between said frame left and right side top horizontal members at a location near the front end of said top horizontal members; a first means for movable seat support and seat height locking position pivotally mounted to said bottom frame horizontal member on each said frame left and right side; a second means for foot operated release of said first means from a locked position, permitting said seat support panel to be raided or lowered;

a pair of hand grip side rails mounted to said frame top horizontal members; a pair of swivellable front wheels mounted to said front frame vertical members near the bottom of said vertical members and a pair of large diameter side wheels mounted one to each said frame right and left side;

said first means for movable seat support and seat height locking position including two identical mechanical linkage means and two pairs of locking elements, each located on said wheelchair support frame on said left and right sides of said support frame;

each said mechanical linkage means comprising: a top horizontal strut welded to said seat support panel parallel with the sides of said wheelchair support frame, a front vertical strut pivotally connected to a first end of said top horizontal strut, a rear vertical strut pivotally connected to a second end of said top strut and a bottom strut pivotally connected to the lower ends of said front and rear vertical struts; said top, front, rear and bottom struts forming a movable trapezoid; said bottom strut being extended and pivotally connected to said bottom frame horizontal member, thereby transmitting any weight applied to said seat ;support panel, through said trapezoid directly to said wheelchair support frame; said trapezoid being pivoted forwardly and backwardly along the axis of said top horizontal strut as said seat support panel is moved up or down;

each pair of said locking elements comprising a first notched member and a second notched member; said first notched member being a flat metal plate, shaped and curved in an arc of about 30 degrees having an inner and outer radial edge and having a multiplicity of notches formed on said inner radial edge; said first notched member being welded to said top strut under said seat support panel in a configuration such that said first notched member describes about 30 degrees of arc downwards in a vertical plane; said first notched member being thereby located so that said multiplicity of notches each correspond to an angle and height of said seat panel underneath which said first notched member is welded; said second notched member being a short, flat metal strut having a single notch in one edge, and being welded at one end to an end of said bottom horizontal strut of said mechanical linkage means at an angle of 90 degrees;

said second means for foot operated release of said first means from a locked position includes a pair of mechanical locking arm levers, each said lever being pivoted at an end thereof to one of the front vertical members of said support frame and movable by application of manual

VOL 1165 ISS 1 AG 2 1994 UMI

pressure to the free end of said lever; each said locking arm lever including a pin affixed at a distance from its pivot end such that said pin may engage with either of said first notched member or said second notched member; said locking arm lever including a spring which is attached to said lever and to said support frame, providing upward pressure on said lever and keeping said pin engaged with said first or second notched members;

whereby said second means for foot-operated release interacts with said first means for movable seat support to maintain said seat support panel in a fixed position and to release said first means for movable seat support from a locked seat position by application of manual pressure;

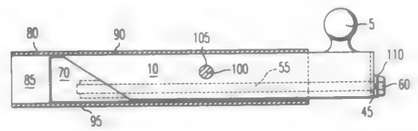
whereby said first means for movable seat support may be used by an attendant operator to place said wheelchair-gurney apparatus in a gurney configuration having said articulated back, seat and leg rest assembly in a horizontal position, and to place said wheelchair-gurney in a wheelchair configuration.

5,333,[illegible]

TRAILER HITCH WEDGE

Carrol Ball, P.O. Box 988, Shingle Springs, Calif. 95682

Filed May 10, 1993, Ser. No. 58,209
Int. Cl.[5] B60D *1/155*
U.S. Cl. 280—504 8 Claims



1. In a detachable hitch for a vehicular tow trailer, said hitch having a rigid shaft with an outside surface that slides into an inside surface of a rigid sleeve that is mounted on a towing vehicle, an aperture in the sleeve and an aperture in the shaft that are aligned when the shaft is inserted in the sleeve, and a pin that is inserted through the aperture in the sleeve and the aperture in the shaft to prevent the shaft from sliding out of the sleeve, the improvement comprising:

(a) a means for transfiguring the shaft to cause a portion of the outside surface of the shaft to press upon a portion of the inside surface of the sleeve; and

(b) a means for controlling the means for transfiguring the shaft to cause a portion of the outside surface of the shaft to press upon a portion of the inside surface of the sleeve.

5,333,889

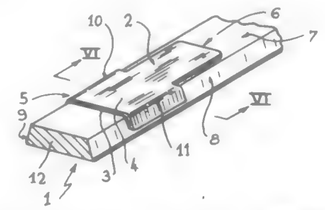
BOARD FOR SLIDING, PROVIDED WITH A DEVICE FOR DAMPING VIBRATIONS

Yves Piegay, Etang, and Jean Bauvois, Villars de Lans, both of France, assignors to Skis Rossignol S.A., Voiron, France

Filed Nov. 5, 1992, Ser. No. 971,588
Claims priority, application France, Nov. 25, 1991, 91 14760
Int. Cl.[5] A63C *5/075*
U.S. Cl. 280—602 23 Claims

1. In a board for sliding over snow, comprising a longitudinally extending body with a sliding surface, an upper surface and two opposite side walls; and at least one vibration damper device which comprises at least one plate of visco-elastic material working in shear and at least one stress element with a high modulus of elasticity, said stress element being adhered to said visco-elastic plate, said damper device being positioned locally on the board at a predetermined zone thereof, the improvement comprising

means for simultaneously damping different modes of vibrations which develop in adjacent zones of the board but in differently oriented planes, there being provided in these zones at least one said damper device, said damper device being shaped and having a surface in contact with the sliding board structure which surface has a shape which partially conforms to the shape of these zones, said damper device having a first portion aligned with said



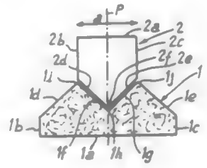
upper surface and a second portion extending from said first portion aligned with one of said side walls and intersecting said first portion, said damper device thereby providing an enveloping form in three dimensions combining at least two different orientations.

5,333,890

PROCESS OF MANUFACTURING A SKI AND A SKI PRODUCED BY THE PROCESS

Alain Bejean, La Clusaz, France, assignor to Salomon S.A., Annecy Cedex, France

Filed Mar. 22, 1990, Ser. No. 497,353
Claims priority, application France, Mar. 23, 1989, 89 03851
Int. Cl.[5] A63C *5/00*
U.S. Cl. 280—609 37 Claims



1. A ski comprising:

(a) a lower element having the shape of a beam casing;

(b) an upper element having the shape of a beam casing;

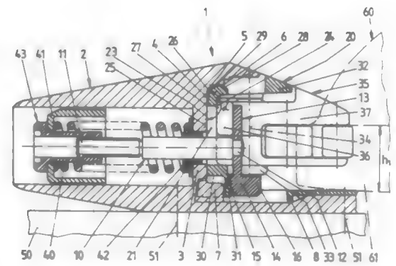
wherein the ski has a body comprised of said lower element and said upper element, wherein said lower element has an upper surface that has a longitudinally extending groove and the upper element has a lower surface that has a longitudinally extending projection that has a transverse cross-section that is complementary to a transverse cross-section of said groove of said lower element, wherein said groove of said lower element is engaged and affixed to said projection of the lower surface of said upper element, wherein said upper element extends upwardly beyond said upper surface of said lower element to form a single rib, and wherein said rib has a width less than a width of said lower element.

5,333,891

FRONT JAW

Karl Stritzl; Helmut Wladar, both of Vienna; Andreas Janisch, Oeyenhausen, and Hubert Wuerthner, Hainburg/Donau, all of Austria, assignors to HTM Sport- und Freizeitgeraete Aktiengesellschaft, Schwechat, Austria

PCT No. PCT/EP92/00656, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO92/17251, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 26, 1992, Ser. No. 941,137
Claims priority, application Austria, Mar. 28, 1991, 683/91
Int. Cl.[5] A63C *9/08*
U.S. Cl. 280—625 2 Claims



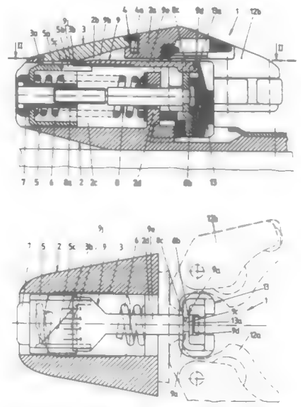
1. A front jaw for a ski binding including a housing adapted to be fastened to a ski and having a rear cross wall extending transverse to a longitudinal axis of the ski, the rear cross wall having a first section extending rearwardly in a direction substantially along the longitudinal axis from an upper end thereof and a central bore through the rear cross wall, an abutment means on a front surface of the rear cross wall, a release spring housed in the housing and having an end thereof abutting the abutment means, an elongated pull rod extending through the release spring within the housing, the release spring being oriented to urge the pull rod along the longitudinal axis, a release plate coupled to one end of the pull rod, two toggle levers each having a short lever arm and a long lever arm, the release plate operatively coupling the pull rod to the short lever arms and the long lever arms engaging a front end of a sole of a ski boot, and a bearing part having a through opening for the pull rod and a front support surface resting at least partially against a rear surface of the rear cross wall, the toggle levers being arranged pivotally on the bearing part, the front support surface of the bearing part including a second section and a third section extending rearwardly and upwardly inclined from an upper end of the second section, the second and third sections defining a pivot axis and an obtuse angle therebetween, the improvement wherein the rear surface and the third section diverge from the pivot axis and thereabove, and wherein a fourth section is provided which extends rearwardly and downwardly from an upper extend of the third section inclined with respect to the longitudinal axis defining a surface which remains in continuous contact with a horizontal rearwardly extending section within the housing.

5,333,892

DEVICE FOR A SKI BINDING

Karl Stritzl; Helmut Wladar, both of Vienna; Andreas Janisch, Oeyenhausen; Hubert Wuerthner, Hainburg/Donau, and Gottfried Steiner, Knittelfeld/Wyern, all of Austria, assignors to HTM Sport -und Freizeitgeraete Aktiengesellschaft, Schwechat, Austria

PCT No. PCT/EP92/00655, § 371 Date Nov. 24, 1992, § 102(e) Date Nov. 24, 1992, PCT Pub. No. WO92/17249, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 25, 1992, Ser. No. 952,847
Claims priority, application Austria, Mar. 28, 1991, 685/91
Int. Cl.[5] A63C *9/08*
U.S. Cl. 280—625 15 Claims



1. In a front jaw for a safety ski binding including a housing adapted to be fastened to an upper side of a ski and having a rear cross wall extending transverse to a longitudinal axis of the ski, an elongated pull rod extending substantially along the longitudinal axis and having a first end disposed within the housing and a second end extending through a first bore in the rear cross wall, a rectangular cup-like sleeve disposed within the housing and opening toward the rear wall, an adjusting nut having a internally threaded hollow shank extending through a second bore in a base wall portion of the sleeve and threadably engaging the first end of the pull rod and rotatably supporting the sleeve, a release spring concentrically surrounding the pull rod and the threaded shank within the housing and disposed between the rear cross wall and the base wall of the sleeve, a release plate coupled to the second end of the pull rod, two toggle levers each having a short lever arm and a long lever arm, the release plate operatively coupling the pull rod to the short lever arms and the long lever arms laterally engaging a sole of an inserted ski boot, said toggle levers each being pivotally supported on the housing, a scale presenting indicia which indicate an adjustment number for a release force, a transparent window means on the housing, and a pointer associated with the scale, the improvement wherein the pointer includes a terminal end portion secured to the release plate and a free end portion remote from said terminal end portion, an upper surface on the sleeve including means for cooperating with said free end portion to define a point of intersection on the scale, said free end portion being proximate the transparent window means and the scale, and the indicia being arranged directly on the transparent window means of the housing and extending transverse to the longitudinal axis so that the proximately located free end will indicate selected indicia on the scale through the transparent window means.

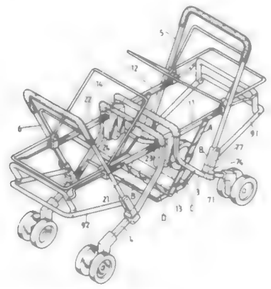
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,893

DUAL-SEAT STROLLER

Shun M. Chen, P.O. Box 82-144, Taipei, Taiwan

Filed Jan. 13, 1993, Ser. No. 3,654
Int. Cl.[5] B62B 7/08
U.S. Cl. 280—642 2 Claims



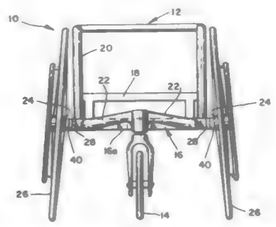
1. A dual-seat stroller comprising:
a front frame having two arm members each provided with a connector;
a rear frame having two arm members each provided with a connector;
four leg members each pivotally connected with one of the connector of said front frame and the connector of said rear frame and having a fixing block with a rod member, said rod member being connected with an engaging seat and a tubular member;
four handles each being provided with a positioning seat pivotally connected with said tubular member and said rod member at one end and being pivotally connected with one of the arm members of said front frame and said rear frame;
a pair of first linking rods each pivotally connected with one of the arm members of said front frame at one end;
a pair of second linking rods each pivotally connected with one of the arm members of said rear frame at one end;
a pair of third linking rods each pivotally connected at one end with another end of one of said first linking rods; and
a pair of fourth linking rods each pivotally connected at one end with another end of one of said second linking rods and connected at another end with another end of one of said third linking rods.

5,333,894

WHEEL MOUNTING APPARATUS FOR WHEELCHAIRS

Douglas Mayes, 11010 Ayres, Los Angeles, Calif. 90064

Filed May 17, 1993, Ser. No. 62,194
Int. Cl.[5] B62D 17/00; B62M 1/14
U.S. Cl. 280—661 13 Claims



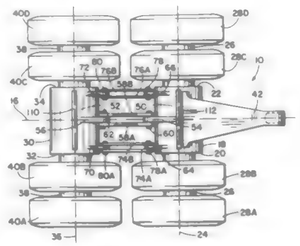
1. In a wheelchair having a pair of drive wheels, apparatus comprising in combination:
a frame;
base camber means integral with said frame for imparting a base camber to the wheels deviating from 0° camber when the wheels are mounted to said frame; and
adjustment means removably securable to said base camber means for mounting the wheels to said frame and for imparting a camber adjustment to the base camber imparted to the wheels by said base camber means.

5,333,895

DUAL REAR AXLE SYSTEM FOR LARGE VEHICLES

Steven J. Fujan, and Frederick W. Loeber, both of Tulsa, Okla., assignors to Terex Corporation, Green Bay, Wis.

Filed Dec. 11, 1991, Ser. No. 805,531
Int. Cl.[5] B60G 5/00
U.S. Cl. 280—676 6 Claims



1. A dual rear axle system for large vehicles comprising:
a frame with a longitudinal axis in the direction of normal travel, the frame having a front end and a rear end;
a forward axle housing having an axis and opposed ends and having an upper portion and a lower portion;
a single draft arm having one end affixed to said forward axle housing midway between said opposed ends and the other end pivotally affixed to said frame in the direction towards said frame front end;
a rearward axle housing having an axis and opposed ends, the rearward axle housing being spaced from said forward axle housing and their axii being parallel to each other and in vertical planes perpendicular to a vertical plane of said frame longitudinal axis, the rearward axle housing having an upper portion and a lower portion;
axle means rotatably supported by both said forward and rearward axle housings;
wheel means secured to said axle means;
a single upper link arm having forward and rearward ends, said forward end being pivotally attached to said upper portion of said forward axle housing midway between said opposed ends thereof and said link arm rearward end being pivotally attached to said upper portion of said rearward axle housing midway between said opposed ends thereof;
lower linkage means having opposed ends, one end being pivotally attached to said lower portion of said forward axle housing and the other end being pivotally attached to said lower portion of said rearward axle housing; and
means providing resilient support between said forward and rearward axle housings and said frame to thereby transfer weight from said frame to said forward and rearward axle housings.

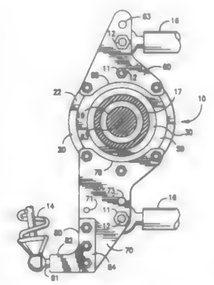
5,333,896

BIRD CAGE TYPE SUSPENSION WITH BEARING CONNECTED TO AXLE TUBE

Brad M. Creighton, 60 York Rd., Warminster, Pa. 18974

Filed Apr. 20, 1993, Ser. No. 49,289
Int. Cl.[5] B60G 9/02
U.S. Cl. 280—688 20 Claims

1. A bird cage for use in mounting an automobile axle assembly of the type having an axle tube to a suspension structure of an automobile comprising:
bearing means for providing low friction rotational movement of the axle tube relative to said bird cage; suspension



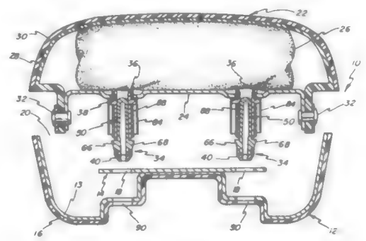
attachment means for attaching the suspension structure of the automobile to said bearing means; and, axle attachment means for attaching the axle tube to said bearing means.

5,333,897

SNAP LOCK PIN INFLATABLE RESTRAINT MODULE MOUNTING MECHANISM

Paul M. Landis, Englewood; James L. Webber, Spring Valley, and Barry C. Worrell, Centerville, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1993, Ser. No. 140,822
Int. Cl.[5] B60R 21/16
U.S. Cl. 280—728 A 11 Claims



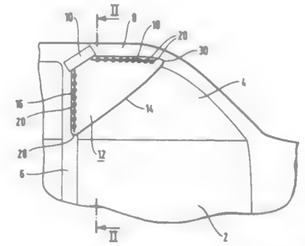
1. In combination with a supplemental inflatable restraint module, an inflatable restraint module mounting mechanism comprising:
a support plate having opposing front and rear faces and a plurality of apertures therethrough,
pin members attached to said inflatable restraint module, each said pin member being formed with a hollow interior and including a distal end movable through one of said apertures in a first direction past said front face of said support plate, and the distal end of each said pin member including openings extending through said pin member to said interior, and
a clip member located within the interior of each of said pin members, each said clip member including opposing first and second locking members and a resilient portion resiliently connecting said first locking member to said second locking member, said resilient portion acting to bias said locking members to extend through said openings to locations outside of said pin members for engaging said rear face of said support plate whereby said distal ends are prevented from moving through said support plate in a second direction opposite to said first direction.

5,333,898

GAS BAG RESTRAINING SYSTEM FOR VEHICLES

Michael Stutz, Spraitbach, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Aug. 20, 1993, Ser. No. 109,665
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1992, 9211423
Int. Cl.[5] B60R 21/20
U.S. Cl. 280—730 A 3 Claims



1. A gas bag restraining system for a vehicle, comprising a housing and a gas bag which in an inactivated state is folded up in said housing and is adapted, when there is a collision, to be automatically inflated to unfold, wherein
a) said housing is located at a corner of a lateral vehicle window defined by two frame sections converging at an angle,
b) two elongated guide elements extend respectively along said frame sections,
c) said gas bag has a plurality of holding elements adapted to run on each guide element for longitudinal sliding movement,
d) and said holding elements are secured to said gas bag along two lateral edges of said gas bag corresponding to said frame sections.

5,333,899

SIDE AIRBAG SAFETY ARRANGEMENT FOR VEHICLE OCCUPANTS

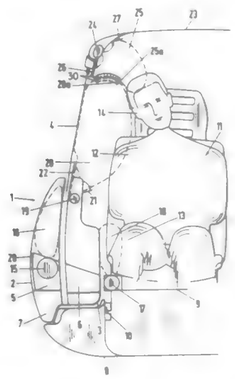
Bastian Witte, Braunschweig, Fed. Rep. of Germany, assignor to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Feb. 11, 1993, Ser. No. 16,761
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1992, 4205705
Int. Cl.[5] B60R 21/22
U.S. Cl. 280—730 A 3 Claims

1. A safety arrangement for vehicle occupants comprising at least one upper airbag mounted to the vehicle at or above a lintel of a side window of a vehicle and at least one lower airbag mounted to the vehicle door at or below a sill of the window, the airbags being arranged to move upon expansion towards each other into mutual engagement along facing sur-

VOL 1165 ISS 1 AG 2 1994 UMI

faces, said surfaces including means for providing a releasable transverse connection therebetween and to provide a cushion



extending between and connected to the lintel and the sill of the side window.

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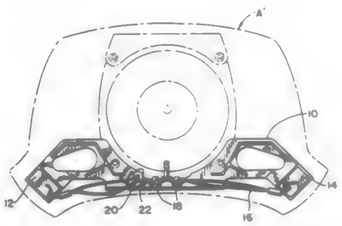
AIRBAG COVER RETAINER WITH WIRE RETENTION FEATURE AND GROUND

Paul Strahl, Ogden, Utah, and Michael D. Frakes, Lake Angeles, Mich., assignors to Morton International, Inc., Chicago, Ill. and Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 4, 1992, Ser. No. 985,904

Int. Cl.[5] B60R *21/22*

U.S. Cl. 280—731 **2 Claims**



1. In a driver's side vehicle occupant restraint module of the type including an airbag, inflator, rupturable module cover and two horn switches with associated conductive horn wiring connecting the two horn switches, the improvement comprising an electrically conductive retainer mounting the two horn switches at spaced-apart positions, the retainer being fabricated of one piece and having at least one tab formed thereon between the two horn switches and receiving the horn wiring for positioning, securing and protecting the horn wiring, and a terminal formed on the retainer to receive a ground wire of the horn wiring, whereby mounting the retainer with the module to a grounded portion of the vehicle grounds the horn switches.

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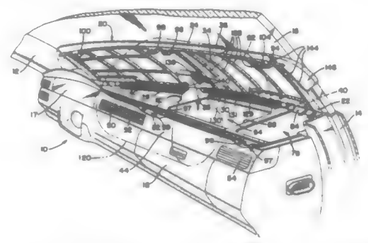
AIR BAG DEPLOYABLE INSTRUMENT PANEL COVER

William J. Barnes, Waterford, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 26, 1993, Ser. No. 51,123

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—732 **9 Claims**



3. In combination with a motor vehicle having an instrument panel structure extending transversely across the vehicle body forwardly of the driver and passenger sides of the occupant compartment and between windshield pillars supporting a windshield:

an air bag module mounted on the instrument panel structure forwardly of the passenger and having an air bag normally stored and folded therein and inflatable to project into the occupant compartment to restrain the passenger,

an instrument panel cover of generally planar flexible construction mounted atop the instrument panel structure to conceal the air bag from view and extending transversely the entire distance across the instrument panel structure forwardly of both the driver and passenger sides of the occupant compartment and further extending longitudinally between a forwardmost edge thereof adjacent the windshield and a rearwardmost edge thereof nearest the occupant so that the instrument panel cover conceals the entire instrument panel structure and air bag module,

a plurality of first fasteners fastening the forwardmost edge of the instrument panel cover to the instrument panel structure and adapted to retain the forwardmost edge during inflation of the air bag,

and a plurality of second fasteners fastening at least the rearwardmost edge of the instrument panel cover forwardly of the passenger and adapted to release the rearwardmost edge of the instrument panel cover from the instrument panel structure upon the application of a lifting force against the underside of the instrument panel cover by the inflating air bag so that the inflating air bag lifts the instrument panel cover upwardly as permitted by flexing of the instrument panel cover to permit the air bag to project into the passenger compartment for restraint of the passenger.

5,333,902

PORTABLE MOTOR VEHICLE SAFETY AIRBAG

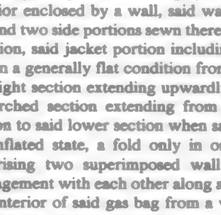
J. Paul Hatfield, 5083 Cannon Bluff Dr., Woodbridge, Va. 22192

Filed Nov. 24, 1993, Ser. No. 157,736

Int. Cl.[5] B60R *21/18*

U.S. Cl. 280—733 **7 Claims**

1. An airbag device for use in an automotive vehicle of the type having passenger seat belts therein, said device comprising a housing having a projecting male buckle element and a female buckle receiving element, said housing including a source of compressed gas and sensor means for detecting the occurrence of a collision, pouch extending along the passenger seat belt and including an inflatable airbag connected to said source of compressed gas, and means for securing said pouch to the passenger seat belt and positioning said pouch in front of



a user, whereby upon occurrence of a collision, said sensor means detects the collision and inflates said airbag.

5,333,903

INFLATABLE GAS BAG FOR RESTRAINING SYSTEMS IN VEHICLES

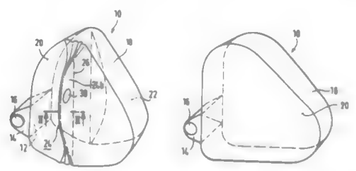
Heinz Eyrainer, Waldstetten, and Hans Kissendorfer, Günzburg, both of Fed. Rep. of Germany, assignors to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,074

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1991, 4101286

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—743 R **4 Claims**



1. An inflatable gas bag for restraining systems in a vehicle having an interior enclosed by a wall, said wall comprising a jacket portion and two side portions sewn thereto, a gas inlet in said jacket portion, said jacket portion including a lower section extending in a generally flat condition from said gas inlet, a generally straight section extending upwardly from said gas inlet, and an arched section extending from said upwardly extending section to said lower section when said gas bag is in a completely inflated state, a fold only in one of said side portions comprising two superimposed wall portions held together in engagement with each other along a separating line separating the interior of said gas bag from a volume defined by said fold, said superimposed wall portions being held together by a holding means and said holding means being so dimensioned in strength that on reaching a predetermined value of gas bag internal pressure said holding means releases said fold, said wall having an asymmetrical form in the completely inflated state, and said fold being disposed in said one side portion in a position and orientation to control the direction of expansion of said gas bag such that said gas bag tends to be unfolded upon inflation in a first direction centrally towards a vehicle occupant while the internal pressure of said gas bag is below the predetermined value and expanding in a second direction transverse to the first direction when the gas bag internal pressure exceeds the predetermined value and said holding means releases said fold.

5,333,904

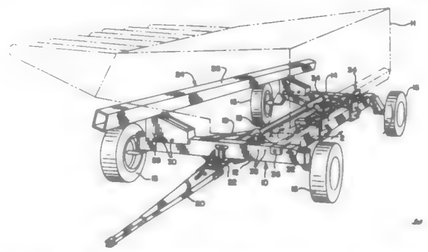
HEADER TRANSPORT SUPPORT BRACKET

Abe B. Kuhns, Arthur, Ill., assignor to E-Z-Trail, Inc., Arthur, Ill.

Filed Mar. 5, 1993, Ser. No. 27,038

Int. Cl.[5] B60P *3/00*

U.S. Cl. 280—789 **19 Claims**



1. A support bracket for supporting a lower edge of a large bulky object for transport of the object comprising:

a channel for mounting the bracket on a chassis rail of a transport vehicle, said channel having a top;

a first support member at the top of said channel and adapted to receive thereon and support the lower edge of the large bulky object when the lower edge defines a first geometric configuration;

a flange extending upwardly from said channel and first support member and at an angle to said first support member to hold the lower edge of the large bulky object of the first geometric configuration against transverse movement when the edge is supported on said support member;

a second support member having a different configuration than said first support member and adapted to receive thereon and support the lower edge of the large bulky object when the lower edge defines a second geometric configuration which is different than said first geometric configuration, and

pivotal mounting means on a side of said channel opposite said flange for mounting said second support member to rotate between a first position away from said first support member to permit said first support member to receive and support the lower edge of the large bulky object having said first geometric configuration, and a second position in overlying relationship to said first support member to permit said second support member to receive and support the lower edge of the large bulky object having said second geometric configuration.

5,333,905

SHOULDER ANCHOR WEIGHT ADJUSTING APPARATUS

Yasutaka Watanabe, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Dec. 22, 1992, Ser. No. 995,056

Claims priority, application Japan, Dec. 27, 1991, 3-107975[U]; Nov. 26, 1992, 4-081804[U]

Int. Cl.[5] B60R *22/00*

U.S. Cl. 280—801.2 **20 Claims**

1. A shoulder anchor height adjusting apparatus having a slider for adjusting a height of a shoulder anchor by moving said shoulder anchor through which a longitudinal intermediate portion of a webbing having one end wound up by a webbing retractor and the other end anchored by an anchor plate passes, at an upper portion of a side wall of a vehicle in a vertical direction of said vehicle, said apparatus comprising:

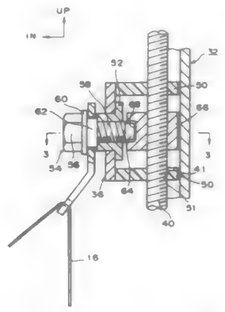
a feed screw disposed at said upper portion of said side wall of said vehicle, having an axis in the vertical direction of said vehicle, and being provided so as to be rotatable about said axis;

VOL 1165 ISS 1 AG 2 1994 UMI

a screw member disposed on said slider and screwed to said feed screw, and moving in the vertical direction of said vehicle by rotation of said feed screw;

a shoulder anchor fitting member for mounting said shoulder anchor on said slider, said shoulder anchor fitting member moving in the same direction of said screw member as said screw member moves in the vertical direction of said vehicle so as to move said shoulder anchor in the vertical direction of said vehicle; and

an engaging means movably engaged with said feed screw

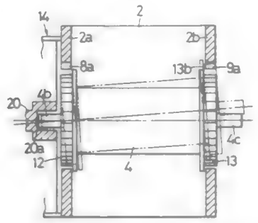


and disposed so as to be contactable with said shoulder anchor fitting member, said engaging means being disengaged from said shoulder anchor fitting member in a normal condition, and being engaged with said shoulder anchor fitting member so as to prevent said shoulder anchor fitting member from moving in the vertical direction of said vehicle by a load applied to said shoulder anchor through said webbing, which causes said screw member to displace said shoulder anchor fitting member in the vertical direction of said vehicle when said vehicle rapidly decelerates.

5,333,906
SEAT BELT RETRACTOR

Yoshiichi Fujimura, Echi, and Shizutaka Matsuura, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 847,336
Claims priority, application Japan, Mar. 11, 1991, 3-45013
Int. Cl.[5] B60R *22/36*
U.S. Cl. 280—806 **9 Claims**



1. A seat belt retractor for use in a vehicle and having at least a reel shaft which receives a biasing force of a spring for taking up a seat belt, and a frame for supporting said reel shaft, and which is equipped with frame locking-type locking means in which, when deceleration in excess of a predetermined deceleration value acts upon the vehicle, said reel shaft moves so that teeth, which are formed on the reel shaft, engage with teeth formed on the frame, thereby locking the reel shaft against rotation;

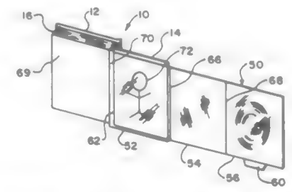
characterized in that one end of two ends of said reel shaft is pivotably secured to said frame so that said reel shaft pivots about said one end when deceleration in excess of the predetermined deceleration value acts upon the vehicle, whereby teeth formed on the other end of said reel shaft engage with the teeth of said frame; and

wherein only said other end of said reel shaft is movable when deceleration in excess of the predetermined deceleration value acts upon the vehicle and when there is an absence of a pulling force on the seat belt in excess of a predetermined pulling force value, and wherein both said one end and said other end of said reel shaft have teeth and are both movable for engaging with respective teeth formed in said frame when a pulling force in excess of the predetermined pulling force value acts upon the seat belt.

5,333,907
COMBINATION BOOK WITH MAGNIFYING PAGE INSERT

Dorothy V. B. Schaeffer, 84 Fawnvue Dr., McKees Rocks, Pa. 15136

Filed Aug. 18, 1993, Ser. No. 107,594
Int. Cl.[5] B42D *5/00*
U.S. Cl. 281—42 **22 Claims**



1. A magnifying insert for a book with pages having a front cover attached to a back cover and the pages positioned therebetween wherein the front cover, the pages, and the back cover open about an axis in a longitudinal direction, comprising:

a transparent first section;

a flexible second section fixedly attached to said first section;

a magnifying lens section fixedly attached to said second section; and

a first crease defined between said first section and said second section, and a second crease defined between said second section and said magnifying lens section, said first crease and said second crease each extending in the longitudinal direction.

5,333,908
INFORMATION MANAGEMENT SYSTEM

Keith R. Dorney, San Juan Capistrano, Calif., and Robert C. Dorney, Allentown, Pa., assignors to Memorybank, Inc., Sebastopol, Calif.

Continuation of Ser. No. 679,915, Apr. 3, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 8,082
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—38 **2 Claims**

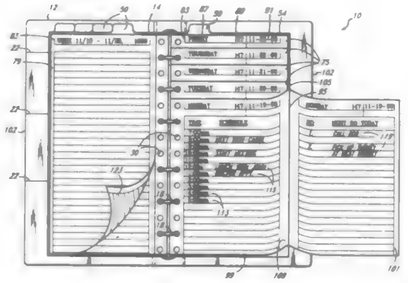
1. A notebook for an information management system for efficiently recording, organizing and accessing information, said notebook comprising:

a binder having more than three ring elements for mounting pages, said elements being spaced from each other by multiples of one-half inch; and

a plurality of pages mounted in said binder, each page having a left margin with a column of holes close to a left side of the page and said holes being continuously spaced from each other by one-half inch along the entire length of said left margin and adapted to receive and engage a left drive member of a conventional track feed printer for printing on said page, selected ones of said holes being engaged by said ring elements when mounted in said binder, said left

margin being joined to said page in a permanent integral manner without a tear line so that said holes are well adapted for securing the pages in the binder;

each of said pages being formed from a sheet having a tear line formed approximately midway across the width of said sheet, said tear line defining one of said pages to the left of said tear line and one of said pages to the right of said tear line; and

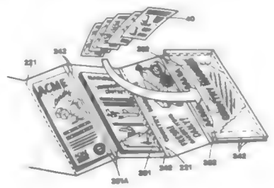


a second column of holes on each of said sheets to the right of said tear line, with the holes of the second column being continuously spaced from each other by approximately one-half inch and corresponding to the holes of said margin, said second column being spaced from the tear line in an amount approximately equal to the spacing between the left side of the sheet and said left margin column of holes.

5,333,909
PROMOTIONAL ADVERTISING BROCHURE INCLUDING REUSABLE ENVELOPE DEVICE

J. Richard Hedge, Jr., 7887 N. La Cholla Blvd. #2155, Tucson, Ariz. 85741

Division of Ser. No. 746,072, Aug. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 488,470, Feb. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 376,639, Jul. 6, 1989, abandoned. This application Mar. 9, 1993, Ser. No. 28,521
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—56 **10 Claims**





1. A combined promotional advertising device made of material adapted to be imprinted with advertising and structural copy further incorporating a substantially enhanced organizational formatting means for promoting greater aftermarket flexibility and performance efficiency, comprising a main body; with said main body comprising:

a rectangular sheet of material having a long horizontal axis and having a front side and a reverse side;

said rectangular sheet having at least three folding means for creating at least four vertically adjacent panel bodies across said long horizontal axis of the sheet thereby establishing said main body portionment;

a reusable aftermarket envelope constructed form at least one end of the sheet with said reusable aftermarket envelope being further comprised of an end panel of said rectangular sheet being fixedly adhered to its adjacent interior panel respectively by a securing means;

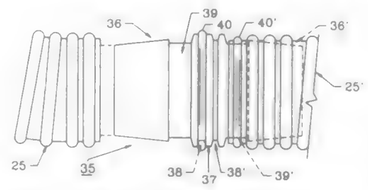
a severance means being operatively interposed between at least the third and the fourth adjacent panel bodies associating across the said long horizontal axis of the sheet thereby enabling said reusable aftermarket envelope to be separated from said main body portion into a freestanding aftermarket form; and,

a pictorial ad field located on the front side panel portion of said reusable aftermarket envelope wherein the ad field is oriented parallel to said long horizontal axis of said rectangular sheet whereby providing a functional at a glance view as to the likely aftermarket contents of the envelope.

5,333,910
HOSE FITTINGS WITH RING HOLDER

Mark R. Bailey, Madison, N.C., assignor to Camco Manufacturing, Inc., Greensboro, N.C.

Filed Jan. 4, 1993, Ser. No. 266
Int. Cl.[5] F16L *33/20*
U.S. Cl. 285—12 **32 Claims**



1. A fitting in combination with a ring for connecting to a flexible sewage drain line, the fitting comprising: a cylindrical section, said cylindrical section defining a first circumferential groove, said ring releasably positionable within said first groove, said ring having a cross-sectional diameter which is greater than the top width of said first groove, said cylindrical section defining a second groove, said second groove for receiving a flexible sewage drain line, whereby said ring is easily dislodged from said first groove and directed to said second groove for engagement with said drain line to tightly hold said drain line in said second groove.

5,333,911
CONNECTOR

Bruce J. Watkins, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Mar. 4, 1993, Ser. No. 26,554
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—18 **9 Claims**

1. A connector comprising

first and second tubular members disposable in end-to-end relation,

said first member having a locking shoulder facing away from its end,

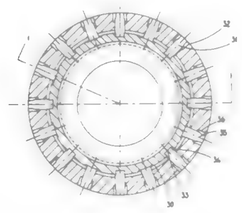
a ring supported on said second member and having an inner side surrounding the first member when said first member is disposed in end-to-end relation with the second member, and

arcuate latches each having a locking shoulder and carried about the inner side of the ring for guided movement between outer positions to permit the ring to be moved over the first member and inner positions in which their locking shoulders are tightly engaged with the locking

VOL 1165 ISS 1 AG 2 1994 UMI

shoulder of the first member so as to hold the members in end-to-end relation,

actuators each connected to a latch intermediate its end and mounted on the ring for moving the latches between their inner and outer positions, and



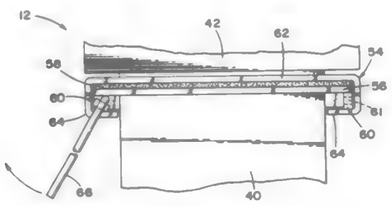
pushers mounted on the ring on opposite sides of each actuator for inward movement, following movement of the latches into their inner positions, to engage and move the ends of the locking shoulders of the latches more tightly against the locking shoulder of the first member.

5,333,912

TRACK SWITCH SNOW MELTER DUCT SYSTEM WITH QUICK RELEASE JOINTS

David K. Fox, Wayzata, Minn., assignor to Railway Equipment Company, Inc., Delano, Minn.

Filed Sep. 18, 1992, Ser. No. 944,709
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—39 11 Claims



1. A quick release cam locking joint for joining two conduits, the joint comprising:

a single flange proximate one end of a first conduit;

a compound flange proximate one end of a second conduit, the compound flange having a primary flange and a plurality of secondary flanges with at least a portion of each secondary flange being disposed spaced apart from the primary flange, wherein the single flange is inserted between the primary flange and the secondary flanges; and

means for camming being inserted between the single flange and each of the secondary flanges, the means for camming being rotated to push against the secondary flanges and push the single flange toward the primary flange to join the first conduit with the second conduit.

5,333,913

GALVANIC ISOLATION DEVICE

Clinton W. Stallard, III, Hampton, Va., assignor to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

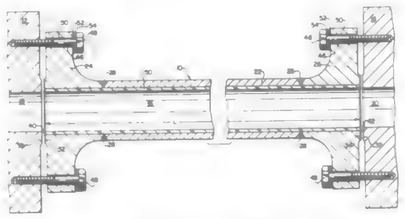
Filed Feb. 12, 1993, Ser. No. 17,690
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—48 20 Claims

1. A device for galvanically isolating two fluid-conducting members made of dissimilar materials comprising:

a coupling pipe connected on a first end to a first fluid-conducting member and connected on a second end to a second fluid-conducting member;

said pipe having an inner diameter defining a fluid passageway between said first and second fluid-conducting members and an insulating liner attached to said pipe inner diameter along the entire length of said pipe;

a first dielectric insulator positioned on one end of said pipe between said pipe and said first fluid-conducting member and a second dielectric insulator positioned on a second end of said pipe between said pipe and said second fluid-conducting member; and



wherein said coupling pipe has a length L and wherein said length L is determined by the equation:

$$L = D[E_C - E_A]\,K,$$

where

D = said inner diameter of said pipe

E_C = corrosion potential of said first fluid-conducting member

E_A = corrosion potential of said second fluid-conducting member, and

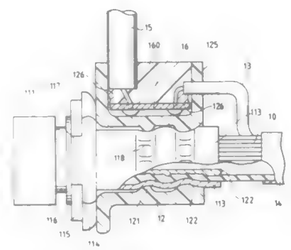
K = constant.

5,333,914

HOSE DEVICE

Norio Oomori; Fumio Ikeda; Keiichi Kodama; Makoto Kanai, and Tatsuya Terayama, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jan. 13, 1993, Ser. No. 4,064
Claims priority, application Japan, Jan. 17, 1992, 4-006578; Apr. 24, 1992, 4-131798; Jun. 8, 1992, 4-038711[U]
Int. Cl.[5] F16L *11/12*
U.S. Cl. 285—54 5 Claims



1. A hose device comprising:

an end metal base member,

hose end secured to said member;

a holder removably fastened to said member, said holder including a box-shaped pot portion filled with electrically insulative material; and

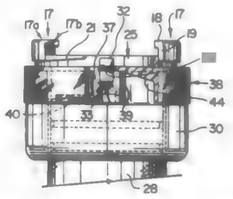
a harness extending along said hose, said harness being fastened to said holder and extending into said electrically insulative material.

5,333,915

COUPLING

Fred Sparling, 122 Waterford Bridge Road, St. John's, Newfoundland, Canada A1E 1C9 , and Wilfred Maloney, 25 Cotton Street, Gander, Newfoundland, Canada A1V 1E3

Continuation-in-part of Ser. No. 765,090, Sep. 25, 1991, Pat. No. 5,184,851. This application Nov. 5, 1992, Ser. No. 973,007
The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.
Int. Cl.[5] F16L *33/00*
U.S. Cl. 285—73 5 Claims



1. A coupling comprising two complementary coupling halves designed to mate with one another for interconnecting sections of hose, each said coupling half comprising:

a tubular body having at one end a projecting tooth structure comprising a plurality of uniformly spaced arcuate connector teeth axially outstanding from the tubular body and terminating in a radially directed arcuate protrusion, and a corresponding socket arrangement comprising a corresponding plurality of arcuate ribs directed in the opposite radial direction to said protrusions at a radius corresponding to that of said teeth, and a plurality of tooth entrance ways located circumferentially between each of said ribs and one of said teeth;

detent locking means associated with said socket arrangement being mounted in said body to be moveable towards and away from an advanced position, and means for moving said detent locking means towards said advanced position;

detent unlocking means carried by said body being manually moveable from an inoperative position to an operative position, said unlocking means upon movement thereof to said operative position being adapted to engage with withdraw said detent locking means from its advanced position;

wherein said detent locking means comprises an axially outwardly resiliently biased locking pin supported in one said connector tooth and operable to automatically engage a complementary aperture in the socket of the other coupling half when said pin is moved into register with such aperture, when the two coupling halves are joined;

and wherein said detent unlocking means comprises an annular ring supported on and extending around the circumference of said body to be angularly rotatable thereon, said ring being resiliently biased in one direction of rotation towards said inoperative position;

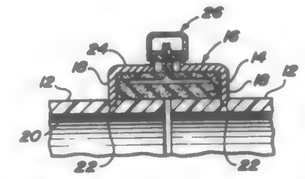
the arrangement being such that one said coupling half is connectable in axial alignment to the other coupling half be juxtaposition and interengagement between the complementary tooth structures and socket arrangements thereof to form the coupling, with each of said locking detent means being automatically moved to its advanced position once make-up of the coupling has been completed to block disengagement from the associated socket arrangement of the tooth structure of the opposed coupling half; disengagement of the two coupling halves requiring angular rotation of said two annular rings in opposite directions to withdraw said detent locking means of each coupling half.

5,333,916

EXTERNAL PIPE COUPLING SYSTEM WITH INFLATABLE GASKET

William A. Burkit, 613 Diehl Ave., Bethlehem, Pa. 18015, and John W. Burkit, P.O. Box 19, Kempton, Pa. 19529

Filed Mar. 30, 1993, Ser. No. 39,634
Int. Cl.[5] F16L *17/00*
U.S. Cl. 285—97 15 Claims



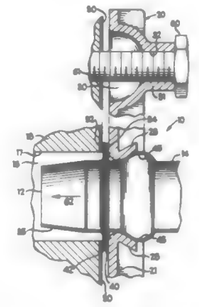
1. An externally applied mechanical system for controlling leakage from and between tubular members, comprising an inflatable, elastomeric sealing gasket adapted to encircle and apply pressure to the wall of said tubular members, where said sealing gasket includes means for inflating same with a pressurized medium, and a support member in engagement with the wall of said tubular members and arranged to overlie said sealing gasket so as to confine the compressive pressure from said sealing gasket against a predefined annular portion of said tubular member, where said support member includes means for tightening same about said tubular members.

5,333,917

TUBE ATTACHMENT CLAMP SYSTEM

Mark J. Davey, North Aurora, and Michael R. Goodrich, West Chicago, both of Ill., assignors to Senior Engineering Investments, B.V, Amsterdam, Netherlands

Filed Aug. 6, 1992, Ser. No. 926,345
Int. Cl.[5] F16L *23/00*
U.S. Cl. 285—205 24 Claims



1. A clamp system for maintaining an end of a tube bearing high-temperature fluid, in substantially sealing engagement with a surface and in substantial alignment with an aperture disposed in said surface, said tube end being arranged substantially perpendicular to said surface with a portion of said tube being arranged adjacent said aperture in said surface, said tube further having a longitudinal axis, said clamp system comprising:

bead sealing means, operably disposed adjacent to and about said tube end, for establishing a fluid-tight seal about said tube end at a radially spaced relation from said tube end, transverse to said longitudinal axis therefrom,

said bead sealing means including a bead contact region operably arranged about said tube end and at a substan-

VOL 1165 ISS 1 AG 2 1994 UMI

tially maximized radially spaced distance from said tube end, transverse to said longitudinal axis, said bead sealing means being free from contact with said surface in which said aperture is disposed between said bead contact region and said tube end, so as to substantially reduce the transfer of heat from within said high temperature fluid from said tube end and through said bead sealing means to said surface; and

retaining means operably configured to insertingly receive said tube end,

said retaining means being further operably configured to be affixable in juxtaposed relation to said surface for maintaining said tube end substantially perpendicular to said surface and in said substantial alignment with said aperture,

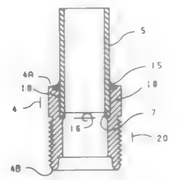
said retaining means being further operably configured, when disposed in said juxtaposed relation to said surface, to maintain said bead contact region of said bead sealing means in substantially sealing contact with said surface, so as to provide an improved, extended life, fluid-tight seal in a high temperature environment.

5,333,918

UNITARY BRAZED TUBING FITTING ASSEMBLY WITH DEFORMED SEALING WEB

James O. Crout, 330 Crosspark Dr., Apt. 8, Jackson, Miss. 39208, and Sreemukh Sanne, 100 Appleridge Dr., Branson, Miss. 39047

Filed Mar. 23, 1993, Ser. No. 47,547
Int. Cl.[5] F16L *13/08*
U.S. Cl. 285—286 **7 Claims**



1. A fitting for brazed assembly to a tubing end comprising:

a threaded fitting having an inner bore therein;

a deformable web extending from the wall of the fitting into said bore intermediate an upper end and a lower end of said fitting;

said web forming a stop for receiving the end of a tubing section inserted into the inner bore of said fitting:

said web sealingly deformed into said tubing section end.

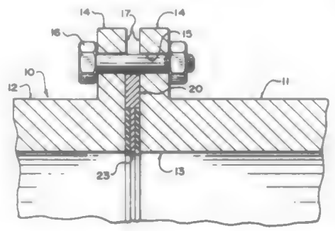
5,333,919

GASKET FOR A PIPE JOINT

Ron Nereanberg, Box 61, R. R. #1, Regina Saskatchewan, Canada S4P 2X1

Filed Sep. 2, 1993, Ser. No. 114,924
Int. Cl.[5] F16L *17/06*
U.S. Cl. 285—363 **1 Claim**

1. A pipe joint comprising a first and second annular flange each surrounding a hollow cylindrical duct and each defining an end face with the end face of the first flange abutting the end face of the second flange to form a joint therebetween, a plurality of bolt fasteners at angularly spaced positions around the annular flange coupling the flanges together, and a gasket positioned between the end faces, the gasket comprising an annular band of metal defining a circular inside edge with a diameter at least equal to that of the hollow cylindrical duct, an circular outside edge, a first face abutting the end face of the first flange and a second face abutting the end face of the second flange, each of the first and second faces being recessed at a position spaced inwardly of the outside edge as to define a recessed portion and a shoulder between the recessed portion and the outside edge, the recessed portion extending from the shoulder inwardly to the circular inside edge and the shoulder being located inwardly of an outer edge of a respective end face of the first and second flanges so that those portions of the first and second faces of the gasket outside of the shoulders lie in contact with the respective one of the first and second end faces, and a layer of sealant material bonded to the recessed



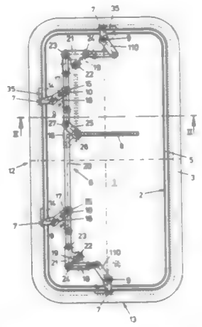
portion and carried thereby and extending at least to the inside edge and compressed between the recessed portion and the respective end face of the first and second flanges, the circular outside edge of the gasket having a diameter substantially equal to that of a locus of inside surfaces of the bolt fasteners so that the outside edge lies just within the locus of the inside surfaces of the bolt fasteners.

5,333,920

PANEL FOR CLOSING AN OPENING, AND CLIP SYSTEM FOR USE AS A PART THEREOF

Jan de Rover, Smilde, Netherlands, assignor to Machinefabriek en Handelmaatschappij Winel B.V., Assen, Netherlands

Filed Jan. 21, 1993, Ser. No. 9,628
Claims priority, application European Pat. Off., Jan. 21, 1992, [illegible]
Int. Cl.[5] E05C *3/16*
U.S. Cl. 292—48 **15 Claims**



1. A panel for closing an opening, with a panel element and a clip system for clamping said panel element against a rebate of the opening, comprising at least two bolts each movable between a first position for clamping the panel element against a rebate and a second position for releasing the panel element and common operating mechanism for moving said bolt, said operating mechanism comprising

at least two levers each pivotable about an axis, connected to a corresponding one of the bolts and provided with a guide strip in an essentially lengthwise direction,

at least two pawls each for operating a corresponding one of said levers, and

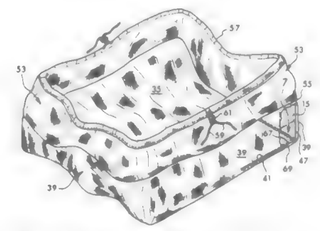
a pawl support onto which said pawls are fitted and movable in curved translatory motion such that the pawls fitted to the pawl support are each movable along a correspondingly curved tract of which a part corresponding to positions of the bolts near the first position is curved away from the pivoting axis of the respective lever and has a course with a radial component relative the pivoting axis of the respective lever such that the distance between corresponding ones of the pawls and the axes increases as the bolts approach said first positions.

5,333,921

ADJUSTABLE COVER AND SEATING SYSTEM FOR A WHEELCHAIR

John C. Dinsmoor, III, Westminister, Colo., assignor to Jay Medical, Ltd., Boulder, Colo.

Filed Sep. 16, 1992, Ser. No. 945,736
Int. Cl.[5] A47C *27/00*
U.S. Cl. 297—219.1 **22 Claims**



1. An adjustable cover primarily intended for use over a seating means, said seating means having upper and lower surfaces and peripheral side surfaces extending about the seating means substantially between said upper and lower surfaces of said seating means,

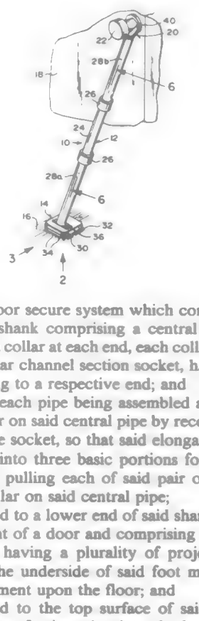
said adjustable cover including first and second portions, said first cover portion having upper, lower, and peripheral side sections substantially corresponding to said upper, lower, and peripheral side surfaces of said seating means and dimensioned to substantially enclose said seating means with said upper, lower, and peripheral side sections of the first cover portion substantially adjacent the corresponding upper, lower, and peripheral side surfaces of said seating means, said second cover portion including a skirt section, means for attaching said skirt section to said first cover portion substantially adjacent said upper section of the first cover portion, said skirt section being dimensioned to extend substantially about said peripheral side section of said first cover portion and to extend downwardly over at least part of said peripheral side section of said first cover portion and over at least part of the lower section of said first cover portion, said adjustable cover further including means for drawing at least a part of said skirt section over and substantially against said part of the lower section of said first cover portion and means for maintaining said part of said skirt section over and substantially against said part of the lower section, said drawing means further drawing said skirt section downwardly to draw said upper section of said first cover portion attached to said skirt section therewith and across the upper surface of said seating means.

5,333,922

PORTABLE DOOR SECURE SYSTEM

William L. Jones, 660 N. Main St., LaGrange, Tex. 78945

Filed Jul. 21, 1993, Ser. No. 94,236
Int. Cl.[5] E05C *17/54*
U.S. Cl. 292—339 **2 Claims**



1. A portable door secure system which comprises:

a) an elongate shank comprising a central pipe integrally formed with a collar at each end, each collar being formed with an annular channel section socket, having a channel mouth opening to a respective end; and

a pair of pipes, each pipe being assembled at one end with one said collar on said central pipe by receipt as a snug fit in a respective socket, so that said elongate shank can be disassembled into three basic portions for storage when not in use by pulling each of said pair of pipes, from a respective collar on said central pipe;

b) means coupled to a lower end of said shank for engaging a floor in front of a door and comprising a foot member;

a non-skid pad having a plurality of projections thereon mounted to the underside of said foot member for frictional engagement upon the floor; and

a hinge mounted to the top surface of said foot member having a tongue for insertion into the lower end of said bottom pipe to allow said projections on said non-skid pad on said floor member to sit flat upon the floor; and

c) means coupled to an upper end of said shank for engaging an underside of a door knob on the door and comprising a Y-shaped yoke member having a stem with a stop abutment thereon for insertion into the upper end of said top pipe, so that said yoke member can bear against the underside of the door knob, whereby said shank can be positioned at an angle between the door knob and the floor, to jam the door closed to prevent the door from being opened inwardly toward the area in which said portable door secure system resides.

5,333,923

TELESCOPING RID FOR PROTECTING THE SIDE BODY STRUCTURE OF A VEHICLE

Raymond E. Whitfield, Rte. 9, Box 122C, Kinston, N.C. 28501

Filed Nov. 26, 1993, Ser. No. 157,522
Int. Cl.[5] B60R *19/42*
U.S. Cl. 293—128 **7 Claims**

1. An attachment for a vehicle having front and rear wheel wells for protecting the body of the vehicle, comprising:

a) a telescoping side body protector for protecting the side body of the vehicle and particularly the doors of the vehicle from impact from other vehicle doors and the like;

b) the telescoping side body protector including a multi-sectional elongated telescoping rod movable from a retracted position to an extended position and wherein in the extended position the telescoping rod extends from the front wheel well to the rear wheel well and is spaced outwardly

VOL 1165 ISS 1 AG 2 1994 UMI

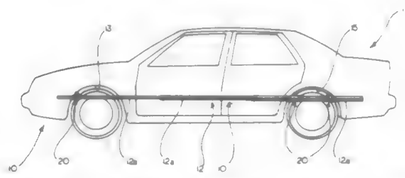
from the vehicle, and wherein in a retracted position the telescoping rod may assume a transport mode and be supported in the retracted mode adjacent a respective wheel well;

c) a series of sleeves secured to respective sections of the elongated telescoping rod;

d) a locking member secured to each sleeve and extending outwardly from both the sleeve and the telescoping rod;

e) a series of locking receptors for receiving the locking members and holding the locking members therein in a locked mode such that in the locked mode the respective locking members are held in a locked position within the locking receptors;

f) each locking member being movable between a locked and unlocked position within a respective locking receptor wherein in a locked position a respective locking rod is securely held within a respective locking receptor and



wherein in the unlocked position the respective locking members can be removed from the respective locking receptors;

g) at least one key for unlocking the locking members from the locking receptors such that the locking member and the telescoping rod can be removed from the locking receptors; and

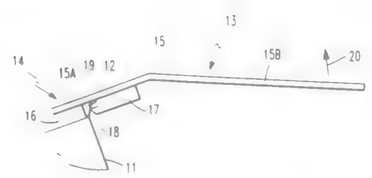
h) fasteners for securing the locking receptors in the front and rear wheel wells of the vehicle such that the elongated telescoping rod can be secured to the vehicle by inserting the locking members in to the respective locking receptors such that in an extended position the telescoping elongated rod extends from the front wheel well to the rear wheel well and protects the side body of the vehicle, and wherein in a retracted position the telescoping rod may be supported in a transport mode by the locking receptors adjacent a respective wheel well.

5,333,924

APPARATUS FOR MOVING BARRELS

Reidar Furnes, Boks 131, N-6036 Mauseidvåg, Norway

Filed Dec. 10, 1992, Ser. No. 989,798
Claims priority, application Norway, Jun. 13, 1990, 902618
Int. Cl.[5] B65G *7/12*
U.S. Cl. 294—15 **18 Claims**



1. Apparatus for moving a cylindrical container, such as a barrel, from an original, first position to a second position, the cylindrical container comprising an upper horizontal surface and a flange portion disposed about the upper horizontal surface, said apparatus comprising:

a generally elongated handle portion, said handle portion defining a longitudinal extent along the length thereof;

a first gripping element and a second gripping element each being mounted on said handle portion;

said first gripping element and said second gripping element being for gripping the flange portion of the cylindrical container to move the cylindrical container;

said first gripping element and said second gripping element generally being disposed in a spaced-apart relation with one another along the longitudinal extent of the handle portion;

said first gripping element and said second gripping element defining a space therebetween for accommodating the flange portion of the cylindrical container therewithin, to grip the flange portion of the cylindrical container to move the cylindrical container;

the upper horizontal surface of the cylindrical container defining a plane;

said first gripping element and said second gripping element being aligned so as to be aligned in a plane parallel to and substantially adjacent the plane defined by the upper horizontal surface of the cylindrical container, to grip the flange portion of the cylindrical container to move the cylindrical container;

said first gripping element, said second gripping element and said handle portion all being substantially immovable with respect to one another;

said first gripping element comprising a gripping edge, said gripping edge:

being adjacent the space defined between said first gripping element and said second gripping element;

facing said second gripping element; and

being for facing the flange portion of the cylindrical container to grip the flange portion of the cylindrical container, to move the cylindrical container; and

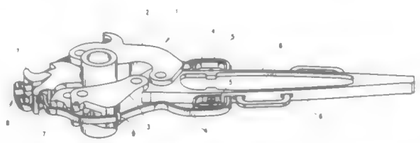
said gripping edge being curved to engage the flange portion of the cylindrical container.

5,333,925

CONTAINMENT APPARATUS FOR MANUAL PIPE TONGS

Larry Foley, Jr., P.O. Box 81007, Lafayette, La. 70508-4334

Filed Feb. 1, 1993, Ser. No. 11,513
Int. Cl.[5] E21B *19/16*
U.S. Cl. 294—86.4 **10 Claims**



1. A girdle for pipe tongs comprising:

a) a mechanical pipe tong having a body and a pivotal arms;

b) at least one energy-absorbing means, attached to one side of said body;

c) a flexible member, encircling said tong arm attached at one end to said energy absorbing means with the opposite end attached to said tong body opposite said energy-absorbing means; and

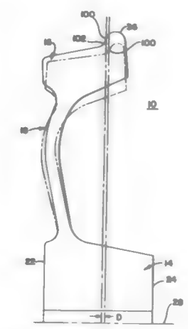
d) a quick-release latch means integral with said flexible member, for parting said flexible member.

5,333,926

RAILWAY WHEEL

C. Dale Christie, Naperville; Michael T. Gallagher, Highland Park; Michael J. Hendricksen, Prospect Heights; John D. Oliver, Flossmoor, and Mark A. Polzin, Bartlett, all of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Mar. 23, 1993, Ser. No. 36,015
Int. Cl.[5] B60B *17/00*
U.S. Cl. 295—21 **14 Claims**



1. A steel railway wheel providing low axial flange deflection and low, thermally-induced, residual tensile stress effects, said wheel comprising:

a hub with an axial bore and a longitudinal axis;

a rim generally concentric with said bore;

a plate extending generally radially outward from said hub to said rim, said plate having a substantially arcuate cross-section, a first front fillet, a second front fillet, a first rear fillet and a second rear fillet;

said hub having a hub front face, a hub front corner radius, a hub rear face and a hub rear corner radius,

said hub front corner radius tangent to said hub front face at a hub front tangent and merging with said front face with one of said plate first and second front fillets,

said hub rear corner radius tangent to said hub rear face at a hub rear tangent and merging with said hub rear face with one of said plate first and second rear fillets;

said rim having a rim front face, rim front corner radius, a rim rear face and a rim rear corner radius,

said rim front corner radius tangent to said rim front face at a rim front tangent and merging with said rim front face with the other of said plate first and second front fillets,

said rim rear corner radius tangent to said rim rear face at a rim rear tangent and merging with said rim rear face with the other of said plate first and second rear fillets;

said rim front face tangent and rim rear face tangent defining a midpoint therebetween;

a first radius extending from said longitudinal axis to said midpoint;

a radial axis extending from said midpoint in a direction toward said longitudinal axis and angularly displaced from said first radius at an angle of inclination up to ten (10) arc degrees from said first radius toward said hub front face;

said plate having a plate contour generally concave to said hub front face, a wall thickness and a centerline generally conforming to said plate contour midway through said wall thickness,

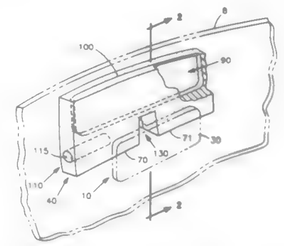
said plate having a maximum depth of curvature at said plate centerline with an offset distance from said radial axis between said hub and said midpoint, which offset distance is between about 1.75 inches (4.45 cm.) and about 2.50 inches (6.35 cm.).

5,333,927

SUN SHIELD FOR A WINDSHIELD

Ronald M. PreJean, 6911 Topanga Canyon #101, Canoga Park, Calif. 91303

Filed Nov. 3, 1993, Ser. No. 148,194
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.7 **6 Claims**



1. A sun shielding device for a windshield of a vehicle, the device cooperating with a rear view mirror assembly support arm extending away from the windshield for supporting a mirror, the device comprising a block of compliant material having a pair of spaced apart surfaces defining an overall extent of the block, the surfaces being joined by a peripheral edge defining a thickness of the block, a portion of the block being separated into two abutting sections defining a first slit therebetween, the slit adapted for engaging the support arm when the support arm is forced into the slit, compliant compressive forces developed within the block applying a clamping action upon the support arm to hold the block in place thereon in a position to block the sun's rays incident on the windshield and further including a first empty space within the block, the space being interconnected with the peripheral edge by a second slit in same, the slit providing access to the space for storing articles within the block, while providing a means for closure of the space.

5,333,928

TABLE AND CHAIR ASSEMBLY

Michelle Rollinson, 263 Old Bellerica Rd., Bedford, Mass. 01730

Filed Apr. 19, 1993, Ser. No. 47,830
Int. Cl.[5] A47B *83/02*
U.S. Cl. 297—142 **4 Claims**

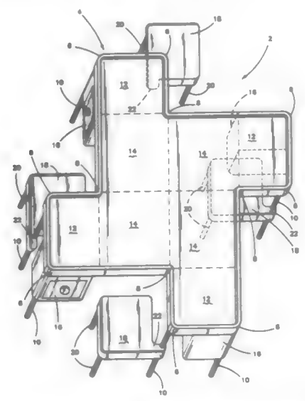
1. A table and chair assembly comprising:

a) a table having a plurality of outwardly projecting right angle corners defining projecting peninsular work areas thereon, and inwardly projecting right angle corners between adjacent ones of said work areas, said table having one leg at each of said outwardly projecting corners, and being free of legs at each of said inwardly projecting corners; and

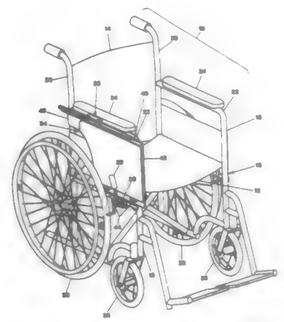
b) a plurality of stools connected to said table, there being one stool pivotally connected to every other one of said table legs so that there are alternating stool-connected legs

VOL 1165 ISS 1 AG 2 1994 UMI

and intervening stool-free legs on said table, said stools being pivotally movable between deployed positions outward of each of said work areas, and storage positions beneath each of said work areas.

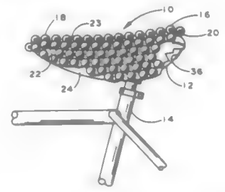


5,333,929
WHEELCHAIR TRAY
Gordon L. Slagerman, Rosser, Canada, assignor to Slagerman Engineering Ltd., Rosser, Canada
Filed Jun. 2, 1992, Ser. No. 889,935
Int. Cl.[5] A47B *83/02*
U.S. Cl. 297—155 16 Claims



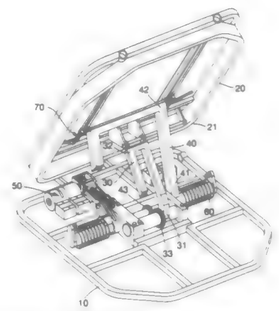
1. In combination, a wheelchair having a chair, at least one substantially horizontal arm and drive wheels on opposite sides of the chair, and a table assembly, the table assembly comprising:
first hinge means mounted on the arm and extending along an outer side of the arm;
a table panel having opposite first and second faces and a mounting edge;
second hinge means secured to the table panel adjacent the mounting edge of the table panel and having a pivot axis spaced outwardly from the mounting edge, the pivot axis being offset from the table panel so as to be spaced from the second face of the table panel, the second hinge means pivotably and slidably engaging the first hinge means for pivotal movement of the table panel about the pivot axis and for translation of the table along the pivot axis whereby the table panel may move between a first use position extending across the arm with the first face of the table panel uppermost and a storage position substantially below the arm, laterally between the chair and the adjacent drive wheel.

5,333,930
SURFACE FOR A SEAT OF A CYCLE
Jerry L. Glenn, 2510 Adams Ave., Des Moines, Iowa 50310
Filed Jan. 25, 1993, Ser. No. 8,761
Int. Cl.[5] A47C *31/11*
U.S. Cl. 297—219.11 7 Claims



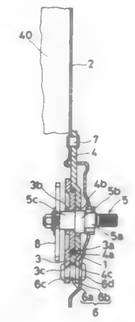
1. An improved surface for a seat of a cycle allowing enhanced blood circulation to crotch and buttock regions of a cyclist as well as continuous air circulation between said crotch and buttock regions of said cyclist and said seat of said cycle, said improved surface comprising:
(a) a seat cover capable of being secured to the seat of the cycle;
(b) a plurality of spherical beads provided over said seat cover;
(c) at least one filament interconnecting said spherical beads; and
(d) attaching means directly attaching said filament to said seat cover;
(e) wherein said attaching means passes through said seat cover.

5,333,931
PORTABLE SEAT LIFT
Bruce Weddendorf, Decatur, Ala., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.
Filed Nov. 2, 1992, Ser. No. 970,203
Int. Cl.[5] A47L *1/00*
U.S. Cl. 297—334 7 Claims



1. A seat lift, comprising:
a base;
a seat having a front side;
a front lever being a single element having a base end and a seat end, said base end of said front lever is rotationally mounted directly to said base at a fixed position and said seat end of said front lever is rotationally mounted to said front side of said seat;
a back lever having a base end and a seat end, said base end of said back lever is rotationally mounted to said base and said seat end of said back lever is slidably mounted to said seat; and
a means for proportionally rotating said front lever with said back lever.

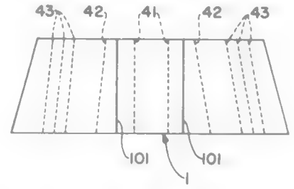
5,333,932
SEAT RECLINING APPARATUS
Munetaka Satoh, Kariya; Sadao Ito, Anjo, and Hiroshi Nawa, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Feb. 25, 1993, Ser. No. 22,028
Claims priority, application Japan, Feb. 28, 1992, 4-43994
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—362 3 Claims



1. A seat reclining apparatus comprising:
a lower arm for supporting a seat-cushion;
a lower plate having a first gear;
a rivet securing the lower plate to the lower arm after being passed through an aperture of the lower plate;
an upper arm for supporting a seat-back;
an upper plate secured to the lower arm and having a second gear in meshing engagement with the first gear; and
a shaft having a centric portion and an eccentric portion, the lower plate and the upper plate being rotatably mounted on the centric portion and the eccentric portion respectively, wherein the rivet is formed into a stepped configuration in such a manner that the rivet has a first portion larger than the aperture in diameter and located between the lower arm and the lower plate, and a second portion larger than the first portion in diameter and located between the first portion and the lower arm, and an outer periphery of the upper plate held between the second portion and the lower plate.

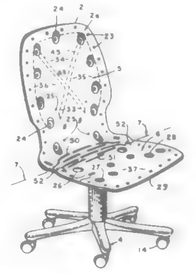
5,333,933
SEAT WITH A TRIM COVER ASSEMBLY HAVING PLURAL STITCHES THEREON
Muneharu Urai; Kazuo Katsuta; Minoru Hosoya; Tatafumi Abe, and Ryosuke Wada, all of Akishima, Japan, assignors to Tachi-S Co. Ltd., Akishima, Japan
Filed Feb. 19, 1992, Ser. No. 838,374
Claims priority, application Japan, Feb. 21, 1991, 3-049053
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.1 7 Claims

1. A seat comprising:
one unitary sheet of trim cover assembly;
a set of plural parallel stitches which extend symmetrically relative to a central line of said trim cover assembly; and
non-parallel stitches which are non-parallel to said central line and are in non-parallel gradually converging relation to each other, said parallel and said non-parallel stitches being formed on said one unitary sheet of trim cover assembly;
a foam cushion body having a predetermined seat configuration and including uneven surface portions thereon; and



said one unitary sheet of trim cover assembly being affixed over said foam cushion body such that said non-parallel stitches are disposed at said uneven surface portions of said foam cushion body, thereby presenting a generally parallel stitching pattern upon said seat.

5,333,934
BACK SHELL WITH SELECTIVE STIFFENING
Glenn A. Knoblock, Kentwood, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Continuation of Ser. No. 738,808, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 850,528, Apr. 10, 1986, Pat. No. 5,050,931. This application Nov. 25, 1991, Ser. No. 797,717
The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.
Int. Cl.[5] A47C *1/024*
U.S. Cl. 297—452.15 7 Claims



1. A chair comprising:
a base;
a seat supported on said base;
a back support pivotally supported on said base;
a control operatively connecting said base and said back support, and selectively controlling rearward tilting of said back support;
a cushion assembly shaped to support the back of a user thereon;
a shell construction connecting said cushion assembly with said back support, said shell construction comprising:
a semi-rigid, resiliently flexible sheet, having forward and rearward surfaces and a back portion shaped to selectively support a back area of an adult user thereon with the cushion assembly being on the forward surface of the shell construction; said back portion having a substantially flat planar shape with a lower area, a central area disposed directly behind a lumbar area of a seated adult user to selectively support the same and an upper area disposed above said central area and generally behind an upper back area and shoulder area of a seated user to selectively

VOL 1165 ISS 1 AG 2 1994 UMI

support the same and at a location which normally tends to selectively resist movement when the seated user moves his back in a direction having a laterally oriented component; and

a plurality of laterally spaced apart first ribs formed integrally with said sheet on the rearward side thereof, and extending generally vertically along the central area of said back portion to stiffen the central area of said back portion in a vertical plane for firm support of at least the lumbar area of the seated user, yet dimensioned to permit at least the upper portion of said back portion to flex in a horizontal plane for improved freedom of movement to the upper back area of the seated user;

second ribs formed integrally on the rearward surface of said sheet, and extending across the central area of said back portion in a generally X-shaped pattern and intersecting each other and said first ribs to control horizontal flexing of the upper area of said back portion; and

a substantially horizontally oriented rib formed integrally with said sheet on a rearward surface thereof and extending laterally of the back portion, said horizontally oriented rib being positioned at an elevation slightly below the point at which the second ribs intersect each other, and wherein:

said back portion has a vertical centerline; and

said first-named ribs extend substantially parallel with the vertical centerline of said back portion to rigidify said back portion along said centerline, yet permit integral twisting of said back portion generally about said centerline.

5,333,935

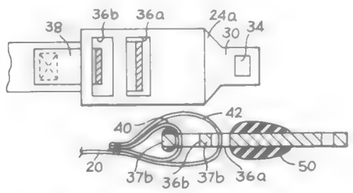
SEAT BELT SYSTEM PROVIDING INCREASED OCCUPANT MOBILITY

Donald A. DiPaola, Mount Clemens, Mich., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Oct. 29, 1992, Ser. No. 968,027

Int. Cl.[5] B60R *22/12*

U.S. Cl. 297—471 **10 Claims**



1. A seat belt system comprising:

first locking means (**24**;**26**) lockingly engagable with second locking means (**26**;**24**); one of the first locking means and second locking means attached to a securing part; wherein a portion of the securing part (**20**) supports elastic material, connected to a first bar (**37**) of the first locking means, and first means (**42**) for limiting extension of the elastic material to a maximum amount when the system is under tension, wherein the first means includes a portion formed into a first loop, the first loop being received about a second bar in the first locking means.

5,333,936

LOW PROFILE MINING MACHINE HAVING A CUTTER MOUNTED ON A SLIDABLE CARRIAGE

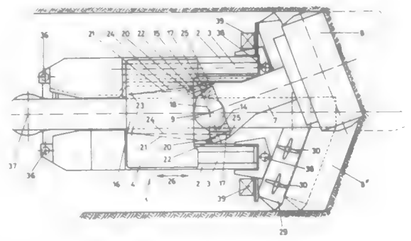
Alfred Zitz, Zeltweg, Austria, assignor to Voest-Alpine Bergtechnik Gesellschaft m.b.H., Zeltweg, Austria

Filed Jan. 8, 1993, Ser. No. 2,487

Claims priority, application Austria, Jan. 10, 1992, A 31/92

Int. Cl.[5] E21C *27/24, 35/20*

U.S. Cl. 299—64 **17 Claims**



1. A cutter machine comprising:

a main frame;

guides mounted on said main frame and running in a longitudinal direction of the machine;

a sliding carriage configured in a self-supporting box configuration over said main frame and displaceable along said guides;

a pivoting cutter arm mounted on said carriage;

cutting means rotatably mounted on said pivoting cutter arm; and

a loading ramp and a removal conveyor running from a work face of said machine for taking up and conveying away material cut by said cutting means, the removal conveyor being mounted in a clear interior space of the carriage so that the carriage may slide independently of the removal conveyor.

5,333,937

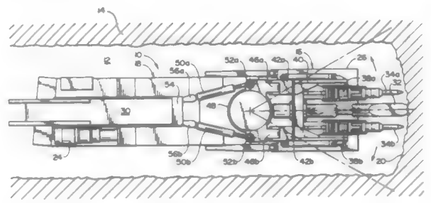
EXCAVATION MACHINE HAVING COMBINED IMPACT HAMMERS AND STATIC RIPPER PICK

David J. Hopkins, 5617 236th Ave. NE., Redmond, Wash. 98053

Filed Oct. 14, 1992, Ser. No. 962,493

Int. Cl.[5] E21C *25/02, 27/28*

U.S. Cl. 299—70 **11 Claims**



1. An excavating machine, comprising:

a chassis assembly;

a cutter assembly mounted to said chassis assembly, said cutter assembly comprising:

(a) at least one static pick having a tip portion, and

(b) first and second impact hammers mounted generally on opposite sides of said static pick so that tip portions of said impact hammers generally flank said tip portion of said pick; and

means for moving said tip portions of said reciprocating hammer and said static pick in combination across a working face so as to remove material therefrom.

5,333,938

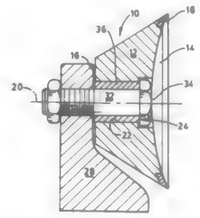
CUTTER BIT

Preston L. Gale, Morton, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jun. 28, 1993, Ser. No. 82,708

Int. Cl.[5] F21B *10/50;* **E21C** *35/18*

U.S. Cl. 299—86 **3 Claims**



1. A cutter bit rotatably mountable on a tool holder, comprising:

a body having a concave face surface and a base surface spaced from said face surface, said body being rotatable about a centrically disposed axis extending through the body normal to said face and base surfaces;

an internal wall surface concentrically disposed about said axis and extending inwardly from said base surface towards said face surface, said internal wall surface defining a recess in said body; and

bearing means interposed said internal wall surface and said tool holder in coaxial alignment with said body axis.

5,333,939

WHEEL HUB/CONSTANT VELOCITY JOINT UNIT

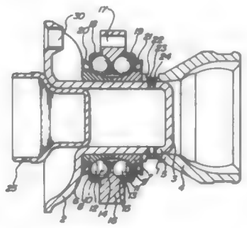
Werner Krude, Neunkirchen-Wolperath; Peter Harz, Hennef, and Herbert Frielingsdorf, Lohmar, all of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg

Continuation of Ser. No. 732,396, Jul. 18, 1991, abandoned. This application May 12, 1993, Ser. No. 61,276

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1990, 4023019

Int. Cl.[5] F16C *13/00*

U.S. Cl. 301—124.1 **17 Claims**



1. A wheel hub/constant velocity joint assembly comprising:

a wheel hub having an elongated cylindrical sleeve portion;

a two-row wheel bearing including a common outer bearing ring, two rows of roller means and at least one inner bearing ring separate from the wheel hub, said two row wheel bearing positioned on said elongated cylindrical sleeve portion of said wheel hub;

a joint member of a constant velocity joint having an end sleeve circumferentially positioned about a portion of said elongated cylindrical sleeve portion on said wheel hub adjacent an axially inner bearing ring for providing a tension force in said two row wheel bearing;

aperture means for receiving a weld, said means circumferentially distributed about said joint member end sleeve;

a weld affixing said joint member to said hub while the two row wheel bearing is in a pretensioned condition; and

said weld being generated substantially radially about said sleeve in said weld receiving means and penetrating the sleeve of the joint member and penetrating into the wheel hub.

5,333,940

TRACTOR/TRAILER BRAKE PRESSURE REGULATION METHOD AND SYSTEM

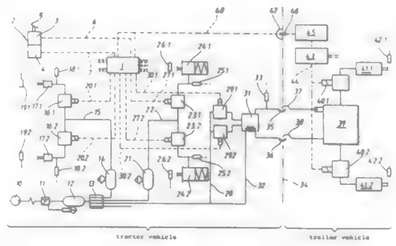
Bernhard Töpfer, Stuttgart, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 944,324

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1991, 4130848

Int. Cl.[5] B60T *13/00*

U.S. Cl. 303—7 **11 Claims**



1. A brake pressure regulation method for a trailer vehicle connected to a tractor vehicle having a pressure-medium brake system controlled by an electronic control unit and supplied by the tractor vehicle with pressure medium, adaptive influencing of the brake pressure emitted to the trailer vehicle being performed in order to distribute the braking work between the tractor vehicle and the trailer vehicle, comprising the steps of:

(a) obtaining wheel speed signals from non-driven wheels of the tractor vehicle and of the trailer vehicle;

(b) transmitting at least one signal representative of at least the wheel speeds of one axle of the trailer vehicle to the tractor vehicle; and

(c) cyclically processing, together with wheel speed signals from the tractor vehicle, the at least one signal, representative of at least the wheel speeds of one axle of the trailer vehicle, in said electronic control unit, wherein

(d) a sliding average of an instantaneous relative difference between average wheel speeds of non-driven wheels of the tractor vehicle and of the trailer vehicle is continuously formed and updated in the unbraked condition from a beginning of a journey;

(e) in the case of a braking operation, the brake pressure for the trailer vehicle is, starting from a fixed starting value representative of the tractor vehicle for a brake pressure relation between the tractor vehicle and the trailer vehicle, calculated as a product of a reference brake pressure of the tractor vehicle and a pressure relation coefficient and correspondingly made available;

(f) after the beginning of the braking operation, the actual retardation is calculated from the speed of non-driven wheels of the tractor vehicle;

(g) as braking continues, a check is made, by analyzing the trailer brake pressure, the instantaneous relative difference between average wheel speeds of non-driven wheels of the tractor vehicle and of the trailer vehicle and the actual

VOL 1165 ISS 1 AG 2 1994 UMI

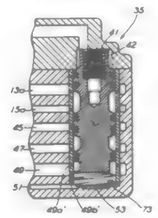
retardation, to determine whether a steady-state braking phase is present;
(h) a check is made to determine whether a difference between the instantaneous relative difference between average wheel speeds of non-driven wheels of the tractor vehicle and of the trailer vehicle over said steady state braking phase and the unbraked updated sliding average thereof has a larger absolute value than a threshold value;
(i) if a steady-state braking phase is present and the threshold value is exceeded, then a change in the brake pressure relation between the tractor vehicle and the trailer vehicle is calculated, this change being proportional to said current difference between said instantaneous relative difference between average wheel speeds of non-driven wheels of the tractor vehicle and of the trailer vehicle and the unbraked updated sliding average thereof;
(j) the change is added to the previous value; and
(k) the resulting pressure relation coefficient adapted in the foregoing steps is stored as the new pilot control value for distributing the brake pressure between the tractor vehicle and the trailer vehicle for the current journey such that the brake pressure for the trailer vehicle is corrected or updated to provide optimum distribution of the braking work between the tractor vehicle and the trailer vehicle.

5,333,941

HIGH PRESSURE VALVE FOR RAILWAY CAR BRAKE CONTROL VALVE DEVICE

James E. Hart, Trafford, and John B. Carroll, Irwin, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Nov. 16, 1992, Ser. No. 976,823
Int. Cl.[5] B60T *15/02*
U.S. Cl. 303—40 17 Claims



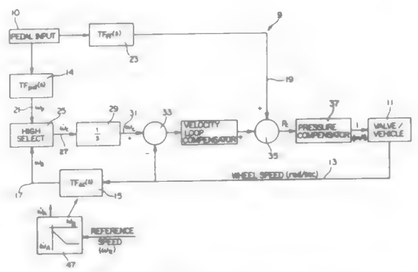
1. Spool valve means for a railway car brake control valve device comprising:
(a) spool member having its opposite ends subject to fluid under pressure and having at least one annular elastomeric pressure seal surrounding the periphery thereof;
(b) a bore in which said spool member is reciprocally disposed for axial movement in opposite directions between a release position and an application position;
(c) at least two axially spaced ports opening into said bore and connected to each other by said spool member in said release position;
(d) said spool member in a position intermediate said release and application positions locating said elastomeric seal between said spaced ports to effect transition from said connected condition thereof to a disconnected condition thereof in said application position, thereby providing a brake control function;
(e) a first spring acting on said spool member in the direction of said release position through the full range of travel of said spool member between said release and application positions; and
(f) a second spring acting on said spool member in the opposing direction of said first spring, but through only a limited distance from said release position of said spool member and without extending said spool member to said intermediate position, whereby said second spring acts on said spool member only prior to said transition between said connected and disconnected conditions.

5,333,942

ANTI-SKID BRAKE CONTROL SYSTEM

Joseph L. Peczkowski, Granger, and Peter J. Suh, South Bend, both of Ind., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Oct. 26, 1992, Ser. No. 966,219
Int. Cl.[5] B60T *8/72*
U.S. Cl. 303—94 8 Claims



1. In a wheeled vehicle having means for supplying pressurized brake fluid to actuate vehicle wheel brakes of the vehicle, a brake control system for providing anti-skid control comprising:
an operator actuatable control for determining a supply of operator commanded pressurized brake fluid to at least one of said vehicle wheel brakes;
first means responsive to operator input to control directly the operator commanded pressurized brake fluid supplied to the one vehicle wheel brake;
second means responsive to operator input to determine commanded wheel deceleration;
means for measuring wheel velocity;
means responsive to measured wheel velocity and for providing a deceleration upper bound on the magnitude of the wheel deceleration;
means for comparing the commanded wheel deceleration and the deceleration upper bound and for selecting the lesser in magnitude; and
means responsive to the comparing means and for supplying the operator commanded pressurized brake fluid to said one vehicle wheel brake in the event that the commanded wheel deceleration is selected and for supplying a lesser pressure determined by the deceleration upper bound in the event the deceleration upper bound is selected.

5,333,943

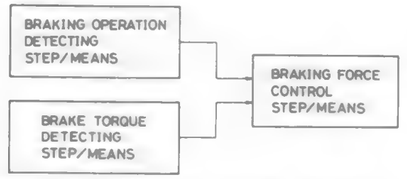
METHOD AND SYSTEM FOR ANTI-LOCK BRAKING IN AUTOMOBILE BY MEASURING BRAKE TORQUE

Masuo Kashiwabara; Yoshikazu Tanaka, and Hideki Sekiguchi, all of Isesaki, Japan, assignors to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan

Continuation of Ser. No. 857,418, Mar. 25, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,592
Claims priority, application Japan, Mar. 25, 1991, 3-060245
Int. Cl.[5] B60T *8/52*
U.S. Cl. 303—112 16 Claims

1. An anti-lock braking method for an automotive vehicle for controlling a braking force of a wheel brake unit for restricting slippage of a wheel, comprising the steps of:
brake operation detecting for detecting operation of said wheel brake unit;
brake torque detecting for detecting a brake torque at said wheel;

brake torque transmitting for transmitting said brake torque detected in said brake torque detecting step;
brake torque receiving for receiving said brake torque transmitted in said transmitting step; and



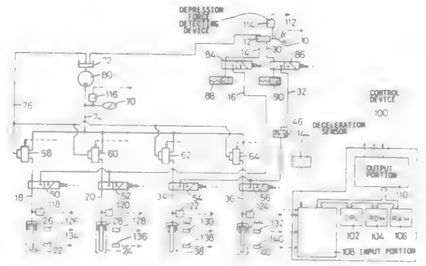
braking force controlling for controlling said braking force of said wheel brake unit depending upon a condition including said brake torque received in said receiving step, while said operation of said wheel brake unit is detected.

5,333,944

ELECTRICALLY CONTROLLED VEHICLE BRAKE SYSTEM HAVING MEANS FOR CONTROLLING BRAKING BASED ON DETECTED ACTUAL BRAKING EFFECT AND DETERMINED TARGET VALUE

Kenji Shirai, Mishima, and Sumio Katsuno, Gotenba, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 3, 1992, Ser. No. 923,493
Claims priority, application Japan, Aug. 6, 1991, 3-221061; Aug. 6, 1991, 3-221062
Int. Cl.[5] B60T *8/70*
U.S. Cl. 303—105 15 Claims



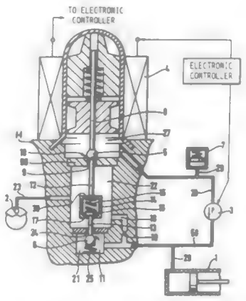
1. An electrically controlled brake system for a wheel of a vehicle, comprising:
a brake operating member;
first detecting means for detecting an operating amount of said brake operating member;
braking means for a one of reducing rotational speed and preventing rotation of said wheel to produce a braking effect;
second detecting means for detecting an actual braking effect provided by said braking means, said second detecting means detecting said actual braking effect in the form of a positive value when said vehicle is running in one of a forward direction and a backward direction, and in the form of a negative value when said vehicle is running in the other of said forward and backward directions; and
control means for determining a positive value as a target braking effect on the basis of said operating amount detected by said first detection means and controlling said braking means such that an absolute value of said actual braking effect detected by said second detecting means coincides with said positive value of said target braking effect to preclude an unnecessarily large braking force being applied to the wheel, irrespective of whether said vehicle is running in said forward or backward direction.

5,333,945

BRAKE PRESSURE CONTROL APPARATUS

Peter Volz, Darmstadt, and Bernd Schopper, Kriftel, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/00232, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/18774, PCT Pub. Date Dec. 12, 1991
PCT Filed Feb. 7, 1991, Ser. No. 952,883
Claims priority, application Fed. Rep. of Germany, May 25, 1990, 4016749; May 25, 1990, 4016754
Int. Cl.[5] B60T *8/36*
U.S. Cl. 303—119.2 11 Claims



1. A brake system for automotive vehicles including a wheel brake, a master cylinder, and a wheel cylinder for said wheel brake, said master cylinder able to generate hydraulic fluid pressure to operate said wheel cylinder, a brake pressure control system including at least one motor-driven pump for the generation of a hydraulic fluid pressure to operate said wheel cylinder and said brake pressure control system, said pump having a suction and a pressure side, an electronic controller, an inlet valve which is associated with said wheel cylinder to control fluid communication of said wheel cylinder with said master cylinder and said pump, and an outlet valve controlling communication of said wheel cylinder with a low pressure region of said control system;
wherein said outlet valve includes a closing element operated by said electronic controller, said closing element movable between a closed position closing communication through said outlet valve and an open position opening communication through said outlet valve, said inlet valve also including a closing element movable between a closed position closing communication through said inlet valve and an open position opening communication through said inlet valve, biasing means biasing said inlet valve closing element toward said closed position, said respective closing elements coupled to each other through coupling means, said coupling means including means causing said closing element of said outlet valve when in said closed position to exert a spring force on said closing element of said inlet valve resisting movement thereof to said closed position, said coupling means further including means operative upon movement of said closing element of said outlet valve to said open position allowing free closing movement of said closing element of said inlet valve induced by said biasing means.

VOL 1165 ISS 1 AG 2 1994 UMI

5,333,946

ELECTROMAGNETIC VALVE FOR ANTISLIP HYDRAULIC BRAKE SYSTEMS

Andre F. L. Goossens, Rumst, Belgium; Karlheinz Seitz, Lorsch, and Josef Lauer, Nonnweiler, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

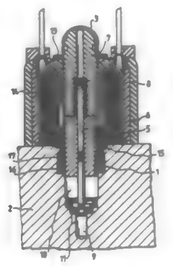
PCT No. PCT/EP91/01466, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO92/05989, PCT Pub. Date Apr. 16, 1992

PCT Filed Aug. 3, 1991, Ser. No. 859,403

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1990, 4030571

Int. Cl.[5] B60T *8/36*

U.S. Cl. 303—119.2 5 Claims



1. An electromagnetic valve for use with brake systems having a slip control, comprising a housing having a bore formed therein, a generally cylindrical valve sleeve closed at one end and formed with a skirt portion at the other end, a bushing received into said housing bore of valve housing against a shoulder thereof, a magnetic armature enclosed by said valve sleeve, a magnetic coil, mounted over said valve sleeve, a needle valve within said valve sleeve driven by said magnetic armature and partially enclosed by said magnetic core, a valve seat mounted in said valve housing aligned with said needle valve and positioned so that said needle valve is driven to be seated thereon by energization of said magnetic coil, said bushing formed at an end opposite said housing bore shoulder with a frusto-conical surface, said skirt portion of said valve sleeve overlying said frusto conical surface of said bushing; material of said valve housing around said bore extending axially inwardly toward said shoulder and also radially inwardly to overlie said frusto-conical bushing surface with said valve sleeve skirt portion interposed therebetween to create a frictional and interlocked connection of said valve sleeve to said valve housing, with interfit shaped portions of said bushing, valve housing, and valve sleeve skirt portion positively resisting separating forces to increase resistance of said connection to said separating forces.

5,333,947

SOLENOID VALVE FOR A WHEEL ANTILOCKUP SYSTEM

Gilbert Kervagoret, Argenteuil, France, assignor to Bendix Europe Services Techniques, Drancy, France

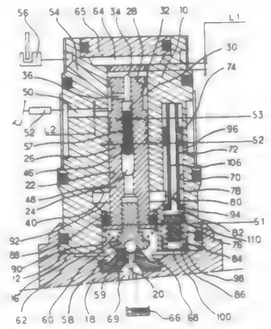
Filed Jun. 15, 1992, Ser. No. 898,364

Claims priority, application France, Jun. 27, 1991, 9107940

Int. Cl.[5] F15B *13/044*

U.S. Cl. 303—119.2 4 Claims

1. A solenoid valve in combination with a hydraulic brake circuit of a motor vehicle with a wheel antilock device, the solenoid valve disposed between at least a pressurized fluid source and a pressure receiver and comprising, in a body, piston means displaceable between a rest position, in which the pressurized fluid source communicates with the pressure receiver, and a work position, in which the pressure receiver communicates with a low-pressure fluid reservoir, characterized in that the piston means is stressed permanently toward the rest position by a constant force resulting from an operable mechanism effecting a single constant fluid pressure acting on a constant surface of the piston means in each position of the piston means, the piston means comprising a first slide valve,



the constant surface of the piston means comprising the difference between the cross-sections of two bearing surfaces of the slide valve, and the operable mechanism comprising a pressure limiter providing said constant fluid pressure from the pressurized fluid source.

5,333,948

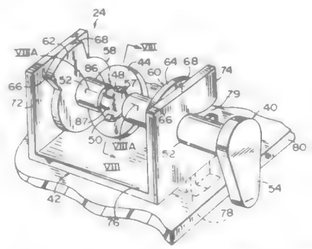
MULTIPLE-GAIN ELECTRONIC BRAKE ACTUATOR WITH TRIGGER POINT INERTIAL SENSOR

Barry G. Austin, Marshall; Marcia S. Albright, Coldwater, and Larry Eccleston, Marshall, all of Mich., assignors to Tekonsha Engineering Company, Tekonsha, Mich.

Filed Jun. 22, 1993, Ser. No. 81,651

Int. Cl.[5] B60T *13/74*

U.S. Cl. 303—24.1 31 Claims



1. In an electronic controller for electrically actuated vehicle brakes including a controller circuit producing pulses of current whose average magnitude is gradually increased for correspondingly energizing the vehicle brakes, the improvement comprising a variable gain control for said controller circuit having at least two gain levels and a trigger point inertial deceleration sensor connected to select one or the other of said gain levels to vary the gain of said controller circuit, said sensor selecting a low gain when detected deceleration is below a threshold and selecting a high gain when the detected deceleration is above said threshold.

5,333,949

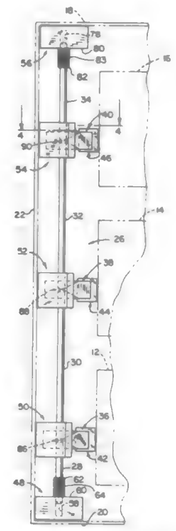
FILE DRAWER INTERLOCK MECHANISM

Dickson J. McGregor, Pembroke, Canada, assignor to Krueger International, Inc., Green Bay, Wis.

Filed Oct. 5, 1992, Ser. No. 956,623

Int. Cl.[5] E05C *7/06*

U.S. Cl. 312—221 13 Claims



1. A drawer interlock for a cabinet, comprising:

a cabinet having two or more drawers, each drawer being movable between an open position and a closed position;

a plurality of elongated control members mounted to the cabinet and arranged in an abutting end-to-end relationship to define a joint between adjacent control members;

a plurality of pivotable members mounted to the cabinet, with each pivotable member being located adjacent a joint between two of the control members, each pivotable member pivotable about a pivot axes oriented substantially parallel to longitudinal axes of the control members, and being movable between a first position and a second position, wherein the pivotable member in its first position engages the two control members at the joint therebetween to move the control members apart, and in its second position allows the two control members to remain in abutting end-to-end relationship;

wherein movement of two of the control members apart by movement of one of the pivotable members to its first position causes movement of the joints between the remainder of the control members to prevent movement of each of the remaining pivotable members from its second position to its first position; and

an actuator member mounted to each drawer, each actuator member being engageable with one of the pivotable members, wherein movement of a first one of the drawers to its open position causes engagement of the actuator member mounted to the first drawer with a first one of the pivotable members, to move the pivotable member from its second position to its first position to move two of the control members apart, and thereby prevent movement of any other drawer to its open position due to engagement of the pivotable members with the control members.

5,333,950

CONTROL CABINET WITH RACK AND MOUNTING PLATE

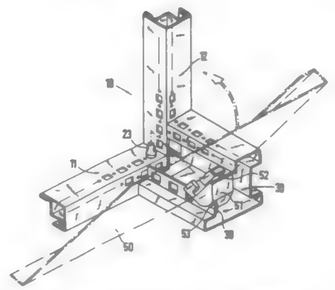
Jürgen Zachrai, Dillenburg, Fed. Rep. of Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 984,947

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1991, 4140072

Int. Cl.[5] A47B *57/00*

U.S. Cl. 312—265.1 14 Claims



1. In a control cabinet having a rack comprising a plurality of horizontal frame pieces and a plurality of vertical frame pieces enclosed by a plurality of wall elements and a cabinet door, a mounting plate having at least one slider with a guide receptacle on its underside, said mounting plate being fastenable parallel to a rear wall element of said control cabinet, each of said horizontal and vertical frame pieces having two adjacent sides disposed perpendicular to each other with identical rows of fastening receivers, said two adjacent sides of each of said horizontal and vertical frame pieces forming an inner edge oriented towards an interior of said control cabinet, at least one of said horizontal frame pieces comprising a depth brace, and a guide rail having a guide bar disposed parallel to said depth brace, in the course of inserting said mounting plate into said rack, said guide receptacle of said at least one slider receiving the guide bar of the guide rail and said at least one slider displacement on the guide bar,

the improvement comprising:

said guide rail with said guide bar (**39**) formed as one piece with said depth brace (**30**),

said guide bar (**39**) comprising a guide bar free edge,

said inner edge of said depth brace being horizontal, an end thereof abutting against a vertical inner edge of one of said vertical frame pieces (**12**) at a vertical distance from the inner edge of one of said horizontal frame pieces (**11**), and

one of said sides (**33**) being vertical and depth brace adjacent having a depth brace free edge positioned at a distance from said guide bar free edge.

5,333,951

ROLL MIXING MACHINE AND METHOD

Mitsumi Wakoh, Tokyo, Japan, assignor to Toyo Sekkei Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1992, Ser. No. 978,836

Claims priority, application Japan, Jul. 22, 1992, 4-216287

Int. Cl.[5] B01F *7/12*; B21B *45/02*

U.S. Cl. 366—71 21 Claims

1. A mixing machine comprising:

frame means;

a first roller rotatable on said frame means on a first axis;

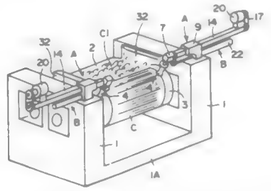
a second roller rotatably supported by said frame means in a position parallel to said first roller and closely adjacent thereto so as to facilitate compression of material between said first and second rollers;

VOL 1165 ISS 1 AG 2 1994 UMI

rotary drive means mounted for reciprocating movement on said frame means in a direction substantially parallel to said first roller;

reciprocating drive means for producing said reciprocating movement of said rotary drive means on said frame means; and

mixing roller means comprising inner end means operatively coupled to said rotary drive means so as to be rotated by



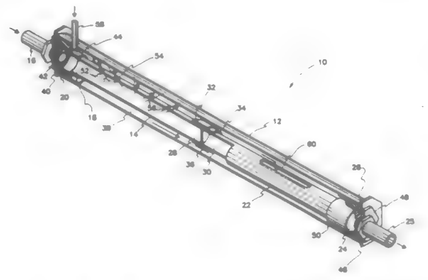
said rotary drive means on a second axis, said mixing roller means further comprising free outer end means mounted for reciprocating movement along a path closely adjacent and parallel to said first roller, said path extending between longitudinally spaced apart outer and inner surface portions of said first roller such that said rotating and reciprocating movement of said mixing roller moves material on said first roller from said outer surface portion thereof toward said inner surface portion thereof.

5,333,952

CHEMICAL MIXING CHAMBER

John L. Perdue, 4442 White Acres Rd., Montgomery, Ala. 36106

Filed Aug. 17, 1993, Ser. No. 107,306
Int. Cl.[5] B01F 5/06
U.S. Cl. 366—336 3 Claims



1. A mixing chamber providing for the mixing of two fluids, comprising:

an elongated outer housing having a first fluid inlet end and an opposite second fluid outlet end, with said outer housing including a first inner pipe and second inner pipe therewithin, with a mixing space being defined between said outer housing and said first and second inner pipes, and a second fluid inlet pipe communicating with said mixing space;

said first inner pipe having a first end and an opposite second end, with said first inner pipe's first end communicating with a first fluid inlet pipe providing for the flow of a first fluid into said mixing chamber, and said first inner pipe's second end being closed;

said second inner pipe having a first end and an opposite second end, with said second inner pipe's first end communicating with an outlet pipe providing for the flow of mixed first and second fluids from said mixing chamber, and said second inner pipe's second end being closed;

said first inner pipe's second end and said second inner pipe's second end are immediately adjacent one another, with said first inner pipe's second end and said second inner pipe's second end each having a cap sealingly secured thereto, with a sleeve being concentrically installed over each said first and second inner pipe's second end cap;

said first inner pipe including first fluid passage means therethrough, and said second inner pipe including at least one mixed fluid passage therethrough, whereby;

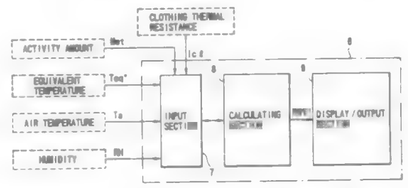
a first fluid flows into said first pipe by means of said inlet pipe and enters said mixing space by said first fluid passage means, a second fluid enters said mixing space by means of said second fluid inlet pipe, the first and second fluids are mixed within said mixing space, and mixed first and second fluids exit said mixing chamber by means of said at least one mixed fluid passage and then through said outlet pipe.

5,333,953

METHOD AND APPARATUS FOR CALCULATING THERMAL SENSITIVITY

Akihiko Kon, Kanagawa, Japan, assignor to Yamatake-Honeywell Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 763,963, Sep. 23, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 95,894
Claims priority, application Japan, Sep. 25, 1990, 2-256723
Int. Cl.[5] G01K 3/00, 13/00; G06F 15/00
U.S. Cl. 374—109 12 Claims



1. A method of calculating thermal sensitivity felt by a person in an environment using an environment measuring section disposed in the environment, the environment measuring section disposed in the environment, the environment measuring section having an associated temperature sensor for detecting a surface temperature Tcr of the environment measuring section and an associated heating means for adjusting the surface temperature Tcr, comprising the steps of:

calculating a set temperature $q_{(th)}$ on the basis of an air temperature Ta and a clothing thermal resistance Icl input to a thermal sensitivity calculating section;

supplying thermal energy information $Hq_{(th)}$ from a thermal energy control section to the associated heating means for heating the associated sensor;

heating the associated sensor to set the surface temperature Tcr of the associated sensor to be equal to the set temperature $q_{(th)}$;

supplying a thermal energy information value representing an amount of power H supplied to the heating means to maintain the surface temperature Tcr substantially the same as the set temperature $q_{(th)}$ from the thermal energy control section to the thermal sensitivity calculating section; and

calculating an equivalent temperature Teq° on the basis of the air temperature Ta, the set temperature $q_{(th)}$, the thermal energy information value, and coefficients b_1 to b_4, according to the following equation (a), when the sensor temperature Tcr is lower than the set temperature $q_{(th)}$, and calculating the equivalent temperature Teq° on the basis of the air temperature Ta, the set temperature $q_{(th)}$, a difference ΔTcr between the sensor temperature Tcr and the set temperature $q_{(th)}$, an air velocity Vair, the thermal energy information $Hq_{(th)}$ representing the amount of power H supplied to the heating means, a coefficient c_1 expressed in consideration of the clothing thermal resistance Icl, coefficients c_2 to c_6, and a coefficient n, according to the following equation (b), when the sensor temperature Tcr is higher than the set temperature $q_{(th)}$,

$$Teq^\circ = b_1 + b_2 \times \theta_{(th)} + b_3 \times Ta - b_4 \times H\theta_{(th)} \quad (a)$$

$$Teq^\circ = c_1 + c_2 \times \theta_{(th)} + c_3 \times Ta + c_4 \times (1 + c_5 \cdot \cdot + Vair^n) \times \Delta Tcr - c_6 \times H\theta_{(th)} \quad (b)$$

where

$$b_1 = \frac{0.24}{1 + Icl} \times 36.5,\ b_2 = 0.45,\ b_3 = 0.55 - \frac{0.24}{1 + Icl},$$

$$b_4 = + \frac{0.45}{Hr}\ ;\ \text{and}\ c_1 = \frac{0.24}{1 + Icl} \times 36.5,$$

$$c_2 = 0.45,\ c_3 = 0.55 - \frac{0.24}{1 + Icl},\ c_4 = 0.45,$$

$$c_5 = \frac{A}{Hr},\ c_6 = + \frac{0.45}{Hr}.$$

3. A thermal sensitivity calculating apparatus for calculating thermal sensitivity felt by a person in an environment arranged with respect to an environment measuring section having heating means capable of supplying heat to the environment to adjust a sensor temperature Tcr of an associated sensor, comprising:

set temperature calculating means for calculating a set temperature $\theta_{(th)}$ on the basis of an air temperature Ta and a clothing thermal resistance Icl;

thermal energy control means for supplying thermal energy information $H\theta_{(th)}$ to said heating means so as to set the sensor temperature Tcr to be equal to the set temperature $\theta_{(th)}$; and

thermal sensitivity calculating means for calculating an equivalent temperature Teq° on the basis of the air temperature Ta, the set temperature $\theta_{(th)}$, the thermal energy information $H\theta_{(th)}$ representing an amount of power H supplied to the heating means, and coefficients b_1 to b_4, according to the following equation (a), when the sensor temperature Tcr is lower than the set temperature $\theta_{(th)}$, and calculating the equivalent temperature Teq° on the basis of the air temperature Ta, the set temperature $\theta_{(th)}$, a difference ΔTcr between the sensor temperature Tcr and the set temperature $\theta_{(th)}$, an air velocity Vair, the thermal energy information $H\theta_{(th)}$ representing the amount of power H supplied to the heating means, a coefficient c_1 expressed in consideration of the clothing thermal resistance Icl, coefficients c_2 to c_6, and a coefficient n, according to the following equation (b), when the sensor temperature Tcr is higher than the set temperature $\theta_{(th)}$,

$$Teq^\circ b_1 + b_2 \times \theta_{(th)} + b_3 \times Ta - b_4 \times H\theta_{(th)} \quad (a)$$

$$Teq^\circ - c_1 + c_2 \times \theta_{(th)} + c_3 \times Ta + c_4 \times (1 + c_5 \cdot \times Vair^n) \times \Delta Tcr - c_6 \times H\theta_{(th)} \quad (b)$$

where

$$b_1 = \frac{0.24}{1 + Icl} \times 36.5,\ b_2 = 0.45,\ b_3 = 0.55 - \frac{0.24}{1 + Icl},$$

$$b_4 = + \frac{0.45}{Hr}\ ;\ \text{and}\ c_1 = \frac{0.24}{1 + Icl} \times 36.5,$$

$$c_2 = 0.45,\ c_3 = 0.55 - \frac{0.24}{1 + Icl},\ c_4 = 0.45,$$

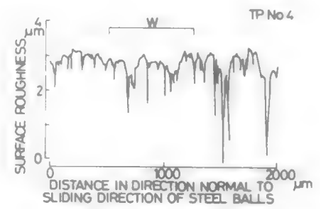
$$c_5 = \frac{A}{Hr},\ c_6 = + \frac{0.45}{Hr}.$$

5,333,954

ROLLING/SLIDING PART

Shoji Noguchi, and Satoru Aihara, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Apr. 5, 1993, Ser. No. 41,586
Claims priority, application Japan, Apr. 6, 1992, 4-112341
Int. Cl.[5] F16C 17/00, 33/58
U.S. Cl. 384—26 1 Claim



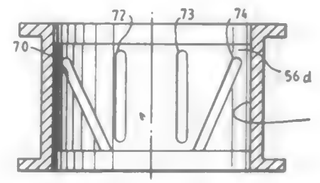
1. A rolling/sliding part for use in rolling or sliding contact with another part, having minute protrusions with tips for defining a surface and a surface layer in the range from 0 to 50 microns beneath the surface, the surface layer having a maximum compressive residual stress of at least 90 kgf/mm² and a hardness of at least Hv 780, and the tips of minute protrusions having an average radius of curvature of at least 90 microns.

5,333,955

AUTOMOTIVE MAIN BEARING

George M. Papa, 57 North Fraser Dr., Mesa, Ariz. 85203

Filed Jan. 11, 1993, Ser. No. 3,005
Int. Cl.[5] F16C 33/10; F01M 1/00
U.S. Cl. 384—291 1 Claim



1. A main bearing for an internal combustion engine comprising:

a) a metal alloy top half having a front edge, a back edge, an internal surface, a first end, and a second end;

b) a metal alloy bottom half having a front edge, a back edge, an internal surface, a first end, and a second end, said bottom half of the bearing meeting said top half of the bearing so that said first end of said top half of the bearing joins said first end of the bottom half of said bearing and said second end of said top half of the bearing joins said second end of the bottom half of said bearing; and

c) recess means disposed on said internal surface of said bottom half of the bearing so that oil can puddle there, capture debris, and prevent dry starts of the internal combustion engine, said recess means comprising:

two straight recesses disposed on said internal surface of said bottom half of the bearing, parallel to said first and second ends, and ending prior to meeting said front edge of the bearing and said back edge of the bearing, and

two straight recesses disposed at an angle to and meeting said front edge of the bearing and stopping prior to the back edge of the bearing and being disposed between said ends and being disposed on the outside of said two straight recesses, respectively.

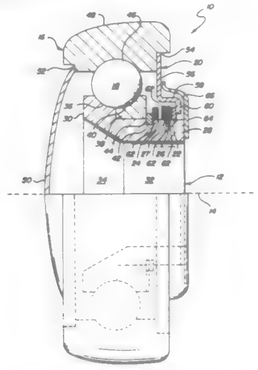
VOL 1165 ISS 1 AUG 2 1994 UMI

5,333,956

TROLLEY WHEEL ASSEMBLY

Arnold R. Hoffman, 274 Longford Dr., Rochester, Mich. 48063, and Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098

Filed Oct. 28, 1992, Ser. No. 967,818
Int. Cl.[5] F16C *33/76*
U.S. Cl. 384—483 16 Claims



1. A trolley wheel assembly (10) securely sealed to prevent loss of lubricant from within the assembly (10) and entrance of contaminants into the assembly (10) over extended operating periods, said assembly (10) comprising:
an inner race (12) disposed about an axis of rotation (14);
an outer race (16) concentrically disposed in a spaced relationship about said inner race (12);
a plurality of ball bearings (18) disposed radially between said inner race (12) and said outer race (16) to permit said outer race (16) to rotate about said inner race (12);
an outer sealing ring (20) fixedly mounted to said outer race (16) and extending radially inwardly toward said inner race (12);
an inner sealing ring (22) rotatably disposed about said inner race (12), extending radially outwardly toward said outer race (16) and contiguous said outer sealing ring (20);
biasing means (24) disposed about said inner race (12) for biasing said inner sealing ring (22) into constant friction engagement with said outer sealing ring (20); and
characterized by at least one backup inner sealing ring (26) rotatably disposed about said inner race (12) between said biasing means (24) and said inner sealing ring (22) to provide a secondary seal around said inner race (12) as rotation of said inner sealing ring (22) against said inner race (12) produces wear on said inner sealing ring (22) and a less secure fit about said inner race (12).

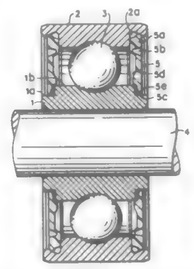
5,333,957

BALL BEARING WITH SEAL

Kee Keng Yip; Hirofumi Shigenobu; Kyoji Kato; Takuya Sato, and Nobuo Yagami, all of Singapore, Singapore, assignors to Minebea Kabushiki Kaisha, Nagano, Japan

Filed Feb. 16, 1993, Ser. No. 18,088
Int. Cl.[5] F16C *33/76*
U.S. Cl. 384—484 5 Claims

1. In a ball bearing comprising:
(a) an inner race, an outer race, a plurality of balls interposed between said inner race and said outer race, and a shielding plate for filling a gap between said inner race and said outer race in a side of said ball bearing;
the improvement wherein:
(b) said shielding plate is molded into one piece from a polyacetal-alloy resin which is adequate in all of rigidity, flexibility and resiliency, and
(c) said polyacetal-alloy resin being a composite material comprising:



40 to 99.5% by weight of an acetal resin; and
60 to 0.5% by weight of a thermoplastic polyester elastomer.

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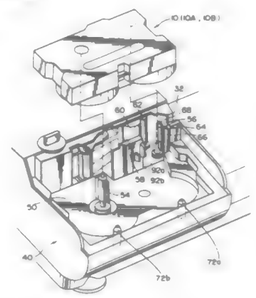
Patent Not Issued For This Number

5,333,959

PRINTING DEVICE INCLUDING A CASSETTE ACCOMMODATION CHAMBER FOR ACCOMMODATING CASSETTES OF DIFFERENT THICKNESSES

Koshiro Yamaguchi, Kasugai; Yoshiaki Nagao, deceased, late of Tsushima, and Sumiko Nagao, Administrator, Nagano, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jan. 7, 1993, Ser. No. 1,176
Claims priority, application Japan, Jan. 8, 1992, 4-020582
Int. Cl.[5] B41J *35/28*
U.S. Cl. 400—208 13 Claims



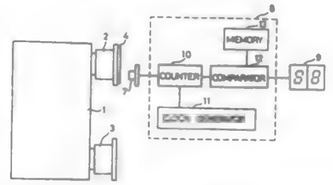
1. In combination, a printing device formed with a cassette accommodation chamber and a cassette positioned within said accommodation chamber, said cassette being one of a plurality of cassettes of predetermined thicknesses accommodating therein tapes of predetermined widths, respectively, for printing;
said printing device comprising:
a bottom surface of said accommodation chamber,
an entrance to said accommodation chamber opposite to said bottom surface,
cassette receiving means provided in said accommodation chamber for receiving a selected one of said cassettes of any one of said predetermined thicknesses, and
cassette mounting means within said cassette receiving means for mounting said selected cassette; and
said cassette having means thereon for cooperating with said mounting means so that a top surface of said selected cassette, opposite to a surface in confronting relationship with said accommodation chamber bottom surface, is at substantially the same position regardless of which one of said plurality of cassettes of predetermined thickness is selected.

5,333,960

DEVICE AND METHOD FOR DISPLAYING A RESIDUAL AMOUNT OF CARTRIDGE RIBBON FOR A COLOR VIDEO PRINTER

Joo H. Nam, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyongki-Do, Rep. of Korea

Filed Nov. 23, 1992, Ser. No. 980,343
Claims priority, application Rep. of Korea, Nov. 21, 1991, 91-20708
Int. Cl.[5] B41J *35/36*
U.S. Cl. 400—249 7 Claims



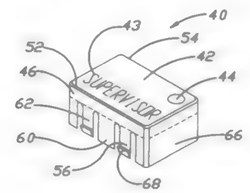
5. A method of for detecting and displaying a residual amount of ribbons of a ribbon tape contained in a cartridge for a color video printer in which a ribbon tape, constituted by a plurality of ribbons, is wound between a supply reel and a take-up reel, said process comprising the steps of:
storing values in a memory, the values corresponding to reference rotational periods of one of said supply reel and said take-up reel, each reference rotational period corresponding to a number of residual ribbons left on said supply reel;
detecting the rotational period of said one of said supply reel and said take-up reel;
comparing the detected rotational period to the values stored in said memory and determining a number of residual ribbons based on said comparison;
displaying the number of residual ribbons.

5,333,961

KEYBOARD WITH TOP MOUNTABLE KEY CAP ASSEMBLIES AND METHOD

Andrew C. Capigatti, Winfield, and John M. Zdenek, Riverside, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 5, 1992, Ser. No. 926,064
Int. Cl.[5] B41J *5/12*
U.S. Cl. 400—490 18 Claims



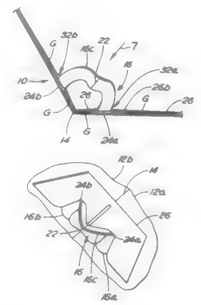
1. A keyboard assembly, comprising:
a keyboard having a key hole with a sidewall having an inwardly protuberant edge; and
a key cap assembly including
a cap with a curtain wall for sealing, sliding engagement with the inwardly protuberant edge and having two opposite sides,
at least two opposed movable arms defined by extensions of the two opposite sides of the curtain wall with distal ends spaced from the cap, and
flanges carried at the distal ends of the movable arms extending outwardly away from the sides and the arms for blocking engagement with the keyboard to prevent separation of the cap from the keyboard.

5,333,962

FOLDABLE RING BINDER-FOLDER

Noble T. Johnson, 1119 Paintbrush Trail, Cedar Park, Tex. 78613, assignor to Noble T. Johnson, Cedar Park, Tex. and Peter D. Keefe, Clinton Twp. Macomb County, Mich.

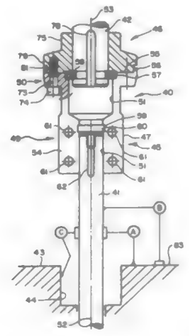
Continuation-in-part of Ser. No. 893,710, Jun. 5, 1992, Pat. No. 5,213,429. This application Jan. 4, 1993, Ser. No. 150
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] B42F *3/00, 13/10*
U.S. Cl. 402—8 23 Claims



1. A binder-folder for holding pages, the pages having at least one hole, said binder-folder comprising:
a first side member; a second side member foldably connected to said first side member, a centerline being located therebetween;
at least one foldable ring, each foldable ring of said at least one foldable ring comprising:
a ring portion having a substantially semi-circular shape, said ring portion having a first end and a second end, said ring portion having a predetermined thickness, said ring portion having a predetermined width; and
means for selectively folding said ring portion; and
foldable ring connection means for selectively connecting said ring portion to each of said first and second side members;
wherein said first and second members are foldable along said centerline between a closed orientation and an open orientation, further wherein said at least one foldable ring selectively folds between an unfolded configuration when said first and second members are at said open orientation to a folded configuration when said first and second members are at said closed orientation;
whereby the pages are held with respect to the binder-folder by said at least one foldable ring threading respectively through the at least one hole of the pages.

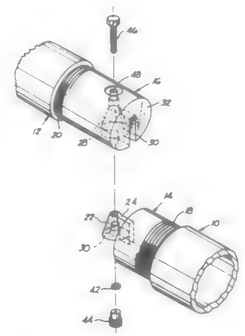
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,963
SHAFT COUPLER
Fred Blumenstrath, Burlington, Canada, assignor to 886 496 Ontario Inc., Ontario, Canada
Filed Sep. 16, 1992, Ser. No. 945,496
Claims priority, application Canada, Jan. 22, 1992, 2059839
Int. Cl.[5] F16D *1/00*
U.S. Cl. 403—301 7 Claims



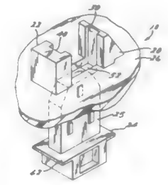
1. A shaft alignment coupling for rigidly connecting a first shaft end and a second shaft end in an axially spaced, aligned fashion, said coupling comprising a first coupling member and a second coupling member, said first coupling member comprising, in combination:
a) a first half-muff which includes
i) a first half-collar defining a generally semi-cylindrical first cavity complementary with a radius of a respective first shaft end;
ii) a generally planar first longitudinal surface portion parallel with a longitudinal axis of said semi-cylindrical cavity and comprised of two first longitudinal sections, one along each side of the first cavity;
iii) a first half-flange defining a generally planar first transverse surface portion perpendicular to said longitudinal axis of said semi-cylindrical cavity and disposed at a first axial end of the first half-muff;
iv) first radial clamping device portion for allowing the clamping of said first half-muff to a second half-muff and to said first shaft end;
b) said second half-muff including:
i) a second half-collar defining a generally semi-cylindrical second cavity complementary with a radius of a respective first shaft end;
ii) a generally planar second longitudinal surface portion parallel with a longitudinal axis of said semi-cylindrical cavity and comprised of two second longitudinal sections, one along each side of the second cavity;
iii) a second half-flange defining a generally planar second transverse surface portion perpendicular to said longitudinal axis of said semi-cylindrical cavity and disposed at a first axial end of the second half-muff;
iv) second radial clamping device portion for allowing the clamping of said second half-muff to said first half-muff and to said first shaft end;
c) at least one of said semi-cylindrical cavities including torque arresting device for non-rotational securement of the first coupling member to the first shaft end;
d) first connecting device provided in said first and second half-flanges for rigidly connecting the half flanges with said second coupling member;
e) said second coupling member comprising, in combination:
i) a generally cylindric sleeve section defining a cylindric passage, the passage having a diameter corresponding to that of the second shaft end and including torque arresting device for non-rotational securement of the second coupling member to the second shaft end;
ii) a flange integral with the sleeve and defining a generally planar end face portion perpendicular to the axis of said cylindric passage;
f) second connecting device provided in said flange and being complementary with said first connecting device for rigidly connecting the flange with said half flanges and thus with said first coupling member.

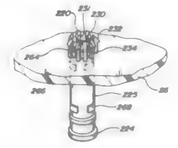
5,333,964
SLIP JOINT CONNECTOR
Frank P. Thomas, Huntsville, Ala., assignor to The United States of Americas as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 28, 1992, Ser. No. 936,474
Int. Cl.[5] F16B *7/02*
U.S. Cl. 403—339 5 Claims



1. A slip joint connector for joining first and second structural elements together, said connector having first and second body members, means for fastening said first body member to said first structural element and means for fastening said second body member to said second structural element, a protuberance projecting from said first body member in a direction remote from said first structural element, said protuberance having an external configuration including first and second portions each having a different geometric configuration, said first portion having a truncated conical configuration including an axis of elongation spaced from said first body member and said second portion having a plurality of planar walls extending intermediate said first portion and said first body member, a receptacle formed in said second body member opening onto a surface remote from said second structural element, said receptacle having internal walls of a configuration conforming in size and shape to said first and second portions for receiving said protuberance in only one disposition through said surface, and locking means for securing said protuberance within said receptacle, said locking means comprising a bore extending through said first portion of said protuberance, said bore having an enlarged cavity opening onto one end of said bore, nut means disposed within said cavity, means for securing said nut within said cavity, and bolt means extending through said second body member into said receptacle and threadedly receivable within said nut means when said protuberance is within said receptacle for drawing said protuberance tightly into abutment with said internal walls of said receptacle.

5,333,965
IN SITU MODULAR FASTENING SYSTEM
John W. Mailey, 6114 Fountain Point, Grand Blanc, Mich. 48439
Continuation-in-part of Ser. No. 828,724, Jan. 31, 1992, Pat. No. 5,193,933. This application Sep. 2, 1992, Ser. No. 939,095
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] F16D *1/00*
U.S. Cl. 403—406.1 19 Claims

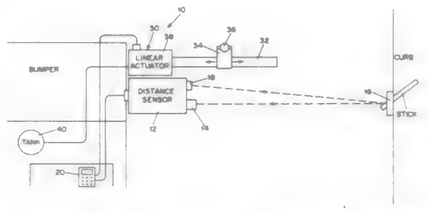




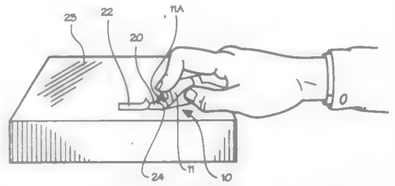
1. An integral modular fastening system for connecting a plastic member to a frame, said fastening system comprising:
a plurality of locking members homogenous with and extending generally perpendicular from said plastic member and forming a slot for engaging said frame between at least one of said plurality of locking members and said plastic member, each of said plurality of locking members being movable between a locked position and an unlocked position;
an anvil movable between an open and closed position, said anvil disposed adjacent to said plurality of locking members in both said open and said closed positions, said anvil positioning said plurality of locking members in said locked position when in said closed position and prohibiting said plurality of locking members from moving from said locked position towards said unlocked position, said anvil allowing said plurality of locking members to move from said locked position towards said unlocked position when in said open position;
means for retaining said anvil in said closed position homogenous with said anvil;
means for retaining said anvil in said open position homogenous with said anvil.

5,333,966
SYSTEM FOR PRE-MARKING FOR STREET STRIPING
Jonathan P. St-Louis, and Kai G. St-Louis, both of Terrebonne, Canada, assignors to Equipments St-Louis & Fils, Inc., Terrebonne, Canada
Filed Aug. 26, 1992, Ser. No. 935,173
Int. Cl.[5] E01C *23/16*
U.S. Cl. 404—84.05 8 Claims

1. Apparatus mountable on a vehicle for marking pavement on a roadway for striping by placing pre-striping marking lines a predetermined distance from the edge of the roadway comprising:
distance determining means for determining the distance that a portion of the vehicle is from the edge of the roadway; and
marking means responsive to said distance determining means for marking the pavement a predetermined distance form the roadway edge, comprising means for holding a paint marking gun and means for moving a paint marking gun relative to the vehicle and toward and away from the roadway edge in response to he distance determining means, to locate the paint marking gun a predetermined distance from the roadway edge.



5,333,967
METHOD AND APPARATUS FOR REMOVING LABELS
Charles F. Foley; Harry P. Metheney, both of Charlotte, and Bradley J. Tucker, Oakboro, all of N.C., assignors to R&D of North Carolina Inc., Charlotte, N.C.
Filed Feb. 23, 1993, Ser. No. 21,043
Int. Cl.[5] B32B *31/00*
U.S. Cl. 401—139 8 Claims



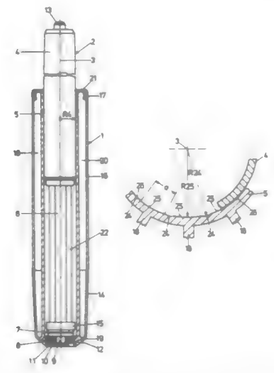
3. Apparatus for the removal of stickers adhered by adhesive to a substrate, said apparatus comprising an applicator, a spatulate-like tool at one end of the applicator, a container, means for integrating the applicator and the container for operative use, the container having an open tip during operative use, the spatulate-like tool including a free end that extends beneath and beyond the container's open tip when the applicator and container are integrated for operative use, the free end of the spatulate-like tool being thin, flexible and flat, and a liquid solvent for the adhesive, the liquid solvent being housed within the container, whereby a small amount of solvent may be dispensed from the open container tip to the free end of the spatulate-like tool as by surface tension until the free end of the spatulate-like tool is placed against a sticker to be removed from a substrate.

5,333,968
LENGTH-ADJUSTABLE COLUMN FOR TABLES, CHAIRS OR THE LIKE
Hans J. Bauer, Altdorf, Fed. Rep. of Germany, assignor to Suspa Compart Aktiengesellschaft, Altdorf, Fed. Rep. of Germany
Filed Jan. 14, 1993, Ser. No. 4,244
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1992, 4200786
Int. Cl.[5] A47B *9/00*; A47C *3/00*; F16F *9/00*
U.S. Cl. 403—377 11 Claims

1. A length-adjustable column for chairs or tables, comprising a stand pipe (1, 1') and one of a pneumatic and a hydropneumatic length-adjusting element arranged therein concentrically of a common central longitudinal axis (3) and of which

VOL 1165 ISS 1 AG 2 1994 UMI

a cylindrical housing (4) is radially supported in the stand pipe (1, 1') and is slidably guided in the direction of a central longitudinal axis (3) and of which a piston rod (6), adjacent to a free end, is arrested on a bottom plate (8) engaged to the stand pipe (1, 1') in the direction of a central longitudinal axis (3), wherein the stand pipe (1, 1') is in the form of a composite pipe integrally injection-moulded of plastic material and consists of an



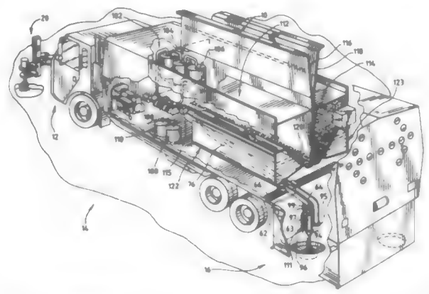
outer tube (16) and an inner guide tube (5, 5') supported against said outer tube (16) by guide webs (18), and wherein partial cylindrical surfaces (25, 25'), which are concentric of the central longitudinal axis (3) and formed by chip removal on an internal surface (22, 22') of the inner guide tube (5, 5') and separated from each other by recesses (24, 24'), are formed as guide surfaces for the housing (4).

5,333,969

AUTOMATED PAVEMENT REPAIR VEHICLE

James R. Blaha, 928 Wesley Ave., Evanston, Ill. 60202; Herbert N. Underwood, 5322 N. McVicker Ave., Chicago, Ill. 60638; Ralph Salle, 24072 N. Lakeside Dr., Lake Zurich, Ill. 60047, and Ronald R. Ralston, 620 Adele, Elmhurst, Ill. 60126

Filed Mar. 19, 1993, Ser. No. 34,506
Int. Cl.[5] E01C *19/00*
U.S. Cl. 404—91 21 Claims



1. An automated pavement repair vehicle for repairing pavement defects, comprising:

a vehicle body having a cab portion, truck portion and rear portion;

a pavement cutting system, said system including a moveable cutter for cutting an edge portion of a pavement defect, said cutter being mounted on said vehicle cab portion;

a moveable control arm, said control arm having extendible and retractable portions, said control arm being supported on and mounted for transverse movement along said truck portion of said vehicle body;

a vacuum system, said vacuum system including a vacuum source, a filtration system, a vacuum conduit, and a hose portion, said vacuum conduit connecting said hose portion to said filtration system to provide a passageway for materials from said hose portion to said filtration system, said hose portion and said vacuum conduit forming a portion of said control arm;

a heating system, said heating system including a heating lance, said heating lance forming a portion of said control arm;

a spray patch application system, said spray patch application system including an aggregate portion and a repair material portion, and a spray patch delivery portion and a nozzle portion connected thereto, said spray patch delivery portion forming a portion of said control arm; and,

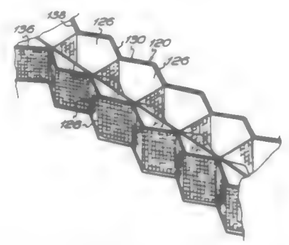
said vehicle rear portion including a work area portion, said work area portion being substantially enclosed by a retractable door assembly positioned to include at least portions of a pavement defect.

5,333,970

BUILDING AND SHORING BLOCKS

James W. Heselden, Leeds, England, assignor to Hesco Bastion Limited, Leeds, England

PCT No. PCT/GB90/00485, § 371 Date Nov. 26, 1991, § 102(e) Date Nov. 26, 1991, PCT Pub. No. WO90/12160, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 2, 1990, Ser. No. 776,268
Claims priority, application United Kingdom, Apr. 7, 1989, 8907832.3; Jul. 10, 1989, 8922639.3; Oct. 24, 1989, 8923934.7; Jan. 20, 1990, 9001376.4
Int. Cl.[5] E02D *29/02*
U.S. Cl. 405—286 26 Claims



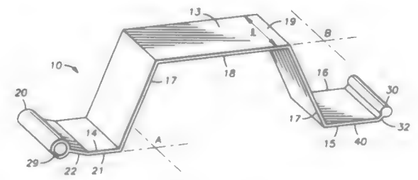
1. A method of providing an on-site structural block comprising transporting to the site a cage structure in a collapsed flattened condition, said cage structure adapted to be filled with a filling material in order to provide a structural block, said cage structure comprising pivotally interconnected panels of open work mesh and lining the interior of said cage with flexible sheet material, and filling the cage at least partially with fluent solid material of a particulate nature, which but for the lining material, would pass through the meshes of the cage and wherein the cage is erectable to the shape of the block to be provided by moving the panels apart, erecting the cage, including applying to the panels before or after erection so as to at least partially line the interior of said cage, said flexible sheet material, said panels comprising side panels defining side walls and partition panels pivotally interconnecting the side walls, said side walls being folded conctertina fashion when the cage is in the collapsed condition, and the cage being erectable into a condition for filling whereby the cage defines a row of side by side cavities for receiving the filling material.

5,333,971

INTERLOCKING BULKHEAD

John A. Lewis, 8014 Buffalo Speedway, Houston, Tex. 77025

Filed Nov. 3, 1992, Ser. No. 970,562
Int. Cl.[5] E02D *5/00, 7/20*
U.S. Cl. 405—281 10 Claims



1. A bulkhead member for use in constructing a bulkhead, comprising:

a body whose thickness is small as compared to its height and width, and having a pair of oppositely disposed faces and first and second side edges;

one of said side edges including an integral split socket extending along a substantial portion of its height, said split socket having a longitudinally extending gap therein;

the other of said side edges including an integral connecting bead extending along a substantial portion of its height, said bead having an enlarged head portion connected to said body through a neck portion, said head portion being lockingly receivable within to split socket of another like bulkhead member with said neck portion being received within the gap of the latter split socket;

one of said faces including first and second coplanar flat surfaces, said surfaces forming the outer extremity of said face;

said connecting bead being disposed adjacent to said first surface and said split socket being disposed adjacent to said second surface;

said connecting bead being mounted on said body at a predetermined offset angle with respect to said first surface, and said gap of said split socket being disposed at an angle with respect to said second surface which is correlative to said predetermined angle, said connecting bead of said bulkhead member being connectable to the split socket of a like bulkhead member with said surfaces of adjacent members being substantially coplanar and with the connecting bead and socket of adjacent members being offset from the common plane of said flat surfaces of the two bulkhead members; and

said predetermined offset angle and said angle of said gap of said socket further being such that when said bulkhead member is inverted, said bulkhead member is connectable to the split socket of a like bulkhead member with said surfaces of connected bulkhead members being substantially perpendicular to one another.

5,333,972

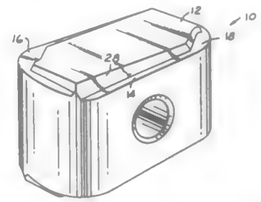
SPECIAL BORING INSERT

Thomas J. Bernadic, Madison Heights; John H. Patterson, Hazel Park, and Brendan L. Brockett, Dearborn Heights, all of Mich., assignors to Valenite Inc., Madison Hts., Mich.

Continuation of Ser. No. 593,829, Oct. 4, 1990, abandoned. This application Nov. 23, 1992, Ser. No. 998,753
Int. Cl.[5] B26D *1/00*
U.S. Cl. 407—113 3 Claims

1. An indexable, on edge, reversible cutting insert for use with a boring toolhead, comprising:

a top and bottom face substantially parallel to each other with a sidewall running substantially unbroken therebetween to define a body; said sidewall comprised of seating surfaces opposite each other and end wall portions opposite each other; said body having rounded corners when viewed from said top or bottom face; said top or bottom face having a cutting edge defined by the intersection of the seating surface and the top or bottom face; said cutting edge, when viewed from said seating surface, being inclined relative to said top or bottom face from one corner to the opposite corner of the insert body; a descending land surface rearward of said cutting edge; said descending land surface following said cutting edge; and an increasing incident angle surface rearward of said descending land surface which together with said descending land surface defines a chip breaker groove; each said increasing incident angle surface extending from said descending land surface to said top or bottom face; said descending



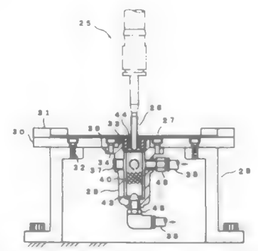
land surface having a positive rake angle and said increasing incident angle surface having an axial rake angle so as to define a bi-directional chip breaker groove; at least two chip breaker grooves being formed on the top and bottom surface opposite each other, said chip breaker grooves forming at least two diagonally opposed cutting corners; each said cutting corner comprised of a scalloped radius formed in said incident angle surface which intersects a chip directional flat formed in the groove at an obtuse angle to form a bi-directional pocket area; and an aperture centrally located on said seating face and extending through said body to the opposite seating face; said central aperture being counterbored.

5,333,973

CUTTING OIL SUPPLYING DEVICE FOR A TAP

Kiyoshi Hoshino, 645 Yamanokami, Yabuzuka-Honmachi-Oaza, Nitta-Gun, Gunma-Ken, Japan, and Izumi Hoshino, 1328-3 Kizaki, Nitta-Machi-Oaza, Nitta-Gun, Gunma-Ken, Japan

Filed Jun. 22, 1993, Ser. No. 80,921
Int. Cl.[5] B23B *51/06;* B23G *1/16*
U.S. Cl. 408—56 13 Claims



1. A cutting oil supplying device supplying cutting oil to a tap which taps a work installed on a worktable comprising:

(a) a cup to be filled with the cutting oil provided beneath said worktable and located at a tapping position; and

(b) a wiping means provided in said cup such that when the tap goes into and out of the cup, said wiping means wipes off excess oil and applies the least amount of the cutting oil necessary for cooling the tap and reducing friction between the tap and the work to the tap.

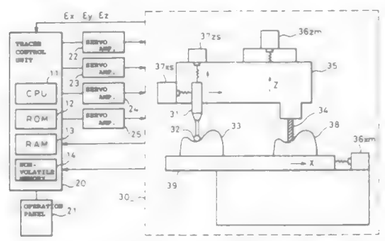
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,974

TRACER CONTROL UNIT

Hitoshi Matsuura, Hachioji, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP92/00116, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO92/13676, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 5, 1992, Ser. No. 930,534
Claims priority, application Japan, Feb. 5, 1991, 3-035560
Int. Cl.[5] B23Q *35/14*; G05B *1/00*
U.S. Cl. 409—84 4 Claims



1. A tracer control unit for machining a workpiece in the same shape as a model by driving a tool so that said tool moves along the traced movement of a stylus that is driven while remaining in contact with said model, comprising:

a plurality of first axis control means for driving said stylus;

a plurality of second axis control means for driving said tool, wherein said first axis control means is operatively connected to said second axis control means;

control signal generating means for generating a plurality of control signals to be supplied respectively to said first axis control means so that said stylus is driven while remaining in contact with said model;

delay means for delaying the control signals generated by said control signal generating means for a specified time and supplying the control signals to said second axis control means; and

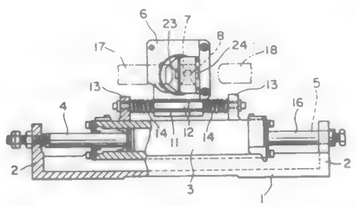
a plurality of subtracting means for subtracting the control signals to be supplied to said second axis control means from the control signals generated by said control signal generating means and for supplying the signals obtained from said subtraction to said first axis control means.

5,333,975

METHOD OF AND APPARATUS FOR DRESSING TIPS FOR WELDING MACHINES

Toshihiro Nishiwaki, Tokyo, Japan, assignor to Obara Corporation, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,490
Int. Cl.[5] B23C *3/00*
U.S. Cl. 409—132 8 Claims



1. A method of dressing a welding tip for a welding machine utilizing a dressing apparatus, comprising the steps of:

advancing the welding tip toward a dressing means associated with the dressing apparatus, said dressing means including at least one rotatable cutting blade which dresses the welding tip;

sensing the presence of the welding tip when the welding tip is in close proximity to but spaced away from said cutting blade;

activating said cutting blade after sensing the presence of the welding tip,

further advancing the welding tip to contact said cutting blade after said cutting blade is activated to prevent said cutting blade from biting into the welding tip and stopping its rotation;

applying pressure to the welding tip to maintain contact between the welding tip and said cutting blade for a predetermined time period so that said cutting blade dresses the welding tip; and

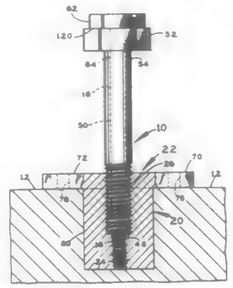
gradually withdrawing the welding tip from said cutting blade after the elapse of said predetermined time period while said cutting blade continues to rotate to further dress the welding tip.

5,333,976

CENTER LOCKING SPACING BOLT

Kurt A. Dobbranz, 4401 Polk St., Hollywood, Fla. 33021

Filed Jun. 23, 1993, Ser. No. 80,123
Int. Cl.[5] F16B *35/02, 39/28*
U.S. Cl. 411—263 20 Claims



1. A spacing bolt assembly for securing to a surface, comprising:

a cylindrical inner bolt portion having a first end with external threads in a first rotational direction and a second end with a radially protruding head structure,

an outer bolt portion having an axial bore adapted to receive said inner bolt portion and having a segment at said second end narrower than said radially protruding head structure and having a first end with external threads in a second rotational direction and having a second end,

an aperture in said surface containing a central bore segment sized and threaded in said first rotational direction to receive said first end of said inner bolt portion and a counterbore segment sized and threaded in said second rotational direction to receive said first end of said outer bolt portion,

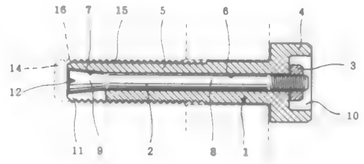
such that said outer bolt portion can be screwed into said counterbore segment to a depth leaving a desired exposed length of said outer bolt portion protruding, and said inner bolt portion can be inserted through said axial bore and screwed into said central bore segment until said inner bolt portion head structure abuts and engages with friction said second end of said outer bolt portion to lock said inner and outer bolt portions together against rotation in either rotational direction.

5,333,977

BOLT HAVING A LOCKING MEANS

Minoru Sugawara, Odawara, Japan, assignor to Ishion Corporation Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1993, Ser. No. 131,325
Claims priority, application Japan, Jun. 14, 1993, 5-165888
Int. Cl.[5] F16B *13/06, 39/02*
U.S. Cl. 411—271 4 Claims



1. A locking bolt comprising:

a main bolt having a head and a tip with a through hole extending axially along its center line, wherein the through hole in the main bolt is provided along at least a portion thereof with a tapered hole portion which gradually tapers in such a way that its diameter is greatest at the tip of the bolt shaft and decreases in the direction of the head of the bolt, and at least one slit is provided in the main bolt wherein the slit cuts through from the exterior of the main bolt to the interior of the tapered hole portion, and

a deforming bolt having a threaded end and a tapered end which tapered end fits into the tapered hole portion of the through hole in the main bolt and which is rotatably mounted in the through hole in the main bolt with the threaded end extending beyond the through hole in the main bolt to engage a tightening nut, and the deforming bolt is provided with at least one notch in the tapered end thereof, the notch having a projecting portion on the outer edge of the notch, and

when the nut is screwed onto the threaded end portion of the shaft of the deforming bolt and tightened the projecting portion of the notch of the deforming bolt engages the slit and the deforming bolt is prevented from rotating together with the nut and the tapered end of the deforming bolt moves toward the head of the main bolt and the tapered end of the main bolt expands radially.

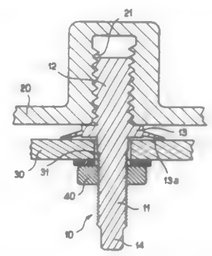
5,333,978

FASTENER FOR SECURING A LIGHTING OR INDICATING UNIT ON A MOTOR VEHICLE

Claude Rives, Evreux, France, assignor to Valeo Vision, Bobigny Cedex, France

Filed May 14, 1993, Ser. No. 62,293
Claims priority, application France, May 14, 1992, 92 05859
Int. Cl.[5] F16B *35/00*
U.S. Cl. 411—389 4 Claims

1. A fastener for securing a lighting or indicating unit for a motor vehicle on a fixed portion of the vehicle having a hole therethrough, the fastener comprising: a first portion having a threaded shank for engagement in the hole and for cooperation with a nut, said first portion having a first end and a free second end; and a second portion extending from said first end of said threaded shank, said second portion having means for securing the fastener to the unit, said second portion having a thread substantially coaxial with that of said threaded shank for cooperation with a complementary thread formed in the unit, said free second end of said threaded shank having an element which is provided so as to be rotatable by means of a tool, and an intermediate portion, having a thin, conical circumferential deformable sealing lip flared toward said threaded shank between said first and second fastener portions for sealing the hole through the fixed portion of the vehicle.

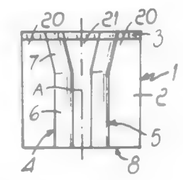


5,333,979

LAMINAR JOINING STAPLE

Giuseppe Raffoni, Viale Bolognesi 24, 27100 Forli', Italy

Filed Oct. 29, 1992, Ser. No. 968,141
Int. Cl.[5] F16B *15/00*
U.S. Cl. 411—477 8 Claims



1. Laminar jointing staple comprising;

a rectangular steel plate having a centerline lane;

a height dimension defined by said plate;

a cutting edge formed on said plate perpendicularly to said centerline plane;

a striking edge formed on said plate opposite to said cutting edge and perpendicular to said centerline plane;

two ridges formed on said plate symmetrically with respect to said centerline plane and extending between said cutting edge and said striking edge, each of said ridges defining a semi-circular cross section;

first portions defined by each of said ridges symmetrically with respect to said centerline plane, said first portions extending across said plate from said striking edge for a distance greater than half of said height dimension;

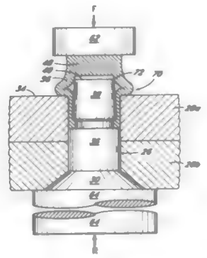
second portions defined by each of said ridges symmetrically with respect to said centerline plane, said second portions mutually diverging apart and extending between said first portions and said cutting edge;

two flat lateral portions defined by said rectangular steel plate and extending between said cutting edge and said striking edge, laterally and externally with respect to said two ridges, and;

a single uninterrupted planar central portion defined by said rectangular steel plate and extending between said cutting edge and said striking edge, said single uninterrupted planar central portion being symmetrical with respect to said centerline plane, laterally delimited by said two ridges, and aligned with said two flat lateral portions.

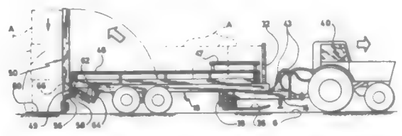
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,980
BUCKLING SEMI-SOLID RIVET
John D. Pratt, Laguna Niguel, and Sohell A. Eshraghi, Irvine, both of Calif., assignors to Textron, Inc., Providence, R.I.
Filed Jul. 15, 1993, Ser. No. 92,367
Int. Cl.[5] F16B *13/04, 19/08*
U.S. Cl. 411—501 32 Claims



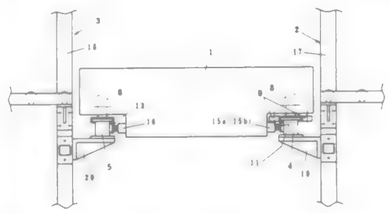
1. A rivet for joining panels, comprising:
a two-piece shank formed of a substantially nontubular solid member and a member having a tubular portion surrounding a portion of said solid member, said tubular portion having an exterior forming a part of a cylindrical shank exterior, and said solid member having an exterior forming a part of the exterior of said shank adjacent said tubular portion exterior; and
a head forming a part of one of said members on one end of said rivet, and a rivet tail on the opposite end forming a part of the other of said members, each of said members being shorter than said rivet before setting of the rivet, said solid member being longer than the combined thickness of said panels, said members defining an interior cavity axially adjacent an end of said solid member, the cavity being surrounded radially by a part of said tubular portion, said tubular portion including a section which is deformable to buckle radially outwardly when unsupported outwardly and subjected to a compressive force on opposite ends of said rivet, said cavity being adapted to accommodate shortening of said rivet caused by said force and the buckling of the tubular section, and said members having interior, axially facing surfaces that engage after the axial dimension of the cavity has reduced a predetermined amount.

5,333,981
BALE LOADING, TRANSPORTING AND UNLOADING TRAILER
Normand Pronovost, and Réjean Pronovost, both of St-Tite, Quebec, Canada
Continuation-in-part of Ser. No. 749,309, Aug. 26, 1991, abandoned. This application Jan. 12, 1993, Ser. No. 3,484
Int. Cl.[5] A01D *90/08*
U.S. Cl. 414—24.5 9 Claims



1. A farm trailer for transporting and unloading generally cylindrical bales of hay comprising:
(a) a wheel-mounted elongated chassis having a front and a rear end;
(b) a front bed including an elongated front bed frame having a front section and a rear section, said front bed frame overlying and co-extensive with said chassis and a front bed flooring secured to and extending across said front section, said rear section defining a cavity;
(c) said front bed frame pivoted to the rear end of said chassis for pivoting movement of said front bed between a rest position resting on said chassis and an upwardly tilted bale unloading position;
(d) a rear bed including a rear bed frame and a rear flooring secured thereto, said rear bed frame pivoted to the rear section of said front bed frame for pivoting movement of said rear bed between a rest position with said rear flooring fitting within said cavity and with both bed floorings in alignment and forming a substantially continuous surface, to an upright bale unloading position relative to said front bed;
(e) first power means to pivot both beds simultaneously between the rest position and the tilted position of said front bed, said rear bed remaining in its rest position relative to said front bed;
(f) second power means to pivot said rear bed relative to said front bed between the rest position and the bale unloading position of said rear bed; and
(g) bale pusher means movable back and forth over said front bed flooring longitudinally of said chassis to push bales successively loaded on said front bed flooring rearwardly onto said rear flooring when both beds are in rest position whereby providing of said rear bed to its upright position produces unloading of the bales supported by said rear bed as a stack, and pivoting of said front bed to an unloading position produces unloading of the bales supported by both beds as a horizontal pack.

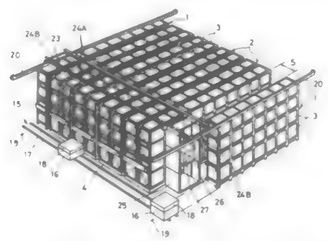
5,333,982
LOAD TRANSPORT SYSTEM FOR AUTOMATED WAREHOUSING
Hideichi Tanizawa, Moriguchi; Shuzo Nishino, Kawanishi, and Takashi Okamura, Osaka, all of Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
Filed May 18, 1992, Ser. No. 885,264
Claims priority, application Japan, May 22, 1991, 3-148017; May 22, 1991, 3-148018; May 22, 1991, 3-148021
Int. Cl.[5] B65G *1/04*
U.S. Cl. 414—279 9 Claims



1. A cargo transport system for automated warehousing comprising guide rail structures each mounted from an opposing shelving face structure of two rows of storage shelves extending substantially parallel to each other and presenting opposing shelving face structures toward one another, each of said guide rail structures including a guide rail with top surfaces and opposing sides, at least one or more power supply conductors, or control signal conductors, or both power supply conductors and control signal conductors disposed substantially parallel to each other and arranged along the side of at least one guide rail, a cargo carrier adapted to roll over said guide rails and occupy a position thereon, and collector means attached from said cargo carrier for maintaining substantially constant electrically conducting contact with said power supply conductors and said control signals conductors for respectively powering and controlling the movement of said cargo

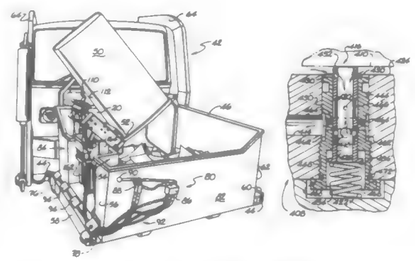
carrier, the cargo carrier having front and rear supporting wheels mounted on each side of the cargo carrier, said supporting wheels being adapted to run on a respective guide rail of each opposing shelving face structure, a main body of a linear motor each mounted from each side of said cargo carrier, a plurality of lateral balancing guide rollers for maintaining said position of the cargo carrier relative to the guide rail, each of the main bodies of said linear motors being arranged on a side of said cargo carrier between respective front and rear supporting wheels close to the top surfaces of the guide rails, said top surfaces of the guide rails serving as secondary conductors for the linear motors, said lateral balancing guide rollers being arranged in pairs and being pivoted from said cargo carrier and being adapted to contact a guide rail on its opposing sides.

5,333,983
RACK ARRANGEMENT
Gokichi Hatouchi, Komaki; Hisao Saitoh, Omihachiman; Kiyoshi Shimizu, Hikone, and Yasushi Hagisu, Shiga, all of Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
Filed Apr. 24, 1992, Ser. No. 873,452
Claims priority, application Japan, Apr. 26, 1991, 3-095923; Dec. 26, 1991, 3-343718; Dec. 27, 1991, 3-345688; Jan. 21, 1992, 4-008007; Jan. 29, 1992, 4-013488; Feb. 7, 1992, 4-021523; Mar. 11, 1992, 4-051971
Int. Cl.[5] B65G *1/10*
U.S. Cl. 414—331 15 Claims



1. A rack arrangement including a pair of longitudinally extending stationary racks having a plurality of vertically and laterally partitioned storage spaces and arranged in parallel spaced apart relation, longitudinally extending movable racks having a plurality of vertically and laterally partitioned storage spaces and frontwardly and rearwardly movably disposed between the stationary racks, and a working space defined between opposite facades of any selected pair of adjacent racks, comprising:
a pair of rails mounted respectively on the tops of said stationary racks and supported thereon,
a girder supported by the rails and guided thereby for movement along the rails,
movable means supported and guided by the girder for movement in a longitudinal direction of the girder which is perpendicular to said rails, said movable means being movable into said working space, and
a take-in/take-out device which is vertically movable within the movable means and capable of supporting a load for storage into one of said storage spaces, said take-in/take-out device being adapted to extend into and retreat from a storage space located opposite to said movable means for delivery of the load to and from the storage space.

5,333,984
RESIDENTIAL REFUSE COLLECTION CART LIFTER WITH UNIVERSAL FEATURES
Jimmy O. Bayne, and Michael J. Susil, both of Simpsonville, S.C., assignors to Bayne Machine Works, Inc., Simpsonville, S.C.
Continuation-in-part of Ser. No. 903,078, Jun. 22, 1992. This application Nov. 23, 1992, Ser. No. 979,153
Int. Cl.[5] B65F *3/02*
U.S. Cl. 414—408 13 Claims



5. A lifting apparatus for use with residential refuse collection carts, for lifting and dumping the contents thereof into a larger refuse container, said apparatus comprising:
a lift plate for receipt thereon of a refuse collection cart to be emptied;
drive means for controllably moving said lift plate with a refuse collection cart received thereon so as to lift and dump the contents of such cart, said drive means including a hydraulically actuated piston in a cylinder;
cart engagement means associated with said lift plate for engaging a refuse collection cart to be emptied; and
drive dampening means for selectively slowing said controlled moving of said lift plate during a predetermined portion of a cart dumping cycle, so as to reduced strain on a cart during final dumping thereof, said drive dampening means including means for selectively limiting the flow of hydraulic fluid within said drive means cylinder in response to the relative position of said piston therein, wherein said cart engagement means include:
cart clamping means associated with said lift plate for clamping thereon a refuse collection cart of the type having a single upper lip to be clamped during lifting of such cart; and
cart latching means associated with said lift plate for latching thereon a refuse collection cart of the type having a pair of opposing latch engagement surfaces, said cart latching means comprising a lower latch member movably mounted between an extended position thereof for engaging the lower of the cart latch engagement surfaces and a retracted position thereof pivoted relatively downward from said extended position thereof, and comprising an upper latch member movably mounted between an extended position thereof for engaging the upper of the cart latch engagement surfaces and a retracted position thereof pivoted relatively upward from said extended position thereof, biasing means for biasing said lower and upper latch members into said respective extended positions thereof for engagement with and lifting of a cart of the type having a pair of opposing latch surfaces, and further being respectively displaceable therefrom into said respective retracted positions thereof upon contact with a cart of the type having a single upper lip to be clamped for engagement of such cart by said cart clamping means and for subsequent lifting thereof with said apparatus.

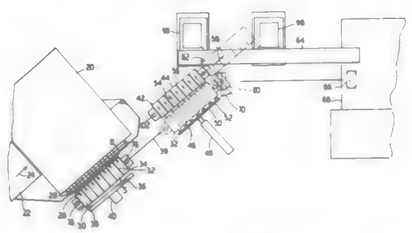
VOL 1165 ISS 1 AG 2 1994 UMI

5,333,985

CAN BLANK HANDLING APPARATUS

Heinz Schmeisser, 3437 S. Crandon Pl., Greenfield, Wis. 53219, and James A. Franz, 3960 Highway Y, West Bend, Wis. 53095

Filed Nov. 13, 1991, Ser. No. 791,438
Int. Cl.[5] B65G *47/26*
U.S. Cl. 414—790.3 28 Claims



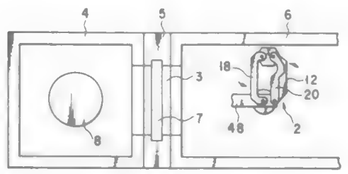
1. A can blank accumulating and transfer device for moving can blanks from a slitter to a welder hopper, comprising:
- a side-by-side arrangement of blank receiving locations positionable at an output of the slitter, said side-by-side arrangement including means for accumulating into stacks a plurality of can blanks output by the slitter to that the stacks are in side-by-side relation;
- an indexing station selectively alternately positionable along side and movable away from said side-by-side arrangement, said indexing station including means for receiving a plurality of the stacks from said side-by-side arrangement;
- first means for transferring the plurality of the stacks accumulated in said side-by-side arrangement into said indexing station;
- a single stack receiving station including means for receiving single stacks from said indexing station; and
- second means for transferring one stack at a time from said indexing station to said single stack receiving station by pushing the one stack at a time from said indexing station to said single stack receiving station.

5,333,986

TRANSFER APPARATUS

Masami Mizukami, and Hatsuo Osada, both of Yamanashi, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,258
Claims priority, application Japan, Jul. 29, 1991, 3-211649
Int. Cl.[5] B25J *21/00*
U.S. Cl. 414—217 20 Claims



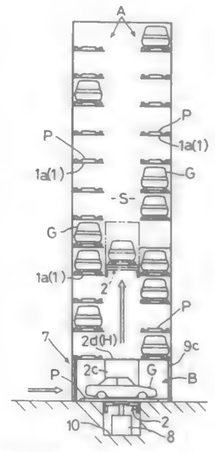
7. A processing system for processing a substrate, comprising:
- a process chamber in which the substrate is processed;
- a support arranged in the process chamber for supporting the substrate which is being processed;
- a load lock chamber connected to the process chamber through a communication mechanism for having the pressure therein reduced to a vacuum;
- a gate connected to the communication mechanism for opening and closing the communication mechanism;
- a transfer apparatus arranged in the load lock chamber for transferring the substrate, in a vacuum atmosphere, between the load lock chamber and the support in the process chamber through the communication mechanism, the transfer apparatus comprising:
- a base arranged in the load lock chamber;
- a rotary drive source mounted on the base, the driving source having a rotary driving shaft;
- a first arm having an end fixed to the rotary driving shaft;
- a first coupling shaft fixed to the other end of the first arm;
- a second arm having an end supported by the base such that said second arm can pivot about a pivotal point;
- a second coupling shaft rotatably supported by the other end of the second arm, the distance between the pivotal point and the second coupling shaft being equal to that between the rotary driving shaft and the coupling shaft;
- a holding member for rotatably holding the first and second coupling shafts, the distance between the first and second coupling shafts being equal to that between the rotary driving shaft and the pivotal point, a straight line connecting the first and second coupling shafts to each other being parallel to a straight line connecting the rotary driving shaft to the pivotal point;
- a first pulley secured to the first coupling shaft, and having a first upper portion and a second lower portion;
- a second pulley secured to the second coupling shaft, and having a first upper portion and a second lower portion which are opposite to the first and second portions of the first pulley, respectively;
- a first belt bridging the first portions of the first and second pulleys, and having one end-side portion wound on clockwise and secured to the first portion of the first pulley and the other-end side portion wound on clockwise and secured to the first portion of the second pulley;
- a second belt bridging the second portions of the first and second pulleys so as to cross said first belt, and having one end-side portion wound on counterclockwise and secured to the second portion of the first pulley and the other-end side portion wound on counterclockwise and secured to the second portion of the second pulley;
- a first outer arm having an end rotatably supported by the first coupling shaft;
- a second outer arm having an end fixed to the second coupling shaft;
- a supporting plate having an end connected to the other ends of the first and second outer arms, the first and second outer arms being connected to the supporting plate such that they can rotate about first and second points, respectively, the distance between the first coupling shaft and the first point being equal to that between the rotary driving shaft and the first coupling shaft, and also equal to the distance between the second coupling shaft and the second point, the distance between the first and second points being equal to that between the first and second coupling shafts, a straight line connecting between the first and second points being parallel to that connecting between the first and second coupling shafts; and
- a supporting portion formed on another end of the supporting plate for supporting the substrate wherein the first and second pulleys and the first and second belts comprise a transmission for suppressing particles generated therefrom due to friction in the load lock chamber and the process chamber.

5,333,987

AUTOMATED HIGH-RAISED PARKING SYSTEM

Shigekazu Takaoka, Kasugai, Japan, assignor to Daifuku Co., Ltd., Osaka, Japan

Filed Oct. 30, 1992, Ser. No. 968,823
Claims priority, application Japan, Nov. 5, 1991, 3-288199; Nov. 5, 1991, 3-288200; Nov. 19, 1991, 3-303027
Int. Cl.[5] E04H *6/22*
U.S. Cl. 414—264 17 Claims



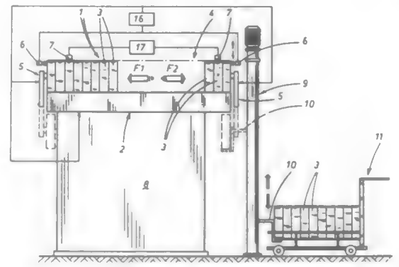
1. An automated high-raised parking system for parking automobiles comprising:
- a parking rack structure including a plurality of racks disposed one above another for parking an automobile, wherein each said rack includes a receiver frame for receiving ends of a pallet for mounting the automobile;
- an entrance/exit section for allowing entrance and exit of the automobile;
- a lift-translator device for transporting the automobile between said entrance/exit section to said racks, said lift-translator device including a lift table vertically movable along a lift passage extending along a side of said parking rack structure and communicating with said entrance/exit section;
- a shielding means for shielding an upward view through said lift passage from said entrance/exit section when said lift table is positioned at said entrance/exit section for entrance or exit of the automobile, wherein said shielding means includes at least one shielding member disposed at a position above said entrance/exit section, said shielding member being capable of selectively moving between a closed state wherein said shielding member projects into said lift passage to prevent said upward view and an open state wherein said shielding member is withdrawn from said lift passage to allow passage of said lift table through said lift passage, said shielding means further including an opening-closure control means for selectively moving said shielding member between said opened state and said closed state in accordance with a lifting movement of said table; and
- an auxiliary shielding member fixedly attached to a rear face of one of said parking racks which is positioned immediately above said entrance/exit section so as to shield said upward view from said entrance/exit section to said parking rack structure.

5,333,988

DEVICE FOR SUPPLYING PRODUCTS ORDERED IN SERIES TO A SUCCESSIVE WORK STATION

Mario Turra, Casalecchio di Reno; Verter Cesari, Granarolo Emilia, and Armando Neri, Bologna, all of Italy, assignors to G.D. S.p.A., Bologna, Italy

Filed Sep. 3, 1992, Ser. No. 940,295
Claims priority, application Italy, Sep. 11, 1991, BO91A 000320
Int. Cl.[5] B65G *59/00*
U.S. Cl. 414—795.8 10 Claims



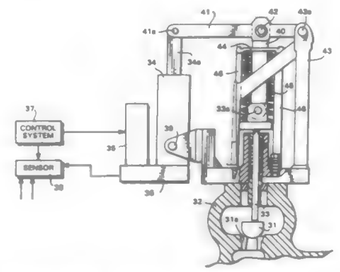
1. A device for transferring products to a work station comprising:
- a magazine adapted to hold a plurality of products, said magazine having an infeed end and an outfeed end;
- means for advancing the products in a forward direction along the magazine from said infeed end toward said outfeed end during a normal transfer of the products to the work station, said advancing means being further capable of alternatively advancing the products in a reverse direction toward the infeed end;
- means for successively transferring each of said products from the outfeed end of the magazine to the work station during the normal transfer of the products; and
- further transfer means for removing the products from the infeed end of the magazine when the products are alternatively advanced in the reverse direction to the infeed end.

5,333,989

ELECTRIC ACTUATORS FOR STEAM TURBINE VALVES

Adrian Missana, Scotia, N.Y., and Russell A. Gary, Marblehead, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1992, Ser. No. 995,365
Int. Cl.[5] F01D *17/00*
U.S. Cl. 415—17 7 Claims



1. A steam turbine control system comprising:
- at least one valve for controlling the admission or extraction of steam to a turbine;

VOL 1165 ISS 1 AG 2 1994 UMI

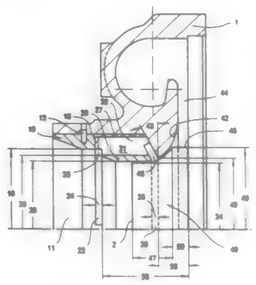
a lever;
a support element for pivotally supporting one end of said lever;
an electrically operated linear actuator for pivotally supporting another end of said lever, said actuator including a linearly extendable shaft, an electric motor and a drive means operatively connected between the motor and the shaft for reciprocally positioning said shaft at a controllable and selectable position;
sensor means for determining system operating conditions and for providing signals indicative of the conditions;
a control means responsive to said sensor means and connected to said actuator for supplying electrical signals and power to said motor for controllably positioning said valve at a said selectable position;
a linkage element pivotally connected between said lever and said valve for conveying linear motion to said valve; and
said support element including means for pivotally mounting said actuator so that an axis along which the actuator shaft reciprocally extends cooperatively moves with an axis along which the linkage element reciprocally extends so as to compensate for any horizontal movement of the linkage element axis at the pivotal connection between said linkage element and said lever;
a spring supportably mounted about said linkage element and operatively connected to said valve for forcing said valve to a closed position in the absence of electrical power being supplied to said motor.

5,333,990

PERFORMANCE CHARACTERISTICS STABILIZATION IN A RADIAL COMPRESSOR

Arno Foerster, Worms; Berthold Engels, Weisenheim am Sand, and Peter Hauck, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Aktiengesellschaft Kuhnle, Kopp & Kausch, Frankental, Fed. Rep. of Germany

PCT No. PCT/EP91/01431, § 371 Date Oct. 28, 1992, § 102(e) Date Oct. 28, 1992, PCT Pub. No. WO92/03660, PCT Pub. Date Mar. 5, 1992
PCT Filed Jul. 30, 1991, Ser. No. 940,892
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1990, 4027174
Int. Cl.[5] F04D *29/44*
U.S. Cl. 415—58.4 15 Claims



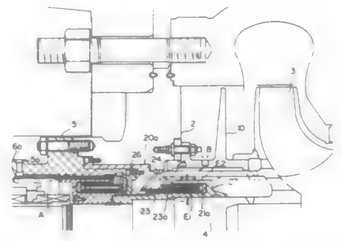
1. Arrangement for performance characteristics stabilization in a radial compressor comprising a housing with an inlet area, an outlet area and an impeller disposed between the inlet and outlet areas and capable of transporting, upon rotation, a medium from the inlet area to the outlet area, said impeller having a contour which changes in axial direction from a diameter at its inlet to a diameter at its outlet in accordance with the profile of a contour wall of the surrounding housing, said arrangement for performance characteristics stabilization comprising a contour ring disposed adjacent the impeller and defining an inlet passage for guiding a main medium flow from said inlet area to said impeller, a venting space surrounding said contour ring and extending from said inlet area to said contour wall, said venting space being in communication with said inlet passage at said inlet area via an inlet communication opening and at the impeller inlet via a stabilization opening disposed intermediate the impeller inlet and the impeller outlet, and an inlet ring exchangeably mounted in said inlet area adjacent said venting space and having a conical inlet end for constricting said main medium flow to said contour ring ahead of said impeller, said inlet ring having an inner radial end wall limiting said venting space and defining said venting space inlet communication opening for controlling medium conditions in said venting space.

5,333,991

THERMAL FATIGUE PREVENTION APPARATUS FOR HIGH TEMPERATURE PUMP

Hiroyuki Kato, Yokohama, Japan, assignor to Ebara Corporation; The Tokyo Electric Power Company Inc., both of Tokyo; Tohoku Electric Power Company Inc., Sendai; Chubu Electric Power Company Inc., Nagoya; Hokuriku Electric Power Company, Toyama; Chugoku Electric Power Company, Inc., Hiroshima; The Japan Atomic Power Company, Tokyo; Kabushiki Kaisha Toshiba, Kawasaki and Hitachi Ltd., Tokyo, all of Japan

Continuation of Ser. No. 782,175, Oct. 24, 1991, abandoned.
This application Apr. 23, 1993, Ser. No. 51,294
Claims priority, application Japan, Oct. 26, 1990, 2-287286
Int. Cl.[5] F04D *29/58*
U.S. Cl. 415—112 3 Claims



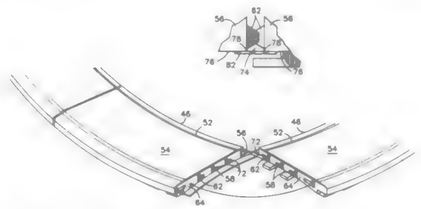
1. A thermal fatigue prevention apparatus for a high temperature pump, comprising:
an impeller in a high temperature pump casing,
a pump shaft rotatably supported by a journal of a submerged bearing and projecting from a shaft through hole of a casing cover,
a shaft sealing means provided between the pump shaft and the casing cover, said shaft sealing means being enclosed with a shaft sealing chamber which is supplied with a low temperature seal purging liquid for cooling and cleaning said shaft sealing means, said seal purging liquid flowing into said pump casing through said shaft through hole, and;
a heater provided within said high temperature pump, said heater raising the temperature of the low temperature seal purging liquid before said seal purging liquid flows into said pump casing by using a high temperature pumping liquid, said heater comprising a cylindrical body around said pump shaft, said seal purging liquid flowing through a cylindrical space formed between said pump shaft and said cylindrical body, said cylindrical body being fixed relative to said casing cover and having a pumping liquid inlet in the vicinity of an outlet for circulating high temperature pumping liquid formed on said submerged bearing, axially extending passages and a pumping liquid outlet provided radially inward of said pumping liquid inlet, said axially extending passages comprising a multiplicity of bores wherein said cylindrical body has a high strength, said multiplicity of bores being in parallel with each other, said pumping liquid flowing in a same direction along said bores, said cylindrical body being disposed inside of said journal of said submerged bearing, the high temperature pumping liquid being filled in a space confined by said heater and said journal and having a peripheral velocity component which causes a radial static differential pressure effecting circulation of the high temperature pumping liquid through said axially extending passages, said multiplicity of bores of said passages being provided in the vicinity of the inner periphery of said cylindrical body so that said low temperature seal purging liquid is heat-exchanged with said high temperature pumping liquid, said pumping liquid outlet of said cylindrical body being directed to an outwardly radial direction radially so that the pumping liquid therefrom is directed away from said pump shaft and remains substantially radial up to the confined space, and a temperature fluctuation adjacent to said pump shaft is minimized.

5,333,992

COOLABLE OUTER AIR SEAL ASSEMBLY FOR A GAS TURBINE ENGINE

Daniel E. Kane, Tolland, and Donald E. Haddad, Amston, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 5, 1993, Ser. No. 14,033
Int. Cl.[5] F01D *25/26*
U.S. Cl. 415—138 20 Claims



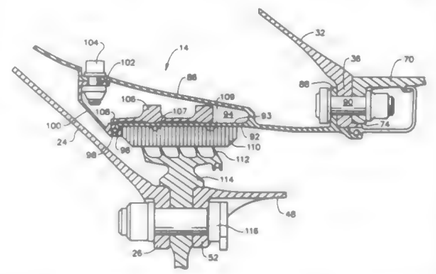
1. The outer air seal assembly for a gas turbine engine, the gas turbine engine disposed about a longitudinal axis and including an axially disposed flow path and a rotor assembly having a plurality of rotor blades engaged with working fluid within the flow path and adapted to rotate about the longitudinal axis, each rotor blade including a radially outer tip, the outer air seal assembly blocking working fluid from flowing radially outwardly of the rotor blades, the outer air seal assembly including:
a plurality of seal segments, each of the seal segments circumferentially spaced from an adjacent seal segment to define a gap therebetween, each segment having a mating surface facing the adjacent seal segment, the plurality of seal segments forming an annular structure disposed radially outwardly of the rotor assembly, each seal segment including a bumper disposed on and extending circumferentially from the mating surface, the bumper having a height H_b measured circumferentially from the mating surface; and
means to flow cooling fluid between adjacent seal segments;
wherein the fluid flowing between adjacent segments flows radially inwardly and into the flow path, wherein the bumper maintains the gap at a minimum distance G_{min}, the distance G_{min} selected to permit cooling fluid to flow through the gap.

5,333,993

STATOR SEAL ASSEMBLY PROVIDING IMPROVED CLEARANCE CONTROL

Henry B. Stueber, Mariemont; Eric E. Baehre, West Chester; Richard W. Albrecht, Fairfield; Christopher C. Glynn, Hamilton, and Robert J. Hemmelgarn, Mason, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 1, 1993, Ser. No. 24,581
Int. Cl.[5] F01D *11/02*
U.S. Cl. 415—164.5 11 Claims



1. In a gas turbine engine of a type having a high pressure compressor section with a stator vane, said stator vane having a support structure, and a rotor disk, said rotor disk having a plurality of radially-outwardly extending seal teeth, a stator seal assembly comprising:
a stator seal segment extending between said stator vane support structure and said rotor disk seal teeth;
said stator seal segment having a forward arm for forming a cavity;
a retaining segment for sealing cavity to form a dead air space;
a control ring located in said dead air space for controlling thermal growth of said stator seal segment, whereby thermal expansion clearance between said stator vane and said rotor disk is minimized by said control ring at both steady state and during transient operation of said engine;
a relatively thick honeycomb block located between said stator seal forward arm and said rotor disk seal teeth, wherein a radially inward portion of said control ring contacts said forward arm;
wherein said control ring comprises a material having a lower coefficient of thermal expansion than a coefficient of thermal expansion for said seal segment;
wherein said control ring is a titanium aluminide alloy, and wherein said radially inward portion of said control ring comprises a pair of axially spaced apart and radially inward lands, each of said lands directly contacting a radially outward surface of said forward arm.

5,333,994

HIGH TEMPERATURE NMR SAMPLE SPINNER

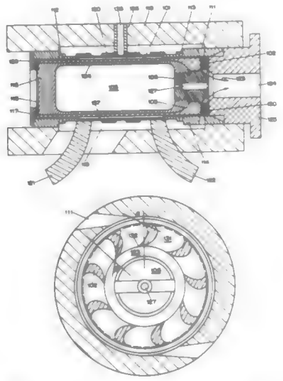
F. David Doty, Columbia; Jonathan B. Spitzmesser, Blythewood, both of S.C., and David G. Wilson, Winchester, Mass., assignors to Doty Scientific, Inc., Columbia, S.C.

Division of Ser. No. 607,521, Nov. 1, 1990, Pat. No. 5,202,633.
This application Sep. 22, 1992, Ser. No. 950,443
Int. Cl.[5] F01D *15/00*
U.S. Cl. 415—202 4 Claims

1. A ceramic thin-walled cylindrical rotor shell for NMR

VOL 1165 ISS 1 AG 2 1994 UMI

having radial inflow turbine blades ground into a partially closed drive end wherein said rotor shell comprises a high



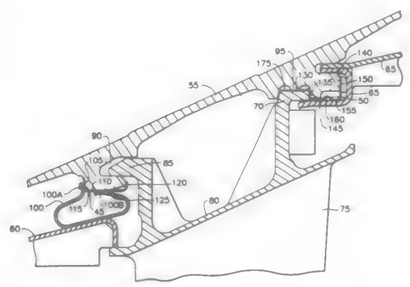
strength ceramic chosen from the set consisting of partially stabilized zirconia and hot pressed silicon nitride.

5,333,995

WEAR SHIM FOR A TURBINE ENGINE

Keith G. Jacobs; Jeanne M. Rosario, both of Loveland, and Michael H. Fisher, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 9, 1993, Ser. No. 103,370
Int. Cl.[5] F01D *9/04, 11/08*
U.S. Cl. 415—209.2 8 Claims



4. A wear shim assembly situated in the interior of a gas turbine engine having a longitudinal axis, said engine including an engine case and an array of stator vanes having mounting hooks attached to the interior of said engine case, the interior of said case including a circumferential rail chamber for receiving the hooks of said stator vanes, said engine including a shroud in the interior of said engine case, said wear shim assembly comprising:

a shim extending circumferentially about the interior of said engine case adjacent said rail chamber, said case including a radial seating surface and first and second axial seating surfaces near said rail chamber, said shim further including,

a first wear surface for protecting the radial seating surface of said engine case, said first wear surface being situated between said hook and the radial seating surface;

a second wear surface for protecting the first axial seating surface of said engine case, said second wear surface being situated between said hook and said first axial seating surface, and

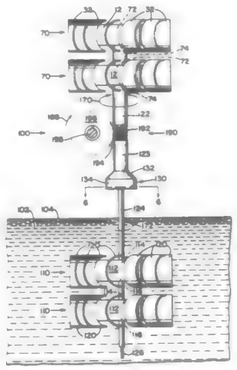
a third wear surface for protecting said second axial seating surface of said engine case, said third wear surface being situated between said shroud and said second axial seating surface.

5,333,996

DUAL FLUID ROTOR APPARATUS

Frank D. Bergstein, 1201 Edgecliff Pl., Cincinnati, Ohio 45206

Continuation-in-part of Ser. No. 911,123, Jul. 9, 1993, Pat. No. 5,246,342. This application Aug. 27, 1993, Ser. No. 113,275
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] F01D *13/00*
U.S. Cl. 416—197 A 17 Claims



8. A fluid rotor, comprising:

(a) a first rotatable vertical shaft, and a second rotatable vertical shaft;

(b) a first rotor subassembly immersed in a liquid, comprising:

(i) a first central hub having a vertical axis of rotation and an outer surface, said first central hub being fixedly attached to said first shaft;

(ii) a first plurality of curved blades, each of said blades having upper and lower leading edges and first and second curved side edges, each blade having a substantially uniform width between said first and second side edges, and each blade being rigidly attached to said outer surface of said first central hub along said first curved side edge;

(c) a second rotor subassembly immersed in a gas, comprising:

(i) a second central hub having a vertical axis of rotation and an outer surface, said second central hub being fixedly attached to said second shaft;

(ii) a second plurality of curved blades, each of said blades having upper and lower leading edges and first and second curved side edges, each blade having a substantially uniform width between said first and second side edges, and each blade being rigidly attached to said outer surface of said second central hub along said first curved side edge;

(d) wherein each of said first and second rotor subassemblies is fixedly attached to its respective said first and second shafts at different vertical elevations with respect to each other, and said first and second shafts are commonly coupled; and

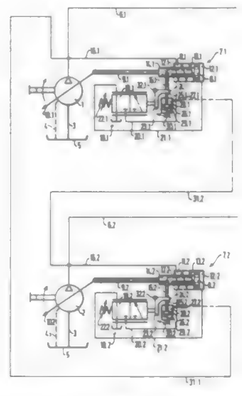
(e) wherein the blades of each of said first and second rotor subassemblies are curved in the same direction.

5,333,997

DEVICE FOR THE POWER CONTROL OF AT LEAST TWO HYDROSTATIC VARIABLE DISPLACEMENT PUMPS

Werner Hormann, Illertissen, and Manfred Blum, Weissenhorn, both of Fed. Rep. of Germany, assignors to Hydromatik GmbH, Elchingen, Fed. Rep. of Germany

Filed Mar. 2, 1993, Ser. No. 25,625
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208925
Int. Cl.[5] F04B *49/08*
U.S. Cl. 417—216 3 Claims



1. Device for the power control of at least two hydrostatic variable displacement pumps, driven by a common drive motor and delivering into respective operating lines, through the adjustment of their displacement in dependence upon the operating pressure in both operating lines by means in each case of an adjusting device which can be acted upon with an adjusting pressure and i.e. prestressed in the direction of maximum displacement,

having in each case a power control valve associated with each adjusting device, which valve is acted upon by a first control pressure, corresponding with the operating pressure in the operating line of the variable displacement pump to be adjusted by the adjusting device, against a pressure difference in the direction of a control position, in which the power control valve controls the adjusting pressure acting upon the adjusting device in the direction tending to reduce the displacement of the variable displacement pump along a hyperbolic control curve,

whereby the pressure difference results from a backpressure of a spring arrangement counteracting the first control pressure and from a second control pressure corresponding with the operating pressure in the operating line of the respective other variable displacement pump, and with increasing second control pressure drops from a specified maximum value to a specified minimum value,

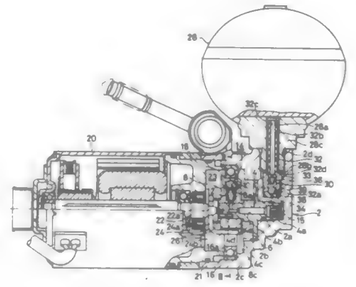
wherein the spring arrangement is divided into a first and a second pressure spring, in that the first pressure spring is set to a force corresponding with the minimum value (Δp_{min}) of the pressure difference and the second pressure spring is set to a force corresponding with the difference ($\Delta p_{max} - \Delta p_{min}$) between the maximum value (Δp_{max}) and the minimum value (Δp_{min}) of the pressure difference, and in that the first pressure spring with its set force and the second pressure spring with a force decreasing with increasing second control pressure act upon the power control valve.

5,333,998

PINTLE FIXING CONSTRUCTION FOR RADIAL PLUNGER PUMP

Hiroshi Yoshida, and Mitsuru Kakuda, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 28,842
Claims priority, application Japan, Apr. 27, 1992, 4-035151[U]
Int. Cl.[5] F04B *1/04*
U.S. Cl. 417—273 9 Claims



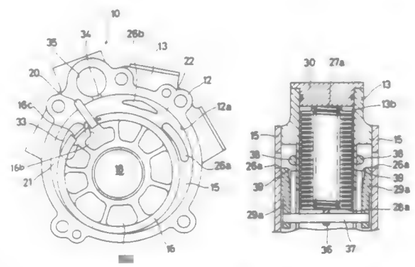
1. A radial plunger pump, comprising a pump housing having a pintle receiving opening therein opening outwardly of the pump housing only at one side of the pump housing, means defining a suction passage and a discharge passage in the pump housing and communicating with the pintle receiving opening, a pintle received in said pintle receiving opening, said pintle being smaller in radial dimension than a radial dimension of said pintle receiving opening so that a gap exists therebetween, a rotor rotatably mounted on the pintle and in the gap, said rotor having a plurality of radially extending cylinder bores therein, a guide ring disposed around the rotor in eccentric relationship with the rotor, a plurality of plungers slidably fitted in the radially extending cylinder bores, said plungers each having an end projecting radially of the rotor and slidably engaging the guide ring, drive means for driving the rotor for rotation, said pintle including means thereon for engaging a wall surface of the pintle receiving opening, and fastening means for fixedly securing the pintle to the wall surface.

5,333,999

VARIABLE DISPLACEMENT COMPRESSOR

Daisuke Sakakura, Anjo, and Hiroshi Okazaki, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 12, 1993, Ser. No. 30,713
Claims priority, application Japan, Mar. 12, 1992, 4-053808
Int. Cl.[5] F04B *49/02*
U.S. Cl. 417—309 2 Claims



1. A variable displacement compressor comprising:

VOL 1165 ISS 1 AG 2 1994 UMI

a housing in which is defined a space;

a rotor eccentrically disposed in the space of the housing to define a compressor chamber and an intake chamber in the housing, said rotor including an outer side;

a bypass passage formed in the housing for establishing fluid communication between the compression chamber and the intake chamber, the bypass passage being an arc-shaped slot that is arranged along a circumferential direction of the rotor at the outer side; and

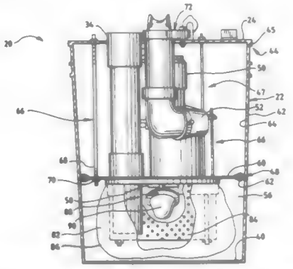
means for opening and closing the bypass passage, the means for opening and closing being positioned adjacent the bypass passage and being movable in a radial direction relative to the bypass passage depending on the pressure in the intake chamber, the opening and closing means including a bellows, a spring accommodated within the bellows, and a valve for being moved in unison with the bellows and the spring when the pressure in the intake chamber reaches a set value, the valve including a tapered portion which is brought into engagement with a projecting element of the housing during movement of the valve to establish a fluid tight engagement between the valve and an outer periphery of the bypass passage.

5,334,000

HOUSING ARRANGEMENT FOR COMPACT BLOWER AND VACUUM

William F. Nordlin, Rockford, Ill., assignor to Greenlee Textron Inc., Rockford, Ill.

Filed Feb. 12, 1993, Ser. No. 17,031
Int. Cl.[5] F04B *35/00*; A47L *9/00*
U.S. Cl. 417—360 **12 Claims**



6. A device for creating a suctioning and blowing force, said device comprising:

a thin-walled container having a bottom, a side wall joined with said bottom, and a mouth defined along an edge of said side wall distal said bottom;

a removable vacuum assembly operatively associated with said container, a top plate of said vacuum assembly operatively associated with said container to cover said mouth, an intermediate plate of said vacuum assembly depending from said top plate, said intermediate plate being spaced away from said top plate, means for producing a vacuum operatively associated with said vacuum assembly positioned between said top plate and said intermediate plate, a vacuum port extending through said top and intermediate plates communicating with said container, a blower port communicating with said vacuum means for expelling atmosphere from said container; and

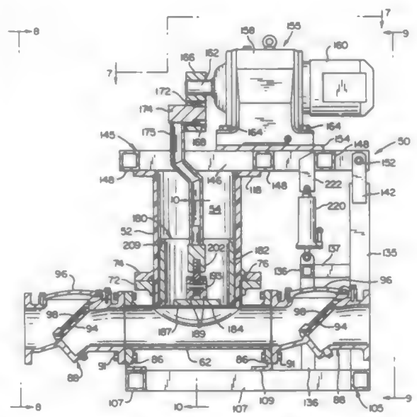
a vacuum chamber being defined by said bottom, said intermediate plate and a portion of said side wall between said bottom and said intermediate plate when said removable vacuum assembly is disposed in said container.

5,334,001

MOUNTING ARRANGEMENT FOR A POSITIVE DISPLACEMENT SLURRY PUMP

Richard L. Williams, Harrod, Ohio, assignor to The Williams Pump Co., Harrod, Ohio

Continuation-in-part of Ser. No. 20,109, Feb. 19, 1993, abandoned, which is a continuation of Ser. No. 749,875, Aug. 26, 1991, abandoned. This application Jul. 27, 1993, Ser. No. 97,951
Int. Cl.[5] F04B *35/00*
U.S. Cl. 417—360 **8 Claims**



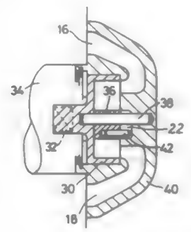
1. A positive displacement pump adapted for pumping sewage and other fluid materials containing solids, comprising a frame, a tubular pump body having a generally vertical axis and upper and lower end portions, said body further having a generally uniform wall thickness and a generally cylindrical outer surface, a pump base supported by said frame and including a conduit extending adjacent said lower end portion of said pump body, a set of check valves connected to said conduit, a motor drive unit having an output shaft, a platform connected to said frame and supporting said drive unit above said upper end portion of said pump body, a piston supported within said pump body for axial movement, a generally vertical connecting rod having upper and lower end portions, means connecting said piston to said lower end portion of said piston rod, drive means connecting said upper end portion of said connecting rod to said output shaft and to effect reciprocating movement of said piston within said pump body in response to rotation of said shaft, a first annular coupling flange surrounding said outer surface of said pump body and movable axially on said lower end portion of said pump body, a resilient sealing ring engaging said outer surface of said pump body adjacent said first coupling flange, a second annular coupling flange adjacent said first coupling flange and rigidly connected to said conduit, a support member mounted on said upper end portion of said pump body under said platform, a set of elongated generally vertical tie rods having threaded portions and positioned outwardly of said outer surface of said pump body in peripherally spaced relation, a set of threaded fasteners secured to said tie rods for rigidly connecting said first and second coupling flanges to each other for compressing said sealing ring between said flanges and against said pump body, and said tie rods extending upwardly from said second coupling flange and connected to said support member for supporting said platform and said motor drive unit and for reducing the load on said pump body.

5,334,002

GEROTOR PUMP WITH SHIFTABLE ROTOR BOSS

Steve Hodge, Tamworth, United Kingdom, assignor to Concentric Pumps Limited, Great Britain

Filed Apr. 23, 1993, Ser. No. 39,321
Claims priority, application United Kingdom, Nov. 10, 1990, 9024492.3
Int. Cl.[5] F01C *21/16*
U.S. Cl. 418—32 **9 Claims**



1. A gerotor pump comprising a pump body; an externally lobed rotor having n lobes and an internally lobed annulus having n+1 lobes meshing with the lobes of said rotor to provide a series of interlobe chambers therebetween, said annulus and said rotor being rotatable about respective parallel axes so that said chambers rotate about said axes and continuously alternately increase and decrease in size; an inlet port and an outlet port opening through said body into said chambers, said inlet port being located so that said chambers move over said inlet port as said chambers increase in size during one half revolution of said chambers and said outlet port being located so that said chambers move over said outlet port as said chambers decrease in size during a successive half revolution;

a cylindrical boss journalling said rotor, said boss including a first pin supported by said body and extending along the axis of rotation of said annulus, and a second pin parallel to and spaced from said first pin; and

a pin-accommodating recess provided in said body having a pair of opposite end faces forming abutment stops, said second pin being accommodated in said recess and movable between said abutment stops by angular movement of said boss about the axis of said first pin so as selectively to change eccentricity of said rotor relative to said annulus, said recess being located between said inlet port and said outlet port.

5,334,003

AIR VALVING MECHANISM, IN COMBINATION WITH A DOUBLE DIAPHRAGM PUMP SUBASSEMBLY

Richard K. Gardner, Montpelier, and Gordon M. Schroeder, New Bavaria, both of Ohio, assignors to The Aro Corporation, Bryan, Ohio

Filed Jan. 25, 1993, Ser. No. 8,443
Int. Cl.[5] F04B *43/06*
U.S. Cl. 417—393 **17 Claims**

1. An air valving mechanism, in combination with a double diaphragm pump subassembly, comprising:

a pair of plates having confronting cavity recesses formed therein, fastened together, to define a chamber therebetween, wherein said plates have parts, and rod-accommodating apertures formed therein;

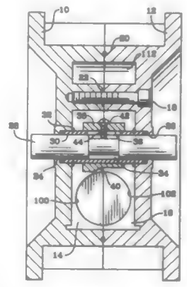
a rod slidably disposed in said apertures and having ends thereof extended outwardly from said plates;

a cylinder having a longitudinal axis set within said chamber;

a piston having a first axial bore formed therein, slidable within said cylinder, wherein said piston further has second and third bores, transverse to said axis, formed therein;

first means, slidably disposed in one of said second and third bores, for (a) effecting fluid communication therethrough with said ports, and (b) sealingly engaging said plates and closing off such fluid communication with said ports;

second means, slidably disposed in the other of said second and third bores, for effecting fluid communication of said first bore with said chamber; and



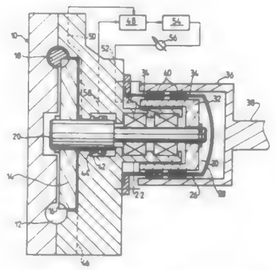
means coupled to said cylinder for admitting motive air thereinto for (a) communication of such admitted air with said bores, and (b) slidably translating said piston in said cylinder and said first and second means in said bores.

5,334,004

COMPRESSOR OR TURBINE TYPE ROTARY MACHINE FOR COMPRESSING OR EXPANDING A DANGEROUS GAS

Paul Lefevre, and Alain Verneau, both of Maurepas, France, assignors to Bertin & Cie, Plaisir, France

Filed Feb. 11, 1992, Ser. No. 834,681
Claims priority, application France, Feb. 12, 1991, 9101579
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—420 **13 Claims**



1. A rotary machine for treating a gas under pressure, said machine comprising a stator in which an annular gas flow chamber is formed, a rotor mounted to rotate in said chamber, a rotary shaft on which the rotor is fixed and which extends outside the stator through a shaft passage thereof, bearings for guiding and supporting the shaft being mounted in said shaft passage of the stator, a bell mounted in sealed manner on the outside of the stator around said shaft passage and delimiting a closed enclosure filled with liquid and separate from said annular gas flow chamber, means for pressurizing the liquid inside the enclosure to a pressure not lower than a maximum value of the gas pressure in the annular chamber of the stator, said liquid pressurizing means comprising a pressure multiplier whose input is connected via a pressure outlet to the annular gas flow chamber of said stator and whose outlet is connected to the closed liquid filled enclosure delimited by said bell, liquid-tight sealing means disposed in said shaft passage between the rotor shaft and the stator at the annular gas flow chamber end thereof and allowing only a very small leakage

VOL 1165 ISS 1 AG 2 1994 UMI

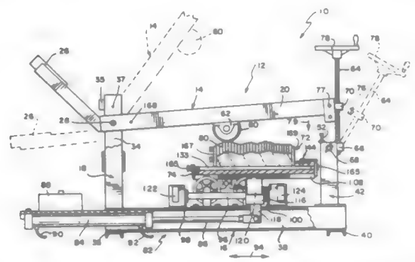
flow rate of said pressurized liquid towards the annular chamber while inhibiting the admission of gas from said annular chamber past the sealing means, and link means comprising a rotary magnetic coupling for linking the rotor shaft to a second shaft outside the stator.

5,334,005

COMPACTING APPARATUS

Don L. Dekker, and Robert R. Hasbrouck, both of Terre Haute, Ind., assignors to Koch Materials Company, Wichita, Kans.

Filed May 18, 1992, Ser. No. 885,155
Int. Cl.[5] B29C *43/00*
U.S. Cl. 425—188 **12 Claims**



1. An apparatus for compressing a material in a mold, the apparatus comprising:

a frame including a first portion and a second portion, the first portion of the frame including a proximal end pivotably coupled to the second portion of the frame and a distal end;

means coupled to the first portion of the frame for compressing the material in the mold;

a support plate coupled to the second portion of the frame for receiving the mold thereon to position the mold relative to the compressing means;

means for varying the distance between the compressing means and the support plate so that the compressing means applies a compressive force to the material, the distance varying means being coupled between the first and second portions of the frame for varying the distance between the distal end of the first portion of the frame and the second portion of the frame; and

drive means coupled to the support plate for moving the support plate relative to the compressing means in a direction normal to the compressive force applied by the compressing means.

5,334,006

HOT SPRUE BUSHING WITH INTERCHANGEABLE TIP HAVING MULTIPLE EDGE GATES

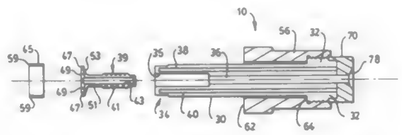
Douglas C. Hepler, Rochester, and David L. Pursel, Webster, both of N.Y., assignors to Polyshot Corporation, Henrietta, N.Y.

Continuation-in-part of Ser. No. 853,953, Mar. 19, 1992, Pat. No. 5,213,824, which is a continuation of Ser. No. 590,932, Oct. 1, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 993,654
Int. Cl.[5] B29C *45/20*
U.S. Cl. 425—190 **15 Claims**

1. A hot sprue bushing for transporting plasticized material from injection nozzles to the edges of mold cavities while controlling the temperature thereof, said hot sprue bushing comprising:

at least one heating cartridge;

an elongated body of given length having arranged in order along its length a head, a stem, and a tip end, said head having a reference seating surface which faces said tip end and a rear surface facing opposite said tip end, said elongated body having a through bore passing from end to end through said head, stem, and tip thereof for transporting plasticized material through at least a portion of said elongated body from said head toward said tip end thereof, said elongated body having at least one nonthrough bore extending alongside said through bore, in heat conducting relationship with respect thereto, and receiving said heating cartridge for controlling the temperature of plasticized material as it travels along said through bore, said nonthrough bore having a length which extends from said head rear surface, through said head and said stem and into said tip end by a predetermined distance, said length of said nonthrough bore being shorter than said given length of said elongated body, said through bore being counterbored a given depth near said tip end of said elongated body, said body being fabricated of a material with a predetermined heat capacity and coefficient of thermal conductivity to provide it with a predetermined mass and heat transfer capability; and



a tip fitted into said counterbore of said elongated body so that part of said tip is in heat conducting relationship with respect to said elongated body while its remaining parts are thermally isolated therefrom, said tip being releasably mateable with said elongated body and having a flow bore which is adapted to communicate with said through bore of said elongated body to receive plasticized material from it, said tip including a plurality of branch flow channels that communicate with said flow bore thereof and terminate in openings for edge gating with a plurality of mold cavities, said tip being fabricated of a material that has a thermal mass less than that of said body material and a coefficient of thermal conductivity substantially higher than that of said elongated body material so that said elongated body acts as a constant temperature source with respect to said tip so as to transfer heat to said tip at said portion thereof in thermal contact therewith to heat said tip and maintain said tip at temperatures for plasticizing material without requiring heating apart from that supplied to said body by said heating cartridge.

5,334,007

EQUIPMENT FOR THE MANUFACTURE OF POLYETHYLENE TEREPHTHALATE CONTAINERS

Gerard Denis, Turretot, and Paul La Barre, Sainte Adresse, both of France, assignors to Sidel, Le Havre, France

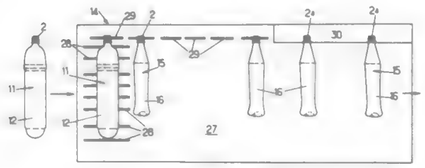
Division of Ser. No. 868,734, Apr. 15, 1992, Pat. No. 5,277,574, which is a division of Ser. No. 654,701, Feb. 13, 1991, Pat. No. 5,229,042. This application Sep. 16, 1993, Ser. No. 121,907
Claims priority, application France, Feb. 13, 1990, 90 01688
Int. Cl.[5] B29C *49/64*
U.S. Cl. 425—526 **8 Claims**

1. Equipment for manufacturing a PET container capable of withstanding, without appreciable deformation, relatively severe thermal conditions encountered during processing by filling with a hot liquid or pasteurization of the contents of the container, comprising:

(a) a first mold with means to shape the body of an intermediate container from the body of an amorphous PET preform, wherein the first mold has a molding cavity whose dimensions are larger than the dimensions of the final container to be obtained by about 20% with respect to height and from 0 to about 30% transversely, and

comprising means for cooling the walls of the cavity to a temperature of about 5° to about 40° C.;

(b) a treatment station comprising a first heating device with means to simultaneously heat the body and the neck section of the intermediate container to a temperature of about 160° to about 240° C. to rapidly shrink the body of the intermediate container and to effect crystallization of the neck section and increase the crystallinity of the con-



tracted intermediate container body, and means to slowly cool the neck section while the heating of the contracted intermediate container body continues; and

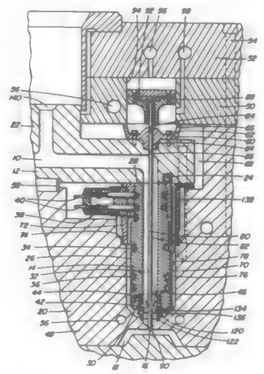
(c) a second mold with means to shape the body of the final container from the heated body of the intermediate container, wherein the second mold has a molding cavity with dimensions that match the body of the final container and being fitted with means enabling the walls of the cavity to be kept at a predetermined temperature.

5,334,008

INJECTION MOLDING NOZZLE INSERT WITH VALVE MEMBER LOCATING BLADES

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

Filed Apr. 26, 1993, Ser. No. 51,895
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—549 **4 Claims**



1. In a valve gated injection molding apparatus to convey melt to a gate extending through a mold to a cavity comprising a heated nozzle having an outer surface, a rear end, a front end, a melt bore extending longitudinally therethrough from the rear end to the front end, and a seat extending around the melt bore at the front end, the nozzle seated in a well having an inner surface in the mold with an insulative air space extending between the outer surface of the nozzle and the inner surface of the well in the mold, an elongated valve member having a cylindrical outer surface mounted to extend centrally in the melt bore through the nozzle, and valve member actuating means connected to the valve member whereby the valve member is reciprocated between an open position wherein the melt flows through the gate from the melt bore into the cavity and a closed position wherein the gate is sealed off by the valve member, the improvement comprising;

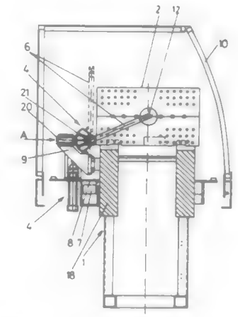
a valve member locating insert having an outer collar and at least one spiral blade having a front and a rear end, the at least one spiral blade extending a predetermined distance inwardly from the outer collar to a curved inner surface, the outer collar being received in the seat at the front end of the nozzle and the valve member extending centrally through the locating insert with the curved inner surface of the at least one spiral blade encircling the value member sufficiently to locate and maintain the valve member in accurate alignment with the gate as the valve member reciprocates and melt flows around the valve member and through the locating insert past the at least one spiral blade the at least one spiral blade tapering to sharp edges at the front and rear ends.

5,334,009

HANDLING DEVICE FOR REMOVING FORMED PLASTIC PARTS FROM THE SPACE BETWEEN DIE PLATENS CARRYING THE MOULD HALVES OF AN INJECTION MOULDING MACHINE

Otto Urbanek, Linz, and Walter Aumayer, Au/Donau, both of Austria, assignors to Engel Maschinenbau Gesellschaft m.b.H., Schwertberg, Austria

Filed Dec. 28, 1992, Ser. No. 966,043
Claims priority, application Austria, Apr. 26, 1991, 875/91
Int. Cl.[5] B29C *45/42*
U.S. Cl. 425—556 **6 Claims**



1. Handling device (4) for removing moulded plastic parts from a space between die platens (2, 3) carrying mould halves of an injection moulding machine wherein the handling device (4) is movable in a longitudinal direction of an injection moulding machine (1) having a rigid gripper arm (6) which is pivotable about an axis (21) extending parallel to the longitudinal direction of the machine (1), the handling device comprising a machine frame (18) carrying the die platens (2, 3) without longitudinal bars, a space between the die platens (2, 3) being open and free of any longitudinal bars, and means supporting the handling device (4) with the gripper arm directly on the machine frame (18).

5,334,010

VALVE GATED INJECTION MOLDING APPARATUS WITH A SPRING IN THE PISTON

Alex C. Teng, Downsview, Canada, assignor to Mold-Masters Limited, Georgetown, Canada

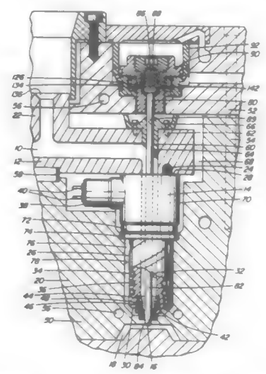
Filed Jan. 19, 1994, Ser. No. 183,313
Claims priority, application Canada, Dec. 13, 1993, 2111248
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—563 **6 Claims**

1. In a valve gated injection molding apparatus having a melt

VOL 1165 ISS 1 AG 2 1994 UMI

passage extending to a gate leading to a cavity, a valve member having a front end, a rear end and an elongated shaft between said front and rear ends said valve member extending through the melt passage in alignment with the gate, the valve member having an enlarged head at the rear end, the enlarged head of the valve member being engaged by a piston having a cap removably attached to a main body of said piston, said piston having a bore through which the elongated shaft of the valve member extends forwardly, the piston being driven in a cylinder to reciprocate the valve member between a retracted open position and a forward closed position in which the front end of the valve member is seated in the gate, having the improvement wherein;

the main body of the piston has a spring chamber extending



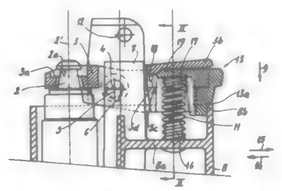
in alignment with the valve member, the spring chamber having a rear end which is closed by the removable cap and a front end from which the valve member bore extends, the head of the valve member being received in the spring chamber with the elongated shaft of the valve member extending forwardly therefrom through the valve member bore, the head of the valve member being larger than the valve member bore whereby a stop is provided by the front end of the spring chamber, and compressible spring means mounted in the spring chamber rearwardly adjacent the head of the valve member, whereby in the closed position the head of the valve member retracts somewhat into the spring chamber against a predetermined force applied forwardly against the head of the valve member by the spring means.

5,334,011

GAS-FILLED CHILDPROOF LIGHTER

René Frigiére, Charbonnieres les Bains, France, assignor to Cricket, Rilliuex la Pape, France

Filed Feb. 25, 1993, Ser. No. 23,210
Claims priority, application France, Feb. 25, 1992, 92 02427
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 **17 Claims**



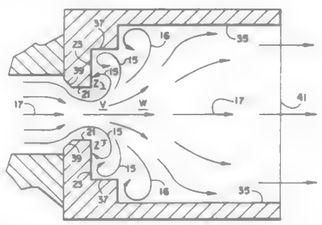
1. A gas-filled childproof lighter, of the type comprising a body with means for producing sparks and in which means for opening the valve consist of a tilting lever articulated to a fixed pin orthogonal to the axis of a burner valve, one end of which lever, in the shape of a fork or a ring, is engaged under a collar of the burner valve and the other end, or actuation end, of which is intended to be actuated by the user by being pushed in the direction of the body of the lighter, counter to the force of a return spring, the means for producing sparks themselves being independent or combined with the lever for opening the valve, and in which there are combined with the tilting lever means for neutralizing this lever, which means consist of a member movable between an active neutralization position, in which it prevents the actuation of the control lever for opening the valve, having a part located under the rear actuation end of this lever, and a nonobstructing position in which allows this actuation, this member, which can be displaced, manually, by the user, from its active neutralization position to its nonobstructing position, and which is normally kept in the neutralization position, being, moreover, arranged so as to be returned automatically into the neutralization position after actuation of the lighting mechanism, wherein the member for neutralizing the tilting lever consists of a pusher mounted so as to slide against the lower face of the rear actuation end of the control lever, whose movement it follows, and movable between a withdrawn active position in which, since it is projecting beyond the rear end of the control lever, a part integral with the body of the lighter is situated just below it, making any maneuver of the control lever impossible in the direction for opening the valve, and an advanced and nonobstructing position, in which the aforementioned part of the body of the lighter is no longer in the path described by the pusher when the control lever is maneuvered in the direction for opening the valve, making this maneuver possible, means being provided for ensuring that the pusher is momentarily kept in the nonobstructing position before actuation of the control lever and other means being provided to ensure that it returns to the active neutralization position immediately after this actuation.

5,334,012

COMBUSTION CHAMBER HAVING REDUCED NO_x EMISSIONS

J. Don Brock; Erbie G. Mize, both of Chattanooga, Tenn., and Malcom L. Swanson, Chickamauga, Ga., assignors to Astec Industries, Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 633,334, Dec. 27, 1990. This application Apr. 9, 1991, Ser. No. 682,750
Int. Cl.[5] F27B *7/02*
U.S. Cl. 432—106 **5 Claims**



1. A method for increasing heating efficiency and reducing NO_x production in a heat source for generating heating gases to be passed into contact with a material to be heated, comprising the steps of:

introducing a main current of combustion gases into a first cross-sectional area;

passing said main current of gases from said first cross-sectional area into a second cross-sectional area having a cross-sectional area greater than said first cross-sectional area such that a first portion of gases is separated from said main current and directed to run contrary to said main current in part of said second cross-sectional area and

passing said main current of gases from said second cross-sectional area into a third cross-sectional area having a cross-sectional area greater than said second cross-sectional area such that a second portion of gases is separated from said main current and is directed to run contrary to said main current in part of said third cross-sectional area; and

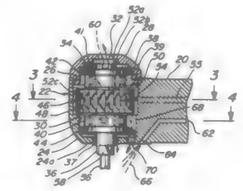
said heat source defining a first end and a second end thereon, said main current of gases flowing from said first end to said second end, wherein said heat source further comprises means for introducing gases into said heat source adjacent to said second end.

5,334,013

HIGH SPEED DENTAL DRILL WITH POSITIVE PRESSURE AIR DRIVE

Moshe Meller, 448 Sayre Dr., Princeton, N.J. 08540

Filed Jan. 13, 1993, Ser. No. 2,350
Int. Cl.[5] A61C *1/05*
U.S. Cl. 433—132 **40 Claims**



1. A high speed dental drill comprising:

a drill head including:

a housing including a bottom and a top, and a cavity therein;

turbine assembly means mounted in said cavity of said housing for supporting a dental tool extending outwardly from said housing;

support means for rotatably supporting said turbine assembly means in said cavity of said housing;

an elongated handle having a distal end connected with said housing, said elongated handle including air conduit means in open communication with said cavity of said housing for supplying driving air under pressure against said turbine assembly means so as to cause rotation of said turbine assembly means and rotation of said tool, the air being exhausted from said turbine assembly means after the air is passed through said turbine assembly means to cause said rotation; and

exhaust means for exhausting substantially all of said exhaust air from said turbine assembly means out of said bottom of said housing so as to create and maintain a positive air pressure in said housing at all times, even during turn off of the drill, so as to prevent liquid from a patient's mouth from being drawn by suction into said cavity of said housing.

5,334,014

WALKING BEAM FURNACE

Gary A. Orbeck, Windham, N.H., and Arthur Waugh, Winchester, Mass., assignors to BTU International, No. Billerica, Mass.

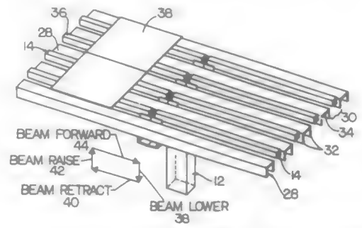
Filed Mar. 30, 1993, Ser. No. 39,915
Int. Cl.[5] F27B *9/00*
U.S. Cl. 432—121 **17 Claims**

1. A walking beam furnace comprising:

a plurality of fixed hearth members in parallel, coplanar disposition, each said fixed hearth member separated from an adjacent fixed hearth member to form a plurality of parallel channels having a channel width; and

a walking beam mechanism, including,

a plurality of refractory ceramic beams in parallel, coplanar disposition aligned with said plurality of parallel channels, each said refractory ceramic beam having a beam width



that is less than said channel width, permitting passage of said plurality of refractory ceramic beams through said plurality of channels without contacting any of said plurality of fixed hearth members, and

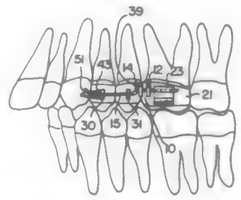
a monolithic, refractory ceramic beam support, supporting said plurality of refractory ceramic beams and movable with respect to said plurality of fixed hearth members.

5,334,015

MAGNETIC ORTHODONTIC APPLIANCE

Abraham M. Blechman, 153 Lester Dr., Tappan, N.Y. 10983

Continuation-in-part of Ser. No. 887,892, May 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 858,340, Mar. 26, 1992, Pat. No. 5,205,736. This application Jan. 4, 1993, Ser. No. 5,461
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—18 **15 Claims**



1. An orthodontic appliance for distalizing a posterior tooth or teeth without surgical extraction, comprising a plurality of anchoring bands adapted to be mounted to certain selected teeth on a single arch of a patient inclusive of the posterior tooth or teeth to be distalized, and at least one proximal tooth anterior thereto; an edgewise member affixed to the anchoring band on the posterior tooth to be distalized, bracket means affixed to the other band(s); an orthodontic sectional wire extending from said edgewise member to said bracket means; and a pair of permanent magnets, each having a hole axially extending through the symmetrical center thereof, and a protective coating surrounding each magnet and each hole, with said magnets slidably mounted on said sectional wire through said holes in an arrangement to repel one another, with the magnet on the distal side of said sectional wire abutting said edgewise member, and with the other magnet in close proximity thereto, and means for securing said magnet on the mesial side of said sectional wire relative to the proximal tooth or teeth supporting said bracket means.

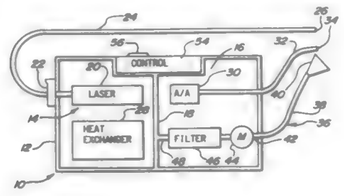
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,016

COMBINATION AIR ABRASIVE SYSTEM AND LASER SYSTEM FOR DENTAL APPLICATIONS

Daniel S. Goldsmith, West Bloomfield, and William S. Parker, Ann Arbor, both of Mich., assignors to American Dental Technologies, Inc., Troy, Mich.

Filed Jun. 22, 1992, Ser. No. 901,780
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—29 24 Claims



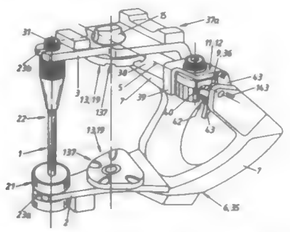
1. In combination:
an air abrasive system for dental applications comprising means for creating an abrasive material laden gas flow, means for directing said gas flow toward a target site in a patient's mouth, means for creating an air flow to remove abrasive material after impingement on the target sight and means for filtering abrasive material from said air flow to create a clean air flow, and
a laser system for dental applications comprising a housing containing a laser, means for exciting said laser to generate a laser output and means for delivering said laser output to a target area in a patient's mouth, and
means for fluidly communicating said clean air flow to said laser housing so that said clean air flow creates a positive pressure in said laser housing.

5,334,017

DENTAL ARTICULATOR

Hans W. Lang, Leutkirch, and Alfred Straka, Isny, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach/Riss, Fed. Rep. of Germany

Filed Apr. 1, 1993, Ser. No. 41,815
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1992, 4211004
Int. Cl.[5] A61C *11/00*
U.S. Cl. 433—57 13 Claims



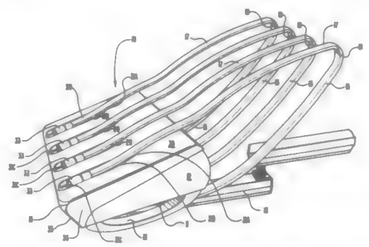
1. A dental articulator comprising a lower Dart and an upper part; an articulator arm which in the working position thereof extends forwardly being arranged on respectively each said part, one of said articulator arms being mounted in swivel and sliding joints so as to be pivotable about a swivel axis extending at right angles to a vertical longitudinal center plane of said articulator; placement areas for a lower jaw tooth model and an upper jaw tooth model being provided on the sides of the respective articulator arms facing one another; centering devices detachably fastening the tooth models to the respective therewith associated articulator arm; at least one said guide surface of the swivel and sliding joint of the upper part being adjustable and lockable in an adjusted position: at least two said upper parts being operatively associated with the articulator, said upper parts having differing adjustabilities for adaption to different types of dental work, each of said upper parts including means for mounting on a common lower part and being selectively mountable and dismountable from said common said lower part, wherein the centering device on the respective therewith associated upper part provides an accurately fitting relationship with the centering device of the lower part.

5,334,018

DENTAL CONTROL UNIT WITH REMOVABLE COVER

Barry S. Young, Tualatin, Oreg., assignor to MDT Corporation, Torrance, Calif.

Filed Dec. 8, 1992, Ser. No. 998,245
Int. Cl.[5] A61G *15/00*
U.S. Cl. 433—77 10 Claims



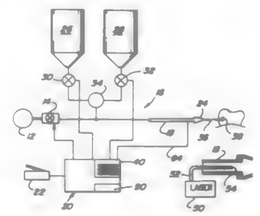
1. A dental control unit for supporting dental handpieces comprising:
a base;
a housing mounted on the base;
at least one conduit having one end secured to the base, and having attachment means on the other end;
a dental handpiece connected to the attachment means on the other end;
a top cover removably fitted over a top surface of said housing and including means on a top surface of the top cover to receive said handpiece and a portion of said conduit.

5,334,019

DENTAL AIR ABRASIVE SYSTEM

Daniel S. Goldsmith; Michael P. Howell, both of Bloomfield Hills, and William S. Parker, Ann Arbor, all of Mich., assignors to American Dental Technologies, Inc., Troy, Mich.

Filed Dec. 6, 1991, Ser. No. 804,886
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—88 11 Claims



1. An apparatus for cutting tooth structure comprising:
a first source of abrasive material containing an abrasive material having a first average size,
a second source of material containing an abrasive material having a second average size different from said first average size,

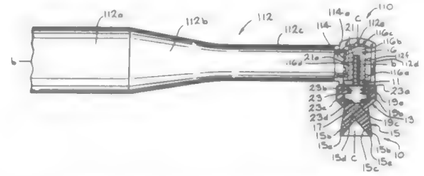
means for creating a gas stream,
means for delivering said gas stream to a target site at the tooth structure,
means for selectively feeding abrasive material from one of said sources of abrasive material into said gas stream upstream from said delivering means so that said gas stream is laden with abrasive material,
wherein said gas stream is of sufficient velocity so that, when laden with abrasive material, cuts tooth structure at the target site,
wherein said feeding means simultaneously feeds abrasive material from said first and second source into said gas stream.

5,334,020

DENTAL PROPHYLAXIS CUP

Ronald C. Eckert, 4267 Sugar Maple La., Okemos, Mich. 48864

Continuation-in-part of Ser. No. 608,340, Nov. 2, 1990, Pat. No. 5,178,538. This application Aug. 7, 1991, Ser. No. 741,737
Int. Cl.[5] A61C *3/06, 1/08*
U.S. Cl. 433—166 57 Claims



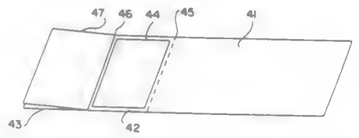
1. In a flexible prophylaxis cup for cleaning teeth which is to be mounted on a dental handpiece including a holding portion of a holding member having a longitudinal axis and having a proximal end which is rotated by a rotating means of the dental handpiece and having a distal end and a head portion at the distal end of the holding portion along the longitudinal axis, the head portion having a reduced cross-section portion adjacent the distal end and an enlarged cross-section portion extending from the reduced portion, the improvement in the prophylaxis cup, which comprises:
(a) a silicone polymer with an abrasive material incorporated therein, which has been heated and then injection molded to form the prophylaxis cup, wherein the cup is then post cured by heating to achieve a hardness between about 50 to 75 Durometer on the "A" scale, and wherein the prophylaxis cup has a shaped body adapted for cleaning teeth with a mounting end to be secured over the enlarged portion and over the reduced portion of the head portion of the holding member, and an opposite, working end around the longitudinal axis of the head portion, spaced from the mounting end, wherein the mounting end of the cup has an inletted portion that is smaller in cross-section than the enlarged portion and reduced portion of the head portion of the holding member so that when the prophylaxis cup is mounted on the holding member with the mounting end of the cup mounted on the head portion, the inletted portion is stretched over the enlarged portion and the reduced portion in a friction fit that does not slip as the working end of the cup is used to clean teeth.

5,334,021

MASKING APPARATUS FOR USE IN AUTHORING, FORMATTING AND PRESENTING INFORMATION TO BE LEARNED OR MEMORIZED

Richard G. Kahn, Winona Rd., R.F.D. #1, Box 154, Ashland, N.H. 03217

Division of Ser. No. 603,167, Oct. 25, 1990, Pat. No. 5,161,978. This application Jul. 10, 1992, Ser. No. 911,621
Int. Cl.[5] G09B *3/00*
U.S. Cl. 434—348 6 Claims



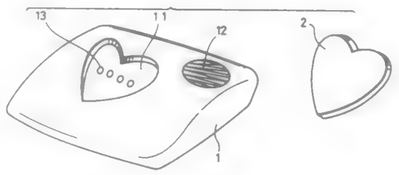
1. A masking apparatus for presenting information to be memorized, comprising:
a body under which a text may be placed;
an opening in the body through which a first portion of the text may be viewed;
a plurality of members disposed on the body including:
a first member adjacent to the opening for covering substantially all of the opening and the first portion of the text,
a second member for covering a second portion of the text, and
a third member adjacent to the first member for covering a third portion of the text in one position and covering the first and second members in another position.

5,334,022

AUDITORY PLAYING DEVICE

Keiko Kitagawa, Tokyo, and Shiro Yasuda, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 937,792
Claims priority, application Japan, Aug. 30, 1991, 3-220714
Int. Cl.[5] G09B *7/00, 3/00*
U.S. Cl. 434—340 13 Claims



1. An auditory playing device comprising:
a plurality of tone plates each marked with a respective identification code having a pattern of spaced apart dots, each said identification code corresponding to a respective tone;
an enclosure having a recess for receiving one of said tone plates;
detecting means for detecting an identification code of one of said tone plates which is selected and placed in a stationary predetermined position within said recess; and
generating means for generating a single tone corresponding to the identification code detected by said detecting means.

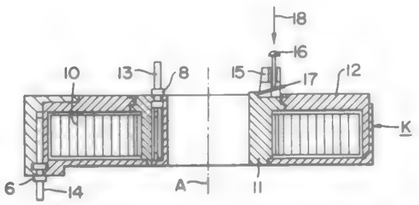
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,023

DEVICE FOR TRANSFERRING A SIGNAL BETWEEN TWO END POINTS WHICH ARE MOVABLE RELATIVE TO EACH OTHER

Friedrich Schauer, Heroldsberg, and Andreas Neuner, Nuremberg, both of Fed. Rep. of Germany, assignors to Kabelmetal electro Gesellschaft mit beschränkter Haftung, Hanover, Fed. Rep. of Germany

Filed May 17, 1993, Ser. No. 63,002
Claims priority, application Fed. Rep. of Germany, May 19, 1992, 4216526
Int. Cl.[5] H01R *39/02*
U.S. Cl. 439—164 4 Claims



1. A device for transferring a signal between two end points comprising:

a substantially circular cassette, and a coiled conductor which is contained in the cassette and interconnects the two end points, wherein the two end points are arranged on the cassette for receiving further extending conductors attachable at the two end points, the length of said conductor being substantially greater than a distance between the two end points, and at least one of the two end points being movable relative to the other, the cassette comprising a stationary stator and a turnable rotor, the device further comprising:

a screw and an outwardly protruding projection for reception of the screw, the screw being displaceable in axial direction of the cassette, the projection being located radially outward of a center of the rotor and adjacent to an interface with the the stator and extending from the rotor;

a spring element disposed on the rotor, the spring element being displaceable by the screw upon a contacting of the spring element by the screw to be applied firmly against the stator in a mounting position of the cassette; and

wherein in a working position of the cassette, the spring element is separated by a distance from the stator upon retraction of the screw.

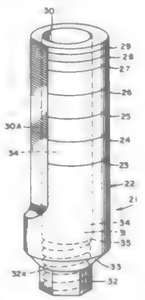
5,334,024

TRANSFER ABUTMENT

Gerald A. Nizzick, Encino, Calif., assignor to Core-Vent Corporation, Las Vegas, Nev.

Continuation of Ser. No. 497,110, Mar. 21, 1990, abandoned.
This application Jul. 6, 1992, Ser. No. 909,119
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 11 Claims

1. An endosseous dental implant having an internal, multi-sided top opening wherein the sides of said internal top opening are substantially untapered, and are substantially parallel to the longitudinal axis of said endosseous dental implant, and an abutment adapted for use with said dental implant, said abutment including a hollow tubular member of a size and shape adapted for use as an abutment, said tubular member having, at one end, unthreaded retention means for anti-rotationally engaging, interlocking and interfitting with said internal, multi-sided top opening, said unthreaded retention means on said abutment tapering downwardly and inwardly from said one end and locking into said internal, multi-sided top opening when seated in said internal, multi-sided top opening, said tubular member including an internal passage adapted to receive fastener means for engaging complementary fastener means inside said implant.

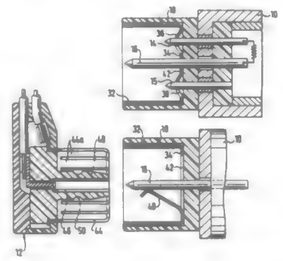


5,334,025

ELECTRICAL PLUG CONNECTION ON A PYROTECHNICAL GAS GENERATOR PROVIDED WITH AN ELECTRICAL IGNITER

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Dec. 7, 1992, Ser. No. 987,255
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 4140692
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—188 6 Claims



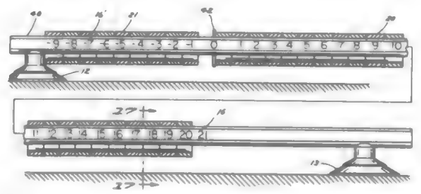
1. An electrical plug connection for connecting a pair of electrical conductors to an electrical igniter on a pyrotechnical gas generator, said electrical igniter comprising a socket and a first pair of contact members extending into said socket in an axial direction of said gas generator, a plug connector being provided for fitting engagement with said socket and comprising a second pair of contact members for cooperation with said first pair of contact members and each connected to one of said conductors, wherein said socket comprises a cylindrical female contact sleeve connected to one of said first pair of contact members and having an integrally formed resilient reed member biased onto contacting engagement with the other of said first pair of contact members to short-circuit said first pair of contact members when said plug connector is removed from said socket, and wherein said plug connector comprises a spreading member engaging between said first pair of contact members to prevent electrical contact between said first pair of contact members when said plug connector is in fitting engagement with said socket, said spreading member being formed by an insulating bush surrounding a contact sleeve forming one of said second pair of contact members, said bush having a tapered free end and said reed member having a bent free end.

5,334,026

MANUAL SLIDING CALCULATOR

Howard Ylitalo, 2500 Montgomery Ave. SW., Cokato, Minn. 55321

Filed Jun. 7, 1993, Ser. No. 72,048
Int. Cl.[5] G06C *1/00*
U.S. Cl. 434—203 4 Claims



1. A manually operable calculating device, having in combination

a single rod,

a suction cup affixed adjacent each end of said rod elevating and supporting the same secured in a non-slidable position on horizontally and vertically disposed surfaces,

a recessed slot extending along said rod,

a strip bearing numerals in sequence disposed into said slot,

a plurality of counters carried on said rod slidable therealong, and

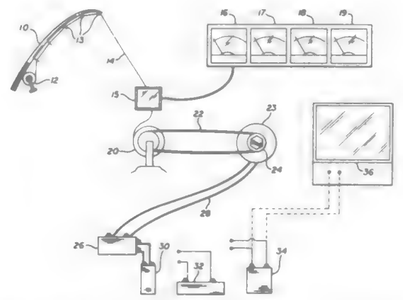
an end portion of said rod not bearing numerals to provide space to receive unused counters.

5,334,027

BIG GAME FISH TRAINING AND EXERCISE DEVICE AND METHOD

Terry Wherlock, 3641 Rebel Cir., Huntington Beach, Calif. 92649-2513

Filed Feb. 25, 1991, Ser. No. 661,434
Int. Cl.[5] A63B *69/00*; G09B *25/00*
U.S. Cl. 434—247 10 Claims



1. A simulator for simulating the action of a fighting fish which is hooked up at the end of a fishing line including a fishing rod, a reel attached to the rod and to one end of a length of the fishing line comprising:

a take-up reel connected to the second end of the fishing line;

a motor operatively connected to said take-up reel;

a motor controller connected to said motor capable of independently varying the speed and torque of said motor to vary the speed and tension on the line exerted by said take-up reel;

a recorder having a recording medium with prerecorded signals corresponding respectively to variable speed and tension on the fishing;

said recorder operatively connected to said motor controller to simultaneously and independently control the torque and speed of said motor;

transducer means coupled to said fishing line for measuring the tension on said line; and

means for displaying line tension for the user during operation while the user may feel line tension and observe rod bending.

7. A method of simulating the steps of catching and landing fish including the steps of:

a) recording signals representing variations in line tension and speed of a sequence representing the hooking and landing of a fish;

b) providing the individual with a rod and a reel with fishing line on said reel with an outboard end of the line available for connection to a source of fish simulating load;

c) connecting the outboard end of said fishing line to a variable speed, variable torque motor means;

d) providing a programmed control of the speed and torque of said motor means to vary the speed and tension on said fishing line with elapsed time to simulate the action of a hooked fish;

e) monitoring the line tension; and

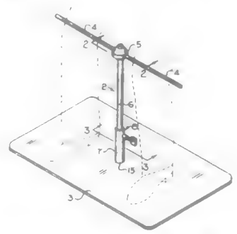
f) means for displaying line tension for the user while the user may feel line tension and observe rod bending.

5,334,028

GOLF SWING TRAINING PROCESS

Edmund J. Melligan, 108A Altruria Ave., Buffalo, N.Y. 14220

Continuation of Ser. No. 790,421, Nov. 12, 1991, abandoned.
This application Mar. 12, 1993, Ser. No. 30,635
Int. Cl.[5] A63B *69/36*
U.S. Cl. 434—252 2 Claims



1. A golf swing training process comprising, providing a golf swing training device having a support frame, a force translation member and pivot means; said support frame being configured to support said pivot means for pivoting about a generally vertical axis; said force translation member having two ends and being engaged with said pivot means for pivoting said ends about said generally vertical axis in response to engagement of said ends at about the knees of a standing golfer; a golfer, standing with legs generally apart and knees bent, such that the back of each said golfer's bent knees engage an end of said force translation member; said golfer swinging a golf club through an arc generally planar to the front of said golfer's body such that as the back of one knee of said golfer forces against an end of said force translation member, said force translation member pivots about said axis and an other end of said force translation member forces against the back of the other knee of said golfer in substantially an opposite direction.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,029

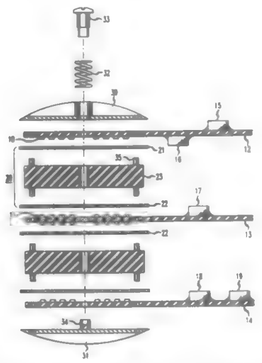
HIGH DENSITY CONNECTOR FOR STACKED CIRCUIT BOARDS

Kaushik S. Akkapeddi, Hanover Township, Morris County; Rocco Bonanni, Wayne Township, Passaic County, both of N.J.; Robert J. Gashler, Olathe, Kans.; Michael G. German, Secaucus, N.J.; William R. Lambert, Mendham Township, Morris County, N.J., and Eugene C. Schramm, Parsippany Township, Morris County, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 11, 1993, Ser. No. 59,844

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—66 **10 Claims**



1. A connector for providing electrical connection between pads on the surfaces of stacked circuit boards comprising:

a pair of flexible sheets, each having major surfaces and exhibiting anisotropic conduction between the major surfaces;

a spacer element mounted between the pair of flexible sheets, the spacer element comprising an array of individual, stand-alone, conductive elements which are held in place by a spacer body; and

a clamping assembly which aligns the spacer and stack of circuit boards in three perpendicular directions and includes a spring-loaded screw assembly comprising a screw inserted within a coil spring for exerting a uniform force over the major surfaces of the sheets.

5,334,030

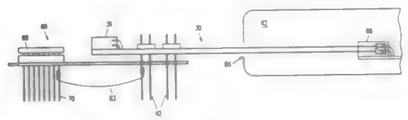
PCMCIA BUS EXTENDER CARD FOR PCMCIA SYSTEM DEVELOPMENT

Al W. Brilliott, Los Altos Hills, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 892,544, Jun. 1, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 98,745

Int. Cl.[5] H05K *1/14*

U.S. Cl. 439—75 **23 Claims**



1. An extender card suitable for use with a personal computing system having a casing and a PCMCIA port disposed within the casing, the PCMCIA port being accessible through an opening in the casing and being spaced apart from the opening sufficiently to be capable of receiving a PCMCIA logic board therebetween, the extender card providing a development environment for peripheral devices to be connected to a PCMCIA port, the extender card comprising:

a generally elongated member;

a PCMCIA header coupled to a first end of the elongated member for engaging the PCMCIA port of the personal computing system, the PCMCIA header and the first end of the elongated member being sized to fit through the casing opening associated with the PCMCIA; port of the personal computing system;

a PCMCIA receptacle coupled to a second end of the elongated member;

a plurality of conductors electrically coupled to the PCMCIA header; and

a plurality of elongated narrow pins arranged in an array, each pin being connected to an associated one of the conductors and extending transversly from the plane of the elongated member, each pin also configured to serve as a connector for external electrical components,

wherein the elongated member is sufficiently long so that when the extender card is plugged into the PCMCIA port, the pins will be positioned outside of the casing for connection to external electrical conductors.

5,334,031

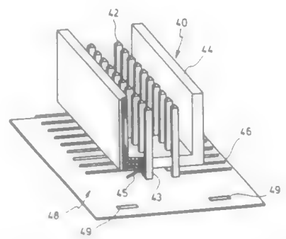
CONTACT DEVICE FOR AN ELECTRICAL COMPONENT AND METHOD FOR MANUFACTURE

Juergen K. Schmidt, Neuss, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 6, 1993, Ser. No. 1,303

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—83 **8 Claims**



1. A contact device for an electrical component, comprising at least one contact element, said contact element having a first contact portion located within said component and a second contact portion projecting downwardly beyond said component and adapted to be connected to a conductor, by soldering, wherein said first contact portion consists of resilient metallic material and said second contact portion consists of a shape memory alloy, said alloy having a transformation temperature which is significantly higher than the operation temperature of said component, said second contact portion including a laterally extending arm having a loop-shaped portion and said contact device being oriented such that said second contact portion is deformed towards said conductor above said transformation temperature.

5,334,032

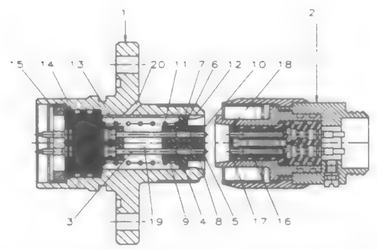
ELECTRICAL CONNECTOR

Fred D. Myers, and Marcus St. E. Cardew, both of Cumbria, United Kingdom, assignors to Swift 943 Ltd T/A Systems Technologies, Ulverston, United Kingdom

Filed May 11, 1993, Ser. No. 60,239

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—140 **7 Claims**



1. An electrical connector for use in electrically conductive environments, said connector comprising a contact pin, said contact pin having a contact area, wherein said contact area is electrically isolated from the electrically conductive environment by a movable mechanical seal, said mechanical seal containing a fluid medium therein, said mechanical seal including flexible seal members to facilitate pressure balancing of the fluid medium with the electrically conductive environment.

5,334,033

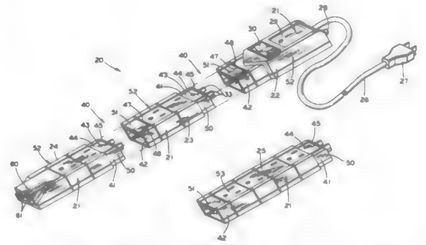
MODULAR OUTLET STRIP

Henry Milan, 1709 Appleridge Ct., Rochester Hills, Mich. 48309

Continuation of Ser. No. 918,241, Jul. 23, 1992, Pat. No. 5,292,257. This application Oct. 27, 1993, Ser. No. 144,048

Int. Cl.[5] H01R *25/16*

U.S. Cl. 439—214 **19 Claims**



1. A surface-mounted modular outlet strip for delivering power from an electrical wall outlet, said modular outlet strip comprising:

a) a power cord having a first end connectable to the electrical wall outlet;

b) a power distribution means connected to a second end of said power cord, said power distribution means including a switch mounted in a first elongate housing and connected to a first quick connect means integrally formed at one end of the first elongate housing;

c) an outlet means removably connected to said power distribution means, said outlet means including a second quick connect means integrally formed as part of one end of a second elongate housing, and at least one electrical outlet connected in series to the second quick connect means and integrally formed in the second elongate housing, the second quick connect means removably connected to the first quick connect means in said power distribution means, and the first and second elongate housings each having a first longitudinal surface in coplanar relationship for engaging a surface and a second longitudinal surface in a coplanar relationship for positioning the switch and the electrical outlets, whereby power is selectively distributed from the wall outlet through said power cord and said power distribution means to the electrical outlets of said outlet means.

5,334,034

CHIP CARD READER WITH AN END POSITION SWITCH

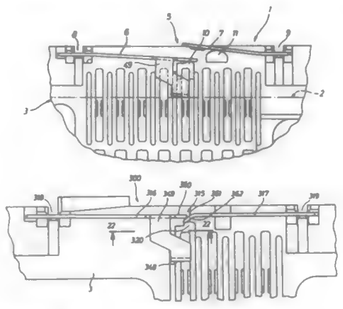
Manfred Reichardt, Weinsberg, and Robert Bleier, Untergruppenbach, both of Fed. Rep. of Germany, assignors to Amphenol-Tuchel Electronics GmbH, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 975,082

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1991, 4137209; Feb. 21, 1992, 4205359; Apr. 10, 1992, 4212150

Int. Cl.[5] H01R *13/703*

U.S. Cl. 439—188 **8 Claims**



1. Chip card reader comprising

a frame in which reading contact elements and an end position switch are provided, said end position switch comprising means including two switching contact elements which contact each other in a contact area for indicating upon opening the reaching of a reading position by a chip card,

wherein one of said switching contact elements is a movable switching contact element and the other of said switching contact elements is a static switching contact element, wherein both said switching contact elements comprise locking means adapted to be locked in the frame for mounting the switching contact elements in the frame, and wherein both switching contact elements are biased into rest positions,

wherein, in the contact area of said movable and said static switching contact elements, cusps are formed, and

wherein said cusps are in the form of cylinders having cylinder axes which are substantially transverse to each other.

5,334,035

PLUG CONNECTOR

Gerhard Wehrle, Donaueschingen, and Michael Sonn, Köngen, both of Fed. Rep. of Germany, assignors to Richard Hirschmann GmbH, Fed. Rep. of Germany

Filed Jun. 8, 1992, Ser. No. 892,802

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118696

Int. Cl.[5] H01R *13/629*

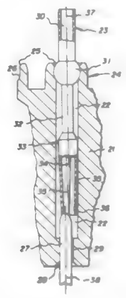
U.S. Cl. 439—252 **24 Claims**

1. A connector comprising:

a contact holder exhibiting a contact chamber and a slightly

VOL 1165 ISS 1 AG 2 1994 UMI

deformable free-standing wall defining a portion of said contact chamber; and



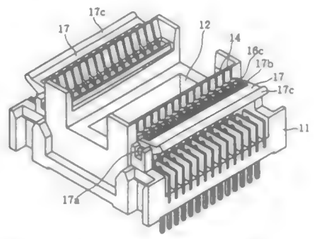
a contact located in said contact holder contact chamber and exhibiting a curved bead supported in a groove in said contact chamber.

5,334,036

SOCKET FOR AN ELECTRIC PART

Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1992, Ser. No. 999,144
Claims priority, application Japan, Mar. 10, 1992, 4-087640
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—266 6 Claims



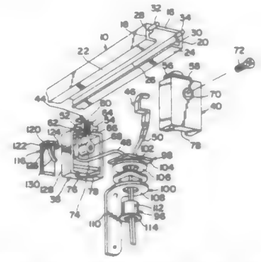
1. A socket for an electric part, comprising:
a socket body;
a plurality of contacts arranged in an array on said socket body and adapted to be contacted with contact pieces on the electric part when the electric part is inserted into said socket body;
each said contact having a contacting portion adapted to engage in pressure contact with a corresponding contact piece, a spring portion for exerting a contact pressure on said contact portion and a retaining element; and
an operating member on said socket body adapted to shift said contacting portions of said contacts away from the contact pieces of the electric part against the resilient force of said spring portions, said operating member having an engagement surface with a plurality of damping projections thereon, and said retaining elements of said contacts being disposed on said damping projections of said engagement surface such that said damping projections damp movement of said retaining elements of said contacts on said operating member wherein said projections are ridges extending in a direction normal to a shifting direction of said contacts, each said ridge being a sharp tooth.

5,334,037

ADAPTER BOX FOR LOW VOLTAGE FIXTURE

Gabrius, Algimantas J., Carol Stream, and Thomas J. DeCicco, Arlington Heights, both of Ill., assignors to Juno Lighting, Inc., Des Plaines, Ill.

Filed Sep. 7, 1993, Ser. No. 117,501
Int. Cl.[5] H01R *25/14*
U.S. Cl. 439—118 15 Claims



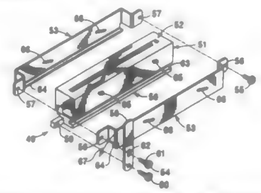
1. An adapter box for mounting on a low voltage lighting fixture track, said track having a track body and a pair of parallel conductive wires mounted in the body, said body having a web with a flange formed integral with each of opposed sides, a pair of opposed inwardly extending edges formed integral with the flanges, said adapter box including: a housing including a pair of housing halves secured to each other, said housing having a pair of mounting ears connectable to the track body, said housing having a contact opening adjacent to the mounting ears, a pair of contacts mounted in the housing for engaging in electrically conductive contact with respective conductive wires in said body, a fixture wire connected to each of the contacts, a contact separator molded as one-piece with one of said housing halves in the contact opening holding the contacts apart, a wire guide assembly mounted in the housing providing a conduit through the housing, and a latch mounted on one of the housing halves for selectively preventing the housing from rotating relative to the track body.

5,334,038

HIGH DENSITY CONNECTOR WITH SLIDING ACTUATOR

Ronald V. Davidge, Coral Springs; Todd A. McClurg; Jay H. Neer, both of Boca Raton; Richard J. Nelson, Boynton Beach, all of Fla., and Rocco J. Noschese, Wilton, Conn., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 990,812, Dec. 14, 1992, abandoned, which is a division of Ser. No. 858,803, Mar. 27, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 161,991
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—267 3 Claims



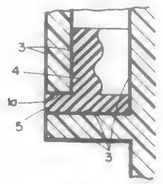
1. An electrical connector for removably receiving an insertion tab of a daughter card, said connector comprising:
an insulative connector housing including a central card-receiving slot, open at one surface to receive said insertion tab in an insertion direction;
a first plurality of contact terminals of a first type, each of said first contact terminals of said first type including a solder tail section extending outside said housing, a clamping section held by said housing, a centrally-facing contact section extending into said card-receiving slot to engage said insertion tab when said insertion tab is within said card-receiving slot, and a flexible section extending between said clamping section and said contact section;
a second plurality of contact terminals of a second type, each of said second contact terminals of said second type including a solder tail section extending outside said housing, a clamping section held by said housing, a centrally-facing contact section extending adjacent to said card-receiving slot but displaced therefrom when each of said second contact terminals of said second type is in a free, undeflected state, a flexible section between said clamping section and said contact section, and an outwardly-facing actuation section;
an actuator extending around a portion of said housing, around said second contact terminals of said second type, and around an upper central slot, said actuator including internal surfaces centrally inclined and engageable with a plurality of said actuation sections of said second contact terminals of said second type, said actuator being slidably mounted on said housing to move in said direction of insertion between a first position, in which a plurality of contact sections of said second type are displaced from said card-receiving slot, and a second position, in which said contact terminals of said second type are deflected to place said contact sections thereof within said card-receiving slot, said actuator being additionally returnable between said second position and said first portion;
a bracket mounted on said housing to slide in an axial direction, said bracket including a ramp surface inclined relative to said axial direction; and
a driving surface extending from said actuator in contact with said ramp surface.

5,334,039

WATERPROOF CONNECTOR HOUSING AND METHOD OF PRODUCING THE SAME

Masahiro Kanda, Shizuoka, Japan, assignor to Yazaki Corp., Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,730
Claims priority, application Japan, Aug. 14, 1991, 3-204221; Aug. 14, 1991, 3-204222
Int. Cl.[5] B29C *39/10;* B29K *83/00;* B29L *31/36;* H01R *13/52*
U.S. Cl. 439—271 33 Claims



1. A waterproof connector housing comprising:
an engagement frame for receiving a mating connector at a front portion thereof;
an annular primer layer formed on a wall of at least an engagement face of said engagement frame; and
an addition-reaction fluid silicone rubber formed on said annular primer layer,
wherein said addition-reaction fluid silicone rubber is combined with said primer layer by vulcanizing the fluid silicone rubber such that a ring-like packing is integrally formed with the connector housing.

5,334,040

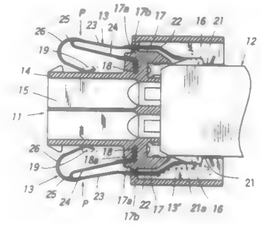
Patent Not Issued For This Number

5,334,041

DEVICE FOR DETACHABLY COUPLING FIRST AND SECOND HALVES OF ELECTRIC CONNECTOR

Tsugio Anbo, Tokorozawa; Yukihumi Machida, Urayasu, and Hirohumi Iguchi, Tokyo, all of Japan, assignors to Mitsubishi Cable Industries Ltd., Amagasaki, Japan

Filed Feb. 23, 1993, Ser. No. 21,083
Claims priority, application Japan, Feb. 26, 1992, 4-075377
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—358 5 Claims



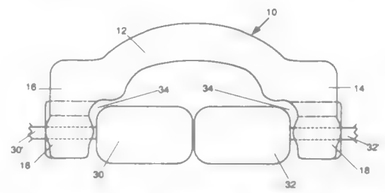
1. A device for detachably coupling first and second connector halves of an electric connector comprising a leaf spring having:
a fitting portion provided at a first end of said leaf spring, said fitting portion being secured to said first connector half, a locking aperture provided at a second end of said leaf spring, said locking aperture being engaged with a locking projection formed on said second connector half to couple said first and second connector halves with each other in a locking condition by means of said leaf spring,
a bent portion formed adjacent to said fitting portion, an unlocking portion termed adjacent to said bent portion, an intermediate portion formed between said locking aperture and said unlocking portion, said intermediate portion being urged against a fulcrum formed on said first connector half, and
a reinforcing portion having a first end connected to a junction between said bent portion and said unlocking portion and a second end urged against a side wall of said first connector half, said reinforcing portion being formed such that a side edge of said reinforcing portion abuts a projection formed in a surface of said first connector half viewed in a direction perpendicular to said side wall thereof,
whereby said leaf spring is formed such that when said unlocking portion is pressed toward said side wall of said first connector half, said leaf spring is resiliently deformed such that said locking aperture is removed from said locking projection to release said locking condition of said first and second connector halves.

5,334,042

ELECTRICAL CORD CONNECTING APPARATUS

Robert K. Chevalier, 836 Grassy Hill Rd., Orange, Conn. 06477

Filed Mar. 16, 1992, Ser. No. 851,619
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—369 9 Claims



1. An electrical cord connecting apparatus, comprising: a

VOL 1165 ISS 1 AG 2 1994 UMI

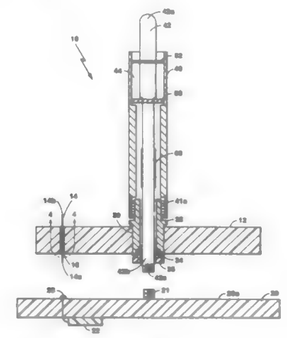
supporting member having a first end and a second end; and holding means disposed on the supporting member for holding a plug end of a portion of electrical cord and for holding a socket end of an other portion of electrical cord, and effective to position and hold the plug end adjacent to the socket end in an engaged position where the plug end is inserted into the socket end, the holding means comprising first engaging means disposed at the first end and second engaging means disposed at the second end, each engaging means for engaging with and retaining a portion of electrical cord, at least one of the engaging means defining an aperture having an inlet and side walls configured and dimensioned to receive a rectangular cross section electrical cord through the inlet and engage with the side walls a portion of electrical cord, the side walls having groove receiving bumps effective to receive grooves disposed on the rectangular cross section electrical cord.

5,334,043

TEST FIXTURE FOR ELECTRONIC COMPONENTS

George J. Dvorak, Jr., Holden, and Lee M. Wolfe, Milford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 28, 1992, Ser. No. 967,595
Int. Cl.[5] H01R *13/627, 13/00*
U.S. Cl. 439—482 **15 Claims**



15. An arrangement comprising:
a circuit board;
a base having a center bore;
a threaded fitting attached to the base and having a portion disposed through the center bore;
a cylindrical body having a central bore therethrough and having an internal threaded portion at its lower end mated to the threaded portion of the fitting;
a cylindrical rod disposed through the cylindrical body;
means, disposed through the central bore of the cylindrical body, for providing rotational movement isolation between the cylindrical body and the cylindrical rod; and
means disposed on the board and the rod for attaching the rod to the circuit board.

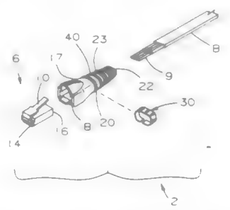
5,334,044

RADIO JACK STRAIN RELIEF AND IDENTIFICATION HOLDER

Aldo Falossi, 22496 Caminito Grande, Laguna Hills, Calif. 92653, and Paul Thomas, 1257 W. O'Farrell St., San Pedro, Calif. 90731

Filed May 27, 1993, Ser. No. 67,586
Int. Cl.[5] H01R *13/50*
U.S. Cl. 439—491 **29 Claims**

25. An apparatus for a conventional radio jack connected to a cable, comprising:
a. a strain relief and identification holder having a hollow body with a first end with an opening for receiving and partially enclosing said radio jack and a second end with a cable entrance which has reduced inner cross-sectional dimensions for tightly retaining said cable; and



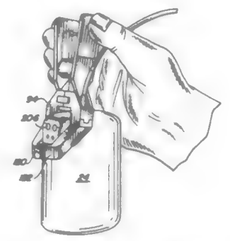
b. means for identifying said radio jack, including a ring crimped onto said strain relief and having identifying indicia on said ring.

5,334,045

UNIVERSAL CABLE CONNECTOR FOR TEMPORARILY CONNECTING IMPLANTABLE LEADS AND IMPLANTABLE MEDICAL DEVICES WITH A NON-IMPLANTABLE SYSTEM ANALYZER

Armando M. Cappa, Reseda, and Warren R. Heer, Rowland Heights, both of Calif., assignors to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 20, 1992, Ser. No. 979,568
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—506 **6 Claims**



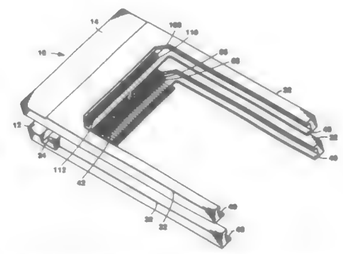
1. A detachable clamp for use with an implantable medical device in a sterile environment that enables electrical contact to be established with a set of implantable leads secured to said implantable medical device without requiring the implantable leads to be detached from the implantable medical device, said implantable medical device including a conductive element that secures the attachment of a proximal end of each implantable lead to the implantable medical device, said clamp comprising:
a set of nonconductive movable jaws connected to a pivot point for opening and closing;
a spring in contact with the set of movable jaws that applies a spring force that tends to close the jaws;
means for manually opening said set of jaws by applying a manual force opposing said spring force;
a plurality of contact pins positioned within said jaws so as to make electrical contact with the conductive element of said implantable medical device when the set of jaws are closed over said implantable medical device, said electrical contact being maintained secure by said spring force;
a cable having a plurality of insulated conductors therein, said cable having a first end attached to said clamp, with at least one of the plurality of electrical conductors within said cable being in electrical contact with each of said contact pins, said cable further having a second end attached to a clamp connector, said clamp connector having a plurality of prongs that are keyed for insertion into a mating connector in only one orientation;
said set of jaws being configured so as to allow their being clamped over said implantable medical device in only one orientation, which one orientation allows each of said contact pins to make electrical contact only with a specific one of said conductive elements of said implantable medical device.

5,334,046

CIRCUIT CARD INTERFACE SYSTEM

Peter Brouillette, Franklin, and Charles S. Pickles, N. Attleboro, both of Mass., assignors to Augat Inc., Mansfield, Mass.

Filed Feb. 22, 1993, Ser. No. 20,772
Int. Cl.[5] H01R *23/72*
U.S. Cl. 439—540 **9 Claims**



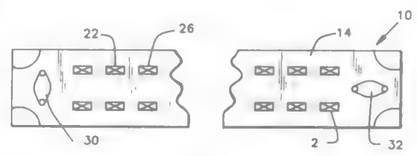
1. A stackable connector for retaining a first circuit card and a second circuit card comprising:
a first connector assembly receiving said first circuit card and including,
a frame having a base including a first surface, a second surface and a third surface and a pair of side members, said side members extending from said base and dimensioned to receive said first circuit card, said base including an insulative portion with an interface channel disposed therein open at said first surface;
a first plurality of leads disposed in said interface channel and accessible at said first surface of said base, said first plurality of leads providing a first electrical signal path between said first surface and said second surface of said base; and
a second plurality of leads disposed on said third surface of said base, said second plurality of leads providing a second electrical signal path between said first circuit card and said second surface of said base, said second electrical signal path being electrically and physically separate from said first electrical signal path;
a second connector assembly receiving said second circuit card and including,
a second frame having a second base including a first surface, a second surface and a third surface and a second pair of side members, said second pair of side members extending from said base and dimensioned to receive said second circuit card, said second base including a second base insulative portion with an elongated protuberance extending outwardly from said second surface of said second base; and
a plurality of second connector leads each having a first end disposed on said elongated protuberance, and a second end extending coaxially with respect to said second pair of side members and accessible at said third surface of said second base, said plurality of second connector leads providing an electrical signal path between said third surface and said second surface of said second base, and said elongated protuberance dimensioned to be received in said interface channel whereupon said plurality of second connector leads engage said first plurality of leads disposed in said interface channel.

5,334,047

ELECTRICAL CONNECTOR MOUNTING POSTS

Arthur A. Lutsky, Irvine, Calif., assignor to Thomas & Betts Corporation, Memphis, Tenn.

Filed Mar. 12, 1993, Ser. No. 30,528
Int. Cl.[5] H01R *13/74*
U.S. Cl. 439—544 **8 Claims**



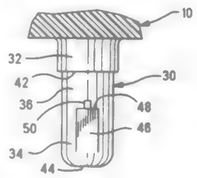
1. An electrical connector for mounting to a printed circuit board having spaced apart substantially circular openings having a given radius of curvature, said connector comprising:
an elongated connector housing having first and second connector ends, an upper connection surface and an opposed lower board mounting surface;
a first mounting post extending from said lower mounting surface adjacent said first connector end; and
a second mounting post extending from said lower mounting surface adjacent said second connector end;
each of said first and second mounting posts being insertable into a respective said opening in said board for frictional engagement with the walls of said opening;
each of said first and second mounting posts including a cross-section having a major axis and a minor axis, said first mounting post major axis extending perpendicularly to said major axis of said second mounting post, each end of said major axis having a curved portion for engagement with said walls of said openings, said curved portions having a radius of curvature which is substantially less than said radius of curvature of said opening.

5,334,048

ELECTRICAL CONNECTOR WITH BOARD RETENTION DEVICE

Michael D. Bowers, Halifax; Robert E. Klinger, Harrisburg; Mark R. Thumma, Oberlin, and David P. Wike, Hummelstown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 1, 1993, Ser. No. 41,801
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—567 **18 Claims**



1. A panel mount electrical connector comprising:
a first mounting surface and at least one mounting post extending therefrom, the first mounting surface is a shoulder provided on the at least one mounting post, the mounting post has a deformable web and the shoulder cooperate to maintain the connector in position on the panel.

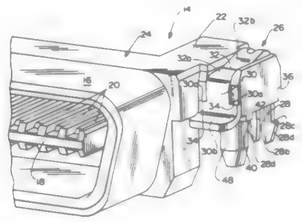
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,049

HOLD-DOWN CLIP FOR BOARD MOUNTED ELECTRICAL CONNECTOR AND METHOD OF USE

Jerry D. Kachlic, Milpitas, Calif., and Toh S. Kiat, Singapore, Singapore, assignors to Molex Incorporated, Lisle, Ill.

Filed May 13, 1993, Ser. No. 61,132
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—567 11 Claims



1. An electrical connector for mounting on a surface of a circuit board comprising:
a dielectric housing having electrical terminal means, the housing being adapted for mounting on the surface of the board with the terminal means establishing electrical connection to appropriate circuit means on the board, and
a stamped and formed hold-down clip mounted on the housing and including a solder tab for mounting to a surface of the circuit board, an anchoring leg portion for securing the clip to the housing, and a spring loaded leg portion projecting from the anchoring leg portion and being flexing movable relative thereto, said spring loaded leg portion being adapted to project through a hole in the board with latch means for engaging an opposite side of the board to secure the connector to the board, said hold-down clip including means for spring loading said leg portion so as to permit said leg portion to travel in a direction perpendicular to said circuit board relative to said housing when in its operational position on said housing and to bias said latch means against the opposite side of the board and thereby accommodate printed circuit boards of varying thicknesses, wherein said hold-down clip is generally U-shaped with said anchoring leg portion and said spring loaded leg portion comprising the legs of the U-shape joined by a bight portion, the bight portion including a fulcrum section abutting a surface of the housing and a flexing section spaced from the housing, the spring loaded leg portion projecting from the flexing section.

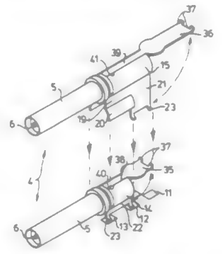
5,334,050

COAXIAL CONNECTOR MODULE FOR MOUNTING ON A PRINTED CIRCUIT BOARD

Derek Andrews, Platanenstraat 23, Vinkel, Netherlands 5382 KA

Filed Feb. 12, 1993, Ser. No. 17,113
Claims priority, application Netherlands, Feb. 14, 1992, 9200272
Int. Cl.[5] H01R *17/04*
U.S. Cl. 439—579 12 Claims

1. A coaxial connector module, comprising:
a housing of electrically insulating material having at least two electrical contract elements, each said electrical contact element having a contact side having a coaxial inner and outer contact part for contacting a further connector and a right angle connection side for mounting on a printed circuit board, the right angle connection side having an electrical conductor which is connected to the inner contact part and has a connection end for mounting on the printed circuit board, said electrical conductor is surrounded in an electrically insulating manner by a shielding casing of electrically conducting sheet material which is electrically connected to the outer contact part, said shielding casing having an essentially circular cylindrical shape which towards the connection end of said electrical conductor merges into two adjacent side-pieces, said side-pieces having at least one connection end for mounting on the printer circuit board, and the at least two electrical contact elements are disposed above one another viewed from said right angle connection side, wherein a first part of the side-pieces of the casing of a higher situated contact element bounds and engages a circular cylindrical cross-section of an adjacent shielding casing of a lower situated contact element, while a second part of said side-pieces of said higher situated contact element extends beyond the lower situated casing and having at least one connection end.

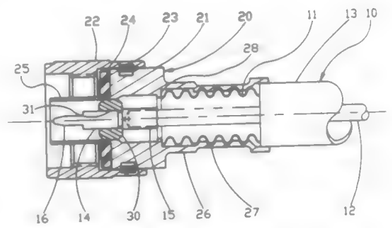


5,334,051

CONNECTOR FOR COAXIAL CABLE HAVING CORRUGATED OUTER CONDUCTOR AND METHOD OF ATTACHMENT

Edward B. Devine, Calumet City, and Richard W. Smith, Orland Park, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Filed Jun. 17, 1993, Ser. No. 78,621
Int. Cl.[5] H01R *17/04*
U.S. Cl. 439—583 6 Claims



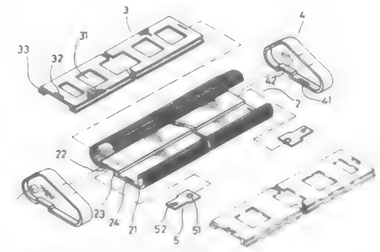
1. A connector assembly for a coaxial cable having an inner conductor and a corrugated outer conductor, said connector assembly comprising:
an inner connector adapted to engage the end of the inner conductor of the coaxial cable,
a unitary outer connector in the form of a hollow cylinder having a thick central portion for supporting a coupling nut, and thin end portions forming a pair of barrels projecting from opposite ends of said central portion, one of said barrels having a threaded inside surface for threadingly engaging the corrugated outer surface of the outer conductor of said cable, the inside wall of said outer connector forming a circumferential shoulder which extends radially inwardly along the end of the corrugated outer conductor of the cable so that when said outer connector is threaded onto said outer conductor, said shoulder is pressed into engagement with the end of said outer conductor to make electrical contact therewith, and
a dielectric spacer between said inner and outer connectors.

5,334,052

RECEPTACLE

Chao-Hsiung Chen, Tainan, Taiwan, assignor to Ma Chi Electric Apparatus Ent. Co., Ltd., Tainan, Taiwan

Filed Jan. 2, 1993, Ser. No. 70,695
Int. Cl.[5] H01R *25/00*
U.S. Cl. 439—650 5 Claims



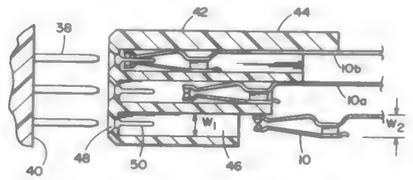
1. A receptacle at least comprising:
a bottom base of a long rectangular shape, having two longitudinal sides curved up defining a longitudinal opening between them for depositing a face plate therein, each said curved-up side having a longitudinal projecting ridge a little recessed, a slot respectively in a lateral side end;
said face plate of a flat longitudinal shape, deposited in said longitudinal opening of said bottom base, having a plurality of combining holes for combining a plurality of sockets or switches, a longitudinal groove respectively in each of two longitudinal side edges to fit with the two longitudinal projections of said bottom base, and a slot respectively in each of two lateral ends; and,
two side caps fitting around and closing two lateral open sides of said bottom base combined with said face plate, having two elastic members on its inner wall to fit in said slots of said bottom base and said face plate, and a hole for a power cord to pass through.

5,334,053

DUAL-BEAM ELECTRICAL CONTACT WITH PRELOAD TABS

Rocco J. Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Oct. 19, 1992, Ser. No. 963,421
Int. Cl.[5] H01R *23/02*
U.S. Cl. 439—682 13 Claims



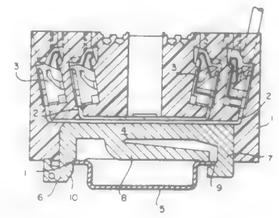
1. An electrical connector contact comprising:
a rear section;
a middle section integrally formed with the rear section; and
two opposing arms extending from the middle section, the two arms including opposing spaced preload tabs at their distal ends, opposing spaced contact areas, and means for moving the opposing preload tabs into contact with each other comprising an extended portion on one of the arms adapted to contact an interior wall in a channel of a housing of an electrical connector, the extended portion being deflectable towards the other one of the arms to thereby move the preload tabs into contact with each other during insertion into the housing channel in order to keep the contact areas spaced from each other.

5,334,054

APPARATUS FOR MOUNTING A CONDUCTOR TERMINAL HOUSING ON A RAIL

Horst Conrad, Detmold; Jörg Diekmann, Bielefeld; Manfred Wilmes, and Walter Hanning, both of Detmold, all of Fed. Rep. of Germany, assignors to C. A. Weidmüller GmbH & Co., Fed. Rep. of Germany

Filed Jan. 25, 1993, Ser. No. 8,544
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1992, 4203184
Int. Cl.[5] H01R *9/26*
U.S. Cl. 439—716 9 Claims



1. Apparatus for mounting a conductor terminal including an insulated housing and a bus bar on a support rail, comprising
(a) a solid metal contact base connected with the bus bar and having depending hook portions at opposite ends thereof, said hook portions clamping on opposite edges of the support rail for electrically and mechanically connecting said base with the rail; and
(b) spring means integrally formed with and depending from said base intermediate said hook portions, said spring means comprising at least one longitudinally extending prong for engaging one edge of the rail, whereby when said base hook portions are clamped on the edges of the rail, said spring means is biased against the rail to retain the conductor terminal in position on the rail.

5,334,055

ELECTRICAL CONNECTOR

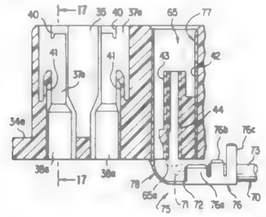
Kensaku Sato, and Akira Shirai, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 715,805, Jun. 14, 1991, abandoned.
This application Apr. 17, 1992, Ser. No. 870,110
Claims priority, application Japan, Sep. 18, 1990, 2-97251[U]; Sep. 18, 1990, 2-97253[U]
Int. Cl.[5] H01R *11/09*
U.S. Cl. 439—723 3 Claims

1. An electrical connector with an antenna terminal, comprising:
an insulation housing having a base portion with a mounting hole thereon and a side wall extending upwardly from said base portion to define a fitting cavity;
an antenna terminal insulation column extending upwardly from said base portion within said fitting cavity and having a central aperture therethrough;
a slit provided on said side wall so as to extend upwardly from said base portioning a vertical plane which includes said mounting hole and said insulation column; and
an outer conductor terminal having a cylindrical portion

VOL 1165 ISS 1 AG 2 1994 UMI

fitted over said insulation column, a conductor portion extending outwardly from a lower edge of said cylindrical portion and fitted in said slit of said side wall, and a ring



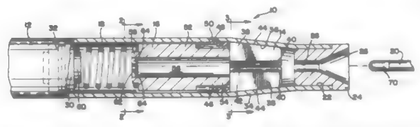
portion placed on said mounting hole for attachment to a grounding object, thereby eliminating rug washer and soldering process.

5,334,056

AUTOMATIC CABLE CONNECTOR WITH IMPACT HAMMER

Emil J. Hlinsky, Oak Brook, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Apr. 19, 1993, Ser. No. 49,167
Int. Cl.[5] H01R *4/52*
U.S. Cl. 439—820 16 Claims



1. An automatic cable connector for making a connection to the end of a cable, said cable connector comprising:

a tubular housing having an open end for receiving the inserted cable end and having a tapered surface adjacent said open end;

a jaw assembly including a plurality of tapered jaw segments surrounding a cable insertion path extending axially into said housing from said open end, said jaw segments cooperating with said tapered surface to close against the cable end in the cable insertion path when said jaw segments are forced toward said open end;

barrier means in said housing spaced from said jaw assembly;

a hammer supported for axial movement in said housing between said barrier means and said jaw assembly, said hammer being movable between an extended position adjacent said jaw assembly and a cocked position spaced from said jaw assembly; and

a hammer spring between said hammer and said barrier means;

said cable connector being characterized by:

said hammer being in said extended position prior to insertion of the cable end into said housing;

said hammer spring having a relaxed length such as to be substantially uncompressed in said extended position of said hammer;

said hammer having an abutment aligned with the cable insertion path, the cable end during insertion engaging the abutment for moving said hammer to the cocked position and for compressing said hammer spring; and

hammer release means for freeing said hammer from the cable end in the cocked position of said hammer to permit said hammer spring to drive said hammer to impact against said jaw assembly.

5,334,057

CONNECTORS FOR ELECTRICAL METER SOCKET ADAPTERS

Larry R. Blackwell, 2151 Aspenwood Ct., San Bernardino, Calif. 92404

Filed Feb. 19, 1993, Ser. No. 20,286
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—839 19 Claims



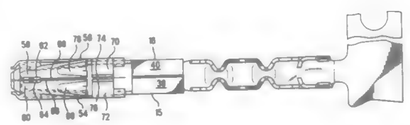
1. A watthour meter socket adapter having a spring loaded jaw-type electrical receptacle adapted to receive a blade-like contact of a watthour meter, the electrical receptacle having a main blade member with a terminal end portion thereof forming a first jaw at the end of the receptacle, a jaw member overlying and rigidly secured to the main blade member with a terminal end portion thereof forming a second jaw at the end of the receptacle, the overlying main blade member and jaw member having cooperating relatively straight contact faces that face one another on opposite sides of a narrow insertion space for receiving said blade-like contact, a narrow transverse slotted opening extending across a lower portion of the insertion space between the main blade member and the overlying jaw member, and a spring member normally applying a spring biasing force to urge said contact faces toward one another for closing the space between them, the spring member comprising a continuous spring wire member of composite configuration in pressure contact with an outside face of the main blade member opposite its contact face and in pressure contact with an outside face of the jaw member opposite its contact face for applying an inward biasing force on said blade-like contact inserted into the insertion space between said contact faces, the spring wire member having legs integral with each other and bent at right angles with respect to each other and comprising a first leg on the outside face of the main blade member spaced from and generally parallel to said narrow slotted opening, a second leg extending along a first side of the contact faces from the first leg into said narrow slotted opening, a third leg extending from the second leg through the slotted opening, a fourth leg extending from the third leg in the narrow slotted opening along a second side of the contact faces, and a fifth leg extending from the fourth leg along the outside face of the jaw member spaced from and generally parallel to said narrow slotted opening.

5,334,058

ELECTRICAL SOCKET TERMINAL

Gheorghe Hotea, Griesheim, Fed. Rep. of Germany, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 25, 1993, Ser. No. 142,851
Claims priority, application United Kingdom, Dec. 1, 1992, 9125136
Int. Cl.[5] H01R *4/48*
U.S. Cl. 439—839 4 Claims



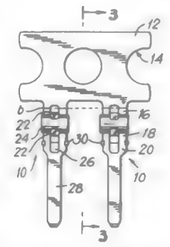
1. An electrical terminal comprising a mating contact portion and a wire terminating rear section, and an outer spring in surrounding relation to said mating contact section, said terminal being characterized in that said outer spring is box shaped including a base wall, two sidewalls and top wall portions folded over to form a longitudinal seam, said top wall portions including at least one upstanding tab extending from opposite sides of said seam in abutting relation and fixed to each other, thereby forming a central polarizing rib.

5,334,059

SOLDER-BEARING LEAD

Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.

Continuation of Ser. No. 687,587, Apr. 16, 1991, Pat. No. 5,139,448. This application Aug. 17, 1992, Ser. No. 931,064
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] H01R *4/02*
U.S. Cl. 439—876 9 Claims



1. A method of producing an assembly of leads for soldering to conductive areas of a substrate, comprising the steps of:

providing a plurality of leads, each of said leads comprising:

an elongated body; and

a solder mass,

said body having two finger-like portions each having one proximal end integral with and attached to said body and a distal second end, said integral ends being adjacent one another at a position along said body,

said finger-like portions extending in opposite directions from said position and encircling at least a portion of said solder mass, with a gap between the distal ends of said finger-like portions,

said solder mass being positioned against said body at said position and remaining uncovered by said finger-like portions at said gap,

whereby, upon facing and directly juxtaposing said uncovered solder mass portion to said substrate conductive area and melting said solder, the solder is caused to flow unobstructedly into contact with said conductive area to solder said lead to said conductive area;

providing a holder, said holder having a plurality of receptacles, each of said receptacles being dimensioned to receive and frictionally engage a respective one of said leads; and

placing a plurality of leads into said receptacles, such that said leads will be immobile with respect to said holder.

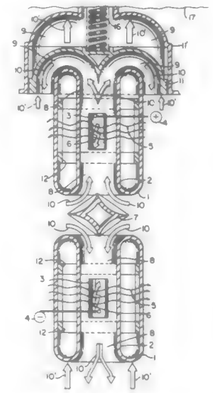
5,334,060

PROPULSION SYSTEM

Kemal Butka, 372 Central Park West, New York, N.Y. 10025

Filed Jul. 30, 1993, Ser. No. 100,575
Int. Cl.[5] B60L *11/02*
U.S. Cl. 440—6 9 Claims

1. A propulsion system, comprising a shaped element attachable to an object to be propulsed and a magnetohydrodynamic propulsion device including means generating an electric current and means generating a magnetic field substantially perpendicular to the electric current and means forming an inner duct, said magnetohydrodynamic propulsion device being located as a whole upstream of said shaped element and forming with the latter at least one arcuate duct, so that by interaction of the magnetic field and the electric current of the magnetohydrohynamic device a force in a liquid is produced which pulls the liquid into said inner duct in a propulsion direction, then pushes the liquid through said inner duct in the



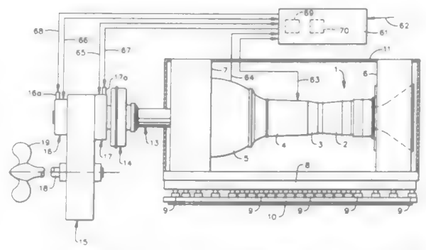
propulsion direction into said arcuate duct to apply a thrust force in the propulsion direction, and then the liquid leaves said arcuate duct to create a reaction force in the propulsion direction to provide an additional thrust force applied to said shaped element in the propulsion direction.

5,334,061

REVERSING MARINE GAS TURBINE DRIVE

Michael E. Behm, and Clifford M. Torrason, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 9, 1992, Ser. No. 942,231
Int. Cl.[5] B63H *21/16, 23/08*
U.S. Cl. 440—75 13 Claims



1. A reversing marine drive comprising a gas generator prime mover provided with first and second counter-rotating power turbines, a ship shaft, a screw on said shaft and a pinion and reduction gear assembly for said ship shaft, a differential gear set means for connecting said first power turbine to said pinion and reduction gear assembly and for disconnecting said second power turbine therefrom to drive said screw in a forward thrust direction and for connecting said second power turbine to said pinion and reduction gear set and disconnecting said first power turbine therefrom to drive said screw in a reverse thrust direction, first and second brake set means being operatively connected to said first and second power turbines,

VOL 1165 ISS 1 AG 2 1994 UMI

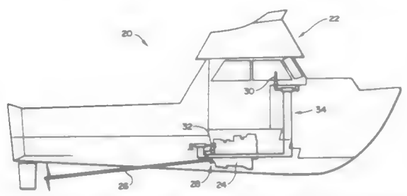
respectively, for stopping said second power turbine when said first power turbine is driving said screw and for stopping said first power turbine when said second power turbine is driving said screw, a master control computer means for monitoring gas generator parameters and for controlling both said gas generator and said brake set means in response to command inputs, interlock means for inhibiting a power setting above idle when both said first and second brake set means are released and for inhibiting release of said first and second brake set means when the power setting of said gas generator is above idle.

5,334,062

SELF-SYNCHRONIZING HYDRAULIC CONTROL SYSTEMS FOR MARINE ENGINE TRANSMISSIONS

Fred Lurbiecki, 21764 61st Ave., Langley, British Columbia, Canada V3A 6H4

Filed Feb. 16, 1993, Ser. No. 17,807
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—86 **11 Claims**



1. An apparatus for connecting a marine engine to a propellor shaft comprising:

a. first transmission means for selectively allowing the engine to rotate the propellor shaft in a first direction, to rotate the propellor shaft in a second direction, or to prevent the engine from rotating the propellor shaft;

b. a first lever;

c. a second lever, where rotation of the second lever directs the transmission means to allow the engine to rotate the propellor shaft in a first direction, rotate of the propellor shaft in the second direction, or prevent rotation of the propellor shaft; and

d. means for transmitting rotation of the first lever to the second lever comprising

i. first casing means for containing flowable working medium,

ii. second casing means for containing flowable working medium,

iii. first piston means movably mounted in the first casing means for defining first and second chambers within the first casing means, volumes of the first and second chambers changing as the first piston means moves within the first casing means, where the first lever is so connected to the first piston means that rotation of the first lever displaces the first piston means within the first casing means,

iv. second piston means movably mounted in the second casing means for defining third and fourth chambers in the second casing means, volumes of the third and fourth chambers changing as the second piston means moves within the second casing means, where the second lever is so connected to the second piston means that displacement of the second piston means within the second casing means causes rotation of the second lever,

v. first means for allowing fluid communication between the second and third chambers,

vi. second means for allowing fluid communication between the first and fourth chambers,

vii. flowable working medium contained within the first through fourth chambers and the first and second fluid communication means,

viii. reservoir means for containing additional flowable working medium;

ix. a first port located in the first casing means, and

x. third means for allowing fluid communication between the reservoir means and the first port, where the first port is so located in the first casing means that fluid can flow from the reservoir means into the first chamber only when the volume of the second chamber is substantially at a minimum and from the reservoir means into the second chamber only when the volume of the first chamber is

substantially at a minimum; wherein movement of the first piston in a first direction causes fluid to flow from the first chamber into the fourth chamber to move the second piston in a second direction; and

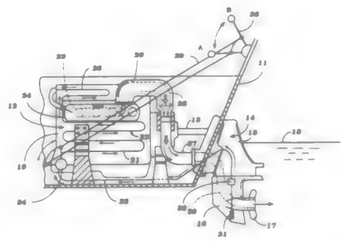
movement of the first piston in a third direction causes fluid to flow from the second chamber into the third chamber to move the second piston in a fourth direction.

5,334,063

COOLING SYSTEM FOR MARINE PROPULSION ENGINE

Seiji Inoue, and Masayoshi Nanami, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 2, 1993, Ser. No. 42,124
Claims priority, application Japan, Apr. 2, 1992, 4-108440
Int. Cl.[5] B63H *21/38*
U.S. Cl. 440—88 **12 Claims**



1. A watercraft having a hull, an internal combustion engine supported within said hull, said engine having a cooling jacket positioned at least in part below the level of water in which said hull is floating at least when said hull is stationary, conduit means for supplying water from the body of water in which said watercraft is operating to said engine cooling jacket for cooling said engine, and two position two way valve means for selectively communicating said cooling jacket to a drain for draining said cooling jacket and for selectively communicating said cooling jacket to said conduit means for delivering water to said cooling jacket.

5,334,064

LIFE RAFT STORAGE AND INFLATION SYSTEM

Kenneth L. Ketterman, Hampton, and Raymond M. Kinne, Newport News, both of Va., assignors to Hampton Rubber Company, Hampton, Va.

Filed Mar. 5, 1993, Ser. No. 26,741
Int. Cl.[5] B63C *9/22*
U.S. Cl. 441—42 **2 Claims**

1. A life raft storage and inflation system comprising:

a clamshell life-raft canister having at least two separable parts and forming a canister cavity therein;

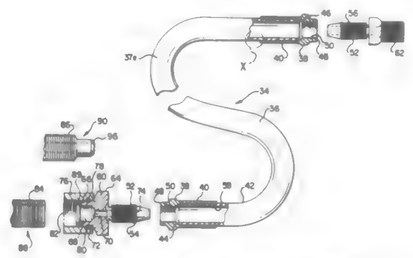
a deflated raft stored in said canister;

a compressed-gas cylinder stored in said canister, said compressed-gas cylinder including a selectively activated nozzle for being activated to release air from said compress-gas cylinder;

an activating means for activating said nozzle to release said compressed gas;

a hose assembly for being coupled to said compressed-gas-cylinder selectively-activated nozzle and extending therefrom to an inlet cock of said deflated life raft, said hose assembly comprising:

a hose formed of a fiber-reinforced, thermoplastic hose wall; cylinder and raft sockets having self-tapping female threads for being screwed onto an outer surface of said hose at opposite ends thereof, each of said sockets having smaller-diameter female nipple threads positioned at an outer end thereof beyond a respective end of the hose; cylinder and raft nipples having male threads thereon for respectively mating with the small-



er-diameter, female, nipple threads of respective cylinder surface of the hose for thereby sealing the hose wall between the nipples and the sockets, each of said cylinder and raft nipples being respectively made as one piece with one of a cylinder and raft coupling for respectively coupling to one of said cylinder nozzle and said inlet cock;

wherein said cylinder coupling is tubularly shaped to define a coupling-seat cavity in a bore thereof with a metallic inner seat therein for sealing with a first type of cylinder nipple and wherein said cylinder coupling is surrounded by a swivel nut mounted on an outer surface of said tubularly-shaped cylinder coupling by means of a circular retainer pin to swivel thereon and said cylinder coupling defines an external seat at an outer end thereof with an O-ring thereon held laterally in place by said swivel nut for sealing with second type of cylinder nipple.

5,334,065

WATER SKI BOOT AND BINDING

Dean P. Uren, 31654 N.E. 106th, Carnation, Wash. 98014, and James D. Anderson, 10312 164th Ave. N.E., Redmond, Wash. 98052

Division of Ser. No. 794,801, Oct. 28, 1991, Pat. No. 5,181,332, which is a continuation of Ser. No. 498,738, Mar. 26, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,302
Int. Cl.[5] B63B *35/85*
U.S. Cl. 441—70 **8 Claims**

1. In a ski for use in water skiing,

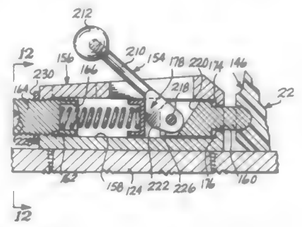
an elongated runner having a pair of cleats on the dorsal side thereof which are spaced apart longitudinally of the runner to permit a user to place a foot-engaging shoe on the runner in the space between the cleats,

means on the cleats for clamping the shoe to the runner,

the clamping means being operable to release the shoe when a predetermined shear force is generated between the runner and the shoe, transverse thereof,

the releasable clamping means including first means on one of the cleats for forming a tenon and mortise joint with cooperable second means for the same on the shoe, means on the other cleat for yieldably biasing the shoe and the second joint-forming means relatively toward the first joint forming means on the one cleat, to form the joint at the one cleat when the shoe is placed between the cleats, and means on the other cleat for yieldably biasing the shoe relatively toward the runner, to releasably clamp the shoe thereto, when the joint is formed at the one cleat,

the one cleat having a mortise therein and the other cleat having a displaceable pin thereon which is yieldably biased in the direction of the mortise and disposed to engage the shoe at an obliquely angled notch in the adjacent end thereof, so as to releasably clamp the end of the shoe to the runner while biasing the first and second joint forming means relatively together to form the joint, and



means including a reciprocal actuator on the other cleat for alternately enlarging and reducing bias on the pin when the shoe is releasably clamped to the runner,

the actuator taking the form of a lever which is pivotally mounted on the pin and has a cam at one end thereof that enlarges the bias in one position of the lever, and reduces the bias in another position thereof, and

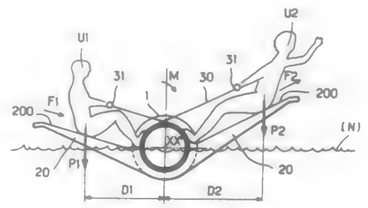
the cam being interposed between the pin and a coiled spring which is caged in a thimble, coaxially of the pin, so that in the one position of the lever, the cam loads the spring, and in the other position of the lever, the cam unloads the spring in part.

5,334,066

WATER SPORTS APPARATUS

Jean-Paul Gerard, 2 rue d'Hallouvry, 35135 Chantepie, France

Filed May 25, 1993, Ser. No. 66,006
Claims priority, application France, Nov. 26, 1990, 90 14910
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—129 **11 Claims**



1. Apparatus for water sports comprising:

a float (1, 7) capable of supporting two users (U1, U2) afloat on the surface of the water, said float being in the form of a body of revolution, said body having a central cylindrical portion connected to two end portions, each of said end portions having a larger diameter than the central portion;

a pair of arms (20) connected to the float (1, 7) and extending symmetrically on either side of the float in a direction substantially perpendicular to its axis of revolution (XX');

a flexible strap which passes around the float, said strap

VOL 1165 ISS 1 AG 2 1994 UMI

having two ends, and a gripping member at each end of the flexible strap.

5,334,067

INFLATABLE FLOAT RING WITH REDUNDANT FLOTATION MEANS

David M. Henry, P.O. Box 10892, and Ronald Marshall, 3219 Point White Dr., NE., both of Bainbridge Island, Wash. 98110

Filed Mar. 19, 1993, Ser. No. 33,824
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—131 5 Claims



1. An improved flotation device, comprising:

A primary inflatable chamber, the primary chamber being inflated when a user of the device first puts the device into use on a body of water,

a user seating area that is surrounded by the primary chamber,

at least one secondary inflatable chamber, the secondary chamber normally being deflated when the primary chamber is inflated, the secondary chamber also being positioned adjacent the primary chamber,

a fabric covering draped over substantially all of the primary chamber, the secondary chamber being held in position adjacent the primary chamber by sandwiching the secondary chamber between the fabric covering and the primary chamber, and

at least one pressurized gas bottle connected to the secondary chamber for inflating it, the bottle having a user-activated gas release mechanism that is within reach of the user when the user is seated in the seating area, whereby the user releases the gas in the bottle and inflates the secondary chamber upon accidental deflation of the primary chamber, in order to maintain buoyancy of the flotation device.

5,334,068

MODEL AIRCRAFT CORRUGATED PAPER BOARD AIRFOIL AND METHOD OF MAKING SAME

Ronald T. Davis, 6640 Sepulveda Blvd., #212, Van Nuys, Calif. 91411

Filed Nov. 9, 1992, Ser. No. 973,513
Int. Cl.[5] A63H *27/18*
U.S. Cl. 446—34 22 Claims

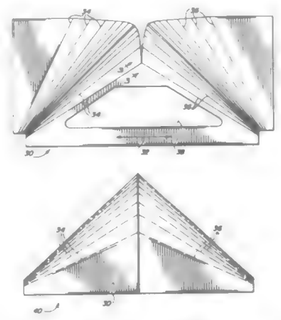
1. A method of making a model aircraft comprising:

trimming a single flat segment of material to form a main segment of a first side of an airfoil and left and right segments of a second side of said airfoil, said main segment and said left and right segments of said airfoil each having edges which will collectively form a front edge of said airfoil, said front edge of said left segment of said airfoil being adjacent a left half of said front edge of said airfoil, said front edge of said right segment of said airfoil being adjacent a right half of said front edge of said airfoil;

scoring a first plurality of non-parallel lines in one side of said main segment of said airfoil and said left segment of said airfoil;

scoring a second plurality of non-parallel lines in one side of said main segment of said airfoil and said right segment of said airfoil;

bending said main segment and said left and right segments of said airfoil along said first and second pluralities of lines



to form said airfoil and to bring edges of said main segment and said left and fright segments which are unsecured together;

and

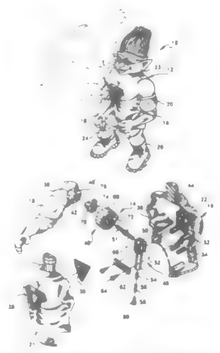
fastening said unsecured edges of said main segment and said left and right segments of said airfoil together to render said airfoil inflexible.

5,334,069

ACTION CHARACTER FIGURE WITH SPARKING MECHANISM

Liu, Dexter C., Portsmouth, R.I., assignor to Liu Concept Design & Associates, Newport, R.I.

Filed Mar. 1, 1993, Ser. No. 24,248
Int. Cl.[5] A63H *3/00, 33/36*
U.S. Cl. 446—23 7 Claims



1. An action character figure comprising;

(a) a character figure body portion including a torso portion having an aperture therein and a limb on said torso portion moveable between first and second positions thereon; and

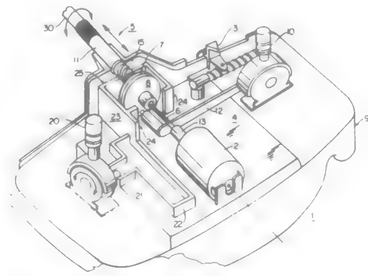
(b) sparking means in said torso portion for producing sparks therein, said sparking means being positioned in said torso portion so that said sparks are visible through said aperture, said sparking means including a flint, a flint wheel engaging said flint, and means for rotating said flint wheel at a sufficiently rapid rate to produce sparks therefrom, said means for rotating said flint wheel being operable by rotating said limb at a first rate to cause rotation of said flint wheel at an increased second rate which is sufficiently rapid to produce sparks from said flint.

5,334,070

TETHERED CONTROLLED FLYING TOY

Yiu K. Yu, Shatin, and Bryan K. F. Au, Kowloon, both of Hong Kong, assignors to Uni-King Toys Ltd., Kwun Tong, Hong Kong

Filed Apr. 20, 1993, Ser. No. 50,520
Int. Cl.[5] A63H *27/04, 27/127, 27/00*
U.S. Cl. 446—31 12 Claims



1. A tethered control flying toy comprising:

(a) a flying toy;

(b) a hand held control means for controlling the flying toy comprising a housing and contained therein: a power source, a motor, a switch to control power to the motor, a means for rotating a hollow tethering means about a central axis of the control means, a means for displacing a hollow tethering means in a direction parallel to the central axis of the control means;

(c) a hollow tethering means attaching the flying toy to the control means;

(d) a rotating tethering means located within the hollow tethering means connecting a propeller of the flying toy to the motor in the control means; and

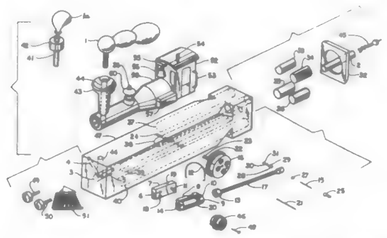
(e) a clutch assembly means for adjusting the orientation of hollow tethering means and the flying toy with respect to said housing.

5,334,071

STEAM LOCOMOTIVE-WHISTLE MODEL AND TOY

Percy E. Mills, 139 Main St., Whitsett, Pa. 15473

Filed Mar. 8, 1993, Ser. No. 27,653
Int. Cl.[5] A63H *29/16, 5/00*
U.S. Cl. 446—186 8 Claims



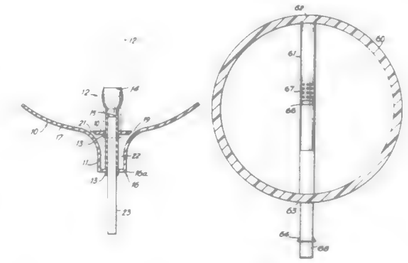
1. A steam locomotive-whistle model and toy comprising an air chamber a smoke-stack in air communication with said chamber and a detachable, solid closure member therefor simulating smoke, which closure member, when in place, prevents air from escaping said chamber through said smoke-stack; a rear intake pipe which when blown by the mouth forces air into said air chamber; a reciprocating piston and cylinder drive in air communication with said air chamber on each side of said model and toy, whereby upon selective introduction of air through either said smokestack or rear intake pipe and said reciprocating piston and cylinders, said reciprocating piston and cylinders will operate from the movement of air.

5,334,072

INFLATABLE BODY AND HOLDER ASSEMBLY

Marc I. Epstein, 1172 Park Ave., New York, N.Y. 10128

Continuation-in-part of Ser. No. 753,829, Sep. 3, 1991, abandoned. This application Mar. 5, 1992, Ser. No. 846,577
Int. Cl.[5] A63H *27/10*
U.S. Cl. 446—224 5 Claims



1. An inflatable body and holder adapted to be filled with an inflation medium, comprising:

a plurality of overlying sealable panels having edge seal means joining said panels together to define the inflatable body, said edge seal means defining an inflation port, an adjacent pair of said panels defining an inflation conduit for communicating the inflation medium from said inflation port to the interior of the inflatable body, said adjacent pair of panels being located between adjoined panels defining external surfaces of the inflatable body, said edge seal means joining said adjacent pair of panels to said panels defining external surfaces of the inflatable body at a plurality of locations around the periphery of the inflatable body, at least one of said locations on the periphery of the inflatable body being substantially diametrically opposite said inflation port,

an opening defined in at least one panel of said adjacent pair of panels to permit inflation medium to enter said inflatable body from said inflation conduit; and

a holder element releasably insertable within said inflation conduit whereby the pressure of said inflation medium within the inflatable body when the inflatable body is filled presses said adjacent pair of panels against said holder element frictionally to secure said holder element within said inflation conduit along its length thereby providing sidewall support to hold the inflatable body rigidly relative to said holder element.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,073

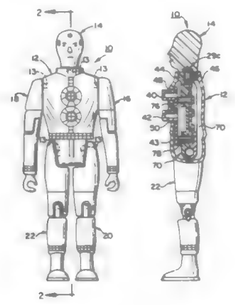
CRASH DUMMY FIGURES

Neil Tilbor, Medford; Anthony R. Garr, Voorhees; Jean Newton, Marlton, all of N.J., and Salvatore Mucaro, Burlington, Conn., assignors to Tyco Investment Corporation, Wilmington, Del.

Continuation of Ser. No. 832,563, Feb. 7, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 109,868

Int. Cl.[5] A63H *3/00, 3/16, 3/46*

U.S. Cl. 446—308 **18 Claims**



1. A toy figure comprising:
a torso having a plurality of openings at appendage locations;
a plurality of individual appendages comprising arm appendages and leg appendages, each appendage including a connector at one end received in at least one of the openings;
a detent within the torso associated with each opening receiving and retaining in the torso a connector received in the opening wherein the detents receiving and retaining each of a first pair of the appendages are collectively formed from a first single wire torsion spring;
biasing members located on the torso so as to bias each connector received in any of the openings out of the receiving openings; and
an actuator in the torso coupled with at least two of the detents so as to simultaneously move the at least two detents and release any connectors being detained by any of the at least two detents.

5,334,074

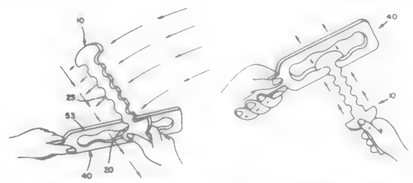
ANTLER SOUND SIMULATING GAME CALL

Joe Suminski, 204 N. 3rd St., Centerville, Ind. 47330

Filed Apr. 2, 1993, Ser. No. 42,383

Int. Cl.[5] A63H *5/00*

U.S. Cl. 446—418 **6 Claims**



1. An antler sound simulating game call, comprising:
a) a first part having a proximal handle and a generally flat distal portion having an elongated wall with a plurality of notches therein, said first part distal portion having a proximal termination shoulder wider than a width distal thereof;
b) a second part having a proximal handle and a widened distal portion having an opening with an elongated notched wall, said opening being enclosed within said distal portion of said second part;
c) said first part distal portion being inserted into said opening and said first part distal portion elongated wall engaging said elongated notched wall of said opening to create sounds simulating sounds of antlers engaging one another during a battle between two bucks.

5,334,075

REMOTE CONTROL CAR STEERED UPON MOTOR REVERSAL

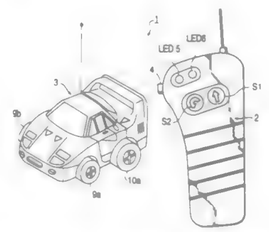
Katsumi Kakizaki, and Taichi Iimura, both of Tokyo, Japan, assignors to Tomy Company, Ltd., Tokyo, Japan

Filed Aug. 17, 1992, Ser. No. 929,953

Claims priority, application Japan, Aug. 23, 1991, 3-74870[U]

Int. Cl.[5] A63H *17/28, 17/00, 30/04*

U.S. Cl. 446—438 **3 Claims**



1. A radio-controlled car having a controller for transmitting a digital control signal, and constructed to travel forward and make a turn by changing the direction of rotation of a motor in accordance with the digital control signal, said radio-controlled car comprising:
a driving shaft operatively connected to the motor;
a first driving wheel fixedly installed on one end of said driving shaft, said first driving wheel rotating in a forward direction regardless of the direction of rotation of the motor;
a second driving wheel idly rotatably mounted on the other end of said driving shaft, said second driving wheel rotating in a forward when the motor rotates in a normal direction and rotating in a reverse direction when the motor rotates in a reverse direction;
a sun gear mounted on a shaft and connected to the motor;
planetary gears rotatably mounted around said sun gear on the center of the shaft of said sun gear, said sun gear and said planetary gears being incorporated in a gear mechanism for driving said second driving wheel, said planetary gears alternately engaged with two gears arranged in different directions in accordance with a change in direction of rotation of the motor;
a rechargeable battery; and
a controller, including:
a built-in charging circuit for recharging said rechargeable battery;
a charging jack provided on said controller and said car;
a signal transmission circuit, comprising:
an astable multivibrator
an oscillator operatively connected to said astable multivibrator;
an antenna matching circuit operatively connected to said oscillator; and
a decoupling circuit;
a charging circuit operatively connected to said signal transmission circuit, comprising:
time-constant circuit means for providing a time constant for determining the rate at which said rechargeable battery is charged;

forward button means for making the car go forward;
turn button means for making the car turn, said turn button also being a charge button;
a transmission light; and
a charge light.

5,334,076

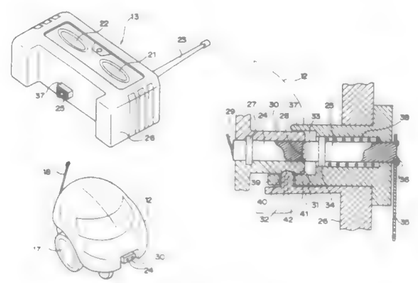
RADIO CONTROL CAR

Morio Shinozuka, Sawara, Japan, assignor to Sawara Co., Ltd., Chiba, Japan

Filed Jul. 22, 1993, Ser. No. 94,960

Int. Cl.[5] A63H *30/04;* **H02J** *7/00;* **H01R** *13/00*

U.S. Cl. 446—456 **7 Claims**



1. A radio controlled car comprising:
a) a self-running car including a power unit, a receiving control unit and an accumulating unit for supplying power to said power unit and said control unit;
b) a remote controller means including a battery unit and a transmitting control unit for transmission of a selected control signal to said self-running car;
c) said self-running car including a charged terminal positioned at a predetermined height in the front of said self-running car to receive an electric charge and direct the charge to said accumulating unit; and
d) said controller including a charging terminal adapted to engage said charged terminal and convey an electric charge from said controller to said charged terminal, said charging terminal being positioned on said controller so that when said controller is placed on the ground, said self-running car can be remotely driven by said controller into coupling engagement with said controller thereby allowing an electric charge to be directed from said charging terminal to said charged terminal for recharging of said self-running car.

5,334,077

LIFT ASSEMBLY FOR LOWRIDER MODEL CARS

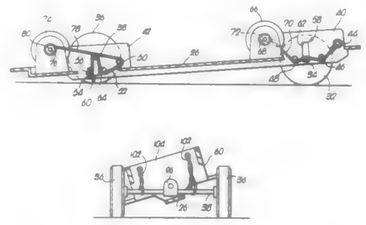
James E. Bailey, 2901 Ralph Bunch Dr., Leavenworth, Kans. 66048

Filed Nov. 23, 1992, Ser. No. 980,302

Int. Cl.[5] A63H *17/26*

U.S. Cl. 446—466 **10 Claims**

1. A scale model of a lowrider vehicle, the model comprising:
a chassis defining a central longitudinal axis;
first and second longitudinally spaced axles supported on the chassis, each extending in a direction transverse to the central longitudinal axis and including a pair of wheels on which the model is supported on the ground,
the chassis including a guide means for maintaining the transverse orientation of the first axle while allowing movement of the first axle relative to the chassis within a plane perpendicular to the central longitudinal axis, the guide means including a pair of laterally opposed side walls connected to the chassis, the side walls each being provided with a vertical slot through which the first axle extends, the slots allowing rotation of the first axle as well as vertical movement of the first axle relative to the chassis within a plane perpendicular to the central longitudinal axis; and
a lifting means for moving the chassis relative to the first axle between a lowered position and a raised position, the



lifting means including a motor mounted on the chassis and provided with a rotatable output shaft, a power supply, a circuit connecting the power supply with the motor, a switch for selectively closing the circuit to energize the motor, and a transmission means for converting the rotational movement of the output shaft into lifting movement for moving the chassis relative to the first axle.

5,334,078

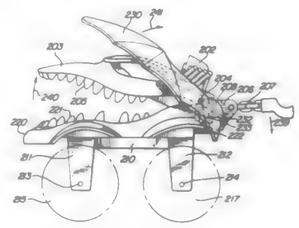
TOY VEHICLE HAVING ARTICULATED JAWS

Keith A. Hippely, Manhattan Beach; Gary Swisher, Hermosa Beach; Terence A. Choy, Lawndale, and Wayne R. Halford, Manhattan Beach, all of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Aug. 17, 1992, Ser. No. 930,574

Int. Cl.[5] A63H *7/00, 17/273, 17/25*

U.S. Cl. 446—470 **5 Claims**



1. A toy vehicle comprising:
a support chassis having a plurality of supporting wheels;
a lower jaw portion coupled to said support means defining a plurality of upwardly extending teeth and a pivotal attachment;
a body defining an upper jaw portion pivotally secured to said lower jaw portion at said pivotal attachment;
a pair of wings pivotally secured to said lower jaw portion;
operative means coupled to said body and said wings for separating said wings as said body pivots upwardly and for closing said wings as said body pivots downwardly; and
lever means coupled to said body for pivoting said body between a lowered closed position and a raised open position.

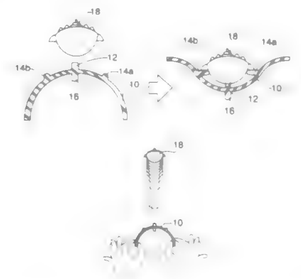
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,079

TOY HAVING FLEXIBLE SHELL FOR LAUNCHING PROJECTILES

John J. Gentile, Montclair, N.J., and Anthony Gentile, New York, N.Y., assignors to Abrams/Gentile Entertainment Inc., New York, N.Y.

Filed Mar. 23, 1993, Ser. No. 36,133
Int. Cl.[5] A63H *13/10, 33/00;* A63B *65/00*
U.S. Cl. 446—486 42 Claims



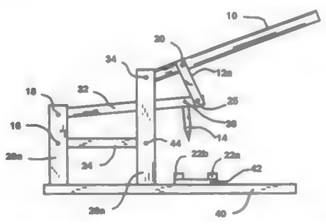
1. A toy for launching projectiles, the toy comprising:
a flexible shell with a thin wall generally having a convex outer surface and a concave inner surface, the convex outer surface including a first protrusion and a plurality of claws, the concave inner surface including a second protrusion;
a first projectile releasably mounted on the first protrusion; and
a second projectile releasably mounted on the second protrusion;
wherein, when the first projectile is mounted on the first protrusion and the shell is inverted such that the convex outer surface becomes a concave surface, the plurality of claws grips the first projectile and thereafter, when pressure is applied to the shell, the shell returns to its original non-inverted shape and the first projectile is discharged from the shell into the air and wherein, when the second projectile is mounted on the second protrusion and the shell is inverted such that the convex outer surface becomes a concave surface and is thereafter dropped on a hard surface, the shell returns to its original non-inverted shape and the second projectile is discharged from the shell into the air.

5,334,080

SHELLFISH CRACKER, SHUCKER

Winston S. Webb, 3592 Camelia Pl., Largo, Fla. 34641

Filed Dec. 8, 1992, Ser. No. 986,904
Int. Cl.[5] A22C *29/04*
U.S. Cl. 452—16 1 Claim



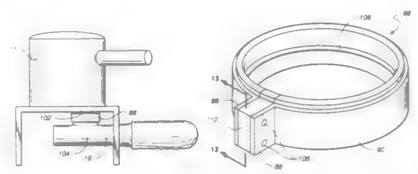
1. A shellfish shucking and cracking machine comprising:
a horizontal base with a pad;
a pair of front and rear vertical supports mounted on the upper surface of said base and oriented parallel to each other;
a main lever pivotally mounted to and between the front pair of vertical supports near the top ends thereof;
a pair of link bars pivotally attached to one end to the main lever at a location proximate to the main lever pivotal connection to the front vertical supports; said link bars being oriented parallel to each other with one of said link bars positioned on either side on said main lever;
a fixed support cross-link mounted to and between said front and rear pairs of vertical supports; said fixed support cross-link being positioned above and parallel to the base to provide a support surface for a first shellfish body portion;
an input lever pivotally attached to and between the rear vertical supports and the free ends of the link bars, at opposite ends thereof; said input lever being positioned above said fixed support cross-link at a distance, whereby said input lever contacts and cracks open the shellfish body portión positioned on said cross-link support when a downward force is applied to the input lever by said main lever via the link bars;
a blade mounted to the input lever at the end proximate the link bar connection and above the pad for opening a second shellfish body portion supported on said pad, when a downward force is applied by the main lever to the input lever.

5,334,081

COMBINATION HOMOGENIZER-VACUUM LOADER FOR MEAT PRODUCTS WITH IMPROVED RING SEAL

Alexander Calderon, 45208 S. Grimmer Blvd., Fremont, Calif. 94539

Continuation-in-part of Ser. No. 647,462, Jan. 28, 1991, Pat. No. 5,129,316. This application Jan. 27, 1992, Ser. No. 826,904
Int. Cl.[5] A22C *11/02*
U.S. Cl. 452—35 9 Claims



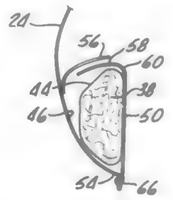
1. An apparatus for sealing a joint between a first cylinder having a first flat end surface and a second cylinder having a second flat end surface interfacing said first flat end surface, which comprises:
a ring having a flat top end surface and an inner and outer cylindrical surface and cut to form two meeting ends;
said inner cylindrical surface having a first circumferential groove;
a first elastomeric 0-ring positioned in said first circumferential groove:
said top end surface having a second circumferential groove;
a second elastomeric 0-ring positioned in said second circumferential groove;
two flanges, one flange attached to one of said meeting ends and facing said other flange attached to said other meeting end;
a flat elastomeric gasket positioned between said flanges;
a means for fastening said flanges together thereby tightening said ring around said first cylinder with said top end surface coplanar with said first flat end surface permitting said second flat end surface of said second cylinder to be positioned against said first flat end surface of said first cylinder and said top end surface and providing that a vacuum generated in said first and second cylinders is maintained by said first and second O-rings and flat elastomeric gasket and forcing said first and second flat end surfaces against one another.

5,334,082

BRASSIERE WITH AUGMENTING BUST SUPPORT

Kathryn Z. Barker, 5615 Via DeCampo, Yorba Linda, Calif. 92687-4917

Filed Apr. 2, 1993, Ser. No. 42,618
Int. Cl.[5] A41C *3/14*
U.S. Cl. 450—31 1 Claim



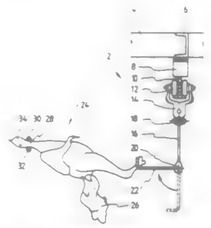
1. A brassiere ensemble comprising:
a plurality of brassiere shells, each shell comprising:
a pair of fabric breast cups;
strap means, interconnecting said breast cups and maintaining a spaced apart relationship therebetween, for enabling the breast cups to be worn by a user;
means, defining a pocket in a lower half of each breast cup, for receiving breast pillow means, said breast pillow means being interchangeable and receivable by any of the plurality of brassiere shells, the pocket defining mans being sized and positioned, in said breast cups, in order to enable a tapered top position of the breast pillow means to engage an underside of each of the user's breasts for uplifting thereof, said strap means and said breast cups being sized for enabling uplifted breasts to exert downward and outward pressure on said breast pillow means to conform with, augment and simulate the undersides of the user's breasts, said pocket defining means further comprising a liner fixed to a bottom edge of each fabric breast cup and pairs of overlapping flaps, one of each flap pair being attached o each fabric breast cup and another of each flap pair being attached to a top of the liner, said flap being positioned in order that the underside of the user's breasts provide compression to hold the flaps against one another and against the breast pillow means;
breast pillow means for augmenting and uplifting a user's breasts, said breast pillow means being receivable by any of the plurality of brassiere shells and comprising breast implant type gel means for simulating breast tissue of the user, the breast pillow means further comprising sealed pliable pouch means for containing the gel means, and a washable fabric covering the pliable pouch means, said breast pillow means being crescent shaped with a tapered top portion; and
support means, disposed along the bottom edge of each fabric breast cup, for limiting downward movement of the breast pillow means.

5,334,083

METHOD AND DEVICE FOR MECHANICALLY DRAWING SLAUGHTERED POULTRY

Adrianus J. van den Nieuwelaar, Gemert, and Cornelis D. van Harskamp, Boxmeer, both of Netherlands, assignors to Stork PMT, Boxmeer, Netherlands

Filed May 6, 1992, Ser. No. 879,757
Claims priority, application Netherlands, May 8, 1991,
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—106 15 Claims



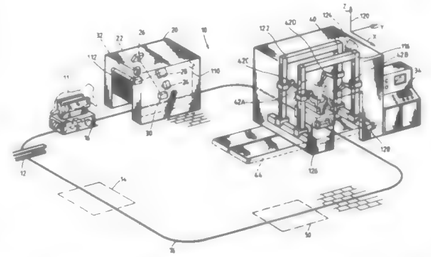
1. A method for mechanical removal of the viscera from the belly cavity of slaughtered poultry hanging by the legs from hooks which are moved in a conveyor along a drawing device, the method comprising the step of tilting, during removal of the viscera, the body of the poultry from a hanging, vertical position through a predetermined angle about an axis running essentially parallel to a line through the hip joints, to a second position, in which the shoulder joints are situated at a height essentially at least as high as the hip joints.

5,334,084

METHOD AND APPARATUS FOR AUTOMATICALLY TRIMMING FATTY TISSUE FROM ANIMAL CARCASSES

William H. O'Brien, Amarillo, Tex., and James M. Malloy, Albay, Calif., assignors to Texas Beef Group, Amarillo, Tex.

Continuation-in-part of Ser. No. 6,831, Jan. 21, 1993, which is a continuation-in-part of Ser. No. 888,256, May 22, 1992, Pat. No. 5,205,779, which is a continuation of Ser. No. 754,527, Sep. 4, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 43,414
Int. Cl.[5] A22C *25/14*
U.S. Cl. 452—157 41 Claims



1. An apparatus for trimming fatty tissue from an animal carcass, said apparatus comprising:
a vision system being arranged to scan at least a portion of said carcass, said vision system producing a signal corresponding to a three-dimensional internal image of said scanned portion of said carcass;
a signal processor being coupled to receive said signal, said signal processor processing said signal to determine a

VOL 1165 ISS 1 AUG 2 1994 UMI

cutting path for trimming fatty tissue from said carcass; and

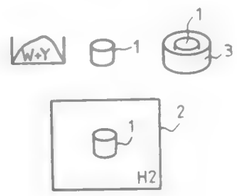
at least one automated cutting implement being controllably moveable along said cutting path to trim said fatty tissue from said carcass.

5,334,085

PROCESS FOR THE MANUFACTURE OF AN IMPREGNATED CATHODE AND A CATHODE OBTAINED BY THIS PROCESS

Arvind Shroff, Paris, France, assignor to Thomson Tubes Electroniques

Division of Ser. No. 645,693, Jan. 25, 1991, abandoned. This application May 26, 1992, Ser. No. 887,663
Claims priority, application France, Feb. 9, 1990, 90 01518
Int. Cl.[5] H01J *9/04*
U.S. Cl. 445—51 1 Claim



1. A process for preparing an impregnated cathode having an electron emissive surface, comprising:

a. preparing an emissive pellet by copressing a mixture of a powder having the stoichiometric proportions of about 80 wt. % of at least one refractory element or alloy selected from the group consisting of tungsten, molybdenum, tantalum, and rhenium, about 2 wt. % of a powder of an electron-emission-improving element or alloy selected from the group consisting of osmium, ruthenium, iridium, scandium and scandium oxide, and about 15 wt. % of an electron emissive material including;

1. a powder of barium and calcium aluminates, or with

2. barium and calcium carbonate to which alumina has been added,

the alumina content of the electron emissive material being about 3 wt. % of said mixture,

b. sintering said pellet in a hydrogen atmosphere at a temperature of about 2000° C., and c. attaching said emissive pellet to a support, said pellet having a top electron emissive surface which forms the emissive surface of said cathode.

5,334,086

APPARATUS FOR HIGH VOLTAGE TREATMENT OF CATHODE RAY TUBE

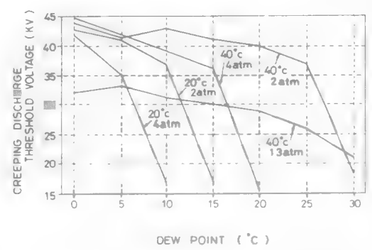
Kinjiro Sano; Wataru Imanishi; Yoshihisa Nakajima, and Masaaki Kinoshita, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 912,138, Jul. 9, 1992, Pat. No. 5,252,098, which is a continuation of Ser. No. 672,869, Mar. 20, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,675
Claims priority, application Japan, Mar. 20, 1990, 2-71378; Mar. 27, 1990, 2-77571; Oct. 8, 1990, 2-270741
Int. Cl.[5] H01J *9/44*
U.S. Cl. 445—62 17 Claims

3. An apparatus for implementing high voltage treatment for a cathode ray tube, including a neck having one end closed with a stem, and housing an electron gun including at least first and second electrodes, and first and second stem pins, external to the cathode ray tube neck and housing, for the first and second electrodes, the apparatus comprising:

first means for establishing a high pressure gas atmosphere around the neck;

second means for applying a voltage which is sufficiently higher than an operating voltage of the cathode ray tube between the first and second stem pins after establishing the high pressure gas atmosphere; and



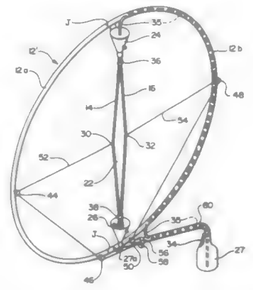
a heating source external to the cathode ray tube neck and housing, for externally heating the part of the stem containing the first and second stem pins, above a temperature of the high pressure gas atmosphere, to thereby prevent a creeping discharge external to the cathode ray tube neck and housing due to the voltage applied to the first and second stem pins.

5,334,087

BUBBLE MAKER

Gene A. Messina, 22 William Penn Dr., Stonybrook, N.Y. 11790

Division of Ser. No. 769,333, Oct. 1, 1991, Pat. No. 5,224,892, which is a continuation of Ser. No. 696,049, May 6, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 27,390
Int. Cl.[5] A63H *33/28*
U.S. Cl. 446—15 1 Claim



1. A bubble maker comprising, in combination:

(a) support means defining vertically spaced first and second support points;

(b) a first elongate fluid transport means having upper and lower ends and secured at its said upper end to said first support point and at its said lower end to said second support point;

(c) a second elongate fluid transport means having upper and lower ends and secured at its said upper end to said first support point and at its said lower end to said second support point, said first and second elongate fluid transport means being spaced apart intermediate said first and second support points to define a gap therebetween;

(d) dispensing means mounted on said support means adjacent said first support point for dispensing bubble-forming solution onto said first and second elongate fluid transport means adjacent said upper ends thereof;

(e) collection means mounted on said support means adjacent said second support point for collecting excess bubble-forming solution adjacent said lower ends of said first and second elongate fluid transport means; and,

(f) pump means for pumping bubble-forming solution from said collection means to said dispensing means;

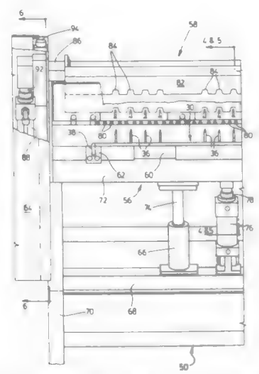
whereby, when said support means is oriented with said first point at an elevation substantially greater than that of said second point and bubble-forming solution is pumped into said dispensing means, said bubble-forming solution passes downwardly along said first and second elongate fluid transport means through gravity while simultaneously forming a thin film of bubble-forming solution spanning said gap so that a gentle air current passing through said gap causes said film of bubble-forming solution to be separated from said first and second elongate fluid transport means and to form a bubble while excess bubble-forming solution flows downwardly to, and is collected by, said collection means from which it can be recirculated to said dispensing means by said pump means.

5,334,088

APPARATUS FOR COMBING AND DECOMBING BACON

Claude P. Le-Normand, 18 Firwood Crl, Islington, Canada M9B 2V7 ; Carlos D. Martinez, 27 Dixington Crl, Weston, Canada M9P 2K3 , and John M. Jones, 1901 Martingrove Apt 512, Toronto, Canada M9V 3P1

Filed Apr. 23, 1993, Ser. No. 59,019
Int. Cl.[5] A22C *17/02*
U.S. Cl. 452—193 5 Claims



1. A product processing facility for processing product in association with product hanger apparatus, and comprising:

processing chamber means;

support bars secured to said conveyor at spaced intervals, and adapted to substantially span a predetermined width within said processing chamber means, said support bars defining a pre-determined length having two ends;

product hangers defining a predetermined length having first and second ends;

attachment means on said product hanger, whereby the same may be connected to said support bars at either end;

a plurality of spaced apart needle members extending from said product hangers substantially normal thereto, whereby individual pieces of said product may be engaged by said needle members, and said hangers may be suspended from said support bars within said processing chamber, with said products spaced apart from one another side-by-side along said hangers;

a support table for supporting product;

a hanger support for supporting a said hanger adjacent to one end of product;

first pressure means adapted to apply pressure to a surface of said product, and

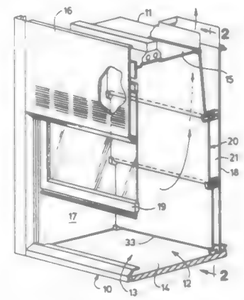
second pressure means adapted to apply pressure to said needle members, whereby said needle members are forced through said product, said pressure means being thereafter releasable, for removal of said hanger and said product thereon.

5,334,089

FUME HOOD WITH ADJUSTABLE BAFFLE ASSEMBLY

Marshall K. Beck, and John M. Bastian, both of Manitowoc, Wis., assignors to Fisher Hamilton Scientific Inc., Two Rivers, Wis.

Filed Sep. 18, 1992, Ser. No. 947,783
Int. Cl.[5] F24F *7/00*
U.S. Cl. 454—62 8 Claims



1. In a fume hood with a housing defining a chamber with a front opening, a baffle assembly disposed in the chamber, said baffle assembly comprising: a plurality of baffle plate members disposed in substantially end-to-end relation; and baffle support means fixedly secured to the housing for receiving bottom edge portions of the baffle plate members and supporting the baffle plate members in substantially upright positions, said support means including retaining means for releasably securing the top edge portion of one of the baffle plate members at a plurality of predetermined positions to vary the distance between that one baffle plate member and an adjacent plate member.

5,334,090

INTEGRATED CABIN PRESSURE CONTROLLER

John F. Rix, Tucson, Ariz., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Sep. 25, 1992, Ser. No. 951,070
Int. Cl.[5] B64D *13/04*
U.S. Cl. 454—72 20 Claims

1. Apparatus for generating cabin pressure commands, comprising:

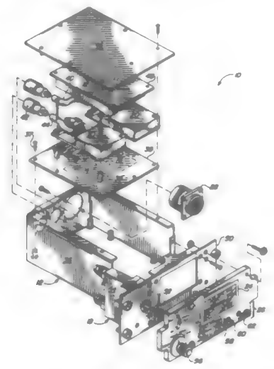
a housing

primary controller means, mounted within said housing, for generating said commands according to at least one parameter;

backup controller means, mounted within said housing, for selectively generating said commands instead of said primary controller means;

VOL 1165 ISS 1 AG 2 1994 UMI

selector means, mounted on a visible surface of said housing, for allowing said at least one parameter to be set; and



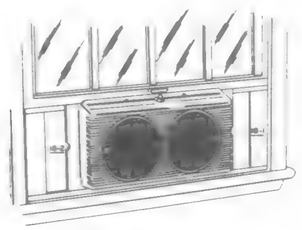
display means, mounted on a visible surface of said housing, for selectively displaying said at least one parameter.

5,334,091

WINDOW FAN

Shao Shih-Chin, Framingham, Mass., assignor to Holmes Products Corp., Milford, Mass.

Continuation of Ser. No. 693,303, May 1, 1991, Pat. No. 5,190,496. This application Sep. 24, 1992, Ser. No. 950,942
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] F24F *7/013*
U.S. Cl. 454—210 5 Claims



1. A window fan comprising:

a) a housing having at least one air flow opening adapted to communicate with the space inside of a window, at least one air flow opening adapted to communicate with the space outside of a window, and an adjustably extendable side extension, said adjustably extendable side extension comprising a first outer guide and a second outer guide, said first outer guide having formed on its inner surface at least one row of projections, and a plurality of telescoping panels, said telescoping panels being disposed between said pair of outer guides on opposite sides of said at least one row of projections;

b) a locking assembly mounted on said housing, said locking assembly including means for engaging the projections on said first outer guide in a ratchet-type fashion, permitting movement thereof upon the application thereto of a substantial force; and

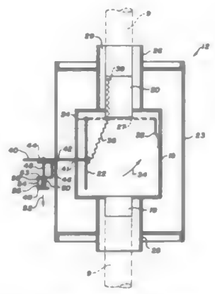
c) at least one fan unit mounted inside said housing.

5,334,092

DUCT SEALING APPARATUS AND DUCTING SYSTEM

Lothar Binzer, 5721 124th St., Surry, Canada

Filed Sep. 3, 1992, Ser. No. 940,071
Int. Cl.[5] F23J *11/00*
U.S. Cl. 454—369 18 Claims



1. Apparatus for sealing a duct comprising:

an enclosed body having inlet and outlet passages for communicating the interior of the enclosed body with the duct;

an outer enclosure about the enclosed body to define an air space about the body, the outer enclosure having an inlet passage and an outlet passage to permit communication of the inlet and outlet passages of the enclosed body with the duct;

duct sealing means located within the enclosed body and movable between an open position to permit flow through the enclosed body and a closed position to block one of the passages of the enclosed body to prevent flow through the body;

actuating means for moving the duct sealing means from the open position to the closed position; and

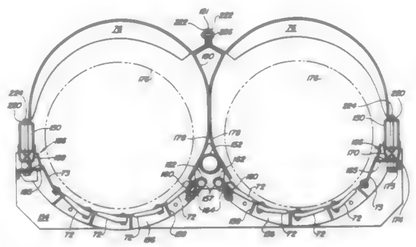
heat sensing means for detecting elevated temperatures indicative of a fire and activating the actuating means.

5,334,093

DETACHABLE COVERS FOR AN AXIAL SEPARATOR

Roderick J. Jensen, Moline; Richard L. Day, Port Byron, and Edwin M. Gerber, Hooppole, all of Ill., assignors to Deere & Company, Moline, Ill.

Filed May 10, 1991, Ser. No. 698,760
Int. Cl.[5] A01F *12/28*
U.S. Cl. 460—83 4 Claims



1. A cover for an axial separator comprising

a covering member having a first longitudinal edge, a second longitudinal edge parallel to the first longitudinal edge, an inside surface and an outside surface, the first longitudinal edge is provided with an outwardly extending flange and the second longitudinal edge is provided with an upwardly extending flange, the outside surface of the covering member is provided with handles, the covering member is also provided with a covering flange for covering a gap formed by adjacent covers when mounted to an axial separator;

spiral vanes secured to and extending inward from the inside surface of the covering member, the spiral vanes are arranged at an angle of inclination; and

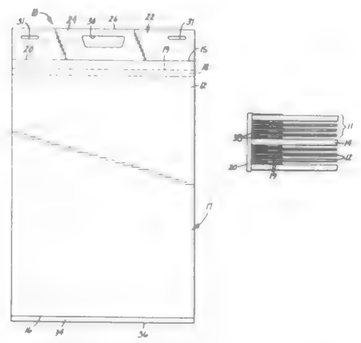
means for mounting the cover to an axial separator, the means cooperating with the mounting flanges, the means for mounting comprise mounting bolts passing through the mounting flanges.

5,334,094

CARBONLESS PAD ASSEMBLY

June M. Armbruster, River Falls, Wis., and Louis M. Leichter, Mendota Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 21, 1992, Ser. No. 948,164
Int. Cl.[5] B41L *1/24*
U.S. Cl. 462—17 17 Claims



1. A pad assembly comprising:

a multiplicity of flexible sheets, each sheet being generally of the same size, having front and rear surfaces, having peripheral edges including first and second opposite edges, having a band of repositionable pressure sensitive adhesive coated on said rear surface adjacent to and spaced by a small predetermined spacing from said first edge and spaced by a large predetermined spacing from said second edge, said sheets being disposed in a stack with the corresponding peripheral edges of the sheets aligned, the front and rear surfaces of adjacent sheets facing each other, and the band of repositionable pressure sensitive adhesive on each sheet adhering that sheet to the adjacent sheet in the stack; and

a layer of padding compound disposed over and releasably adhered to the aligned first edges of the sheets in the stack, said padding compound being sufficiently flexible to allow, after the band of repositionable pressure sensitive adhesive on the rear surface of one of the sheets in the stack is separated from the front surface of the adjacent sheet in the stack, that one sheet to be pivoted away from that adjacent sheet by hinge-like flexing of the padding compound between the sheets, and said layer of padding compound being sufficiently adhered to the sheets to remain adhered to the adjacent sheets during such flexing while affording manual peeling of the one sheet from the padding compound to separate that one sheet from the stack; and,

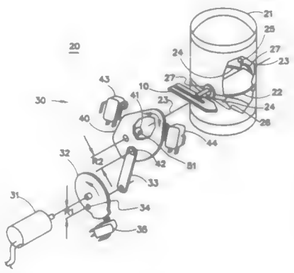
an image transfer system arranged between each of the plurality of sheets for transferring a writing on one of the sheets to another sheet.

5,334,095

ROTARY COUPLER WITH SHAFT MISALIGNMENT AND OVERTRAVEL TOLERANCE

George J. Colling, 199 Maple La., Jordan, Minn. 55352, and Dale A. Mueller, 15215 N. 67th Ave., Maple Grove, Minn. 55311

Continuation-in-part of Ser. No. 998,199, Dec. 30, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 127,673
Int. Cl.[5] F16D *3/78, 1/02;* F16B *21/14, 21/18*
U.S. Cl. 464—101 13 Claims



1. A mechanical coupler for rotational coupling of first and second coaxial shafts, each shaft having a slotted end proximate the slotted end of the other shaft, comprising:

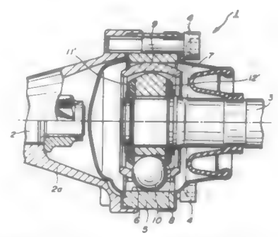
an elongated blade of resilient material having first and second ends, said blade being divided by a longitudinal slit into first and second strips connected together by bridging means, said blade further being folded into a V-shape having first and second segments which extend from an intermediate bight to the first and second ends of said blade respectively, a least the first segment having a shaft engaging region spaced from the bridging means and formed to engage shafts to be coupled so as to be retained in a predetermined position relative thereto.

5,334,096

UNIFORM MOTION TYPE UNIVERSAL JOINT WITH NO GENERATION OF HIGH FREQUENCY VIBRATING COMPONENT

Keijiro Iwao, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 21, 1992, Ser. No. 822,955
Claims priority, application Japan, Jan. 21, 1991, 3-005109
Int. Cl.[5] F16D *3/227*
U.S. Cl. 464—146 11 Claims



1. A mechanical device which is operated and is involved in at least one slide motion, comprising:

a) a pair of cooperative members, one of the pair of cooperative members being at least rolled and slid on the other of

VOL 1165 ISS 1 AG 2 1994 UMI

the pair of cooperative members in response to an external force exerted on either of the pair of cooperative members, the pair of cooperative members being relatively harmonically vibrated together in response to the external force causing relative harmonic vibrations to both of the pair of cooperative members; and

b) means for providing a displacement variation for a portion of one of the pair of cooperative members contacting the other of the pair of cooperative members in a direction of the external force so that a phase of the displacement variation is at least different from a phase of the harmonic vibrations generated due to a frictional force created by the sliding contact between the pair of cooperative members;

wherein the mechanical element is a uniform motion type universal joint having a drive portion and a driven portion operatively connected to each other, said driven portion including a rotation axle, and wherein a first one of the pair of cooperative members comprises an inner joint member which is installed on the rotation axle of the universal joint, the rotation axle serving as a driven axle, and a plurality of balls each installed in a space defined by a second one of the pair of cooperative members includes a plurality of ball rolling grooves installed at a side of the inner joint member;

wherein said displacement variation providing means comprises a sensor for detecting a rotational phase of the rotation axle; first means responsive to an output signal from the sensor for generating a command signal according to the output signal from the sensor; second means for generating a pair of voltages in response to the command signal; and third means installed between the rotation axle and the inner joint member for carrying out the displacement variation between the rotation axle and the inner joint member in a direction which coincides with an axial direction of the rotation axle according to the pair of voltages which are applied thereacross, a phase of each of the pair of voltages being different from the rotation phase of the rotation axle.

5,334,097

TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION SUPPORTED BY A COMMON BEARING AND REACTION STATIONARY SHAFT

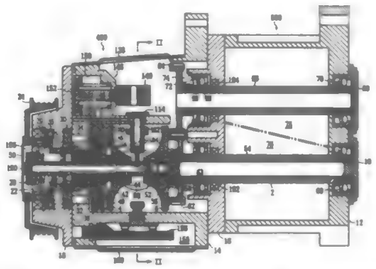
Yudai Tatara, Susono; Yasunobu Jufuku, Gotenba; Hisashi Machida, and Hiroyuki Ito, both of Fujisawa, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Nihon Seiko Kabushiki Kaisha, Tokyo, both of Japan

Filed Jan. 4, 1993, Ser. No. 223

Claims priority, application Japan, Jan. 7, 1992, 4-019491; Jan. 22, 1992, 4-032769

Int. Cl.[5] F16H *15/16*

U.S. Cl. 476—8 12 Claims



1. A toroidal type continuously variable transmission comprising an input disk, an output disk and power rollers sandwiched and frictionally engaged between said input and output disks so as to transmit rotational power therebetween at a transmission ratio variable according to an inclination of said power rollers relative to said input and output disks, wherein the improvement comprises:

a housing;

a stationary shaft mounted to said housing;

a first bearing means supporting said input disk radially around said stationary shaft so as to be rotatable coaxially therearound;

a second bearing means supporting said output disk radially around said stationary shaft so as to be rotatable coaxially therearound;

a third bearing means supporting said input disk relative to said stationary shaft against an axial thrust oriented away from said output disk, while allowing said input disk to rotate coaxially around said stationary shaft; and

a fourth bearing means supporting said input disk relative to said stationary shaft against an axial thrust oriented away from said input disk, while allowing said output disk to rotate coaxially around said stationary shaft,

wherein said third bearing means is a radial-thrust bearing means, and said input disk is axially supported from said third bearing means via a hollow shaft member which is torque-transmittingly connected with said input disk at a first end thereof and is radially and axially supported by said third bearing means at a second end thereof opposite to said first end thereof.

5,334,098

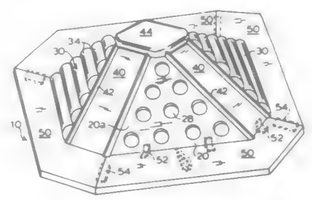
PLAYGROUND DEVICE

Rodney T. Pope, Cherryville; Steven D. Barber, and Daniel R. Hall, both of Charlotte, all of N.C., assignors to Specialty Products Incorporated, Charlotte, N.C.

Filed Feb. 25, 1993, Ser. No. 22,444

Int. Cl.[5] A63B *9/00*

U.S. Cl. 472—116 9 Claims



1. A children's playground device adapted for climbing and sliding on outer surface portions thereof, comprising:

(a) a first set of four generally planar members each providing an inclined irregular outer surface adapted for climbing:

(b) a second set of four generally planar members each providing an inclined smooth outer surface adapted for sliding;

(c) connecting and mounting means removeably interconnecting and mounting said planar members in side by side relationship in a manner wherein:

(i) said planar members form removable sides of an integral structure simulating an eight-sided pyramid;

(ii) individual planar members of said first and second sets are mounted in an alternating sequence such that each said climbing surface is located between two said sliding surfaces;

(iii) each planar member of the first set is positioned on a side of said structure opposite from a side of said structure on which another planar number of the first set is positioned; and

(iv) each planar member of the second set is positioned on a side of said structure opposite from a side of said structure on which another planar number of the second set is positioned.

5,334,099

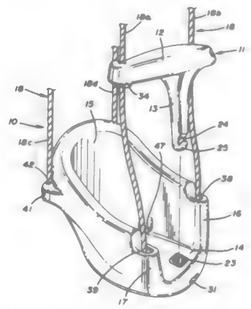
RESTRAINING BAR ASSEMBLY FOR A SWING

Mark A. Marra, and Robert L. Quinlan, Jr., both of Stow, Ohio, assignors to The Little Tikes Company, Hudson, Ohio

Filed Sep. 4, 1992, Ser. No. 940,638

Int. Cl.[5] A63G *9/00*

U.S. Cl. 472—118 12 Claims



1. A restraining bar assembly for a toddler swing, the swing having a seat and arm rests, comprising a T-bar including a cross bar and a lower extension member, a latch mechanism for connecting said lower extension member to the seat of the swing, said latch mechanism including spring means attached to and biased against the seat of the swing for engaging said lower extension member, said spring means including a tail contacting the seat for biasing said spring means against the seat, and positioning guide means for securing said cross bar to the arm rests of the swing.

5,334,100

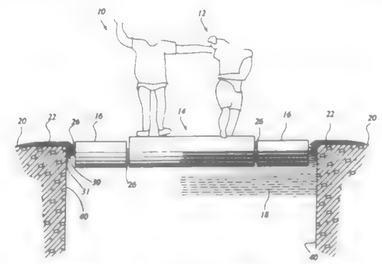
SAFE BIRLING

Ken Bailey, 3800 Anderson Street, Whitby, Ontario, Canada L1N 5R5

Filed Feb. 17, 1993, Ser. No. 18,105

Int. Cl.[5] A63B *23/06*

U.S. Cl. 472—127 19 Claims



1. An amusement apparatus for birling, or balancing on a rotating cylinder, comprising:

a birling cylinder strong enough to bear the weight of at least two persons, and having a coating on its longitudinal surface soft enough to prevent injury in common falls from a standing position;

rotation control means to slow, speed, stop, or start the rotation of the birling cylinder;

fastening means to position the birling cylinder horizontally in water between two members or walls, such as containing walls of a swimming pool; and

access means to allow walking to the birling cylinder without entering the water; said means comprising two stationary platform cylinders flattened on top and covered with a soft protective coating, each of which is oriented longitudinally parallel to the birling cylinder and extends between one end of the birling cylinder and one of two said members or walls in a manner to prevent injury in common falls from a standing position;

whereby a person can walk from a poolside surface to the birling cylinder and balance there, or climb from water in the pool onto the birling cylinder and balance there, such that if the rotation of said cylinder, or any loss of footing or any other common reason such as playful pushing causes the person to lose their balance and fall either on said cylinder or the access means, no injury will result.

5,334,101

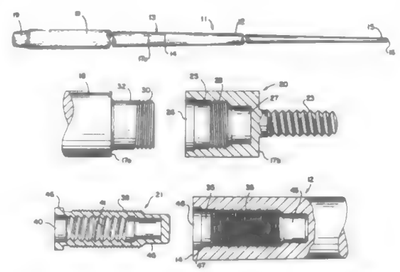
CONNECTOR FOR DETACHABLE BILLIARD CUE

James D. McDermott, Germantown, Wis., assignor to McDermott Cue Manufacturing, Inc., Menomonee Falls, Wis.

Filed May 27, 1993, Ser. No. 68,544

Int. Cl.[5] A63D *15/08*

U.S. Cl. 473—44 8 Claims



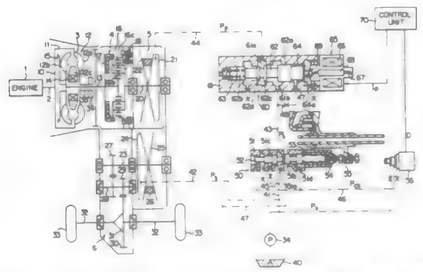
1. A cue connector for a detachable, jointed billiard cue comprising a first and a second section, said connector including a one-piece joint fitting adapted to be carried by the first cue section and a one-piece insert fitting adapted to be carried by the second cue section, the first cue section being provided with an axially extending shaft portion of reduced diameter having a proximal end, a distal end and a threaded portion intermediate the proximal and distal ends of said shaft portion, said one-piece joint fitting having a first enlarged portion defining an open-ended cylindrical chamber, said chamber at least partially defined by a threaded section spaced inwardly from the open end of said chamber and adapted for threading engagement with the threaded portion of the shaft portion of the first cue section, said camber further defined by an inner portion of relatively reduced diameter adapted for receiving the distal end of the first cue section, said joint fitting further including a protruding threaded pin, the second cue section containing an open-ended re-entrant bore for receiving said insert fitting, said bore defined by an internally threaded portion, an enlarged shouldered stop at the open end of said bore and an inner bore portion of reduced diameter, said insert fitting having an externally threaded portion adapted for threading engagement with the threaded portion of said bore of the second cue section, a first end of reduced diameter adapted for seating within said inner reduced bore portion of the second cue section, a outwardly flanged end adapted to engage said shouldered stop formed in said bore of the second cue section, and a re-entrant bore at least partially defined by a threaded portion for detachably receiving the threaded pin of said joint fitting.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,102
CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE TRANSMISSION

Keiji Sato, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,806
Claims priority, application Japan, Oct. 11, 1991, 3-292349
Int. Cl.[5] F16H *61/06, 61/18*
U.S. Cl. 474—18 **8 Claims**



1. A control system for a continuously variable transmission having a primary pulley operatively connected to an engine, a secondary pulley operatively connected to vehicle wheels, a belt wound around both the primary and secondary pulleys for transmitting power of the engine to the vehicle wheels, a primary cylinder provided on the primary pulley and secondary cylinder provided on the secondary pulley both for adjusting a transmission rate thereof, said control system comprising:
- a primary control valve for producing a primary control pressure for the primary cylinder;
- a secondary control valve for producing a secondary control pressure for the secondary cylinder;
- control means connected to said primary and secondary control valves for changing the primary and secondary control pressures to change the transmission ratio of said transmission;
- actuator means provided on said primary control valve for receiving an electric signal from said control means; and
- setting means for setting maximum primary control pressure of said primary control valve to a predetermined value representing an intermediate transmission ratio between maximum and minimum transmission ratios so as to prevent slipping of said belt and locking of said wheels when electric current stops in said primary control valve due to a malfunction of said system.

5,334,103
INSITU ADJUSTABLE DUAL RANGE BELT DRIVE ASSEMBLY

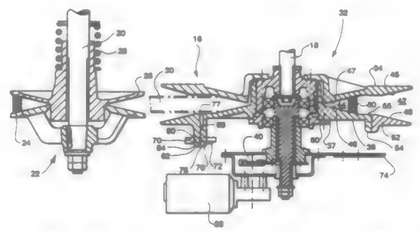
Jose G. T. Gryspeerdt, Neveie, Belgium, assignor to Ford New Holland, Inc., New Holland, Pa.

Division of Ser. No. 997,251, Dec. 9, 1992, Pat. No. 5,282,773, which is a division of Ser. No. 691,196, Apr. 25, 1991, Pat. No. 5,191,755. This application Oct. 28, 1993, Ser. No. 142,026
Claims priority, application European Pat. Off., Apr. 26, 1990, EP90.201.055.2
Int. Cl.[5] F16H *59/00, 55/52, 9/12*
U.S. Cl. 474—18 **6 Claims**

1. In a variable diameter belt-type power transfer assembly having a drive belt engageable with an adjustable sheave including a pair of opposing, coaxial flanges, one of said flanges being axially movable relative to the other said flange, the improvement comprising:

both said flanges having opposed first belt engaging surfaces flaring radially outwardly with respect to each other so as to define a first, variable diameter belt receiving groove therebetween, and opposed second belt engaging surfaces flaring radially outwardly with respect to each other so as to define a second, variable diameter belt receiving groove therebetween, said second belt receiving groove being located radially inwardly with respect to said first belt receiving groove; and

one of the flanges including an outer flange portion provided with one of said first belt engaging surfaces and an inner

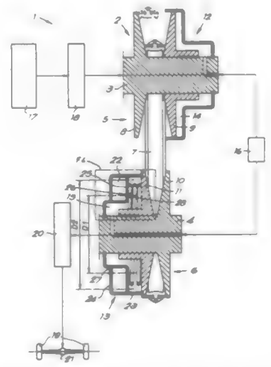


flange portion provided with one of said second belt engaging surfaces, said outer flange portion being releasably attached to said inner flange portion and being selectively movable between an operative position in which said drive belt is operable within said first belt receiving groove and a retracted position to allow said drive belt to be operable within said second belt receiving groove.

5,334,104
TRANSMISSION UNIT FOR MOTOR VEHICLES

Rafaël Schuermans, Maasmechelen, Belgium, assignor to VCST, naamloze vennootschap, Sint-Truiden, Belgium

Filed Mar. 12, 1993, Ser. No. 29,279
Claims priority, application Belgium, Mar. 13, 1992, 09200253
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—28 **17 Claims**

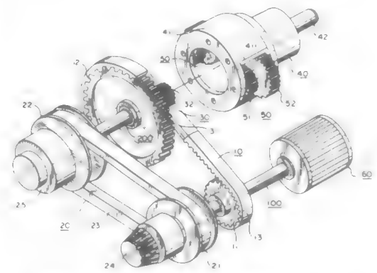


1. Transmission unit for motor vehicles comprising: a continuously variable transmission; at least one hydraulic cylinder/-piston unit with a pressure chamber co-operating with the continuously variable transmission; a pressure compensation chamber co-operating with the pressure chamber; a passage connection connecting the pressure compensation chamber with the pressure chamber; and a pressure-sensitive passage control member provided in the passage connection, the pressure-sensitive passage control member increasingly closing off a passage opening of the passage connection as pressure in the pressure chamber increases.

5,334,105
VARIABLE SPEED MECHANISM

Fue-Jye Wang, No. 29-20, Dong-Tsuen Rd., Taiping, Taichung Hsien, Taiwan

Filed Jun. 25, 1993, Ser. No. 81,131
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—69 **3 Claims**

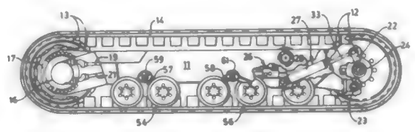


1. A variable speed mechanism comprising:
- a timing transmission set comprising a first element mounted on a first shaft, a second timing element pivoted to a second shaft, and an endless fastening element encircling said first timing element and said second timing element;
- a variable speed belted wheel set comprising a belted wheel mounted on said first shaft, a second belted wheel mounted on said second shaft, and an endless belt encircling a wheel groove of said first belted wheel and a wheel groove of said second belted wheel;
- a sun gear set comprising a first sun gear pivoted to said second shaft and fastened with said first timing element, and a second sun gear mounted on an outer end of said second shaft;
- a locating member having one end provided with a cylindrical portion and having another end provided with a power output shaft, said cylindrical portion having an open end dimensioned to receive therein said sun gear set, said cylindrical portion being provided in a circumference thereof with at least one window of a predetermined shape and having a pivot mounted there in axially;
- a planetary gear set corresponding in number to said window and pivoted respectively to said pivot of said window, said planetary gear set comprising a first planetary gear engaging said first sun gear, said planetary gear set further comprising a second planetary gear fastened with said first planetary gear such that said second planetary gear meshes with said second sun gear; and
- a power source to drive said first shaft of said second shaft.

5,334,106
HYDRAULIC RECOIL AND BELT TENSION CONTROL SYSTEM

Robert J. Purcell, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed May 6, 1993, Ser. No. 57,396
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—110 **5 Claims**

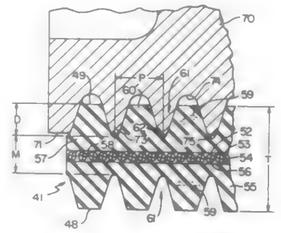


1. A hydraulic recoil and belt tension control system for an endless belt propulsion device having a drive wheel, a reversible hydraulic motor drivingly connected to the drive wheel, a first motor conduit adapted to receive pressurized fluid to drive the motor in a first direction, a second motor conduit adapted to receive pressurized fluid to drive the motor in a second direction, an idler wheel movable relative to the drive wheel, and an endless drive belt entrained around the drive and idler wheels, comprising:
- an hydraulic actuator having first and second actuating chambers and a piston rod operatively connected to the idler wheel;
- a first check valve disposed between the first motor conduit and the first actuating chamber;
- a second check valve disposed between the second motor conduit and the first actuating chamber; and
- a relief valve connected to the first actuating chamber.

5,334,107
BELT CONSTRUCTION, THE COMBINATION OF THE BELT CONSTRUCTION AND A PULLEY AND METHODS OF MAKING THE SAME

Jack D. White, Jr., Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

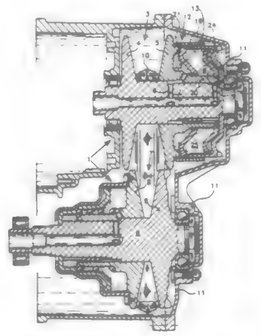
Division of Ser. No. 717,223, Jun. 18, 1991, Pat. No. 5,273,496. This application Jul. 23, 1993, Ser. No. 96,319
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[5] F16G *1/00*
U.S. Cl. 474—238 **5 Claims**



1. In the combination of an endless power transmission belt construction having opposed side edge means and having opposed inner surface means and outer surface means with each said surfaces means defining a plurality of longitudinally disposed and alternately spaced apart like projections and grooves, said belt construction having a certain thickness between the roots of said groves in said opposed surface means thereof, and a rotatable pulley means having an outer peripheral ribbed surface means meshing with a portion of one of said inner surface means and said outer surface means of said belt construction and defining a plurality of longitudinally disposed and alternately spaced apart like projections and grooves that respectively have portions thereof for serially meshing respectively with cooperating portions of said grooves and projections of said one surface means of said belt construction, the improvement wherein the depth of said grooves of each said surface means of said belt construction is substantially less than the approximately 2.4 mm depth of the groove of a similar belt construction that is adapted to have one of the opposed surface means thereof mesh with said ribbed surface means of said pulley means, the depth of said grooves in said inner surface means of said belt construction being substantially the same as the depth of said grooves in said outer surface means of said belt construction, said depth of said grooves of said belt construction being approximately 2.0 mm, said certain thickness of said belt construction being approximately 2.82 mm and the entire thickness of said belt construction being approximately 6.82 mm, at least one of said surface means of said belt construction being cogged.

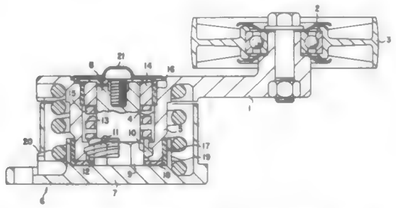
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,108
PULLEY
Hendrikus F. Lamers, Goirle, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands
Filed Feb. 19, 1993, Ser. No. 23,044
Claims priority, application Netherlands, Mar. 9, 1992, 9200423
Int. Cl.[5] F16H 59/00
U.S. Cl. 474—8 7 Claims



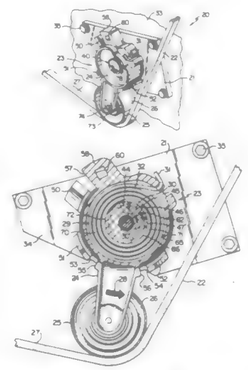
1. Pulley, suitable for application in a continuously variable transmission, said pulley comprising: a set of discs which are fitted on a shaft and between which an endless belt can be fitted, at least one of said discs being axially displaceable and being provided with cylinder/piston means, said cylinder/piston means having at least one pressure chamber provided with radial and concentric cylinder walls, at least one of the walls being sealingly displaceable along a circular surface of one of the cylinder walls, at least one of the radial walls of the pressure chamber being secured by means of a force fit, and being provided with a resilient hinge approximately at the position of said fit.

5,334,109
BELT TENSION ADJUSTING DEVICE
Tomoyoshi Izutsu, and Kazuki Kawashima, both of Iwata, Japan, assignors to NTN Corporation, Osaka, Japan
Filed Dec. 16, 1992, Ser. No. 991,008
Claims priority, application Japan, Dec. 18, 1991, 3-104399[U]; Dec. 18, 1991, 3-104451[U]
Int. Cl.[5] F16H 7/08
U.S. Cl. 474—135 2 Claims



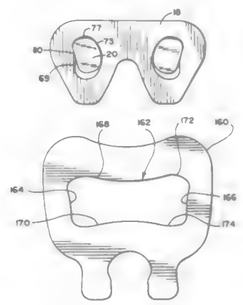
1. A belt tension adjusting device comprising a fixed member, a support shaft extending vertically from said fixed member, a pulley arm having a boss at one end thereof and a pulley mounted at the other end thereof, said boss being formed with a bore, said pulley arm pivotally mounted on said support shaft with said support shaft received in said bore, a damper mechanism mounted between said support shaft and said boss for damping the pivoting motion of said pulley arm, a tension adjusting spring coupled to said pulley arm for biasing said pulley to impart tension to a belt, and a bearing for bearing radial load produced when said pulley arm pivots, at least part of said bearing being located on the outer periphery of said boss of said pulley arm.

5,334,110
BELT TENSIONING SYSTEM, BELT TENSIONING THEREFOR AND METHOD OF MAKING THE SAME
David E. Gardner, Royal Oak, and David B. Novak, Bloomfield Hills, both of Mich., assignors to Dayco Products, Inc., Dayton, Ohio
Division of Ser. No. 970,345, Oct. 30, 1992, Pat. No. 5,254,048, which is a division of Ser. No. 832,297, Feb. 7, 1992, Pat. No. 5,190,502. This application Jul. 29, 1993, Ser. No. 99,283
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] F16H 7/08
U.S. Cl. 474—135 10 Claims



1. In a method of making a belt tensioner for a belt tensioning system that comprises a support means having an abutment means and an endless transmission belt construction carried by said support means and arranged to move in a certain path relative to said support means, said tensioner comprising an arm adapted to be pivotally mounted to said support means, a pully rotatably carried by said arm and being adapted to be in engagement with said belt construction, and a wound coiled spring having opposed ends one of which is adapted to be operatively interconnected to said abutment means of said support means and the other of which is operatively interconnected to said arm whereby the force of said wound coiled spring is adapted to pivot said arm in a direction that urges said pully against said belt construction with a force that tensions said belt construction, the improvement comprising the steps of forming said arm to have a shoulder means that is engaged by said one of said opposed ends of said wound coiled spring by the force of said wound coiled spring so as to permit insertion and removal of said arm and said wound coiled spring as a self-contained unit to and from said support means when said arm is pivoted to a certain position where said shoulder means of said arm engages said one end of said wound coiled spring and effectively holds said one end of said wound coiled spring out of contact with said abutment means of said support means, and forming said arm to be adapted to be mounted to said support means with a single fastening member.

5,334,111
SINGLE PIN ROCKER JOINT CVT CHAIN
Edward H. Cole, Jr., Utica, Mich., and Philip J. Mott, Dryden, N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Continuation-in-part of Ser. No. 778,409, Oct. 17, 1991, Pat. No. 5,192,253. This application Oct. 14, 1992, Ser. No. 961,077
Int. Cl.[5] F16G 13/04
U.S. Cl. 474—214 14 Claims



1. A rocker joint for a chain constructed of an assembly of links and pivot members, the chain comprising a plurality of sets of interleaved links, each link having a pair of spaced apertures, the apertures of one link set being transversely aligned with one set of apertures of the next adjacent link set, the apertures being defined by a series of surfaces,

the chain including a plurality of sets of guide row links interleaved with sets of non-guide row links, the sets of guide row links having pairs of flanking guide links located on the outside of the sets of guide row links, the apertures within the guide row links have at least one curved surface and the apertures within the non-guide row links have a plurality of curved surfaces, at least one of the non-guide row link apertures surfaces being convexly arcuate,

at least some of the sets of links including a load block member oriented generally transversely to the links,

the pivot member having a substantially flat front surface and a convex back surface, the back surface being defined by a plurality of radii,

the pivot member being received in the apertures of the flanking guide links such that the pivot member back surface engages the curved surfaces defined by the flanking guide links thereby preventing substantial rotation of the pivot member relative to the flanking guide links,

the pivot member being received in the apertures of some of the non-guide row links such that the front surface of the pivot member and the convexly arcuate surface of the non-guide row link aperture engage and rock on one another, and

the back surface of the pivot member being positioned for clearance from the non-guide row link aperture back surface as the surfaces move relative to one another as the chain articulates.

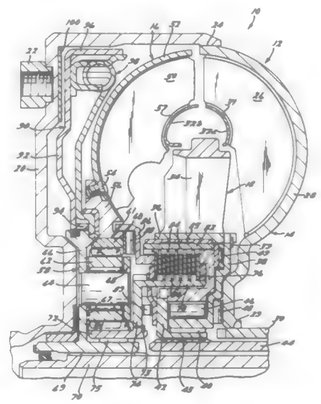
5,334,112
INPUT COMPOUNDING TORQUE CONVERTER
Thomas D. Nogle, Troy, and Valentin Botosan, Rochester Hills, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 13, 1992, Ser. No. 960,161
Int. Cl.[5] F16H 47/08
U.S. Cl. 475—59 18 Claims

1. An input compounding torque converter for converting and multiplying torque from a prime mover to an input shaft of a transmission, comprising:

impeller means operatively connected for rotation with a prime mover;

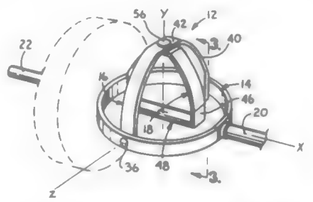
turbine means fluidly connected in driving relationship with said impeller means for receiving torque from said impeller means;

a planetary gear assembly interconnecting said turbine



means and an input shaft of a transmission for multiplying torque from said turbine means to the input shaft and a self-energizing brake assembly interconnecting a predetermined gear of said planetary gear assembly and a stationary portion of the transmission for holding stationary said predetermined gear against rotation in either direction of rotation when applied and allowing freewheeling motion of said predetermined gear in either direction when released.

5,334,113
MULTI-POSITION GRIP SYSTEM FOR BARBELLS
Ronald W. Roepke, 216 E. Hazelwood, Waterville, Kans. 66548
Filed Dec. 11, 1992, Ser. No. 989,552
Int. Cl.[5] A63B 21/075
U.S. Cl. 482—106 16 Claims



12. A multi-position grip system for use with barbells or the like, comprising:

(a) a pair of generally open-centered first frame members;

(b) an elongate bar rotatably intercoupling said first frame members in linear relationship for rotation of said members about a first axis defined by said bar;

(c) a pair of elongate weight-supporting bars axially coupled with said first frame members in opposed relationship with said first bar, said bars each including weight attachment means;

(d) a pair of second bail members, each having a pair of

VOL 1165 ISS 1 AG 2 1994 UMI

opposed ends connected by a bight portion, said second ends being concentrically and rotatably coupled with said first frame members about a pair of second axes defined by said second ends perpendicular to said first axis;

(e) a pair of third bail members, each having a pair of opposed ends connected by a bight portion, said third ends being coupled with a handgrip portion, said third bight portions being concentrically and rotatably coupled with said second bight portion for rotation of said third bail members about a pair of third axes intersecting said respective second and third bight portions; and

(f) means permitting cooperative rotation of said first frame, second, and third members to permit independent rotation of each of said handgrips about said three axes during use.

5,334,114

CONTROL SYSTEM FOR SERVO HYDRAULIC PRESSURE IN VEHICULAR AUTOMATIC TRANSMISSION

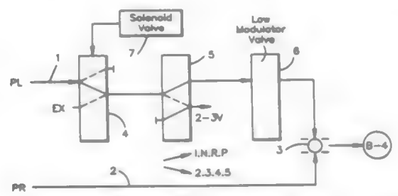
Masahiko Ando, Okazaki; Koji Noda, Anjo; Yoshihisa Yamamoto, Nishio; Masahiro Hayabuchi, Anjo; Kazumasa Tsukamoto, Toyota; Yasuo Hojo, Nagoya; Seitoku Kubo, Toyota; Yutaka Taga, and Hidehiro Oba, both of Aichi, all of Japan, assignors to Aisin AW Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of Japan

Filed Nov. 24, 1992, Ser. No. 980,605

Claims priority, application Japan, Dec. 3, 1991, 3-344120

Int. Cl.[5] F16H *3/44*

U.S. Cl. 475—119 **1 Claim**



1. A control system for servo hydraulic pressure in a vehicular automatic transmission provided with planetary gear mechanisms disposed between an input shaft and an output shaft so that shifting elements of the planetary gear mechanisms can be connected under control by servo hydraulic pressure to establish a different power flow in accordance with engagement or release of frictional engagement means and hence to achieve plural speed stages, comprising:

a servo pressure feed line for feeding, even in a non-running range, servo hydraulic pressure to at least one particular frictional engagement means out of plural frictional engagement means which are caused to simultaneously engage in a reverse range of the automatic transmission;

a directional control valve disposed in the servo hydraulic pressure feed line to control feed or drain of the servo hydraulic pressure to or from said particular frictional engagement means through the line; and

a solenoid valve for controlling the directional control valve to prevent the feed of the servo hydraulic pressure at vehicle speeds above a predetermined value.

5,334,115

CONTINUOUSLY OR INFINITELY VARIABLE TRANSMISSION FREE OF OVER-RUNNING CLUTCHES

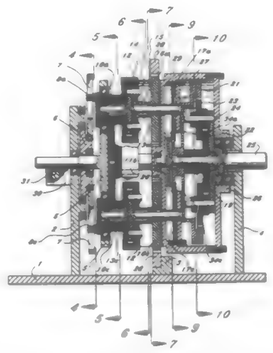
Paul B. Pires, Ben Lomond, Calif., assignor to Epilogics, Los Gatos, Calif.

Continuation of Ser. No. 660,292, Feb. 22, 1991, Pat. No. 5,226,859. This application Apr. 21, 1993, Ser. No. 51,193

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[5] F16H *3/70*

U.S. Cl. 475—169 **9 Claims**



1. A commutator assembly for use in a transmission such as an oscillating ratchet style continuously or infinitely variable transmission, said assembly comprising:

(a) a stationary commutator member having a continuous surface, one segment of which defines a continuous drive surface and a second segment of which defines a non-driving surface;

(b) a plurality of reaction members mounted for rotation about their own axes adjacent said commutator member and spaced apart about the center of the latter at predetermined distances from one another; and

(c) means supporting all of said reaction members for rotation about the center of said commutator member such that each reaction member engages the drive surface of said commutator member and is caused to rotate about its own axis as it passes over the drive surface for producing its own reaction rotation and is allowed to free-wheel about its own axis as it passes over the non-driving surface of said commutator member whereby it produces no reaction rotation.

5,334,116

ALL WHEEL DRIVE TRANSFER CASE HAVING TWO WHEEL OVERDRIVE

Ralph W. Baxter, Jr., Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 31, 1992, Ser. No. 999,311

Int. Cl.[5] F16H *37/06*

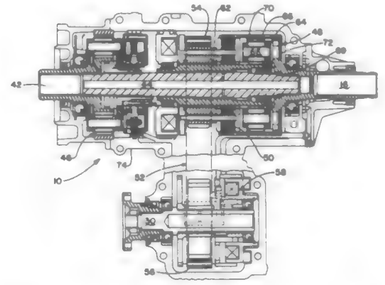
U.S. Cl. 475—204 **7 Claims**

1. A transfer case for a vehicle having a pair of front wheels and a pair of rear wheels, said transfer case comprising:

an input shaft connected to a carrier of a planetary gear differential having a ring gear connected to a first output shaft and a sun gear connected to a second output shaft;

a clutch provided on the planetary gear differential for selectively locking the first and second output shafts together for concurrent rotation when said planetary gear differential clutch is engaged; and

a brake for selectively preventing the second output shaft from rotating so that when said second output shaft brake is applied and the planetary gear differential clutch is disengaged, the first output shaft will rotate at an over-



drive ratio relative to the rotational speed of the input shaft.

5,334,117

AUTOMATIC TRANSMISSION WITH AN ADD-ON EXTENSION TO INCREASE THE NUMBER OF GEAR RATIOS

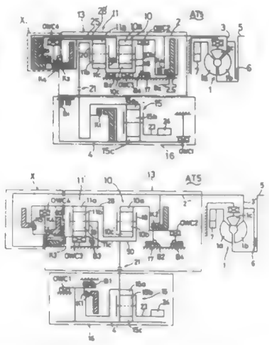
Koki Ito, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 766,949, Sep. 30, 1991, abandoned. This application May 11, 1993, Ser. No. 59,340

Claims priority, application Japan, Sep. 28, 1990, 2-261078

Int. Cl.[5] F16H *3/00*

U.S. Cl. 475—276 **4 Claims**



1. An automatic transmission comprising:

a first transmission shaft for transmitting engine torque into said automatic transmission;

a second transmission shaft juxtaposed in parallel with said first transmission shaft for transmitting said engine torque from said automatic transmission;

first multi-transmission means, mounted on said first transmission shaft, for automatically shifting the automatic transmission into a plurality of gear ratios;

said first frictional engagement means, mounted on said first transmission shaft, for controlling operation of said first multi-transmission means;

second multi-transmission means, mounted on said second transmission shaft, for automatically shifting the automatic transmission into a plurality of gear ratios;

second frictional engagement means mounted on said second transmission shaft, for controlling operations of said second multi-transmission means;

counter gear means for transmitting said engine torque from said first multi-transmission means to said second multi-transmission means;

an extension detachably coupled to said first multi-transmission means, having frictional engagement means for increasing the number of shiftable gear ratios of said automatic transmission; and

a torque convertor, fastened to said automatic transmission at one end of said first transmission shaft, for multiplying said engine torque, said first multi-transmission means comprising two planetary gearsets disposed coaxially on said first transmission shaft on axially opposite sides of said counter gear means.

5,334,118

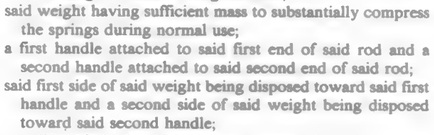
RECIPROCATING WEIGHT EXERCISE DEVICE

Harry E. Dantolan, 11045 S. Spaulding, Chicago, Ill. 60655-2725

Continuation-in-part of Ser. No. 355,661, May 22, 1989, abandoned. This application Jun. 4, 1990, Ser. No. 532,602

Int. Cl.[5] A63B *21/06*

U.S. Cl. 482—93 **14 Claims**



1. An exercise device which comprises:

a rigid rod having a first end and a second end;

a first coil spring and a second coil spring;

a weight on said rod;

said weight having a fist side and a second side and adapted for sliding movement along said rod;

said weight having sufficient mass to substantially compress the springs during normal use;

a first handle attached to said first end of said rod and a second handle attached to said second end of said rod;

said first side of said weight being disposed toward said first handle and a second side of said weight being disposed toward said second handle;

an adjustable locking rind located around the rod;

said first coil spring having a first end and a second end;

said first coil spring located around said rod;

said first end of said first coil spring abutting against said adjustable locking ring and said second end of said first coil spring abutting against said first side of said weight;

a second coil spring having a first end and a second end; and,

said first end of said second coil spring abutting against said second handle and said second end of said second coil spring abutting against said second side of said weight.

5,334,119

HURDLE BOOM HOLDER

Erkki M. Eloranta, GranöS-73197 Köping, Sweden

PCT No. PCT/FI91/00041, § 371 Date Aug. 10, 1992, § 102(e) Date Aug. 10, 1992, PCT Pub. No. WO91/12060, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 7, 1991, Ser. No. 917,136

Claims priority, application Finland, Feb. 8, 1990, 900637

Int. Cl.[5] A63B *65/22*

U.S. Cl. 482—16 **8 Claims**

1. An apparatus for holding an end of a hurdle boom at a desired height and horizontal orientation comprising:

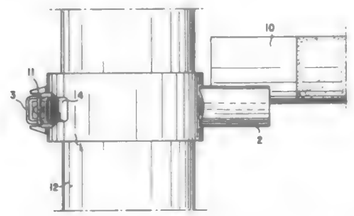
an upright pillar;

a gliding part in he form of a sleeve longitudinally split at one point only and mounted around said pillar, said gliding part having opposed free ends at the split point which are circumferentially spaced from one another in a rest position whereby said gliding part with said free ends in the rest position is freely movable vertically on said pillar;

VOL 1165 ISS 1 AG 2 1994 UMI

a support attached to said gliding part at a position laterally opposite the split point and extending horizontally therefrom, said support including an upwardly facing horizontal surface which is concave in shape, such that the end of the boom rests vertically on said horizontal surface of said support; and

a tightening means which bridges said free ends of said gliding part for moving said free ends from the rest position to a precise restrained position where said free ends



are circumferentially closed toward one another relative to the rest position and said gliding part is radially drawn into frictional engagement with said pillar to hold said gliding part vertically in place, whereby after moving said gliding part to a desired height and horizontal orientation while said free ends are circumferentially spaced from one another said tightening means then moves said free ends to the closed position to hold said support on said gliding part at the desired height and horizontal orientation.

5,334,120

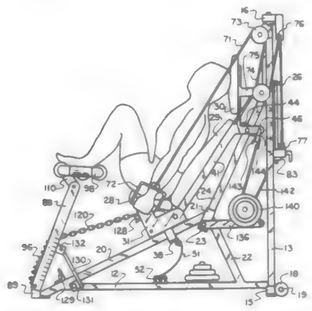
GRAVITY SLED EXERCISE MACHINE

Aaron P. Rasmussen, 1776 Essex St., El Cajon, Calif. 92020

Continuation-in-part of Ser. No. 41,978, Apr. 2, 1993, abandoned. This application Nov. 18, 1993, Ser. No. 153,988

Int. Cl.[5] A63B *21/06*

U.S. Cl. 482—97 **13 Claims**



1. A gravity sled exercise machine comprising:

a frame support structure having a horizontal frame member with a front end and a back end; a vertical frame member having two upright pieces joined at the top end with a perpendicular tee bar; a middle section joined with upper and lower spacer angles; a bottom end with means for joining said vertical frame member to the back end of said horizontal frame member;

a frame support structure to include a biangular arrangement of lineal rail members, consisting of an upper rail, angularly inclined in vertical orientation, with a top end and a bottom end; and a lower rail, angularly inclined in horizontal orientation, with a front end and a back end; said lower rail having an eyelet receptacle attached near the front end; means for joining said rail members to said vertical and horizontal frame members;

a two piece torso support sled engaged in multiangular movement on said upper and lower rail members;

a seat truck component of said support sled having a front end and a back end with tow bar receptacle attached to the front end;

a seat truck tracking means reciprocally engaged in lineal motion on said lower rail to produce fixed angle support of said sled seat truck;

a tether with attachment means for limiting the reciprocal movement of said seat truck on said lower rail;

a back rest component of said support sled to include a frame having a top end with a U bracket and guide support means engaged to travel on said upper rail, a bottom end with axial support means to provide pivotal connection to the back end of said seat truck; said guide support means in kinematic interaction with said axial support means to provide curvilinear motion with angular adjustment of said back rest during the ascent and descent of said torso sled;

a backrest component of said support sled having a headrest with integral pulley wing mounts attached the top end of said backrest component;

a gravity hanger pivotally attached to said back rest U bracket to accept additional weightedness;

a weighted lever assembly with pulley and line means for adding variable gravity to said torso support sled; means for coupling said line to said gravity hanger and to said frame support structure; means to pivot said lever on said frame support structure;

a pulley lift means, having hand rings, pulleys, lines and enabling structure to include an offset pulley bracket and eye hanger mounted at each end of said vertical frame tee bar;

a pulley lift means having an adjustable clamp means by which said hand rings are fitted to the reach of the exercise client; means for attachment of said adjustment clamp to said spacer angles of the vertical frame member;

a pulley lift means wherein a person, reclining on said torso support sled and grasping said hand rings, could use arm motion to move said sled upward on said biangular rails from a horizontal angle of orientation to a vertical angle of orientation;

a leg exercise means comprising a leg lever with a top end and an indexed bottom end, said bottom end having pivotal connection means to the front end of said lower rail; a foot cradle with pivot mounting means attached to the top end of said leg lever; a flexible coupling member with means for adjusting the length of said coupling member at the point of attachment to said leg lever; a tensioning spring with means for joining said spring to said leg lever and to the front end of said lower rail; a leg lever position indicator with pivotal means of attachment to the front end of said lower rail; and

a leg exercise means whereby said leg lever is coupled by said flexible coupling means to either of two connective receptacles: attaching said coupling means to said eyelet receptacle at the front of said lower rail produces a static coupling and cooperative arm and leg interaction; attaching said coupling means to said tow bar receptacle produces a dynamic radial movement of said leg lever assembly and structures opposition of arm and leg forces.

5,334,121

INTERCHANGEABLE/ADJUSTABLE HURDLE

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Filed May 17, 1993, Ser. No. 61,729

Int. Cl.[5] A63B *5/02*

U.S. Cl. 482—17 **10 Claims**

1. An interchangeable/adjustable hurdle, comprising:

a first tee, said first tee having a vertical insert region and a first horizontal insert region;

a second tee, said second tee having a vertical insert region and a first horizontal insert region;

an integral first horizontal leg support means consisting of a first horizontal leg support connected to said first tee;

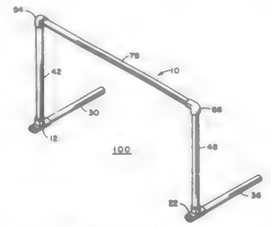
an integral second horizontal leg support means consisting of a first horizontal leg support connected to said first tee;

an integral second horizontal leg support means consisting of a second horizontal leg support connected to said second tee;

a first elbow comprised of a smooth-walled vertical insert region and smooth-walled horizontal insert region;

a second elbow comprised of a smooth-walled vertical insert region and a smooth-walled horizontal insert region;

a first vertical leg support of fixed length connected to said first tee and to said first elbow, said first vertical by support having a said tee connecting end connected to said first tee and an elbow connecting end connected to said first elbow, said elbow connecting end of said first vertical



leg support contacts said smooth-walled vertical insert region of said first elbow to provide a threadless friction-fit connection;

a second vertical leg support of fixed length connected to said second tee and to said second elbow, said second vertical leg support having a tee connecting end connected to said second tee and an elbow connecting end connected to said second elbow, said elbow connecting end of said second vertical leg support contacts said smooth-walled vertical insert region of said second elbow to provide a threadless friction-fit connection;

a crossbar having a first elbow insert end and a second elbow insert end, said first elbow insert end of said crossbar contacts said smooth-walled horizontal insert region of said first elbow to provide a threadless friction-fit connection and said second elbow insert end of said crossbar contacts said smooth-walled horizontal insert region of said second elbow to provide a threadless friction-fit connection; and

wherein said first and second vertical leg supports are identical in length.

5,334,122

BIASING MEANS, COMPONENTS THEREFOR AND METHODS OF MAKING SAME

Richard W. Cole, Nixa, and Clinton L. Bishop, Springfield, both of Mo., assignors to Dayco Products, Inc., Dayton, Ohio

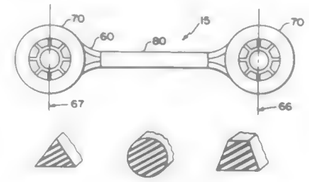
Division of Ser. No. 792,513, Nov. 13, 1991, Pat. No. 5,242,353. This application Jun. 2, 1993, Ser. No. 71,123

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[5] A63B *21/04*

U.S. Cl. 482—130 **15 Claims**

1. A biasing means for use with an exercising machine having a fixed support member and a movable lever arm pivotally mounted on said support member, said biasing means comprising a first end means adapted to be detachably disposed on said lever arm and a second end means adapted to be detachably disposed on said support member for providing resistance to motion of said lever arm, at least one end member comprising outer supporting surfaces, said end member being placed within at least one of said end means, said end means being contiguous with only said outer supporting surfaces, said biasing means further having a central portion between said end



means, and a longitudinal axis, and having a cross-sectional area measured transverse said longitudinal axis and having containing means disposed around said central portion of said biasing means.

5,334,123

TILTING EXERCISE APPARATUS FOR THE BACK

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Filed Jul. 8, 1992, Ser. No. 910,425

Int. Cl.[5] A63B *21/00*; A61F *5/00*

U.S. Cl. 482—144 **1 Claim**

1. An exercise apparatus for decompressing the spine, comprising:

a frame;

a chair, said chair having a lower hip-supporting section and an upper back-supporting section, said upper back-supporting section connected to said lower hip-supporting section so as to extend upwardly from said lower hip-supporting section;

said lower hip-supporting section having a lower supporting section connected to a rear supporting section, said lower supporting section extending from said rear supporting section;

said chair pivotably coupled to said frame at a point approximately one-third of the length of said chair from a lowest portion of said chair when said chair is upright, said chair comprising a padded bar and a belt, said padded bar connected to a forward portion of said lower supporting section and urging said user's knees slightly towards said user's chest so that said user's hips are rotated slightly forwards to remove at least some curvature from said user's spine while using the exercise apparatus and said

VOL 1165 ISS 1 AG 2 1994 UMI

belt securing said user to said chair, said chair also comprising:

a back cushion, said back cushion pivotably coupled to said upper back-supporting section; and

a resistive element, said resistive element connected between said upper back-supporting section and said back cushion and able to contact and expand so that said upper back-supporting section and said back cushion may move with respect to each other, whereby a user of said exercise apparatus may exert pressure against said resistive element in order to exercise; and

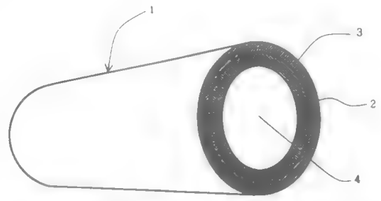
a pivotable bearing, said pivotable bearing establishing said pivotable coupling between said frame and said chair; whereby

when said chair is fully tilted backwards, said upper back-supporting portion of said chair forms an angle with the floor of approximately thirty degrees (30°) and a user may seat himself in said chair and tilt said chair backwards to decompress said user's spine.

5,334,124
GUIDE ROLLS

Hideyuki Ohno, Yokohama, Japan, assignor to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 804,304, Dec. 9, 1991, abandoned. This application Sep. 2, 1993, Ser. No. 116,052
Claims priority, application Japan, Feb. 27, 1991, 3-53547
Int. Cl.[5] B21B *31/08*; B60B *5/00*
U.S. Cl. 492—50 **5 Claims**

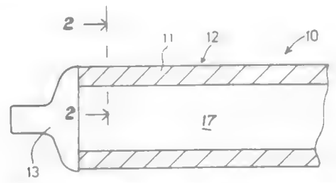


1. A guide roll comprising an inside layer made of a fiber-reinforced material which consists essentially of an epoxy resin composition as a matrix and at least one kind of reinforcing fibers selected from the group consisting of carbon fibers, glass fibers, alumina fibers, aramide fibers, polyester fibers and polyethylene fibers, and an outside layer which consists essentially of a fluororesin.

5,334,125
MARTENSITE ROLL

Jari Vähäpesola, Muurame, Finland, assignor to Valmet Paper Machinery Inc., Finland

Continuation of Ser. No. 854,334, Mar. 19, 1992, abandoned. This application May 13, 1993, Ser. No. 61,303
Claims priority, application Finland, Mar. 20, 1991, 911360
Int. Cl.[5] B21B *31/08*
U.S. Cl. 492—58 **16 Claims**

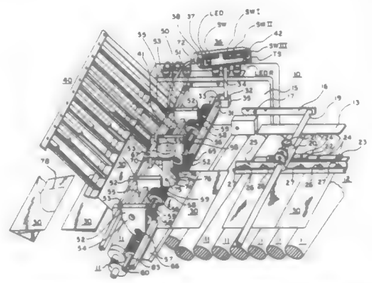


1. A roll for use in a paper machine, said roll having a cast-iron roll mantle, an outer surface of said roll mantle being hardened and tempered such that it has a homogeneous, fine and uniform microstructure of martensite.

5,334,126
CONTROLLED PERFORATION APPARATUS FOR FOLDING MACHINES

Richard J. Moll, c/o Dick Moll & Sons, Inc., Warminster, Pa. 18974

Filed Feb. 10, 1993, Ser. No. 16,582
Int. Cl.[5] B26D *5/06, 5/38*
U.S. Cl. 493—22 **4 Claims**



1. In combination with a paper processing machine which includes a plurality of driven transport rollers to receive sheets of paper and the like and transport them in a straight line, apparatus for detecting the presence of sheets of paper, applying at least one line of perforations at selected locations and of controlled length, and feeding the sheets for further processing which comprises:

a lower driven shaft to receive sheets of paper therefrom which is below and after said transport rollers and extends transversely across said apparatus,

at least one roller segment on said shaft,

at least one female collar on said shaft and selectively positioned therealong at the location where said perforation line is to be applied to said sheets,

a rod connected to said apparatus, and extending above and transversely across said apparatus,

a plurality of idler plates on said rod,

at least one idler shaft carried by said idler plates, above said lower driven shaft,

a plurality of roller elements on said idler shaft,

a bracket carried on said rod between said idler plates and selectively positionable therealong above said collar,

an electrically actuated solenoid on said bracket,

a vertically movable output arm extending downwardly from said solenoid,

a perforation wheel carried by said arm which applies a line of perforations to said sheets when said output arm is moved downwardly, so that said sheets are contacted by said wheel and said collar,

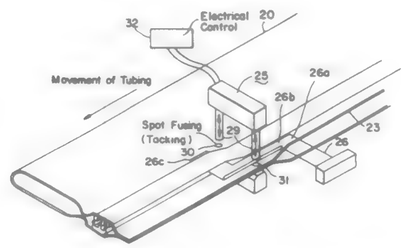
sheet detector means on said machine to detect the presence, or absence of a sheet of paper, and

control means connected to said solenoid and to said sheet detector means which upon receipt of a signal from said sheet detector means, signals said solenoid to cause said solenoid arm to move downwardly whereby said line of perforations is applied to said one of said sheets.

5,334,127
RECLOSABLE PLASTIC BAGS MADE WITH OPEN MOUTH AND METHOD OF MAKING OPEN MOUTH BAGS

Edward C. Bruno, 15336 Penwood Pl., Aurora, Colo. 80015, and Roger A. Davison, 8761 Galen Ct., Denver, Colo. 80229

Filed Mar. 1, 1993, Ser. No. 24,325
Int. Cl.[5] B31B *3/64, 3/72*
U.S. Cl. 493—194 **6 Claims**



1. In a method of making reclosable plastic bags wherein the bags are made by extruding plastic film from an extruder as continuous tubing having making fastener profiles moving the tubing along a longitudinal path and flattening the tubing engaging, the profiles to mate and close with each other, and slitting the tubing longitudinally; the improvement consisting of the steps of:

a) periodically fusing the engaged and slit continuous tubing on at least one selected area adjacent said profiles as said tubing moves along said path, and

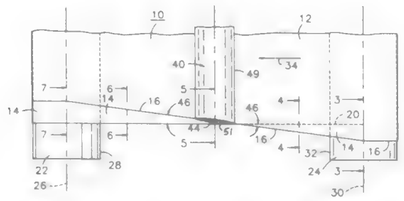
b) separating said profiles of the fused continuous tubing at a path position subsequent to said fusing,

whereby said tubing and profiles may then be sealed and cut to form bags with open profiles and with open mouths.

5,334,128
APPARATUS AND METHOD FOR FOLDING OVER AN EDGE PORTION OF THIN SHEET

Philip H. Carrico, Greenfield Center, and Roger W. Holmes, Queensbury, both of N.Y., assignors to General Electric Company, Fort Edward, N.Y.

Filed Sep. 11, 1992, Ser. No. 944,103
Int. Cl.[5] B65H *45/08, 45/22*
U.S. Cl. 493—439 **4 Claims**



1. Apparatus for folding over along a crease line an edge portion of a thin sheet of material, which sheet comprises on opposite sides of said crease line a body portion and an edge portion integral with the body portion and extending between the body portion and an edge of the sheet, the edge portion being substantially in line with the body portion when the sheet is unfolded and being doubled back into an overlapping position with respect to said body portion when the sheet is fully folded, said apparatus comprising:

(a) a pair of support rolls having laterally spaced-apart axes and peripheries over which said sheet is caused to pass so that a predetermined region of said sheet extends between said peripheries as the sheet travels from a first one of said support rolls to a second one of said support rolls,

(b) an air film roll having a longitudinal axis and positioned between said support rolls and exerting on said predetermined region of said sheet a force that causes the body portion of the sheet in said predetermined region to be deflected toward a reference plane in which said support roll axes are located, and in which:

(c) said air film roll has an outer end that is located at said crease line so that said edge portion folds along said crease line from said in-line position at said first support roll to a position substantially perpendicular to said body portion at said outer end of the air film roll and folds along said crease line from said perpendicular position to said overlapping position in the zone of said sheet extending between said outer end of the air film roll and said second support roll, said edge and said edge portion when said edge portion is in said substantially perpendicular position are disposed in close proximity to said outer end of the air film roll,

(d) said outer end of said air film roll has a substantially planar configuration and angles in two directions with respect to an adjacent end plane perpendicular to the longitudinal axis of the air film roll,

(e) there is a first viewing plane parallel to said reference plane on the outer side of said air film roll,

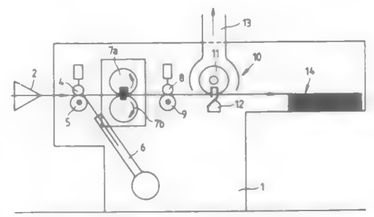
(f) when said air film roll and said predetermined region of said sheet are viewed from said first viewing plane, said outer end of the air film roll angles in a first of said two directions with respect to said perpendicular end plane that allows said edge of the sheet to pass said outer end via a straight line path extending between said support rolls, and

(g) when viewed from a second viewing plane perpendicular to said first viewing plane and extending through the longitudinal axis of said air film roll, said outer end of the air film roll angles in a second of said two directions with respect to said perpendicular end plane to recess away from the perpendicular end plane the portion of said outer end nearest said first viewing plane.

5,334,129
CROSS-CUTTER FOR FINAL TREATMENT OR FINISHING OF WEBS OF MATERIAL

Ralf Haller, Oftersheim, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Dec. 7, 1992, Ser. No. 987,027
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1991, 4140365
Int. Cl.[5] B31F *5/02*
U.S. Cl. 493—351 **14 Claims**



1. In a printing press, a rotary cross-cutter for final processing of a plurality of mutually superimposed webs of material having print-free locations thereon from which excess portions have been removed, comprising a cross-cutting unit disposed at a given location along a travel path of the webs, rotary

VOL 1165 ISS 1 AG 2 1994 UMI

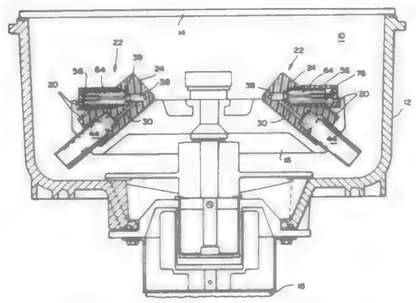
bodies disposed at locations along said travel path upstream of said cross-cutting unit, at least one of said rotary bodies having first means for causing the webs of material to cling to one another at the print-free location of the mutually superimposed webs in a direction transverse to said travel path and at least another of said rotary bodies having second means for cutting off edge portions of the webs of material.

5,334,130

CENTRIFUGAL VACUUM CONCENTRATION WITH HOLDER ASSEMBLY

Michael Glater, Brooklyn; Carlos Barreda, and Yury Zlobinsky, both of Massapequa, all of N.Y., assignors to Savant Instruments, Inc., Farmingdale, N.Y.

Filed May 13, 1992, Ser. No. 882,596
Int. Cl.[5] B04B *1/18*; B01D *1/00*
U.S. Cl. 494—4 11 Claims



1. A holder assembly for use in a centrifugal vacuum concentrator, said centrifugal vacuum concentrator including a sealable vacuum chamber, and a rotor in the chamber on which a liquid-containing material can be supported to concentrate same when the rotor is rotated and a condition of vacuum is imposed on the chamber by connecting a vacuum pump to the chamber, the holder assembly being mountable on the rotor, said holder assembly comprising

a receptor housing, the receptor housing having a passage therein,

a vial for holding the liquid-containing material, the vial having an opening therein,

means for removably securing the vial to the receptor housing with the opening therein in communication with the receptor housing passage, and

a centrifugal valve carried by the receptor housing and including a movable valve element, and bias means normally urging the valve element to a port blocking position of a port communicating the receptor housing passage with an outlet therefrom to the vacuum chamber, the bias means maintaining the valve element in port blocking position in opposition to a counter bias effect of one of or a combination of a pressure presence in the receptor housing passage which is a pressure in a range of pressures below a predetermined pressure value and a centrifugal force which is a force in a range of centrifugal forces below a predetermined magnitude acting on the valve element during rotor rotation and tending to urge it counter to the urging of the bias means, and

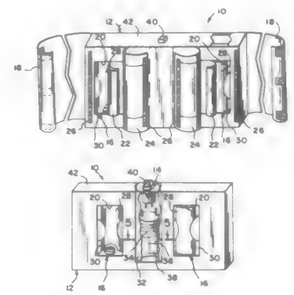
the centrifugal valve being enclosed in a carrier secured to the receptor, an interior of the enclosure communicating with the receptor outlet, the enclosure having port means open to the vacuum chamber whereby an unblocked flow course exists between the vial opening and the port means whenever the valve element is out of port blocking position.

5,334,131

STRAP-ON MASSAGER WITH VIBRATORY UNBALANCED WEIGHT

Ismael C. Omandam, 439 Rebecca Rd., Belvidere, Ill. 61008, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Aug. 20, 1993, Ser. No. 109,247
Int. Cl.[5] A61H *1/00*
U.S. Cl. 601—71 1 Claim



1. A strap on massaging device which comprises:

a) a padded housing;

b) a vibrating mechanism retained within said padded housing;

c) a pair of battery units for supplying a power source to said vibrating mechanism retained within said padded housing;

d) an elastic band extending from said padded housing to be attached about a leg of a person, so that said padded housing which is held to the leg will cushion against excessively vigorous uncomfortable effects of said vibrating mechanism acting against the leg;

e) said padded housing having a pair of compartments for holding said battery units therein;

f) a pair of front flaps over said compartments;

g) a pair of front covers over said front flaps;

h) VELCRO fasteners for keeping said front covers closed over said front flaps; wherein each said batter unit includes:

i) a battery;

j) a holder for said battery which fits into one said compartment; wherein said vibrating mechanism includes:

k) a cylindrical tube placed within said padded housing;

l) a motor mounted in said cylindrical tube;

m) a rotary shaft extending from said motor;

n) a weight offset on a distal end of said shaft to cause vibrations;

o) a switch mounted to said cylindrical tube on an external side surface of said padded housing which is electrically connected between said motor and said batteries; wherein said vibrating mechanism further includes:

p) said weight being cam shaped onto the distal end of said shaft;

q) a rubber bumper mounted onto said cam weight; and

r) a bearing race in said cylindrical tube, so that said cam weight with said rubber bumper can rotate about said bearing race to cause the vibration therein.

5,334,132

CONVERTIBLE ARM SLING

Wayne Z. Burkhead, 2909 Lemmon Ave., Dallas, Tex. 75204

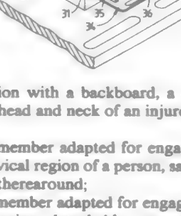
Filed Apr. 16, 1993, Ser. No. 49,986
Int. Cl.[5] A61F *5/40*
U.S. Cl. 602—4 10 Claims

5. An arm sling comprising:

a forearm support section for receiving a patient's forearm, said forearm support section including an elbow end portion, a wrist end portion, a bottom panel, an elbow panel, and first and second side panels;

a support strap having first and second end portions coupled to the forearm panel near the elbow end portion and the wrist end portion, respectively, for suspending the forearm support section from the patient's shoulder;

a pocket panel secured to said bottom panel intermediate said first and second side panels thereby defining an open pocket for receiving a splint;



releasable fastener means disposed in the pocket for engaging and retaining a splint; and,

releasable fastener means disposed in the pocket for engaging and retaining a splint; and,

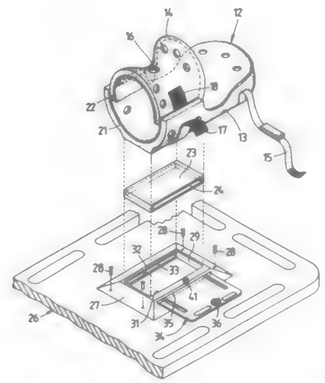
a splint having a first end portion received in the pocket and secured therein by the fastener means, and having a second end portion projecting from the forearm support section for providing subjacent support for a patient's hand.

5,334,133

IMMOBILIZING CERVICAL COLLAR

Terry L. Carroll, 3760 White Rd., Dora, Ala. 35062

Filed Oct. 19, 1992, Ser. No. 962,670
Int. Cl.[5] A61F *5/00, 5/37*
U.S. Cl. 602—18 17 Claims



1. In combination with a backboard, a cervical collar for immobilizing the head and neck of an injured person comprising:

(a) a posterior member adapted for engagement behind the head and cervical region of a person, said member extending laterally therearound;

(b) an anterior member adapted for engagement beneath the mandibular region, detachably secured to said posterior region to encircle said person's neck;

(c) a base attached to said posterior member rearwardly thereof;

(d) a patient backboard for supporting a horizontally disposed patient; and

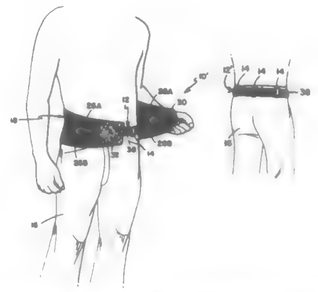
(e) a receiver attached to said patient backboard, said receiver having a recess for accepting said base, and a means for securing said base within said recess, said base having at least one opening extending transversely through said base for accepting said securing means when said base and said posterior member are in place on a patient.

5,334,134

LUMBOSACRAL BACK SUPPORT RELEASABLY SECURED TO A STABILIZING BELT

Harold D. Saunders, Eden Prairie, Minn., assignor to The Saunders Group, Chaska, Minn.

Continuation-in-part of Ser. No. 719,267, Jun. 21, 1991, Pat. No. 5,205,815. This application Dec. 2, 1992, Ser. No. 984,343
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—19 19 Claims



1. A lumbosacral back support system for releasably securing a lumbosacral back support to the spine of a user proximate the user's waist, the user wearing a lower body garment, comprising:

a lower body garment having a waist portion with belt loops located proximate the waist portion;

stabilizing belt means for insertion through the belt loops, the stabilizing belt means having an inner and outer surface with first releasable attachment means located on the outer surface so that the first releasable attachment means face away from the user; and

at least one lumbosacral support member having an inner and outer surface with second releasable attachment means on the inner surface for automatically engaging with the first releasable attachment means when the lumbosacral support member is brought into contact with the stabilizing belt means, the first and second releasable attachment means being arranged so that the lumbosacral support member engages the user's spine from approximately the sacrum to at least the L_3 lumbar vertebrae, whereby the stabilizing belt means maintains the vertical position of the lumbosacral support member relative to the spine of the user during active movement.

5,334,135

FORMED RESILIENT ORTHOPAEDIC SUPPORT

Tracy E. Grim, 3010 W. Boston Ct., Broken Arrow, Okla. 74012, and Alec D. Bobroff, 12865 Glen Brae Dr., Saratoga, Calif. 95070

Filed Feb. 16, 1993, Ser. No. 18,004
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—26 26 Claims

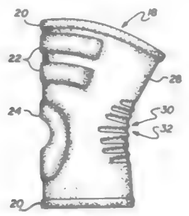
1. An orthopaedic knee brace comprising:

foam rubber sheet material for extending around the knee area;

VOL 1165 ISS 1 AG 2 1994 UMI

means for orienting the knee brace with a front side accommodating the patella and a rear popliteal side;

said popliteal side being provided with a plurality of compression molded, substantially transverse, linearly extending grooves of reduced thickness, constituting means for reducing bunching of the knee brace when the leg is bent at the knee; and



said foam rubber sheet material having a surface and a predetermined thickness in major areas of said brace away from the ribbed area on the rear of the knee brace opposite the patella, said grooves extending inward from said surface, and the thickness of said brace at the bottom of said grooves being substantially less than said predetermined thickness.

5,334,136

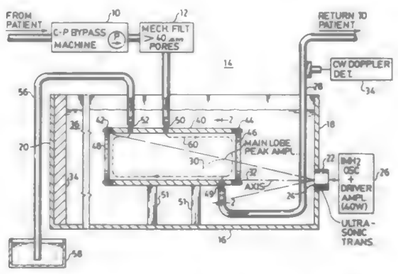
SYSTEM FOR TREATING BLOOD PROCESSED IN A CARDIOPULMONARY BYPASS MACHINE AND ULTRASOUND FILTRATION APPARATUS USEFUL THEREIN

Karl Schwarz, 90 Gorham St., Canandaijea, N.Y. 14424; Richard S. Meltzer, 22 Westland Ave., Rochester, N.Y. 14618, and Charles C. Church, 309 N. 16th St., Oxford, Miss. 38655

Filed Jan. 19, 1990, Ser. No. 467,444

Int. Cl.[5] A61M *1/30*

U.S. Cl. 604—4 **19 Claims**



1. The method of treating blood obtained from a patient undergoing cardiac bypass surgery and processed by a cardiopulmonary bypass machine to filter microbubbles therein before returning the blood to the patient which comprises the steps of generating and transmitting through a stream of said blood an ultrasonic travelling wave which is substantially free of reflections to sweep said bubbles out of said stream.

5,334,137

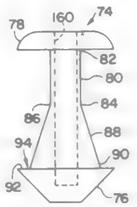
LACRIMAL FLUID CONTROL DEVICE

Jerre M. Freeman, Memphis, Tenn., assignor to Eagle Vision, Inc., Memphis, Tenn.

Filed Feb. 21, 1992, Ser. No. 839,417

Int. Cl.[5] A61M *27/00*

U.S. Cl. 604—8 **23 Claims**



1. A lacrimal fluid control device for blocking the flow of lacrimal fluid from the surface of an eye through a punctal opening and into an associated canaliculus, said lacrimal fluid control device comprising:

a tip portion comprising a generally inverted truncated cone and being operable to facilitate placement of the lacrimal fluid control device at least partially through a punctal opening of a wearer and into a generally vertical portion of an associated canaliculus;

a head portion;

a shank portion integrally joined at one end to said head portion and at the other end to said tip portion,

said head portion comprising a generally enlarged dome with respect to said shank portion at said one end and being integrally joined to said head portion and operable to prevent drift of the lacrimal fluid control device completely through the punctal opening and into the generally vertical portion of the associated canaliculus,

said shank portion interconnecting said head and tip portions and being operably engaged about its periphery by a punctal opening ring of tissue of a patient, said shank portion having,

a diameter at the junction of said shank portion with said head portion which is less than the diameter of said shank portion at the junction of said shank portion with said tip portion such that;

said shank portion having at least one segment that slopes outwardly along a longitudinal position of said shank from a position relatively closer to said head portion than said tip portion to a position relatively closer to said tip portion than said head portion,

lateral closing force of the punctal opening ring of tissue against said shank portion produces a resultant force vector on the shank portion which is directed toward the tip of the lacrimal fluid control device to facilitate retention of the lacrimal fluid control device within the punctal opening to block the flow of lacrimal fluid from the surface of an eye through the punctal opening and into an associated canaliculus.

5,334,138

METHOD AND COMPOSITION FOR INCREASED SKIN CONCENTRATION OF ACTIVE AGENTS BY IONTOPHORESIS

Burton H. Sage, Jr., and Jim E. Riviere, both of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C. and Becton Dickinson and Company, Franklin Lakes, N.J.

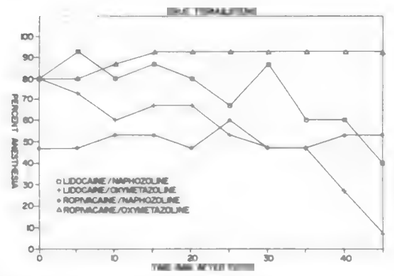
Continuation-in-part of Ser. No. 494,062, Mar. 15, 1990, abandoned. This application Feb. 8, 1991, Ser. No. 653,204

Int. Cl.[5] A61N *1/30*

U.S. Cl. 604—20 **14 Claims**

1. A method for enhancing skin concentration of iontophoretic delivered active agents comprising:

(a) adding to an active agent an imidazoline vasoconstrictor in an amount effective to enhance the skin concentration of the active agent when delivered iontophoretically; and



(b) delivering a pharmaceutically acceptable composition of said active agent and vasoconstrictor by iontophoresis.

5,334,139

METHOD OF PERITONEAL DIALYSIS USING A TUBE SET

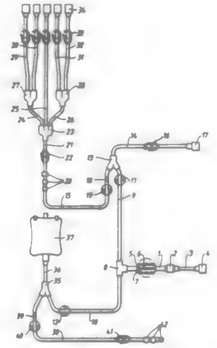
Jan-Bertil Jeppsson, Lomma, and Ingvar Losell, Staffanstorp, both of Sweden, assignors to Gambro AB, Sweden

Continuation of Ser. No. 62,326, May 14, 1993, which is a continuation of Ser. No. 815,178, Dec. 31, 1991, abandoned. This application Feb. 3, 1994, Ser. No. 191,075

Claims priority, application Sweden, Feb. 18, 1991, 91.00471-3

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—28 **7 Claims**



1. A method of performing peritoneal dialysis comprising the steps of:

providing a tube set including a unitary tubular member having at least one supply lumen and at least one discharge lumen and partition means therebetween;

transporting fresh dialysis solution through said at least one supply lumen of said tube set, into a connector arranged at a second end of said unitary tubular member, said connector having a common chamber for fluid communication with said at least one supply lumen and said at least one discharge lumen, and into a patient through a peritoneal catheter arranged in said patient;

removing spend dialysis solution from the patient by transporting said spend dialysis solution through said common chamber of said connector into said at least one discharge lumen of said unitary tubular member so that said at least one supply lumen and said at least one discharge lumen simultaneously transport said fresh dialysis solution and said spend dialysis solution in opposite directions of flow respectively, thereby transferring heat between said fresh dialysis solution and said spend dialysis solution through said partition; and

discharging said spend dialysis solution by transporting it from said at least one discharge lumen to a discharge location.

5,334,140

TOOL FOR LAPAROSCOPIC SURGERY

Edward H. Phillips, 712 N. Roxbury Dr., Beverly Hills, Calif. 90210

Division of Ser. No. 528,954, May 25, 1990, Pat. No. 5,195,958. This application Jan. 12, 1993, Ser. No. 3,505

Int. Cl.[5] A61B *17/32*

U.S. Cl. 604—35 **9 Claims**



1. An instrument for laparoscopic evacuation and collection of particulate matter from a body cavity, comprising:

(a) a housing having a proximate end and a distal end and having an outlet port for the passage of evacuated fluid and a first conduit communicating with said outlet port, said housing further having an inlet port for the passage of irrigating fluid and a second conduit communicating with said inlet port;

(b) a third conduit carried by said housing having a longitudinal axis and a proximate end and a distal end with an opening adjacent said distal end, said third conduit extending in an axial direction from said distal end of said housing and having a collection chamber for collecting said particulate matter adjacent said distal end of said third conduit where said collection chamber communicates with said opening and where said third conduit has an axially extending inner conduit communicating with said first and second conduits and said collection chamber, said inner conduit having a single flow path therethrough to permit the passage of irrigating fluid through said opening and into said body cavity or to permit the passage of said evacuated fluid suctioned from said body cavity through said opening, and where said third conduit has an engagement lip extending radially at said distal end of said third conduit forming a terminus and axial boundary of said opening, said collection chamber having a greater cross-sectional area than said inner conduit;

(c) valve means carried by said housing responsive to external force in a normally closed position to preclude the flow of irrigating or evacuated fluid for selectively permitting the passage of irrigating fluid through said inlet port and into said inner conduit or for selectively permitting passage of evacuated fluid or said particulate matter through said opening into said collection chamber.

5,334,141

EXTRAVASATION DETECTION SYSTEM AND APPARATUS

Kenneth L. Carr, Harvard; James F. Regan, Waltham, both of Mass., and Seid W. Waddell, Sarver, Pa., assignors to Medrad, Inc., Pittsburgh, Pa.

Filed Jun. 26, 1992, Ser. No. 904,651

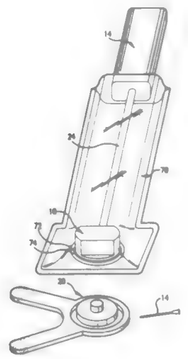
Int. Cl.[5] A61M *31/00;* **A61B** *5/04, 5/05*

U.S. Cl. 604—50 **22 Claims**

1. A system for microwave detection of extravasation of liquid from a blood vessel of a patient into which the liquid is injected, the system including microwave antenna means for receiving microwave emission signals from the patient and

VOL 1165 ISS 1 AG 2 1994 UMI

processing means connected with the antenna means for responding to changes in said signals representative of extravasation, the antenna means including a reusable antenna element connected to said processing means, a disposable attachment



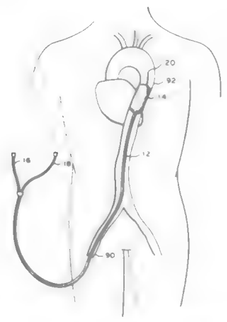
element for adhering to a patient's skin over an injection site, and interfitting male and female coupling means on the attachment element and the antenna element respectively for releasably securing the antenna element on the attachment element in intimate contact with the patient's skin.

5,334,142

SELECTIVE AORTIC PERFUSION SYSTEM

Norman A. Paradis, Brooklyn, N.Y., assignor to New York University, New York, N.Y.

Filed Sep. 9, 1991, Ser. No. 756,693
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—53 26 Claims



1. A method for improving and extending the period during which cardiopulmonary resuscitation can be successfully performed, comprising the steps of:

placing a balloon catheter having an inflatable balloon through the femoral artery of a patient suffering from cardiac arrest, and feeding said catheter into the artery until the balloon is positioned in the descending aorta;

inflating said balloon to occlude the aorta, whereby infused fluids will be restricted to the volume of the aorta above the balloon occlusion; and

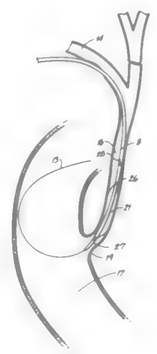
infusing an oxygenated fluid through a lumen in said balloon catheter to a point distal of said balloon.

5,334,143

METHOD TO REMOVE COMMON BILE DUCT STONES

Brendon J. Carroll, 2278 Betty La., Beverly Hills, Calif. 90210

Filed Apr. 17, 1992, Ser. No. 869,730
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—54 8 Claims



1. A method for laparoscopically removing stones captively held in the common bile duct comprising the steps of:

a) advancing a guidewire laparoscopically through the cystic duct and through the common bile duct and extending said guidewire into the duodenum;

b) advancing a flexible catheter having an axis of elongation over said guidewire, said catheter having sufficient distal curvature to enable the passage of the distal end of said catheter through the cystic duct junction with said common bile duct, said catheter having an inflatable balloon adjacent said distal end where said inflatable balloon has first and second radiopaque markers defining the axial boundries of said balloon and an irrigation port located proximally of said balloon, said irrigation port having a third radiopaque marker located proximally of said first and second radiopaque markers and adjacent said irrigation port;

c) visualizing the passage of said inflatable balloon through said cystic duct and into said common bile duct flouroscopically;

d) positioning said balloon adjacent the juncture of said common bile duct and duodenum to permit dilation of the sphincter muscle;

e) inflating said balloon sufficiently to dilate said sphincter muscle;

f) deflating said balloon; and

g) irrigating said common bile duct with a fluid to flush said stones into said duodenum.

5,334,144

SINGLE USE DISPOSABLE NEEDLELESS INJECTOR

Paul G. Alchas, Wayne, and A. Wes Prais, Hewitt, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

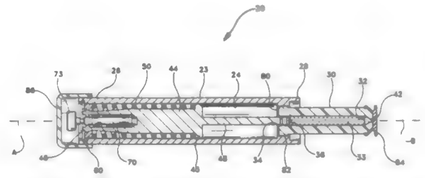
Filed Oct. 30, 1992, Ser. No. 969,624
Int. Cl.[5] A61M *5/30*
U.S. Cl. 604—68 27 Claims

1. An operable single use needleless hypodermic injector comprising:

an elongate housing having a proximal end, a distal end, a hollow bore therethrough and a longitudinal axis;

a reservoir at said distal end of said housing, said reservoir having a generally cylindrical chamber defining a longitudinal axis for containing an injectable liquid, said chamber being axially aligned with said longitudinal axis of said housing, said reservoir having a first open end adjacent said housing, a resilient stopper mounted slidably within said chamber, said stopper for sealing said chamber and for ejecting the liquid from said chamber, and a distal second end of said reservoir having an orifice in fluid communication with said chamber, said orifice serving to form a stream of the liquid when said stopper is moved distally in said chamber; and

an elongate piston mounted for axial movement within said bore having a proximal end and a distal end, said injector having biasing means for axially biasing said piston to said distal end of said housing, said piston having an armed position wherein said piston is positioned proximally in



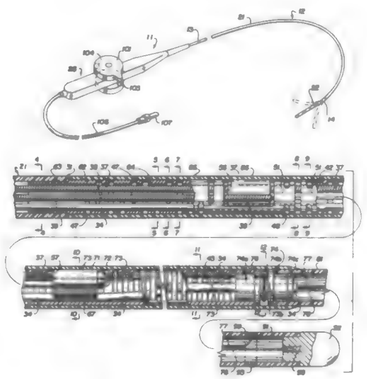
said housing in opposition to said biasing means, said biasing means thereby having potential energy, retention means for retaining said piston in said armed position, release means for releasing said piston from said armed position and allowing said energy of said biasing means to urge a distal axial movement of said piston, said movement of said piston to engage and to cause a distal axial movement of said stopper through said chamber thereby ejecting the liquid through said orifice, so that the stream of the liquid being formed at said orifice will make a hypodermic penetration when said orifice is placed adjacent dermal tissue, and means for preventing said piston from being retained in said armed position after said release means is released.

5,334,145

TORQUABLE CATHETER

Ingemar H. Lundquist, 17 Mile Dr. at The Dunes, Pebble Beach, Calif. 93953-1186, and Russell B. Thompson, 872 Roble Avenue, #4, Menlo Park, Calif. 94025

Filed Sep. 16, 1992, Ser. No. 945,512
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—95 9 Claims



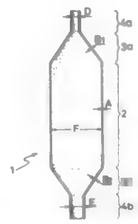
1. In a torquable catheter for performing ablation procedures in the heart, a flexible elongate tubular member having proximal and distal extremities and having a longitudinal axis, said tubular member having first and second portions each having proximal and distal extremities, said first portion having its proximal extremity adjacent the proximal extremity of the tubular member and being comprised of a plastic torque tube having a cylindrical wall which is circular in cross-section and having fibers disposed therein counterwrapped in two different spirals to provide good torque characteristics, said second portion adjacent to the distal extremity of the flexible elongate tubular member and being comprised of a metal torque tube having at least one slot therein subtending less than 360° and extending substantially transversely of the longitudinal axis, a flexible sleeve encasing said metal torque tube, means forming a joint between the proximal extremity of said metal torque tube and the distal extremity of said plastic torque tube and means mounted on the proximal extremity of the flexible elongate member for causing bending and connected to the distal extremity of the tubular member of the second portion of the tubular member.

5,334,146

CATHETER BALLOON HAVING VARYING WALL THICKNESS

Hitoshi Ozasa, Nakai, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 790,637
Claims priority, application Japan, Nov. 10, 1990, 2-304559
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 6 Claims



1. In a catheter balloon made of a polymer and comprising a cylindrical portion of a substantially uniform diameter, tapered portions at front and rear portions of the cylindrical portion, and connecting portions at the front and rear of the tapered portions, the cylindrical and tapered portions having a wall thickness, the improvement wherein:

the balloon, including the tapered portions and the cylindrical portion, is made by biaxially drawing;

the tapered portions are redrawn;

substantially middle parts of the tapered portions have wall thicknesses (B) which are equal to or greater than 0.3 times the wall thickness (A) of said cylindrical portion, and the wall thicknesses (B) of the substantially middle parts of the tapered portions are equal to or smaller than 0.9 times the wall thickness (A) of said cylindrical portion; and

the wall thickness of the front tapered portion is thinner than the wall thickness of a rear tapered portion and said cylindrical portion.

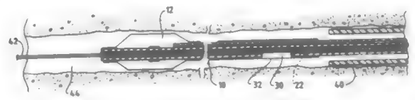
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,147

RAPID EXCHANGE TYPE DILATATION CATHETER

Kirk L. Johnson, Miami Lakes, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Apr. 28, 1993, Ser. No. 54,430
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 12 Claims



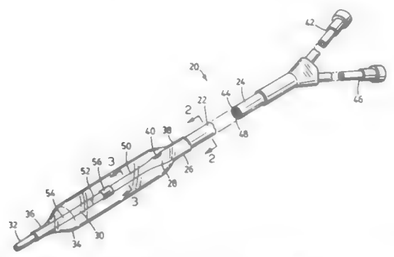
1. A balloon dilatation catheter having proximal and distal ends, which comprises a flexible, tubular wall defining a catheter shaft, which shaft carries a dilatation balloon adjacent the distal end, said catheter shaft defining an inflation lumen communicating with said balloon and a guidewire lumen extending substantially the length of said catheter and extending through the catheter distal end; and an aperture portion defined in said catheter shaft communicating between said guidewire lumen and the catheter exterior, said aperture portion being covered by a frangible wall.

5,334,148

BALLOON CATHETER

Geoffrey S. Martin, Mississauga, Canada, assignor to Med-Pro Design, Inc., Mississauga, Canada

Filed Dec. 22, 1992, Ser. No. 995,216
Claims priority, application Canada, Jan. 30, 1992, 2060133
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 7 Claims



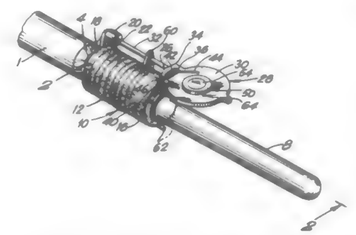
1. A balloon catheter for use in angioplasty at a selected location in a blood vessel, the catheter comprising:
a co-axial balloon;
an elongate main body defining first and second lumens and extending axially between proximal and distal ends;
first and second connections attached to the proximal ends of the main body in fluid communication with respective ones of the first and second lumens;
an intermediate portion extending axially from the distal end of the main body and forming a continuation of the first lumen;
an opening through the circumference of said intermediate portion providing communication with the second lumen;
tip portion means attached to the intermediate portion within said balloon and extending axially to form a further extension of the first lumen and defining an end opening so that the first lumen can accommodate a guide wire through the end opening and said first connection;
said co-axial balloon being attached to the main body and to the tip section to contain said opening in the intermediate portion for inflating and deflating the balloon; and
said tip portion means being more flexible and elastic than the intermediate portion such that the tip portion will readily deflect transversely as the balloon is inflated to permit the balloon to take up the shape of the blood vessel at said selected location.

5,334,149

POST-INJECTION SHEATH FOR A HYPODERMIC SYRINGE NEEDLE

Marvin Nortman, 119 Plymouth Blvd., Smithtown, N.Y. 11787, and Arthur A. Kravets, 464 Old Country Rd., Melville, N.Y. 11747

Filed Jul. 13, 1993, Ser. No. 90,874
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 20 Claims



1. A post-injection sheath for a hypodermic syringe needle having a hub, said post-injection sheath comprising:
an accordion-shaped resilient sheath body having a first end, at which it is fixedly secured to the needle hub, and a second open end, said sheath body having a compressed position, which corresponds to a ready-to be-used position of the needle, and an expanded position, in which it covers the needle;
an end cover pivotally supported on said sheath body at said second open end for closing said second open end in the expanded position of said sheath body, said end cover having a first position, in which it extends substantially parallel to a longitudinal axis of said sheath body, and a second position, in which it extends transverse to the longitudinal axis of said sheath body and covers said open end;
means for pivotally supporting said end cover at said second open end of said sheath body;
means for automatically pivoting said end cover from the first position thereof to the second position thereof in the expanded position of said sheath body; and
means for retaining said sheath body in the compressed position thereof, wherein said retaining means are adapted to be manually disabled, and said sheath body automatically moves to the expanded position thereof upon disabling of said retaining means.

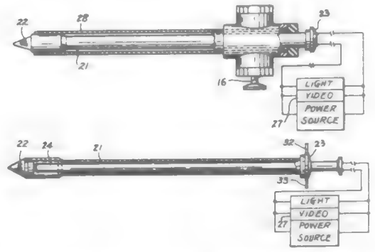
5,334,150

VISUALLY DIRECTED TROCAR FOR LAPAROSCOPIC SURGICAL PROCEDURES AND METHOD OF USING SAME

Steven G. Kaali, 88 Ashford Ave., Dobbs Ferry, N.Y. 10522

Filed Nov. 17, 1992, Ser. No. 978,092
Int. Cl.[5] A61M *5/176*
U.S. Cl. 604—164 29 Claims

14. A surgical penetration device comprising:
a) an inflexible elongated member having a first end,
b) light transmission and imaging means provided at the first end of said elongated member to project light and receive light images,
c) said light transmission and imaging means including means for piercing human flesh to permit surgical insertion of said light transmission and imaging means through human flesh into a body cavity,
d) said light transmission and imaging means being affixed to said first end of said inflexible elongated member and formed essentially of transparent material,



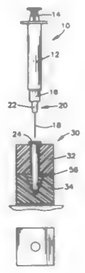
e) said piercing means having a substantially solid piercing point, and
f) said elongated member having means for containing a lighting means and a light image receiving means to cooperate with said light transmission and imaging means.

5,334,151

DEVICE FOR CAPPING AND UNCAPPING A HYPODERMIC NEEDLE

Albert N. Santilli, 28326 Gates Mills Blvd., Pepper Pike, Ohio 44124

Filed Mar. 3, 1993, Ser. No. 25,544
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 15 Claims



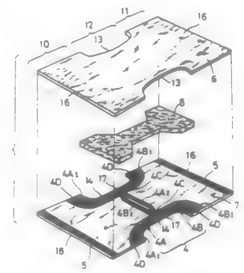
1. A device for applying a cap to, or removing a cap from, a hypodermic needle, comprising:
a body portion comprised of resilient foam, the body portion being in the shape of a rectangular prism and having an opening therein through which the cap may be inserted and removed, the body portion including a base;
means for attaching the base to a desired surface; and
means for mechanically gripping the cap upon insertion of the cap through the opening, said means for gripping being disposed within the body portion and including a conical helix of a size and shape that is engageable by the cap.

5,334,152

DISPOSABLE GARMENTS

Hironori Nomura; Hirofumi Ohnishi, both of Iyomishima; Yoshinori Matsura, Kanonji, and Toru Sasaki, Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Continuation of Ser. No. 738,447, Jul. 31, 1991, Pat. No. 5,197,960, which is a continuation of Ser. No. 626,783, Dec. 13, 1990, Pat. No. 5,055,103. This application Jan. 8, 1993, Ser. No. 2,028
Claims priority, application Japan, Dec. 18, 1989, 328022
The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.2 3 Claims



1. A disposable garment in assembled condition having
a topsheet and a backsheet disposed in an overlying relationship
spaced apart first and second leg openings, each leg opening having an upper end portion and a lower end portion
a crotch area extending between said lower end portions of said leg openings
means for elastically surrounding each of said leg openings, the improvement comprising
said means for elastically surrounding each of said leg openings comprising a plurality of first elastic members and a plurality of second elastic members,
said first elastic members extending along one-half of said first leg opening, across said crotch area and then along one half of said second leg opening,
said second elastic members extending along the other half of said first leg opening, across said crotch area and then along the other half of said second leg opening,
said first and second elastic members intersecting each other adjacent said lower end portion of each leg opening,
the tensile strength of said first and second elastic members gradually decreasing from a location adjacent said lower end portion of each leg opening to said upper end portion of each leg opening.

5,334,153

CATHETER PURGE APPARATUS AND METHOD OF USE

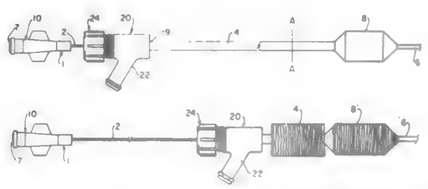
Jon T. McIntyre, Lowell, Mass., and James F. Crittenden, Hollis, N.H., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Oct. 7, 1992, Ser. No. 957,725
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—99 40 Claims

1. A catheter comprising:
a first tubular member having a distal portion, a proximal portion with a first fitting and having a lumen therein;
a second tubular member having a distal portion and a proximal portion, and having a lumen therein, said second tubular member disposed coaxially about said first tubular member, said distal portion of said second tubular member being attached to said distal portion of said first tubular member so that said lumen of said second tubular member is fluid-tight;

VOL 1165 ISS 1 AG 2 1994 UMI

a second fitting connected to said proximal portion of said second tubular member in fluid communication therewith, said second fitting slidably mounted on said first tubular member;



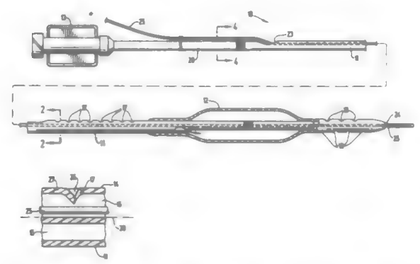
said second tubular member being flexible such that said second tubular member is adjustable in length along its longitudinal axis to allow said second fitting to be positioned along said proximal portion and said distal portion of said first tubular member.

5,334,154

PERFUSION TYPE DILATATION CATHETER HAVING PERFUSION PORTS WITH DEPRESSED PROXIMAL EDGES

Wilfred J. Samson, Saratoga; Motasim M. Sirhan, Santa Clara, and Jovito L. Fernando, Modesto, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Aug. 4, 1992, Ser. No. 925,568
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—102 **10 Claims**



1. A perfusion-type intravascular catheter comprising:

a) an elongated shaft having proximal and distal portions and a guidewire receiving inner lumen extending through at least the distal portion of the shaft to a guidewire port in the distal end of the shaft; and

b) at least one perfussion port which extends through a wall of the elongated shaft, which is in fluid communication with the guidewire receiving inner lumen of the shaft and which has a lower proximal edge which is inwardly depressed into the guidewire receiving inner lumen to prevent a guidewire from passing through the perfusion port when the guidewire is advanced distally through the guidewire receiving inner lumen.

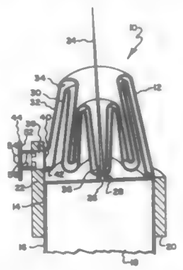
5,334,155

HYPODERMIC SYRINGE NEEDLE GUARD

Daniel Sobel, 2113 Carriage Sq., Silver Spring, Md. 20906

Filed Apr. 6, 1993, Ser. No. 43,293
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **20 Claims**

1. A needle guard for a hypodermic syringe comprising a flexible membrane which is shaped to define a toroidal chamber which, under a first pressure, is conical in shape and includes one end portion having an opening means sized for passage of the needle, an other end portion sized for attachment to a forward portion of a barrel of the hypodermic syringe, and a length to extend beyond the tip of the needle, the membrane further shaped so that the toroidal chamber extends around the needle when the needle guard is attached to the hypodermic syringe whereby the needle does not extend into the toroidal chamber, said membrane chamber being closed



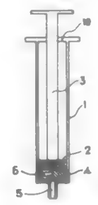
and under a second pressure less than said first pressure and folded inwardly upon itself so that the needle passes within said opening means and beyond the membrane, means for attachment of said other end portion to the forward portion of the barrel of the hypodermic syringe, and means for applying said first pressure to said chamber to effect unfolding of the membrane to cover the needle tip for preventing needle-stick or re-use of a used hypodermic needle.

5,334,156

THROW-AWAY SYRINGE

Antonio Serrano Gonzalez, El Vedat de Torrent, Spain, assignor to Sanitor S.L., Madrid, Spain

Filed Apr. 15, 1993, Ser. No. 48,013
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **6 Claims**



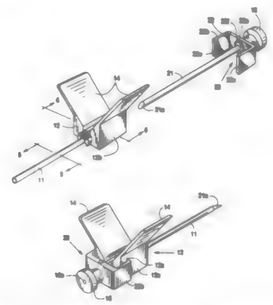
1. A throw-away syringe, of the type including a cylindrical tubular body in which a first stopper is mounted to be displaced in the direction of an axis of said body as controlled by a manually actuated stem; said syringe including a second stopper between said first stopper and a discharge end of said tubular body freely movable in said body; a blade fitted above said second stopper, said blade inoperative during a backward stroke of movement of said second stopper and operative to make a mark or incision in said body when said second stopper is moved in an opposite advance direction, said mark in said body permitting the inner pressure in said cylindrical body to become equal to atmospheric pressure to prevent sucking up of fluid and therefore prevent reusing the syringe after its first use.

5,334,157

CATHETER INTRODUCER

James K. Klein, Boerne, and George E. Sinko, San Antonio, both of Tex., assignors to Gesco International, Inc., San Antonio, Tex.

Filed Sep. 9, 1993, Ser. No. 118,522
Int. Cl.[5] A61M *25/01*
U.S. Cl. 604—160 **8 Claims**



1. A catheter introducer comprising, in combination:

a tubular plastic sheath having an external diameter small enough so that the distal end thereof may be readily insertable in a selected human vein and an internal bore diameter sufficiently large to permit a desired diameter of catheter to enter the proximal end and to be readily passed through the bore of said sheath;

a percutaneous needle having a sharpened open distal end insertable through said bore of said sheath to an extent that the sharpened open end of said needle projects out of the distal end of said sheath, whereby penetration of a selected vein by said needle permits the distal end of said sheath to be moved forwardly relative to said needle to enter the selected vein;

said sheath having a pair of diametrically opposed, longitudinally extending score lines, whereby the application of opposed radial forces to the proximal end of said sheath at locations respectively intermediate said score lines will produce a longitudinal splitting of said tubular sheath;

an operating member for said sheath formed from molded plastic material;

said operating member comprising a central hub portion having a bore rigidly bonded to the proximal end of said sheath;

said central hub portion having longitudinal slots respectively disposed in alignment with said score lines in said sheath;

a pair of manually graspable, radially projecting wings respectively secured to said hub portion intermediate said slots, whereby opposed forces applied to said wings effect the longitudinal splitting of said hub portion and said sheath,

a pair of opposed parallel planar surfaces respectively formed on said operating member;

a generally U-shaped head secured to the proximal end of said needle;

said head having a bight portion and spaced arm portions respectively snugly engagable with said planar surfaces when said bight portion abuts said hub portion, thereby resisting forces on said wings tending to longitudinally split said hub portion;

a notch formed in only one of said planar surfaces; and

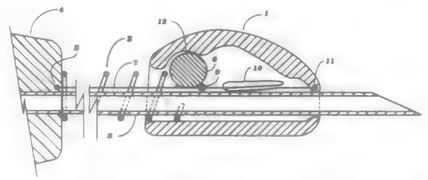
a projection formed on only one of said arms snap-engagable with said notch, thereby securing said needle head to said operating member and orienting said needle opening relative to said wings.

5,334,158

AUTOMATIC NEEDLE TIP GUARD FOR STANDARD HYPODERMIC NEEDLES

Donald J. McLees, 2623 Virginia Ave., Everett, Wash. 98201

Filed Dec. 20, 1993, Ser. No. 169,010
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **5 Claims**



1. An automatically activated guard for the tip of a one-time use standard hypodermic needle comprising:

a standard disposable hypodermic needle having a pointed tip at the front and attached to a standard hub at the rear; and

a hollow needle tip guard through which said needle passes, said guard being initially located near said tip; and

a ball inside said guard; and

an anchor wire extending from an anchor point on said needle hub to an anchor point on the inside of said guard; and

a stop attached to said anchor wire between the two anchor points and wedged between said ball and said needle in front of said ball; and

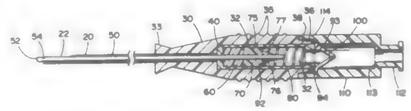
a partially compressed coil spring extending from said needle hub to said ball, said needle passing longitudinally through said coil spring, said needle tip guard having an inner chamber of two portions, the rear portion containing said ball and having a rear opening large enough for said coil spring to pass therethrough but too small to allow passage of said ball, the front portion being large enough to allow passage of said stop from in front of said ball to the rear of said ball, said inner chamber having a constriction between said rear portion and said front portion large enough for said ball to pass therethrough but too small to allow passage of said stop from in front of said ball to the rear of said ball, said guard having a front opening large enough to allow passage of said needle but too small to allow passage of said ball therethrough, said ball being movable by said coil spring to a position at the front of said inner chamber occluding said front opening, said guard being movable by said coil spring to a position enclosing said needle tip, and said anchor wire being of such a fully extended length that travel of said guard rear opening beyond the front of said needle tip is prevented.

5,334,159

THORACENTESIS NEEDLE ASSEMBLY UTILIZING CHECK VALVE

David Turkel, Fort Lauderdale, Fla., assignor to Symbiosis Corporation, Miami, Fla.

Filed Mar. 30, 1992, Ser. No. 860,447
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—158 **16 Claims**

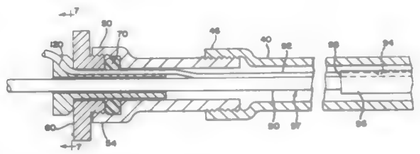


1. A thoracentesis needle assembly, comprising:

VOL 1165 ISS 1 AG 2 1994 UMI

a) a longitudinally extending hollow needle having a sharp distal end and a proximal end, and having a longitudinal axis;
b) a longitudinally extending hollow probe extending through said hollow needle and having a blunt distal end and a proximal end, said probe having at least one port around its distal end;
c) a resilient biasing means coupled to said longitudinally extending hollow probe for resiliently biasing said probe forward with respect to said hollow needle such that said blunt distal end of said probe extends past said sharp distal end of said needle;
d) a hollow housing means for housing said resilient biasing means and for permitting relative movement of said probe relative to said hollow housing means, said hollow housing means fixedly coupled to said needle, and said probe and said hollow housing means providing a fluid flow path from said port of said probe to at least a distal end of said hollow housing means;
e) an automatic check valve means in said fluid flow path, said automatic check valve means for permitting flow of fluid in a direction from said distal end to said proximal end of said probe through said fluid flow path, but preventing flow of fluid in a direction from said proximal end to said distal end of said probe through said fluid flow path; and
a hollow fluid coupling means having a distal end bonded to said housing means by one of glue and sonic welding, and a proximal end having a fluid coupling mating means, said hollow fluid coupling means further providing said fluid flow path,
wherein said automatic check valve means is located between said proximal end of said probe and said fluid coupling mating means, and said automatic check valve means permits flow of fluid in a direction from said port of said probe through to said proximal end of said fluid coupling means, but prevents flow of fluid in a direction through said probe from said proximal end of said fluid coupling means through to said port of said probe.

5,334,160
INTRAVASCULAR CATHETER WITH SLEEVE AND METHOD FOR USE THEREOF
Louis G. Ellis, Minneapolis, Minn., assignor to Scimed Life Systems, Inc., Maple Grove, Minn.
Filed May 4, 1992, Ser. No. 878,727
Int. Cl.[5] A61M *5/178, 5/32, 31/00, 5/00*
U.S. Cl. 604—167 **12 Claims**



1. A method of performing an intravascular procedure with an guide wire and intravascular catheter having an elongate shaft, an implement located at a distal portion thereof, and a close-fitting sleeve located around the shaft and movable therealong, and further in which the intravascular catheter has a lumen shorter than a length of the catheter and having a proximal opening located at the distal portion of the elongate shaft communicating with the shorter lumen, and further in which said sleeve is located around the elongate shaft proximally of the proximal opening, the method comprising the steps of:
advancing the guide wire intravascularly;
positioning the intravascular catheter over the guide wire in an introducer device having a hemostatic valve located at a proximal end thereof;
positioning the close fitting sleeve at the hemostatic valve;
positioning a proximal portion of the guide wire between the sleeve and the hemostatic valve;
tightening the hemostatic valve on the sleeve to form a seal between the sleeve, the guide wire and the hemostatic valve; and
advancing the intravascular catheter along the guide wire.

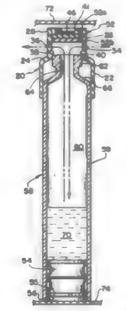
5,334,161
CATHETER WITH NEEDLE TRAP
Simon Gurmarnik, 38 Garrison Rd., #1, Brooklyne, Mass. 02146
Filed May 21, 1993, Ser. No. 64,215
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—164 **8 Claims**



1. A device for IV therapy and the like, comprising a hollow catheter having a tip and a rear end; a needle insertable into said catheter, said rear end of said catheter having a first inlet provided with a membrane and formed so that said needle can be inserted through said first inlet and said membrane into said catheter, and a second separate inlet formed so that a syringe or an IV tubing can be inserted through said second inlet into said catheter; and a trap for a tip of said needle when said needle is withdrawn from said catheter so that the tip of the needle remains enclosed by and obstructed within said trap, said trap having a passage through which said needle moves and means for blocking said tip of said needle inside said passage and including a screw which is screwable through a wall of said trap so as to partially extend into said passage and clamp said tip of said needle in the latter.

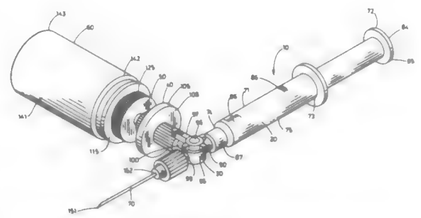
5,334,162
CARTRIDGE ASSEMBLY FOR A LYOPHILIZED COMPOUND FORMING A DISPOSABLE PORTION OF AN INJECTOR PEN AND METHOD FOR SAME
Dale C. Harris, Fairland, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Mar. 15, 1993, Ser. No. 31,683
Int. Cl.[5] A61M *5/00, 37/00;* **A61B** *19/00*
U.S. Cl. 604—232 **23 Claims**

1. A method of lyophilizing and sealing an injectionable product within a cartridge, the method comprising the steps of:
providing an elongate cartridge having on a first end thereof a shoulder, a rim defining a first opening and having a circumferential radially outwardly extending flange adjacent said first opening, and a neck disposed axially between said flange and shoulder, said neck having a diameter smaller than said flange and shoulder, said cartridge including a second opening on a second end thereof distal said first opening;
inserting a plunger in said second opening;
providing a cap having a cylindrical portion and a seal, said cylindrical portion including an open bottom receivable over said neck, said cap including a top having an opening therein for receipt of a needle therethrough, at least one vent circumferentially disposed in said cap, and at least two deformable ledges on said cap extending radially inwardly from said cylindrical portion axially below said vent, said seal being axially disposed between said vent and said top so as to block said top opening;
inserting the product to be lyophilized into said cartridge;
placing said cap onto said cartridge such that said deformable ledges rest upon said flange and said vent is in fluid communication with said cartridge first opening;
placing said cartridge with said cap in a lyophilizing chamber;
lyophilizing the product; and



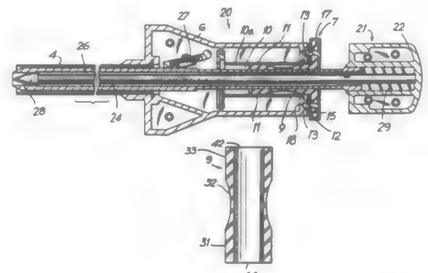
closing said cap by exerting a downward pressure upon said cap such that said deformable ledges yieldably snap around said flange and into said neck to be lockingly retained therein, said vent is blocked from communication with said cartridge first opening, and said seal is pressed into sealing engagement with said rim by downward pressure exerted by said top thereby providing an air impermeable barrier between said top opening and said cartridge first opening.

5,334,163
APPARATUS FOR PREPARING AND ADMINISTERING A DOSE OF A FLUID MIXTURE FOR INJECTION INTO BODY TISSUE
Kevin B. Sinnett, W273 S8555 Hill View Dr., Mukwonago, Wis. 53149
Filed Sep. 16, 1992, Ser. No. 945,684
Int. Cl.[5] A61M *5/315*
U.S. Cl. 604—236 **18 Claims**



1. An apparatus for preparing and administering a dose of a fluid mixture for injection into an eye during a medical procedure; the apparatus comprising:
(a) a syringe having a hollow barrel and a plunger which travels within the hollow barrel to regulate fluid flow within, the hollow barrel having a first end and a second end that oppose each other such that travel of the plunger toward the second end forces fluid from the hollow barrel and travel toward the first end draws fluid into the hollow barrel;
(b) a cannula having a proximal end and a distal end, the cannula defining a conduit therethrough which extends from the proximal end to the distal end;
(c) a valve positioned intermediate the syringe and the cannula, the valve having a first passageway connected to be in fluid communication with the hollow barrel, a second passageway connected to be in fluid communication with the proximal end of the cannula, a third passageway connected to receive a first fluid, and a means for selectively directing fluid flow between two of the different passageways, and blocking flow in the remaining passageway, wherein the fluid flow is selectively directed from the third passageway to the hollow barrel to introduce the first fluid to the hollow barrel of the syringe for mixing with a second fluid to form the dose of the fluid mixture, and further wherein the fluid flow is selectively directed from the first passageway to the second passageway to permit fluid flow from the hollow barrel of the syringe to the distal end of the cannula to thereby administer the dose of the fluid into the eye by injection upon travel of the plunger toward the second end of the hollow barrel; and
(d) a vessel which is connected to the third passageway, the vessel containing the first fluid under pressure, wherein the second fluid is air which is drawn into the hollow barrel by travel of the plunger toward the first end of the hollow barrel and the first fluid is an inert gas.

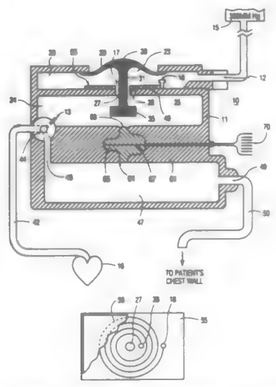
5,334,164
VARIABLE INTERIOR DIMENSION CANNULA ASSEMBLY
Thomas D. Guy, Fairfield, and Alex Iannіruberto, Waterbury, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jan. 3, 1992, Ser. No. 816,215
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—248 **18 Claims**



1. A valve for selectively varying the inner opening of a cannula when positioned therein which comprises a generally tubular member having first and second end portions and a flexible intermediate portion, each end portion comprising a wall and said flexible intermediate portion comprising an intermediate wall, said intermediate wall being thinner than each said end portion wall, the boundary between at least one said end portion and said intermediate portion having a gradually tapered contour, wherein when said intermediate portion is subjected to torsional force the inner dimension of said intermediate portion changes.

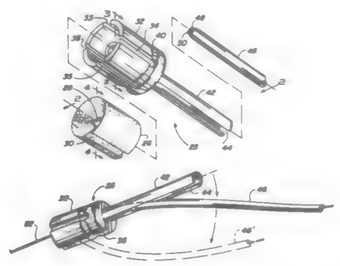
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,165
FLUSH DEVICE
Lawrence M. Abrams, P.O. Box 5779, Englewood, N.J. 07631
Filed Jan. 13, 1993, Ser. No. 3,551
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—249 13 Claims



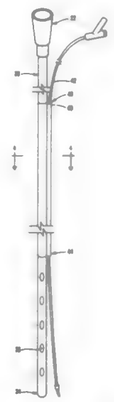
1. A flush device comprising a housing and including first and second paths for fluid passage therein, said device including a first wall separating said housing into entrance and exit chambers, said wall having first and second apertures therethrough, said entrance chamber including an entrance port for introducing fluid into said entrance chamber, said exit chamber including an exit port for fluids exiting said exit cheer, said entrance chamber including a capillary tube connected to said first aperture and open to said first and second chambers, control means movable between first and second positions for opening and closing said second aperture to fluid passage respectively for obtaining a fast flush mode only under attendant control, said capillary having an elongated geometry along an arcuate path on the surface of said wall, said device including a fluid path connected to said exit port and adapted for insertion into a patient.

5,334,166
APPARATUS AND METHOD FOR WETTING HYDROPHILIC-COATED GUIDE WIRES AND CATHETERS
Aubrey Palestrant, 6800 N. 47th St., Paradis Valley, Ariz. 85253
Division of Ser. No. 771,204, Oct. 4, 1991, Pat. No. 5,242,428.
This application Jun. 10, 1993, Ser. No. 74,462
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—265 23 Claims



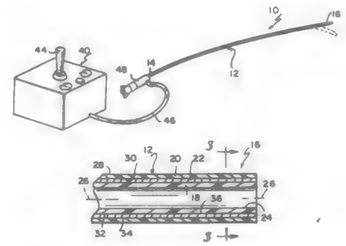
1. A reduced-friction catheter and sheath apparatus to facilitate passage of a catheter through a sheath into a patient's body, said apparatus comprising in combination:
a. a catheter having a distal end for insertion into a patient's body and having an opposing proximal end, said catheter having an outer surface including a lubricious outer surface that is relatively slippery when activated by a wetting fluid;
b. a longitudinally extending sheath having a central bore extending along the longitudinal axis thereof, said sheath having a distal end for insertion into a patient's body and having an opposing proximal end through which the distal end of said catheter can be inserted, the proximal end of said sheath including a deformable diaphragm for wipingly engaging the outer surface of said catheter to form a fluid-tight seal thereabout;
c. absorbent material disposed proximate the proximal end of said sheath, said absorbent material having a central longitudinal bore therein for permitting said catheter to pass therethrough before entering the deformable diaphragm of said sheath; and
d. means for wetting said absorbent material;
e. said absorbent material wetting the lubricious surface of said catheter as said catheter is advanced into the deformable diaphragm of said sheath.

5,334,167
MODIFIED NASOGASTRIC TUBE FOR USE IN ENTERAL FEEDING
David A. Cocanower, 4200 Bishop, Detroit, Mich. 48224
Filed Nov. 19, 1993, Ser. No. 154,980
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—280 22 Claims



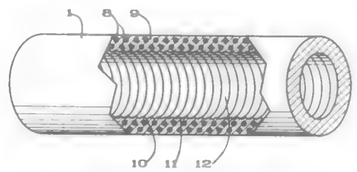
1. A nasogastric tube having distal and proximal ends and openings along its distal end, comprising, in combination,
an introducer sheath having distal and proximal ends, the sheath extending longitudinally along and being coupled to the nasogastric tube, the sheath distal end not obstructing the nasogastric openings, the sheath defining a longitudinally extending lumen of sufficiently large inner diameter to permit an enteral feeding tube to be passed therethrough, the sheath being of a flexible construction and being collapsible against the nasogastric tube.

5,334,168
VARIABLE SHAPE GUIDE APPARATUS
Chad G. Hemmer, Indianapolis, Ind., assignor to Catheter Research, Inc., Indianapolis, Ind.
Filed Jun. 11, 1993, Ser. No. 76,113
Int. Cl.[5] A61M *25/00, 37/00*
U.S. Cl. 604—281 13 Claims



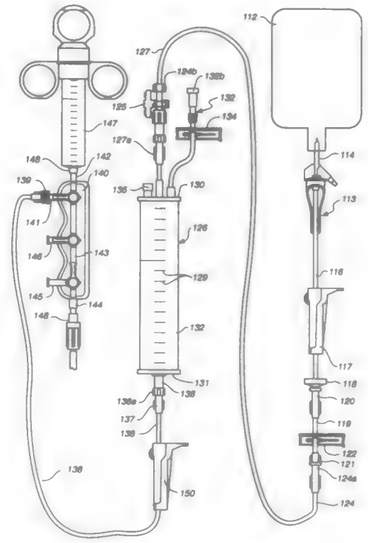
1. An apparatus comprising
a flexible, elongated tubular member having a central axis extending longitudinally therethrough,
a nickel titanium tube arranged in the tubular member to extend along the central axis of the tubular member and formed to include a lumen extending therethrough, and
control means for selectively heating the nickel titanium tube to move the nickel titanium tube to assume a predetermined shape, thereby moving the tubular member so that it assumes a corresponding predetermined shape.

5,334,169
REINFORCED CATHETER WITH THIN MONOLITHIC WALLS
Joe E. Brown, Lilburn, and Matt D. Pursley, Dawsonville, both of Ga., assignors to American Interventional Technologies, Inc., Stone Mountin, Ga.
Filed May 11, 1992, Ser. No. 881,422
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—282 16 Claims



1. A catheter having:
strands of resilient reinforcement material having a structural memory embedded in monolithic catheter walls of flexible material,
the reinforcement material being select strands of resilient material positioned in select spiralled relationship within the monolithic walls,
linear diagnostic communication members positioned in the monolithic walls,
solid lubricant material on inside and outside peripheral surfaces of the catheter walls,
friction reduction channels in the inside peripheral surfaces of the catheter walls,
the reinforcement material being a plurality of layers of multiple strand resilient lines spiral braided in oppositely spiralled relationship within the monolithic walls, and having select variation of density of helical spirals per linear distance within the catheter.

5,334,170
DYE MANAGEMENT SYSTEM INCLUDING AN ADMINISTRATION SET WITH AN IN-LINE BURETTE
Mark T. Moroski, Scranton, Pa., assignor to Abbott Laboratories, Abbott Park, Ill.
Filed Jul. 14, 1993, Ser. No. 91,543
Int. Cl.[5] A61M *5/14, 5/00*
U.S. Cl. 604—80 17 Claims



1. A fluid management system comprising:
a primary fluid container;
a secondary fluid container;
a sterile fluid disposed in said primary fluid container for transfer to said secondary fluid container;
a fluid flow input line connecting said primary and secondary fluid containers;
a fluid flow control member provided in the fluid flow input line between said primary and secondary fluid containers to interrupt fluid flow from said primary to said secondary fluid container;
a one way fluid flow control device disposed in the fluid flow input line between the primary fluid container and the fluid flow control member to prevent fluid return from the secondary fluid container to the primary fluid container thereby providing a sterile barrier for the primary fluid container:
at least one external fluid flow control member provided on the fluid flow input line for controlling fluid flow through the one-way fluid flow control from the primary fluid container to the secondary fluid container and operable to terminate fluid flow;
a disconnect member in the fluid input line engageable with the one way fluid flow control device thereby enabling the disconnection of the primary fluid container from the secondary fluid container without loss of fluid; and
a sterile cap engaging the disconnect to preserve the sterile barrier for the primary fluid container thus to permit the use of the single container of fluid held in the primary fluid container in a second procedure with another secondary fluid container, thus to minimize waste and to maintain sterility in the primary fluid container.

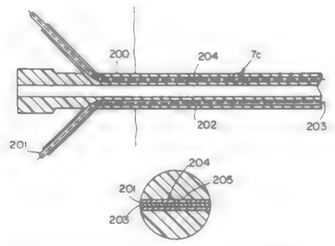
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,171

FLEXIBLE, NONCOLLAPSIBLE CATHETER TUBE WITH HARD AND SOFT REGIONS

Antoine Kaldany, Chestnut Hill, Mass., assignor to InterMED, Inc., Chestnut Hill, Mass.

Division of Ser. No. 734,478, Jul. 23, 1991, Pat. No. 5,222,949.
This application Dec. 2, 1992, Ser. No. 984,393
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—282 13 Claims



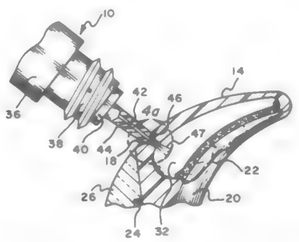
1. A method of in vivo sterilization comprising:
(a) positioning an optical fiber within a wall of a flexible, indwelling catheter;
(b) positioning the catheter in a body lumen adjacent body tissue; and
(c) transmitting ultraviolet light along the length of the optical fiber and radially outwardly from the fiber against the adjacent catheter so that portions of the catheter and surrounding body tissue are exposed to the ultraviolet light and sterilized.

5,334,172

FLUID APPLICATOR FOR OCULAR PROSTHESIS

Kevin V. Kelley, 63 Bradford Way, Voorhees, N.J. 08043

Continuation-in-part of Ser. No. 892,980, Jun. 3, 1992, Pat. No. 5,171,265. This application Dec. 14, 1992, Ser. No. 990,053
Int. Cl.[5] A61F *2/14;* A61M *35/00*
U.S. Cl. 604—300 23 Claims



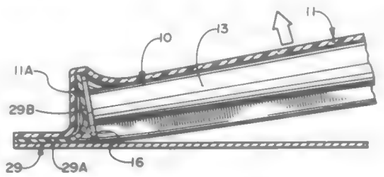
1. A method for injecting fluids into a self lubricating ocular prosthesis for use in a person's orbital cavity, the prosthesis comprising:
(i) a solid rigid prosthetic eye body comprising an anterior convex surface through which an iris-cornea-sclera simulation is visible and a posterior surface, proximately conforming to a surface of the person's orbital cavity,
(ii) at least one chamber in the body defining a reservoir volume,
(iii) an access passage from the at least one chamber through the posterior surface of the body,
(iv) a cap releasably closing the access passage, and
(v) a bore opening from the at least one chamber through an orifice in the anterior surface of the body, there being a peripheral edge of the anterior surface around the orifice, the method comprising:
(I) providing an applicator device comprising:
(A) a container comprising an open topped cavity adapted to be filled with a fluid that can be injected into the chamber of the prosthesis, and
(B) a hollow tubular nozzle comprising:
(i) a lengthwise tubular bore operatively connectable at an inside end to the open topped cavity of the container and having an outside end opening,
(ii) a pointed outside end tip surface surrounding the outside end opening, and
(iii) seating means that when the end tip surface is engaged against the orifice in the anterior surface of the eye body, the end tip surface seats and seals in the orifice,
(II) filling the cavity of the container with a fluid,
(III) locating the orifice by touching and moving the end tip surface of the nozzle on the anterior surface of the prosthesis,
(IV) seating the end tip surface in the orifice, pressuring the end tip surface of the nozzle to the orifice, and, while maintaining that pressure,
(V) ejecting fluid from the cavity of the container through the tubular bore of the nozzle into the bore opening through the anterior surface of the prosthesis and into the chamber.

5,334,173

STABILIZING FOOT MEANS FOR CAP OF NEEDLE ASSEMBLY AND METHOD THEREOF

Michael Armstrong, Jr., Baltimore, Md., assignor to Leonard Bloom, Towson, Md., a part interest

Filed Apr. 1, 1993, Ser. No. 41,489
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—263 1 Claim



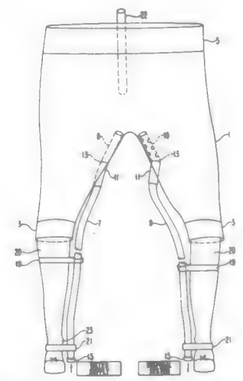
1. In a needle and cap assembly for medical use, wherein the assembly is contained in a sterile package, the sterile package having at least one wall, wherein the assembly includes a needle and further includes a cap having a foot, the foot having a bottom surface provided with an adhesive, and a peel-off protective cover for the adhesive, and wherein upon removal from the sterile package, the cap is stuck onto a supporting surface, such that the needle, after use, may be reinserted into the cap in a one-hand operation, thereby avoiding a needle stick, the improvement wherein, in the sterile package, the protective cover for the adhesive has a first portion anchored to the sterile package and further has a second portion disposed between the wall of the sterile package and the foot on the cap, such that as the sterile package is broken open and the assembly is pulled out of the sterile package, the first portion of the protective cover remains with the sterile package while the second portion of the cover is separated from the foot, thereby automatically exposing the adhesive on the foot.

5,334,174

PERSONAL WASTE DISPOSAL GARMENTS

Norman A. Street, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 803,288, Oct. 23, 1991, abandoned.
This application Jan. 25, 1993, Ser. No. 48,012
Int. Cl.[5] A62B *17/00;* A61M *1/00*
U.S. Cl. 604—313 6 Claims



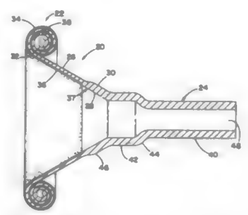
1. A personal waste disposal undergarment apparatus comprising:
(a) a waterproof and breathable undergarment having cuffs and a waist band that are watertight when worn on a patient and wherein said undergarment is collapsible on the patient;
(b) a first hose attached to a warm water supply on one end and to the inside of the undergarment at the other end to provide a fresh supply of water into the undergarment; and
(c) a second hose attached to a disposal system on one end and to the undergarment at the other end wherein a waste stream escapes by vacuum to a disposal system.

5,334,175

MALE URINARY INCONTINENCE DEVICE

Anthony J. Conway; Philip J. Conway, both of Chatfield, and Richard D. Fryar, Jr., Rochester, all of Minn., assignors to Rochester Medical Corporation, Stewartville, Minn.

Continuation-in-part of Ser. No. 611,193, Nov. 9, 1990. This application Jan. 2, 1992, Ser. No. 816,104
Int. Cl.[5] A61F *5/44, 6/02*
U.S. Cl. 604—352 14 Claims



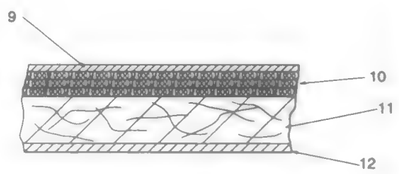
1. A male urinary incontinence device, comprising:
a condom catheter having a sheath, a tube, and a transition section between said sheath and said tube, said sheath and said tube being cylindrical, said sheath having a larger diameter than said tube, said condom catheter having an inner surface and an outer surface; and
an adhesive coating on said inner surface on a portion of said sheath and a portion of said transition section, said portion of said sheath and said portion of said transition section being contiguous and for releasable adhesion to a wearer's male organ.

5,334,176

ABSORBENT CORE FOR USE IN CATAMENIAL PRODUCTS

Daniel E. Buenger; James C. Hornsey, both of Cincinnati, and John L. Hammons, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 23, 1991, Ser. No. 734,405
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—367 20 Claims



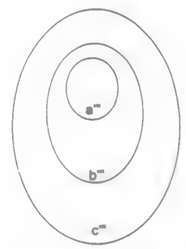
1. An absorbent article comprising:
(a) a fluid-permeable topsheet;
(b) a fluid-impermeable backsheet joined to said topsheet; and
(c) an absorbent core positioned between said topsheet and said backsheet, said absorbent core comprising a wet-laid sheet of substantially uniformly distributed unrefined individualized curled cellulosic fibers having an average length from about 1.6 mm to about 7 mm and at least about 30% of refined individualized curled cellulosic fibers having an average length from about 0.25 mm to about 1.5 mm.

5,334,177

ENHANCED CORE UTILIZATION IN ABSORBENT PRODUCTS

Richmond R. Cohen, Warren, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 941,856, Sep. 8, 1992, which is a continuation of Ser. No. 768,785, Sep. 30, 1991, abandoned.
This application Sep. 30, 1992, Ser. No. 954,083
The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—378 51 Claims



1. A core component for use in a fluid-absorbing article having a plurality of zones comprising:
(a) a zone of vulnerability positioned in said core component for maximum exposure to initial wetting, the zone of

VOL 1165 ISS 1 AG 2 1994 UMI

vulnerability having a wadding component comprising synthetic fiber; and

(b) at least one additional core zone in the core component having a wadding component and arranged in the core component in an area of reduced potential exposure to initial wetting and in fluid-receivable relation to said zone of vulnerability;

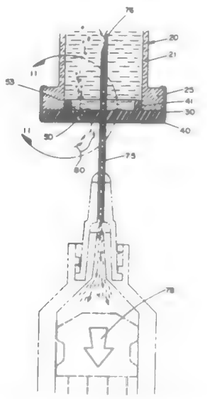
wherein the wadding component in the zone of vulnerability has (1) a greater average pore size than the average pore size of the wadding components in the at least one additional core zone and (2) a higher average fractional fiber volume-to-fiber surface area value than the average fractional fiber volume-to-fiber surface area in the wadding component of the at least one additional core zone.

5,334,178

PIERCEABLE PHARMACEUTICAL CONTAINER CLOSURE WITH CHECK VALVE

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Apr. 14, 1993, Ser. No. 47,326
Int. Cl.[5] A61B *19/00*; A61M *5/32*
U.S. Cl. 604—415 **20 Claims**



1. A pharmaceutical container of the pierceable diaphragm type for storing medication in fluid form for withdrawal when required, said container comprising:

a housing having a wall structure with an opening and a bottom, said wall structure and said bottom together defining an inner volume;

a pierceable diaphragm sealingly positioned in said opening, said diaphragm having an outer surface and at least one fluid check valve affording one way fluid communication from an ambient atmosphere toward said inner volume when said inner volume has a fluid pressure less than the fluid pressure of the ambient atmosphere, the outer surface having a needle-pierceable region;

a protective cover covering said check valve while leaving at least a portion of the needle-pierceable region exposed; and

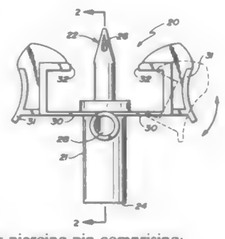
a fluid pathway defined between the cover and the outer surface fluidly coupling the ambient atmosphere with said check valve.

5,334,179

LATCHING PIERCING PIN FOR USE WITH FLUID VIALS OF VARYING SIZES

Robert G. Poli, Campbell; V. Stanton Thomas, Palo Alto, both of Calif.; Wayne F. Adolf, Mt. Prospect, and William L. Rudzena, McHenry, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 16, 1992, Ser. No. 961,758
Int. Cl.[5] A61J *1/00*
U.S. Cl. 604—403 **7 Claims**



1. A latching piercing pin comprising:

a longitudinal body portion having opposite ends, with a piercing element at one end, a connecting member at an opposite and a fluid channel extending the length of said body portion, and in fluid communication with said opposite ends, a second vent channel and a vent port, the second channel extending from the piercing end to the vent port;

a flexible beam mounted on said body portion to extend transversely from a mid-portion of said body portion, said beam bendable about a longitudinal axis of the piercing pin substantially in excess of 45° from the transverse initial position thereof;

engaging members mounted on said flexible beam on opposite sides of said body portion and extending outwardly in the same direction as the piercing element and each member including at respective upper end thereof an latching member having an inwardly directed latching flange and an outwardly directed gripping flange, the pin operable to engage and pierce an associated fluid vial cooperable therewith, and the flexible beam moveable to substantially bend about the longitudinal axis of the pin to accept within the beam structure fluid vial covers for rigid walled vials of substantially varying sizes and the latching members are moveable in combination with said beam to engage and latch to said vial cover and gripping flanges operable to enable selective disengagement of the latching pin from the cover of an engaged fluid vial thereby implementing removal of the pin from the cover of the fluid vial.

5,334,180

STERILE FORMED, FILLED AND SEALED FLEXIBLE CONTAINER

Wayne F. Adolf, Mt. Prospect; R. Hayes Helgren, Mundelein; James T. Renick, Bristol, and Walter T. Szempruch, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 1, 1993, Ser. No. 41,797
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—411 **14 Claims**

12. A sterile formed, filled and sealed flexible container for a sterile fluid, the container comprising:

a flexible film sheet having at least an inner film layer and an outer film layer;

a longitudinally extending saddle line dividing the film sheet into substantially equal first and second portions;

a fluid sump stretched outwardly from the film sheet and having a longitudinal axis coincident with the saddle line;

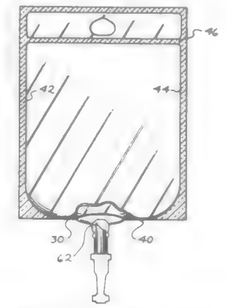
the first portion of the film sheet folded over the saddle line so that the inner layer of the first portion of the film sheet

opposes the inner layer of the second portion of the film sheet;

a continuous peripheral seal between the inner layer of the opposed first and second portions of the film sheet so as to form a hermetically sealed inner chamber between the first and second portions of the film sheet;

a rigid tubular port having a first and second open end;

an integral circumferential flange surrounding the first open end of the tubular port, the flange having a contoured face circumferentially sealed to the outer layer of the film sheet along the radiused fluid sump;



an access fitment at the second open end of the tubular port;

a removable cover for closing the second open end of the tubular port;

a penetrator element slidably contained within the tubular port and having a sharp end for slidably protruding beyond the circumferential flange so as to piece the film sheet and penetrate the sealed inner chamber; and

at least one passageway through the penetrator element from the sharp end for fluid communication from the penetrated inner chamber to the access fitment.

5,334,181

CRYOSURGICAL SYSTEM FOR DESTROYING TUMORS BY FREEZING

Boris Rubinsky, Albany, Calif.; Gary Onik, Wexford, Pa.; J. J. Finkelstein, Washington, D.C.; Dan Neu, Pittsburgh, and Steve Jones, Monroeville, both of Pa., assignors to Cryomedical Sciences, Inc., Rockville, Md.

Division of Ser. No. 588,329, Sep. 26, 1990, abandoned. This application Jan. 31, 1992, Ser. No. 828,732
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—22 **8 Claims**

1. A cryosurgical system for destroying tumors by freezing, comprising

at least one source of cryogenic liquid refrigerant,

means for sub-cooling the cryogenic liquid refrigerant,

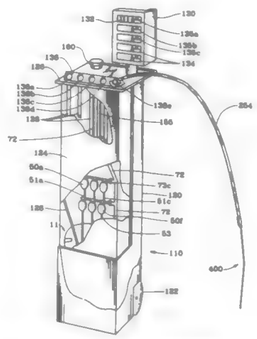
a multiplicity of cryoprobe instruments,

supply conduit means connecting the at least one source to each of the multiplicity of instruments,

flow control means for directing flow of liquid refrigerant from the at least one source via the supply conduit means to only preselected ones of the multiplicity of instruments to cryogenically activate the preselected ones,

temperature control means for controlling the temperature of each cryogenically activated cryoprobe instrument independently of the temperature of any other cryogenically activated cryoprobe instrument, and

display means for displaying which of the preselected ones of the multiplicity of instruments is receiving liquid refrigerant, and for displaying the temperature of each preselected one, whereby only one or a multiplicity of the cryoprobe instruments may be activated to simultaneously freeze different portions of a tumor to facilitate total destruction thereof and/or simultaneously freeze at least one portion each of two or more tumors in the same patient.

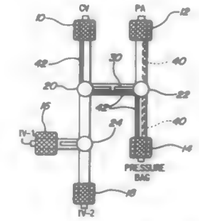


5,334,182

PULMONARY ARTERY CATHETER MONITORING BRIDGE

R. Kaye Simons, Saginaw, and Frazer A. Wadenstorer, Millington, both of Mich., assignors to Perry Creek Group Corporation, Bridgeport, Mich.

Filed Sep. 2, 1992, Ser. No. 939,143
Int. Cl.[5] A61M *1/00, 5/00, 25/00*; F16K *5/00*
U.S. Cl. 604—32 **9 Claims**



1. An apparatus for interconnecting to and routing fluid flow between a plurality of tubings in patient hemodynamic monitoring situations, one of said tubings connected to a fluid line in communication with a central vein of a patient, another of said tubings connected to another fluid line in communication with a pulmonary artery of said patient, another of said tubings connected to another fluid line in communication with a pressure reading apparatus and the remainder of said plurality of tubings connected to at least one fluid line in communication with an intravenous solution reservoir, the apparatus comprising:

a plurality of connectors for receiving said fluid lines and said tubing;

fluid path means, disposed between said connectors, for carrying fluids to and from said connectors;

fluid routing means, disposed between said fluid path means, for routing fluid flow along said fluid path means, said path means and said routing means cooperating to selectively provide for a fluid communication path between said pulmonary artery and said pressure reading apparatus to obtain a pulmonary artery pressure reading while also selectively providing for a fluid communication path between said central vein and one of said antravenous solutions to administer said solutions to the patient, and

VOL 1165 ISS 1 AG 2 1994 UMI

said path means and said routing means cooperating to selectively provide for a fluid communication path between said central vein and said pressure reading apparatus to obtain a central venous pressure reading while also inhibiting fluid communication between said central vein and said at least one intravenous solutions and between said pulmonary artery and said pressure reading apparatus, wherein said fluid path means is capable of precluding exposure of said intravenous solution to the atmosphere; and

route markings for identifying fluid routes along said fluid path means coincident with said selective fluid communication paths.

5,334,183

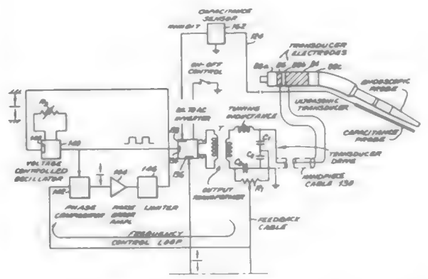
ENDOSCOPIC ELECTROSURGICAL APPARATUS

David G. Wuchinich, New York, N.Y., assignor to Valleylab, Inc., Boulder, Colo.

Continuation of Ser. No. 329,747, Mar. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 133,711, Dec. 16, 1987, Pat. No. 4,922,902, which is a division of Ser. No. 20,266, Feb. 27, 1987, Pat. No. 4,750,488, and a continuation of Ser. No. 865,240, May 19, 1986, Pat. No. 4,750,902, which is a continuation-in-part of Ser. No. 770,342, Aug. 23, 1985, abandoned. This application Apr. 9, 1992, Ser. No. 866,953

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—46 **26 Claims**



1. An endoscopic electrosurgical apparatus for removal of unwanted biological material through a naturally occurring or surgically created opening in the body of a patient comprising:

a handpiece;

an elongated sheath extending from said handpiece, said elongated sheath having a distal end and having a hollow bore therethrough;

a resonator assembly disposed within the handpiece and elongated sheath, said resonator assembly including an elongated tool having a tip extending beyond the distal end of the elongated sheath to a work site in the body of a patient;

means mounted in said handpiece for generating electrical energy and for transmitting said electrical energy to said resonator assembly in an amount sufficient to enable said tip of the elongated tool to disintegrate unwanted biological material from the patient or to cauterize tissue of the patient at said work site;

means mounted in said handpiece for generating ultrasonic vibrations and for transmitting said vibrations to said resonator assembly to enable said tip of the elongated tool to vibrate to incise unwanted biological material from the patient at said work site;

means for irrigating said work site with fluid to assist in removal of disintegrated biological material;

aspiration means for removing said disintegrated biological material from said work site through said elongated sheath; and

means for viewing said work site from said handpiece.

5,334,184

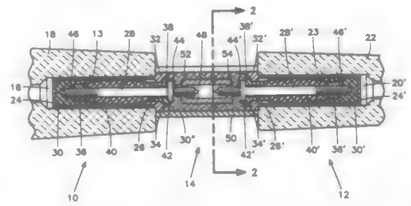
APPARATUS FOR INTRAMEDULLARY FIXATION BROKEN BONES

Lev A. Bimman, 100 N. La Cumbre Rd., Apt. 18, Santa Barbara, Calif. 93110

Filed Jun. 30, 1992, Ser. No. 906,385

Int. Cl.[5] A61F *5/04, 2/28*

U.S. Cl. 606—63 **12 Claims**



1. An internal bone fixation apparatus for supporting and securing together two sections of a fractured elongated bone within a patient's body, the apparatus comprising:

a) a first fixation portion disposed in a hole formed in the internal cavity of a first section of the fractured bone on one side of the fracture wherein the first fixation portion includes a first means for securing the first fixation portion in the hole formed in the internal cavity of the first section of the fractured bone, and a first means for insulating the securing means from contact with the patient's body, and wherein the first securing means comprises:

a1) an expansion bolt which is of a generally hollow shape and open at both ends, in an unexpanded state, wherein a first end of the expansion bolt has a internally threaded section, and a second end has a flanged section having an outer diameter larger than the remainder of the expansion bolt, and a radially expandable section is disposed between the internally threaded section and the flanged section which includes a plurality of longitudinal slats, the longitudinal slats being deformable to an expanded state wherein they bulge outward when a longitudinal compressive force is applied to ends of the expandable section and tightly presses against a surrounding surface contacted, and,

a2) a screw which is of a generally cylindrical shape and has a flange which forms a boundary between a first threaded section on a first end of the screw and the remainder of the screw, and wherein the diameter of the remainder of the screw is sized so that it is slidable through an inner bore of the hollow expansion bolt, whereas the flange is larger than the bore and not slideable therethrough, and wherein the screw has a second threaded section on a second end opposite the flange, the second threaded section matable with the internally threaded section of the expansion bolt, and wherein,

a3) the screw is disposed within the bore of the expansion bolt such that the second threaded section of the screw is mated with the internally threaded section of the expansion bolt and a surface of the flange of the screw is in contact with the flanged section of the expansion bolt, and the expandable section is in one of (i) the unexpanded state prior to the securing of the first fixation portion in the hole formed in the internal cavity of the first section of the fractured bone, and (ii) the expanded state after such securing, the securing being accomplished by rotating the screw within the expansion bolt such that a compressive force is applied to the ends of the expansion section;

b) a second fixation portion disposed in a hole formed in the internal cavity of a second section of the fractured bone on the opposite side of the fracture from the first section of the fractured bone wherein the second fixation portion includes a second means for securing the second fixation portion in the hole formed in the internal cavity of the second section of the fractured bone, and a second means for insulating the securing means from contact with the patient's body, and wherein the second securing means is identical to the first securing means; and

c) a means for connecting the first fixation portion to the second fixation portion wherein the connecting means is adjustable such that the first and second fixations portions can be one of (i) drawn together, and (ii) spread apart in a longitudinal direction, thereby similarly moving the first and second sections of the fractured bone so that a desired length of the overall elongated bone can be obtained.

5,334,185

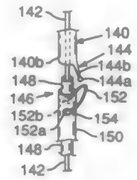
END-TO-END INSTRUMENT PLACEMENT APPARATUS

Jerry D. Giesy, and Matthew W. Hoskins, both of Portland, Oreg., assignors to Giesy Consultants, Inc., Portland, Oreg.

Continuation of Ser. No. 957,509, Oct. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 722,886, Jun. 28, 1991, Pat. No. 5,152,749. This application Oct. 5, 1993, Ser. No. 132,118

Int. Cl.[5] A61M *5/178, 25/00*

U.S. Cl. 604—164 **8 Claims**



1. An instrument placement system for use in conjunction with a guide wire, the system comprising:

an elongate instrument to be placed having a slide coupling for mounting slidably upon the guide wire;

an elongate positioner; and

an end-to-end coupling mechanism including a first coupling portion and a second coupling portion cooperative to join together in end-to-end relation said instrument to be placed and said positioner, said first coupling portion operative at a proximal end of said instrument to be placed and said second coupling portion operative at distal end of said positioner, said coupling mechanism further including a de-coupling portion operable exclusively at a proximal end of said positioner to release said first and second portions.

5,334,186

MEDICAL TUBING AND IMPLEMENT ORGANIZER

Stephen M. Alexander, 2926 Wenwood, Abilene, Tex. 79606

Filed Nov. 9, 1992, Ser. No. 973,724

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—180 **14 Claims**

1. A medical implement and tubing organizer comprising a base portion for supporting said organizer on a supporting surface and receiving medical implements, and a multiple tubing holder portion for carrying a plurality of tubes;

said base portion including an elongated support element and a substantially planar element defining a plurality of aperture located in said planar element and adapted to receive medical implements;

said multiple tubing holder portion extending out of a plane defined by a surface of said base portion and including:

a top member,

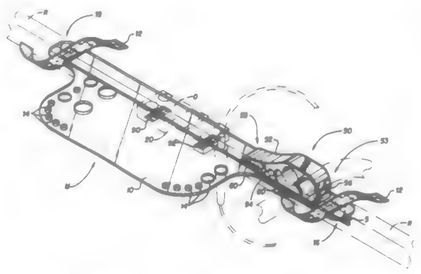
a bottom member positioned beneath said top member,

hinging means defining a pivot point between said top member and said bottom member, said hinging means is a living hinge, said living hinge is removable from said top member and said bottom member,

releasable and reusable closure means for repeatedly holding said top member and said bottom member in a generally parallel relationship and for releasing said top member from said bottom member, said releasable and reusable closure means attached to both said top and bottom members,

a plurality of mutually complementing cavities cut out of both said top and bottom members, and

removable and reusable engagement means integral to said bottom member for repeatedly attaching said multiple



tubing holder portion to said base portion and for releasing said multiple tubing holder portion from said base portion, whereby

when said bottom and said top member are rotated about said pivot point and placed in a generally parallel relationship, said mutually complementing cavities define a plurality of generally cylindrical lateral bores in a side-by-side arrangement;

wherein said multiple tubing holder portion and said base portion are configured so said multiple tubing holder portion is removable from said base portion, while maintaining medical implements in said base portion and tubing in said multiple tubing holder portion in predetermined orientations, respectively.

5,334,187

BALLOON CATHETER SYSTEM WITH SLIT OPENING HANDLE

Robert E. Fischell, Dayton, Md.; David R. Fischell, Fair Haven, N.J., and Tim A. Fischell, Nashville, Tenn., assignors to Cathco, Inc., Dayton, Md.

Continuation-in-part of Ser. No. 65,593, May 21, 1993. This application Jul. 28, 1993, Ser. No. 98,439

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—194 **7 Claims**

1. A balloon angioplasty catheter system for use by a single operator comprising:

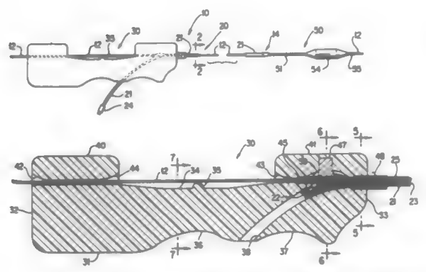
a flexible guide wire;

an elongated catheter shaft having distal and proximal ends and having a first lumen in fluid communication with an inflatable balloon mounted near the catheter system's distal end and a second lumen adapted to pass the flexible guide wire, the second lumen having a slit extending from near the shaft's proximal end to near the shaft's distal end which distal end is joined to a transition section to which is joined an inflatable balloon; and,

a slide handle having a guide wire passageway and also a separate catheter shaft passageway, the slide handle having a slit opening means to allow the guide wire to enter

VOL 1165 ISS 1 AG 2 1994 UMI

the guide wire passageway, the slide handle also having a detachable joining means to detachably join the slide



handle to a "Y" adaptor which is itself detachably joined to a guiding catheter.

5,334,188

CONNECTOR WITH INJECTION SITE

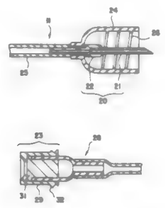
Yoshifumi Inoue, Ikeda, and Hiroshi Yoshioka, Takatsuki, both of Japan, assignors to Nissho Corporation, Osaka, Japan

Continuation of Ser. No. 714,991, Jun. 14, 1991, abandoned, which is a continuation of Ser. No. 453,882, Dec. 20, 1989, abandoned, which is a division of Ser. No. 275,306, Nov. 23, 1988, abandoned. This application Dec. 14, 1992, Ser. No. [illegible]0,932

Claims priority, application Japan, Dec. 7, 1987, 62-186267; Dec. 7, 1987, 62-308860

Int. Cl.[5] A61M *5/31*

U.S. Cl. 604—283 **6 Claims**



1. A connector assembly including an injection needle for providing fluid communication through a closed injection site at one end of an infusion line for infusing fluid therapy to a patient which consists of:

a tubular member having first and second ends, a through passage, and a reduced external diameter portion between said first and second ends,

an injection needle having one end fitted to said first end of said tubular member and having an internal fluid passage,

a tube connected to said second end of said tubular member,

a connector having one end mounted for rotation around said reduced diameter portion of said tubular member,

an infusion line,

a complimentary connector having a closed injection site at one end of said infusion line,

connecting means on said connector for securing said connector to said complimentary connector, and

a second end of said needle extending beyond said connecting means to permit said needle to pierce said injection site prior to engagement of said connecting means with said complimentary connector whereby said connector and said complimentary connector are connected together subsequent to piercing said needle through said injection site.

5,334,189

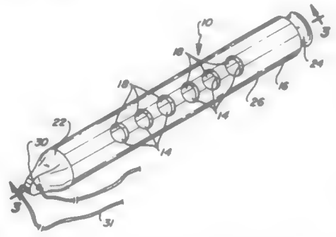
DEVICE FOR CONTROLLED DIFFUSION OF A CHEMICAL SUBSTANCE

Stephen E. Wade, P.O. Box 774324, Steamboat Springs, Colo. 80477

Filed Jun. 3, 1991, Ser. No. 709,693

Int. Cl.[5] A61K *9/22*; **A61M** *35/00*; **A61C** *17/06*; **A61B** *5/00*

U.S. Cl. 604—890.1 **10 Claims**



1. A device for controlled diffusion of a chemical substance of interest between a body fluid and said device, said device comprising:

a structure impermeable to the substance of interest, an inwardly facing surface of which surrounds and in part defines a compartment, said structure having a port defined therein; and

a diffusion layer formed in said structure characterized by selective permeability to the substance of interest while being substantially impermeable to other substances and the substance of interest bound to any of said other substances, said layer comprising at the time of formation in said compartment a dispersed solution coating substantially all of said inwardly facing surface of said structure thereby establishing said layer in adherence with said inwardly facing surface and across said port.

5,334,190

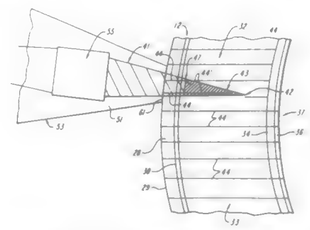
LASER THERMOKERATOPLASTY METHODS AND APPARATUS

Theo Seiler, Zell, Fed. Rep. of Germany, assignor to Summit Technology, Inc., Waltham, Mass.

Continuation of Ser. No. 598,118, Oct. 16, 1990, abandoned. This application May 8, 1992, Ser. No. 883,055

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—5 **15 Claims**



1. An apparatus for performing thermokertoplasty comprising:

a radiation source for delivery of infrared radiation in the wavelength range of about 1.8 microns to about 2.3 microns into a cornea of an eye, and

focusing means for focusing radiation from the source into the cornea in a controlled manner such that the focusing means defines a coagulation cone with an apex at a depth less than about 450 microns in the cornea, whereby the radiation effects heat-induced shrinkage of the collagenous tissue of the cornea and thereby changes the corneal curvature.

5,334,191

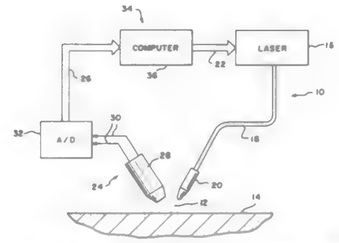
LASER TISSUE WELDING CONTROL SYSTEM

Dix P. Poppas; Steven M. Schlossberg; Theodore J. Choma; Scott D. Klioze, all of c/o Laserscope Surgical Systems 3052 Orchard Dr., San Jose, Calif. 95134-2011, and James H. Boll, San Francisco, Calif., assignors to Dix Phillip Poppas; Steven Mark Schlossberg; Theodore John Choma and Scott David Klioze

Filed May 21, 1992, Ser. No. 886,779

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—12 **8 Claims**



1. A system for welding tissue by irradiation with laser energy, comprising:

laser means for generating a beam of laser energy and directing said beam toward the tissue so as to irradiate a region to be welded, said laser means having a control input and being responsive to a control signal supplied to said control input to adjust the power of said beam of laser energy,

sensor means for sensing the temperature of the tissue in said region to be welded and for providing a sensor output indicative of said temperature, and

control means, responsive to said sensor output, for supplying a control signal to said laser means such that said region to be welded is heated to a predetermined temperature, in which the tissue in the region to be welded is coated with a material which, when irradiated with laser energy from said laser means, fluoresces at a wavelength which differs from the wavelength of said laser energy, in which said system further comprises a means for sensing fluorescence by said material and for providing a safety output signal, and in which said control means is responsive to said safety output signal so as to terminate operation of said laser means in the event that fluorescence is not sensed.

5,334,192

TARGETING DEVICE FOR AN IMPLANT

Klaus F. A. Behrens, Rickling, Fed. Rep. of Germany, assignor to Homwedica GmbH, Schoenkirchen, Fed. Rep. of Germany

Filed Jan. 30, 1992, Ser. No. 828,397

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1991, 9101037[U]

Int. Cl.[5] A61F *2/32*

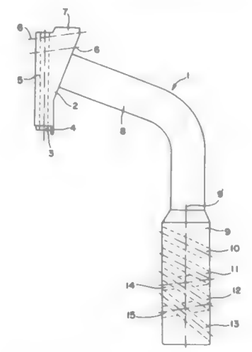
U.S. Cl. 606—96 **11 Claims**

1. A targeting device for an implant to be used for fractures comprising:

(a) a head having a means for retaining a nail to be inserted into the medullary canal of a bone;

(b) locking means for releasably fastening said nail to said means for retaining a nail; and

(c) a targeting arm attached to said head, wherein said targeting arm has an axis and has a free end and extends substantially parallel to a nail attached to said means for retaining a nail and wherein said targeting arm has a plurality of first targeting bores for receiving a drill sleeve, said first targeting bores extending at different angles with respect to the axis of said targeting arm, wherein at least



one of said targeting bores and at least one of said further targeting bores cross each other, such that the cross-section of one bore intersects the cross-section of another bore within said target arm.

5,334,193

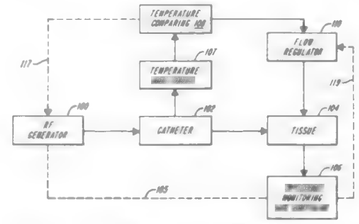
FLUID COOLED ABLATION CATHETER

Paul C. Nardella, North Easton, Mass., assignor to American Cardiac Ablation Co., Inc., Taunton, Mass.

Filed Nov. 13, 1992, Ser. No. 975,662

Int. Cl.[5] A61B *17/39*; **A61N** *1/05*

U.S. Cl. 606—41 **9 Claims**



6. A system for controlling the temperature of an energy delivering electrode disposed on an ablation catheter, comprising:

a thin, flexible elongate catheter having a central lumen disposed therein to enable fluid to be conveyed through the catheter, at a variable rate of flow, for discharge at a distal portion of the catheter, the catheter having at least one energy delivering electrode disposed at a distal portion of the catheter and the catheter having dimensions suitable for intravascular delivery;

an electrosurgical generator unit in electrical communication with the catheter for providing a desired electrosurgical energy output to the electrode for delivery to tissue adjacent the electrode;

a fluid supply source in communication with the lumen;

temperature sensing means associated with the catheter for sensing the temperature of the energy delivering electrode and generating a signal representative of measured electrode temperature;

comparator means for comparing the measured electrode temperature and a predetermined maximum temperature

VOL 1165 ISS 1 AG 2 1994 UMI

value and generating a signal representative of the temperature difference; and

a fluid control means for regulating the rate of flow of fluid through the lumen in response to the signal from the comparator means representative of the temperature difference to maintain the measured electrode temperature at or below the predetermined temperature.

5,334,194

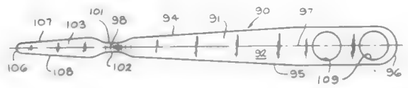
COLLATERAL LIGAMENT RETRACTOR FOR USE IN PERFORMING KNEE SURGERY

W. F. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623

Division of Ser. No. 508,090, Apr. 11, 1990, Pat. No. 5,217,463. This application Dec. 9, 1992, Ser. No. 988,205

Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—88 **5 Claims**



1. A collateral ligament retractor for use in performing knee surgery comprising:

(a) a handle extending along a longitudinal axis, said handle including a flat portion defining a plane;

(b) an integral support section extending from said handle flat portion and following a curved path downwardly from said plane when said flat portion is in a horizontal position; and,

(c) a tip extending from said integral support section and following a curved path in a reverse direction from that of said integral support section, said tip terminating in an end angled upwardly toward and below said plane defined by said horizontally positioned flat portion, said end having a thickness not to exceed 0.110 inch and following an outwardly curved blunt path across its breadth, said tip having edges tapering toward each other as they approach said end, said tapering occurring throughout a major portion of said tip.

5,334,195

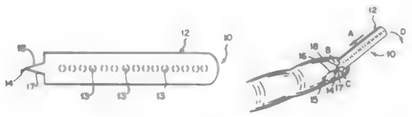
METHOD AND ARTICLE FOR REMOVING SPLINTERS WITH A DISPOSABLE LANCET

Peter Gollobin, 9 Meadow La., Glen Head, N.Y. 11545

Filed Feb. 6, 1991, Ser. No. 651,148

Int. Cl.[5] A45D *26/00*

U.S. Cl. 606—131 **2 Claims**



1. A method for removing a splinter from a patient's skin comprising:

removing the lancet from an individually wrapped pre-sterilized package,

piercing the patient's skin in an area adjacent to said splinter with a hand-held, disposable, elongated metal, generally flat lancet, having a handle portion at one end and a flat V-shaped point at its other end said flat point of said lancet having a length in the range of 2/64" to 5/16", said lancet having an overall length in the range of 0.375" to 2.50", said lancet having an overall width in the range of $\frac{1}{4}$" to $\frac{1}{2}$", and said lancet having a thickness in the range of 0.003" to 0.015",

tearing the patient's skin by piercing the skin adjacent to the splinter and then lifting the lancet in a direction perpendicular to the entry point in the patient's skin in a repetitive fashion so as to loosen the skin around the splinter, and

thereafter placing said flat point of said lancet under said splinter and lifting it away from the skin so as to dislodge said splinter.

5,334,196

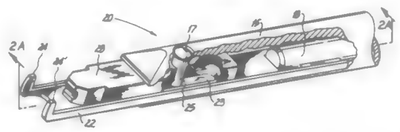
ENDOSCOPIC FASTENER REMOVER

Ian M. Scott, Ridgefield, and David A. Nicholas, Trumbull, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 5, 1992, Ser. No. 956,714

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—138 **26 Claims**



1. A surgical apparatus for removing from the body a fastener having a pair of legs joined by a backspan having top and bottom portions, the apparatus comprising:

a) an endoscopic portion;

b) means positioned at a distal end of said endoscopic portion for removing the fastener, said fastener removing means comprising a stationary member and a movable member, wherein said movable member comprises parallel spaced apart fork means for engaging said backspan; and

c) means remote from said distal end of said endoscopic portion for actuating said fastener removing means;

wherein said movable member engages the fastener backspan bottom portion and proximal movement of said movable member moves said fastener proximally to cause said fastener backspan top portion to press against said stationary member further causing said fastener to deform to a configuration suitable for removal.

5,334,197

FLEXIBLE BASE FLUID DELIVERY APPARATUS

Marshall S. Kriesel, Saint Paul; Thomas N. Thompson, Richfield, and Farhad Kazemzadeh, Bloomington, all of Minn., assignors to Science Incorporated, Bloomington, Del.

Continuation of Ser. No. 588,983, Sep. 25, 1990. This application Jul. 21, 1992, Ser. No. 917,754

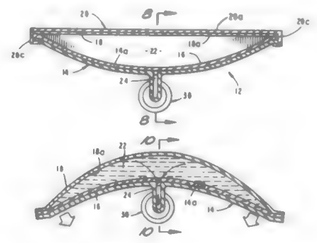
Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—132 **19 Claims**

1. A device for expelling fluids at a controlled rate, comprising:

(a) a yieldably deformable solid base having first and second surfaces, said solid base being deformable from a first position wherein said first surface is in a first configuration to a second position wherein said first surface is in a second configuration;

(b) means for forming a fluid chamber comprising a distendable membrane having a first surface and being constructed of an elastic material, said first surface of said membrane being disposed in a first position relative said first surface of said solid base when said base is in said first position and being disposed in a second position relative said first surface of said solid base when said base is in said second position to form a fluid chamber between said first surface of said solid base and said first surface of said membrane said fluid chamber having a fluid port, said distendable membrane being distendable when said solid base is in said second position in a manner to establish internal stresses therewithin tending to return said mem-



brane to a less distended configuration whereby fluid within said chamber will be urged to flow from said fluid port; and

(c) means removably connected to said solid base for maintaining said base in said first position.

5,334,198

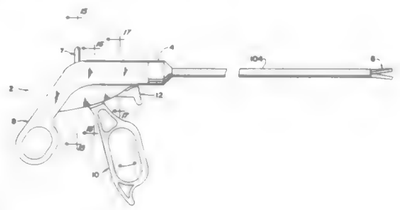
SURGICAL INSTRUMENT

Rickey D. Hart, North Attleboro, Mass.; Richard M. Winters, Cary, N.C.; John T. Rice, and James E. Nicholson, both of Lincoln, Mass., assignors to Innovasive Devices, Inc., Hopkinton, Mass.

Filed Oct. 9, 1992, Ser. No. 959,121

Int. Cl.[5] A61B *17/40*

U.S. Cl. 606—52 **43 Claims**



15. A surgical instrument comprising:

a handle assembly, a tool head, and drive means connecting said handle assembly and said tool head;

said handle assembly comprising a handle and a trigger member pivotally mounted to said handle;

said tool head comprising first and second cooperating tool members movable between a first open position wherein they are spaced from one another and a second closed position wherein they are proximate to or engaged with one another; and

said drive means comprising an elongate rod, a tube surrounding said rod means, for releasably securing one end of said rod to said handle assembly, means for securing said tool head to the opposite end of said rod, support means attached to said handle for slidably supporting said tube for sliding axial movement relative to said rod, said support means comprising (1) a first housing releasably secured to said handle assembly and defining an elongate chamber, and (2) a second housing slidably mounted in said elongate chamber, said tube being secured to and movable with said second housing relative to said first housing lengthwise of the axis of said tube, and said rod extending through said second housing, and means connecting said support means and said trigger member whereby manipulation of said trigger member will cause said second housing and said tube to move axially relative to said rod between a first position wherein one end of said tube is retracted from said tool head and said first and second tool members are in said first open position and a second position wherein said tube overlaps said tool head and forces said first and second tool members into said second closed position;

said tool head and said drive means forming a discrete subassembly that is removably secured to said handle assembly.

5,334,199

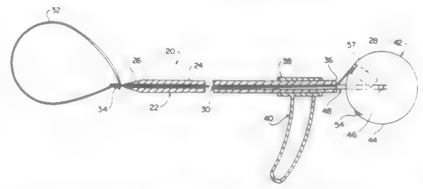
LIGATING INSTRUMENT AND METHODS OF LIGATING TISSUE IN ENDOSCOPIC OPERATIVE PROCEDURES

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Aug. 17, 1992, Ser. No. 930,320

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—144 **17 Claims**



1. A ligating instrument for ligating anatomical tissue comprising

a ligating device including an elongate body having a distal end and a proximal end and a length of ligature material extending through said body and secured to said proximal end, said ligature material being formed into a ligature loop disposed externally of said distal end for being positioned around anatomical tissue to be ligated, said proximal end being separable from the remainder of said body to allow said ligature material to be moved through said ligating device to close said ligature loop around the anatomical tissue; and

an adapter including means for receiving said ligating device, a handle connected with said receiving means for being grasped by a hand of a surgeon and operating means coupled with said receiving means for securing said proximal end of said body, said operating means being movable manually by the hand grasping said handle to move said ligature material through said ligating device to close said ligature loop and form a ligature in the anatomical tissue.

5,334,200

SUTURE KNOT MAKING DEVICE AND METHOD FOR USE

Lanny L. Johnson, 4528 Hagadorn, East Lansing, Mich. 48823, assignor to Lanny L. Johnson, Lansing, Mich.

Filed Mar. 2, 1993, Ser. No. 24,749

Int. Cl.[5] A61B *17/00*

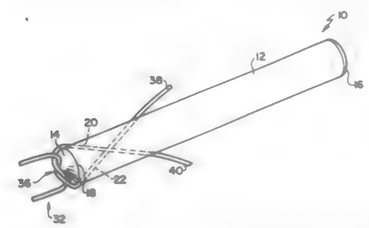
U.S. Cl. 606—148 **9 Claims**

1. A suture knot making device for positioning a loop of suture at a surgical site remote from an opening to the site, the device comprising:

a cylindrical member having distal and proximal portions, said distal portion having a convexly curved end face, first and second bores disposed in said cylindrical member, each said bore having a distal open end disposed substantially adjacent a transition area where said convexly curved end face merges with a cylindrical surface of said member, said distal open ends being disposed approxi-

VOL 1165 ISS 1 AG 2 1994 UMI

mately 180° apart, said first and second bores being non-intersecting and extending at an acute angle relative to a



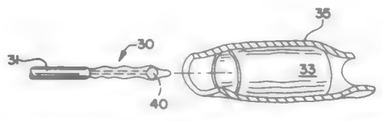
longitudinal axis of said member, whereby the bores cross one another within said member.

5,334,201

PERMANENT STENT MADE OF A CROSS LINKABLE MATERIAL

Kevin P. Cowan, 4242 Estates Ct., Allison Park, Pa. 15101

Filed Mar. 12, 1993, Ser. No. 30,977
Int. Cl.[5] A61F *2/06*
U.S. Cl. 623—1 10 Claims



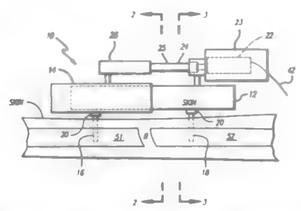
1. An endovascular stent for resisting restenosis in a stenosed region of a blood vessel that has been expanded by balloon angioplasty, said stent comprising: a stent sleeve having an expandable tubular body portion containing a cross-linkable substance at least a portion of which can be cured by exposure to radiation, and a film of material which is biologically compatible with the vessel and encapsulating such tubular body portion to thereby isolate it from the vessel.

5,334,202

PORTABLE BONE DISTRACTION APPARATUS

Michael A. Carter, 22039 W. Rodeffer Pl., Saugus, Calif. 91350

Filed Apr. 6, 1993, Ser. No. 43,412
Int. Cl.[5] A61B *17/60;* A61F *5/04*
U.S. Cl. 606—58 11 Claims



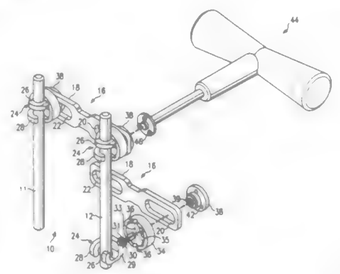
1. A portable bone distraction apparatus comprising:
a) a motor driven bone distraction mechanism having at least two fasteners for attachment to the proximal and the distal sides of a bone break;
b) a motor for periodically moving said attachments relative to each other to distract the bone;
c) a microprocessor control circuit for controlling the operation of said motor;
d) input means for manually programming the desired rate of bone distraction into said microprocessor;
e) means for sensing a tissue condition parameter and for providing signals representative of the condition of tissue proximate the locations of said bone attachments to said microprocessor;
f) means for comparing said sensed condition signals with a normal condition parameter programmed into said microprocessor; and
g) means for adjusting the operation of said motor when said sensed condition signals vary by a predetermined amount from said normal condition parameter programmed into said microprocessor.

5,334,203

SPINAL FIXATION SYSTEM AND METHODS

Erik J. Wagner, Allen, Tex., assignor to AMEI Technologies Inc., Wilmington, Del.

Filed Sep. 30, 1992, Ser. No. 954,561
Int. Cl.[5] A61B *17/58;* B25G *3/00;* A44B *1/04*
U.S. Cl. 606—61 15 Claims



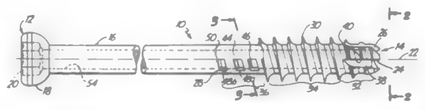
12. A connector for use in securing rods to each other during medical procedures comprising:
a plate having multiple legs, each of the legs having an end with an elongated slot formed therein;
a plurality of double hook bolts for coupling to the rods, each bolt extending through a corresponding elongated slot in one of the legs, each bolt including a first hook for partially encircling a rod in a first direction and a second hook for partially encircling the rod from a second direction opposite from the first direction;
said first hook oriented in said first direction and said second hook spaced from said first hook and oriented in a second direction opposite from said first direction; and
means for securing each of the double hook bolts to the plate.

5,334,204

FIXATION SCREW

Richard H. Clewett, Los Angeles; Claude O. Pering, Rancho Palos Verdes, and Daniel B. Sharitz, Lawndale, all of Calif., assignors to Ace Medical Company, Los Angeles, Calif.

Filed Aug. 3, 1992, Ser. No. 924,315
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—73 21 Claims



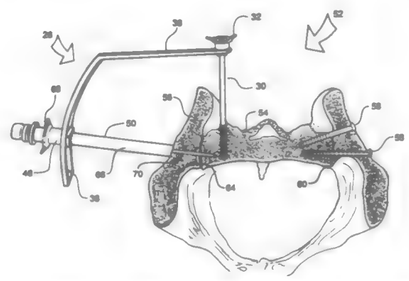
1. A fixation screw for attaching to a bone, the screw having an axis about which the screw maybe rotated in a forward rotational direction to attach the screw to the bone and about which the screw may be rotated in a reverse rotational direction to remove the screw from the bone, the screw comprising:
an elongate shaft having a proximal end and a distal end;
a plurality of convolutions of thread on the shaft extending from the distal end toward the proximal end; and
at least one flute transversing a proximal portion of the thread, the flute forming cutting faces on the thread, the cutting faces being formed in a first plane containing the axis of the screw, the flute further forming a base surface having a rotational portion coincident to a root diameter of the thread and a planar portion is a second plane tangential to the rotational portion, the first and second planes forming an angle greater than 90°, the cutting faces being arranged to cut the bone when the screw is rotated in the reverse rotational direction.

5,334,205

SACROILIAC JOINT FIXATION GUIDE

James E. Cain, Mequon, Wis., assignor to The United States of America as represented by the Secretary of the Air Force, Wright-Patterson Air Force Base, Ohio

Filed Jun. 30, 1993, Ser. No. 84,056
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—96 1 Claim



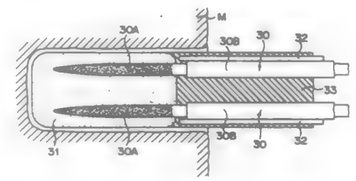
1. A method for guiding a fixation screw across a human sacroiliac joint, comprising the steps of:
(a) screwing a targeting screw into the rear of the sacrum, the targeting screw having a head and a tip;
(b) attaching the head of the targeting screw to a first end of a first arm of a jig member, the jig member including a semicircular second arm attached at an angle to a second end of the first arm, the second arm having a slot opening along its length;
(c) attaching a bushing assembly to the second arm of the jig member at a first position along the slot;
(d) sliding a cannulated pin set through the bushing assembly, wherein the lengths of the targeting screw, the first and the second arms of the jig member, the angle between the first and second arms, and the radius of curvature of the semicircular second arm are such that, when the targeting screw head is attached to the first end of the first arm, and the bushing assembly is fixed at any position along the slot opening, the axis of the cannulated pin set will lie on a radius drawn from the tip of the targeting screw; and,
(e) after assembling together the targeting screw, the jig member, the bushing assembly and the cannulated pin set, using the cannulated pin set to insert a fixation screw across the sacroiliac joint.

5,334,206

LASER LIGHT IRRADIATION APPARATUS

Norio Daikuzono, Chiba, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 575,905, Aug. 31, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 894,483
Claims priority, application Japan, Sep. 5, 1989, 1-230195
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—7 7 Claims



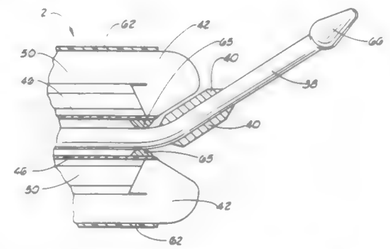
1. A laser light irradiation apparatus comprising:
a laser light emitting member;
an optical fiber for transmitting laser light, having an exposed core section inserted into the light emitting member to apply transmitted light from the fiber into the light emitting member;
a surface layer formed on the exposed core section of the optical fiber, said surface layer containing light scattering particles;
a second optical fiber, having an exposed core section inserted into the light emitting member to apply transmitted light from the second optical fiber into the light emitting member; and
a surface layer formed on the exposed core section of the second optical fiber, said surface layer containing light scattering particles.

5,334,207

LASER ANGIOPLASTY DEVICE WITH MAGNETIC DIRECTION CONTROL

Lindell W. Gay, Jr., Norman, Okla., assignor to Allen E. Coles, Oklahoma City, Okla.

Filed Mar. 25, 1993, Ser. No. 36,768
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—7 26 Claims



1. A device for performing laser excision within a vessel, the device comprising:
a laser fiber having a proximal end and a distal end, the distal end having a distal end portion with a laser fiber tip, the distal end portion of said laser fiber being insertable into a vessel;
a magnetized sleeve disposed around the distal end portion of said laser fiber;
laser means, operatively connected to the proximal end of said laser fiber, for emitting laser pulses from the laser fiber tip;

VOL 1165 ISS 1 AG 2 1994 UMI

a plurality of control wires insertable into the vessel with said laser fiber, each one of said control wires having a proximal end and a distal end, said control wires being spaced around said laser fiber with the distal end of each one of said control wires proximate to said magnetized sleeve;

a plurality of magnetic cores, each one of said magnetic cores being located proximate to the proximal end of at least one of said control wires, said magnetic cores producing induced magnetic fields in the distal end of said control wires; and

control means, operatively connected to said magnetic cores, for altering the magnetic fields in said cores;

wherein the altering the magnetic fields in said magnetic cores alters the induced magnetic fields in the distal ends of said control wires and wherein altering the induced magnetic fields in the distal ends of said control wires alters the orientation of said magnetic sleeve to aim the distal end portion of said laser fiber.

5,334,208

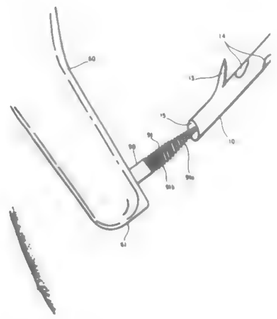
METHOD FOR RETRIEVING STENTS

Nib Soehendra, Norderstedt, and Carsten Grosse, Daldorf, both of Fed. Rep. of Germany, assignors to Wilson-Cook Medical Inc., Winston-Salem, N.C.

Division of Ser. No. 549,601, Jul. 9, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 19,984

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—108 **9 Claims**



1. A method for removing a stent that has been implanted within the body of a patient, the stent having a lumen wall portion, said method comprising the steps of:

introducing an endoscope into position proximal to the proximal end of said implanted stent;

passing a wire guide through the endoscope and interior of the lumen of the stent;

advancing a stent retrieval cable over the wire guide and into position at the proximal end of the stent, the stent retrieval cable being torqueable, and having a threaded portion at its distal end;

rotating the proximal end of the retrieval cable to engage the threading at the distal end of the retrieval cable into the lumen wall of the implanted stent to form an attachment between the cable and the stent; and

removing the attached cable and stent combination through the endoscope and out of the body.

5,334,209

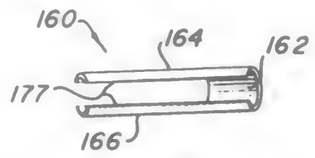
MULTI-FUNCTIONAL INSTRUMENTS AND STRETCHABLE LIGATING AND OCCLUDING DEVICES

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation of Ser. No. 720,381, Jun. 25, 1991, Pat. No. 5,217,473, which is a division of Ser. No. 446,555, Dec. 5, 1989, Pat. No. 5,026,379. This application Jun. 8, 1993, Ser. No. 73,193

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—141 **2 Claims**



1. A clip for application to tissue during an endoscopic surgical procedure comprising a base having first and second edges having lengths in parallel alignment and an arcuate configuration between said first and second edges, and first and second opposed legs extending, respectively, from said first and second edges of said base, said legs having lengths extending in parallel alignment with said lengths of said first and second edges, said clip being made of integral, one-piece construction of a material biasing said first and second legs toward each other.

5,334,210

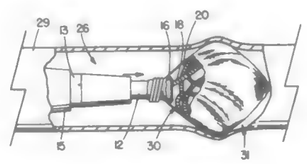
VASCULAR OCCLUSION ASSEMBLY

Cesare Gianturco, Savoy, Ill., assignor to Cook Incorporated, Bloomington, Ind.

Filed Apr. 9, 1993, Ser. No. 45,414

Int. Cl.[5] A61B *17/12*

U.S. Cl. 606—151 **20 Claims**



1. A vascular occlusion assembly comprising:

a foldable material bag having an expanded shape, an internal cavity, and an external opening communicating with said internal cavity; and

an elongated flexible member which is inserted in said internal cavity through said external opening of said foldable material bag and when positioned in said internal cavity of said foldable material bag assumes a convoluted configuration expanding said foldable material bag to said expanded shape without being fixedly secured thereto, said vascular occlusion assembly adapted to be placed within the vascular system to occlude the same.

5,334,211

LUMEN TRACKING ATHERECTOMY SYSTEM

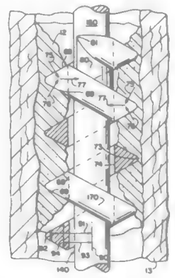
Samuel Shiber, Atkinson, N.H., assignor to Surgical System & Instruments, Inc., Atkinson, N.H.

Continuation-in-part of Ser. No. 662,558, Feb. 28, 1991, which is a continuation-in-part of Ser. No. 499,726, Mar. 27, 1990, Pat. No. 5,135,531, which is a continuation-in-part of Ser. No. 350,020, May 12, 1989, Pat. No. 4,979,939, which is a continuation-in-part of Ser. No. 326,967, Mar. 22, 1989, Pat. No. 4,957,482, Ser. No. 324,616, Mar. 16, 1989, Pat. No. 5,007,896, Ser. No. 323,328, Mar. 13, 1989, Pat. No. 5,002,553, and Ser. No. 332,497, Apr. 3, 1989, Pat. No. 5,024,651, said Ser. No. 326,967, Ser. No. 324,616, Ser. No. 323,328, and Ser. No. 332,497, each is a continuation-in-part of Ser. No. 286,509, Dec. 19, 1988, Pat. No. 4,894,051, which is a continuation-in-part of Ser. No. 243,900, Sep. 13, 1988, Pat. No. 4,886,490, which is a continuation-in-part of Ser. No. 225,880, Jul. 29, 1988, Pat. No. 4,842,579, Ser. No. 205,479, Jun. 13, 1988, Pat. No. 4,883,458, and Ser. No. 78,042, Jul. 27, 1987, Pat. No. 4,819,634, said Ser. No. 225,880, Ser. No. 205,479, and Ser. No. 78,042, each is a continuation-in-part of Ser. No. 18,083, Feb. 24, 1987, Pat. No. 5,041,082, which is a continuation-in-part of Ser. No. 874,546, Jun. 16, 1986, Pat. No. 4,732,154, which is a continuation-in-part of Ser. No. 609,846, May 14, 1984, abandoned. This application Jul. 14, 1992, Ser. No. 913,231

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—159 **2 Claims**



1. An atherectomy system for opening an obstructed vessel, comprising in combination:

flexible guide-wire assembly insertable into the vessel, at least a portion of which is made of a helical wire having a trapezoidal shaped cross-section which narrows in width with increasing radial distance from the center of the helical portion, and,

a flexible catheter, slidable over said flexible guide-wire assembly, having a blade at its distal end.

5,334,212

EAR WAX EXTRACTOR WITH DEPTH CONTROL

Manuel L. Karell, 3573 - 22 St., San Francisco, Calif. 94114

Filed Nov. 17, 1993, Ser. No. 153,880

Int. Cl.[5] A61F *11/00*

U.S. Cl. 606—162 **1 Claim**

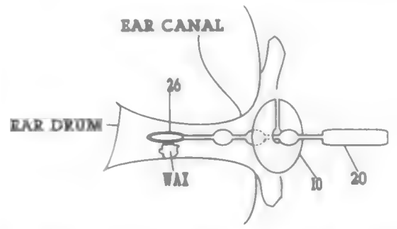
1. An apparatus adapted to remove wax from the ear comprising:

a means to extract wax, a means to control the depth of insertion of said means to extract wax, and a means to adjust the depth of said means to extract wax;

wherein said means to extract wax is a loop curette, said curette having a shaft with a loop at one end, a handle for rotation at the other end and in between spacer bead-like protrusions;

wherein said means to control the depth of insertion of said loop curette is a stopper having a slit and central resting hole:

whereby said stopper surrounds said shaft and held in place adjacent bead-like protrusions;



whereby, said loop curette and said stopper will act as a functional unit when inserted into the ear canal, preventing the loop curette from being inserted too far into the ear canal, thereby preventing ear drum injury as the wax is removed.

5,334,213

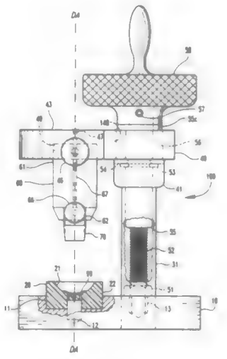
CORNEAL PRESS

Francis W. Price, Jr., 5511 Sunset La., Indianapolis, Ind. 46208

Filed Oct. 15, 1993, Ser. No. 137,908

Int. Cl.[5] A61F *9/00*; A61B *17/32*

U.S. Cl. 606—166 **4 Claims**



1. Corneal press apparatus for trephining corneal tissue, said press comprising:

a) a modular cutting block for holding a specimen of corneal tissue in a concave position;

b) a base support member, said base support member including means for securely holding said modular cutting block in position wherein said cutting block holds said specimen of corneal tissue in position centered about a defined axis;

c) two guide posts attached to said base and rising therefrom, said guide posts being positioned in offset parallel alignment relative to said defined axis;

d) a collet mount, said collet mount being slidably mounted onto said guide posts, said collet mount including collet-mounting means for receiving and securely holding a collet in centered alignment about said defined axis;

e) a threaded drive mechanism mechanically linking said collet mount to said base support member such that the operation of said threaded drive causes said collet mount to slide along said guide posts; and

f) a collet, said collet being holdably receivable by said collet-mounting means, said collet including trephine-

VOL 1165 ISS 1 AG 2 1994 UMI

mounting means for receiving and securely holding a trephine in centered alignment about said defined axis;

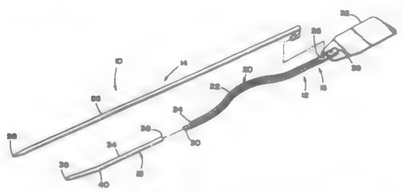
whereby the operation of said threaded drive, with said collet being received and securely held by said collet-mounting means, and said received collet further receiving and securely holding a trephine in centered alignment about said defined axis, causes the trephine to move along said defined axis in centered alignment thereabout to precisely cut a specimen of corneal tissue positioned on said cutting block about said defined axis.

5,334,214

APPARATUS AND METHOD FOR DIVIDING TRANSVERSE CARPAL LIGAMENT

Matthew D. Putnam, 5208 Larada La., Minneapolis, Minn.

Filed May 21, 1992, Ser. No. 886,778
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—170 **10 Claims**



1. Apparatus for dividing a transverse carpal ligament in a hand of a person, comprising:

a knife having means for pulling at a first end and means for being guided while being pulled by said pulling means at a second end;

means for guiding said guided means, said guiding means having distal and proximal ends; and

means for leading said guiding means, said leading means being detachable from said distal end of said guiding means;

wherein said leading means is directed into a first incision in said hand and under said carpal ligament and out a second incision to place said guiding means, said leading means then being detached, and wherein said pulling means is directed into said first incision and over said carpal ligament and out said second incision to allow placement of said guided means in said guiding means, so that said knife can be pulled by said pulling means from said first incision to cut said carpal ligament to said second incision, said guided means thereupon being removed from said guiding means and said guiding means being removed from said hand.

5,334,215

PINCERS HAVING DISPOSABLE END MEMBERS

Shih-Chieh Chen, No. 3, Lane 68, Liou Yang East Street, Taichung, Taiwan

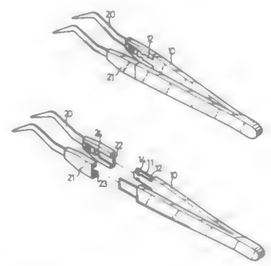
Filed Sep. 13, 1993, Ser. No. 119,544
Int. Cl.[5] A61B *17/30*
U.S. Cl. 606—210 **2 Claims**

1. A pair of pincers comprising:

two legs, each of said legs having one end resiliently secured together to allow opposing free ends of said legs to move toward and away from each other;

a pair of end members releasably coupled to said free ends of said legs; and,

means for releasably securing each of said pair of end members to a respective one of said fee ends of said legs, said releasable securing means including (1) an extension extending from each of said free ends of said legs, (2) a rib formed on each of said extensions, and (3) a coupler secured to each of said pair of end members, each of said couplers including (1) a channel for engagement with a respective extension of said legs, and (2) a groove for



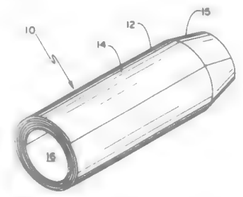
engagement with a respective rib, whereby, each of said end members are secured to a respective one of said legs.

5,334,216

HEMOSTATIC PLUG

Claude A. Vidal, Santa Barbara; Russel J. Redmond, Goleta, both of Calif., and Joshua Makower, Nanuet, N.Y., assignors to Howmedica Inc., New York, N.Y.

Filed Dec. 10, 1992, Ser. No. 988,567
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—213 **11 Claims**



1. A hemostatic plug for placement in a wound site where hemostatic treatment is indicated, the plug comprising at least one sheet of a hemostatic material of a predetermined length dimension, said sheet being rolled upon itself a plurality of times to create a tubular structure, said tubular structure being of a compressed length less than said predetermined length dimension, and having an opening along a longitudinal axis over its entire compressed length.

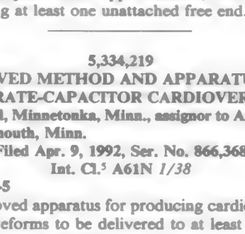
5,334,217

SEPTAL DEFECT CLOSURE DEVICE

Gladwin S. Das, Lauderdale, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 822,951, Jan. 21, 1992, abandoned. This application May 14, 1993, Ser. No. 62,095
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—213 **30 Claims**

1. A septal defect closure device comprising first and second occluding disks, each disk comprising a flexible, biologically compatible membrane having a periphery and an elastically deformable frame extending along and attached adjacent to the periphery of the membrane, said frame being capable of being collapsed for passage through a catheter and elastically returning to a predetermined shape for tautly holding the membrane; a central portion of the membrane of the first disk being affixed



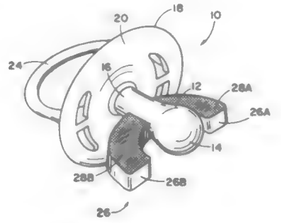
to a central portion of the membrane of the second disk to define a central conjoint disk.

5,334,218

TEETHING PACIFIER WITH SEMI-CIRCULAR TEETHING MEMBER

Jill C. Johnson, 1714 E. 30th Pl., Tulsa, Okla. 74114

Filed Sep. 30, 1993, Ser. No. 130,029
Int. Cl.[5] A61J *17/02*
U.S. Cl. 606—235 **4 Claims**



1. A combination infant pacifier and teether comprising:

a nipple member having a bulbous forward portion and a rearward portion;

an enlarged diameter shield member having a forward and a rearward surface, said nipple member rearward portion being affixed to said shield member forward surface;

a handle affixed to said shield member rearward surface; and

a generally semi-circular teething member supported by and extending forwardly of said shield member forward surface and adjacent said nipple member, the teething member having at least one unattached free end.

5,334,219

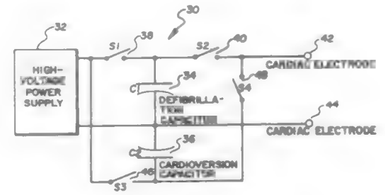
IMPROVED METHOD AND APPARATUS FOR SEPARATE-CAPACITOR CARDIOVERSION

Mark W. Kroll, Minnetonka, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Filed Apr. 9, 1992, Ser. No. 866,368
Int. Cl.[5] A61N *1/38*
U.S. Cl. 607—5 **30 Claims**

1. An improved apparatus for producing cardioversion defibrillation waveforms to be delivered to at least two implantable electrodes in a human patient in response to a sensing of a cardiac dysrhythmia in the patient the apparatus including a first capacitor means having a first capacitance value for storing a first amount of electrical energy, means for charging the first capacitor means to the first amount of electrical energy, and switch means for selectively controlling a discharge of the first capacitor means through the at least two electrodes to produce a defibrillation waveform, the improvement comprising:

a second capacitor means separate from the first capacitor means and having a second capacitance value for storing a second amount of electrical energy, the second capacitance value and the second amount being of smaller values than the first capacitance value and the first amount of electrical energy;



means for charging the second capacitor means to the second amount of electrical energy; and

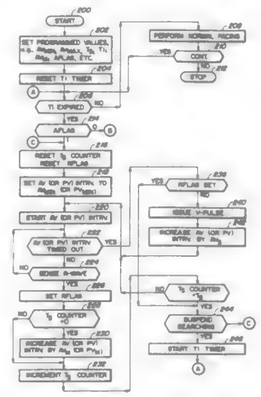
switch means for selectively controlling a discharge of the second capacitor means through the at least two electrodes to produce a cardioversion waveform having at least one pulse having a pulse duration.

5,334,220

DUAL-CHAMBER IMPLANTABLE PACEMAKER HAVING AN ADAPTIVE AV INTERVAL THAT PREVENTS VENTRICULAR FUSION BEATS AND METHOD OF OPERATING SAME

Jason A. Sholder, Northridge, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 13, 1992, Ser. No. 976,153
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—9 **23 Claims**



1. An implantable pacemaker comprising:

atrial sensing means for sensing an atrial depolarization (P-wave);

atrial pacing means for generating an atrial stimulation pulse (A-pulse);

ventricular sensing means for sensing a ventricular depolarization (R-wave), and;

ventricular pacing means for generating a ventricular stimulation pulse (V-pulse);

means for storing operating instructions and control parameters; and

controlling means coupled to said storing means, said atrial and ventricular sensing means and said atrial and ventricu-

VOL 1165 ISS 1 AG 2 1994 UMI

lar pacing means for coordinating the operation of said atrial and ventricular sensing means, and said atrial and ventricular pacing means, in accordance with said operating instructions and said control parameters, said controlling means comprising:

first timing means for defining an AV interval;

second timing means for defining an atrial escape interval;

third timing means for measuring a conduction time interval, said conduction time interval comprising the time between atrial activity and sensing an R-wave, atrial activity comprising either of sensing a P-wave and generating an A-pulse;

first logic means for triggering said ventricular pacing means at the conclusion of said AV interval only in the event an R-wave is not sensed during said AV interval, said AV interval commencing with said atrial activity;

second logic means for triggering said atrial pacing means at the conclusion of said atrial escape interval only in the event a P-wave is not sensed during said atrial escape interval; and

adjustment means for automatically adjusting said AV interval to a value that is different than said conduction time interval;

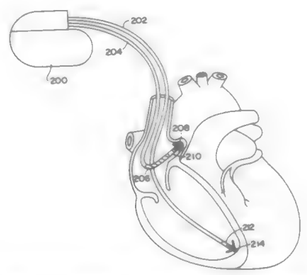
whereby V-pulses that are generated by said pacemaker are generated at a time that is different than said conduction time, thereby avoiding fusion between said V-pulses and said R-waves.

5,334,221

METHOD AND APPARATUS FOR TREATMENT OF ANGINA SAME

Gust H. Bardy, Seattle, Wash., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 906,959, Jun. 30, 1992, abandoned.
This application Jun. 30, 1993, Ser. No. 86,278
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—14 20 Claims



1. A method of electrical stimulation, comprising:

placing an electrode in an appropriate location surrounding for stimulating the SA nodal fat pad of a human heart;

defining a first heart rate;

sensing the rate at which said human heart is beating;

providing said stimulus pulses to said electrode, synchronized to depolarizations of a chamber of said human heart, during refractory periods following said depolarizations, in response to the rate at which said heart is beating exceeding said first heart rate;

determining the effect of said stimulus pulses on the rate at which said human heart is beating; and

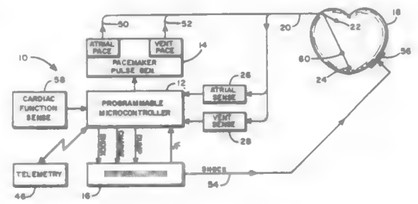
adjusting the amplitude of said stimulus pulses as a function of the determined effect of said stimulus pulses.

5,334,222

CARDIAC STIMULATING APPARATUS AND METHOD FOR HEART FAILURE THERAPY

Rodney W. Salo, Fridley; Julio C. Spinelli, Shoreview, and Bruce A. Tockman, Minneapolis, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Nov. 3, 1992, Ser. No. 970,893
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—17 13 Claims



1. A method of operating an implantable cardiac stimulator implanted in a patient suffering from congestive heart failure, said cardiac stimulator being of the type having means for sensing atrial activity, means for sensing ventricular activity, means for sensing cardiac function of the heart, means for stimulating at least one ventricular chamber, and microprogrammable controller means coupled to said means for sensing said atrial activity, said means for sensing ventricular activity and said means for sensing cardiac function, said microprogrammable controller means controlling said means for stimulating said at least one ventricular chamber so as to issue ventricular stimulating pulses at computed AV delay intervals following the sensing of an atrial event, comprising the steps of:

(a) computing the electromechanical interval (EMI) of the patient's heart using information derived from said cardiac function sensing means, said atrial sensing means and said ventricular sensing means;

(b) computing the atrial cycle length (ACL) of the patient's heart using information derived from said atrial sensing means;

(c) changing the AV delay parameter of said pacemaker by a known increment from a previous value when it is determined that EMI is less than ACL;

(d) using said cardiac function sensing means to determine whether each of the incremental changes in the AV delay parameter enhanced the cardiac function of the patient's heart measured on a previous cycle;

(e) repeating steps (a)–(d) until it is determined in step (d) that cardiac function degraded; and

(f) adjusting the AV interval by a pre-programmed small time value.

5,334,223

ELECTRICAL SAFETY SYSTEM FOR ELECTRICAL DEVICE

Alan P. Dieken, Oakdale; David J. Fischer, Arden Hills; Jonathan C. Platt, Bloomington, and William L. Sondermann, Circle Pines, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 22, 1993, Ser. No. 8,724
Int. Cl.[5] A61B *5/00*
U.S. Cl. 607—31 17 Claims

1. An apparatus for electrical isolation from a power source of exposed electrical contacts on multiple modules of an electrical device, wherein the isolation continues until proper alignment of the multiple modules, wherein the device comprises two modules capable of mechanical alignment and electrical connection, and wherein at least one module is portable, the apparatus comprising:

unenergized, exposed electrical contacts on the first module,

at least one concealed actuating component within the first module,

at least one concealed sensor component within the second module,

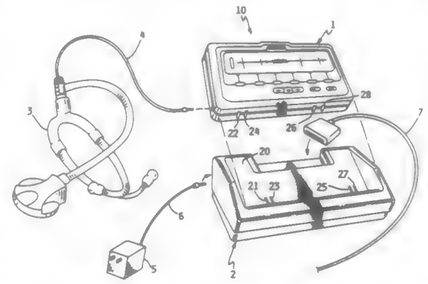
unenergized, exposed electrical contacts on the second module, and

at least one electrical switching device in electrical communication with a corresponding concealed sensor component and with the power source,

wherein each switching device is normally open but when closed is in electrical communication with corresponding exposed electrical contacts on the second module and in energized electrical communication with electrical circuitry connected to the power source,

wherein alignment of a concealed actuating component and a corresponding concealed sensor component causes a corresponding switching device to close and to provide energized electrical communication with electrical circuitry to the exposed electrical contacts on the second module, and

wherein mechanical alignment of the first module and the second module causes energized electrical connection of exposed electrical contacts on the second module with corresponding exposed electrical contacts on the first module.



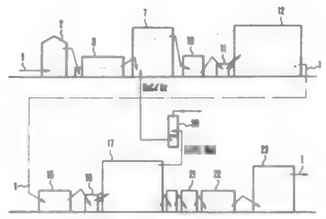
VOL
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5,334,224

METHOD FOR CONTINUOUS PRETREATMENT OF A CLOTH

Yoshiteru Sando; Eiichi Nakano; Hiroshi Ishidoshiro, and Koji Sando, all of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Mar. 3, 1993, Ser. No. 25,841
Claims priority, application Japan, Mar. 11, 1992, 4-052680
Int. Cl.[5] D06L *3/08*
U.S. Cl. 8—108.1 2 Claims



1. A method for the continuous treatment of a long cloth comprising:

(A) subjecting the cloth to a souring treatment in a solution of sodium chlorite;

(B) subjecting the cloth from step (A) to a desizing treatment;

(C) subjecting the cloth from step (B) to a scouring treatment;

(D) subjecting the scoured cloth from step (C) to a bleaching treatment in a sodium chlorite solution; and

(E) absorbing chlorine dioxide gas produced from the bleaching treatment in a solution of H_2O_2 and NaOH to produce sodium chlorite solution and using the thus produced sodium chlorite solution in the souring step.

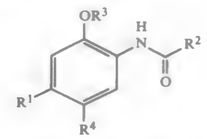
5,334,225

KERATINOUS FIBER DYE COMPOSITION CONTAINING A 2-SUBSTITUTED AMINO-5-ALKYLPHENOL DERIVATIVE COUPLER

Masahiko Ogawa; Hidetoshi Tagami; Toru Yoshihara; Jiro Kawase, all of Tokyo; Akira Kiyomine, Tochigi; Tadashi Tamura, Tochigi; Yoshinori Nishizawa, Tochigi, and Ken-ichi Matsunaga, Saitama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jul. 13, 1993, Ser. No. 90,963
Claims priority, application Japan, Jul. 15, 1992, 4-187691
Int. Cl.[5] A61K *7/13;* C07C *271/00*
U.S. Cl. 8—408 4 Claims

1. A keratinous fiber dye composition comprising an aromatic diamine developer and a coupler, wherein said coupler is a 2-substituted amino-5-alkylphenol derivative represented by the following formula (1):



(1)

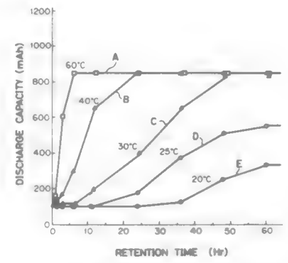
wherein R^1 represents an alkyl group having from 1 to 4 carbon atoms; R^2 represents a hydrogen atom, a substituted or unsubstituted alkyl group having from 1 to 4 carbon atoms, a substituted or unsubstituted alkoxy group having from 1 to 4 carbon atoms or a substituted or unsubstituted amino group; R^3represents a hydrogen atom or a substituted or unsubstituted acyl group having from 2 to 5 carbon atoms; and R^4 represents a hydrogen atom, a halogen atom or an alkoxy group having from 1 to 4 carbon atoms which may be substituted with a hydroxyl group; or a cosmetically acceptable salt thereof, wherein the molar ratio of said developer to said coupler is from about 1:0.5 to 1:2.

5,334,226

METHOD OF MANUFACTURING A SEALED-TYPE NICKEL-HYDROGEN CELL

Jun Furukawa, Iwaki, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Yokohama, Japan

Continuation of Ser. No. 932,568, Aug. 20, 1992, abandoned.
This application Oct. 20, 1993, Ser. No. 138,382
Int. Cl.[5] H01M *10/04*
U.S. Cl. 29—623.2 7 Claims



1. A method of manufacturing a sealed nickel-hydrogen cell, comprising:

providing a laminate comprising a nickel electrode, a hydrogen electrode and a separator interposed between the electrodes;

placing the laminate and an electrolyte in a container and sealing the container to form a sealed cell;

charging and discharging the sealed cell; and

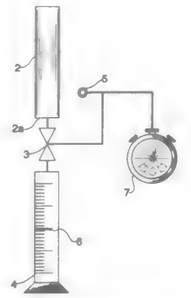
after the step of charging and discharging the cell at least one cycle, heating the sealed cell in its discharged state to a temperature of 30°–60° C. for a time sufficient to maximize the discharge capacity of the cell.

5,334,227

EFFICIENT DIESEL FUEL ANTIFOAMS OF LOW SILICONE CONTENT

Wojciech Grabowski, Gland, Switzerland, assignor to OSi Specialties, Inc., Danbury, Conn.

Filed Jan. 30, 1993, Ser. No. 86,009
Int. Cl.[5] C10L *1/28*
U.S. Cl. 44—320 20 Claims



1. A diesel fuel defoaming agent comprising a polymer of the formula $MD_xD^*_yD^{**}_zM$ where M is $O_{0.5}Si(CH_3)_3$, D is a

VOL 1165 ISS 1 AG 2 1994 UMI

$OSi(CH_3)_2$, D* is $OSi(CH_3)R$, R is polyether, D** is $OSi(CH_3)R'$, R' is a phenol derivative, x+y+z is 35–350, x/(y+z) is 3 to 6 and y/z is 0.25 to 9.0.

5,334,228

DEPOSIT CONTROL ADDITIVES AND FUEL COMPOSITIONS CONTAINING THE SAME

Henry Ashjian, E. Brunswick; Matthew P. Miller, Toms River, both of N.J.; Doug-Ming Shen, Langhorne, Pa., and Margaret M. Wu, Skillman, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 18, 1993, Ser. No. 137,539
Int. Cl.[5] C10L *1/16, 1/22*
U.S. Cl. 44—347 **20 Claims**

1. An additive having detergency properties for normally liquid fuels comprising a combination of

i) a detergent component and

ii) a carrier fluid component comprising at least one compound selected from the group consisting of adamantane, diamantane, triamantane, tetramantane, and the alkyl-substituted derivatives thereof.

5,334,229

ALGINATE GEL BEAD

Yuji Sakamoto, Tochigi, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 412,938, Sep. 26, 1989, abandoned. This application Feb. 3, 1992, Ser. No. 830,070
Int. Cl.[5] A01C *1/06;* **A01H** *1/00*
U.S. Cl. 47—57.6 **17 Claims**

1. A method for producing a gel bead for encapsulating a plant propagule, which bead possesses the capability of self-breaking, the method comprising the steps of:

(a) providing a gel bead comprising complexed alginate;

(b) removing excess complexing agent from said gel bead;

(c) treating said gel bead with a solution containing at least one monovalent cation salt selected from the group consisting of sodium salts, potassium salts, and ammonium salts; and

(d) removing excess monovalent cation salt from said gel bead thereby causing said bead to break open after sowing.

5,334,230

SEALED AIR DRYER WTIH TURBOSAVER VALVE

Alan Sloka, Weston, Mo., assignor to Midland Brake, Inc., Kansas City, Mo.

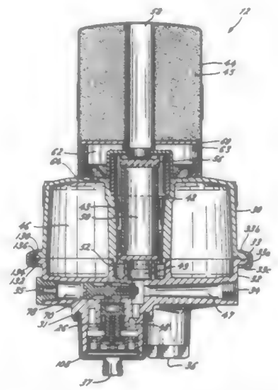
Filed Dec. 23, 1992, Ser. No. 995,800
Int. Cl.[5] B01D *50/00*
U.S. Cl. 55—213 **27 Claims**

1. A braking system for vehicles comprising

a source of gas;

a gas compressor for maintaining the gas pressure in a gas reservoir between a predetermined first pressure level in which the compressor compresses the gas and a predetermined higher second pressure level in which the compressor ceases to compress the gas; and

a gas dryer intermediate the compressor and the reservoir for drying the compressed gas, the gas dryer comprising a gas intake port in communication with the compressor for receiving gas from the compressor and a gas outlet port in communication with the reservoir, a coalescing filter downstream of the intake port for removing contaminants from the gas, a desiccant filter downstream of the coalescing filter for removing moisture from the gas and delivering a portion of the dry gas to the outlet port and purge gas to a purge gas chamber, and a passage disposed between the coalescing and desiccant filters permitting the



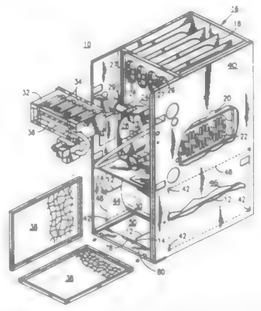
purge gas to bypass the coalescing filter when the second pressure level is reached.

5,334,231

PAIRED RETAINING CLIPS FOR GAS FURNACE FILTER WIRE

Timothy J. Waterman, Carmel, and Paul J. Otts, Plainfield, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 26, 1993, Ser. No. 143,449
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—493 **15 Claims**



1. A filter retaining device for a furnace having a casing for housing components including a filter, the casing having an opening formed therein for receiving circulating air, said device comprising:

a filter wire for securing the filter over the casing opening so that incoming circulating air is filtered of airborne particulate matter prior to entering the casing;

retainer means for moveably securing a first end of said filter wire relative to the casing, said retainer means being insertable through a first hole positioned adjacent one side of the casing opening; and

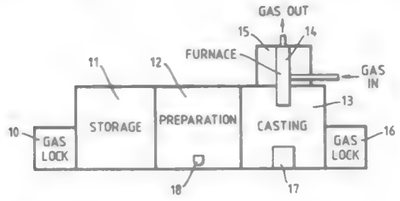
latch means for releasably securing a second end of said filter wire to the casing, said latch means insertable through a second hole positioned adjacent another side of the casing opening so that when the filter is placed over the casing opening, said filter wire may be moved into position against the filter and said second end of the wire snapped into said latch means to secure the filter.

5,334,232

METHOD FOR THE PREPARATION OF HALIDE GLASS ARTICLES

Paul W. France; Steven F. Carter, and John R. Williams, all of Suffolk, England, assignors to British Telecommunications Public Limited Company, London, England

PCT No. PCT/GB91/01122, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993, PCT Pub. No. WO92/00923, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 9, 1991, Ser. No. 983,854
Claims priority, application United Kingdom, Jul. 9, 1990, 9015090.3
Int. Cl.[5] C03B *5/225*
U.S. Cl. 65—388 **22 Claims**



1. Method of preparation of a halide glass article which method comprises:

preparing a halide glass melt,

casting the glass melt, and

treating the melt of halide glass with a flow of gas at a pressure less than atmospheric during the preparation of the melt or during the casting of said melt or during both said preparation and said casting wherein at least 90 mole % of the halide of the said halide glass is fluoride.

21. A method of preparing halide glass articles which method comprises:

preparing a melt of a halide glass and thereafter shaping said melt into a halide glass article,

at least 90% mole of the halide of said halide glass being fluoride, and

after said melt has been prepared and before it is shaped into said article, treating said melt with a flow of gas at less than atmospheric pressure.

5,334,233

CYLINDER-PORT BLOCK ARRANGEMENT FOR GLASS CONTAINER FORMING APPARATUS

Joseph W. Kozora, R.D. #2, Box 559A, Valencia, Pa. 16059

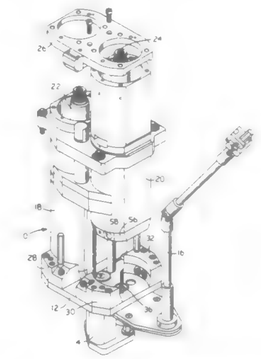
Filed Apr. 30, 1993, Ser. No. 54,260
Int. Cl.[5] C03B *11/10*
U.S. Cl. 65—171 **13 Claims**

12. A forming plunger mechanism assembly used in the manufacture of glass containers as part of a glass container forming machine, the forming plunger mechanism assembly comprising:

a generally horizontally disposed saddle plate for supporting one or more cylinders thereon;

the saddle plate having an upper surface and a peripheral lateral side surface;

a plurality of removably attachable port blocks disposed on the upper surface of the saddle plate; and



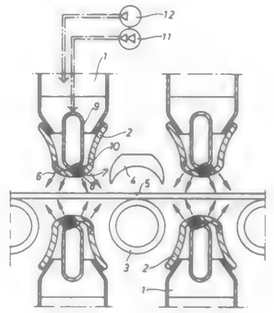
means acting between each port block and the saddle plate enabling selective repositioning of the port blocks on the saddle plate.

5,334,234

NOZZLE ASSEMBLY FOR A FLAT-GLASS TEMPERING MACHINE

Kauko K. Anttonen, and Jukka H. Vehmas, both of Tampere, Finland, assignors to Tamglass Engineering Oy, Tampere, Finland

Filed Jan. 29, 1993, Ser. No. 10,780
Claims priority, application Finland, Feb. 12, 1992, 920590
Int. Cl.[5] C03B *27/00*
U.S. Cl. 65—351 **8 Claims**



1. A cooling assembly for a flat-glass tempering machine, said tempering machine being provided with a glass sheet supporting conveyor and a plurality of nozzle assemblies positioned above and below said conveyor, each of the nozzle assemblies comprising a nozzle housing and a nozzle cover provided with a plurality of orifices, a first and a second compressed-air source having substantially different pressures, a first portion of the orifices being linked to the first compressed-air source and a second portion of the orifices being linked to the second compressed-air source, the plurality of orifices being included in a common nozzle cover supplying air of different pressures, each of the first and second portion of orifices separately form an orifice pattern sufficiently dense to permit uniform cooling at below maximum rate by one of the first and second portions.

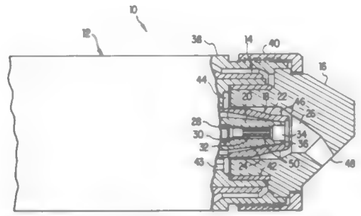
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,235

THERMAL SPRAY METHOD FOR COATING CYLINDER BORES FOR INTERNAL COMBUSTION ENGINES

Mitchel R. Dorfman, Smithtown; Jorge E. Garcia, Farmingdale, and Burton A. Kushner, Old Bethpage, all of N.Y., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 22, 1993, Ser. No. 7,701
Int. Cl.[5] C22C *37/10*
U.S. Cl. 75—255 4 Claims



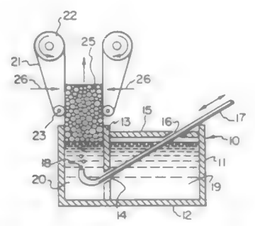
1. A composite thermal spray powder useful for high velocity thermal spraying inside cylinder walls, consisting essentially of aluminum and an iron base metal, wherein the iron base metal consists of cast iron and iron-molybdenum alloy, the aluminum being between 1% and 10% by weight of the total of the aluminum and the iron base metal, and the iron-molybdenum alloy being between about 30% and 70% of the iron base metal.

5,334,236

PROCESS FOR PRODUCING SHAPED SLABS OF PARTICLE STABILIZED FOAMED METAL

Harry Sang, Kingston; Lorne D. Kenny, Inverary, and Iljoon Jin, Kingston, all of Canada, assignors to Alcan International Limited, Montreal, Canada

Continuation-in-part of Ser. No. 708,700, May 31, 1991, abandoned. This application Jun. 29, 1992, Ser. No. 905,619
The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.
Int. Cl.[5] B22D *27/00*
U.S. Cl. 75—415 17 Claims



1. A process for producing a slab of foam metal wherein the foam is formed by heating a composite of a metal matrix and finely divided solid stabilizer particles above the solidus temperature of the metal matrix and discharging gas bubbles into the molten metal composite below the surface thereof to thereby form a stabilized liquid foam on the surface of the molten metal composite,

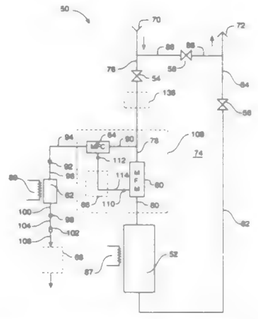
characterized in that the stabilized liquid foam is continuously drawn off the surface of the molten metal composite and is continuously passed through a forming zone where it is formed into a foam product of desired cross-sectional shape.

5,334,237

METHOD AND APPARATUS FOR PREDICTING END-OF-LIFE OF A CONSUMABLE IN A FLUID PURIFICATION SYSTEM

D'Arcy H. Lorimer, Pismo Beach, Calif., assignor to SAES Pure Gas, Inc., San Luis Obispo, Calif.

Filed Feb. 26, 1993, Ser. No. 25,376
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—25 34 Claims



1. A method for predicting the end-of-life of a system consumable in a system for purifying an unpurified fluid, the method comprising the steps of:

coupling a model consumable to a fluid purification system which has comparable characteristics but substantially less capacity than a system consumable in said fluid purification system;

diverting a portion of the unpurified fluid which could otherwise flow into said system consumable into said model consumable, the mass flow rate of the diverted portion being controlled by a mass flow controller; and

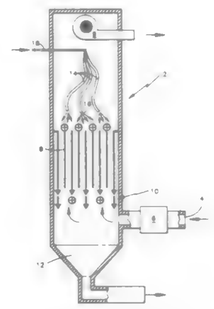
analyzing said model consumable to predict the end-of-life of said system consumable.

5,334,238

CLEANER METHOD FOR ELECTROSTATIC PRECIPITATOR

Forrest R. Goodson, San Jose, and Thomas P. Rudy, Saratoga, both of Calif., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 27, 1990, Ser. No. 618,773
Int. Cl.[5] B03C *3/80*
U.S. Cl. 95—59 1 Claim



1. A method for cleaning an electrostatic precipitator comprising:

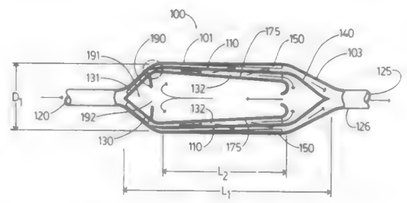
causing a flow of cleaning gas through at least one flexible tube positioned inside the precipitator housing, wherein said flow of gas is sufficient to cause the flexible tube to move about randomly thereby directing said flow of gas onto the electrostatic precipitator plates and further, said flow of gas being sufficient to cause particles which have adhered to said precipitator plates to be dislodged.

5,334,239

PASSIVE GAS SEPARATOR AND ACCUMULATOR DEVICE

Hwang Choe, Saratoga, and Thomas T. Fallas, Berkeley, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 29, 1993, Ser. No. 158,338
Int. Cl.[5] B01D *19/00*
U.S. Cl. 95—261 12 Claims



1. A device for separating and accumulating gas bubbles from a gas-liquid mixture which comprises:

a housing member having a cylindrical inner surface that defines an inner chamber, said housing member having a front section with an inlet and a back section with an outlet, wherein said front section has an inner front surface that defines a front chamber;

a cylindrical gas separation filter, with a first end and a second end, that is axially positioned within said inner chamber, said gas separation filter having an aperture at the first end for receiving the gas-liquid mixture, said gas separation filter defining an inner region that is in fluid communication with said aperture, wherein said gas separation filter has pores of a size effective to prevent passage of gas bubbles;

a cone shaped deflector, having a first side and a second side, that is positioned within said front chamber wherein the deflector and inner front surface of said front chamber define an inlet channel that is in fluid communication with the inlet and the aperture;

a cylindrical gas storage screen axially positioned within said inner region and enclosed by the gas separation filter wherein said gas storage screen has pores that are greater in size than those of said gas separation filter; and

one or more front swirler vanes located in said inlet channel, said front swirler vanes adapted for inducing a flow of liquid preferentially toward the cylindrical inner surface of the housing member.

5,334,240

AQUEOUS ACIDIC TIN-LEAD IMMERSION PLATING BATH CONTAINING WEAK ACID AND WEAK BASE

Donald R. Ferrier, Thomaston, Conn., assignor to MacDermid, Incorporated, Waterbury, Conn.

Filed Jun. 4, 1990, Ser. No. 532,372
Int. Cl.[5] C23C *18/16, 18/52, 18/54*
U.S. Cl. 106—1.22 10 Claims

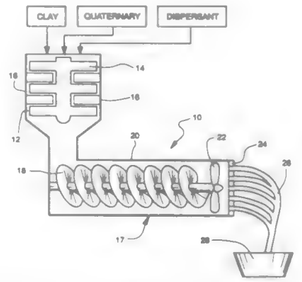
1. An aqueous strongly acidic tin-lead immersion plating bath comprising thiourea, a water-soluble source of divalent tin ion, a water-soluble source of divalent lead ion, a weak acid selected from the group consisting of citric acid, acetic acid, tartaric acid and mixtures thereof, and aqueous ammonia.

5,334,241

ORGANOPHILIC CLAY AND METHOD FOR ITS MANUFACTURE

Frank W. Jordan, Clarkston, Mich., assignor to T.O.W. Inc., Clarkston, Mich.

Filed Oct. 22, 1992, Ser. No. 964,668
Int. Cl.[5] C04B *14/04*
U.S. Cl. 106—487 7 Claims



1. A method of manufacturing an organically substituted clay comprising the steps of:

premixing a substantially, non-slurried volume of clay having an exchangeable cationic species with a volume of a cationic organic material and, thereafter,

subjecting said non-slurried mixture to a confining pressure of about 3,000 psi to at least about 8,000 psi while simultaneously further mixing said volumes so that at least some of the exchangeable cationic species in said clay are substituted by said cationic organic material and said mixture is warmed and plastic.

5,334,242

BAKING STONE AND METHOD OF MANUFACTURE THEREOF

Mark J. O'Toole, 7713 W. 158th Ct., Orland Park, Ill. 60462

Filed May 4, 1992, Ser. No. 878,097
Int. Cl.[5] C04B *14/38, 14/00*
U.S. Cl. 106—711 2 Claims

1. A composition for preparing a baking stone for use at temperatures exceeding 500° F., the composition consisting of the following approximate percentages by weight:

low alkali portland cement	48–54%
sand	31–37%
alkali resistant glass fibers	.75–1.25%
water	12.5–15.5%
plasticizer	.25–.35%

said glass fibers having lengths from about one-half inch (½"),

the mixture being free of clay, and the plasticizer not exceeding 0.4%.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,243

CRACK INHIBITOR FOR TAPE JOINT COMPOSITIONS

Larry N. Hyman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 4, 1993, Ser. No. 57,238
Int. Cl.[5] C04B *26/02, 26/20*
U.S. Cl. 106—794 3 Claims

2. A tape joint composition having limestone, mica, clay and a binder as principle ingredients, the improvement which comprises using an effective amount of a crack inhibiting additive wherein the additive is a mixture of

a. between about 15 to about 80 weight percent of a surface-treated cellulose ether; and

b. between 20 to about 85 weight percent, of calcium oxide, calcium hydroxide or a mixture thereof,

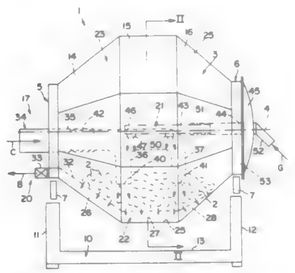
wherein the weight percent is based on the total weight of the additive.

5,334,244

DEVICE FOR COVERING LUMPY PRODUCTS, ESPECIALLY PILLS, PELLETS OR TABLETS, WITH A COATING MATERIAL

Lorenz B. Bohle, Industriestrasse 18, D-4722 Enningerloh, Fed. Rep. of Germany

Filed Nov. 4, 1992, Ser. No. 971,345
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 4138997
Int. Cl.[5] A23G *3/26;* B05C *3/00*
U.S. Cl. 118—19 15 Claims



1. Device for covering lumpy products, especially pills, pellets or tablets, with a coating material, comprising a rotatable drum, a device designed for feeding air into the drum, a device designed for releasing the air from the drum including at least one releasing air channel provided with at least one air passage opening directed to the interior space of the drum, and further comprising a device designed for spraying the product located in the drum with a coating material, characterized in that the at least one releasing air channel extends along at least one part of the inside wall of the drum and is detachably connected thereto.

5,334,245

METHOD AND APPARATUS FOR COATING THE TOP OF AN ELECTRICAL DEVICE

Mary A. Hartnett, and Kimberly J. Sherman, both of Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Division of Ser. No. 303,512, Jan. 27, 1989, Pat. No. 5,019,409. This application Jun. 18, 1990, Ser. No. 539,259
Int. Cl.[5] B05C *11/00, 5/02, 3/09*
U.S. Cl. 118—59 10 Claims

1. An apparatus for encapsulating the top of an electrical device in a tape comprising,

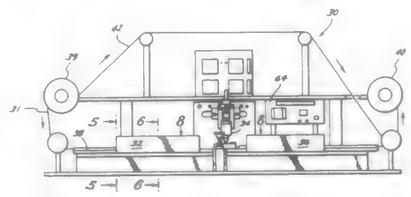
a track for movably carrying said tape,

a preheat station over the track for removing moisture from the device,

an encapsulation dispensing station downstream from the preheat station, said encapsulation station includes,

a heater positioned below the track for heating an electrical device placed thereon for reducing the viscosity of applied encapsulant,

a pressure actuated epoxy dispenser positioned above the



heater and above the track and means for moving said dispenser in a continuous line and in a plurality of separated concentric lines for dispensing a liquid epoxy encapsulant onto the top of an electrical device positioned on the heater, and

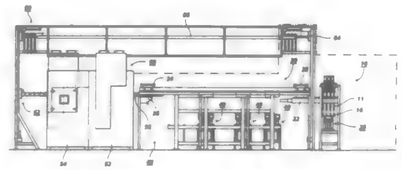
a gel station downstream from the encapsulation station for heating and solidifying the dispensed epoxy.

5,334,246

DIP COAT PROCESS MATERIAL HANDLING SYSTEM

Stanley J. Pietrzykowski, Jr.; Alexander A. Antonelli, both of Rochester; John J. Darcy, III, Webster; Richard C. Petralia, Rochester; Mark C. Petropoulos; Peter J. Schmitt, both of Ontario; Patrick R. Shane, Rochester; Eugene A. Swain, Webster; Mark S. Thomas, Williamson, and Alan D. Smith, Henrietta, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1992, Ser. No. 995,491
Int. Cl.[5] C25D *17/06*
U.S. Cl. 118—69 20 Claims



1. A material handling system for dip coating a plurality of workpieces to deposit a layer of coating material thereon, comprising:

carrier means for receiving the plurality of workpieces;

means for elevating the workpieces in a single plane to load the workpieces onto said carrier means;

a dip station for depositing a layer of coating material onto each of the plurality of workpieces;

first transport means for transporting said carrier means in a first plane to position the workpieces over said dip station; and

second transport means for transporting said carrier means in a second plane substantially perpendicular to the first plane to transport the workpieces into and out of said dip station with the workpieces attached to said carrier means; and

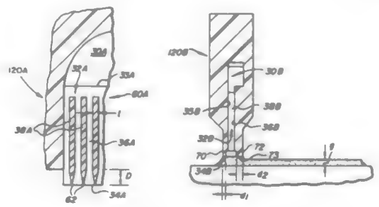
means for transferring said carrier means between said first transport means and said second transport means.

5,334,247

COATER DESIGN FOR LOW FLOWRATE COATING APPLICATIONS

Richard L. Columbus, Rochester, and Harvey J. Palmer, Lima, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1991, Ser. No. 735,577
Int. Cl.[5] B05L *3/18*
U.S. Cl. 118—411 7 Claims



1. In a photographic developer apparatus for developing a photographic product, said developer apparatus comprising a source of developer liquid and a coater for delivery of the liquid in a uniform layer onto a surface of the photographic product, said coater comprising a body having an internal manifold chamber of a width generally equal to the width of a photographic product, means for introducing the liquid at a point within said chamber, a slit orifice shaded to deliver a uniform layer of liquid, and a delivery channel having a length extending from said manifold to said orifice,

the improvement wherein said coater delivery channel comprises spaced-apart opposed surfaces connected together for the majority of said delivery channel length at spaced intervals by a plurality of wall portions in said channel extending between said surfaces in a first direction toward said orifice to confine liquid flow into spaced-apart individual streams of flow between said wall portions, and coalescing means disposed inside said orifice next to said wall portions for coalescing said individual streams together into a substantially continuous strip of liquid while still inside said orifice, so that said developer is effluent-free,

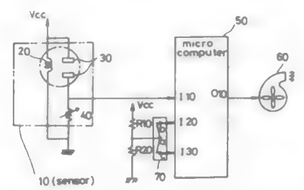
and wherein said wall portions extend substantially completely across the gap between said surfaces and to said orifice with a thickness that tapers sufficiently as the orifice is reached as to aid coalescence of said separate streams at said orifice.

5,334,248

METHOD FOR CONTROLLING AN AIR CLEANER

Byung K. Kwak, Changwon-si, Rep. of Korea, assignor to Goldstar, Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 2, 1992, Ser. No. 970,470
Claims priority, application Rep. of Korea, Nov. 2, 1991, 19477/1991
Int. Cl.[5] B01D *46/46*
U.S. Cl. 95—12 8 Claims



1. A method for cleaning air regardless of initial value of air pollution in an air cleaner, comprising the steps performed in sequence of:

a) sensing at a first time an initial value of air pollution and obtaining a first air pollution increment when the air cleaner is first powered on;

b) sensing a present value of air pollution a certain time later than said first time and obtaining a second air pollution increment;

c) obtaining a third air pollution increment from said initial value of air pollution and said present value of air pollution by subtracting said first air pollution increment from said second air pollution increment;

d) determining an air pollution grade from a plurality of air pollution grades having a plurality of blow control section set according to each of said air pollution grades by use of the third air pollution increment; and

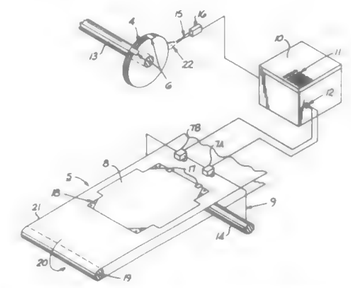
e) controlling air blow according to a blow control section covering said third air pollution increment of said air pollution grade determined in step d).

5,334,249

PROGRAMMABLE ELECTRICALLY CONTROLLED PHOTOEYE LINKED APPLICATOR FOR GLUE GUNS

Edward E. Osbon, West Monroe, La., assignor to Greg D. Thompson, West Monroe, La.

Filed Jan. 28, 1993, Ser. No. 10,189
Int. Cl.[5] B05C *11/00*
U.S. Cl. 118—679 8 Claims



1. A variably programmable system for dispensing glue lines in patterns on carton blanks being conveyed cyclically by a conveyor mechanism powered by a rotating shaft coupled to a power source to convey the sheets past a gluing station, comprising in combination: at least one remotely controllable glue dispensing nozzle, a structure for disposing the nozzle at a stationary position in a posture for depositing a line of glue upon sheets being conveyed by said mechanism, a shaft from said conveyor mechanism synchronously timed with the presentation of said sheets at said gluing station, a mechanism for coupling a marker conveying wheel to said shaft for rotating in synchronism with the cyclic conveyance of the sheets past the gluing station, at least one marker for positioning on said marker wheel to rotate therewith in synchronous timing with the presentation of said sheets at said gluing station, said marker being of dimensions to subtend predetermined angles of rotation of the marker wheel, marker positioning means for positioning said marker to subtend a predetermined angle at controllable positions about the marker wheel to identify corresponding predetermined lengths along the path of the conveyed sheets scheduled for receiving said line of glue from said nozzle, a sensing array for detecting the presence of the marker as it rotates with said marker wheel, and nozzle control means responsive to the sensing array for operating said nozzle to deposit lines of glue upon said sheets in a pattern determined by the dimensions of said marker and its position relative to the wheel.

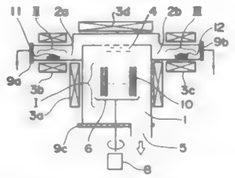
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,250

VAPOR DEPOSITION APPARATUS FOR USING SOLID STARTING MATERIALS

Akiyoshi Mikami, Yamatotakada; Takashi Ogura, Nara; Kousuke Terada, Tenri; Masaru Yoshida, Nara; Takuo Yamashita, Tenri; Koichi Tanaka, Nara; Katsushi Okibayashi, Sakurai; Shigeo Nakajima, Nara; Hiroaki Nakaya, Tenri, and Kouji Taniguchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 594,138, Oct. 10, 1990, abandoned.
This application Feb. 17, 1993, Ser. No. 22,742
Claims priority, application Japan, Nov. 2, 1989, 1-286454
Int. Cl.[5] C23C *16/44*
U.S. Cl. 118—724 5 Claims



1. A vapor deposition apparatus for depositing an electroluminescent film on a plurality of substrates, comprising:
- a vertically-oriented main reaction tube having a top and a bottom, said main reaction tube having a gas vent at said bottom, the plurality of substrates being vertically oriented within said main reaction tube;
- two horizontally-oriented branch reaction tubes connected to said top of the main reaction tube, each of said branch reaction tubes containing a solid starting material and having a gas inlet at its free end;
- a baffle arranged between said main reaction tube and said branch reaction tubes; and
- heating means for heating said main and branch reaction tubes;
- wherein carrier gas introduced into said branch reaction tubes at said gas inlets is mixed by said baffle arrangement and vertically transported over said plurality of vertically oriented substrates and exhausted from said main reaction tube at said gas vent such that deposition of said film on said plurality of substrates is by the vertical flow of said mixed carrier gas.

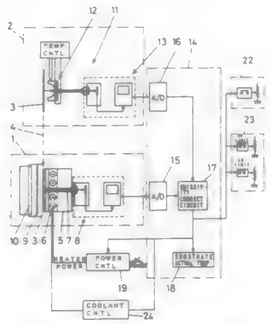
5,334,251

METHOD OF AND APPARATUS FOR CONTROLLING TEMPERATURE IN THE PROCESSING OF A SUBSTRATE

Kiyoshi Nashimoto, Fuchu, Japan, assignor to Anelva Corporation, Tokyo, Japan

Division of Ser. No. 680,938, Apr. 5, 1991, Pat. No. 5,147,498.
This application Jun. 23, 1992, Ser. No. 903,140
Claims priority, application Japan, Apr. 9, 1990, 2-37891
Int. Cl.[5] H01L *21/00*
U.S. Cl. 118—725 7 Claims

1. Apparatus for processing the front surface of a substrate said processing apparatus comprising:
- a processing chamber;
- a substrate holder assembly in said chamber, said assembly having a hole therethrough and through which hole the back surface of a substrate held by said assembly in said chamber will be exposed when the substrate is being processed;
- contactless substrate temperature sensor means for directly sensing the heat emitted from the back surface of a substrate held by said assembly, said sensor means disposed in said chamber in axial alignment with said hole in said substrate holder assembly, and the space between said sensor means and said hole being free of obstacles such that said sensor means will directly face the back surface of a substrate when the substrate is being processed;
- a substrate transfer device;
- a heat emissivity measuring device disposed along a substrate transfer path through which a substrate is transferred by said device to a processing position in said chamber, said heat emissivity measuring device including a



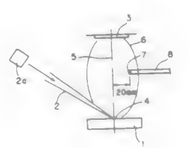
heater having an emissivity value of unity, and temperature sensor means for sensing the temperature of heat emitted by a substrate that is heated by said heater; and
- emissivity correction circuit means for receiving the outputs of each of said temperature sensor means and for correcting an output of said contactless substrate temperature sensor means based on the output of the temperature sensor means of said heat emissivity measuring device.

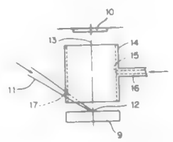
5,334,252

METHOD OF AND APPARATUS FOR PREPARING OXIDE SUPERCONDUCTING FILM

Noriyuki Yoshida; Satoshi Takano; Shigeru Okuda; Noriki Hayashi, all of Osaka; Tsukushi Hara, Chofu; Kiyoshi Okaniwa, Chofu, and Takahiko Yamamoto, Chofu, all of Japan, assignors to Sumimoto Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 662,874, Mar. 1, 1991, Pat. No. 5,187,148.
This application Sep. 25, 1992, Ser. No. 952,928
Claims priority, application Japan, Mar. 2, 1990, 2-52522; Mar. 2, 1990, 2-52523; Mar. 2, 1990, 2-52524; Feb. 15, 1991, 3-30403
Int. Cl.[5] C23C *14/00*
U.S. Cl. 118—726 4 Claims





1. An apparatus for preparing an oxide superconducting film using laser ablation comprising:

- a target containing components of an oxide superconductive material;
- a laser source for applying a laser beam to said target;
- a substrate arranged to be opposite to said target; and
- a gaseous oxygen inlet in the vicinity of a point on said target irradiated by said laser beam, said inlet being directed toward and within a laser plasma generated by application of said laser beam to said target, said gaseous oxygen inlet being provided on a forward end of a conduit.

5,334,253

SOLUTION OF CERTAIN FIVE AND SIX CARBON ATOM CARBOHYDRATES

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Nov. 13, 1990, Ser. No. 611,718
Int. Cl.[5] C13F *3/00*; C08L *5/00*; C07H *1/00*
U.S. Cl. 127—63 1 Claim

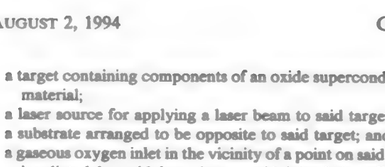
1. A method for converting mannitol into a single liquid phase having a pH in the range of 5 to 6 which consists of dissolving mannitol in dimethylacetamide.

5,334,254

NON-ABRASIVE DISC CLEANER

Paul J. Gelardi, P.O. Box 127, Cape Porpoise, Me. 04014; John A. Gelardi, Kennebunkport, and David A. Capotosto, Kennebunk, both of Me., assignors to Paul J. Gelardi, Kennebunkport, Me.

Filed Oct. 21, 1992, Ser. No. 964,001
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—25.4 31 Claims



31. A non-abrasive cleaning method for discs comprising supplying cleaning fluid from a reservoir to a spin pan in an enclosure having a spinning means, positioning and spinning the disc with respect to the fluid, contacting the disc with fluid, frothing the fluid with the spinning disc, and subsequently spinning the fluid off the disc to dry the disc through centrifugal force and air contact, thereby washing and drying the disc without abrasive contact, further comprising providing the cleaning fluid reservoir in communication with the spin pan and communicating fluid from the reservoir to the spin pan, further comprising providing the reservoir and spin pan within the base and the spinning means within the cover; hinging the base and the cover, positioning the disc on an engagement means attached to the motor in the cover and closing the cover on the base, further comprising positioning the pan horizontally over the reservoir, incorporating a port in the pan, and supplying fluid from the reservoir to the pan through the port.

5,334,255

METHOD FOR REMOVING AND RECLAIMING EXCESS PAINT FROM A PAINT SPRAY BOOTH

Lawrence E. James, Grosse Ile, Mich., and William C. Walsh, Archbold, Ohio, assignors to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 650,366, Feb. 4, 1991, abandoned, which is a division of Ser. No. 445,314, Dec. 4, 1989, abandoned.
This application Jul. 15, 1992, Ser. No. 915,041
Int. Cl.[5] B08B *7/00*; C09D *9/00*; C11D *7/50*
U.S. Cl. 134—38 29 Claims

1. A method for removing and reclaiming excess paint from a paint spray booth comprising the steps of:
- i). entraining over-sprayed paint particles in a stream of air passing through the paint spray booth;
- ii). causing the entrained over-sprayed paint particles to come into contact with a flowing aqueous flood sheet within the paint spray booth such that a substantial portion of said paint particles are solubilized within said flowing aqueous flood sheet and thereby removed from said stream of air, and wherein said flowing aqueous flood sheet consists essentially of an aqueous paint carder which includes;
  - A. between about 16 to about 45 percent by weight of at least one aprotic heterocyclic oxygenate selected the group consisting of N-methyl pyrrolidone, N-ethyl pyrrolidone, 1,5-dimethyl-2-pyrrolidone;
  - B. between about 14 to 52 percent by weight of at least one organic solvent; and
  - C. the balance being water;
- iii). separating and collecting said solubilized paint particles from said aqueous flood sheet, whereby said paint particles are reclaimed; and
- iv). recycling said aqueous flood sheet after separation of said paint particles therefrom according to step iii) to the paint spray booth.

5,334,256

PAINT STRIPPING COMPOSITION

Charles R. Howe, 108 Mahogany Dr., Northeast, Md. 21901

Filed Jun. 2, 1993, Ser. No. 70,280
Int. Cl.[5] B08B *3/08*; C09D *9/00*; C11D *7/26, 7/50*
U.S. Cl. 134—38 6 Claims

1. A paint stripping composition consisting of:
about 60% by weight of ethylene glycol monobutyl ether; and
about 40% by weight of isopropyl alcohol.

5,334,257

TREATMENT OBJECT SUPPORTING DEVICE

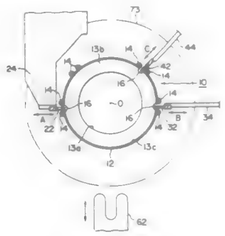
Hironobu Nishi, Sagamihara, and Kazuo Terada, Machida, both of Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo and Tokyo Electron Tohoku Kab. Kaisha, Iwate, both of Japan

Filed May 25, 1993, Ser. No. 66,416
Claims priority, application Japan, May 26, 1992, 4-158745; Jan. 22, 1993, 5-027501
Int. Cl.[5] B05C *13/02*
U.S. Cl. 118—500 11 Claims

1. A treatment object retaining device comprising:
- a plurality of ring shaped supporting means for supporting loaded treatment objects;
- a plurality of supporting rods arranged in the vertical axis direction for supporting said plurality of ring shaped supporting means in parallel and at predetermined spacing in the vertical direction;
- cutout sections not extending to the center opening of said ring shaped supporting plate provided in at least three locations of said ring shaped supporting means other than

VOL 1165 ISS 1 AG 2 1994 UMI

coupling sections of said ring-shaped supporting means with said supporting rods; and



a plurality of supporting teeth freely entering and leaving the said cutout sections.

5,334,258

WASHING METHOD

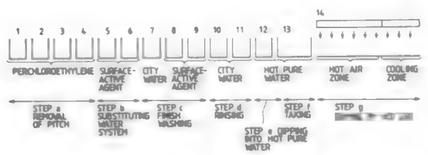
Nagato Osano, Kawasaki; Yukihiro Imai, Utsunomiya; Akihito Hosaka, Ayase; Ikuo Nakajima, Tokyo; Toshiji Nishiguchi, Kawasaki, and Akira Horie, Toride, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Jul. 14, 1992, Ser. No. 913,047

Claims priority, application Japan, Jul. 16, 1991, 3-175513; Sep. 18, 1991, 3-237936

Int. Cl.[5] B08B *3/08*

U.S. Cl. 134—42 3 Claims



1. A method for washing an article having optical function, said method comprising the steps of:

degreasing said article, in a degreasing bath containing an organic solvent;

washing said article in a washing bath containing a surface-active agent;

washing said article with a washing liquid being heated to about 70° to 80° C.,

removing said article from the washing liquid at a speed of 3 to 8 mm/sec. after a specified time in the washing liquid; and

drying said article.

5,334,259

AMORPHOUS SILICON SOLAR CELL AND METHOD OF MANUFACTURE

Takayuki Mizumura, Mihara; Kenji Sawada, Sumoto; Naoki Kojima, Sumoto; Yasuyoshi Kawanishi, Sumoto, and Masatoshi Otsuki, Sumoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 10, 1992, Ser. No. 942,830

Claims priority, application Japan, Sep. 10, 1991, 3-230183; Oct. 22, 1991, 3-274146; Nov. 28, 1991, 3-314729

Int. Cl.[5] H01L *31/04, 31/18*

U.S. Cl. 136—258 19 Claims

15. An amorphous silicon solar cell comprising thin layers of:

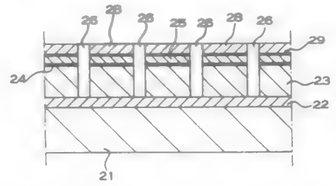
(a) transparent electrode;

(b) amorphous silicon; and

(c) backside electrode comprising an alkali resistant metal; formed in that order on a transparent substrate; wherein holes or grooves are provided through said backside electrode and amorphous silicon layer by wet-etching, and further characterized in that;

(d) a metallic thin film attachment layer is sandwiched between said backside electrode and the amorphous silicon layer;

(e) said backside electrode adheres to said amorphous silicon layer via said metallic thin film attachment layer; and



(f) holes or grooves are provided through said backside electrode and said thin film attachment layer by wetetching using a first etchant, and through the amorphous silicon layer by wet-etching using a second, alkaline etchant solution.

5,334,260

NO-CLEAN, LOW-RESIDUE, VOLATILE ORGANIC COMPOUND FREE SOLDERING FLUX AND METHOD OF USE

Krystyna Stefanowski, Chicago, Ill., assignor to Litton Systems, Inc., Des Plaines, Ill.

Filed Feb. 5, 1993, Ser. No. 14,201

Int. Cl.[5] B23K *35/34*

U.S. Cl. 148—23 15 Claims

1. A no-clean, low-residue, rosin-free foam soldering flux solution comprising:

a. at least about 95% by weight of a cosolvent system free of volatile organic compound solvents which is comprised of (i) at least about 90% by weight demineralized water based on total weight of the soldering flux solution and (ii) from about 1% by weight to about 5% by weight based on total weight of the soldering flux solution of a non-volatile organic solvent forming a cosolvent with said demineralized water, said nonvolatile organic solvent having a boiling point above about 190° C. and a vapor pressure below 0.1 millimeters Hg at 25° C.;

b. from about 1% to about 4% by weight of fluxing agent consisting essentially of two or more carboxylic acids selected from the group consisting of C_2–C_{10} dicarboxylic acids, monocarboxylic acids and hydroxy acids, said fluxing agent being present as solute in said cosolvent system; and

c. nonionic surfactant in an amount not exceeding about 1% by weight based on total weight of soldering flux solution.

5,334,261

SOLDERING FLUX COMPOSITION AND SOLDER PASTE COMPOSITION

Hatsuhiro Minahara, Takatsuki, and Noriko Ikuta, Kobe, both of Japan, assignors to MEC Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 877,819, May 4, 1992, abandoned. This application Jan. 7, 1993, Ser. No. 1,409

Claims priority, application Japan, May 27, 1991, 3-149193

Int. Cl.[5] B23K *35/34*

U.S. Cl. 148—23 7 Claims

1. A soldering flux which comprises (A) at least one unsaturated alcohol which generates a peroxide by decomposition or oxidation when subjected to heating, and (B) at least one ester



of an inorganic or organic acid which generates an acid by decomposition in the presence of unsaturated alcohol (A).

5,334,262

METHOD OF PRODUCTION OF VERY THIN SOFT MAGNETIC ALLOY STRIP

Takao Sawa, Yokohama, and Masaaki Yagi, 2-12-8, Kagitori, Sendai-shi, Miyagi-ken, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Masaaki Yagi, Sendai, both of Japan

Division of Ser. No. 804,697, Dec. 11, 1991, Pat. No. 5,198,040, which is a division of Ser. No. 401,418, Sep. 1, 1989, Pat. No. 5,096,513. This application Dec. 10, 1992, Ser. No. 988,702

Int. Cl.[5] B22D *39/06*

U.S. Cl. 148—121 15 Claims

8. A method for producing an extremely thin soft magnetic alloy strip of an Fe-based alloy, comprising the steps of:

melting an alloy; and

ejecting said molten alloy through a nozzle, under a pressure not higher than 0.03 kg/cm^2, onto the surface of a rotating cooling member rotating at a peripheral speed of not less than 20 m/sec in an atmosphere of reduced pressure of not higher than 1×10^{-2} Torr or in a He atmosphere of not higher than 60 Torr, thereby rapidly quenching said ejected molten alloy to form a thin amorphous alloy strip, wherein said nozzle has an orifice of a rectangular cross section, the short side of which is not more than 0.2 mm and falls parallel to a peripheral direction of said rotating cooling member, and the distance between said nozzle and said rotating cooling member is not more than 0.2 m.

5,334,263

SUBSTRATE STABILIZATION OF DIFFUSION ALUMINIDE COATED NICKEL-BASED SUPERALLOYS

Jon C. Schaeffer, Milford, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 5, 1991, Ser. No. 802,683

Int. Cl.[5] C23C *8/34*

U.S. Cl. 148—217 18 Claims

1. A superalloy article, comprising:

a nickel-based superalloy substrate containing TCP-phase forming elements;

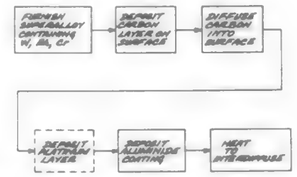
a carbide precipitate-containing region within the substrate and extending to a carbide depth below a surface of the substrate; and

an aluminum-rich diffusion layer extending from the surface of the substrate to an aluminide depth below the surface of the substrate.

10. A process for preparing a coated article, comprising the steps of:

furnishing a nickel-based superalloy substrate containing rhenium, chromium, tantalum and tungsten;

depositing a carbon-containing layer over a surface of the substrate;



diffusing carbon from the carbon-containing layer into the substrate at a temperature sufficient to form carbide precipitates in the substrate;

depositing an aluminide coating on the surface of the substrate; and

heating the substrate to form a protective layer containing aluminum and nickel at the surface of the substrate.

5,334,264

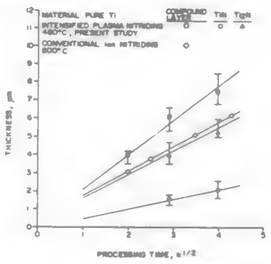
TITANIUM PLASMA NITRIDING INTENSIFIED BY THERMIONIC EMISSION SOURCE

Efstathios I. Meletis, Baton Rouge, La., assignor to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Filed Jun. 30, 1992, Ser. No. 906,929

Int. Cl.[5] C22C *14/00, 27/00*

U.S. Cl. 148—222 20 Claims



1. In a process for nitriding the surface of titanium or a titanium-containing alloy for providing a hard surface layer material with enhanced wear and corrosion resistance by plasma nitriding, the improvement comprising combining a thermionic emission source with a plasma nitriding glow discharge source whereby the glow discharge is intensified.

5,334,265

MAGNETIC METAL

Rady E. Shalin; Alexandr N. Savich; Evgeny B. Kachanov, all of Moscow; Alexandr F. Petrakov, Moskovskaya oblast; Vadim P. Piskorsky, Moscow; Alexandr I. Vevjurko, Moscow; Vladislav K. Orlov, Moscow; Eduard N. Shingarev, Moscow; Sergei I. Ivanov, Moscow; Jury V. Khaskin, Moscow; Alexandr S. Buinovsky, and Vladimir M. Kondakov, both of Tomsk, all of U.S.S.R., assignors to Aura System Inc., El Segundo, Calif.

Filed Feb. 4, 1993, Ser. No. 13,766

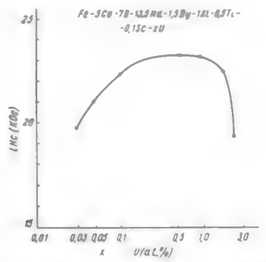
Int. Cl.[5] H01F *1/053*

U.S. Cl. 148—302 7 Claims

1. Magnetic material containing Fe-B-Co-R wherein R con-

VOL 1165 ISS 1 AG 2 1994 UMI

stitutes R_1 and R_2, with R_1 comprising at least one of the rare earth elements selected from the group consisting of Neodymium (Nd) and Praseodymium (Pr), with R_2 comprising at least one of the rare earth elements selected from the group consisting of Dysprosium (Dy) and Terbium (Tb), and an admixture of M, which constitutes M_1 and M_2, M_1 comprising at least one of the elements selected from the group consisting of Aluminum (Al), Niobium (Nb), and Chromium (Cr), and M_2 comprising at least one of the elements selected from the group consisting of Titanium (Ti), Hafnium (Hf), Zirconium (Zr), Vanadium (V), and Tantalum (Ta), said magnetic material also containing Uranium (U) and having the following relative proportion of components, in atomic %:



at least one of the rare earth elements selected from the group consisting of Neodymium and Praseodymium 12.0–17.0;
at least one of the rare earth elements selected from the group consisting of Dysprosium and Terbium 0.1–5.0;
at least one of the elements selected from the group consisting of Aluminum, Niobium, and Chromium 0.5–4.0;
at least one of the elements selected from the group consisting of Titanium, Hafnium, Zirconium, Vanadium, and Tantalum 0.1–1.5;
Cobalt 2.0–6.0
Boron 6.5–8.5
Uranium 0.05–1.5
Iron remainder.

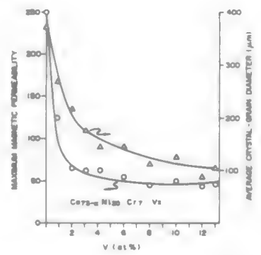
5,334,266
HIGH STRENGTH, HEAT RESISTANT ALUMINUM-BASED ALLOYS
Makoto Kawanishi, and Hidenobu Nagahama, both of Kurobe, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Continuation of Ser. No. 663,746, Mar. 1, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,421
Claims priority, application Japan, Mar. 6, 1990, 2-52635
Int. Cl.[5] C22C *45/08*
U.S. Cl. 148—403 **14 Claims**

5. A high strength, heat resistant aluminum-based alloy having a composition containing aluminum intermetallic compounds obtained by rapid solidification, said composition consisting of the general formula:

$$Al_{a'}M_bQ_cX_{d3}Zr_{d4}$$

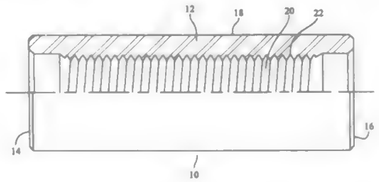
wherein:
M is at least one metal element selected from the group consisting of Ni, Cu, Zn and Ag;
Q is at least one metal element selected from the group consisting of V, Cr and Mn;
X is at least one metal element selected from the group consisting of Li, Mg and Ca; and
a', b, c, d3 and d4 are, in atomic percentages; $80 \leqq a' \leqq 94$, $5 \leqq b \leqq 15$, $0.5 \leqq c \leqq 3$ and $0.5 \leqq d3+d4 \leqq 10$.

5,334,267
SPUTTERING TARGET FOR MAGNETIC RECORDING MEDIUM AND METHOD OF PRODUCING THE SAME
Shigeru Taniguchi, Yasugi; Akira Kawakami, and Hideo Murata, both of Matsue, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Filed Jul. 30, 1993, Ser. No. 99,425
Claims priority, application Japan, Aug. 3, 1992, 4-226414; Mar. 29, 1993, 5-093608
Int. Cl.[5] C22C *19/07*
U.S. Cl. 148—425 **4 Claims**



1. A sputtering target for a magnetic recording medium, wherein said target is formed of a quaternary alloy consisting essentially of, by atom, 5 to 30% of nickel, 5 to 14% of chromium, not more than 6% of vanadium, and balance of cobalt and unavoidable impurities, and wherein said target has an average crystal-grain diameter of not greater than 300 μm.

5,334,268
METHOD OF PRODUCING HIGH STRENGTH SUCKER ROD COUPLING
Dean E. Hermanson, Richardson; Donald F. Hallden, Mesquite, and Horace G. Isom, Rockwell, all of Tex., assignors to LTV Energy Products Co., Garland, Tex.
Filed Dec. 17, 1992, Ser. No. 992,179
Int. Cl.[5] C21D *9/00*
U.S. Cl. 148—530 **9 Claims**

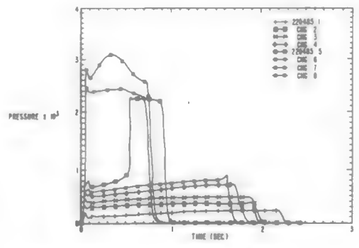


1. A method of producing a sucker rod coupling, comprising the steps of:
a. forming a hollow cylindrical core from a heat treatable steel, said core having an inner surface and an outer surface;
b. applying a thin layer coating to said outer surface, said coating having a Rockwell hardness of at least 45 HRC;
c. heat treating said core and said coating to elevate Rockwell hardness of said core to greater than 23 HRC;
d. cutting partial threads in said inner surface of said core; said partial threads having roots; and
e. cold working said partial threads to transform said partial threads into finished threads and to place said thread roots in compression.

5,334,269
INTERRUPTED NORMALIZATION HEAT TREATMENT PROCESS
Ashok K. Khare, and Michael Scott, both of Warren, Pa., assignors to National Forge Company, Irvine, Pa.
Continuation of Ser. No. 845,856, Mar. 3, 1992, Pat. No. 5,334,269, which is a continuation of Ser. No. 496,602, Mar. 21, 1990, abandoned. This application Oct. 20, 1992, Ser. No. 963,877
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] C21D *1/20*
U.S. Cl. 148—638 **10 Claims**

1. A process for normalizing a ferritic alloy steel that includes the steps of rapidly cooling at least outer surfaces of the steel from a temperature above the Ac_3 temperature to a temperature below the Ar_1 temperature and forming bainitic structures in the outer surfaces, and during subsequent air cooling to room temperature reheating the outer surfaces of the steel to a temperature at least above the Ar_1 temperature with bleed back heat from the steel and retaining as many bainitic structures as possible at the outer surfaces, thereby forming an alloy steel with outer surfaces and interior portions adjacent thereto having predominantly bainitic structures.

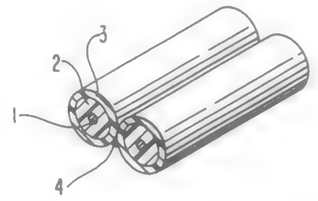
5,334,270
CONTROLLED BURN RATE, REDUCED SMOKE, SOLID PROPELLANT FORMULATIONS
Robert H. Taylor, Jr., Harvest, Ala., assignor to Thiokol Corporation, Ogden, Utah
Continuation-in-part of Ser. No. 827,207, Jan. 29, 1992, abandoned. This application Nov. 25, 1992, Ser. No. 981,774
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.4 **18 Claims**



1. A solid rocket motor propellant comprising:
from about 6% to about 10% binder, said binder consisting essentially of hydroxy-terminated polybutadiene binder;
from about 65% to about 90% ammonium perchlorate; and
from about 0.3% to about 5.0% refractory oxide selected from the group consisting of TiO_2, and SiO_2;
said propellant formulated such that it burns at at least two stable burn rates over at least two corresponding pressure ranges such that the propellant provides boost-sustain operation when burned in a solid rocket motor.

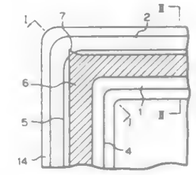
5,334,271
PROCESS FOR MANUFACTURE OF TWISTED PAIR ELECTRICAL CABLES HAVING CONDUCTORS OF EQUAL LENGTH
Roddy M. Bullock, San Marcos; Alfredo L. Cedrone, Austin; Michael L. Eckert, Manor, and James G. Vana, Jr., Austin, all of Tex., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Oct. 5, 1992, Ser. No. 956,330
Int. Cl.[5] H01B *13/08, 13/14*
U.S. Cl. 156—51 **6 Claims**

1. A process for manufacturing a cable in the form of a twisted pair of insulated electrical conductors having equal physical lengths, comprising the steps of:
(a) adhering together along their length two parallel insulated electrical conductors of equal length by bonding the insulations thereof together along the line of contact between the two insulations;



(b) passing the adhered insulated conductors as a unit through a rotatable close-fitting die; and
(c) twisting the insulated conductors to form a twisted pair cable having insulated conductors of equal length.

5,334,272
METHOD FOR PRODUCING AN EASILY OPENABLE CONTAINER
Yukio Takata, and Takeshi Shinohara, both of Himeji, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan
Division of Ser. No. 713,497, Jun. 12, 1991, Pat. No. 5,167,339. This application Jul. 21, 1992, Ser. No. 915,669
Claims priority, application Japan, Jun. 15, 1990, 2-155280
Int. Cl.[5] B65B *7/28*; B32B *31/20*
U.S. Cl. 156—69 **5 Claims**



1. A method of producing an easily openable container, comprising:
grooving a multilayer container body including an innermost layer,
an adjacent layer contacting the innermost layer, the innermost layer and the adjacent layer being peelable from each other,
a recessed portion having an open end and
a flange extending circumferentially and outwardly from the open end of the recessed portion so that the flange has a first circumferential notch and a second circumferential notch which are made in the innermost layer, and the second circumferential notch is located radially outside the first circumferential notch;
melt sealing a lid member to the innermost layer of the multilayer container body at the flange between the first circumferential notch and the second circumferential notch to form a melt sealed area so that the peel strength between the lid member and the innermost layer of the multilayer container body is larger than the peel strength between the innermost layer and the adjacent layer of the multilayer container body, and a portion of the melt sealed area projects outwardly from the second circumferential notch to provide a portion for beginning opening of the easily openable container; and
making a depression through the lid member in the innermost layer at an outermost edge of the projecting portion

VOL 1165 ISS 1 AG 2 1994 UMI

of the melt sealed area at the same time the lid member is melt sealed to the multilayer container body.

5,334,273

WAFER BONDING USING TRAPPED OXIDIZING VAPOR

John P. Short, Indian Harbor Beach; Craig J. McLachlan, Melbourne; George V. Rouse, Indialantic, and James R. Zibrida, Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 834,439, Feb. 12, 1992, Pat. No. 5,266,135, which is a continuation of Ser. No. 781,686, Oct. 24, 1991, abandoned, which is a continuation of Ser. No. 476,322, Feb. 7, 1990, abandoned. This application Oct. 14, 1993, Ser. No. 137,293

Int. Cl.[5] B32B *31/24*

U.S. Cl. 156—87 **23 Claims**

PROCESS

A. PREPARE SLICES

B. OXIDIZE BONDING SURFACE OF ONE SLICE

C. TREAT BONDING SURFACES WITH ACID

D. APPLY LIQUID OXIDANT TO A BONDING SURFACE

E. PRESS SLICES TOGETHER AND DRY

F. HEAT SLICES TO BOND

1. A method of forming bonded wafers from two slices comprising:

pressing a pair of slices together at bonding surfaces with a predetermined quantity of oxidant therebetween; and

heating said pair of slices to bond said slices together.

5,334,274

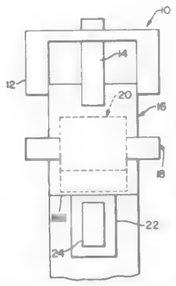
METHOD FOR USE IN BELT MANFUACTURE AND BELT AND INDICATOR ASSEMBLY

Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B&G Plastics, Inc., Newark, N.J.

Filed Jan. 7, 1992, Ser. No. 817,750

Int. Cl.[5] G09F *21/02*

U.S. Cl. 156—93 **5 Claims**



1. A method for the making of belts through the use of a belt buckle having a prong pivotally supported on an open frame of the buckle, a belt blank having a prong-passage opening therethrough at a location distal from a first end of the belt blank, and a belt-retaining loop member, the method comprising the steps of:

(a) inserting said first end of said belt blank through said buckle open frame;

(b) folding said belt blank onto itself about a fold line extending through said belt blank prong-passage opening and inserting said buckle prong through said prong-passage opening;

(c) providing a marketing indicator with an adhesive backing selected to adhere to said belt blank;

(d) adhering said marketing indicator to said belt blank within said fold of said belt blank at a first location using said adhesive backing;

(d) applying said belt-retaining loopmember to said folded belt blank at least in part within said fold of said belt blank at a second location to provide an unsecured assembly of said folded belt blank, said buckle, said marketing indicator and said belt-retaining loop member;

(f) inverting the unsecured assembly of said folded belt blank, said buckle, said marketing indicator and said belt-retaining loop member; and

(g) securing said inverted secured assembly of said folded belt blank, said buckle, said marketing indicator and said belt-retaining loop member.

5,334,275

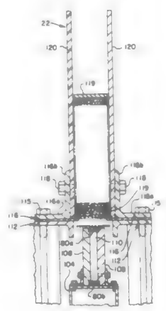
METHOD AND APPARATUS FOR STACKING AND FABRICATING HONEYCOMB INSULATING MATERIAL

Frank C. Romeo, Fort Worth, Tex., and Harlan A. Holmes, Los Angeles, Calif., assignors to Home Fashions, Inc., Santa Monica, Calif.

Filed Feb. 21, 1992, Ser. No. 839,600

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—264 **8 Claims**



1. In a method for mass producing one or more individual stacks of expandable, secured together tubular strips forming a honeycomb panel, with apparatus including a stacking chamber having an inlet and pushing apparatus opposite said inlet for pushing a strip delivered opposite said inlet into said chamber, said method including sequentially delivering flat tubular strips, each strip having a flat face on opposite sides thereof and an adhesive applied to one flat face thereof, to a point opposite said stacking chamber inlet so that the adhesive coated face of each strip faces said inlet; the improvement wherein said pushing apparatus is provided with a pushing member having a strip-holding face lying in a given plane and having suction apertures for holding the non-adhesive coated flat face of each strip delivered in said plane; sucking air through said suction apertures and moving said pushing member back and forth into and out of said stacking chamber at said inlet with said strip-holding face presented parallel to the non-adhesive coated flat face of a strip previously pushed into said stacking chamber, to push said adhesive coated flat face of the strip being delivered opposite the stacking chamber inlet against the non-adhesive coated flat face of the strip previously pushed into said chamber, to secure the strips together and to form a substantially unwrinkled stack of aligned strips.

5,334,276

APPARATUS FOR THE PRODUCTION OF A HONEYCOMB CORE FROM FOIL STRIP

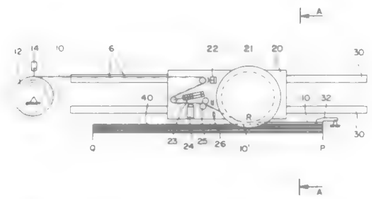
Johannes Meier, Neuhausen, Switzerland, assignor to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Division of Ser. No. 919,950, Jul. 27, 1992, Pat. No. 5,277,732. This application Aug. 2, 1993, Ser. No. 100,377

Claims priority, application Switzerland, Aug. 5, 1991, 2315/91

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—364 **8 Claims**



1. Apparatus for the production of an unexpanded honeycomb core from foil band unrolled from a band coil, which is coated at uniform intervals with strips of adhesive and cut into strips in the direction of uncoiling, the strips then being piled on top of one another with their respective adhesive strips parallel but in staggered positions, and thereafter adhesively bonded together under pressure to form a stack with ends which is finally expanded, which comprises: position detectors which determine the position of the adhesive strips, at least one positioning drive to obtain a staggered adhesive strip arrangement based on the adhesive strip location, at least one cutting device and one liftable sealing roller for applying heat and pressure to the stack for the bonding of the strips to a topmost strip of the stack, said position detectors, positioning drive, cutting device and sealing roller being mounted on a sliding carriage, which can move along guideways in such a way that the sealing roller with its low point can sweep along a honeycomb holder device positioned underneath it over its entire width, wherein pressure and elevated temperature is applied by the sealing roller to the strips and at least a topmost underlying strip, and including a clamp for holding fast the strips at least at one end of the honeycomb holder device.

5,334,277

METHOD OF VAPOR-GROWING SEMICONDUCTOR CRYSTAL AND APPARATUS FOR VAPOR-GROWING THE SAME

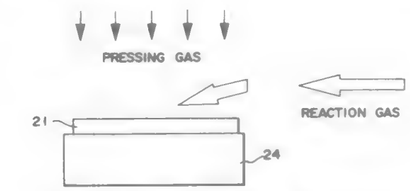
Shuji Nakamura, Anan, Japan, assignor to Nichia Kagaky Kogyo K.K., Tokushima, Japan

Filed Oct. 22, 1991, Ser. No. 780,469

Claims priority, application Japan, Oct. 25, 1990, 2-288665; Mar. 13, 1991, 3-074822

Int. Cl.[5] C30B *25/14*

U.S. Cl. 117—102 **17 Claims**



1. A method of vapor-growing a gallium nitride group semiconductor crystal layer using a metal organic chemical vapor deposition method, comprising the steps of:

heating the substrate;

supplying a reaction gas to a surface of the heated substrate so as to be parallel or obliquely to said substrate;

blowing a pressing gas by using a blow tube widened toward a blow port, substantially in a vertical direction toward said substrate to bring said reaction gas into contact with the surface of said substrate;

each of said step being performed under atmospheric pressure.

5,334,278

LIQUID-PHASE EPITAXY GROWTH SYSTEM AND METHOD FOR GROWING EPITAXIAL LAYER

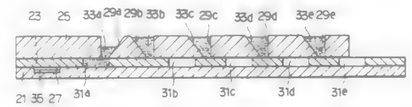
Song J. Lee, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Aug. 30, 1991, Ser. No. 752,856

Claims priority, application Rep. of Korea, May 16, 1991, 91-7955

Int. Cl.[5] C30B *19/06*

U.S. Cl. 117—57 **7 Claims**



1. A liquid-phase epitaxy growing method using a boat comprising a slider section including a slot for receipt of a substrate, a contacting well section containing a plurality of spaced apart contacting wells for selectively contacting solutions within said contacting wells with said substrate, a source holder section containing a plurality of source wells for selectively transferring solutions within said source wells to said contacting wells, and means for controllably heating said boat and materials contained therewithin to selected temperatures, the method comprising:

forming solutions by dissolving, at a temperature T_1, a source for a melt-etch within one of said source wells, and various sources for expitaxial growths in others of said source wells,

during a first time period, at said temperature T_1, transferring a solution to one only of said contacting wells, said solution being melt-etch solution from said one source well,

then, separating said one contacting well from said one source well for isolating said transferred melt-etch solution from said one source well,

then, while maintaining the isolation of said melt-etch solution from said one source well, transferring, at a temperature T_2, solution from said others of said source wells to respective ones of said contacting wells,

then, separating said others of said contacting wells from their respective source wells for isolating the contents of all of said contacting wells from all of said source wells,

then, while lowering the temperature from T_2, contacting said substrate with the melt-etch solution within said one contacting well for performing in situ melt-etching of said substrate during a time period beginning when the temperature reaches a temperature T_3, which is higher than T_1 and

growing successive epitaxial layers on said substrate by successively contacting said substrate with solutions from said others of said contacting wells during a time period starting when the temperature reaches a temperature T_4 which is less than T_3.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,279

METHOD AND APPARATUS FOR MAKING PRINTED CIRCUIT BOARDS

George D. Gregoire, 9927 Aviary Dr., San Diego, Calif. 92131

Division of Ser. No. 45,366, Apr. 8, 1993. This application Aug. 27, 1993, Ser. No. 113,392
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—630 14 Claims



1. In a method of making a printed circuit board including a planar substrate having thereon a desired electrical circuit pattern with metallized solder lands thereof disposed out of the plane of the substrate, the steps of making a three dimensional female predecessor tool, comprising:

using a photo tool having emulsion areas thereon corresponding to the desired electrical circuit pattern and the metallized out of plane solder lands thereof;

dimensioning a metallic plate to conform to the planar surface area of the printed circuit board;

coating at least one surface of said metallic plate with a light sensitive material;

placing said photo tool on the coated surface of said metallic plate so the emulsion areas thereon are properly aligned on the surface to facilitate formation of the desired electrical circuit pattern and the metallized out of plane solder lands thereof;

exposing said photo tool disposed on said plate to high intensity light to form a desired pattern in said light sensitive material to facilitate formation of the desired metallized out of plane solder lands of the printed circuit board;

removing the unwanted areas of said light sensitive material to expose portions of the metallic plate to be etched with said desired pattern; and

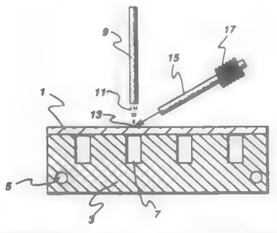
etching said desired pattern in the exposed surface of said metallic plate to form in the resulting three dimensional predecessor tool out of plane portions corresponding substantially to the solder lands of the printed circuit board.

5,334,280

SUPPRESSION OF GRAPHITE FORMATION DURING LASER ETCHING OF DIAMOND

Thomas R. Anthony, Schenectady, and James F. Fleischer, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 21, 1993, Ser. No. 64,465
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—635 9 Claims



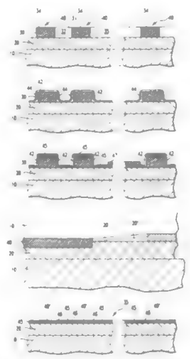
1. A method for laser etching a diamond article which comprises contacting the region to be etched with a cutting laser and simultaneously cooling said article and contacting said article, at least at the point of etching, with a gaseous material effective to remove graphite or inhibit its formation.

5,334,281

METHOD OF FORMING THIN SILICON MESAS HAVING UNIFORM THICKNESS

George W. Doerre, Poughkeepsie; Seiki Ogura, Hopewell Junction, and Nivo Rovedo, La Grangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1992, Ser. No. 876,598
Int. Cl.[5] H01L *21/08*
U.S. Cl. 156—636 10 Claims



1. A method of forming isolated silicon mesas from a wafer having a bulk silicon substrate, an insulating oxide layer disposed above said substrate and a silicon device layer above said oxide layer, comprising the steps of:

forming a set of trenches in said device layer, said trenches being disposed to define a plurality of silicon mesas and extending from a first device layer surface down to said oxide layer, whereby said trenches have a bottom surface of oxide;

depositing a gauge layer of polycrystalline silicon having a predetermined gauge thickness in said set of trenches; oxidizing said gauge layer of polysilicon to form an oxide polish gauge layer of predetermined polish gauge thickness, related to said predetermined gauge thickness, in said trenches, whereby said mesas are surrounded by said oxide polish gauge layer having an oxide gauge surface said predetermined polish gauge thickness above said first layer surface; and

polishing said mesas by chemical-mechanical polishing until said mesas are substantially co-planar with said oxide gauge surface, whereby said oxide polish gauge layer acts as a thickness gauge to establish a mesa thickness of said mesas.

5,334,282

ELECTRON BEAM LITHOGRAPHY SYSTEM AND METHOD

Yoshinori Nakayama, Sayama, and Shinji Okazaki, Urawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,252
Claims priority, application Japan, Sep. 28, 1990, 2-256899
Int. Cl.[5] A61K *27/02*
U.S. Cl. 156—643 17 Claims

1. An electron beam lithography method, comprising the steps of:

emitting an electron beam in a fixed predetermined dosage;

repeating drawing a unit pattern with said electron beam on a substrate wherein a plurality of said unit patterns forms a highly integrated device pattern;

forming said unit pattern by shaping the electron beam with a first aperture having an aperture pattern matching said unit pattern; and



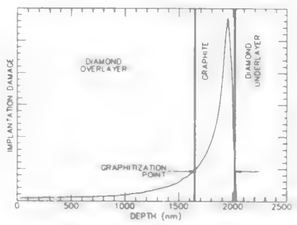
varying a transmittance of the electron beam with at least one second aperture to selectively control an intensity of an exposure dosage of the electron beam on said substrate.

5,334,283

PROCESS FOR SELECTIVELY ETCHING DIAMOND

Nalin R. Parikh, Chapel Hill, and John D. Hunn, Pittsboro, both of N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Aug. 31, 1992, Ser. No. 937,401
Int. Cl.[5] H01L *21/312*
U.S. Cl. 156—654 29 Claims



1. A process for selectively etching a diamond substrate comprising the steps of:

(a) forming one or more graphitic areas within a diamond substrate by implanting the diamond substrate with ions capable of graphitizing diamond to a depth below the surface of the diamond substrate and

(b) selectively etching the diamond substrate with a gaseous reactant under conditions sufficient to convert the graphitic area to a gaseous product.

5,334,284

SURFACE TREATMENT OF INDIUM PHOSPHIDE UTILIZING CHEMICAL ROUGHENING OF THE SURFACE

Catherine Ngo, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

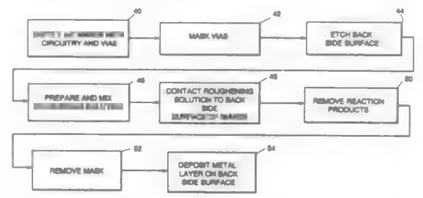
Continuation of Ser. No. 996,232, Dec. 23, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 134,129
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—656 16 Claims

1. A process for preparing the surface of a piece of Indium phosphide, comprising the steps of:

supplying a piece of indium phosphide;

etching a surface of the piece of indium phosphide with an aqueous solution of nitric acid and ceric ammonium nitrate;

preparing and mixing a roughening solution of acetic acid, nitric acid, and hydrobromic acid; and



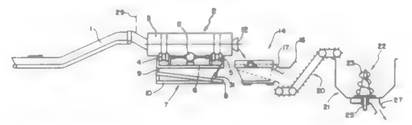
contacting the roughening solution to the etched surface of the piece of indium phosphide for a contact time sufficient to roughen the surface of the indium phosphide.

5,334,285

PROCESS FOR THE TREATMENT OF WASTEPAPER USING DRUM SOAKER

Herbert Ortner; Theodor Bahr, and Walter Musselmann, all of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 797,216, Nov. 25, 1991, abandoned. This application May 21, 1993, Ser. No. 66,409
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1990, 4037230
Int. Cl.[5] D21C *5/02*; D21B *1/32*
U.S. Cl. 162—4 6 Claims



1. A process for the treatment of wastepaper and accompanying heavy contaminants, said contaminants being selected from the group consisting of wood, glass, plastic and metal contained in the wastepaper, and metal straps from wastepaper bales, wherein a major proportion of said wastepaper is imprinted with printing inks, said process comprising the sequential steps of:

soaking said wastepaper and contaminants in a first rotating drum soaker in the presence of process chemicals so that a portion of said paper is disintegrated into fibers, said process chemicals being present in an amount comprising at least 40% of a total amount that would be required for substantially complete disintegration of said wastepaper and separation of said printing inks;

directly conveying said soaked wastepaper and contaminants to a sorting apparatus;

sorting coarse contaminants from said soaked wastepaper solution in said sorting apparatus by screening;

conveying said sorted soaked wastepaper to a pulper;

extensively dissolving said wastepaper into fibers in said pulper, said soaking, sorting and dissolution steps taking place at a consistency of at least 13%; and

separating said printing ink from said fibers.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,286

TISSUE PAPER TREATED WITH TRI-COMPONENT BIODEGRADABLE SOFTENER COMPOSITION

Dean Van Phan, West Chester, and Paul D. Trokhan, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 13, 1993, Ser. No. 61,137
Int. Cl.[5] D21H *21/22*
U.S. Cl. 162—158 19 Claims

1. A softened tissue paper having on at least one surface thereof a tri-component biodegradable softener composition mixture comprising:

(a) a nonionic softener selected from the group consisting of sorbitan mono-, di-, tri- esters and mixtures thereof;

(b) a nonionic surfactant compatibilizer selected from the group consisting of ethoxylated sorbitan esters, propoxylated sorbitan esters, alkylpolyglycosides and mixtures thereof; and

(c) a polyhydoxy compound selected from the group consisting of glycerol, polyethylene glycol, polypropylene glycol and mixtures thereof;

wherein the weight ratio of the nonionic softener to the nonionic surfactant compatibilizer ranges from about 10:1 to 1:10 and wherein the weight ratio of the nonionic softener to the polyhydroxy compound ranges from about 10:1 to 1:10, the tri-component softener being present in an amount from about 0.1% to about 3% by weight of the dry tissue paper.

5,334,287

GRAFT POLYMERS OF NATURAL SUBSTANCES CONTAINING SACCHARIDE STRUCTURES OR DERIVATIVES THEREOF AND ETHYLENICALLY UNSATURATED COMPOUNDS AND THEIR USE

Heinrich Hartmann, Limburgerhof; Walter Denzinger, Speyer; Michael Kroener, Mannheim; Claudia Nilz, Dannstadt-Schauernheim; Friedrich Linhart, Heidelberg, and Andreas Stange, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 17, 1992, Ser. No. 914,926
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4127733
Int. Cl.[5] C08F *251/00;* D21H *21/06, 21/10*
U.S. Cl. 162—175 14 Claims

1. A graft polymer prepared by polymerization of monomers (A) mixtures of N-vinylformamide having formyl groups and vinylacetate having acetate groups; in the presence of (B) a compound selected from the group consisting of monosaccharides, oligosaccharides, polysaccharides, oxidatively, hydrolytically or enzymatically degraded polysaccharide, oxidized hydrolytically degraded or oxidized enzymatically degraded polysaccharides, chemically modified mono-, oligo- or polysaccharides and mixtures thereof;

in a weight ratio (A):(B) of from 95:5 to 20:80;

followed by elimination of from 2 to 100% of the formyl groups of the polymerized N-vinylformamide of the graft polymer with formation of moieties of the formula



and elimination of from 2–100% of the acetate groups of the polymerized vinylacetate of the graft polymer with formation of moieties of the formula

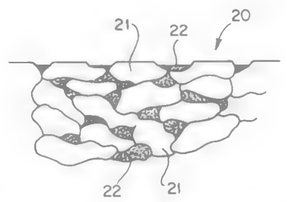


5,334,288

PRESS ROLL IN A PAPER MACHINE

Toshiyuki Nasu, Yotsukaido, and Mutsunori Kai, Noda, both of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,411
Int. Cl.[5] D21F *3/08*
U.S. Cl. 162—358.1 13 Claims



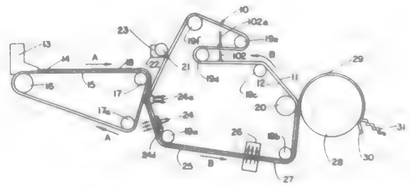
1. A press roll in a paper machine comprising a metal base and a sprayed coating provided on an outer surface of said metal base, at least an outer layer of said sprayed coating comprising a sprayed mixture of a plastics and at least one of a ceramics and a cermet, an outer surface of the plastic portion of said sprayed coating having a lapped, depressed surface relative to the outer surface of the ceramic or cermet portion.

5,334,289

PAPERMAKING BELT AND METHOD OF MAKING THE SAME USING DIFFERENTIAL LIGHT TRANSMISSION TECHNIQUES

Paul D. Trokhan, Hamilton, and Glenn D. Boutilier, Blue Ash, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 546,633, Jun. 29, 1990, abandoned. This application Jun. 15, 1992, Ser. No. 872,470
Int. Cl.[5] D21F *3/00*
U.S. Cl. 162—358.2 20 Claims



1. A papermaking belt having a paper-contacting side and a textured backside opposite said paper-contacting side, said papermaking belt comprising:

a framework comprising a cured photosensitive resinous material, said framework having a first surface defining said paper-contacting side of said belt, a second surface opposite said first surface, and conduits extending between said first surface and said second surface, said first surface having a paper side network formed therein defining said conduits, and said second surface having a backside network with passageways, distinct from said conduits, that provide surface texture irregularities in said backside network;

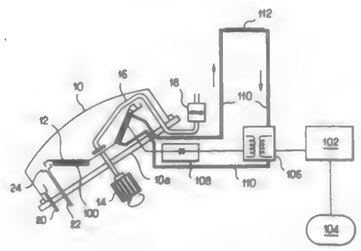
a reinforcing structure positioned between said first surface and at least a portion of said second surface, said reinforcing structure having a paper-facing side, a machine-facing side opposite said paper-facing side, interstices, and a reinforcing component comprised of a plurality of structural components, a first portion of said reinforcing component having a first opacity and a second portion of said reinforcing component having a second opacity less than said first opacity, wherein said first opacity is sufficient to substantially prevent curing of said photosensitive resinous material which comprises the framework when said photosensitive resinous material is in its uncured state and said first portion is positioned between said photosensitive resinous material and an actinic light source, and said second opacity is sufficient to permit curing of said photosensitive resinous material, said first portion defining a first projected area; wherein said passageways in said backside network of said framework are positioned predominately within said first projected area; wherein said reinforcing structure comprises a plurality of machine-direction warp yarns interwoven with a plurality of cross-machine direction weft yarns to form said interstices between said warp yarns and said weft yarns, a plurality of said warp yarns or said weft yarns having a first opacity and a plurality of said warp yarns or said weft yarns having good second opacity, said first yarns and said second yarns being of substantially equal diameter.

5,334,290

MOLECULAR DISTILLATION APPARATUS HAVING INDUCTION-HEATING

Jacques Nuns; Alain Girault, both of Ecuelles, and Alain Rancurel, Leves, all of France, assignors to Expanchimie S.A.R.L., Courbevoie, France

Filed Nov. 21, 1991, Ser. No. 792,859
Claims priority, application France, Nov. 21, 1990, 90 14518
Int. Cl.[5] B01D *3/12*
U.S. Cl. 202—205 10 Claims



1. A molecular distillation apparatus of the type comprising a metallic conical rotor having a center, means for rotatably driving said conical rotor, means to feed a liquid to be distilled to said center of said conical rotor, a vacuum bell, means for establishing a vacuum in said vacuum bell, said vacuum bell defining an enclosure, said enclosure housing the conical rotor and means for inductively heating said conical rotor, said inductive heating means being located beneath and in proximity to said conical rotor, wherein said heating means comprise at least two concentric inductors supplying different thermal power densities to homologous regions of said conical rotor and wherein an inner inductor supplies a greater thermal power density to said conical rotor than the power density supplied to said conical rotor by an outer inductor.

5,334,291

ON-SITE, CONTROLLED WASTE CONCENTRATOR AND SOLVENT REGENERATOR APPARATUS

Gilbert Gavlin, Lincolnwood, Ill.; William M. Langdon, deceased, late of Green Valley, Ariz. by Nancy Langdon, legal representative ; Boris Goltsin; Gunther Erlebacher, both of Skokie, Ill., and Douglas A. Larson, River Forest, Ill., assignors to Safety-Kleen Corp., Elgin, Ill.

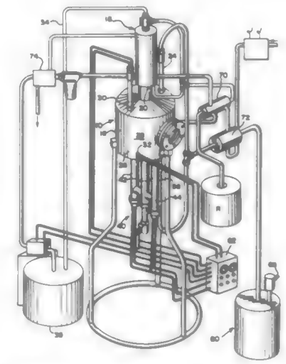
Filed Jul. 9, 1993, Ser. No. 89,691
Int. Cl.[5] B01D *3/02, 3/42*
U.S. Cl. 202—234 11 Claims

1. An apparatus for controlled, on-site distillation and removal of non-volatile residues and impurities from a circulating solvent stream in an end use flow circuit for said solvent, said apparatus comprising:

a generally hollow vessel defining a fluid-receiving chamber including an upper vapor-receiving portion and a lower liquid-receiving stamp portion, said lower sump portion having an associated maximum liquid fill height, an associated minimum liquid fill height and a contaminated solvent entry port disposed below the minimum fill height;

means for condensing solvent vapors into liquid form solvent disposed in fluid flow communication with said vapor-receiving portion, said condensing means including means for collecting liquid form solvent and for returning a liquid form solvent fraction to the circulating solvent stream;

a self-scrubbing heat transfer assembly including an elongate, vertically-oriented heating tube having a lower end with a heater rod-receiving opening and an opposed upper end with a discharge opening, and an elongate heater rod having a lower end with a base mounting portion and an opposed upper free end, said heater rod being mounted to said heating tube so that said base mounting portion is releasably, sealingly, mountedly engaged in the rod-receiving opening and the free end of the heater rod is telescopically and generally coaxially received in said heating tube, said heater rod having an outer diameter which is less than an inner diameter of said heating tube



thereby defining an annular heat transfer region between the heating tube and the heater rod, means for fluidly connecting said discharge opening to said upper vapor-receiving portion, means for connecting said lower sump portion of said chamber to a lower end portion of said annular heat transfer region, means for introducing contaminated solvent from said circulating solvent stream in said end use flow circuit to said contaminated solvent entry port, means for sensing overflow volume to a waste container, means for sensing when the liquid level in the lower sump portion is at or below said minimum liquid level fill height, means for monitoring the temperature of the liquid in the lower sump portion, means for interactively controlling operation of the apparatus by monitoring the temperature of the circulating liquid form solvent in the sump portion until a pre-determined maximum high temperature value is reached, whereupon a controller is operative to cause the introducing means to introduce: new contaminated solvent into said lower sump portion to decrease the temperature of the sump liquid and simultaneously overflow a controlled volume of concentrated non-volatile residues and impurities through an overflow exit port into said waste container, until a maximum waste container volume has been reached, said controller further including means for controlling the heater rod to turn said

VOL 1165 ISS 1 AG 2 1994 UMI

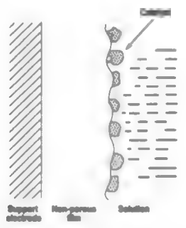
heater rod from an "on" condition to an "off" condition when a maximum waste container volume has been reached or exceeded, when cold water supply to said condenser is interrupted, and when a minimum liquid fill level sensor indicates that the liquid level has dropped below said minimum fill level.

5,334,292

CONDUCTING POLYMER FILMS CONTAINING NANODISPERSED CATALYST PARTICLES: A NEW TYPE OF COMPOSITE MATERIAL FOR TECHNOLOGICAL APPLICATIONS

Krishnan Rajeshwar, and Chalasani S. C. Bose, both of Arlington, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Aug. 17, 1992, Ser. No. 931,212
Int. Cl.[5] C25B *3/00*
U.S. Cl. 204—59 R 5 Claims



1. A method of producing an electronically conductive polymer film comprising colloidal catalytic particles homogeneously dispersed therein, the method comprising:

preparing a colloidal suspension of catalytic particles in a solution comprising an electronically conductive polymer precursor; and

electrosynthesizing an electronically conductive polymer film containing homogeneously dispersed colloidal catalytic particles.

5,334,293

ELECTRODE COMPRISING A COATED VALVE METAL SUBSTRATE

John F. Cairns, Warrington, and David R. Hodgson, Wigan, both of England, assignors to Imperial Chemical Industries Public Limited Company, London, England

Filed Aug. 23, 1991, Ser. No. 748,928
Claims priority, application United Kingdom, Aug. 31, 1990, 9018953
Int. Cl.[5] C25B *1/16, 11/10*
U.S. Cl. 204—98 18 Claims

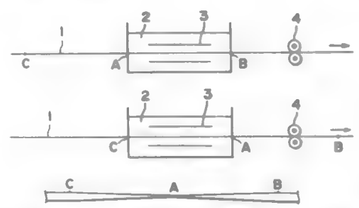
1. An electrode which comprises a substrate of a valve metal or an alloy thereof having properties similar to those of the valve metal and a coating comprising an outer layer which comprises RuO_2, an oxide of at least one non-noble metal and at least one other noble metal or oxide thereof and an intermediate layer having a composition different from that of the outer layer and which comprises RuO_2 and an oxide of at least one non-noble metal wherein the ruthenium oxide provides a minor portion of at least one of the intermediate layer and the outer layer.

5,334,294

METHOD OF CONTINUOUSLY PROCESSING WIRE MATERIAL AND DEVICE THEREFOR

Hirohisa Iwai, Yokohama; Kaisuke Shiroyama, Zama; Akira Matsuda; Takeo Nakamura, both of Nikko, and Ryotomo Shirakawa, Imaichi, all of Japan, assignors to The Furokawa Electric Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00027, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992, PCT Pub. No. WO92/12819, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 16, 1991, Ser. No. 923,800
Int. Cl.[5] B23H *9/00*
U.S. Cl. 204—129.55 6 Claims



1. A method of continuously processing wire material, to produce a taper on the wire material comprising:

passing a long wire material continuously at a speed through an electrolytic polishing bath with a cathode installed therein;

turning on electricity only when a portion of said wire to be processed passes through said electrolytic polishing bath; and

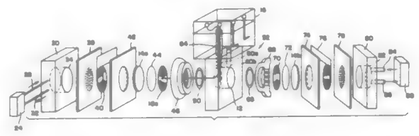
increasing the speed when a nonprocessing portion of the wire passes through the electrolytic polishing bath, thereby a taper is produced.

5,334,295

MICRO FUEL-CELL OXYGEN GAS SENSOR

John P. Gallagher, deceased, late of Jupiter, Fla. by Janice M. Gallagher , and Robert J. Masi, Littleton, Mass., assignors to Delta F. Corporation, Woburn, Mass.

Division of Ser. No. 864,491, Apr. 7, 1992, Pat. No. 5,256,273. This application May 3, 1993, Ser. No. 58,776
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.16 24 Claims



1. A method for measuring the amount of oxygen in a gas which includes:

establishing in an electrolyte an electrolytic path between sensing electrodes comprising a cathode and an anode;

flow the gas to the cathode;

metering the oxygen to the cathode based on gaseous phase diffusion to provide a measurement proportional to volummetric concentration;

reducing the oxygen at the cathode to form hydroxyl ions;

placing hydrogen in contacting relationship with the anode; and

oxidizing the hydrogen at the anode to form water and to establish a current which current is linear to the volummetric concentration of the oxygen reduced at the cathode; and

measuring the oxygen reduced.

5,334,296

PEROXIDASE COLLOIDAL GOLD OXIDASE BIOSENSORS FOR MEDIATORLESS GLUCOSE DETERMINATION

Robert W. Henkens, Durham; Junguo Zhao, Chapel Hill, and John P. O'Daly, Carrboro, all of N.C., assignors to Andcare, Inc., Durham, N.C.

Division of Ser. No. 846,229, Mar. 6, 1992, Pat. No. 5,225,064, which is a continuation-in-part of Ser. No. 821,732, Jan. 15, 1992, Pat. No. 5,217,594. This application Jun. 28, 1993, Ser. No. 83,349
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.12 20 Claims

1. A method of electrochemical determination of an analyte comprising:

obtaining a bioelectrode prepared from a colloidal gold adsorbed peroxidase and an oxidase in communication with a conducting surface; and

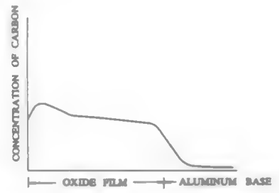
detecting current generated in the presence of the analyte when a sample containing the analyte is contacted with the bioelectrode.

5,334,297

METHOD FOR PRODUCTION OF COLORED ARTICLE OF ALUMINUM OR ALUMINUM ALLOY

Norio Nakada, Toyama; Hideo Fukui, Kurobe; Hatsuo Hirono, Toyama, and Seishiro Ito, Ikoma, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 954,343, Sep. 30, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 119,559
Claims priority, application Japan, Sep. 30, 1991, 3-276490
Int. Cl.[5] C25D *13/04*
U.S. Cl. 204—181.2 6 Claims



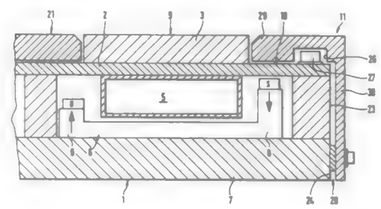
1. A method of producing a colored article of aluminum or an aluminum alloy, comprising the steps of anodizing said aluminum or aluminum alloy at high voltage in the range between DC 150 V and 200 V in an aqueous solution of at least one acid selected from among mineral acids and organic acids thereby forming on a surface of said aluminum or aluminum alloy a porous anodic oxide film which contains pores having a diameter in the range between 50 and 200 nm, immersing the anodized aluminum or aluminum alloy in an aqueous dispersion of an organic pigment finely divided into particles of a size in the range between 3 and 150 nm and dispersed in an aqueous medium, and then subjecting the anodized aluminum or aluminum alloy to an electrophoretic treatment to cause the organic pigment to be migrated and deposited in the pores of the anodic oxide film thereby obtaining the colored article of aluminum or aluminum alloy.

5,334,298

SPUTTERING CATHODE

Rainer Gegenwart, Rödermark, Fed. Rep. of Germany, assignor to Leybold AG, Hanau, Fed. Rep. of Germany

Filed Oct. 20, 1992, Ser. No. 963,467
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1992, 4201551
Int. Cl.[5] C23C *14/35*
U.S. Cl. 204—192.12 8 Claims



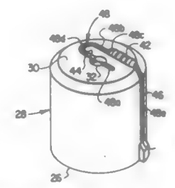
1. The method of operating a sputtering cathode which operates on the magnetron principle, comprising: utilizing a cathode body which has a target having a sputtering surface which is an outwardly facing surface, utilizing a magnet system behind the target and having poles of opposite polarity lying one opposite the other for the production of magnetic lines of force which issue from the target and, after running through arcuate paths, re-enter the target, utilizing a limb of a dark space shield running parallel to the sputtering surface and having an inner margin and covering marginal areas of the target lying outside of an erosion zone, electrically floating the dark space shield and providing the dark space shield with at least one limb separated from the target by a gap which is so great that no plasma can ignite between the target and the dark space shield and that the gap does not become adversely affected by back-scattered material and providing the dark-space shield with an externally lying end face facing away from the cathode body and lying in the same transverse plane as the sputtering surface of the target.

5,334,299

WATER HEATER HAVING IMPROVED SACRIFICIAL ANODE ASSEMBLY THEREIN

James S. Rodea, Montgomery, Ala., assignor to Rheem Manufacturing Company, New York, N.Y.

Division of Ser. No. 4,724, Jan. 14, 1993, Pat. No. 5,256,267. This application May 26, 1993, Ser. No. 67,218
Int. Cl.[5] C23F *13/00*
U.S. Cl. 204—196 5 Claims



1. A water heater comprising:

a metal tank having an interior for holding a quantity of water to be heated, and a sacrificial anode assembly supported on said metal tank, said sacrificial anode assembly including:

an elongated metal anode member extending into the interior of said metal tank, said anode member having a core wire extending axially therethrough and projecting outwardly through an end of said anode member,

an insulating sleeve member receiving and being captively

VOL 1165 ISS 1 AG 2 1994 UMI

retained on said end of said anode member, said insulating sleeve member having:

an end wall portion with a central opening that receives an end portion of said core wire,

a first exterior surface groove formed in said end wall portion and having a first generally straight section extending into said central opening and having an end spaced apart therefrom, a second generally straight section offset from said first section and having an end spaced apart from said central opening, and a curved third section joining said ends of said first and second sections, and

a second exterior surface groove formed in and extending generally axially along a side wall portion of said insulating sleeve member, said second exterior surface groove defining a continuation of said second section of said first exterior surface groove;

a hollow metal cap member receiving and captively retained on said insulating sleeve member, said cap member being secured to said metal tank; and

an electrical resistor having:

a cylindrical body portion received in said second section of said first exterior surface groove in a spaced apart relationship with said end thereof, said cylindrical body portion having opposite ends,

a first electrical lead wire extending from one end of said resistor body portion sequentially through a portion of said second groove section, said curved third groove section, said first groove section, and across said central opening, said first electrical lead wire having an outer end portion fixedly and conductively secured to said end portion of said core wire, and

a second electrical lead wire extending from the opposite end of said resistor body portion and through said second exterior surface groove, said second electrical lead wire having an outer end fixedly and conductively secured to said metal cap member.

5,334,300

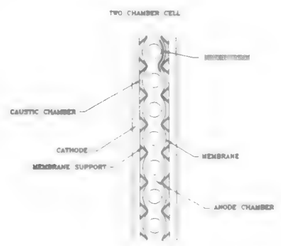
TURBULENT FLOW ELECTRODIALYSIS CELL

John R. Herron; Edward G. Beaudry; Carl E. Jochums, and Luis E. Medina, all of Corvallis, Oreg., assignors to Osmotek, Inc., Corvallis, Oreg.

Filed Dec. 8, 1992, Ser. No. 986,772

Int. Cl.[5] C25B *9/00*; **C25C** *7/00, 7/02*

U.S. Cl. 204—257 **5 Claims**



1. A two-chambered electrocell comprising one or a plurality of anode chambers, a crude flow inlet and a crude flow outlet communicating with the anode chamber, one or a plurality of cathode chambers, and a catholyte outlet communicating with the cathode chamber, wherein cylindrical anodes are located in the anode chamber, wherein the anode chamber is defined by a membrane having a first side and a second side, wherein the first side of the membrane communicates with crude fluid circulating within the anode chamber, and wherein the second side of the membrane is supported by a plurality of support members, wherein a pressure of crude fluid in the anode chamber deflects the membrane between the support members toward the cathode to form a crude flow path having a constantly changing direction, and wherein the cathode chamber is defined by the second side of the membrane and the two-chambered electrocell, and the support members and a cathode are located in the cathode chamber.

5,334,301

ELECTROCHEMICAL CELL HAVING INFLATABLE SEALS BETWEEN ELECTRODES

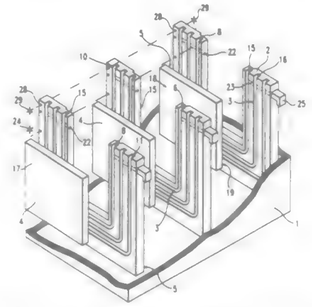
Harri Heinke, Erlensee; Wolfgang Blatt, Wächtersbach, and Bernd Busse, Darmstadt, all of Fed. Rep. of Germany, assignors to Heraeus Elektrochemie GmbH, Hanau, Fed. Rep. of Germany

Filed Feb. 9, 1993, Ser. No. 15,692

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1992, 4206843

Int. Cl.[5] C25B *9/00*

U.S. Cl. 204—267 **18 Claims**



1. Electrochemical cell for completion of electrochemical processes by means of ion conducting solutions, said cell comprising

a plurality of plate-like electrodes, each electrode having at least one sealing surface,

a plurality of electrode frames which hold said electrodes in parallel spaced apart relationship to form electrolyte spaces therebetween, each electrode frame having at least one sealing surface which faces a respective sealing surface of an electrode, and

a plurality of hose-like tubular sealing elements, at least one said sealing element positioned against each sealing surface of an electrode and against the facing sealing surface of a frame, the sealing elements having a cross section which is expandable under pressure, whereby,

a liquid impermeable seal can be formed between each pair of facing sealing surfaces by applying internal pressure to the tubular sealing element.

5,334,302

MAGNETRON SPUTTERING APPARATUS AND SPUTTERING GUN FOR USE IN THE SAME

Kenichi Kubo, Kofu; Yasuo Kobayashi, Nirasaki, and Koji Koizumi, Yamanashi, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 976,453

Claims priority, application Japan, Nov. 15, 1991, 3-326675; Feb. 18, 1992, 4-69717

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.18 **25 Claims**

1. A magnetron sputtering apparatus for forming a sputtering film on an object, comprising:

(a) a vacuum chamber for accommodating the object;

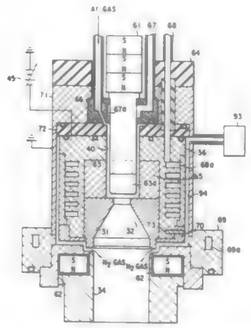
(b) a plurality of sputtering guns for emitting sputter particles to the object, each sputtering gun having,

a target having a recess opening to the object,

a sputtering gas supply source for supplying a sputtering gas from a bottom of the recess,

a electric field producing mechanism for producing an electric field in the recess, thereby producing a plasma the sputtering gas, and

a magnetic field producing mechanism for producing, in the recess, a magnetic field including a component intersecting the electric field at right angles;



(c) a support member for supporting the object within the vacuum chamber; and

(d) a movement mechanism for moving the sputtering guns and the support member relative to each other,

wherein the sputter particles sputtered from the target by the plasma produced in the recess are deposited on the object.

5,334,303

ELECTROCHEMICAL MEASUREMENT SYSTEM

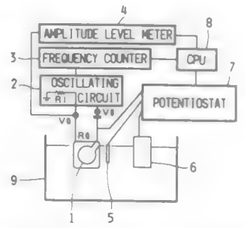
Hiroshi Muramatsu, and Xuanjing Ye, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Mar. 16, 1992, Ser. No. 851,752

Claims priority, application Japan, Mar. 22, 1991, 3-058998; Apr. 9, 1991, 3-076558

Int. Cl.[5] G01N *27/26*; **H01L** *41/00*

U.S. Cl. 204—412 **17 Claims**



1. A system for effecting analysis of an electrochemical reaction conducted within a cell having a working electrode, a counter electrode and a reference electrode disposed in an electrolyte solution, the system comprising:

an electrochemical measurement unit composed of a potentiostat connected to the working electrode, the counter electrode and the reference electrode for measuring a cell current flowing through the cell and an electrode potential of the working electrode;

a quartz crystal resonator having an electrode which functions as the working electrode;

a characteristic measurement unit comprising an oscillating circuit operative to apply a drive signal to the working electrode for oscillating the resonator, a first measurement circuit for measuring a resonant frequency variation of the resonator, and a second measurement circuit for measuring a resonant resistance variation of the resonator in terms of an amplitude level variation of the drive signal; and

means for analyzing the electrochemical reaction based on concurrently measured results of the cell current, the electrode potential of the working electrode, the resonant frequency variation, and the resonant resistance variation.

5,334,304

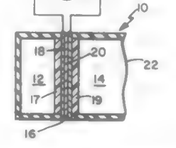
ELECTROCHEMICAL FORCE SENSOR

Henri J. R. Maget, 6455 La Jolla Blvd., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 563,051, Aug. 6, 1990, abandoned. This application Nov. 18, 1991, Ser. No. 793,459

Int. Cl.[5] G01N *27/406, 27/417*

U.S. Cl. 204—421 **13 Claims**



1. A gas pressure ratio sensor comprising:

a gas-tight housing, having two ends and a first wall at a first end;

a rigidly-supported electrolytic membrane having two sides disposed to form a second wall at a second end of said gas-tight housing and defining therein a storage chamber for holding a supply of electrochemically active gas;

at least one pervious electrode disposed on each said side of and in contact with said electrolytic membrane to form at least one opposed electrode pair; the gas being electrochemically reversibly active so as to enter into an anodic reaction at one side of said at least one electrode pair where the gas molecules are convened to ions transportable through said electrolytic membrane and a cathodic reaction at the opposite side of said at least one electrode pair where said ions are reconverted to gas molecules; and

control means consisting essentially of at least one of the electrode pairs adapted to be responsive to a pressure differential across the electrolytic membrane, means to detect an output voltage from tile electrode pair caused by the pressure differential, which means are in electrical communication with said electrode pair, controller means in electrical communication with the detection means which are programmed to cause a current to be provided to said electrolytic membrane in response to, and sufficient to reverse, the current supplying the detected output voltage to return the pressure in the chamber to a predetermined value.

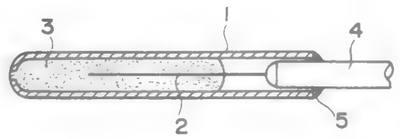
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,305

REFERENCE ELECTRODE

Kohji Okada, Iwakura; Minato Ando, Aichi; Jun-ichi Tokumoto, Konan, and Takashi Katoh, Kasugai, all of Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jul. 10, 1992, Ser. No. 911,584
Claims priority, application Japan, Jul. 10, 1991, 3-195096
Int. Cl.[5] G01N *27/30*
U.S. Cl. 204—435 9 Claims



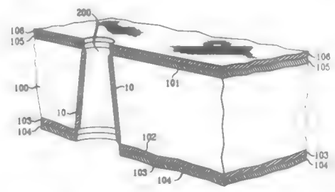
1. A reference electrode comprising, as an internal liquid, LiCl and NH_4NO_3 in a dissolved state at a concentration ratio of $[NH_4NO_3]/[LiCl] \geqq 4$.

5,334,306

METALLIZED PATHS ON DIAMOND SURFACES

William C. Dautremont-Smith, Westfield; Leonard C. Feldman, Berkeley Heights, both of N.J.; Rafael Kalish, Haifa, Israel; Avishay Katz, Westfield, N.J.; Barry Miller, Murray Hill, N.J., and Netzer Moriya, Maplewood, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 927,772, Aug. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 870,741, Apr. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 806,934, Dec. 11, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 973,611
Int. Cl.[5] C25D *5/02, 5/54, 7/12*
U.S. Cl. 205—131 16 Claims



1. A method of forming a metallized path located on a surface of a diamond body in accordance with a first selected path located on the surface of the body comprising the steps of:
(a) defining a second selected path on the surface of the body that comprises the first selected path by directing a laser beam or an ion beam onto the surface of the body in accordance with the second selected path, whereby a graphite path forms along the surface of the body in accordance with the second selected path; and
(b) plating at least a selected portion of the graphite path with a metallic layer, whereby the metallized path is formed.

5,334,307

RESID HYDROPROCESSING CATALYST

Howard D. Simpson, Irvine; Marvin J. Schwedock, and John W. Ward, both of Yorba Linda, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 764,814, Sep. 24, 1991, Pat. No. 5,210,061. This application Feb. 19, 1993, Ser. No. 19,776
Int. Cl.[5] C10G *45/00, 45/04*
U.S. Cl. 208—254 H 20 Claims

1. A catalytic hydroprocess of a hydrocarbon-containing oil containing contaminant metals, nitrogen or sulfur, said hydroprocess comprising contacting a catalyst composition in a fixed bed in a reactor with said hydrocarbon-containing oil under hydroprocessing conditions so as to produce a product hydrocarbon-containing oil containing less contaminant metals, nitrogen or sulfur than said hydrocarbon-containing oil, said catalyst composition comprising at least one Group VIB hydrogenation metal component supported on an amorphous, porous refractory oxide containing alumina and silica, said catalyst composition containing between 1.8 and 7.8 weight percent of silica, calculated as SiO_2, and said composition having a median pore diameter between 120 and 140 angstroms.

5,334,308

REDUCTION OF JET ENGINE SMOKE EMISSIONS BY CONTACTING JET FUEL WITH A CARBON MOLECULAR SIEVE ADSORBENT

Leonard B. Graiff; Danny Y. Ngan, both of Houston; Benton E. Visser, Cypress, and Greg E. Webster, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 23, 1992, Ser. No. 902,601
The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.
Int. Cl.[5] C10G *25/00*
U.S. Cl. 208—299 2 Claims

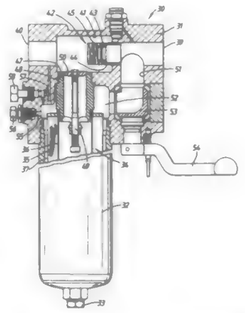
1. A process for reducing the smoke emissions from a jet fuel engine comprising combusting a jet fuel range hydrocarbon in a jet engine wherein prior to combusting the jet fuel in the engine the jet fuel is treated by a process consisting essentially of:
(a) contacting the jet fuel with a carbon molecular sieve adsorbent at a liquid hourly space velocity between about 0.5 and 30, ambient pressure, and at a temperature between about 30° F. and 800° F. in at least one adsorbent bed under suitable process conditions such that the smoke point of the jet fuel is increased; and
(b) recovering the jet fuel.

5,334,309

FILTER UNITS

David J. Huggett, Portsmouth, and Jamie Collard, Southampton, both of England, assignors to Pall Corporation, Glen Cove, N.Y.

Filed Sep. 23, 1992, Ser. No. 948,633
Claims priority, application United Kingdom, Sep. 27, 1991, 9120692
Int. Cl.[5] B01D *35/147*
U.S. Cl. 210—133 13 Claims



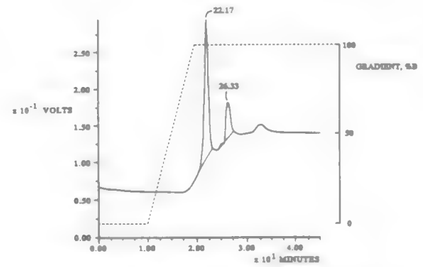
1. A filter unit comprising a housing including a bowl, a filter element disposed in the bowl, means defining an inlet passage leading through the housing to the bowl for passage thereto of fluid to be filtered, means defining an outlet passage for filtered fluid leading through the housing from the bowl, an anti-backflow valve in the outlet passage, means defining a by-pass passage extending through the housing between a first point in the inlet passage and second point on the outlet passage on a downstream side of the anti-backflow valve, an inlet valve provided in the inlet passage between the first point and the filter element and operable to open or close the inlet passage, a by-pass valve which operates to open the by-pass passage when the inlet passage is closed for replacement of the filter element in the bowl and to close the by-pass passage when the inlet passage is open to re-direct fluid to the filter element, means defining a pressurization passage in the housing between the by-pass passage and a point on the inlet passage between the inlet valve and the bowl, and a repressurization valve provided in the housing and which is normally closed but operates to open the repressurization passage to pass fluid from the by-pass passage to the bowl with the inlet valve closed.

5,334,310

COLUMN WITH MACROPOROUS POLYMER MEDIA

Jean M. J. Frechet, and Frantisek Svec, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 779,929, Oct. 21, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,181
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 16 Claims



11. A column comprising a rigid tube and at least one continuous plug of a macroporous organic polymer disposed within the column and extending across the cross-sectional area of the column, wherein the plug contains small pores having diameters less than about 200 nm and large pores having diameters greater than about 600 nm and wherein said column is capable of passing a liquid selected from an organic solvent and water therethrough at a linear flow rate of at least about 200 cm/hr and at a pressure of less than about 30 MPa (4,500 psi).

5,334,311

SEPARATION AGENT COMPRISING ALIPHATIC OR AROMATIC ESTER OF POLYSACCHARIDE

Tohru Shibata; Hajime Namikoshi, and Ichiro Okamoto, all of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 993,119, Dec. 18, 1992, Pat. No. 5,268,098, which is a division of Ser. No. 809,680, Dec. 18, 1991, Pat. No. 5,192,444, which is a division of Ser. No. 640,079, Jan. 11, 1991, Pat. No. 5,089,138, which is a division of Ser. No. 430,736, Nov. 2, 1989, Pat. No. 5,041,226, which is a division of Ser. No. 225,066, Jul. 27, 1988, Pat. No. 4,892,659, which is a division of Ser. No. 18,814, Feb. 18, 1987, Pat. No. 4,786,415, which is a continuation of Ser. No. 716,790, Mar. 27, 1985, abandoned.
This application Sep. 15, 1993, Ser. No. 121,741
Claims priority, application Japan, Apr. 2, 1984, 59-65323
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 1 Claim

1. A chromatographic separating agent comprising mannan tribenzoate supported on a porous carrier having a particle size range of from 1 to 10 millimeter and a pore size of from 10 Angstroms to 100 microns, the amount of mannan tribenzoate to be supported is 1 to 100 wt. % based on the carrier.

5,334,312

USE OF BICARBONATES IN THE BIODEGRADATION OF HYDROCARBON CONTAMINANTS

M. Stephen Lajoie, Basking Ridge, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Apr. 1, 1993, Ser. No. 41,689
Int. Cl.[5] C02F *1/40*
U.S. Cl. 210—610 20 Claims

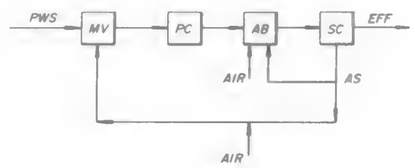
1. A method for treating a solid or liquid medium contaminated with a hydrocarbon contaminant by adding to the medium in the presence of water and at least one microorganism capable of metabolizing at least one hydrocarbon compound present, a salt composition comprising a bicarbonate selected from the group consisting of ammonium bicarbonate, potassium bicarbonate, and mixtures thereof, said salt composition yielding ammonium and bicarbonate ions when dissolved in water, such that said hydrocarbon contaminant is eliminated or reduced to a desired lower level, said salt composition being added to said medium as a solution prepared by dissolving the composition in water, or as a solid composition.

5,334,313

REDUCTION OF ACRYLONITRILE IN WASTEWATER FROM THE PRODUCTION OF ABS PLASTIC

Oscar E. Anderson, Belpre, Ohio, assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 24, 1992, Ser. No. 949,962
Int. Cl.[5] C02F *3/12*
U.S. Cl. 210—624 13 Claims



1. A wastewater treatment process for the reduction of residual acrylonitrile monomer in an aqueous medium comprising said monomer, said process comprising the steps of:
(a) addition of oxygenated activated sludge to said aqueous medium to reduce the level of residual acrylonitrile monomer in said aqueous medium by aerobic digestion,
(b) primary clarification of said aqueous medium to separate a sludge from a water effluent,
(c) aeration of said water effluent in the presence of activated sludge to produce a product having a reduced biological oxygen demand compared to said water effluent,
(d) secondary clarification of said product to produce activated sludge and a wastewater stream, and
(e) oxygenating said activated sludge and recycling said oxygenated activated sludge to the addition step (a).

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,314

COMPOSITION MEMBRANE FOR SEPARATING WATER FROM FLUIDS CONTAINING ORGANIC COMPONENTS BY MEANS OF PERVAPORATION

Jean M. L. Neel, Villers-les-Nancy; Quang T. Nguyen, Ladres, both of France, and Hartmut Bruschke, NuBloch, Fed. Rep. of Germany, assignors to Deutsche Carbone AG, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP90/02074, § 371 Date Oct. 1, 1991, § 102(e) Date Oct. 1, 1991, PCT Pub. No. WO91/08043, PCT Pub. Date Jun. 13, 1991

PCT Filed Dec. 3, 1990, Ser. No. 741,508

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, 3939841; Dec. 1, 1989, 3939867

Int. Cl.[5] B01D *61/36*

U.S. Cl. 210—640 26 Claims

1. Composite membrane for separating water from fluid mixtures containing organic components by means of pervaporation comprising a non-porous separating layer of cross-linked polyvinyl alcohol, characterized in that the polyvinyl alcohol separating layer has been subjected to a post cross-linking by treatment with acids, which act in the vapor phase on said polyvinyl alcohol layer.

5,334,315

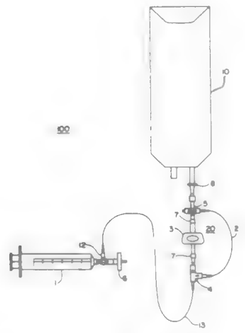
PRIMING SYSTEM

Vlado I. Matkovich, Glen Cove; Thomas J. Bormann, Melville, and Gerard R. DelGiacco, Yonkers, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Jan. 17, 1992, Ser. No. 824,788

Int. Cl.[5] B01D *61/20*

U.S. Cl. 210—641 33 Claims



12. A method of depleting a deleterious or undesirable substance from a patient's fluid comprising:

passing a priming fluid through a bypass connected in parallel with an unprimed fluid treatment element,

wherein the fluid treatment element includes at least one porous medium suitable for removing a deleterious or undesirable substance from the patient's fluid;

exhausting the gas displaced by the priming fluid through a vent;

passing the priming fluid through the fluid treatment element;

withdrawing a fluid containing a deleterious or undesirable substance from a patient through the primed bypass; and

then passing the patient's fluid through the primed fluid treatment element to deplete the deleterious or undesirable substance from the fluid.

5,334,316

PROCESS OF USING POLYTETRAALKYLAMMONIUM AND POLYTRIALKYLAMINE-CONTAINING LIGANDS BONDED TO INORGANIC SUPPORTS FOR REMOVING AND CONCENTRATING DESIRED IONS FROM SOLUTIONS

Ronald L. Bruening, Springville; Bryon J. Tarbet, Highland; Jerald S. Bradshaw, and Reed M. Izatt, both of Provo, all of Utah, assignors to Brigham Young University, Provo, Utah

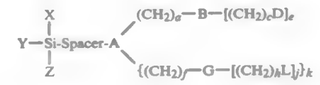
Division of Ser. No. 834,917, Feb. 12, 1992, Pat. No. 5,244,856, which is a continuation-in-part of Ser. No. 595,309, Oct. 10, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,629

Int. Cl.[5] B01D *15/00*

U.S. Cl. 210—670 13 Claims

1. A method for the concentration and removal of desired ions selected from the group consisting of $PtCl_6^{2-}$, $PtCl_4^{2-}$, $PdCl_4^{2-}$, $RhCl_6^{3-}$, $IrCl_6^{3-}$, $RuCl_6^{3-}$, $IrCl_6^{2-}$, $RuCl_6^{2-}$, $BiCl_6^{3-}$, CrO_4^{2-}, SeO_4^{2-}, IO_3^-, IO_4^-, TcO_4^-, MnO_4^-, ReO_4^-, $AuCl_4^-$, $HgCl_4^{2-}$, $PbCl_4^{2-}$, $SbCl_6^{3-}$, $SnCl_4^{2-}$, $SnCl_6^{2-}$, SeO_3^{2-}, AsO_4^{3-}, and AsO_3^{3-} from a source solution which comprises

(a) bringing said source solution having a first volume into contact with a compound comprising a polytetraalkylammonium- and/or polytrialkylamine-containing ligand covalently bonded to a solid inorganic support having the formula:



wherein Spacer is a 1 to 10 carbon member hydrophilic grouping; A is a member selected from the group consisting of NR_x, S and O where x is an integer such that all nitrogens are either quaternary or tertiary; B, D, G, and L are members selected from the group consisting of NR_x, S, and O, or SH and OH when S and O are located in a terminal position, with x being an integer such that the nitrogen atoms present are quaternary or tertriary; a, c, f and h are each integers ranging from 1 to 5; e and j are each integers ranging from 0 to 25; and k is an integer of 0 or 1; with the proviso that k must be O when A is S or O; R is a member selected from the group consisting of lower alkyl or substituted lower alkyl; with the further proviso that at least two of A, B, D, G or L must be a member selected from the group consisting of tetraalkylammonium, substituted tetraalkylammonium, trialkylamine, or substituted trialkylamine and X, Y, and Z are each a member selected from the group consisting of Cl, Br, I, alkyl, alkoxy, substituted alkyl, substituted alkoxy and O-solid support with the provisno that at least one of X, Y, and Z must be O-solid support; said polytetraalkylammonium and/or polytrialkylamine containing ligand portion of said compound having an affinity for the desired ions to form a complex between said desired ions and said polytetraalkylammonium and/or polytrialkylamine containing ligand portion of said compound;

(b) removing said source solution from contact with said compound to which said desired ions have been complexed; and

(c) contacting said compound having said desired ions complexed thereto with a smaller volume of a receiving solution having a greater affinity for said desired ions than said compound or greater affinity for said compound than said desired ions thereby breaking said complex and recovering the desired ions in concentrated form in said smaller volume of said receiving solution.

5,334,317

METHOD FOR RECOVERING ORGANIC MATERIAL IN SOLVENT EXTRACTION PROCESSES

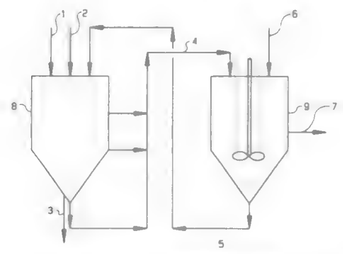
Gustavo H. Bannach Sichtermann, Santiago; Aliro T. N. Pincheira Alverez, Chuquicamata; Andres A. Reghezza Inzunza, Chuquicamata; Alberto S. Cruz Rivera, Chuquicamata; Tomas S. Lorca Soto, Antofagasta; Luis F. Hidalgo Cortes, Chuquicamata; Jorge M. Menacho Llana, and Miguel A. Martinez Pereira, both of Santiago, all of Chile, assignors to Corporacion Nacional Del Cobre De Chile, Santiago, Chile

Filed Jul. 28, 1993, Ser. No. 99,038

Claims priority, application Chile, Aug. 4, 1992, 816-92

Int. Cl.[5] B01D *17/04*

U.S. Cl. 210—708 23 Claims



1. A method for recovering organic material from emulsions produced during a solvent extraction process, comprising:

introducing a quantity of emulsions produced during a solvent extraction process into a first collecting pond, said emulsion comprising drops of organic material suspended in an aqueous matrix and a plurality of fine solid particles located at the interface between the organic material and the aqueous matrix;

adding to said emulsions in said first pond a quantity of an aqueous washing solution such that the ratio of the emulsions to the aqueous washing solution is between about 1:1 to 1:2,

washing said emulsions with the aqueous washing solution;

purging said washed emulsions to remove between 25–75 percent by weight of the solids therefrom together with a portion of said aqueous washing solution;

transferring the washed emulsions into a second collecting pond;

breaking at least some of said emulsions by agitating said emulsions within said second pond with an organic liquid which is miscible with the organic phase of the emulsion and immiscible with the aqueous phase;

decanting said emulsions for a sufficient time to form at least three substantially separate layers within said second collecting pond, said layers comprising a first organic layer, a second layer of unbroken emulsions and a third layer comprising an aqueous phase with a quantity of solid particles in suspension therein, said particles containing a quantity of impregnated organic material; and

removing said organic layer from said second pond.

5,334,318

COMPOSITIONS CONTAINING ACTIVE SULFUR

James N. Vinci, Mayfield Heights, and Curtis R. Scharf, Wickliffe, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 381,616, Jul. 18, 1989, abandoned, which is a continuation of Ser. No. 239,586, Sep. 1, 1986, Pat. No. 4,873,006. This application Jul. 6, 1993, Ser. No. 87,561

Int. Cl.[5] C10M *135/02, 149/00*

U.S. Cl. 252—38 22 Claims

1. A lubricating composition comprising:

(A) an oil of lubricating viscosity;

(B) the reaction product of at least one polycarboxylic compound having at least one hydrocarbon-based substituent of 50 to 500 carbon atoms derived from an olefin polymer or chlorinated analog thereof, wherein the polymer is derived from at least one hydrocarbyl olefin having 2 to 16 carbon atoms, with at least one of: (i) a N-(hydroxyl-substituted hydrocarbyl) amine or (ii) a hydroxyl-substituted poly(hydrocarbyloxy) derivative of said amine;

(C) an active sulfur containing organic compound; and

(D) at least one alkali metal or alkaline earth metal containing compound.

5,334,319

COMPOSITION FOR HYDRAULIC LUBRICATION AND COUPLING

Hirotaka Tomizawa, Tokorozawa; Noboru Umemoto, Kami-Fukuoka, and Hitoshi Ohenoki, Sayama, all of Japan, assignors to Tonen Corporation, Tokyo, Japan

Continuation of Ser. No. 712,881, Jun. 11, 1991, abandoned. This application Dec. 1, 1992, Ser. No. 984,254

Claims priority, application Japan, Jun. 18, 1990, 2-158915; Jun. 18, 1990, 2-158916; Jun. 18, 1990, 2-158917; Mar. 30, 1991, 3-067450; Apr. 23, 1991, 3-092155

Int. Cl.[5] C10M *105/76*

U.S. Cl. 252—46.006 3 Claims

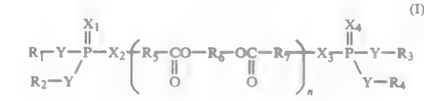
1. A fan coupling composition which comprises:

i) an organopolysiloxane having a viscosity of 1,000 to 20,000 cSt 25° C.;

ii) from 0.01 to 5%, by weight of the organopolysiloxane, of a phosphorous type anti-wear agent; and

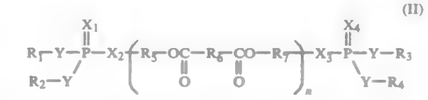
iii) from 0.01 to 2%, by weight of the organopolysiloxane, of an antioxidant; said phosphorous type anti-wear agent having one of the following formulae (I) to VII):

(I)



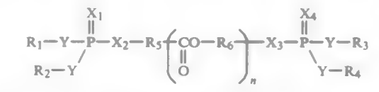
wherein each of R_1 to R_4 is independently hydrogen or a monovalent hydrocarbon group containing from 1 to 20 carbon atoms; each of R_5 to R_7 is independently a divalent hydrocarbon group containing from 1 to 6 carbon atoms; each of X_1 to X_4 is independently oxygen or sulfur; each Y is independently a direct bond, oxygen or sulfur; and n is an integer of from 0 to 2, with the proviso that both X_2 and X_3 are sulfur when n is 0;

(II)



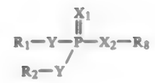
wherein R_1 to R_7, X_1 to X_4, Y and n are as defined in Formula (I);

(III)



wherein each of R_1 to R_4 is independently hydrogen or a monovalent hydrocarbon group containing from 1 to 20 carbon atoms; each of R_5 and R_6 is independently a divalent hydrocarbon group containing from 1 to 6 carbon atoms; each of X_1 to X_4 is independently oxygen or sulfur; each Y is independently a direct bond, oxygen or sulfur; and n is an integer of from 0 to 2;

VOL 1165 ISS 1 AG 2 1994 UMI



(IV)

wherein each of R_1 and R_2 is independently hydrogen or a monovalent hydrocarbon group containing from 1 to 20 carbon atoms; R_8 is a hydrocarbon group containing from 1 to 20 carbon atoms and containing at least one ester bond; each of X_1 and X_2 is independently oxygen or sulfur; and each Y is independently a direct bond, oxygen or sulfur;

$$(R—Y)_3—P═X_a \quad (V)$$

wherein each R-y group may be identical or different, R is hydrogen or a hydrocarbon group containing from 1 to 20 carbon atoms; X is oxygen or sulfur; Y is oxygen or sulfur; and a is 0 or 1;

$$(R—Y_b)_3—P═X_a \quad (VI)$$

wherein each R-Y_b group may be identical or different, R is hydrogen or a hydrocarbon group containing from 1 to 20 carbon atoms; X is oxygen or sulfur; Y is oxygen or sulfur; a is 0 or 1; and b is 0 or 1;

$$((R)_2N)_a(RO)_b—P═X \quad (VII)$$

wherein each R_2N group and each RO group may be identical or different, R is hydrogen or a hydrocarbon group containing from 1 to 20 carbon atoms; X is oxygen or sulfur; a is an integer of from 1 to 3; and b is an integer of from 0 to 2, with the proviso that a+b=3.

5,334,320

COMPOSITIONS FOR HYDRAULIC, LUBRICATING AND COUPLING

Hirotaka Tomizawa, Tokorozawa; Noboru Umemoto, Kamifukuoka, and Hitoshi Ohenoki, Sayama, all of Japan, assignors to Tonen Corporation, Tokyo, Japan

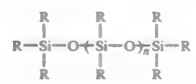
Continuation of Ser. No. 717,218, Jun. 20, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 3,687

Claims priority, application Japan, Jun. 29, 1990, 2-172043; Jun. 29, 1990, 2-172044; Mar. 30, 1991, 3-067450; Apr. 23, 1991, 3-091155

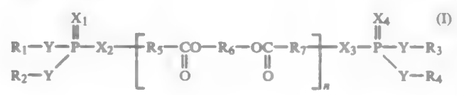
Int. Cl.[5] C10M *105/76*

U.S. Cl. 252—46.6 2 Claims

1. A composition for use in a viscous coupling, comprising an organopolysiloxane having a viscosity of 1,000 to 300,000 cSt at 25° C. and of the formula:

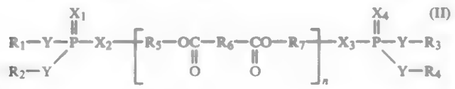


wherein each R represents a hydrocarbon group containing 1 to 18 carbon atoms, which may be halogenated, and n is an integer of 1 to 3,000: and, as an anti-wear agent, at least one compound of formulas (I) to (IV) alone or together with a storage stabilizer:



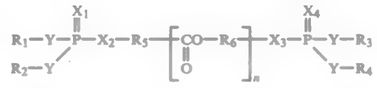
(I)

wherein each of R_1 to R_4 is hydrogen or a monovalent hydrocarbon group containing 1 to 20 carbon atoms; each of R_5 to R_7 is a divalent hydrocarbon group containing 1 to 6 carbon atoms; each of X_1 to X_4 is oxygen or sulfur; Y is either a direct bond or oxygen or sulfur; and n is an integer of 0 to 2, provided that both X_2 and X_3 are sulfur when n is 0;



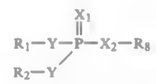
(II)

wherein R_1 to R_7, X_1 to X_4, Y and n are as defined in formula (I):



(III)

wherein each of R_1 to R_4 is hydrogen or a monovalent hydrocarbon group containing 1 to 20 carbon atoms; each of R_5 and R_6 is a divalent hydrocarbon group containing 1 to 6 carbon atoms; each of X_1 to X_4 is oxygen or sulfur; and Y is either a direct bond or oxygen or sulfur; and n is an integer of 0 to 2,



(IV)

wherein each of R_1 and R_2 is hydrogen or a monovalent hydrocarbon group containing 1 to 20 carbon atoms; R_8 is a hydrocarbon group containing 1 to 20 carbon atoms and containing at least one ester bond; each of X_1 and X_2 is oxygen or sulfur; and Y is either a direct bond or oxygen or sulfur.

5,334,321

MODIFIED HIGH MOLECULAR WEIGHT SUCCINIMIDES

James J. Harrison, Novato, and William R. Rube, Jr., Benicia, both of Calif., assignors to Chevron Research and Technology Company, a Division of Chevron U.S.A. Inc., San Francisco, Calif.

Filed Mar. 9, 1993, Ser. No. 28,433

Int. Cl.[5] C10M *133/44*

U.S. Cl. 252—51.5 A 37 Claims

1. A modified polyamino alkenyl or alkyl succinimide comprising the succinimide reaction product of:

(i) an alkenyl- or alkyl-substituted succinic anhydride derived from a polyolefin having a Mn of about 2000 to about 2700 and a Mw/Mn ratio of about 1 to about 5; and

(ii) a polyalkylene polyamine having greater than 4 nitrogen atoms per mole;

wherein the succinimide reaction product is post-treated with a cyclic carbonate.

5,334,322

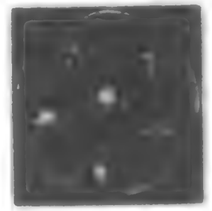
WATER DILUTABLE CHAIN BELT LUBRICANT FOR PRESSURIZABLE THERMOPLASTIC CONTAINERS

William A. Williams, Jr., Latrobe, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1992, Ser. No. 954,639

Int. Cl.[5] C10M *105/08, 105/12, 105/14*

U.S. Cl. 252—52 A 20 Claims



1. A method for reducing abrasion of thermoplastic surfaces by contacting the interface between said surfaces and a conveyor means with a composition comprising the reaction product of a short chain alcohol and a short chain alkylene oxide.

5,334,323

DEICING OR ANTIICING FLUIDS FOR AIRCRAFT

Hans Schrimpf, Mutterstadt; Hans Krebs, Hassloch; Gert Liebold, Edingen-Neckarhausen, and Guenter Frey, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 408,234, Sep. 18, 1989, abandoned. This application Apr. 18, 1991, Ser. No. 687,209

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1988, 3832310

Int. Cl.[5] C09K *3/18*

U.S. Cl. 252—70 11 Claims

1. A deicing/antiicing fluid for aircraft based on a glycol, water and a crosslinked polyacrylic acid as thickener, consisting essentially of:

a) 40–70% by weight of a glycol selected from the group consisting of the alkylene glycols of 2 or 3 carbon atoms and oxyalkylene glycols o from 4 to 6 carbon atoms, or a mixture thereof,

b) 0.1–1.0% by weight of a crosslinked polyacrylic acid which in the form of a 0.5% strength by weight aqueous solution at pH 7.0 a Brookfield viscometer at 20 rpm,

c) 0.02–1.5% by weight of a nonionic surfactant formed from an alcohol of from 10 to 20 carbon atoms reacted with from 1 to 10 molecules of a low molecular weight alkoxide,

d) 0.05–2.0% by weight of one or more corrosion inhibitors,

e) 0.2–0.7% by weight of a mixture of potassium hydroxide and sodium hydroxide containing up to 70% by weight of potassium hydroxide, or of pure sodium hydroxide, to the fluid pH to 7.0–9.5,

f) 0.01–0.1% by weight of an antioxidant, and

g) water to 100% by weight, all the weight percentages being based on the weight of the fluid, and wherein the deicing/antiicing fluid has a holdover time of at least about 30 minutes as measured by the AEA freezing rain endurance test and a viscosity of from about 2000 mPa.s to not greater than about 4000 mPa.s when measured at 20° C. using a Brookfield viscometer at 0.3 rpm.

5,334,324

BLEACH ACTIVATORS IN GRANULAR FORM

Christiane Zeise, Korschenbroich; Jochen Jacobs, Wuppertal, and Wilfried Raehse, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

PCT No. PCT/EP91/01393, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO92/02608, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 25, 1991, Ser. No. 978,700

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1990, 4024759

Int. Cl.[5] C11D *1/831, 3/395;* D06L *3/02, 3/16*

U.S. Cl. 252—91 20 Claims

1. A composition comprising free-flowing granules containing from about 70 to about 95% by weight of a bleach activator, based on the weight of said granules, and a substantially water-free binder for said bleach activator, said binder consisting of a mixture of anionic and nonionic surfactants which are solid at storage conditions wherein said anionic surfactant is present in the amount of from about 60 to about 95%/wt., based on the weight of said mixture of anionic and nonionic surfactants, said granules having been prepared by premixing said mixture of surfactants and said bleach activator, homogenizing the resulting mixture to form a paste which is extrudable in strand form, extruding said paste under elevated pressure at a temperature of up to 90° C., cutting the extrudate into granules, and rounding said granules under conditions which prevent said granules from sticking together.

11. The process of preparing free-flowing granules containing from about 70 to about 95% by weight of a bleach activator, based on the weight of said granules, and a substantially water-free binder for said bleach activator, said binder consisting of a mixture of anionic and nonionic surfactants which are solid at storage conditions wherein said anionic surfactant is present in the amount of from about 60 to about 95% by weight, based on the weight of said mixture of anionic and nonionic surfactants, said process consisting essentially of premixing said mixture of said anionic and nonionic surfactants and said bleach activator, homogenizing the resulting mixture to form a paste which is extrudable in strand form, extruding said paste under elevated pressure at a temperature of up to 90° C., cutting the extrudate into granules, and rounding said granules under conditions which prevent said granules from sticking together.

5,334,325

DELAYED-GELLING, POST-FOAMING COMPOSITION BASED UPON ALKOXYLATED ALKYL PHOSPHATE ESTER SURFACTANTS

James G. Chaussee, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

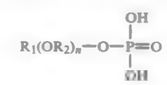
Filed Jan. 23, 1991, Ser. No. 643,850

Int. Cl.[5] C11D *1/78, 3/18, 3/36, 17/00*

U.S. Cl. 252—174.16 14 Claims

1. A delayed-gelling, post-foaming composition which comprises:

(a) from about 15 to 30 weight percent of an anionic alkoxylated alkyl phosphate ester surfactant having the general formula



wherein R_1 is an alkyl group having about 8 to 18 carbon atoms, (OR_2) is an ethoxy or a propoxy group, and n is from about 1 to 10;

(b) a sufficient amount of a neutralizing agent to provide a pH for the composition of from about 4.5 to 8;

(c) from about 0.5 to 15 weight percent of a post-foaming agent selected from the group consisting of at least one higher hydrocarbon having between 5 to 8 carbon atoms

VOL 1165 ISS 1 AG 2 1994 UMI

and a mixture of at least one lower hydrocarbon having up to 4 carbon atoms and at least one higher hydrocarbon having between 5 to 8 carbon atoms; and

(d) the balance comprising water, wherein the composition is dispensed from a container in the form of a liquid and remains as a liquid for a predetermined period of time before it sets up into a gel.

5,334,326

DIAROYL PEROXIDE COMPOSITIONS

John V. Bostick, San Dimas, Calif., assignor to Norac Company, Inc., Azusa, Calif.

Filed Jul. 29, 1991, Ser. No. 737,069
Int. Cl.[5] C01B *15/055*
U.S. Cl. 252—186.26 7 Claims

1. A stabilized paste or liquid dispersion comprising: (1) a diaroyl peroxide, (2) a liquid alkyl ester of benzoic acid in which the alkyl group of the ester has from 8 to 12 carbon atoms, and (3) water from 0.0 to 40% by weight; said diaroyl peroxide is readily dispersible and essentially insoluble, and the ratio of said diaroyl peroxide to the said alkyl benzoate is from 0.3-1 to 7-1.

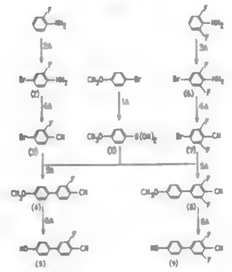
5,334,327

LATERALLY FLUORINATED 4-CYANOPHENYL AND 4'-CYANOBIPHENYL BENZOATES

George W. Gray, Cottingham; David Lacey, Hull; Kenneth J. Toyne, Hull; Michael Hird, Hull, and Damien G. McDonnell, Great Malvern, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and North Ireland, London, England

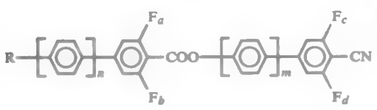
Division of Ser. No. 571,590, Aug. 30, 1990, Pat. No. 5,156,763. This application May 12, 1992, Ser. No. 881,670
Claims priority, application United Kingdom, Feb. 24, 1988, 8804330
Int. Cl.[5] C09K *19/20, 19/12;* C07C *69/76;* G02F *1/13*
U.S. Cl. 252—299.67 10 Claims

Scheme A



1. A compound having the formula I:

Formula I



in which R is R^1 or R^1O wherein R^1 is C_{1-12} alkyl, m and n are 0 or 1 provided that (n+m) is 1, each of a, b, c and d are independently 0 or 1, provided (a+b+c+d) is not zero and excluding the cases where a and b are 0 and one of c and d is 0, where n, c and d are 0, m is 1 and (a+b)=1, where n is 0, m is 1, (a+b)=1 and (c+d)=1, and where n is 0, m is 1, (a+b)=0 and (c+d)=2.

5,334,328

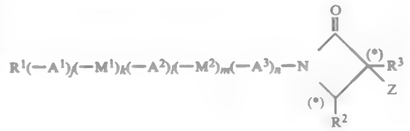
CHIRAL AZETIDINONE DERIVATIVES, AND THEIR USE AS DOPES IN LIQUID-CRYSTAL MIXTURES

Günter Scherowsky; Claas Junghans, both of Berlin; Anke Kaltbeitzel, Rüsselsheim; Rainer Wingen, Hattersheim am Main, and Britta Michalski, Berlin, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 17, 1992, Ser. No. 900,167
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4120220; Jun. 25, 1991, 4120981
Int. Cl.[5] C09K *19/34;* C07D *205/08*
U.S. Cl. 252—299.61 5 Claims

1. An azetidinone of the formula I

(I)



in which the symbols and indices have the following meanings:

(*) indicates a possible chiral center,

R^1 is a straight-chain or branched alkyl radical having 1 to 16 carbon atoms, in which one or more non-adjacent $-CH_2-$ groups may be replaced by —O—, —O—CO— or —CO—O—, which correspondingly reduces the number of carbon atoms in the radical,

R^2 is a hydrogen atom or an alkyl radical having 1 to 10 carbon atoms,

R^3 is a hydrogen atom or an alkyl radical having 1 to 10 carbon atoms,

Z is H,

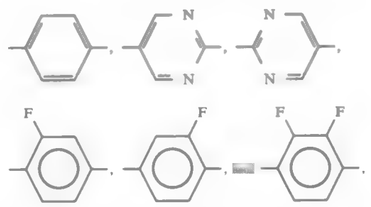
j and l are 0, 1 or 2,

k and m are 0 or 1, and

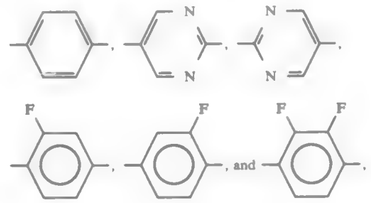
n is 0, 1 or 2,

with the following proviso: if j and/or l are zero, k is zero; if n is zero, m is zero; the sum of j+l+n is at least 1 and at most 3,

$-A^1-$ and $-A^2-$ are selected from the group consisting of



$-A^3-$ is selected from the group consisting of



and

$-M^1-$ and $-M^2-$ are —O—CO— or —CO—O—.

5,334,329

LUBRICANT AND FUNCTIONAL FLUID COMPOSITIONS EXHIBITING IMPROVED DEMULSIBILITY

James N. Vinci, Mayfield Hts., and James J. Schwind, Eastlake, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 7, 1988, Ser. No. 255,890
Int. Cl.[5] C10M *133/44*
U.S. Cl. 252—49.6 48 Claims

1. A lubricating composition comprising a mixture of

(A) a major amount of an oil of lubricating viscosity,

(B) a dispersant effective amount of at least one nitrogen- and boron-containing composition prepared by reacting

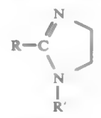
(B-1) a boron compound selected from the group consisting of boron trioxide, boron anhydrides, boron halides, boron acids, boron amides, esters of boric acid and mixtures thereof with

(B-2) at least one acylated nitrogen intermediate prepared by the reaction of

(B-2-a) at least one substituted succinic acylating agent with

(B-2-b) at least about one-half equivalent, per equivalent of acylating agent, of an amine characterized by the presence within its structure of at least one >NH group wherein said substituted succinic acylating agent consists of substituent groups and succinic groups, and the substituent groups are derived from polyalkene characterized as having an $\overline{M}n$ value of at least about 700, and

(C) a minor, effective amount of at least one demulsifier characterized by the formula



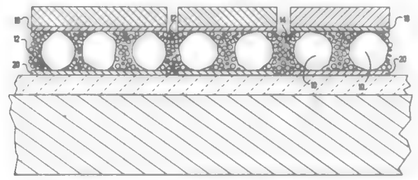
wherein R is an alkyl or alkenyl group containing from about 5 to about 30 carbon atoms, and R′ is hydrogen or a hydrocarbyl group containing from 1 to about 8 carbon atoms.

5,334,330

ANISOTROPICALLY ELECTRICALLY CONDUCTIVE COMPOSITION WITH THERMAL DISSIPATION CAPABILITIES

John R. Rowlette, Clemmons, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 30, 1990, Ser. No. 502,478
Int. Cl.[5] H01B *1/00, 1/20*
U.S. Cl. 252—512 5 Claims



1. An anisotropically electrically conductive composition having the capability to more efficiently conduct heat anisotropically when used as an electrical interconnection medium between a pair of electrical conductors, said composition comprising a mixture of electrically conductive particles in an amount below the percolation threshold for volume conduction for such composition, and electrically non-conductive, but thermally conductive particles, within a polymeric matrix, where said particles are present in an amount of no more than 50% by volume, with the minimum amounts of each being those amounts sufficient to render said composition electrically and thermally conductive.

5,334,331

METHOD OF ACTIVATING N-METHYL-2-PYRROLIDONE (NMP) VARNISH AND PAINT REMOVER SOLVENTS FOR REMOVAL OF ORGANIC COATINGS

Frank Fusiak, Bayonne, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Jan. 12, 1993, Ser. No. 3,169
Int. Cl.[5] C09D *9/00;* C11D *7/32, 7/50*
U.S. Cl. 252—542 12 Claims

1. A stripping composition for removal of paints, varnish, shellac, enamel, polyurethanes coatings and inks from a substrate which consists essentially of (a) between 60 and about 98.5 wet. % of a component selected from the group consisting of N-methylpyrrolidone and a 90/10 to about 37/57 weight ratio mixture of N-methylpyrrolidone and gamma-butyrolactone and (b) between about 0.5 and about 5 wt. % cyclomethicone having the formula



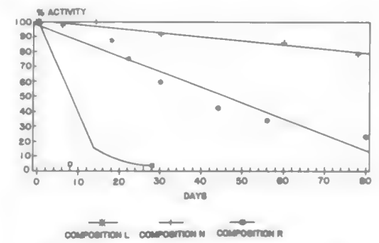
wherein n has a value of from 3 to 6.

5,334,332

CLEANING COMPOSITIONS FOR REMOVING ETCHING RESIDUE AND METHOD OF USING

Wai M. Lee, Fremont, Calif., assignor to EKC Technology, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 610,044, Nov. 5, 1990, Pat. No. 5,279,771. This application Jul. 9, 1992, Ser. No. 911,102
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] C11D *3/30, 3/33*
U.S. Cl. 252—548 8 Claims



1. A composition for removing etching residue from a resist-free substrate, said composition consisting essentially of 5–50% hydroxylamine, 10–80% of at least one alkanolamine which is miscible with said hydroxylamine and a balance of water wherein said hydroxylamine and said alkanolamine are present in sufficient amounts to remove etching residue from said

VOL 1165 ISS 1 AG 2 1994 UMI

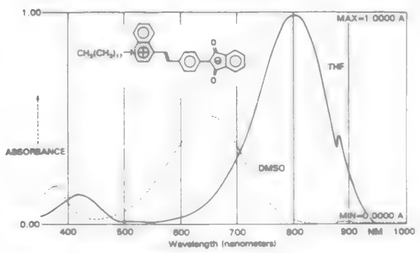
resist-free substrate and said resist was removed from said substrate by means other than said composition.

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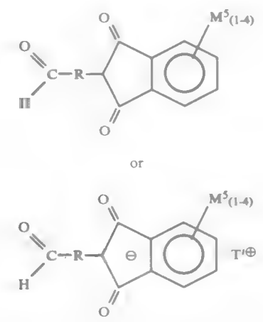
ELECTROACTIVE COMPOUNDS, COMPOSITIONS AND DEVICES AND METHODS OF MAKING THE SAME

Frederick J. Goetz, Wilmington, Del., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Dec. 17, 1990, Ser. No. 629,781
Int. Cl.[5] F21V *9/00*; C07C *45/00, 49/115*
U.S. Cl. 252—582 **6 Claims**



1. A process of making an aldehyde compound having a structure:



or

wherein R is a diradical comprising a substituted or unsubstituted aromatic carboxylic ring system of e members, where e is 6 to 20, or substituted or unsubstituted aromatic heterocyclic ring system of f members, where f is 4 to 20, wherein the substituents are zero to (e-2) or (f-2) same or different J, L, R^1, R^2, G—R^3 or Q substituents for the carbocyclic and heterocyclic ring systems, respectively;

G is a diradical comprising substituted or unsubstituted —(—HC═CH—)$_m$—, where m is an integer from 1 to 10, substituted or unsubstituted —$(CH_2)_n$—, where n is an integer from 1 to 22, a substituted or unsubstituted aromatic ring system of 6 to 16 carbons or a substituted or unsubstituted aromatic heterocyclic ring system of g members, where g is 5 to 14, the members being carbon atoms and 1 to (g−1) heteroatoms, the heteroatom being one or more of N, P, As, Sb, O, S, Se or Te, the G substitutents being J^1 and L^1 with the proviso that the maximum number of G substituents is 6;

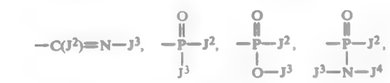
G^1 and G^2 each independently have the same definition as G;

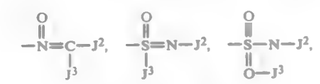
J is an electron donating group —$(CH_2)_n$—R^1, —S—R^1, —O—R^1, —N(R^1)(R^2), —G—R^1, —$(CH_2)_n$—G—R^1, —S—G—R^1, —O—G—R^1, —N(G^1—R^1)(G^2—R^2);

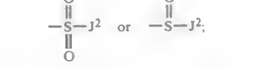
J^1 is —$(CH_2)_n$—R^1, —S—R^1, —O—R^1 or —N(R^1)(R^2);

J^2, J^3 and J^4 each independently have the same definition as J;

L is —C═N, —N═O, —NO_2, —C(═O)—J^2,







L^1 independently has the same definition as L;

R^1 and R^2 are independently H, F, Cl, Br, I, Q, alkyl of 1 to 22 carbons, cycloalkyl of 3 to 22 carbons, a substituted or unsubstituted aromatic ring system of 6 to 16 carbons or a substituted or unsubstituted aromatic heterocyclic ring system of h members in the ring system, where h is 5 to 14, the members being carbon atoms and 1 to (h−1) heteroatoms, the heteroatom being one or more of N, P, As, Sb, O, S, Se or Te, the R^1 or R^2 substituents being J^1 or L^1 with the proviso that the maximum number of R^1 or R^2 substituents is 6;

R^3 is H, F, Cl, Br, I, Q, alkyl of 1 to 22 carbons or cycloalkyl

Q is a polymerizable group, the polymerizable group being alpha,beta-unsaturated carbonyl of 4 to 26 carbons, vinyl ether of 3 to 25 carbons, carboxylic acid of 2 to 23 carbons, ester of 3 to 45 carbons, alcohol of 1 to 22 carbons, alkyl amine of 1 to 44 carbons, 1-substituted or 1,1-substituted alkylene of 2 to 44 carbons, or a polymerizable group of 1 to 44 carbons containing a nucleophilically replaceable group of zero to 22 carbons, the nucleophilically replaceable group being F, Cl, Br, I, an alkyl halide or an —O—L group, the Q substituents being J, L, R^1, R^2, G—R^3,

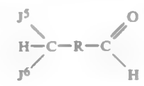
any M^5 independently is any of J, L, R^1, R^2, G—R^3 or Q;

$T^{i\oplus}$ is a stable metallic or nonmetallic cation; and

i is an integer of 1 to 4;

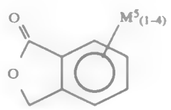
the process comprising

(a) reacting a first starting material having a structure



where J^5 and J^6 are independently —S—R^1, —OR^1, or —N(R^1)(R^2),

with a substituted or unsubstituted phthalide having a structure



in the presence of a strong base and an organic solvent for the reactants and base;

(b) heating the reaction mixture of step (a) at a sufficient temperature and for a sufficient time to obtain an intermediate reaction product;

(c) heating the intermediate reaction product of step (b) in the presence of a mineral acid at a sufficient temperature and for a sufficient time to obtain the aldehyde compound; and

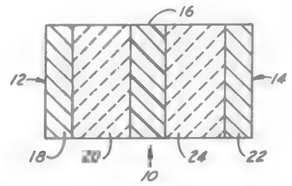
(d) isolating the aldehyde compound.

5,334,334

METHOD OF PREPARING LITHIUM BATTERY ELECTRODE COMPOSITIONS

Rene Koksbang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Mar. 30, 1993, Ser. No. 40,061
Int. Cl.[5] B29C *35/16*
U.S. Cl. 264—28 **25 Claims**



1. A method of preparing a composition for an electrode, comprising:

a) forming a mixture comprising at least one volatile constituent and an oxide of vanadium represented by the general formula V_2O_5; and

b) freeze-drying the mixture of step (a) by cooling the volatile constituent to a temperature below the freezing point of such constituent under subatmospheric pressure for a time sufficient to remove a major portion of such constituent.

5,334,335

COMPOSITIONS AND METHODS FOR REPAIRING AND REMOVING SCRATCHES AND OTHER IMPERFECTIONS FROM PLASTIC SURFACES

William C. Norville, Park City, Utah, assignor to Clearfix Corporation, New York, N.Y.

Filed Oct. 19, 1992, Ser. No. 962,887
Int. Cl.[5] B24D *3/02*; B29C *59/00*; B32B *35/00*; C09C *1/68*
U.S. Cl. 264—36 **40 Claims**

1. A composition for removing scratches and other imperfections from plastic surfaces comprising

a solid polishing material in an amount within a range from between about 5% to about 40% by weight of said composition;

water in an amount within a range from about 35% to about 85% by weight; and

organic solvent in an amount within a range from about 3% to about 35% by weight, said organic solvent comprising at least one alkane.

30. A method for removing scratches and other imperfections from plastic surfaces comprising the steps of

applying to a buffing pad a polishing composition comprising

a solid polishing material in a concentration within a range from between about 5% to about 40% by weight, and a particle size in a range from between about 0.5 microns to about 500 microns;

water in a concentration within a range from about 35% to about 85%; and

an organic solvent in a concentration within a range from about 3% to about 30%, said solvent comprising at least one alkane; and

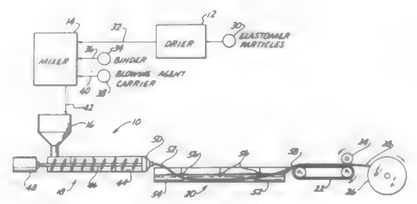
using said buffing pad and said polishing composition to buff a plastic surface to remove said scratches and other imperfections.

5,334,336

METHOD OF FORMING POROUS PIPE USING A BLOWING AGENT CARRIER COMPONENT

James J. Franz, Monarch Beach, Calif., and Richard A. Hutchinson, San Antonio, Tex., assignors to Subsurface Technology Corporation, Dana Point, Calif.

Continuation of Ser. No. 368,240, Jun. 19, 1989, abandoned.
This application Jun. 8, 1992, Ser. No. 896,510
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—45.3 **18 Claims**



1. A process for producing a porous pipe comprising:

drying elastomer particles to provide anhydrous elastomer particles with a moisture content insufficient to significantly influence the porosity in said porous pipe;

forming an extrudable mixture comprising said anhydrous elastomer particles, binder component, a solid blowing agent carrier component having a composition other than said elastomer particles and said binder component, and blowing agent combined with said solid blowing agent carrier component in a sufficient amount to provide porosity to a porous pipe produced from said extrudable mixture, said combined blowing agent being more than about 50% of the total effective blowing agent present in said extrudable mixture;

controlling the amount of at least one of (1) blowing agent combined with said solid blowing agent carrier component and (2) solid blowing agent carrier component in said extrudable mixture to control the porosity of said porous pipe; and

extruding said extrudable mixture at conditions effective to form said porous pipe, including a wall defining a longitudinally extending interior space and having sufficient porosity to allow liquid water from said longitudinally extending interior space to pass through and out of said wall under normal use conditions.

5,334,337

PRODUCTION OF FOAM BOARDS OF HIGH COMPRESSIVE STRENGTH USING A BLOWING AGENT MIXTURE

Heinz Voelker, Limburgrhof; Gerhard Alicke, Worms; Manfred Weilbacher; Manfred Weilbacher, Frankenthal; Reinhold Weber, Mutterstadt, and Horst Schuch, Ilversheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 13, 1992, Ser. No. 975,729
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138388
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—45.3 **2 Claims**

1. A process for the production of foam boards of high compressive strength which have a cross-section of at least 100 CM^2, which comprises extruding a mixture consisting essentially of (1) a polymer component consisting essentially of a styrene polymer, and (2) and 5 to 16% by weight, based on the styrene polymer, of a blowing agent consisting essentially of, based on the weight of the blowing agent:

VOL 1165 ISS 1 AG 2 1994 UMI

a) from 3 to 70% by weight of ethanol,
b) from 10 to 40% by weight of carbon dioxide,
c) from 0 to 88% by weight of a saturated C_3- to C_5-hydrocarbon, and
d) from 2 to 90% by weight of at least one fluorinated hydrocarbon selected from the group consisting of difluoroethane, trifluoroethane, tetrafluoroethane and pentafluoroethane.

5,334,338

PROCESS FOR MANUFACTURING A SOUND INSULATING STRUCTURE

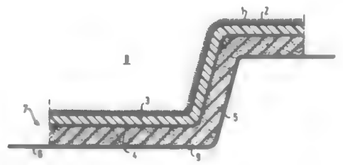
Christoph Kittel, Nienhagen; Hans Walendy, Wathlingen; Gerhard Burak, Adelheidsdorf, and Manfred Hoffmann, Nienhof, all of Fed. Rep. of Germany, assignors to Dr. Alois Stankiewicz GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 325,288, Mar. 17, 1989, abandoned. This application Jan. 8, 1992, Ser. No. 895,213

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1988, 3809980

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—46.4 15 Claims



1. A process for manufacturing a sound insulating structure comprising disposing a decorative covering provided with a backing of structured material in a closed tool; initiating foaming in said closed tool, whereby a foam is formed; collapsing said foam to form a consolidated layer with at most a few cells; thereafter further foaming to form an elastic soft foam layer adjacent to said consolidated layer wherein said structured material is disposed between said consolidated layer and said soft foam layer.

5,334,339

BORON NITRIDE SINTER AND PROCESS FOR ITS PRODUCTION

Masazumi Nakashima, Imari; Hiroshi Nakamura, Nishimstsura; Sumihiko Kurita, Kishima, all of Japan, assignor to Kabushiki Kaisha Kouransha, Saga, Japan

PCT No. PCT/JP87/00592, § 371 Date May 19, 1988, § 102(e) Date May 19, 1988, PCT Pub. No. WO88/00934, PCT Pub. Date Feb. 11, 1988

PCT Filed Aug. 7, 1987, Ser. No. 199,237

Claims priority, application Japan, Aug. 7, 1986, 61-186459

Int. Cl.[5] C04B *35/58*

U.S. Cl. 264—65 4 Claims

1. A process of producing a sintered shape article comprising boron nitride, which comprises forming a starting powder mixture comprising at least 5% by weight of amorphous boron nitride; shaping said powder into a shape corresponding to the article to be produced; and subjecting said shape to sintering conditions, comprising substantially atmospheric pressure, under a reductive nitriding atmosphere.

5,334,340

METHOD OF PRODUCING A MODULAR COVER FOR AN AIR BAG ASSEMBLY

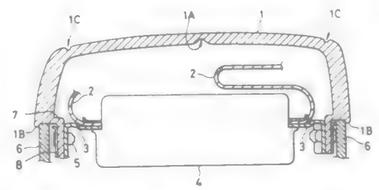
Takayasu Zushi, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 809,485, Jan. 14, 1992. This application Sep. 3, 1992, Ser. No. 940,283

Claims priority, application Japan, Oct. 17, 1991, 3-269390

Int. Cl.[5] B29C *45/12*

U.S. Cl. 264—161 3 Claims



1. A method of producing a modular cover having a main portion with a lower edge, a step portion extending inwardly from the lower edge of the main portion, a vertical portion extending from the step portion in a direction away from the main portion, and a welting portion projecting parallel to the vertical portion from the lower edge of the main portion, said method comprising:

preparing a first mold for defining inner surfaces of the main portion, the step portion and the vertical portion,

preparing a second mold situated adjacent to the first mold, said second mold defining outer surfaces of the vertical portion, the step portion and the welting portion and having a submarine gate therein, said submarine gate having an outlet located at a side of the welting portion facing the vertical portion without facing a side of an outer surface of the main portion,

preparing a third mold situated above the second mold for covering the first mold to thereby define the outer surface of the main portion so that a cavity of the modular cover with the welting portion is defined by the first, second and third molds,

injecting a resin into the cavity through the submarine gate to form the modular cover,

removing the first, second and third molds to take out a molded moduler cover, and

cutting a projection formed at a position corresponding to the submarine gate so that when the modular cover is installed in a mounting plate in use, a gate mark formed by cutting the projection is located between the welting portion and the vertical portion and is hidden.

5,334,341

PROCESS FOR CONTROLLING CARBON CONTENT OF INJECTION MOLDING STEELS DURING DEBINDING

Eric Streicher, Viroflay, France, and Randall M. German, State College, Pa., assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed May 27, 1992, Ser. No. 888,600

Int. Cl.[5] B22F *1/00*

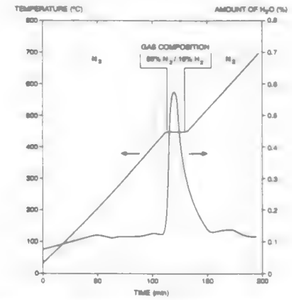
U.S. Cl. 419—53 10 Claims

1. A process for controlling the carbon content in a metallic piece molded by injection or other process comprising,

a) heating said shaped piece under a substantially pure hydrogen atmosphere only up to a temperature sufficient to remove low molecular weight constituents,

b) replacing said substantially pure H_2 atmosphere with a substantially pure nitrogen atmosphere and heating the pieces to a temperature higher than that in step a), sufficient to remove binder without effecting carburization or decarburization,

c) maintaining the temperature in the enclosure at substantially the same temperature in step b) while subjecting the pieces to an atmosphere comprising from 15% to 100% vol. hydrogen, the complement being nitrogen, then



d) replacing said atmosphere by substantially pure nitrogen, and

e) heating the pieces to a temperature sufficient to further eliminate the remaining binder.

5,334,342

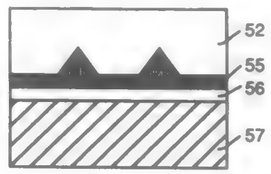
METHOD OF FABRICATING OF DIAMOND MOTH-EYE SURFACE

Alan B. Harker; Jeffrey F. DeNatale, both of Thousand Oaks, Calif.; Patrick J. Hood, Beavercreek, Ohio, and John F. Flintoff, Thousand Oaks, Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 746,458, Aug. 16, 1991, Pat. No. 5,242,711. This application May 4, 1993, Ser. No. 58,521

Int. Cl.[5] B29C *33/76*; C23C *16/22*

U.S. Cl. 264—317 20 Claims



1. A method of forming a diamond moth eye surface, comprising the steps of: etching a substrate to produce cavities in said substrate, said cavities forming a surface

relief pattern comprising an inverse of said diamond moth eye surface; nucleating and growing a polycrystalline diamond film on said substrate, said diamond

film filling said cavities; bonding an optical material to said diamond film; and removing said substrate from said diamond film to expose said diamond moth eye

surface, said moth eye surface providing an effective refractive index gradient between the atmosphere and said optical material bonded to said diamond film.

5,334,343

POLYESTER COMPOSITIONS WITH A HIGH CRYSTALLIZATION RATE

Riccardo Po'; Ernesto Occhiello, both of Novara; Giorgio Giannotta, Milan, and Fabio Garbassi, Novara, all of Italy, assignors to Enichem S.p.A., Milan, Italy

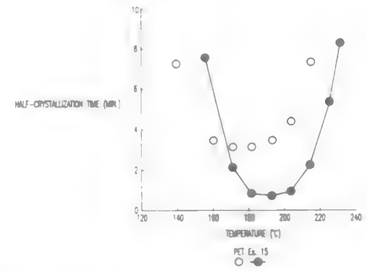
Filed Mar. 12, 1992, Ser. No. 850,041

Claims priority, application Italy, Mar. 18, 1991, MI 91 A 000712

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[5] B29C *45/00*

U.S. Cl. 264—328.1 10 Claims



1. Polyester compositions with a high crystallization rate obtained by mixing, at a high temperature, a polyester resin with at least one organic compound having the general formula:

ROOC—Ar—OOC—Ar'—COO—Ar—COOR (I)

where R represents a hydrogen atom or a C_1–C_4 alkyl radical, Ar represents a 1,2-phenylene or a naphthylene group, and Ar' represents a phenylene or naphthylene group, at least one of Ar and Ar' being naphthylene.

5,334,344

TERNARY ACTIVE BRAZING BASED ON A ZIRCONIUM-NICKEL ALLOY

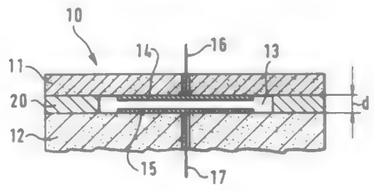
Frank Hegner, Lörrach; Elke Schmidt, Schopfheim; Thomas Klähn, Freiburg-Opfingen, all of Fed. Rep. of Germany; Peter Reimann, Buckten, Switzerland; Heinz Breitenstein, Büttwil, Switzerland, and Stephan Messmer, Allschwil, Switzerland, assignors to Endress u. Hauser GmbH u. Co., Fed. Rep. of Germany

Filed Nov. 12, 1991, Ser. No. 791,092

Claims priority, application European Pat. Off., Nov. 13, 1990, 90710031.7; Fed. Rep. of Germany, Sep. 4, 1991, 4129414

Int. Cl.[5] C22C *16/00*

U.S. Cl. 420—422 3 Claims



1. In a method for brazing ceramic parts, single crystals, metal parts, ceramic parts to single crystals, ceramic parts to metal parts, or single crystals to metal parts with a brazing alloy to form a brazed joint, the improvement comprising

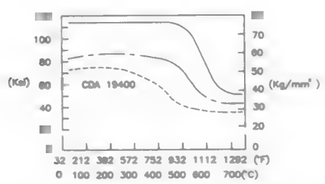
VOL 1165 ISS 1 AG 2 1994 UMI

using a ternary active brazing alloy containing 15 atom % to 30 atom % titanium and 70 atom % to 85 atom % of a zirconium-nickel alloy comprising 70 atom % to 85 atom % zirconium and 15 atom % to 30 atom % nickel.

5,334,345
ZIRCONIUM-BASED ALLOY FOR COMPONENTS IN NUCLEAR REACTORS
Peter Rudling, Västerås, Sweden, assignor to ABB ATOM AB, Västerås, Sweden
Filed Oct. 16, 1992, Ser. No. 961,630
Int. Cl.[5] C22C *16/00*
U.S. Cl. 420—422 **6 Claims**

1. A zirconium-based alloy for components in nuclear reactors which comprises 1.0–2.0 per cent by weight tin, 0.07–0.70 per cent by weight iron, 0.05–0.15 per cent by weight chromium, 0.16–0.40 per cent by weight nickel, 0.015–0.30 per cent by weight niobium, 0.002–0.05 per cent by weight silicon, 0.09–0.20 per cent by weight oxygen, and a balance of zirconium and impurities normally occurring in reactor grade sponge zirconium of other kinds than the above-mentioned substances.

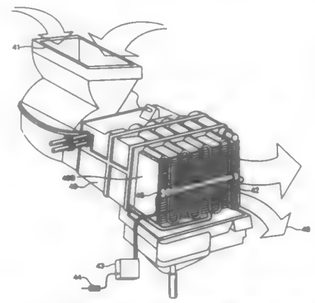
5,334,346
COPPER ALLOYS FOR ELECTRICAL AND ELECTRONIC PARTS
Young G. Kim, 247-17 Nonhyun-dong, Kangnam-ku, Seoul, and In Y. Hwang, Ulsan-si, both of Rep. of Korea, assignors to Poongsan Corporation, Inchon and Young G. Kim, Seoul, both of Rep. of Korea
Filed Feb. 18, 1993, Ser. No. 19,363
Claims priority, application Rep. of Korea, Sep. 24, 1992, 17424/1992
Int. Cl.[5] C22C *9/00*
U.S. Cl. 420—4.85 **5 Claims**



1. A copper alloy having high strength, enhanced ductility, and good electrical conductivity consisting essentially from about 0.5 to 2.4% by weight nickel, from 0.1 to 0.5% by weight silicon, from about 0.02 to 0.16% by weight phosphorus from 0.02 to 0.2% by weight magnesium and balance copper.

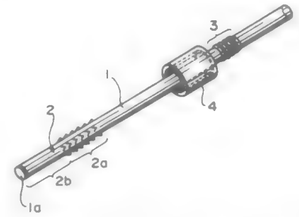
5,334,347
ELECTRIC DISCHARGE DEVICE
Brad C. Hollander, 13213 Constable Ave., Granada Hills, Calif. 91344
Filed Jul. 2, 1992, Ser. No. 907,672
Int. Cl.[5] A61L *2/10, 9/20*
U.S. Cl. 422—24 **29 Claims**

26. An electric discharge device comprising a ballast and a sealed tube containing a vaporizable material, the tube comprising a tube base, a hollow envelope having at least one end, an electrode partially disposed within the envelope and electrically coupled to the ballast, a spacer disposed within the envelope, the spacer spaced between the electrode and the end, and means for establishing two regions within the envelope when



the electrode is energized, one region being cooler than the other region.

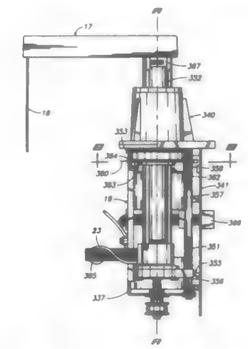
5,334,348
URINE SAMPLER
Koichiro Saito, Tokyo, and Kaoru Shimizu, Kisai, both of Japan, assignors to Yoshisuke Sakai, Fukuoka, Japan
Filed Nov. 6, 1992, Ser. No. 972,514
Claims priority, application Japan, Nov. 8, 1991, 3-319727
Int. Cl.[5] G01N *33/50*
U.S. Cl. 422—61 **10 Claims**



1. A urine sampler comprising a hollow, cylindrical main stick body closed at least at one end and having a plurality of urine collection apertures formed in a wall thereof wherein the urine collection apertures are diagonal cuts in the wall of the main stick body and the tips of the apertures project outwardly from the wall.

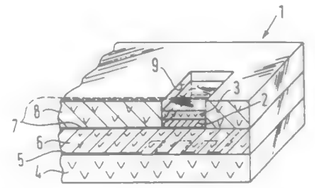
5,334,349
LIQUID TRANSFER MODULE FOR A CHEMICAL ANALYZER
Norman Kelln, and Kelsey Loughlin, both of Spokane, Wash., assignors to Schiapparelli Biosystems, Inc., Fairfield, N.J.
Filed Jul. 16, 1992, Ser. No. 916,208
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—63 **5 Claims**

1. A liquid transfer module for a chemical analyzer, comprising:
an instrument framework;
a radially-extended probe arm movably mounted on the framework for effecting transfers of liquids between angularly spaced stations located about the framework, the probe arm having inner and outer ends;
a vertical, downwardly-extending open pipette mounted to the outer end of the probe arm;
a vertical tubular shaft fixed to and extending beneath the inner end of the probe arm, the tubular shaft being centered about a fixed vertical axis an the framework;
bearing means operably connected between the tubular shaft and the framework for supporting the tubular shaft relative to the framework for both elevational and pivotal motion;
first coaxial drive means operably connected to the tubular shaft for moving it elevationally relative to the framework;
the first coaxial drive means comprising:
a first powered rotational element arranged circumferentially about the tubular shaft; and
a first driving connection between the first powered rotational element and the tubular shaft for imparting rotational motion between them while permitting free relative axial motion in directions parallel to the vertical axis; and
second coaxial drive means operably connected to the tubular shaft for moving it angularly relative to the framework;
the second coaxial drive means comprising:
a second powered rotational element arranged coaxially within the tubular shaft at a fixed elevation on, the framework: and
a second driving connection between the second powered rotational element and the tubular shaft capable of imparting axial motion to the tubular shaft relative to the second rotational element in directions parallel to the vertical axis while permitting free rotational motion between them.



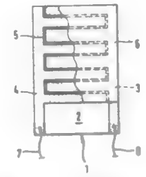
5,334,350
RESISTANCE PROBE FOR DETERMINING GAS COMPOSITIONS AND METHOD OF PRODUCING IT
Karl-Hermann Friese, Leonberg; Werner Gruenwald, Gerlingen; Hans-Martin Wiedenmann, and Gerhard Hoetzel, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE90/00909, § 371 Date Jun. 19, 1992, § 102(e) Date Jun. 19, 1992, PCT Pub. No. WO91/09301, PCT Pub. Date Jun. 27, 1991
PCT Filed Nov. 24, 1990, Ser. No. 861,810
Int. Cl.[5] G01N *27/04;* H01C *1/02, 7/00*
U.S. Cl. 422—98 **25 Claims**

1. A resistance probe to determine the oxygen content in gas mixtures, the resistance probe including a sensor carrier body comprising the following superposed layers:
an insulating ceramic substrate;
an electrode layer including a pair of electrodes;
a semiconductor layer, which is capable of functioning as a gas sensor, and which is in electrical contact with said pair of electrodes;
at least one covering sheet disposed on said pair of electrodes and containing at least one recess in which said semiconductor layer is disposed on said pair of electrodes and which allows a gas mixture to pass through to said semiconductor layer; and



a ceramic covering disposed in said at least one recess and on, and completely covering, the semiconductor layer, with the ceramic covering being a porous engobe protective layer.

5,334,351
SENSOR FOR DETECTING ANALYTES IN A FLUID MEDIUM
Jürgen Heinze, Freiburg, and Andreas W. Synowczyk, Bad Krozingen, both of Fed. Rep. of Germany, assignors to Dräger werk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany
Filed Jun. 25, 1993, Ser. No. 81,127
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1992, 4221233; Dec. 10, 1992, 4241438
Int. Cl.[5] G01N *27/00, 31/00*
U.S. Cl. 422—90 **17 Claims**



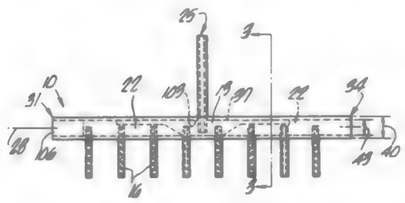
1. A sensor for detecting an analyte in a fluid medium, the sensor comprising:
a carrier;
a pair of electrodes arranged on said carrier;
a fullerene layer in contact with said electrodes and reversibly interacting with the analyte in the manner of an electron exchange to vary the conductivity of said layer in accordance with the concentration or the composition of said analyte; and,
output means connected to said electrodes for supplying a signal indicative of said conductivity.

5,334,352
MANIFOLD CONSTRUCTION
Edgar G. Johnson, Huntsville, Ala., assignor to ICN Biomedicals, Inc., Costa Mesa, Calif.
Filed Sep. 23, 1992, Ser. No. 950,430
Int. Cl.[5] B01L *3/00;* B05B *1/14*
U.S. Cl. 422—99 **6 Claims**

1. A manifold for splitting the flow of a fluid, said manifold comprising:
a main body with an elongated cavity of constant cross-sectional area perpendicular to a longitudinal axis of said main body, said cavity being longitudinally disposed between a first end and a second end of said main body;

VOL 1165 ISS 1 AG 2 1994 UMI

an inlet passage of constant cross-sectional area communicating with an interior of said cavity at a cavity inlet point;
a plurality of outlet passages communicating with said interior of said cavity; and
at least two inserts, a first insert extending longitudinally into said first end of said main body and a second insert extending longitudinally into said second end of said main body,



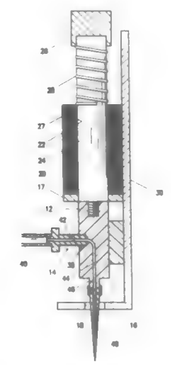
said at least two inserts comprising a first leg and second leg being separated by a constant leg separation distance before meeting at a root, the first and second legs have a sloped surface constructed so that a cross-sectional area of each of said at least two inserts perpendicular to a longitudinal axis of each of said inserts varies in a manner that balances the volume of fluid that flows from each of said outlet passages.

5,334,353

MICROPIPETTE DEVICE

Frederick R. Blattner, 1547 Jefferson St., Madison, Wis. 53711

Filed Feb. 3, 1993, Ser. No. 12,670
Int. Cl.[5] B01L *3/02*
U.S. Cl. 422—100 **8 Claims**



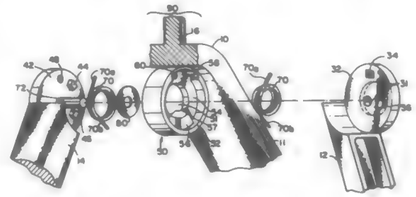
1. A micropipette device for delivering sub-microliter volumes of fluid into a receptacle, the device comprising;
a mounting bracket;
a hollow dispensing tip having a first end and a second end;
a tip holder holding the dispensing tip at the first end and secured to the mounting bracket in such a way that the tip holder is capable of reciprocal vertical motion;
a linear motive force generator connected to the mounting bracket and connected to the tip holder to reciprocate the tip holder vertically above the receptacle;
a fluid tubing adapted for connecting a fluid pump means to the dispensing tip, wherein the fluid pump means forces a sub-microliter droplet of fluid through the tubing and out of the dispensing tip so that the droplet is hold on the second end of the dispensing tip by surface tension; and
a stop plate located below and in the downward path of travel of the tip holder and fixed in place on the mounting bracket so that vertical downward motion of the tip holder as caused by the linear motive force generator is stopped by the stop plate so as to dislodge the droplet of fluid located on the second end of the dispensing tip so that the droplet falls away from the dispensing tip and drops into the receptacle without the dispensing tip making physical contact with the receptacle.

5,334,354

LABORATORY CLAMP HAVING A FULLY ENCLOSED HINGE MECHANISM

Robert W. Johnston, Newton Square; Alan L. Hooper, Media, both of Pa.; Peter D. Byar, Willingboro, N.J., and Ronald G. Pridham, Coatesville, Pa., assignors to Troemner, Inc., Philadelphia, Pa.

Filed Sep. 11, 1992, Ser. No. 944,181
Int. Cl.[5] B01L *9/00*
U.S. Cl. 422—104 **15 Claims**



1. A utility clamp resistant to corrosion of internal components when exposed to caustic environments, comprising
a pair of opposed jaw members mounted for relative pivotal movement about a hinge axis between open and closed positions;
an extension arm adapted to support said jaw members;
a fully-enclosed hinge on said extension arm, said hinge having a central disc portion with a central passage therethrough providing a cavity, a hinge pin defining said hinge axis, and pre-loaded torsion bias mechanism internal of said cavity so as to be isolated from the environment, said pre-loaded torsion bias mechanism continuously urging at least one of said jaw members in one direction between the open and closed positions;
said pair of opposed jaws each having an outer disc portion comprising part of said hinge, the outer disc portions of said pair being on opposite sides of said central disc portion and covering said central passage to provide a closed cavity defined by said passage between said outer disc portions, said jaws normally biased to an open position by said pre-loaded torsion bias mechanism; and
an adjustment mechanism for adjusting and locking said jaws in a closed position relative to each other against the urging of said pre-loaded torsion bias mechanism.

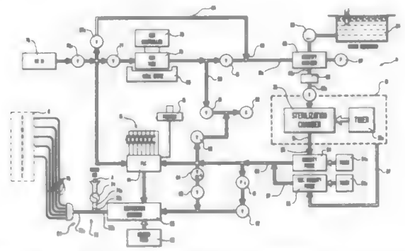
5,334,355

OZONE STERILIZATION SYSTEM SPENT STERILIZATION AGENT DESTRUCT AND AMBIENT AIR MIXING DEVICE

Chris G. Faddis, West Valley City, Utah, assignor to Cyclo₃pss Medical Systems, Inc., Salt Lake City, Utah

Filed Mar. 12, 1993, Ser. No. 31,219
Int. Cl.[5] B01D *53/36;* **F01N** *3/10;* **G05D** *23/00*
U.S. Cl. 422—122 **5 Claims**

1. A spent sterilization agent destruct and ambient air mixing device in combination with a medical instrument sterilizer with an ozone generator comprising, a closed outer housing, arranged as a component of a medical instrument sterilizer with an ozone generator; an inner body for fitting in said closed outer housing that is open therethrough; means for passing a flow of a spent ozone O_3 sterilization agent into one end of said inner body; a catalytic converter means for fitting within said inner body that receives the flow of spent ozone O_3 sterilization agent and converts ozone O_3 in said flow into oxygen O_2 rendering said spent ozone O_3 sterilization agent flow inert; electrically operated heater pad means mounted to the inner body for providing a controlled heating of the spent effluent



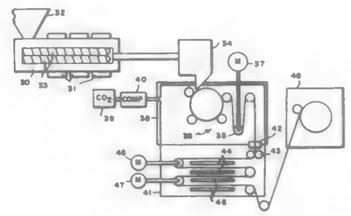
flow through the catalytic converter means to increase the efficiency of the reactive process taking place within said catalytic converter means; and fan means connected for passing ambient air into a flow from a discharge end of said inner body for mixing with said inert spent sterilization agent containing oxygen O_2 as has passed through said inner body and for venting said mix of ambient air and inert spent sterilization flow to atmosphere.

5,334,356

SUPERMICROCELLULAR FOAMED MATERIALS

Daniel F. Baldwin, Medford; Nam P. Suh, Sudbury; Chul B. Park, and Sung W. Cha, both of Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 682,116, Apr. 5, 1991, Pat. No. 5,158,986.
This application Aug. 24, 1992, Ser. No. 934,570
Int. Cl.[5] C08F *2/00;* **B28B** *1/50;* **A21D** *13/00;* **B29D** *1/00*
U.S. Cl. 422—133 **25 Claims**



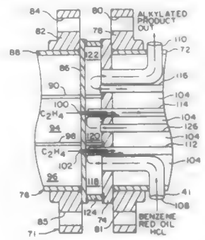
1. A system for producing a foamed material comprising extrusion means
means connected to said extrusion means for supplying a material to be foamed to said extrusion means;
die means for shaping material;
said extrusion means connected to said die means for providing extruded material to said die means;
means for heating said extrusion means to cause said extrusion means to provide said extruded material at a higher temperature than room temperature to permit said die means to produce shaped continuous heated material;
means for engaging and transporting said shaped continuous heated material through an enclosed volume;
means connected to said enclosed volume for supplying supercritical fluid to said enclosed volume to introduce said supercritical fluid into said shaped continuous heated material at a higher pressure than atmospheric pressure;
means for retaining said shaped continuous heated material within said enclosed volume for a sufficient time period to permit said supercritical fluid to saturate said shaped continuous heated material;
means for removing said shaped continuous heated material saturated with said supercritical fluid from said enclosed volume at a pressure which is less than said higher pressure; and
foam heating means for heating said material which has been removed from said enclosed volume so as to produce shaped continuous heated foamed material having a plurality of cells distributed substantially throughout said foamed material.

5,334,357

TURBULENT FLOW REACTOR

James H. Benton, Sugar Land; Jack Broodo, Missouri City; John B. Ivy, Lake Jackson; Kirk A. Leissner, Angleton, and Ellroy G. Fox, Clute, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 511,489, Apr. 17, 1990, Pat. No. 5,227,556.
This application Dec. 17, 1992, Ser. No. 992,204
Int. Cl.[5] B01J *10/00*
U.S. Cl. 422—197 **7 Claims**



1. A reactor system for a reaction between reactant materials which produces reaction products, the reactor comprising
a hollow vessel having a first end, a second end, and a reaction product outlet from which, when in operation, products of a reaction in the vessel are discharged from the vessel;
a plurality of serially connected set of reaction tubes, each set comprising at least one reaction tube, each reaction tube having an interior, an exterior surface, a first end and a second end and mounted horizontally within the vessel extending from the first end of the vessel to the second end of the vessel, the first end of odd numbered sets of tubes being an inlet end for the tubes of each such odd numbered set and the second end of even numbered sets of tubes being an inlet for the tubes of each such even numbered set;
a first chamber disposed at the first end of the vessel for receiving first reactant material;
the first end of each reaction tube of a first set of the plurality of sets of reaction tubes communicating with the first chamber so that first reactant materials flows turbulently with a pressure drop from the first chamber into the interior of at least one reaction tube of the first set through the first end thereof;
a hollow sparger disposed partially in the inlet end of each of the at least one reaction tube of the first set into and through which second reactant material flows turbulently with a pressure drop into the interior of the at least one reaction tube for reacting therein with the first reactant material;
the second end of each reaction tube of the first set communicating with the inlet end of each reaction tube of the second set in a first chamber at the second end of the vessel, the first end of the second set of reaction tubes

VOL 1165 ISS 1 AG 2 1994 UMI

communicating with the reaction product outlet so that, when in operation, reaction product in the vessel flows from the first set of reaction tubes to and through at least one reaction tube of the second set of reaction tubes and thereafter to and through the reaction product outlet and out of the vessel.

5,334,358

SELF-CLEANING REACTOR/MIXER WITH LARGE USEFUL VOLUME

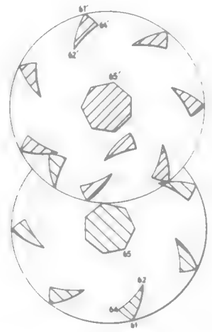
Heinrich Schuchardt, Krefeld, and Martin Ulbrich, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 704,597, May 23, 1991, abandoned. This application Aug. 4, 1993, Ser. No. 101,942

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1990, 4018666

Int. Cl.[5] B01F *7/04*

U.S. Cl. 422—210 **11 Claims**



1. A disc reactor having a useful free volume comprising at least two parallel shafts rotating in the same direction, axially staggered circular discs secured to the shafts, each circular disc having a peripheral portion, a plurality of spaced apart scraper elements attached to the circular discs at the peripheral portions thereof, and a casing enclosing the shafts and the axially staggered circular discs secured thereto, each of the scraper elements on the discs of one of the parallel shafts having a surrounding surface that cleans the surrounding surface of the scraper elements on an adjacent disc on the other one of the parallel shafts, each surrounding surface of the scraper elements having an outwardly extending convex surface portion cleaned by the convex surface portion of the scraper elements on an adjacent disc on the other shaft or by the casing, and each surrounding surface of the scraper elements including an inwardly extending concave portion cleaned by the scraper elements on an adjacent disc on the other shaft.

5,334,359

APPARATUS FOR PRODUCTION OF SPARINGLY WATER-SOLUBLE SALT CRYSTAL GRAINS

Haruhiko Masutomi; Hirofumi Ohtani, both of Hino; Naoko Uchida, Tokyo, and Chikao Mamiya, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 896,987

Claims priority, application Japan, Jun. 21, 1991, 3-150396

Int. Cl.[5] B01F *7/16;* **B01J** *8/20;* **B01D** *9/02*

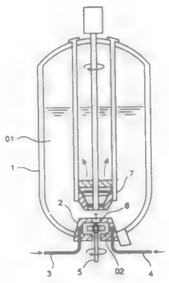
U.S. Cl. 422—225 **10 Claims**

8. An apparatus for producing sparingly water-soluble salt crystal grains, comprising:

a reaction chamber having a stirring member and being capable of receiving a crystal growth process solution including a protective colloid substance in which at least one of a crystal core formation process a and crystal growth process can take place;

circulating means, including a circulating pipe line, positioned outside of said reaction chamber, for circulating said crystal growth process solution from and to said reaction chamber;

a mixing vessel having openings through which a cationic component solution and an anionic component solution can be separately introduced into said mixing vessel and a stirring member for mixing said component solutions to form a precipitation process solution in which sparingly



water-soluble salt grains are produced, said mixing vessel disposed in the vicinity of said circulating line; and

a one-way valve connecting said mixing vessel to said pipe line while preventing a reverse flow from said pipe line to said mixing vessel, wherein one side of said one-way valve is filled with said precipitation process solution and the other side is filled with said crystal growth process solution and said precipitation process solution is injected into said crystal growth process solution through said one-way valve immediately after said component solutions are mixed while said crystal growth process solution is circulated.

5,334,360

APPARATUS FOR CONTINUOUS PRODUCTION OF TETRAPHOSPHORUS POLYSULFIDES

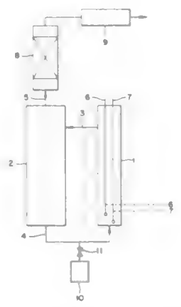
Philippe Engel, Villeurbanne, and Alain Courant, Vienne, both of France, assignors to Atochem, Puteaux, France

Division of Ser. No. 645,418, Jan. 24, 1991, Pat. No. 5,198,202. This application Nov. 2, 1992, Ser. No. 970,025

Claims priority, application France, Jan. 24, 1990, 90 00789

Int. Cl.[5] B01F *5/10*

U.S. Cl. 422—230 **15 Claims**



1. Apparatus for the continuous preparation of a tetraphosphorus polysulfide, comprising a closed reactor loop, means for continuously circulating a liquid tetraphosphorus polysulfide reaction mixture in said reactor loop, means for establishing and continuously maintaining a density gradient within such continuously circulating reaction mixture, means for introducing liquid phosphorus and liquid sulfur into such continuously circulating reaction mixture, and means for continuously separating desired final product tetraphosphorus polysulfide, in gaseous state, from such continuously circulating reaction mixture, wherein said means for introducing liquid phosphorus is in fluid communication with a liquid phosphorus source and said means for introducing liquid sulfur is in fluid communication with a liquid sulfur source.

5,334,361

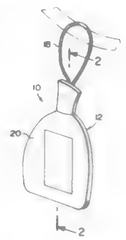
CAR AIR FRESHENER

Anthony Rafaelides, 77-15 Ditmars Blvd. #2-B, Jackson Heights, N.Y. 11370, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Mar. 22, 1993, Ser. No. 35,173

Int. Cl.[5] A61L *9/00*

U.S. Cl. 422—305 **2 Claims**



1. An air freshener which comprises:

a) a housing made of a porous material and having a pocket;

b) a scent pad impregnated with a fragrance inserted within said pocket;

c) a cord attached to said housing so that said housing can be suspended to allow said scent pad to release said fragrance into air and give the air a pleasant odor; and

d) a flexible squeeze bulb having a pair of openings and provided in said housing to divide said pocket into two separated chambers each opening communicating with a respective one of said chambers; and

e) said scent pad being divided into two separated parts on opposite sides of and in communication with said flexible squeeze bulb within said two chambers of said pocket so that a manual depression of said flexible squeeze bulb will help release said fragrance from said two parts of said scent pad.

5,334,362

PROCESS FOR THE PRODUCTION OF DISPOSABLE PRODUCTS FROM METAL CHLORIDES IN A TITANIUM DIOXIDE CHLORIDE PROCESS

Dieter Schinkitz, and Hans Thumm, both of Leverkusen, Fed. Rep. of Germany, assignors to Kronos, Inc., Hightstown, N.J.

Filed Sep. 23, 1992, Ser. No. 948,636

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1991, 4131577

Int. Cl.[5] C01G *23/07*

U.S. Cl. 423—1 **16 Claims**

1. A process for treating metal chlorides obtained in a form of dust collector solids in production of titanium dioxide by the chloride process, to render said metal chloride dumpable, comprising the steps of

slurrying the dust collector solids in at least one member selected from the group consisting of water and acid to dissolve said metal chlorides,

separating inert constituents of the dust collector solids from the slurry,

selectively precipitating metals as metal hydroxides by gradually increasing the pH in the slurry filtrate with a pH value of 5 up to pH values below 12 only after adding an oxidizing agent in a pH range of about 4.2 to 5,

and making the precipitated metal hydroxides into non-thixotropic filter cake disposable in an environmentally sound waste facility.

5,334,363

PROCESS FOR RECOVERING SULFUR AND HYDROGEN FROM HYDROGEN SULFIDE

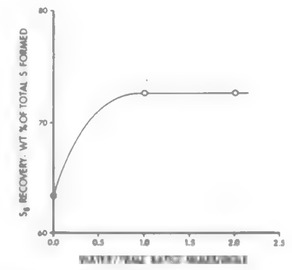
Mark A. Plummer, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 1, 1992, Ser. No. 983,936

The portion of the term of this patent subsequent to Jan. 10, 2010, has been disclaimed.

Int. Cl.[5] C01B *17/16*

U.S. Cl. 423—226 **31 Claims**



1. A process for converting hydrogen sulfide to sulfur comprising:

providing a polar organic solvent having an anthraquinone and water dissolved therein, said water being dissolved in said solvent in an amount of from about 0.5 to about 50 moles of said water to moles of said anthraquinone;

contacting a feed gas containing hydrogen sulfide with said polar organic solvent; and

reacting said hydrogen sulfide gas with said anthraquinone to produce sulfur and an anthrahydroquinone in said solvent, said water increasing the amount of said sulfur which is precipitated and recovered from said solvent.

5,334,364

PROCESS FOR PURIFYING SILICA SAND

Juan-Lauro Aguirre-Villafana, and Juan Leal-Gonzales, both of Nuevo Leon, Mexico, assignors to Materias Primas Monterrey, S.A. De C.V., Monterrey, Mexico

Continuation-in-part of Ser. No. 706,220, May 28, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 38,169

Int. Cl.[5] C01B *33/12*

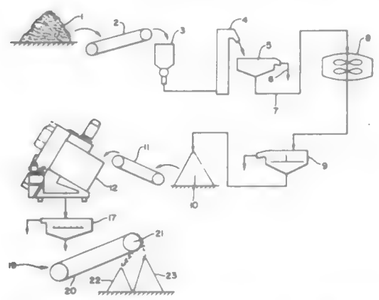
U.S. Cl. 423—340 **2 Claims**

1. A process for purifying silica sand, consisting:

a) abrasive-attritioning a sand particle mixture by subjecting the sand particles to centrifugal rotation under dry condi-

VOL 1165 ISS 1 AG 2 1994 UMI

tions, while simultaneously agitating the particles with translative eccentric, downstream, and upstream move-



ments, wherein the surface impurities are removed from the sand particles, and

b) eliminating the impurities from the sand particle mixture.

5,334,365

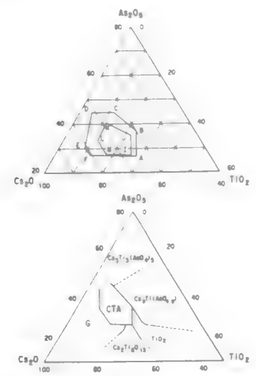
SINGLE CESIUM TITANYL ARSENATE-TYPE CRYSTALS, AND THEIR PREPARATION

Lap K. Cheng, Bear, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 26, 1992, Ser. No. 888,945

Int. Cl.[5] **C01B** *37/14*

U.S. Cl. 423—596 **10 Claims**



1. A flux process for producing a single orthorhombic crystal of $Cs_{1-x}M_xTiOAsO_4$ wherein M is selected from the group consisting of Na, K, Rb, Tl and mixtures thereof, wherein x is from 0 to 0.4, wherein the dimension of the crystal along each axis is at least about 2 mm, and wherein the product of the dimensions along the three axes is at least about 15 mm^3, comprising the steps of: preparing a homogeneous melt containing the components for forming said crystal and a flux comprising oxides of Cs and As at a temperature no higher than the decomposition temperature of said orthorhombic crystal, the mole fraction of M relative to the total Cs + M in the melt being within the range of from 0 to about 0.2; introducing a seed crystal for said single crystal in the melt; activating the controlled crystallization on the seed crystal; and continuing the crystallization until formation of the single crystal is completed.

5,334,366

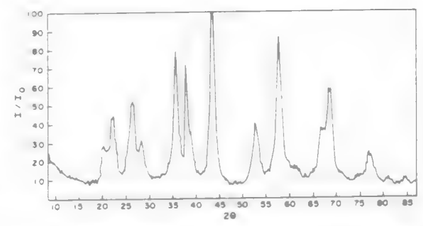
TRANSITION ALUMINA AND METHOD FOR ITS PRODUCTION

Anthony J. Perrotta, Monroeville, and Randall B. Minnick, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 7, 1993, Ser. No. 1,152

Int. Cl.[5] **C01F** *7/02*

U.S. Cl. 423—625 **5 Claims**



1. A transition alumina having an x-ray diffraction pattern essentially as shown in Table 1.

5,334,367

ZEOLITE ZSM-45

Edward J. Rosinski, Pedricktown, N.J., and Mae K. Rubin, Bala Cynwyd, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation of Ser. No. 511,895, Apr. 10, 1990, abandoned, which is a continuation of Ser. No. 562,359, Dec. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 425,019, Sep. 27, 1982, abandoned. This application Oct. 21, 1992, Ser. No. 964,477

Int. Cl.[5] **C01B** *33/26;* **B01J** *29/06*

U.S. Cl. 423—704 **1 Claim**

1. The as-synthesized form of a zeolite, designated ZSM-45, having a composition, on an anhydrous basis and in terms of moles of oxides per mole of alumina, expressed by the formula: $(0.8–1.8)R_2O$: $(0.0–0.3)Na_2O$: $(0.0–0.5)K_2O$: Al_2O_3: $xSiO_2$ wherein R is 2-(hydroxyalkyl)trimethylammonium and x is at least 8, the calcined form of said zeolite having the X-ray diffraction pattern of Table 1, and the calcined form of said zeolite being capable of sorbing at least 2 percent by weight of cyclohexane.

5,334,368

SYNTHESIS OF MESOPOROUS OXIDE

Jeffrey S. Beck, Princeton; Kirk D. Schmitt, Pennington, both of N.J., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 967,962, Oct. 27, 1992, Pat. No. 5,250,282, which is a continuation of Ser. No. 735,000, Jul. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 625,245, Dec. 10, 1990, Pat. No. 5,098,684, which is a continuation-in-part of Ser. No. 470,008, Jan. 25, 1990, Pat. No. 5,102,643. This application Dec. 22, 1992, Ser. No. 995,215

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] **C01B** *33/26*

U.S. Cl. 423—704 **6 Claims**

1. A method for synthesizing a composition of matter comprising an inorganic, porous, non-layered crystalline phase material exhbiting, after calcination, an X-ray diffraction pattern with at least one peak at a position greater than about 18 Angstrom Units d-spacing and exhibiting a benzene adsorption capacity of greater than about 15 grams benzene per 100 grams at 50 torr and 25° C., said method comprising the steps of:

(a) preparing a reaction mixture capable of forming said composition, said mixture comprising one or more sources of at least one oxide, an organic agent and a solvent or

solvent mixture; said oxide being selected from the group consisting of divalent element oxides, trivalent element oxides, tetravalent element oxides and pentavalent element oxides; said organic agent comprising an ion of the formula $R_1R_2R_3R_4Q^+$, wherein Q is nitrogen or phosphorus and wherein at least one of R_1, R_2, R_3 and R_4 is aryl or alkyl of from 6 to about 36 carbon atoms or combinations thereof, the remainder of R_1, R_2, R_3 and R_4 being selected from the group consisting of nitrogen, alkyl of from 1 to 5 carbon atoms and combinations thereof;

(b) maintaining said mixture under sufficient conditions of pH, temperature and time for formation of said composition of matter; and

(c) recovering said composition of matter,

wherein said step (a) comprises the steps of (i) forming a solution comprising at least one source of said oxide; and (ii) adding a gelling reagent to said solution of step (i) to convert said solution into a gel.

5,334,369

PLATELET RECEPTOR ANTAGONISTS USEFUL IN DETECTING INTRAVASCULAR PLATELET AGGREGATION

Perry V. Halushka, Charleston; Ken M. Spicer, Sullivans Island, both of S.C., and Dale E. Mais, Roachdale, Ind., assignors to Medical University of South Carolina, Charleston, S.C.

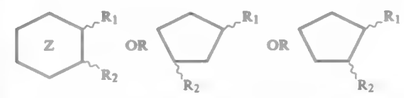
Filed Jun. 11, 1991, Ser. No. 713,726

Int. Cl.[5] **A61K** *49/02*

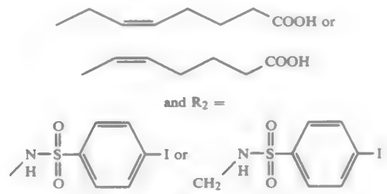
U.S. Cl. 424—1.85 **10 Claims**

1. A method of determining platelet deposition in a subject comprising binding an effective radiolabeled thromboxane A_2 receptor antagonist with a platelet, allowing sufficient time for the platelet to migrate within the subject, and visualizing the radiolabeled platelet in the subject.

2. The method of claim 1, wherein the thromboxane A_2 receptor antagonist is a compound having the following structure:



R_1 and R_2 are either α or β to the ring system and are considered to be any compound with R_1=



5,334,370

COMPOSITIONS OF ALKYLBENZENES IN FILM-FORMING MATERIALS FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Kurt A. Josef, Clifton Park; Edward R. Bacon, East Greenbush; Kimberly G. Estep, Albany, all of N.Y.; Carl R. Illig, Phoenixville, and Brent D. Douty, Coatesville, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Feb. 4, 1993, Ser. No. 13,459

Int. Cl.[5] **A61K** *49/04;* **C07C** *69/76, 22/00, 25/00*

U.S. Cl. 424—5 **50 Claims**

1. An x-ray contrast composition designed for depositing a thin, flexible film membrane onto the mucosal lining of the nutrient absorbing inner surface of the intestine of a patient to form a barrier between said nutrient absorbing inner surface and the content of said intestine, said flexible film membrane to remain bound to said mucosal lining until eliminated by normal cell turnover comprising based on w/v:

(a) of from about 0.001 to about 15% of a polymeric material capable of forming a film membrane on the gastrointestinal tract in the pH range of from about 5 to about 8, said polymeric material is selected from the group consisting of

anionic polymers carrying negative charges in the ionized form,

cationic polymers carrying positive charges in the ionized form, and

neutral polymers, said neutral polymers having polarizable electrons selected from the group consisting of oxygen, nitrogen, sulfur, fluoride, chloride, bromide and iodide; in combination with

(b) of from about 0.001 to about 15% of a divalent cation to potentiate the binding of said flexible film membrane to said mucosal lining selected from the group consisting of Ca^{++}, Mg^{++}, Zn^{++} and Ba^{++}; and

(c) of from about 0.001 to about 75% of an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



wherein

R is C_1–C_{25} alkyl, cycloalkyl, unsaturated allyl or halo-lower-alkyl, each of which may be optionally substituted with halo, fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy, $(CR_1R_2)_p$—$(CR_3{=}CR_4)_m$Q, or $(CR_1R_2)_p$—C≡C—Q;

R_1, R_2, R_3 and R_4 are independently H, lower-alkyl, optionally substituted with halo;

n is 1–5;

m is 1–5;

p is 1–10; and

Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl in a pharmaceutically acceptable carrier.

VOL 1165 ISS 1 AUG 2 1994 UMI

5,334,371

MARCOCYCLIC POLYAZA BICYCLO COMPOUNDS CONTAINING 5 OR 6 MEMBERED RINGS, AND METHOD FOR MRI

Heinz Gries; Bernd Radüchel; Johannes Platzek; Hanns-Joachim Weinmann; Wolf-Rüdiger Press, and Ulrich Speck, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 381,887, Jul. 19, 1989, abandoned, and a continuation-in-part of Ser. No. 642,961, Jan. 18, 1991, abandoned. This application Jul. 6, 1992, Ser. No. 907,929

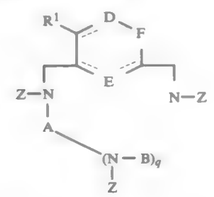
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1988, 3825040; Jan. 18, 1990, 4001655

Int. Cl.[5] A61B *5/055*; C07D *225/00*; A61K *31/44*

U.S. Cl. 424—9 49 Claims

1. In a method of NMR diagnostics wherein a patient is subjected to NMR imaging, the improvement comprising administering to said patient an effective amount of a compound of general formula I

(I)



wherein

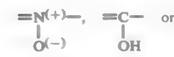
=== represents a single bond or double bond;

q is 1 or 2;

A and B, being the same or different are each straight-chain or branched C_{2-6} alkylene;

D is N, =C=O, $—NR^2—$, $—CHR^3—$, or $=CR^3—$;

E is N, S, O,



F is $(—CHR^8—)_n$ or $(=CR^8—)_n$;

Z is an H atom or $—CH_2COOY$;

Y, in each case, is a hydrogen atom or a metal ion equivalent of an element with atomic numbers 21–29, 31, 32, 37–39, 42–44, 49 or 57–83;

R^1 is an H atom, a halogen atom, or a C_1–C_6 alkyl group;

R^2 is H or C_1–C_6 alkyl;

R^3 is H, a halogen atom, phenyl, or a C_1–C_6 alkyl group optionally substituted by one or more phenyl and/or hydroxy group(s), OR^5,



R^4 is a hydroxy group, H, C_{1-6}-alkyl, or a C_1–C_6 alkyl group which is optionally hydroxylated or carboxylated;

R^5 is C_1–C_6 alkyl optionally substituted by 1 to 3 hydroxy groups;

R^6 and R^7, independently from one another, are each H, C_{1-6}-alkyl optionally substituted by 1 to 3 hydroxy groups, phenyl optionally substituted by 1 to 3 hydroxy groups or benzyl optionally substituted by 1 to 3 hydroxy group, or R^6 and R^7 together with the nitrogen atom form a saturated or unsaturated 5 or 6 membered ring optionally containing an additional N atom, O atom, S atom or a carbonyl group, said 5 or 6 membered ring being optionally substituted by 1 to 3 C_{1-6}-alkyl groups optionally substituted by 1 to 3 hydroxy groups, or one of the substituents R^6 or R^7 is



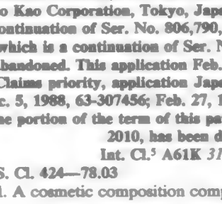
R^8 is an H atom, a halogen atom, or a C_{1-6}-alkyl group or G;

m is 0 or 1;

n is 0 or 1;

G is a second macrocycle of general formula II bonded by a direct bond, a bis(carbonylamino) group or by a C_1–C_{20} alkylene group optionally having carbonyl groups, carbonylamino groups, or O atoms on the ends thereof and optionally contains one or more oxygen atom(s), Z—, C_{1-10}-acyl groups, C_{1-10}-hydroxyacyl substituted imino groups, one to two C—C double bonds and/or one to two C—C triple bonds

(II)



D^1 has the same meaning as D, with the exception that D^1 does not contain the substituent G, or D^1 is

and

F^1 has the same meaning as F, with the exception that F^1 does not contain the substituent G, or F^1 is

as well as the salts thereof formed with inorganic and/or organic bases, amino acids or amino acid amides;

wherein at least two of the groups Z are each $—CH_2COOY$ in which the substituents Y are metal ion equivalents of at least one element with atomic numbers 21–29, 42, 44 or 58–70;

with the proviso that the macrocyclic compound of general formula I contains not more than one radical G.

5,334,372

ALCOHOL-MODIFIED SILICON ESTER DERIVATIVE AND COSMETIC COMPOSITION CONTAINING SAME

Akira Kawamata, Utsunomiya; Yoko Kikuchi, Toride; Yuji Suzuki, Sakura; Toshiyuki Suzuki, Ichikawa; Mituo Suda, and Yukihiro Ohashi, both of Ichikaimachi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 806,790, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 417,450, Oct. 5, 1989, abandoned. This application Feb. 16, 1993, Ser. No. 17,996

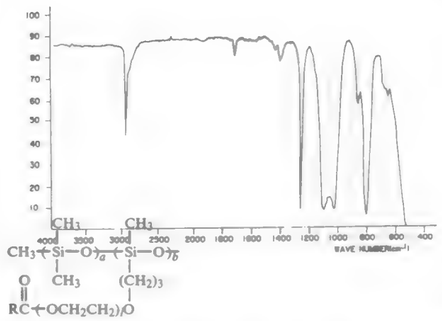
Claims priority, application Japan, Oct. 7, 1988, 63-252942; Dec. 5, 1988, 63-307456; Feb. 27, 1989, 1-45795

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/74, 7/021*

U.S. Cl. 424—78.03 4 Claims

1. A cosmetic composition comprising a cosmetically effective amount of an alcohol-modified silicone ester derivative of the following formula (I):



wherein



are selected from the group consisting of an abietic acid residue, a dehydroabietic acid residue, a dihydroabietic acid residue and a tetrahydroabietic acid residue; a, b and c are numbers which sum falls in the range from 0 to 90; d is 0 or 1; a, b, c and d are not all 0 at the same time, l, m and n are numbers which sum falls in the range from 0 to 6, and each of l, m and n being 0 to 2.

5,334,373

ALLYL ISOTHIOCYANATE SPRAYS

Yasushi Sekiyama; Yuichi Mizukami, both of Hyogo, and Tessei Yamamoto, Tokyo, all of Japan, assignors to Nippon Sanso Corporation, Tokyo and The Green Cross Corporation, Osaka, both of Japan

Filed Jul. 16, 1993, Ser. No. 913,793

Claims priority, application Japan, Jul. 18, 1991, 3-178370

Int. Cl.[5] A01N *25/06, 47/46*

U.S. Cl. 424—40 4 Claims

1. A method of making an allyl isothiocyanate aerosol comprising

dissolving 0.1 to 10% by weight of an allyl isothiocyanate in liquid carbon dioxide in a pressurized vessel to form a solution; and

discharging the solution from the pressurized vessel whereby the liquid carbon dioxide acts as a propellant to form the allyl isothiocyanate aerosol.

5,334,374

PHARMACEUTICAL COMPOSITIONS CONTAINING PENTAMIDINE

Philip S. Hartley, Crich, England, and John Stevens, Scarborough, Canada, assignors to Fisons plc, Ipswich, United Kingdom

Division of Ser. No. 657,335, Feb. 14, 1991, Pat. No. 5,204,113, which is a continuation of Ser. No. 275,054, Nov. 14, 1988, abandoned. This application Nov. 3, 1992, Ser. No. 970,580

Int. Cl.[5] A61K *9/14, 9/48*

U.S. Cl. 424—45 3 Claims

1. A pressurized powder pharmaceutical composition for the prophylactic or remedial treatment of pneumo-cystis carinii pneumonia by oral or nasal inhalation, said composition containing as active ingredient, from 0.5 to 12% by weight of dry, finely divided particulate pentamidine or a pharmaceutically acceptable salt thereof with a mass median diameter of from 0.01 to 10 microns, and a pharmaceutically acceptable liquefied gas aerosol propellant, said finely divided pentamidine or salt thereof being dispensed in a stream of said liquefied gas propellant which vaporizes, providing an aerosol of dry powder.

5,334,375

ANTIBACTERIAL ANTIPLAQUE ORAL COMPOSITION

Nuran Nabi, North Brunswick; Michael Prencipe, East Windsor, and Abdul Gaffar, Princeton, all of N.J., assignors to Colgate Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 738,766, Aug. 1, 1991, Pat. No. 5,202,112, Ser. No. 655,571, Feb. 14, 1991, Pat. No. 5,178,851, Ser. No. 657,885, Feb. 19, 1991, Pat. No. 5,180,578, Ser. No. 754,887, Sep. 6, 1991, Pat. No. 5,192,530, and Ser. No. 758,345, Sep. 9, 1991, Pat. No. 5,192,531, which is a continuation of Ser. No. 399,669, Aug. 25, 1989, abandoned, and Ser. No. 398,592, Aug. 28, 1989, Pat. No. 5,188,821, said Ser. No. 655,571, is a continuation of Ser. No. 398,566, Aug. 25, 1989, Pat. No. 5,032,386, said Ser. No. 657,885, is a continuation of Ser. No. 398,605, Aug. 25, 1989, abandoned, said Ser. No. 754,887, is a continuation of Ser. No. 398,606, Aug. 25, 1989, abandoned, said Ser. No. 398,566, Ser. No. 398,605, Ser. No. 398,606, Ser. No. 399,669, and Ser. No. 398,592, each is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, and Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, which is a continuation of Ser. No. 8,901, Jan. 30, 1987, abandoned. This application Jul. 16, 1992, Ser. No. 914,083

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—52 33 Claims

1. An oral composition comprising in an orally acceptable vehicle an effective antiplaque amount of a substantially water insoluble noncationic antibacterial agent and an antibacterial-enhancing agent in an amount effective to enhance delivery of said antibacterial agent to, and the retention thereof on, oral surfaces, said antibacterial-enhancing agent comprising a synthetic cross-linked polymer having in a 1 wt.% aqueous solution an elastic or storage modulus G′ and a viscous or loss modulus G′ substantially independent of frequency in an applied frequency range of 0.1 to 100 radiants/sec., a G′ minimum value of 5,000 dynes/sq. cm which varies less than 1 order of magnitude of its original value, and a ratio of G′/G′ ranging from more than 0.05 to less than 1.

5,334,376

COMPOSITIONS FOR CONDITIONING HAIR

Clarence R. Robbins, Martinsville; Amrit Patel, Dayton, and Jane Clarke, Matawan, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 13, 1993, Ser. No. 106,019

Int. Cl.[5] A61K *7/06*

U.S. Cl. 424—70 20 Claims

12. Method of conditioning hair which comprises contacting said hair with a composition comprising an aqueous dispersion of particulate barium sulfate combined with one or more co-reactants selected from the group consisting of a silicone free

VOL 1165 ISS 1 AUG 2 1994 UMI

of amino groups, a long chain fatty alcohol and a long chain fatty acid amide.

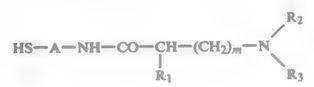
5,334,377

ALKYLAMINO MERCAPTOALKYLAMIDES AND THEIR USE AS A REDUCING AGENT IN A PROCESS FOR THE PERMANENT DEFORMATION OF HAIR

Alex Jumino, Livry Gargan; Gérard Malle, Villiers sur Morin, and Bernadette Luppi, Sevran, all of France, assignors to L'Oreal, Paris, France

Filed May 15, 1992, Ser. No. 8..3,870
Claims priority, application France, May 17, 1991, 91 06029
Int. Cl.[5] C07C *323/00, 323/41*
U.S. Cl. 424—71 22 Claims

1. A compound having the formula



(I)

wherein

A represents the divalent radical $—(CH_2)_n—$ wherein n is a whole number ranging from 2 to 5 or the divalent radical $—(CH_2)_2—O—(CH_2)_2—$,

m is equal to 0, 1 or 2,

R_1 represents hydrogen or a linear or branched lower alkyl having 1–5 carbon atoms,

R_2 and R_3, each independently, represent hydrogen or linear or branched lower alkyl having 1–4 carbon atoms, with the proviso that R_2 and R_3 do not simultaneously represent hydrogen and

the salts of said compound of formula I.

5,334,378

PHARMACEUTICAL FORMULATION IN THE FORM OF AQUEOUS SUSPENSION

Youko Mitani, Suita; Kenji Muta, Shiga, and Mitsuo Umemoto, Osaka, all of Japan, assignors to Rohto Pharmaceutical Co., Ltd., Japan

Filed Mar. 26, 1993, Ser. No. 37,360
Claims priority, application Japan, Apr. 2, 1992, 4-081083
Int. Cl.[5] A61K *9/08, 31/74, 31/95*
U.S. Cl. 424—78.1 10 Claims

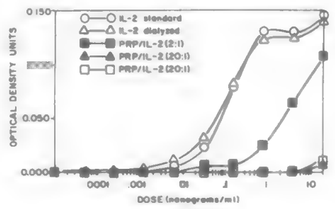
1. A pharmaceutical formulation in the form of an aqueous suspension capable of maintaining a uniform dispersion upon storage which comprises (a) 0.01–3.00 w/v % of an ion exchange resin carrying an active ingredient capable of being converted into an ionic active ingredient, (b) 0.10–3.00 w/v % of a suspending agent selected from the group consisting of natural gums, nonionic cellulose derivatives and alginates and mixtures thereof, (c) 0.05–2.00 w/v % of a dispersion stabilizer comprising an amino acid selected from the group consisting of glycine, alanine, cystine, valine, lysine, arginine, histidine and salts thereof and (d) 92.00–99.84 w/v % of water, wherein said maintained uniform dispersion is the effect of the amino acid dispersion stabilizer on the ion exchange resin carrying an active ingredient and the suspending agent.

5,334,379

CYTOKINE AND HORMONE CARRIERS FOR CONJUGATE VACCINES

Subramonia Pillai, and Ronald Eby, both of Rochester, N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Continuation-in-part of Ser. No. 380,566, Jul. 14, 1989. This application Jul. 16, 1990, Ser. No. 553,901
Int. Cl.[5] A61K *37/66, 39/02, 39/385;* C07K *15/26*
U.S. Cl. 424—85.2 17 Claims



1. An immunogenic conjugate comprising a bacterial capsular polymer bound to a lymphokine selected from the group consisting of interferon, interleukin 1α, interleukin-2β and interleukin-2.

5,334,380

ANTI-ENDOTOXIN, INTERLEUKIN-1 RECEPTOR ANTAGONIST AND ANTI-TUMOR NECROSIS FACTOR ANTIBODY WITH ARGININE-FREE FORMULATIONS FOR THE TREATMENT OF HYPOTENSION

Robert G. Kilbourn, Houston, Tex.; Owen W. Griffith, Milwaukee, Wis., and Steven S. Gross, New York, N.Y., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 767,265, Sep. 27, 1991, Pat. No. 5,286,739. This application Jun. 30, 1992, Ser. No. 910,868
Int. Cl.[5] A61K *37/02, 37/04, 37/18*
U.S. Cl. 424—85.2 23 Claims

1. A therapeutic regimen comprising a therapeutically effective amount of an arginine-free formulation of amino acids and a therapeutically effective amount of an interleukin-1 receptor antagonist, wherein said formulation comprises a mixture of essential and non-essential amino acids together in a pharmacologically acceptable excipient.

5,334,381

LIPOSOMES AS CONTRAST AGENTS FOR ULTRASONIC IMAGING AND METHODS FOR PREPARING THE SAME

Evan C. Unger, 13365 E. Camino La Cebadilla, Tucson, Ariz. 85749

Division of Ser. No. 18,112, Feb. 17, 1993, which is a division of Ser. No. 967,974, Oct. 27, 1992, which is a division of Ser. No. 818,069, Jan. 8, 1992, Pat. No. 5,230,882, which is a division of Ser. No. 750,877, Aug. 26, 1991, Pat. No. 5,123,414, which is a division of Ser. No. 569,828, Aug. 20, 1990, Pat. No. 5,088,499, which is a continuation-in-part of Ser. No. 455,707, Dec. 22, 1989, abandoned. This application Jun. 30, 1993, Ser. No. 85,608
The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.
Int. Cl.[5] A61B *8/00*
U.S. Cl. 424—9 30 Claims

1. A method for synthesizing a liposome having encapsulated therein a gas comprising contacting liposomes in an aqueous medium with gas under elevated pressures.

5,334,382

LYOPHILIZED POLYETHYLENE OXIDE MODIFIED CATALASE COMPOSITION, POLYPEPTIDE COMPLEXES WITH CYCLODEXTRIN AND TREATMENT OF DISEASES WITH THE CATALASE COMPOSITIONS

Christopher P. Phillips, Doylestown, and Robert A. Snow, West Chester, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 178,205, Jan. 5, 1994, which is a division of Ser. No. 23,182, Feb. 25, 1993, Pat. No. 5,298,410. This application Feb. 10, 1994, Ser. No. 195,945
Int. Cl.[5] C12N *9/96;* A61K *31/715, 37/26*
U.S. Cl. 424—94.3 28 Claims

1. A reconstituted lyophilized formulation of polyethylene glycol and a biologically active catalase conjugate comprising:

a) polyethylene glycol having a molecular weight of from about 1,000 to about 15,000 daltons and consisting of less than about 10% w/w non-monomethoxylated polyethylene glycol and more than 90% w/w monomethoxylated polyethylene glycol; said conjugate having an enzymatic activity of from about 150 to about 150,000 U/ml;

b) from about 0.1 to about 20% w/v of cyclodextrin; and

c) from about 0.01 to about 50 nM buffer, said formulation having a pH of from about 5.7 to about 6.5.

5,334,383

ELECTRICALLY HYDROLYZED SALINES AS IN VIVO MICROBICIDES FOR TREATMENT OF CARDIOMYOPATHY AND MULTIPLE SCLEROSIS

Robert E. Morrow, Salt Lake City, Utah, assignor to Medical Discoveries, Inc., Logan, Utah

Filed May 23, 1990, Ser. No. 527,321
Int. Cl.[5] A61K *37/50*
U.S. Cl. 424—94.4 5 Claims

1. A method for the treatment of antigen related infections selected from the group consisting of cardiomyopathy and multiple sclerosis, said method including:

(a) intravenously injecting an effective amount of colchicine into a human subject followed by,

(b) intravenously injecting into said subject an effective amount of a isotonic electrolyzed saline solution prepared by subjecting a 0.25 to 0.50% saline solution to electrolysis for a period of time and at sufficient voltage/current to yield an initial electrolyzed solution containing between about 100 to 300 ppm of chloride ions along with other electrolysis products selected from the group consisting of ozone, hydroxide, hypochlorite, peroxide, chlorine dioxide and oxygen along with corresponding amounts of molecular hydrogen and sodium and hydrogen ions followed by balancing said initial electrolyzed solution with sufficient amounts of hypertonic saline to provide said isotonic electrolyzed saline solution; and

(c) administering to said subject, in correlation with steps (a) and (b), an effective amount of one or more modulating agents selected from the group consisting of superoxide dismutase, myeloperoxidase, glutathione peroxidase, glutathione, catalase, ascorbic acid and sodium ascorbate.

5,334,384

PROCESS FOR PURIFICATION OF STREPTAKINASE USING A REDUCING AGENT

Christopher J. Mannix; Richard A. G. Smith; Ceri J. Lewis, all of Epsom, and Julian S. Harber, Worthing, all of England, assignors to Beecham Group p.l.c., United Kingdom

Filed Oct. 17, 1989, Ser. No. 422,430
Claims priority, application United Kingdom, Oct. 19, 1988, 8824096.7
Int. Cl.[5] C12N *1/02;* A61K *37/547*
U.S. Cl. 424—94.63 10 Claims

1. A process for the separation of streptokinase from contaminating proteins containing reducible disulphide bridges in a streptokinase-containing mixture, which comprises treating the mixture with a reducing agent to reduce said disulphide bridges in the contaminating proteins to free thiol groups, contacting the mixture with a reagent R-X wherein R is a group capable of reacting with a free thiol group and X is a group R^1 capable of reacting with a free thiol group or is a thiol-containing matrix, and thereafter separating the resulting chemically modified contaminating proteins from the mixture to provide streptokinase in the form substantially free of said contaminating proteins.

5,334,385

NEW ALKALOID DERIVATIVES, THEIR USE AND PHARMACEUTICAL FORMULATIONS CONTAINING THEM

Ezio Bombardelli, Milan, Italy, assignor to Indena S.p.A., Italy

Filed Jul. 30, 1992, Ser. No. 922,689
Claims priority, application United Kingdom, Jun. 2, 1992, 9211659.5
Int. Cl.[5] A61K *35/78, 7/00*
U.S. Cl. 424—195.1 11 Claims

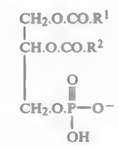
1. A salt having the formula

$$[Alk]_x[PA]_y$$

wherein

Alk is a cation derived from an alkaloid selected from the group consisting of vincamine, apovincamine, raubasine, apocuanzine, nicergoline and salts and esters thereof,

PA represents a phosphatidic acid or a mixture of phosphatidic acids represented by the formula



wherein R^1 and R^2 which may be the same or different represent a C_{10-24} alkyl group, a C_{10-24} alkenyl group or a C_{10-24} alkadienyl group, and

x:y is a substantially equimolar ratio in the range 1.1:1 to 1:1.1.

5,334,386

METHOD OF CONTROLLING ZEBRA MUSSELS

Harold H. Lee, Lambertville, Mich.; Peter C. Fraleigh, Sylvania, Ohio, and Akilu Lemma, Florence, Italy, assignors to The University of Toledo, Toledo, Ohio

Continuation of Ser. No. 596,879, Oct. 12, 1990, Pat. No. 5,252,330. This application Aug. 12, 1992, Ser. No. 928,291
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[5] A61K *35/78;* C02F *1/68*
U.S. Cl. 424—195.1 11 Claims

1. The method of controlling zebra mussels comprising contacting said mussels with an effective amount of an aqueous treating medium to kill the mussels or reduce the ability of the mussels to attach to a substrate or reduce the ability of the mussels to cluster, the medium comprising a powdered berry of a Phytolacca plant in water.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,387

TOPICAL COMPOSITION COMPRISING MONO AND DIALKYL PHOSPHATES WITH A COSURFACTANT

Peter D. Haugk, Lincoln Park, N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Filed Feb. 23, 1993, Ser. No. 23,829
Int. Cl.[5] A61K *7/06*
U.S. Cl. 424—401 16 Claims

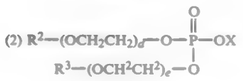
1. A composition suitable for topical application to the skin or hair comprising an admixture of

a. phosphate surfactant mixture of the structure



(1) $R^1-(OCH_2CH_2)_c-O-\underset{\underset{OZ}{|}}{\overset{\overset{O}{\|}}{P}}-OY$

and



(2) $R^2-(OCH_2CH_2)_d-O-\underset{\underset{R^3-(OCH^2CH^2)_e-O}{|}}{\overset{\overset{O}{\|}}{P}}-OX$

wherein R^1 is normal alkyl having an average of from about 10 to 18 carbon atoms;

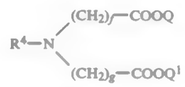
R^2 and R^3 are the same or different and are normal alkyl having an average of about 10 to 18 carbon atoms;

X, Y and Z are the same or different and are selected from hydrogen, alkali metal, alkaline earth metal, ammonium and substituted ammonium cations;

d and e are the same or different and are selected from 0 or an integer from 1 to 10 ; and

c is 0 or an integer from 1 to 4; wherein with respect to a (1) and a (2) taken together the wt % of a (1) is from about 55 to 75 wt % and a (2) is from about 25 to 45 wt %, and

b. a cosurfactant of the formula



(3) $R^4-N(-(CH_2)_f-COOQ)(-(CH_2)_g-COOQ^1)$

wherein R^4 is normal alkyl having an average of from about 10 to 18 carbon atoms;

f and g are the same or different and are 1 or 2;

Q and Q^1 are the same or different and are selected from hydrogen, alkali metal, ammonium, and substituted ammonium cation with the proviso that Q and Q^1 are not hydrogen at the same time; wherein with respect to a and b taken together, a is from about 33 to 95 wt % and b is from about 5 to 67 wt %.

5,334,388

ANTIMICROBIAL DRYING SUBSTRATE

Minh Q. Hoang, Taylorsville, and Mohammed A. Khan, Sandy, both of Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 15, 1993, Ser. No. 122,829
Int. Cl.[5] A01N *25/34*
U.S. Cl. 424—402 2 Claims

1. A dry wipe comprising an absorbent paper substrate which is coated and dried with an antimicrobial formulation comprising:

(a) isopropanol or ethanol in an amount from about 50 to about 75 weight percent of the total composition;

(b) chlorhexidine gluconate or parachlorometaylenol in an amount from about 0.05 to about 1.5 weight percent of the total composition;

(c) chitosan in an amount from about 0.01 to about 2.5 weight percent of the total composition;

(d) a polyalkylene glycol in an amount from about 0.5 to about 1.5 weight percent of the total composition.

(e) a moisturizer and/or emollient in an amount from about 0.5 to about 1.5 weight percent of the total composition;

(f)water in an amount from about 24 to about 27 weight percent of the total composition; and

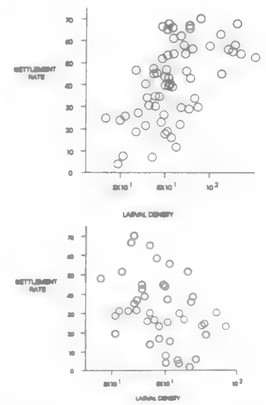
(g) a suitable pH adjusting component.

5,334,389

ANTIFOULING COATING AND METHOD FOR USING SAME

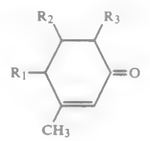
Donald J. Gerhart, Hillsborough, N.C., assignor to Duke University, Durham, N.C.

Filed Oct. 15, 1992, Ser. No. 961,159
Int. Cl.[5] A01N *25/08, 31/06*
U.S. Cl. 424—409 28 Claims



1. An antifouling coating for an underwater surface which controls the attachment of organisms to that surface, said coating comprising

(a) a compound of Formula I:



(1)

wherein R_1, R_2 and R_3 are each independently hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, halogen, or hydroxyl groups in an amount effective to control the attachment of barnacles to said surface; and

(b) a film-forming component.

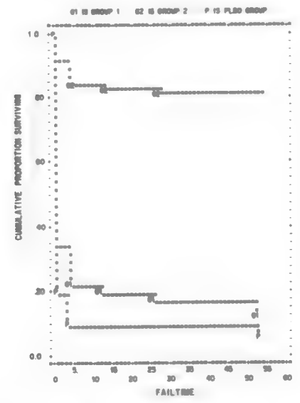
5,334,390

METHOD FOR TABACCO DEHABITUATION

Neil Solomon, 2209 Ken Oak Rd., Baltimore, Md. 21209; Theodore C. Solomon, 3006 Benson Mill Rd., Upperco, Md. 21155, and Allen J. Freed, 47-40 Glenwood St., Little Neck, N.Y. 11362

Filed Nov. 5, 1992, Ser. No. 971,539
Int. Cl.[5] A61K *9/14, 47/36*
U.S. Cl. 424—439 23 Claims

1. A method for alleviating symptoms of nicotine withdrawal in a human habituated to tobacco who has curtailed the use of tobacco comprising orally administering to the human for at least about 4 weeks an alkalizing composition consisting



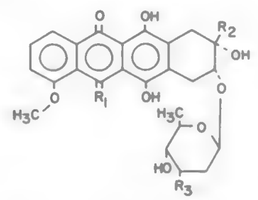
essentially of calcium carbonate in an amount sufficient to neutralize or alkalize the urine to alleviate said symptoms.

5,334,391

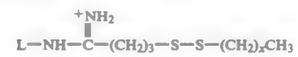
INTRACELLULARLY CLEAVABLE COMPOUNDS

Brian R. Clark, Redwood City, and Bishwajit Nag, Pacifica, both of Calif., assignors to Anergen, Inc., Redwood City, Calif.

Division of Ser. No. 523,334, May 14, 1990, Pat. No. 5,169,934.
This application May 29, 1992, Ser. No. 890,187
Int. Cl.[5] A61K *9/127*
U.S. Cl. 424—450 3 Claims



1. A liposome having a compound anchored in the liposome bilayer said compound having the formula:



$L-NH-\overset{\overset{+NH_2}{\|}}{C}-(CH_2)_3-S-S-(CH_2)_xCH_3$

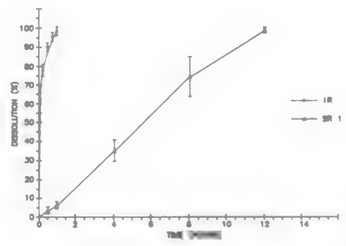
in which L is a doxorubicin moiety and X has a value of from 11 to 17.

5,334,392

MATRIX TABLET PERMITTING THE SUSTAINED RELEASE OF INDAPAMIDE AFTER ORAL ADMINISTRATION

Alain Cuine, Saint Jean de Braye; Bruno H. de Barochez, Chevilly, and David Guez, Neuilly sur Seine, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Jun. 9, 1992, Ser. No. 895,787
Claims priority, application France, Jun. 18, 1991, 91 07400
Int. Cl.[5] A61K *9/20, 9/16*
U.S. Cl. 424—468 9 Claims



1. A sustained release indapamide matrix tablet consisting essentially of between 1 and 2.5 mg of indapamide, polyvidone, methylhydroxyalkylcellulose, and excipient, which exhibits linear sustained release for at least eight hours, wherein 50 percent of the total quantity of indapamide is released over a period of between 5 and 14 hours, which produces blood levels in humans of between 20 and 80 ng/ml for up to 24 hours after oral administration, produced by a process consisting essentially of the steps of:

(a) mixing indapamide with solid polyvidone having a molecular weight between 10,000 and 700,000 and an excipient;

(b) wetting the mixture of step (a) with an aqueous alcoholic solution to form a granulate;

(c) mixing the granulate with methylhydroxyalkylcellulose having a viscosity between 1,000 and 20,000 centipoises;

(d) lubricating the mixture of step (c) with a lubricating agent; and

(e) compressing the lubricated mixture of step (d) in a rotary tableting machine to produce a tablet having a hardness, measured by diametrical crushing, of 60 to 75N,

wherein the percentages of indapamide, methylhydroxyalkylcellulose, and polyvidone are respectively approximately 1%, between 30 and 50 percent, and between 2 and 10 percent of the total mass of the tablet, the excipient consisting essentially of a compound selected from the group consisting of sugar, colloidal silica, and lubricant.

5,334,393

SUSTAINED-RELEASE TABLET BASED ON ISOSORBIDE 5-MONONITRATE AND PROCESS FOR PREPARING IT

Joël Bougaret, Castres, and Michel Soernac, Dijon, both of France, assignors to Pierre Fabre Medicament, Boulogne, France

Filed Sep. 9, 1991, Ser. No. 756,810
Claims priority, application France, Sep. 7, 1990, 90 11133
Int. Cl.[5] A61K *9/20*
U.S. Cl. 424—469 14 Claims

1. Sustained-release tablet, characterized in that it comprises as active principle, isosorbide 5-mononitrate (5-ISMN) in the form of a powder having the following particle size profile:

40 to 60% of isosorbide 5-mononitrate of particle size larger than 80 μm and smaller than 100 μm,

20 to 50% of isosorbide 5-mononitrate of particle size larger than 100 μm and smaller than 250 μm,

VOL 1165 ISS 1 AG 2 1994 UMI

approximately 5% of isosorbide 5-mononitrate of particle size larger than 250 μm and smaller than 500 μm,
approximately 0.5% of isosorbide 5-mononitrate of particle size larger than 500 μm,
approximately 0% to 34.5% of isosorbide 5-mononitrate having a particle size smaller than 80 μm,
in a homogeneous dispersion in a hydrophilic matrix comprising at least one swelling agent and at least one diluent, at a swelling agent to diluent weight ratio of between 0.2 and 0.7, said swelling agent containing a hydrophilic polymeric substance of apparent viscosity between about 0.1 and 100 Pa.s.

5,334,394

HUMAN IMMUNODEFICIENCY VIRUS DECOY

Nir Kossovsky; Andrew E. Gelman, both of Los Angeles, and Edward E. Sponsler, Burbank, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 690,601, Apr. 24, 1991, Pat. No. 5,178,882, which is a continuation-in-part of Ser. No. 542,255, Jun. 22, 1990, Pat. No. 5,219,577. This application Jan. 4, 1993, Ser. No. 199

The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.[5] A61K *9/14, 39/12*

U.S. Cl. 424—494 **9 Claims**

1. A vaccine for use in treating an animal to elicit an immune response against the human immunodeficiency virus, said vaccine comprising:
a decoy virus comprising:
a core particle having a diameter of between about 10 to 200 nanometers, said core particle comprising a metal, ceramic or polymer;
a coating comprising a substance that provides a threshold surface energy to said core particle which is sufficient to bind immunologically active fragments of the human immunodeficiency virus without denaturing said immunologically active fragments, said substance covering at least a part of the surface of said core particle and being selected from the group consisting of cellobiose, trehalose, isomaltose, maltose, nystose, maltotriose and nitrocellulose;
at least one immunologically reactive fragment of the human immunodeficiency virus bound to said coated core particle to form said decoy virus; and
a pharmaceutically acceptable carrier for said decoy virus.

5,334,395

METHOD OF TREATING AN EPSTEIN-BARR VIRAL INFECTION

Sudhakar S. Wagle, Mequon, Wis.; Thomas Steinbach, Houston, Tex.; Carl H. Lawyer, Mequon, Wis.; William J. Hermann, Jr., Sealy, Tex., and Ali A. S. Gawish, Mequon, Wis., assignors to Kremers-Urban Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 803,844, Dec. 4, 1991, which is a continuation of Ser. No. 728,267, Jul. 11, 1991, abandoned, which is a continuation of Ser. No. 228,364, Aug. 4, 1988, Pat. No. 5,055,296, said Ser. No. 934,554, and a continuation of Ser. No. 780,084, is a continuation-in-part of Ser. No. 728,267, Jul. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 228,364, Aug. 4, 1988, Pat. No. 5,055,296. This application Aug. 24, 1992, Ser. No. 934,554

Int. Cl.[5] A61K *35/407*

U.S. Cl. 424—553 **4 Claims**

1. A method of treating an Epstein-Barr viral infection comprising administering to a mammal having Epstein-Barr virus infection a therapeutically effective amount of a mammalian liver extract, referred to as KU10,001, the extract being heat stable, insoluble in acetone and soluble in water.

5,334,396

CHEWING GUM SWEETENED WITH ALITAME AND HAVING A HIGH LEVEL OF LECITHIN

Robert J. Yatka, Orland Park, Ill., assignor to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Oct. 19, 1992, Ser. No. 963,897

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—3 **19 Claims**

1. A chewing gum composition comprising:
a) about 5% to about 95% gum base,
b) about 10% to about 90% bulking agent,
c) a sweetening amount of Alitame and
d) lecithin in an amount effective to delay the release of the Alitame, whereby at least a 15% decrease in the Alitame release rate between the first and sixth minutes of chewing, compared to the same formula without the lecithin, is achieved.

5,334,397

BUBBLE GUM FORMULATION

Ronald L. Ream, Plano; Christine L. Corriveau, Orland Park, and William J. Wokas, Bolingbrook, all of Ill., assignors to Amurol Products Company, Naperville, Ill.

Filed Jul. 14, 1992, Ser. No. 914,367

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—5 **38 Claims**

1. A chewing gum composition comprising;
a water soluble bulk portion;
a chewing gum base;
one or more fruit flavoring agents not spray dried;
a spray dried fruit flavor ingredient which includes at least about 30 weight percent active fruit flavor and a carrier;
an encapsulated acesulfame-K ingredient; and
a separately encapsulated aspartame ingredient.

5,334,398

PROCESSES FOR THE PRODUCTION OF A CHEESE CURD AND CHEESE CONTAINING WHEY PROTEIN

Ryoichi Sueyasu; Kunio Ueda, and Kazuhiko Sagara, all of Yamanashi, Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Continuation of Ser. No. 525,917, May 18, 1990, abandoned. This application Jul. 21, 1992, Ser. No. 917,919

Claims priority, application Japan, May 22, 1989, 1-128372

Int. Cl.[5] A23C *9/12*

U.S. Cl. 426—36 **8 Claims**

1. A process for the production of cheese curd which comprises the steps of:
(a) concentrating milk by ultrafiltration end cooling said milk to a temperature of from 10° to 20 ° C.
(b) adding whey protein concentrate to said milk after completion of said ultrafiltration and cooling, adjusting fie pH to between and 5.0 and 5.6 by the addition of acid, and forming a reaction mixture by adding with stirring to said milk and whey protein concentrate, a milk coagulating enzyme, e lactic acid bacteria starter and water, the water is added at a temperature of from 65° to 75° C., to instantaneously elevate the temperature of said mixture and thereby coagulate the mixture to form the cheese curd and a liquid phase and
(c) thereafter recovering hid cheese curd from the liquid phase.

5,334,399

METHOD OF PREPARING LACTOSE-HYDROLYZED MILK WITH SUPPRESSED SWEETNESS

Robert G. Flynn, West Windsor Township, Mercer County; Abraham I. Bakal, Parsippany, and Margaret A. Snyder, Lake Hiawatha, all of N.J., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Feb. 27, 1992, Ser. No. 842,716

Int. Cl.[5] A23C *9/12*

U.S. Cl. 426—42 **9 Claims**

1. A process for modifying a lactose-hydrolyzed fluid milk, the normal lactose content of which has been reduced by at least about 70% by lactase hydrolysis, in order to suppress perceived sweetness resulting from glucose and galactose produced by the lactose hydrolysis, which comprises incorporating into the lactose-hydrolyzed fluid milk from about 0.02 to about 0.075% by weight of potassium chloride.

5,334,400

BEVERAGE PACKAGE

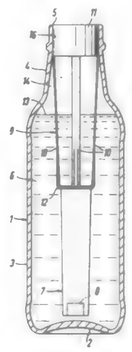
Robert Purdham, Ickenham, Great Britain, assignor to Guinness Brewing Worldwide Limited, London, United Kingdom

Filed Jun. 3, 1992, Ser. No. 893,247

Claims priority, application United Kingdom, Jun. 12, 1991, 9112649.0

Int. Cl.[5] B65B *31/00;* **B65D** *17/00, 25/00*

U.S. Cl. 426—112 **9 Claims**



1. A beverage package comprising a container having a base on which the package normally stands, a side wall extending upwardly from the base to a top, said top having means for sealing the package and being openable for dispensing beverage from the package; said side wall being necked as it approaches said openable top so that a top part of the container is relatively narrower than the region of the container adjacent its base; the container containing beverage having gas in solution which beverage forms a headspace that is at a pressure greater than atmospheric; a hollow insert located within the container and containing at least one of gas at a pressure greater than atmospheric or gas at a pressure greater than atmospheric and liquid, said insert having a restricted orifice and being retained so that when the container is in an upstanding condition said restricted orifice is submerged in the beverage whereby when the top of the container is opened for the headspace to communicate with atmospheric pressure, a pressure differential is developed which causes at least one of gas or liquid in the insert to be ejected, by way of the restricted orifice, into the beverage in the container for the development of a head of froth on the beverage by the evolution of gas in solution from the beverage, and wherein the insert is retained at its location in the container by an extension part of the insert which extends upwardly therefrom and frictionally engages with the narrowed top part of the container adjacent to its openable top.

5,334,401

Patent Not Issued For This Number

5,334,402

HEAT PROCESSING OF A PRODUCT

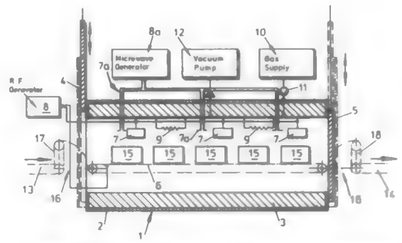
David Ovadia, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

PCT No. PCT/US91/05470, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO92/02150, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 1, 1991, Ser. No. 972,468

Int. Cl.[5] A23L *3/00;* **H05B** *6/00*

U.S. Cl. 426—241 **20 Claims**



1. A method of heat processing a product, comprising the steps of: placing said product in an enclosed zone;
subjecting said product while in said zone to dielectric heating; and
during at least a portion of said heat processing within said zone, first adding gas to said zone to increase the pressure therein to level above atmospheric, and thereafter gradually reducing the pressure within said zone by subtracting gas therefrom until the pressure conditions within said zone are below atmospheric.

5,334,403

METHOD AND DEVICE FOR APPLYING MICROWAVES TO PRODUCTS, ESPECIALLY FOR DRYING, REHEATING AND DEFREEZING SAID PRODUCTS

Etienne de Maillard, 21 allée Verte Campagne, F-33140 Villenave D'Ornon, France

Filed Apr. 21, 1993, Ser. No. 49,371

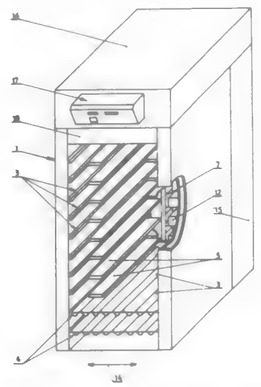
Int. Cl.[5] A23L *1/00;* **H05B** *6/00*

U.S. Cl. 426—241 **8 Claims**

1. A method of applying microwaves for defreezing, reheating or drying products, comprising the steps of:
disposing product to be treated on a least one layer in a closed chamber, the layer having an extent;
moving a microwave source above and at a specific constant

VOL 1165 ISS 1 AG 2 1994 UMI

distance from the layer to scan the extent of the layer in at least one to-and-from movement; and



varying microwave source movement speed, passage number and microwave radiation intensity according to product type and treatment.

5,334,404

PROCESS FOR TRANSFERRING IMAGES OF EDIBLE PASTE ONTO BAKED PASTRY SHEETS

Ruben Garcia, and Felicia Garcia, both of 600 Grand Blvd., Deer Park, N.Y. 11729

Filed Feb. 1, 1993, Ser. No. 11,716
Int. Cl.[5] A21D *8/00, 10/04*
U.S. Cl. 426—383 **8 Claims**

1. A process for transferring images of edible paste onto pastry sheets which may be formed into useful pastry shapes having distinctive finely patterned designs in edible paste, the process comprising: a first step of making a silk screen image of said design; providing a edible paste mixture having a colored edible material; placing said edible paste mixture onto said silk screen and placing a transfer sheet beneath said silk screen, said transfer sheet having an upper side and an under side; spreading said edible paste mixture across said screen and onto said upper side of said transfer sheet to form said edible paste mixture into said design and print said design on said transfer sheet; then layering a batter onto and across said upper side of said transfer sheet and baking said batter and said transfer sheet in an oven at a temperature of about 350°–450° F. and for a time sufficient to transform said batter into a pastry sheet, said transfer sheet being made of material that will not burn at said baking temperatures and will allow the transfer of said design to said pastry sheet without sticking to the transfer sheet; removing said transfer sheet and said pastry sheet, after a time, from said oven and then removing said pastry sheet from said transfer sheet such that said design has been transferred from said transfer sheet to said pastry sheet to create a fine image on said pastry sheet.

5,334,405

METHOD OF PACKAGING FOOD PRODUCT

Michael P. Gorlich, Hilton Head Island, S.C., assignor to World Class Packaging Systems, Inc., Hilton Head Island, S.C.

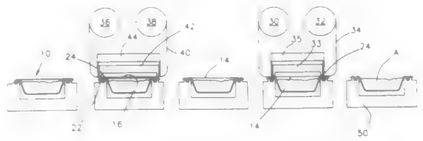
Division of Ser. No. 64,700, May 20, 1993. This application Feb. 2, 1994, Ser. No. 190,298
Int. Cl.[5] B65B *31/00, 55/00*
U.S. Cl. 426—396 **6 Claims**

1. A method of packaging a food product to be exposed to varying package gaseous conditions during storage in a package, comprising the steps of:

providing a tray, said tray having sidewalls defining a cavity and an outwardly directed flange extending around the perimeter of said tray, wherein said flange comprises both an inner flange portion adjacent said sidewalls and an outer flange portion that is further away from said sidewalls than said inner flange portion, said flange further comprising a depressed portion between said inner and outer flange portions wherein said depressed portion extends downwardly from and is connected to both said inner and outer flange portions to form a depression in said flange and wherein said inner and outer flange portions and said depression extend completely around the perimeter of said tray;

placing said food product in said cavity of said tray;

placing a gas permeable web of material on said tray and over said food product and said cavity so that it extends entirely across said cavity;



securing said gas permeable web of material to said inner flange portion completely around the perimeter of said flange portion to seal said food product in said cavity;

then cutting any of the gas permeable web material that extends over the depression at a position over said depression so that said gas permeable web material does not extend outwardly beyond said depression and onto said outer flange portion, leaving said secured gas permeable material as a membrane intact on said inner flange portion;

covering said secured gas permeable membrane and said outer flange portion with a second membrane that is more gas impermeable than said gas permeable membrane; and

securing said second membrane to said outer flange portion such that said second membrane completely covers said gas permeable membrane but is unsecured to said gas permeable membrane and such that the second membrane completely seals and encloses the gas permeable membrane and said food product in said cavity.

5,334,406

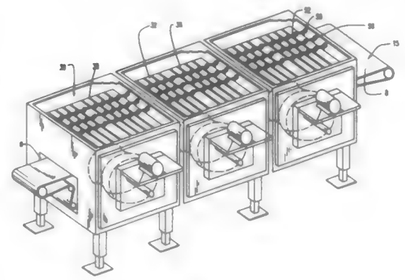
METHOD AND DEVICE FOR TRANSMITTING HEATING OR COOLING MEDIUM TO A FOOD PRODUCT ON A MOVING SUBSTRATE

Jack Appolonia, Yardley, Pa.; Robert Muscato, Monmouth Junction, and George Wittel, Bridgewater Township, Somerset County, both of N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed Feb. 26, 1993, Ser. No. 23,299
Int. Cl.[5] A23L *1/00;* **A21B** *1/00;* **F25D** *17/00*
U.S. Cl. 426—520 **29 Claims**

28. A method of heating or cooling a food product comprising:

passing a multidirectional flow of a heating or cooling medium into at least one continuous channel traversing at least a major portion of the width of a moving substrate having thereon said food product, and discharging the heating or cooling medium in a unidirectional flow through a second opening toward the food product on said moving substrate.

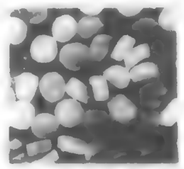


5,334,407

COUSCOUS

Brendan J. Donnelly; Amar Debbouz, and Kevin R. Hagen, all of Fargo, N. Dak., assignors to North Dakota State University Research Foundation, Fargo, N. Dak.

Filed Jan. 26, 1993, Ser. No. 9,299
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—618 **14 Claims**



1. A shelf-storable couscous food product consisting essentially of non-sticky free-flowing wheat-based particles having a size between about 0.85 and about 2.5 mm mesh, and having a moisture content below about 13% by weight, said couscous food product being relatively quickly hydratable and steam cooked without loss of its particulate integrity and being particularly characterized by the fact that the particles thereof are substantially translucent, have a Water Absorption Index greater than 4.7, and have a substantially uniform and dense extrusion-compacted composition comprised essentially of the starches and gluten-forming proteins in a blend of, by dry solids weight, at least about 65% up to 100% of durum wheat flour or middlings or semolina and about 35% down to 0% of flours or middlings or farinas of cereal grains other than durum wheat, at least about 80% of the dry solids weight of said starches being gelatinized, said particles being further characterized by having, when examined under a magnification of 12 times, (i) substantially smooth surfaces on the exterior thereof and (ii) angularly projecting edges on the exterior thereof.

5,334,408

NUTRIENT COMPOSITION CONTAINING NON-PHOSPHORYLATED PEPTIDES FROM CASIN-BASED MATERIAL

Gérard Brule; Loïc Roger, both of Reanes; Jacques Fauquant, Monfort, and Michel Piot, Reanes, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Division of Ser. No. 648,129, Jan. 30, 1991, Pat. No. 5,216,123, which is a continuation of Ser. No. 342,701, Apr. 26, 1989, Pat. No. 5,028,589, which is a continuation of Ser. No. 227,515, Aug. 2, 1988, abandoned, which is a continuation of Ser. No. 820,840, Jan. 22, 1986, Pat. No. 4,816,398, which is a continuation of Ser. No. 637,733, Aug. 6, 1984, abandoned, which is a continuation of Ser. No. 388,931, Jun. 16, 1982, Pat. No. 4,495,176, which is a division of Ser. No. 229,062, Jan. 28, 1981, Pat. No. 4,358,465.
This application May 26, 1992, Ser. No. 888,370
Claims priority, application France, Feb. 1, 1980, 80 02281
The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.
Int. Cl.[5] A23J *3/00;* **C12P** *21/06;* **A61K** *37/18;* **C07K** *1/00*
U.S. Cl. 426—57 **10 Claims**

1. A composition for effecting nutrition, which comprises:

a) an amount of an essentially pure non-phosphorylated casein peptide sufficient to effect said nutrition, which peptide comprises greater than 12% by weight of aromatic amino acids, less than 4% by weight of serine, less than 10% by weight of free amino acids, and a value of less than 0.02 for the formula:

$$\frac{Ca + Mg + P}{N_T}$$

wherein Ca is total calcium, Mg is total magnesium, P is total phosphorus and N_T is total nitrogen $\times 6.38$; and

b) a carrier suitable for consumption.

5,334,409

CATHODE RAY TUBE AND PROCESS FOR PRODUCING SAME

Chang-min Sohn, and Su-min Jeong, both of Suwon, Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyungki, Rep. of Korea

Filed Jul. 7, 1992, Ser. No. 909,669
Claims priority, application Rep. of Korea, Jul. 10, 1991, 91-11707; Jul. 11, 1991, 91-11782
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—64 **12 Claims**

1. A process for producing a cathode ray tube comprising the steps of:

mixing an alcohol solution of an acid and a partially hydrolyzed alkylsilicate monomer with an amount of water being at least four times greater than the number of moles of said alkylsilicate;

applying the mixed solution to the outer surface of a panel by spin coating to form a coating thereon; and

heating the resulting coating to a temperature in the range of 150° to 200° C. for 5 to 30 minutes to form an antistatic and non-glare coating.

5,334,410

METHOD OF LACQUERING THE LUMINOPHORE LAYER OF A COLOUR PICTURE TUBE

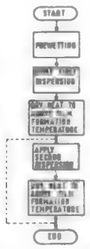
Heinz Beckerle, and Rolf Reidinger, both of Ebersbach, Fed. Rep. of Germany, assignors to Nokia Unterhaltungselektronick GmbH, Pforzheim, Fed. Rep. of Germany

Filed Nov. 5, 1991, Ser. No. 788,171
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1990, 4036239
Int. Cl.[5] D05D *5/06*
U.S. Cl. 427—68 **12 Claims**

1. A method of lacquering the luminophore layer on the screen trough of a colour picture tube, wherein

VOL 1165 ISS 1 AG 2 1994 UMI

a first aqueous dispersion of a lacquer is applied to the luminophore layer,
the first dispersion is fully dried and heated to above the film formation temperature of the lacquer, thereby producing a first lacquer film,
a second aqueous dispersion of a lacquer is applied to the lacquer film, and



this second dispersion is fully dried and heated to above the film formation temperature, thereby producing a second lacquer film characterized in that
identical components are used for both dispersions, and
the luminophore layer is prewetted before the first aqueous dispersion is applied, while the second aqueous dispersion is applied directly to the first lacquer film.

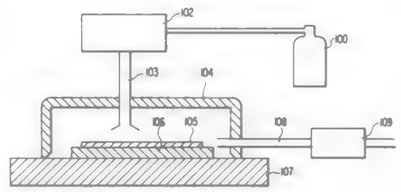
5,334,411
MULTILAYER CERAMIC CAPACITOR MANUFACTURING PROCESS
John G. Pepin, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 11, 1993, Ser. No. 2,991
Int. Cl.[5] B05D *5/12;* **H01G** *7/00, 4/06*
U.S. Cl. 427—79 **7 Claims**

1. A method for making electrode/dielectric layers comprising the sequential steps:
A. Casting a thin layer of a dispersion of finely divided conductive metal particles in a solution of volatilizable film-forming polymer binder and volatile organic solvent onto the smooth surface of a rigid substrate with a release agent and heating the cast dispersion to remove the volatile solvent therefrom;
B. Calendering the exposed surface of the solvent-free dispersion of conductive metal particles in the polymeric binder to smoothen it;
C. Positioning a thin hard metallic imaging mask, the open areas of which are patterned in the image of one or more multilayer ceramic capacitor electrodes on the smoothened surface of the dispersion,
D. Applying a supported flexible unpatterned film of dielectric solids dispersed in a matrix of organic polymeric binder on top of the mask;
E. Applying uniform pressure to the unpatterned dielectric film such that the dielectric film contacts the conductive metal layers exposed by the mask, and the conductive metal layers laminate to the dielectric film to form a pattern of the multilayer ceramic capacitor electrode (s); and
F. Separating the dielectric layer bearing the laminated conductive metal electrode pattern from the mask.

5,334,412
ENAMEL FOR USE ON GLASS AND A METHOD OF USING THE SAME
George C. Korn, Coraopolis, Pa., and Robert P. Blonski, North Royalton, Ohio, assignors to Ferro Corporation, Cleveland, Ohio
Filed Dec. 23, 1991, Ser. No. 813,207
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—108 **16 Claims**

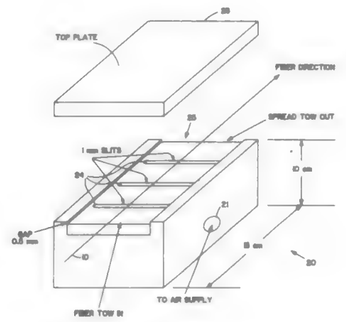
1. A method of decorating a glass substrate to serve as an electrically heated window, such electrically heated window having a conductive metal coating applied thereto which serves as an electrically resistive heating element, said method comprising the steps of:
A. applying to a glass substrate an enamel composition comprising a vehicle and a solids portion, such solids portion comprising a glass frit and a separate and distinct addition of silicon (Si) metal, such solids portion comprising from about 0.01 weight percent to about 20 weight percent silicon metal;
B. optionally drying or curing such applied enamel composition;
C. applying a conductive metal coating over such enamel composition;
D. optionally drying or curing such applied conductive metal coating; and
E. firing such glass substrate bearing such conductive metal coating and such enamel composition.

5,334,413
METHOD FOR PREPARING A MAGNETIC RECORDING MEDIUM
Toshio Ishida; Yasuo Nishikawa, and Tadashi Yasunaga, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 18, 1992, Ser. No. 978,520
Claims priority, application Japan, Nov. 19, 1991, 3-303129
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—130 **6 Claims**



1. A method for preparing a ferromagnetic thin metal film type magnetic recording medium comprising the steps of:
depositing a metal vapor stream comprising Co as a main component on a non-magnetic support in an oxygen gas-containing atmosphere to form a ferromagnetic thin metal film, wherein said ferromagnetic thin metal film has an oxygen content of at least 15 at. %;
exposing the ferromagnetic thin metal film to ozone; and then
applying a perfluoropolyether having at least one polar group to the ferromagnetic thin metal film;
wherein said perfluoropolyether having at least one polar group has a saturation adsorption amount (mg/m^2) of at least 4.0 mg/m^2 against said ferromagnetic thin metal film.

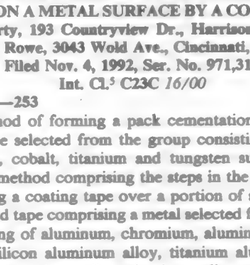
5,334,414
PROCESS FOR COATING CARBON FIBERS WITH PITCH AND COMPOSITES MADE THEREFROM
Danny D. Edie, Clemson, and James W. Klett, Seneca, both of S.C., assignors to Clemson University, Clemson, S.C.
Filed Jan. 22, 1993, Ser. No. 8,787
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—189 **10 Claims**



2. A process for forming a carbon/carbon composite comprising the steps of:
a) providing a carbon fiber tow to a pressurized air comb spreader, said air comb spreader including a tow spreading chamber having an entrance and an exit for said fiber tow, wherein air is forced in through a plurality of air comb slits for intersecting said fiber tow in a substantially perpendicular direction as said fiber tow moves from said entrance to said exit to spread said carbon fiber tow into substantially individual fiber filaments to create a spreaded fiber tow;
b) providing said spreaded fiber tow to a powder coating chamber for depositing a pitch material onto said substantially individual carbon fiber filaments;
c) depositing said pitch material onto said carbon fiber filaments to form a pitch-coated carbon fiber tow by providing said pitch material in dry powdered form to an upper portion of said fiber coating chamber, said dry pitch powder being provided to said coating chamber at a point of low air velocity so that said pitch powder falls onto said spreaded fiber tow traveling through said powder coating chamber prior to said pitch powder entering into a region of high air velocity within said coating chamber and being recirculated back to a region of low air velocity in said coating chamber;
d) providing said pitch-coated carbon fiber tow for further processing; and
e) forming said pitch-coated carbon fiber tow into a carbon/carbon composite by subjecting said pitch-coated tow to carbonization.

5,334,415
METHOD AND APPARATUS FOR FILM COATED PASSIVATION OF INK CHANNELS IN INK JET PRINTHEAD
Donald J. Hayes, Plano, and John R. Pies, Dallas, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Sep. 21, 1992, Ser. No. 947,830
Int. Cl.[5] B05D *7/22*
U.S. Cl. 427—231 **18 Claims**

1. A method for coating surfaces of channels of a workpiece, comprising the steps of:
placing said workpiece on a rotation plate having a centrum for rotation;
securing said workpiece in position upon said rotation plate such that said channels of said workpiece are generally directed from said centrum radially outward;
depositing an insulating resin along said surfaces of said channels; and



spinning said rotation plate to cause said deposited insulating resin to migrate along said surfaces of said channels, thereby coating said surfaces thereof.

5,334,416
HEAT RESISTANT STAINLESS STEEL COATED BY DIFFUSION OF ALUMINUM AND THE COATING METHOD THEREOF
Byeong G. Seong; Soon Y. Hwang; Jin H. Song, and Kyoo Y. Kim, all of Pohang City, Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd. and Research Institute of Industrial Science & Technology, both of Pohang City, Rep. of Korea
Filed Dec. 23, 1992, Ser. No. 996,320
Claims priority, application Rep. of Korea, Dec. 30, 1991, 91-25135
Int. Cl.[5] C23C *16/06, 16/10, 16/12*
U.S. Cl. 427—252 **16 Claims**

1. A method of aluminum diffusion coating a heat resistant stainless steel containing nickel and chromium as main alloy components, wherein the method comprises the steps of:
a) burying said heat resistant stainless steel in a diffusion coating pack powder composed of an aluminum source, an activator and inert filler materials,
b) treating the steel and powder at 850°–1025° C. for 5–20 hours, and
c) forming an outer aluminide layer and a chromium-rich intermediate layer on the stainless steel, without forming an interdiffusion layer containing aluminide precipitates, under the aluminide layer.

5,334,417
METHOD FOR FORMING A PACK CEMENTATION COATING ON A METAL SURFACE BY A COATING TAPE
Kevin Rafferty, 193 Countryview Dr., Harrison, Ohio 45030, and Bruce Rowe, 3043 Wold Ave., Cincinnati, both of Ohio
Filed Nov. 4, 1992, Ser. No. 971,317
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—253 **7 Claims**

1. A method of forming a pack cementation coating on a metal surface selected from the group consisting of stainless steel, nickel, cobalt, titanium and tungsten superalloys and nickel, said method comprising the steps in the sequence of:
positioning a coating tape over a portion of said metal surface, said tape comprising a metal selected from the group consisting of aluminum, chromium, aluminum chromium alloy, silicon aluminum alloy, titanium aluminum alloy, vanadium, and vanadium aluminum alloy, a halide carrier compound and a metal oxide filler and a binder, said binder comprising fibrillated polytetrafluorethylene, and
heating said surface to a temperature effective to cause said polytetrafluorethylene to evaporate and to cause said metal to react with said carrier and said metal surface to

VOL 1165 ISS 1 AG 2 1994 UMI

provide said pack cementation coating on said metal surface.

5,334,418

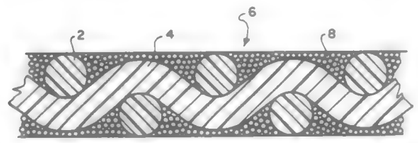
COMPRESSIBLE FABRIC SUBSTRATE

Joseph L. Byers, Inman; W. Toriran Flint, Spartanburg, both of S.C., and Richard C. Kerr, Rutherfordton, N.C., assignors to Reeves Brothers, Inc., Spartanburg, S.C.

Continuation-in-part of Ser. No. 794,261, Nov. 15, 1991, abandoned. This application Sep. 3, 1993, Ser. No. 116,819

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—373 26 Claims



1. A method for making a compressible fabric which comprises forming a matrix material having a plurality of cells therein; applying the matrix material to at least one side of a fabric substrate comprising a plurality of warp and fill fibers or yarns to at least partially surround substantially all of the fibers, yarns and interstices of the fabric substrate, thus at least partially impregnating said fibers, yarns and interstices with said matrix material, to impart increased compressibility properties to the fabric; and curing the matrix material to obtain the compressible fabric; wherein the matrix material is applied such that the thickness of the partially impregnated fabric substrate is substantially the same as the unimpregnated fabric substrate.

5,334,419

METHOD OF SIZING CARBON FIBERS

Hiroshi Minami; Yoshihiko Nakaoka, and Tsuneyoshi Yamamoto, all of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

Filed Mar. 26, 1993, Ser. No. 37,919

Claims priority, application Japan, Mar. 27, 1992, 4-102217; Feb. 16, 1993, 5-51445

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—386 12 Claims

1. A method of sizing carbon fibers comprising the steps of:

processing said carbon fibers with a water-based emulsion of sizing agents comprising one or more ester compounds selected from Group A described below and non-ionic surfactant at weight ratio of 90/10–30/70, said sizing agents having average diameter of 0.01–0.5 μm in said water-based emulsion; and

applying said sizing agents to said carbon fibers at a rate of 0.1–5.0 weight % with respect to said carbon fibers;

said Group A consisting of ester compounds shown by Formula (1) below and ester compounds shown by Formula (2) below:

$$R^1COOR^2 \qquad \text{Formula (1)}$$

$$R^3COO(CH_2-\underset{\displaystyle R^5}{\underset{|}{CH}}O)_n-R^4 \qquad \text{Formula (2)}$$

and said surfactant being one or more selected from Group B consisting of polyalkoxylated aliphatic carboxylic acid esters of polyhydric alcohol, aliphatic carboxylic acid esters of polyoxyalkyleneglycol and polyoxyalkyleneglycol ethers of aliphatic alcohol, where R^1 and R^3 are each saturated aliphatic hydrocarbon group with 1–29 carbon atoms, unsaturated aliphatic hydrocarbon group with 15–21 carbon atoms or hydroxy substituted aliphatic hydrocarbon group with 15–21 carbon atoms; R^2 is saturated aliphatic hydrocarbon group with 1–22 carbon atoms or unsaturated aliphatic hydrocarbon group with 14–22 carbon atoms; R^4 is saturated alphatic hydrocarbon group with 1–22 carbon atoms, unsaturated aliphatic hydrocarbon group with 14–22 carbon atoms or alkylphenyl group having alkyl group with 4–12 carbon atoms; R^5 is hydrogen atom, methyl group, ethyl group, phenyl group or phenoxymethyl group such that the total carbon atom number of R^1 and R^2 is 10 or greater than the total carbon atom number of R^2 and R^4 is 10 or greater; and n is an integer 1–20.

5,334,420

PROCESS FOR THE PRODUCTION OF A MULTICOAT FINISH, AND AN AQUEOUS PAINT

Michael Hartung, Geseke; Michael Grabbe, Senden, and Peter Mayenfels, Münster, all of Fed. Rep. of Germany, assignors to BASF Lacke & Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

PCT No. PCT/EP91/00464, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO91/15528, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 13, 1991, Ser. No. 927,510

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1990, 4010176

Int. Cl.[5] B05D *1/36, 7/16, 7/26*

U.S. Cl. 427—407.1 16 Claims

1. A process for the production of a multicoat finish on a substrate surface, in which

(1) a pigmented aqueous basecoat is applied to the substrate surface,

(2) a polymer film is formed from the composition applied in stage (1),

(3) a transparent topcoat is applied to the basecoat obtained in this way and subsequently

(4) the basecoat is baked together with the topcoat, wherein the basecoat comprises as binder a polymer which can be obtained by polymerizing in an organic solvent or in a mixture of organic solvents

(A) ethylenically unsaturated monomers or a mixture of ethylenically unsaturated monomers in the presence of

(B) a polyurethane resin which has a number average molecular weight of 200 to 30,000, preferably of 1,000 to 5,000, and which contains on a statistical average 0.05 to 1.1, preferably 0.2 to 0.9, particularly preferably 0.3 to 0.7 polymerizable double bonds per molecule,

and converting the reaction product obtained in this way to an anionically stabilized aqueous dispersion.

5,334,421

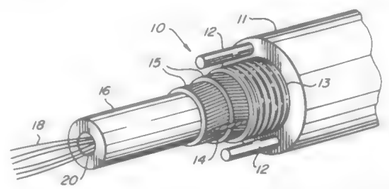
PROCESS FOR COLOR CODING AN OPTICAL FIBER

Christopher W. McNutt, Newton, N.C., assignor to Alcatel NA Cable Systems, Inc., Claremont, N.C.

Filed Nov. 5, 1992, Ser. No. 972,317

Int. Cl.[5] B05D *5/06*

U.S. Cl. 427—513 12 Claims



1. A process for color coding a surface of an optical fiber, said process comprising the steps of:

applying a dispersion of an ultraviolet light curable color coding ink in a carrier fluid to the surface of said optical fiber;

placing said optical fiber with the dispersed ultraviolet light curable ink thereon in a convection oven to evaporate said carrier fluid to form a carrier free ultraviolet light curable ink on said optical fiber; and

placing said optical fiber with the carrier free ultraviolet light curable ink thereon in an ultraviolet light radiator to cause the carrier free ultraviolet light curable ink to undergo a cross-linking reaction to form a color coding ink on said optical fiber.

5,334,422

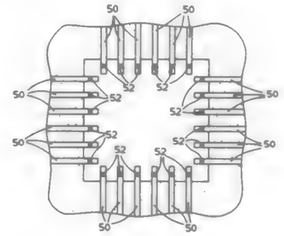
ELECTRICAL CONNECTOR HAVING ENERGY-FORMED SOLDER STOPS AND METHODS OF MAKING AND USING THE SAME

Bruce A. Myers, Kokomo; John E. Isenberg, Roosville; Christine R. Coapman, and James A. Blanton, both of Kokomo, all of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Division of Ser. No. 783,468, Oct. 28, 1991, Pat. No. 5,281,772. This application Feb. 5, 1993, Ser. No. 13,851

Int. Cl.[5] B05D *3/06, 5/12*

U.S. Cl. 427—552 12 Claims



11. A method of forming an integrated circuit chip assembly comprising the steps of:

providing an integrated circuit chip having connector pads for electrically connecting the integrated circuit of said chip to an external source of electricity;

providing a composition comprising a conductive material and an inorganic oxide;

applying said composition on a substrate to form a wet printed lead having a top surface and an end;

forming a flexible solder bump on the contactor pads of said integrated circuit chip;

sintering said printed pattern to form a cohesive electrically conductive lead;

forming a solder stop in a portion of the sintered lead by the step consisting essentially of directing a laser beam onto said portion of the sintered lead to form a solder stop surface consisting essentially of fused inorganic oxides; wherein said portion of said printed lead between the end of the lead and said solder stop defines a contact region for said solder bump;

aligning said integrated circuit chip so that said flexible solder bump contacts said contact region of said electrically conductive lead; and

reflowing said flexible solder bump, wherein the solder does not flow over the solder stop, and cooling the solder so that said integrated circuit is secured to said electrically conductive lead.

5,334,423

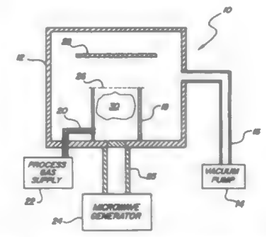
MICROWAVE ENERGIZED PROCESS FOR THE PREPARATION OF HIGH QUALITY SEMICONDUCTOR MATERIAL

Subhendu Guha; Chi C. Yang, and XiXiang Xu, all of Troy, Mich., assignors to United Solar Systems Corp., Troy, Mich.

Filed Jan. 28, 1993, Ser. No. 10,074

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—575 10 Claims



1. A method for the microwave energized deposition of a non-polycrystalline semiconductor material, said method including the steps of:

providing a deposition chamber;

disposing a substrate in said deposition chamber;

introducing a processing gas including at least one semiconductor precursor material, into said chamber;

maintaining said processing gas at a pressure;

providing a source of microwave power to introduce microwave energy into said deposition chamber;

energizing said source of microwave power at a level selected to create a plasma from said processing gas, at the 100% saturation mode, said plasma having a concentration of deposition species sufficient to deposit a layer of semiconductor material on said substrate at a first deposition rate; and

controlling access of said deposition species to said substrate so that the actual deposition rate of the semiconductor material onto said substrate is less than said first deposition rate.

5,334,424

THERMOPLASTIC NORBORNENE RESIN FORMED ARTICLES AND SUSTRATES FOR LIQUID CRYSTAL DISPLAY

Tsutomu Hani; Nobukazu Takahashi, both of Yokohama; Teiji Kohara, Kawasaki, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,152

Int. Cl.[5] C09K *19/00*

U.S. Cl. 428—1 13 Claims

1. A thermoplastic saturated norbornene resin formed article which has a surface wherein the surface roughness is 0.05 μmn or less in terms of the maximum height, R_{max}, over an extent which can enclose a circle of 1 cm or more in diameter.

11. A substrate for liquid crystal display comprising a thermoplastic saturated norbornene resin having a surface wherein the surface roughness is 0.05 μm or less in terms of the maximum height, R_{max}, over an extent which can enclose a circle of 1 cm or more in diameter.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,425

FLORAL PRESENTATION

Martin J. O'Brien, 2542 W. Thomas St., Chicago, Ill. 60622, and George Spector, 233 Broadway Rm 3815, New York, N.Y. 10007

Filed Aug. 3, 1992, Ser. No. 924,279
Int. Cl.[5] A47G *7/00*
U.S. Cl. 428—23 4 Claims



1. A floral display device which comprises:
a) a penetratable member for receiving and retaining a plurality of flower stems therein in a floral arrangement;
b) means for removably attaching said member to a flat surface; wherein said removably attaching means includes:
c) a holder having a base with a plurality of spaced spring biased arms extending therefrom, so that when said member is inserted within said holder and spring arms, said arms will retain said member within said holder; and
d) a suction cup affixed to said base, so that said suction cup can stick to the flat surface to removably attach said holder thereto.

5,334,426

HIGH TEMPERATURE CERAMIC COMPOSITE

Robert G. Smith, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 20, 1991, Ser. No. 747,647
Int. Cl.[5] B32B *18/00*
U.S. Cl. 428—34.4 12 Claims



1. A shaped composite article comprising ceramic oxide fiber, said ceramic oxide fiber having in said composite a surface which is available for coating, a first coating at least partially covering said surface of said ceramic oxide fiber available for coating to provide a surface which is available for overcoating, and a second coating at least partially covering that portion of said surface which is available for overcoating, wherein said first coating comprises a carbonaceous matrix which includes boron nitride particles in contact therewith, and said second coating comprises silicon carbide, with the proviso that said second coating covers at least a portion of said first coating.

5,334,427

STAMPABLE REINFORCED THERMOPLASTIC SHEET AND ARTICLES OBTAINED FROM SAID SHEET

Gilles Cognet, Bernay; Régis Jacquemet, Evreux, and Véronique Lamblin, Reims, all of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Dec. 11, 1992, Ser. No. 989,380
Claims priority, application France, Dec. 13, 1991, 91 15532
Int. Cl.[5] B29C *43/20, 51/14;* B29K *105/16;* B29L *9/00;* B32B *5/28*
U.S. Cl. 428—34.5 22 Claims

1. Stampable reinforced thermoplastic sheet, at least one face of which comprises, from the outside to the inside, at least three successive layers abc, in which:
a is a matrix comprising a thermoplastic resin reinforced by at least two different fillers selected from the group consisting of lamellar type fillers, spherical fillers, and substantially spherical type fillers, the viscosity of the matrix, measured using a capillary viscometer, at the temperatures at which the sheets are produced and used, and at a shear rate of 20 s^{-1}, being between 450 and 2000 Pa.s;
b is an interfacial binder chemically compatible with the thermoplastic resin of the matrix a, the viscosity of which, measured under the same conditions as that of the matrix a, is between 10 and 350 Pa.s, and
c is a reinforcement consisting of a needled glass mat.

22. Moulded articles and parts obtained by stamping one or more sheets according to claim 1,
at least one of the surfaces of these articles and parts being made up, from the outside to the inside, of at least three successive layers abc, in which:
a is a matrix comprising a thermoplastic resin reinforced by at least two different fillers selected from the group consisting of lamellar type fillers, spherical fillers, and substantially spherical type fillers,
b is an interfacial binder chemically compatible with the thermoplastic resin of the matrix a, and having, with respect to the latter, a lower viscosity at the temperatures at which the sheets are produced and used; and
c is a reinforcement consisting of a needled glass mat.

5,334,428

MULTILAYER COEXTRUDED LINEAR LOW DENSITY POLYETHYLENE STRETCH WRAP FILMS

David V. Dobreski; George N. Eichbauer, both of Fairport, and Michael E. Leach, Penfield, all of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 28, 1992, Ser. No. 997,411
Int. Cl.[5] B65D *65/02*
U.S. Cl. 428—34.9 24 Claims

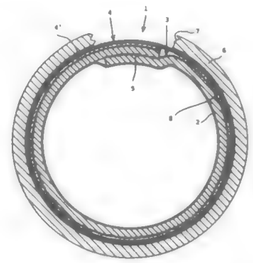
1. A thermoplastic stretch wrap film for the overwrap packaging of articles, comprising at least three layers, said three layers having two outer layers and an intermediate layer positioned between said outer layers, said intermediate layer consisting essentially of a low melt index linear low density polymer of ethylene and a minor amount of at least one alpha olefin having from 4 to 10 carbon atoms, said low melt index linear low density copolymer having a melt index of between 0.5 and 2.5 and at least one of said two outer layers consisting essentially of a high melt index linear low density copolymer of ethylene and a minor amount of at least one alpha olefin having from 4 to 10 carbon atoms, said high melt index linear low density copolymer having a melt index of at least 2.8, said high melt index linear low density copolymer containing from about 3.5 to about 15 weight percent n-hexane extractibles, wherein said n-hexane extractibles are present in an amount sufficient to cause the stretch wrap film to exert a cling force when in surface-to-surface contact with itself or another surface when used in the stretch overwrap packaging of articles.

5,334,429

LINING MATERIAL FOR PIPE LINES AND A PROCESS FOR PROVIDING PIPE LINES THEREWITH

Takayoshi Imoto, Otsu, and Toshio Okahashi, Higashiosaka, both of Japan, assignors to Ashimori Industry Co., Ltd., Osaka, Japan

Filed Jun. 23, 1992, Ser. No. 902,731
Claims priority, application Japan, Jun. 24, 1991, 3-182043; Apr. 4, 1992, 4-112151
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.2 5 Claims



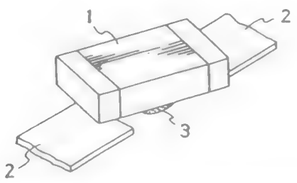
1. A lining material for pipe lines, comprising: a flexible tubular film; a resin-impregnated sheet covering an outer surface of said flexible tubular film; and a tubular covering material overlaid on an outer surface of said resin-impregnated sheet; said resin-impregnated sheet comprising a mat of fibers of a high tenacity, and optionally a fabric, impregnated with a thickened liquid thermohardenable resin to form a fiber-reinforced or fabric-fiber-reinforced composite molding sheet having a width greater than an inner circumferential length of a pipe line to be treater, lateral end portions of the molding sheet overlapping each other slidably in opposite directions so as to form a tube; said tubular covering material having a strong resistance to tensile force, said tubular covering material overlaying the outer surface of said molding sheet for a full length of said molding sheet.

5,334,430

PRESSURE-SENSITIVE ADHESIVE FOR TEMPORARILY SECURING ELECTRONIC DEVICES

Mitsuo Ishikawa, and Shigeaki Watarai, both of Tokyo, Japan, assignors to Senju Metal Industry Co., Ltd. and Nihon Junyaku Co., both of Tokyo, Japan

Division of Ser. No. 577,716, Sep. 5, 1990, Pat. No. 5,085,364. This application Nov. 8, 1991, Ser. No. 789,602
Claims priority, application Japan, Sep. 5, 1989, 1-228423; Nov. 15, 1989, 1-296680
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 10 Claims



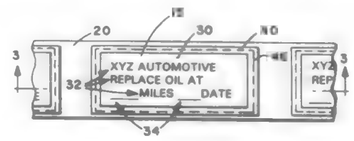
1. A pressure-sensitive adhesive tape or sheet for temporarily securing electronic devices on a printed-circuit board before and during soldering, comprising a support having a releasing surface and a pressure-sensitive adhesive disposed on the releasing surface of the support, said pressure sensitive adhesive consisting essentially of a resinous material having a dynamic modulous of elasticity in the range of from 10^4 to 10^9 dyne/cm^2 as measured at a soldering temperature of the electronic devices with a frequency of applied vibrations of 10 Hz, and said adhesive being a blend of 30–60 weight % of an acrylate copolymer resin 0–10 weight % of an urethane-acrylate copolymer resin, and 40–60 weight % of a silicone-acrylate copolymer resin.

5,334,431

PIGGYBACK ASSEMBLY OF STATIC CLING DECAL, INTERMEDIATE LAYER AND ADHESIVE WEB

Andre G. Longtin, Weare, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Mar. 16, 1993, Ser. No. 31,866
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 8 Claims



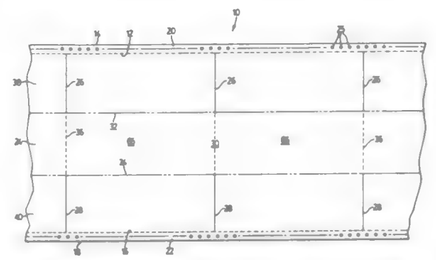
1. An assembly comprising:
a continuous web substrate;
a plurality of individual release liners releasably attached to said continuous web; and
at least one static cling label attached to each of said plurality of individual release liners, wherein said plurality of individual release liners each have an adhesive on a side of said liner opposite to said static cling label and wherein said adhesive adheres to said continuous web substrate.

5,334,432

CONTINUOUS FORM

John A. Long, 41 Lamont Avenue, Scarborough, Ontario, M1S 1A8, Canada

Continuation-in-part of Ser. No. 859,879, Mar. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 816,712, Jan. 3, 1992, Pat. No. 5,275,857, which is a continuation-in-part of Ser. No. 800,285, Nov. 29, 1991, Pat. No. 5,219,631. This application Mar. 23, 1993, Ser. No. 35,702
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—43 5 Claims

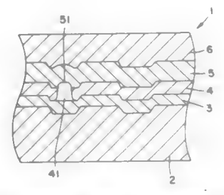


1. A paper continuous form, comprising:
a plurality of opposed pairs of linear transverse cuts, one cut of each opposed pair extending in said continuous form from one margin of said continuous form and the other cut of each opposed pair extending in said continuous form from the other margin of said continuous form, all transverse cuts of said plurality of opposed pairs of transverse

VOL 1165 ISS 1 AG 2 1994 UMI

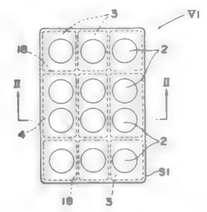
cuts which extend from a given one of said one margin and said other margin being of uniform length;
a light line of perforation joining each opposed pair of transverse cuts;
each transverse cut being at least several times longer than any cut forming part of said light line of perforation.

5,334,433
OPTICAL RECORDING MEDIUM
Junji Tominaga, Nagano, Japan, assignor to TDK Corporation, Tokyo, Japan
Filed Dec. 28, 1992, Ser. No. 996,821
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 16 Claims



1. An optical recording medium comprising a dielectric thin film, a recording thin film, and a reflective thin film stacked on a surface of a substrate in the described order, said recording thin film containing an inorganic compound which decomposes to release a gas upon heating.

5,334,434
VIBRATION OR SHOCK ABSORBING MEMBER
Tomio Shiota, Takatsuki; Toshiharu Hikida, Kyoto; Masashi Sugimoto, Saita; Kazuhiko Kodama, Kyoto, and Kaoru Shimizu, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 10, 1992, Ser. No. 832,961
Claims priority, application Japan, Feb. 15, 1991, 3-021925
Int. Cl.[5] B32B *3/20*
U.S. Cl. 428—188 18 Claims



1. A vibration or shock absorbing member which comprises an integral structure, a plurality of protrusions formed at least on one main flat surface of said integral structure in a matrix pattern, partition walls intersecting each other in the integral structure, and a plurality of independent hollow portions formed under said protrusions within the integral structure through said intersections partition walls in the matrix pattern, said integral structure being formed into one piece by a one-shot molding.

5,334,435
INK-JET RECORDING LIQUIDS
Louis J. Rossi, Rochester, N.Y., and Sunita P. Chavan, Beaver Creek, Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 20, 1992, Ser. No. 979,130
Int. Cl.[5] B32B *29/00, 3/00*
U.S. Cl. 428—195 6 Claims

1. Tetrakis diphenylguanidinium salt of 6-amino-4-hydroxy-3-[[7-sulfo-4-[(4-sulfophenyl)azo]-1-naphthalenyl]azo]-2,7-naphthalenedisulfonic acid.

5,334,436
FLEXIBLE MATERIAL INCLUDING ACTIVE PARTICLES, PROCESS FOR THE PRODUCTION THEREOF, AND PROTECTIVE CLOTHING MADE THEREFROM
Karin Hobbs, Gefrees; Regina Hoffmann, Muenchberg, and Klaus Smolik, Gefrees, all of Fed. Rep. of Germany, assignors to Helsa-Werke Helmut Sandler GmbH & Co. KG, Gefrees, Fed. Rep. of Germany
Filed Feb. 17, 1993, Ser. No. 18,764
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206443
Int. Cl.[5] B32B *5/04, 5/16, 3/16, 33/00*
U.S. Cl. 428—195 26 Claims

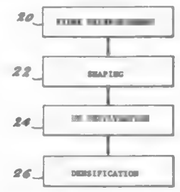
1. A flexible sheet material comprising an at least substantially air-permeable carrier in web form, spaced-apart adhesive points on the carrier, and active particles adapted to interact with at least one of noxious and odorous substances and fixed on said carrier by means of said adhesive points in an at least substantially uniform distribution on the carrier, said carrier in web form having a surface area reduced from the carrier surface area at the time said spaced-apart adhesive points were applied thereto.

5,334,437
SPUNLACED FABRIC COMPRISING A NONWOVEN BATT HYDRAULICALLY ENTANGLED WITH A WARP-LIKE ARRAY OF COMPOSITE ELASTIC YARNS
Dimitri P. Zafiroglu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Sep. 23, 1992, Ser. No. 946,861
Int. Cl.[5] B32B *5/06;* D04H *1/74;* D02G *3/32*
U.S. Cl. 428—219 5 Claims

1. An improved spunlaced fabric that comprises a nonwoven fibrous layer hydraulically entangled with an array of elastic yarn, wherein the improvement comprises for greater resistance to damage from repetitive stretching, the elastic yarn array is formed with a combination yarn comprising a first component of elastic filaments, the first component amounting to no more than 60% of the total weight of the combination yarn, and a second component of non-elastomeric staple fibers or filaments of textile decitex, the yarns of said elastic yarn array being substantially free of over-and-under intercrossing relationships.

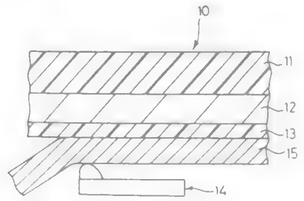
5,334,438
COMPOSITE MATERIAL WITH A REFRACTORY FIBROUS REINFORCEMENT AND ITS PRODUCTION PROCESS
Frédéric Saugnac, Pessac, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France
Filed Nov. 25, 1991, Ser. No. 797,720
Claims priority, application France, Nov. 28, 1990, 90 14874
Int. Cl.[5] B32B *9/00;* C23C *16/02*
U.S. Cl. 428—212 39 Claims

1. Composite material having a fibrous reinforcement, incorporating refractory fibres (2) embedded in a nonmetallic matrix (4) and an interphase material (6) interposed between the fibres and the matrix, characterized in that the interphase material has a thickness between 0.05 and 3 micrometers, and comprises a solid solution having a structure selected from the group consisting of a lamellar structure, an amorphous structure, and an intermediate structure between the amorphous



and the lamellar structure, said solid solution containing in atomic %, 1 to 99% carbon, 1 to 99% boron, and up to 98% nitrogen.

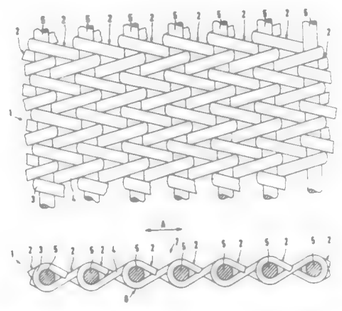
5,334,439
IMAGE RETRANSFER SHEET FOR DRY-PROCESSING TYPE IMAGE-TRANSFER ONTO AN IMAGE RECEIVING SHEET
Takashi Kawaguchi, Aichi, and Mitsuo Yamane, Yokkaichi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Aug. 28, 1992, Ser. No. 936,649
Claims priority, application Japan, Sep. 2, 1991, 3-221647
Int. Cl.[5] B41M *5/26*
U.S. Cl. 428—212 24 Claims



1. An image-retransfer sheet for dry-processing type image-transfer onto an image receiving sheet comprising:
a substrate;
a first layer formed of a surface treating agent on the first surface of said substrate, the first layer being capable of receiving a thermally transferred ink image thereon and having a tensile strength ranging from about 1 to about 100 kg/cm^2; and
a second layer formed of a thermoplastic synthetic resin film on said first layer, wherein holes are formed in the resin film as the first layer receives a transferred ink image.

5,334,440
WIRE-LINK BELT
Walter Halterbeck, and Martin Huser, both of Duren, Fed. Rep. of Germany, assignors to Thomas Josef Heimbach GmbH & Co., Duren, Fed. Rep. of Germany
Filed Jul. 9, 1992, Ser. No. 910,820
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1991, 4122805
Int. Cl.[5] D21F *7/12;* D03D *25/00;* B21F *27/08*
U.S. Cl. 428—222 17 Claims

1. A wire link belt, comprising:
a) a plurality of cooperating wire coils extending generally in the direction of the belt, each coil consisting of mutually facing first and second end arcs interconnected by a turn leg integral therewith and said coils defining spaced first and second flat surfaces of the belt;
b) a plurality of plug-in wires extending in spaced relation transverse to the direction of movement of the belt; and
c) each end arc disposed about an associated one of said plug-in wires so that adjacent coils may pivot thereabout

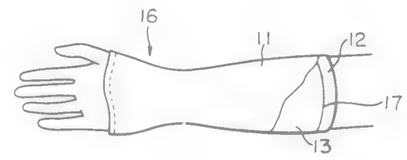


and each turn interconnecting associated ones of said end arcs has at least a portion extending obliquely therebetween relative to said first and second surfaces so that permeability of the belt to air is minimized.

5,334,441
COMPOSITE COMPRISING UNSATURATED POLYESTER-FLEXIBLE POLYMER BLOCK COPOLYMER COATED FIBER STRUCTURES IN A POLYESTER OR VINYL ESTER RESIN MATRIX
Frederick J. McGarry, Weston, Mass., and Douglas S. McBain, Norton, Ohio, assignors to GenCorp Inc., Fairlawn, Ohio
Filed Jan. 30, 1992, Ser. No. 828,081
Int. Cl.[5] D03D *15/12;* D04H *1/58*
U.S. Cl. 428—229 19 Claims

1. A composite material, comprising:
a fiber structure coated with a block copolymer of the formula AB or ABA, or mixtures thereof and optionally said block copolymer contains small amounts of $A(BA)_n$, where A is an unsaturated polyester having a molecular weight of from about 100 to about 5000, B is a flexible polymer having a Tg of about 0° C. or less, and n is 2 to 5, the coated fiber structure being dispersed in a polyester or vinyl ester resin matrix and wherein the fiber structure is from 5 to 85 wt. % of the composite.

5,334,442
ORTHOPEDIC SHEET-LIKE COMPOSITION
Shigetomi Okamoto, Kyutaro; Masahiko Miwa, Uji; Takayuki Sekine, Urawa, and Hiroshi Yamaguchi, Tokyo, all of Japan, assignors to Alcare Co., Ltd., Tokyo, Japan
Filed Nov. 25, 1992, Ser. No. 981,181
Claims priority, application Japan, Nov. 28, 1991, 3-339747
Int. Cl.[5] A61F *5/04*
U.S. Cl. 428—246 11 Claims



1. An orthopedic sheet comprising a pliant sheet of material

VOL 1165 ISS 1 AG 2 1994 UMI

having opposed side surfaces, said pliant sheet being impregnated with a viscous water-curable resin that cures when exposed to water a first triple-layered fabric structure overlaying one side surface of said pliant sheet, and a second triple-layered fabric structure overlaying the other side surface of said pliant sheet, each of said first and second triple-layered fabric structures having a front face, a back face and an intermediate portion interconnecting said front and back faces.

5,334,443

SUBSTRATE WITH ADHESION PROMOTING FILM COMPRISING VINYL CHLORIDE POLYMER PLASTICIZED WITH POLYKETONE

Jagadish C. Goswami, New City, N.Y., and Gerald R. Alessio, Emerson, N.J., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 595,060, Oct. 10, 1990, Pat. No. 5,109,047. This application Mar. 3, 1992, Ser. No. 845,120

Int. Cl.[5] B32B *7/00, 7/12;* C08K *5/07*

U.S. Cl. 428—261 8 Claims

1. An article of manufacture comprising:

(a) a substrate selected from the group consisting of polymer films, yarns, open weave fabrics, and metals; and

(b) an adhesion promoting, fused film comprising a vinyl chloride polymer and a liquid carbon monoxide-propylene polyketone as a plasticizer thereof on the substrate.

5,334,444

COMPATIBILIZED POLYPHENYLENE ETHER/POLYAMIDE MONOFILAMENT AND FELT MADE THEREFORM

Yousuf M. Bhoori, Edison; Daniel S. Leydon, Succasunna, and Paul Gilmore, Mendham, all of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 814,977, Dec. 24, 1991, Pat. No. 5,225,270. This application Nov. 25, 1992, Ser. No. 976,380

The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[5] D04H *1/08;* B32B *19/00;* D02G *3/00;* C08F *283/08*

U.S. Cl. 428—280 23 Claims

1. A monofilament comprising, based on the total weight of the monofilament:

(a) from about 10 weight % to about 60 weight % of a functionalized polyphenylene ether;

(b) from about 40 weight % to about 90 weight % of a polyamide; and

(c) from about 1 weight % to about 30 weight % of a functionalized elastomeric polymer,

wherein said monofilament exhibits a tenacity of at least 3 grams per denier as measured in accordance with the ATMD2256-90 breaking tenacity testing procedure.

5,334,445

CELLULOSIC FIBROUS AGGREGATE AND A PROCESS FOR ITS PREPARATION

Herman P. Ruyter; Anton Hortulanus, and Jan Dekker, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 13, 1989, Ser. No. 448,101

Claims priority, application United Kingdom, Dec. 16, 1988, 8829445; Feb. 10, 1989, 8903012.6

Int. Cl.[5] D04H *1/58*

U.S. Cl. 428—284 22 Claims

1. A cellulosic fibrous aggregate formed from sections of cellulosic fibrous material by a process which comprises:

a softening stage comprising softening a plurality of sections of cellulosic fibrous material at least 20 cm long by the action of an aqueous softening agent at elevated temperature, thereby at least partially breaking down the cellulosic cross-linking in the cellulosic fibrous material;

a compression stage comprising pressing together the softened sections of cellulosic fibrous material to form a compressed matrix; and

a consolidation stage comprising dewatering and consolidating the compressed matrix to form a consolidated matrix.

5,334,446

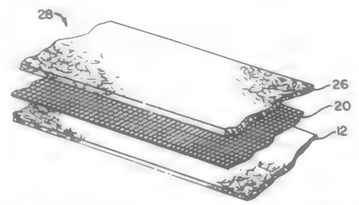
COMPOSITE ELASTIC NONWOVEN FABRIC

Thomas E. Quantrille, Simpsonville; Jared A. Austin, Greer, and G. Stanley Zimmerman, Greenville, all of S.C., assignors to Fiberweb North America, Inc., Simpsonville, S.C.

Filed Jan. 24, 1992, Ser. No. 825,016

Int. Cl.[5] B32B *5/16, 27/34;* D06N *7/04*

U.S. Cl. 428—284 51 Claims



1. A composite elastic nonwoven fabric comprising:

an elastomeric net having a plurality of apertures;

a fibrous web comprising at least about 10 wt. % binder fibers, said binder fibers comprising at least one low melting material having a melting temperature between about 100 and about 135° C., said fibrous web additionally comprising non-binder fibers and being intimately hydroentangled with said net such that at least a portion of said binder fibers extend through at least a portion of the apertures in said net; and

at least a portion of said binder fibers having been thermally activated thereby bonding said hydroentangled web into a coherent, substantially unitary structure encompassing said elastomeric net.

5,334,447

FOAM SUBSTRATE-ATTACHED ADHESIVE SHEETS

Yoshinao Kitamura; Shinkiti Yamashita; Yasuyuki Tokunaga; Masahiko Ando, and Takeshi Yamanaka, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Dec. 3, 1993, Ser. No. 161,268

Claims priority, application Japan, Dec. 9, 1992, 4-352554

Int. Cl.[5] B32B *7/12*

U.S. Cl. 428—317.3 8 Claims

1. A foam substrate-attached adhesive sheet or tape comprising a substrate having formed thereon a layer of a pressure-sensitive adhesive, wherein the substrate is a foam elastomer having a breaking elongation of at least 800% and an apparent 800% modulus of from 1.0 to 15 kg/cm^2 in a tensile test of 23° C., and a breaking elongation of at least 400% and an apparent 400% modulus of from 2.0 to 60 kg/cm^2 in a tensile test of −30° C.

5,334,448

POLYVINYL CHLORIDE/POLYURETHANE FOAM COMPOSITE ELEMENTS, THE PRODUCTIONS THEREOF, AND LIQUID, URETHANE-CONTAINING POLYISOCYANATE MIXTURES WHICH CAN BE USED TO PREPARE THE POLYURETHANE FOAM

Peter Horn, Heidelberg; Erhard Reich, Damme; Stefan Adams, Ludwigshafen, and Sarbananda Chakrabarti, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 3, 1991, Ser. No. 802,074

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1990, 4038783

Int. Cl.[5] B32B *27/00*

U.S. Cl. 428—319.7 8 Claims

1. A composite element consisting essentially of

A) at least one top layer of polyvinyl chloride or a polyvinyl chloride-containing polymer mixture, and

B) a polyurethane foam,

wherein the polyvinyl chloride or polyvinyl chloride-containing polymer mixture of the top layer (A), the polyurethane foam (B), or (A) and (B) contain units of an α,β-olefinically unsaturated polyester having a molecular weight factor per double bond of from 150 to 3000.

5,334,449

COATED PAPER

Werner Bergmann, Brüggen, and Paul H. Dühling, Elsdorf - Esch, both of Fed. Rep. of Germany, assignors to Stora Feldmühle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/01629, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO92/05312, PCT Pub. Date Apr. 2, 1992

PCT Filed Aug. 27, 1991, Ser. No. 980,800

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1990, 4029491

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—327 11 Claims

1. A one-side coated paper comprising a calendered coating applied to one side of raw paper, said coating consisting of one or two layers formed with a composition containing a first film-forming synthetic resin binding agent, a natural binding agent and a mineral pigment, a cover coat applied to said calendered coating by the cast coating method using a mineral pigment-free composition containing a second film-forming synthetic resin binding agent and a natural binding agent, said second film-forming synthetic resin binding agent having a film-forming temperature of less than 40° C., and said mineral pigment-free composition containing from 20 to 60 wt. % of a natural binding agent, based on the total binding agent content.

5,334,450

WEATHERABLE STYRENIC FILM STRUCTURES WITH INTERMEDIATE TIE LAYER AND LAMINATES THEREOF

Vincent S. Zabrocki, Newark, and Robert H. Kelch, Granville, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed May 20, 1992, Ser. No. 886,659

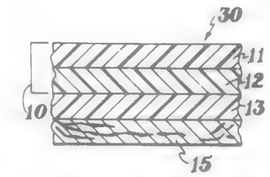
Int. Cl.[5] B32B *27/08*

U.S. Cl. 428—332 15 Claims

1. A flexible film structure adapted for use as a weatherable surface coating on a substrate, comprising:

a) at least one weatherable layer comprising from about 50 weight percent to 100 weight percent of a weatherable polymer selected from the group consisting of acrylonitrile-ethylene/propylene rubber-styrene, acrylonitrile-styrene-acrylate rubber, styrene acrylonitrile, and blends thereof, said weatherable layer having a 1 percent secant modulus of greater than about 150,000 psi;

b) at least one intermediate tie layer, underlying the weatherable layer comprising a thermoplastic polymer selected from the group consisting of chlorinated polyethylene, styrenic block polymer, copolyamide adhesives, copolyester adhesives, polyvinyl, polyurethanes, ethylene propylene diene copolymers, and mixtures thereof, said intermediate tie layer being adjacent to and adhered to said at least one weatherable layer, said intermediate tie layer having a 1 percent secant modulus of less than about 150,000 psi; and



c) at least one adhesive layer, underlying said intermediate tie layer, comprising an ethylene copolymer or terpolymer, chlorinated polyethylene, styrenic block polymer, copolyamide adhesive, copolyester adhesive, polyvinyl chloride, polyurethane, or a mixture thereof, said adhesive layer adjacent to and adhered to said at least one intermediate tie layer, said adhesive layer having a 1 percent secant modulus of less than about 150,000 psi;

wherein the total thickness of the film structure is less than about 25 mils.

5,334,451

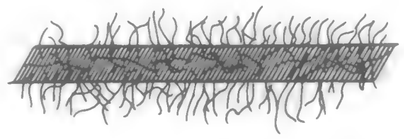
CONTINUOUS FILAMENT YARN PRECOAT SEPTUM

Steven D. Barboza, Baltimore, Md., assignor to Memtec America Corporation, Timonium, Md.

Continuation of Ser. No. 844,460, Mar. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 395,512, Aug. 18, 1989, abandoned. This application Apr. 26, 1993, Ser. No. 51,540

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—377 24 Claims



1. In a precoat septum adapted to receive and support a particulate filter medium on the surface of said septum, said septum comprising a spiral winding of a yarn supported on a porous core, the improvement comprising:

said spiral winding is a continuous filament yarn under tension, air jet textured to the extent that said filaments form a plurality of random entangled loops, with a sufficient degree of entanglement that said loops are not pulled out under the tension as wound on said core and when subjected to backwashing.

5,334,452

CARPET FIBERS HAVING MULTIPOLIATE CROSS-SECTIONAL CONFIGURATION

Jing-Pein Yu, Pensacola, Fla., assignor to Monsanto Company, Saint Louis, Mo.

Filed Nov. 16, 1992, Ser. No. 976,811

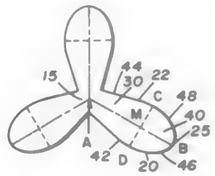
Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—397 6 Claims

1. A polymeric fiber characterized by a multilobal cross-sectional configuration, said configuration comprising:

VOL 1165 ISS 1 AUG 2 1994 UMI

(a) a fiber center including a central point; and
(b) a plurality of elongated lobes having a non-circular, oblong shape, said lobes extending radially outwardly from said fiber center, each of said lobes defined by a pair of opposing, substantially symmetrical contours curved along their entire lengths and terminating at a tip, wherein each of said contours is a singular arc concave along its



entire length, said tip with said central point defining a lobe centerline; wherein each of said lobes includes an inner portion and an outer portion immediately adjacent said inner portion along a line of maximum width which is shorter in length than said centerline and which perpendicularly bisects said centerline to form an outer centerline segment and an inner centerline segment.

5,334,453

DIAMOND-COATED BODIES AND PROCESS FOR PREPARATION THEREOF

Satoshi Ito; Masakazu Watanabe, both of Nagoya; Toshimichi Ito, Tokyo, and Masaya Tsubokawa, Sodegaura, all of Japan, assignors to NGK Spark Plug Company Limited, Nagoya and Idemitsu Petrochemical Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 634,916, Dec. 27, 1990, abandoned. This application Jun. 26, 1992, Ser. No. 905,199
Claims priority, application Japan, Dec. 28, 1989, 1-344779
The portion of the term of this patent subsequent to Jun. 26, 2009, has been disclaimed.
Int. Cl.[5] B23P *15/28;* B23B *27/20*
U.S. Cl. 428—408 5 Claims

1. A diamond-coated body comprising a diamond film coated by means of vapor phase synthesis on the surface of a substrate comprising a ceramics based on silicon nitride having a crystalline intergranular phase, wherein said substrate is prepared by sintering a body formed of a ceramics based on silicon nitride, whereby is obtained a sintered body having an intergranular glassy phase, cooling the sintered body to at least approximately room temperature, and subjecting the cooled sintered body to crystallization treatment by heating at a temperature from 1400° to 1700° C.

5,334,454

ARTICLES BY PLASMA-ACTIVATED CHEMICAL VAPOR DEPOSITION OF FLUORINATED CYCLIC SILOXANES

Gerardo Caporiccio, Milan; Riccardo D'Agostino, and Pietro Favia, both of Bari, all of Italy, assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 916,647, Jul. 20, 1992, Pat. No. 5,230,929. This application Feb. 22, 1993, Ser. No. 20,491
Claims priority, application Italy, Jul. 22, 1991, MI91A002011
Int. Cl.[5] B32B *27/36*
U.S. Cl. 428—412 8 Claims

1. A substrate having a coating deposited by a method comprising:
introducing a sufficient quantity of vapor into a chamber cyclic siloxane with the structure $_x$ in which R is a containing the substrate, wherein the vapor comprises a fluorinated hydrocarbon radical with 1–6 carbon atoms, R' is a fluorinated hydrocarbon radical with 3–10 carbon atoms, the carbon in the alpha and beta positions with respect to the silicon atom is hydrogenated and x is 3 or 4; and
exposing the vapor in the chamber to a radio frequency plasma discharge to cause reaction of the vapor and, thereby, deposition of the coating on the substrate.

5,334,455

FREE-RADICAL CURABLE COMPOSITIONS

Gerry K. Noren, Hoffman Estates; John J. Krajewski, Wheeling; Sami A. Shams; John M. Zimmerman, both of Hoffman Estates; Danny C. Thompson, Schaumburg, and John T. Vandeberg, Barrington, all of Ill., assignors to Stamicarbon B.V., Galeen, Netherlands

Continuation-in-part of Ser. No. 647,492, Jan. 28, 1991, abandoned, Ser. No. 647,514, Jan. 28, 1991, abandoned, and Ser. No. 647,460, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 436,826, Nov. 15, 1989, abandoned, said Ser. No. 647,492, is a continuation-in-part of Ser. No. 437,374, Nov. 15, 1989, abandoned, said Ser. No. 647,514, is a continuation-in-part of Ser. No. 438,540, Nov. 15, 1989, abandoned, each is a continuation-in-part of Ser. No. 404,578, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 319,566, Mar. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 231,362, Aug. 12, 1988, abandoned. This application May 26, 1992, Ser. No. 888,888
Int. Cl.[5] B32B *27/38;* C08F *2/50, 16/32, 22/10*
U.S. Cl. 428—413 26 Claims

1. A free-radical radiation curable composition comprising:
a) at least one compound containing from one to about six vinyl ether groups; and
b) at least one maleate or fumarate terminated product obtained by the reaction of a half-ester of maleic acid and/or fumaric acid with a polyepoxy functionalized compound,
wherein the ratio of vinyl ether groups to maleate and/or fumarate groups is in the range of about 2:1 to about 1:2.

5,334,456

FREE-RADICAL CURABLE COMPOSITIONS

Gerry K. Noren, Hoffman Estates; John J. Krajewski, Wheeling; Sami A. Shams; John M. Zimmerman, both of Hoffman Estates; Danny C. Thompson, Schaumburg, and John T. Vandeberg, Barrington, all of Ill., assignors to Stamicarbon B.V., Galeen, Netherlands

Continuation-in-part of Ser. No. 647,492, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 437,374, Nov. 15, 1989, abandoned, and a continuation-in-part of Ser. No. 647,514, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 438,540, Nov. 15, 1989, abandoned, and a continuation-in-part of Ser. No. 647,460, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 436,826, Nov. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 404,578, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 319,566, Mar. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 231,362, Aug. 12, 1988, abandoned. This application May 26, 1992, Ser. No. 888,919
Int. Cl.[5] B32B *27/06, 27/36;* C08F *2/50, 16/32*
U.S. Cl. 428—431 26 Claims

1. A free-radical radiation curable composition comprising:
a) at least one compound containing from one to about six vinyl ether groups; and
b) at least one compound containing a saturated ester or polyester backbone and at least one maleate and/or fumarate end group per molecule,
wherein the ratio of vinyl ether groups to maleate and/or fumarate groups in the composition is in the range of about 2:1 to about 1:2.

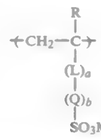
5,334,457

PLASTIC FILM HAVING A COATING LAYER COMPRISING A COPOLYESTER AND A CONDUCTIVE POLYMER AND LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL USING THE SAME

Yoshihiro Wada; Tohru Kobayashi, and Noriki Tachibana, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 757,247
Claims priority, application Japan, Sep. 12, 1990, 2-241964; Sep. 21, 1990, 2-253884
Int. Cl.[5] B32B *27/06*
U.S. Cl. 428—480 16 Claims

1. A film laminate comprising a plastic film support and a polyester resin composition layer laminated on the surface of the plastic film support,
wherein the polyester resin composition layer comprising components of a polyester copolymer (A), a polymer (B) having a conductive group in an amount of at least 5% by weight based on one molecule of the polymer (B) and having a recurring unit represented by the following formula (I):



(I)

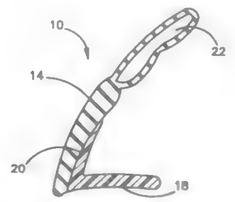
wherein R represents a hydrogen atom, a halogen atom or an alkyl group having 1 to 6 carbon atoms; L represents each group of —COO— or —CONH—; Q represents an alkylene group having 1 to 6 carbon atoms; a and b each represents 0 or 1; and M represents a hydrogen atom or a cation,
and a cross-linking agent (C).

5,334,458

RUBBER/PLASTIC CO-EXTRUSION

Thomas O. Powers, Chardon; Timothy T. Hertrick, Stow, and Mary A. Peak, Warren, all of Ohio, assignors to Geauga Company, Middlefield, Ohio

Filed Apr. 23, 1992, Ser. No. 872,798
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—517 6 Claims



1. A unitary co-extrudate article, comprising:
a rubber extrudate segment, said rubber extrudate segment passing through heating zones of a rubber extrudate extrusion machine having set temperatures between 150° F. and 175° F.;
a plastic extrudate segment, said plastic extrudate segment passing through heating zones of a plastic extrudate extrusion machine having set temperatures between 200° F. and 400° F.; and
a continuous cohesive cross-linked interface formed at a surface of interaction between said rubber extrudate segment and said plastic extrudate segment, said interface being formed as said rubber extrudate segment and said plastic extrudate segment are co-extruded through an orifice of a common die plate to form the unitary co-extrudate article, and wherein the article is shaped as said segments, cross-linked at said interface, exit through the orifice of the common die plate.

5,334,459

COMPOUND BODY

Rolf G. Oskarsson, Ronninge, and Mats O. Lundstrom, Sandviken, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Jun. 16, 1993, Ser. No. 77,680
Claims priority, application Sweden, Jul. 6, 1992, 9202092-4
Int. Cl.[5] B22F *5/00*
U.S. Cl. 428—546 10 Claims



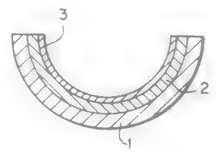
1. A tool for chipforming machining of metals and similar materials comprising a tough core of high speed steel and a surface of more wear resistant material than the core, the high speed steel of the core containing carbon in an amount 0.05–0.25% lower than the conventional content of carbon for that particular high speed steel, said high-speed steels being HSS grades including of M2, M3:2, M41, M42, T2 and T42.

5,334,460

CU-PB SYSTEM ALLOY COMPOSITE BEARING HAVING OVERLAY

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Koichi Yamamoto, Komaki, and Kenji Sakai, Ichinomiya, all of Japan, assignors to Daido Metal Company, Nagoya, Japan

Filed Dec. 2, 1992, Ser. No. 984,548
Claims priority, application Japan, Jan. 29, 1992, 4-014065
Int. Cl.[5] B22F *7/04*
U.S. Cl. 428—552 17 Claims



1. A Cu-Pb system alloy composite bearing with an overlay comprising three layers including a backing metal layer of steel a copper-lead system bearing alloy layer formed on said backing metal layer, and a tin-containing lead alloy overlay formed on said bearing alloy layer,
wherein said copper-lead system bearing alloy layer contains, by weight, 2 to 10% of nickel and 0.05 to 1.0% of boron so as to prevent the tin contained in said lead alloy overlay from diffusing into said copper-lead system bearing alloy layer, at least a part of said nickel and boron being in the form of Ni-B, and said copper-lead system bearing alloy layer has a hardness greater than NV80.

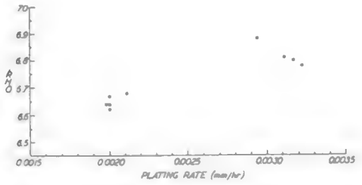
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,461

PRODUCT FORMED BY METHOD OF CONTROLLING RESISTIVITY OF PLATED METAL

Melanie A. Day, Dryden; Ronald A. Kaschak, Vestal, both of N.Y., and Steven A. Schubert, Tucson, Ariz., assignors to International Business Machines, Inc., Armonk, N.Y.

Continuation of Ser. No. 421,349, May 19, 1988, abandoned, which is a division of Ser. No. 889,661, Jul. 28, 1986, Pat. No. 4,756,923. This application Nov. 13, 1991, Ser. No. 794,368
Int. Cl.[5] B32B *5/14, 15/20*
U.S. Cl. 428—610 4 Claims



1. A metal formed in accordance with a method comprising the steps of:

determining the variable relationship between the magnitude of a residual resistivity of a metal when autocatalytically plated onto a substrate and the rate of plating said metal; and

autocatalytically plating said metal at least three distinct, selected rates of deposition to produce a desired, non-uniform residual resistivity profile over the cross section of the metal, which profile includes at least three distinct, corresponding residual resistivities.

5,334,462

CERAMIC MATERIAL AND INSULATING COATING MADE THEREOF

Raymond W. Vine, East Hartford, and Neal P. Anderson, South Windsor, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 404,715, Sep. 8, 1989, abandoned. This application Jan. 11, 1993, Ser. No. 75,870
Int. Cl.[5] C04B *35/48*
U.S. Cl. 428—697 4 Claims

1. A hard insulating single phase ceramic material consisting essentially of ceria and an amount of yttria sufficient to increase the room temperature hardness by at least 50% over the room temperature hardness of ceria when measured according to the Vickers Hardness test using a 500 gram load.

5,334,463

HYBRID FUEL BATTERY SYSTEM AND THE OPERATION METHOD THEREOF

Osamu Tajima, Hyogo; Shingo Sumi, Osaka; Koji Shindo, Osaka; Satoshi Yamamoto, Osaka, and Fumiiki Yoneda, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 27, 1992, Ser. No. 967,270
Claims priority, application Japan, Nov. 29, 1991, 3-315080
Int. Cl.[5] H07M *16/00*
U.S. Cl. 429—9 14 Claims

1. A hybrid fuel cell system comprising:

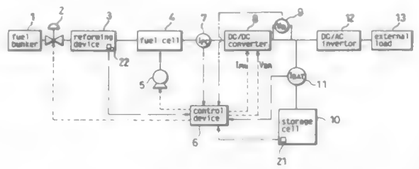
a fuel cell for generating electric power by reacting fuel gas and oxidant gas;

current restricting means for restricting an output current of said fuel cell;

a storage cell connected parallel to a series circuit comprising said fuel cell and said current restricting means for helping the fuel cell to supply electric power to an external load;

external load fluctuation detecting means for detecting a fluctuation in the current demanded by the external load; and

current limitation adjusting means for following the fluctuation in the current demanded by the external load by changing the restriction of the output current of the fuel cell which is made by said current restricting means, with the passage of time.

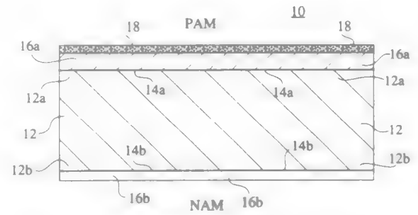


5,334,464

LIGHTWEIGHT BATTERY PLATES

John J. Rowlette, Monrovia, Calif., assignor to Bipolar Power Corporation, Whittier, Calif.

Continuation-in-part of Ser. No. 733,471, Jul. 22, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 932,521
Int. Cl.[5] H01M *2/20*
U.S. Cl. 429—210 42 Claims



1. A battery plate apparatus (10C) for use in a sealed bipolar lead-acid battery comprising:

a layer of iron (12) which is self-healing in an acidic environment; said layer of iron (12) having an upper (12*a*) and a lower (12*b*) side;

a discrete thermodynamically instable positive side protective layer of lead (16*a*) which protects said central layer of iron (12) from a destructive electrochemical reaction;

said discrete thermodynamically instable positive side protective layer of lead (16*a*) being located adjacent to said upper side (12*a*) of said central layer of iron (12);

said discrete thermodynamically instable positive side protective layer of lead 16*a* having an upper and a lower side and a first and a second lateral end;

a discrete thermodynamically stable positive side protective layer of fluorine-doped conductive stannic oxide (18);

said discrete thermodynamically stable positive side protective layer of fluorine-doped conductive stannic oxide (18) being located adjacent to said upper side of said discrete thermodynamically instable positive side protective layer of lead (16*a*;)

said discrete thermodynamically stable positive side protective layer of fluorine-doped conductive stannic oxide (18) having an upper (18*a*) and a lower (18*b*) side and a first (18*c*) and a second (18*d*) lateral end;

a discrete negative side protective layer of lead (16*b*); said discrete negative side protective layer of lead (16*b*) being located adjacent to said lower side (12*b*) of said layer of iron (12) and having a high hydrogen over-voltage;

said layer of iron (12) which is self-healing in an acidic environment being capable of forming a stable protective film over itself if a defect in either of said discrete protective layers of lead (16*a*, 16*b*) exposes said layer of iron (12) to said acidic environment;

a wetting agent layer of nickel flash (14) for providing plating compatibility; said wetting agent layer of nickel flash (14) being generally located between said lower side (12*b*) of said layer of iron (12) and said negative side protective layer of lead (16*b*); said wetting agent layer of nickel flash being generally from one to twenty micro-inches thick;

a first intermediate layer of lead (22) for protecting said layer of iron (12) during a charge reversal of said sealed bipolar lead-acid battery (10); and

a nonconductive seal (24) for insulating said thermodynamically stable positive side protective layer of fluorine-doped conductive stannic oxide (18) from external electrical potentials;

said nonconductive seal (24) being located adjacent to said upper side (18*a*) of said thermodynamically stable positive side protective layer of fluorine-doped conductive stannic oxide (18);

said nonconductive seal (24) including a pair of insulating margins (24*c*, 24*d*);

said pair of insulating margins (24*c*, 24*d*) being located near said first (18*c*) and said second (18*d*) lateral ends of said upper side (18*a*) of said thermodynamically stable positive side protective layer of fluorine-doped conductive stannic oxide (18); and

said nonconductive seal (24) being formed from a ceramic material.

5,334,465

METHOD OF MAKING CADMIUM ELECTRODES FOR ALKALINE BATTERIES

Guy Bronoel, Versailles; Thierry Potier, Neuilly-Sur-Marne; Noëlle Tassin, Fontenay-Sous-Bois; Bernard Bugnet, Saint-Genis-Pouilly; Denis Doniat, Le Perreux, and Robert Rouget, Paris, all of France, assignors to Sorapec S.A., Fontenay-Sous-Bois, France

Division of Ser. No. 817,499, Jan. 7, 1992, Pat. No. 5,264,309. This application Aug. 30, 1993, Ser. No. 113,260
Claims priority, application France, Jan. 10, 1991, 91 00394
Int. Cl.[5] H01M *4/44, 4/58*
U.S. Cl. 429—222 9 Claims

1. Method of manufacturing a cadmium negative electrode, comprising:

preparing a mixture comprising cadmium oxide and between 8 to 12% nickel sulphate hexahydrate; and

filling a nickel foam with said mixture.

5,334,466

X-RAY MASK AND PROCESS COMPRISING CONVEX-CONCAVE ALIGNMENT MARK WITH ALIGNMENT REFLECTION FILM

Juro Yasui, and Kiyoshi Araki, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

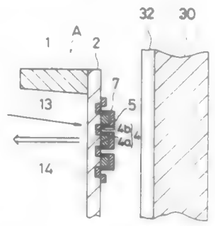
Filed Oct. 20, 1992, Ser. No. 963,900
Claims priority, application Japan, Oct. 24, 1991, 3-277686; Oct. 28, 1991, 3-281080; Oct. 28, 1991, 3-281082
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 11 Claims

1. An X-ray mask having an X-ray transmission film formed on the surface of a mask base, and an alignment mark formed on the surface of said X-ray transmission film wherein:

(a) the surface of said X-ray transmission film is formed alternately into a grating form as well as into a cross-sectionally uneven form to form said alignment mark having a convex portion and a concave portion,

(b) the convex portion of said alignment mark has on a surface thereof a first alignment light reflection film for reflecting an alignment light passing through said X-ray transmission film,

(c) the concave portion of said alignment mark has on a surface thereof a second alignment light reflection film for reflecting the alignment light passing through said X-ray transmission film, and



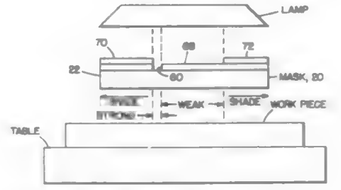
(d) said first alignment light reflection film and said second alignment light reflection film are formed in respective different processes.

5,334,467

GRAY LEVEL MASK

John E. Cronin, Milton; Paul A. Farrar, Sr., So. Burlington; Carter W. Kaanta, Colchester; James G. Ryan, Essex Junction, and Andrew J. Watts, Milton, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 605,606, Oct. 30, 1990, Pat. No. 5,213,916. This application Feb. 25, 1993, Ser. No. 22,516
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 5 Claims



1. A gray level mask comprising:

a substrate of light-transmissive material;

a first layer of material having a first transmissivity to light less than a light transmissivity of said substrate, exposure of said material of said first layer to radiation having a wavelength different from a wavelength of said light altering a light transmissivity of said material of said first layer, said radiation being drawn from a class of radiation including electron beam radiation and x-radiation;

a second layer of material having a second light transmissivity less than the light transmissivity of said substrate but greater than or equal to zero transmissivity;

wherein said first and said second layers are supported by said substrate with said first layer lying between said substrate and said second layer;

said first layer partially laps said substrate to leave an exposed part of said substrate to permit propagation of light at a relatively high level of intensity via said exposed part of said substrate; and

said second layer partially laps said first layer to expose a part of said first layer, said second layer retaining exposure of said exposed part of said substrate to permit direct illumination of the exposed parts of said substrate and said first layer by said radiation, the exposed part of said first layer permitting propagation of light at a moderate level of intensity, and said second layer providing for little or no light transmission.

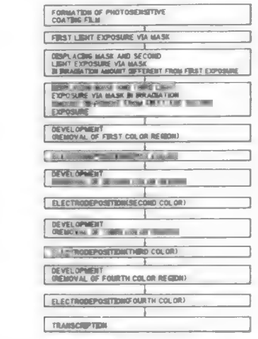
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,468

METHOD FOR PRODUCING COLOR FILTER

Yukio Yamasita, Yokohama; Haruyoshi Sato, Kawasaki; Toru Nakamura, Yokohama; Hitoshi Yuasa, Yokohama, and Yutaka Otsuki, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 909,320
Claims priority, application Japan, Jul. 9, 1991, 3-168431
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—7 47 Claims



1. A method for producing a color filter comprising the steps of:

(A) forming a photosensitive coating film on a transparent electrically conductive layer provided on an outermost surface of a substrate having an alignment film, and exposing said photosensitive coating film to light in a first irradiation amount through a mask having a predetermined pattern of a certain light transmittance, and at least once displacing said mask to another position on said photosensitive coating film so as to not overlap with previous position and exposing said photosensitive coating film to light in a second irradiation amount different from said first irradiation amount through said mask,

(B) developing and removing a photosensitive coating film portion exposed to light in one of smallest and largest irradiation amounts for exposing the transparent electrically conductive layer and electrodepositing a colored coating on the exposed electrically conductive layer for forming a colored layer thereon, operation of developing and removing the photosensitive coating film and electrodepositing the colored coating being repeated in sequence of difference in irradiation amounts to form different colored layers, respectively; and

(C) transcribing said colored layers, said transparent electrically conductive layer and said alignment film onto another substrate.

5,334,469

PHOTOGRAPHIC PROCESSES FOR PRODUCING SPECTRAL IMAGE RECORDS RETRIEVABLE BY SCANNING

James E. Sutton, Rochester; John Gasper, Hilton; Allen K. Tsaur, Fairport, and Ann Tarn, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 982,358, Nov. 27, 1992, Pat. No. 5,300,413.
This application Jul. 16, 1993, Ser. No. 93,124
Int. Cl.[5] G03C 11/00, 7/00, 5/22, 1/46
U.S. Cl. 430—21 8 Claims

1. A method of extracting two or more spectral image records from an imagewise exposed multicolor photographic element having a support and, coated on the support, a plurality of tabular silver halide grain emulsions for individually recording imagewise exposure in at least two different regions of the visible spectrum,

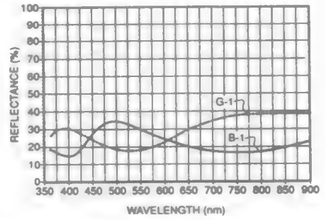
comprising the steps of

(a) photographically processing the imagewise exposed photographic element to produce a detectable image in each tabular grain emulsion that can be spectrally distinguished from the detectable image in all other emulsions for recording in a different region of the spectrum and

(b) within the spectral range of from 300 to 900 nm scanning the processed photographic element with electromagnetic radiation in at least two different spectral regions and recording the images observed in the photographic element,

wherein

(1) in each of the tabular silver halide grain emulsions tabular grain exhibiting a mean equivalent circular diameter of greater than 0.4 micrometer and a mean thickness of less than 0.2 micrometer account for greater than 90 percent of total grain projected area, no more than one of the tabular grain emulsions exhibits a mean tabular grain thickness of less than 0.07 micrometer, each of the remaining tabular grain emulsions exhibit a coefficient of variation of tabular grain thickness of less than 15 percent, and the mean tabular grain thickness of emulsions for recording imagewise exposure to different regions of the visible spectrum differs by at least 0.02 micrometer,



(2) during photographic processing the tabular silver halide grain emulsions are developed and Ag^+ is thereafter removed from the photographic element without removing undeveloped silver halide grains,

(3) the processed photographic element is scanned using electromagnetic radiation in a first spectral wavelength region at which the tabular grains in a first of the emulsions reflect to a greater degree than the tabular grain of any emulsion which has recorded imagewise exposure in a different region of the spectrum,

(4) the processed photographic element is also scanned using electromagnetic radiation in a second spectral wavelength region within which the tabular grains in a second of the emulsions reflect, and

(5) during scanning the intensities of the electromagnetic radiation in the first and second wavelength regions reflected from or transmitted through the photographic element are measured and recorded.

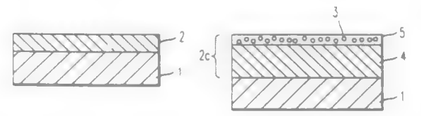
5,334,470

ELECTROPHOTOGRAPHIC ELEMENT WITH M-PHENYLENEDIAMINE DERIVATIVES THEREIN

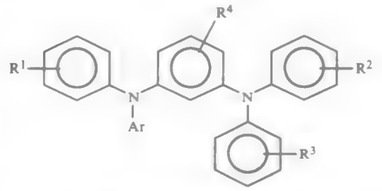
Tomoyuki Shimada, Shizuoka; Masaomi Sasaki, Susono; Tamotsu Aruga, Mishima, and Hiroshi Adachi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,619
Claims priority, application Japan, Sep. 2, 1991, 3-248363; Sep. 2, 1991, 3-248364; Sep. 25, 1991, 3-273418; Nov. 21, 1991, 3-332476; Dec. 9, 1991, 3-350314
Int. Cl.[5] G03G 5/047, 5/09
U.S. Cl. 430—59 44 Claims

1. An electrophotographic photoconductor comprising an electroconductive substrate and a photoconductive layer



formed thereon comprising a m-phenylenediamine compound of formula (I):



(I)

wherein Ar is selected from the group consisting of a non-condensed polycyclic hydrocarbon group having not more than 18 carbon atoms other than a phenyl group, and a condensed polycyclic hydrocarbon group having not more than 18 carbon atoms; and R^1, R^2, R^3, R^4 each is selected from the group consisting of hydrogen, a halogen atom, a cyano group, a nitro group, an alkyl group having 1 to 12 carbon atoms, an alkoxy group having 1 to 12 carbon atoms, an aryl group selected from the group consisting of phenyl group, biphenyl group, and naphthyl group, an aryloxy group with an aryl group selected from the group consisting of phenyl group and naphthyl group, an alkylmercapto group represented by $—SR^5$ in which R^5 represents an alkyl group having 1 to 12 carbon atoms,



in which R^6 and R^7 each are selected from the group consisting of hydrogen, an alkyl group having 1 to 12 carbon atoms, and an aryl group selected from the group consisting of phenyl group, biphenyl group, and naphthyl group, an alkylenedioxy group, and an alkylenedithio group,

wherein said photoconductive layer is selected from a first embodiment wherein said layer further comprises a sensitizing dye, and a binder, a second embodiment wherein said layer comprises a charge generating material dispersed in a charge transnorting medium which comprises a compound of formula (I) and a binder, or a third embodiment wherein said layer is a multilayer having a charge transfer layer including a compound of formula (I) as a charge transporting material and a charge generation layer comprising a charge generating material.

5,334,471

LOW GLOSS ENCAPSULATED COMPOSITIONS

Guerino G. Sacripante, Oakville; Grazyna Kmiecik-Lawrynowicz, Burlington, and Beng S. Ong, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1992, Ser. No. 907,989
Int. Cl.[5] G03G 9/083, 9/093, 9/097
U.S. Cl. 430—106.6 10 Claims

1. A toner composition consisting essentially of a core consisting essentially of a blended mixture of a polymer resin or resins, low remanence magnetite of from between about 0.1 to about 8 gauss with an average volume particle diameter of from between about 2 to about 6 microns, and a light scattering component with an average particle diameter of from between about 2 to about 6 microns; and which core is encapsulated in a polymeric shell; and wherein said light scattering component is selected from the group consisting of calcium oxide, titanium oxide, titanium dioxide, alumina, barium sulfate, calcium sulfate, mica, calcium titanate, barium titanate, magnesium titanate, strontium titanate, zirconium titanate, barium zirconate, cerium oxide, silicone nitride, clay, siliceous sand, zinc oxide, zinc stearate, calcium carbonate, magnesium oxide, zinc stearate, and mixtures thereof.

5,334,472

TONER FOR DEVELOPING STATIC CHARGE IMAGES

Nobuyuki Aoki; Hideo Fujita, and Jiro Aoshima, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,231
Claims priority, application Japan, Apr. 15, 1991, 3-108175; May 14, 1991, 3-136999
Int. Cl.[5] G03G 9/097
U.S. Cl. 430—109 9 Claims

1. A toner for developing static charge images, having an aluminum oxide powder adhered to the surface thereof in the amount of 0.01% to 5% by weight, said aluminum oxide powder being treated by a coupling agent and having a specific surface area of not less than 75 m^2/g as measured by BET method so as to adsorb CO_2 gas at a rate not more than 4.0 pieces/nm^2, wherein said coupling agent is one or more of the materials selected from the group consisting of dimethylsilicone, methyltrimethoxysilane, (3-aminopropyl)trimethoxysilane, (3-aminopropyl)triethoxysilane, (3-(2-aminoethoxyamino)propyl)triethoxysilane, (3-(2-aminoethoxyamino)-propyl)trimethoxysilane and $C_8F_{17}SO_2NC_2H_5(CH_2)_3Si(CH_3O)_3$.

5,334,473

CONTINUOUS METHOD OF TREATING POLYMER REACTION MIXTURE

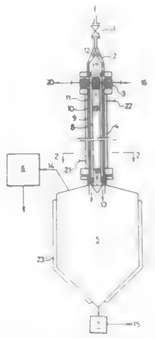
Nobuki Kobayashi, Mobara; Yoku Shiraishi, Chiba; Takashi Yamamoto, Mobara, and Masaaki Shin, Fujisawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 922,008, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 360,888, Jan. 23, 1991, abandoned. This application Mar. 10, 1993, Ser. No. 29,360
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] G03G 9/00
U.S. Cl. 430—109 2 Claims

1. An electrophotographic toner comprising styrene polymer or copolymer with other vinyl monomer, having a number average molecular weight (Mn) of 2,000–15,000, a Z average molecular weight (Mz) of between 400,000 and 9,000,000, and Mz/Mn of 50–600, and comprising 70–30 parts of a low molecular weight polymer having a number average molecular weight of 1,000–5,000 and a glass transition temperature of 40°–80° C., and 30–70 parts of a high molecular weight polymer which gives said styrene polymer or copolymer having said Mn, Mz and Mz/Mn when mixed with said low molecular weight polymer, said styrene polymer or copolymer being produced by flowing down and preheating a reaction mixture containing said styrene polymer or copolymer by causing said mixture to flow through a circular-ring-shaped space of a heat-exchanger, said heat-exchanger consisting of an outer double pipe as a jacket of a circulating heat medium, a concentrically loaded inner pipe of the heat-exchanger for circulating the heat medium and the circular-ring-shaped space formed in

VOL 1165 ISS 1 AG 2 1994 UMI

between, and flashing the reaction mixture containing said styrene polymer into a reaction mixture containing with said



heat-exchanger to continuously separate the styrene polymer with 0.3% or less of volatile ingredient.

5,334,474

DRY TONER WITH MIXED AZO DYE CHARGE CONTROL AGENT

Jerry J. Abbott, Longmont; Brian W. Baird, Louisville, and Michael G. Miller, Longmont, all of Colo., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Jun. 14, 1993, Ser. No. 75,440

Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—110 **6 Claims**

1. A dry toner comprising resin particles, coloring matter and a charge control agent comprising Zapon Yellow 141.

5,334,475

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

Eiichi Kato, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 30, 1992, Ser. No. 982,990

Claims priority, application Japan, Nov. 29, 1991, 3-339487; Dec. 4, 1991, 3-347633

Int. Cl.[5] G03G *9/12*

U.S. Cl. 430—114 **10 Claims**

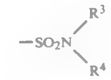
1. A liquid developer for electrostatic photography comprising at least resin grains dispersed in a non-aqueous solvent having an electric resistance of at least 10^9 Ωcm and a dielectric constant of not higher than 3.5, wherein the dispersed resin grains are copolymer resin grains obtained by polymerizing a solution containing (1) at least one monofunctional monomer (A) which is soluble in said non-aqueous solvent but becomes insoluble therein by being polymerized, (2) at least one monomer (C) represented by the general formula (I) below which contains a specific substituent and which is copolymerizable with said monofunctional monomer (A), (3) at least one polyfunctional monomer (D) having at least two polymerizable functional groups which are copolymerizable with said monofunctional monomer (A), and (4) at least one dispersion-stabilizing resin (P) soluble in said non-aqueous solvent, which is a polymer containing a repeating unit represented by the general formula (II) and the main chain of said polymer is partially crosslinked, or at least one dispersion-stabilizing resin (P') soluble in said non-aqueous solvent, which is an AB block copolymer having a weight average molecular weight from 1×10^4 to 5×10^5 composed of an A block containing at least a polymerizable component represented by the general formula (II') described below and a B block comprising a polymerizable component containing at least one polar group selected from a carboxy group, a sulfo group, a hydroxyl group, a formyl group, an amino group, a phosphono group, a



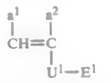
group (wherein R^1 represents $—R^2$ or $—OR^2$ (wherein R^2 represents a hydrocarbon group)), a



group, a



group (wherein $R^3$and R^4 each represents a hydrogen atom or a hydrocarbon group) and a cyclic acid anhydride-containing group, and/or a polymerizable component corresponding to the monofunctional monomer (A);



(I)

wherein E^1 represents an aliphatic group having 8 or more carbon atoms or a substituent selected from the substituents represented by the general formula (III)

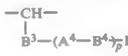


(III)

wherein R^{21} represents a hydrogen atom or an aliphatic group having from 1 to 18 carbon atoms, B^1 and B^2, which may be the same different, each represents —O—, —S—, —CO—, —CO_2— —OCO—, —SO_2—,



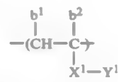
—$NHCO_2$— or —NHCONH— (wherein R^{22} has the same meaning as R^{21}), A^1 and A^2, which may be the same or different, each has a hydrocarbon group having from 1 to 18 carbon atoms which may be substituted and which may contain an intervening group represented by the following formula in the main chain of said hydrocarbon group;



(wherein B^3 and B^4, which maybe the same or different, each has the same meaning as B^1 and B^2, A^4 represents a hydrocarbon group having from 1 to 18 carbon atoms which may be substituted, and R^{23} has the same meaning as R^{21}), m, n and p, which may be the same or different, each represents an integer of from 0 to 4, provided that m, n and p cannot be 0 at the same time; U^1 represents —COO—, —CONH—,

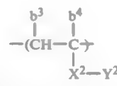


(wherein E^2 represents an aliphatic group or a substituent represented by the above general formula (III)), —OCO—, —CONHCOO—, —CH_2COO—, —$(CH_2)_s$OCO— (wherein s represents an integer of from 1 to 4), —O— or —C_6H_4—COO—; a^1 and a^2, which may be the same or different, each represents a hydrogen atom, an alkyl group, —COO—E^3 or —CH_2COO—E^3 (wherein E^3 represents an aliphatic group);



(II)

wherein X^1 represents —COO—, —OCO—, —CH_2OCO—, —CH_2COO—, —O— or —SO_2—; Y_1 represents an aliphatic group containing from 6 to 32 carbon atoms; b^1 and b^2 which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group having from 1 to 8 carbon atoms, —COO—Z^1 or —COO—Z^1 bonded via a hydrocarbon group having from 1 to 8 carbon atoms (wherein Z^1 represents a hydrocarbon group having from 1 to 22 carbon atoms);



(II')

wherein X^2 represents —COO—, —OCO—, —$(CH_2)_y$—COO—, —$(CH_2)_y$—OCO— (wherein y represents an integer of from 1 to 3) or —O—; Y^2 represents an aliphatic group having 10 or more carbon atoms; b^3 and b^4, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, a —COO—Z^2 group or a —COO—Z^2 group bonded via a hydrocarbon group (wherein Z^2 represents a hydrogen atom or a hydrocarbon group which may be substituted).

5,334,476

ELECTROPHOTOGRAPHIC PROCESS FOR SIMULTANEOUSLY TRANSFERRING AND FIXING AN IMAGE

Shigeru Yagi, Minami-ashigara; Taketoshi Higashi, Manami Ashigara; Yuzuru Fukuda, Manami Ashigara; Masato Ono, Manami Ashigara; Masaki Yokoi, Manami Ashigara, and Masao Watanabe, Manami Ashigara, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,475

Claims priority, application Japan, Apr. 15, 1991, 3-108325; Jan. 27, 1992, 4-033980

Int. Cl.[5] G03G *13/16*

U.S. Cl. 430—126 **12 Claims**

1. An electrophotographic process, which comprises the steps of: forming an electrostatic latent image on an amorphous silicon photoreceptor having a surface layer that exhibits a contact angle of 60° or more with pure water; developing said electrostatic latent image with a capsule toner; superimposing transfer paper on the capsule toner image thus formed; and simultaneously transferring and fixing said image on said paper by applying pressure.

5,334,477

THERMALLY ASSISTED TRANSFER PROCESS

Douglas E. Bugner, Rochester, N.Y.; David S. Hays, Newark, Ohio; Jeanne E. Kaeding, and Steven J. Spinelli, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,099

Int. Cl.[5] G03G *13/16*

U.S. Cl. 430—126 **28 Claims**

1. A method of non-electrostatically transferring dry toner particles which comprise a toner binder and have a particle size of less than 8 micrometers from the surface of an element which comprises a conductive support and a surface layer, said surface layer having an electrically insulating polymeric binder resin matrix which comprises a block copolyester or copolycarbonate having a fluorinated polyether block of the formula



wherein each of R^1, R^2, R^3, R^4, R^5 and R^6 is fluorine or a perfluorinated lower alkyl group, n and m are integers and the sum of n plus m is from 10 to 100 to a receiver which comprises a substrate having a coating of a thermoplastic addition polymer on a surface of the substrate wherein the Tg of the thermoplastic polymer is less than approximately 10° C. above the Tg of the toner binder which comprises:

(A) contacting said toner particles with said thermoplastic polymer coating on said receiver;

(B) heating said receiver to a temperature such that the temperature of said thermoplastic polymer coating on said receiver during said transferring is at least approximately 15° C. above the Tg of said thermoplastic polymer; and

(C) separating said receiver from said element at a temperature above the Tg of said thermoplastic polymer,

whereby virtually all of said toner particles are transferred from the surface of said element to said thermoplastic polymer coating on said receiver.

5,334,478

OXYTITANIUM PHTHALOCYANINE IMAGING MEMBERS AND PROCESSES THEREOF

Denis Desilets, Mississauga; Trevor I. Martin, Burlington; James D. Mayo, Toronto, all of Canada; Terry L. Bluhm, Pittsford, N.Y., and Cheng-Kuo Hsiao, Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 14, 1992, Ser. No. 944,631

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.[5] G03G *5/06;* **C09B** *67/50*

U.S. Cl. 430—135 **16 Claims**

1. A process for the preparation of Type IV oxytitanium phthalocyanine consisting essentially of the addition of an oxytitanium phthalocyanine containing dissimilar amounts of the Type I and Type II titanyl phthalocyanine polymorphs to a solvent comprised of a trihaloacetic acid and an alkylene halide; adding the resultant solution to a mixture which enables precipitation of Type X phthalocyanine from the solution; and thereafter subjecting a slurry of the Type X oxytitanium phthalocyanine obtained to treatment with a halobenzene.

5,334,479

PROCESSES FOR AQUABULK POLYMERIZATION TO PRODUCE HIGH PURITY TONERS

Allan K. Chen, Oakville, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 23, 1992, Ser. No. 872,477

Int. Cl.[5] G03G *5/00*

U.S. Cl. 430—137 **21 Claims**

1. A surfactant stabilizer free heat transfer bulk polymerization process for the preparation of a high purity toner consist-

VOL 1165 ISS 1 AG 2 1994 UMI

ing essentially of adding water to a reaction vessel, which water is added in an amount of from about 20 to about 60 percent based on the reaction vessel contents; heating the reaction vessel at a temperature of from about 30° C. to about 110° C.; adding to the reaction vessel a solution of monomer or monomers and initiator or initiators; heating the reaction vessel contents at a temperature of from about 80° C. to about 95° C.; increasing the temperature in the reaction vessel to from between about 95° to about 105° C. thereby removing water therefrom; and subsequently further heating at a temperature of from about 140° C. to about 160° C. the vessel contents to enable a molten polymer product, subsequently adding pigment thereto followed by cooling.

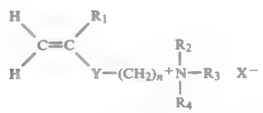
5,334,480

CAPSULE TONER

Yoshihiro Inaba; Koichi Takashima; Izuru Matsui, and Tsutomu Kubo, all of Minami-Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 991,360
Claims priority, application Japan, Dec. 19, 1991, 3-354705
Int. Cl.[5] G03G 9/093
U.S. Cl. 430—138 6 Claims

1. A capsule toner comprising a core covered with an outer shell, said outer shell comprising a substance capable of forming a radical, a polymer comprising at least a unit derived from a quaternary ammonium salt-containing vinyl monomer represented by formula (I) being deposited on the surface of said outer shell, and basic carbon black being externally added to said capsule toner:



(I)

wherein R_1 represents a hydrogen atom or a methyl group; R_2, R_3, and R_4 each represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms or a benzyl group; Y represents —COO—, —CONH— or a phenylene group; n represents an integer of from 1 to 7; and X^- represents a halogen ion or an anion having a —COO—$^-$ group or an —SO_3^- group.

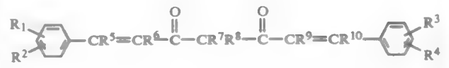
5,334,481

POSITIVE DIAZO QUINONE PHOTORESIST COMPOSITIONS CONTAINING ANTIHALATION COMPOUND

Hans J. Merrem, Seeheim, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 609,031, Aug. 14, 1990, abandoned, which is a continuation of Ser. No. 352,718, May 12, 1989, abandoned, which is a continuation of Ser. No. 104,930, Oct. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 858,146, May 1, 1986, abandoned. This application Apr. 25, 1991, Ser. No. 692,811
Claims priority, application Fed. Rep. of Germany, May 2, 1985, 3515693
Int. Cl.[5] G03F 7/023; G03C 1/61
U.S. Cl. 430—191 12 Claims

1. In a positive photoresist composition comprising in admixture a diazoquinone photosensitizer and a novolak resin, the improvement wherein the composition further comprises an amount effective to suppress stray radiation or halation effects in photoresist coatings made therewith, of a compound of the formula



wherein

R^1 to R^4 are each independently hydroxyl or C_1-C_6-alkoxy and

R^5 to R^{10} are each independently hydrogen or C_{1-6}-alkyl.

5,334,482

PHOTOGRAPHIC ELEMENT WITH GAS PERMEABLE HYDROPHOBIC LAYER ON BACKING LAYER

Toshiaki Aono, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 20, 1992, Ser. No. 871,029
Claims priority, application Japan, Apr. 19, 1991, 3-115574
Int. Cl.[5] G03C 5/34, 1/88; B32B 3/26
U.S. Cl. 430—203 8 Claims

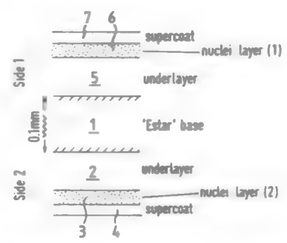
1. A photographic element comprising a water-soluble base or base precursor in at least a dye-fixing layer or an adjacent layer(s) thereto on one surface of a support and a backing layer comprising a hydrophilic binder on the other surface of the support, wherein a gas-permeable hydrophobic layer is provided as the outermost layer of said backing layer, and said gas-permeable hydrophobic layer is an aeriferous porous layer containing a hydrophobic polymer.

5,334,483

DIFFUSION TRANSFER RECEIVER

Julie Baker, Rickmansworth; Colin J. Gray, Harrow, and Anthony M. Barnett, Bushey, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 26, 1993, Ser. No. 39,329
Claims priority, application United Kingdom, Nov. 21, 1990, 9025365.9
Int. Cl.[5] G03C 5/54
U.S. Cl. 430—207 8 Claims



1. A diffusion transfer receiver for use in a diffusion transfer photographic process, said diffusion transfer receiver comprising a support and non-light-sensitive image receiver layers exhibiting different imaging characteristics which adapt them for different end uses on each face of said support, each of said image receiver layers including catalytic nuclei for physical development of a transferred silver halide complex and containing different tone controlling compounds to impart said different imaging characteristics thereto.

3. A diffusion transfer receiver as claimed in claim 1, wherein the sides of the receiver are identifiable by a different matting agent on each side to allow recognition by touch.

5,334,484

PHOTOPOLYMERIZABLE COMPOSITION AND PHOTOPOLYMERIZABLE ELEMENT

Yoshitaka Minami; Hajime Kakumaru, both of Hitachi; Naohiro Kubota, Urawa; Nobuhide Tominaga, Urawa, and Koji Ishizaki, Urawa, all of Japan, assignors to Hitachi Chemical Co., Ltd. and Asahi Denka Kogyo Kabushiki Kaisha, both of Tokyo, Japan

PCT No. PCT/JP91/01293, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO92/06412, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 27, 1991, Ser. No. 859,430
Claims priority, application Japan, Sep. 28, 1990, 2-260876
Int. Cl.[5] G03C 1/73; G03F 7/031
U.S. Cl. 430—281 3 Claims

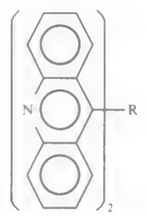
1. A photopolymerizable composition comprising:

(a) 100 parts by weight of a compound having at least one ethylenically unsaturated group,

(b) 0 to 400 parts by weight of a thermoplastic organic polymer and

(c) 0.01 to 20 parts by weight of a photoinitiator,

characterized in that an acridine compound of the following general formula (I) is used as the photoinitiator (c):



(I)

wherein R represents an alkylene, oxadialkylene or thiodialkylene group having 2 to 20 carbon atoms.

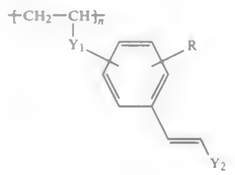
5,334,485

ACID SOLUBLE PHOTO-RESIST COMPRISING A PHOTOSENSITIVE POLYMER

Lawrence C. Van Iseghem, and Alexander S. Gybin, both of Duluth, Minn., assignors to The Chromaline Corporation, Duluth, Minn.

Filed Nov. 5, 1991, Ser. No. 788,134
Int. Cl.[5] G03F 7/038; C08F 8/44; G03C 1/72
U.S. Cl. 430—287 30 Claims

1. A photosensitive polymer composition comprising pH sensitive units having the general structure:



wherein R is hydrogen alkyl, alkoxy, aldehyde, carboxyl, oxy, hydroxyl, aryl, aryloxy, halo, cyanop, or amino; Y_1 comprises, a quaternary heterocyclic nitrogen-containing organic moiety having about 1 to 26 carbon atoms linked through the atoms of the heterocycle, or a quaternary heterocyclic nitrogen-containing organic moiety having about 1 to 26 carbon atoms linked through at least one C_{1-6} alkyl substituent; Y_2 comprises a quaternary heterocyclic nitrogen-containing organic moiety having about 1 to 26 carbon atoms; and the photosensitive polymer has a molecular weight of about 1,000 to 1,000,000.

5,334,486

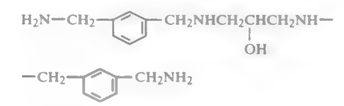
PHOTOPOLYMERIZABLE COMPOSITION AND DRY PS PLATE

Yukio Abe; Tatsuji Higashi; Tsumoru Hirano, and Syunichi Kondo, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Dec. 23, 1991, Ser. No. 811,671
Claims priority, application Japan, Dec. 27, 1990, 2-407843; Jul. 18, 1991, 3-178456
Int. Cl.[5] G03F 7/027
U.S. Cl. 430—288 3 Claims

1. A photopolymerizable composition comprising:

(a) the reaction product of 6 moles of glycidyl methacrylate with 1 mole of polyamine of the following formula:



and

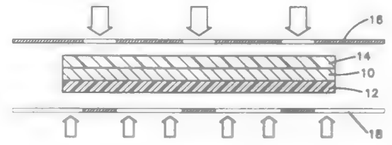
(b) a photopolymerization initiator.

5,334,487

METHOD FOR FORMING A PATTERNED LAYER ON A SUBSTRATE

Thomas E. Kindl, Endwell; Ronald J. Moore, Binghamton, and Paul G. Rickerl, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 23, 1992, Ser. No. 918,989
Int. Cl.[5] G03F 7/00
U.S. Cl. 430—312 11 Claims



1. A method of forming a pattern of conductive material on a dielectric material with a plurality of access openings through said dielectric material communicating with the conductive material comprising the steps of:

providing a sheet of conductive material which is to be patterned;

providing a layer of a first photoimageable material on one face of said conductive material;

providing a layer of a second photoimageable material on the other face of said conductive material;

said layer of said first photoimageable material being a dielectric film forming material;

the material of said layer of said first photoimageable material being developable by a developer which will not develop said second photoimageable material;

imagewise patterning said layers of first and second photoimageable materials, said layer of said second photoimageable material being imaged in the pattern to be formed in said conductive material, said layer of said first photoimageable material being imaged in the pattern of the access openings to be formed in the first photoimageable material which will communicate with the conductive material;

thereafter, developing said layer of said second photoimageable material to reveal the underlying conductive material;

etching the revealed underlying conductive material to form a selected pattern therein with an etch media that will not

VOL 1165 ISS 1 AG 2 1994 UMI

substantially alter said layer of said first photoimageable material;

developing said layer of said first photoimageable material to form a plurality of openings through said layer of first photoimageable material; whereby a pattern of conducting material is formed on a dielectric material with openings extending through said dielectric material to said patterned conductive material; and thereafter providing electrically conducting material in said access openings to thereby form discrete conductors in said access openings communicating with said pattern of conductive material.

5,334,488

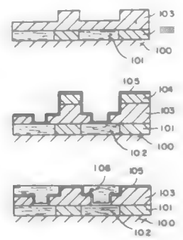
METHOD FOR MANUFACTURE OF MULTILAYER CIRCUIT BOARD

Charles R. Shipley, Jr., Newton, Mass., assignor to Shipley Company Inc., Marlborough, Mass.

Continuation of Ser. No. 462,607, Jan. 9, 1990, Pat. No. 5,246,817, which is a continuation-in-part of Ser. No. 54,102, May 20, 1987, Pat. No. 4,902,610, which is a continuation of Ser. No. 761,843, Aug. 2, 1985, abandoned. This application May 10, 1993, Ser. No. 59,912

Int. Cl.[5] **G03G** *5/16*

U.S. Cl. 430—315 **9 Claims**



1. A method for the formation of a circuit board having two or more layers of circuitry, said method comprising the steps of applying a permanent dielectric coating over a first circuit layer having imaged openings defining interconnections, catalyzing the surface of the permanent dielectric coating and the imaged openings by contact with an electroless plating catalyst, applying a coating over said catalyzed permanent dielectric coating, said coating having imaged openings defining a circuit pattern, and electrolessly plating metal into said openings for interconnections and circuitry whereby, when plated, there is formed a second circuit in electrical contact with said first circuit.

5,334,489

PROCESS FOR GENERATION OF SQUARIC ACID AND FOR IMAGING, AND IMAGING MEDIUM FOR USE THEREIN

Jurgen M. Grasshoff, Hudson; Mark R. Mischke, and Stephen J. Telfer, both of Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 23, 1992, Ser. No. 965,162

Int. Cl.[5] **G03C** *1/725, 1/73, 1/735, 5/00*

U.S. Cl. 430—335 **16 Claims**

1. A process for generation of squaric acid or an acidic derivative thereof, which process comprises:

exposing a superacid precursor to actinic radiation effective to generate superacid from the superacid precursor; and

heating the superacid while the superacid is admixed with a 3,4-disubstituted-cyclobut-3-ene-1,2-dione in which at least one of the 3- and 4-substituents consists of an oxygen atom bonded to the squaric acid ring, and an alkyl or alkylene group, a partially hydrogenated aryl or arylene group, or an aralkyl group, bonded to said oxygen atom, said 3,4-disubstituted cyclobut-3-ene-1,2-dione being capable of decomposing so as to cause replacement of the or each original alkoxy, alkyleneoxy, aryloxy, aryleneoxy, or aralkyloxy group of the derivative with a hydroxyl group, thereby producing squaric acid or an acidic squaric acid derivative having one hydroxyl group, the heating being continued for a temperature and time sufficient to cause the superacid to produce, from the 3,4-disubstituted-cyclobut-3-ene-1,2-dione, squaric acid or said acidic derivative thereof.

5,334,490

MAGENTA DEVELOPMENT INHIBITOR RELEASING COUPLER

William J. Begley, Webster; Teh H. Chen, Fairport, and David S. Bailey, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

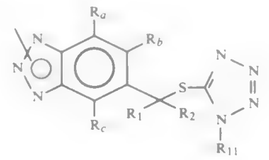
Continuation-in-part of Ser. No. 786,439, Nov. 1, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 906,630

Int. Cl.[5] **G03C** *7/38, 7/32*

U.S. Cl. 430—382 **9 Claims**

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer and at least one magenta dye forming development inhibitor releasing coupler comprising a coupling-off group wherein

the coupling-off group is represented by the formula:



wherein

R_a, R_b, R_c, R_1 and R_2 individually are hydrogen, substituted or unsubstituted alkyl or aryl containing 1–12 carbon atoms, or halogen, nitro, ester, amide, or R_1 and R_2 together complete a substituted or unsubstituted 5, 6 or 7 membered ring system;

R_{11} is an unsubstituted alkyl.

7. A process of forming an image in an exposed photographic silver halide element as defined in claim 1 comprising developing the element with a color photographic silver halide developing agent.

5,334,491

PHOTOGRAPHIC BLEACH COMPOSITIONS AND METHODS OF PHOTOGRAPHIC PROCESSING

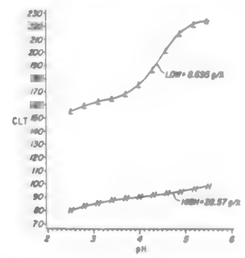
David G. Foster; Keith H. Stephen, and Mary E. Craver, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 797,663, Nov. 25, 1991, abandoned. This application Sep. 22, 1993, Ser. No. 125,491

Int. Cl.[5] **G03C** *7/42*

U.S. Cl. 430—393 **3 Claims**

1. A method of processing an imagewise exposed and developed color silver halide photographic material containing an indoaniline cyan dye, said method comprising bleaching said material with a bleach composition having a pH of from about 2.5 to about 4.5; said bleach composition comprising a ferric methyliminodiacetic acid complex wherein the ratio of moles of methyliminodiacetic acid to moles of ferric iron is 2:1 to 3:1 and wherein the bleach composition contains from 2 to 25 grams per liter of ferric iron; and further comprising from 0.12 to 0.13 moles per liter of bromide ion.



5,334,492

PHOTOGRAPHIC PROCESSING METHOD AND APPARATUS

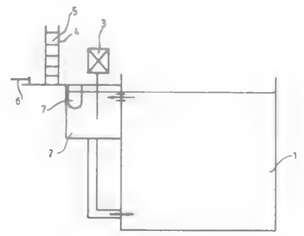
Ubbo Wernicke, Röstrath-Kleineichen, and Werner Went, Leichlingen, both of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1992, Ser. No. 896,839

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1991, 4120867

Int. Cl.[5] **G03C** *5/31, 5/395;* **G03D** *3/00, 3/08*

U.S. Cl. 430—398 **7 Claims**



1. A process for processing photographic silver halide materials with aqueous processing baths which are replenished during processing comprising replenishing at least one processing bath by transporting one by one at least one replenishing chemical in the form of a plurality of solid bodies of geometrically defined shape and of the same size and composition to the processing bath.

7. An apparatus for processing photographic materials with processing solution wherein said apparatus consists of: a tank accommodating the processing solution;

optionally, a container ("balcony") arranged on the tank at the same level as the processing solution in the tank and communicating with the tank, said balcony comprising means for pumping the processing solution through both the tank and the balcony;

a transport means for transporting the photographic material through the tank; and

a means in which moldings of replenishing chemicals are arranged in such a manner that the moldings can be transported one-by-one into the processing solution.

5,334,493

PHOTOGRAPHIC PROCESSING SOLUTION HAVING A STABILIZING ABILITY AND A METHOD FOR PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yoshihiro Fujita; Masakazu Morigaki; Hiroshi Kawamoto; Shigeru Nakamura; Morio Yagihara, and Hiroyuki Watanabe, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

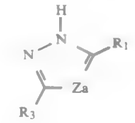
Continuation of Ser. No. 805,954, Dec. 12, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 128,278

Claims priority, application Japan, Dec. 12, 1990, 2-401513; Feb. 12, 1991, 3-39022

Int. Cl.[5] **G03C** *11/00*

U.S. Cl. 430—463 **10 Claims**

1. A photographic stabilizing solution having a stabilizing ability for a magenta dye image comprising formaldehyde, wherein said photographic stabilizing solution further contains an amine compound having at least one —NH— group which is represented by formula (I'):



(I')

wherein the Za represents —N= or —C(R_2)=, R_1, R_2 and R_3 may be the same or different and each represents a hydrogen atom or an unsubstituted alkyl group having from 1 to 3 carbon atoms; the above groups may be further substituted with the group represented by R_1 and a hydroxyl group; and R_1 and R_2 or R_2 and R_3 may be combined with each other to form a 5- to 7-membered ring and wherein the —NH— equivalent amount per liter of the photographic stabilizing solution is greater than the molar concentration of formaldehyde in the photographic stabilizing solution.

5,334,494

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiichi Ueda; Fumie Fukazawa, and Toshihiko Yagi, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 893,649, Jun. 4, 1992, abandoned. This application Nov. 15, 1993, Ser. No. 153,472

Claims priority, application Japan, Jun. 12, 1991, 3-167570

Int. Cl.[5] **G03C** *1/76*

U.S. Cl. 430—533 **11 Claims**

1. A rolled silver halide photographic light-sensitive material for color film, comprising:

a support formed of a copolyester comprising an aromatic dibasic acid containing a metal salt of sulfonic acid, and a glycol,

at least one silver halide emulsion layer provided on a first side of said support, and

a back coating layer provided on a second side of said support,

wherein said support as a loss modulus tan δ of 0.03 or more at 50° C.;

said back coating layer having a gelatin content of 6 g/m^2 or less; and

a ratio of a gelatin content of said back coating layer to that of said silver halide emulsion layer being 0.3 or more.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,495

SILVER HALIDE GRAINS HAVING SMALL TWIN-PLANE SEPARATIONS

Donald L. Black, Webster, and Robert D. Wilson, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 792,119, Nov. 14, 1991, Pat. No. 5,219,720, which is a continuation-in-part of Ser. No. 522,718, May 14, 1990, abandoned. This application Nov. 27, 1992, Ser. No. 982,531
Int. Cl.[5] G03C *1/035*
U.S. Cl. 430—567 20 Claims

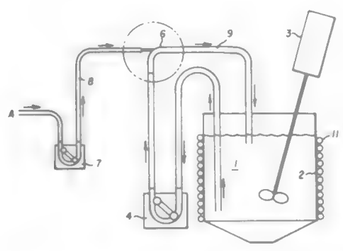
1. A tabular-grain silver halide emulsion in which at least 50 percent of the total grain projected area is accosted for by tabular grains having a mean diameter of at least 0.6 micrometer and a spacing between two parallel twin planes of less than 0.012 micrometer wherein said tabular silver halide grains of said emulsion comprise greater than 90 percent of the total number of grains in said emulsion.

5,334,496

PROCESS AND APPARATUS FOR REPRODUCIBLE PRODUCTION OF NON-UNIFORM PRODUCT DISTRIBUTIONS

Karen L. Pond, Pittsford; Alton L. Chitty, Rochester; Douglas L. Oehlbeck, Rochester; Marian S. Henry, Rochester, and Ward K. Darron, Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 17, 1992, Ser. No. 946,760
Int. Cl.[5] G03C *1/015;* B01F *5/10*
U.S. Cl. 430—569 8 Claims



1. A method for the reproducible production of non-uniform distributions of polymolecular association clusters, each of said clusters comprising a plurality of a species A in association with a single species B, said association cluster arising from a reaction of the form

$$nA + B \underset{k^{-1}}{\overset{k^{1}}{\rightleftharpoons}} BA_n$$

wherein n is an integer, k^1 is the rate of forward reaction, k^{-1} is the rate of reverse reaction, and $k^1 >> k^{-1}$, said method comprising:

(a) mixing at a rate of P turnovers per minute a suspension of particles of species B at concentration C_B in a suitable solvent of volume V in a vessel;

(b) flowing a portion of said suspension through an isolated reaction zone at a rate $r_1 \backsimeq QV$ per minute for x minutes where Q represents a proportion of the total vessel volume to be passed through said zone per minute, and X is (1/Q) E wherein E represents a number of cycles of full vessel volume to be passed through said isolated reaction zone;

(c) introducing species A into said isolated reaction zone at a rate $r_2 = FC_BV$ per minute, where F represents a desired mole ratio of reactant A to be added; and

(d) returning said portion of said suspension including said introduced species A to said vessel, whereby a non-uniform distribution of polymolecular association clusters is formed;

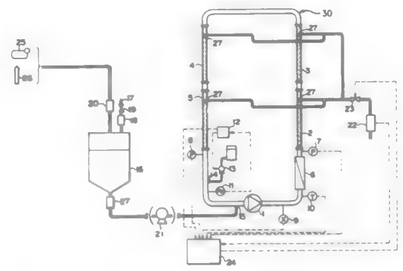
said constants E, F, P and Q being chosen such that E is a number from 0.01 to 100, F is a number from 10^{-8} to 10^{-1}, P is a number from 0 to 100, and Q is a number from 0.001 to 10.

5,334,497

METHOD OF FEEDING A SUBSTRATE INTO TUBULAR BIOREACTOR

Hideki Inaba, Seimei-ryou, 1-25-5, Iwase, Kamakura-shi, Kanagawa; Isao Endo, 5-7-6, Honda, Kokubunji-shi, Tokyo; Teruyuki Nagamune, 2nd Chuou Mansion, 404, 2-16-74, Chuou, Kamifukuoka-Shi, Saitama, and Susumu Tachikawa, c/o Hiratsuka Laboratory, 63-30, Yuuhigaoka, Hiratsuka-shi, Kanagawa, all of Japan

Continuation-in-part of Ser. No. 385,698, Jul. 27, 1989, abandoned. This application Nov. 4, 1991, Ser. No. 786,819
Claims priority, application Japan, Dec. 13, 1988, 63-312792
Int. Cl.[5] C12Q *3/00;* C12M *1/36*
U.S. Cl. 435—3 7 Claims



1. A method of feeding a substrate into a tubular bioreactor of a closed loop, within which an aqueous liquid mixture comprising a substrate, fluidized biocatalyst, and product is continuously circulated, comprising:

a tubular hollow vessel forming said closed loop in which said aqueous liquid mixture can be smoothly circulated;

tubular membrane modules constituting at least a portion of an inside wall of said tubular hollow vessel, through which said product permeates to an outlet line having an adjusting valve for adjusting an amount of discharge of aqueous liquid mixture;

a circulating means for continuously circulating said aqueous liquid mixture in said tubular hollow vessel; and

an inlet for feeding said substrate from a feed line to said tubular hollow vessel, said inlet being mounted at a position just upstream of said circulating means;

wherein said method comprises the steps of:

(a) applying pressure to said feed line to create pressurized liquid in said tubular hollow vessel;

(b) feeding said substrate from said inlet into said tubular hollow vessel by means of suction power generated at the corresponding position in said tubular hollow vessel along said closed loop; and

(c) adjusting the flow rate of aqueous liquid mixture passing through said membrane modules as well as the feed rate of said substrate into the closed loop at a desired level, by adjusting the opening of said adjusting valve mounted on said outlet line, at a level to give a predetermined feed rate of the biocatalyst, discharge rate of the aqueous liquid mixture falling out from said outlet line, and concentration of the biocatalyst, so that the yield of said product and the reaction rate are maximized.

5,334,498

HERPES SIMPLEX VIRUS 1 UL13 GENE PRODUCT: METHODS AND COMPOSITIONS

Bernard Roizman, and Frances C. Purves, both of Chicago, Ill., assignors to Arch Development Corporation, University of Chicago

Filed Aug. 18, 1992, Ser. No. 931,631
Int. Cl.[5] C12Q *1/70*
U.S. Cl. 435—5 2 Claims

1. A process of identifying a substance for its potential ability to impair herpes simplex vital replication comprising the steps of:

a) forming an admixture of an effective catalytic amount of herpes simplex virus U_L13 gene product, and an effective amount of a substrate whose phosphorylation is catalyzed by said gene product in a liquid medium containing a phosphate donor;

b) selecting a substance suspected of impairing herpes simplex viral replication; and

c) testing for the ability of said substance to inhibit phosphorylation of said substrate and thus potentially to impair herpes simplex viral replication.

5,334,499

METHODS OF EXTRACTING, AMPLIFYING AND DETECTING A NUCLEIC ACID FROM WHOLE BLOOD OR PBMC FRACTION

Brent A. Burdick, and Tobias D. Ekeze, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 339,437, Apr. 17, 1989, abandoned. This application Sep. 12, 1989, Ser. No. 406,222
Int. Cl.[5] C12Q *1/68;* G01N *1/10*
U.S. Cl. 435—6 7 Claims

1. A method for the rapid extraction of a nucleic acid from a specimen of whole blood, said method consisting of:

A. mixing a whole blood specimen with a salt solution comprising one or more polysaccharides,

B. subjecting the mixture resulting from step A to heat at a temperature at least at or near the boiling point of water for from about two to about fifteen minutes to lyse the cells in said mixture to release a nucleic acid from said cells, and

C. recovering said nucleic acid from said heated mixture.

5,334,500

Patent Not Issued For This Number

5,334,501

QUANTIFICATION OF BACTERIA USING A NUCLEIC ACID HYBRIDIZATION ASSAY

Trevor H. Adams, Woodinville; Dennis E. Schwartz, Redmond; Nicolaas M. J. Vermuelen, Woodinville, and Roy H. Kanemoto, Seattle, all of Wash., assignors to Microprobe Corporation, Bothell, Wash.

Continuation of Ser. No. 631,131, Dec. 19, 1990, abandoned, which is a continuation of Ser. No. 378,355, Jul. 11, 1989, abandoned. This application Apr. 1, 1993, Ser. No. 41,804
Int. Cl.[5] C12Q *1/68;* C07H *21/04, 21/02;* C12N *15/00*
U.S. Cl. 435—6 19 Claims

1. A method of measuring the quantity of bacteria in a biological sample said method consisting essentially of the following steps:

(A) lysing the bacteria in the biological sample under conditions that release target ribosomal RNA (rRNA), wherein the target rRNA has minimal disturbance of secondary structure and is non-denatured;

(B) contacting the target rRNA with an immobilized oligonucleotide capture probe wherein;

(i) hybridization conditions are nondenaturing for the target rRNA; and

(ii) the capture probe consists of a sequence selected from the group consisting of 5'X-CTGCTGCCTCCCGTAGGAGT-X3', 5'X-GTAT-TACCGCGGCTGCTG-X3' and concatemers of said sequences, wherein each X is the same or different as the other X and is from 0 to 10 nucleic acid bases; and

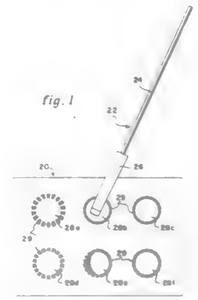
(C) determining total bacteria in the sample.

5,334,502

METHOD OF COLLECTING, IDENTIFYING, AND QUANTIFYING SALIVA

Jangbir S. Sangha, Overland Park, Kans., assignor to Osborn Laboratories, Inc., Olathe, Kans.

Continuation-in-part of Ser. No. 800,647, Nov. 27, 1991, abandoned. This application Dec. 24, 1991, Ser. No. 814,077
Int. Cl.[5] G01N *33/531, 33/543*
U.S. Cl. 435—7.21 48 Claims



1. A method of collecting and identifying saliva for analysis, said method comprising the steps of:

(a) inserting a first absorbent element into the mouth of a subject for application of a fluid saliva specimen thereto,

(b) providing a second absorbent element which is separate from said first absorbent element and having a zone of application for transfer of saliva thereto, wherein said zone of application comprises an indicator which indicates the presence of said fluid saliva specimen when contacted with said specimen, said indicator is spaced a predetermined distance from said zone of application to require transfer of a predetermined quantity of saliva to said second absorbent element prior to said applied saliva contacting said indicator, said predetermined distance also provides for collection of a sufficient quantity of specimen which is uncontacted by said indicator to permit subsequent analysis of said specimen,

(c) transferring the fluid saliva from said first absorbent element to said zone of application, and

(d) observing said indicator for saliva contact therewith in order to determine that said predetermined quantity of saliva has been transferred to said second absorbent element.

5,334,503

TEST KIT AND METHOD FOR THE DETECTION OF MICROORGANISMS ASSOCIATED WITH PERIODONTAL DISEASES USING SURFACTANT MIXTURE AS EXTRACTION COMPOSITION

Brian A. Snyder; Paul B. Contestable; Catherine T. Abrams, and Elizabeth A. Grogan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 8, 1991, Ser. No. 773,833
Int. Cl.[5] G01N *33/569*
U.S. Cl. 435—7.32 12 Claims

6. A method for the determination of *Actinobacillus actinomycetemcomitans, Porphyromonas gingivalis* or *Prevotella intermedia* comprising:

A. contacting a specimen suspected of containing *Actinobacillus actinomycetemcomitans, Porphyromonas gingivalis* or *Prevotella intermedia* with an aqueous extraction composi-

VOL 1165 ISS 1 AG 2 1994 UMI

tion buffered to a pH of from about 8 to about 11 comprising:

a. from about 1 to about 10 weight percent of a water-soluble cationic surfactant which is a quaternary ammonium salt or a mixture thereof, and

b. from about 1 to about 10 weight percent of an anionic surfactant which has a sulfate anion having from 6 to 14 carbon atoms and an alkali metal or ammonium cation,

said contacting being carried out under time and temperature conditions effective to extract an antigen from said *Actinobacillus actinomycetemcomitans, Porphyromonas gingivalis* or *Prevotella intermedia*.

B. after extraction forming a detectable immunological complex of the extracted antigen and an antibody specific to the antigen, and

C. detecting said complex as a determination of the presence of *Actinobacillus actinomycetemcomitans, Porphyromonas gingivalis* or *Prevotella intermedia* in said specimen.

5,334,504

IN VITRO ASSAY FOR DETECTING CELL-MEDIATED IMMUNE RESPONSES

Paul R. Wood, Lower Templestowe, and Leigh A. Corner, Romsey, both of Australia, assignors to Commonwealth Scientific & Industrial Research Organisation, Campbell, Australia

Continuation of Ser. No. 3,662, Jan. 12, 1993, abandoned, which is a continuation of Ser. No. 272,805, Nov. 4, 1988, abandoned. This application Sep. 22, 1993, Ser. No. 124,439

Claims priority, application Australia, Mar. 6, 1986, PH 4893/86

Int. Cl.[5] **G01N** *33/53, 33/569*

U.S. Cl. 435—7.32 **7 Claims**

1. An in vitro method of detecting a cell-mediated immune response to a specific antigen in a human or animal, which comprises the steps of:

(i) incubating a whole blood sample from the human or animal with the specific antigen; and

(ii) detecting the presence of gamma interferon (γIFN) released by sensitized lymphocytes in said whole blood sample to indicate a cell-mediated immune response to said specific antigen.

5,334,505

N- AND O-SUBSTITUTED AMINOPHENOLS, METHOD AND USE FOR DIAGNOSIS

Gerd Zimmermann, Mannheim, and Dieter Mangold, Maxdorf, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Dec. 21, 1990, Ser. No. 633,231

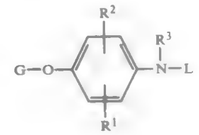
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1989, 3942355

Int. Cl.[5] **C07H** *17/00;* **G01N** *31/14*

U.S. Cl. 435—18 **15 Claims**

1. A process for colorimetric determination of a hydrolase enzyme by reaction of a chromogenic enzyme substrate with the enzyme, oxidation of a leuko colored material liberated from the chromogenic enzyme substrate by the enzyme and determination of the resulting colored material as a measure for the amount of enzyme, comprising

reacting the hydrolase enzyme with an N- and O-substituted aminophenyl derivative as the chromogenic enzyme substrate of the formula:

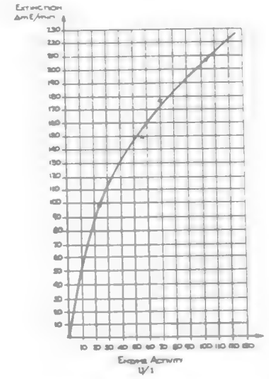


(I)

wherein

G is the residue of an organic or inorganic acid or a glycoside residue,

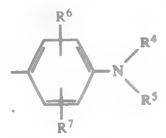
R^1 and R^2, which are the same or different, are hydrogen, halogen, SO_3H, PO_3H_2 or a salt of the acid residues of SO_3H or PO_3H_2, hydroxyl, nitro, carboxyl, carboxamido, cyano, alkyl, alkenyl, alkoxy, alkylsulphinyl, alkylsulphonyl, alkoxycarbonyl, alkylcarbonyl, aryl or aralkyl unsubstituted or substituted at least once by hydroxyl, carboxyl, halogen, cyano, SO_3H, PO_3H_2 or a salt of one of the acid residues of SO_3H or PO_3H_2 or,



when two substituents of R^1 and R^2 are present on neighboring carbon atoms, R^1 and R^2 together represent a 1,4-butadiendiyl radical which is unsubstituted or substituted at least once by SO_3H, PO_3H_2 or a salt of the acid groups of SO_3H or PO_3H_2, an alkyl or a carboxyl group,

R^3 is hydrogen, —CO—COOH, SO_3H, PO_3H_2 or a salt of the acid groups of SO_3H or PO_3H_2, an alkylcarbonyl radical unsubstituted or substituted at least once by halogen, COOH, SO_3H or PO_3H_2 or a salt of the acid groups of SO_3H or PO_3H_2 or an arylcarbonyl radical unsubstituted or substituted at least once by SO_3H, PO_3H_2 or a salt of the acid groups of SO_3H or PO_3H_2, and

L is a radical of the formula:



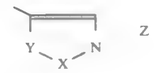
(II)

wherein

R^4 and R^5, which are the same or different, are alkyl or together represent a saturated 3–6 member hydrocarbon chain which is uninterrupted or interrupted by oxygen, sulphur or nitrogen and wherein alkyl or the hydrocarbon chain is unsubstituted or substituted at least once by hydroxyl, carboxyl, alkoxycarbonyl, alkoxy, SO_3H, PO_3H_2 or a salt of one of the acid groups of SO_3H or PO_3H_2 or halogen, and

R^6 and R^7, which can be the same or different, are hydrogen, halogen, hydroxyl, carboxamido, an alkyl, alkoxy, alkylcarbonyl, alkoxycarbonyl, aryl or aralkyl radical unsubstituted or substituted at least once by hydroxyl, carboxyl, halogen, SO_3H, PO_3H_2 or a salt of one of the acid groups of SO_3H or PO_3H_2, or

L is a pyrazolo-heterocylic radical of the formula:



(III)

wherein

X-Y signifies NR^8—CO or N=CR^9, wherein R^8 is hydrogen or an alkyl and R^9 is alkyl, alkenyl, alkoxy, alkylthio, aryl, aralkyl, in each case unsubstituted or substituted by hydroxyl, dialkylphosphinyl, carboxyl, SO_3H, PO_3H_2 or a salt of one of the acid groups of SO_3H or PO_3H_2, alkoxycarbonyl, amino, wherein the amino is unsubstituted or substituted by one or two alkyl radicals which one or two alkyl radicals are unsubstituted or substituted by at least one hydroxyl, carboxyl or alkoxycarbonyl radical and wherein when amino is substituted by two alkyl radicals, the alkyl radicals can be joined to form a ring which, apart from the first nitrogen atom of the amino group, is uninterrupted or is interrupted by oxygen, sulphur or a second nitrogen atom, or the amino is unsubstituted or substituted by one or two acyl radicals, alkoxy- or aralkoxycarbonyl radicals, H_2N—CO, alkyl-, aralkyl- or arylcarbamoyl radicals; or R^9 is hydrogen, carboxyl, alkoxycarbonyl, carboxamido or halogen, and

Z signifies NR^{10}—N=N, wherein R^{10} is hydrogen or an alkyl or aralkyl radical, or

Z is an unsaturated 3–5 member chain of nitrogen atoms or of carbon atoms, or said chain having at least one nitrogen or sulphur atom, whereby carbon atoms in the chain are unsubstituted or substituted by alkyl, alkoxy, hydroxyalkyl, alkylthio, hydroxyl, aralkyl, aryl, carboxyl, carboxamido, alkoxycarbonyl, cyano, amino, wherein the amino is unsubstituted or substituted by one or two alkyl radicals which one or two alkyl radicals are unsubstituted or substituted by at least one hydroxyl, carboxyl, alkoxycarbonyl, halogen, or nitrogen which is not attached via a double bond and nitrogen is unsubstituted or substituted by alkyl or aralkyl or two neighboring chain substituents form an alkylene which alkylene is unsubstituted or substituted or anellated with aryl and tautomers thereof.

5,334,506

CHROMOGENIC METHOD OF DETECTING ENDOPROTEASES

Werner Stüber, Lahntal, and Dieter Schnaitmann, Eppstein/Taunus, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Fed. Rep. of Germany

Division of Ser. No. 89,425, Aug. 26, 1987, Pat. No. 5,097,014. This application Oct. 30, 1991, Ser. No. 785,020

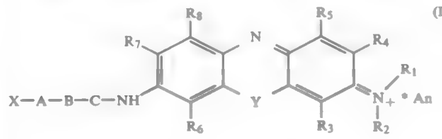
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1986, 3629175

Int. Cl.[5] **A61K** *37/00*

U.S. Cl. 435—23 **3 Claims**

1. A method for the detection and determination of endoproteases comprising:

a) incubating a solution suspected of containing an endoprotease with a solution containing a chromogenic peptide substrate for said endoprotease, said chromogenic peptide substrate comprising a compound of the formula I



(I)

in which

X denotes a hydrogen atom, a group which irreversibly masks the terminal amino group, or a conventional protecting group selected from the group consisting of carbobenzoxy, t-butoxycarbonyl and 9-fluorenyloxycarbonyl,

A and B may be identical or different and denote an alpha-, beta- or gamma-amino acid which comprises 2 to 15 carbon atoms and up to 4 nitrogen atoms, 2 sulfur atoms and 6 oxygen atoms, and B may denote a dipeptide formed from these amino acids,

C denotes arginine, lysine, tyrosine, phenylalanine or tryptophane, and their homologs,

R_1 and R_2 may be identical or different and denote a hydrogen atom or an alkyl radical having up to 4 carbon atoms,

R_3 to R_8 may be identical or different and denote hydrogen, an alkyl radical, an alkoxy radical or a halogen radical,

Y denotes oxygen, and

An^- denotes an anion,

and its water-soluble salts, and

b) determining the amount of chromophore released by said endoprotease from said chromogenic peptide substrate.

5,334,507

COMPOSITION FOR MEASUREMENT OF POTASSIUM ION CONCENTRATION AND COMPOSITION FOR ELIMINATION OF AMMONIUM IONS

Yoshihiro Soya, Shinichi, Teshima; and Shigenori Emi, all of Tsuruga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Sep. 9, 1992, Ser. No. 942,579

Claims priority, application Japan, Sep. 20, 1991, 3-270248; Oct. 17, 1991, 3-298211

Int. Cl.[5] **C12Q** *1/26, 1/32*

U.S. Cl. 435—25 **23 Claims**

1. A composition for measurement of potassium ion concentration, which comprises a) pyruvate kinase, b) glycerol kinase, c) glycerol-3-phosphate oxidase, d) peroxidase, e) a chromogen of reduced type, e) adenosine diphosphate or a salt thereof, and e) phosphoenolpyruvic acid or a salt thereof, said composition being suitable for the measurement of potassium ion concentration.

5,334,508

PROCESS AND AGENT FOR THE COLORIMETRIC DETERMINATION OF AN ANALYTE BY MEANS OF ENZYMATIC OXIDATION

Joachim Hoenes, Weinheim, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Fed. Rep. of Germany

Division of Ser. No. 390,946, Aug. 9, 1989, Pat. No. 5,206,147. This application Jan. 14, 1993, Ser. No. 4,587

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1988, 3826922

Int. Cl.[5] **C12Q** *1/26;* **C12N** *9/02, 9/04, 9/06, 9/08*

U.S. Cl. 435—25 **20 Claims**

1. A composition for use in the colorimetric determination of an analyte comprising

a) an oxidoreductase enzyme dependent from the cofactors flavine or PQQ which is effective to oxidize the analyte;

b) an aromatic nitroso compound or a tautomerically equivalent oxime compound which is effective to accept electrons from the enzyme/cofactor to cause a color change in the reaction mixture; and

c) a coupling reagent for an oxidative coupling reaction.

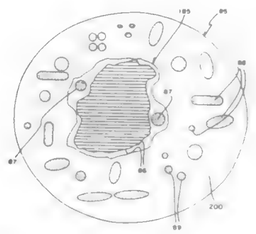
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,509

METHOD FOR DETECTING INTESTINAL PATHOGEN DIENTAMOEBA FRAGILIS

Neil H. Riordan, 7715 E. 32nd North, Wichita, Kans. 67226

Filed Oct. 22, 1992, Ser. No. 964,874
Int. Cl.[5] C12Q *1/04;* G01N *33/48*
U.S. Cl. 435—34 20 Claims



15. A method for determining if Dientamoeba fragilis is present in fecal material from a human being comprising the steps of:

(a) obtaining from a human being a fecal sample;

(b) mixing the obtained fecal sample with an aqueous salt solution to obtain a mixture of fecal material and aqueous salt solution;

(c) centrifuging the mixture of step (b) to produce a supernatant and sediment;

(d) removing the sediment of step (c) from the supernatant;

(e) contacting the removed sediment of step (d) with an acridine solution in a weight ratio ranging from about 1:10 to about 10:1 such that if Dientamoeba fragilis is present in the sediment, the Dientamoeba fragilis becomes stained with a first color, and such that if a residual fecal material is present in the sediment, the residual fecal material becomes stained with a second color, and such that further if a residual field is present in a microscopic field of view of the sediment, the residual field possesses a third color, said acridine solution comprising an aqueous solution and from about 0.40 micrograms/milliliter to about 100 micrograms/milliliter of an acridine biological staining compound; and

(f) viewing through a fluorescence microscope the removed sediment of step (e) after being contacted with the acridine solution of step (e) and detecting and discovering the presence of the first color, signifying the presence of Dientamoeba fragilis in the removed sediment and in the fecal sample, and further detecting and discovering the presence of the second color, signifying the presence of the residual fecal material in the removed sediment and in the fecal sample, and yet further detecting and discovering the presence of the third color, signifying the presence of the residual field in the microscopic field of view of the sediment.

5,334,510

PROCESS FOR PRODUCING RIBOFLAVIN BY FERMENTATION

Naoki Usui; Yoko Yamamoto, and Tuyoshi Nakamatu, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,191
Claims priority, application Japan, Sep. 9, 1991, 3-227864
Int. Cl.[5] C12P *25/00;* C12N *1/20*
U.S. Cl. 435—66 2 Claims

1. A process for producing riboflavin by fermentation which comprises:

culturing a biologically pure mutant of *Bacillus subtilis* having an activity of hydrolysing phosphoric acid from 5'-guanylic acid at a rate of 0.1 μmol/min/mg-protein or less and which has the ability to produce riboflavin; accumulating riboflavin in the medium and recovering the riboflavin.

5,334,511

ISOLATED MINK GROWTH HORMONE GENES, NOVEL RECOMBINANT DNA AND METHODS FOR PRODUCING MINK GROWTH HORMONE

Yasuhiro Harada; Eiichi Nakano; Hiroki Tatsumi, all of Noda, and Motoaki Umezu, Sendai, all of Japan, assignors to Kikkoman Corporation, Chiba, Japan

Filed Oct. 16, 1992, Ser. No. 963,331
Int. Cl.[5] C12N *15/00*
U.S. Cl. 435—69.4 3 Claims

1. An isolated mink growth hormone gene defined in SEQ ID No. 1.

5,334,512

FATTY ACID SUPPLEMENTED MEDIUM FOR RECOMBINANT PRODUCTION OF HUMAN SERUM ALBUMIN BY YEAST

Kaoru Kobayashi; Shinobu Kuwae; Tomoshi Ooya; Hirotoshi Fukutsuka; Akinori Sumi; Wataru Ohtani; Takao Ohmura, and Kazumasa Yokoyama, all of Hirakata, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Mar. 20, 1992, Ser. No. 854,841
Claims priority, application Japan, Mar. 20, 1991, 3-081719
Int. Cl.[5] C12N *1/19, 1/38, 15/81;* C12P *21/02*
U.S. Cl. 435—69.6 5 Claims

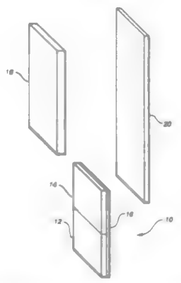
1. A method for producing human serum albumin which comprises cultivating a human serum albumin-producing yeast prepared by genetic engineering in a medium containing a fatty acid having 10 to 26 carbon atoms or its salt, wherein the fatty acid is added to the medium at a concentration of 0.005–0.4% (w/v).

5,334,513

METHOD FOR IMMUNOCHROMATOGRAPHIC ANALYSIS

Carl N. Skold, Mountain View; Armen B. Shanafelt, Redwood City; Vartan Ghazarossian, Menlo Park, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 376,723, Jul. 7, 1989, Pat. No. 5,164,294, which is a continuation-in-part of Ser. No. 194,708, May 17, 1988, Pat. No. 5,039,607. This application Sep. 3, 1992, Ser. No. 940,137
Int. Cl.[5] G01N *30/00, 33/558*
U.S. Cl. 435—7.92 8 Claims



1. A method for determining the amount of a component in a liquid medium or a reagent, which method comprises:

contacting a first bibulous member zone ("first zone") with a liquid medium containing a component, said first zone having non-diffusively bound therein a reagent interreactive with said component, under conditions wherein said liquid medium and at least a portion of said component contained therein traverse all of said first zone and migrate by capillary migration into a second bibulous member zone ("second zone") of different composition than said first zone and incapable of specifically binding said component and

measuring the distance said component has migrated into said second zone or the difference in the distances said medium and said component have migrated into said second zone, said distance or said difference being related to the amount of said component in said liquid medium or the amount of said reagent.

5,334,514

PROCESS FOR THE PRODUCTION OF ACTIVATED SIALIC ACIDS

Matthias Kittelmann, Kartäuserstrasse 88, 7800 Freiburg, Fed. Rep. of Germany; Oreste Ghisalba, Eschenweg 3, 4153 Reinach, Switzerland; Teresa Klein, Mariengartenstrasse 6, 5170 Jülich, Fed. Rep. of Germany; Udo Kragl, 665 Takarazuka-Shi, Takatsukasa-3-6-32 Nigawa, Greenheight 105, Japan, and Christian Wandrey, Wolfshovener Strasse 139, 5170 Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 915,474, Jul. 16, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 152,269
Claims priority, application Switzerland, Jul. 17, 1991, 2119/91
Int. Cl.[5] C12P *19/26*
U.S. Cl. 435—84 15 Claims

1. A process for the preparation of a cytidine 5'-monophosphosialic acid which comprises obtaining a cell extract by cultivating a naturally occurring microorganism having cytidine 5'-monophospho-N-acetylneuraminic acid synthetase activity, breaking down the microorganism, and removing the insoluble cell components; and continuously reacting a sialic acid with cytidine 5'-triphosphate in the presence of the cell extract in an enzyme membrane reactor, the extract optionally having been subjected to one purification step.

5,334,515

METHOD FOR ALTERING A NUCLEOTIDE SEQUENCE

Ayoub Rashtchian, Gaithersburg; David M. Schuster, Poolesville, and George W. Buchman, III, Mt. Airy, all of Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

Continuation of Ser. No. 683,684, Apr. 10, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 38,071
Int. Cl.[5] C07H *21/04;* C12N *15/10, 15/11;* C12P *19/34*
U.S. Cl. 435—91.2 16 Claims

1. A method for selectively amplifying the concentration of a desired DNA molecule corresponding to a nucleotide sequence of an RNA molecule present in a sample, comprising:

(a) annealing to said RNA molecule, said molecule having a 5' sequence whose amplification is desired, and a 3' sequence, a primer molecule (I); said primer molecule (I) having a first region whose sequence is complementary to a sequence of said 3' sequence of said RNA molecule, and a second region, 5' to said first region, whose sequence is not complementary to any sequence of said 3' sequence of said RNA molecule, wherein said first region of said primer molecule (I) contains at least one deoxyuridine residue;

(b) extending said primer molecule (I) to thereby synthesize a first DNA molecule having a sequence complementary to said 5' sequence, said sequence whose amplification is desired, and said 3' sequence of said RNA molecule, and additionally containing said second region of said primer;

(c) eliminating said RNA molecule from the sample;

(d) producing a complement of said first DNA molecule using at least one primer (II) having a sequence similar to said 5' sequence of said RNA molecule, to thereby produce a second DNA molecule complementary to said first DNA molecule;

(e) treating said first DNA molecule with UDG under conditions sufficient to eliminate said deoxyuridine residue contained therein; and

(f) amplifying the concentration of said desired DNA molecule using at least one primer (III) having a sequence similar to said second region of said primer (I), to copy said second DNA molecule.

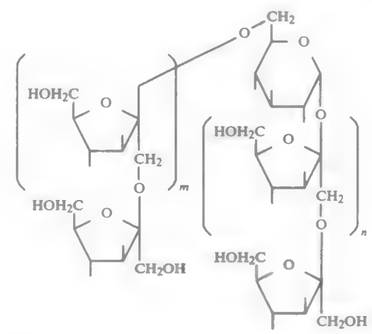
5,334,516

PRODUCTION METHOD OF BRANCHED FRUCTOOLIGOSACCHARIDES

Masayoshi Muramatsu, Fuji; Teruo Nakakuki, Mishima; Seishiro Kainuma, Shimizu, and Taizo Miwa, Sagamihara, all of Japan, assignors to Nihon Shokuhin Kako Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1988, Ser. No. 234,684
Claims priority, application Japan, Sep. 4, 1987, 62-221347
Int. Cl.[5] C12P *19/04*
U.S. Cl. 435—101 12 Claims

1. A method for the production of branched fructooligosaccharides of the following formula:



wherein m=0–10, n=0–8 and m+n=3–10 comprising treating a sucrose solution containing at least 30% sucrose with the mycelia or the enzyme prepared from the mycelia of the microorganism *Aspergillus sydowi* at a reaction temperature in the range of 40°–60° C., subsequently removing the branched fructooligosaccharides produced, and separating said branched fructooligosaccharides from other compounds produced.

5,334,517

MICROBIAL PROCESS FOR THE PRODUCTION OF TRANS-4-HYDROXY-L-PROLINE

Tatsuji Matsuoka; Nobufusa Serizawa, both of Tokyo; Tsuyoshi Hosoya, and Kouhei Furuya, both of Tsukuba, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 990,689
Claims priority, application Japan, Dec. 17, 1991, 3-333353
Int. Cl.[5] C12P *17/10, 17/12*
U.S. Cl. 435—121 19 Claims

1. A process for the preparation of trans-4-hydroxy-L-proline comprising cultivating in a culture broth a trans-4-hydroxy-L-proline producing microorganism, said microorganism being a species of a genus selected from the group consisting of Clonostachys, Gliocladium and Nectria, and separating the resulting trans-hydroxy-L-proline from the culture broth.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,518

PROCESS FOR PREPARATION OF GAMMA-PYRONE DERIVATIVES

Hidehiko Takahashi, Tokyo; Katsumi Imada, Funabashi, and Akira Motoshio, Kodaira, all of Japan, assignors to Yakurigaku Chuo Kenkyusho, Tokyo, Japan

Filed Nov. 3, 1992, Ser. No. 970,859
Int. Cl.[5] C12P *17/06*
U.S. Cl. 435—125 4 Claims

1. A process for the preparation of 3-hydroxy-4(1H)-pyran-4-one and 3,5-dihydroxy-4(1H)-pyran-4-one, which comprises fermenting a 1-alkyl-substituted-aldopentose with a microorganism selected from the group consisting of *Gluconobacter rubiginosus, Gluconobacter melanogenus, Gluconobacter suboxydans, Erwinia carotovora,* and *Pseudomonas fluorescens;* heating the resultant ferment under acid conditions; and recovering 3-hydroxy-4(1H)-pyran-4-one and 3,5-dihydroxy-4-(1H)-pyran-4-one from the heated and acidified ferment.

5,334,519

PROCESS FOR BIOLOGICAL PRODUCTION OF AMIDES WITH *R. RHODOCHROUS* J-1

Hideaki Yamada, and Toru Nagasawa, both of Kyoto, Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 243,986, Sep. 13, 1988, abandoned. This application Oct. 15, 1991, Ser. No. 777,641
Claims priority, application Japan, Sep. 18, 1987, 62-234597; Mar. 26, 1988, 63-72766
Int. Cl.[5] C12N *1/20, 1/38;* C12P *13/02*
U.S. Cl. 435—129 9 Claims

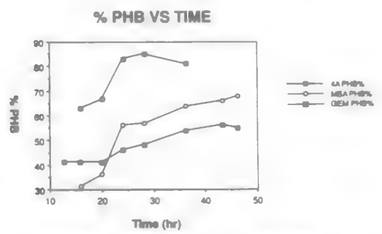
1. In a process for biological production of an amide, wherein a nitrile selected from an aromatic nitrile having 4 – 10 carbon atoms in the aromatic nucleus and an aliphatic nitrile having 2 – 6 carbon atoms is hydrated into the corresponding amide by the action of a nitrile hydratase present in a microorganism, the improvement which comprises contacting said nitrile with cells of the microorganism *Rhodococcus rhodochrous* J-1 which has been cultured in the presence of cobalt ion contained in a culture medium in an amount of about 5 to 15 mg per liter, calculated as $CoCl_2$ and in the presence of about 2 to 6 g per liter of an amide or nitrile inducer capable of inducing nitrile hydratase and wherein the culture medium is essentially free of iron ions, to thereby produce nitrile hydratase in said *Rhodococcus rhodochrous* J-1 and recovering the amide produced.

5,334,520

PRODUCTION OF POLY-BETA-HYDROXYBUTYRATE IN TRANSFORMED *ESCHERICHIA COLI*

Douglas E. Dennis, Weyers Cave, Va., assignor to Center for Innovative Technology, Herndon, Va.

Filed May 25, 1990, Ser. No. 528,549
Int. Cl.[5] C12P *7/40;* C12N *1/20, 1/38;* C08G *63/06*
U.S. Cl. 435—136 15 Claims



1. An *Escherichia coli* bacterial host transformed by a vector consisting essentially of a deoxyribonucleic acid sequence encoding the poly-beta-hydroxybutyrate biosynthetic pathway of *Alcaligenes eutrophus* wherein the bacterial host has a lactose utilization system and grows in minimal medium containing whey and wherein the bacterial host is *Escherichia coli* strain ATCC 68329.

5,334,521

CLONING AND CHARACTERIZATION OF A CARDIAC ADENYLYL CYCLASE

Yoshihiro Ishikawa, Cresskill, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Nov. 18, 1991, Ser. No. 793,961
Int. Cl.[5] C12N *15/00*
U.S. Cl. 435—172.1 10 Claims

1. A purified and isolated gene which has as the entire coding portion of its nucleotide sequence the sequence depicted in FIG. 2 and identified as SEQ ID NO: 1, which encodes a biologically active cardiac adenylyl cyclase.

5,334,522

SYSTEM FOR ISOLATING AND PRODUCING NEW GENES, GENE PRODUCTS AND DNA SEQUENCES

Michael A. Resnick, and Miroslav Radman, both of Chapel Hill, N.C., assignors to United States/National Institutes of Health, Rockville, Md.

Continuation of Ser. No. 457,557, Dec. 27, 1989, abandoned. This application Mar. 27, 1992, Ser. No. 860,233
Int. Cl.[5] C12N *15/00, 15/03*
U.S. Cl. 435—172.3 9 Claims

1. A method for producing plasmids with heteroduplex DNA sequences, comprising the steps of:

(a) providing a first cloning vector with a first backbone molecule of DNA and having cloned therein a probe molecule of DNA wherein a first restriction site is present at an end of the probe DNA, said first restriction site being different from any other restriction site present anywhere in said first backbone or said probe DNA;

(b) providing a second cloning vector having a second backbone molecule of DNA which is capable of annealing to said first backbone of said first cloning vector at between 75° C. and 95° C. in the presence of 0.2M NaCl, said second backbone having a test molecule of DNA cloned therein, the test DNA having a second restriction site, said second restriction site being present at an end of said test DNA, wherein the end of said test DNA having said second restriction site is distal to the end of said probe DNA having said first restriction site when said probe DNA and test DNA are annealed to each other, wherein said second restriction site is different from any other restriction site present anywhere in said first or second backbones, probe DNA or test DNA;

(c) cutting said first cloning vector at said first restriction site with a restriction enzyme, thereby producing a first linear molecule;

(d) cutting said second cloning vector at said second restriction site with a restriction enzyme, thereby producing a second linear molecule;

(e) heat-denaturing said first and second linear molecules to obtain single-stranded DNA; and

(f) hybridizing said linear molecules at between 75° C. and 95° C. in the presence of 0.2M NaCl to allow annealing of backbone DNA, followed by hybridization at between 22° C. and 75° C. in the presence of 0.2M NaCl to allow annealing of probe DNA and test DNA strands so that circular plasmids containing heteroduplex DNA sequences are obtained, wherein each strand of said circular plasmids contains a length of single-stranded DNA not annealed to the other strand of said plasmid, and wherein one end of each of said single-stranded lengths is not joined to the strand of said plasmid of which it is a part.

5,334,523

Patent Not Issued For This Number

5,334,524

PROCESS FOR PRODUCING LEVAN SUCRASE USING *BACILLUS LICHENIFORMIS*

Robert L. Charles, and Jayarama K. Shetty, both of Elkhart, Ind., assignors to Solvay Enzymes, Inc., Houston, Tex.

Filed May 18, 1992, Ser. No. 884,183
Int. Cl.[5] C12N *9/00, 1/20, 9/10;* A61K *37/50*
U.S. Cl. 435—193 11 Claims

1. A levan sucrase enzyme produced by *Bacillus licheniformis* APMC 84 having deposit number NRRL B-18962 and mutants thereof capable of producing said levan sucrase enzyme wherein said enzyme possesses at a temperature of about 55 C. a maximum activity at a pH of about 5.5 and retains at least 50% of its maximum activity at a pH of 4.0, as determined by the amount of glucose produced under the assay conditions which include sucrose as a substrate and measurement by high performance liquid chromatography.

5,334,525

HEPADNAVIRUS POLYMERASE GENE PRODUCT HAVING RNA-DEPENDENT DNA PRIMING AND REVERSE TRANSCRIPTASE ACTIVITIES AND METHODS OF MEASURING THE ACTIVITIES THEREOF

Christoph Seeger, Melrose Park, Pa., assignor to Fox Chase Cancer Center, Philadelphia, Pa.

Filed Aug. 28, 1992, Ser. No. 937,214
Int. Cl.[5] C12N *9/12, 15/10;* C08L *5/00;* C12Q *1/48*
U.S. Cl. 435—194 18 Claims

1. A composition of matter comprising, in extracellular combination, a substantially virus-free hepadnavirus polymerase gene product and an RNA template for hepadnavirus minus strand DNA synthesis, said composition of matter having a DNA priming activity and a reverse transcriptase activity.

5,334,526

CLONING AND EXPRESSION OF *ALUI* RESTRICTION ENDONUCLEASE

Michael D. Smith; Brian J. Schmidt, both of Rockville; Mary C. Longo, Germantown, and Deb K. Chatterjee, N. Potomac, all of Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

Filed May 28, 1993, Ser. No. 68,188
Int. Cl.[5] C12N *9/22, 15/63, 15/70*
U.S. Cl. 435—199 22 Claims

1. A recombinant host cell comprising an Arthrobacter gene coding for a restriction endonuclease, said restriction endonuclease is capable of recognizing the palindromic sequence:

5′ AG ↓ CT 3′
3′ TC ↑ GA 5′

and cleaving said sequence between the deoxyguanidine and deoxycytidine residues.

5,334,527

EPIDERMAL GRAFT SYSTEM

Miriam M. Bryak, Galveston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 153,957, Feb. 9, 1988, Pat. No. 5,015,584, which is a continuation-in-part of Ser. No. 108,338, Oct. 14, 1987, abandoned. This application Mar. 21, 1991, Ser. No. 672,840
Int. Cl.[5] C12N *5/00;* A61F *2/10*
U.S. Cl. 435—240.23 14 Claims

13. A skin autograft or allograft composite produced by a process comprising:

treating a synthetic surgical dressing with collagen to produce collagen-coated synthetic surgical dressing;

infusing the collagen-coated synthetic surgical dressing with eucaryotic cell medium MCDB-153;

growing human epidermal cells in a collagen-coated vessel containing eucaryotic cell medium MCDB-153 to produce undifferentiated cells;

transferring the undifferentiated human epidermal cells from the vessel to the collagen-coated synthetic surgical dressing infused with MCDB-153;

culturing the undifferentiated epidermal cells to induce attachment to the collagen-coated synthetic surgical dressing to produce a skin autograft or allograft composite consisting essentially of undifferentiated epidermal cells; and

recovering said composite.

5,334,528

MONOCLONAL ANTIBODIES TO CYCLODIENE INSECTICIDES AND METHOD FOR DETECTING THE SAME

Larry H. Stanker, Livermore; Martin Vanderlaan, Danville, and Bruce E. Watkins, Livermore, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 30, 1989, Ser. No. 428,537
Int. Cl.[5] C12N *5/20;* C07K *15/00*
U.S. Cl. 435—240.27 3 Claims

1. A monoclonal antibody, produced by a cell which is a fusion product of an immortal mammalian cell and immunosensitized cell from a mammal which has been immunized with a 1-hydroxychlordene hemisuccinate hapten reacted with an immunogenic keyhole limpet hemocyanin carrier protein,

wherein said antibody is identified through screening of said antibody for its binding affinity with the analog hapten of heptachlor-bovine serum albumin and cyclodiene compound and its lack of binding affinity to aid carrier protein to demonstrate the presence of reactive sites and specific affinities for compounds of the class of cyclodienes which possess the cyclopentadiene functionality; and

wherein said antibody is a product of hybridoma Hept-2, which is deposited at the ATCC with Accession No. HB 10623.

5,334,529

STABLY TRANSFORMED COFFEE PLANT CELLS AND PLANTLETS

Tommy L. Adams, Millbrae, and Michael A. Zarowitz, San Carlos, both of Calif., assignors to Escagenetics Corporation, San Carlos, Calif.

Continuation of Ser. No. 726,579, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 373,021, Jun. 27, 1989, abandoned. This application Dec. 10, 1992, Ser. No. 988,009
Int. Cl.[5] C12N *5/14*
U.S. Cl. 435—240.4 8 Claims

1. An isolated cell derived from a protoplast of the species *Coffea arabica* wherein the protoplast is derived from a cell line having all of the identifying characteristics of cell line CA-2 and is genetically transformed by means selected from the group consisting of electroporation and protoplast fusion to possess a stable trait wherein the cell can be maintained in cell culture and regenerated to a plantlet having the stable trait.

5,334,530

METHOD AND MEDIA FOR THE SOMATIC EMBRYOGENESIS AND REGENERATION OF BAMBOO

Susan H. Woods, and John E. Woods, both of Rte. 2, Englewood, Tenn. 37329

Filed Mar. 10, 1992, Ser. No. 848,913
Int. Cl.[5] C12N *5/00*
U.S. Cl. 435—240.48 7 Claims

1. A process for regenerating bamboo plants from excised bamboo plant tissue which comprises the steps of

(a) placing tissue obtained from mature undifferentiated vegetative bamboo plant parts on a first stage medium capable of inducing the excised tissue to produce an organogenic callus, said medium containing 1-naphthalene acetic acid, in an amount in the range of from 0.1 to 10

VOL 1165 ISS 1 AG 2 1994 UMI

mg/l and culturing said excised tissue until an organogenic callus is obtained and
(b) obtaining an explant from the organogenic callus of step (a),
(c) transferring the explant obtained from step (b) to a second stage medium containing 6-benzylaminopurine in an amount in the range of from 0.3 to 3 mg/l and 2,4-dichlorophenoxy acetic acid, in an amount in the range of from 0.5 to 6 mg/l, said medium being capable of inducing callus formation and somatic embryogenesis of the callus,
(d) cultivating a second callus, and
(e) forming multiple embryos from the callus of step (d).

5,334,531

PLASMID VECTOR FOR EXPRESSION IN BACILLUS AND USED FOR CLONING THE STRUCTURAL GENE WHICH CODES FOR THE HUMAN GROWTH HORMONE AND A METHOD OF PRODUCING THE HORMONE

Marina Del Bue; Paola Cosmina; Elisabetta Franchi, all of Milan, and Guido Grandi, Segrate, all of Italy, assignors to Eniricerche S.p.A, Milan, Italy

Continuation of Ser. No. 455,921, Dec. 21, 1989, abandoned, which is a continuation of Ser. No. 40,643, Apr. 21, 1987, abandoned. This application Feb. 14, 1992, Ser. No. 837,659
Int. Cl.[5] C12N *1/21, 15/18, 15/75*
U.S. Cl. 435—252.31 **5 Claims**

1. A microorganism transformed with the plasmid pSM212 which is stably maintained and which expresses the structural gene encoding human growth hormone at greater than or equal to 200 mg/l of human growth hormone, wherein the microorganism is of the genus Bacillus.

5,334,532

PDGF-B FUSION PROTEIN, VECTORS, AND HOST CELLS FOR USE IN PRODUCTION THEREOF

Charles Tackney, Brooklyn, N.Y.; Jurgen Hoppe, Wurzburg, Fed. Rep. of Germany; Wolfram Eichner, and Herbert Weich, both of Braunschweig, Fed. Rep. of Germany, assignors to ImClone Systems Incorporated, New York, N.Y.

Filed Jun. 4, 1991, Ser. No. 675,885
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1988, 3834079
Int. Cl.[5] C12N *15/00, 5/00;* **C07K** *13/00*
U.S. Cl. 435—252.33 **3 Claims**

1. An expression vector for producing PDGF-B comprising a DNA molecule having the nucleotide sequence of FIG. 3.

5,334,533

OIL CONTAMINATION CLEAN-UP BY USE OF MICROBES AND AIR

Dominic J. Colasito, 2707 Panorama, Bakersfield, Calif. 93306; Mery C. Robinson, 4106 Lemnos, Ocean Hills, Calif. 92056, and Alvin J. Smith, 4379 Modoc Rd., Santa Barbara, Calif. 93110

Filed May 7, 1990, Ser. No. 519,827
Int. Cl.[5] D06M *16/00;* **C02F** *3/00*
U.S. Cl. 435—264 **3 Claims**

1. The method of reducing hydrocarbon contamination at a locus of contamination concentration in an underground in situ formation and employing bacteria that consume hydrocarbon includes:
a) determining the locus of contamination by drilling multiple test holes downwardly in the formation and testing the drilling formation composition for presence of contamination, via the test holes, thereby to determine the boundary of said locus of contamination,
b) drilling separate multiple holes generally downwardly substantially vertically into the formation, and at different multiple lateral sides of said locus of contamination in said in situ formation, and to depths at least approximating the depths of said locus of contamination, said holes being drilled to have diameters between 5 and 8 inches,
c) providing multiple delivery pipes, having perforations along their lengths, and extending said pipes downwardly into said separate holes so that some perforations are spaced apart generally vertically at said lateral sides of said locus of contamination, and so that said perforations face toward said locus of contamination and sidewardly thereof, said delivery holes drilled to downwardly terminate generally sidewardly of said locus of contamination so that the formation under said locus of contamination is everywhere maintained undisturbed, and providing a supply pipe connected to said delivery pipes,
d) filling gravel into said holes about said pipes,
e) providing and dispersing into the locus of contamination fluid containing said bacteria, and O_2, said fluid and O_2 being delivered via said supply pipe, said delivery pipes and gravel into said formation to carry said bacteria into said locus of contamination, from different sides of said locus, the gravel acting to aid dispersal of the fluid, bacteria and O_2, whereby the bacteria consume hydrocarbon to produce CO_3 and water in said locus of contamination without the formation containing the contamination having been excavated, the O_2 delivered under pressure to form bubbles in the fluid being dispersed into the formation, to aid such dispersal,
f) said dispersing also acting to produce a bacteria barrier about said locus of contamination for intercepting flow of the hydrocarbon from said locus,
g) said formation containing said contamination being maintained in an in situ, unexcavated and undrilled state between said vertically drilled holes at opposite sides of said locus of contamination, during said dispersing.

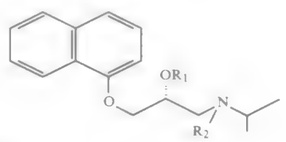
5,334,534

ENZYMATIC PREPARATION OF OPTICALLY ACTIVE PROPANOLOL AND β-ADRENERGIC BLOCKERS USING ESTERASE

Ching-Shih Chen, Wakefield, R.I., assignor to The Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, Providence, R.I.

Filed Apr. 15, 1992, Ser. No. 868,987
Int. Cl.[5] C12P *41/00*
U.S. Cl. 435—280 **2 Claims**

1. A method for the synthesis of an enzymatic optically active propranolol which comprises:
effecting an enzyme mediated enantioselective hydrolysis on a substrate of the formula:



where
$R_1 = R_2 = C(O)H$
$R_1 = R_2 = C(O)OCH_3$
$R_1 = C(O)OCH_3$ $R_2 = C(O)C_3(O)C_3H_7$
$R_1 = C(O)OCH_3$ $R_2 = C(O)$ 
$R_1 = C(O)OCH_3$ $R_2 = C(O)C_7H_{15}$
$R_1 = C(O)OCH_3$ $R_2 = C(O)C_{11}H_{23}$; and

wherein
the hydrolytic enzyme is cholesterol esterase, pig liver esterase or porcine pancrease esterase to form the corresponding (R) and (S) enantiomers;

separating the diasteroisomers; and
recovering the separated diasteroisomers.

5,334,535

PROCESS FOR THE PREPARATION OF OPTICALLY PURE DIASTEREOISOMERS OF TETRAHYDROFOLATE COMPOUNDS USING 10-FORMYLTETRAHYDROFOLATE SYNTHETASE FROM CLOSTRIDIUM

Gerhard Schlingmann, Hilburn, N.Y., and Stuart A. Rosenfeld, Alameda, Calif., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 449,662, Dec. 11, 1989, abandoned. This application Sep. 18, 1992, Ser. No. 947,641
Int. Cl.[5] C12P *41/00, 13/14*
U.S. Cl. 435—280 **1 Claim**

1. A process for preparing a substantially pure calcium salt of 5-formyl-5, 6S,7,8-tetrahydrofolic acid, which process comprises the steps of:
(a) enzymatically formylating the 6S form of a mixture of 6R and 6S diastereoisomers of 5,6,7,8-tetrahydrofolic acid utilizing a tetrahydrofolate formylase enzyme elaborated by Clostridium sp. ATCC No. 7905 or a mutant thereof so as to form a mixture comprising 10-formyl-5,6S,7,8-tetrahydrofolic acid; unreacted 5,6S,7,8-tetrahydrofolic acid and unreacted 5,6R,7,8-tetrahydrofolic acid;
(b) cyclizing said 10-formyl-5,6S, 7,8-tetrahydrofolic acid form 5,10-methenyl-5,6S, 7,8-tetra hydrofolic acid and hydrolyzing and 5,10-methenyl-5,6S,7,8-tetrahydrofolic acid to form 5-formyl-5,6S, 7,8-tetrahydrofolic acid, wherein said cyclizing and hydrolyzihng steps are conducted in the presence of 5,6R,7,8-tetrahydrofolic acid;
(c) separating the 5-formyl-5,6S, 7,8-tetrahydrofolic acid form 5,10-methenyl-5,6S, 7,8-tetra hydrofolic acid and 5,6R, 7,8-tetrahydrofolic acid by reverse phase chromatographic separation, and developed with a gradient of 0.1M aqueous formic acid and methanol;
(d) converting the substantially pure 5-formyl-5,6-S,7,8-tetrahydrofolic acid to the corresponding calcium salt using calcium chloride or a chemical equivalent thereof.

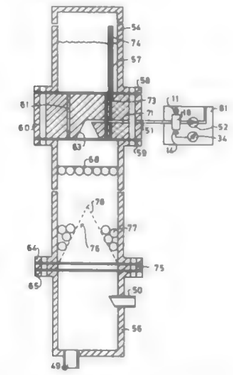
5,334,536

APPARATUS FOR THE PHOTOMETRIC DETERMINATION OF GAS CONCENTRATIONS

Klaus Nonnenmacher, Dischingerweg 11, D-7400 Tuebingen 5, Fed. Rep. of Germany

Filed Jun. 12, 1992, Ser. No. 898,220
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1991, 4119346
Int. Cl.[5] G01N *21/00*
U.S. Cl. 436—135 **6 Claims**

1. Apparatus for measuring the concentration of a gas in a liquid medium, comprising:
a radiation source (11,38) and at least one photoreceiver (14) for creating at least one optical path;
at least one measuring cell and at least one optically identical reference cell;
means for alternating the optical path between the measuring cell and the reference cell;
a source of liquid medium with a gas entrained therein;
a source of reference gas; and,
an apparatus for exchanging the gas from the liquid medium to a reference gas, said exchange apparatus comprising an upper storage container (54), an intermixing part (55) containing ball packing (77), said storage container (54) being connected to the intermixing part (55) by at least one liquid outlet, said intermixing part (55) having at least one gas outlet (51), at least one liquid outlet (67) communicating with a lower part of the exchange apparatus (56), and a lifting tray for carrying the packing (77), said lower part (56) having an air inlet (50) and a liquid outlet (49),



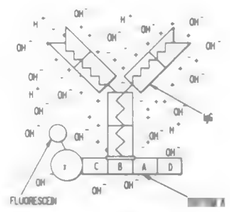
the intermixing part (55) being connected by a pressure compensating line (57) to the storage container (54).

5,334,537

DIRECT IMMUNOASSAY USING PH-SENSITIVE FLUOROCHROMES

Cheng S. Lee, Columbia, and Ping Y. Huang, Baltimore, both of Md., assignors to The University of Maryland, College Park, Md.

Filed Nov. 14, 1991, Ser. No. 791,309
Int. Cl.[5] G01N *33/543, 33/536*
U.S. Cl. 436—518 **7 Claims**



1. A method of directly detecting complexing of an antigen-/antibody binding pair, comprising:
a) preparing a solution of one of said members of said binding pair complexed with a fluorochrome selected from the group consisting of fluorescein, umbelliferones, pyrenes, resorfins, hydroxyesters of aromatic acids, styryl dyes and tetramethyl rhodamine dyes said fluorochrome being complexed with said one of said members of said binding pair at a point spatially proximal to a binding site for said antigen/antibody binding pair in a buffer having a pH other than the isoelectric point of said antibody, and determining the intensity of fluorescence thereof,
b) adding said remaining member of said binding pair to said solution and monitoring the intensity of the fluorescence of said solution,
c) wherein a change in fluorescent intensity in said solution after step b corresponds to the complexing of said antigen with said antibody said solution being free of molecular moieties which affect the intensity of the fluorescence of said fluorochrome, said change in fluorescent intensity

VOL 1165 ISS 1 AG 2 1994 UMI

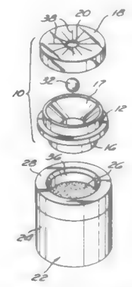
being induced by a change in the microenvironment of said fluorochrome induced by said complexing event.

5,334,538

GOLD SOL IMMUNOASSAY SYSTEM AND DEVICE

James E. Parker, Long Beach, and Aileen Herranen, Woodland Hills, both of Calif., assignors to V-Tech, Inc., Pomona, Calif.

Continuation of Ser. No. 617,608, Nov. 26, 1990, abandoned.
This application Jan. 9, 1992, Ser. No. 818,341
Int. Cl.[5] G01N *33/553*
U.S. Cl. 436—525 13 Claims



1. A system for one-step immunotesting of a liquid sample for the presence of a particular analyte, comprising:
a funnel body having;
a top liquid entrance and a bottom liquid exit;
a cover having pipette access secured to the funnel body across the top liquid entrance;
a filter secured to the funnel body across the bottom liquid exit at a bottom end of the funnel body;
a gold sol bead within the funnel body, positioned between the cover and the filter, said gold sol bead comprising a particular first immunosorbent agent which is reactive with said particular analyte, to form a labelled immunosorbent-analyte complex,
wherein said pipette access is an opening large enough for a pipette but smaller than the gold sol bead, and
an immunosorbent assembly having;
a body member having a means for removably receiving and supporting the bottom end of the funnel body; and
an immunosorbent means secured within the body member below the means for receiving and supporting the bottom end of the funnel body, said immunosorbent means having, fixed thereto, a second immunosorbent agent complementary and reactive to said labelled first immunosorbent-analyte complex, such that when the labelled first immunosorbent-analyte complex comes into contact with said second immunosorbent agent, a labelled first immunosorbent-analyte-second immunosorbent complex is formed on said immunosorbent means.

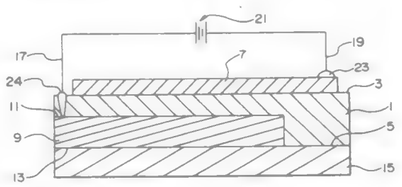
5,334,539

FABRICATION OF POLY(P-PHENYLENEACETYLENE) LIGHT-EMITTING DIODES

Joseph Shinar; Leland S. Swanson; Feng Lu, and Yiwei Ding, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 29, 1993, Ser. No. 11,391
Int. Cl.[5] H01L *21/00, 21/02, 29/28*
U.S. Cl. 437—1 20 Claims

1. A method for producing a polymer-based light-emitting diode comprising the steps of:
(a) providing a hole-injecting electrode;
(b) coating the hole-injecting electrode with a layer of a conjugated polymer to form a conjugated polymer-coated hole-injecting electrode;
(c) coating the conjugated polymer-coated hole-injecting electrode with a layer of an electron-injecting material to form an electron-injecting electrode; wherein the hole-injecting electrode, polymer layer, and electron-injecting electrode form a polymer-based light-emitting diode (LED); and



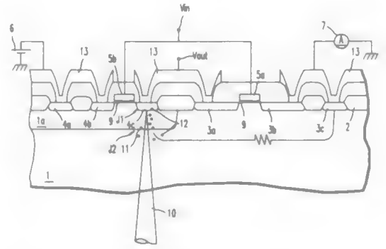
(d) annealing the polymer-based LED at a temperature and for a period of time effective to reduce the electroluminescence threshold voltage by at least about 20%.

5,334,540

OBIC OBSERVATION METHOD AND APPARATUS THEREFOR

Tatsuya Ishii, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 896,312, Jun. 10, 1992, abandoned. This application May 5, 1993, Ser. No. 56,908
Claims priority, application Japan, Nov. 14, 1991, 3-298631
Int. Cl.[5] H01L *21/00*
U.S. Cl. 437—7 13 Claims



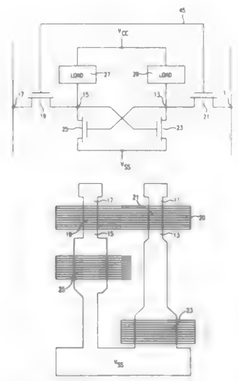
1. An OBIC observation method comprising the steps of:
(a) applying a light beam to a silicon substrate, having a first major surface being provided with a p-n junction and a second major surface opposite to said first major surface, from the side of said second major surface while performing prescribed scanning;
(b) detecting an OBIC current fed by electron-hole pairs excited by said light beam due to a photovoltaic effect in said p-n junction; and
(c) displaying distribution of said OBIC current in said silicon substrate in correspondence to said prescribed scanning,
said light beam having a wavelength which implements a light penetration depth larger than the thickness of said silicon substrate and which is shorter than the absorption edge of said silicon substrate.

5,334,541

METHOD OF FABRICATING AN INTEGRATED CIRCUIT WITH LINES OF CRITICAL WIDTH EXTENDING IN THE ASTIGMATICALLY PREFERRED DIRECTION OF THE LITHOGRAPHIC TOOL

Thomas E. Adams, Emmaus; Kuo-Hua Lee, Lower Macungie Township, Lehigh County; William J. Nagy, Bethlehem, and Janmye Sung, Lower Macungie Township, Lehigh County, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 701,271, May 16, 1991, abandoned.
This application Dec. 31, 1992, Ser. No. 999,731
Int. Cl.[5] H01L *21/285*
U.S. Cl. 437—8 2 Claims



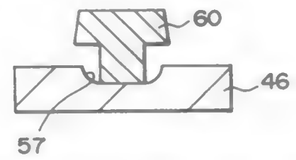
1. A method for fabricating a semiconductor integrated circuit comprising:
evaluating a lithographic tool to determine the most astigmatically preferred direction for lines of critical width; and
fabricating said integrated circuit so that said lines of critical width are parallel to one another and extending in said astigmatically preferred direction.

5,334,542

METHOD OF FORMING T-SHAPED ELECTRODE

Tadashi Saito, and Kazuyuki Inokuchi, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,280
Claims priority, application Japan, Nov. 27, 1991, 3-312821
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 11 Claims



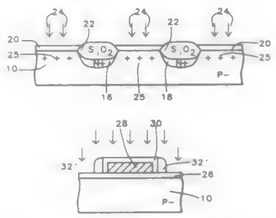
1. A method of forming a T-shaped electrode comprising the steps of:
forming a mask layer over a substrate:
forming a negative type first resist layer over the mask layer;
exposing the first resist layer through an exposure mask by a first exposure value, the exposure mask including a phase shifter pattern having an edge to form a first thin line-like unexposed pattern corresponding to the edge of the phase shifter pattern onto the first resist layer, the first thin line-like unexposed pattern having a first width;
developing the first resist layer to remove the first thin line-like unexposed pattern;
etching the mask layer through the removed first thin line-like pattern to form an aperture which exposes the substrate through the mask layer;
removing the first resist pattern;
forming a negative type second resist layer on the mask layer and within the aperture;
exposing the second resist layer through the exposure mask by a second exposure value, the second exposure value being less than the first exposure value to form a second thin line-like unexposed pattern corresponding to the edge of the phase shifter pattern onto the second resist layer over the aperture, the second unexposed pattern having a second width greater than the first width;
developing the second resist layer to remove the second thin line-like unexposed pattern to form a mask and substrate structure; and
depositing an electrode material on the mask and substrate structure; and
removing the mask layer and the second resist layer to form the T-shaped electrode.

5,334,543

METHOD OF MAKING REVERSE LIGHTLY DOPED DRAIN (LDD) FOR BURIED N+ CONDUCTOR

Jyh-Kuang Lin, I-Lan, and Nai J. Yeh, Hsinchu, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Oct. 28, 1993, Ser. No. 142,140
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—30 11 Claims



1. A method of fabrication of an semiconductor device comprising
a) forming a plurality of buried conductor lines in a semiconductor substrate with silicon dioxide structures formed by thermal oxidation on the surface thereof,
b) primary implanting of dopant ions into the surface of said substrate,
c) forming a layer of gate oxide above said substrate,
d) forming a plurality of conductive structures above said gate oxide layer,
e) secondary implanting of dopant ions into the surface of said substrate,
f) forming spacer structures adjacent to said conductive structures on said gate oxide layer,
g) forming thermal oxidation on said substrate, and
h) tertiary implanting of dopant ions into the surface of said semiconductor material,
whereby leakage is reduced by said profile of surface concentration of dopant in said semiconductor material of said substrate.

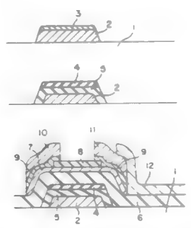
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,544

METHOD OF MAKING THIN FILM TRANSISTORS

Tomizo Matsuoka, Neyagawa; Mamoru Takeda, Hirakata, and Ikunori Kobayashi, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 30, 1993, Ser. No. 99,460
Claims priority, application Japan, Dec. 16, 1992, 4-335720
Int. Cl.[5] H01L 21/265
U.S. Cl. 437—40 4 Claims



1. A manufacturing method of a thin film transistor which comprises a first conductive layer composed of a conductive material selectively deposited on a transparent insulative substrate, an insulating layer covering the exposed surface of said substrate and said first conductive layer, a semiconductive layer covering a particular surface of said insulating layer, a pair of second conductive layers formed overlapping said semiconductive layer partially, and a transparent conductive layer electrically contacting with one of said second conductive layers, being characterized by

forming a first thin film of an aluminum system metal on said transparent insulative substrate as said first conductive layer,

forming a second thin film of a metal other than said aluminum system metal on said first conductive layer, said metal being anodic-oxidizable,

anodic-oxidizing said thin film of a metal other than said aluminum system and part of said aluminum system metal and, thereby, forming a first insulating layer on said first conductive layer, and

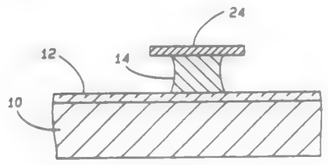
depositing a thin film of silicon nitride as a second insulating layer on said first insulating layer, said first and second insulating layers forming said insulating layer covering the exposed surface of said substrate and said first conductive layer.

5,334,545

PROCESS FOR FORMING SELF-ALIGNING COBALT SILICIDE T-GATES OF SILICON MOS DEVICES

Anthony L. Caviglia, Laurel, Md., assignor to Allied Signal Inc., Morris Township, Morris County, N.J.

Filed Feb. 1, 1993, Ser. No. 11,632
Int. Cl.[5] H01L 21/283, 21/336
U.S. Cl. 437—41 7 Claims



1. A process for making a self-aligned cobalt silicide T-gate for silicon MOS devices comprising the steps of:

forming a gate oxide layer on a top surface of a silicon substrate;

forming a polysilicon layer on said gate oxide layer;

forming a masking oxide layer on said polysilicon layer, said masking oxide layer having an opening exposing a gate region on said polysilicon layer;

depositing a layer of cobalt on said masking oxide layer and said gate region of the polysilicon layer;

heating said substrate to react said cobalt layer with said polysilicon layer in said opening to form a cobalt silicide layer in said gate region, said cobalt layer deposited on said masking oxide layer remaining unreacted;

removing said unreacted portion of said cobalt layer and said masking oxide layer to expose said polysilicon layer in the region not covered by said cobalt silicide layer; and

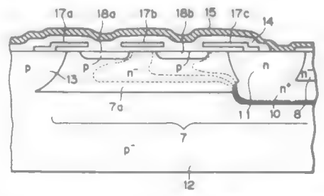
etching said exposed polysilicon layer using said cobalt silicide as a mask to form said self-aligned cobalt silicide T-gate.

5,334,546

METHOD OF FORMING A SEMICONDUCTOR DEVICE WHICH PREVENTS FIELD CONCENTRATION

Tomohide Terashima, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 807,754, Dec. 17, 1991, Pat. No. 5,204,545, which is a continuation of Ser. No. 545,600, Jun. 29, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 20,719
Claims priority, application Japan, Nov. 22, 1989, 1-305361
Int. Cl.[5] H01L 21/265
U.S. Cl. 437—41 3 Claims



1. In a semiconductor device comprising a first conductivity type semiconductor substrate, a second conductivity type first semiconductor region formed on said semiconductor substrate through p-n junction isolation, and a conductive layer extending above said first semiconductor region across an end portion of said first semiconductor region, a method of forming a structure for preventing field concentration caused in said end portion of said first semiconductor region, existing under said conductive layer, through influence exerted by an electric field from said conductive layer, comprising the steps of:

forming a first insulating film on said end portion of said first semiconductor region;

forming at least one conductive plate on said first insulating film;

introducing an impurity into said first semiconductor region by using said conductive plate as a mask to form at least one first conductivity type second semiconductor region being alternately arranged with said conductive plate so that end portions of said conductive plate and said second semiconductor region overlap with each other, in a surface of said end portion of said first semiconductor region; and

forming a second insulating film over said first insulating film and said conductive plate, wherein

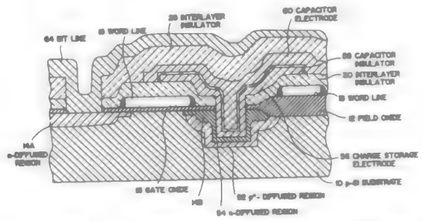
said conductive layer is formed on said second insulating film.

5,334,547

METHOD OF MANUFACTURING A SEMICONDUCTOR MEMORY HAVING AN INCREASED CELL CAPACITANCE IN A RESTRICTED CELL AREA

Kunio Nakamura, Tokyo, Japan, assignor to NEC Corporation, Japan

Division of Ser. No. 790,140, Nov. 7, 1991, abandoned, which is a continuation of Ser. No. 457,286, Dec. 27, 1989, abandoned.
This application Jul. 8, 1992, Ser. No. 911,348
Claims priority, application Japan, Dec. 27, 1988, 63-331716
Int. Cl.[5] H01L 21/70
U.S. Cl. 437—52 3 Claims



1. A method of manufacturing a semiconductor memory which comprises:

at least one memory cell which includes an insulated gate field effect transistor and an associated stacked capacitor which are formed close to each other on a single substrate of a first conduction type,

the insulated gate field effect transistor having a source and a drain which are located separately from each other in the single substrate and are formed by impurity regions of a second conduction type opposite to the first conduction type,

the insulated gate field effect transistor also having a gate formed by a gate insulator on a region between the source and the drain,

the gate and the source of the insulated gate field effect transistor being connected to a word line and a bit line, respectively,

the drain of the insulated gate field effect transistor being connected to a first electrode of the stacked capacitor,

a first impurity region of the first conduction type having a higher impurity concentration than that of the substrate, formed in the substrate below the stacked capacitor, and

a second impurity region of the second conduction type formed above the first impurity region in the substrate below the stacked capacitor and which has a junction depth shallower than the depth of the first impurity region, so that a pn junction is formed between the first impurity region and the second impurity region,

the second impurity region being connected to the first electrode of the stacked capacitor, whereby the memory cell has a cell capacitance based on a sum of a capacitance of the stacked capacitor and a junction capacitance of the pn junction,

an upper portion of said second impurity region being substantially contiguous to said gate insulator,

wherein a trench, having sidewalls which define opposite sides of the trench and having a bottom, is formed into the substrate under the stacked capacitor, said sidewalls being substantially perpendicular to the substrate, and the stacked capacitor extends into the trench, thereby increasing the capacitance of the stacked capacitor, and

the first impurity region of the first conduction type and the second impurity region of the second conduction type are respectively formed to completely surround the sidewalls on the opposite sides and to extend under the bottom of the trench, the first and second impurity regions thus being substantially aligned with the trench, so that the pn junction between the first impurity region and the second impurity region completely surrounds the sidewalls and extends under the bottom of the trench from one side of the trench to the other,

the method including the step of forming a first conduction type impurity ion diffused layer and a second conduction type impurity ion diffused layer formed thereon, in said substrate in a substrate portion where said stack capacitor is formed, said first conduction type impurity ion diffused layer and said second conduction type impurity ion diffused layer being substantially in parallel to said substrate, forming said trench substantially perpendicular to said substrate in said substrate portion so as to penetrate through said first conduction type impurity layer to reach a substrate portion under said first conduction type impurity layer;

implanting impurity ions of the first conduction type under a first acceleration energy so as to form the portion of the first impurity region completely surrounding the sidewalls, with a rotating inclined ion implantation in which the substrate is inclined at an angle of substantially 10° to 15° in relation to a direction perpendicular to a direction of an ion beam, and the substrate is rotated; and

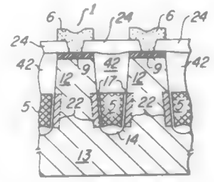
implanting impurity ions of the second conduction type under a second acceleration energy lower than the first acceleration energy, so as to form the portion of the second impurity region completely surrounding the sidewalls, with a rotating inclined ion implantation in which the substrate is inclined at an angle of substantially 10° to 15° in relation to a direction perpendicular to a direction of an ion beam and the substrate is rotated.

5,334,548

HIGH PERFORMANCE COMPOSED PILLAR DRAM CELL

Bing W. Shen; William F. Richardson, both of Richardson, and Robert R. Doering, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 951,639, Sep. 25, 1992, Pat. No. 5,300,450, which is a division of Ser. No. 770,726, May 15, 1991, abandoned, which is a continuation of Ser. No. 200,823, Jun. 1, 1988, Pat. No. 5,103,276. This application Jul. 30, 1993, Ser. No. 99,822
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] H01L 21/70
U.S. Cl. 437—52 6 Claims



1. A method of forming an array of memory cells, each memory cell formed at a semiconductor pillar of a first conductivity type, said pillar having a multisided cross-section, for each memory cell said method comprising the steps of:

(a) forming a capacitor, said step of forming a capacitor comprising the steps of:

i. forming a storage dielectric film surrounding said pillar near the bottom; and

ii. forming a field plate surrounding said storage dielectric film;

(b) biasing said field plate to a voltage sufficient to form an inversion region surrounding said pillar on the other side of said storage dielectric film from said field plate;

(c) forming a transistor, said step of forming a transistor comprising the steps of:

VOL 1165 ISS 1 AG 2 1994 UMI

i. doping a region at the top of said pillar of a second conductivity type connected to a bit line;

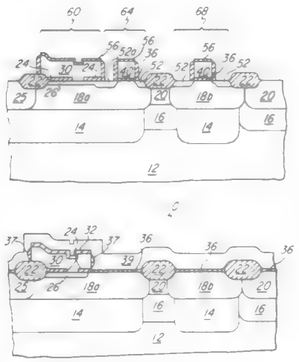
ii. forming a single control gate associated with each said pillar, said control gate disposed only on a single one of the sides of said associated pillar above said field plate, said control gate separated from said pillar by a gate dielectric and extending between said inversion region and said doped region so that a voltage applied to said control gate controls the conduction path along said single side of said pillar between said doped region and said inversion region, said control gate comprising a semiconductive material and formed in contact with a metal wordline.

5,334,549

BICMOS PROCESS THAT SUPPORTS MERGED DEVICES

Robert H. Eklund, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 13, 1993, Ser. No. 106,458
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—59 **14 Claims**



1. A method for forming a semiconductor device comprising the steps of:

a. forming a first insulator layer over a surface of a semiconductor body having a first well region;

b. implanting a base region in a first portion of said first well region;

c. forming an emitter electrode over said first insulator layer and said base region, wherein a portion of said emitter electrode extends through said first insulator layer to said base region;

d. removing a portion of said first insulator layer not covered by said emitter electrode;

e. growing a second insulator layer on the surface of said semiconductor body;

f. forming a plurality of gate electrodes on said second insulator layer, wherein at least one of said gate electrodes is formed over said first well region;

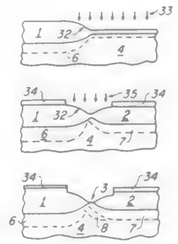
g. forming a plurality of source/drain regions at the surface of said semiconductor body, wherein a first one of said source/drain regions is formed between said at least one gate electrode and said emitter electrode, said first source/drain region contacting said base region.

5,334,550

METHOD OF PRODUCING A SELF-ALIGNED WINDOW AT RECESSED INTERSECTION OF INSULATING REGIONS

David J. McElroy, Rosenberg; Sung-Wei Lin, Houston, and Manzur Gill, Rosharon, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 637,390, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 295,079, Jan. 9, 1989, abandoned. This application Jan. 15, 1993, Ser. No. 4,813
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—65 **9 Claims**



1. A method of making a window between oxide insulating regions of an integrated circuit structure, comprising the steps of:

forming on a semiconductor substrate a first oxide insulating region having a sloped wall;

after forming said first oxide insulating region, growing a second oxide insulating region on the surface of said substrate, adjacent to said first oxide insulating region, such that said sloped wall and an edge of said second oxide insulating region form a recessed area;

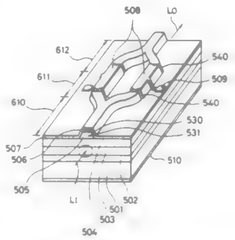
etching said recessed area such that opposing walls of said first oxide insulating region and said second oxide insulating region define a window region to the surface of said substrate.

5,334,551

METHOD OF MAKING SEMICONDUCTOR OPTICAL GUIDED-WAVE DEVICE

Keiro Komatsu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 8, 1992, Ser. No. 910,739
Claims priority, application Japan, Jul. 10, 1991, 3-168539
Int. Cl.[5] H01L *21/20, 21/203*
U.S. Cl. 437—105 **5 Claims**



1. A method for producing a semiconductor optical guided-wave device, said method comprising the steps of:

forming a first semiconductor cladding layer on a surface of a semiconductor substrate, said surface being in the (100)-plane; and

forming a semiconductor guiding layer on said first semiconductor cladding layer; forming a second semiconductor cladding layer on said semiconductor guiding layer;

forming a dielectric mask layer on said second semiconductor cladding layer, said mask having a stripe-shaped gap which extends in the [011]-direction;

selectively forming a third semiconductor cladding layer on said second semiconductor cladding layer through said stripe-shaped gap by using said dielectric mask layer and a crystal growth technique;

forming a semiconductor cap layer on said third semiconductor cladding layer;

said semiconductor cap layer and said third semiconductor cladding layer forming a ridge which extends in the [011]-direction, and said ridge having a substantially trapezoidal cross-section taken in a direction perpendicular to a longitudinal direction of said ridge;

said ridge having tilted side faces extending parallel to said longitudinal direction of said ridge in said (111)-planes;

forming an optical waveguide in said semiconductor guiding layer at a position just below said ridge;

applying dielectric protection layer, after removing said dielectric mask layer, said dielectric protection layer covering an uncovered surface of said second semiconductor cladding layer and an entire surface of said ridge including said tilted side faces;

forming a window in said dielectric protection layer at a top face of said ridge;

forming a first electrode through said window, and said first electrode contacting said top face of said semiconductor cap layer; and

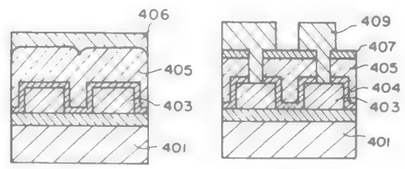
forming a second electrode on a back surface of said semiconductor substrate.

5,334,552

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE HAVING A MULTI-LAYERED INTERCONNECTION STRUCTURE

Tetsuya Homma, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 24, 1992, Ser. No. 980,901
Claims priority, application Japan, Dec. 4, 1991, 3-319549
Int. Cl.[5] H01L *21/90*
U.S. Cl. 437—195 **9 Claims**



1. A method for fabricating a semiconductor device having a multi-layered interconnection structure, which method comprising the steps of:

(a) forming a first wiring layer on a surface of a semiconductor substrate through an insulating film;

(b) forming a first silicon oxide film on the first wiring layer;

(c) forming a fluorine-containing silicon oxide film on the first silicon oxide film;

(d) forming a flattening film on the fluorine-containing silicon oxide film;

(e) etching back the flattening film by dry etching to remove the flattening film and flatten the surface of the fluorine-containing silicon oxide film;

(f) forming a second silicon oxide film on the flattened surface formed in step (e);

(g) forming in position a through-hole which passes through the first silicon oxide film, the fluorine-containing silicon oxide film and the second silicon oxide film;

(h) forming a second wiring layer on the second silicon oxide film such that part of the second wiring layer connects the first wiring layer through the through-hole; and

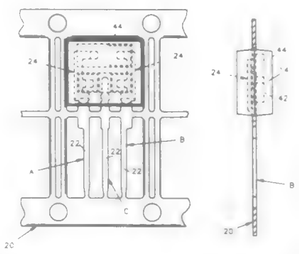
(i) repeating the steps (b) to (h) to form a repeated number of layers individually formed by the respective steps (b) to (h).

5,334,553

TELECOMMUNICATION EQUIPMENT PROTECTOR

Pravin N. Popat, Norton; Diethard Unterweger, Plainville; Gennady Baskin, Sharon; Ronald J. Candelet, Attleboro, and Gary L. Tonnies, North Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 987,038, Dec. 7, 1992. This application Mar. 11, 1993, Ser. No. 29,861
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 **4 Claims**



1. A method for making a surge protection device particularly adapted for protecting telecommunication equipment coupled to telephone ring, tip and common lines comprising the steps of taking a semiconducting element having a reverse breakdown PN junction and having first and second electrodes, mounting the body on an electrically conductive heat sink with one electrode electrically connected to the heat sink, taking a first electrically conductive lead having a distal end portion, putting a selected amount of solder paste on the other electrode, placing the distal end portion on the other electrode through the solder paste, forcing the first electrically conductive lead against the other electrode with a selected force, the amount of solder placed on the other electrode being sufficient so that the solder will wick up onto the sidewalls defining the distal end portion when the distal end portion is forced against the other electrode and soldering the first electrically conductive lead to the other electrode, electrically connecting a second electrically conductive lead to the heat sink and overmolding the body, heat sink and portions of the first and second electrically conductive leads.

5,334,554

NITROGEN PLASMA TREATMENT TO PREVENT FIELD DEVICE LEAKAGE IN VLSI PROCESSING

Kwang-Ming Lin; Lih-Shyig Tsai; Jiunn-Jyi Lin, and Yung-Haw Liaw, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Co., Ltd., Hsin-Chu, Taiwan

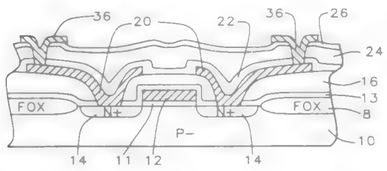
Filed Jan. 24, 1992, Ser. No. 825,371
Int. Cl.[5] H01L *21/469*
U.S. Cl. 437—231 **17 Claims**

1. A method for forming multiple metal, spin-on-glass multilayer metallurgy for a one micrometer or less feature size integrated circuit without field inversion comprising:

providing a semiconductor substrate having a pattern of field effect device source/drain regions therein with a pattern of gate dielectric and gate electrode structures associated therewith and a pattern of field isolation structures at least partially within said semiconductor substrate electrically separating certain of these source/drain regions from one another; forming a passivation layer over

VOL 1165 ISS 1 AG 2 1994 UMI

the surfaces of said patterns; and forming said multilayer metallurgy thereover by:
opening a pattern of openings through said passivation layer to at least some of said source/drain regions,
depositing and patterning a first metallurgy layer in contact with said pattern of openings;
forming a first silicon oxide via dielectric layer over said pattern of first metallurgy layer;
exposing said first silicon oxide dielectric layer to a nitrogen containing plasma containing no hydrogen ions at a temperature of less than about 450° C.;



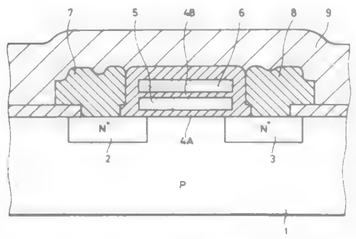
forming a spin-on-glass layer over said via dielectric layer and curing the layer;
forming a second silicon oxide via dielectric layer over said spin-on-glass layer;
forming a pattern of openings in said second via layer, said spin-on-glass layer, and said first via layer; and
depositing and patterning a second metallurgy layer in contact with said pattern of openings to make electrical contact with said first metallurgy layer wherein said multilevel metallurgy integrated circuit without field inversion is completed.

5,334,555

METHOD OF DETERMINING CONDITIONS FOR PLASMA SILICON NITRIDE FILM GROWTH AND METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Toshinobu Sugiyama, and Hiroshi Sakurai, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,962
Claims priority, application Japan, Nov. 6, 1991, 3-290114
Int. Cl.[5] H01L *21/00, 21/02, 21/302, 21/463*
U.S. Cl. 437—241 **13 Claims**



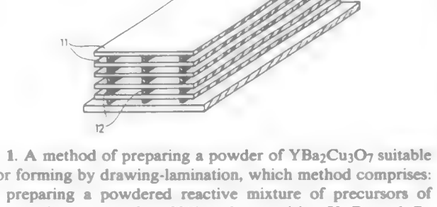
1. A method of determining conditions for the growth of a silicon nitride film in a plasma generated with SiH_4 and nitride gases by the application of high-frequency electric energy, comprising the steps of:
establishing an allowable range of ultraviolet radiation absorption rates of the silicon nitride film;
establishing an allowable range of inner stresses of the silicon nitride film, said range of inner stresses being from -3.0×10^9 to -7.0×10^9 dyn/cm^2; and
controlling levels of both the flow rate of the SiH_4 gas and the high-frequency electric energy to cause the silicon nitride film to satisfy said allowable range of ultraviolet radiation absorption rates and said allowable range of inner stresses.

5,334,556

METHOD FOR IMPROVING GATE OXIDE INTEGRITY USING LOW TEMPERATURE OXIDATION DURING SOURCE/DRAIN ANNEAL

Richard L. Guldi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 23, 1993, Ser. No. 35,868
Int. Cl.[5] H01L *21/324*
U.S. Cl. 437—248 **26 Claims**



1. A method of improving gate oxide integrity of a partially fabricated semiconductor device, comprising the steps of:
(a) providing a partially fabricated semiconductor device by the steps of:
(i) providing a semiconductor substrate having a moat region delineated by a field oxide;
(ii) forming a gate oxide in said moat region;
(iii) forming a polysilicon gate over said gate oxide layer; and
(iv) forming spaced apart source and drain regions adjacent said polysilicon gate; and
(b) annealing said partially fabricated semiconductor device in an atmosphere of an inert gas and an oxidizing gas at a temperature commencing from about 600° C. and gradually ramped up to about 900° C.; and
(c) further annealing said partially fabricated semiconductor device in an atmosphere of an inert gas when reaching said temperature of about 900° C.

5,334,557

METHOD OF PREPARING $YBA_2CU_3O_7$ POWDER FOR FORMING BY DRAWING-LAMINATION

Géard Duperray, La Norville; Claudette Audry, Massy, and Francoise Ducatel, Bonnelles, both of France, assignors to Alcatel Alsthom Compagnie Generale d'Electricite, Paris Cedex, France

Filed Mar. 3, 1993, Ser. No. 25,795
Claims priority, application France, Mar. 6, 1992, 92 02726
Int. Cl.[5] H01L *39/12;* **B28B** *11/00*
U.S. Cl. 505—500 **8 Claims**

1. A method of preparing a powder of $YBa_2Cu_3O_7$ suitable for forming by drawing-lamination, which method comprises:
preparing a powdered reactive mixture of precursors of purity greater than 99% and comprising Y, Ba and Cu such that the overall stoichiometry of the mixture is YBa_2CU_3 accurate to less than 1%,
binding said powdered reactive mixture to form intermediate pieces less than two millimeters in thickness which are placed in contact with a support in an oven so that their contact area with the support is small and liquid phase which appears during subsequent heat treating of said intermediate pieces is therefore preserved since it has little risk of being absorbed by the support,
heat treating said intermediate pieces in said oven such that said heat treating comprises at least the following stages:
a first dwell of duration in the range of 10 hours to 30 hours at a temperature, T_1, in the range 890° C. to 910° C. in an atmosphere of 20% oxygen, corresponding to synthesis of the quadratic phase of $YBa_2Cu_3O_7$,
a second dwell of duration in the range 20 hours to 100 hours at a temperature, T_2, in the range 920° C. to 960° C. in an atmosphere of 20% oxygen, corresponding to re-crystallization of the quadratic phase of $YBa_2Cu_3O_7$, and
a third dwell of duration in the range 10 hours to 50 hours at a temperature, T_3, in the range 500° C. to 300° C. in a pure oxygen atmosphere, corresponding to transformation of the quadratic phase of $YBa_2Cu_3O_7$ into the orthorhomic phase of $YBa_2Cu_3O_7$, and
dry grinding said heat treated intermediate pieces to obtain grains of said powder with an average diameter of the order of a few μm.

5,334,558

LOW TEMPERATURE GLASS WITH IMPROVED THERMAL STRESS PROPERTIES AND METHOD OF USE

Raymond L. Dietz, Georgetown, and David M. Peck, Danvers, both of Mass., assignors to Diemat, Inc., Topsfield, Mass.

Filed Oct. 19, 1992, Ser. No. 962,924
Int. Cl.[5] C03C *3/12*
U.S. Cl. 501—41 **18 Claims**



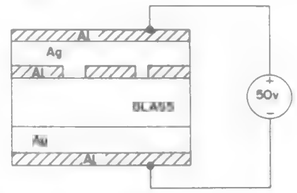
1. A crystallizing glass composition which consists essentially of, by weight on an oxide basis, about:
about 47% Ag_2O
about 22% V_2O_5
about 9% TeO_2
about 22% PbO_2.

5,334,559

PHOSPHATE GLASS USEFUL IN LASERS

Joseph S. Hayden, Clarks Summit, Pa., assignor to Schott Glass Technologies, Inc., Duryea, Pa.

Filed Feb. 1, 1993, Ser. No. 11,653
Int. Cl.[5] C03C *3/17, 3/16*
U.S. Cl. 501—48 **9 Claims**



1. A glass consisting essentially of:

	Mole %
P_2O_5	50–70
Al_2O_3	4–7
Na_2O	10–35
La_2O_3	0.1
Ln_2O_3	>0–1.5
Sum R'O (R' = Ca, Sr, Ba, Zn and Pb)	0–20
Sum R_2O (R = K, Rb and Cs)	0–18

wherein
Ln_2O_3 represents the sum of the oxides of active lasing lanthanides of atomic number 58–71, the amount of MgO is 0, and the amount of Li_2O is 0.

5,334,560

Patent Not Issued For This Number

5,334,561

HIGH PRESSURE INJECTION NOZZLE

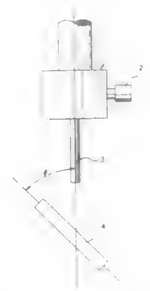
Shigetomo Matsui, 4-25, Higashiyama-Cho, Higashiosaka-Shi, Osaka-Fu; Hiroyuki Matsumura, 2-1-35-402, Ryugadai, Suma-Ku, Kobe-Shi, Hyogo-Ken; Yoshikazu Ikemoto, 1196, Kamiozo, Ozo-Cho, Kita-Ku, Kobe-Shi, Hyogo-Ken; Yasuhiro Kumon, 3-11-3-404, Minamigoyo, Kita-Ku, Kobe-Shi, Hyogo-Ken; Shigeru Nakayama, 1-1-2-28-104, Ryugadai, Suma-Ku, Kobe-Shi, Hyogo-Ken; Keiji Tsujita, 25-10, Matsukage, Okubo-Cho, Akashi-Shi, Hyogo-Ken; Keisuke Fukunaga, 2-15-2-1204, Masago, Chiba-Shi, Chiba-Ken; Nobuhiro Kuribayashi, 1-14-7, Sumiredai, Nishinomiya-Shi, Hyogo-Ken, and Kenichi Wakana, 7-2, Imazu-Oohigashi-Cho, Nishinomiya-Shi, Hyogo-Ken, all of Japan

Continuation of Ser. No. 760,509, Sep. 16, 1991, abandoned. This application Nov. 19, 1993, Ser. No. 154,718
Claims priority, application Japan, Sep. 20, 1990, 2-248616; Jun. 11, 1991, 3-165251; Jun. 11, 1991, 3-165252
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—87 **7 Claims**

1. A high pressure injection nozzle member formed by liquid phase sintering without imparting external pressure consisting of a super hard alloy comprising a tungsten carbide as a main component, wherein the tungsten carbide is composed of grains each having a diameter of less than 1 μm, further comprising at least one kind of carbide or solid solution of carbide selected from one of the group consisting of Ti, T, V, Cr, Mo, Hf, and Zr by a total weight % of 0.5 to 10.0% and a binding

VOL 1165 ISS 1 AUG 2 1994 UMI

material essentially consisting of at least one of iron group elements by weight % of 0.2 to 2.0%, said super hard alloy



having a high abrasion proof property and having a hardness more than HRA 94.5.

5,334,562

COMPOSITE CERAMIC ARTICLES

Marc S. Newkirk; Andrew W. Urquhart, both of Newark, Del.; Harry R. Zwicker, Elkton, Md., and H. Daniel Lesher, Wilmington, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 659,473, Feb. 25, 1991, Pat. No. 5,187,130, which is a continuation of Ser. No. 415,180, Sep. 29, 1989, abandoned, which is a division of Ser. No. 265,835, Nov. 1, 1988, Pat. No. 4,916,113, which is a continuation of Ser. No. 819,397, Jan. 17, 1986, Pat. No. 4,851,375, which is a continuation-in-part of Ser. No. 697,876, Feb. 4, 1985, abandoned. This application Feb. 16, 1993, Ser. No. 17,940
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] C04B *35/65*
U.S. Cl. 501—88 17 Claims

1. A self-supporting ceramic composite body comprising at least one filler material embedded by a ceramic matrix, said at least one filler material consisting essentially of randomly oriented crystallites, said ceramic matrix comprising (1) at least 1 percent by volume of at least one metallic constituent; (2) at least one structural feature selected from the group consisting of a) voids and b) channels comprising at least a portion of said at least one metallic constituent; and (3) an oxidation reaction product, said oxidation reaction product consisting essentially of crystallites of a single-phase material; said ceramic matrix further characterized by crystal lattice misalignments between adjacent oxidation reaction product crystallites being less than said lattice misalignments between oxidation reaction product crystallites having said at least one structural feature disposed therebetween.

5,334,563

CERAMICS COMPOSITE MATERIAL AND PRODUCTION THEREOF

Gudrun H. Garvie, Beaumaris, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

PCT No. PCT/AU91/00382, § 371 Date Feb. 23, 1993, § 102(e) Date Feb. 23, 1993, PCT Pub. No. WO92/03391, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 23, 1991, Ser. No. 979,871
Claims priority, application Australia, Aug. 23, 1990, PK1889
Int. Cl.[5] C04B *35/48, 35/49*
U.S. Cl. 501—105 12 Claims

1. A composite refractory material, having a porosity which does not exceed 12 percent, the composite refractory material comprising

(a) a matrix of a polycrystalline refractory ceramic material, a fraction of from 5 percent to 90 percent by volume of the crystalline grains thereof having a diameter in the range of from 15 micrometers to about 80 micrometers; and

(b) particles of a ceramic material dispersed in the matrix material, the dispersed particles occupying from 1.0 percent by volume to 40 percent by volume of the composite refractory material, each dispersed particle comprising an agglomerate of microcrystals which (i) are strongly bonded together, (ii) exhibit a strong thermal expansion anisotropy, and (iii) have a size such that cracks do not form spontaneously within the agglomerates during cooling from a temperature of about 1600° C. to room temperature; the dispersed ceramic material and the refractory material of the matrix being mutually chemically inert in the temperature range of the use of the composite refractory material;

further characterized in that

(c) the matrix material is alumina and the dispersed ceramic material is monoclinic zirconia.

5,334,564

METHOD FOR THE PREPARATION OF HIGHLY REACTIVE CLAY COMPOSITES FOR THE REMOVAL OF SO_x FROM FLUE GAS STREAMS

Thomas J. Pinnavaia, and Jayantha Amarasekera, both of East Lansing, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 553,254, Jul. 16, 1990, Pat. No. 5,219,536, and a continuation-in-part of Ser. No. 719,987, Jun. 24, 1991, Pat. No. 5,126,300. This application Mar. 5, 1992, Ser. No. 846,583
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] B01D *53/34;* B01J *20/12, 21/16;* C01B *17/60*
U.S. Cl. 502—84 64 Claims

1. A method for preparing a composite material useful for SO_x removal from a flue gas stream of a coal burning power plant and other gas streams which comprises:

(a) providing a mixture with water of a smectite clay, a basic compound selected from the group consisting of alkaline earth metal oxides, hydroxides, carbonates and mixtures thereof dispersed in the clay and a quantity of a second metal ion in a form selected from the group consisting of metal oxides, metal oxide precursors and mixtures thereof dispersed in the composite, wherein the metal ion is present in an amount which promotes oxidation of sulfur dioxide to sulfur trioxide; and

(b) heating the mixture to provide the composite material, wherein when the composite material is heated to a temperature of 500° C. or above in the presence of the SO_x in the gas stream the SO_x are removed by the composite material.

5,334,565

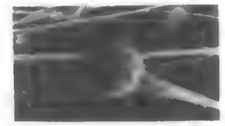
METHOD OF MANUFACTURING SILICON NITRIDE WHISKERS

Yusaku Takita, 1196-93 Suzan Miyazaki, Ohita-shi, Ohita-ken; Tatsumi Ishihara, Ohita; Yukako Mizuhara, Ohita, and Masao Noguchi, Ohita, all of Japan, assignors to Nakama Syokai Company; Tokai Kogyo Company; Yusaku Takita; Ohita Gas Co., Ltd. and Ohgasu Co., Ltd., all of Beppu, Japan

Filed Jan. 23, 1992, Ser. No. 824,329
Claims priority, application Japan, Mar. 8, 1991, 3-067579
Int. Cl.[5] C04B *35/02*
U.S. Cl. 501—95 12 Claims

1. A method of producing fibriform silicon nitride from a raw silicon-contalnlng material, comprising:

treating the raw silicon-containing material and a catalytic element in an atmosphere including a reducing agent and



a nitrfhing agent at a temperature within a range of approximately 1.200° C. to 1,700° C.

5,334,566

SELECTIVE HYDROGENATION OF CONJUGATED DIOLEFIN POLYMERS WITH TEBBE'S REAGENT

Carma J. Gibler, and Stanley E. Wilson, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 986,200, Dec. 7, 1992, Pat. No. 5,244,980. This application Apr. 16, 1993, Ser. No. 49,689
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—113 3 Claims

1. A catalyst for the hydrogenation of conjugated diolefin polymers which comprises an organo alkali metal promoter and Tebbe's reagent.

5,334,567

COCATALYST FOR VANADIUM-CONTAINING ETHYLENE POLYMERIZATION CATALYST

Raghu Menon, West Chester; Albert P. Masino, Hamilton, and Mark K. Reinking, Mason, all of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed Jan. 29, 1993, Ser. No. 10,740
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—116 16 Claims

1. An improved catalyst system for polymerizing α-olefins consisting essentially of a silica supported vanadium based solid catalyst component prepared by the steps of:

(a) pretreating silica support to remove surface hydroxyl groups;

(b) slurrying said pretreated silica with a hydrocarbon solvent;

(c) contacting said slurried silica with an organometallic compound having the formula:

$$R_xMR'_yR''_z$$

wherein M is a metal of Group IIIA of the Periodic Table of Elements, R is an alkyl group containing 1 to 12 carbon atoms, R′ and R″ are independently hydrogen, halide, alkyl or alkoxy groups containing from 1 to 12 carbon atoms, x is an integer from 1 to 3, and y and z are 0 or an integer from 1 to 2, the sum of which is not greater than 3−x;

(d) contacting said product of step (c) with a vanadium compound having the formula:

$$V(OR)_x(O)_y(X^2)_z$$

wherein X^2 is a halogen, R is a saturated hydrocarbon having from 1 to about 18 carbon atoms, x=0 or an integer from 1 to 5, y=0 or 1, and z=(5−x−2y) or 4 or 3 when x=0, y=0, or mixtures of such vanadium compounds;

(e) reacting said product of step (d) with an organic reagent selected from the group consisting of alcohols, ethers, carbonates, amines, and phosphorous compounds; and

(f) adding an alkylaluminum first cocatalyst component, and at least one halosilane second cocatalyst component having the formula R_f^6/SiX_g^3 where X^3 is halogen; R^6 is hydrogen, alkoxy, alkyl, aryl, silyoxy or cycloalkyl; f is 0 or an integer from 1 to 3, and g is an integer from 1 to 4 with the proviso that the sum of f and g is 4, to the silica supported vanadium based solid catalyst component during polymerization of said α-olefin.

5,334,568

CATALYTIC SOLID FOR USE IN THE POLYMERIZATION OF ALPHA-OLEFINES, PROCESS FOR PREPARING IT AND PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINES IN THE PRESENCE OF A CATALYST SYSTEM CONTAINING THIS SOLID

Léopold Demiddeleer, Sterrebeek; Yvan Kempeneer, Erps-Kwerps, and Laurence Desvachez, Brussels, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Division of Ser. No. 313,731, Feb. 22, 1989, Pat. No. 5,034,484. This application Jun. 6, 1991, Ser. No. 711,069
Claims priority, application France, Feb. 22, 1988, 88 02200
Int. Cl.[5] B01J *31/00, 37/00*
U.S. Cl. 502—119 30 Claims

1. In a process for the preparation of a catalytic solid by reacting effective amounts of a magnesium halide (M) with an oxygenated organic compound of titanium (T) to which is added a polymeric compound of silicon (S) to form a solid complex (C) containing magnesium, a halogen, titanium, and silicon; the improvement comprising converting the solid complex (C) into a microporous catalytic solid containing aluminum by contacting the solid complex (C) with a compound (H) selected from the group consisting of the halogenated compounds of titanium and silicon, and further contacting the solid complex (C) with a supplemental organoaluminum compound (A) of the general formula

$$AlR_n^6X_{3-n}$$

wherein R^6 is a hydrocarbon radical, X is a halogen and $0<n\leqq 3$.

5,334,569

ALKYLATION AID

John C. Kisalus, Houston, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 17,961, Feb. 24, 1987, abandoned. This application Jun. 15, 1987, Ser. No. 62,738
Int. Cl.[5] B01J *31/04*
U.S. Cl. 502—167 4 Claims

1. A promoter composition useful in a strong acid catalyzed alkylation process, the promoter comprising from 5–8% by weight of an oil-soluble C_8–C_{24} tertiary alkyl primary amine salt of a mixed C_8–C_{22} mono- and di-alkyl phosphate ester, from 5–55% by weight of either alpha or beta primene and with the balance of said promoter being a hydrocarbon solvent.

5,334,570

PORE IMPREGNATED CATALYST DEVICE

Patricia A. Beauseigneur, Waverly; Irwin M. Lachman; Mallanagouda D. Patil, both of Corning; Srinivas H. Swaroop, and Raja R. Wusirika, both of Painted Post, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 735,877, Jul. 26, 1991, abandoned, and a continuation-in-part of Ser. No. 736,417, Jul. 26, 1992, abandoned, and a continuation-in-part of Ser. No. 913,611, Jul. 20, 1992, abandoned. This application Jul. 21, 1992, Ser. No. 914,473
Int. Cl.[5] B01J *35/10, 37/02, 21/04, 21/06*
U.S. Cl. 502—304 35 Claims

1. A catalyst device comprising a porous catalyst support, the support consisting essentially of: a multichannel substrate having porous walls defining the channels and a network of open pores distributed through the walls, the walls containing washcoat particles bonded to the walls, all of which particles are of colloidal particle sizes in the range of about 0.001–0.2 micrometers and selected from the group consisting of alu-

VOL 1165 ISS 1 AG 2 1994 UMI

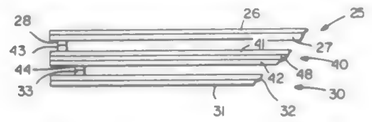
mina, rare earth oxide, silica, and zirconia, over 50% of the washcoat particles being deposited within the pores on the surfaces thereof substantially throughout the walls, any other portion of the washcoat particles being deposited on the external surfaces of the walls, and the washcoat particles not filling any microcracks in the walls.

5,334,571

CARBONLESS PAPER FOR NON-IMPACT LASER PRINTING

George Baxter, Youngstown, Ohio, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Oct. 18, 1991, Ser. No. 779,335
Int. Cl.[5] B41M 5/20
U.S. Cl. 503—226 17 Claims



1. An assembly of sheets, wherein adjacent sheets have aligned adhesive strips, for constructing carbonless multipart business forms, said sheets disposed in trays of a non-impact printer, the sheets comprising:

a plurality of CB sheets of the same construction, each of the CB sheets having a first edge with an adhesive strip on the CB face spaced a first distance from the first edge;

a plurality of each of two different types of CF sheets, comprising first and second CF sheets, each of the first CF sheets having an adhesive strip on the CF face spaced the first distance from a first edge thereof, and each of the second CF sheets having an adhesive strip on the CF face spaced a second distance from the first edge thereof, said second distance offset from said first distance by at least a width of said adhesive strip; and

a plurality of each of two different types of CFB sheets, comprising first and second CFB sheets, each of the first CFB sheets having an adhesive strip on the CF face spaced the first distance from a first edge thereof, and an adhesive strip on the CB face spaced the second distance from the first edge, and each of the second CFB sheets having an adhesive strip on the CF face spaced the second distance from the first edge thereof, and an adhesive strip on the CB face spaced the first distance from the first edge thereof.

5,334,572

INTERLAYER FOR SLIPPING LAYER IN DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

Noel R. Vanier, Fort Collins, Colo., and David P. Brust, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 21, 1993, Ser. No. 140,373
Int. Cl.[5] B41M 5/035, 5/38
U.S. Cl. 503—227 20 Claims

8. A process of forming a dye transfer image comprising:

(a) imagewise-heating a dye-donor element comprising a support having on one side thereof a dye layer and on the other side thereof, in order, a subbing layer comprising a polymer having an inorganic backbone which is an oxide of a Group IVa or IVb element, and a slipping layer, and

(b) transferring a dye image to a dye receiving element to form said dye transfer image,

wherein an interlayer is located between said subbing layer and said slipping layer, said interlayer comprising a polymer having free hydroxyl groups.

5,334,573

SHEET MATERIAL FOR THERMAL TRANSFER IMAGING

Howard G. Schild, Brighton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 2, 1991, Ser. No. 801,460
Int. Cl.[5] B41M 5/035, 5/38
U.S. Cl. 503—227 36 Claims

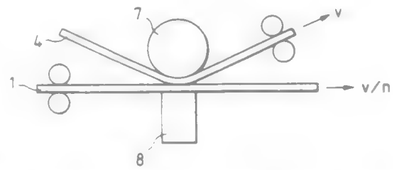
19. A process for thermal diffusion transfer imaging comprising placing a donor sheet and an image-receiving sheet adjacent to one another and heating selected portions of the donor sheet so as to transfer said image-forming material from the donor sheet to the receiving sheet, the donor sheet comprising a support, an image-forming material capable of being transferred by heat and a polymer system comprising at least one polymer as a binder for the image-forming material, and the receiving sheet comprising a polymer system comprising at least one polymer capable of receiving said image-forming material from said donor sheet upon application of heat thereto, the polymer system of said receiving sheet being incompatible/immiscible with the polymer system of said donor sheet at the receiving sheet/donor sheet interface so that there is no adhesion between the donor sheet and the receiving sheet during thermal processing, said donor sheet polymer system and said receiving sheet polymer system being substantially free of a release agent.

5,334,574

METHOD FOR THERMAL DYE TRANSFER PRINTING, DYE TRANSFER SHEETS AND METHOD FOR MAKING SAME, DYE RECEIVING SHEETS AND A THERMAL PRINTING SYSTEM

Hiromu Matsuda; Tetsuji Kawakami; Keiichi Yubakami, all of Osaka; Akihiro Imai, and Nobuyoshi Taguchi, both of Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 318,588, Mar. 3, 1989, Pat. No. 5,137,865.
This application Jun. 29, 1992, Ser. No. 905,990
Claims priority, application Japan, Mar. 4, 1988, 63-51930; Jun. 10, 1988, 63-144242; Jun. 10, 1988, 63-144243; Jun. 10, 1988, 63-144244
Int. Cl.[5] B41M 5/035, 5/38
U.S. Cl. 503—227 5 Claims



1. A method for thermal dye transfer printing which comprises:

providing a dye transfer sheet having a substrate and a dye transfer layer formed on the substrate and comprised of a sublimable dye and a binder resin, and providing a dye receiving sheet having on a substrate a dye receiving layer capable of receiving the sublimable dye of an imagewise pattern from the dye transfer sheet, the dye receiving layer being arranged to have a diffusion rate of the sublimable dye therethrough smaller than a diffusion rate of the sublimable dye in the dye transfer layer;

contacting the dye transfer sheet and the dye receiving sheet so that the dye transfer layer and the dye receiving layer are facing each other;

heating the contacted sheets in an imagewise pattern to cause the sublimable dye to transfer to the dye receiving layer according to the imagewise pattern to form an image on the dye receiving sheet; and

repeating the contacting and heating steps for a plurality of subsequent printing operations wherein (1) the dye transfer sheet is reused for printing on fresh dye receiving sheets or (2) the dye transfer sheet is run at a speed, relative to a thermal printing head, smaller than a speed of the dye receiving sheet, whereby the dye transfer layer is repeatedly used plural times at any arbitrary portions thereof.

5,334,575

DYE-CONTAINING BEADS FOR LASER-INDUCED THERMAL DYE TRANSFER

John M. Noonan, Rochester, and Mitchell S. Burberry, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,350
Int. Cl.[5] B41M 5/035, 5/38
U.S. Cl. 503—227 18 Claims

7. A process of forming a laser-induced thermal dye transfer image comprising:

a) contacting at least one monocolor dye donor element comprising a support having thereon a dye layer comprising solid, homogeneous beads which contain an image dye, a binder and a laser light-absorbing material, said beads being dispersed in a vehicle, with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

b) imagewise-heating said dye-donor element by means of a laser; and

c) transferring a dye image to said dye-receiving element to form said laser-induced thermal dye transfer image.

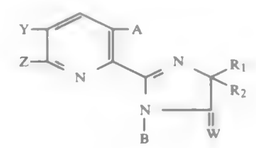
5,334,576

5 (AND/OR 6) SUBSTITUTED 2-(2-IMIDAZOLIN-2-YL)NICOTINIC ACIDS, ESTERS AND SALTS, USEFUL AS HERBICIDAL AGENTS AND NOVEL INTERMEDIATES FOR THE PREPARATION OF SAID NICOTINIC ACIDS, ESTERS AND SALTS

Robert F. Doehner, Jr., East Windsor; David W. Ladner, Hamilton Square, and John M. Finn, Mercerville, all of N.J., assignors to American Cyanamid Company, Wayne, N.J.

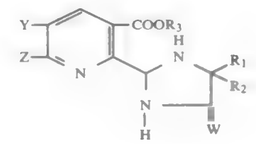
Continuation of Ser. No. 397,699, Aug. 23, 1989, abandoned, which is a continuation of Ser. No. 139,996, Dec. 31, 1987, abandoned, which is a continuation-in-part of Ser. No. 889,999, Jul. 28, 1986, abandoned. This application Mar. 23, 1992, Ser. No. 855,259
Int. Cl.[5] A01N 43/40; C07D 401/04, 413/04; C07F 9/58
U.S. Cl. 504—128 30 Claims

1. A compound having the structure:



(I)

or



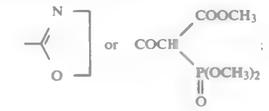
(II)

wherein

R_1 is C_1–C_4 alkyl;

R_2 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl; and when R_1 and R_2 are taken together with the carbon to which they are attached they may represent C_3–C_6 cycloalkyl optionally substituted with methyl;

A is $COOR_3$, $CONHR_6$, CHO, CH_2OH, $COCH_3$, COC_6H_5, CN, CH_3, CH=NOH, CH_2COOH, CONHOH, CH_2CH_2COOH, CHR_8OH,



R_3 is hydrogen,



C_1–C_{12} alkyl optionally substituted with one of the following groups: C_1–C_3 alkoxy, C_1–C_3 alkylthio, halogen, hydroxy, C_3–C_6 cycloalkyl, benzyloxy, furyl, phenyl, halophenyl, loweralkylphenyl, loweralkoxyphenyl, nitrophenyl, carboxyl, loweralkoxycarbonyl, cyano or triloweralkylammonium halide;

C_3–C_{12} alkenyl optionally substituted with one of the following groups: C_1–C_3 alkoxy, phenyl, halogen or loweralkoxycarbonyl or with two C_1–C_3 alkoxy groups or two halogen groups;

C_3–C_6 cycloalkyl optionally substituted with one or two chlorine group;

B is H, COR_4 or SO_2R_5;

R_4 is C_1–C_{11} alkyl, chloromethyl or phenyl optionally substituted with one chloro, one nitro or one methoxy group;

R_5 is C_1–C_4 alkyl or phenyl optionally substituted with one methyl group;

W is O or S;

R_8 is C_1–C_4 alkyl or phenyl;

Y and Z may independently be selected from the group consisting of hydrogen, halogen, C_1–C_6 alkyl, C_1–C_4 hydroxyalkyl, C_1–C_6 alkoxy, C_1–C_4 alkylthio, phenoxy, C_1–C_4 haloalkyl, nitro, cyano, C_1–C_4 alkylamino, di-C_1–C_4 alkylamino, C_1–C_4 alkylsulfonyl, difluoromethoxy, trifluoromethoxy, 1,1,2,2,-tetrafluoroethoxy, phenyl optionally substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen;

C_3–C_8 straight or branched alkenyloxy optionally substituted with 1 to 3 halogens;

C_3–C_8 straight or branched alkynyloxy optionally substituted with 1 to 3 halogens;

C_2–C_6 straight or branched alkynyl substituted with hydroxy;

C_3–C_6 cycloalkyl interrupted by 1 oxygen, sulfur, amino or C_1–C_4 alkylamino; and oxiranyl optionally substituted by one or two C_1–C_4 alkyl;

And at least one member of Y and Z must be selected from the group consisting of:

C_2–C_6 straight or branched alkenyl optionally substituted with phenyl, C_1–C_4 alkoxy or 1 to 3 halogens;

C_2–C_6 straight or branched alkynyl optionally substituted with phenyl, C_1–C_4 alkoxy or 1 to 3 halogens;

VOL 1165 ISS 1 AG 2 1994 UMI

C_3–C_6 cycloalkyl optionally substituted with methyl, halogen or C_1–C_4 alkoxy;
C_1–C_4 alkylcarbonyl optionally substituted with C_1–C_4 alkoxy or 1 to 3 halogens;
C_1–C_4 alkylcarbonylamino optionally substituted on nitrogen with C_1–C_2 alkyl or C_1–C_4 alkoxy and on carbon with C_1–C_4 alkoxy or 1 to 3 halogens;
C_1–C_4 alkylcarbonyloxy optionally substituted with C_1–C_4 alkoxy or 1 to 3 halogens;
C_1–C_4 alkyl substituted with one or more of the following groups: C_1–C_4 alkoxy optionally substituted with phenyl, thienyl, furyl, cyclopropyl, tetrahydrofuryl, C_1–C_4 alkoxy, C_1–C_4 dialkylamino, C_1–C_4 alkylamino, C_1–C_4 trialkylammonium or 1 to 3 halogens; with the proviso that when the substituent on the C_1–C_4 alkoxy group is C_1–C_4 alkoxy, C_1–C_4 alkylamino, C_1–C_4 dialkylamino or C_1–C_4 trialkylammonium, the respective heteroatoms are separated by at least 2 carbon atoms;
C_1–C_4 alkenyloxy optionally substituted with 1 to 3 halogens;
C_1–C_4 alkynyloxy optionally substituted with 1 to 3 halogens;
C_3–C_6 cycloalkoxy; phenylthio;
C_1–C_4 alkylthio optionally substituted with phenyl or 1 to 3 halogens;
C_1–C_4 alkylsulfinyl optionally substituted with phenyl or 1 to 3 halogens;
C_1–C_4 alkylsulfonyl optionally substituted with phenyl or 1 to 3 halogens;
C_1–C_4 alkylamino optionally substituted on carbon by phenyl or 1 to 3 halogens;
C_1–C_4 dialkylamino;
C_1–C_4 trialkylammonium;
C_1–C_4 alkylcarbonyloxy; cyano;
phenylamino, optionally substituted in the ring by 1 to 3 halogens, C_1–C_4 alkyl, or C_1–C_4 alkoxy;
phenoxy, optionally substituted in the ring by 1 to 3 halogens, C_1–C_4 alkyl, or C_1–C_4 alkoxy;
2(or 3)-furyl optionally substituted with halogen or C_1–C_3 alkyl;
2(or 3)-thienyl optionally substituted with halogen or C_1–C_3 alkyl;
N-methyl-2(or 3)-pyrrolyl; hydroxy; formyl;
amino optionally substituted with C_1–C_4 alkoxy, C_1–C_4 alkylsulfonyl, C_1–C_2 alkyl and C_1–C_4 alkoxy, C_1–C_4 alkylsulfonyl and C_1–C_2 alkyl, amino, C_1–C_4 monoalkylamino, or C_1–C_4 dialkylamino;
2(or 4)-pyridyloxy optionally substituted with C_1–C_4 alkyl, trifluoromethyl or 1 or 2 halogens;
C_1–C_4 mono or dialkylaminocarbonylamino, optionally substituted on the nitrogen attached to the ring with C_1–C_2 alkyl or C_1–C_4 alkoxy;
C_1–C_4 alkoxycarbonylamino, optionally substituted on nitrogen with C_1–C_2 alkyl or C_1–C_4 alkoxy; and C_1–C_4 mono or dialkylaminocarbonyloxy;

Provided also that when Y is hydroxy, Z cannot be hydrogen; Provided also that when B is COR_4 or SO_2R_5, A is CH_3, CN or $COOR_3$ in which R_3 is other than H or a cation and W is O, then Y and Z cannot be alkylamino, hydroxyl or hydroxyloweralkyl;

an N-oxide thereof when W is O, provided that R_3 cannot be unsaturated alkyl and Y and Z cannot be alkylthioalkyl, alkylaminoalkyl, dialkylaminoalkyl, trialkylammoniumalkyl, amino, 2(or 4)-pyridyloxy, alkoxyamino or unsaturated alkyl;
an optical isomer thereof when R_1 and R_2 are not the same;
a tautomer thereof;
or an agronomically acceptable acid addition salt thereof except when R_3 is a cation.

5,334,577

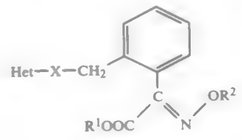
OXIME ETHER DERIVATIVES, THEIR PREPARATION AND FUNGICIDES CONTAINING THESE DERIVATIVES

Bernd Wenderoth, Lampertheim; Siegbert Brand, Weinheim; Franz Schuetz, Ludwigshafen; Thomas Kuekenhoehner, Frankenthal; Franz Roehl; Eberhard Ammermann, both of Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 411,638, Sep. 25, 1989, abandoned. This application Dec. 4, 1990, Ser. No. 620,456
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1988, 3835028
Int. Cl.[5] C07D *263/58;* **A01N** *43/76*
U.S. Cl. 504—130 **6 Claims**

1. Oxime ether derivatives of the formula I

(I)



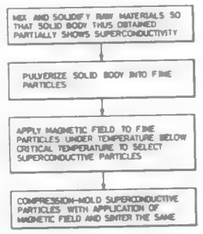
wherein R^1 and R^2 are each hydrogen or C_1–C_5-alkyl, Het is pyridyl substituted by halogen, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, C_1–C_2-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkyl-C_1–C_4-alkoxy, phenyl, benzyl, 2-phenylethyl, 3-phenylpropyl, 4-phenylbutyl, C_1–C_4-alkylcarbonyl, C_1–C_4-alkoxycarbonyl or cyano, and X is oxygen, and their plant-tolerated acid addition salts, metal complexes and N-oxides.

5,334,578

METHOD OF MANUFACTURING SUPERCONDUCTOR

Maumi Kawashima, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 19, 1988, Ser. No. 221,080
Claims priority, application Japan, Jul. 21, 1987, 62-182928
Int. Cl.[5] H01L *39/12*
U.S. Cl. 505—400 **4 Claims**



1. A method of manufacturing a superconductor of composition $Y_1Ba_2Cu_3O_x$ with a critical current density J_C at a temperature of 77k and magnetic flux density of O T (tesla) of about 1200 A/cm_2, said superconductor having anisotropic conducing axes, comprising the steps of:

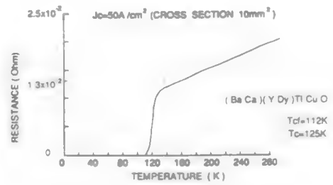
blending, mixing and solidifying raw materials for a superconductor of composition $Y_1Ba_2Cu_3O_x$ with a critical current density J_C at a temperature of 77k and magnetic flux density of O T (tesla) of about 1200 A/cm_2, so that a solid body thus obtained at least partially shows superconductivity at a temperature less than a critical temperature;
pulverizing said body into the fine particles;
applying a magnetic field to said fine particles at a temperature below the critical temperature, and selecting superconductive particles; and
compression molding said superconductive particles thus selected while applying a magnetic field, and sintering the same.

5,334,579

PROCESS FOR PREPARING SUPERCONDUCTING MATERIAL

Hideo Itozaki; Saburo Tanaka; Nobuhiko Fujita; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 652,256, Feb. 6, 1991, abandoned, which is a continuation of Ser. No. 351,550, May 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 223,634, Jul. 25, 1988, Pat. No. 4,880,773. This application Dec. 31, 1992, Ser. No. 999,670
Claims priority, application Japan, Jul. 25, 1987, 62-185739; Jul. 26, 1987, 62-185710
The portion of the term of this patent subsequent to Mar. 31, 2010, has been disclaimed.
Int. Cl.[5] C01F *11/02;* **C01G** *3/02, 15/00;* **H01L** *39/12*
U.S. Cl. 505—474 **13 Claims**



1. A process for producing a a compound oxide superconductive material represented by the general formula:

$$(Ba,Ca)_x(\alpha,Dy)_{1-x}Tl_yCu_{1-y}O_{3-z}$$

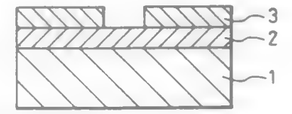
wherein
"α" represents Y or La;
the atomic ratio of Ca to Ba is between 1% and 90%;
the atomic ratio of Dy to α is between 1% and 90;
x, y, and z are within the ranges of $0<x<1$, $0<y<1$, and $0\leqq z<1$ respectively; and
the expression of (Ba,Ca) and (α,Dy) means that the respective elements occupy predetermined sites in a crystal in a predetermined proportion, said process comprising preparing a material powder, compacting the material powder and then subjecting the resulting compact to a final sintering operation, wherein said material powder is
(A) a powder mixture composed of
(i) powders of elemental Ba, Cu, Ca, α, Dy and Tl or
(ii) powders of compounds each containing at least one of said elements Ba, Cu, Ca, α, Dy and Tl, or
(iii) a mixture of (i) and (ii),
(B) a sintered powder obtained by sintering preliminarily the powder mixture (A) and then pulverizing the resulting sintered mass, or
(C) a powder mixture of said powder mixture (A) and said sintered powder (B),
in which "α" represents Y or La, and
wherein, the atomic ratios of (Ba,Ca): (α,DY):Tl:Cu in said material powder are $x:(1-x):y:(1-y)$, the atomic ratio of Ca to Ba is between 1% and 90%, the atomic ratio of Dy to α is between 1% and 90%, x and y are within the ranges of $0<x<1$ and $0<y<1$, respectively.

5,334,580

SUPERCONDUCTING DEVICE HAVING SUPERCONDUCTING WEAK COUPLING

Toshikazu Nishino, Kawasaki; Haruhiro Hasegawa, Kokubunji, and Ushio Kawabe, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 742,524, Aug. 7, 1991, Pat. No. 5,232,905, which is a continuation of Ser. No. 145,315, Jan. 19, 1988, abandoned. This application Jan. 14, 1993, Ser. No. 4,247
Claims priority, application Japan, Jan. 30, 1987, 62-18393; Apr. 13, 1987, 62-88804
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] H01B *12/00;* **H01L** *29/06, 39/22*
U.S. Cl. 505—191 **7 Claims**



3. A superconducting device comprising:
a substrate;
a first region formed over said substrate and being made of a material selected from the group consisting of semiconductor and normal-conductor; and
at least two second regions formed on the first region and being made of an oxide superconductor having a crystalline structure and having spaced from each other to form a superconducting weak coupling therebetween through the first region,
wherein the first region has the same crystalline structure as the second regions and wherein the first region has a material composition different than that of said second regions.

5,334,581

PROCESS FOR PREPARING PERFUMED PERSONAL PRODUCTS

John M. Behan, Kennington; Jeremy N. Ness, Chartham; Keith D. Perring, Ashford, and William M. Smith, Folkstone, all of Great Britain, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Division of Ser. No. 962,714, Oct. 19, 1992, Pat. No. 5,246,918, which is a division of Ser. No. 726,407, Jul. 10, 1991, Pat. No. 5,190,915. This application Jan. 15, 1993, Ser. No. 76,650
Claims priority, application European Pat. Off., Jul. 11, 1990, 90307586.5
Int. Cl.[5] A61K *7/46*
U.S. Cl. 512—2 **2 Claims**

1. A process for preparing structured emulsions containing liquid crystal structures, and comprising an aqueous phase and a non-aqueous phase containing non-ionic emulsifiers and optional structuring aids, which comprises:

(a) forming the non-aqueous phase by mixing 1–30%, by weight of the total emulsion one or more non-ionic emulsifiers, 1–50%, by weight of the total emulsion, of a perfume, including 0–30%, by weight of the nonaqueous phase, of optional hydrophobic adjuncts, and optional structuring aids, at a temperature at which the non-aqueous phase forms a homogeneous liquid;
(b) forming the aqueous phase in an amount of 20–98%, by weight of the total emulsion, consisting of water and 0–30%, by weight of the aqueous phase, optional hydrophilic adjuncts and brought at substantially the same temperature as that of the non-aqueous phase; and
(c) mixing the non-aqueous phase formed in (a) and the aqueous phase formed in (b) under shear conditions.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,582

PHARMACEUTICAL BACTERIOCIN COMPOSITIONS AND METHODS FOR USING THE SAME

Peter Blackburn; Steven J. Projan, both of New York, N.Y., and Edward B. Goldberg, Newton, Mass., assignors to Applied Microbiology, Inc., Brooklyn, N.Y.

Continuation of Ser. No. 822,433, Jan. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 317,626, Mar. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 209,861, Jun. 22, 1988, abandoned. This application Jul. 6, 1993, Ser. No. 86,758

Int. Cl.[5] A61K *37/02, 31/14*

U.S. Cl. 514—2 26 Claims

1. A method of preventing or treating for bacterial infection in a low-pH environment in the range of pH 2–5 comprising contacting the bacteria with a composition comprising a lanthionine-containing bacteriocin and a chelating agent in a pharmaceutically acceptable carrier.

5,334,583

USE OF SUGAR DERIVATIVES FOR THE PROPHYLAXIS AND TREATMENT OF VIRUS INFECTIONS

Bohumir Lukas, Basel, and Karl H. S. Ruppin, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Division of Ser. No. 601,600, Oct. 17, 1990, Pat. No. 5,189,017, which is a continuation of Ser. No. 319,909, Mar. 3, 1989, abandoned, which is a continuation of Ser. No. 750,667, Jul. 19, 1985, abandoned, which is a continuation of Ser. No. 640,547, Aug. 14, 1984, abandoned, which is a continuation of Ser. No. 515,006, Jul. 18, 1983, abandoned. This application Dec. 2, 1992, Ser. No. 985,087

Claims priority, application Switzerland, Jul. 23, 1982, 4528/82

The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.[5] A61K *37/02*; C07K *9/00*

U.S. Cl. 514—8 16 Claims

1. A pharmaceutical non-suppository composition for topical administration to a warm-blooded animal, said composition being in the form of an ointment, a cream, a paste, a gel, a foam, a spray, or a lipstick, said composition comprising a pharmaceutically acceptable carrier and an in-vivo antivirally effective amount, but not more than 0.9% by weight, of a pharmaceutically acceptable salt of N-acetylmuramyl-L-alanyl-D-isoglutaminyl-L-alanine-2-(1,2-dipalmitoyl-sn-glycero-3-hydroxyphosphoryloxy)-ethylamide, and said composition being free of an agent which is alone active as a vaccine.

5,334,584

RECOMBINANT, NON-GLYCOSYLATED BPI PROTEIN AND USES THEREOF

Randal W. Scott, Cupertino, and Marian N. Marra, San Mateo, both of Calif., assignors to INCYTE Pharmaceuticals, Inc., Palo Alto, Calif.

Continuation of Ser. No. 681,551, Apr. 5, 1991, Pat. No. 5,171,739, which is a continuation-in-part of Ser. No. 567,016, Aug. 13, 1990, which is a continuation-in-part of Ser. No. 468,696, Jan. 19, 1990, Pat. No. 5,089,274, which is a continuation-in-part of Ser. No. 310,842, Feb. 14, 1989, abandoned. This application Dec. 14, 1992, Ser. No. 990,044

The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[5] A61K *37/02, 35/14*

U.S. Cl. 514—012 30 Claims

1. A substantially homogeneous, biologically active, recombinant non-glycosylated BPI Protein.

5,334,585

PYRETHROID MICROEMULSION COMPOSITIONS AND METHOD FOR CONTROLLING INSECTS THEREWITH

Paul-Joel Derian, Sceaux, and Gilles Guerin, Eaubonne, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Feb. 21, 1992, Ser. No. 838,669

Claims priority, application France, Feb. 22, 1991, 91 02374

Int. Cl.[5] A01N *65/00, 37/34*

U.S. Cl. 514—74 19 Claims

1. A stable pyrethroid microemulsion composition comprising:

(1) from 0.1% to 95% by weight/weight of at least one synthetic pyrethroid in liquid form:

(2) from 2% to 90% by weight/weight of a surfactant system comprising:

(a) at least one anionic surfactant selected from the group consisting of neutral phosphates or sulfates of ethoxylated, propoxylated or ethoxypropoxylated di(1-phenylethyl)phenols and ethoxylated, propoxylated or ethoxypropoxylated tri(1-phenylethyl) phenols;

(b) at least one nonionic surfactant selected from the group consisting of ethoxylated, propoxylated or ethoxypropoxylated di(1-phenylethyl)phenols, ethoxylated, propoxylated, propoxylated or ethoxypropoxylated tri(1-phenylethyl)phenols and ethoxypropoxylated nonylphenols; and

(c) at least one co-surfactant selected from the group consisting of straight-chain or branched aliphatic alcohols having from 3 to 10 carbon atoms, cycloaliphatic alcohols having from 5 to 12 carbon atoms, arylaliphatic alcohols having from 7 to 12 carbon atoms, ether-alcohols of the formula R-$(OR')_n$-OH, wherein R represents a straight-chain or branched alkyl radical having from 1 to 8 carbon atoms; R′ represents an alkylene radical; and n represents an integer from 1 to 3; and straightchain or branched aliphatic carboxylic acids having from 5 to 10 carbon atoms; and

(3) water;

wherein the ratio by weight of anionic surfactant/nonionic surfactant is from 10.90 to 90/10, and the ratio by weight of cosurfactant/anionic surfactants is from 0.25 to 0.80.

15. A method for controlling insects which attack plants or wood, comprising application of the pyrethroid microemulsion composition of claim 1 to the plants or the wood.

5,334,586

HETEROCYCLE-SUBSTITUTED DIPHOSPHONATE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS, AND METHODS OF TREATING ABNORMAL CALCIUM AND PHOSPHATE METABOLISM

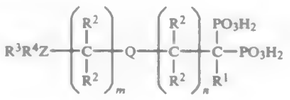
Frank H. Ebetino, Norwich, N.Y., and James J. Benedict, Golden, Colo., assignors to Procter & Gample Pharmaceuticals, Inc., Norwich, N.Y.

Division of Ser. No. 378,530, Jul. 11, 1989, Pat. No. 5,071,840, which is a continuation-in-part of Ser. No. 945,068, Dec. 19, 1986, abandoned. This application Oct. 21, 1991, Ser. No. 779,705

Int. Cl.[5] C07F *9/6509, 9/6512*; A61K *31/675*

U.S. Cl. 514—85 22 Claims

1. A heterocycle-substituted diphosphonic acid, or a pharmaceutically-acceptable phosphonic acid salt thereof, having the general structure:



wherein:

(a) Z is a saturated six membered heterocycle, wherein said heterocycle has two ring nitrogen atoms;

(b) Q is a covalent bond or a moiety selected from the group consisting of oxygen, sulfur, or —NR^2—;

(c) m and n are integers from 0 to 10, and m+n is from 0 to 10;

(d) R^1 is selected from the group consisting of hydrogen; halogen; alkyl having from 1 to 6 carbon atoms; phenyl; benzyl; hydroxy, and the C_1–C_6 esters thereof, unsubstituted amino, and C_1–C_6 acylamino; amino and C_1–C_6 acylamino substituted with one alkyl group having from 1 to 6 carbon atoms; amino substituted independently with two alkyl groups having from 1 to 6 carbon atoms; ammonium substituted independently with three alkyl groups having from 1 to 6 carbon atoms, having a pharmaceutically-acceptable counter-ion; and —CO_2H, the pharmaceutically-acceptable salts thereof, the C_1–C_6 esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups having from 1 to 6 carbon atoms; except that when n=0 and Q is oxygen, sulfur or nitrogen, then R^1 is selected from the group consisting of hydrogen; alkyl having from 1 to 6 carbon atoms; phenyl; benzyl; and —CO_2H, the pharmaceutically-acceptable salts thereof, the C_1–C_6 esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups having from 1 to 6 carbon atoms;

(e) R^2 is selected from the group consisting of hydrogen, methyl, ethyl, and propyl;

(f) R^3 and R^4 are substituents on one or more carbon atoms of said heterocycle, independently selected from the group consisting of hydrogen; halogen; alkyl having from 1 to 3 carbon atoms; unsubstituted amino and C_1–C_3 acylamino; amino and C_1–C_6 acylamino substituted with one alkyl group having from 1 to 3 carbon atoms; amino substituted independently with two alkyl groups having from 1 to 3 carbon atoms; ammonium substituted independently with three alkyl groups having from 1 to 3 carbon atoms, having a pharmaceutically-acceptable counter-ion; hydroxy, or the C_1–C_6 esters thereof, ether having from 1 to 3 carbon atoms; —CO_2H, the pharmaceutically-acceptable salts thereof, the C_1–C_3 esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups having from 1 to 3 carbon atoms; and nitro;

and wherein the Q-containing chain is not attached to the heterocyclic ring at a nitrogen atom of the heterocyclic ring; and wherein further when m=0 and Q is oxygen, nitrogen or sulfur, then Q is bonded to the heterocyclic ring at a carbon atom not bonded directly to a nitrogen atom in the heterocyclic ring except that when Q is nitrogen then Q may also be bonded to the heterocyclic ring by a diazinilidene or ylidene structure.

5,334,587

COMPOUNDS, NAMED THE "LEUSTRODUCSINS", THEIR PREPARATION AND THEIR THERAPEUTIC USES

Takafumi Kohama; Isao Kaneko; Takemichi Nakamura, all of Tokyo; Takeshi Kagasaki, Iwaki; Ryuzo Enokita, Tsukuba, and Keiichi Matsuda, Tokyo, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

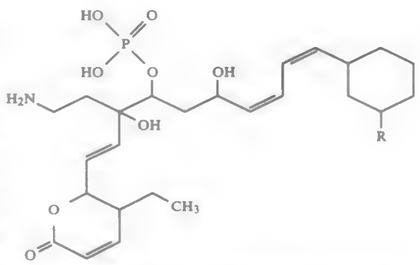
Filed Mar. 25, 1992, Ser. No. 857,162

Claims priority, application Japan, Mar. 27, 1991, 3-063087

Int. Cl.[5] A61K *31/665*; C07F *9/06*

U.S. Cl. 514—99 19 Claims

1. A leustroducsin compound of formula (I):



(I)

in which R represents a 5-methylhexanoyloxy group, a 6-methyloctanoyloxy group or a 7-methyloctanoyloxy group, or a pharmaceutically acceptable salt thereof.

5,334,588

COMPOSITION FOR INHIBITING TRANSMISSION OF HEPATITIS B VIRUS

Charles L. Fox, Jr., deceased, late of Fort Lauderdale, Fla. by Alan F. Ruf, legal representative , and Shanta M. Modak, River Edge, N.J., assignors to The Trustees of Columbia University in the City of New York, Morningside Heights, N.Y.

PCT No. PCT/US89/04642, § 371 Date Jun. 4, 1991, § 102(e) Date Jun. 4, 1991, PCT Pub. No. WO90/04390, PCT Pub. Date May 3, 1990

Continuation-in-part of Ser. No. 262,165, Oct. 18, 1988, Pat. No. 4,952,411, which is a continuation-in-part of Ser. No. 18,624, Feb. 25, 1987, abandoned. This PCT application Oct. 17, 1989, Ser. No. 678,260

Int. Cl.[5] A61K *31/56, 31/555*

U.S. Cl. 514—171 9 Claims

1. A method for inhibiting transmission of hepatitis B virus, comprising applying to a patient a composition comprising an effective antiviral amount of silver sulfadiazine at a site where contact with hepatitis B virus may occur.

5,334,589

QUINOLONE CARBOXYLIC ACID--METAL ION--ACID COMPLEXES

Laman A. Al-Razzak, Libertyville, and Francisco J. Alvarez, Lindenhurst, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 458,927, Dec. 29, 1989, abandoned. This application Jun. 25, 1992, Ser. No. 867,200

Int. Cl.[5] A61K *31/47*; C07D *215/56*

U.S. Cl. 514—185 9 Claims

1. A pharmaceutical composition comprising a quinolone carboxylic acid—metal ion—acid complex dissolved in a physiologically acceptable carrier and having a pH of about 4 to about 10.

5,334,590

MRSA ACTIVE 2-PHENYL-CARBAPENEMS

Frank DiNinno, Old Bridge, and Ravindra N. Guthikonda, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

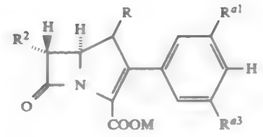
Continuation of Ser. No. 777,949, Oct. 17, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 92,770

Int. Cl.[5] C07D *487/00*; A01N *43/00*; A61K *31/395*

U.S. Cl. 514—210 12 Claims

1. A compound of the formula:

VOL 1165 ISS 1 AG 2 1994 UMI

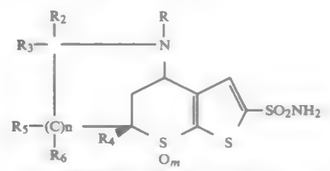


I

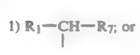
wherein:
R is H or CH_3;
R^2 is (R)—$CH_3CH(OH)$— or (R)—$CH_3CH(F)$—;
R^{a1} is halogen, —SCH_3, —$S(O)_2CH_3$ and —(C═O)H;
R^{a3} is halogen, —SCH_3, —$S(O)_2CH_3$, —(C═O)H, —(S→O)CH_3 and —cyano; and
M is a pharmaceutically acceptable cation or ester.

5,334,591
TRICYCLIC THIENOTHIOPYRAN CARBONIC ANHYDRASE INHIBITORS
John J. Baldwin, Gwynedd Valley; Kenneth L. Shepard, North Wales; Gerald S. Ponticello, Lansdale, and Theresa M. Williams, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation-in-part of Ser. No. 777,812, Oct. 15, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,363
Int. Cl.[5] C07D *471/18, 487/18;* **A61K** *31/44, 31/55*
U.S. Cl. 514—215 **10 Claims**

1. A compound of structural formula



having a cis configuration, the enantiomers and mixtures thereof, or an ophthalmologically acceptable salt thereof wherein:
R is:



1) R_1—CH—R_7; or

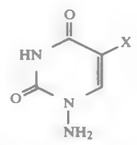
R_1 is:
1) H;
2) C_{1-6}alkyl, C_{2-6}alkenyl or C_{1-6}alkyl substituted with F, OH, C_{1-5}alkyl-$S(O)_m$— or C_{1-5}alkyl-O—;
3) phenyl or benzyl wherein the phenyl groups optionally are substituted by C_{1-3}alkyl, halogen, CF_3, OH, or C_{1-3}alkoxy;
R_2, R_3, R_5, R_6, and R_7 are independently H or C_{1-4}alkyl or R_2 and R_3 together are ═O; and
R4 is
1) H or C_{1-6}alkyl;
2) C_{1-6}alkyl substituted with
a) hydroxy,
b) C_{1-3}alkyl-O—,
c) hydroxy-C_{1-3}alkyl-O—,
d) C_{1-3}alkyl-O—C_{1-3} alkyl-O—,
e) hydroxy-C_{1-3}alkyl-O—C_{1-3}alkyl-O—,
f) $(C_{1-3}alkyl)_2$-N—,
g) hydroxy-C_{1-3}alkyl-NH—,
h) C_{1-3}alkyl-O—C_{1-3}alkyl-NH—,
i) hydroxy-C_{1-3}alkyl-O—C_{1-3}alkyl-NH—,
j) C_{1-3}alkyl-$S(O)_m$—,
k) hydroxy-C_{1-3}alkyl-$S(O)_m$—,
l) C_{1-3}alkyl-O—C_{1-3}alkyl-$S(O)_m$—,
m) hydroxy-C_{1-3}alkyl-O—C_{1-3}alkyl-$S(O)_m$—,
n) C_{1-3}alkyl-$S(O)_m$-C_{1-3}alkyl-O—,
o) hydroxy-C_{1-3}alkyl-$S(O)_m$—C_{1-3}alkyl-O—,
p) C_{1-3}alkyl-$S(O)_m$—C_{1-3}alkyl-$S(O)_m$—
q) hydroxy-C_{1-3}alkyl-$S(O)_m$—C_{1-3}alkyl-$S(O)_m$—,
3) C_{2-3}alkenyl or C_{2-6}alkenyloxy; m and n are 0, 1, or 2.

5,334,592
CERTAIN PAF ANTAGONIST ANTIHISTAMINE COMBINATIONS AND METHODS
M. Motasim Billah, Edison, N.J., assignor to Schering Corporation, Kenilworth, N.J.
Continuation of Ser. No. 582,959, Oct. 11, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,229
Int. Cl.[5] A61K *31/55, 31/50, 31/41, 31/34*
U.S. Cl. 514—220 **9 Claims**

1. A method for treating allergic reactions in a mammal comprising administering an anti-allergic effective amount of a combination comprising a PAF-antagonist and an antihistamine, said PAF-antagonist being selected from 4-(2-chlorophenyl)-9-methyl-6H-thieno [3,2-f][1,2,4]triazolo [4,3-a][1,4]diazepine-2-propionic acid morpholide and 2,5-bis(3,4,5-trimethoxyphenyl)tetrahydrofuran, and said antihistamine being selected from chlorpheniramine, clemastine, and ketotifen.

5,334,593
ANXIOLYTIC DRUGS
Masahiro Imaizumi, and Shinji Sakata, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan
PCT No. PCT/JP91/00015, § 371 Date Jul. 9, 1992, § 102(e) Date Jul. 9, 1992, PCT Pub. No. WO91/10432, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 11, 1991, Ser. No. 867,712
Claims priority, application Japan, Jan. 13, 1990, 2-4728
Int. Cl.[5] A61K *31/505*
U.S. Cl. 514—274 **2 Claims**

1. A method of treating anxiety in mammal, which comprises administering an effective dose of a 1-amino-5-halogenouracil represented by the following formula (I):

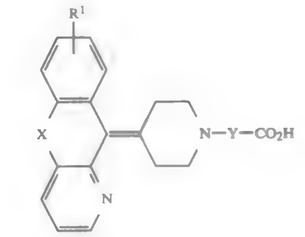


(I)

wherein X represents a halogen atom, or a pharmaceutically acceptable salt thereof to a mammal in a state of anxiety.

5,334,594
AMPHOTERIC TRICYCLIC COMPOUND
Yasuo Ito, Katsuyama; Hideo Kato, Fukui; Shingo Yasuda, Katsuyama; Noriyuki Kado, Katsuyama; Nobuhiko Iwasaki, Katsuyama; Hiroyuki Nishino, Katsuyama, and Makoto Takeshita, Katsuyama, all of Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Katsuyama, Japan
Filed Feb. 10, 1993, Ser. No. 15,812
Claims priority, application Japan, Feb. 20, 1992, 4-069404; May 1, 1992, 4-137602; May 1, 1992, 4-137605; Sep. 18, 1992, 4-273506; Nov. 6, 1992, 4-321467
Int. Cl.[5] C07D *491/052;* **A61K** *31/445*
U.S. Cl. 514—291 **9 Claims**

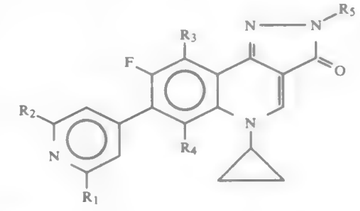
1. An amphoteric tricyclic compound represented by the following formula:



wherein R^1 represents a hydrogen atom or a halogen atom; X represents —O—, —CH_2O—, or —OCH_2—; and Y represents a C_2–C_5 alkylene group which may optionally be substituted with a lower alkyl group, and a pharmacologically acceptable salt thereof.

5,334,595
PYRAZOLOQUINOLONES AS ANTICANCER AGENTS
Mark P. Wentland, Colonie, N.Y., assignor to Sterling Winthrop Inc., New York, N.Y.
Filed Oct. 23, 1992, Ser. No. 967,470
Int. Cl.[5] C07D *471/04;* **A61K** *31/44*
U.S. Cl. 514—293 **16 Claims**

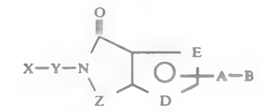
1. A compound of formula



wherein
R_1 is hydrogen, lower-alkyl, or trifluoromethyl;
R_2 is lower-alkyl, trifluoromethyl or CH_2Y where Y is hydroxy, chloro, lower-alkylamino or dilower-alkylamino
R_3 and R_4 are each independently hydrogen or fluoro;
R_5 is hydrogen, lower-alkyl or
(a) phenyl, 2-pyridyl, 4-pyridyl, 1-naphthyl or such groups substituted with one to about three, the same or different, lower-alkyl, fluoro, hydroxy, or lower-alkoxy;
(b) C_4 to C_7 cycloalkyl or C_4 to C_7 cycloalkyl substituted with amino, lower-alkylamino, dilower-alkylamino, formamido, acetamido, lower-alkyl, hydroxy, lower-alkoxy, trifluoromethyl, carboxy, lower-alkoxycarbonyl or halo, or C_4 to C_7 cycloalkyl having a phenyl ring fused thereto, forming a C_8 to C_{11} bicyclic radical wherein 1 ring is aromatic and the other saturated;
(c) A saturated carbon containing heterocyclic 5- or 6-membered ring containing oxygen and/or nitrogen or such ring substituted with lower-alkyl where if both nitrogen and oxygen are present they are non-adjacent; or
(d) $(CH_2)_n$-Z wherein n is an integer from one to four and Z is amino, dilower-alkylamino, bis(hydroxylower-alkyl) lower-alkylamino, hydroxy, trifluoromethyl, carboxy, lower-alkoxycarbonyl, lower-alkoxy, formyl or acetal thereof, or a substituent selected from (a), (b) or (c); or a pharmaceutically acceptable acid addition salt thereof.

5,334,596
FIBRINOGEN RECEPTOR ANTAGONISTS
George D. Hartman; Wasyl Halczenko, both of Lansdale, and John D. Prugh, Chalfont, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed May 11, 1993, Ser. No. 62,510
Int. Cl.[5] C07D *495/04, 491/048*
U.S. Cl. 514—301 **18 Claims**

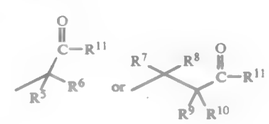
1. A compound having the formula



and pharmaceutically acceptable salts, wherein
X is a 6-membered non-aromatic ring with 0 to 1 N atoms;
Y is $(CH_2)_m$, where m is an integer from 0–6;
Z is $(CH_2)_2$;
D is O or S;
E is C;
A is



wherein n is 1 or 2;
B is chosen from



where
R^3 is H, C_{1-10} alkyl or aryl C_{0-8}alkyl;
R^5 is H;
R^6 is independently chosen from substituted or unsubstituted: hydrogen, fluorine,
C_{1-8} alkyl, hydroxyl, hydroxy C_{1-6} alkyl, carboxy C_{0-6} alkyl,
C_{1-6} alkyloxy, C_{1-6} alkylcarbonyl, aryl C_{0-6} alkylcarbonyl,
C_{1-6} alkylcarbonyloxy, aryl C_{0-6} alkylcarbonyloxy, C_{1-6} alkylaminocarbonyloxy, arylC_{0-6}alkylaminocarbonyloxy,
C_{3-8} cycloalkyl,
aryl C_{0-6} alkyl,
C_{0-6} alkylamino C_{0-6} alkyl,
C_{0-6} dialkylamino C_{0-6} alkyl,
C_{1-8} alkylsulfonylamino C_{0-6} alkyl,
aryl C_{0-6} alkylsulfonylamino C_{0-6} alkyl,
C_{1-8} alkyloxycarbonylamino C_{0-8} alkyl,
aryl C_{0-8} alkyloxycarbonylamino C_{0-8} alkyl,
C_{1-8} alkylcarbonylamino C_{0-6} alkyl,
aryl C_{0-6} alkylcarbonylamino C_{0-6} alkyl,
C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl,
aryl C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl,
C_{0-8} alkylaminosulfonylamino C_{0-6} alkyl,
aryl C_{0-8} alkylaminosulfonylamino C_{0-6} alkyl,
C_{1-6} alkylsulfonyl C_{0-6} alkyl,
aryl C_{0-6} alkylsulfonyl C_{0-6} alkyl,
C_{1-6} alkylcarbonyl C_{0-6} alkyl,
aryl C_{0-6} alkylcarbonyl C_{0-6} alkyl,
C_{1-6} alkylthiocarbonylamino C_{0-6} alkyl, and
aryl C_{0-6} alkylthiocarbonylamino C_{0-6} alkyl,
wherein groups may be unsubstituted or substituted with one or more substituents selected from hydrogen,

VOL 1165 ISS 1 AG 2 1994 UMI

C_{1-10} alkyl,
aryl C_{0-8} alkyl,
oxo,
thio,
amino C_{0-8} alkyl, C_{1-3} acylamino C_{0-8} alkyl,
C_{0-6} alkylamino C_{0-8} alkyl,
C_{1-6} dialkylamino C_{0-8} alkyl,
C_{1-4} alkoxy C_{0-6} alkyl,
carboxy C_{0-6} alkyl, C_{1-3} alkoxycarbonyl C_{0-6} alkyl,
carboxy C_{0-6} alkyloxy, and
hydroxy C_{0-6} alkyl,
and



where G is an L- or D-amino acid, or its corresponding ester, connected through an amide linkage;
R^7 is H or CH_3;
R^8 is H or CH_3;
R^9 is H;
R^{10} is independently chosen from substituted or unsubstituted: hydrogen, fluorine,
C_{1-8} alkyl, hydroxyl, hydroxy C_{1-6} alkyl, carboxy C_{0-6} alkyl,
C_{1-6} alkyloxy, C_{1-6} alkylcarbonyl, aryl C_{0-6} alkylcarbonyl,
C_{1-6} alkylcarbonyloxy, aryl C_{0-6} alkylcarbonyloxy, C_{1-6} alkylaminocarbonyloxy, arylC_{0-6}alkylaminocarbonyloxy,
C_{3-8} cycloalkyl,
aryl C_{0-6} alkyl,
C_{0-6} alkylamino C_{0-6} alkyl,
C_{0-6} dialkylamino C_{0-6} alkyl,
C_{1-8} alkylsulfonylamino C_{0-6} alkyl,
aryl C_{0-6} alkylsulfonylamino C_{0-6} alkyl,
C_{1-8} alkyloxycarbonylamino C_{0-8} alkyl,
aryl C_{0-8} alkyloxycarbonylamino C_{0-8} alkyl,
C_{1-8} alkylcarbonylamino C_{0-6} alkyl,
aryl C_{0-6} alkylcarbonylamino C_{0-6} alkyl,
C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl,
aryl C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl,
C_{0-8} alkylaminosulfonylamino C_{0-6} alkyl,
aryl C_{0-8} alkylaminosulfonylamino C_{0-6} alkyl,
C_{1-6} alkylsulfonyl C_{0-6} alkyl,
aryl C_{0-6} alkylsulfonyl C_{0-6} alkyl,
C_{1-6} alkylcarbonyl C_{0-6} alkyl,
aryl C_{0-6} alkylcarbonyl C_{0-6} alkyl,
C_{1-6} alkylthiocarbonylamino C_{0-6} alkyl, and
aryl C_{0-6} alkylthiocarbonylamino C_{0-6} alkyl,
wherein groups may be unsubstituted or substituted with one or more substituents selected from hydrogen,
C_{1-10} alkyl,
aryl C_{0-8} alkyl,
oxo,
thio,
amino C_{0-8} alkyl, C_{1-3} acylamino C_{0-8} alkyl,
C_{0-6} alkylamino C_{0-8} alkyl,
C_{1-6} dialkylamino C_{0-8} alkyl,
C_{1-4} alkoxy C_{0-6} alkyl,
carboxy C_{0-6} alkyl, C_{1-3} alkoxycarbonyl C_{0-6} alkyl,
carboxy C_{0-6} alkyloxy, and
hydroxy C_{0-6} alkyl,
and



where G is an L- or D-amino acid, or its corresponding ester, connected through an amide linkage; and
R^{11} is chosen from
hydroxy,
C_{1-8} alkyloxy,
aryl C_{0-6} alkyloxy,
C_{1-8} alkylcarbonyloxy C_{1-4} alkyloxy, and
aryl C_{1-8} alkylcarbonyloxy C_{1-4} alkyloxy, or
an L- or D-amino acid joined by an amide linkage and wherein the carboxylic acid moiety of said amino acid is as the free acid or is esterified by C_{1-6} alkyl.

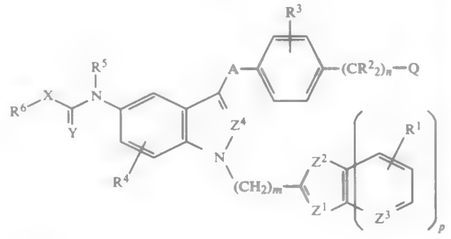
5,334,597

INDOLE CARBAMATES AS LEUKOTRIENE ANTAGONISTS

Petpiboon Prasit, Kirkland, and Marc Blouin, Quebec, both of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Oct. 17, 1991, Ser. No. 777,958
Int. Cl.[5] **C07D** *401/06, 471/04, 247/00, 209/12;* **A61K** *31/40, 311/415*
U.S. Cl. 514—300 **8 Claims**

1. A compound of the formula:



wherein:
R^1 is H, lower alkyl, halogen, CF_3, CN, NO_2, or N_3;
R^2 is each independently H or lower alkyl;
R^3 is H, lower alkyl, lower alkoxy, or halogen;
R^4 is H, lower alkyl, lower alkoxy, or halogen;
R^5 is H or lower alkyl;
R^6 is alkyl, cycloalkyl, or alkyl substituted with R^7-phenyl;
R^7 is H, lower alkyl, lower alkoxy, or halogen;
R^8 is lower alkyl, R^9-phenyl, or CF_3;
R^9 is H, lower alkyl, lower alkoxy, lower alkylthio, or halogen;
R^{11} is H, lower alkyl, alkyl, cycloalkyl, alkyl substituted with R^7-phenyl, halogen, CF_3, CN, NO_2, or N_3;
A is C═O or CH_2;
Q is $CONHS(O)_2R^8$
X is CH_2, NR_2, O, or a bond;
Y is O, NH, or S;
Z^1 is CH or N;
Z^2 is —CH═CR^{11}—;
Z^3 is CH or N;
Z^4 is CR^5 or N;
m is 0 to 4;
n is 0 to 2;
p is 0 or 1;
with the proviso that when p=0, Z^1 is N;
or a pharmaceutically acceptable salt thereof.

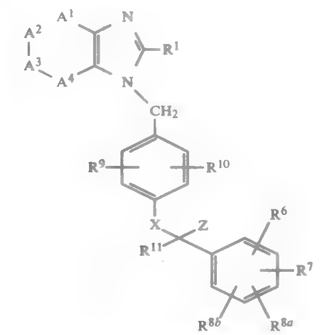
5,334,598

SIX-MEMBERED RING FUSED IMIDAZOLES SUBSTITUTED WITH PHENOXYPHENYLACETIC ACID DERIVATIVES

Scott W. Bagley, Groton, Conn.; Prasun K. Chakravarty, Edison; Anna Chen, Rahway; Daljit S. Dhanoa, Secaucus Falls; Kenneth J. Fitch, Cranford; William J. Greenlee, Teaneck; Elizabeth M. Naylor, Scotch Plains; Thomas F. Walsh, Westfield, all of N.J., and David L. Williams, Jr., Telford, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

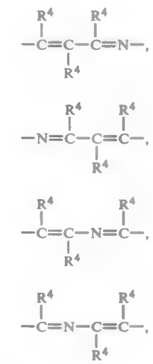
Filed Mar. 19, 1993, Ser. No. 35,340
Int. Cl.[5] **A61K** *31/435;* **C07D** *471/04*
U.S. Cl. 514—303 **8 Claims**

1. A compound of structural Formula I:

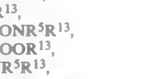


I

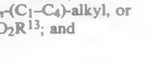
or a pharmaceutically acceptable salt thereof wherein:
R^1 is:
(a) H,
(b) $(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl or $(C_2–C_6)$-alkynyl each of which is unsubstituted or substituted with a substituent selected from the group consisting of:
i) phenyl or naphthyl as defined in R^1(c),
ii) $(C_3–C_7)$-cycloalkyl,
iii) Cl, Br, I, F,
iv) OH,
v) NH_2,
vi) $NH(C_1–C_4)$-alkyl,
vii) $N[(C_1–C_4)\text{-alkyl})]_2$,
viii) $NHSO_2R^2$,
ix) $(C_1–C_4)$-perfluoroalkyl,
x) $COOR^2$, or
xi) SO_2NHR^3,
xii) $—S(O)_n-(C_1–C_4)$-alkyl, or
xiii) —O—$(C_1–C_4)$-alkyl,
(c) aryl, wherein aryl is defined as phenyl or naphthyl which is unsubstituted, mono- or disubstituted with substituents selected from the group consisting of:
i) Cl, Br, I, F,
ii) $(C_1–C_4)$-alkyl,
iii) $(C_1–C_4)$-alkoxy,
iv) NO_2,
v) CF_3,
vi) $SO_2NR^3R^3$,
vii) $(C_1–C_4)$-alkylthio,
viii) hydroxy,
ix) amino,
x) $(C_3–C_7)$-cycloalkyl, or
xi) $(C_3–C_{10})$-alkenyl,
(d) heteroaryl, wherein heteroaryl is defined as a 5- or 6-membered heteroaromatic moiety selected from the group consisting of thiophene, furan, thiazole, oxazole, pyridine or pyrimidine, which is unsubstituted, mono- or disubstituted with substituents selected from the group consisting of:
i) Cl, Br, I, F,
ii) OH,
iii) SH,
iv) NO_2,
v) $(C_1–C_4)$-alkyl,
vi) $(C_2–C_4)$-alkenyl,
vii) $(C_2–C_4)$-alkynyl,
viii) $(C_1–C_4)$-alkoxy, or
ix) CF_3,
(e) $(C_1–C_4)$-perfluoroalkyl,
(f) —O—$(C_1–C_6)$-alkyl,
(g) $—S(O)_n-(C_1–C_4)$-alkyl,
(h) $—CONR^3R^3$,
(i) $—NR^3CO—O(C_1–C_4)$-alkyl, or
(j) $(C_3–C_7)$-cycloalkyl; and
$—A^1—A^2—A^3—A^4—$ is:



(a)



(b)



(c)



(d)

n is: 0 to 2; and
R^2 is:
(a) H, or
(b) $(C_1–C_6)$-alkyl; and
R^3 is:
(a) R^2,
(b) benzyl, or
(c) phenyl; and
R^4 groups are independently:
(a) H,
(b) $(C_1–C_6)$-alkyl or $(C_2–C_6)$-alkenyl each of which is unsubstituted or substituted with one of the following substituents,
i) —OH,
ii) —O—$(C_1–C_4)$-alkyl,
iii) $—S(O)_n-(C_1–C_4)$-alkyl,
iv) $—NR^5-(C_1–C_4)$-alkyl,
v) $—NHR^5$,
vi) $—COOR^5$,
vii) $—CONHR^7$,
ix) $—CONR^5R^{13}$, or
x) $(C_3–C_7)$-cycloalkyl,
(c) $(C_3–C_7)$-cycloalkyl,
(d) F, Cl, Br, I,
(e) CF_3,
(f) $—COOR^5$,
(g) $—CONR^5R^{13}$,
(h) $—NR^5R^{13}$,
(i) $—NR^5CONR^5R^{13}$,
(j) $—NR^5COOR^{13}$,
(k) $—SO_2NR^5R^{13}$,
(l) —O—$(C_1–C_4)$-alkyl,
(m) $—S(O)_n-(C_1–C_4)$-alkyl, or
(n) $—NHSO_2R^{13}$; and
R^5 is:

VOL 1165 ISS 1 AG 2 1994 UMI

(a) H,
(b) (C_1–C_6)-alkyl,
(c) aryl, wherein aryl is phenyl or naphthyl, which is unsubstituted or substituted as defined in R^1(c),
(d) —CH_2-aryl, wherein aryl is phenyl or naphthyl, which is unsubstituted or substituted as defined in R^1(c), or
(e) (C_3–C_7)-cycloalkyl; and

R^6 and R^7 on adjacent carbon atoms are joined together to form a ring structure:



A represents:

(a) —Y—[C(R^{12})(R^{12})]$_s$—Y—; and
s is 1 or 2; and
Y is —O—, —S(O)$_n$— and NR^5; and
R^{8a} and R^{8b} are independently:
(a) H,
(b) F, Cl, Br, or I,
(c) —NO_2,
(d) —NH_2,
(e) —NH(C_1–C_4)-alkyl,
(f) —N[(C_1–C_4)-alkyl]$_2$,
(g) —SO_2NHR^5,
(h) —CF_3,
(i) (C_1–C_4)-alkyl,
(j) —OR^5,
(k) —S(O)n-(C_1–C_4)-alkyl,
(l) —NHCO-(C_1–C_4)-alkyl,
(m) —NHCO—O(C_1–C_4)-alkyl,
(n) —CH_2O-(C_1–C_4)-alkyl,
(o) —O—(CH_2)m—OR^5,
(p) —$CONR^5R^{13}$, or
(q) —$COOR^5$; and

m is 2, 3, or 4; and
R^9 and R^{10} are independently:
(a) H,
(b) (C_1–C_6)-alkyl, unsubstituted or substituted with (C_3–C_7)-cycloalkyl,
(c) (C_2–C_6)-alkenyl,
(d) (C_2–C_6)-alkynyl,
(e) Cl, Br, F, I,
(f) (C_1–C_6)-alkoxy,
(g) when R^9 and R^{10} are on adjacent carbons, they can be joined to form a phenyl ring,
(h) perfluoro-(C_1–C_6)-alkyl,
(i) (C_3–C_7)-cycloalkyl, unsubstituted or substituted with (C_1–C_6)-alkyl,
(j) aryl, wherein aryl is phenyl or naphthyl,
(k) (C_1–C_6)-alkyl—S(O)$_n$-(CH_2)$_n$—,
(l) hydroxy-(C_1–C_6)-alkyl or dihydroxy-(C_1–C_6)-alkyl,
(m) —CF_3,
(n) —CO_2R^5,
(o) —OH,
(p) —NR^5R^{13},
(q) —[(C_1–C_6)-alkyl]NR^5R^{13},
(r) —NO_2,
(s) —(CH_2)$_n$—SO_2—N(R^5)$_2$,
(t) —NR^5CO-(C_1–C_4)-alkyl, or
(u) —$CON(R^5)_2$;

X is:
(a) —O—,
(b) —S(O)$_n$—,
(c) —NR^5—
(d) —CH_2O—,
(e) —CH_2S(O)$_n$,
(f) —CH_2NR^5—,
(g) —OCH_2—,
(h) —NR^5CH_2—,
(i) —S(O)$_n$$CH_2$—, or
(j) single bond,

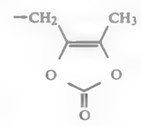
R^{11} is:
(a) H,
(b) (C_1–C_6)-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of:
(i) -aryl, wherein aryl is phenyl or naphthyl,
(ii) -(C_3–C_7)-cycloalkyl,
(iii) —NR^5R^{13},
(iv) -morpholin-4-yl,
(v) —OH,
(vi) —CO_2R^5, or
(vii) —$CON(R^5)_2$,
(c) aryl, wherein aryl is phenyl or naphthyl, which is unsubstituted or substituted with a substituent selected from the group consisting of:
i) (C_1–C_4)-alkyl,
ii) —O—(C_1–C_4)-alkyl,
iii) —$CONR^5R^{13}$,
iv) F, Cl, Br or I, or
v) —$COOR^5$;

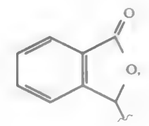
R^{12} is:
(a) H,
(b) (C_1–C_4)-alkyl unsubstituted or substituted with one of the following substituents:
i) —OH,
ii) —NR^5R^{13},
iii) —$COOR^5$,
iv) —$CONHR^5$, or
v) —$CONR^5R^{13}$;

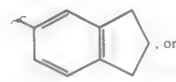
Z is:
(a) —CO_2H,
(b) —CO_2R^{14},
(c) -tetrazol-5-yl,
(d) —CONH(tetrazol-5-yl)
(e) —$CONHSO_2$-phenyl or —$CONHSO_2$-naphthyl, wherein phenyl or naphthyl is unsubstituted or substituted as defined in R^1(c),
(f) —$CONHSO_2$-(C_1–C_8)-alkyl, wherein the alkyl group is unsubstituted or substituted with a substituent selected from the group consisting of: —OH, —SH, —O(C_1–C_4)-alkyl, —S—(C_1–C_4)-alkyl, —CF_3, Cl, Br, F, I, —NO_2, —CO_2H, —CO_2-(C_1–C_4)-alkyl, —NH_2, —NH[(C_1–C_4)-alkyl], or —N[(C_1–C_4)-alkyl]$_2$,
(g) —$CONHSO_2$-(C_1–C_4)-perfluoroalkyl,
(h) —$CONHSO_2$-heteroaryl, wherein heteroaryl is as defined in R^1(d),
(i) —$CONHSO_2NR^3R^3$,
(j) —SO_2NHCO-phenyl or —SO_2NHCO-naphthyl, wherein phenyl or naphthyl is unsubstituted or substituted as defined in R^1(c),
(k) —SO_2NHCO-(C_1–C_8)-alkyl, wherein the alkyl group is unsubstituted or substituted with a substituent selected from the group consisting of: —OH, —SH, —O(C_1–C_4)-alkyl, —S—(C_1–C_4)-alkyl, —CF_3, Cl, Br, F, I, —NO_2, —CO_2H, —CO_2-(C_1–C_4)-alkyl, —NH_2, —NH[(C_1–C_4)-alkyl], —N[(C_1–C_4)-alkyl]$_2$,
(l) —SO_2NHCO-(C_1–C_4)-perfluoroalkyl,
(m) —SO_2NHCO-heteroaryl, wherein heteroaryl is as defined in R^1(d),
(n) —$SO_2CONR^3R^3$,
(o) —$PO(OH)_2$,
(p) —$PO(OR^2)_2$, or
(q) —$PO(OH)(OR^2)$; and

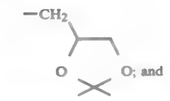
R^{13} is:
(a) H,
(b) (C_1–C_6)-alkyl,
(c) allyl,
(d) (C_3–C_6)-cycloalkyl,
(e) (C_1–C_4)-acyl,
(f) benzyl, or
(g) phenyl; and

R^{14} is:
(a) (C_1–C_4)-alkyl,
(b) CHR^{15}—O—COR^{16},
(c) CH_2CH_2—N[(C_1–C_2)-alkyl]$_2$,
(d) CH_2CH_2—N[CH_2CH_2]$_2$O,
(e) $(CH_2CH_2O)_y$—O—[(C_1–C_4)-alkyl], wherein y is 1 or 2,
(f) phenyl, naphthyl, CH_2-phenyl or CH_2-naphthyl, where phenyl or naphthyl is substituted or unsubstituted with CO_2-(C_1–C_4)-alkyl,


(g)


(h)


, or


; and

R^{15} and R^{16} independently are (C_1–C_6)-alkyl or phenyl.

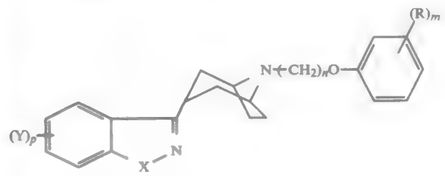
5,334,599

HETEROARYL-8-AZABICYCLO[3,2,1]OCTANES AS ANTIPSYCHOTIC AGENTS, 5-HT_3 RECEPTOR ANTAGONISTS AND INHIBITORS OF THE REUPTAKE OF SEROTONIN

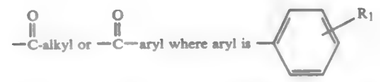
Edward J. Glamkowski, Warren, N.J.; David M. Fink, Doylestown, Pa.; Barbara E. Kurys, Elmwood Park, and Yulin Chiang, Convent Station, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 831,027, Feb. 4, 1992, Pat. No. 5,234,931, Continuation-in-part of Ser. No. 650,144, Feb. 4, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,134
Int. Cl.[5] **C07D** *401/04, 413/04, 417/04;* **A61K** *31/46*
U.S. Cl. 514—304 **20 Claims**

1. A compound of the formula



where
X is [—O—, —S— or] —NH;
Y is hydrogen, halogen or loweralkoxy;
p is 1 or 2;
n is 2, 3 or 4;
R is hydrogen, loweralkyl, loweralkoxy, hydroxy, halogen, amino, loweralkylamino, nitro, loweralkylthio, trifluoromethoxy, cyano, trifluoromethyl,



R_1 is hydrogen, loweralkyl, loweralkoxy, halogen, hydroxy, carboxyl, loweralkylamino, nitro, loweralkylthio, cyano or trifluoromethyl;
m is 1 or 2; or a pharmaceutically acceptable acid addition salt thereof or where applicable the geometric and optical isomers and racemic mixtures thereof.

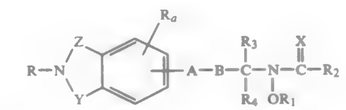
5,334,600

ISOQUINOLYL SUBSTITUTED HYDROXYLAMINE DERIVATIVES

John H. Van Duzer, Asbury, and Dennis M. Roland, Basking Ridge, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 893,142, Jun. 3, 1992, Pat. No. 5,260,316, which is a continuation-in-part of Ser. No. 738,075, Jul. 30, 1991, abandoned. This application Feb. 1, 1993, Ser. No. 12,081
Int. Cl.[5] **A61K** *31/47;* **C07D** *217/06, 217/16*
U.S. Cl. 514—309 **11 Claims**

1. A compound of the formula


(I)

wherein
R represents hydrogen, lower alkyl, aryl, biaryl, C_3–C_7-cycloalkyl, aryl-lower alkyl, aryl-lower alkenyl, aryl-lower alkynyl, aryloxy-lower alkyl, arylthio-lower alkyl; C_3–C_7-cycloalkyl-lower alkyl, biaryl-lower alkyl, aryl-C_3–C_7-cycloalkyl, aryl-C_3–C_7-cycloalkyl-lower alkyl or aryloxy-aryl-lower alkyl; and aryl represents carbocyclic or heterocyclic aryl;
Z represents C_2-alkylene or vinylene, each unsubstituted or substituted by lower alkyl;
Y represents CO;
A represents a direct bond;
B represents lower alkynylene;
X represents oxygen or sulfur,
R_1 represents hydrogen, acyl, lower alkoxycarbonyl, aminocarbonyl, mono- or di-lower alkylaminocarbonyl, lower alkenylaminocarbonyl, lower alkynylaminocarbonyl, carbocyclic or heterocyclic aryl-lower alkylaminocarbonyl, carbocyclic or heterocyclic arylaminocarbonyl, C_3–C_7-cycloalkylaminocarbonyl or C_3–C_7-cycloalkyl-lower alkylaminocarbonyl;
R_2 represents lower alkyl, lower alkoxycarbonyl-lower alkyl, C_3–C_7-cycloalkyl, carbocyclic or heterocyclic aryl, carbocyclic or heterocyclic aryl-lower alkyl, C_3–C_7-cycloalkyl-lower alkyl, amino, mono- or di-lower alkylamino, lower alkenylamino, lower alkynylamino, carbocyclic or heterocyclic aryl-lower alkylamino, carbocyclic or heterocyclic arylamino, C_3–C_7-cycloalkylamino, C_3–C_7-cycloalkyl-lower alkylamino or lower alkoxycarbonyl-lower alkylamino;
R_3 and R_4 independently represent hydrogen or lower alkyl;
R_a represents hydrogen, lower alkyl, halo, trifluoromethyl or lower alkoxy; or a pharmaceutically acceptable salt thereof.

VOL 1165 ISS 1 AUG 2 1994 UMI

5,334,601

SOFT β-ADRENERGIC BLOCKING AGENTS

Nicholas S. Bodor, 6219 SW. 93rd Ave., Gainesville, Fla. 32608

Division of Ser. No. 822,127, Jan. 17, 1992, Pat. No. 5,202,347, which is a division of Ser. No. 692,260, Apr. 26, 1991, Pat. No. 5,135,926, which is a continuation of Ser. No. 286,879, Dec. 20, 1988, abandoned, which is a division of Ser. No. 922,462, Oct. 23, 1986, Pat. No. 4,829,086, which is a continuation of Ser. No. 741,846, Jun. 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 589,359, Mar. 14, 1984, abandoned. This application Dec. 28, 1992, Ser. No. 997,248

Claims priority, application Canada, Mar. 13, 1985, 07476391

Int. Cl.[5] A61K *31/34, 31/405;* C07D *307/83, 209/08*

U.S. Cl. 514—312 14 Claims

1. A compound of the formula



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein:

n is one;

R is C_6–C_{18} polycycloalkyl-C_pH_{2p}- consisting of a two or three ring bridged or fused saturated alicyclic hydrocarbon system bearing 0 to 3 methyl substituents and having a total of 6 to 18 carbon atoms in the polycycloalkyl portion and p is zero, one or two; or R is C_6–C_{18} polycycloalkenyl-C_pH_{2p}- consisting of a two or three ring bridged or fused unsaturated alicyclic hydrocarbon system bearing 0 to 3 methyl substituents and having a total of 6 to 18 carbon atoms in the polycycloalkenyl portion and p is zero, one or two;

R_1 is C_1–C_7 alkyl; and

Ar is a divalent fused ring system having two or three rings and at least one benzene nucleus, and optionally having one or two hetero ring atoms selected from the group consisting of N, O and S.

5,334,602

ARYLOXALKYLAMINE DERIVATIVES AND USES THEREOF

Bernhard Lotz, and Gerhard Greier, both of Linz, Austria, assignors to Laevosan-Gesellschaft GmbH, Linz/Donau, Austria

PCT No. PCT/EP90/00380, § 371 Date Sep. 3, 1991, § 102(e) Date Sep. 3, 1991, PCT Pub. No. WO90/10628, PCT Pub. Date Sep. 20, 1990

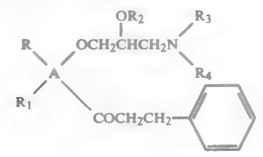
PCT Filed Mar. 8, 1990, Ser. No. 768,535

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 3907811

Int. Cl.[5] A61K *31/165, 31/138;* C07C *225/10;* C07D *333/32*

U.S. Cl. 514—317 21 Claims

1. A compound of formula



wherein A is a benzene or thiophene ring, R and R_1 are each hydrogen, alkyl of 1 to 8 carbon atoms, halogen, CF_3 or alkoxy of 1 to 8 carbon atoms, R_2 is alkyl of 1 to 8 carbon atoms, cycloalkyl of 1 to 8 carbon atoms, alkynyl of 1 to 8 carbon atoms, or alkaryl of 1 to 8 carbon atoms, R_3 and R_4 are each hydrogen, alkyl of 1 to 8 carbon atoms, alkenyl of 1 to 8 carbon atoms, alkynyl of 1 to 8 carbon atoms or cycloalkyl of 1 to 8 carbon atoms, whereby R_3 and R_4 are the same or different but are not both hydrogen, or R_3 and R_4, together with the nitrogen atom connecting them, form a 5 to 7-membered saturated ring or a saturated heterocyclic ring optionally containing an oxygen or nitrogen atom wherein said optional nitrogen atom is optionally substituted by an alkyl of 1 to 3 carbon atoms, acid addition salts thereof and optically active isomers thereof.

5,334,603

COMPOSITION AND USE OF 3-PHENYL-5-THIOCYANO-METHYLTHIO-1,3,4-THIADIAZOLE-2(3H)THIONE

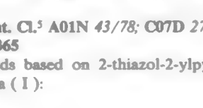
Ravi B. Shankar; R. Garth Pews, and Duane R. Romer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 16, 1993, Ser. No. 153,703

Int. Cl.[5] C07D *285/125;* A61K *31/425;* A01N *43/82*

U.S. Cl. 514—363 5 Claims

1. A compound corresponding to the formula:



5,334,604

HYPOGLYCEMIC HYDROXYUREA DERIVATIVES

Steven W. Goldstein, Mystic, and Ruth E. McDermott, Salem, both of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US91/04352, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993

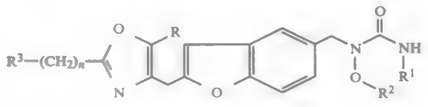
Continuation of Ser. No. 572,745, Aug. 23, 1990, abandoned.

This PCT application Jun. 26, 1991, Ser. No. 983,538

Int. Cl.[5] C07D *413/00*

U.S. Cl. 514—364 6 Claims

1. A compound of the formula



wherein

R is hydrogen or C1 to C3 alkyl;

R^1 and R^2 are together and are carbonyl;

R^3 is C1 to C9 alkyl, C3 to C7 cycloalkyl, phenyl, naphthyl, furyl, benzofuryl or thienyl or one of said groups mono- or disubstituted with C1 to C3 alkyl, C1 to C_3 alkoxy, C1 to C3 alkoxycarbonyl, trifluoromethyl, fluoro or chloro; and

n is 0 or 1; or

a pharmaceutically acceptable cationic salt thereof.

5,334,605

THIAZOLYLPYRROLES HAVING A FUNGICIDAL ACTIVITY

Giovanni Camaggi, Novara; Lucio Filippini, San Donato Milanese; Marilena Gusmeroli, Nonza; Raul Riva, Novara; Carlo Garavaglia, Cuggiono; Luigi Mirenna, Milan, and Luigi Mirenna, Milan, all of Italy, assignors to Ministero Dell-'Universita' E Della Ricerca Scientifica E, Rome, Italy

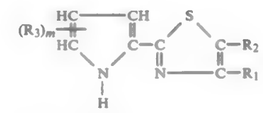
Filed Feb. 5, 1993, Ser. No. 14,131

Claims priority, application Italy, Feb. 6, 1992, MI92A000230

Int. Cl.[5] A01N *43/78;* C07D *277/22*

U.S. Cl. 514—365 13 Claims

1. Compounds based on 2-thiazol-2-ylpyrrole having the general formula (I):



(I)

wherein:

R_1 represents a hydrogen atom, a C_1–C_6 alkyl group either linear or branched, a phenyl group, a C_1–C_4 alkoxyl group, a phenoxyl group, a C_4–C_6 heterocycloxylic group, optionally substituted with halogens, such as chlorine, bromine, iodine, or with C_1–C_4 alkyl radicals;

R_2 represents a hydrogen atom, or a C_1–C_6 alkyl or haloalkyl group, either linear or branched;

R_3 represents a C_1–C_6 alkyl or haloalkyl group, either linear or branched;

m is an integer between 0 and 4.

5,334,606

OXAZOLIDINDIONE SUBSTITUTED INDOLE DERIVATIVES

Angus M. MacLeod, Bishops Stortford, England, assignor to Merck Sharpe & Dohme Ltd., Hoddesdon, England

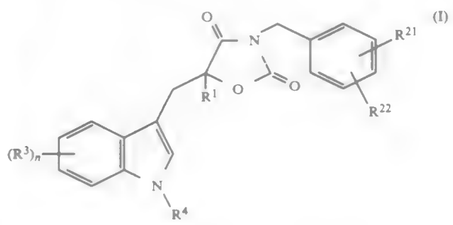
Filed Nov. 30, 1992, Ser. No. 982,794

Claims priority, application United Kingdom, Dec. 3, 1991, 9125726.1; Mar. 31, 1992, 9207055.6; Jul. 30, 1992, 9216237.9

Int. Cl.[5] C07D *263/40*

U.S. Cl. 514—376 5 Claims

1. A compound of formula (I):



(I)

wherein:

R^1 is selected from H, C_{1-6}alkyl or C_{2-6}alkenyl;

each R^3 is selected from methyl, methoxy, chloro, fluoro or trifluoromethyl;

R^4 is selected from H, C_{1-6}alkyl, phenyl (C_{1-4}alkyl) optionally substituted by; C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl; $COOR^b$ or $CONR^bR^c$, wherein R^b and R^c are independently selected from H, C_{1-6}alkyl, phenyl or trifluoromethyl;

R^{21} and R^{22} each independently represent halo or trifluoromethyl;

n is 0, 1, 2 or 3;

or a pharmaceutically acceptable salt thereof.

5,334,607

METHODS FOR TREATING MYCOSES

Hubert Sauter, Mannheim; Gisela Lorenz, Neustadt; Gerd Steiner, Kirchheim; Bernd Janssen, Ludwigshafen; Timm Anke, Kaiserslautern, and Wolfgang Steglich, Munich, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

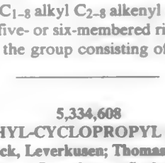
Filed May 28, 1992, Ser. No. 889,418

Claims priority, application Fed. Rep. of Germany, May 28, 1991, 4117371

Int. Cl.[5] A01N *37/10, 37/50, 43/40, 43/54, 43/56*

U.S. Cl. 514—378 6 Claims

1. A process for treating mycoses in humans and nonhuman animals comprising administering a composition comprising an effective amount of an active compound of the formula



where =Y is =CH—OCH_3, =CH—CH_3, =CH—CH_2—CH_3, =CH—SCH_3, or =N—OCH_3; X is oxygen, or if Y is =N—OCH_3, also NH; Z is F, Cl, Br, I, nitro, cyano, —OR^{12}, —SR^{13}, —SOR^{14}, SO_2R^{15}, —$COOR^{16}$, —$CONR^{17}R^{18}$, —COR^{19}, —CR^{20}=NR^{21}, —N=$CR^{22}R^{23}$, —CR^{24}=N—OR^{25}, —$CR^{25}R^{26}$—O—N=$CR^{27}R^{28}$, —CR^{30}=$CR^{31}R^{29}$, —CHR^{30}—$CHR^{31}R^{29}$, —O—$CHR^{30}R^{29}$, —CHR^{30}—OR^{29}, —CHR^{30}—SR^{29}, —S—$CHR^{30}R^{29}$, —O—N=$CR^{30}R^{29}$, —$CHR^{30}R^{29}$; or —R^{31}-CH—O—N=$CR^{33}R^{32}$;

R^{12} to R^{29}, identical or different, are hydrogen; C_{1-18} alkyl; C_{2-8} alkenyl; C_{2-8} alkynyl; a five- or six-membered hetaryl with 1 to 3 atoms selected from the group consisting of N, O and S; a five- or six-membered aryl which can be unsubstituted or substituted 1 or more times with halogen C_{1-12} alkyl, C_{1-12} haloalkyl, C_{2-12} alkenyl, C_{2-12} alkynyl, C_{1-12} alkoxy, C_{1-12} haloalkoxy, C_{2-12} alkenyloxy, C_{2-12} alkynyloxy, formyl, C_{1-12} acyl, cyano, trifluoromethyl, nitro or —CR^{40}=N—OR^{41} where R^{40} is H or C_{1-4} alkyl and R^{41} is H, C_{1-8} alkyl, C_{2-8} alkenyl, or C_{2-8} alkynyl;

R^{30} and R^{31}, identical or different, are H or a straight chain or branched C_{1-4} alkyl;

R^{32} and R^{33}, the same or different, are H, C_{1-12} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy-C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy-C_{1-4}-alkyl, aryloxy-C_{1-4} alkyl, arylthio C_{1-4} alkenyl, hetaryl-C_{2-4} alkenyl, C_{2-12}-alkynyl, C_{3-6}-cycloalkyl, aryl, hetaryl, cyano, —$COOR^{34}$, —$CONR^{35}R^{36}$, —COR^{37}, —CR^{38}—NOR^{39} or R^{32} and R^{33} form, together with the carbon atom to which they are bonded, a 4- or 7-membered ring which can contain an oxygen or sulfur atom;

R^{34} to R^{39} are H, C_{1-4} alkyl, aryl or hetaryl;

wherein said aryl is a five- or six-membered ring which is unsubstituted or substituted 1 or more times with halogen, C_{1-12} alkyl, C_{1-12} haloalkyl, C_{2-12} alkenyl, C_{2-12} alkynyl, C_{1-12} alkoxy, C_{1-12} haloalkoxy, C_{2-12} alkenyloxy, C_{2-12} alkynyloxy, formyl, C_{1-12} acyl, cyano, trifluoromethyl, nitro or —CR^{40}=N—OR^{41} where R^{40} is H or C_{1-4} alkyl and R^{41} is H, C_{1-8} alkyl C_{2-8} alkenyl or C_{2-8} alkynyl; and said hetaryl is a five- or six-membered ring with 1 to 3 atoms selected from the group consisting of N, O and S.

5,334,608

AZOLYMETHYL-CYCLOPROPYL DERIVATIVES

Jürgen Scherkenbeck, Leverkusen; Thomas Himmler, Odenthal; Hermann Hagemann, Leverkusen; Stefan Dutzmann, Hilden; Heinz-Wilhelm Dehne, Monheim, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 23, 1993, Ser. No. 21,390

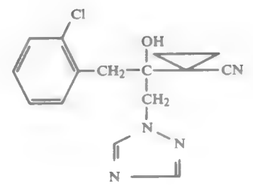
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1992, 4206529

Int. Cl.[5] A01N *43/653;* C07D *249/08*

U.S. Cl. 514—383 3 Claims

1. A compound wherein such compound is 1-(2-chlorophenyl)-2-(1-cyano-cyclo-propyl) -3-(1,2,4-triazol-1-yl)-propan-2-ol of the formula.

VOL 1165 ISS 1 AG 2 1994 UMI



5,334,609

THIAZOLE DERIVATIVES OF ALKOXYACRYLATES WITH A FUNGICIDAL ACTIVITY

Giovanni Camaggi, Novara; Lucio Filippini, San Donato Milanese; Marilena Gussmeroli, Monza; Raul Riva, Novara; Carlo Garavaglia, Caggiono, and Luigi Mirenna, Milan, all of Italy, assignors to Ministero dell'Universita' e della Ricerca Scientifica e Technologica, Rome, Italy

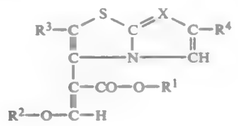
Filed Feb. 5, 1993, Ser. No. 14,219

Claims priority, application Italy, Feb. 6, 1992, MI92 A/000215

Int. Cl.[5] A01N *43/50, 43/36;* C07D *235/04*

U.S. Cl. 514—393 10 Claims

1. Pyrrole[2,1-b]-and imidazol [2,1-b]thiazole compounds having the general formula (I):



(I)

wherein:

X represents a nitrogen atom or the group



R^1, R^2 and R^3, the same or different, represent a hydrogen atom, a C_1–C_6 alkyl or haloalkyl group, either linear or branched;

R^4 represents a hydrogen atom, a C_1–C_6 alkyl group, linear or branched, a phenyl group, optionally substituted with: halogens;

C_1–C_4 alkyl radicals;

C_1–C_4 alkoxy or haloalkoxy radicals;

phenyl or phenoxyl radicals.

5,334,610

α-ARYL-α-HYDROXY-β-IMIDAZOLINYL-PROPIONAMIDES

Wilfried Draber, and Hilmar Bischoff, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

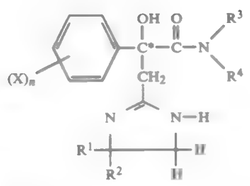
Filed Jan. 14, 1993, Ser. No. 4,341

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1992, 4201709

Int. Cl.[5] A61K *31/415;* C07D *233/06*

U.S. Cl. 514—401 5 Claims

1. A compound of the formula



(I)

in which

n is a number from 0 to 5,

R^1 and R^2 each independently is hydrogen or C_1–C_6-alkyl or together are C_4–C_6-alkanediyl,

R^3 is hydrogen or C_1–C_6-alkyl,

R^4 represents hydrogen; C_{1-6}-alkyl optionally substituted by fluorine, chlorine, or C_{1-4}-alkoxy; C_{3-7}-cycloalkyl or C_{3-7}-cycloalkyl-C_{1-4}-alkyl each optionally substituted by fluorine, chlorine, bromine or C_{1-4}alkyl; phenyl, naphthyl, phenyl-C_{1-4}-alkyl or naphthyl-C_{1-4}-alkyl each optionally substituted by fluorine, chlorine, bromine, cyano or nitro or by C_{1-4}alkyl, C_{1-4}-alkoxy, C_{1-4}-alkylthio, C_{1-4}-alkylsulphinyl or C_{1-4}-alkylsulphonyl each optionally substituted by fluorine and/or chlorine;

X represents halogen, or C_1–C_4-alkyl or C_1–C_4-alkoxy each of which is optionally substituted by fluorine and/or chlorine,

or a physiologically tolerated acid adduct thereof.

5,334,611

6-ETHYL MITOMYCIN DERIVATIVES

Hitoshi Arai, Sunto; Yutaka Kanda, Machida; Motomichi Kono, Sunto; Masaji Kasai, Fujisawa; Tadashi Ashizawa, Numazu, and Katsuhige Gomi, Susono, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 857,427, Mar. 26, 1992, Pat. No. 5,256,685.

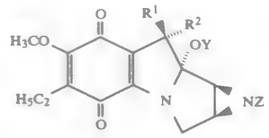
This application Aug. 3, 1993, Ser. No. 101,029

Claims priority, application Japan, Mar. 26, 1991, 3-061838

Int. Cl.[5] C07D *487/22;* A61K *31/40*

U.S. Cl. 514—410 2 Claims

1. A mitomycin derivative represented by the formula:



wherein Y and Z represent independently methyl or hydrogen; one of R^1 and R^2 represents CH_2OCONH_2 and the other represents hydrogen.

5,334,612

PHARMACEUTICAL COMPOSITIONS CONTAINING AS ACTIVE SUBSTANCE SULPHUR-CONTAINING CARBOXYLIC ACIDS AND THEIR USE IN COMBATING RETROVIRUSES

Joachim Kalden, Erlangen; Bernhard Fleckenstein, Wiesenthau; Andreas Baur, and Thomas Harrer, both of Erlangen, all of Fed. Rep. of Germany, assignors to ASTA Pharma Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

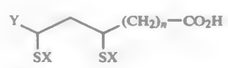
Filed Nov. 8, 1990, Ser. No. 610,560

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1988, 3937325; May 16, 1990, 4015728

Int. Cl.[5] A61K *31/385, 45/02, 31/385, 37/66*

U.S. Cl. 514—440 22 Claims

1. A dosage unit of a pharmaceutical composition containing at least one compound of Formula I,



I

where X is a hydrogen atom and both X's represent a direct link between the two sulphur atoms; Y is hydrogen or a C_1–C_6-alkyl and n represents a number from 1 to 10 with the exception to α-lipoic acid and dihydrolipoic acid, or a pharmaceutically acceptable salt of said compound of Formula I

the dosage unit being a solid or semi-solid formulation containing 20 mg to 6 g of the total amount of active ingredient of Formula I, or the dosage nit being a solution, suspension or emulsion which contains 0.2 mg to 800 mg per ml, of the total amount of active ingredient of Formula I.

5,334,613

ANTIBACTERIAL SUBSTANCE BE-24566B

Katsuhisa Kojiri; Shigeru Nakajima; Aisaku Fuse, and Hiroyuki Suda, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

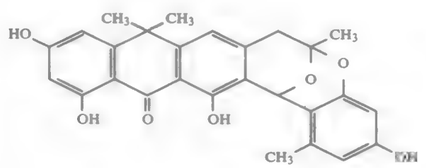
Filed Nov. 12, 1992, Ser. No. 974,460

Claims priority, application Japan, Nov. 12, 1991, 3-323699

Int. Cl.[5] A01N *43/32;* C07D *319/08*

U.S. Cl. 514—452 2 Claims

1. An antibacterial substance: BE-24566B represented by the following structural formula (I):



[I]

or a pharmaceutically acceptable salt thereof.

5,334,614

HYDROXYLAMINE DERIVATIVES

Philip N. Edwards, Bramhall, and Michael S. Large, Stoke-on-Trent, both of England, assignors to Zeneca Ltd., London, England and Zeneca Pharma SA, Cergy Cedex, France

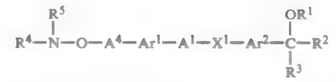
Filed May 11, 1993, Ser. No. 59,313

Claims priority, application European Pat. Off., May 12, 1992, 92401290.9

Int. Cl.[5] A61K *31/35, 31/34;* C07D *309/10, 307/20*

U.S. Cl. 514—459 8 Claims

1. A hydroxylamine derivative of the formula I



I

wherein R^4 is hydrogen, carbamoyl, (1-4C)alkyl, cyclopentyl, cyclohexyl, tetrahydrofuran-3-yl, tetrahydropyran-4-yl, piperidin-4-yl, N-(1-4C)alkylpiperidin-4-yl, (2-5C)alkanoyl, (1-4C)alkylsulphonyl, N-(1-4C)alkylcarbamoyl, N,N-di-(1-4C)-alkylcarbamoyl, phenyl, phenyl-(1-4C)alkyl, di-phenyl-(1-4C)alkyl, benzoyl, phenylsulphonyl or a heteroarylmethyl group wherein the heteroaryl moiety is selected from pyridyl, pyrimidinyl, furyl, thienyl, oxazolyl and thiazolyl;

R^5 is hydrogen, (1-4C)alkyl, (3-4C)alkenyl, (3-4C)alkynyl, cyano-(1-4C)alkyl, phenyl or phenyl-(1-4C)alkyl;

A^4 is (1-4C)alkylene which may optionally bear one or two substituents selected from (1-4C)alkyl, phenyl and phenyl-(1-4C)alkyl;

wherein each phenyl, phenyl-(1-4C)alkyl, di-phenyl-(1-4C)alkyl, benzoyl, phenylsulphonyl or heteroarylmethyl group in R^4, R^5 or A^4 may optionally bear one or two substituents selected from halogeno, cyano, trifluoromethyl, nitro, (1-4C)alkyl and (1-4C)alkoxy;

Ar^1 is phenylene, pyridinediyl or pyrimidinediyl which may optionally bear one or two substituents selected from halogeno, cyano, trifluoromethyl, (1-4C)alkyl and (1-4C)alkoxy;

A^1 is a direct link to X^1, or A^1 is (1-4C)alkylene;

X^1 is oxy, thio, sulphinyl or sulphonyl;

Ar^2 is phenylene, pyridinediyl, pyrimidinediyl, thiophenediyl, furandiyl or thiazolediyl which may optionally bear one or two substituents selected from halogeno, cyano, trifluoromethyl, (1-4C)alkyl and (1-4C)alkoxy;

R^1 is hydrogen, (1-4C)alkyl, (3-4C)alkenyl or (3-4C)alkynyl; and

R^2 and R^3 together form a group of the formula $—A^2—X^2—A^3—$ which together with the carbon atom to which A^2 and A^3 are attached define a ring having 5 or 6 ring atoms, wherein each of A^2 and A^3 is independently (1-3C)alkylene and X^2 is oxy, and which ring may optionally bear one or two substituents selected from hydroxy, (1-4C)alkyl and (1-4C)alkoxy;

R^3 is (1-4C)alkyl, (2-4C)alkenyl or (2-4C)alkynyl; or a pharmaceutically-acceptable salt thereof.

5,334,615

OIL WITH BACTERICIDAL AND VIRUCIDAL PROPERTIES

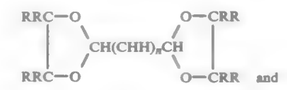
Wilhelm E. Walles, 6648 N. River Rd., Freeland, Mich. 48623

Filed Dec. 17, 1992, Ser. No. 992,080

Int. Cl.[5] A61K *31/335, 31/08, 31/11*

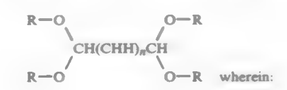
U.S. Cl. 514—467 20 Claims

1. A composition of matter comprising a substantially non-aqueous oil in combination with an acetal that can release aldehyde functionality on aqueous contact, wherein the acetal is saturated and non-hydroxylated, and wherein the acetal is selected from among compounds of the group consisting of compounds of the following general formulae:



(I)

and



(II)

wherein:

Each "n" is 2 or 3, and

VOL 1165 ISS 1 AUG 2 1994 UMI

Each "R" is independently at each occurrence lower alkyl or hydro in the formula I and independently at each occurrence lower alkyl in the formula II.

5,334,616

CYCLIC PHENOLIC THIOETHERS COMPOUNDS WHICH ARE USEFUL IN TREATING ALLERGIES AND INFLAMMATION

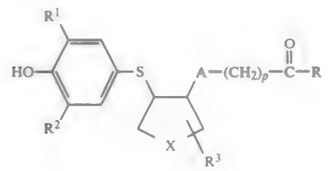
Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 903,832, Jun. 24, 1992, Pat. No. 5,250,561, which is a division of Ser. No. 697,849, May 9, 1991, Pat. No. 5,147,893. This application Jan. 22, 1993, Ser. No. 80,941

Int. Cl.[5] A61K *31/34;* **C07D** *305/04*

U.S. Cl. 514—473 **12 Claims**

1. A compound of the formula:



wherein:

R^1 and R^2 are the same or different and independently represent tert-alkyl or phenyl;

R^3 represents hydrogen or alkyl;

X represents $-(CH_2)_w-B-(CH_2)_y-$ wherein B represents 0 and w and y can each independently be an integer from 0 to 3 with the proviso that the sum of w+y is equal to or less than 3;

A represents O or $S(O)_n$ wherein n is 0, 1 or 2;

p is an integer from 0 to 4; and

R represents NR^5R^6, wherein R^5 is hydrogen or alkyl, and R^6 is hydrogen, alkyl, heterocyclealkyl containing one, two, three or four heteroatoms selected from nitrogen and oxygen, heterocyclealkyl containing one, two, three or four heteroatoms selected from nitrogen and oxygen which is substituted with one, two, three or four groups selected from alkyl, phenyl, phenylalkyl, heterocycle, cycloalkyl, halogen, hydroxy, lower alkoxy and phenyl substituted with one, two, three or four groups selected from alkyl, hydroxy, alkoxy, halogen, alkylamino, dialkylamino, phenyl and alkyl carbonyl, cycloalkyl, cycloalkyl substituted with one, two, three or four groups selected from alkyl, hydroxy, alkoxy and halogen, phenyl, phenyl substituted with one, two, three or four groups selected from alkyl, hydroxy, alkoxy, halogen, alkylamino, dialkylamino, phenyl and alkyl carbonyl, phenylalkyl or phenylalkyl substituted with one, two, three or four groups selected from alkyl, hydroxy, alkoxy, halogen, alkylamino, dialkylamino, phenyl and alkyl carbonyl, or NR^5R^6 together form a heterocyclic ring containing one, two, three or four heteroatoms selected from nitrogen and oxygen which may optionally be substituted with one, two, three or four groups selected from alkyl, phenyl, phenylalkyl, heterocycle, cycloalkyl, halogen, hydroxy, lower alkoxy or phenyl substituted with one, two, three or four groups selected from alkyl, hydroxy, alkoxy, halogen, alkylamino, dialkylamino, phenyl and alkyl carbonyl;

or a pharmaceutically acceptable salt thereof.

5,334,617

AMINO ACIDS USEFUL AS INHIBITORS OF THE ADVANCED GLYCOSYLATION OF PROTEINS

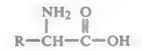
Peter C. Ulrich, Old Tappan, N.J., and Anthony Cerami, Shelter Island, N.Y., assignors to The Rockefeller University, New York, N.Y. and Alteon Inc., Northvale, N.J.

Filed Jan. 27, 1992, Ser. No. 825,598

Int. Cl.[5] A61K *31/195*

U.S. Cl. 514—562 **31 Claims**

1. A method for treating an animal to inhibit the formation of advanced glycosylation end products of a target protein within said animal, said method comprising administering to said animal an effective amount of a pharmaceutical composition, said pharmaceutical composition comprising an agent of the formula



(I)

wherein R is selected from the group consisting of hydrogen; lower alkyl, optionally substituted by one or two hydroxyl, thiol, phenyl, hydroxyphenyl, lower alkylthio, carboxy, aminocarboxy or amino groups; and their biocompatible and pharmaceutically acceptable acid addition salts; capable of reacting with the carbonyl moiety of the early glycosylation product formed by the initial glycosylation of said target protein, together with a carrier therefor.

5,334,618

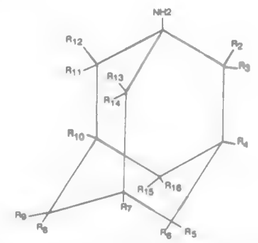
METHOD OF PREVENTING NMDA RECEPTOR-MEDIATED NEURONAL DAMAGE

Stuart A. Lipton, Newton, Mass., assignor to The Children's Medical Center Corporation, Boston, Mass.

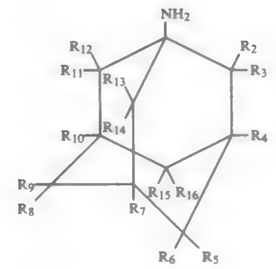
Continuation-in-part of Ser. No. 680,201, Apr. 4, 1991, abandoned. This application Sep. 3, 1992, Ser. No. 939,824

Int. Cl.[5] A61K *31/13*

U.S. Cl. 514—659 **14 Claims**



1. A method of treating a patient to reduce painful peripheral neuropathy comprising administering to said patient a compound of the formula below, wherein R_1 comprises an amino group; R_2–R_{17} are independently H or a short chain aliphatic group comprising 1–5 carbons; and R_4 and R_{10} may also be a halogen or an acyl group, or a physiologically acceptable salt thereof, in a concentration effective to cause such reduction.



5,334,619

INHIBITION OF POSTHARVEST FRUIT DECAY BY 2-NONANONE

Steven F. Vaughn, Peoria, and Gayland F. Spencer, Metamora, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 7, 1993, Ser. No. 88,470

Int. Cl.[5] A01N *35/00*

U.S. Cl. 514—675 **6 Claims**

1. A method of inhibiting fungal decay in a fruit comprising contacting said fruit with effective fungicidal amount of the compound 2- nonanone.

5,334,620

PRODUCTION OF CHLOROFLUOROCARBON-FREE, URETHANE-CONTAINING MOLDINGS HAVING A CELLULAR CORE AND A COMPACTED PERIPHERAL ZONE

Peter Horn, Heidelberg; Ulrich Mueller, Neustadt; Wolfgang Hoelderich, Frankenthal; Ulf Sattler, Rieste; Rudolf Taddey, Damme, and Dieter Tintelnot, Diepholz, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 10, 1992, Ser. No. 896,295

Int. Cl.[5] C08J *9/08, 9/12;* **C08K** *3/36*

U.S. Cl. 521—51 **17 Claims**

1. A process for the production of chlorofluorocarbon-free, urethane-containing moldings having a cellular core and a compacted peripheral zone, by reacting

a) an organic and/or modified organic polyisocyanate with

b) at least one polyol with a functionality of from 2 to 8 and a molecular weight of from 500 to 8500, and

c) optionally, a low-molecular-weight chain extender and-/or cross-linking agent,

in the presence of

d) a blowing agent,

e) a catalyst,

f) additives, and

g) optionally, assistants,

in a closed mold with compaction, wherein one of the additives (f) is an amorphous, microporous silica gel.

5,334,621

PROCESS TO PREPARE LOW DENSITY POROUS CROSSLINKED POLYMERIC MATERIALS

Sharon M. Beshouri, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 4, 1993, Ser. No. 148,141

Int. Cl.[5] C08J *9/28*

U.S. Cl. 521—64 **15 Claims**

1. A process for the production of a porous crosslinked polymeric material comprising:

(a) providing a water-in-oil emulsion comprising (i) a mixture of polymerizable monomers comprising at least one oil-soluble vinyl monomer and from about 2 to about 70 weight percent, based on the mixture, of a multifunctional unsaturated crosslinking monomer, (ii) at least 90 weight percent, based on the emulsion, of water as the internal phase (iii) an effective amount of a surfactant comprising (A) at least one sorbitan fatty acid ester or saccharide fatty acid ester and (B) a glycerol monofatty acid ester to produce the water-in-oil emulsion, and (iv) a polymerization initiator; and

(b) heating the water-in-oil emulsion under conditions effective to polymerize and crosslink the polymerizable monomers, and

(c) removing at least a portion of water from said crosslinked emulsion thereby producing a porous crosslinked polymeric material.

5,334,622

MECHANICALLY FROTHED PLASTISOLS

Robert C. Bergvist, Fort Mill, S.C., assignor to Rutland Plastic Technologies, Inc., Pineville, N.C.

Filed Oct. 6, 1993, Ser. No. 132,458

Int. Cl.[5] C08J *9/30*

U.S. Cl. 521—74 **17 Claims**

1. A process for production and delivery of a plastisol foam comprising mechanically frothing a plastisol under a pressure in excess of atmospheric pressure; while maintaining the resulting raw foam under a pressure in excess of atmospheric pressure, introducing the raw foam into a suitable container; thereafter, conditioning said raw foam by agitation and under a pressure in excess of the vapor pressure of the foam; maintaining the foam under a pressure in excess of said vapor pressure, until the foam is dispensed; and dispensing a conditioned, pressurized foam.

5,334,623

ABSORBENT MATERIAL AND USES THEREOF

Robert V. Holland, North Ryde, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

Filed Mar. 5, 1992, Ser. No. 829,020

Claims priority, application Australia, Sep. 12, 1989, PJ6333

Int. Cl.[5] A23B *7/00;* **B65B** *55/00;* **C08K** *5/3467*

U.S. Cl. 523—100 **16 Claims**

1. A composition for absorbing gaseous unsaturated compounds comprising a tetrazine having electron withdrawing substituent incorporated in an ethylene permeable substrate such that upon exposure to ethylene, the said tetrazine reacts with ethylene rapidly and irreversibly.

5,334,624

POLYOL COMPOSITIONS

Diana M. F. Daems, Kortenberg, Belgium, assignor to Imperial Chemical Industries PLC, London, England

Filed Dec. 6, 1993, Ser. No. 163,467

Claims priority, application United Kingdom, Dec. 23, 1992, 9226868.9

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—130 **11 Claims**

1. Polyol composition comprising a basic catalyst and chlorodifluoromethane, characterised in that the polyol composition further comprises an acid-ended polyester having a molecular weight in the range 300 to 3000 and an acid value in the range 5 to 100 mg KOH/g.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,625

RESTORATIVE DENTAL ADHESIVE COMPOSITION

Robert L. Ibsen; Donald R. Pacropis, both of Santa Maria, and William R. Glace, Orcutt, all of Calif., assignors to Den-Mat Corporation, Santa Maria, Calif.

Continuation-in-part of Ser. No. 561,194, Aug. 1, 1990, Pat. No. 5,151,453, which is a continuation of Ser. No. 333,904, Apr. 6, 1989, abandoned. This application Oct. 10, 1991, Ser. No. 774,551

Int. Cl.[5] C08F *2/44*

U.S. Cl. 523—115 **8 Claims**

1. An adhesive composition useful for dental restoration consisting essentially of:

(a) a finely-divided, from about 0.005 to about 500 microns, reinforcing filler;

(b) a methacrylate-functional resin;

(c) a bonding agent selected from the group consisting of (i) N-phenylglycin, the alkali metal salt thereof, or the mixture of the foregoing two compounds, (ii) the adduct of N(P-tolyl) glycine and glycidyl methacrylate, the alkali metal salt thereof, or the mixture of the foregoing two compounds, (iii) the adduct of N-phenylglycine and glycidyl, the adduct of bisphenol A and glycidyl methacrylate, the alkali metal salt thereof, or the mixture of the foregoing two compounds, and N-(p-tolyl) glycine;

(d) a coupling agent selected from the group consisting of (i) the adduct of pyromellitic acid dianhydride and 2-hydroxyethylmethacrylate, (ii) the adduct of 3,3'4,4'-benzophenonetetracarboxylic dianhydride and 2-hydroxyethyl methacrylate, and (iii) 4-methacryloxyethyltrimellitic; and

(e) a thermal initiator.

5,334,626

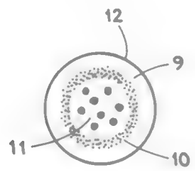
BONE CEMENT COMPOSITION AND METHOD OF MANUFACTURE

Steve T. Lin, Fort Wayne, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Jul. 28, 1992, Ser. No. 921,030

Int. Cl.[5] A61K *6/08;* C08K *9/00;* B05D *1/36*

U.S. Cl. 523—116 **1 Claim**



1. A method of manufacturing beads for incorporation into the dry component of a bone cement comprising the steps of:

(a) forming a first opacifier containing bead by solidifying a first liquid comprising a liquified polymer combined with an opacifier;

(b) coating the first bead to form a second, layered bead by coating the first bead with a second liquid comprising a liquified polymer combined with a polymerization initiator and solidifying the coating.

5,334,627

Patent Not Issued For This Number

5,334,628

AMINE DERIVATIVES, PROCESSES FOR PREPARING THE SAME AND FUNGICIDES CONTAINING THE SAME

Tetsuya Maeda, Tokorozawa; Toshiyuki Yamamoto, Tokyo; Mituo Takase, Hino; Kazuya Sasaki, Higashikurume; Tadashi Arika, Kasukabe; Mamoru Yokoo, Kawagoe; Rieko Hashimoto, Asaka; Kouji Amemiya, Kodaira, and Sakae Koshikawa, Kawaguchi, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

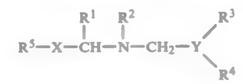
Division of Ser. No. 720,327, Jun. 25, 1991, which is a division of Ser. No. 479,894, Feb. 14, 1990, Pat. No. 5,106,866, which is a division of Ser. No. 283,055, Dec. 7, 1988, Pat. No. 5,021,458, which is a continuation of Ser. No. 73,329, Jul. 13, 1987, abandoned, which is a continuation of Ser. No. 740,596, Jun. 3, 1985, abandoned. This application Dec. 31, 1992, Ser. No. 999,163

Claims priority, application Japan, Jun. 9, 1984, 59-118636

Int. Cl.[5] A01N *43/42, 33/04;* C07D *215/18;* C07C *211/00*

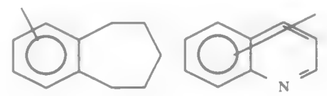
U.S. Cl. 514—311 **2 Claims**

1. An amine derivative represented by formula (I):

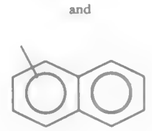


(I)

wherein X is selected from the group consisting of:

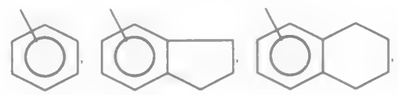


and



and

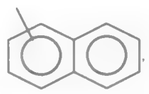
Y is selected from the group consisting of



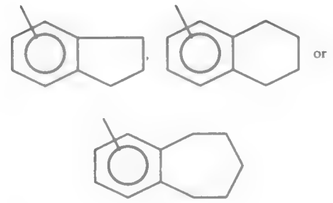
provided that Y cannot be



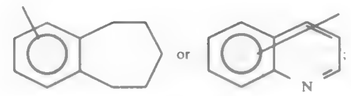
when X is



and further provided that Y cannot be



when X is



R^1 is hydrogen atom or an alkyl group of 1 to 6 carbon atoms or a halogenated alkyl group;

R^2 is hydrogen atom or an alkyl group of 1 to 6 carbon atoms;

R^3 is hydrogen atom or an alkyl group of 1 to 6 carbon atoms;

R^4 is hydrogen atom, an alkyl group of 1 to 10 carbon atoms, a cycloalkyl group of 3 to 7 carbon atoms or a halogenated alkyl group;

R^5 is hydrogen atom, an alkyl group of 1 to 6 carbon atoms, a halogen atom or a nitro group,

wherein R^5 is attached to an arbitrary position of X, and R^3 or R^4 is attached to an arbitrary position of Y.

5,334,629

CONTROL OF CONTINUOUS PHASE PH USING VISIBLE LIGHT TO ACTIVATE PH-DEPENDENT FIBERS AND GELS IN A CONTROLLED AND REVERSIBLE MANNER

Albert Zirino, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1992, Ser. No. 936,681

Int. Cl.[5] G21K *1/10*

U.S. Cl. 523—137 **60 Claims**

1. A visible light actuated apparatus comprising:

a source of visible light having the capability of selectively emitting either of at least one first wavelength of visible light or at least one second wavelength of visible light, said at least one first wavelength of visible light and said at least one second wavelength of visible light being emitted within the spectrum of visible light of between 400 nm to 700 nm and at an amplitude sufficient to effect a pH change;

a pH dependent dye solution, disposed to receive said at least one first wavelength of visible light or said at least one second wavelength of visible light, having the property of being responsive to said at least one first wavelength of visible light or said at least one second wavelength of visible light to change its pH to either of two discrete pH values within a pH range of 3 to 11, respectively; and

a polyelectrolyte fiber, disposed in said pH dependent dye solution, having the property to change its volume in response to one of said two discrete pH values of said pH dependent dye solution to produce a selective first physical displacement and to reversibly change its volume in response to the other of said two discrete pH values of said pH dependent dye solution to produce a selective reversible second physical displacement.

5,334,630

THIXOTROPIC COMPOSITIONS

Robert S. Francis, and Murray R. Orpin, both of South Glamorgan, United Kingdom, assignors to BP Chemicals Limited, London, England

Filed Aug. 30, 1991, Ser. No. 752,730

Claims priority, application United Kingdom, Sep. 1, 1990, 9019143.8

Int. Cl.[5] C08K *3/36;* C08L *61/10*

U.S. Cl. 523—216 **19 Claims**

1. A thixotropic laminating resin composition comprising:

(a) an acid hardenable phenol-aldehyde resole,

(b) a highly dispersed hydrophobic amorphous silica present in the composition in an amount from 0.5–5% w/w based on the total composition, and

(c) A viscosity modifier, said composition having a viscosity of 40–50 poise at 5 rpm and of 14–18 poise at 50 rpm measured at 25° C. using a Brookfield RVT instrument, spindle 4.

5,334,631

POWDER COATING COMPOSITION CONTAINING A RESIN, A CURING AGENT AND ZINC

Dominique Durand, Etrechy, France, assignor to Akzo N.V., Netherlands

Filed Jul. 21, 1992, Ser. No. 918,320

Claims priority, application European Pat. Off., Jul. 22, 1991, 91201919.7

Int. Cl.[5] C08K *3/08;* C08L *63/00, 63/04*

U.S. Cl. 523—459 **9 Claims**

1. An anticorrosive powder coating composition consisting essentially of (a) a resin, (b) a curing agent and (c) zinc, wherein the zinc is a mixture of (c1) about 10–35% by weight lamellar zinc and (c2) about 10–35% by weight zinc dust, percent by weight being based upon the total weight of (a), (b) and (c).

5,334,632

WATER-REDUCIBLE COATING COMPOSITION AND PROCESS OF USE THEREOF

Carroll W. Cope, Marion, Va., assignor to Marley Mouldings Inc., Marion, Va.

Division of Ser. No. 586,457, Sep. 21, 1990, Pat. No. 5,198,481, which is a division of Ser. No. 285,519, Dec. 15, 1988, Pat. No. 4,980,402. This application Feb. 3, 1993, Ser. No. 12,707

The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[5] C08K *11/00;* C09D *11/02;* B05D *5/00*

U.S. Cl. 524—9 **3 Claims**

1. A printing composition comprising:

	% by volume
Water	2–8
Organic solvents	1–5
Acrylic resins	30–60
Yellow pigment	8–12
Brown pigment	10–20
Red pigment	up to 3
Iridescent white pigment	up to 1
Inert pigment	up to 5
Wetting agent	2–8
Wax	5–15

VOL 1165 ISS 1 AUG 2 1994 UMI

5,334,633

COMPOSITION FOR COATING METAL, PLASTIC AND WOOD SUBSTRATES TO IMPART WOOD-LIKE APPEARANCE AND TEXTURE THERETO

Carroll W. Cope, Marion, Va., assignor to Marley Mouldings Inc., Marion, Va.

Continuation of Ser. No. 824,693, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 274,756, Nov. 22, 1988, abandoned. This application Oct. 14, 1993, Ser. No. 137,904
Int. Cl.[5] C08L 99/00
U.S. Cl. 524—15 2 Claims

1. A liquid composition comprising:

	% Volume
Alkyd resins	3–4
Maleic resins	3–4
Xylene	14–18
Volatile solvents other than xylene	2–3
Anti-marring agent	2–4
Tripentaerythritol	40–45
Melamine resin	7–10
Wetting agent	0.01–0.1
Deodorant	0.2
Thickener	5–8
Pecan shell flour	0.1–0.3
White pigment	5–6
Yellow pigment	1.0
Black and red pigments	up to 13.69
Talc extender	4–6
	100%

5,334,634

POLYMER COMPOSITIONS FOR THE PRODUCTION OF ARTICLES OF BIODEGRADABLE PLASTICS MATERIAL AND METHODS FOR THEIR PREPARATION

Catia Bastiolo, Novara; Vittorio Bellotti, Fontaneto D'Agogna; Luciano Del Giudice, Milan, and Roberto Lombi, Novara, all of Italy, assignors to Novamont S.p.A., Milan, Italy

Division of Ser. No. 530,925, May 29, 1990, abandoned. This application Aug. 13, 1991, Ser. No. 744,288
Claims priority, application Italy, May 30, 1989, 67413-A/89
Int. Cl.[5] C08L 89/06, 101/00; C09H 9/02
U.S. Cl. 524—47 20 Claims

1. A polymer composition usable for the production of articles of biodegradable plastics material, comprising an ethylene/vinyl alcohol copolymer and a destructured starch, wherein said ethylene/vinyl alcohol copolymer has an ethylene content of from 10 to 40% by weight and a melt flow index of from 2 to 50 and is present in a ratio to the destructured starch of from 1:19 to 19:1 by weight.

5,334,635

ANTISTATIC THERMOPLASTIC POLYMERS

Kishore Udipi, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 18, 1992, Ser. No. 993,274
Int. Cl.[5] C08K 5/05; C08L 25/04, 71/02
U.S. Cl. 524—377 4 Claims

1. An antistatic thermoplastic styrenic polymer composition consisting essentially of a styrenic polymer selected from the group consisting of styrene-acrylonitrile copolymer, α-methylstyrene-acrlonitrile copolymer, acrylonitrile-butadiene-styrene copolymer, acrylonitrile-butadiene-α-methylstyrene copolymer, styrene-acrylonitrile copolymer blended with a poly(C_3 to C_{10} alkyl acrylate) rubber grafted with a styrene-acrylonitrile copolymer, styrene-acrylonitrile copolymer blended with a polybutadiene rubber grafted with a styrene-acrylonitrile copolymer, and styrene-acrylonitrile copolymer blended with an ethylene-propylene-diene copolymer rubber grafted with a styrene-acrylonitrile copolymer, and

a) from about 1 to about 30 parts by weight of a polyethylene oxide of weight average molecular weight in the range of 100,000 to 4,000,000 per 100 parts by weight of the styrenic polymer;

b) from about 0.5 to about 15 parts by weight of a glycol per 100 parts by weight of the styrenic polymer wherein the glycol is represented by the formula $HO(CH_2CH_2O)_nH$ and n is in the range of 1 to 3; and

c) from about 0.1 to about 3 parts by weight of a lithium salt per 100 parts by weight of the styrenic polymer; wherein the weight ratio of the glycol to the polyethylene oxide is in the range of about 0.2 to about 1, wherein the lithium salt is selected from the group consisting of lithium chloride, lithium bromide, lithium iodide, lithium nitrate, lithium sulfate, lithium acetate, lithium citrate, lithium fluorosilicate, and the hydrates of these salts, and wherein the weight ratio of the lithium salt to the sum of the weight of the polyethylene oxide and the glycol is in the range of about 1:15 to about 1:3.

5,334,636

THERMOPLASTIC COMPOSITION

Takeshi Fujii, Sodegaura, and Manabu Ishikawa, Ichihara, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 26, 1992, Ser. No. 858,185
Int. Cl.[5] C08L 23/16, 71/12; C08K 3/04
U.S. Cl. 524—449 6 Claims

1. A polymer composition consisting essentially of,

A) a polyphenylene ether resin and,

B) optionally a styrene resin and,

C) an impact strength improving amount of one or more of impact strength improving polymer(s), wherein the polymer(s) is selected from the group consisting of a styrene grafted polyolefin rubber, a styrene/unsaturated functional monomer co-grafted polyolefin rubber, a functionalized ethylene alpha-olefin(polyene) copolymer rubber, and a copolymer or terpolymer of ethylene and at least one unsaturated functional monomer and,

D) from about 5 to about 20 parts by weight of at least one mineral filler selected from the group consisting of talc, mica, and wollastonite based on 100 parts by weight of the total of the polymers, A) the polyphenylene ether resin, B) the styrene resin, and C) the impact strength improving polymer and,

E) from about 5 parts to about 40 parts by weight of a carbon black based on the total of the polymers, A) the polyphenylene ether resin, B) the styrene resin, and C) the impact strength improving polymer and,

F) optionally a plasticizing amount of one or more of plasticizer(s),

characterized in that the surface resistivity of the composition is lower than about 10^{10} ohm.

5,334,637

ISOCYANATOCARBOXYLIC ACIDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN COATING COMPOSITIONS AS CROSS-LINKING AGENTS

Christian Zwiener, Cologne, Fed. Rep. of Germany; Rainer Rettig, Nishinomiya, Japan; Klaus Nachtkamp, Duesseldorf, Fed. Rep. of Germany; Josef Pedain, Cologne, Fed. Rep. of Germany, and Dieter Arlt, Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1992, Ser. No. 988,663
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142275
Int. Cl.[5] C08J 3/00; C08K 3/20; C08L 51/00, 75/00
U.S. Cl. 524—539 7 Claims

1. A process for the preparation of an isocyanato carboxylic acid containing

a) 1 to 30% by weight of isocyanate groups attached to (cyclo)aliphatic tertiary carbon atoms and

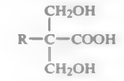
b) 0.5 to 500 milliequivalents, per 100 g of isocyanatocarboxylic acid, of carboxyl groups which may be at least partially present in carboxylate salt form,

which comprises reacting at an NCO/OH equivalent ratio of 1.6:1 to 2:1

A) a diisocyanate having a molecular weight of 168 to 300, an isocyanate group attached to a primary aliphatic carbon atom and an isocyanate group attached to a tertiary (cyclo)aliphatic carbon atom and

B) up to 25 isocyanate equivalents percent, based on the equivalents of components A) and B), of one or more diisocyanates other than those set forth in A) which have a molecular weight of 168 to 300 and contain (cyclo)aliphatically bound isocyanate groups with

C) 2,2-bis-(hydroxymethyl)-alkanoic acids corresponding to the formula



wherein

R represents hydrogen, a hydroxymethyl group or an alkyl group having 1 to 20 carbon atoms and

D) optionally one or more organic polyhydroxyl compounds other than those set forth in C).

5,334,638

AQUEOUS DISPERSION USEFUL IN COATINGS CONTAINING HYDROLYZED CELLULOSE ESTER AND ACYRLIC RESIN

Chung M. Kuo, Kingsport; Larry G. Curtis, Johnson City, and Paul L. Lucas, Gray, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jan. 21, 1992, Ser. No. 823,507
Int. Cl.[5] C08L 1/14
U.S. Cl. 524—40 12 Claims

1. An aqueous dispersion composition comprising:

(a) about 3 to 50 weight percent, hydrolyzed cellulose ester based on total solids;

(b) about 40 to 95 weight percent acrylic resin, based on total solids, having free acid functionality that is at least partially neutralized;

(c) about 0 to 10 weight percent surfactant based on total solids;

(d) about 50 to 200 parts organic solvent per 100 parts hydrolyzed cellulose ester; and

(e) an amount of water to render the dispersion usable in coating applications;

wherein said hydrolyzed cellulose ester has a hydroxyl content of at least 3 weight percent based on the unit molecular weight of the hydrolyzed cellulose ester and the content of (a), (b), and (c) in the total composition is about 10 to 50 weight percent.

5,334,639

STARCH OIL SIZING COMPOSITION AND GLASS FIBERS TREATED THEREWITH

William B. Rice, Davidson County, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 828,046, Jan. 30, 1992, abandoned. This application Feb. 8, 1993, Ser. No. 15,071
Int. Cl.[5] C08L 3/00, 91/06, 91/00; C08K 5/24
U.S. Cl. 524—47 15 Claims

1. An aqueous sizing composition for glass fibers comprising:

a mixture of an hydroxyl propyl corn starch which has been formed by the reaction of a high amylose corn starch with propylene oxide, and a highly crosslinked low amylose non-ionic corn starch, said starches having a combined weight percentage of 50–60% of the sizing composition on a non-aqueous basis;

a lubricating mixture selected from the group consisting of fatty di or triglycerides and waxes, fatty diglycerides and humectants, fatty diglycerides, waxes and humectants, or waxes and humectants, wherein the triglyceride, where present, is in a ratio to the other lubricants of at least 1:1 on a weight basis;

a second lubricant which is the salt of a polyamino functional polyamide resin, said polyamino functional polyamide resin salt being formed from the condensation reaction product of a polycarboxylic acid and a polyamine, said polyamine having greater than two amine groups per molecule, and the carboxylic acid having 1 to 5 carbon atoms;

at least one coupling agent selected from the group consisting of hydrolyzed silanes and non-hydrolyzed silanes, and mixtures thereof; and

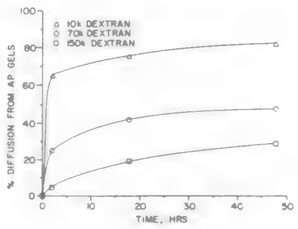
water in an mount sufficient to apply the solution to glass fibers.

5,334,640

IONICALLY COVALENTLY CROSSLINKED AND CROSSLINKABLE BIOCOMPATIBLE ENCAPSULATION COMPOSITIONS AND METHODS

Neil P. Desai; Patrick Soon-Shiong; Paul A. Sandford, and Roswitha E. Heintz, all of Los Angeles, Calif., assignors to Clover Consolidated, Ltd., Lausanne, Switzerland

Filed Apr. 8, 1992, Ser. No. 866,038
Int. Cl.[5] C08K 5/15; C08L 5/00; A61K 9/14; C12N 11/02
U.S. Cl. 524—56 36 Claims



1. A crosslinked biocompatible material comprising:

at least one ionically crosslinked component; and

at least one covalently crosslinked component, wherein the ionically crosslinked component is selected from a polysaccharide, a polyanion, or a polycation.

5,334,641

RUBBER ASPHALT MIX

Michael W. Rouse, P.O. Box 8203, Vicksburg, Miss. 39182-0308

Continuation of Ser. No. 822,292, Jan. 17, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 85,249
Int. Cl.[5] C08L 95/00
U.S. Cl. 524—71 26 Claims

1. An asphalt paving compound comprising:

paving grade asphalt:

finely ground particulate rubber which has been mechanically abraded at least twice during its manufacture which passes a 50 mesh in at least five percent by weight to asphalt;

said asphalt and said rubber being reacted together for less than 25 minutes at less than a temperature above 375 degrees Fahrenheit, forming thereby a non-gel asphalt rubber mixture without additional extender oils.

VOL 1165 ISS 1 AUG 2 1994 UMI

5,334,642

STABILIZED POLYARYL ETHER KETONE MOLDING COMPOSITIONS

Juergen Koch, Neuhofen, and Gerhard Heinz, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 677,336, Mar. 29, 1991, Pat. No. 5,208,278. This application Dec. 30, 1992, Ser. No. 998,730

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1990, 4010188

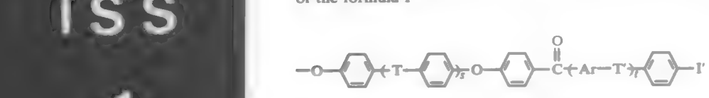
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] C08K *5/45, 5/34, 5/48*

U.S. Cl. 524—83 6 Claims

1. A stabilized polyaryl ether ketone molding composition containing as essential components

A) from 50 to 99.99% by weight of an acid containing polyaryl ether ketone prepared by electrophilic polycondensation and composed to an extent of not less than 50 mol % of units of the formula I'



where s and t are each 0, 1, 2 or 3, T and T' are each —O— or —CO— and Ar is meta-phenylene, paraphenylene or two aromatic rings linked to each other in the meta or para position by a chemical bond, or the ring-substituted C_1–C_8-alkyl, C_6–C_{20}-aryl or halogen derivatives thereof,

B) from 0.01 to 4% by weight of at least one organic compound which has a base constant pk_b within the range from 2 to 12 and a boiling point of higher than 300° C.,

C) from 0 to 50% by weight of a further thermoplastic other than A), and

D) from 0 to 45% by weight of fibrous or particulate fillers or mixtures thereof.

5,334,643

PEELABLE THERMOPLASTIC FILM

Paul D. Gage, Eau Claire, Wis., assignor to Rexene Products Company, Dallas, Tex.

Continuation of Ser. No. 443,173, Nov. 30, 1989, abandoned. This application Jul. 1, 1991, Ser. No. 725,893

Int. Cl.[5] C08K *5/20*

U.S. Cl. 524—232 10 Claims

1. A peelable thermoplastic film comprising:

a blend for a film having a peel strength of at least about 300 gm/½ inch and a thickness of from about 0.0005 inch to about 0.02 inch, said blend including:

(a) from about 40% to about 60% by weight of an A-B-A block copolymer, said A blocks being derived from polystyrene or a polystyrene homolog, said B blocks comprising an ethylene butene random copolymer, said block copolymer including approximately 30% by weight mineral oil;

(b) from about 20% to about 50% by weight of an ethylene vinyl acetate copolymer; and

(c) about 10% by weight of an erucamide anti-block concentrate.

5,334,644

AQUEOUS ADDITIVE SYSTEMS, METHODS AND POLYMERIC PARTICLES

William C. Gose, and Kenneth W. Hyche, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 476,071, Feb. 7, 1990, Pat. No. 5,190,579, which is a continuation-in-part of Ser. No. 240,903, Sep. 6, 1988, Pat. No. 5,007,961, which is a continuation-in-part of Ser. No. 197,946, May 24, 1988, Pat. No. 4,975,120, which is a continuation-in-part of Ser. No. 827,042, Feb. 7, 1986, Pat. No. 4,898,616, which is a continuation-in-part of Ser. No. 701,888, Feb. 15, 1985, abandoned. This application Mar. 2, 1993, Ser. No. 31,371

Int. Cl.[5] C08K *5/01;* C08L *91/06*

U.S. Cl. 524—487 8 Claims

1. A method of applying additives to polymeric particles comprising contacting said particles with an aqueous system free from in situ formation of color producing complexes comprising:

a) an emulsified wax,

b) in the range of 0.025 up to 60 parts by weight of surfactant per part of emulsified wax,

c) in the range of 0.005 up to 2 parts by weight of a base per part of emulsified wax, with a pH in the range of greater than 7 to equal to or less than about 12,

d) in the range of 0.05 up to 160 parts by weight of at least one processing, stabilizing or other functional polymer additive, per part of emulsified wax, and

e) at least enough water to render the resulting combination fluid; and

drying said particles wherein said particles are produced from polymers selected from the group consisting of polyolefins, polyimides, polyamides, polystyrene, polyethylene terephthalate, and acrylonitrile-butadiene-styrene.

5,334,645

SUBSTRATE FOR CIRCUIT BOARD INCLUDING THE GLASS FIBERS AS REINFORCING MATERIAL

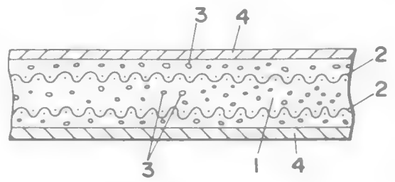
Kiyotaka Komori, Kadoma; Seishiro Yamakawa, Hirakata; Shigeru Yamamoto; Jun Naka, both of Kyoto, and Tadashi Kokubo, Nagaokakyo, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka and Nippon Electric Glass Co., Ltd., Ohtsu, both of Japan

Division of Ser. No. 832,267, Feb. 7, 1992, Pat. No. 5,284,807. This application Nov. 8, 1993, Ser. No. 148,330

Claims priority, application Japan, Feb. 8, 1991, 3-017747; Jun. 13, 1991, 3-142163; Jun. 14, 1991, 3-143465; Jun. 18, 1991, 3-145901

Int. Cl.[5] C08K *3/40;* C03C *13/02*

U.S. Cl. 524—494 16 Claims



1. A substrate for circuit board comprising:

a layer made of a resin;

a reinforcing member embedded in said layer, said reinforcing member composed of glass fibers which are made from a glass composition,

said glass composition comprising at least 85 mol % of an oxide mixture, said oxide mixture consisting essentially of:

40 to 65 mol % of SiO_2;

MgO, CaO, SrO and BaO in amounts which total 20 to 45 mol % of said oxide mixture;

TiO_2 and ZrO_2 in amounts which total 5 to 25 mol % of said oxide mixture;

0.5 to 15 mol % of $NbO_{5/2}$;

said composition having a dielectric constant ϵ_r of 9 or more at 1 MHz and 25° C.; and

said composition being characterized to show a devitrification temperature which is lower than a spinning temperature at which said composition exhibits a viscosity of $10_{2.5}$ poise.

5,334,646

THERMOPLASTIC ELASTOMER GELATINOUS ARTICLES

John Y. Chen, Pacifica, Calif., assignor to Applied Elastomerics, Inc., Pacifica, Calif.

Continuation-in-part of Ser. No. 705,711, May 23, 1991, Pat. No. 5,262,468, and a continuation-in-part of Ser. No. 211,426, Jun. 24, 1988, Pat. No. 5,153,254, which is a continuation-in-part of Ser. No. 921,752, Oct. 21, 1986, which is a continuation-in-part of Ser. No. 572,172, Jan. 18, 1984, Pat. No. 4,618,213, which is a continuation-in-part of Ser. No. 458,703, Jan. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 134,977, Mar. 28, 1980, Pat. No. 4,369,284, which is a continuation-in-part of Ser. No. 916,731, Jun. 19, 1978, Pat. No. 4,773,855, which is a continuation-in-part of Ser. No. 815,315, Jul. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 778,343, Mar. 17, 1977, Pat. No. 4,663,047. This application Oct. 6, 1992, Ser. No. 957,290

The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.

Int. Cl.[5] C08K *5/01;* C08L *53/00;* A42B *3/00*

U.S. Cl. 524—474 9 Claims

1. An article of manufacture form from a gelatinous elastomer composition consisting essentially of:

(a) 100 parts by weight of a high viscosity triblock copolymer of the general configuration poly(styrene-ethylene-butylene-styrene);

(b) from about 300 to about 1,600 parts by weight of a plasticizing oil;

(c) said article characterized by a gel rigidity of from about 20 to about 700 gram Bloom.

5,334,647

FIBER-REINFORCED THERMOPLASTIC MOLDING COMPOSITIONS

James M. Sperk, Jr., Parma; Bling-lin Lee, Broadview Heights; James W. Summers, Bay Village, and Edward M. Faber, deceased, late of Avon Lake, all of Ohio by Sharon M. Faber, executrix , assignors to The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 759,965, Sep. 16, 1991, Pat. No. 5,225,476. This application Jul. 1, 1993, Ser. No. 86,474

Int. Cl.[5] C08L *75/00*

U.S. Cl. 524—507 20 Claims

1. A thermoplastic molded article, comprising:

a fiber-reinforced, two-phase, thermoplastic article, said article containing a thermoplastic polyurethane component and an immiscible thermoplastic polymer component which is PET, PETG, polycarbonate, polyacetal, or an ABS copolymer,

said article having a surface layer rich in said thermoplastic polyurethane component and substantially free of said fibers, and a two-phase interior portion containing said thermoplastic polyurethane component, said immiscible thermoplastic polymer component, and said fibers.

5,334,648

EMULSION POLYMERS FOR USE AS A UREA FORMALDEHYDE RESIN MODIFIER

Stephen F. Drews, N. Olmsted, and Leo A. Tischer, Parma, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 784,864, Oct. 30, 1991, abandoned. This application May 28, 1993, Ser. No. 69,641

Int. Cl.[5] C08J *3/00;* C08K *3/00;* C08L *61/00*

U.S. Cl. 524—512 17 Claims

1. A nonwoven glass mat binder for use in forming a roofing substrate formed from a blend of urea formaldehyde resin and a copolymer, said urea formaldehyde resin and said copolymer being present in a weight ratio of about 9:1 and said copolymer being made from at least:

a) a vinyl chloride monomer;

b) a functional monomer, for crosslinking the vinyl chloride polymer and/or reacting with the urea formaldehyde in an amount of from about 0.5 to about 8% by weight; and

c) an effective amount of a softening monomer, selected from the group consisting essentially of acrylates, olefins and vinyl esters in an amount of from about 9.5 to about 70 percent by weight, to result in suitable wet and dry tensile strength and resulting in a mat having increased flexibility.

5,334,649

WATER BASE INK COMPOSITION

Hisanori Fujita, Osaka, Japan, assignor to Sakura Color Products Corporation, Osaka, Japan

Filed Dec. 28, 1992, Ser. No. 997,200

Claims priority, application Japan, Dec. 26, 1991, 3-359682; Nov. 24, 1992, 4-313142

Int. Cl.[5] C08L *33/08;* C09D *11/16*

U.S. Cl. 524—558 12 Claims

1. A water base ink composition for writing or drawing which consists essentially of water as a solvent, a carboxyl group containing styrenic resin having an average molecular weight of 1500–30000 and an acid value of 150–300, in an amount of 2–20% by weight, a basic dye in an amount of 0.1–80 parts by weight in relation to 100 parts by weight of the styrenic resin, and an alkali which is volatile at normal temperatures in such an amount as to adjust the ink composition to a pH in the range of 6 to 8.5.

5,334,650

POLYURETHANE COATING COMPOSITION DERIVED FROM LONG-CHAIN ALIPHATIC POLYOL

Paul Serdiuk, Warren, and Alan L. Steinmetz, Milford, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Sep. 29, 1992, Ser. No. 954,730

Int. Cl.[5] C08J *3/00;* C08K *3/20;* C08L *75/00*

U.S. Cl. 524—591 13 Claims

1. A coating composition comprising:

(a) an aqueous medium,

(b) a water-dispersible polyurethane resin that is the reaction product of a mixture comprising:

(1) a C36 dimer fatty alcohol,

(2) a multifunctional compound having at least one active hydrogen group and at least one water-stabilizing group,

(3) an active hydrogen-containing capping and/or chain extending agent, and

(4) a polyisocyanate, and

(c) an aminoplast crosslinking agent.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,651

WATER-THINNABLE TWO-COMPONENT COATING PREPARATION, A PROCESS FOR ITS PREPARATION, AND ITS USE

Michael Schwab, Niederahausen; Udo Frank, Ingelheim, and Gerd Walz, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 23, 1993, Ser. No. 36,024

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209677; Jun. 4, 1992, 4218449

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—591 11 Claims

1. A water-thinnable two-component coating preparation comprising

a) a polyisocyanate component comprising one or more organic polyisocyanates, and

b) a polyurethane resin prepared by

1. reacting

(A) polyisocyanates with

(B) polyols having an average molecular weight M_n of at least 400, and

(D) compounds having at least two groups which are reactive toward isocyanate groups and at least one group which is capable of anion formation, to give a prepolymer containing free NCO groups and

2. reacting the prepolymer prepared in step 1 with at least one of the components:

(E) low molecular weight polyols carrying no further groups which are reactive toward isocyanate groups, these compounds being employed in excess;

(F) compounds which are monofunctional or contain active hydrogen of differing reactivity, and are different from (E).

5,334,652

POLYESTER-BASED COATING COMPOSITIONS HAVING HIGH PIGMENT-TO-BINDER RATIOS

William E. Wellman, Edison, N.J.; Albert I. Yezrielev, Seabrook, and Ralph M. Kowalik, Kingwood, both of Tex., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Filed Jun. 18, 1991, Ser. No. 717,784

Int. Cl.[5] C08L *67/00;* C08G *63/78*

U.S. Cl. 524—601 23 Claims

1. A liquid curable coating composition comprising a mixture of

a) a curable, phenolic terminated polyester or diester resin having a number average molecular weight in the range of from about 1,500 to about 10,000;

b) an amino crosslinking agent present at a level of at least about 5% by weight based on the combined weight of resin and crosslinking agent;

c) crosslinking catalyst present at a level of at least about 0.1% by weight based on the combined weight of resin and crosslinking agent; and

d) a pigment material selected from the group consisting of pigment, a mixture of pigments or a mixture of pigment and pigment extender, said pigment material being present in said composition at a weight ratio such that the ratio of pigment to resin binder components falls within the range of from 1.25 to 1 up to about 5.0 to 1;

said composition further characterized in that when applied to a substrate and cured by heating to a temperature of at least about 350° F., the cured film has a MEK rub value of greater than 5 as measured by ASTM D-3732, a gloss retention of 47.6 or greater and a weight loss of 10% or less after being subjected to accelerated weathering tests for 1300±63 hours as measured in accordance with ASTM G-53.

5,334,653

POLYESTER FIBER COATING COMPOSITIONS

Masakado Kesnoki; Isao Ona, and Masaru Ozaki, all of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 936,150

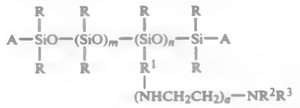
Claims priority, application Japan, Aug. 30, 1991, 3-247033

Int. Cl.[5] C08L *83/08*

U.S. Cl. 524—714 18 Claims

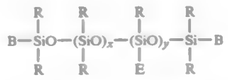
1. A composition consisting of:

(A) 100 parts by weight of an amino radical-containing organopolysiloxane having the formula:



wherein R is a monovalent hydrocarbon radical having from 1 to 20 carbon atoms R^1 is a divalent hydrocarbon radical, R^2 is a hydrogen atom or monovalent hydrocarbon radical, R^3 is a hydrogen atom or monovalent hydrocarbon radical, A is a hydroxy radical or an alkoxy radical, m is 1 or has a value greater than 1, n is 1 or has a value greater than 1, an integer from 0 to 5, said organopolysiloxane (A) having a viscosity greater than 50 centistokes at 25° C.; and

(B) 1–50 parts by weight of an organopolysiloxane containing at least 3 epoxy radical-containing organic groups in each molecule and having the formula:



wherein R is a substituted or unsubstituted monovalent hydrocarbon radical, E is an epoxy radical-containing organic group, B is selected from the group consisting of substituted monovalent hydrocarbon radicals, unsubstituted monovalent hydrocarbon radicals, and epoxy radical-containing organic groups, x has a value from 0 to 25, y has a value from 1 to 30, and wherein the value of x+y is from 1 to 30.

5,334,654

FLEXIBILIZED POLYEPOXIDE RESINS

William E. Starner, Nesquehoning, and Susan G. Musselman, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 3, 1993, Ser. No. 56,728

Int. Cl.[5] C08L *63/00*

U.S. Cl. 524—849 14 Claims

1. In a curable epoxy resin comprising a polyglycidyl ether of a phenol having terminal 1,2-epoxy groups and an amine curative, the improvement for enhancing elasticity of the resulting epoxy resin which comprises, in combination therewith:

a monofunctional aliphatic, aliphatic ether or ester amine reactive component, and

an acrylate terminated urethane prepolymer and an amine curative having from 3 to 10 epoxide reactive hydrogen atoms.

5,334,655

METHOD FOR REDUCING MICROFOAM IN A SPRAY-APPLIED WATERBORNE COMPOSITION

Virginia A. Carlson, North Wales; Maria E. Curry-Nkansah, Lansdale; Matthew S. Gebhard, New Britain, and Rosemarie P. Lauer, Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 9, 1993, Ser. No. 164,603

Int. Cl.[5] C08G *18/14*

U.S. Cl. 524—804 17 Claims

1. A method for reducing the amount of microfoam in a spray-applied clear waterborne polymeric composition comprising:

(a) forming said clear composition comprising an emulsion-polymerized addition polymer having a GPC weight average molecular weight of less than about 75,000;

(b) applying said clear composition to a substrate using a spraying method; and

(c) drying said clear composition.

5,334,656

POLYESTER RESIN COMPOSITIONS

Naoki Yamamoto; Akira Yanagase; Akira Nakata; Atsunori Koshirai, and Toshimi Yanai, all of Otake, Japan, assignors to Matsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 743,202, Aug. 9, 1991. This application Jan. 25, 1993, Ser. No. 8,184

Claims priority, application Japan, Aug. 27, 1990, 2-224586

Int. Cl.[5] C08F *283/12, 299/08;* C08L *51/08*

U.S. Cl. 525—63 11 Claims

1. A polyester resin composition obtained by melt-mixing a mixture comprising resin components comprising as main resins

(A) a thermosplastic polyester resin and

(B) a polyorganosiloxane graft copolymer obtained by graft-polymerizing one or more kinds of vinyl monomer, at least one of which is an epoxy group-containing vinyl monomer, onto a compound rubber comprising a polyorganosiloxane rubber and a polyalkyl (meth)acrylate rubber which have been inseparably united with each other.

5,334,657

THERMOFORMABLE, CHEMICAL RESISTANT POLYMER BLENDS

Steven B. Swartzmiller; Robert J. Donald, and Jeffrey E. Bonekamp, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US92/09091, § 371 Date Dec. 18, 1992, § 102(e) Date Dec. 18, 1992, PCT Pub. No. WO93/13168, PCT Pub. Date Jul. 8, 1993

Continuation-in-part of Ser. No. 859,207, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 811,350, Dec. 20, 1991, abandoned. This PCT application Oct. 27, 1992, Ser. No. 971,921

Int. Cl.[5] C08L *25/10, 23/02, 23/08*

U.S. Cl. 525—71 9 Claims

1. A thermoformable polymer blend that is resistant to the solvent effects of halogenated hydrocarbons comprising:

A) from 50.1 to 59.9 parts by weight impact modified monovinylidene aromatic polymer, comprising from 1 to 25 weight percent of a rubber and 75 to 99 weight percent of a monovinylidene aromatic polymer matrix having weight average molecular weight (Mw) from 50,000 to 400,000, said weight percents being based on the total weight of said impact modified, monovinylidene aromatic polymer;

B) from 30.1 to 39.9 parts by weight of an olefin polymer, selected from the group consisting of homopolymers of ethylene and copolymers of ethylene with one or more C4- 8 α-olefins; and

C) from 5 to 25 parts by weight of a compatibilizing polymer, adapted to increase interfacial adhesion between components A) and B), components A) and B) existing in said blend as co-continuous phases, and the sum of A), B) and C) being 100 parts; said compatibilizing polymer being an elastomeric styrene/butadiene/styrene or styrene/isoprene/styrene triblock copolymer having weight average (Mw) and number average (Mn) molecular weights of from 10,000 to 150,000 and containing from 25 to 45 weight percent styrene.

5,334,658

THERMOPLASTIC MODLING MATERIALS

Uwe Blumenstein, Ludwighafen; Peter Klaerner, Battenberg; Horst Schuch, Ilvesheim, and Hans-Michael Walter, Freinsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 709,206, Jun. 3, 1991, abandoned. This application Dec. 16, 1992, Ser. No. 991,650

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1990, 4018230

Int. Cl.[5] C08L *51/04*

U.S. Cl. 525—71 12 Claims

1. A thermoplastic molding material comprising, a high-impact polystyrene containing (A) from 75–97% by weight of polystyrene as a hard matrix, and (B) from 3 to 25% by weight of particulate, elastomeric (co)polymer based essentially on butadiene or its copolymers and having a glass transition temperature of less than −20° C., in turn consisting of, based on B

B1: from 40 to 98% by weight of a (co)polymer B1having a means particle size of from 100 to 600 nm and

B2: from 2 to 60% by weight of a particle blend B2 which in turn consists of, based on B2,

B21 from to 1 to 60% by weight of a (co)polymer B21 having a mean particle size of from 200 to 1200 nm and

B22 from 40 to 99% by weight of a (co)copolymer B22 having a means particle size of from 1200 to 8000 nm,

(co)polymer B1 having an encapsulated-particle morphology and (co)polymers B21 and B22 having a cellular and/or coiled particle morphology.

5,334,659

ELASTOMERIC BLENDS AND METHOD FOR THEIR PREPARATION

James J. Scobbo, Jr., Guilderland, and Gregory J. Stoddard, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 33,208, Mar. 18, 1993, abandoned. This application May 24, 1993, Ser. No. 66,289

Int. Cl.[5] C08L *51/04*

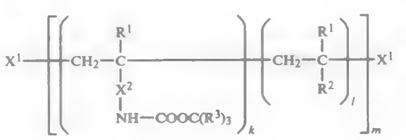
U.S. Cl. 525—71 8 Claims

1. A resinous composition comprising:

at least one thermoplastic polymer, and

an impact modifying proportion of a copolymer composition prepared by:

blending in a first step, under reactive conditions, at least one carbamate-functionalized addition polymer having the formula



(I)

wherein:

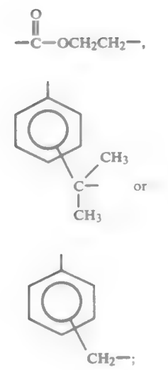
each R^1 is independently hydrogen or C_{1-5} alkyl;

each R^2 is independently aryl or alkaryl of 1 to 20 carbon atoms; an ester group of 1 to 20 carbon atoms; alkoxy of 1 to 20 carbon atoms; acetoxy; or cyano;

each R^3 is independently a C_{1-10} hydrocarbyl moiety, provided that at least one R^3 is alkyl;

X^2 is

VOL 1165 ISS 1 AG 2 1994 UMI



k is an integer in the range from 1 to about 1000;
l is 0 or an integer from 1 to about 4000, and k and l may vary independently from unit to unit;
m is an integer from 1 to about 100 and represents the number of carbamate-functionalized monomer and comonomer alternations when l is 1 or greater; and
X^1 is a chain terminating group;
with an excess of at least one functionalized elastomer reactive therewith, to form an elastomeric preblend; and
blending in a second step, under reactive conditions, said elastomeric preblend with a further amount of at least one functionalized addition polymer reactive with said functionalized elastomer;
said copolymer composition comprising a continuous addition polymer phase having dispersed therein elastomer particles containing occluded addition polymer and being stabilized by copolymer formation between the elastomer particles and the addition polymer in the occluded and continuous phases.

5,334,660

VINYL CHLORIDE RESIN COMPOSITION

Akira Takaki, Kobe; Hiroto Mori, Takasago, and Toshihiko Hasegawa, Hyogo, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 13, 1992, Ser. No. 867,479
Int. Cl.[5] C08L *25/10, 25/14, 51/04, 55/04*
U.S. Cl. 525—84 **4 Claims**

1. A vinyl chloride resin composition which comprises:
(A) 1 to 30% by weight of a graft copolymer and
(B) 99 to 70% by weight of a vinyl chloride resin; said graft copolymer (A) being prepared by
(i) adding a water-soluble electrolyte to an aqueous latex containing 50 to 85 parts by weight of a butadiene polymer (a) of 60 to 100% by weight of butadiene, 40 to 0% by weight of an aromatic vinyl monomer, 10 to 0% by weight of a vinyl monomer copolymerizable therewith and 5 to 0% by weight of a crosslinkable monomer, said butadiene polymer (a) having an average particle size of less than 0.1 μm,
(ii) adding 1 to 45 parts by weight of a monomer mixture (b) to said latex and carrying out the polymerization, said monomer mixture (b) comprising 51 to 100% by weight of an aromatic vinyl monomer, 49 to 0% by weight of an alkyl methacrylate and 0 to 20% by weight of a vinyl monomer copolymerizable therewith,
(iii) adding 5 to 45 parts by weight of a monomer mixture (c) to the polymerization mixture in the step (ii) and carrying out the polymerization, said monomer mixture (c) comprising 51 to 100% by weight of an alkyl methacrylate, 49 to 0% by weight of an aromatic vinyl monomer and 0 to 20% by weight of a vinyl monomer copolymerizable therewith, and
(iv) adding 0 to 30 parts by weight of a monomer mixture (d) to the polymerization mixture in the step (iii) and carrying out the polymerization, said monomer mixture (d) comprising 51 to 100% by weight of an aromatic vinyl monomer, 49 to 0% by weight of an alkyl methacrylate and 0 to 20% by weight of a vinyl monomer copolymerizable therewith;
the total amount of the polymer (a), the mixture (b), the mixture (c) and the mixture (d) being 100 parts by weight.

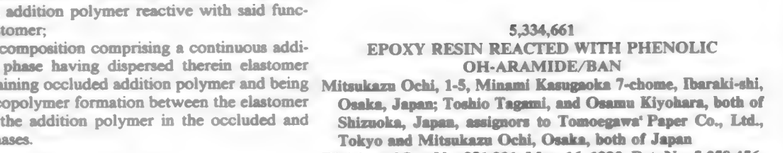
5,334,661

EPOXY RESIN REACTED WITH PHENOLIC OH-ARAMIDE/BAN

Mitsukazu Ochi, 1-5, Minami Kasugaoka 7-chome, Ibaraki-shi, Osaka, Japan; Toshio Tagami, and Osamu Kiyohara, both of Shizuoka, Japan, assignors to Tomoegawa' Paper Co., Ltd., Tokyo and Mitsukazu Ochi, Osaka, both of Japan

Division of Ser. No. 851,801, Mar. 16, 1992, Pat. No. 5,258,456. This application Jul. 28, 1993, Ser. No. 97,890
Claims priority, application Japan, Mar. 15, 1991, 3-74419; Apr. 11, 1991, 3-105058; Apr. 11, 1991, 3-105165; Apr. 12, 1991, 3-106414; Apr. 12, 1991, 3-106415; Apr. 19, 1991, 3-113648; Apr. 30, 1991, 3-124446; May 1, 1991, 3-126441; May 8, 1991, 3-131617; May 9, 1991, 3-132117; May 14, 1991, 3-136919; May 15, 1991, 3-138626; May 15, 1991, 3-138650; May 21, 1991, 3-144065; May 22, 1991, 3-145240; Dec. 26, 1991, 3-356750
Int. Cl.[5] C08L *63/02, 63/04*
U.S. Cl. 525—90 **6 Claims**

1. An epoxy resin modified material obtained by reacting an epoxy resin and a phenolic hydroxyl group-containing aramid/polybutadiene-acrylonitrile block copolymer represented by formula (I):



wherein Ar^1 and Ar^3 each represent a divalent aromatic group; Ar^2 represents a phenolic hydroxyl group-containing divalent aromatic group; x represents an integer of from 3 to 7; y represents an integer of from 1 to 4; y/(x+y) is from 0.1 to 0.3; z represents an integer of from 5 to 15; m represents an integer of from 1 to 400; n represents an integer of from 1 to 400 n/(m+n) is from 0.01 to 0.50; and l represents an integer of from 1 to 50.

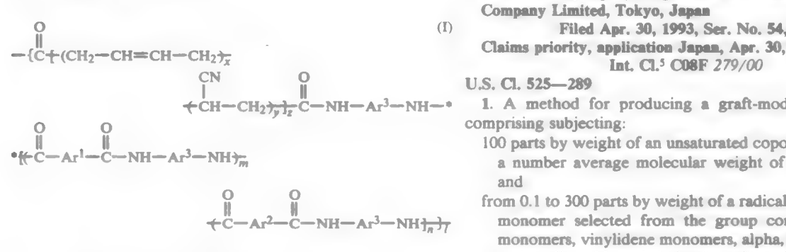
5,334,662

EPOXY RESIN/PHENOLIC OH-ARAMID/BAN BLOCK COPOLYMER PRODUCT WITH CTBN

Mitsukazu Ochi, 1-5, Minami Kasugaoka 7-chome, Ibaraki-shi, Osaka; Toshio Tagami, and Osamu Kiyohara, both of Shizuoka, all of Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo and Mitsukazu Ochi, Osaka, both of Japan

Division of Ser. No. 97,890, Jul. 28, 1993, which is a division of Ser. No. 851,801, Mar. 16, 1992, Pat. No. 5,258,456. This application Nov. 9, 1993, Ser. No. 149,371
Claims priority, application Japan, Mar. 15, 1991, 3-74419; Apr. 11, 1991, 3-105058; Apr. 11, 1991, 3-105165; Apr. 12, 1991, 3-106414; Apr. 12, 1991, 3-106415; Apr. 19, 1991, 3-113648; Apr. 30, 1991, 3-124446; May 1, 1991, 3-126441; May 8, 1991, 3-131617; May 9, 1991, 3-132117; May 14, 1991, 3-136919; May 15, 1991, 3-138626; May 15, 1991, 3-138650; May 21, 1991, 3-144065; May 22, 1991, 3-145240; Dec. 26, 1991, 3-356750
Int. Cl.[5] C08L *63/02, 63/04*
U.S. Cl. 525—90 **2 Claims**

1. An epoxy resin composition comprising:
(A) an epoxy resin modified material obtained by reacting an epoxy resin and a phenolic hydroxyl group-containing aramid/polybutadiene-acrylonitrile block copolymer represented by formula (I):



wherein Ar^1 and Ar^2 each represent a divalent aromatic group; Ar^2 represents a phenolic hydroxyl group-containing divalent aromatic group; x represents an integer of from 3 to 7; y represents an integer of from 1 to 4; y/(x+y) is from 0.1 to 0.3; z represents an integer of from 5 to 15; m represents an integer of from 1 to 400; n represents an integer of from 1 to 400; n/(m+n) is from 0.01 to 0.50; and l represents an integer of from 1 to 50,
(B) an epoxy resin,
(C) a hardener other than the polybutadiene-acrylonitrile copolymer having a carboxyl group at both terminals thereof and
(D) a polybutadiene-acrylonitrile copolymer having a carboxyl group at both terminals thereof.

5,334,663

THERMOPLASTIC COMPOSITIONS, PROCESS FOR PREPARING THEM AND THEIR APPLICATION IN THE PRODUCTION OF INDUSTRIAL ARTICLES

Joel Audureau, Noeuxles-Mines, and Vincent Crenna, Pont-Ste-Maxence, both of France, assignors to ECP-Enichem Polymeres France S.A., Courbevoie Cedex, France

Division of Ser. No. 435,386, Dec. 7, 1989, Pat. No. 5,218,046. This application Mar. 1, 1993, Ser. No. 24,244
Claims priority, application France, May 7, 1987, 87/06431
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] C08L *23/26, 23/36;* **C08J** *5/00*
U.S. Cl. 525—194 **8 Claims**

1. A process for preparing a non-crosslinked thermoplastic composition, comprising the steps of:
contacting a polymer (A) of (i) ethylene or (ii) ethylene together with at least one α-olefin containing from 3 to 12 carbon atoms and comprising at least 70 mol % of units derived from ethylene with at least one free radical initiator in a quantity of between 0.001 and 0.3 parts by weight of said free radical initiator per 100 parts by weight of said polymer (A) at a temperature above the melting point of said polymer (A) for a period of time greater than or equal to one-tenth of the half-life of said free radical initiator at said temperature, such that said polymer (A) is modified to have a measured limiting viscosity between 1.3 and 100 times its limiting viscosity calculated from molecular mass distribution; and
combining with less than 90% and at least 2% by weight of said polymer (A), more than 10% and up to 98% by weight of a polymer (B) containing at least 85 mol % of units derived from at least one α-olefin containing from 3 to 12 carbon atoms and not more than 15 mol % of units derived from ethylene to form the composition.

5,334,664

METHOD FOR PRODUCING GRAFT-MODIFIED COPOLYMERS

Masayuki Tomida; Hitoshi Nimura, and Mitsutoshi Aritomi, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,094
Claims priority, application Japan, Apr. 30, 1992, 4-111730
Int. Cl.[5] C08F *279/00*
U.S. Cl. 525—289 **19 Claims**

1. A method for producing a graft-modified copolymer comprising subjecting:
100 parts by weight of an unsaturated copolymer which has a number average molecular weight of 3,000–1,000,000; and
from 0.1 to 300 parts by weight of a radically polymerizable monomer selected from the group consisting of vinyl monomers, vinylidene monomers, alpha, beta-unsaturated carboxylic acids and derivatives thereof to radical polymerization conditions thereby to introduce a polymer chain formed from said radically polymerizable monomer;
wherein said unsaturated copolymer is obtained by copolymerizing propylene and a cyclic olefin selected from the group consisting of 5-vinylbicyclo[2,2,2]hept-2-ene and 8-ethylidenetetra-cyclo[4,4,0,$1^{2,5}$,$1^{7,10}$]-3-dodecene, the concentration of a repeating unit originating from said cyclic olefin in said unsaturated copolymer being from 0.05 to 50 mol %.

5,334,665

LIQUID DIENE POLYMERS AND COPOLYMERS TERMINATED BY REACTION WITH FUSED-RING POLYNUCLEAR AROMATIC COMPOUNDS

David F. Lawson, Uniontown; Mark L. Stayer, Jr., Mogadore, and Thomas A. Antkowiak, Rittman, all of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 812,258, Dec. 20, 1991, Pat. No. 5,210,145. This application May 6, 1993, Ser. No. 58,340
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—289 **6 Claims**

1. A terminally functionalized liquid polymer prepared by reacting a living polymer having a molecular weight M_n of from about 200 to about 50,000 obtained by anionic polymerization of a diene monomer or a mixture of a diene monomer and vinyl aromatic hydrocarbon monomer with a fused-ring polynuclear aromatic compound capable of reacting with no more than 1 mole of living polymer per mole of said fused-ring polynuclear aromatic compound.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,666

VULCANIZABLE ELASTOMER COMPOSITION COMPRISING EPOXY GROUP-CONTAINING ELASTOMER, ORGANIC COMPOUND HAVING AT LEAST TWO -C(X)-NH-C(Y)-BONDS (X=O OR S, Y=O OR S), QUATERNARY AMMONIUM OR PHOSPHONIUM SALT, AND OPTIONALLY A UREA OR THIOUREA COMPOUND

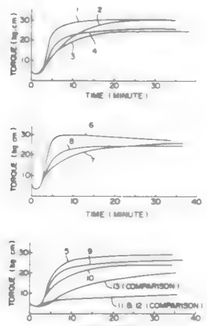
Shigelu Yagishita, Yokohama, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 300,726, Jan. 25, 1989, abandoned, which is a continuation of Ser. No. 89,177, Aug. 25, 1987, abandoned. This application Apr. 23, 1993, Ser. No. 51,291

Claims priority, application Japan, Aug. 29, 1986, 61-202817; Aug. 29, 1986, 61-202818

Int. Cl.[5] C08F *220/32*

U.S. Cl. 525—327.3 **7 Claims**

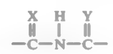


1. A vulcanizable elastomer composition exhibiting scorch stability, storage stability, rapid vulcanizability, compression set resistance and heat aging resistance comprising an epoxy group-containing elastomer having said epoxy groups as cross-linking sites, and blended therewith a vulcanization system for cross-linking said epoxy group-containing elastomer through said epoxy groups, said vulcanization system consisting essentially of (1) an organic compound having at least two bonds of the following formula



wherein X and Y are both oxygen or sulfur atoms, or one of X and Y is an oxygen atom and the other is a sulfur atom in the molecule, and (2) a quaternary compound selected from quaternary ammonium salts and quaternary phosphonium salts.

2. A vulcanizable elastomer composition exhibiting scorch stability, storage stability, rapid vulcanizability, compression set resistance and heat aging resistance comprising an epoxy group-containing elastomer having said epoxy groups as cross-linking sites, and blended therewith a vulcanization system for cross-linking said epoxy group-containing elastomer through said epoxy groups, said vulcanization system consisting essentially of (1) an organic compound having at least two bonds of the following formula



wherein X and Y are both oxygen or sulfur atoms, or one of X and Y is an oxygen atom and the other is a sulfur atom, in the molecule, and (2) a quaternary compound selected from quaternary ammonium salts and quaternary phosphonium salts, and (3) a compound having one



bond wherein Z represents an oxygen or sulfur atom in the molecule.

5,334,667

VULCANIZABLE, FLUORINE-CONTAINING ELASTOMER COMPOSITION

Yuichi Yamamoto, Takahagi, and Haruyoshi Tatsu, Hitachi, both of Japan, assignors to Nippon Mektron, Limited, Tokyo, Japan

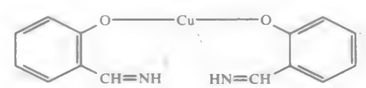
Filed Dec. 27, 1993, Ser. No. 172,730

Claims priority, application Japan, Dec. 28, 1992, 4-358541

Int. Cl.[5] C08F *8/42*

U.S. Cl. 525—370 **6 Claims**

1. A vulcanizable fluorine-containing elastomer composition, which comprises a fluorine-containing elastomer containing at least one of iodine and bromine in the molecule, and salicylaldoimino copper complex having the following formula as a cross-linking agent:



5,334,668

PRECURSOR POLYPHENYLENE FOR AND METHOD OF PRODUCING GLASSY CARBON

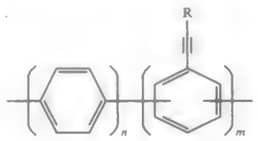
James M. Tour; Eric Stephens, and Joanna F. Davis, all of Colombia, S.C., assignors to University of South Carolina, Colombia, S.C.

Division of Ser. No. 746,714, Aug. 19, 1991, Pat. No. 5,236,686. This application Feb. 4, 1993, Ser. No. 13,744

Int. Cl.[5] C08G *61/10*

U.S. Cl. 525—416 **3 Claims**

1. A polymeric material having the formula



wherein R is selected from the group consisting of hydrogen, trialkyl silyl groups, substituted and unsubstituted phenyl groups and n-alkyl groups and the ratio of n/m is 5 or less, and wherein the polymeric material has a level of meta linkages such that heating the polymer to 900° C. in a nitrogen atmosphere yields a glassy carbon material.

5,334,669

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYESTER RESINS

Guido Ghisolfi, Tortona, Italy, assignor to M. & G. Ricerche S.p.A., Pozzilli, Italy

PCT No. PCT/EP92/00667, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO92/17520, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 26, 1992, Ser. No. 952,619

Claims priority, application Italy, Mar. 29, 1991, MI91 A 000833

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—437 **8 Claims**

1. Process for the continuous production of high molecular weight polyester resin from polyester resin having a lower molecular weight, comprising the steps of blending the resin in a molten state with an additive selected from the group of the dianhydrides of the aromatic tetracarboxylic acids, granulating the resin, subjecting the granules first to crystallization and then to solid state polyaddition, characterized in that the crystallization and the polyaddition steps are carried out at a temperature comprised between the TG of the resin and 170° C.

5,334,670

ELASTOMER AND PROCESS FOR PRODUCTION THEREOF

Yuji Uchida, Kanagawa; Yoshio Yoshida, Tokyo; Toshikazu Kaneda, Kanagawa; Toshiaki Moriya, Kanagawa, and Tsutomu Kumazawa, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 837,030, Feb. 14, 1992. This application Dec. 15, 1993, Ser. No. 167,072

Claims priority, application Japan, May 14, 1991, 3-136992

Int. Cl.[5] C08G *63/06*

U.S. Cl. 525—440 **14 Claims**

1. An elastomer composition molded by a reaction injection molding of a member selected from the group consisting of polyurethane resins, polyurea resins, polyurethane/urea resins and polyurea/amide resins, said composition containing a polyester condensate as an internal release agent, said polyester condensate having a hydroxyl group and further having an amino and/or imino group at the end of the molecule and being derived from a polyester condensate produced by transesterification of a saturated or unsaturated fatty acid having a hydroxyl group.

5,334,671

PHENOL TERMINATED DIESTER COMPOSITIONS DERIVED FROM DICARBOXYLIC ACIDS, POLYESTER POLYMERS OR ALKYD POLYMERS, AND CURABLE COMPOSITIONS CONTAINING SAME

Albert I. Yezrielev, Seabrook, Tex.; William E. Wellman, Edison, N.J.; Ralph M. Kowalik, Kingwood, Tex.; George A. Knudsen, Scotch Plains, N.J., and Michael G. Romanelli, Brooklyn, N.Y., assignors to Exxon Chemical Patents Inc., Linden, N.J.

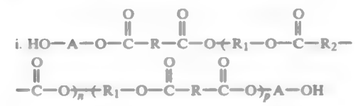
Division of Ser. No. 572,754, Aug. 24, 1990, Pat. No. 5,210,155. This application Jan. 15, 1993, Ser. No. 6,004

Int. Cl.[5] C08L *61/20, 61/28, 67/02*

U.S. Cl. 525—443 **25 Claims**

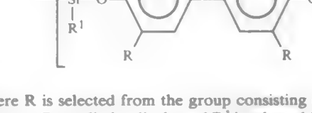
1. A polymer composition comprising a homogeneous mixture of:

a. a non-liquid crystalline phenol terminated diester composition having a number average molecular weight within the range of about 500 to about 10,000 and having a structure selected from the group consisting of:



-continued

and



wherein R is an aliphatic divalent hydrocarbon radical containing 2 to 40 carbon atoms or a mixture of such radicals, provided however that R contains at least about 8 carbon atoms when n is 0, R_1 is an aliphatic or cycloaliphatic hydrocarbon radical containing 2 to 40 carbon atoms or a mixture of such radicals, R_2 is an aliphatic, aromatic or a mixture of aliphatic and aromatic hydrocarbon radicals having from 2 to 40 carbon atoms, A is divalent aromatic radical selected from the group consisting of phenylene, naphthylene or bis phenylene, p is 0 or 1, n is 0 or an integer ranging from 1 to about 40, provided however, that p is 0 when n is 0 and p is 1 when n is an integer, and q is an integer ranging from 1 to 40, mixed with

b. an amount of an amino crosslinking agent effective for curing the phenol terminated diester composition.

5,334,672

AROMATIC POLYMER BLENDS AND METHOD

Therese C. Jordan, Saratoga Springs, and Jimmy L. Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

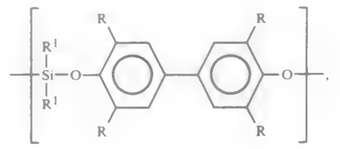
Continuation of Ser. No. 928,397, Aug. 12, 1992, abandoned, which is a continuation of Ser. No. 736,547, Jul. 26, 1991, abandoned. This application May 27, 1993, Ser. No. 46,874

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] C08L *67/02, 83/04*

U.S. Cl. 525—446 **2 Claims**

1. A polybutylene terephthalate blend having improved flame retardance comprising about equal parts by weight of a polybutylene terephthalate and a poly(arylsiloxane) having the formula,



where R is selected from the group consisting of the same or different $C_{(1-8)}$ alkyl radicals, and R^1 is selected from the group consisting of the same or different $C_{(1-13)}$ monovalent hydrocarbon radicals, and $C_{(1-13)}$ monovalent hydrocarbon radicals substituted with monovalent radicals inert during condensation.

5,334,673

POLYURETHANE GOLF BALL

Shenshen Wu, North Dartmouth, Mass., assignor to Acushnet Co., Fairhaven, Mass.

Continuation of Ser. No. 556,905, Jul. 20, 1990, abandoned. This application Dec. 24, 1991, Ser. No. 814,081

Int. Cl.[5] A63B *37/12*

U.S. Cl. 273—235 R **11 Claims**

1. A golf ball comprising a core and a cover wherein said cover is made from a thermosetting polyurethane composition comprising a single polyurethane prepolymer made from any

VOL 1165 ISS 1 AG 2 1994 UMI

of 4,4'-diphenyl methane diisocyanate or 3,3'-dimethyl-4,4'-biphenyl diisocyanate and a polyol cured with a slow-reacting polyamine selected from the group consisting of 3,5-dimethylthio-2,4-toluenediamine; 3,5-dimethylthio-2,6-toluenediamine; N,N'-dialkyl diamino diphenyl methane; trimethylene glycol-di-p-aminobenzoate; polytetramethyleneoxide-di-p-aminobenzoate and mixtures thereof.

5,334,674

POLYHYDROXY AROMATIC COMPOUNDS, EPOXY RESINS DERIVED THEREFROM AND EPOXY RESIN COMPOSITIONS

Akihiro Naka; Shuichi Ito, both of Kyoto; Shinya Akizuki, Osaka, and Kiyoshi Saito, Hyogo, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto and Nitto Denko Corporation, Osaka, both of Japan

Filed Jun. 18, 1992, Ser. No. 900,887

Claims priority, application Japan, Jun. 19, 1991, 3-147639; Jun. 21, 1991, 3-150546; Nov. 8, 1991, 3-293251

Int. Cl.[5] **C08G** *14/04, 59/62;* **C08L** *61/34, 63/00, 63/02, 63/04*

U.S. Cl. 525—481 **9 Claims**

1. An epoxy resin composition comprising an epoxy resin and a polyhydroxy aromatic compound as an epoxy resin curing agent, said polyhydroxy aromatic compound being derived from xylene and hydroxyl group-containing naphthalene by copolycondensation with an aidehyde, the proportions of the xylene unit and the naphthalene unit being 5 to 50 and 95 to 50 mole percent respectively, the amount of said aldehyde to be used being within a range of 0.4 to 1.0 mole per mole of a sum total of the xylene and the hydroxyl group-containing naphthalene, said compound having a weight-average molecular weight of 300 to 3,000, an equivalent ratio between the epoxy groups of said epoxy resin and the phenolic hydroxyl groups of said polyhydroxy aromatic compound being within a range of 1:0.8 to 1.2.

5,334,675

LATENT ACID CURABLE COMPOSITIONS

Arthur H. Gerber, Louisville, Ky., assignor to Borden, Inc., Columbus, Ohio

Division of Ser. No. 166,096, Dec. 13, 1993, Pat. No. 5,317,050, which is a continuation-in-part of Ser. No. 988,247, Dec. 9, 1992, Pat. No. 5,296,520. This application Feb. 24, 1994, Ser. No. 201,361

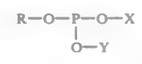
Int. Cl.[5] **C08G** *8/28;* **C08L** *61/06*

U.S. Cl. 525—485 **20 Claims**

1. A composition comprising:

A. an acid hardenable phenolic resin;

B. an aryl phosphite having the formula



wherein each of R and X is aryl of 6 to 12 carbon atoms, and Y is a member selected from the group consisting of hydrogen, aryl of 6 to 12 carbon atoms, and alkyl of 1 to 12 carbon atoms, said phosphite being in an amount sufficient on hydrolysis thereof to harden the resin; and

C. an additive selected from the group consisting of an organic nitrogen containing material having a pK_a of 0 to 3, a material having an internal epoxide, and mixtures thereof, wherein the quantity of the additive is from about 1% to 10% by weight of the resin.

5,334,676

EPOXY RESIN ADVANCED WITH POLYPHENOL/OXYALKYLATED AROMATIC OR CYCLOYALIPHATIC DIGLYCIDYL ETHER PRODUCT

Kenneth W. Anderson, Lake Jackson; Deborah I. Haynes, Freeport, and Ross C. Whiteside, Jr., Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 15,505, Feb. 9, 1993, Pat. No. 5,276,071, which is a division of Ser. No. 516,018, Apr. 27, 1990, Pat. No. 5,212,262, which is a continuation-in-part of Ser. No. 372,064, Jun. 27, 1989, abandoned, which is a division of Ser. No. 128,249, Dec. 3, 1987, Pat. No. 4,863,575. This application Sep. 14, 1993, Ser. No. 121,398

Int. Cl.[5] **C08L** *63/02;* **C08K** *3/20*

U.S. Cl. 525—524 **5 Claims**

1. An advanced epoxy resin composition comprising the product resulting from reacting a composition comprising

(1) the aromatic hydroxyl-containing product resulting from reacting a composition comprising

(a) at least one diglycidyl ether of (i) an oxyalkylated aromatic diol, or (ii) at least one compound having two hydroxyl groups per molecule in which the hydroxyl groups are attached to an aliphatic or cycloaliphatic carbon atom and which compound is free of aromatic rings; or (iii) a combination of (i) and (ii); and (iv) optionally, a diglycidyl ether compound different from (i) and (ii) which is present in an amount such that the amount of epoxy groups contributed by component (iv) based upon the total amount of epoxy groups contributed by components (i), (ii) and (iv) is from about zero to about 75 percent; and

(b) at least one compound containing two aromatic hydroxyl groups per molecule; wherein components (a) and (b) are employed in amounts such that there are more aromatic hydroxyl groups present than glycidyl ether groups;

(2) at least one diglycidyl ether of a compound containing two aromatic hydroxyl groups per molecule;

(3) optionally, one or more compounds containing two aromatic hydroxyl groups per molecule which is different from component (1); and

(4) optionally, a monofunctional capping agent; wherein components (1) and (2) are employed in amounts such that the resultant product has an epoxide equivalent weight greater than that of component (2); component (3). when present, is employed in an amount which provides a total amount of aromatic hydroxyl groups from components (1) and (3) per epoxide group contained in component (2) of from about 0.5:1 to about 0.95:1; and component (4), when present, is employed in an amount which provides a ratio of epoxy-reactive groups contained in component (4) per glycidyl group not consumed by reaction of components (1) and (3) with component (2) of from about zero: 1 to about 0.7:1.

5,334,677

PROCESS FOR PRODUCING SYNDIOTACTIC POLYOLEFINS

Razavi Abbas, Seabrook, and John A. Ewen, Houston, both of Tex., assignors to Fina Technology, Inc., Dallas, Tex.

Continuation of Ser. No. 404,115, Sep. 7, 1989, abandoned, which is a division of Ser. No. 220,007, Jul. 15, 1988, Pat. No. 4,892,851. This application Nov. 15, 1991, Ser. No. 792,974

Int. Cl.[5] **C08F** *4/622, 4/626, 10/00*

U.S. Cl. 526—114 **13 Claims**

1. A process for polymerizing an olefin monomer, said process comprising:

a) selecting a metallocene catalyst described by the formula

$$R''(Cp[R_n])(CpR'_m)MeQ_k$$

wherein Cp is a cyclopentadienyl and CpR'_m is a substituted cyclopentadienyl ring; R'' is a structural bridge between the Cp ring and the CpR'_m ring imparting stereorigidity to the catalyst; Me is a group 4*b*, 5*b*, or 6*b* metal from the Periodic Table of Elements; each Q is hydrocarbyl radical having 1–20 carbon atoms or is a halogen; $0 \leq k \leq 3$; and wherein (CpR'_m) is a sterically different ring than ($Cp[R_n]$);

b) combining an aluminum cocatalyst selected from the group consisting of alumoxanes and mixtures of alumoxanes and alkylaluminums with the catalyst of a);

c) introducing the catalyst into a polymerization reaction zone containing an olefin monomer and maintaining the reaction zone under polymerization reaction condition; and

d) forming a syndiotactic polyolefin; wherein (CpR'_m) is a fluorenyl radical and ($Cp[R_n]$) is an unsubstituted cyclopentadienyl radical.

5,334,678

BOTH ENDS-MODIFIED OLEFIN POLYMERS AND PROCESSES FOR THE PRODUCTION THEREOF

Hiroyuki Furuhashi; Naomi Koyama, and Satoshi Ueki, all of Iruma, Japan, assignors to Tonen Corporation, Japan

Division of Ser. No. 956,939, Oct. 5, 1992, abandoned, which is a division of Ser. No. 749,601, Aug. 26, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,085

Int. Cl.[5] **C08F** *110/02, 110/06*

U.S. Cl. 526—169.2 **6 Claims**

1. A process for the production of an olefin polymer comprising recurring units of the formula —(—CH_2.CHR—)— and having a H_2C=CH— group bonded at both ends thereof and a number average molecular weight of 300 to 500,000, wherein R is a hydrogen atom or methyl group, which comprises polymerizing ethylene or propylene with a reaction product of a polymerization catalyst consisting of a vanadium chelate compound and a dialkylaluminum halide represented by the general formula $R^{1'}{}_2AlX'$ wherein $R^{1'}$ is an alkyl group containing 1 to 20 carbon atoms and X' is a halogen atom with an α, ω-diolefin compound represented by the general formula H_2C=C—(—C_mH_{2m}—)—CH=CH_2 wherein m is 1 to 15, and then further reacting with the diolefin compound and with a proton donor.

5,334,679

METHOD FOR PRODUCTION OF WATER-SOLUBLE CATIONIC POLYMER

Takushi Yamamoto; Hiroari Hara; Nobuhiro Maeda, and Morio Nakamura, all of Himeji, Japan, assignors to Sumitomo Seika Chemicals Co., Ltd., Hyogo, Japan

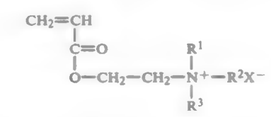
Continuation of Ser. No. 891,818, Jun. 1, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 95,830

Claims priority, application Japan, Jun. 1, 1991, 3-157824

Int. Cl.[5] **C08F** *2/18, 2/32*

U.S. Cl. 526—200 **8 Claims**

1. A method for the production of a water-soluble cationic polymer comprising polymerizing a water-soluble monomer selected from the group consisting of a cationic acrylate monomer represented by the Formula (1) alone, wherein R^1 and R^2 represent an alkyl group having 1 to 4 carbon atoms, R^3 represents a hydrogen atom or alkyl group having 1 to 4 carbon atoms, and X^- represents a halide ion, sulfate ion, nitrate ion, phosphate ion, carboxylate ion or sulfonate ion,



(1)

and a mixture of said monomer and another monomer copolymerizable therewith, wherein the concentration of the aqueous solution of said water-soluble monomer is 25 to 80% by weight, in a dispersion medium in the presence of a surfactant by suspension polymerization, wherein said surfactant is a sucrose fatty acid ester whose HLB is 2 to 12 or a polyglycerol fatty acid ester whose HLB is 2 to 16 or a mixture thereof, so as to give said water-soluble cationic polymer having a limiting viscosity of 5 to 15 (η) and a degree of cationization of 3.0 to 5.2.

5,334,680

EMULSION POLYMERIZATION METHOD FOR A BROMINATED STYRENE

Akihiro Mukai, Mihara, Japan, assignor to Teijin Chemicals, Ltd., Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 43,797

Claims priority, application Japan, Apr. 7, 1992, 4-085547

Int. Cl.[5] **C08F** *12/16, 2/22*

U.S. Cl. 526—207 **22 Claims**

1. A method for the emulsion polymerization of brominated styrene which comprises the steps of charging a reaction vessel with a mixture consisting essentially of:

a brominated styrene,

an organic solvent which dissolves said brominated styrene and is sparingly soluble in water, in an amount of 1 to 500 parts by weight per 100 parts by weight of said brominated styrene,

and carrying out the emulsion polymerization reaction.

4. The method of claim 1 in which the organic solvent is a member selected from the group consisting of aliphatic hydrocarbons and aromatic hydrocarbons, ketones and esters.

5,334,681

FLUORINE AND/OR SILICONE CONTAINING POLY(ALKYLENE-OXIDE)-BLOCK COPOLYMER HYDROGELS AND CONTACT LENSES THEREOF

Karl F. Mueller, New York, and Walter L. Plankl, Yorktown Heights, both of N.Y., assignors to Ciba-Geigy Corporation, New York, N.Y.

Continuation of Ser. No. 73,644, Jun. 8, 1993, abandoned, which is a continuation of Ser. No. 931,646, Aug. 17, 1992, abandoned, which is a continuation of Ser. No. 630,711, Dec. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 486,493, Feb. 28, 1990, Pat. No. 5,115,056, which is a continuation-in-part of Ser. No. 368,755, Jun. 20, 1989, abandoned. This application Dec. 17, 1993, Ser. No. 168,979

Int. Cl.[5] **C08F** *12/30, 114/18*

U.S. Cl. 526—243 **58 Claims**

1. A copolymer which is oxygen permeable, flexible, wettable, biocompatible and suitable for use in ophthalmic devices, such as contact lenses, which copolymer comprises the polymerization product of

(A) 15 to 69.9% by weight of a vinyl-telechelic polyether substantially free of fluorine , or a mixture thereof,

(B) 30 to 84.9% by weight of

(B-1) a fluorinated, ethylenically unsaturated monomer, or

(B-2) a silicone-containing ethylenically unsaturated monomer, or

a mixture of monomer (B-1) and monomer (B-2),

(C) 0 to 40% by weight of an ethylenically unsaturated monomer or mixture of monomers other than monomer (B-1) or monomer (B-2), and

(D) 0.1 to 10% by weight of a polyethylenically unsaturated comonomer of 200 to 1000 molecular weight.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,682

EPOXY FUNCTIONAL COPOLYMER OF HIGHER A-OLEFIN AND UNSATURATED DICARBOXYLIC ACID ESTER AND DERIVATIVES THEREOF

Theodore A. Marolewski, New City; Eric W. Burkhardt, Brewster, both of N.Y., and Uwe H. Wallfahrer, Kreuzau, Fed. Rep. of Germany, assignors to Akzo nv, Arnhem, Netherlands

Division of Ser. No. 19,498, Feb. 19, 1993, Pat. No. 5,274,102.
This application Aug. 27, 1993, Ser. No. 113,573
Int. Cl.[5] C08F *224/00*
U.S. Cl. 526—273 5 Claims

1. An epoxy functional copolymer of: (1) a higher α-olefin; (2) an unsaturated dicarboxylic acid ester; and (3) an ethylenically unsaturated glycidyl compound.

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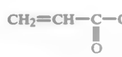
ACRYLATE POLYMER ELASTOMER AND VULCANIZABLE COMPOSITION CONTAINING THE SAME

Takafumi Kawanaka; Takeshi Ohishi, both of Yokohama, and Masahiro Shimizu, Yamato, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,010
Claims priority, application Japan, Mar. 31, 1992, 4-106167
Int. Cl.[5] C08F *220/18, 220/40, 220/32, 220/22*
U.S. Cl. 526—273 14 Claims

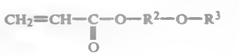
1. An acrylic copolymer elastomer having a Mooney viscosity (ML_{1+4}, 100° C.) of 10 to 100 obtained by copolymerizing

(a) 45 to 89.9 wt. % of a monomer represented by the formula



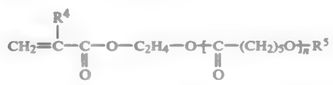
(1)

wherein R^1 represents an alkyl group having 1 to 8 carbon atoms, or a monomer represented by the formula



(2)

wherein R^2 represents an alkylene group having 1 to 8 carbon atoms and R^3 represents an alkyl group having 1 to 8 carbon atoms, p1 (b) 10 to 45 wt. % of a monomer represented by the formula



(3)

wherein R^4 represents a hydrogen atom or a methyl group, R^5 represents a hydrogen atom or a hydrocarbon group having 1 to 4 carbon atoms, and n represents an integer of 1 to 5,

(c) 0.1 to 10 wt. % of crosslinkable monomer, and

(d) 0 to 30 wt. % of a monoethylenic unsaturated monomer copolymerizable with the above (a), (b) and (c) components.

11. An acrylic copolymer elastomer of claim 1, 2, 3 or 4 wherein said cross-linkable monomer component (c) is selected from the group consisting of vinyl chloro-acetate and glycidal methacrylate.

5,334,684

α-OLEFIN-ALKENYLSILANE COPOLYMER AND METHOD FOR PREPARING SAME

Tadashi Asanuma, and Kaoru Kawanishi, both of Takaishi, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 616,933, Nov. 21, 1990, abandoned.
This application Jan. 5, 1992, Ser. No. 894,475
Claims priority, application Japan, Nov. 28, 1989, 1-306402; Nov. 29, 1989, 1-307644; Dec. 18, 1989, 1-326169
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] C08F *230/08, 4/642*
U.S. Cl. 526—279 6 Claims

1. A syndiotactic α-olefin-alkenylsilane copolymer in which among peaks attributable to the side chain methyl or methylene groups directly bonded to the main chain of the copolymer and indicative of isotactic, syndiotactic and atactic configurations of the copolymer the alkyl groups in the side chains of the α-olefin units have a substantially syndiotactic configuration so that, in the ^{13}C-NMR spectrum of the copolymer observed in a 1,2,4-trichlorobenzene solution,

(i) a main peak not attributable to the isotactic structure thereof is positioned on the side of higher magnetic field than is the peak attributable to the isotactic structure, and (ii) the intensity of said main peak is 0.3 or more relative to the sum of the intensities of the total peaks attributable to the side chain methyl or methylene groups directly bonded to the main chain; the alkenylsilane is represented by the formula;



wherein X is a hydrogen atom, a halogen atom or a saturated hydrocarbon residue having from 1 to 20 carbon atoms, and m is an integer of from 0 to 10; the content of alkenylsilane units is from 3 to 35% by mol; and an intrinsic viscosity measured in a tetralin solution at 135° C. is at least 0.01 dl/g.

5,334,685

GRAFTED COPOLYMERS HIGHLY ABSORBENT TO AQUEOUS ELECTROLYTE SOLUTIONS

Iqbal Ahmed, and Henry L. Hsieh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 679,987, Apr. 3, 1991, abandoned. This application Sep. 10, 1992, Ser. No. 943,108
Int. Cl.[5] C08L *1/00, 3/00*
U.S. Cl. 527—300 26 Claims

1. A graft copolymer formed by:

(A) graft polymerizing onto a first polymer of polysaccharide, and at least one comonomer selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, acrylic acid, methacrylic acid, alkali salts of acrylic acid, alkali salts of methacrylic acid, 2-methacryloyloxyethyldiethylamine, 2-acrylamido-2-methylpropane sulfonic acid, alkali salts of 2-acrylamido-2-methylpropane sulfonic acid, 2-methacryloyloxyethane sulfonic acid, alkali salts of 2-methacryloyloxyethane sulfonic acid, N-vinyl-2-pyrrolidone and combinations of two or more thereof;

(B) graft copolymerizing therewith an ampholytic ion pair monomer having an ammonium cation and a sulfonate anion wherein

(i) the ammonium cation is 3-methacrylamidopropyltrimethylammonium; and

(ii) the sulfonate anion is selected from the group consisting of 2-acrylamido-2-methylpropane sulfonate, 2-methacryloyloxyethane sulfonate, vinyl sulfonate, styrene sulfonate and any combination of two or more thereof;

wherein the comonomers and ion pair monomers are provided in amounts which are effective to produce a highly absorbent graft copolymer; and

(C) partially saponifying neutralization graft copolymer formed in step (B).

5,334,686

PRESSURE-SENSITIVE ADHESIVE AND ADHESIVE SHEETS USING THE SAME

Masahiko Ando; Takeshi Yamanaka; Yutaka Moroishi; Yasuyuki Tokunaga, and Yoshinao Kitamura, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Nov. 30, 1993, Ser. No. 159,124
Claims priority, application Japan, Nov. 30, 1992, 4-345446
Int. Cl.[5] C08F *20/54*
U.S. Cl. 526—307.7 11 Claims

1. A pressure-sensitive adhesive comprising an acrylic polymer comprising the following components (a) to (d);

(a) from 50 to 84% by weight of an acrylic monomer represented by formula (1);

(1)

wherein R^1 represents hydrogen or methyl and R^2 represents an alkyl group having from 4 to 14 carbon atoms,

(b) from 15 to 28% by weight of an N,N-di-substituted (meth)acrylamide represented by formula (2);

(2)

wherein R^3 represents hydrogen or methyl and R^4 and R^5 represent an alkyl group or organic groups which combine with each other to form a heterocyclic ring with the N atom,

(c) from 1 to 10% by weight of a monomer having an acid group, and

(d) from 0 to 25% by weight of other monomer copolymerizable with the components (a) to (c), the total amount of the components (a) to (d) being 100% by weight.

5,334,687

ORGANOPOLYSILOXANE COMPOSITION

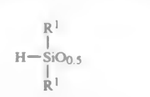
Masayuki Ikeno, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 955,228, Oct. 1, 1992, abandoned, which is a continuation of Ser. No. 578,444, Sep. 7, 1990, abandoned. This application Mar. 15, 1993, Ser. No. 32,202
Claims priority, application Japan, Sep. 8, 1989, 1-233398
Int. Cl.[5] C08G *77/06*
U.S. Cl. 528—15 10 Claims

1. An organopolysiloxane composition which comprises:

(A) an organopolysiloxane having alkenyl radicals which comprises at least 0.05 mol % on average of all the silicon-bonded organic radicals contained in the molecule;

(B) an organohydrogenpolysiloxane containing at least two siloxy units represented by the formula (I):



(I)

wherein the two R^1 radicals, which may be identical or different, are each a univalent hydrocarbon radical of from 1 to 10 carbon atoms selected from the group consisting of alkyl radicals, cycloalkyl radicals, aryl radicals and aralkyl radicals which may be substituted, per molecule;

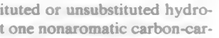
(C) a platinum group metal catalyst;

(D) at least one amine compound selected from the group consisting of the compounds represented by the general formula (II):



(II)

wherein R^2 is an alkyl radical of from 1 to 4 carbon atoms, the two R^2 radicals being either identical or different, R^3 is an alkyl radical of from 1 to 4 carbon atoms or a hydrogen atom, the two R^3 radicals being either identical or different, and R^4 is an alkylene radical of from 2 to 4 carbon atoms, and the compounds represented by the general formula (III):



(III)

wherein R^5 is an alkyl radical of from 2 to 4 carbon atoms; and

(E) an acetylene alcohol, with the mole ratio of acetylene alcohol to Pt group metal atoms in the catalyst at least 10 and with the mole ratio of amine compound (D) to Pt group metal atoms in the catalyst ranging from 2 to 20:1.

5,334,688

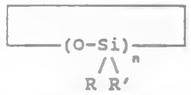
FULLY SUBSTITUTED CYCLOPOLYSILOXANES AND THEIR USE FOR MAKING ORGANOSILICON POLYMERS

De-Kai Loo, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 19, 1993, Ser. No. 49,097
Int. Cl.[5] C08G *77/20*
U.S. Cl. 528—15 20 Claims

1. An organosilicon crosslinked polymer or crosslinkable prepolymer that is the hydrosilation reaction product of:

(a) a cyclic polysiloxane having the formula



where R is saturated, substituted or unsubstituted alkyl or alkoxy group or a substituted or unsubstituted aryl or aryloxy group, R′ is a substituted or unsubstituted hydrocarbon group having at least one nonaromatic carbon-carbon double bond that is reactive in hydrosilation, and n is 3, or 3 and 4, and

(b) at least one organosilicon compound having at least two ≡SiH groups selected from the group consisting of (1) cyclic polysiloxanes and (2) tetrahedral siloxysilanes, said hydrosilation reaction being carried out in the presence of a hydrosilation catalyst.

5,334,689

PROCESS FOR PREPARING FLEXIBLE POLYURETHANE FOAMS

Louis Muller, Ottenburg, and Gabriel Verhelst, Herent, both of Belgium, assignors to Imperial Chemical Industries PLC, London, United Kingdom

Continuation of Ser. No. 112,725, Aug. 27, 1993, which is a division of Ser. No. 48,094, Apr. 12, 1993, Pat. No. 5,270,348. This application Jan. 12, 1994, Ser. No. 180,740
Claims priority, application United Kingdom, Apr. 16, 1992, 9208377.3
Int. Cl.[5] C08G *18/70, 18/30*
U.S. Cl. 528—67 2 Claims

1. Polyisocyanate composition comprising 60–95% by weight of an isocyanate prepolymer having a free NCO content of from 2 to 15% by weight which prepolymer has been made from a polyoxyalkylene polyol which has an ethylene oxide content of up to 30% by weight and 5–40% by weight of another isocyanate prepolymer having a free NCO content of 25–31% by weight which prepolymer has been made from a polyoxyalkylene polyol which has an ethylene oxide content of at least 50% by weight, the % by weight of the first and the second prepolymer being calculated on the total weight of the first and the second prepolymer.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,690

POLYURETHANE DISPERSIONS

Markus A. Schafheutle, Hochheim, and Heinz-Peter Klein, Mainz, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 7, 1993, Ser. No. 88,315

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1992, 4222530

Int. Cl.[5] C08L *75/04*

U.S. Cl. 528—71 8 Claims

1. A polyurethane dispersion obtained by reacting at least one member of the group consisting of polyester polyols containing ionic groups, polycarbonate polyols containing ionic groups and polyether polyols containing ionic groups with at least one polyisocyanate.

5,334,691

HYDROPHILIC POLYURETHANES OF IMPROVED STRENGTH

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter Ltd., Princeton, N.J.

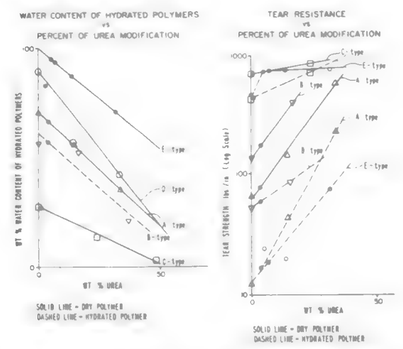
Division of Ser. No. 561,240, Jul. 24, 1990, Pat. No. 5,120,816.

This application Apr. 23, 1992, Ser. No. 872,893

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] C08G *18/30;* A61F *2/14*

U.S. Cl. 528—76 8 Claims



1. A carrier system comprising an active agent the active agent is selected from a medicament, fungicide, pesticide, insecticide, fertilizer, fragrance, flavor, sun-screen, depilatory, cosmetic and a contraceptive and as a carrier vehicle therefor, a substantially non-covalently crosslinked hydrophilic substantially non-foaming polyurethane resin having improved tear strength and improved tensile strength and a urea content of from about 13.6 to 33.7 weight percent consisting essentially of the reaction product of a mixture of:

A. a diol component selected from at least one of

(1) a long chain poly(oxyethylene) glycol, having a molecular weight of from about 2500 to about 12,000

(2) a medium chain poly(oxyethylene) glycol or polyester glycol, having a molecular weight of from about 250 to about 2500,

B. at least one organic chain extender having a molecular weight of less than 250;

C. water; and

D. an organic diisocyanate;

wherein alternative mole ratios of the diol component A and water per mole of chain extender B are as follows:

(i) 0.4 to 0.5 of diol component (1), 1.5 to 10.0 of water;

(ii) 0.1 to 0.25 of diol component (2), 0.05 to 0.72 of water;

(iii) 0.25 to 0.50 of diol component (2), 0.25 to 1.00 of water;

(iv) 0.5 to 0.75 of diol component (2), 0.3 to 3.3 of water; or

(v) 0.06 to 0.07 of diol component (1), 0.1 to 0.2 of diol component (2) and 0.25 to 1.25 of water;

wherein the effective NCO:OH ratio is in the range of 0.85:1 to 1.1:1 and the amount of water in the reaction mixture is in the range of about 1 to about 2.5 wt. %.

5,334,692

HIGHLY BRANCHED POLYPHOSPHONATES BASED ON MELAMINE

Bernhard Hess, Moers; Wolfgang Schulz-Schlitte, Dormagen; Jürgen Kirsch, Leverkusen; Dieter Freitag, Krefeld; Uwe Arndt, Cologne; Hans-Georg Gehrke, Odenthal-Eberich, and Klaus Zander, Essen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 750,063, Aug. 26, 1991, abandoned.

This application Nov. 24, 1993, Ser. No. 158,160

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1990, 4028268; Apr. 23, 1991, 4113157

Int. Cl.[5] C08G *79/04;* C08L *85/02;* C09K *21/14*

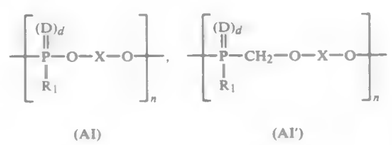
U.S. Cl. 528—126 5 Claims

5. A thermoplastic molding composition comprising:

i) 30 to 98% by weight of polyalkylene terephthalate; and

ii) 2 to 30% by weight of highly branched compounds composed of phosphorus-containing structural units and melamine units, comprising:

A) from 70 to 99.5% by weight of structural units corresponding to formula (AI)or (AI')



(AI) (AI')

wherein

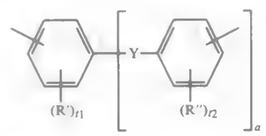
R_1 stands for a C_1–C_{10} alkyl group or an aromatic ring having 6 to 12 carbon atoms,

D stands for oxygen,

d denotes 1,

n stands for integers from 2 to 1000 and

X stands for the following formula



wherein

Y denotes a single bond or C_1–C_3-alkylene, C_5–C_{12}-cycloalkylene, O, S, CO or SO_2,

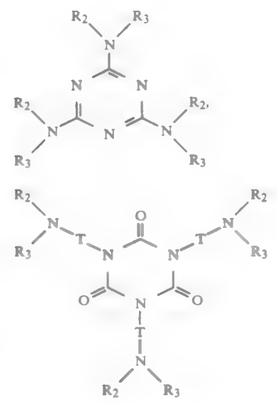
R' and R'' denote, independently, C_1–C_{10}-alkyl, halogen, phenyl or hydrogen,

a stands for zero or 1, and

t_1 and t_2 denote, independently, 0, 1, 2, 3, or 4 or

X denotes a naphthylene or phenolphthalein group, and

B) from 0.1 to 40% by weight of structural units of one or more compounds corresponding to formula (BII) or (BIII)



wherein

R_2 stands for a CH_2—O structural unit or hydrogen

R_3 stands for a CH_2—O structural unit and

T stands for an optionally substituted C_1–C_{10}-alkylene, C_5–C_{10}-cycloalkylene or C_6–C_{10}-arylene group or an optionally substituted diphenylmethane group,

together with structural units derived from polyphenols having 3 or 4 aromatic OH groups.

5,334,693

ARAMID COMPOSITION

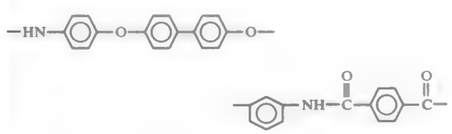
Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1993, Ser. No. 65,970

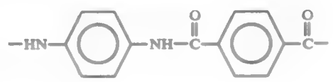
Int. Cl.[5] C08G *69/26*

U.S. Cl. 528—185 11 Claims

1. An aramid, consisting essentially of repeat units of 20 to 80 mole percent of a first unit of the formula



and a second unit of the formula



5,334,694

AROMATIC COPOLYAMIDES, PROCESSES FOR THEIR PREPARATION AND STRUCTURES FORMED THEREFROM

Holger Jung, Niedernhausen; Peter Klein, Wiesbaden, and Karl Heinrich, Grossaitingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 25, 1993, Ser. No. 8,220

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1992, 4202164

Int. Cl.[5] C08G *69/32*

U.S. Cl. 528—185 10 Claims

1. An aromatic copolyamide which is soluble in organic polyamide solvents and contains the recurring structural units of the formulae Ia, Ib, Ic and Id

[—OC—R^1—CO—NH—R^2—NH—] (Ia),

[—OC—R^1—CO—NH—R^3—NH—] (Ib),

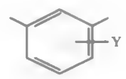
[—OC—R^1—CO—NH—R^4—NH—] (Ic),

[—OC—R^1—CO—NH—R^5—NH—] (Id),

in which 90 to 100 mol % of all radicals R^1, with respect to the amount of these radicals in the copolymer, are a divalent aromatic radical, the valency bonds of which are in the para-position or in a comparable coaxial or parallel position with respect to one another, and which is unsubstituted or substituted by one or two inert radicals, and 0 to 10 mol % of all radicals R^1, with respect to the amount of these radicals in the copolymer, are a divalent aromatic radical, the valency bonds of which are in the meta-position or in a comparable angled position with respect to one another, and which is unsubstituted or substituted by one or two inert radicals,

R^2 is a divalent aromatic radical, the valency bonds of which are in the para-position or in a comparable coaxial or parallel position with respect to one another, and which is unsubstituted or substituted by one or two inert radicals, and

R^3 is a radical of the formula II

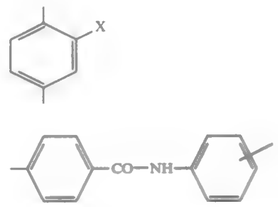


(II)

R^4 is a radical of the formula III

—Ar^1—O—Ar^1—O—Ar^1— (III), and

R^5 is a radical of the formula IV or V or a combination thereof



(IV) (V)

in which Ar^1 has one of the meanings defined for R^2, Y is hydrogen, a halogen atom, a lower alkyl group or a lower alkoxy group, X is a halogen atom, a lower alkyl group or a lower alkoxy group, and the proportion of recurring structural units Ia, Ib, Ic and Id, with respect to the sum of

VOL 1165 ISS 1 AG 2 1994 UMI

these structural units in the copolymer, is within the following limits:
recurring structural unit of the formula Ia: 30 to 70 mol %;
recurring structural unit of the formula Ib: 15 to 40 mol %;
recurring structural unit of the formula Ic: 5 to 30 mol %; and
recurring structural unit of the formula Id: 5 to 30 mol %.

5,334,695

THERMOTROPIC COPOLYESTER, PROCESS FOR PREPARING IT AND USE THEREOF IN THE PREPARATION OF VULCANIZED RUBBERS

Arnaldo Roggero, San Donato Milanese; Ugo Pedretti, Milan; Francesco P. La Mantia, Palermo; Vincenzo Citta', Castel Buono, and Alessandro Lezzi, Milan, all of Italy, assignors to Enitricherche S.p.A., Milan, Italy

Filed Jul. 22, 1992, Ser. No. 918,548
Claims priority, application Italy, Jul. 30, 1991, MI91A002107
Int. Cl.[5] C08G 63/00, 63/02
U.S. Cl. 528—193 12 Claims

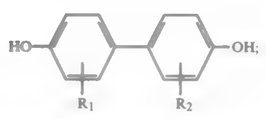
1. A thermotropic copolyester which has a mesophase nematic transition temperature range of from 120° C. to 200° C., consisting essentially of, in its macromolecule, units derived from:

(a) at least one saturated, aliphatic alpha, omega-dicarboxy acid having the general formula I

$$HOOC—(CH_2)_N—COOH \quad (I)$$

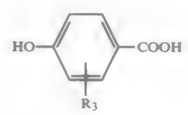
wherein n is 3 to 8;

(b) at least one 4,4'-dihydroxy-biphenyl having the general formula II



II

(c) at least one 4-hydroxy-benzoic acid having the general formula III



III

wherein R_1, R_2 and R_3 are independently hydrogen, a C_1–C_6alkyl, or a C_3–C_6-alkenyl, with the proviso that at least one from said three substituents is an alkenyl; with the following mutual molar ratios between the units;
(a)/(b)=1;
(c)/(a) =1 to 7, with the proviso that, if R_3 is hydrogen, the ratio of (c)/(a) is lower than, or equal to 2.

5,334,696

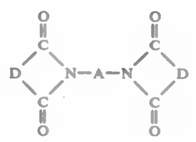
POLYIMIDE RESIN LAMINATES

Larry D. Olson, Viroqua; Jeffrey R. Kamla, and Henry R. Johnson, both of West Salem, all of Wis., assignors to Allied Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 18, 1992, Ser. No. 993,147
Int. Cl.[5] C08G 73/10; C08L 79/08
U.S. Cl. 528—322 9 Claims

1. A thermosetting resin composition consisting essentially of:

(a) a bisimide having the formula:

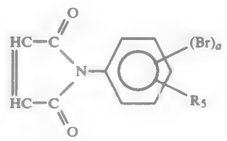


where

A comprises at least one of alkylene radicals having 1 to 20 carbon atoms, cycloalkylene radicals having 4 to 40 carbon atoms, heterocyclic radicals containing at least one of O, S, and N, and phenylene or polycyclic aromatic radicals

D is a divalent radical containing a carbon-carbon double bond;

b) a reactive brominated aromatic compound selected from the group consisting of imides, styrenes, and acrylates; wherein said imides have the formula

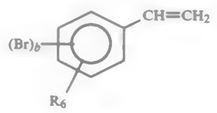


where R_5, is independently selected from the group consisting of

H and lower alkyl

a is an integer from 1 to 5; and

wherein said styrenes have the formula

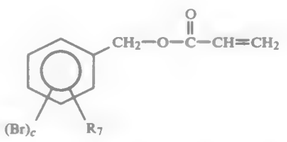


where R_6 is independently selected from the group consisting of

H and lower alkyl

b is an integer from 1 to 5; and

wherein said acrylates have the formula



where R_7 is independently selected from the group consisting of

H and lower alkyl;

c is an integer from 1 to 5;

(c) dicyandiamide; and (d) with or without ethylene bistetrabromophthalimide.

5,334,697

POLYIMIDE GAS SEPARATION MEMBRANES

John W. Simmons, Wilmington, Del., assignor to L'Air Liquide, S.A., Paris, France

Filed Oct. 4, 1993, Ser. No. 130,771
Int. Cl.[5] C08G 73/10; B01D 53/22, 71/64
U.S. Cl. 528—353 6 Claims

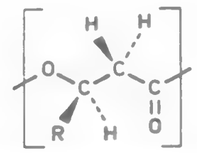
1. A gas separation membrane formed from a polyimide incorporating at least one dianhydride unit based on a 9,9-disubstituted xanthene dianhydride.

5,334,698

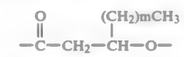
PROCESS FOR PRODUCING POLYESTERS BY FERMENTATION: A PROCESS FOR PRODUCING OPTICALLY ACTIVE CARBOXYLIC ACIDS AND ESTERS: ARTICLES OF MANUFACTURE COMPRISING POLYESTER

Bernard Witholt, Eelde, and Roland G. Lageveen, Groningen, both of Netherlands, assignors to Rijksuniversiteit te Groningen, Broerstraat, Netherlands

Division of Ser. No. 127,216, Dec. 1, 1987, Pat. No. 5,135,859. This application Oct. 2, 1991, Ser. No. 770,180
Claims priority, application Netherlands, Dec. 2, 1986, 8603073
Int. Cl.[5] C08G 63/08, 63/06; C12P 7/62
U.S. Cl. 528—354 6 Claims



1. An optically active polyester compound isolated from *Pseudomonas oleovorans* cells cultured in a nutrient medium in the presence of a carbon source and at least one nutrient essential for growth, said carbon source comprising at least one paraffin product containing 6–7 or 9–12 carbon atoms or at least one paraffin oxidation product containing 6–12 carbon atoms, said polyester compound comprising units other than exclusively 3-hydroxyoctanoate units or 3-hydroxyoctanoate and 3-hydroxyhectanoate units having the structural formula:



wherein m represents an integer of 2–8.

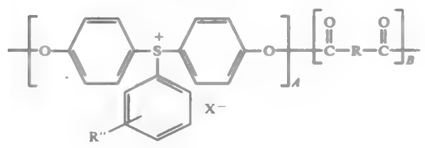
5,334,699

POLYMERIC INITIATOR COMPOUNDS

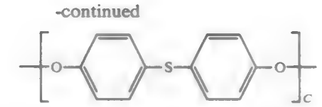
Bing R. Hsieh, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1992, Ser. No. 905,609
Int. Cl.[5] C08G 75/00, 63/02, 63/68
U.S. Cl. 528—373 33 Claims

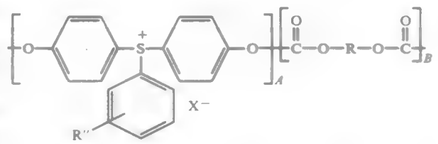
1. A compound of the formula



-continued



wherein X is an anion with weak nucleophilicity, A, B, and C represent the number of monomer units, wherein C may be zero. R is selected from the group consisting of hydrocarbon groups and alkylene ether groups, and R'' is selected from the group consisting of hydrogen, nitro, amide, halide, trimethylsilyl, alkyl groups, and alkoxy groups; or



wherein X is an anion with weak nucleophilicity, A, B, and C represent the number of monomer units, wherein R is selected from the group consisting of hydrocarbon groups and alkylene ether groups, and R'' is selected from the group consisting of hydrogen, nitro, amide, halide, trimethylsilyl, alkyl groups, and alkoxy groups, and wherein the compound contains A monomers, B monomers, and C monomers.

5,334,700

PHOTODEGRADABLE AND BIODEGRADABLE POLYETHYLENE

Richard G. Austin, Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

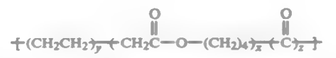
Division of Ser. No. 781,516, Oct. 22, 1991, Pat. No. 5,281,681, Continuation-in-part of Ser. No. 633,352, Dec. 27, 1990, abandoned. This application Nov. 1, 1993, Ser. No. 146,854
Int. Cl.[5] C08G 2/00
U.S. Cl. 528—392 5 Claims

1. A process for making a biodegradable polymer comprising:

mixing ethylene with 2-methylene-1,3-dioxepane and carbon monoxide to form a reaction mixture;

heating the reaction mixture to about 150° to 260° C., at a pressure of about 350 to 3500 kg/cm^2;and

reacting said mixture in the presence of a free radical initiator to form a biodegradable and photodegradable polymer having a molecular weight of greater than 7,000, said polymer having repeating units represented by the formula



where x, y and z are integers.

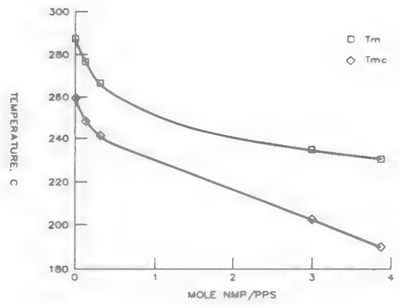
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,701

PROCESS FOR THE REMOVAL OF LOWER MOLECULAR WEIGHT FRACTIONS OF POLY(ARYLENE SULFIDE) POLYMERS

Carlton E. Ash, Sugarland, Tex.; Jon F. Geibel; Randy L. Hagenson, both of Bartlesville, Okla., and David A. Soules, Middletown, R.I., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 23, 1992, Ser. No. 965,489
Int. Cl.[5] C08G 75/14
U.S. Cl. 528—486 10 Claims



1. A method for selectively removing a lower molecular weight fraction from a poly(arylene sulfide) polymer comprising a lower molecular weight fraction and a higher molecular weight fraction, which method comprises:

a) contacting said polymer with a polar organic compound, and a promoter selected from the group consisting of water, an alkali metal salt, and mixtures thereof, wherein said promoter is soluble in said polar organic compound, at a temperature sufficient for the formation of a less dense polymer-lean liquid phase comprising a portion of said lower molecular weight fraction and a more dense polymer-rich liquid phase comprising essentially all of the higher molecular weight fraction of said poly(arylene sulfide) polymer;

b) separating and thus removing said polymer-lean phase from said polymer-rich phase; and

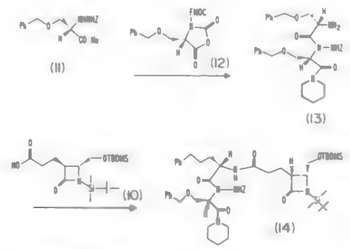
c) recovering said higher molecular weight fraction of said polymer from said polymer-rich phase.

5,334,702

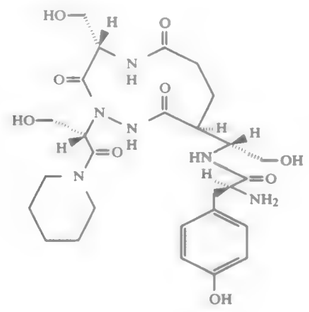
COMPOSITIONS WHICH ARE IMMUNOLOGICALLY CROSSREACTIVE WITH ANTIBODIES AND PREPARATIVE METHODS THEREFOR

Mark I. Greene, Penn Valley; Horacio U. Saragovi, Philadelphia, both of Pa., and Michael Kahn, Chicago, Ill., assignors to University of Illinois, Champaign, Ill. and Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 674,866, Mar. 25, 1991, abandoned, and Ser. No. 703,465, May 21, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 933,013
Int. Cl.[5] C07K 7/02, 7/50; C07D 245/00
U.S. Cl. 530—323 6 Claims



1. A compound having the structure:



5,334,703

CHROMOGENIC SUBSTRATE

Salo Arielly, Kungsbacka, Sweden, assignor to Chromonogenix AB, Molndal, Sweden

Filed Jun. 11, 1992, Ser. No. 859,717
Claims priority, application Sweden, Dec. 12, 1989, 8904188
Int. Cl.[5] C07K 5/00, 5/10
U.S. Cl. 530—330 8 Claims

1. Peptide derivatives having the general formula:

R_1-A_1-A_2-A_3-A_4-R_2 or its salt

wherein

R_1=H or a protective group

A_1=H, Ile, Leu or Val

A_2=Glu, Asp, Ser, or Thr

A_3=Gly or Glyc

A_4=Arg or Lys

R_2=is a group that upon enzymatic hydrolysis gives para-nitroaniline (pNA),

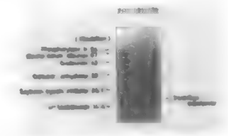
with the proviso that A_3 is Gly when A_4 is Lys and Glyc when A_4 is Arg.

5,334,704

GLYCOPROTEIN ISOLATED FROM GANODERMA HAVING IMMUNOSUPPRESSIVE ACTIVITY

Hajime Tsunoo, Tokyo; Kousuke Kino, and Akio Yamashita, both of Odawara, all of Japan, assignors to Meiji Milk Products Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 187,501
Claims priority, application Japan, Apr. 28, 1987, 62-106025
Int. Cl.[5] A61K 37/02; C07K 3/02, 15/10, 15/14
U.S. Cl. 530—371 10 Claims



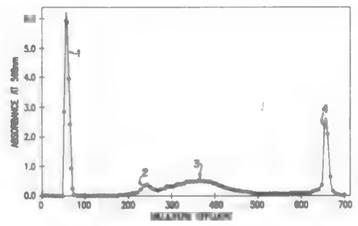
1. A substantially pure glycoprotein isolated from *Ganoderma lucidum* mycelia, being free of human hemagglutination ability, and having immunosuppressive activities and a molecular weight of 16,000–18,000 as measured by SDS gel electrophoresis or 12,000–16,000 as measured by tricin-SDS gel electrophoresis.

5,334,705

BENZENETRICARBOXYLATE DERIVATIVE-CROSSLINKED LOW OXYGEN AFFINITY HEMOGLOBIN

Joseph Bonaventura; Marius Brouwer, and Robert E. Cashon, all of Beaufort, N.C., assignors to Duke University, Durham, N.C.

Filed Aug. 15, 1991, Ser. No. 745,637
Int. Cl.[5] A61K 37/00, 35/14, 37/02; C07K 13/00
U.S. Cl. 530—385 9 Claims



1. Stroma-free tetrameric mammalian hemoglobin having an affinity for oxygen which is lower than that of non-crosslinked hemoglobin A, and which is crosslinked with a benzenetricarboxylate derivative, which derivative has at least two reactive sites capable of covalent bonding with and crosslinking of two peptide chains.

5,334,706

ADMINISTRATION OF LOW DOSE HEMOGLOBIN TO INCREASE PERFUSION

Robert J. Przybelski, Antioch, Ill., assignor to Baxter International, Deerfield, Ill.

Filed Jan. 30, 1992, Ser. No. 528,429
Int. Cl.[5] A61K 35/14, 37/00
U.S. Cl. 530—385 1 Claim

1. A method of increase perfusion in a mammal comprising administering intramolecularly or intermolecularly crosslinked stroma-free hemoglobin at a dose ranging from 30 to 2500 mg per kg of body weight.

5,334,707

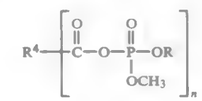
USE OF ACYL PHOSPHATE ESTERS IN THE MODIFICATION OF HEMOGLOBIN

Ronald H. Kluger, 14 Bradgate Road, Don Mills, Ontario, Canada M3B 1J7 , and Andrew S. Grant, Via Oronco 27, Varese, 21100, Italy

Division of Ser. No. 493,524, Mar. 14, 1990, abandoned. This application Sep. 15, 1992, Ser. No. 944,914
Int. Cl.[5] C07K 13/00; A61K 35/14
U.S. Cl. 530—385 12 Claims

1. A process of preparing a modified, crosslinked hemoglobin comprising:

(a) crosslinking hemoglobin with an acyl phosphate ester crosslinking agent of the formula:



where n is an integer from 2–5;

R is methyl, ethyl, benzyl or an alkali metal counterion; and R^4 is a linear or branched alkyl, alkenyl, alkynyl, cyclic alyl, cyclic alkenyl, aryl, arylalkenyl, arylalkyl or aryl substituted by alkyl, alkenyl or alkynyl; and

(b) purifying the resulting crosslinked hemoglobin.

5,334,708

METHOD FOR RADIOLABELING MONOVALENT ANTIBODY FRAGMENTS

Chien-Hsing Chang, Downingtown, Pa., and Anastasia L. Jones, Clinton, N.J., assignors to Immunomedics, Inc., Warren, N.J.

Continuation of Ser. No. 518,707, May 7, 1990. This application Dec. 8, 1992, Ser. No. 987,563
Int. Cl.[5] C07K 15/28
U.S. Cl. 530—391.5 22 Claims

1. A method for producing a radionuclide-labeled monovalent antibody fragment which comprises the steps of:

(a) cleaving a divalent $F(ab)_2$ or $F(ab')_2$ antibody fragment using sulfite or meta-bisulfite ions to produce monovalent Fab or Fab' antibody fragments having free sulfhydryl and S-sulfonate groups;

(b) contacting said monovalent Fab or Fab' antibody fragments with a sufficient amount of stannous ions to reduce said S-sulfonate groups to free sulfhydryl groups and to reduce radiopertechnetate or radioperrhenate ions added subsequently; and

(c) contacting said monovalent Fab or Fab' antibody fragments having free sulfhydryl groups with radiopertechnetate or radioperrhenate ions, without removing excess sulfite or meta-bisulfite ions, to produce radionuclide-labeled monovalent Fab or Fab' antibody fragments having reduced radiopertechnetate or radioperrhenate ions bound to said sulfhydryl groups.

5,334,709

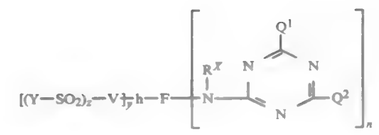
REACTIVE DYESTUFFS CONTAINING A TRIAZINYLAMINO GROUP AND ONE OR TWO GROUPS OF THE VINYLSULFONE SERIES

Jörg Dannheim, Frankfurt am Main, and Werner H. Russ, Flörsheim am Main, both of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 993,360
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142420; Feb. 21, 1992, 4205326; Dec. 15, 1992, 4204599
Int. Cl.[5] C09B 62/503; D06P 1/384
U.S. Cl. 534—618 12 Claims

1. A dyestuff of the formula

VOL 1165 ISS 1 AG 2 1994 UMI



in which

F is the radical of a monoazo, disazo or polyazo dyestuff, or of a heavy metal complex azo dyestuff derived therefrom, or of an anthraquinone, phthalocyanine, formazan, azomethine, dioxazine, phenazine, stilbene, triphenylmethane, xanthene, thioxanthene, nitroaryl, naphthoquinone, pyrenequinone or perylenetetracarbimide dyestuff;

R^x is hydrogen or alkyl of 1 to 4 carbon atoms unsubstituted or substituted by halogen, hydroxy, cyano, alkoxy of 1 to 4 carbon atoms, alkoxycarbonyl of 2 to 5 carbon atoms, carboxy, sulfamoyl, sulfo or sulfato;

n is the number 1 or 2;

V is a direct bond or an alkylene or an optionally substituted arylene, or is an alkylene-arylene or arylene-alkylene or alkylene-arylene-alkylene or arylene-alkylene-arylene, or is an arylene-arylene which is interrupted by a hetero group, and the alkylenes of these groups are those having 1 to 8 carbon atoms and are unsubstituted or substituted, and the arylenes of these groups are unsubstituted or substituted phenylenes or naphthylenes, and the alkylenes are not or are interrupted by one or more hetero groups and the alkylene and arylene moieties in the combined alkylenes-arylenes are not interrupted or are separated from one another by a hetero group;

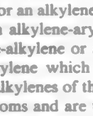
y is the number 1 or 2;

z is the number 1 or 2;

h is an nitrogen atom, if y is 2, or, if y is 1, is a group of the formula —NH—, —N(R)—, where R has one of the abovementioned meanings, or is —NH—CO—NH—, —NH—CO— or —CO—NH—, or is a direct bond;

Y is vinyl, or is ethyl which contains, in the β-position, a substituent which is eliminated under alkaline conditions;

Q^1 is a group of the general formula (2A)



(2A)

in which W^R and W^S, together with the nitrogen atom, form a heterocyclic radical which is built up from an alkylene of 3 to 8 carbon atoms, or form a heterocyclic radical which is built up from a further hetero group selected from oxygen and a group of the formula —NH—, and two alkylenes of 1 to 4 carbon atoms;

Q^2 is phenylamino substituted by sulfo in the phenyl.

5,334,710

COMPOUNDS HAVING NON-LINEAR OPTICAL PROPERTIES

Markus Ahlheim, Hartheim, and Friedrich Lehr, Efringen Kirchen, both of Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

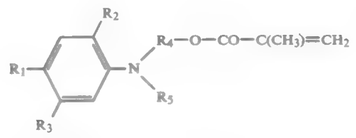
Continuation of Ser. No. 875,845, Apr. 29, 1992, abandoned. This application Apr. 21, 1993, Ser. No. 50,941

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1991, 4114049

Int. Cl.[5] **C07C** *245/08*

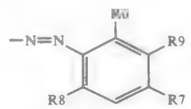
U.S. Cl. 534—852 **9 Claims**

1. A compound, free of any water soluble groups of formula I



(I)

in which R_1 is a group of formula a



(a)

R_2, when R_1 is a group of formula a), is selected from hydrogen and C_{1-4}alkoxy;

R_3, when R_1 is a group of formula a) or formula b), is selected from hydrogen, C_{1-4}alkyl, C_{1-4}alkoxyl and C_{1-4}alkylcarbonylamino and

R_4 is a C_{2-6}alkylene group;

R_5, when R_1 is a group of formula a) or nitro, is selected from benzyl and phenylethyl, the phenyl group of benzyl or phenylethyl having optionally 1 or 2 substituents selected from C_{1-4}alkyl, C_{1-4}alkoxy and halogen, and

R_6 is hydrogen, halogen or cyano;

R_7 is nitro, cyano or $—C(R_{14})=C(R_{15})(R_{16})$;

R_8 is hydrogen, halogen, cyano or nitro;

R_9 is hydrogen or when R_6 is hydrogen and R_8 is nitro, R_9 is hydrogen or SCN;

R_{14} is hydrogen or cyano; and R_{15} and R_{16} independently are cyano or C_{1-10}alkoxycarbonyl.

5,334,711

SYNTHETIC CATALYTIC OLIGONUCLEOTIDE STRUCTURES

Brian Sproat, Heidelberg; Angus Lamond, Wiesenbach, and Giovanni Paolella, Gaiberg, all of Fed. Rep. of Germany, assignors to Europaisches Laboratorium fur Molekularbiologie (EMBL), Heidelberg, Fed. Rep. of Germany

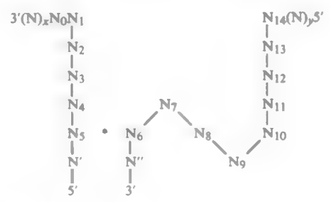
Filed Jun. 22, 1992, Ser. No. 901,708

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1991, 4120406; May 15, 1992, 4216134

Int. Cl.[5] **C07H** *17/00, 23/00;* **A01N** *43/04;* **A61K** *31/70*

U.S. Cl. 536—24.5 **21 Claims**

1. An oligonucleotide structure with a catalytically active center which has a hammerhead structure, having the general structural formula (II):



(II)

wherein

x and y can be the same or different and $x \geq 1$ and $y \geq 2$,

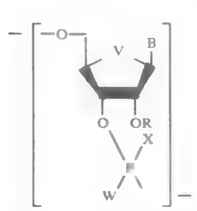
N_5 and N_6 are in each case nucleotides which are complementary to one another and • represents a base pairing,

N′ and N″ either represent two nucleotide sequences which contain nucleotides which are at least partially complementary to one another so as to enable a stable base pairing between the two nucleotide sequences or

N′ and N″ together represent a single nucleotide sequence whereby at least part of the sequence can form a double-stranded stem at least part of the sequence can form a double-stranded stem by base pairing between complementary nucleotides, and in which, at least one additional nucleotide N can be inserted after N_7 or/and N_9;

the residue R in formula (I) is different from hydrogen in at least one of the nucleotides N_2, N_3, N_5, N_6, N_7, N_9, N_{10}, N_{12}, N_{13} and N_{14} in formula (II), and

N in each case represents a nucleotide according to the general structural formula (I)



(I)

wherein

B represents a nucleoside base which is selected from the group consisting of adenin-9-yl (A), cytosin-1-yl (C), guanin-9-yl (G), uracil-1-yl (U), uracil-5-yl (ψ), hypoxanthin-9-yl (I), thymin-1-yl (T) and 2-aminoadenin-9-yl,

V in each nucleotide is independently an O or a CH_2 group,

X and W can in each nucleotide be the same different and are independently O, S, NH_2, alkyl or alkoxy groups with 1 to 10 carbon atoms, and

R is hydrogen or a straight-chained or branched alkyl, alkenyl or alkinyl group with 1 to 10 carbon atoms which is unsubstituted or substituted with halogen, cyano, isocyano, nitro, amino, carboxyl, hydroxyl or-/and mercapto groups.

5,334,712

CYCLIC HYDROCARBONS WITH AN AMINOALKYL SIDECHAIN

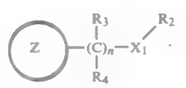
Roy A. Johnson, Kalamazoo; Gordon L. Bundy, Portage; Gilbert A. Youngdale, Portage; Douglas R. Morton, Portage, and Donald P. Wallach, deceased, late of Richland, all of Mich. by Vera M. Wallach, Legal Representative , assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,721, Feb. 20, 1991, Pat. No. 5,196,524, which is a division of Ser. No. 394,396, Aug. 15, 1989, abandoned, which is a division of Ser. No. 117,851, Jun. 16, 1987, Pat. No. 4,917,826, which is a continuation-in-part of Ser. No. 843,120, Mar. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 788,995, Oct. 18, 1985, abandoned. This application Nov. 16, 1992, Ser. No. 976,751

Int. Cl.[5] **C07J** *41/00, 43/00*

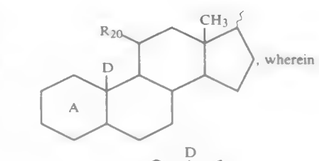
U.S. Cl. 540—112 **5 Claims**

1. A compound of the formula



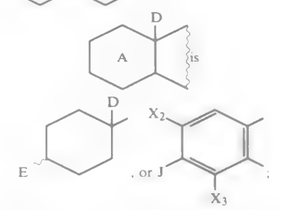
Formula I

wherein Z is



Formula II

wherein



Formula III

wherein the dashed line indicates that the 5-6 bond is saturated or unsaturated;

wherein D is CH_3;

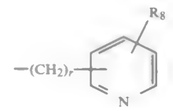
wherein E and J are hydrogen, or R_5O—;

wherein R_5 is hydrogen, C_1–C_3 alkyl, or $HOCH_2CH(OH)CH_2$—;

wherein X_2 and X_3 are hydrogen;

wherein X_1 is NR_1;

wherein R_1 is



-(phenyl)-CH_2-(3-pyridinyl)

wherein R_8 is hydrogen;

wherein R_2 is hydrogen, or Cl_1–C_3 alkyl;

wherein n is 0;

wherein r is 1–8; and pharmacologically acceptable salts thereof.

5,334,713

N-LONG CHAIN ACYL NEUTRAL AMINO ACID ESTERS

Tatsuya Hattori, and Naoko Mikami, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,310

Claims priority, application Japan, Oct. 21, 1991, 3-272455

Int. Cl.[5] **C07J** *41/00, 43/00*

U.S. Cl. 540—113 **4 Claims**

1. N-long chain acyl neutral amino acid esters of the general formula (I):

wherein X represents an ester-forming residue of a sterol; COR represents a long chain acyl group having 8 to 22 carbon atoms; R_1 and R_2 are identical or different from each other, and each represents a hydrogen atom or a straight chain or branched alkyl group having 1 to 4 carbon atoms, or R_1 and R_2 together form an alkylene group; and n represents 0, 1 or 2.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,714

METHOD FOR PREPARING ALKOXYPHTHALOCYANINE

Takahisa Oguchi; Kenichi Sugimoto; Shin Aihara; Hisato Itoh, all of Yokohama; Mansuke Matsumoto, Itami; Toshihiro Masaoka, and Masakazu Nakamura, both of Osaka, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo and Yamamoto Chemicals, Incorporated, Yao, both of Japan

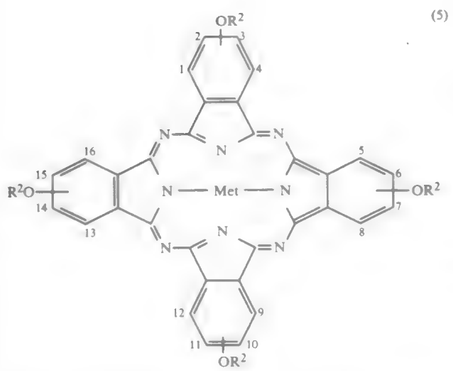
Division of Ser. No. 813,179, Dec. 24, 1991, Pat. No. 5,220,010. This application Mar. 2, 1993, Ser. No. 25,064

Claims priority, application Japan, Dec. 26, 1990, 2-413909; Jul. 17, 1991, 3-176604

Int. Cl.[5] C09B *47/067*; C07F *15/04, 15/06, 15/02*

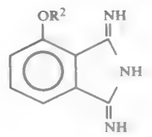
U.S. Cl. 540—143 9 Claims

1. A method for preparing an alkoxyphthalocyanine represented by the formula (5):



(5)

wherein each of R^2s is independently a secondary alkyl group having 3 to 20 carbon atoms, Mt is a divalent metal atom or metal oxide, and the substitution positions of -OR^2s are the 1- or 4-position, and 5- or 8-position, and 9- or 12-position, and the 13- or 16-position, which comprises the step of reacting one to four kinds of diiminoisoindolines represented by the formula (4):



(4)

wherein R^2 is a secondary alkyl group having 3 to 20 carbon atoms, with a metal or a metal derivative in the presence or absence of an organic base at a temperature of from 150° to 300° C. in an aliphatic alcohol solvent having a boling point of 150° C. or more and 6 or more carbon atoms.

5,334,715

1-PIPERAZINYL-2-BUTENES AND -2-BUTYNES

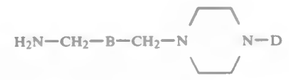
Helen H. Ong, Whippany; Nicholas J. Hrib, Somerville, both of N.J.; Joseph Perez, Amherst, N.H., and John G. Jurcak, Somerset, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 875,477, Apr. 29, 1992, Pat. No. 5,194,436, which is a division of Ser. No. 639,639, Jan. 10, 1991, Pat. No. 5,130,315. This application Feb. 1, 1993, Ser. No. 986,415

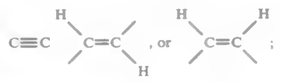
Int. Cl.[5] C07D *295/00, 403/00, 413/00, 401/00*

U.S. Cl. 544—392 6 Claims

1. A compound of the formula



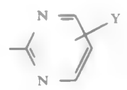
wherein B is a group of the formula



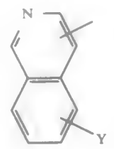
D is a group of the formula



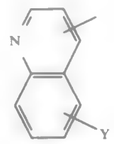
wherein Y is hydrogen, loweralkyl, loweralkoxy, halogen, or trifluoromethyl; a group of the formula



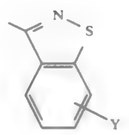
wherein Y is as above; a group of the formula



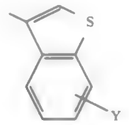
wherein Y is as above; a group of the formula



wherein Y is as above; a group of the formula



wherein Y is as above; a group of the formula



wherein Y is as above; the solid line (—) refers to point of attachment of the group to the indicated member of the formula; the optical isomers; or a pharmaceutically acceptable salts thereof.

5,334,716

HETEROCYCLIC DERIVATIVES

Satoshi Okada; Kozo Sawada; Akio Kuroda, all of Tsukuba; Shinya Watanabe, and Hirokazu Tanaka, both of Tsuchiura, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

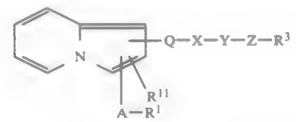
Filed Jun. 2, 1992, Ser. No. 892,453

Claims priority, application United Kingdom, Jun. 17, 1991, 9113027; Sep. 30, 1991, 9120764; Nov. 15, 1991, 9124345; Feb. 21, 1992, 9203809

Int. Cl.[5] C07D *417/07, 405/14*; A61K *31/41*

U.S. Cl. 546—112 12 Claims

1. A compound of the formula:



wherein

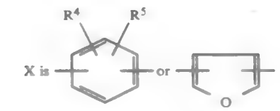
R^1 is carboxy or pharmaceutically acceptable protected carboxy,

R^3 is phenyl substituted by lower alkyl, mono- or di- or triphenyl(lower)alkyl which may be substituted by one to four substituents selected from the group consisting of lower alkyl, halogen, cyano, carboxy, mono- or di- or triphenyl(lower)alkoxycarbonyl, mono- or di(lower)alkylcarbamoyl, phenylcarbamoyl, lower alkylphenylcarbamoyl, lower alkoxy, hydroxy(lower)alkyl, lower alkanoyloxy(lower)-alkyl, cyclo(lower)alkyl(lower)alkyl, lower alkenyl and lower alkynyl, lower alkylcarbamoyl(-lower)alkyl, or lower alkylphenylcarbamoyl(lower)alkyl,

R^{11} is hydrogen or lower alkyl,

A is lower alkylene which may be substituted by oxo, or lower alkenylene,

Q is carbonyl or lower alkylene,

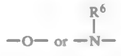


in which R^4 is hydrogen or lower alkyl, and

R^5 is hydrogen, lower alkyl or Y—Z—R^3,

Y is bond or lower alkylene,

Z is lower alkylene, lower alkenylene,



in which R^6 is hydrogen, lower alkyl, mono- or di- or triphenyl(lower)alkyl which may be substituted by lower alkyl, or lower alkoxycarbonyl,

and pharmaceutically acceptable salts thereof.

5,334,717

INTERMEDIATES FOR 2-AMINO AND AZIDO DERIVATIVES OF 1,5-IMINOSUGARS

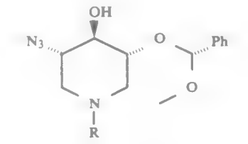
Ish K. Khanna, Vernon Hills; Richard A. Mueller, Glencoe, and Richard M. Weier, Lake Bluff, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 861,696, Apr. 1, 1992, Pat. No. 5,202,251. This application Jan. 8, 1993, Ser. No. 2,380

Int. Cl.[5] C07D *491/056*

U.S. Cl. 546—116 2 Claims

1. A compound of the formula



wherein R = H, n—C_4H_9, $CH_2CH(C_2H_5)_2$ and $(CH_2)_3CF_3$.

5,334,718

CHEMICAL PROCESS AND INTERMEDIATES USED THEREIN

Andrew P. Thomas, Congleton; David M. G. Martin, Stockport; Stanley A. Lee, and Lyn Powell, both of Macclesfield, all of England, assignors to Zeneca Limited, London, England

Filed Jan. 25, 1993, Ser. No. 7,930

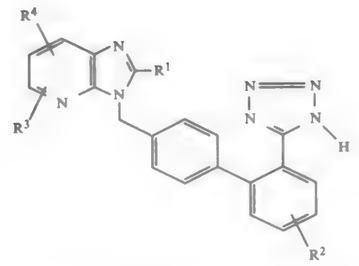
Claims priority, application United Kingdom, Jan. 28, 1992, 9201715.1

Int. Cl.[5] C07D *471/04*

U.S. Cl. 546—118 11 Claims

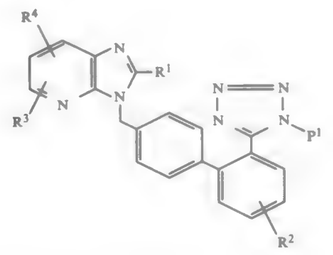
1. A process for the manufacture of an imidazo [4,5-b]pyridine of the formula I

VOL 1165 ISS 1 AG 2 1994 UMI



I

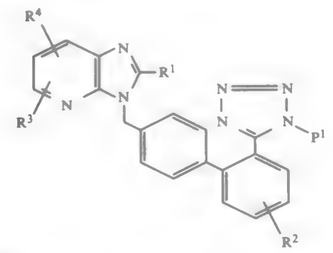
or a physiologically acceptable salt thereof, wherein R^1 is (1–6C)alkyl; R^2 is hydrogen or halogeno; and R^3 and R^4 are selected from hydrogen, halogeno, (1–6C)alkyl, (1–6C)alkoxy, hydroxymethyl and hydroxy; which is characterised in that a compound of the formula II



II

wherein P^1 is an electron-deficient phenyl group or is a pyridyl or pyrimidyl group, is reacted with a base selected from an alkali metal hydroxide, (1–12C)alkanolate, (1–12C)alkanethiolate, phenolate, thiophenolate and diphenylphosphide, wherein any phenyl ring of the latter three groups may optionally bear a (1–4C)alkyl, (1–4C)alkoxy or halogeno substituent; whereafter: when a physiologically acceptable salt of a compound of formula I is required, it is obtained by reaction with the appropriate acid or base affording a physiologically acceptable ion, or by any other conventional salt formation procedure; and when an optically active form of a compound of formula I is required, the process is carried out with an optically active form of the starting material of formula II, or a racemic form of a compound of formula I is resolved using a conventional procedure; and wherein R^1, R^2, R^3, R^4 and P^1 have any of the meanings defined above.

11. A compound of the formula II



II

in either a racemic or optically active form; wherein P^1 is an electron-deficient phenyl group or is a pyridyl or pyrimidyl group; and wherein R^1 is (1–6C)alkyl; R^2 is hydrogen or halogeno; and R^3 and R^4 are selected from hydrogen, halogeno, (1–6C) alkyl, (1–6C) alkoxy, hydroxymethyl and hydroxy.

5,334,719

BICYCLIC(AZAAROMATIC) INDOLES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

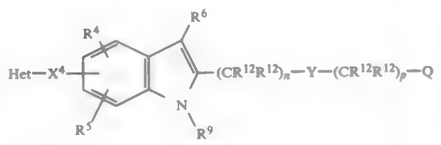
Richard Frenette, Laval, Canada, assignor to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Jun. 17, 1992, Ser. No. 899,399

Int. Cl.[5] C07D *401/02, 401/14, 409/14;* **A61K** *31/40*

U.S. Cl. 546—174 9 Claims

1. A compound of the formula I:



I

wherein:

Het is $ArR^1R^2R^3$;

Ar is quinolinyl, the tetrahydro derivative thereof, and the N-oxide thereof;

R^1, R^2, R^3, R^4, R^5, and R^{11} are independently hydrogen, halogen, perhalo lower alkenyl, lower alkyl, lower alkenyl, lower alkynyl, $—CF_3$, —CN, $—NO_2$, $—N_3$, $—C(OH)R^{12}R—S(O)_2R^{15}$, $—S(O)_2NR^{16}R^{16}$, $—OR^{16}$, $—NR^{16}R^{16}$, $—NR^{13}CONR^{16}R^{16}$, $—COR^{17}$, $CONR^{16}R^{16}$, or $—(CH_2)_rR^{22}$;

R^6 is hydrogen, $—CH_3$, CF_3, —C(O)H, $X^1—R^7$ or $X^2—R^8$;

R^7 and R^{10} are independently alkyl, alkenyl, $—(CH_2)_uPh(R^{11})_2$ or $—(CH_2)_uTh(R^{11})_2$;

R^8 is $—CF_3$ or R^7;

R^9 is hydrogen or $X^3—R^{10}$;

each R^{12} is independently hydrogen or lower alkyl, or two R^{12}'s on same carbon atom are joined to form a cycloalkyl ring of 3 to 6 carbon atoms;

R^{13} is hydrogen, lower alkyl or $—CH_2R^{22}$;

R^{14} is lower alkyl or $—(CH_2)_rR^{22}$;

R^{15} is $—CF_3$ or R^{14};

R^{16} is hydrogen, OH, $—COR^{17}$, R^{14}, or two R^{16}'s on the same nitrogen may be joined to form a monocyclic heterocyclic ring of 4 to 6 atoms containing one N;

R^{17} is hydrogen, $—CF_3$, lower alkyl, lower alkenyl, lower alkynyl or $—(CH_2)_rR^{22}$;

R^{18} is $—(CH_2)_s—C(R^{19}R^{19})—(CH_2)_s—R^{20}$ or $—CH_2CONR^{16}R^{16}$;

R^{19} is hydrogen or lower alkyl;

R^{20} is

a) 2,5-dioxo-1-pyrrolidinyl, (3-pyridinylcarbonyl) amino, 1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl, 1,3-dihydro-2H-isoindol-2-yl, 2,4-imidazolinedion-1-yl, 2,6-piperidinedion-1-yl, 2-imidazolyl, 2-oxo-1,3-dioxolen-4-yl, piperidin-1-yl, morpholin-1-yl, or piperazin-1-yl, or

b) the radical W-R^{21};

R^{21} is alkyl or $—COR^{24}$;

R^{22} is phenyl substituted with 1 or 2 R^{23} groups;

R^{23} is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, lower alkylcarbonyl, $—CF_3$, —CN, $—NO_2$ or $—N_3$;

R^{24} is alkyl, cycloalkyl, or a monocyclic group of 5 to 7 members containing 1 heteroatom selected from N, S or O;

R^{25} is the residual structure of a standard amino acid, or R^{19}, R^{25} together with the N to which they are attached from a proline residue;

R^{26} is hydrogen or lower alkyl;

R^{27} is lower alkyl or R^{26} and R^{27} on the same carbon are joined to form a cycloalkyl ring of 3 to 6 carbon atoms;

m is 1 to 3;
n is 0 to 3;
p is 1 to 3 when m is 1;
p is 0 to 3 when m is 0;
r is 0 to 2;
s is 0 to 3;
t is 0 to 2;
u is 0 to 3;
W is O, S or NR^{16}
X^1 is O or NR^{16};
X^2 is CO, $CR^{12}R^{12}$, S, S(O), or $S(O)_2$;
X^3 is CO, $CR^{12}R^{12}$, $S(O)_2$, or a bond;
X^4 is $CR^{26}=CR^{27}$, $CR^{27}=R^{26}$, $CR^{26}R^{27}Y^1$, or $Y^1CR^{27}R^{26}$;
Y is X^1, X^2, O—NR^{16}, NR^{16}—O or a bond;
Y^1 is O, S, $S(O)_2$, or $CR^{26}R^{26}$;
Q is $—CO_2R^{13}$, $—CONHS(O)_2R^{15}$, $—NHS(O)_2R^{15}$, CN, $—S(O)_2NHR^{16}$, $—CONR^{16}R^{16}$, $—CO_2R^{18}$, $—CONR^{19}R^{25}$, $—CR^{12}R^{12}OH$, or 1H— or 2H-tetrazol-5-yl, $—NR^{16}R^{16}$, $—NR^{16}CONR^{16}R^{16}$, $—C(=NR^{16})R^{17}$, $—NR^{16}(CH_2)_mNR^{16}R^{16}$, $—N(R^{16})(CH_2)_mNR^{16}CONR^{16}R^{16}$, $—CON(R^{16})(CH_2)_m—NR^{16}R^{16}$, or $—CON(R^{16}(CH_2)_mNR^{16}CONR^{16}R^{16}$;
or a pharmaceutically acceptable salt thereof.

5,334,720

DIPHENYL-1-(AMINOALKYL)-2-PIPERIDINONE AND -2-PYRROLIDINONE DERIVATIVES HAVING ANTICONVULSANT PROPERTIES

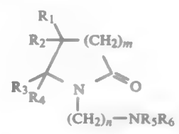
Richard J. Schmiesing, Pittsford, and Robert J. Murray, Rochester, both of N.Y., assignors to Fisons Corporation, Rochester, N.Y.

Filed Mar. 7, 1991, Ser. No. 666,120

Int. Cl.[5] C07D *401/00*

U.S. Cl. 546—208 4 Claims

1. A compound of formula I



wherein

R_1 and R_2 independently represent phenyl or phenyl substituted by one or more groups selected from halogen, hydroxyl, nitro, amino, C_{1-6} alkyl and C_{1-6} alkoxy;

R_3 and R_4 independently represent hydrogen or C_1–C_6 alkyl;

R_5 and R_6 independently represent hydrogen, C_{1-6} alkyl or C_{3-6} cycloalkyl, or R_5 and R_6 together with the nitrogen form a $C_{4-6}N$ heterocycle;

m represents an integer from 1–2; and

n represents an integer from 1–3;

or a pharmaceutically acceptable acid addition salt thereof.

5,334,721

2,4-DIMETHYL-5-OXOHEXANE AND A METHOD OF USE THEREFOR

Anna M. C. F. Castelijns, Stein; Hearicus J. Arts, Sittard, and Richard Green, Geleen, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Division of Ser. No. 902,785, Jun. 24, 1992, Pat. No. 5,254,712, which is a continuation of Ser. No. 638,397, Jan. 7, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 98,909

Claims priority, application Netherlands, Jan. 6, 1990, 9000034

Int. Cl.[5] C07D *213/09, 213/12*

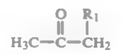
U.S. Cl. 546—251 14 Claims

1. A process for the preparation of a 2-methyl-3,5-dialkylpyridine represented by the formula:

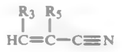


wherein R_1 and R_5 are independently of one another a C_1 to C_{20} alkyl group comprising:

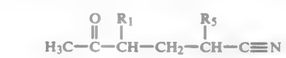
allowing a methyl ketone represented by the formula:



wherein R_1 is as defined above, and an α,β-unsaturated nitrile represented by the formula:



wherein R_3 is H and R_5 is as defined above, to react in the presence of a catalytically effective amount of a strong base which is sufficient to promote the formation a 2,4-dialkyl-5-oxohexane nitrile represented by the formula:



wherein R_1 and R_5 are as defined above, in high yield and in the substantial absence of undesired isomers; and catalytically cyclizing and dehydrogenating the 2,4-dialkyl-5-oxohexane nitrile whereby the 2-methyl-3,5-dialkyl pyridine is obtained.

5,334,722

FUNGICIDES

Patrick J. Crowley, Crowthorne; Alasdair T. Glen, Macclesfield; Rosamund A. Spence, Warminster, and Kevin R. Lawson, High Wycombe, all of England, assignors to Imperial Chemical Industries PLC, London, England

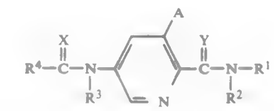
Continuation of Ser. No. 736,171, Jul. 26, 1991, abandoned. This application Apr. 7, 1992, Ser. No. 864,991

Claims priority, application United Kingdom, Jul. 27, 1990, 9016378

Int. Cl.[5] C07D *213/26, 213/38, 213/50, 213/61*

U.S. Cl. 546—289 10 Claims

1. A compound of the formula (I)



A is fluoro, chloro, bromo, iodo, C_{1-4} alkyl, C_{1-4} alkoxy, halo(C_{1-4})alkyl, C_{1-4} alkoxylmethyl, C_{1-4} alkylthiomethyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxycarbonyl, C_{1-4} alkylcarbonyl, formyl, cyano, nitro or C_{1-4} alkylthio; R^1 and R^2 are independently C_{1-4} alkyl, C_{3-6} alkenyl optionally substituted with halogen, C_{3-6} alkynl optionally substituted with halogen C_{1-4} alkoxy, halo(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, C_{1-4} alkoxy(C_{1-4})alkyl, C_{1-4} alkylthio(C_{1-4})alkyl or cyano; R^3 is H; R^4 is C_{2-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, or C_{3-6} cycloalkyl, all of which may be optionally substituted with halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, cyano, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, azido, nitro, isocyano or NR^5R^6 where R^5 and R^6 are independently H, C_{1-4} alkyl, C_{1-4}

VOL 1165 ISS 1 AG 2 1994 UMI

alkylcarbonyl, or formyl; and X and Y are independently oxygen or sulphur.

5,334,723

2-PIPERIDINECARBOXYLIC ACID DERIVATIVE, ONCOGENE SUPPRESSOR AND AGENT FOR OBTAINING REVERTANTS

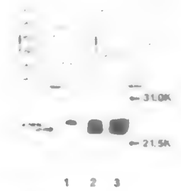
Tsuneo Okonogi; Osamu Makabe; Yuichi Yamamoto; Osamu Itoh; Tsutomu Tsuruoka; Takayuki Usui; Seiji Shibahara; Kozo Nagaoka; Shigeharu Inouye, all of Kanagawa; Nobuko Okada, Tokyo, and Susumu Nishimura, Chiba, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,112

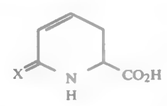
Claims priority, application Japan, Aug. 29, 1991, 3-219022; Sep. 9, 1991, 3-229190

Int. Cl.[5] **C07D** *211/76, 211/86, 211/88*

U.S. Cl. 546—298 **7 Claims**



1. A compound represented by formula (I):



(I)

wherein X represents an oxygen atom or a sulfur atom; or a pharmaceutically acceptable salt said compound.

5,334,724

PREPARATION OF SUBSTITUTED 4-CHLOROPYRIDINES

Dieter Kaufmann, Bergisch-Gladbach; Klaus Jelich, Wuppertal; Rudolf Braden, Odenthal, and Winfried Rosen, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 639,617, Jan. 10, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 905,080

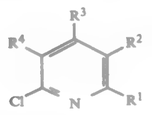
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1990, 4001248; Jun. 23, 1990, 4020055

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.[5] **C07D** *213/26, 213/61, 213/56, 213/81*

U.S. Cl. 546—345 **13 Claims**

1. A process for the preparation of a substituted 2-chloropyridine of the formula

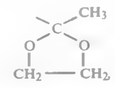


(I)

in which

R^1 represents hydrogen, fluorine, chlorine, cyano, $COOCH_3$, $COOC_2H_5$, $CON(CH_3)_2$ or $CON(C_2H_5)_2$,

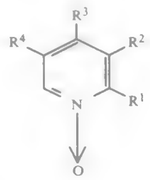
R^2 represents hydrogen, fluorine, chlorine, CH_3, C_2H_5, CH_2Cl, CH_2CN, $CH_2—OCH_3$, $CH_2—OC_2H_5$, $CH_2—N(i—C_3H_7)_2$, $CH_2—N(i—C_4—H_9)_2$,



or in which R^1 and R^2 together represent the divalent group —CH=CH—CH=CH—,

R^3 represents hydrogen, chlorine, $COOCH_3$, $COOC_2H_5$, $CON(CH_3)_2$ or $CON(C_2H_5)_2$, and

R^4 represents hydrogen, fluorine, chlorine or cyano, or in which R^3 and R^4 together represent the divalent group —CH=CH—CH=CH—, which comprises reacting a pyridine-1-oxide of the formula



with an aromatic carbonyl chloride in the presence of an inert organic solvent and in the presence of an organic acid acceptor at a temperature between about −20° C. and 200° C., provided that only one of R^1, R^2, R^3 and R^4 can represent cyano or carbalkoxy at one time.

5,334,725

2-AMINOMETHYL-4-EXOMETHYLENETHIAZOLINE EPOXIDES

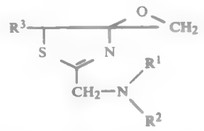
Kenneth P. Moder, West Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 952,426, Sep. 28, 1992, abandoned, which is a division of Ser. No. 703,526, May 21, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 76,489

Int. Cl.[5] **C07F** *9/09;* **C07D** *277/62*

U.S. Cl. 548—147 **2 Claims**

1. A compound of the formula



wherein

R^1 represents hydrogen, methyl, ethyl, benzyl or benzoyl;

R^2 represents methyl or ethyl; or R^1 and R^2, taken together with the nitrogen atom to which they are attached, form a pyrrolidine, piperidine or morpholine ring; and

R^3 represents hydrogen or methyl.

5,334,726

ARYL TRIAZOLE HERBICIDES

Adam C. Hsu, Lansdale, and Colin M. Tice, Elkins Park, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

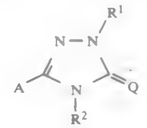
Division of Ser. No. 541,575, Jun. 21, 1990, Pat. No. 5,120,347. This application Mar. 10, 1992, Ser. No. 848,770

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] **C07D** *249/12*

U.S. Cl. 548—263.2 **2 Claims**

1. A compound of the formula



wherein

A is phenyl or substituted phenyl with one or two substituents independently selected front $(C_1–C_3)$alkyl, halogen, methoxy or trifluoromethyl;

Q is oxygen or sulfur; and

(a) R^1 is $(C_3–C_6)$alkenyl and R^2 is $(C_1–C_2)$alkyl, $(C_3–C_6)$alkynyl, monohalo $(C_1–C_6)$alkyl, monohalo $(C_3–C_6)$alkynyl, or $(C_1–C_6)$alkoxy $(C_1–C_6)$alkyl;

or

(b) R^1 is $(C_1–C_2)$alkyl, $(C_3–C_6)$alkynyl, monohalo $(C_1–C_6)$alkyl, monohalo $(C_3–C_6)$alkynyl, or $(C_1–C_6)$alkoxy $(C_1–C_6)$alkyl; and R^2 is $(C_3–C_6)$alkenyl;

or

(c) R^1 and R^2 are each independently selected from $(C_3–C_6)$alkenyls.

5,334,727

PYRAZOLE-CONTAINING PIGMENT DERIVATIVES

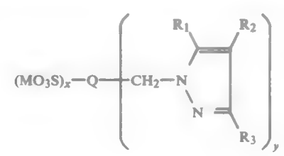
Colin D. Campbell, Wilmington, Del., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 611,208, Nov. 8, 1990, abandoned. This application Jan. 11, 1993, Ser. No. 4,201

Int. Cl.[5] **C07D** *231/54, 498/00, 471/00*

U.S. Cl. 548—373.1 **26 Claims**

1. A pyrazole derivative corresponding to the formula



wherein

Q is a pigment moiety;

R_1, R_2 and R_3 are independently hydrogen; halogen; $C_1–C_1$-salkyl, optionally substituted with one or more halogen or $C_1–C_6$alkoxy groups, $C_6–C_{12}$aryl, optionally substituted with C_{-C18}alkyl, halogen, nitro, or $C_1–C_6$alkoxy groups, or R_1 and R_2 together with the carbons of the pyrazole ring form a benzene ring;

M is hydrogen, a quaternary nitrogen cation or a metal cation;

x is 0 to 2; and

y is 0.05 to 4.

5,334,728

DOPAMINE RECEPTOR LIGANDS AND IMAGING AGENTS

Hank F. Kung, Wynnewood, and Raymond Murphy, Philadelphia, both of Pa., assignors to The Trustees of The University of Pennsylvania, Philadelphia, Pa.

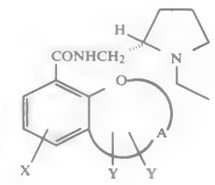
Division of Ser. No. 816,140, Dec. 31, 1991, Pat. No. 5,186,921, which is a division of Ser. No. 339,006, Apr. 17, 1989, Pat. No. 5,122,361. This application Oct. 6, 1992, Ser. No. 957,259

Int. Cl.[5] **C07F** *7/22, 7/10, 3/14;* **C07D** *403/12*

U.S. Cl. 548—402 **12 Claims**

1. A compound selected from the group consisting of compounds of the formulas

Formula III



where

X is selected from the group consisting of $Sn(R)_3$, $Si(R)_3$ and HgR;

R is $C_1–C_5$ alkyl;

Y and Y′ are independently selected from the group consisting of hydrogen, $C_1–C_5$ alkyl, $C_2–C_5$ alkenyl and $C_2–C_5$ alkynyl groups; and

A is an alkylene moiety of from two to eight carbon atoms.

5,334,729

STABLE RADIOMETAL ANTIBODY IMMUNOCONJUGATES

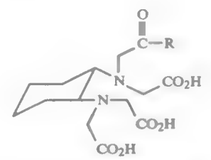
Ronnie C. Mease, Coram; Suresh C. Srivastava, Setauket, both of N.Y., and Jean-François Gestin, Oudon, France, assignors to Associated Universities, Inc., Washington, D.C.

Division of Ser. No. 679,258, Apr. 2, 1991, Pat. No. 5,089,663, which is a continuation-in-part of Ser. No. 872,905, Jun. 29, 1989, Pat. No. 5,021,571. This application Nov. 4, 1991, Ser. No. 787,244

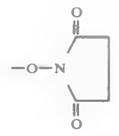
Int. Cl.[5] **C07D** *207/46;* **C07C** *281/02*

U.S. Cl. 548—546 **4 Claims**

2. A compound of the formula



wherein R is selected from the group consisting of



—$NHNH_2$; and

VOL 1165 ISS 1 AG 2 1994 UMI

-continued



and o is 1 to 6.

5,334,730

PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE CARBOXYLIC ACIDS AND AMIDE INTERMEDIATES

Elke Fritz-Langhals, Ottobrunn, Fed. Rep. of Germany, assignor to Consortium fur Elektrochemische Industrie GmbH, Fed. Rep. of Germany

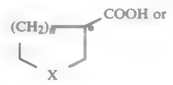
Filed Jul. 1, 1992, Ser. No. 907,117

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122218

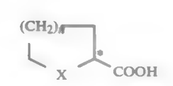
Int. Cl.[5] C07D *307/16, 309/08, 333/24, 335/02*

U.S. Cl. 549—13 **24 Claims**

1. A process for the preparation of optically active carboxylic acids of the formula I* or II*



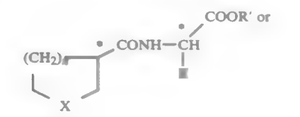
I*



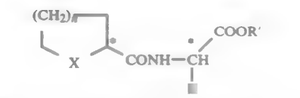
II*

in which X is an oxygen or sulfur atom and n is 1 or 2, which comprises reacting a racemic carboxylic acid I or II or its derivatives, wherein said derivatives are selected from the group consisting of acid halides, esters, anhydrides and amides, with an optically active 2-aminocarboxylic acid ester to give the diastereomeric carboxylic acid amides, separating the diastereomers and, after cleavage of the amide bond, isolating the optically active carboxylic acids of the general formula I* or II*.

21. Optically active carboxylic acid amides of the formula IV* or V*



IV*



V*

wherein n=1 or 2, X=S or O, R is $-CH_3$, $-CH(CH_3)_2$, $-CH_2CH(CH_3)_2$, $-CH_2CH_2SCH_3$, or a benzyl radical, and R' is $-CH_3$, $-CH_2OCH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$ or $-CH(CH_3)_2$.

5,334,731

POLYHALODIHYDRODIOXINS AND POLYHALODIOXOLES

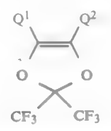
Paul R. Resnick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 680,530, Apr. 4, 1991, abandoned, which is a division of Ser. No. 408,593, Sep. 18, 1989, Pat. No. 5,026,801. This application Nov. 19, 1992, Ser. No. 978,844

Int. Cl.[5] C07D *317/42*

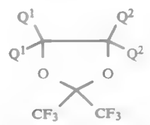
U.S. Cl. 549—455 **6 Claims**

1. A process for the preparation of halogenated dioxoles of the structure:



B

wherein Q^1 and Q^2 are each F or Cl; from halogenated dioxolanes of the structure:



A

wherein Q^1 and Q^2 are each F or Cl, provided that at least one of each of Q^1 and Q^2 in structure A is Cl via dechlorination of structure A comprising treatment of structure A with zinc in the presence of a solvent selected from DMF, N,N-dimethyl acetamide and N-methyl pyrrolidone and in the presence of a metal activating agent selected from 1,2-dibromoethane or bromine.

5,334,732

OXIDATION OF CEPHALOMANNINE WITH OZONE IN THE PRESENCE OF TAXOL

Christopher K. Murray; Timothy D. Ziebarth, and Jeffrey T. Beckvermit, all of Boulder, Colo., assignors to Hauser Chemical Research, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 909,080, Jul. 2, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 120,170

Int. Cl.[5] C07D *305/00, 407/00;* **C02F** *1/70*

U.S. Cl. 549—510 **5 Claims**

1. A process for oxidizing cephalomannine in the presence of taxol in a solution comprising contacting said solution with ozone.

5,334,733

SUBSTITUTED 1,1,1-TRIARYL-2,2,2-TRIFLUOROETHANES AND PROCESSES FOR THEIR SYNTHESIS

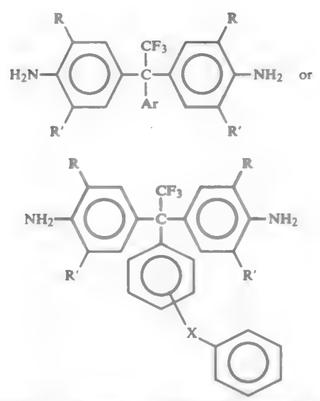
William B. Alston, Medina, Ohio, and Roy F. Gratz, Fredericksburg, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 545,088, Jun. 28, 1990, abandoned. This application Jan. 17, 1992, Ser. No. 822,240

Int. Cl.[5] C07C *15/16*

U.S. Cl. 552—114 **1 Claim**

1. A diamine selected from the formula:



pps wherein Ar is phenyl or a polycyclic aromatic hydrocarbon and X is O, S, SO_2, NH, PH, Nϕ, Pϕ, C=O, CH_2 or CHϕ, and R and R' are the same or different and are individually an alkyl radical.

5,334,734

VAT DYES

Matthias Niedenbrueck, Limburgerhof, and Manfred Patsch, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

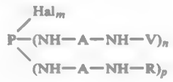
Filed Oct. 26, 1992, Ser. No. 966,404

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, P4137416

Int. Cl.[5] C09B *3/40, 3/44*

U.S. Cl. 552—278 **3 Claims**

1. Vat dyes of the general formula (I)



(I)

where
P is pyranthrone,
A is 1,4- or 1,5-anthraquinonylene,
V is a violanthronyl or isoviolanthronyl radical which may carry up to 2 chlorine or bromine atoms as substituents,
R is hydrogen, the acyl radical of an aliphatic C_1–C_6-carboxylic acid or the acyl or sulfonyl radical of an aromatic carboxylic or sulfonic acid,
Hal is chlorine or bromine,
m is from 0 to 3,
n is from 1 to 4, and
p is from 0 to 3,
with the proviso that the sum m+n+p is not greater than 4.

5,334,735

PROCESS FOR PREPARING CHLORANIL

Jean-Roger Desmurs, Communay, and Isabelle Jouve, Villeurbanne, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 622,113, Dec. 6, 1990, abandoned, which is a continuation of Ser. No. 301,892, Jan. 26, 1989, abandoned. This application Mar. 4, 1993, Ser. No. 26,079

Claims priority, application France, Jan. 27, 1988, 88 00910

Int. Cl.[5] C07C *50/24, 46/06*

U.S. Cl. 552—308 **15 Claims**

1. A process for preparing chloranil comprising contacting a quinone or hydroquinone with hydrochloric acid to form a mixture, heating the mixture to a temperature above 60° C., and contacting said mixture at a temperature above 60° C. with hydrogen peroxide for a time sufficient to form the chloranil, wherein the reaction takes place in the substantial absence of a chlorination catalyst.

5,334,736

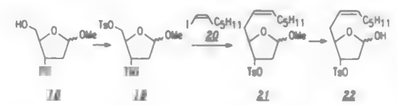
FUNCTIONALIZING CARBOHYDRATE DERIVATIVES BY BASE-INDUCED β-ELIMINATIOM FORMING BIOACTIVE DERIVATIVES CONTAINING HYDROXY-DIENE SUBUNITS

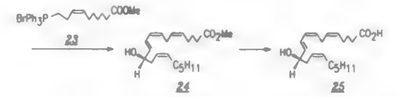
Lumin Sun, Richardson, and John R. Falck, Dallas, both of Tex., assignors to University of Texas System Board of Regents, Austin, Tex.

Filed May 16, 1991, Ser. No. 701,655

Int. Cl.[5] C07C *51/00*

U.S. Cl. 554—148 **24 Claims**





1. A process for functionalizing a carbohydrate derivative comprising:
coupling a first substituted and protected carbohydrate derivative with a first coupling reagent to yield a second substituted and protected carbohydrate derivative;
deprotecting said second substituted and protected carbohydrate derivative to yield a substituted and deprotected carbohydrate derivative, said substituted and deprotected carbohydrate derivative being characterized as having a free hydroxyl group at its C-1 position; and
coupling said substituted and deprotected carbohydrate derivative with a second coupling reagent, thereby effecting a base-induced β-elimination and subsequent olefination to form a compound containing a subunit having at least one hydroxyl group and a diene group.

5,334,737

LIQUID SILICONE ESTERS

Raymond J. Thimineur, Scotia; Frank J. Traver, Troy, and Virgina M. Van Valkenburgh, West Lebanon, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed May 24, 1991, Ser. No. 705,454

Int. Cl.[5] C07F *7/08, 7/18*

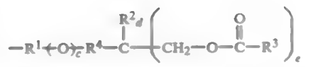
U.S. Cl. 556—440 **15 Claims**

1. A silicone ester composition comprising a liquid silicone ester or blend of silicone liquid esters, the silicone liquid ester or blend of silicone liquid esters having a freezing point of up to about 30° C., and comprising:
(A) units of the general formula:

$$R_aR^E_bSiO_{[4-(a+b)]/2} \quad (1)$$

wherein R is an organic radical, a is a number ranging from 0 to 3, b is a number ranging from 0 to 3, a+b is a number ranging from 1 to 3, with the proviso that there is present at least one R^E radical, R^E being an ester-containing organic group selected from the group consisting of:
(1)

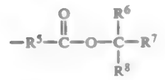
VOL 1165 ISS 1 AG 2 1994 UMI



(II)

wherein c is 0 or 1; d is 0, 1, or 2; e is 1, 2, or 3; the sum of d+e being 3; further wherein R^1 is a linear or branched organic group having from 2 to about 14 carbon atoms if the ester-containing organic group (1) contains no olefinic unsaturation and R^1 is a linear or branched organic group having from about 2 to about 18 carbon atoms if the ester-containing organic group (1) contains olefinic unsaturation; further wherein R^2 is hydrogen or an organic radical of from 1 to about 6 carbon atoms; R^3 is a linear unsaturated organic radical of from 1 to about 23 carbon atoms, a linear saturated organic radical of from 1 to about 17 carbon atoms, or a branched organic radical of from about 1 to about 35 carbon atoms; and R^4 is a linear or branched organic radical having 0 to about 6 carbon atoms;

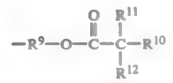
(2)



(III)

wherein R^5 is a linear or branched organic group having from 2 to about 15 carbon atoms if the ester-containing organic group (2) contains no olefinic unsaturation and R^5 is a linear or branched organic group having from 2 to about 23 carbon atoms if the ester-containing organic group (2) contains olefinic unsaturation; further wherein R^6 is hydrogen or a linear or branched organic radical of from 1 to about 6 carbon atoms, and R^7 is a linear unsaturated organic radical of from 1 to about 23 carbon atoms, a linear saturated organic radical of from 1 to about 17 carbon atoms, or a branched organic radical of from 1 to about 35 carbon atoms; and R^8 is hydrogen or a linear or branched organic group having from 1 to about 6 carbon atoms;

(3)



(IV)

wherein R^9 is a linear or branched organic group having from 2 to about 14 carbon atoms if the ester-containing organic group (3) contains no olefinic unsaturation and R^9 is a linear or branched organic group having from 2 to about 24 carbon atoms if the ester-containing organic group (3) contains olefinic unsaturation; R^{10} is a linear unsaturated organic radical of from 1 to about 22 carbon atoms, a linear saturated organic radical of from 1 to about 14 carbon atoms, or a branched organic radical of from 1 to about 34 carbon atoms; R^{11} is hydrogen or a linear or branched organic radical of from 1 to about 6 carbon atoms; and R^{12} is hydrogen or a linear or branched organic radical of from 1 to about 6 carbon atoms; or

(4) chemical reaction mixtures of (1), (2), and (3);

or

(B) $R^{13}_xR^E_ySiO_{\frac{4-x-y}{2}}$ units and $SiO_{4/2}$ units;

wherein each R^{13} is independently an organic radical, x is a number ranging from 0 to 3, y is a number ranging from 0 to 3, x+y is 3, with the proviso that there is present at least one R^E radical; the ratio of $R^{13}_xR^E_ySiO_{\frac{4-x-y}{2}}$ units to $SiO_{4/2}$ units being from about 0.5:1 to about 4:1.

5,334,738

PROCESS FOR THE PREPARATION OF METHYLCHLOROSILANES

Bernd Pachaly; Volker Frey, and Herbert Straussberger, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 20, 1993, Ser. No. 169,699

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1993, 4303766

Int. Cl.[5] C07F 7/16

U.S. Cl. 556—472 **4 Claims**

1. A process for the preparation of methylchlorosilanes from silicon and methyl chloride in the presence of a copper catalyst and wherein promoter substances may be employed, in which the production rates of the individual methylchlorosilanes, based on the surface area of the silicon employed, are controlled by the structure of the silicon, which comprises selecting the silicon having the desired structure on the basis of its structural parameter QF, the structural parameter QF being determined by

(a) cutting up silicon test specimens to form a cut surface,

(b) totaling on the cut surface the areas of precipitates of intermetallic phases having a longitudinal shape to give an area number A,

(c) totaling on the cut surface the areas of precipitates of intermetallic phases having a circular shape to give an area number B, and

(d) obtaining the quotient of the area number A and the area number B, called the structural parameter QF.

5,334,739

PROCESS AN ALPHA MONOCLINIC CRYSTALLINE MODIFICATION OF 2,2',2''-NITRILO[TRIETHYL-TRIS-(3,3',5,5'-TETRA-TERT-BUTYL-1,1'-BIPHENYL-2,2'-DIYL)PHOSPHITE]

Stephen D. Pastor, Danbury, Conn.; Sai P. Shum, Hawthorne, N.Y., and Paul A. Odorisio, Edgewater, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 30, 1992, Ser. No. 983,180

Int. Cl.[5] C07F 9/6574

U.S. Cl. 558—78 **5 Claims**

1. A process for the preparation of the alpha, monoclinic crystalline form of the compound 2,2',2''-nitrilo[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl) phosphite]-which comprises

crystallizing or recrystallizing said compound from a mixture of benzene, toluene, o-xylene, m-xylene, p-xylene, 1,2,3-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, 1,2,4,5-tetramethylbenzene, ethylbenzene, cumene, o-cymene, m-cymene, p-cymene, o-diisopropylbenzene or m-diisopropylbenzene and an alkanol of 1 to 3 carbon atoms;

from methyl formate, ethyl formate, methyl acetate, ethyl acetate, n-butyl acetate, isobutyl acetate or amyl acetate;

from diethyl ether, diisopropyl ether or methyl tert-butyl ether; or

from a mixture of methylene chloride, chloroform, 1,2-dichloroethane or 1,1,2,2-tetrachloroethane and an alkanol of 1 to 3 carbon atoms.

5,334,740

CYCLOHEXANETRIOL DERIVATIVES

Takashi Takahashi, Yokohama, and Manzo Shiono, Okayama, both of Japan, assignors to Kurary Co., Ltd., Okayama, Japan

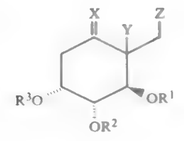
Filed Mar. 13, 1992, Ser. No. 851,943

Claims priority, application Japan, Mar. 13, 1991, 3-073932

Int. Cl.[5] C07D 311/02, 262/20; C07C 69/74

U.S. Cl. 548—110 **9 Claims**

1. Cyclohexanetriol derivatives represented by formula (I)



(I)

wherein

R^1, R^2 and R^3 are the same or different, and each denotes a hydrogen atom or a protecting group of a hydroxyl group,

X denotes an oxygen atom, $=CHCH_2OR^4$, $=CHCHO$ or $=CHCO_2R^5$ Y denotes a hydrogen atom and Z denotes $-OR^6$ or Y and Z together form a single bond; or X and Z together form $=NO-$, $=CHCH(OR^7)O-$ or $=CHCO_2-$ and Y is a hydrogen atom,

R^4 and R^6 denote a hydrogen atom or a protecting group of a hydroxyl group respectively,

R^5 denotes a lower alkyl group,

R^7 denotes a hydrogen atom or a lower alkyl group.

5,334,741

PHOSPHORYLATION WITH MONOMERIC METAPHOSPHATES

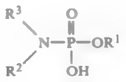
Louis D. Quin, Amherst, Mass., and Stefan Jankowski, Lodz, Poland, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Jul. 20, 1992, Ser. No. 916,661

Int. Cl.[5] C07F 9/02

U.S. Cl. 558—110 **14 Claims**

1. A process for phosphorylating a solid substrate having surface hydroxyl groups, comprising contacting the surface of said substrate with a solution comprising a compound of the formula (1)



(1)

in a solvent that does not undergo nucleophilic attack with metaphosphate of the formula R^1-OPO_2, and then heating the solution to thermolyse said compound in the presence of said surface to generate metaphosphate in solution whereby said metaphosphate phosphorylates said substrate, wherein

R^1 is a straight or branched, saturated or unsaturated alkyl group containing 1 to 60 carbon atoms, wherein the alkyl group optionally contains a linkage of the formula —O—, —S—, —NH—, —C(O)—, —C(O)O—, OC(O)—, —C-(O)NH—, or —HNC(O)—, and is optionally substituted with —CN, —Cl, —Br, —F, aryl, aryloxy, heterocyclic or cyclo-C_3–C_8-alkyl; or R^1 is aryl, heterocyclic, cyclo-C_3–C_8-alkyl, or bicyclic, tricyclic or polycyclic alkyl, and is optionally substituted with —CN, —Cl, —Br, —F, phenyl, benzyl, or straight or branched, saturated or unsaturated alkyl or alkoxy containing up to 12 carbon atoms, the optional phenyl, benzyl, alkyl and alkoxy being optionally substituted with —CN, —Cl, —Br, —F, or C_1–C_6 alkyl;

R^2 and R^3 are independently hydrogen; or straight or branched, saturated or unsaturated, alkyl containing 1 to 60 carbon atoms and optionally containing a linkage of the formula —O—, —S—, —NH—, —C(O)—, —C(O)O—, —OC(O)—, —C(O)NH— or —NHC(O)—, and optionally substituted with —CN, —Cl, —Br, —F, aryl, aryloxy, heterocyclic, or cyclo-C_3–C_8-alkyl; or R^2 and R^3 are independently selected from the group consisting of bicyclic, tricyclic and polycyclic alkyl, cyclo-C_3–C_8-alkyl, aryl, and heterocyclic, any of which is optionally substituted with —CN, —Cl, —Br, —F, or with phenyl, benzyl, or straight or branched, saturated or unsaturated, alkyl or alkoxy containing up to 12 carbon atoms, the optional phenyl, benzyl, alkyl and alkoxy substituents being optionally substituted with —CN, —Cl, —Br, —F, or C_1–C_6 alkyl;

or R^2 and R^3 together with the N to which they are attached form a saturated or unsaturated 5 or 6-member ring which optionally contains an oxygen atom or a second nitrogen atom, and which is optionally fused to a phenyl ring.

5,334,742

PROCESS FOR THE CONTINUOUS PREPARATION OF DIARYL CARBONATES FROM DIALKYL CARBONATES

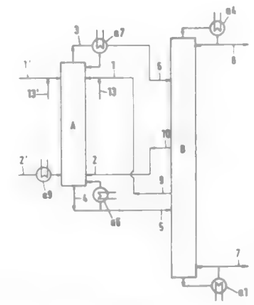
Norbert Schön; Reinhard Langer; Hans-Josef Buysch, all of Krefeld, and Paul Wagner, Düsseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 6, 1993, Ser. No. 103,931

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1992, 4226755

Int. Cl.[5] C07C 69/96

U.S. Cl. 558—274 **20 Claims**



1. A process for the preparation of a diaryl carbonate of the formula

$$Ar^1—O—CO—O—Ar^1,$$

in which

Ar^1 denotes unsubstituted phenyl, phenyl substituted by 1 to 3 C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen radicals, or naphthyl

by transesterification of an aromatic hydroxyl compound of the formula

$$Ar^1—OH,$$

Ar^1 has the meanings given,

with 0.1 to 10 mol of a dialkyl carbonate of the formula

$$R^1—O—CO—O—R^1,$$

in which

R^1 denotes straight-chain or branched C_1–C_6-alkyl or C_5–C_6-cycloalkyl,

in the presence of a transesterification catalyst in a column apparatus, wherein the reaction is carried out in a mass-coupled and energy-coupled combination of a counter-current column A and a reaction column B, reactions and separations running in parallel in the aforementioned columns, in such a way that, in the counter-current column A, the aromatic hydroxyl compound which was withdrawn at least in part in the liquid state from the reaction column B is reacted in the liquid phase in the presence of a transesterification catalyst with a mixture, conducted in counter-current thereto in the gaseous

VOL 1165 ISS 1 AG 2 1994 UMI

state, of 100 to 95 parts by weight of dialkyl carbonate and 0 to 5 parts by weight of the underlying alcohol of the formula

$$R^1OH,$$

in which

R^1 has the given meaning,

where the mixture was withdrawn in the gaseous state from the reaction column B and can contain aromatic hydroxyl compounds Ar^1OH, at temperatures from 100° C. to 300° C. and pressures from 0.05 to 20 bar and the mixture, produced in A as a bottom product, of an alkyl aryl carbonate of the formula

$$Ar^1—O—CO—O—R^1,$$

in which

Ar^1 and R^1 have the meaning given above,

of unreacted aromatic hydroxyl compound, with or without a small amount of the dialkyl carbonate and with or without homogeneously dissolved catalyst in the liquid form, is fed into the bottom part of the reaction column B and the gaseous mixture, produced in A as head product, of the alcohol, as yet unreacted dialkyl carbonate and aromatic hydroxyl compound is fed into the upper part of the reaction column B and is reacted at temperatures of 100° to 300° C. and pressures of 0.05 to 5 bar in the reaction part of B to the extent of 60 to >95%, where, furthermore, diaryl carbonate is withdrawn as a bottom product in the lower part of the column B, the liquid stream, which is to be returned to A, of the aromatic hydroxyl compounds is withdrawn in the central section of B and above the feed of the bottom product of A; the gaseous mixture, which is to be returned to A, of 95 to 100 parts by weight of dialkyl carbonate and 0 to 5 parts by weight of the alcohols derived therefrom and aromatic hydroxyl compounds is withdrawn int he central section of B between the draw-off of the liquid aromatic hydroxyl compound and the infeed of the head product from A; and a mixture of 80 to 20% by weight of the derived alcohol and 20 to 80% by weight of dialkyl carbonate is withdrawn as a head stream from B, reacted or withdrawn dialkyl carbonate and reacted aromatic hydroxyl compound being supplemented by feed into A or B.

5,334,743

CATALYTIC AMMOXIDATION OF SATURATED HYDROCARBONS

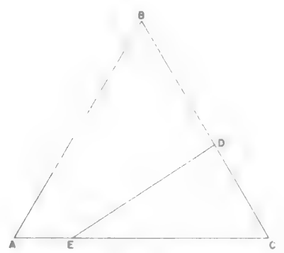
Gilbert Blanchard, Le Plessis Belleville; Elisabeth Bordes, Vemars, and Gilbert Ferre, Livry Gargan, all of France, assignors to Rhone-Poulenc Chimie, Courvevoie Cedex, France

Filed Dec. 16, 1992, Ser. No. 991,170

Claims priority, application France, Dec. 16, 1991, 91 15843

Int. Cl.[5] C07C *253/24*

U.S. Cl. 558—319 **16 Claims**



1. A process for the ammoxidation of a saturated hydrocarbon into an α,β-ethylenically unsaturated nitrile, by reacting an acyclic alkane containing at least 3 carbon atoms per molecule with ammonia and oxygen, in vapor phase, and in the presence of a catalytically effective amount of a solid catalyst, said catalyst having an active phase represented by the empirical formula (I):

$$Mo_aV_bM_cO_x \quad (I)$$

in which M is one or more of the elements, manganese, zinc, cobalt, copper, lithium, sodium, potassium, and silver; a is a number greater than zero and less than 2; b is a number greater than zero and less than 2; c is a number greater than zero and less than 1; and x is determined by the oxidation number of the other elements thereof and said active phase represented by formula (I) being the sole ammoxidation catalytic component.

5,334,744

ISOMERISATION PROCESS

Ernest S. Cleugh, Barnsley, and David J. Milner, Manchester, both of England, assignors to Zeneca Ltd., London, England

Filed Dec. 23, 1992, Ser. No. 995,861

Claims priority, application United Kingdom, Dec. 24, 1991, 9127355.7

Int. Cl.[5] C07C *253/34*

U.S. Cl. 558—354 **9 Claims**

1. A process for obtaining lambda-cyhalothrin in the form of a racemic modification consisting of two isomers, namely S-α-cyano-3-phenoxybenzyl 1R,3R-3-(Z-2-chloro-3,3,3-trifluoroprop-1-en-1-yl)-2,2-dimethylcyclopropane carboxylate and its enantiomer which comprises the step of treating cyhalothrin in the form of a mixture of four isomers in approximately equal amounts, said four isomers being the two isomers constituting lambda-cyhalothrin and the epimers of these two isomers in solution in, or as a slurry in, a monohydric lower alkanol having up to six carbon atoms and optionally containing from 2 to 15% by volume of water with an alkali metal cyanide and in the absence of a base.

5,334,745

PREPARATION OF 3-AMINOPROPIONITRILES

Martin Brudermueller, Mannheim; Tom Witzel, Ludwigshafen, and Franz Merger, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

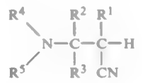
Filed May 28, 1993, Ser. No. 69,129

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1992, 4218358

Int. Cl.[5] C07C *253/30*

U.S. Cl. 558—394 **7 Claims**

1. A process for the preparation of a 3-aminopropionitrile of the formula



I

wherein R^1, R^2, R^3, R^4 and R^5, independently of one another, are each hydrogen, C_1–C_{20}-alkyl, C_1–C_8-aminoalkyl, cyano-C_1–C_8-alkyl, C_3–C_{20}-cycloalkyl, C_7–C_{20}-aralkyl or C_6–C_{14}-aryl, with the proviso that each aryl group has a carbocyclic structure, which process comprises:

reacting an amine of the formula



II

with an acrylonitrile of the formula



III

wherein the substituents have the above-mentioned meanings, in a molar ratio of from 0.9:1 to 100:1 at a temperature of from 40° to 200° C. and a pressure of from 1 to 350 bar over a heterogeneous catalyst selected from the group consisting of oxides of the second, third or fourth main groups or of the third to sixth subgroups of the Periodic Table of Elements, acidic zeolites and mixtures thereof.

5,334,746

PROCESS FOR PRODUCING α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER

Kyung S. Choi; Dae K. Joo; Min S. Han; E Nam Hwang, and Hong K. Choi, all of Seoul, Rep. of Korea, assignors to Miwon Co., Ltd., Rep. of Korea

Continuation of Ser. No. 935,961, Aug. 27, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 161,437

Int. Cl.[5] C07C *229/00*

U.S. Cl. 560—38 **26 Claims**

1. A process for producing L-phenylalanine methyl ester, comprising the steps of:

(a) esterifying L-phenylalanine with methanol in the presence of a strong acid,

(b) continuously removing the water produced during the esterification reaction to produce the L-phenylalanine methyl ester strong acid salt,

(c) neutralizing said L-phenylalanine methyl ester strong acid salt with a base dissolved in methanol, which is substantially free of water, to produce a mixture, and

(d) filtering said produced mixture and evaporating the methanol to produce concentrated L-phenylalanine methyl ester.

5,334,747

METHOD OF PREPARING SUBSTITUTED MALONIC ESTER ANILIDES AND MALONIC ACID MONO-ANILIDES

Klaus-Dieter Steffen, Hennef, Fed. Rep. of Germany, assignor to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

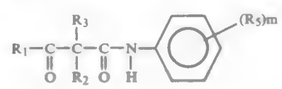
Filed Apr. 7, 1992, Ser. No. 864,740

Claims priority, application Fed. Rep. of Germany, May 6, 1991, 4114733

Int. Cl.[5] C07C *229/40*

U.S. Cl. 560—43 **8 Claims**

1. In the preparation of a mono-ester mono-amide, mono-acid mono-amide or bis-amide of a singly or doubly substituted malonic acid, of the formula



(I)

or a mixture thereof, wherein a singly or doubly substituted malonic acid dialkyl ester of the formula



(II)

is reacted with an aniline of the formula



(III)

wherein

R_1=O-alkyl (C_1–C_6) OH, O^- alkali$^+$, or



R_2=alkyl (C_1–C_6), alkoxy (C_1–C_6), or aryl,

R_3=H, alkyl (C_1–C_6), alkoxy (C_1–C_6), or aryl, or

R_2+R_3=—$(R_4CR_4)_n$—, where n=2–5

R_4=H, CH_3, or halogen,

R_5=halogen, alkyl (C_1–C_6), alkoxy (C_1–C_6), $N(R_6)_2$, cyano, acyl, nitro, or thioalkyl (C_1–C_6),

m=0–5, and

R_6=alkyl (C_1–C_6),

the improvement which comprises

a) effecting the reaction in the presence of a stoichiometric amount of an alkali alcoholate based on the aniline (III),

b) neutralizing the reaction product with an acid thereby to produce the malonic mono-ester mono-anilide and malonic bis-anilide, and

c) reacting the product with water thereby to saponify the ester group in the reaction mixture to produce the mono-anilide.

5,334,748

FUNGICIDES

Alan J. Buckley, Oldham Lancs; Michael G. Huchings, Manchester; Ian Ferguson, Lancs; Kevin Beautement, Berkshire; John M. Clough, Buckinghamshire; Patrick J. Crowley, Berkshire; Christopher R. A. Godfrey, Berkshire; Paul J. deFraine, Berkshire; Vivienne M. Anthony, Berkshire, and Stephen P. Heaney, Berkshire, all of England, assignors to Imperial Chemical Industries PLC, London, United Kingdom

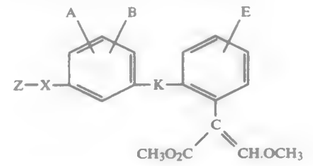
Filed Sep. 9, 1988, Ser. No. 242,760

Claims priority, application United Kingdom, Sep. 9, 1987, 8721221; Sep. 15, 1987, 8721706; Jan. 22, 1988, 8801485; Mar. 17, 1988, 8806317; Jun. 21, 1988, 8814734

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—60 **15 Claims**

1. Fungicidal compounds of the formula



(I)

and stereoisomers thereof, wherein K is oxygen or sulphur; Z is optionally substituted aryl; X is O, $S(O)_n$, NR^4, CR^1R^2, CHR^9, CO, $CR^1(OR^2)$, C=CR^1R^2, CHR^1CHR^2, CR^1=CR^2, CHR^1CR^2=CH, C≡C, $OCHR^1$, CHR^1O, $OCHR^1O$, $S(O)_nCHR^1$, $S(O)_nCHR^1O$, $CHR^1S(O)_n$, CHR^1OSO_2, NR^4CHR^1, CHR^1NR^4, CO_2, O_2C, SO_2O, OSO_2, CO.CO, $COCHR^1$, $COCHR^1O$, CHR^1CO, CHOH.CHR^1, CHR^1.CHOH,

VOL 1165 ISS 1 AG 2 1994 UMI



$CONR^4$, $OCONR^4$, NR^4CO, $CSNR^4$, $OCS.NR^4$, $SCO.NR^4$, NR^4CO_2, NR^4CS, NR^4CSO, NR^4COS, NR^4CONR^4, $S(O)_nNR^4$, $NR^4S(O)_m$, CS_2, S_2C, CO.S, SCO, N=N, N=CR^1, CR^1=N, $CHR^1CHR^2CH(OH)$, CHR^1OCO, CHR^1SCO, CHR^1NR^4CO, $CHR^1NR^4CONR^4$, CHR^1CHR^2CO, O.N=CR^1, $CHR^1O.N$=CR^2, $COOCR^1R^2$, $CHR^1CHR^2CHR^3$, $OCHR^1CHR^2$, $(CH_2)_nO$, CHR^1OCHR^2, CHR^1CHR^2O, $OCHR^1$, CHR^2O, $S(O)_nCHR^1CHR^2$, $CHR^1S(O)_nCHR^2$, $CHR^1CHR^2S(O)_m$, CR^1=NNR^4, NR^4N=CR^1, CHR^1CONR^2, $CHR^1OCO.NR^2$, CH=$CHCH_2O$, $COCHR^1CHR^2O$, or $(R^5)_2P^+CHR^2Q^-$; A, B and E, which may be the same or different, are H, halo, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, phenoxy, nitro or cyano; R^1, R^2 and R^3, which may be the same or different, are H, C_{1-4} alkyl or phenyl; R^4 is H, C_{1-4} alkyl or COR^1; R^5 is optionally substituted phenyl; R^9 is substituted phenyl; Z^- is a halide anion; n is 0, 1 or 2 and m is 3, 4 or 5; except that when Z is unsubstituted phenyl and X and K are oxygen, A, B and E are not all hydrogen.

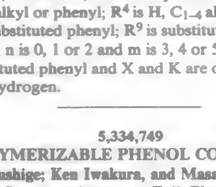
5,334,749

POLYMERIZABLE PHENOL COMPOUND

Yunichi Fukushige; Ken Iwakura, and Masato Satomura, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 17, 1992, Ser. No. 992,540
Claims priority, application Japan, Dec. 18, 1991, 3-333774
Int. Cl.[5] C07C *69/88*
U.S. Cl. 560—67 **4 Claims**

1. A polymerizable phenol compound represented by formula (I):



(I)

wherein X represents a hydrogen atom or a chlorine atom; Y represents a hydrogen atom; Z represents —COO—, —O—, $—SO_2—$ or $—SO_2NH—$; R represents an alkylene group having an —O—, —S—, $—SO_2—$, —CO—, —NH— or a phenylene group; and P represents an acryloyloxy group or a methacryloyloxy group.

5,334,750

PROCESS FOR THE PREPARATION OF CINNAMIC ACID DERIVATIVES

Dieter Kaufmann, Bergisch Gladbach; Carsten Hesse, Leverkusen, and Thomas Himmler, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 31, 1993, Ser. No. 40,726
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1992, 4211608
Int. Cl.[5] C07C *69/76*
U.S. Cl. 560—104 **10 Claims**

1. Process for the preparation of cinnamic acid derivatives from bromoaromatics and acrylic acid derivatives in the presence of palladium catalysts and a phosphane, characterised in that it is carried out in the presence of an inorganic base, a large excess (based on the palladium) of phosphane, and alcohols and/or a phase transfer catalyst.

5,334,751

ETHYL ACETATE FROM ETHANOL

Michael F. Lemanski, Cleveland; Joseph B. Hazen, Garfield Heights, and Patricia R. Blum, Macedonia, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 624,845, Dec. 10, 1990. This application Apr. 28, 1992, Ser. No. 874,947
Int. Cl.[5] C07C *67/02*
U.S. Cl. 560—265 **2 Claims**

1. A process for making ethyl acetate which comprises reacting in a reaction zone ethanol and molecular oxygen in the presence of a solid catalyst that (1) contains crystalline TiP_2O_7, titanium pyrophosphate, and (2) has the elements and proportions indicated by the empirical formula

$$Pd_aM_bTiP_cO_x \qquad \text{(formula 1)}$$

where M is selected from Cd, Au, Zn, Tl, alkali metals and alkaline earth metals,
a is from 0.0005 to 0.2
b is from zero to 3a
c is 0.5 to 2.5, and
x is a value sufficient to satisfy the valence requirements of the other elements present, and
the Ti and P of said crystalline TiP_2O_7 represents part of the Ti and P of said formula 1.

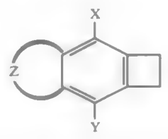
5,334,752

CYCLOBUTABENZENE MONOMERS

David C. Martin; Jeffrey S. Moore, both of Ann Arbor; Larry J. Markoski, Wayland, all of Mich., and Kenneth A. Walker, Urbana, Ill., assignors to The Board of Regents acting for and on behalf of University of Michigan, Ann Arbor, Mich.

Filed Jul. 1, 1992, Ser. No. 907,430
Int. Cl.[5] C07C *205/12*
U.S. Cl. 560—360 **6 Claims**

1. A monomer of the general formula:



wherein Z is hydrogens or a cyclobutane ring; and X and Y are carboxyl, amino, isocyanate, acid halide, or 4-fluorobenzoyl groups.

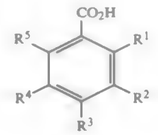
5,334,753

PROCESSES FOR PREPARING ORTHO-SUBSTITUTED BENZOIC ACIDS

Bernard Bennetau, Talence Cedex, France, and Paul A. Cain, Ongar, England, assignors to Rhone-Poulenc Agriculture Ltd, Essex, England

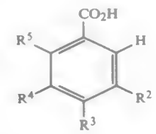
Continuation-in-part of Ser. No. 850,128, Mar. 12, 1992, abandoned. This application Dec. 23, 1992, Ser. No. 996,046
Int. Cl.[5] C07C *63/06, 59/48*
U.S. Cl. 562—405 **12 Claims**

1. A process for preparing ortho-substituted benzoic acids of formula (I):



(I)

wherein:
R^1 is a group which may be introduced by electrophilic substitution of an aromatic lithio derivative;
R^2 is a fluorine, chlorine or bromine atom;
R^3 is a fluorine, chlorine, bromine or hydrogen atom or a group selected from R^6, $—OR^6$ and $—SR^6$;
R^4 and R^5 are independently hydrogen, fluorine, chlorine, bromine, or a straight- or branched-chain alkyl group having from one to six carbon atoms optionally substituted by one or more fluorine atoms;
R^6 is a straight- or branched-chain alkyl group having from one to six carbon atoms optionally substituted by one or more halogen atoms;
with the proviso that when R^4 is fluorine, chlorine or bromine and R^5 is hydrogen, R^2 and R^4 represent the same group;
which comprises the reaction of a compound of formula (II):



(II)

wherein R^2, R^3, R^4 and R^5 are as defined above, with a lithiating reagent, followed by the reaction of the ortho-lithiated compound thus obtained with an electrophilic reagent to introduce the group R^1.

5,334,754

PROCESS FOR PREPARING 2,5-DIPHENYLTEREPHTHALIC ACID BY OXIDATION

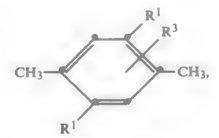
Charles E. Sumner, Jr.; Bruce L. Gustafson, both of Kingsport; Ernest W. Arnold, III, Blountville, all of Tenn.; Eric J. Fugate, Gate City, Va., and Dewey W. Fuller, Jr., Bristol, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 14, 1992, Ser. No. 930,890
Int. Cl.[5] C07C *51/215, 67/39*
U.S. Cl. 562—416 **5 Claims**

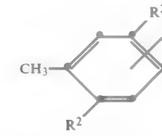
1. A process for preparing 2,5-diphenylterephthalic acid, optionally substituted with one group selected from the group consisting of C_1–C_{10} alkyl, halo, nitro, a group of the formula $—CO_2R^4$, and $—OR^4$, wherein R^4 is C_1–C_4 alkyl; which comprises
(a) di-alkylation of a compound of the formula



wherein R^3 is hydrogen, C_1–C_{10} alkyl, halo, nitro, or a group of the formula $—CO_2R^4$ or $—OR^4$, wherein R^4 is C_1–C_4 alkyl; with cyclohexene in the presence of an acid catalyst, to provide a compound of the formula



wherein R^1 is cyclohexyl; followed by
(b) dehydrogenation in the presence of a Group VIII or Group IB catalyst, at a temperature of about 100° C. to 500° C., and at a pressure of about 0.01 to 30 atmospheres, to provide a compound of the formula



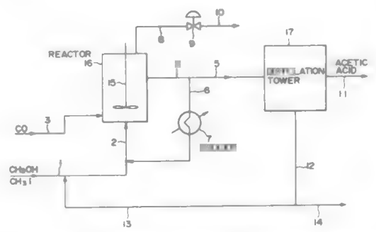
wherein R^2 is phenyl; followed by
(c) oxidation in the presence of air or oxygen and a cobaltous bromide oxidation catalyst system, at a temperature of about 75° C. to 250° C., and at a pressure of about 10 to 1000 psig.

5,334,755

PROCESS FOR THE PRODUCTION OF ACETIC ACID FROM METHANOL AND CARBON MONOXIDE USING SUPPORTED RHODIUM CATALYST

Noriyuki Yoneda, Tokyo; Yoshimi Shiroto, Yokohama; Kazuhiko Hamato, Kawasaki; Sachio Asaoka, Yokohama, and Tetsuo Maejima, Kiyose, all of Japan, assignors to Chiyoda Corporation, Japan

Filed Apr. 21, 1993, Ser. No. 49,303
Claims priority, application Japan, Apr. 24, 1992, 4-131790; Apr. 24, 1992, 4-131791
Int. Cl.[5] C07C *67/36, 51/10*
U.S. Cl. 562—519 **8 Claims**



1. A process for the production of acetic acid, comprising:
reacting an alkyl iodide with a pyridine-containing resin to quaternize the pyridine component of said resin;
reacting carbon monoxide, an alkyl iodide and a rhodium salt to form a rhodium carbonyl complex which ionically binds to the quaternized resin to form a solid catalyst;
introducing a feed including methanol, carbon monoxide, an alkyl iodide and a solvent into a reaction zone containing said solid catalyst;
contacting said feed with said solid catalyst to react said methanol with carbon monoxide and to obtain a reaction solution; and
discharging at least a portion of said reaction solution from said reaction zone to obtain a product solution;
wherein said solvent includes at least one organic solvent selected from the group consisting of carboxylic acids having at least two carbon atoms and carboxylic acid esters having at least two carbon atoms, and wherein said reaction is performed at a temperature of 140°–250° C. and a pressure of 15–60 kg/cm^2G with a partial pressure of carbon monoxide of 7–30 kg/cm^2 while maintaining (a) the water concentration of said product solution in the range of 0.5–10% by weight and (b) the carbonylation degree C_r of the solution within said reaction zone at 0.15 or more, wherein the carbonylation degree C_r is given by the following equation:

VOL 1165 ISS 1 AG 2 1994 UMI

C_r = (M[CH_3COOH] + M[CH_3COOCH_3] + M[CH_3COOR^1])/(M[CH_3COOH] + 2M[CH_3COOCH_3] + 2M[CH_3OCH_3] + M[CH_3COOR^1] + M[R^3COOCH_3] + M[CH_3OR^3] + M[CH_3OH])

wherein M[CH_3COOH], M[CH_3COOCH_3], M[CH_3COOR^1], M[CH_3OCH_3], M[R^2COOCH_3], M[CH_3OR^3] and M[CH_3OH] represent the amounts, in terms of molarity, of CH_3COOH, CH_3COOCH_3, CH_3COOR^1 where R^1 represents an alkyl group having at least two carbon atoms, CH_3OCH_3, R^2COOCH_3 where R^2 represents an alkyl group having at least two carbon atoms, CH_3OR^3 where R^3 represents an alkyl group having at least two carbon atoms and CH_3OH, respectively, which are present in the solution within said reaction zone.

5,334,756

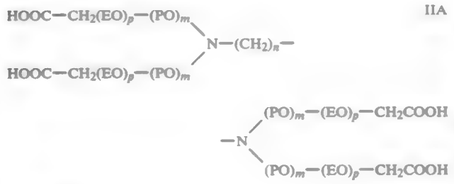
CARBOXYLATE OF CERTAIN POLYOXYALKYLENE AMINE

Parfait J. M. Likibi; Robert V. Casciani, and Gregory L. McCraw, all of Charlotte, N.C., assignors to Sandoz Ltd., Basle, Switzerland

Filed Mar. 26, 1991, Ser. No. 675,220
Int. Cl.[5] C07C *229/00*
U.S. Cl. 562—565 **6 Claims**

1. A polyoxyalkylene amine carboxylate selected from the group consisting of:

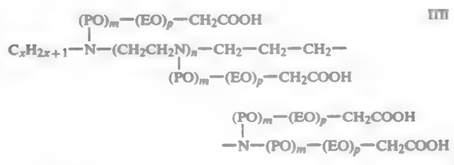
a) a compound of formula IIA:



IIA

where
each m is an integer 1 to 25;
n is an integer 2 to 4; and
each p is an integer 1 to 60;

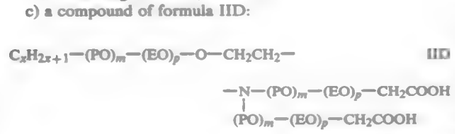
b) a compound of formula IIB:



IIB

where
each m is 0 or an integer 1 to 30;
n is 0 or an integer 1 to 10;
each p is an integer 3 to 30; and
x is an integer 5 to 24;

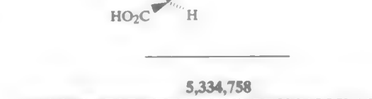
c) a compound of formula IID:



IID

where
each m is 0 or an integer 1 to 20;
each p is an integer to 3 to 40; and
x is an integer 6 to 20;

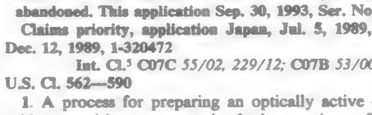
d) a compound of formula IIE:



IIE

where
each m is 0 or an integer 1 to 40;
each p is an integer 3 to 20;
x is an integer 6 to 20; and
$X^{\ominus}$ is an anion;

and e) a compound of formula IIF:



IIF

where
R is methyl, ethyl, or benzyl;
each m is 0 or an integer 1 to 40;
each p is an integer 3 to 20;
x is an integer 6 to 20; and
$X^{\ominus}$ is an anion.

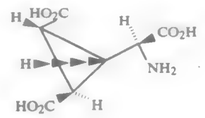
5,334,757

2-(2,3-DICARBOXYCYCLOPROPYL) GLYCINE AND METHOD FOR PRODUCING THE SAME

Yasufumi Ohfune; Keiko Shimamoto, both of Osaka; Haruhiko Shinozaki, and Michiko Ishida, both of Saitama, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Apr. 29, 1993, Ser. No. 53,693
Claims priority, application Japan, Oct. 18, 1991, 3-271392; Mar. 27, 1992, 4-070472; Sep. 22, 1992, 4-252823
Int. Cl.[5] C07C *229/46*
U.S. Cl. 562—568 **5 Claims**

1. (2S, 1'R, 2'R, 3'R)-2-(2,3-dicarboxycyclopropyl)-glycine represented by the following formula (1):



(1)

5,334,758

PROCESS FOR PREPARING OPTICALLY ACTIVE CARBOXYLIC ACID

Masahiko Saburi; Masamichi Ohnuki, and Yasuzo Uchida, all of Tokyo, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Continuation of Ser. No. 928,174, Aug. 14, 1992, abandoned, which is a continuation of Ser. No. 493,051, Mar. 13, 1990, abandoned. This application Sep. 30, 1993, Ser. No. 128,759
Claims priority, application Japan, Jul. 5, 1989, 1-173835; Dec. 12, 1989, 1-320472
Int. Cl.[5] C07C *55/02, 229/12;* C07B *53/00*
U.S. Cl. 562—590 **6 Claims**

1. A process for preparing an optically active carboxylic acid comprising asymmetric hydrogenation of an α,β-unsaturated carboxylic acid using an alcohol as a hydrogen donor in the presence of a metal-optically active phosphine complex, wherein said alcohol is used in a molar ratio of from 2 to 130 times that of the α,β-unsaturated carboxylic acid, and wherein said asymmetric hydrogenation is performed in a nitrogen atmosphere.

5,334,759

PREPARATION OF FORMIC ACID FROM CARBON MONOXIDE AND WATER

Ferdinand Lippert, Bad Duerkheim, and Arthur Hocha, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 17, 1993, Ser. No. 107,054
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1992, 4227394
Int. Cl.[5] C07C *53/02, 53/04, 53/06*
U.S. Cl. 562—609 **4 Claims**

1. A process for the preparation of formic acid by the reaction of carbon monoxide with water at temperature of from 100° to 250° C. and absolute pressures of from 100 to 350 bar, wherein a tertiary amine of the formula I



(I)

in which
R^1, R^2, R^3 individually denote C_1–C_{14} alkyl, C_3–C_8 cycloalkyl, aryl, and C_7–C_{16} aralkyl or together denote a 1,4-alkylene group or 1,5-alkylene group optionally mono- to tetra-substituted by C_1–C_4 alkyl, provided that the total number of carbon atoms in R^1, R^2, and R^3 is from 3 to 40, is added to the reaction mixture.

5,334,760

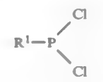
METHOD OF PRODUCING A PHOSPHINYL-CARBOXYLIC ACID DERIVATIVE

Toshio Wachi, Nara; Yutaka Sakaguchi, Kitakatsuragi, and Kotaro Fujita, Sakai, all of Japan, assignors to Sakai Chemical Industry Co., Ltd., Osaka, Japan

Filed Aug. 7, 1992, Ser. No. 925,830
Claims priority, application Japan, Aug. 9, 1991, 3-287421; Jun. 19, 1992, 4-161450
Int. Cl.[5] C07F *9/52, 9/50, 9/535*
U.S. Cl. 562—817 **4 Claims**

1. A method of producing the resulting reaction product by the step comprising:

reacting a phosphine derivative of the following general formula I):

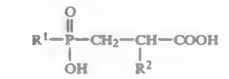


(I)

(wherein R_1 is an alkyl group having 1 to 18 carbon atoms or an aryl group having 6 to 18 carbon atoms, and said aryl group may have an alkyl group having 1 to 18 carbon atoms or an alkenyl group having 2 to 18 carbon atoms)

with acrylic acid or methacrylic acid in the presence of a catalyst selected from the group consisting of an organic peroxide and an azo-compound, said resulting reaction product having a chemical structure which:

(1), when hydrolyzed, changes to a phosphinyl-carboxylic acid derivative of the following general formula (III):



(III)

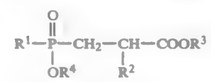
wherein R^1 is as defined above, and R^2 is a hydrogen atom or a methyl group,

(2) when reacted with a hydroxyl group-containing compound of the following general formula (IV):

R^3—OH (IV)

(wherein R^3 is an alkyl group having 1 to 10 carbon atoms or an aryl group having 6 to 18 carbon atoms, and said aryl group may contain an alkyl group having 1 to 18 carbon atoms or an alkenyl group having 2 to 18 carbon atoms),

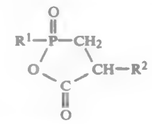
changes to a phosphinyl-carboxylic acid derivative in the form of ester of the following general formula (V):



(V)

(wherein R^1 and R^2 are as defined above, R^3 is as defined above, R^4 is a hydrogen atom, an alkyl group having 1 to 10 carbon atoms or an aryl group having 6 to 18 carbon atoms, and said aryl group may contain an alkyl group having 1 to 18 carbon atoms or an alkenyl group having 2 to 18 carbon atoms), and

(3) when reacted with acetic anhydride, changes to a phosphinyl-carboxylic acid derivative in the form of a cyclic acid anhydride of the following general formula (IV):



(VI)

(wherein R^1 and R^2 are as defined above).

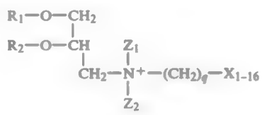
5,334,761

CATIONIC LIPIDS

Gulilat Gebeyehu, Silver Spring; Joel A. Jessee, Mt. Airey; Valentina C. Ciccarone, Gaithersburg; Pamela Hawley-Nelson, Silver Spring, all of Md., and Anna Chytil, Nashville, Tenn., assignors to Life Technologies, Inc., Gaithersburg, Md.

Filed Aug. 28, 1992, Ser. No. 937,508
Int. Cl.[5] C07C *233/36*
U.S. Cl. 564—197 **18 Claims**

1. A composition having the structure



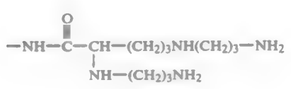
wherein
R_1 and R_2 independently of another, are $C_{1\text{-}23}$ alkyl or alkenyl, or



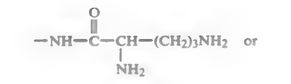
alkyl or alkenyl,
Z_1 and Z_2 independently of one another, are H or unbranched alkyl $C_{1\text{-}6}$, q is 1 to 6,
X is selected from any of X_1–X_8, X_{15} and X_{16} where

VOL 1165 ISS 1 AG 2 1994 UMI

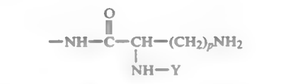
X_1 is $-(CH_2)_nBr$, $(CH_2)_nCl$, $(CH_2)_nF$, $(CH_2)_nF$ or $(CH_2)_nI$ where n=0–6 or
X_2 is $-(CH_2)_nNH_2$ n=0–6 or
X_3 is $-NH-(CH_2)_m-NH_2$ m=2–6 or
X_4 is $-NH-(CH_2)_3-NH-(CH_2)_4-NH_2$ or
X_5 is $-NH-(CH_2)_3-NH-(CH_2)_4-NH(CH_2)_3-NH_2$ or
X_6 is



X_7 is



X_8 is



X_{15} is $-(CH_2)_r-SH$ where r is 0–6 or
X_{16} is $-(CH_2)_s-S-S-(CH_2)_t-NH_2$ where s is 0–6 and t is 2–6.

5,334,762
METHOD FOR ACCELERATING OXIME PRODUCTION
James P. Neilan, Bear, Del., and Donald J. Gosciniak, West Chester, Pa., assignors to Zeneca Inc., Wilmington, Del.
Filed Feb. 4, 1993, Ser. No. 13,278
Int. Cl.[5] C07C *249/08*
U.S. Cl. 564—259 **9 Claims**

1. A method for preparing oximes, comprising:
reacting an aldehyde or ketone with hydroxylamine or a salt thereof in the presence of a catalytic amount of an organotin(IV) compound selected from the group consisting of monoalkyltin(IV), dialkyltin(IV) and aryltin(IV) compounds.

5,334,763
PROCESSES FOR MAKING ETHANOLAMINES
Samuel J. Washington, and Tony F. Grant, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.
Filed Apr. 22, 1993, Ser. No. 51,719
Int. Cl.[5] C07C *213/04*
U.S. Cl. 564—475 **14 Claims**

1. A process for reducing the amount of the ethoxylated amine byproducts MEAGE, DEAGE and TEAGE formed in a process for making ethanolamines from the reaction of ethylene oxide and ammonia, comprising feeding carbon dioxide or a material which will evolve carbon dioxide to a reactor for conducting such process.

5,334,764
PROCESS FOR PREPARING N-ALKAYL POLYHYDROXY AMINES
Jeffrey J. Scheibel; Daniel S. Connor; Robert E. Shumate, and James B. St. Laurent, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 938,576, Aug. 31, 1992, abandoned, which is a continuation of Ser. No. 598,462, Oct. 12, 1990, abandoned. This application May 6, 1993, Ser. No. 59,000
Int. Cl.[5] B07C *209/00*
U.S. Cl. 564—487 **1 Claim**

1. A process carried out under non-oxidizing conditions for preparing N-methyl glucamine, comprising the steps of:
a) reacting glucose with N-methyl amine at a mole ratio of about 1:1 amine:sugar in methanol or 1,2-propylene glycol solvent at a temperature in the range of from about 30° C. to about 60° C. for a period from about 1–10 hours and removing unreacted amine to provide an adduct;
b) reacting said substantially amine-free adduct from step (a) with hydrogen at a temperature from about 40° C. to about 120° C. said adduct being dissolved in methanol or 1,2-propylene glycol solvent, in the presence of a nickel catalyst; and
c) removing said catalyst and substantially removing the water and solvent from the reaction mixture to secure the N-methyl glucamine.

5,334,765
CARBAMOYL DERIVATIVES
Robert T. Jacobs, Wilmington, Del., assignor to Imperial Chemical Industries PLC, London, England
Division of Ser. No. 927,762, Aug. 10, 1992, Pat. No. 5,286,740, which is a continuation of Ser. No. 626,072, Dec. 11, 1990, abandoned. This application Oct. 14, 1993, Ser. No. 137,245
Claims priority, application United Kingdom, Dec. 11, 1989, 8927981
Int. Cl.[5] C07C *211/03*
U.S. Cl. 564—510 **2 Claims**

1. 2-Methyl-4,4,4-trifluorobutylamine, or an acid solution salt thereof.

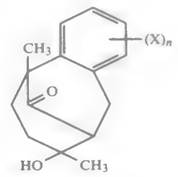
5,334,766
PROCESS FOR THE RESOLUTION OF RACEMIC DIPHOSPHINE OXIDES
Marco Cereghetti, Basel, Switzerland, and Alain Rageot, St. Louis, France, assignors to Hoffmann-La Roche INc., Nutley, N.J.
Filed Apr. 9, 1992, Ser. No. 866,384
Claims priority, application Switzerland, Apr. 29, 1991, 1272/91
Int. Cl.[5] C07F *9/53, 9/572, 9/655, 9/6553*
U.S. Cl. 568—14 **6 Claims**

1. A process for the resolution of racemic diphosphine oxides into the optically active antipodes by reacting the racemic diphosphine oxide with a resolving agent, which process comprises using a carbamate or thiocarbamate of an optically active α-hydroxycarboxylic acid or α-aminocarboxylic acid as the resolving agent.

5,334,767
BENZO[F]QUINOLINONES
James E. Audia, Indianapolis, Ind.; Kenneth S. Hirsch, Clarksville, Md.; Charles D. Jones, Indianapolis, Ind.; David E. Lawhorn, Greenfield, Ind.; Loretta A. McQuaid, and Leland O. Weigel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 927,710, Aug. 10, 1992, Pat. No. 5,239,075, which is a continuation-in-part of Ser. No. 781,039, Oct. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 748,116, Aug. 21, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 52,960
Int. Cl.[5] C07C *49/792, 49/796, 49/807*
U.S. Cl. 568—327 **3 Claims**

1. A compound of the Formula

II



where:
X is halogen, NO_2, CF_3, mercapto, or a group $-A-R^6$ where A is C_1–C_6 alkylene or C_2–C_6 alkenylene or C_2–C_6 alkynylene; and R^6 is halogen or hydroxy;
n is 1 or 2; or a pharmaceutically acceptable salt thereof.

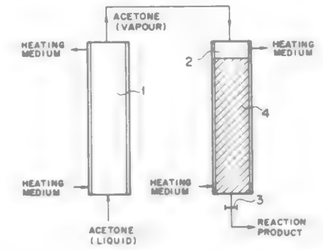
5,334,768
PROCESS FOR THE PRODUCTION OF A CYCLOALKANONE AND/OR A CYCLOALKANOL
Johannes G. van Hinsberg, Meerssen; Cornelis G. M. van de Moesdijk, Beek; Ivo Spaargaren, Geleen, and Otto E. Sielcken, Sittard, all of Netherlands, assignors to DSM N.V., Heerlen, Netherlands
Filed Feb. 3, 1993, Ser. No. 12,859
Claims priority, application Netherlands, Mar. 2, 1992, 9200187
Int. Cl.[5] C07C *45/58*
U.S. Cl. 568—341 **12 Claims**

1. Process for the production of cycloalkanone and optionally cycloalkanol comprising:
causing a mixture containing cycloalkylhydroperoxide to react with a cycloalkene under the influence of a catalyst, wherein the reaction is conducted with a short measure of cycloalkene relative to the cycloalkylhydroperoxide, under such conditions that virtually all of the cycloalkene reacts to cycloalkene oxide and optionally cycloalkanol and/or cycloalkanone,
after which, subjecting the mixture, optionally after decomposition of cycloalkylhydroperoxide and distillation of cycloalkane, to a first separation, in which at least cycloalkene oxide is separated therefrom,
isomerizing the cycloalkene oxide in the separated mixture to substantially cycloalkanone, and
recovering at least the cycloalkanone.

5,334,769
PROCESS FOR THE SYNTHESIS OF ALDEHYDES AND THEIR DERIVATIVES
Rose-Marie Ferrero, Lyons, and Roland Jacquot, Sainte Foy Les Lyon, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France
Filed Oct. 26, 1992, Ser. No. 966,385
Claims priority, application France, Oct. 24, 1991, 91 13147
Int. Cl.[5] C07C *45/00, 45/41*
U.S. Cl. 568—435 **42 Claims**

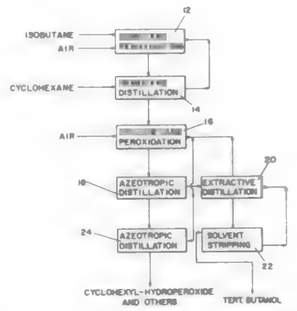
1. A process for the preparation of aldehydes and their derivatives by hydrogen reduction of carboxylic acids, esters or anhydrides, comprising reducing said carboxylic acids, esters or anhydrides in the presence of a catalytically effective amount of bimetallic ruthenium-tin catalyst.

5,334,770
PROCESS OF ALDOL CONDENSATION BY GAS-PHASE REACTION
Hiroshi Ueda, Takarazuka; Tamotsu Takamoto, and Koji Okada, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Jun. 23, 1993, Ser. No. 79,830
Claims priority, application Japan, Jul. 9, 1992, 4-182220
Int. Cl.[5] C07C *45/72*
U.S. Cl. 568—463 **13 Claims**



1. A process for aldol condensation of an active hydrogen-containing compound comprising:
feeding a gaseous active hydrogen-containing compound to an indirect heat transfer type, non-isothermal reactor which is provided with a fixed bed solid catalyst whereby the aldol condensate of said active hydrogen-containing compound is obtained.

5,334,771
PEROXIDATION OF SECONDARY CARBON IN ALKANES AND CYCLOALKANES
George Ember, Hackensack, N.J.; Edilberto A. De Castro Netro, Bahia, and Rogerio F. De Lacerda, Ondina, both of Brazil, assignors to ABB Lummus Crest Inc., Bloomfield, N.J. and Nitrocarbono S.A., Camacari, Brazil
Filed Jul. 14, 1993, Ser. No. 91,780
Int. Cl.[5] C07C *409/04, 409/06, 409/08*
U.S. Cl. 568—573 **10 Claims**



1. A method for the peroxidation of secondary carbon in hydrocarbons selected from the group consisting of alkanes and cycloalkanes to produce secondary hydroperoxides comprising:

VOL 1165 ISS 1 AUG 2 1994 UMI

a. peroxidizing said hydrocarbon with molecular oxygen at a temperature of from 100° to 200° C. in the presence of a tertiary hydroperoxide initiator containing no more than 50 mole percent tertiary alcohol and the amount of tertiary hydroperoxide is from 0.5 to 10 mole percent of said hydrocarbon to produce a mixture of said secondary hydroperoxide, an unreacted quantity of said hydrocarbon, as unreacted quantity of said tertiary hydroperoxide and said tertiary alcohol;

b. subjecting said mixture to azeotropic distillation whereby first a minimum boiling binary azeotrope of said tertiary alcohol and a portion of said unreacted hydrocarbon is removed from said mixture as overhead leaving a bottoms containing said secondary hydroperoxide, remaining unreacted hydrocarbon and said unreacted quantity of tertiary hydroperoxide;

c. subjecting said bottoms to a further azeotropic distillation whereby a second minimum boiling binary azeotrope of said tertiary hydroperoxide and at least a portion of said remaining unreacted hydrocarbon is removed from said bottoms as an overhead and recycling said second minimum boiling azeotrope to said peroxidizing step.

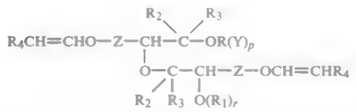
5,334,772

POLYALK-1-ENYL ETHERS

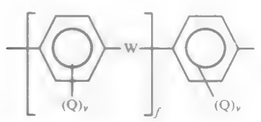
Jeffrey S. Plotkin, Monsey, N.Y.; Kolazi S. Narayanan, Palisades Park, and Paul D. Taylor, West Milford, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 417,135, Oct. 4, 1989, abandoned. This application Apr. 13, 1992, Ser. No. 867,563
Int. Cl.[5] C07C *43/11*
U.S. Cl. 568—609 10 Claims

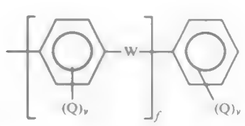
1. The polyalk-1-enyl ether having the formula



wherein p has a value of from 0 to 8; when p has a positive value, R is the radical:



where W is C_1 to C_4 alkyl, sulfur, sulfonyl or oxygen, f has a value of from 1 to 50, Q is halo or C_1 to C_4 alkyl and v has a value of 0–4; when p is zero, R is a monovalent C_2 to C_{20} optionally alkoxylated radical of alkyl, phenyl, benzyl, or the radical:



where

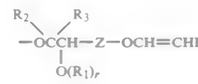
W is C_1 to C_4 alkyl, sulfur, sulfonyl or oxygen, f has a value of from 1 to 50, Q is halo or C_1 to C_4 alkyl and v has a value of 0–4;

R_2 and R_3 are each independently hydrogen or C_1 to C_6 alkyl;

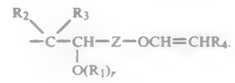
R_4 is hydrogen or C_1 to C_6 alkyl;

Z is an optionally alkoxylated C_1 to C_8 aliphatic hydrocarbon;

Y is



r has a value from 1 to 100, and R_1 is hydrogen when r is 1 and, when r is greater than 1, R_1 is



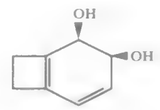
5,334,773

MICROBIAL PRODUCTION OF CIS-DIHYDRODIOL AND PHENOL DERIVATIVES OF BENZOCYCLOBUTENE

Alan D. Grund, Manitowoc, Wis., assignor to Bio-Technical Resources, L.P., Manitowoc, Wis.

Continuation-in-part of Ser. No. 785,978, Oct. 31, 1991, abandoned. This application Jun. 16, 1993, Ser. No. 78,670
Int. Cl.[5] C07C *39/12, 39/17*
U.S. Cl. 568—734 1 Claim

1. A dihydrodiol of the formula

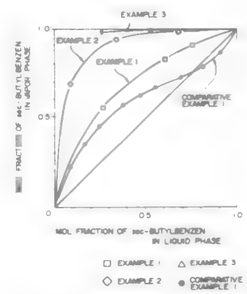


5,334,774

PROCESS FOR PURIFYING PHENOL

Kayoko Kogure, Sodegaura; Kimura: Kazuo, Ichihara; Michihiro Kawasaki, Ichihara; Masaaki Toma, Ichihara, and Eiji Imamura, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 24, 1993, Ser. No. 64,982
Claims priority, application Japan, Jun. 5, 1992, 4-145326; Oct. 6, 1992, 4-267191; Dec. 16, 1992, 4-335763
Int. Cl.[5] C07C *37/74*
U.S. Cl. 568—754 18 Claims



1. A process for purifying and recovering phenol from a reaction liquid produced by oxidizing sec-butylbenzene to sec-butylbenzene hydroperoxide and decomposing the resulting sec-butylbenzene hydroperoxide to phenol and methyl ethyl ketone, which process comprises the steps of:

(A) distilling the reaction liquid to obtain a first overhead liquid mainly containing methyl ethyl ketone from the top of a distillation column, and a first bottom liquid mainly containing phenol and unreacted sec-butylbenzene from the bottom of the distillation column;

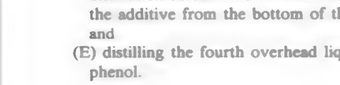
(B) distilling the first bottom liquid to obtain a second overhead liquid mainly containing phenol, sec-butylbenzene and other materials which form an azeotropic mixture with phenol from the top of the distillation column, and a second bottom liquid containing materials having higher boiling points than that of phenol from the bottom of the distillation column; and

(C) distilling the second overhead liquid in the presence of an additive selected from the following groups 1 to 5:

group 1: dialkylene glycols having 2–10 carbon atoms, polyalkylene glycols having 2–10 carbon atoms, and the ethers thereof;

group 2: alkanediols having 2–20 carbon atoms;

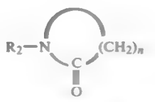
group 3: ethanolamine-type compounds represented by the formula (1)



(1)

wherein R_1 represents an alkyl group having 1–6 carbon atoms, a cycloalkyl group having 3–6 carbon atoms, a monohydroxyalkyl group having 1–6 carbon atoms or a hydrogen atom, m represents an integer of 1–4, and X represents a hydroxyl group, an amino group or a hydrogen atom, provided that R_1 and X can conjointly represent a cyclic group formed by removing one hydrogen atom from R_1 and X, respectively, and connecting R_1 and X to form a ring;

group 4: lactam compounds represented by the formula (2)



(2)

wherein R_2 represents an alkyl group having 1–6 carbon atoms, a cycloalkyl group having 3–6 carbon atoms, a monohydroxyalkyl group having 1–6 carbon atoms, or a hydrogen atom, and n represents an integer of 3–7; and

group 5: quinoline, sulfolane and N,N-dimethylimidazolidinone,

to obtain a third overhead liquid containing sec-butylbenzene and other materials which form an azeotropic mixture with phenol from the top of the distillation column, and a third bottom liquid containing phenol and the additive from the bottom of the distillation column;

(D) distilling the third bottom liquid to obtain a fourth overhead liquid mainly containing phenol from the top of the distillation column and a fourth bottom liquid containing the additive from the bottom of the distillation column; and

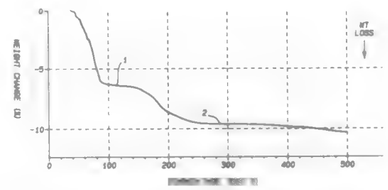
(E) distilling the fourth overhead liquid to obtain purified phenol.

5,334,775

POLYMER ALKYLATION OF HYDROXYAROMATIC COMPOUNDS

Antonio Gutierrez, Mercerville; Stuart L. Soled, Pittstown, and Jose A. Paes, Scotch Plains, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jun. 2, 1993, Ser. No. 70,572
Int. Cl.[5] C07C *37/14*
U.S. Cl. 568—791 17 Claims



1. A process for producing an alkylated hydroxyaromatic compound, comprising:

contacting, in the liquid phase,

a hydroxyaromatic compound,

a polymer alkylating agent of at least about 500 number average molecular weight and having at least one reactive carbon-carbon double bond unsaturation, and

a heteropoly catalyst having substantially no waters of crystallization per heteropolyanion therein and forming an alkylated hydroxy aromatic compound.

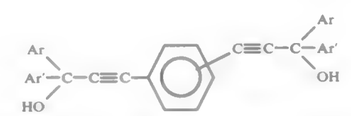
5,334,776

COMPOUND AND SEPARATING AGENT

Fumio Toda, Ehime, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP92/01083, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO93/05004, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 27, 1992, Ser. No. 30,058
Claims priority, application Japan, Sep. 9, 1991, 3-227991
Int. Cl.[5] C07C *33/28, 33/48*
U.S. Cl. 568—813 5 Claims

1. An optically active compound represented by the formula (I):



wherein Ar and Ar' are different from each other and are each an aromatic group; and the positional relationship of the two substituents on the central benzene ring may be ortho, meta or para.

5,334,777

CONVERSION OF ALKANES TO ALKANOLS AND GLYCOLS

Jorge Miller, and Miguel Kling, both of Bogota, Colombia, assignors to Energia Andina Ltd., New York, N.Y.

Continuation-in-part of Ser. No. 971,899, Nov. 4, 1992, Pat. No. 5,243,098. This application Aug. 4, 1993, Ser. No. 101,739
Int. Cl.[5] C07C *27/00, 29/00, 31/18*
U.S. Cl. 568—859 11 Claims

1. A process for producing a glycol from a corresponding lower alkene or lower alkanol which comprises the following steps:

a) reacting the alkene or alkanol with a metal halide (wherein the metal is in the higher of two possible valence

VOL 1165 ISS 1 AUG 2 1994 UMI

states) to form a corresponding alkyl dihalide or halo alcohol, the corresponding metal halide (wherein the metal is in the lower of the two possible valence states), and hydrohalic acid; and

b) reacting the obtained hydrohallo acid and alkyl dihalide or halo alcohol with magnesium oxide and H_2O to form the corresponding glycol and magnesium halide hydrate.

5,334,778

PROCESS FOR THE PRODUCTION OF 1,3-PROPANEDIOL

Thomas Haas, Frankfurt; Norbert Wiegand, Rheinfelden, and Dietrich Arntz, Oberursel, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 19, 1993, Ser. No. 63,317

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1992, 4218282

Int. Cl.[5] C07C *29/141, 31/20*

U.S. Cl. 568—862 **15 Claims**

1. A process for the production of 1,3-propanediol having a residual carbonyl content below 500 ppm, expressed as propionaldehyde, comprising catalytically hydrogenating 3-hydroxypropionaldehyde in aqueous solution in the presence of a hydrogenation catalyst at (a) 30° to 80° C. to an 3-hydroxypropionaldehyde conversion of 50 to 95% and (b) then continuing said hydrogenating at 120° to 140° C. to achieve an 3-hydroxypropionaldehyde conversion of substantially 100%.

5,334,779

CATALYST COMPOSITIONS AND THE USE THEREOF IN THE HYDROGENATION OF CARBOXYLIC ACID ESTERS

Yeong-Jen Kuo, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1993, Ser. No. 69,489

Int. Cl.[5] C07C *29/14, 27/04*

U.S. Cl. 568—864 **10 Claims**

1. A process for hydrogenating a carbonyl compound to the alcohol which corresponds to the carbonyl compound which comprises contacting the carbonyl compound with hydrogen in the presence of a catalyst comprising the oxides of copper, zinc, and a third element selected from the group consisting of aluminum, magnesium, zirconium and mixtures thereof wherein the amount of the oxide of the third component is not more than 4 weight percent under hydrogenation conditions of temperature and pressure.

5,334,780

OXIDATION OF HYDROCARBONS OVER ORDERED ARRAYS OF HETEROPOLYACIDS AND POLYOXOANIONS ON GRAPHITE

Shahid N. Shaikh, Media; Paul E. Ellis, Jr., Downingtown, and James E. Lyons, Wallingford, all of Pa., assignors to Sun Company, Inc., Philadelphia, Pa.

Filed Jul. 30, 1993, Ser. No. 100,534

Int. Cl.[5] C07C *27/12, 31/12, 45/33*

U.S. Cl. 568—910 **25 Claims**

1. A method for oxidation of alkanes comprising contacting said hydrocarbon in the presence of oxidant with catalyst comprising (1) heteropolyacid having the formula:

$$H_a(X_kM_nM'_zO_y)^{-e}$$

wherein X is one or more elements selected from a Group IIIB–VIB element; M is molybdenum, tungsten or vanadium or combinations thereof; M′ is one or more atoms of chromium or other transition metal from Groups IVA, VA, VIIA, VIIIA, IB and IIB of the Periodic Table, substituted in the framework for one or more metal or metal-oxygen unit k is 1 to 5, z is 1 to 3, n is 5 to 20−z, y is 18 to 62, e is the change on the $(X_kM_nM'_zO_y)$ group and the number of hydrogen atoms needed to balance the formula, M′ is different from M, and each M′ atom is bonded through oxygen to another M or M′ atom; or (2) polyoxoanion thereof; wherein said heteropolyacid or polyoxoanion is deposited on a graphite surface.

5,334,781

PROCESS FOR THE PREPARATION OF NITROBENZENE

Herman W. Kouwenhoven, Herrliberg; Leopoldo Bertea, and Roel Prins, both of Zürich, all of Switzerland, assignors to CU Chemie Uetikon AG, Uetikon, Switzerland

Filed Jan. 15, 1993, Ser. No. 5,104

Claims priority, application Switzerland, Jan. 15, 1992, 0101/92-5

Int. Cl.[5] C07C *205/06*

U.S. Cl. 568—927 **5 Claims**

1. A process for the preparation of nitrobenzene, characterized by the catalytic nitration of benzene at a temperature between 300 and 523 K., using aqueous nitric acid as nitrating agent and a catalyst based on H-clinoptilolite.

5,334,782

METHOD FOR PRODUCING A HYDROGEN-CONTAINING CHLOROMETHANE

Shinsuke Morikawa; Masaru Yoshitake, and Shin Tatematsu, all of Yokohama, Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

PCT No. PCT/JP92/00522, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO92/18447, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 23, 1991, Ser. No. 960,423

Claims priority, application Japan, Apr. 23, 1991, 2-119457; Dec. 13, 1991, 2-352257

Int. Cl.[5] C07C *17/24, 19/02, 19/04*

U.S. Cl. 570—101 **6 Claims**

1. A method for producing a hydrogen-containing chloromethane, which comprises reducing a polychloromethane by hydrogen in a liquid phase fixed bed system in the presence of a reduction catalyst, wherein said reduction catalyst comprises:

(A) at least one element selected from the group consisting of ruthenium, rhodium, palladium and platinum, or

(B) as the main component at least one element selected from the group consisting of ruthenium, rhodium, palladium and platinum, and at least one additional component element selected from the group consisting of copper, silver and gold.

5,334,783

PROCESS FOR THE PREPARATION OF HEXAFLUOROPROPENE

Reinhold Freudenreich; Ingolf Mielke; Karl Rettenbeck, and Thomas Schöttle, all of Burgkirchen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 739,732, Jul. 30, 1991, abandoned, which is a continuation of Ser. No. 664,465, Mar. 1, 1991, abandoned, which is a continuation of Ser. No. 488,395, Feb. 27, 1990, abandoned, which is a continuation of Ser. No. 321,966, Mar. 10, 1989, abandoned. This application Sep. 22, 1992, Ser. No. 949,348

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1988, 3808437; Jul. 9, 1988, 3823370

Int. Cl.[5] C07C *17/02*

U.S. Cl. 570—153 **19 Claims**

1. A process for the preparation of hexafluoropropene by thermal cleavage of a mixture consisting of chlorotetrafluoroethane and perfluorocyclobutane and between 0.5 and 20 mole of tetrafluoroethylene per mole of combined chlorotetrafluoroethane and perfluorocyclobutane at a temperature of from 600° C. to 1,000° C. under a pressure of from 1 kPa to 1,000 kPa.

5,334,784

WATER SEPARATION PROCESS

Charles B. Blake, Guilden Sutton; James M. Forsyth, Withington; Ann S. Liow, Halton Village; Stephen J. Adams, Great Sankey; Ralph J. Doy, Saltburn; Rowland J. P. Brierley, Yarn; Jane A. E. Roberts, Hoole; Brian Schofield, Atherton, and Neil D. Shilling, Northwich, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 9, 1992, Ser. No. 987,718

Claims priority, application United Kingdom, Dec. 10, 1991, 9126228; Sep. 3, 1992, 9218607; Sep. 15, 1992, 9219469

Int. Cl.[5] C07C *17/08, 19/08*

U.S. Cl. 570—165 **10 Claims**

1. A process for the manufacture of 1,1,1,2-tetrafluoroethane, comprising:

(a) effecting the gaseous reaction of trichloroethylene and-/or 1,1,1-trifluoro-2-chloroethane with a stoichiometric excess of HF in the presence of a fluorination catalyst;

(b) contacting the resulting gaseous product stream with liquid HF to effect mass transfer of water present in the gaseous product stream to said liquid HF; and

(c) recycling HF obtained from said product stream following step (b) to the reaction of step (a).

5,334,785

PROCESS FOR THE MANUFACTURE OF 1,1,1,2-TETRAFLUOROETHANE

Li Wang, Bloomingdale; Timothy J. Barder, Addison; Mark Kaiser, Brookfield; Russell W. Johnson, Elmhurst, and Blaise J. Arena, Des Plaines, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 958,532, Oct. 8, 1992, abandoned, which is a continuation of Ser. No. 782,928, Oct. 25, 1991, abandoned. This application Jun. 23, 1993, Ser. No. 81,930

Int. Cl.[5] C07C *17/08*

U.S. Cl. 570—165 **7 Claims**

1. A process for the vapor phase fluorination of hydrocarbons and or halogenated hydrocarbons with hydrogen fluoride over a catalyst at fluorination conditions wherein said catalyst consists essentially of the product of heating in nitrogen at a temperature of about 300° C. to 650° C. a mixture of an aluminum oxide hydrate selected from the group consisting of boehmite, beat aluminum oxide monohydrate, and alpha or beta alumina trihydrate and an acidic chromium compound selected from the group consisting of $Cr(OH)Cl_2.2H_2)$ $CrCl_3$, $Cr(NO_3)_3$, $Cr(OH)(CH_3COO)_2$, $Cr(CH_3COO)_3$ and $(Cr(OH)_2(CH_3COO)_7$, said chromium having a valence of 3.

5,334,786

PROCESS FOR PREPARING 1,1,1,2-TETRAFLUOROETHANE

Satoshi Koyama; Yukio Homoto, and Naoki Esaka, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 912,139, Jul. 9, 1992, abandoned, which is a continuation of Ser. No. 668,121, Mar. 12, 1991, abandoned. This application Jan. 27, 1993, Ser. No. 9,420

Claims priority, application Japan, Mar. 13, 1990, 2-61811; Oct. 22, 1990, 2-285596

Int. Cl.[5] C07C *17/00, 17/08*

U.S. Cl. 570—168 **7 Claims**

1. A process for preparing 1,1,1,2-tetrafluoroethane which comprises the steps of:

(1) reacting trichloroethylene with hydrogen fluoride in the gas phase in the presence of a fluorination catalyst to obtain 1,1,1-trifluorochloroethane in a first reaction zone,

(2) introducing the reaction mixture from the first reaction zone to a second reaction zone,

(3) reacting 1,1,1-trifluorochloroethane from the first reaction zone with hydrogen fluoride in the gas phase in the presence of a fluorination catalyst to obtain 1,1,1,2-tetrafluoroethane and by-produce 1,1-difluorochloroethylene in the second reaction zone,

(4) recycling the entire reaction mixture including 1,1,1,2-tetrafluoroethane from the second reaction zone to the first reaction zone,

(5) reacting 1,1-difluorochloroethylene produced in the second reaction zone with hydrogen flucride to reduce the amount of 1,1-difluorochloroethylene in the first reaction zone, and

(6) recovering 1,1,1,2-tetrafluoroethane ad hydrogen chloride formed as a by-produce from the reaction mixture from the first reaction zone between the first and second reaction zones.

5,334,787

PROCESS FOR THE MANUFACTURE OF PENTAFLUOROETHANE

Vinci M. Felix, Kennett Square, Pa.; William H. Gumprecht, Wilmington, Del., and Barry A. Mahler, Glen Mills, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 834,798, Feb. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 695,900, May 6, 1991. This application Nov. 12, 1992, Ser. No. 989,481

Int. Cl.[5] C07C *17/08*

U.S. Cl. 570—169 **13 Claims**

1. A process for the preparation of CF_3CHF_2 comprising:

(a) contacting HF with at least one reactant comprising a material selected from the group consisting of CF_3CHCl_2, $CClF_2CHClF$, CF_3CHClF, and CHF_2CClF_2, in the gas phase in the presence of a solid Cr_2O_3 catalyst at a temperature of about 300° to 370° C. and an HF/reactant mole ratio of about 2/1 to 10/1 for a time of about 10 to 100 seconds to form a product stream comprising at least about 50 mole % CF_3CHF_2, and less than about 2 mole % CF_3CClF_2; and thereafter,

(b) separating and recovering CF_3CHF_2 from the product stream.

5,334,788

REACTION OF SUBSTRATE COMPOUNDS WITH FLUORINE IN AN EDUCTOR

Keith B. Baucom, Alachua; Adam C. Alty, Gainesville, and Earl J. Kimmel, Jacksonville, all of Fla., assignors to PCR Group, Inc., Gainesville, Fla.

Continuation of Ser. No. 345,588, May 1, 1989, Pat. No. 5,177,275. This application May 1, 1992, Ser. No. 876,978

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] C07C *19/08, 17/20, 22/00*

U.S. Cl. 570—175 **11 Claims**

1. A process comprising

(a) inducing movement in a fluid stream which is or contains a substrate compound having at least one fluorine-reactive site to provide a moving substrate stream

(b) educting elemental fluorine, alone, or in admixture with an inert gas, into the stream of fluid substrate whereby said fluorine is reacted rapidly with said substrate in a controlled manner; and

(c) recovering a reacted substrate compound, a mixture of such compounds or an oligomeric derivative of such compound or compounds, and

wherein step (b) is carried out in an eductor comprising a venturi nozzle having a throat for directing the moving fluid substrate and a suction chamber for introducing fluorine upstream of said throat into said moving fluid substrate.

VOL 1165 ISS 1 AG 2 1994 UMI

5,334,789

OXYCHLORINATION CATALYST PROCESS FOR PREPARING THE CATALYST AND METHOD OF OXYCHLORINATION WITH USE OF THE CATALYST

Masashi Komatsu, Ibaraki; Michio Yamamoto, Otsu; Masaru Ishino, Ichihara, and Gohfu Suzukamo, Suita, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 30, 1993, Ser. No. 83,502
Claims priority, application Japan, Jun. 30, 1992, 4-172465
Int. Cl.[5] C07C *17/156*
U.S. Cl. 570—203 20 Claims

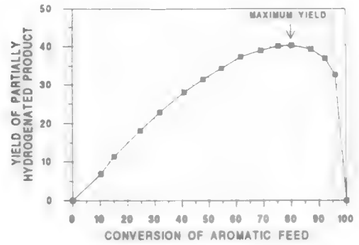
1. A method for oxychlorination of an olefin or an aromatic hydrocarbon in the presence of a catalyst using hydrogen chloride and oxygen wherein the catalyst is an oxychlorination catalyst comprising (i) a carrier material, (ii) a palladium compound, a copper compound and a vanadium compound, and, optionally, (iii) an alkali earth metal compound.

5,334,790

PROCESS AND CATALYST FOR PARTIALLY HYDROGENATING AROMATICS TO PRODUCE CYCLOOLEFINS

Michael A. Richard, Foster City; Jacques De Deken, Palo Alto, and David K. Yee, Milpitas, all of Calif., assignors to Catalytica, Mountain View, Calif.

Filed Feb. 26, 1992, Ser. No. 841,850
Int. Cl.[5] C07C *5/05*
U.S. Cl. 585—271 31 Claims



1. A process for producing cycloolefins from aromatic feedstocks comprising the steps of:

contacting hydrogen, an aqueous solution which contains a promoter selected from the group consisting of a Group VIII, IB, and IIB metal salt, and the aromatic feedstock comprising one or more monocyclic or polycyclic aromatic hydrocarbons with a partial hydrogenation catalyst to hydrogenate partially the aromatic feedstock and produce the corresponding cycloolefin, wherein the hydrogenation catalyst is comprised of ruthenium and a composite catalyst support made up of a core of a first oxidic material having a surface area greater than about 50 m^2/gm which is at least partially surrounded by a second oxidic material having a surface area less than about 10 m^2/gm, wherein the composite support has a BET surface area of at least 50 m^2/gm, the ruthenium exists as particles no more than about 25 Å in average diameter, and the second oxidic material is selected from the group consisting of metal oxides, semimetal oxides, and a lanthanum-containing material of the formula:

$$x(LaONO_3)+y(La_2O_3)+z(La(NO_3)_3)$$

where $x<1$, $z<1$, and $x+y+z=1$; and

separating the cycloolefin from the hydrogenation catalyst.

5,334,791

HYDROGENATION PROCESS WITH TRANSITION METAL CATALYSTS DERIVED FROM BIFUNCTIONAL PHOSPHORUS-NITROGEN LIGANDS

Ronald G. Cavell; David J. Law, both of Edmonton, and Robert W. Reed, Guelph, all of Canada, assignors to Ligands Inc., Calgary, Canada

Filed May 22, 1992, Ser. No. 887,014
Int. Cl.[5] C07C *5/03*
U.S. Cl. 585—277 18 Claims

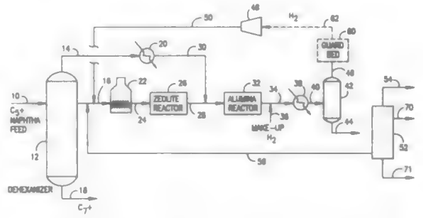
1. A process for hydrogenating a non-aromatic unsaturated hydrocarbon, comprising: reacting the hydrocarbon with a catalyst precursor which includes a source of a group VIIIB transition metal from the second and third rows of the periodic table and a heterobifunctional ligand constructs with a phosphine center and an imine nitrogen center, in the presence of hydrogen and a promoter selected from secondary or tertiary acyclic alkyl mines in a suitable solvent which solubilizes the hydrocarbon, catalyst precursor, the hydrogen, and the promoter.

5,334,792

COMBINED PARAFFIN ISOMERIZATION/RING OPENING PROCESS FOR C5+NAPHTHA

Kenneth J. Del Rossi, Woodbury; David J. Dovedytis, Plainsboro; David J. Esteves, Mercerville, all of N.J.; Mohsen N. Harandi, Langhorne, and Albin Huss, Jr., Chadds Ford, both of Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 9, 1992, Ser. No. 958,826
Int. Cl.[5] C07C *5/02, 5/13, 5/23*
U.S. Cl. 585—314 25 Claims



1. A process for ring opening and isomerization of C_5+ naphtha hydrocarbons, said process comprising the steps of:

(a) passing C_5+ naphtha hydrocarbons comprising at least 10 wt. % C_6 cyclic hydrocarbons to a fractionation zone;

(b) withdrawing a sidecut comprising C_6 hydrocarbons and a majority of said C_6 cyclic hydrocarbons entering said fractionation zone;

(c) charging said sidecut along with hydrogen to a first reaction zone, wherein said hydrocarbons and hydrogen are contacted with a catalyst comprising a zeolite and a hydrogenation component at a temperature and pressure sufficient to saturate benzene and open cyclic hydrocarbons contained in said hydrocarbons;

(d) withdrawing an overhead from said fractionation zone comprising C_5 hydrocarbons and a minority of said C_6 cyclic hydrocarbons entering said fractionation zone; and

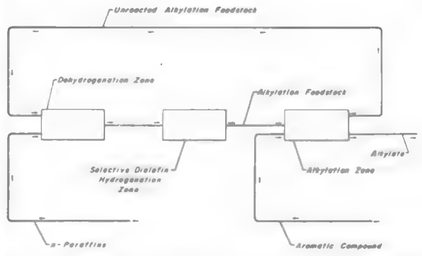
(e) mixing said overhead with hydrocarbon product from said first reaction zone and charging to a second reaction zone, wherein hydrocarbons are contacted with an isomerization catalyst at a temperature and pressure sufficient to isomerize paraffins, and wherein said second reaction zone temperature is lower than said first reaction zone temperature.

5,334,793

INCREASING CATALYST LIFE AND IMPROVING PRODUCT LINEARITY IN THE ALKYLATION OF AROMATICS WITH LINEAR OLEFINS

Joseph A. Kocal, Gurnee, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 919,329, Jul. 27, 1992, Pat. No. 5,245,094. This application May 27, 1993, Ser. No. 67,900
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] C07C *2/66*
U.S. Cl. 585—323 18 Claims



1. A process of increasing the linearity of monoalkylbenzenes formed in the continuous alkylation of benzene by the linear monoolefins contained in an alkylation feedstock arising from the dehydrogenation of linear paraffins having from 6 to 20 carbon atoms and consisting essentially of unreacted linear paraffins, linear olefins, and more than about 2 weight percent of aromatic compounds formed in said dehydrogenation having from about 7 up through about 20 carbon atoms, said alkylation performed in the presence of an alkylation catalyst at a benzene to olefin molar ratio R, a liquid hourly space velocity L, a pressure P, and at a temperature T_1, where said alkylation catalyst effects more than 99% conversion of olefins for a time t_1 which is at least 16 hours, said process comprising decreasing the concentration of the aromatic compounds in the alkylation feedstock to less than about 2 weight percent to afford a reduced aromatics alkylation feedstock, and subsequently performing said alkylation with the reduced aromatics alkylation feedstock under the same R, L, and P values but at a temperature T_2 at least 5° C. lower than T_1, and where said alkylation catalyst effects more than 99% conversion of olefins for a time t_2 which is at least as great as t_1.

5,334,794

PROCESS FOR PRODUCING MONOALKENYL AROMATIC HYDROCARBON COMPOUND

Norio Fushimi; Ko Kedo; Kenji Inamasa, and Makoto Takagawa, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 47,811
Claims priority, application Japan, Jun. 22, 1992, 4-162692
Int. Cl.[5] C07C *2/72*
U.S. Cl. 585—452 15 Claims

1. A process for producing a monoalkenyl aromatic hydrocarbon compound which comprises alkenylating a side chain of an aromatic hydrocarbon compound having at least one hydrogen atom bonded at an α-position of the side chain with a conjugated diene having 4 or 5 carbon atoms in the presence of a catalyst comprising a mixture obtained by heat treating metallic sodium together with a mixture of zirconium oxide and at least one potassium compound selected from the group consisting of potassium hydroxide, potassium carbonate, potassium hydrogen carbonate and potassium zirconate in an inert gas atmosphere.

5,334,795

PRODUCTION OF ETHYLBENZENE

Pochen Chu, Voorhees; Michael E. Landis, Woodbury, and Quang N. Le, Cherry Hill, all of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation of Ser. No. 786,617, Nov. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 545,163, Jun. 28, 1990, abandoned. This application Oct. 27, 1992, Ser. No. 967,954
The portion of the term of this patent subsequent to Oct. 9, 2007, has been disclaimed.
Int. Cl.[5] C07C *2/66*
U.S. Cl. 585—467 11 Claims

1. A process for the production of ethylbenzene, said process comprising alkylating benzene with ethylene under liquid phase conditions in the presence of a solid, porous acidic alkylation catalyst comprising a crystalline material characterized by an X-ray diffraction pattern including values substantially as set out in Table 1 of the specification.

5,334,796

ALKYLATION OF ALKYLAROMATICS PROMOTED BY AMINE COMPOUND

Lawrence D. Lillwitz, Glen Ellyn, and Anne M. Karachewski, St. Charles, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 799,543, Nov. 27, 1991, Pat. No. 5,198,594. This application Feb. 19, 1993, Ser. No. 20,334
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] C07C *2/66*
U.S. Cl. 585—467 8 Claims

1. A process for alkylating an alkylaromatic compound having at least one benzylic hydrogen atom with an olefinic compound comprising contacting the alkylaromatic under liquid phase conditions with an olefinic compound in the presence of at least one zero valent alkali metal and in the presence of an amine compound.

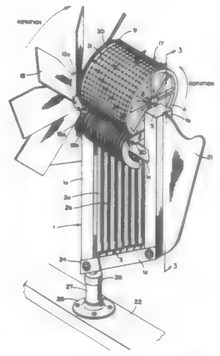
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5,334,797

WIND POWERED MUSIC MACHINE

Brian L. Niedge, 1113 S. Cale, Miles City, Mont. 59301

Filed Oct. 1, 1992, Ser. No. 955,031
Int. Cl.[5] G10F *1/06*
U.S. Cl. 84—95.1 13 Claims



1. A wind powered music machine comprising a vertically positioned framework consisting of a longer vertical member, a shorter vertical member, an upper horizontal cross-piece and a lower diagonal cross-piece, a plurality of chime tubes, being tuned to the musical scale, vertically suspended top and bottom in said frame, a hollow rotatable cylindrical body, the axis of which is horizontally disposed, mounted by means of a spoke-work and small hub at each end, held fast to an axial shaft, which rotates in two bearings fixed atop said framework, a propeller of adequate size to power said machine, being driven by the wind, fixed to a rotary shaft which rotates in a bearing mounted to said framework, the axis of said rotary shaft being parallel with the axis of said cylindrical body, a small pinion gear on said shaft, engaging and counter-rotating a large ring gear fixed to one end of said cylindrical body, thus, slowly rotating said cylindrical body in the correct direction, a plurality of small pegs mounted on said body in a predetermined pattern and held in a plurality of small peg location holes equally spaced around the periphery of said cylindrical body, a plurality of lever hammers mounted on said frame for engagement by said pegs to depress and release the upper ends of said hammers, thereby causing the lower ends of said lever hammers, to lift and fall because of gravity, striking the correct chime tube in the correct sequence, thus, producing the desired musical tones, said lever hammers being equally spaced upon a common rod mounted parallel with the axis of said cylindrical body, to said framework, said common rod being convenient to the lower periphery of said cylindrical body and the upper portion of said chime tubes with continual accurate alignment of said peg location holes, pegs, lever hammers and chime tubes, respectively, being essential for correct operation of the machine.

5,334,798

INTERCONNECT CABLE WITH BUILT-IN SHIELDING AND METHOD OF USE

Robert M. Kalis, Prairie Village, Kans., assignor to Allied-Signal Inc., Morristown, N.J.

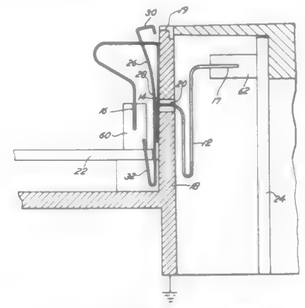
Filed Jan. 8, 1993, Ser. No. 2,303
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 R 13 Claims

1. An interconnect cable that electrically connects a first circuit board with a second circuit board, said first and second circuit boards being separated by an enclosure wall having an opening through which said cable passes, said cable comprising:

(a) a first connecting means for electrically connecting said cable to said first circuit board;

(b) a second connect means for electrically connecting said cable to said second circuit board;

(c) conducting means for conducting current and voltage



signals between said first circuit board and said second circuit board; and

(d) shielding means for providing electrical and mechanical shielding;

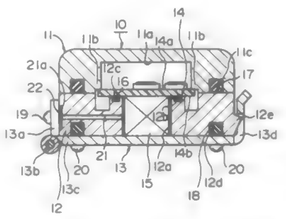
whereby, when said cable connects said first and second circuit boards by passing through said opening, said shielding means mechanically seals said opening and electrically shields said circuit boards.

5,334,799

WATERTIGHT CASING FOR ELECTRONIC APPARATUS

Yoshihisa Naito, Kawasaki, and Takahiro Hayashi, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 18, 1992, Ser. No. 884,165
Claims priority, application Japan, May 24, 1991, 3-120483
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] H05K *5/06*
U.S. Cl. 174—17 VA 3 Claims



1. A watertight casing for an electronic apparatus including a printed board having a battery mounted on one side thereof and electronic parts mounted on the other side thereof, said casing comprising:

a first case provided with a recess portion for receiving said electronic parts on said printed board;

a second case attached to said first case and provided with a through hole for receiving said battery and a land portion surrounding said through hole;

a cover member attached to said second case;

a first sealing member interposed between said first case and said second case;

VOL 1165 ISS 1 AUG 2 1994 UMI

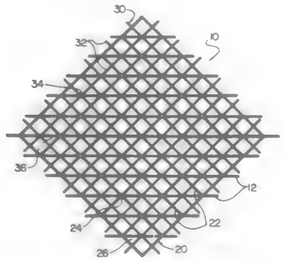
a second sealing member interposed between said second case and said cover member; and
a third sealing member positioned so as to be interposed, when said electronic apparatus is housed within said casing, between said printed board and said land portion of said second case;
a vent hole provided in said second case for communicating said through hole with an atmosphere; and
a gas permeable waterproof sheet for closing said vent hole.

5,334,800

FLEXIBLE SHIELDED CIRCUIT BOARD

Stephen O. Kenney, Haverhill, Mass., assignor to Parlex Corporation, Methuen, Mass.

Filed Jul. 21, 1993, Ser. No. 95,287
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 R **9 Claims**



1. A flexible, shielded circuit board comprising:
a substrate having first and second opposing substantially planar surfaces and one or more conductors disposed in the substrate; and
first and second shield layers comprised of electrically conductive material respectively disposed on said first and second planar surfaces, said first and second shield layers each having a mesh pattern of voids and conductive regions, said voids being defined by said conductive regions;
the mesh pattern of said first shield layer being offset from the mesh pattern of said second shield layer.

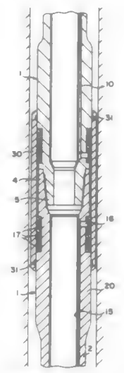
5,334,801

PIPE SYSTEM WITH ELECTRICAL CONDUCTORS

Frank Mohn, London, England, assignor to Framo Developments (UK) Limited, London, England

PCT No. PCT/GB90/01816, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO91/08373, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 23, 1990, Ser. No. 859,367
Claims priority, application United Kingdom, Nov. 24, 1989, #926510.0
Int. Cl.[5] G01V *1/40;* **E21B** *17/02, 17/10;* **H01R** *4/60*
U.S. Cl. 174—47 **27 Claims**

1. A pipe system comprising:
two pipe members having interengageable connecting means by which said two pipe members are mechanically connected together in end-to-end relationship,
electrical conductor means extending within each of said pipe members, and
electrical connection means at the connected ends of said pipe members, establishing electrical connection between said electrical conductor means of the connected pipe members, wherein:
said electrical connection means comprise external contacts exposed at the outer surfaces of said pipe members at the end regions thereof adjacent said interengageable connecting means,
a bridging member extending across the mechanically connected ends of said pipe members and mounted externally of said pipe members, said bridging member being received in recesses at the end regions of said pipe members and forming a continuous outer surface with said pipe members, and



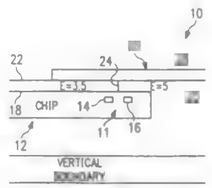
second conductor means included in said bridging member, said second conductor means having second contacts exposed at positions on said bridging member adjacent said pipe members and in engagement with said external contacts exposed at the outer surfaces of said pipe members.

5,334,802

METHOD AND CONFIGURATION FOR REDUCING ELECTRICAL NOISE IN INTEGRATED CIRCUIT DEVICES

Michael A. Lamson, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 939,188, Sep. 2, 1992. This application Jun. 30, 1993, Ser. No. 86,277
Int. Cl.[5] H01L *23/28*
U.S. Cl. 174—52.2 **11 Claims**



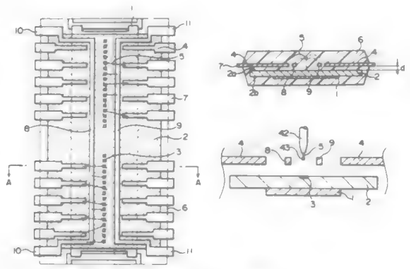
1. A chip packaging configuration for preventing differential electrical coupling with a plurality of associated bit lines, comprising:
an integrated circuit chip having a lead frame electrically coupled with said plurality of associated bit lines, said plurality of associated bit lines being near a surface of said integrated circuit chip;
a first packaging material having a first dielectric constant covering a first portion of said surface and associated between said plurality of associated bit lines and said lead frame;
a second packaging material having a second dielectric constant covering a second portion of said surface and associated between said plurality of bit lines and said lead frame;
said first packaging material and said second packaging material associated with said plurality of associated bit lines to expose each of said plurality of bit lines to allow approximately equal coupling to said lead frame for each bit line through said first dielectric constant and said second dielectric constant to thereby prevent differential electrical coupling of said plurality of associated bit lines with said lead frame.

5,334,803

SEMICONDUCTOR DEVICE AND METHOD OF PRODUCING THE SAME

Ken Yamamura; Naoto Ueda; Kazunari Michii; Hitoshi Fujimoto, all of Itami; Kiyoaki Tsumura, Kikuchi; Hitoshi Sasaki, and Takashi Miyamoto, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 968,055
Claims priority, application Japan, Oct. 30, 1991, 3-284565; Sep. 17, 1992, 4-248367
Int. Cl.[5] H01L *23/02, 23/28;* **H01R** *43/00*
U.S. Cl. 174—52.4 **12 Claims**



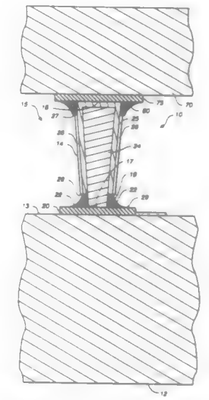
1. A semiconductor device comprising:
a semiconductor chip having a first surface, an opposed second surface, and a plurality of electrode pads linearly disposed substantially on a longitudinal center line of the first surface of said semiconductor chip;
a die-pad bonded to the second surface of said semiconductor chip to support the chip and having a smaller area than said semiconductor chip;
at least one common inner-lead disposed opposite and spaced from the first surface of said semiconductor chip and substantially parallel to the longitudinal center line;
a plurality of inner leads disposed adjacent to corresponding electrode pads opposite and spaced from the first surface of said semiconductor chip;
a plurality of metallic wires electrically connecting respective electrode pads with one of the common inner-lead and the corresponding inner lead;
a resin package encapsulating said semiconductor chip, said die-pad, said common inner-lead, said plurality of inner leads, and said plurality of wires;
at least one common outer-lead integrally connected with said common inner-lead and exposed outside said resin package; and
a plurality of outer leads, each outer lead being unitary with a corresponding inner lead and exposed outside said resin package wherein said common inner-lead and said plurality of inner leads are spaced from the first surface of said semiconductor chip by a gap ranging from 0.1 mm to 0.4 mm and the gap is filled with resin that is part of said resin package.

5,334,804

WIRE INTERCONNECT STRUCTURES FOR CONNECTING AN INTEGRATED CIRCUIT TO A SUBSTRATE

David G. Love, Pleasanton; Larry L. Moresco, San Carlos; William T. Chou, Cupertino; David A. Horine, Los Altos; Connie M. Wong, Fremont, and Solomon I. Beilin, San Carlos, all of Calif., assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 17, 1992, Ser. No. 977,571
Int. Cl.[5] H05K *01/00*
U.S. Cl. 174—267 **25 Claims**



1. A wire interconnect structure for electrically coupling a substrate to an integrated circuit chip, comprising:
an electrically conductive post disposed on a surface of said substrate for making contact to the integrated circuit, said post comprising an elongated body having a bottom end and top end thereof, the bottom end being mounted on the surface of the substrate and the top end for connecting to the integrated circuit chip by an electrical-conductive, reflowable material, said post comprising a material having a higher melting point than the reflowable material such that when the post is connected to the integrated circuit the shape of said post does not substantially change;
a peripheral edge formed around said bottom end next to said surface; and
a solder fillet disposed along said peripheral edge.

5,334,805

CONTROLLER FOR AN ACOUSTIC WAVE TOUCH PANEL

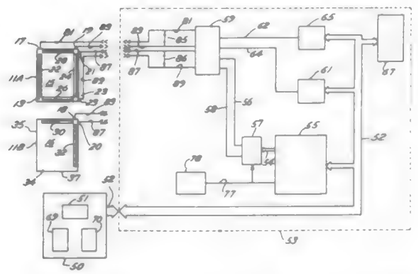
Terrence J. Knowles, Hanover Park, and Del Ogren, Deerfield, both of Ill., assignors to Carroll Touch, Round Rock, Tex.

Continuation-in-part of Ser. No. 898,281, Jun. 15, 1992. This application Nov. 6, 1992, Ser. No. 972,605
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 **65 Claims**

32. A touch position detector for an acoustic touch panel having a substrate and at least one transducer for imparting an acoustic wave into said substrate for propagation along a plurality of paths, each path representing a position along a first axis and for receiving an acoustic wave incident thereto to provide a signal representative of said wave, a touch on said substrate intersecting one of said paths forming a perturbation in the acoustic wave propagating along said path comprising:
a comparator for comparing said received acoustic wave signal to a reference signal to provide a signal representing the difference therebetween;

VOL 1165 ISS 1 AG 2 1994 UMI

a software low pass filter for filtering said difference signal to provide a filtered difference signal; and



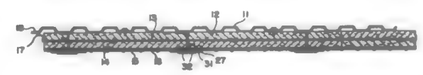
a software peak detector for detecting a peak of said filtered difference signal, said peak representing the position of said touch relative to said axis.

5,334,806

TEMPERATURE AND SOUND INSULATED PANEL ASSEMBLY

Elliott L. Avery, Hinsdale, Ill., assignor to Transco Inc., Chicago, Ill.

Filed Oct. 18, 1991, Ser. No. 778,733
Int. Cl.[5] E04B *1/82*
U.S. Cl. 181—286 17 Claims



1. A thermal and acoustical insulation panel assembly having a plurality of superimposed members, the insulation panel assembly comprising:
a rigid facing;
a first thermally-insulating batt covering one side of said rigid facing;
an acoustically-insulating mass-loaded vinyl sheet having a thickness of about 0.03 inch, a base weight of about 1 lb./sq. ft. and an apparent bending modulus of about 25.2 mega pascals and covering said first batt;
a second thermally-insulating batt covering said mass-loaded vinyl sheet;
a thermally-reflective backing covering said second batt;
a retainer positioned upon said backing; and,
means for securing the plurality of superimposed members together.

5,334,807

APPARATUS FOR ELEVATOR GROUP CONTROL HAVING LOW SERVICE FLOOR DETECTION FOR IMPROVED PASSENGER PICKUP EFFICIENCY

Susumu Kubo; Shoji Nakai, and Masumi Tsunoda, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 30, 1991, Ser. No. 767,465
Claims priority, application Japan, Oct. 1, 1990, 2-260482; Jan. 22, 1991, 3-20347
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] B66B *1/20*
U.S. Cl. 187—126 5 Claims

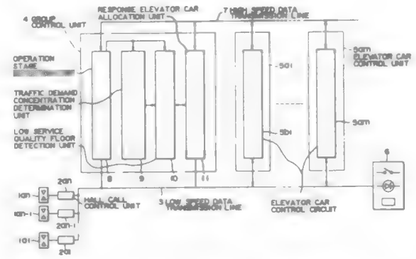
1. An apparatus for elevator group control, in which a plurality of elevator cars are operated between a plurality of floors, and one of said plurality of elevator cars is allocated to respond to a hall call generated by passengers on each floor, comprising:

operation state detecting means for detecting operation modes of said elevator cars corresponding to particular hall call destinations at particular time periods of the day;

traffic demand concentration determining means for determining, on the basis of the detection result of said operation state detecting means, whether a plurality of traffic demands in the elevator system are concentrated at one or more floors;

low service quality floor detecting means for detecting, when said traffic demand concentration determining means determines that said traffic demands are concentrated, a low service quality floor at which service is lower than at other floors as a result of concentration of the traffic demands; and

elevator responding means for causing an elevator car, which is allocated to said low service quality floor detected by said low service quality floor detecting means, to respond to said low service quality floor when said elevator car operates in a direction opposite to a particular



floor and a hall call of said low service quality floor is in the direction toward said particular floor,

wherein said low service quality floor detecting means determines, as said low service quality floor, at least one of

(1) a floor from which an elevator car starts full of passengers in a direction toward a particular floor at a time preceding stopping of said elevator car,

(2) a hall call allocating a floor which has been passed by an elevator car full of passengers,

(3) a floor at which a hall call waiting time is a predetermined time or more,

(4) a floor at which a predicted nonresponse time is a predetermined time or more,

(5) a floor having a maximum nonresponse time of hall calls allocating floors to an elevator car operating in a direction toward a particular floor,

(6) a floor at which the number of passengers capable of getting on is a predetermined value or less at a time preceding stopping of said elevator car, and

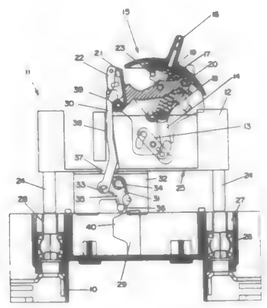
(7) a floor at which a boarding accumulated value ratio of the floor in a predetermined time period is lower than a boarding queue based on past statistical data.

5,334,808

DRAW-OUT MOLDED CASE CIRCUIT BREAKER

Marc Bur, Grenoble, and Jean-Pierre Nebon, St. Martin le Vinoux, both of France, assignors to Merlin Gerin, France

Filed Apr. 6, 1993, Ser. No. 43,380
Claims priority, application France, Apr. 23, 1992, 92 05137
Int. Cl.[5] H02B *1/04*
U.S. Cl. 200—50 AA 8 Claims



1. A draw-out low-voltage circuit breaker assembly, comprising:
a connecting base comprising stationary draw-in contacts and a fixed cam;
a circuit breaker which is movable between a drawn-in and a drawn-out position with respect to the connecting base, said circuit breaker comprising movable draw-in contacts for electrical connection to said stationary draw-in contacts in the drawn-in position, a molded case having a rigid bracket extending from a rear face of the molded case, said molded case housing breaking contacts and an operating mechanism connected to said breaking contacts for opening and closing said breaking contacts, and trip device means for opening the breaking contacts when a fault occurs; and
draw-out breaking means for opening said breaking contacts via said trip device means upon separating the circuit breaker from the connecting base, said draw-out breaking means comprising a transmission lever having one end coupled to said trip device means, a rocker pivotally mounted to said rigid bracket and having first and second arms, said first arm being articulated to a second end of the transmission lever and said second arm bearing a pin member;
wherein upon separating the circuit breaker from the connecting base, said pin member engages said fixed cam thereby rotating said rocker and sliding said transmission lever to engage said trip device means and open said breaking contacts, and wherein in the drawn-out position, said transmission lever is disengaged from said trip device means, enabling said circuit breaker to be freely opened and closed.

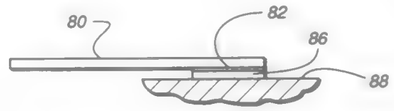
5,334,809

PARTICLE ENHANCED JOINING OF METAL SURFACES

Louis DiFrancesco, Hayward, Calif., assignor to Particle Interconnect, Inc., Hayward, Calif.

Continuation of Ser. No. 720,182, Jul. 22, 1991, abandoned, which is a division of Ser. No. 479,696, Feb. 14, 1990, Pat. No. 5,083,697. This application Feb. 11, 1993, Ser. No. 16,190
Int. Cl.[5] H01H *1/02*
U.S. Cl. 200—262 21 Claims

1. A temporary electrical junction comprising:
a first electrical contact having a first metal surface;
a second electrical contact having a second metal surface; and
a plurality of particulate cores having a hardness greater than that of said first and second metal surfaces, said particulate cores being disposed between said first and second contacts such that, when force is applied to said



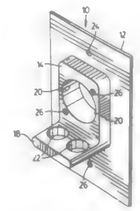
first contact and said second contact, said particulate cores cause elasto-plastic deformation of at least one of said first and second surfaces, such that said first and second contacts are temporarily joined together at least partly along their respective metal surfaces to complete said electrical junction.

5,334,810

COMBINATION LOCK AND SWITCH MOUNT

John S. Kranjec, and Robert S. Kranjec, both of 35 Hartford Trail, Brampton, Ontario, Canada L6W 4K2

Filed Jun. 3, 1992, Ser. No. 892,761
Claims priority, application Canada, Jun. 3, 1991, 2043750
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—294 19 Claims



1. A mount for a manually activated switch, comprising:
a) a face plate having a front face, a rear face and an aperture therethrough adapted for interchangeably mounting a switch actuator or a lock cylinder therein;
b) a support member located on the rear face of the face plate, the support member being integrally formed with the face plate, the support member having a first portion and a second portion projecting outwardly from the face plate the first portion having a switch mounting surface parallel to said rear face capable of mounting a switch thereto in a first arrangement, said aperture passing through the first portion; and
c) the second portion having switch mounting means formed therein adapted for alternatively mounting a switch to be engaged by one of said switch actuator and lock cylinder mounted in said aperture in a second arrangement.

5,334,811

SWITCH WITH LAMINATED COVER

JoAnne M. Burgener, and Arthur W. Dawson, both of Stephenson, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

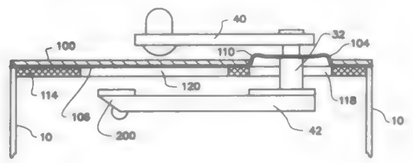
Filed May 17, 1993, Ser. No. 63,378
Int. Cl.[5] H01H *21/08*
U.S. Cl. 200—302.3 6 Claims

1. A switch, comprising:
a housing;

VOL 1165 ISS 1 AG 2 1994 UMI

a switching mechanism disposed within said housing;

a cover attached to said housing to enclose said switching mechanism, said cover comprising an outer plate, an inner plate and a sheet disposed therebetween, said sheet having a protrusion formed therein to define a raised potion of generally circular cross-section having a generally circular raised surface connected to a planar portion of said sheet by a generally annular wall portion, said outer plate having a generally circular first opening therethrough, said protrusion being disposed through said first opening, said inner plate having a generally circular second opening therethrough, said first and second openings being



aligned with each other, said sheet being confined between said inner and outer plates;

a pin extending through and attached to said generally circular raised surface of said protrusion, said pin comprising an outer portion extending from an outer surface of said raised surface and an inner portion extending from an inner surface of said raised surface;

an external lever attached to said external portion of said pin;

an internal lever attached to said internal portion of said pin; and

a third opening formed in said inner plate proximate a distal end of said internal lever to provide clearance for a portion of said switching mechanism.

5,334,812

SYRINGE NEEDLE DESTRUCTOR

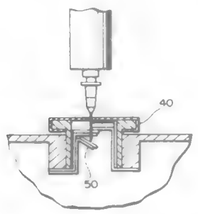
Ch'ing-Lung Hsieh, 6F-3, No. 20, Wu-Chyuan-Er Rd, Shin Juang City, Taipei County, Taiwan

Filed Dec. 23, 1991, Ser. No. 812,006

Claims priority, application China, Jul. 5, 1991, 91217107.3

Int. Cl.[5] B23K *11/22*

U.S. Cl. 219—68 **9 Claims**



1. A syringe needle destructor which consists of a housing, a multi-electrode type needle destroying device and a needle supporting frame, characterized in that wherein the needle supporting frame is an elastic supporting frame disposed above the housing and installed above the destroying device and consists of a sliding face plate with a needle inserting hole and an elastic frame body the housing is provided with an opening to contain at least two electrode members of the multi-electrode type needle destroying device, two snap holes are provided on the two sides of the opening to install the elastic supporting frame, the opposite inner edges of said two snap holes are provided with two spring grooves to support two springs of the elastic supporting frame respectively, and the multi-electrode type needle destroying device consists of at least two electrode members in the housing, connected to a power source, a power source wire, a switch, a transformer and a fuse.

5,334,813

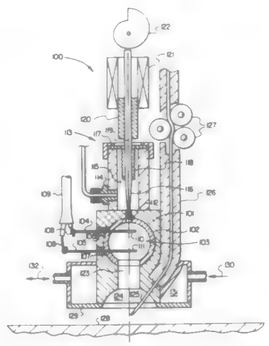
METAL INERT GAS WELDING SYSTEM FOR USE IN VACUUM

Charles D. Stocks, Huntsville, Ala., assignor to The United States of America as represented by the Adminstrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 20, 1993, Ser. No. 123,945

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—72 **18 Claims**



12. A method of welding, comprising the steps of:

accepting an inert gas into a first opening of a pre-plasma cavity within an inert gas welding device;

applying an electromagnetic field to said inert gas with first and second electrodes within said pre-plasma cavity to thereby convert said inert gas into a plasma, said pre-plasma cavity confining said plasma and inhibiting a plasma flow from said cavity into a low pressure or vacuum environment surrounding said welding device;

allowing said plasma to exit a second opening of said pre-plasma cavity;

directing said plasma from said second opening of said pre-plasma cavity to an arc welding cavity within said inert gas welding device and adjacent said second opening;

placing said arc welding cavity adjacent to a working surface;

accepting a welding material into said arc welding cavity;

impinging said plasma on said working surface and said welding material to thereby heat said working surface and said welding material; and

focussing said plasma within said arc welding cavity to thereby increase a rate of heat transfer between said plasma and said working surface and said welding material.

5,334,814

ELECTRODE FOR SPOT WELDING

Tadashi Nosetani; Keizo Namba, both of Nagoya; Hiromichi Sano, Chiryu; Makoto Yonemitsu, Nagoya; Masaki Kumagai, Nagoya, and Masanori Tsunekawa, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed May 27, 1992, Ser. No. 890,017

Claims priority, application Japan, May 27, 1991, 3-151006; May 27, 1991, 3-151007

Int. Cl.[5] B23K *11/30, 35/24*

U.S. Cl. 219—119 **8 Claims**

1. An electrode for spot welding of aluminum or aluminum alloys, said electrode consisting of a copper base material having a Sn layer of from 0.03 to 400 μm coated only on a tip end thereof.

5,334,815

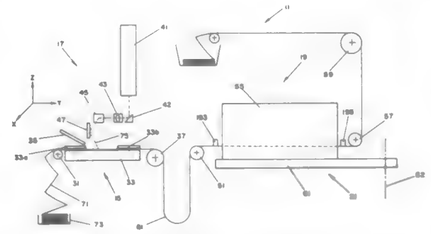
APPARATUS AND METHOD FOR PRODUCING A PRINTING SCREEN

George MacNaughton, Andover; Steven Forti, Norwell; Douglas Whittington, Malden, all of Mass., and Kevin Ackley, New Boston, N.H., assignors to Wear Guard Corp., Norwell, Mass.

Filed Jan. 15, 1992, Ser. No. 822,363

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.7 **29 Claims**



1. An apparatus for producing a printing screen from a non-perforated template material, comprising:

means for positioning the template material relative to a laser;

a laser for ablating the template material to form holes;

means for moving the beam from the laser in the x-direction relative to the template material;

means for moving the beam in the y-direction relative to the template material;

means for focusing the beam on the template material; and

powered means for feeding the template material in the form of a web to said positioning means, and for feeding the template material away from the positioning means in the form of a screen web after the laser beam has formed holes therein.

5,334,816

LASER BEAM MACHINING APPARATUS AND METHOD FOR ADJUSTING THE HEIGHT OF ITS CONDENSER LENS

Tsutomu Sugiyama, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 12, 1992, Ser. No. 974,436

Claims priority, application Japan, Feb. 3, 1992, 4-017359; Mar. 13, 1992, 4-055178

Int. Cl.[5] B23K *26/02*

U.S. Cl. 219—121.83 **11 Claims**

1. A laser beam machining apparatus comprising:

a laser oscillator,

a guide for transmitting laser beam generated by said laser oscillator.

a condenser lens for converging said laser beam,

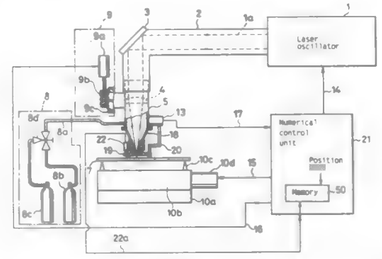
a machining torch for blowing a assist gas upon an objective surface of a workpiece,

source and transmission means for feeding said assist gas,

a movable machining table for movably holding a workpiece for performing the machining thereon,

a servo-motor for driving said table to vary a distance between said condenser lens and said workpiece,

a numerical control unit for controlling and driving said servo-motor, said machining table and said laser oscillator,



a tracing unit including a position-sensor and a signal converter and mounted on said machining torch, for detecting the distance between said condenser lens and said workpiece,

said tracing unit having an aperture for permitting the passage of the laser beam and the auxiliary gas therethrough; and

a guide bearing for smoothly moving said tracing unit along the optical axis of said laser beam.

5,334,817

SURFACE TEMPERATURE CONTROL DEVICE FOR MAINTAINING A CONSTANT TEMPERATURE BY CONTROL OF CURRENT SUPPLY

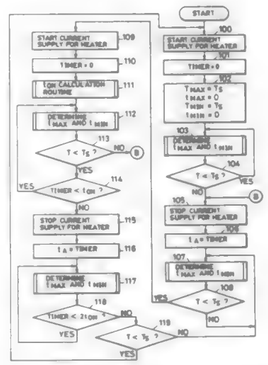
Tomohiro Nakamori, Machida; Kazuhiko Okazawa, Kawasaki; Tatsuto Tachibana, Yokohama; Akihisa Kusano, Kawasaki; Kaoru Sato, Yokohama, and Toshiyuki Itoh, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1991, Ser. No. 727,122

Claims priority, application Japan, Jul. 10, 1990, 2-180597

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—492 **8 Claims**



1. A temperature control device for maintaining a surface temperature of a member being heated by a heating source at

VOL 1165 ISS 1 AG 2 1994 UMI

approximately a predetermined temperature, said device comprising:

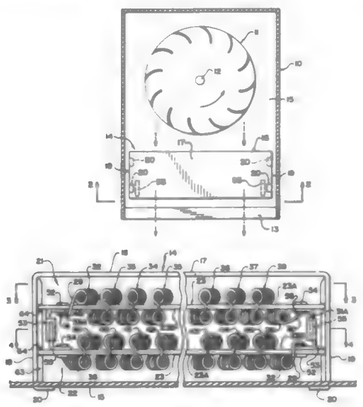
control means for controlling a start and a duration of a second current supply for said heating source, said control means calculating the duration for the second current supply in accordance with a time required for a first current supply for said heating source and a time required for a surface temperature of said member to be heated from a minimum value to a maximum value during application of the first current supply, said control means starting the second current supply after the surface temperature of said member which has been heated by the first current supply has fallen to the predetermined temperature.

5,334,818

MODULAR HIGH DENSITY ELECTRIC HEATING ELEMENT ARRANGEMENT FOR AN AIR FLOW HEATER

Gary C. Edwards, and Ronald H. Schaefer, both of Winnipeg, Canada, assignors to Temro Division, Budd Canada Inc., Winnipeg, Canada

Filed Mar. 6, 1992, Ser. No. 846,873
Int. Cl.[5] H05B *1/02, 3/02;* F24H *1/10;* H01C *00/00*
U.S. Cl. 219—539 20 Claims



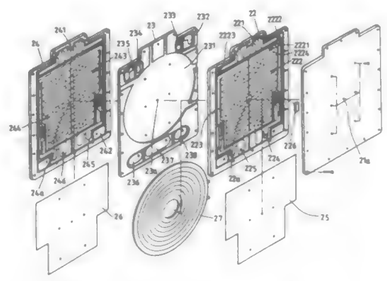
1. A heating element for heating an air flow passing thereover comprising a first substrate sheet and a second substrate sheet each formed of an electrically non-conductive material and defining a first side, a second opposed side, a first side edge, a second opposed side edge, a first end and a second opposed end, each substrate sheet having wound generally therearound a continuous electrical resistance heating wire, the wire being shaped so as to form a plurality of separate generally parallel helical coils and a plurality of interconnecting portions, the helical coils including a first helical coil and a last helical coil, alternate ones of the helical coils being arranged on the first and second sides of the sheet respectively, each helical coil extending from a position adjacent the first side edge to a position adjacent the second side edge, each end of each helical coil except the first on one side of each substrate sheet and the last on the other side of each substrate sheet being connected by a respective one of the interconnecting portions to a respective corresponding end of two helical coils on the other side, connecting means for supporting the first and second substrate sheets in substantially parallel spaced generally overlying relation with the first side of the first sheet facing the first side of the second sheet such that the helical coils on the first side of the first sheet are adjacent to but spaced from the helical coils on the first side of the second sheet so as to allow the passage of the air flow therebetween, and first and second terminal means for connection to a source of electrical power, said connecting means being arranged to provide both mechanical support between the first and second sheets and also electrical connection between the heating wire of the first sheet and the heating wire of the second sheet the connecting means and The first and second terminal means being arranged such that electrical power flows through the heating wires of both of said sheets.

5,334,819

INSTANT HEATING TYPE WATER HEATERS

Hsiao-Chih Lin, 8F-6, No. 100, Sec. 02, Hoping E. Rd., Taipei, Taiwan

Filed Nov. 8, 1993, Ser. No. 148,360
Int. Cl.[5] H05B *6/10*
U.S. Cl. 219—628 2 Claims



1. A water heater comprising:

a housing (1) having a water intake pipe (12) and a water outlet pipe (13) on the outside and a printed circuit board (14) on the inside;

a pre-heating unit (3) fastened inside said housing (1), said pre-heating unit (3) comprising a transformer, a transistor, a rectifier, and an electric heating coil;

a heating unit (2) fastened inside said housing (1), said heating unit (2) comprising a first heat-resisting plastic plate (21), a second heat-resisting plate (22), a third heat-resisting plastic plate (23), a fourth heat-resisting plastic plate (24), a first stainless steel plate (25) retained between and covered within the first and second heat-resisting plastic plates (21;22), a second stainless steel plate (26) retained between and covered with the third and fourth heat-resisting plastic plates (23;24), and an electromagnetic device (27) retained between and covered within the second and third heat-resisting plastic plates (22;23), said second heat-resisting plastic plate (22) comprising a top water course (221), a right water course (222), a left water course (223), a water inlet (224) and a water outlet (225) at the bottom, and a magnet (226) placed in the right water course (222), the first heat-resisting plastic plate (21) being made symmetrical to the second heat-resisting plastic plate (22), the third heat-resisting plastic plate (23) comprising a circular center water course (231), and a plurality of upper water grooves (232;233;234;235) and a plurality of lower water grooves (236;237;238), the fourth heat-resisting plastic plate (24) comprising a top water course (241), a right water course (243), a left water course (244), a cold water inlet (242) and a water hole (245) and a hot water outlet (246) at the bottom, the electromagnetic device having two opposite lead wires extended out of the heating unit (2) through wire holes (22*a*;21*a*) on the second and first heat-resisting plastic plates (22;21) and wire holes (23*a*;24*a*) on the third and fourth heat-resisting plastic plates (23;24); and

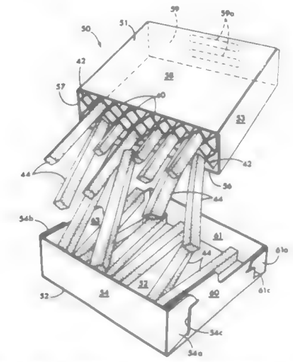
wherein when in use, water is guided from the water intake pipe (12) of the housing (1) into the heating unit (2) through the cold water inlet (242) of the fourth heat-resisting plastic plate (24), to flow through the water groove (238) and the water inlet (224) and to move the magnet (226) upwards, and then to flow in proper order through a hole (2221) on the right water course (222) of the second heat-resisting plastic plate (22), the water groove (232), a hole (2222) on the top water course (221), the top water course (221), a hole (2223) on the top water course (221), and the water groove (235), and then to flow through the top water course (241), the water groove (233), the right water course (222), and then the left water course (223) and the water outlet (225), and then to flow through the water groove (237), the water hole (245) on the fourth heat-resisting plastic plate (24), and then to flow through the right water course (243) and then the left water course (244) so as to finally flow out of the water heater through the water outlet pipe (13) via the hot water outlet (246).

5,334,820

MICROWAVE FOOD HEATING PACKAGE WITH ACCORDION PLEATS

Sara J. Risch, and Lawrence C. Brandberg, both of Edina, Minn., assignors to Golden Valley Microwave Foods Inc., Edina, Minn.

Filed Feb. 28, 1992, Ser. No. 843,524
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—730 23 Claims



1. A microwave heating package containing a susceptor for heating, browning or crisping food, comprising,

an outer packaging enclosure formed from a material that is at least partially transparent to microwave energy,

at least two susceptor segments, each comprising a laterally extending sheet of susceptor material for absorbing microwave energy to heat, brown and crisp the food,

said susceptor segments are present in pairs wherein each segment is paired with a segment above or below it,

each susceptor segment is folded to have a plurality of parallel, alternatively oppositely directed accordion folds so that each successive fold is bent in the opposite direction from the preceding and succeeding folds to form a plurality of adjacent panels that produce V-shaped pockets in each segment on opposite sides of each fold,

a food piece is located in each pocket for being heated by the susceptor during heating in a microwave oven,

said susceptor segments are arranged so that the segments of each pair are located on opposite sides of a piece of food, the arrangement being such that the pockets are aligned on opposite sides of the same food piece with a pocket in one segment of the pair enclosing the food piece on two adjacent upwardly facing sides and a pocket in the other segment of the pair enclosing the same food piece on its two opposite downwardly facing sides,

said pockets defining chambers for the food pieces that are tipped on an edge with respect to a plane in which a row of said chambers are aligned, and

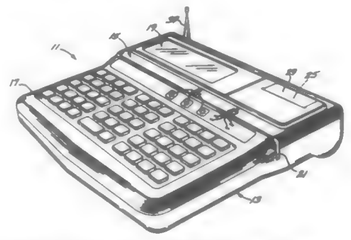
the chambers in said row are staggered between the chambers of an adjacent row of chambers.

5,334,821

PORTABLE POINT OF SALE TERMFINAL

James A. Campo, Brunswick; Fred J. Anderson, Wooster; Donald M. Embree, Uniontown; Charles J. Hofstetter, Aurora, and Donald I. Sloan, Stow, all of Ohio, assignors to Telxon Corporation, Akron, Ohio

Filed Jul. 16, 1992, Ser. No. 915,470
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—380 10 Claims



1. A portable point of sale terminal comprising:

a hand-carryable housing having a front face;

a keyboard and a display mounted on the front face of the housing;

a power source located within the housing;

a first electromagnetic transceiver located within the housing for transmitting and receiving data over the air to and from a host computer; and

a second electromagnetic transceiver located within the housing, for transmitting and receiving data over the air to and from a remote input-output device.

5,334,822

METHOD AND SYSTEM FOR INVENTORING A DISTRIBUTED PLURALITY OF ITEMS ON A SUPPLY

Michael D. Sanford, Arlington, Tex., assignor to Universal Computer Technologies Inc., Fort Worth, Tex.

Filed May 21, 1990, Ser. No. 527,073
Int. Cl.[5] G06F *15/24*
U.S. Cl. 235—385 9 Claims

1. A method of inventorying a plurality of items in a supply, said items including a plurality of subgroupings of similar item types distributed in a selected pattern among a plurality of known locations, said method of inventorying being performed by a plurality of known inventory entities, comprising:

providing a plurality of first machine readable information carriers each with data relating to and identifying a unique and particular item type of said plurality of items in said supply;

providing a plurality of second machine readable information carriers for uniquely identifying each item in said supply independently of item type subgroupings;

providing a data reader for reading and recording data from said first and second machine readable information carriers;

providing a computer with a program resident in memory for receiving said data from said data reader;

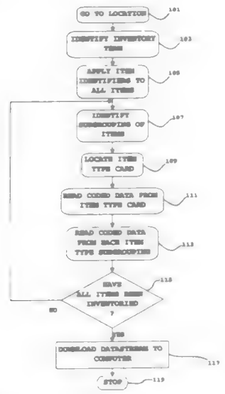
applying one of said plurality of second machine readable information carriers to each of said items in said supply;

reading with said data reader a selected first machine readable information carrier, corresponding to a particular subgrouping of said item types;

reading with said data reader, prior to reading a subsequent

VOL 1165 ISS 1 AG 2 1994 UMI

first machine readable information carrier, a plurality of said second machine readable information carriers of a particular subgrouping of a single item type; thereafter reading with said data reader additional ones of said first machine readable information carriers and second machine readable information carriers of other particular item types; and



transferring data read from said first and second machine readable information carriers to said program in said computer to form a database.

5,334,823

SYSTEMS AND METHODS FOR OPERATING DATA CARD TERMINALS FOR TRANSACTION CHARGEBACK PROTECTION

Paul W. Noblett, Jr., Ft. Lauderdale, Fla.; Mark Brady, Dix Hills; Peter R. Cavicchi, Babylon, both of N.Y.; Kumar S. Choudhuri, Kennesaw, Ga.; Timothy W. Depew, Ft. Lauderdale, Fla.; John C. Evans, Atlanta, Ga.; Shelley K. Friedman, Boca Raton, Fla.; James H. Hamilton, Lawrenceville, Ga.; Edward G. Kligfeld, Ft. Lauderdale, Fla.; Holly B. Krahe, Deerfield Beach, Fla.; Thomas J. Liney, Boca Raton, Fla.; Murray A. Morton, Coral Springs, Fla.; Parameswaran B. Nair, Acworth, Ga.; Gregory A. Philmon, Loganville, Ga.; James F. Price; James T. Stills, both of Atlanta, Ga.; Laura J. Turner, Ft. Lauderdale, and Diane T. Vogt, Sunrise, both of Fla., assignors to National Bancard Corporation, Sunrise, Fla.

Filed Jan. 10, 1992, Ser. No. 819,327
Int. Cl.[5] G06F *15/21*
U.S. Cl. 235—380 148 Claims

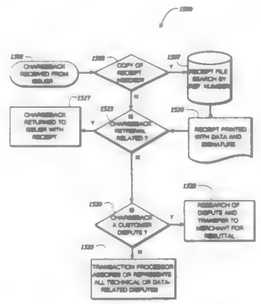
104. A system for indicating a data card transaction as charge-back protected, comprising:

a physical presence detector for detecting the physical presence of a data card at a data card terminal at which the transaction is recorded and for providing a card present flag, said data card terminal being utilized by a merchant, said data card terminal being further operative for obtaining transaction information corresponding to the particular transaction;

a card reader for electronically obtaining card identifying information relating to the data card from an information carrying medium associated with the data card;

a signature capture device for capturing a signature provided by a holder of the data card who is purportedly authorized to conduct a transaction with the data card and for providing signature signals corresponding to the signature;

circuitry responsive to said card present flag, said signature signals, and said card identifying information from said card reader for providing a transaction protected flag associated with said transaction information; and



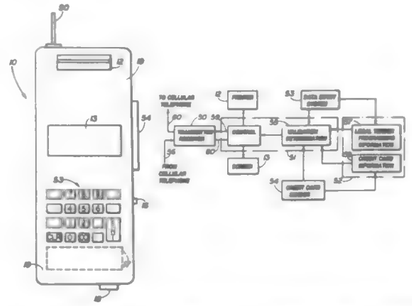
a transaction processor responsive to said transaction protected flag for processing the transaction represented by said transaction information in a manner so that the merchant is not charged back for the transaction.

5,334,824

METHOD AND APPARATUS FOR VALIDATING CREDIT INFORMATION DURING HOME DELIVERY OF ORDER

Jerry R. Martinez, 5312 W. Tierra Buena, Glendale, Ariz. 85306

Continuation-in-part of Ser. No. 997,165, Dec. 28, 1992, which is a continuation-in-part of Ser. No. 762,398, Sep. 19, 1991, Pat. No. 5,208,446. This application Mar. 30, 1993, Ser. No. 39,850
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—380 1 Claim



1. In a home delivery system for validating credit tendered to a delivery person when the person delivers an order to a recipient at a residence,

(a) a host computer with memory means for storing credit validation data;

(b) portable housing means carried by the delivery person;

(c) credit data entry means mounted in said housing means for entering credit information concerning the recipient;

(d) data processing means mounted in said housing means and coupled with said credit data entry means for storing said credit information;

(e) first transmission means mounted in said housing means and operatively associated with said data processing means to transmit said credit information from said portable housing means to said host computer for examination to generate validation information indicating whether said credit information is acceptable;

(f) receiver means mounted in said housing and operatively associated with said data processing means;

(g) printer means mounted in said housing and operatively associated with said data processing means; and,

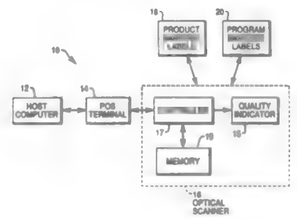
(h) second transmission means operatively associated with said host computer for transmitting said validation information to said receiver means to generate validation information signals from said receiver means to said data processing means, said data processing means, when said validation information signals indicate said credit information is acceptable, activating said printer means to print a receipt for the recipient to confirm that the order was delivered to the recipient and paid for by the recipient.

5,334,825

SYSTEM AND METHOD FOR MONITORING BARCODE LABEL QUALITY

Craig E. Maddox, Lilburn, Ga., assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 27, 1992, Ser. No. 874,771
Int. Cl.[5] G06K *5/00, 9/03*
U.S. Cl. 235—437 15 Claims



1. A system for monitoring barcode label quality during a transaction comprising:

an optical scanner for reading barcode labels during the transaction;

means within the optical scanner for sensing a defective barcode label during a scanning operation;

means for indicating the presence of the defective barcode label to an operator;

means within the optical scanner for making readable a predetermined number of types of defective barcode labels;

means within the optical scanner for tallying the number of barcodes read and the number of defective barcode labels during the transaction; and

means within the optical scanner for identifying manufacturers which marked their products with the defective barcode labels.

5,334,826

METHOD AND APPARATUS FOR EXTENDING AND CONFIRMING THE SERVICE LIFE OF SEMICONDUCTOR LASER OF BAR CODE READER BY DETECTING CURRENT INCREASE CORRESPONDING TO TEMPERATURE OF SEMICONDUCTOR LASER

Shinichi Sato, and Hiroaki Katoh, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed May 8, 1992, Ser. No. 880,025
Claims priority, application Japan, May 10, 1991, 3-105293
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—455 30 Claims

1. A semiconductor laser control apparatus comprising:

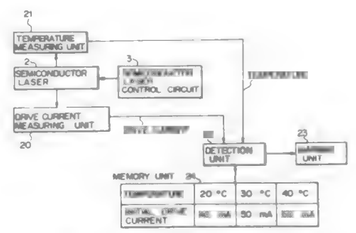
a semiconductor laser;

a semiconductor laser control circuit, coupled to said semiconductor laser, for controlling a drive current of said semiconductor laser so that a specific light quantity is output from said semiconductor laser;

drive current measuring means for measuring an actual drive current of said semiconductor laser;

temperature measuring means for measuring an actual temperature of said semiconductor laser;

memory means for storing at least one initial drive current value of said semiconductor laser for the specific light quantity and corresponding temperature of said at least one initial drive current value;



detection means for comparing the actual drive current value of said semiconductor laser measured by said drive current measuring means with the at least one initial drive current value corresponding to the actual temperature when the actual drive current is measured; and

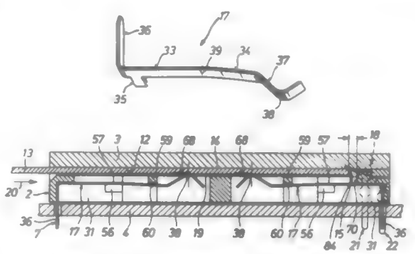
warning means for generating an alarm predicting the expiration of service life of said semiconductor laser, when the actual drive current value exceeds the corresponding at least one initial drive current value by a specified percentage.

5,334,827

CHIP CARD READER

Robert Bleier, Untergruppenbach, and Manfred Reichardt, Weinsberg, both of Fed. Rep. of Germany, assignors to Amphenol-Tuchel Electronics GmbH, Fed. Rep. of Germany

PCT No. PCT/EP90/01608, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO91/04547, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 21, 1990, Ser. No. 842,155
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1989, 3931506
Int. Cl.[5] G06K *19/06*
U.S. Cl. 235—492 19 Claims



1. A chipcard reader comprising a contact support within which reading contacts and switching contacts forming an end position switch are located, wherein the reading contacts are adapted for engagement with contact zones of a chipcard which has been inserted into said chipcard reader and moved relative to said contact support until it has reached a reading position,

wherein the end position switch is designed such that it acts in its actuated position approximately perpendicular with respect to the direction of card insertion upon engagement of the card with the switch as the card is inserted into the

VOL 1165 ISS 1 AG 2 1994 UMI

reader such that no force component is generated which would act in the direction opposite to the direction of card insertion, wherein the chipcard has at least two contact zones, one of which is located forwardly of the other relative to the direction of card insertion, and

wherein the end position switch comprises two similar components arranged in the direction of insertion of the chipcard behind each other such that a current circuit connected to the switching contacts is switched only if the forwardly located contact zone has already passed the contact for the other contact zone.

5,334,828

BORESIGHT SYSTEM AND CALIBRATION METHOD

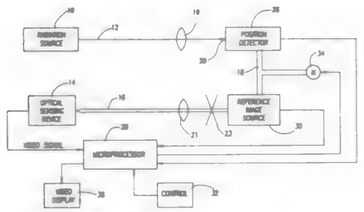
Uri Shimoni, Kiron; Lewis Colman, Jerusalem, and Moshe Meidan, Ramat Hasharon, all of Israel, assignors to Israel Aircraft Industries Ltd., Lod, Israel

Filed Aug. 19, 1992, Ser. No. 934,205

Claims priority, application Israel, Aug. 30, 1991, 99346

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—206.2 **14 Claims**



1. An optical system comprising:

a generator for generating a beam of radiation;

an optical sensing device; and

apparatus for boresighting the optical sensing device with the beam of radiation without there being required an optical interconnection between the generator and the optical sensing device and including:

a beam location sensor operative to determine the location of the beam of radiation relative to a given beam reference location defined therein; and

an aiming location fixed in position with respect to the beam location sensor and providing an optical system reference image at a predetermined spatial separation from the beam reference location, which separation is determined by virtue of said aiming locator being fixed in position with respect to the beam location sensor.

5,334,829

PACKAGE FOR SOLID STATE IMAGER WITH HEATING MEANS TO REPAIR IMAGER LATTICE DEFECT

Takahisa Ueno, and Hideshi Abe, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jan. 19, 1993, Ser. No. 5,796

Claims priority, application Japan, Jan. 27, 1992, 4-012284

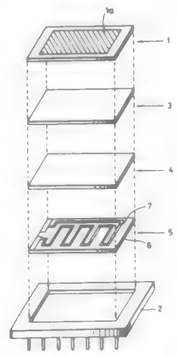
Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **12 Claims**

1. A solid state imaging device comprising:

image sensor means for sensing an incident light, said image sensor means having an image area on its surface; and

heating means comprising a heating element formed on an opposite side to said surface, power source means for supplying a voltage to said heating element and switching means for switching a supply of said voltage, said heating means heating said image sensor means from the opposite side to said surface to thereby repair a lattice defect in said image sensor means, said heating means being insulated



from said semiconductor substrate by an electrical insulator.

5,334,830

SCANNING OPTICAL MICROSCOPE HAVING A COMPACT CONFOCAL OPTICAL SYSTEM FOR ADJUSTING POSITION OF APERTURE

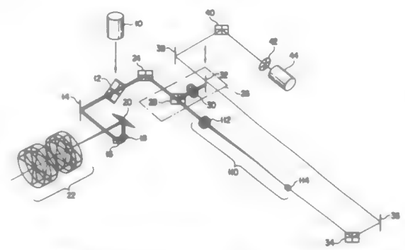
Hiroya Fukuyama, Sagamihara; Hisao Kitagawa; Mitsunori Yamamoto, both of Tokyo, and Shingo Kashima, Sagamihara, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 863,408, Apr. 3, 1992, Pat. No. 5,225,671. This application Jan. 14, 1993, Ser. No. 4,458

Claims priority, application Japan, May 29, 1991, 3-126054; Jul. 31, 1992, 4-205382

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—216 **11 Claims**



1. A scanning optical microscope for scanning a sample with a light beam to observe the sample, comprising:

a light source for emitting a light beam;

focusing means for focusing the light beam from said light source to the sample to form a light spot on the sample;

scanning means for scanning the light spot across the sample;

first light converging means for converging the light beam from the sample, said first light converging means including a first pair of optical elements, one optical element of said first pair having a positive power and the other optical element of said first pair having a negative power, and a second pair of optical elements, one optical element of said second pair having a positive power and the other optical element of said second pair having a negative power;

aperture means arranged in conjugation with the light spot

and including an aperture having a diameter which allows a light beam from a minute spot on a focal plane of a lens to selectively pass through the aperture;

first detecting means for detecting the light beam passing through the aperture of said aperture means; and

image forming means for forming an image based on information from said scanning means and said first detecting means.

5,334,831

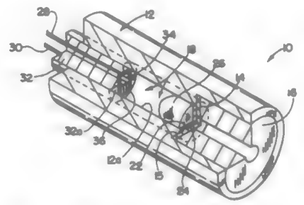
PROXIMITY DETECTOR FOR DETECTING POSITION OF A TARGET

Lisa B. Maurice, Jericho, Vt., assignor to Simmonds Precision Products, Inc., Akron, Ohio

Continuation of Ser. No. 709,627, Jun. 3, 1991, Pat. No. 5,149,962. This application Jun. 18, 1992, Ser. No. 900,879

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.17 **7 Claims**



1. A proximity detector for detecting position of a ferromagnetic target comprising a permanent magnet having a magnetic field portion that changes in response to movement of the target, and a magneto-optic sensor that detects said magnetic field portion change, said magneto-optic sensor including a magneto-optic material positioned within said magnetic field portion, means that transmits polarized light bidirectionally along an optical path through said magneto-optic material, said magneto-optic material rotating said light angle of polarization in relation to said magnetic field portion; and means to detect said polarization angle rotation.

5,334,832

APPARATUS AND METHODS FOR DETERMINING SPLICE EFFECTIVENESS BETWEEN TWO OPTICAL FIBERS USING SOLID GELS AS COUPLING ENHANCERS FOR MEASURING COMPONENT ATTENUATION

Frank H. Levinson, Palo Alto, and Martin L. Wisecarver, Pittsburgh, both of Calif., assignors to Photonix Industries, Los Angeles, Calif.

Filed Jan. 15, 1993, Ser. No. 78,021

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.24 **68 Claims**

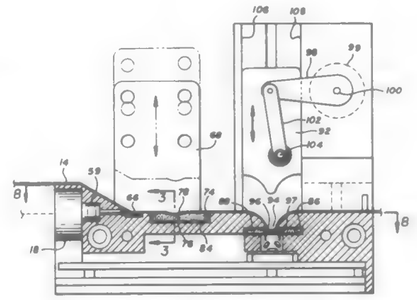
1. In apparatus for determining the effectiveness of a splice of first and second optical fibers each having a core, a cladding enveloping the core and a buffer enveloping the cladding,

first means for providing on one side of the splice for a first emission of light into the first fiber and for a first detection of the light in the first fiber in spaced relationship to the first light emission at a position closer to the splice than the first light emission,

second means for providing on a second side of the splice for a second emission of light into the second fiber and for a second detection of light in the second fiber in spaced relationship to the second light emission at a position closer to the splice than the second light emission,

third means spaced between the first light emission and the first light detection for preventing any light in the cladding and the buffer in the first optical fiber from the first light emission from reaching the position of the first light detection,

fourth means spaced between the second light emission and the second light detection for preventing any light in the cladding and the buffer in the second optical fiber from the second light emission from reaching the position of the second light emission,



fifth means for providing at different times for the first light detection from the first light emission and from the second light emission and for the second light detection from the first light emission and the second light emission, and

sixth means responsive to the detections from the fifth means for processing such detections to provide an indication of the effectiveness of the splice.

5,334,833

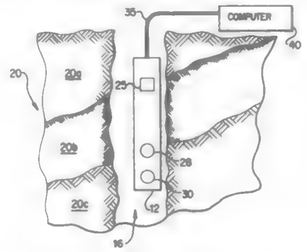
SENSITIVITY FUNCTION TECHNIQUE FOR MODELING NUCLEAR TOOLS

Charles Case, West Redding; Charles Watson, Danbury, both of Conn., and Richard Lawrence, Stormville, N.Y., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 14, 1991, Ser. No. 716,463

Int. Cl.[5] G01V *5/12*

U.S. Cl. 250—270 **6 Claims**



5. A method of logging a formation comprising:

traversing a borehole in the formation with a logging tool;

detecting nuclear radiation in the formation with nuclear detectors in the tool;

producing a first log of data representing the detected nuclear radiation and an estimation of formation properties including formation density and formation photoelectric absorption as a function of borehole depth;

producing a three dimensional model of the tool, borehole, and formation;

using the three dimensional model to calculate separate Compton sensitivity values and photoelectric sensitivity values for each of a plurality of three dimensional sectors of the formation;

using the estimation of formation properties and the sensitiv-

VOL 1165 ISS 1 AG 2 1994 UMI

ity values to predict responses of the nuclear detectors in the tool such that the predicted responses are calculated as a function of borehole depth, formation density and formation photoelectric absorption;

producing a synthetic second log of the predicted nuclear detector responses;

comparing the synthetic second log to the first log of data;

modifying the estimation of formation properties based on the comparison of the synthetic second log and the first log of data; and

producing a record indicating formation properties when the synthetic second log and first log of data are substantially similar.

5,334,834

INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY DEVICE

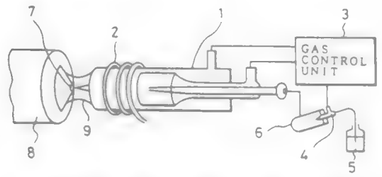
Tetsumasa Ito, and Yoshitomo Nakagawa, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed Apr. 13, 1993, Ser. No. 45,422

Claims priority, application Japan, Apr. 13, 1992, 4-93032

Int. Cl.[5] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—288 **5 Claims**



1. An inductively coupled plasma mass spectrometric device, for identification and measurement of impurity elements in a sample solution using an inductively coupled plasma, comprising: a plasma torch for generating the inductively coupled plasma; a high-frequency coil surrounding said torch for generating a high frequency electromagnetic field to maintain the inductive coupling plasma; a gas control unit connected for supplying plasma-producing gas to said plasma torch; a high-frequency power source coupled to said coil for applying high-frequency electric power to said coil; a matching circuit for electrically matching said high-frequency power source to the inductively coupled plasma; an analysis tube disposed for detecting an impurity element ionized by the inductively coupled plasma after mass separation has been performed by introduction of the ionized impurity element into a vacuum; a connection point at circuit ground potential; a shield plate made of metal interposed between said plasma torch and said high-frequency coil, a variable capacitor having first and second terminals, said first terminal being conductively connected to said shield plate; means for connecting said second terminal of said variable capacitor to said connection point; and means for maintaining said shield plate out of contact with said coil to enable control of the plasma potential of the inductively coupled plasma.

5,334,835

PROBE DRIVE MECHANISM AND ELECTRONIC DEVICE WHICH USES THE SAME

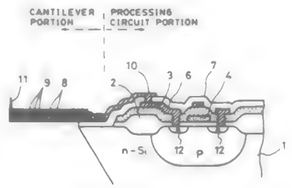
Masaru Nakayama; Osamu Takamatsu, both of Atsugi; Takayuki Yagi, Machida; Keisuke Yamamoto, Yamato; Takehiko Kawasaki, Isehara; Yasuhiro Shimada, and Yoshio Suzuki, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 951,751

Claims priority, application Japan, Oct. 3, 1991, 3-281891; Aug. 26, 1992, 4-248925

Int. Cl.[5] H01J *37/00*

U.S. Cl. 250—306 **33 Claims**



1. A probe drive mechanism, comprising:

a cantilever portion having a piezoelectric layer disposed between electrode layers, a micro-tip for detecting a tunnel current and an electrode for receiving said tunnel current;

a processing circuit portion, positioned adjacent to said cantilever portion, which drives said cantilever portion and detects and amplifies said tunnel current;

a substrate for supporting said cantilever portion and said processing portion; and

a protection layer covering said circuit portion and a portion of said substrate, wherein said cantilever portion is formed on said protection layer adjacent to said processing circuit portion.

5,334,836

IMAGING DEVICE HAVING A PASSIVE COMPLIANT CARD SCANNER AND A VALIDATION SENSOR

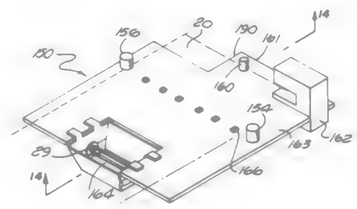
Andrew S. Filo, Cupertino, Calif., assignor to Simon Marketing, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 598,266, Oct. 16, 1990, Pat. No. 5,151,595. This application Nov. 29, 1991, Ser. No. 800,372

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] G03G *5/00*

U.S. Cl. 250—316.1 **23 Claims**



1. An imaging card device, comprising:

a passive compliant card scanner having a card insertion alignment axis;

receiving means in said scanner for receiving a card therein whether said card is aligned or misaligned with said alignment axis, said card having binary zones, said binary zones being selectively filled with infrared radiating ink; and

code sensor means, mounted to said passive compliant card scanner, for reading said binary zones to detect the presence and absence of said infrared radiating ink when said card is aligned or misaligned with said alignment axis.

5,334,837

MICRO ANALYTICAL METHOD, SAMPLING PLATE USED IN SAME, METHOD OF DETECTING ORGANIC COMPOUND BY USE OF SAID MICRO ANALYTICAL METHOD, APPARATUS FOR SAME AND METHOD OF DIVIDING FOR MICRO-LIQUID FLOW

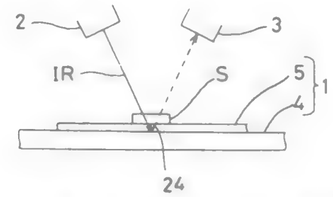
Masahiko Ikeda, Kusatsu, and Hiroei Uchihara, Yamashina, both of Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Sep. 30, 1992, Ser. No. 954,267

Claims priority, application Japan, Oct. 5, 1991, 3-285566; Feb. 29, 1992, 4-079237; May 9, 1992, 4-143235; Jun. 20, 1992, 4-186320

Int. Cl.[5] G01N *21/01, 21/35*

U.S. Cl. 250—339 **28 Claims**



1. A micro spectrometric analytical method comprising:

depositing microliter quantities of a solution of a solute in a solvent drop by drop on a water-repellent thin film applied to an infrared ray-reflecting material,

evaporating said solvent to provide a sample,

irradiating said sample with infrared radiation, and

measuring the infrared spectrum reflected from said infrared ray-reflecting material through said sample.

5,334,838

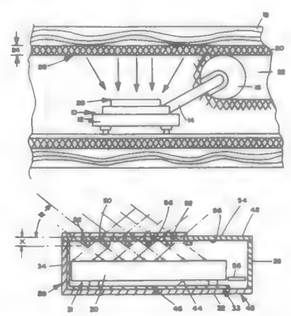
RADIATION SENSOR

John W. Ramsden, Jr., Huntsville, Ala., assignor to American Mining Electronics, Inc., Huntsville, Ala.

Filed Dec. 11, 1992, Ser. No. 989,164

Int. Cl.[5] G61V *5/00*

U.S. Cl. 250—361 R **7 Claims**



1. A radiation sensor assembly comprising:

a housing forming an enclosure for a radiation sensing element, said housing having a cover member provided with a radiation-pervious section to permit radiation emissions from a source of radiation to pass therethrough to said sensing element, said housing including side, bottom, and a pair of end walls which form a lower enclosure portion, said cover being secured to said side and end walls in spaced relation with said radiation sensing element, said lower enclosure portion having first and second adjoining sections, said first section having said radiation-sensing element therein, and said second section having electronic circuitry means therein including a cathode ray tube for receiving signals from said radiation sensing element and transmitting signals which are indicative of the amount of radiation received by said radiation sensing element, said second section having one of said pair of end walls disposed for supporting said cathode ray

collimating means integral with said cover for directing said radiation emissions into said lower enclosure portion and onto said sensing element;

said radiation-pervious section of said cover being positioned above said first section of said housing and said radiation-sensing element to direct said radiation emissions only on said radiation-sensing element, said collimating means being defined by a plurality of side-by-side spaced openings provided in said radiation-pervious section of said housing, said spaced openings being disposed in substantially parallel relation and extending longitudinally along said radiation-impervious section of said cover, and baffle means including a plurality of baffle members positioned between each said spaced openings of said plurality of spaced openings, said baffle members being provided with a predetermined thickness, said predetermined thickness being chosen so as to control the angle at which the rays of radiation impinge on said radiation-sensitive element;

a first protective shield of radiation-pervious material positioned over said cover to prevent debris from entering said housing while also permitting the radiation to be directed into said lower portion of said housing; and

a second protective shield of radiation-pervious material positioned between said cover and said lower portion of said housing.

5,334,839

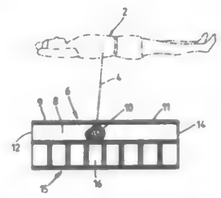
POSITION SENSITIVE RADIATION DETECTOR

Jon A. Anderson, Plano, and Peter P. Antich, Richmond, both of Tex., assignors to The Board of Regents, The University of Texas System., Austin, Tex.

Continuation-in-part of Ser. No. 784,593, Oct. 29, 1991, Pat. No. 5,281,821. This application Mar. 26, 1993, Ser. No. 38,677

Int. Cl.[5] G01T *1/20*

U.S. Cl. 250—368 **11 Claims**



1. Apparatus for detecting and locating the origin of radiation in a medical diagnostic imaging system, including:

at least one primary optical fiber which has a scintillating core surrounded by cladding, where the cladding has at least one waveshifter incorporated in it, with the at least one primary fiber being positioned to receive radiation from a radiation source;

at least one secondary optical fiber which intersects the primary fiber at a non-zero angle and which has a core surrounded by cladding, and whose cladding is in optical contact with the cladding of the at least one primary fiber;

a plurality of means for detecting light which are coupled to the at least one primary fiber and the at least one secondary fiber; and

VOL 1165 ISS 1 AG 2 1994 UMI

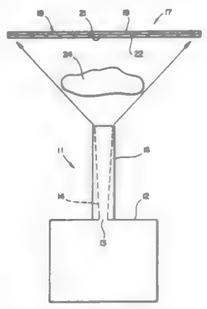
means for collecting and processing data from the means for detecting light, to locate the origin of the radiation.

5,334,840

NEUTRON DETECTOR AND METHOD

Richard L. Newacheck, Lafayette; Ivan E. Lamb, Berkeley, and R. R. Tsukimura, Walnut Creek, all of Calif., assignors to Aerotest Operations, San Ramon, Calif.

Filed Jul. 31, 1992, Ser. No. 923,382
Int. Cl.[5] G01T *3/00, 3/06*
U.S. Cl. 250—483.1 14 Claims



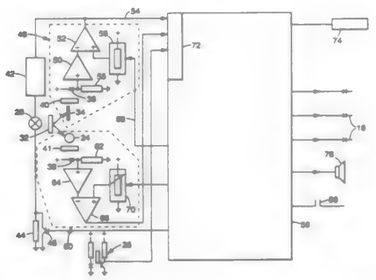
1. A neutron detector, comprising carbon infiltrated hexagonal boron nitride which emits light when acted upon by neutrons, means holding the boron nitride for exposure to neutrons, and means for detecting light emitted by the carbon infiltrated hexagonal boron nitride.

5,334,841

METHOD AND APPARATUS FOR DETECTING FLUORESCENCE

Josef A. Graessle, Kaarst; Werner R. Schwarz, Leverkusen, both of Fed. Rep. of Germany, and William E. Foltz, Cottage Grove, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 22, 1993, Ser. No. 7,758
Int. Cl.[5] G01N *21/64*
U.S. Cl. 250—458.1 8 Claims



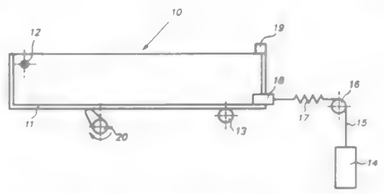
1. An apparatus for detecting fluorescence of an unknown target material being excitable at an excitation wavelength and fluorescing at a fluorescing wavelength, comprising:
a reference material;
an energy source arranged to excite both said target material and said reference material at approximately said excitation wavelength;
power supply means for supplying electrical power having an adjustable voltage to said energy source;
an excitation filter optically arranged between said energy source and both of said target material and said reference material, said excitation filter passing light energy at approximately said excitation wavelength;
a reference detector means optically arranged to be responsive to and for detecting light emitted from said reference material at approximately said fluorescing wavelength;
a target detector means optically arranged to be responsive to and for detecting light emitted from said target material at approximately said fluorescing wavelength;
reference measurement means for generating a reference output in response to said reference detector means in order to determine the amount of fluorescence generated by said reference material;
target measurement means for generating a target output in response to said target detector means in order to determine the amount of fluorescence generated by said target material;
reference calibration means coupled to said reference measurement means and to said power supply means for varying the electrical voltage supplied to said energy source and for calibrating said reference output; and
target calibration means coupled to said target measurement means for calibrating said target output in response to a known target material.

5,334,842

RADIOGRAPHIC SCREEN

Jan Van Havenbergh, Zwijndrecht; Philip Dooms, Edegem; Jozef Aertbelien, Schilde, all of Belgium, and Harald Blum, Wachtendonk, Fed. Rep. of Germany, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 4, 1993, Ser. No. 70,954
Claims priority, application European Pat. Off., Jun. 16, 1992, 92201760.3
Int. Cl.[5] G01T *1/202*
U.S. Cl. 250—483.1 12 Claims



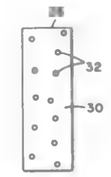
1. A radiographic screen comprising (1) a metal or hydrophobic resin support, (2) a layer comprising a fluorescent phosphor dispersed in an organic polymeric binder and (3) an optionally present outermost organic polymer coating protecting said phosphor layer against abrasion, characterised in that the edges (side surfaces) of said screen are covered with a polymer material being formed essentially from a moisture-hardened polymer composition prepared by a process comprising the steps of :
(I) mixing in at least one solvent following components (A) and (B)
(A) 30 to 99 parts by weight of at least one copolymer of olefinically unsaturated compounds having a weight-average molecular weight [$\overline{M}w$] of at least 1500 and containing chemically incorporated moieties capable of undergoing an addition reaction with amino groups, and
(B) 1 to 70 parts by weight of organic substances containing blocked amino groups which are capable of forming under the influence of moisture free primary and/or secondary amino groups, wherein (i) the copolymers of component (A) contain intramolecularly bound carboxylic anhydride moieties, with the anhydride equivalent weight of the copolymers being from 393 to 9,800, and the still unhardened composition contains from 0.25 to 10 anhydride moieties for each blocked amino group,
II) coating the obtained mixture onto at least one side surface (edge) of said fluorescent screen, and
(III) allowing moisture (H_2O) to come into contact with the coated mixture essentially consisting of the above defined components (A) and (B). .

5,334,843

COMPOSITE SCINTILLATOR SCREEN

Herbert D. Zeman, 1687 Peach St., Memphis, Tenn. 38112

Filed Aug. 17, 1992, Ser. No. 931,020
Int. Cl.[5] G21K *4/00*
U.S. Cl. 250—486.1 17 Claims



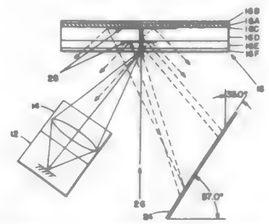
1. A scintillator screen for an X-ray system comprising:
a substrate of low-Z, non-scintillating material; and
bodies associated with the substrate including a high-Z, scintillating material adapted to scintillate upon exposure to photoelectrons produced by X-rays passing through the high-Z material of the bodies, the bodies being of such size and being spatially separated from one another by the low-Z material of the substrate to provide the screen with a predetermined sensitivity to X-rays within a preselected energy range.

5,334,844

OPTICAL ILLUMINATION AND INSPECTION SYSTEM FOR WAFER AND SOLAR CELL DEFECTS

Howard E. Pollard, Saratoga; Robert E. Neff, Fremont, and Cheryl J. Ajluni, San Jose, all of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Apr. 5, 1993, Ser. No. 42,890
Int. Cl.[5] G01N *21/47*
U.S. Cl. 250—330 3 Claims



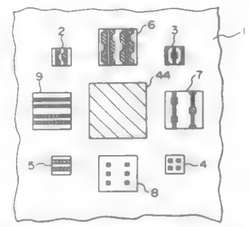
1. An optical inspection system for observing physical defects in a crystalline substrate structure comprising:
a source of collimated light beam,
means disposed in the path of said collimated light beam for filtering said collimated light beam to pass specific wavelengths of said collimated light beam,
means disposed in the path of said collimated light beam for diffusing said collimated light beam at said specific wavelengths and directing the diffused light onto and illuminating said crystalline substrate structure,
and observation means directed onto said crystalline substrate structure and responsive to said collimated light and said diffused light for providing an image of said crystalline substrate structure wherein physical defects in said crystalline substrate structure are apparent in said image,
wherein said physical defects are cracks in said crystalline substrate structure,
wherein said source of collimated light produces light in the near infrared spectrum, and wherein said diffused light directed onto said crystalline substrate structure by said diffusing means illuminates said crystalline substrate structure to produce shadows representative of said cracks which are apparent in said image of said observation means, and
wherein said source of near infrared collimated light is a quartz-halogen lamp, said filtering means is a long pass filter, and said diffusing means is a structure having a reflective surface disposed in the path of the filtered collimated light for diffusing and reflecting the filtered collimated light rays onto said crystalline layer structure at a plurality of separate angles.

5,334,845

CHARGED BEAM EXPOSURE METHOD AND APPARATUS AS WELL AS APERTURE STOP AND PRODUCTION METHOD THEREOF

Hiroaki Wakabayashi, Kodaira; Yoshinori Nakayama, Sayama; Fumio Murai, Tokyo, and Shinji Okazaki, Urawa, all of Japan, assignors to Hitachi Limited, Tokyo, Japan

PCT No. PCT/JP90/00388, § 371 Date Nov. 26, 1990, § 102(e) Date Nov. 26, 1990, PCT Pub. No. WO90/11619, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 23, 1990, Ser. No. 613,746
Claims priority, application Japan, Mar. 24, 1989, 1-070685
Int. Cl.[5] H01L *21/027*
U.S. Cl. 250—492.2 12 Claims



1. A pattern forming mask for charged or electron beam comprising:
a plate;
a plurality of first openings formed through said plate and forming a first pattern which includes a single minimum repetition pattern;
a plurality of second openings formed through different areas of said plate than said first openings and forming a second pattern which includes at least two of said single minimum repetition pattern; and
at least one third opening formed through different areas of said plate than said first and second openings and forming a rectangular pattern.

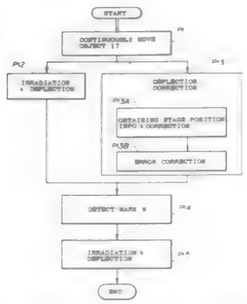
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,846

CORRECTION OF CHARGED PARTICLE BEAM EXPOSURE DEFLECTION BY DETECTING STAGE POSITION AND A POSITION DETECTION MARK

Mitsuhiro Nakano, Kasugai, and Junichi Kai, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Filed Jul. 1, 1992, Ser. No. 907,018
Claims priority, application Japan, Jul. 2, 1991, 3-161668
Int. Cl.[5] H01J 37/304
U.S. Cl. 250—492.2 14 Claims



1. A charged particle beam exposure apparatus comprising:
a source for irradiating a charged particle beam on a continuously moving object which has a position detection mark provided thereon and is carried on a movable stage;
deflection means for deflecting the charged particle beam based on deflection signals;
first detection means for detecting the position detection mark of the object;
second detection means for detecting a stage position of the continuously moving object and for outputting a position detection signal;
moving means for moving the stage which carries the object; and
control means for controlling inputs and outputs of said source, said deflection means, said first and second detection means and said moving means,
said control means including means for correcting the deflection signals which are supplied to said deflection means so that the position detection mark is irradiated by the charged particle beam based on the position detection signal which is output from said second detection means and is related to the stage position of the object which is continuously moved by said moving means.

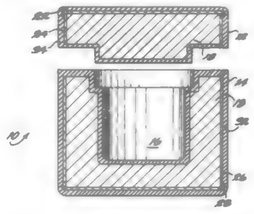
5,334,847

COMPOSITION FOR RADIATION SHIELDING

James W. Kronberg, Aiken, S.C., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 8, 1993, Ser. No. 14,604
Int. Cl.[5] G21F 1/12
U.S. Cl. 250—506.1 14 Claims

1. A shield for ionizing radiation, said shield comprising:
a body made of uranium and having an exterior; and
a bismuth coating adhered to said exterior of said body, said coating being made of a corrosion-resistant material and



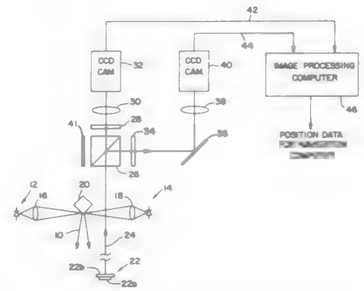
adhering to said exterior by forming an intermetallic compound.

5,334,848

SPACECRAFT DOCKING SENSOR SYSTEM

Gary E. Grimm, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Apr. 9, 1993, Ser. No. 47,127
Int. Cl.[5] G01N 21/86
U.S. Cl. 250—548 15 Claims



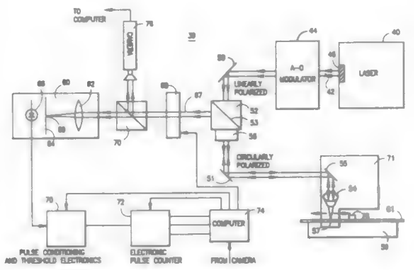
1. Apparatus for forming an image of a reflective target, comprising:
means for generating electromagnetic radiation having two distinct wavelengths;
a reflective target responsive to only one of the wavelengths;
means for transmitting the radiation, to illuminate the reflective target, of which the exact position and orientation are initially unknown;
filter means, for separating received reflected radiation into two wavelength bands containing the two respective transmitted wavelengths;
camera means, for converting the received and filtered radiation simultaneously into two separate electronic images corresponding to received images in the two wavelength bands; and
image processing means, including means for subtracting the two electronic images, one from the other, to yield an enhanced image of the reflective target, whereby unwanted reflections from other objects tend to be canceled in the means for subtraction.

5,334,849

APPARATUS FOR AND METHOD OF VERIFYING ETCHING OF OPTICAL SERVO INFORMATION ON MAGNETIC MEDIA

Fred C. Thomas, Kaysville; James Bero; Robert Short, both of Ogden, and Paul R. Johnson, South Kaysville, all of Utah, assignors to Iomega Corporation, Roy, Utah

Filed Jun. 10, 1992, Ser. No. 896,197
Int. Cl.[5] G01D 5/34; G11B 13/04
U.S. Cl. 250—559 44 Claims



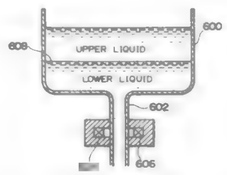
1. An apparatus for etching a point on the surface of a magnetic medium to reduce the reflectivity of said point and for verifying said etching, comprising:
a light source for providing a collimated incident beam of light;
a first lens situated in the path of the transmitted incident beam for focusing the incident beam to a point on the surface of the magnetic medium, the focused incident beam reacting with the magnetic medium to reduce the reflectivity of the surface at that point, a portion of the focused incident beam being reflected, said first lens collimating the reflected beam and directing the reflected beam back toward the light source;
means for separating the reflected beam from the incident beam and for deflecting the reflected beam; and
detector means situated in the path of the deflected reflected beam for measuring the intensity of the reflected beam, and for comparing the measured intensity to a threshold value, whereby proper etching is verified if the intensity of the reflected beam is not less than the threshold value.

5,334,850

METHOD AND DEVICE FOR OPTICALLY DETECTING AN INTERFACE BETWEEN TWO FLUIDS AND METHOD OF SETTING THE PARAMETERS FOR SUCH DETECTION

Keiji Ashida, Kashiwa, Japan, assignor to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Oct. 15, 1992, Ser. No. 961,326
Claims priority, application Japan, Oct. 17, 1991, 3-269430
Int. Cl.[5] G01N 15/06
U.S. Cl. 250—577 50 Claims



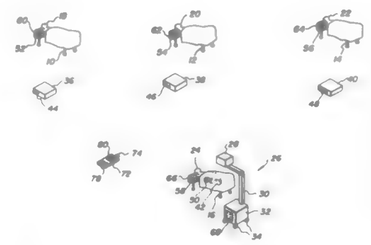
1. A method for detecting an interface between a first and second fluid in a light transmitting unit, the fluids passing through the light transmitting unit occupying a part of an optical path between a light source and a detecting unit, comprising:
in accordance with at least one light transmitting characteristic of at least one of the first and second fluids, setting a spectral intensity of the light source, at least one characteristic of an optical path from the light source to the detecting unit, and spectral detection sensitivity of the detecting unit; and
detecting the interface according to when an output difference, between an output of the detecting unit in the presence of light transmitted through the first fluid when said first fluid occupies the part of the optical path in the light transmitting unit and an output of the detecting unit in the presence of light transmitted through the second fluid when said second fluid occupies the part of the optical path in the light transmitting unit, exceeds a set value,
so as to monitor a deflection of an output of the detecting unit, whereby passage of an interface between the first and the second fluids through the light transmitting unit is detected.

5,334,851

COMPUTED RADIOGRAPHY PATIENT IDENTIFICATION SYSTEM

Walter F. Good; David Gur, both of Pittsburgh, Pa.; James F. Owen, Rochester, N.Y.; Bruce R. Whiting, Pittsford, N.Y.; David L. Modney, Fairport, N.Y., and Richard Weil, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y. and University of Pittsburgh, Pittsburgh, Pa.

Continuation of Ser. No. 656,900, Feb. 15, 1991, abandoned.
This application Oct. 19, 1992, Ser. No. 963,036
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[5] G01N 23/04
U.S. Cl. 250—582 5 Claims



1. A computed radiography patient identifying system comprising:
patient identifying bar code means adapted to be located with a patient for identifying a patient;
storage phosphor means for storing an x-ray image of a patient, said storage phosphor means having storage phosphor identifying bar code means for identifying the storage phosphor means;
x-ray examination type bar code means locatable with an x-ray source for identifying x-ray examination type characteristics of said x-ray image stored in said storage phosphor means, wherein said x-ray examination type bar code means includes a first set of bar codes identifying unique body parts of a patient and a second set of bar codes identifying x-ray exposure conditions;
hand-held bar code scanner means, having memory, for scanning said patient identifying bar code means, said storage phosphor bar code identifying means, and a bar code from each of the respective first and second sets of said x-ray examination type bar code means at the time said storage phosphor means is exposed to an x-ray image

VOL 1165 ISS 1 AG 2 1994 UMI

of a patient, to produce patient identifying information, storage phosphor means identifying information, and x-ray examination type information which is stored in said memory;

storage phosphor reader means for converting a stored x-ray image in said storage phosphor means into an x-ray image signal, said storage phosphor reader means having first means for receiving information identifying said storage phosphor means from said storage phosphor bar code identifying means; and

second means for receiving from said hand-held bar code scanner means the stored information relating to patient identification, storage phosphor means identification, and x-ray examination type and for matching the received information with said x-ray image signal converted from said storage phosphor means.

5,334,852

CASSETTE AUTOLOADER

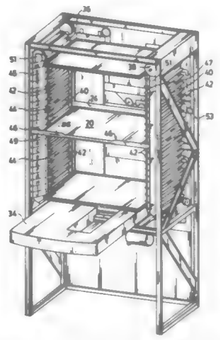
John C. Boutet; Walter C. Bubie; Darryl D. DeWolff, all of Rochester, and Jeffrey J. Yaskow, Williamson, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,640

The portion of the term of this patent subsequent to Jan. 17, 2011, has been disclaimed.

Int. Cl.[5] G01N *23/04*

U.S. Cl. 250—589 26 Claims



12. In an apparatus for storing and automatically delivering cassettes and/or pallets containing cassettes to a reader, comprising:

storage and delivery means defining a plurality of cassette retaining sites, a read access site, and a body encasing said storage and delivery means, said body having a portal adjoining said cassette retaining sites for allowing cassettes to be placed on or removed from the storage and delivery means, the improvement comprising:

indicia means adjacent said portal for identifying the cassette retaining sites, and a guard bar placed across the read access site, said bar being constructed and positioned to prevent accidental removal of a cassette from said read access site.

5,334,853

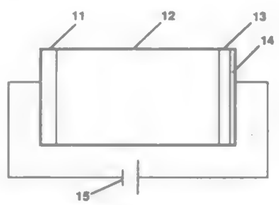
SEMICONDUCTOR COLD ELECTRON EMISSION DEVICE

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1993, Ser. No. 128,508

Int. Cl.[5] H01L *29/161*

U.S. Cl. 257—10 10 Claims



1. A cold electron emission device comprising:

a forward biased heterojunction semiconductor in which said heterojunction is formed by a P-type material which is SiC and an N-type material which is AlN;

a first metallic ohmic contact connected to said P-type material at one end of said junction;

a second metal ohmic contact connected to said N-type material at an opposite end of said junction; and

a voltage source with a positive and negative terminal; said positive terminal being connected to said first ohmic contact and said negative terminal being connected to said second ohmic contact.

5,334,854

OPTICAL SEMICONDUCTOR DEVICE WITH WAVELENGTH SELECTIVITY AND METHOD FOR AMPLIFYING OR EMITTING THE LIGHT USING THE SAME

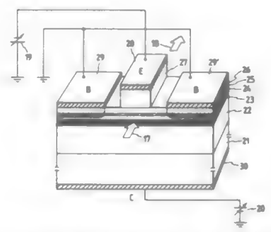
Takeo Ono, and Masahiro Okuda, both of Sagamihara, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1991, Ser. No. 727,128

Claims priority, application Japan, Jul. 11, 1990, 2-183388

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—13 72 Claims



1. An optical semiconductor device with wavelength selectivity comprising:

a substrate;

a collector layer provided on said substrate and composed of a semiconductor having a first conductive type;

a multiple quantum well layer provided on said collector layer;

a base layer provided on said multiple quantum well layer and composed of a semiconductor having a second conductive type, said base layer consisting of an active layer, and first and second semiconductor layers with said active layer sandwiched therebetween and having a wider band gap than said active layer, said base layer and said multiple quantum well layer propagating light;

an emitter layer provided on said base layer and composed of a semiconductor having the first conductive type; and

a collector electrode, a base electrode and an emitter electrode electrically connected to said collector layer, said base layer and said emitter layer, respectively.

5,334,855

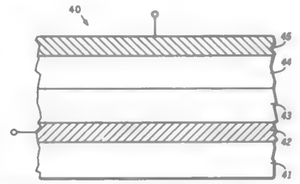
DIAMOND/PHOSPHOR POLYCRYSTALLINE LED AND DISPLAY

Curtis D. Moyer, Phoenix; James E. Jaskie, and Ronald N. Legge, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 24, 1992, Ser. No. 933,837

Int. Cl.[5] H01L *33/00, 29/161*

U.S. Cl. 257—13 14 Claims



1. A semiconductor/phosphor polycrystalline light emitting diode comprising:

a carrier injection layer including a semiconductor material with a selected bandgap;

a light emitting layer including a polycrystalline phosphor material with a selected bandgap positioned on a surface of the carrier injection layer so as to form a junction therebetween, the light emitting layer emitting substantially all of the light of the light emitting diode; and

the semiconductor material and the polycrystalline phosphor material being selected so that the bandgap of the semiconductor material is wider than the bandgap of the polycrystalline phosphor material.

5,334,856

IMAGE READOUT ELEMENT WITH OXYTITANIUM PHTHALOCYANINE

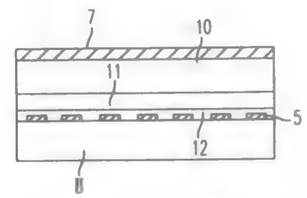
Shigenori Otsuka, Omiya; Hiromi Horiuchi, and Masayuki Hiroi, both of Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 725,602, Jul. 3, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 97,919

Claims priority, application Japan, Jul. 3, 1990, 2-175680

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—40 8 Claims



1. An image readout device comprising an integration of readout elements for converting image signals into electrical signals, each of said elements comprising a photoconductive layer and a pair of electrodes which contact said layer, and between which said layer is disposed, wherein said photoconductive layer contains a charge generation material and a charge transport material, and said charge generation material is oxytitanium phthalocyanine.

5,334,857

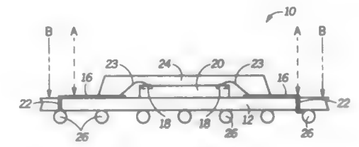
SEMICONDUCTOR DEVICE WITH TEST-ONLY CONTACTS AND METHOD FOR MAKING THE SAME

Timothy J. Mennitt, Cedar Park; John P. Warren, and James W. Sloan, both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1992, Ser. No. 864,246

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—48 22 Claims



1. A semiconductor device comprising:

a package substrate having a top surface, a bottom surface, and a perimeter;

a plurality of external operational contacts attached to a surface of the package substrate for electrical connection to a user substrate;

a plurality of test-only contacts formed on a surface of the package substrate; and

a semiconductor die positioned on the package substrate and electrically coupled to the plurality of operational contacts and the plurality of test-only contacts, wherein the plurality of operational contacts is electrically coupled to a first portion of the semiconductor die and the plurality of test-only contacts is electrically coupled to a second portion of the die, wherein the second portion of the semiconductor die is excluded from the first portion.

5,334,858

SEMICONDUCTOR DEVICE OF TAB STRUCTURE, CAPABLE OF ENSURING EASE OF TESTING OF SAME IN FINAL FORM

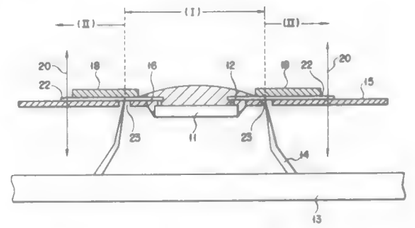
Shinobu Wada, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 822,878, Jan. 21, 1992, abandoned. This application Jul. 2, 1993, Ser. No. 85,149

Claims priority, application Japan, Jan. 22, 1991, 3-006024

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—48 6 Claims



1. A semiconductor device comprising:

a tape member having first and second faces, at a center of which a hole is formed;

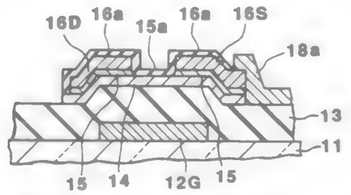
a plurality of leads having first and second ends and mounted on the first face of said tape member so that the first ends project over said hole;

a slit formed in a portion of said tape member around the

VOL 1165 ISS 1 AG 2 1994 UMI

hole, said slit being located below portions of said leads which are proximate to the first ends, said slit exposing said leads to permit contact with a probe;
a semiconductor chip arranged in aid hole and in contact with the first ends;
a first insulation member located in said hole, for covering at least a contact portion where said semiconductor chip and the first ends are in contact with one another; and
a second insulation member formed on said leads and said slit, for covering said leads except for the second ends thereof.

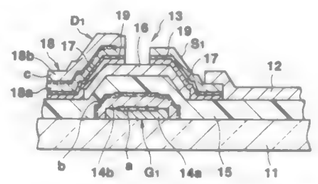
5,334,859
THIN-FILM TRANSISTOR HAVING SOURCE AND DRAIN ELECTRODES INSULATED BY AN ANODICALLY OXIDIZED FILM
Kunihiro Matsuda, Sagamihara, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Sep. 2, 1992, Ser. No. 939,458
Claims priority, application Japan, Sep. 5, 1991, 3-252845; Nov. 26, 1991, 3-335553; Nov. 27, 1991, 3-335875; Dec. 13, 1991, 3-351328; Dec. 13, 1991, 3-351329
Int. Cl.[5] H01L *29/04, 27/01*
U.S. Cl. 257—57 **20 Claims**



17. A thin-film transistor panel comprising a plurality of thin-film transistor elements arranged in a matrix form, and data lines and gate lines connected to said thin-film transistor elements,
each of said thin-film transistor elements comprising:
a gate electrode;
a gate-insulating film;
an i-type semiconductor layer to face the gate electrode through the gate insulating film therebetween;
an n-type semiconductor layer having an anodically oxidized region; and
source and drain electrodes electrically connected to the portions of the i-type semiconductor layer through the n-type semiconductor layer and isolated from each other by the anodically oxidized region of said n-type semiconductor layer which is located between said source and drain electrodes; and
each of said data lines having an anodically oxidized surface region.

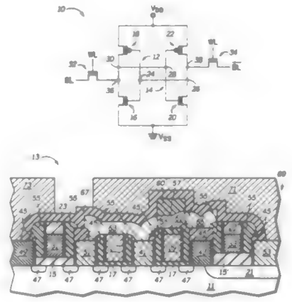
5,334,860
PANEL HAVING THIN FILM ELEMENT FORMED THEREON
Hideo Naito, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 23, 1992, Ser. No. 902,969
Claims priority, application Japan, Jun. 27, 1991, 3-181625
Int. Cl.[5] H01L *27/01*
U.S. Cl. 257—59 **20 Claims**

18. A semiconductor device comprising:
a semiconductor element including a plurality of thin films laminated on one another to have a predetermined form; and
a wire, connected to the semiconductor element, for supplying a signal thereto, the wire having a lower conductive film, an upper conductive film formed on the lower conductive film electrically connected thereto, and an etching stopper film interposed between the lower and upper conductive films,



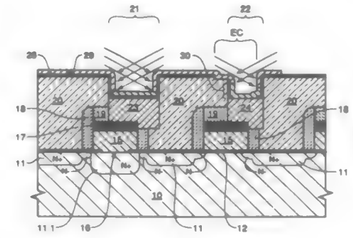
wherein the etching stopper film is an insulating film formed by processing a surface region of the lower conductive film,
wherein the etching stopper film is formed by oxidizing the surface region of the lower conductive film.

5,334,861
SEMICONDUCTOR MEMORY CELL
James R. Pfiester, and James D. Hayden, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.
Filed May 19, 1992, Ser. No. 885,333
Int. Cl.[5] H01L *27/01*
U.S. Cl. 257—67 **17 Claims**



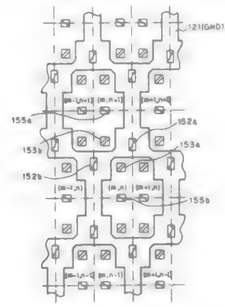
1. A memory cell comprising:
a semiconductor body having an active region;
a CMOS device having a first transistor of one conductivity type overlying a central portion of the active region and a second transistor of opposite conductivity type overlies the first transistor.
wherein the first transistor comprises elevated source and drain regions overlying the active region and spaced apart by a shared-gate electrode, and
a first dielectric layer having a first selected thickness separating the shared-gate electrode from the active region, and
first and second lightly doped regions in the active region underlying the shared-gate electrode and spaced apart by a first channel region;
a word line overlying an end portion of the active region;
a Vss signal line formed in the active region passing under a portion of the word line and electrically coupled to the first transistor, wherein the Vss signal line comprises a doped region in the active area underlying the word line portion and separated from the word line portion by a second dielectric layer having a second selected thickness;
a conductive body electrically isolated from the word line portion and the CMOS device which contacts the active region adjacent to the word line portion and extends upward therefrom to overlie the word line portion and at least a portion of the CMOS device.

5,334,862
THIN FILM TRANSISTOR (TFT) LOADS FORMED IN RECESSED PLUGS
Monte Manning, Kuna, and Charles H. Dennison, Boise, both of Id., assignors to Micron Semiconductor, Inc., Boise, Id.
Filed Aug. 10, 1993, Ser. No. 104,523
Int. Cl.[5] H01L *29/68, 21/265*
U.S. Cl. 257—67 **36 Claims**



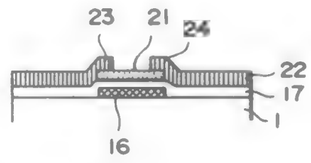
16. A thin film transistor (TFT) fabricated on a supporting substrate, said TFT comprising:
a) a recessed conductive plug serving as a control gate;
b) a control gate insulating layer;
c) a film of semiconductive material connecting to and overlapping said recessed plug, said film having vertical regions extending above said recessed plug and horizontal regions extending over said recessed plug;
wherein, said vertical regions above said recessed plug are conductively doped to form TFT source/drain regions and the horizontal region spanning between said vertical regions above said recessed plug is conductively doped to form a TFT channel region and the horizontal regions outside said recessed plug are conductively doped to form a TFT source/drain interconnect.

5,334,863
SEMICONDUCTOR MEMORY DEVICE HAVING A MESHLIKE GROUNDING WIRING
Masayoshi Ohkawa, and Fumihiko Hayashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jun. 8, 1992, Ser. No. 895,034
Claims priority, application Japan, Jun. 6, 1991, 3-134534; Jul. 15, 1991, 3-172849
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—69 **8 Claims**



1. In a semiconductor memory device in which one static memory cell includes first and second load transistors consisting of P-channel type thin film transistors, a first and second driver transistors including an N-channel MOS transistor formed on the surface of a silicon substrate, first and second access transistors including an N-channel MOS transistor formed on the surface of said silicon substrate, a word line, first and second digit lines, a power supply wiring, and a first grounding wiring, the gate electrodes of said first and said second driver transistors and the gate electrodes of said first and said second access transistors that also serve as said word lines are formed of a first conductor film consisting of a material having a melting point higher than that of aluminum, said first grounding wiring within said memory cell being formed of a second conductor film including a material having a melting point higher than that of aluminum, wherein said first grounding wiring is connected to a second grounding wiring formed of an aluminum film in a predetermined region outside of said memory cell, and said first and said second load transistors being formed of a third conductor film including a material having a melting point higher than that of aluminum and a fourth conductor film consisting of a material having a melting point higher than that of aluminum: wherein;
the semiconductor memory device in the sad word lien is branched within the memory cell to a first word lien that also serves as the gate electrode of said first access transistor and a second word line that also serves as the gate electrode of said second access transistor, said first word line and said second word line being connected at a predetermined location outside said memory cell, and said first load transistor and said second load transistor, said first driver transistor and said second driver transistor, and said first access transistor and said second access transistor being respectively arranged at point symmetric positions with respect to the same reference point within the memory cell;
said first grounding wiring, being in the vicinity of the respective connecting holes in the direction of the boundary between symmetrical bits, extending respectively in the direction parallel to said first and said second digit lines and in the direction parallel to said word line, thereby forming a mesh like shape.

5,334,864
PROCESS FOR SELECTIVE FORMATION OF II-VI GROUP COMPOUND FILM
Hiroyuki Tokunaga, Kawasaki, and Takao Yonehara, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 686,868, Apr. 16, 1991, Pat. No. 5,100,691, which is a continuation of Ser. No. 587,162, Feb. 21, 1990, abandoned, which is a continuation of Ser. No. 174,381, Mar. 28, 1988, abandoned. This application Jan. 9, 1992, Ser. No. 818,530
Claims priority, application Japan, Mar. 26, 1987, 62-71991
Int. Cl.[5] H01L *29/161, 27/12*
U.S. Cl. 257—78 **10 Claims**



1. A semiconductor device having a II–VI group compound film, which comprises:
a substrate;
a first electrode provided on said substrate; a polycrystalline or amorphous insulating film provided on said first electrode having a non-nucleation surface with small nucleation density and a nucleation surface with larger nucleation density than the nucleation density of said non-

VOL 1165 ISS 1 AUG 2 1994 UMI

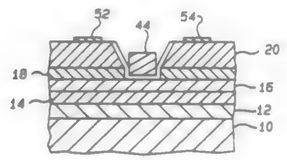
nucleation surface and a large area sufficient for a number of nuclei to be formed;
a II–VI group compound film on said nucleation surface formed by applying a II–VI group compound film forming treatment on said insulating film; and
a second electrode provided in contact with said II–VI group compound film.

5,334,865

MODFET STRUCTURE FOR THRESHOLD CONTROL

Ayub Fathimulla, Ellicott City, and Aina Olaleye, Columbia, both of Md., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jul. 31, 1991, Ser. No. 738,416
Int. Cl.[5] H01L *29/784, 29/205, 29/804, 29/06*
U.S. Cl. 257—192 7 Claims



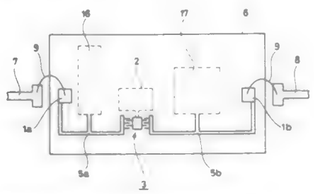
1. A semiconductor device comprising:
a semi-insulating semiconductor substrate;
an undoped semiconductor buffer layer disposed on said semiconductor substrate;
at least one undoped semiconductor spacer layer disposed on said buffer layer, one of said at least one spacer layer being of a different composition than said buffer layer;
an etch stop layer disposed on said at least one spacer layer, said etch stop layer being of a different composition than said at least one spacer layer;
a doped semiconductor layer disposed on said etch stop layer, said doped semiconductor layer having the same composition as one of said at least one spacer layer;
a gate well etched through at least said doped semiconductor layer to said etch stop layer, said gate well having a base defining a gate region;
a gate electrode disposed on said base of said gate well; and
source and drain electrodes disposed on a top surface of said doped semiconductor layer on opposite sides respectively of said gate well.

5,334,866

INTEGRATED CIRCUIT DEVICE WITH FUNCTIONS SELECTABLE BY CHANGING INTERCONNECTION PATTERN

Kenki Kubo, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1992, Ser. No. 989,446
Claims priority, application Japan, Jan. 6, 1992, 4-000307
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—207 11 Claims



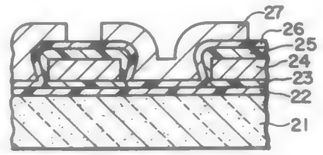
1. A semiconductor device comprising:
a semiconductor substrate having a major surface;
a power supply lead opposed to said semiconductor substrate for receiving a predetermined electric potential;
a power supply pad formed on a major surface of said semiconductor substrate;
a power supply wire connecting said power supply pad and said power supply lead;
a power supply interconnection pattern formed on said semiconductor substrate and electrically connected to said power supply pad;
an internal circuit formed on said semiconductor substrate for selecting functions of the semiconductor device or inhibiting use of a circuit formed on said semiconductor substrate; and
an internal circuit interconnection pattern connected to said internal circuit and formed on said semiconductor substrate, said internal circuit interconnection pattern having a portion adjacent a predetermined portion of said power supply interconnection pattern and separated therefrom by a space smaller than a diameter of said power supply wire connecting said power supply lead and said power supply pad.

5,334,867

IMAGE SENSOR DEVICE WITH INSULATION FILM

Jong-cheol Shin, and Heung-kwun Oh, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 11, 1993, Ser. No. 59,330
Claims priority, application Rep. of Korea, May 11, 1992, 92-7950
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—222 7 Claims



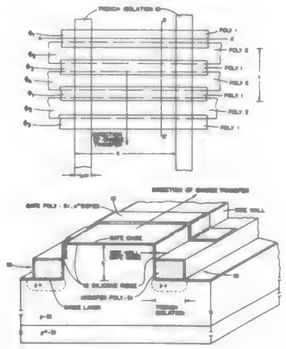
1. An image sensor comprising:
a semiconductor substrate;
a first oxidation film formed over said semiconductor substrate;
a first nitride film formed over said first oxidation film;
a plurality of first spaced apart gate electrodes formed on said first nitride film; and
a plurality of second gate electrodes, separated from adjacent ones of said first gate electrodes by an insulation film, said second gate electrodes being arranged so as to be spaced apart from each other,
said insulation film for separating said first gate electrodes and said second gate electrodes comprising:
a second oxidation film contacting each of said first gate electrodes,
and a second nitride film disposed over said second oxidation film and contacting each of said second gate electrodes.

5,334,868

SIDEWALL CHARGE-COUPLED DEVICE WITH TRENCH ISOLATION

Hon-Sum P. Wong, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 652,959, Feb. 8, 1991, abandoned. This application May 5, 1993, Ser. No. 57,425
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—244 14 Claims



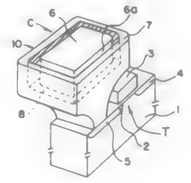
1. A sidewall charge-coupled imaging device with trench isolation comprising:
a substrate of a material for generating charges in response to incident light, said substrate defining an upper surface and having a plurality of substantially parallel isolation trenches, having sidewalls with upper and lower portions, formed in the upper surface of the substrate, which isolation trenches separate adjacent columns of charge-coupled device calls, with each of said columns forming a substrate ridge delineated between the isolation trenches and comprising adjacent charge-coupled device calls having surfaces substantially defined by the surface of said substrate for producing photon-to-electron charge conversion in response to incident light, and said adjacent charge-coupled device cells being formed of sidewalls in common with the upper portions of the sidewalls of said isolation trenches and the substrate ridge delineated between the isolation trench sidewalls, so as to maximize the three dimensional surface areas of the charge-coupled device cells available to generate and store charges and facilitate transport of charges along the ridge and cell sidewalls in paths substantially linear and parallel to said isolation trenches; and
a plurality of alternating first and second types of substantially parallel, at least partially transparent surface electrodes arranged in an overlapping electrode configuration over substantially the entire upper surface of said substrate and being electrically isolated from each other and from said substrate and extending substantially perpendicular to said plurality of substantially parallel isolation trenches for defining individual charge coupled device cells in the substrate material beneath the alternating first and second types of surface electrodes and to provide for clocking of charges from cell to cell within each column of cells along the ridges and cell sidewalls parallel to said trenches, said plurality of alternating first and second types of surface electrodes producing, by an applied electric field, an induced potential well in the substrate beneath each of the plurality of alternating first and second types of surface electrodes, such that substantially the entire upper surface of the substrate and the sidewalls in common with the upper portions of the sidewalls of the isolation trenches produce photon-to-electron conversion in response to incident light.

5,334,869

SEMICONDUCTOR MEMORY DEVICE

Katsuji Iguchi, Yamatokoriyama; Seizo Kakimoto, Nara, and Naoyuki Shimamura, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 794,846, Nov. 21, 1991, abandoned, which is a continuation of Ser. No. 540,759, Jun. 20, 1990, abandoned. This application Aug. 27, 1993, Ser. No. 112,480
Claims priority, application Japan, Jun. 20, 1989, 1-158028
Int. Cl.[5] H01L *29/68*
U.S. Cl. 257—309 11 Claims



1. A semiconductor memory device having a plurality of memory cells, each of said memory cells comprising:
a transistor formed on a surface of a semiconductor substrate and having a first terminal; and
a capacitor formed on the semiconductor substrate and having first and second electrodes, said first electrode being connected with said first terminal of the transistor;
said first electrode of the capacitor including,
a principal portion of a generally column configuration,
a peripheral portion spaced from and surrounding an outer side surface of a wall of the principal portion with the height of said principal portion being generally the same as the height of said peripheral portion which surrounds said principal portion, and
a bottom portion connecting an end of the principal portion with an end of the peripheral portion; and
said second electrode of the capacitor including respective portions confronting the principal portion, the peripheral portion and the bottom portion of the first electrode and said second electrode extending over an inner side surface and an outer side surface of a wall of the peripheral portion of the first electrode so that both said inner side surface and said outer side surface of the wall of the peripheral portion define capacitive surface area of said first electrode.

5,334,870

COMPLEMENTARY MIS TRANSISTOR AND A FABRICATION PROCESS THEREOF

Mitsutaka Katada, Kariya; Hidetoshi Muramoto, Nagoya; Seizi Fuzino, Toyota; Tadashi Hattori, Okazaki, and Katsunori Abe, Obu, all of Japan, assignors to Nippondenso Co. Ltd., Kariya, Japan

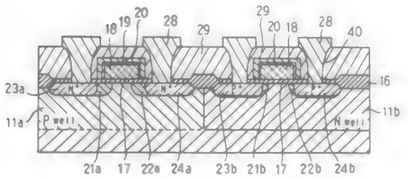
Filed Apr. 16, 1993, Ser. No. 46,699
Claims priority, application Japan, Apr. 17, 1992, 4-125606
Int. Cl.[5] H01L *27/02, 29/10*
U.S. Cl. 257—371 9 Claims

1. A complementary MIS transistor, comprising: a substrate;
a P-type well and an N-type well defined in said substrate;
an insulating gate provided on each of said P-type well and said N-type well;
a source region and a drain region both of N-type and formed in said P-type well so as to align respectively to a first edge and a second, opposite edge of said insulating gate that is provided on said P-type well;

VOL 1165 ISS 1 AG 2 1994 UMI

a source region and a drain region both of P-type and formed in said N-type well so as to align respectively to a first edge and a second, opposite edge of said insulating gate that is provided on said N-type well; and

N-type diffusion regions formed in correspondence to said source region and said drain region in each of said P-type well and said N-type well, said N-type diffusion region having an impurity concentration level that is higher than



an impurity concentration level of said P-type well and said N-type well but is lower than an impurity concentration level of said source and drain regions, said N-type diffusion regions extending laterally from said source and drain regions into a part of said substrate located immediately below said first and second edges of said insulating gate, said N-type diffusion regions extending vertically in said substrate to a depth smaller than or equal to a depth of said source and drain regions.

5,334,871

FIELD EFFECT TRANSISTOR SIGNAL SWITCHING DEVICE

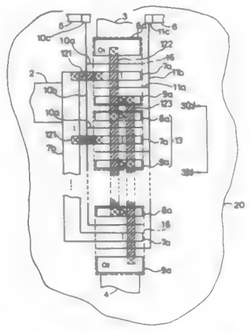
Naoto Andoh, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 766,121, Sep. 27, 1991. This application Jul. 9, 1993, Ser. No. 88,580

Claims priority, application Japan, Oct. 9, 1990, 2-271639

Int. Cl.[5] **H01L** *29/80, 29/20*

U.S. Cl. 257—402 **6 Claims**



1. A field effect transistor signal switching device comprising:

a semi-insulating semiconductor substrate including a plurality of spaced apart active regions having a low resistivity relative to the substrate serially arranged in the substrate;

an input electrode disposed on the substrate including a respective source electrode disposed on each of the active regions and a source pad;

first and second output electrodes respectively including a first drain electrode and a second drain electrode disposed on each of the active regions;

first and second control electrodes disposed on the substrate for controlling the selective transmission of an input signal applied to the input electrode to the first and second output electrodes, the first and second control electrodes respectively including a first gate electrode and a second gate electrode disposed on each of the respective active regions between the source electrode and the first and second drain electrodes of the respective active region, first and second gate pads, and first and second connecting portions disposed on the substrate respectively electrically connecting the first and second gate electrodes to the first and second gate pads; and

a first air bridge structure electrically connecting the source electrodes to the source pad, a second air bridge structure electrically connecting the first drain electrodes together, and a third air bridge structure electrically connecting the second drain electrodes together.

5,334,872

ENCAPSULATED SEMICONDUCTOR DEVICE HAVING A HANGING HEAT SPREADING PLATE ELECTRICALLY INSULATED FROM THE DIE PAD

Tetsuya Ueda, and Osamu Nakagawa, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 807,652, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 572,541, Sep. 5, 1990, abandoned. This application May 18, 1993, Ser. No. 62,567

Claims priority, application Japan, Jan. 29, 1990, 2-16127

Int. Cl.[5] **H01L** *23/48, 23/28, 23/02, 27/54*

U.S. Cl. 257—675 **6 Claims**

1. A packaged semiconductor device comprising:

an electrically conducting lead frame including a plurality of connecting leads, each connecting lead having a first end and a second end, the first ends of the connecting leads lying substantially in a first plane, a die pad having an area and lying in a second plane generally parallel to and spaced from the first plane, and a plurality of first hanging leads extending from the first plane to the second plane and supporting the die pad;

a semiconductor chip having opposed first and second surfaces and a plurality of electrodes disposed on the first surfaces wherein the second surface of the semiconductor chip is bonded to the die pad and the first ends of at least some of the connecting leads are electrically connected to corresponding electrodes;

heat spreading plate spaced from, directly opposite, and electrically insulated from the die pad, having an area larger than the area of the die pad for dispersing heat produced by the semiconductor chip, and including a plurality of second hanging leads connected to the heat spreading plate, supporting and extending from the heat spreading plate to and terminating substantially in the first plane, the second hanging leads being respectively disposed between and electrically insulated from pairs of the connecting leads; and

a resin package encapsulating the semiconductor chip, the die pad, the second ends of the connecting leads, the heat spreading plate, and the second hanging leads wherein a portion of the resin package is disposed between and separates the heat spreading plate from the die pad.

5,334,873

SEMICONDUCTOR PACKAGES WITH CENTRALLY LOCATED ELECTRODE PADS

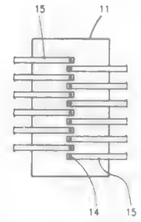
Gi Bon Cha, Kyungki-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Apr. 22, 1992, Ser. No. 872,154

Claims priority, application Rep. of Korea, May 11, 1991, 7631/1991

Int. Cl.[5] **H01L** *23/02*

U.S. Cl. 257—666 **7 Claims**



1. A semiconductor package comprising:

a semiconductor chip including an electric circuit and having an upper surface;

a plurality of inner leads;

a plurality of electrically conductive pads for connecting the inner leads to the electric circuit, and wherein the pads are disposed on a central, longitudinally extending area of the upper surface of the semiconductor chip and each of the inner leads extends directly over a respective, associated one of the pads;

a plurality of solders, each of the inner pads having a respective one of the solders formed thereon, and each of the solders connecting a respective one of the inner leads to the associated one of the pads;

an insulating film disposed on the upper surface of the semiconductor chip for preventing electrical interference between the inner leads and the electrical circuit of the semiconductor chip; and

an encapsulating layer encapsulating the semiconductor chip and the inner leads.

5,334,874

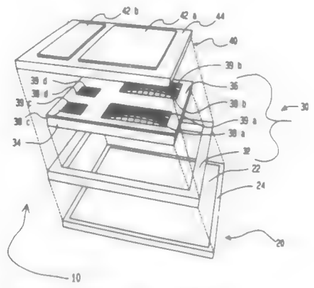
ELECTRONIC DEVICE PACKAGE

Richard A. Metzler, 28232 Driza, Mission Viejo, Calif. 92692, and Mark Kalatsky, 2175 Temple Hills Dr., Laguna Beach, Calif. 92651

Filed Sep. 13, 1991, Ser. No. 759,165

Int. Cl.[5] **H01L** *23/02;* **H01J** *15/00*

U.S. Cl. 257—678 **20 Claims**



1. An electronic package comprising:

a first base substrate;

an apertured plate, said apertured plate positioned adjacent said first base substrate to form a cavity, wherein said first base substrate and said apertured plate are fusible directly to each other;

a semiconductor device having an electrical contact pad, said device disposed within said cavity such that said device is substantially enclosed within said cavity, said cavity enclosing said semiconductor device being substantially voidless;

a second base substrate which is directly fusible to said apertured plate, said second base substrate encapsulating said semiconductor device;

a first substrate conductor path which extends from a cavity conductor pad through said first base substrate to an exterior conductor pad, said cavity conductor pad located on a first surface of said first base substrate, said exterior conductor pad located on a second surface of said first base substrate; and

a conducting interconnector between said device electrical contact pad and said cavity conductor pad, thus forming an electrical connection between said semiconductor device and said exterior conductor pad.

5,334,875

STACKED SEMICONDUCTOR MEMORY DEVICE AND SEMICONDUCTOR MEMORY MODULE CONTAINING THE SAME

Toshio Sugano, Kokubunji; Kohji Nagaoka, Tobu; Seiichiro Tsukui, Komoro; Yoshiaki Wakashima, Kawasaki; Michio Tanimoto, Kokubunji; Masayuki Watanabe, Yokohama; Suguru Sakaguchi, Chigasaki; Kunihiko Nishi, Kokubunji; Aizo Kaneda, Yokohama; Kohji Serizawa, Fujisawa; Michiharu Honda, Yokohama; Tohru Yoshida, Yamato; Takeshi Komaru, Tachikawa, and Atsushi Nakamura, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Tobu Semiconductor, Ltd., Saitama, both of Japan

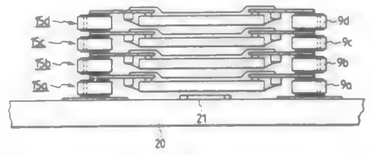
Division of Ser. No. 631,154, Dec. 20, 1990, Pat. No. 5,198,888, which is a division of Ser. No. 288,955, Dec. 23, 1988, Pat. No. 5,028,986. This application Mar. 2, 1993, Ser. No. 1,649

Claims priority, application Japan, Dec. 28, 1987, 62-332126; Feb. 26, 1988, 63-42069; Jun. 8, 1988, 63-139304; Nov. 16, 1988, 63-287658

The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.

Int. Cl.[5] **H01L** *23/16*

U.S. Cl. 257—686 **56 Claims**



1. A semiconductor memory device comprising:

first and second semiconductor memory chips which are stacked one above the other, each of said memory chips having first and second principal surfaces with a plurality of first electrodes and a second electrode being located on the first principal surface; and

first and second connectors, each having a plurality of first conductors arranged on a first surface and a plurality of second conductors arranged on a second surface which is opposite to said first surface, said first conductors being electrically connected to respective ones of said second conductors,

wherein said first electrodes and said second electrode formed on said first memory chip are electrically connected to respective conductors of said first conductors of said first connector, wherein said first electrodes and said second electrode formed on said second memory chip are electrically connected to respective conductors of said

VOL 1165 ISS 1 AG 2 1994 UMI

first conductors of said second connector, wherein said first and second connectors are stacked one above the other, wherein said second conductors of said first connector are electrically connected to respective conductors of said first conductors of said second connector, wherein said first electrodes of said first memory chip are electrically connected to respective electrodes of said first electrodes of said second memory chip via said first and second conductors, and wherein said second electrode of said first memory chip is electrically independent of said second electrode of said second memory chip.

5,334,876

POWER WINDOW OR PANEL CONTROLLER

John Washeleski, Reed City; Mark R. Wheeler, Cadillac, and Mario Boisvert, Reed City, all of Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Apr. 22, 1992, Ser. No. 872,190
Int. Cl.[5] G05D *3/20*; H02H *7/085*
U.S. Cl. 307—10.1 **12 Claims**

1. Apparatus for activating a motor for moving a window or panel along a travel path and de-activating the motor if an obstacle is encountered by the window or panel comprising:

a) motor sense means for sensing the motor current as the motor moves the window or panel along a travel path;

b) switch means for energizing the motor with an energization signal; and

c) control means coupled to the switch means for controllably energizing the motor comprising:

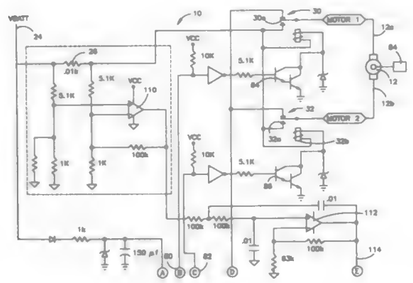
i) means for monitoring motor current from the motor sense means;

ii) timer means for timing a start-up interval after motor energization;

iii) a memory for storing a plurality of motor currents sensed by the motor sense means during a calibration sequence;

iv) means for comparing sensed motor current after the start-up interval with values of motor current stored in the memory; and

v) output means coupled to said switch means for stopping the motor if the sensed motor current exceeds the motor curent stored in the memory after a delay corresponding to the start-up interval.

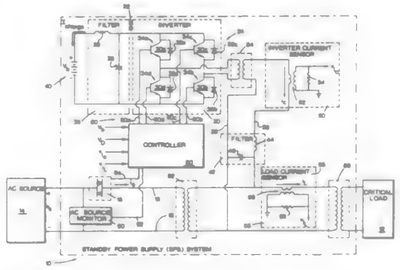


5,334,877

STANDBY POWER SUPPLY WITH LOAD-CURRENT HARMONICS NEUTRALIZER

Ned Mohan, St. Paul, and Maximilian R. Peterson, Rochester, both of Minn. now by change of name from Reza Ghotbi , assignors to Electric Power Research Institute, Palo Alto, Calif.

Continuation of Ser. No. 661,341, Feb. 25, 1991, Pat. No. 5,172,009. This application Dec. 15, 1992, Ser. No. 992,845
The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.
Int. Cl.[5] H02J *9/00, 9/06*
U.S. Cl. 307—46 **10 Claims**



1. A standby power supply system, comprising:

a single converter having an AC side and a DC side, with the AC side for coupling in parallel with a load normally powered by an AC source, the converter supplying emergency AC power to the load during failure of the AC source, with the load drawing a load current having harmonic distortion;

a back-up power source coupled to the DC side of the converter;

a harmonic distortion sensor for sensing the load current harmonic distortion during normal operating conditions; and

a controller responsive to the harmonic distortion sensor for causing the converter to produce a harmonics neutralizing current to substantially neutralize the load current harmonic distortion and isolate the harmonic distortion form the AC source to draw only sinusoidal current therefrom, wherein the controller comprises a comparator which maintains the converter output within selected limits.

5,334,878

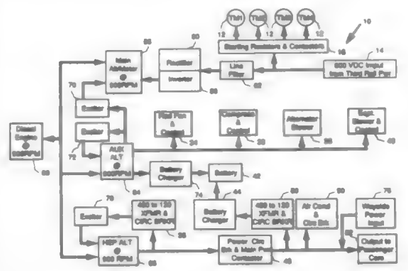
INVERTER CONTROL FOR THIRD RAIL HEAD END POWER

Laurence D. Vanek, Girard, N.Y., and Robert G. McGrath, North East, both of Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 13, 1993, Ser. No. 46,833
Int. Cl.[5] B60L *11/02*
U.S. Cl. 307—64 **11 Claims**

1. An electrical system for providing dual power producing capability to a locomotive having a power generating system including a main alternator, the electrical system comprising:

(a) an engine for driving the power generating system of the locomotive when operating under normal conditions; and



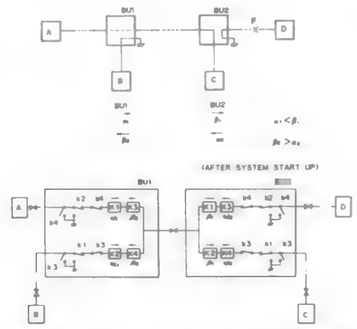
(b) conversion means for driving the power generating system of the locomotive when operating on third rail power.

5,334,879

FEEDING SYSTEM AND FEEDING METHOD FOR A SUBMARINE CABLE COMMUNICATION SYSTEM

Yoshiyuki Inoue; Masaaki Takahashi, and Kenji Ohta, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 822,103, Jan. 17, 1992, abandoned. This application Jul. 16, 1993, Ser. No. 92,563
Claims priority, application Japan, Jan. 17, 1991, 3-015672; Feb. 7, 1991, 3-038173
Int. Cl.[5] H01H *47/14*; H04B *3/02*
U.S. Cl. 307—112 **18 Claims**



15. A feeding system supplying a current to repeaters from terminal stations, comprising:

a communication cable connected to the repeaters and to the terminal stations conducting the current; and

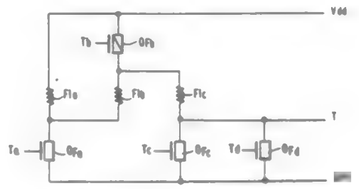
switching circuits, each connected to said communication cable and to a respective repeater, connecting each said respective repeater to one of said communication cable and ground responsive to the current conducted through said communication cable, and each of said switching circuits having a current threshold different from other current thresholds in other switching circuits.

5,334,880

LOW VOLTAGE PROGRAMMABLE STORAGE ELEMENT

Wagdi W. Abadeer, Jericho; Badih El-Kareh, Milton; Wayne F. Ellis, Jericho; Duane E. Galbi, Essex Jct.; Nathan R. Hiltebeitel, Essex Jct.; William R. Tonti, Essex Jct., and Josef S. Watts, South Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1991, Ser. No. 693,463
Int. Cl.[5] G11C *11/34, 11/40, 7/00*; H01L *29/04*
U.S. Cl. 307—219 **19 Claims**



1. A programmable storage device, comprising:

a plurality of resistors, said resistors including at least one electrically tunable resistor, said resistors having a series predetermined first resistance, said predetermined first resistance being reducible to a predetermined second resistance in response to an applied predetermined threshold current; and

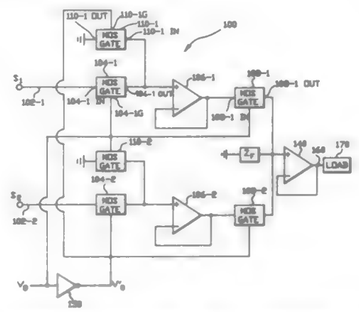
switching means for coupling said resistors in series in response to a plurality of first control signals and for coupling said resistors in parallel in response to a plurality of second control signals for permitting application of said predetermined threshold current to said at least one electrically tunable resistor.

5,334,881

HIGH ISOLATION ELECTRONIC SWITCH

Thomas I. Kirkpatrick, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 19, 1992, Ser. No. 854,112
Int. Cl.[5] H03K *17/56, 17/687, 3/01*
U.S. Cl. 307—241 **8 Claims**



1. A high isolation electronic switch for selectively switching an output line between first and second signal input lines, comprising:

a first circuit having a first current carrying path connecting the first signal input line to the output line and a second current carrying path connecting a portion of the first current carrying path of said first circuit to a ground potential, wherein said first circuit is selectively operated

VOL 1165 ISS 1 AUG 2 1994 UMI

to conduct along only one of its first or second current carrying paths;

a first unity gain buffer connected serially in the first current carrying path of said first circuit;

a second circuit having a first current carrying path connecting the second signal input line to the output line and a second current carrying path connecting a portion of the first current carrying path of said second circuit to a ground potential, wherein said second circuit is selectively operated to conduct along its first current carrying path when said first circuit is conducting along its second current carrying path, and along its second current carrying path when said first circuit is conducting along its first current carrying path;

a second unity gain buffer connected serially in the first current carrying path of said second circuit;

a fixed impedance connected between the output line and ground potential for minimizing effects of conducting resistance when said first or second circuits are selectively operated to conduct along their respective first current carrying path, and for minimizing effects of capacitive leakage when said first or second circuits are selectively operated to conduct along their second current carrying path; and

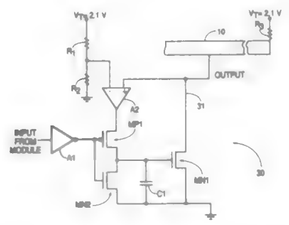
a third unity gain buffer connected serially in the output line for isolating said fixed impedance from effects of a load connected to the output line.

5,334,882

DRIVER FOR BACKPLANE TRANSCEIVER LOGIC BUS

Sai L. Ting, Santa Clara, Calif., assignor to National Semiconductor, Santa Clara, Calif.

Filed Dec. 14, 1992, Ser. No. 990,735
Int. Cl.[5] H03K *3/01, 17/56*
U.S. Cl. 307—270 8 Claims



1. A driver for a bus in a multiprocessor, said driver comprising:

a transistor connected between said bus and a first reference voltage, said transistor having a first terminal and a control terminal;

a feedback loop connected between said first terminal and said control terminal, said feedback loop comprising a first switching means and an amplifier, said amplifier having a first input terminal connected to said first terminal and a second input terminal connected to a second reference voltage;

a second switching means connected between said control terminal and said first reference voltage; and

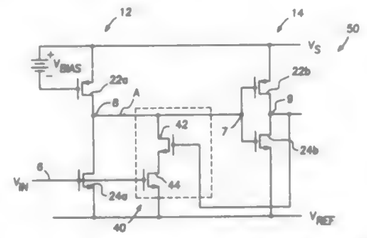
an input to said driver connected to a control terminal of said first switching means.

5,334,883

CIRCUIT FOR INTRODUCING HYSTERISIS

Bruce D. Rosenthal, Los Gatos, Calif., assignor to Elantec, Inc., Milpitas, Calif.

Filed Feb. 3, 1993, Ser. No. 12,595
Int. Cl.[5] H03K *3/295, 5/158*
U.S. Cl. 307—290 6 Claims



1. A fast, high performance driver circuit having a threshold voltage and a hysteresis level which are substantially independent of the supply voltage, the driver circuit comprising:

a first inverter including first and second transistors having opposite conductivity properties, each having a gate, source and drain, the drains of the first ad second transistors being connected to a common node to form an output of the first inverter, the first transistor having its gate connected to a bias voltage and its source connected to a supply voltage for supplying current to the node at the output of the first inverter according to the bias, and the second transistor having its gate forming an input for the first inverter as an input of the driver circuit, and its source connected to a reference voltage, the first inverter being a class A inverting amplifier for providing a threshold voltage that is substantially independent of the supply voltage;

a second inverter having an input and an output, the input of the second inverter being connected to the node at the output of the first inverter and the output of the second inverter forming the output of the driver circuit, for providing a signal at the driver circuit output having a polarity that is opposite to the polarity of the signal at the input of the second inverter;

a cascoded transistor pair having a pair of inputs formed by the gates of the cascoded transistors, an output formed by the drain of one of the cascoded transistors and a reference terminal formed by the source of the other cascoded transistor, one of the cascode inputs being connected to the driver circuit output, the other cascode input being connected to the driver circuit input, the cascode output being connected to the node at the output of the first inverter, and the cascode reference terminal being connected to a reference voltage, for controlling the flow of current from the first transistor of the first inverter into the drain of the second transistor and into the cascode transistors in response to voltage signals at the input and output of the driver circuit.

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THREE JUNCTION SQUID MIXER

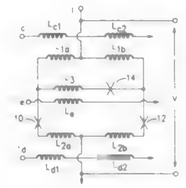
Claudia D. Tesche, Amawalk, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 23, 1991, Ser. No. 734,729
Int. Cl.[5] H03K *3/38, 17/92;* G01R *33/02;* H03M *1/00*
U.S. Cl. 307—306 7 Claims

1. A three junction superconducting quantum interface device mixer for mixing two input magnetic flux signals to enable heterodyning for up-converting low frequency signals or down-converting high frequency signals, to minimize noise in the superconducting quantum interference device, comprising:

a) a dc superconducting quantum interface circuit comprising a series circuit pair of first and second nonlinear elements, each having current to voltage characteristic similar to a Josephson junction and first and second input coils for the dc superconducting quantum interface circuit; and

b) a third nonlinear element having a current to voltage characteristic similar to a Josephson junction coupled in



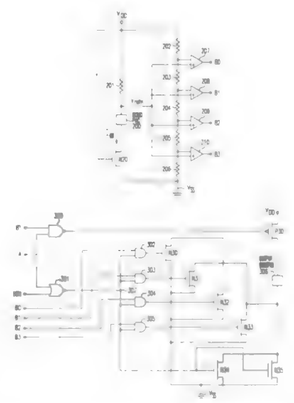
parallel with one of the input coils forming an additional or third shunting junction having a current flowing therethrough to provide a circuit that can be employed as a mixing device for mixing two input magnetic flux signals to enable heterodyning for up-converting low frequency signals or down-converting high frequency signals, to minimize noise in the superconducting quantum interference device.

5,334,885

AUTOMATIC CONTROL OF BUFFER SPEED

Bernard L. Morris, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 13, 1993, Ser. No. 3,751
Int. Cl.[5] H03K *17/16, 19/092*
U.S. Cl. 307—443 15 Claims



1. An integrated circuit comprising a buffer output device of a given conductivity type for pulling a node toward a given voltage level, and means for controlling the switching speed of said device to compensate for variations in at least one of the factors of: manufacturing process, operating temperature, and power supply voltage;

Characterized in that said means for controlling the speed comprises:

a reference device of said given conductivity type for generating an analog reference signal that tracks the effect of at least one of said factors on said switching speed, and an analog-to-digital converter comprising at least two comparators that receive said analog reference signal, compare said analog reference signal to fixed reference voltages, and produce digital control signals thereby;

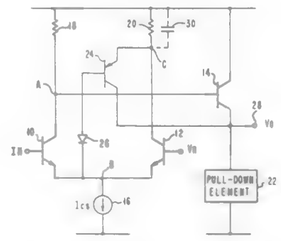
and wherein said buffer output device comprises independently-controllable switching elements that are rendered active, or alternatively inactive, by said digital control signals.

5,334,886

DIRECT-COUPLED PNP TRANSISTOR PULL-UP ECL CIRCUITS AND DIRECT-COUPLED COMPLEMENTARY PUSH-PULL ECL CIRCUITS

Ching-Te K. Chuang, South Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,088
Int. Cl.[5] H03K *19/086, 19/003*
U.S. Cl. 307—455 8 Claims



1. An emitter coupled logic circuit comprising a first NPN transistor having a base connected to an input terminal, a second NPN transistor having an emitter connected to an emitter of the first NPN transistor and a base connected to receive a reference voltage, a constant current source connected between a low voltage line and the connection of the emitters of said first and said second NPN transistors, a collector of said first NPN transistor being connected to a high voltage line via a first resistor, a collector of said second NPN transistor being connected to a high voltage line via a second resistor, a third NPN transistor having a base connected to the collector of said first NPN transistor and a collector connected to said high voltage line and an emitter connected to an output terminal, a pull-down element connected between the output terminal and said low voltage line wherein the improvement comprises:

a PNP transistor having an emitter connected to the collector of said second NPN transistor, a collector connected to said output terminal and a base; and

a diode having an anode connected to the base of said PNP transistor and a cathode connected to the connection of the emitters of said first and said second NPN transistors.

5,334,887

ECL LATCH CIRCUIT

Yasumi Kurashima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 12, 1993, Ser. No. 60,851
Claims priority, application Japan, May 12, 1992, 4-146688
Int. Cl.[5] H03K *19/20, 3/01*
U.S. Cl. 307—455 8 Claims

1. An ECL latch circuit comprising a logic section and having a reset function, said logic section including a first transistor, a second transistor, a third transistor, a fourth transistor, a fifth transistor, a sixth transistor, and a seventh transistor,

said first transistor having a collector connected to a ground potential through a first load resistor, and a base serving as a first signal input terminal,

said second transistor having a collector connected to the ground potential through a second load resistor, a base

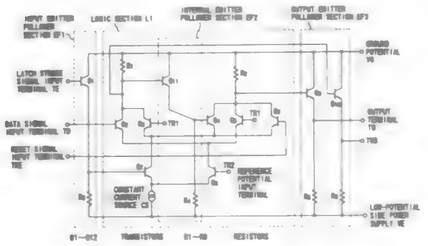
VOL 1165 ISS 1 AG 2 1994 UMI

serving as a second signal input terminal, and an emitter connected to an emitter of said first transistor,

said third transistor having a collector connected to the collector of said first transistor, and a base for receiving a first reference potential,

said fourth transistor having a collector connected to the collector of said second transistor, a base for receiving a collector potential of said first transistor through an emitter follower section, and an emitter connected to an emitter of said third transistor,

said fifth transistor having a collector connected to the



collector of said second transistor, a base for receiving a reset signal, and an emitter connected to the emitter of said third transistor,

said sixth transistor having a collector connected to the emitter of said third transistor, a base serving as a third signal input terminal, and an emitter connected to a low-potential side power supply through a constant current source, and

said seventh transistor having a collector connected to the emitter of said first transistor, a base serving as a fourth signal input terminal, and an emitter connected to the emitter of said sixth transistor.

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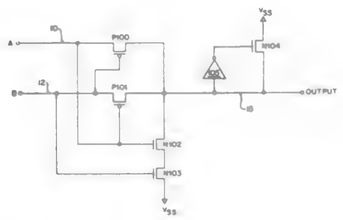
FAST EXCLUSIVE-OR AND EXCLUSIVE-NOR GATES

Milind A. Bodas, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 19, 1993, Ser. No. 49,558

Int. Cl.[5] H03K *19/21*

U.S. Cl. 307—471 **5 Claims**



1. A circuit comprising:

an output node;

a first input node receiving a first signal and a second input node receiving a second signal, said first and second signals being driven between a first and a second logic level;

a first gate passing said first signal from said first input node to said output node, said first gate being coupled between said first input node and said output node and having a control terminal coupled to said second input node such that when said second signal is at said first logic level, said first gate couples said first signal to said output node;

a second gate passing said second signal from said second input node to said output node, said second gate being coupled between said second input node and said output node and having a control terminal coupled to said first input node such that when said first signal is at said first logic level, said second gate couples said second signal to said output node;

a pull-down circuit coupling a reference potential corresponding to said first logic level to said output node when said first and second signals are at said second logic level, said pull-down circuit being coupled to said first and second input nodes and between said reference potential and said output node; and

a driving circuit coupled between said output node and said reference potential for driving said output node to said reference potential when said first and second signals are at said first logic level.

5,334,889

CMOS OUTPUT BUFFER CIRCUIT WITH LESS NOISE

Katsuhiro Hisaka, Tokyo, Japan, assignor to Oki Electric Industry, Co., Ltd., Tokyo, Japan

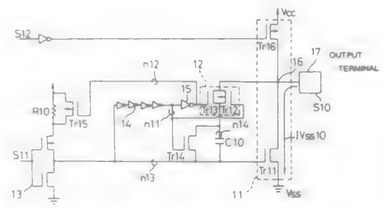
PCT No. PCT/JP91/00816, § 371 Date Feb. 12, 1992, § 102(e) Date Feb. 12, 1992, PCT Pub. No. WO91/20130, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 19, 1991, Ser. No. 834,545

Claims priority, application Japan, Jun. 20, 1990, 2-162194

Int. Cl.[5] H03K *19/092, 17/16*

U.S. Cl. 307—475 **28 Claims**



1. An output buffer for use with a power source having first and second power source terminals, comprising:

an output terminal;

a first field effect transistor coupled between said first power source terminal and said output terminal for electrically connecting said first power source terminal with said output terminal, in a first prescribed period;

a second field effect transistor coupled between said second power source terminal and said output terminal, and having a control terminal for electrically connecting said second power source terminal with said output terminal;

an inverter circuit coupled between said first and second power source terminals for generating a first control signal having a first logic level during said first prescribed period and a second logic level in a second prescribed period following said first prescribed period, said inverter having an output terminal coupled to said control terminal of said second field effect transistor via a first node;

a delay circuit for receiving said first control signal and for generating a delay signal having said second logic level at a prescribed delay time after said first control signal having said second logic level is received thereby; and

a control signal supply circuit, receiving said first control signal and said delay signal, for applying a second control signal to said control terminal of said second field effect transistor, said control signal supply circuit including a capacitor having a first terminal connected to said first node and a second terminal, a first switch which is coupled between said second terminal of said capacitor and said output terminal and which is turned to a non-conductive state in response to said delay signal having said

second logic level, a second switch which is coupled between said second terminal of said capacitor and said first node and which is turned to a conductive state in response to said delay signal having said second logic level, a resistor which is coupled between said first power source terminal and said inverter circuit, and a third switch which is coupled in parallel to said resistor and which is turned to a conductive state in response to said delay signal having said second logic level, whereby during said prescribed delay time after said first prescribed period, said second control signal is gradually changed from said first logic level towards said second logic level, and after receipt of said delay signal, said second control signal is relatively swiftly changed to said second logic level.

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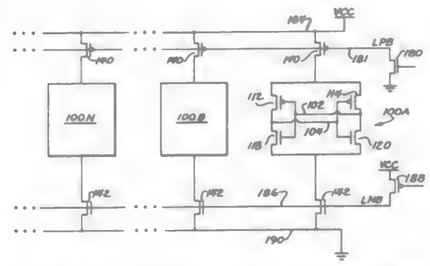
SENSE AMPLIFIER CLOCK DRIVER

Kim C. Hardee, Colorado Springs, Colo., assignor to United Memories, Inc., Colorado Springs, Colo. and Nippon Steel Semiconductor Corp., Japan

Filed Oct. 30, 1992, Ser. No. 969,418

Int. Cl.[5] H03K *5/01*

U.S. Cl. 307—530 **16 Claims**



1. A method of generating a control signal for controlling the operation of sense amplifier driver transistors in an integrated circuit memory comprising the steps of:

causing a change in voltage of a sense amplifier power supply control signal to an intermediate value between a precharge value and a final value;

maintaining said intermediate value voltage for a duration; then

bringing the sense amplifier power supply control signal to its full value.

5,334,891

VARIABLE DELAY CIRCUIT FOR PRODUCING A DELAY WHICH VARIES AS A HYPERBOLIC FUNCTION OF THE CURRENT INTENSITY

Roland Marbot, Versailles, France, assignor to Bull, S.A., Paris, France

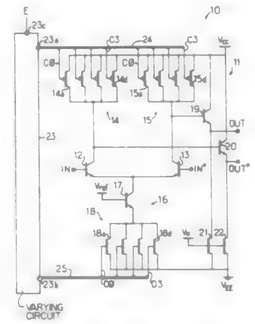
Continuation of Ser. No. 809,179, Dec. 18, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 52,279

Claims priority, application France, Dec. 27, 1990, 90 16340

Int. Cl.[5] H03K *5/159*

U.S. Cl. 307—603 **17 Claims**

1. An variable delay device (**10**), comprising at least one differential amplifier (**11**) having first and second transistors (**12, 13**), a current source (**16**) for supplying current to said first and second transistors, first and second variable resistive load elements (**14, 15**) serially connected with said first and second transistors, respectively, varying means (**123, 18***a*–**18***d*) connected to said current source for varying current intensity supplied from the current source to produce a variable delay and maintaining means (**23, 14***a*–**14***d*, **15***a*–**15***d*) for maintaining the voltages across each of said first and second load elements at a substantially constant value regardless of the current intensity flowing through said first and second load elements,



whereby said variable delay varies as a hyperbolic function of the current intensity produced by the current source.

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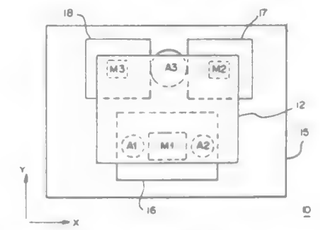
POSITIONING DEVICE FOR PLANAR POSITIONING

Anwar Chitayat, Northport, N.Y., assignor to Anorad Corporation, Northport, N.Y.

Filed Dec. 22, 1992, Ser. No. 995,589

Int. Cl.[5] H02K *41/00*

U.S. Cl. 310—12 **31 Claims**



1. A positioning device comprising:

a shuttle;

a base assembly having a planar surface;

means for slidably supporting said shuttle in a plane above said planar surface of said base assembly;

said means for slidably supporting including means for permitting said shuttle to slide in any direction in said plane;

a plurality of linear motors for linearly moving said shuttle above said surface of said base assembly along orthogonal first and second axes in a continuously variable manner;

said plurality of linear motors including a plurality of magnets;

said linear motors passing a current through a magnetic field produced by said plurality of magnets thereby producing a force;

said first axis defining a first direction; and

said second axis defining a second direction.

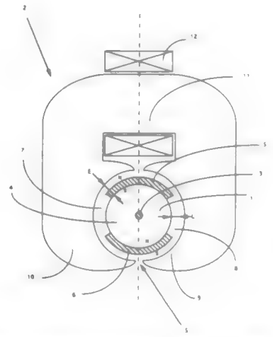
VOL 1165 ISS 1 AUG 2 1994 UMI

5,334,893

MONOPHASE ELECTROMAGNETIC ROTARY ACTUATOR OF TRAVEL BETWEEN 60 AND 130 DEGREES

Claude Oudet, Besancon, and Daniel Prudham, Thise, both of France, assignors to Moving Magnet Technologies SA, Besancon, France

Filed Feb. 26, 1993, Ser. No. 22,916
Claims priority, application France, Feb. 28, 1992, 92 02435
Int. Cl.[5] H02K *33/00*
U.S. Cl. 310—38 12 Claims



1. A monophase electromagnetic rotary actuator of angular travel between 70/N and 110/N degrees comprising:

a rotor exhibiting 2N magnets, N being equal to 1 or to 2, and a core of a material of high magnetic permeability;

a stator exhibiting two pole pieces joined by at least one connecting part supporting at least one coil, the two pole pieces and the core of the rotor defining between them an air gap of constant length E, wherein the 2N magnets have a reversible permeability close to 1 and wherein a relation between a magnetized width Y_a of one of the 2N magnets measured on a mean diameter of the magnets, a width of an angular arc C through which the rotor passes on the mean diameter of the magnets, a width S measured on the mean diameter of the magnets between two adjacent stator poles and a constant length E of the air gap is

$$Y_a = C + S + 2E'$$

where:
E′ is between E/2 and E
and wherein:
C+2 E′/E

and wherein
L/E>0.75;

L designating a radial length of one of the 2N magnets;

to obtain a high torque/mass ratio and a torque that is approximately independent of the angular position of the rotor.

5,334,894

ROTARY PULSE MOTOR

Hiroshi Nakagawa, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,472
Int. Cl.[5] H02K *37/14*
U.S. Cl. 310—49 R 18 Claims

1. In a rotary pulse motor comprising:

(A) a first cylindrical magnetic-path forming means made of magnetic material;

(B) a second cylindrical magnetic-path forming means made of magnetic material and inserted concentrically into said first cylindrical magnetic-path forming means, said first cylindrical magnetic-path forming means or said second cylindrical magnetic-path forming means being rotatably supported;

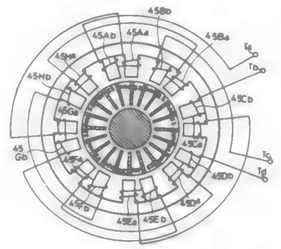
(C) slit-like grooves formed at a regular angular pitch P/2 in a peripheral portion of one of said first and second cylindrical magnetic-path forming means;

(D) teeth formed between said slit-like grooves;

(E) permanent magnets inserted into said slit-like grooves and so arranged that the magnetic polarities of said teeth are alternately inverted;

(F) magnetic-pole means formed at a regular angular pitch of a constant multiplier of said P/2, in the other of said first and second cylindrical magnetic-path forming means, said magnetic-pole means facing to said teeth at a constant air gap in the radial direction, and

(G) coil means provided on the other of said first and second cylindrical magnetic-path forming means so as to generate magnetic flux through said air gap, the improvement comprising: the other of said first and second cylindrical magnetic-path forming means comprises plural cylindrical



core portions magnetically combined with each other and arranged in the axial direction of said first and second cylindrical magnetic-path forming means, and said magnetic-pole means comprises plural rows of magnetic poles formed on the respective core portions of the other of said first and second cylindrical magnetic-path forming means, said magnetic poles of the respective rows being angularly shifted from one another by a pitch of a predetermined multiplier of said P;

whereby a magnetic flux flows through a path passing in succession through—an N-polarized magnetic pole of one of said rows—said air gap—an adjacent S-polarized one of said teeth of said one of the first and second cylindrical magnetic-path forming means—an axial path in said one of the first and second cylindrical path forming means along said permanent magnet—an N-polarized one of said teeth adjacent to said adjacent S-polarized one—said air gap—an S-polarized magnetic pole of another of said rows, adjacent to said N-polarized magnetic pole of the one of said rows—another axial path in said other of the first and second cylindrical magnetic path forming means—and returning to the original N-polarized magnetic pole to complete the path, when said coil means is energized.

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SPINDLE MOTOR WITH THE STATOR CORE SUPPORTED BY A RESIN MEMBER

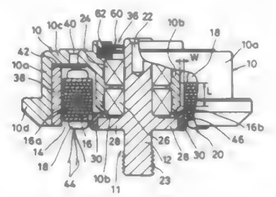
Yuji Morioka; Masanobu Chuta; Kuniyasu Iwazaki, and Kihachiro Ohta, all of Kyoto, Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Filed Mar. 18, 1992, Ser. No. 853,121
Claims priority, application Japan, Mar. 20, 1991, 3-081713; Mar. 20, 1991, 3-081769; Mar. 27, 1991, 3-089964
Int. Cl.[5] H02K *7/14, 5/00*
U.S. Cl. 310—67 R 5 Claims

1. A spindle motor having a housing, a hub member rotatable relative to said housing, a bearing means disposed between said housing and said hub member, a rotor magnet mounted on said hub member, and a stator mounted on said housing in such a manner as to face said rotor magnet, wherein:

said housing has an axial portion and a stator-fixing portion, said hub member has a hub body on which a recording member is to be set, and a supporting wall portion axially extending from an inner peripheral position of said hub body thereof, said hub member being rotatably supported by said axial portion through said bearing means;

said stator has a stator core disposed in an annular space



defined by said hub body and said supporting wall portion, said stator core being fixed to said stator-fixing portion through a supporting member formed by a synthetic resin;

said stator core has a positioning notch formed in a lower end portion thereof, said notch being covered with part of said synthetic resin; the outer peripheral surface of said supporting wall portion and the inner peripheral surface of said stator core extends while facing each other over a sufficient axial length thereof with a slight radial gap defined therebetween; and

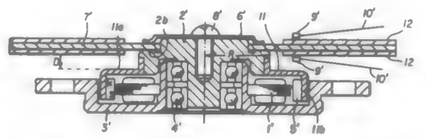
said supporting wall portion and said stator core cooperate with each other to function as an air seal structure.

5,334,896

SPINDLE MOTOR FOR MAGNETIC DISK DEVICES

Masahiro Ohsawa, Machida, Japan, assignor to Fuji Electric Co., Ltd., Japan

Filed Aug. 28, 1992, Ser. No. 936,501
Claims priority, application Japan, Aug. 30, 1991, 3-219635
Int. Cl.[5] H02K *11/00, 1/27;* G11B *17/04*
U.S. Cl. 310—67 R 3 Claims



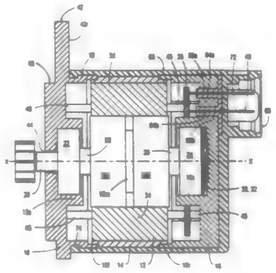
1. A spindle motor for magnetic disk devices comprising: a stator; a hub axially supported on a frame of a stator; a bowl-like rotor yoke protruding from a base of the hub in a radial direction and covering a top and circumference of the stator; and a rotor magnet fitted to an inner circumference of the rotor yoke in a position opposite to a magnetic pole of the stator; a magnetic disk seated on the hub; wherein a clearance is provided between the magnetic disk seated on the hub and a top of the rotor yoke; wherein the rotor yoke is a magnetic body and the hub is made of an identical material as a substrate of the magnetic disk.

5,334,897

ELECTRIC MOTOR WITH ENCASED HOUSING

David J. Ineson, Oakville; Edward M. O'Connor, Middlefield, and David C. Casali, Glastonbury, all of Conn., assignors to North American Philips Corporation, New York, N.Y.

Filed May 24, 1993, Ser. No. 66,958
Int. Cl.[5] H02K *5/00*
U.S. Cl. 310—89 31 Claims



1. A substantially sealed electric motor comprising:

a. an electromechanical assembly including a stator, a plurality of windings, and a rotor electromagnetically coupled to the windings and the stator and mounted for rotation relative to the stator in response to application of an electrical current to the windings;

b. electrical connection means facilitating external electrical connection to the windings;

c. a shaft driven by the rotor and accessible externally of the motor, said shaft having a longitudinal axis; and

d. a substantially closed housing having a plurality of separable parts, said housing substantially enclosing the electromechanical assembly and including:

(1) a drive portion having an opening through which a length of the shaft extends out of the housing; and

(2) a body portion adjacent the drive portion and extending around a distal end of the electromechanical assembly, said body portion including at least one junction between said separable parts, said body portion and each said junction being substantially impervious to a predetermined molding material;

a casing comprising said predetermined material molded over a substantial area of the body portion which includes each said at least one junction; and

at least one irregularity in an outer surface of the housing, to which an inner surface of the molded casing conforms, for retaining the casing on said housing.

5,334,898

POLYPHASE BRUSHLESS DC AND AC SYNCHRONOUS MACHINES

Dymytro Skybyk, 340 Evans St., Williamsville, N.Y. 14221

Continuation-in-part of Ser. No. 769,355, Sep. 30, 1991, Pat. No. 5,216,339. This application Oct. 30, 1992, Ser. No. 968,870
Int. Cl.[5] H02K *1/22*
U.S. Cl. 310—268 20 Claims

1. A discoidal brushless induction motor-generator comprising:

dual stators sandwiching a rotor, containing multiple permanent magnets, and connected to a shaft having a shaft axis, each of said stator further comprising;

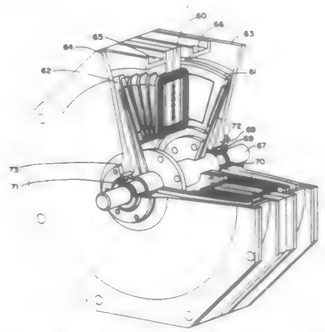
a toroidal lamination core, including a core axis collinear with said shaft axis, said lamination core having a plurality of core slots defining an annular region, wherein the circumferential distance between adjacent core slots defines a slot pitch;

VOL 1165 ISS 1 AG 2 1994 UMI

a plurality of armature coils wound across said lamination core and through said core slots wherein;

each said armature coil comprises a wire wound in multiple turns, said turns of wire being insulated from adjacent turns of said wire and from said lamination core;

said wire forming each of said armature coils having two wire ends terminating on the outer surface of said dual stators and connected to wire ends of other of said armature coils and ultimately to switching and control means;



each of said armature coils being series connected over a predetermined number of slot pitches; whereby

a magnetic flux of alternating polarity in each of said armature coils may be generated by a current flow through said wires of said armature coils; and

each of said dual stators being mounted on one side to a liquid cooled heat sink, whereby said heat sink cools said plurality of armature coils and said toroidal lamination cores of both stators;

said permanent magnets being located on each of two sides of said rotor.

5,334,899

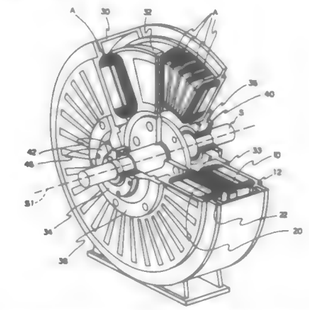
POLYPHASE BRUSHLESS DC AND AC SYNCHRONOUS MACHINES

Dymytro Skybyk, 340 Evans St., Williamsville, N.Y. 14221

Continuation-in-part of Ser. No. 968,870, Oct. 30, 1992, which is a continuation-in-part of Ser. No. 769,355, Sep. 30, 1991, Pat. No. 5,216,339. This application Mar. 25, 1993, Ser. No. 36,862

Int. Cl.[5] **H02K** *1/22*

U.S. Cl. 310—268 **25 Claims**



19. A discoidal brushless DC, AC synchronous and induction motor-generating comprising:

a frame structure including means to support at least one stator;

at least one stator including an inner and outer annular surface and having at least one at least one primary toroidal lamination core, including a primary axis collinear with said shaft axis, said lamination core having a plurality of primary core slots, wherein the circumferential distance between adjacent primary core slots defines a slot pitch and said stator further including a plurality of permanent magnets mounted on said inner annular surface of said stator;

at least one rotor including a plurality of wound field pole coils, said wound field poles having a primary winding and a secondary winding wherein said secondary winding is disposed within the confines of said primary winding, and said rotor further including a secondary toroidal lamination core, having a core axis collinear with said shaft axis, having a plurality of secondary core slots, wherein the circumferential distance between adjacent secondary core slots defining a slot pitch with a plurality of secondary armature coils wound through said secondary core slots, wherein each said secondary armature coil comprises a flat copper wire wound in multiple turns, said turns of wire being insulated from adjacent turns of said wire and from said secondary lamination core;

said wire forming each of said secondary armature coils having two wire ends connected to one of said wound field poles;

a plurality of primary armature coils wound across said primary lamination core and through said primary core slots wherein;

each of said primary armature coils comprises a primary wire wound in multiple turns, said turns of primary wire being insulated from adjacent turns of said wire and from said primary lamination core;

said primary wire forming each of said armature coils having two wire ends terminating on the outer surface of said stator and connected to wire ends of other of said armature coils and ultimately to switching and control means;

each of said primary armature coils being series connected over a predetermined number of slot pitches;

said frame structure includes means to define a minimal axial air gap between said stator and said rotor; whereby

a magnetic flux of alternating polarity in each of said armature coils may be generated by a current flow through said wires of said armature coils; and

said magnetic flux of said armature coils facing an opposing polarity of one of said wound field poles;

each of said stator being mounted proximate to a heat sink means for dissipating heat, whereby said heat sink means cools said plurality of armature coils and said primary lamination core.

5,334,900

TORSIONAL QUARTZ CRYSTAL RESONATOR

Hirofumi Kawashima, Sendai, Japan, assignor to Seiko Electronic Components Ltd., Japan

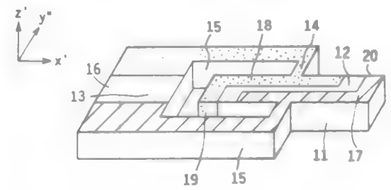
Continuation of Ser. No. 886,330, May 20, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,628

Claims priority, application Japan, Dec. 19, 1990, 2-403751; May 27, 1991, 3-121487; May 27, 1991, 3-121488; Sep. 26, 1991, 3-247877; Sep. 27, 1991, 3-249838

Int. Cl.[5] **H01L** *41/08*

U.S. Cl. 310—370 **14 Claims**

1. A torsional quartz crystal tuning fork resonator vibratable in a torsional mode, the resonator having a specific cut type defined such that a Z plate quartz crystal normal to a z-axis (optical axis) and having its length extending along a y-axis (mechanical axis) is rotated around an x-axis (electrical axis) by a cut angle ϕ in the range of 0° through +30°, and is further rotated around a resultant z'-axis (new z-axis) by another cut angle θ in the range of −20° through −10° or +10° through +20° so as to form the torsional quartz crystal tuning fork resonator, the resonator having a thickness-to-width ratio



$R_{zx}=z_0/x_0$ within the range of 0.6 through 1.1, and the resonator having a first order temperature coefficient α of approximately zero around room temperature.

5,334,901

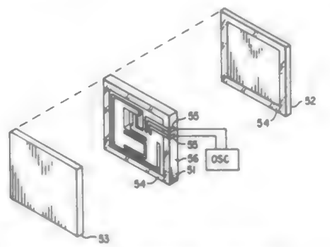
VIBRATING BEAM ACCELEROMETER

William C. Albert, Boonton, and Herbert T. Califano, Bloomingdale, both of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Apr. 30, 1993, Ser. No. 55,132

Int. Cl.[5] **G01P** *15/10*; **H01L** *41/08*

U.S. Cl. 310—321 **13 Claims**



1. A vibrating beam accelerometer comprising:

an inner structure comprising a vibrating beam extending between a pair of isolator masses which are each connected via isolator beams to a pair of structures;

an outer structure comprising flexure beams extending between a mount structure and a proof mass structure;

a peripheral seal structure mounted to said mount structure and surrounding said inner structure and said outer structure;

an electrode pattern termination extending to and around an edge of said mount structure of said outer structure; and

electronic circuitry means including an oscillator connected to said electrode pattern termination.

5,334,902

ELECTROSTRICTIVE EFFECT DEVICE

Takayuki Inoi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 7, 1993, Ser. No. 58,941

Claims priority, application Japan, May 8, 1992, 4-115605

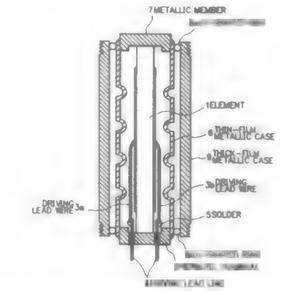
Int. Cl.[5] **H01L** *41/04*

U.S. Cl. 310—344 **13 Claims**

1. An electrostrictive effect device, comprising:

a multi-layer element in which electrostrictive effect ceramic layers and inner electrode conductive layers are alternately accumulated thereonto;

a thin-film case formed of a thin metallic film and a metallic member, the film and the member hermetically sealing up the multi-layer element;



sliding members disposed around the thin-film case; and

a thick-film case disposed around the sliding members.

5,334,903

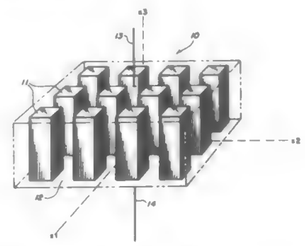
COMPOSITE PIEZOELECTRICS UTILIZING A NEGATIVE POISSON RATIO POLYMER

Wallace A. Smith, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1992, Ser. No. 985,988

Int. Cl.[5] **H01L** *41/187*; **H04R** *17/00*

U.S. Cl. 310—358 **7 Claims**



1. A piezoelectric ceramic-polymer composite material comprising: a matrix of a polymer which has a negative Poisson ratio, a plurality of piezoelectric ceramic rods embedded in said matrix each of which rods has its longitudinal axis aligned in the same direction; and means for polarizing the composite with an electric field parallel to the axis of said rods.

5,334,904

COMPACT DISC CASE

Dale C. Kramer, Nugent Road, P.O. Box 370, Port Colborne, Ontario, Canada L3K 1B7

Filed Jan. 15, 1992, Ser. No. 820,763

Claims priority, application United Kingdom, Jan. 16, 1991, 9100979; Aug. 20, 1991, 9117946

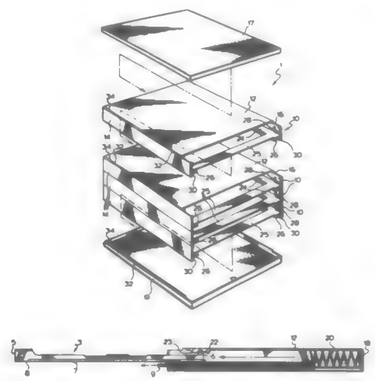
Int. Cl.[5] **A47B** *81/06*

U.S. Cl. 312—9.57 **19 Claims**

1. A storage device for rectangular trays and associated printed material, each of said rectangular trays having a front surface and a rear surface and a pair of side ledges extending substantially from said rear surface to said front surface and terminating in respective notches adjacent said front surface, said storage device comprising a plurality of interconnected housing elements, each of said housing elements including a rear wall and two side walls defining a rectangular space for

VOL 1165 ISS 1 AG 2 1994 UMI

receiving one of said rectangular trays, biasing means adjacent said rear wall for applying a compressive force to said rear surface for urging said tray out of said space, latch means extending from at least one of said two side walls for releasably engaging one of said notches, thereby retaining said tray in said space against said compressive force, and exactly two pairs of flanges, a first one of said two pairs of flanges extending from



respective ones of said two side walls for supporting and guiding said pair of side edges into and out of said space, whereby said trays may be opened and closed relative to said housing elements for providing access thereto, and a second one of said two pairs of flanges extending from respective ones of said two side walls parallel to said first pair of flanges for receiving a sheet of said printed material.

5,334,905

IMMERSIBLE LAMP FOR A PHOTOCHEMICAL REACTOR

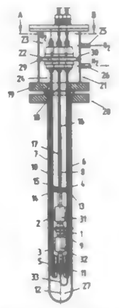
Bernt Ullrich, Erlensee, Fed. Rep. of Germany, assignor to Heraeus Instruments GmbH, Hanau, Fed. Rep. of Germany

Filed Feb. 8, 1993, Ser. No. 14,639

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1992, 4203840

Int. Cl.[5] H01J *7/24, 61/52, 7/26;* **H01K** *1/58*

U.S. Cl. 313—22 **17 Claims**



1. An immersible lamp for a photochemical reactor, comprising

a generally tubular discharge lamp (**1**);

an outer bulb (**10**) surrounding said discharge lamp (**1**) and adapted for passage of inert cooling gas therebetween;

a pair of axially oppositely located electrical contact terminals (**2, 3**) on said discharge lamp (**1**), at least one of said contact terminals serving simultaneously as a securing means;

first and second sockets (**4,5**) mounted in said outer bulb (**10**) and receiving respective ends of said tubular discharge lamp, at least one (**4**) of said sockets being movable;

wherein

said movable socket (**4**) is slidable along a longitudinal axis (**12**) of said outer bulb (**10**);

a plurality of guide rods (**6,7,16**) are provided to maintain axial alignment of said movable sock it; and

a spring element (**8**) around one (**16**) of said guide rods maintains said movable socket (**4**) in releasable engagement with one of said contact terminals (**2**) of said discharge lamp (**1**).

5,334,906

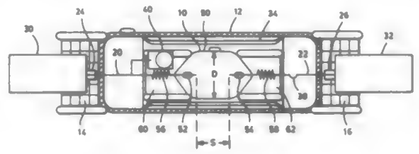
METAL HALIDE ARC DISCHARGE LAMP HAVING SHORT ARC LENGTH

Martin E. Muzeroll, Merrimack, N.H., assignor to OSRAM Sylvania Inc., Danvers, Mass.

Filed Oct. 23, 1992, Ser. No. 965,490

Int. Cl.[5] H01J *61/34, 17/16*

U.S. Cl. 313—25 **16 Claims**



1. An arc discharge lamp comprising:

a sealed, light-transmissive outer jacket;

a light-transmissive shroud disposed within said outer jacket:

an arc tube assembly disposed within said shroud, said arc tube assembly comprising a light-transmissive arc tube, first and second electrodes mounted within said arc tube and a fill material within said arc tube for supporting an arc discharge; and

means for coupling electrical energy through said outer Jacket to the first and second electrodes in said arc tube, said first and second electrodes having a spacing such that an electric field in a range of about 60 to 95 volts per centimeter is established between said first and second electrodes during operation.

5,334,907

COOLING DEVICE FOR MICROWAVE TUBE HAVING HEAT TRANSFER THROUGH CONTACTING SURFACES

Henri Desmur, Fontenay Aux Roses, and Robert Duret, Maurepas, both of France, assignors to Thomson Tubes Electroniques, Velizy, France

Filed Oct. 22, 1992, Ser. No. 964,883

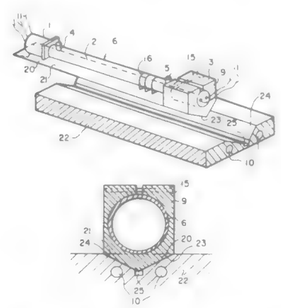
Claims priority, application France, Oct. 25, 1991, 91 13216

Int. Cl.[5] H01J *23/00*

U.S. Cl. 313—36 **8 Claims**

5. A cooling device for a microwave tube, comprising:

a cold part and a heat-conducting member, the heat-conducting member having a first surface in contact with a surface of the cold part and a second surface in contact with an envelope of the tube, wherein at least part of the surface of the cold part and at least part of the first surface of the heat-conducting member are respectively shaped as



a concave dihedron and a convex dihedron in order to increase an area of contact therebetween.

5,334,908

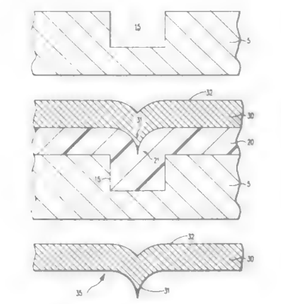
STRUCTURES AND PROCESSES FOR FABRICATING FIELD EMISSION CATHODE TIPS USING SECONDARY CUSP

Steven M. Zimmerman, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 887,579, May 19, 1992, abandoned, which is a continuation of Ser. No. 555,213, Jul. 18, 1990, abandoned. This application Dec. 23, 1992, Ser. No. 996,369

Int. Cl.[5] H01J *1/16*

U.S. Cl. 313—336 **51 Claims**



1. A field emission cathode structure comprising at least one layer of material which is capable of emitting electrons under the influence of an electric field, and having at least one tip for the emission of electrons formed by the process comprising the steps of:

(a) providing at least one hole in a substrate,

(b) depositing at least a first material and filling at least a portion of said hole sufficiently to form a cusp,

(c) depositing said at least one layer of a material which is capable of emitting electrons under the influence of an electrical field, and filling at least a portion of said cusp to form said at least one electron emitting layer, wherein said electron emitting layer has an upper surface and a lower surface, said upper surface having at least one secondary cusp, said lower surface having at least one tip, such that at least one tip is opposite said at least one secondary cusp, and wherein at least a portion of the surface of said tip is concave and wherein said at least one tip is used for the emission of said electrons, and

(d) removing at least a portion of said substrate and at least a portion of said first material to expose at least a portion of said tip of said electron-emitting material and thereby forming said at least one field emission cathode structure.

5,334,909

MICROWAVE TUBE COLLECTOR ASSEMBLY INCLUDING A CHROMIUM OXIDE FILM

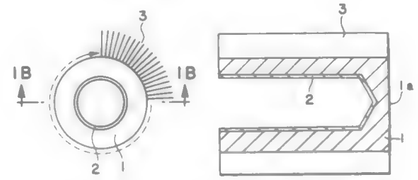
Hidemasa Kawai, Tokyo, Japan, assignor to Nec Corporation, Japan

Filed Jun. 30, 1992, Ser. No. 906,818

Claims priority, application Japan, Jul. 5, 1991, 3-164854; Jul. 5, 1991, 3-164867

Int. Cl.[5] H01J *23/027*

U.S. Cl. 315—5.38 **9 Claims**



6. A microwave tube collector assembly comprising:

an elongated metal cylinder consisting of a chromium-copper alloy, said metal cylinder having a longitudinal axial opening with an inner surface, said metal cylinder further having an outer surface, and two ends, one of said two ends being an entrance to said longitudinal opening, the other of said two ends being closed to terminate said axial opening; and

a chromium oxide film covering said inner surface.

5,334,910

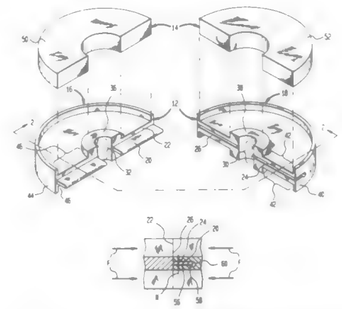
INTERLOCKING PERIODIC PERMANENT MAGNET ASSEMBLY FOR ELECTRON TUBES AND METHOD OF MAKING SAME

Kenneth S. Karsten, Bethlehem, and Richard C. Wertman, Allentown, both of Pa., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 2, 1992, Ser. No. 939,306

Int. Cl.[5] H01J *23/087*

U.S. Cl. 315—5.35 **14 Claims**



7. A cylindrical periodic permanent magnet device for an electron tube, comprising:

a first semi-cylindrical assembly of interposed first magnet members and first pole pieces, wherein each of said first magnet members is respectively juxtaposed between adjacent ones of said first pole pieces, each of said first pole

VOL 1165 ISS 1 AG 2 1994 UMI

pieces having a respective locking member extending therefrom; and

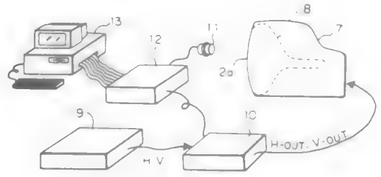
a second semi-cylindrical assembly of interposed second magnet members and second pole pieces, wherein each of said second magnet members is respectively juxtaposed between adjacent ones of said second pole pieces, each of said second pole pieces having a respective receptacle disposed therein for receiving and retaining a corresponding one of said locking members from said first pole pieces, thereby interconnecting each said first pole piece assembly to a corresponding said second pole piece assembly such that each of said first magnet members and said second magnet members align.

5,334,911

APPARATUS FOR AND METHOD OF MEASURING BEAM SPOT LUMINESCENCE DISTRIBUTION

Kazuo Enmoto, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,316
Claims priority, application Japan, Jul. 24, 1991, 3-206219
Int. Cl.[5] H01J *31/26;* **H04N** *17/02*
U.S. Cl. 315—10 **1 Claim**



1. A measuring device wherein a luminescence distribution within a beam spot of an electron beam irradiating a tube surface of a color cathode ray tube is measured, said measuring device comprising:

an electron beam moving means for varying locations irradiated by the electron beam while maintaining a measurement region of brightness defined within a specific fluorescent substance on said tube surface within the beam spot, said electron beam moving means including

a synchronous signal phase control device for varying phases of synchronous signals provided to a deflecting circuit of the cathode ray tube, and

a control circuit for supplying said synchronous signal phase control device with a command signal in response to a phase amount corresponding to each irradiated location of the electron beam; and

means for measuring the brightness of said measurement region at each irradiated position of the electron beam

wherein said synchronous signal phase control device comprises:

means for shifting a phase of a reference horizontal synchronous signal in response to a first command signal from the control circuit, and

means for shifting a phase of a reference vertical synchronous signal in response to a second command signal from the control circuit

wherein said means for shifting the phase of the reference horizontal signal comprises:

a delay line for shifting a phase of the reference horizontal synchronous signal by a prescribed quantity and generating a plurality of delayed horizontal synchronous signals, and

a selector for selecting one delayed synchronous signal in response to the first command signal, and

wherein said means for shifting a phase of the reference vertical synchronous signal comprises:

a first counter for starting counting from a rising edge of the reference vertical synchronous signal and for counting reference pulses corresponding to a first phase deviation quantity indicated by the second command signal,

a second counter for starting counting from a falling edge of the reference vertical synchronous signal and for counting reference pulses corresponding to a second phase deviation quantity, and

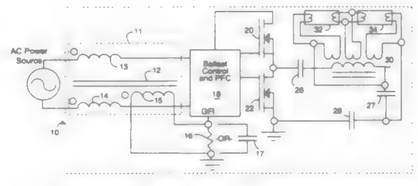
a flip-flop set by an output of said first counter and reset by an output of said second counter.

5,334,912

GROUND FAULT DETECTOR AND ASSOCIATED LOGIC FOR AN ELECTRONIC BALLAST

Richard C. Counts, Dallas, Tex., assignor to USI Lighting, Inc., San Leandro, Calif.

Filed Aug. 24, 1992, Ser. No. 934,410
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—119 **6 Claims**



1. A ground-fault detector for controlling shock potential in a fluorescent lamp system, the detector comprising:

a sense transformer including a core, two primary windings and a secondary winding, said primary windings for passing through alternating current (AC) from a power source to a lamp ballast;

a low impedance circuit element connected across said secondary winding for preventing a saturation of said core of the sense transformer;

an analog comparator coupled across the low impedance circuit element for detecting when ground-fault signals in said secondary winding exceed a predetermined threshold voltage; and

digital counter means connected to the analog comparator and configured to count the periods that a ground-fault condition persists as indicated by the analog comparator output assuming one of two possible states, and having means for outputting a disabling signal to shut off said fluorescent lamp system if said indication persists longer than three consecutive half-cycles of said AC power.

5,334,913

MICROWAVE POWERED LAMP HAVING A NON-CONDUCTIVE REFLECTOR WITHIN THE MICROWAVE CAVITY

Michael G. Ury, Bethesda, and Charles H. Wood, Rockville, both of Md., assignors to Fusion Systems Corporation, Rockville, Md.

Filed Jan. 13, 1993, Ser. No. 3,562
Int. Cl.[5] H05B *41/16*
U.S. Cl. 315—248 **9 Claims**

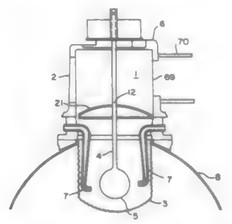
1. A microwave powered lamp comprising:

a microwave cavity having a wall which is transparent to optical radiation;

means for coupling microwave energy to said cavity;

a discharge envelope mounted within said cavity;

reflector means for reflecting light emitted from said cavity mounted external to said cavity; and,



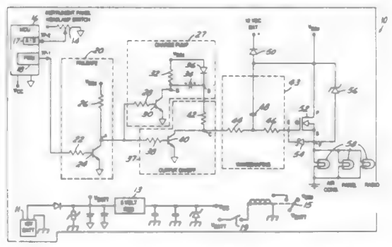
non-conductive reflector means mounted within said cavity for reflecting light outwardly from said cavity.

5,334,914

VEHICLE INSTRUMENT PANEL LAMPS, PULSE WIDTH DIMMER SYSTEM THEREFOR

Patrick D. Dean, Armada, and Abbas T. Sabbah, Sterling Heights, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 23, 1992, Ser. No. 855,975
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—291 **1 Claim**



1. A pulse width modulation (PWM) lamp dimming system in a vehicle instrument panel for furnishing a lamp illumination mode of operation with selectable variable dimming states with respect to full illumination of a plurality of lamps in the instrument panel, the dimming system being energized from a source voltage of electrical potential difference coupled to (1) a voltage regulator device for supplying a source of regulated power of a chosen amplitude and to (2) an instrument panel lamp switch and relay for applying the source voltage to the dimming system when desirous of manual control of illumination of the lamps of the instrument panel, said dimming system comprising:

(a) an instrument panel potentiometer mounted on said panel for providing a manually controlled signal referenced to said source of regulated power which can vary between fully OFF to a maximum signal level for adjusting the amount of dimming of said instrument panel lamps;

(b) a microcontroller unit (MCU) including an analog to digital converter (A/D) circuit and a pulse width modulation (PWM) circuit, receiving regulated power from said voltage regulator and having an input terminal port of said A/D converter that receives control signals from said potentiometer used to produce an internal control signal for adjusting the pulse width and duty cycle of an output pulse signal of a chosen frequency from said PWM circuit;

(c) a pulse width dimming (PWD) module circuit connected to receive the PWM signals from said microcontroller for developing a failsafe, waved shaped, charged pump type modified PWM signal in response to the duty cycle of the incoming PWM signal; the failsafe circuit having an electronic switch coupled to receive the PWM signal from said MCU for providing passing the PWM signal during normal operation but inhibiting the other circuits of said PWD module of the PWM signal ceases or said MCU goes in a reset mode; said PWD module also including an output ON/OFF circuit having a second electronic switch coupled to the output of said failsafe circuit for buffering the PWM signal entering said failsafe circuit, said second electronic switch also forming another failsafe circuit for switching OFF the input PWM signal if a signal failure occurs in said MCU; said PWD module also includes a waveshaping circuit for accepting the output pulse signal from said charge pump circuit and producing at an output terminal an integrated pulse signal in response to the signal from said charge pump, the duty cycle of the integrated pulse signal being in proportion to the control signal from the potentiometer control signal routed to the A/D converter of said MCU; and

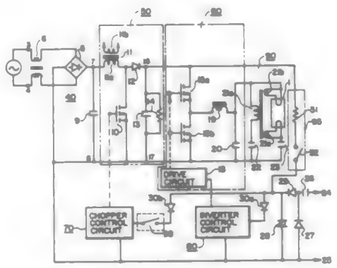
(d) an n-channel field effect transistor (FET) coupled between said PWD module and said plurality of instrument panel lamps for providing various levels of current to said lamps in response to the duty cycle of the PWM signal, said FET having a first zener diode connected across the source and drain terminals of said FET for reducing the effects of supply voltage transient currents passing through said FET.

5,334,915

OPERATING CIRCUIT ARRANGEMENT FOR A DISCHARGE LAMP

Hajime Ohsaki, Hayama, and Keiichi Shimizu, Yokohama, both of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,217
Claims priority, application Japan, Sep. 30, 1991, 3-252589
Int. Cl.[5] G05F *1/00*
U.S. Cl. 315—307 **19 Claims**



1. An operating circuit arrangement for a discharge lamp comprising:

a rectifier circuit for rectifying an a.c. voltage to a d.c. voltage;

a chopper circuit arrangement, coupled to said rectifier circuit, which comprises;

a chopper circuit for stepping up said d.c. voltage and generating a d.c. output voltage, and

a chopper control circuit for controlling the operation of said chopper circuit, wherein said chopper control circuit is responsive to an output of said chopper circuit;

an inverter circuit arrangement, coupled to said chopper circuit arrangement, which comprises:

an inverter circuit for generating a high frequency voltage for operating said discharge lamp, and

an inverter control circuit for controlling the operation of said inverter circuit in a manner such that said inverter circuit is placed in a steady operational mode in which

VOL 1165 ISS 1 AUG 2 1994 UMI

said discharge lamp is activated prior to the generation of a given level of said d.c. output voltage by said chopper circuit; and

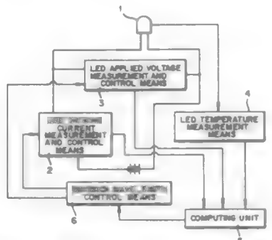
a starting circuit, coupled to said inverter control circuit and said chopper control circuit, for starting both said inverter control circuit and said chopper control circuit.

5,334,916

APPARATUS AND METHOD FOR LED EMISSION SPECTRUM CONTROL

Masahiro Noguchi, Ibaraki, Japan, assignor to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,758
Claims priority, application Japan, May 27, 1991, 3-121317
Int. Cl.[5] G05F *1/00*; H05B *41/36*
U.S. Cl. 315—309 8 Claims



1. An emission spectrum controlling apparatus for at least one light emitting diode comprising:

a temperature measurement means for measuring at least one of the temperature of a corresponding one of said at least one light emitting diode and the temperature in an environment proximate to a corresponding one of said at least one light emitting diode;

a driving power control means for controlling the driving power of the at least one light emitting diode;

a computing means for computing an emission wavelength of the at least one light emitting diode; and

emission wavelength control means for controlling the driving power control means based on the temperature information from the temperature measurement means and driving power information from the driving power controlling means.

5,334,917

SYSTEM AND METHOD FOR OPTIMALLY DRIVING A DC MOTOR

Bjorn Lind, Bilidal, Sweden, assignor to W. Schlafhorst AG & Co., Monchengladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 720,892, Jun. 25, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 937,995
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—254 3 Claims

3. A motor drive system for driving a DC motor, the motor comprising stator windings, a permanent magnet rotor, and an inverter, the drive system comprising:

a) stator means of the motor comprising two sets of phase windings driven by the inverter, the inverter emitting first, second, and third phase voltage square waves with a 180° commutating angle and a phase displacement of 60° between the first and second sets of voltage waves in order to suppress the fifth and seventh harmonics in the stator of the motor;

b) control unit means to control the inverter the output of the inverter comprising three phase square waves with a 180° commutating angle which drive the motor;

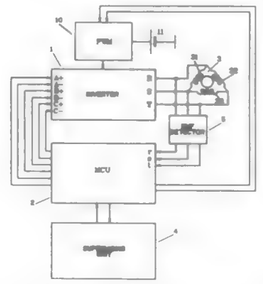
c) supervise unit means for monitoring the inverter;

d) voltage source means for supplying a pulse width modulated constant voltage, connected to the motor;

e) inverter means for inverting current, the inverter means being supplied from the voltage source means;

f) back-EMF detection circuit means for detecting a back-EMF voltage induced by the rotor in the stator windings during a time given by the control unit means in response to output signals from the back-EMF detection circuit means the back-EMF detect circuit means connected between the voltage source means and the control unit means;

g) detection means for detecting the speed and position of the rotor in order to emit information signals to the supervise unit means at a start of the rotor rotation in response



to a start impulse and a direction command sent from the supervising unit to a timing logic in the commutation control unit; and

h) commutation control unit means for displacing the commutation times, the commutation control unit comprising a time counter means which counts clock pulses from a reference oscillator between time intervals obtained from a pulse detect circuit means, the time intervals corresponding to successive zero crossings detected by the back-EMF detect circuit means, whereby after a multiplication with a signal constant in an input memory the result is counted down with the clock frequency reference oscillator means in a down counter means, the down counter means giving modified time for activation of flip-flop means for creation of modified control signals.

5,334,918

METHOD OF CONTROLLING A COORDINATE POSITIONING MACHINE FOR MEASUREMENT OF A WORKPIECE

David R. McMurtry, Wotton-Under-Edge, and Alexander T. Sutherland, Edinburgh, both of United Kingdom, assignors to Renishaw plc, Gloucestershire, United Kingdom

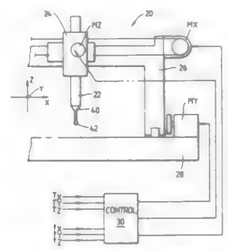
PCT No. PCT/GB91/01001, § 371 Date Jan. 27, 1992, § 102(e) Date Jan. 27, 1992, PCT Pub. No. WO91/20020, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 20, 1991, Ser. No. 820,693
Claims priority, application United Kingdom, Jun. 20, 1990, 9013744
Int. Cl.[5] A25J *9/16*
U.S. Cl. 318—568.16 10 Claims

2. A method of controlling a coordinate positioning machine having a head, and a contact measuring probe connected to the head for sensing a distance between a surface and the head, the method controlling the machine to drive the head along an unknown path adjacent a workpiece surface, and to maintain the probe within measuring range of the surface, the method comprising the steps of:

measuring, using the contact measuring probe, the position

of at least two points on the surface of the workpiece and lying on the path traced by the head;

predicting, in real time from the two previously measured points the position of a third point; and



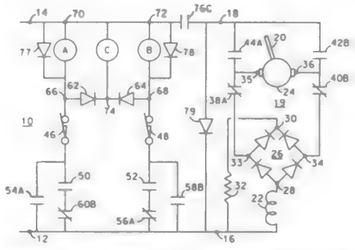
driving the head to a position at which the measuring probe lies within measuring range of the third point.

5,334,919

MOTOR CONTROL SYSTEM HAVING IMPROVED DYNAMIC BRAKING

Frank G. Willard, Oakmont, Pa., assignor to Cleaveland/Price Inc., Trafford, Pa.

Filed Jun. 11, 1993, Ser. No. 76,433
Int. Cl.[5] H02P *3/12*
U.S. Cl. 318—375 12 Claims



1. A motor control system for a reversible series DC electric motor, said motor having an output shaft adapted to be connected to a driven member, and said system when energized operable to rotate said output shaft to move said driven member and when energization is removed to smoothly, rapidly, and consistently stop rotation of said output shaft and movement of said driven member, said control system comprising:

a DC source having output terminals of predetermined polarities;

a motor field winding forming an integral part of said series DC motor, a bridge circuit conformed as a full-wave rectifier and having DC terminals of different polarities and AC terminals, said motor field winding electrically connecting between one output terminal of said DC source and the one DC terminal of said full-wave rectifier bridge which has a polarity opposite to the polarity of said one output terminal of said DC source, and the other DC terminal of said full-wave rectifier bridge connecting to said one output terminal of said DC source;

a rotatable motor armature having two electric terminals and forming an integral part of said series DC motor, said motor armature connecting to and operable to drive said rotatable output shaft, one electric terminal of said motor armature adapted to be connected via one AC terminal of said full-wave rectifier bridge to said one DC terminal of said bridge, a first controllable open or closed switch connected in circuit between said one motor armature terminal and said one DC terminal of said bridge, the other electric terminal of said motor armature adapted to be connected via said other AC terminal of said bridge to said one DC terminal of said bridge, a second controllable open or closed switch connected in circuit between said other motor armature terminal and said one DC terminal of said bridge, said other electric terminal of said motor armature also adapted to be connected via a third controllable open or closed switch to the other output terminal of said DC source, and said one electric terminal of said motor armature also adapted to be connected via a fourth controllable open or closed switch to said other output terminal of said DC source;

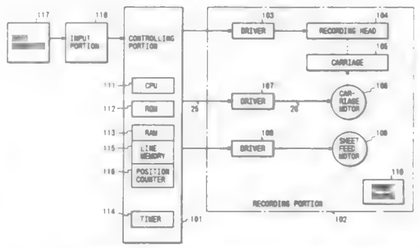
and means for selectively controlling the opening and closing of said open or closed switches including the following open and closed relationships to produce the following system functions: when said first and third switches are closed and said second and fourth switches are open, said armature and connected output shaft rotate in one direction to move said driven member in one predetermined direction; when said second and fourth switches are closed and said first and third switches are open, said armature and connected output shaft rotate in an opposite direction to move said driven member in another predetermined direction; and when said first and second switches are closed and said third and fourth switches are open, any rotation of said armature and output shaft and movement of said driven member are smoothly and rapidly dynamically braked.

5,334,920

RECORDING APPARATUS

Noriaki Ito, Yokohama; Shigeyasu Nagoshi, Kawasaki, and Shigeru Yoshimura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1991, Ser. No. 712,048
Int. Cl.[5] G05B *19/40*
U.S. Cl. 318—685 7 Claims



1. A recording apparatus for moving a recording head to scan for recording, comprising:

a carriage mounted with a recording head;

a stepping motor for moving the carriage;

detecting means for detecting whether said carriage is at a home position, wherein said detecting means generates a detection signal when detecting that said carriage is at the home position;

a driver for switching an exciting current to be fed to a coil of said stepping motor in accordance with a pulse signal; and

control means for generating the pulse signal to instruct said drive to drive said stepping motor, wherein said control means in initialized by said detection signal, wherein said control means comprises a counter for determining the position of said carriage by counting pulse signals and a timer for determining the period of the pulse signal, and wherein said control means determines on the basis of the count value of said counter whether the rotary speed of said stepping motor exceed a specified value when accel-

VOL 1165 ISS 1 AG 2 1994 UMI

erating until said carriage reaches a record-starting position, and when said control means determines that the rotary speed of said stepping motor is less than the specified value, said control means sets the period of the pulse signal to be short, and when said control means determines that the rotary speed of said stepping motor is more than the specified value, said control means sets the period of the pulse signal of said timer to be long.

5,334,921

CIRCUIT ARRANGEMENT FOR OPERATING A MULTI-PHASE SYNCHRONOUS MOTOR IN A DIRECT VOLTAGE NETWORK

Josef Wehberg, Bühl, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

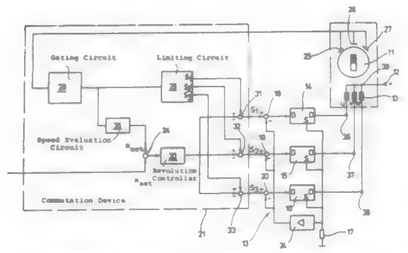
PCT No. PCT/DE91/00884, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO92/11689, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 20, 1990, Ser. No. 920,565

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040926

Int. Cl.[5] H02P *6/02*

U.S. Cl. 318—721 **10 Claims**



1. A circuit arrangement for operating a synchronous motor including a multi-phase armature winding in a direct voltage network, the arrangement comprising a switching device for the successive connection of the winding phases of the armature winding to a direct mains voltage, the switching device including a plurality of semiconductor switches that are associated with the individual winding phases, and a commutation device for the actuation in the proper sequence of the semiconductor switches by means of switching signals in conformance with the rotary position of the rotor of the synchronous motor, characterized in that each control input (G) of the semiconductor switches (**14–16; 41–44**) is preceded by an analog difference former (**18–20; 51–56**) which receives, on the one hand, the switching signal (S1–S3; S1–S6) associated with the semiconductor switch (**14–16; 41–46**) and, on the other hand, a reference signal derived from the phase sum current of the armature winding (**10**); and the actuation of the semiconductor switches (**14–16; 41–46**) is effected by the difference formers (**18–20; 51–56**) in such a manner that the semiconductor switches (**14–16; 41–46**) are fully energized as long as the amplitude of the switching signal (S1–S3; S1–S6) is greater than the amplitude of the reference signal.

5,334,922

ASYNCHRONOUS MOTOR SPEED CONTROL METHOD AND DEVICE

Michelangelo Manini, Bologna, Italy, assignor to FAAC S.p.A., Bologna, Italy

Filed Mar. 22, 1993, Ser. No. 34,295

Claims priority, application Italy, Mar. 24, 1992, MI92A000654

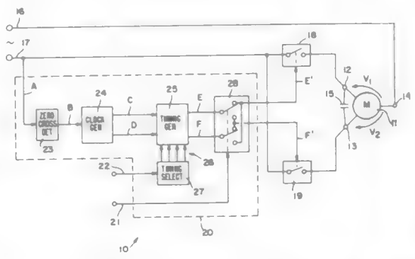
Int. Cl.[5] H02P *7/00*

U.S. Cl. 318—772 **33 Claims**

1. A method for controlling the speed of an asynchronous electric motor having a first branch of electrical windings and a second branch of electrical windings out of phase with the first branch, comprising

providing one single-phase power supply source, and

selectively producing a first motor power supply condition for running the motor at rated speed in which the first branch is supplied by a single-phase sine wave voltage from said source, and the second branch is supplied by the same single-phase sine wave voltage through a phase shifting capacitor, and a second motor power supply condition in which each of said branches is supplied by a partialized voltage formed by said single-phase sine wave voltage from said source for a half-period of said sine wave every uneven number ns of half-periods for running said motor at a speed reduced to 1/ns of said rated speed.



5,334,923

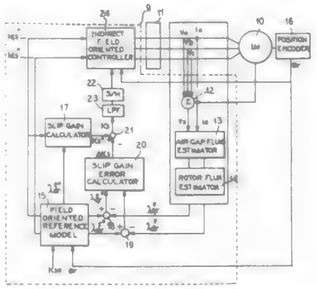
MOTOR TORQUE CONTROL METHOD AND APPARATUS

Robert D. Lorenz, Madison, Wis.; Kam T. Hung, Wanchai, Hong Kong; Thomas A. Lipo, Madison, Wis., and Julio C. Moreira, Benton Harbor, Mich., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 591,517, Oct. 1, 1990. This application Mar. 27, 1992, Ser. No. 858,172

Int. Cl.[5] H02P *5/40*

U.S. Cl. 318—805 **8 Claims**



2. A method for controlling the rotor field orientation in an operating multiphase induction machine having stator means, rotor means and an air gap therebetween, said method comprising the steps of:

a) determining the third harmonic component of air gap flux from the third harmonic component of stator phase voltage;

b) determining the maximum value of the fundamental component of said air gap flux from said third harmonic air gap flux component;

c) measuring the phase angle between the maximum value of the stator current and the maximum value of said fundamental air gap flux component;

d) passing said phase angle and also the maximum value of said third harmonic air gap flux component through a quadrature oscillator means which produces direct and quadrature components of said fundamental air gap flux component;

e) computing the rotor flux from said direct and said quadrature components;

f) comparing said computed rotor flux to a reference motor flux, thereby generating a phase angle value which represents the difference between the fully oriented rotor field orientation and the actual rotor field orientation;

g) inputing said phase angle signal into a regulator means along with reference signals for said direct and said quadrature values of current being input into said machine, thereby generating current values for each phase of said machine; and

h) charging said current values into a current regulator from which power is fed to said machine, thereby regulating input power to control said rotor field orientation.

5,334,924

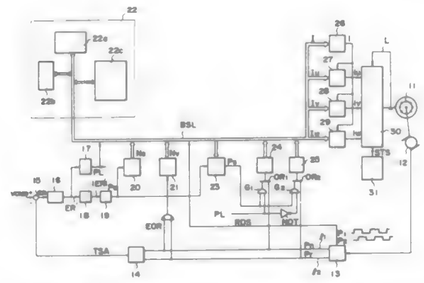
INDUCTION MOTOR CONTROL SYSTEM

Shigeki Kawada, Hino, and Hiroshi Ishida, Hamuramachi, both of Japan, assignors to Fanuc Ltd, Yamanashi, Japan

Filed Oct. 30, 1981, Ser. No. 316,763

Int. Cl.[5] H02P *5/40*

U.S. Cl. 318—811 **6 Claims**



1. A system for controlling an induction motor by a microprocessor having a processing unit, a control program memory and a data memory, said system comprising:

memory means for storing motor characteristics including a torque-current amplitude characteristic, a torque-phase characteristic, a rotational speed-slip characteristic and a rotational angle-sinusoidal value characteristic;

means for deriving an analog value difference voltage between a voltage indicative of a speed command and a voltage indicative of the actual induction motor speed;

voltage-to-frequency conversion means for converting the difference voltage into a digital pulse train P_e;

means for obtaining torque information by reading, at fixed periods, N_e-number of pulses of the pulse train P_e, and for obtaining induction motor speed information by reading, at fixed periods, N_r-number of pulses of a pulse train having a frequency proportional to the induction motor speed;

means for deriving a numerical value corresponding to the N_r-number of pulses on the basis of the rotational speed-slip characteristic stored in said memory means;

first counter means, responsive to said numerical value corresponding to the N_r-number of pulses and to the pulse train P_e, for dividing said pulse train P_e by said numerical value corresponding to the N_r-number of pulses to produce a pulse train P_s indicative of induction motor slip;

means for mixing the pulse train P_s with said pulse train having a frequency proportional to the induction motor speed;

second counter means for counting the pulses in the mixed pulse trains to produce rotational angle information ϕ;

means for generating three-phase AC signals i_u, i_v, i_w by executing a predetermined operation to control slip frequency, on the basis of said N_e-number of pulses, said rotational angle ϕ, said torque-current amplitude characteristic, said torque-phase characteristic, and said rotational angle-sinusoidal value characteristic; and

means for driving the induction motor on the basis of the three-phase sinusoidal AC signals i_u, i_v, i_w.

5,334,925

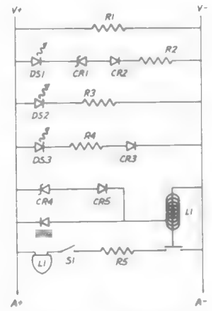
NICKEL CADMIUM BATTERY DEEP CYCLER DEVICE

Robert A. Kendrick, P.O. Box 1576, Fallbrook, Calif. 92028

Filed Sep. 18, 1992, Ser. No. 946,680

Int. Cl.[5] H02J *7/00*

U.S. Cl. 320—5 **7 Claims**



1. A device for draining a battery prior to recharging the battery, the device comprising:

means in the form of first and second input terminals for connecting the device to a battery to be discharged;

means in the form of a first circuit coupled to the input terminals for draining current from the battery connected to the input terminals, the first circuit having sufficient resistance to drain current from the battery without damage to the battery when the battery has an output voltage above a predetermined threshold level;

means in the form of a second circuit coupled to the input terminals for draining current from the battery when the battery has an output voltage no greater than the threshold level; and

means in the form of a relay coupled to the input terminals for decoupling the second circuit from at least one of the first and second input terminals when the battery has an output voltage greater than the threshold level;

wherein the second circuit includes means in the form of an incandescent lamp in series with a resistor for presenting a resistance between the first and second input terminals that decreases to approximately one ohm as the output voltage of the battery decreases.

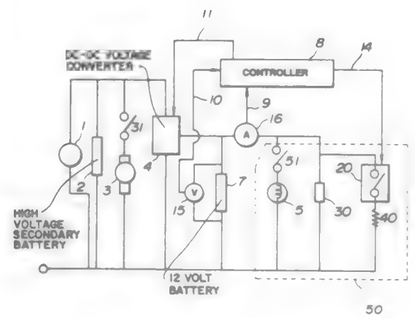
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,926

ELECTRIC POWER SYSTEM FOR AUTOMOTIVE VEHICLE

Katsuhiro Imaizumi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 30, 1993, Ser. No. 40,255
Claims priority, application Japan, Mar. 31, 1992, 4-077822
Int. Cl.[5] H02J 7/14; H02P 9/30
U.S. Cl. 320—15 3 Claims



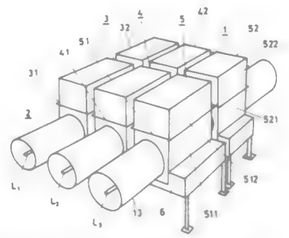
1. An electric power system for an automotive vehicle, comprising:
- a generator for generating electric power by using an engine as a driving source;
- a high-voltage secondary battery connected to an output terminal of said generator;
- a first load connected to the generator output terminal;
- a converter connected to the generator output terminal for converting electric power from a high-voltage to a low-voltage;
- a low-voltage secondary battery connected to an output terminal of said converter, said low-voltage secondary battery being charged by said converter;
- a second load connected to an output terminal of said low voltage secondary battery;
- a third load connected to the output terminal of said low-voltage secondary battery;
- a switch through which said third load is connected to said low-voltage secondary battery;
- a volt-meter connected to said low-voltage secondary battery for detecting the voltage of said low-voltage secondary battery,
- an ammeter connected to said second and third loads and detecting a load current applied to said second and third loads; and
- a controller controlling said converter to step operation when said volt-meter detects a voltage value larger than a first predetermined value, and to start the operation so as to charge said low-voltge secondary battery when said volt-meter detects a voltage value not larger than the first predetermined value, said controller controlling said switch to put said converter in a turned-on condition until said low-voltage battery is charged to a predetermined charged condition when the load current detected by said ammeter is smaller than a second predetermined value and put said converter in a turned-off conditions when the load current is not smaller than the second predetermined value.

5,334,927

MULTIPHASE SWITCHING SYSTEM AND GENERATOR ARRANGEMENT HAVING SUCH A SWITCHING SYSTEM

Leonhard Widenhorn, Zug, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Apr. 5, 1993, Ser. No. 43,021
Claims priority, application Switzerland, Apr. 28, 1992, 1371/92
Int. Cl.[5] H02B 1/00; H02J 3/00
U.S. Cl. 322—100 15 Claims



1. A multiphase switching system comprising:

plural phase conductors arranged in an encapsulation, each phase being insulated from the remaining phase conductors in a generator output line, said phase conductors being arranged between a generator and a transformer;

a first switching apparatus having at least two switching positions, a first of which is arranged between the generator and an output of the switching system to the network transformer, and a second of which is arranged between the generator and a starting device which is arranged outside the encapsulation for connection with the generator when the first switching position is open and the second switching position is closed.

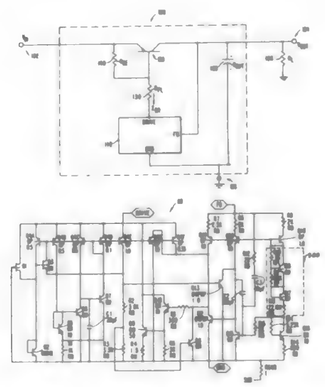
5,334,928

FREQUENCY COMPENSATION CIRCUIT FOR LOW DROPOUT REGULATORS

Robert C. Dobkin, Monte Sereno; Carl T. Nelson, San Jose, and Dennis P. O'Neill, San Carlos, all of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Division of Ser. No. 785,483, Oct. 31, 1991, Pat. No. 5,274,323.
This application Jul. 27, 1993, Ser. No. 98,461
Int. Cl.[5] G05F 1/575
U.S. Cl. 323—280 7 Claims

1. A frequency compensation circuit for a voltage regulator circuit, the voltage regulator circuit including a drive terminal, a feedback terminal and a ground terminal, an error signal generating circuit connected to the feedback terminal and the ground terminal and having an output node at the collector of an NPN transistor, the frequency compensation circuit comprising:
- a first capacitor coupled between the output node and the base of the NPN transistor, the first capacitor providing a rolloff in the gain of the error signal generating circuit; and
- a second capacitor coupled between the base of the NPN transistor and the feedback terminal, the second capacitor providing a zero which cancels the pole generated by the first capacitor at a frequency which allows regulator loop gain to fall well below unity.

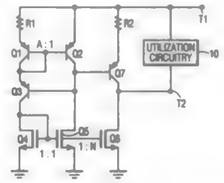


5,334,929

CIRCUIT FOR PROVIDING A CURRENT PROPORTIONAL TO ABSOLUTE TEMPERATURE

Otto H. Schade, Jr., N. Caldwell, N.J., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 26, 1992, Ser. No. 935,830
Int. Cl.[5] G05F 3/16
U.S. Cl. 323—315 16 Claims



1. An integrated circuit for providing a current proportional to absolute temperature, comprising:

current mirror means for producing a reference current;

a first circuit means coupled between said current mirror means and a summing node for providing thereto a first current exhibiting substantially zero temperature coefficient;

second circuit means coupled between said current mirror means and said summing node for providing thereto a second current exhibiting a negative temperature coefficient; and

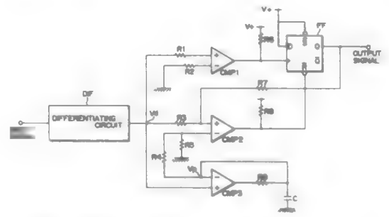
output means coupled to said summing node for summing said first and second currents for providing and carrying a third current through said output means exhibiting a positive temperature coefficient.

5,334,930

PEAK DETECTION CIRCUIT

Akira Onodera, Kawagoe, and Koichi Yamazaki, Sakado, both of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,476
Claims priority, application Japan, May 14, 1991, 3-109368
Int. Cl.[5] G01R 19/04; H03K 5/19
U.S. Cl. 324—103 P 1 Claim



1. A peak detection circuit, comprising:
- a differentiating circuit which produces a differentiated signal of an input signal,
- a peak hold circuit which produces a peak value envelope of an output of said differentiating circuit,
- a voltage dividing circuit for dividing an output of said differentiating circuit so as to produce a reference signal,
- a first comparator which receives the output of said differentiating circuit and the reference signal which has a value corresponding to that of an output of said peak hold circuit to compare them with each other, and detects when said input signal falls below said reference signal so as to produce an output representing such a condition,
- a second comparator which detects a portion by which the output of said differentiating circuit exceeds the zero-cross point so as to produce a clock pulse, and
- a flip-flop for producing a signal which rises in accordance with the clock pulse from said second comparator and falls in accordance with the output of said first comparator, the output terminal of said flip-flop being connected to an input terminal of said first comparator via a resistor having a high resistance to attain a hysteresis characteristic in inversion operation of said flip-flop,

thereby to form an output signal representing a peak of the input signal by the rise of the output of said flip-flop.

5,334,931

MOLDED TEST PROBE ASSEMBLY

Norman B. Clarke, Pleasant Valley; Lawrence G. Cook; Robert G. Doyle, both of Poughkeepsie, and Michael Reaser, Highland, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1991, Ser. No. 790,334
Int. Cl.[5] G01R 1/02
U.S. Cl. 324—757 15 Claims

12. A probe tip for contacting and testing an object including:
- a body block including a cantilevered portion and an attachment portion and being formed with a groove such that said cantilevered portion is substantially separated from said attachment portion by said groove and such that said cantilevered portion has a predetermined resiliency, said body block comprising plastic,
- a contact tip located on said cantilevered portion,
- a conductive material overlying at least a portion of said body block from said contact tip to said attachment portion and
- a holder block shaped to cover at least said attachment portion of said body block,

said body block and said holder block each including a portion of an attachment means for attaching said holder

VOL 1165 ISS 1 AG 2 1994 UMI

block and said body block together in a predetermined positional relationship,

said contact tip for traversing a surface of said object and



wiping contaminants therefrom upon said contact tip being brought into contact with said object and until a limit of said predetermined resiliency of said cantilevered portion is reached.

5,334,932

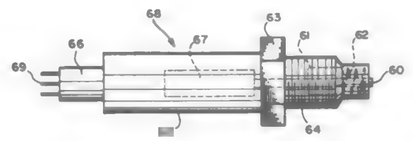
TEMPERATURE COMPENSATED ELECTRICAL SENSOR SYSTEM FOR MEASURING FERROUS PARTICLES IN A FLUID USING A SERIES RESONANT OSCILLATOR AND MICROPROCESSOR

Paul H. Nielsen, Wilmington, Del., assignor to Vickers Incorporated, Glenolden, Pa.

Continuation of Ser. No. 659,110, Feb. 22, 1991, abandoned. This application Dec. 24, 1991, Ser. No. 813,353

Int. Cl.[5] G01N *27/74;* **G01R** *33/12*

U.S. Cl. 324—204 **2 Claims**



1. A means for sensing ferrous particles entrained in a fluid comprising:

(a) a magnet having two poles, a first one of which is positioned within said fluid;

(b) a coil formed from an electrically-conductive material located coaxially with a second pole of said magnet;

(c) a series resonant electronic circuit for measuring the inductance of said coil, said circuit being connected to said coil, said series resonant circuit comprising:

1. a series resonant network of said coil;
2. a capacitor;
3. a series resonant oscillator comprising an amplifier having a series resonant network connected to its inverting input, a rectifier, an integrator comparator, and a multiplier, wherein the output of said amplifier is applied to a first input of said multiplier before being rectified and applied to the input of the integrator comparator, the output of the integrator comparator being applied to a second input of said multiplier, the output of the multiplier being applied to the non-inverting input of said amplifier;
4. a gain and offset amplifier; and
5. a microprocessor for determining a temperature compensation in response to the period of oscillation and a single representative of the gain of said amplifier;

wherein the output of said microprocessor is a signal representative of the temperature compensated inductance of said coil, and thus is also representative of the amount of ferrous material accumulated on or immediately adjacent to said first pole of said magnet.

5,334,933

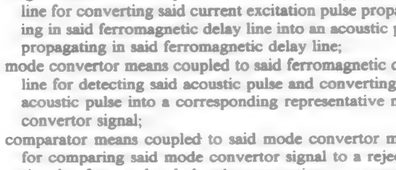
VARIABLE REJECTION METHOD FOR IMPROVED SIGNAL DISCRIMINATION IN A MAGNETOSTRICTIVE POSITION TRANSDUCER

Jacob Tellerman, Bayside, N.Y., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Continuation of Ser. No. 756,978, Sep. 9, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 156,678

Int. Cl.[5] G01B *7/14;* **G01F** *23/46;* **H04B** *11/00*

U.S. Cl. 324—207.13 **10 Claims**



1. A magnetostrictive transducer, comprising:

a ferromagnetic delay line;

a pulse generator coupled to said ferromagnetic delay line for generating a current excitation pulse in said ferromagnetic delay line;

magnet means located proximate said ferromagnetic delay line for converting said current excitation pulse propagating in said ferromagnetic delay line into an acoustic pulse propagating in said ferromagnetic delay line;

mode convertor means coupled to said ferromagnetic delay line for detecting said acoustic pulse and converting said acoustic pulse into a corresponding representative mode convertor signal;

comparator means coupled to said mode convertor means for comparing said mode convertor signal to a rejection signal reference level thereby generating a comparator output signal;

circuit means, coupled to said comparator means and to said pulse generator, for generating an interrogation pulse which causes the pulse generator to generate said current excitation pulse, and for measuring a time interval between generation of said interrogation pulse and reception of said acoustic pulse by said mode convertor as indicated by the occurrence of said comparator output signal, said circuit means including position determination means for determining, responsive to a value of said ferromagnetic delay line;

rejection signal generation means coupled to said circuit means and said comparator means for generating said rejection signal initiated by said interrogation pulse; said reference level of said rejection signal, having a DC amplitude varying in direct proportion to the level of said mode convertor signal so that for any magnet means location along said ferromagnetic delay line, the ratio of said rejection signal level to said mode convertor signal level is substantially constant; and

wherein said rejection signal generation means further includes buffer means, coupled to said circuit means and said comparator means, for adjusting said reference level of the rejection signal, the buffer means electrically connecting to a capacitor which provides a charging/discharging signal responsive to the interrogation pulse.

5,334,934

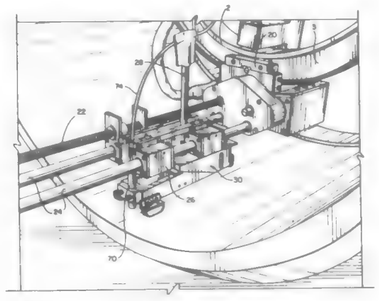
EDDY CURRENT PROBE APPARATUS AND INTERLACED SCANNING METHOD FOR INTERIOR INSPECTION OF METAL DEVICES

John R. M. Viertl, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 729,725, Jul. 15, 1991. This application Dec. 31, 1992, Ser. No. 999,650

Int. Cl.[5] G01N *27/72, 27/82;* **G01B** *33/12*

U.S. Cl. 324—220 **8 Claims**



1. An apparatus for monitoring eddy currents comprising:

a plurality of eddy current probes each having at least one current carrying coil for producing a signal indicative of electromagnetic eddy currents in an interior surface of a cylinder;

a carriage on which said plurality of probes are mounted, said carriage holding said probes a substantially constant distance over said interior surface;

translation means moving said carriage across said interior surface parallel to an axis of said cylinder such that said probes trace straight scan lines across said surface, said translation means comprising at least one shaft extending parallel to the cylinder axis in said cylinder and said carriage being slidably coupled to said shaft, said translation means rotating said carriage around said interior surface for at least two rotations, and with each rotation of said translation means interlacing the scan lines of said probes with scan lines from a previous rotation; and

data acquisition means for processing said signals from said probes and interlacing said signals taken during said scan lines.

5,334,935

APPARATUS AND METHOD FOR DETECTING WEAK MAGNETIC FIELDS HAVING A SATURABLE CORE SHAPED TO CANCEL MAGNETIC FIELDS PARALLEL TO THE CORE

Steven L. Cook, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 27, 1992, Ser. No. 966,931

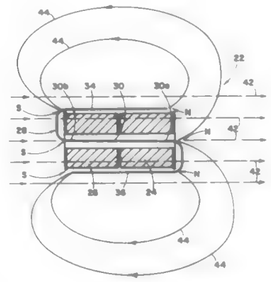
Int. Cl.[5] G01R *33/04, 33/02*

U.S. Cl. 324—253 **18 Claims**

1. Apparatus for detecting the presence of extraneous magnetic fields having a predetermined weak magnitude comprising:

a transformer having an excitation winding, an output winding, and a saturable core made of amorphous metal alloy which will saturate in a magnetic field of a predetermined saturation magnitude, the core being shaped to cancel the electromagnetic effects of magnetic fields having flux lines which are substantially parallel with respect to the transformer;

excitation means, connected to the excitation winding, for generating a magnetic field having an excitation magnitude of lesser magnitude than the saturation magnitude, the excitation magnitude and the weak magnitude of the extraneous magnetic field combining to create a magnetic field of greater magnitude than the saturation magnitude of the core; and



detection means, connected to the output winding, for detecting and indicating saturation of the core.

5,334,936

MAGNETIC RESONANCE IMAGING APPARATUS

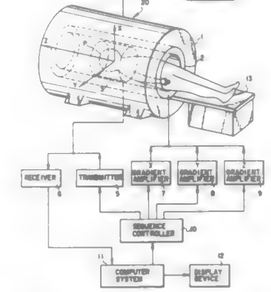
Yoshio Machida, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 31, 1992, Ser. No. 938,834

Claims priority, application Japan, Sep. 3, 1991, 3-222883

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—309 **12 Claims**



1. A magnetic resonance imaging apparatus adapted for a spin-echo method using a selective excitation pulse and a refocus pulse as radio-frequency pulses comprising:

sequence control means for carrying out a spin-echo pulse sequence while changing the phases of the RF pulses with each encoding step so that the phase difference between the selective excitation pulse and the refocus pulse is changed in increments of a fixed angle with each encoding step; and

means for reconstructing an MR image on the basis of signals acquired in accordance with the spin-echo pulse sequence carried out by said sequence control means,

whereby a phase difference between an echo signal induced by the selective excitation pulse and an FID (free induction decay) signal induced by the refocus pulse is changed in increments of said fixed angle with each encoding step, and an artifact based on the FID signal is produced in a position corresponding to said phase difference with respect to an image based on the echo signal.

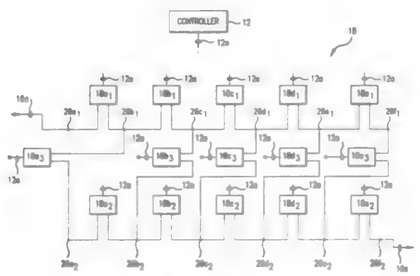
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,937

MAGNETIC FIELD GRADIENT COIL AND ASSEMBLY

Timothy L. Peck, 402 Sunrise Dr., Urbana, Ill. 61801, and Pratik Ghosh, 1755 Paloma St., Pasadena, Calif. 91104

Filed Oct. 27, 1992, Ser. No. 966,885
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 21 Claims



1. A magnetic field gradient coil for use in imaging techniques requiring a magnetic field gradient, said magnetic field gradient coil comprising,

at least one strip having a plurality of N conductors wherein each conductor is arranged in a substantially spatially parallel relationship with respect to the other conductors for generating a magnetic field gradient for imaging; and

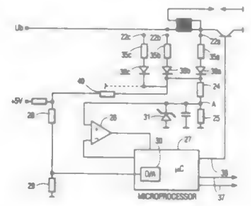
switching means for electrically coupling an M number of conductors in parallel in response to a control signal.

5,334,938

METHOD OF MONITORING AN INTERNAL COMBUSTION ENGINE IGNITION SYSTEM BY MEASURING SPARK DURATION OR VOLTAGE AND DISTINCTION BETWEEN ISOLATED ERRORS AND RECURRENT ERRORS

Karl-Heinz Kugler, Vaihingen; Arnd-Matthias Langner, Kornwestheim; Karlheinz Riedel, Vaihingen/Enz-Guendelbach; Richard Schleupen, Grossingersheim, and Christian Zimmermann, Ingersheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 749,297, Aug. 23, 1991, abandoned.
This application Dec. 21, 1992, Ser. No. 994,453
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1990, 4026919; May 22, 1991, 4116642
Int. Cl.[5] F02P *17/00, 11/02*
U.S. Cl. 324—399 13 Claims



1. A method of monitoring an ignition system of an internal combustion engine comprising the steps of:

continually, contemporarily measuring engine operating parameters including engine speed and engine load, and deriving from combinations of said contemporarily measured parameters an indication of one condition of engine operation, within a range of several ranges of engine operation conditions;

measuring, for a sequence of successive ignition sparks, in at least one cylinder the spark voltage, by sensing said spark voltage induced in a primary winding of an ignition coil;

comparing, for an ignition spark of said sequence, the measured spark voltage with a previously stored limit value of spark duration and with a previously stored limit value of spark voltage and in each case thereby providing a designation of adequacy or deficiency, of the measured spark voltage of said successive sparks in terms of spark voltage induced in said primary winding of said ignition coil;

determining from at least one designation of deficiency among said designations of adequacy or deficiency whether a signal malfunction recognition or a statistical recognition of malfunction from said sequence of ignition events is preferable, based on the condition of engine operation within the range;

in the event of preference of a statistical recognition of malfunction, performing the following steps:

in response to every ignition spark of said sequence for which a said deficiency is designated, incrementing a malfunction counter (FZ), by a predetermining first count value (B);

in response to every ignition spark of said sequence for which no said deficiency is designated, decrementing said malfunction counter by a predetermined second count value, said second count value (A) being smaller than said first count value; and

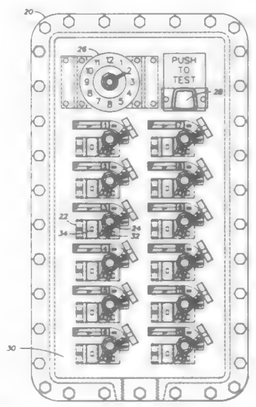
as soon as the count value of said malfunction counter exceeds a predetermined third count value which is at least twice as great as said first count value, producing at least a malfunction signal for the attention of a person using said internal combustion engine.

5,334,939

GROUND FAULT CIRCUIT BREAKER TEST CIRCUIT FOR PANELBOARDS HAVING MINIMUM PENETRATIONS AND TESTING CIRCUIT BREAKERS WITHOUT OPENING PANELBOARD ENCLOSURE

Garrett S. Yarbrough, Manlius, N.Y., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 13, 1992, Ser. No. 975,858
Int. Cl.[5] H02B *1/04*
U.S. Cl. 324—424 19 Claims



1. A ground fault circuit interrupter ("GFCI") circuit breaker test circuit for panelboards, comprising:

a panelboard enclosure;

a plurality of GFCI circuit breakers, n, disposed within said panelboard enclosure, wherein each of the GFCI circuit breakers includes a corresponding load output terminal;

a plurality of test terminals, n, each of which is electrically connected to one of said corresponding load output terminals;

a circuit for testing each of said plurality of GFCI circuit breakers, said circuit for testing including a test load selectively connected to one of said test terminals by a selector switch; and

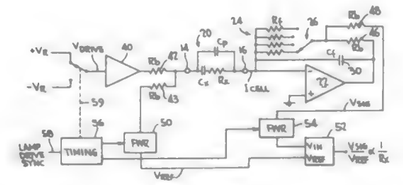
said circuit for testing further including no more than two test actuators located externally to said panelboard enclosure enabling each of said plurality of GFCI circuit breakers to be tested without opening said panelboard enclosure.

5,334,940

METHODS AND CIRCUITS FOR MEASURING THE CONDUCTIVITY OF SOLUTIONS

Frederick K. Blades, Boulder, Colo., assignor to Anatel Corporation, Boulder, Colo.

Division of Ser. No. 913,822, Jul. 14, 1992, Pat. No. 5,260,663.
This application Apr. 16, 1993, Ser. No. 46,953
Int. Cl.[5] G01N *27/06*
U.S. Cl. 324—442 32 Claims



1. A method for measuring the resistivity of a solution confined between two electrodes in a cell such that a series resistivity R_x and a series capacitance C_x are exhibited between the electrodes, comprising the steps of:

applying a bipolar square wave drive signal V_{drive} to one electrode of said cell;

connecting the other electrode of said cell to an inverting input of an op-amp;

grounding a non-inverting input of the op-amp;

connecting an integrating capacitor C_f between the inverting input and the output of the op-amp, such that C_f is charged at a rate proportional to the conductivity of the solution in said cell;

measuring the rate of charge of C_f; and

determining the resistivity R_x of the solution in said cell responsive tot he rate of charge of C_f.

5,334,941

MICROWAVE REFLECTION RESONATOR SENSORS

Ray J. King, Pleasanton, Calif., assignor to KDC Technology Corp., Livermore, Calif.

Filed Sep. 14, 1992, Ser. No. 944,526
Int. Cl.[5] H01P *3/08*
U.S. Cl. 324—637 29 Claims

1. A microwave reflection sensor for measuring the in situ dielectric and conductive properties of a material, comprising:

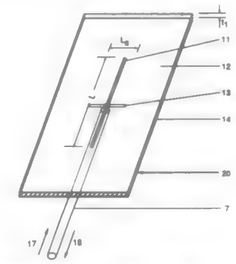
a metal ground plane;

a dielectric substrate mounted on one surface (front) of the ground plane;

a highly conducting microwave resonator formed on the opposed surface of the substrate opposite the ground plane;

an electrically short feed slot formed in the ground plane and inductively coupled to the resonator;

an electrical feed means operatively connected to the slot for coupling microwave power to and receiving microwave power reflected from the slot, said feed means having an



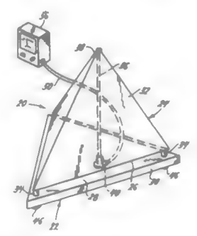
input coupling factor r_o in the range $0.5<r_o<2.0$ at the resonant frequency of the resonator.

5,334,942

METHOD OF, AND DEVICE FOR USE IN MONITORING LEAF WETNESS BY CONDUCTIVITY/RESISTIVITY MESUREMENT

Mark M. Hulse, Fayette, and W. Hal Shaffer, Jr., Columbia, both of Mo., assignors to The Curators of the University of Missouri of Columbia, Missouri, Columbia, Mo.

Filed Dec. 2, 1992, Ser. No. 984,339
Int. Cl.[5] G01R *27/02;* G01N *27/04*
U.S. Cl. 324—694 6 Claims



1. A device for providing a signal emulating the wetness of plant leaves, the device comprising: a first generally horizontal surface; a second, generally upwardly facing sloped surface having an edge spaced above the first surface by a gap, so that drops of moisture can accumulate on the second surface, and run off the edge, bridging the gap; and first and second leads extending from the first and second surfaces, respectively, to measure the conductivity/resistivity across the gap.

5,334,943

LINEAR ACCELERATOR OPERABLE IN TE 11N MODE

Kenji Sawada, Ehime, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,641
Claims priority, application Japan, May 20, 1991, 3-142768; Jul. 1, 1991, 3-185763
Int. Cl.[5] H01J *23/00*
U.S. Cl. 328—233 6 Claims

6. A linear accelerator for use in linearly accelerating a beam of charged particles along a beam axis by generating a quadrupole electric field in a cavity resonator along said beam axis, said linear accelerator comprising:

a conductor cylinder which surrounds a hollow space and which has a cylinder axis parallel to said beam axis and a pair of ends having apertures positioned on said beam axis;

fist through fourth conductive vanes azimuthally located

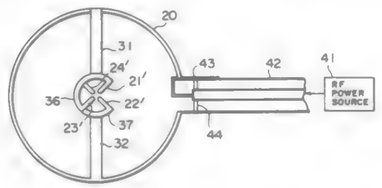
VOL 1165 ISS 1 AG 2 1994 UMI

clockwise around said beam axis with an azimuthal interval of a right angle left between two adjacent ones of said conductive vanes so that said first and said third conductive vanes are opposed to each other with said beam axis interposed therebetween while said second and said fourth conductive vanes are also opposed to each other with said beam axis interposed therebetween, said first through said fourth conductive vanes being extended between said ends of the conductive cylinder with a space gap left among said first through said fourth conductive vanes; and

exciting means connected to said cavity resonator for exciting said first through said fourth conductive vanes by a predetermined mode TE_{11N} to induce said quadrupole electric field within said space gap where N is an integer greater than zero;

said exciting means comprising:

a preselected number of conductive plate sets each of



which is composed of first and second conductive plates extended within said hollow space from said conductive cylinder towards said beam axis and opposed to each other, said preselected number being equal to (N+1), said first conductive plates of each set being aligned with one another along said beam axis while said second conductive plates are also aligned with one another;

first intermediate conductive means for connecting said first and said third conductive vanes to the first conductive plate of a predetermined one of the sets and for connecting said second and said fourth conductive vanes to the first conductive plate of an adjacent set to said predetermined one of the sets; and

second intermediate conductive mans for connecting said second and said fourth conductive vanes to the second conductive plate of said predetermined one of the sets and for connecting said first and said third conductive vanes to the first conductive plate of said adjacent set to said predetermined one of the sets.

5,334,944

DIFFERENTIAL AMPLIFIER CIRCUIT FOR ENHANCING SMALL VOLTAGE SIGNALS

Noriyuki Hirakata, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 899,526, Jun. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 709,885, Jun. 4, 1991, abandoned. This application Dec. 17, 1993, Ser. No. 168,399

Claims priority, application Japan, Jun. 4, 1990, 2-145827

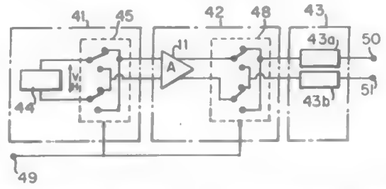
Int. Cl.[5] H03F *15/00, 1/02*

U.S. Cl. 330—6 **6 Claims**

1. A sensor circuit comprising:

a magnetism sensor having a Hall element;

a single differential amplifier circuit connected to said magnetism sensor for eliminating voltage drops occurring in a resistance component of the Hall element, for amplifying a signal generated by said magnetism sensor, and for generating an output signal corresponding to said amplification of said magnetism sensor output; and



filter means for removing an AC component from said differential amplifier circuit output signal.

5,334,945

POWER CONTROL CIRCUIT

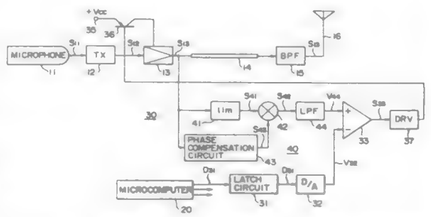
Satoshi Yokoya, and Nobutaka Takao, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,238

Claims priority, application Japan, Mar. 11, 1992, 4-087800

Int. Cl.[5] H03G *3/20*

U.S. Cl. 330—129 **2 Claims**



1. A power control circuit for use in a mobile station of a mobile phone system, comprising:

a power amplifier for amplifying a power of a transmission signal to obtain an output signal;

control circuit means for controlling a level of the output signal output by said power amplifier;

a limiter for partially limiting an amplitude of the output signal from said power amplifier in order to obtain a limited signal;

a multiplication circuit for multiplying the limited signal from said limiter and part of the output signal from said power amplifier in order to acquire a multiplied signal;

a low-pass filter for extracting a direct current component of the multiplied signal from said multiplication circuit; and

a comparison circuit for comparing the direct current component from said low-pass filter with a reference voltage designated by a base station of said mobile phone system in order to obtain a comparison output;

wherein the comparison output from said comparison circuit is supplied to said control circuit means; and

wherein said control circuit means controls the level of the output signal from said power amplifier so that the direct current component from said low-pass filter will become equal to said reference voltage.

5,334,946

APPARATUS AND METHOD FOR REDUCING DISTORTION IN AMPLIFICATION

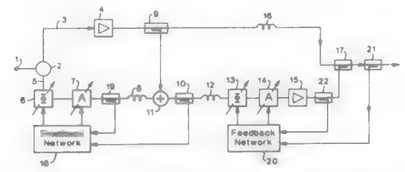
Peter B. Kenington; Mark A. Beach, both of Bristol; Andrew Bateman, Bath, and Joseph P. McGeehan, Corsham, all of England, assignors to British Technology Group Limited, London, England

Continuation-in-part of Ser. No. 689,346, Apr. 24, 1991, Pat. No. 5,157,345. This application Aug. 14, 1992, Ser. No. 931,132

Claims priority, application United Kingdom, Apr. 25, 1990, 9009295; Apr. 25, 1991, 9108920; May 5, 1992, 9209720

Int. Cl.[5] H03F *1/26*

U.S. Cl. 330—144 **39 Claims**



33. A method of reducing the distortion produced by an amplifier circuit comprising the steps of

deriving an error signal dependent on the output signals of the amplifier circuit and inputs signals supplied to the amplifier from which it is required to provide undistorted output signals,

cancelling the distortion produced by the amplifier circuit using the error signal, to provide a corrected signal,

automatically making separate amplitude adjustments and phase adjustments of at least one of: the error signals, a signal used in generating the error signal and a signal used in providing the corrected signal, in response to respective simultaneously derived first and second control signals to give substantially improved cancellation of the said distortion, and

generating each of the first and second control signals from at least two signals, one of which depends on one of the said input signals, and signals derived therefrom, and the other of which depends on the said error signal.

5,334,947

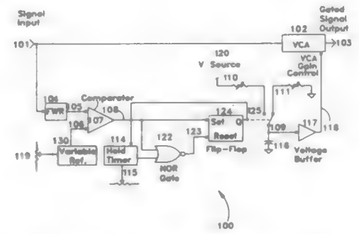
LOGIC ENHANCED NOISE GATE

Donn Werrbach, Burbank, Calif., assignor to Aphex Systems, Ltd., Sun Valley, Calif.

Filed Jul. 6, 1993, Ser. No. 85,728

Int. Cl.[5] H03G *3/32*

U.S. Cl. 330—149 **25 Claims**



24. A method for enhancing the performance of a noise gate which includes a voltage controlled amplifier (VCA) coupled to an input signal and having an output signal, where the amplitude of the output signal is controlled by the VCA, the method comprising the steps of:

a. detecting whether a triggering signal is above a threshold level;

b. setting a bistable logical element to a first logic state whenever said triggering signal rises above said threshold level;

c. starting a hold time period whenever said bistable logical element becomes set to said first logical state;

d. setting said bistable logical element to a second logical state when said hold time period has expired and said triggering signal is below said threshold level; and

e. causing said VCA to go to a higher gain when said bistable logical element resides in said first logical state, or a lower gain when said bistable logical element resides said in second logical state;

f. whereby said noise gate is gated on when said VCA has a higher gain, and off when said VCA has a lower gain, and can respond to triggering signals arising above said threshold level for a very short period of time, because said bistable logical element sustains an attack period from the instant said triggering signal goes above said threshold level until both said hold time period expires and said triggering signal falls below said threshold level.

5,334,948

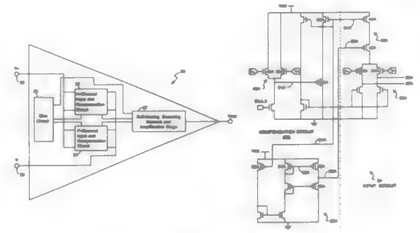
CMOS OPERATIONAL AMPLIFIER WITH IMPROVED RAIL-TO-RAIL PERFORMANCE

Edison Fong, Sunnyvale, and Nghiem Nguyen, Mountain View, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 17, 1993, Ser. No. 18,093

Int. Cl.[5] H03F *3/18*

U.S. Cl. 330—253 **14 Claims**



1. An operational amplifier comprising:

a V+ input node and a V−input node;

a differential input circuit, coupled to said V+ and V−input nodes, said differential input circuit including a pair of transistors, each of said pair of transistors having a gate coupled to a different one of said V+ and V−input nodes, and a current source, coupled to said pair of transistors, said current source supplying a controllable current to said pair of transistors; and

a voltage tracking circuit coupled to said current source and said V+ and V−input nodes, said voltage tracking circuit generating a tracking voltage that corresponds to the one of said V+ and V−signals having a lower voltage and modulating said controllable current supplied by said current source in accordance with said tracking voltage so as to maintain said pair of transistors in a saturated, high gain state.

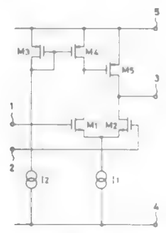
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,949

DIFFERENTIAL AMPLIFIERS

Kazuya Sone, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 23, 1993, Ser. No. 21,301
Claims priority, application Japan, Feb. 27, 1992, 4-041537; Mar. 4, 1992, 4-046476
Int. Cl.[5] H03F 3/45
U.S. Cl. 330—253 14 Claims



1. A differential amplifier comprising

a first constant-current source one end of which is connected to a first power supply terminal,

a current-mirror circuit having a first and a second transistors each of which has three electrodes, wherein in the first transistor the first electrode is connected to a second power supply terminal, the second electrode is connected to the third electrode, and the connection point common to the second and the third electrode is connected to the other end of the first constant-current source, and wherein in the second transistor the first electrode is connected to the second power supply terminal and the third electrode is connected to the common connection point,

a second constant-current source one end of which is connected to the first power supply terminal,

a pair of differential transistors consisting of a third transistor and a fourth transistor each of which has three electrodes, wherein in the third transistor the second electrode is connected to the second electrode of the second transistor and the third electrode is connected to a first signal input terminal, and wherein in the fourth transistor the first electrode is connected to the first electrode of the third transistor, the connection point common thereto is connected to the other end of the second constant-current source, and the third electrode is connected to a second signal input terminal, and

a fifth transistor having three electrodes wherein the first electrode is connected to the second power supply terminal, the second electrode is connected to the second electrode of the fourth transistor, the connection point common thereto is connected to a signal output terminal, and the third electrode is connected to the second electrode of the second transistor.

5,334,950

CLASS-AB PUSH-PULL DRIVE CIRCUIT

Masao Arimoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,537
Claims priority, application Japan, Mar. 13, 1992, 4-055121
Int. Cl.[5] H03F 3/18
U.S. Cl. 330—264 8 Claims

1. A class-AB push-pull circuit comprising:

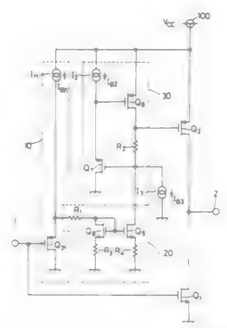
first and second power supply terminals for supplying first and second power supply potentials, respectively;

input and output terminals for receiving an input signal voltage and outputting an output signal, respectively;

a first transistor having a polarity, a first electrode connected to said output terminal, a second electrode connected to said first power supply terminal, and a control electrode directly connected to said input terminal for receiving the input signal voltage, conduction of said first transistor being controlled in accordance with a potential difference between said control and second electrodes of said first transistor;

a second transistor having a polarity opposite to the polarity of said first transistor, a first electrode connected to said output terminal, a second electrode connected to said second power supply terminal, and a control electrode, conduction of said second transistor being controlled in accordance with a potential difference between said control and second electrodes of said second transistor;

a voltage-to-current converter having an output terminal



and coupled to said input terminal for generating a current in response to the input signal voltage;

an inverting amplifier connected between said output terminal of said voltage-to-current converter and said control electrode of said second transistor for converting the current generated by said voltage-to-current converter into an inverted voltage opposite in polarity to the current and applying the inverted voltage to said control electrode of said second transistor; and

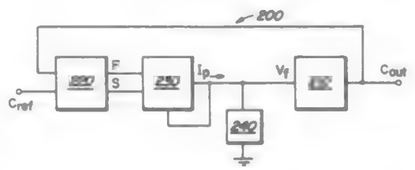
a buffer circuit connected between said input terminal and said voltage-to-current converter for buffering the input signal voltage and supplying a buffered input signal voltage to said voltage-to-current converter.

5,334,951

PHASE LOCK LOOPS AND METHODS FOR THEIR OPERATION

John G. Hogeboom, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 18, 1993, Ser. No. 19,583
Int. Cl.[5] H03L 7/00
U.S. Cl. 331—1 A 25 Claims



1. A phase lock loop, comprising:

a voltage controlled oscillator for generating an output signal having a frequency which is responsive to a control voltage;

a phase detector responsive to the output signal and to a reference signal to generate a control signal indicative of a phase difference of the output signal and the reference signal; and

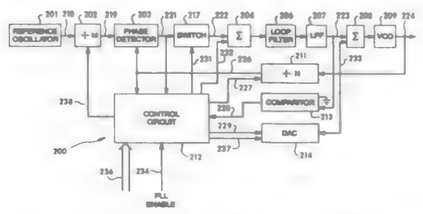
a loop filter comprising a charge pump and a filter network, the charge pump being responsive to the control signal and to the control voltage to apply a charge indicative of both the phase difference and the control voltage to the filter network to develop the control voltage.

5,334,952

FAST SETTLING PHASE LOCKED LOOP

Steven L. Maddy, and Graeme S. Paterson, both of Boulder, Colo., assignors to SpectraLink Corporation, Boulder, Colo.

Filed Mar. 29, 1993, Ser. No. 38,147
Int. Cl.[5] H03L 7/08, 7/085, 7/10, 7/16
U.S. Cl. 331—1 A 10 Claims



1. A phase locked loop comprising:

a voltage controlled oscillator (VCO) having a control input for receiving a drive voltage and an output, wherein the VCO produces a signal on the output having a frequency that is determined by the drive voltage;

a filter having an input and an output, wherein the filter output is coupled to the VCO control input;

a digital to analog converter (DAC) having an analog output continually coupled to the VCO control input and having a digital input for receiving a digital code and a control input for receiving control signals;

a phase detector having first and second inputs for receiving signals and an output, wherein the phase detector generates an error signal on the output that is determined by any phase offset between the signals on the first and second inputs

a switch having an output coupled to the input of the filter, an input coupled to the output of the phase detector, and a control input, for controllably coupling and decoupling the error signal on the phase detector output to the input of the filter in response to a signal on the control input;

a feedback circuit coupled from the VCO output to the second input of the phase detector for providing a feedback signal to the second input of the phase detector;

a reference signal means having a reset input and an output coupled to the first input of the phase detector for providing a reference signal to the first input of the phase detector; and

a control circuit having a first control output coupled to the control input of the switch, a second control output coupled to the control input of the DAC, a digital data output coupled to the digital data input of the DACs, a first input to the control circuit coupled to the feedback circuit, the first input for receiving the feedback signal from the feedback circuit, wherein the control circuit serves to open the switch before causing the DAC to change output voltage and wherein the control circuit provides a reset output signal to the reset input of the reference signal generator to synchronize the feedback signal with the reference signal; and

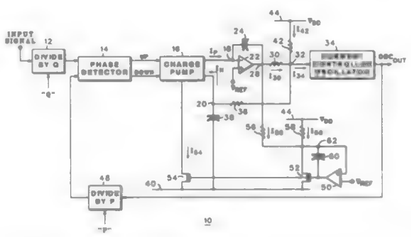
means for generating an analog error cancelling signal having an input coupled to the phase detector output and an output coupled to the input of the loop filter, wherein the analog error cancelling signal cancels at least a portion of the error signal on the phase detector output.

5,334,953

CHARGE PUMP BIAS CONTROL IN A PHASE LOCK LOOP

Dejan Mijuskovic, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 22, 1993, Ser. No. 94,738
Int. Cl.[5] H03L 7/089, 7/093, 7/10, 7/18
U.S. Cl. 331—8 3 Claims



1. A circuit, comprising:

a charge pump having first and second inputs, first and second outputs and a bias control input, said first and second inputs being coupled for receiving first and second control pulses, said first and second outputs being coupled for providing first and second control currents;

a first amplifier having first and second inputs and an output, said first input being coupled to said first output of said charge pump, said second input being coupled for receiving a reference voltage;

a first capacitor coupled between said input of said first amplifier and said first input of said first amplifier;

a first resistor coupled between said output of said first amplifier and a first node for providing a first summation current;

a second resistor coupled between a first power supply conductor and said first node for providing said first summation current;

a current controlled oscillator (ICO) having an input coupled for receiving said first summation control current from said first node for setting frequency of operation of an oscillator signal;

a second amplifier having first and second inputs and an output, said first input being coupled for receiving said reference voltage;

a second capacitor coupled between said output of said second amplifier and said second input of said second amplifier at a second node;

a third resistor coupled between said second node and said first power supply conductor;

a fourth resistor coupled between said second node and said output of said first amplifier;

a first transistor having a gate, a drain and a source, said gate being coupled to said output of said second amplifier, said source being coupled to a second power supply conductor, said drain being coupled to said second node; and

a second transistor having a gate, a drain and a source, said gate being coupled to said output of said second amplifier, said source being coupled to said second power supply conductor, said drain being coupled to said bias control input of said charge pump.

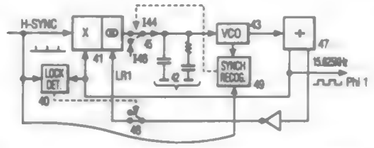
VOL 1165 ISS 1 AG 2 1994 UMI

5,334,954

PHASE LOCKED LOOP CIRCUIT

Rudolf Koblitz, and Kuno Lenz, both of Meylan, Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 980,946
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1990, 4013494
Int. Cl.[5] H03L 7/107; H04N 5/04
U.S. Cl. 331—20 7 Claims



1. A phase control circuit for controlling the phase of the periodic component of an output signal with respect to the periodic component of an input signal, comprising:

first means for providing a control signal to means for regulating said phase of said output signal, said control signal having a first value for phase relationships of said periodic component of said output signal with respect to said periodic component of said input signal in a predetermined range of values, and a second valve for phase relationships of said periodic component of said output signal to said periodic component of said input signal outside of said range of values;

a phase lock detector for detecting if the state of said respective phase relationship of said input and output signals is locked;

a signal source for providing a third signal having a periodic component having the same frequency as said components of said input and output signals and having a pulse width substantially wider than a pulse width of said input signal; and

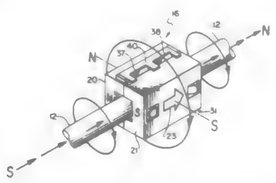
switch means actuated by said phase lock detector and responsive to said signal source for applying said third signal to said first means when said input and output signals are unlocked, whereby said control signal has said first value when said input and output signals are phase locked and said second value when said input and third signal pulse widths do not overlap.

5,334,955

CABLE SIGNAL INTERFERENCE SUPPRESSOR

Edward F. Strnad, 1118A Vincent St., Redondo Beach, Calif. 90277

Filed Mar. 1, 1993, Ser. No. 24,450
Int. Cl.[5] H03H 7/01
U.S. Cl. 333—12 3 Claims



3. An improved interference filter comprising:

an electrical cable having an assumed directional signal flow;

a filter detachably carried on said electrical cable having a core of weakly pre-magnetized ferrite material of given polarity enclosed in a housing having an exterior surface;

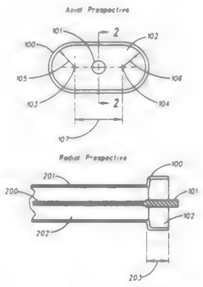
a visual marking carried on said housing exterior for properly orienting the magnetic polarity of said ferrite material; and said cable and filter are in harmonizing polarity orientation so that said filter absorbs signal interference accompanying said cable signal flow.

5,334,956

COAXIAL CABLE HAVING AN IMPEDANCE MATCHED TERMINATING END

Lisa M. Leding, Palatine, and John M. Tischer, Streamwood, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1992, Ser. No. 860,481
Int. Cl.[5] H01P 3/06
U.S. Cl. 333—33 6 Claims



6. An improved coaxial cable that includes a first inner conductor, a substantially circular first dielectric material having a first dielectric constant, and a substantially circular first outer conductor, wherein the circular first dielectric material encircles the first inner conductor and wherein the circular first outer conductor encircles the circular first dielectric material and the first inner conductor, wherein the improvement comprises:

a second inner conductor having a diameter larger than a diameter of the first inner conductor and is physically and electrically coupled to the first inner conductor;

a second dielectric material that has a second dielectric constant, wherein the second dielectric material substantially surrounds the second inner conductor, wherein the second dielectric material has a geometric shape of an elongated circle characterized by a first semi-circle connected to a second semi-circle by a first pair of substantially parallel lines, wherein the first semi-circle is defined by a first radius and a first center point, wherein the second semi-circle is defined by a second radius and a second center point, wherein the first center point and the second point are separated by a distance and are substantially collinear, and wherein the first dielectric constant is greater than the second dielectric constant; and

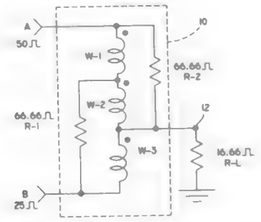
a second outer conductor that is physically and electrically coupled to the first outer conductor, wherein the second outer conductor surrounds the second dielectric material and the second inner conductor, wherein the second outer conductor has a geometric shape of an elongated circle characterized by a third semi-circle connected to a fourth semi-circle by a second pair of substantially parallel lines, and wherein the geometric shape of the second outer conductor is substantially identical to the geometric shape of the second dielectric material.

5,334,957

RF HIGH POWER, TWO AND THREE WAY IN PHASE COMBINER AND METHOD

Floyd A. Koontz, Holcomb, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 9, 1992, Ser. No. 973,650
Int. Cl.[5] H03H 7/38
U.S. Cl. 333—131 40 Claims



9. An isolated input, two unequal port in-phase RF power combiner having a bandwidth of at least two octaves and the capacity for handling at least 5 kw of power comprising:

first and second input terminals of significantly different impedance;

a transformer winding connected across said input terminals, said winding being tapped to provide first, second and third tightly coupled windings of equal turns;

first and second equal value resistors connected respectively across a first and a second pair of said three windings; and,

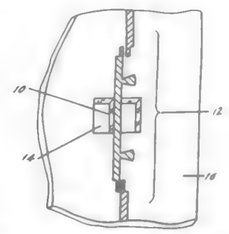
a load connected to the interconnection of two of said three windings.

5,334,958

MICROWAVE FERROELECTRIC PHASE SHIFTERS AND METHODS FOR FABRICATING THE SAME

Richard W. Babbitt, Fairhaven; Thomas E. Koscica, Clark, and William C. Drach, Trenton, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 6, 1993, Ser. No. 89,065
Int. Cl.[5] H01P 1/18
U.S. Cl. 333—156 11 Claims



1. A ferroelectric phase shifter comprising:

an elongated slab of ferroelectric material having a high dielectric constant which can be varied by applying an electric field to such material, said slab having a length, a width, and a thickness, and first and second major surfaces which are opposed to each other through said thickness of the slab;

a signal conductor formed extending across said major surface in said width direction and formed by a metallized portion of said ferroelectric material on said first major surface;

a ground plane conductor formed on a portion of said second major surface of said slab and opposite said signal conductor;

said signal conductor being narrow in said length direction and narrower than said length of said elongated slab, such that said conductor, said ground plane, and the interposed ferroelectric material form a microstripline; and

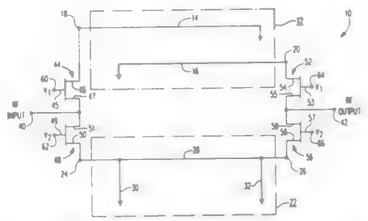
input and output circuit means, said ferroelectric phase shifter being interposed between said input and output circuit means and thereby forming an RF phase shifting circuit of which the ferroelectric phase shifter forms an active element, wherein said input and output circuit means are formed on a common substrate, and said elongated ferroelectric material slab is inserted into a slot formed in said common substrate with said signal conductor on said ferroelectric slab being conductively connected to said input and output circuit means.

5,334,959

180 DEGREE PHASE SHIFTER BIT

David M. Krafcsik, Glen Burnie, and David W. Chan, Beltsville, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1993, Ser. No. 46,323
Int. Cl.[5] H01P 1/18
U.S. Cl. 333—164 9 Claims



1. A 180° phase shifter bit operable independently of input signal frequency over a predetermined bandwidth of interest to produce a 180° phase shifted RF output signal, comprising:

(a) an RF input terminal;

(b) an RF output terminal;

(c) a coupled transmission line segment of two coupled lines having a coupling of less than −3 db and having a characteristic impedance of less than 50 ohms with opposed ends of each line of the coupled line segment being connected respectively to the RF input terminal and the RF output terminal with the other end of each line being grounded;

(d) a pi network transmission line segment having a central line portion having opposed ends from which extend grounded line portions, and the opposed ends of the central line portion are respectively connected to the RF input terminal and the RF output terminal;

(e) a first input FET having a gate, a source and a drain, the first input FET connecting the RF input terminal to the coupled line segment, the gate of the first input FET being connected to a bias port, one of the drain and the source of the first input FET being connected to the RF input terminal, and the other of the drain and the source of the first input FET being connected to the coupled line segment;

(f) a second input FET having a gate, a source and a drain, the second input FET connecting the RF input terminal to the pi network segment, the gate of the second input FET being connected to a bias port, one of the drain and the source of the second input FET being connected to the RF input terminal, and the other of the drain and the source of the second input FET being connected to the pi network segment;

(g) a first output FET having a gate, a source and a drain, the first output FET connecting the RF output terminal to the

VOL 1165 ISS 1 AG 2 1994 UMI

coupled line segment, the gate of the first output FET being connected to a bias port, one of the drain and the source of the first output FET being connected to the RF output terminal, and the other of the drain and the source of the first output FET being connected to the coupled line segment; and

(h) a second output FET having a gate, a source and a drain, the second output FET connecting the RF output terminal to the pi network segment, the gate of the second output FET being connected to a bias port, one of the drain and the source of the second output FET being connected to the RF output terminal, and the other of the drain and the source of the second output FET being connected to the pi network segment;

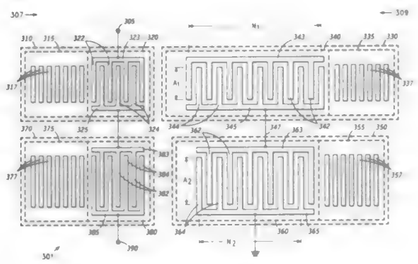
wherein the input FETs and the output FETS have a capacitance such that a portion of the RF input signal will travel through one of the pi network segment and the coupled line segment when the RF input signal is switched through the other of the pi network segment and the coupled line segment.

5,334,960

CONJUGATELY MATCHED ACOUSTIC WAVE TRANSDUCERS AND METHOD

David Penunuri, Fountain Hills, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 16, 1993, Ser. No. 17,891
Int. Cl.[5] H03H *9/64*
U.S. Cl. 333—193 **17 Claims**



6. A filter including in combination:

a substrate for propagating acoustic waves;

a first electro-acoustic transducer disposed on said substrate, said first electro-acoustic transducer for generating first acoustic waves in response to a first electrical signal applied to said first electro-acoustic transducer;

a first inductive acoustic transducer disposed on said substrate, said first inductive acoustic transducer acoustically coupled to said first electro-acoustic transducer, said first inductive acoustic transducer having a first electrical admittance $Y_1=G_1+jX_1$, wherein G_1 is a first real conductance and X_1 is a first imaginary conductance, said first imaginary conductance X_1 having a negative value over at least a first frequency range, said first inductive acoustic transducer for generating a second electrical signal in response to said first acoustic waves;

a first capacitive acoustic transducer disposed on said substrate, said first capacitive acoustic transducer electrically coupled to said first inductive acoustic transducer, said first capacitive acoustic transducer having a second electrical admittance $Y_2=G_2+jX_2$, wherein G_2 is a second real conductance and X_2 is a second imaginary conductance, said second imaginary conductance X_2 having a positive value over at least said first frequency range, said first capacitive acoustic transducer for generating second acoustic waves in response to said second electrical signal;

a first acousto-electric transducer disposed on said substrate, said first acousto-electric transducer acoustically coupled to said first capacitive acoustic transducer, said first acousto-electric transducer for generating a third electrical signal in response to said second acoustic waves, said third electrical signal providing a filtered version of said first electrical signal;

wherein said first and second real conductances G_1 and G_2 are approximately equal over said first frequency range; and

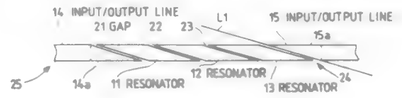
wherein magnitudes of said first and second imaginary conductances X_1 and X_2 are approximately equal over said first frequency range.

5,334,961

STRIP-LINE TYPE BANDPASS FILTER

Hirokazu Shirai, Kawasaki; Morikazu Sagawa, Tokyo, and Mitsuo Makimoto, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 6, 1992, Ser. No. 925,156
Claims priority, application Japan, Aug. 12, 1991, 3-201682; Dec. 25, 1991, 3-342628
Int. Cl.[5] H01P *1/203*
U.S. Cl. 333—204 **6 Claims**



1. A bandpass filter comprising:

an input strip line;

an output strip line; and

a plurality of resonators formed between said input and output strip lines and formed of a plurality of conductive strip lines, said plurality of resonators being spaced apart by gaps and being coupled across said gaps, and each conductive strip line of each resonator being formed substantially in a straight line and having a pair of edges, and first and second ends with inclined edges such that the width of the conductive strip line varies at said first and second ends where coupling across the gaps occur, and said pair of edges of each conductive strip line being parallel to the straight line.

5,334,962

HIGH-SPEED DATA SUPPLY PATHWAY SYSTEMS

Brian P. Higgins, Boise, Id.; David W. Gardner; Kerry D. Rhea, both of Colorado Springs, Colo.; Thomas E. Linnenbrink, Monument, Colo.; Rebecca S. Reed, Colorado Springs, Colo., and Peter C. T. Roberts, Sudbury, Mass., assignors to Q-Dot Inc., Colorado Springs, Colo.

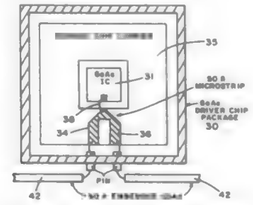
Continuation of Ser. No. 269,765, Nov. 10, 1988, abandoned, which is a continuation-in-part of Ser. No. 99,450, Sep. 18, 1987, abandoned. This application May 29, 1990, Ser. No. 530,461
Int. Cl.[5] H01P *5/00;* **H01L** *23/12*
U.S. Cl. 333—247 **7 Claims**

1. A very fast electrical data transmission pathway for connecting to at least one high speed integrated circuit comprising an integrated circuit chip carried by an integrated circuit package, said pathway comprising:

a plurality of differential transmission lines external to the integrated circuit package;

at least one continuous internal transmission line extending through said integrated circuit package;

means for connecting said integrated circuit chip to said internal transmission line; and



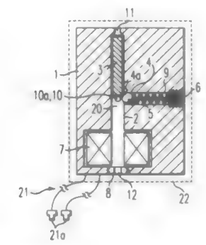
means for connecting said internal transmission line in electrical series with at least two of said plurality of differential transmission lines.

5,334,963

INERTIA AND INDUCTANCE SWITCHES

Francis C. Wessling, Huntsville, Ala., assignor to The University of Alabama in Huntsville, Huntsville, Ala.

Filed Oct. 22, 1992, Ser. No. 964,932
Int. Cl.[5] H01H *35/00;* **G01P** *15/00*
U.S. Cl. 335—2 **25 Claims**



1. A switch comprising:

a housing including a passageway therein;

a magnet mounted within and movable along said passageway;

a stopping pin for preventing possible movement of said magnet until removed; and

a coil mounted in said housing such that is comprises a spiral around at least a portion of said passageway;

wherein movement of said magnet along said passageway and into said coil causes conduction of a current thereby producing a signal pulse.

5,334,964

CURRENT LIMITING CHOKE COIL

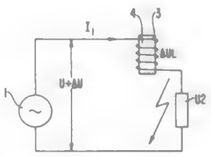
Heinz Voigt, Frankfurt am Main; Roland Fischer, Nidderau, and Rudolf Schneider, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP89/00983, § 371 Date Apr. 29, 1991, § 102(e) Date Apr. 29, 1991, PCT Pub. No. WO90/02407, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 22, 1989, Ser. No. 690,948
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1988, 3829207; Jan. 14, 1989, 3919465
Int. Cl.[5] H01F *1/00;* **H02H** *7/00;* **H01H** *47/00*
U.S. Cl. 505—211 **21 Claims**

1. A device comprising;

a single winding; and

a coil core arranged in said single winding, said coil core comprising superconductive components of metal oxide ceramic superconductive material and ferromagnetic components of ferromagnetic material, wherein if the amplitude of an alternating current applied to said single winding exceeds a threshold value at a system frequency,



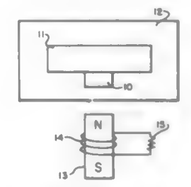
said single winding generates a threshold magnetic field which converts said superconductive components into non-superconductive components.

5,334,965

SUPERCONDUCTIVE MATERIAL AND MAGNETIC FIELD FOR DAMPING AND LEVITATION SUPPORT AND DAMPING OF CRYOGENIC INSTRUMENTS

Benjamin P. Dolgin, Northridge, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 15, 1993, Ser. No. 77,470
Int. Cl.[5] H01F *1/00;* **H01H** *47/00;* **H02B** *5/00*
U.S. Cl. 335—216 **5 Claims**



1. A system for levitation which depends upon the Meissner effect and for vibration damping of a cryogenic instrument inside a cold chamber comprising

superconductive material rigidly attached to or coated on said cryogenic instrument inside said cold chamber,

a magnetic flux source outside said cold chamber,

a vibration damping means attached to said magnetic flux source outside of said cold chamber, whereby said cryogenic instrument is levitated by force generated by Meissner-effect repulsion, and vibrational energy of said superconductive material rigidly attached to or coated on said cryogenic instrument is transferred to said magnetic flux source outside said cold chamber and there dampened by said vibration damping means.

5,334,966

MAGNETOSTATIC FIELD GENERATOR FOR MAGNETIC RESONANCE IMAGING APPARATUS

Hirotaka Takeshima, Ryugasaki, and Hiroyuki Takeuchi, Kashiwa, both of Japan, assignors to Hitachi Medical Corp., Tokyo, Japan

Filed Dec. 2, 1992, Ser. No. 984,333
Claims priority, application Japan, Dec. 5, 1991, 3-348410
Int. Cl.[5] H01F *7/02*
U.S. Cl. 335—306 **4 Claims**

1. A magnetostatic field generator for a magnetic resonance imaging apparatus comprising:

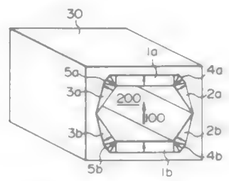
a pair of permanent magnets each having a rectangular parallelepiped shape arranged perpendicular to a direction

VOL 1165 ISS 1 AUG 2 1994 UMI

of a uniform magnetic field so as to surround a first space where said uniform magnetic field is generated;

a plurality of first permanent magnets each having a trigonal prism shape arranged on both sides of an area between said permanent magnets each having a rectangular parallelepiped shape;

a plurality of second permanent magnets each having a trigonal prism shape which are arranged between said permanent magnets each having a rectangular parallelepiped shape and said first permanent magnets and satisfy magnetic field boundary conditions including a magnetization direction of said second permanent magnets being determined so that (1) first perpendicular components of magnetic flux density in respective ones of said first permanent magnets and said second permanent magnets, which are perpendicular to a first boundary surface at which respective ones of said first permanent magnets and said second permanent magnets contact each other, are continuous at said first boundary surface, (2) first parallel components of a magnetic field in respective ones of said permanent magnets and said second permanent magnets



which are parallel to said first boundary surface, are continuous at said first boundary surface, (3) second perpendicular components of magnetic flux density in a second space between respective ones of said permanent magnets having a rectangular parallelepiped shape and said second permanent magnets which are perpendicular to a second boundary surface at which respective ones of said second permanent magnets face said second space, are continuous at said second boundary surface, and (4) second parallel components of a magnetic field in said second space and respective ones of said second permanent magnets which are parallel to said second boundary surface, are continuous at said second boundary surface; and

a yoke for holding said permanent magnets each having a rectangular parallelepiped shape, said plurality of first permanent magnets, and said plurality of second permanent magnets and forming a magnetic path, said yoke contacting said pair of permanent magnets each having a rectangular parallelepiped shape, said plurality of first permanent magnets, and said plurality of second permanent magnets.

5,334,967

VOLTAGE DIVIDER

George Paszkiewicz, Hinsdale, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Jun. 29, 1993, Ser. No. 84,889
Int. Cl.[5] H01C *10/06*
U.S. Cl. 338—95 20 Claims

1. A voltage divider, comprising:

a first non-conductive substrate having first and second opposite surfaces;

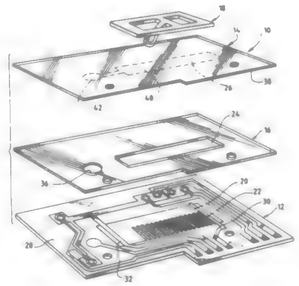
a second non-conductive flexible substrate having first and second opposite surfaces, said first surface of said second substrate facing, and being sealed to, said first surface of said first substrate;

non-conductive spacing means, having a slot defined therein, interposed between said first and second substrates for positioning at least a predetermined portion of said second substrate at a distance from said first substrate;

a longitudinally extending conductive strip, electrically connected to a desired circuit, disposed upon a portion of said first surface of said second substrate which corresponds to said predetermined portion of said second substrate which is spaced from said first substrate;

longitudinally extending voltage divider resistance means disposed upon a first portion of said first surface of said first substrate which is remote from said predetermined spaced portion of said second substrate upon which said longitudinally extending conductive strip is disposed; and

a plurality of conductive taps disposed upon a second portion of said first surface of said first substrate and extending laterally from said longitudinally extending voltage divider resistance means so as to be disposed in a longitudinally extending array with a predetermined distance being defined between successive ones of said plurality of conductive taps, said plurality of conductive taps being integrally connected to said longitudinally extending voltage divider resistance means and being positioned substantially beneath said predetermined spaced portion of said



second substrate upon which said longitudinally extending conductive strip is disposed such that a user can depress said predetermined spaced portion of said second substrate so as to establish electrical contact between a predetermined portion of said longitudinally extending conductive strip and at least one of said plurality of conductive taps, by causing said predetermined portion of said longitudinally extending conductive strip to be moved through said slot of said non-conductive spacing means, so as to complete said circuit and provide a desired voltage thereto whereby said user can selectively depress said predetermined spaced portion of said second substrate anywhere along its length where said longitudinally extending conductive strip is correspondingly positioned so as to provide selective contact of a predetermined portion of said longitudinally extending conductive strip with one or more of said successive ones of said plurality of conductive taps and thereby vary said voltage supplied to said circuit.

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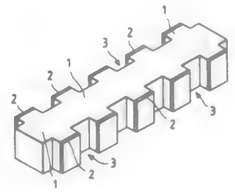
CHIP NETWORK-TYPE RESISTOR ARRAY

Masayuki Negoro, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 5, 1993, Ser. No. 14,346
Claims priority, application Japan, Mar. 2, 1992, 4-044527
Int. Cl.[5] H01C *1/01*
U.S. Cl. 338—320 4 Claims

1. A network-type resistor array comprising a resistory body, a plurality of resistors formed in adjacent relation in the resistor body, a plurality of electrodes mounted in spaced relation along a surface of the resistor body, and a plurality of

multifaceted notches in the surface of the resistor body interposed between adjacent electrodes, each of the multifaceted



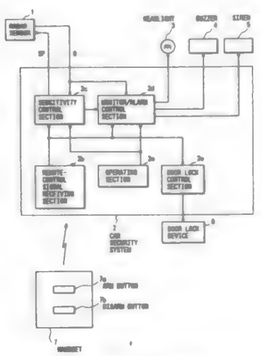
notches having at least two substantially planar surface portions extending at an angle to each other.

5,334,969

VEHICLE SECURITY SYSTEM WITH CONTROLLER PROXIMITY SENSOR

Koichi Abe, and Mitsuhiro Murata, both of Iwaki, Japan, assignors to Alpine Electronics, Inc., Tokyo, Japan

Filed Jun. 30, 1992, Ser. No. 907,767
Claims priority, application Japan, Jul. 10, 1991, 3-169700
Int. Cl.[5] B60R *25/10*
U.S. Cl. 340—426 17 Claims



1. A vehicle security system, comprising:

a proximity sensor having variable sensitivity to cover a corresponding monitored area and producing a detection signal upon detecting motion in the monitored area;

a sensitivity control circuit for varying the sensitivity of said proximity sensor;

a monitoring and alarming control circuit for monitoring and alarming control in response to an output from said proximity sensor;

an alarm device for performing one of a plurality of alarming operations under control of said monitoring and alarming control circuit;

said proximity sensor, said sensitivity control circuit, said monitoring and alarming control circuit and said alarm device being adapted for mounting on a vehicle;

wherein said sensitivity control circuit, upon operation of the system, automatically varies the sensitivity of said proximity sensor to set the sensitivity to a level under which level an environment of a monitored area corresponding to said set sensitivity level does not cause said proximity sensor to produce said detection signal; and

wherein said monitoring and alarming control circuit determines that an abnormal state has occurred and performs an alarming control operation to cause the alarm device to perform a predetermined alarming operation, upon a receipt of said detection signal from said proximity sensor after the setting of the sensitivity level;

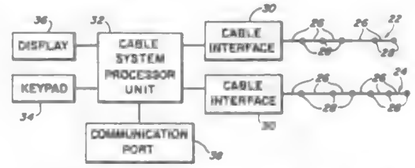
and wherein said sensitivity control circuit finds a maximum sensitivity level corresponding to a maximum monitored area an environment of which does not cause said proximity sensor to produce said detection signal, and sets the sensitivity of said proximity sensor to the maximum sensitivity level.

5,334,970

ALARM SYSTEM

Douglas S. Bailey, Deerfield, Ill., assignor to Midwesco, Inc., Niles, Ill.

Filed May 21, 1992, Ser. No. 887,023
Int. Cl.[5] G08B *29/00*
U.S. Cl. 340—506 12 Claims
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 29 Pages)



1. A leak detection system for detecting and locating leak and fault conditions in a monitored region shown on a display and for displaying leak and fault information, said system comprising:

a leak monitoring subsystem including leak detection cables containing at least one leak and fault condition responsive sensor section;

said leak monitoring subsystem including means for detecting the existence of a leak or fault by said leak detection cables and means for locating the leak or fault condition at a linear distance along the length of said leak detection cables;

said leak monitoring subsystem further including means for providing an informational message including a numerical representation of said linear distance;

a leak signal processing subsystem;

a communication link connected between said leak monitoring subsystem and said leak signal processing subsystem;

said communication link including means for communicating said leak or fault message from said leak monitoring subsystem to said leak signal processing subsystem; and

said leak signal processing subsystem including a graphical display device and means for repeating said leak or fault message upon said graphical display device;

said leak detection system being characterized by:

said leak signal processing subsystem including a stored representation of the monitored region in form capable of being displayed on said graphical display device;

means for displaying said stored representation on said graphical display device;

means for converting the representation of said linear distance into the physical location of the leak or fault condition in said stored representation; and

means for superimposing a leak or fault location indicator at said physical location upon said stored representation displayed on said graphical display device.

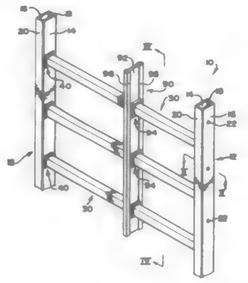
VOL 1165 ISS 1 AUG 2 1994 UMI

5,334,971

SECURITY DEVICE KIT, A SECURITY DEVICE AND A SECURITY INSTALLATION

Pieter L. Raath, Pretoria, South Africa, assignor to MODSEC Systems (Proprietary) Limited, Pretoria, South Africa

Filed Sep. 8, 1992, Ser. No. 941,543
Int. Cl.[5] G08B *13/22*; E06B *9/01*
U.S. Cl. 340—550 10 Claims



6. A security installation, which comprises

a security device comprising a pair of spaced hollow elongate primary security members extending generally in a first direction, each having a plurality of longitudinally spaced openings in a first side thereof; and a plurality of elongate secondary security members extending generally in a second direction which is orthogonal to the first direction, the secondary security members having ends located in said openings of the primary security members so that said ends are thereby held captive in the primary security members, the secondary security members thus spanning a space between the primary security members and being spaced apart from one another, each secondary security member comprising an outer elongate component which is hollow, an inner elongate component extending along an inside of the outer component and spaced therefrom, with the inner and outer elongate components being electrically conductive and electrically connected or connectable to an electrical current such that a potential difference can be provided between them and insulators electrically insulating the inner from the outer elongate components; and

an electrically operable burglar protection system operatively connected to the security device, the burglar protection system including an alarm, the inner elongate components being at a low electrical potential and the outer elongate components being at neutral voltage so that the security device is harmless under normal conditions, the inner elongate components being protected by the outer elongate components from outside interference so as to eliminate false alarms, and means for generating an alarm upon electrical bridging of the inner and outer elongate components.

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INFRARED INTRUDER-DETECTION SYSTEM

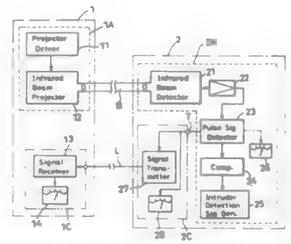
Tadashi Sugimoto, Otsu; Yoshihiro Imaro, Gamo; Shigeki Nishimura, Kurita, and Tatsuya Arimoto, Otsu, all of Japan, assignors to Optex Co., Ltd., Shiga, Japan

Continuation of Ser. No. 703,146, May 17, 1991, abandoned.
This application Mar. 22, 1993, Ser. No. 34,588
Claims priority, application Japan, Jul. 11, 1990, 2-184545; Nov. 26, 1990, 2-323479
Int. Cl.[5] G08B *13/18*
U.S. Cl. 340—556 1 Claim

1. An infrared intruder-detection system comprising:

a first and a second optical means each of which comprises a single infrared photo diode which selectively functions either as an infrared beam projector or as an infrared beam detector and said first and second optical means selectively function such that either said infrared photo diode of said first optical means projects and said infrared photo diode of said second optical means detects an infrared beam or said infrared photo diode of said second optical means projects and said infrared photo diode of said first optical means detects an infrared beam;

a first level indicator for providing an indication having a magnitude which reflects a magnitude of an output signal of said first optical means only while the infrared photo diode of the same is functioning as an infrared beam detector; and



a second level indicator for providing an indication having a magnitude which reflects a magnitude of an output signal of said second optical means only while the infrared photo diode of the same is functioning as an infrared beam detector;

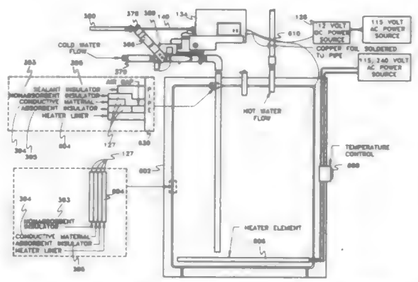
whereby said first and second optical means are individually and precisely aligned by directing said first optical means toward said second optical means while said first optical means functions to detect an infrared beam until the magnitude of the indication on said first level indicator is at a maximum, and directing said second optical means towards the first optical means while said second optical means functions to detect an infrared beam until the magnitude of the indication on said second level indicator is at a maximum.

5,334,973

LEAK DETECTION AND SHUT-OFF APPARATUS

Mark A. Furr, P.O. Box 1393, Derry, N.H. 03038

Filed Feb. 4, 1992, Ser. No. 830,937
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—605 9 Claims



1. A leak detection and shut-off apparatus for a liquid container comprising:

a three layer sensor comprising:

a first layer, non-absorbent and non-conductive in both wet and dry environments, said first layer furthest from said container, thereby keeping moisture from said sensor and preventing false alarms;

a second layer, contacting said container and substantially encompassing same, non-conductive when dry and conductive when in contact with moisture;

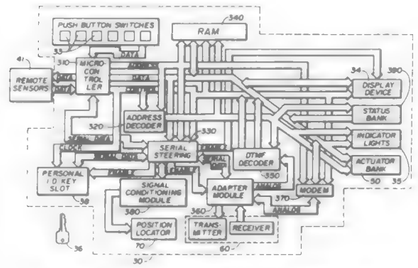
a third layer, sandwiched between said first and second layers, said third layer being conductive having a resistance ranging from 0 to 2 megohms, wherein a leak in said container will cause said sensor to produce a signal corresponding to said leak by completing an electrical circuit through said second and third layers.

5,334,974

PERSONAL SECURITY SYSTEM

James R. Simms, 9405 Elizabeth Ct., Fulton, Md. 20759; Charles G. Simms, 3310 Hall's Creek La., Owings, Md. 20736, and Daniel D. Moore, Jr., 108 Midhurst Rd., Baltimore, Md. 21212

Filed Feb. 6, 1992, Ser. No. 831,901
Int. Cl.[5] G08G *1/123*
U.S. Cl. 340—990 27 Claims



1. A method for safeguarding the personal security of a particular vehicle operator comprising the steps of:

storing vehicle identification information in a mobile security assembly which is to be conveyed in a vehicle;

storing personal information relating to a particular vehicle operator in a data entry device, said personal information including a personal identification as well as other information characteristic of said particular vehicle operator;

activating said mobile security assembly upon insertion of said data entry device into said mobile security assembly to capture said personal information therefrom;

determining a coordinate location of said vehicle;

combining said vehicle identification information, personal information, and coordinate location of said mobile unit in a formatted personal security message;

triggering said mobile unit upon an occurrence of a personal security condition to establish a communication link with a central dispatch station, and to transmit said personal security message;

receiving said personal security message at said central station and decoding the type of personal security condition, personal information and vehicle identification information, and coordinate location therefrom;

displaying a digitized map at said central station;

correlating said coordinate location of said vehicle to a corresponding point on said digitized map at said central station and indicating said point on said digitized map; and

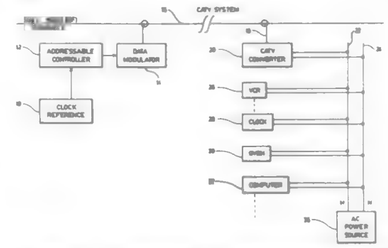
superposing the type of personal security condition and said personal and vehicle identification information on said digitized map.

5,334,975

RESIDENTIAL TIME REFERENCE SYSTEM

David E. Wachob, 8379 Glen Rd., Elkins Park, Pa. 19117, and Hal M. Krisbergh, 1538 Meadowbrook Rd., Rydal, Pa. 19046

Filed Jul. 16, 1991, Ser. No. 731,843
Int. Cl.[5] H04M *11/04*; G04C *11/00*
U.S. Cl. 340—825.21 22 Claims



1. A method for distributing the current time throughout a facility, said facility being connected by means of a converter to a broadcast video communication channel including a first time reference message having time reference data corresponding to the current time, and having at least one appliance connected to the AC power line wiring of said facility, said appliance having an internal clock including means for reading a second time reference message and setting the time of said clock in response to said second message, said method comprising:

receiving at said converter said first time reference message including time reference data corresponding to said current time from said broadcast video communication channel;

retransmitting from said converter said received time reference data corresponding to said current time as said second time reference message on said AC power line wiring of said facility;

receiving said second time reference message on said AC power line wiring at said appliance; and

setting said internal clock of said appliance responsive to said received second time reference message to said current time.

5,334,976

KEYBOARD WITH FINGER-ACTUABLE AND STYLUS-ACTUABLE KEYS

An Wang, Lincoln, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 290,220, Dec. 27, 1988, abandoned.
This application Jul. 11, 1990, Ser. No. 551,673
Int. Cl.[5] H03K *17/967*
U.S. Cl. 341—22 2 Claims

1. A keyboard having keys for actuation by an operator for communicating to a processor, said keyboard comprising:

a set of alphanumeric keys arranged in a QWERTY format for generating desired inputs to be transmitted to the processor;

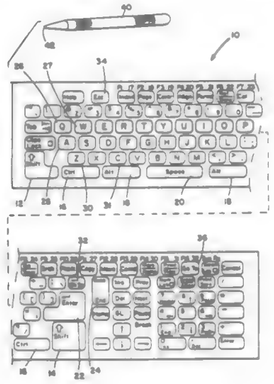
each of said set of alphanumeric keys being a first key, each having the surface area dimension less than a value from a prescribed range of values; and

a plurality of second keys, each having the surface dimension greater than or equal to a value from said prescribed range of values;

said surface area dimension being defined as the region where key actuation by the operator can be effected, and said prescribed range of values being defined as those values which are suited for key activation by the operator when using a finger;

VOL 1165 ISS 1 AG 2 1994 UMI

said keys being mounted in a flat keyboard face which is disposed at an angle with respect to a horizontal plane of



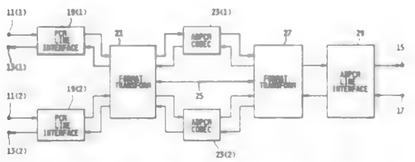
a desktop; said angle being in the range between 30 degrees and 90 degrees.

5,334,977

ADPCM TRANSCODER WHEREIN DIFFERENT BIT NUMBERS ARE USED IN CODE CONVERSION

Tadaharu Kato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,520
Claims priority, application Japan, Mar. 8, 1991, 3-103277; Mar. 8, 1991, 3-103278
Int. Cl.[5] H03M *7/34*
U.S. Cl. 341—76 9 Claims



1. An adaptive differential PCM transcoder which is for code converting two PCM streams to one adaptive differential PCM stream and which includes an adaptive differential PCM encoder device for encoding two PCM sequences into one adaptive differential PCM sequence and a format transforming device for format transforming said two PCM streams into said two PCM sequences and said adaptive differential PCM sequence into said adaptive differential PCM stream, said adaptive differential PCM transcoder comprising:

a scale factor calculating device for using said adaptive differential PCM sequence in calculating a voice optimum scale factor and a data optimum scale factor;

a judging device for comparing said data optimum scale factor with a predetermined threshold value to judge presence and absence of a data component in said two PCM sequences;

a bit number determining device for selecting a bit number in accordance with the absence and the presence of said data component to produce a bit number signal representative of said bit number;

a first connection for supplying said bit number signal to said adaptive differential PCM encoding device to make said adaptive differential PCM encoder device use said bit number in encoding said two PCM sequences into said adaptive differential PCM sequence; and

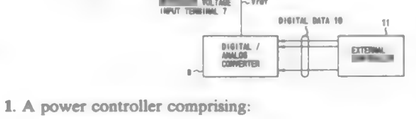
a second connection for supplying said bit number signal to said format transforming device to make said format transforming device use said bit number in format transforming said adaptive differential PCM sequence into said adaptive differential PCM stream.

5,334,978

MANCHESTER PATTERN FAULT RECOGNITION

Daniel L. Halliday, Granger, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Oct. 28, 1992, Ser. No. 967,583
Int. Cl.[5] H03M *5/12*
U.S. Cl. 341—94 6 Claims



1. A method of detecting and decoding a received Manchester Encoded, Gray Coded data word signal comprising the steps of:

testing the Manchester Encoded, Gray Coded data word for missing data bits;

constructing first and second copies of said data word which differ from one another only in the bit positions where a missing data bit was discovered during said testing step, said first constructed data word having a ONE in the missing data bit position and said second constructed having a ZERO in the missing data bit position;

converting said first and second copies of said data word from Gray Code into corresponding first and second coded binary words;

subtracting said first coded binary work from said second coded binary word to obtain an absolute value; and

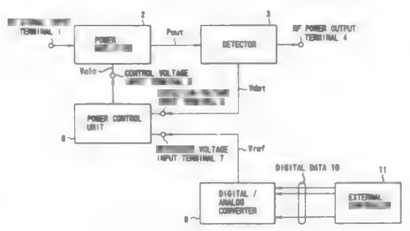
selecting either of said first and second binary coded binary words as valid information representing the received data word and the missing data bit as being the least significant if the absolute value of the difference computed in the step of subtracting is one otherwise rejecting the received data word as invalid.

5,334,979

POWER CONTROLLER

Naoto Hatakeyama, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 31, 1992, Ser. No. 938,422
Claims priority, application Japan, Aug. 30, 1991, 3-220507
Int. Cl.[5] H03M *1/62, 1/84, 1/88*
U.S. Cl. 341—138 4 Claims



1. A power controller comprising:

a power amplifying means for amplifying an RF signal input on the basis of an applied control voltage to output an RF power signal;

detecting means for detecting the RF power signal form said power amplifying means to output a detection voltage;

digital/analog converting means, having nonlinear conversion characteristics approximated to characteristics of the detection voltage corresponding tot he RF power of said detection means, for converting externally input digital data of a small number of bits into a reference voltage to output the reference voltage; and

power control means for comparing the reference voltage from said digital/analog converting means with the detection voltage from said detecting means to output the control voltage;

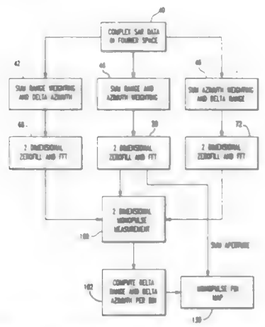
wherein said digital/analog converting means had conversion characteristics in which a rate of change in reference voltage corresponding to a change of the input in digital data is set to be low in a high sensitive output region of a feedback system including said power amplifying means, said detecting means, and said power control means, to increase a resolution of each bit of the input digital data, and is set to be high in a low sensitive output region of the feedback system to decrease the resolution of each bit of the input digital data.

5,334,980

METHOD AND SYSTEM FOR SHARPENING IMPULSE RESPONSE IN A SYNTHETIC APERTURE RADAR

Martin J. Decker, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 2, 1993, Ser. No. 100,825
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—25 12 Claims



1. A method of sharpening impulse response of synthetic aperture return data of a synthetic aperture radar system, comprising:

collecting computed range and azimuth return data;

forming three apertures of the collected computed data, one of the three apertures generating data corresponding to SUM weighting in range and azimuth, a second of the apertures generating data corresponding to SUM weighting in range and DELTA weighting in azimuth, and a third of the apertures generating data corresponding to SUM weighting in azimuth and DELTA weighting in range;

transforming the generated data in each of the three apertures into a two dimensional map format;

performing two dimensional monopulse measurement of a combined transformed generated data in the map format, having bins corresponding to range and azimuth;

calculating the DELTA data in range and the DELTA data in azimuth for each of the bins; and

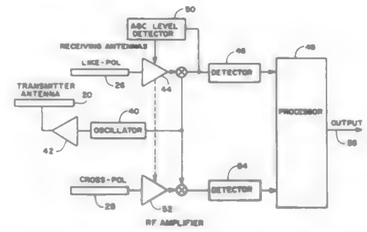
displaying the return energy in the individual range and azimuth bins in accordance with a monopulse measurement ratio of the SUM data of the range and the DELTA data of the range in the range bins and a ratio of the SUM data of the azimuth and the DELTA data of the range in each azimuth bin.

5,334,981

AIRBORNE METAL DETECTING RADAR

Carter C. Smith, San Diego, and John B. Gehman, La Jolla, both of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Apr. 9, 1992, Ser. No. 865,572
Int. Cl.[5] G01S *13/04*
U.S. Cl. 342—27 22 Claims



1. A radar system for detecting a metal target which may be camouflaged or concealed by natural foliage from an airborne flying vehicle and comprising:

an antenna carried by a flying vehicle for transmitting an electromagnetic signal,

first receiving antenna means carried by the flying vehicle for receiving the transmitted electromagnetic signal selected from the terrain and the target,

second receiving antenna means carried by the flying vehicle and arranged orthogonally to the first antenna means for receiving the transmitted electromagnetic signal reflected from the target, and

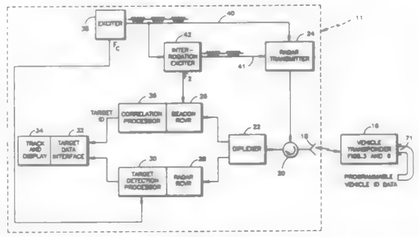
means coupled to the first and second receiving antenna means for processing the received signals to provide information as to the presence of a metal target.

5,334,982

AIRPORT SURFACE VEHICLE IDENTIFICATION

Lee A. Owen, Southbury, Conn., assignor to Norden Systems, Inc., Norwalk, Conn.

Filed May 27, 1993, Ser. No. 68,478
Int. Cl.[5] G01S *13/87*
U.S. Cl. 342—36 15 Claims



1. An airport vehicle identification system for detecting and identifying vehicles on the surface of an airport, comprising:

a ground surveillance radar system which multiplexes and radiates both a conventional radar signal for detecting vehicles on the surface of the airport and a beacon interro-

VOL 1165 ISS 1 AUG 2 1994 UMI

gation signal, and which receives both a reflected skin return signal from a detected vehicle indicative of the vehicle's position and an encoded ID signal indicative of the vehicle's identity; and

a vehicle mounted transponder for receiving and processing said beacon interrogation signal and for radiating said encoded ID signal when said beacon interrogation signal is valid.

5,334,983

DOPPLER-EFFECT GROUND SPEED SENSOR FOR USE WITH A BRAKE SYSTEM

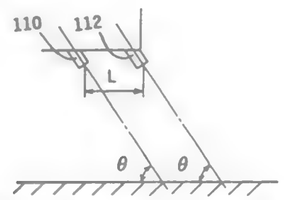
Shinji Ikeda, and Masashi Mizukoshi, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 10, 1992, Ser. No. 942,981

Claims priority, application Japan, Sep. 24, 1991, 3-273317; Dec. 20, 1991, 3-347917

Int. Cl.[5] G01S *13/00*

U.S. Cl. 342—70 **7 Claims**



1. A Doppler-effect type ground-speed sensor including a transmitter attached to a body of the vehicle and transmitting a wave toward a road surface in a predetermined direction of propagation, a receiver attached to said body and receiving a portion of said wave which is irregularly reflected by said road surface, and a signal processor which provides an output representative of said ground-speed of the vehicle, on the basis of frequencies of said wave transmitted by said transmitter and said portion received by said receiver, wherein the improvement comprises:

said receiver is spaced apart from said transmitter by a predetermined distance in one of opposite running directions of the vehicle in which said predetermined direction of propagation is inclined with respect to a direction perpendicular to the running directions.

5,334,984

METHOD AND SYSTEM FOR LOCATING DIRECTION OF TRANSMISSION SOURCE BASED ON WAVE THEREFROM

Noriyuki Akaba, Yokohama, Japan, assignor to Tokyo Keiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 531,678, Jun. 1, 1990, abandoned. This application Jul. 28, 1992, Ser. No. 920,513

Claims priority, application Japan, Jun. 2, 1989, 1-141316

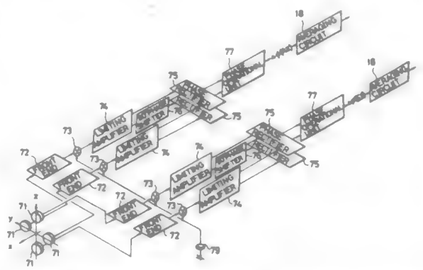
Int. Cl.[5] G01S *13/44, 13/68*

U.S. Cl. 342—149 **12 Claims**

1. A direction finding method for locating the direction of a transmission source based on an electromagnetic wave which is transmitted from the transmission source and is received by an antenna means at a receiving end apparatus, said method comprising:

(a) at the transmission source, transmitting an angle-modulated wave which is a communication wave selected from a group consisting of a frequency modulated wave, a phase modulated wave, a chirp modulated wave, a frequency hopping wave, and a wave modulated by a phase shift keying; and

(b) at the receiving end apparatus receiving the transmitted wave, converting a beat frequency signal formed from a combination consisting of a direct wave and a reflected wave contained in the received wave, into intermediate signals, and time-averaging the intermediate signals, whereby an angle error due to a multipath interference is minimized by substantially eliminating multipath signal components so that the direction of the transmission



source can be determined by using a monopulse method at the receiving end apparatus,

wherein a time averaged of the signals converted from the beat frequency signal is substantially 0 and modulation is unaltered by the direction of the transmission source with respect to the receiving end apparatus.

5,334,985

AZIMUTH RANGE VELOCITY DISPLAY AND CURSOR FOR USE THEREWITH

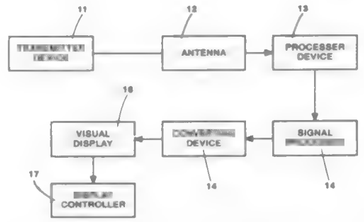
Stephen P. Tucker, 73 Eighth Avenue, St. Peters, S.A. 5069, and Samuel B. Colegrove, 3 Blamey Court, Highbury, S.A. 5089, both of Australia

Filed May 6, 1992, Ser. No. 880,731

Claims priority, application Australia, May 6, 1991, PK6000; May 6, 1991, PK6001

Int. Cl.[5] G01S *13/00*

U.S. Cl. 342—176 **34 Claims**



1. A method for displaying and determining the velocity associated with received radar return signals from frequency modulated continuous wave radar systems, comprising the steps of:

determining a velocity for each radar return signal from a detected beat frequency associated therewith; and

displaying, on a visual display system having successive radar dwells, one or more major plots indicating range, azimuth and velocity of said each radar return signal, whereby:

each major plot is associated with a velocity axis assigned a maximum and a minimum display velocity;

each said major plot is composed of minor plots indicating range, azimuth and velocity of each radar return signal and associated with a velocity axis extending between zero velocity value and a magnitude value of greatest possible velocity corresponding to a range of detected beat frequencies;

said minor plots are repeated, end upon end with respect to the velocity axes, whilst the velocity displayed is not larger than said maximum display velocity nor smaller than said minimum display velocity; and

the transition from one minor plot to an adjacent minor plot corresponds to zero velocity; and

wherein, between successive radar dwells, radar return signals falling on one side of said zero velocity value remain substantially in a same display position, while radar return signals, falling on an opposite side of the zero velocity value, do not remain substantially in the same display position.

5,334,986

DEVICE FOR DETERMINING THE POSITION OF A VEHICLE

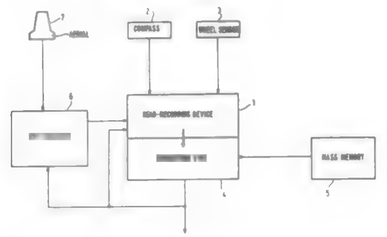
Herman C. Fernhout, 's-Hertogenbosch, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1993, Ser. No. 38,432

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1992, 4211933

Int. Cl.[5] G01S *5/02*

U.S. Cl. 342—357 **8 Claims**



1. A device for determining the position of a vehicle, comprising:

a. a Global Positioning System receiver for periodically providing GPS position data determined from data received from a plurality of satellites;

b. sensor means attached to the vehicle for providing sensor data representative of the navagational direction and wheel movement of the vehicle;

c. dead-reckoning means f or providing dead-reckoning position data determined from the GPS position data and from sensor data;

d. memory means for storing route data for a geographic region to be navigated by the vehicle;

d. correction means for comparing the dead-reckoning position data with substantially corresponding route data from the memory means and for correcting the dead-reckoning position data to produce corrected vehicle position coordinates; and

e. means for correcting the GPS position data provided by the receiver in correspondence with the corrected vehicle position coordinates.

5,334,987

AGRICULTURAL AIRCRAFT CONTROL SYSTEM USING THE GLOBAL POSITIONING SYSTEM

Ted L. Teach, Dayton, Ohio, assignor to Spectra-Physics Laserplane, Inc., Dayton, Ohio

Filed Apr. 1, 1993, Ser. No. 41,162

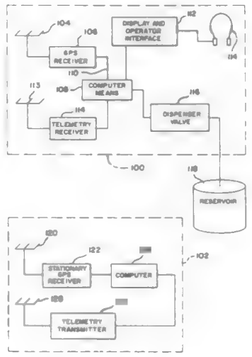
Int. Cl.[5] H04B *7/185;* G01S *5/02*

U.S. Cl. 342—357 **19 Claims**

1. An aircraft control system for use in an agricultural aircraft for applying chemicals to an agricultural field in one of a plurality of flight patterns, said aircraft having at least one dispenser valve for releasing said chemicals from a reservoir, said aircraft control system comprising:

global positioning receiver means for receiving radio frequency signals from a plurality of satellites;

computer means, responsive to said global positioning means, for storing surface coordinates of the boundary of said agricultural field, for storing said one of said plurality of flight patterns, for decoding said radio frequency signals to determine continuously the position of said aircraft, for determining deviations in position of said aircraft



from said one of said plurality of flight patterns, and for automatically activating said at least one dispenser valve when said aircraft is flying within the boundary of said agricultural field whereby said chemicals are applied to said agricultural field; and

pilot interface means, responsive to said computer means, for indicating deviations in position of said aircraft from said one of said plurality of flight patterns to a pilot of said aircraft.

5,334,988

GLASS ANTENNA FOR AUTOMOBILE

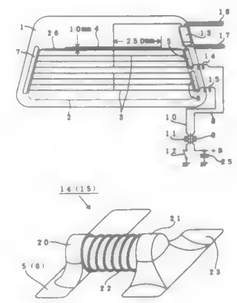
Harunori Murakami; Yuji Baba, both of Doshomachi; Kanta Urakami, Himeji; Nobuya Niizaki, Yokohama; Hirofumi Natsume, Chiba, and Masato Arisawa, Tsuchiura, all of Japan, assignors to Nippon Sheet Glass Co., Ltd. and Sumitomo Chemical Company, Ltd., both of Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,376

Claims priority, application Japan, Mar. 26, 1991, 3-086281

Int. Cl.[5] H01Q *1/32, 21/30*

U.S. Cl. 343—704 **6 Claims**



1. A glass antenna for an automobile comprising:

VOL 1165 ISS 1 AG 2 1994 UMI

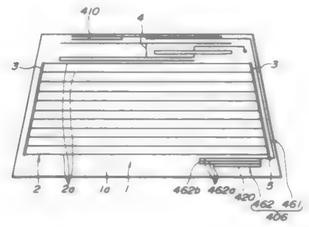
an FM main antenna provided on a window glass of said automobile and having a reverse T-configuration;
an FM subsidiary and AM antenna provided on said window glass and consisting of defogging heaters;
a bus provided on said window glass and connected to said defogging heaters for supplying a defogging current;
a choke coil having a high impedance against AM frequencies;
a coil mounted on said window glass adjacent to said bus, having one end directly connected to said bus to prevent an FM signal from leaking, another end connected to said choke coil, said bus connected to said one end providing an output to FM frequencies; and
a land provided on said window glass for receiving said defogging current through said choke coil, and said coil being a wireless lead component connected between said bus and said land.

5,334,989

AUTOMOTIVE WINDOW GLASS ANTENNA

Yoji Nagayama; Shingo Tadokoro, and Tokio Tsukada, all of Matsusaka, Japan, assignors to Central Glass Company, Ube, Japan

Filed Mar. 8, 1993, Ser. No. 28,920
Claims priority, application Japan, Mar. 6, 1992, 4-049738; Mar. 19, 1992, 4-063750; Mar. 19, 1992, 4-063751; Mar. 31, 1992, 4-077281
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 343—713 8 Claims



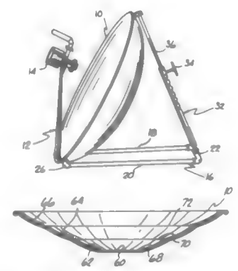
1. An antenna system attached to a vehicle rear window glass for receiving radio waves, the window glass being provided with a defogging heater element so as to leave a space around the heater element, the antenna system comprising:
a first antenna arranged in an area of said space above the defogging heater element and having a horizontal conductive strip and a vertical conductive strip; and
a second antenna having a feed point arranged in a widthwise marginal area of said space under the heater element, and a pair of first and second elements connected to said feed point;
said first element having a vertical conductive strip arranged in an area of said space between the heater element and a lateral edge of the window glass, a T-shaped or inverted T-shaped conductive strip assembly made up of a longer horizontal strip portion and a shorter vertical strip portion and arranged in an area of said space above said first antenna and a horizontal conductive strip extending between said vertical strip portion of said T-shaped or inverted T-shaped conductive strip assembly and said vertical conductive strip and arranged in an area of said space above said first antenna;
said second element having at least a horizontal conductive strip arranged in an area of said space under the heater element.

5,334,990

KU-BAND SATELLITE DISH ANTENNA

James E. Robinson, Littleton, Colo., assignor to K-Star International Corp., Sedalia, Colo.

Continuation of Ser. No. 879,051, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 700,097, May 7, 1991, abandoned, which is a continuation of Ser. No. 499,061, Mar. 26, 1990, abandoned. This application Mar. 2, 1993, Ser. No. 24,910
Int. Cl.[5] H01Q *1/12, 15/16, 19/10, 19/12*
U.S. Cl. 343—840 4 Claims



1. A satellite dish antenna system comprising:
a circular dish-shaped member having an inner concave reflecting surface to be focused toward a transmitting earth satellite, the inner concave reflecting surface of said circular dish-shaped member having a central circular planar area and a plurality of annular parabolically-shaped reflecting segments concentric with and surrounding said central circular planar area, each of said plurality of annular parabolically-shaped reflecting segments being arranged to have an associated focal point that is different from the associated focal point of each other one of said plurality of parabolically-shaped relecting segments;
a base member removably connected to said dish-shaped member for supporting said circular dish-shaped member in a particular orientation, said base member comprising a U-shaped support extending from a pair of points on a peripheral edge of said dish-shaped member in an area behind said inner concave surface of said circular dish-shaped member;
elevation adjustment means removably connected to said circular dish-shaped member and to said base member for setting an elevation angle of said circular dish-shaped member; and
feed mount means removably connected to a peripheral edge of said circular dish-shaped member for supporting a feed horn and amplifier assembly in a fixed position in front of said inner concave surface of said circular dish-shaped member.

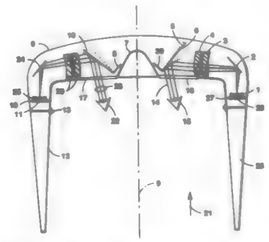
5,334,991

DUAL IMAGE HEAD-MOUNTED DISPLAY

Benjamin A. Wells, Newton; Frank D. Smith, Milton; Michael A. Feldstein, Sudbury, and Greg Hutner, Westwood, all of Mass., assignors to Reflection Technology, Waltham, Mass.

Filed May 15, 1992, Ser. No. 883,977
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—8 25 Claims

1. A dual image display comprising:
a housing;
a light-emitting mechanism generating first and second images;
first and second oscillating scanning mirrors respectively positioned to reflect the first and second images to a user's eyes, said first and second oscillating scanning mirrors being supported by the housing and each of said first and second oscillating scanning mirrors independently generating vibrations that are transmitted to the housing and interact; and
means responsive to the physical position of both of the first and second oscillating scanning mirrors for controlling the motion of the first oscillating scanning mirror and



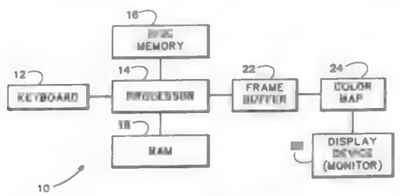
independently controlling the motion of the second oscillating scanning in order to reduce the vibrations transmitted to said housing due to the motions of said first and second oscillating scanning mirrors and the interaction therebetween.

5,334,992

COMPUTER DISPLAY COLOR CONTROL AND SELECTION SYSTEM

Roxanna F. Rochat; Joann M. Taylor, and Novia A. Weiman, all of Beaverton, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Oct. 26, 1987, Ser. No. 113,672
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—22 13 Claims



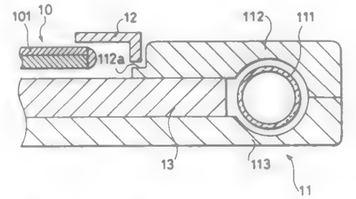
1. A user interface for controlling color selection in a computer system having a color display monitor, comprising:
means for displaying on the monitor a graph depicting a range of hues in one dimension;
means for selecting any hue displayed on the hue graph in response to input from the user and generating data representing this hue;
means for displaying on the monitor a graph depicting chroma and lightness combinations in two-dimensions in a selected hue;
means for selecting any chroma and lightness combination displayed on the chroma and lightness graph in response to input from the user and generating data representing this chroma and lightness; and
register means for storing data representing one or more selected hue, chroma and lightness combinations.

5,334,993

LIQUID CRYSTAL DISPLAY DEVICE

Hiroyuki Okajima, Kita-Katsuragi, and Shinichi Uratani, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 3, 1992, Ser. No. 939,825
Claims priority, application Japan, Sep. 4, 1991, 3-223961
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—102 4 Claims



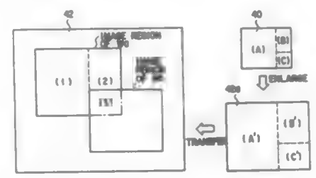
1. A liquid crystal display device in use for a portable computer or the like, said device comprising:
a liquid crystal display panel;
a light source for illuminating said liquid crystal panel through a back surface thereof;
a light guide for transmitting a light emitted by said light source to the back surface of said liquid crystal panel;
a holding member made of a plastic having a low heat conductivity and light-shading quality for accommodating and fixing said light source at one or two end portions thereof and said light guide so that a surface of said light guide faces the back surface of said liquid crystal panel, said holding member having an engaging portion which is adjacent to the surface of said light guide which faces the back surface of said liquid crystal display panel, said holding member being open to the air except at said engaging portion; and
a metallic frame member having an L-shaped cross-section and fixing said liquid crystal panel to said holding member at said engaging portion so as not to obstruct transmission of heat emitted from said light source to the air through said holding member, one end portion of said frame member being engaged with said engaging portion of said holding member when said frame fixes said panel in such a way as to obstruct transmission of heat emitted from said light source to said liquid crystal panel through said holding member, said engaging portion and said frame member.

5,334,994

IMAGE DISPLAY DEVICE HAVING MULTI-WINDOW SYSTEM

Shiro Takagi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1992, Ser. No. 859,959
Claims priority, application Japan, May 21, 1991, 3-116100
Int. Cl.[5] G09G *5/26*
U.S. Cl. 345—127 3 Claims



1. A method for displaying an image on a display area capa-

VOL 1165 ISS 1 AUG 2 1994 UMI

ble of displaying first and second overlapping windows, wherein said second window overlaps said first window such that said first window includes a non-overlapped area, said method comprising the steps of:

storing image data having a first size in a page memory;

dividing said non-overlapped area of said first window into at least one rectangular area if said first window is overlapped by said second window when said image data having its size modified from said first size to a second size is displayed on said first window;

extracting a portion of said image data corresponding to said non-overlapped area of said first window from said page memory, modifying said portion of said image data extracted from said page memory from said first size to said second size, and storing said portion of said image data modified to said second size in a display memory, if non-overlapped area of said first window includes only one rectangular area;

modifying said image data stored in said page memory from said first size to said second size and storing said image data having said second size in a work memory, if said non-overlapped area of said first window includes at least two rectangular areas; and

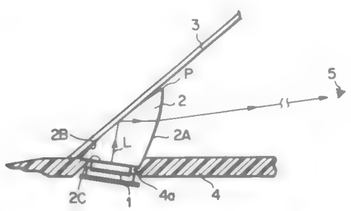
extracting said image data corresponding to said non-overlapped area including at least two rectangular areas of said first window from said work memory, said image data extracted from said work memory having said second size, and storing said image data having said second size extracted from said work memory in said display memory.

5,334,995

INDICATION DISPLAY UNIT FOR VEHICLES

Tadashi Iino, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jul. 16, 1991, Ser. No. 730,745
Claims priority, application Japan, Aug. 10, 1990, 2-210255
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—7 2 Claims



1. An indication display unit for vehicles comprising:

an indicating means for displaying vehicle operational information encased in a case located within the dashboard, said case being abutted to a cam disposed thereunder,

a prism having at least three faces and mounted on the dashboard in such a manner that a crest portion thereof is directed upwards at which a first and a second face thereof abut each other, said first face and second face being directed, respectively, toward the driver's seat and to the windshield, and said third face firmly attached to said case such that the indication surface of said indicating means is directed upward, wherein an indicated image projected from said indicating means entering said prism by way of said third face thereof, said indicated image entered said prism being reflected on the inner surface of said second face so as finally to be visibly observed through said first face,

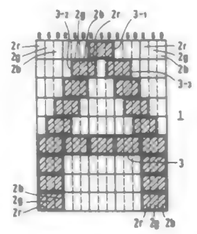
wherein the rearward portion of said case is axially supported and the forward portion thereof is downwardly biased, whereby said prism is rotated by way of the movement of said case which is activated by the rotating movement of said cam, and in that at least one of said first and second faces is formed in a convex shape, wherein in the case that said second face is formed in a convex shape, the indicating surface of said indicating means is located within the focal point of said second face of said prism, and in the case that said first face is formed in a convex shape, an indicated image reflected on the inner surface of said second face is located within the focal point of said first face of said prism.

5,334,996

COLOR DISPLAY APPARATUS

Yasushi Tanigaki; Yoshikazu Satoh, and Yoshiharu Kobayashi, all of Tokyo, Japan, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 23, 1990, Ser. No. 603,974
Claims priority, application Japan, Dec. 28, 1989, 1-342096
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—152 20 Claims



1. A color display apparatus comprising: a color display panel containing a plurality of color dots of equal size and comprising three primary colors formed in a predetermined order in which the color dots of each primary color are respectively aligned in vertical columns on the display panel, a memory for storing bit information corresponding to dot-matrix patterns representative of characters to be displayed, and a display control section for activating the color dots on the color display panel in accordance with the bit information read from the memory to thereby display characters, characterized in that the memory is provided with at least three storage areas corresponding respectively to color-dot groups of the three primary colors, in that each storage area stores bit information corresponding to dot-matrix patterns representative respectively of a plurality of characters to be displayed, wherein .o display a character, the display control section activates the color dots of the three primary colors on the color display panel based respectively on data read respectively from said three storage areas and in a manner such that the three primary color dots for a slant segment of the character are activated in a sequence different from the activation sequence of the three primary color dots of a non-slant segment of the character displayed on the color display panel.

5,334,997

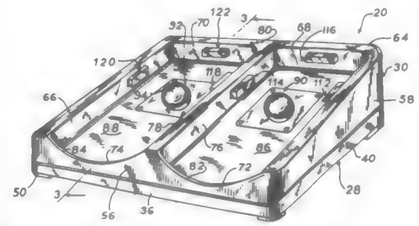
FOOT-OPERATED COMPUTER CONTROL

David Scalloa, R.R. 2, Parkersburg, Iowa 50665

Filed Dec. 22, 1992, Ser. No. 995,597
Int. Cl.[5] G09G *5/00*
U.S. Cl. 345—167 18 Claims

1. In combination, a computer for use by an operator and including a cursor; and a foot-operated control for controlling operation of the computer in response to movement of one or more of the operator's feet, the foot-operated control including a foot-enclosing housing located below the computer for receipt of at least one of the operator's feet, and one or more control elements mounted to the housing and interconnected with the computer, the one or more control elements including a track ball positioned within the housing directly below the

operator's foot for controlling the position of the computer's cursor and a plurality of switches positioned within the housing, said plurality including a switch on different sides of the housing to be engaged by lateral movement of the operator's foot.

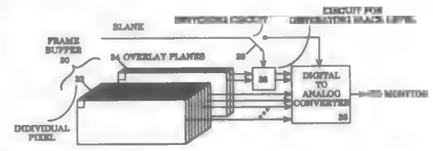


5,334,998

METHOD AND APPARATUS FOR UTILIZING BLANKING ON BOTH ZERO SETUP AND PEDESTAL SETUP DISPLAY MONITORS WITH A CONVENTIONAL COMPUTER SYSTEM

Curtis Priem, Fremont, and Charles Boynton, Palo Alto, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 5, 1991, Ser. No. 726,303
Int. Cl.[5] G09G *3/00;* H04N *5/16*
U.S. Cl. 345—185 14 Claims



9. A computer system capable of providing appropriate analog outputs to both a zero-setup display monitor and a pedestal setup display monitor comprising:

a digital-to-analog converter (DAC) including means for receiving a first plurality of digital signals, means for receiving a second plurality of digital signals, and means for outputting analog signals;

frame buffer means coupled to said means for receiving a first plurality of digital signals;

frame buffer overlay means coupled to said means for receiving a second plurality of digital signals;

circuit means for generating a black level signal coupled to said frame buffer overlay and said means for receiving a second plurality of digital signals;

means for switchably coupling a blanking signal to either said DAC or said circuit means for generating a black level;

wherein, in the event said computer system is used with a pedestal setup display monitor, said means for switchably coupling a blanking signal couples said blanking signal to said DAC, thereby causing said DAC to output an analog signal appropriate for said pedestal setup display monitor,

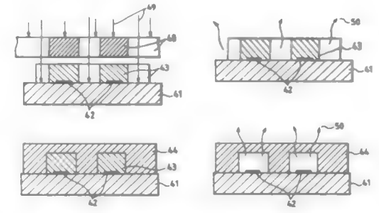
wherein, in the event said computer system is used with a zero setup display monitor, said means for switchably coupling a blanking signal couples said blanking signal to said circuit means for generating a black level signal, causing said circuit means to couple said black level signal to said DAC, thereby causing said DAC to output an analog signal appropriate for said zero setup display monitor.

5,334,999

DEVICE FOR PREPARING INK JET RECORDING HEAD WITH CHANNELS CONTAINING ENERGY GENERATING ELEMENTS

Akio Kashiwazaki; Masatsune Kobayashi, both of Yokohama; Ryuichi Arai, Tokyo; Junichi Kobayashi, Ayase, and Akihiko Shimomura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1991, Ser. No. 778,668
Claims priority, application Japan, Oct. 18, 1990, 2-277838; Jul. 5, 1991, 2-165410; Jul. 5, 1991, 3-165411; Oct. 4, 1991, 3-257663
Int. Cl.[5] B41V *2/05*
U.S. Cl. 347—65 15 Claims



1. A process for preparing an ink jet recording head, comprising:

the step for providing a first material which is volatilized by imparting an active energy in a layer on a substrate;

the step for patterning the layer of said first material by imparting said active energy to the layer of said first material corresponding to the pattern of ink channels communicated to the discharging outlet which discharges ink;

the step for providing a second material so as to cover the layer of said first material shaped in the pattern formed by said step; and

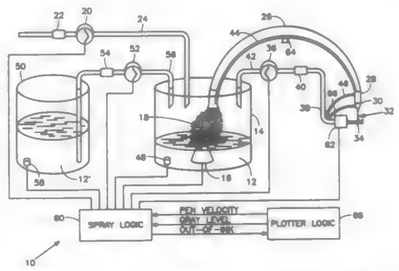
the step for forming said ink channels by volatilization of the layer of said pattern shaped first material coated with said second material by imparting said active energy.

5,335,000

INK VAPOR AEROSOL PEN FOR PEN PLOTTERS

Wayne R. Stevens, Downey, Calif., assignor to CalComp Inc., Anaheim, Calif.

Filed Aug. 4, 1992, Ser. No. 925,603
Int. Cl.[5] B41J *2/11, 2/18*
U.S. Cl. 347—82 25 Claims



1. In a pen plotter, aerosol pen apparatus for marking plotting media comprising:

a) a chamber containing liquid ink;

b) vaporizing means disposed within said chamber for forming ink vapor from said liquid ink;

VOL 1165 ISS 1 AG 2 1994 UMI

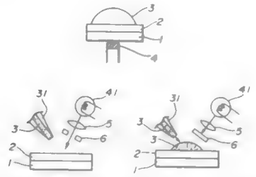
c) a pen body having a nozzle tip;
d) a conduit connected between said chamber and said pen body;
e) pump means for creating a pressure within said chamber sufficient to force said ink vapor through said conduit and out said nozzle tip; and,
f) ink vapor condensation removal means for removing condensed ink vapor from the interior of at least one of said conduit, pen body, and the nozzle tip.

5,335,001

PROCESS AND APPARATUS FOR FORMING DOT IMAGE CAPABLE OF CONTROLLING DOT SIZE

Yasuo Katano, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 5, 1991, Ser. No. 681,069
Claims priority, application Japan, Apr. 9, 1990, 2-94811; Apr. 20, 1990, 2-104609
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] B41M *5/28*
U.S. Cl. 346—76 R **45 Claims**



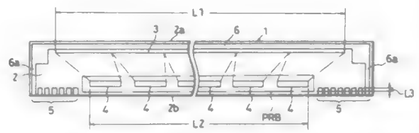
1. A process for forming a dot image on a recording medium which has a surface having a characteristic in which a receding contact angle decreases when said recording medium is heated in a condition where said recording medium is in contact with a liquid, a vapor or a solid which generates or changes to either a vapor or a liquid at a temperature lower than a temperature at which the receding contact angle on said recording medium starts to decrease, said process comprising in any order the following steps (a) and (b) of:
(a) selectively heating the surface of said recording medium so that one or a plurality of heated areas are formed on the surface of said recording medium in accordance with image information, the size of each heated area being controlled in accordance with the image information; and
(b) bringing a contact material into contact with the surface of said recording medium, said contact material being either a liquid, a vapor or a solid which generates or changes to either a vapor or a liquid at a temperature lower than a temperature at which the receding contact angle on said recording medium starts to decrease,
wherein the receding contact angle of each heated area decreases so that a latent image corresponding to one or the plurality of the heated areas is formed on the surface of said recording medium.

5,335,002

PRINTING HEAD AND PRINTER INCORPORATING THE SAME

Takaya Nagahata; Toshiyuki Shirasaki; Hiroshi Fukumoto; Tokihiko Kishimoto; Masayoshi Yamaguchi; Yoshinori Matsumoto, all of Kyoto; Hisato Matsumoto; Yoshihiro Ishizaki, both of Amagi, and Yoshinobu Kishimoto, Kyoto, all of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 23, 1992, Ser. No. 950,651
Claims priority, application Japan, Sep. 30, 1991, 3-252060; Sep. 30, 1991, 3-252061; Jan. 31, 1992, 4-16547; Feb. 14, 1992, 4-27623
Int. Cl.[5] B41J *2/34, 2/335*
U.S. Cl. 346—76 PH **15 Claims**



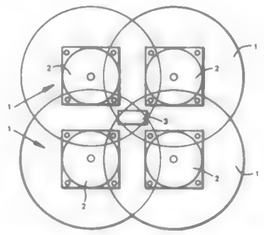
1. A printing head comprising:
an elongate head substrate having first and second longitudinal edges;
a line of printing dots provided on the head substrate along the first longitudinal edge;
an array of drive ICs provided on the head substrate along the second longitudinal edge and enclosed in a protective resin body;
a plurality of connection terminals formed on the head substrate adjacent to the second longitudinal edge; and
a pattern of wiring conductor paths formed on the head substrate for electrically connecting between the connection terminals and the drive ICs;
wherein the drive IC array is rendered shorter than the printing dot line to provide two excess portions at both ends of the head substrate, the connection terminals being locally arranged within the respective excess end portions without overlapping the drive IC array longitudinally of the head substrate while overlapping the protective resin body transversely of the head substrate.

5,335,003

OPTICAL STENCIL

Peter G. Sugden, Cottingham, England, assignor to Coherent, Inc., Santa Clara, Calif.

Filed Nov. 14, 1991, Ser. No. 776,253
Claims priority, application United Kingdom, May 19, 1989, [illegible]
Int. Cl.[5] B41J *2/435*
U.S. Cl. 346—107 R **11 Claims**



1. A variable optical stencil assembly comprising:
at least three discs each having a separate central axis, each disc being of substantially equal diameter, each disc including a plurality of windows disposed around the periphery thereof, each window having at least one character therein; and
means for independently rotating each of said discs about the center axis thereof and wherein the center axis of the discs are spaced apart such that each said disc only partially overlaps each of the other discs at a central point between the axes of rotation of the discs in a manner such that the windows of each disc are aligned with the windows of the other discs.

5,335,004

ACTIVE ENERGY-RAY-CURABLE RESIN COMPOSITION, INK JET HEAD HAVING INK PATH WALL FORMED BY USE OF THE COMPOSITION, PROCESS FOR PREPARING THE HEAD, AND INK JET APPARATUS PROVIDED WITH THE HEAD

Hirohide Matsuhisa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 627,492, Dec. 14, 1990, abandoned. This application Mar. 12, 1992, Ser. No. 850,211
Claims priority, application Japan, Dec. 15, 1989, 1-325453
Int. Cl.[5] C08F *2/50*; C08G *59/22, 59/18*
U.S. Cl. 347—44 **9 Claims**

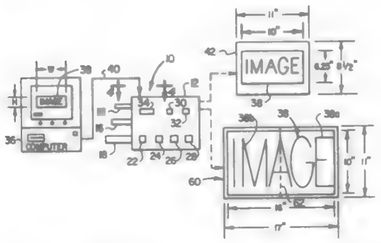
1. A process for preparing an ink jet head, comprising the steps of:
(a) forming a solid layer from a positive-type photosensitive resin at a position for forming a flow path communicating with an ejection opening for ejecting ink on a substrate, said substrate being provided with an energy generating member for generating energy to be utilized for ejecting ink from the ejection opening so as to correspond to the path;
(b) applying, at another position on the substrate where the solid layer is not formed, an active energy-ray-curable resin composition which is cationic-polymerizable comprising
(i) 65 to 98.5% by weight of an aromatic epoxy resin having a molecular weight of not less than 300,
(ii) 1 to 10% by weight of a epoxy-functional silane coupling agent substantially free of amino, and thiol functional groups, and
(iii) 0.5 to 5% by weight of a photosensitized cationic polymerization initiator;
(c) curing the active energy-ray-curable resin composition by exposure to an active energy ray; and
(d) removing the solid layer to form the flow path.

5,335,005

EXPANDED AREA PRINTING METHODS AND ASSOCIATED APPARATUS FOR AN IMAGE REPRODUCTION MACHINE

Charles A. Sellers, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 16, 1992, Ser. No. 851,848
Int. Cl.[5] G01D *15/04*; G03G *21/00*
U.S. Cl. 346—160 **15 Claims**



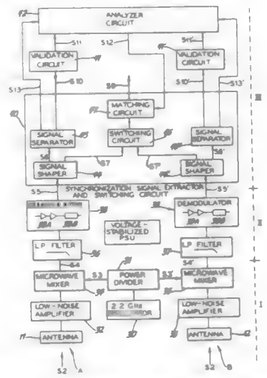
1. A method for use in conjunction with an image reproduction machine operative and dimensionally configured to receive, throughfeed and then discharge a first, nonfolded cut paper sheet having a nominal size and imprint thereon, within boundaries of a side surface thereof, an image transmitted to said machine, said method being useable to imprint on an oversized cut paper sheet having a size substantially larger than said nominal size, an oversized image of a printout size greater than that which could be accommodated by said first sheet, said method comprising the steps of:
transmitting said oversized image to said machine;
folding said oversized sheet to form therefrom a folded sheet having a front end edge portion, a rear end portion, a side fold edge portion, and first outer side surface and second outer side surfaces opposite said first outer side surface;
feeding said folded sheet, front end portion first, through said machine and concurrently causing said machine to imprint a first portion of the received oversized image upon said first outer side surface of said folded sheet; and
refeeding said folded sheet, in a flipped orientation, through said machine and concurrently causing said machine to imprint a second portion of the received oversized image upon said second outer side surface of said folded sheet.

5,335,006

METHOD AND DEVICE FOR TRANSMITTING VIDEO SIGNALS IN CONFINED SPACES

Dominique Charpentier, Montataire; Pierre DeGaugue, Lambersart; Daniel Degardin, Fletre, and Jacques Baudet, Villeneuve D'Asco, all of France, assignors to Charbonnages De France, Rueil Malmaison, France

PCT No. PCT/FR90/00893, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO91/09502, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 7, 1990, Ser. No. 859,421
Claims priority, application France, Dec. 8, 1989, 89 16304
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—82 **34 Claims**



1. A method of transmitting video signals formed by a succession of video picture line signals beginning with a known format synchronization signal of a known period representing a known line synchronization frequency between a transmission area and a reception area, both included in a confined space, comprising the steps of:
producing a first video signal in the transmission area;
modulating said first video signal at a carrier frequency in the microwave band to produce microwave transmission signals;
transmitting said microwave transmission signals from a transmitting antenna directed to the reception area pro-

VOL 1165 ISS 1 AUG 2 1994 UMI

vided with two receiving antennae, each receiving antenna provided on an angularly offset privileged axis with respect to each another;

receiving separate microwave transmission signals produced by said transmitting step in each of said two receiving antenna;

processing and demodulating said microwave transmission signals in separate but identified first and second demodulation and processing channels connected to a respective receiving antenna to produce a second video signal in said first demodulation and processing channel and a third video signal in said second demodulation and processing channel;

connecting said second video signal to a picture forming apparatus;

detecting, in said first and second demodulation and processing channels, the presence of a periodic signal with a frequency equal to the video line synchronization frequency in said second and third video signals; and

connecting said third video signal to the picture forming apparatus if said periodic signal is no longer detected in said first demodulation and processing channel, but is detected in said second demodulation and processing channel.

5,335,007

BEAM SCANNING DEVICE FOR AN ELECTRONIC PHOTOGRAPHY TYPE PRINTER

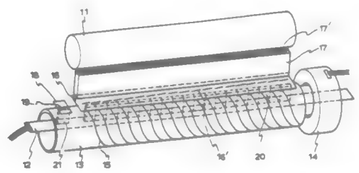
Hoon B. Choi, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 29, 1992, Ser. No. 736,769

Claims priority, application Rep. of Korea, Jul. 31, 1990, 11349/1990

Int. Cl.[5] G01D *15/14;* **H04N** *1/29;* **H01J** *5/16*

U.S. Cl. 346—107 R **5 Claims**



1. A scanning device for an electronic photography printer comprising:

a photosensitive drum

a horizontal rotary cylinder having a circumferential surface and a plurality of spiral slits cut on said surface, said slits being axially spaced from one another along said cylinder;

a horizontal LED array extending inside of the rotary cylinder, said array having a plurality of LEDs, said LEDs being disposed on the LED array and having widths equal to the axial spacing between adjacent ones of said spiral slits of the rotary cylinder;

a horizontal slit plate disposed between the photosensitive drum and the rotary cylinder and having a plurality of longitudinally aligned slits, said slits of said slit plate being inclined with respect to a horizontal line of the horizontal slit plate and axially spaced from one another; and

a self-focus lens array horizontally disposed between the photosensitive drum and the horizontal slit plate.

5,335,008

IMAGER WHICH HAS A LOAD TRANSISTOR CONNECTED TO EACH VERTICAL SIGNAL LINE AND WHEREIN EACH LOAD TRANSISTOR COMPRISES TWO FIELD TRANSISTORS CONNECTED IN SERIES

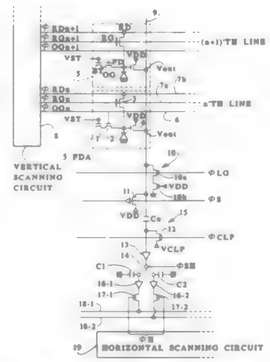
Masahara Hamasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,129

Claims priority, application Japan, Mar. 8, 1991, 3-069341

Int. Cl.[5] H04N *3/14*

U.S. Cl. 348—301 **6 Claims**



1. A CCD image sensing device in which an amplifying transistor for amplifying photoelectrically-converted signal charges and outputting the amplified signal to one of a plurality of vertical signal lines is provided at every pixel of a plurality of pixels arrayed in a two-dimensional fashion and load means is connected to each of said plurality of vertical signal lines and selectively connected as a load of said amplifying transistor, in which said load means consists of:

(a) a first field effect transistor having a constant current characteristic; and

(b) a second field effect transistor connected in series with said first field effect transistor and acting to provide linear operation.

5,335,009

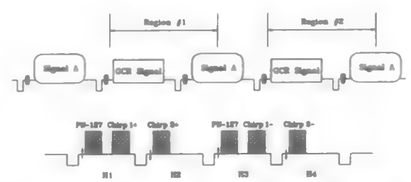
TELEVISION BROADCASTING AND RECEIVING SYSTEMS UTILIZING HYBRID GHOST REFERENCE SIGNALS IN SINGLE FIELD FOR FAST GHOST CANCELLATION

Cheng-Yun Sun, Taichung, and Chin-Shyung Lo, Taipei, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 23, 1992, Ser. No. 921,837

Int. Cl.[5] H04N *5/21*

U.S. Cl. 348—614 **22 Claims**



1. A method for characterizing a multi-path signal transmission in transmitting a plurality of signals divided into a plurality of cyclic fields each including field synchronization signals

and a vertical blanking period which further includes a plurality of horizontal scanning periods wherein said method comprising the steps of:

(a) transmitting periodically within a single vertical blanking period for one of said plurality of cyclic fields at least two reference signals each with a different predefined signal characteristic wherein each of said reference signals being transmitted in a different time duration defined by said horizontal scanning periods;

(b) receiving said plurality of signals including said reference signals in said different horizontal blanking periods within said single vertical blanking period; and

(c) processing said received signals including said reference signals in said different horizontal blanking periods within said single vertical blanking period for detecting a multi-path channel delay of said signal transmission.

5,335,010

ANTENNA DIVERSITY RECEIVING SYSTEM WITH ANTENNA SWITCHING DURING LINE PERIODS AND SIGNAL QUALITY EVALUATION DURING LINE BLANKING INTERVALS

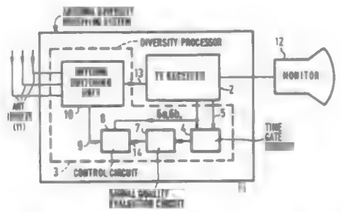
Heinz Lindemeier, Planegg; Jochen Hope, Haar; Leopold Reiter, Gilching, and Rainer Kronberger, Ottobrun, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

PCT No. PCT/NL91/00020, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO92/14310, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 8, 1991, Ser. No. 930,697

Int. Cl.[5] H04N *5/44*

U.S. Cl. 348—706 **20 Claims**



1. A mobile antenna diversity receiving system for selectively coupling to a television receiver one of a plurality of antennas which are provided for receiving a HF television signal, said system including a diversity processor comprising:

a. an antenna switching unit for selectively coupling the antennas to the television receiver;

b. means for providing a video signal and a line synchronizing signal derived from the television signal being received by the antenna being coupled to the television receiver, said line synchronizing signal defining when line blanking intervals and line synchronizing pulses occur during successive line periods;

c. a time gate circuit having an input for receiving the video signal and including means responsive to a trigger signal derived from the line synchronizing signal for providing said video signal at an output of said circuit during a line blanking interval;

d. a signal quality evaluation circuit coupled to the output of the time gate circuit for producing a signal representative of the quality of the video signal provided at the output of said time gate circuit during the line blanking interval;

e. a control circuit coupled to the signal quality evaluation circuit and to the antenna switching unit, said control circuit including a comparator for testing, during the line blanking interval, the quality of the received video signal, and said control circuit, in response to a predetermined result of said testing, effecting switching by said antenna switching unit, during a line period, to change the antenna selection.

5,335,011

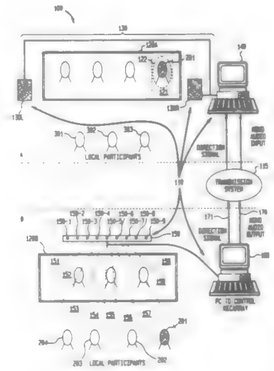
SOUND LOCALIZATION SYSTEM FOR TELECONFERENCING USING SELF-STEERING MICROPHONE ARRAYS

Eric J. Addeo, Long Valley; John D. Robbins, Denville, and Gennady Shtirmer, Morris Plains, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Jan. 12, 1993, Ser. No. 3,380

Int. Cl.[5] H04M *11/00;* **H04N** *7/12*

U.S. Cl. 348—15 **19 Claims**



1. A method for transmitting audio and video signals between first and second stations comprising the steps of:

receiving, at a microphone array located in a first station, a sound from at least one of a plurality of non-overlapping volume zones of said first station,

determining, at said first station, based on the sound detected in each of said zones, a zone in which said sound originated by successively forming a highly directional beam in each of said zones, and

transmitting from said first station to a second station a monochannel audio signal representative of said sound, a direction signal indicating said zone of origin of said sound and a video signal representative of an image of said first station.

5,335,012

APPARATUS FOR INSPECTING THE SEAL OF INSULATING GLASS PANES

Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening, Austria

Filed Sep. 15, 1992, Ser. No. 944,991

Claims priority, application Austria, Sep. 16, 1991, 1858/91

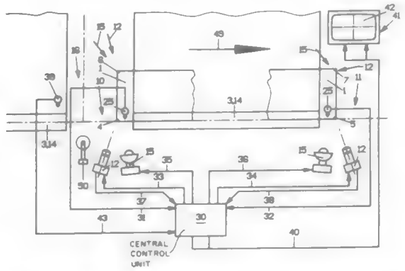
Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—92 **20 Claims**

1. Apparatus for inspecting the seal of insulating glass panes (1) in the zone of corners (4, 5, 6, 7) of an insulating glass pane (1), comprising at least one TV camera (12), located in the region of a delivery conveyor (3, 14) of a sealing facility for insulating glass panes, and at least one monitor (41) connected to the at least one camera (12) for displaying the stationary recorded images of corners (4, 5, 6, 7) of an insulating glass pane (1) recorded by the camera (12), the at least one camera

VOL 1165 ISS 1 AG 2 1994 UMI

(12) being provided in an interruption (16) beside the beginning (10) of the delivery conveyor (3, 14) through which a sealing



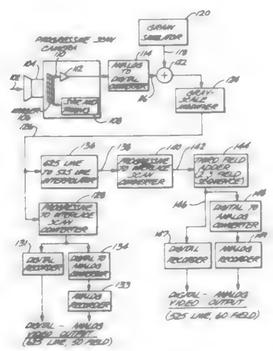
nozzle (50) moves from a ready position into an operative position.

5,335,013

METHOD AND APPARATUS FOR VIDEO CAMERA IMAGE FILM SIMULATION

Robert A. Faber, 14054 Badger Ave., Sylmar, Calif. 91342

Filed Jan. 16, 1992, Ser. No. 821,790
Int. Cl.[5] H04N 5/253
U.S. Cl. 348—104 23 Claims



1. A video camera for generating a video signal to simulate the appearance of film-recorded images comprising:
means for receiving an optical image;
means for sampling the receiving means to generate a sampled video image of 24 progressively-scanned single field frames per second;
means for modifying the sampled video image to simulate the nonlinear gray scale of film; and
means for converting the modified video image into a video image of an interlaced format.

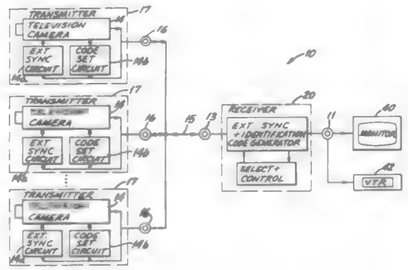
5,335,014

METHOD AND APPARATUS FOR REMOTE SYNCHRONOUS SWITCHING OF VIDEO TRANSMITTERS

David Elberbaum, Tokyo, Japan, assignor to Elbex Video, Ltd., Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,918
Int. Cl.[5] H04N 7/18
U.S. Cl. 348—159 28 Claims

1. A method for synchronous remote switching of a plurality of transmitters in a television system including a plurality of transmitters for transmitting a composite video signal, each transmitter incorporating an individually allotted identification code, a receiver for receiving said composite video signal, and at least one transmission line for transmitting and receiving information between said transmitters and said receiver, the method comprising the steps of:
transmitting an external synchronizing signal from said receiver to said transmitters through said transmission line along with an identification code signal commensurate with the individually allotted identification code of a



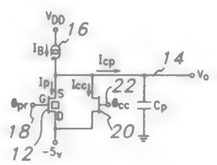
respective transmitter, wherein the external synchronizing signal is modified in said receiver so that a fluctuated external synchronizing signal is produced which is transmitted to said transmitters through said transmission line, and
switching a respective one of said transmitters on to transmit said composite video signal to said receiver through said transmission line whenever said identification code signal is commensurate with a respective individually allotted identification code and after said external synchronizing signal has been modified.

5,335,015

METHOD FOR IMPROVED DYNAMIC RANGE OF BCMD IMAGE SENSORS

Alan N. Cooper, Coppell; William P. McCracken, Garland, and Jaroslav Hynecek, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 30, 1992, Ser. No. 969,668
Int. Cl.[5] H04N 3/14
U.S. Cl. 348—302 7 Claims



1. A method for improving the dynamic range of an image array photosite, comprising the steps of:
turning on a column clamp transistor having a source coupled to a photosite transistor source and a drain coupled to a photosite transistor drain, said column clamp transistor is turned on by a column clamp transistor gate voltage;
decreasing a current supplied to a column sense line below a quiescent value, said column sense line is coupled to said photosite transistor source;
turning on said photosite transistor by a photosite transistor gate voltage;

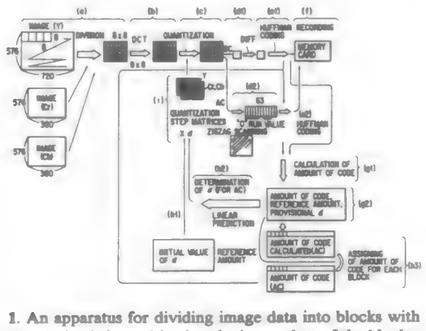
turning off said photosite transistor and said column clamp transistor at substantially the same time;
increasing said current above said quiescent value; and
returning said current to said quiescent value.

5,335,016

IMAGE DATA COMPRESSING/CODING APPARATUS

Chihiro Nakagawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,366
Claims priority, application Japan, Jan. 29, 1991, 3-026702
Int. Cl.[5] H04N 7/133
U.S. Cl. 348—405 19 Claims



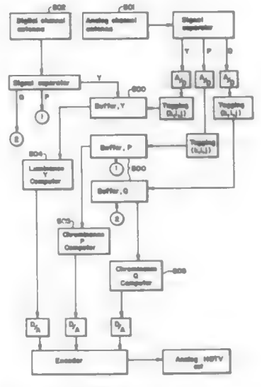
1. An apparatus for dividing image data into blocks with a predetermined size, subjecting the image data of the blocks to an orthoganol transformation to obtain orthogonal transformation coefficients, quantizing the orthogonal transformation coefficients with quantizing means, and compressing and coding the quantized orthogonal transformation coefficients with variable length coding means, the apparatus comprising:
means for calculating an amount of code data based on the output from said variable length coding means;
control means for providing a reference amount of code data of the image data of one frame and sending forth a statistic process instruction and a coding process instruction after the completion of the statistic process;
setting means for supplying to said quantizing means provisional quantization step data corresponding to the reference amount of code data supplied from said control means in the statistic process and the provisional quantization step data for a DC component of the orthogonal transformation coefficients and an optimum quantization step data for an AC component of the orthogonal transformation coefficients, the optimum quantization step data corresponding to a remainder amount of code data obtained by subtracting the amount of code data of the DC component which is quantized by using the provisional quantization step data from the reference amount of code data set by said control means;
means for calculating an amount of code data to be assigned to each block based on an amount of code data obtained in the statistic process and the reference amount of code data; and
means for stopping the coding operation of said variable length coding means in the coding process when the amount of code data of a block exceeds the assigned amount of code data of the block, and wherein said quantizing means quantizes the orthogonal transformation coefficients in accordance with the provisional and optimum quantization step data.

5,335,017

METHOD FOR ENCODING TRANSMITTING AND RECEIVING HIGH DEFINITION TELEVISION SIGNALS USING SINGLE VARIABLE INDEPENDENT EQUATIONS REPRESENTING EACH PIXEL OVER TIME

Dan Brasoveanu, 4603 Virginia Ave., Baltimore, Md. 21225, and Mihai C. Rauta, Rockville, Md., assignors to Scott C. Harris; Dan Brasoveanu and M. Rauta, Washington, D.C.

Filed Jan. 8, 1993, Ser. No. 2,278
Int. Cl.[5] H04N 7/12
U.S. Cl. 348—426 9 Claims



9. High definition receiving system representing a plurality of pixels which represent frames of television information, comprising:
a memory which stores an equation of a basic form, and which stores a plurality of values indicative of coefficients of said equations, one group of coefficients representing a time progression of each pixel of a high definition television screen over a plurality of frames;
calculating means for calculating a value of each said pixel over said plurality of frames from said stored values indicative of coefficients and said stored equations; and
a receiver structure receiving a television signal which includes instructions to update ones of said values indicative of coefficients for particular one of said pixels and to update a television picture represented thereby.

5,335,018

DIGITAL PHASE-LOCKED LOOP

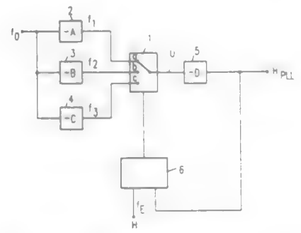
Ulrich Möhlmann, Buchholz-Dibbersen; Gerd Onken, Hamburg; Dieter Kunze, Lentfördea, and Jörg Wolber, Pinneberg-Thesdorf, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 969,613, Oct. 30, 1992, abandoned.
This application Oct. 25, 1993, Ser. No. 142,645
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1991, 4138543
Int. Cl.[5] H04N 5/12
U.S. Cl. 348—536 24 Claims

1. A digital phase-locked loop (PLL) which responds to a square-wave input signal of expected frequency f_E and comprises: a change-over switch which is switched in response to square-wave signals of different frequencies and precedes a main divider operating with a divisor D, the main divider producing the output signal of the phase-locked loop, the change-over switch being activated via a switching logic dependent upon said output signal and the input signal, characterized in that
the change-over switch is switched between a first square-

VOL 1165 ISS 1 AG 2 1994 UMI

wave signal of a first frequency f_1, a second square-wave signal of a second frequency f_2 and a third square-wave signal of a third frequency f_3, in which $f_1 (1/D) = F_E$, and the switching logic controls the change-over switch such that it is switched to the first signal of the first frequency f_1 in the period between two pulses of the input signal, and



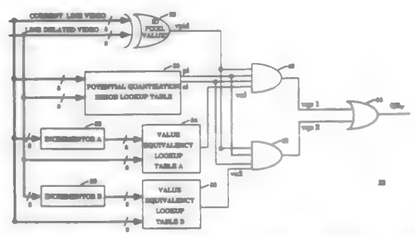
to the second signal of the second frequency f_2 during a pulse of the input signal and a first state of the output signal, and to the third signal of the third frequency f_3 during a pulse of the input signal and a second state of the output signal, and in that $f_2 > f_1 > f_3$ when the circuit locks in on the leading edges of the pulses of the input signal and $f_2 < f_1 < f_3$ when the circuit locks in on the trailing edges.

5,335,019

DIGITAL VIDEO DATA QUANTIZATION ERROR DETECTION AS APPLIED TO INTELLIGENT DYNAMIC COMPANDING

William Herz, Newark, and David Rossmere, San Jose, both of Calif., assignors to Sony Electronics, Inc., Park Ridge, N.J.

Filed Jan. 14, 1993, Ser. No. 4,687
Int. Cl.[5] H04N 5/21
U.S. Cl. 348—607 38 Claims



1. In a digital video system comprising a plurality of digitized lines of video, an apparatus for detecting quantization errors of numerically adjacent values of digital video data of adjacent pixels in a dimension of pixel adjacency, said apparatus comprising:

a) first condition determination means for determining whether digital video data of a first and a second line of video have identical pixel values, said first and second lines of video being synchronized in said dimension of pixel adjacency;

b) second condition determination means for determining whether corresponding digital video data of said first and second lines of video are members of a list of input values (data_in) of a digital video data shifting/modifying function that cause quantization errors;

c) third condition determination means for determining whether corresponding digital video data of said first and second lines of video are numerically adjacent to each other; and

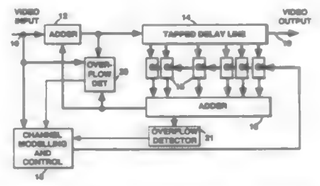
d) fourth condition determination means coupled to said first, second and third condition determination means for determining if quantization errors of numerically adjacent values exist for corresponding digital video data of said first and second lines of video based on the determination results of said first, second and third condition determination means.

5,335,020

IIR GHOST CANCELLING SYSTEM WITH REDUCTION OF FILTER INSTABILITY

Charles B. Dieterich, Kingston, N.J., assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Mar. 3, 1993, Ser. No. 25,496
Int. Cl.[5] H04N 5/213, 5/21
U.S. Cl. 348—614 9 Claims



1. Multipath signal canceling apparatus comprising:

a source of input signal;

a programmable IIR filter including; delay elements for providing a plurality of relatively delayed signals, weighting circuits, having input connections for receiving weighting coefficients, said weighting circuits for weighting respective said delayed signals, combining circuitry coupled to said weighting circuits, for combining weighted signals provided by said weighting circuitry, and signal summing means for combining said input signal and output signal provided by said combining circuitry;

channel modeling means, responsive to said input signal, for generating said weighting coefficients, said channel modeling means arranged to add the magnitudes of the generated weighting coefficients together to generate a sum of weighting coefficients and to scale said weighting coefficients to produce scaled weighting coefficients if said sum of weighting coefficients exceeds a predetermined value, said scaling of said weighting coefficients arranged to reduce said sum of weighting coefficients; and

means for applying said scaled weighting coefficients to said input connections if said sum of weighting coefficients exceeds said predetermined value and for applying said weighting coefficients to said connections otherwise.

5,335,021

LOGICAL COMB FILTER AND CHROMA SIGNAL SEPARATION CIRCUIT

Akira Sawada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,811
Claims priority, application Japan, Nov. 30, 1990, 2-340907; Feb. 13, 1991, 3-019614
Int. Cl.[5] H04N 9/64
U.S. Cl. 348—664 11 Claims

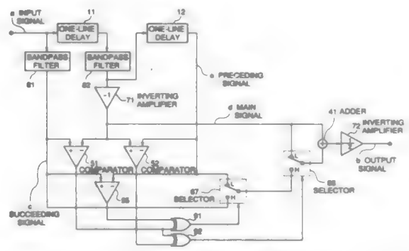
4. A logical comb filter comprising

input means for deriving first, second and third signals from an input signal including a first delay circuit receiving an input signal for delaying the received input signal by one scan line period to produce a main signal composed of the delayed input signal, a second delay circuit receiving said main signal for delaying the received main signal by one scan line period to produce a preceding signal composed of the delayed main signal, said first, second and third

signals being derived from said input signal, said main signal and said preceding signal,

discrimination means for receiving said first, second and third signals for producing first, second and third discrimination signals,

control signal generating means for generating first and second control signals in response to said first, second and third discrimination signals, and



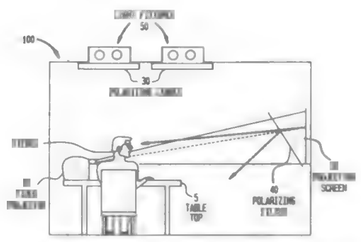
a selection circuit means for receiving said first, second and third signals and controlled by said first and second control signals for selecting said second signal in response to a first state of said first control signal, and for selecting either said third signal or said first signal in accordance with said second control signal and a second state of said first control signal.

5,335,022

HIGH-CONTRAST FRONT PROJECTION VIDEO DISPLAY SYSTEM

David A. Braun, Denville; Terence J. Nelson, New Providence, and Lanny S. Smoot, Morris Township, Morris County, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 830,172, Jan. 31, 1992. This application Sep. 23, 1993, Ser. No. 126,150
Int. Cl.[5] H04N 5/74, 9/31
U.S. Cl. 348—744 9 Claims



1. A front-projection video display system for obtaining high contrast in a viewing room without darkened ambient conditions comprising:

a front-projection video projector, which projects an image in components, said projected image having an intensity and said components having substantially the same direction of polarization, wherein said front projection video projector produces a projected image comprising three components, a first and a second component having the same polarization and a third component being orthogonally polarized to said first and second components, and wherein said projector comprises a first half-wave plate for rotating said third component into agreement with said first and second components;

a polarization maintaining projection screen for receiving said projected image from said video projector; and

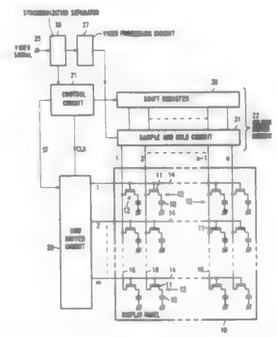
a polarizing filter located between said video projector and said projection screen, said filter being polarized in the same direction as said components of said projected image, wherein said polarization maintaining screen substantially preserves the intensity of said projected image on roundtrip between said polarizing filter and said screen.

5,335,023

MULTI-STANDARD VIDEO MATRIX DISPLAY APPARATUS AND ITS METHOD OF OPERATION

Martin J. Edwards, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 22, 1993, Ser. No. 34,039
Claims priority, application United Kingdom, Apr. 7, 1992, 9207527
Int. Cl.[5] H04N 5/66, 3/14
U.S. Cl. 348—800 9 Claims



8. A method of operating a matrix display for displaying an applied video signal in the form of any one of a plurality of different standards and comprising a display panel having an array of picture elements arranged in a set number of rows and columns, and driving means for driving the picture elements according to the applied video signal, said method including the steps of supplying data signals derived from the applied video signal to the columns of picture elements and scanning the rows of picture elements in turn at rates which are determined from the standard of the applied video signal, characterised in that the rows of picture elements are scanned at a rage which is substantially equal to the number of rows of picture elements in the panel divided by the active field period of the applied video signal.

5,335,024

AUTOMATIC KINESCOPE BIAS ARRANGEMENT

Enrique Rodriguez-Cavazos, Indianapolis, and Robert D. Altmanshofer, Carmel, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Nov. 9, 1992, Ser. No. 973,812
Claims priority, application United Kingdom, Nov. 13, 1991, 9124071
Int. Cl.[5] H04N 5/68
U.S. Cl. 348—806 10 Claims

1. A television system comprising:

a display device;

a source of a video signal;

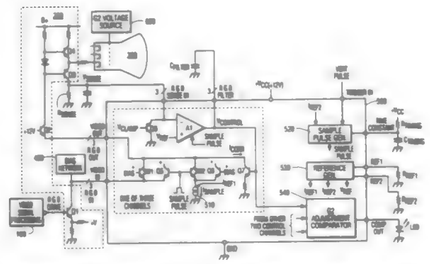
means for amplifying said video signal to produce an amplified version of said video signal; said amplifying means

VOL 1165 ISS 1 AG 2 1994 UMI

including an input portion coupled to said source and an output portion coupled to said display device;

means for providing a bias signal for said display device coupled to said input portion of said amplifying means; and

an integrated circuit including an input terminal coupled to said input portion of said amplifying means; an output terminal coupled to said output portion of said amplifying means; a sense terminal coupled to said output portion of said amplifying means; means for generating a timing signal during a test interval; means for generating a test



signal in response to said timing signal; means coupled to said output terminal for coupling said test signal to said display device via said output portion of said amplifying means; means coupled to said sense terminal for generating a correction signal in response to said test signal; means coupled to said output terminal for coupling said correction signal to said display device via said output portion of said amplifying means; and a switching element coupled between said input and output terminals for selectively decoupling said input and output portions of said amplifying means and thereby decoupling said bias signal from said display device in response to said timing signal.

5,335,025

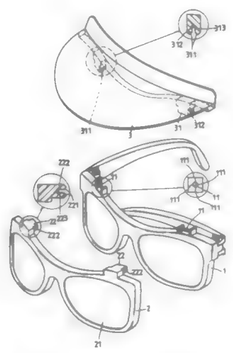
DETACHABLE MOUNTING FOR SUNSHADE AND SUNGLASSES ON VISION CORRECTING EYEGLASSES

Wen T. Wang, #246-1, Kang Kou, Kang Kou Tsun, An Ting Hsiang, Tainan Hsien, Taiwan

Filed May 10, 1993, Ser. No. 58,212

Int. Cl.[5] G02C *3/00, 7/16, 9/02*

U.S. Cl. 351—47 **1 Claim**



1. A frame for vision correcting eyeglasses having a pair of temples and being adapted for releasable interchangeable coupling with a secondary eyeglass frame and a sunshade, comprising:

a pair of shaft members affixed to an upper edge of said vision correcting eyeglass frame in longitudinally spaced relation, each of said pair of shaft members extend in said longitudinal direction and are disposed in parallel spaced relation above said upper edge of said vision correcting eyeglass frame, each of said shaft members having a rhomboid contour defined by four angularly directed sides;

a pair of first catches integrally formed on an upper edge of said secondary eyeglass frame in longitudinally spaced relation and in corresponding alignment with said pair of shaft members for releasable coupling therewith, each of said pair of first catches having a first open end directed toward a rear side of said secondary eyeglass frame, said first open end being in open communication with a first channel opening extending longitudinally through each of said pair of first catches, said first channel opening having angularly walls to define a rhomboid channel contour corresponding to said rhomboid contour of said shaft members for pivotal displacement of said secondary eyeglass frame to one of a plurality of discrete positions relative to said vision correcting eyeglass frame defined by said rhomboid contours of said first channels and said shaft members; and,

a pair of second catches integrally formed on a lower surface of said sunshade in longitudinally spaced relation and in corresponding alignment with said pair of shaft members for releasable coupling therewith, each of said pair of second catches having a second open end directed away from said lower surface of said sunshade, said second open end being in open communication with a second channel opening extending longitudinally through each of said pair of second catches, said second channel opening having angularly walls to define a rhomboid channel contour corresponding to said rhomboid contour of said shaft members, whereby said secondary eyeglass frame and said sunshade are interchangeably attachable to, and detachable from, said vision correcting eyeglass frame.

5,335,026

EYEGLASS LENS

Kazutoshi Kato; Toshiharu Katada, and Osamu Yokoyama, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 714,292, Jun. 12, 1991, Pat. No. 5,270,746. This application May 27, 1993, Ser. No. 67,878

Claims priority, application Japan, Jun. 13, 1990, 2-154371; Aug. 22, 1990, 2-220592; Nov. 28, 1990, 2-326440

Int. Cl.[5] G02C *7/02, 7/06*

U.S. Cl. 351—159 **7 Claims**



1. An eyeglass lens for correcting an astigmatism, said lens having an optical center and periphery comprising an outer facing front refracting surface having a minus refracting power and an outer facing rear refracting surface, said rear refracting surface having a radius of curvature which varies from the optical center of the lens to the outer periphery of the lens.

5,335,027

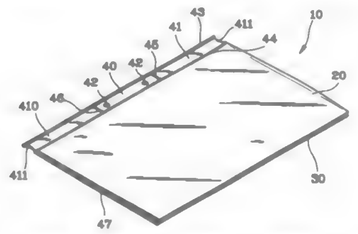
TRANSPARENCY FOLDER

Fong-Ing Lin, 5 Fl. No. 2, Lane 62, Sec. 1, Chung Cheng Rd., Tan Shui Jen, Taipei Hsien, and Sheau-Wen Lin, 3 Fl., No. 21, Lane 16, Tzu Yu Rd., Hsinchu City, both of Taiwan

Filed Jul. 28, 1993, Ser. No. 98,634

Int. Cl.[5] B65D *27/00*

U.S. Cl. 353—120 **10 Claims**



1. A transparency folder comprising a transparent plastic folder and an opaque contrast sheet; said transparent plastic folder including an opening on the top end thereof, and seal edges on the side edge and the bottom edge on the side edge thereof; said opaque contrast sheet having a seal edge on the side edge and a folding line, and said opaque contrast sheet being attached on the back of said transparent plastic folder; said transparent plastic folder and said opaque contrast sheet being attached together at one edge with a sealing method to form a binding part and two index regions, and a seal edge on the bottom edge of said transparent plastic folder.

5,335,028

WATERPROOF AND/OR WATER-RESISTANT CAMERA

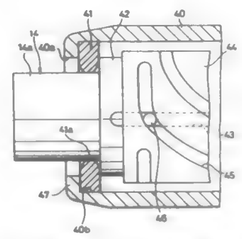
Kosei Kosako, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 762,449, Sep. 19, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 3,847

Claims priority, application Japan, Sep. 20, 1990, 2-098813; Jul. 11, 1991, 3-062091

Int. Cl.[5] G03B *17/08*

U.S. Cl. 354—64 **11 Claims**



1. A waterproof and/or water-resistant camera comprising:

a camera body;

a stationary lens barrel which is provided with said camera body;

a photographing lens barrel which is provided in said stationary lens barrel and is movable in an optical axis direction of said camera; and

annular seal means for sealing provided between an outer periphery of said photographing lens barrel and an inner periphery of said stationary lens barrel,

at least a surface layer of said photographing lens barrel that is in contact with said annular seal means being composed of a rustproof material with a hardness of at least Hv 150, said photographing lens barrel being composed of metal with said surface layer being chrome plated.

5,335,029

MAGNETIC RECORDING SYSTEM FOR CAMERA USING FILM WITH MAGNETIC RECORDING PORTION

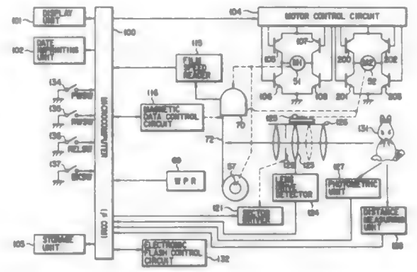
Junichi Itoh; Masahiro Doi; Yasushi Toizumi; Kazunori Mizokami; Yoji Watanabe, and Ayumu Midorikawa, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 80,317

Claims priority, application Japan, Jun. 26, 1992, 4-169687; Sep. 14, 1992, 4-244961

Int. Cl.[5] G03B *17/24, 1/00*

U.S. Cl. 354—106 **48 Claims**



1. A magnetic recording apparatus for a camera using a film with a magnetic recording portion, comprising:

magnetic recording means for recording photographic data on a predetermined position of said magnetic recording portion when said film is wound after photography corresponding to one frame is completed;

electrically erasable nonvolatile storage means for storing the photographic data after the photography corresponding to one frame is completed;

magnetic reproducing means for reproducing the photographic data recorded on said magnetic recording portion while said film is rewound;

determining means for determining whether the photographic data reproduced by said magnetic reproducing means coincides with the photographic data stored in said storage means; and

re-recording means for causing said magnetic recording means to re-record the photographic data, stored in said storage means, on the predetermined position of said magnetic recording portion when said determining means determines that the two photographic data do not coincide with each other.

5,335,030

VIEW FINDER OF ZOOM LENS CAMERA

Shinya Suzaka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 952,070

Claims priority, application Japan, Sep. 30, 1991, 3-320856; Sep. 30, 1991, 3-320857; Sep. 30, 1991, 3-320858

Int. Cl.[5] G03B *15/03*

U.S. Cl. 354—149.1 **24 Claims**

1. View finder apparatus of a zoom lens camera, said view finder apparatus comprising:

a zoom lens;

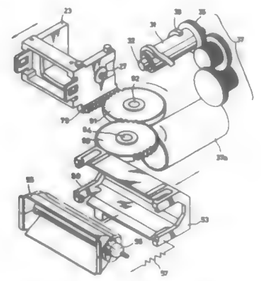
an object distance measuring device having a light emitter and a light receiver;

a zoom finder device comprising means for varying the field of view of said zoom finder device in association with said zoom lens, said zoom finder device being positioned be-

VOL 1165 ISS 1 AG 2 1994 UMI

tween said light emitter and said light receiver of said object distance measuring device;

a strobe positioned so that one of said light emitter and said light receiver is positioned between said strobe and said zoom finder device; and



means for associating movement between said zone finder device and said strobe so that said strobe is moved in response to movement of said zoom finder device.

5,335,031

APPARATUS FOR CHANGING THE SIZE OF THE PHOTOGRAPHING APERTURE IN A CAMERA

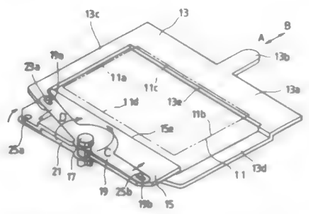
Yuji Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaishi, Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 17,182

Claims priority, application Japan, Feb. 12, 1992, 4-005258[U]; Feb. 13, 1992, 4-005504[U]

Int. Cl.[5] G03B *17/02*

U.S. Cl. 354—159 16 Claims



1. An apparatus for changing a size of an aperture which defines a photographing aperture in a camera, comprising:

a pair of light intercepting plates which can cover a predetermined area of end edges of the aperture to partly intercept light incident thereupon; and,

an association mechanism which moves the light intercepting plates in association with each other between a retracted position in which the aperture is fully opened and a restricted-size position in which the aperture is partly covered,

said association mechanism comprising a shaft secured to a camera body, and a connecting rotatable member which is rotatably mounted to the shaft, said connecting rotatable member comprising a pair of rotatable plates which are relatively rotatably mounted to said shaft in a superposed configuration, and connected at one end thereof to one of the light intercepting plates and at the other end thereof to the other light intercepting plate, receptively, so that the rotation of the connecting rotatable member causes the associated movement of the light intercepting plates between the retracted position and the restricted-size position, wherein one of the light intercepting plates is provided with association arms extending towards the other light intercepting plate, outside the aperture in the retracted position, so that one of opposite ends of one of the rotatable plates is connected to one of the association arms of one of the light intercepting plates, and the other end of one of the rotatable plates is connected to the other light intercepting plate, respectively, and one end of the other rotatable plate is connected to the other end of one of the light intercepting plates, and the other end of the other rotatable plate is connected to the other light intercepting plate, respectively.

5,335,032

IMAGE STABILIZING APPARATUS

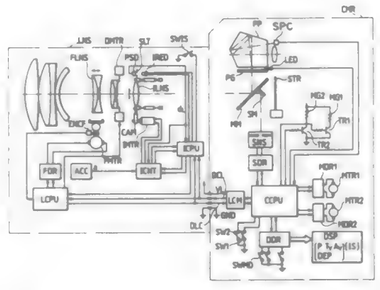
Ichiro Onuki, and Masao Shikaumi, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,886

Claims priority, application Japan, Apr. 26, 1991, 3-122991; Apr. 26, 1991, 3-122993

Int. Cl.[5] G03B *1/18, 3/00, 17/00;* H04N *5/232*

U.S. Cl. 354—195.1 28 Claims



1. An image stabilizing apparatus comprising:

(A) image stabilizing means controllable for stabilizing an image by moving in an optical path;

(B) direction of gravity detection means for detecting a direction in which gravity acts on said image stabilizing means during operation of said image stabilizing means; and

(C) control means for changing a control of said image stabilizing means in response to an output of said direction of gravity detection means.

5,335,033

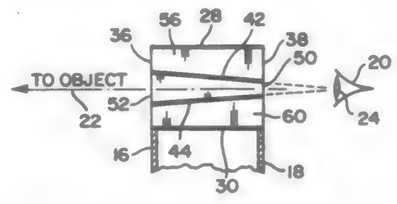
LENSLESS CAMERA VIEWFINDER

Paul L. Ruben, Penfield, and William L. Burnham, LeRoy, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1992, Ser. No. 919,422

Int. Cl.[5] G03B *13/02*

U.S. Cl. 354—219 21 Claims



1. A lensless viewfinder for a camera, having a body and an optical element, for use by a photographer in taking a picture

of an object or scene in object space in front of the camera, in a frame, which viewfinder comprises means for presenting to a pupil of an eye of the photographer when the camera is pointed towards said object space a view perimeter of which is the perimeter of the frame of said picture, means for blocking a portion of said view which becomes virtually imperceptible when said camera is pointed to bring the center of said frame along the line of sight between said pupil and the object or scene, and said viewfinder having front and rear windows respectively closer to and further from the object, said front window defining said perimeter of said frame when said pupil is located along said line of sight rearwardly of said rear window along said line of sight at a design position where said blocking means becomes virtually imperceptible.

5,335,034

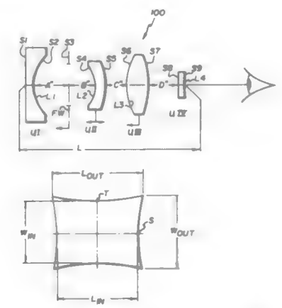
ZOOM VIEWFINDER WITH NON-RECTANGULAR WINDOW

Alan E. Lewis, Rochester, and Paul L. Ruben, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 1, 1992, Ser. No. 938,966

Int. Cl.[5] G03B *13/02*

U.S. Cl. 354—219 10 Claims



1. A viewfinder comprising a plurality of optical units and a framing window located within said viewfinder, said framing window having a fixed size non-rectangular aperture opening with curved sides to provide a rectangular field of view.

5,335,035

VISUAL LINE DIRECTION DETECTING DEVICE FOR THE CAMERA

Yoshihiro Maeda, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Feb. 23, 1993, Ser. No. 21,314

Claims priority, application Japan, Feb. 24, 1992, 4-036258

Int. Cl.[5] G03B *13/02;* A61B *3/14*

U.S. Cl. 354—219 29 Claims

1. A visual line direction detecting device comprising:

a finder optical system of a camera;

light-emitting means for radiating light on an eyeball of a user of the camera through at least a portion of said finder optical system;

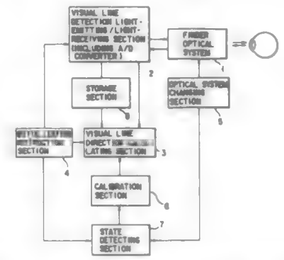
light-receiving means for receiving light reflected by the eyeball of the user;

storage means for storing an output from said light-receiving means when the user watches a predetermined position on a finder of the finder optical system;

calculating means for calculating the direction in which the user is looking in accordance with outputs from said storage means and said light-receiving means;

detecting means for detecting a change in said finder optical system; and

correcting means for correcting an output from said calculating means when a change in said finder optical system



is detected by said detecting means after a storage operation in said storage means.

5,335,036

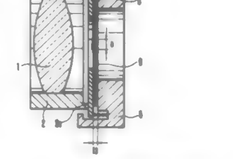
SHUTTER DEVICE FOR CAMERA

Chikara Aoshima, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,679

Int. Cl.[5] G03B *9/40*

U.S. Cl. 354—246 27 Claims



1. A shutter device for a camera, comprising:

a) a plurality of shutter blades arranged to be movable to a first position for closing and to a second position for opening; and

b) switching means for changing a clearance provided between said plurality of shutter blades along an optical axis from a first state over to a second state in which said clearance is narrower than in said first state, said switching means being capable of changing from said first state to said second state at the first position of said plurality of shutter blades.

5,335,037

CAMERA PROVIDED WITH LIGHT EMITTING DEVICE

Hideo Yoshida, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Nov. 12, 1992, Ser. No. 974,458

Claims priority, application Japan, Nov. 12, 1991, 3-101371[U]

Int. Cl.[5] G03B *17/02, 3/00*

U.S. Cl. 354—288 4 Claims

1. A camera provided with a light emitting device comprising:

a light emitting device for autofocusing control;

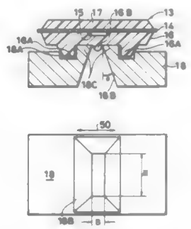
a light receiving device for sensing the light emitted from the emitting device and reflected from a subject to detect

VOL 1165 ISS 1 AG 2 1994 UMI

light-receiving positions which vary in the direction of a base length joining the light emitting device and the light receiving device with the distance to the subject;

an adapter for attaching said light emitting device to the camera body;

a light-shielding member integrated in said adapter in such a manner as to cover the light emitting device with an



opening provided to project light through when said light emitter is attached to said adapter; and

an opening in said adapter having a larger width of said opening in the direction perpendicular to the direction of the base length than the width of said opening in the direction of the base length for increasing the quantity of light emitted.

5,335,038

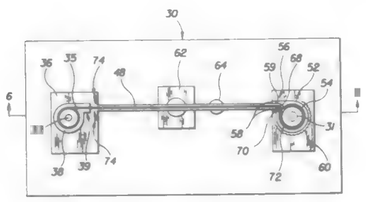
METHOD AND APPARATUS FOR PREPARING A PHOTOGRAPHIC FILMSTRIP FOR PROCESSING IN A PHOTO FINISHING APPARATUS

Robert J. Blackman, Rochester; William J. Greene, Webster, and Newton C. M. Landis, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1993, Ser. No. 53,757

Int. Cl.[5] G03D *3/08*

U.S. Cl. 354—319 **15 Claims**



1. A method of transferring a photographic filmstrip from a film supply cartridge to a photo finishing apparatus, wherein the filmstrip is initially coiled about a spool inside the cartridge with a trailing film end portion secured to the spool and a leading film end portion being free, said method comprising the steps of:

advancing the filmstrip, leading film end portion first, from the supply cartridge into a host container;

reverse coiling the filmstrip, leading film end portion first, inside said host container to reduce any longitudinal curl in said filmstrip resulting from the filmstrip being wound on said spool; and

releasing the trailing film end portion from the spool.

5,335,039

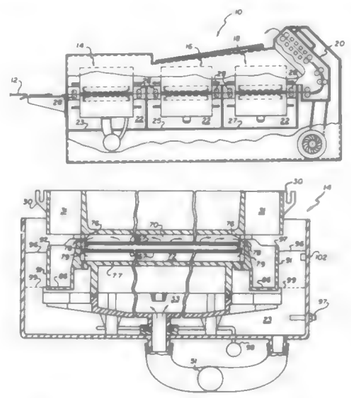
APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIAL

Bruce R. Muller, Rochester; Douglas O. Hall, Canandaigua; David G. Sherburne, Ontario, and Thomas W. Glanville, Churchville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1992, Ser. No. 956,136

Int. Cl.[5] G03D *3/02, 13/02*

U.S. Cl. 354—324 **30 Claims**



1. In an apparatus for processing photosensitive material, the apparatus having an upper tank for a processing fluid and a lower tank for the processing fluid, an narrow processing chamber between the upper tank and lower thanks through which the photosensitive material can be advanced for processing the photosensitive material, said chamber having an entrance at one end and an exit at the other end to allow the photosensitive material to travel through the chamber, a first nozzle assembly for supplying processing fluid from the upper tank to the processing chamber, said first nozzle assembly comprising and an inner nozzle mounted to the upper tank and at least one outer nozzle secured to said upper tank, said inner and at least one outer nozzle being spaced apart a predetermined distance so as to form a discharge opening there between, said discharge opening being in fluid communication with the processing fluid in said upper tank so as to create a first fluid layer on one side of the photosensitive material, a first drain for removing processing fluid from the first fluid layer, a second nozzle assembly for supplying processing fluid from the lower tank to the processing chamber, said second nozzle assembly comprising an inner nozzle mounted to the lower tank and at least one outer nozzle secured to the lower tank, said inner and at least one outer nozzle of said second nozzle assembly being spaced apart a predetermined distance so as to form a discharge opening there between, said discharge opening being in fluid communication with the processing fluid in said lower tank so as to create a second fluid layer on the other side of the photosensitive material, a second drain for removing processing fluid from the second fluid layer, the improvement comprising;

said inner nozzles and at least one outer nozzles of said first and second nozzle assemblies being made of a plastic material, and means for maintaining said predetermined distance between said inner and outer nozzles substantially constant along the length of the discharge opening comprises a plurality of spaced projections of substantially identical thickness between said inner and at least one outer nozzles.

5,335,040

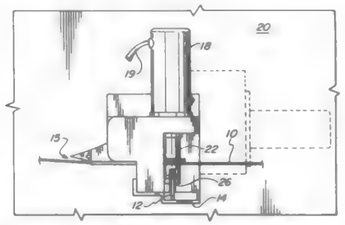
APPARATUS FOR SELECTIVELY NOTCHING OR CUTTING PHOTOGRAPHIC FILM OR THE LIKE

Richard A. Keeney, Eagan, and Gerald Jensen, Plymouth, both of Minn., assignors to Management Graphics, Inc., Minneapolis, Minn.

Filed Oct. 6, 1992, Ser. No. 957,220

Int. Cl.[5] G03B *19/00*

U.S. Cl. 354—354 **19 Claims**



1. Apparatus for selectively notching a portion of a material or severing said material by cutting entirely through it comprising:

means for guiding a material along a path;

a blade mounted for variable penetration into said path; and

automated drive means interconnected with said blade for driving said blade into said path;

wherein said drive means:

are selectively actuable to move said blade to a first position to notch a portion of said material and to a second position to sever said material; and

include a first solenoid drivingly engageable with said blade for moving said blade from a rest position outside of said path to said second position, said blade passing through said first position as it travels to said second position.

5,335,041

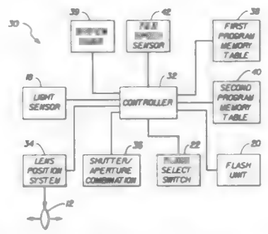
EXPOSURE AND FOCUS SYSTEM FOR A ZOOM CAMERA

Myron E. Fox, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 13, 1993, Ser. No. 120,994

Int. Cl.[5] G03B *7/091, 13/36, 15/03*

U.S. Cl. 354—402 **10 Claims**



1. An automatic focus/automatic exposure system for use in a photographic camera that takes photographs of a scene and includes a flash unit operable in a flash on or flash off status, an objective lens having a variable focus distance, and a shutter-/aperture combination adapted for adjustment through a range of exposure settings comprising shutter times and aperture diameters to produce an exposure, the system comprising:

a light level detecting system that receives ambient light from the scene and produces a light signal representative of the amount of received light;

a controller that receives the light signal and determines a lens focus distance, flash unit status, and exposure setting in accordance with the received light signal value and controls the focus distance of the objective lens, the flash unit status, and the setting of the shutter/aperture combination in accordance with such determinations; and

a program table memory providing data to the controller and having data elements addressed by light signal value, each data element storing lens focus distance data for setting the lens focus distance at one of a plurality of distance zones, flash unit status data for setting the flash unit status, aperture data for setting the aperture size, and shutter time data for setting the shutter open time, such that the flash unit status is changed from off to on at a predetermined light signal value without a corresponding change in lens focus distance.

5,335,042

CAMERA WITH A MOTION COMPENSATION DEVICE

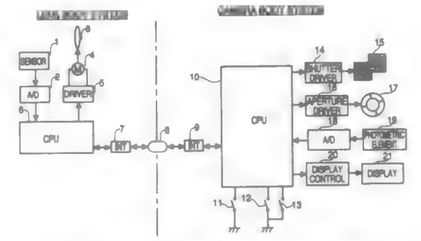
Kazuharu Imafuji; Nobuhiko Terui, and Akira Katayama, all of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,533

Claims priority, application Japan, Jan. 24, 1992, 4-032999

Int. Cl.[5] G03B *7/08, 17/38*

U.S. Cl. 354—430 **22 Claims**



1. A camera, having a motion compensation feature, comprising:

means for detecting a motion level of said camera;

means for compensating motion of said camera;

said means for compensating having a maximum range of compensation;

means for exposing an image;

means for preventing exposing an image when said motion level exceeds said maximum range of compensation; and

means for selectively disabling said means for preventing exposing an image.

5,335,043

SHEET MISFEED AND JAM DETECTION BY MEASURING FORCE EXERTED ON FEED ROLLS

Jacob N. Kluger; Michael J. Martin; Steven R. Moore, and Russell J. Sokac, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 2, 1991, Ser. No. 801,553

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—206 **4 Claims**

1. An apparatus for detecting sheet misfeeds and jams in a device having a supporting frame comprising:

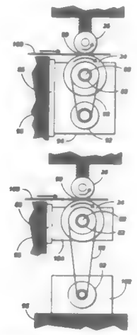
means for advancing the sheet, wherein said advancing means comprises a pair of rolls coaxially parallel and disposed adjacent to each other so that the circumferential surface of the first roll is in contact with the circumferential surface of the second roll so as to form a nip, a drive shaft, a pair of bearings with one of said pair of bearings being mounted on opposed end regions of said drive shaft with each of said rolls being mounted in said bearings;

means operatively associated with said advancing means for measuring the force applied on the sheet in a direction

VOL 1165 ISS 1 AG 2 1994 UMI

substantially parallel to the direction of movement of the sheet by said advancing means as the sheet is advanced by said advancing means, said measuring means comprises a force transducer disposed between said bearings and the supporting frame;

means for comparing the measured force with a reference



force and generating an error signal indicative of the difference therebetween; and

means responsive to the error signal,for displaying misfeeding of the sheet;

a drive motor externally driving one of said rolls about its axis of rotation, said comparing means error signals being adapted to control said drive motor.

5,335,044

PROJECTION TYPE EXPOSURE APPARATUS AND METHOD OF EXPOSURE

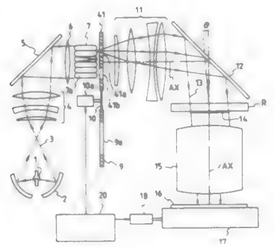
Naomasa Shiraishi, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 20,775

Claims priority, application Japan, Feb. 26, 1992, 4-39754; May 26, 1992, 4-132996

Int. Cl.[5] G03B *27/42*

U.S. Cl. 355—53 20 Claims



1. A projection type exposure apparatus comprising:

a light source for radiating illumination light for exposure;

an illumination optical system for irradiating with said illumination light a mask having a first pattern and a second pattern extending perpendicular to each other;

said illumination optical system having a fly eye type integrator for forming a plurality of images of the light source on or near a Fourier transform plane to a pattern surface of said mask;

a projection optical system for projecting an image of the patterns of said mask on a photosensitive substrate; and

a stop member for restricting passage of said illumination light through said Fourier transform plane to an annular zone with center on an optical axis of said illumination optical system and for partially shielding or reducing said plurality of images of the light source such that a number of images of the light source contributing to a resolution of said first pattern is substantially identical with that of images of the light source contributing to a resolution of said second pattern in said annular zone.

5,335,045

PHOTOGRAPHIC PRINTING MACHINE FOR COPYING ORIGINALS ON SHEET-LIKE COPY MATERIAL

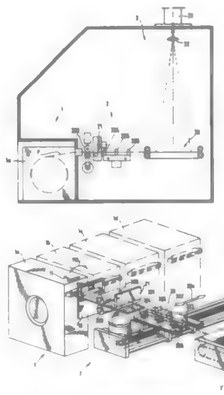
Jürg Kunz, Bülach; Hugo Knecht, Schöfflisdorf, and Erich Binder, Buchs, all of Switzerland, assignors to Gretag Imaging AG, Regensdorf, Switzerland

Filed May 18, 1993, Ser. No. 63,083

Claims priority, application Fed. Rep. of Germany, May 22, 1992, 92810392

Int. Cl.[5] G03B *27/58*

U.S. Cl. 355—72 16 Claims



1. Photographic printing machine for copying originals on sheet-like copy material comprising:

a storage reservoir for copy material, said storage reservoir having a plurality of cassettes each of which includes a cassette opening, the cassette openings of said plurality of cassettes being positioned side by side in a direction substantially perpendicular to a transport direction of copy material;

an imaging unit for imaging an original onto the copy material; and

a feed mechanism for transporting the copy material from the storage reservoir to the imaging unit, said feed mechanism having a carriage that moves in a direction perpendicular to the transport direction of the copy material for transporting the copy material from at least one of said cassette openings to the imaging unit.

5,335,046

CLAMPING MECHANISM FOR USE ON A ROTATABLE PLOTTER DRUM

Brian Bosy, Framingham, Mass., assignor to Intergraph Corporation, Huntsville, Ala.

Continuation-in-part of Ser. No. 23,780, Feb. 22, 1993. This application Mar. 18, 1993, Ser. No. 33,387

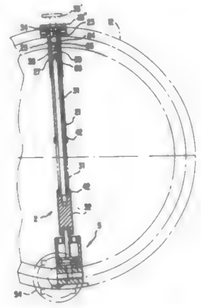
Int. Cl.[5] G03B *27/60;* B41F *1/28, 21/00;* B41L *21/00*

U.S. Cl. 355—73 20 Claims

1. A clamping system for use in a rotatable drum, the clamping system comprising:

a mounting member affixed to the drum, the mounting member having a passage aligned radially with respect to the drum; and

a slidable member extending through the passage and past the drum's axis of rotation, the slidable member including, at one end, a head, which is disposed further from the axis



of rotation than the mounting member and adjacent the drum surface so as to permit clamping between the head and the drum surface, and, at the other end, a weight, which is disposed so that the slidable member's center of mass is opposite the drum's axis of rotation from the head.

5,335,047

PRINTING PLATE MAKING APPARATUS FOR TWO DIFFERENT KINDS OF MASTERS

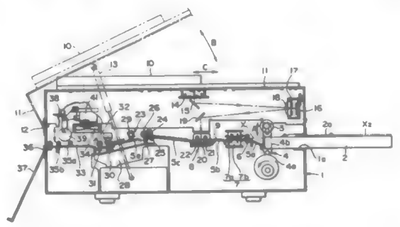
Masanori Kai; Satoshi Okabe, both of Hachioji; Nobuyoshi Hatori, Chofu; Toshio Koike, and Tamio Iwamoto, both of Hachioji, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,396

Claims priority, application Japan, Jul. 17, 1992, 4-026141

Int. Cl.[5] G03G *15/00, 21/00;* G03D *3/08*

U.S. Cl. 355—200 4 Claims



1. A printing plate making apparatus comprising a housing containing:

an exposing stage at which an original image is exposed on a master;

means including a master supplying roller and a charger for supplying a print master to said exposing stage;

locking means for locking said master supplying roller;

a developing stage for developing an exposed master;

a fixing stage including a panel heater and press rollers for fixing a developed master;

a mode selecting switch for selectively altering operational characteristics of at least said master supplying roller, said panel heater and said press rollers; and

a master heating switch comprising means for selectively stopping a supply of voltage to said charger and operating said panel heater as a master heating unit.

5,335,048

EFFICIENT CONTROL SYSTEM OF IMAGE FORMING APPARATUS

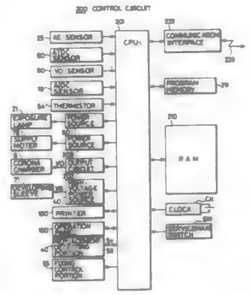
Yoshiaki Takano; Tadafumi Shimizu; Hiroyuki Ideyama; Manabu Kamitamari, all of Toyokawa; Kadotari Nishimori, Amagasaki; Yoshihiko Hatta, Toyokawa; Masazumi Ito; Tsugihito Yoshiyama, both of Toyohashi; Yoshifumi Shibata, Toyokawa, and Yoshiaki Hata, Ashiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 648,460, Jan. 30, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,804

Claims priority, application Japan, Jan. 30, 1990, 2-22714; Jan. 30, 1990, 2-22715

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—204 21 Claims



1. A control system including a plurality of image forming apparatuses and a control unit connected to each of said image forming apparatuses through a communication line, wherein

each of said image forming apparatuses comprises operational data transmitting means for transmitting operational data including information related to a consumption amount of consumables to said control unit through said communication line, and

said control unit comprises;

operational data receiving means for receiving the operational data transmitted from said image forming apparatus through said communication line,

input means for inputting consumables supply data corresponding to an amount of consumables supplied to a user of each of said image forming apparatuses,

memory means for storing the consumables supply data input from said input means, and

calculating means for calculating a present stock amount of consumables, including consumables that are not loaded in said image forming apparatus, on the basis of the operational data received by said operational data receiving means and the consumables supply data stored in said memory means.

5,335,049

EXHAUST DEVICE FOR PICTURE IMAGE FORMING APPARATUS

Makoto Kanai, and Kouichi Okabe, both of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1992, Ser. No. 906,428

Claims priority, application Japan, Jul. 1, 1991, 3-186834

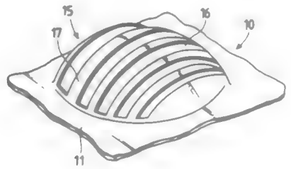
Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—215 2 Claims

1. In a picture image forming apparatus for producing paper recorded with picture images by forming a picture image in toner on a photosensitive body employing an electrophotographic process, transferring the formed picture image in toner onto recording paper, and fixing the recording paper bearing the picture image formed in toner by passing the recording

VOL 1165 ISS 1 AG 2 1994 UMI

paper through a fixing device, the picture image forming apparatus being provided with an exterior frame and means for discharging heat, particulate dust, and the like, generated inside the picture image forming apparatus, to the outside of the exterior frame, the improvement comprising:



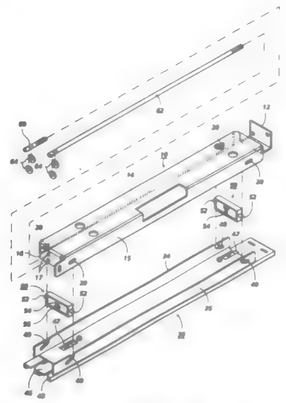
an exhaust device comprising a concave part of the exterior frame and having slits in said concave part for passing exhaust materials through the frame.

5,335,050

ADJUSTABLE SUPPORT ASSEMBLY

William G. Osbourne, and Julio A. Sanchez-Banos, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 13, 1993, Ser. No. 120,892
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—221 16 Claims



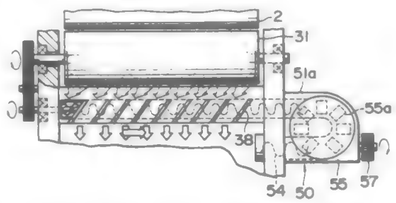
1. An apparatus for adjustably supporting a device at a precise selected distance from a surface, comprising:
a fixedly mounted support bracket having an elongated body extending along a longitudinal axis, including opposed lateral sidewalls and an end cap transverse thereto, said lateral sidewalls having complementary elongated support slots positioned in alignment with one another on each sidewall;
an adjustable support bracket having an elongated body for being mounted in a nestable configuration with said fixedly mounted support bracket, including opposed lateral sidewalls having complementary adjustment slots positioned in alignment with one another on each sidewall;
coupling means having integral support projections extending outwardly therefrom for cooperative engagement with the complementary support slots and the complementary adjustment slots to interactively couple said adjustable support bracket to said fixedly mounted support bracket; and
means for adjustably positioning said coupling means along the longitudinal axis for effecting selective reciprocating movement of said adjustable support bracket relative to said fixedly mounted support bracket.

5,335,051

FOREIGN MATERIAL REMOVING DEVICE AND DEVELOPING APPARATUS COMPRISING THE SAME

Tatsuo Tani, Urayasu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 942,047
Claims priority, application Japan, Sep. 8, 1991, 3-257101; May 27, 1992, 4-160329
Int. Cl.[5] G03G *15/08, 21/00*
U.S. Cl. 355—245 11 Claims



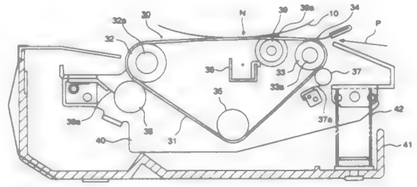
7. A development apparatus for developing latent images formed on a latent image bearing member with a magnetic developer, comprising:
a developer guide member including an opening at a lower portion thereof, with concave and convex portions being formed at least part of the inner peripheral surface thereof;
magnetic field generating means for generating a magnetic field with the magnetic poles thereof being movable along said concave and convex portions of said developer guide member; and
a receiving member disposed below said opening.

5,335,052

IMAGE RECORDING APPARATUS WITH BELT-TYPE TRANSFER DEVICE

Kenji Sato, and Naoto Tokutake, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 86,611
Claims priority, application Japan, Aug. 7, 1992, 4-211438
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—271 6 Claims



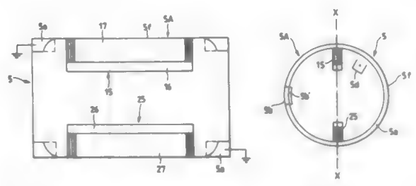
1. An image recording apparatus comprising:
(a) a rotating photoreceptor drum on which a toner image is formed;
(b) a transfer belt charged by a corona charger disposed on a rear side of said transfer belt, said transfer belt transferring said toner image onto a recording sheet and conveying said recording sheet;
(c) a driving roller for driving said transfer belt, said driving roller having first and second end portions and rotational shaft portions positioned at said first and second end portions thereof, one of said rotational shaft portions being connected with a driving source for driving said driving roller;
(d) a driven roller having first and second end portions, said driven roller being driven by said driving roller as said driving roller drives said transfer belt, said driven roller having rotational shaft portions provided at said first end second end portions thereof;
(e) a frame for supporting said rotational shaft portions of both said driving roller and said driven roller, such that said transfer belt is stretched in a loop around both said driving roller and said driven roller; and
(f) a stationary housing for rotatably supporting said frame about a plurality of bearings and for supporting said rotational shaft portions of said driving roller, wherein a first one of said plurality of bearings is fixedly provided to said stationary housing to support that one of said rotational shaft portions of said driving roller which is connected with said driving source, a second one of said plurality of bearings is movably provided relative to said stationary housing, said second one of said plurality of bearing supporting the other one of said rotational shaft portions of said driving roller.

5,335,053

IMAGE FORMING APPARATUS WITH GROUNDED CONDUCTIVE MEMBER CONTACTING A RECORDING SHEET BEARING MEMBER

Takashi Hasegawa, Ageo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,489
Claims priority, application Japan, Mar. 17, 1992, 4-091594
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—274 18 Claims



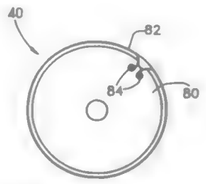
1. An image forming apparatus, comprising:
a recording sheet bearing member for bearing a recording sheet on which an image is to be formed;
a charger brush contacting a surface of said recording sheet bearing member opposite to a surface thereof on which the recording sheet is born and adapted to apply charge to said recording sheet bearing member; and
a grounded conductive member arranged out of a range of movement of a tip of said charger brush, wherein said conductive member has opposed ring portions between which said charger brush is disposed, and said ring portions support said recording sheet bearing member.

5,335,054

IMAGE TRANSFER APPARATUS INCLUDING INTERMEDIATE TRANSFER BLANKET

Benzion Landa, Edmonton, Canada; Hanna Pinhas, Holon, and Paul Fenster, Petach Tikva, both of Israel, assignors to Spectrum Sciences B.V., Wassenaar, Netherlands

Continuation of Ser. No. 777,008, Oct. 16, 1991, abandoned, which is a continuation of Ser. No. 393,631, Aug. 14, 1989, Pat. No. 5,089,856, which is a continuation-in-part of Ser. No. 306,065, Feb. 6, 1989, Pat. No. 4,984,025. This application Feb. 11, 1993, Ser. No. 17,410
Int. Cl.[5] G03G *15/12*
U.S. Cl. 355—279 23 Claims



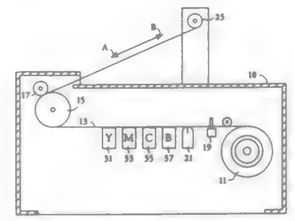
1. Imaging apparatus comprising:
an image bearing surface;
means for forming an electrostatic image on the image bearing surface;
means for developing the electrostatic image using a toner comprising charged toner particles to form a toner image;
an intermediate transfer drum operative for transfer of the toner image from the image bearing surface to a transfer surface of the intermediate transfer member and for subsequent transfer to a substrate, wherein the intermediate transfer drum comprises a rigid core and an intermediate transfer blanket which is fixedly and replaceably secured and attached to the core.

5,335,055

BIDIRECTIONAL TONING PROCESS

Arthur E. Bliss, Sunnyvale, Calif., assignor to Phoenix Precision Graphics, Inc., Sunnyvale, Calif.

Filed May 20, 1993, Ser. No. 65,215
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R 14 Claims



1. A method for forming a visible image comprising,
winding a web of image receiving material in a first direction from a supply roll toward a takeup roll,
reversing the direction of winding such that the web moves toward the supply roll in a second direction,
during web motion in the first direction, writing an electrostatic latent image on the web,
during web motion at a subsequent time in the second direction, applying toner to the latent image.

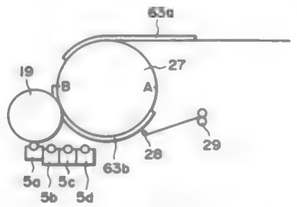
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,056

RECORDING APPARATUS HAVING PLURALITY OF DEVELOPING UNITS

Masanori Muramatsu, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 437,033, Nov. 15, 1989, abandoned. This application Jul. 27, 1993, Ser. No. 97,615
Claims priority, application Japan, Nov. 16, 1988, 63-287563; Aug. 31, 1989, 1-225390
Int. Cl.[5] G03G *15/01, 15/14*
U.S. Cl. 355—327 14 Claims



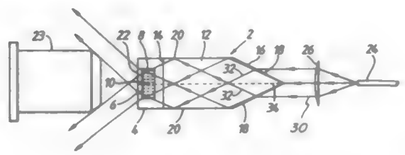
1. A recording apparatus comprising:
a recording body on which a latent image is to be formed;
a movable developing assembly which can be brought into contact with or separated from said recording body, said movable developing assembly comprising a plurality of developing units for developing the latent image;
a transfer medium holding body having means for winding a plurality of transfer media on said transfer medium holding body;
means for separating the transfer media wound around said transfer medium holding body;
designation means for designating a plurality of said developing units to be used, and at least one developing unit to be disabled, in accordance with a color mode of image recording; and
means for adjusting a transfer medium feed timing in accordance with a change time period of said plurality of developing units designated by said designating means and a transfer medium size.

5,335,057

MEASURING GEOMETRY OF OPTICAL FIBRE COATINGS WITH TRANSVERSE INCIDENT BEAMS

Julia H. Shaw, Romsey, and Andrew G. Hallam, Bishops Waltham, both of United Kingdom, assignors to York Technology Limited, Hampshire, United Kingdom

Filed Sep. 8, 1992, Ser. No. 941,418
Claims priority, application United Kingdom, Sep. 9, 1991, 9119253.4
Int. Cl.[5] G01N *21/84*
U.S. Cl. 356—73.1 12 Claims



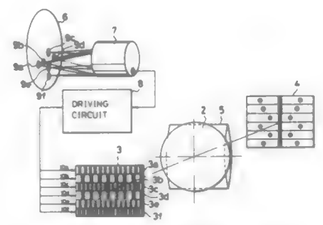
1. An apparatus for measuring the geometry of an optical fibre having at least one coating, the apparatus comprising a container for containing a coated optical fibre in a fluid, a prism for directing light transversely through the fibre in the container, the prism being adapted to split light incident thereon into two light paths and to reflect the two light paths at respective prism surfaces whereby the two reflected light paths cross at a location in the container at which the fibre is, in use, disposed, and light exit means for permitting light deviated at the coating interfaces or surfaces to exit the container whereby the light can be detected by a light detecting means by substantially dark field illumination.

5,335,058

TIME SERIES SIGNAL MULTICHANNEL FREQUENCY ANALYZER USING LIQUID CRYSTAL PANEL

Tomoaki Eiju; Kiyofumi Matsuda; Thomas H. Barnes, and Shigeru Kokaji, all of Tsukuba, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,481
Claims priority, application Japan, Dec. 11, 1991, 3-350892
Int. Cl.[5] G01P *3/36;* G01R *19/00*
U.S. Cl. 356—28.5 4 Claims



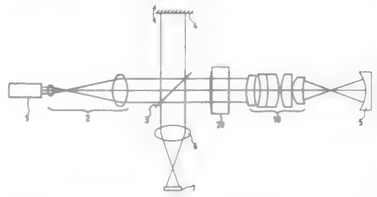
1. A time series signal multichannel frequency analyzer using a liquid crystal panel, comprising a Fourier transform lens, a liquid crystal panel provided with scanning lines and disposed at a front focal plane of the Fourier transform lens, means for assigning time series signals from different signal sources to the individual lines of the liquid crystal panel, observation means disposed at a rear focal plane of the Fourier transform lens, and a cylindrical lens disposed between the Fourier transform lens and an observation plane of the observation means.

5,335,059

METHOD AND APPARATUS FOR MEASURING LENS PERFORMANCE

Koichi Maruyama; Syun'itirou Wakamiya, and Makoto Iwaki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,553
Claims priority, application Japan, May 13, 1991, 3-205002
Int. Cl.[5] G01B *9/00*
U.S. Cl. 356—124 20 Claims



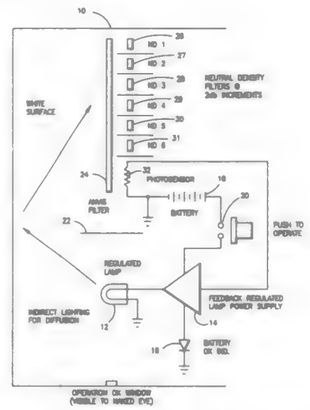
6. A method for measuring the performance of a lens to be measured comprising the steps of:
emitting rays of light from a light source;
transforming said emitted rays of light to rays of light having plane waves by a collimating means;
splitting said rays of light having plane wave front into a reference beam and a measurement beam by a separating means;
transforming said plane wave front of said measurement beam to a spherical wave front by passing said measurement beam through an auxiliary lens;
passing said measurement beam, passed through said auxiliary lens; through said lens to be measured;
superimposing said reference beam and said measurement beam passed through said lens to be measured so that an interference pattern is formed;
wherein said lens to be measured has a spherical aberration when said rays of light from said light source are incident to said lens to be measured with a plane wave front; and
wherein said measurement beam, passed through said auxiliary lens, suppresses said spherical aberration.

5,335,060

IMAGE INTENSITY DEGRADATION TESTER

Geoffrey E. Gentile, Hammonton, N.J., and Bruce D. Oestreich, Media, Pa., assignors to The Boeing Company, Seattle, Wash.; Bell Helicopter Textron, Inc., Fort Worth, Tex.

Continuation of Ser. No. 252,489, Sep. 30, 1988, abandoned. This application Dec. 21, 1992, Ser. No. 994,484
Int. Cl.[5] G01D *18/00*
U.S. Cl. 356—213 5 Claims



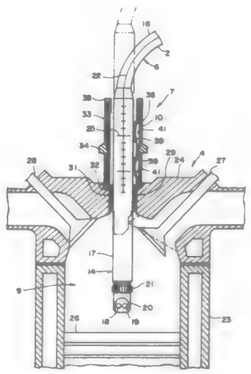
1. A device for testing intensity of light comprising:
a light source;
a first optical filter able to pass light having wavelengths in the visible spectrum near infrared and to block passage of light having shorter wavelengths;
photosensor means exposed to light from the light source that passes through the first optical filter for producing an electrical control variable whose magnitude changes with the intensity of light passing through the first optical filter;
feedback control means responsive to the magnitude of the electrical control variable for maintaining substantially constant the intensity of light from the light source; and
an array of neutral density optical filters exposed to light from the first optical filter, each neutral density optical filter of the array being able to pass light of different intensity than other neutral density optical filters of the array, thereby producing a graduated scale of light intensity, wherein the feedback control means comprises:
an emitter-coupled differential amplifier including a current bridge carrying current from a power source through the photosensor means;
cascaded amplifier stages having control current connected to the current bridge;
means for changing control current in the cascaded amplifier stages in response to changes in magnitude of the electrical control variable of the photosensor means; and
means for changing the voltage drop across the light source in response to control current changes in the cascaded amplifier stages.

5,335,061

ENDOSCOPE HOLDING APPARATUS FOR INSPECTING THE INTERIORS OF A RECIPROCATING ENGINE AND ROTARY ENGINE HAVING IGNITION PLUG HOLES, ENDOSCOPE APPARATUS INCLUDING THE ENDOSCOPE HOLDING APPARATUS AND INSPECTING METHOD

Tsutomu Yamamoto, Tokyo; Minoru Okada, Sagamihara; Takakazu Ishigami, Tokyo; Nobuyuki Motoki, Tokyo; Eiichi Fuse, Tokyo, and Masaaki Hayashi, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 412,078, Sep. 25, 1989, abandoned. This application Apr. 8, 1992, Ser. No. 865,254
Claims priority, application Japan, Feb. 27, 1989, 1-47868
Int. Cl.[5] G01B *11/02*
U.S. Cl. 356—241 28 Claims



1. An endoscope holding apparatus for holding an insertable part of an endoscope in a combustion chamber of an internal combustion engine having ignition plug holes and inserted through said plug holes for viewing the interior of said combustion chamber through insertable end comprising:
a fixing means for fixing said insertable end of said endoscope in a stationary position in a selected hole of said ignition plug holes, said fixing means extending from said ignition plug hole to the outside of said combustion chamber without extending into said combustion chamber; and
a supporting means for supporting said fixing means in the internal combustion engine.

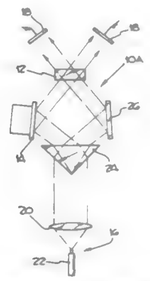
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,062

APPARATUS FOR ALL-OPTICAL SELF-ALIGNING HOLOGRAPHIC PHASE MODULATION AND MOTION SENSING AND METHOD SENSING AND METHOD FOR SENSING SUCH PHASE MODULATION

Rudolf Hofmeister, Pasadena, and Amnon Yariv, San Marino, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Nov. 19, 1992, Ser. No. 978,811
Int. Cl.[5] G01B 9/02
U.S. Cl. 356—347 24 Claims



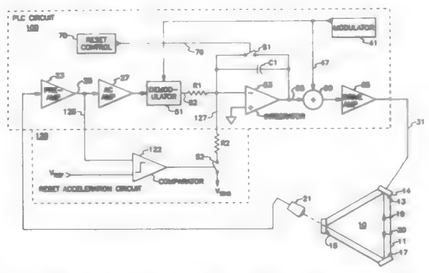
1. An all-optical, self-aligning, holographic phase modulation and motion sensor comprising:
a crystal exhibiting a zero electric field photorefractive effect;
a phase modulation source having a phase modulating output;
a coherent optical radiation source having an output beam;
means for splitting said output beam into first and second beams;
at least one optical radiation detector; and
means for coupling said phase modulating output into at least one of said first and second beams, directing said first and second beams through said photorefractive crystal, and directing at least one of said beams to said optical radiation detector.

5,335,063

LASER PATH LENGTH CONTROL RESET ACCELERATION CIRCUIT

Andrew J. Karpinski, Jr., Clearwater, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 9, 1991, Ser. No. 697,816
Int. Cl.[5] G01C 19/66
U.S. Cl. 356—350 14 Claims



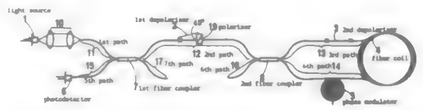
1. A ring laser angular rate sensor apparatus comprising:
a. ring laser means for generating a pair of counter-propagating laser beams about a closed-loop path wherein the laser beam intensity varies as a function of a mirror transducer drive signal;
b. path length control means including a transducer drive amplifier means which provides the mirror transducer drive signal for variably adjusting the length of the closed-loop path so as to acquire a peak laser intensity; and
c. reset acceleration means for selectively applying a bias signal to the path length control means so as to rapidly force the mirror transducer drive signal in one direction thereby causing the laser intensity corresponding to the mirror transducer drive signal to increase and allowing the path length control means to acquire a laser intensity peak, wherein said reset acceleration means includes,
means for comparing a predetermined reference signal with a laser intensity signal, and
bias signal means responsive to said comparing means for applying the bias signal when said comparing means indicates that the laser intensity signal is below the level of the predetermined reference signal.

5,335,064

FIBER-OPTIC GYROSCOPE FOR MEASURING VELOCITY OF AN OBJECT

Yozo Nishiura, and Yasuhiko Nishi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 10, 1992, Ser. No. 911,612
Claims priority, application Japan, Jul. 12, 1991, 3-198534; Apr. 30, 1992, 4-139899
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] G01C 19/64
U.S. Cl. 356—350 9 Claims



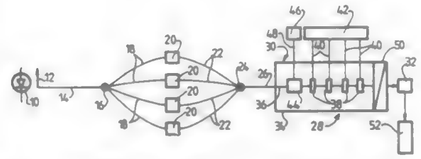
1. A fiber-optic gyroscope for measuring an angular velocity of a fiber coil by propagating light beams clockwise and counterclockwise in the fiber coil, detecting an intensity of an interference beam, and calculating a phase difference between a clockwise propagated beam and a counterclockwise propagated beam, comprising a light source for emitting a quasi-monochromatic light beam, the fiber coil of a single mode fiber wound in many turns, a photodetector for detecting an intensity of the interference beam, a first fiber path communicating with the light source, a second fiber path, a third fiber path being an end of the fiber coil, a fourth fiber path being another end of the fiber coil, a fifth fiber path communicating with the photodetector, a first coupler for coupling the first and fifth fiber paths to the second fiber path, a second coupler for coupling the third and forth fiber paths to the second fiber path, a polarizer disposed in the second fiber path, a first depolarizer disposed in front of the polarizer in the second fiber path and a second depolarizer provided either in the third fiber path or the fourth fiber path between the fiber coil and the second coupler or in the second fiber between the polarizer and the second coupler, the first depolarizer being constructed by coupling a polarization maintaining fiber to a front end of the polarizer at an about 45 ° inclination angle between principal axes of the polarizer and the polarization maintaining fiber, the polarization maintaining fiber having a difference of optical paths between the beams with different principal axes being longer than a coherent length of the light source.

5,335,065

SEQUENTIAL DEMULTIPLEXING RECEIVER FOR A NETWORK OF OPTICAL SENSORS USING SPECTRUM MODULATION ENCODING

Michel Lequime, Eguilles, and Pierre Sansonetti, Aix en Provence, both of France, assignors to Bertin & Cie, Plaisir, France

PCT No. PCT/FR92/00141, § 371 Date Oct. 12, 1992, § 102(e) Date Oct. 12, 1992, PCT Pub. No. WO92/14990, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 13, 1992, Ser. No. 934,525
Claims priority, application France, Feb. 14, 1991, 91 01733
Int. Cl.[5] G01B 9/02
U.S. Cl. 356—351 16 Claims



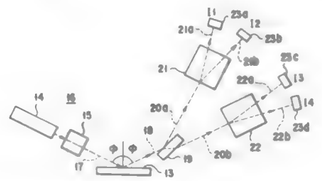
1. A sequential demultiplexing receiver for a network of interferometer optical sensors using spectrum modulation encoding, wherein each sensor is subjected to a physical magnitude to be measured and generates an optical path length difference that is a function of the value of said magnitude, said receiver comprising:
an integrated optical circuit having two modes selected from the group consisting of polarization modes or transverse modes;
said circuit comprising a substrate that is birefringent or semiconductive;
a plurality of integrated components formed on said substrate for mode coupling or mode conversion by the electro-optical effect;
a light waveguide connecting said components in series; and
means connected to each of said components for applying electrical voltages individually thereto to enable them to be activated sequentially, thus generating path length differences tuned to those of the sensors.

5,335,066

MEASURING METHOD FOR ELLIPSOMETRIC PARAMETER AND ELLIPSOMETER

Takeo Yamada; Akira Kazama, and Takahiko Oshige, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 816,612, Dec. 31, 1991, abandoned.
This application Oct. 7, 1993, Ser. No. 133,762
Claims priority, application Japan, Aug. 29, 1991, 3-217657; Oct. 11, 1991, 3-263689; Nov. 29, 1991, 3-315686
Int. Cl.[5] G01J 4/04
U.S. Cl. 356—364 10 Claims



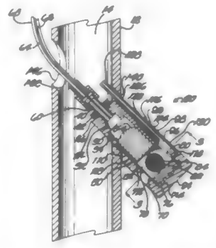
1. An ellipsometer comprising:
a light source section for radiating a polarized light beam onto a measurement target at a predetermined angle;
a non-polarizing beam splitter for receiving a reflected light beam from the measurement target and for splitting the received reflected light beam into two split light beams of different directions;
a plurality of optical members for dividing each of said split light beams into two light beams having different polarization directions, whereby the received reflected light beam, reflected by the measurement target, is divided into four different polarized light components;
four light-receiving units for detecting light intensities of the respective four different polarized light components; and
means for selecting the three polarized light components having the three highest light intensities out of the four light intensities detected by said four light-receiving units; and
means for calculating ellipsometric parameters of an elliptically polarized beam of the reflected beam on the basis of the three selected polarized light components having said three highest light intensities.

5,335,067

SPECTROPHOTOMETRIC PROBE

William S. Prather, Augusta, and Patrick E. O'Rourke, Martinez, both of Ga., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1992, Ser. No. 953,042
Int. Cl.[5] G01N 21/05, 21/59
U.S. Cl. 356—436 20 Claims



1. An apparatus for performing spectrophotometric measurements of a fluid, said apparatus for use with a source of light and a spectrophotometer, said apparatus comprising:
a support having a longitudinal axis; and
a probe having a longitudinal axis, a first end and a second end, said first end of said probe carried by said support, said second end extending from said support, said longitudinal axis of said probe being held at an acute angle with respect to said longitudinal axis of said support,
said probe in optical communication with said spectrophotometer and said light source,
said probe having means formed in said second end for receiving a fluid and means for transmitting light through said fluid in said receiving means from said source of light to said spectrophotometer,
means for venting gas present in said receiving means, said venting means in fluid communication with and above said receiving means and oriented so that, when fluid enters said receiving means and said gas separates from said fluid, said gas rises to said venting means, and
means for controlling a flow of gas, said controlling means in fluid communication with said venting means so that said controlling means enables said venting means to vent said gas.

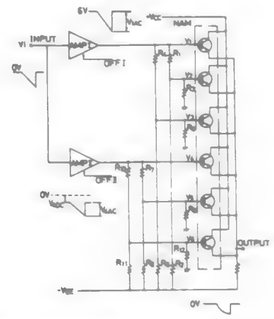
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,068

GAMMA COMPENSATING CIRCUIT METHOD AND APPARATUS OF A COLOR TV CAMERA

Hiroshi Hanajima, Tokyo, Japan, assignor to Ikegami Tsushinki Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,587
Claims priority, application Japan, Oct. 2, 1990, 2-263203
Int. Cl.[5] H04N 9/69
U.S. Cl. 348—674 7 Claims



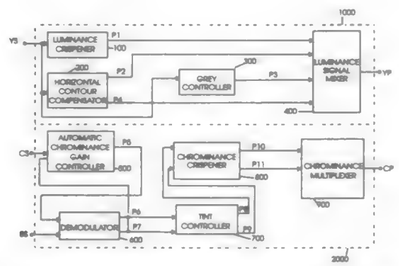
1. A gamma compensating method for a color TV camera comprising the steps of:
independently generating a plurality of output signals having different offset voltages from amplifiers having different amplification factors with respect to a common input signal;
voltage dividing each of the plurality of output signals independently to provide a plurality of different voltage divided signals; and
selectively outputting a voltage divided output, whose absolute value becomes minimum, selected for each level region of the input signal.

5,335,069

SIGNAL PROCESSING SYSTEM HAVING VERTICAL/HORIZONTAL CONTOUR COMPENSATION AND FREQUENCY BANDWIDTH EXTENSION FUNCTIONS

Jung H. Kim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 28, 1992, Ser. No. 826,781
Claims priority, application Rep. of Korea, Feb. 1, 1991, 91-1788
Int. Cl.[5] H04N 9/68
U.S. Cl. 348—630 33 Claims



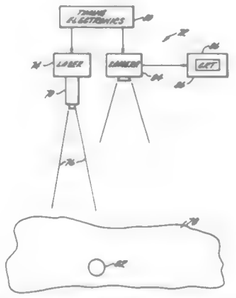
31. A method for processing high frequency image signals, comprising the steps of:
receiving luminance and chrominance signals;
generating processed luminance signals by reducing transition time of frequency components of said luminance signals, compensating horizontal contours of said luminance signals, and controlling gray levels of said luminance signal; and
generating processed chrominance signals by gain controlling and demodulating said chrominance signals to provide demodulated chrominance signals, and by controlling tint components and reducing transition time of frequency components of the demodulated chrominance signals.

5,335,070

LASER LIGHT BEAM HOMOGENIZER AND IMAGING LIDAR SYSTEM INCORPORATING SAME

Kent P. Pflibsen, and Albert N. Stuppi, both of Tucson, Ariz., assignors to Kaman Aerospace Corporation, Bloomfield, Conn.

Division of Ser. No. 750,572, Aug. 27, 1991, Pat. No. 5,303,084.
This application Sep. 14, 1993, Ser. No. 96,923
Int. Cl.[5] H04N 7/18; G01C 3/08
U.S. Cl. 348—31 16 Claims



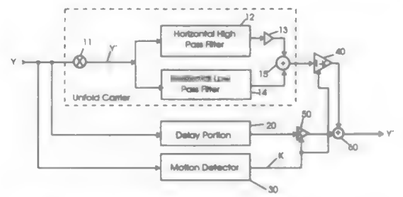
1. An apparatus for detecting and imaging an object at least partially enveloped by a backscattering medium which is at least partially transmitting to light comprising:
light pulse generating means for selectively generating short pulses of light;
light projection means for receiving said pulses of light from said light pulse generating means and transforming the cross-section of said light pulse from a first shape to a preselected second shape;
projecting means for projecting said short pulses of light toward the backscattering medium and at an object enveloped by the medium;
camera means for detecting said pulses of light reflected back from said object after a time delay corresponding to the round-trip propagation time of said light pulses to and from said object; and
converting means for converting said detected pulses of light to a video image of said object;
said light projection means comprising;
diverging means for diverging a light beam with spatially inhomogeneous intensity, said light having a coherence length L_C, said diverging means providing a diverging light beam;
integrator means having a first aperture for receiving said diverging light beam and having a plurality of internally reflective surfaces for forming an array of apparent light sources, the light from each apparent source in said array being superposed by said integrator means at a second aperture thereof, each individual light ray from each apparent source following a distinct light path to said second aperture to provide a uniform illumination beam;
minimum path length difference means for providing a minimum path length difference between the individual path lengths of any two rays coincident at said second aperture and arising from adjacent apparent sources in said array, said minimum path length difference means being at least said coherence length L_C of said beam;
control optics means for receiving said uniform illumination beam, said control optics means reducing the divergence of said uniform illumination beam and providing a controlled beam; and
projection optics means for projecting an image of the integrator to the desired distance.

5,335,071

APPARATUS FOR ENHANCING IMAGE QUALITY OF A VIDEOTAPE RECORDER USING MOTION ADAPTIVE METHOD

Hyun-ku Shin, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 12, 1992, Ser. No. 897,810
Claims priority, application Rep. of Korea, Jun. 27, 1991, 91-10774
Int. Cl.[5] H04N 5/91, 5/92
U.S. Cl. 348—392 22 Claims



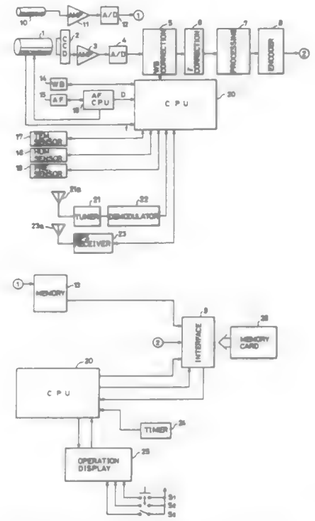
1. An apparatus for enhancing image quality of a video tape recorder using motion adaptive method, comprising:
signal unfolding means for providing a first brightness signal by unfolding a folded brightness signal having a full frequency bandwidth from an input brightness signal;
delay means for providing a delayed brightness signal by delaying the input brightness signal for a delay period;
motion detector means for detecting a motion signal from the input brightness signal;
first and second controllable attenuator means for outputting said first brightness signal from said brightness signal unfolding means and said delayed brightness signal from said delay means in dependence upon said motion signal detected by said motion detector means; and
adder means for adding the outputs of said first and second controllable attenuator means to provide an output brightness signal.

5,335,072

PHOTOGRAPHIC SYSTEM CAPABLE OF STORING INFORMATION ON PHOTOGRAPHED IMAGE DATA

Yoshito Tanaka; Dai Shintani, both of Sakai; Hirokazu Naruto, Higashiosaka; Katsuyuki Nanba, Sakai; Nobuyuki Taniguchi, Nishinomiya; Hiroshi Ishibe, Kyoto, and Yoshihiro Tanaka, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 708,068, May 30, 1991. This application Mar. 12, 1993, Ser. No. 29,991
Claims priority, application Japan, May 30, 1990, 2-142400; Jul. 11, 1990, 2-184751; Jul. 11, 1990, 2-184752; Jul. 11, 1990, 2-184753; Jul. 11, 1990, 2-184754; Jul. 11, 1990, 2-184755; Jul. 11, 1990, 2-184756; Jul. 11, 1990, 2-184757; Jul. 11, 1990, 2-184758; Jul. 11, 1990, 2-184759; Jul. 11, 1990, 2-184760; Jul. 11, 1990, 2-184761; Jul. 11, 1990, 2-184762; Jul. 11, 1990, 2-184763; Jul. 11, 1990, 2-184764; Jul. 11, 1990, 2-184765; Jul. 11, 1990, 2-184766; Jul. 11, 1990, 2-184767
Int. Cl.[5] H04N 5/225
U.S. Cl. 348—232 38 Claims



1. A photographic system comprising: a camera including;
photographing means for photographing subjects to generate respective image data of the subjects,
first storage means for storing the generated image data,
information production means for producing, at the time of photography, information pertaining to the photographed subjects and identifying the respective image data stored by said first storage means, and
second storage means for storing the produced information; and
a reproduction device for reproducing the image data including;
retrieval condition input means for inputting a retrieval condition designating stored produced information for retrieving desired stored image data,
retrieval means responsive to the retrieval condition input means for retrieving the stored image data identified by the stored produced information designated by the input retrieval condition, and
reproducing means for reproducing the retrieved stored image data.

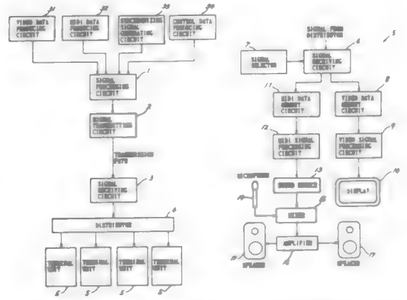
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,073

SOUND AND IMAGE REPRODUCTION SYSTEM

Yuji Yamamoto, Yawata, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 1, 1992, Ser. No. 937,752
Claims priority, application Japan, Sep. 2, 1991, 3-221783
Int. Cl.[5] H04N 7/08
U.S. Cl. 348—738 4 Claims



1. A sound and image reproduction system characterized in that the system comprises a signal transmitter and signal receiver,

the signal transmitter comprising:

signal processing means which, based on a series of video data for producing one or a plurality of images and MIDI data for producing a series of sounds corresponding to the video data, prepares a quasi video signal containing the two kinds of data as arranged in alternating fields or in alternating pluralities of fields in time series and which adds to the quasi video signal identification data for distinguishing the series of video data and MIDI data from other series of video data and MIDI data, and

signal transmitting means for transmitting the quasi video signal to the signal receiver,

the signal receiver comprising:

signal receiving means for receiving the quasi video signal from the signal transmitter, and

a plurality of terminal units for reproducing desired sounds and images from the quasi video signal received, each of the terminal units comprising:

selection means for preparing said identification data for specifying the sounds and images to be reproduced,

signal processing means for extracting from the received quasi video signal the series of video data and MIDI data containing the selection signal prepared by the selection means,

sound emitting means for outputting the MIDI data extracted by the signal processing means, and

display means for outputting the video data extracted by the signal processing means.

5,335,074

PHASE LOCKED LOOP SYNCHRONIZER FOR A RESAMPLING SYSTEM HAVING INCOMPATIBLE INPUT AND OUTPUT SAMPLE RATES

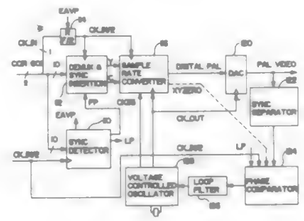
Kevin J. Stec, Medford, N.J., assignor to Panasonic Technologies, Inc., Secaucus, N.J.

Continuation-in-part of Ser. No. 14,820, Feb. 8, 1993. This application Jul. 23, 1993, Ser. No. 96,635
Int. Cl.[5] H04N 5/04, 5/06
U.S. Cl. 348—537 15 Claims

1. A phase locked output clock signal generation apparatus suitable for use in a video signal conversion system in which an input video signal, having an input sample rate which is determined by an input clock signal, is converted into an output video signal having an output sample rate, which is determined by said output clock signal, said apparatus comprising:

means, coupled to receive the output signal for generating a phase reference signal having transitions which are desirably in a predetermined phase relationship with the input clock signal;

phase comparison means, coupled to receive a signal representing instants at which predetermined samples of the



input video signal occur and the phase reference signal component of the output video signal for generating a phase difference signal representing a difference in phase relative to a predetermined phase relationship between the respective input and output clock signals; and

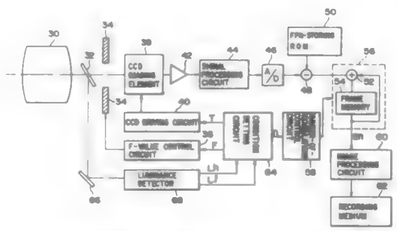
controlled oscillator means, responsive to the phase difference signal for generating said output clock signal in the predetermined phase relationship with the input clock signal.

5,335,075

IMAGE SENSING APPARATUS HAVING EXPOSURE LEVEL AND DYNAMIC RANGE CONTROL CIRCUIT

Yasuhiro Komiya; Takeshi Mori, both of Tokyo, and Tatsuo Nagasaki, Yokohama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 771,433, Oct. 4, 1991, Pat. No. 5,264,940. This application Feb. 26, 1993, Ser. No. 23,087
Claims priority, application Japan, Oct. 8, 1990, 2-269916; Aug. 26, 1991, 3-213706
Int. Cl.[5] H04N 5/238
U.S. Cl. 348—298 2 Claims



1. An image sensing apparatus having an exposure level and dynamic range control circuit, for use in an image input device having an exposure system that produces an electronic image input signal of a subject, said image sensing apparatus comprising:

light-amount adjusting means for adjusting an amount of incident light received from the subject;

solid-state imaging element means for (1) enabling a reading of an image included in said incident light, (2) generating the electronic image input signal of the subject and (3) controlling an exposure time of said exposure system;

accumulating means, including addition means, for accumulating by addition a plurality of image signals read by said solid-state imaging element means;

number-of-addition control means for controlling how many additions are performed by said addition means of said accumulating means; and

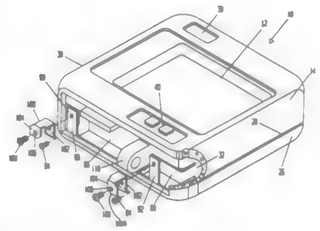
condition setting means for (1) setting said light-amount adjusting means so as to selectively set an amount of incident light, (2) setting said solid-state imaging element means so as to selectively set an amount of exposure time, and (3) setting said number-of-addition control means so as to selectively set how many additions are performed by said addition means of said accumulating means, according to one of a luminance of said subject as represented by said electronic image input signal of said subject, and conditions set by said condition setting means.

5,335,076

SOFT SHROUD FOR SCREEN DISPLAY DEVICE

Carter K. Reh, Santa Ana, and Edward Robak, Orange, both of Calif., assignors to General Production Services, Inc., Anaheim, Calif.

Filed Oct. 16, 1992, Ser. No. 962,277
Int. Cl.[5] H04N 5/645, 5/64; A47B 5/00; H01H 1/10
U.S. Cl. 348—794 20 Claims



1. In a housing for a visual display device having a front face with a display screen, which housing includes a front housing section with a front wall, opposite side walls and top and bottom walls, with said front wall having a bezel surrounding said screen display, the improvement comprising:

a. an interior metal housing with opposite side walls and top and bottom walls receiving said visual display device and having a front panel with an opening in said front panel surrounding said display screen and a rear cover with a rear wall to enclose said visual display device, and an opening in the bottom wall of said housing;

b. a plastic foam thin layer having a thickness from 0.1 to 0.375 inch entirely covering said interior metal housing and rear cover;

c. an impervious plastic coating overlying said thin layer;

d. supporting mounting brackets received in said opening in said bottom wall of said housing.

5,335,077

TIME BASE CORRECTING DEVICE

Shinichi Yamashita; Shingo Ikeda, and Makoto Gohda, all of c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 906,267
Claims priority, application Japan, Jul. 3, 1991, 3-189187; Jul. 3, 1991, 3-189188
Int. Cl.[5] A04N 9/89
U.S. Cl. 358—320 22 Claims

1. A time base correcting device comprising:

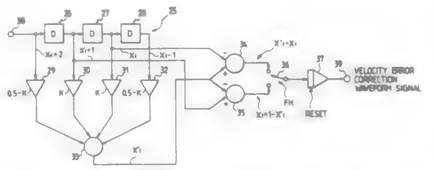
(a) input means for inputting a video signal including a sync. signal and a burst signal;

(b) means for generating a first clock signal synchronized with the sync. signal of the video signal inputted by said input means;

(c) phase difference detection means for detecting a phase difference between said burst signal and said first clock signal at a predetermined interval to produce an error signal representing said phase difference;

(d) phase adjustment means for adjusting the phase of said first clock in accordance with said error signal;

(e) a memory for storing the video signal supplied from said input means in synchronism with said first clock supplied through said phase adjustment means;



(f) interpolation means for generating an interpolation signal at said predetermined interval by using a plurality of error signals produced by said phase difference detection means which are successive along a time base; and

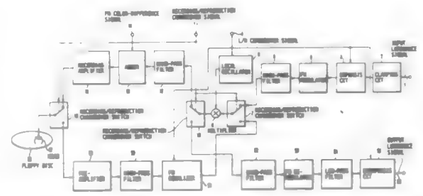
(g) readout control means for controlling the readout from said memory by using a difference between said interpolation signal and said error signal.

5,335,078

IMAGE SIGNAL RECORDING APPARATUS OR REPRODUCING APPARATUS

Saburou Nakazato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 873,614, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 762,781, Sep. 19, 1991, abandoned, which is a continuation of Ser. No. 243,991, Sep. 13, 1988, abandoned. This application Sep. 8, 1993, Ser. No. 118,572
Int. Cl.[5] H04N 9/80
U.S. Cl. 358—330 9 Claims



1. An image signal recording apparatus for recording angle-modulated image signals on a recording medium, comprising:

(A) angle-modulating means for inputting an image signal and angle-modulating the input image signal into a first frequency band located in a frequency band which is sufficiently higher than a second frequency band and a third frequency band which is wider than said second frequency band, thereby forming and outputting a first angle-modulated image signal;

(B) recording operation mode indicating means for indicating either one of a first recording operation mode or a second recording operation mode, said first recording operation mode being a mode in which an image signal corresponding to an image having a first resolution is recorded on said recording medium and said second recording operation mode being a mode in which an image signal corresponding to an image having a second resolution higher than said first resolution is recorded on said recording medium;

(C) reference signal generating means capable of selectively

VOL 1165 ISS 1 AG 2 1994 UMI

outputting a first reference signal and a second reference signal having a frequency higher than that of said first reference signal, said reference signal generating means being arranged to generate said first reference signals in the case where said first recording operation mode is indicated by said recording operation mode indicating means and to generate said second reference signal in the case where said second recording operation mode is indicated by said recording operation mode indicating means;

(D) frequency-converting means for frequency-converting said angle-modulated image signal into said second frequency band or said third frequency band on the basis of the first reference signal or the second reference signal which is selectively outputted from said reference signal generating means and outputting the frequency-converted signal; and

(E) recording means for recording the angle-modulated image signal output from said frequency-converting means on the recording medium.

5,335,079

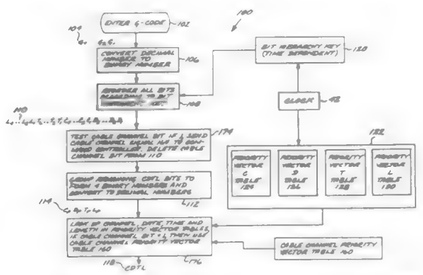
APPARATUS AND METHOD USING COMPRESSED CODES FOR RECORDER PREPROGRAMMING

Henry C. Yuen, Pasadena, and Daniel S. Kwoh, Rolling Hills Estate, both of Calif., assignors to Gemstar Development Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 371,054, Jun. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 289,369, Dec. 23, 1988, abandoned. This application Mar. 27, 1991, Ser. No. 676,934

Int. Cl.[5] H04N *5/78*

U.S. Cl. 358—335 **50 Claims**



1. A system for programming and automatically recording video signals, by a video recorder, under control of sets of channel, date, time-of-day and program length commands, the system comprising:

an input for receiving compressed coded indications, each compressed coded indication comprising one or more alphanumeric characters and each compressed coded indication incorporating the data represented in a set of individual channel, day, time-of-day and program length commands, wherein said compressed coded indications have a length that is less than the length of the concatenation of said individual channel, day, time-of-day and program length commands represented by such compressed coded indications; and

a decoder for decoding and expanding said compressed coded indications into sets of individual channel, day, time-of-day and program length commands for control of the video recorder.

5,335,080

APPARATUS AND METHOD FOR GENERATING VIDEO PICTURE ADJUSTMENT SIGNALS IN VCR

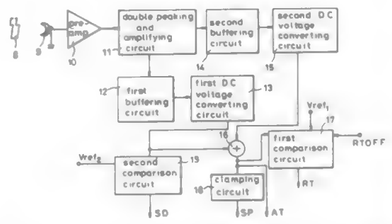
Seung C. Park, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 18, 1992, Ser. No. 931,346

Claims priority, application Rep. of Korea, Aug. 23, 1991, 14539/1991

Int. Cl.[5] H04N *5/78, 9/491*

U.S. Cl. 358—335 **20 Claims**



20. In a video reproduction apparatus for reproducing a video signal through a VCR head, a method of generating video picture adjustment signals in a VCR, comprising the steps of:

detecting the video signal from a VCR tape through the VCR head;

determining a first peaked and amplified signal corresponding to a recording frequency band of a super tape type of VCR tape and a second peaked and amplified signal corresponding to both the recording frequency band of the super tape and a recording frequency band of a normal tape type of VCR tape;

converting the first and second peaked and amplified signals into first and second DC voltage signals;

forming a third signal as a function of said first and second DC voltage signals; and

generating at least one of a video picture sharpness adjustment signal, video picture tracking adjustment signal, and a video tape deterioration state signal as a function of said third signal,

said video tape deterioration state signal is formed as a function of comparing said third signal against a predetermined reference.

5,335,081

MULTIPLE DISPLAY PRESENTATION SYSTEM CAPABLE OF SEQUENCING PRERECORDED SCENES FOR JOINT REPRODUCTION

Hirohisa Yamaguchi, and Yasuji Morioka, both of Tokyo, Japan, assignors to TEAC Corporation, Tokyo, Japan

Continuation of Ser. No. 749,140, Aug. 23, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 135,855

Claims priority, application Japan, Aug. 24, 1990, 2-223947

Int. Cl.[5] H04N *5/781*

U.S. Cl. 358—342 **5 Claims**

1. A visual presentation system capable of visually presenting successive sets of correlated scenes according to a desired presentation program, said correlated scenes being recorded on a plurality of record media, comprising:

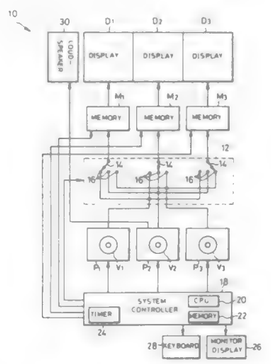
(a) a plurality of playback devices associated one with each record medium for retrieving prerecorded scenes therefrom, each record medium having a multiplicity of record tracks on which the correlated scenes are prerecorded along with addresses individually identifying the record tracks;

(b) a plurality of displays connected to the playback devices for jointly reproducing successive sets of the prerecorded scenes retrieved from the plurality of record media by the

playback devices, the plural displays being disposed in juxtaposition; and

(c) a system controller connected to the playback devices and having a memory for storing a presentation program, the presentation program including the addresses of desired record tracks on each record medium from which the prerecorded scenes are to be retrieved by one associated device in a desired sequence, the system controller reading the presentation program on the memory for controlling the playback devices according to the presentation program so as to cause each playback device to retrieve the prerecorded scenes from the desired record tracks on one associated record medium in the desired sequence;

wherein the presentation program has a series of steps, each step representing addresses and playback commands for



one set of correlated scenes jointly reproduced on the displays, wherein the presentation program written on the memory includes data representing moments of time when the successive steps of the presentation program are to be started, and wherein the visual presentation system further comprises a timer connected to the system controller for providing a time signal, the system controller including means responsive to the time signal to read the successive steps of the presentation program on the memory at the moments of time specified by the presentation program; and further comprising: switching means for connecting each playback device to any of the displays; a monitor display connected to the system controller for visually reproducing the presentation program on the memory; and input means connected to the system controller for rewriting the presentation program on the memory.

5,335,082

METHOD AND APPARATUS FOR USING MONOCHROME IMAGES TO FORM A COLOR IMAGE

Arthur J. Sable, Boulder, Colo., assignor to Optron Corporation, Boulder, Colo.

Continuation-in-part of Ser. No. 866,741, Apr. 10, 1992, Pat. No. 5,294,993. This application Jan. 10, 1994, Ser. No. 179,971

Int. Cl.[5] G03F *3/00*

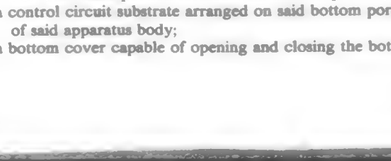
U.S. Cl. 358—350 **12 Claims**

8. A medical diagnostic color imaging system for use with a medical diagnostic scanning device that generates a first color output having a plurality of color image component electrical signals respectively representing different color image components of a color image of a subject scanned by said device, or an alternative second monochromatic output having a monochromatic electrical signal representing a monochromatic image of a subject scanned by said device, said system comprising:

input means for providing sets of electrical color image component input signals wherein the signals of each set represent different optical color image components of a color image of a subject scanned by said device, and for providing electrical monochromatic input signals each representing a different monochromatic image of a subject scanned by said device, said sets of electrical color image component input signals and said electrical monochromatic input signals being provided sequentially in the order in which they are generated by said scanning device,

memory means having a plurality of image storage locations, each said location being configured and arranged to store a set of electrical color image component input signals respectively representing the different optical color image components of a single color image of a subject scanned by said scanning device, or an electrical monochromatic input signal representing a monochromatic image of a subject scanned by said scanning device,

means for storing a plurality of sets of said color electrical color image component input signals and a plurality of said electrical monochromatic input signals at different ones of said storage locations,



film holder means configured and arranged to hold monochromatic film, and

means for selectively reading from said memory means a first group of said sets of electrical color image component input signals and consecutively forming on a first film in said film holder means an exposed optical record of a sequence of the sets of said first group, or selectively reading a second group of said monochromatic signals and consecutively forming on a second film in said film holder means an exposed optical record of a sequence Of the monochromatic input signals of said second group, whereby said scanning device may be operated to generate color and monochromatic outputs in any sequence, and a group of the color outputs of the scanning device may be employed consecutively to make a group of consecutive optical records of color images and a group of monochromatic outputs of the scanning device may be employed consecutively to make a group of consecutive optical records of monochromatic images, regardless of the order in which said first color and second monochromatic outputs are generated by said scanning device.

5,335,083

CIRCUIT SUBSTRATE HOLDING APPARATUS FOR A FACSIMILE

Hiromichi Nagane, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 710,836, Jun. 5, 1991. This application Jul. 22, 1993, Ser. No. 94,922

Claims priority, application Japan, Jun. 7, 1990, 2-150211; Jul. 11, 1990, 2-184649; Jul. 11, 1990, 2-184651; Jul. 11, 1990, 2-184652; Jul. 11, 1990, 2-184653

Int. Cl.[5] H05K *7/16*

U.S. Cl. 358—400 **6 Claims**

1. A circuit substrate holding apparatus for a facsimile comprising:

an apparatus body having an upper portion, a bottom portion and a side portion formed with a notch portion;

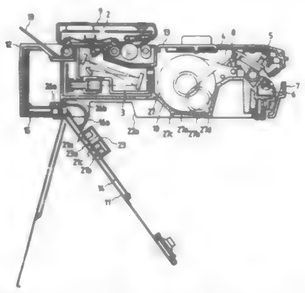
a control circuit substrate arranged on said bottom portion of said apparatus body;

a bottom cover capable of opening and closing the bottom

VOL 1165 ISS 1 AG 2 1994 UMI

portion of said apparatus body, said bottom portion fixing said control circuit substrate and said bottom cover serving as a support member for said control circuit substrate;

input/output terminals for lines to be connected to said control circuit substrate, said input/output terminals being fixed to said control circuit substrate and located at said notch portion of said side portion of said apparatus body; and



retaining frames for said input/output terminals, said retaining frames being fixed to said control circuit substrate and shaped to correspond to the notch portions of the said portion of said apparatus body and being opened and closed unitedly with said control circuit substrate together with said input/output terminals.

5,335,084

DOCUMENT IMAGE FILING SYSTEM HAVING INPUT COLOR MODE SELECTING CAPABILITY

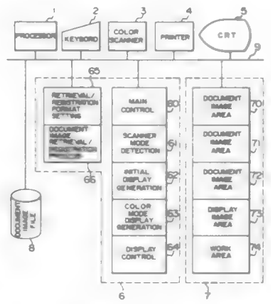
Narihiro Munemasa, Kawasaki; Fumio Wakamori, Tokyo; Hidefumi Masuzaki, Hadano; Masaaki Fujinawa, Odawara, and Yasuo Kurosu, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 892,960

Claims priority, application Japan, Jun. 3, 1991, 3-130979

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—403 **4 Claims**



1. A document image filing system, comprising:

image input means having at least color and monochrome modes as image input mode for inputting document images;

means for designating the image input mode of said image input means operated by a user;

filing means for storing document image data inputted from said image input means;

display means for displaying document images; and

control means for outputting a background image corresponding to the input mode of the inputted image on the display when the document image inputted from said image input means is displayed on said display means.

5,335,085

FACSIMILE APPARATUS

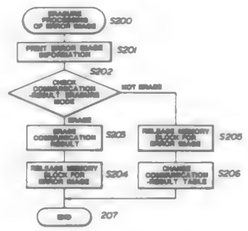
Takuji Nakatsuma, Urayasu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,113

Claims priority, application Japan, Sep. 5, 1991, 3-254700

Int. Cl.[5] H04N *1/00, 1/32*

U.S. Cl. 358—404 **19 Claims**



1. A facsimile apparatus, comprising:

data storage means for storing image data;

transmission means for transmitting the image data stored in said data storage means; and

control means for determining whether image transmission by said transmission means has ended normally or was interrupted because of an error, determining a cause of the error when the image transmission was interrupted because of the error, and selectively erasing or preserving the image data in said data storage means according to a result of these determinations.

5,335,086

METHOD OF AND APPARATUS FOR ELIMINATING PIN HOLES

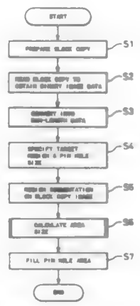
Hideaki Kitamura, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd, Japan

Filed Nov. 22, 1991, Ser. No. 795,971

Claims priority, application Japan, Nov. 22, 1990, 2-320194

Int. Cl.[5] G06K *9/40;* **H04N** *1/419*

U.S. Cl. 358—431 **18 Claims**



1. A method of eliminating a pin hole in a linework image by processing image data of the linework image, comprising the steps of:

(a) specifying a pin hole size;

(b) dividing the linework image into plural separate regions;

(c) calculating the size of each separate region;

(d) comparing the size of each separate region with said pin hole size to find a separate region smaller than said pin hole size as a possible pin hole area; and

(e) filling said possible pin hole area with a color of a separate region surrounding said possible pin hole area;

said step (c) comprising the step (c-1) of counting the number of pixels in each separate region.

5,335,087

DOCUMENT ACKNOWLEDGE SYSTEM HAVING HORIZONTAL/VERTICAL-RUN LENGTH SMOOTHING ALGORITHM CIRCUITS AND A DOCUMENT REGION DIVIDE CIRCUIT

Mun H. Cho, Kyungki-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

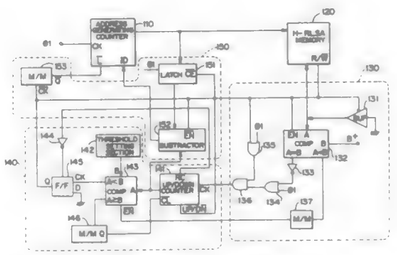
Division of Ser. No. 678,051, Apr. 1, 1991, Pat. No. 5,282,056.

This application Oct. 13, 1993, Ser. No. 135,469

Claims priority, application Rep. of Korea, Mar. 31, 1990, 4443/1990; Aug. 27, 1990, 13246/1990

Int. Cl.[5] H04N *3/14*

U.S. Cl. 358—432 **22 Claims**



1. A scanning filtering system comprising:

determining means for determining a pixel value;

storing means for storing the pixel value;

register means for storing a count, the count being incremented when the pixel value is within a predetermined range;

resetting means for resetting the count in the register means when a current pixel value is outside the predetermined range;

comparing means for comparing the count to a predetermined number; and

changing means for changing the values of a variable number of stored pixel values, when the count is less than the predetermined number, the variable number being equal to the current count.

5,335,088

APPARATUS AND METHOD FOR ENCODING HALFTONE IMAGES

Zhigang Fan, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1992, Ser. No. 861,743

Int. Cl.[5] G06K *9/36;* **H04N** *11/02*

U.S. Cl. 358—429 **22 Claims**

1. An apparatus for encoding a selected halftone pattern to provide a corresponding signal with the halftone pattern including a set of pixels arranged in a block, comprising:

an image buffer for buffering a threshold matrix and the block;

means, communicating with said image buffer, for determining whether the selected halftone pattern can be formed with the threshold matrix and a single gray value;

an encoder for:

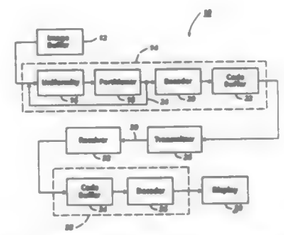
encoding the block with the signal in response to a determination by said determining means that the selected halftone pattern can be formed with the threshold matrix and the single gray value, and

encoding the block with a second signal in response to a determination by said determining means that the selected halftone pattern cannot be formed with the threshold matrix and the single gray value.

2. A method for encoding a selected halftone pattern to provide a corresponding first signal with the selected halftone pattern including a first set of pixels arranged in a first block, comprising the steps of:

providing a second set of pixels arranged in a second block;

providing the second block with a uniform halftone pattern formed from a selected threshold matrix and a single gray value;



comparing the selected halftone pattern with the uniform halftone pattern to determine whether the selected halftone pattern substantially matches the uniform halftone pattern;

encoding the first block with the first signal when the selected halftone pattern substantially matches the uniform halftone pattern; and

encoding the first block with a second signal when the selected halftone pattern is substantially different than the uniform halftone pattern.

5,335,089

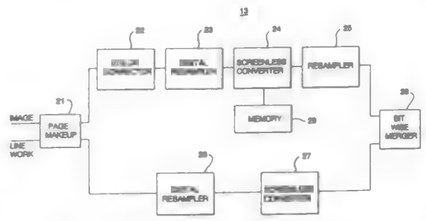
ELECTRONIC HIGH-FIDELITY SCREENLESS CONVERSION SYSTEM AND METHOD USING A SEPARABLE FILTER

Zhenhua Xie, Naperville, and Michael A. Rodriguez, Palatine, both of Ill., assignors to R. R. Donnelley & Sons Company, Lisle, Ill.

Filed Jul. 29, 1992, Ser. No. 921,349

Int. Cl.[5] H04N *1/23*

U.S. Cl. 358—456 **38 Claims**



1. A system for converting one input value of a series of input values into an output value wherein previous input values have been converted to previous output values and subsequent input values are to be converted to output values, the system comprising:

error generating means for generating first and second errors for the one input value undergoing conversion, wherein the first error is based upon application of a one dimensional separable filter to a selected number of previous output values, to output values predicted for a certain number of subsequent input values, and to an output value

VOL 1165 ISS 1 AG 2 1994 UMI

having an assumed first level for the one input value undergoing conversion, and wherein the second error is based upon application of the one dimensional separable filter applied to the selected number of previous output values, to the output values predicted for the certain number of subsequent input values, and to an output value having an assumed second level for the one input value undergoing conversion; and

output value setting means for setting the one input value undergoing conversion to an output value having the first level if the first error is less than the second error and to an output value having the second level if the first error is greater than the second error.

5,335,090

IMAGE READING APPARATUS HAVING DETACHABLE OPTICAL SYSTEM

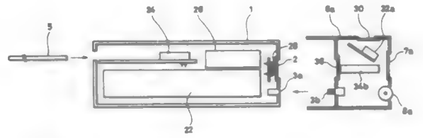
Hirokazu Yamada, Yao; Akio Nakajima, Toyokawa, and Toshio Tsuboi, Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 10, 1990, Ser. No. 580,260

Claims priority, application Japan, Sep. 11, 1989, 1-236467; Sep. 11, 1989, 1-236468; Sep. 11, 1989, 1-236469

Int. Cl.[5] H04N *1/024*

U.S. Cl. 358—473 2 Claims



1. A detachable two-part component image recording apparatus comprising:

a first image processing unit consisting of a first housing member, a light source, a rod lens, a first electrical connector, and means for synchronizing the reading of image data, the first housing member operatively supporting the light source to illuminate a document and the rod lens to transmit any image, the means for synchronization including a synchronizing clock generator for providing clock signals being supported within the first housing; and

a second image processing unit having a second housing member detachably mounted to the first housing member, the second housing member integrally supporting an image sensor for alignment with the rod lens, a second electrical connector for attachment to the first electrical connector, a signal processor for processing an output of the image sensor in response to the clock signals from the synchronizing clock generator and a detachable memory for storing the processed output.

5,335,091

APPARATUS FOR MECHANICALLY DITHERING A CCD ARRAY

Russell J. Palum, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1991, Ser. No. 815,479

Int. Cl.[5] H04N *1/028, 3/10*

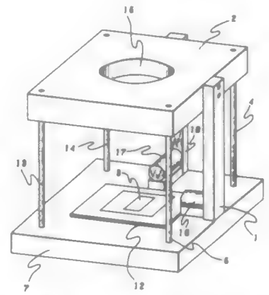
U.S. Cl. 358—474 19 Claims

1. An apparatus for imparting a controlled relative displacement of two parallel surfaces in an electro-optical detector system comprising:

(a) first and second rigid frames having opposing parallel faces, wherein said parallel face of said first rigid frame carries one of an image source and a photosensitive matrix and said opposing parallel face of said second rigid frame carries the other of said image source and said photosensitive matrix;

(b) a plurality of parallel connecting beams connecting said first and second rigid frames, the ends of said beams being fixedly attached to said frames, said beams having a stiffness such that a natural frequency of oscillation of a system comprising said beams and said frames is greater than 200 cps;

(c) a force-transferring beam substantially parallel to said connecting beams having a first end fixedly attached to said first rigid frame, said force transferring beam having



a smaller stiffness than the sum of the stiffness of said connecting beams; and

(d) means for applying sufficient force to said second end of said force-transferring beam to cause a displacement of said second end from a position of rest, said means fixedly attached to said second rigid frame and engaging a second end of said force-transferring beam wherein the resistance to deflection of said force-transferring beam and said connecting beams act in concert to produce a relative displacement of said first and second rigid frames substantially along a single axis.

5,335,092

CONTACT TYPE IMAGE SENSOR

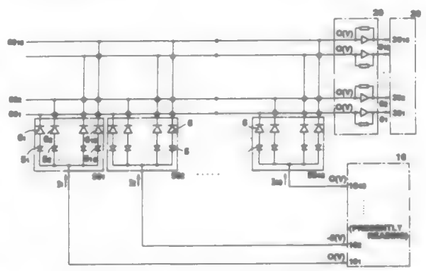
Koichi Kitamura; Hidenori Mimura; Kazuo Yamamoto; Yasumitsu Ohta; Kazuyoshi Sai, and Youichi Nagatake, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 504,602, Apr. 4, 1990, abandoned. This application Nov. 27, 1992, Ser. No. 982,419

Claims priority, application Japan, Apr. 6, 1989, 1-88539; Oct. 30, 1989, 1-282506

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—482 3 Claims



1. A contact type image sensor, comprising:

a plurality of photodiodes and a plurality of blocking diodes, the photodiodes and blocking diodes being arranged in back-to-back connection to form a plurality of sensor elements, each sensor element including one back-to-back connected photodiode and blocking diode;

a plurality of crossing, electrically conductive lines arranged in a matrix pattern and connected to the cathodes of the photodiodes and to each other, the lines, where they cross, defining stray capacitances, the sensor elements read out through said lines in response to being driven by a matrix drive system; and

means for controlling the voltage on the cathodes of all of the photodiodes and blocking diodes, such that the cathodes of all of the photodiodes are maintained continuously at the same voltage so as to prevent generation of crosstalk by the stray capacitances, with the voltage on the cathodes of the blocking diodes being different than the voltage maintained on the cathodes of the photodiodes.

5,335,093

FILM IMAGE READING SYSTEM

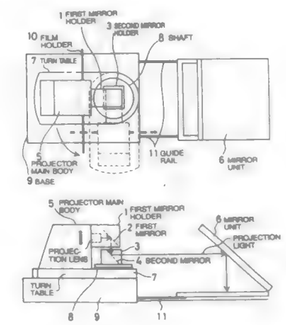
Yoshiya Imoto, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1992, Ser. No. 861,399

Claims priority, application Japan, Apr. 1, 1991, 3-068237; Apr. 2, 1991, 3-069912; Apr. 2, 1991, 3-069913; Apr. 11, 1991, 3-068238

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—487 18 Claims



1. A film image reading system, comprising reading means for reading image information, a film projector for holding a film and projecting an image of said film, a mirror unit for projecting the projected film image from said film projector to said reading means, a first mirror and a second mirror for projecting said projected image from said film projector to said mirror unit by a deflecting optical path between said film projector and said mirror unit, mirror holding means for holding said first and second mirrors, and a base for supporting said film projector and said mirror holding means in place; said second mirror fixed in said mirror holding means, and said first mirror supported for integral rotation movement with said film projector around said second mirror; and adjusting means for adjusting the swing range of said first mirror and the swing range of said second mirror, the swing adjustment range of said first mirror and said second mirror based on a locus of the projected image of film center when said film projector and said first mirror are rotated by a predetermined angle.

5,335,094

PHOTOELECTRIC CONVERTING DEVICE HAVING MATRIX WIRING AND READ-OUT OF PARALLEL SIGNALS AS A SERIAL SIGNAL

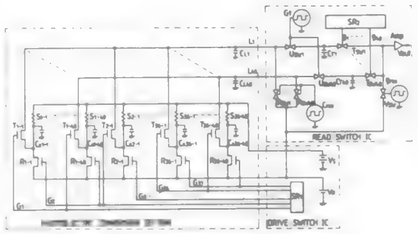
Noriyuki Kaifu, Yokohama; Toshihiro Saika, Zama; Tadao Endo, Atsugi, and Tetsuya Shimada, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 649,728, Feb. 1, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 26,107

Claims priority, application Japan, Feb. 6, 1990, 2-028044

Int. Cl.[5] H04N *1/028*

U.S. Cl. 358—494 17 Claims



1. A photoelectric converting device comprising:

a photoelectric converting section in which a plurality of photoelectric conversion elements, transfer switching elements, matrix signal wirings, and gate drive wirings are arranged on a same substrate and which generates parallel signals;

a drive switching section for applying drive signals to the gate drive wirings; and

a read switching section for converting the parallel signals which are transferred from the matrix signal wirings into a serial signal, and for outputting the serial signal, said read switching section comprising (a) a plurality of transfer switches respectively connected to said matrix signal wirings and being activated together simultaneously, (b) a plurality of read capacitors, (c) a plurality of read switches for reading out carriers stored in said plurality of read capacitors, and (d) reading means for reading said read switches by sequentially switching said plurality of read switches such that a partial overlap occurs between (i) a first driving period of at least one of said transfer switching elements and (ii) a second driving period of at least one of said read switches.

5,335,095

IMAGE FORMING APPARATUS CAPABLE OF EDITING COLOR IMAGE

Hitoshi Kageyama; Osamu Yamada, and Shinichi Mori, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 593,292, Oct. 4, 1990, which is a continuation of Ser. No. 283,200, Dec. 12, 1988, abandoned. This application May 21, 1992, Ser. No. 886,303

Claims priority, application Japan, Dec. 16, 1987, 62-319526

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—500 10 Claims

1. An image forming apparatus capable of editing a photocopied color image comprising:

image reading means for scanning an original image to optically read the image and outputting original image data;

color designating means for directly sensing a desired color in an original image without aid of an intermediate display monitor, said color designating means having color reading means for optically reading a color of an image to generate color data, and storing means for storing the color data;

editing means for electrically editing corresponding color

VOL 1165 ISS 1 AG 2 1994 UMI

areas within the original image data based on the designated desired color stored as color data in said storing means to generate edited image data for forming a photocopy; and

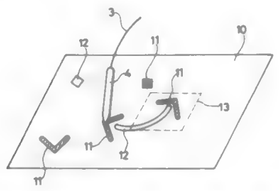


image forming means for forming a photocopied image on copying paper based on the edited image data output from said editing means thereby to form a photocopied image edited based on the designated desired color sensed by said color designating means.

5,335,096

METHOD AND APPARATUS FOR PROCESSING IMAGES

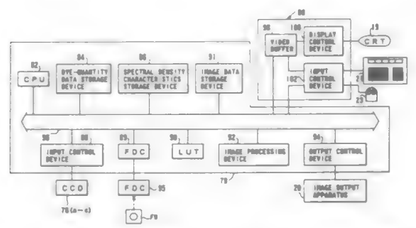
Osamu Shimazaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 3, 1993, Ser. No. 70,805

Claims priority, application Japan, Jun. 5, 1992, 4-145613

Int. Cl.[5] G03F *3/08;* **H04N** *1/46*

U.S. Cl. 358—518 **9 Claims**



1. A method of processing an image carried by a desired original made of a color photosensitive material in an image reading apparatus, comprising the steps of:

preparing a calibration chart comprising at least three regions therein and made of said color photosensitive material, each of said regions having one of the three primary colors developed by respective color dyes of the color photosensitive material;

measuring the spectral density of said calibration chart by a spectrodensitometer to determine the quantities of the respective color dyes in each of said regions;

reading said calibration chart by said image reading apparatus to determine the density of the color in each of said regions;

producing conversion data for converting color density into corresponding color dye quantity by correlating the color densities and color dye quantities obtained from said calibration chart;

reading said original by said image reading apparatus to determine the respective primary color densities in said original;

converting said primary color densities in said original into the corresponding color dye quantities by said conversion data;

obtaining a composite density from the converted color dye quantities in said original by applying thereto spectral density characteristics of the color photosensitive material; and

determining color space data of a desired colorimetric system from said composite density.

5,335,097

COLOR TONE CORRECTING APPARATUS

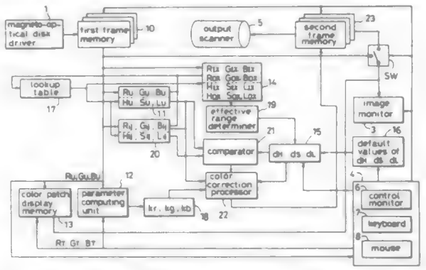
Shigeo Murakami, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Mar. 30, 1993, Ser. No. 39,680

Claims priority, application Japan, Apr. 21, 1992, 4-129542; Nov. 27, 1992, 4-341689; Nov. 27, 1992, 4-341690

Int. Cl.[5] H04N *1/46;* **G03F** *3/08*

U.S. Cl. 358—520 **38 Claims**



24. A color tone correcting apparatus for effecting a color tone correction of an original image, where color components of output signals are signals (CMYK signals) of C (cyan), M (magenta), Y (yellow) and K (black), by converting the CMYK signals into CMYK signals of a target color, said apparatus comprising:

original image data storage means for storing digitalized color component signals (RGB signals) of R (red), G (green) and B (blue) of pixels in said original image;

RGB/CMYK converting means for converting said RGB signals into said CMYK signals;

an image data conversion table for converting said RGB signals into three attribute values (i.e. hue H, saturation S and lightness L: HSL values) of perceived colors;

processing condition designating means for designating RGB signals (signals to be corrected) of a color to be corrected and to act as a central object for tone correction processing from the RGB signals stored in said original image data storage means, and for designating CMYK signals (target signals) of a target color resulting from the tone correction effected for said color to be corrected;

effective range determining means for determining, from the HSL values, an effective range of the tone correction processing with reference to said color to be corrected;

parameter computing means for computing parameters for use in the tone correction processing based on CMYK signals for the tone correction converted by said RGB/CMYK converting means from the signals designated by said processing condition designating means to be corrected, and said target signals designated by said processing condition designating means;

object pixel determining means for determining pixels subjected to the tone correction processing by comparing the HSL values obtained by applying said RGB signals of pixels in said original image stored in said original image data storage means to said image data conversion table, and the HSL values determined by said effective range determining means and indicative of the effective range of tone correction processing; and

tone correction processing means for effecting the tone correction processing by applying the parameters computed by said parameter computing means to the CMYK signals of pixels determined by said object pixel determining means to be objects of the tone correction processing among the CMYK signals obtained by successively applying the RGB signals of pixels of the original image stored in said original image data storage means to said RGB/CMYK converting means.

5,335,098

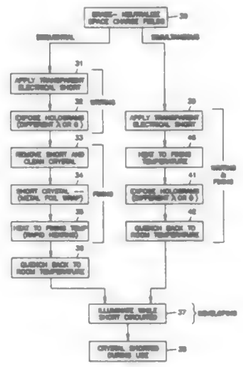
FIXING METHOD FOR NARROW BANDWIDTH VOLUME HOLOGRAMS IN PHOTOREFRACTIVE MATERIALS

Victor Leyva, Los Angeles, and George A. Rakuljic, Santa Monica, both of Calif., assignors to Accuwave Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 908,298, Jul. 2, 1992, which is a continuation-in-part of Ser. No. 736,736, Jul. 26, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,746

Int. Cl.[5] G02B *5/32;* **G03H** *1/18, 1/26*

U.S. Cl. 359—7 **33 Claims**



1. The method of developing a uniform electron distribution in a photorefractive crystal having a fixed grating formed by displaced electron patterns compensated locally by equalizing ionic displacements, comprising the steps of:

applying a thin transparent conductive coating to the crystal;

coupling an electrical potential to the coating to dissipate potential electrical fields in the crystal; and

illuminating the crystal with a distributed beam having multiple wavelength components to migrate the electrons to a uniform disposition due to the photorefractive effect.

5,335,099

VEILING GLARE CONTROL HOLOGRAPHIC WINDSHIELD

Ronald T. Smith, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,733

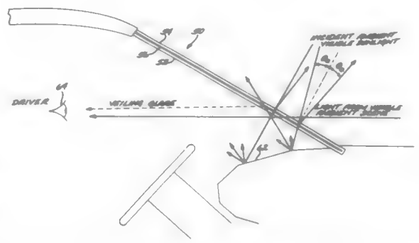
Int. Cl.[5] G02B *5/32, 27/42;* **G03H** *1/00*

U.S. Cl. 359—15 **24 Claims**

1. A veiling glare holographic windshield for vehicles, comprising:

inner and outer windshield singlets;

a zero-degree mirror reflection hologram disposed between said two singlets, said hologram having a high reflectance zone in the visible spectral range at normal incidence; and



wherein said reflection hologram is characterized by a hologram reflection peak which is in the ultraviolet range at high off-axis angles of incidence.

5,335,100

APPARATUS FOR LIGHTING A LIQUID CRYSTAL ELEMENT

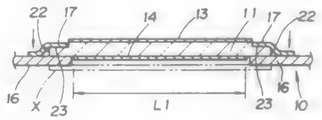
Masao Obata, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 6, 1992, Ser. No. 878,995

Claims priority, application Japan, May 10, 1991, 3-032454

Int. Cl.[5] G02F *1/1335, 1/1333*

U.S. Cl. 359—49 **17 Claims**



1. A liquid crystal lighting apparatus comprising:

a lighting apparatus main body disposed rearwardly of a liquid crystal display panel;

an optical conductor plate, parallel to said liquid crystal display panel, arranged within said lighting apparatus main body;

light sources disposed at opposite sides of said optical conductor plate; and

a reflector sheet disposed rearwardly of said optical conductor plate and in parallel therewith, for reflecting light traveling toward a rear side of said optical conductor plate, toward said liquid crystal display panel,

said lighting apparatus main body including a window frame disposed between the liquid crystal panel and said optical conductor plate, and a support disposed rearwardly of said optical conductor plate, for clamping said optical conductor plate between said window frame and support,

said optical conductor plate being reduced in thickness at opposite sides, different from the light source sides, to form steps, said support abutting said steps, said steps having a depth making a thickness between said window frame and said support smaller than a thickness between said window frame and said reflector sheet.

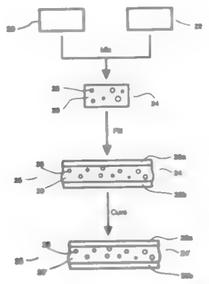
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,101

METHOD OF MAKING LIQUID CRYSTAL MATERIAL INCLUDING POLYMERIZING DISPERSION OF PREPOLYMER AND LIQUID CRYSTAL WHICH IS IMMISCIBLE IN THE PREPOLYMER

Robert H. Reamey, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed May 6, 1993, Ser. No. 59,028
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—52 **15 Claims**



1. A method of making an encapsulated liquid crystal material which comprises a liquid crystal composition dispersed in a containment medium and is responsive to an applied electric field to transform from a first visual state to a second visual state, which method comprises the steps of:

(a) providing a liquid crystal composition having an ordinary and an extraordinary refractive index;

(b) providing a prepolymer material in which the liquid crystal composition is substantially immiscible and which is polymerizable into a containment medium having a refractive index which is substantially matched with the ordinary refractive index of the liquid crystal composition;

(c) forming a dispersion of the liquid crystal composition in the prepolymer material, the dispersion having a mean volume diameter of less than 20 μm; and

(d) thereafter polymerizing the prepolymer material to form the encapsulated liquid crystal material.

5,335,102

LIQUID CRYSTAL DISPLAY ELEMENT AND METHOD FOR TREATING DEFECTIVE PIXELS THEREIN

Yuzuru Kanemori, Tenri; Mikio Katayama, Ikoma; Kiyoshi Nakazawa, Fujiders; Hiroaki Kato, Nara; Kozo Yano, Yamatokoriyama; Naofumi Kondo, Nara; Hiroshi Fujiki, Sakai; Toshiaki Fujihara, Higashiosaka; Hidenori Negoto, Ikoma, and Manabu Takahama, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 19, 1991, Ser. No. 656,845
Claims priority, application Japan, May 11, 1990, 2-121787; May 11, 1990, 2-121788; May 14, 1990, 2-125191; Jun. 4, 1990, 2-146857
Int. Cl.[5] G02E *1/343;* G09G *2/36*
U.S. Cl. 359—59 **8 Claims**

1. An active matrix display device comprising:

a pair of insulating substrates at least one of which is light transmitting;

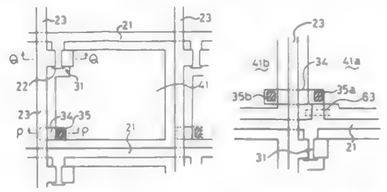
scanning lines and signal lines arranged orthogonally on one of said pair of substrates; and

pixel electrodes each connected to an adjacent scanning line and an adjacent signal line via a switching element,

a conductive layer disposed under said adjacent signal line and said pixel electrode and extending therebetween;

an insulating film interposed between said conductive layer and said adjacent signal line, and between said conductive layer and said pixel electrode, respectively; and

a conductive piece formed between said pixel electrode and said insulating film and overlapping said conductive layer



for facilitating a conductive connection between said conductive layer and said pixel electrode, said conductive layer facilitating another conductive connection between said conductive layer and said adjacent signal line under a defective condition of said switching element.

5,335,103

DOUBLE SEAL PATTERN FOR A LIQUID CRYSTAL DEVICE WITH CURVED ENDS

Sang Y. Kim, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Feb. 22, 1993, Ser. No. 24,173
Claims priority, application Rep. of Korea, Feb. 21, 1992, 92-2668
Int. Cl.[5] G02F *1/1339*
U.S. Cl. 359—80 **4 Claims**

1. A seal pattern formed on a substrate of a liquid crystal display having an active area, comprising:

(a) a first seal pattern surrounding said active area on said substrate and which defines a first liquid crystal injection port at one side thereof; and

(b) a second seal pattern formed around and exterior to said first seal pattern and which defines a second liquid crystal injection port corresponding in location to said first liquid crystal injection port, said second seal pattern having two ends having a first portion, each end being turned outwardly from said active area at said first and second liquid crystal injection ports and having a second portion being outwardly turned from said first portion.

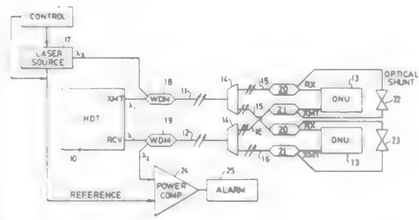
5,335,104

METHOD OF DETECTING BREAKS IN MULTI-DROP FEEDER SYSTEMS

Robert W. Johnson, Marcy, N.Y., assignor to Laser Precision Corp., Utica, N.Y.

Filed Oct. 22, 1992, Ser. No. 964,826
Int. Cl.[5] H04B *10/08;* H04J *14/02*
U.S. Cl. 359—110 **4 Claims**

1. A fiber optic passive distribution network in which a host digital terminal serves a plurality of subscribers, each of said subscribers being provided with an optical network unit, said host digital terminal and each of said optical network units having a transmit terminal outputting a light carrier in a given wavelength band and receive terminal receiving a light carrier in said wavelength band, receive and transmit primary optical fibers extending from the host digital terminal receive and transmit terminals to respective first and second optical power splitters, a plurality of first branch fibers coupling the first splitter to the transmit terminals of the associated optical network units, a plurality of second branch fibers coupling the second splitter to the receive terminals of the associated optical network units; and the improvement which comprises a laser source generating out-of-band light at a wavelength out of said wavelength band; respective wave division multiplex means interposed in the first branch fibers and said second primary



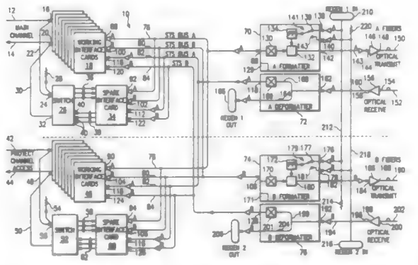
fibers for blending said out-of-band light with said carriers to travel on the associated primary and branch fibers; respective wave division demultiplexer means interposed in said first primary fibers and said second branch fibers for stripping said out-of-band light from said light carriers in the associated primary and branch optical fibers; respective light shunt means at each of said optical network units for coupling the associated wave division demultiplexer and multiplexer to carry said out-of-band light between said demultiplexer and said multiplexer; a light conduit carrying said out-of-band light from said laser source to the wave division multiplexer associated with said transmit primary fiber, and a power comparator having a reference input coupled to receive a reference level from said laser source and another input coupled to the wave division demultiplexer associated with said receive primary fiber.

5,335,105

HIGH SPEED COMMUNICATIONS INTERFACE PROTECTION SYSTEM

Stephen C. Carlton, Plano, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Apr. 10, 1992, Ser. No. 867,269
Int. Cl.[5] H04J *14/08*
U.S. Cl. 359—135 **8 Claims**



1. A high speed telecommunications interface protection system, comprising:

at least one interface circuit operable to receive a first signal in a first protocol and in response thereto to transmit a second signal in a second protocol, said interface circuit further operable to receive a third signal in said second protocol and in response thereto to transmit a fourth signal in said first protocol;

a first destination circuit coupled to said interface circuit, said first destination circuit operable to generate a first clock frame and to send said first clock frame to said interface circuit;

a second destination circuit coupled to said interface circuit, said second destination circuit operable to generate a second clock frame and to send said second clock frame to said interface circuit; and

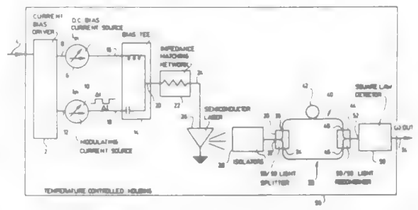
said interface circuit operable to transmit said second signal in said second protocol to said first destination circuit by inserting said second signal into said first clock frame to said first destination circuit, said interface circuit further operable to transmit said second signal in said second protocol to said second destination circuit by inserting said second signal into said second clock frame and retransmitting said second clock frame to said second destination circuit.

5,335,106

OPTICALLY-BASED FREQUENCY SYNTHESIZER FOR GENERATING AN ELECTRIC OUTPUT SIGNAL AT A PRESELECTED FREQUENCY THAT CAN BE CHANGED OVER A WIDE BAND OF FREQUENCIES FOR COMMUNICATION PURPOSE

Normand Paquin, Westmount, and A. K. Ghosh, Dollard des Ormeaux, both of Canada, assignors to MPB Technologies Inc., Quebec, Canada

Filed Oct. 30, 1992, Ser. No. 969,455
Int. Cl.[5] H04B *10/06*
U.S. Cl. 359—180 **20 Claims**



1. An optically-based frequency synthesizer for generating an electric output signal at a preselected frequency having a given period that can be changed over a wide band of frequencies for communication purposes, comprising:

modulating means having an input for receiving a command signal corresponding to said preselected frequency, and an output for generating a current driving signal having a DC component, and a modulating component formed of an AC signal having a predetermined time period which is an integer multiple of the period of said preselected frequency, and an amplitude responsive to said command signal;

a laser having an input for receiving said current driving signal so that said laser is driven to emit a coherent light signal at at least two different wavelengths during the predetermined time period, said coherent light signal having a given coherence time;

optical isolating means for receiving said light signal emitted by said laser for preventing undesirable optical feedback into said laser;

an optical splitting device having an input optically con-

VOL 1165 ISS 1 AG 2 1994 UMI

nected to an output of said isolating means, and first and second outputs;

a first optical path having an end optically connected to the first output of said splitting device;

a second optical path having an end optically connected to the second output of said splitting device, and a delay means along its length for producing a time delay in light signal transmitted through said second path with respect to light signal transmitted through said first path, said time delay being shorter than said coherence time;

an optical recombining device having first and second inputs optically connected to other ends of said first and second paths respectively, so that said light signal transmitted through said first path can be beat with said light signal transmitted through said second path, said light signals transmitted through said paths having a frequency difference determined by said time delay;

a non-linear device having an input optically connected to an output of said recombining device, and an output for generating said electric output signal at said preselected frequency which corresponds to said frequency difference; and

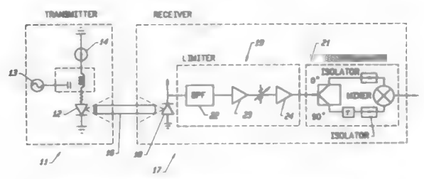
means for stabilizing operation of said synthesizer with respect to ambient temperature, whereby by applying said command signal to said modulating means, said output signal can be generated for communication purposes.

5,335,107

METHOD AND APPARATUS FOR MODULATION OF SELF-PULSATING DIODE LASER'S SELF-PULSATING FREQUENCY

John B. Georges, Berkeley, and Kam Y. Lau, Danville, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed May 29, 1992, Ser. No. 891,551
Int. Cl.[5] H04B *10/04*
U.S. Cl. 359—181 **13 Claims**



1. A system for optical communications, comprising:

a transmitter comprising a self-pulsating laser diode for generating a light signal comprising an optical carrier and a self-pulsating microwave sub-carrier;

modulating means for modulating said self-pulsating microwave sub-carrier generated by said transmitter so as to generate a modulated microwave sub-carrier light signal; and

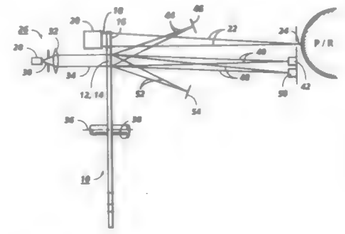
a receiver comprising a photodetector for receiving said modulated microwave sub-carrier light signal and a decoder for decoding said modulated microwave sub-carrier light signal.

5,335,108

ROTATING DISC OPTICAL SYNCHRONIZATION SYSTEM USING ALTERNATING BINARY DIFFRACTIVE OPTICAL ELEMENTS

Ellis D. Harris, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 989,321, Dec. 11, 1992, abandoned.
This application Nov. 22, 1993, Ser. No. 155,348
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.
Int. Cl.[5] G02B *5/18, 26/10, 27/44*
U.S. Cl. 359—209 **5 Claims**



4. An optical synchronization system for a scanning system on a rotating disc comprising:

a light source for emitting a coherent light beam,

means to collimate said coherent light beam,

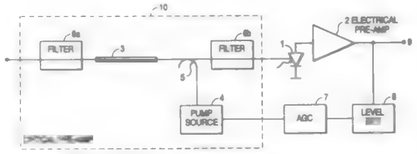
a plurality of alternating binary diffractive optical elements and blocking elements disposed circumferentially on said rotating disc such that said collimated light beam is alternately diffracted and focussed by said binary diffractive optical elements onto a first photodetector and blocked by said blocking elements to generate a synchronization signal for rotation of said rotating disc.

5,335,109

OPTICAL RECEIVER WITH EXTENDED DYNAMIC RANGE

Rolf Heidemann, Tamm, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Continuation of Ser. No. 843,243, Feb. 28, 1992, abandoned.
This application Feb. 19, 1993, Ser. No. 22,751
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1991, 4106778
Int. Cl.[5] H04B *10/02, 10/16;* **H01L** *15/00*
U.S. Cl. 359—341 **15 Claims**



1. An optical receiver for an optical communication system for receiving an optical input signal and producing an electrical output signal, comprising:

an optical amplifier for receiving an incoming optical signal at an input thereof and producing an optical output signal at an output thereof;

an optical-to-electrical transducer means operatively coupled to receive the optical output signal from the optical amplifier, wherein the incoming optical signal passes through the optical amplifier before entering the transducer means, the optical-to-electrical transducer means converting the received optical signal into the electrical output signal and providing the electrical output signal at an output of the receiver; and

control means, operatively coupled to the optical amplifier and to the optical-to-electrical transducer means, for controlling the optical amplifier to adjust the level of the optical signal output by the optical amplifier based on the electrical output signal output by the transducer means;

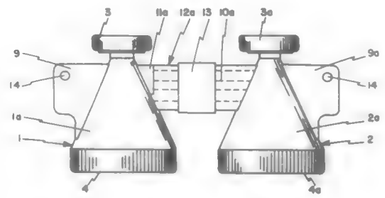
wherein said control means comprises level detector means for receiving the electrical output signal from the transducer means and determining the instantaneous average value of the electrical output signal, and automatic gain control means for receiving the instantaneous average value from the level detector means and producing a control voltage output signal to control the level of the optical signal output by the optical amplifier.

5,335,110

STEREO MULTI-VISION SCOPE FOR SIGHTSEEING

Suk K. Shin, 107-80 Hhun ger-Dong, Seo dae moon-ku, Seoul, Rep. of Korea

Filed Dec. 14, 1992, Ser. No. 990,042
Claims priority, application Rep. of Korea, Jan. 25, 1992, 1113
Int. Cl.[5] G02B *3/08, 27/22, 27/12*
U.S. Cl. 359—480 **8 Claims**



1. A stereo multi-vision scope comprising:

first and second cone-type tubes, each of said first and second cone-type tubes having art ocular portion at one end and an object portion at another end, each of said object portions including a multi-image means for viewing distant objects as a multitude of visual images when looking through said ocular portions, each of said ocular portions having a shape for viewing through respective said first and second corn-type tubes when said ocular portions are held to eyes of a user:

support means for connecting said first and second cone-type tubes and for adjusting a distance between said first and second corn type tubes to have said distance substantially equal a distance between the eyes of the user.

5,335,111

HOLLOW RETROREFLECTOR ASSEMBLY WITH HARD MOUNT ASSEMBLY

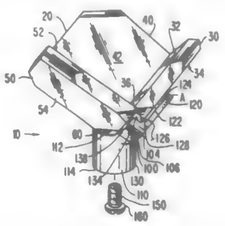
Zvi Bleier, Comack, N.Y., assignor to PLX Inc., Deer Park, N.Y.

Filed Apr. 22, 1993, Ser. No. 52,043
Int. Cl.[5] G02B *5/122*
U.S. Cl. 359—529 **42 Claims**

1. A retroreflector assembly comprising:

a retroreflector comprising three plates having optically flat reflective surfaces disposed at right angles to each other, wherein each of said plates has first and second sides disposed at right angles to each other, said first side of each of said plates abutting and being joined to said reflective surface of said plate adjacent to said abutting plate; said

a mounting member adapted for mounting said retroreflector thereon, comprising first and second receiving surfaces disposed at right angles to each other, wherein said first receiving surface has adhered thereto a portion of said first side of one of said plates and said second receiving surface has adhered thereto a portion of said second side of said one of said plates.

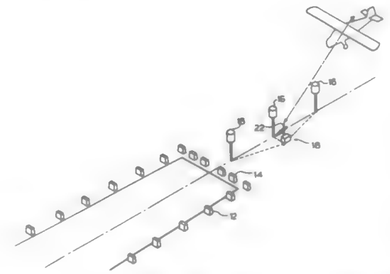


5,335,112

REMOTE AREA LANDING SYSTEM

Reginald S. Bennett, Toronto, and Gary Hretsina, Ajax, both of Canada, assignors to RB-Maxim Visual Aids Ltd., Ajax, Canada

Continuation-in-part of Ser. No. 775,751, Oct. 15, 1991, Pat. No. 5,223,977, which is a continuation-in-part of Ser. No. 617,766, Nov. 26, 1990, Pat. No. 5,115,343, Continuation-in-part of Ser. No. 507,840, Apr. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 469,376, Jan. 24, 1990, abandoned. This application Aug. 17, 1992, Ser. No. 930,802
Int. Cl.[5] G02B *5/124*
U.S. Cl. 359—530 **7 Claims**



1. Remote area landing system comprising in combination:

a plurality of markers adapted to be located adjacent a landing area, adapted to retroreflect light incident thereon;

said markers being arranged to define a landing location;

each of said markers having a panel bearing cube corner reflectant sheeting;

a lighting system adapted to indicate the presence of said landing area;

an antenna;

means responsive to receipt of a predetermined radio signal by said antenna to turn on said lighting system

wherein said signal responsive means comprises:

a storage battery connected to power said lighting system;

a solar cell connected to charge said battery;

a control adapted to activate said lighting system;

an antenna;

said control being connected to receive the signal from said antenna, and responsive to a component of predetermined frequency therein, to cause illumination of said lighting system.

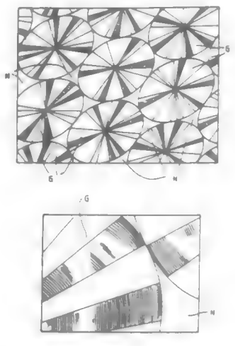
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,113

DIFFRACTION GRATING

Wayne K. Jackson, and Richard A. Goodman, both of Victoria, Australia, assignors to Reserve Bank of Australia, Sydney, Australia

PCT No. PCT/AU89/00542, § 371 Date Aug. 19, 1991, § 102(e) Date Aug. 19, 1991, PCT Pub. No. WO90/07133, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 19, 1989, Ser. No. 743,387
Claims priority, application Australia, Dec. 19, 1988, PJ2020
Int. Cl.[5] G02B *5/18*; G09F *3/00*; B42D *15/00*
U.S. Cl. 359—569 42 Claims



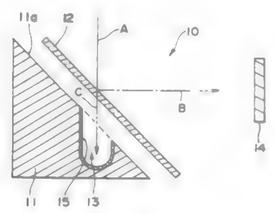
23. A security device comprising a plastic film grating configured to form part of a currency note or credit card, wherein said grating is a pixellated diffraction grating in which each pixel is an individual diffraction grating of reflecting or transmissive lines, said security device, when illuminated, generating an optically variable but structurally stable image, wherein each individual diffraction grating generates a two-dimensional optical catastrophe image diffraction pattern when illuminated.

5,335,114

OPTICAL REFLECTING UNIT

Kazuhiro Suzuki, Hadano, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,242
Claims priority, application Japan, Sep. 25, 1991, 3-85357[U]
Int. Cl.[5] G02B *17/00, 27/10, 5/08*
U.S. Cl. 359—602 8 Claims



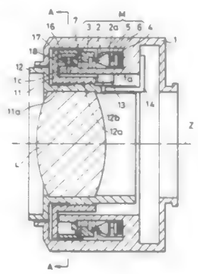
1. An optical reflecting unit comprising:
a prism having a slanting surface, said slanting surface having a longitudinal direction;
a half mirror for folding the optical path of light which is incident upon said half mirror in the form of a scan line, and for transmitting a portion of said incident light as a transmitted light, said half mirror arranged relative to the slanting surface along the longitudinal direction;
an extracted bore in said prism for receiving said transmitted light; and
an optical absorber, provided on a bottom and a peripheral wall of the extracted bore, for absorbing the transmitted light through said half mirror.

5,335,115

LENS BARREL

Tohru Kawai, Kawasaki; Masahisa Tamura, Yokohama; Ryuji Suzuki, Yokohama, and Haruhiko Yamanouchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 483,764, Feb. 23, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 28,605
Claims priority, application Japan, Feb. 23, 1989, 1-44001; Mar. 28, 1989, 1-75933; Mar. 28, 1989, 1-75934; Mar. 28, 1989, 1-75935
Int. Cl.[5] G02B *15/14, 7/02*
U.S. Cl. 359—696 33 Claims



17. A lens barrel comprising:
a driving source including a motor having an axis of rotation;
a rotating member driven by said motor;
a bearing mechanism for rotatably supporting said rotating member, said bearing mechanism including a roller that rotates about an axis which extends in a radial direction of the rotational axis of said motor; and
urging means for urging said rotating member and said roller in a direction to contact each other.

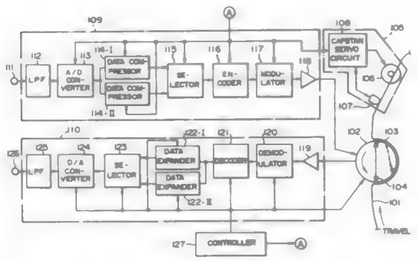
5,335,116

METHOD AND APPARATUS FOR RECORDING ANALOG VIDEO SIGNAL IN COMPRESSED DIGITAL FORMAT

Ken Onishi; Hidenori Banjyo, and Yukari Arano, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 979,554, Nov. 20, 1992, abandoned, which is a continuation of Ser. No. 518,112, May 3, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 147,035
Claims priority, application Japan, May 9, 1989, 1-115739; May 9, 1989, 1-115739
Int. Cl.[5] H04N *5/782*
U.S. Cl. 360—9.1 30 Claims

1. In a digital video signal recording system for recording recording data which are produced from digital video signals generated by an analog-to-digital converter, and supplied to a rotary head, said recording data recorded in tracks of a magnetic tape which is fed at a constant speed, the improvement comprising a method of recording which can selectively record in one of an ordinary recording mode and a long recording mode, said long recording mode including the steps of:
sending said digital video signals produced by said analog-to-digital converter directly to a data compressor:
compressing said digital video signals in said data compressor at a rate of 1/N (where N can be any integer greater than 1) of a data rate adopted in recording in said ordinary recording mode, thereby producing compressed data;
feeding the output of said data compressor to a selector, and directly feeding an output of said selector to an encoder;
feeding said magnetic tape at a speed of 1/ N of the speed adopted in recording in said ordinary recording mode; and



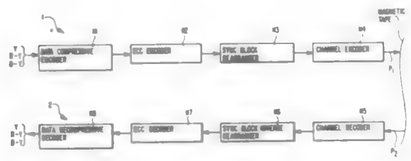
recording said recording data for one field in a recording time of 1/N as long as the time for recording in said ordinary recording mode, whereby said recording data for one field, which are recorded in M (M: an integer greater than N) tracks in said ordinary recording mode, are recorded in about M/N intermittent tracks in said long recording mode (M/N not being limited to an integer).

5,335,117

DIGITAL MAGNETIC RECORDING/REPRODUCING METHOD AND APPARATUS THEREFOR FOR RECORDING RE-ARRANGED SYNC BLOCKS

Ku-man Park, Seoul, and Tae-eung Kim, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Nov. 3, 1992, Ser. No. 971,062
Claims priority, application Rep. of Korea, Mar. 14, 1992, 92-4227
Int. Cl.[5] G11B *5/09*; H04N *5/76*
U.S. Cl. 360—48 9 Claims



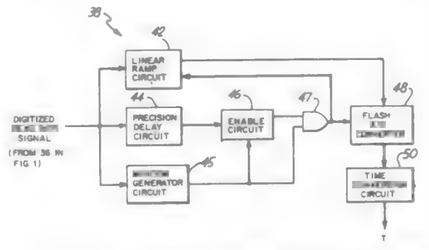
4. A digital recording and reproducing method in which a digital image signal is compressively coded to record data for one picture in units of k tracks on a magnetic tape and recorded compressively coded data is read out and expansively decoded to recover data in units of pictures, said method comprising the steps of:
(a) forming the compressively coded data into m sequential sync block units for every picture, where m is an integer greater than 1, said respective sync block units having an ID code;
(b) arranging said m sync block units in sync block unit strings corresponding to said k tracks to produce k sync block unit strings, wherein a first string comprises sync block units of 1+kn permutation, a second string comprises sync block units of 2+kn permutation, . . . , and a kth string comprises sync block units of k+kn permutation, where k is an integer greater than 1 and where n is an integer from 0 to m/k;
(c) recording said k sync block unit strings on said corresponding k tracks of said magnetic tape;
(d) sequentially re-arranging said sync block units read from said magnetic tape in an order based on said ID code in picture units irrespective of the picture to which one of said sync block units belongs and irrespective of playback speed during playback of said magnetic tape; and
(e) expansively decoding the re-arranged sync block unit data in units of pictures.

5,335,118

DISC DRIVE WITH WRITE PRECOMPENSATION USING WINDOW/PULSE TIMING MEASUREMENTS

Forrest C. Meyer, Eden Prairie, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 22, 1992, Ser. No. 918,676
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—51 20 Claims



1. An apparatus for measuring spacing between a data pulse and a following edge of a data window in a magnetic storage system including a magnetic storage media and a magnetic head, comprising:
a capacitor;
means coupled to the capacitor for charging the capacitor;
an analog-to-digital converter connected to the capacitor for converting a voltage on the capacitor to a digital value;
charge controller means, coupled to the means for charging the capacitor, for triggering charging of the capacitor upon detection of a data pulse from a first electrical signal; and
converter controller means, coupled to the analog-to-digital converter, for triggering conversion of the voltage on the capacitor to the digital value upon detection of an edge of a data window from a separate and distinct second electrical signal immediately following a data pulse.

5,335,119

DATA RECORDING SYSTEM HAVING UNIQUE NONRECORDING DETECTION

Lionel C. Shih, and Tracy G. Wood, both of San Jose, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Feb. 28, 1992, Ser. No. 843,517
Int. Cl.[5] G11B *5/09, 20/10*
U.S. Cl. 360—53 14 Claims

1. A system adapted to selectively record and reproduce digital data on a magnetic tape and to determine during reproducing when said recorded digital information data is valid, said system comprising:
means adapted to selectively record and reproduce information data including user data and system format data in physical blocks of predetermined size on a recording area of said tape, said user data being contained in data blocks, each physical block being recorded on a set of tracks, said recording means being adapted to reproduce said information data from said tape immediately after it has been recorded;
buffer means for storing a predetermined amount of said

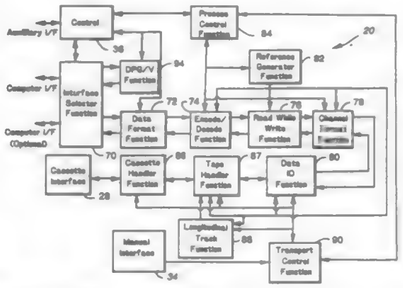
VOL 1165 ISS 1 AUG 2 1994 UMI

information data during the recording of said information data;

servo means for controlling the speed and direction of movement of said tape;

processing means for generating said system format data and for providing said user data and said system format data to said recording means for recording thereby on said tape, said processing means generating a subarea matrix of said system format data for recording on said recording area;

said processing means being adapted to generate system format data that includes data identifying each data block being recorded and the location on the tape where each physical block is being recorded;



said processing means being adapted to generate system format data that includes a cyclic redundancy check field of said system format data, the content of said cyclic redundancy check field being unique for each data block being recorded, said processing means comparing said cyclic redundancy check field of a recorded data block that is reproduced immediately after having been recorded to the cyclic redundancy check field of the corresponding data block located in said buffer means and generating data indicating a nonrecording failure detection in the event said comparison is different.

5,335,120

DEVICE FOR READING A SET OF RESISTIVE ELEMENTS FEATURING INTERROGATION AND VOLTAGE STABILIZATION CIRCUITS

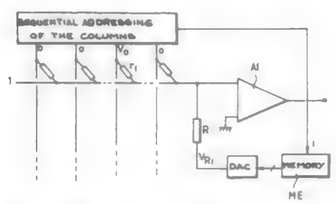
Joseph Colineau, Bures Sur Yvette, and Thierry Valet, Viroflay, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Mar. 22, 1993, Ser. No. 35,068

Claims priority, application France, Mar. 27, 1992, 92 03717

Int. Cl.[5] G11B *15/12, 5/09*

U.S. Cl. 360—63 **8 Claims**



1. A device for the reading of a set of resistive elements, each comprising an interrogation port that can be connected to an electrical interrogation source and a reading port connected to a voltage detection circuit that enables the resistance of each resistive element to be measured, wherein:

the interrogation circuit successively applies an interrogation potential to the interrogation port of each resistive element while it applies a reference potential to the other resistive elements;

and wherein:

said device comprises at least one voltage stabilization circuit that is connected to the reading ports of the resistive elements and that keeps these ports substantially at the reference potential.

5,335,121

ARRANGEMENT FOR REPRODUCING A DIGITAL SIGNAL FROM A TRACK ON A MAGNETIC RECORD CARRIER USING A READ HEAD WITH MAGNETO-RESISTIVE ELEMENT AND AN EQUALIZER FILTER

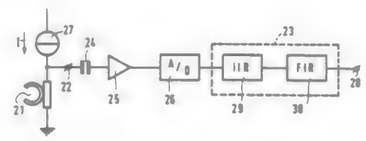
John M. Bombeeck, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 838,385, Feb. 19, 1992. This application Oct. 25, 1993, Ser. No. 142,647

Claims priority, application European Pat. Off., Oct. 1, 1991, 91202549.1

Int. Cl.[5] G11B *5/035, 5/127, 5/33*

U.S. Cl. 360—65 **4 Claims**



1. Arrangement for reproducing a digital signal from a track on a magnetic record carrier, the arrangement including:

a magnetic read head having a magneto-resistive (MR) element, the magnetic head having a first side (front) and a second side (back), one of the sides having a magnetic shielding for the MR element which is larger than the magnetic shielding on the other side, whereby the MR element is substantially unshielded against external magnetic fields on said first side of the magnetic read head, and is substantially shielded against external magnetic fields, other than a reproducing magnetic field, on said second side of the magnetic read head;

an equalizer filter means, having an input coupled to an output of the magnetic read head, and an output, the equalizer filter means being adapted to supply an output signal at its output which has been substantially equalized as regards magnitude and group delay as a function of frequency; and

transport means for moving the magnetic record carrier in a certain direction past the magnetic read head, characterized in that the equalizer filter means includes a series arrangement of digital finite impulse response (FIR) filter means and digital infinite impulse response (IIR) filter means, the IIR filter means having an input an output, and being adapted to substantially equalize magnitude and delay of signal applied to its input in a low frequency region of the signal frequency range as a function of frequency, and to supply an equalized signal to its output, and the FIR filter means having an input and an output, and being adapted to substantially equalize the magnitude of a signal applied to its input in a higher frequency region of the signal frequency range as a function of frequency, and to supply an equalized signal to its output, and the transport means being adapted to transport the magnetic record carrier past the magnetic read head in a direction from the substantially unshielded first side to the substantially shielded second side.

5,335,122

AUTOMATIC TRACK LOCKING STATE CHECK CIRCUIT

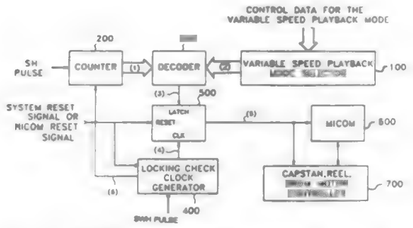
Hong-jo An, Kwangmyung, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 17, 1991, Ser. No. 701,826

Claims priority, application Rep. of Korea, May 21, 1990, 90-7300

Int. Cl.[5] G11B *21/04*

U.S. Cl. 360—70 **20 Claims**



1. An automatic track checking circuit of a rotary digital audio tape recorder, comprising:

variable speed selector means for logically combining control data for one of a forward direction and a reverse direction, and providing a selected speed among a plurality of speeds for a playback mode from said control data;

counter means for counting sampled-and-hold pulses for a predetermined time to provide counted signals;

decoder means for decoding said counted signals according to said selected speed to provide a decoded signal;

latch means in synchronism with switching head pulses, for latching said decoded signal to generate an automatic track locking signal; and

locking check clock generator means for setting a locking range for a tracking servo according to said switching head pulses and a system reset signal, and controlling the generation of said automatic track locking signal of said latch means and the initiation of said counter means.

5,335,123

APPARATUS AND METHOD FOR HEAD-POSITIONING ON A ROTATABLE RECORDING MEDIUM

Ryosuke Shimizu, Yawata, and Noriaki Wakabayashi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 21, 1991, Ser. No. 657,779

Claims priority, application Japan, Feb. 21, 1990, 2-39979

Int. Cl.[5] G11B *5/596*

U.S. Cl. 360—77.05 **9 Claims**

1. Method for recognizing head position information comprising the steps of:

discretely forming servo-patterns in a circular direction of a rotatable recording medium, each servo-pattern comprising at least two sub servo-patterns,

determining values of said at least two sub servo patterns, and comparing peak values of reproduced signal amplitudes representing values of said sub servo-patterns respectively thereby to form a first binary-valued information,

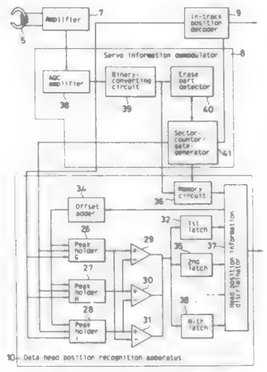
subsequently adding a first offset onto at least one of those peak values of said reproduced signal amplitudes in compliance with a value of said first binary-valued information,

then comparing respective peak values to each other again thereby to form a second binary-valued information,

further adding a second offset onto a peak value on which said first offset was added in compliance with a value of the second binary-valued information,

or further adding a different offset from the first offset onto a peak value on which no offset was added at the time when second binary-valued information was produced, then comparing respective peak values to each other again, thereby to form a third binary-valued information, and

then repeating the above-mentioned steps at least N times (N is an integer), thereby to recognize the head position in the



radial direction of a recording medium up to a precision of $1/(2^N)$ of the information track width based on said servo signal,

wherein said sub-servo-patterns include a three-phase sub-servo-pattern which has a three-track period and includes two tracks with a pattern thereon and one track without a pattern thereon, said three-phase sub-servo-patterns shifted from each other by a one-track period.

5,335,124

DISK DRIVE

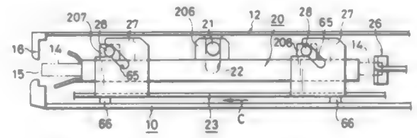
Yuji Yokota, Chichibu, Japan, assignor to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Continuation of Ser. No. 734,224, Jul. 22, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 128,567

Claims priority, application Japan, Jul. 23, 1990, 2-194297; Feb. 5, 1991, 2-035491

Int. Cl.[5] G11B *17/04*

U.S. Cl. 360—99.06 **22 Claims**



1. A disk drive for recording data to and/or reproducing data from a disk comprising:

a guide member for supporting said disk during installation or removal of said disk to or from said disk drive; and

a slide member having an engage portion which engages said guide member so as to move said guide member in response to the installation or the removal of said disk, with said engage portion being disposed in a concave portion formed at a side wall of said guide member;

wherein an outer surface of a the side wall of said guide member is substantially coplanar with an outer surface of side wall of said slide member.

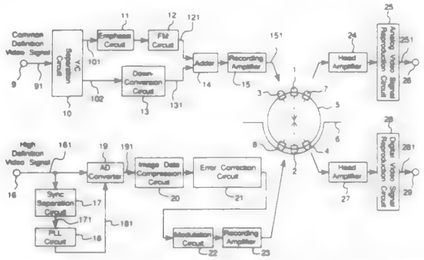
VOL 1165 ISS 1 AUG 2 1994 UMI

5,335,125

VIDEO SIGNAL MAGNETIC RECORDING AND REPRODUCING APPARATUS

Etsuto Nakatsu; Yoshihiro Morioka, both of Osaka, and Masaaki Kobayashi, Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 30, 1992, Ser. No. 969,482
Claims priority, application Japan, Nov. 1, 1991, 3-287465
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—10.3 2 Claims



1. A video signal magnetic recording and reproducing apparatus capable of recording and reproducing a video signal in a standard speed mode and an extended play (EP) mode and capable of simultaneously recording and reproducing a composite video signal consisting of a first video signal with normal definition and a second video signal with high definition in a simulcast for broadcasting an identical program in both a conventional broadcasting system and a high definition broadcasting system, said video signal magnetic recording and reproducing apparatus comprising:

a rotating drum including

a first magnetic head pair for recording and reproducing the video signal in the standard speed mode,

a second magnetic head pair for recording and reproducing the video signal in the EP mode and for recording and reproducing the first video signal in the standard speed mode and

a third magnetic head pair for recording and reproducing the second video signal in the standard speed mode, said third magnetic head pair having an azimuth angle different from those of the first and second magnetic head pairs;

a magnetic recording medium in which said first and second video signal are recorded;

first recording signal processing means for receiving and processing the first video signal to obtain an analog recording signal which is to be recorded onto a first track pattern formed on said magnetic recording medium by the second magnetic head pair at the standard speed mode;

second recording signal processing means for receiving and processing the second video signal to obtain an analog recording signal which is to be recorded onto a second track pattern formed on said magnetic recording medium by the third magnetic head pair at the standard speed mode, wherein the analog recording signal and the digital recording signal are simultaneously recorded in a simulcast such that each track of said second track pattern is adjacent to each track of said first track pattern;

first reproduction signal processing means for processing a recorded first video signal reproduced from said magnetic recorded medium by any one of said first and second magnetic head pairs to output a reproduction first video signal; and

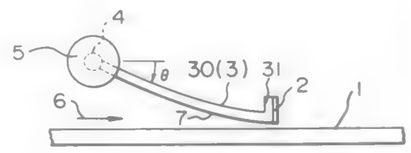
second reproduction signal processing means for processing a recorded second video signal reproduced from said magnetic recorded medium by said third magnetic head pair to output a reproduction second video signal when reproducing the recorded second video signal in a simulcast.

5,335,126

MAGNETIC DISK DEVICE WITHOUT SLIDER AND HAVING MAGNETIC HEAD MOUNTED DIRECTLY ON MAGNETIC HEAD SUPPORT INCLUDING INTEGRAL GAS PRESSURE GENERATING STRUCTURE

Mikio Tokuyama, Tsukuba; Ryoichi Ichikawa, and Noriaki Okamoto, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 26, 1992, Ser. No. 888,536
Claims priority, application Japan, May 23, 1991, 3-118352
Int. Cl.[5] G11B *5/60, 5/48*
U.S. Cl. 360—104 16 Claims



1. A magnetic disk device wherein magnetic head means reads information from a magnetic disk surface and writes information on the magnetic disk surface, said device comprising:

an arm disposed at a distance from said magnetic disk surface;

a magnetic head support including a single flexible member cantilevered to said arm, said single flexible member having a first end attached to said arm and having a second end extended toward said magnetic disk surface at a predetermined angle relative to said magnetic disk surface, said single flexible member having rigidity in a direction parallel to said magnetic disk surface and flexibility in a direction non-parallel to said magnetic disk surface over an area extending from said first end to said second end;

at least one magnetic head provided on the second end of said single flexible member; and

gas pressure generating means for generating a gas pressure between said magnetic head support and said magnetic disk surface due to relative movement between said magnetic head support and said magnetic disk surface, said gas pressure generating means being integral with a portion of said single flexible member facing said magnetic disk surface.

5,335,127

LAMINATION TYPE MAGNETO-RESISTIVE HEAD

Yuji Nagata, Yao; Toshio Fukazawa, Kyoto, and Satoru Mitani, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 22, 1992, Ser. No. 902,580
Int. Cl.[5] G11B *5/127*
U.S. Cl. 360—113 2 Claims

1. A lamination type magneto-resistive head which comprises at least two magneto-resistive heads, each of said two magneto-resistive heads comprising:

first, second, and third magnetic layers;

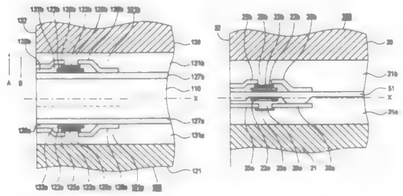
a first gap disposed between said first magnetic layer and said second magnetic layer;

a second gap disposed between said second magnetic layer and said third magnetic layer;

a magneto-resistive element disposed near said second gap so as to overlap an end of said second magnetic layer and an end of said third magnetic layer; and

a bias magnetic field applying means for applying a bias magnetic field to said magneto-resistive element;

wherein said first magnetic layer of one of said two magneto-resistive heads substantially faces said first magnetic layer of the other of said two magneto-resistive heads and wherein said magneto-resistive element of each of said



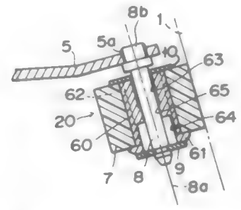
two magneto-resistive heads is absent from an area disposed between said first magnetic layer of one of said two magneto-resistive heads and said first magnetic layer of the other of said two magneto-resistive heads.

5,335,128

CLEANING ROLLER FOR HEAD CYLINDER OF MAGNETIC TAPE UNIT

Kouji Morinaka, Osaka, Japan, assignor to Funai Electric Co., Ltd., Osaka, Japan

Filed Apr. 30, 1992, Ser. No. 876,172
Claims priority, application Japan, Dec. 10, 1991, 3-349959
Int. Cl.[5] G11B *5/41*
U.S. Cl. 360—128 4 Claims



1. A cleaning roller for a head cylinder of a magnetic tape unit comprising:

a substantially cylindrical cleaning pad having a bore formed therein;

a cylinder received within said bore and having an insert hole passing therethrough, said insert hole including a small diameter center portion and a pair of larger diameter end portions, said center portion being disposed between said end portions and having an inner diameter which is substantially smaller than inner diameters of said end portions;

a support shaft extending through said insert hole and having an outer diameter which is approximately the same size as the inner diameter of said center portion and substantially smaller than inner diameters of said end portions so that said cylinder is supported on said shaft by said small diameter center portion of said insert hole;

said cleaning pad and cylinder being rotatable around said support shaft and pivotable around said center portion of said insert hole, relative to said support shaft, so that said pad is always kept in close and even contact with a surface of said head cylinder;

said cylinder being formed with a groove in an outer circumferential surface thereof in which an inner portion of said cleaning pad is embedded so that said cylinder and said cleaning pad move together as a unit; and

a stopper plate mounted on said support shaft and engaging one end of said cylinder to secure said cleaning roller to said support shaft;

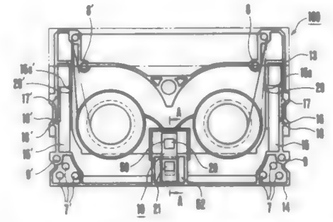
said one end of said cylinder being formed by a flange overlying part of one end of said cleaning pad.

5,335,129

INTERCHANGEABLE COMPACT TAPE CASSETTE

Hiroo Edakubo, Kanagawa; Tatsuo Ushiro, Saitama; Osamu Nagatsuka, Kanagawa, and Junji Kobayashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1991, Ser. No. 791,470
Claims priority, application Japan, Nov. 13, 1990, 2-304070; Nov. 13, 1990, 2-304071
Int. Cl.[5] G11B *23/087*
U.S. Cl. 360—132 4 Claims



1. A tape cassette containing a tape-shaped recording medium in a state of being wound around a pair of reels, comprising:

a) a first casing having an aperture part through which the tape-shaped recording medium can be externally pulled out from the cassette; and

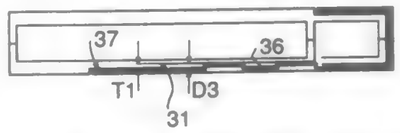
b) a second casing arranged to engage said first casing and to be slidable in the direction of externally pulling out the tape-shaped recording medium, the tape-shaped recording medium being contained in both said first and second casings wherein said tape cassette is usable in either of the position where said second casing is pulled out relatively to said first casing and the position where said second casing is not pulled out relatively to said first casing.

5,335,130

CASSETTE WITH RECORDING MEDIUM

Klaus Schoettle, Heidelberg, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 10,056
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202334
Int. Cl.[5] G11B *23/087*
U.S. Cl. 360—132 7 Claims



1. In a magnetic recording cassette having a housing with openings therein for the entry of drive members and for the access of scanning members to the recording medium, said housing having a movable closure member biased by a spring element for closing and exposing said openings, said spring element having an effective thickness and being housed in a recess on the housing between said housing and said movable closure member, said recess having a certain depth, the improvement comprising: the effective thickness of said spring

VOL 1165 ISS 1 AUG 2 1994 UMI

element being greater than the certain depth of said recess, for preventing the closure member from scraping against the cassette housing.

5,335,131

TAPE CARTRIDGE HAVING A TRANSPARENT PANEL COVERING THE TAPE SENSING OPENING

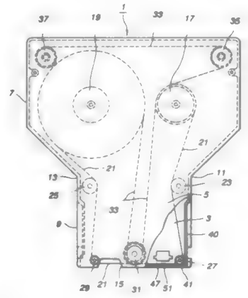
Masanori Sato, and Osamu Koizumi, both of Miyagi, Japan, assignors to Sony Corporation, Japan

Filed Feb. 16, 1993, Ser. No. 18,314

Claims priority, application Japan, Feb. 17, 1992, 4-028783; Feb. 19, 1992, 4-031161; Feb. 21, 1992, 4-033798

Int. Cl.[5] G11B *23/02*

U.S. Cl. 242—347 25 Claims



1. A tape cartridge including a housing accommodating therein two tape packs of a magnetic recording tape, a plurality of tape guides, an endless drive belt, a belt driving roller on which the drive belt is wrapped to be driven, and a plurality of belt guide rollers over which the drive belt is wrapped, said housing comprising:

a base plate;

a cover secured to said base plate and provided with an opening, said cover cooperating with said base plate to define an inner space for receiving said tape packs therein;

a transparent panel fitted into said opening of said cover to allow a light to pass from an outside to an inside of said housing; and

engaging means for securing said transparent panel to said cover, said engaging means being respectively provided on peripheral portions of said cover and peripheral portions of said transparent panel opposed to the peripheral portions of said cover.

5,335,132

OVERVOLTAGE SENSOR WITH HYSTERESIS

Thomas R. DeShazo, Jr., Frenchtown, N.J., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 17, 1991, Ser. No. 716,488

Int. Cl.[5] H02H *3/20*

U.S. Cl. 361—18 18 Claims

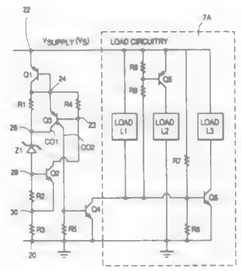
9. An overvoltage sensing circuit comprising:

first and second nodes at which first and second voltages are provided;

a first current flow circuit path formed of a first resistor, a second resistor and a voltage reference circuit element coupled in series between said first and second nodes;

a first bipolar transistor having a base, an emitter and a collector, the base and emitter of said first bipolar transistor being connected across said first resistor, whereby said first bipolar transistor is operative to sense current flow through said first current flow path, so that in response to current flow through said first resistor forward biasing the base-emitter of said first bipolar transistor, said first bipolar transistor is rendered conductive causing current flow in the collector of said first bipolar transistor;

a second bipolar transistor having a base, an emitter and a collector, said second bipolar transistor having its collector-emitter current flow path connected across said second resistor, and wherein the base of said second transistor is connected to the collector of said first transistor, so that current flow in the collector of said first bipolar transistor is operative to turn on said second transistor and reduce the voltage drop across said first resistor.



5,335,133

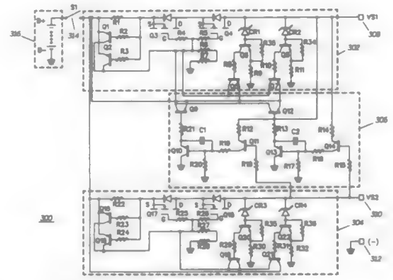
DUAL OUTPUT BATTERY WITH FAULT DETECT

Michael R. Bishop, and David H. Minasi, both of Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 29, 1991, Ser. No. 799,811

Int. Cl.[5] H02H *3/28*

U.S. Cl. 361—56 5 Claims



1. A portable rechargeable battery, comprising:

a battery housing;

a battery pack located inside of the battery housing;

a high-power limiting means coupled to the battery pack for providing a high-power limited battery output;

a low-power limiting means coupled to the battery pack for providing a low-power limited battery output; and

a fault detection means coupled to the high-power and low-power battery outputs for interrupting the high-power limited battery output in the event a fault condition occurs which electrically shorts the high-power and low-power limited battery outputs together or which causes the high-power limited battery output to be under a current limited condition for over a predetermined period of time.

5,335,134

CIRCUIT CONFIGURATION FOR PROTECTING TERMINALS OF INTEGRATED CIRCUITS

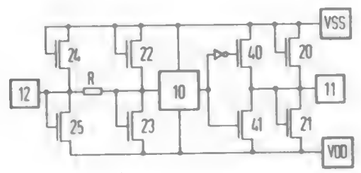
Christian Stein, München; Xaver Guggenmos, Dachau, and Joachim Krause, Landshut, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 651,312, Feb. 6, 1991, abandoned. This application Sep. 3, 1992, Ser. No. 939,676

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1990, 4003560

Int. Cl.[5] H02H *3/10*

U.S. Cl. 361—56 4 Claims



1. A circuit configuration for protecting an integrated circuit connected to first and second signal lines and to first and second supply lines, comprising:

two first and two second thin-oxide MOS-transistors of an n-channel type, each with gate, drain and source terminals, wherein

said drain terminals of said fist thin-oxide MOS-transistors are connected to the first supply line, and said gate and source terminals of each of said first MOS-transistors are mutually connected to respective ones of the signal lines; and

said drain terminals of said second thin-oxide MOS-transistors are connected to respective ones of the signal lines and said gate and source terminals are mutually connected to the second supply line.

5,335,135

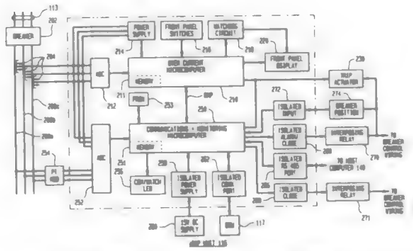
FAULT RECORDING SYSTEM FOR AN ELECTRIC POWER TRIP UNIT

Michael A. Kinney, Raleigh, N.C., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Continuation of Ser. No. 753,268, Aug. 30, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,638

Int. Cl.[5] H02N *3/08*

U.S. Cl. 361—79 12 Claims



1. A circuit breaker system for use with electric power lines which transmit an electric power signal including an electric current component to a load circuit, comprising:

a circuit breaker which may be tripped to disconnect the electric power lines from the load circuit;

first controller means coupled to the electric power lines for measuring the electric current component and for tripping the circuit breaker when the electric current component of the power signal ha a magnitude which exceeds a predetermined value for a predetermined amount of time; and

second controller means, coupled to the electric power lines, for monitoring the power signal including:

event logging means, including a volatile memory, for logging the magnitude of the electric current component in an event log when the magnitude of the electric current component is greater than the predetermined value, to produce an event log which contains a plurality of logged current magnitude events, corresponding to respective instants in time; and

trip logging means, including a non-volatile memory, for logging, in a trip log, the magnitude of the electric current component which exists immediately prior to the tripping the circuit breaker by the first controller means.

5,335,136

ELECTRONIC CIRCUIT ARRANGEMENT FOR TRIGGERING SOLENOID VALVES

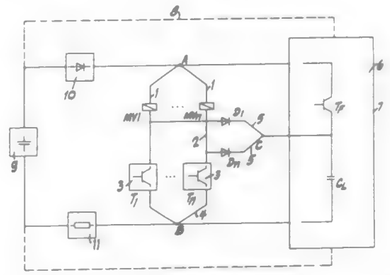
Johannes Locher, Stuttgart; Herbert Graf, Ditzingen; Néstor Rodriguez-Amaya, Stuttgart; Alfred Schmitt, Ditzingen; Joachim Tauscher, Stuttgart, and Werner Zimmermann, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 720,470, Jun. 27, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 74,000

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1988, 3844193

Int. Cl.[5] H01H *47/00*

U.S. Cl. 361—160 15 Claims



1. An apparatus for controlling solenoid valves in a fuel injection system for an internal combustion engine, comprising:

a plurality of solenoid valves;

a plurality of first transistors, each coupled in series to a respective solenoid valve;

a plurality of first diodes, each having an input coupled between a respective solenoid valve and a first transistor;

a second transistor coupled to the output of each first diode through a first collecting point and directly mechanically connected to each solenoid valve through a second collecting point; and

a capacitor coupled to the output of each first diode and to the second transistor through the first collecting point and coupled to each of the first transistors through a third collecting point.

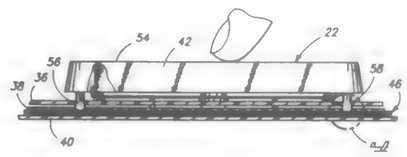
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,137

COMPUTER KEYBOARD WITH ELECTROSTATIC DISCHARGE FEATURE

George P. English, Coeur d'Alene, Id., and Nathan Batson, Newman Lake, Wash., assignors to Key Tronic Corporation, Spokane, Wash.

Filed Jul. 29, 1992, Ser. No. 921,514
Int. Cl.[5] H05F 3/04
U.S. Cl. 361—220 24 Claims



14. A computer keyboard comprising:
a housing;
multiple non-conductive keys operatively mounted in the housing, individual non-conductive keys having a non-conductive key body which is movable between an extended ready position and a depressed activated position and means for biasing the non-conductive key body to the ready position;
at least one conductive key operatively mounted in the housing, the conductive key including a conductive key body which is movable between an extended ready position and a depressed activated position and means for biasing the conductive key body to the ready position;
a switch assembly mounted in the housing beneath the non-conductive and conductive keys, the switch assembly having contacts for engagement by corresponding ones of the non-conductive and conductive keys when individual non-conductive and conductive key bodies are depressed to their activated positions, the switch assembly having an electrostatic discharge pad provided thereon which is coupled to ground;
a conductive plug having one end electrically coupled and mounted to the conductive key body of the conductive key and the other end adjacent to, but spaced from, the electrostatic discharge pad, the other end of the conductive plug engaging the electrostatic discharge pad when the conductive key body is depressed; and
the keyboard being configured to dissipate electrostatic charge from a keyboard user to ground through the conductive key body, the plug, and the electrostatic discharge pad when the conductive key body is depressed.

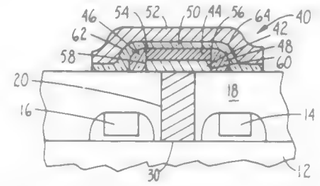
5,335,138

HIGH DIELECTRIC CONSTANT CAPACITOR AND METHOD OF MANUFACTURE

Gurtej Sandhu, and Pierre Fazan, both of Boise, Id., assignors to Micron Semiconductor, Inc., Bois, Id.

Filed Feb. 12, 1993, Ser. No. 17,385
Int. Cl.[5] H01G 1/01; H01L 27/00
U.S. Cl. 361—303 14 Claims

1. A high dielectric constant stacked storage capacitor for a semiconductor structure, comprising:
a polysilicon electrode formed in an electrically insulating layer of the semiconductor structure;
a barrier layer formed of an electrically conductive material deposited on the polysilicon electrode;
a lower electrode formed of a non-oxidizing electrically conductive material deposited on the barrier layer and etched with the barrier layer to form a stacked structure having sidewalls;
a pair of spacers covering the sidewalls of the stacked structure formed by depositing a material different than the conductive material for the lower electrode over the lower electrode and the sidewalls and etching said material to provide a rounded and smooth topography and an increased surface area for deposition of a dielectric material;



dielectric material deposited on the lower electrode and spacers to provide a smooth dielectric layer; and
an upper electrode formed on the dielectric layer.

5,335,139

MULTILAYER CERAMIC CHIP CAPACITOR

Takeshi Nomura; Yukie Nakano, both of Chiba; Akira Satoh, Akita, and Tomohiro Arashi, Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 13, 1993, Ser. No. 90,257
Claims priority, application Japan, Jul. 13, 1992, 4-208483; Mar. 19, 1993, 5-085705; Jun. 1, 1993, 5-154355
Int. Cl.[5] H01G 7/00
U.S. Cl. 361—4 16 Claims

11. A multilayer ceramic chip capacitor comprising alternately stacked dielectric layers and internal electrode layers, wherein
said dielectric layers contain barium titanate as a major component and magnesium oxide, yttrium oxide, at least one of barium oxide and calcium oxide, and silicon oxide as minor components in such a proportion that there are present
MgO: 0.1–3 mol
Y_2O_3: more than 1 mol–5 mol
BaO+CaO: 2–12 mol
SiO_2: 2–12 mol
per 100 mol of $BaTiO_3$, provided that the barium titanate, magnesium oxide, yttrium oxide, barium oxide, calcium oxide, and silicon oxide are calculated as $BaTiO_3$, MgO, Y_2O_3, BaO, CaO, and SiO_2, respectively.

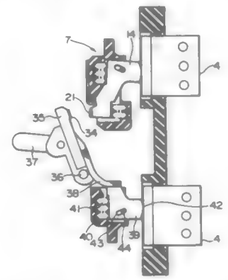
5,335,140

DRAWER-TYPE CIRCUIT INTERRUPTER

Toshihide Kamino, Kishiwada; Junichi Sonoda, Kawachinagano; Hirofumi Ogawa, Yamatokoriyama, and Takeshi Endo, Nara, all of Japan, assignors to Terasaki Denki Sangyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1993, Ser. No. 20,360
Claims priority, application Japan, Feb. 27, 1992, 4-041495; Feb. 12, 1993, 5-024222
Int. Cl.[5] H02B 11/12
U.S. Cl. 361—608 6 Claims

1. A drawer-type circuit interrupter constructed with an interrupter body (2) having a first contact member (8, 35, 51) having an open-and-close contact portion (24, 34, 52), an open-and-close operation mechanism (6) for operating said first contact member (8, 35, 51) and at least one second contact member (14, 30, 45, 100, 105, 106, 108), and a mounting frame (1) having external line connect terminals (4, 33, 103, 107, 109), said circuit interrupter characterized in that the second contact member (14, 30, 45, 100, 105, 106, 108) is a movable-type provided with an open-and-close contact portion (21, 48) that is contactable with and separable from the first contact member (8, 35, 51) on one end thereof and a drawer contact portion (20, 31, 49) contactable with and separable from an external line connect terminal (4, 33, 103, 107, 109) on the other end thereof, and further in that when the interrupter body (2) is in a connected position the drawer contact portion (20, 31, 49) on the



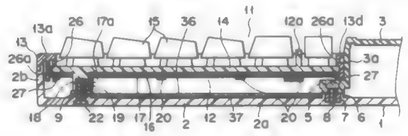
other end of said second contact member (14, 30, 45, 100, 105, 106, 108) contacts an external line connect terminal (4, 33, 103, 107, 109).

5,335,141

PORTABLE ELECTRONIC APPARATUS HAVING A REMOVABLE KEYBOARD SECURED TO A HOUSING BY SCREWS PROTRUDING THROUGH THE BOTTOM WALL OF THE HOUSING

Takashi Hosoi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 905,485, Jun. 26, 1992, abandoned, which is a continuation of Ser. No. 542,042, Jun. 22, 1990, abandoned. This application Sep. 3, 1993, Ser. No. 115,782
Claims priority, application Japan, Jun. 23, 1989, 1-162217
Int. Cl.[5] H05K 7/02, 9/00; B41J 29/02; G06F 1/16
U.S. Cl. 361—680 17 Claims



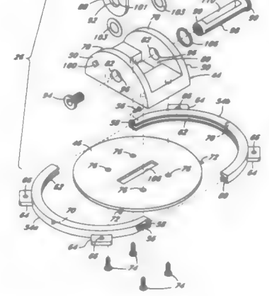
7. A portable electronic apparatus comprising:
a housing including a bottom case having a bottom wall, a front portion and a rear portion, and an upper case covering the rear portion of the bottom case;
a printed circuit board disposed in the front portion of the bottom case;
a keyboard unit removably mounted on the housing to cover the front portion of the bottom case, the keyboard unit comprising:
a substantially planar keyboard body having a top face, an under side and a fixing portion including a plurality of projections protruding from the under side of the keyboard body;
a film member disposed on the under side of the keyboard body and having a circuit pattern thereon;
a shielding plate fixed to the under side of the keyboard body, the film member being between the underside of the keyboard body and the shielding plate, the shielding plate shielding the printed circuit board from electromagnetic noise produced by the keyboard unit, the projections protruding through the film member and the shielding plate;
a plurality of keys disposed on substantially the entire top face of the keyboard body; and
a rectangular keyboard frame fitted on the peripheral edge of the keyboard body, the keyboard frame being removably fitted to the front portion of the bottom case and being removable from the bottom case independently of the upper case; and
means for securing the fixing portion to the housing, the securing means including a plurality of screws screwed into the projections through the bottom wall of the bottom case.
15. A portable electronic apparatus comprising:
a housing including a bottom case having a bottom wall, a front portion and rear portion, and an upper case covering the rear portion of the bottom case;
a printed circuit board disposed in the front portion of the housing;
a keyboard unit removably mounted on the housing to cover the front portion of the bottom case, the keyboard unit including a top face, an under side, a fixing portion having a plurality of projections protruding from the under side, and a plurality of keys disposed on substantially the entire top face; and
means for securing the fixing portion to the housing, the securing means including a plurality of screws screwed into the projections through the bottom wall.

5,335,142

PORTABLE COMPUTER DISPLAY TILT/SWIVEL MECHANISM

William J. Anderson, Anaheim, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Dec. 21, 1992, Ser. No. 994,116
Int. Cl.[5] H05K 7/16; F16M 11/12; G06F 1/16
U.S. Cl. 361—681 20 Claims



1. A portable computer, comprising:
a base;
a cover incorporating a display screen;
a hinge assembly connecting said cover and said base, said hinge assembly movable in two axes to permit said cover to tilt about a horizontal axis and to swivel about a vertical axis relative to said base, said hinge assembly comprising:
a mounting ring attached to said base, said mounting ring having an inner surface, said mounting ring further comprising a split mounting ring assembly having two semicircular members, each member having respective ends, said two semicircular members positioned so that said ends are abutting, said abutting ends fastened together to form a circle;
a swivel disk adapted to swivel about said vertical axis, said swivel disk having a peripheral edge located within said mounting ring and guided by said inner surface of said mounting ring; and

VOL 1165 ISS 1 AG 2 1994 UMI

a tilt assembly mounted to said swivel disk and also to said cover of the portable computer.

16. A portable computer, comprising:

a base;

a cover incorporating a display screen;

a hinge assembly interconnecting said cover and said base, said hinge assembly movable in two axes to permit said cover to tilt about a horizontal axis and to swivel about a vertical axis relative to said base;

a mounting ring attached to said base;

a swivel disk adapted to swivel about said vertical axis within said mounting ring;

a tilt assembly mounted to said swivel disk and also to said cover of the portable computer;

a tilt base mounted to said swivel disk;

a hollow tilt tube held within aligned apertures in said tilt base; and a yoke comprising:

a mounting plate for mounting said yoke to said cover; and

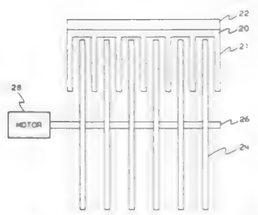
two arms having aligned apertures sized to freely rotate over said tilt tube, whereby said cover mounts to said yoke to rotate about said tilt tube, tilt base, and swivel disk.

5,335,143

DISK AUGMENTED HEAT TRANSFER SYSTEM

George C. Maling, Jr., and Roger R. Schmidt, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 5, 1993, Ser. No. 102,447
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—694 10 Claims



1. An air cooling system for integrated circuit packages which tend to collect particles and heat the air adjacent to said circuit packages during operation comprising:

a circuit package having a plurality of heat dissipative surfaces on members to be cooled, which surfaces are aligned in spaced substantially parallel planes which are mounted on and perpendicular to a base support surface;

a plurality of heat transfer disks and means for mounting said heat transfer disks for rotary movement adjacent to said heat dissipative surface;

said means for mounting said heat transfer disks including a disk drive shaft coupled to a motor, said disk drive shaft substantially parallel to the base support surface;

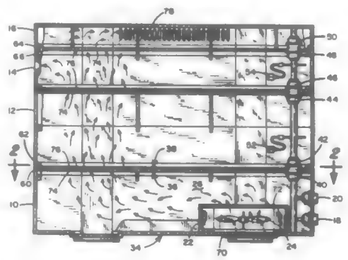
said heat transfer disks being mounted on said disk drive shaft at spaced locations such that a surface of said heat transfer disks is interposed in the space between said spaced substantially parallel planes proximate to and between said heat dissipative surfaces, and while continuously rotating said heat transfer disk removes said particles and said heat from the air adjacent to said circuit package.

5,335,144

MODULAR STACKED HOUSING ARRANGEMENT

Timothy R. Maroushek, Lino Lakes, Minn., assignor to Samar Enterprises Company, Ltd., Taipei, Taiwan

Filed Nov. 2, 1992, Ser. No. 969,892
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—695 10 Claims



1. A snap-fit stacking arrangement for combining a plurality of discrete self-contained interconnected electronic modules in aligned stacked relation comprising:

(a) a plurality of discrete self-contained snap-attached modules including a base module and one or more interchangeable, functional intermediate modules, each having discrete three-dimensional housing enclosures including pairs of spaced, oppositely disposed sidewalls and top and bottom panels adapted to be plugged together in parallel stacked relation and a cover module;

(b) integral cooperating pin and socket pass-through electrical connector units associated with the top and bottom panels for interconnecting respective facing top and bottom panels of juxtaposed modules electrically with one another in a manner which internally interconnects all stacked modules using connectors not eternally visible on the connected stack;

(c) intermodular ventilation system comprising common inlet and outlet means and matching pass-through openings in corresponding top and bottom panels of the base and intermediate modules;

(d) circulation means for pressurizing and impelling air flow through the stacked modular arrangement; and

(e) wherein said cover module is disposed on top of the one or more modules of the plurality of self-contained modules covering and protecting an otherwise exposed pin and socket connecting unit of the top surface of the plurality of stacked intermediate modules, the cover module being further provided with a plurality of side exhaust openings to accommodate ventilation flow.

5,335,145

IC CARD AND METHOD OF MANUFACTURING THE SAME

Masaaki Kusui, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 74,535
Claims priority, application Japan, Jun. 16, 1992, 4-156311
Int. Cl.[5] H05K 1/14
U.S. Cl. 361—737 6 Claims

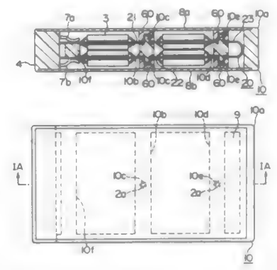
1. An IC card comprising:

two circuit boards stacked opposite each other with a predetermined spacing and electronic component parts mounted on each of the circuit boards;

a main frame including a U-shaped frame portion having an open end and surrounding three sides of said two circuit boards and at least one board supporting portion secured to said frame portion and extending between said two circuit boards to maintain the spacing between said circuit boards;

a connector disposed at the open end of said main frame, said connector being electrically and mechanically connected to both of said circuit boards;

two opposed panels mounted on said main frame and connector covering said circuit boards; and



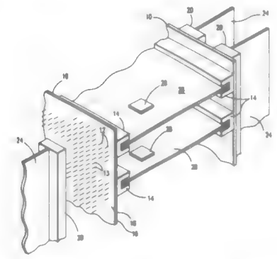
sub-frames secured to said two circuit boards at said board supporting portions so that said circuit boards are held at a spacing from said panels.

5,335,146

HIGH DENSITY PACKAGING FOR DEVICE REQUIRING LARGE NUMBERS OF UNIQUE SIGNALS UTILIZING ORTHOGONAL PLUGGING AND ZERO INSERTION FORCE CONNETORS

Robert F. Stucke, Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1992, Ser. No. 827,240
Int. Cl.[5] H01R 23/68
U.S. Cl. 361—785 3 Claims



1. A high density packaging system for interconnecting a plurality of circuit cards, said plurality of circuit cards comprising at least a first set, a second set and a third set of said circuit cards;

said circuit cards comprising electrical components, wherein said first set of said circuit cards comprises first electrical connectors disposed along a first edge of said circuit cards of said first set and, wherein said third set of said circuit cards comprises a first plurality of electrical connectors disposed along a first edge of said circuit cards of said third set, and wherein said second set of said circuit cards comprises a first plurality of electrical connection points disposed along at least two edges of each of said cards of said second set, said edges being parallel and disposed on opposite edges of said cards;

said first plurality of electrical connectors and said first plurality of electrical connectors and said first plurality of electrical connection points being electrically connected to at least some of said electrical components on said plurality of said circuit cards;

a first interconnection circuit board disposed intermediate said first set of said circuit cards and said second set of said circuit cards;

a second interconnection circuit board disposed intermediate said second set of said circuit cards and said third set of said circuit cards;

said first and second interconnection circuit boards each disposed parallel to the other and a first surface of said first interconnection circuit board facing toward a first surface of the second interconnection circuit board;

a second plurality of connectors disposed on said first surface of each of said interconnection circuit boards, said second plurality of connectors being zero insertion force connectors with an insertion axis parallel to a long axis of said zero insertion force connectors;

a second plurality of connection points disposed on a second surface of each of said interconnection circuit boards opposite said first surfaces of said interconnection circuit boards, said second plurality of connection points disposed to engage said first plurality of electrical connectors of said first set of circuit cards and said third set of circuit cards, when said first set and said third set of circuit cards are oriented orthogonally with respect to said second set of circuit cards; and

electrical interconnection paths, including said plurality of connection points connecting each of said first connectors to at least one of said plurality of said second connectors located on said first surface of said first and second interconnection boards;

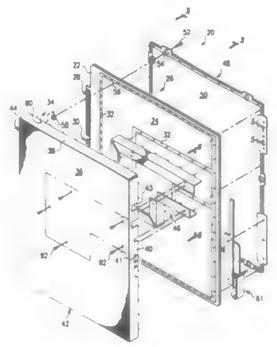
whereby individual ones of said second set of circuit cards are inserted into said at least two of said second plurality of connectors to establish contact with said circuit cards of said first set and circuit cards of said third set without having to disturb the spatial spacing of said interconnection circuit cards.

5,335,147

EMI SHIELD APPARATUS AND METHODS

William F. Weber, Allen, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Continuation of Ser. No. 834,908, Feb. 12, 1992, abandoned.
This application Mar. 31, 1993, Ser. No. 41,522
Int. Cl.[5] H05K 9/00
U.S. Cl. 361—818 2 Claims



1. A printed circuit board assembly for containing electronic circuitry and isolating EMI from the electronic circuitry, comprising:

a printed circuit board for holding the electronic circuitry and comprising a plurality of leads for permitting electrical connection to the electronic circuitry, said printed circuit board having a top side and a bottom side;

an electrically conductive perimeter comprising an electrically conductive layer integral to said printed circuit

VOL 1165 ISS 1 AG 2 1994 UMI

board and surrounding the electronic circuitry, said electrically conductive perimeter permitting electrical leads to the electronic circuitry to pass under and separate from said perimeter to an edge of said printed circuit board;

a top housing comprising a first electrically conductive shield materials for covering and isolating said top side and the electronic circuitry from EMI, said top housing further comprising a predetermined set of trace signal openings for permitting passage of-electrical connectors to said electronic circuitry;

a first plurality of tangs for engaging said electrically conductive perimeter to form a solderless removable electrical connection with said first shield material to said perimeter;

a bottom housing comprising a second electrically conductive shield material for covering and isolating said bottom side and said electronic circuitry from EMI;

a second plurality of tangs for engaging said electrically conductive perimeter to form a solderless removable electrical connection with said second shield material to said perimeter; and

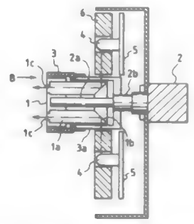
fastening means for fastening said top housing and said bottom housing to said electrically conductive perimeter for establishing an EMI shield enclosure for the electronic circuitry while permitting exposure of said leads.

5,335,148

ILLUMINATED KNOB DEVICE

Shuusuke Tominaga, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Hyogo, Japan

Filed Jan. 28, 1993, Ser. No. 10,367
Claims priority, application Japan, Jan. 31, 1992, 4-45895
Int. Cl.[5] G01D *11/28*
U.S. Cl. 362—26 **9 Claims**



1. An illuminated knob comprising:

an inner light source for illuminating the illuminated knob to show characters of the illuminated knob;

a first manipulation member fitted on an inner fixed shaft of the illuminated knob, said first manipulation member including an outer member indicating said characters and including an inner member, said inner member having a light bending portion for bending rays of light generated by said inner light source and a light guide portion for transmitting said rays of light to illuminate said outer member; and

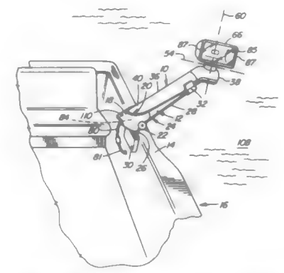
a second manipulation member fitted on a rotatable outer shaft which is disposed around said inner fixed shaft, said second manipulation member having a transparent portion through which said rays of light are transmitted.

5,335,149

METHOD AND APPARATUS FOR HOLDING A LIGHT ON A BOAT

Kenneth W. Evans, Penticton, Canada, assignor to Sierra Sun Holdings Ltd., Penticton, Canada

Filed May 13, 1992, Ser. No. 882,527
Int. Cl.[5] B63B *45/00*
U.S. Cl. 362—61 **21 Claims**



1. A utility light apparatus for a boat, the apparatus comprising:

a) a body having a distal end portion and a proximal end portion;

b) holding means for holding the body on the boat, the holding means including a fishing rod holder having a receptacle, said fishing rod holder being securable to the boat;

c) releasable connecting means on the proximal end portion of the body for releasably connecting the body to the holding means, the connecting means including a connecting portion of sufficient size to permit said connecting portion to be received and releasably held in the receptacle of the holding means; and

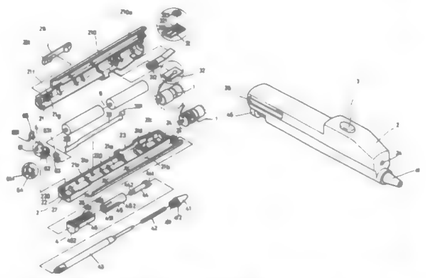
d) a light secured to the distal end portion of the body, the light being operable to emit a light beam.

5,335,150

LASER POINTER WITH A CONSTANT POWER OUTPUT CONTROL

Chao C. Huang, 10F, No. 185, Yung Chi Rd., Taipei, Taiwan

Filed Aug. 31, 1993, Ser. No. 113,670
Int. Cl.[5] B43K *29/10*
U.S. Cl. 362—118 **3 Claims**



1. A laser pointer comprised of a laser module, a laser module, a housing, a toggle switch, a push button ballpoint pen, a battery set, and a rotary cap, wherein:

said laser module is comprised of a lens assembly, a laser diode, a diode holder, and a trigger circuit board, said lens assembly comprising a plastic lens fastened in a bore thereof by an O-ring and disposed in line with a front projecting hole thereof, said diode holder comprising a front tube fitted into said bore and stopped at said plastic lens against said O-ring, a laser diode, said laser diode being electrically connected to said trigger circuit board by a soldering process, said trigger circuit board being electrically connected to said toggle switch;

said housing is comprised of an upper shell and a bottom shell respectively made of a plastic material through the process of injection molding, said upper shell comprising a peripheral flange inserted in a peripheral groove on said bottom shell, and a peripheral welding strip welded to a peripheral welding strip on said bottom shell, said housing comprising a first chamber, which receives said laser module and said battery set, a second chamber, which receives said push button ballpoint pen, a third chamber, which receives said toggle switch, a toggle switch slot in communication with said third chamber, a projecting hole at one end of said first chamber, a screw hole at one end of said second chamber, a rear opening at an opposite end of said second chamber, an end hole at an opposite end of said first chamber into which said rotary cap fits, two opposite grooves inside the end hole through which two opposite lock keys on said rotary cap pass, and a clip slot on said upper shell adjacent to said end hole to hold a clip;

said toggle switch is compriaed of a button, a printed circuit board, and an elongated spring strip, said button having an extension strip at one end for automatic return control, and a press rod within a bottom hole thereof, said printed circuit board having one end connected to said laser module by a leaf spring and a cable and an opposite end connected to said battery set by said elongated spring strip through said rotary cap;

said push button ballpoint pen is comprised of a front socket, a reservoir tube, a thrust axle, a sleeve, and a push button, said front socket comprising a center through hole through the length and an externally threaded stub tube at one end threaded into the screw hole on said housing, said thrust axle comprising pawl at one end, which catches said reservoir tube, and a screw rod at an opposite end inserted through said sleeve and threaded into a bottom screw hole on said push button, said sleeve comprising two longitudinal rails on the inside for guiding said thrust axle to move in the longitudinal direction, said push button comprising a H-shaped flange for positioning, a screw hole into which the screw rod of said thrust axle is threaded, and a flat top end for pressing with the thumb; and

said rotary cap comprises two opposite lock keys, which pass through the grooves inside said end hole and then are locked inside said end hole through a rotary motion, a contact spring fastened inside a bottom hole thereof, a retaining groove on an outer side thereof, two plug holes symmetrically spaced at the bottom, and a substantially U-shaped finger rod provided for turning said rotary cap with the fingers, said finger rod having two opposite ends inserted through the retaining groove of said rotary cap and fitted into said plug holes, the contact spring of said rotary cap being connected to said battery set and comprising a circular flange disposed in contact with said elongated spring strip of said toggle switch.

5,335,151

MARKER LIGHT

Anders Dahlberg, Sippvägen 41, S-183 63 Täby, Sweden

PCT No. PCT/SE91/00572, § 371 Date Feb. 26, 1993, § 102(e) Date Feb. 26, 1993, PCT Pub. No. WO88/00157, PCT Pub. Date Jan. 14, 1988
PCT Filed Aug. 30, 1991, Ser. No. 979,878
Claims priority, application Sweden, Aug. 31, 1990, 9002784-8
Int. Cl.[5] F21V *5/04*
U.S. Cl. 362—153.1 **7 Claims**

1. Marker light comprising a casing (1) to be flush-mounted into the ground, comprising:

a lower light source (2) adapted to emit a collected upwardly directed light bundle (L_1, L_2),

a prism (4) placed above the light source with inclined surfaces adapted to divide said upwardly directed light bundle into two bundle portions (L_1', L_2') being directed obliquely upwards in opposite directions, and

an upper cover plate (3), being transparent at least in an area of each of said bundle portions, said cover plate including essentially upper planar surfaces (3*a*, 3*b*) said upper cover plate having an upper surface lying essentially in a ground level plane, and with a lower surface having saw-tooth surface portions (16*a*, 16*b*), said prism (4) inclined surfaces and said saw-tooth surface portions (16*a*, 16*b*) being mutually adapted in such a way that said obliquely upwards directed light bundle portions will incide essentially perpendicularly onto the respective saw-tooth surface portion (16*a*, 16*b*) and, after passage through the upper cover

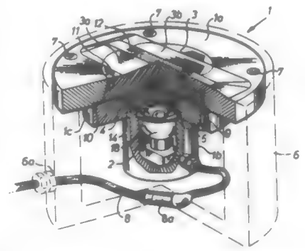


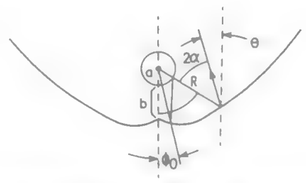
plate (3), be refracted in the planar upper surfaces thereof, so that two light beams (L_1'', L_2'') are emitted in opposite directions at a desired vertical angle (ϵ) to the ground level plane, characterized in that said prism (4) has an essentially planar lower surface (4*a*) being perpendicular to the upwardly directed light bundle (L_1, L_2) from the light source (2), and an upper surface with at least one saw-tooth formation, the inclined surface portions (17*a*, 17*b*) of which having angles of inclination such that the inciding light will be redirected through total reflection at the respective inclined surface portions (17*a*, 17*b*) and be emitted under the least possible refraction in the respective adjacent, inclined surface portions (17*a*, 17*b*) while at the same time maintaining said essentially perpendicular angle of incidence onto the lower saw-tooth surface portions of the cover plate, and said two light beams (L_1'', L_2'') being emitted from the upper planar surface of the cover plate at said desired vertical angle (ϵ).

5,335,152

NONIMAGING OPTICAL ILLUMINATION SYSTEM

Roland Winston, Chicago, Ill., assignor to NiOptics Corporation, Evanston, Ill.

Filed Oct. 11, 1991, Ser. No. 774,666
Int. Cl.[5] F21V *7/02*
U.S. Cl. 362—217 **11 Claims**



1. A nonimaging illumination optical device for producing a

VOL 1165 ISS 1 AG 2 1994 UMI

selected far field illuminance output $I(\theta)$ over an angular range θ, comprising:

a source of light having a surface and a characteristic luminance $L(\theta)$ and related to said selected far field illuminance output $I(\theta)$ by the expression:

$$L(\theta_i)R_i \sin(\phi_i-\theta_i)Q(\theta_i)=I(\theta_i) \quad (A)$$

where R_i is a radius vector from a point within said source of light, ϕ_i is an angle between said radius vector and a direction 180° from direct forward illumination output from said nonimaging illumination optical device, θ_i is an angle between direct forward illumination and light rays reflected once from a light reflecting surface having an aperture opening and a spatial position and also disposed at least partially around said light source and said light source disposed opposite the aperature opening of said light reflecting surface and $G(\theta_i)$ is a geometrical factor that is a function of the geometry of said light source; and

the spatial position of said light reflecting surface for producing said selected far field illuminance output $I(\theta_i)$ being defined in terms of said R_i, ϕ_i and θ_i and said R_i functionally describing a profile for said spatial position of said light reflecting surface and varying as a function of said angle ϕ_i in accordance with the expression:

$$R_i=(\text{const.})\exp\{\int \tan[(\phi_i-\theta_i)/2]d\phi_i\} \quad (b)$$

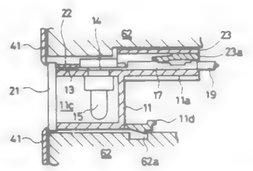
and said light reflecting surface satisfying equations (a) and (b) simultaneously.

5,335,153

INDICATOR LIGHTING UNIT

Minoru Kubota, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Apr. 6, 1993, Ser. No. 43,774
Claims priority, application Japan, Apr. 7, 1992, 4-21159[U]
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—240 8 Claims



1. An indicator lighting unit which is inserted from a rear side of a case having an indicating plate and which is for illuminating said indicating plate from the rear side thereof to provide indications, said indicator lighting unit comprising:

a one-piece modular housing inserted from the rear side of said case, said housing having a plurality of illuminating cells corresponding to said indicating plate and a plurality of bulb insertion holes communicating with said illuminating cells, respectively;

a common electrode plate passing through the vicinities of said bulb insertion holes, said common electrode plate being directly mounted on said housing;

a plurality of control electrode plates passing through the vicinities of said bulb insertion holes, said control electrode plates being directly mounted on said housing;

a plurality of bulbs inserted in and engaged with said bulb insertion holes and electrically connected to said common electrode plate and said control electrode plates;

a first wire having one end electrically connected to said common electrode plate; and

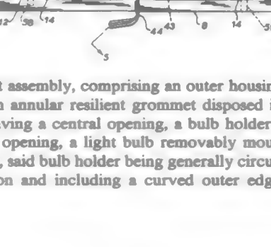
a plurality of second wires each having one end thereof electrically connected to said control electrode plates; whereby said housing may be easily mounted and removed from said case.

5,335,154

OPTICAL AXIS ADJUSTMENT MECHANISM FOR A LIGHT SOURCE

Masanobu Koitabashi; Masato Toda, and Keiji Handa, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 942,316
Claims priority, application Japan, Sep. 12, 1991, 3-233116
Int. Cl.[5] F21V *29/00*
U.S. Cl. 362—294 6 Claims



1. A light source comprising:

a lamp house including a source lamp for emitting illumination light in a certain direction and heat sinks for cooling the source lamp;

a base member holding said lamp house and having an optical axis adjustment mechanism for non-pivotally moving said lamp house to adjust an optical axis of illumination light said source lamp emits;

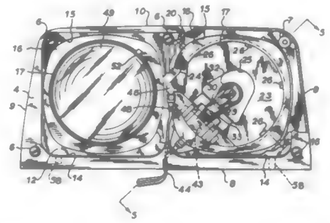
wherein the optical axis adjustment mechanism mounted on said base member includes a plurality of holders for holding the bottom of said lamp house, and a vertical axis drive means for driving said plurality of holders by the same quantity of drive and thus moving said lamp house along said vertical axis while keeping it in a horizontal attitude.

5,335,155

TAIL LIGHT CONSTRUCTION

Brian A. Hanson, Therasa, and Edgar C. Paffrath, West Bend, both of Wis., assignors to Wesbar Corporation, West Bend, Wis.

Filed Nov. 23, 1992, Ser. No. 980,339
Int. Cl.[5] G60Q *1/26*; F21V *33/00*
U.S. Cl. 362—267 21 Claims



1. A light assembly, comprising an outer housing having an aperture, an annular resilient grommet disposed in said aperture and having a central opening, a bulb holder mounted in the central opening, a light bulb removably mounted in said bulb holder, said bulb holder being generally circular in planar configuration and including a curved outer edge, attaching

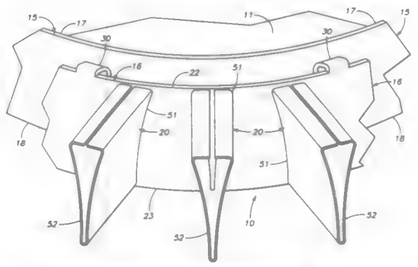
means for attaching the curved outer edge to an inner surface of said grommet, said attaching means comprising a plurality of notches for receiving said outer edge, each notch being defined by a pair of opposed tabs which are formed from the inner surface of said grommet, electrical connecting means connected to the bulb and extending outwardly in sealed relation through said grommet, and a lens covering the opening in said grommet.

5,335,156

FLEXIBLE CANTILEVERED PARABOLIC LIGHTING BAFFLE

Ronald N. Caferro, Spokane, Wash., assignor to Ecolite Manufacturing Company, Ltd., Spokane, Wash.

Filed May 14, 1993, Ser. No. 62,787
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—291 13 Claims



1. A flexible cantilevered parabolic lighting baffle for curvilinear application to a ceiling structure, comprising:

a flexible first member adapted to be attached to a ceiling structure;

an elongated flexible second member;

wherein the second member includes longitudinal top and bottom edges, and wherein the second member includes a light seal element adjacent the bottom edge thereof;

a light baffle element mounted to the elongated flexible second member and projecting therefrom to a free end; and

a connector releasably joining the first and second members together.

5,335,157

ANTI-COLLISION LIGHT ASSEMBLY

Harold W. Lyons, Killingworth, Conn., assignor to Whelen Technologies, Inc., Chester, Conn.

Continuation-in-part of Ser. No. 817,581, Jan. 7, 1992, Pat. No. 5,230,560. This application Jan. 26, 1993, Ser. No. 9,021
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] F21V *13/04*
U.S. Cl. 362—297 20 Claims

1. Apparatus for producing pulses of light in the visible spectrum comprising:

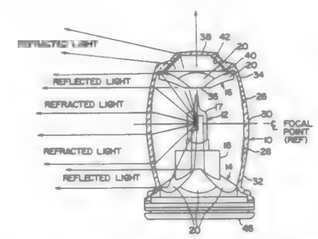
a light generator, said light generator having a light emitting region from which light rays are radiated when the light generator is in a energized state;

light transmissive cover means;

means for supporting said light generator within said cover means, said supporting means positioning said light generator so that a portion of the light emitting region thereof lies on an axis;

first reflector means positioned within said cover means on a first side of said light generator for intercepting and redirecting light rays radiating from said light generator, said first reflector means comprising a plurality of parabolic reflective surfaces, said reflective surfaces having a common focal point and being arranged about said axis, said common focal point being located approximately on said axis whereby light rays incident on said first reflector means parabolic surfaces will be redirected in directions which are generally transverse to said axis; and

second reflector means positioned within said cover means for intercepting light rays radiating from said light generator, said second reflector means comprising a plurality of parabolic reflective surfaces, said reflective surfaces of said second reflector means having a common focal point



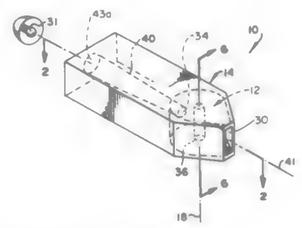
and being arranged about said axis, said common focal point of said second reflector means parabolic reflective surfaces being located approximately on said axis and approximately coincident with said focal point of said first reflector means whereby light rays incident on said second reflector means parabolic reflector surfaces will be redirected in directions which are generally parallel to the directions of the light rays redirected by said first reflector means, said second reflector means being located along said axis at a second side light generator and in a generally facing relationship to said first reflector means.

5,335,158

HIGH EFFICIENCY LINEAR LIGHT SOURCE

Martin C. Kaplan, Rochester; Gary L. Erck, Webster, and Richard J. Federico, Churchville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1992, Ser. No. 887,197
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—303 34 Claims



1. A linear light source comprising:

a source for producing a beam of radiation; and

an elongated light integrating cavity defined by cavity walls having a diffusely-reflecting interior surface, said cavity walls having an input port through which said beam is introduced into said cavity and an output slot generally parallel to a longitudinal axis of said cavity, the beam being introduced into said cavity through a high collection non-imaging optical device having a hollow bore and reflective concentrator walls for concentrating the entering beam toward the input port of said cavity.

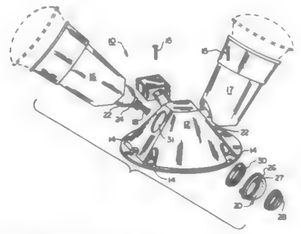
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,159

PLASTIC LAMP HOLDER

Kent Chen, Taipei Hsien, Taiwan; Suleyman O. Sumer, Chapel Hill, and Jose M. Pinedo, High Point, both of N.C., assignors to Regent Lighting Corporation, Burlington, N.C.

Filed May 19, 1992, Ser. No. 885,488
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—421 34 Claims



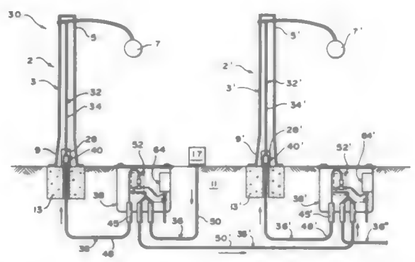
1. A lighting fixture, said fixture comprising:
(a) a lampholder for receiving a floodlight or the like;
(b) a base for establishing electrical and mechanical connections with a source of electrical power, said base having a circular aperture for receiving one end of said lampholder; and
(c) a ball and socket assembly connected between said base and the end of said lampholder for supporting said lampholder and permitting said lampholder to be manually positioned with respect to said base; said assembly including: (i) a semi-spherically shaped portion attached to said one end of said lampholder and having a diameter larger than the diameter of said circular aperture in said base thereby preventing its passage through said circular aperture; (ii) a stem portion attached to said semi-spherically shaped portion and aligned perpendicularly to the surface of said semi-spherically shaped portion and extending through said circular aperture; (iii) a hemispherical shaped portion adapted to mate with said semi-spherically shaped portion and having an elongated slotted aperture for receiving said stem; and (iv) retaining means attached to said stem for applying a predetermined force on said hemispherical shaped portion.

5,335,160

MAST-TYPE OUTDOOR LIGHTING SYSTEM

Paul F. Savoca, West Bay Shore, N.Y., assignor to Duraline, Central Islip, N.Y.

Filed Jul. 13, 1993, Ser. No. 90,942
Int. Cl.[5] F21S *1/10*
U.S. Cl. 362—431 23 Claims



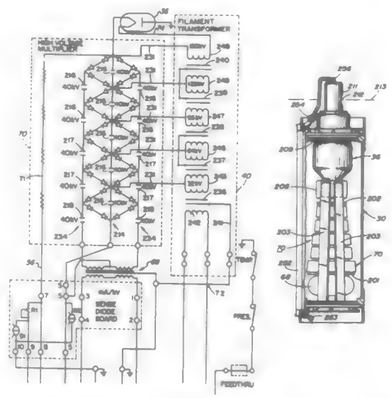
1. An improved outdoor lighting system of the type including at least one light assembly tubular mast having a distal end for supporting an electrically powered light source, and a proximal end mounted in the ground, and an electrical cable for connecting the light source to a power source, said cable having a first portion disposed within said mast and connected to said light source, and a second portion disposed underground and connected to said power source, wherein the improvement comprises:
an electrical connector assembly means for detachably connecting said first and second portions of said cable and for spontaneously disconnecting said portions in response to an application of a tensile force on said connector that is less than a tensile force necessary to damage the connection between said second portion and said power source.

5,335,161

HIGH VOLTAGE MULTIPLIERS AND FILAMENT TRANSFORMERS FOR PORTABLE X-RAY INSPECTION UNITS

Anthony J. Pellegrino, New Fairfield; Earl C. Mayes, Brookfield; Donald E. Sharpe, Woodbury, and George H. Bantz, New Canaan, all of Conn., assignors to Lorad Corporation, Danbury, Conn.

Filed Mar. 30, 1992, Ser. No. 860,004
Int. Cl.[5] H02M *7/10*; H05G *1/10*
U.S. Cl. 363—61 18 Claims



1. A multi-stage DC voltage multiplier assembly having a plurality of serially-connected voltage multiplying-rectifying stages, including:
a series-connected array of capacitors each having an insulating outer shell and having two internally threaded ferrule terminals projecting coaxially beyond said outer shell, a ferrule terminal of each capacitor being aligned in co-axial juxtaposition with a ferrule terminal of the next adjacent capacitor, forming a co-axially aligned array of pairs of capacitors,
a length of threaded rod threaded into the coaxially aligned ferrules of each adjacent pair of capacitors,
and a conductive electrical connector having a first bore loosely fitting without binding on said threaded rod and at least two prongs defining between themselves a slot extending substantially radially from the axis of said threaded rod and ferrules, said slot being dimensioned to accommodate an electrical conductor inserted radially therein, with a clamping screw engaged in a second bore extending transverse to said slot through said prongs, said second bore extending through a first prong and into a last prong and with the clamping screw spanning each said slot at a point intermediate its radial length, and extending into threaded engagement with a reduced diameter threaded end of said second bore in the last prong,

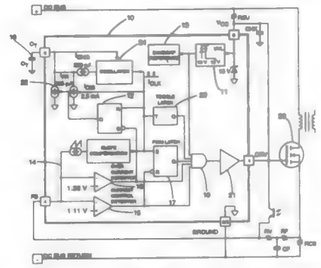
whereby tightening of the clamping screw in the second bore deforms the prongs to clamp each said electrical conductor inserted in said radial slot.

5,335,162

PRIMARY SIDE CONTROLLER FOR REGULATED POWER CONVERTERS

Fernando R. Martin-Lopez, Colorado Springs, Colo., and Richard Redl, Onnens, Switzerland, assignors to Toko America, Inc., Mount Prospect, Ill.

Filed Jan. 15, 1993, Ser. No. 4,934
Int. Cl.[5] H02M *1/08*
U.S. Cl. 363—97 2 Claims



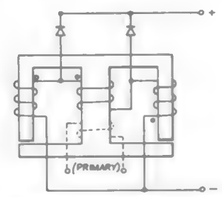
1. A controller for controlling a drive voltage pulse applied to a power switching device in a regulated power converter, the controller comprising:
a single summing junction for receiving a net feedback signal comprising an error signal, a current sense signal, and a current ramp signal;
first comparator means connected to the single summing junction for comparing the net feedback signal to a first reference voltage and for initiating termination of the drive voltage pulse when the net feedback signal rises to the first reference voltage; and
a frequency reduction circuit, including second comparator means connected to the single summing junction for comparing the net feedback signal to a second reference voltage to sense an over current condition when the net feedback signal rises to the second reference voltage, the frequency reduction circuit being responsive to the second comparator means when an over current condition has been sensed, for variably lengthening the period of the drive voltage pulse to protect the power switching device from the over current condition.

5,335,163

POWER SUPPLY CIRCUIT WITH INTEGRATED MAGNETIC COMPONENTS

Ole S. Seiersen, Hørsholm, Denmark, assignor to Scanpower, Horsholm, Denmark

Filed May 13, 1993, Ser. No. 50,499
Int. Cl.[5] H02M *1/14, 7/06*; H01F *27/24*
U.S. Cl. 363—126 5 Claims



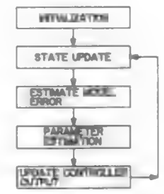
1. A magnetic circuit having several magnetic components integrated on one or more common magnet cores of a power supply circuit comprising: a transformer, secondary winding ends of which are connected to uniform, first electrodes of a pair of rectifier diodes, second electrodes of which are connected to one output terminal of the power supply circuit, and further including two reactive components, and the first electrodes of the diodes further being connected to a second output terminal of the power supply circuit via a respective one of the reactive components, where a number of turns of the two reactive components substantially is selected so as to equal a number of secondary turns on the transformer, the two reactive components are positioned on each separate core part so that resulting magnetic flux in common core parts substantially equals a difference between magnetic flux of the core parts, and a primary winding and the secondary winding of the transformer are positioned on the common core parts.

5,335,164

METHOD AND APPARATUS FOR ADAPTIVE CONTROL

William A. G. Gough, Jr., Aldergrove, and David L. Lyon, Vancouver, both of Canada, assignors to Universal Dynamics Limited, Canada

Filed Jul. 31, 1991, Ser. No. 739,013
Int. Cl.[5] G05B *13/04*
U.S. Cl. 364—149 7 Claims



1. A method of generating a control signal for controlling a process, during each of a plurality of sampling instants, said process having at least one input variable and one output variable, the application of said control signal to said process constituting a control action causing a variation of said input variable, said method comprising:
a) providing an adaptive controller adapted to store a model of said process comprising a state vector and a model parameter vector and to generate said control action;
b) providing means for measuring said output variable of said process, generating a signal representing said measurement and communicating said measurement to said adaptive controller;
c) selecting a number n of orthonormal series functions to model said process;
d) providing a signal to define an initial state vector $l(t)_{t=O}=$

$$\begin{vmatrix} d_1 \\ d_2 \\ . \\ . \\ . \\ d_n \end{vmatrix}$$

where d_l is a constant, and storing said initial state vector in said adaptive controller;
e) providing a signal to define an initial predicted model parameter vector=

VOL 1165 ISS 1 AG 2 1994 UMI

$$\begin{vmatrix} h_1 \\ h_2 \\ . \\ . \\ . \\ h_n \end{vmatrix}$$

where h_i is a constant, and storing said initial predicted model parameter vector in said adaptive controller;

f) performing an update of said state vector in said controller using said orthonormal series functions to provide a history of said control actions and any feedforward input variables up to that sampling instant;

g) measuring said process output variable and calculating a model error in the predicted model parameter vector by comparing said predicted model parameter vector to said measured process output variable;

h) updating the model parameter vector with said model error by a Kalman filter recursive least squares method;

i) calculating the change in controller output required to bring said process output variables to a desired value based on a predicted process output variable obtained from said updated model parameter vector and said updated state vector;

j) generating a control action based on said calculated required change in controller output;

k) repeating steps f) through j) at each sampling instant;

l) storing a reference model parameter vector in said controller during a period of satisfactory controller operation; and

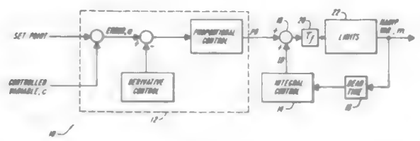
m) periodically replacing said model parameter vector in said controller with said reference vector if a steadily decreasing prediction parameter gain is detected.

5,335,165

METHOD AND APPARATUS FOR ADAPTIVE DEADTIME PROCESS CONTROL

Francis G. Shinskey, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed May 27, 1992, Ser. No. 889,473
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—162 **18 Claims**



9. A proportional-integral-derivative deadtime process controller for measuring a controlled variable signal representative of a first characteristic of a process, and for applying a manipulated variable signal to that process to vary that first characteristic, said controller comprising

A. proportional derivative means for generating an PD signal indicative of an error in said controlled variable signal, said proportional derivative means including means for generating said PD signal as a function of a time rate of change of said controlled variable signal and a difference between said controlled variable signal and a predetermined setpoint,

B. summation means, coupled with said proportional derivative means, for summing said PD signal and a time-delayed integral signal to generate a summation signal,

C. noise filter means, coupled with said summation means, for filtering said summation signal to generate a manipulated variable signal, said noise filter means having a filter time constant τ_f,

D. controlled variable signal output means for selectively applying said manipulated variable signal to said process, and

E. feedback means, coupled to said controlled variable signal output means, for processing said manipulated variable signal to generate said time-delayed integral signal, said processing including

i) time-delaying said manipulated variable signal an amount substantially equal to a deadtime, τ_d, and

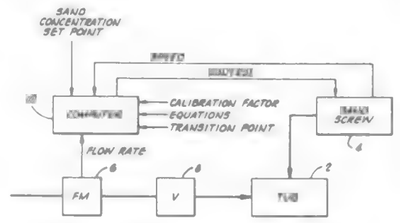
ii) passing that time-delayed manipulated variable signal through a first-order lag of time constant I to generate said time-delayed integral signal.

5,335,166

METHOD OF OPERATING A SAND SCREW

Stanley V. Stephenson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 24, 1992, Ser. No. 825,229
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—166 **10 Claims**



4. A method of operating a sand screw, comprising:

providing to a computer a first signal, the first signal indicating speed of a sand screw delivering sand;

converting the first signal in the computer into a second signal in response to a predetermined calibration factor, the second signal representing an uncorrected rate of sand delivery;

converting the second signal in the computer into a third signal in correspondence with a relationship defined by a predetermined equation, the third signal representing a corrected rate of sand delivery;

providing to the computer a fourth signal, the fourth signal representing a flow rate of a fluid;

providing to the computer a fifth signal, the fifth signal representing a desired concentration of sand in the fluid; and

generating a control signal in response to the third, fourth, and fifth signals and providing the control signal to the sand screw for controlling the speed of the sand screw when the sand screw speed is greater than or lesser than a speed commensurate with the free fall of sand in the sand screw.

5,335,167

FILAMENT WINDING APPARATUS

John W. Boyd, 263 N. Palmetto, Denmark, S.C. 29042

Filed May 27, 1992, Ser. No. 889,500
Int. Cl.[5] G06F *15/46*; B65H *81/00*
U.S. Cl. 364—167.01 **4 Claims**

1. A programmable filament winding apparatus comprising:

a rotatable mandrel having a center rotational axis;

a traverse axially movable relative to said mandrel for positioning a filament to be applied to said mandrel and for applying a resin thereto;

a filament supply means;

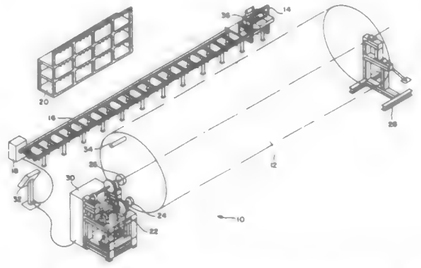
drive means associated with said traverse for movably positioning said traverse;

winding means for rotating said mandrel while filament is wound thereon;

a first encoder for producing a signal corresponding to rotation of said mandrel;

a second encoder associated with said traverse for producing a signal corresponding to a position of said traverse as it moves along said drive mans axial to said mandrel;

a computer including a microprocessor for receiving and processing signals from said first and second encoders and



for controlling said drive means and the rotation of said mandrel;

control means in communication with said computer for controlling said drive means and the rotation of said mandrel;

said microprocessor of said computer including a programmable memory for storing at least one program describing motion of said drive means and rotation of said mandrel; and

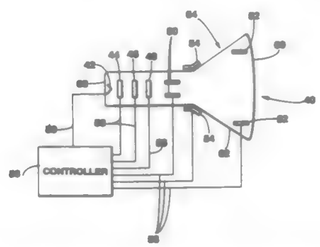
said control means allowing an operator to additionally control the motion of said drive means independent from the rotation of said mandrel.

5,335,168

COMPUTER SYSTEM WITH POWER-DOWN MODE FOR MONITOR

Richard E. Walker, The Woodlands, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jan. 13, 1993, Ser. No. 4,144
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—707 **14 Claims**



1. A computer system having a central processing unit comprising:

a display device having a normal powered-on mode and a low powered-on mode;

a heating filament disposed within the display device;

a normal voltage source applied to the heating filament when the display device is in the normal power mode;

a low voltage source applied to the heating filament when the display device is in the low power mode; and

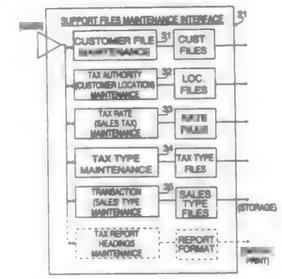
means for changing the power mode of the display device between the normal powered-on mode and the low powered-on mode.

5,335,169

SYSTEM FOR TRACKING MULTIPLE RATE ASSESSMENTS ON TRANSACTIONS

Malcolm K. L. Chong, Honolulu, Hi., assignor to DSI of Hawaii, Inc., Honolulu, Hi.

Filed Jan. 27, 1992, Ser. No. 826,013
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—408 **7 Claims**



1. A computerized system for entering transactions with customers which are of different types and have different types and rates of rate assessments for different rate assessment authorities assessed on the value of the transactions, and for thereafter automatically generating a report of rate assessments on the entered transactions applicable to any specified rate assessment authority, comprising:

(a) a computer having a processor which is programmed for tracking different types and rates of rate assessments for different rate authorities and which is operatively coupled to a display screen, memory storage, input means, and output means;

(b) said memory storage storing a plurality of data files including:

(1) a customer identification support file;

(2) an assessment rate support file;

(3) an assessment type support file;

(4) a transaction type support file; and

(5) a transaction data file;

(c) said processor being programmed for providing a support file maintenance interface to the user through display on said display screen, inputting data by said input means, and storing data in the respective support files in said memory storage, said support file interface including:

(1) first maintenance means for assigning, for each customer entry maintained in said customer identification support file, a customer identification (ID) code, a customer location code, and an assessment rate code and type code corresponding to an applicable rate assessment authority for rate assessments on transactions for the assigned customer location code;

(2) second maintenance means for assigning, for each assessment rate entry maintained in said assessment rate support file, a rate percentage amount corresponding to the respective assessment rate code;

(3) third maintenance means for assigning, for each assessment type entry maintained in said assessment type support file, a rate assessment type description corresponding to the respective assessment type code; and

(4) fourth maintenance means for assigning, for each transaction type entry maintained in said transaction type support file, a transaction type description corresponding to the respective transaction type code;

(d) said processor being further programmed for providing a

VOL 1165 ISS 1 AG 2 1994 UMI

transaction data interface to the user through display on said screen display, inputting data by said input means, and storing data in the transaction data file in said memory storage, said transaction data interface including:

(1) transaction data entry means for entering a customer ID code, transaction type code, and transaction value amount for each transaction being entered;

(2) assessment retrieving means for automatically retrieving and displaying the assessment rate code, percentage amount, assessment type code, and type description applicable to the respective transaction being entered through said transaction data interface, based upon the customer ID code for the transaction being linked to the corresponding customer entry maintained in said customer identification support file, and the assessment rate code and assessment type code maintained in the latter support file being linked to the corresponding assessment percentage amount and type description maintained respectively in said assessment rate support file and in said assessment type support file;

(3) assessment calculating means for automatically calculating the rate assessment applicable to the respective transaction based upon the assessment percentage amount retrieved by said assessment retrieving means and the transaction value amount; and

(4) transaction description retrieving means for retrieving and displaying the transaction description applicable to the respective transaction based upon the transaction type code for the transaction being linked to the corresponding transaction type entry maintained in said transaction type support file;

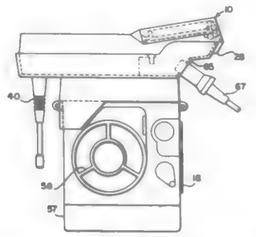
(e) said processor being further programmed for automatically generating a rate assessment report of rate assessments on entered transactions applicable to any specified rate assessment authority for display on said display screen and outputting data by said output means, based upon sorting the transaction entries stored in said transaction data file by customer location code, rate assessment type code, and transaction type code.

5,335,170

MODULAR SYSTEM FOR INVENTORY CONTROL

Alfred J. Petteruti; Steven F. Petteruti, both of East Greenwich; Robert J. Bouthillier, Lincon, and Robert A. Petteruti, East Greenwich, all of R.I., assignors to Comtec Information Systems, Inc., Warwick, R.I.

Filed Sep. 4, 1992, Ser. No. 940,428
Int. Cl.[5] G06F *15/00*; G06K *7/10*
U.S. Cl. 364—403 **7 Claims**



1. A modular and portable system for inventory control, comprising:

(A) a hand-holdable scanning module comprising:

(i) a head portion including:

a scanner for projecting light at an object, detecting light reflected from the object, and generating an electrical signal representative of the object,

programmable decode electronics coupled to said scanner for receiving the electrical signal and decoding it to interpret the object, and

a first interconnector coupled to said programmable decode electronics; and

a handle portion formed integrally with said head portion and including:

activating means for causing said scanner to generate the electrical signal, and

a battery for supplying power to said scanner and said programmable decode electronics in said head portion; and

(B) a programmable master module releasably coupled to said scanning module to form a potable scanner device capable of reading and analyzing objects and storing information related thereto, said master module comprising:

(i) a display,

(ii) a keypad,

(iii) memory,

(iv) programmable processing electronics coupled to the display, keypad, and memory, and

(v) a second interconnector, coupled to the processing electronics, for interconnecting with said first interconnector of said scanning module to form said portable scanner device,

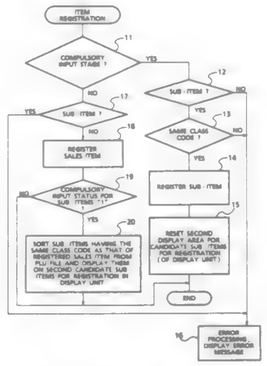
wherein said master module also is releasably couplable with any one of a plurality of non-scanning modules when released from said scanning module.

5,335,171

ELECTRONIC REGISTER

Seiji Fuyama, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 27, 1992, Ser. No. 842,628
Claims priority, application Japan, Mar. 11, 1991, 3-044804
Int. Cl.[5] G07G *1/12*
U.S. Cl. 364—405 **14 Claims**



1. An electronic register for registering price look up (PLU) items allotted to individual sales items, each of the PLU items having a class code and compulsory input status information, the electronic register comprising:

a PLU file for storing collateral information items, each of said collateral information items having a class code and an item name;

reading-out means for reading out ones of said collateral information items having a class code which match a class code of a PLU item to be registered from the PLU file when the compulsory input status information of said PLU item to be registered indicates a requirement for further information;

display means, having a display screen, for displaying the item names of said ones of said collateral information items read out by said reading-out means;

input means for inputting a selection from among said ones of said collateral information items displayed by said display means; and

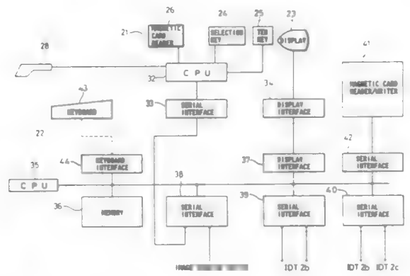
means for registering the collateral information item whose selection is input through said input means.

5,335,172

RADIATION IMAGE INFORMATION PROCESSING SYSTEM

Masayuki Matsumoto, and Daigo Ezuka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 5, 1991, Ser. No. 755,233
Claims priority, application Japan, Sep. 13, 1990, 2-243247
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.13 **3 Claims**



1. A radiation image information processing system comprising:

a plurality of image reading devices for reading image information from storage-type phosphor sheets on which radiation image information of objects have been recorded;

a plurality of first registering means supplied with ID information of said objects and other information corresponding to said radiation image information recorded on said phosphor sheets, wherein each one of said image reading devices is electrically connected to a single corresponding one of said plurality of first registering means, and said plurality of first registering means being electrically connected to one another;

a plurality of second registering means electrically connected to respective units of said plurality of first registering means;

an interconnecting device for carrying out exchange of information among said plurality of first registering means, said respective units of said first registering means being electrically connected to one another through said interconnecting device;

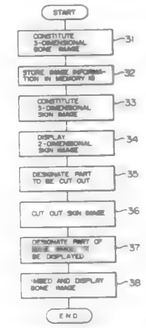
each of said first registering means further comprising memory means, wherein information is transferred between said plurality of first registering means and said plurality of second registering means such that said memory means of each of said first registering means is capable of storing therein said ID information inputted to either said first registering means or said second registering means and of reading said ID information therefrom.

5,335,173

MEDICAL DIAGNOSIS IMAGE DISPLAY METHOD AND APPARATUS

Osamu Sasahara, Kashiwa, Japan, assignor to Hitachi Medical Corp., Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 925,773
Claims priority, application Japan, Aug. 8, 1991, 3-199049
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.22 **6 Claims**



1. A medical examination and diagnosis image display method, said method comprising the steps of:

transforming three-dimensional image information of a first tissue of a subject patient to be examined and diagnosed into a first two-dimensional projected image information viewed from a first viewing perspective and displaying the two-dimensional projected image information, said first two-dimensional projected image information being obtained by performing a projection operation on the three-dimensional image information of the first tissue;

transforming three-dimensional image information of a second tissue of the subject patient into a second two-dimensional projected image information viewed from the first viewing perspective and storing the second two-dimensional projected image information in a first memory, said second two-dimensional projected image information being obtained by performing a projection operation on the three-dimensional image information of the second tissue;

designating a part of the first two-dimensional projected image of the first tissue to be cut out from the displayed first two-dimensional projected image;

reading out image information of the second tissue corresponding to the designated part from the first memory;

integrating image information of the second tissue read out from the first memory into the part designated of the first two-dimensional projected image of the first tissue; and

displaying the integrated image.

5,335,174

CORRECTING METHOD FOR DATA USED FOR CONTROL OPERATION OF VEHICULAR CLUTCH

Hiromi Kohno, and Hiroyuki Soda, Masuhiro Ohsuka, Yusi Satdh; all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 503,975, Apr. 4, 1990, Pat. No. 5,065,849. This application Jun. 6, 1991, Ser. No. 711,057
Claims priority, application Japan, Jun. 11, 1990, 2-152189
Int. Cl.[5] F16D *21/04*; G06F *15/50*
U.S. Cl. 364—424.1 **9 Claims**

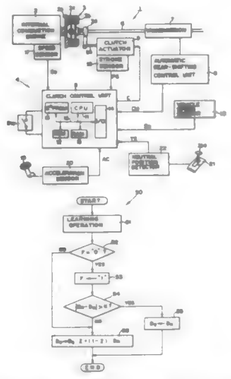
1. A method for correcting clutch data including stored meet position data, which is stored in a memory and is used for controlling actuator means for operating a vehicular friction type clutch connected with an internal combustion engine for

VOL 1165 ISS 1 AG 2 1994 UMI

powering a vehicle with an electronically controlled transmission system, said method comprising steps of:

carrying out a learning operation to obtain learned meet position data representing a learned meet position of the clutch;

discriminating whether or not the learned meet position data obtained in said learning operation step is first learned meet position data obtained by the first learning operation



carried out after power is applied to the electronically controlled transmission system; and,

updating the stored meet position data stored in the memory by replacing it with said first learned meet position data when a difference between said first learned meet position data and the stored meet position data stored in the memory is greater than a prescribed value representing a predetermined change in a sensed position of said actuator

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5,335,175

PROPELLER CONTROL SYSTEM

Gilbert A. Turner, 27 Great Norwood St., Cheltenham, Glos., GL50 2AW, Great Britain

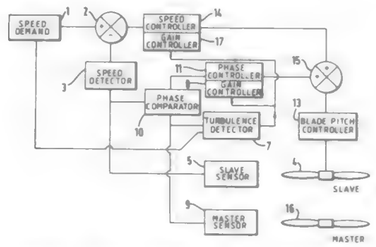
PCT No. PCT/GB91/01361, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO92/02411, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 9, 1991, Ser. No. 847,007

Claims priority, application United Kingdom, Aug. 10, 1990, 9017598

Int. Cl.[5] B64C *11/50*

U.S. Cl. 364—424.01 5 Claims



1. A propeller control system for use with an aircraft having at least two propellers, said control system comprising propeller movement monitor means to monitor relative movement between said propellers and to produce a corresponding error signal; a propeller controller that receives said error signal as an input and produces a corresponding output control signal to control the relative movement between said propellers, the propeller controller having a variable gain function that operates on said input error signal with a variable gain value to produce said output control signal; free air turbulence monitor means that monitors free air turbulence in the region of said propellers and produces a corresponding free air turbulence signal; and a gain controller that varies the gain value used in the propeller controller in response to the free air turbulence signal so that in the presence of turbulence a low gain value is used and in the absence of turbulence a high gain value is used.

5,335,176

SAFETY SYSTEM FOR VEHICLES

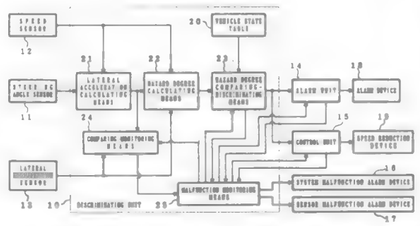
Masahide Nakamura, Osaka, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Nov. 30, 1992, Ser. No. 982,664

Claims priority, application Japan, Dec. 2, 1991, 3-99284

Int. Cl.[5] B62D *5/00*

U.S. Cl. 364—424.05 2 Claims



1. A safety system for vehicles comprising a steering angle detecting means, a means for detecting speeds of the vehicle, a means for detecting lateral accelerations of the vehicle, and a discriminating means having a table wherein the relationships between vehicle speeds and lateral accelerations are classified for each of different ranges of steering angles into a safety region and a hazardous region with respect to the state of the vehicle, the discriminating means being adapted to judge the state of the vehicle from the results of detection by the respective detecting means with reference to the table and to give an alarm to the driver when the state of the vehicle has come out of the safety region into the hazardous region, the discriminating means storing an initial degree of hazard upon the state of the vehicle coming out of the safety region into the hazardous region and recognizing that the current degree of hazard has become greater than previously when exceeding the initial degree of hazard, the discriminating means controlling a speed reduction device to brake the vehicle when the state of the vehicle in the hazardous region has become greater than previously in the degree of hazard.

5,335,177

METHOD AND SYSTEM FOR ENSURING THE RELIABILITY OF DATA USED TO PILOT AN AIRCRAFT

Catherine Boiteau, and Roger Parus, both of Merignac, France, assignors to Sextant Avionique, Meudon la Foret Cedex, France

Filed Dec. 16, 1991, Ser. No. 807,478

Claims priority, application France, Dec. 14, 1990, 90 15687; Dec. 14, 1990, 90 15688

Int. Cl.[5] G06F *11/00, 11/16*

U.S. Cl. 364—424.06 24 Claims

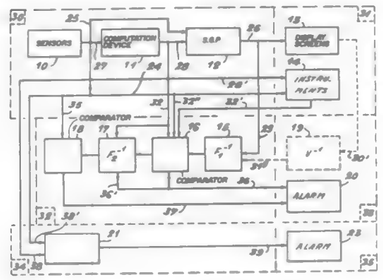
1. Method for ensuring the reliability of the data used to pilot an aircraft, comprising the steps of:

(a) obtaining data corresponding, firstly, to parameters given by sensors and, secondly, to parameters indicative of navigation that are given by a computing device and presented to the pilot, either by means of onboard instruments or by means of a symbol generator associated with a display device giving a display in the form of synthesis images that include one or more reticles as well as alphanumerical characters;

(b) detecting and recognizing said synthesis images so as to obtain digital signals indicative thereof;

(c) computing one or more navigation parameters and/or sensor parameters from said digital signals;

(d) comparing said computed parameters with values from the group consisting of the same parameters given by said computation device or with values from the sensors so as



to detect inconsistencies between the compared parameters;

(e) generating an alarm signal when one or more of said inconsistencies go beyond a determined threshold;

wherein said step (b) of detecting and recognizing includes the steps of:

recording one image of the screen of the display device;

analyzing said recorded image so as to identify reticles and alphanumerical characters, and

determining the digital values of data presented to the pilot.

5,335,178

SLIP CONTROL DECELERATION SIGNAL FILTERING SYSTEM

Jochen Schäfer, Ludwigsburg; Thomas Frank, and Frank Bederna, both of Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP90/00503, § 371 Date Oct. 21, 1991, § 102(e) Date Oct. 21, 1991, PCT Pub. No. WO90/12702, PCT Pub. Date Nov. 1, 1990

PCT Filed Mar. 30, 1990, Ser. No. 775,945

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1989, 3913059

Int. Cl.[5] B60T *8/32*

U.S. Cl. 364—426.02 7 Claims

1. Method for controlling wheel slippage in a vehicle comprising

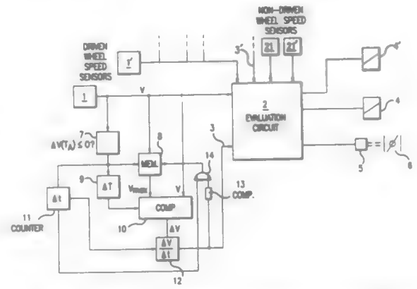
determining the speed of a driven wheel and producing an instantaneous digital wheel speed value v at time points displaced by measurement intervals T_A,

determining the speed change during each measurement interval T_A,

storing said value v as a maximum v_{max} when said speed change is equal to or less than zero in a measurement interval T_A immediately following an interval T_A in which a speed change greater than zero was determined,

determining a difference $\Delta v = v_{max} - v$,

determining a quotient $\Delta v/\Delta t$ beginning at predetermined filtering time ΔT after storing v_{max}, where At is elapsed time after storing v_{max} said quotient representing a filtered slope of the value v, and



using said quotient as a control variable to regulate wheel slippage.

5,335,179

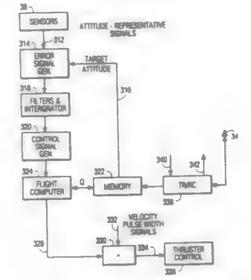
UNIFIED SPACECRAFT ATTITUDE CONTROL SYSTEM WITH PSEUDO-COMPLEMENTARY PAIRED THRUSTERS

Jeffrey B. Boka, Trenton; Naresh R. Patel, Bellmawr, both of N.J.; Kevin D. Kim, King of Prussia, Pa., and David S. Shaw, Plainsboro, N.J., assignors to General Electric Co., East Windsor, N.J.

Filed Dec. 24, 1992, Ser. No. 996,660

Int. Cl.[5] B64G *1/24, 1/26*

U.S. Cl. 364—434 5 Claims



1. A spacecraft including an attitude control system, and defining a center of mass, said spacecraft comprising:

attitude sensing means for generating attitude signal representative of the attitude of said spacecraft about at least one axis;

a plurality of physical thrusters associated with said spacecraft, for generating, in response to limited duty cycle signals, at least components of thrust in mutually opposite diretions about said center of mass of said spacecraft in a plane orthogonal to said axis;

error signal generating means coupled to said sensing means, for comparing said attitude signals with a commanded attitude, and for generating error signals in response to said comparison;

memory means located aboard said spacecraft, said memory means being preloaded with a gain matrix representing the torques which can be generated by pseudo-complementary pairs of said physical thrusters, and with a linear transformation matrix relating to the transformation between said pseudo-complementary thrusters and said physical thrusters; and

thruster control processing means coupled to said memory

VOL 1165 ISS 1 AG 2 1994 UMI

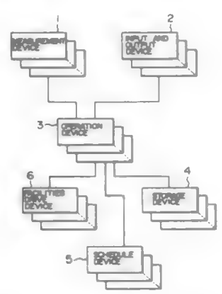
means, to said error signal generating means, and to said physical thrusters, for, during each recurrent control cycle, (a) multiplying said error signals by said gain matrix for generating pseudo-complementary pulse width signals (pw) related to the magnitude of said error signals, (b) generating augmented pseudo-complementary pulse width signals (PW) from said pseudo-complementary pulse width signals, said augmented pseudo-complementary pulse width signals being related to said pseudo-complementary pulse width signals, selected for establishing which of said physical thrusters is to be energized to provide torque in the desired direction, (c) generating pulse width ($\{\Delta t\}$) signals in response to said augmented pseudo-complementary pulse width signals by multiplying the magnitude of said augmented pulse width signals (PW) by said linear transformation matrix (α) from said memory means, for establishing the pulse width per unit cycle of those among said thrusters which are to be energized, and (d) limiting the values of said pulse width signals to lie within predetermined limits, to produce said limited duty cycle signals.

5,335,180

METHOD AND APPARATUS FOR CONTROLLING MOVING BODY AND FACILITIES

Kazunori Takahashi, Hitachi; Nobuhiro Hamada, Hitachiota; Masao Takato, Kutsuta; Kenji Baba; Yasuo Morooka, both of Hitachi; Junzo Kawakami, Mito; Takayoshi Yokota, Hitachiota, and Ryuji Kiyokawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1991, Ser. No. 760,962
Claims priority, application Japan, Sep. 19, 1990, 2-247500
Int. Cl.[5] G01N *15/00*
U.S. Cl. 364—436 **27 Claims**



6. A control apparatus for a moving body and facilities comprising:

a measuring means for measuring at least one parameter with respect to at least one moving body of a plurality of moving bodies such as a number of moving bodies, moving speed, and moving direction of said at least one moving body;

a memory means for storing information on at least one of a condition of a local area in which said at least one moving body is moving and facilities said at least one moving body is heading for;

a processing means for processing information from said measuring means and memory means; and

an input/output means for accessing information processed by said processing means, and displaying said information;

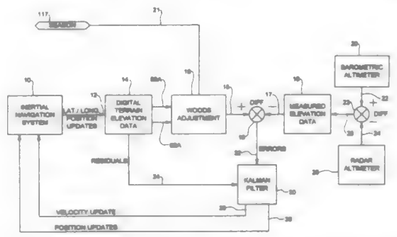
wherein said memory means includes a means for storing information measured by said measuring means, and said processing means includes a means for generating a prediction model for said at least one moving body and facilities from stored information.

5,335,181

TERRAIN REFERENCED NAVIGATION—WOODS DATA BASE MODEL

John T. McGuffin, Albuquerque, N. Mex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 15, 1992, Ser. No. 821,725
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—443 **5 Claims**



1. A terrain referenced navigation system for use in an aircraft comprising:

(a) a means for determining a current terrain elevation from the aircraft having a current terrain elevation output;

(b) a means for inertial navigation having a latitude/longitude positional output, a selected position update input and a selected velocity update input;

(c) a means for storing a digital terrain elevation map having a terrain latitude/longitude input connected to the latitude/longitude positional output and having a digital terrain elevation residual output and a woods indicator output and a digital terrain elevation output wherein the means for storing a digital terrain elevation map provides the digital terrain elevation residual output, woods indicator output, and digital terrain elevation output in response to the terrain latitude/longitude input, and wherein the woods indicator output indicates the existence or absence of a deciduous forest in the terrain;

(d) a means for generating a woods state adjustment to the digital terrain elevation output so as to provide a woods adjusted digital terrain elevation output in accordance with the present season when said deciduous forest is indicated, the woods state adjustment means being coupled to the woods indicator output and the digital terrain elevation output;

(e) a means for computing the difference between elevations connected to the current terrain elevation output and the woods adjusted digital terrain elevation output, wherein the means for computing the difference between elevations also includes a terrain error output; and

(f) a means for terrain correlation connected to the digital terrain elevation residual output and the terrain error output and wherein the means for terrain correlation provides a terrain velocity update and a terrain position update.

5,335,182

EMBROIDERY DATA PRODUCING APPARATUS

Fumiaki Asano, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 7, 1993, Ser. No. 87,078
Claims priority, application Japan, Jul. 20, 1992, 4-191919
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—470 **20 Claims**

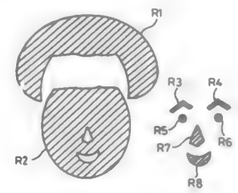
1. An embroidery data producing apparatus, comprising:

storage means for storing contour data defining contours of a plurality of embroidery regions;

detection means for detecting ones of the plurality of embroidery regions which contain other ones of the plurality of embroidery regions, based on the contour data of the embroidery regions stored in the storage means;

discrimination means for determining shapes of the contained ones of the plurality of embroidery regions contained in the containing ones of the plurality of embroidery regions detected by said detection means; and

determining means for determining, based on the determined



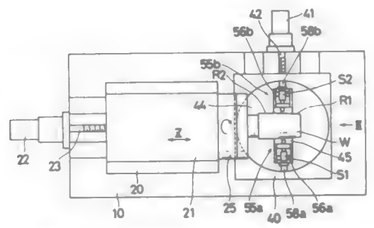
shapes of the contained ones of the plurality of embroidery regions, whether portions of the containing ones of the plurality of embroidery regions corresponding to the contained ones of the plurality of embroidery regions should be removed from the containing ones of the plurality of embroidery regions.

5,335,183

METHOD AND APPARATUS FOR DETERMINING PROFILE OF CYLINDRICAL OBJECT

Akira Tsuboi, Kariya, and Katsuhiko Takeuchi, Anjo, both of Japan, assignors to Toyoda Koki Kagbushiki Kaisha, Kariya, Japan

Filed Jan. 21, 1992, Ser. No. 822,952
Claims priority, application Japan, Jan. 21, 1991, 3-019156
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.37 **14 Claims**



1. A method of determining the profile of a cylindrical object whose radius varies with axial position, comprising the steps of:

installing a pair of detectors on opposite sides of an axis of rotation of the object, the detectors acting to measure the radial position of the outer surface of the object;

rotating said cylindrical object about its axis of rotation;

moving the object to plural longitudinal positions along said axis of rotation;

moving at least one of the detectors radially in synchronism with the movement of the object according to data about changes in the radius of an ideal profile of the object;

calculating, for each of said longitudinal positions, the average of output signals from the detectors as a deviation from the ideal profile of the object; and

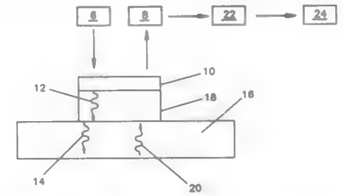
preparing a correlation table of each of said longitudinal positions with the calculated deviation at said longitudinal position.

5,335,184

NONDESTRUCTIVE ULTRASONIC TESTING OF MATERIALS

Bernard P. Hildebrand, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Filed Jul. 16, 1990, Ser. No. 553,939
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—507 **10 Claims**



1. A method of detecting changes in a material between a top surface and a bottom surface due to aging, comprising the steps of:

(a) introducing an ultrasonic wave of a known frequency into a material to be tested prior to substantial aging of the material, such that a reflection wave form of the ultrasonic wave passing from one surface through the material to the other surface is generated and stored;

(b) periodically passing an ultrasonic wave of the same frequency as in above from one surface through the material to the other surface at various periods of aging and retrieving and storing the reflection wave form of the ultrasonic wave passed through the aged material; and

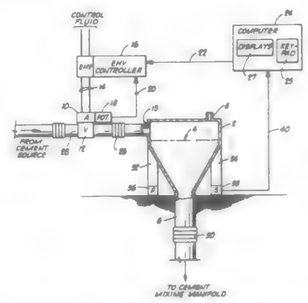
(c) statistically comparing the reflection wave form generated in (a) with the reflection wave form generated in (b) above in order to determine structural changes in the material.

5,335,185

AUTOMATIC LEVEL CONTROL SYSTEM AND METHOD

Alan J. Pitts, Comanche, and Charles E. Fowler, Duncan, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 24, 1992, Ser. No. 873,919
Int. Cl.[5] G01G *11/08;* **G05D** *9/00*
U.S. Cl. 364—510 **10 Claims**



1. An automatic level control system, comprising:

storage means for receiving a material;

weight sensing means for sensing the weight of the material in said storage means;

means, responsive to said weight sensing means, for providing a control signal;

valve means for controlling the flow of the material into said storage means, said valve means providing a material flow

VOL 1165 ISS 1 AG 2 1994 UMI

passageway adjustable through a range of states from fully closed to fully open;

feedback means for sensing the state of the passageway to which said valve means is adjusted;

means for adjusting the state of the passageway of said valve means in response to the control signal and said feedback means; and

wherein said means for providing a control signal includes:

means for entering a selected density value for the material received in said storage means;

means, responsive to the entered selected density value and the sensed weight of the material received in said storage means, for determining low and high limits and the amount of material received in said storage means relative to the low and high limits; and

means for generating the control signal in proportional response to the determined relationship between the amount of material received in said storage means and the low and high limits.

5,335,186

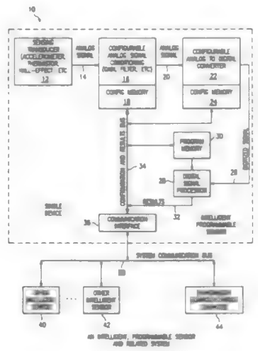
INTELLIGENT PROGRAMMABLE SENSING

Richard T. Tarrant, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 890,326, May 26, 1992, abandoned, which is a continuation of Ser. No. 502,353, Mar. 30, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 530

Int. Cl.[5] **G06F** *15/46*

U.S. Cl. 364—550 **27 Claims**



1. An intelligent programmable sensing apparatus using elements mounted on at least one silicon base, said elements comprising:

a transducer for sensing physical variables and generating a plurality of raw analog signals representing said sensed physical variables; and

a configurable analog signal conditioner receiving said raw analog signals from said transducer, said configurable analog signal conditioner conditioning said raw analog signals to transmit conditioned analog signals, said configurable analog signal conditioner including:

a first configurable memory for storing at least one signal conditioning instruction for directing said configurable analog signal conditioner, said first configurable memory being reprogrammable to contain different sets of signal conditioning instructions immediately at any time and being adapted for connection to an external programming device supplying the different sets of signal conditioning instructions.

5,335,187

METHOD AND APPARATUS FOR DYEING AND COLOR MATCHING LENSES

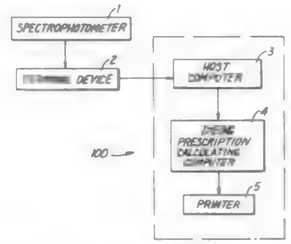
Shuzo Koizumi; Noriaki Uehara, and Toru Kobayashi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 10, 1991, Ser. No. 726,409

Claims priority, application Japan, Jul. 10, 1990, 2-182107; Jul. 10, 1990, 2-182108; Jul. 13, 1990, 2-186520; May 24, 1991, 3-120339

Int. Cl.[5] **G01J** *3/28;* **G01N** *21/25*

U.S. Cl. 364—526 **22 Claims**



19. A method of formulating a prescription for dyeing lenses, comprising the steps of:

selecting a color for a lens;

converting the color selected into numerical data based on the spectral transmittance characteristics of the color lens selected, which are obtained by determining the transmittance values for the selected color over a selected spectrum; and

formulating a dyeing prescription based on the numerical data.

5,335,188

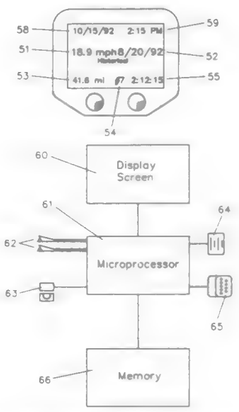
BICYCLE COMPUTER WITH MEMORY AND MEANS FOR COMPARING PRESENT AND PAST PERFORMANCE IN REAL TIME

Lawrence J. Brisson, 574 Croyden Ct., Sunnyvale, Calif. 94087

Filed Aug. 10, 1993, Ser. No. 104,442

Int. Cl.[5] **G01P** *11/00, 3/64;* **G01C** *22/00*

U.S. Cl. 364—551.01 **8 Claims**



1. A user controlled display system for a bicycle for monitoring and comparing electrical signals representative of the present performance of a rider along a course travelled, against a selected prior performance, comprising:

wheel revolution detection means associated with a wheel of the bicycle, said wheel revolution detection means providing a series of signals according to the number of revolutions of the wheel representative of the distance travelled by the wheel;

clocking means providing a plurality of timing signals representative of the elapsed time from the beginning of the performance;

Input/Output means for receiving user input and selection data, and generating a corresponding input signal representative thereof, and for generating a display signal in response to a received output display signal to display data to the user;

Central Processing Unit means receiving as input said distance travelled, elapsed time and user generated input signals, for retrievably storing each of said distance travelled, elapsed time and user generated input signals in a user selected portion of a memory means as a set of detailed performance data signals representative of at least the elapsed time and distance for a plurality of points along the present course travelled by the user,

said central processing unit means operating under a predetermined set of user controlled instructions to store said set of performance data for each performance of the rider in said memory means, and compare said set of performance data signals against a stored user selected set of performance data representing a selected performance, and generate an output display signal representative of a user selected comparison metric therebetween to said Input/Output means.

5,335,189

ROTATION PHASE CONTROL DEVICE

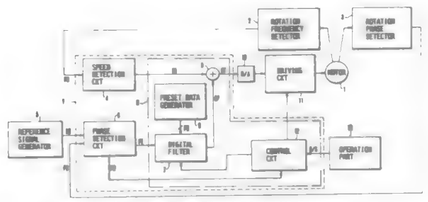
Nobutoshi Takayama, Kanagawa; Takashi Kobayashi; Toshiaki Mabuchi, both of Tokyo, and Koji Takahashi, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 465,466, Jan. 16, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 893,564

Claims priority, application Japan, Jan. 21, 1989, 1-12513; Jan. 24, 1989, 1-14351

Int. Cl.[5] **H02P** *5/06*

U.S. Cl. 364—565 **19 Claims**



1. A rotation phase control device comprising:

a) phase control means for controlling a rotation phase of a rotary body to adjust the rotation phase to a reference phase, said phase control means including phase compensation means for performing at least an integrating process on phase error information according to a phase difference between said rotation phase and said reference phase;

b) phase judging means for judging a phase difference between said rotation phase and said reference phase to be within or not within a predetermined range; and

c) resetting means for resetting the integrating process of said phase compensation means in response to a judgment of said phase judging means indicating that said phase difference has entered said predetermined range.

5,335,190

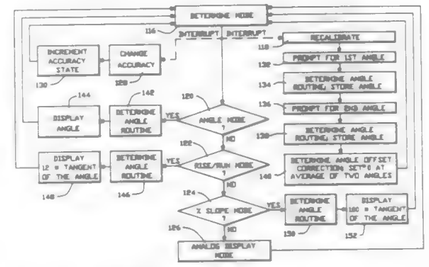
INCLINOMETER WHICH IS RESCALABLE THROUGH THE USE OF MULTIPLE ANGLES

Robert E. Nagle, Mt. View, and Andrew G. Butler, Palo Alto, both of Calif., assignors to Wedge Innovations Incorporated, Oklahoma City, Okla.

Continuation of Ser. No. 422,515, Oct. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 65,286, Jun. 22, 1987, Pat. No. 4,912,662. This application Jul. 27, 1992, Ser. No. 920,395

Int. Cl.[5] **G01C** *9/06*

U.S. Cl. 364—571.01 **4 Claims**



4. An inclinometer including:

means for rescaling the inclinometer including:

means for sensing and storing a plurality of reference angles; and

means for using the reference angels to adjust an inclinometer sensor signal value;

wherein the means for using includes:

means for rescaling an inclinometer sensor signal value between adjacent referenced angles by multiplying the difference between the inclinometer sensor signal value to be rescaled and an adjacent inclinometer measured reference angle, by a ratio of the true angular difference between the two reference angles adjacent to the inclinometer sensor signal value to be rescaled, divided by the difference between reference angle values as measured by the inclinometer.

5,335,191

METHOD AND MEANS FOR COMMUNICATION BETWEEN SIMULATION ENGINE AND COMPONENT MODELS IN A CIRCUIT SIMULATOR

Kenneth S. Kundert, Belmont, Calif., and Jacob K. White, Arlington, Mass., assignors to Cadence Design Systems, Inc., San Jose, Calif.

Filed Mar. 27, 1992, Ser. No. 859,057

Int. Cl.[5] **G06G** *7/63*

U.S. Cl. 364—578 **9 Claims**

1. An apparatus for operating a circuit simulator comprising:

an engine processor for generating overall circuit response when given the response of individual components;

input means connected to said engine processor for accepting input from an external source;

output means connected to said engine processor for sending engine processor output to an external destination;

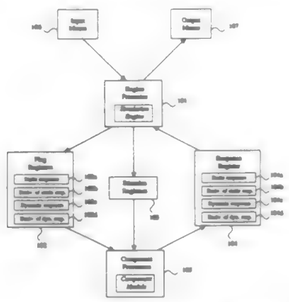
flag communication means connected to receive flags from said engine processor and to transmit flags for specifying both the type of response, and the specific response information said engine processor requires;

response computation filtration means connected to said engine processor for determining the value of said flags to indicate the specific response information required;

stimulus communication means connected to receive stimulus from said engine processor and to transmit stimulus;

VOL 1165 ISS 1 AG 2 1994 UMI

at least one component processor connected to receive flags from said flag communication means and to receive stimulus from said stimulus communication means, each said component processor capable of generating a variety of response information for a given type of response, each



said component processor generating a subset of the available response information as indicated by said flags of one component when given a stimulus; and

response communication means connected to receive response from said component processors and to transmit response to said engine processor.

5,335,192

PORTABLE COMPUTER WITH PIVOTALLY MOUNTED COVER

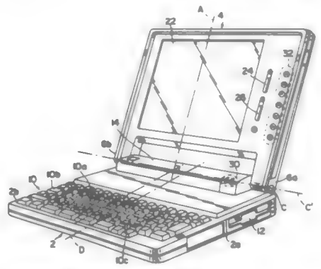
Hirokazu Oshiba, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 9, 1991, Ser. No. 682,089

Claims priority, application Japan, Apr. 11, 1990, 2-96752; Apr. 11, 1990, 2-96753; Apr. 24, 1990, 2-109782

Int. Cl.[5] G06F *1/00*

U.S. Cl. 364—708.1 16 Claims



1. A portable computer comprising:

body bound by opposite body sides which are spaced from each other in a longitudinal direction, said body having an array of keys, said array of keys including a subarray of alphanumeric keys whose operation records alphanumeric American Standard Code for Information Exchange (ASCII) characters for display, wherein, for a subarray line perpendicular to said longitudinal direction and symmetrically bisecting said subarray, said subarray line is displaced in said longitudinal direction from a body line perpendicular to said longitudinal direction and symmetrically bisecting said body;

a lid including a display section for displaying the alphanumeric ASCII characters according to signals generated by operation of the keys of said array; and

a hinge portion connecting said lid with said body for rotation of said lid about an axis which extends in the longitudinal direction, wherein said subarray line, and a display line which is perpendicular to said longitudinal direction and symmetrically bisects said display section, are located in a plane which is perpendicular to said axis, said array comprising a plurality of lines of keys, the lines extending in said longitudinal direction, said subarray consisting of a plurality of the keys in one of said lines, two keys in said one line of keys having position marks formed thereon, the subarray line being equidistantly spaced from said two keys.

5,335,193

SCIENTIFIC CALCULATOR WITH COORDINATE TRANSFORMATION AND SINGLE LINE NUMERIC VALUE DISPLAY

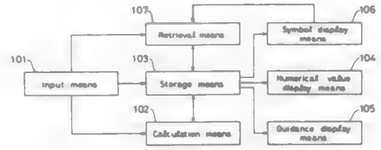
Fumiaki Kawawaki, Shiki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 25, 1993, Ser. No. 8,328

Claims priority, application Japan, Jan. 27, 1992, 4-12273

Int. Cl.[5] G06F *3/00*

U.S. Cl. 364—709.12 4 Claims



1. A scientific calculator capable of performing a transformation calculation yielding two calculation result values, the calculator comprising:

an input device for entering at least two numerical values; a transformation command; and a replacement command;

a processor responsively connected to the input device for calculating two calculation result values based on the two entered numerical values and the entry of the transformation command;

a memory connected to the processor for storing, at least prior to entry of the transformation command, the numerical values entered from the input device and, subsequent to entry of the transformation command, the calculation result values calculated by the processor;

a numerical value display connected to the processor for displaying, at any one moment subsequent to entry of the transformation command, one of the calculation result values;

a guidance display connected to the processor for displaying an indicia which signifies a calculation process and a meaning of the numerical value displayed on the numerical value display;

a symbol display connected to the processor which, upon display of one of the two calculation result values at the numerical value display, provides an indication that the other calculation result value is stored in the memory; and

wherein the processor, in response to entry of the replacement command, exchanges the calculation result value stored in the memory and the value displayed by the numerical value display.

5,335,194

SAMPLE RATE CONVERTER

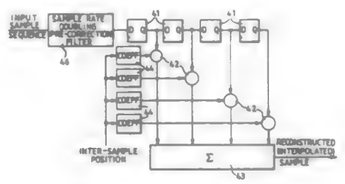
John C. Clayton, Buckinghamshire, and Trevor N. Scofield, Berkshire, both of England, assignors to Innovision Limited, Slough, England

Filed Dec. 17, 1992, Ser. No. 992,433

Claims priority, application United Kingdom, Mar. 14, 1992, 9205614

Int. Cl.[5] G06F *15/31*

U.S. Cl. 364—724.1 10 Claims



1. A sample rate converter which comprises a first finite impulse response (FIR) digital filter which effects a sampling rate doubling operation, which has a relatively large number of taps and whose output is connected to a second FIR digital filter having a relatively low number of variable coefficient taps, the frequency response of the first FIR digital filter being arranged to compensate for the frequency response of the second FIR digital filter.

5,335,195

METHOD AND CIRCUIT FOR PROCESSING DIGITAL SIGNALS REPRESENTATIVE OF VECTORS OR TUPLES OF THE SAME DIMENSION AND APPLICATION THEREOF TO SETS HAVING ANY CARDINALITY AND TO VECTORS OR TUPLES OF ANY DIMENSIONS

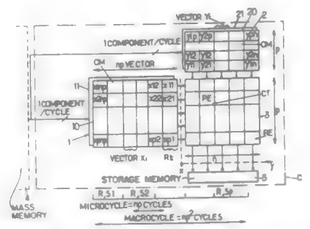
Francis Jutand, Cachan; Anne Lafage, Paris, and Emmanuel Boutillon, Chatou, all of France, assignors to France Telcom, France

Filed Jun. 4, 1991, Ser. No. 709,817

Claims priority, application France, Jun. 8, 1990, 90 07164

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—736 23 Claims



1. A method of processing digital signals representative of vectors referred to as tuples having the same dimension p, said processing being carried out between pairs of vectors Xi with components {xki} of a first set of vectors R and of vectors Yi with components {yki} of a second set of vectors S, said processing comprising in causing pairs of said vectors Xi, Yi to meet so as to bring together components of the same order k{xki}; {yki} and effecting computation on said components, said method comprising the steps of:

designating one of the sets of vectors R as spatial meeting data, corresponding to a succession in time of spatial meeting data vectors Rk formed by the vectors Xi;

designating the other set of vectors S as input data, said input data being formed from at least one vector Yi of said other set of vectors S; and

meeting in space and in time of said input data and spatial meeting data using parallel processing, said parallel processing being organized as a two-dimensional network of cells for processing said components {xki} and {yki} of same order k, one of the dimensions of said two-dimensional network referred to as the x dimension being assigned to said succession in time of spatial meeting data vectors Rk and the other dimension of said two-dimensional network referred to as the y dimension being assigned to the input data formed by at least said vector Yi so as to perform a spatial parallelism processing in which an input data vector meets in parallel a plurality of spatial meeting data vectors and a time parallelism processing in which a plurality of input data vectors are processed in parallel.

5,335,196

SEMICONDUCTOR MEMORY DEVICE HAVING MEMORY CELLS FORMED OF ONE TRANSISTOR AND ONE CAPACITOR AND A METHOD OF PRODUCING THE SAME

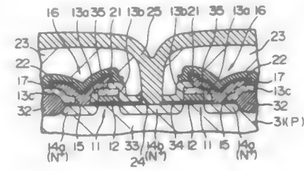
Kenji Anzai, Sagamihara, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 49,497

Claims priority, application Japan, Apr. 23, 1992, 4-130003

Int. Cl.[5] G11C *11/24*

U.S. Cl. 361—149 13 Claims



1. A semiconductor device having memory cells for recording informations in cooperation with transistors and capacitors formed on a semiconductor substrate, each of said memory cells comprising:

a transistor having:

a first insulating layer formed on said semiconductor substrate,

a gate electrode formed on said first insulating layer,

a source portion formed within said semiconductor substrate and under said first insulating layer so as to be adjacent to said gate electrode, and

a drain portion formed within said semiconductor substrate and under said first insulating layer so as to be adjacent to said gate electrode and opposite to said source portion in relation to said gate electrode;

a capacitor having a lower electrode made in contact with said source portion;

a second insulating layer formed under said lower electrode and on an upper surface of said gate electrode;

a third insulating layer covering side surfaces facing said source portion of said second insulating layer and of said gate electrode; and

a fourth insulating layer covering side surfaces facing said drain portion of said second insulating layer and of said gate electrode and a drain side of upper surface of said second insulating layer.

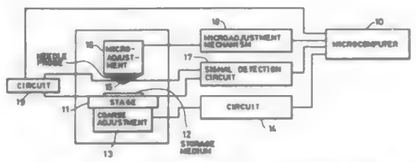
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,197

STORAGE MEDIUM, STORAGE METHOD AND STORED INFORMATION READING METHOD

Norio Kaneko; Katsuhiko Shinsho, and Keisuke Yamamoto, all of Atsugi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 500,569, Mar. 28, 1990, Pat. No. 5,097,443.
This application Dec. 10, 1991, Ser. No. 804,593
Claims priority, application Japan, Mar. 28, 1989, 1-73744
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—153 35 Claims



1. A method for storing information comprising the following steps:

(a) preparing a storage medium comprising an oxide layer; and

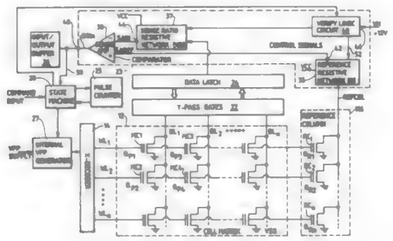
(b) exposing portions of the oxide layer to light to heat the oxide layer in accordance with information signals; thereby forming a plurality of portions containing varying quantities of oxygen, wherein information is stored.

5,335,198

FLASH EEPROM ARRAY WITH HIGH ENDURANCE

Michael A. Van Buskirk; Kevin W. Plouse, both of San Jose; Joseph G. Pawletko, Sunnyvale; Chi Chang, Redwood City; Sameer S. Haddad, San Jose, and Ravi P. Gutala, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 6, 1993, Ser. No. 57,583
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—185 18 Claims



1. In a semiconductor integrated memory device having an over-erased bit correction structure for performing a correction operation on over-erased memory cells in the memory device, said correction structure comprising in combination:

a cell matrix (12) having a plurality of memory cells (MC) arrayed in rows of word lines and columns of bit lines intersecting said rows of word lines, each of said memory cells including a floating gate array transistor having its control gate connected to one of said rows of word lines, its drain connected to one of said columns of bit lines, and its source connected to a ground potential;

row decoder means (14) responsive to row address signals and being operatively connected to said cell matrix for selecting one of said rows of word lines;

column decoder means (18) responsive to column address signals and being operatively connected to said cell matrix for selecting one of said columns of bit lines;

reference column means (116) including a plurality of reference cells (RC) arrayed in rows of word lines corresponding to the number of rows in said cell matrix, each of said reference cells including a reference cell transistor (Q_R) having its gate connected to the same one of said rows of word lines, its drain connected to a reference bit line, and its source connected to the ground potential;

sensing circuit means (23) for comparing leakage current in the selected one of said columns of bit lines and a reference current in the reference column means during a program verify mode of operation and for generating a logic signal which is at a high logic level when said bit line leakage current is greater than said reference current indicative of an over-erased memory cell and which is at a low logic level when said bit line leakage current is less than said reference current indicative of a properly programmed memory cell; and

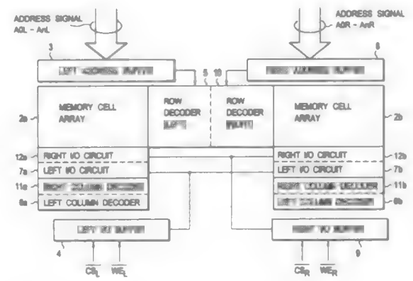
pulse counter means (25) coupled to said row decoder means for providing a plurality of programming pulses one at a time to the selected one of said rows of word liens and to the control gate of the array transistor in a first selected memory cell to be programmed during programming of the first selected memory cell in the selected one of said columns of bit lines until said logic signal generated by said sensing circuit means is at the low logic level so as to program back simultaneously all over-erased memory cells connected to the same selected one of said columns of bit lines.

5,335,199

MULTIPORT MEMORY

Keizo Aoyama, Kanagawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1992, Ser. No. 853,788
Claims priority, application Japan, Mar. 19, 1991, 3-55044
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—230.05 33 Claims



24. A multiport memory, comprising:

static memory cells;

a first port and a second port provided for a write or a read operation to or from said static memory cells;

first and second bit lines and first and second word lines having levels and provided corresponding to said first and second ports;

switches for electrically connecting said bit lines corresponding to said first and second word lines of a same port to said static memory cells depending on the levels of said first and second word lines; and

short-circuit devices for substantially short-circuiting the bit lines corresponding to the ports selected for the write operation and other selected bit lines among the first and second bit lines, when the first and second word lines belonging to a same row are selected from the read or the write operation;

a row address matching detection circuit which compares row addresses input to respective ports with each other and outputs a signal when the row addresses of the ports including those selected for the write operation match;

a first cell region and a second cell region which may be formed by dividing said word lines in a cell region of said static memory cells into two regions;

a right row decoder provided between said first cell region and said second cell region, corresponding to a right port; and

a left row decoder provided between said first cell region and said second cell region, corresponding to a left port; and

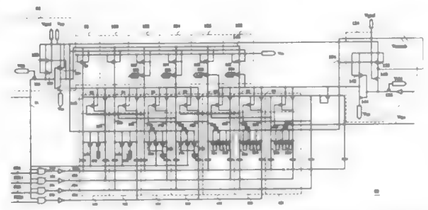
said short-circuit devices receive an output of said row address matching detection circuit and generate a short-circuit of the bit lines corresponding to the ports selected for the write operation and other selected bit lines, among the bit lines corresponding to the respective ports.

5,335,200

HIGH VOLTAGE NEGATIVE CHARGE PUMP WITH LOW VOLTAGE CMOS TRANSISTORS

Tim M. Coffman, Sugarland, and Sung-Wei Lin, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 5, 1993, Ser. No. 756
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 2 Claims



2. An improved negative charge pump system for erasing a memory array in a memory which has a supply voltage and a negative charge pump having multiple stages, comprising:

(a) means for selecting a memory array to be erased;

(b) means for applying the supply voltage to the charge pump;

(c) means for pumping the supply voltage to produce a pumped negative voltage from a negative voltage at each of said multiple stages of said negative charge pump;

(d) means for erasing the selecting array with the pumped negative voltage;

(e) means for stopping said erasing; and

(f) means for providing a separate discharge path for each of said negative voltages trapped in each said stage of the charge pump.

5,335,201

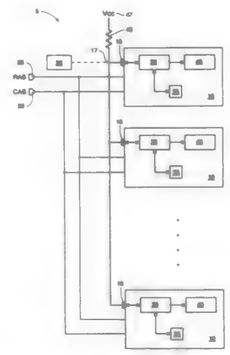
METHOD FOR PROVIDING SYNCHRONOUS REFRESH CYCLES IN SELF-REFRESHING INTERRUPTABLE DRAMS

Terry R. Walther, and Scott E. Schaefer, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Apr. 15, 1991, Ser. No. 685,330
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 43 Claims

1. A method for operating a memory system having a plurality of memory devices, each memory device having at least one refresh circuit and an external refresh pin, said refresh pins of said plurality of DRAMs connected at a common node, comprising the following steps:

a) providing said refresh pins alternately with first and second potentials, said first and second potentials having substantially different voltage levels, said first potential provided from a source external to said plurality of said memory devices, and said second potential generated in at least one of said memory devices;



b) communicating said second potential to said refresh pins from said at least one of said memory devices; and

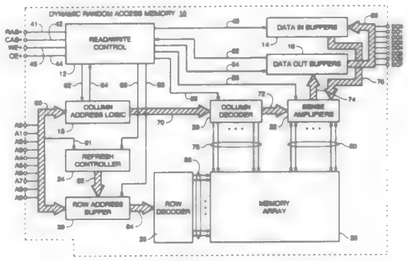
c) synchronously refreshing said plurality of memory devices with at least one of said refresh circuits of said plurality of said memory devices in response to said step of providing said second potential on said refresh pins.

5,335,202

VERIFYING DYNAMIC MEMORY REFRESH

Troy A. Manning, and William R. Bachand, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Jun. 29, 1993, Ser. No. 84,399
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 42 Claims



1. A system for providing an output data signal, the system responsive to a first control signal, a second control signal, and an input data signal, the system comprising:

a. a dynamic storage cell;

b. means, coupled to the cell, for storing data in the cell in response to the input data signal and the first control signal, and for providing the output data signal in response to the second control signal;

c. refreshing means, coupled to the cell, for refreshing the cell after an absence of the first and the second control signal for a first time, and for refreshing the cell in response to a third control signal; and

d. detecting means, coupled to the refreshing means, for

VOL 1165 ISS 1 AUG 2 1994 UMI

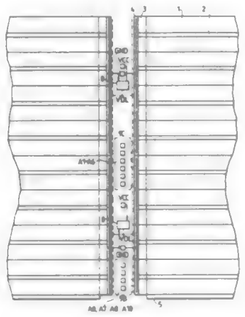
providing the third control signal in response to a test signal input to the system.

5,335,203

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH INTERNAL VOLTAGE DROP CIRCUITS

Kyoko Ishii, Tokyo; Shinichi Miyatake, Hamura; Tsutomu Takahashi, Akishima; Shinji Udo, Akishima; Hiroshi Yoshioka, Akishima; Mitsuhiro Takano, Tokorozawa, and Makoto Morino, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi VLSI Engineering Corp., Kodaira, both of Japan

Filed Feb. 12, 1992, Ser. No. 834,354
Claims priority, application Japan, Feb. 12, 1991, 3-040954
Int. Cl.[5] G11C *11/40, 11/34;* H03K *3/01*
U.S. Cl. 365—226 8 Claims



1. A semiconductor integrated circuit device comprising:
a plurality of divided memory blocks, each of which includes a plurality of sets of memory mats arranged with dynamic memory cells in a matrix shape and sense amplifiers for amplifying signals read out of said memory mats;
a plurality of internal voltage drop circuits, each of which is coupled to receive a supply voltage from outside of the semiconductor integrated circuit device for generating operating voltages of said sense amplifiers; and
a plurality of pads, each of which respectively corresponds to a predetermined one of said internal voltage drop circuits, for respectively coupling said plurality of internal voltage drop circuits to said supply voltage.

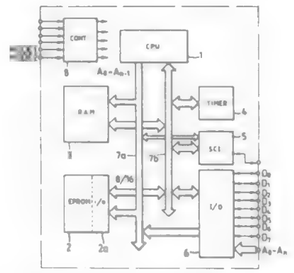
5,335,204

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Akinori Matsuo, Higashiyamato; Masashi Watanabe, Kokubunji; Michio Fujimoto, Akishima; Masashi Wada, Fuchuu; Yoshiharu Nagayama, Fuchuu, and Kazuo Naito, Fuchuu, all of Japan, assignors to Hitachi., Ltd. and Hitachi VLSI Engineering Corp., Tokyo, Japan

Continuation of Ser. No. 842,887, Feb. 26, 1992, Pat. No. 5,257,234, which is a continuation of Ser. No. 621,643, Dec. 4, 1990, Pat. No. 5,105,389, which is a continuation of Ser. No. 219,736, Jul. 15, 1988, Pat. No. 4,989,185. This application May 28, 1993, Ser. No. 69,988
Claims priority, application Japan, Jul. 15, 1987, 62-174703; Aug. 24, 1987, 62-208145
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—230.01 20 Claims

1. A semiconductor integrated circuit device comprising:
external terminals;
a plurality of word lines;
a plurality of data lines;
a plurality of memory cells coupled to the plurality of word and data lines so that each memory cell is coupled to one word line and to one data line;
word line selection means for selecting one of the plurality of word lines;
first common data lines;
first selection means for selectively coupling selected ones of the plurality of data lines to the first common data lines, respectively;
second common data lines, a number of which is smaller than that of the first common data lines;
second selection means for selectively coupling selected ones of the first common data lines to the second common data lines so that the selected ones of the plurality of data lines are coupled to the second common data lines via the selected ones of first common data lines;



read-out means coupled to the first common data lines and for selectively providing first data based on read-out data appearing on the first common data lines when the read-out means is brought into an operation state in response to a first control signal;
input and output means coupled between the external terminals and the second common data lines for selectively inputting externally generated data received at the external terminals to the memory cells or outputting second data based on read-out data appearing on the second common data lines to the external terminals when the input and output means is brought into an operation state in response to a second control signal; and
circuit means coupled to the read-out means and for selectively receiving the first data.

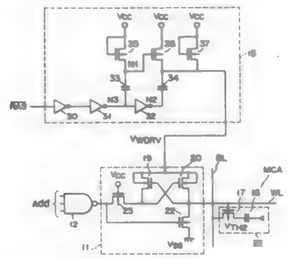
5,335,205

DRAM USING WORD LINE POTENTIAL CONTROL CIRCUIT

Masaki Ogihara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1991, Ser. No. 757,632
Claims priority, application Japan, Sep. 12, 1990, 2-239893
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.06 22 Claims

1. A semiconductor memory device, comprising:
memory cells connected to word lines, at least one of said memory cells including a MOS transfer gate transistor of a first conductivity type having a threshold voltage Vth;
word line drive means for driving said word lines during a word line selection mode; and
word line potential control means for outputting at an output terminal thereof a word line drive signal to said word line drive means, said word line drive signal having, if said MOS transfer gate transistor of the first conductivity type is an N-channel MOS transistor, a first level which is not higher than a first power source potential Vcc and not lower than the threshold voltage Vth and a second level which is higher than said first power source potential Vcc, and said word line drive signal having, if said MOS transfer gate transistor of the first conductivity type is a P-channel MOS transistor, a first level which is not lower



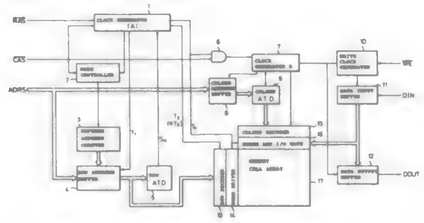
than a second power source potential Vss and not higher than the threshold voltage Vth and a second level which is lower than said second power source potential Vss.

5,335,206

SEMICONDUCTOR STORAGE DEVICE

Satoru Kawamoto, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

PCT No. PCT/JP90/01443, § 371 Date Jun. 25, 1991, § 102(e) Date Jun. 25, 1991, PCT Pub. No. WO91/06956, PCT Pub. Date May 16, 1991
PCT Filed Nov. 7, 1990, Ser. No. 720,501
Claims priority, application Japan, Nov. 7, 1989, 1-289117
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—233.5 4 Claims



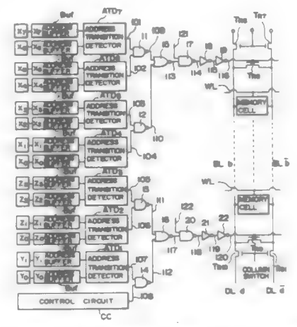
1. A semiconductor storage device, comprising:
a first timing circuit for generating a first timing signal in response to inactivation of a row address strobe signal;
a second timing circuit for generating a second timing signal in response to activation of the row address strobe signal after the inactivation of a row address strobe signal;
an address change detection circuit for generating an address change detection signal in response to a change of the row address which has occurred during a period between the inactivation and activation of the row address signal;
a row decoder decoding a row address for subsequent access in response to the first timing signal and simultaneously decoding a changed row address signal in response to the second timing signal when the address change detection signal is generated; and
a word driver, connected to the row decoder, selecting a word line and being activated in response to the second timing signal.

5,335,207

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Hiroshi Takamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 15, 1991, Ser. No. 729,561
Claims priority, application Japan, Jul. 17, 1990, 2-188450
Int. Cl.[5] G11C *7/00;* H01L *27/00*
U.S. Cl. 365—233.5 4 Claims



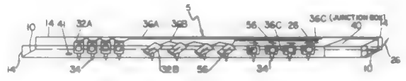
1. A semiconductor integrated circuit device comprising:
a group of a plurality of memory cells, the plurality of memory cells in the group being arranged to form a column;
a pair of bit lines commonly connected to said plurality of memory cells;
a plurality of equalizing means provided across said pair of said bit lines, said plurality of equalizing means being provided at different positions along said bit lines;
a plurality of address transition detecting means for detecting changes in address bits and outputting detection pulse signals corresponding thereto; and
a plurality of equalizing pulse generating means composed of a plurality of logical circuit stages and provided for each of said plural equalizing means, for generating an equalizing pulse signal from said detection pulse signals outputted by said address transition detecting means and providing said equalizing pulse signal to said equalizing means.

5,335,208

METHOD FOR CONDUCTING MULTIPLE NATURAL FREQUENCY SEISMIC SURVEYS

Stanley A. Sansone, 621-17th St., Ste. 2630, Denver, Colo. 80293

Division of Ser. No. 901,517, Jun. 19, 1992, Pat. No. 5,231,252. This application Apr. 21, 1993, Ser. No. 51,560
Int. Cl.[5] G01V *1/00*
U.S. Cl. 367—49 7 Claims



1. A method for conducting a multiple natural frequency seismic survey, the method comprising the steps of:
providing a plurality of natural frequency seismic motion sensors, each having a different natural sensing frequency, each natural sensing frequency being selected to lie within a range of frequencies present in a reflected seismic wave, each of said natural frequency seismic motion sensors being coupled to the earth;
actuating a source of seismic energy; and
recording indications of reflected seismic waves sensed by

VOL 1165 ISS 1 AUG 2 1994 UMI

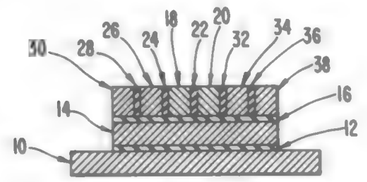
said plurality of natural frequency seismic motion sensors in response to actuation of said source of seismic energy.

5,335,209

ACOUSTIC SENSOR AND PROJECTOR MODULE HAVING AN ACTIVE BAFFLE STRUCTURE

Paul E. Jaeske, Arnold, and Larry T. Gingerich, Annapolis, both of Md., assignors to Westinghouse Electric Corp., Pitsburgh, Pa.

Filed May 6, 1993, Ser. No. 57,382
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—155 19 Claims



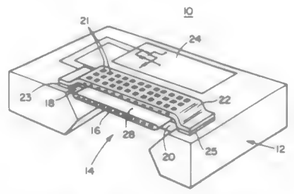
1. An acoustic sensor and projector module comprising:
a base acoustic baffle including at least one baffle layer;
a first acoustic transducer element, positioned on a surface of said base acoustic baffle, for projecting acoustic signals, said first acoustic transducer element having first and second opposing side planes;
a second acoustic transducer element, positioned on said surface of said base acoustic baffle, for sensing acoustic signals, said second acoustic transducer element having first and second opposing side planes, said first side plane of said second acoustic transducer element positioned opposite said first side plane o said first acoustic transducer element;
a first side acoustic baffle including at least one baffle layer positioned on said surface o said base acoustic baffle, said first side acoustic baffle having a first side plane in engagement with said second side plane of said first acoustic transducer element, said first side acoustic baffle baffling the acoustic signals projected by said first acoustic transducer element, and said first side acoustic baffle and said first acoustic transducer element baffling the acoustic signals sensed by said second acoustic transducer element; and
a second side acoustic baffle including at least one baffle layer positioned on said surface of said base acoustic baffle, said second side acoustic baffle having a first side plane in engagement with said second side plane of said second acoustic transducer element, said second side acoustic baffle baffling the acoustic signals sensed by said second acoustic transducer element, and said second side acoustic baffle and said second acoustic transducer element baffling the acoustic signals projected by said first acoustic transducer element,
wherein each of said base acoustic baffle, said first acoustic transducer element, said second acoustic transducer element, said first side acoustic baffle, and said second side acoustic baffle forms a ¼ wavelength acoustic baffle.

5,335,210

INTEGRATED LIQUID CRYSTAL ACOUSTIC TRANSDUCER

Jonathan Bernstein, Medfield, Mass., assignor to The Charles Stark Draper Laboratory Inc., Cambridge, Mass.

Filed Oct. 28, 1992, Ser. No. 968,342
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.
Int. Cl.[5] H04R *19/00*
U.S. Cl. 367—163 20 Claims



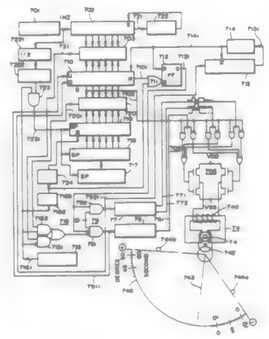
1. An integrated liquid crystal acoustic transducer, comprising:
a substrate chip having a through hole;
a movable plate electrode;
means for resiliently mounting said movable plate electrode across said hole in said substrate chip;
a perforated electrode spaced from said movable plate electrode and mounted across said hole in said substrate chip; and
a liquid crystal medium, disposed between said electrodes, whose polarization vector orientation changes in response to electrical and acoustic input to reciprocally convert between electric and acoustic energy.

5,335,211

DISPLAY DEVICE BY MEANS OF A HAND

Takeo Muto; Masahiro Sase, and Kato Yoshiaki, all of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Division of Ser. No. 392,949, Jul. 26, 1989, Pat. No. 5,119,349.
This application Apr. 13, 1992, Ser. No. 874,552
Claims priority, application Japan, Dec. 25, 1987, 62-326757
Int. Cl.[5] G04F *5/00*; G04B *47/06*
U.S. Cl. 368—11 9 Claims



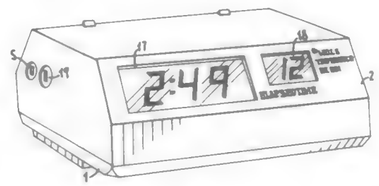
1. A display device by means of a hand for indicating a physical quantity by moving the hand forward or backward by an angle of a unit per step within a selected measuring range of a predetermined angle corresponding to a predetermined number of steps, comprising:
an A/D converting circuit for converting a physical quantity to be measured to a digital data corresponding to said quantity;
a stepping motor and an indicating mechanism driven thereby for indicating said physical quantity;
a stepping motor driving circuit;
a converting circuit for converting said digital data into forward or backward driving signals equal in number to the steps corresponding to a difference between a new digital data and an old digital data for sending the forward or backward driving signals to said driving circuit; and
inhibiting circuit means for inhibiting a generation of said forward or backward driving signals which make the hand move out of the selected measuring range without changing the selected measuring range in the event that said physical quantity becomes larger or smaller out of the selected measuring range and for stopping the hand temporarily at least, said inhibiting circuit including detecting circuit means for detecting purely electrically the fact that the hand has reached an end of the selected measuring range or will deviate from the selected measuring range, and when said inhibiting circuit inhibits the generation of said forward or backward driving signals to be inputted in said stepping motor driving circuit.

5,335,212

GOLF CLOCK

Peter J. Bartos, 2753 Bridle Path Pl., Bethlehem, Pa. 18017

Filed Jan. 5, 1993, Ser. No. 639
Int. Cl.[5] G04B *47/00*
U.S. Cl. 368—107 5 Claims



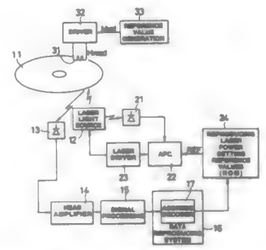
1. A golfing clock for controlling the speed of play on a golf course having a housing with a front display panel and rear memory control panel, said front display panel having a first and second digital readout display, said first digital readout display indicating a total lapsed time from the beginning of play on the golf course, said second digital readout display coupled to a programmable memory means within said housing, said second digital readout display displaying the recommended area of play and the hole number for each hole on the golf course programmed to correspond to the total lapsed time displayed by said first digital readout display, the second digital readout displays indicia indicating the tee, fairway, and green areas and the hole number of each hole on the golf course, and in which said memory means can only be programmed by switches on said memory control panel accessible only with a key.

5,335,213

POSITIONAL DETECTION OF A MAGNETO-OPTIC RECORDING MEDIUM FOR CONTROLLING IRRADIATION OF A RELIEF REGION

Atsushi Fukumoto, Kanagawa; Toshiki Udagawa; Shunji Yoshimura, both of Tokyo; Masumi Ono, Kanagawa, and Kouichi Yasuda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP91/01439, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/15093, PCT Pub. Date Sep. 3, 1992
PCT Filed Oct. 19, 1991, Ser. No. 937,876
Claims priority, application Japan, Feb. 13, 1991, 3-041139
Int. Cl.[5] G11B *11/00, 11/10*
U.S. Cl. 369—121 14 Claims



1. A method for reproducing an optical recording medium comprising a recording layer and reproducing layer, said recording and reproducing layers being magnetically coupled to each other in steady state, said method comprising: extinguishing the magnetic coupling between the recording layer and the reproducing layer to erase data recorded in the recording medium in a region the temperature of which is raised to a temperature higher than a predetermined temperature by irradiation of a readout beam during reproduction, and reading the recording information held by said recording layer in an area of an irradiated region other than the magnetic coupling extinguished region, characterized by detecting a reproducing position for a data bit on said optical recording medium when rotating said optical recording medium at a constant rotational velocity for reproducing said recording medium, and controlling the size of said magnetic coupling extinguished region in accordance with a line recording density at said reproducing position.

5,335,214

OPTICAL RECORDING TRACK ACCESS DRIVING APPARATUS

Hirotsugu Matoba, Sakurai; Masaru Nomura, Tenri, and Takeshi Yamaguchi, Sakai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1992, Ser. No. 923,745
Claims priority, application Japan, Aug. 2, 1991, 3-194336
Int. Cl.[5] G11B *7/09*
U.S. Cl. 369—44.28 22 Claims

1. An optical recording medium driving apparatus using an optical recording medium having alternate lands and grooves in a radial direction of the optical recording medium, the apparatus having an optical head for projecting a light beam onto the optical recording medium and for receiving a reflected light beam from the optical recording medium, the reflected light beam bearing a reproduction signal, comprising:
first low frequency component removing means for removing a low frequency component from the reproduction signal;
slice level generation means for generating a slice level which varies depending on an output from said first low frequency component removing means for removing a low frequency component from the reproduction signal,

VOL 1165 ISS 1 AG 2 1994 UMI

when shifting from tracking operation to track access operation; and

comparator means for comparing the output of said first low frequency component removing means with said slice level emitted by said slice level generation means during a time said shifting from a tracking operation to a track access operation is performed.

5,335,215

SEMICONDUCTOR INTEGRATED CIRCUIT FOR SIGNAL PROCESSING OF OPTICAL DISK OF WRITE-ONCE TYPE AND SEMICONDUCTOR DEVICE

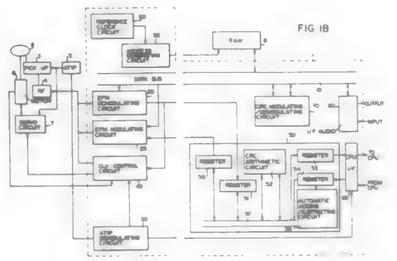
Yasushi Yoshiyama, Ikeda, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 766,663

Claims priority, application Japan, Sep. 30, 1990, 2-262009

Int. Cl.[5] G11B *7/00, 5/09*

U.S. Cl. 369—50 8 Claims



1. A semiconductor integrated circuit for processing a signal of an optical disk of a write-once type, comprising:

an EFM demodulating circuit for demodulating an EFM-modulated EFM signal read from the optical disk;

an EFM modulating circuit for EFM-modulating data written on the optical disk;

an ATIP demodulating circuit for demodulating an ATIP signal read from the optical disk;

a CLV control circuit for outputting a signal for controlling rotation of the optical disk based on said EFM signal or said ATIP signal;

a subcode forming arithmetic circuit for performing a CRC operation with respect to the data to be written on the optical disk thereby to form a subcode and for extracting the subcode from said EFM signal and performing the CRC operation of the subcode;

a CIRC modulating/demodulating circuit for detecting and correcting an error in CIRC signal from said EFM-demodulated signal and adding a CIRC error correction Code to the data to be written on the optical disk;

an interface circuit for outputting and inputting an audio signal or data; and

an interface circuit for interfacing with a data bus of a processor for an external system controller;

wherein the semiconductor integrated circuit further comprises a controller for controlling the rotation of the optical disk of the write-once type; said controller comprising:

means for measuring the length of a top or bottom of each signal pattern of a binary EFM input signal by using an internal reference clock signal;

means for judging whether or not the length of the top or bottom is three to eleven times a unit length; and

motor control means for decelerating the rotation of the optical disk when a signal pattern having a top or bottom equal to or smaller than twice the unit length is detected by the judging means and accelerating the rotation of the optical disk when the signal pattern having a top or bottom equal to or greater than twelve times the unit length is detected by the judging means.

5,335,216

REPRODUCING APPARATUS REPRODUCING DATA FROM A RECORDING MEDIUM HAVING A PREFORMATTED ADDRESS AREA AT A STARTING POSITION OF EACH SECTOR

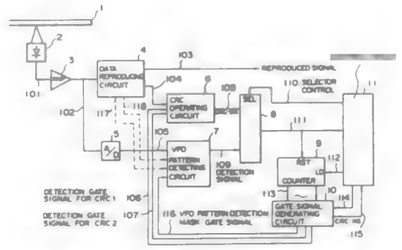
Hiroshi Suzuki; Takuya Mizokami, both of Odawara, and Kikuo Shimizu, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 629,418, Dec. 18, 1990, Pat. No. 5,233,592. This application May 13, 1993, Ser. No. 60,147

Claims priority, application Japan, Dec. 19, 1989, 1-328924

Int. Cl.[5] H04N *5/76;* G11B *27/36, 5/09*

U.S. Cl. 369—59 24 Claims



1. A reproducing apparatus of a recording medium having an address area preformatted at a starting position of each of a plurality of sectors, the apparatus comprising:

pattern detection means for detecting a predetermined pattern of a data pulse train in said starting position of each sector;

timing creation means for creating a reading timing, at which an address of a sector is to be read, according to the detection of said predetermined pattern of the data pulse train; and

discrimination means for discriminating whether an address read from said recording medium based on said reading timing created by said timing creation means is correct or not;

wherein said timing creation means creates reproducing timings for the sector of said address and an address reading timing for a next sector which follows said sector, based on a point in time when said address is read.

5,335,217

OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS

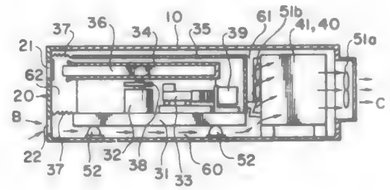
Tokuya Kaneda, Odawara, and Akira Kuribayashi, Minamiashigara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 631,256, Dec. 20, 1990. This application Aug. 13, 1992, Ser. No. 928,086

Claims priority, application Japan, Dec. 27, 1989, 1-336735

Int. Cl.[5] G11B *33/14*

U.S. Cl. 369—77.2 2 Claims



1. An optical information processing apparatus comprising:

means for supporting an optical storage medium;

means including an optical head for irradiating a light beam against the optical storage medium;

a circuit board package mounting electronic circuit elements for controlling said optical head;

a first chamber accommodating at least said optical head, thereby isolating said optical head from at least said circuit board package;

an air flow passage isolated from said first chamber, through which ambient air flows to said circuit board package to bypass said first chamber;

a second chamber spatially isolated from said first chamber, wherein said air flow passage communicates with said second chamber;

a base cover; and

a casing with a front portion, and an expandable flexible member;

wherein said base cover includes means forming an opening upstream of ambient air flowing through said air flow passage, and said opening forming means are connected to said front portion of the casing by said flexible member; and

wherein said first chamber is isolated from said air flow passage and from the second chamber by said base cover.

5,335,218

DISC LOADING TRANSFER MECHANISM FOR PLURAL DISC CHANGER

Yasuo Osada, Saitama, Japan, assignor to Sony Corporation, Japan

Filed Apr. 24, 1992, Ser. No. 873,102

Claims priority, application Japan, May 2, 1991, 3-100806; May 2, 1991, 3-100807; Jul. 17, 1991, 3-176325; Jul. 17, 1991, 3-176326

Int. Cl.[5] G11B *17/22, 17/18*

U.S. Cl. 369—178 16 Claims

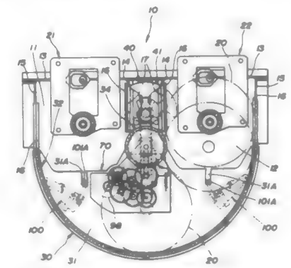
1. A disc loading apparatus for carrying disc between a disc container having a separate first and second container portions and a disc carrier, comprising:

a drive roller mounted rotatably on the disc carrier, the drive roller having a peripheral surface for contact with the peripheral surface of a disc;

a semicircular guide member secured on the disc carrier at a position concentric with the drive roller to define a disc carrying path along with the drive roller, the semicircular guide member having an inner peripheral surface facing to the peripheral surface of the drive roller for contact with the peripheral surface of a disc;

a disc knocker mechanism rotatably in a forward direction and in a reverse direction according to a drive supplied by an electric motor, said disc knocker mechanism being provided on the disc carrier between said first and second container portions for knocking the peripheral surface of a disc to push a disc out of the first container portion when the disc knocker mechanism is rotated in the forward direction and out of the second container portion when the disc knocker mechanism is rotated in the reverse direction, and into the disc carrying path; and

drive means for rotating the drive roller to advance a disc in the disc carrying path with the advancing disc revolving around the drive roller.



5,335,219

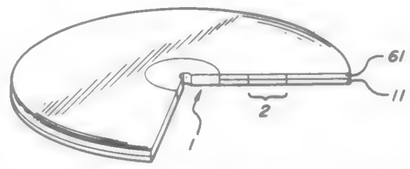
HOMOGENEOUS COMPOSITION OF MICROCRYSTALLINE SEMICONDUCTOR MATERIAL, SEMICONDUCTOR DEVICES AND DIRECTLY OVERWRITABLE MEMORY ELEMENTS FABRICATED THEREFROM, AND ARRAYS FABRICATED FROM THE MEMORY ELEMENTS

Stanford R. Ovshinsky, 2700 Squirrel Rd., Bloomfield Hills, Mich. 48013; Stephen J. Hudgens, 2 Alexandria Towne, Southfield, Mich. 48075; David A. Strand, 2091 Daintree, West Bloomfield, Mich. 48323; Wolodymyr Czubatyj, 2426 Walter, Warren, Mich. 48092; Jesus Gonzalez-Hernandez, 5004 Mansfield, Apt. #101, Royal Oak, Mich. 48073; Hellmut Fritzsche, 5801 S. Blackstone, Chicago, Ill. 60637; Qiuyi Ye, 400 Hampton Ctr., Apt. #201, Rochester, Mich. 48307; Sergey A. Kostyiev, 1208 Lenox, Bloomfield Hills, Mich. 48304, and Benjamin S. Chao, 3513 Sherwood Dr., Troy, Mich. 48083

Continuation-in-part of Ser. No. 642,984, Jan. 18, 1991, Pat. No. 5,166,758. This application Sep. 30, 1991, Ser. No. 768,139

Int. Cl.[5] G11C *13/00*

U.S. Cl. 369—288 29 Claims



1. An optical memory disk of directly overwritable, multi-level, single-cell memory elements comprising:

a substrate;

a large area body of memory material capable of forming a plurality of optically operated, directly overwritable, multilevel, single-cell memory elements on said substrate;

each of said memory elements formed by a small area por-

VOL 1165 ISS 1 AG 2 1994 UMI

tion of said large area body of memory material, each of said small area portions defining a single memory cell;

said memory material constituting means for assuming a large dynamic range of optical reflectance values with the ability to be set directly to one of a plurality of reflectance values within said dynamic range without the need to be set to a specific starting or erased reflectance value, regardless of the previous reflectance value of said material in response to a selected optical input signal so as to provide each of said single cells with multilevel storage capabilities; and

means for the selective addressing, setting and reading of said reflectance values of each individual memory element.

5,335,220
OPTICAL RECORDING ELEMENT AND DRIVING SYSTEM

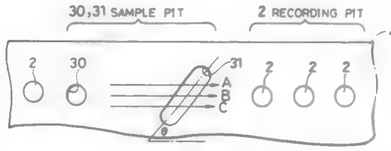
Kenji Ohta; Tetsuya Inui; Hiroyuki Katayama; Akira Takahashi; Junji Hirokane, all of Nara; Yukinori Nishitani, Neyagawa; Michinobu Mieda, and Kazuo Van, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 394,750, Aug. 16, 1989, Pat. No. 5,170,390. This application Jan. 16, 1992, Ser. No. 821,361

Claims priority, application Japan, Aug. 22, 1988, 63-208623; Oct. 28, 1988, 63-274096; Dec. 27, 1988, 63-330955; Feb. 21, 1989, 1-40591

Int. Cl.[5] G11B *3/78*

U.S. Cl. 369—288 **6 Claims**



1. An optical recording element for recording, erasing and reproducing information using a light beam, comprising:

a transparent substrate;

sample pits disposed at intervals of a fixed distance in an access direction of said light beam on said substrate, each of said sample pits including a pair of pits for providing information regarding tracking errors, at least one of which is inclined with respect to the access direction of the light beam;

preformed pits formed in the access direction of said light beam each of said preformed pits having a discrete recording film at its base;

each of said sample pits includes:

a first reference pit of substantially round shape disposed in the center of one of said tracks;

an elongated pit angled with respect to the track direction; and

a second reference pit disposed after the angled pit in the access direction of said light beam so that the spacing between the first reference pit and the inclined pit is equal to the spacing between the angled pit and the second reference pit.

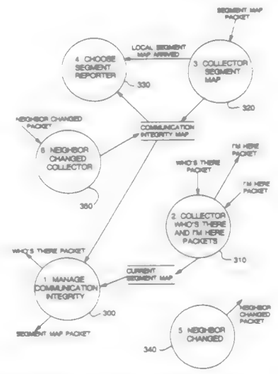
5,335,221
INTEGRITY MAPPING IN DATA COMMUNICATION SYSTEM

Jim L. Snowbarger, and Harold W. Haibleib, both of Marshalltown, Iowa, assignors to Fisher-Rosemount Systems, Inc., Austin, Tex.

Division of Ser. No. 740,313, Aug. 5, 1991, Pat. No. 5,272,702. This application May 26, 1993, Ser. No. 67,704

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—13 **20 Claims**



1. A communication system comprising:

communication channel means for conducting messages thereon;

a plurality of device means connected to said communication channel means;

wherein one of said device means is designated as a reporter means for periodically transmitting an integrity report request message requiring all others of said device means to transmit integrity report messages and for globally transmitting an integrity map in response to said integrity report messages from said all others of said device means, said integrity map indicating the integrity of said all others of said device means, and being transmitted in a global transmission to all of said other devices; and

wherein each of said all others of said device means is arranged for transmitting an integrity report message to said reporter means in response to said integrity report request message, for storing said integrity map, and for monitoring said reporter means so the one of said all others of said device means can become a reporter means for said communication channel means if said reporter means fails.

5,335,222
TRAFFIC CONTROL SYSTEM FOR ASYNCHRONOUS TRANSFER MODE EXCHANGE

Jyoei Kamoi, Kawasaki; Hichiro Hayami; Yuji Kato, both of Yokohama; Toshio Shimoe, Hatano; Shunji Abe, Yokohama; Michio Kusayanagi; Haruo Mukai, both of Tokyo, and Toshio Soumiya, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 742,758, Aug. 9, 1991, Pat. No. 5,280,483. This application Jun. 15, 1993, Ser. No. 76,793

Claims priority, application Japan, Aug. 9, 1990, 2-209153; Aug. 30, 1990, 2-226491; Nov. 13, 1990, 2-306734

Int. Cl.[5] H04J *3/14*

U.S. Cl. 370—60 **9 Claims**

1. A traffic control system for an asynchronous transfer mode exchange which receives, upon reception of a call, described parameters of the call and wherein call communications are performed by transmission of call information in successive cells, the traffic control system comprising:

an asynchronous transfer mode communication path over which the call communications are transmitted in successive calls;

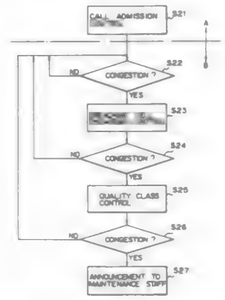
monitoring means for providing a breaching cell, which is entering into the front stage of said asynchronous transfer mode communication path and which has parameters exceeding the described parameters of the cell, with a mark; and

congestion determining means;

said asynchronous transfer mode communication path comprising:

a first discard switch which passes cells therethrough and is selectively operable for discarding a marked cell;

a second discard switch which passes cells therethrough an



is selectively operable for discarding a low priority cell; and

a buffer storage which receives and temporarily stores cells which have passed through said first and second discard switches and which has a plurality of storage regions having respective storage capacities defined by a plurality of corresponding threshold values; and

said congestion determining means being operable for discriminating the storage region of said buffer storage which is current in use for storing cells, and therefore the currently used amount of said buffer storage, in accordance with said plurality of corresponding threshold values and for selectively controlling the operation of said first and second discard switches in accordance with the result of said discrimination.

5,335,223
POINTER PROCESSING CIRCUIT IN SONET SYSTEM

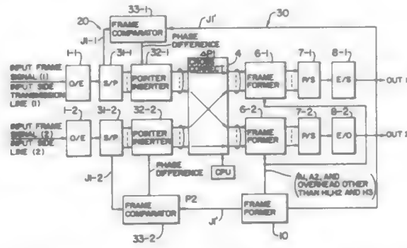
Hatsumi Iino, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 18, 1992, Ser. No. 998,571

Claims priority, application Japan, Dec. 18, 1991, 3-333764

Int. Cl.[5] H04L *12/58*

U.S. Cl. 370—65.5 **8 Claims**



1. A pointer processing circuit in combination with a cross connect equipment in a SONET transmission system which has said cross connect equipment between a reception part and a transmission part, and a frame counter connected to said pointer processing circuit and producing a frame synchronous signal, wherein said reception part receives input frame signals from a plurality of input side transmission lines and applies said input frame signals to said cross connect equipment while said transmission part is provided with cross connected input frame signals from the cross connect equipment, reforms said cross connected frame signals into signals having a specified frame format and retransmits said signals as output frame signals to respective output side transmission lines in synchronism with said frame synchronous signal produced by said frame counter, the pointer processing circuit being installed in said reception part at said cross connect equipment so that pointer processing of said frame signals is carried out for every input side transmission line and each input frame signal has a pointer value before cross connection thereof, said pointer processing circuit comprising means to detect a phase difference between said input frame signal of each of said input side transmission lines and said frame synchronous signal from said frame counter and adjust the pointer value of said input frame signal for each of said input side transmission lines based on the thus detected phase difference signal so that the phase difference is cancelled.

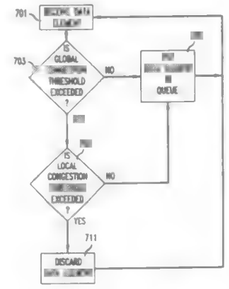
5,335,224
SERVICE GUARANTEES/CONGESTION CONTROL IN HIGH SPEED NETWORKS

Robert G. Cole, Eatontown; Kerry W. Fendick, Middletown, and Manoel A. Rodrigues, Atlantic Highlands, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 30, 1992, Ser. No. 906,964

Int. Cl.[5] H04J *3/22;* **H04L** *12/56*

U.S. Cl. 370—84 **17 Claims**



1. A method for use in controlling congestion at a resource of a data network at which resource a plurality of channels are active, said resource comprising at least a queue and a server, the method characterized by the steps of:

making a determination as to whether or not said resource can guarantee that it will service a data element arriving on a particular active channel of said plurality of channels prior to placing said arriving data element in said queue, said determination being made as a function of i) a contracted-for bandwidth for each of said active channels, ii) the arrival rate of data elements for the particular active channel and iii) the arrival rate of data elements for each active channel of said plurality that is not said particular active channel, said determining being independent of any indication, stored for said data element, that said data element exceeded the contracted-for bandwidth of the channel on which it arrived; and

dropping said arriving data element so that it is not placed in said queue only when the result of said determination is that said resource cannot guarantee that it will service a particular arriving data element.

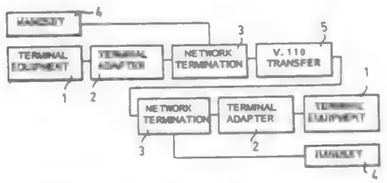
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,225

COMMUNICATION SYSTEM AND A METHOD FOR CONTROLLING A CONNECTION IN THE COMMUNICATION SYSTEM

Veikko Brax, Ylivieska, Finland, assignor to Telenokia OY, Espoo, Finland

PCT No. PCT/FI91/00344, § 371 Date Sep. 18, 1992, § 102(e) Date Sep. 18, 1992, PCT Pub. No. WO92/09157, PCT Pub. Date May 29, 1992
PCT Filed Nov. 18, 1991, Ser. No. 910,325
Claims priority, application Finland, Nov. 19, 1990, 905698
Int. Cl.[5] H04J *3/22, 3/12;* H04L *12/20, 12/12*
U.S. Cl. 370—84 20 Claims



1. A method for controlling a connection between terminal equipments in a communication system in which the connection includes at least one leg attached to V.24 interfaces and rate-adapted in compliance with the CCITT recommendation V.110 or an equivalent comprising:

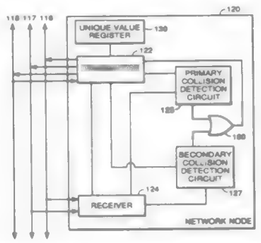
utilizing V.24 status signal states in said at least one leg for hand-shaking end-to-end signalling events between the terminal equipments which are significant to said at least one leg.

5,335,226

COMMUNICATIONS SYSTEM WITH RELIABLE COLLISION DETECTION METHOD AND APPARATUS

Richard A. Williams, Leominster, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 18, 1992, Ser. No. 900,619
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.2 21 Claims



1. An apparatus for detecting collisions in a node for a communications system, comprising:

a receiving means for receiving data from a communications medium, said receiving means indicating whether data is or is not being received from said medium,

a transmitting means, responsive to said receiving means indicating data is not being received from said communications medium, for transmitting data on said medium, said transmitting means indicating whether data is or is not being transmitted,

a first collision detection means, responsive to said receiving means indicating data is being received from said communications medium, and further responsive to said transmitting means indicating data is being transmitted, for detecting a collision when said transmitting means begins indicating data is being transmitted while said receiving means is indicating data is being received, and

a second collision detection means, responsive to said receiving means and said transmitting means, for detecting a collision when data being transmitted is unequal to data being received.

5,335,227

SERIAL NETWORK TOPOLOGY AND RECOGNFIGURATION GENERATOR

Jay L. Smith; Bradley S. Trubey, both of Raleigh, and Anthony D. Walker, Durham, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1990, Ser. No. 630,720
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—95.1 9 Claims

1. A multiport connection unit for connecting a plurality of ports to a serial communication network and for generating a network directory comprising:

a plurality of communication ports;

at least two communication adapters each having a unique identifier and each including means for connecting said adapters to said serial communication network whereby each adapter of the at least two communications adapters can receive and transmit information signals including said unique identifier from and to the network; switching means for selectively connecting said ports in series between the said at least two adapters;

a control means connected to at least one of the said at least two adapters for receiving therefrom a predetermined control message which includes the identifier of the source of the control message and is provided in sequence by all active devices connected to the communication ports; and

means for correlating the sequential device identities received between the identifiers of the said at least two adapters to the communication ports selected by the said switching means to generate the directory including devices and ports to which said devices are connected.

5,335,228

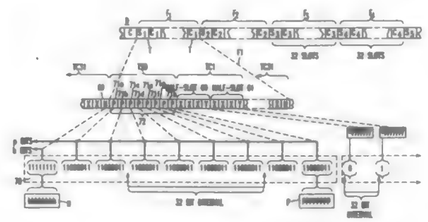
SYNCHRONIZATION RELATED TO DATA STREAMS

Michael P. Bottiglieri, Wyckoff, and Peter A. A. Dempsey, Morris Plains, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1992, Ser. No. 954,218
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—100.1 12 Claims

1. The improvement in apparatus comprising data handling means for receiving data, processing it and forwarding it as at least one time division multiplex data stream constituted of

periodic consecutive binary bits and having the format of a plurality of periodic frames of time slots of which each frame comprises a service slot for only service bits and a plurality of customer slots for customer bits and a lesser number of service bits, said improvement comprising: encoding means operable on said stream to generate in each of said frames both a synchronizing pattern of reserved service bits comprising a sequence of synchronizing bits in said service slot and, also, a spoiler pattern of reserved service bits comprising spoiler bits in said customer slots, said spoiler pattern being interrelated with said synchronizing pattern to preclude any bit sequence present in said stream and including any customer bit from duplicating said synchronization pattern.

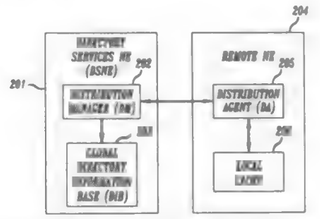


5,335,229

LOGICAL INTEGRATION OF MULTIPLE NETWORK ELEMENTS IN A TELECOMMUNICATIONS MANAGEMENT NETWORK

Christopher J. Hunt, Howell, N.J., and C. Daniel Vanevic, Fremont, N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 14, 1992, Ser. No. 990,385
Int. Cl.[5] H04J *3/12;* H04L *12/24*
U.S. Cl. 370—110.1 12 Claims



1. An integrated network element for use in a digital transmission system including at least one other network element comprising:

a first network element provisioned as a directory services network element (DSNE);

at least a second network element including means for supporting an open standard interface (OSI) protocol stack having at least an OSI network layer including OSI routing protocols, and means for connecting said at least second network element via a data communications channel to said at least one other network element, said data communications channel being used to support OSI protocol stack data;

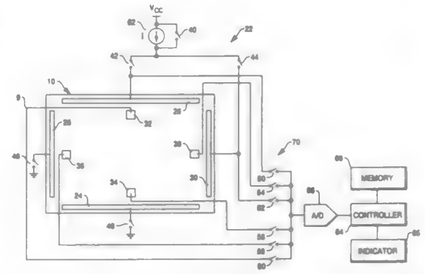
said first network element including means for supporting an open standard interface (OSI) protocol stack having at least an OSI network layer including OSI routing protocols and an applications layer including a directory distribution protocol, means for connecting said first network element to said at least communications channel being used to support OSI protocol stack data, second network element via a data communications channel, said data means for utilizing said OSI routing protocols for detecting via received OSI protocol stack data supplied from said at least second network element that at least one other network element has become reachable and for automatically providing an indication of said at least one other network element becoming reachable to said directory distribution protocol in said application layer, means for automatically obtaining network identity information from said indicated newly reachable at least one other network element via said at least second network element and means for controllably automatically supplying via said at least second network element said network identity information of said newly reachable at least one other network element to any other network elements in a subnetwork including said newly reachable at least one other network element, said first network element being provisioned to supply only its network identity information to said at least second network element and for not supplying the network identity information of said at least second network element to any of the other network elements, wherein said at least second network element appears transparent to said other network elements from an operations, administration, maintenance or provisioning standpoint.

5,335,230

APPARATUS AND METHOD FOR AUTOMATIC DIGITIZER FAULT DETECTION

John F. Crooks, and Robert L. Protheroe, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 12, 1991, Ser. No. 744,062
Int. Cl.[5] G01R *31/28;* G08C *21/00*
U.S. Cl. 371—15.1 24 Claims



1. An apparatus for detecting faults in a digitizer, the digitizer having a plurality of operative electrodes, comprising:

source means for energizing the digitizer including a constant direct current source, a constant direct voltage source, and a first switch means for selectively coupling either the constant current source or the constant voltage source to the digitizer;

an analog-to-digital converter coupled to the digitizer and to the source means;

a controller coupled to the output of the analog-to-digital converter for performing fault detection routines;

means coupled to the controller for indicating information about the operability of the digitizer;

a second switch means for selectively connecting the source means and the analog-to-digital converter to the digitizer, the first and second switch means including analog switches controlled by the controller;

a non-volatile memory coupled to the controller;

a plurality of test electrodes within the digitizer coupled to the analog-to-digital converter; and

VOL 1165 ISS 1 AG 2 1994 UMI

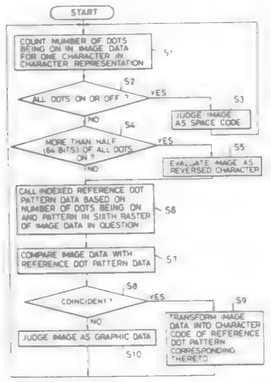
a wiring harness for connecting the analog-to-digital converter and the source means to the digitizer.

5,335,231

REMOTE DIAGNOSIS SYSTEM FOR NUMERICAL CONTROL APPARATUS

Minoru Kato, Niwa, Japan, assignor to Okuma Corporation, Nagoya, Japan

Filed Mar. 9, 1992, Ser. No. 848,361
Claims priority, application Japan, Mar. 20, 1991, 3-081617
Int. Cl.[5] G01R 31/28
U.S. Cl. 371—15.1 2 Claims



1. A remote diagnosis system for a numerical control apparatus which is capable of diagnosing the operation state of said numerical control apparatus by means of a terminal unit disposed away from said numerical control apparatus by transmitting image data of said numerical control apparatus from a diagnosis data transmitting unit attached thereto to said numerical control apparatus, comprising:

an image data read out means for reading out image data corresponding to one character in character representation from an image storage means bearing said image data, said image data including a number of dots which are in a first state; and

a character coding means for counting the number of dots in said image data which are in said first state, and for comparing said image data with reference dot pattern data which have been initially indexed based on said number of dots in said first state and dot patterns in specific rasters of said image data, and for converting said image data into character code when said image data coincides with said reference dot pattern data and for generating a graphic code when said image data fails to coincide with said reference dot pattern data.

5,335,232

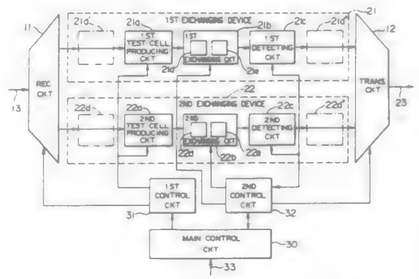
DATA EXCHANGE CAPABLE OF MINIMIZING LOSS OF A DATA BLOCK

Toshio Suzuki, and Chikashi Itoh, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 22, 1992, Ser. No. 886,944
Claims priority, application Japan, May 23, 1991, 3-149716
Int. Cl.[5] G06F 11/00
U.S. Cl. 371—20.4 5 Claims

3. A data exchange for use in an asynchronous transfer mode communication system for exchanging an input data block into an output data block, said data exchange comprising first buffer means for memorizing said input data block as a first buffered data block to produce said first buffered data block as a first output data block, second buffer means for memorizing said input data block as a second buffered data block to produce said second buffered data block as a second output data block, receiving means for receiving a received data block to selectively supply said received data as said input data block to said first and said second buffer means, and transmitting means for carrying out transmission of one of said first and said second data blocks as said output data block; wherein said data exchange further comprises:

control signal producing means for producing first and second control signals, said receiving means being responsive to said first control signal to supply said input data block to said first buffer means, said receiving means being responsive to said second control signal to supply said input data block to said first and said second buffer means;



test data supplying means for supplying a test data block as said input data block to said first and said second buffer means in response to said second control signal;

detecting means for detecting whether or not said first output data block is coincident with said test data block to produce a first detecting signal, said detecting means detecting whether or not said second output data block is coincident with said test data block to produce a second detecting signal;

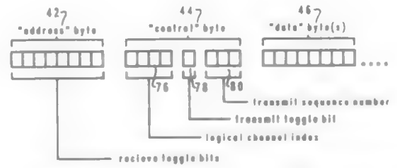
control means responsive to said first and said second detecting signals for controlling said receiving means and said transmitting means to connect said receiving means and said transmitting means to said second buffer means.

5,335,233

DATA PACKET FORMAT

Michael E. Nagy, Tampa, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1990, Ser. No. 636,793
Int. Cl.[5] G08C 25/02
U.S. Cl. 371—32 8 Claims



1. A method of encoding a plurality of high-level data link control data frames to allow identification and re-transmission of only the ones of said plurality of high-level data link control data frames having an error, comprising the steps of:

providing an address byte in each of said high-level data link control data frames having a plurality of individual bits for identifying each of said plurality of high-level data link control data frames at a receive;

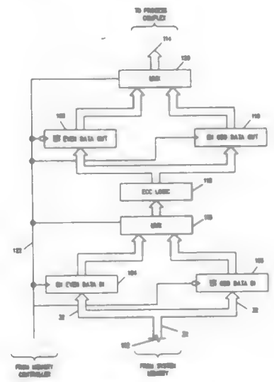
associating each of said plurality of high-level data link control data frames with one of said plurality of individual bits in said address byte at said receiver before transmitting said high-level data link control data frames to a transmitter.

5,335,234

ERROR CORRECTION CODE PIPELINE FOR INTERLEAVED MEMORY SYSTEM

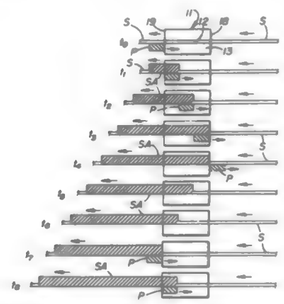
Keith D. Matteson, and Michael L. Longwell, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 540,983, Jun. 19, 1990, abandoned.
This application May 7, 1993, Ser. No. 58,832
Int. Cl.[5] H03M 13/00
U.S. Cl. 371—40.1 12 Claims



VOL 1165 ISS 1 AG 2 1994 UMI

repeatedly injecting pump pulses of said shorter wavelength into said cladding at the other end of said amplifier fiber, with the time between the end of one pump pulse and the beginning of the next pump pulse being no more than



approximately twice the transit time of light of said shorter wavelength through the length of the cladding of said amplifier fiber,

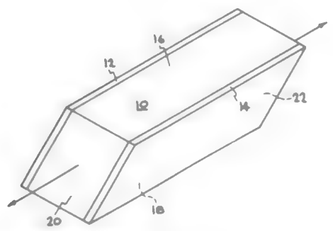
directing the amplified seed beam from the other end of said inner core to a desired transmission medium.

5,335,237

PARASITIC OSCILLATION SUPPRESSION IN SOLID STATE LASERS USING ABSORBING THIN FILMS

Luis E. Zapata, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 29, 1992, Ser. No. 968,111
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—33 **15 Claims**



1. A material comprising:

(a) a solid state laser gain medium; and

(b) an absorbing thin film bonded to at least certain surfaces of said gain medium wherein the index of refraction of said thin film is greater than or equal to the index of refraction of said gain medium and wherein said thin film is selected from a group consisting of germanium, silica, dried graphite ink, semiconductor material, a halide and dysprosium.

5,335,238

APPARATUS AND METHOD FOR GUIDING AN ELECTRIC DISCHARGE WITH A MAGNETIC FIELD

John T. Bahns, Iowa City, Iowa, assignor to The University of Iowa Research Foundation, Iowa City, Iowa

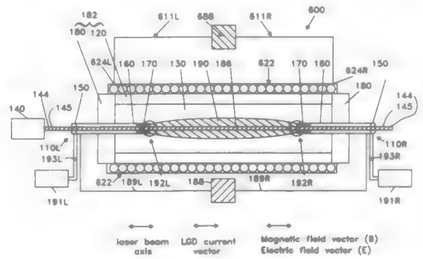
Continuation-in-part of Ser. No. 926,294, Aug. 10, 1992. This application Apr. 8, 1993, Ser. No. 45,056
Int. Cl.[5] H01S *3/094, 3/097*; H05H *1/18*
U.S. Cl. 372—37 **19 Claims**

1. A device for generating and guiding an electric discharge, comprising:

first and second electrodes;

a material positioned between said first electrode and said second electrode, said material having at least two excited electronic states of different energies neither of which is a ground state;

means for applying photons having an energy equal to the difference in energy between said two excited electronic



states, said photons filling a region of the material between said first and second electrodes;

means for applying a voltage across said first and second electrodes, whereby said electric discharge is generated and follows an ionized path in said region; and

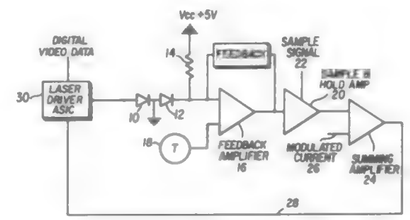
means for applying a magnetic field oriented in a direction approximately along said ionized path in order to further confine said electric discharge to follow said ionized path.

5,335,239

THERMAL COMPENSATION FOR LASER DIODES USING ACTIVE FEEDBACK

Karen L. Herczeg; David M. Mcvay; Daniel J. Phelps, all of Rochester, and Kimberley C. Bell, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 17, 1993, Ser. No. 32,233
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **15 Claims**



1. A drive circuit for driving a semiconductor laser having a light output that is modulated in response to digital video data comprising:

means for generating a sample signal to establish a sampling period;

means for generating a first signal corresponding to said light output at a maximum level to produce a threshold current reference;

means for generating a second signal corresponding to the ambient temperature of said laser;

amplifier means for generating an error signal which is proportional to said first and second signal;

means for measuring the current level of said laser when modulated to produce a maximum analog modulated current reference signal;

means for summing said error signal and said modulated current reference signal to produce a drive signal; and

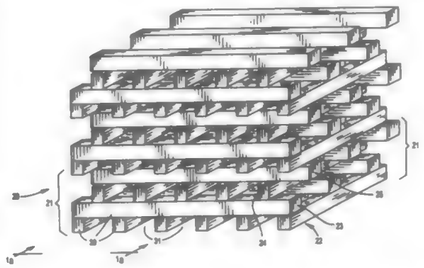
means for driving said laser in response to said drive signal and modulating the laser in response to the digital video data.

5,335,240

PERIODIC DIELECTRIC STRUCTURE FOR PRODUCTION OF PHOTONIC BAND GAP AND DEVICES INCORPORATING THE SAME

Kai-Ming Ho; Che-Ting Chan, and Costas Soukoulis, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 22, 1992, Ser. No. 995,248
Int. Cl.[5] H01S *3/14*
U.S. Cl. 372—39 **14 Claims**



1. A periodic dielectric structure which exhibits a photonic band gap comprising, in combination:

a plurality of dielectric rods arranged in a matrix of a material having a different and contrasting refractive index, a number of said rods being arranged to form a planar layer, and a plurality of layers being stacked one on the other to form a three-dimensional structure,

each layer having a plurality of rods arranged with parallel axes at a given spacing, each layer having its axes oriented at 90° with respect to its adjacent layers, alternate layers having their axes parallel to each other with the rods of one layer in offset between the rods of the other, thereby to form a three-dimensional structure of stacked layers having a four-layer periodicity,

the dimensions of the rods, the spacing between the rods, and the refractive contrast of the materials being selected to produce a photonic band gap at a given wavelength.

5,335,241

BURIED STRIPE TYPE SEMICONDUCTOR LASER DEVICE

Toshiyuki Okumura, Tsuri; Kazuhiko Inoguchi, Nara; Fumihiro Konushi, Nara, and Haruhisa Takiguchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 30, 1991, Ser. No. 751,923
Claims priority, application Japan, Aug. 30, 1990, 2-229961; Sep. 11, 1990, 2-241715
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **14 Claims**

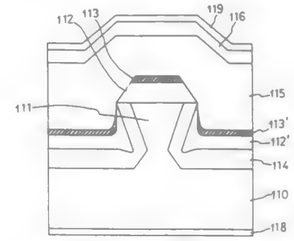
1. A semiconductor laser device comprising:

a semiconductor substrate of a first conductivity type having a main surface with a (100) crystal orientation;

a mesa stripe formed in said main surface of said semiconductor substrate, said mesa stripe being oriented along the <011> direction and having a top surface with a (100) crystal orientation;

a multilayer structure formed on said top surface of said mesa stripe, said multilayer structure including an active layer for a laser oscillation, side faces of said multilayer structure being {111} facets;

current confinement means for confining electric currents within said mesa stripe, said current confinement means



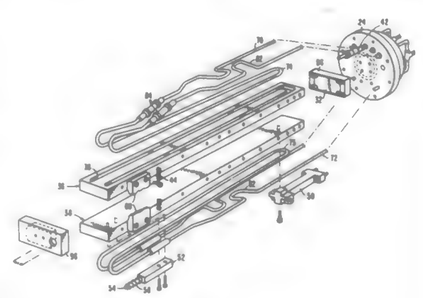
being formed on said main surface of said semiconductor substrate and at sides of said mesa stripe.

5,335,242

RESONATOR FOR CO_2 SLAB WAVEGUIDE LASER

James L. Hobart, Los Altos Hills, Calif.; J. Michael Yarborough, Tucson, Ariz.; Joseph Dallarosa, Redwood City, and Phillip Gardner, Cupertino, both of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

Continuation of Ser. No. 732,156, Jul. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 607,910, Nov. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 596,463, Oct. 12, 1990, Pat. No. 5,140,606, and a continuation of Ser. No. 596,788, Oct. 12, 1990, Pat. No. 5,123,028. This application May 4, 1993, Ser. No. 57,321
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—95 **4 Claims**



1. A slab laser comprising:

a pair of elongated, spaced apart

electrodes, having opposed, light reflecting surfaces;

a laser gas disposed between said electrodes;

means for exciting said laser gas to create a gas discharge; and

a pair of spherical mirrors surrounding said electrodes to define a resonant cavity, with the configuration of said mirrors being selected such that a stable waveguide resonant cavity is defined along a first axis extending between said light reflecting surfaces and an unstable resonator is defined along a second axis perpendicular to said first axis and wherein the length of the electrodes are chosen such that the radius of curvature of the wavefront of the laser beam in the first axis at the mirror location substantially matches the radius of curvature of the mirrors selected for the unstable resonator.

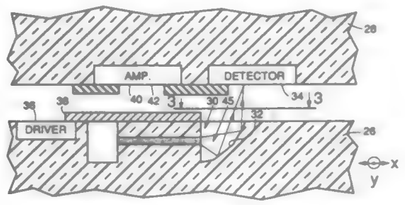
VOL 1165 ISS 1 AUG 2 1994 UMI

5,335,243

3-D OPTO-ELECTRONIC SYSTEM WITH LASER INTER-SUBSTRATE COMMUNICATION, AND FABRICATION METHOD

Randy L. Kubena, Agoura; Frederic P. Stratton, El Segundo; Gary M. Atkinson; Hugh McNulty, Jr., both of Santa Monica, and James W. Ward, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 4, 1992, Ser. No. 971,383
Int. Cl.[5] H01S 3/08
U.S. Cl. 372—99 18 Claims



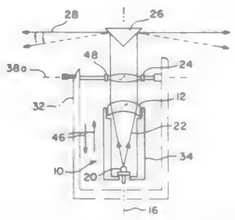
1. A 3-D laser system, comprising:
a substrate,
a laser formed on said substrate to emit a laser beam along an axis that is generally parallel to the substrate, and
a mirror formed on said substrate in the path of said laser beam, said mirror having a 3-dimensional curvature to both deflect and focus said laser beam away from said substrate.

5,335,244

TECHNIQUE AND APPARATUS USING A MOVEABLE WEAK LENS

John P. Dugan, Cincinnati; James N. Hayes, Urbana, both of Ohio, and Steve M. Elliott, South Hamilton, Mass., assignors to Spectra-Physics Laserplane, Inc., Dayton, Ohio

Continuation of Ser. No. 893,260, Jun. 4, 1992, Pat. No. 5,257,279. This application Aug. 18, 1993, Ser. No. 108,899
Int. Cl.[5] H01S 3/08
U.S. Cl. 372—101 20 Claims



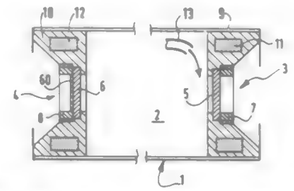
1. A laser instrument assembly for producing a laser light along a predetermined axis, said assembly comprising:
a laser light source for generating said laser light;
at least one focusing lens for focusing at least one portion of said laser light;
a lens carrier for securing said focusing lens so as to intercept said at least one portion of said laser light;
a plurality of radial leaf springs for supporting said lens carrier and said focusing lens; and
adjustment means for displacing at least one of said plurality of radial leaf springs such that said focusing lens is displaced in a direction which is at an angle relative to said predetermined axis to direct said portion of said laser light source along said predetermined axis.

5,335,245

POWER LASER WITH UNCOATED DIAMOND WINDOW

Bruno Marie, Maurepas; Daniel Guerin, Chelles, and Christian Larquet, Guyancourt, all of France, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Feb. 17, 1993, Ser. No. 18,722
Claims priority, application France, Mar. 2, 1992, 92 02437
Int. Cl.[5] H01S 3/08
U.S. Cl. 372—103 8 Claims



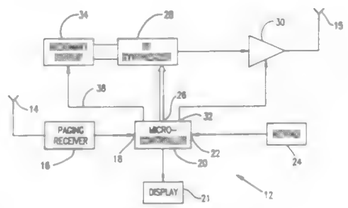
1. A power laser comprising a cavity (2) delimited at respective opposite ends by a first partially transmitting window (3) and a second reflecting window (4), said first window (3) comprising at least one diamond wafer (5) with uncoated flat parallel surfaces, having a controlled thickness whose variations do not exceed 0.2 micron.

5,335,246

PAGER WITH REVERSE PAGING FACILITY

Hanoch Yokev, Ramat Gan, and Haim Harel, Herzliya, both of Israel, assignors to Nexus Telecommunication Systems, Ltd., Israel

Continuation-in-part of Ser. No. 932,610, Aug. 20, 1992, abandoned. This application Oct. 15, 1992, Ser. No. 961,776
Int. Cl.[5] G08B 5/22
U.S. Cl. 375—1 20 Claims



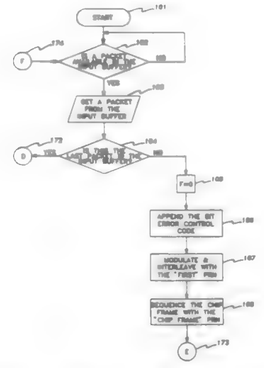
1. Paging apparatus comprising:
at least one base station including a base transmitter which periodically transmits timing signals; and
a plurality of remote units, each including:
a mobile receiver operative to receive timing signals transmitted by at least one base transmitter;
synchronization circuitry receiving the timing signals and providing a spread spectrum frequency-hopping sequence characteristic of the particular remote unit;
a mobile transmitter producing a radiated frequency-hopped signal responsive to the frequency-hopping sequence and the timing signal; and
a message generator operative to modify the radiated frequency-hopped signal to transmit a message to at least one base station.

5,335,247

ADAPTIVE DATA RATE PACKET COMMUNICATIONS SYSTEM

David Olmstead, 8000 Rachelle Pl., Vienna, Va. 22182-4022

Division of Ser. No. 965,700, Oct. 23, 1992, Pat. No. 5,274,667. This application Aug. 27, 1993, Ser. No. 112,321
Int. Cl.[5] H04L 27/30, 9/00
U.S. Cl. 375—1 7 Claims



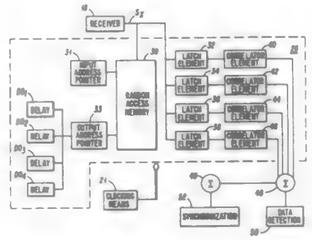
1. A method of transferring packet communication data between a first site and a second site using a communications channel having a first communications path and a second communications path, said method comprising the steps of:
receiving at the first site a first plurality of bits;
forming at the first site a predetermined number of first bit frames from the first plurality of bits, each of the predetermined number of first bit frames having a bit string of a first predetermined length which includes a first error code in a specific location of each of the predetermined number of first bit frames;
spread spectrum modulating at the first site each of the predetermined number of first bit frames bit by bit with a first pseudo random number having a first predetermined chip to bit ratio to the predetermined number of first bit frames so as to form a succession of first transmission queues;
initially establishing at the first site one of the first transmission queues as a first transmission queue to be transmitted along the first communication path;
finally establishing at the first site the first transmission queue to be transmitted as a presently transmitted first transmission queue, being the result of spread spectrum modulation of a presently transmitted first bit frame of the predetermined number of first bit frames;
transmitting at the first site along the first communication path a first succession of chip frames from the presently transmitted first transmission queue such that each chip frame thereof contains a sequence of chips having a length equivalent to the predetermined length of the bit string for each of the predetermined number of first bit frames, wherein each of the chips of the sequence of chips for each chip frame of the first succession of chip frames from the presently transmitted first transmission queue is a result of a modulation of one of the bits of the presently transmitted first bit frame with one of the bits of the first pseudo random number;
monitoring at the first site the second communication path for a first correct receipt acknowledgement signal; reestablishing at the first site a next successive transmission queue to the presently transmitted first transmission queue within the succession of first transmission queues as the first transmission queue to be transmitted upon receipt of the first correct receipt acknowledgement signal if such a next successive transmission queue thereof exists;
terminating the transmission of packet communication data from the first site to the second site if the next successive transmission queue does not exist as determined in said step of reestablishing at the first site; and
repeating at the first site said steps of finally establishing at the first site, transmitting at the first site, monitoring at the first site, reestablishing at the first site, and terminating the transmission of packet communication from the first site to the second site if the next successive transmission queue does exist as determined in said step of reestablishing at the first site.

5,335,248

APPARATUS FOR CORRELATING MULTI-FREQUENCY SIGNALS

Timothy E. Snodgrass, Palo, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 17, 1993, Ser. No. 79,308
Int. Cl.[5] G06F 15/336
U.S. Cl. 375—1 10 Claims



1. An apparatus for processing multi-frequency transmitted information received by multi-frequency receiver means comprising:
temporary storage means for receiving input data and for providing the input data as output data at particular subsequent time delay intervals;
means for controlling input data and output data with respect to the temporary storage means;
a plurality of matched filter elements coupled to receiver means for receiving the output data;
a plurality of latch means for receiving the output data from the temporary storage means and for performing a latching operation of catching data samples and transferring the data samples into said plurality of matched filter means; and
summing means coupled to the plurality of matched filter means for combining the output of all matched filter [illegible]

5,335,249

METHOD AND APPARATUS FOR SPREAD SPECTRUM COMMUNICATIONS

Thomas E. Krueger, Kirkland, and Kenneth L. Astrof, Edmonds, both of Wash., assignors to Seattle Silicon Corporation, Bellevue, Wash.

Filed Jul. 29, 1993, Ser. No. 99,058
Int. Cl.[5] H04B 7/216, 1/64, 17/00
U.S. Cl. 375—1 23 Claims

1. A method for communicating between a first station and a second station over a plurality of communication channels, the first station including a first transmitter and a first receiver and the second station including a second transmitter and a second receiver, the second receiver at the second station sequentially monitoring each of the channels in the plurality of communication channels for communication signals transmit-

VOL 1165 ISS 1 AUG 2 1994 UMI

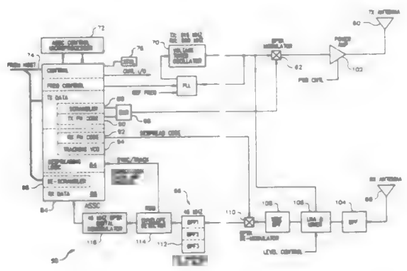
ted by the first transmitter at the first station for a predetermined period of time, the method comprising the steps of:

a) initiating the establishment of a link of communication channels between the first station and the second station, each of the communication channels of the link being characterized by a predetermined set of spread spectrum parameters, each parameter taking a value in a range of values such that the communication reliability of a communication channel changes monotonically as the value of the corresponding parameter changes from one extreme of the range to the other extreme of the range;

b) determining whether the link is established between the first station and the second station;

c) if the link is not established, broadcasting communication signals from the first transmitter to the second receiver over a first one of the plurality of communication channels for a period of time equal to the total period of time over which the second receiver monitors the channels in the plurality of communication channels;

d) if the link is not established after performing step c), changing one of the parameters in at least one of the predetermined sets of spread spectrum parameters at the first station and returning to step b);



e) if the link is established after performing step c), changing the one of the parameters in the at least one of the predetermined sets of spread spectrum parameters at the second station;

f) monitoring the spread spectrum parameters associated with each channel in the plurality of communication channels to determine which channel in the plurality of communication channels is characterized by spread spectrum parameters, at least one of which has a critical value that establishes a communication reliability that is the smallest possible greater than a predetermined communication reliability between the first station an the second station;

g) transmitting a communication signal from the first station to the second station, the communication signal including information identifying which channel in the plurality of communication channels has a spread spectrum parameter that has a critical value; and

h) causing the first and second transmitters and the first and second receivers to change to the channel in the plurality of communication channels that has the spread spectrum parameter that has a critical value.

5,335,250

METHOD AND APPARATUS FOR BIDIRECTIONAL DEMODULATION OF DIGITALLY MODULATED SIGNALS

Paul W. Dent, Stehag, Sweden, and Sandeep Chennakeshu, Schenectady, N.Y., assignors to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Oct. 22, 1992, Ser. No. 965,848
Int. Cl.[5] H04Q *1/20*
U.S. Cl. 375—10 **19 Claims**

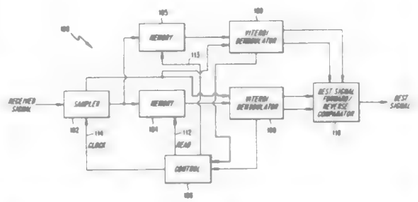
2. An apparatus for demodulating data symbols transmitted through a communication channel comprising:

means for sequentially receiving a plurality of first predetermined data symbols, a plurality of unknown data symbols, and a plurality of second predetermined data symbols;

means for storing the received pluralities of data symbols;

means for determining first and second sets of reference signals from the stored pluralities of first and second predetermined data symbols, respectively;

means for forward-demodulating the stored unknown data symbols based on the first set of reference signals beginning with unknown symbols received nearer the first predetermined data symbols;



means for backward-demodulating the stored unknown data symbols based on the second set of reference signals beginning with the unknown data symbols received nearer the second predetermined data symbols;

means for determining quality values indicative of demodulation qualities of the forward- and backward-demodulated data symbols;

means for comparing the quality values; and

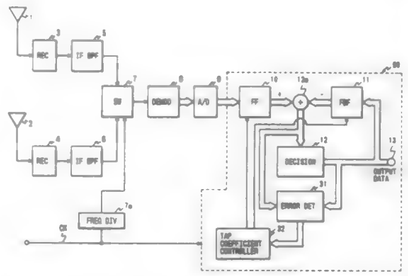
means for selecting either the forward- or backward-demodulated data symbols based on the comparison of quality values.

5,335,251

DIVERSITY RECEIVER

Hiroshi Onishi, Machida; Akihiko Matsuoka, Itabashi; Kouei Misaiza, Kawasaki, and Yuuri Yamamoto, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 22, 1992, Ser. No. 995,077
Claims priority, application Japan, Dec. 25, 1991, 3-342627
Int. Cl.[5] H04B *7/10*; **H04L** *1/02*
U.S. Cl. 375—100 **4 Claims**



1. A diversity receiver for a digital modulation wave having a given symbol rate, comprising:

a first antenna;

a first receiving section connected to the first antenna for converting a digital modulation wave induced at the first antenna into a first intermediate-frequency signal;

a first band pass filter connected to the first receiving section for subjecting the first intermediate-frequency signal to a band pass filtering process;

a second antenna;

a second receiving section connected to the second antenna for converting a digital modulation wave induced at the second antenna into a second intermediate-frequency signal;

a second band pass filter connected to the second receiving section for subjecting the second intermediate-frequency signal to a band pass filtering process;

switch means for alternately selecting one of output signals of the first and second band pass filter at a period equal to a half of a period corresponding to the symbol rate;

a quadrature demodulator connected to the switch means for demodulating an output signal of the switch means into quadrature baseband signals;

an analog-to-digital converter connected to the quadrature demodulator for converting the quadrature baseband signals into corresponding digital signals; and

a decision feedback adaptive equalizer connected to the analog-to-digital converter for subjecting the digital signals to an equalizing process.

5,335,252

STEAM GENERATOR SYSTEM FOR GAS COOLED REACTOR AND THE LIKE

Jay S. Kaufman, 24 Scotland Rd., Kingston, N.H. 03848

Filed Oct. 18, 1993, Ser. No. 137,512
Int. Cl.[5] G21C *15/00*
U.S. Cl. 376—402 **15 Claims**

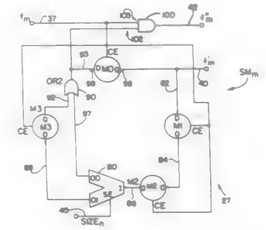
12. In a vapor generator heat removal system for a nuclear power plant reactor, which produces required inlet vapor conditions for the main nuclear power plant turbine and for the nuclear power plant reheat turbine, one or more reheater tube bundles comprising a plurality of parallel heat transfer tube circuits, an economizer/evaporator tube bundle stage comprising a plurality of heat transfer tube circuits, and an initial superheater tube bundle stage located inside of a nuclear pressure vessel, said nuclear pressure vessel also containing a nuclear reactor core, and external to said nuclear pressure vessel an intermediate superheater tube bundle comprising a plurality of heat transfer tubes arranged in parallel tube circuits contained in an intermediate superheater pressure vessel, and a finishing superheater tube bundle comprising a plurality of heat transfer tubes arranged in parallel tube circuits contained in a finishing superheater pressure vessel, such that the tube side inlet of said intermediate superheater pressure vessel is connected to the tube side outlet of said initial superheater, the shell side inlet of said finishing superheater is connected to the tube side outlet of said reheater tube bundles, the tube side outlet of said intermediate superheater pressure vessel is connected to the tube side inlet of said finishing superheater pressure vessel, and the shell side outlet of said finishing superheater pressure vessel is connected to the shell side inlet of said intermediate superheater pressure vessel, such that the tube side of said intermediate superheater tube bundle and the tube side of said finishing superheater tube bundle comprise a series flow arrangement from the tube side outlet of said initial superheater tube bundle to the inlet of said plant main turbine, and the shell side of said finishing superheater tube bundle, and the shell side of said intermediate superheater tube bundle comprise a series flow arrangement from the tube side outlet of said reheater tube bundle to the inlet of said plant reheat turbine.

5,335,253

NON-INTEGRAL FREQUENCY DIVISION USING REGULATED DIGITAL DIVIDER CIRCUITS

David C. Oliver, San Antonio, Tex., and Micheal J. Petrillo, Twinsburg, Ohio, assignors to Gould, Inc., Eastlake, Ohio

Filed Oct. 1, 1992, Ser. No. 955,350
Int. Cl.[5] H03K *21/40*
U.S. Cl. 377—48 **13 Claims**



1. A non-integral frequency divider circuit, comprising:

first finite state machine means for selectively dividing an input by a first value or a second value as a function of a control input, thereby providing an output;

second finite state machine means for providing said control input: and

wherein said second finite state machine means comprises means for dividing said output of said first finite state machine means by a third value, an output of said second finite state machine serving as said control input to said first finite state machine means.

5,335,254

SHIFT REGISTER SYSTEM FOR DRIVING ACTIVE MATRIX DISPLAY

Nang-Ping Tu, and Ming-Daw Chen, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan, Hsinchu, Taiwan

Filed Apr. 27, 1993, Ser. No. 52,689
Int. Cl.[5] H03K *3/01, 17/26*
U.S. Cl. 377—76 **11 Claims**

1. A shift register system for outputting a multiplicity of sequential control signals, comprising:

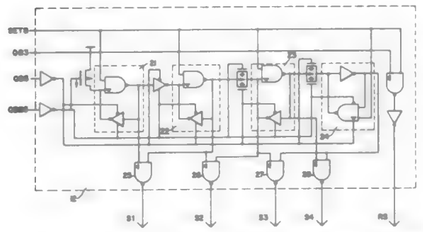
more than one group of shift registers,

each said group having a clock signal for shifting data signal in said group;

a clock control circuit for producing more than one said clock signal for applying to more than one said group sequentially,

VOL 1165 ISS 1 AG 2 1994 UMI

each clock signal having a number of clock pulses which is more than the number of shift register stages in each said

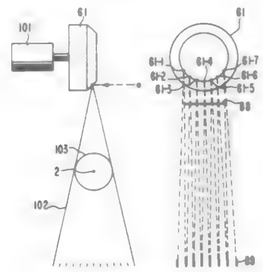


group to produce overlapping clock pulses with the clock pulses of adjacent groups.

5,335,255
X-RAY SCANNER WITH A SOURCE EMITTING PLURALITY OF FAN BEAMS

Edward J. Seppi, 320 Dedalera Dr., Portola Valley, Calif. 94028; John M. Pavkovich, 2945 Alexis Dr., Palo Alto, Calif. 94304, and Edward G. Shapiro, 252 Andsbury Ave., Mountain View, Calif. 94043

Filed Mar. 24, 1992, Ser. No. 856,231
Int. Cl.[5] G01N *23/00*
U.S. Cl. 378—4 15 Claims



1. In a Radiation Therapy Simulator X-ray CT apparatus including radiation therapy simulator gantry means for supporting an X-ray source and a detector and for maintaining said source and detector in a fan beam fixed relationship while said gantry is rotating about an axis in space;

means to position a sample to be examined by X-rays, said position being between said X-ray source and said detector;

computer means coupled to said detector for receiving signals proportional to the transmitted X-ray photon intensity of said fan beams of X-rays after said X-rays have traversed through a sample at a plurality of gantry positions about said axis including means to correlate each signal for each fan beam to each said gantry position including means to reconstruct X-ray density cross sectional images of slices of an examined sample by performing fan beam reconstruction computations on said signals, the improvement comprising:

said X-ray source simultaneously emitting a plurality of parallel fan beams toward said detector;

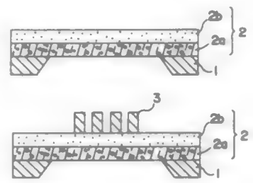
said detector includes means for simultaneously receiving said plurality of parallel fan beams; and

said computer means includes means to compute said X-ray cross sectional density distributions for each of said fan beams.

5,335,256
SEMICONDUCTOR SUBSTRATE INCLUDING A SINGLE OR MULTI-LAYER FILM HAVING DIFFERENT DENSITIES IN THE THICKNESS DIRECTION

Tomoko Maruyama, Isehara, and Takashi Iizuka, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1992, Ser. No. 851,792
Claims priority, application Japan, Mar. 18, 1991, 3-077149
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—35 93 Claims

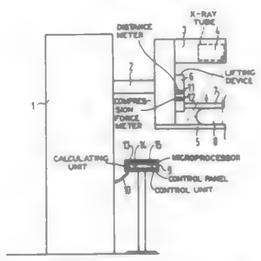


1. An X-ray mask support having an X-ray permeable film and a support frame for supporting said X-ray permeable film, said X-ray permeable film mainly comprising a single-layer film having different densities in its thickness direction.

5,335,257
METHOD AND APPARATUS FOR CONTROLLING THE COMPRESSION FORCE IN X-RAY EQUIPMENT FOR MAMMOGRAPHIC EXAMINATIONS

Stefan Stunberg, Stockholm, Sweden, assignor to Siemens Elema AB, Solna, Sweden

Filed Apr. 7, 1993, Ser. No. 43,807
Claims priority, application Sweden, Apr. 10, 1992, 92011576
Int. Cl.[5] H05G *1/30*
U.S. Cl. 378—37 10 Claims



1. A method for controlling compression force in an x-ray apparatus for mammographic examinations, comprising the steps of:

compressing a breast to be examined disposed between a pressure plate and a support platform by increasing a compression force exerted on said breast by moving said pressure plate toward said support platform;

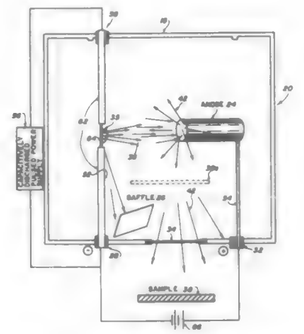
measuring the thickness of the compressed breast as said compression force is exerted on said breast by said pressure plate; and

stopping increasing said compression force when a change in the measured breast thickness reaches a preset value.

5,335,258
SUBMICROSECOND, SYNCHRONIZABLE X-RAY SOURCE

Robert R. Whitlock, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1993, Ser. No. 41,388
Int. Cl.[5] H01J *35/00*
U.S. Cl. 378—122 17 Claims



17. A method for producing x-rays comprising the steps of:

generating a capacitively discharged high current electrical pulse across a gap in an electrical conductor containing a electrical conductor means within a vacuum vessel to generate a flow of plasma electrons;

impressing a static field potential across the separation between the electrical conductor means and a positively biased electron target to accelerate the flow of the plasma electrons to the electron target;

collecting the plasma electrons on the positively biased electron target;

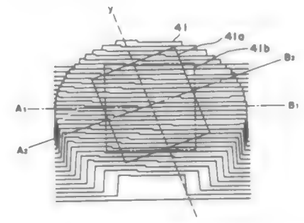
emitting x-rays from the electron target when the plasma electrons strike the electron target; and,

allowing the x-rays to pass outside of the vacuum vessel through a sample window to be collected by a sample.

5,335,259
X-RAY EXPOSURE APPARATUS

Masami Hayashida, Yokohama; Yasuaki Fukuda, Hadano, and Yutaka Watanabe, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1993, Ser. No. 15,434
Claims priority, application Japan, Feb. 10, 1992, 4-057463; Dec. 25, 1992, 4-359605
Int. Cl.[5] G21K *1/00*
U.S. Cl. 378—161 16 Claims



1. An x-ray apparatus, comprising:

an X-ray window through which synchrotron radiation light is projected, said X-ray window having an X-ray transmission film; and

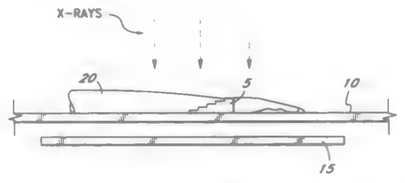
correcting means for correcting an intensity distribution of the synchrotron radiation light,

wherein said X-ray transmission film has at least one of a film thickness distribution and a transmissivity distribution changing substantially in a predetermined direction and said X-ray transmission film is so disposed that the predetermined direction is substantially aligned with a direction of change of the intensity distribution of the synchrotron radiation light.

5,335,260
CALIBRATION PHANTOM AND IMPROVED METHOD OF QUANTIFYING CALCIUM AND BONE DENSITY USING SAME

Ben A. Arnold, 10r Public Sq., Columbia, Ky. 42728

Filed Nov. 25, 1992, Ser. No. 981,263
Int. Cl.[5] G01D *18/00*
U.S. Cl. 378—207 19 Claims



1. A method of quantifying calcium and bone density in the body of a patient using a calibration reference phantom comprising stable, substantially human tissue equivalent material with respect to x-ray attenuation and absorption properties and calcium homogeneously blended therein, and an x-ray imaging system, comprising:

positioning the calibration phantom proximal to a part of the patient's anatomy such that x-rays pass through the patient and the phantom simultaneously;

placing said phantom and said portion of the patient's anatomy within an apparatus comprising a container having substantially human tissue equivalent materials with respect to x-ray attenuation and absorption characteristics in a bolusing structure of a fixed size and shape, such that the x-ray beam which passes through the patient and phantom is similarly attenuated and has a constant path length;

placing an x-ray filter plate between said apparatus and said x-ray beam to predictably attenuate the x-ray beam;

creating an image of the phantom and the portion of the patient's anatomy; and

comparing the image of the phantom and the patient's anatomy to determine calcium content in the patient's anatomy.

5,335,261
RADIO TELEPHONE APPARATUS

Akihiko Fujinaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,781
Claims priority, application Japan, Nov. 30, 1990, 2-329617
Int. Cl.[5] H04M *11/00, 1/64;* H04B *1/38*
U.S. Cl. 379—58 10 Claims

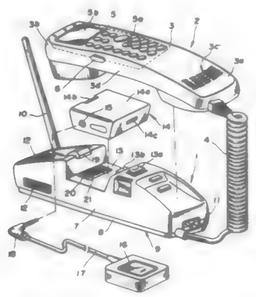
1. A radio telephone comprising:

a main body enclosing a transmitting circuit and a receiving circuit;

a handset removably mounted to the main body, the handset including a microphone electrically connected to the transmitting circuit and a speaker electrically connected to the receiving circuit;

VOL 1165 ISS 1 AG 2 1994 UMI

a voice recognition circuit for recognizing a voice input to the microphone and for performing a dialing operation based on the voice; and



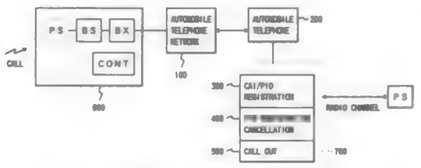
a switch which, if activated when the radio telephone is in a talk state, disconnects the microphone from the transmitting circuit, and if activated when the radio telephone is not in a talk state, enables the voice recognition circuit.

5,335,262

RADIO COMMUNICATION ADAPTER CONNECTED TO MOBILE STATION AND MOBILE COMMUNICATION SYSTEM USING THE RADIO COMMUNICATION ADAPTER

Takuro Oguchi; Shunroku Sasaki, and Masaru Asahara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 20, 1992, Ser. No. 871,412
Claims priority, application Japan, Apr. 19, 1991, 3-087969
Int. Cl.[5] H04M *11/00;* **H04B** *7/15, 1/38;* **H04Q** *7/00*
U.S. Cl. 379—58 **24 Claims**



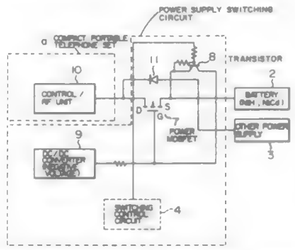
1. A mobile communication system comprising:
a first mobile communication network having a first service area and a controller;
first mobile stations having first identification data registered in said first mobile communication network in order to identify positions of the first mobile stations and receive a communication service provided by said first mobile communication network;
a second mobile communication network communication with said first mobile communication network and having a second service area;
second mobile stations having second identification data registered in said second mobile communication network in order to receive a communication service provided by said second mobile communication network; and
radio communication adapter means, connected to said second mobile stations, for coupling, via a radio channel, the first mobile stations located outside the first service area with said second mobile stations,
wherein the first identification data of the first mobile stations located outside the first service area are respectively transferred to said radio communication adapter means, said second mobile stations and said second mobile communication network, and registered, in connection with the second mobile stations by said controller, in said first communication network.

5,335,263

POWER SUPPLY SWITCHING CIRCUIT FOR A COMPACT PORTABLE TELEPHONE SET

Naoshi Tsunehiro, Tokyo; Akihiko Sekiguchi, and Asako Nakamura, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 7, 1992, Ser. No. 909,713
Claims priority, application Japan, Jul. 18, 1991, 3-178133
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **14 Claims**



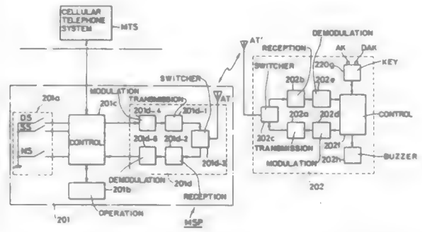
1. A power supply switching system for a compact portable telephone set comprising:
a first power supply for supplying power to said compact portable telephone set;
a second power supply, having a smaller power capacity than said first power supply, for supplying power to said compact portable telephone set;
a power supply switching element for electrically correcting the compact portable telephone set and said second power supply, said switching element comprising a single P-channel power MOSFET having a gate, a drain and a source;
a separate path for connecting said first power supply and said compact portable telephone set; and
switching control means for controlling switching of said power supply switching element;
said switching control means including a switching control circuit and negative voltage generation means for (i) turning-on said P-channel power MOSFET by applying a negative voltage across the gate and the source of said P-channel power MOSFET when said second power supply is to be connected to the compact portable telephone set so as to reduce resistance between the drain and the source of said P-channel power MOSFET, and (ii) turning-off said P-channel power MOSFET by maintaining the gate and the source of said P-channel power MOSFET at a same potential when said first power supply is to be connected to said compact portable telephone set, wherein said compact portable telephone set is powered by said second power supply when said P-channel power MOSFET is turned-on and said compact portable telephone set is powered by said first power supply, via said separate path, when said P-channel power MOSFET is turned-off.

5,335,264

METHOD AND APPARATUS FOR MONITORING SOUND WITHIN A VEHICLE BY TELEPHONE

Makoto Namekawa, Iwaki, Japan, assignor to Alpine Electronics, Inc., Tokyo, Japan

Continuation of Ser. No. 843,782, Feb. 28, 1992, abandoned, which is a continuation of Ser. No. 120,221, Nov. 13, 1987, abandoned, which is a continuation of Ser. No. 881,893, Jul. 3, 1986, abandoned. This application Oct. 1, 1993, Ser. No. 131,108
Claims priority, application Japan, Jul. 9, 1985, 60-150645
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **10 Claims**



1. An apparatus for remotely monitoring the sound in a vehicle equipped with a mobile telephone system and an anti-theft system, comprising:
a controller in the anti-theft system for monitoring the condition of the vehicle, wherein the controller is connected to the telephone system and includes means for turning on the telephone system to a power-on state, the telephone system initially being in the power-off state when the vehicle is unattended to be protected by the anti-theft system;
the controller including means for turning on the telephone system when an abnormal condition of the vehicle is detected by the anti-theft system, to allow the telephone system to receive an incoming call; and
the telephone system including means for connecting a microphone of the telephone system within the vehicle to a transmitter of the telephone system upon receipt of said incoming call, to enable monitoring of sound within the vehicle.

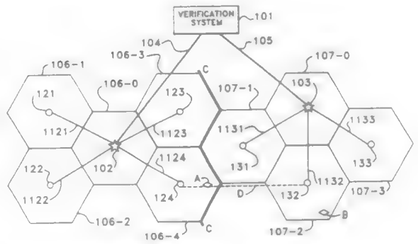
5,335,265

APPARATUS FOR DETECTING AND PREVENTING SUBSCRIBER NUMBER CLONING IN A CELLULAR MOBILE TELEPHONE SYSTEM

John R. Cooper, Tewksbury, and Kenneth W. Sonberg, Medford, both of Mass., assignors to Electronic Data Systems Corporation, Plano, Tex.

Continuation of Ser. No. 790,643, Nov. 8, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 88,391
Int. Cl.[5] H04M *11/00;* **H04Q** *7/00*
U.S. Cl. 379—59 **26 Claims**

1. In a cellular mobile telephone system, wherein a plurality of mobile telephone switching offices, each of which serves a plurality of cell sites for establishing cellular cell connections with mobile subscriber units located in a geographical area covered by said cell sites, are connected to a subscriber verification system which validates the authorization of subscriber units, each of which is identified by a unique subscriber identification code assigned to said subscriber unit, to receive service when roaming outside of the subscriber's home mobile telephone switching office, apparatus in said subscriber verification system to detect subscriber identification code cloning comprising:
means, responsive to a one of said subscriber units originating a cellular cell connection, for storing data indicative of a subscriber unit identification code assigned to said one subscriber unit and real time call data associated with said cellular call connection; and



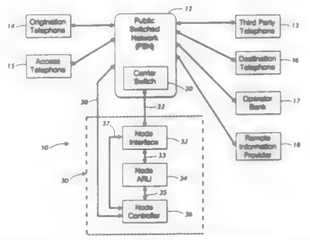
means for detecting a temporal anomaly indicative of subscriber number cloning in said stored call data.

5,335,266

AUTOMATED TELECOMMUNICATION PERIPHERAL SYSTEM

Charles T. Richardson, Jr., Norcross; Kevin L. Austin, Roswell, and Samuel F. Billingsley, III, Atlanta, all of Ga., assignors to United States Advance Network, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 852,491, Mar. 16, 1992, Pat. No. 5,317,627, which is a continuation of Ser. No. 591,047, Oct. 19, 1990, Pat. No. 5,113,430. This application Apr. 1, 1992, Ser. No. 861,625
Int. Cl.[5] H04M *1/64, 3/42*
U.S. Cl. 379—88 **7 Claims**



4. A method of providing an automated operator service to bridge a call, said method comprising the steps of:
providing a bridging node located outside of a public switched network and connected to a carrier switch within the public switched network, wherein the bridging node includes a storage device with a plurality of stored voice prompts;
receiving on a first communication path at the bridging node from the carrier switch a call bridging request, including, at least, a destination assigned to a destination telephone located remotely from the bridging node, as a result of a caller dialing the destination number to initiate a first telephone call from an origination telephone located remotely from the bridging node to which is assigned an origination number;
answering the first telephone call on the first communication path at the bridging node;
transmitting a voice prompt of the plurality of stored voice prompts from the bridging node to the origination telephone requesting selection of a billing method;
receiving a billing method selection indication at the bridging node from the origination telephone;
initiating a second telephone call from the bridging node through a second communication path to the destination telephone, including transmitting the destination number

VOL 1165 ISS 1 AG 2 1994 UMI

from the bridging node through the second communication path to the carrier switch;

connecting the first communication path to the second communication path at the bridging node to bridge the origination telephone to the destination telephone;

accepting on a third communication path at the bridging node a monitoring call from a monitor telephone; and

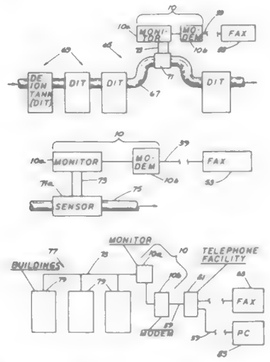
connecting the monitor telephone to the origination telephone and the destination telephone by connecting the third communication path to the first and second communication paths at the bridging node.

5,335,267

APPARATUS AND METHOD FOR TRANSMITTING TEXT DATA DIRECTLY TO A FACSIMILE MACHINE

John N. Evers, Fridley, and Thomas N. Hilleary, Plymouth, both of Minn., assignors to Autotrol Corporation, Milwaukee, Wis.

Continuation of Ser. No. 593,993, Oct. 9, 1990, abandoned. This application Aug. 28, 1992, Ser. No. 936,332
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 17 Claims



1. A method for transmitting a report in text data from a monitoring apparatus to a facsimile machine, the apparatus being connected directly to process equipment by electrical leads for monitoring at least one separately-controlled process variable, the method including the steps of:

providing a conversion module within the apparatus and having firmware embedded in at least one semiconductor chip therein for converting a first code to a second code;

transmitting a command set to the conversion module for selecting a facsimile mode of operation;

implementing transmission of text data to the conversion module in a first code, the text data relating to at least one process variable;

initiating a converting step upon the occurrence of at least one of a predetermined plurality of events including (a) receipt at the conversion module of a signal indicating the end of the text data and (b) the absence of text data transmission over a time in excess of a predetermined time;

converting such text data to a second code using only firmware, thereby providing converted binary text data; and,

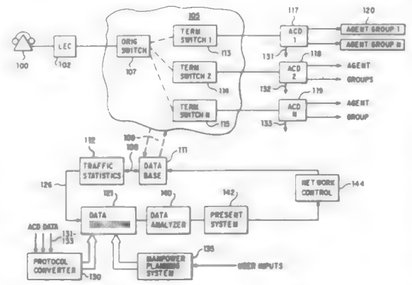
transmitting such converted binary text data from the apparatus directly to the facsimile machine, such converted binary text data being in the form of a report transmitted over a telephone line.

5,335,268

INTELLIGENT ROUTING OF SPECIAL SERVICE TELEPHONE TRAFFIC

John F. Kelly, Jr., Wylie, Tex.; Robert G. Laird, Colorado Springs, Colo.; Thomas E. Baker, Monument, Colo., and Cristobal A. Torres, Colorado Springs, Colo., assignors to MCI Communications Corporation, Washington, D.C.

Filed Oct. 22, 1992, Ser. No. 964,134
Int. Cl.[5] H04M *15/00, 7/00*
U.S. Cl. 379—112 17 Claims



1. A system for dynamically balancing traffic in the form of special service telephone calls among a plurality of automatic call distributors (ACDs) as a function of a level of demand for such special service calls and a level of supply available to respond to said demand, said ACDs being connected to receive said special service calls via a telephone network having originating and terminating switches for network routing of the calls at various costs and a routing data base accessible by the originating switches to obtain switch routing directions for said special service calls therefrom, comprising:

(a) a data gathering means connected to gather data indicative of said demand from said switches and indicative of said supply from each ACD and operative to formulate information from said gathered data which statistically characterizes the supply and demand for said special service calls;

(b) an analysis means for receiving information indicative of said costs and for receiving said information which characterizes said supply and demand from said data gathering means and operative to process said information indicative of costs and said information characteristic of said supply and demand to formulate a plan for routing said special service calls from said originating switches to said ACDs so that the number of calls to each ACD is allotted as a function of the level of demand for service, the level of supply of service, and the cost of routing; and

(c) a control means interconnected to receive said routing plan from said analysis means and operative to automatically effect changes in the data base so that the originating switches are directed in a manner to implement said routing plan.

5,335,269

TWO DIMENSIONAL ROUTING APPARATUS IN AN AUTOMATIC CALL DIRECTOR-TYPE SYSTEM

Joseph C. Steinlicht, Glen Ellyn, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 12, 1992, Ser. No. 850,110
Int. Cl.[5] H04M *3/00, 3/42*
U.S. Cl. 379—266 3 Claims

1. The method of directing incoming calls, received by a call directing switching system that is handling a plurality of applications where a given first application is normally handled by an agent in a given first group of agents trained to handle said first application, to an agent in another group of agents when all agents in said given first group are unavailable at the time of receipt of the call comprising the steps of:

a. receiving a call;

b. placing the call in at least first and second queues;

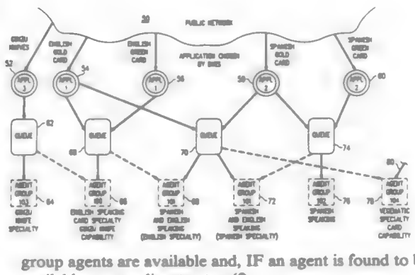
c. checking a primary service (first choice) group of agents in said first queue to see if any primary service group agents are available and, IF an agent is found to be available, proceeding to step (f);

d. checking a further primary service (second choice) group of agents in said first queue to see if any primary service group agents are available and, IF an agent is found to be available, proceeding to step (f);

e. checking a secondary service (third choice) group of agents in said first queue to see if any secondary service group agents are available;

f. marking the call as being offered to an agent IF an agent is found to be available in one of steps (c) through (e) OTHERWISE;

g. leaving the call in the queues until offered to and connected with an agent OR a delay timeout is exceeded for an agent becoming available.

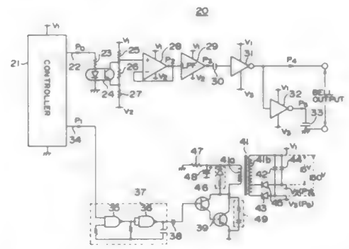


5,335,270

BELL SIGNAL GENERATING CIRCUIT

Masayuki Tsurusaki, and Takashi Watanabe, both of Hino, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 19, 1993, Ser. No. 108,282
Claims priority, application Japan, Aug. 20, 1992, 4-221740
Int. Cl.[5] H04M *3/02*
U.S. Cl. 379—253 3 Claims



1. A bell signal generating circuit, comprising:

means for generating a pulse signal and a direct current signal in synchronism with the pulse signal;

a photo-coupler for removing a direct current component of the pulse signal to output a first signal;

a filter connected to the photo-coupler, for removing higher harmonics of the first signal to output a second signal;

a differential amplifier connected to the filter, for differentially amplifying the second signal to output a bell signal; and

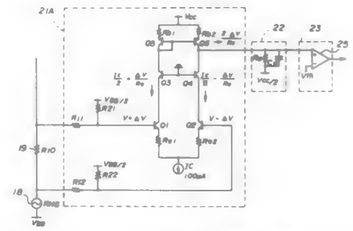
means, responsive to the direct current signal, for applying a direct current supply voltage to the differential amplifier.

5,335,271

RING TRIP DETECTION CIRCUIT

Kenji Takato; Kazumi Kinoshita; Kiyoshi Kurosaki; Taichi Kosako, all of Kawasaki, and Kazuyuki Minohara, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 3, 1992, Ser. No. 938,771
Claims priority, application Japan, Sep. 12, 1991, 3-232677
Int. Cl.[5] H04M *3/02*
U.S. Cl. 379—382 12 Claims



1. A ring trip detection circuit for detecting an OFF-hooked state of a telephone receiver during ringing of a telephone set by detecting a change in a voltage across two terminals of a transmission resistor through which a ringing signal is supplied to the telephone set from a ringing signal source, said ring trip detection circuit comprising:

a voltage dividing circuit, coupled to the two terminals of the transmission resistor, for dividing voltages at the two terminals and for outputting divided voltages;

a first pair of transistors having bases for respectively receiving the divided voltages from said voltage dividing circuit;

a constant current source;

a first pair of resistors having first terminals respectively coupled to emitters of said first pair of transistors and second terminals coupled in common to said constant current source, said first pair of resistors having same resistance values; and

a current mirror circuit having an input and an output thereof respectively coupled to collectors of the first pair of transistors, for outputting an output current which indicates whether or not the telephone receiver is off-hooked, an output signal of the ring trip detection circuit being derived from a node which connects the output of said current mirror circuit and one of said first pair of transistors,

said voltage dividing circuit including a first resistor circuit for dividing the voltage at one of the terminals of the transmission resistor, and a second resistor circuit for dividing the voltage at the other terminal of the transmission resistor, said first and second resistor circuits dividing the voltage with the same voltage dividing ratio,

said current mirror circuit including a second pair of transistors having emitters which are coupled to a power source voltage, bases which are connected to each other and collectors which are respectively coupled to the collectors of said first pair of transistors, one of said second pair of transistors having the base and collector thereof connected to each other, the other of said second pair of transistors outputting the output current from the collector thereof.

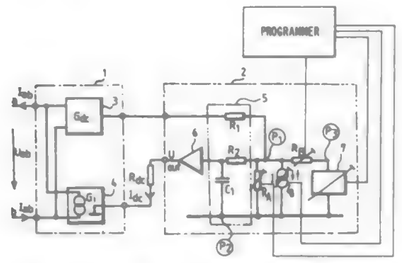
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,272

METHOD AND ARRANGEMENT FOR SUPPLYING DIRECT CURRENT TO A TELEPHONE LINE

Bengt G. Löfmark, Skärholmen; Jan O. H. Oredsson, Solna, and Claes J. A. Lindberg, Sollentuna, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 649,030, Feb. 1, 1991, abandoned. This application Oct. 28, 1993, Ser. No. 141,378
Claims priority, application Sweden, Feb. 1, 1990, 9000366
Int. Cl.[5] H04M 1/00
U.S. Cl. 379—413 13 Claims



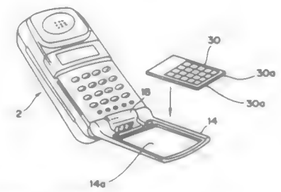
1. A device for supplying a first direct current to a 2-wire telephone line comprising:
- a voltage converter electrically connected to detect and control a first voltage level across said telephone line and having an output to provide a reduced voltage level corresponding to said first voltage level;
- a low-pass filter to substantially filter-out speech signals from said telephone line, said low-pass filter having an input and an output, said low-pass filter comprising a resistive section and a capacitive section, said resistive section including a first resistive element, said capacitive section including a capacitive element and a second resistive element, and said low-pass filter input being electrically connected to said voltage converter output;
- a current generator electrically connected in parallel relation with said capacitive section and having an output to provide a selectable current wherein said selectable current determines an open circuit voltage across said telephone line;
- a first adjustable resistor electrically connected in relation with said capacitive section wherein a supply resistance of said device across said telephone line is determine by said first adjustable resistor when said first current has a value less than a limit line current value;
- an adjustable voltage limiter electrically connected in series relation with a second adjustable resistor, said series connected adjustable voltage limiter and second adjustable resistor being in parallel relation with said capacitive section, said voltage limiter having an adjustable output value wherein said output value determines the limit line current value at which to allow limitation of said first current, said supply resistance of said device across said telephone line being determined by said second adjustable resistor when said first current has a value greater than said line limit current value;
- a buffer amplifier electrically connected to said low-pass filter output and having an output to provide a second voltage;
- a buffer output resistor electrically connected to said buffer amplifier output to provide a second current corresponding to said second voltage; and
- a current amplifier electrically connected to receive said second current and having an output electrically connected to supply said first current to said telephone line.

5,335,273

PORTABLE TELEPHONE AND MULTIFUNCTIONAL PROTECTIVE HOUSING THEREFOR

Hisamitsu Takagi, Inagi; Akihide Nishiyama, Yokohama, and Masashi Tomura, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 9, 1991, Ser. No. 756,587
Claims priority, application Japan, Sep. 7, 1990, 2-235660
Int. Cl.[5] H04M 1/00
U.S. Cl. 379—433 2 Claims



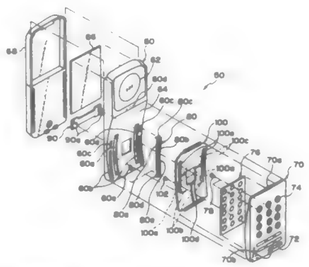
1. A portable telephone comprising:
- a body including a speaker, a microphone, and switch means;
- a cover rotatably mounted to said body, said cover being adapted to cover at least said switch means when said cover is in a closed condition;
- cover holding means for rotatably holding said cover with respect to said body, said cover holding means comprising:
  - a cover mounting projection integrally formed with said body and having a pair of holes formed therein;
  - a pair of shafts each respectively rotatably inserted through one of said holes, each of said shafts having a first end fixed to said cover and a second end having a plate portion; and
  - a pair of U-shaped springs fixed to said body so as to respectively nip said plate portions of said shafts to maintain said cover at a stable position when said cover is in an open condition; and
- a functional module detachably mounted to said cover.

5,335,274

EXTENDABLE TELEPHONE

Hitoshi Masuda; Masataka Suzuki; Masataka Ohno, all of Tokyo; Kazuyoshi Kobayashi, and Hiromitsu Nakamura, both of Kanagawa, all of Japan, assignors to NEC Corporation, Japan

Filed Feb. 28, 1992, Ser. No. 843,460
Claims priority, application Japan, Feb. 28, 1991, 057855
Int. Cl.[5] H04M 1/00
U.S. Cl. 379—433 13 Claims



1. An extendible telephone set including:
- a main casing means provided at least with a receiver and a curved concave surface;

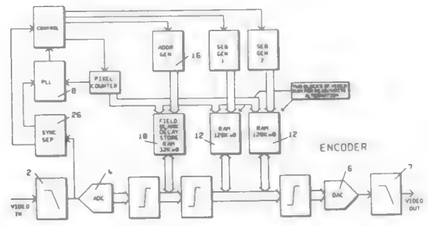
- an auxiliary casing means provided at least with a transmitter and mounted on said main casing means to be extendible therefrom in a curvilinear sliding motion;
- said auxiliary casing means including a curved convex back which faces said concave surface of said main casing means;
- first means operatively mounting said auxiliary casing means to said main casing means for sliding curvilinear movement relative thereto between a contracted position and an extended position;
- with said auxiliary casing means in said contracted position, said auxiliary casing means overlying said concave surface and being nested in a depression defined by said concave surface;
- with said auxiliary casing means in said contracted position, said telephone set having a generally rectangular parallelepiped outline;
- said first means comprising slide members intervening between said concave surface of said main casing means and said convex back for allowing said auxiliary casing means to slide curvilinearly relative to said main casing means to either of said extended position and said contracted position, and a support member for connecting said convex back slidably to said concave surface of said main casing means via said slide members; and
- said first means also comprising a pair of grooves extending in a longitudinal direction on said concave surface of said main casing means in close proximity to opposite side edges of said concave surface and symmetrically to each other, a pair of guide slots formed through said main casing means in parallel to said pair of grooves and closer to said opposite side edges than said grooves, and a pair of rectangular holes located above and in alignment with said pair of guide slots.

5,335,275

TELEVISION SCRAMBLER

David J. Millar; Stephen J. Greenhalgh, and Richard P. Gregory, all of Northampton, United Kingdom, assignors to DCE Voice Processing Limited, Buckinghamshire, United Kingdom

PCT No. PCT/GB91/00343, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992, PCT Pub. No. WO91/14341, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 5, 1991, Ser. No. 923,948
Claims priority, application United Kingdom, Mar. 5, 1990, 9004901.6
Int. Cl.[5] H04N 7/167
U.S. Cl. 380—4 15 Claims



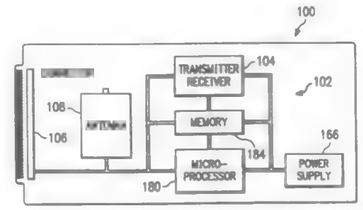
1. Apparatus for encrypting or decrypting a signal comprising a series of values or groups of values, comprising
- a memory having a predetermined number of storage locations or groups of locations;
- means for reading output values or groups of output values from, and writing new input values or groups of input values into, each of said locations or groups of locations in a first predetermined order until the said predetermined number is reached, and further for reading output values or groups of output values from, and writing new input values or groups of values into, each of said locations or groups of locations in a second predetermined order until the said predetermined number is reached;
- and control means for causing the reading and writing operations to be repeated alternately in the two said predetermined orders.

5,335,276

COMMUNICATION SYSTEM AND METHODS FOR ENHANCED INFORMATION TRANSFER

E. Earle Thompson, Dallas, and Gerald G. Birdwell, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 16, 1992, Ser. No. 991,628
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—21 22 Claims



1. A multiple purpose communication system for exchanging information comprising:
- a communication network for transmitting and receiving information;
- a communication device for transmitting and receiving information using the communication network the communication device having a plurality of electrical circuits for communicating information including a processor and an associated memory for executing communication programs and applications with the electrical circuits, the communication device further comprising:
  - a plurality of application modules; and
  - a receptacle for installing a selected application module into the communication device;
- a microphone for entering information into the communication device;
- a speaker for transmitting information from the communication device;
- an interactive visual display for displaying selected information by the communication device; and
- a voice recognition circuit for activating selected communication programs and applications provided by the processor and the associated memory in response to information supplied from the microphone.

5,335,277

SIGNAL PROCESSING APPPARATUS AND METHODS

John C. Harvey, and James W. Cuddihy, both of New York, N.Y., assignors to The Personalized Mass Media Corporation, New York, N.Y.

Continuation of Ser. No. 849,226, Mar. 10, 1992, Pat. No. 5,233,654, which is a continuation of Ser. No. 588,126, Sep. 25, 1990, Pat. No. 5,109,414, which is a continuation of Ser. No. 96,096, Sep. 11, 1987, Pat. No. 4,965,825, which is a continuation-in-part of Ser. No. 829,531, Feb. 14, 1986, Pat. No. 4,704,725, which is a continuation of Ser. No. 317,510, Nov. 3, 1981, Pat. No. 4,694,490. This application May 3, 1993, Ser. No. 56,501
Int. Cl.[5] H04N 7/167
U.S. Cl. 380—20 56 Claims

1. A method of processing control signals and controlling

VOL 1165 ISS 1 AG 2 1994 UMI

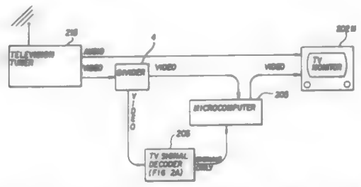
equipment at a remote site based on broadcast transmissions including:

(a) the step of receiving at said remote site a broadcast carrier transmission;

(b) the step of demodulating said broadcast carrier transmission to detect an information transmission therein;

(c) the step of detecting and identifying at said remote site control signals associated with said information transmission;

(d) the step of passing at least a portion of said control signals to a computer control means at said remote site;



(e) the step of said computer control means determining based on instructions included in said control signals whether receiver means at said remote site is operating; and

(f) the step of directing, based on the result of said determination step, said information transmission and a selected portion of said control signals to (1) said receiver means and associated computer equipment or (2) a recorder means activated by said computer control means.

5,335,278

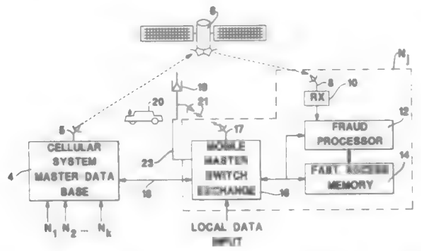
FRAUD PREVENTION SYSTEM AND PROCESS FOR CELLULAR MOBILE TELEPHONE NETWORKS

Noel D. Matchett, Silver Spring, and J. Neil Birch, Potomac, both of Md., assignors to Wireless Security, Inc., Silver Spring, Md.

Filed Dec. 31, 1991, Ser. No. 816,602

Int. Cl.[5] **H04L** *9/32;* **H04M** *11/00*

U.S. Cl. 380—23 **15 Claims**



1. In a cellular telephone system including a plurality of independent cellular telephone networks each network having at least one mobile master exchange switch and related radio transmission facilities for providing cellular telephone services within its respective cell areas to mobile cellular subscribers and wherein each mobile telephone unit authorized for subscriber use by one of said independent cellular telephone networks has an assigned system identification number (SID) data for identifying one of said independent cellular telephone networks as the authorizing cellular network and further wherein each mobile telephone unit authorized for use by a subscriber has an assigned customer identifying electronic serial number (ESN) and mobile identification number (MIN) data pair and wherein said SID data and said ESN-MIN data pair collectively comprise subscriber authorization data, a fraud prevention system comprising:

a central database memory means for storing subscriber authorization data form at least some of said plurality of independent cellular networks,

data transmission means for facilitating the transmission of said subscriber authorization data form said central database memory means to individual ones of said independent cellular telephone networks having different SID data,

fast access memory means at each said independent cellular telephone network for storing subscriber authorization data relating to authorized subscribers of different ones of said independent cellular telephone networks,

data input means for updating said subscriber authorization data stored in said central database memory means, and

authorization logic means for comparing user subscriber authorization data received in conjunction with an off-hook signal from a mobile subscriber with said subscriber authorization data stored in said fast access memory means having the same SID data as said requesting mobile subscriber to determine if the mobile subscriber requesting service is a valid authorized subscriber.

5,335,279

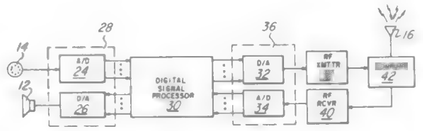
DIGITAL VOICE-BAND SPECTRUM INVERSION APPARATUS

David W. Baughman, Mt. Prospect, Ill., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 30, 1993, Ser. No. 99,893

Int. Cl.[5] **H04L** *9/00*

U.S. Cl. 380—38 **14 Claims**



8. Apparatus for use in a voice communications system for encrypting a local voice signal or for decrypting a received analog voice-band signal encrypted by said apparatus, said apparatus comprising:

means for converting an input analog signal to a digital signal including means for periodically sampling the voltage level of said input analog signal, and means for converting said sampled voltage levels to digital representations thereof;

means for modifying said digital signal in accordance with an algorithm which computes the two's complement inversion of the digital representations of alternate samples of said input analog signal; and

means for converting said modified digital signal to an output analog signal, said output analog signal being modified in frequency spectrum from said input analog signal.

5,335,280

RANDOM SUM CIPHER SYSTEM AND METHOD

Arnold R. Vobach, 11114 Ashcroft, Houston, Tex. 77096

Filed Jan. 28, 1993, Ser. No. 10,245

Int. Cl.[5] **H04K** *1/00*

U.S. Cl. 380—42 **16 Claims**

1. A cipher system for use by a sender and receiver, comprising:

a. a source of plaintext alphabet characters, each character of which is coded by a numerical synonym, the set of numerical synonyms comprising a collection of non-negative integers of common length and known to both sender and receiver;

b. a central processing unit, coupled to the source of characters, for developing a concatenation of the numerical synonyms comprising a plaintext message string integer corresponding to a plaintext message; and

c. a masking tape memory coupled to the central processing unit to store a masking tape string integer, accessed by a randomly or pseudo-randomly selected starting position integer, and extracted from a string of digits accessible to both sender and receiver, and added to the plaintext message string to form a ciphertext string, the masking tape string integer differing only from one message to another as determined by the location of a starting position integer.

5,335,281

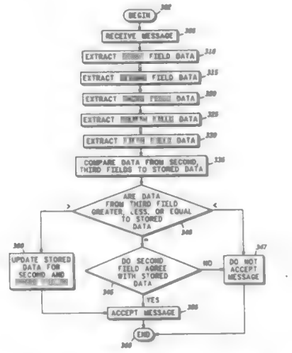
NETWORK CONTROLLER AND METHOD

Michelle L. Tugenberg; Barry N. Altschuler, both of Scottsdale, and Douglas A. Hardy, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 15, 1992, Ser. No. 991,056

Int. Cl.[5] **H04K** *1/00*

U.S. Cl. 380—48 **20 Claims**



1. A method for passing supervisory control from a first station to a second station of a plurality of stations, said method comprising steps of:

(a) providing in the first station a message header having a first field containing message identification information, a second field containing supervisor station identification information, a third field comprising update count information and a fourth field comprising sending station identification information in an interstation message;

(b) communicating the interstation message from the first station to the second station;

(c) processing in the second station a received message header from the interstation message to extract message identification information, supervisor station identification information, update count information and sending station identification information from the first through fourth fields of the received message header;

(d) comparing the extracted supervisor station identification information to stored supervisor station information to obtain an initial agreement when the extracted and the stored supervisor station identification information agree; and

(e) determining in the second station a present identification of a network controller from the extracted data.

5,335,282

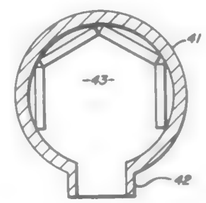
SIGNAL SUMMING NON-MICROPHONIC DIFFERENTIAL MICROPHONE

George F. Cardas, 480 Eleventh St., South East Bandon, Oregon 97411

Filed Jul. 22, 1992, Ser. No. 918,421

Int. Cl.[5] **H04R** *3/00*

U.S. Cl. 381- ·92 **3 Claims**



1. A microphone for converting sound pressure variations to electrical signals having a positive phase when acted upon by a force in a first direction and a negative phase when acted upon by a force in the opposite direction, said microphone comprising:

at least a first pressure transducer acoustically coupled to the environment and having an electrical output of a first phase,

at least a second pressure transducer oriented oppositely to said first pressure transducer and acoustically coupled to said first pressure transducer to produce an electrical output of the same phase as said first pressure transducer, and

circuit means combining the electrical output of said first pressure transducer and the electrical output of the said second pressure transducer,

said circuit means comprising a number of field-effect or bipolar transistors having their respective gates connected to their respective transducer outputs of the same number as the transistor, the sources and drains of said transistors being so connected that the amplified signal outputs of the transducers are superimposed in series,

whereby an acoustic signal directed to both the first and second transducers produces output phases that are additive, and a randomly directed pressure impulse produces both positive and negative output phases which electrically cancel the oppositely oriented transducers, and the outputs of the transducers are combined to increase the output level of the microphone in relation to the number of transducers.

5,335,283

LOUDSPEAKER APPARATUS FOR ELECTRONIC KEYBOARD MUSICAL INSTRUMENT

Katsuhiko Torii, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Nov. 16, 1992, Ser. No. 975,336

Claims priority, application Japan, Mar. 24, 1992, 4-15309

Int. Cl.[5] **G10H** *1/00;* **H05K** *5/00*

U.S. Cl. 381—118 **9 Claims**

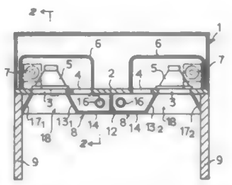
1. A loudspeaker apparatus for an electronic keyboard musical instrument, said apparatus comprising:

a shelf board constituting a casing of said musical instrument, said shelf board having a sound emission opening and a first port, said sound emission opening communicating with an environment external of said casing;

VOL 1165 ISS 1 AG 2 1994 UMI

a loudspeaker mounted on an upper side of said shelf board in alignment with a fringe of said sound emission opening;

a first speaker box mounted on the upper side of said shelf board so as to enclose said loudspeaker and said first port, said first speaker box being completely enclosed by said casing; and



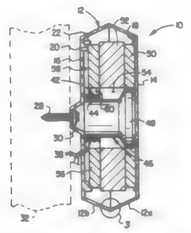
a chamber mounted on a lower side of said shelf board in fluid flow communication with said first speaker box via said first port, said chamber having a second port, said second port communicating with the environment external of said casing.

5,335,284

CONELESS, NO-MOVING-PARTS SPEAKER

James W. Lemons, Rte. 1 - Box 643, Lone Oak, Tex. 75453

Filed Nov. 23, 1993, Ser. No. 156,890
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—152 **4 Claims**



1. A coneless, no-moving-parts speaker comprising:

a housing having first and second spaced apart, parallel exterior walls having facing interior side surfaces;

an annular boss formed on said interior side surface of said first exterior wall;

a first annular lip formed on an outer peripheral side portion of said annular boss and axially projecting therefrom toward said second exterior wall;

a second annular lip formed on said interior side surface of said second exterior wall and axially projecting toward said first exterior wall;

a voice coil disposed on a tubular core portion within said housing, said core portion having a first end fixedly secured to a central portion of said inner side surface of said first exterior wall, and a second end spaced inwardly apart from said interior side surface of said second exterior wall;

wiring means, connected to said voice coil and extending outwardly through said housing, for transmitting electrical energy from an external source to said voice coil;

a first annular metal washer member disposed within said housing, said first metal washer member having a peripheral portion closely received by said first annular lip, a first side surface abutting said annular boss and being in a spaced apart, facing relationship with said interior side surface of said first exterior wall, a second side surface facing and being spaced inwardly apart from said interior side surface of said second exterior wall, and being aligned with said second end of said tubular core portion, and a central circular opening outwardly circumscribing said voice coil;

an annular magnet member disposed within said housing and having a first side surface coaxially and fixedly secured to said second side surface of said first washer member, a central circular opening having a diameter substantially identical with the diameter of said central circular opening of said first washer member, and a second side surface facing and inwardly spaced apart from said interior side surface of said second exterior wall;

a second annular metal washer member disposed within said housing and having a first side surface coaxially and fixedly secured to said second side surface of said magnet member, a circular central opening, a peripheral portion closely received in said second annular lip, and a second side surface abutting said interior side surface of said second exterior wall; and

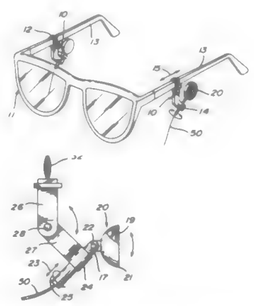
a cylindrical metal alignment shaft disposed within said housing and having a first end portion closely received in said tubular core portion, and a radially enlarged second end portion press-fitted into said circular opening in said second washer member, the side surface of said central opening in said magnet member forming with said alignment shaft an annular reverberation chamber extending from said second end of said tubular core portion to said radially enlarged second end portion of said alignment shaft, said alignment shaft having an end surface that abuts said interior side surface of said first exterior housing wall.

5,335,285

EARPHONE-TYPE SPEAKER ASSEMBLY

Jacob Gluz, 92 Woodlawn, Dollard des Ormeaux, Quebec H9A 1Z2, Canada

Filed Jun. 1, 1993, Ser. No. 69,189
Claims priority, application Canada, Jun. 11, 1992, 2071840
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—187 **2 Claims**



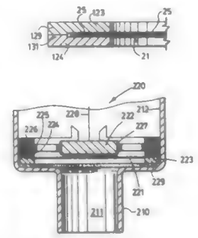
1. An earphone-type speaker assembly for securement to the temples of an eyeglass frame, said speaker assembly comprising rigid support means slidably securable to said temples of said eyeglass frame for position at a predetermined location and having a speaker secured thereto and spaced from said frame at a position forward of the ears of a wearer of said eyeglass frame, a pivot connection for securing said speaker to a free end of said support means to orient said speaker at a desired position relative to an ear of a wearer so that said wearer can hear sound emitted by said speaker as well as other sounds in his environment, when desired, by displacing said speaker on said pivot connection, wherein said speaker is comprised of a housing said pivot connection having a connecting shaft secured to said housing, said connecting shaft being displaceable retained for axial rotation within a clamp provided at said free end of said support means to rotate said speaker housing 360 degrees about said shaft, said connecting shaft being an elongated shaft capable of axial longitudinal displacement in said clamp to position said speaker closer or further from said free end of said support means, said support means being comprised of a stationary support having a pivot connection at an end thereof.

5,335,286

ELECTRET ASSEMBLY

Elmer V. Carlson, Prospect Heights, and William J. Ballad, Buffalo Grove, both of Ill., assignors to Knowles Electronics, Inc., Itasca, Ill.

Filed Feb. 18, 1992, Ser. No. 836,606
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—191 **11 Claims**



1. An electret assembly for an electroacoustic transducer comprising:

a thin, flexible, planar diaphragm comprising a first electrode of an electret assembly;

a planar backplate comprising a second electrode of the electret assembly;

one of the first and second electrodes of the assembly being charged to a given differential voltage relative to the other electrode;

and diaphragm mounting means for mounting the diaphragm in fixed, spaced, substantially parallel relation to the backplate, the differential voltage tending to pull a central portion of the diaphragm toward the backplate, thereby tensioning and stiffening the central portion of the diaphragm;

the diaphragm mounting means permitting limited radial movement of the rim of the diaphragm in the plane of the diaphragm but precluding movement of the rim of the diaphragm perpendicular to the plane of the diaphragm.

5,335,287

LOUDSPEAKER UTILIZING MAGNETIC LIQUID SUSPENSION OF THE VOICE COIL

Lewis S. Athanas, West Newbury, Mass., assignor to Aura, Ltd., Lewiston, Me.

Filed Apr. 6, 1993, Ser. No. 43,308
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—197 **3 Claims**

1. A loudspeaker comprising:

an annular permanent magnet assembly, having an axis;

an annular frame, extending axially from said magnet assembly, to form an annular seat spaced radially outwardly from said axis;

a diaphragm, having an outer edge area mounted on said annular seat;

said magnet assembly, comprising an annular permanent magnet, having first and second end faces;

a first magnetizable plate, positioned flat-wise against the first end face of the magnet;

a cylindrical pole piece, extending from said first plate, through the space circumscribed by said permanent magnet;

a second magnetizable plate positioned flat-wise against the second end face of said magnet;

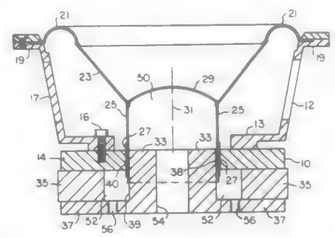
said second plate, having an inner annular edge spaced outwardly from the cylindrical side surface of said pole piece, to define an annular magnetic gap;

a voice coil means extending from said diaphragm into said annular magnetic gap;

said voice coil means comprising a cylindrical tube having an inner surface and an outer surface, and an electrical winging on the outer surface of said tube; said tube being formed of a thermally conductive material;

a magnetic fluid that includes an inner fluid layer bridging the space between the inner surface of said tube and the side surface of said pole piece, and an outer fluid layer bridging the space between said electrical winding and the inner annular edge of said second plate;

the outer surface of said tube being completely disconnected form said second plate whereby the magnetic fluid constitutes the sole means for locating said tube within the magnetic gap;



said diaphragm and said voice coil means forming a first chamber at one end of the pole piece;

said plates cooperating with the annular magnet to form a second chamber surrounding the pole piece in open communication with said annular gap;

a first vent passage means extending through the pole piece, to minimize pressure changes in said first chamber, during movement of the diaphragm and voice coil means;

a second vent passage means extending through said first plate, to minimize pressure changes in said second chamber;

said tube having an end edge located within said second chamber; and

said magnetic fluid having a viscosity of about fifty (50) centipoise; said magnetic fluid comprising micron-sized magnetic particles in sufficient concentration to achieve a magnetic density in the range from about 600 to about 800 gauss.

5,335,288

APPARATUS AND METHOD FOR BIOMETRIC IDENTIFICATION

Keith W. Faulkner, 31 Bulmershe Road, Reading, Berkshire RG1 5RH, United Kingdom

Filed Feb. 10, 1992, Ser. No. 833,015
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—4 **19 Claims**

1. Biometric measuring apparatus for recognizing a person's identity based on measurements performed on the person's hand, said apparatus comprising:

support means for supporting a portion of a person's hand including at least a plurality of fingers in spread positions and having a predefined background image plane associated therewith;

means for producing and storing a silhouette image of a hand portion placed on said support means, including

image capture means for viewing said hand portion and said support means from a prearranged first direction;

illumination means for illuminating said hand portion and

VOL 1165 ISS 1 AUG 2 1994 UMI

said support means to present a silhouette image of said hand portion to said image capture means; and

storage means for storing at least a portion of said silhouette image presented to said image capture means;

means for producing and storing a structured light image of said hand portion, including

image capture means for viewing said hand portion and said support means from a prearranged second viewing direction;

illumination means for directing a structured light pattern onto said hand portion from a prearranged direction substantially different from said second viewing direction to present to said image capture means a structured light image comprising at least one element of said structured light pattern striking a surface region of at least one of said fingers at a position displaced from a precalibrated striking position on said background

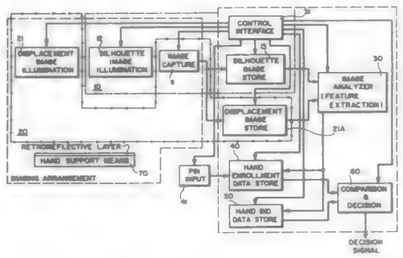


image plane in the absence of said finger, the magnitude of said position displacement providing measurement data on finger height characteristics; and

storage means for storing at least a portion of said structure light image;

means for analyzing said stored silhouette image and said stored structure light image to produce hand feature data, including hand feature data derived at least in part from said measurement data on finger height characteristics;

means for storing hand enrollment data comprising said hand feature data obtained during a hand enrollment operation cycle;

means for storing hand bid data comprising said hand feature data obtained during a hand bid operation cycle; and

means for comparing hand bid data with hand enrollment data to decide on the basis of prearranged decision criteria whether said hand bid data and said hand enrollment data were produced by the same hand portion.

5,335,289

RECOGNITION OF CHARACTERS IN CURSIVE SCRIPT

Hazem Y. Abdelazim, Cairo, Egypt, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1992, Ser. No. 837,450

Claims priority, application Egypt, Feb. 13, 1991, 91301146.6

Int. Cl.[5] G06K *9/34*

U.S. Cl. 382—9 **11 Claims**

1. A method of recognizing characters in cursive script in which the script is scanned to detect word boundaries and words are then segmented into characters, characterized by the steps of:

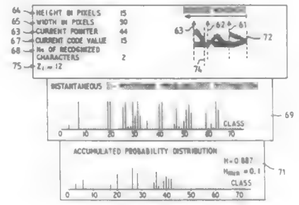
(i) choosing and extracting (30) a word boundary from a cursive script comprised of characters;

(ii) starting at said word boundary, extracting (50) a portion of said word;

(iii) comparing (60) said extracted portion with a set of reference portions representing known characters, each of said known characters having an average width;

(iv) extracting a second portion, said second portion being successive to said first portion, and comparing of said second portion with said set of reference portions;

(v) repeating said extracting step (iv) and said comparing step (iii) with successive portions until said successive portions have been identified as one of said known characters, and



(vi) skipping a number of portions depending on said average width of said identified known character;

(vii) starting from the last skipped portion, extracting a portion of said word and then repeating the process from step (ii) for the identification of next and subsequent characters.

5,335,290

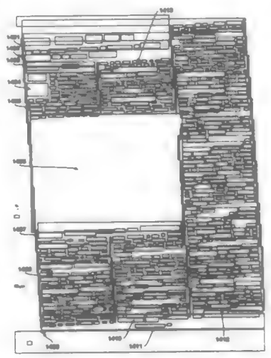
SEGMENTATION OF TEXT, PICTURE AND LINES OF A DOCUMENT IMAGE

John F. Cullen, Palo Alto, Calif., and Koichi Ejiri, Narashino, Japan, assignors to Ricoh Corporation, Menlo Park, Calif. and Ricoh Company Ltd., Tokyo, Japan

Filed Apr. 6, 1992, Ser. No. 864,423

Int. Cl.[5] G06K *9/34*

U.S. Cl. 382—9 **10 Claims**



1. In a character recognition system, a method for segmenting portions of a medium into text and non-text types, said method comprising the steps of:

a) compressing a bit mapped representation of said medium, said compressing said bit mapped representation of said medium including

a.i) providing said bit mapped representation of said medium to a compression means,

a.ii) compressing group of N scanlines of said bit mapped representation into a corresponding compressed scanline, and

a.iii) constructing a compressed representation of said medium from said compressed scanlines;

b) providing said compressed representation of said medium to a run length extraction and classification means, said compressed representation comprised of one or more scanlines;

c) extracting run lengths from each scanline of said compressed representation of said medium;

d) creating a run length record for each extracted run length, each run length record including a classification of the corresponding run length as short, medium or long based on it's length;

e) constructing rectangles from said run length records, said rectangles representing a portion of said medium;

f) determining a skew of said rectangles;

g) correcting for skew of said rectangles;

h) classifying each of said rectangles as type image, vertical line, horizontal line or unknown; and

i) merging rectangles of type UNKNOWN into one or more text blocks.

5,335,291

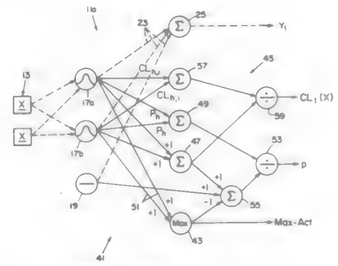
METHOD AND APPARATUS FOR PATTERN MAPPING SYSTEM WITH SELF-RELIABILITY CHECK

Mark A. Kramer, Winchester; James A. Leonard, Cambridge, both of Mass., and Lyle H. Ungar, Philadelphia, Pa., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 763,378, Sep. 20, 1991, abandoned. This application Dec. 9, 1993, Ser. No. 165,067

Int. Cl.[5] G06K *9/62*

U.S. Cl. 382—14 **19 Claims**



1. A pattern mapping system comprising:

an input layer for presenting an input pattern;

a working layer of working nodes connected to the input layer for receiving the input pattern and generating activation signals in accordance with predefined training parameters, and (b) statistical signals associated with each activation signal;

an output layer of output nodes coupled to the working layer for providing from the activation signals an output pattern indicative of the input pattern; and

a node assembly coupled to the working layer for receiving the statistical signals and in response to the statistical signals providing an indication of reliability of the output pattern as a function of the predefined training parameters.

5,335,292

DOCUMENT PROCESSING SYSTEM AND METHOD

Kenneth T. Lovelady, and Medford D. Sanner, both of Irving, Tex., assignors to Recognition International Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 289,596, Dec. 21, 1988, Pat. No. 5,003,613. This application Feb. 6, 1991, Ser. No. 651,581

Int. Cl.[5] G06K *9/00*

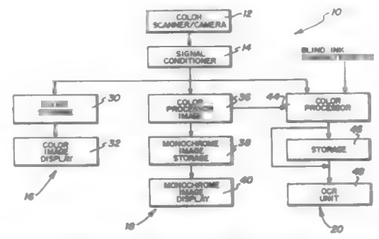
U.S. Cl. 382—17 **20 Claims**

1. A document processing system for processing documents having data printed thereon including markings having an interior core area bounded by an edge, the markings having a hue and visible to the eye, but are not to be read by the system and the data includes characters which are to be read by the system comprising:

means for scanning a document and for generating a plurality of colored picture elements;

means for identifying colors included within the core area and edge of the markings;

means for converting the colors of the picture elements of the core area and edge of the markings to a color of the background of the document thereby generating a filtered image of the document;



means for subtracting a percentage of the hue that is complementary to the hue of the markings from the hue of the markings, such that the background surrounding a character is detected by said optical character recognition means as the colors of the markings; and

optical character recognition means for receiving said filtered image of the document representing character information only and for identifying the characters appearing on the document from said filtered image, such that the markings and the background surrounding a character are not distinguishable by said optical character recognition means.

5,335,293

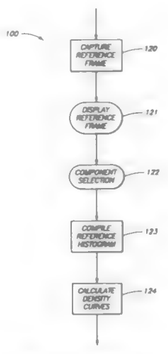
PRODUCT INSPECTION METHOD AND APPARATUS

Anthony Vannelli, and Thomas C. Madsen, both of Walla Walla, Wash., assignors to Key Technology, Inc., Walla Walla, Wash.

Filed Jun. 16, 1992, Ser. No. 899,450

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—17 **60 Claims**



1. An automated quality inspection device for evaluating optical component characteristics of a product, the inspection device comprising:

means for capturing video frames of product images, each video frame comprising an array of color values, each color value being specified by at least one variable;

VOL 1165 ISS 1 AG 2 1994 UMI

component selection means for allowing an operator to identify portions of individual component types within a reference video frame;

control means for (1) deriving relative component type probability curves from the identified portions of the individual component types, and (2) classifying individual color values as single component types according to the highest relative component type probability for each individual color value;

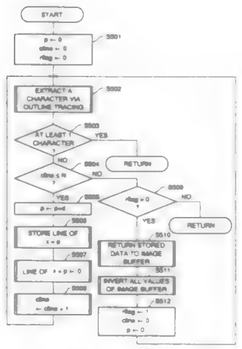
wherein the control means includes processing means for deriving the relative component type probability curves by comparing color values of the identified portions of component types to the color values of an overall sample video frame.

5,335,294

IMAGE PROCESSING FOR PATTERN EXTRACTION

Toru Niki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 915,306
Claims priority, application Japan, Jul. 23, 1991, 3-182505
Int. Cl.[5] G06K 9/48
U.S. Cl. 382—22 30 Claims



1. An image processing method comprising the steps of:

inputting an image;

storing a start point;

searching for black pixels, starting from the stored starting point, and tracing an outline of a pattern including black pixels located in the searching;

discriminating whether a whole pattern has been extracted by a tracing operation in said searching and tracing step;

moving the start point if it is discriminated in said discriminating step that no whole pattern has been extracted;

repeating said searching and tracing step starting from the moved start point; and

if it is discriminated in said discriminating step that a whole pattern has been extracted, outputting the extracted pattern.

5,335,295

SYSTEM AND METHOD FOR SCALING A DIGITAL IMAGE

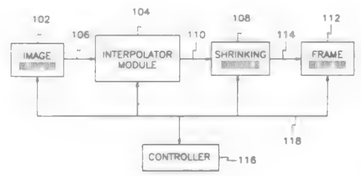
Bruno Ferracini, Milan, Italy; Jorge Gonzalez-Lopez, Seville, Spain, and Giancarlo Pettazzi, Milan, Italy, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1991, Ser. No. 697,141
Int. Cl.[5] G06K 9/42
U.S. Cl. 382—47 13 Claims

1. An apparatus for scaling the size of a first digital image by a desired scaling factor to achieve a second digital image, the apparatus comprising:

an interpolator configured to magnify the first digital image by a first scaling factor greater than or equal to one to create an intermediate digital image, said intermediate digital image including a first plurality of pixels, each of said first plurality of pixels having a pixel value; and

a shrinking logic circuit, coupled to said interpolator, configured to reduce said intermediate digital image generated by said interpolator by a second scaling factor which is limited to always be a power of two to thereby generate the second digital image, said second digital image containing a second plurality of pixels, each of said second



plurality of pixels having a pixel value, each one of said second plurality of pixels corresponding to a quantity of said first plurality of pixels, wherein said corresponding quantity of said first plurality of pixels is a power of two, said shrinking logic circuit further configured to average said pixel values of each of said corresponding quantity of said first plurality of pixels and assign said average value to said pixel value of said corresponding one of said second plurality Of pixels corresponding to said quantity of said first plurality of pixels, said second scaling factor thereby reducing said intermediate digital image by a power of two,

wherein said first scaling factor is determined based upon the desired scaling factor and said second scaling factor.

5,335,296

PROCESS FOR HIGH SPEED RESCALING OF BINARY IMAGES

Ross M. Larkin, Rollings Hills, and John R. DeAguiar, Sebastopol, both of Calif., assignors to Optigraphics Corporation, San Diego, Calif.

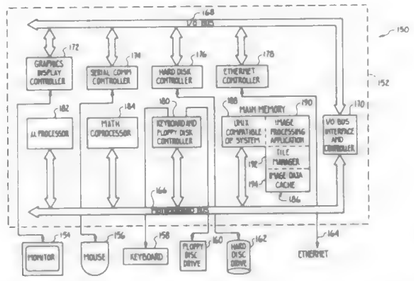
Continuation of Ser. No. 949,761, Sep. 23, 1992, abandoned, which is a continuation of Ser. No. 693,010, Apr. 30, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 14,085
Int. Cl.[5] G06K 9/42; G06F 15/00; G09G 1/06
U.S. Cl. 382—47 18 Claims
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 53 Pages)

1. A system for scaling an image prestored in a memory, comprising:

first table generation means for generating a first scaler table having a number of input bits and a first number of output bits wherein each input bit is indicative of a pixel in the prestored image and each output bit is indicative of a pixel in the image after scaling, the first table generation means storing the first scaler table in the memory, the first scaler table capable of having more than one input bit and more than one output bit simultaneously;

second table generation means for generating a second scaler table having the same number of input bits as the first scaler table and a second number of output bits different from the first number of output bits wherein each input bit is indicative of a pixel in the prestored image and each output bit is indicative of a pixel in the image after scaling, the second table generation means storing the second scaler table in the memory, the second scaler table capable of having more than one input bit and more than one output bit simultaneously;

sequencer means for generating a sequence having a bit string wherein the value of any one of the bits is indicative of either the first or second scaler table, the sequence having further data indicative of the alignment in the memory of valid bits in the image that may not be completely located within memory boundaries of the memory; and



scaler means for selecting the first or second scaler table by reading the bit storing of the sequencer and applying only data aligned on memory boundaries to the selected table so that the image is scaled by a preselected scale factor that is interpolated by the selection of the scaler tables;

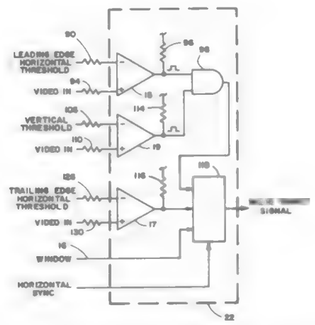
wherein the system is capable of scaling the image such that the preselected scale factor is a ratio of two integers, neither integer having a value of one.

5,335,297

TARGET DETECTION FOR VISION SYSTEMS

Michael W. Pullen, Ridgecrest, Calif., assignor to The United States of Americas as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 822,518, Jan. 17, 1992, abandoned. This application May 3, 1993, Ser. No. 55,455
Int. Cl.[5] G06K 9/38
U.S. Cl. 382—50 9 Claims



1. An apparatus for autonomously detecting in real-time the presence of a target in each frame of an input video signal, said apparatus comprising:

a first adaptive means for producing a horizontal threshold for the leading edge and a horizontal threshold for the trailing edge of a video waveform representing a possible target when said waveform is contained in said video signal;

a second adaptive means for producing a vertical threshold from each video frame of a possible target and its surroundings;

a user adjustable means for providing a window for each video frame within which the presence of video waveform exceeding said horizontal and vertical thresholds indicates a possible target location; and

a means for comparing comprising of a first comparator for comparing said video input signal with said horizontal leading edge threshold, a second comparator for comparing said video input signal with said vertical threshold, and a third comparator for comparing said video input signal with said horizontal trailing edge threshold, and a means for ANDing the outputs of said first comparator and said second comparator, and inputting the ANDed result with the output resulting from said third comparator, said window, and a horizontal sync signal for each video frame to flip-flop having a valid target signal as its output.

5,335,298

AUTOMATED EXTRACTION OF AIRPORT RUNWAY PATTERNS FROM RADAR IMAGERY

Richard A. Hevenor, and Pi-Fuay Chen, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 19, 1991, Ser. No. 746,822
Int. Cl.[5] G06K 9/46
U.S. Cl. 382—54 28 Claims

1. A method for extracting terrain features of an image formed by an array of pixels comprising the steps of:

smoothing the image at each pixel in a direction which is most homogeneous for each pixel for preserving edges in the image;

detecting the magnitude and direction of edges at each pixel;

enhancing the edges by increasing gray tone values of pixels on edges and decreasing gray tone values of pixels not on edges in accordance with the occurrence of edges and non-edges in a selected neighborhood of each pixel and an angle associated with each edge and non-edge;

thinning edges to obtain at least a single pixel line without destroying connectivity of the edges;

labeling connected components formed from connected pixels by using a selected value;

calculating properties of each connected component in terms of at least area and region spread for identifying connected components;

identifying borders between connected components;

eliminating pixels not on the identified borders; and

approximating each border as a series of interconnected

VOL 1165 ISS 1 AG 2 1994 UMI

straight line segments which differ from the border by less than a selected amount.

5,335,299

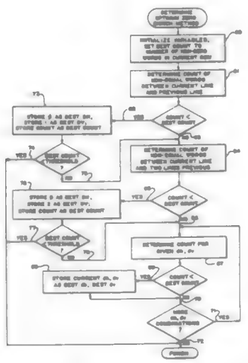
VIDEO COMPRESSION ALGORITHM

William Atkinson, Los Gatos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 441,333, Nov. 22, 1989, Pat. No. 5,033,105, which is a continuation of Ser. No. 84,309, Aug. 11, 1967, abandoned. This application May 2, 1991, Ser. No. 694,660

Int. Cl.[5] G06K 9/36

U.S. Cl. 382—56 16 Claims



1. A method of compressing information comprising the steps of:

(a) enriching a bit-map of said information in a first binary state by:

(i) copying a first row of said bit-map;

(ii) shifting said copy of said first row a predetermined number of bits in a first direction;

(iii) performing a logical operation using as input said first row of data and said copy of said first row of data yielding a second row of data;

(iv) determining the number of bits of data in said second row of data which are in said first binary state;

(v) if said number of bits in said binary state is greater than a first value, storing said number of bits as said first value and storing said predetermined number as a second value; and

(b) encoding said enriched bit-map.

5,335,300

METHOD OF MANUFACTURING I/O NODE IN AN OPTICAL CHANNEL WAVEGUIDE AND APPARATUS FOR UTILIZING

Davis H. Hartman, Phoenix; Fred V. Richard, Scottsdale, and Michael S. Lebby, Apache Junction, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1992, Ser. No. 994,235

Int. Cl.[5] G02B 6/34

U.S. Cl. 385—37 23 Claims

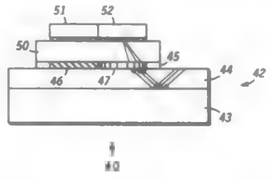
9. An input/output node in an optical channel waveguide and apparatus utilizing the node comprising:

a molded cladding layer having a first index of refraction and a channel formed therein;

optically transparent material having a second index of refraction at least 0.01 greater than the first index of refraction and positioned in the channel of the cladding layer so as to form an optical channel waveguide having a critical internal reflection angle, the optical channel waveguide having an exposed surface;

a holographic layer having an index of refraction substantially similar to the second index of refraction, the holographic layer being formed with first and second substantially parallel, spaced apart optical input/output surfaces, the holographic layer having a plurality of gratings formed therein so as to substantially extend between the first and second optical input/output surfaces of the holographic layer, and the first optical input/output surface being affixed in overlying relationship to the exposed surface of the optical channel waveguide;

the plurality of gratings being positioned to form an angle with the first and second optical input/output surfaces of the holographic layer such that light rays incident on the



second optical input/output surface of the holographic layer and substantially normal thereto are diffracted by the gratings into the optical waveguide at an angle, with a transverse axis of the optical channel waveguide, greater than the critical angle of the optical channel waveguide;

an optically transparent layer of material affixed to the second optical input/output surface of the holographic layer; and

an electronic device including at least one of a light generator and a light detector fixedly mounted on the optically transparent layer in optical communication with the optical channel waveguide.

5,335,301

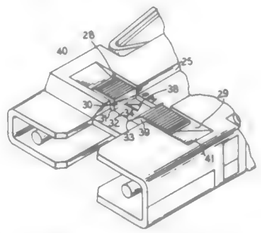
FIBER OPTIC CONNECTOR WITH SLIDING KEY

David L. Newman, Chicago; Leopold Kiernicki, Niles; Philip Schofield, Oak Park, and James W. McGinley, Schaumburg, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed May 5, 1993, Ser. No. 57,733

Int. Cl.[5] G02B 6/38, 6/26

U.S. Cl. 385—75 20 Claims



1. A duplex optical fiber connector for terminating two optical fibers of a cable and being adapted to be joined to a polarized receptacle, said connector comprising:

an exterior shape corresponding to the shape of an opening of the receptacle, said connector being insertable into said opening along an axis of said receptacle;

an axially extending channel having a width corresponding to a receptacle mating configuration; and

a keying element in said channel blocking said width of said channel, said keying element having a recess, said keying element being movable transverse to said axis so that said recess may be positioned toward one side of said channel for receiving a rib of said receptacle when said rib is positioned toward said one side of said channel to be received in said recess upon said connector being axially inserted in said receptacle opening.

5,335,302

LIGHT WAVEGUIDE LEAD HAVING A FILLING COMPOUND AND METHOD FOR MANUFACTURE OF THE LEAD

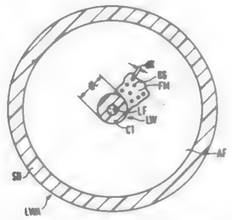
Hubert Polle, Coburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 21, 1993, Ser. No. 124,714

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1992, 4231570

Int. Cl.[5] G02B 6/44

U.S. Cl. 385—100 25 Claims



1. In a light waveguide lead comprising at least one light waveguide accommodated in a protective sheath and embedded in a pasty filling material, the improvements comprising the filling material having small balls embedded therein for formation of a lead filling compound, said small balls being composed of a different material than the filling material and the diameter of the small balls and their number being selected so that the light waveguide has a displaceability within the lead filling compound which is adequate for any movement applied to the light waveguide lead.

5,335,303

QUASI-PHASED MATCHED OPTICAL WAVEGUIDE FREQUENCY CONVERSION ELEMENT HAVING A FERROELECTRIC LIQUID CRYSTALLINE MATERIAL EXHIBITING A PERIODIC STRUCTURE

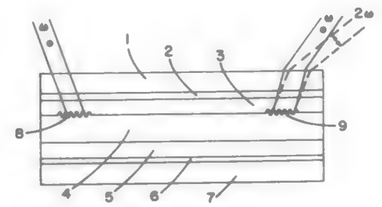
Richard Buchecker, Zurich, Switzerland; Xin H. Chen, Berlin, Fed. Rep. of Germany; Jürg Fünfschilling, Basel, Switzerland; Rolf-Peter Herr, Freiburg, Fed. Rep. of Germany; Martin Schadt, Seltisberg, Switzerland, and Klaus Schmitt, Lörrach, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 899,085, Jun. 15, 1992, abandoned. This application Aug. 5, 1993, Ser. No. 102,676

Claims priority, application Switzerland, Jun. 25, 1991, 1878/91; Jan. 10, 1992, 65/92

Int. Cl.[5] H03F 7/00

U.S. Cl. 385—122 11 Claims



1. An optical element for efficient generation of short-wave laser light by frequency conversion by means of a wave-guiding layer, wherein the wave-guiding layer comprises a ferroelectric $\chi^{(2)}$-active monomeric or polymeric liquid crystalline material having a periodic structure which permits a quasi phase matching of a guided laser beam, the period length of the three-dimensional structure being equal to twice the coherence length $l_c=\pi/\Delta\beta$ of the material, whereby $\Delta\beta=\beta_e(2\omega)-2\beta_o(\omega)$, with ω=angular frequency of the fundamental wave, 0=zero-order mode and β=propagation constant of the mode.

5,335,304

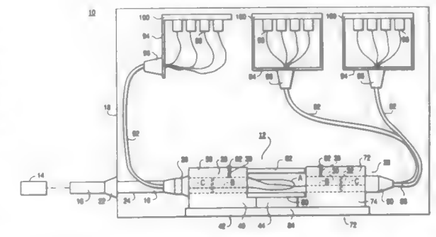
CONNECTOR DISTRIBUTION ASSEMBLY FOR A FIBER OPTIC DETECTOR SYSTEM

Dale Smith, Baltimore, and Gregory P. Behrmann, Columbia, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 30, 1993, Ser. No. 54,499

Int. Cl.[5] G02B 6/36

U.S. Cl. 385—135 4 Claims



1. A fiber optic connector distribution assembly in a fiber optic detector system for receiving groups of optical fibers and protectively distributing the groups through separate optical fiber connectors, comprising:

first means for receiving a first plurality of optical fibers;

second means for receiving optical fiber connectors;

a first plurality of optical fiber connectors;

third means adjacent the first means for separating the first plurality of optical fibers into groups of optical fibers, each group connecting to one end of each first optical fiber connector of said first plurality of optical fiber connectors;

a second plurality of optical fibers separated into groups, each group being connected to a second end of each of said optical fiber connectors of the first plurality of fiber optic connectors, and extending out of the assembly;

a second plurality of optical fiber connectors;

wherein a first end of each second optical fiber connector receives one of the groups of the first plurality of optical fibers, and wherein a second end of each second optical fiber connector receives one of the groups of the second plurality of optical fibers, and further wherein each optical fiber connector includes first and second halves; and

wherein the first and second halves of each fiber optic connector abut to transmit light from the group of the first plurality of optical fibers received by the first half of the optical fiber connector to the group of the second plurality of optical fibers received by the second half of the optical fiber connector.

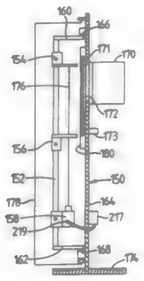
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,305

OPTICAL SENSOR FOR FLUID PARAMETERS

Nadhir B. Kosa, The Woodlands; Gene J. Twigg, Magnolia; James R. Salter; Raghuvir Singh, both of The Woodlands; David J. Costello, Spring, and Leslie A. Schlain, Woodlands, all of Tex., assignors to OPtex Biomedical, Inc., The Woodlands, Tex.

Continuation-in-part of Ser. No. 810,479, Dec. 19, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,232
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—147 22 Claims



1. A method for making an optical fiber sensor probe having a plurality of optical fibers, the method comprising

aggregating together a plurality of optical fibers, certain of the optical fibers having a bend therein, the fiber bends disposed in a first section of the optical fiber probe near or at a first end of the optical fiber probe, the optical fiber probe having a second section adjacent the first section and a third section adjacent the second section,

encapsulating the second section of the optical fiber probe in plotting material and curing the potting material, loose ends of the optical fibers extending from the second section and into the third section,

emplacing a first tube over a portion of the third section of the optical fiber probe, and

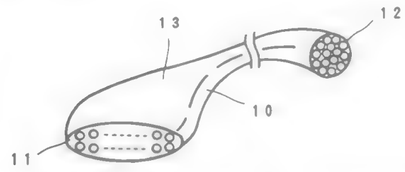
emplacing a second tube over the first section of the optical fiber probe.

5,335,306

ULTRAVIOLET RESISTANT SILICA GLASS FIBER

Masatoshi Takita, Jyoetsu; Hiroyuki Hayami, and Koichi Suzuki, both of Itami, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo and Mitsubishi Cable Industries, Ltd., Amagasaki, both of Japan

Filed Sep. 30, 1992, Ser. No. 953,787
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—142 13 Claims



1. A silica glass optical fiber for use at the ultraviolet region, which is composed of a doped silica glass cladding layer formed on a silica glass core, said silica glass core having (1) an OH group content of 10–1000 ppm and (2) a fluorine content of 50–5000 ppm, and (3) being substantially free of chlorine,

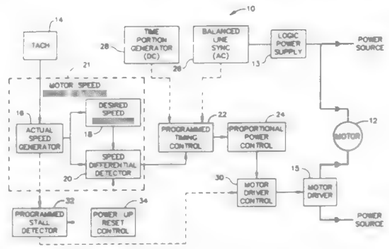
wherein the silica glass for forming said core is synthetic silica glass produced by burning at least one member selected from a group consisting of silicon compounds of the formula $R^1mSi(OR^2)_{4-m}$, and at least one member selected from the a group consisting of fluorine compounds of the formula $C_aH_bF_c$, wherein R^1 and R^2 are each a lower alkyl group having 1 to 4 carbon atoms, and $0 \leqq m \leqq 4$, $1 \leqq a \leqq 3$, $0 \leqq b \leqq 7$, and $1 \leqq c \leqq 8$, with oxyhydrogen flame, and vitrifying synthesized silica fine particles.

5,335,307

PRECISION ELECTRIC MOTOR SPEED

William F. Sommer, P.O. Box 163, LaGrange, Ga. 30241

Continuation of Ser. No. 838,144, Feb. 18, 1992, abandoned. This application Feb. 1, 1993, Ser. No. 21,650
Int. Cl.[5] H02P *5/165*
U.S. Cl. 388—814 21 Claims



1. A speed control for an electric motor comprising:

a tachometer for providing tachometer generated pulses indicative of an actual speed of the electric motor;

an actual speed generator for receiving the tachometer generated pulses and creating specific width pulses therefrom, each specific width pulse having a leading edge and a trailing edge such that an actual motor speed is determined based on one leading edge of one specific width pulse;

a desired speed generator for utilizing said leading and said trailing edge of the specific width pulse to initiate and terminate secondary pulses such that the full duration of each said secondary pulse is indicative of a desired speed of the electric motor;

digital comparison means for continuously comparing said desired speed of the electric motor with said actual speed of the electric motor, and further for providing an error signal indicative of said actual speed as it relates to said desired speed; and

means for instantaneously adjusting said actual speed of the electric motor to reduce said error signal.

5,335,308

MOVABLE HEAT TREAT APPARATUS WITH SIGHTING MEANS

Thomas M. Sorensen, White Bear Lake, Minn., assignor to BGK Finishing Systems, Inc., Blaine, Minn.

Continuation of Ser. No. 878,047, May 4, 1992, abandoned. This application Sep. 17, 1993, Ser. No. 122,356
Int. Cl.[5] F26B *3/30*
U.S. Cl. 392—412 8 Claims

1. An apparatus for heat treating a finish applied to a surface of a body, said apparatus comprising:

a movable platform;

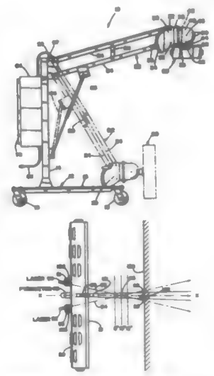
at least one infrared lamp secured to said platform for movement therewith and having an adjustable position relative to said platform;

power connect means for connecting said lamp to a source of electrical power;

heat detection means for detecting a temperature of said surface, said heat detection means having a directional axis, said heat detection means connected to said lamp for movement therewith;

circuit means for controlling the energization of said lamp and including said heat detection means; and

sighting means for aiming said lamp at said surface with said sighting means including means for indicating to an operator a location on said surface against which said heat detection means is aimed, said sighting means connected to said lamp for movement therewith, said sighting means including a distance indicating means for indicating when said heat detection means is spaced from said surface by a predetermined distance, said sighting means further including at least a first and second light source disposed at an angle to said directional axis of said heat detection means; said first and second light sources disposed for first and second beams generated by said first and second light sources, respectively, to intersect at a point disposed within a target area of said heat detection means and at said predetermined distance.

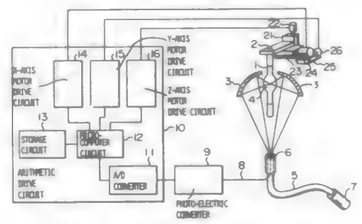


5,335,309

LIGHT-BEAM HEATING APPARATUS

Koji Fujii; Nobuyuki Haji, both of Osaka, and Minoru Yamada, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 886,333, May 20, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 87,105
Claims priority, application Japan, Aug. 29, 1991, 3-218345; Oct. 1, 1991, 3-253359
Int. Cl.[5] H05B *1/00*
U.S. Cl. 392—421 11 Claims



1. A light-beam heating apparatus comprising:

a radiating lamp having a light emitting portion;

an ellipsoidal reflecting mirror having first and second focal points for condensing light emitted by the light emitting portion of said radiating lamp, the light emitting portion of said radiating lamp being positioned initially in a vicinity of said first focal point;

an optical fiber including fiber elements, said optical fiber having a light receiving end located in the vicinity of said second focal point on which the condensed light is incident;

a photodetector for detecting the light incident on the light receiving end of said optical fiber, said photodetector having at least one sensing fiber element and disposed at a fixed position in the light receiving end of said optical fiber and having an optical output corresponding to the intensity of the light incident theron, the intensity of the incident light on said light receiving end having a distribution with a peak derived from the relative positions of said radiating lamp and said ellipsoidal reflecting mirror;

a radiating lamp fitting mechanism provided with a drive mechanism for moving the light emitting portion of said radiating lamp with respect to said first focal point;

a photoelectric converter for photoelectrically converting the optical output of said photodetector into an electrical output, the electrical output of said converter being determined by the position of the peak of the light intensity on the light receiving end with respect to the actual position of the light emitting portion of said radiating lamp; and

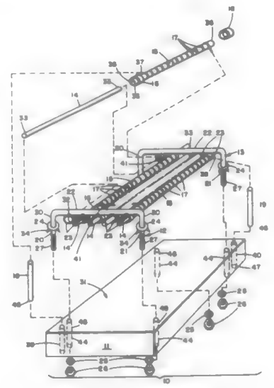
an arithmetic drive circuit coupled to the output of said photoelectric converter and said drive mechanism, said arithmetic drive circuit generating an estimate of the distribution of the light intensity relative to the fixed position of said sensing fiber element and energizing said drive mechanism to move the light emitting portion of said radiating lamp in at least one direction to said first focal point thereby locating said light intensity peak at a predetermined position on said light receiving end.

5,335,310

MODULAR HEATING ASSEMBLY WITH HEATING ELEMENT SUPPORT TUBES DISPOSED BETWEEN HANGERS

George Novy, Danbury, and Angelo Makris, Southbury, both of Conn., assignors to The Kanthal Corporation, Bethel, Conn.

Filed Jan. 5, 1993, Ser. No. 679
Int. Cl.[5] H05B *3/00*; F24H *9/00*; F24D *19/02*
U.S. Cl. 392—434 14 Claims



1. A modular type heating unit having particular utility for use in a furnace, comprising:

an insulating body member (11);

a pair of spaced apart aligned support hangers (12, 13) each having one or more bracket members (23) affixed to a respective support beam (22), and each having a pair of

VOL 1165 ISS 1 AG 2 1994 UMI

rod members (20, 21) mounted to said body member and being dimensioned for supporting its respective support beam relatively distally from said body member;

a dual support system having a discrete inner support member (14) comprising a ceramic tube or rod with a diameter selected to enable its end portions (33) to be removably inserted into a respective one of said bracket members of each said aligned support hanger to facilitate assembly/-disassembly of each dual support system from a respective pair of bracket members, and having a discrete outer support member (15) comprising a ceramic tube having surfaces defining a tube hole extending longitudinally the length of said outer support member and dimensioned for removably receiving said inner support member (14) so that said outer support member is supported by said inner support member; and

an electrical heating element (17) mounted on said outer support member.

5,335,311

MODULAR GALVANIC CURRENT CONTROL RESISTOR ASSEMBLY FOR MOUNTING ON AN ELECTRIC IMMERSION HEATER

Raymond T. Groothuizen, Kitchener, Canada, assignor to Glengarry Industries Ltd., Guelph, Canada

Filed Jan. 19, 1993, Ser. No. 5,969
Int. Cl.[5] F24H *1/20*; H05B *3/82*
U.S. Cl. 392—457 **10 Claims**



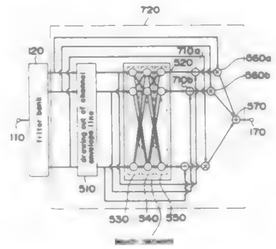
1. A resistor device for application to a U-shaped heating element having a pair of sheath ends projecting through mounting means for a container to reduce galvanic action produced in the container by said heating element in which said heating element is used to heat the contents thereof, comprising a metal disc, an insulating gasket co-extensive with said metal disc and abutting said metal disc, a resistor having a pair of leads, an opening formed in said metal disc and aligned with an opening in said gasket, said aligned openings receiving said resistor, one of said leads being disposed between said metal disc and said gasket for electrical contact within said metal disc, the other lead extending through the opening in said gasket into abutment against the opposite side of said gasket, said metal disc and gasket each having a pair of openings formed therein for receiving sheath ends of the heating element in frictional engagement therewith whereby upon mounting of the device upon the sheath ends of the U-shaped heating element extending in electrically insulative relationship through the mounting means for the container, electrical conductivity is effected between said sheath ends and said mounting means through said resistor.

5,335,312

NOISE SUPPRESSING APPARATUS AND ITS ADJUSTING APPARATUS

Tsuyoshi Mekata, Katano, and Hideyuki Takagi, Kyoto, both of Japan, assignors to Technology Research Association of Medical and Welfare Apparatus, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 940,499
Claims priority, application Japan, Sep. 6, 1991, 3-226984
Int. Cl.[5] G10L *3/02*
U.S. Cl. 395—2.11 **14 Claims**



1. A noise suppressing apparatus comprising:

one channel of voice and additional noise;

frequency band dividing means for dividing an input signal from only said one channel with voice and additional noise into a plurality of frequency bands with each frequency band including a voice component and an additional noise component within the respective frequency band of the input signal;

a neural network, having weight coefficients to emphasize voice and suppress noise, including an input layer having a plurality of units connected with the frequency band dividing means, a hidden layer having a plurality of units connected with the input layer units, and an output layer of a single unit connected with the hidden layer units,

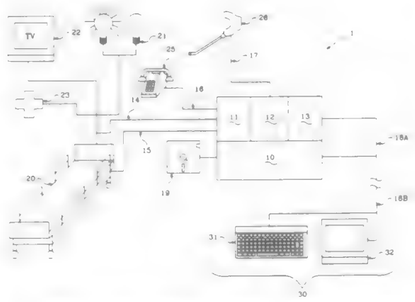
wherein output signals with noises being suppressed are obtained from the single unit of the output layer.

5,335,313

VOICE-ACTUATED, SPEAKER-DEPENDENT CONTROL SYSTEM FOR HOSPITAL BED

Terry L. Douglas, 909 Norfolk Rd., Livermore, Calif. 94550-1814

Filed Dec. 3, 1991, Ser. No. 801,257
Int. Cl.[5] G10L *7/08*
U.S. Cl. 395—2.84 **26 Claims**



1. A voice-actuated speaker-dependent control system for use with a hospital bed having patient related devices of the kind which enable a user-patient to use simple voice commands to control a plurality of said patient-related devices including those in said hospital bed, each of said devices having an activating unit and a switch relay which activates said activating unit of each said device, said voice-activated patient-related device control system having means for acknowledging the receipt of said patient-user's request and comprising in operative combination:

a) a computer disposed in association with said multi-functional hospital bed, said computer including:

i) a monitor, a keyboard, and a motherboard connected to said monitor and said keyboard and comprising a main central processor unit having a floppy-disk drive for a floppy disk and video card for displaying teaching instructions for said patient-user on said monitor;

ii) means for recognizing a patient's voice for transforming a user-patient's voice input into digital information and transmitting said digital information to said motherboard;

iii) a controller card is connected to said motherboard and to said patient-related devices and which functions as an interface between said motherboard and said patient-related devices, said controller card also being connected to said means for recognizing a user-patient's voice; and

iv) teaching means for teaching said system to recognize teaching instructions from said user-patient's voice; and

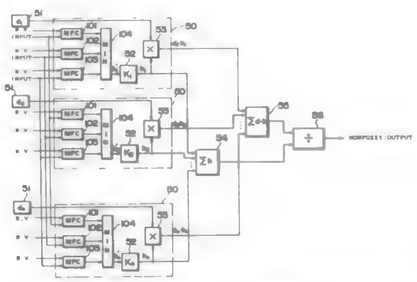
b) a headset assembly which is worn by said patient-user, said headset assembly including a microphone for use as a conventional telephone transmitter for transmitting voice input to said means for patient voice recognition and to said floppy disk, and an earphone for use as a conventional telephone receiver for receiving a signal from said means for acknowledging said patient-user's request.

5,335,314

FUZZY INFERENCE APPARATUS

Yasuhiro Tsutsumi, and Junichi Nishimura, both of Takatsuki, Japan, assignors to Omron Corporation, Kyoto, Japan

Division of Ser. No. 410,462, Sep. 21, 1989, Pat. No. 5,131,071.
This application May 26, 1992, Ser. No. 891,966
Claims priority, application Japan, Sep. 26, 1988, 63-240542; Sep. 27, 1988, 63-239736; Sep. 27, 1988, 63-239737; Sep. 29, 1988, 63-244969; Sep. 30, 1988, 63-244622; Sep. 30, 1988, 63-247109; Sep. 30, 1988, 63-247110
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—3 **5 Claims**



1. A fuzzy inference engine for performing fuzzy inference in accordance with a plurality of preset rules, each rule including at least one antecedent and a consequent, comprising:

a plurality of inference sections respectively associated with said plurality of preset rules, each inference section comprising at least one:

membership function element for outputting, in accordance with an antecedent of each said rule, a signal representing a membership function value corresponding to each input signal supplied thereto;

first operation means for each preset rule for performing a first predetermined operation relating to the antecedent of the rule, on signals outputted from the membership function elements of the rule to produce a first signal;

coefficient means for multiplying said first signal from said first operation means by a coefficient specified for each said rule to produce a second signal;

setting means for each preset rule for generating a center signal corresponding to a value representing a center position of a membership function of the consequent of each said rule;

first arithmetic means for combining said second signal and said center signal to produce a third signal representing the product, for each said rule, of a value represented by said second signal and the value representing the center position set by said setting means;

second arithmetic means for summing the third signals for each of said inference sections to produce a fourth signal;

third arithmetic means for summing the second signals for each of said interference sections to produce a fifth signal; and

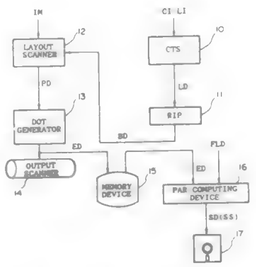
fourth arithmetic means for dividing said fourth signal by said fifth signal to produce an output signal representing the result of the performance of the fuzzy inference.

5,335,315

METHOD FOR DETERMINING A GRAPHIC AREA RATIO OF A PRINTING PLATE AND AN APPARATUS THEREFOR

Masakichi Yoshida; Kenjiro Ikehata, and Masashi Sugimura, all of Tokyo, Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1991, Ser. No. 757,909
Claims priority, application Japan, Sep. 17, 1990, 2-246490; Nov. 29, 1990, 2-332784; Nov. 29, 1990, 2-332785
Int. Cl.[5] G06F *15/62*, *3/00*
U.S. Cl. 395—109 **12 Claims**



1. A method for calculating an area ratio between a graphic area comprising characters and graphics to be printed on at least one page by a printing plate, relative to a total area of the printing plate, the characters and graphics represented by character data and graphic data, respectively, said method comprising the steps of:

arranging a first layout of the character data and the graphic data for each page, to generate first layout data;

generating binary dot data by carrying out a bit-map-making-operation for said first layout data for each page;

arranging a second layout of each page according to page layout information to produce plate-based data for the printing plate; and

dividing the printing plate into specific regional divisions and counting said binary dot data for each specific regional division.

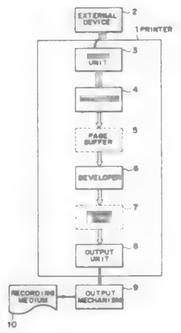
VOL 1165 ISS 1 AUG 2 1994 UMI

5,335,316

OUTPUT METHOD AND APPARATUS

Yoichi Toyokura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,049
Claims priority, application Japan, Apr. 25, 1991, 3-95347
Int. Cl.[5] G06F *3/00, 15/62*
U.S. Cl. 395—115 8 Claims



1. An output apparatus comprising:
means for receiving print data from an external apparatus;
means for analyzing the print data received by said receiving means;
means for converting the analyzed print data into image data;
a frame memory for storing therein the image data converted by said converting means;
means for checking the image data stored in said frame memory; and
means for compressing the image data stored in said frame memory in response to a check made by said checking means.

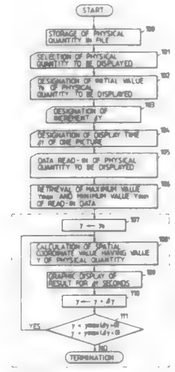
5,335,317

METHOD AND APPARATUS FOR DISPLAYING THREE DIMENSIONAL PHYSICAL QUANTITY

Junichi Yamashita; Hideo Soneda, and Satoshi Sugawara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 28, 1991, Ser. No. 676,388
Claims priority, application Japan, Mar. 28, 1990, 2-76743
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—119 7 Claims

1. A display method for displaying a three-dimensionally distributed physical quantity, said display method comprising the steps of:
dividing a value range corresponding to physical quantity values which are distributed in a three dimensional space into a plurality of small value ranges;
designating a particular one of said small value ranges so that the values belonging to said divided plurality of small value ranges successively increase or decrease with each designation;
obtaining all of the positions in said three dimensional space of which said physical quantity values are equal to the value in said designated particular small value range; and



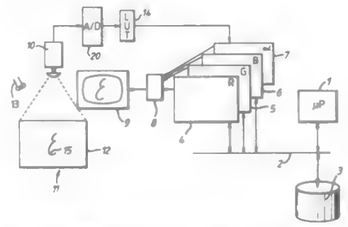
displaying said obtained positions on a display device for a predetermined time to thereby display a spatial distribution of said physical quantity values.

5,335,318

ELECTRONIC IMAGE GENERATION APPARATUS INCLUDING A CAMERA FOR RECORDING A REGION AND PRODUCING A CONTROL DATA ARRAY

Richard A. Kirk, Herts, England, assignor to Crosfield Electronics Limited, Hemel Hempstead, England

Filed Jun. 10, 1992, Ser. No. 836,448
Claims priority, application United Kingdom, Jul. 1, 1991, 9114152.3
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—131 6 Claims



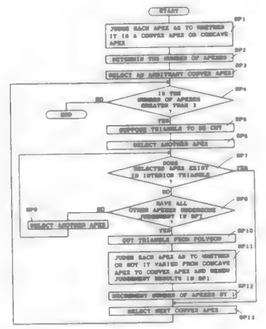
6. Electronic image generation apparatus comprising a monitor; a colour data array for storing digital data defining the colour component content of pixels of an image; a control data array for storing control data for each display pixel; a colour data store for storing digital data defining the colour component content of pixels of one or more predetermined images; mixing means connected to said control data array and said colour data array for generating display pixel data comprising a combination of proportions of the data in the colour data array and other predetermined colour data from the colour data store, said proportions being in accordance with the control data, said monitor being responsive to said display pixel data; and a camera for viewing a region within which an indicator may be moved, the camera being connected to the control data array such that data relating to the appearance of the region is recorded in the control data array, wherein the digital data stored in the colour data array is replaced by the combined display pixel data when the appearance of the monitor is deemed satisfactory.

5,335,319

POLYGON DIVISION METHOD AND APPARATUS

Koei Obata, Kusatsu, Japan, assignor to Daikin Industries, Ltd., Japan

Filed Nov. 19, 1991, Ser. No. 794,484
Claims priority, application Japan, Nov. 20, 1990, 2-317138
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—141 6 Claims



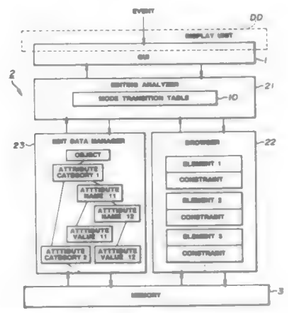
5. A polygon division method comprising the steps of:
judging whether or not an apex, which has varied from a convex apex to a concave apex during every triangle cutting operation to a polygon, is present;
continuing division of the polygon when judging that no apex which has varied from a convex apex to a concave apex is present; and
terminating division of the polygon when judging that an apex which has varied from a convex apex to a concave apex is present.

5,335,320

GRAPHICAL USER INTERFACE EDITING SYSTEM

Masatake Iwata; Jun Kurabe, and Hiroshi Ichiji, all of Kawasaki, Japan, assignors to Fuji Xerox Co., Ltd., Japan

Filed Oct. 15, 1991, Ser. No. 775,767
Claims priority, application Japan, Oct. 22, 1990, 2-283759
Int. Cl.[5] G06F *3/14, 9/06*
U.S. Cl. 395—155 12 Claims



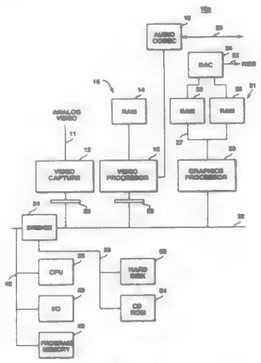
1. A graphical user interface editing system comprising:
memory means for storing as a graphical user interface database a plurality of graphical user interface elements constituting a graphical user interface; said memory means also storing graphical user interface data corresponding to said graphical user interface and comprising said graphical user interface elements as unit elements;
browser means for managing said plurality of stored graphical user interface elements;
edit data manager means for editing and managing the graphical user interface data corresponding to said graphical user interface;
user input means for receiving a user input as an event of the graphical user interface;
editing analyzer means for analyzing the event received from the user input means and issuing to the browser means and the edit data manager means a previously defined processing command;
wherein said browser means stores a constraint for the event in correspondence with each of the graphical user interface elements, and
the editing analyzer means issues said previously defined processing command to the browser means and the edit data manager means when the event satisfies the constraint corresponding to the graphical user interface element which is a target of the event.

5,335,321

SCALABLE MULTIMEDIA PLATFORM ARCHITECTURE

Kevin Harney, Brooklyn, N.Y., and Louis A. Lippincott, Roebling, N.J., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 19, 1992, Ser. No. 901,383
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 4 Claims



1. A video processing system comprising:
bus means for transmitting data;
graphics processing means coupled to said bus means for performing graphics processing;
a central processing unit coupled to said bus means and for performing video processing;
first connecting means for detachably receiving a video acceleration subsystem for performing video processing and electrically coupling said bus means to said video acceleration subsystem, wherein said video acceleration subsystem accelerates said video processing system by performing at least some of the video processing otherwise performed by said central processing unit; and
second connecting means for detachably receiving a video capture subsystem for performing video capture processing and for electrically coupling said bus means to said video capture subsystem, wherein said video capture subsystem accelerates said video processing system by performing video capture processing otherwise performed by said central processing unit.

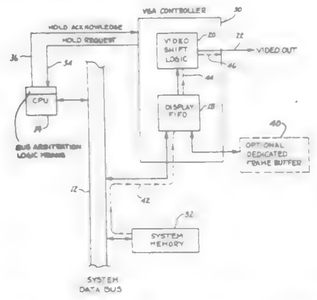
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,322

COMPUTER DISPLAY SYSTEM USING SYSTEM MEMORY IN PLACE OR DEDICATED DISPLAY MEMORY AND METHOD THEREFOR

Phillip E. Mattison, Gilbert, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 31, 1992, Ser. No. 861,403
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 7 Claims



1. A computer display system comprising, in combination:
a central Processing Unit (CPU) having an associated data bus coupled thereto;
display controller means coupled to said CPU for controlling a display device, said display controller means comprising, in combination:
a display first-in first-out (FIFO) electrically coupled to said data bus of said CPU, said CPU having means for writing display data into said display FIFO;
video shift logic means electrically coupled to said display FIFO for converting said display data in said display FIFO to a serial format;
video output means electrically coupled to said video shift logic means for allowing connection to said display device; and
system memory means electrically coupled to said data bus having a block of said system memory means defined as a frame buffer for storing display information for said display controller means;
said CPU having bus arbitration logic means for permitting said CPU to relinquish control of said data bus to a second bus controller, said display controller means being electrically coupled to said bus arbitration logic means of said CPU in such a way as to allow said display controller means to request and receive control of said data bus, said display controller means becoming said second bus controller for the purpose of transferring said display data from said block of system memory means defined as a frame buffer to said display FIFO in said display controller means.

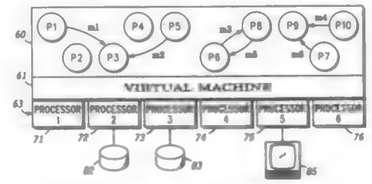
5,335,323

COMPUTER HUMAN INTERFACE WITH MULTIAPPLICATION DISPLAY

Frank C. Kolnick, Willowdale, Canada, assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 689,113, Apr. 22, 1991, abandoned, which is a continuation of Ser. No. 620, Jan. 5, 1987, abandoned. This application Nov. 27, 1992, Ser. No. 982,401
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—164 12 Claims

1. A human interface in a data processing system, said interface comprising:
display means for displaying a window;
means for representing information in at least two device-independent pictures;
means permitting a portion of said information of a first one of said pictures to be accessed by at least first and second independent applications and for permitting a portion of said information of a second one of said pictures to be accessed by at least third and fourth independent applications, wherein each of said portions comprises a plurality of picture elements which are uniquely linked with said respective applications, said picture elements of said first and second applications being intermingled, and said pic-



ture elements of said third and fourth applications being intermingled;
a picture manager process for controlling independently the picture elements linked with each of said respective applications; and
means for displaying said portions of information of each of said pictures in said window of said display means such that information representing said first and second applications is displayed in an intermingled manner and information representing said third and fourth applications is displayed in the intermingled manner.

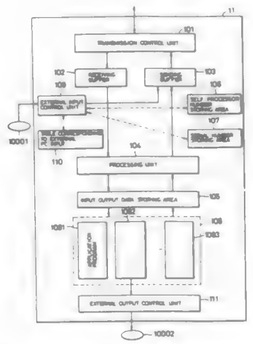
5,335,324

DISTRIBUTED PROCESSING SYSTEM AND METHOD FOR JOB EXECUTION USING A PLURALITY OF PROCESSORS AND INCLUDING IDENTIFICATION OF REPLICATED DATA

Masayuki Orimo, Kawasaki; Kinji Mori, Yokohama; Yasuo Suzuki, Ebina; Minoru Koizumi, Yokohama; Katsumi Kawano, Fuchu; Kozo Nakai, Katsuta, and Hirokazu Kasashima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 35,026, Apr. 6, 1987, abandoned, and a continuation-in-part of Ser. No. 940,495, Dec. 10, 1986, Pat. No. 4,797,885, and Ser. No. 895,375, Aug. 11, 1986, Pat. No. 4,803,683. This application Sep. 16, 1991, Ser. No. 760,349
Claims priority, application Japan, Apr. 4, 1986, 61-76522; Jul. 25, 1986, 61-173642
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—200 13 Claims

1. A distributed processing method in a system including a plurality of processors connected via a transmission path for processing data carried in messages by transmission of successive messages through the system, each transmission of a message through the system representing an event of processing by the system, comprising the steps of:
(a) sending from an originating processor to said transmission path a first message containing data, a first content code indicating the content of the data and an event number for identifying an event of processing of the data in the system;
(b) receiving in a first receiving processor said first message as it flows through the transmission path and processing the data in said first message;
(c) sending to said transmission path from said first receiving processor a second message containing a result of processing the data in said first message, a second content code and the same event number as contained in said first message;
(d) receiving in a second receiving processor said second message as it flows through the transmission path and processing the data in said second message;
(e) sending to said transmission path from said second receiving processor a third message containing a result of processing the data in said second message, a third content code and the same event number as contained in said second message;
(f) repeating steps (a) through (e) a predetermined number of times so as to place plural first, second and third messages on said transmission path;



(g) receiving in an analyzing processor from said transmission path at least said plural second and third messages and identifying a processing flow in a processing sequence within the system on the basis of the content codes and event numbers contained in said messages;
(h) receiving in at least one processor plural messages from said transmission path; and
(i) respectively comparing in said one receiving processor the content code and the event number of a received message with the content code and event number of a previously received message to detect replicated messages having the same content code and event number.

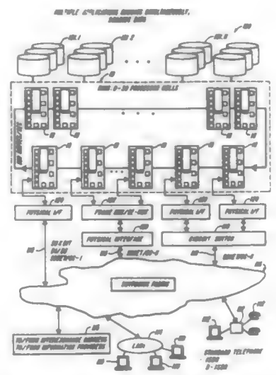
5,335,325

HIGH-SPEED PACKET SWITCHING APPARATUS AND METHOD

Steven J. Frank, Hopkinton; Henry Burkhardt, III, Manchester; James B. Rothnie, Brookline, and William F. Mann, Sudbury, all of Mass., assignors to Kendall Square Research Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 370,325, Jun. 22, 1989, and a continuation-in-part of Ser. No. 136,930, Dec. 22, 1987, Pat. No. 5,055,999. This application Mar. 26, 1990, Ser. No. 499,182
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—200 19 Claims

1. Digital packet switching apparatus for selectively switching digital signal packets between a set of nodes, said digital signal packets being configured in accordance with a selected protocol, the apparatus comprising
A. plural processing cells, each being associated with at least one of said nodes, and each including
a processing unit coupled to an associated memory element for storing information-representative signals, including digital signal packets, or portions thereof,
packet processing means, coupled to at least one of the nodes associated with that processing cell and to at least the memory element of that processing cell, for at least one of
(i) receiving a digital signal packet from that node and transmitting at least a portion of that digital signal packet for storage in that memory element, or
(ii) receiving at least a portion of a digital signal packet from that memory element and transmitting a digital signal packet, including at least that portion, to that node,
B. memory management means coupled to the memory elements of said plural processing cells for accessing one or more of said information-representative signals stored therein,
C. at least a requesting one of said processing units including access request means for generating an access-request signal representative of a request for access to an information-representative signal stored in any of said memory elements, said access request means including means for selectively generating said access-request signal to include an ownership-request signal representative of a request for priority access to the requested information-representative signal, wherein said requested information-representative signal can comprise a digital signal packet, or portion thereof, at least the memory element associated with the requesting processing unit including control means for selectively transmitting said access-request signal to said memory management means,



D. said memory management means including memory coherence means responsive to selected ones of said ownership-request signals for
allocating, only within the memory element associated with the requesting processing unit, physical storage space for the requested information-representative signal, wherein that space is the exclusive storage space for the requested information-representative signal with respect to all of said memory elements, and for storing that requested information-representative signal in that exclusive physical storage space.

5,335,326

MULTICHANNEL FIFO DEVICE CHANNEL SEQUENCER

Uoc H. Nguyen, Long Beach; Lipson Whang, Hacienda Heights, and George Apostol, Los Angeles, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1992, Ser. No. 954,991
Int. Cl.[5] G06F *13/00, 13/38*
U.S. Cl. 395—250 1 Claim

1. A bus to bus interface for connecting a first bus to a second bus, the bus to bus interface comprising:
first bus interface means connected to the first bus for conveying data and control information to and from the first bus;
second bus interface means connected to the second bus for conveying data and control information to and from the second bus;
central buffer means connected to the first bus interface

VOL 1165 ISS 1 AG 2 1994 UMI

means and the second bus interface means, the central buffer means including:

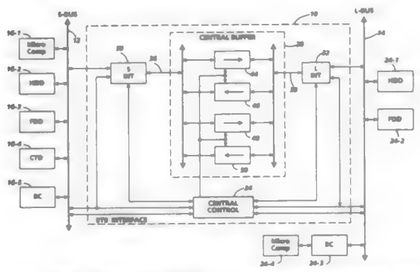
first FIFO device connected to first bus interface means and second bus interface means for conveying data, organized within first FIFO device as one or more serial, identified, channels, from first bus interface means to second bus interface means;

second FIFO device connected to first bus interface means and second bus interface means for conveying data, organized within second FIFO device as one or more serial, identified, channels, from second bus interface means to first bus interface means;

control means connected to the first bus, first bus interface means, second bus, second bus interface means, and the central buffer means, for receiving and transmitting control information from and to the first bus, first bus interface means, second bus, second bus interface means, and the central buffer means, and for controlling the operation of first bus interface means, second bus interface means, and the central buffer means, including operation of the first and second FIFO devices, in response to the received control information;

wherein central buffer means is for conveying data between first bus interface means and second bus interface means, and for conveying control information between control means and first bus interface means and second bus interface means; and

wherein the control means includes:



first control sequence means for tracking and controlling the channels of data within first FIFO device, the first sequence control means comprising:

first circular queue means for providing a predetermined number of slots, with the slots arranged circularly in series, with each slot capable of containing information regarding a channel of data already resident in first FIFO device, including the identity of the channel and the status of the channel, and capable of containing information regarding a channel of data pending residence in first FIFO device, including the identity of the pending channel;

first input pointer means for traversing first circular queue means, slot by slot, and if a slot contains the identity of a resident channel, then updating the status information in the slot of that resident channel, and if the slot does not contain the identity of a resident channel, then determining whether any channels are pending residence in first FIFO device, and if so inserting in the slot the identity of a pending channel and commencing transfer of the pending channel into first FIFO device, provided first FIFO device has room for the pending channel;

first output pointer means for traversing circular queue means, slot by slot, and if a slot contains the identity of a first FIFO device resident channel, then commensing transfer of that channel from the first FIFO device;

wherein the first input pointer means is prevented from advancing to the same slot as the first output pointer means, and the first output pointer means is prevented from advancing to the same slot as the first input pointer means so that resident channels of data in first FIFO device are not overwritten before the resident channels of data are outputted from the first FIFO device;

second control sequence means for tracking and controlling the channels of data within second FIFO device, the second sequence control means comprising:

second circular queue means for providing a predetermined number of slots, with the slots arranged circularly in series, with each slot capable of containing information regarding a channel of data already resident in second FIFO device, including the identity of the channel and the status of the channel, and capable of containing information regarding a channel of data pending residence in second FIFO device, including the identity of the pending channel;

second input pointer means for traversing second circular queue means, slot by slot, and if a slot contains the identity of a resident channel, then updating the status information in the slot of that resident channel, and if the slot does not contain the identity of a resident channel, then determining whether any channels are pending residence in second FIFO device, and if so inserting in the slot the identity of a pending channel and commencing transfer of the pending channel into second FIFO device, provided second FIFO device has room for the pending channel;

second output pointer means for traversing circular queue means, slot by slot, and if a slot contains the identity of a second FIFO device resident channel, then commensing transfer of that channel from the first FIFO device; and

wherein the second input pointer means is prevented from advancing to the same slot as the second output pointer means, and the second output pointer means is prevented from advancing to the same slot as the second input pointer means so that resident channels of data in second FIFO device are not overwritten before the resident channels of data are outputted from the second FIFO device.

5,335,327

EXTERNAL MEMORY CONTROL TECHNIQUES WITH MULTIPROCESSORS IMPROVING THE THROUGHPUT OF DATA BETWEEN A HIERARCHICALLY UPPER PROCESSING UNIT AND AN EXTERNAL MEMORY WITH EFFICIENT USE OF A CACHE MEMORY

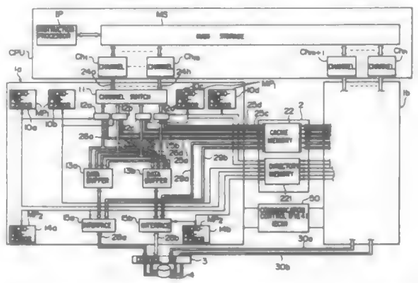
Kiyoshi Hisano, Odawara; Ken Hirashima, Minami-ashigara; Hiroyuki Kurosawa, Hiratsuka; Kenji Kubota, and Shuji Sugimoto, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 418,659, Oct. 10, 1989, Pat. No. 5,241,640. This application Mar. 29, 1993, Ser. No. 38,523

Claims priority, application Japan, Oct. 12, 1988, 63-256504

Int. Cl.[5] **G06F** *13/00, 13/12, 13/14, 13/38*

U.S. Cl. 395—250 **9 Claims**



1. A control apparatus interposed between a hierarchically upper processing unit and an external memory device, comprising:

a channel switch circuit connected to a plurality of channels from the upper processing unit for accepting an access request from the channels;

a plurality of channel ports selected by the channel switch circuit;

a cache memory interposed between the upper processing unit and the external memory device for storing information exchanged with the upper processing unit, said cache memory including means for temporarily holding copies of the information stored in the external memory device;

a plurality of information paths for selectively communicating among the upper processing unit, the cache memory and the external memory device, the plurality of information paths comprising:

first path means for establishing a first information exchange path between the cache memory and each of the plurality of channel ports,

second path means for establishing a second information exchange path between the external memory device and each of the plurality of channel ports;

a plurality of first control processors provided for the plurality of channel ports respectively for detecting conditions of the cache memory in response to the access request from a one of the plurality of channels and for independently controlling selection of the first and second information exchange paths by the channel ports;

a plurality of third path means for establishing a third information exchange path between the cache memory and the external memory device, a number of the third path means being smaller than a total number of the first path means;

a plurality of second control processors provided for the third path means respectively for selectively establishing the second and third information exchange paths to the external memory device, wherein the plurality of second control processors is smaller in number than the plurality of first control processors; and

processor supervisor means for establishing communications between the first and second control processors, for establishing independent operation of each of the control processors and controlling competition between the control processors, in such a manner that the access request from the channels for accessing the external memory device is applied to the cache memory as far as possible to effect reading and writing of requested information between the cache memory and the upper processing unit.

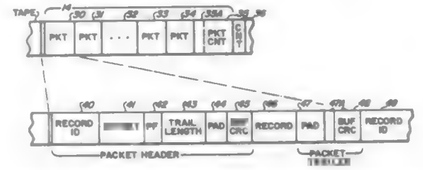
cording format demarcation machine sensible indications, first ones of said format indications signifying an ensuing format on said storage member as indicating signal blocks recorded in either first or second formats while second ones of said format indications signifying the ensuing format is undetermined, said first format having said signal blocks storing one of said records and said second format having said signal blocks storing said predetermined number of data records;

including machine-executed steps of:

determining the number of said data bytes in one of the data records;

determining that said data records are in one file of said data records wherein each of said data records in said one file having an identical number of data bytes; and

inserting a predetermined number of said data records into one of said signal blocks including the step of dividing said one signal block into extends and inserting identifications of said data records in each of said extends for respectively identifying the data records in said one signal block;



while reading signal blocks recorded on said storage member, sensing one of said format indications, then in response to sensing said first one of said format indications indicating that the number of records in the next ensuing signal block to be sensed is recorded in the indicated first or second format, respectively;

sensing said ensuing signal blocks for retrieving one of said data records from each signal block recorded in said first format and said predetermined number of said data records from each signal block recorded in said second format; and

sensing a second one of said format indications, then reading a next signal block, examining said read next signal block for ascertaining whether said next read signal block was recorded in said first or second formats, then reading a next ensuing signal block in said ascertained first or second format.

5,335,328

METHODS FOR RECORDING AND READING DATA FROM A RECORD MEMBER HAVING DATA IN ANY ONE OF A PLURALITY OF BLOCK FORMATS INCLUDING DETERMINING LENGTH OF RECORDS BEING TRANSFERRED

Edwin C. Dunn; Scott M. Fry; Scott A. Jackson; Neil H. MacLean, Jr., all of Tucson, Ariz.; Richard P. Reynolds, Salem, Oreg., and Richard A. Ripberger, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 572,744, Jun. 28, 1989, Pat. No. 5,200,864. This application Nov. 19, 1992, Ser. No. 977,371

Int. Cl.[5] **G06F** *12/06;* **B11R** *5/09*

U.S. Cl. 395—275 **18 Claims**

1. In a machine-effected method of transferring data signals arranged in data records of said data signals, between a peripheral controller and a data storage member, each data record having a number of bytes of data, said number may vary from data record to data record, wherein the data records are recorded on the storage member in signal blocks, said signal blocks being separated by inter-block gaps in which no data signals are recorded and wherein each of the signal blocks recorded on said storage member may contain one or more of said data records; wherein said storage member contains re-

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5,335,329

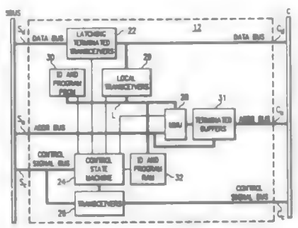
APPARATUS FOR PROVIDING DMA FUNCTIONALITY TO DEVICES LOCATED IN A BUS EXPANSION CHASSIS

Stanley E. Cox, Farmers Branch, and Mark E. Ish, Harris County, both of Tex., assignors to Texas Microsystems, Inc., Houston, Tex.

Filed Jul. 18, 1991, Ser. No. 732,471

Int. Cl.[5] **G06F** *13/14, 13/38*

U.S. Cl. 395—325 **8 Claims**



1. A data processing system, comprising:

VOL 1165 ISS 1 AG 2 1994 UMI

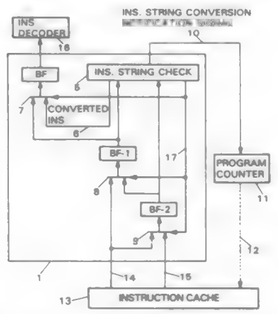
a bus, for communicating address, data and control signals;
a bus expansion slot, connected to said bus;
an expansion control system, coupled to said bus expansion slot and to a cable, comprising:
a controller coupled to receive control signals from said bus;
an expansion chassis, coupled to said cable, said expansion chassis comprising:
a plurality of expansion slots, wherein each of said expansion slots is configured such that an add-on function may be installed in respective ones of said expansion slots;
an expansion bus for communicating address, data and control signals between said cable and said expansion slots;
a chassis controller, coupled to a control line of said cable and to said expansion slots;
a first latch coupled between said expansion bus and said cable, controller by said chassis controller;
wherein, during a direct memory access operation initiated by an add-on function installed into one of said expansion slots, said chassis controller issues a local grant signal to said one of said expansion slots so that said add-on function presents a first value onto said expansion bus responsive thereto prior to said bus presenting a bus grant signal to said expansion control system;
and wherein said chassis controller controls said first latch to store the first value received on said expansion bus and to present said first value onto said cable, for a period of time after said expansion but no longer is communicating said first value.

5,335,330

INFORMATION PROCESSING APPARATUS WITH OPTIMIZATION PROGRAMMING

Masao Inoue, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 13, 1991, Ser. No. 699,404
Claims priority, application Japan, May 14, 1990, 2-123430; Nov. 30, 1990, 2-338121
Int. Cl.[5] G06F *9/40*
U.S. Cl. 395—375 **4 Claims**



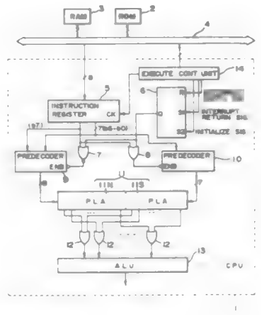
1. An information processing apparatus comprising:
a plurality of instruction buffers each for storing an instruction;
detection means for checking said instructions stored in said instruction buffers to detect a program loop and any instructions in said program loop unnecessary to be executed in second and subsequent implementations of said program loop;
cancel means for canceling the execution of said detected instructions in the third and subsequent implementations of said program loop; and
adjust means for adjusting the contents of a program counter which indicates the addresses of the instructions which are to be stored in said instruction buffers, said instruction buffers being able to store said instructions to be stored as a result of said cancellation.

5,335,331

MICROCOMPUTER USING SPECIFIC INSTRUCTION BIT AND MODE SWITCH SIGNAL FOR DISTINGUISHING AND EXECUTING DIFFERENT GROUPS OF INSTRUCTIONS IN PLURAL OPERATING MODES

Yutaka Murao, Tokyo, and Tetsuro Wada, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 12, 1991, Ser. No. 728,681
Claims priority, application Japan, Jul. 13, 1990, 2-185605
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—375 **6 Claims**



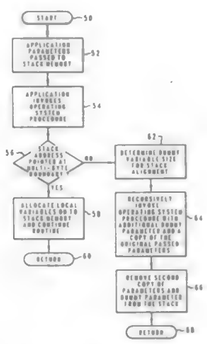
1. A microcomputer comprising:
instruction storing means for storing at least two instruction groups including instructions of different kinds, respectively distinguished on the basis of a specific bit of an instruction;
instruction register means for storing an instruction read from said instruction storing means;
execution control means for controlling the storing operation of said instruction to said instruction register means, said execution control means outputting a mode switch signal;
mode memory means for storing operation mode information for plural operation modes corresponding to the at least two instruction groups, in response to mode switch signals given by said execution control means;
a predecoder receiving the specific bit from the instruction register means and the operation mode information from the mode memory means for processing said instruction as one of a first instruction in a first operation mode of said plural operation modes when the specific bit is a first value and the operation mode information indicates said first operation mode, a second instruction in a second operation mode of said plural operation modes when the specific bit is a first value and the operation mode information indicates said second operation mode, a third instruction in said first operation mode when the specific bit is a second value and the operation mode information indicates said first operation mode, and a fourth instruction when the specific bit is a second value and the operation mode information indicates said second operation mode, said predecoder outputting predecoded data; and
instruction decoding means comprising a programmable logic array for decoding the predecoded data from said predecoder, said programmable logic array having a part selected by said specific bit and said operation mode information and outputting a decoded result; and
arithmetic logic means, coupled to said programmable logic array, for performing an arithmetic operation on the decoded result from said programmable logic array.

5,335,332

METHOD AND SYSTEM FOR STACK MEMORY ALIGNMENT UTILIZING RECURSION

Kenneth W. Christopher, Jr., Lighthouse Point; Virginia M. Roarabaugh, Boca Raton, and Theodore C. Waldron, III, Sunrise, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1991, Ser. No. 815,103
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—400 **9 Claims**



1. A method for enhancing operating system efficiency in a data processing system utilizing multi-byte data fetch operations and having a stack memory for temporary storage, said method comprising the steps of:
at each invocation of a procedure within said operating system from an application within said data processing system, determining if stack memory contents including passed parameters and variables from said procedure will be aligned at a multi-byte boundary within said stack memory; and
if said stack memory contents are not aligned at a multi-byte boundary within said stack memory, recursively invoking said procedure with an additional parameter such stack memory contents allocated on said stack memory with said additional parameter are aligned at a multi-byte boundary within said stack memory wherein data may be efficiently stored and retrieved thereafter within said stack memory utilizing multi-byte data operations.

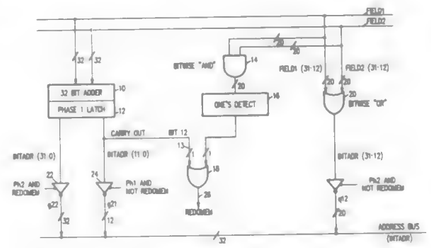
5,335,333

GUESS MECHANISM FOR FASTER ADDRESS CALCULATION IN A PIPELINED MICROPROCESSOR

Glenn J. Hinton, Portland, and Gyanendra Tiwary, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 29, 1991, Ser. No. 784,566
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—400 **7 Claims**

1. A microprocessor including an address bus and a translation lookaside buffer (TLB) which translates, to a physical address, a logical address comprised of logical address lower bits and logical address upper bits, said logical address upper bits corresponding to a logical page number and said logical address lower bits corresponding to address locations within said logical page, apparatus for forming a physical address from a base logical address and displacement logical address comprising:
first means for combining base logical address upper bits and displacement logical address upper bits to produce result logical address upper bits;
effective address computation means for adding said base logical address and said displacement logical address to produce a calculated address;
detection mean for comparing said base logical address upper bits and said displacement logical address upper bits to produce a redomem signal upon a condition that said base logical address upper bits and said displacement logical address upper bits are the same and a not redomem



signal upon a condition that said base logical address upper bits and said displacement logical address upper bits are not the same;
first gating means, connected to said first means, to said effective address computation means, to said detection means, and to said address bus, responsive to said not redomem signal, for grating said result logical address upper bits and said calculated address lower bits to said address bus; and,
second gating means connected to said effective address computation means, to said redomem signal, and to said address bus, for gating said calculated address to said address bus.

5,335,334

DATA PROCESSING APPARATUS HAVING A REAL MEMORY REGION WITH A CORRESPONDING FIXED MEMORY PROTECTION KEY VALUE AND METHOD FOR ALLOCATING MEMORIES THEREFOR

Kikuo Takahashi; Toyohiko Kagimasa, and Toshiaki Mori, all of Hachioji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

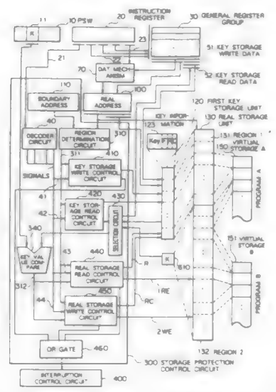
Filed Aug. 29, 1991, Ser. No. 751,778
Claims priority, application Japan, Aug. 31, 1990, 2-228129
Int. Cl.[5] G06F *12/06, 12/14*
U.S. Cl. 395—425 **18 Claims**

1. A data processing apparatus comprising:
a real storage having first and second regions each having a plurality of real unit regions; and
a plurality of storage locations, each storage location being provided for a corresponding one of said real unit regions of said first region, each of said plurality of storage locations having a first field for storing a storage protection key determined by a protection key assigned to a virtual unit region after a real unit region has been allocated to said virtual unit region and a second field for storing at least one information signal related to accessing said corresponding real unit region executed after said corresponding real unit region has been allocated to said virtual unit region,
one storage location provided in common to said plurality of real unit regions of said second region having a field for storing a storage protection key predetermined for common use among said real unit regions of said second region, said one storage location storing said predetermined storage protection key before one of said real unit regions

VOL 1165 ISS 1 AG 2 1994 UMI

of said second region is allocated to a virtual unit region; and

accessing means responsive to an instruction designating one real unit region of said real storage for either of access to data held in said designated real unit region or access to a storage protection key for said one designated real unit



region for accessing one of said plurality of storage locations corresponding to one of said real unit regions of said first region when the designated real unit region is one of said real unit regions of said first region, and for accessing said one storage location when the designated real unit region one of said real unit regions of said second region.

5,335,335

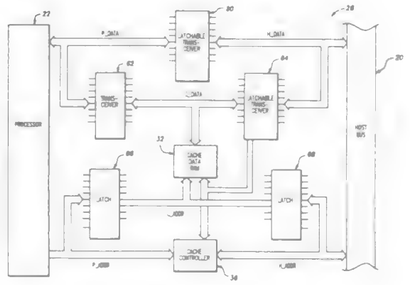
MULTIPROCESSOR CACHE SNOOP ACCESS PROTOCOL WHEREIN SNOOP MEANS PERFORMS SNOOPING OPERATIONS AFTER HOST BUS CYCLE COMPLETION AND DELAYS SUBSEQUENT HOST BUS CYCLES UNTIL SNOOPING OPERATIONS ARE COMPLETED

Mike T. Jackson, Houston; Jeffrey C. Stevens, Spring, and Roger E. Tipley, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Aug. 30, 1991, Ser. No. 753,420

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—425 **12 Claims**



1. A computer system having guaranteed cache controller snoop access, the computer system comprising:

a host bus having a state when a cycle is executing;

random access memory coupled to said host bus;

one or more microprocessors coupled to said host bus; and

at least one other device coupled to said host bus for performing cycles on said host bus;

wherein, each of said microprocessors has an associated cache memory and cache controller coupled to said host bus for performing cycles on said host bus, each of said cache controllers snooping said host bus while other cache controllers and other devices are performing cycles on said host bus which require snooping, said cache controllers including:

means coupled to said host bus for latching the state of said host bus during a host bus cycle; and

means coupled to said latching means for snooping said host bus cycle from said latched host bus state after said host bus cycle is no longer present on said host bus.

5,335,336

MEMORY DEVICE HAVING REFRESH MODE RETURNING PREVIOUS PAGE ADDRESS FOR RESUMED PAGE MODE

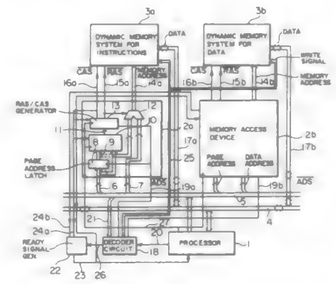
Masatsugu Kametani, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 329,306, Mar. 27, 1989, abandoned. This application Jun. 22, 1993, Ser. No. 79,852

Claims priority, application Japan, Mar. 28, 1988, 63-74145

Int. Cl.[5] G06F *12/00*; **G11C** *7/00, 8/00*

U.S. Cl. 395—425 **22 Claims**



1. A memory device comprising:

a plurality of memory groups, each memory group including a plurality of memory subgroups wherein each memory subgroup is associated with a specific page and the pages associated with the respective memory subgroups in each memory group have minimum interference with each other, the memories of each memory group constituting a memory system responsive to a page access, said memory system comprising:

memory means, responsive to a current access designating a new page address of the memory system, for storing an old page address designated at least one access earlier than said current access;

judging means responsive to the access of said new page address for judging whether the new page address designated by said current access coincides with the old page address stored in said memory means;

means for executing a page access according to the old page address when the result of the judging indicates a coincidence between them, and executing a page access according to the new page address when the result of the judging indicates a non-coincidence between them; and

refresh control means provided for said memory system of each group and for selectively operating a refresh cycle by providing a refresh address instead of the new page address to the memory system of a group and including means for making a RAS signal non-active for a time interval sufficient for RAS precharge after completion of the refresh cycle and again active after a lapse of the time interval and at the same time providing the old page address to the memory system of the group thereby providing a return of the operation to the page access mode.

5,335,337

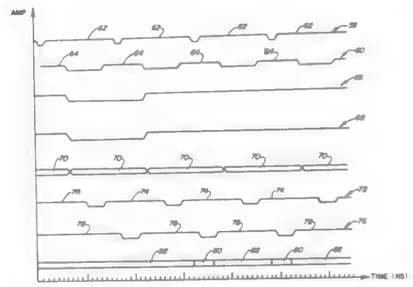
PROGRAMMABLE DATA TRANSFER TIMING

Michael A. Gagliardo, Shrewsbury; John J. Lynch, Wayland, and James E. Tessari, Arlington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 27, 1989, Ser. No. 303,624

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—500 **4 Claims**



1. In a data processing system having a plurality of central processing units, a reference clock and a memory source, a method of transmitting data between one of said plurality of central processing units and said memory source, said method comprising the steps of:

determining minimum transmission delay of a signal from each of said central processing units to said memory source;

determining minimum reception delay of each of said central processing units from said memory source;

correlating each said minimum transmission delay from each of said central processing units with each associated minimum reception delay from said memory source to establish a minimum transmission-reception delay period for each of said central processing units;

establishing a plurality of clock delays with respect to said reference clock, with each said delay corresponding to a different one of said minimum transmission-reception delay periods to form a plurality of delayed clock signals;

selecting one of said plurality of central processing units, each of said central processing units having a timing cycle with a data reading window;

sending a first latch signal synchronized with said reference clock from said selected central processing unit to said memory source to form latched serial data at said memory source;

sending a second latch signal synchronized with said reference clock from said selected central processing unit to said memory source to form a plurality of latched parallel multi-bit data words from said latched serial data;

sending a select signal from said selected central processing unit to said memory source to select one of said latched parallel multi-bit data words;

sending an associated one of said delayed clock signals from said selected central processing unit to said memory source to control the timing of the transmitting of said selected multi-bit parallel data word to said selected central processing unit; and

reading said selected multi-bit data word during a data reading window of one of said timing cycles.

5,335,338

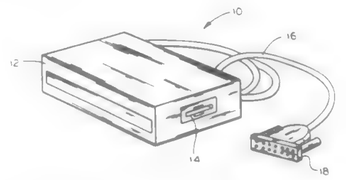
GENERAL PURPOSE PARALLEL PORT INTERFACE

Ronald J. Proesel, DeKalb, Ill., assignor to Micro Solutions, Inc., DeKalb, Ill.

Filed May 31, 1991, Ser. No. 708,512

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—500 **20 Claims**



1. A general purpose interface for connecting a mass memory storage device to a parallel port of a personal computer for facilitating data transfer between the storage device and a central processing unit of the personal computer, comprising:

a cable for connection to the parallel port of the personal computer to transfer data, CPU control and status signals to and from the personal computer;

a peripheral port for connection to a peripheral controller for the mass memory storage device to transfer data and interface control signals to and from the peripheral controller;

a random access memory circuit for storing the data to be transferred between the storage device and the personal computer;

a logic circuit electrically coupled to said cable, said peripheral port and said memory circuit, including decoding means for decoding the CPU control signals from said personal computer and control means responsive to the decoded CPU control signals for generating the interface control signals to said memory circuit and said peripheral port to control transfer of data between any of said cable, said peripheral port and said memory circuit, said control means including a direct memory access channel to control transmission of data between said memory circuit and either said peripheral port or said cable.

5,335,339

EQUIPMENT AND METHOD FOR INTERACTIVE TESTING AND SIMULATING OF A SPECIFICATION OF A NETWORK SYSTEM

Yukihito Maejima; Toko Ohtsubo, both of Yokohama; Mitsuyuki Masui, Yokosuka; Noriyuki Abe, Ishikawa; Katsuhiko Yuura, Kodaira, and Kenji Mochizuki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1991, Ser. No. 793,590

Claims priority, application Japan, Nov. 22, 1990, 2-316125; Apr. 5, 1991, 3-072803

Int. Cl.[5] G06F *3/00*

U.S. Cl. 395—500 **23 Claims**

1. An equipment for observing a behavior of a real time system in real time and sequentially displaying the behavior, the equipment comprising:

a display screen;

program memory means for storing a plurality of simulation program modules, symbol representation program modules and an inter-program communication control routine,

each of said simulation program modules including a function of: i) defining an operation of one of a plurality of objects representing said real time system components and relationship between said one of said objects and at least one other of the plurality of objects of the real time system and ii) simulating the operation of said one of said objects according to contents of an operation control message for

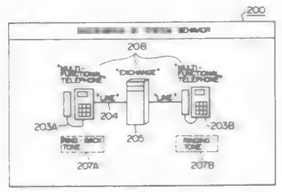
VOL 1165 ISS 1 AG 2 1994 UMI

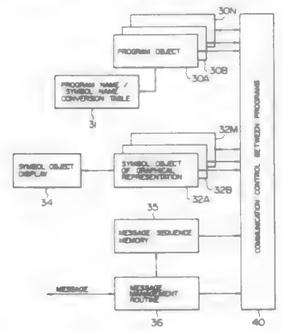
simulating the behavior of the real time system applied from said inter-program communication control routine,

each of said symbol representation program modules including a function for displaying on the display screen an operational state of one of said objects of a relationship between said one of the objects and at least one other of the plurality of objects of said real time system in a form of a pictorial graphical symbol, respectively,

said inter-program communication control routine including a function for reading an operation control message from said program memory means and distributing said operation control message to at least one of said simulation program modules selected in accordance with destination information included in the operation control message;

memory means for storing in a predetermined sequence therein a plurality of operation control messages each including destination information to designate one of said simulation program modules by which the operation control message is to be processed; and,





processor means for reading out said operation control messages one by one from said memory means and for selectively executing said inter-program communication control routine, said simulation program modules and said symbol representation program modules,

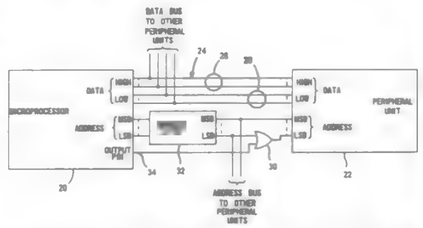
wherein each of said simulation program modules includes a function of generating a symbol control message to inform a specific one of said symbol representation program modules corresponding to the simulation program module of an object state change caused by a result of simulation operation of the simulation program module executed when receiving an operation control message from said inter-program communication control routine, said symbol control message being supplied to said specific one of said symbol representation program modules via said inter-program communication control routine so that said specific one of said symbol representation program modules changes the operational state of the associated one of said pictorial graphical symbols presented on said display screen according to contents of the symbol control message.

5,335,340

BYTE-SWAP HARDWARE SIMULATOR FOR A SIXTEEN BIT MICROPROCESSOR COUPLED TO AN EIGHT BIT PERIPHERAL UNIT

Michael D. Strong, Mechanicsburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed May 29, 1992, Ser. No. 891,310
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—500 **5 Claims**



1. A method of transferring data between a sixteen bit microprocessor and an address in an eight bit peripheral unit, wherein the microprocessor and the peripheral unit are connected via the low byte half of the microprocessor's sixteen bit data bus, comprising the steps of:

examining each instruction in the microprocessor to determine if that instruction involves the transfer of data between the microprocessor and the peripheral unit;

if a transfer of data is involved, determining whether the data comprise eight bits or sixteen bits;

if the data to be transferred comprise eight bits, determining whether the address in the peripheral unit is odd or even;

if the address in the peripheral unit for the eight bit data transfer is odd, controlling the microprocessor to operate as if the peripheral unit address is the previous even address while communicating the correct odd address to the peripheral unit;

if the data to be transferred comprise sixteen bits, determining whether the address in the peripheral unit is odd or even;

if the address in the peripheral unit for the sixteen bit data transfer is even, controlling the microprocessor to first transfer the low eight bit byte of the data between the microprocessor and the even address of the peripheral unit and to then transfer the high eight bit byte of the data by operating as if the peripheral unit address is the even address while communicating the next odd address to the peripheral unit; and

if the address in the peripheral unit for the sixteen bit data transfer is odd, controlling the microprocessor to first transfer the low eight bit byte of the data by operating as if the peripheral unit address is the previous even address while communicating the correct odd address to the peripheral unit and to then transfer the high eight bit byte of the data between the microprocessor and the next even address of the peripheral unit.

5,335,341

DUMP ANALYSIS SYSTEM AND METHOD IN DATA PROCESSING SYSTEMS

Jit S. Chana, Totton, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

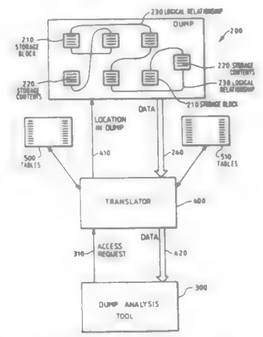
Filed Mar. 19, 1991, Ser. No. 671,235
Claims priority, application United Kingdom, Dec. 20, 1990, 9027436.4
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **10 Claims**

1. A data processing system, operating under control of a control program having different versions, said data processing system comprising:

A) means for generating information indicative of a state of the data processing system;

B) an analysis means for analyzing said state of said data processing system; and

C) accessing means for accessing said information and providing said information to said analysis means in a constant format in response to an access request transmitted from said analysis means to said accessing means, said accessing means having different versions, each of said versions of said accessing means corresponding to a corresponding different one of said versions of the control program.

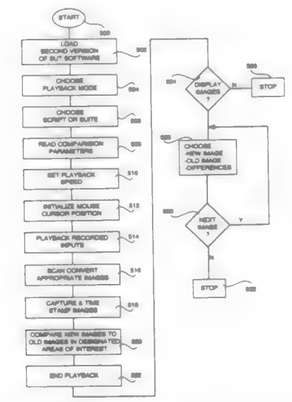


5,335,342

AUTOMATED SOFTWARE TESTING SYSTEM

Gregory M. Pope; Jeffrey F. Stone, both of Santa Cruz, and John A. Gregory, Redwood City, all of Calif., assignors to Tiburon Systems, Inc., San Jose, Calif.

Filed May 31, 1991, Ser. No. 707,882
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **10 Claims**



1. A method for testing a system-under-test having a screen means for displaying images and one or more input devices, the steps comprising:

executing a first version of system-under-test resident software;

recording a script containing input signals from said input device;

capturing specified screen images as displayed on said screen means;

executing said script on a second version of said system-under-test resident software, said second version of said software being different from said first version of said software;

capturing screen images of said second version corresponding to said specified screen images;

designating specific exclusion areas and inclusion areas on said screen images;

determining differences between said different versions of said software as appear in said designated inclusion areas; and

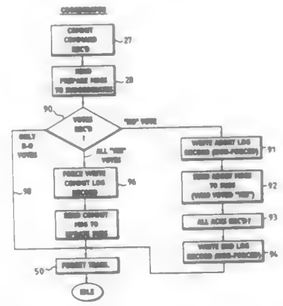
identifying the location relative to one of said screen images, of differences detected.

5,335,343

DISTRIBUTED TRANSACTION PROCESSING USING TWO-PHASE COMMIT PROTOCOL WITH PRESUMED-COMMIT WITHOUT LOG FORCE

Butler Lampson, Cambridge, and David B. Lomet, Westford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 6, 1992, Ser. No. 909,556
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—575 **11 Claims**



1. A method of operating a transaction processing system using a presumed-commit two-phase commit protocol, comprising the steps of:

assigning transaction identifiers (TIDs) to transactions in increasing order;

when a transaction is ready to commit, sending a commit command to a coordinator process, said coordinator process executing at a site having permanent storage and volatile memory;

determining whether the TID of said transaction ready to commit is within a selected range of TIDs;

if said TID of said transaction ready to commit is within said selected range of TIDs, sending a prepare message to subordinate processes;

if said TID of said transaction ready to commit is not within said selected range of TIDs, writing any volatile log records, including a log record for said transaction which is ready to commit, to said permanent storage so as to ensure that said TID is within the selected range before sending said prepare message to said subordinate processes.

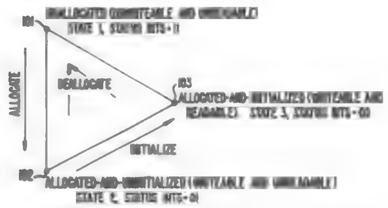
VOL 1165 ISS 1 AG 2 1994 UMI

5,335,344

METHOD FOR INSERTING NEW MACHINE INSTRUCTIONS INTO PREEXISTING MACHINE CODE TO MONITOR PREEXISTING MACHINE ACCESS TO MEMORY

Reed Hastings, La Honda, Calif., assignor to Pure Software Inc., Sunnyvale, Calif.

Continuation of Ser. No. 718,573, Jun. 21, 1991, Pat. No. 5,193,180. This application Nov. 2, 1992, Ser. No. 970,315
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **9 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 88 Pages)



1. A computer implemented method for producing a set of modified machine instructions from a set of preexisting machine instructions, wherein machine instructions are machine readable instructions executable by a computer processor, said set of modified machine instructions having the ability to maintain memory status information for a region of memory and having the ability to check memory accesses to said region of memory, said set of preexisting machine instructions including a set of preexisting memory access instructions corresponding to a set of preexisting memory accesses to said region of memory, said memory status information indicating at least two memory states, said at least two memory states including an allocated state and an allocated state, said allocated state corresponding to a memory location allocated by a computer program, and said unallocated state corresponding to a memory location not allocated by said computer program, said method comprising the steps of:

providing, in a computer storage medium, status information maintenance machine instructions for maintaining said memory status information such that said memory status information is indexed by memory addresses of said region of memory, wherein at least a first portion of said status information maintenance machine instructions is for being executed in conjunction with memory allocation machine instructions, and for updating to said allocated state said status information for memory allocated within said region of memory by said memory allocation machine instructions, and at least a second portion of said status information maintenance machine instructions is for being executed in conjunction with memory deallocation machine instructions, and for updating to said unallocated state said status information for memory deallocated within said region of memory by said memory deallocation machine instructions;

providing, in a computer storage medium, memory access checking machine instructions for being executed in conjunction with a memory access instruction, for checking said status information for memory within said region of memory accessed by said memory access instruction and for reporting an error if said status information for said accessed memory indicates said unallocated state;

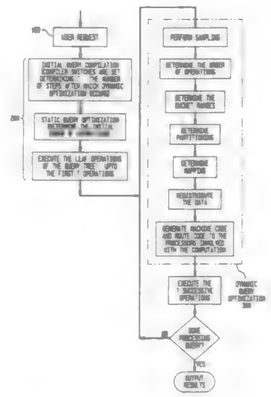
under computer control, modifying said set of preexisting machine instructions and producing in a computer storage medium said modified set of machine instructions including said status information maintenance machine instructions, said memory access checking machine instructions, and instructions corresponding to at least a subset of said set of preexisting machine instructions.

5,335,345

DYNAMIC QUERY OPTIMIZATION USING PARTIAL INFORMATION

Gideon Frieder, Syracuse, N.Y., and Ophir Frieder, Basking Ridge, N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Apr. 11, 1990, Ser. No. 508,265
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **4 Claims**



1. A method applied post-compilation time for operating a data processing system having a relational database to dynamically optimize and execute a set of operations forming all or part of a query, based on the state of the data at the time of execution, said set comprising a plurality of operations and said method comprising, in sequential order,

at the time said set of operations is to be executed, statistically sampling at least one relation resident in said relational database of said data processing system on which said set of operations is to be executed,

first executing an algorithm utilizing the statistical samples obtained as a result of said sampling step to determine the order in which said plurality of operations are to be executed based on the samples obtained during said sampling step to optimize said set of operations based on the state of the data at the time of said sampling step, said first executing step including executing the set of operations on the samples in at least one order of execution and selecting the order of execution that results in the best performance for said data processing system, and

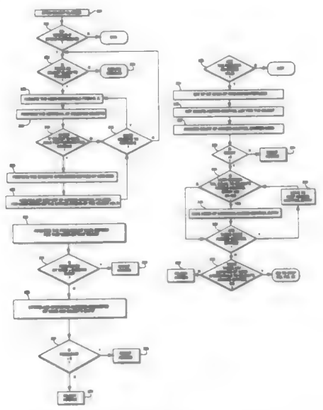
second executing on said data processing system said set of operations on said at least one relation in an order selected by said first executing step.

5,335,346

ACCESS CONTROL POLICIES FOR AN OBJECT ORIENTED DATABASE, INCLUDING ACCESS CONTROL LISTS WHICH SPAN across OBJECT BOUNDARIES

Robert A. Fabbio, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 352,081, May 15, 1989, abandoned.
This application Dec. 12, 1991, Ser. No. 808,060
Int. Cl.[5] G06F *12/14*
U.S. Cl. 395—600 **2 Claims**



1. A method for controlling access privileges to data, said method comprising:

assigning at least one access control policy associated with a plurality of dynamically assignable groups across a plurality of dynamically extendable external objects in an object oriented database;

traversing objects to dynamically extend access control policies to encompass a newly extended object;

controlling a plurality of operations including an execute operation applied to execution of a plurality of methods to at least one of said plurality of dynamically extendable objects based on said assignment and at last one credential of a user requesting access to said data represented by at least one of said plurality of dynamically extendable; and

inheriting said assigned at least one access control policy by a second of said external objects descending from said at least one object; said inheriting further including determining a least amount of privilege associated with at least one composite object accessed by said user.

5,335,347

METHOD AND APPARATUS FOR SCOPED INTERPROCESS MESSAGE SWITCHING

Carolyn L. Foss, Palo Alto; Dwight F. Hare, Menlo Park; Richard F. McAllister, Palo Alto; Tin A. Nguyen, Danville; Amy Pearl, Mountain View, and Sami Shalo, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jan. 23, 1991, Ser. No. 644,942
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—650 **20 Claims**

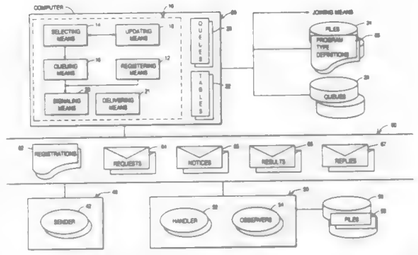
1. In a network of computer systems comprising a sender process, a plurality of receiver processes, and a plurality of message switches, a method for scoped interprocess message switching between said sender process and said receiver processes, said method comprising the steps of:

registering each of said receiver processes with at most one of said message switches on said network of computer systems, each of said registrations comprising registering at least one message pattern for the receiver process being registered, each of said message patterns described scoped messages the receiver process being registered is to receive, said description including the scoped messages' message scope types, said message scope types including a session and at least one non-session identifier message scope type, said description further including the sender process's session identifier if the scoped messages' message scope types are the session message scope type, and non-session message scopes if the scoped messages' message scope types are the at least one non-session message scope type;

joining said switches to appropriate ones of said non-session message scopes on said network of computer systems by said switches enrolling themselves as remote switches for receiving messages scoped with the particular non-session message scopes in response and in accordance to said registrations of said receiver processes

receiving scoped messages from said sender process by said switches;

selecting said registered receiver processes by said switches



in response to said received scoped messages, each of said scoped messages having message attributes identifying the scoped message's message scope type, the sender process's session identifier if the scoped message's message scope type is the session message scope type, and a non-session message scope if the scoped message's message scope type is the non-session message scope type, said selections being performed by said switches in accordance to said registered information and using said joining relationships between said switches and said non-session message scopes if said scoped messages' message scope types are the at least one non-session message scope type;

queuing copies of said received scoped messages with selected receiver processes by said selecting switches in response to its selection of receiver processes;

signaling said selected receiver processes by said queuing switches regarding the availability of said queued scoped messages in response to its queuing of scoped messages; and

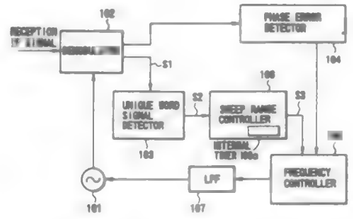
delivering said queued scoped messages by said signaling switches, upon request of said signaled receiver processes, to said requesting receiver processes.

VOL 1165 ISS 1 AG 2 1994 UMI

5,335,348
RADIO RECEIVER HAVING FREQUENCY SWEEP CONTROL APPARATUS

Shinichi Kono, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 29, 1992, Ser. No. 998,397
Claims priority, application Japan, Jan. 10, 1992, 4-021939; Jan. 30, 1992, 4-040363; Apr. 21, 1992, 4-126675; Apr. 21, 1992, 4-126676; Jun. 17, 1992, 4-157197
Int. Cl.[5] H04B 1/16
U.S. Cl. 455—192.2 12 Claims



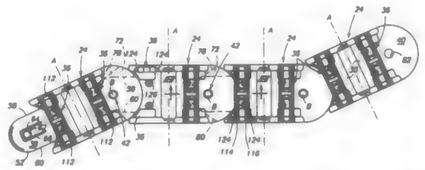
1. A frequency sweep control apparatus comprising:
variable frequency oscillation means for generating an oscillation frequency;
demodulation means for demodulating a reception intermediate frequency signal by using an output from said variable frequency oscillation means;
unique word signal detection means for detecting a unique word signal in the reception signal from a demodulated output from said demodulation means and outputting a detection signal indicating a unique word signal detected state in which the unique word signal is detected or a unique word signal non-detected state in which the unique word signal is not detected;
sweep range control means for outputting a sweep range control information in accordance with the duration of the unique word signal detected state as detected by said unique word signal detection means;
frequency control means for causing said variable frequency oscillation means to oscillate within a sweep range of the oscillation frequency designated by the sweep range control information; and
timer means for measuring a duration of the unique word signal non-detected state with respect to a time point where the unique word signal detected state change to the unique word signal non-detected state,
wherein said sweep range control means controls said frequency control means such that only a frequency range near a frequency set in an immediately preceding unique word signal detected state is set as said sweep range in order to shorten a time for detecting the unique word signal until a measuring result by said timer means comes to a predetermined period of time, and an entire frequency range is set as said sweep range after the measuring result by said timer means comes to the predetermined period of time.

5,335,349
TELECOMMUNICATION OVERHEAD CABLE DISTRIBUTION ASSEMBLY

Duane B. Kutsch, Otis Orchards, and Lloyd W. Lohf, Spokane, both of Wash., assignors to Telect, Inc., Liberty Lake, Wash.

Filed Dec. 14, 1992, Ser. No. 990,980
Int. Cl.[5] G02B 6/44
U.S. Cl. 455—6.1 12 Claims

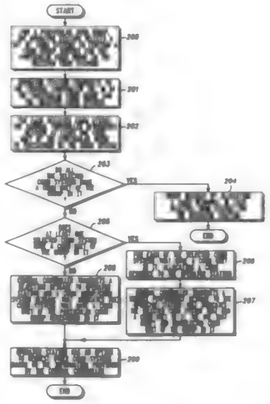
1. In a telecommunication overhead cable distribution system having "T"-shaped distribution units at designated distribution locations and cable support sections extending between the distribution locations for distributing telecommunication cables vertically and horizontally to and from telecommunication termination panels while protecting and preventing the telecommunication cables from being bent in an arc of less than a predetermined radius of curvature, in which each cable support section comprises:
a plurality of interconnecting cable support units that are pivotally interconnected to each other for receiving and protecting the telecommunication cables between the "T"-shaped distribution units to enable the cables to be distributed in vertical orientations or horizontal orientations between the distribution locations;
each of the cable support units are articulatively interconnected to enable the units to be selectively pivoted both about a substantially vertical axis and about a substantially horizontal axis relative to the adjacent cable support units to enable the cables to be distributed in the vertical orientation and the horizontal orientation;
each of the cable support units having a male member and a female member that are mounted for pivotal movement relative to each other in a substantially vertical plane about the substantially horizontal axis;
said female member having a female connector element for receiving a complementary male connector element of an adjacent cable support unit to enable the unit to pivot in a substantially horizontal plane about the vertical axis.



5,335,350
INDIVIDUAL COMMUNICATION SYSTEM SELECTION METHOD FOR GROUP SERVICES

William A. Felderman; Daniel J. McDonald, both of Cary, and Laura A. Christensen, Mt. Prospect, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1992, Ser. No. 841,674
Int. Cl.[5] H04B 7/14
U.S. Cl. 455—17 12 Claims

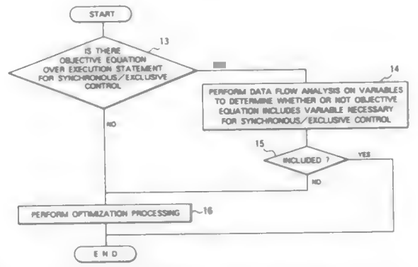


9. In a network of communication systems that comprises a plurality of communication systems, a central controller that interfaces with the plurality of communication systems and at least one operator station, wherein each communication system includes a plurality of communication units that are arranged into communication groups, a limited number of communication resources that are transceived via a limited number of repeaters, and a communication resource allocator that allocates via the central controller the limited number of communication resources among the plurality of communication units, a method for the at least one operation station to select individual communication systems for communication group services, the method comprises the steps of:
a) for a particular communication group, selecting, by the operator station, a communication group service for the particular communication group and selecting at least one communication system;
b) transmitting, by the operator station, the at least one selected communication system and an identification of the particular communication group to the central controller;
c) receiving a response to the transmission of the selected communication system; and
d) when the response indicates that a communication resource has been granted, executing the selected communication group service.

5,335,351
METHOD FOR OPTIMIZING SOURCE PROGRAM INCLUDING VARIABLES NECESSARY FOR SYNCHRONOUS/EXCLUSIVE CONTROL

Kazuhiro Aida; Eiji Nunohiro, both of Yokohama, and Hiroyuki Sone, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Software Engineering Co., Ltd., Yokohama, both of Japan

Filed May 15, 1992, Ser. No. 883,375
Claims priority, application Japan, May 21, 1991, 3-115858
Int. Cl.[5] G06F 9/45
U.S. Cl. 395—700 8 Claims

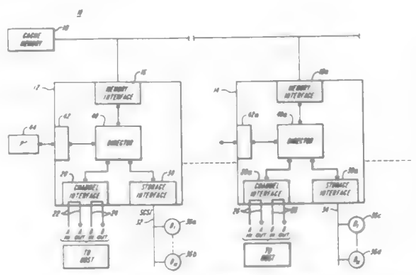


1. A method for generating an object program from a source program for a multiprocessor system, the method being executed by a computer and comprising the steps of:
making a first judgment to determine whether said source program includes equations each of which performs a same calculation and whether said equations are in a range near an executable statement for synchronous control in said source program;
making a second judgment to determine whether each one of a plurality of variables used in said same calculation is necessary for synchronous control when it is determined by said first judgment that said source program includes said equations; and
optimizing said source program by performing said same calculation once and using results of said same calculation in each of said equations when it is determined by said first judgment that said equations are not in a range near the executable statement for synchronous control or when it is determined by said second judgment that each one of said variables used in said same calculation is not necessary for synchronous control.

5,335,352
RECONFIGURABLE, MULTI-FUNCTION DATA STORAGE SYSTEM CONTROLLER SELECTIVELY OPERABLE AS AN INPUT CHANNEL ADAPTER AND A DATA STORAGE UNIT ADAPTER

Moshe Yanai, Framingham; Natan Vishlitzky, Brookline; Bruno Alterescu, Newton, and Daniel Castel, Framingham, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Sep. 24, 1990, Ser. No. 587,253
Int. Cl.[5] G06F 9/06, 13/10, 13/36, 13/40
U.S. Cl. 395—800 7 Claims



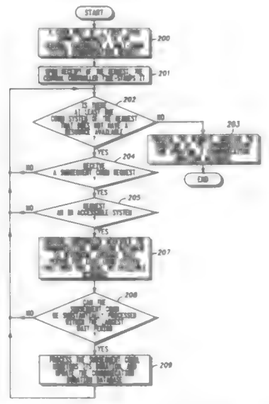
1. A reconfigurable, multi-function data controller for use in a data storage system, and selectively adaptable for use as a data input channel adapter and as a data storage unit adapter, said reconfigurable, multi-function data controller comprising:
a data channel interface including at least one independent, bi-directional channel, for receiving commands and data from one or more host computers, and for transmitting data and status information to said one or more host computers;
at least one memory interface, for transmitting and receiving commands and data to and from at least one semiconductor memory storage area, and for transmitting and receiving commands and data to and from other multi-function data controllers;
a data storage device interface, including at least one bi-directional storage device interface, for controlling the transmission and reception of data to and from at least one connected data storage device; and
a data controller director, coupled to the data channel interface, the at least one memory interface and to the data storage device interface, and selectively responsive to received commands, for directing the reconfigurable, multi-function data controller to function as, at a given time, one of a data input channel director and a data storage unit adapter, said data controller director responsive to at least a first command for reconfiguring said reconfigurable, multi-function data controller as a data input channel adapter by directing said data channel interface to engage for receiving commands and data from one or more host computers and by directing said data storage device interface to disengage, so as to configure said reconfigurable multi-function data controller to serve as a data input channel adapter, and responsive to at least a second command; for reconfiguring said reconfigurable, multi-function data controller as a data storage unit adapter by directing said storage device interface to engage for interfacing with one or more attached data storage devices and by directing said data channel interface to disengage, so as to configure said reconfigurable multi-function data controller to serve as a data storage unit adapter.

VOL 1165 ISS 1 AUG 2 1994 UMI

5,335,353
METHOD FOR PROCESSING SUBSEQUENTLY RECEIVED COMMUNICATIONS

Paul J. Cizek, Palatine, and Arthur D. Chrapkowski, Hoffman Estates, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1992, Ser. No. 841,700
Int. Cl.[5] H04B *7/14*
U.S. Cl. 455—17 **6 Claims**



1. In a network of communication systems that comprises a plurality of communication systems, a central controller that interfaces with the plurality of communication systems and at least one operator station, wherein each communication system includes a plurality of communication units that are arranged into communication groups, a limited number of communication resources that are transceived via a limited number of repeaters, and a communication resource allocator that allocates via the central controller the limited number of communication resources among the plurality of communication units, a method for processing subsequently received communications, the method comprises the steps of:

a) transmitting, by a communication unit of a first communication group, a request for a multi-communication system communication to the central controller;

b) time-stamping, by the central controller, the request for the multi-communication system communication when the request is received;

c) determining, by the central controller, that at least one of the communication systems in the multi-communication system communication presently does not have an available communication resource to produce at least one non-accessible communication system;

d) for each communication system in the multi-communication system communication that has an available communication resource, reserving, by the central controller, the available communication resource to produce an accessible communication system;

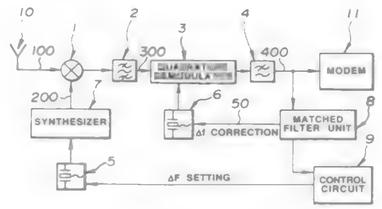
e) determining, by the central controller, an average wait period for a communication resource to become available in each of the at least one non-accessible communication system; and

f) when a communication request for a second communication group is subsequently received within at least one of the accessible communication systems, processing the communication request for the second communication group when the communication request will be processed substantially within the average wait period.

5,335,354
DEMODULATION CIRCUIT HAVING AUTOMATIC FREQUENCY CONTROL FUNCTION

Masatoshi Koike, Sagamihara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki and Toshiba Audio Video Engineering Co., Limited, Tokyo, both of Japan

Filed Nov. 26, 1991, Ser. No. 798,132
Claims priority, application Japan, Nov. 27, 1990, 2-320894
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—192.2 **2 Claims**



1. A demodulation circuit having an automatic frequency control function, comprising:

first frequency conversion means for converting an input high frequency signal into an intermediate frequency signal by using a first reference signal;

second frequency conversion means for converting the intermediate frequency signal into a base band signal by using a second reference signal;

matched filter means for receiving the base band signal and correcting the frequency of the second reference signal so as to maximize a power value of the base band signal; and

controlling means for detecting whether the frequency of the base band signal exceeds a correctable range of the matched filter means based on an output of the matched filter means, and correcting the frequency of the first reference signal such that the frequency of the base band signal falls within the correctable range of the matched filter means when the controlling means detects that the frequency of the base band signal exceeds the correctable range;

said controlling means including:

memory means for storing a first maximum power value of the base band signal controlled by the matched filter means when the frequency of the base band signal is unshifted, a second maximum power value of the base band signal controlled by the matched filter means when the frequency of the base band signal is increased by a predetermined frequency and a third maximum power value of the base band signal controlled by the matched filter means when the frequency of the base band signal is decreased by the predetermined frequency;

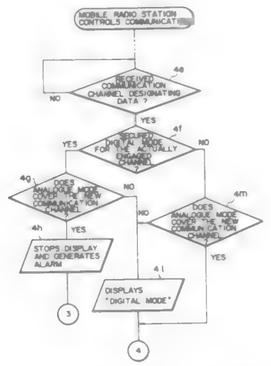
comparison means for comparing the first, second and third maximum power values; and

control means coupled to said comparison means for (1) maintaining the frequency of the base band signal when a relationship of the third maximum power value < the first maximum power value > the second maximum power value is satisfied, (2) increasing the frequency of the base band signal by the predetermined frequency when a relationship of the third maximum power value < the first maximum power value < the second maximum power value is satisfied, and (3) decreasing the frequency of the base band signal by the predetermined frequency when a relationship of the third maximum power value > the first maximum power value > the second maximum power value is satisfied.

5,335,355
MOBILE RADIO COMMUNICATION SYSTEM UTILIZING ANALOG AND DIGITAL MODULATION

Masayuki Tanaka, and Koichi Ito, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 9, 1991, Ser. No. 727,594
Claims priority, application Japan, Jul. 9, 1990, 2-179527
Int. Cl.[5] H04B *7/26*
U.S. Cl. 455—33.1 **25 Claims**



18. A method of indicating to a user of a radio communication system having a base station and a mobile radio station when an analog mode of communication is provided but a digital mode of communication has been selected by the user for communicating between the base station and the mobile radio station in a first radio zone, the method comprising the steps of:

selecting, at the mobile radio station, the digital mode of communication between the base station ad the mobile radio station;

transmitting the selected digital mode of communication to the base station;

detecting whether the digital mode of communication is set; and

providing an indication to the user if the digital mode of commnciaiton is not set.

5,335,356
ADAPTIVE RESOURCE ALLOCATION IN A MOBILE TELEPHONE SYSTEM

Hans E. Andersson, Vreta Kloster, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Sep. 5, 1991, Ser. No. 755,148
Int. Cl.[5] H04B *7/01*
U.S. Cl. 455—54.1 **3 Claims**

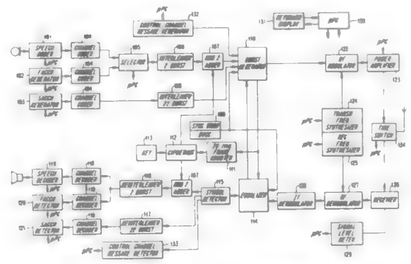
1. A method of monitoring and altering transmission quality of a call in a mobile radiotelephone system, comprising the steps of:

measuring properties of a radio channel carrying said call at a plurality of receiver sites to yield a plurality of measurements;

evaluating said measurements;

repeating said measuring step at intervals;

repeating said evaluating step at a variable time interval equal to the smallest time value of a set comprising a first time value determined as a function of a measurement indicative of quality of reception at a receiver site presently handling said call, a second time value determined as a function of a measurement indicative of a distance of a mobile station party to said call from said receiver site presently handling said call, and a third time value determined as a function of a difference between a signal strength measurement at said receiver site handling said call and a greatest signal strength measurement at the remaining receiver sites; and

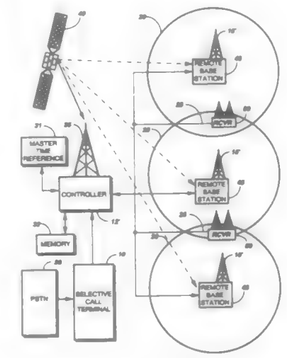


issuing a command to alter said transmission quality responsive to said evaluating step.

5,335,357
SIMULCAST SCHEDULER

Robert D. Fennell, Coral Springs, and David R. Petreye, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 632,575, Dec. 24, 1990, Pat. No. 5,287,550. This application Jul. 16, 1993, Ser. No. 93,130
Int. Cl.[5] H04B *7/005, 7/185*
U.S. Cl. 455—51.2 **9 Claims**



1. A selective call network, comprising:

terminal means for receiving selective call information and generating in response thereto a selective call message and a transmission time and for receiving simulcast delay information and calculating in response thereto a plurality of equalization times;

a plurality of transmission means for transmitting said selective call message, wherein each of said plurality of equalization times corresponds to a different transmission means included in said plurality of transmission means; and

a plurality of scheduling means, each of which is coupled to said terminal means and coupled to a corresponding one of said plurality of transmission means, each of said plurality of scheduling means comprising:

receiving means for receiving said selective call message, said transmission time, and the corresponding equalization time included in said plurality of equalization times from said terminal means;

VOL 1165 ISS 1 AG 2 1994 UMI

memory means for storing at least the corresponding equalization time received from said terminal means; and

calculating means for calculating from said transmission time and the corresponding equalization time a simulcast time to provide said selective call message to said plurality of transmission means.

5,335,358

SUBSCRIBER INCOMPATIBILITY DISPLAY ARRANGEMENT

Timothy J. Sherburne, Elk Grove Village; David J. Ness-Cohn, Lisle, and Randy L. Ekl, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1988, Ser. No. 284,230
Int. Cl.[5] H04B *7/00*
U.S. Cl. 455—53.1 18 Claims

1. In a console having a display and being operably connected to at least one RF communication system having several subscribers and at least one talk group and wherein at least one of said several subscribers in incompatible with at least one talk group, said console being constructed and arranged for assigning subscribers to talk groups, a method of assigning a particular subscriber to a particular talk group, comprising the steps of:

(a) assigning said particular subscriber to said particular talk group;

(b) displaying a first subscriber symbol representing said particular subscriber and a first talk group symbol representing said particular talk group;

(c) determining if said particular subscriber is incompatible with said particular talk group; and

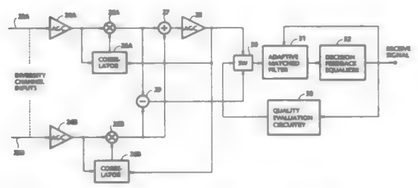
(d) responsive to the result of step (c), indicating that said particular subscriber is incompatible with said particular talk group.

5,335,359

DIVERSITY RECEIVER USING MATCHED FILTER AND DECISION FEEDBACK EQUALIZER

Ichiro Tsujimoto, and Yoshiyuki Fujimoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 30, 1991, Ser. No. 707,120
Claims priority, application Japan, May 31, 1990, 2-142238; May 31, 1990, 2-142239; Oct. 25, 1990, 2-289721
Int. Cl.[5] H04B *17/02*
U.S. Cl. 455—52.3 7 Claims



1. A radio communications system comprising:

transmitter means for delaying a digital signal to produce a delayed version of the digital signal and transmitting the delayed version on a first diversity channel and transmitting a nondelayed version of the digital signal on a second diversity channel;

first and second receiver means associated respectively with the first and second diversity channels for generating first and second diversity channel signals;

first and second normalizing amplifier means coupled respectively to the first and second receiver means for respectively producing first and second constant-amplitude signals from the first and second diversity channel signals;

first and second phase alignment means coupled to the first and second normalizing amplifier means, respectively;

adder means for combining output signals from the first and second phase alignment means;

third normalizing amplifier means for producing a third constant-amplitude signal from an output signal of the adder means and applying the third constant-amplitude signal to the first and second phase alignment means, whereby dominant components of the first and second constant-amplitude signals are combined at a maximum ratio by the adder means;

subtracter means for combining output signals from the first and second phase alignment means;

selector means for selecting a signal from the output of the third normalizing amplifier means or from the output of the subtracter means in response to a command signal applied thereto;

matched filter means coupled to the output of the selector means; and

decision feedback equalizer means coupled to the output of the matched filter means; and

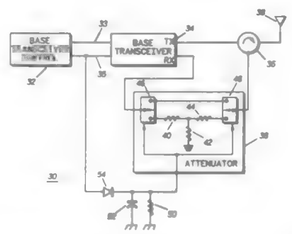
evaluation means for producing the command signal depending on an output signal from the decision feedback equalizer means.

5,335,360

BASE SITE SELECTION APPARATUS AND METHOD

Paul D. Marko, Ft. Lauderdale; Stelios J. Patsiokas, Plantation; Craig P. Wadin, Sunrise, and Gary S. Lobel, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 25, 1991, Ser. No. 720,975
Int. Cl.[5] H04B *7/00, 1/06;* H04M *11/00*
U.S. Cl. 455—56.1 14 Claims



1. In a communication system having a plurality of base sites for allocating a communication channel for use by a communication unit in response to a communication channel request from the communication unit, a base site comprising:

receiver means, operating in a low sensitivity mode when there are no communication channel requests received, and operating in a high sensitivity mode, the high sensitivity mode being activated by a control signal;

transmitter means, activated by the control signal; and

control means coupled to the receiver means and to the transmitter means for controlling the receiver means and the transmitter means, the control means providing the control signal to the transmitter and to the receiver means, in response to the communication channel request.

5,335,361

INTEGRATED CIRCUIT MODULE WITH DEVICES INTERCONNECTED BY ELECTROMAGNETIC WAVES

Sanjar Ghaem, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 11, 1991, Ser. No. 805,222
Int. Cl.[5] H04B *7/02;* G02F *1/015*
U.S. Cl. 455—66 26 Claims

1. An integrated circuit module comprising:

a housing having at least one electromagnetic wave reflective interior surface;

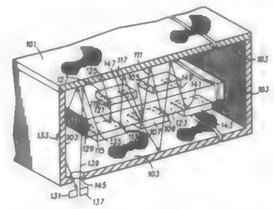
an essentially planar substrate having a first and an opposing second surface, said first and opposing second surfaces disposed inside said housing;

a first conductor disposed on said first surface;

a first semiconductor device disposed on said first surface and connected to said first conductor;

an electromagnetic wave transmitter, for sending information signals derived from said first semiconductor device, disposed on said first surface and coupled to said first conductor;

a second conductor disposed on said opposing second surface;



a second semiconductor device disposed on said opposing second surface and connected to said second conductor; and

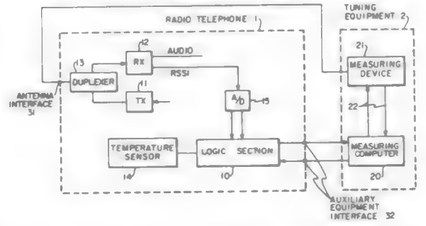
an electromagnetic wave receiver disposed on said opposing second surface and coupled to said second conductor, said electromagnetic wave receiver receiving said information signals from said electromagnetic wave transmitter and providing said information signals to said second semiconductor device, wherein said electromagnetic wave transmitter, said at least one electromagnetic wave reflective interior surface, and said electromagnetic wave receiver are positioned to establish an electromagnetic wave path for communicating said information signals from said electromagnetic wave transmitter, via said at least one electromagnetic wave reflective interior surface, to said electromagnetic wave receiver.

5,335,362

METHOD OF TUNING AND COMPENSATING THE RECEIVED SIGNAL STRENGTH INDICATOR IN A RADIO TELEPHONE

Risto Vaisanen, and Aki Leppanen, both of Salo, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Sep. 21, 1990, Ser. No. 586,075
Claims priority, application Finland, Sep. 25, 1989, 894530
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] H04B *17/00*
U.S. Cl. 455—67.1 16 Claims



1. A method for correcting a radio telephone's received signal strength indicator, the radio telephone having a logic section controlling the radio telephone's operation, comprising the steps of:

i) connecting external tuning equipment to the radio telephone via at least two interfaces;

ii) generating a test signal in the external tuning equipment;

iii) transmitting the test signal to the radio telephone via at least a first of the two interfaces such that the radio telephone generates a test received signal strength indicator (RSSI) signal in response to the test signal;

iv) transmitting from the radio telephone to the external tuning equipment the test RSSI signal via at least a second of the two interfaces;

v) generating in the external tuning equipment a compensating value corresponding to the transmitted test RSSI signal;

vi) transmitting the compensating value to the radio telephone logic section via at least the second interface;

vii) storing the compensating value in a memory of the logic section of the radio telephone; and

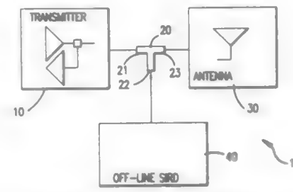
viii) compensating an actual RSSI signal by combining the actual RSSI signal with an appropriate compensating value.

5,335,363

SIGNAL INTERFERENCE REDUCTION DEVICE AND METHOD

Nicholas J. Basciano, Millersville, Md., assignor to Arinc Research Corporation, Annapolis, Md.

Filed Dec. 30, 1991, Ser. No. 814,470
Int. Cl.[5] H04B *1/38*
U.S. Cl. 455—73 28 Claims



12. An Off-line signal interference reduction device connected to a TEE-junction of a signal receiving system for shunting undesired signals comprising:

a signal interference reduction device switch coupled to the TEE-junction for selectively engaging said Off-line signal interference reduction device;

a main load coupled to a ground for dissipating said undesired signals; and

a filtering system coupled between said signal interference reduction device switch and said main load.

5,335,364

CIRCUIT ARRANGEMENT FOR AUTOMATIC FREQUENCY CONTROL IN A RADIO TELEPHONE

Jarmo Heinonen, Salo, Finland, assignor to Nokia Mobile Phones, Ltd., Salo, Finland

Filed Feb. 21, 1992, Ser. No. 839,383
Claims priority, application Finland, Feb. 22, 1991, 910861
Int. Cl.[5] H04B *1/40, 1/16*
U.S. Cl. 455—76 2 Claims

1. A circuit for controlling a frequency of a frequency signal generator that provides a local oscillator signal to a mixer in a radio frequency section of a radio transceiver, said circuit comprising:

a voltage controlled oscillator (VCO) connected to said frequency signal generator for generating a reference frequency signal;

means for deriving an intermediate frequency signal from an input signal to said radio transceiver wherein said input

VOL 1165 ISS 1 AG 2 1994 UMI

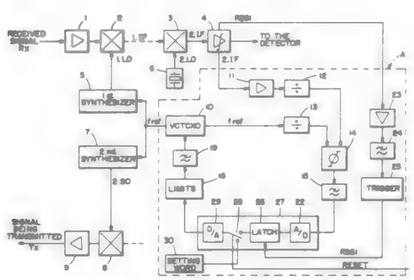
signal is coupled to an input of said mixer and said intermediate frequency signal is outputted from said mixer;

detector means for determining a signal strength of said intermediate frequency signal and for providing a signal strength indication thereof;

phase detector means having first and second inputs;

divider means responsive to said intermediate frequency signal and said reference frequency signal to derive therefrom equal frequency signals and to apply said equal frequency signals as inputs to said first and second inputs, respectively, said inputs causing said phase detector means to output a first control signal indicative of a phase difference between said equal frequency signals;

switch means connected to receive said indication from said detector means and said first control signal, for selectively applying said first control signal to said VCO so as to maintain said reference frequency signal phase locked to said input signal, said switch means including memory means for storing values of said first control signal, said memory means comprising a latch circuit for storing digital values, an analog to digital converter connected to



receive said first control signal and to apply a digital value corresponding to said first control signal to said latch circuit for storage, and a digital to analog converter connected to receive a stored digital value from said latch circuit, said switch means responsive to said signal strength indication exceeding or equalling a threshold to apply said first control signal to said VCO and to a decrease of said signal strength indication below said threshold, to cause said latch circuit to apply a stored value of said first control signal via said digital to analog converter to said VCO, said value of said first control signal stored in said latch circuit just prior to said decrease;

constant voltage means connected to said switch means, said switch means applying during a start-up mode, an output from said constant voltage means to said VCO as a second control signal to set the reference frequency signal to a predetermined frequency; and

means for controlling said switch means to apply said second control signal to said VCO if said signal strength indication from said detector means falls and remains below said threshold for a predetermined period.

5,335,365

FREQUENCY SYNTHESIZER WITH VCO OUTPUT CONTROL

Wayne W. Ballantyne, Plantation; Leng H. Ooi, Sunrise, and Eugene W. Hodges, III, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 726,661, Jul. 8, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,749

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—76 **10 Claims**

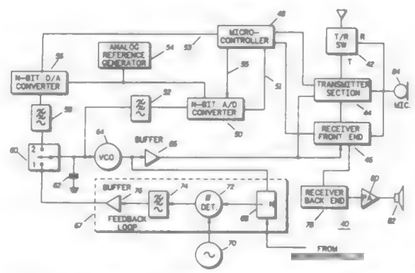
1. A frequency synthesizer circuit having a phase-lock mode of operation and a battery-saver mode of operation, the frequency synthesizer circuit comprising:

a voltage-controlled oscillator (VCO) having a control input;

a capacitor coupled to said control input;

phase-locked loop (PLL) means for comparing an output from the VCO with a reference signal to provide a first control voltage;

control means having an input for receiving and sampling



the first control voltage during the phase-lock mode, and an output for providing a second control voltage, the second control voltage representing a value of the first control voltage sampled during the phase-lock mode; and

switch means for selectively coupling the first control voltage to the capacitor during the phase-lock mode, and for coupling the second control voltage to the capacitor during the battery-saver mode in order to maintain a substantially constant control voltage at the control input of the VCO.

5,335,366

RADIATION SHIELDING APPARATUS FOR A RADIO TRANSMITTING DEVICE

John J. Daniels, 350 Bristol St. Unit A-1, Waterbury, Conn. 06708

Filed Feb. 1, 1993, Ser. No. 12,446

Int. Cl.[5] H04B *1/38*

U.S. Cl. 455—89 **6 Claims**



1. A radiation shielding apparatus in combination with a cellular telephone radio transmitting device having a radiation emanating external antenna for transmission of electromagnetic radiation, said radiation shielding apparatus comprising:

shielding means comprising an elongated member having a closed-curve cross sectional shape so as to wrap completely around the antenna of the cellular telephone device, a side of the elongated member closest to a user of the cellular telephone device comprising a first material which shields the user from radiation emanating from the antenna toward the user and an other side of the elongated member comprising a second material for allowing the radiation emanating from the antenna to pass, and fixing means for disposing, fixing and maintaining the elongated member at an operable position between the antenna and the user of the cellular telephone device so that at the operable position the elongated member is effective to prevent exposure of the user to the radiation during all transmissions of electromagnetic radiation from the radiation emanating antenna.

5,335,367

ANTENNA RETRACTING STRUCTURE OF PORTABLE RADIO

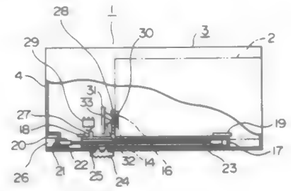
Naotomo Adachi; Tetsuya Kubo; Ryoichi Kaiwa, and Michiyoshi Kudoh, all of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 5, 1992, Ser. No. 846,145

Claims priority, application Japan, Mar. 11, 1991, 3-044789

Int. Cl.[5] H04B *1/38, 1/034, 1/18;* **H01Q** *1/24*

U.S. Cl. 455—90 **7 Claims**



1. A portable radio comprising:

a slidable antenna retractably supported by a housing;

an antenna operating member movably mounted in said housing for projecting an antenna top portion from said housing by sliding said antenna in a first direction toward the outside of said housing or for releasing said antenna to enable said antenna to slide in a retracting direction opposite to said first direction; and

an operating portion for operating said antenna operating member from outside said housing, wherein said antenna operating member and said operating portion are biased by a spring to bias said antenna to retract in the retracting direction.

5,335,368

PORTABLE RADIO APPARATUS HAVING VARIABLE IMPEDANCE MATCHING CIRCUIT BETWEEN ANTENNA AND RADIO CIRCUIT

Yoshiharu Tamura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 29, 1992, Ser. No. 891,412

Claims priority, application Japan, May 31, 1991, 3-155115

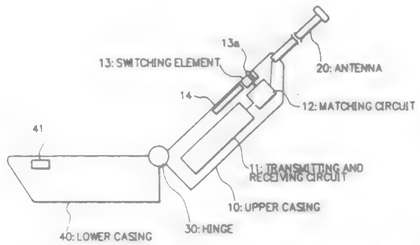
Int. Cl.[5] H04B *1/38, 1/18;* **H01Q** *1/240*

U.S. Cl. 455—90 **12 Claims**

1. A portable radio apparatus having an antenna and a foldable casing accommodating therein a radio circuit, said apparatus comprising:

variable matching means for establishing a matching between said radio circuit and said antenna; and

sensing means for sensing a folded state of said casing,



said variable matching means altering a matching state between said radio circuit and said antenna depending on the sensing result of said sensing means.

5,335,369

AUTOMATIC POWER CONTROL CIRCUIT FOR USE WITH A RADIO TELECOMMUNICATION APPARATUS

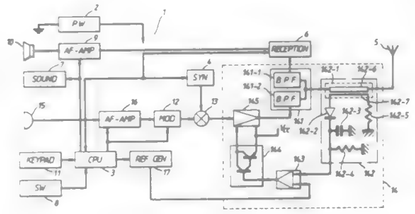
Hideki Aisaka, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 21, 1991, Ser. No. 703,807

Claims priority, application Japan, May 21, 1990, 2-129224

Int. Cl.[5] H04B *1/04*

U.S. Cl. 455—116 **9 Claims**



1. An automatic power control circuit for use in a radio telecommunication apparatus, comprising:

power amplifying means, having an amplification factor controlled in accordance with an amplifier control signal, for amplifying radio frequency signals;

filtering means for filtering an output of said power amplifying means to select signals of a predetermined range of frequencies;

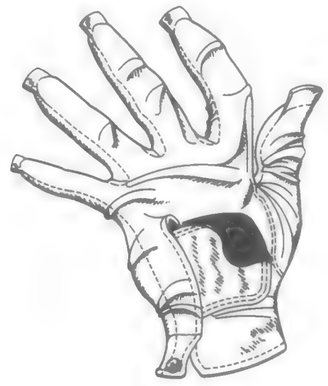
detecting means for detecting a level of forward signals output from said filtering means;

comparing means for comparing the detected level of said forward signals with an amplifier level control signal; and

amplifier control signal generating means for generating the amplifier control signal for controlling the amplification factor of said power amplifying means in accordance with an output of said comparing means.

VOL
1165
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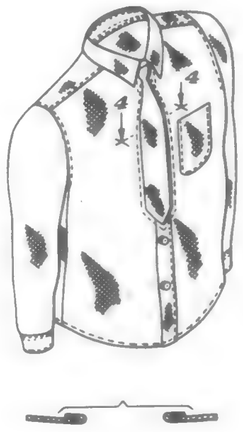
349,179
GOLF GLOVE WITH REMOVAL TABS
Walter A. Grannen, III, 402 Three Notch La., Bargersville, Ind. 46106
Filed Oct. 13, 1992, Ser. No. 363
Term of patent 14 years
U.S. Cl. D2—616



349,180
SHIRT AND SOCK STAY
Floyd Oldham, P.O. Box 533, Newark, Tex. 76071
Filed Oct. 28, 1991, Ser. No. 784,032
Term of patent 14 years
U.S. Cl. D2—624



349,181
SHIRT
Peter S. C. Cheng, 5 Ross Street, Toronto, Ontario, Canada M5T 1Z8
Filed Nov. 9, 1992, Ser. No. 1,251
Term of patent 14 years
U.S. Cl. D2—842



349,182
INFANT BIB
Hope C. Bristol, P.O. Box 218, 230 Fisher Ave., Neptune, N.J. 07754
Filed Aug. 20, 1992, Ser. No. 931,544
Term of patent 14 years
U.S. Cl. D2—861

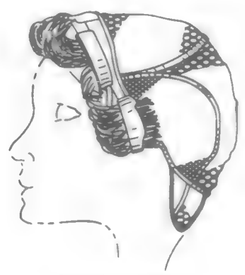


VOL 1165 ISS 1 AG 2 1994 UMI

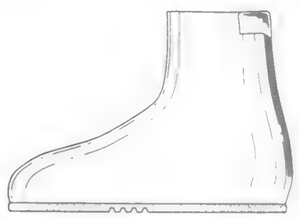
349,183
EAR FLAP HAT
Brian P. Harbison, 2269 Chestnut St., Ste. 245, San Francisco, Calif. 94123
Filed Oct. 24, 1991, Ser. No. 781,946
Term of patent 14 years
U.S. Cl. D2—870



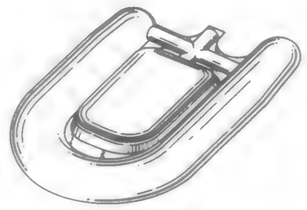
349,184
SHPITZEL RELIGIOUS HAIR ARTICLE
Feige Rosenberger, 190 Wilson St., Apt. 4-D, Brooklyn, N.Y. 11211
Filed Jun. 17, 1992, Ser. No. 900,072
Term of patent 14 years
U.S. Cl. D2—875



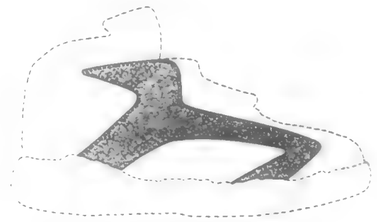
349,185
WATER-RESISTANT SHOE COVER FOR CYCLIST
Lee H. Cooper, 3706 Gull Way, Fort Collins, Colo. 80525
Filed Apr. 8, 1992, Ser. No. 866,666
Term of patent 14 years
U.S. Cl. D2—911



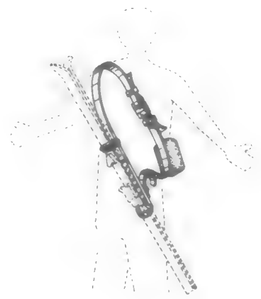
349,186
BLADDER FOR A SHOE SOLE
Joel L. Passke, Portland, Oreg.; David M. Forland, Battle Ground, and Larry R. Sarkinen, Vancouver, both of Wash., assignors to Nike, Inc., Beaverton, Oreg.
Filed Sep. 1, 1993, Ser. No. 12,419
Term of patent 14 years
U.S. Cl. D2—961



349,187
ELEMENT OF A SHOE UPPER
Judith R. Close, Dedham, and Wayne M. Russell, Cohasset, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 2,869, Dec. 22, 1992, Pat. No. Des. 341,931.
This application Nov. 24, 1993, Ser. No. 15,680
Term of patent 14 years
U.S. Cl. D2—972



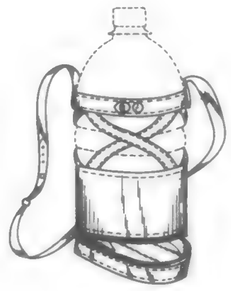
349,188
HOLSTER-TYPE SKI CARRIER
Scott E. Powers, 73 Boxford Rd., Rowley, Mass. 01969
Filed Feb. 7, 1992, Ser. No. 831,337
Term of patent 14 years
U.S. Cl. D3—221



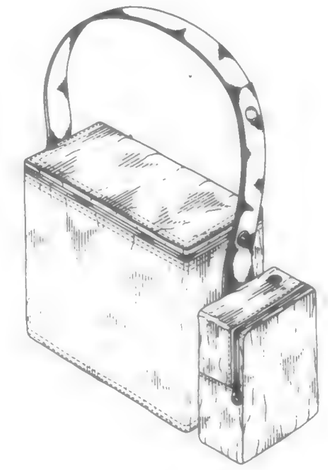
349,189
KEY HOLDER
Seung D. Hong, Seoul, Rep. of Korea, assignor to Logos Co., Ltd., Kyunggi, Rep. of Korea
Filed Nov. 2, 1993, Ser. No. 14,778
Claims priority, application Rep. of Korea, Jul. 8, 1993, 93-13537
Term of patent 14 years
U.S. Cl. D3—208



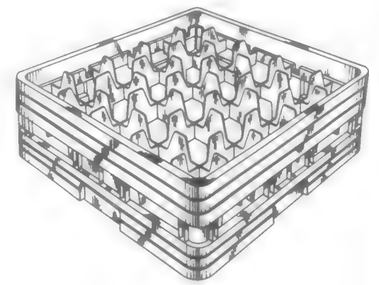
349,190
BOTTLE HOLDER
Harold F. Wasserman, 625 S. Barrington, Suite 2, Los Angeles, Calif. 90049
Filed Feb. 24, 1993, Ser. No. 5,158
Term of patent 14 years
U.S. Cl. D3—229



349,191
COMBINATION FOOD AND BEVERAGE CARRY BAG
Jeffrey V. Mason, Huntington, N.Y., assignor to Canvas & Leather Bag Co., Inc., Melville, N.N.Y.
Filed Nov. 24, 1992, Ser. No. 3,324
Term of patent 14 years
U.S. Cl. D3—289

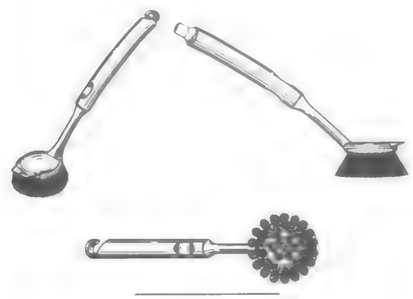


349,192
CRATE
Jhi Hung Leung, Hong Kong, China, assignor to Star Industrial Co., Ltd., Hong Kong, China
Filed May 6, 1992, Ser. No. 880,367
Claims priority, application United Kingdom, Nov. 20, 1991, 2019081
Term of patent 14 years
U.S. Cl. D3—313

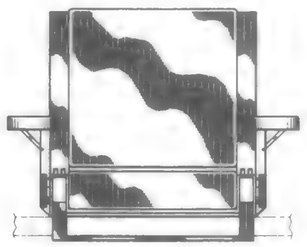


VOL 1165 ISS 1 AG 2 1994 UMI

349,193
COMBINED BRUSH AND SCRAPER
James F. Sloan, Greenville, and David B. Joyner, Winterville, both of N.C., assignors to Empire Brushes, Inc., Greenville, N.C.
Filed Jan. 12, 1993, Ser. No. 3,550
Term of patent 14 years
U.S. Cl. D4—118



349,194
FOLDING PORTABLE STADIUM SEAT
Frank J. Hollis, 252 Dusenburg SS, Ore City, Tex. 75683
Filed Jan. 27, 1993, Ser. No. 4,089
Term of patent 14 years
U.S. Cl. D6—368



349,195
CHAIR
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Company of Alabama, Inc., Birmingham, Ala.
Filed Dec. 8, 1992, Ser. No. 2,302
Term of patent 14 years
U.S. Cl. D6—376



349,196
CHAIR
Hartmut Lohmeyer, Flemingstr. 94a. DE-8000, Munich 81, Fed. Rep. of Germany
Filed Sep. 9, 1991, Ser. No. 756,775
Term of patent 14 years
U.S. Cl. D6—379



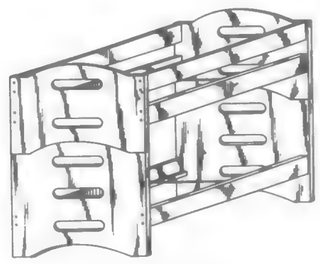
349,197
ARM CHAIR
Philip Stone, Woodbury, and Craig Stout, Redding, both of Conn., assignors to Ethan Allen Inc., Danbury, Conn.
Filed May 1, 1992, Ser. No. 877,019
Term of patent 14 years
U.S. Cl. D6—379



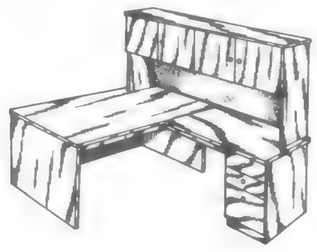
349,198
CHAIR
Chun S. Lee, Buffalo Grove, Ill., assignor to Schnadig Corporation, Chicago, Ill.
Filed Feb. 4, 1993, Ser. No. 4,410
Term of patent 14 years
U.S. Cl. D6—379



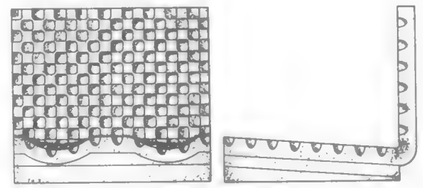
349,199
BUNK BED FRAME
Walter B. Woodhams, Rte. #2, Box 270A, Peru, Ind. 46970
Filed Sep. 30, 1992, Ser. No. 952,788
Term of patent 14 years
U.S. Cl. D6—393



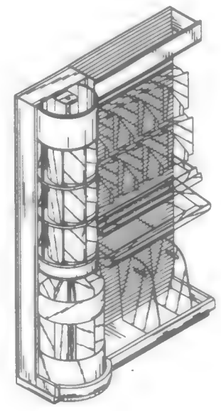
349,200
DESK
James O. Kelley, Springlake, Mich., assignor to Sligh Furniture Co., Holland, Mich.
Filed May 19, 1992, Ser. No. 885,551
Term of patent 14 years
U.S. Cl. D6—427



349,201
COMBINED SEAT AND BACK SUPPORT CUSHION
Bruce Sleboda, Midlothian, and Robert J. Rose, Chesterfield, both of Va., assignors to Carpenter Co., Va.
Division of Ser. No. 817,680, Jan. 7, 1992. This application Sep. 17, 1993, Ser. No. 13,087
Term of patent 14 years
U.S. Cl. D6—601

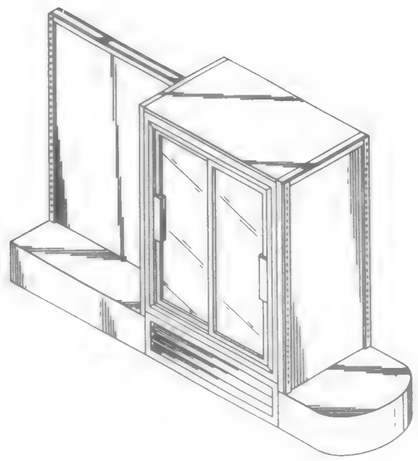


349,202
MERCHANDISE DISPLAY
Luke Eliadis, Stow; James R. Melton, Huron, and John A. Vlah, Middlefield, all of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed May 14, 1992, Ser. No. 883,413
Term of patent 14 years
U.S. Cl. D6—467



VOL 1165 ISS 1 AG 2 1994 UMI

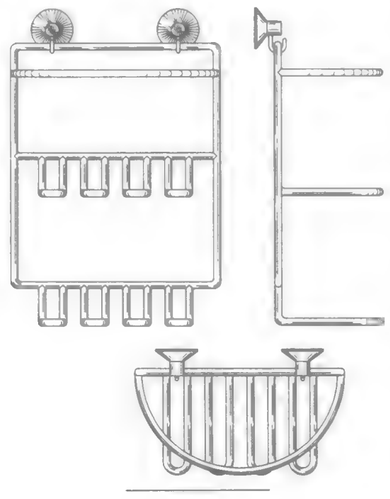
349,203
REFRIGERATOR AND MERCHANDISE RACK SUPPORT STRUCTURE FOR CHECK OUT AISLES
Donald D. Kelemen, Royston; Gerald M. Hewell, Dewy Rose, and J. Marshall Suttles, Elberton, all of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Mar. 29, 1993, Ser. No. 6,433
Term of patent 14 years
U.S. Cl. D6—470



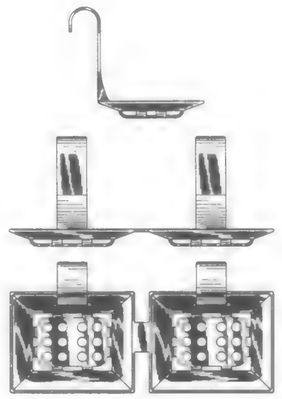
349,204
JEWELRY DISPLAY
Joseph G. Lefebvre, Barrington, R.I., assignor to International Packaging Corporation, Pawtucket, R.I.
Filed Jun. 21, 1993, Ser. No. 9,791
Term of patent 14 years
U.S. Cl. D6—476



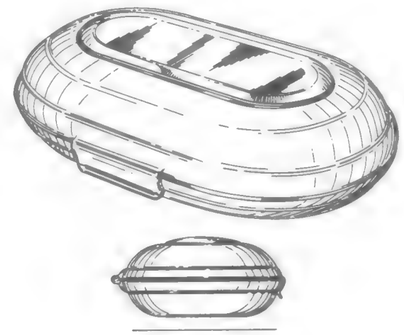
349,205
SHOWER CADDY
Mamoon M. Khuhawar, 11638 Via Isabel, El Cajon, Calif. 92019
Filed Feb. 1, 1993, Ser. No. 4,278
Term of patent 14 years
U.S. Cl. D6—525



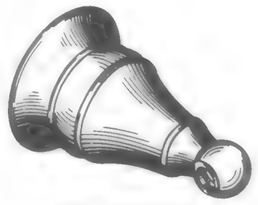
349,206
SHOWER SOAP HOLDER
Dan L. Fischer, and Rickie C. Fischer, both of 14690 E. Evans Ave., Aurora, Colo. 80014
Filed Jan. 8, 1993, Ser. No. 3,408
Term of patent 14 years
U.S. Cl. D6—536



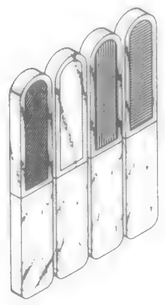
349,207
SOAP CASE
Stacy L. Wolff, Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 7, 1993, Ser. No. 3,449
Term of patent 14 years
U.S. Cl. D6—536



349,208
ESCUTCHEON FOR A BATHROOM FITTING
John E. Bollenbacher, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 14, 1993, Ser. No. 3,991
Term of patent 14 years
U.S. Cl. D6—550



349,209
COMBINED CONDIMENT HOLDER AND STIRRER
Frederick M. Smith, 1668 N. 400 W. #9G, Layton, Utah 84041
Filed Feb. 11, 1993, Ser. No. 4,692
Term of patent 14 years
U.S. Cl. D7—300.2



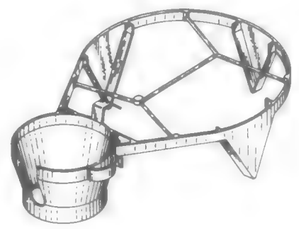
349,210
DECALCOMANIA FOR CHINA DINNERWARE
Joanne M. Capella, Syracuse, N.Y., assignor to The Pfaltzgraff Co., York, Pa.
Filed May 14, 1992, Ser. No. 881,567
Term of patent 14 years
U.S. Cl. D7—396.5



349,211
COFFEE FILTER
Gregg W. Cerato, 11 Bonnie Heights Dr., Hudson, N.H. 03051
Filed Nov. 23, 1992, Ser. No. 1,765
Term of patent 14 years
U.S. Cl. D7—400

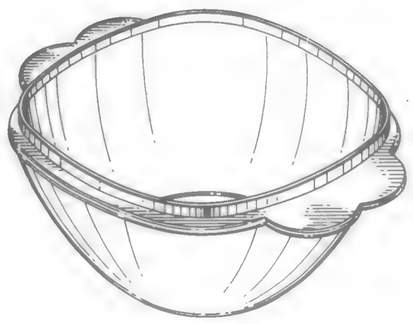


349,212
COMBINED CUP AND PLATE HOLDER
C. Richard Lynch, 2435 S. Broadway #1, Denver, Colo. 80210
Filed Mar. 17, 1993, Ser. No. 6,011
Term of patent 14 years
U.S. Cl. D7—505

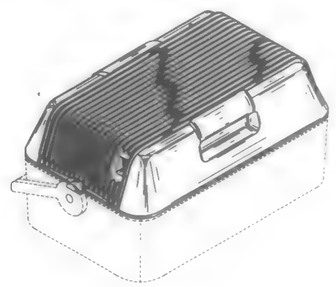


VOL 1165 ISS 1 AG 2 1994 UMI

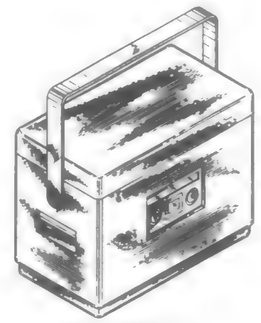
349,213
SERVING BOWL
Morison S. Cousins, Winter Park, and Brian L. Aiken, Orlando, both of Fla., assignors to Dart Industries Inc., Deerfield, Ill.
Filed Jun. 5, 1992, Ser. No. 894,699
The portion of the term of this patent subsequent to Jul. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—543



349,214
COOLER LID
Heiner Wedi, Emsdetten, Fed. Rep. of Germany, assignor to WAECO-Wahning & Co. GmbH, Emsdetten, Fed. Rep. of Germany
Filed Jan. 5, 1993, Ser. No. 3,444
Term of patent 14 years
U.S. Cl. D7—605



349,215
COMBINED COOLER AND STEREO
Victor Mercado, 414 14th St., Union City, N.J. 07087
Filed Jan. 29, 1993, Ser. No. 4,199
Term of patent 14 years
U.S. Cl. D7—605

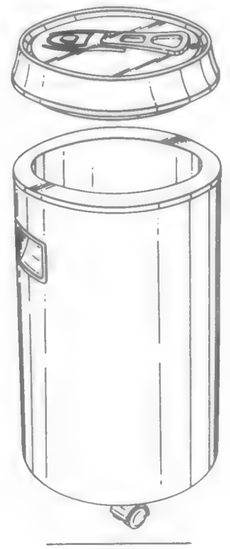


349,216
BEVERAGE CONTAINER HOLDER
Victor E. Steinfels, III, 8627 Gavinton Ct., Dublin, Ohio 43017
Continuation-in-part of Ser. No. 919,558, Jul. 22, 1992, abandoned. This application Feb. 11, 1993, Ser. No. 4,728
The portion of the term of this patent subsequent to Jul. 13, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—623

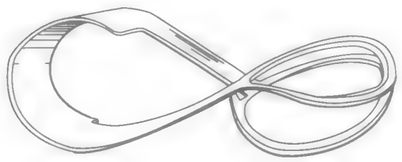
349,217
HOLDER FOR DRINK CONTAINERS
Jeff Spencer, 212 S. 14th Ave., Marshalltown, Iowa 50158
Filed Feb. 5, 1993, Ser. No. 5,111
Term of patent 14 years
U.S. Cl. D7—625



349,218
NON-REFRIGERATED CONTAINER
Graeme R. Evans, Ashmore, Australia, assignor to Singleton Industries Pty. Ltd., Broadbeach, Australia
Filed Feb. 28, 1992, Ser. No. 844,385
Claims priority, application Australia, Aug. 30, 1991, 2556/91
Term of patent 14 years
U.S. Cl. D7—628



349,219
EGG TONG
Stewart E. Granick, Riverwoods; Irving K. Kannett, Highland Park, both of Ill., and Gary M. Skwarek, Memphis, Tenn., assignors to Schering-Plough HealthCare Products Inc., Memphis, Tenn.
Filed Nov. 20, 1992, Ser. No. 1,742
Term of patent 14 years
U.S. Cl. D7—687



349,220
ELECTRIC GRASS TRIMMER AND EDGER
John Griffin, Phoenix, Ariz., assignor to McCulloch Corporation, Tucson, Ariz.
Filed Apr. 24, 1992, Ser. No. 874,568
Term of patent 14 years
U.S. Cl. D8—8

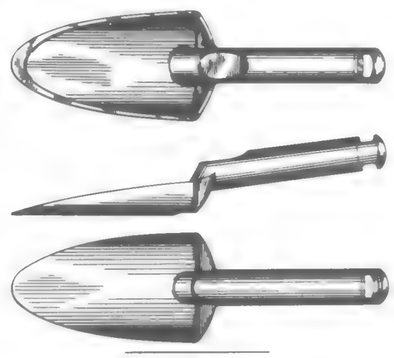


349,221
ELECTRIC GRASS TRIMMER AND EDGER
John Griffin, Phoenix, Ariz., assignor to McCulloch Corporation, Tucson, Ariz.
Filed Apr. 24, 1992, Ser. No. 874,570
Term of patent 14 years
U.S. Cl. D8—8

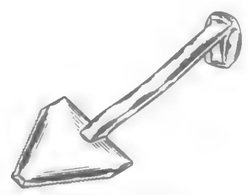


VOL 1165 ISS 1 AG 2 1994 UMI

349,222
TROWEL
Erkki O. Lindén, Billnäs, and Karl S. Rönnholm, Karis, both of Finland, assignors to Fiskars Consumer Oy Ab, Fiskars, Finland
Filed Jun. 24, 1993, Ser. No. 10,068
Term of patent 14 years
U.S. Cl. D8—10



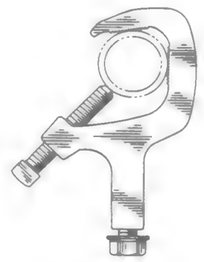
349,223
GARDENING TOOL
Mark R. Nyffeler, R.R. 4 (Box 23), Columbus, Nebr. 68601
Filed May 24, 1993, Ser. No. 8,635
Term of patent 14 years
U.S. Cl. D8—11



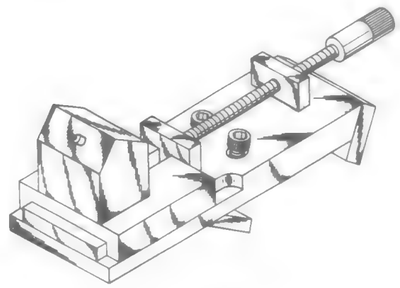
349,224
CORKSCREW
Mark C. Hughes, 60 Monmouth Road, Warley Woods, Birmingham, and Janusz L. Holland, 28 York Road, Edgbaston, Birmingham, both of England
Filed Jun. 9, 1993, Ser. No. 9,292
Claims priority, application United Kingdom, Dec. 11, 1992, 1017692
Term of patent 14 years
U.S. Cl. D8—42



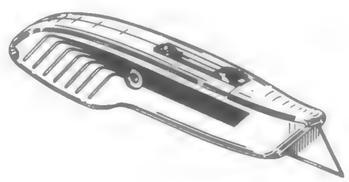
349,225
THEATRICAL C-CLAMP
Eric Von Fange, P.O. Box 767, Fort Mill, S.C. 29716
Filed Jul. 2, 1993, Ser. No. 10,227
Term of patent 14 years
U.S. Cl. D8—73



349,226
GRINDING WHEEL DRESSING TOOL
Paul Ruyts, 23423 Summer Pine, Spring, Tex. 77373
Filed May 10, 1993, Ser. No. 8,122
Term of patent 14 years
U.S. Cl. D8—74



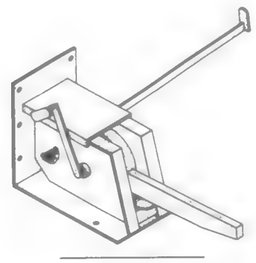
349,227
RETRACTABLE BLADE UTILITY KNIFE
H. Nicholas Ragland, and James F. Mariol, both of Cincinnati, Ohio, assignors to Millers Falls Tool Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 756,773, Sep. 9, 1991, Pat. No. Des. 336,029. This application May 19, 1993, Ser. No. 8,583
Term of patent 14 years
U.S. Cl. D8—99



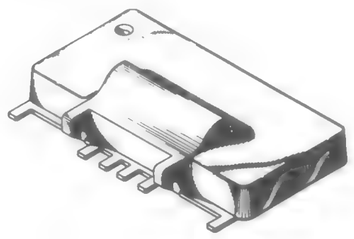
349,228
DOOR HANDLE
Franz W. Jans, Roedermark, Fed. Rep. of Germany, assignor to JADO Bathroom and Hardware Manufacturing Corp., Camarillo, Calif.
Filed May 20, 1993, Ser. No. 8,677
Term of patent 14 years
U.S. Cl. D8—308



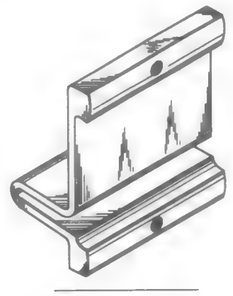
349,229
RESTRAINT LATCH FOR TRUCKS
Kurt K. Larsen, Pell City, Ala., assignor to Blue Giant Equipment Corporation, Pell City, Ala.
Filed Dec. 28, 1992, Ser. No. 3,080
Term of patent 14 years
U.S. Cl. D8—331



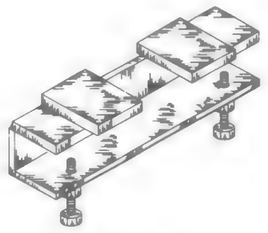
349,230
RELEASE KEY FOR A SECURITY CONTAINER
Gale W. Essick, E. Canton, Ohio, assignor to Alpha Enterprises, Inc., North Canton, Ohio
Filed Jan. 25, 1993, Ser. No. 4,026
Term of patent 14 years
U.S. Cl. D8—347



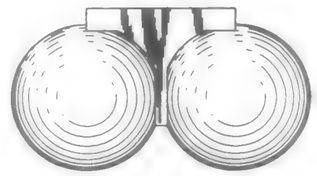
349,231
LOCKING CASE BRACKET
Daniel M. Cislo, Malibu, Calif., assignor to The Securecase Company, Santa Monica, Calif.
Filed Dec. 3, 1992, Ser. No. 2,090
Term of patent 14 years
U.S. Cl. D8—349



349,232
PIPE SHOE GUIDE
Dwight R. Lebow, 465 Southern Oaks Dr., Lake Jackson, Tex. 77566
Division of Ser. No. 616,004, Nov. 20, 1990, Pat. No. Des. 337,509. This application Jul. 13, 1993, Ser. No. 10,640
Term of patent 14 years
U.S. Cl. D8—354

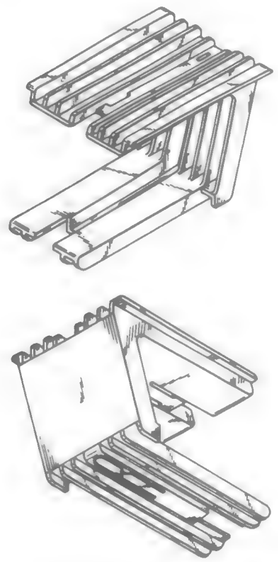


349,233
FURNITURE LEG CAP
Betty L. Terrell, 1175 SW. 11th Terr., Vero Beach, Fla. 32962
Filed Jan. 8, 1993, Ser. No. 3,402
Term of patent 14 years
U.S. Cl. D8—374

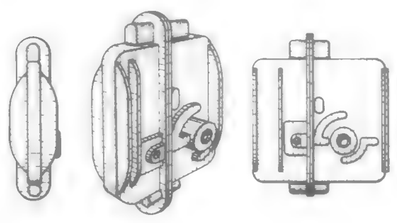


VOL 1165 ISS 1 AG 2 1994 UMI

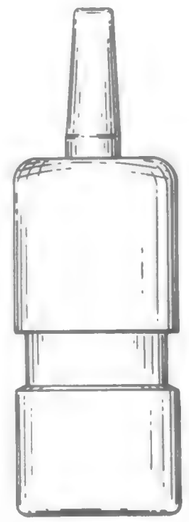
349,234
BRACKET FOR SUPPORTING OFFICE DESK TRAYS
Eric P. Chan, New York, N.Y., assignor to American Trading and Production Corporation, Baltimore, Md.
Filed Dec. 26, 1991, Ser. No. 814,279
Term of patent 14 years
U.S. Cl. D8—381



349,235
CAM LOCKING ASSEMBLY FOR JOINING THE ENDS OF PREFABRICATED WALL UNITS
C. Stephen Keller, Mansfield, Pa., assignor to The Murus Company, Millerton, Pa.
Filed Jan. 28, 1992, Ser. No. 827,818
Term of patent 14 years
U.S. Cl. D8—384



349,236
SPRAY BOTTLE
Kenneth S. Moore, London, England, assignor to Precise Plastics, Ltd., London, England
Filed Nov. 19, 1992, Ser. No. 1,647
Term of patent 14 years
U.S. Cl. D9—300



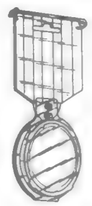
349,237
CONTAINER WITH BRUSH-HOLDING LID
James L. Hall, 4552 Biscay St., Denver, Colo. 80249
Filed Oct. 8, 1992, Ser. No. 182
Term of patent 14 years
U.S. Cl. D9—337



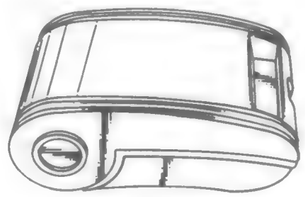
349,238
PILL DISPENSER HOUSING
Terry M. Haber, Lake Forest, Calif., assignor to Habley Medical Technology Corp., Laguna Hills, Calif.
Filed Oct. 27, 1992, Ser. No. 857
Term of patent 14 years
U.S. Cl. D9—339



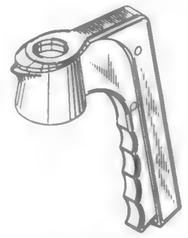
349,239
PACKAGE
Gerard Th.H. Steenland, Gouda, Netherlands, assignor to Steenland's Chocoladefabriek B.V., Pa Gouda, Netherlands
Filed Sep. 16, 1992, Ser. No. 948,962
Claims priority, application World Int. Prop. O., Mar. 16, 1992, DM/022289
Term of patent 14 years
U.S. Cl. D9—415



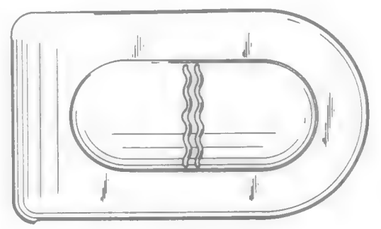
349,240
CONTAINER
Richard D. Booten, Brentwood, Tenn., assignor to Aladdin Industries, Inc., Nashville, Tenn.
Filed Mar. 2, 1993, Ser. No. 5,334
Term of patent 14 years
U.S. Cl. D9—422



349,241
COMBINATION RE-SEALABLE CLOSURE AND HANDLE FOR SCREW TOP BOTTLES
Jerry D. Isaacson, 1042 Westmoor, Winnetka, Ill. 60093
Continuation of Ser. No. 718,848, Jan. 20, 1991, abandoned.
This application Apr. 12, 1993, Ser. No. 7,025
Term of patent 14 years
U.S. Cl. D9—443



349,242
DISPENSER COVER
Daniel B. Lazarchik, Boston, and Jill M. Shurtleff, South Boston, both of Mass., assignors to The Gillette Company, Boston, Mass.
Filed Sep. 30, 1991, Ser. No. 764,936
Term of patent 14 years
U.S. Cl. D9—444



349,243
BOTTLE WATCH
Willam M. Hersch, 725 E. Wahner Pl., Bayside, Wis. 53217
Filed Apr. 6, 1992, Ser. No. 865,587
Term of patent 14 years
U.S. Cl. D10—33

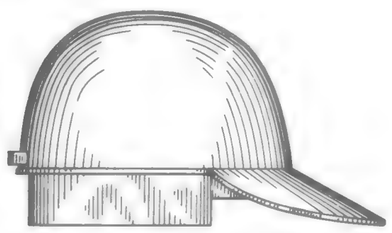


VOL 1165 ISS 1 AG 2 1994 UMI

349,244
CAN WATCH
William M. Hersch, 725 E. Wahner Pl., Bayside, Wis. 53217
Filed Apr. 6, 1992, Ser. No. 865,588
Term of patent 14 years
U.S. Cl. D10—33



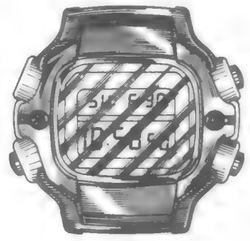
349,245
BASEBALL CAP WATCH
William M. Hersch, 725 E. Wahner Pl., Bayside, Wis. 53217
Filed Apr. 6, 1992, Ser. No. 865,589
Term of patent 14 years
U.S. Cl. D10—33



349,246
WRIST WATCH
Toshio Nakai, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,473
Claims priority, application Japan, Mar. 31, 1992, 4-9079
Term of patent 14 years
U.S. Cl. D10—38



349,247
WRIST WATCH
Shoichi Sugita, Wako, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,475
Claims priority, application Japan, Mar. 31, 1992, 4-9075
Term of patent 14 years
U.S. Cl. D10—38



349,248
WRIST WATCH
Hideyuki Yamamoto, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,477
Claims priority, application Japan, Mar. 31, 1992, 4-9073
Term of patent 14 years
U.S. Cl. D10—38



349,249
WRIST WATCH
Toshio Nakai, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,482
Claims priority, application Japan, Mar. 31, 1992, 4-9072
Term of patent 14 years
U.S. Cl. D10—38



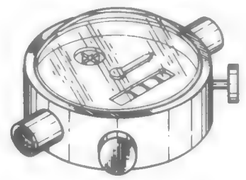
349,250
WRIST WATCH
Ryusuke Moriai, Kamifukuoka, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,483
Claims priority, application Japan, Mar. 31, 1992, 4-9083
Term of patent 14 years
U.S. Cl. D10—38



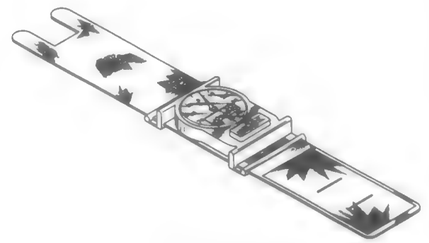
349,251
WRIST WATCH
Atsushi Goto, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,474
Claims priority, application Japan, Apr. 6, 1992, 4-243
Term of patent 14 years
U.S. Cl. D10—39



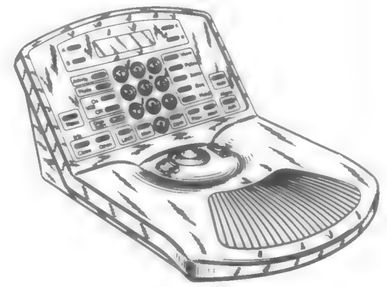
349,252
WATER LINE FLOW CONTROL METER
Harold C. Hurd, R.R. 1 Box 438, Allons, Tenn. 38541
Filed Mar. 23, 1993, Ser. No. 6,232
Term of patent 14 years
U.S. Cl. D10—96



349,253
PEDOMETER
Joseph E. Brown, 3825 N. Pine Grove Ave., #502, Chicago, Ill. 60613
Filed Feb. 11, 1993, Ser. No. 4,694
Term of patent 14 years
U.S. Cl. D10—97

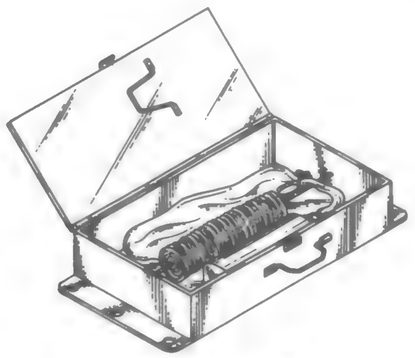


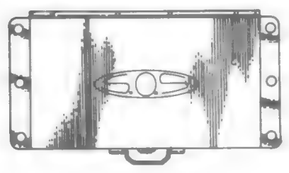
349,254
CONTROL UNIT FOR A SURVEILLANCE SYSTEM
Jon D. Buzzard, Margate, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.
Filed Dec. 21, 1993, Ser. No. 16,656
Term of patent 14 years
U.S. Cl. D10—106



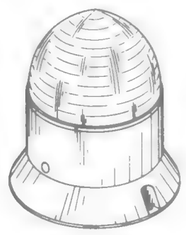
VOL 1165 ISS 1 AG 2 1994 UMI

349,255
BOAT DISTRESS SIGNAL KIT
Nicholas Zaleski, and Erick Zaleski, both of 1 Harris St., Carteret, N.J. 07008
Filed Apr. 26, 1993, Ser. No. 7,545
Term of patent 14 years
U.S. Cl. D10—109





349,256
EMERGENCY FLASHING STROBE LIGHT
Steven E. Bellinger, and Rebecca R. Bellinger, both of 220 La 101 Barton Lake, Lot 157, Fremont, Ind. 46737
Filed Jun. 25, 1993, Ser. No. 9,957
Term of patent 14 years
U.S. Cl. D10—114

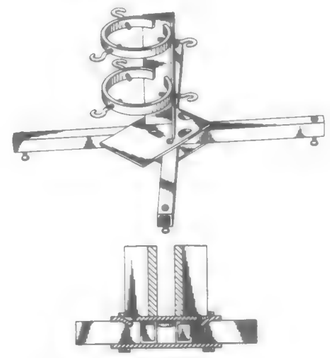


349,257
WATCH STRAP
Myron Polenberg, New York, N.Y., assignor to Swiss Army Brands, Ltd., Shelton, Conn.
Filed Mar. 17, 1993, Ser. No. 6,004
Term of patent 14 years
U.S. Cl. D11—3



349,258
ORNAMENT
Paul Witte, 157 N. Main St., New Hope, Pa. 18938
Filed May 3, 1993, Ser. No. 7,787
Term of patent 14 years
U.S. Cl. D11—121

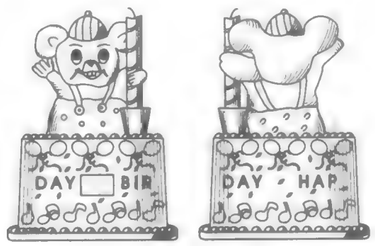
349,259
CHRISTMAS TREE STAND
Daniel Adam, 15 L'Oree des Bois, Ste Catherine J.C., Quebec, Canada G0A 3M0
Filed Mar. 2, 1992, Ser. No. 845,434
Term of patent 14 years
U.S. Cl. D11—130.1



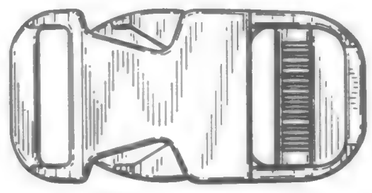
349,260
FIGURE
Norwood D. Oliver, Mantoloking, N.J., and Karen Wenzel-Murphy, Yardley, Pa., assignors to Kinney Shoe Corporation, New York, N.Y.
Filed Nov. 17, 1992, Ser. No. 1,580
Term of patent 14 years
U.S. Cl. D11—160



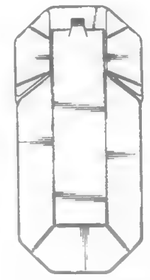
349,261
CAKE DECORATION
George S. K. Huang, 444 Apricot La., Mountain View, Calif. 94040
Filed Mar. 4, 1993, Ser. No. 5,421
Term of patent 14 years
U.S. Cl. D11—184



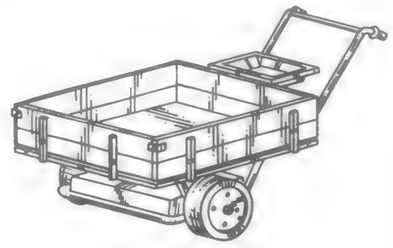
349,262
BUCKLE
Mark J. Krauss, E. Greenwich, R.I., assignor to American Cord & Webbing Co., Inc., Woonsocket, R.I.
Filed Jul. 1, 1993, Ser. No. 10,298
Term of patent 14 years
U.S. Cl. D11—216



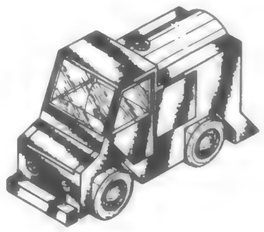
349,263
SLIDER FOR SLIDE FASTENERS
Fumie Mukai, Toyama, Japan, assignor to Yoshida Kogyo K.K., Japan
Filed Mar. 23, 1993, Ser. No. 6,227
Term of patent 14 years
U.S. Cl. D11—221



349,264
MOTORIZED UTILITY CART
Stig L. Albertsson, P.O. Box 297, Manchester, Vt. 05254
Filed Jan. 9, 1993, Ser. No. 3,741
Term of patent 14 years
U.S. Cl. D12—1



349,265
VEHICLE FOR CLEARING SNOW AND ICE FROM ROADWAYS
John M. Patton, Box G, Hillsboro, Ill. 62049
Filed Feb. 5, 1993, Ser. No. 4,491
Term of patent 14 years
U.S. Cl. D12—14

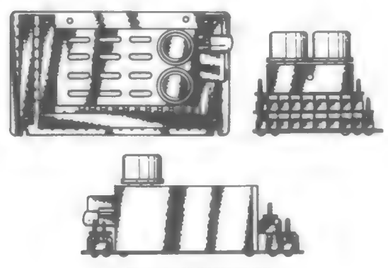


VOL 1165 ISS 1 AG 2 1994 UMI

349,266
MOTORCYCLE FRAME COVER
Tom Rudd, Hudson, Wis., and Alwin J. Stahel, St. Paul, Minn., assignors to KuryAkyn Holdings, Inc., Somerset, Wis.
Filed Nov. 18, 1992, Ser. No. 1,831
Term of patent 14 years
U.S. Cl. D12—117



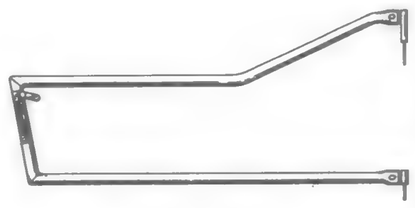
349,267
WIRING PANEL FOR MOTOR VEHICLES
Ron Francis, 167 Keystone Rd., Chester, Pa. 19013
Filed Jun. 12, 1992, Ser. No. 897,543
Term of patent 14 years
U.S. Cl. D13—147



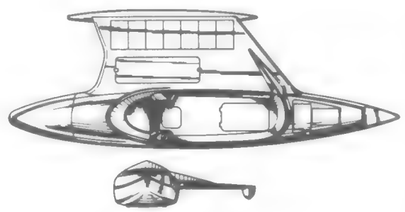
349,268
COMBINED WINDOW AND FRAME
Edgar W. Jones, 2757 Progress Park, Stow, Ohio 44224
Filed Oct. 2, 1992, Ser. No. 75
Term of patent 14 years
U.S. Cl. D12—183



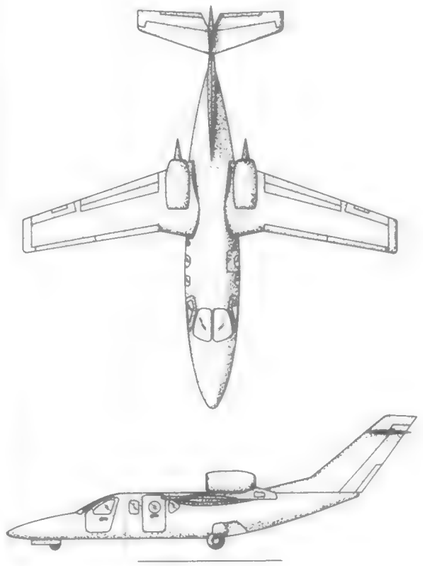
349,269
DOOR FOR UTILITY VEHICLES
Ryan R. Harris, 1812 Navy St., Santa Monica, Calif. 90405
Continuation-in-part of Ser. No. 845,441, Mar. 3, 1992. This application Dec. 4, 1992, Ser. No. 2,157
The portion of the term of this patent subsequent to Dec. 7, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—196



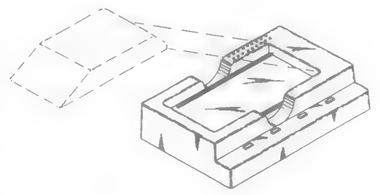
349,270
CANOE
Jun Ito, Nakano; Toshimitsu Ikeda, Saitama, and Masato Kita, Tokorozawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 24, 1992, Ser. No. 3,019
Claims priority, application Japan, Jun. 26, 1992, 4-19254
Term of patent 14 years
U.S. Cl. D12—302



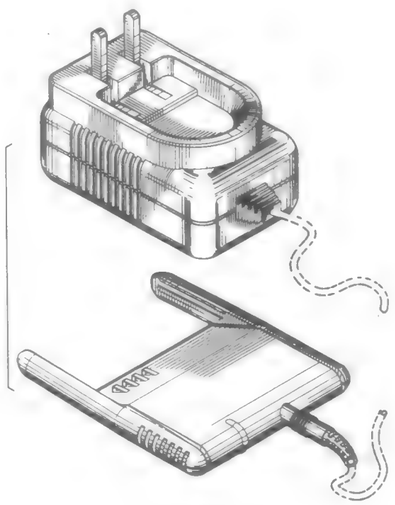
349,271
AIRPLANE
Kazuo Inoue, Nerima, and Michimasa Fujino, Komae, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 6, 1992, Ser. No. 846,417
Term of patent 14 years
U.S. Cl. D12—337



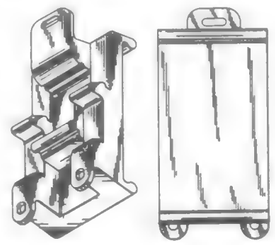
349,272
BATTERY CHARGER FOR A TRAPEZOIDAL BATTERY
George E. Sage, 22002 Redmond-Fall City Rd., Redmond, Wash. 98053
Filed Nov. 18, 1993, Ser. No. 15,494
Term of patent 14 years
U.S. Cl. D13—107



349,273
BATTERY CHARGER
Terrance N. Taylor, Barrington, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 22, 1993, Ser. No. 6,127
Term of patent 14 years
U.S. Cl. D13—108

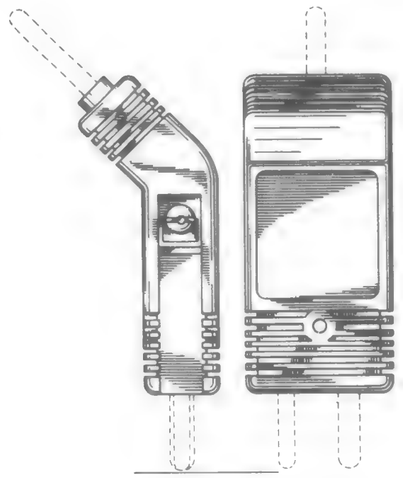


349,274
CLIP FOR MOUNTING ELECTRICAL EQUIPMENT ON A RAIL
Ahmad A. Kian, Minneapolis, and Paul R. Bedney, Jr., Eagan, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Apr. 14, 1992, Ser. No. 868,583
Term of patent 14 years
U.S. Cl. D13—128



VOL 1165 ISS 1 AG 2 1994 UMI

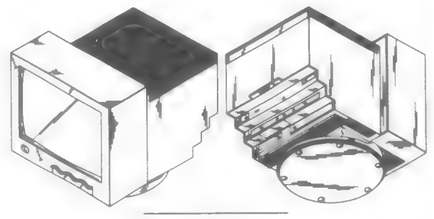
349,275
ELECTRICAL CONNECTOR FOR TEMPERATURE MEASURING EQUIPMENT
Milton B. Hollander, Stamford, Conn., assignor to Omega Engineering, Inc., Stamford, Conn.
Filed Aug. 7, 1992, Ser. No. 926,532
The portion of the term of this patent subsequent to Dec. 22, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—133



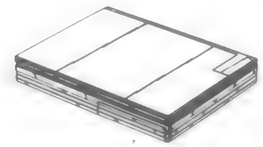
349,276
DEAD FRONT ELECTRICAL CONNECTOR FOR RECHARGING ELECTRIC VEHICLES
Ernest G. Hoffman, Middlefield, and Alfred L. Ehrenfels, Cheshire, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.
Filed Feb. 1, 1993, Ser. No. 6,212
Term of patent 14 years
U.S. Cl. D13—133



349,277
COMBINED INTEGRATED COMPUTER AND DISPLAY COVER
Tristan A. Merino, Austin, Tex., and Richard F. Sapper, Milan, Italy, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 1, 1993, Ser. No. 4,292
Term of patent 14 years
U.S. Cl. D14—100

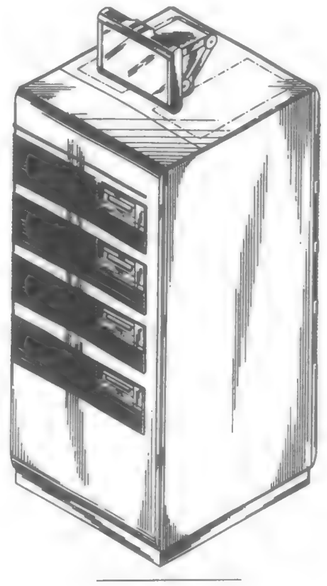


349,278
NOTEBOOK COMPUTER HOUSING
Israel Wetrin, London, England, assignor to Elonex PLC, London, England
Filed Feb. 24, 1993, Ser. No. 5,145
Claims priority, application United Kingdom, Aug. 27, 1992, 9218296
Term of patent 14 years
U.S. Cl. D14—106

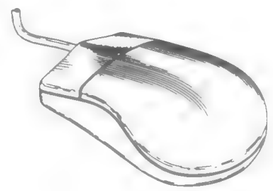




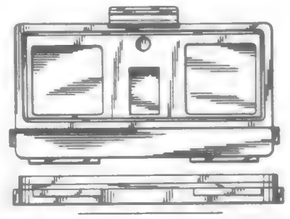
349,279
CABINET FOR TAPE DRIVES
Gary L. Jorgensen, Louisville; Dale R. Martine; Leon C. Oenes, both of Westminster, and Gregory D. Volan, Boulder, all of Colo., assignors to Storage Technology Corporatino, Louisville, Colo.
Filed Dec. 28, 1992, Ser. No. 3,039
Term of patent 14 years
U.S. Cl. D14—108



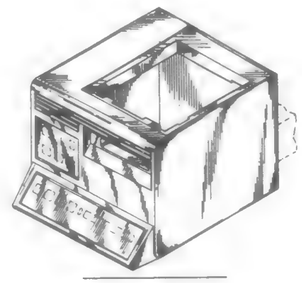
349,280
COMPUTER MOUSE
Steven T. Kaneko, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.
Filed Oct. 6, 1992, Ser. No. 175
Term of patent 14 years
U.S. Cl. D14—114



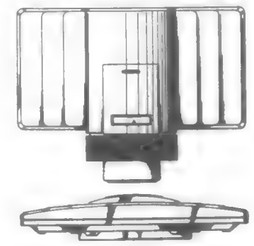
349,281
COMPUTER CARD PACKAGE FOR PROVIDING ADDITIONAL MEMORY AND DATA FOR A DIGITAL BOOK
Ngoc M. Luong, Maple Shade, N.J., assignor to Franklin Electronic Publishers, Incorporated, Mt. Holly, N.J.
Filed Oct. 20, 1992, Ser. No. 689
Term of patent 14 years
U.S. Cl. D14—114



349,282
HOUSING FOR MAGNETIC TAPE CARTRIDGE MAGAZINE AUTOLOADER
Harold A. Lunka, Broomfield; George Reichenberg, Lafayette, and Gregory D. Volan, Louisville, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Jul. 21, 1992, Ser. No. 918,636
Term of patent 14 years
U.S. Cl. D14—124

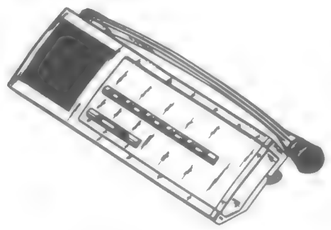


349,283
WIRELESS BASESTATION
Michael Kurtz, Ottawa, Canada, assignor to Northern Telecom Limited, MOntreal, Canada
Filed Jul. 6, 1992, Ser. No. 909,442
Term of patent 14 years
U.S. Cl. D14—142

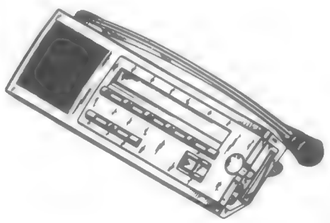


VOL 1165 ISS 1 AG 2 1994 UMI

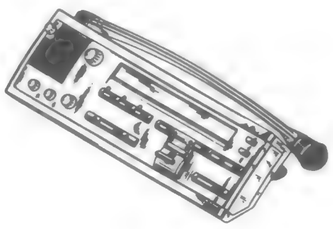
349,284
DELEGATE UNIT FOR CONFERENCE SYSTEM
Johannes G. Robertus, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 13, 1992, Ser. No. 1,455
Claims priority, application World Int. Prop. O., Jun. 10, 1992, DM/023.046
Term of patent 14 years
U.S. Cl. D14—159



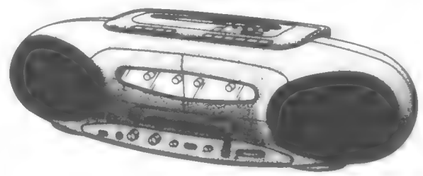
349,285
CHAIRMAN UNIT FOR CONFERENCE SYSTEM
Johannes G. Robertus, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 13, 1992, Ser. No. 1,456
Claims priority, application World Int. Prop. O., Jun. 10, 1992, DM/023.046
Term of patent 14 years
U.S. Cl. D14—159



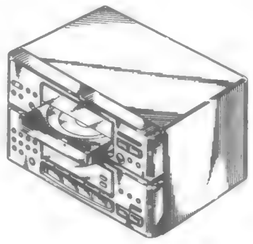
349,286
INTERPRETER UNIT FOR CONFERENCE SYSTEM
Johannes G. Robertus, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 13, 1992, Ser. No. 1,458
Claims priority, application Netherlands, Jun. 10, 1992, DM/023.046
Term of patent 14 years
U.S. Cl. D14—159



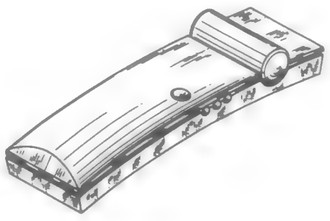
349,287
COMBINED DIGITAL AUDIO DISC PLAYER, RADIO TUNER AND TAPE RECORDER
Manabu Hokazono, Hiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 8, 1992, Ser. No. 939,490
Claims priority, application Japan, Mar. 5, 1992, 4-6325
Term of patent 14 years
U.S. Cl. D14—168



349,288
COMBINED DIGITAL AUDIO DISC PLAYER AND RADIO RECEIVER
Masafumi Ito, Tokyo; Minoru Sube, Hachioji; Haruki Takita, Tokyo, and Hiroyuki Watanabe, Oume, all of Japan, assignors to TEAC Corporation, Japan
Filed Oct. 13, 1992, Ser. No. 403
Claims priority, application Japan, Apr. 14, 1992, 11102-1992
Term of patent 14 years
U.S. Cl. D14—168



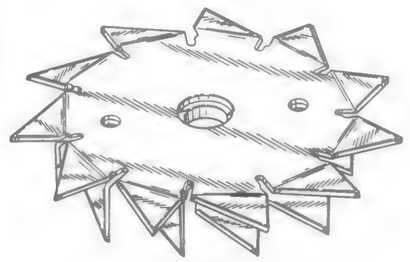
349,289
INFRA-RED LANGUAGE DISTRIBUTION RECEIVER
Dirk J. N. Vananderoye, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 6, 1992, Ser. No. 868,378
Claims priority, application World Int. Prop. O., Nov. 21, 1991, DM/021.191
Term of patent 14 years
U.S. Cl. D14—217



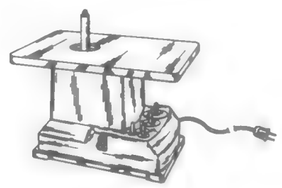
349,290
CONTROLLER FOR A VIDEO EDITING SYSTEM
Donald R. Christensen, Grass Valley; Leonard N. Albrecht, Irvine; Ronald E. Hendriks, Auburn, and Jerry M. Lewis, Grass Valley, all of Calif., assignors to The Grass Valley Group, Inc., Nevada City, Calif.
Filed Dec. 2, 1992, Ser. No. 2,281
Term of patent 14 years
U.S. Cl. D14—217



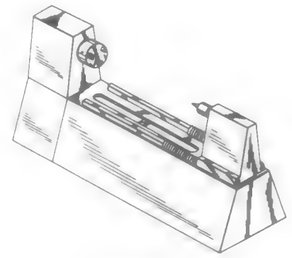
349,291
MULCHER BLADE
Edward Forbush, 1741 Washington, Algonac, Mich. 48001
Filed Apr. 13, 1992, Ser. No. 867,610
Term of patent 14 years
U.S. Cl. D15—17



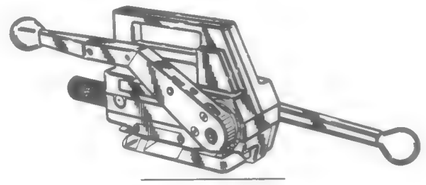
349,292
OSCILLATING SPINDLE SANDER
Daniel A. Chunn, Greenville, S.C., assignor to Ryobi Motor Products Corp., Easley, S.C.
Filed Apr. 5, 1993, Ser. No. 6,709
Term of patent 14 years
U.S. Cl. D15—125



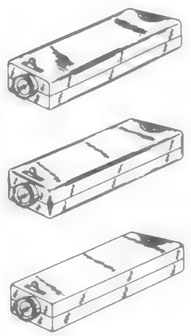
349,293
ARMATURE TEST STAND
William L. Rhoton, Briggsdale, Colo., assignor to Ironworks Manufacturing, Inc., Greeley, Colo.
Filed May 19, 1993, Ser. No. 8,602
Term of patent 14 years
U.S. Cl. D15—130



349,294
HAND OPERATED STRAPPING TOOL
Robert J. Nix, Algonquin, and Charles Pycha, Chicago, both of Ill., assignors to Signode Corporation, Glenview, Ill.
Filed May 1, 1992, Ser. No. 877,157
Term of patent 14 years
U.S. Cl. D15—145

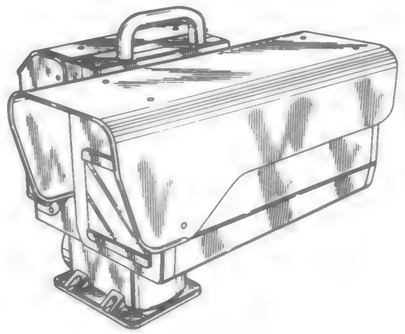


349,295
POCKET MICROSCOPE
Peter Weidemann, Dingstätte 34, 2080 Pinneberg, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 830,198, Jan. 31, 1992, Pat. No. 5,267,087. This application Feb. 3, 1992, Ser. No. 829,889
Term of patent 14 years
U.S. Cl. D16—131



VOL 1165 ISS 1 AG 2 1994 UMI

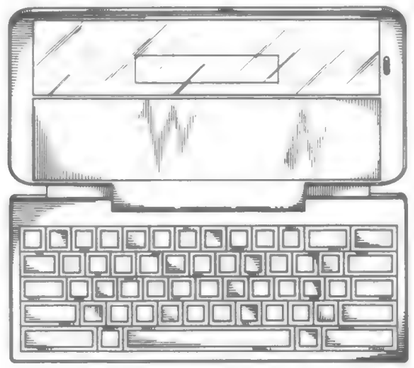
349,296
PORTABLE PANHEAD FOR BROADCAST CAMERA
Hiroyuki Ichiyoshi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 21, 1993, Ser. No. 3,909
Claims priority, application Japan, Jul. 28, 1992, 4-22542
Term of patent 14 years
U.S. Cl. D16—242

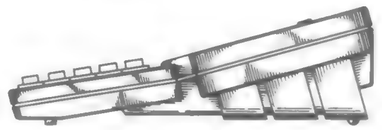


349,297
CAP FOR A WRITING INSTRUMENT
Kazuhisa Shimizu, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 13, 1992, Ser. No. 912,176
Term of patent 14 years
U.S. Cl. D19—57



349,298
ELECTRONIC EDUCATIONAL GAME FOR THE TEACHING OF CHILDREN
Chi K. Leung, Kowloon, Hong Kong, assignor to VTECH Industries, Inc., Wheeling, Ill.
Filed Mar. 10, 1992, Ser. No. 849,329
Claims priority, application United Kingdom, Nov. 6, 1991, 2018806
Term of patent 14 years
U.S. Cl. D19—60





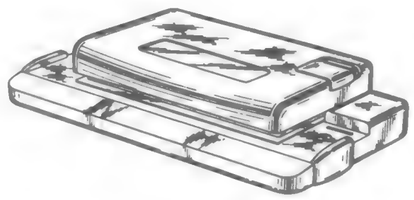
349,299
HOUSING FOR ELECTRONIC INSTRUCTIONAL GAME APPARATUS
Chin T. Fok, Shatin, Hong Kong, assignor to VTECH Industries, Inc., Wheeling, Ill.
Filed Nov. 13, 1992, Ser. No. 1,415
Term of patent 14 years
U.S. Cl. D19—60



349,300
ELECTRONIC APPARATUS HOUSING
Pui C. Lau, West Point, Hong Kong, assignor to Vtech Industries, Inc., Wheeling, Ill.
Filed Mar. 10, 1992, Ser. No. 849,701
Claims priority, application United Kingdom, Nov. 6, 1991, 2018807
Term of patent 14 years
U.S. Cl. D19—62



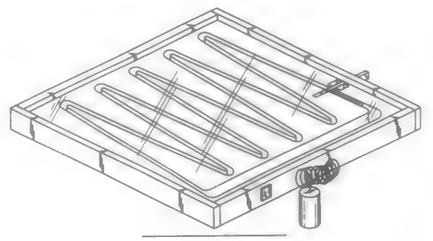
349,301
PUNCH
Chuzo Mori, Katsushika, Japan, assignor to Carl Jimuki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 25, 1992, Ser. No. 934,346
Term of patent 14 years
U.S. Cl. D19—72



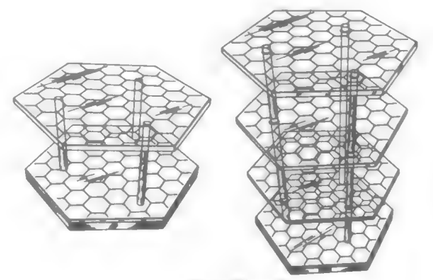
349,302
CONICAL CHANNEL FOR RETAIL DISPLAYS
Karen Wenzel-Murphy, 50 Sutphin Rd., Yardley, Pa. 19067, and Stan Kao, 9 Brookdale Rd., Bloomfield, N.J. 07003
Filed Nov. 17, 1992, Ser. No. 1,599
Term of patent 14 years
U.S. Cl. D20—10



349,303
GAME BOARD
Andrew J. Kaplan, Portsmouth, N.H., assignor to Kinderworks Corporation, Portsmouth, N.H.
Filed Jan. 22, 1993, Ser. No. 3,963
Term of patent 14 years
U.S. Cl. D21—9



349,304
TRIDIMENSIONAL GAME BOARD
Robert Marsolais, 28 Benoit, Vaudreuil, Québec, Canada J7V 8P5 , assignor to Robert Marsolais, Vaudreuil, Canada
Filed Jun. 3, 1992, Ser. No. 892,008
Term of patent 14 years
U.S. Cl. D21—23

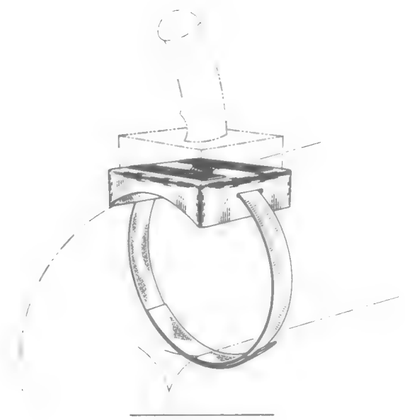


349,305
BULLS EYE TARGET PLAYING CARD
Rodney E. Diehl, 311 S. Booth Dr., New Castle, Del. 19720
Filed Sep. 21, 1992, Ser. No. 949,004
Term of patent 14 years
U.S. Cl. D21—42

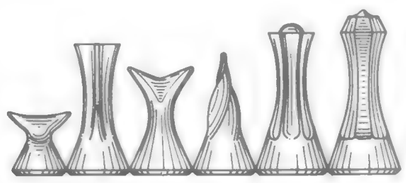


VOL 1165 ISS 1 AG 2 1994 UMI

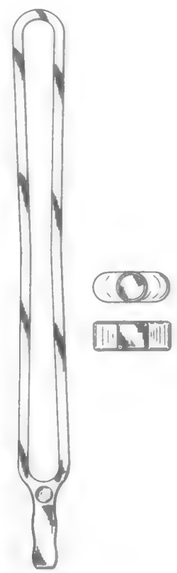
349,306
JOY STICK SUPPORT
Michael Altman, Sacramento, and Michael Smit, Carmichael, both of Calif., assignors to California Pacific Group, Ltd., Sacramento, Calif.
Filed Apr. 21, 1993, Ser. No. 7,388
Term of patent 14 years
U.S. Cl. D21—48



349,307
CHESS SET
Paul H. Rockwell, 713 Moonlight Dr., Garland, Tex. 75040
Filed Sep. 14, 1992, Ser. No. 948,728
Term of patent 14 years
U.S. Cl. D21—52



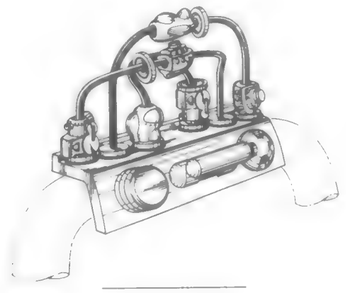
349,308
SKILL AND AMUSEMENT TOY
Robert D. Triner, 5562 Fleetwood, N.W., Canton, Ohio 44718
Filed May 22, 1992, Ser. No. 887,286
Term of patent 14 years
U.S. Cl. D21—59



349,309
PUSH TOY
Ernest L. Thornell, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed Jan. 25, 1993, Ser. No. 4,145
Term of patent 14 years
U.S. Cl. D21—59



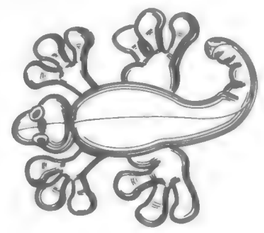
349,310
ACTIVITY TOY
Brian Sundberg, Stoughton, Mass., assignor to Safety 1st, Inc., Chestnut Hill, Mass.
Filed May 21, 1993, Ser. No. 8,685
Term of patent 14 years
U.S. Cl. D21—59



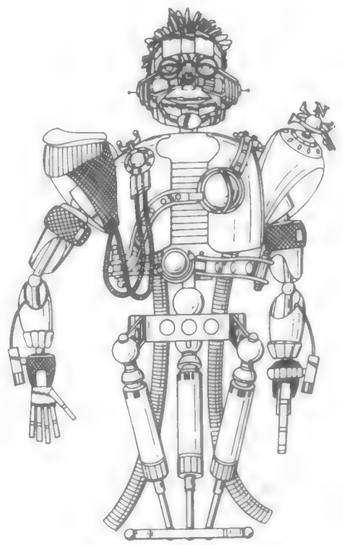
349,311
CRAYON BALLOON
Michael S. Isaacs, Brooklyn, N.Y., assignor to U.S. Balloon Manufacturing Co., Inc., Brooklyn, N.Y.
Filed Mar. 1, 1989, Ser. No. 317,340
Term of patent 14 years
U.S. Cl. D21—84



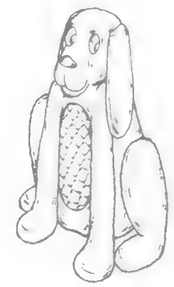
349,312
STUFFED TOY
Jason P. Whalen, 2146 Division St., Chicago, Ill. 60622
Filed Apr. 1, 1992, Ser. No. 862,248
Term of patent 14 years
U.S. Cl. D21—148



349,313
ROBOTIC FIGURE
Timothy J. Delaney, Northridge, and Mark W. Stutz, Calabasas, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Apr. 10, 1992, Ser. No. 866,442
Term of patent 14 years
U.S. Cl. D21—150



349,314
DOG FIGURE FOR KICKING
Richard Kritzman, 1023 S. Mears, Whitehall, Mich. 49461
Filed Feb. 12, 1992, Ser. No. 834,516
Term of patent 14 years
U.S. Cl. D21—161

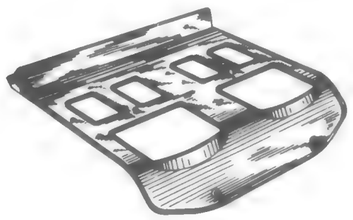


VOL 1165 ISS 1 AG 2 1994 UMI

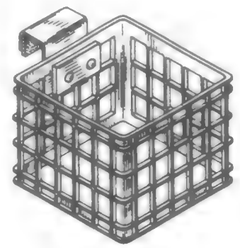
349,315
JACK RABBIT DOLL
George Kennedy, Granada Hills, Calif., assignor to Fact Games, Ltd., San Jose, Calif.
Filed Dec. 16, 1992, Ser. No. 2,592
Term of patent 14 years
U.S. Cl. D21—187



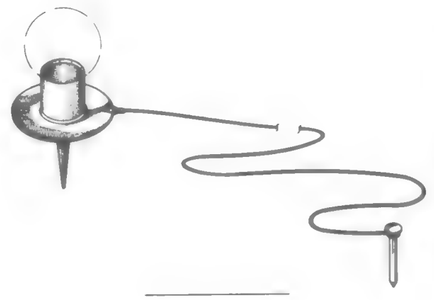
349,316
PHYSICAL EXERCISER
Randy Miller, 1322 Crowley Ave., Madison, Wis. 53704, and David W. Wendt, Madison, Wis., assignors to Randy Miller, Madison, Wis.
Filed Jul. 10, 1992, Ser. No. 911,311
Term of patent 14 years
U.S. Cl. D21—191



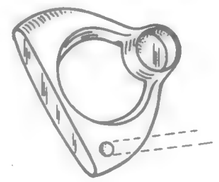
349,317
BASKETBALL GOAL
James C. Offutt, P.O. Box 1194, Peoria, Ill. 61653
Filed Aug. 10, 1992, Ser. No. 927,945
Term of patent 14 years
U.S. Cl. D21—201



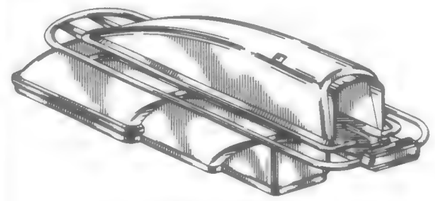
349,318
ANCHORED GOLF TEE
Allen C. Rubin, 9015 E. Calle Pasto, Tucson, Ariz. 85715
Filed Apr. 19, 1993, Ser. No. 7,245
Term of patent 14 years
U.S. Cl. D21—208



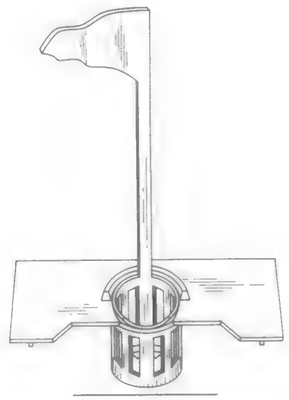
349,319
PUTTER HEAD
Sylvester Bayer, 2121 N. Harriman St., Appleton, Wis. 54911
Filed Sep. 11, 1992, Ser. No. 943,596
Term of patent 14 years
U.S. Cl. D21—217



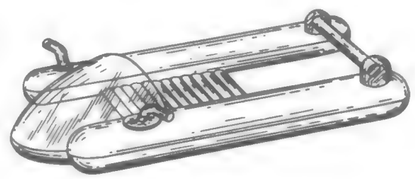
349,320
BOWLING LANE RETURN SHROUD AND RAIL
Robert S. Hagen, Orlando, Fla., assignor to Heddon Bowling Corporation, Lake Hamilton, Fla.
Filed Mar. 12, 1993, Ser. No. 5,833
Term of patent 14 years
U.S. Cl. D21—233



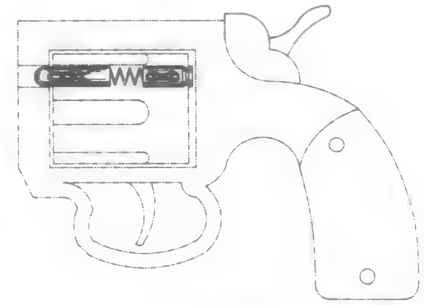
349,321
GOLF PUTTING RECEPTACLE
Anthony C. Eversole, 3131 S. Louisville, Tulsa, Okla. 74135
Filed Oct. 1, 1990, Ser. No. 591,497
Term of patent 14 years
U.S. Cl. D21—234



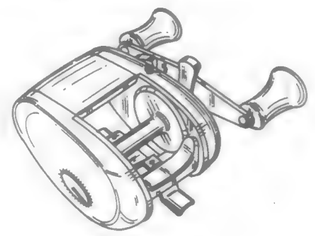
349,322
RECREATIONAL FLOATATION DEVICE WITH CROSS-BAR
Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Sep. 2, 1993, Ser. No. 12,510
Term of patent 14 years
U.S. Cl. D21—237



349,323
REVOLVER SAFETY LOCK
William A. Howard, 460 Feemster La., Rock Hill, S.C. 29730
Filed Jan. 21, 1993, Ser. No. 3,915
Term of patent 14 years
U.S. Cl. D22—108



349,324
BAITCAST REEL
Dennis E. Roberts, Owasso, Okla.; Richard J. Robbins, Derby, Kans., and Hyunkyu Kim, Tulsa, Okla., assignors to Zebco Corporation, Tulsa, Okla.
Filed Nov. 25, 1991, Ser. No. 797,110
The portion of the term of this patent subsequent to Jul. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D22—140

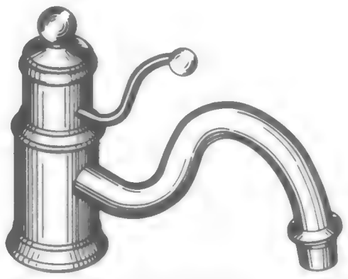


349,325
BRAKE SYSTEM REGULATOR
Ed F. Jones, P.O. Box 9880, Spokane, Wash. 99209
Filed Jun. 16, 1992, Ser. No. 900,097
Term of patent 14 years
U.S. Cl. D23—235

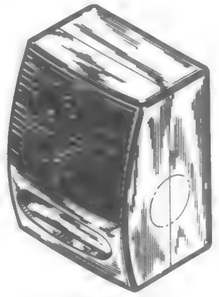


VOL 1165 ISS 1 AG 2 1994 UMI

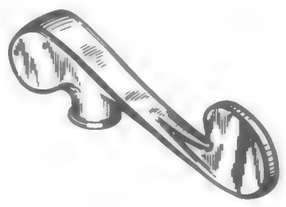
349,326
FAUCET
John E. Bollenbacher, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Feb. 3, 1993, Ser. No. 4,388
Term of patent 14 years
U.S. Cl. D23—238



349,327
HOUSING FOR A PLUMBING FIXTURE CONTROL
Thomas A. Bonnell, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Oct. 28, 1992, Ser. No. 884
Term of patent 14 years
U.S. Cl. D23—249



349,328
HANDLE FOR A PLUMBING FITTING
John E. Bollenbacher, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 14, 1993, Ser. No. 3,782
Term of patent 14 years
U.S. Cl. D23—252



349,329
HANDLE FOR PLUMBING FITTINGS
Tom E. Robbins, San Leandro, Calif., assignor to Kallista, Inc., San Leandro, Calif.
Filed Apr. 29, 1993, Ser. No. 8,101
Term of patent 14 years
U.S. Cl. D23—252

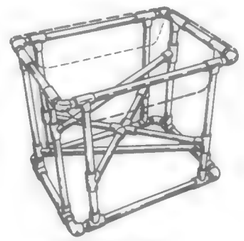


349,330
SPOUT
Bruce M. Sauter, Elgin, and Kevin G. Short, Midlothian, both of Ill., assignors to Sterling Plumbing Group, Inc., Schaumberg, Ill.
Filed Aug. 14, 1992, Ser. No. 930,217
Term of patent 14 years
U.S. Cl. D23—255

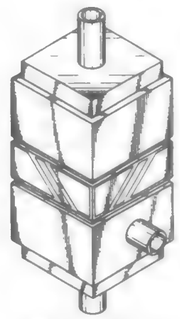
349,331
SPOUT
John E. Bollenbacher, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 14, 1993, Ser. No. 3,786
Term of patent 14 years
U.S. Cl. D23—257



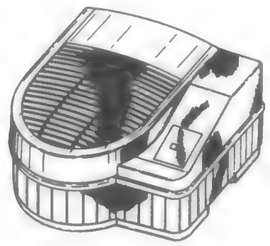
349,332
TUB SUPPORT BASE
Rose M. Albritton, 7675 Trask Ave., No. A, Westminster, Calif. 92683
Filed Apr. 15, 1993, Ser. No. 7,229
Term of patent 14 years
U.S. Cl. D23—304



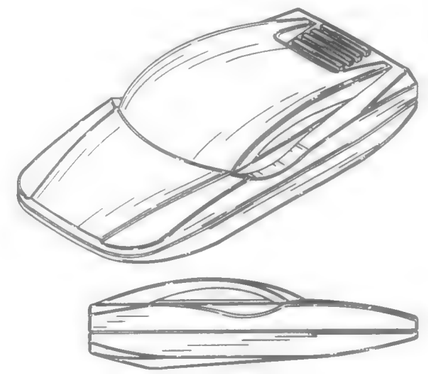
349,333
HEAT RECOVERY UNIT
Donald King, 476 Allen Ave., Chillicothe, Ohio 45601
Filed Jul. 8, 1991, Ser. No. 726,521
Term of patent 14 years
U.S. Cl. D23—314



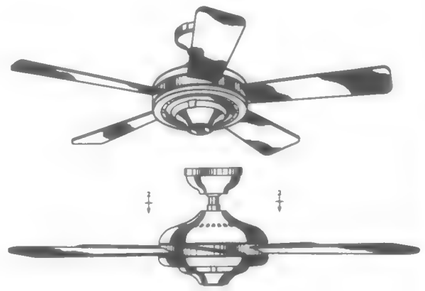
349,334
EVAPORATIVE HUMIDIFIER
Richard M. O'Grady, Southington, Conn., and Johnson Peng, Chang-Haw, Taiwan, assignors to Duracraft Corporation, Whitinsville, Mass.
Filed Jul. 6, 1993, Ser. No. 10,317
Term of patent 14 years
U.S. Cl. D23—360



349,335
AIR FRESHENER
Allen Y. L. Wang, Taipei, Taiwan, assignor to Eutech Enterprise Ltd., Taipei, Taiwan
Filed Nov. 3, 1993, Ser. No. 14,785
Term of patent 14 years
U.S. Cl. D23—366

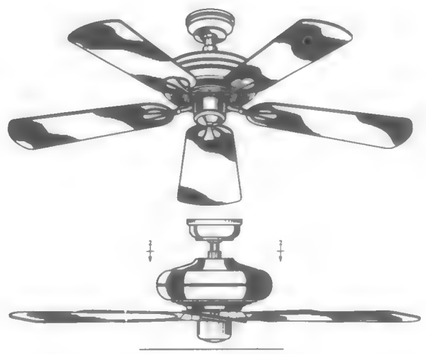


349,336
CEILING FAN
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Oct. 29, 1993, Ser. No. 14,814
Term of patent 14 years
U.S. Cl. D23—377

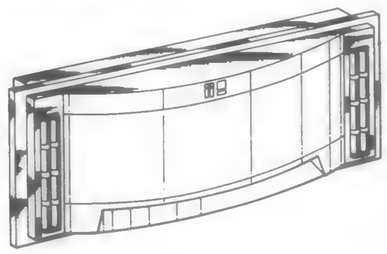


VOL 1165 ISS 1 AG 2 1994 UMI

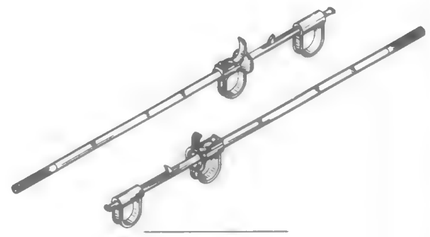
349,337
CEILING FAN
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Dec. 2, 1993, Ser. No. 15,994
Term of patent 14 years
U.S. Cl. D23—377



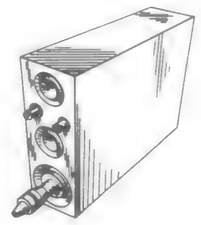
349,338
COMBINED HEATING AND COOLING PANEL UNIT FOR PLACEMENT IN A MODULAR OFFICE PANELLING SYSTEM
Jonathan Crinion, Toronto, Canada, assignor to Teknion Furniture Systems, Downsview, Canada
Filed Nov. 19, 1992, Ser. No. 1,654
Claims priority, application Canada, Jun. 5, 1992, 05-06-92-2
Term of patent 14 years
U.S. Cl. D23—386



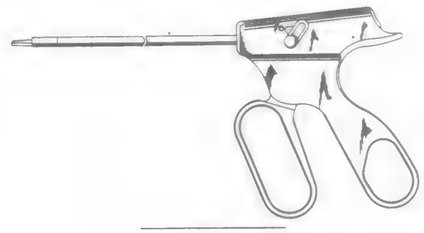
349,339
SURGICAL ADHESION BARRIER APPLICATOR
Mary B. Youtsler, Cincinnati; Ronald D. Adams, Wyoming; Kevin R. O'Brian, Cincinnati, all of Ohio; Richard M. O'Grady, Southington; Robert L. Marvin, Jr., New Britain, both of Conn.; Kenneth C. Deutsch, Lakeland, and John O. White, Lakeville, both of Minn., assignors to Ethicon, Inc., Somerville, N.J.
Filed Oct. 5, 1992, Ser. No. 163
Term of patent 14 years
U.S. Cl. D24—133



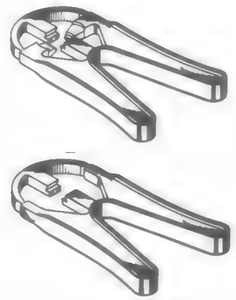
349,340
CATHETER IMAGING LIGHT SOURCE
Phillip J. Snoke; Steven C. Gamper; Lionel D. Gillespie, all of Atlanta; David S. Rowley, Smyrna, and Bruce W. Copeland, Stone Mountain, all of Ga., assignors to Catheter Imaging Systems, Atlanta, Ga.
Filed Oct. 19, 1992, Ser. No. 636
Term of patent 14 years
U.S. Cl. D24—138



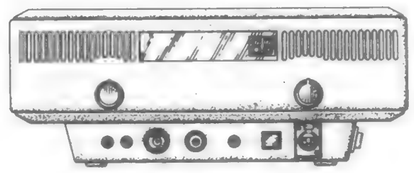
349,341
ENDOSCOPIC GRASPER
Philip R. Lichtman, Newton, and Eric E. May, Norfolk, both of Mass., assignors to Microsurge, Inc., Needham, Mass.
Filed Oct. 28, 1992, Ser. No. 903
Term of patent 14 years
U.S. Cl. D24—143



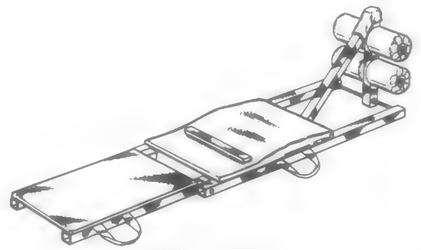
349,342
INTRAOCULAR LENS FOLDER
Stephen J. Van Noy, Fort Worth, and Robert Hambleton, Plano, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Feb. 2, 1993, Ser. No. 4,357
Term of patent 14 years
U.S. Cl. D24—143



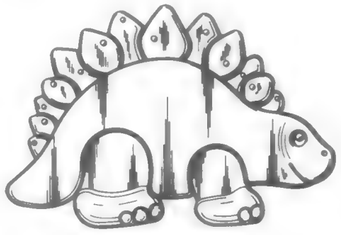
349,343
ELECTROSURGICAL GENERATOR UNIT
William J. Hannon, Cohasset, and Richard J. Keohan, Braintree, both of Mass., assignors to Medical Scientific, Inc., Taunton, Mass.
Filed Jul. 28, 1992, Ser. No. 920,979
Term of patent 14 years
U.S. Cl. D24—170



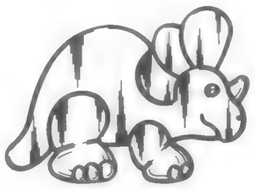
349,344
TRACTION UNIT
Robert M. Kudlak, Box 250, Callander, Ontario, Canada P01 1H0
Filed Oct. 15, 1992, Ser. No. 487
Claims priority, application Canada, Apr. 15, 1992, 15-04-92-7
Term of patent 14 years
U.S. Cl. D24—183



349,345
BABY TEETHER TOY
Randy L. Abrams, Leominster, Mass., assignor to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Mar. 8, 1993, Ser. No. 5,641
Term of patent 14 years
U.S. Cl. D24—195

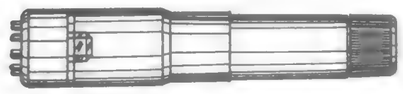


349,346
BABY TEETHER TOY
Randy L. Abrams, Leominster, Mass., assignor to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Mar. 8, 1993, Ser. No. 5,643
Term of patent 14 years
U.S. Cl. D24—195

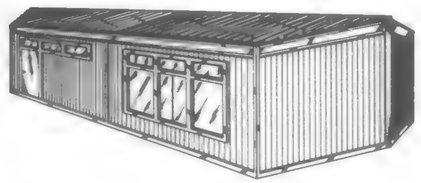


VOL 1165 ISS 1 AG 2 1994 UMI

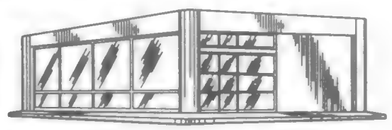
349,347
COMBINED MASSAGER AND MASSAGING HEADS
Hing-Wah Huen, Kowloon, Hong Kong, assignor to Fairform Mfg. Co., Ltd., Kowloon, Hong Kong
Filed Nov. 27, 1991, Ser. No. 798,791
Term of patent 14 years
U.S. Cl. D24—214



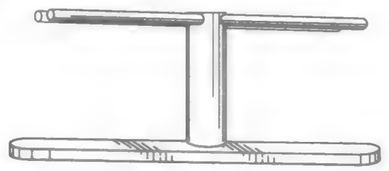
349,348
MODULAR BUILDING
Robert P. McGrath, San Francisco, Calif., assignor to McGrath RentCorp, San Lorenzo, Calif.
Filed Sep. 30, 1992, Ser. No. 954,078
Term of patent 14 years
U.S. Cl. D25—1



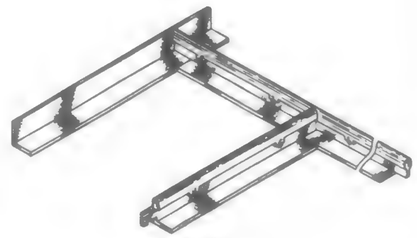
349,349
SERVICE STATION BUILDING
Alan E. Goldberg, New Canaan, Conn., assignor to Mobil Oil Corp., Fairfax, Va.
Filed Jan. 10, 1992, Ser. No. 819,523
Term of patent 14 years
U.S. Cl. D25—34



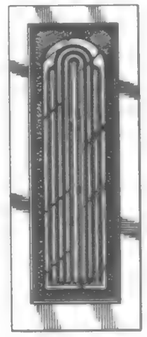
349,350
SERVICE STATION ISLAND
Alan E. Goldberg, New Canaan, Conn., assignor to Mobil Oil Corp., Fairfax, Va.
Filed Jan. 10, 1992, Ser. No. 819,527
Term of patent 14 years
U.S. Cl. D25—56



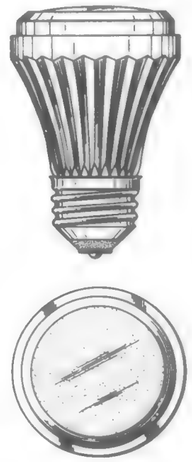
349,351
DROPPED CEILING SUPPORT ELEMENT
Joseph Englen, 109 Marlborough St., Apt. #2, Chelsea, Mass. 02150
Filed Nov. 20, 1992, Ser. No. 1,678
Term of patent 14 years
U.S. Cl. D25—58



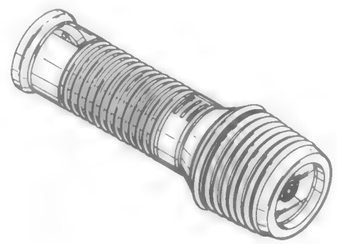
349,352
DOOR INSERT PANEL
David Csati, 13851 115th Avenue, Surrey British Columbia, Canada V3R 5Y3
Filed Dec. 23, 1992, Ser. No. 2,958
Term of patent 14 years
U.S. Cl. D25—103



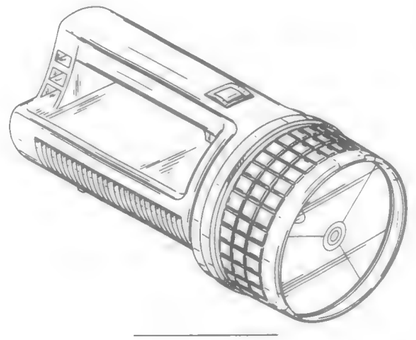
349,353
ELECTRIC LAMP
Joseph P. Gallant, Lexington, Ky., assignor to GTE Products Corporation, Danvers, Mass.
Filed Jul. 7, 1992, Ser. No. 909,933
The portion of the term of this patent subsequent to Jul. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—2



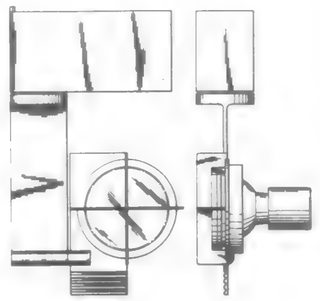
349,354
FLASHLIGHT
Kai C. A. Yau, Kowloon, Hong Kong, assignor to World Hint Limited, Kowloon, Hong Kong
Filed Oct. 13, 1992, Ser. No. 365
Claims priority, application United Kingdom, May 27, 1992, 2023157
Term of patent 14 years
U.S. Cl. D26—37



349,355
FLASHLIGHT
Kai C. A. Yau, Kowloon, Hong Kong, assignor to World Hint Limited, Kowloon, Hong Kong
Filed Oct. 13, 1992, Ser. No. 399
Claims priority, application United Kingdom, May 27, 1992, 2023153
Term of patent 14 years
U.S. Cl. D26—37

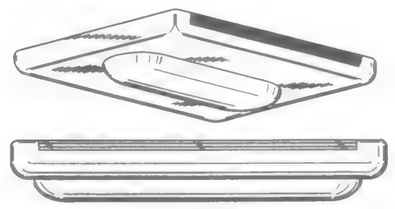


349,356
ADJUSTABLE SPOT LIGHT
Bruce N. Layne, Wheaton, Ill., assignor to Cooper Industries, Houston, Tex.
Filed Feb. 4, 1992, Ser. No. 830,245
Term of patent 14 years
U.S. Cl. D26—63

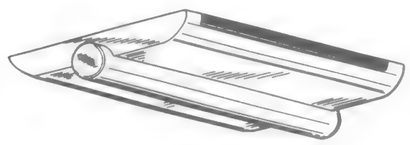


VOL 1165 ISS 1 AG 2 1994 UMI

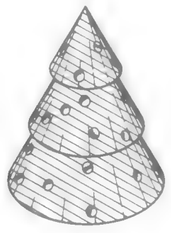
349,357
INDIRECT LIGHTING FIXTURE
Douglas J. Herst, Ross, and Utkan Salman, Emeryville, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.
Continuation-in-part of Ser. No. 260,358, Oct. 20, 1988, Pat. No. Des. 311,967, and a continuation-in-part of Ser. No. 502,663, Apr. 2, 1990, abandoned, and a continuation-in-part of Ser. No. 555,146, Jul. 19, 1990, abandoned, which is a division of Ser. No. 588,971, Sep. 27, 1990, Pat. No. Des. 341,439. This application Aug. 3, 1993, Ser. No. 11,391
Term of patent 14 years
U.S. Cl. D26—85



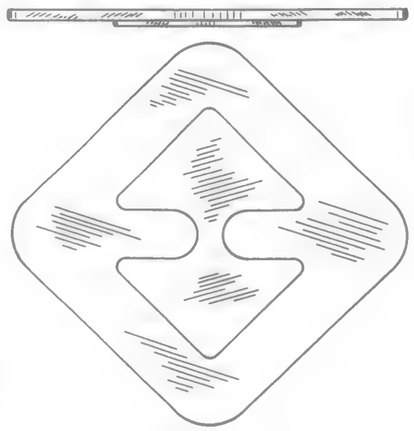
349,358
INDIRECT LIGHTING FIXTURE
Douglas J. Herst, Ross, and Utkan Salman, Emeryville, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.
Continuation-in-part of Ser. No. 260,358, Oct. 20, 1988, Pat. No. Des. 311,967, and a continuation-in-part of Ser. No. 502,663, Apr. 2, 1990, abandoned, and a continuation-in-part of Ser. No. 555,146, Jul. 19, 1990, abandoned, which is a division of Ser. No. 588,971, Sep. 27, 1990, Pat. No. Des. 341,439. This application Aug. 3, 1993, Ser. No. 11,392
Term of patent 14 years
U.S. Cl. D26—85



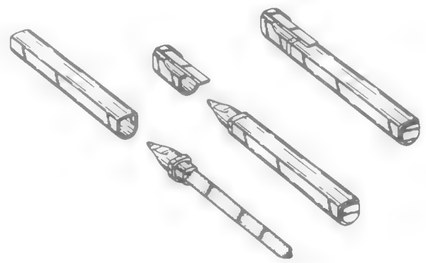
349,359
DECORATIVE LIGHT ENCLOSURE
William E. McLaughlin, II, Box 4356 Woodland Acres R.R. #4, Berwick, Pa. 18603
Filed Jan. 11, 1993, Ser. No. 3,616
Term of patent 14 years
U.S. Cl. D26—101



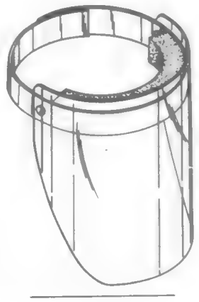
349,360
LENS FOR AN AUXILIARY VEHICLE SIGNAL
Stanley W. Gonsior, Minnetonka, Minn., assignor to S&S Asset Management Co., Eden Prairie, Minn.
Filed Mar. 16, 1992, Ser. No. 851,358
Term of patent 14 years
U.S. Cl. D26—125



349,361
COMBINATION NAIL FILE AND NAIL CLEANER WITH A TWO-PIECE CASE
Gerd Hartmann, Solingen, Fed. Rep. of Germany, assignor to J. A. Henckels Zwillingswerk AG, Solingen, Fed. Rep. of Germany
Filed Dec. 8, 1992, Ser. No. 2,297
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1992, 9204692
Term of patent 14 years
U.S. Cl. D28—57



349,362
FACE SHIELD
John P. Russell, 3301 Osage La., Center Point, Ala. 35215
Filed Aug. 24, 1992, Ser. No. 933,530
Term of patent 14 years
U.S. Cl. D29—110

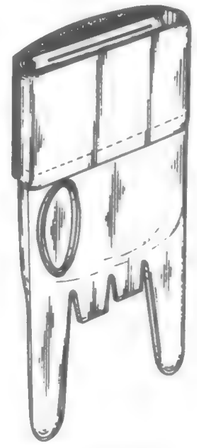


349,363
FACE PROTECTIVE MASK
G. Richard Windle, 1114 Laurelhill Ct., Arlington, Tex. 76015
Filed Sep. 14, 1992, Ser. No. 948,763
Term of patent 14 years
U.S. Cl. D29—110

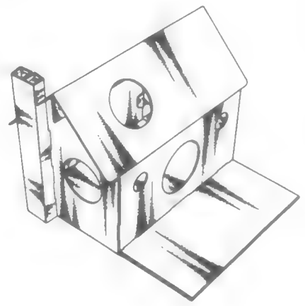
349,364
BILLIARD GLOVE
Corey Rasmussen, 17422 N. 55th Ave., Glendale, Ariz. 85308
Filed Jul. 8, 1991, Ser. No. 726,548
Term of patent 14 years
U.S. Cl. D29—113



349,365
BOWLING GLOVE
Byung T. Choi, Seoul, Rep. of Korea, assignor to Dong I. Kim, Kuri, Japan
Filed Jul. 1, 1992, Ser. No. 907,119
Claims priority, application Rep. of Korea, Jan. 6, 1992, 60/1992
Term of patent 14 years
U.S. Cl. D29—113



349,366
PET HOUSE
Charles J. Kuhn, and Ledell Kuhn, both of 10520 Plainview Ave., Tujunga, Calif. 91042
Filed Apr. 16, 1993, Ser. No. 7,292
Term of patent 14 years
U.S. Cl. D30—108

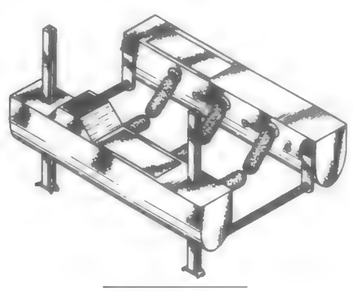


VOL 1165 ISS 1 AG 2 1994 UMI

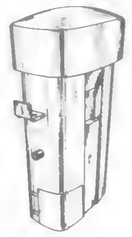
349,367
COMBINED BIRD TOY AND BEAK SHARPENER
Richard L. Lawson, 3272 N. Greenwood, Sanger, Calif. 93657
Filed Feb. 26, 1994, Ser. No. 7,206
Term of patent 14 years
U.S. Cl. D30—119



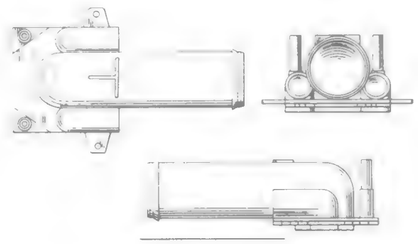
349,368
DEVICE FOR WASHING THE BOTTOM OF A BOAT
Harold A. Haskins, 23012 Meadows, Flat Rock, Mich. 48134
Filed Oct. 29, 1992, Ser. No. 927
Term of patent 14 years
U.S. Cl. D32—4



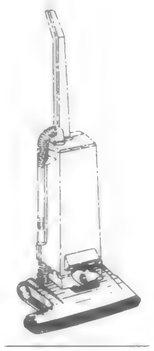
349,369
VACUUM CANNISTER
Jack E. Adams, 3627 Honey Hill Dr., SE., Cedar Rapids, Iowa 52403
Filed Nov. 2, 1992, Ser. No. 992
Term of patent 14 years
U.S. Cl. D32—21



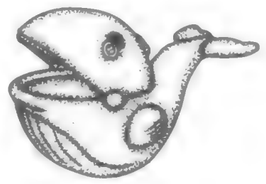
349,370
SUCTION TERMINAL HOUSING FOR A CENTRAL VACUUM CLEANER SYSTEM
Heikki Salo, Turku, and Pekka Nurmi, Espoo, both of Finland, assignors to AKP-Tekno Oy, Finland
Filed Feb. 15, 1990, Ser. No. 482,322
Claims priority, application Finland, Aug. 31, 1989, 763/89
Term of patent 14 years
U.S. Cl. D32—31



349,371
BASE FOR AN UPRIGHT VACUUM CLEANER
Kent J. Furcron, Blountville, Tenn., and Mark D. Dziersk, Simsbury, Conn., assignors to TRC Acquisition Corporation, Atlanta, Ga.
Filed Jan. 10, 1992, Ser. No. 818,988
Term of patent 14 years
U.S. Cl. D32—32



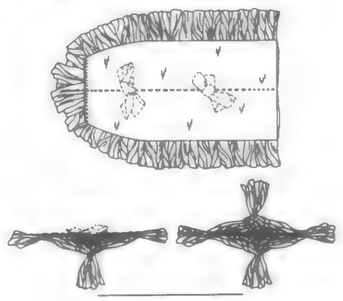
349,372
HAMPER
David A. Bird, and Mitchell L. Wilgus, both of Akron, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jun. 30, 1993, Ser. No. 10,180
Term of patent 14 years
U.S. Cl. D32—37



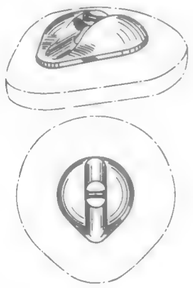
349,373
PROTECTING SCRUB GLOVE
Harry B. Marley, P.O. Box 1168-616, Studio City, Calif. 91604, assignor to Harry B. Marley, Studio City, Calif.
Filed Jun. 18, 1992, Ser. No. 900,859
Term of patent 14 years
U.S. Cl. D32—43



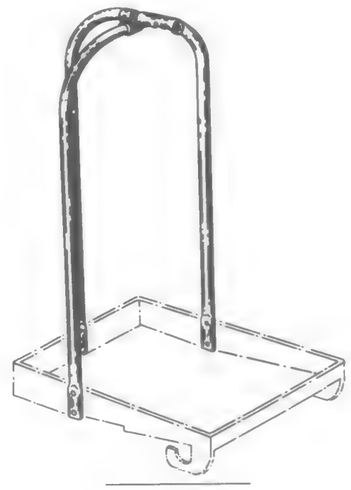
349,374
DUST MOP HEAD
Robert D. Newell, 429 N. Main St., Roxboro, N.C. 27973
Filed Feb. 21, 1991, Ser. No. 659,190
Term of patent 14 years
U.S. Cl. D32—50



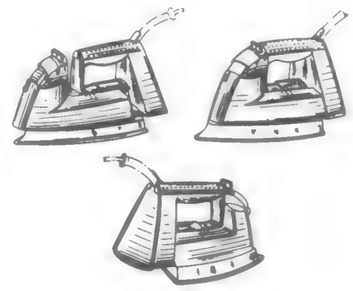
349,375
DUST MOP FRAME
Enzo Berti, Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Jan. 27, 1992, Ser. No. 825,709
Term of patent 14 years
U.S. Cl. D32—50



349,376
HANDLE FOR PAINT ROLLER PAN
Richard A. Haukey, Sr., 23 Emerson Rd., Medfield, Mass. 020253
Filed Apr. 23, 1992, Ser. No. 872,655
Term of patent 14 years
U.S. Cl. D32—53.1

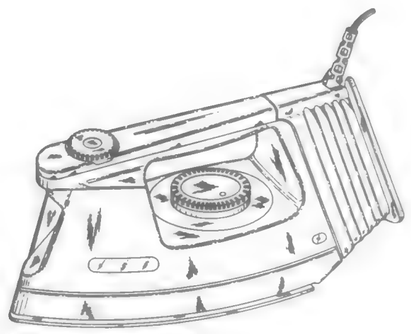


349,377
STEAM IRON
Franz A. Stützer, Offenbach, and Eduard Rohner, Hammelburg, both of Fed. Rep. of Germany, assignors to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Nov. 21, 1991, Ser. No. 795,626
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1991, M9104070.1
Term of patent 14 years
U.S. Cl. D32—70

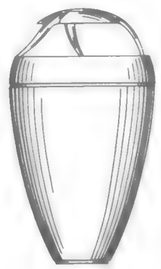


VOL 1165 ISS 1 AG 2 1994 UMI

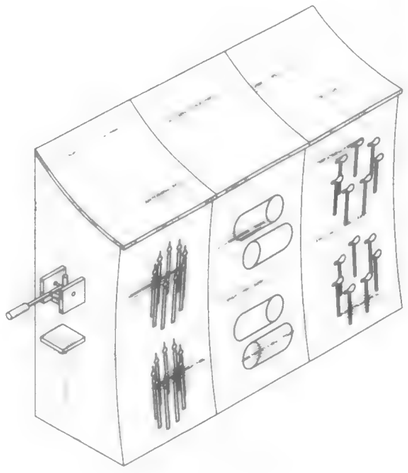
349,378
ELECTRIC IRON
Sean Simmon, Sea Cliff, N.Y., assignor to The Singer Company, N.V., Curacao, Netherlands Antilles
Filed Oct. 2, 1992, Ser. No. 112
Term of patent 14 years
U.S. Cl. D32—70



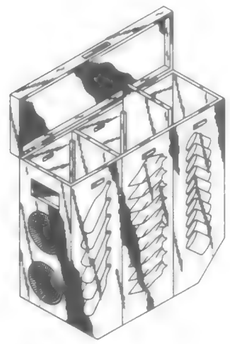
349,379
BIN
Philippe Starck, Paris, France, assignor to J. C. Decaux, France
Filed Aug. 7, 1992, Ser. No. 926,676
Claims priority, application France, Feb. 13, 1992, 920789
Term of patent 14 years
U.S. Cl. D34—1



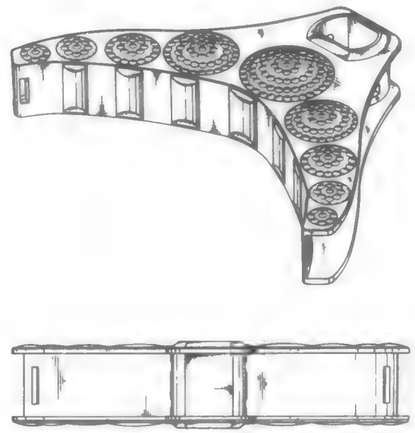
349,380
HOME RECYCLING CENTER BIN
Leo Maturino, 1075 Trinity St., #235, Redding, Calif. 96001
Filed Feb. 9, 1993, Ser. No. 4,620
Term of patent 14 years
U.S. Cl. D34—7



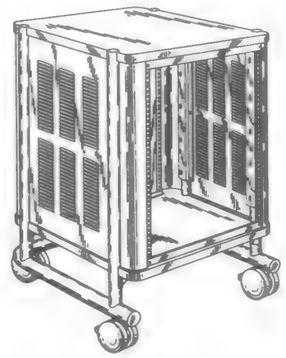
349,381
HOME RECYCLER
Anne M. Fennell, 355 Coronado - Apt. #3, Long Beach, Calif. 90814
Filed Jun. 1, 1993, Ser. No. 8,919
Term of patent 14 years
U.S. Cl. D34—7



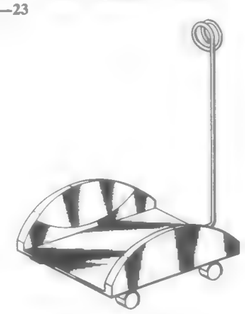
349,382
TOP BAG HOLDER OF GOLF CART
Ching-Chang Wu, No. 35-1, Jih Hsin Street, Tu Cheng Hsiang, Taipei Hsien, Taiwan
Filed Feb. 3, 1993, Ser. No. 4,379
Term of patent 14 years
U.S. Cl. D34—15



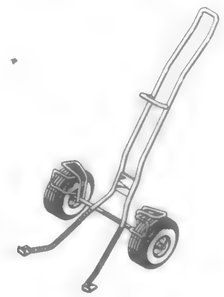
349,383
EQUIPMENT RACK CART
Jeffrey T. McCaffrey, Portland, Oreg., assignor to Anthro Corporation, Portland, Oreg.
Filed Nov. 24, 1992, Ser. No. 1,920
Term of patent 14 years
U.S. Cl. D34—19



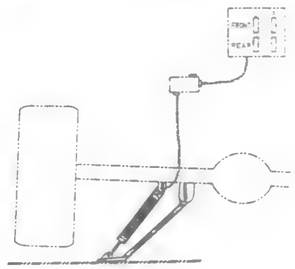
349,384
SUPPORT TROLLEY FOR A CPU (COMPUTER PROCESSING UNIT)
Jonathan Crinion, Toronto, Canada, assignor to Teknion Furniture Systems, Downsview, Canada
Filed Nov. 19, 1992, Ser. No. 1,653
Claims priority, application Canada, Jun. 5, 1992, 05-06-92-3
Term of patent 14 years
U.S. Cl. D34—23



349,385
TIRE DOLLY
Donald R. Suggs, Sr., Denton, Tex., assignor to Tire Shuttle, Inc., Elm Mott, Tex.
Filed Oct. 14, 1992, Ser. No. 417
Term of patent 14 years
U.S. Cl. D34—26



349,386
BUILT IN HYDRAULIC JACK
William C. Piebenga, 7629 Summerglen Dr., Raleigh, N.C. 27615
Filed Jan. 24, 1992, Ser. No. 826,168
Term of patent 14 years
U.S. Cl. D34—31



VOL
1165
ISS
1
AG
2
1994
UMI

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF AUGUST, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & P Mfg., Inc.: *See*—
Posthumus, Albert, 5,333,799, Cl. 241-27.000.

A.W. Chesterton Company: *See*—
Azibert, Henri V.; Willbrant, Margaret B.; and Attenasio, Ann T., 5,333,882, Cl. 277-1.000.

Aarts, Mathias L. C., to Product Suppliers AG. Process and apparatus for leak-testing a package. 5,333,492, Cl. 73-49.300.

Abadeer, Wagdi W.; El-Kareh, Badih; Ellis, Wayne F.; Galbi, Duane E.; Hiltebeitel, Nathan R.; Tonti, William R.; and Watts, Josef S., to International Business Machines Corporation. Low voltage programmable storage element. 5,334,880, Cl. 307-219.000.

ABB ATOM AB: *See*—
Rudling, Peter, 5,334,345, Cl. 420-422.000.

ABB Lummus Crest Inc.: *See*—
Ember, George; De Castro Netro, Edilberto A.; and De Lacerda, Rogerio F., 5,334,771, Cl. 568-573.000.

Abbas, Razavi; and Ewen, John A., to Fina Technology, Inc. Process for producing syndiotactic polyolefins. 5,334,677, Cl. 526-114.000.

Abbott, Jerry J.; Baird, Brian W.; and Miller, Michael G., to Lexmark International, Inc. Dry toner with mixed azo dye charge control agent. 5,334,474, Cl. 430-110.000.

Abbott Laboratories: *See*—
Adolf, Wayne F.; Helgren, R. Hayes; Renick, James T.; and Szempruch, Walter T., 5,334,180, Cl. 604-411.000.
Al-Razzak, Laman A.; and Alvarez, Francisco J., 5,334,589, Cl. 514-185.000.
Moroski, Mark T., 5,334,170, Cl. 604-80.000.
Poli, Robert G.; Thomas, V. Stanton; Adolf, Wayne F.; and Rudzena, William L., 5,334,179, Cl. 604-403.000.

Abdelazim, Hazem Y., to International Business Machines Corporation. Recognition of characters in cursive script. 5,335,289, Cl. 382-9.000.

Abe, Hideshi: *See*—
Ueno, Takahisa; and Abe, Hideshi, 5,334,829, Cl. 250-208.100.

Abe, Katsunori: *See*—
Katada, Mitsutaka; Muramoto, Hidetoshi; Fuzino, Seizi; Hattori, Tadashi; and Abe, Katsunori, 5,334,870, Cl. 257-371.000.

Abe, Koichi; and Murata, Mitsuhiro, to Alpine Electronics, Inc. Vehicle security system with controller proximity sensor. 5,334,969, Cl. 340-426.000.

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Maejima, Yukihito; Ohtsubo, Toko; Masui, Mitsuyuki; Abe, Noriyuki; Yuura, Katsuhiko; and Mochizuki, Kenji, 5,335,339, Cl. 395-500.000.

Abe, Shunji: *See*—
Kamoi, Jyoei; Hayami, Hichiro; Kato, Yuji; Shimoe, Toshio; Abe, Shunji; Kusayanagi, Michio; Mukai, Haruo; and Soumiya, Toshio, 5,335,222, Cl. 370-60.000.

Abe, Tatafumi: *See*—
Urai, Muneharu; Katsuta, Kazuo; Hosoya, Minoru; Abe, Tatafumi; and Wada, Ryosuke, 5,333,933, Cl. 297-452.100.

Abe, Yukio; Higashi, Tatsuji; Hirano, Tsumoru; and Kondo, Syunichi, to Fuji Photo Film Co., Ltd. Photopolymerizable composition and dry PS plate. 5,334,486, Cl. 430-288.000.

Abrams, Catherine T.: *See*—
Snyder, Brian A.; Contestable, Paul B.; Abrams, Catherine T.; and Grogan, Elizabeth A., 5,334,503, Cl. 435-7.320.

Abrams/Gentile Entertainment Inc.: *See*—
Gentile, John J.; and Gentile, Anthony, 5,334,079, Cl. 446-486.000.

Abrams, Lawrence M. Flush device. 5,334,165, Cl. 604-249.000.

Accord Enterprise Corporation: *See*—
Lai, Ten-Yi, 5,333,826, Cl. 248-229.000.

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Leyva, Victor; and Rakuljic, George A., 5,335,098, Cl. 359-7.000.

Ace Medical Company: *See*—
Clewett, Richard H.; Pering, Claude O.; and Sharitz, Daniel B., 5,334,204, Cl. 606-73.000.

Ackley, Kevin: *See*—
MacNaughton, George; Forti, Steven; Whittington, Douglas; and Ackley, Kevin, 5,334,815, Cl. 219-121.700.

Acushnet Co.: *See*—
Wu, Shenshen, 5,334,673, Cl. 273-235.00R.

Adachi, Hiroshi: *See*—
Shimada, Tomoyuki; Sasaki, Masaomi; Aruga, Tamotsu; and Adachi, Hiroshi, 5,334,470, Cl. 430-59.000.

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Adams, Stefan: *See*—
Horn, Peter; Reich, Erhard; Adams, Stefan; and Chakrabarti, Sarbananda, 5,334,448, Cl. 428-319.700.

Adams, Stephen J.: *See*—
Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., 5,334,784, Cl. 570-165.000.

Adams, Thomas E.; Lee, Kuo-Hua; Nagy, William J.; and Sung, Janmye, to AT&T Bell Laboratories. Method of fabricating an integrated circuit with lines of critical width extending in the astigmatically preferred direction of the lithographic tool. 5,334,541, Cl. 437-8.000.

Adams, Tommy L.; and Zarowitz, Michael A., to Escagenetics Corporation. Stably transformed coffee plant cells and plantlets. 5,334,529, Cl. 435-240.400.

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Adelhelm, Jurgen W.: *See*—
Vogler, Jes V.; and Adelhelm, Jurgen W., 5,333,507, Cl. 73-756.000.

Adir et Compagnie: *See*—
Cuine, Alain; de Barochez, Bruno H.; and Guez, David, 5,334,392, Cl. 424-468.000.

Adolf, Wayne F.; Helgren, R. Hayes; Renick, James T.; and Szempruch, Walter T., to Abbott Laboratories. Sterile formed, filled and sealed flexible container. 5,334,180, Cl. 604-411.000.

Adolf, Wayne F.: *See*—
Poli, Robert G.; Thomas, V. Stanton; Adolf, Wayne F.; and Rudzena, William L., 5,334,179, Cl. 604-403.000.

ADS Environmental Services, Inc.: *See*—
Petroff, Alan M.; and Fullerton, Larry W., 5,333,508, Cl. 73-861.250.

Advance Systems, Inc.: *See*—
Cesario, Donald C., 5,333,771, Cl. 226-92.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Samson, Wilfred J.; Sirhan, Motasim M.; and Fernando, Jovito L., 5,334,154, Cl. 604-102.000.

Advanced Micro Devices, Inc.: *See*—
Van Buskirk, Michael A.; Plouse, Kevin W.; Pawletko, Joseph G.; Chang, Chi; Haddad, Sameer S.; and Gutala, Ravi P., 5,335,198, Cl. 365-185.000.

Aerospace Systems & Technologies Ltd.: *See*—
Humphreys, Bryan E., 5,333,415, Cl. 51-281.00R.

Aerospatiale Societe Nationale Industrielle: *See*—
LeMaire, Etienne; and Fantino, Lucien, 5,333,562, Cl. 112-262.100.

Aerotest Operations: *See*—
Newacheck, Richard L.; Lamb, Ivan E.; and Tsukimura, R. R., 5,334,840, Cl. 250-483.100.

Aertbelien, Jozef: *See*—
Van Havenbergh, Jan; Dooms, Philip; Aertbelien, Jozef; and Blum, Harald, 5,334,842, Cl. 250-483.100.

AG Technology Co., Ltd.: *See*—
Morikawa, Shinsuke; Yoshitake, Masaru; and Tatematsu, Shin, 5,334,782, Cl. 570-101.000.

Agency of Industrial Science & Technology: *See*—
Eiju, Tomoaki; Matsuda, Kiyofumi; Barnes, Thomas H.; and Kokaji, Shigeru, 5,335,058, Cl. 356-28.500.

Agfa Gevaert Aktiengesellschaft: *See*—
Wernicke, Ubbo; and Went, Werner, 5,334,492, Cl. 430-398.000.

Agfa-Gevaert, N.V.: *See*—
Van Havenbergh, Jan; Dooms, Philip; Aertbelien, Jozef; and Blum, Harald, 5,334,842, Cl. 250-483.100.

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Aihara, Satoru: *See*—
Noguchi, Shoji; and Aihara, Satoru, 5,333,954, Cl. 384-26.000.

Aihara, Shin: *See*—
Oguchi, Takahisa; Sugimoto, Kenichi; Aihara, Shin; Itoh, Hisato; Matsumoto, Mansuke; Masaoka, Toshihiro; and Nakamura, Masakazu, 5,334,714, Cl. 540-143.000.

VOL 1165 ISS 1 - AG 2 1994 UMI

Air Products and Chemicals, Inc.: *See*—
Garg, Diwakar; Berger, Kerry R.; and Eichelberger, Donald P., 5,333,776, Cl. 228-219.000.
Seelig, David L.; and McAfee, Kevin S., 5,333,802, Cl. 241-65.000.
Starner, William E.; and Musselman, Susan G., 5,334,654, Cl. 524-849.000.

Aisaka, Hideki, to Kabushiki Kaisha Toshiba. Automatic power control circuit for use with a radio telecommunication apparatus. 5,335,369, Cl. 455-116.000.

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Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Katou, Yutaka, 5,333,561, Cl. 112-121.140.
Sakakura, Daisuke; and Okazaki, Hiroshi, 5,333,999, Cl. 417-309.000.
Satoh, Munetaka; Ito, Sadao; and Nawa, Hiroshi, 5,333,932, Cl. 297-362.000.

Ajinomoto Co., Inc.: *See*—
Hattori, Tatsuya; and Mikami, Naoko, 5,334,713, Cl. 540-113.000.
Usui, Naoki; Yamamoto, Yoko; and Nakamatu, Tuyoshi, 5,334,510, Cl. 435-66.000.

Ajluni, Cheryl J.: *See*—
Pollard, Howard E.; Neff, Robert E.; and Ajluni, Cheryl J., 5,334,844, Cl. 250-330.000.

Akaba, Noriyuki, to Tokyo Keiki Co., Ltd. Method and system for locating direction of transmission source based on wave therefrom. 5,334,984, Cl. 342-149.000.

Akebono Brake Industry Co., Ltd.: *See*—
Kaneda, Naoki, 5,333,707, Cl. 188-296.000.
Mori, Masatomo, 5,333,706, Cl. 188-156.000.

Akebono Research and Development Centre Ltd.: *See*—
Mori, Masatomo, 5,333,706, Cl. 188-156.000.

Akerman, Jan: *See*—
Fischer, Udo K.; Akerman, Jan; Asberg, Bengt A.; and Lagerberg, Stig E., 5,333,520, Cl. 76-108.200.

Akizuki, Shinya: *See*—
Naka, Akihiro; Ito, Shuichi; Akizuki, Shinya; and Saito, Kiyoshi, 5,334,674, Cl. 525-481.000.

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Foerster, Arno; Engels, Berthold; and Hauck, Peter, 5,333,990, Cl. 415-58.400.

Akzo Nobel N.V.: *See*—
Goswami, Jagadish C.; and Alessio, Gerald R., 5,334,443, Cl. 428-261.000.

Akzo N.V.: *See*—
Durand, Dominique, 5,334,631, Cl. 523-459.000.
Marolewski, Theodore A.; Burkhardt, Eric W.; and Wallfahrer, Uwe H., 5,334,682, Cl. 526-273.000.

Al-Razzak, Laman A.; and Alvarez, Francisco J., to Abbott Laboratories. Quinolone carboxylic acid--metal ion--acid complexes. 5,334,589, Cl. 514-185.000.

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Stueber, Henry B.; Baehre, Eric E.; Albrecht, Richard W.; Glynn, Christopher C.; and Hemmelgarn, Robert J., 5,333,993, Cl. 415-164.500.

Albright, Marcia S.: *See*—
Austin, Barry G.; Albright, Marcia S.; and Eccleston, Larry, 5,333,948, Cl. 303-24.100.

Alcan International Limited: *See*—
Sang, Harry; Kenny, Lorne D.; and Jin, Iljoon, 5,334,236, Cl. 75-415.000.

Alcare Co., Ltd.: *See*—
Okamoto, Shigetomi; Miwa, Masahiko; Sekine, Takayuki; and Yamaguchi, Hiroshi, 5,334,442, Cl. 428-246.000.

Alcatel Alsthom Compagnie Generale d'Electricite: *See*—
Duperray, Grard; Audry, Claudette; and Ducatel, Francoise, 5,334,557, Cl. 505-500.000.

Alcatel NA Cable Systems, Inc.: *See*—
McNutt, Christopher W., 5,334,421, Cl. 427-513.000.

Alcatel Network Systems, Inc.: *See*—
Carlton, Stephen C., 5,335,105, Cl. 359-135.000.
Weber, William F., 5,335,147, Cl. 361-818.000.

Alcatel N.V.: *See*—
Heidemann, Rolf, 5,335,109, Cl. 359-341.000.

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Goswami, Jagadish C.; and Alessio, Gerald R., 5,334,443, Cl. 428-261.000.

Alexander, Stephen M. Medical tubing and implement organizer. 5,334,186, Cl. 604-180.000.

Alfa Costruzioni Meccaniche S.p.A.: *See*—
Piazza, Gastone, 5,333,719, Cl. 198-399.000.

Alfred Teves GmbH: *See*—
Goossens, Andre F. L.; Seitz, Karlheinz; and Lauer, Josef, 5,333,946, Cl. 303-119.200.
Volz, Peter; and Schopper, Bernd, 5,333,945, Cl. 303-119.200.

Alicke, Gerhard: *See*—
Voelker, Heinz; Alicke, Gerhard; Weilbacher, Manfred; Weilbacher, Manfred; Weber, Reinhold; and Schuch, Horst, 5,334,337, Cl. 264-45.300.

Allbright, Edwin T. System for supporting and tensioning a volleyball net. 5,333,880, Cl. 273-411.000.

Allied Signal Inc.: *See*—
Caviglia, Anthony L., 5,334,545, Cl. 437-41.000.
Fathimulla, Ayub; and Olaleye, Aina, 5,334,865, Cl. 257-192.000.
Halliday, Daniel L., 5,334,978, Cl. 341-94.000.
Kalis, Robert M., 5,334,798, Cl. 174-35.00R.
Olson, Larry D.; Kamla, Jeffrey R.; and Johnson, Henry R., 5,334,696, Cl. 528-322.000.
Peczkowski, Joseph L.; and Suh, Peter J., 5,333,942, Cl. 303-94.000.
Wang, Li; Barder, Timothy J.; Kaiser, Mark; Johnson, Russell W.; and Arena, Blaise J., 5,334,785, Cl. 570-165.000.

AlliedSignal Inc.: *See*—
Albert, William C.; and Califano, Herbert T., 5,334,901, Cl. 310-321.000.
Bhoori, Yousuf M.; Leydon, Daniel S.; and Gilmore, Paul, 5,334,444, Cl. 428-280.000.
DiPaola, Donald A., 5,333,935, Cl. 297-471.000.
Rix, John F., 5,334,090, Cl. 454-72.000.

Alpine Electronics, Inc.: *See*—
Abe, Koichi; and Murata, Mitsuhiro, 5,334,969, Cl. 340-426.000.
Namekawa, Makoto, 5,335,264, Cl. 379-58.000.

Alston, William B.; and Gratz, Roy F., to United States of America, National Aeronautics and Space Administration. Substituted 1,1,1-triaryl-2,2,2-trifluoroethanes and processes for their synthesis. 5,334,733, Cl. 552-114.000.

Alteon Inc.: *See*—
Ulrich, Peter C.; and Cerami, Anthony, 5,334,617, Cl. 514-562.000.

Alterescu, Bruno: *See*—
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, 5,335,352, Cl. 395-800.000.

Altmanshofer, Robert D.: *See*—
Rodriguez-Cavazos, Enrique; and Altmanshofer, Robert D., 5,335,024, Cl. 348-806.000.

Altschuler, Barry N.: *See*—
Tugenberg, Michelle L.; Altschuler, Barry N.; and Hardy, Douglas A., 5,335,281, Cl. 380-48.000.

Alty, Adam C.: *See*—
Baucom, Keith B.; Alty, Adam C.; and Kimmel, Earl J., 5,334,788, Cl. 570-175.000.

Aluminum Company of America: *See*—
Perrotta, Anthony J.; and Minnick, Randall B., 5,334,366, Cl. 423-625.000.

Alusuisse-Lonza Services Ltd.: *See*—
Meier, Johannes, 5,334,276, Cl. 156-364.000.

Alvarez, Francisco J.: *See*—
Al-Razzak, Laman A.; and Alvarez, Francisco J., 5,334,589, Cl. 514-185.000.

Amarasekera, Jayantha: *See*—
Pinnavaia, Thomas J.; and Amarasekera, Jayantha, 5,334,564, Cl. 502-84.000.

AMEI Technologies Inc.: *See*—
Wagner, Erik J., 5,334,203, Cl. 606-61.000.

Amemiya, Kouji: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, 5,334,628, Cl. 514-311.000.

American Cardiac Ablation Co., Inc.: *See*—
Nardella, Paul C., 5,334,193, Cl. 606-41.000.

American Colloid Company: *See*—
Hughes, John, 5,333,673, Cl. 164-528.000.

American Cyanamid Company: *See*—
Doehner, Robert F., Jr.; Ladner, David W.; and Finn, John M., 5,334,576, Cl. 504-128.000.
Ishikawa, Yoshihiro, 5,334,521, Cl. 435-172.100.
Pillai, Subramonia; and Eby, Ronald, 5,334,379, Cl. 424-85.200.
Schlingmann, Gerhard; and Rosenfeld, Stuart A., 5,334,535, Cl. 435-280.000.

American Dental Technologies, Inc.: *See*—
Goldsmith, Daniel S.; and Parker, William S., 5,334,016, Cl. 433-29.000.
Goldsmith, Daniel S.; Howell, Michael P.; and Parker, William S., 5,334,019, Cl. 433-88.000.

American Interventional Technologies, Inc.: *See*—
Brown, Joe E.; and Pursley, Matt D., 5,334,169, Cl. 604-282.000.

American Manufacturing Company, Inc.: *See*—
Berger, George A., 5,333,442, Cl. 57-314.000.

American Mining Electronics, Inc.: *See*—
Ramsden, John W., Jr., 5,334,838, Cl. 250-361.00R.

American Standard Inc.: *See*—
Carlo, Leoni, 5,333,791, Cl. 239-428.500.
Levien, Robin H.; and Schmidt, Adam R., 5,333,325, Cl. 4-584.000.
Smith, Ronald R.; Foreman, Richard D.; Graf, Todd S.; and Redden, Joseph D., 5,333,835, Cl. 251-129.120.

America[3] Foundation: *See*—
Meldner, Heiner; and Downs, Roland J., 5,333,568, Cl. 114-103.000.

Ameritek, Inc.: *See*—
Holliday, George L.; Holliday, Brightman K.; and Shimer, Herbert G., Jr., 5,333,519, Cl. 76-107.800.

Ammermann, Eberhard: *See*—
Wenderoth, Bernd; Brand, Siegbert; Schuetz, Franz; Kuekenhoehner, Thomas; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,334,577, Cl. 504-130.000.

Amoco Corporation: *See*—
Lillwitz, Lawrence D.; and Karachewski, Anne M., 5,334,796, Cl. 585-467.000.

Ampex Corporation: *See*—
Shih, Lionel C.; and Wood, Tracy G., 5,335,119, Cl. 360-53.000.

Amphenol-Tuchel Electronics GmbH: *See*—
Bleier, Robert; and Reichardt, Manfred, 5,334,827, Cl. 235-492.000.
Reichardt, Manfred; and Bleier, Robert, 5,334,034, Cl. 439-188.000.

AMSTED Industries Incorporated: *See*—
Christie, C. Dale; Gallagher, Michael T.; Hendricksen, Michael J.; Oliver, John D.; and Polzin, Mark A., 5,333,926, Cl. 295-21.000.

Amurol Products Company: *See*—
Ream, Ronald L.; Corriveau, Christine L.; and Wokas, William J., 5,334,397, Cl. 426-5.000.

An, Hong-jo, to SamSung Electronics Co., Ltd. Automatic track locking state check circuit. 5,335,122, Cl. 360-70.000.

Anastase, Constantin; Daily, Jay H.; and Nehren, William C., to White Consolidated Industries, Inc. Process for treating textiles. 5,333,338, Cl. 8-158.000.

Anatel Corporation: *See*—
Blades, Frederick K., 5,334,940, Cl. 324-442.000.

Anbo, Tsugio; Machida, Yukihumi; and Iguchi, Hirohumi, to Mitsubishi Cable Industries Ltd. Device for detachably coupling first and second halves of electric connector. 5,334,041, Cl. 439-358.000.

Anchor Hocking Corporation: *See*—
Uhlik, James M., 5,333,427, Cl. 52-306.000.

Andcare, Inc.: *See*—
Henkens, Robert W.; Zhao, Junguo; and O'Daly, John P., 5,334,296, Cl. 204-153.120.

Anderson, Fred J.: *See*—
Campo, James A.; Anderson, Fred J.; Embree, Donald M.; Hofstetter, Charles J.; and Sloan, Donald I., 5,334,821, Cl. 235-380.000.

Anderson, James D.: *See*—
Uren, Dean P.; and Anderson, James D., 5,334,065, Cl. 441-70.000.

Anderson, Jon A.; and Antich, Peter P., to Board of Regents, The University of Texas System., The. Position sensitive radiation detector. 5,334,839, Cl. 250-368.000.

Anderson, Kenneth W.; Haynes, Deborah I.; and Whiteside, Ross C., Jr., to Dow Chemical Company, The. Epoxy resin advanced with polyphenol/oxyalkylated aromatic or cycloyaliphatic diglycidyl ether product. 5,334,676, Cl. 525-524.000.

Anderson, Neal P.: *See*—
Vine, Raymond W.; and Anderson, Neal P., 5,334,462, Cl. 428-697.000.

Anderson, Oscar E., to General Electric Company. Reduction of acrylonitrile in wastewater from the porduction of ABS plastic. 5,334,313, Cl. 210-624.000.

Anderson, Phillip S.: *See*—
Hoppmann, Kurt H.; Vaughn, Charles; Anderson, Phillip S.; and Schmitt, Werner H., 5,333,716, Cl. 198-380.000.

Anderson, Robert N.; and Bentley, Mark R., to Indresco Inc. Roller load measuring device. 5,333,510, Cl. 73-862.581.

Anderson, Steven P. Wrist mounted magnetic holder. 5,333,767, Cl. 224-183.000.

Anderson, William J., to AST Research, Inc. Portable computer display tilt/swivel mechanism. 5,335,142, Cl. 361-681.000.

Andersson, Hans E., to Telefonaktiebolaget L M Ericsson. Adaptive resource allocation in a mobile telephone system. 5,335,356, Cl. 455-54.100.

Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, to Aisin AW Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Control system for servo hydraulic pressure in vehicular automatic transmission. 5,334,114, Cl. 475-119.000.

Ando, Masahiko; Yamanaka, Takeshi; Moroishi, Yutaka; Tokunaga, Yasuyuki; and Kitamura, Yoshinao, to Nitto Denko Corporation. Pressure-sensitive adhesive and adhesive sheets using the same. 5,334,686, Cl. 526-307.700.

Ando, Masahiko: *See*—
Kitamura, Yoshinao; Yamashita, Shinkiti; Tokunaga, Yasuyuki; Ando, Masahiko; and Yamanaka, Takeshi, 5,334,447, Cl. 428-317.300.

Ando, Minato: *See*—
Okada, Kohji; Ando, Minato; Tokumoto, Jun-ichi; and Katoh, Takashi, 5,334,305, Cl. 204-435.000.

Andoh, Naoto, to Mitsubishi Denki Kabushiki Kaisha. Field effect transistor signal switching device. 5,334,871, Cl. 257-402.000.

Andrew Corporation: *See*—
Devine, Edward B.; and Smith, Richard W., 5,334,051, Cl. 439-583.000.

Andrews, Derek. Coaxial connector module for mounting on a printed circuit board. 5,334,050, Cl. 439-579.000.

Andrews, Robert L., to Hyer Industries, Inc. Screw feeder with progressively decreasing screw confinement. 5,333,762, Cl. 222-238.000.

Anelva Corporation: *See*—
Nashimoto, Kiyoshi, 5,334,251, Cl. 118-725.000.

Anergen, Inc.: *See*—
Clark, Brian R.; and Nag, Bishwajit, 5,334,391, Cl. 424-450.000.

Angeion Corporation: *See*—
Kroll, Mark W., 5,334,219, Cl. 607-5.000.

Anke, Timm: *See*—
Sauter, Hubert; Lorenz, Gisela; Steiner, Gerd; Janssen, Bernd; Anke, Timm; and Steglich, Wolfgang, 5,334,607, Cl. 514-378.000.

Ankenbruck, James B.; Antolin, Jose V.; Herbstler, Horst D.; Lund, Bruce D.; Vahcic, Anne K.; and Wilson, Lowell T., to Ohio Art Company, The. Color drawing toy. 5,333,387, Cl. 33-18.100.

Anorad Corporation: *See*—
Chitayat, Anwar, 5,334,892, Cl. 310-12.000.

Anthony, Thomas R.; and Fleischer, James F., to General Electric Company. Suppression of graphite formation during laser etching of diamond. 5,334,280, Cl. 156-635.000.

Anthony, Vivienne M.: *See*—
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.

Antich, Peter P.: *See*—
Anderson, Jon A.; and Antich, Peter P., 5,334,839, Cl. 250-368.000.

Antkowiak, Thomas A.: *See*—
Lawson, David F.; Stayer, Mark L., Jr.; and Antkowiak, Thomas A., 5,334,665, Cl. 525-289.000.

Antolin, Jose V.: *See*—
Ankenbruck, James B.; Antolin, Jose V.; Herbstler, Horst D.; Lund, Bruce D.; Vahcic, Anne K.; and Wilson, Lowell T., 5,333,387, Cl. 33-18.100.

Antonelli, Alexander A.: *See*—
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.

Anttonen, Kauko K.; and Vehmas, Jukka H., to Tamglass Engineering Oy. Nozzle assembly for a flat-glass tempering machine. 5,334,234, Cl. 65-351.000.

Anzai, Kenji, to Nippon Steel Corporation. Semiconductor memory device having memory cells formed of one transistor and one capacitor and a method of producing the same. 5,335,196, Cl. 361-149.000.

Aoki, Nobuyuki; Fujita, Hideo; and Aoshima, Jiro, to Tomoegawa Paper Co., Ltd. Toner for developing static charge images. 5,334,472, Cl. 430-109.000.

Aono, Toshiaki, to Fuji Photo Film Co., Ltd. Photographic element with gas permeable hydrophobic layer on backing layer. 5,334,482, Cl. 430-203.000.

Aoshima, Chikara, to Canon Kabushiki Kaisha. Shutter device for camera. 5,335,036, Cl. 354-246.000.

Aoshima, Jiro: *See*—
Aoki, Nobuyuki; Fujita, Hideo; and Aoshima, Jiro, 5,334,472, Cl. 430-109.000.

Aoyama, Keizo, to Fujitsu Limited. Multiport memory. 5,335,199, Cl. 365-230.050.

Aphex Systems, Ltd.: *See*—
Werrbach, Donn, 5,334,947, Cl. 330-149.000.

Apostol, George: *See*—
Nguyen, Uoc H.; Whang, Lipson; and Apostol, George, 5,335,326, Cl. 395-250.000.

Apple Computer, Inc.: *See*—
Atkinson, William, 5,335,299, Cl. 382-56.000.

Applied Elastomerics, Inc.: *See*—
Chen, John Y., 5,334,646, Cl. 524-474.000.

Applied Microbiology, Inc.: *See*—
Blackburn, Peter; Projan, Steven J.; and Goldberg, Edward B., 5,334,582, Cl. 514-2.000.

Appolonia, Jack; Muscato, Robert; and Wittel, George, to BOC Group, Inc., The. Method and device for transmitting heating or cooling medium to a food product on a moving substrate. 5,334,406, Cl. 426-520.000.

Arai, Hitoshi; Kanda, Yutaka; Kono, Motomichi; Kasai, Masaji; Ashizawa, Tadashi; and Gomi, Katsushige, to Kyowa Hakko Kogyo Co., Ltd. 6-ethyl mitomycin derivatives. 5,334,611, Cl. 514-410.000.

Arai, Ryuichi: *See*—
Kashiwazaki, Akio; Kobayashi, Masatsune; Arai, Ryuichi; Kobayashi, Junichi; and Shimomura, Akihiko, 5,334,999, Cl. 347-65.000.

Araki, Kiyoshi: *See*—
Yasui, Juro; and Araki, Kiyoshi, 5,334,466, Cl. 430-5.000.

Arano, Yukari: *See*—
Onishi, Ken; Banjyo, Hidenori; and Arano, Yukari, 5,335,116, Cl. 360-9.100.

Arashi, Tomohiro: *See*—
Nomura, Takeshi; Nakano, Yukie; Satoh, Akira; and Arashi, Tomohiro, 5,335,139, Cl. 361-4.000.

Arch Development Corporation: *See*—
Roizman, Bernard; and Purves, Frances C., 5,334,498, Cl. 435-5.000.

Arena, Blaise J.: *See*—
Wang, Li; Barder, Timothy J.; Kaiser, Mark; Johnson, Russell W.; and Arena, Blaise J., 5,334,785, Cl. 570-165.000.

Arielly, Salo, to Chromonogenix AB. Chromogenic substrate. 5,334,703, Cl. 530-330.000.

Arika, Tadashi: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, 5,334,628, Cl. 514-311.000.

Arimoto, Masao, to Mitsubishi Denki Kabushiki Kaisha. Class-AB push-pull drive circuit. 5,334,950, Cl. 330-264.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Arimoto, Tatsuya: *See—*
Sugimoto, Tadashi; Imuro, Yoshihiro; Nishimura, Shigeki; and Arimoto, Tatsuya, 5,334,972, Cl. 340-556.000.

Arinc Research Corporation: *See—*
Basciano, Nicholas J., 5,335,363, Cl. 455-73.000.

Arisawa, Masato: *See—*
Murakami, Harunori; Baba, Yuji; Urakami, Kanta; Niizaki, Nobuya; Natsume, Hirofumi; and Arisawa, Masato, 5,334,988, Cl. 343-704.000.

Aritomi, Mitsutoshi: *See—*
Tomida, Masayuki; Nimura, Hitoshi; and Aritomi, Mitsutoshi, 5,334,664, Cl. 525-289.000.

Arlt, Dieter: *See—*
Zwiener, Christian; Rettig, Rainer; Nachtkamp, Klaus; Pedain, Josef; and Arlt, Dieter, 5,334,637, Cl. 524-539.000.

Armbruster, June M.; and Leichter, Louis M., to Minnesota Mining and Manufacturing Company. Carbonless pad assembly. 5,334,094, Cl. 462-17.000.

Armstrong, Michael, Jr., to Bloom, Leonard, a part interest. Stabilizing foot means for cap of needle assembly and method thereof. 5,334,173, Cl. 604-263.000.

Arndt, Uwe: *See—*
Hess, Bernhard; Schulz-Schlitte, Wolfgang; Kirsch, Jurgen; Freitag, Dieter; Arndt, Uwe; Gehrke, Hans-Georg; and Zander, Klaus, 5,334,692, Cl. 528-126.000.

Arnold, Ben A. Calibration phantom and improved method of quantifying calcium and bone density using same. 5,335,260, Cl. 378-207.000.

Arnold, Ernest W., III: *See—*
Sumner, Charles E., Jr.; Gustafson, Bruce L.; Arnold, Ernest W., III; Fugate, Eric J.; and Fuller, Dewey W., Jr., 5,334,754, Cl. 562-416.000.

Arnold, Floyd L.; Bair, Carl J.; Kiraly, Christopher M.; Norgren, William P.; and Wintriss, George V., to Arnold, Floyd L.; and Bair, Carl J. Sports simulator. 5,333,874, Cl. 273-185.00B.

Arnott, Randy M., to Digital Equipment Corporation. FIFO based parity generator. 5,335,235, Cl. 371-49.200.

Arntz, Dietrich: *See—*
Haas, Thomas; Wiegand, Norbert; and Arntz, Dietrich, 5,334,778, Cl. 568-862.000.

Aro Corporation, The: *See—*
Gardner, Richard K.; and Schroeder, Gordon M., 5,334,003, Cl. 417-393.000.

Arriulou, Pascal; Grelaud, Alain; and Venet, Francois, to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude. Indirect heat exchanger. 5,333,683, Cl. 165-166.000.

Arts, Henricus J.: *See—*
Castelijns, Anna M. C. F.; Arts, Henricus J.; and Green, Richard, 5,334,721, Cl. 546-251.000.

Artusi, Giovanni; and Simonetti, Stelio, to Lange International S.A. Tightening device for ski boot. 5,333,363, Cl. 24-685.00K.

Aruga, Tamotsu: *See—*
Shimada, Tomoyuki; Sasaki, Masaomi; Aruga, Tamotsu; and Adachi, Hiroshi, 5,334,470, Cl. 430-59.000.

Asabuki, Hideyo: *See—*
Saito, Shinkichi; Asabuki, Hideyo; Onozato, Atsushi; Nishimura, Toshinori; Kawada, Kazuo; and Yamamoto, Shinji, 5,333,860, Cl. 273-77.00A.
Teramoto, Mitsutake; Okumoto, Takaharu; Goto, Teruo; Saito, Shinkichi; and Asabuki, Hideyo, 5,333,859, Cl. 273-77.00A.
Teramoto, Mitsutake; Saito, Shinkichi; and Asabuki, Hideyo, 5,333,862, Cl. 273-80.00C.

Asahara, Masaru: *See—*
Oguchi, Takuro; Sasaki, Shunroku; and Asahara, Masaru, 5,335,262, Cl. 379-58.000.

Asahi Denka Kogyo Kabushiki Kaisha: *See—*
Minami, Yoshitaka; Kakumaru, Hajime; Kubota, Naohiro; Tominaga, Nobuhide; and Ishizaki, Koji, 5,334,484, Cl. 430-281.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kosako, Kosei, 5,335,028, Cl. 354-64.000.
Maruyuma, Koichi; Wakamiya, Syun'itirou; and Iwaki, Makoto, 5,335,059, Cl. 356-124.000.
Suzuka, Shinya, 5,335,030, Cl. 354-149.100.

Asahi Kogaku Kogyo Kabushiki Kaishi: *See—*
Ogawa, Yuji, 5,335,031, Cl. 354-159.000.

Asano, Fumiaki, to Brother Kogyo Kabushiki Kaisha. Embroidery data producing apparatus. 5,335,182, Cl. 364-470.000.

Asanuma, Kiyohisa: *See—*
Miyoshi, Masahiko; Asanuma, Kiyohisa; and Soutome, Kazuharu, 5,333,546, Cl. 101-216.000.

Asanuma, Tadashi; and Kawanishi, Kaoru, to Mitsui Toatsu Chemicals, Incorporated. α-olefin-alkenylsilane copolymer and method for preparing same. 5,334,684, Cl. 526-279.000.

Asaoka, Sachio: *See—*
Yoneda, Noriyuki; Shiroto, Yoshimi; Hamato, Kazuhiko; Asaoka, Sachio; and Maejima, Tetsuo, 5,334,755, Cl. 562-519.000.

Asberg, Bengt A.: *See—*
Fischer, Udo K.; Akerman, Jan; Asberg, Bengt A.; and Lagerberg, Stig E., 5,333,520, Cl. 76-108.200.

Asea Brown Boveri Ltd.: *See—*
Widenhorn, Leonhard, 5,334,927, Cl. 322-100.000.

Ash, Carlton E.; Geibel, Jon F.; Hagenson, Randy L.; and Soules, David A., to Phillips Petroleum Company. Process for the removal of lower molecular weight fractions of poly(arylene sulfide) polymers. 5,334,701, Cl. 528-486.000.

Ashbrook, Clifford L., to Quin Tics Corporation. Bullet puller. 5,333,367, Cl. 29-275.000.

Ashida, Keiji, to Sumitomo Chemical Co., Ltd. Method and device for optically detecting an interface between two fluids and method of setting the parameters for such detection. 5,334,850, Cl. 250-577.000.

Ashimori Industry Co., Ltd.: *See—*
Imoto, Takayoshi; and Okahashi, Toshio, 5,334,429, Cl. 428-36.200.

Ashimori Kogyo Kabushiki Kaisha: *See—*
Shimokawa, Shinji; and Kita, Katsuo, 5,333,649, Cl. 138-89.000.

Ashizawa, Tadashi: *See—*
Arai, Hitoshi; Kanda, Yutaka; Kono, Motomichi; Kasai, Masaji; Ashizawa, Tadashi; and Gomi, Katsushige, 5,334,611, Cl. 514-410.000.

Ashjian, Henry; Miller, Matthew P.; Shen, Dong-Ming; and Wu, Margaret M., to Mobil Oil Corporation. Deposit control additives and fuel compositions containing the same. 5,334,228, Cl. 44-347.000.

Associated Universities, Inc.: *See—*
Mease, Ronnie C.; Srivastava, Suresh C.; and Gestin, Jean-Francois, 5,334,729, Cl. 548-546.000.

AST Research, Inc. *See—*
Anderson, William J., 5,335,142, Cl. 361-681.000.

ASTA Pharma Aktiengesellschaft: *See—*
Kalden, Joachim; Fleckenstein, Bernhard; Baur, Andreas; and Harrer, Thomas, 5,334,612, Cl. 514-440.000.

Astec Industries, Inc.: *See—*
Brock, J. Don; Mize, Erbie G.; and Swanson, Malcom L., 5,334,012, Cl. 432-106.000.

Astrof, Kenneth L.: *See—*
Krueger, Thomas E.; and Astrof, Kenneth L., 5,335,249, Cl. 375-1.000.

AT&T Bell Laboratories: *See—*
Adams, Thomas E.; Lee, Kuo-Hua; Nagy, William J.; and Sung, Janmye, 5,334,541, Cl. 437-8.000.
Akkapeddi, Kaushik S.; Bonanni, Rocco; Gashler, Robert J.; German, Michael G.; Lambert, William R.; and Schramm, Eugene C., 5,334,029, Cl. 439-66.000.
Bottiglieri, Michael P.; and Dempsey, Peter A. A., 5,335,228, Cl. 370-100.100.
Cole, Robert G.; Fendick, Kerry W.; and Rodrigues, Manoel A., 5,335,224, Cl. 370-84.000.
Dautremont-Smith, William C.; Feldman, Leonard C.; Kalish, Rafael; Katz, Avishay; Miller, Barry; and Moriya, Netzer, 5,334,306, Cl. 205-131.000.
Dunaenko, Charles, Jr.; Pawlenko, Ivan; and Samson, Larry P., 5,333,521, Cl. 81-9.510.
Hunt, Christopher J.; and Vanevic, C. Daniel, 5,335,229, Cl. 370-110.100.
Morris, Bernard L., 5,334,885, Cl. 307-443.000.

Athanas, Lewis S., to Aura, Ltd. Loudspeaker utilizing magnetic liquid suspension of the voice coil. 5,335,287, Cl. 381-197.000.

Atkinson, Gary M.: *See—*
Kubena, Randy L.; Stratton, Frederic P.; Atkinson, Gary M.; McNulty, Hugh, Jr.; and Ward, James W., 5,335,243, Cl. 372-99.000.

Atkinson, William, to Apple Computer, Inc. Video compression algorithm. 5,335,299, Cl. 382-56.000.

Atochem: *See—*
Engel, Philippe; and Courant, Alain, 5,334,360, Cl. 422-230.000.

Attenasio, Ann T.: *See—*
Azibert, Henri V.; Willbrant, Margaret B.; and Attenasio, Ann T., 5,333,882, Cl. 277-1.000.

Au, Bryan K. F.: *See—*
Yu, Yiu K.; and Au, Bryan K. F., 5,334,070, Cl. 446-31.000.

Aubele, Eugen: *See—*
Breyer, Karl-Hermann; Aubele, Eugen; Grupp, Gunter; Ebersbach, Peter; and Wiedmann, Wolfgang, 5,333,386, Cl. 33-1.00M.

Audia, James E.; Hirsch, Kenneth S.; Jones, Charles D.; Lawhorn, David E.; McQuaid, Loretta A.; and Weigel, Leland O., to Eli Lilly and Company. Benzo[F]quinolinones. 5,334,767, Cl. 568-327.000.

Audry, Claudette: *See—*
Duperray, Grard; Audry, Claudette; and Ducatel, Francoise, 5,334,557, Cl. 505-500.000.

Audureau, Joel; and Crenna, Vincent, to ECP-Enichem Polymeres France S.A. Thermoplastic compositions, process for preparing them and their application in the production of industrial articles. 5,334,663, Cl. 525-194.000.

Augat Inc.: *See—*
Brouillette, Peter; and Pickles, Charles S., 5,334,046, Cl. 439-540.000.

Aumayer, Walter: *See—*
Urbanek, Otto; and Aumayer, Walter, 5,334,009, Cl. 425-556.000.

Aura, Ltd.: *See—*
Athanas, Lewis S., 5,335,287, Cl. 381-197.000.

Aura System Inc.: *See—*
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

Austin, Barry G.; Albright, Marcia S.; and Eccleston, Larry, to Tekonsha Engineering Company. Multiple-gain electronic brake actuator with trigger point inertial sensor. 5,333,948, Cl. 303-24.100.

Austin, Jared A.: *See—*
Quantrille, Thomas E.; Austin, Jared A.; and Zimmerman, G. Stanley, 5,334,446, Cl. 428-284.000.

Austin, Kevin L.: *See—*
Richardson, Charles T., Jr.; Austin, Kevin L.; and Billingsley, Samuel P., III, 5,335,266, Cl. 379-88.000.

Austin, Richard G., to Exxon Chemical Patents Inc. Photodegradable and biodegradable polyethylene. 5,334,700, Cl. 528-392.000.

Austria Metall Aktiengesellschaft: *See—*
Ublacker, Peter, 5,333,485, Cl. 72-367.000.

Autotrol Corporation: *See—*
Evers, John N.; and Hilleary, Thomas N., 5,335,267, Cl. 379-100.000.

Avery Dennison Corporation: *See—*
Benoit, James C.; and Deschenes, Charles L., 5,333,822, Cl. 248-71.000.

Avery, Elliott L., to Transco Inc. Temperature and sound insulated panel assembly. 5,334,806, Cl. 181-286.000.

Aymes, Doniel G. Swimming pool with ladder. 5,333,323, Cl. 4-496.000.

Azibert, Henri V.; Willbrant, Margaret B.; and Attenasio, Ann T., to A.W. Chesterton Company. Balanced mechanical seal assembly and flow ring therefor. 5,333,882, Cl. 277-1.000.

B. F. Goodrich Company, The: *See—*
Drews, Stephen F.; and Tischer, Leo A., 5,334,648, Cl. 524-512.000.
Sperk, James M., Jr.; Lee, Biing-lin; Summers, James W.; and Faber, Edward M., deceased, 5,334,647, Cl. 524-507.000.

B&G Plastics, Inc.: *See—*
Kolton, Chester; and Spater, Stuart S., 5,334,274, Cl. 156-93.000.

Baba, Kenji: *See—*
Takahashi, Kazunori; Hamada, Nobuhiro; Takato, Masao; Baba, Kenji; Morooka, Yasuo; Kawakami, Junzo; Yokota, Takayoshi; and Kiyokawa, Ryuji, 5,335,180, Cl. 364-436.000.

Baba, Yuji: *See—*
Murakami, Harunori; Baba, Yuji; Urakami, Kanta; Niizaki, Nobuya; Natsume, Hirofumi; and Arisawa, Masato, 5,334,988, Cl. 343-704.000.

Babbitt, Richard W.; Koscica, Thomas E.; and Drach, William C., to United States of America, Army. Microwave ferroelectric phase shifters and methods for fabricating the same. 5,334,958, Cl. 333-156.000.

Bachand, William R.: *See—*
Manning, Troy A.; and Bachand, William R., 5,335,202, Cl. 365-222.000.

Backus, Brian L.: *See—*
Ramsey, Charles R.; Holcomb, Russell E.; and Backus, Brian L., 5,333,488, Cl. 73-1.00J.

Bacon, Edward R.: *See—*
Josef, Kurt A.; Bacon, Edward R.; Estep, Kimberly G.; Illig, Carl R.; and Douty, Brent D., 5,334,370, Cl. 424-5.000.

Badgett, James F.: *See—*
Harris, Edward D.; Schimmelpfennig, Fred J., Jr.; Badgett, James F.; and Bonner, Jeffrey O., 5,333,416, Cl. 52-27.000.

Bae, Young D.; and Kim, Jin B., to Samsung Electronics Co., Ltd. Air conditioner with heater for heating liquified refrigerant. 5,333,472, Cl. 62-503.000.

Baehre, Eric E.: *See—*
Stueber, Henry B.; Baehre, Eric E.; Albrecht, Richard W.; Glynn, Christopher C.; and Hemmelgarn, Robert J., 5,333,993, Cl. 415-164.500.

Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., to Merck & Co., Inc. Six-membered ring fused imidazoles substituted with phenoxy-phenylacetic acid derivatives. 5,334,598, Cl. 514-303.000.

Bahns, John T., to University of Iowa Research Foundation, The. Apparatus and method for guiding an electric discharge with a magnetic field. 5,335,238, Cl. 372-37.000.

Bahr, Theodor: *See—*
Ortner, Herbert; Bahr, Theodor; and Musselmann, Walter, 5,334,285, Cl. 162-4.000.

Bailey, David S.: *See—*
Begley, William J.; Chen, Teh H.; and Bailey, David S., 5,334,490, Cl. 430-382.000.

Bailey, Douglas S., to Midwesco, Inc. Alarm system. 5,334,970, Cl. 340-506.000.

Bailey, James E. Lift assembly for lowrider model cars. 5,334,077, Cl. 446-466.000.

Bailey, Ken. Safe birling. 5,334,100, Cl. 472-127.000.

Bailey, Mark R., to Camco Manufacturing, Inc. Hose fittings with ring holder. 5,333,910, Cl. 285-12.000.

Bair, Carl J.: *See—*
Arnold, Floyd L.; Bair, Carl J.; Kiraly, Christopher M.; Norgren, William P.; and Wintriss, George V., 5,333,874, Cl. 273-185.00B.

Baird, Brian W.: *See—*
Abbott, Jerry J.; Baird, Brian W.; and Miller, Michael G., 5,334,474, Cl. 430-110.000.

Bak, Chan S.: *See—*
Kimura, Hiroshi; Hadeishi, Tetsuo, deceased; Olsen, Harold M.; and Bak, Chan S., 5,333,487, Cl. 73-23.310.

Bakal, Abraham I.: *See—*
Flynn, Robert G.; Bakal, Abraham I.; and Snyder, Margaret A., 5,334,399, Cl. 426-42.000.

Baker Hughes Incorporated: *See—*
Baugh, John L.; and Melenyzer, George J., 5,333,692, Cl. 166-387.000.

Baker, Julie; Gray, Colin J.; and Barnett, Anthony M., to Eastman Kodak Company. Diffusion transfer receiver. 5,334,483, Cl. 430-207.000.

Baker, Thomas E.: *See—*
Kelly, John F., Jr.; Laird, Robert G.; Baker, Thomas E.; and Torres, Cristobal A., 5,335,268, Cl. 379-112.000.

Baldwin, Daniel F.; Suh, Nam P.; Park, Chul B.; and Cha, Sung W., to Massachusetts Institute of Technology. Supermicrocellular foamed materials. 5,334,356, Cl. 422-133.000.

Baldwin, John J.; Shepard, Kenneth L.; Ponticello, Gerald S.; and Williams, Theresa M., to Merck & Co., Inc. Tricyclic thienothiopyran carbonic anhydrase inhibitors. 5,334,591, Cl. 514-215.000.

Ball, Carrol. Trailer hitch wedge. 5,333,888, Cl. 280-504.000.

Ballad, William J.: *See—*
Carlson, Elmer V.; and Ballad, William J., 5,335,286, Cl. 381-191.000.

Ballantyne, Wayne W.; Ooi, Leng H.; and Hodges, Eugene W., III, to Motorola, Inc. Frequency synthesizer with VCO output control. 5,335,365, Cl. 455-76.000.

Ballard Medical Products: *See—*
Davis, Richard C.; and Domin, Terrance L., 5,333,761, Cl. 222-212.000.

Banjyo, Hidenori: *See—*
Onishi, Ken; Banjyo, Hidenori; and Arano, Yukari, 5,335,116, Cl. 360-9.100.

Banks, Stewart: *See—*
Jamison, Mark D.; Banks, Stewart; Williamson, Nicholas; and Roders, George W., 5,333,758, Cl. 222-101.000.

Bannach Sichtermann, Gustavo H.; Pincheira Alverez, Aliro T. N.; Reghezza Inzunza, Andres A.; Cruz Rivera, Alberto S.; Lorca Soto, Tomas S.; Hidalgo Cortes, Luis F.; Menacho Llana, Jorge M.; and Martinez Pereira, Miguel A., to Corporacion Nacional Del Cobre De Chile. Method for recovering organic material in solvent extraction processes. 5,334,317, Cl. 210-708.000.

Bantly, Matthew: *See—*
LoCicero, Rai-Ann; Morgan, Stuart; Romm, Michael; Bantly, Matthew; and Mangan, Edward O., 5,333,744, Cl. 211-87.000.

Bantz, George H.: *See—*
Pellegrino, Anthony J.; Mayes, Earl C.; Sharpe, Donald E.; and Bantz, George H., 5,335,161, Cl. 363-61.000.

Banyu Pharmaceutical Co., Ltd.: *See—*
Kojiri, Katsuhisa; Nakajima, Shigeru; Fuse, Aisaku; and Suda, Hiroyuki, 5,334,613, Cl. 514-452.000.

Barber, Steven D.: *See—*
Pope, Rodney T.; Barber, Steven D.; and Hall, Daniel R., 5,334,098, Cl. 472-116.000.

Barboza, Steven D., to Memtec America Corporation. Continuous filament yarn precoat septum. 5,334,451, Cl. 428-377.000.

Barder, Timothy J.: *See—*
Wang, Li; Barder, Timothy J.; Kaiser, Mark; Johnson, Russell W.; and Arena, Blaise J., 5,334,785, Cl. 570-165.000.

Bardon, Hugo A.: *See—*
Mehringer, Ricardo F.; Bardon, Hugo A.; and Pozzetti, Augusto P., 5,333,627, Cl. 132-108.000.

Bardy, Gust H., to Medtronic, Inc. Method and apparatus for treatment of angina same. 5,334,221, Cl. 607-14.000.

Barker, Kathryn Z. Brassiere with augmenting bust support. 5,334,082, Cl. 450-31.000.

Barker Manufacturing Co., Inc.: *See—*
Eden, Edward J., 5,333,420, Cl. 52-67.000.

Barnes, Thomas D. Target board for bag pitching game. 5,333,879, Cl. 273-400.000.

Barnes, Thomas H.: *See—*
Eiju, Tomoaki; Matsuda, Kiyofumi; Barnes, Thomas H.; and Kokaji, Shigeru, 5,335,058, Cl. 356-28.500.

Barnes, William J., to General Motors Corporation. Air bag deployable instrument panel cover. 5,333,901, Cl. 280-732.000.

Barnett, Anthony M.: *See—*
Baker, Julie; Gray, Colin J.; and Barnett, Anthony M., 5,334,483, Cl. 430-207.000.

Baroid Technology, Inc.: *See—*
Thigpen, Gary M.; and Sherwood, William H., 5,333,699, Cl. 175-431.000.

Barr, Larry H.: *See—*
Rodney, Stanley; and Barr, Larry H., 5,333,550, Cl. 102-331.000.

Barreda, Carlos: *See—*
Glater, Michael; Barreda, Carlos; and Zlobinsky, Yury, 5,334,130, Cl. 494-4.000.

Barth, Phillip W.; and Gordon, Gary B., to Hewlett-Packard Company. High performance micromachined valve orifice and seat. 5,333,831, Cl. 251-11.000.

Bartholomew, Leroy E.; Childs, Eric G.; and Callahan, David M. Blowout preventer with removable packer. 5,333,832, Cl. 251-1.300.

Bartos, Peter J. Golf clock. 5,335,212, Cl. 368-107.000.

Basciano, Nicholas J., to Arinc Research Corporation. Signal interference reduction device and method. 5,335,363, Cl. 455-73.000.

BASF Aktiengesellschaft: *See—*
Blumenstein, Uwe; Klaerner, Peter; Schuch, Horst; and Walter, Hans-Michael, 5,334,658, Cl. 525-71.000.
Brudermueller, Martin; Witzel, Tom; and Merger, Franz, 5,334,745, Cl. 558-394.000.
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,334,287, Cl. 162-175.000.
Horn, Peter; Reich, Erhard; Adams, Stefan; and Chakrabarti, Sarbananda, 5,334,448, Cl. 428-319.700.

VOL
1165
ISS
1
AG
2
1994
UMI

Horn, Peter; Mueller, Ulrich; Hoelderich, Wolfgang; Sattler, Ulf; Taddey, Rudolf; and Tintelnot, Dieter, 5,334,620, Cl. 521-51.000.
Koch, Juergen; and Heinz, Gerhard, 5,334,642, Cl. 524-83.000.
Lippert, Ferdinand; and Hoehn, Arthur, 5,334,759, Cl. 562-609.000.
Niedenbrueck, Matthias; and Patsch, Manfred, 5,334,734, Cl. 552-278.000.
Sauter, Hubert; Lorenz, Gisela; Steiner, Gerd; Janssen, Bernd; Anke, Timm; and Steglich, Wolfgang, 5,334,607, Cl. 514-378.000.
Schoettle, Klaus, 5,335,130, Cl. 360-132.000.
Schrimpf, Hans; Krebs, Hans; Liebold, Gert; and Frey, Guenter, 5,334,323, Cl. 252-70.000.
Voelker, Heinz; Alicke, Gerhard; Weilbacher, Manfred; Weilbacher, Manfred; Weber, Reinhold; and Schuch, Horst, 5,334,337, Cl. 264-45.300.
Wenderoth, Bernd; Brand, Siegbert; Schuetz, Franz; Kuekenhoehner, Thomas; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,334,577, Cl. 504-130.000.

BASF Corporation: *See—*
James, Lawrence E.; and Walsh, William C., 5,334,255, Cl. 134-38.000.
Serdiuk, Paul; and Steinmetz, Alan L., 5,334,650, Cl. 524-591.000.

BASF Lacke & Farben Aktiengesellschaft: *See—*
Hartung, Michael; Grabbe, Michael; and Mayenfels, Peter, 5,334,420, Cl. 427-407.100.

Baskin, Gennady: *See—*
Popat, Pravin N.; Unterweger, Diethard; Baskin, Gennady; Candelet, Ronald J.; and Tonnies, Gary L., 5,334,553, Cl. 437-209.000.

Bassi, Dario; and Montibert, Pierre, to Staubli-Verdol SA. Mobile hook of electromagnetic shed-forming device. 5,333,652, Cl. 139-455.000.

Bastian, John M.: *See—*
Beck, Marshall K.; and Bastian, John M., 5,334,089, Cl. 454-62.000.

Bastiolo, Catia; Bellotti, Vittorio; Del Giudice, Luciano; and Lombi, Roberto, to Novamont S.p.A. Polymer compositions for the production of articles of biodegradable plastics material and methods for their preparation. 5,334,634, Cl. 524-47.000.

Bateman, Andrew: *See—*
Kenington, Peter B.; Beach, Mark A.; Bateman, Andrew; and McGeehan, Joseph P., 5,334,946, Cl. 330-144.000.

Batson, Nathan: *See—*
English, George P.; and Batson, Nathan, 5,335,137, Cl. 361-220.000.

Battelle Memorial Institute: *See—*
Hildebrand, Bernard P., 5,335,184, Cl. 364-507.000.

Battle, John R. Flush regulator. 5,333,331, Cl. 4-324.000.

Baubois, Michel: *See—*
Simon, Georges; and Baubois, Michel, 5,333,530, Cl. 89-13.100.

Baucom, Keith B.; Alty, Adam C.; and Kimmel, Earl J., to PCR Group, Inc. Reaction of substrate compounds with fluorine in an eductor. 5,334,788, Cl. 570-175.000.

Baudet, Jacques: *See—*
Charpentier, Dominique; DeGaugue, Pierre; Degardin, Daniel; and Baudet, Jacques, 5,335,006, Cl. 348-82.000.

Bauer, Hans J., to Suspa Compart Aktiengesellschaft. Length-adjustable column for tables, chairs or the like. 5,333,968, Cl. 403-377.000.

Baugh, John L.; and Melenyzer, George J., to Baker Hughes Incorporated. Straight bore metal-to-metal wellbore seal apparatus and method of sealing in a wellbore. 5,333,692, Cl. 166-387.000.

Baughman, David W., to Texas Instruments Incorporated. Digital voice-band spectrum inversion apparatus. 5,335,279, Cl. 380-38.000.

Baur, Andreas: *See—*
Kalden, Joachim; Fleckenstein, Bernhard; Baur, Andreas; and Harrer, Thomas, 5,334,612, Cl. 514-440.000.

Bauvois, Jean: *See—*
Piegay, Yves; and Bauvois, Jean, 5,333,889, Cl. 280-602.000.

Baxter, George, to Moore Business Forms, Inc. Carbonless paper for non-impact laser printing. 5,334,571, Cl. 503-226.000.

Baxter International: *See—*
Przybelski, Robert J., 5,334,706, Cl. 530-385.000.

Baxter, Ralph W., Jr., to Dana Corporation. All wheel drive transfer case having two wheel overdrive. 5,334,116, Cl. 475-204.000.

Bayer Aktiengesellschaft: *See—*
Draber, Wilfried; and Bischoff, Hilmar, 5,334,610, Cl. 514-401.000.
Hess, Bernhard; Schulz-Schlitte, Wolfgang; Kirsch, Jurgen; Freitag, Dieter; Arndt, Uwe; Gehrke, Hans-Georg; and Zander, Klaus, 5,334,692, Cl. 528-126.000.
Kaufmann, Dieter; Jelich, Klaus; Braden, Rudolf; and Rosen, Winfried, 5,334,724, Cl. 546-345.000.
Kaufmann, Dieter; Hesse, Carsten; and Himmler, Thomas, 5,334,750, Cl. 560-104.000.
Scherkenbeck, Jurgen; Himmler, Thomas; Hagemann, Hermann; Dutzmann, Stefan; Dehne, Heinz-Wilhelm; and Hanssler, Gerd, 5,334,608, Cl. 514-383.000.
Schon, Norbert; Langer, Reinhard; Buysch, Hans-Josef; and Wagner, Paul, 5,334,742, Cl. 558-274.000.
Schuchardt, Heinrich; and Ullrich, Martin, 5,334,358, Cl. 422-210.000.
Zwiener, Christian; Rettig, Rainer; Nachtkamp, Klaus; Pedain, Josef; and Arlt, Dieter, 5,334,637, Cl. 524-539.000.

Bayly, Robert M.: *See—*
Carpenter, Charles T.; and Bayly, Robert M., 5,333,659, Cl. 144-231.000.

Bayne, Jimmy O.; and Susil, Michael J., to Bayne Machine Works, Inc. Residential refuse collection cart lifter with universal features. 5,333,984, Cl. 414-408.000.

Bayne Machine Works, Inc.: *See—*
Bayne, Jimmy O.; and Susil, Michael J., 5,333,984, Cl. 414-408.000.

Beach, Mark A.: *See—*
Kenington, Peter B.; Beach, Mark A.; Bateman, Andrew; and McGeehan, Joseph P., 5,334,946, Cl. 330-144.000.

Beard, McDaniel L.: *See—*
Enfield, Jeffrey J.; Harmon, William S.; and Beard, McDaniel L., 5,333,364, Cl. 28-172.200.

Beaudry, Edward G.: *See—*
Herron, John R.; Beaudry, Edward G.; Jochums, Carl E.; and Medina, Luis E., 5,334,300, Cl. 204-257.000.

Beauseigneur, Patricia A.; Lachman, Irwin M.; Patil, Mallanagouda D.; Swaroop, Srinivas H.; and Wusirika, Raja R., to Corning Incorporated. Pore impregnated catalyst device. 5,334,570, Cl. 502-304.000.

Beautement, Kevin: *See—*
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.

Beck, Jeffrey S.; Schmitt, Kirk D.; and Vartuli, James C., to Mobil Oil Corp. Synthesis of mesoporous oxide. 5,334,368, Cl. 423-704.000.

Beck, Marshall K.; and Bastian, John M., to Fisher Hamilton Scientific Inc. Fume hood with adjustable baffle assembly. 5,334,089, Cl. 454-62.000.

Becker, John C.; Cameron, John D., Jr.; Cameron, William L.; and Sinram, Bryan W. Commingled recyclables recovery and recycling process and related apparatuses. 5,333,797, Cl. 241-19.000.

Beckerle, Heinz; and Reidinger, Rolf, to Nokia Unterhaltungselektronick GmbH. Method of lacquering the luminophore layer of a colour picture tube. 5,334,410, Cl. 427-68.000.

Beckvermit, Jeffrey T.: *See—*
Murray, Christopher K.; Ziebarth, Timothy D.; and Beckvermit, Jeffrey T., 5,334,732, Cl. 549-510.000.

Becton, Dickinson and Company: *See—*
Alchas, Paul G.; and Prais, A. Wes, 5,334,144, Cl. 604-68.000.
Hoang, Minh Q.; and Khan, Mohammed A., 5,334,388, Cl. 424-402.000.
Sage, Burton H., Jr.; and Riviere, Jim E., 5,334,138, Cl. 604-20.000.

Bederna, Frank: *See—*
Schafer, Jochen; Frank, Thomas; and Bederna, Frank, 5,335,178, Cl. 364-426.020.

Bedi, James J.: *See—*
Rothfuss, Robert G.; Okorocha, Livyn O.; Bishop, Gregory D.; Sambi, Narinderjit S.; Bedi, James J.; Privitera, Salvatore; and Sherrill, Michael, 5,333,772, Cl. 227-176.000.

Bedingham, William; Dufresne, Joel R.; and Wirt, David F., to Minnesota Mining and Manufacturing Company. Catheter and probe-catheter assembly. 5,333,609, Cl. 128-632.000.

Beecham Group p.l.c.: *See—*
Mannix, Christopher J.; Smith, Richard A. G.; Lewis, Ceri J.; and Harber, Julian S., 5,334,384, Cl. 424-94.630.

Begley, William J.; Chen, Teh H.; and Bailey, David S., to Eastman Kodak Company. Magenta development inhibitor releasing coupler. 5,334,490, Cl. 430-382.000.

Behan, John M.; Ness, Jeremy N.; Perring, Keith D.; and Smith, William M., to Unilever Patent Holdings B.V. Process for preparing perfumed personal products. 5,334,581, Cl. 512-2.000.

Behm, Michael E.; and Torasson, Clifford M., to General Electric Company. Reversing marine gas turbine drive. 5,334,061, Cl. 440-75.000.

Behrens, Klaus F. A., to Homwedica GmbH. Targeting device for an implant. 5,334,192, Cl. 606-96.000.

Behringwerke Aktiengesellschaft: *See—*
Stuber, Werner; and Schnaitmann, Dieter, 5,334,506, Cl. 435-23.000.

Behrmann, Gregory P.: *See—*
Smith, Dale; and Behrmann, Gregory P., 5,335,304, Cl. 385-135.000.

Beigang, Wolfgang, to GKN Automotive AG. Freewheeling device for four wheel drive vehicles. 5,333,711, Cl. 192-71.000.

Beilin, Solomon I.: *See—*
Love, David G.; Moresco, Larry L.; Chou, William T.; Horine, David A.; Wong, Connie M.; and Beilin, Solomon I., 5,334,804, Cl. 174-267.000.

Bejean, Alain, to Salomon S.A. Process of manufacturing a ski and a ski produced by the process. 5,333,890, Cl. 280-609.000.

Bell Communications Research, Inc.: *See—*
Addeo, Eric J.; Robbins, John D.; and Shtirmer, Gennady, 5,335,011, Cl. 348-15.000.
Braun, David A.; Nelson, Terence J.; and Smoot, Lanny S., 5,335,022, Cl. 348-744.000.
Frieder, Gideon; and Frieder, Ophir, 5,335,345, Cl. 395-600.000.

Bell, Dennis L.; and Millett, Ray C., to Millett Industries. Holder for pistols, rifles, cameras and the like. 5,333,829, Cl. 248-634.000.

Bell Helicopter Textron, Inc.: *See—*
Gentile, Geoffrey E.; and Oestreich, Bruce D., 5,335,060, Cl. 356-213.000.

Bell, Kimberley C.: *See—*
Herczeg, Karen L.; Mcvay, David M.; Phelps, Daniel J.; and Bell, Kimberley C., 5,335,239, Cl. 372-38.000.

Bellotti, Vittorio: *See—*
Bastiolo, Catia; Bellotti, Vittorio; Del Giudice, Luciano; and Lombi, Roberto, 5,334,634, Cl. 524-47.000.

Belvo, Rachel J.: *See—*
Jensen, Eric L.; Belvo, Rachel J.; and Derr, Randall L., 5,333,708, Cl. 188-322.140.

Bendix Europe Services Techniques: *See—*
Kervagoret, Gilbert, 5,333,947, Cl. 303-119.200.

Benedict, Barry: *See—*
Taylor, George S.; and Benedict, Barry, 5,333,428, Cl. 52-308.000.

Benedict, James J.: *See—*
Ebetino, Frank H.; and Benedict, James J., 5,334,586, Cl. 514-85.000.

Benedikt, Walter; Betz, Dieter; Grewe, Werner; and Haist, Gerhard, to Robert Bosch GmbH. Ignition coil for ignition systems in combustion engines. 5,333,592, Cl. 123-634.000.

Bennetau, Bernard; and Cain, Paul A., to Rhone-Poulenc Agriculture Ltd. Processes for preparing ortho-substituted benzoic acids. 5,334,753, Cl. 562-405.000.

Bennett, Reginald S.; and Hretsina, Gary, to RB-Maxim Visual Aids Ltd. Remote area landing system. 5,335,112, Cl. 359-530.000.

Benoit, James C.; and Deschenes, Charles L., to Avery Dennison Corporation. Attachment system. 5,333,822, Cl. 248-71.000.

Bentley, Mark R.: *See—*
Anderson, Robert N.; and Bentley, Mark R., 5,333,510, Cl. 73-862.581.

Benton, James H.; Broodo, Jack; Ivy, John B.; Leissner, Kirk A.; and Fox, Ellroy G., to Dow Chemical Company, The. Turbulent flow reactor. 5,334,357, Cl. 422-197.000.

Berg, Lloyd, to Berg, Lloyd. Solution of certain five and six carbon atom carbohydrates. 5,334,253, Cl. 127-63.000.

Bergamini, Giorgio; and Paris, Ernesto, to Nuovopignone Industrie Meccaniche e Fonderia SpA. System for effective vapor recovery without seal members in fuel filling installations. 5,333,655, Cl. 141-59.000.

Berger, George A., to American Manufacturing Company, Inc. Method for producing a rope having superior friction and wearing resistance. 5,333,442, Cl. 57-314.000.

Berger, Johann, to MTU Motoren- Und Turbinen-Union Muenchen GmbH. Device for operating a swirler which controls combustion air of a burner for gas turbine engines. 5,333,459, Cl. 60-723.000.

Berger, Kerry R.: *See—*
Garg, Diwakar; Berger, Kerry R.; and Eichelberger, Donald P., 5,333,776, Cl. 228-219.000.

Bergmann, Werner; and Dahling, Paul H., to Stora Feldmuhle Aktiengesellschaft. Coated paper. 5,334,449, Cl. 428-327.000.

Bergstein, Frank D. Dual fluid rotor apparatus. 5,333,996, Cl. 416-197.00A.

Bergvist, Robert C., to Rutland Plastic Technologies, Inc. Mechanically frothed plastisols. 5,334,622, Cl. 521-74.000.

Bernadic, Thomas J.; Patterson, John H.; and Brockett, Brendan L., to Valenite Inc. Special boring insert. 5,333,972, Cl. 407-113.000.

Bernhardt Apparatebau GmbH u. Co.: *See—*
Glass, Stefan, 5,333,756, Cl. 222-5.000.

Bernstein, Jonathan, to Charles Stark Draper Laboratory Inc., The. Integrated liquid crystal acoustic transducer. 5,335,210, Cl. 367-163.000.

Bero, James: *See—*
Thomas, Fred C.; Bero, James; Short, Robert; and Johnson, Paul R., 5,334,849, Cl. 250-559.000.

Berry, William M., III; Charles, Doyle B.; and Flagg, Michael F., to Southwire Company. Reel support with horizontal and vertical adjustment. 5,333,809, Cl. 242-578.100.

Berstein, Garri, to W. Hegenscheidt Gesellschaft mbH. Method for straightening out of true work pieces, especially crankshafts. 5,333,480, Cl. 72-110.000.

Bertes, Leopoldo: *See—*
Kouwenhoven, Herman W.; Bertea, Leopoldo; and Prins, Roel, 5,334,781, Cl. 568-927.000.

Bertin & Cie: *See—*
Lefevre, Paul; and Verneau, Alain, 5,334,004, Cl. 417-420.000.
Lequime, Michel; and Sansonetti, Pierre, 5,335,065, Cl. 356-351.000.

Beshouri, Sharon M., to Shell Oil Company. Process to prepare low density porous crosslinked polymeric materials. 5,334,621, Cl. 521-64.000.

Beswick, Duane; and Enriquez, Robert. Adjustable automatic door closure apparatus and method for use thereof. 5,333,355, Cl. 16-300.000.

Beta Raven Inc.: *See—*
Volk, Benjamin L.; Volk, Joseph A., Jr.; and Kniepmann, Mark R., 5,333,757, Cl. 222-94.000.

Betz, Dieter: *See—*
Benedikt, Walter; Betz, Dieter; Grewe, Werner; and Haist, Gerhard, 5,333,592, Cl. 123-634.000.

BGK Finishing Systems, Inc.: *See—*
Sorensen, Thomas M., 5,335,308, Cl. 392-412.000.

Bhoori, Yousuf M.; Leydon, Daniel S.; and Gilmore, Paul, to AlliedSignal Inc. Compatibilized polyphenylene ether/polyamide monofilament and felt made thereform. 5,334,444, Cl. 428-280.000.

BHP Petroleum Pty Ltd.: *See—*
Dean, James L.; Seto, Rodney K.; and Kovit, Sheldon L., 5,333,691, Cl. 166-341.000.

Bielfeldt, Friedrich B.; and Kroll, Detlef, to Maschinenfabrik J. Dieffenbacher GmbH & Co. Method for guiding steel bands of a continuously working press by altering a position of a pressing ram to apply a varying pressure profile to a material being pressed. 5,333,541, Cl. 100-41.000.

Big Unlimited: *See—*
Taylor, George S.; and Benedict, Barry, 5,333,428, Cl. 52-308.000.

Billah, M. Motasim, to Schering Corporation. Certain PAF antagonist antihistamine combinations and methods. 5,334,592, Cl. 514-220.000.

Billingsley, Samuel F., III: *See—*
Richardson, Charles T., Jr.; Austin, Kevin L.; and Billingsley, Samuel F., III, 5,335,266, Cl. 379-88.000.

Bimman, Lev A. Apparatus for intramedullary fixation broken bones. 5,334,184, Cl. 606-63.000.

Binder, Erich: *See—*
Kunz, Jurg; Knecht, Hugo; and Binder, Erich, 5,335,045, Cl. 355-72.000.

Binzer, Lothar. Duct sealing apparatus and ducting system. 5,334,092, Cl. 454-369.000.

Bio-Technical Resources, L.P.: *See—*
Grund, Alan D., 5,334,773, Cl. 568-734.000.

Bipolar Power Corporation: *See—*
Rowlette, John J., 5,334,464, Cl. 429-210.000.

Birch, J. Neil: *See—*
Matchett, Noel D.; and Birch, J. Neil, 5,335,278, Cl. 380-23.000.

Birdwell, Gerald G.: *See—*
Thompson, E. Earle; and Birdwell, Gerald G., 5,335,276, Cl. 380-21.000.

Bischoff, Hilmar: *See—*
Draber, Wilfried; and Bischoff, Hilmar, 5,334,610, Cl. 514-401.000.

Bishop, Clinton L.: *See—*
Cole, Richard W.; and Bishop, Clinton L., 5,334,122, Cl. 482-130.000.

Bishop, Gregory D.: *See—*
Rothfuss, Robert G.; Okorocha, Livyn O.; Bishop, Gregory D.; Sambi, Narinderjit S.; Bedi, James J.; Privitera, Salvatore; and Sherrill, Michael, 5,333,772, Cl. 227-176.000.

Bishop, Michael R.; and Minasi, David H., to Motorola, Inc. Dual output battery with fault detect. 5,335,133, Cl. 361-56.000.

Black, Donald L.; and Wilson, Robert D., to Eastman Kodak Company. Silver halide grains having small twin-plane separations. 5,334,495, Cl. 430-567.000.

Blackburn, Peter; Projan, Steven J.; and Goldberg, Edward B., to Applied Microbiology, Inc. Pharmaceutical bacteriocin compositions and methods for using the same. 5,334,582, Cl. 514-2.000.

Blackman, Robert J.; Greene, William J.; and Landis, Newton C. M., to Eastman Kodak Company. Method and apparatus for preparing a photographic filmstrip for processing in a photo finishing apparatus. 5,335,038, Cl. 354-319.000.

Blackwell, Larry R. Connectors for electrical meter socket adapters. 5,334,057, Cl. 439-839.000.

Blades, Frederick K., to Anatel Corporation. Methods and circuits for measuring the conductivity of solutions. 5,334,940, Cl. 324-442.000.

Blaha, James R.; Underwood, Herbert N.; Salle, Ralph; and Ralston, Ronald R. Automated pavement repair vehicle. 5,333,969, Cl. 404-91.000.

Blahuta, Lew: *See—*
Tarrson, Emanuel B.; Maric, Dane; and Blahuta, Lew, 5,333,346, Cl. 15-167.100.

Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., to Imperial Chemical Industries PLC. Water separation process. 5,334,784, Cl. 570-165.000.

Blanchard, Gilbert; Bordes, Elisabeth; and Ferre, Gilbert, to Rhone-Poulenc Chimie. Catalytic ammoxidation of saturated hydrocarbons. 5,334,743, Cl. 558-319.000.

Blanding, Douglass L., to Eastman Kodak Company. Averaging half-nuts. 5,333,513, Cl. 74-424.80A.

Blanton, James A.: *See—*
Myers, Bruce A.; Isenberg, John K.; Coapman, Christine R.; and Blanton, James A., 5,334,422, Cl. 427-552.000.

Blatt, Wolfgang: *See—*
Heinke, Harri; Blatt, Wolfgang; and Busse, Bernd, 5,334,301, Cl. 204-267.000.

Blattner, Frederick R. Micropipette device. 5,334,353, Cl. 422-100.000.

Blechman, Abraham M. Magnetic orthodontic appliance. 5,334,015, Cl. 433-18.000.

Bleier, Robert; and Reichardt, Manfred, to Amphenol-Tuchel Electronics GmbH. Chip card reader. 5,334,827, Cl. 235-492.000.

Bleier, Robert: *See—*
Reichardt, Manfred; and Bleier, Robert, 5,334,034, Cl. 439-188.000.

Bleier, Zvi, to PLX Inc. Hollow retroreflector assembly with hard mount assembly. 5,335,111, Cl. 359-529.000.

Blendinger, Herbert; Fertig, Gunter; and Stellwagen, Armin, to Mannesmann Rexroth GmbH. Apparatus for adjusting the working fluid pressure. 5,333,450, Cl. 60-459.000.

Bliss, Arthur E., to Phoenix Precision Graphics, Inc. Bidirectional toning process. 5,335,055, Cl. 355-326.00R.

Blonski, Robert P.: *See—*
Korn, George C.; and Blonski, Robert P., 5,334,412, Cl. 427-108.000.

Bloom, Leonard: *See—*
Armstrong, Michael, Jr., 5,334,173, Cl. 604-263.000.

Blouin, Marc: *See—*
Prasit, Petpiboon; and Blouin, Marc, 5,334,597, Cl. 514-300.000.

Blue Giant Equipment Corporation: *See—*
Larsen, Kurt K., 5,333,339, Cl. 14-71.100.

Bluhm, Terry L.: *See—*
Desilets, Denis; Martin, Trevor I.; Mayo, James D.; Bluhm, Terry L.; and Hsiao, Cheng-Kuo, 5,334,478, Cl. 430-135.000.

Blum, Harald: *See—*
Van Havenbergh, Jan; Dooms, Philip; Aertbelien, Jozef; and Blum, Harald, 5,334,842, Cl. 250-483.100.

Blum, Manfred: *See—*
Hormann, Werner; and Blum, Manfred, 5,333,997, Cl. 417-216.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Blum, Patricia R.: *See—*
Lemanski, Michael F.; Hazen, Joseph B.; and Blum, Patricia R., 5,334,751, Cl. 560-265.000.

Blume, Heinrich-Jochen: *See—*
Mittenbuhler, Karl-Heinz; and Blume, Heinrich-Jochen, 5,333,371, Cl. 29-595.000.

Blumenstein, Uwe; Klaerner, Peter; Schuch, Horst; and Walter, Hans-Michael, to BASF Aktiengesellschaft. Thermoplastic modling materials. 5,334,658, Cl. 525-71.000.

Blumentrath, Fred, to 886 496 Ontario Inc. Shaft coupler. 5,333,963, Cl. 403-301.000.

Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, The: *See—*
Chen, Ching-Shih, 5,334,534, Cl. 435-280.000.

Board of Regents acting for and on behalf of University of Michigan, The: *See—*
Martin, David C.; Moore, Jeffrey S.; Markoski, Larry J.; and Walker, Kenneth A., 5,334,752, Cl. 560-360.000.

Board of Regents, The University of Texas System., The: *See—*
Anderson, Jon A.; and Antich, Peter P., 5,334,839, Cl. 250-368.000.
Brysk, Miriam M., 5,334,527, Cl. 435-240.230.
Kilbourn, Robert G.; Griffith, Owen W.; and Gross, Steven S., 5,334,380, Cl. 424-85.200.
Rajeshwar, Krishnan; and Bose, Chalasani S. C., 5,334,292, Cl. 204-59.00R.

Board of Supervisors of Louisiana State University and Agricultural and Mechanical College: *See—*
Meletis, Efstathios I., 5,334,264, Cl. 148-222.000.

Board of Trustees operating Michigan State University: *See—*
Pinnavaia, Thomas J.; and Amarasekera, Jayantha, 5,334,564, Cl. 502-84.000.

Bobren, Allan J.: *See—*
Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., 5,333,438, Cl. 53-399.000.

Bobroff, Alec D.: *See—*
Grim, Tracy E.; and Bobroff, Alec D., 5,334,135, Cl. 602-26.000.

BOC Group, Inc., The: *See—*
Appolonia, Jack; Muscato, Robert; and Wittel, George, 5,334,406, Cl. 426-520.000.

Bocker, Jurgen: *See—*
Heitmann, Thomas; Bocker, Jurgen; and Hahn, Ulf, 5,333,551, Cl. 102-439.000.

Bodas, Milind A., to Intel Corporation. Fast exclusive-or and exclusive-nor gates. 5,334,888, Cl. 307-471.000.

Bodenseewerk Geratechnik GmbH: *See—*
Stelte, Norbert, 5,333,739, Cl. 209-582.000.

Bodor, Nicholas S. Soft β-adrenergic blocking agents. 5,334,601, Cl. 514-312.000.

Boehringer Mannheim GmbH: *See—*
Hoenes, Joachim, 5,334,508, Cl. 435-25.000.
Zimmermann, Gerd; and Mangold, Dieter, 5,334,505, Cl. 435-18.000.

Boeing Company, The: *See—*
Gentile, Geoffrey E.; and Oestreich, Bruce D., 5,335,060, Cl. 356-213.000.

Bohle, Lorenz B. Device for covering lumpy products, especially pills, pellets or tablets, with a coating material. 5,334,244, Cl. 118-19.000.

Boisvert, Mario: *See—*
Washeleski, John; Wheeler, Mark R.; and Boisvert, Mario, 5,334,876, Cl. 307-10.100.

Boiteau, Catherine; and Parus, Roger, to Sextant Avionique. Method and system for ensuring the reliability of data used to pilot an aircraft. 5,335,177, Cl. 364-424.060.

Boka, Jeffrey B.; Patel, Naresh R.; Kim, Kevin D.; and Shaw, David S., to General Electric Co. Unified spacecraft attitude control system with pseudo-complementary paired thrusters. 5,335,179, Cl. 364-434.000.

Boll, James H.: *See—*
Poppas, Dix P.; Schlossberg, Steven M.; Choma, Theodore J.; Klioze, Scott D.; and Boll, James H., 5,334,191, Cl. 606-12.000.

Bollinger, Steven R., to Carter Automotive Company, Inc. Engine exhaust gas recirculation control mechanism. 5,333,456, Cl. 60-605.200.

Bombardelli, Ezio, to Indena S.p.A. New alkaloid derivatives, their use and pharmaceutical formulations containing them. 5,334,385, Cl. 424-195.100.

Bombeeck, John M., to U.S. Philips Corporation. Arrangement for reproducing a digital signal from a track on a magnetic record carrier using a read head with magneto-resistive element and an equalizer filter. 5,335,121, Cl. 360-65.000.

Bonanni, Rocco: *See—*
Akkapeddi, Kaushik S.; Bonanni, Rocco; Gashler, Robert J.; German, Michael G.; Lambert, William R.; and Schramm, Eugene C., 5,334,029, Cl. 439-66.000.

Bonaventura, Joseph; Brouwer, Marius; and Cashon, Robert E., to Duke University. Benzenetricarboxylate derivative-crosslinked low oxygen affinity hemoglobin. 5,334,705, Cl. 530-385.000.

Bonekamp, Jeffrey E.: *See—*
Swartzmiller, Steven B.; Donald, Robert J.; and Bonekamp, Jeffrey E., 5,334,657, Cl. 525-71.000.

Bonner, Jeffrey O.: *See—*
Harris, Edward D.; Schimmelpfennig, Fred J., Jr.; Badgett, James F.; and Bonner, Jeffrey O., 5,333,416, Cl. 52-27.000.

Bonvik, Knut: *See—*
Br nd Dag A.; Bonvik, Knut; and Wognild, Svein, 5,333,497, Cl. 73-219.000.

Borden, Inc.: *See—*
Gerber, Arthur H., 5,334,675, Cl. 525-485.000.

Bordes, Elisabeth: *See—*
Blanchard, Gilbert; Bordes, Elisabeth; and Ferre, Gilbert, 5,334,743, Cl. 558-319.000.

Borg-Warner Automotive, Inc.: *See—*
Cole, Edward H., Jr.; and Mott, Philip J., 5,334,111, Cl. 474-214.000.

Borgman, Milton H.: *See—*
Bryson, Rodney; and Borgman, Milton H., 5,333,517, Cl. 74-810.100.

Bormann, Thomas J.: *See—*
Matkovich, Vlado I.; Bormann, Thomas J.; and DelGiacco, Gerard R., 5,334,315, Cl. 210-641.000.

Bose, Chalasani S. C.: *See—*
Rajeshwar, Krishnan; and Bose, Chalasani S. C., 5,334,292, Cl. 204-59.00R.

Bostick, John V., to Norac Company, Inc. Diaroyl peroxide compositions. 5,334,326, Cl. 252-186.260.

Bosy, Brian, to Intergraph Corporation. Clamping mechanism for use on a rotatable plotter drum. 5,335,046, Cl. 355-73.000.

Botosan, Valentin: *See—*
Nogle, Thomas D.; and Botosan, Valentin, 5,334,112, Cl. 475-59.000.

Bottiglieri, Michael P.; and Dempsey, Peter A. A., to AT&T Bell Laboratories. Synchronization related to data streams. 5,335,228, Cl. 370-100.100.

Bougaret, Joel; and Sournac, Michel, to Pierre Fabre Medicament. Sustained-release tablet based on isosorbide 5-mononitrate and process for preparing it. 5,334,393, Cl. 424-469.000.

Boutet, John C.; Bubie, Walter C.; DeWolff, Darryl D.; and Yaskow, Jeffrey J., to Eastman Kodak Company. Cassette autoloader. 5,334,852, Cl. 250-589.000.

Bouthillier, Robert J.: *See—*
Petteruti, Alfred J.; Petteruti, Steven F.; Bouthillier, Robert J.; and Petteruti, Robert A., 5,335,170, Cl. 364-403.000.

Boutilier, Glenn D.: *See—*
Trokhan, Paul D.; and Boutilier, Glenn D., 5,334,289, Cl. 162-358.200.

Boutillon, Emmanuel: *See—*
Jutand, Francis; Lafage, Anne; and Boutillon, Emmanuel, 5,335,195, Cl. 364-736.000.

Bowers, Michael D.; Klinger, Robert E.; Thumma, Mark R.; and Wike, David P., to Whitaker Corporation, The. Electrical connector with board retention device. 5,334,048, Cl. 439-567.000.

Bowles, Thomas J. Soft plastic fishing lures containing microencapsulated liquid fish attractant. 5,333,405, Cl. 43-42.060.

Boyd, Dana M., to Mobil Oil Corporation. Bag pack and system for suspending and dispensing bags. 5,333,730, Cl. 206-554.000.

Boyd, John W. Filament winding apparatus. 5,335,167, Cl. 364-167.010.

Boylston, Clifford H.: *See—*
Smith, Leary W.; and Boylston, Clifford H., 5,333,787, Cl. 239-227.000.

Boynton, Charles: *See—*
Priem, Curtis; and Boynton, Charles, 5,334,998, Cl. 345-185.000.

Boyum, Gerald A.; and Schweiss, Jon W., to United States of America, Environmental Protection Agency. Portable controlled air sampler. 5,333,511, Cl. 73-864.340.

Bozich, Frank; and King, Charles J., to Croda Apex Adhesives, Inc. Hot-melt pressure sensitive adhesive packaging, preform, and method. 5,333,439, Cl. 53-450.000.

BP Chemicals Limited: *See—*
Francis, Robert S.; and Orpin, Murray R., 5,334,630, Cl. 523-216.000.

Brackett, Anne W.; Durham, Marcus O.; Perkins, Lynn K.; and Thoman, Gregory E., to W. L. Walker Co., Inc. Apparatus and method for measuring physical characteristics of a liquid. 5,333,498, Cl. 73-304.00R.

Braden, Rudolf: *See—*
Kaufmann, Dieter; Jelich, Klaus; Braden, Rudolf; and Rosen, Winfried, 5,334,724, Cl. 546-345.000.

Bradshaw, Jerald S.: *See—*
Bruening, Ronald L.; Tarbet, Bryon J.; Bradshaw, Jerald S.; and Izatt, Reed M., 5,334,316, Cl. 210-670.000.

Brady, Mark: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Brady, Robert T.; and Werling, Joseph H., to Mark IV Transportation Products Corporation. Compact boiler having low NOX emissions. 5,333,574, Cl. 122-367.100.

Brand, Siegbert: *See—*
Wenderoth, Bernd; Brand, Siegbert; Schuetz, Franz; Kuekenhochner, Thomas; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,334,577, Cl. 504-130.000.

Brandberg, Lawrence C.: *See—*
Risch, Sara J.; and Brandberg, Lawrence C., 5,334,820, Cl. 219-730.000.

Brandt, David E.; Young, Ronald L.; and Pryor, Timothy B., to ERDA, Inc. Aircraft berthing seat. 5,333,818, Cl. 244-118.600.

Brandt, James E.: *See—*
Warren, John L.; and Brandt, James E., 5,333,422, Cl. 52-115.000.

Brandy, Gilbert; Compagnon, Jean-Claude; and Vignot, Jean-Marie, to Vesuvius Crucible Company. Vitreous fused silica. 5,333,670, Cl. 164-364.000.

Branover, Herman: *See—*
Gelfgat, Yuri; El-Boher, Arie; and Branover, Herman, 5,333,672, Cl. 164-468.000.

Brasoveanu, Dan; and Rauta, Mihai C., to Harris, Scott C.; Brasoveanu, Dan; and Rauta, M. Method for encoding transmitting and receiving high definition television signals using single variable independent equations representing each pixel over time. 5,335,017, Cl. 348-426.000.

Braun, David A.; Nelson, Terence J.; and Smoot, Lanny S., to Bell Communications Research, Inc. High-contrast front projection video display system. 5,335,022, Cl. 348-744.000.

Braun, Eduard: *See—*
Reifenrath, Werner; and Braun, Eduard, 5,333,543, Cl. 100-53.000.

Brax, Veikko, to Telenokia OY. Communication system and a method for controlling a connection in the communication system. 5,335,225, Cl. 370-84.000.

Breitenstein, Heinz: *See—*
Hegner, Frank; Schmidt, Elke; Klahn, Thomas; Reimann, Peter; Breitenstein, Heinz; and Messmer, Stephan, 5,334,344, Cl. 420-422.000.

Breyer, Karl-Hermann; Aubele, Eugen; Grupp, Gunter; Ebersbach, Peter; and Wiedmann, Wolfgang, to Carl-Zeiss-Stiftung Heidenheim/Brenz. Method of measuring the effective instantaneous position of a slide-mounted probe element or tool. 5,333,386, Cl. 33-1.00M.

Brezak, Rikki: *See—*
Klein, Harvey A., 5,333,625, Cl. 128-898.000.

Bridgestone/Firestone, Inc.: *See—*
Lawson, David F.; Stayer, Mark L., Jr.; and Antkowiak, Thomas A., 5,334,665, Cl. 525-289.000.

Brierley, Rowland J. P.: *See—*
Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., 5,334,784, Cl. 570-165.000.

Briggs, Edward L.: *See—*
Edwards, Wallace L.; McMillen, Kenneth R.; and Briggs, Edward L., 5,333,516, Cl. 74-665.0GC.

Brigham Young University: *See—*
Bruening, Ronald L.; Tarbet, Bryon J.; Bradshaw, Jerald S.; and Izatt, Reed M., 5,334,316, Cl. 210-670.000.

Brilliott, Al W., to National Semiconductor Corporation. PCMCIA bus extender card for PCMCIA system development. 5,334,030, Cl. 439-75.000.

Brisson, Lawrence J. Bicycle computer with memory and means for comparing present and past performance in real time. 5,335,188, Cl. 364-551.010.

British Aerospace Public Limited Co.: *See—*
Wallis, Graham P., 5,333,814, Cl. 244-1.0TD.

British Technology Group Limited: *See—*
Butler, Clive; and Shams, Iden, 5,333,388, Cl. 33-559.000.
Kenington, Peter B.; Beach, Mark A.; Bateman, Andrew; and McGeehan, Joseph P., 5,334,946, Cl. 330-144.000.

British Telecommunications Public Limited Company: *See—*
France, Paul W.; Carter, Steven F.; and Williams, John R., 5,334,232, Cl. 65-388.000.

Br nd Dag A.; Bonvik, Knut; and Wognild, Svein, to Metron AS. Method and apparatus for continuous measurement of liquid flow velocity. 5,333,497, Cl. 73-219.000.

Brock, J. Don; Mize, Erbie G.; and Swanson, Malcom L., to Astec Industries, Inc. Combustion chamber having reduced NO_x emissions. 5,334,012, Cl. 432-106.000.

Brockett, Brendan L.: *See—*
Bernadic, Thomas J.; Patterson, John H.; and Brockett, Brendan L., 5,333,972, Cl. 407-113.000.

Brockman, James W., to Rott & Company. Convertible muzzle brake. 5,333,529, Cl. 89-14.300.

Bronoel, Guy; Potier, Thierry; Tassin, Noelle; Bugnet, Bernard; Doniat, Denis; and Rouget, Robert, to Sorapec S.A. Method of making cadmium electrodes for alkaline batteries. 5,334,465, Cl. 429-222.000.

Broodo, Jack: *See—*
Benton, James H.; Broodo, Jack; Ivy, John B.; Leissner, Kirk A.; and Fox, Ellroy G., 5,334,357, Cl. 422-197.000.

Brose Fahrzeugteile GmbH & Co. KG: *See—*
Tschirschwitz, Herbert; and Jager, Wolfgang, 5,333,411, Cl. 49-352.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Asano, Fumiaki, 5,335,182, Cl. 364-470.000.
Ito, Kazuhisa, 5,333,564, Cl. 112-275.000.
Kawaguchi, Takashi; and Yamane, Mitsuo, 5,334,439, Cl. 428-212.000.
Yamaguchi, Koshiro; Nagao, Yoshiaki, deceased; and Nagao, Sumiko, Administrator, 5,333,959, Cl. 400-208.000.
Yoshida, Noriyuki, 5,333,560, Cl. 112-121.110.

Brouillette, Peter; and Pickles, Charles S., to Augat Inc. Circuit card interface system. 5,334,046, Cl. 439-540.000.

Brouwer, Douglas J.: *See—*
Redding, John C.; and Brouwer, Douglas J., 5,333,327, Cl. 4-693.000.

Brouwer, Marius: *See—*
Bonaventura, Joseph; Brouwer, Marius; and Cashon, Robert E., 5,334,705, Cl. 530-385.000.

Brown, Joe E.; and Pursley, Matt D., to American Interventional Technologies, Inc. Reinforced catheter with thin monolithic walls. 5,334,169, Cl. 604-282.000.

Brudermueller, Martin; Witzel, Tom; and Merger, Franz, to BASF Aktiengesellschaft. Preparation of 3-aminopropionitriles. 5,334,745, Cl. 558-394.000.

Bruening, Ronald L.; Tarbet, Bryon J.; Bradshaw, Jerald S.; and Izatt, Reed M., to Brigham Young University. Process of using polytetraalkylammonium and polytrialkylamine-containing ligands bonded to inorganic supports for removing and concentrating desired ions from solutions. 5,334,316, Cl. 210-670.000.

Bruggemann, Charles J.; Poss, Michael G.; and Shah, Sanjay M., to General Motors Corporation. Hydroforming of compound tubes. 5,333,775, Cl. 228-157.000.

Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, to Institut National de la Recherche Agronomique. Nutrient composition containing non-phosphorylated peptides from casin-based material. 5,334,408, Cl. 426-57.000.

Bruno, Edward C.; and Davison, Roger A. Reclosable plastic bags made with open mouth and method of making open mouth bags. 5,334,127, Cl. 493-194.000.

Bruno, Robert H.: *See—*
Kee, Kok-Hiong; Schneider, James G.; and Bruno, Robert H., 5,333,607, Cl. 128-204.180.

Bruschke, Hartmut: *See—*
Neel, Jean M. L.; Nguyen, Quang T.; and Bruschke, Hartmut, 5,334,314, Cl. 210-640.000.

Brust, David P.: *See—*
Vanier, Noel R.; and Brust, David P., 5,334,572, Cl. 503-227.000.

Bruton, Billy R.: *See—*
Walter, James C.; Bruton, Billy R.; and Walter, George E., Jr., 5,333,684, Cl. 166-54.000.

Brysk, Miriam M., to Board of Regents, The University of Texas System. Epidermal graft system. 5,334,527, Cl. 435-240.230.

Bryson, Rodney; and Borgman, Milton H., to Standex International Corporation. Drive system for providing a multiple speed outlet in a single rotational direction from a reversible input. 5,333,517, Cl. 74-810.100.

BTU International: *See—*
Orbeck, Gary A.; and Waugh, Arthur, 5,334,014, Cl. 432-121.000.

Bubie, Walter C.: *See—*
Boutet, John C.; Bubie, Walter C.; DeWolff, Darryl D.; and Yaskow, Jeffrey J., 5,334,852, Cl. 250-589.000.

Buchbinder, Ligaya H., to Ligaya Corporation. Brow shaver. 5,333,382, Cl. 30-47.000.

Buchecker, Richard; Chen, Xin H.; Funfschilling, Jurg; Herr, Rolf-Peter; Schadt, Martin; and Schmitt, Klaus, to Hoffmann-La Roche Inc. Quasi-phased matched optical waveguide frequency conversion element having a ferroelectric liquid crystalline material exhibiting a periodic structure. 5,335,303, Cl. 385-122.000.

Buchman, George W., III: *See—*
Rashtchian, Ayoub; Schuster, David M.; and Buchman, George W., III, 5,334,515, Cl. 435-91.200.

Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., to Imperial Chemical Industries PLC. Fungicides. 5,334,748, Cl. 560-60.000.

Budny, Thomas F.; Schenna, Anthony G.; and Durham, Larry D., to Ivy Hill Corporation. Lens package. 5,333,732, Cl. 206-316.100.

Buenger, Daniel E.; Horney, James C.; and Hammons, John L., to Procter & Gamble Company, The. Absorbent core for use in catamenial products. 5,334,176, Cl. 604-367.000.

Bugner, Douglas E.; Hays, David S.; Kaeding, Jeanne E.; and Spinelli, Steven J., to Eastman Kodak Company. Thermally assisted transfer process. 5,334,477, Cl. 430-126.000.

Bugnet, Bernard: *See—*
Bronoel, Guy; Potier, Thierry; Tassin, Noelle; Bugnet, Bernard; Doniat, Denis; and Rouget, Robert, 5,334,465, Cl. 429-222.000.

Buinovsky, Alexandr S.: *See—*
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

Bukur, Dragan: *See—*
Pearl, David S., II; Webb, Louis H., III; Mohammed, Shaheed; and Bukur, Dragan, 5,333,467, Cl. 62-77.000.

Bulcsu, Istvan, to VITS Maschinenbau GmbH. Drying apparatus. 5,333,395, Cl. 34-79.000.

Bulgrien, Garth H., to Ford New Holland, Inc. Slipping clutch creeper. 5,333,709, Cl. 74-335.000.

Bull, S.A.: *See—*
Marbot, Roland, 5,334,891, Cl. 307-603.000.

Bullock, Roddy M.; Cedrone, Alfredo L.; Eckert, Michael L.; and Vana, James G., Jr., to W. L. Gore & Associates, Inc. Process for manufacture of twisted pair electrical cables having conductors of equal length. 5,334,271, Cl. 156-51.000.

Bundy, Gordon L.: *See—*
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; and Wallach, Donald P., deceased, 5,334,712, Cl. 540-112.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Bur, Marc; and Nebon, Jean-Pierre, to Gerin, Merlin. Draw-out molded case circuit breaker. 5,334,808, Cl. 200-50.0AA.

Burak, Gerhard: *See*—
Kittel, Christoph; Walendy, Hans; Burak, Gerhard; and Hoffmann, Manfred, 5,334,338, Cl. 264-46.400.

Burberry, Mitchell S.: *See*—
Noonan, John M.; and Burberry, Mitchell S., 5,334,575, Cl. 503-227.000.

Burdick, Brent A.; and Ekeze, Tobias D., to Eastman Kodak Company. Methods of extracting, amplifying and detecting a nucleic acid from whole blood or PBMC fraction. 5,334,499, Cl. 435-6.000.

Burgener, JoAnne M.; and Dawson, Arthur W., to Honeywell Inc. Switch with laminated cover. 5,334,811, Cl. 200-302.300.

Burgio, Vito L. Method for rigid tissue biopsy. 5,333,619, Cl. 128-754.000.

Burke, Alan W. Bulge putter. 5,333,873, Cl. 273-175.000.

Burkhardt, Eric W.: *See*—
Marolewski, Theodore A.; Burkhardt, Eric W.; and Wallfahrer, Uwe H., 5,334,682, Cl. 526-273.000.

Burkhardt, Henry, III: *See*—
Frank, Steven J.; Burkhardt, Henry, III; Rothnie, James B.; and Mann, William F., 5,335,325, Cl. 395-200.000.

Burkhead, Wayne Z. Convertible arm sling. 5,334,132, Cl. 602-4.000.

Burkit, John W.: *See*—
Burkit, William A.; and Burkit, John W., 5,333,916, Cl. 285-97.000.

Burkit, William A.; and Burkit, John W. External pipe coupling system with inflatable gasket. 5,333,916, Cl. 285-97.000.

Burndy Corporation: *See*—
Noschese, Rocco J., 5,334,053, Cl. 439-682.000.

Burnham, William L.: *See*—
Ruben, Paul L.; and Burnham, William L., 5,335,033, Cl. 354-219.000.

Burns, Donald W., Jr., to Eastman Kodak Company. Wound spool of web material. 5,333,805, Cl. 242-160.300.

Burtner, Lee W.: *See*—
Clark, William C., Jr.; Jacko, Richard J.; and Burtner, Lee W., 5,333,502, Cl. 73-623.000.

Busse, Bernd: *See*—
Heinke, Harri; Blatt, Wolfgang; and Busse, Bernd, 5,334,301, Cl. 204-267.000.

Bustos, Rafael T., to L&P Property Management Company. Arc system cooler display rack. 5,333,746, Cl. 211-187.000.

Butka, Kemal. Propulsion system. 5,334,060, Cl. 440-6.000.

Butler, Andrew G.: *See*—
Nagle, Robert E.; and Butler, Andrew G., 5,335,190, Cl. 364-571.010.

Butler, Clive; and Shams, Iden, to British Technology Group Limited. Probes. 5,333,388, Cl. 33-559.000.

Buysch, Hans-Josef: *See*—
Schon, Norbert; Langer, Reinhard; Buysch, Hans-Josef; and Wagner, Paul, 5,334,742, Cl. 558-274.000.

Byar, Peter D.: *See*—
Johnston, Robert W.; Hooper, Alan L.; Byar, Peter D.; and Pridham, Ronald G., 5,334,354, Cl. 422-104.000.

Byers, Joseph L.; Flint, W. Toriran; and Kerr, Richard C., to Reeves Brothers, Inc. Compressible fabric substrate. 5,334,418, Cl. 427-373.000.

Byrd, Richard H., Jr. U-lock with strength enhancing header extensions. 5,333,476, Cl. 70-38.00A.

C. A. Weidmuller GmbH & Co.: *See*—
Conrad, Horst; Diekmann, Jorg; Wilmes, Manfred; and Hanning, Walter, 5,334,054, Cl. 439-716.000.

C E Johansson AB: *See*—
Petterson, Bo; and Gustafsson, Carl E., 5,333,390, Cl. 33-706.000.

C. R. Bard, Inc.: *See*—
McIntyre, Jon T.; and Crittenden, James F., 5,334,153, Cl. 604-99.000.
Moutafis, Timothy E.; Elton, Richard K.; DuBois, Thomas C.; and MacMore, Bruce N., 5,333,620, Cl. 128-772.000.

Cadence Design Systems, Inc.: *See*—
Kundert, Kenneth S.; and White, Jacob K., 5,335,191, Cl. 364-578.000.

Caferro, Ronald N., to Ecolite Manufacturing Company, Ltd. Flexible cantilevered parabolic lighting baffle. 5,335,156, Cl. 362-291.000.

Cagle, Billy J., to Navistar International Transportation Corp. Cylinder head casting. 5,333,581, Cl. 123-193.500.

Cain, James E., to United States of America, Air Force. Sacroiliac joint fixation guide. 5,334,205, Cl. 606-96.000.

Cain, Paul A.: *See*—
Bennetau, Bernard; and Cain, Paul A., 5,334,753, Cl. 562-405.000.

Cairns, John F.; and Hodgson, David R., to Imperial Chemical Industries Public Limited Company. Electrode comprising a coated valve metal substrate. 5,334,293, Cl. 204-98.000.

CalComp Inc.: *See*—
Stevens, Wayne R., 5,335,000, Cl. 347-82.000.

Calderon, Alexander. Combination homogenizer-vacuum loader for meat products with improved ring seal. 5,334,081, Cl. 452-35.000.

Calhoun, Christopher A. Maze type board game. 5,333,878, Cl. 273-283.000.

Califano, Herbert T.: *See*—
Albert, William C.; and Califano, Herbert T., 5,334,901, Cl. 310-321.000.

California Institute of Technology: *See*—
Hofmeister, Rudolf; and Yariv, Amnon, 5,335,062, Cl. 356-347.000.

Callahan, David M.: *See*—
Bartholomew, Leroy E.; Childs, Eric G.; and Callahan, David M., 5,333,832, Cl. 251-1.300.

Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Mirenna, Luigi; and Mirenna, Luigi, to Ministero Dell'Universita' E Della Ricerca Scientifica E. Thiazolylpyrroles having a fungicidal activity. 5,334,605, Cl. 514-365.000.

Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; and Mirenna, Luigi, to Ministero dell'Universita' e della Ricerca Scientifica e Technologica. Thiazole derivatives of alkoxyacrylates with a fungicidal activity. 5,334,609, Cl. 514-393.000.

Camco Manufacturing, Inc.: *See*—
Bailey, Mark R., 5,333,910, Cl. 285-12.000.

Camerlengo, Arthur J.: *See*—
Harrington, James E.; and Camerlengo, Arthur J., 5,333,466, Cl. 62-55.500.

Cameron, John D., Jr.: *See*—
Becker, John C.; Cameron, John D., Jr.; Cameron, William L.; and Sinram, Bryan W., 5,333,797, Cl. 241-19.000.

Cameron, William L.: *See*—
Becker, John C.; Cameron, John D., Jr.; Cameron, William L.; and Sinram, Bryan W., 5,333,797, Cl. 241-19.000.

Campbell, Colin D., to Ciba-Geigy Corporation. Pyrazole-containing pigment derivatives. 5,334,727, Cl. 548-373.100.

Campo, James A.; Anderson, Fred J.; Embree, Donald M.; Hofstetter, Charles J.; and Sloan, Donald I., to Telxon Corporation. Portable point of sale termfinal. 5,334,821, Cl. 235-380.000.

Camsell, Edwin; Schuppert, Leo V., Jr.; and Stakem, Kerry J., to Whitaker Corporation, The. Socket insertion tool having indexable socket guide. 5,333,373, Cl. 29-739.000.

Cananagh, Eric J., to Lucas Industries public limited company. Pump-/injector. 5,333,588, Cl. 123-506.000.

Candelet, Ronald J.: *See*—
Popat, Pravin N.; Unterweger, Diethard; Baskin, Gennady; Candelet, Ronald J.; and Tonnies, Gary L., 5,334,553, Cl. 437-209.000.

Canon Denshi Kabushiki Kaisha: *See*—
Yokota, Yuji, 5,335,124, Cl. 360-99.060.

Canon Kabushiki Kaisha: *See*—
Aoshima, Chikara, 5,335,036, Cl. 354-246.000.
Edakubo, Hiroo; Ushiro, Tatsuzo; Nagatsuka, Osamu; and Kobayashi, Junji, 5,335,129, Cl. 360-132.000.
Hasegawa, Takashi, 5,335,053, Cl. 355-274.000.
Hayashida, Masami; Fukuda, Yasuaki; and Watanabe, Yutaka, 5,335,259, Cl. 378-161.000.
Ito, Noriaki; Nagoshi, Shigeyasu; and Yoshimura, Shigeru, 5,334,920, Cl. 318-685.000.
Kaifu, Noriyuki; Saika, Toshihiro; Endo, Tadao; and Shimada, Tetsuya, 5,335,094, Cl. 358-494.000.
Kaneko, Norio; Shinsho, Katsuhiko; and Yamamoto, Keisuke, 5,335,197, Cl. 365-153.000.
Kashiwazaki, Akio; Kobayashi, Masatsune; Arai, Ryuichi; Kobayashi, Junichi; and Shimomura, Akihiko, 5,334,999, Cl. 347-65.000.
Kawai, Tohru; Tamura, Masahisa; Suzuki, Ryuji; and Yamanouchi, Haruhiko, 5,335,115, Cl. 359-696.000.
Maruyama, Tomoko; and Iizuka, Takashi, 5,335,256, Cl. 378-35.000.
Matsuhisa, Hirohide, 5,335,004, Cl. 347-44.000.
Muramatsu, Masanori, 5,335,056, Cl. 355-327.000.
Nagane, Hiromichi, 5,335,083, Cl. 358-400.000.
Nakamori, Tomohiro; Okazawa, Kazuhiko; Tachibana, Tatsuto; Kusano, Akihisa; Sato, Kaoru; and Itoh, Toshiyuki, 5,334,817, Cl. 219-492.000.
Nakatsuma, Takuji, 5,335,085, Cl. 358-404.000.
Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, 5,334,835, Cl. 250-306.000.
Nakazato, Saburou, 5,335,078, Cl. 358-330.000.
Niki, Toru, 5,335,294, Cl. 382-22.000.
Ono, Takeo; and Okuda, Masahiro, 5,334,854, Cl. 257-13.000.
Onuki, Ichiro; and Shikaumi, Masao, 5,335,032, Cl. 354-195.100.
Osano, Nagato; Imai, Yukihiro; Hosaka, Akihito; Nakajima, Ikuo; Nishiguchi, Toshiji; and Horie, Akira, 5,334,258, Cl. 134-42.000.
Takayama, Nobutoshi; Kobayashi, Takashi; Mabuchi, Toshiaki; and Takahashi, Koji, 5,335,189, Cl. 364-565.000.
Tokunaga, Hiroyuki; and Yonehara, Takao, 5,334,864, Cl. 257-78.000.
Toyokura, Yoichi, 5,335,316, Cl. 395-115.000.

Capigatti, Andrew C.; and Zdenek, John M., to Rockwell International Corporation. Keyboard with top mountable key cap assemblies and method. 5,333,961, Cl. 400-490.000.

Caporiccio, Gerardo; D'Agostino, Riccardo; and Favia, Pietro, to Dow Corning Corporation. Articles by plasma-activated chemical vapor deposition of fluorinated cyclic siloxanes. 5,334,454, Cl. 428-412.000.

Capotosto, David A.: *See*—
Gelardi, Paul J.; Capotosto, David A.; Dussault, James R.; and Capotostop, Christopher C., 5,333,381, Cl. 30-2.000.
Gelardi, Paul J.; Gelardi, John A.; and Capotosto, David A., 5,334,254, Cl. 134-25.400.

Capotostop, Christopher C.: *See*—
Gelardi, Paul J.; Capotosto, David A.; Dussault, James R.; and Capotostop, Christopher C., 5,333,381, Cl. 30-2.000.

Cappa, Armando M.; and Heer, Warren R., to Siemens Pacesetter, Inc. Universal cable connector for temporarily connecting implantable leads and implantable medical devices with a non-implantable system analyzer. 5,334,045, Cl. 439-506.000.

Cardas, George F. Signal summing non-microphonic differential microphone. 5,335,282, Cl. 381-92.000.

Cardew, Marcus St. E.: *See*—
Myers, Fred D.; and Cardew, Marcus St. E., 5,334,032, Cl. 439-140.000.

Cardiac Pacemakers, Inc.: *See*—
Salo, Rodney W.; Spinelli, Julio C.; and Tockman, Bruce A., 5,334,222, Cl. 607-17.000.

Carl Strutz & Co., Inc.: *See*—
Zwigart, John M.; Tweedy, Mark R.; and McCoy, Gary W., 5,333,720, Cl. 198-409.000.

Carl-Zeiss-Stiftung Heidenheim/Brenz: *See*—
Breyer, Karl-Hermann; Aubele, Eugen; Grupp, Gunter; Ebersbach, Peter; and Wiedmann, Wolfgang, 5,333,386, Cl. 33-1.00M.

Carlo, Leoni, to American Standard Inc. Nozzle for emission of a mixture of water and air for hydromassage. 5,333,791, Cl. 239-428.500.

Carlson, Elmer V.; and Ballad, William J., to Knowles Electronics, Inc. Electret assembly. 5,335,286, Cl. 381-191.000.

Carlson, Virginia A.; Curry-Nkansah, Maria E.; Gebhard, Matthew S.; and Lauer, Rosemarie P., to Rohm and Haas Company. Method for reducing microfoam in a spray-applied waterborne composition. 5,334,655, Cl. 524-804.000.

Carlton, Stephen C., to Alcatel Network Systems, Inc. High speed communications interface protection system. 5,335,105, Cl. 359-135.000.

Carpenter, Charles T.; and Bayly, Robert M., to Key Knife, Inc. Knife holder. 5,333,659, Cl. 144-231.000.

Carr, Kenneth L.; Regan, James F.; and Waddell, Seid W., to Medrad, Inc. Extravassation detection system and apparatus. 5,334,141, Cl. 604-50.000.

Carrico, Philip H.; and Holmes, Roger W., to General Electric Company. Apparatus and method for folding over an edge portion of thin sheet. 5,334,128, Cl. 493-439.000.

Carrier Corporation: *See*—
Lewis, Russell G.; and Fraser, Howard H., Jr., 5,333,460, Cl. 62-6.000.
Liu, Xin; Spencer, Steven J.; Gupte, Neelkanth S.; Chiang, Robert H. L.; and Gaffaney, Daniel, 5,333,682, Cl. 165-133.000.
Waterman, Timothy J.; and Otis, Paul J., 5,334,231, Cl. 55-493.000.

Carroll, Brendon J. Method to remove common bile duct stones. 5,334,143, Cl. 604-54.000.

Carroll, John B.: *See*—
Hart, James E.; and Carroll, John B., 5,333,941, Cl. 303-40.000.

Carroll, Robert P. Letter guide apparatus. 5,333,389, Cl. 33-564.000.

Carroll, Terry L. Immobilizing cervical collar. 5,334,133, Cl. 602-18.000.

Carroll Touch: *See*—
Knowles, Terrence J.; and Ogren, Del, 5,334,805, Cl. 178-18.000.

Carter Automotive Company, Inc.: *See*—
Bollinger, Steven R., 5,333,456, Cl. 60-605.200.

Carter, Michael A. Portable bone distraction apparatus. 5,334,202, Cl. 606-58.000.

Carter, Steven F.: *See*—
France, Paul W.; Carter, Steven F.; and Williams, John R., 5,334,232, Cl. 65-388.000.

Casali, David C.: *See*—
Ineson, David J.; O'Connor, Edward M.; and Casali, David C., 5,334,897, Cl. 310-89.000.

Casali, John G.; and Mauney, Daniel W., to Center for Innovative Technology, The. Earplug and hearing devices formed in-situ. 5,333,622, Cl. 128-864.000.

Casciani, Robert V.: *See*—
Likibi, Parfait J. M.; Casciani, Robert V.; and McCraw, Gregory L., 5,334,756, Cl. 562-565.000.

Case, Charles; Watson, Charles; and Lawrence, Richard, to Schlumberger Technology Corporation. Sensitivity function technique for modeling nuclear tools. 5,334,833, Cl. 250-270.000.

Case Corporation: *See*—
Frisbee, Claude M.; and Werner, Ronald H., 5,333,697, Cl. 172-821.000.

Cashon, Robert E.: *See*—
Bonaventura, Joseph; Brouwer, Marius; and Cashon, Robert E., 5,334,705, Cl. 530-385.000.

Casio Computer Co., Ltd.: *See*—
Matsuda, Kunihiro, 5,334,859, Cl. 257-57.000.
Naito, Hideo, 5,334,860, Cl. 257-59.000.

Castel, Daniel: *See*—
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, 5,335,352, Cl. 395-800.000.

Castelijns, Anna M. C. F.; Arts, Henricus J.; and Green, Richard, to Stamicarbon B.V. 2,4-dimethyl-5-oxohexane and a method of use therefor. 5,334,721, Cl. 546-251.000.

Catalytica: *See*—
Richard, Michael A.; De Deken, Jacques; and Yee, David K., 5,334,790, Cl. 585-271.000.

Catan, Robert S. Automated air mixing system. 5,333,783, Cl. 236-13.000.

Caterpillar Inc.: *See*—
Cornelius, Erwin D., 5,333,696, Cl. 172-772.000.
Gale, Preston L., 5,333,938, Cl. 299-86.000.
Hosseini, Javad, 5,333,533, Cl. 91-361.000.
Oertley, Thomas E., 5,333,710, Cl. 180-9.500.
Purcell, Robert J., 5,334,106, Cl. 474-110.000.

Cathco, Inc.: *See*—
Fischell, Robert E.; Fischell, David R.; and Fischell, Tim A., 5,334,187, Cl. 604-194.000.

Catheter Research, Inc.: *See*—
Hemmer, Chad G., 5,334,168, Cl. 604-281.000.

Cavell, Ronald G.; Law, David J.; and Reed, Robert W., to Ligands Inc. Hydrogenation process with transition metal catalysts derived from bifunctional phosphorus-nitrogen ligands. 5,334,791, Cl. 585-277.000.

Cavicchi, Peter R.: *See*—
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Caviglia, Anthony L., to Allied Signal Inc. Process for forming self-aligning cobalt silicide T-gates of silicon MOS devices. 5,334,545, Cl. 437-41.000.

Cedrone, Alfredo L.: *See*—
Bullock, Roddy M.; Cedrone, Alfredo L.; Eckert, Michael L.; and Vana, James G., Jr., 5,334,271, Cl. 156-51.000.

Center for Innovative Technology, The: *See*—
Casali, John G.; and Mauney, Daniel W., 5,333,622, Cl. 128-864.000.
Dennis, Douglas E., 5,334,520, Cl. 435-136.000.

Central Glass Company: *See*—
Nagayama, Yoji; Tadokoro, Shingo; and Tsukada, Tokio, 5,334,989, Cl. 343-713.000.

Cerami, Anthony: *See*—
Ulrich, Peter C.; and Cerami, Anthony, 5,334,617, Cl. 514-562.000.

Cereghetti, Marco; and Rageot, Alain, to Hoffmann-La Roche INc. Process for the resolution of racemic diphosphine oxides. 5,334,766, Cl. 568-14.000.

Cesari, Verter: *See*—
Turra, Mario; Cesari, Verter; and Neri, Armando, 5,333,988, Cl. 414-795.800.

Cesario, Donald C., to Advance Systems, Inc. Web threader having an endless belt formed from a thin metal strip. 5,333,771, Cl. 226-92.000.

Cha, Gi Bon, to Goldstar Electron Co., Ltd. Semiconductor packages with centrally located electrode pads. 5,334,873, Cl. 257-666.000.

Cha, Sung W.: *See*—
Baldwin, Daniel F.; Suh, Nam P.; Park, Chul B.; and Cha, Sung W., 5,334,356, Cl. 422-133.000.

Chakrabarti, Sarbananda: *See*—
Horn, Peter; Reich, Erhard; Adams, Stefan; and Chakrabarti, Sarbananda, 5,334,448, Cl. 428-319.700.

Chakravarty, Prasun K.: *See*—
Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., 5,334,598, Cl. 514-303.000.

Chalfant, Jeffrey R.; and Harvey, Kenneth, to Chalfant Sewing Fabricators, Inc. Loading dock door seal extender. 5,333,424, Cl. 52-173.200.

Chalfant Sewing Fabricators, Inc.: *See*—
Chalfant, Jeffrey R.; and Harvey, Kenneth, 5,333,424, Cl. 52-173.200.

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Chan, Che-Ting: *See*—
Ho, Kai-Ming; Chan, Che-Ting; and Soukoulis, Costas, 5,335,240, Cl. 372-39.000.

Chan, David W.: *See*—
Krafcsik, David M.; and Chan, David W., 5,334,959, Cl. 333-164.000.

Chana, Jit S., to International Business Machines Corporation. Dump analysis system and method in data processing systems. 5,335,341, Cl. 395-575.000.

Chang, Chi: *See*—
Van Buskirk, Michael A.; Plouse, Kevin W.; Pawletko, Joseph G.; Chang, Chi; Haddad, Sameer S.; and Gutala, Ravi P., 5,335,198, Cl. 365-185.000.

Chang, Chien-Hsing; and Jones, Anastasia L., to Immunomedics, Inc. Method for radiolabeling monovalent antibody fragments. 5,334,708, Cl. 530-391.500.

Chao, Benjamin S.: *See*—
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Strand, David A.; Czubatyj, Wolodymyr; Gonzalez-Hernandez, Jesus; Fritzsche, Hellmut; Ye, Qiuyi; Kostylev, Sergey A.; and Chao, Benjamin S., 5,335,219, Cl. 369-288.000.

Charbonnages De France: *See*—
Charpentier, Dominique; DeGaugue, Pierre; Degardin, Daniel; and Baudet, Jacques, 5,335,006, Cl. 348-82.000.

Charles, Doyle B.: *See*—
Berry, William M., III; Charles, Doyle B.; and Flagg, Michael F., 5,333,809, Cl. 242-578.100.

Charles, Robert L.; and Shetty, Jayarama K., to Solvay Enzymes, Inc. Process for producing levan sucrase using *Bacillus licheniformis* . 5,334,524, Cl. 435-193.000.

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Bernstein, Jonathan, 5,335,210, Cl. 367-163.000.

Charpentier, Dominique; DeGaugue, Pierre; Degardin, Daniel; and Baudet, Jacques, to Charbonnages De France. Method and device for

VOL 1165 ISS 1 AG 2 1994 UMI

transmitting video signals in confined spaces. 5,335,006, Cl. 348-82.000.

Chatterjee, Deb K.: *See*—
Smith, Michael D.; Schmidt, Brian J.; Longo, Mary C.; and Chatterjee, Deb K., 5,334,526, Cl. 435-199.000.

Chaussee, James G., to S. C. Johnson & Son, Inc. Delayed-gelling, post-foaming composition. 5,334,325, Cl. 252-174.160.

Chavan, Sunita P.: *See*—
Rossi, Louis J.; and Chavan, Sunita P., 5,334,435, Cl. 428-195.000.

Chen, Allan K., to Xerox Corporation. Processes for aquabulk polymerization to produce high purity toners. 5,334,479, Cl. 430-137.000.

Chen, Anna: *See*—
Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., 5,334,598, Cl. 514-303.000.

Chen, Chao-Hsiung, to Ma Chi Electric Apparatus Ent. Co., Ltd. Receptacle. 5,334,052, Cl. 439-650.000.

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Chen, John Y., to Applied Elastomerics, Inc. Thermoplastic elastomer gelatinous articles. 5,334,646, Cl. 524-474.000.

Chen, Kent; Sumer, Suleyman O.; and Pinedo, Jose M., to Regent Lighting Corporation. Plastic lamp holder. 5,335,159, Cl. 362-421.000.

Chen, Ming-Daw: *See*—
Tu, Nang-Ping; and Chen, Ming-Daw, 5,335,254, Cl. 377-76.000.

Chen, Pi-Fuay: *See*—
Hevenor, Richard A.; and Chen, Pi-Fuay, 5,335,298, Cl. 382-54.000.

Chen, Shih-Chieh. Pincers having disposable end members. 5,334,215, Cl. 606-210.000.

Chen, Shun M. Dual-seat stroller. 5,333,893, Cl. 280-642.000.

Chen, Teh H.: *See*—
Begley, William J.; Chen, Teh H.; and Bailey, David S., 5,334,490, Cl. 430-382.000.

Chen, Xin H.: *See*—
Buchecker, Richard; Chen, Xin H.; Funfschilling, Jurg; Herr, Rolf-Peter; Schadt, Martin; and Schmitt, Klaus, 5,335,303, Cl. 385-122.000.

Cheng, Lap K., to Du Pont de Nemours, E. I., and Company. Single cesium titanyl arsenate-type crystals, and their preparation. 5,334,365, Cl. 423-596.000.

Chennakeshu, Sandeep: *See*—
Dent, Paul W.; and Chennakeshu, Sandeep, 5,335,250, Cl. 375-10.000.

Cherney, Dale M.: *See*—
James, Robert C.; and Cherney, Dale M., 5,333,703, Cl. 180-271.000.

Chevalier, Robert K. Electrical cord connecting apparatus. 5,334,042, Cl. 439-369.000.

Chevron Research and Technology Company, a Division of Chevron U.S.A. Inc.: *See*—
Harrison, James J.; and Ruhe, William R., Jr., 5,334,321, Cl. 252-51.50A.

Chiang, Robert H. L.: *See*—
Liu, Xin; Spencer, Steven J.; Gupte, Neelkanth S.; Chiang, Robert H. L.; and Gaffaney, Daniel, 5,333,682, Cl. 165-133.000.

Chiang, Yulin: *See*—
Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, 5,334,599, Cl. 514-304.000.

Children's Medical Center Corporation, The: *See*—
Lipton, Stuart A., 5,334,618, Cl. 514-659.000.

Childs, Eric G.: *See*—
Bartholomew, Leroy E.; Childs, Eric G.; and Callahan, David M., 5,333,832, Cl. 251-1.300.

Childs, Leslie A.: *See*—
Wingfield, William R.; Childs, Leslie A.; and Pilaczynski, Clarence L., 5,333,724, Cl. 198-495.000.

Childs, Paul J.: *See*—
Hurley, James R.; Childs, Paul J.; and Norman, Timothy J., 5,333,539, Cl. 99-403.000.

Chiquita Branda, Inc.: *See*—
Herdeman, Robert W.; Kowalczyn, Taras A.; Graham, Charles R.; and Herzstein, John, 5,333,394, Cl. 34-467.000.

Chitayat, Anwar, to Anorad Corporation. Positioning device for planar positioning. 5,334,892, Cl. 310-12.000.

Chitty, Alton L.: *See*—
Pond, Karen L.; Chitty, Alton L.; Oehlbeck, Douglas L.; Henry, Marian S.; and Darron, Ward K., 5,334,496, Cl. 430-569.000.

Chiyoda Corporation: *See*—
Yoneda, Noriyuki; Shiroto, Yoshimi; Hamato, Kazuhiko; Asaoka, Sachio; and Maejima, Tetsuo, 5,334,755, Cl. 562-519.000.

Cho, Mun H., to Goldstar Co., Ltd. Document acknowledge system having horizontal/vertical-run length smoothing algorithm circuits and a document region divide circuit. 5,335,087, Cl. 358-432.000.

Choe, Hwang; and Fallas, Thomas T., to United States of America, Energy. Passive gas separator and accumulator device. 5,334,239, Cl. 95-261.000.

Choi, Hong K.: *See*—
Choi, Kyung S.; Joo, Dae K.; Han, Min S.; Hwang, E Nam; and Choi, Hong K., 5,334,746, Cl. 560-38.000.

Choi, Hoon B., to Goldstar Co., Ltd. Beam scanning device for an electronic photography type printer. 5,335,007, Cl. 346-107.00R.

Choi, Kyung S.; Joo, Dae K.; Han, Min S.; Hwang, E Nam; and Choi, Hong K., to Miwon Co., Ltd. Process for producing α-L-aspartyl-L-phenylalanine methyl ester. 5,334,746, Cl. 560-38.000.

Choma, Theodore J.: *See*—
Poppas, Dix P.; Schlossberg, Steven M.; Choma, Theodore J.; Klioze, Scott D.; and Boll, James H., 5,334,191, Cl. 606-12.000.

Choma, Theodore John: *See*—
Poppas, Dix P.; Schlossberg, Steven M.; Choma, Theodore J.; Klioze, Scott D.; and Boll, James H., 5,334,191, Cl. 606-12.000.

Chong, Malcolm K. L., to DSI of Hawaii, Inc. System for tracking multiple rate assessments on transactions. 5,335,169, Cl. 364-408.000.

Chou, Chen-Wen. Movable automatic sawing and clamping framework. 5,333,385, Cl. 30-371.000.

Chou, William T.: *See*—
Love, David G.; Moresco, Larry L.; Chou, William T.; Horine, David A.; Wong, Connie M.; and Beilin, Solomon I., 5,334,804, Cl. 174-267.000.

Choudhuri, Kumar S.: *See*—
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Choy, Terence A.: *See*—
Hippely, Keith A.; Swisher, Gary; Choy, Terence A.; and Halford, Wayne R., 5,334,078, Cl. 446-470.000.

Chrapkowski, Arthur D.: *See*—
Cizek, Paul J.; and Chrapkowski, Arthur D., 5,335,353, Cl. 455-17.000.

Christensen, Emeron P. Furniture elevating device. 5,333,825, Cl. 248-188.200.

Christensen, Laura A.: *See*—
Felderman, William A.; McDonald, Daniel J.; and Christensen, Laura A., 5,335,350, Cl. 455-17.000.

Christie, C. Dale; Gallagher, Michael T.; Hendricksen, Michael J.; Oliver, John D.; and Polzin, Mark A., to AMSTED Industries Incorporated. Railway wheel. 5,333,926, Cl. 295-21.000.

Christopher, Gilman O. Quick disconnect nozzle apparatus. 5,333,790, Cl. 239-391.000.

Christopher, Kenneth W., Jr.; Roarabaugh, Virginia M.; and Waldron, Theodore C., III, to International Business Machines Corporation. Method and system for stack memory alignment utilizing recursion. 5,335,332, Cl. 364-400.000.

Chromaline Corporation, The: *See*—
Van Iseghem, Lawrence C.; and Gybin, Alexander S., 5,334,485, Cl. 430-287.000.

Chromonogenix AB: *See*—
Arielly, Salo, 5,334,703, Cl. 530-330.000.

Chrysler Corporation: *See*—
Dean, Patrick D.; and Sabbah, Abbas T., 5,334,914, Cl. 315-291.000.
Nogle, Thomas D.; and Botosan, Valentin, 5,334,112, Cl. 475-59.000.
Strahl, Paul; and Frakes, Michael D., 5,333,900, Cl. 280-731.000.

Chu, Pochen; Landis, Michael E.; and Le, Quang N., to Mobil Oil Corp. Production of ethylbenzene. 5,334,795, Cl. 585-467.000.

Chuang, Ching-Te K., to International Business Machines Corporation. Direct-coupled PNP transistor pull-up ECL circuits and direct-coupled complementary push-pull ECL circuits. 5,334,886, Cl. 307-455.000.

Chuang, Keh-Shih K. Steering wheel security device. 5,333,478, Cl. 70-209.000.

Chubu Electric Power Company Inc.: *See*—
Kato, Hiroyuki, 5,333,991, Cl. 415-112.000.

Chugoku Electric Power Company, Inc.: *See*—
Kato, Hiroyuki, 5,333,991, Cl. 415-112.000.

Church, Charles C.: *See*—
Schwarz, Karl; Meltzer, Richard S.; and Church, Charles C., 5,334,136, Cl. 604-4.000.

Church & Dwight Co., Inc.: *See*—
Lajoie, M. Stephen, 5,334,312, Cl. 210-610.000.

Chuta, Masanobu: *See*—
Morioka, Yuji; Chuta, Masanobu; Iwazaki, Kuniyasu; and Ohta, Kihachiro, 5,334,895, Cl. 310-67.00R.

Chytil, Anna: *See*—
Gebeyehu, Gulilat; Jessee, Joel A.; Ciccarone, Valentina C.; Hawley-Nelson, Pamela; and Chytil, Anna, 5,334,761, Cl. 564-197.000.

Ciba-Geigy Corporation: *See*—
Campbell, Colin D., 5,334,727, Cl. 548-373.100.
Lukas, Bohumir; and Ruppin, Karl H. S., 5,334,583, Cl. 514-8.000.
Merrem, Hans J., 5,334,481, Cl. 430-191.000.
Mueller, Karl F.; and Plankl, Walter L., 5,334,681, Cl. 526-243.000.
Pastor, Stephen D.; Shum, Sai P.; and Odorisio, Paul A., 5,334,739, Cl. 558-78.000.
Van Duzer, John H.; and Roland, Dennis M., 5,334,600, Cl. 514-309.000.

Ciccarone, Valentina C.: *See*—
Gebeyehu, Gulilat; Jessee, Joel A.; Ciccarone, Valentina C.; Hawley-Nelson, Pamela; and Chytil, Anna, 5,334,761, Cl. 564-197.000.

Citizen Watch Co., Ltd.: *See*—
Muto, Takeo; Sase, Masahiro; and Yoshiaki, Kato, 5,335,211, Cl. 368-11.000.

Citta', Vincenzo: *See*—
Roggero, Arnaldo; Pedretti, Ugo; La Mantia, Francesco P.; Citta', Vincenzo; and Lezzi, Alessandro, 5,334,695, Cl. 528-193.000.

Cizek, Paul J.; and Chrapkowski, Arthur D., to Motorola, Inc. Method for processing subsequently received communications. 5,335,353, Cl. 455-17.000.

Clark, Brian R.; and Nag, Bishwajit, to Anergen, Inc. Intracellularly cleavable compounds. 5,334,391, Cl. 424-450.000.

Clark, Bryan J., to Power Poxy Adhesives, Inc. Packaging system for two part epoxy adhesives and the like. 5,333,737, Cl. 206-568.000.

Clark, William C., Jr.; Jacko, Richard J.; and Burtner, Lee W., to Westinghouse Electric Corp. Method and apparatus for monitoring the environment of a vessel. 5,333,502, Cl. 73-623.000.

Clarke, Jane: *See*—
Robbins, Clarence R.; Patel, Amrit; and Clarke, Jane, 5,334,376, Cl. 424-70.000.

Clarke, Norman B.; Cook, Lawrence G.; Doyle, Robert G.; and Renner, Michael, to International Business Machines Corporation. Molded test probe assembly. 5,334,931, Cl. 324-757.000.

Clawson Tank Company: *See*—
Harding, Robert A., Jr., 5,333,752, Cl. 220-565.000.

Clayton, John C.; and Scofield, Trevor N., to Innovision Limited. Sample rate converter. 5,335,194, Cl. 364-724.100.

CLE: *See*—
Paliard, Maurice; and Duputs, Jacques, 5,333,798, Cl. 241-24.000.

Clearfix Corporation: *See*—
Norville, William C., 5,334,335, Cl. 264-36.000.

Cleaveland/Price Inc.: *See*—
Willard, Frank G., 5,334,919, Cl. 318-375.000.

Clemson University: *See*—
Edie, Danny D.; and Klett, James W., 5,334,414, Cl. 427-189.000.

Cleugh, Ernest S.; and Milner, David J., to Zeneca Ltd. Isomerisation process. 5,334,744, Cl. 558-354.000.

Clevenger, Neal A.: *See*—
Rzesutock, Michael P.; and Clevenger, Neal A., 5,333,653, Cl. 141-1.000.

Clewett, Richard H.; Pering, Claude O.; and Sharitz, Daniel B., to Ace Medical Company. Fixation screw. 5,334,204, Cl. 606-73.000.

Clifford, Todd W. Outdoor cooking grill provided with vending apparatus. 5,333,596, Cl. 126-41.00R.

Clochon, Frank A.: *See*—
Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., 5,333,438, Cl. 53-399.000.

Clough, John M.: *See*—
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.

Clover Consolidated, Ltd.: *See*—
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., 5,334,640, Cl. 524-56.000.

Coapman, Christine R.: *See*—
Myers, Bruce A.; Isenberg, John K.; Coapman, Christine R.; and Blanton, James A., 5,334,422, Cl. 427-552.000.

Cobb, Douglas A. Liquid trap for gaseous or liquid phase materials. 5,333,461, Cl. 62-11.000.

Cocanower, David A. Modified nasogastric tube for use in enteral feeding. 5,334,167, Cl. 604-280.000.

Coffinberry, George A., to General Electric Company. Scramjet engine having improved fuel/air mixing. 5,333,445, Cl. 60-270.100.

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Cognet, Gilles; Jacquemet, Regis; and Lamblin, Veronique, to Elf Atochem S.A. Stampable reinforced thermoplastic sheet and articles obtained from said sheet. 5,334,427, Cl. 428-34.500.

Cohen, Richmond R., to Hercules Incorporated. Enhanced core utilization in absorbent products. 5,334,177, Cl. 604-378.000.

Coherent, Inc.: *See*—
Hobart, James L.; Yarborough, J. Michael; Dallarosa, Joseph; and Gardner, Phillip, 5,335,242, Cl. 372-95.000.
Sugden, Peter G., 5,335,003, Cl. 346-107.00R.

Colasito, Dominic J.; Robinson, Mery C.; and Smith, Alvin J. Oil contamination clean-up by use of microbes and air. 5,334,533, Cl. 435-264.000.

Cole, Edward H., Jr.; and Mott, Philip J., to Borg-Warner Automotive, Inc. Single pin rocker joint CVT chain. 5,334,111, Cl. 474-214.000.

Cole, Richard W.; and Bishop, Clinton L., to Dayco Products, Inc. Biasing means, components therefor and methods of making same. 5,334,122, Cl. 482-130.000.

Cole, Robert G.; Fendick, Kerry W.; and Rodrigues, Manoel A., to AT&T Bell Laboratories. Service guarantees/congestion control in high speed networks. 5,335,224, Cl. 370-84.000.

Colegrove, Samuel B.: *See*—
Tucker, Stephen P.; and Colegrove, Samuel B., 5,334,985, Cl. 342-176.000.

Coles, Allen E.: *See*—
Gay, Lindell W., Jr., 5,334,207, Cl. 606-7.000.

Colgate-Palmolive Company: *See*—
Haugk, Peter D., 5,334,387, Cl. 424-401.000.
Nabi, Nuran; Prencipe, Michael; and Gaffar, Abdul, 5,334,375, Cl. 424-52.000.
Robbins, Clarence R.; Patel, Amrit; and Clarke, Jane, 5,334,376, Cl. 424-70.000.

Colineau, Joseph; and Valet, Thierry, to Thomson-CSF. Device for reading a set of resistive elements featuring interrogation and voltage stabilization circuits. 5,335,120, Cl. 360-63.000.

Collard, Jamie: *See*—
Huggett, David J.; and Collard, Jamie, 5,334,309, Cl. 210-133.000.

Colling, George J.; and Mueller, Dale A. Rotary coupler with shaft misalignment and overtravel tolerance. 5,334,095, Cl. 464-101.000.

Colman, Lewis: *See*—
Shimoni, Uri; Colman, Lewis; and Meidan, Moshe, 5,334,828, Cl. 250-206.200.

Coltene/Whaledent, Inc.: *See*—
Simmen, Christen, 5,333,760, Cl. 222-137.000.

Columbia University in the City of New York, The Trustees of: *See*—
Fox, Charles L., Jr., deceased; and Modak, Shanta M., 5,334,588, Cl. 514-171.000.

Columbus, Richard L.; and Palmer, Harvey J., to Eastman Kodak Company. Coater design for low flowrate coating applications. 5,334,247, Cl. 118-411.000.

Commonwealth Scientific and Industrial Research Organisation: *See*—
Cutmore, Nicholas G., 5,333,493, Cl. 73-73.000.
Holland, Robert V., 5,334,623, Cl. 523-100.000.
Wood, Paul R.; and Corner, Leigh A., 5,334,504, Cl. 435-7.320.

Commonwealth Scientific and Industrial Research Organization: *See*—
Garvie, Gudrun H., 5,334,563, Cl. 501-105.000.

Compag Computer Corporation: *See*—
Sellers, Charles A., 5,335,005, Cl. 346-160.000.

Compagnon, Jean-Claude: *See*—
Brandy, Gilbert; Compagnon, Jean-Claude; and Vignot, Jean-Marie, 5,333,670, Cl. 164-364.000.

Compaq Computer Corporation: *See*—
Hayes, Donald J.; and Pies, John R., 5,334,415, Cl. 427-231.000.
Jackson, Mike T.; Stevens, Jeffrey C.; and Tipley, Roger E., 5,335,335, Cl. 395-425.000.
Walker, Richard E., 5,335,168, Cl. 364-707.000.

Composites-Busch & Cie: *See*—
Lallemand, Alain, 5,333,857, Cl. 273-67.00A.

Comtec Information Systems, Inc.: *See*—
Petteruti, Alfred J.; Petteruti, Steven F.; Bouthillier, Robert J.; and Petteruti, Robert A., 5,335,170, Cl. 364-403.000.

Concentric Pumps Limited: *See*—
Hodge, Steve, 5,334,002, Cl. 418-32.000.

Conec, Inc.: *See*—
Seelig, David L.; and McAfee, Kevin S., 5,333,802, Cl. 241-65.000.

Connor, Daniel S.: *See*—
Scheibel, Jeffrey J.; Connor, Daniel S.; Shumate, Robert E.; and St. Laurent, James B., 5,334,764, Cl. 564-487.000.

Conrad, Hans-Rolf, to Sulzer Papertec Krefeld GmbH. Mobile platform for operators of calenders. 5,333,544, Cl. 100-53.000.

Conrad, Horst; Diekmann, Jorg; Wilmes, Manfred; and Hanning, Walter, to C. A. Weidmuller GmbH & Co. Apparatus for mounting a conductor terminal housing on a rail. 5,334,054, Cl. 439-716.000.

Consolidated Industries Corp.: *See*—
Kirkpatrick, Michael E.; and Haydock, Paul M., 5,333,597, Cl. 126-110.00R.

Consortium fur Elektrochemische Industrie GmbH: *See*—
Fritz-Langhals, Elke, 5,334,730, Cl. 549-13.000.

Contestable, Paul B.: *See*—
Snyder, Brian A.; Contestable, Paul B.; Abrams, Catherine T.; and Grogan, Elizabeth A., 5,334,503, Cl. 435-7.320.

Conti, Romano. Rotative inserting unit for documents and sheets of paper, in particular for automatic equipment for the printing and inserting of said materials into envelopes. 5,333,437, Cl. 53-284.300.

Conway, Anthony J.; Conway, Philip J.; and Fryar, Richard D., Jr., to Rochester Medical Corporation. Male urinary incontinence device. 5,334,175, Cl. 604-352.000.

Conway, Philip J.: *See*—
Conway, Anthony J.; Conway, Philip J.; and Fryar, Richard D., Jr., 5,334,175, Cl. 604-352.000.

Cook Incorporated: *See*—
Gianturco, Cesare, 5,334,210, Cl. 606-151.000.

Cook, Lawrence G.: *See*—
Clarke, Norman B.; Cook, Lawrence G.; Doyle, Robert G.; and Renner, Michael, 5,334,931, Cl. 324-757.000.

Cook, Steven L., to Halliburton Company. Apparatus and method for detecting weak magnetic fields having a saturable core shaped to cancel magnetic fields parallel to the core. 5,334,935, Cl. 324-253.000.

Cooley, Robert S.: *See*—
Mielke, Richard A.; Mattson, Norman E.; and Cooley, Robert S., 5,333,598, Cl. 126-116.00R.

Cooper, Alan N.; McCracken, William P.; and Hynecek, Jaroslav, to Texas Instruments Incorporated. Method for improved dynamic range of BCMD image sensors. 5,335,015, Cl. 348-302.000.

Cooper Industries, Inc.: *See*—
Yarbrough, Garrett S., 5,334,939, Cl. 324-424.000.

Cooper, John R.; and Sonberg, Kenneth W., to Electronic Data Systems Corporation. Apparatus for detecting and preventing subscriber number cloning in a cellular mobile telephone system. 5,335,265, Cl. 379-59.000.

Cope, Carroll W., to Marley Mouldings Inc. Water-reducible coating composition and process of use thereof. 5,334,632, Cl. 524-9.000.

Cope, Carroll W., to Marley Mouldings Inc. Composition for coating metal, plastic and wood substrates to impart wood-like appearance and texture thereto. 5,334,633, Cl. 524-15.000.

Cordis Corporation: *See*—
Johnson, Kirk L., 5,334,147, Cl. 604-56.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Core-Vent Corporation: *See*—
Niznick, Gerald A., 5,334,024, Cl. 433-173.000.
Cornelius, Erwin D., to Caterpillar Inc. Reversible protector for a work member. 5,333,696, Cl. 172-772.000.
Cornell Research Foundation, Inc.: *See*—
Frechet, Jean M. J.; and Svec, Frantisek, 5,334,310, Cl. 210-198.200.
Corner, Leigh A.: *See*—
Wood, Paul R.; and Corner, Leigh A., 5,334,504, Cl. 435-7.320.
Corning Incorporated: *See*—
Beauseigneur, Patricia A.; Lachman, Irwin M.; Patil, Mallanagouda D.; Swaroop, Srinivas H.; and Wusirika, Raja R., 5,334,570, Cl. 502-304.000.
Corporacion Nacional Del Cobre De Chile: *See*—
Bannach Sichtermann, Gustavo H.; Pincheira Alverez, Aliro T. N.; Reghezza Inzunza, Andres A.; Cruz Rivera, Alberto S.; Lorca Soto, Tomas S.; Hidalgo Cortes, Luis F.; Menacho Llana, Jorge M.; and Martinez Pereira, Miguel A., 5,334,317, Cl. 210-708.000.
Corriveau, Christine L.: *See*—
Ream, Ronald L.; Corriveau, Christine L.; and Wokas, William J., 5,334,397, Cl. 426-5.000.
Corzine, Alan J.; and Eberhart, Gerald E., to Olin Corporation. Hunting bullet with reinforced core. 5,333,552, Cl. 102-509.000.
Cosmina, Paola: *See*—
Del Bue, Marina; Cosmina, Paola; Franchi, Elisabetta; and Grandi, Guido, 5,334,531, Cl. 435-252.310.
Costello, David J.: *See*—
Kosa, Nadhir B.; Twiggs, Gene J.; Salter, James R.; Singh, Raghuvir; Costello, David J.; and Schlain, Leslie A., 5,335,305, Cl. 385-147.000.
Costemalle, Bernard J.; and Fusco, James V., to Exxon Chemical Patents Inc. Tire innerliner composition. 5,333,662, Cl. 152-510.000.
Cota, Marlo E.; and Johnson, Richard L., to Motorola, Inc. Containment vessel for environmentally sealing a chemical compound. 5,333,641, Cl. 137-264.000.
Couillard, Yves: *See*—
Jullien, Claude; and Couillard, Yves, 5,333,681, Cl. 165-82.000.
Counts, Richard C., to USI Lighting, Inc. Ground fault detector and associated logic for an electronic ballast. 5,334,912, Cl. 315-119.000.
Courant, Alain: *See*—
Engel, Philippe; and Courant, Alain, 5,334,360, Cl. 422-230.000.
Cowan, Kevin P. Permanent stent made of a cross linkable material. 5,334,201, Cl. 623-1.000.
Cox, Stanley E.; and Ish, Mark E., to Texas Microsystems, Inc. Apparatus for providing DMA functionality to devices located in P bus expansion chassis. 5,335,329, Cl. 395-325.000.
Craelius, William; and Newby, Nicki A. Apparatus for digitally recording and analyzing electrocardial and other bioelectric signals. 5,333,615, Cl. 128-696.000.
Craver, Mary E.: *See*—
Foster, David G.; Stephen, Keith H.; and Craver, Mary E., 5,334,491, Cl. 430-393.000.
Creighton, Brad M. Bird cage type suspension with bearing connected to axle tube. 5,333,896, Cl. 280-688.000.
Crenna, Vincent: *See*—
Audureau, Joel; and Crenna, Vincent, 5,334,663, Cl. 525-194.000.
Cretti, Piero, to Plastedil, S.A. Modular panel of expanded synthetic material provided with staggered longitudinal "T"-shaped channels, receiving "T"-shaped wooden posts useful for erecting walls. 5,333,429, Cl. 52-309.700.
Cricket: *See*—
Frigiere, Rene , 5,334,011, Cl. 431-153.000.
Crittenden, James F.: *See*—
McIntyre, Jon T.; and Crittenden, James F., 5,334,153, Cl. [illegible].
Croda Apex Adhesives, Inc.: *See*—
Bozich, Frank; and King, Charles J., 5,333,439, Cl. 53-450.000.
Cronin, John E.; Farrar, Paul A., Sr.; Kaanta, Carter W.; Ryan, James G.; and Watts, Andrew J., to International Business Machines Corporation. Gray level mask. 5,334,467, Cl. 430-5.000.
Crooks, John F.; and Protheroe, Robert L., to NCR Corporation. Apparatus and method for automatic digitizer fault detection. 5,335,230, Cl. 371-15.100.
Crosfield Electronics Limited: *See*—
Kirk, Richard A., 5,335,318, Cl. 395-131.000.
Crout, James O.; and Sanne, Sreemukh. Unitary brazed tubing fitting assembly with deformed sealing web. 5,333,918, Cl. 285-286.000.
Crowley, Patrick J.; Glen, Alasdair T.; Spence, Rosamund A.; and Lawson, Kevin R., to Imperial Chemical Industries PLC. Fungicides. 5,334,722, Cl. 546-289.000.
Crowley, Patrick J.: *See*—
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.
Cruz Rivera, Alberto S.: *See*—
Bannach Sichtermann, Gustavo H.; Pincheira Alverez, Aliro T. N.; Reghezza Inzunza, Andres A.; Cruz Rivera, Alberto S.; Lorca Soto, Tomas S.; Hidalgo Cortes, Luis F.; Menacho Llana, Jorge M.; and Martinez Pereira, Miguel A., 5,334,317, Cl. 210-708.000.
Cryolife, Inc.: *See*—
Morse, Brenda S.; and Shanbrom, Edward, 5,333,626, Cl. 128-898.000.
Cryomedical Sciences, Inc.: *See*—
Rubinsky, Boris; Onik, Gary; Finkelstein, J. J.; Neu, Dan; and Jones, Steve, 5,334,181, Cl. 606-22.000.
CSI Industrial Systems, Corp.: *See*—
Kassuba, Steven M., 5,333,764, Cl. 222-602.000.
CU Chemie Uetikon AG: *See*—
Kouwenhoven, Herman W.; Bertea, Leopoldo; and Prins, Roel, 5,334,781, Cl. 568-927.000.
Cubic Automatic Revenue Collection Group: *See*—
Tetherton, Cyril F., 5,333,410, Cl. 49-35.000.
Cuddihy, James W.: *See*—
Harvey, John C.; and Cuddihy, James W., 5,335,277, Cl. 380-20.000.
Cugliari, Gregory A. Game tracking and weapon locating device. 5,333,881, Cl. 273-416.000.
Cuine, Alain; de Barochez, Bruno H.; and Guez, David, to Adir et Compagnie. Matrix tablet permitting the sustained release of indapamide after oral administration. 5,334,392, Cl. 424-468.000.
Cullen, John F.; and Ejiri, Koichi, to Ricoh Corporation; and Ricoh Company Ltd. Segmentation of text, picture and lines of a document image. 5,335,290, Cl. 382-9.000.
Cummins, Christopher K. M., to Sherwood Medical Company. Endotracheal tube for face, chin and neck surgery. 5,333,608, Cl. 128-207.140.
Cummins Engine Company, Inc.: *See*—
Gant, Gary L.; Muntean, George L.; and Osborn, Jeffrey C., 5,333,786, Cl. 239-89.000.
Cumpiano, William R.: *See*—
Janes, Richard; and Cumpiano, William R., 5,333,527, Cl. 84-291.000.
Cuomo, Robert: *See*—
Re, John; and Cuomo, Robert, 5,333,571, Cl. 119-56.100.
Curry-Nkansah, Maria E.: *See*—
Carlson, Virginia A.; Curry-Nkansah, Maria E.; Gebhard, Matthew S.; and Lauer, Rosemarie P., 5,334,655, Cl. 524-804.000.
Curtis, Larry G.: *See*—
Kuo, Chung M.; Curtis, Larry G.; and Lucas, Paul L., 5,334,638, Cl. 524-40.000.
Cutmore, Nicholas G., to Commonwealth Scientific and Industrial Research Organisation. Moisture content by microwave phase shift and mass/area. 5,333,493, Cl. 73-73.000.
Cyclo3pss Medical Systems, Inc.: *See*—
Faddis, Chris G., 5,334,355, Cl. 422-122.000.
Czolkoss, Wolfgang, to Taprogge GmbH. Method for measuring the cleaning effectiveness of cleaning bodies on heat exchangers. 5,333,674, Cl. 165-11.100.
Czubatyj, Wolodymyr: *See*—
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Strand, David A.; Czubatyj, Wolodymyr; Gonzalez-Hernandez, Jesus; Fritzsche, Hellmut; Ye, Qiuyi; Kostylev, Sergey A.; and Chao, Benjamin S., 5,335,219, Cl. 369-288.000.
Daems, Diana M. F., to Imperial Chemical Industries PLC. Polyol compositions. 5,334,624, Cl. 521-130.000.
D'Agostino, Riccardo: *See*—
Caporiccio, Gerardo; D'Agostino, Riccardo; and Favia, Pietro, 5,334,454, Cl. 428-412.000.
Dahlberg, Anders. Marker light. 5,335,151, Cl. 362-153.100.
Dahling, Paul H.: *See*—
Bergmann, Werner; and Dahling, Paul H., 5,334,449, Cl. 428-327.000.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See*—
Naka, Akihiro; Ito, Shuichi; Akizuki, Shinya; and Saito, Kiyoshi, 5,334,674, Cl. 525-481.000.
Dai, Masahiro: *See*—
Itoh, Junichi; Dai, Masahiro; Toizumi, Yasushi; Mizokami, Kazunori; Watanabe, Yoji; and Midorikawa, Ayumu, 5,335,029, Cl. 354-106.000.
Daicel Chemical Industries, Ltd.: *See*—
Shibata, Tohru; Namikoshi, Hajime; and Okamoto, Ichiro, 5,334,311, Cl. 210-198.200.
Toda, Fumio, 5,334,776, Cl. 568-813.000.
Daido Metal Company: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Sakai, Kenji, 5,334,460, Cl 428-552.000.
Daifuku Co., Ltd.: *See*—
Hatouchi, Gokichi; Saitoh, Hisao; Shimizu, Kiyoshi; and Hagisu, Yasushi, 5,333,983, Cl. 414-331.000.
Takaoka, Shigekazu, 5,333,987, Cl. 414-264.000.
Tanizawa, Hideichi; Nishino, Shuzo; and Okamura, Takashi, 5,333,982, Cl. 414-279.000.
Daikin Industries, Ltd.: *See*—
Koyama, Satoshi; Homoto, Yukio; and Esaka, Naoki, 5,334,786, Cl. 570-168.000.
Obata, Koei, 5,335,319, Cl. 395-141.000.
Daikuzono, Norio, to Mitsubishi Denki Kabushiki Kaisha. Laser light irradiation apparatus. 5,334,206, Cl. 606-7.000.
Daily, Jay H.: *See*—
Anastase, Constantin; Daily, Jay H.; and Nehren, William C., 5,333,338, Cl. 8-158.000.
Dainippon Plastics Co., Ltd.: *See*—
Kishima, Yoshio; and Nishiyama, Itsuo, 5,333,494, Cl. 73-104.000.
Dainippon Screen Mfg. Co., Ltd.: *See*—
Murakami, Shigeo, 5,335,097, Cl. 358-520.000.
Dainippon Screen Mfg. Co., Ltd: *See*—
Kitamura, Hideaki, 5,335,086, Cl. 358-431.000.
Daiwa Seiko, Inc.: *See*—
Hirano, Kazuo, 5,333,813, Cl. 242-322.000.

Dallarosa, Joseph: *See*—
Hobart, James L.; Yarborough, J. Michael; Dallarosa, Joseph; and Gardner, Phillip, 5,335,242, Cl. 372-95.000.
Dameron, Tony. Shaft drive hydraulic system and isolated hydraulic system. 5,333,452, Cl. 60-484.000.
Dana Corporation: *See*—
Baxter, Ralph W., Jr., 5,334,116, Cl. 475-204.000.
Danfoss A/S: *See*—
Vogler, Jes V.; and Adelhelm, Jurgen W., 5,333,507, Cl. 73-756.000.
Daniels, John J. Radiation shielding apparatus for a radio transmitting device. 5,335,366, Cl. 455-89.000.
Dannheim, Jorg; and Russ, Werner H., to Hoechst AG. Reactive dyestuffs containing a triazinylamino group and one or two groups of the vinylsulfone series. 5,334,709, Cl. 534-618.000.
Dantolan, Harry E. Reciprocating weight exercise device. 5,334,118, Cl. 482-93.000.
Danzer, Gustave J. Jibe controller. 5,333,567, Cl. 114-102.000.
Darcy, John J., III: *See*—
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.
Darron, Ward K.: *See*—
Pond, Karen L.; Chitty, Alton L.; Oehlbeck, Douglas L.; Henry, Marian S.; and Darron, Ward K., 5,334,496, Cl. 430-569.000.
Das, Gladwin S., to University of Minnesota, Regents of the. Septal defect closure device. 5,334,217, Cl. 606-213.000.
Dautremont-Smith, William C.; Feldman, Leonard C.; Kalish, Rafael; Katz, Avishay; Miller, Barry; and Moriya, Netzer, to AT&T Bell Laboratories. Metallized paths on diamond surfaces. 5,334,306, Cl. 205-131.000.
Davey, Mark J.; and Goodrich, Michael R., to Senior Engineering Investments, B.V. Tube attachment clamp system. 5,333,917, Cl. 285-205.000.
Davidge, Ronald V.; McClurg, Todd A.; Neer, Jay H.; Nelson, Richard J.; and Noschese, Rocco J., to International Business Machines Corp. High density connector with sliding actuator. 5,334,038, Cl. 439-267.000.
Davis, Joanna F.: *See*—
Tour, James M.; Stephens, Eric; and Davis, Joanna F., 5,334,668, Cl. 525-416.000.
Davis, Phillip. Vehicle parking boot. 5,333,477, Cl. 70-226.000.
Davis, Richard C.; and Domin, Terrance L., to Ballard Medical Products. Collapsible bottle. 5,333,761, Cl. 222-212.000.
Davis, Ronald T. Model aircraft corrugated paper board airfoil and method of making same. 5,334,068, Cl. 446-34.000.
Davison, Roger A.: *See*—
Bruno, Edward C.; and Davison, Roger A., 5,334,127, Cl. 493-194.000.
Dawson, Arthur W.: *See*—
Burgener, JoAnne M.; and Dawson, Arthur W., 5,334,811, Cl. 200-302.300.
Dawson, John G., Jr.: *See*—
Showalter, Michael S.; Dawson, John G., Jr.; and Gusky, Frank J., 5,333,841, Cl. 266-51.000.
Day, Melanie A.; Kaschak, Ronald A.; and Schubert, Steven A., to International Business Machines, Inc. Product formed by method of controlling resistivity of plated metal. 5,334,461, Cl. 428-610.000.
Day, Richard L.: *See*—
Jensen, Roderick J.; Day, Richard L.; and Gerber, Edwin M., 5,334,093, Cl. 460-83.000.
Dayco Products, Inc.: *See*—
Cole, Richard W.; and Bishop, Clinton L., 5,334,122, Cl. 482-130.000.
Gardner, David E.; and Novak, David B., 5,334,110, Cl. 474-135.000.
White, Jack D., Jr., 5,334,107, Cl. 474-238.000.
DCE Voice Processing Limited: *See*—
Millar, David J.; Greenhalgh, Stephen J.; and Gregory, Richard P., 5,335,275, Cl. 380-4.000.
DeAguiar, John R.: *See*—
Larkin, Ross M.; and DeAguiar, John R., 5,335,296, Cl. 382-47.000.
Dean, James L.; Seto, Rodney K.; and Kovit, Sheldon L., to BHP Petroleum Pty Ltd.; and FSSL, Incorporated. ROV installable junction plate and method. 5,333,691, Cl. 166-341.000.
Dean, Patrick D.; and Sabbah, Abbas T., to Chrysler Corporation. Vehicle instrument panel lamps, pulse width dimmer system therefor. 5,334,914, Cl. 315-291.000.
de Barochez, Bruno H.: *See*—
Cuine, Alain; de Barochez, Bruno H.; and Guez, David, 5,334,392, Cl. 424-468.000.
Debbouz, Amar: *See*—
Donnelly, Brendan J.; Debbouz, Amar; and Hagen, Kevin R., 5,334,407, Cl. 426-618.000.
De Castro Netro, Edilberto A.: *See*—
Ember, George; De Castro Netro, Edilberto A.; and De Lacerda, Rogerio F., 5,334,771, Cl. 568-573.000.
DeCicco, Thomas J.: *See*—
Gabrius, Algimantas J.; and DeCicco, Thomas J., 5,334,037, Cl. 439-118.000.
Decker, Martin J., to Westinghouse Electric Corp. Method and system for sharpening impulse response in a synthetic aperture radar. 5,334,980, Cl. 342-25.000.
De Deken, Jacques: *See*—
Richard, Michael A.; De Deken, Jacques; and Yee, David K., 5,334,790, Cl. 585-271.000.
Deere & Company: *See*—
Jensen, Roderick J.; Day, Richard L.; and Gerber, Edwin M., 5,334,093, Cl. 460-83.000.
Deering, Robert S., to Lancer Corporation. Modular dispensing tower. 5,333,759, Cl. 222-129.100.
deFraine, Paul J.: *See*—
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.
DeFrank, Michael, to T-Systems International, Inc. Drip irrigation hose with pressure compensation and method for its manufacture. 5,333,793, Cl. 239-533.100.
Degardin, Daniel: *See*—
Charpentier, Dominique; DeGaugue, Pierre; Degardin, Daniel; and Baudet, Jacques, 5,335,006, Cl. 348-82.000.
DeGaugue, Pierre: *See*—
Charpentier, Dominique; DeGaugue, Pierre; Degardin, Daniel; and Baudet, Jacques, 5,335,006, Cl. 348-82.000.
Degussa Aktiengesellschaft: *See*—
Haas, Thomas; Wiegand, Norbert; and Arntz, Dietrich, 5,334,778, Cl. 568-862.000.
Dehne, Heinz-Wilhelm: *See*—
Scherkenbeck, Jurgen; Himmler, Thomas; Hagemann, Hermann; Dutzmann, Stefan; Dehne, Heinz-Wilhelm; and Hanssler, Gerd, 5,334,608, Cl. 514-383.000.
Dekker, Don L.; and Hasbrouck, Robert R., to Koch Materials Company. Compacting apparatus. 5,334,005, Cl. 425-188.000.
Dekker, Jan: *See*—
Ruyter, Herman P.; Hortulanus, Anton; and Dekker, Jan, 5,334,445, Cl. 428-284.000.
De Lacerda, Rogerio F.: *See*—
Ember, George; De Castro Netro, Edilberto A.; and De Lacerda, Rogerio F., 5,334,771, Cl. 568-573.000.
Del Bue, Marina; Cosmina, Paola; Franchi, Elisabetta; and Grandi, Guido, to Eniricerche S.p.A. Plasmid vector for expression in bacillus and used for cloning the structural gene which codes for the human growth hormone and a method of producing the hormone. 5,334,531, Cl. 435-252.310.
Delco Electronics Corp.: *See*—
Myers, Bruce A.; Isenberg, John K.; Coapman, Christine R.; and Blanton, James A., 5,334,422, Cl. 427-552.000.
DelGiacco, Gerard R.: *See*—
Matkovich, Vlado I.; Bormann, Thomas J.; and DelGiacco, Gerard R., 5,334,315, Cl. 210-641.000.
Del Giudice, Luciano: *See*—
Bastiolo, Catia; Bellotti, Vittorio; Del Giudice, Luciano; and Lombi, Roberto, 5,334,634, Cl. 524-47.000.
Delineate: *See*—
Tickner, Ernest G.; Short, Robert E.; and Rammler, David H., 5,333,613, Cl. 128-662.020.
Dell USA, L.P.: *See*—
Matteson, Keith D.; and Longwell, Michael L., 5,335,234, Cl. 371-40.100.
Del Monte, Berardino, to United Technologies Corporation. Aircraft landing gear swivel locking pin having automatic release and reengage. 5,333,816, Cl. 244-50.000.
Delot, Jose, to Delot Process, S.A. Electromagnetic valve for controlling the flow of a fluid in a pipe. 5,333,646, Cl. 137-827.000.
Delot Process, S.A.: *See*—
Delot, Jose, 5,333,646, Cl. 137-827.000.
Del Rossi, Kenneth J.; Dovedytis, David J.; Esteves, David J.; Harandi, Mohsen N.; and Huss, Albin, Jr., to Mobil Oil Corporation. Combined paraffin isomerization/ring opening process for c5+naphtha. 5,334,792, Cl. 585-314.000.
Delta F. Corporation: *See*—
Gallagher, John P., deceased; and Masi, Robert J., 5,334,295, Cl. 204-153.160.
de Maillard, Etienne. Method and device for applying microwaves to products, especially for drying, reheating and defreezing said products. 5,334,403, Cl. 426-241.000.
DeMaio, James B.: *See*—
Stout, James T.; and DeMaio, James B., 5,333,734, Cl. 206-427.000.
Demartini, Robert J., to Drainage Products, Inc. Laminar flow generation devices. 5,333,417, Cl. 52-11.000.
Demiddeleer, Leopold; Kempeneer, Yvan; and Desvachez, Laurence, to Solvay (Societe Anonyme). Catalytic solid for use in the polymerization of alpha-olefines, process for preparing it and process for the polymerization of alpha-olefines in the presence of a catalyst system containing this solid. 5,334,568, Cl. 502-119.000.
Dempsey, Peter A. A.: *See*—
Bottiglieri, Michael P.; and Dempsey, Peter A. A., 5,335,228, Cl. 370-100.100.
Den-Mat Corporation: *See*—
Ibsen, Robert L.; Pacropis, Donald R.; and Glace, William R., 5,334,625, Cl. 523-115.000.
DeNatale, Jeffrey F.: *See*—
Harker, Alan B.; DeNatale, Jeffrey F.; Hood, Patrick J.; and Flintoff, John F., 5,334,342, Cl. 264-317.000.
Denis, Gerard; and La Barre, Paul, to Sidel. Equipment for the manufacture of polyethylene terephthalate containers. 5,334,007, Cl. 425-526.000.
Dennis, Douglas E., to Center for Innovative Technology. Production of poly-beta-hydroxybutyrate in transformed *escherichia coli*. 5,334,520, Cl. 435-136.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Dennis, Richard K.; Myers, Wade D.; and Riddle, James A., to Die Tech, Inc. Substrate lead strip mounting machine and method. 5,333,375, Cl. 29-827.000.

Dennison, Charles H.: *See—*
Manning, Monte; and Dennison, Charles H., 5,334,862, Cl. 257-67.000.

Dent, Paul W.; and Chennakeshu, Sandeep, to Ericsson GE Mobile Communications Inc. Method and apparatus for bidirectional demodulation of digitally modulated signals. 5,335,250, Cl. 375-10.000.

Denzer, Eric. Condom with transdermal vasodilator. 5,333,621, Cl. 128-844.000.

Denzinger, Walter: *See—*
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,334,287, Cl. 162-175.000.

Depew, Timothy W.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Derian, Paul-Joel; and Guerin, Gilles, to Rhone-Poulenc Chimie. Pyrethroid microemulsion compositions and method for controlling insects therewith. 5,334,585, Cl. 514-74.000.

de Rover, Jan, to Machinefabriek en Handelmaatschappij Winel B.V. Panel for closing an opening, and clip system for use as a part thereof. 5,333,920, Cl. 292-48.000.

Derr, Randall L.: *See—*
Jensen, Eric L.; Belvo, Rachel J.; and Derr, Randall L., 5,333,708, Cl. 188-322.140.

Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., to Clover Consolidated, Ltd. Ionically covalently crosslinked and crosslinkable biocompatible encapsulation compositions and methods. 5,334,640, Cl. 524-56.000.

Deschenes, Charles L.: *See—*
Benoit, James C.; and Deschenes, Charles L., 5,333,822, Cl. 248-71.000.

DeShazo, Thomas R., Jr., to Harris Corporation. Overvoltage sensor with hysteresis. 5,335,132, Cl. 361-18.000.

Desilets, Denis; Martin, Trevor I.; Mayo, James D.; Bluhm, Terry L.; and Hsiao, Cheng-Kuo, to Xerox Corporation. Oxytitanium phthalocyanine imaging members and processes thereof. 5,334,478, Cl. 430-135.000.

Desmur, Henri; and Duret, Robert, to Thomson Tubes Electroniques. Cooling device for microwave tube having heat transfer through contacting surfaces. 5,334,907, Cl. 313-36.000.

Desmurs, Jean-Roger; and Jouve, Isabelle, to Rhone-Poulenc Chimie. Process for preparing chloranil. 5,334,735, Cl. 552-308.000.

Desvachez, Laurence: *See—*
Demiddeleer, Leopold; Kempeneer, Yvan; and Desvachez, Laurence, 5,334,568, Cl. 502-119.000.

Deutsche Aerospace AG: *See—*
Sardanowsky, Wladimir, 5,333,815, Cl. 244-3.160.

Deutsche Carbone AG: *See—*
Neel, Jean M. L.; Nguyen, Quang T.; and Bruschke, Hartmut, 5,334,314, Cl. 210-640.000.

Deutsche Thomson-Brandt GmbH: *See—*
Koblitz, Rudolf; and Lenz, Kuno, 5,334,954, Cl. 331-20.000.

Devillet, Serge: *See—*
Stomp, Hubert; Kremer, Andre; Fries, Daniel; Reichert, Marc; and Devillet, Serge, 5,333,842, Cl. 266-226.000.

Devine, Edward B.; and Smith, Richard W., to Andrew Corporation. Connector for coaxial cable having corrugated outer conductor and method of attachment. 5,334,051, Cl. 439-583.000.

DeWolff, Darryl D.: *See—*
Boutet, John C.; Bubie, Walter C.; DeWolff, Darryl D.; and Yaskow, Jeffrey J., 5,334,852, Cl. 250-589.000.

Dhanoa, Daljit S.: *See—*
Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., 5,334,598, Cl. 514-303.000.

Die Tech, Inc.: *See—*
Dennis, Richard K.; Myers, Wade D.; and Riddle, James A., 5,333,375, Cl. 29-827.000.

Dieken, Alan P.; Fischer, David J.; Platt, Jonathan C.; and Sondermann, William L., to Minnesota Mining and Manufacturing Company. Electrical safety system for electrical device. 5,334,223, Cl. 607-31.000.

Diekmann, Jorg: *See—*
Conrad, Horst; Diekmann, Jorg; Wilmes, Manfred; and Hanning, Walter, 5,334,054, Cl. 439-716.000.

Diemat, Inc.: *See—*
Dietz, Raymond L.; and Peck, David M., 5,334,558, Cl. 501-41.000.

Dieterich, Charles B., to RCA Thomson Licensing Corporation. IIR ghost cancelling system with reduction of filter instability. 5,335,020, Cl. 348-614.000.

Dietz, Raymond L.; and Peck, David M., to Diemat, Inc. Low temperature glass with improved thermal stress properties and method of use. 5,334,558, Cl. 501-41.000.

DiFrancesco, Louis, to Particle Interconnect, Inc. Particle enhanced joining of metal surfaces. 5,334,809, Cl. 200-262.000.

Digital Equipment Corporation: *See—*
Arnott, Randy M., 5,335,235, Cl. 371-49.200.
Dvorak, George J., Jr.; and Wolfe, Lee M., 5,334,043, Cl. 439-482.000.
Gagliardo, Michael A.; Lynch, John J.; and Tessari, James E., 5,335,337, Cl. 395-500.000.
Lampson, Butler; and Lomet, David B., 5,335,343, Cl. 395-575.000
LoCicero, Rai-Ann; Morgan, Stuart; Romm, Michael; Bantly, Matthew; and Mangan, Edward O., 5,333,744, Cl. 211-87.000.
Williams, Richard A., 5,335,226, Cl. 370-85.200.

Dimen, Michael. Tension gauge. 5,333,509, Cl. 73-862.391.

Ding, Yiwei: *See—*
Shinar, Joseph; Swanson, Leland S.; Lu, Feng; and Ding, Yiwei, 5,334,539, Cl. 437-1.000.

Dinh, Khanh, to Heat Pipe Technology, Inc. Booster heat pipe for air-conditioning systems. 5,333,470, Cl. 62-333.000.

DiNinno, Frank; and Guthikonda, Ravindra N., to Merck & Co., Inc. MRSA active 2-phenyl-carbapenems. 5,334,590, Cl. 514-210.000.

Dinsmoor, John C., III, to Jay Medical, Ltd. Adjustable cover and seating system for a wheelchair. 5,333,921, Cl. 297-219.100.

DiPaola, Donald A., to AlliedSignal Inc. Seat belt system providing increased occupant mobility. 5,333,935, Cl. 297-471.000.

Director of National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries: *See—*
Isobe, Seiichiro; Noguchi, Akinori; and Uemura, Kunihiko, 5,333,556, Cl. 100-93.00S.

DiSilvestro, Maurizio; and Giovannini, Flavio, to Weber S.r.l. Manifold for a system for supplying fuel to an internal-combustion engine. 5,333,587, Cl. 123-456.000.

Disposable Waste Systems, Inc.: *See—*
Chambers, Joseph W., Sr.; and Fennessy, Craig J., 5,333,801, Cl. 241-46.020.

Dividella AG: *See—*
Specker, Erich, 5,333,778, Cl. 229-120.240.

DiVito, Anthony J. Ball-driving device. 5,333,867, Cl. 273-129.00M.

Dobbrunz, Kurt A. Center locking spacing bolt. 5,333,976, Cl. 411-263.000.

Dobkin, Robert C.; Nelson, Carl T.; and O'Neill, Dennis P., to Linear Technology Corporation. Frequency compensation circuit for low dropout regulators. 5,334,928, Cl. 323-280.000.

Dobreski, David V.; Eichbauer, George N.; and Leach, Michael E., to Mobil Oil Corporation. Multilayer coextruded linear low density polyethylene stretch wrap films. 5,334,428, Cl. 428-34.900.

Dr. Alois Stankewicz GmbH: *See—*
Kittel, Christoph; Walendy, Hans; Burak, Gerhard; and Hoffmann, Manfred, 5,334,338, Cl. 264-46.400.

Dodds, Graeme C.; and McNeil, Peter G. Wireless irrigation system. 5,333,785, Cl. 239-69.000.

Doehner, Robert F., Jr.; Ladner, David W.; and Finn, John M., to American Cyanamid Company. 5 (and/or 6) substituted 2-(2-imidazolin-2-yl)nicotinic acids, esters and salts, useful as herbicidal agents and novel intermediates for the preparation of said nicotinic acids, esters and salts. 5,334,576, Cl. 504-128.000.

Doering, Robert R.: *See—*
Shen, Bingn W.; Richardson, William F.; and Doering, Robert R., 5,334,548, Cl. 437-52.000.

Doerre, George W.; Ogura, Seiki; and Rovedo, Nivo, to International Business Machines Corporation. Method of forming thin silicon mesas having uniform thickness. 5,334,281, Cl. 156-636.000.

Doi, Yoshitada: *See—*
Fukano, Yoshihiro; Makado, Shoichi; and Doi, Yoshitada, 5,333,647, Cl. 137-884.000.

Dolgin, Benjamin P., to United States of America, National Aeronautics and Space Administration. Superconductive material and magnetic field for damping and levitation support and damping of cryogenic instruments. 5,334,965, Cl. 335-216.000.

Domin, Terrance L.: *See—*
Davis, Richard C.; and Domin, Terrance L., 5,333,761, Cl. 222-212.000.

Donald, Robert J.: *See—*
Swartzmiller, Steven B.; Donald, Robert J.; and Bonekamp, Jeffrey E., 5,334,657, Cl. 525-71.000.

Doniat, Denis: *See—*
Bronoel, Guy; Potier, Thierry; Tassin, Noelle; Bugnet, Bernard; Doniat, Denis; and Rouget, Robert, 5,334,465, Cl. 429-222.000.

Donnelly, Brendan J.; Debbouz, Amar; and Hagen, Kevin R., to North Dakota State University Research Foundation. Couscous. 5,334,407, Cl. 426-618.000.

Dooms, Philip: *See—*
Van Havenbergh, Jan; Dooms, Philip; Aertbelien, Jozef; and Blum, Harald, 5,334,842, Cl. 250-483.100.

Dorfman, Mitchel R.; Garcia, Jorge E.; and Kushner, Burton A., to Perkin-Elmer Corporation, The. Thermal spray method for coating cylinder bores for internal combustion engines. 5,334,235, Cl. 75-255.000.

Dorney, Keith R.; and Dorney, Robert C., to Memorybank, Inc. Information management system. 5,333,908, Cl. 283-38.000.

Dorney, Robert C.: *See—*
Dorney, Keith R.; and Dorney, Robert C., 5,333,908, Cl. 283-38.000.

Dorri, Bizham: *See—*
Laskaris, Evangelo T.; Herd, Kenneth G.; and Dorri, Bizham, 5,333,464, Cl. 62-51.100.

Doty, F. David; Spitzmesser, Jonathan B.; and Wilson, David G., to Doty Scientific, Inc. High temperature NMR sample spinner. 5,333,994, Cl. 415-202.000.

Doty Scientific, Inc.: *See—*
Doty, F. David; Spitzmesser, Jonathan B.; and Wilson, David G., 5,333,994, Cl. 415-202.000.

Douglas, Patrick J. Foldable framework for belt conveyor. 5,333,725, Cl. 198-632.000.

Douglas, Terry L. Voice-actuated, speaker-dependent control system for hospital bed. 5,335,313, Cl. 395-2.840.

Douty, Brent D.: *See—*
Josef, Kurt A.; Bacon, Edward R.; Estep, Kimberly G.; Illig, Carl R.; and Douty, Brent D., 5,334,370, Cl. 424-5.000.

Dovedytis, David J.: *See—*
Del Rossi, Kenneth J.; Dovedytis, David J.; Esteves, David J.; Harandi, Mohsen N.; and Huss, Albin, Jr., 5,334,792, Cl. 585-314.000.

Dover Corporation: *See—*
Rzesutock, Michael P.; and Clevenger, Neal A., 5,333,653, Cl. 141-1.000.

Dow Chemical Company, The: *See—*
Anderson, Kenneth W.; Haynes, Deborah I.; and Whiteside, Ross C., Jr., 5,334,676, Cl. 525-524.000.
Benton, James H.; Broodo, Jack; Ivy, John B.; Lessner, Kirk A.; and Fox, Ellroy G., 5,334,357, Cl. 422-197.000.
Hyman, Larry N., 5,334,243, Cl. 106-794.000.
Shankar, Ravi B.; Pews, R. Garth; and Romer, Duane R., 5,334,603, Cl. 514-363.000.
Swartzmiller, Steven B.; Donald, Robert J.; and Bonekamp, Jeffrey E., 5,334,657, Cl. 525-71.000.
Washington, Samuel J.; and Grant, Tony F., 5,334,763, Cl. 564-475.000.
Zabrocki, Vincent S.; and Kelch, Robert H., 5,334,450, Cl. 428-332.000.

Dow Corning Corporation: *See—*
Caporiccio, Gerardo; D'Agostino, Riccardo; and Favia, Pietro, 5,334,454, Cl. 428-412.000.

Dow Corning Toray Silicone Co., Ltd.: *See—*
Kennoki, Masakado; Ona, Isao; and Ozaki, Masaru, 5,334,653, Cl. 524-714.000.

Downs, Roland J.: *See—*
Meldner, Heiner; and Downs, Roland J., 5,333,568, Cl. 114-103.000.

Doy, Ralph J.: *See—*
Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., 5,334,784, Cl. 570-165.000.

Doyle, Robert G.: *See—*
Clarke, Norman B.; Cook, Lawrence G.; Doyle, Robert G.; and Renner, Michael, 5,334,931, Cl. 324-757.000.

Draber, Wilfried; and Bischoff, Hilmar, to Bayer Aktiengesellschaft. α-aryl-α-hydroxy-β-imidazolinyl-propionamides. 5,334,610, Cl. 514-401.000.

Drach, William C.: *See—*
Babbitt, Richard W.; Koscica, Thomas E.; and Drach, William C., 5,334,958, Cl. 333-156.000.

Dragerwerk AG: *See—*
Schnoor, Christian; Thometschek, Roderich; and Rittner, Wolfgang, 5,333,748, Cl. 220-343.000.

Dragerwerk Aktiengesellschaft: *See—*
Heinze, Jurgen; and Synowczyk, Andreas W., 5,334,351, Cl. 422-90.000.

Drainage Products, Inc.: *See—*
Demartini, Robert J., 5,333,417, Cl. 52-11.000.

Drews, Stephen F.; and Tischer, Leo A., to B. F. Goodrich Company, The. Emulsion polymers for use as a urea formaldehyde resin modifier. 5,334,648, Cl. 524-512.000.

Dreyer, Adolf, to Robert Bosch GmbH. Circuit arrangement to detect knocking. 5,333,489, Cl. 73-35.000.

Dril-Quip, Inc.: *See—*
Watkins, Bruce J., 5,333,911, Cl. 285-18.000.

DSI of Hawaii, Inc.: *See—*
Chong, Malcolm K. L., 5,335,169, Cl. 364-408.000.

DSM N.V.: *See—*
van Hinsberg, Johannes G.; van de Moesdijk, Cornelis G. M.; Spaargaren, Ivo; and Sielcken, Otto E., 5,334,768, Cl. 568-341.000.

Dubinsky, Emanuel. Extension pole having stabilizer means for securely attaching the extension pole to the main pole. 5,333,824, Cl. 248-159.000.

DuBois, Neil J.; and Polhemus, Stanley J., to United States of America, Navy. Damped linkage for torpedo steering actuator. 5,333,570, Cl. 114-144.00R.

DuBois, Thomas C.: *See—*
Moutafis, Timothy E.; Elton, Richard K.; DuBois, Thomas C.; and MacMore, Bruce N., 5,333,620, Cl. 128-772.000.

Ducatel, Francoise: *See—*
Duperray, Grard; Audry, Claudette; and Ducatel, Francoise, 5,334,557, Cl. 505-500.000.

Dufresne, Joel R.: *See—*
Bedingham, William; Dufresne, Joel R.; and Wirt, David F., 5,333,609, Cl. 128-632.000.

Dugan, John P.; Hayes, James N.; and Elliott, Steve M., to Spectra-Physics Laserplane, Inc. Technique and apparatus using a moveable weak lens. 5,335,244, Cl. 372-101.000.

Duke University: *See—*
Bonaventura, Joseph; Brouwer, Marius; and Cashon, Robert E., 5,334,705, Cl. 530-385.000.
Gerhart, Donald J., 5,334,389, Cl. 424-409.000.

Dunaenko, Charles, Jr.; Pawlenko, Ivan; and Samson, Larry P., to AT&T Bell Laboratories. Wire stripper. 5,333,521, Cl. 81-9.510.

Duncan, Richard N. Carding machine having a fine-fiber brush. 5,333,357, Cl. 19-99.000.

Dunlop, Donald L.; and Ervin, Douglas R., to Solar Turbines Incorporated. Method and apparatus for flattening portions of a corrugated plate. 5,333,482, Cl. 72-307.000.

Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., to International Business Machines Corporation. Methods for recording and reading data from a record member having data in any one of a plurality of block formats including determining length of records being transferred. 5,335,328, Cl. 395-275.000.

Dunn, Philip: *See—*
Nichols, Michael P.; and Dunn, Philip, 5,333,343, Cl. 15-106.000.

Duperray, Grard; Audry, Claudette; and Ducatel, Francoise, to Alcatel Alsthom Compagnie Generale d'Electricite. Method of preparing $YBa_2Cu_3O_7$ powder for forming by drawing-lamination. 5,334,557, Cl. 505-500.000.

Du Pont de Nemours, E. I., and Company: *See—*
Cheng, Lap K., 5,334,365, Cl. 423-596.000.
Felix, Vinci M.; Gumprecht, William H.; and Mahler, Barry A., 5,334,787, Cl. 570-169.000.
Irwin, Robert S., 5,334,693, Cl. 528-185.000.
Pepin, John G., 5,334,411, Cl. 427-79.000.
Resnick, Paul R., 5,334,731, Cl. 549-455.000.
Zafiroglu, Dimitri P., 5,334,437, Cl. 428-219.000.

Duputs, Jacques: *See—*
Paliard, Maurice; and Duputs, Jacques, 5,333,798, Cl. 241-24.000.

Duraline: *See—*
Savoca, Paul F., 5,335,160, Cl. 362-431.000.

Durand, Dominique, to Akzo N.V. Powder coating composition containing a resin, a curing agent and zinc. 5,334,631, Cl. 523-459.000.

Duret, Robert: *See—*
Desmur, Henri; and Duret, Robert, 5,334,907, Cl. 313-36.000.

Durham, Larry D.: *See—*
Budny, Thomas F.; Schenna, Anthony G.; and Durham, Larry D., 5,333,732, Cl. 206-316.100.

Durham, Marcus O.: *See—*
Brackett, Anne W.; Durham, Marcus O.; Perkins, Lynn K.; and Thoman, Gregory E., 5,333,498, Cl. 73-304.00R.

Dussault, James R.: *See—*
Gelardi, Paul J.; Capotosto, David A.; Dussault, James R.; and Capotostop, Christopher C., 5,333,381, Cl. 30-2.000.

Dutzmann, Stefan: *See—*
Scherkenbeck, Jurgen; Himmler, Thomas; Hagemann, Hermann; Dutzmann, Stefan; Dehne, Heinz-Wilhelm; and Hanssler, Gerd, 5,334,608, Cl. 514-383.000.

Dvorak, George J., Jr.; and Wolfe, Lee M., to Digital Equipment Corporation. Test fixture for electronic components. 5,334,043, Cl. 439-482.000.

Dynacraft Golf Products, Inc.: *See—*
Wishon, Thomas W., 5,333,871, Cl. 273-169.000.

E-Z-Trail, Inc.: *See—*
Kuhns, Abe B., 5,333,904, Cl. 280-789.000.

Eagle Vision, Inc.: *See—*
Freeman, Jerre M., 5,334,137, Cl. 604-8.000.

East Japan Railway Company: *See—*
Matsui, Kazumi; Matsuoka, Kouichi; and Nakagawa, Shigeru, 5,333,553, Cl. 104-290.000.

Eastman Chemical Company: *See—*
Gose, William C.; and Hyche, Kenneth W., 5,334,644, Cl. 524-487.000.
Kuo, Chung M.; Curtis, Larry G.; and Lucas, Paul L., 5,334,638, Cl. 524-40.000.
Sumner, Charles E., Jr.; Gustafson, Bruce L.; Arnold, Ernest W., III; Fugate, Eric J.; and Fuller, Dewey W., Jr., 5,334,754, Cl. 562-416.000.

Eastman Kodak Company: *See—*
Baker, Julie; Gray, Colin J.; and Barnett, Anthony M., 5,334,483, Cl. 430-207.000.
Begley, William J.; Chen, Teh H.; and Bailey, David S., 5,334,490, Cl. 430-382.000.
Black, Donald L.; and Wilson, Robert D., 5,334,495, Cl. 430-567.000.
Blackman, Robert J.; Greene, William J.; and Landis, Newton C. M., 5,335,038, Cl. 354-319.000.
Blanding, Douglass L., 5,333,513, Cl. 74-424.80A.
Boutet, John C.; Bubie, Walter C.; DeWolff, Darryl D.; and Yaskow, Jeffrey J., 5,334,852, Cl. 250-589.000.
Bugner, Douglas E.; Hays, David S.; Kaeding, Jeanne E.; and Spinelli, Steven J., 5,334,477, Cl. 430-126.000.
Burdick, Brent A.; and Ekeze, Tobias D., 5,334,499, Cl. 435-6.000.
Burns, Donald W., Jr., 5,333,805, Cl. 242-160.300.
Columbus, Richard L.; and Palmer, Harvey J., 5,334,247, Cl. 118-411.000.
Foster, David G.; Stephen, Keith H.; and Craver, Mary E., 5,334,491, Cl. 430-393.000.
Fox, Myron E., 5,335,041, Cl. 354-402.000.
Good, Walter F.; Gur, David; Owen, James F.; Whiting, Bruce R.; Modney, David L.; and Weil, Richard, 5,334,851, Cl. 250-582.000.
Herczeg, Karen L.; Mcvay, David M.; Phelps, Daniel J.; and Bell, Kimberley C., 5,335,239, Cl. 372-38.000.
Kaplan, Martin C.; Erck, Gary L.; and Federico, Richard J., 5,335,158, Cl. 362-303.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Kuo, Yeong-Jen, 5,334,779, Cl. 568-864.000.
Lewis, Alan E.; and Ruben, Paul L., 5,335,034, Cl. 354-219.000.
Muller, Bruce R.; Hall, Douglas O.; Sherburne, David G.; and Glanville, Thomas W., 5,335,039, Cl. 354-324.000.
Noonan, John M.; and Burberry, Mitchell S., 5,334,575, Cl. 503-227.000.
Palum, Russell J., 5,335,091, Cl. 358-474.000.
Pond, Karen L.; Chitty, Alton L.; Oehlbeck, Douglas L.; Henry, Marian S.; and Darron, Ward K., 5,334,496, Cl. 430-569.000.
Rossi, Louis J.; and Chavan, Sunita P., 5,334,435, Cl. 428-195.000.
Ruben, Paul L.; and Burnham, William L., 5,335,033, Cl. 354-219.000.
Snyder, Brian A.; Contestable, Paul B.; Abrams, Catherine T.; and Grogan, Elizabeth A., 5,334,503, Cl. 435-7.320.
Sutton, James E.; Gasper, John; Tsaur, Allen K.; and Tarn, Ann, 5,334,469, Cl. 430-21.000.
Vanier, Noel R.; and Brust, David P., 5,334,572, Cl. 503-227.000.

Ebara Corporation: *See—*
Kato, Hiroyuki, 5,333,991, Cl. 415-112.000.

Eberhart, Gerald E.: *See—*
Corzine, Alan J.; and Eberhart, Gerald E., 5,333,552, Cl. 102-509.000.

Ebersbach, Peter: *See—*
Breyer, Karl-Hermann; Aubele, Eugen; Grupp, Gunter; Ebersbach, Peter; and Wiedmann, Wolfgang, 5,333,386, Cl. 33-1.00M.

Ebetino, Frank H.; and Benedict, James J., to Procter & Gample Pharmaceuticals, Inc. Heterocycle-substituted diphosphonate compounds, pharmaceutical compositions, and methods of treating abnormal calcium and phosphate metabolism. 5,334,586, Cl. 514-85.000.

Eby, Ronald: *See—*
Pillai, Subramonia; and Eby, Ronald, 5,334,379, Cl. 424-85.200.

Eccleston, Larry: *See—*
Austin, Barry G.; Albright, Marcia S.; and Eccleston, Larry, 5,333,948, Cl. 303-24.100.

Eckert, Michael L.: *See—*
Bullock, Roddy M.; Cedrone, Alfredo L.; Eckert, Michael L.; and Vana, James G., Jr., 5,334,271, Cl. 156-51.000.

Eckert, Ronald C. Dental prophylaxis cup. 5,334,020, Cl. 433-166.000.

Ecolite Manufacturing Company, Ltd.: *See—*
Caferro, Ronald N., 5,335,156, Cl. 362-291.000.

ECP-Enichem Polymeres France S.A.: *See—*
Audureau, Joel; and Crenna, Vincent, 5,334,663, Cl. 525-194.000.

Edakubo, Hiroo; Ushiro, Tatsuzo; Nagatsuka, Osamu; and Kobayashi, Junji, to Canon Kabushiki Kaisha. Interchangeable compact tape cassette. 5,335,129, Cl. 360-132.000.

Eden, Edward J., to Barker Manufacturing Co., Inc. Rack and gear modular room extender. 5,333,420, Cl. 52-67.000.

Edie, Danny D.; and Klett, James W., to Clemson University. Process for coating carbon fibers with pitch and composites made therefrom. 5,334,414, Cl. 427-189.000.

Edmundson, Donald J.; and Sheppard, Sherman H. Commercial bleaching apparatus. 5,333,475, Cl. 68-27.000.

Eduard Frieb Gesellschaft m.b.H: *See—*
Frieb, Viktor, 5,333,344, Cl. 15-146.000.

Edwards, Gary C.; and Schaefer, Ronald H., to Temro Division, Budd Canada Inc. Modular high density electric heating element arrangement for an air flow heater. 5,334,818, Cl. 219-539.000.

Edwards, Martin J., to U.S. Philips Corporation. Multi-standard video matrix display apparatus and its method of operation. 5,335,023, Cl. [illegible]

Edwards, Philip N.; and Large, Michael S., to Zeneca Ltd.; and Zeneca Pharma SA. Hydroxylamine derivatives. 5,334,614, Cl. 514-459.000.

Edwards, Wallace L.; McMillen, Kenneth R.; and Briggs, Edward L., to Vermeer Manufacturing Company. Apparatus for driving transverse shafts of a baler. 5,333,516, Cl. 74-665.0GC.

Eger, Heinz, to MHZ Sonnenschutztechnik GmbH. Cassette-type awning. 5,333,663, Cl. 160-22.000.

Eichbauer, George N.: *See—*
Dobreski, David V.; Eichbauer, George N.; and Leach, Michael E., 5,334,428, Cl. 428-34.900.

Eichelberger, Donald P.: *See—*
Garg, Diwakar; Berger, Kerry R.; and Eichelberger, Donald P., 5,333,776, Cl. 228-219.000.

Eichner, Wolfram: *See—*
Tackney, Charles; Hoppe, Jurgen; Eichner, Wolfram; and Weich, Herbert, 5,334,532, Cl. 435-252.330.

Eickhoff, Jon H., to Ronningen Research & Development Company. Side rail connector for a platform assembly. 5,333,557, Cl. 108-65.000.

Eiju, Tomoaki; Matsuda, Kiyofumi; Barnes, Thomas H.; and Kokaji, Shigeru, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Time series signal multichannel frequency analyzer using liquid crystal panel. 5,335,058, Cl. 356-28.500.

Ejiri, Koichi: *See—*
Cullen, John F.; and Ejiri, Koichi, 5,335,290, Cl. 382-9.000.

EKC Technology, Inc.: *See—*
Lee, Wai M., 5,334,332, Cl. 252-548.000.

Ekeze, Tobias D.: *See—*
Burdick, Brent A.; and Ekeze, Tobias D., 5,334,499, Cl. 435-6.000.

Ekl, Randy L.: *See—*
Sherburne, Timothy J.; Ness-Cohn, David J.; and Ekl, Randy L., 5,335,358, Cl. 455-53.100.

Eklund, Robert H., to Texas Instruments Incorporated. BiCMOS process that supports merged devices. 5,334,549, Cl. 437-59.000.

Elantec, Inc.: *See—*
Rosenthal, Bruce D., 5,334,883, Cl. 307-290.000.

Elberbaum, David, to Elbex Video, Ltd. Method and apparatus for remote synchronous switching of video transmitters. 5,335,014, Cl. 348-159.000.

Elbex Video, Ltd.: *See—*
Elberbaum, David, 5,335,014, Cl. 348-159.000.

El-Boher, Arie: *See—*
Gelfgat, Yuri; El-Boher, Arie; and Branover, Herman, 5,333,672, Cl. 164-468.000.

Eldridge, Ann; and Eldridge, Henry V. Garden marker apparatus. 5,333,391, Cl. 33-760.000.

Eldridge, Henry V.: *See—*
Eldridge, Ann; and Eldridge, Henry V., 5,333,391, Cl. 33-760.000.

Electric Power Research Institute: *See—*
Mohan, Ned; and Peterson, Maximilian R., 5,334,877, Cl. 307-46.000.

Electronic Data Systems Corporation: *See—*
Cooper, John R.; and Sonberg, Kenneth W., 5,335,265, Cl. 379-59.000.

Elf Atochem North America, Inc.: *See—*
Goetz, Frederick J., 5,334,333, Cl. 252-582.000.

Elf Atochem S.A.: *See—*
Cognet, Gilles; Jacquemet, Regis; and Lamblin, Veronique, 5,334,427, Cl. 428-34.500.

Eli Lilly and Company: *See—*
Audia, James E.; Hirsch, Kenneth S.; Jones, Charles D.; Lawhorn, David E.; McQuaid, Loretta A.; and Weigel, Leland O., 5,334,767, Cl. 568-327.000.
Harris, Dale C., 5,334,162, Cl. 604-232.000.
Moder, Kenneth P., 5,334,725, Cl. 548-147.000.

Elin Energieversorgung GmbH: *See—*
Sinhuber, Franz, 5,333,680, Cl. 165-47.000.

Elite Mushroom Company, Inc.: *See—*
Santucci, Vincent J., Sr., 5,333,751, Cl. 220-512.000.

Elitex Usti nad Orlici Usti nad Orlici : *See—*
Kroupa, Petr, 5,333,359, Cl. 19-159.00R.

El-Kareh, Badih: *See—*
Abadeer, Wagdi W.; El-Kareh, Badih; Ellis, Wayne F.; Galbi, Duane E.; Hiltebeitel, Nathan R.; Tonti, William R.; and Watts, Josef S., 5,334,880, Cl. 307-219.000.

Elliott, Steve M.: *See—*
Dugan, John P.; Hayes, James N.; and Elliott, Steve M., 5,335,244, Cl. 372-101.000.

Ellis, Louis G., to Scimed Life Systems, Inc. Intravascular catheter with sleeve and method for use thereof. 5,334,160, Cl. 604-167.000.

Ellis, Paul E., Jr.: *See—*
Shaikh, Shahid N.; Ellis, Paul E., Jr.; and Lyons, James E., 5,334,780, Cl. 568-910.000.

Ellis, Wayne F.: *See—*
Abadeer, Wagdi W.; El-Kareh, Badih; Ellis, Wayne F.; Galbi, Duane E.; Hiltebeitel, Nathan R.; Tonti, William R.; and Watts, Josef S., 5,334,880, Cl. 307-219.000.

Eloranta, Erkki M. Hurdle boom holder. 5,334,119, Cl. 482-16.000.

Elton, Richard K.: *See—*
Moutafis, Timothy E.; Elton, Richard K.; DuBois, Thomas C.; and MacMore, Bruce N., 5,333,620, Cl. 128-772.000.

Ember, George; De Castro Netro, Edilberto A.; and De Lacerda, Rogerio F., to ABB Lummus Crest Inc.; and Nitrocarbono S.A. Peroxidation of secondary carbon in alkanes and cycloalkanes. 5,334,771, Cl. 568-573.000.

Embree, Donald M.: *See—*
Campo, James A.; Anderson, Fred J.; Embree, Donald M.; Hofstetter, Charles J.; and Sloan, Donald I., 5,334,821, Cl. 235-380.000.

EMC Corporation: *See—*
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, 5,335,352, Cl. 395-800.000.

Emi, Shigenori: *See—*
Soya, Yoshihiro; and Emi, Shigenori, 5,334,507, Cl. 435-25.000.

Emmoto, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for and method of measuring beam spot luminescence distribution. 5,334,911, Cl. 315-10.000.

Endo, Isao: *See—*
Inaba, Hideki; Endo, Isao; Nagamune, Teruyuki; and Tachikawa, Susumu, 5,334,497, Cl. 435-3.000.

Endo, Tadao: *See—*
Kaifu, Noriyuki; Saika, Toshihiro; Endo, Tadao; and Shimada, Tetsuya, 5,335,094, Cl. 358-494.000.

Endo, Takeshi: *See—*
Kamino, Toshihide; Sonoda, Junichi; Ogawa, Hirofumi; and Endo, Takeshi, 5,335,140, Cl. 361-608.000.

Endress u. Hauser GmbH u. Co.: *See—*
Hegner, Frank; Schmidt, Elke; Klahn, Thomas; Reimann, Peter; Breitenstein, Heinz; and Messmer, Stephan, 5,334,344, Cl. 420-422.000.

Energia Andina Ltd.: *See—*
Miller, Jorge; and Kling, Miguel, 5,334,777, Cl. 568-859.000.

Enfield, Jeffrey J.; Harmon, William S.; and Beard, McDaniel L., to Guilford Mills, Inc. Method for producing random yarn denier variations on draw warping machines. 5,333,364, Cl. 28-172.200.

Engel Maschinenbau Gesellschaft m.b.H.: *See—*
Urbanek, Otto; and Aumayer, Walter, 5,334,009, Cl. 425-556.000.

Engel, Philippe; and Courant, Alain, to Atochem. Apparatus for continuous production of tetraphosphorus polysulfides. 5,334,360, Cl. 422-230.000.

Engels, Berthold: *See—*
Foerster, Arno; Engels, Berthold; and Hauck, Peter, 5,333,990, Cl. 415-58.400.

English, George P.; and Batson, Nathan, to Key Tronic Corporation. Computer keyboard with electrostatic discharge feature. 5,335,137, Cl. 361-220.000.

Enichem S.p.A.: *See—*
Po', Riccardo; Occhiello, Ernesto; Giannotta, Giorgio; and Garbassi, Fabio, 5,334,343, Cl. 264-328.100.

Enitricerche S.p.A: *See—*
Del Buc, Marina; Cosmina, Paola; Franchi, Elisabetta; and Grandi, Guido, 5,334,531, Cl. 435-252.310.

Enitricherche S.p.A.: *See—*
Roggero, Arnaldo; Pedretti, Ugo; La Mantia, Francesco P.; Citta', Vincenzo; and Lezzi, Alessandro, 5,334,695, Cl. 528-193.000.

Enokita, Ryuzo: *See—*
Kohama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, 5,334,587, Cl. 514-99.000.

Enriquez, Robert: *See—*
Beswick, Duane; and Enriquez, Robert, 5,333,355, Cl. 16-300.000.

EnviroSystems Corporation: *See—*
Hullar, Gordon C.; and Justice, Jerry F., 5,333,469, Cl. 62-181.000.

Epilogics: *See—*
Pires, Paul B., 5,334,115, Cl. 475-169.000.

Epstein, Marc I. Inflatable body and holder assembly. 5,334,072, Cl. 446-224.000.

Equipments St-Louis & Fils, Inc.: *See—*
St-Louis, Jonathan P.; and St-Louis, Kai G., 5,333,966, Cl. 404-84.050.

Erana, Agustin. Coreshooters for self-setting process with vacuum system. 5,333,669, Cl. 164-160.100.

Erck, Gary L.: *See—*
Kaplan, Martin C.; Erck, Gary L.; and Federico, Richard J., 5,335,158, Cl. 362-303.000.

ERDA, Inc.: *See—*
Brandt, David E.; Young, Ronald L.; and Pryor, Timothy B., 5,333,818, Cl. 244-118.600.

Ericsson GE Mobile Communications Inc.: *See—*
Dent, Paul W.; and Chennakeshu, Sandeep, 5,335,250, Cl. 375-10.000.

Erlebacher, Gunther: *See—*
Gavlin, Gilbert; Langdon, William M., deceased; Goltsin, Boris; Erlebacher, Gunther; and Larson, Douglas A., 5,334,291, Cl. 202-234.000.

Ervin, Douglas R.: *See—*
Dunlop, Donald L.; and Ervin, Douglas R., 5,333,482, Cl. 72-307.000.

ESAB Group, Inc., The: *See—*
Showalter, Michael S.; Dawson, John G., Jr.; and Gusky, Frank J., 5,333,841, Cl. 266-51.000.

Esaka, Naoki: *See—*
Koyama, Satoshi; Homoto, Yukio; and Esaka, Naoki, 5,334,786, Cl. 570-168.000.

Escagenetics Corporation: *See—*
Adams, Tommy L.; and Zarowitz, Michael A., 5,334,529, Cl. 435-240.400.

Eshraghi, Soheil A.: *See—*
Pratt, John D.; and Eshraghi, Soheil A., 5,333,980, Cl. 411-501.000.

Estep, Kimberly G.: *See—*
Josef, Kurt A.; Bacon, Edward R.; Estep, Kimberly G.; Illig, Carl R.; and Douty, Brent D., 5,334,370, Cl. 424-5.000.

Esteves, David J.: *See—*
Del Rosai, Kenneth J.; Dovedytis, David J.; Esteves, David J.; Harandi, Mohsen N.; and Huss, Albin, Jr., 5,334,792, Cl. 585-314.000.

Etheredge, Robert W., to Kendall Company, The. Finger bandage package and dispenser. 5,333,753, Cl. 221-33.000.

Ethicon, Inc.: *See—*
Main, Lauren O.; and Grant, Richard L., 5,333,773, Cl. 227-179.000.
Rothfuss, Robert G.; Okorocha, Livyn O.; Bishop, Gregory D.; Sambi, Narinderjit S.; Bedi, James J.; Privitera, Salvatore; and Sherrill, Michael, 5,333,772, Cl. 227-176.000.

Europaisches Laboratorium fur Molekularbiologie (EMBL): *See—*
Sproat, Brian; Lamond, Angus; and Paolella, Giovanni, 5,334,711, Cl. 536-24.500.

Evans, John C.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Evans, Kenneth W., to Sierra Sun Holdings Ltd. Method and apparatus for holding a light on a boat. 5,335,149, Cl. 362-61.000.

Evers, John N.; and Hilleary, Thomas N., to Autotrol Corporation. Apparatus and method for transmitting text data directly to a facsimile machine. 5,335,267, Cl. 379-100.000.

Ewen, John A.: *See—*
Abbas, Razavi; and Ewen, John A., 5,334,677, Cl. 526-114.000.

Exergen Corporation: *See—*
Pompei, Francesco, 5,333,784, Cl. 236-91.00C.

Expanchimie S.A.R.L.: *See—*
Nuns, Jacques; Girault, Alain; and Rancurel, Alain, 5,334,290, Cl. 202-205.000.

Exxon Chemical Patents Inc.: *See—*
Austin, Richard G., 5,334,700, Cl. 528-392.000.

Costemalle, Bernard J.; and Fusco, James V., 5,333,662, Cl. 152-510.000.
Gutierrez, Antonio; Soled, Stuart L.; and Paes, Jose A., 5,334,775, Cl. 568-791.000.
Wellman, William E.; Yezrielev, Albert I.; and Kowalik, Ralph M., 5,334,652, Cl. 524-601.000.
Yezrielev, Albert I.; Wellman, William E.; Kowalik, Ralph M.; Knudsen, George A.; and Romanelli, Michael G., 5,334,671, Cl. 525-443.000.

Eyrainer, Heinz; and Kissendorfer, Hans, to TRW Repa GmbH. Inflatable gas bag for restraining systems in vehicles. 5,333,903, Cl. 280-743.00R.

Ezuka, Daigo: *See—*
Matsumoto, Masayuki; and Ezuka, Daigo, 5,335,172, Cl. 364-413.130.

FAAC S.p.A.: *See—*
Manini, Michelangelo, 5,334,922, Cl. 318-772.000.

Fabbio, Robert A., to International Business Machines Corporation. Access control policies for an object oriented databaae, including access control lists which span across object boundaries. 5,335,346, Cl. 395-600.000.

Faber, Edward M., deceased: *See—*
Sperk, James M., Jr.; Lee, Biing-lin; Summers, James W.; and Faber, Edward M., deceased, 5,334,647, Cl. 524-507.000.

Faber, Robert A. Method and apparatus for video camera image film simulation. 5,335,013, Cl. 348-104.000.

Faber, Sharon M., executrix: *See—*
Sperk, James M., Jr.; Lee, Biing-lin; Summers, James W.; and Faber, Edward M., deceased, 5,334,647, Cl. 524-507.000.

Faddis, Chris G., to Cyclospas Medical Systems, Inc. Ozone sterilization system spent sterilization agent destruct and ambient air mixing device. 5,334,355, Cl. 422-122.000.

Fadner, Thomas A., to Rockwell International Corporation. Direct-to-press imaging system for use in lithographic printing. 5,333,548, Cl. 101-467.000.

Faeth, Warren P., to Tokheim Corporation. Vapor passage fuel blockage removal. 5,333,654, Cl. 141-1.000.

Fagot, Jacques, to Skis Rossignol S.A. Racket for tennis or the like. 5,333,858, Cl. 273-73.00G.

Faircloth, W. C., Jr.: *See—*
Pannell, Lorris O.; and Faircloth, W. C., Jr., 5,333,718, Cl. 198-397.000.

Falck, John R.: *See—*
Sun, Lumin; and Falck, John R., 5,334,736, Cl. 554-148.000.

Fallas, Thomas T.: *See—*
Choe, Hwang; and Fallas, Thomas T., 5,334,239, Cl. 95-261.000.

Falossi, Aldo; and Thomas, Paul. Radio jack strain relief and identification holder. 5,334,044, Cl. 439-491.000.

Fan, Zhigang, to Xerox Corporation. Apparatus and method for encoding halftone images. 5,335,088, Cl. 358-429.000.

Fantino, Lucien: *See—*
LeMaire, Etienne; and Fantino, Lucien, 5,333,562, Cl. 112-262.100.

Fanuc Ltd.: *See—*
Matsuura, Hitoshi, 5,333,974, Cl. 409-84.000.

Fanuc Ltd: *See—*
Kawada, Shigeki; and Ishida, Hiroshi, 5,334,924, Cl. 318-811.000.

Faries, Durward I., Jr.; and Heymann, Bruce R., to O. R. Solutions, Inc. Method and apparatus for producing surgical slush and heated sterile liquid. 5,333,326, Cl. 4-639.000.

Farrar, Paul A., Sr.: *See—*
Cronin, John E.; Farrar, Paul A., Sr.; Kaanta, Carter W.; Ryan, James G.; and Watts, Andrew J., 5,334,467, Cl. 430-5.000.

Farrow, Clarence: *See—*
Gastle, Thomas H.; Gastle, James E.; and Farrow, Clarence, 5,333,335, Cl. 5-625.000.

Fathimulla, Ayub; and Olaleye, Aina, to Allied-Signal Inc. MODFET structure for threshold control. 5,334,865, Cl. 257-192.000.

Faulkner, Keith W. Apparatus and method for biometric identification. 5,335,288, Cl. 382-4.000.

Fauquant, Jacques: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 5,334,408, Cl. 426-57.000.

Favia, Pietro: *See—*
Caporiccio, Gerardo; D'Agostino, Riccardo; and Favia, Pietro, 5,334,454, Cl. 428-412.000.

Fazan, Pierre: *See—*
Sandhu, Gurtej; and Fazan, Pierre, 5,335,138, Cl. 361-303.000.

Federico, Richard J.: *See—*
Kaplan, Martin C.; Erck, Gary L.; and Federico, Richard J., 5,335,158, Cl. 362-303.000.

Feiring, Andrew J. Measurement of absolute vascular flow. 5,333,614, Cl. 128-662.060.

Felderman, William A.; McDonald, Daniel J.; and Christensen, Laura A., to Motorola, Inc. Individual communication system selection method for group services. 5,335,350, Cl. 455-17.000.

Feldman, Leonard C.: *See—*
Dautremont-Smith, William C.; Feldman, Leonard C.; Kalish, Rafael; Katz, Avishay; Miller, Barry; and Moriya, Netzer, 5,334,306, Cl. 205-131.000.

Feldman, William, to Playoff Corporation. Method for producing printed images on foil-covered surfaces. 5,333,549, Cl. 101-483.000.

Feldstein, Michael A.: *See—*
Wells, Benjamin A.; Smith, Frank D.; Feldstein, Michael A.; and Hutner, Greg, 5,334,991, Cl. 345-8.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Felix, Vinci M.; Gumprecht, William H.; and Mahler, Barry A., to Du Pont de Nemours, E. I., and Company. Process for the manufacture of pentafluoroethane. 5,334,787, Cl. 570-169.000.

Fendick, Kerry W.: *See—*
Cole, Robert G.; Fendick, Kerry W.; and Rodrigues, Manoel A., 5,335,224, Cl. 370-84.000.

Fenelon, Paul J. In-line parallel proportionally partitioned by-pass metering device and method. 5,333,496, Cl. 73-202.000.

Fennell, Robert D.; and Petreye, David R., to Motorola, Inc. Simulcast scheduler. 5,335,357, Cl. 455-51.200.

Fennessy, Craig J.: *See—*
Chambers, Joseph W., Sr.; and Fennessy, Craig J., 5,333,801, Cl. 241-46.020.

Fenster, Paul: *See—*
Landa, Benzion; Pinhas, Hanna; and Fenster, Paul, 5,335,054, Cl. 355-279.000.

Ferguson, Ian: *See—*
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.

Fernando, Jovito L.: *See—*
Samson, Wilfred J.; Sirhan, Motasim M.; and Fernando, Jovito L., 5,334,154, Cl. 604-102.000.

Fernhout, Herman C., to U.S. Philips Corporation. Device for determining the position of a vehicle. 5,334,986, Cl. 342-357.000.

Ferracini, Bruno; Gonzalez-Lopez, Jorge; and Pettazzi, Giancarlo, to International Business Machines Corporation. System and method for scaling a digital image. 5,335,295, Cl. 382-47.000.

Ferraro, Frank A., to Warner-Lambert Company. Razor handle mechanism with convex-concave slidable cartridge support. 5,333,383, Cl. 30-87.000.

Ferre, Gilbert: *See—*
Blanchard, Gilbert; Bordes, Elisabeth; and Ferre, Gilbert, 5,334,743, Cl. 558-319.000.

Ferrero, Rose-Marie; and Jacquot, Roland, to Rhone-Poulenc Chimie. Process for the synthesis of aldehydes and their derivatives. 5,334,769, Cl. 568-435.000.

Ferrier, Donald R., to MacDermid, Incorporated. Aqueous acidic tin-lead immersion plating bath containing weak acid and weak base. 5,334,240, Cl. 106-1.220.

Ferro Corporation: *See—*
Korn, George C.; and Blonski, Robert P., 5,334,412, Cl. 427-108.000.

Fertig, Gunter: *See—*
Blendinger, Herbert; Fertig, Gunter; and Stellwagen, Armin, 5,333,450, Cl. 60-459.000.

Fiberweb North America, Inc.: *See—*
Quantrille, Thomas E.; Austin, Jared A.; and Zimmerman, G. Stanley, 5,334,446, Cl. 428-284.000.

Field Container Company, L.P.: *See—*
Sykora, John M.; and Hough, Graham, 5,333,779, Cl. 229-125.080.

Field, Roger. Revolver firearm with gas sealing. 5,333,531, Cl. 89-26.000.

Figiel, Janusz: *See—*
Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., 5,333,438, Cl. 53-399.000.

Filippini, Lucio: *See—*
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Mirenna, Luigi; and Mirenna, Luigi, 5,334,605, Cl. 514-365.000.
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; and Mirenna, Luigi, 5,334,609, Cl. 514-393.000.

Filo, Andrew S., to Simon Marketing, Inc. Imaging device having a passive compliant card scanner and a validation sensor. 5,334,836, Cl. 250-316.100.

Fina Technology, Inc.: *See—*
Abbas, Razavi; and Ewen, John A., 5,334,677, Cl. 526-114.000.

Fink, David M.: *See—*
Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, 5,334,599, Cl. 514-304.000.

Finkelstein, J. J.: *See—*
Rubinsky, Boris; Onik, Gary; Finkelstein, J. J.; Neu, Dan; and Jones, Steve, 5,334,181, Cl. 606-22.000.

Finn, John M.: *See—*
Doehner, Robert F., Jr.; Ladner, David W.; and Finn, John M., 5,334,576, Cl. 504-128.000.

Finn, Richard R.: *See—*
Klestadt, Ralph H.; and Finn, Richard R., 5,333,528, Cl. 89-1.510.

Fischell, David R.: *See—*
Fischell, Robert E.; Fischell, David R.; and Fischell, Tim A., 5,334,187, Cl. 604-194.000.

Fischell, Robert E.; Fischell, David R.; and Fischell, Tim A., to Cathco, Inc. Balloon catheter system with slit opening handle. 5,334,187, Cl. 604-194.000.

Fischell, Tim A.: *See—*
Fischell, Robert E.; Fischell, David R.; and Fischell, Tim A., 5,334,187, Cl. 604-194.000.

Fischer, David J.: *See—*
Dieken, Alan P.; Fischer, David J.; Platt, Jonathan C.; and Sondermann, William L., 5,334,223, Cl. 607-31.000.

Fischer, Roland: *See—*
Voigt, Heinz; Fischer, Roland; and Schneider, Rudolf, 5,334,964, Cl. 505-211.000.

Fischer, Udo K.; Akerman, Jan; Asberg, Bengt A.; and Lagerberg, Stig E., to Sandvik AB. Method of making a cemented carbide body for tools and wear parts. 5,333,520, Cl. 76-108.200.

Fisher, Gerald. Swing lock spare tire carrier. 5,333,766, Cl. 224-42.210.

Fisher Hamilton Scientific Inc.: *See—*
Beck, Marshall K.; and Bastian, John M., 5,334,089, Cl. 454-62.000.

Fisher, Michael H.: *See—*
Jacobs, Keith G.; Rosario, Jeanne M.; and Fisher, Michael H., 5,333,995, Cl. 415-209.200.

Fisher-Rosemount Systems, Inc.: *See—*
Snowbarger, Jim L.; and Halbleib, Harold W., 5,335,221, Cl. 370-13.000.

Fisons Corporation: *See—*
Schmiesing, Richard J.; and Murray, Robert J., 5,334,720, Cl. 546-208.000.

Fisons plc: *See—*
Hartley, Philip S.; and Stevens, John, 5,334,374, Cl. 424-45.000.

Fitch, Kenneth J.: *See—*
Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., 5,334,598, Cl. 514-303.000.

Fitzpatrick, Martin. Portable tar melting kettle assembly. 5,333,600, Cl. 126-343.50A.

FKI Industries, Inc.: *See—*
Sapp, Gordon K., 5,333,715, Cl. 198-372.000.

Flagg, Michael F.: *See—*
Berry, William M., III; Charles, Doyle B.; and Flagg, Michael F., 5,333,809, Cl. 242-578.100.

Fleckenstein, Bernhard: *See—*
Kalden, Joachim; Fleckenstein, Bernhard; Baur, Andreas; and Harrer, Thomas, 5,334,612, Cl. 514-440.000.

Fleischer, James F.: *See—*
Anthony, Thomas R.; and Fleischer, James F., 5,334,280, Cl. 156-635.000.

Flexon Industries Corporation: *See—*
Folkman, Alex, 5,333,650, Cl. 138-109.000.

Flint, W. Toriran: *See—*
Byers, Joseph L.; Flint, W. Toriran; and Kerr, Richard C., 5,334,418, Cl. 427-373.000.

Flintoff, John F.: *See—*
Harker, Alan B.; DeNatale, Jeffrey F.; Hood, Patrick J.; and Flintoff, John F., 5,334,342, Cl. 264-317.000.

Flynn, Robert G.; Bakal, Abraham I.; and Snyder, Margaret A., to Sterling Winthrop Inc. Method of preparing lactose-hydrolyzed milk with suppressed sweetness. 5,334,399, Cl. 426-42.000.

Focht, Louise M.: *See—*
Green, Robert S.; and Focht, Louise M., 5,333,604, Cl. 601-33.000.

Focke & Co. (GmbH & Co.): *See—*
Focke, Heinz; and Gosebruch, Harald, 5,333,735, Cl. 206-494.000.

Focke, Heinz; and Gosebruch, Harald, to Focke & Co. (GmbH & Co.). Soft pack, especially cuboid paper tissue pack. 5,333,735, Cl. 206-494.000.

Foerster, Arno; Engels, Berthold; and Hauck, Peter, to Aktiengesellschaft Kuhnle, Kopp & Kausch. Performance characteristics stabilization in a radial compressor. 5,333,990, Cl. 415-58.400.

Fohl, Artur, to TRW Repa GmbH. Electrical plug connection on a pyrotechnical gas generator provided with an electrical igniter. 5,334,025, Cl. 439-188.000.

Foley, Charles F.; Metheney, Harry P.; and Tucker, Bradley J., to R&D of North Carolina Inc. Method and apparatus for removing labels. 5,333,967, Cl. 401-139.000.

Foley, Larry, Jr. Containment apparatus for manual pipe tongs. 5,333,925, Cl. 294-86.400.

Folkman, Alex, to Flexon Industries Corporation. Hose coupling with a stiffening sleeve. 5,333,650, Cl. 138-109.000.

Foltz, William E.: *See—*
Graessle, Josef A.; Schwarz, Werner R.; and Foltz, William E., 5,334,841, Cl. 250-458.100.

Fong, Edison; and Nguyen, Nghiem, to National Semiconductor Corporation. CMOS operational amplifier with improved rail-to-rail performance. 5,334,948, Cl. 330-253.000.

Ford Motor Company: *See—*
Gaston, Robert D., 5,333,499, Cl. 73-317.000.
Morganti, Carl R.; Singh, Gitanjli; and Sweet, Benjamin D., 5,333,593, Cl. 123-637.000.
Verkleeren, Ronald L., 5,333,576, Cl. 123-184.530.

Ford New Holland, Inc.: *See—*
Bulgrien, Garth H., 5,333,709, Cl. 74-335.000.
Gryspeerdt, Jose G. T., 5,334,103, Cl. 474-18.000.

Foreman, Richard D.: *See—*
Smith, Ronald R.; Foreman, Richard D.; Graf, Todd S.; and Redden, Joseph D., 5,333,835, Cl. 251-129.120.

Forintek Canada Corporation: *See—*
Varoglu, Erol, 5,333,426, Cl. 52-236.700.

Forsyth, James M.: *See—*
Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., 5,334,784, Cl. 570-165.000.

Forti, Steven: *See—*
MacNaughton, George; Forti, Steven; Whittington, Douglas; and Ackley, Kevin, 5,334,815, Cl. 219-121.700.

Fortini, Brian E.: *See—*
Manning, George E.; Fortini, Brian E.; and Reymann, Vincent R., Jr., 5,333,872, Cl. 273-169.000.

Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, to Sun Microsystems, Inc. Method and apparatus for scoped interprocess message switching. 5,335,347, Cl. 395-650.000.

Foster, Clark B.: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,334,178, Cl. 604-415.000.

Foster, David G.; Stephen, Keith H.; and Craver, Mary E., to Eastman Kodak Company. Photographic bleach compositions and methods of photographic processing. 5,334,491, Cl. 430-393.000.

Foster-Miller, Inc.: *See—*
Smirlock, Martin E.; Ribich, William A.; Marinaccio, Paul J.; and Sawaf, Bernard E., 5,333,532, Cl. 89-36.020.

Foster Wheeler Energy Corporation: *See—*
Garcia-Mallol, Juan A., 5,333,838, Cl. 251-305.000.

Fowler, Charles E.: *See—*
Pitts, Alan J.; and Fowler, Charles E., 5,335,185, Cl. 364-510.000.

Fowler, David E.: *See—*
Silin, Connie J.; and Fowler, David E., 5,333,855, Cl. 273-26.00A.

Fox, Charles L., Jr., deceased (by Ruf, Alan F., legal representative); and Modak, Shanta M., to Columbia University in the City of New York, The Trustees of. Composition for inhibiting transmission of hepatitis B virus. 5,334,588, Cl. 514-171.000.

Fox Chase Cancer Center: *See—*
Seeger, Christoph, 5,334,525, Cl. 435-194.000.

Fox, David K., to Railway Equipment Company, Inc. Track switch snow melter duct system with quick release joints. 5,333,912, Cl. 285-39.000.

Fox, Ellroy G.: *See—*
Benton, James H.; Broodo, Jack; Ivy, John B.; Leissner, Kirk A.; and Fox, Ellroy G., 5,334,357, Cl. 422-197.000

Fox, Myron E., to Eastman Kodak Company. Exposure and focus system for a zoom camera. 5,335,041, Cl. 354-402.000.

Fox Pool Corporation: *See—*
Weir, Donald H., 5,333,322, Cl. 4-496.000.

Foxboro Company, The: *See—*
Shinskey, Francis G., 5,335,165, Cl. 364-162.000.

Frakes, Michael D.: *See—*
Strahl, Paul; and Frakes, Michael D., 5,333,900, Cl. 280-731.000.

Fraleigh, Peter C.: *See—*
Lee, Harold H.; Fraleigh, Peter C.; and Lemma, Aklilu, 5,334,386, Cl. 424-195.100.

Framo Developments (UK) Limited: *See—*
Mohn, Frank, 5,334,801, Cl. 174-47.000.

France, Paul W.; Carter, Steven F.; and Williams, John R., to British Telecommunications Public Limited Company. Method for the preparation of halide glass articles. 5,334,232, Cl. 65-388.000.

France Telcom: *See—*
Jutand, Francis; Lafage, Anne; and Boutillon, Emmanuel, 5,335,195, Cl. 364-736.000.

Franchi, Elisabetta: *See—*
Del Bue, Marina; Cosmina, Paola; Franchi, Elisabetta; and Grandi, Guido, 5,334,531, Cl. 435-252.310.

Francis, Robert S.; and Orpin, Murray R., to BP Chemicals Limited. Thixotropic compositions. 5,334,630, Cl. 523-216.000.

Frank, Steven J.; Burkhardt, Henry, III; Rothnie, James B.; and Mann, William F., to Kendall Square Research Corporation. High-speed packet switching apparatus and method. 5,335,325, Cl. 395-200.000.

Frank, Thomas: *See—*
Schafer, Jochen; Frank, Thomas; and Bederna, Frank, 5,335,178, Cl. 364-426.020.

Frank, Udo: *See—*
Schwab, Michael; Frank, Udo; and Walz, Gerd, 5,334,651, Cl. 524-591.000.

Franklin, Larry D.: *See—*
Hill, Tyrone; and Franklin, Larry D., 5,333,393, Cl. 34-440.000.

Franz, James A.: *See—*
Schmeisser, Heinz; and Franz, James A., 5,333,985, Cl. 414-790.300.

Franz, James J.; and Hutchinson, Richard A., to Subsurface Technology Corporation. Method of forming porous pipe using a blowing agent carrier component. 5,334,336, Cl. 264-45.300.

Fraser, Howard H., Jr.: *See—*
Lewis, Russell G.; and Fraser, Howard H., Jr., 5,333,460, Cl. 62-6.000.

Frauenberger, Andreas, to Frauenberger & Co. mbH. Mailbox. 5,333,782, Cl. 232-28.000.

Frauenberger & Co. mbH: *See—*
Frauenberger, Andreas, 5,333,782, Cl. 232-28.000.

Frechet, Jean M. J.; and Svec, Frantisek, to Cornell Research Foundation, Inc. Column with macroporous polymer media. 5,334,310, Cl. 210-198.200.

Freed, Allen J.: *See—*
Solomon, Neil; Solomon, Theodore C.; and Freed, Allen J., 5,334,390, Cl. 424-439.000.

Freeman, Jerre M., to Eagle Vision, Inc. Lacrimal fluid control device. 5,334,137, Cl. 604-8.000.

Freitag, Dieter: *See—*
Hess, Bernhard; Schulz-Schlitte, Wolfgang; Kirsch, Jurgen; Freitag, Dieter; Arndt, Uwe; Gehrke, Hans-Georg; and Zander, Klaus, 5,334,692, Cl. 528-126.000.

Frenette, Richard, to Merck Frosst Canada, Inc. Bicyclic(azaaromatic indoles as inhibitors of leukotriene biosynthesis. 5,334,719, Cl. 546-174.000

Freudenreich, Reinhold; Mielke, Ingolf; Rettenbeck, Karl; and Schottle, Thomas, to Hoechst Aktiengesellschaft. Process for the preparation of hexafluoropropene. 5,334,783, Cl. 570-153.000.

Freund, Richard A.; and Peller, Allen E. Storage/display rack for discs and cassettes. 5,333,740, Cl. 211-40.000.

Frey, Guenter: *See—*
Schrimpf, Hans; Krebs, Hans; Liebold, Gert; and Frey, Guenter, 5,334,323, Cl. 252-70.000.

Frey, Volker: *See—*
Pachaly, Bernd; Frey, Volker; and Straussberger, Herbert, 5,334,738, Cl. 556-472.000.

Frieb, Viktor, to Eduard Frieb Gesellschaft m.b.H. Jaw-type holder for cleaning tool. 5,333,344, Cl. 15-146.000.

Frieder, Gideon; and Frieder, Ophir, to Bell Communications Research, Inc. Dynamic query optimization using partial information. 5,335,345, Cl. 395-600.000.

Frieder, Ophir: *See—*
Frieder, Gideon; and Frieder, Ophir, 5,335,345, Cl. 395-600.000.

Friedman, Shelley K.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Frielingsdorf, Herbert: *See—*
Krude, Werner; Harz, Peter; and Frielingsdorf, Herbert, 5,333,939, Cl. 301-124.100.

Fries, Daniel: *See—*
Stomp, Hubert; Kremer, Andre; Fries, Daniel; Reichert, Marc; and Devillet, Serge, 5,333,842, Cl. 266-226.000.

Friese, Karl-Hermann; Gruenwald, Werner; Wiedenmann, Hans-Martin; and Hoetzel, Gerhard, to Robert Bosch GmbH. Resistance probe for determining gas compositions and method of producing it. 5,334,350, Cl. 422-98.000.

Frigiere, Rene , to Cricket. Gas-filled childproof lighter. 5,334,011, Cl. 431-153.000.

Frisbee, Claude M.; and Werner, Ronald H., to Case Corporation. Flip block assembly for changing dozer blade pitch. 5,333,697, Cl. 172-821.000.

Fritz-Langhals, Elke, to Consortium fur Elektrochemische Industrie GmbH. Process for the preparation of optically active carboxylic acids and amide intermediates. 5,334,730, Cl. 549-13.000.

Fritzsche, Hellmut: *See—*
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Strand, David A.; Czubatyj, Wolodymyr; Gonzalez-Hernandez, Jesus; Fritzsche, Hellmut; Ye, Qiuyi; Kostylev, Sergey A.; and Chao, Benjamin S., 5,335,219, Cl. 369-288.000.

Fry, Scott M.: *See—*
Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,335,328, Cl. 395-275.000.

Fryar, Richard D., Jr.: *See—*
Conway, Anthony J.; Conway, Philip J.; and Fryar, Richard D., Jr., 5,334,175, Cl. 604-352.000.

Frye, Ricky J., to MIM Industries, Inc. Thread cutting via reciprocating arm with pockets and a trimming plate. 5,333,565, Cl. 112-291.000.

FSSL, Incorporated: *See—*
Dean, James L.; Seto, Rodney K.; and Kovit, Sheldon L., 5,333,691, Cl. 166-341.000.

Fuchs, Dieter; and Strohhacker, Peter, to Maschinenfabrik Bezner GmbH & Co. KG. Process and installation for recovering valuable materials, in particular from waste material on building sites. 5,333,738, Cl. 209-38.000.

Fugate, Eric J.: *See—*
Sumner, Charles E., Jr.; Gustafson, Bruce L.; Arnold, Ernest W., III; Fugate, Eric J.; and Fuller, Dewey W., Jr., 5,334,754, Cl. 562-416.000.

Fujan, Steven J.; and Loeber, Frederick W., to Terex Corporation. Dual rear axle system for large vehicles. 5,333,895, Cl. 280-676.000.

Fuji Electric Co., Ltd.: *See—*
Kobayashi, Tatsuya, 5,333,754, Cl. 221-75.000.
Ohsawa, Masahiro, 5,334,896, Cl. 310-67.00R.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Matsuura, Takashi, 5,333,583, Cl. 123-295.000.
Mouri, Toyohiko, 5,333,700, Cl. 180-79.100.
Sato, Keiji, 5,334,102, Cl. 474-18.000.

Fuji Photo Film Co., Ltd.: *See—*
Abe, Yukio; Higashi, Tatsuji; Hirano, Tsumoru; and Kondo, Syunichi, 5,334,486, Cl. 430-288.000.
Aono, Toshiaki, 5,334,482, Cl. 430-203.000.
Fujita, Yoshihiro; Morigaki, Masakazu; Kawamoto, Hiroshi; Nakamura, Shigeru; Yagihara, Morio; and Watanabe, Hiroyuki, 5,334,493, Cl. 430-463.000.
Fukushige, Yuuichi; Iwakura, Ken; and Satomura, Masato, 5,334,749, Cl. 560-67.000.
Ishida, Toshio; Nishikawa, Yasuo; and Yasunaga, Tadashi, 5,334,413, Cl. 427-130.000.
Kato, Eiichi, 5,334,475, Cl. 430-114.000.
Kushima, Hiroshi; and Tsuyuki, Mikio, 5,333,850, Cl. 271-164.000.
Matsumoto, Masayuki; and Ezuka, Daigo, 5,335,172, Cl. 364-413.130.
Shimazaki, Osamu, 5,335,096, Cl. 358-518.000.

Fuji Photo Optical Co., Ltd.: *See—*
Yoshida, Hideo, 5,335,037, Cl. 354-288.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Fuji Xerox Co., Ltd.: *See—*
Imoto, Yoshiya, 5,335,093, Cl. 358-487.000.
Inaba, Yoshihiro; Takashima, Koichi; Matsui, Izuru; and Kubo, Tsutomu, 5,334,480, Cl. 430-138.000.
Iwata, Masatake; Kurabe, Jun; and Ichiji, Hiroshi, 5,335,320, Cl. 395-155.000.
Kanai, Makoto; and Okabe, Kouichi, 5,335,049, Cl. 355-215.000.
Yagi, Shigeru; Higashi, Taketoshi; Fukuda, Yuzuru; Ono, Masato; Yokoi, Masaki; and Watanabe, Masao, 5,334,476, Cl. 430-126.000.

Fujihara, Toshiaki: *See—*
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.

Fujii, Koji; Haji, Nobuyuki; and Yamada, Minoru, to Matsushita Electric Industrial Co., Ltd. Light-beam heating apparatus. 5,335,309, Cl. 392-421.000.

Fujii, Takeshi; and Ishikawa, Manabu, to Sumitomo Chemical Company, Limited. Thermoplastic composition. 5,334,636, Cl. 524-449.000.

Fujiki, Hiroshi: *See—*
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.

Fujimoto, Hitoshi: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, 5,334,803, Cl. 174-52.400.

Fujimoto, Michio: *See—*
Matsuo, Akinori; Watanabe, Masashi; Fujimoto, Michio; Wada, Masashi; Nagayama, Yoshiharu; and Naito, Kazuo, 5,335,204, Cl. 365-230.010.

Fujimoto, Yoshiyuki: *See—*
Tsujimoto, Ichiro; and Fujimoto, Yoshiyuki, 5,335,359, Cl. 455-52.300.

Fujimura, Yoshiichi; and Matsuura, Shizutaka, to Takata Corporation. Seat belt retractor. 5,333,906, Cl. 280-806.000.

Fujinaka, Akihiko, to Sony Corporation. Radio telephone apparatus. 5,335,261, Cl. 379-58.000.

Fujinawa, Masaaki: *See—*
Munemasa, Narihiro; Wakamori, Fumio; Masuzaki, Hidefumi; Fujinawa, Masaaki; and Kurosu, Yasuo, 5,335,084, Cl. 358-403.000.

Fujioka, Yoshiharu; Nagatsuka, Shintaro; and Tsutaki, Shoji, to Kabushiki Kaisha Toshiba. Method of manufacturing a magnetic head. 5,333,372, Cl. 29-603.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Okada, Satoshi; Sawada, Kozo; Kuroda, Akio; Watanabe, Shinya; and Tanaka, Hirokazu, 5,334,716, Cl. 546-112.000.

Fujita, Hideo: *See—*
Aoki, Nobuyuki; Fujita, Hideo; and Aoshima, Jiro, 5,334,472, Cl. 430-109.000.

Fujita, Hisanori, to Sakura Color Products Corporation. Water base ink composition. 5,334,649, Cl. 524-558.000.

Fujita, Kotaro: *See—*
Wachi, Toshio; Sakaguchi, Yutaka; and Fujita, Kotaro, 5,334,760, Cl. 562-817.000.

Fujita, Nobuhiko: *See—*
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,334,579, Cl. 505-474.000.

Fujita, Yoshihiro; Morigaki, Masakazu; Kawamoto, Hiroshi; Nakamura, Shigeru; Yagihara, Morio; and Watanabe, Hiroyuki, to Fuji Photo Film Co., Ltd. Photographic processing solution having a stabilizing ability and a method for processing a silver halide color photographic light-sensitive material. 5,334,493, Cl. 430-463.000.

Fujitsu Limited: *See—*
Aoyama, Keizo, 5,335,199, Cl. 365-230.050.
Iino, Hatsumi, 5,335,223, Cl. 370-65.500.
Inoue, Yoshiyuki; Takahashi, Masaaki; and Ohta, Kenji, 5,334,879, Cl. 307-112.000.
Kamoi, Jyoei; Hayami, Hichiro; Kato, Yuji; Shimoe, Toshio; Abe, Shunji; Kusayanagi, Michio; Mukai, Haruo; and Soumiya, Toshio, 5,335,222, Cl. 370-60.000.
Kawamoto, Satoru, 5,335,206, Cl. 365-233.500.
Love, David G.; Moresco, Larry L.; Chou, William T.; Horine, David A.; Wong, Connie M.; and Beilin, Solomon I., 5,334,804, Cl. 174-267.000.
Nakano, Mitsuhiro; and Kai, Junichi, 5,334,846, Cl. 250-492.200.
Oguchi, Takuro; Sasaki, Shunroku; and Asahara, Masaru, 5,335,262, Cl. 379-58.000.
Sato, Shinichi; and Katoh, Hiroaki, 5,334,826, Cl. 235-455.000.
Takagi, Hisamitsu; Nishiyama, Akihide; and Tomura, Masashi, 5,335,273, Cl. 379-433.000.
Takato, Kenji; Kinoshita, Kazumi; Kurosaki, Kiyoshi; Kosako, Taichi; and Minohara, Kazuyuki, 5,335,271, Cl. 379-382.000.

Fujitsu VLSI Limited: *See—*
Kawamoto, Satoru, 5,335,206, Cl. 365-233.500.
Nakano, Mitsuhiro; and Kai, Junichi, 5,334,846, Cl. 250-492.200.

Fukano, Yoshihiro; Makado, Shoichi; and Doi, Yoshitada, to SMC Corporation. Manifold valve. 5,333,647, Cl. 137-884.000.

Fukazawa, Fumie: *See—*
Ueda, Eiichi; Fukazawa, Fumie; and Yagi, Toshihiko, 5,334,494, Cl. 430-533.000.

Fukazawa, Toshio: *See—*
Nagata, Yuji; Fukazawa, Toshio; and Mitani, Satoru, 5,335,127, Cl. 360-113.000.

Fukuda, Yasuaki: *See—*
Hayashida, Masami; Fukuda, Yasuaki; and Watanabe, Yutaka, 5,335,259, Cl. 378-161.000.

Fukuda, Yuzuru: *See—*
Yagi, Shigeru; Higashi, Taketoshi; Fukuda, Yuzuru; Ono, Masato; Yokoi, Masaki; and Watanabe, Masao, 5,334,476, Cl. 430-126.000.

Fukui, Hideo: *See—*
Nakada, Norio; Fukui, Hideo; Hirono, Hatsuo; and Ito, Seishiro, 5,334,297, Cl. 204-181.200.

Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for internal combustion engine. 5,333,586, Cl. 123-414.000.

Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ono, Masumi; and Yasuda, Kouichi, to Sony Corporation. Positional detection of a magneto-optic recording medium for controlling irradiation of a relief region. 5,335,213, Cl. 369-121.000.

Fukumoto, Hiroshi: *See—*
Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, 5,335,002, Cl. 346-76.0PH.

Fukunaga, Keisuke: *See—*
Matsui, Shigetomo; Matsumura, Hiroyuki; Ikemoto, Yoshikazu; Kumon, Yasuhiro; Nakayama, Shigeru; Tsujita, Keiji; Fukunaga, Keisuke; Kuribayashi, Nobuhiro; and Wakana, Kenichi, 5,334,561, Cl. 501-87.000.

Fukushige, Yuuichi; Iwakura, Ken; and Satomura, Masato, to Fuji Photo Film Co., Ltd. Polymerizable phenol compound. 5,334,749, Cl. 560-67.000.

Fukutsuka, Hirotoshi: *See—*
Kobayashi, Kaoru; Kuwae, Shinobu; Ooya, Tomoshi; Fukutsuka, Hirotoshi; Sumi, Akinori; Ohtani, Wataru; Ohmura, Takao; and Yokoyama, Kazumasa, 5,334,512, Cl. 435-69.600.

Fukuyama, Hiroya; Kitagawa, Hisao; Yamamoto, Mitsunori; and Kashima, Shingo, to Olympus Optical Co., Ltd. Scanning optical microscope having a compact confocal optical system for adjusting position of aperture. 5,334,830, Cl. 250-216.000.

Fukuyo, Kei; and Kawaishi, Shintaro, to Nisshinbo Industries Inc. Solenoid valve. 5,333,836, Cl. 251-129.150.

Fuller, Dewey W., Jr.: *See—*
Sumner, Charles E., Jr.; Gustafson, Bruce L.; Arnold, Ernest W., III; Fugate, Eric J.; and Fuller, Dewey W., Jr., 5,334,754, Cl. 562-416.000.

Fuller, Ernest, to Life Support, Inc. Back traction device for use with chairs. 5,333,623, Cl. 128-875.000.

Fullerton, Larry W.: *See—*
Petroff, Alan M.; and Fullerton, Larry W., 5,333,508, Cl. 73-861.250.

Funahashi, Yoshiki: *See—*
Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, 5,333,846, Cl. 267-140.140.

Funai Electric Co., Ltd.: *See—*
Morinaka, Kouji, 5,335,128, Cl. 360-128.000.

Funfschilling, Jurg: *See—*
Buchecker, Richard; Chen, Xin H.; Funfschilling, Jurg; Herr, Rolf-Peter; Schadt, Martin; and Schmitt, Klaus, 5,335,303, Cl. 385-122.000.

Furnes, Reidar. Apparatus for moving barrels. 5,333,924, Cl. 294-15.000.

Furokawa Electric Co., Ltd., The: *See—*
Iwai, Hirohisa; Shiroyama, Kaisuke; Matsuda, Akira; Nakamura, Takeo; and Shirakawa, Ryotomo, 5,334,294, Cl. 204-129.550.

Furr, Mark A. Leak detection and shut-off apparatus. 5,334,973, Cl. 340-605.000.

Furuhashi, Hiroyuki; Koyama, Naomi; and Ueki, Satoshi, to Tonen Corporation. Both ends-modified olefin polymers and processes for the production thereof. 5,334,678, Cl. 526-169.200.

Furukawa Denchi Kabushiki Kaisha: *See—*
Furukawa, Jun, 5,334,226, Cl. 29-623.200.

Furukawa, Jun, to Furukawa Denchi Kabushiki Kaisha. Method of manufacturing a sealed-type nickel-hydrogen cell. 5,334,226, Cl. 29-623.200.

Furuya, Kouhei: *See—*
Matsuoka, Tatsuji; Serizawa, Nobufusa; Hosoya, Tsuyoshi; and Furuya, Kouhei, 5,334,517, Cl. 435-121.000.

Fusco, James V.: *See—*
Costemalle, Bernard J.; and Fusco, James V., 5,333,662, Cl. 152-510.000.

Fuse, Aisaku: *See—*
Kojiri, Katsuhisa; Nakajima, Shigeru; Fuse, Aisaku; and Suda, Hiroyuki, 5,334,613, Cl. 514-452.000.

Fuse, Eiichi: *See—*
Yamamoto, Tsutomu; Okada, Minoru; Ishigami, Takakazu; Motoki, Nobuyuki; Fuse, Eiichi; and Hayashi, Masaaki, 5,335,061, Cl. 356-241.000.

Fushimi, Norio; Kedo, Ko; Inamasa, Kenji; and Takagawa, Makoto, to Mitsubishi Gas Chemical Company, Inc. Process for producing monoalkenyl aromatic hydrocarbon compound. 5,334,794, Cl. 585-452.000.

Fusiak, Frank, to ISP Investments Inc. Method of activating N-methyl-2-pyrrolidone (NMP) varnish and paint remover solvents for removal of organic coatings. 5,334,331, Cl. 252-542.000.

Fusion Systems Corporation: *See—*
Ury, Michael G.; and Wood, Charles H., 5,334,913, Cl. 315-248.000.

Fuyama, Seiji, to Matsushita Electric Industrial Co., Ltd. Electronic register. 5,335,171, Cl. 364-405.000.

Fuzino, Seizi: *See—*
Katada, Mitsutaka; Muramoto, Hidetoshi; Fuzino, Seizi; Hattori, Tadashi; and Abe, Katsunori, 5,334,870, Cl. 257-371.000.

G. D. Searle & Co.: *See—*
Khanna, Ish K.; Mueller, Richard A.; and Weier, Richard M., 5,334,717, Cl. 546-116.000.
Mueller, Richard A.; and Partis, Richard A., 5,334,616, Cl. 514-473.000.

G.D. S.p.A.. *See—*
Turra, Mario; Cesari, Verter; and Neri, Armando, 5,333,988, Cl. 414-795.800.

Gabrius, Algimantas J.; and DeCicco, Thomas J., to Juno Lighting, Inc. Adapter box for low voltage fixture. 5,334,037, Cl. 439-118.000.

Gaffaney, Daniel: *See—*
Liu, Xin; Spencer, Steven J.; Gupte, Neelkanth S.; Chiang, Robert H. L.; and Gaffaney, Daniel, 5,333,682, Cl. 165-133.000.

Gaffar, Abdul: *See—*
Nabi, Nuran; Prencipe, Michael; and Gaffar, Abdul, 5,334,375, Cl. 424-52.000.

Gaffney, Edward J.; and Lin, Jhy-hong, to Ortho-Kinetics, Inc. Three wheel scooter with quick release rear motor and wheel assembly. 5,333,702, Cl. 180-208.000.

Gage, Paul D., to Rexene Products Company. Peelable thermoplastic film. 5,334,643, Cl. 524-232.000.

Gagliardo, Michael A.; Lynch, John J.; and Tessari, James E., to Digital Equipment Corporation. Programmable data transfer timing. 5,335,337, Cl. 395-500.000.

Galazin, Gregory T., to NAI Neway, Inc. Height control valve and dump valve therefor. 5,333,645, Cl. 137-627.500.

Galbi, Duane E.: *See—*
Abadeer, Wagdi W.; El-Kareh, Badih; Ellis, Wayne F.; Galbi, Duane E.; Hiltebeitel, Nathan R.; Tonti, William R.; and Watts, Josef S., 5,334,880, Cl. 307-219.000.

Gale, Preston L., to Caterpillar Inc. Cutter bit. 5,333,938, Cl. 299-86.000.

Gallagher, Janice M.: *See—*
Gallagher, John P., deceased; and Masi, Robert J., 5,334,295, Cl. 204-153.160.

Gallagher, John P., deceased (by Gallagher, Janice M.); and Masi, Robert J., to Delta F. Corporation. Micro fuel-cell oxygen gas sensor. 5,334,295, Cl. 204-153.160.

Gallagher, Michael T.: *See—*
Christie, C. Dale; Gallagher, Michael T.; Hendricksen, Michael J.; Oliver, John D.; and Polzin, Mark A., 5,333,926, Cl. 295-21.000.

Gambro AB: *See—*
Jeppsson, Jan-Bertil; and Losell, Ingvar, 5,334,139, Cl. 604-28.000.

Gant, Gary L.; Muntean, George L.; and Osborn, Jeffrey C., to Cummins Engine Company, Inc. Fuel injection device for an internal combustion engine. 5,333,786, Cl. 239-89.000.

Ganter, Udo; and Rodi, Norbert, to Heidelberger Druckmaschinen AG. Sheet-fed rotary offset printing press with a removable imprinting or finishing unit. 5,333,545, Cl. 101-76.000.

Garavaglia, Carlo: *See—*
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Mirenna, Luigi; and Mirenna, Luigi, 5,334,605, Cl. 514-365.000.
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; and Mirenna, Luigi, 5,334,609, Cl. 514-393.000.

Garbassi, Fabio: *See—*
Po', Riccardo; Occhiello, Ernesto; Giannotta, Giorgio; and Garbassi, Fabio, 5,334,343, Cl. 264-328.100.

Garcia, Felicia: *See—*
Garcia, Ruben; and Garcia, Felicia, 5,334,404, Cl. 426-383.000.

Garcia, Jorge E.: *See—*
Dorfman, Mitchel R.; Garcia, Jorge E.; and Kushner, Burton A., 5,334,235, Cl. 75-255.000.

Garcia-Mallol, Juan A., to Foster Wheeler Energy Corporation. Blade damper with extensions to reduce boundary leakage. 5,333,838, Cl. 251-305.000.

Garcia, Ruben; and Garcia, Felicia. Process for transferring images of edible paste onto baked pastry sheets. 5,334,404, Cl. 426-383.000.

Gardner, David E.; and Novak, David B., to Dayco Products, Inc. Belt tensioning system, belt tensioning therefor and method of making the same. 5,334,110, Cl. 474-135.000.

Gardner, David W.: *See—*
Higgins, Brian P.; Gardner, David W.; Rhea, Kerry D.; Linnenbrink, Thomas E.; Reed, ebecca S.; and Roberts, Peter C. T., 5,334,962, Cl. 333-247.000.

Gardner, Phillip: *See—*
Hobart, James L.; Yarborough, J. Michael; Dallarosa, Joseph; and Gardner, Phillip, 5,335,242, Cl. 372-95.000.

Gardner, Richard K.; and Schroeder, Gordon M., to Aro Corporation, The. Air valving mechanism, in combination with a double diaphragm pump subassembly. 5,334,003, Cl. 417-393.000.

Garg, Diwakar; Berger, Kerry R.; and Eichelberger, Donald P., to Air Products and Chemicals, Inc. Atmospheres for brazing aluminum and aluminum alloys. 5,333,776, Cl. 228-219.000.

Garneys, David. Soap dispenser insert for a shower head. 5,333,789, Cl. 239-318.000.

Garnier, Catherine; and Venet, Francois, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude. Production and installation for the production of gaseous nitrogen at several different purities. 5,333,463, Cl. 62-24.000.

Garot, Corinne; and Gauthier, Pierre, to L'Air Liquide, Societe Anonyme pour l'etude et l'Exploitation des Procedes Georges Claude. Process and apparatus for the purification of hydrogen by cryogenic treatment of a gas containing the same. 5,333,462, Cl. 62-24.000.

Garr, Anthony R.: *See—*
Tilbor, Neil; Garr, Anthony R.; Newton, Jean; and Mucaro, Salvatore, 5,334,073, Cl. 446-308.000.

Garvie, Gudrun H., to Commonwealth Scientific and Industrial Research Organization. Ceramics composite material and production thereof. 5,334,563, Cl. 501-105.000.

Gary, Russell A.: *See—*
Missana, Adrian; and Gary, Russell A., 5,333,989, Cl. 415-17.000.

Gashler, Robert J.: *See—*
Akkapeddi, Kaushik S.; Bonanni, Rocco; Gashler, Robert J.; German, Michael G.; Lambert, William R.; and Schramm, Eugene C., 5,334,029, Cl. 439-66.000.

Gasper, John: *See—*
Sutton, James E.; Gasper, John; Tsaur, Allen K.; and Tarn, Ann, 5,334,469, Cl. 430-21.000.

Gastle, James E.: *See—*
Gastle, Thomas H.; Gastle, James E.; and Farrow, Clarence, 5,333,335, Cl. 5-625.000.

Gastle, Thomas H.; Gastle, James E.; and Farrow, Clarence. Patient support device. 5,333,335, Cl. 5-625.000.

Gaston, Robert D., to Ford Motor Company. Liquid measuring float and float rod assembly. 5,333,499, Cl. 73-317.000.

Gauthier, Pierre: *See—*
Garot, Corinne; and Gauthier, Pierre, 5,333,462, Cl. 62-24.000.

Gavlin, Gilbert; Langdon, William M., deceased (by Langdon, Nancy, legal representative); Goltsin, Boris; Erlebacher, Gunther; and Larson, Douglas A., to Safety-Kleen Corp. On-site, controlled waste concentrator and solvent regenerator apparatus. 5,334,291, Cl. 202-234.000.

Gawish, Ali A. S.: *See—*
Wagle, Sudhakar S.; Steinbach, Thomas; Lawyer, Carl H.; Hermann, William J., Jr.; and Gawish, Ali A. S., 5,334,395, Cl. 424-553.000.

Gay, Lindell W., Jr., to Coles, Allen E. Laser angioplasty device with magnetic direction control. 5,334,207, Cl. 606-7.000.

Geauga Company: *See—*
Powers, Thomas O.; Hertrick, Timothy T.; and Peak, Mary A., 5,334,458, Cl. 428-517.000.

Gebeyehu, Gulilat; Jessee, Joel A.; Ciccarone, Valentina C.; Hawley-Nelson, Pamela; and Chytil, Anna, to Life Technologies, Inc. Cationic lipids. 5,334,761, Cl. 564-197.000.

Gebhard, Matthew S.: *See—*
Carlson, Virginia A.; Curry-Nkansah, Maria E.; Gebhard, Matthew S.; and Lauer, Rosemarie P., 5,334,655, Cl. 524-804.000.

Gegenwart, Rainer, to Leybold AG. Sputtering cathode. 5,334,298, Cl. 204-192.120.

Gehman, John B.: *See—*
Smith, Carter C.; and Gehman, John B., 5,334,981, Cl. 342-27.000.

Gehrke, Hans-Georg: *See—*
Hess, Bernhard; Schulz-Schlitte, Wolfgang; Kirsch, Jurgen; Freitag, Dieter; Arndt, Uwe; Gehrke, Hans-Georg; and Zander, Klaus, 5,334,692, Cl. 528-126.000.

Geibel, Jon F.: *See—*
Ash, Carlton E.; Geibel, Jon F.; Hagenson, Randy L.; and Soules, David A., 5,334,701, Cl. 528-486.000.

Gelardi, John A.: *See—*
Gelardi, Paul J.; Gelardi, John A.; and Capotosto, David A., 5,334,254, Cl. 134-25.400.

Gelardi, Paul J.; Capotosto, David A.; Dussault, James R.; and Capotostop, Christopher C., to Gelardi, Paul J. Wrap cutter. 5,333,381, Cl. 30-2.000.

Gelardi, Paul J.; Gelardi, John A.; and Capotosto, David A., to Gelardi, Paul J. Non-abrasive disc cleaner. 5,334,254, Cl. 134-25.400.

Gelfgat, Yuri; El-Boher, Arie; and Branover, Herman, to Ontec, Ltd. Method and device for producing homogeneous alloys. 5,333,672, Cl. 164-468.000.

Gellert, Jobst U. Injection molding nozzle insert with valve member locating blades. 5,334,008, Cl. 425-549.000.

Gelman, Andrew E.: *See—*
Kossovsky, Nir; Gelman, Andrew E.; and Sponsler, Edward E., 5,334,394, Cl. 424-494.000.

Gemstar Development Corporation: *See—*
Yuen, Henry C.; and Kwoh, Daniel S., 5,335,079, Cl. 358-335.000.

GenCorp Inc.: *See—*
McGarry, Frederick J.; and McBain, Douglas S., 5,334,441, Cl. 428-229.000.

General Electric Company: *See—*
Anderson, Oscar E., 5,334,313, Cl. 210-624.000.
Anthony, Thomas R.; and Fleischer, James F., 5,334,280, Cl. 156-635.000.
Behm, Michael E.; and Toraason, Clifford M., 5,334,061, Cl. 440-75.000.
Boka, Jeffrey B.; Patel, Naresh R.; Kim, Kevin D.; and Shaw, David S., 5,335,179, Cl. 364-434.000.
Carrico, Philip H.; and Holmes, Roger W., 5,334,128, Cl. 493-439.000.
Coffinberry, George A., 5,333,445, Cl. 60-270.100.
Halila, Ely E., 5,333,443, Cl. 60-39.310.
Jacobs, Keith G.; Rosario, Jeanne M.; and Fisher, Michael H., 5,333,995, Cl. 415-209.200.

VOL 1165 ISS 1 AG 2 1994 UMI

Jordan, Therese C.; and Webb, Jimmy L., 5,334,672, Cl. 525-446.000.
Laskaris, Evangelo T.; Herd, Kenneth G.; and Dorri, Bizham, 5,333,464, Cl. 62-51.100.
Missana, Adrian; and Gary, Russell A., 5,333,989, Cl. 415-17.000.
Schaeffer, Jon C., 5,334,263, Cl. 148-217.000.
Schlegel, Mark D., 5,333,525, Cl. 83-23.000.
Scobbo, James J., Jr.; and Stoddard, Gregory J., 5,334,659, Cl. 525-71.000.
Stetson, John B., Jr., 5,333,819, Cl. 244-164.000.
Stueber, Henry B.; Baehre, Eric E.; Albrecht, Richard W.; Glynn, Christopher C.; and Hemmelgarn, Robert J., 5,333,993, Cl. 415-164.500.
Thimineur, Raymond J.; Traver, Frank J.; and Van Valkenburgh, Virgina M., 5,334,737, Cl. 556-440.000.
Vanek, Laurence D.; and McGrath, Robert G., 5,334,878, Cl. 307-64.000.
Viertl, John R. M., 5,334,934, Cl. 324-220.000.

General Motors Corporation: *See—*
Barnes, William J., 5,333,901, Cl. 280-732.000.
Bruggemann, Charles J.; Poss, Michael G.; and Shah, Sanjay M., 5,333,775, Cl. 228-157.000.
Jensen, Eric L.; Belvo, Rachel J.; and Derr, Randall L., 5,333,708, Cl. 188-322.140.
Landis, Paul M.; Webber, James L.; and Worrell, Barry C., 5,333,897, Cl. 280-728.00A.
O'Daniel, Gregory F., 5,333,500, Cl. 73-468.000.

General Production Services, Inc.: *See—*
Reh, Carter K.; and Robak, Edward, 5,335,076, Cl. 348-794.000.

Gentile, Anthony: *See—*
Gentile, John J.; and Gentile, Anthony, 5,334,079, Cl. 446-486.000.

Gentile, Geoffrey E.; and Oestreich, Bruce D., to Boeing Company, The; and Bell Helicopter Textron, Inc. Image intensity degradation tester. 5,335,060, Cl. 356-213.000.

Gentile, John J.; and Gentile, Anthony, to Abrams/Gentile Entertainment Inc. Toy having flexible shell for launching projectiles. 5,334,079, Cl. 446-486.000.

Georges, John B.; and Lau, Kam Y., to University of California, Regents of the. Method and apparatus for modulation of self-pulsating diode laser's self-pulsating frequency. 5,335,107, Cl. 359-181.000.

Gerard, Jean-Paul. Water sports apparatus. 5,334,066, Cl. 441-129.000.

Gerber, Arthur H., to Borden, Inc. Latent acid curable compositions. 5,334,675, Cl. 525-485.000.

Gerber, Edwin M.: *See—*
Jensen, Roderick J.; Day, Richard L.; and Gerber, Edwin M., 5,334,093, Cl. 460-83.000.

Gerhart, Donald J., to Duke University. Antifouling coating and method for using same. 5,334,389, Cl. 424-409.000.

Gerin, Merlin: *See—*
Bur, Marc; and Nebon, Jean-Pierre, 5,334,808, Cl. 200-50.0AA.

German, Michael G.: *See—*
Akkapeddi, Kaushik S.; Bonanni, Rocco; Gashler, Robert J.; German, Michael G.; Lambert, William R.; and Schramm, Eugene C., 5,334,029, Cl. 439-66.000.

German, Randall M.: *See—*
Streicher, Eric; and German, Randall M., 5,334,341, Cl. 419-53.000.

Gerstenkorn, Michael D.: *See—*
Lane, Wallace E.; Lane, Michael L.; Whitney, Lowell T.; and Gerstenkorn, Michael D., 5,333,763, Cl. 222-386.500.

Gery, Jonathan S. Pitching practice apparatus. 5,333,856, Cl. 273-26.00A.

Gesco International, Inc.: *See—*
Klein, James K.; and Sinko, George E., 5,334,157, Cl. 604-160.000.

Gestin, Jean-Francois: *See—*
Mease, Ronnie C.; Srivastava, Suresh C.; and Gestin, Jean-Francois, 5,334,729, Cl. 548-546.000.

Ghaem, Sanjar, to Motorola, Inc. Integrated circuit module with devices interconnected by electromagnetic waves. 5,335,361, Cl. 455-66.000.

Ghazarossian, Vartan: *See—*
Skold, Carl N.; Shanafelt, Armen B.; Ghazarossian, Vartan; and Ullman, Edwin F., 5,334,513, Cl. 435-7.920.

Ghisalba, Oreste: *See—*
Kittelmann, Matthias; Ghisalba, Oreste; Klein, Teresa; Kragl, Udo; and Wandrey, Christian, 5,334,514, Cl. 435-84.000.

Ghisolfi, Guido, to M. & G. Ricerche S.p.A. Process for the production of high molecular weight polyester resins. 5,334,669, Cl. 525-437.000.

Ghosh, A. K.: *See—*
Paquin, Normand; and Ghosh, A. K., 5,335,106, Cl. 359-180.000.

Ghosh, Pratik: *See—*
Peck, Timothy L.; and Ghosh, Pratik, 5,334,937, Cl. 324-318.000.

Giannotta, Giorgio: *See—*
Po', Riccardo; Occhiello, Ernesto; Giannotta, Giorgio; and Garbassi, Fabio, 5,334,343, Cl. 264-328.100.

Gianturco, Cesare, to Cook Incorporated. Vascular occlusion assembly. 5,334,210, Cl. 606-151.000.

Giat Industries: *See—*
Simon, Georges; and Baubois, Michel, 5,333,530, Cl. 89-13.100.

Gibler, Carma J.; and Wilson, Stanley E., to Shell Oil Company. Selective hydrogenation of conjugated diolefin polymers with Tebbe's reagent. 5,334,566, Cl. 502-113.000.

Giesy Consultants, Inc.: *See—*
Giesy, Jerry D.; and Hoskins, Matthew W., 5,334,185, Cl. 604-164.000.

Giesy, Jerry D.; and Hoskins, Matthew W., to Giesy Consultants, Inc. End-to-end instrument placement apparatus. 5,334,185, Cl. 604-164.000.

Gilbert, Bruce. Wireline set and tubing retrievable packer. 5,333,685, Cl. 166-123.000.

Gilcher, Heinz, to Union Switch & Signal Inc. Railway vehicle wheel detector utilizing magnetic differential bridge. 5,333,820, Cl. 246-249.000.

Gilchrist, Jon P.; and Klebusch, William C., to South Bend Controls, Inc. Solenoid valve. 5,333,643, Cl. 137-605.000.

Gill, Manzur: *See—*
McElroy, David J.; Lin, Sung-Wei; and Gill, Manzur, 5,334,550, Cl. 437-65.000.

Gillioz, Marc. Lead-in device for a slide fastener. 5,333,362, Cl. 24-433.000.

Gilmore, Paul: *See—*
Bhoori, Yousuf M.; Leydon, Daniel S.; and Gilmore, Paul, 5,334,444, Cl. 428-280.000.

Gingerich, Larry T.: *See—*
Jaenke, Paul E.; and Gingerich, Larry T., 5,335,209, Cl. 367-155.000.

Gioscia, Richard, to Sony Electronics, Inc. Mounting assembly for suspending an electrical appliance from an elevated cabinet. 5,333,827, Cl. 248-289.100.

Giovannini, Flavio: *See—*
DiSilvestro, Maurizio; and Giovannini, Flavio, 5,333,587, Cl. 123-456.000.

Girault, Alain: *See—*
Nuns, Jacques; Girault, Alain; and Rancurel, Alain, 5,334,290, Cl. 202-205.000.

GKN Automotive AG: *See—*
Beigang, Wolfgang, 5,333,711, Cl. 192-71.000.
Krude, Werner; Harz, Peter; and Frielingsdorf, Herbert, 5,333,939, Cl. 301-124.100.

Glace, William R.: *See—*
Ibsen, Robert L.; Pacropis, Donald R.; and Glace, William R., 5,334,625, Cl. 523-115.000.

Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, to Hoechst-Roussel Pharmaceuticals Inc. Heteroaryl-8-azabicyclo[3,2,1]octanes as antipsychotic agents, 5-HT_3 receptor antagonists and inhibitors of the reuptake of serotonin. 5,334,599, Cl. 514-304.000.

Glanville, Thomas W.: *See—*
Muller, Bruce R.; Hall, Douglas O.; Sherburne, David G.; and Glanville, Thomas W., 5,335,039, Cl. 354-324.000.

Glasa, Stefan, to Bernhardt Apparatebau GmbH u. Co. Device for the inflation of, more particularly, a container or a floating body of an item of lifesaving equipment. 5,333,756, Cl. 222-5.000.

Glater, Michael; Barreda, Carlos; and Zlobinsky, Yury, to Savant Instruments, Inc. Centrifugal vacuum concentration with holder assembly. 5,334,130, Cl. 494-4.000.

Glen, Alasdair T.: *See—*
Crowley, Patrick J.; Glen, Alasdair T.; Spence, Rosamund A.; and Lawson, Kevin R., 5,334,722, Cl. 546-289.000.

Glengarry Industries Ltd.: *See—*
Groothuizen, Raymond T., 5,335,311, Cl. 392-457.000.

Glenn, Jerry L. Surface for a seat of a cycle. 5,333,930, Cl. 297-219.110.

Gluz, Jacob. Earphone-type speaker assembly. 5,335,285, Cl. 381-187.000.

Glynn, Christopher C.: *See—*
Stueber, Henry B.; Baehre, Eric E.; Albrecht, Richard W.; Glynn, Christopher C.; and Hemmelgarn, Robert J., 5,333,993, Cl. 415-164.500.

Godfrey, Christopher R. A.: *See—*
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.

Goetz, Frederick J., to Elf Atochem North America, Inc. Electroactive compounds, compositions and devices and methods of making the same. 5,334,333, Cl. 252-582.000.

Goforth, Henry E., to Spego, Inc. Pressure stabilizer for barfeed apparatus. 5,333,524, Cl. 82-127.000.

Gohda, Makoto: *See—*
Yamashita, Shinichi; Ikeda, Shingo; and Gohda, Makoto, 5,335,077, Cl. 358-320.000.

Gold Industries Co., Ltd.: *See—*
Murata, Kentaro, 5,333,733, Cl. 206-330.000.

Goldberg, Edward B.: *See—*
Blackburn, Peter; Projan, Steven J.; and Goldberg, Edward B., 5,334,582, Cl. 514-2.000.

Golden Valley Microwave Foods Inc.: *See—*
Risch, Sara J.; and Brandberg, Lawrence C., 5,334,820, Cl. 219-730.000.

Goldfarb, Simon. Method of playing a game of chance at locations remote from the game site. 5,333,868, Cl. 273-138.00A.

Goldsmith, Daniel S.; and Parker, William S., to American Dental Technologies, Inc. Combination air abrasive system and laser system for dental applications. 5,334,016, Cl. 433-29.000.

Goldsmith, Daniel S.; Howell, Michael P.; and Parker, William S., to American Dental Technologies, Inc. Dental air abrasive system. 5,334,019, Cl. 433-88.000.

Goldstar Co., Ltd.: *See—*
Cho, Mun H., 5,335,087, Cl. 358-432.000.
Choi, Hoon B., 5,335,007, Cl. 346-107.00R.
Kwak, Byung K., 5,334,248, Cl. 95-12.000.

Park, Seung C., 5,335,080, Cl. 358-335.000.

Goldstar Electron Co., Ltd.: *See—*
Cha, Gi Bon, 5,334,873, Cl. 257-666.000.

Goldstein, Steven W.; and McDermott, Ruth E., to Pfizer Inc. Hypoglycemic hydroxyurea derivatives. 5,334,604, Cl. 514-364.000.

Gollobin, Peter. Method and article for removing splinters with a disposable lancet. 5,334,195, Cl. 606-131.000.

Goltsin, Boris: *See—*
Gavlin, Gilbert; Langdon, William M., deceased; Goltsin, Boris; Erlebacher, Gunther; and Larson, Douglas A., 5,334,291, Cl. 202-234.000.

Gomi, Katsushige: *See—*
Arai, Hitoshi; Kanda, Yutaka; Kono, Motomichi; Kasai, Masaji; Ashizawa, Tadashi; and Gomi, Katsushige, 5,334,611, Cl. 514-410.000.

Gonzalez-Hernandez, Jesus: *See—*
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Strand, David A.; Czubatyj, Wolodymyr; Gonzalez-Hernandez, Jesus; Fritzsche, Hellmut; Ye, Qiuyi; Kostylev, Sergey A.; and Chao, Benjamin S., 5,335,219, Cl. 369-288.000.

Gonzalez-Lopez, Jorge: *See—*
Ferracini, Bruno; Gonzalez-Lopez, Jorge; and Pettazzi, Giancarlo, 5,335,295, Cl. 382-47.000.

Good, Walter F.; Gur, David; Owen, James F.; Whiting, Bruce R.; Modney, David L.; and Weil, Richard, to Eastman Kodak Company; and University of Pittsburgh. Computed radiography patient identification system. 5,334,851, Cl. 250-582.000.

Goodman, Richard A.: *See—*
Jackson, Wayne K.; and Goodman, Richard A., 5,335,113, Cl. 359-569.000.

Goodrich, Michael R., to Senior Engineering Investments, B.V. Integrated air injection and exhaust gas recirculation system. 5,333,447, Cl. 60-278.000.

Goodrich, Michael R.: *See—*
Davey, Mark J.; and Goodrich, Michael R., 5,333,917, Cl. 285-205.000.

Goodson, Forrest R.; and Rudy, Thomas P., to United Technologies Corporation. Cleaner method for electrostatic precipitator. 5,334,238, Cl. 95-59.000.

Goossens, Andre F. L.; Seitz, Karlheinz; and Lauer, Josef, to Alfred Teves GmbH. Electromagnetic valve for antislip hydraulic brake systems. 5,333,946, Cl. 303-119.200.

Gordon, Gary B.: *See—*
Barth, Phillip W.; and Gordon, Gary B., 5,333,831, Cl. 251-11.000.

Gorlich, Michael P., to World Class Packaging Systems, Inc. Method of packaging food product. 5,334,405, Cl. 426-396.000.

Gosciniak, Donald J.: *See—*
Neilan, James P.; and Gosciniak, Donald J., 5,334,762, Cl. 564-259.000.

Gose, William C.; and Hyche, Kenneth W., to Eastman Chemical Company. Aqueous additive systems, methods and polymeric particles. 5,334,644, Cl. 524-487.000.

Gosebruch, Harald: *See—*
Focke, Heinz; and Gosebruch, Harald, 5,333,735, Cl. 206-494.000.

Goswami, Jagadish C.; and Alessio, Gerald R., to Akzo Nobel N.V. Substrate with adhesion promoting film comprising vinyl chloride polymer plasticized with polyketone. 5,334,443, Cl. 428-261.000.

Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, to Tokai Rubber Industries, Ltd. Elastic mount having fluid chamber partially defined by oscillating plate actuated by moving coil in annular gap between two yokes connected to permanent magnet, and method of manufacturing the elastic mount. 5,333,846, Cl. 267-140.140.

Goto, Kunifumi: *See—*
Suzuki, Shigeru; Hoshino, Tatsuyuki; Hiramatsu, Osamu; and Goto, Kunifumi, 5,333,679, Cl. 165-43.000.

Goto, Kyohei, to Kaisei Engineering Co., Ltd. Golf practice apparatus. 5,333,876, Cl. 273-195.00B.

Goto, Teruo: *See—*
Teramoto, Mitsutake; Okumoto, Takaharu; Goto, Teruo; Saito, Shinkichi; and Asabuki, Hideyo, 5,333,859, Cl. 273-77.00A.

Gough, William A. G., Jr.; and Lyon, David L., to Universal Dynamics Limited. Method and apparatus for adaptive control. 5,335,164, Cl. 364-149.000.

Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter Ltd. Hydrophilic polyurethanes of improved strength. 5,334,691, Cl. 528-76.000.

Gould, Inc.: *See—*
Oliver, David C.; and Petrillo, Micheal J., 5,335,253, Cl. 377-48.000.

Grabbe, Michael: *See—*
Hartung, Michael; Grabbe, Michael; and Mayenfels, Peter, 5,334,420, Cl. 427-407.100.

Grabner, R. Fred: *See—*
Makowiecki, Daniel M.; McKernan, Mark A.; Grabner, R. Fred; and Ramsey, Philip B., 5,333,726, Cl. 204-298.090.

Grabowski, Wojciech, to OSi Specialties, Inc. Efficient diesel fuel antifoams of low silicone content. 5,334,227, Cl. 44-320.000.

Graessle, Josef A.; Schwarz, Werner R.; and Foltz, William E., to Minnesota Mining and Manufacturing Company. Method and apparatus for detecting fluorescence. 5,334,841, Cl. 250-458.100.

Graf, Herbert: *See—*
Locher, Johannes; Graf, Herbert; Rodriguez-Amaya, Nestor; Schmitt, Alfred; Tauscher, Joachim; and Zimmermann, Werner, 5,335,136, Cl. 361-160.000.

Graf, Todd S.: *See—*
Smith, Ronald R.; Foreman, Richard D.; Graf, Todd S.; and Redden, Joseph D., 5,333,835, Cl. 251-129.120.

Graham, Charles R.: *See—*
Herdeman, Robert W.; Kowalczyn, Taras A.; Graham, Charles R.; and Herzstein, John, 5,333,394, Cl. 34-467.000.

Graiff, Leonard B.; Ngan, Danny Y.; Visser, Benton E.; and Webster, Greg E., to Shell Oil Company. Reduction of jet engine smoke emissions by contacting jet fuel with a carbon molecular sieve adsorbent. 5,334,308, Cl. 208-299.000.

Grandi, Guido: *See—*
Del Bue, Marina; Cosmina, Paola; Franchi, Elisabetta; and Grandi, Guido, 5,334,531, Cl. 435-252.310.

Grant, Andrew S.: *See—*
Kluger, Ronald H.; and Grant, Andrew S., 5,334,707, Cl. 530-385.000.

Grant, Richard L.: *See—*
Main, Lauren O.; and Grant, Richard L., 5,333,773, Cl. 227-179.000.

Grant, Tony F.: *See—*
Washington, Samuel J.; and Grant, Tony F., 5,334,763, Cl. 564-475.000.

Grasshoff, Jurgen M.; Mischke, Mark R.; and Telfer, Stephen J., to Polaroid Corporation. Process for generation of squaric acid and for imaging, and imaging medium for use therein. 5,334,489, Cl. 430-335.000.

Gratz, Roy F.: *See—*
Alston, William B.; and Gratz, Roy F., 5,334,733, Cl. 552-114.000.

Gravel, James L., to Rosemount Inc. Pneumatic instrument particle trap. 5,333,637, Cl. 137-83.000.

Graves, Gerald E. Nutcracker. 5,333,384, Cl. 30-120.200.

Gray, Colin J.: *See—*
Baker, Julie; Gray, Colin J.; and Barnett, Anthony M., 5,334,483, Cl. 430-207.000.

Gray, George W.; Lacey, David; Toyne, Kenneth J.; Hird, Michael; and McDonnell, Damien G., to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and North Ireland United Kingdom Atomic Energy Authority, The. Laterally fluorinated 4-cyanophenyl and 4'-cyanobiphenyl benzoates. 5,334,327, Cl. 252-299.670.

Green Cross Corporation, The: *See—*
Kobayashi, Kaoru; Kuwae, Shinobu; Ooya, Tomoshi; Fukutsuka, Hirotoshi; Sumi, Akinori; Ohtani, Wataru; Ohmura, Takao; and Yokoyama, Kazumasa, 5,334,512, Cl. 435-69.600.
Sekiyama, Yasushi; Mizukami, Yuichi; and Yamamoto, Tessei, 5,334,373, Cl. 424-40.000.

Green, Patricia: *See—*
Pridgeon, Jay G.; Green, Patricia; and Spector, George, 5,333,877, Cl. 273-248.000.

Green, Richard: *See—*
Castelijns, Anna M. C. F.; Arts, Henricus J.; and Green, Richard, 5,334,721, Cl. 546-251.000.

Green, Robert S.; and Focht, Louise M., to Sutter Corporation. Patella exercising apparatus. 5,333,604, Cl. 601-33.000.

Greene, Mark I.; Saragovi, Horacio U.; and Kahn, Michael, to University of Illinois; and University of Pennsylvania, Trustees of the. Compositions which are immunologically crossreactive with antibodies and preparative methods therefor. 5,334,702, Cl. 530-323.000.

Greene, William J.: *See—*
Blackman, Robert J.; Greene, William J.; and Landis, Newton C. M., 5,335,038, Cl. 354-319.000.

Greenhalgh, Stephen J.: *See—*
Millar, David J.; Greenhalgh, Stephen J.; and Gregory, Richard P., 5,335,275, Cl. 380-4.000.

Greenlee Textron Inc.: *See—*
Nordlin, William F., 5,334,000, Cl. 417-360.000.

Greenlee, William J.: *See—*
Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., 5,334,598, Cl. 514-303.000.

Gregoire, George D. Method and apparatus for making printed circuit boards. 5,334,279, Cl. 156-630.000.

Gregory, John A.: *See—*
Pope, Gregory M.; Stone, Jeffrey F.; and Gregory, John A., 5,335,342, Cl. 395-575.000.

Gregory, Richard P.: *See—*
Millar, David J.; Greenhalgh, Stephen J.; and Gregory, Richard P., 5,335,275, Cl. 380-4.000.

Greier, Gerhard: *See—*
Lotz, Bernhard; and Greier, Gerhard, 5,334,602, Cl. 514-317.000.

Grelaud, Alain: *See—*
Arriulou, Pascal; Grelaud, Alain; and Venet, Francois, 5,333,683, Cl. 165-166.000.

Gretag Imaging AG: *See—*
Kunz, Jurg; Knecht, Hugo; and Binder, Erich, 5,335,045, Cl. 355-72.000.

Grewe, Werner: *See—*
Benedikt, Walter; Betz, Dieter; Grewe, Werner; and Haist, Gerhard, 5,333,592, Cl. 123-634.000.

Gries, Heinz; Raduchel, Bernd; Platzek, Johannes; Weinmann, Hanns-Joachim; Preas, Wolf-Rudiger; and Speck, Ulrich, to Schering Aktiengesellschaft. Marcocyclic polyaza bicyclo compounds containing 5 or 6 membered rings, and method for MRI. 5,334,371, Cl. 424-9.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Griffith, Owen W.: *See—*
Kilbourn, Robert G.; Griffith, Owen W.; and Gross, Steven S., 5,334,380, Cl. 424-85.200.

Grim, Tracy E.; and Bobroff, Alec D. Formed resilient orthopaedic support. 5,334,135, Cl. 602-26.000.

Grimm, Gary E., to TRW Inc. Spacecraft docking sensor system. 5,334,848, Cl. 250-548.000.

Grogan, Elizabeth A.: *See—*
Snyder, Brian A.; Contestable, Paul B.; Abrams, Catherine T.; and Grogan, Elizabeth A., 5,334,503, Cl. 435-7.320.

Groothuizen, Raymond T., to Glengarry Industries Ltd. Modular galvanic current control resistor assembly for mounting on an electric immersion heater. 5,335,311, Cl. 392-457.000.

Gross, Steven S.: *See—*
Kilbourn, Robert G.; Griffith, Owen W.; and Gross, Steven S., 5,334,380, Cl. 424-85.200.

Grosse, Carsten: *See—*
Soehendra, Nib; and Grosse, Carsten, 5,334,208, Cl. 606-108.000.

Gruenwald, Werner: *See—*
Friese, Karl-Hermann; Gruenwald, Werner; Wiedenmann, Hans-Martin; and Hoetzel, Gerhard, 5,334,350, Cl. 422-98.000.

Grund, Alan D., to Bio-Technical Resources, L.P. Microbial production of cis-dihydrodiol and phenol derivatives of benzocyclobutene. 5,334,773, Cl. 568-734.000.

Grupp, Gunter: *See—*
Breyer, Karl-Hermann; Aubele, Eugen; Grupp, Gunter; Eberspeerdt, Peter; and Wiedmann, Wolfgang, 5,333,386, Cl. 33-1.00M.

Gryspeerdt, Jose G. T., to Ford New Holland, Inc. Insitu adjustable dual range belt drive assembly. 5,334,103, Cl. 474-18.000.

Guerin, Daniel: *See—*
Marie, Bruno; Guerin, Daniel; and Larquet, Christian, 5,335,245, Cl. 372-103.000.

Guerin, Gilles: *See—*
Derian, Paul-Joel; and Guerin, Gilles, 5,334,585, Cl. 514-74.000.

Guez, David: *See—*
Cuine, Alain; de Barochez, Bruno H.; and Guez, David, 5,334,392, Cl. 424-468.000.

Guggenmos, Xaver: *See—*
Stein, Christian; Guggenmos, Xaver; and Krause, Joachim, 5,335,134, Cl. 361-56.000.

Guha, Subhendu; Yang, Chi C.; and Xu, XiXiang, to United Solar Systems Corp. Microwave energized process for the preparation of high quality semiconductor material. 5,334,423, Cl. 427-575.000.

Guilford Mills, Inc.: *See—*
Enfield, Jeffrey J.; Harmon, William S.; and Beard, McDaniel L., 5,333,364, Cl. 28-172.200.

Guinness Brewing Worldwide Limited: *See—*
Purdham, Robert, 5,334,400, Cl. 426-112.000.

Guldi, Richard L., to Texas Instruments Incorporated. Method for improving gate oxide integrity using low temperature oxidation during source/drain anneal. 5,334,556, Cl. 437-248.000.

Gumprecht, William H.: *See—*
Felix, Vinci M.; Gumprecht, William H.; and Mahler, Barry A., 5,334,787, Cl. 570-169.000.

Gupte, Neelkanth S.: *See—*
Liu, Xin; Spencer, Steven J.; Gupte, Neelkanth S.; Chiang, Robert H. L.; and Gaffaney, Daniel, 5,333,682, Cl. 165-133.000.

Gur, David: *See—*
Good, Walter F.; Gur, David; Owen, James F.; Whiting, Bruce R.; Modney, David L.; and Weil, Richard, 5,334,851, Cl. 250-582.000.

Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., to Signode Corporation. Dual coil power strapping machine. 5,333,438, Cl. 53-399.000.

Gurmarnik, Simon. Catheter with needle trap. 5,334,161, Cl. 604-164.000.

Guse, Rudolf, to SMS Schloemann-Siemag Aktiengesellschaft. Installation for manufacture of hot rolled steel strips. 5,333,366, Cl. 29-33.00C.

Gusky, Frank J.: *See—*
Showalter, Michael S.; Dawson, John G., Jr.; and Gusky, Frank J., 5,333,841, Cl. 266-51.000.

Gusmeroli, Marilena: *See—*
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Mirenna, Luigi; and Mirenna, Luigi, 5,334,605, Cl. 514-365.000.
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; and Mirenna, Luigi, 5,334,609, Cl. 514-393.000.

Gustafson, Bruce L.: *See—*
Sumner, Charles E., Jr.; Gustafson, Bruce L.; Arnold, Ernest W., III; Fugate, Eric J.; and Fuller, Dewey W., Jr., 5,334,754, Cl. 562-416.000.

Gustafsson, Carl E.: *See—*
Petterson, Bo; and Gustafsson, Carl E., 5,333,390, Cl. 33-706.000.

Gutala, Ravi P.: *See—*
Van Buskirk, Michael A.; Plouse, Kevin W.; Pawletko, Joseph G.; Chang, Chi; Haddad, Sameer S.; and Gutala, Ravi P., 5,335,198, Cl. 365-185.000.

Guthikonda, Ravindra N.: *See—*
DiNinno, Frank; and Guthikonda, Ravindra N., 5,334,590, Cl. 514-210.000.

Gutierrez, Antonio; Soled, Stuart L.; and Paes, Jose A., to Exxon Chemical Patents Inc. Polymer Alkylation of hydroxyaromatic compounds. 5,334,775, Cl. 568-791.000.

Guttoriello, Angelo: *See—*
Smith, Rowland C.; Pettit, Neville T.; and Guttoriello, Angelo, 5,333,506, Cl. 73-756.000.

Guy, Thomas D.; and Iannirubertо, Alex, to United States Surgical Corporation. Variable interior dimension cannula assembly. 5,334,164, Cl. 604-248.000.

Gybin, Alexander S.: *See—*
Van Iseghem, Lawrence C.; and Gybin, Alexander S., 5,334,485, Cl. 430-287.000.

Haas, Thomas; Wiegand, Norbert; and Arntz, Dietrich, to Degussa Aktiengesellschaft. Process for the production of 1,3-propanediol. 5,334,778, Cl. 568-862.000.

Haber, Terry M.; Smedley, William H.; and Foster, Clark B., to Habley Medical Technology Corporation. Pierceable pharmaceutical container closure with check valve. 5,334,178, Cl. 604-415.000.

Habley Medical Technology Corporation: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,334,178, Cl. 604-415.000.

Hadar, Yoram, to Lego M. Lemelshtrich Ltd. Ball-type water sprinkler. 5,333,788, Cl. 239-241.000.

Haddad, Donald E.: *See—*
Kane, Daniel E.; and Haddad, Donald E., 5,333,992, Cl. 415-138.000.

Haddad, Sameer S.: *See—*
Van Buskirk, Michael A.; Plouse, Kevin W.; Pawletko, Joseph G.; Chang, Chi; Haddad, Sameer S.; and Gutala, Ravi P., 5,335,198, Cl. 365-185.000.

Hadeishi, Chikako, Administrator: *See—*
Kimura, Hiroshi; Hadeishi, Tetsuo, deceased; Olsen, Harold M.; and Bak, Chan S., 5,333,487, Cl. 73-23.310.

Hadeishi, Tetsuo, deceased: *See—*
Kimura, Hiroshi; Hadeishi, Tetsuo, deceased; Olsen, Harold M.; and Bak, Chan S., 5,333,487, Cl. 73-23.310.

Hafner, Curtis R., to Marquette Electronics, Inc. Cardiac monitoring method and apparatus. 5,333,617, Cl. 128-697.000.

Hagemann, Hermann: *See—*
Scherkenbeck, Jurgen; Himmler, Thomas; Hagemann, Hermann; Dutzmann, Stefan; Dehne, Heinz-Wilhelm; and Hanssler, Gerd, 5,334,608, Cl. 514-383.000.

Hagen, Kevin R.: *See—*
Donnelly, Brendan J.; Debbouz, Amar; and Hagen, Kevin R., 5,334,407, Cl. 426-618.000.

Hagenson, Randy L.: *See—*
Ash, Carlton E.; Geibel, Jon F.; Hagenson, Randy L.; and Soules, David A., 5,334,701, Cl. 528-486.000.

Hagisu, Yasushi: *See—*
Hatouchi, Gokichi; Saitoh, Hisao; Shimizu, Kiyoshi; and Hagisu, Yasushi, 5,333,983, Cl. 414-331.000.

Hagnere, Raymon; and Warnke, Pierre, to Valeo. Friction clutch. 5,333,713, Cl. 192-89.220.

Hahn, Ulf: *See—*
Heitmann, Thomas; Bocker, Jurgen; and Hahn, Ulf, 5,333,551, Cl. 102-439.000.

Haist, Gerhard: *See—*
Benedikt, Walter; Betz, Dieter; Grewe, Werner; and Haist, Gerhard, 5,333,592, Cl. 123-634.000.

Haji, Nobuyuki: *See—*
Fujii, Koji; Haji, Nobuyuki; and Yamada, Minoru, 5,335,309, Cl. 392-421.000.

Halbleib, Harold W.: *See—*
Snowbarger, Jim L.; and Halbleib, Harold W., 5,335,221, Cl. 370-13.000.

Halczenko, Wasyl: *See—*
Hartman, George D.; Halczenko, Wasyl; and Prugh, John D., 5,334,596, Cl. 514-301.000.

Halford, Wayne R.: *See—*
Hippely, Keith A.; Swisher, Gary; Choy, Terence A.; and Halford, Wayne R., 5,334,078, Cl. 446-470.000.

Halila, Ely E., to General Electric Company. Seal assembly. 5,333,443, Cl. 60-39.310.

Hall, Daniel R.: *See—*
Pope, Rodney T.; Barber, Steven D.; and Hall, Daniel R., 5,334,098, Cl. 472-116.000.

Hall, Douglas O.: *See—*
Muller, Bruce R.; Hall, Douglas O.; Sherburne, David G.; and Glanville, Thomas W., 5,335,039, Cl. 354-324.000.

Hallam, Andrew G.: *See—*
Shaw, Julia H.; and Hallam, Andrew G., 5,335,057, Cl. 356-73.100.

Hallden, Donald F.: *See—*
Hermanson, Dean E.; Hallden, Donald F.; and Isom, Horace G., 5,334,268, Cl. 148-530.000.

Haller, Ralf, to Heidelberger Druckmaschinen AG. Cross-cutter for final treatment or finishing of webs of material. 5,334,129, Cl. 493-351.000.

Halliburton Company: *See—*
Cook, Steven L., 5,334,935, Cl. 324-253.000.
Nusz, Bary J.; Payne, Robert K.; and Perez, Leslie A., 5,333,636, Cl. 137-12.000.
Pitts, Alan J.; and Fowler, Charles E., 5,335,185, Cl. 364-510.000.
Stephenson, Stanley V., 5,335,166, Cl. 364-166.000.

Halliday, Daniel L., to Allied-Signal Inc. Manchester pattern fault recognition. 5,334,978, Cl. 341-94.000.

Halterbeck, Walter; and Huser, Martin, to Thomas Josef Heimbach GmbH & Co. Wire-link belt. 5,334,440, Cl. 428-222.000.

Halushka, Perry V.; Spicer, Ken M.; and Mais, Dale E., to Medical University of South Carolina. Platelet receptor antagonists useful in detecting intravascular platelet aggregation. 5,334,369, Cl. 424-1.850.

Hamada, Nobuhiro: *See—*
Takahashi, Kazunori; Hamada, Nobuhiro; Takato, Masao; Baba, Kenji; Morooka, Yasuo; Kawakami, Junzo; Yokota, Takayoshi; and Kiyokawa, Ryuji, 5,335,180, Cl. 364-436.000.

Hamasaki, Masaharu, to Sony Corporation. Imager which has a load transistor connected to each vertical signal line and wherein each load transistor comprises two field transistors connected in series. 5,335,008, Cl. 348-301.000.

Hamato, Kazuhiko: *See—*
Yoneda, Noriyuki; Shiroto, Yoshimi; Hamato, Kazuhiko; Asaoka, Sachio; and Maejima, Tetsuo, 5,334,755, Cl. 562-519.000.

Hamilton, James H.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Hammons, John L.: *See—*
Buenger, Daniel E.; Horney, James C.; and Hammons, John L., 5,334,176, Cl. 604-367.000.

Hampton Rubber Company: *See—*
Ketterman, Kenneth L.; and Kinne, Raymond M., 5,334,064, Cl. 441-42.000.

Han, Min S.: *See—*
Choi, Kyung S.; Joo, Dae K.; Han, Min S.; Hwang, E Nam; and Choi, Hong K., 5,334,746, Cl. 560-38.000.

Hanajima, Hiroshi, to Ikegami Tsushinki Co., Ltd. Gamma compensating circuit method and apparatus of a color TV camera. 5,335,068, Cl. 348-674.000.

Hanchar, Peter J.: *See—*
Tanzer, Raymond C.; and Hanchar, Peter J., 5,333,866, Cl. 273-118.00R.

Handa, Keiji: *See—*
Koitabashi, Masanobu; Toda, Masato; and Handa, Keiji, 5,335,154, Cl. 362-294.000.

Hani, Tsutomu; Takahashi, Nobukazu; Kohara, Teiji; and Natsuume, Tadao, to Nippon Zeon Co., Ltd. Thermoplastic norbornene resin formed articles and sustrates for liquid crystal display. 5,334,424, Cl. 428-1.000.

Hanning, Walter: *See—*
Conrad, Horst; Diekmann, Jorg; Wilmes, Manfred; and Hanning, Walter, 5,334,054, Cl. 439-716.000.

Hans Oetiker AG Mashinen- und Apprate-fabrik: *See—*
Oetiker, Hans, 5,333,360, Cl. 24-20.00R.

Hansen, Gary P.: *See—*
Mellum, Ronald J.; Hawkins, Peter M., Jr.; Kline, Glennard M.; Klinkert, Deborah A.; McFarlane, Ronald G.; and Hansen, Gary P., 5,333,678, Cl. 165-42.000.

Hanson, Brian A.; and Paffrath, Edgar C., to Wesbar Corporation. Tail light construction. 5,335,155, Cl. 362-267.000.

Hanssler, Gerd: *See—*
Scherkenbeck, Jurgen; Himmler, Thomas; Hagemann, Hermann; Dutzmann, Stefan; Dehne, Heinz-Wilhelm; and Hanssler, Gerd, 5,334,608, Cl. 514-383.000.

Hara, Hiroari: *See—*
Yamamoto, Takushi; Hara, Hiroari; Maeda, Nobuhiro; and Nakamura, Morio, 5,334,679, Cl. 526-200.000.

Hara, Seinosuke; Yamada, Yosihiko; and Nakamura, Makoto, to Unisia Jecs Corporation; and Nissan Motor Co., Ltd. Control device for controlling intake and exhaust valves of internal combustion engine. 5,333,579, Cl. 123-90.170.

Hara, Tsukushi: *See—*
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,334,252, Cl. 118-726.000.

Harada, Yasuhiro; Nakano, Eiichi; Tatsumi, Hiroki; and Umezu, Motoaki, to Kikkoman Corporation. Isolated mink growth hormone genes, novel recombinant DNA and methods for producing mink growth hormone. 5,334,511, Cl. 435-69.400.

Harandi, Mohsen N.: *See—*
Del Rossi, Kenneth J.; Dovedytis, David J.; Esteves, David J.; Harandi, Mohsen N.; and Huss, Albin, Jr., 5,334,792, Cl. 585-314.000.

Harber, Julian S.: *See—*
Mannix, Christopher J.; Smith, Richard A. G.; Lewis, Ceri J.; and Harber, Julian S., 5,334,384, Cl. 424-94.630.

Hardee, Kim C., to United Memories, Inc.; and Nippon Steel Semiconductor Corp. Sense amplifier clock driver. 5,334,890, Cl. 307-530.000.

Harding, Robert A., Jr., to Clawson Tank Company. Storage container unit for hazardous liquids. 5,333,752, Cl. 220-565.000.

Hardy, Douglas A.: *See—*
Tugenberg, Michelle L.; Altschuler, Barry N.; and Hardy, Douglas A., 5,335,281, Cl. 380-48.000.

Hare, Dwight F.: *See—*
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, 5,335,347, Cl. 395-650.000.

Harel, Haim: *See—*
Yokev, Hanoch; and Harel, Haim, 5,335,246, Cl. 375-1.000.

Harker, Alan B.; DeNatale, Jeffrey F.; Hood, Patrick J.; and Flintoff, John F., to Rockwell International Corporation. Method of fabricating of diamond moth-eye surface. 5,334,342, Cl. 264-317.000.

Harmon, William S.: *See—*
Enfield, Jeffrey J.; Harmon, William S.; and Beard, McDaniel L., 5,333,364, Cl. 28-172.200.

Harney, Kevin; and Lippincott, Louis A., to Intel Corporation. Scalable multimedia platform architecture. 5,335,321, Cl. 395-162.000.

Harrer, Thomas: *See—*
Kalden, Joachim; Fleckenstein, Bernhard; Baur, Andreas; and Harrer, Thomas, 5,334,612, Cl. 514-440.000.

Harrington, James E.; and Camerlengo, Arthur J., to Helix Technology Corporation. Cryopump water drain. 5,333,466, Cl. 62-55.500.

Harris Corporation: *See—*
DeShazo, Thomas R., Jr., 5,335,132, Cl. 361-18.000.
Koontz, Floyd A., 5,334,957, Cl. 333-131.000.
Schade, Otto H., Jr., 5,334,929, Cl. 323-315.000.
Short, John P.; McLachlan, Craig J.; Rouse, George V.; and Zibrida, James R., 5,334,273, Cl. 156-87.000.

Harris, Dale C., to Eli Lilly and Company. Cartridge assembly for a lyophilized compound forming a disposable portion of an injector pen and method for same. 5,334,162, Cl. 604-232.000.

Harris, Edward D.; Schimmelpfennig, Fred J., Jr.; Badgett, James F.; and Bonner, Jeffrey O., to Pat Pyka Design Consultants, Inc. Modular wall-forming, shroud-enclosing panel for mounting into the interior of aircraft. 5,333,416, Cl. 52-27.000.

Harris, Ellis D., to Xerox Corporation. Rotating disc optical synchronization system using alternating binary diffractive optical elements. 5,335,108, Cl. 359-209.000.

Harris, Scott C.: *See—*
Brasoveanu, Dan; and Rauta, Mihai C., 5,335,017, Cl. 348-426.000.

Harrison, James J.; and Ruhe, William R., Jr., to Chevron Research and Technology Company, a Division of Chevron U.S.A. Inc. Modified high molecular weight succinimides. 5,334,321, Cl. 252-51.50A.

Hart, David C.: *See—*
Woollard, Howard W.; and Hart, David C., 5,333,854, Cl. 273-73.00R.

Hart, James E.; and Carroll, John B., to Westinghouse Air Brake Company. High pressure valve for railway car brake control valve device. 5,333,941, Cl. 303-40.000.

Hart, Larry. Workpiece turing and milling apparatus. 5,333,657, Cl. 142-24.000.

Hart, Rickey D.; Winters, Richard M.; Rice, John T.; and Nicholson, James E., to Innovasive Devices, Inc. Surgical instrument. 5,334,198, Cl. 606-52.000.

Hartley, Philip S.; and Stevens, John, to Fisons plc. Pharmaceutical compositions containing pentamidine. 5,334,374, Cl. 424-45.000.

Hartman, Davis H.; Richard, Fred V.; and Lebby, Michael S., to Motorola, Inc. Method of manufacturing I/O node in an optical channel waveguide and apparatus for utilizing. 5,335,300, Cl. 385-37.000.

Hartman, George D.; Halczenko, Wasyl; and Prugh, John D., to Merck & Co., INc. Fibrinogen receptor antagonists. 5,334,596, Cl. 514-301.000.

Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, to BASF Aktiengesellschaft. Graft polymers of natural substances containing saccharide structures or derivatives thereof and ethylenically unsaturated compounds and their use. 5,334,287, Cl. 162-175.000.

Hartnett, Mary A.; and Sherman, Kimberly J., to Microelectronics and Computer Technology Corporation. Method and apparatus for coating the top of an electrical device. 5,334,245, Cl. 118-59.000.

Hartung, Michael; Grabbe, Michael; and Mayenfels, Peter, to BASF Lacke & Farben Aktiengesellschaft. Process for the production of a multicoat finish, and an aqueous paint. 5,334,420, Cl. 427-407.100.

Haruch, James, to Spraying Systems Co. Spray nozzle with recessed deflector surface and mounting assembly thereof. 5,333,794, Cl. 239-600.000.

Harvey, John C.; and Cuddihy, James W., to Personalized Mass Media Corporation, The. Signal processing appparatus and methods. 5,335,277, Cl. 380-20.000.

Harvey, Kenneth: *See—*
Chalfant, Jeffrey R.; and Harvey, Kenneth, 5,333,424, Cl. 52-173.200.

Harz, Peter: *See—*
Krude, Werner; Harz, Peter; and Frielingsdorf, Herbert, 5,333,939, Cl. 301-124.100.

Hasbrouck, Robert R.: *See—*
Dekker, Don L.; and Hasbrouck, Robert R., 5,334,005, Cl. 425-188.000.

Hasegawa, Akira; Omura, Masayoshi; Imade, Shinichi; and Ikuta, Eishi, to Olympus Optical Co., Ltd. Acoustic lens system. 5,333,503, Cl. 73-642.000.

Hasegawa, Haruhiro: *See—*
Nishino, Toshikazu; Hasegawa, Haruhiro; and Kawabe, Ushio, 5,334,580, Cl. 505-191.000.

Hasegawa, Takashi, to Canon Kabushiki Kaisha. Image forming apparatus with grounded conductive member contacting a recording sheet bearing member. 5,335,053, Cl. 355-274.000.

Hasegawa, Toshihiko: *See—*
Takaki, Akira; Mori, Hiroto; and Hasegawa, Toshihiko, 5,334,660, Cl. 525-84.000.

Hashimoto, Atsuki: *See—*
Matsumura, Mitsuma; Mizuno, Kenji; and Hashimoto, Atsuki, 5,333,605, Cl. 601-40.000.

Hashimoto, Hiromasa, to Shin-Etsu Handotai Co., Ltd. Automatic wafer lapping apparatus. 5,333,413, Cl. 51-165.750.

Hashimoto, Rieko: *See—*
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko;

VOL 1165 ISS 1 AG 2 1994 UMI

Amemiya, Kouji; and Koshikawa, Sakae, 5,334,628, Cl. 514-311.000.

Hastings, Reed, to Pure Software Inc. Method for inserting new machine instructions into preexisting machine code to monitor preexisting machine access to memory. 5,335,344, Cl. 395-575.000.

Hata, Yoshiaki: *See*—
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.

Hatakeyama, Naoto, to NEC Corporation. Power controller. 5,334,979, Cl. 341-138.000.

Hatfield, J. Paul. Portable motor vehicle safety airbag. 5,333,902, Cl. 280-733.000.

Hatori, Nobuyoshi: *See*—
Kai, Masanori; Okabe, Satoshi; Hatori, Nobuyoshi; Koike, Toshio; and Iwamoto, Tamio, 5,335,047, Cl. 355-200.000.

Hatouchi, Gokichi; Saitoh, Hisao; Shimizu, Kiyoshi; and Hagisu, Yasushi, to Daifuku Co., Ltd. Rack arrangement. 5,333,983, Cl. 414-331.000.

Hatta, Yoshihiko: *See*—
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.

Hattori, Kazuo: *See*—
Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, 5,333,501, Cl. 73-592.000.

Hattori, Tadashi: *See*—
Katada, Mitsutaka; Muramoto, Hidetoshi; Fuzino, Seizi; Hattori, Tadashi; and Abe, Katsunori, 5,334,870, Cl. 257-371.000.

Hattori, Tatsuya; and Mikami, Naoko, to Ajinomoto Co., Inc. N-long chain acyl neutral amino acid esters. 5,334,713, Cl. 540-113.000.

Hauck, Peter: *See*—
Foerster, Arno; Engels, Berthold; and Hauck, Peter, 5,333,990, Cl. 415-58.400.

Haugk, Peter D., to Colgate-Palmolive Company. Topical composition comprising mono and dialkyl phosphates with a cosurfactant. 5,334,387, Cl. 424-401.000.

Hausch, Duane D., to Red Wing Shoe Company, Inc. Inflatable ventilating insole. 5,333,397, Cl. 36-3.00B.

Hauser Chemical Research, Inc.: *See*—
Murray, Christopher K.; Ziebarth, Timothy D.; and Beckvermit, Jeffrey T., 5,334,732, Cl. 549-510.000.

Hawkins, Peter M., Jr.: *See*—
Mellum, Ronald J.; Hawkins, Peter M., Jr.; Kline, Glennard M.; Klinkert, Deborah A.; McFarlane, Ronald G.; and Hansen, Gary P., 5,333,678, Cl. 165-42.000.

Hawley-Nelson, Pamela: *See*—
Gebeyehu, Gulilat; Jessee, Joel A.; Ciccarone, Valentina C.; Hawley-Nelson, Pamela; and Chytil, Anna, 5,334,761, Cl. 564-197.000.

Haworth, Inc.: *See*—
Kriener, Michael; Uhlenbrock, Johannes; Wilkerson, Larry A.; and Roslund, Richard N., Jr., 5,333,368, Cl. 297-301.000.

Hayabuchi, Masahiro: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.

Hayami, Hichiro: *See*—
Kamoi, Jyoei; Hayami, Hichiro; Kato, Yuji; Shimoe, Toshio; Abe, Shunji; Kusayanagi, Michio; Mukai, Haruo; and Soumiya, Toshio, 5,335,222, Cl. 370-60.000.

Hayami, Hiroyuki: *See*—
Takita, Masatoshi; Hayami, Hiroyuki; and Suzuki, Koichi, 5,335,306, Cl. 385-142.000.

Hayashi, Fumihiko: *See*—
Ohkawa, Masayoshi; and Hayashi, Fumihiko, 5,334,863, Cl. 257-69.000.

Hayashi, Kazuo: *See*—
Yamada, Toshihisa; Miyamoto, Toshiharu; Hayashi, Kazuo; Takayama, Ryoichi; Kobayashi, Shinji; and Ohmura, Keizi, 5,333,554, Cl. 105-397.000.

Hayashi, Masaaki: *See*—
Yamamoto, Tsutomu; Okada, Minoru; Ishigami, Takakazu; Motoki, Nobuyuki; Fuse, Eiichi; and Hayashi, Masaaki, 5,335,061, Cl. 356-241.000.

Hayashi, Noriki: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,334,252, Cl. 118-726.000.

Hayashi, Takahiro: *See*—
Naito, Yoshihisa; and Hayashi, Takahiro, 5,334,799, Cl. 174-17.0VA.

Hayashida, Masami; Fukuda, Yasuaki; and Watanabe, Yutaka, to Canon Kabushiki Kaisha. X-ray exposure apparatus. 5,335,259, Cl. 378-161.000.

Hayaski, Kiyoshi: *See*—
Takemoto, Sumio; and Hayaski, Kiyoshi, 5,333,354, Cl. 15-301.000.

Hayden, James D.: *See*—
Pfiester, James R.; and Hayden, James D., 5,334,861, Cl. 257-67.000.

Hayden, Joseph S., to Schott Glass Technologies, Inc. Phosphate glass useful in lasers. 5,334,559, Cl. 501-48.000.

Haydock, Paul M.: *See*—
Kirkpatrick, Michael E.; and Haydock, Paul M., 5,333,597, Cl. 126-110.00R.

Hayes, Donald J.; and Pies, John R., to Compaq Computer Corporation. Method and apparatus for film coated passivation of ink channels in ink jet printhead. 5,334,415, Cl. 427-231.000.

Hayes, James N.: *See*—
Dugan, John P.; Hayes, James N.; and Elliott, Steve M., 5,335,244, Cl. 372-101.000.

Haynes, Deborah I.: *See*—
Anderson, Kenneth W.; Haynes, Deborah I.; and Whiteside, Ross C., Jr., 5,334,676, Cl. 525-524.000.

Hays, David S.: *See*—
Bugner, Douglas E.; Hays, David S.; Kaeding, Jeanne E.; and Spinelli, Steven J., 5,334,477, Cl. 430-126.000.

Hazen, Joseph B.: *See*—
Lemanski, Michael F.; Hazen, Joseph B.; and Blum, Patricia R., 5,334,751, Cl. 560-265.000.

Heaney, Stephen P.: *See*—
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.

Heat Pipe Technology, Inc.: *See*—
Dinh, Khanh, 5,333,470, Cl. 62-333.000.

Hedge, J. Richard, Jr. Promotional advertising brochure including reusable envelope device. 5,333,909, Cl. 283-56.000.

Heer, Warren R.: *See*—
Cappa, Armando M.; and Heer, Warren R., 5,334,045, Cl. 439-506.000.

Heffron, Duane. Archery bow assembly. 5,333,595, Cl. 124-88.000.

Hegner, Frank; Schmidt, Elke; Klahn, Thomas; Reimann, Peter; Breitenstein, Heinz; and Messmer, Stephan, to Endress u. Hauser GmbH u. Co. Ternary active brazing based on a zirconium-nickel alloy. 5,334,344, Cl. 420-422.000.

Heian Corporation: *See*—
Suzuki, Yukitomo, 5,333,370, Cl. 29-563.000.
Suzuki, Yukitomo, 5,333,526, Cl. 83-256.000.

Heidelberger Druckmaschinen AG: *See*—
Ganter, Udo; and Rodi, Norbert, 5,333,545, Cl. 101-76.000.
Haller, Ralf, 5,334,129, Cl. 493-351.000.
Pfisterer, Alexander; and Rodi, Anton, 5,333,547, Cl. 101-409.000.

Heidemann, Rolf, to Alcatel N.V. Optical receiver with extended dynamic range. 5,335,109, Cl. 359-341.000.

Heinke, Harri; Blatt, Wolfgang; and Busse, Bernd, to Heraeus Elektrochemie GmbH. Electrochemical cell having inflatable seals between electrodes. 5,334,301, Cl. 204-267.000.

Heinonen, Jarmo, to Nokia Mobile Phones, Ltd. Circuit arrangement for automatic frequency control in a radio telephone. 5,335,364, Cl. 455-76.000.

Heinrich, Karl: *See*—
Jung, Holger; Klein, Peter; and Heinrich, Karl, 5,334,694, Cl. 528-185.000.

Heintz, Roswitha E.: *See*—
Dessi, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., 5,334,640, Cl. 524-56.000.

Heinz, Gerhard: *See*—
Koch, Juergen; and Heinz, Gerhard, 5,334,642, Cl. 524-83.000.

Heinze, Christoph, to Hoechst Aktiengesellschaft. Process and apparatus for thermal treatment of a mixture of solid substances and gases. 5,333,392, Cl. 34-363.000.

Heinze, Jurgen; and Synowczyk, Andreas W., to Dragerwerk Aktiengesellschaft. Sensor for detecting analytes in a fluid medium. 5,334,351, Cl. 422-90.000.

Heitmann, Thomas; Bocker, Jurgen; and Hahn, Ulf, to Rheinmetall GmbH. Drive member for a large-caliber multi-purpose cartridge and use of such a drive member for the product of different types of cartridges. 5,333,551, Cl. 102-439.000.

Hektor, Otto L. Apparatus for returning basketballs to freethrow line. 5,333,853, Cl. 273-1.50A.

Helgren, R. Hayes: *See*—
Adolf, Wayne F.; Helgren, R. Hayes; Renick, James T.; and Szempruch, Walter T., 5,334,180, Cl. 604-411.000.

Helix Technology Corporation: *See*—
Harrington, James E.; and Camerlengo, Arthur J., 5,333,466, Cl. 62-55.500.

Helsa-Werke Helmut Sandler GmbH & Co. KG: *See*—
Hobbs, Karin; Hoffmann, Regina; and Smolik, Klaus, 5,334,436, Cl. 428-195.000.

Hemmelgarn, Robert J.: *See*—
Stueber, Henry B.; Baehre, Eric E.; Albrecht, Richard W.; Glynn, Christopher C.; and Hemmelgarn, Robert J., 5,333,993, Cl. 415-164.500.

Hemmer, Chad G., to Catheter Research, Inc. Variable shape guide apparatus. 5,334,168, Cl. 604-281.000.

Henderson, Robert J. Inflatable sail battens. 5,333,569, Cl. 114-103.000.

Hendricksen, Michael J.: *See*—
Christie, C. Dale; Gallagher, Michael T.; Hendricksen, Michael J.; Oliver, John D.; and Polzin, Mark A., 5,333,926, Cl. 295-21.000.

Heneveld, William R. Encased lint roller with collapsible cover/handle. 5,333,341, Cl. 15-104.002.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Zeise, Christiane; Jacobs, Jochen; and Raehse, Wilfried, 5,334,324, Cl. 252-91.000.

Henkens, Robert W.; Zhao, Junguo; and O'Daly, John P., to Andcare, Inc. Peroxidase colloidal gold oxidase biosensors for mediatorless glucose determination. 5,334,296, Cl. 204-153.120.

Henry, David M.; and Marshall, Ronald. Inflatable float ring with redundant flotation means. 5,334,067, Cl. 441-131.000.

Henry, Marian S.: *See*—
Pond, Karen L.; Chitty, Alton L.; Oehlbeck, Douglas L.; Henry, Marian S.; and Darron, Ward K., 5,334,496, Cl. 430-569.000.

Henszey, Richard R.; and Weiss, Bruce W., to Sentry Equipment Corp. Variable pressure reducing device. 5,333,648, Cl. 138-26.000.

Hepler, Douglas C.; and Pursel, David L., to Polyshot Corporation. Hot sprue bushing with interchangeable tip having multiple edge gates. 5,334,006, Cl. 425-190.000.

Heraeus Elektrochemie GmbH: *See*—
Heinke, Harri; Blatt, Wolfgang; and Busse, Bernd, 5,334,301, Cl. 204-267.000.

Heraeus Instruments GmbH: *See*—
Ullrich, Bernt, 5,334,905, Cl. 313-22.000.

Herbstler, Horst D.: *See*—
Ankenbruck, James B.; Antolin, Jose V.; Herbstler, Horst D.; Lund, Bruce D.; Vahcic, Anne K.; and Wilson, Lowell T., 5,333,387, Cl. 33-18.100.

Hercules Incorporated: *See*—
Cohen, Richmond R., 5,334,177, Cl. 604-378.000.
Loo, De-Kai, 5,334,688, Cl. 528-15.000.

Herczeg, Karen L.; Mcvay, David M.; Phelps, Daniel J.; and Bell, Kimberley C., to Eastman Kodak Company. Thermal compensation for laser diodes using active feedback. 5,335,239, Cl. 372-38.000.

Herd, Kenneth G.: *See*—
Laskaris, Evangelo T.; Herd, Kenneth G.; and Dorri, Bizham, 5,333,464, Cl. 62-51.100.

Herdeman, Robert W.; Kowalczyn, Taras A.; Graham, Charles R.; and Herzstein, John, to Chiquita Brands, Inc. Controlled atmosphere container system for perishable products. 5,333,394, Cl. 34-467.000.

Hermann, William J., Jr.: *See*—
Wagle, Sudhakar S.; Steinbach, Thomas; Lawyer, Carl H.; Hermann, William J., Jr.; and Gawish, Ali A. S., 5,334,395, Cl. 424-553.000.

Hermanson, Dean E.; Hallden, Donald F.; and Isom, Horace G., to LTV Energy Products Co. Method of producing high strength sucker rod coupling. 5,334,268, Cl. 148-530.000.

Herr, Rolf-Peter: *See*—
Buchecker, Richard; Chen, Xin H.; Funfschilling, Jurg; Herr, Rolf-Peter; Schadt, Martin; and Schmitt, Klaus, 5,335,303, Cl. 385-122.000.

Herranen, Aileen: *See*—
Parker, James E.; and Herranen, Aileen, 5,334,538, Cl. 436-525.000.

Herron, John R.; Beaudry, Edward G.; Jochums, Carl E.; and Medina, Luis E., to Osmotek, Inc. Turbulent flow electrodialysis cell. 5,334,300, Cl. 204-257.000.

Hertrick, Timothy T.: *See*—
Powers, Thomas O.; Hertrick, Timothy T.; and Peak, Mary A., 5,334,458, Cl. 428-517.000.

Herz, William; and Rossmere, David, to Sony Electronics, Inc. Digital video data quantization error detection as applied to intelligent dynamic companding. 5,335,019, Cl. 348-607.000.

Herzstein, John: *See*—
Herdeman, Robert W.; Kowalczyn, Taras A.; Graham, Charles R.; and Herzstein, John, 5,333,394, Cl. 34-467.000.

Hesco Bastion Limited: *See*—
Heselden, James W., 5,333,970, Cl. 405-286.000.

Heselden, James W., to Hesco Bastion Limited. Building and shoring blocks. 5,333,970, Cl. 405-286.000.

Hess, Bernhard; Schulz-Schlitte, Wolfgang; Kirsch, Jurgen; Freitag, Dieter; Arndt, Uwe; Gehrke, Hans-Georg; and Zander, Klaus, to Bayer Aktiengesellschaft. Highly branched polyphosphonates based on melamine. 5,334,692, Cl. 528-126.000.

Hesse, Carsten: *See*—
Kaufmann, Dieter; Hesse, Carsten; and Himmler, Thomas, 5,334,750, Cl. 560-104.000.

Hevenor, Richard A.; and Chen, Pi-Fuay, to United States of America, Army. Automated extraction of airport runway patterns from radar imagery. 5,335,298, Cl. 382-54.000.

Hewlett-Packard Company: *See*—
Barth, Phillip W.; and Gordon, Gary B., 5,333,831, Cl. 251-11.000.

Heyden, Eddy F. M. G.; LaCour, Christian; Lechevalier, Michel M. A. A.; and Riou, Christophe N., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation. Dual sealing valve assembly. 5,333,644, Cl. 137-614.180.

Heymann, Bruce R.: *See*—
Faries, Durward I., Jr.; and Heymann, Bruce R., 5,333,326, Cl. 4-639.000.

Hickner, Andrew J. Water diverter for sloped roof flashings. 5,333,419, Cl. 52-58.000.

Hidalgo Cortes, Luis F.: *See*—
Bannach Sichtermann, Gustavo H.; Pincheira Alverez, Aliro T. N.; Reghezza Izunza, Andres A.; Cruz Rivera, Alberto S.; Lorca Soto, Tomas S.; Hidalgo Cortes, Luis F.; Menacho Llana, Jorge M.; and Martinez Pereira, Miguel A., 5,334,317, Cl. 210-708.000.

Higashi, Taketoshi: *See*—
Yagi, Shigeru; Higashi, Taketoshi; Fukuda, Yuzuru; Ono, Masato; Yokoi, Masaki; and Watanabe, Masao, 5,334,476, Cl. 430-126.000.

Higashi, Tatsuji: *See*—
Abe, Yukio; Higashi, Tatsuji; Hirano, Tsumoru; and Kondo, Syunichi, 5,334,486, Cl. 430-288.000.

Higashino, Morio, to Minebea Co., Ltd. Apparatus for cleaning metal articles. 5,333,629, Cl. 134-76.000.

Higgins, Brian P.; Gardner, David W.; Rhea, Kerry D.; Linnenbrink, Thomas E.; Reed, ebecca S.; and Roberts, Peter C. T., to Q-Dot Inc. High-speed data supply pathway systems. 5,334,962, Cl. 333-247.000.

Higgins, Thomas F.; and McNeely, Michael D., to Keystone International Holdings Corp. Fluid pressure relief system for pressure vessels. 5,333,635, Cl. 137-12.000.

Hikida, Toshiharu: *See*—
Shiota, Tomio; Hikida, Toshiharu; Sugimoto, Masashi; Kodama, Kazuhiko; and Shimizu, Kaoru, 5,334,434, Cl. 428-188.000.

Hildebrand, Bernard P., to Battelle Memorial Institute. Nondestructive ultrasonic testing of materials. 5,335,184, Cl. 364-507.000.

Hill, Andrea Kirsty Lee: *See*—
Hill, Kerry, 5,333,601, Cl. 126-523.000.

Hill, Christy Brianna: *See*—
Hill, Kerry, 5,333,601, Cl. 126-523.000.

Hill, Kerry, to Hill, Christy Brianna; and Hill, Andrea Kirsty Lee. Masonry heater. 5,333,601, Cl. 126-523.000.

Hill, Tyrone; and Franklin, Larry D. Shoe retaining apparatus and method. 5,333,393, Cl. 34-440.000.

Hilleary, Thomas N.: *See*—
Evers, John N.; and Hilleary, Thomas N., 5,335,267, Cl. 379-100.000.

Hillerich & Bradsby Co., Inc.: *See*—
Manning, George E.; Fortini, Brian E.; and Reymann, Vincent R., Jr., 5,333,872, Cl. 273-169.000.

Hiltebeitel, Nathan R.: *See*—
Abadeer, Wagdi W.; El-Kareh, Badih; Ellis, Wayne F.; Galbi, Duane E.; Hiltebeitel, Nathan R.; Tonti, William R.; and Watts, Josef S., 5,334,880, Cl. 307-219.000.

Himmler, Thomas: *See*—
Kaufmann, Dieter; Hesse, Carsten; and Himmler, Thomas, 5,334,750, Cl. 560-104.000.
Scherkenbeck, Jurgen; Himmler, Thomas; Hagemann, Hermann; Dutzmann, Stefan; Dehne, Heinz-Wilhelm; and Hanssler, Gerd, 5,334,608, Cl. 514-383.000.

Hiniker Company: *See*—
Hodapp, Gary D.; Johnson, James A.; and Tomlonovic, Vincent J., 5,333,559, Cl. 111-152.000.

Hinton, Glenn J.; and Tiwary, Gyanendra, to Intel Corporation. Guess mechanism for faster address calculation in a pipelined microprocessor. 5,335,333, Cl. 395-400.000.

Hippely, Keith A.; Swisher, Gary; Choy, Terence A.; and Halford, Wayne R., to Mattel, Inc. Toy vehicle having articulated jaws. 5,334,078, Cl. 446-470.000.

Hirakata, Noriyuki, to Sumitomo Electric Industries, Ltd. Differential amplifier circuit for enhancing small voltage signals. 5,334,944, Cl. 330-6.000.

Hirakawa, Yoshihiro: *See*—
Ogata, Akihiro; Hirakawa, Yoshihiro; Soichi, Masakatsu; and Kitano, Fumiyasu, 5,333,628, Cl. 134-64.00R.

Hiramatsu, Osamu: *See*—
Suzuki, Shigeru; Hoshino, Tatsuyuki; Hiramatsu, Osamu; and Goto, Kunifumi, 5,333,679, Cl. 165-43.000.

Hirano, Kazuo, to Daiwa Seiko, Inc. Fishing line retaining device in reel for fishing. 5,333,813, Cl. 242-322.000.

Hirano, Tsumoru: *See*—
Abe, Yukio; Higashi, Tatsuji; Hirano, Tsumoru; and Kondo, Syunichi, 5,334,486, Cl. 430-288.000.

Hirao, Konomu, to Otsuka Electronics Co., Ltd. Absorption spectrum determining method and spectrometric measuring apparatus for light-diffusive object using the method. 5,333,610, Cl. 128-633.000.

Hirashima, Ken: *See*—
Hisano, Kiyoshi; Hirashima, Ken; Kurosawa, Hiroyuki; Kubota, Kenji; and Sugimoto, Shuji, 5,335,327, Cl. 395-250.000.

Hird, Michael: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Hird, Michael; and McDonnell, Damien G., 5,334,327, Cl. 252-299.670.

Hiroi, Masayuki: *See*—
Otsuka, Shigenori; Horiuchi, Hiromi; and Hiroi, Masayuki, 5,334,856, Cl. 257-40.000.

Hirokane, Junji: *See*—
Ohta, Kenji; Inui, Tetsuya; Katayama, Hiroyuki; Takahashi, Akira; Hirokane, Junji; Nishitani, Yukinori; Mieda, Michinobu; and Van, Kazuo, 5,335,220, Cl. 369-288.000.

Hirono, Hatsuo: *See*—
Nakada, Norio; Fukui, Hideo; Hirono, Hatsuo; and Ito, Seishiro, 5,334,297, Cl. 204-181.200.

Hirose Electric Co., Ltd.: *See*—
Sato, Kensaku; and Shirai, Akira, 5,334,055, Cl. 439-723.000.

Hirose, Tetsuya: *See*—
Takahashi, Yoshiharu; Hiroe, Tetsuya; Otani, Hiroshi; and Takemura, Seiji, 5,333,505, Cl. 73-727.000.

Hirsch, Kenneth S.: *See*—
Audia, James E.; Hirsch, Kenneth S.; Jones, Charles D.; Lawhorn, David E.; McQuaid, Loretta A.; and Weigel, Leland O., 5,334,767, Cl. 568-327.000.

Hisaka, Katsuhiro, to Oki Electric Industry, Co., Ltd. CMOS output buffer circuit with less noise. 5,334,889, Cl. 307-475.000.

Hisano, Kiyoshi; Hirashima, Ken; Kurosawa, Hiroyuki; Kubota, Kenji; and Sugimoto, Shuji, to Hitachi, Ltd. External memory control techniques with multiprocessors improving the throughput of data between a hierarchically upper processing unit and an external memory with efficient use of a cache memory. 5,335,327, Cl. 395-250.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Hitachi Chemical Co., Ltd.: *See*—
Minami, Yoshitaka; Kakumaru, Hajime; Kubota, Naohiro; Tominaga, Nobuhide; and Ishizaki, Koji, 5,334,484, Cl. 430-281.000.
Hitachi Construction Machinery Co., Ltd.: *See*—
Takahashi, Kinya; Nozawa, Yusaku; and Ino, Kazuyuki, 5,333,449, Cl. 60-427.000.
Hitachi, Ltd.: *See*—
Aida, Kazuhiro; Nunohiro, Eiji; and Sone, Hiroyuki, 5,335,351, Cl. 395-700.000.
Hisano, Kiyoshi; Hirashima, Ken; Kurosawa, Hiroyuki; Kubota, Kenji; and Sugimoto, Shuji, 5,335,327, Cl. 395-250.000.
Ishii, Kyoko; Miyatake, Shinichi; Takahashi, Tsutomu; Udo, Shinji; Yoshioka, Hiroshi; Takano, Mitsuhiro; and Morino, Makoto, 5,335,203, Cl. 365-226.000.
Kametani, Masatsugu, 5,335,336, Cl. 395-425.000.
Kaneda, Tokuya; and Kuribayashi, Akira, 5,335,217, Cl. 369-77.200.
Kano, Kiyoshi; and Okazaki, Kichizaemon, 5,333,770, Cl. 226-15.000.
Kato, Hiroyuki, 5,333,991, Cl. 415-112.000.
Maejima, Yukihito; Ohtsubo, Toko; Masui, Mitsuyuki; Abe, Noriyuki; Yuura, Katsuhiko; and Mochizuki, Kenji, 5,335,339, Cl. 395-500.000.
Matsuo, Akinori; Watanabe, Masashi; Fujimoto, Michio; Wada, Masashi; Nagayama, Yoshiharu; and Naito, Kazuo, 5,335,204, Cl. 365-230.010.
Munemasa, Narihiro; Wakamori, Fumio; Masuzaki, Hidefumi; Fujinawa, Masaaki; and Kurosu, Yasuo, 5,335,084, Cl. 358-403.000.
Nakayama, Yoshinori; and Okazaki, Shinji, 5,334,282, Cl. 156-643.000.
Nishino, Toshikazu; Hasegawa, Haruhiro; and Kawabe, Ushio, 5,334,580, Cl. 505-191.000.
Ootomo, Hideo; Takeda, Hiroshi; and Yachi, Shunichiro, 5,333,666, Cl. 164-45.000.
Orimo, Masayuki; Mori, Kinji; Suzuki, Yasuo; Koizumi, Minoru; Kawano, Katsumi; Nakai, Kozo; and Kasashima, Hirokazu, 5,335,324, Cl. 395-200.000.
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.
Suzuki, Hiroshi; Mizokami, Takuya; and Shimizu, Kikuo, 5,335,216, Cl. 369-59.000.
Takahashi, Kazunori; Hamada, Nobuhiro; Takato, Masao; Baba, Kenji; Morooka, Yasuo; Kawakami, Junzo; Yokota, Takayoshi; and Kiyokawa, Ryuji, 5,335,180, Cl. 364-436.000.
Takahashi, Kikuo; Kagimasa, Toyohiko; and Mori, Toshiaki, 5,335,334, Cl. 395-425.000.
Tokyuama, Mikio; Ichikawa, Ryoichi; and Okamoto, Noriaki, 5,335,126, Cl. 360-104.000.
Wakabayashi, Hiroaki; Nakayama, Yoshinori; Murai, Fumio; and Okazaki, Shinji, 5,334,845, Cl. 250-492.200.
Yamada, Toshihisa; Miyamoto, Toshiharu; Hayashi, Kazuo; Takayama, Ryoichi; Kobayashi, Shinji; and Ohmura, Keizi, 5,333,554, Cl. 105-397.000.
Yamaguchi, Hiroshi; Noguchi, Minori; Kohno, Makiko; and Nakata, Toshihiko, 5,333,495, Cl. 73-105.000.
Yamashita, Junichi; Soneda, Hideo; and Sugawara, Satoshi, 5,335,317, Cl. 395-119.000.
Hitachi Medical Corp.: *See*—
Sasahara, Osamu, 5,335,173, Cl. 364-413.220.
Takeshima, Hirotaka; and Takeuchi, Hiroyuki, 5,334,966, Cl. 335-306.000.
Hitachi Metals, Ltd.: *See*—
Taniguchi, Shigeru; Kawakami, Akira; and Murata, Hideo, 5,334,267, Cl. 148-425.000.
Hitachi Software Engineering Co., Ltd.: *See*—
Aida, Kazuhiro; Nunohiro, Eiji; and Sone, Hiroyuki, 5,335,351, Cl. 395-700.000.
Hitachi Techno. Engineering Co., Ltd.: *See*—
Mishina, Haruo; and Yamama, Shinya, 5,333,774, Cl. 228-46.000.
Hitachi Tobu Semiconductor, Ltd.: *See*—
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.
Hitachi VLSI Engineering Corp.: *See*—
Ishii, Kyoko; Miyatake, Shinichi; Takahashi, Tsutomu; Udo, Shinji; Yoshioka, Hiroshi; Takano, Mitsuhiro; and Morino, Makoto, 5,335,203, Cl. 365-226.000.
Matsuo, Akinori; Watanabe, Masashi; Fujimoto, Michio; Wada, Masashi; Nagayama, Yoshiharu; and Naito, Kazuo, 5,335,204, Cl. 365-230.010.
Hitomi, Yasuhiro, to Shimano Inc. Spinning reel having anti-reverse mechanism that facilitates bail switching. 5,333,811, Cl. 242-232.000.
Hlinsky, Emil J., to MacLean-Fogg Company. Automatic cable connector with impact hammer. 5,334,056, Cl. 439-820.000.
Ho, Kai-Ming; Chan, Che-Ting; and Soukoulis, Costas, to Iowa State University Research Foundation, Inc. Periodic dielectric structure for production of photonic band gap and devices incorporating the same. 5,335,240, Cl. 372-39.000.
Hoang, Minh Q.; and Khan, Mohammed A., to Becton, Dickinson and Company. Antimicrobial drying substrate. 5,334,388, Cl. 424-402.000.
Hobart, James L.; Yarborough, J. Michael; Dallarosa, Joseph; and Gardner, Phillip, to Coherent, Inc. Resonator for CO_2 slab waveguide laser. 5,335,242, Cl. 372-95.000.
Hobbs, Karin; Hoffmann, Regina; and Smolik, Klaus, to Helsa-Werke Helmut Sandler GmbH & Co. KG. Flexible material including active particles, process for the production thereof, and protective clothing made therefrom. 5,334,436, Cl. 428-195.000.
Hoch, Forest M.: *See*—
Purtell, Rufus J.; and Hoch, Forest M., 5,333,796, Cl. 239-734.000.
Hochstein, Peter A.: *See*—
Hoffman, Arnold R.; and Hochstein, Peter A., 5,333,956, Cl. 384-483.000.
Hodapp, Gary D.; Johnson, James A.; and Tomlonovic, Vincent J., to Hiniker Company. Row crop cultivator and seeding attachment. 5,333,559, Cl. 111-152.000.
Hodge, Steve, to Concentric Pumps Limited. Gerotor pump with shiftable rotor boss. 5,334,002, Cl. 418-32.000.
Hodges, Eugene W., III: *See*—
Ballantyne, Wayne W.; Ooi, Leng H.; and Hodges, Eugene W., III, 5,335,365, Cl. 455-76.000.
Hodgson, David R.: *See*—
Cairns, John F.; and Hodgson, David R., 5,334,293, Cl. 204-98.000.
Hoechst AG: *See*—
Dannheim, Jorg; and Russ, Werner H., 5,334,709, Cl. 534-618.000.
Hoechst Aktengesellschaft: *See*—
Schwab, Michael; Frank, Udo; and Walz, Gerd, 5,334,651, Cl. 524-591.000.
Hoechst Aktiengesellschaft: *See*—
Freudenreich, Reinhold; Mielke, Ingolf; Rettenbeck, Karl; and Schottle, Thomas, 5,334,783, Cl. 570-153.000.
Heinze, Christoph, 5,333,392, Cl. 34-363.000.
Jung, Holger; Klein, Peter; and Heinrich, Karl, 5,334,694, Cl. 528-185.000.
Schafheutle, Markus A.; and Klein, Heinz-Peter, 5,334,690, Cl. 528-71.000.
Hoechst Aktiwengesellschaft: *See*—
Scherowsky, Gunter; Junghans, Claas; Kaltbeitzel, Anke; Wingen, Rainer; and Michalski, Britta, 5,334,328, Cl. 252-299.610.
Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, 5,334,599, Cl. 514-304.000.
Ong, Helen H.; Hrib, Nicholas J.; Perez, Joseph; and Jurcak, John G., 5,334,715, Cl. 544-392.000.
Hoehn, Arthur: *See*—
Lippert, Ferdinand; and Hoehn, Arthur, 5,334,759, Cl. 562-609.000.
Hoelderich, Wolfgang: *See*—
Horn, Peter; Mueller, Ulrich; Hoelderich, Wolfgang; Sattler, Ulf; Taddey, Rudolf; and Tintelnot, Dieter, 5,334,620, Cl. 521-51.000.
Hoenes, Joachim, to Boehringer Mannheim GmbH. Process and agent for the colorimetric determination of an analyte by means of enzymatic oxidation. 5,334,508, Cl. 435-25.000.
Hoetzel, Gerhard: *See*—
Friese, Karl-Hermann; Gruenwald, Werner; Wiedenmann, Hans-Martin; and Hoetzel, Gerhard, 5,334,350, Cl. 422-98.000.
Hoff, John. Rotating lubricating technique for equipment. 5,333,704, Cl. 184-11.400.
Hoffman, Arnold R.; and Hochstein, Peter A. Trolley wheel assembly. 5,333,956, Cl. 384-483.000.
Hoffmann-La Roche Inc.: *See*—
Buchecker, Richard; Chen, Xin H.; Funfschilling, Jurg; Herr, Rolf-Peter; Schadt, Martin; and Schmitt, Klaus, 5,335,303, Cl. 385-122.000.
Cereghetti, Marco; and Rageot, Alain, 5,334,766, Cl. 568-14.000.
Mullis, Kary B.; Johnson, Larry; Leath, Richard A.; Wennberg, Timothy J.; Mezei, Louis M.; and Widunas, Joseph T., 5,333,675, Cl. 165-12.000.
Rosenberg, Burkard; and Schacher, Gottlieb, 5,333,717, Cl. 198-389.000.
Hoffmann, Manfred: *See*—
Kittel, Christoph; Walendy, Hans; Burak, Gerhard; and Hoffmann, Manfred, 5,334,338, Cl. 264-46.400.
Hoffmann, Regina: *See*—
Hobbs, Karin; Hoffmann, Regina; and Smolik, Klaus, 5,334,436, Cl. 428-195.000.
Hofmeister, Rudolf; and Yariv, Amnon, to California Institute of Technology. Apparatus for all-optical self-aligning holographic phase modulation and motion sensing and method sensing and method for sensing such phase modulation. 5,335,062, Cl. 356-347.000.
Hofstetter, Charles J.: *See*—
Campo, James A.; Anderson, Fred J.; Embree, Donald M.; Hofstetter, Charles J.; and Sloan, Donald I., 5,334,821, Cl. 235-380.000.
Hoge, David T.; and Owens, John C., to Storage Technology Corporation. Raised linear threading mechanism for a tape transport system. 5,333,810, Cl. 242-332.400.
Hogeboom, John G., to Northern Telecom Limited. Phase lock loops and methods for their operation. 5,334,951, Cl. 331-1.00A.
Hojo, Yasuo: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.
Hokoriku Pharmaceutical Co., Ltd.: *See*—
Ito, Yasuo; Kato, Hideo; Yasuda, Shingo; Kado, Noriyuki; Iwasaki, Nobuhiko; Nishino, Hiroyuki; and Takeshita, Makoto, 5,334,594, Cl. 514-291.000.

Hokuriku Electric Power Company: *See*—
Kato, Hiroyuki, 5,333,991, Cl. 415-112.000.
Holcomb, Russell E.: *See*—
Ramsey, Charles R.; Holcomb, Russell E.; and Backus, Brian L., 5,333,488, Cl. 73-1.00J.
Holcombe, Cressie E.; and Pfeiler, William A., to Martin Marietta Energy Systems, Inc. Non-graphite crucible for high temperature applications. 5,333,844, Cl. 266-275.000.
Holland, Robert V., to Commonwealth Scientific and Industrial Research Organisation. Absorbent material and uses thereof. 5,334,623, Cl. 523-100.000.
Hollander, Brad C. Electric discharge device. 5,334,347, Cl. 422-24.000.
Holliday, Brightman K.: *See*—
Holliday, George L.; Holliday, Brightman K.; and Shimer, Herbert G., Jr., 5,333,519, Cl. 76-107.800.
Holliday, George L.; Holliday, Brightman K.; and Shimer, Herbert G., Jr., to Ameritek, Inc. Steel rule die and method. 5,333,519, Cl. 76-107.800.
Holmes, Gregory A. Football game. 5,333,865, Cl. 273-94.000.
Holmes, Harlan A.: *See*—
Romeo, Frank C.; and Holmes, Harlan A., 5,334,275, Cl. 156-264.000.
Holmes Products Corp.: *See*—
Shih-Chin, Shao, 5,334,091, Cl. 454-210.000.
Holmes, Roger W.: *See*—
Carrico, Philip H.; and Holmes, Roger W., 5,334,128, Cl. 493-439.000.
Homayoun, Habib: *See*—
Mills, Gary N.; and Homayoun, Habib, 5,333,616, Cl. 128-696.000.
Home Fashions, Inc.: *See*—
Romeo, Frank C.; and Holmes, Harlan A., 5,334,275, Cl. 156-264.000.
Homma, Tetsuya, to NEC Corporation. Method for fabricating a semiconductor device having a multi-layered interconnection structure. 5,334,552, Cl. 437-195.000.
Homoto, Yukio: *See*—
Koyama, Satoshi; Homoto, Yukio; and Esaka, Naoki, 5,334,786, Cl. 570-168.000.
Homwedica GmbH: *See*—
Behrens, Klaus F. A., 5,334,192, Cl. 606-96.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Okuda, Akihito; Kanamaru, Yoshihiro; Tane, Toshiaki; and Ogawa, Hirohisa, 5,333,453, Cl. 60-487.000.
Shimura, Yasuo; Kudoh, Takahiro; and Shimizu, Jiro, 5,333,578, Cl. 123-90.170.
Honda, Michiharu: *See*—
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.
Honeywell Inc.: *See*—
Burgener, JoAnne M.; and Dawson, Arthur W., 5,334,811, Cl. 200-302.300.
Karpinski, Andrew J., Jr., 5,335,063, Cl. 356-350.000.
McGuffin, John T., 5,335,181, Cl. 364-443.000.
Hong Jin Crown America: *See*—
Hong, Scott S., 5,333,329, Cl. 2-424.000.
Hong, Scott S., to Hong Jin Crown America. Ratchet system for motorcycle helmet shield. 5,333,329, Cl. 2-424.000.
Hood, Patrick J.: *See*—
Harker, Alan B.; DeNatale, Jeffrey F.; Hood, Patrick J.; and Flintoff, John F., 5,334,342, Cl. 264-317.000.
Hooper, Alan L.: *See*—
Johnston, Robert W.; Hooper, Alan L.; Byar, Peter D.; and Pridham, Ronald G., 5,334,354, Cl. 422-104.000.
Hope, Jochen: *See*—
Lindemeier, Heinz; Hope, Jochen; Reiter, Leopold; and Kronberger, Rainer, 5,335,010, Cl. 348-706.000.
Hopkins, David J. Excavation machine having combined impact hammers and static ripper pick. 5,333,937, Cl. 299-70.000.
Hopkins, John W., to Textron Inc. Starter input shaft. 5,333,580, Cl. 123-185.300.
Hoppe, Donna T. Accessory organizer. 5,333,727, Cl. 206-6.100.
Hoppe, Jurgen: *See*—
Tackney, Charles; Hoppe, Jurgen; Eichner, Wolfram; and Weich, Herbert, 5,334,532, Cl. 435-252.330.
Hoppe, Manfred: *See*—
Korsmeier, Wilhelm; Wolf, Dieter; Hoppe, Manfred; and Schollmeyer, Holns J., 5,333,591, Cl. 123-527.000.
Hoppmann Corporation: *See*—
Hoppmann, Kurt H.; Vaughn, Charles; Anderson, Phillip S.; and Schmitt, Werner H., 5,333,716, Cl. 198-380.000.
Hoppmann, Kurt H.; Vaughn, Charles; Anderson, Phillip S.; and Schmitt, Werner H., to Hoppmann Corporation. Linear feeder for varying size articles. 5,333,716, Cl. 198-380.000.
Horiba, Ltd.: *See*—
Ikeda, Masahiko; and Uchihara, Hirosi, 5,334,837, Cl. 250-339.000.
Horie, Akira: *See*—
Osano, Nagato; Imai, Yukihiro; Hosaka, Akihito; Nakajima, Ikuo; Nishiguchi, Toshiji; and Horie, Akira, 5,334,258, Cl. 134-42.000.
Horine, David A.: *See*—
Love, David G.; Moresco, Larry L.; Chou, William T.; Horine, David A.; Wong, Connie M.; and Beilin, Solomon I., 5,334,804, Cl. 174-267.000.
Horiuchi, Hiromi: *See*—
Otsuka, Shigenori; Horiuchi, Hiromi; and Hiroi, Masayuki, 5,334,856, Cl. 257-40.000.
Hormann, Werner; and Blum, Manfred, to Hydromatik GmbH. Device for the power control of at least two hydrostatic variable displacement pumps. 5,333,997, Cl. 417-216.000.
Horn, Peter; Reich, Erhard; Adams, Stefan; and Chakrabarti, Sarbananda, to BASF Aktiengesellschaft. Polyvinyl chloride/polyurethane foam composite elements, the productions thereof, and liquid, urethane-containing polyisocyanate mixtures which can be used to prepare the polyurethane foam. 5,334,448, Cl. 428-319.700.
Horn, Peter; Mueller, Ulrich; Hoelderich, Wolfgang; Sattler, Ulf; Taddey, Rudolf; and Tintelnot, Dieter, to BASF Aktiengesellschaft. Production of chlorofluorocarbon-free, urethane-containing moldings having a cellular core and a compacted peripheral zone. 5,334,620, Cl. 521-51.000.
Horney, James C.: *See*—
Buenger, Daniel E.; Horney, James C.; and Hammons, John L., 5,334,176, Cl. 604-367.000.
Hortulanus, Anton: *See*—
Ruyter, Herman P.; Hortulanus, Anton; and Dekker, Jan, 5,334,445, Cl. 428-284.000.
Hosaka, Akihito: *See*—
Osano, Nagato; Imai, Yukihiro; Hosaka, Akihito; Nakajima, Ikuo; Nishiguchi, Toshiji; and Horie, Akira, 5,334,258, Cl. 134-42.000.
Hoshi, Naoki: *See*—
Miyamoto, Michikazu; Koyama, Hideho; and Hoshi, Naoki, 5,333,535, Cl. 92-88.000.
Hoshino, Izumi: *See*—
Hoshino, Kiyoshi; and Hoshino, Izumi, 5,333,973, Cl. 408-56.000.
Hoshino, Kiyoshi; and Hoshino, Izumi. Cutting oil supplying device for a tap. 5,333,973, Cl. 408-56.000.
Hoshino, Tatsuyuki: *See*—
Suzuki, Shigeru; Hoshino, Tatsuyuki; Hiramatsu, Osamu; and Goto, Kunifumi, 5,333,679, Cl. 165-43.000.
Hoskins, Matthew W.: *See*—
Giesy, Jerry D.; and Hoskins, Matthew W., 5,334,185, Cl. 604-164.000.
Hosoi, Takashi, to Kabushiki Kaisha Toshiba. Portable electronic apparatus having a removable keyboard secured to a housing by screws protruding through the bottom wall of the housing. 5,335,141, Cl. 361-680.000.
Hosoya, Minoru: *See*—
Urai, Muneharu; Katsuta, Kazuo; Hosoya, Minoru; Abe, Tatafumi; and Wada, Ryosuke, 5,333,933, Cl. 297-452.100.
Hosoya, Tsuyoshi: *See*—
Matsuoka, Tatsuji; Serizawa, Nobufusa; Hosoya, Tsuyoshi; and Furuya, Kouhei, 5,334,517, Cl. 435-121.000.
Hosseini, Javad, to Caterpillar Inc. Method and apparatus for controlling an implement. 5,333,533, Cl. 91-361.000.
Hotea, Gheorghe, to Whitaker Corporation, The. Electrical socket terminal. 5,334,058, Cl. 439-839.000.
Hough, Graham: *See*—
Sykora, John M.; and Hough, Graham, 5,333,779, Cl. 229-125.080.
Houghton, Jon C.: *See*—
Swift, Steven M.; and Houghton, Jon C., 5,333,640, Cl. 137-262.000.
Houpt, Friedhelm. Roof covering element comprising plastic stalks. 5,333,431, Cl. 52-314.000.
Howe, Charles R. Paint stripping composition. 5,334,256, Cl. 134-38.000.
Howell, Michael P.: *See*—
Goldsmith, Daniel S.; Howell, Michael P.; and Parker, William S., 5,334,019, Cl. 433-88.000.
Howmedica Inc.: *See*—
Vidal, Claude A.; Redmond, Russel J.; and Makower, Joshua, 5,334,216, Cl. 606-213.000.
Hretsina, Gary: *See*—
Bennett, Reginald S.; and Hretsina, Gary, 5,335,112, Cl. 359-530.000.
Hrib, Nicholas J.: *See*—
Ong, Helen H.; Hrib, Nicholas J.; Perez, Joseph; and Jurcak, John G., 5,334,715, Cl. 544-392.000.
Hsiao, Cheng-Kuo: *See*—
Desilets, Denis; Martin, Trevor I.; Mayo, James D.; Bluhm, Terry L.; and Hsiao, Cheng-Kuo, 5,334,478, Cl. 430-135.000.
Hsieh, Bing R., to Xerox Corporation. Polymeric initiator compounds. 5,334,699, Cl. 528-373.000.
Hsieh, Ch'ing-Lung. Syringe needle destructor. 5,334,812, Cl. 219-68.000.
Hsieh, Henry L.: *See*—
Ahmed, Iqbal; and Hsieh, Henry L., 5,334,685, Cl. 527-300.000.
Hsu, Adam C.; and Tice, Colin M., to Rohm and Haas Company. Aryl triazole herbicides. 5,334,726, Cl. 548-263.200.
Hsun, Yan-Ju. Game apparatus. 5,333,869, Cl. 273-153.00S.
HTM Sport- und Freizeitgeraete Aktiengesellschaft: *See*—
Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; and Wuerthner, Hubert, 5,333,891, Cl. 280-625.000.
Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; Wuerthner, Hubert; and Steiner, Gottfried, 5,333,892, Cl. 280-625.000.
Huang, Chao C. Laser pointer with a constant power output control. 5,335,150, Cl. 362-118.000.
Huang, Ping Y.: *See*—
Lee, Cheng S.; and Huang, Ping Y., 5,334,537, Cl. 436-518.000.
Huang, Shao-Kuang. Solar collector assembly. 5,333,602, Cl. 126-608.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Huang, Tien-Tsai. Multi-purpose snow scrapper. 5,333,342, Cl. 15-105.000.

Huchings, Michael G.: *See—*
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.

Hudgens, Stephen J.: *See—*
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Strand, David A.; Czubatyj, Wolodymyr; Gonzalez-Hernandez, Jesus; Fritzsche, Hellmut; Ye, Qiuyi; Kostylev, Sergey A.; and Chao, Benjamin S., 5,335,219, Cl. 369-288.000.

Huggett, David J.; and Collard, Jamie, to Pall Corporation. Filter units. 5,334,309, Cl. 210-133.000.

Hughes Aircraft Company: *See—*
Kimura, Hiroshi; Hadeishi, Tetsuo, deceased; Olsen, Harold M.; and Bak, Chan S., 5,333,487, Cl. 73-23.310.
Klestadt, Ralph H.; and Finn, Richard R., 5,333,528, Cl. 89-1.510.
Kubena, Randy L.; Stratton, Frederic P.; Atkinson, Gary M.; McNulty, Hugh, Jr.; and Ward, James W., 5,335,243, Cl. 372-99.000.
Loving, Ronald E., 5,333,458, Cl. 60-722.000.
Ngo, Catherine, 5,334,284, Cl. 156-656.000.
Smith, Ronald T., 5,335,099, Cl. 359-15.000.

Hughes, John, to American Colloid Company. Metal casting in a sand mold having a sodium bentonite clay binder mixture. 5,333,673, Cl. 164-528.000.

Hughes Missile Systems Company: *See—*
Smith, Carter C.; and Gehman, John B., 5,334,981, Cl. 342-27.000.

Hullar, Gordon C.; and Justice, Jerry F., to EnviroSystems Corporation. Method and apparatus for efficiently controlling refrigeration and air conditioning systems. 5,333,469, Cl. 62-181.000.

Huls Aktiengesellschaft: *See—*
Steffen, Klaus-Dieter, 5,334,747, Cl. 560-43.000.

Hulse, Mark M.; and Shaffer, W. Hal, Jr., to University of Missouri of Columbia, Missouri, The Curators of the. Method of, and device for use in monitoring leaf wetness by conductivity/resistivity mesurement. 5,334,942, Cl. 324-694.000.

Humphreys, Bryan E., to Aerospace Systems & Technologies Ltd. Process for sealing a perforated web material. 5,333,415, Cl. 51-281.00R.

Hung, Kam T.: *See—*
Lorenz, Robert D.; Hung, Kam T.; Lipo, Thomas A.; and Moreira, Julio C., 5,334,923, Cl. 318-805.000.

Hunn, John D.: *See—*
Parikh, Nalin R.; and Hunn, John D., 5,334,283, Cl. 156-654.000.

Hunt, Christopher J.; and Vanevic, C. Daniel, to AT&T Bell Laboratories. Logical integration of multiple network elements in a telecommunications management network. 5,335,229, Cl. 370-110.100.

Hurley, James R.; Childs, Paul J.; and Norman, Timothy J., to Tecogen, Inc. Microwave enhanced deep fat fryer. 5,333,539, Cl. 99-403.000.

Huser, Martin: *See—*
Halterbeck, Walter; and Huser, Martin, 5,334,440, Cl. 428-222.000.

Huss, Albin, Jr.: *See—*
Del Rossi, Kenneth J.; Dovedytis, David J.; Esteves, David J.; Harandi, Mohsen N.; and Huss, Albin, Jr., 5,334,792, Cl. 585-314.000.

Hutchinson, Richard A.: *See—*
Franz, James J.; and Hutchinson, Richard A., 5,334,336, Cl. 264-45.300.

Hutner, Greg: *See—*
Wells, Benjamin A.; Smith, Frank D.; Feldstein, Michael A.; and Hutner, Greg, 5,334,991, Cl. 345-8.000.

Hwang, E Nam: *See—*
Choi, Kyung S.; Joo, Dae K.; Han, Min S.; Hwang, E Nam; and Choi, Hong K., 5,334,746, Cl. 560-38.000.

Hwang, In Y.: *See—*
Kim, Young G.; and Hwang, In Y., 5,334,346, Cl. 420-4.850.

Hwang, Soon Y.: *See—*
Seong, Byeong G.; Hwang, Soon Y.; Song, Jin H.; and Kim, Kyoo Y., 5,334,416, Cl. 427-252.000.

Hyche, Kenneth W.: *See—*
Gose, William C.; and Hyche, Kenneth W., 5,334,644, Cl. 524-487.000.

Hydromatik GmbH: *See—*
Hormann, Werner; and Blum, Manfred, 5,333,997, Cl. 417-216.000.

Hyer Industries, Inc.: *See—*
Andrews, Robert L., 5,333,762, Cl. 222-238.000.

Hyman, Larry N., to Dow Chemical Company, The. Crack inhibitor for tape joint compositions. 5,334,243, Cl. 106-794.000.

Hynecek, Jaroslav: *See—*
Cooper, Alan N.; McCracken, William P.; and Hynecek, Jaroslav, 5,335,015, Cl. 348-302.000.

Ianniruberto, Alex: *See—*
Guy, Thomas D.; and Ianniruberto, Alex, 5,334,164, Cl. 604-248.000.

Ibsen, Robert L.; Pacropis, Donald R.; and Glace, William R., to Den-Mat Corporation. Restorative dental adhesive composition. 5,334,625, Cl. 523-115.000.

Ichiji, Hiroshi: *See—*
Iwata, Masatake; Kurabe, Jun; and Ichiji, Hiroshi, 5,335,320, Cl. 395-155.000.

Ichikawa, Ryoichi: *See—*
Tokyuama, Mikio; Ichikawa, Ryoichi; and Okamoto, Noriaki, 5,335,126, Cl. 360-104.000.

ICN Biomedicals, Inc.: *See—*
Johnson, Edgar G., 5,334,352, Cl. 422-99.000.

Ide, Akiyoshi: *See—*
Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, 5,333,846, Cl. 267-140.140.

Idemitsu Petrochemical Company Limited: *See—*
Iio, Satoshi; Watanabe, Masakazu; Ito, Toshimichi; and Tsubokawa, Masaya, 5,334,453, Cl. 428-408.000.
Takata, Yukio; and Shinohara, Takeshi, 5,334,272, Cl. 156-69.000.

Ideyama, Hiroyuki: *See—*
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.

Iguchi, Hirohumi: *See—*
Anbo, Tsugio; Machida, Yukihumi; and Iguchi, Hirohumi, 5,334,041, Cl. 439-358.000.

Iguchi, Katsuji; Kakimoto, Seizo; and Shinmura, Naoyuki, to Sharp Kabushiki Kaisha. Semiconductor memory device. 5,334,869, Cl. 257-309.000.

Iijima, Akira: *See—*
Miyairi, Kazuki; and Iijima, Akira, 5,333,369, Cl. 29-405.000.

Iimura, Taichi: *See—*
Kakizaki, Katsumi; and Iimura, Taichi, 5,334,075, Cl. 446-438.000.

Iino, Hatsumi, to Fujitsu Limited. Pointer processing circuit in sonet system. 5,335,223, Cl. 370-65.500.

Iino, Tadashi, to Yazaki Corporation. Indication display unit for vehicles. 5,334,995, Cl. 345-7.000.

Iio, Satoshi; Watanabe, Masakazu; Ito, Toshimichi; and Tsubokawa, Masaya, to NGK Spark Plug Company Limited; and Idemitsu Petrochemical Company Limited. Diamond-coated bodies and process for preparation thereof. 5,334,453, Cl. 428-408.000.

Iizuka, Takashi: *See—*
Maruyama, Tomoko; and Iizuka, Takashi, 5,335,256, Cl. 378-35.000.

Ikeda, Fumio: *See—*
Oomori, Norio; Ikeda, Fumio; Kodama, Keiichi; Kanai, Makoto; and Terayama, Tatsuya, 5,333,914, Cl. 285-54.000.

Ikeda, Masahiko; and Uchihara, Hirosi, to Horiba, Ltd. Micro analytical method, sampling plate used in same, method of detecting organic compound by use of said micro analytical method, apparatus for same and method of dividing for micro-liquid flow. 5,334,837, Cl. 250-339.000.

Ikeda, Shingo: *See—*
Yamashita, Shinichi; Ikeda, Shingo; and Gohda, Makoto, 5,335,077, Cl. 358-320.000.

Ikeda, Shinji; and Mizukoshi, Masashi, to Toyota Jidosha Kabushiki Kaisha. Doppler-effect ground speed sensor for use with a brake system. 5,334,983, Cl. 342-70.000.

Ikegami Tsushinki Co., Ltd.: *See—*
Hanajima, Hiroshi, 5,335,068, Cl. 348-674.000.

Ikehata, Kenjiro: *See—*
Yoshida, Masakichi; Ikehata, Kenjiro; and Sugimura, Masashi, 5,335,315, Cl. 395-109.000.

Ikemoto, Yoshikazu: *See—*
Matsui, Shigetomo; Matsumura, Hiroyuki; Ikemoto, Yoshikazu; Kumon, Yasuhiro; Nakayama, Shigeru; Tsujita, Keiji; Fukunaga, Keisuke; Kuribayashi, Nobuhiro; and Wakana, Kenichi, 5,334,561, Cl. 501-87.000.

Ikeno, Masayuki, to Shin-Etsu Chemical Co., Ltd. Organopolysiloxane composition. 5,334,687, Cl. 528-15.000.

Ikuta, Eishi: *See—*
Hasegawa, Akira; Omura, Masayoshi; Imade, Shinichi; and Ikuta, Eishi, 5,333,503, Cl. 73-642.000.

Ikuta, Noriko: *See—*
Minahara, Hatsuhiro; and Ikuta, Noriko, 5,334,261, Cl. 148-23.000.

Illig, Carl R.: *See—*
Josef, Kurt A.; Bacon, Edward R.; Estep, Kimberly G.; Illig, Carl R.; and Douty, Brent D., 5,334,370, Cl. 424-5.000.

Illinois Tool Works Inc.: *See—*
Paszkiewicz, George, 5,334,967, Cl. 338-95.000.

Imada, Katsumi: *See—*
Takahashi, Hidehiko; Imada, Katsumi; and Motoshio, Akira, 5,334,518, Cl. 435-125.000.

Imade, Shinichi: *See—*
Hasegawa, Akira; Omura, Masayoshi; Imade, Shinichi; and Ikuta, Eishi, 5,333,503, Cl. 73-642.000.

Imafuji, Kazuharu; Terui, Nobuhiko; and Katayama, Akira, to Nikon Corporation. Camera with a motion compensation device. 5,335,042, Cl. 354-430.000.

Imai, Akihiro: *See—*
Matsuda, Hiromu; Kawakami, Tetsuji; Yubakami, Keiichi; Imai, Akihiro; and Taguchi, Nobuyoshi, 5,334,574, Cl. 503-227.000.

Imai, Masahiro; and Makino, Yoshiyuki, to Kabushiki Kaisha Toshiba. Washing machine. 5,333,474, Cl. 68-12.160.

Imai, Yukihiro: *See—*
Osano, Nagato; Imai, Yukihiro; Hosaka, Akihito; Nakajima, Ikuo; Nishiguchi, Toshiji; and Horie, Akira, 5,334,258, Cl. 134-42.000.

Imaizumi, Katsuhiro, to Nissan Motor Co., Ltd. Electric power system for automotive vehicle. 5,334,926, Cl. 320-15.000.

Imaizumi, Masahiro; and Sakata, Shinji, to Yamasa Shoyu Kabushiki Kaisha. Anxiolytic drugs. 5,334,593, Cl. 514-274.000.

Imam, M. Ashraf: *See—*
Louat, Norman P.; Provenzano, Virgil; Imam, M. Ashraf; and Sadananda, Kuntimaddi, 5,333,667, Cl. 164-97.000.

Imamura, Eiji: *See—*
Kogure, Kayoko; Kimura: Kazuo; Kawasaki, Michihiro; Toma, Masaaki; and Imamura, Eiji, 5,334,774, Cl. 568-754.000.

Imanishi, Wataru: *See—*
Sano, Kinjiro; Imanishi, Wataru; Nakajima, Yoshihisa; and Kinoshita, Masaaki, 5,334,086, Cl. 445-62.000.

ImClone Systems Incorporated: *See—*
Tackney, Charles; Hoppe, Jurgen; Eichner, Wolfram; and Weich, Herbert, 5,334,532, Cl. 435-252.330.

Immunomedics, Inc.: *See—*
Chang, Chien-Hsing; and Jones, Anastasia L., 5,334,708, Cl. 530-391.500.

Imoto, Takayoshi; and Okahashi, Toshio, to Ashimori Industry Co., Ltd. Lining material for pipe lines and a process for providing pipe lines therewith. 5,334,429, Cl. 428-36.200.

Imoto, Yoshiya, to Fuji Xerox Co., Ltd. Film image reading system. 5,335,093, Cl. 358-487.000.

Imperial Chemical Industries PLC: *See—*
Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., 5,334,784, Cl. 570-165.000.
Buckley, Alan J.; Huchings, Michael G.; Ferguson, Ian; Beautement, Kevin; Clough, John M.; Crowley, Patrick J.; Godfrey, Christopher R. A.; deFraine, Paul J.; Anthony, Vivienne M.; and Heaney, Stephen P., 5,334,748, Cl. 560-60.000.
Crowley, Patrick J.; Glen, Alasdair T.; Spence, Rosamund A.; and Lawson, Kevin R., 5,334,722, Cl. 546-289.000.
Daems, Diana M. F., 5,334,624, Cl. 521-130.000.
Jacobs, Robert T., 5,334,765, Cl. 564-510.000.
Muller, Louis; and Verhelst, Gabriel, 5,334,689, Cl. 528-67.000.

Imperial Chemical Industries Public Limited Company: *See—*
Cairns, John F.; and Hodgson, David R., 5,334,293, Cl. 204-98.000.

Imuro, Yoshihiro: *See—*
Sugimoto, Tadashi; Imuro, Yoshihiro; Nishimura, Shigeki; and Arimoto, Tatsuya, 5,334,972, Cl. 340-556.000.

Inaba, Hideki; Endo, Isao; Nagamune, Teruyuki; and Tachikawa, Susumu. Method of feeding a substrate into tubular bioreactor. 5,334,497, Cl. 435-3.000.

Inaba, Yoshihiro; Takashima, Koichi; Matsui, Izuru; and Kubo, Tsutomu, to Fuji Xerox Co., Ltd. Capsule toner. 5,334,480, Cl. 430-138.000.

Inamasa, Kenji: *See—*
Fushimi, Norio; Kedo, Ko; Inamasa, Kenji; and Takagawa, Makoto, 5,334,794, Cl. 585-452.000.

INCYTE Pharamaceuticals, Inc.: *See—*
Scott, Randal W.; and Marra, Marian N., 5,334,584, Cl. 514-012.000.

Indena S.p.A.: *See—*
Bombardelli, Ezio, 5,334,385, Cl. 424-195.100.

Indresco Inc.: *See—*
Anderson, Robert N.; and Bentley, Mark R., 5,333,510, Cl. 73-862.581.

Industrial Technology Research Institute: *See—*
Sun, Cheng-Yun; and Lo, Chin-Shyung, 5,335,009, Cl. 348-614.000.

Industrial Technology Research Institute, Taiwan: *See—*
Tu, Nang-Ping; and Chen, Ming-Daw, 5,335,254, Cl. 377-76.000.

Ineson, David J.; O'Connor, Edward M.; and Casali, David C., to North American Philips Corporation. Electric motor with encased housing. 5,334,897, Cl. 310-89.000.

Ingram, Ronald W. E.: *See—*
Marocco, Norbert; and Ingram, Ronald W. E., 5,333,365, Cl. 29-24.500.

Innovasive Devices, Inc.: *See—*
Hart, Rickey D.; Winters, Richard M.; Rice, John T.; and Nicholson, James E., 5,334,198, Cl. 606-52.000.

Innovision Limited: *See—*
Clayton, John C.; and Scofield, Trevor N., 5,335,194, Cl. 364-724.100.

Ino, Kazuyuki: *See—*
Takahashi, Kinya; Nozawa, Yusaku; and Ino, Kazuyuki, 5,333,449, Cl. 60-427.000.

Inoguchi, Kazuhiko: *See—*
Okumura, Toshiyuki; Inoguchi, Kazuhiko; Konushi, Fumihiro; and Takiguchi, Haruhisa, 5,335,241, Cl. 372-46.000.

Inoi, Takayuki, to NEC Corporation. Electrostrictive effect device. 5,334,902, Cl. 310-344.000.

Inokuchi, Kazuyuki: *See—*
Saito, Tadashi; and Inokuchi, Kazuyuki, 5,334,542, Cl. 437-40.000.

Inoue, Masao, to Matsushita Electric Industrial Co., Ltd. Information processing apparatus with optimization programming. 5,335,330, Cl. 395-375.000.

Inoue, Seiji; and Nanami, Masayoshi, to Sanshin Kogyo Kabushiki Kaisha. Cooling system for marine propulsion engine. 5,334,063, Cl. 440-88.000.

Inoue, Yoshifumi; and Yoshioka, Hiroshi, to Nissho Corporation. Connector with injection site. 5,334,188, Cl. 604-283.000.

Inoue, Yoshiyuki; Takahashi, Masaaki; and Ohta, Kenji, to Fujitsu Limited. Feeding system and feeding method for a submarine cable communication system. 5,334,879, Cl. 307-112.000.

Inouye, Shigeharu: *See—*
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.

Institut National de la Recherche Agronomique: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 5,334,408, Cl. 426-57.000.

Instromedix, Inc.: *See—*
Mills, Gary N.; and Homayoun, Habib, 5,333,616, Cl. 128-696.000.

Intel Corporation: *See—*
Bodas, Milind A., 5,334,888, Cl. 307-471.000.
Harney, Kevin; and Lippincott, Louis A., 5,335,321, Cl. 395-162.000.
Hinton, Glenn J.; and Tiwary, Gyanendra, 5,335,333, Cl. 395-400.000.

Intergraph Corporation: *See—*
Bosy, Brian, 5,335,046, Cl. 355-73.000.

InterMED, Inc.: *See—*
Kaldany, Antoine, 5,334,171, Cl. 604-282.000.

International Business Machines Corporation: *See—*
Abadeer, Wagdi W.; El-Kareh, Badih; Ellis, Wayne F.; Galbi, Duane E.; Hiltebeitel, Nathan R.; Tonti, William R.; and Watts, Josef S., 5,334,880, Cl. 307-219.000.
Abdelazim, Hazem Y., 5,335,289, Cl. 382-9.000.
Chana, Jit S., 5,335,341, Cl. 395-575.000.
Christopher, Kenneth W., Jr.; Roarabaugh, Virginia M.; and Waldron, Theodore C., III, 5,335,332, Cl. 364-400.000.
Chuang, Ching-Te K., 5,334,886, Cl. 307-455.000.
Clarke, Norman B.; Cook, Lawrence G.; Doyle, Robert G.; and Renner, Michael, 5,334,931, Cl. 324-757.000.
Cronin, John E.; Farrar, Paul A., Sr.; Kaanta, Carter W.; Ryan, James G.; and Watts, Andrew J., 5,334,467, Cl. 430-5.000.
Davidge, Ronald V.; McClurg, Todd A.; Neer, Jay H.; Nelson, Richard J.; and Nowchese, Rocco J., 5,334,038, Cl. 439-267.000.
Doerre, George W.; Ogura, Seiki; and Rovedo, Nivo, 5,334,281, Cl. 156-636.000.
Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,335,328, Cl. 395-275.000.
Fabbio, Robert A., 5,335,346, Cl. 395-600.000.
Ferracini, Bruno; Gonzalez-Lopez, Jorge; and Pettazzi, Giancarlo, 5,335,295, Cl. 382-47.000.
Kindl, Thomas E.; Moore, Ronald J.; and Rickerl, Paul G., 5,334,487, Cl. 430-312.000.
Maling, George C., Jr.; and Schmidt, Roger R., 5,335,143, Cl. 361-694.000.
Nagy, Michael E., 5,335,233, Cl. 371-32.000.
Smith, Jay L.; Trubey, Bradley S.; and Walker, Anthony D., 5,335,227, Cl. 370-95.100.
Stucke, Robert F., 5,335,146, Cl. 361-785.000.
Tesche, Claudia D., 5,334,884, Cl. 307-306.000.
Wong, Hon-Sum P., 5,334,868, Cl. 257-244.000.
Zimmerman, Steven M., 5,334,908, Cl. 313-336.000.

International Business Machines, Inc.: *See—*
Day, Melanie A.; Kaschak, Ronald A.; and Schubert, Steven A., 5,334,461, Cl. 428-610.000.

Inui, Tetsuya: *See—*
Ohta, Kenji; Inui, Tetsuya; Katayama, Hiroyuki; Takahashi, Akira; Hirokane, Junji; Nishitani, Yukinori; Mieda, Michinobu; and Van, Kazuo, 5,335,220, Cl. 369-288.000.

Iomega Corporation: *See—*
Thomas, Fred C.; Bero, James; Short, Robert; and Johnson, Paul R., 5,334,849, Cl. 250-559.000.

Iowa State University Research Foundation, Inc.: *See—*
Ho, Kai-Ming; Chan, Che-Ting; and Soukoulis, Costas, 5,335,240, Cl. 372-39.000.
Shinar, Joseph; Swanson, Leland S.; Lu, Feng; and Ding, Yiwei, 5,334,539, Cl. 437-1.000.

Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Aramid composition. 5,334,693, Cl. 528-185.000.

Isenberg, John K.: *See—*
Myers, Bruce A.; Isenberg, John K.; Coapman, Christine R.; and Blanton, James A., 5,334,422, Cl. 427-552.000.

Ish, Mark E.: *See—*
Cox, Stanley E.; and Ish, Mark E., 5,335,329, Cl. 395-325.000.

Ishiba, Keiichi: *See—*
Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, 5,333,846, Cl. 267-140.140.

Ishibe, Hiroshi: *See—*
Tanaka, Yoshito; Shintani, Dai; Naruto, Hirokazu; Nanba, Katsuyuki; Taniguchi, Nobuyuki; Ishibe, Hiroshi; and Tanaka, Yoshihiro, 5,335,072, Cl. 348-232.000.

Ishida, Hiroshi: *See—*
Kawada, Shigeki; and Ishida, Hiroshi, 5,334,924, Cl. 318-811.000.

Ishida, Michiko: *See—*
Ohfune, Yasufumi; Shimamoto, Keiko; Shinozaki, Haruhiko; and Ishida, Michiko, 5,334,757, Cl. 562-568.000.

Ishida, Toshio; Nishikawa, Yasuo; and Yasunaga, Tadashi, to Fuji Photo Film Co., Ltd. Method for preparing a magnetic recording medium. 5,334,413, Cl. 427-130.000.

Ishidoshiro, Hiroshi: *See—*
Sando, Yoshiteru; Nakano, Eiichi; Ishidoshiro, Hiroshi; and Sando, Koji, 5,334,224, Cl. 8-108.100.

Ishigami, Takakazu: *See—*
Yamamoto, Tsutomu; Okada, Minoru; Ishigami, Takakazu; Motoki, Nobuyuki; Fuse, Eiichi; and Hayashi, Masaaki, 5,335,061, Cl. 356-241.000.

Ishihara, Kosei. Sheet metal drawing equipment. 5,333,486, Cl. 72-391.200.

VOL 1165 ISS 1 AG 2 1994 UMI

Ishihara, Tatsumi: *See*—
Takita, Yusaku; Ishihara, Tatsumi; Mizuhara, Yukako; and Noguchi, Masao, 5,334,565, Cl. 501-95.000.

Ishii, Kyoko; Miyatake, Shinichi; Takahashi, Tsutomu; Udo, Shinji; Yoshioka, Hiroshi; Takano, Mitsuhiro; and Morino, Makoto, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corp. Semiconductor integrated circuit device with internal voltage drop circuits. 5,335,203, Cl. 365-226.000.

Ishii, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha. OBIC observation method and apparatus therefor. 5,334,540, Cl. 437-7.000.

Ishikawa Gasket Co., Ltd.: *See*—
Miyaoh, Yoshio; and Nakaya, Minoru, 5,333,884, Cl. 277-235.00B.

Ishikawa, Manabu: *See*—
Fujii, Takeshi; and Ishikawa, Manabu, 5,334,636, Cl. 524-449.000.

Ishikawa, Masami: *See*—
Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, 5,333,501, Cl. 73-592.000.

Ishikawa, Mitsuo; and Watarai, Shigeaki, to Senju Metal Industry Co., Ltd.; and Nihon Junyaku Co. Pressure-sensitive adhesive for temporarily securing electronic devices. 5,334,430, Cl. 428-40.000.

Ishikawa, Yoshihiro, to American Cyanamid Company. Cloning and characterization of a cardiac adenylyl cyclase. 5,334,521, Cl. 435-172.100.

Ishikawajima-Harima Heavy Industries Co., Ltd.: *See*—
Nasu, Toshiyuki; and Kai, Mutsunori, 5,334,288, Cl. 162-358.100.

Ishino, Masaru: *See*—
Komatsu, Masashi; Yamamoto, Michio; Ishino, Masaru; and Suzukamo, Gohfu, 5,334,789, Cl. 570-203.000.

Ishioka, Yutaka: *See*—
Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, 5,333,846, Cl. 267-140.140.

Ishion Corporation Co., Ltd.: *See*—
Sugawara, Minoru, 5,333,977, Cl. 411-271.000.

Ishizaki, Koji: *See*—
Minami, Yoshitaka; Kakumaru, Hajime; Kubota, Naohiro; Tominaga, Nobuhide; and Ishizaki, Koji, 5,334,484, Cl. 430-281.000.

Ishizaki, Yoshihiro: *See*—
Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, 5,335,002, Cl. 346-76.0PH.

Isobe, Seiichiro; Noguchi, Akinori; and Uemura, Kunihiko, to Director of National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries. Double press screw. 5,333,556, Cl. 100-93.00S.

Isom, Horace G.: *See*—
Hermanson, Dean E.; Hallden, Donald F.; and Isom, Horace G., 5,334,268, Cl. 148-530.000.

ISP Investments Inc.: *See*—
Fusiak, Frank, 5,334,331, Cl. 252-542.000.
Plotkin, Jeffrey S.; Narayanan, Kolazi S.; and Taylor, Paul D., 5,334,772, Cl. 568-609.000.

Israel Aircraft Industries Ltd.: *See*—
Shimoni, Uri; Colman, Lewis; and Meidan, Moshe, 5,334,828, Cl. 250-206.200.

Isuzu Ceramics Research Institute Co., Ltd.: *See*—
Kawamura, Hideo, 5,333,582, Cl. 123-254.000.

Ito, Hiroyuki: *See*—
Tatara, Yudai; Jufuku, Yasunobu; Machida, Hisashi; and Ito, Hiroyuki, 5,334,097, Cl. 476-8.000.

Ito, Kazuhisa, to Brother Kogyo Kabushiki Kaisha. Method of controlling stopping operation of a sewing machine and system thereof. 5,333,564, Cl. 112-275.000.

Ito, Koichi: *See*—
Tanaka, Masayuki; and Ito, Koichi, 5,335,355, Cl. 455-33.100.

Ito, Koki, to Mazda Motor Corporation. Automatic transmission with an add-on extension to increase the number of gear ratios. 5,334,117, Cl. 475-276.000.

Ito, Masazumi: *See*—
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.

Ito, Noriaki; Nagoshi, Shigeyasu; and Yoshimura, Shigeru, to Canon Kabushiki Kaisha. Recording apparatus. 5,334,920, Cl. 318-685.000.

Ito, Sadao: *See*—
Satoh, Munetaka; Ito, Sadao; and Nawa, Hiroshi, 5,333,932, Cl. 297-362.000.

Ito, Seishiro: *See*—
Nakada, Norio; Fukui, Hideo; Hirono, Hatsuo; and Ito, Seishiro, 5,334,297, Cl. 204-181.200.

Ito, Shuichi: *See*—
Naka, Akihiro; Ito, Shuichi; Akizuki, Shinya; and Saito, Kiyoshi, 5,334,674, Cl. 525-481.000.

Ito, Tetsumasa; and Nakagawa, Yoshitomo, to Seiko Instruments Inc. Inductively coupled plasma mass spectrometry device. 5,334,834, Cl. 250-288.000.

Ito, Toshimichi: *See*—
Iio, Satoshi; Watanabe, Masakazu; Ito, Toshimichi; and Tsubokawa, Masaya, 5,334,453, Cl. 428-408.000.

Ito, Yasuo; Kato, Hideo; Yasuda, Shingo; Kado, Noriyuki; Iwasaki, Nobuhiko; Nishino, Hiroyuki; and Takeshita, Makoto, to Hokoriku Pharmaceutical Co., Ltd. Amphoteric tricyclic compound. 5,334,594, Cl. 514-291.000.

Itoh, Chikashi: *See*—
Suzuki, Toshio; and Itoh, Chikashi, 5,335,232, Cl. 371-20.400.

Itoh, Hisato: *See*—
Oguchi, Takahisa; Sugimoto, Kenichi; Aihara, Shin; Itoh, Hisato; Matsumoto, Mansuke; Masaoka, Toshihiro; and Nakamura, Masakazu, 5,334,714, Cl. 540-143.000.

Itoh, Junichi; Dai, Masahiro; Toizumi, Yasushi; Mizokami, Kazunori; Watanabe, Yoji; and Midorikawa, Ayumu, to Olympus Optical Co., Ltd. Magnetic recording system for camera using film with magnetic recording portion. 5,335,029, Cl. 354-106.000.

Itoh, Norio: *See*—
Mine, Kohichi; and Itoh, Norio, 5,333,484, Cl. 72-349.000.

Itoh, Osamu: *See*—
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.

Itoh, Tokiji, to Toyota Jidosha Kabushiki Kaisha. Diagnostic system for a secondary air supplier in an engine. 5,333,446, Cl. 60-274.000.

Itoh, Toshiyuki: *See*—
Nakamori, Tomohiro; Okazawa, Kazuhiko; Tachibana, Tatsuto; Kusano, Akihisa; Sato, Kaoru; and Itoh, Toshiyuki, 5,334,817, Cl. 219-492.000.

Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, to Sumitomo Electric Industries, Ltd. Process for preparing superconducting material. 5,334,579, Cl. 505-474.000.

ITT Corporation: *See*—
Karsten, Kenneth S.; and Wertman, Richard C., 5,334,910, Cl. 315-5.350.

ITW Limited: *See*—
Smith, Rowland C.; Pettit, Neville T.; and Guttoriello, Angelo, 5,333,506, Cl. 73-756.000.

Ivanov, Sergei I.: *See*—
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

Ivy Hill Corporation: *See*—
Budny, Thomas F.; Schenna, Anthony G.; and Durham, Larry D., 5,333,732, Cl. 206-316.100.
O'Brien, Patrick J.; and Womack, Ronald W., 5,333,728, Cl. 206-232.000.

Ivy, John B.: *See*—
Benton, James H.; Broodo, Jack; Ivy, John B.; Leissner, Kirk A.; and Fox, Ellroy G., 5,334,357, Cl. 422-197.000.

Iwai, Hirohisa; Shiroyama, Kaisuke; Matsuda, Akira; Nakamura, Takeo; and Shirakawa, Ryotomo, to Furokawa Electric Co., Ltd., The. Method of continuously processing wire material and device therefor. 5,334,294, Cl. 204-129.550.

Iwaki, Makoto: *See*—
Maruyuma, Koichi; Wakamiya, Syun'itirou; and Iwaki, Makoto, 5,335,059, Cl. 356-124.000.

Iwakura, Ken: *See*—
Fukushige, Yuuichi; Iwakura, Ken; and Satomura, Masato, 5,334,749, Cl. 560-67.000.

Iwamoto, Tamio: *See*—
Kai, Masanori; Okabe, Satoshi; Hatori, Nobuyoshi; Koike, Toshio; and Iwamoto, Tamio, 5,335,047, Cl. 355-200.000.

Iwao, Keijiro, to Nissan Motor Co., Ltd. Uniform motion type universal joint with no generation of high frequency vibrating component. 5,334,096, Cl. 464-146.000.

Iwasaki, Nobuhiko: *See*—
Ito, Yasuo; Kato, Hideo; Yasuda, Shingo; Kado, Noriyuki; Iwasaki, Nobuhiko; Nishino, Hiroyuki; and Takeshita, Makoto, 5,334,594, Cl. 514-291.000.

Iwata, Masatake; Kurabe, Jun; and Ichiji, Hiroshi, to Fuji Xerox Co., Ltd. Graphical user interface editing system. 5,335,320, Cl. 395-155.000.

Iwatsu Electric Co., Ltd.: *See*—
Kai, Masanori; Okabe, Satoshi; Hatori, Nobuyoshi; Koike, Toshio; and Iwamoto, Tamio, 5,335,047, Cl. 355-200.000.

Iwazaki, Kuniyasu: *See*—
Morioka, Yuji; Chuta, Masanobu; Iwazaki, Kuniyasu; and Ohta, Kihachiro, 5,334,895, Cl. 310-67.00R.

Izatt, Reed M.: *See*—
Bruening, Ronald L.; Tarbet, Bryon J.; Bradshaw, Jerald S.; and Izatt, Reed M., 5,334,316, Cl. 210-670.000.

Izumi, Akira, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Instrument panel for industrial vehicle. 5,333,701, Cl. 180-90.000.

Izutsu, Tomoyoshi; and Kawashima, Kazuki, to NTN Corporation. Belt tension adjusting device. 5,334,109, Cl. 474-135.000.

J. M. Voith GmbH: *See*—
Ortner, Herbert; Bahr, Theodor; and Musselmann, Walter, 5,334,285, Cl. 162-4.000.
Piper, Michael; Rienecker, Reimund; Kleinert, Rudi; and Schneider, Walter, 5,333,883, Cl. 277-102.000.

Jacko, Richard J.: *See*—
Clark, William C., Jr.; Jacko, Richard J.; and Burtner, Lee W., 5,333,502, Cl. 73-623.000.

Jackson, Mike T.; Stevens, Jeffrey C.; and Tipley, Roger E., to Compaq Computer Corporation. Multiprocessor cache snoop access protocol wherein snoop means performs snooping operations after host bus cycle completion and delays subsequent host bus cycles until snooping operations are completed. 5,335,335, Cl. 395-425.000.

Jackson, Scott A.: *See*—
Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,335,328, Cl. 395-275.000.

Jackson, Wayne K.; and Goodman, Richard A., to Reserve Bank of Australia. Diffraction grating. 5,335,113, Cl. 359-569.000.

Jacobs, Jochen: *See*—
Zeise, Christiane; Jacobs, Jochen; and Raehse, Wilfried, 5,334,324, Cl. 252-91.000.

Jacobs, Keith G.; Rosario, Jeanne M.; and Fisher, Michael H., to General Electric Company. Wear shim for a turbine engine. 5,333,995, Cl. 415-209.200.

Jacobs, Robert T., to Imperial Chemical Industries PLC. Carbamoyl derivatives. 5,334,765, Cl. 564-510.000.

Jacquemet, Regis: *See*—
Cognet, Gilles; Jacquemet, Regis; and Lamblin, Veronique, 5,334,427, Cl. 428-34.500.

Jacquot, Roland: *See*—
Ferrero, Rose-Marie; and Jacquot, Roland, 5,334,769, Cl. 568-435.000.

Jaenke, Paul E.; and Gingerich, Larry T., to Westinghouse Electric Corp. Acoustic sensor and projector module having an active baffle structure. 5,335,209, Cl. 367-155.000.

Jager, Wolfgang: *See*—
Tschirschwitz, Herbert; and Jager, Wolfgang, 5,333,411, Cl. 49-352.000.

James. Lawrence E.; and Walsh, William C., to BASF Corporation. Method for removing and reclaiming excess paint from a paint spray booth. 5,334,255, Cl. 134-38.000.

James, Robert C.; and Cherney, Dale M., to Thames Group Ltd., The. Carbon monoxide sensor and control for motor vehicles. 5,333,703, Cl. 180-271.000.

Jamison, Mark D.; Banks, Stewart; Williamson, Nicholas; and Roders, George W., to Marlingford Holdings Limited. Multi-outlet fluid dispenser pouch. 5,333,758, Cl. 222-101.000.

Janes, Richard; and Cumpiano, William R. Compression molded composite guitar soundboard. 5,333,527, Cl. 84-291.000.

Jang, Sun-Sing. External body of smoke exhauster. 5,333,599, Cl. 126-299.00D.

Janisch, Andreas: *See*—
Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; and Wuerthner, Hubert, 5,333,891, Cl. 280-625.000.
Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; Wuerthner, Hubert; and Steiner, Gottfried, 5,333,892, Cl. 280-625.000.

Jankowski, Stefan: *See*—
Quin, Louis D.; and Jankowski, Stefan, 5,334,741, Cl. 558-110.000.

Janssen, Bernd: *See*—
Sauter, Hubert; Lorenz, Gisela; Steiner, Gerd; Janssen, Bernd; Anke, Timm; and Steglich, Wolfgang, 5,334,607, Cl. 514-378.000.

Japan Atomic Power Company, The: *See*—
Kato, Hiroyuki, 5,333,991, Cl. 415-112.000.

Japan Electronic Control Systems Co., Ltd.: *See*—
Kashiwabara, Masuo; Tanaka, Yoshikazu; and Sekiguchi, Hideki, 5,333,943, Cl. 303-112.000.

Jaskie, James E.: *See*—
Moyer, Curtis D.; Jaskie, James E.; and Legge, Ronald N., 5,334,855, Cl. 257-13.000.

Jay Medical, Ltd.: *See*—
Dinsmoor, John C., III, 5,333,921, Cl. 297-219.100.

Jelich, Klaus: *See*—
Kaufmann, Dieter; Jelich, Klaus; Braden, Rudolf; and Rosen, Winfried, 5,334,724, Cl. 546-345.000.

Jensen, Eric L.; Belvo, Rachel J.; and Derr, Randall L., to General Motors Corporation. Compression cut-off valve for a hydraulic damper. 5,333,708, Cl. 188-322.140.

Jensen, Gerald: *See*—
Keeney, Richard A.; and Jensen, Gerald, 5,335,040, Cl. 354-354.000.

Jensen, Roderick J.; Day, Richard L.; and Gerber, Edwin M., to Deere & Company. Detachable covers for an axial separator. 5,334,093, Cl. 460-83.000.

Jeong, Su-min: *See*—
Sohn, Chang-min; and Jeong, Su-min, 5,334,409, Cl. 427-64.000.

Jeppsson, Jan-Bertil; and Losell, Ingvar, to Gambro AB. Method of peritoneal dialysis using a tube set. 5,334,139, Cl. 604-28.000.

Jepsen, Erik L.; and Nielsen, Jorgen F., to Toftejorg A/S. Apparatus for the cleaning of a closed compartment. 5,333,630, Cl. 134-104.100.

Jessee, Joel A.: *See*—
Gebeyehu, Gulilat; Jessee, Joel A.; Ciccarone, Valentina C.; Hawley-Nelson, Pamela; and Chytil, Anna, 5,334,761, Cl. 564-197.000.

Jessen, Thomas F. Granular and liquid treatment material spreader. 5,333,795, Cl. 239-663.000.

Jidosha Kiki Co., Ltd.: *See*—
Nikaido, Masaya, 5,333,454, Cl. 60-459.000.
Uyama, Shintaro, 5,333,534, Cl. 91-376.00R.
Yoshida, Hiroshi; and Kakuda, Mitsuru, 5,333,998, Cl. 417-273.000.

Jin, Iljoon: *See*—
Sang, Harry; Kenny, Lorne D.; and Jin, Iljoon, 5,334,236, Cl. 75-415.000.

Jochums, Carl E.: *See*—
Herron, John R.; Beaudry, Edward G.; Jochums, Carl E.; and Medina, Luis E., 5,334,300, Cl. 204-257.000.

Jodai, Tetsuji: *See*—
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,334,579, Cl. 505-474.000.

John O. Butler Company, Inc.: *See*—
Tarrson, Emanuel B.; Maric, Dane; and Blahuta, Lew, 5,333,346, Cl. 15-167.100.

Johnson, Edgar G., to ICN Biomedicals, Inc. Manifold construction. 5,334,352, Cl. 422-99.000.

Johnson, Henry R.: *See*—
Olson, Larry D.; Kamla, Jeffrey R.; and Johnson, Henry R., 5,334,696, Cl. 528-322.000.

Johnson, James A.: *See*—
Hodapp, Gary D.; Johnson, James A.; and Tomlonovic, Vincent J., 5,333,559, Cl. 111-152.000.

Johnson, Jill C. Teething pacifier with semi-circular teething member. 5,334,218, Cl. 606-235.000.

Johnson, Kirk L., to Cordis Corporation. Rapid exchange type dilatation catheter. 5,334,147, Cl. 604-96.000.

Johnson, Lanny L., to Johnson, Lanny L. Suture knot making device and method for use. 5,334,200, Cl. 606-148.000.

Johnson, Larry: *See*—
Mullis, Kary B.; Johnson, Larry; Leath, Richard A.; Wennberg, Timothy J.; Mezei, Louis M.; and Widunas, Joseph T., 5,333,675, Cl. 165-12.000.

Johnson, Noble T., to Johnson, Noble T.; and Keefe, Peter D. Foldable ring binder-folder. 5,333,962, Cl. 402-8.000.

Johnson, Paul R.: *See*—
Thomas, Fred C.; Bero, James; Short, Robert; and Johnson, Paul R., 5,334,849, Cl. 250-559.000.

Johnson, Richard L.: *See*—
Cota, Marlo E.; and Johnson, Richard L., 5,333,641, Cl. 137-264.000.

Johnson, Robert W., to Laser Precision Corp. Method of detecting breaks in multi-drop feeder systems. 5,335,104, Cl. 359-110.000.

Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; and Wallach, Donald P., deceased (by Wallach, Vera M., Legal Representative), to Upjohn Company, The. Cyclic hydrocarbons with an aminoalkyl sidechain. 5,334,712, Cl. 540-112.000.

Johnson, Russell W.: *See*—
Wang, Li; Barder, Timothy J.; Kaiser, Mark; Johnson, Russell W.; and Arena, Blaise J., 5,334,785, Cl. 570-165.000.

Johnston, Christian W.: *See*—
Gould, Francis E.; and Johnston, Christian W., 5,334,691, Cl. 528-76.000.

Johnston, Robert W.; Hooper, Alan L.; Byar, Peter D.; and Pridham, Ronald G., to Troemner, Inc. Laboratory clamp having a fully enclosed hinge mechanism. 5,334,354, Cl. 422-104.000.

Jones, Anastasia L.: *See*—
Chang, Chien-Hsing; and Jones, Anastasia L., 5,334,708, Cl. 530-391.500.

Jones, Charles D.: *See*—
Audia, James E.; Hirsch, Kenneth S.; Jones, Charles D.; Lawhorn, David E.; McQuaid, Loretta A.; and Weigel, Leland O., 5,334,767, Cl. 568-327.000.

Jones, John M.: *See*—
Le-Normand, Claude P.; Martinez, Carlos D.; and Jones, John M., 5,334,088, Cl. 452-193.000.

Jones, Lloyd G.; and Yates, Tommy J., to Mobil Oil Corporation. Method and apparatus for gravel packing of wells. 5,333,688, Cl. 166-278.000.

Jones, Lloyd G.; and Yates, Tommy J., to Mobil Oil Corporation. Gravel packing of wells with fluid-loss control. 5,333,689, Cl. 166-278.000.

Jones, Steve: *See*—
Rubinsky, Boris; Onik, Gary; Finkelstein, J. J.; Neu, Dan; and Jones, Steve, 5,334,181, Cl. 606-22.000.

Jones, William L. Portable door secure system. 5,333,922, Cl. 292-339.000.

Joo, Dae K.: *See*—
Choi, Kyung S.; Joo, Dae K.; Han, Min S.; Hwang, E Nam; and Choi, Hong K., 5,334,746, Cl. 560-38.000.

Jordan, Frank W., to T.O.W. Inc. Organophilic clay and method for its manufacture. 5,334,241, Cl. 106-487.000.

Jordan, Therese C.; and Webb, Jimmy L., to General Electric Company. Aromatic polymer blends and method. 5,334,672, Cl. 525-446.000.

Jorstad, John L.; Morley, Richard A.; Overbagh, William H.; and Steele, George W., to Reynolds Metals Company. Process for creation of metallurgically bonded inserts cast-in-place in a cast aluminum article. 5,333,668, Cl. 164-100.000.

Josef, Kurt A.; Bacon, Edward R.; Estep, Kimberly G.; Illig, Carl R.; and Douty, Brent D., to Sterling Winthrop Inc. Compositions of alkylbenzenes in film-forming materials for visualization of the gastrointestinal tract. 5,334,370, Cl. 424-5.000.

Joseph, Thomas J. Detachable device-holding apparatus for a stepladder. 5,333,823, Cl. 248-146.000.

Jouve, Isabelle: *See*—
Deamurs, Jean-Roger; and Jouve, Isabelle, 5,334,735, Cl. 552-308.000.

Jufuku, Yasunobu: *See*—
Tatara, Yudai; Jufuku, Yasunobu; Machida, Hisashi; and Ito, Hiroyuki, 5,334,097, Cl. 476-8.000.

Jullien, Claude; and Couillard, Yves, to Packinox SA. Heat exchanger of the plate type. 5,333,681, Cl. 165-82.000.

Jung, Holger; Klein, Peter; and Heinrich, Karl, to Hoechst Aktiengesellschaft. Aromatic copolyamides, processes for their preparation and structures formed therefrom. 5,334,694, Cl. 528-185.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Junghans, Claas: *See*—
Scherowsky, Gunter; Junghans, Claas; Kaltbeitzel, Anke; Wingen, Rainer; and Michalski, Britta, 5,334,328, Cl. 252-299.610.

Junino, Alex; Malle, Gerard; and Luppi, Bernadette, to L'Oreal. Alkylamino mercaptoalkylamides and their use as a reducing agent in a process for the permanent deformation of hair. 5,334,377, Cl. 424-71.000.

Juno Lighting, Inc.: *See*—
Gabrius, Algimantas J.; and DeCicco, Thomas J., 5,334,037, Cl. 439-118.000.

Jurcak, John G.: *See*—
Ong, Helen H.; Hrib, Nicholas J.; Perez, Joseph; and Jurcak, John G., 5,334,715, Cl. 544-392.000.

Justice, Jerry F.: *See*—
Hullar, Gordon C.; and Justice, Jerry F., 5,333,469, Cl. 62-181.000.

Jutand, Francis; Lafage, Anne; and Boutillion, Emmanuel, to France Telcom. Method and circuit for processing digital signals representative of vectors or tuples of the same dimension and application thereof to sets having any cardinality and to vectors or tuples of any dimensions. 5,335,195, Cl. 364-736.000.

K-Star International Corp.: *See*—
Robinson, James E., 5,334,990, Cl. 343-840.000.

Kaali, Steven G. Visually directed trocar for laparoscopic surgical procedures and method of using same. 5,334,150, Cl. 604-164.000.

Kaanta, Carter W.: *See*—
Cronin, John E.; Farrar, Paul A., Sr.; Kaanta, Carter W.; Ryan, James G.; and Watts, Andrew J., 5,334,467, Cl. 430-5.000

Kabelmetal electro Gesellschaft mit beschrankter Haftung: *See*—
Schauer, Friedrich; and Neuner, Andreas, 5,334,023, Cl. 439-164.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Torii, Katsuhiko, 5,335,283, Cl. 381-118.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Sawa, Kiyohiko, 5,333,538, Cl. 99-353.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Yamamoto, Shigeru; and Yamada, Hideki, 5,333,479, Cl. 172-3.000.

Kabushiki Kaisha Kouransha: *See*—
Nakashima, Masazumi, 5,334,339, Cl. 264-65.000.

Kabushiki Kaisha Miyake Design Jimusho: *See*—
Takizawa, Naoki, 5,333,765, Cl. 223-28.000.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Watanabe, Yasutaka, 5,333,905, Cl. 280-801.200.

Kabushiki Kaisha Tokyo Kikai Seisakusho: *See*—
Miyoshi, Masahiko; Asanuma, Kiyohisa; and Soutome, Kazuharu, 5,333,546, Cl. 101-216.000.

Kabushiki Kaisha Toshiba: *See*—
Aisaka, Hideki, 5,335,369, Cl. 455-116.000.
Fujioka, Yoshiharu; Nagatsuka, Shintaro; and Tsutaki, Shoji, 5,333,372, Cl. 29-603.000.
Hosoi, Takashi, 5,335,141, Cl. 361-680.000.
Imai, Masahiro; and Makino, Yoshiyuki, 5,333,474, Cl. 68-12.160.
Kato, Hiroyuki, 5,333,991, Cl. 415-112.000.
Koike, Masatoshi, 5,335,354, Cl. 455-192.200.
Kubo, Susumu; Nakai, Shoji; and Tsunoda, Masumi, 5,334,807, Cl. 187-126.000.
Machida, Yoshio, 5,334,936, Cl. 324-309.000.
Murao, Yutaka; and Wada, Tetsuro, 5,335,331, Cl. 395-375.000.
Odaira, Hiroshi; and Sato, Yoshizumi, 5,333,379, Cl. 29-841.000.
Ogihara, Masaki, 5,335,205, Cl. 365-230.060.
Sawa, Takao; and Yagi, Masaaki, 5,334,262, Cl. 148-121.000.
Takagi, Shiro, 5,334,994, Cl. 345-127.000.
Takamoto, Hiroshi, 5,335,207, Cl. 365-233.500.
Tanaka, Masayuki; and Ito, Koichi, 5,335,355, Cl. 455-33.100.
Tsurusaki, Masayuki; and Watanabe, Takashi, 5,335,270, Cl. 379-253.000.
Wada, Shinobu, 5,334,858, Cl. 257-48.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Izumi, Akira, 5,333,701, Cl. 180-90.000.
Suzuki, Shigeru; Hoshino, Tatsuyuki; Hiramatsu, Osamu; and Goto, Kunifumi, 5,333,679, Cl. 165-43.000.

Kachanov, Evgeny B.: *See*—
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

Kachlic, Jerry D.; and Kiat, Toh S., to Molex Incorporated. Hold-down clip for board mounted electrical connector and method of use. 5,334,049, Cl. 439-567.000.

Kado, Noriyuki: *See*—
Ito, Yasuo; Kato, Hideo; Yasuda, Shingo; Kado, Noriyuki; Iwasaki, Nobuhiko; Nishino, Hiroyuki; and Takeshita, Makoto, 5,334,594, Cl. 514-291.000.

Kaeding, Jeanne E.: *See*—
Bugner, Douglas E.; Hays, David S.; Kaeding, Jeanne E.; and Spinelli, Steven J., 5,334,477, Cl. 430-126.000.

Kagasaki, Takeshi: *See*—
Kohama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, 5,334,587, Cl. 514-99.000.

Kageyama, Hitoshi; Yamada, Osamu; and Mori, Shinichi, to Minolta Camera Kabushiki Kaisha. Image forming apparatus capable of editing color image. 5,335,095, Cl. 358-500.000.

Kagimasa, Toyohiko: *See*—
Takahashi, Kikuo; Kagimasa, Toyohiko; and Mori, Toshiaki, 5,335,334, Cl. 395-425.000.

Kahn, Michael: *See*—
Greene, Mark I.; Saragovi, Horacio U.; and Kahn, Michael, 5,334,702, Cl. 530-323.000.

Kahn, Richard G. Masking apparatus for use in authoring, formatting and presenting information to be learned or memorized. 5,334,021, Cl. 434-348.000.

Kai, Junichi: *See*—
Nakano, Mitsuhiro; and Kai, Junichi, 5,334,846, Cl. 250-492.200.

Kai, Masanori; Okabe, Satoshi; Hatori, Nobuyoshi; Koike, Toshio; and Iwamoto, Tamio, to Iwatsu Electric Co., Ltd. Printing plate making apparatus for two different kinds of masters. 5,335,047, Cl. 355-200.000.

Kai, Mutsunori: *See*—
Nasu, Toshiyuki; and Kai, Mutsunori, 5,334,288, Cl. 162-358.100.

Kaifu, Noriyuki; Saika, Toshihiro; Endo, Tadao; and Shimada, Tetsuya, to Canon Kabushiki Kaisha. Photoelectric converting device having matrix wiring and read-out of parallel signals as a serial signal. 5,335,094, Cl. 358-494.000.

Kainuma, Seishiro: *See*—
Muramatsu, Masayoshi; Nakakuki, Teruo; Kainuma, Seishiro; and Miwa, Taizo, 5,334,516, Cl. 435-101.000.

Kaisei Engineering Co., Ltd.: *See*—
Goto, Kyohei, 5,333,876, Cl. 273-195.00B.

Kaiser, Mark: *See*—
Wang, Li; Barder, Timothy J.; Kaiser, Mark; Johnson, Russell W.; and Arena, Blaise J., 5,334,785, Cl. 570-165.000.

Kaiwa, Ryoichi: *See*—
Adachi, Naotomo; Kubo, Tetsuya; Kaiwa, Ryoichi; and Kudoh, Michiyoshi, 5,335,367, Cl. 455-90.000.

Kaken Pharmaceutical Co., Ltd.: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, 5,334,628, Cl. 514-311.000.

Kakimoto, Seizo: *See*—
Iguchi, Katsuji; Kakimoto, Seizo; and Shinmura, Naoyuki, 5,334,869, Cl. 257-309.000.

Kakizaki, Katsumi; and Iimura, Taichi, to Tomy Company, Ltd. Remote control car steered upon motor reversal. 5,334,075, Cl. 446-438.000.

Kakuda, Mitsuru: *See*—
Yoshida, Hiroshi; and Kakuda, Mitsuru, 5,333,998, Cl. 417-273.000.

Kakumaru, Hajime: *See*—
Minami, Yoshitaka; Kakumaru, Hajime; Kubota, Naohiro; Tominaga, Nobuhide; and Ishizaki, Koji, 5,334,484, Cl. 430-281.000.

Kalatsky, Mark: *See*—
Metzler, Richard A.; and Kalatsky, Mark, 5,334,874, Cl. 257-678.000.

Kaldany, Antoine, to InterMED, Inc. Flexible, noncollapsible catheter tube with hard and soft regions. 5,334,171, Cl. 604-282.000.

Kalden, Joachim; Fleckenstein, Bernhard; Baur, Andreas; and Harrer, Thomas, to ASTA Pharma Aktiengesellschaft. Pharmaceutical compositions containing as active substance sulphur-containing carboxylic acids and their use in combating retroviruses. 5,334,612, Cl. 514-440.000.

Kalis, Robert M., to Allied-Signal Inc. Interconnect cable with built-in shielding and method of use. 5,334,798, Cl. 174-35.00R.

Kalish, Rafael: *See*—
Dautremont-Smith, William C.; Feldman, Leonard C.; Kalish, Rafael; Katz, Avishay; Miller, Barry; and Moriya, Netzer, 5,334,306, Cl. 205-131.000.

Kalisz, John B.; and Wexler, Mark H., to Lockheed Corporation. Ballonet system for a lighter-than-air vehicle. 5,333,817, Cl. 244-97.000.

Kaltbeitzel, Anke: *See*—
Scherowsky, Gunter; Junghans, Claas; Kaltbeitzel, Anke; Wingen, Rainer; and Michalski, Britta, 5,334,328, Cl. 252-299.610.

Kaltenbach & Voigt GmbH & Co.: *See*—
Lang, Hans W.; and Straka, Alfred, 5,334,017, Cl. 433-57.000.

Kam, Mok S., to Vogue Vanity SDN BHD. Dual flush system. 5,333,332, Cl. 4-326.000.

Kaman Aerospace Corporation: *See*—
Pflibsen, Kent P.; and Stuppi, Albert N., 5,335,070, Cl. 348-31.000.

Kametani, Masatsugu, to Hitachi, Ltd. Memory device having refresh mode returning previous page address for resumed page mode. 5,335,336, Cl. 395-425.000.

Kamino, Toshihide; Sonoda, Junichi; Ogawa, Hirofumi; and Endo, Takeshi, to Terasaki Denki Sangyo Kabushiki Kaisha. Drawer-type circuit interrupter. 5,335,140, Cl. 361-608.000.

Kamio, Shigeru; and Sakita, Katsuya, to Nippondenso Co., Ltd. Throttle control system. 5,333,584, Cl. 123-399.000.

Kamitamari, Manabu: *See*—
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.

Kamla, Jeffrey R.: *See*—
Olson, Larry D.; Kamla, Jeffrey R.; and Johnson, Henry R., 5,334,696, Cl. 528-322.000.

Kamoi, Jyoei; Hayami, Hichiro; Kato, Yuji; Shimoe, Toshio; Abe, Shunji; Kusayanagi, Michio; Mukai, Haruo; and Soumiya, Toshio, to Fujitsu Limited. Traffic control system for asynchronous transfer mode exchange. 5,335,222, Cl. 370-60.000.

Kanai, Makoto; and Okabe, Kouichi, to Fuji Xerox Co., Ltd. Exhaust device for picture image forming apparatus. 5,335,049, Cl. 355-215.000.

Kanai, Makoto: *See*—
Oomori, Norio; Ikeda, Fumio; Kodama, Keiichi; Kanai, Makoto; and Terayama, Tatsuya, 5,333,914, Cl. 285-54.000.

Kanai, Masao. Drying apparatus having a rotary spiral blade and a baffle plate in opposition thereto. 5,333,396, Cl. 34-166.000.

Kanamaru, Yoshihiro: *See*—
Okuda, Akihito; Kanamaru, Yoshihiro; Tane, Toshiaki; and Ogawa, Hirohisa, 5,333,453, Cl. 60-487.000.

Kanda, Masahiro, to Yazaki Corp. Waterproof connector housing and method of producing the same. 5,334,039, Cl. 439-271.000.

Kanda, Ryouji, to Tokai Rubber Industries, Ltd. Elastic mount having at least two orifices formed by rubber filler on orifice-defining structure which extends along at least one of two fluid chambers. 5,333,847, Cl. 267-140.120.

Kanda, Ryouji: *See*—
Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, 5,333,846, Cl. 267-140.140.

Kanda, Yutaka: *See*—
Arai, Hitoshi; Kanda, Yutaka; Kono, Motomichi; Kasai, Masaji; Ashizawa, Tadashi; and Gomi, Katsushige, 5,334,611, Cl. 514-410.000.

Kane, Daniel E.; and Haddad, Donald E., to United Technologies Corporation. Coolable outer air seal assembly for a gas turbine engine. 5,333,992, Cl. 415-138.000.

Kaneda, Aizo: *See*—
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Niahi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.

Kaneda, Naoki, to Akebono Brake Industry Co., Ltd. Controller for retarder. 5,333,707, Cl. 188-296.000.

Kaneda, Tokuya; and Kuribayashi, Akira, to Hitachi, Ltd. Optical information recording and reproducing apparatus. 5,335,217, Cl. 369-77.200.

Kaneda, Toshikazu: *See*—
Uchida, Yuji; Yoshida, Yoshio; Kaneda, Toshikazu; Moriya, Toshiaki; and Kumazawa, Tsutomu, 5,334,670, Cl. 525-440.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Takaki, Akira; Mori, Hiroto; and Hasegawa, Toshihiko, 5,334,660, Cl. 525-84.000.

Kaneko, Isao: *See*—
Kohama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, 5,334,587, Cl. 514-99.000.

Kaneko, Norio; Shinsho, Katsuhiko; and Yamamoto, Keisuke, to Canon Kabushiki Kaisha. Storage medium, storage method and stored information reading method. 5,335,197, Cl. 365-153.000.

Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, to Sharp Kabushiki Kaisha. Liquid crystal display element and method for treating defective pixels therein. 5,335,102, Cl. 359-59.000.

Kanemoto, Roy H.: *See*—
Adams, Trevor H.; Schwartz, Dennis E.; Vermuelen, Nicolaas M. J.; and Kanemoto, Roy H., 5,334,501, Cl. 435-6.000.

Kano, Kiyoshi; and Okazaki, Kichizaemon, to Hitachi, Ltd. System for controlling tape traveling height and tape guide with tape edge detector therefor. 5,333,770, Cl. 226-15.000.

Kansas State University Research Foundation: *See*—
Ovadia, David, 5,334,402, Cl. 426-241.000.

Kanthal Corporation, The: *See*—
Novy, George; and Makris, Angelo, 5,335,310, Cl. 392-434.000.

Kanzaki Kokyukoki Mfg. Co., Ltd.: *See*—
Sakikawa, Shigenori; and Sakakura, Shinya, 5,333,451, Cl. 60-468.000.

Kao Corporation: *See*—
Kawamata, Akira; Kikuchi, Yoko; Suzuki, Yuji; Suzuki, Toshiyuki; Suda, Mituo; and Ohashi, Yukihiro, 5,334,372, Cl. 424-78.030.
Ogawa, Masahiko; Tagami, Hidetoshi; Yoshihara, Toru; Kawase, Jiro; Kiyomine, Akira; Tamura, Tadashi; Nishizawa, Yoshinori; and Matsunaga, Ken-ichi, 5,334,225, Cl. 8-408.000.

Kaplan, Martin C.; Erck, Gary L.; and Federico, Richard J., to Eastman Kodak Company. High efficiency linear light source. 5,335,158, Cl. 362-303.000.

Kappel, Reinhard: *See*—
Pruss, Ludwig; and Kappel, Reinhard, 5,333,512, Cl. 74-331.000.

Karachewski, Anne M.: *See*—
Lillwitz, Lawrence D.; and Karachewski, Anne M., 5,334,796, Cl. 585-467.000.

Karell, Manuel L. Ear wax extractor with depth control. 5,334,212, Cl. 606-162.000.

Karpinski, Andrew J., Jr., to Honeywell Inc. Laser path length control reset acceleration circuit. 5,335,063, Cl. 356-350.000.

Karsten, Kenneth S.; and Wertman, Richard C., to ITT Corporation. Interlocking periodic permanent magnet assembly for electron tubes and method of making same. 5,334,910, Cl. 315-5.350.

Kasai, Masaji: *See*—
Arai, Hitoshi; Kanda, Yutaka; Kono, Motomichi; Kasai, Masaji; Ashizawa, Tadashi; and Gomi, Katsuhige, 5,334,611, Cl. 514-410.000.

Kasashima, Hirokazu: *See*—
Orimo, Masayuki; Mori, Kinji; Suzuki, Yasuo; Koizumi, Minoru; Kawano, Katsumi; Nakai, Kozo; and Kasashima, Hirokazu, 5,335,324, Cl. 395-200.000.

Kaschak, Ronald A.: *See*—
Day, Melanie A.; Kaschak, Ronald A.; and Schubert, Steven A., 5,334,461, Cl. 428-610.000.

Kashima, Shingo: *See*—
Fukuyama, Hiroya; Kitagawa, Hisao; Yamamoto, Mitsunori; and Kashima, Shingo, 5,334,830, Cl. 250-216.000.

Kashiwabara, Masuo; Tanaka, Yoshikazu; and Sekiguchi, Hideki, to Japan Electronic Control Systems Co., Ltd. Method and system for anti-lock braking in automobile by measuring brake torque. 5,333,943, Cl. 303-112.000.

Kashiwazaki, Akio; Kobayashi, Masatsune; Arai, Ryuichi; Kobayashi, Junichi; and Shimomura, Akihiko, to Canon Kabushiki Kaisha. Device for preparing ink jet recording head with channels containing energy generating elements. 5,334,999, Cl. 347-65.000.

Kassai, Kenzou. Human body moving apparatus. 5,333,334, Cl. 5-85.100.

Kassuba, Steven M., to CSI Industrial Systems, Corp. Ladle stopper rod control arrangement. 5,333,764, Cl. 222-602.000.

Katada, Mitsutaka; Muramoto, Hidetoshi; Fuzino, Seizi; Hattori, Tadashi; and Abe, Katsunori, to Nippondenso Co. Ltd. Complementary MIS transistor and a fabrication process thereof. 5,334,870, Cl. 257-371.000.

Katada, Toshiharu: *See*—
Kato, Kazutoshi; Katada, Toshiharu; and Yokoyama, Osamu, 5,335,026, Cl. 351-159.000.

Katagiri, Takashi, to Santo Industries Co., Ltd. Assembly for controlling turn of a hinge pivot. 5,333,356, Cl. 16-340.000.

Katano, Yasuo, to Ricoh Company, Ltd. Process and apparatus for forming dot image capable of controlling dot size. 5,335,001, Cl. 346-76.00R.

Katayama, Akira: *See*—
Imafuji, Kazuharu; Terui, Nobuhiko; and Katayama, Akira, 5,335,042, Cl. 354-430.000.

Katayama, Hiroyuki: *See*—
Ohta, Kenji; Inui, Tetsuya; Katayama, Hiroyuki; Takahashi, Akira; Hirokane, Junji; Nishitani, Yukinori; Mieda, Michinobu; and Van, Kazuo, 5,335,220, Cl. 369-288.000.

Katayama, Mikio: *See*—
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.

Kato, Eiichi, to Fuji Photo Film Co., Ltd. Liquid developer for electrostatic photography. 5,334,475, Cl. 430-114.000.

Kato Hatsuji Kaisha, Ltd.: *See*—
Seiichi, Sato, 5,333,845, Cl. 267-711.000.

Kato, Hideo: *See*—
Ito, Yasuo; Kato, Hideo; Yasuda, Shingo; Kado, Noriyuki; Iwasaki, Nobuhiko; Nishino, Hiroyuki; and Takeshita, Makoto, 5,334,594, Cl. 514-291.000.

Kato, Hiroaki: *See*—
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.

Kato, Hiroyuki, to Ebara Corporation; Tokyo Electric Power Company Inc., The; Tohoku Electric Power Company Inc.; Chubu Electric Power Company Inc.; Hokuriku Electric Power Company; Chugoku Electric Power Company, Inc.; Japan Atomic Power Company, The; Kabushiki Kaisha Toshiba; and Hitachi Ltd. Thermal fatigue prevention apparatus for high temperature pump. 5,333,991, Cl. 415-112.000.

Kato, Kazutoshi; Katada, Toshiharu; and Yokoyama, Osamu, to Seiko Epson Corporation. Eyeglass lens. 5,335,026, Cl. 351-159.000.

Kato, Kyoji: *See*—
Yip, Kee Keng; Shigenobu, Hirofumi; Kato, Kyoji; Sato, Takuya; and Yagami, Nobuo, 5,333,957, Cl. 384-484.000.

Kato, Minoru, to Okuma Corporation. Remote diagnosis system for numerical control apparatus. 5,335,231, Cl. 371-15.100.

Kato, Rentaro: *See*—
Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, 5,333,846, Cl. 267-140.140.

Kato, Tadaharu, to NEC Corporation. ADPCM transcoder wherein different bit numbers are used in code conversion. 5,334,977, Cl. 341-76.000.

Kato, Yuji: *See*—
Kamoi, Jyoei; Hayami, Hichiro; Kato, Yuji; Shimoe, Toshio; Abe, Shunji; Kusayanagi, Michio; Mukai, Haruo; and Soumiya, Toshio, 5,335,222, Cl. 370-60.000.

Katoh, Hiroaki: *See*—
Sato, Shinichi; and Katoh, Hiroaki, 5,334,826, Cl. 235-455.000.

Katoh, Takashi: *See*—
Okada, Kohji; Ando, Minato; Tokumoto, Jun-ichi; and Katoh, Takashi, 5,334,305, Cl. 204-435.000.

Katou, Yutaka, to Aisin Seiki Kabushiki Kaisha. Apparatus for shifting sewing position in a sewing machine. 5,333,561, Cl. 112-121.140.

Katsuno, Sumio: *See*—
Shirai, Kenji; and Katsuno, Sumio, 5,333,944, Cl. 303-105.000.

Katsuta, Kazuo: *See*—
Urai, Muneharu; Katsuta, Kazuo; Hosoya, Minoru; Abe, Tatafumi; and Wada, Ryosuke, 5,333,933, Cl. 297-452.100.

VOL 1165 ISS 1 AG 2 1994 UMI

Katz, Avishay: *See*—
Dautremont-Smith, William C.; Feldman, Leonard C.; Kalish, Rafael; Katz, Avishay; Miller, Barry; and Moriya, Netzer, 5,334,306, Cl. 205-131.000.

Kaufman, Jay S. Steam generator system for gas cooled reactor and the like. 5,335,252, Cl. 376-402.000.

Kaufmann, Dieter; Jelich, Klaus; Braden, Rudolf; and Rosen, Winfried, to Bayer Aktiengesellschaft. Preparation of substituted 2-chloropyridines. 5,334,724, Cl. 546-345.000.

Kaufmann, Dieter; Hesse, Carsten; and Himmler, Thomas, to Bayer Aktiengesellschaft. Process for the preparation of cinnamic acid derivatives. 5,334,750, Cl. 560-104.000.

Kawabe, Ushio: *See*—
Nishino, Toshikazu; Hasegawa, Haruhiro; and Kawabe, Ushio, 5,334,580, Cl. 505-191.000.

Kawada, Kazuo: *See*—
Saito, Shinkichi; Asabuki, Hideyo; Onozato, Atsushi; Nishimura, Toshinori; Kawada, Kazuo; and Yamamoto, Shinji, 5,333,860, Cl. 273-77.00A.

Kawada, Shigeki; and Ishida, Hiroshi, to Fanuc Ltd. Induction motor control system. 5,334,924, Cl. 318-811.000.

Kawaguchi, Takashi; and Yamane, Mitsuo, to Brother Kogyo Kabushiki Kaisha. Image retransfer sheet for dry-processing type image-transfer onto an image receiving sheet. 5,334,439, Cl. 428-212.000.

Kawai, Hidemasa, to Nec Corporation. Microwave tube collector assembly including a chromium oxide film. 5,334,909, Cl. 315-5.380.

Kawai, Tohru; Tamura, Masahisa; Suzuki, Ryuji; and Yamanouchi, Haruhiko, to Canon Kabushiki Kaisha. Lens barrel. 5,335,115, Cl. 359-696.000.

Kawaishi, Shintaro: *See*—
Fukuyo, Kei; and Kawaishi, Shintaro, 5,333,836, Cl. 251-129.150.

Kawakami, Akira: *See*—
Taniguchi, Shigeru; Kawakami, Akira; and Murata, Hideo, 5,334,267, Cl. 148-425.000.

Kawakami, Junzo: *See*—
Takahashi, Kazunori; Hamada, Nobuhiro; Takato, Masao; Baba, Kenji; Morooka, Yasuo; Kawakami, Junzo; Yokota, Takayoshi; and Kiyokawa, Ryuji, 5,335,180, Cl. 364-436.000.

Kawakami, Tetsuji: *See*—
Matsuda, Hiromu; Kawakami, Tetsuji; Yubakami, Keiichi; Imai, Akihiro; and Taguchi, Nobuyoshi, 5,334,574, Cl. 503-227.000.

Kawamata, Akira; Kikuchi, Yoko; Suzuki, Yuji; Suzuki, Toshiyuki; Suda, Mituo; and Ohashi, Yukihiro, to Kao Corporation. Alcohol-modified silicon ester derivative and cosmetic composition containing same. 5,334,372, Cl. 424-78.030.

Kawamoto, Hiroshi: *See*—
Fujita, Yoshihiro; Morigaki, Masakazu; Kawamoto, Hiroshi; Nakamura, Shigeru; Yagihara, Morio; and Watanabe, Hiroyuki, 5,334,493, Cl. 430-463.000.

Kawamoto, Satoru, to Fujitsu Limited; and Fujitsu VLSI Limited. Semiconductor storage device. 5,335,206, Cl. 365-233.500.

Kawamura, Hideo, to Isuzu Ceramics Research Institute Co., Ltd. Pre-combustion chamber gas engine. 5,333,582, Cl. 123-254.000.

Kawamura, Yoshihisa, to VIP Kokusai Kyumei Center, Inc. Self-sealing compression packaging bag and compression packaging bag. 5,333,736, Cl. 206-524.800.

Kawanaka, Takafumi; Ohishi, Takeshi; and Shimizu, Masahiro, to Nippon Zeon Co., Ltd. Acrylate polymer elastomer and vulcanizable composition containing the same. 5,334,683, Cl. 526-273.000.

Kawanishi, Kaoru: *See*—
Asanuma, Tadashi; and Kawanishi, Kaoru, 5,334,684, Cl. 526-279.000.

Kawanishi, Makoto; and Nagahama, Hidenobu, to Yoshida Kogyo K.K. High strength, heat resistant aluminum-based alloys. 5,334,266, Cl. 148-403.000.

Kawanishi, Yasuyoshi: *See*—
Mizumura, Takayuki; Sawada, Kenji; Kojima, Naoki; Kawanishi, Yasuyoshi; and Otsuki, Masatoshi, 5,334,259, Cl. 136-258.000.

Kawano, Katsumi: *See*—
Orino, Masayuki; Mori, Kinji; Suzuki, Yasuo; Koizumi, Minoru; Kawano, Katsumi; Nakai, Kozo; and Kasashima, Hirokazu, 5,335,324, Cl. 395-200.000.

Kawasaki, Michihiro: *See*—
Kogure, Kayoko; Kimura: Kazuo; Kawasaki, Michihiro; Toma, Masaaki; and Imamura, Eiji, 5,334,774, Cl. 568-754.000.

Kawasaki, Takehiko: *See*—
Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, 5,334,835, Cl. 250-306.000.

Kawase, Jiro: *See*—
Ogawa, Masahiko; Tagami, Hidetoshi; Yoshihara, Toru; Kawase, Jiro; Kiyomine, Akira; Tamura, Tadashi; Nishizawa, Yoshinori; and Matsunaga, Ken-ichi, 5,334,225, Cl. 8-408.000.

Kawashima, Hirofumi, to Seiko Electronic Components Ltd. Torsional quartz crystal resonator. 5,334,900, Cl. 310-370.000.

Kawashima, Kazuki: *See*—
Izutsu, Tomoyoshi; and Kawashima, Kazuki, 5,334,109, Cl. 474-135.000.

Kawashima, Maumi, to Sumitomo Electric Industries, Ltd. Method of manufacturing superconductor. 5,334,578, Cl. 505-400.000.

Kawawaki, Fumiaki, to Sharp Kabushiki Kaisha. Scientific calculator with coordinate transformation and single line numeric value display. 5,335,193, Cl. 364-709.120.

Kawazoe, Hiroshi: *See*—
Takahata, Toshihiro; Kawazoe, Hiroshi; Murakoshi, Toshiichi; and Tokunaga, Masataka, 5,333,800, Cl. 242-7.010.

Kazama, Akira: *See*—
Yamada, Takeo; Kazama, Akira; and Oshige, Takahiko, 5,335,066, Cl. 356-364.000.

Kazemzadeh, Farhad: *See*—
Kriesel, Marshall S.; Thompson, Thomas N.; and Kazemzadeh, Farhad, 5,334,197, Cl. 604-132.000.

KDC Technology Corp.: *See*—
King, Ray J., 5,334,941, Cl. 324-637.000.

Kedo, Ko: *See*—
Fushimi, Norio; Kedo, Ko; Inamasa, Kenji; and Takagawa, Makoto, 5,334,794, Cl. 585-452.000.

Kee, Kok-Hiong; Schneider, James G.; and Bruno, Robert H., to Sherwood Medical Company. Ventilator manifold with accessory access port. 5,333,607, Cl. 128-204.180.

Kee, Kok-Hiong: *See*—
Schneider, James; and Kee, Kok-Hiong, 5,333,606, Cl. 128-200.240.

Keefe, Peter D.: *See*—
Johnson, Noble T., 5,333,962, Cl. 402-8.000.

Keeney, Richard A.; and Jensen, Gerald, to Management Graphics, Inc. Apparatus for selectively notching or cutting photographic film or the like. 5,335,040, Cl. 354-354.000.

Kelch, Robert H.: *See*—
Zabrocki, Vincent S.; and Kelch, Robert H., 5,334,450, Cl. 428-332.000.

Kelley, Kevin V. Fluid applicator for ocular prosthesis. 5,334,172, Cl. 604-300.000.

Kelln, Norman; and Loughlin, Kelsey, to Schiapparelli Biosystems, Inc. Liquid transfer module for a chemical analyzer. 5,334,349, Cl. 422-63.000.

Kelly, John F., Jr.; Laird, Robert G.; Baker, Thomas E.; and Torres, Cristobal A., to MCI Communications Corporation. Intelligent routing of special service telephone traffic. 5,335,268, Cl. 379-112.000.

Kemp, David M., Jr.: *See*—
Kemp, George; and Kemp, David M., Jr., 5,333,642, Cl. 137-557.000.

Kemp, George; and Kemp, David M., Jr., to Kemp Industrial Refrigeration, Inc. Safety valve monitoring apparatus. 5,333,642, Cl. 137-557.000.

Kemp Industrial Refrigeration, Inc.: *See*—
Kemp, George; and Kemp, David M., Jr., 5,333,642, Cl. 137-557.000.

Kempeneer, Yvan: *See*—
Demiddeleer, Leopold; Kempeneer, Yvan; and Desvachez, Laurence, 5,334,568, Cl. 502-119.000.

Kendall Company, The: *See*—
Etheredge, Robert W., 5,333,753, Cl. 221-33.000.

Kendall Square Research Corporation: *See*—
Frank, Steven J.; Burkhardt, Henry, III; Rothnie, James B.; and Mann, William F., 5,335,325, Cl. 395-200.000.

Kendrick, Robert A. Nickel cadmium battery deep cycler device. 5,334,925, Cl. 320-5.000.

Kenington, Peter B.; Beach, Mark A.; Bateman, Andrew; and McGeehan, Joseph P., to British Technology Group Limited. Apparatus and method for reducing distortion in amplification. 5,334,946, Cl. 330-144.000.

Kenney, Stephen O., to Parlex Corporation. Flexible shielded circuit board. 5,334,800, Cl. 174-35.00R.

Kennoki, Masakado; Ona, Isao; and Ozaki, Masaru, to Dow Corning Toray Silicone Co., Ltd. Polyester fiber coating compositions. 5,334,653, Cl. 524-714.000.

Kenny, Lorne D.: *See*—
Sang, Harry; Kenny, Lorne D.; and Jin, Iljoon, 5,334,236, Cl. 75-415.000.

Kerr, Richard C.: *See*—
Byers, Joseph L.; Flint, W. Toriran; and Kerr, Richard C., 5,334,418, Cl. 427-373.000.

Kervagoret, Gilbert, to Bendix Europe Services Techniques. Solenoid valve for a wheel antilockup system. 5,333,947, Cl. 303-119.200.

Ketterman, Kenneth L.; and Kinne, Raymond M., to Hampton Rubber Company. Life raft storage and inflation system. 5,334,064, Cl. 441-42.000.

Key Knife, Inc.: *See*—
Carpenter, Charles T.; and Bayly, Robert M., 5,333,659, Cl. 144-231.000.

Key Technology, Inc.: *See*—
Vannelli, Anthony; and Madsen, Thomas C., 5,335,293, Cl. 382-17.000.

Key Tronic Corporation: *See*—
English, George P.; and Batson, Nathan, 5,335,137, Cl. 361-220.000.

Keystone International Holdings Corp.: *See*—
Higgins, Thomas F.; and McNeely, Michael D., 5,333,635, Cl. 137-12.000.
Maxwell, Horace J., 5,333,638, Cl. 137-116.000.

Khan, Mohammed A.: *See*—
Hoang, Minh Q.; and Khan, Mohammed A., 5,334,388, Cl. 424-402.000.

Khanna, Ish K.; Mueller, Richard A.; and Weier, Richard M., to G. D. Searle & Co. Intermediates for 2-amino and azido derivatives of 1,5-iminosugars. 5,334,717, Cl. 546-116.000.

Khare, Ashok K.; and Scott, Michael, to National Forge Company. Interrupted normalization heat treatment process. 5,334,269, Cl. 148-638.000.

Khaskin, Jury V.: *See*—
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

Kiat, Toh S.: *See*—
Kachlic, Jerry D.; and Kiat, Toh S., 5,334,049, Cl. 439-567.000.

Kiernicki, Leopold: *See*—
Newman, David L.; Kiernicki, Leopold; Schofield, Philip; and McGinley, James W., 5,335,301, Cl. 385-75.000.

Kikkoman Corporation: *See*—
Harada, Yasuhiro; Nakano, Eiichi; Tatsumi, Hiroki; and Umezu, Motoaki, 5,334,511, Cl. 435-69.400.

Kikuchi, Yoko: *See*—
Kawamata, Akira; Kikuchi, Yoko; Suzuki, Yuji; Suzuki, Toshiyuki; Suda, Mituo; and Ohashi, Yukihiro, 5,334,372, Cl. 424-78.030.

Kilbourn, Robert G.; Griffith, Owen W.; and Gross, Steven S., to Board of Regents, The University of Texas System. Anti-endotoxin, interleukin-1 receptor antagonist and anti-tumor necrosis factor antibody with arginine-free formulations for the treatment of hypotension. 5,334,380, Cl. 424-85.200.

Kim, Jin B.: *See*—
Bae, Young D.; and Kim, Jin B., 5,333,472, Cl. 62-503.000.

Kim, Jung H., to SamSung Electronics Co., Ltd. Signal processing system having vertical/horizontal contour compensation and frequency bandwidth extension functions. 5,335,069, Cl. 348-630.000.

Kim, Kevin D.: *See*—
Boka, Jeffrey B.; Patel, Naresh R.; Kim, Kevin D.; and Shaw, David S., 5,335,179, Cl. 364-434.000.

Kim, Kyoo Y.: *See*—
Seong, Byeong G.; Hwang, Soon Y.; Song, Jin H.; and Kim, Kyoo Y., 5,334,416, Cl. 427-252.000.

Kim, Sung Y., to Samsung Electronics Co., Ltd. Double seal pattern for a liquid crystal device with curved ends. 5,335,103, Cl. 359-80.000.

Kim, Tae-eung: *See*—
Park, Ku-man; and Kim, Tae-eung, 5,335,117, Cl. 360-48.000.

Kim, Young G.; and Hwang, In Y., to Poongsan Corporation; and Kim, Young G. Copper alloys for electrical and electronic parts. 5,334,346, Cl. 420-4.850.

Kimmel, Earl J.: *See*—
Baucom, Keith B.; Alty, Adam C.; and Kimmel, Earl J., 5,334,788, Cl. 570-175.000.

Kimura, Hiroshi; Hadeishi, Tetsuo, deceased (by Hadeishi, Chikako, Administrator); Olsen, Harold M.; and Bak, Chan S., to Hughes Aircraft Company. Spark-excited fluorescence sensor. 5,333,487, Cl. 73-23.310.

Kimura: Kazuo: *See*—
Kogure, Kayoko; Kimura: Kazuo; Kawasaki, Michihiro; Toma, Masaaki; and Imamura, Eiji, 5,334,774, Cl. 568-754.000.

Kindl, Thomas E.; Moore, Ronald J.; and Rickerl, Paul G., to International Business Machines Corporation. Method for forming a patterned layer on a substrate. 5,334,487, Cl. 430-312.000.

King, Charles J.: *See*—
Bozich, Frank; and King, Charles J., 5,333,439, Cl. 53-450.000.

King, Ray J., to KDC Technology Corp. Microwave reflection resonator sensors. 5,334,941, Cl. 324-637.000.

Kinne, Raymond M.: *See*—
Ketterman, Kenneth L.; and Kinne, Raymond M., 5,334,064, Cl. 441-42.000.

Kinney, Michael A., to Siemens Energy & Automation, Inc. Fault recording system for an electric power trip unit. 5,335,135, Cl. 361-79.000.

Kino, Kousuke: *See*—
Tsunoo, Hajime; Kino, Kousuke; and Yamashita, Akio, 5,334,704, Cl. 530-371.000.

Kinoshita, Kazumi: *See*—
Takato, Kenji; Kinoshita, Kazumi; Kurosaki, Kiyoshi; Kosako, Taichi; and Minohara, Kazuyuki, 5,335,271, Cl. 379-382.000.

Kinoshita, Masaki: *See*—
Sano, Kinjiro; Imanishi, Wataru; Nakajima, Yoshihisa; and Kinoshita, Masaaki, 5,334,086, Cl. 445-62.000.

Kiraly, Christopher M.: *See*—
Arnold, Floyd L.; Bair, Carl J.; Kiraly, Christopher M.; Norgren, William P.; and Wintrias, George V., 5,333,874, Cl. 273-185.00B.

Kirin Beer Kabushiki Kaisha: *See*—
Sakamoto, Yuji, 5,334,229, Cl. 47-57.600.

Kirk, Richard A., to Crosfield Electronics Limited. Electronic image generation apparatus including a camera for recording a region and producing a control data array. 5,335,318, Cl. 395-131.000.

Kirkland, Daniel R.; and Sublette, Mark A., to White Consolidated Industries, Inc. Cleaning wash-arm for dishwashing filter. 5,333,631, Cl. 134-104.100.

Kirkpatrick, Michael E.; and Haydock, Paul M., to Consolidated Industries Corp. Abatement member and method for inhibiting formation of oxides of nitrogen. 5,333,597, Cl. 126-110.00R.

Kirkpatrick, Thomas I., to United States of America, Navy. High isolation electronic switch. 5,334,881, Cl. 307-241.000.

Kirsch, Jurgen: *See*—
Hess, Bernhard; Schulz-Schlitte, Wolfgang; Kirsch, Jurgen; Freitag, Dieter; Arndt, Uwe; Gehrke, Hans-Georg; and Zander, Klaus, 5,334,692, Cl. 528-126.000.

Kisalus, John C., to Nalco Chemical Company. Alkylation aid. 5,334,569, Cl. 502-167.000.

Kishima, Yoshio; and Nishiyama, Itsuo, to Mitsubishi Denki Kabushiki Kaisha; and Dainippon Plastics Co., Ltd. Material strength measuring apparatus. 5,333,494, Cl. 73-104.000.

Kishimoto, Tokihiko: *See*—
Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, 5,335,002, Cl. 346-76.0PH.

Kishimoto, Yoshinobu: *See*—
Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, 5,335,002, Cl. 346-76.0PH.

Kissendorfer, Hans: *See*—
Eyrainer, Heinz; and Kissendorfer, Hans, 5,333,903, Cl. 280-743.00R.

Kita, Katsuo: *See*—
Shimokawa, Shinji; and Kita, Katsuo, 5,333,649, Cl. 138-89.000.

Kitagawa, Hisao: *See*—
Fukuyama, Hiroya; Kitagawa, Hisao; Yamamoto, Mitsunori; and Kashima, Shingo, 5,334,830, Cl. 250-216.000.

Kitagawa, Keiko; and Yasuda, Shiro, to Sony Corporation. Auditory playing device. 5,334,022, Cl. 434-340.000.

Kitamura, Hideaki, to Dainippon Screen Mfg. Co., Ltd. Method of and apparatus for eliminating pin holes. 5,335,086, Cl. 358-431.000.

Kitamura, Koichi; Mimura, Hidenori; Yamamoto, Kazuo; Ohta, Yasumitsu; Sai, Kazuyoshi; and Nagatake, Youichi, to Nippon Steel Corporation. Contact type image sensor. 5,335,092, Cl. 358-482.000.

Kitamura, Yoshinao; Yamashita, Shinkiti; Tokunaga, Yasuyuki; Ando, Masahiko; and Yamanaka, Takeshi, to Nitto Denko Corporation. Foam substrate-attached adhesive sheets. 5,334,447, Cl. 428-317.300.

Kitamura, Yoshinao: *See*—
Ando, Masahiko; Yamanaka, Takeshi; Moroishi, Yutaka; Tokunaga, Yasuyuki; and Kitamura, Yoshinao, 5,334,686, Cl. 526-307.700.

Kitano, Fumiyasu: *See*—
Ogata, Akihiro; Hirakawa, Yoshihiro; Soichi, Masakatsu; and Kitano, Fumiyasu, 5,333,628, Cl. 134-64.00R.

Kittel, Christoph; Walendy, Hans; Burak, Gerhard; and Hoffmann, Manfred, to Dr. Alois Stankiewicz GmbH. Process for manufacturing a sound insulating structure. 5,334,338, Cl. 264-46.400.

Kittelmann, Matthias; Ghisalba, Oreste; Klein, Teresa; Kragl, Udo; and Wandrey, Christian. Process for the production of activated sialic acids. 5,334,514, Cl. 435-84.000.

Kiyohara, Osamu: *See*—
Ochi, Mitsukazu; Tagami, Toshio; and Kiyohara, Osamu, 5,334,661, Cl. 525-90.000.
Ochi, Mitsukazu; Tagami, Toshio; and Kiyohara, Osamu, 5,334,662, Cl. 525-90.000.

Kiyokawa, Ryuji: *See*—
Takahashi, Kazunori; Hamada, Nobuhiro; Takato, Masao; Baba, Kenji; Morooka, Yasuo; Kawakami, Junzo; Yokota, Takayoshi; and Kiyokawa, Ryuji, 5,335,180, Cl. 364-436.000.

Kiyomine, Akira: *See*—
Ogawa, Masahiko; Tagami, Hidetoshi; Yoshihara, Toru; Kawase, Jiro; Kiyomine, Akira; Tamura, Tadashi; Nishizawa, Yoshinori; and Matsunaga, Ken-ichi, 5,334,225, Cl. 8-408.000.

Klaerner, Peter: *See*—
Blumenstein, Uwe; Klaerner, Peter; Schuch, Horst; and Walter, Hans-Michael, 5,334,658, Cl. 525-71.000.

Klahn, Thomas: *See*—
Hegner, Frank; Schmidt, Elke; Klahn, Thomas; Reimann, Peter; Breitenstein, Heinz; and Messmer, Stephan, 5,334,344, Cl. 420-422.000.

Klebusch, William C.: *See*—
Gilchrist, Jon P.; and Klebusch, William C., 5,333,643, Cl. 137-605.000.

Klein, Harvey A., to Brezak, Rikki. Suturing with corrosion and breakage resistant flexible wire. 5,333,625, Cl. 128-898.000.

Klein, Heinz-Peter: *See*—
Schafheutle, Markus A.; and Klein, Heinz-Peter, 5,334,690, Cl. 528-71.000.

Klein, James H., to Roberts Consolidated Industries, Inc. Carpet seaming iron with air gap between cooling plates. 5,333,401, Cl. 38-89.000.

Klein, James K.; and Sinko, George E., to Geaco International, Inc. Catheter introducer. 5,334,157, Cl. 604-160.000.

Klein, Peter: *See*—
Jung, Holger; Klein, Peter; and Heinrich, Karl, 5,334,694, Cl. 528-185.000.

Klein, Teresa: *See*—
Kittelmann, Matthias; Ghisalba, Oreste; Klein, Teresa; Kragl, Udo; and Wandrey, Christian, 5,334,514, Cl. 435-84.000.

Kleinert, Rudi: *See*—
Piper, Michael; Rienecker, Reimund; Kleinert, Rudi; and Schneider, Walter, 5,333,883, Cl. 277-102.000.

Klestadt, Ralph H.; and Finn, Richard R., to Hughes Aircraft Company. Multiple missile ejection system. 5,333,528, Cl. 89-1.510.

Klett, James W.: *See*—
Edie, Danny D.; and Klett, James W., 5,334,414, Cl. 427-189.000.

Kligfeld, Edward G.: *See*—
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krabe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Kline, Glennard M.: *See*—
Mellum, Ronald J.; Hawkins, Peter M., Jr.; Kline, Glennard M.; Klinkert, Deborah A.; McFarlane, Ronald G.; and Hansen, Gary P., 5,333,678, Cl. 165-42.000.

Kling, Miguel: *See*—
Miller, Jorge; and Kling, Miguel, 5,334,777, Cl. 568-859.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Klinger, Robert E.: *See—*
Bowers, Michael D.; Klinger, Robert E.; Thumma, Mark R.; and Wike, David P., 5,334,048, Cl. 439-567.000.

Klinkert, Deborah A.: *See—*
Mellum, Ronald J.; Hawkins, Peter M., Jr.; Kline, Glennard M.; Klinkert, Deborah A.; McFarlane, Ronald G.; and Hansen, Gary P., 5,333,678, Cl. 165-42.000.

Klioze, Scott D.: *See—*
Poppas, Dix P.; Schlossberg, Steven M.; Choma, Theodore J.; Klioze, Scott D.; and Boll, James H., 5,334,191, Cl. 606-12.000.

Klioze, Scott David: *See—*
Poppas, Dix P.; Schlossberg, Steven M.; Choma, Theodore J.; Klioze, Scott D.; and Boll, James H., 5,334,191, Cl. 606-12.000.

Kluger, Jacob N.; Martin, Michael J.; Moore, Steven R.; and Sokac, Russell J., to Xerox Corporation. Sheet misfeed and jam detection by measuring force exerted on feed rolls. 5,335,043, Cl. 355-206.000.

Kluger, Ronald H.; and Grant, Andrew S. Use of acyl phosphate esters in the modification of hemoglobin. 5,334,707, Cl. 530-385.000.

Klumpjan, Joe. Wire unreeling device. 5,333,808, Cl. 242-598.300.

Kmiecik-Lawrynowicz, Grazyna: *See—*
Sacripante, Guerino G.; Kmiecik-Lawrynowicz, Grazyna; and Ong, Beng S., 5,334,471, Cl. 430-106.600.

Knecht, Hugo: *See—*
Kunz, Jurg; Knecht, Hugo; and Binder, Erich, 5,335,045, Cl. 355-72.000.

Kneis, Leopold; and Slamenik, Manfred, to Veitscher-Magnesitwerke-Actien-Gesellschaft. Device for installing and removing gas purging plugs for metallurgical vessels. 5,333,843, Cl. 266-271.000.

Kniepmann, Mark R.: *See—*
Volk, Benjamin L.; Volk, Joseph A., Jr.; and Kniepmann, Mark R., 5,333,757, Cl. 222-94.000.

Knoblock, Glenn A., to Steelcase Inc. Back shell with selective stiffening. 5,333,934, Cl. 297-452.150.

Knowles Electronics, Inc.: *See—*
Carlson, Elmer V.; and Ballad, William J., 5,335,286, Cl. 381-191.000.

Knowles, Terrence J.; and Ogren, Del, to Carroll Touch. Controller for an acoustic wave touch panel. 5,334,805, Cl. 178-18.000.

Knudsen, George A.: *See—*
Yezrielev, Albert I.; Wellman, William E.; Kowalik, Ralph M.; Knudsen, George A.; and Romanelli, Michael G., 5,334,671, Cl. 525-443.000.

Kobayashi, Ikunori: *See—*
Matsuoka, Tomizo; Takeda, Mamoru; and Kobayashi, Ikunori, 5,334,544, Cl. 437-40.000.

Kobayashi, Junichi: *See—*
Kashiwazaki, Akio; Kobayashi, Masatsune; Arai, Ryuichi; Kobayashi, Junichi; and Shimomura, Akihiko, 5,334,999, Cl. 347-65.000.

Kobayashi, Junji: *See—*
Edakubo, Hiroo; Uahiro, Tatsuzo; Nagatsuka, Osamu; and Kobayashi, Junji, 5,335,129, Cl. 360-132.000.

Kobayashi, Kaoru; Kuwae, Shinobu; Ooya, Tomoshi; Fukutsuka, Hirotoshi; Sumi, Akinori; Ohtani, Wataru; Ohmura, Takao; and Yokoyama, Kazumasa, to Green Cross Corporation, The. Fatty acid supplemented medium for recombinant production of human serum albumin by yeast. 5,334,512, Cl. 435-69.600.

Kobayashi, Kazuyoshi: *See—*
Masuda, Hitoshi; Suzuki, Masatakatsu; Ohno, Masataka; Kobayashi, Kazuyoshi; and Nakamura, Hiromitsu, 5,335,274, Cl. 379-433.000.

Kobayashi, Masaaki: *See—*
Nakatsu, Etsuto; Morioka, Yoshihiro; and Kobayashi, Masaaki, 5,335,125, Cl. 360-10.300.

Kobayashi, Masatsune: *See—*
Kashiwazaki, Akio; Kobayashi, Masatsune; Arai, Ryuichi; Kobayashi, Junichi; and Shimomura, Akihiko, 5,334,999, Cl. 347-65.000.

Kobayashi, Nobuki; Shiraishi, Yoku; Yamamoto, Takashi; and Shin, Masaaki, to Mitsui Toatsu Chemicals, Incorporated. Continuous method of treating polymer reaction mixture. 5,334,473, Cl. 430-109.000.

Kobayashi, Shinji: *See—*
Yamada, Toshihisa; Miyamoto, Toshiharu; Hayashi, Kazuo; Takayama, Ryoichi; Kobayashi, Shinji; and Ohmura, Keizi, 5,333,554, Cl. 105-397.000.

Kobayashi, Takashi: *See—*
Takayama, Nobutoshi; Kobayashi, Takashi; Mabuchi, Toshiaki; and Takahashi, Koji, 5,335,189, Cl. 364-565.000.

Kobayashi, Tatsuya, to Fuji Electric Co., Ltd. Shelf for housing products in an automatic frozen-product vending machine. 5,333,754, Cl. 221-75.000.

Kobayashi, Tohru: *See—*
Wada, Yoshihiro; Kobayashi, Tohru; and Tachibana, Noriki, 5,334,457, Cl. 428-480.000.

Kobayashi, Toru: *See—*
Koizumi, Shuzo; Uehara, Noriaki; and Kobayashi, Toru, 5,335,187, Cl. 364-526.000.

Kobayasshi, Yasuo: *See—*
Kubo, Kenichi; Kobayashi, Yasuo; and Koizumi, Koji, 5,334,302, Cl. 204-298.180.

Kobayashi, Yoshiharu: *See—*
Tanigaki, Yasushi; Satoh, Yoshikazu; and Kobayashi, Yoshiharu, 5,334,996, Cl. 345-152.000.

Koblitz, Rudolf; and Lenz, Kuno, to Deutsche Thomson-Brandt GmbH. Phase locked loop circuit. 5,334,954, Cl. 331-20.000.

Kocal, Joseph A., to UOP. Increasing catalyst life and improving product linearity in the alkylation of aromatics with linear olefins. 5,334,793, Cl. 585-323.000.

Koch, Juergen; and Heinz, Gerhard, to BASF Aktiengesellschaft. Stabilized polyaryl ether ketone molding compositions. 5,334,642, Cl. 524-83.000.

Koch Materials Company: *See—*
Dekker, Don L.; and Hasbrouck, Robert R., 5,334,005, Cl. 425-188.000.

Kodama, Kazuhiko: *See—*
Shiota, Tomio; Hikida, Toshiharu; Sugimoto, Masashi; Kodama, Kazuhiko; and Shimizu, Kaoru, 5,334,434, Cl. 428-188.000.

Kodama, Keiichi: *See—*
Oomori, Norio; Ikeda, Fumio; Kodama, Keiichi; Kanai, Makoto; and Terayama, Tatsuya, 5,333,914, Cl. 285-54.000.

Kogure, Kayoko; Kimura: Kazuo; Kawasaki, Michihiro; Toma, Masaaki; and Imamura, Eiji, to Sumitomo Chemical Company, Limited. Process for purifying phenol. 5,334,774, Cl. 568-754.000.

Kohama, Takafumi; Kaneko, Isso; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, to Sankyo Company, Limited. Compounds, named the "Leustroducsins", their preparation and their therapeutic uses. 5,334,587, Cl. 514-99.000.

Kohara, Teiji: *See—*
Hani, Tsutomu; Takahashi, Nobukazu; Kohara, Teiji; and Natsume, Tadao, 5,334,424, Cl. 428-1.000.

Kohler Co.: *See—*
Olmr, Jaroslav J., 5,333,575, Cl. 123-41.420.
Redding, John C.; and Brouwer, Douglas J., 5,333,327, Cl. 4-693.000.

Kohlmann, Michael J.; and Williams, Randall W. Purified water dispensing apparatus and method. 5,333,660, Cl. 141-263.000.

Kohno, Hiromi; and Soda, Hiroyuki, to Zexel Corporation. Correcting method for data used for control operation of vehicular clutch. 5,335,174, Cl. 364-424.100.

Kohno, Makiko: *See—*
Yamaguchi, Hiroshi; Noguchi, Minori; Kohno, Makiko; and Nakata, Toshihiko, 5,333,495, Cl. 73-105.000.

Koike, Masatoshi, to Kabushiki Kaisha Toshiba; and Toshiba Audio Video Engineering Co., Limited. Demodulation circuit having automatic frequency control function. 5,335,354, Cl. 455-192.200.

Koike, Toshio: *See—*
Kai, Masanori; Okabe, Satoshi; Hatori, Nobuyoshi; Koike, Toshio; and Iwamoto, Tamio, 5,335,047, Cl. 355-200.000.

Koitabashi, Masanobu; Toda, Masato; and Handa, Keiji, to Olympus Optical Co., Ltd. Optical axis adjustment mechanism for a light source. 5,335,154, Cl. 362-294.000.

Koizumi, Koji: *See—*
Kubo, Kenichi; Kobayashi, Yasuo; and Koizumi, Koji, 5,334,302, Cl. 204-298.180.

Koizumi, Minoru: *See—*
Orimo, Masayuki; Mori, Kinji; Suzuki, Yasuo; Koizumi, Minoru; Kawano, Katsumi; Nakai, Kozo; and Kasashima, Hirokazu, 5,335,324, Cl. 395-200.000.

Koizumi, Osamu: *See—*
Sato, Masanori; and Koizumi, Osamu, 5,335,131, Cl. 242-347.000.

Koizumi, Shuzo; Uehara, Noriaki; and Kobayashi, Toru, to Seiko Epson Corporation. Method and apparatus for dyeing and color matching lenses. 5,335,187, Cl. 364-526.000.

Kojima, Naoki: *See—*
Mizumura, Takayuki; Sawada, Kenji; Kojima, Naoki; Kawanishi, Yasuyoshi; and Otsuki, Masatoshi, 5,334,259, Cl. 136-258.000.

Kojiri, Katsuhisa; Nakajima, Shigeru; Fuse, Aisaku; and Suda, Hiroyuki, to Banyu Pharmaceutical Co., Ltd. Antibacterial substance BE-24566B. 5,334,613, Cl. 514-452.000.

Kokaji, Shigeru: *See—*
Eiju, Tomoaki; Matsuda, Kiyofumi; Barnes, Thomas H.; and Kokaji, Shigeru, 5,335,058, Cl. 356-28.500.

Koksbang, Rene, to Valence Technology, Inc. Method of preparing lithium battery electrode compositions. 5,334,334, Cl. 264-28.000.

Kokubo, Tadashi: *See—*
Komori, Kiyotaka; Yamakawa, Seishiro; Yamamoto, Shigeru; Naka, Jun; and Kokubo, Tadashi, 5,334,645, Cl. 524-494.000.

Kolnick, Frank C., to Motorola, Inc. Computer human interface with multiapplication display. 5,335,323, Cl. 395-164.000.

Kolton, Chester; and Spater, Stuart S., to B&G Plastics, Inc. Method for use in belt manfuacture and belt and indicator assembly. 5,334,274, Cl. 156-93.000.

Komaru, Takeshi: *See—*
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Niahi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.

Komatsu, Keiro, to NEC Corporation. Method of making semiconductor optical guided-wave device. 5,334,551, Cl. 437-105.000.

Komatsu, Masashi; Yamamoto, Michio; Ishino, Masaru; and Suzukamo, Gohfu, to Sumitomo Chemical Company, Limited. Oxychlorination catalyst process for preparing the catalyst and method of oxychlorination with use of the catalyst. 5,334,789, Cl. 570-203.000.

Komiya, Yasuhiro; Mori, Takeshi; and Nagasaki, Tatsuo, to Olympus Optical Co., Ltd. Image sensing apparatus having exposure level and dynamic range control circuit. 5,335,075, Cl. 348-298.000.

Komori, Kiyotaka; Yamakawa, Seishiro; Yamamoto, Shigeru; Naka, Jun; and Kokubo, Tadashi, to Matsushita Electric Works, Ltd.; and Nippon Electric Glass Co., Ltd. Substrate for circuit board including the glass fibers as reinforcing material. 5,334,645, Cl. 524-494.000.

Kon, Akihiko, to Yamatake-Honeywell Co., Ltd. Method and apparatus for calculating thermal sensitivity. 5,333,953, Cl. 374-109.000.

Kondakov, Vladimir M.: *See—*
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

Kondo, Naofumi: *See—*
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.

Kondo, Syunichi: *See—*
Abe, Yukio; Higashi, Tatsuji; Hirano, Tsumoru; and Kondo, Syunichi, 5,334,486, Cl. 430-288.000.

Konica Corporation: *See—*
Masutomi, Haruhiko; Ohtani, Hirofumi; Uchida, Naoko; and Mamiya, Chikao, 5,334,359, Cl. 422-225.000.
Sato, Kenji; and Tokutake, Naoto, 5,335,052, Cl. 355-271.000.
Ueda, Eiichi; Fukazawa, Fumie; and Yagi, Toshihiko, 5,334,494, Cl. 430-533.000.
Wada, Yoshihiro; Kobayashi, Tohru; and Tachibana, Noriki, 5,334,457, Cl. 428-480.000.

Kono, Motomichi: *See—*
Arai, Hitoshi; Kanda, Yutaka; Kono, Motomichi; Kasai, Masaji; Ashizawa, Tadashi; and Gomi, Katsushige, 5,334,611, Cl. 514-410.000.

Kono, Shinichi, to NEC Corporation. Radio receiver having frequency sweep control apparatus. 5,335,348, Cl. 455-192.200.

Konushi, Fumihiro: *See—*
Okumura, Toshiyuki; Inoguchi, Kazuhiko; Konushi, Fumihiro; and Takiguchi, Haruhisa, 5,335,241, Cl. 372-46.000.

Koontz, Floyd A., to Harris Corporation. RF high power, two and three way in phase combiner and method. 5,334,957, Cl. 333-131.000.

Korn, George C.; and Blonski, Robert P., to Ferro Corporation. Enamel for use on glass and a method of using the same. 5,334,412, Cl. 427-108.000.

Korsmeier, Wilhelm; Wolf, Dieter; Hoppe, Manfred; and Schollmeyer, Holns J., to Ruhrgas Aktiengesellschaft. Device to control a gas-fired appliance. 5,333,591, Cl. 123-527.000.

Kosa, Nadhir B.; Twiggs, Gene J.; Salter, James R.; Singh, Raghuvir; Costello, David J.; and Schlain, Leslie A., to OPtex Biomedical, Inc. Optical sensor for fluid parameters. 5,335,305, Cl. 385-147.000.

Kosako, Kosei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Waterproof and/or water-resistant camera. 5,335,028, Cl. 354-64.000.

Kosako, Taichi: *See—*
Takato, Kenji; Kinoshita, Kazumi; Kurosaki, Kiyoshi; Kosako, Taichi; and Minohara, Kazuyuki, 5,335,271, Cl. 379-382.000.

Koscica, Thomas E.: *See—*
Babbitt, Richard W.; Koscica, Thomas E.; and Drach, William C., 5,334,958, Cl. 333-156.000.

Koshikawa, Sakae: *See—*
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, 5,334,628, Cl. 514-311.000.

Koshirai, Atsunori: *See—*
Yamamoto, Naoki; Yanagase, Akira; Nakata, Akira; Koshirai, Atsunori; and Yanai, Toshimi, 5,334,656, Cl. 525-63.000.

Kossovsky, Nir; Gelman, Andrew E.; and Sponsler, Edward E., to University of California, The Regents of the. Human immunodeficiency virus decoy. 5,334,394, Cl. 424-494.000.

Kostylev, Sergey A.: *See—*
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Strand, David A.; Czubatyj, Wolodymyr; Gonzalez-Hernandez, Jesus; Fritzsche, Hellmut; Ye, Qiuyi; Kostylev, Sergey A.; and Chao, Benjamin S., 5,335,219, Cl. 369-288.000.

Kouwenhoven, Herman W.; Bertea, Leopoldo; and Prins, Roel, to CU Chemie Uetikon AG. Process for the preparation of nitrobenzene. 5,334,781, Cl. 568-927.000.

Kovit, Sheldon L.: *See—*
Dean, James L.; Seto, Rodney K.; and Kovit, Sheldon L., 5,333,691, Cl. 166-341.000.

Kowalczyn, Taras A.: *See—*
Herdeman, Robert W.; Kowalczyn, Taras A.; Graham, Charles R.; and Herzstein, John, 5,333,394, Cl. 34-467.000.

Kowalik, Ralph M.: *See—*
Wellman, William E.; Yezrielev, Albert I.; and Kowalik, Ralph M., 5,334,652, Cl. 524-601.000.
Yezrielev, Albert I.; Wellman, William E.; Kowalik, Ralph M.; Knudsen, George A.; and Romanelli, Michael G., 5,334,671, Cl. 525-443.000.

Koyama, Hideho: *See—*
Miyamoto, Michikazu; Koyama, Hideho; and Hoshi, Naoki, 5,333,535, Cl. 92-88.000.

Koyama, Naomi: *See—*
Furuhashi, Hiroyuki; Koyama, Naomi; and Ueki, Satoshi, 5,334,678, Cl. 526-169.200.

Koyama, Satoshi; Homoto, Yukio; and Esaka, Naoki, to Daikin Industries, Ltd. Process for preparing 1,1,1,2-tetrafluoroethane. 5,334,786, Cl. 570-168.000.

Koyo Seiko Co., Ltd.: *See—*
Nakamura, Masahide, 5,335,176, Cl. 364-424.050.

Kozora, Joseph W. Cylinder-port block arrangement for glass container forming apparatus. 5,334,233, Cl. 65-171.000.

Krafcsik, David M.; and Chan, David W., to Westinghouse Electric Corporation. 180 degree phase shifter bit. 5,334,959, Cl. 333-164.000.

Kragl, Udo: *See—*
Kittelmann, Matthias; Ghisalba, Oreste; Klein, Teresa; Kragl, Udo; and Wandrey, Christian, 5,334,514, Cl. 435-84.000.

Krahe, Holly B.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Krajewski, John J.: *See—*
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,455, Cl. 428-413.000.
Noren, Gerry K.; Krajewski. John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandebcrg, John T., 5,334,456, Cl. 428-431.000.

Kramer, Dale C. Compact disc case. 5,334,904, Cl. 312-9.570.

Kramer, Mark A.; Leonard, James A.; and Ungar, Lyle H., to Massachusetts Institute of Technology. Method and apparatus for pattern mapping system with self-reliability check. 5,335,291, Cl. 382-14.000.

Kranjec, John S.; and Kranjec, Robert S. Combination lock and switch mount. 5,334,810, Cl. 200-294.000.

Kranjec, Robert S.: *See—*
Kranjec, John S.; and Kranjec, Robert S., 5,334,810, Cl. 200-294.000.

Krause, Joachim: *See—*
Stein, Christian; Guggenmos, Xaver; and Krause, Joachim, 5,335,134, Cl. 361-56.000.

Kravets, Arthur A.: *See—*
Nortman, Marvin; and Kravets, Arthur A., 5,334,149, Cl. 604-110.000.

Krebs, Hans: *See—*
Schrimpf, Hans; Krebs, Hans; Liebold, Gert; and Frey, Guenter, 5,334,323, Cl. 252-70.000.

Kremer, Andre: *See—*
Stomp, Hubert; Kremer, Andre; Fries, Daniel; Reichert, Marc; and Devillet, Serge, 5,333,842, Cl. 266-226.000.

Kremers-Urban Company: *See—*
Wagle, Sudhakar S.; Steinbach, Thomas; Lawyer, Carl H.; Hermann, William J., Jr.; and Gawish, Ali A. S., 5,334,395, Cl. 424-553.000.

Krentz, Douglas J. Adjustable chest pouch. 5,333,768, Cl. 224-215.000.

Kriener, Michael; Uhlenbrock, Johannes; Wilkerson, Larry A.; and Roslund, Richard N., Jr., to Haworth, Inc. Chair control with forward tilt. 5,333,368, Cl. 297-301.000.

Kriesel, Marshall S.; Thompson, Thomas N.; and Kazemzadeh, Farhad, to Science Incorporated. Flexible base fluid delivery apparatus. 5,334,197, Cl. 604-132.000.

Krisbergh, Hal M.: *See—*
Wachob, David E.; and Krisbergh, Hal M., 5,334,975, Cl. 340-825.210.

Kroener, Michael: *See—*
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,334,287, Cl. 162-175.000.

Kroll, Detlef: *See—*
Bielfeldt, Friedrich B.; and Kroll, Detlef, 5,333,541, Cl. 100-41.000.

Kroll, Mark W., to Angeion Corporation. Improved method and apparatus for separate-capacitor cardioversion. 5,334,219, Cl. 607-5.000.

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Kronberger, Rainer: *See—*
Lindemeier, Heinz; Hope, Jochen; Reiter, Leopold; and Kronberger, Rainer, 5,335,010, Cl. 348-706.000.

Kronos, Inc.: *See—*
Schinkitz, Dieter; and Thumm, Hans, 5,334,362, Cl. 423-1.000.

Kroupa, Petr, to Elitex Usti nad Orlici Usti nad Orlici . Non-circular sliver container. 5,333,359, Cl. 19-159.00R.

Krude, Werner; Harz, Peter; and Frielingsdorf, Herbert, to GKN Automotive AG. Wheel hub/constant velocity joint unit. 5,333,939, Cl. 301-124.100.

Krueger International, Inc.: *See—*
McGregor, Dickson J., 5,333,949, Cl. 312-221.000.

Krueger, Thomas E.; and Astrof, Kenneth L., to Seattle Silicon Corporation. Method and apparatus for spread spectrum communications. 5,335,249, Cl. 375-1.000.

Krueger, William B.: *See—*
Lutz, Mark A.; and Krueger, William B., 5,333,504, Cl. 73-727.000.

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Kubo, Seitoku: *See—*
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Kubo, Susumu; Nakai, Shoji; and Tsunoda, Masumi, to Kabushiki Kaisha Toshiba. Apparatus for elevator group control having low service floor detection for improved passenger pickup efficiency. 5,334,807, Cl. 187-126.000.

Kubo, Tetsuya: *See*—
Adachi, Naotomo; Kubo, Tetsuya; Kaiwa, Ryoichi; and Kudoh, Michiyoshi, 5,335,367, Cl. 455-90.000.

Kubo, Tsutomu: *See*—
Inaba, Yoshihiro; Takashima, Koichi; Matsui, Izuru; and Kubo, Tsutomu, 5,334,480, Cl. 430-138.000.

Kubota, Kenji: *See*—
Hisano, Kiyoshi; Hirashima, Ken; Kurosawa, Hiroyuki; Kubota, Kenji; and Sugimoto, Shuji, 5,335,327, Cl. 395-250.000.

Kubota, Minoru, to Yazaki Corporation. Indicator lighting unit. 5,335,153, Cl. 362-240.000.

Kubota, Naohiro: *See*—
Minami, Yoshitaka; Kakumaru, Hajime; Kubota, Naohiro; Tominaga, Nobuhide; and Ishizaki, Koji, 5,334,484, Cl. 430-281.000.

Kudoh, Michiyoshi: *See*—
Adachi, Naotomo; Kubo, Tetsuya; Kaiwa, Ryoichi; and Kudoh, Michiyoshi, 5,335,367, Cl. 455-90.000.

Kudoh, Takahiro: *See*—
Shimura, Yasuo; Kudoh, Takahiro; and Shimizu, Jiro, 5,333,578, Cl. 123-90.170.

Kuekenhoehner, Thomas: *See*—
Wenderoth, Bernd; Brand, Siegbert; Schuetz, Franz; Kuekenhoehner, Thomas; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,334,577, Cl. 504-130.000.

Kugler, Karl-Heinz; Langner, Arnd-Matthias; Riedel, Karlheinz; Schleupen, Richard; and Zimmermann, Christian, to Robert Bosch GmbH. Method of monitoring an internal combustion engine ignition system by measuring spark duration or voltage and distinction between isolated errors and recurrent errors. 5,334,938, Cl. 324-399.000.

Kuhns, Abe B., to E-Z-Trail, Inc. Header transport support bracket. 5,333,904, Cl. 280-789.000.

Kulpa, Walter J., to Pitney Bowes Inc. Document corner turning belt transport apparatus and method. 5,333,851, Cl. 271-225.000.

Kumagai, Masaki: *See*—
Nosetani, Tadashi; Namba, Keizo; Sano, Hiromichi; Yonemitsu, Makoto; Kumagai, Masaki; and Tsunekawa, Masanori, 5,334,814, Cl. 219-119.000.

Kumano, Akira: *See*—
Maehara, Masanori; Kusui, Yoshio; Kumano, Akira; and Yoshida, Shuji, 5,333,807, Cl. 242-334.600.

Kumazawa, Tsutomu: *See*—
Uchida, Yuji; Yoshida, Yoshio; Kaneda, Toshikazu; Moriya, Toshiaki; and Kumazawa, Tsutomu, 5,334,670, Cl. 525-440.000.

Kumon, Yasuhiro: *See*—
Matsui, Shigetomo; Matsumura, Hiroyuki; Ikemoto, Yoshikazu; Kumon, Yasuhiro; Nakayama, Shigeru; Tsujita, Keiji; Fukunaga, Keisuke; Kuribayashi, Nobuhiro; and Wakana, Kenichi, 5,334,561, Cl. 501-87.000.

Kundert, Kenneth S.; and White, Jacob K., to Cadence Design Systems, Inc. Method and means for communication between simulation engine and component models in a circuit simulator. 5,335,191, Cl. 364-578.000.

Kung, Hank F.; and Murphy, Raymond, to University of Pennsylvania, The Trustees of The. Dopamine receptor ligands and imaging agents. 5,334,728, Cl. 548-402.000.

Kunz, Jurg; Knecht, Hugo; and Binder, Erich, to Gretag Imaging AG. Photographic printing machine for copying originals on sheet-like copy material. 5,335,045, Cl. 355-72.000.

Kunze, Dieter: *See*—
Mohlmann, Ulrich; Onken, Gerd; Kunze, Dieter; and Wolber, Jorg, 5,335,018, Cl. 348-536.000.

Kuo, Chung M.; Curtis, Larry G.; and Lucas, Paul L., to Eastman Chemical Company. Aqueous dispersion useful in coatings containing hydrolyzed cellulose ester and acyrlic resin. 5,334,638, Cl. 524-40.000.

Kuo, Yeong-Jen, to Eastman Kodak Company. Catalyst compositions and the use thereof in the hydrogenation of carboxylic acid esters. 5,334,779, Cl. 568-864.000.

Kurabe, Jun: *See*—
Iwata, Masatake; Kurabe, Jun; and Ichiji, Hiroshi, 5,335,320, Cl. 395-155.000.

Kurary Co., Ltd.: *See*—
Takahashi, Takashi; and Shiono, Manzo, 5,334,740, Cl. 548-110.000.

Kurashima, Yasumi, to NEC Corporation. ECL latch circuit. 5,334,887, Cl. 307-455.000.

Kuribayashi, Akira: *See*—
Kaneda, Tokuya; and Kuribayashi, Akira, 5,335,217, Cl. 369-77.200.

Kuribayashi, Nobuhiro: *See*—
Matsui, Shigetomo; Matsumura, Hiroyuki; Ikemoto, Yoshikazu; Kumon, Yasuhiro; Nakayama, Shigeru; Tsujita, Keiji; Fukunaga, Keisuke; Kuribayashi, Nobuhiro; and Wakana, Kenichi, 5,334,561, Cl. 501-87.000.

Kuroda, Akio: *See*—
Okada, Satoshi; Sawada, Kozo; Kuroda, Akio; Watanabe, Shinya; and Tanaka, Hirokazu, 5,334,716, Cl. 546-112.000.

Kuroda, Toshiki, to Mitsubishi Denki Kabushiki Kaisha. Control device for idle rotation of engine. 5,333,585, Cl. 123-339.000.

Kurosaki, Kiyoshi: *See*—
Takato, Kenji; Kinoshita, Kazumi; Kurosaki, Kiyoshi; Kosako, Taichi; and Minohara, Kazuyuki, 5,335,271, Cl. 379-382.000.

Kurosawa, Hiroyuki: *See*—
Hisano, Kiyoshi; Hirashima, Ken; Kurosawa, Hiroyuki; Kubota, Kenji; and Sugimoto, Shuji, 5,335,327, Cl. 395-250.000.

Kurosu, Yasuo: *See*—
Munemasa, Narihiro; Wakamori, Fumio; Masuzaki, Hidefumi; Fujinawa, Masaaki; and Kurosu, Yasuo, 5,335,084, Cl. 358-403.000.

Kurys, Barbara E.: *See*—
Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, 5,334,599, Cl. 514-304.000.

Kusano, Akihisa: *See*—
Nakamori, Tomohiro; Okazawa, Kazuhiko; Tachibana, Tatsuto; Kusano, Akihisa; Sato, Kaoru; and Itoh, Toshiyuki, 5,334,817, Cl. 219-492.000.

Kusayanagi, Michio: *See*—
Kamoi, Jyoei; Hayami, Hichiro; Kato, Yuji; Shimoe, Toshio; Abe, Shunji; Kusayanagi, Michio; Mukai, Haruo; and Soumiya, Toshio, 5,335,222, Cl. 370-60.000.

Kushima, Hiroshi; and Tsuyuki, Mikio, to Fuji Photo Film Co., Ltd. Sheet film loading apparatus. 5,333,850, Cl. 271-164.000.

Kushner, Burton A.: *See*—
Dorfman, Mitchel R.; Garcia, Jorge E.; and Kushner, Burton A., 5,334,235, Cl. 75-255.000.

Kusui, Masaaki, to Mitsubishi Denki Kabushiki Kaisha. IC card and method of manufacturing the same. 5,335,145, Cl. 361-737.000.

Kusui, Yoshio: *See*—
Maehara, Masanori; Kusui, Yoshio; Kumano, Akira; and Yoshida, Shuji, 5,333,807, Cl. 242-334.600.

Kutsch, Duane B.; and Lohf, Lloyd W., to Telect, Inc. Telecommunication overhead cable distribution assembly. 5,335,349, Cl. 455-6.100.

Kuwae, Shinobu: *See*—
Kobayashi, Kaoru; Kuwae, Shinobu; Ooya, Tomoshi; Fukutsuka, Hirotoshi; Sumi, Akinori; Ohtani, Wataru; Ohmura, Takao; and Yokoyama, Kazumasa, 5,334,512, Cl. 435-69.600.

Kwak, Byung K., to Goldstar, Co., Ltd. Method for controlling an air cleaner. 5,334,248, Cl. 95-12.000.

Kwoh, Daniel S.: *See*—
Yuen, Henry C.; and Kwoh, Daniel S., 5,335,079, Cl. 358-335.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Arai, Hitoshi; Kanda, Yutaka; Kono, Motomichi; Kasai, Masaji; Ashizawa, Tadashi; and Gomi, Katsushige, 5,334,611, Cl. 514-410.000.

Kyushu Sumitoku Electronics Co., Ltd.: *See*—
Ogata, Akihiro; Hirakawa, Yoshihiro; Soichi, Masakatsu; and Kitano, Fumiyasu, 5,333,628, Cl. 134-64.00R.

L&P Property Management Company: *See*—
Bustos, Rafael T., 5,333,746, Cl. 211-187.000.

La Barre, Paul: *See*—
Denis, Gerard; and La Barre, Paul, 5,334,007, Cl. 425-526.000.

Lacey, David: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Hird, Michael; and McDonnell, Damien G., 5,334,327, Cl. 252-299.670.

Lachman, Irwin M.: *See*—
Beauseigneur, Patricia A.; Lachman, Irwin M.; Patil, Mallanagouda D.; Swaroop, Srinivas H.; and Wusirika, Raja R., 5,334,570, Cl. 502-304.000.

LaCour, Christian: *See*—
Heyden, Eddy F. M. G.; LaCour, Christian; Lechevalier, Michel M. A. A.; and Riou, Christophe N., 5,333,644, Cl. 137-614.180.

Ladner, David W.: *See*—
Doehner, Robert F., Jr.; Ladner, David W.; and Finn, John M., 5,334,576, Cl. 504-128.000.

Laevosan-Gesellschaft GmbH: *See*—
Lotz, Bernhard; and Greier, Gerhard, 5,334,602, Cl. 514-317.000.

Lafage, Anne: *See*—
Jutand, Francis; Lafage, Anne; and Boutillon, Emmanuel, 5,335,195, Cl. 364-736.000.

Lagerberg, Stig E.: *See*—
Fischer, Udo K.; Akerman, Jan; Asberg, Bengt A.; and Lagerberg, Stig E., 5,333,520, Cl. 76-108.200.

Lageveen, Roland G.: *See*—
Witholt, Bernard; and Lageveen, Roland G., 5,334,698, Cl. 528-354.000.

Lai, Ten-Yi, to Accord Enterprise Corporation. Saddle support mechanism. 5,333,826, Cl. 248-229.000.

L'Air Liquide, S.A.: *See*—
Simmons, John W., 5,334,697, Cl. 528-353.000.

L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude: *See*—
Arriulou, Pascal; Grelaud, Alain; and Venet, Francois, 5,333,683, Cl. 165-166.000.
Garnier, Catherine; and Venet, Francois, 5,333,463, Cl. 62-24.000.
Garot, Corinne; and Gauthier, Pierre, 5,333,462, Cl. 62-24.000.
Marie, Bruno; Guerin, Daniel; and Larquet, Christian, 5,335,245, Cl. 372-103.000.
Streicher, Eric; and German, Randall M., 5,334,341, Cl. 419-53.000.

Laird, Robert G.: *See*—
Kelly, John F., Jr.; Laird, Robert G.; Baker, Thomas E.; and Torres, Cristobal A., 5,335,268, Cl. 379-112.000.

Lajoie, M. Stephen, to Church & Dwight Co., Inc. Use of bicarbonates in the biodegradation of hydrocarbon contaminants. 5,334,312, Cl. 210-610.000.

Lallemand, Alain, to Composites-Busch & Cie. Hockey stick. 5,333,857, Cl. 273-67.00A.

La Mantia, Francesco P.: *See*—
Roggero, Arnaldo; Pedretti, Ugo; La Mantia, Francesco P.; Citta', Vincenzo; and Lezzi, Alessandro, 5,334,695, Cl. 528-193.000.

Lamb, Ivan E.: *See*—
Newacheck, Richard L.; Lamb, Ivan E.; and Tsukimura, R. R., 5,334,840, Cl. 250-483.100.

Lambert, William R.: *See*—
Akkapeddi, Kaushik S.; Bonanni, Rocco; Gashler, Robert J.; German, Michael G.; Lambert, William R.; and Schramm, Eugene C., 5,334,029, Cl. 439-66.000.

Lamblin, Veronique: *See*—
Cognet, Gilles; Jacquemet, Regis; and Lamblin, Veronique, 5,334,427, Cl. 428-34.500.

Lamers, Hendrikus F., to Van Doorne's Transmissie B.V. Pulley. 5,334,108, Cl. 474-8.000.

Lamond, Angus: *See*—
Sproat, Brian; Lamond, Angus; and Paolella, Giovanni, 5,334,711, Cl. 536-24.500.

Lampson, Butler; and Lomet, David B., to Digital Equipment Corporation. Distributed transaction processing using two-phase commit protocol with presumed-commit without log force. 5,335,343, Cl. 395-575.000.

Lamson, Michael A., to Texas Instruments Incorporated. Method and configuration for reducing electrical noise in integrated circuit devices. 5,334,802, Cl. 174-52.200.

Lancer Corporation: *See*—
Deering, Robert S., 5,333,759, Cl. 222-129.100.

Landa, Benzion; Pinhas, Hanna; and Fenster, Paul, to Spectrum Sciences B.V. Image transfer apparatus including intermediate transfer blanket. 5,335,054, Cl. 355-279.000.

Landis, Michael E.: *See*—
Chu, Pochen; Landis, Michael E.; and Le, Quang N., 5,334,795, Cl. 585-467.000.

Landis, Newton C. M.: *See*—
Blackman, Robert J.; Greene, William J.; and Landis, Newton C. M., 5,335,038, Cl. 354-319.000.

Landis, Paul M.; Webber, James L.; and Worrell, Barry C., to General Motors Corporation. Snap lock pin inflatable restraint module mounting mechanism. 5,333,897, Cl. 280-728.00A.

Lane, Michael L.: *See*—
Lane, Wallace E.; Lane, Michael L.; Whitney, Lowell T.; and Gerstenkorn, Michael D., 5,333,763, Cl. 222-386.500.

Lane, Wallace E.; Lane, Michael L.; Whitney, Lowell T.; and Gerstenkorn, Michael D., to Quoin Industrial Inc. Pressure activation device. 5,333,763, Cl. 222-386.500.

Lang, Hans W.; and Straka, Alfred, to Kaltenbach & Voigt GmbH & Co. Dental articulator. 5,334,017, Cl. 433-57.000.

Langdon, Nancy, legal representative: *See*—
Gavlin, Gilbert; Langdon, William M., deceased; Goltsin, Boris; Erlebacher, Gunther; and Larson, Douglas A., 5,334,291, Cl. 202-234.000.

Langdon, William M., deceased: *See*—
Gavlin, Gilbert; Langdon, William M., deceased; Goltsin, Boris; Erlebacher, Gunther; and Larson, Douglas A., 5,334,291, Cl. 202-234.000.

Lange International S.A.: *See*—
Artusi, Giovanni; and Simonetti, Stelio, 5,333,363, Cl. 24-685.00K.

Langer, Reinhard: *See*—
Schon, Norbert; Langer, Reinhard; Buysch, Hans-Josef; and Wagner, Paul, 5,334,742, Cl. 558-274.000.

Langner, Arnd-Matthias: *See*—
Kugler, Karl-Heinz; Langner, Arnd-Matthias; Riedel, Karlheinz; Schleupen, Richard; and Zimmermann, Christian, 5,334,938, Cl. 324-399.000.

Langsam, Robin L. Inflatable booster seat. 5,333,336, Cl. 5-654.000.

Lanxide Technology Company, LP: *See*—
Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Leaher, H. Daniel, 5,334,562, Cl. 501-88.000.

Large, Michael S.: *See*—
Edwards, Philip N.; and Large, Michael S., 5,334,614, Cl. 514-459.000.

Larkin, Ross M.; and DeAguiar, John R., to Optigraphics Corporation. Process for high speed rescaling of binary images. 5,335,296, Cl. 382-47.000.

Larquet, Christian: *See*—
Marie, Bruno; Guerin, Daniel; and Larquet, Christian, 5,335,245, Cl. 372-103.000.

Larsen, Kurt K., to Blue Giant Equipment Corporation. Dock leveler with wheel barrier. 5,333,339, Cl. 14-71.100.

Larson, Douglas A.: *See*—
Gavlin, Gilbert; Langdon, William M., deceased; Goltsin, Boris; Erlebacher, Gunther; and Larson, Douglas A., 5,334,291, Cl. 202-234.000.

Laser Precision Corp.: *See*—
Johnson, Robert W., 5,335,104, Cl. 359-110.000.

Laskaris, Evangelo T.; Herd, Kenneth G.; and Dorri, Bizham, to General Electric Company. Cold head sleeve and high-TC superconducting lead assemblies for a superconducting magnet which images human limbs. 5,333,464, Cl. 62-51.100.

Lau, Kam Y.: *See*—
Georges, John B.; and Lau, Kam Y., 5,335,107, Cl. 359-181.000.

Laube, Kim. Animal grooming cleaning device. 5,333,633, Cl. 134-182.000.

Lauer, Josef: *See*—
Goossens, Andre F. L.; Seitz, Karlheinz; and Lauer, Josef, 5,333,946, Cl. 303-119.200.

Lauer, Rosemarie P.: *See*—
Carlson, Virginia A.; Curry-Nkansah, Maria E.; Gebhard, Matthew S.; and Lauer, Rosemarie P., 5,334,655, Cl. 524-804.000.

Law, David J.: *See*—
Cavell, Ronald G.; Law, David J.; and Reed, Robert W., 5,334,791, Cl. 585-277.000.

Lawhorn, David E.: *See*—
Audia, James E.; Hirsch, Kenneth S.; Jones, Charles D.; Lawhorn, David E.; McQuaid, Loretta A.; and Weigel, Leland O., 5,334,767, Cl. 568-327.000.

Lawrence, Richard: *See*—
Case, Charles; Watson, Charles; and Lawrence, Richard, 5,334,833, Cl. 250-270.000.

Lawruk, Stephen P., to Whitaker Corporation, The. Cable harness connector termination and testing apparatus. 5,333,376, Cl. 29-861.000.

Lawson, David F.; Stayer, Mark L., Jr.; and Antkowiak, Thomas A., to Bridgestone/Firestone, Inc. Liquid diene polymers and copolymers terminated by reaction with fused-ring polynuclear aromatic compounds. 5,334,665, Cl. 525-289.000.

Lawson, Kevin R.: *See*—
Crowley, Patrick J.; Glen, Alasdair T.; Spence, Rosamund A.; and Lawson, Kevin R., 5,334,722, Cl. 546-289.000.

Lawyer, Carl H.: *See*—
Wagle, Sudhakar S.; Steinbach, Thomas; Lawyer, Carl H.; Hermann, William J., Jr.; and Gawish, Ali A. S., 5,334,395, Cl. 424-553.000.

Le, Quang N.: *See*—
Chu, Pochen; Landis, Michael E.; and Le, Quang N., 5,334,795, Cl. 585-467.000.

Leach, Michael E.: *See*—
Dobreski, David V.; Eichbauer, George N.; and Leach, Michael E., 5,334,428, Cl. 428-34.900.

Leal-Gonzales, Juan: *See*—
Aguirre-Villafana, Juan-Lauro; and Leal-Gonzales, Juan, 5,334,364, Cl. 423-340.000.

Leath, Richard A.: *See*—
Mullis, Kary B.; Johnson, Larry; Leath, Richard A.; Wennberg, Timothy J.; Mezei, Louis M.; and Widunas, Joseph T., 5,333,675, Cl. 165-12.000.

Lebby, Michael S.: *See*—
Hartman, Davis H.; Richard, Fred V.; and Lebby, Michael S., 5,335,300, Cl. 385-37.000.

Lechevalier, Michel M. A. A.: *See*—
Heyden, Eddy F. M. G.; LaCour, Christian; Lechevalier, Michel M. A. A.; and Riou, Christophe N., 5,333,644, Cl. 137-614.180.

Ledin, Richard E.: *See*—
Weerts, Allen L.; and Ledin, Richard E., 5,333,632, Cl. 134-105.000.

Leding, Lisa M.; and Tischer, John M., to Motorola, Inc. Coaxial cable having an impedance matched terminating end. 5,334,956, Cl. 333-33.000.

Lee, A-Ying. Device for mounting an induced-draft fan pipe on an electric soldering iron. 5,333,821, Cl. 248-52.000.

Lee, Biing-lin: *See*—
Sperk, James M., Jr.; Lee, Biing-lin; Summers, James W.; and Faber, Edward M., deceased, 5,334,647, Cl. 524-507.000.

Lee, Cheng S.; and Huang, Ping Y., to University of Maryland, The. Direct immunoessay using pH-sensitive fluorochromes. 5,334,537, Cl. 436-518.000.

Lee, Harold H.; Fraleigh, Peter C.; and Lemma, Aklilu, to University of Toledo, The. Method of controlling Zebra mussels. 5,334,386, Cl. 424-195.100.

Lee, Kuo-Hua: *See*—
Adams, Thomas E.; Lee, Kuo-Hua; Nagy, William J.; and Sung, Janmye, 5,334,541, Cl. 437-8.000.

Lee, Song J., to Samsung Electronics Co., Ltd. Liquid-phase epitaxy growth system and method for growing epitaxial layer. 5,334,278, Cl. 117-57.000.

Lee, Stanley A.: *See*—
Thomas, Andrew P.; Martin, David M. G.; Lee, Stanley A.; and Powell, Lyn, 5,334,718, Cl. 546-118.000.

Lee, Tai-Wang. Sand belt device. 5,333,414, Cl. 51-170.0EB.

Lee, Wai M., to EKC Technology, Inc. Cleaning compositions for removing etching residue and method of using. 5,334,332, Cl. 252-548.000.

Leek, William F., to Simpson Strong-Tie Company, Inc. Post to foundation connection. 5,333,435, Cl. 52-704.000.

Lees, John N., Jr., to Svedala Industries, Inc. Method of capturing and fixing volatile metal and metal oxides in an incineration process. 5,333,558, Cl. 110-346.000.

Lefevre, Paul; and Verneau, Alain, to Bertin & Cie. Compressor or turbine type rotary machine for compressing or expanding a dangerous gas. 5,334,004, Cl. 417-420.000.

Legge, Ronald N.: *See*—
Moyer, Curtis D.; Jaakie, James E.; and Legge, Ronald N., 5,334,855, Cl. 257-13.000.

Lego M. Lemelshtrich Ltd: *See*—
Hadar, Yoram, 5,333,788, Cl. 239-241.000.

Lehmann, Martin. Method for reducing test cycle time and for improving measuring accuracy at a leak testing process. 5,333,491, Cl. 73-49.300.

Lehmann, Paul F. Merchandising display unit. 5,333,745, Cl. 211-88.000.

Lehnhoff Hartstahl GmbH & Co.: *See*—
Walter, Karl-Heinz, 5,333,695, Cl. 172-272.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Lehr, Friedrich: *See—*
Ahlheim, Markus; and Lehr, Friedrich, 5,334,710, Cl. 534-852.000.

Leichter, Louis M.: *See—*
Armbruster, June M.; and Leichter, Louis M., 5,334,094, Cl. 462-17.000.

Leifeld, Ferdinand, to Trutzschler GmbH & Co. KG. Feeding device for a fiber tuft cleaning and opening apparatus. 5,333,358, Cl. 19-105.000.

Leissner, Kirk A.: *See—*
Benton, James H.; Broodo, Jack; Ivy, John B.; Leissner, Kirk A.; and Fox, Ellroy G., 5,334,357, Cl. 422-197.000.

Lekhtman, Gregory; and Stephan, Roy. Portable self-contained instrument for the measurement of nerve resistance of a patient. 5,333,618, Cl. 128-734.000.

LeMaire, Etienne; and Fantino, Lucien, to Aerospatiale Societe Nationale Industrielle. Method of stitching a piece of fabric, a piece of fabric obtained thereby, and a composite fiber-matrix piece obtained using said piece of fabric. 5,333,562, Cl. 112-262.100.

Lemaire, Gilles; and Perot, Marc, to Poclain Hydraulics. Assembly of a hydraulic motor and brake. 5,333,705, Cl. 188-71.500.

Lemanski, Michael F.; Hazen, Joseph B.; and Blum, Patricia R., to Standard Oil Company, The. Ethyl acetate from ethanol. 5,334,751, Cl. 560-265.000.

Lemma, Aklilu: *See—*
Lee, Harold H.; Fraleigh, Peter C.; and Lemma, Aklilu, 5,334,386, Cl. 424-195.100.

Lemons, James W. Coneless, no-moving-parts speaker. 5,335,284, Cl. 381-152.000.

Le-Normand, Claude P.; Martinez, Carlos D.; and Jones, John M. Apparatus for combing and decombing bacon. 5,334,088, Cl. 452-193.000.

Lenz, Kuno: *See—*
Koblitz, Rudolf; and Lenz, Kuno, 5,334,954, Cl. 331-20.000.

Leonard, James A.: *See—*
Kramer, Mark A.; Leonard, James A.; and Ungar, Lyle H., 5,335,291, Cl. 382-14.000.

Leppanen, Aki: *See—*
Vaisanen, Risto; and Leppanen, Aki, 5,335,362, Cl. 455-67.100.

Lequime, Michel; and Sanaonetti, Pierre, to Bertin & Cie. Sequential demultiplexing receiver for a network of optical sensors using spectrum modulation encoding. 5,335,065, Cl. 356-351.000.

Lesher, H. Daniel: *See—*
Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Lesher, H. Daniel, 5,334,562, Cl. 501-88.000.

Lesner, Kenneth W.: *See—*
Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., 5,333,438, Cl. 53-399.000.

Levien, Robin H.; and Schmidt, Adam R., to American Standard Inc. Bathtub apron system. 5,333,325, Cl. 4-584.000.

Levinson, Frank H.; and Wisecarver, Martin L., to Photonix Industries. Apparatus and methods for determining splice effectiveness between two optical fibers using solid gels as coupling enhancers for measuring component attenuation. 5,334,832, Cl. 250-227.240.

Lewis, Alan E.; and Ruben, Paul L., to Eastman Kodak Company. Zoom viewfinder with non-rectangular window. 5,335,034, Cl. 354-219.000.

Lewis, Ceri J.: *See—*
Mannix, Christopher J.; Smith, Richard A. G.; Lewis, Ceri J.; and Harber, Julian S., 5,334,384, Cl. 424-94.630.

Lewis, Gary W.: *See—*
Lewis, Lorne S.; and Lewis, Gary W., 5,333,542, Cl. 100-45.000.

Lewis, John A. Interlocking bulkhead. 5,333,971, Cl. 405-281.000.

Lewis, Lorne S.; and Lewis, Gary W. Apparatus for collecting and compacting aluminum cans. 5,333,542, Cl. 100-45.000.

Lewis, Russell G.; and Fraser, Howard H., Jr., to Carrier Corporation. Compact and serviceable packaging of a self-contained cryocooler system. 5,333,460, Cl. 62-6.000.

Lexmark International, Inc.: *See—*
Abbott, Jerry J.; Baird, Brian W.; and Miller, Michael G., 5,334,474, Cl. 430-110.000.

Leybold AG: *See—*
Gegenwart, Rainer, 5,334,298, Cl. 204-192.120.

Leydon, Daniel S.: *See—*
Bhoori, Yousuf M.; Leydon, Daniel S.; and Gilmore, Paul, 5,334,444, Cl. 428-280.000.

Leyva, Victor; and Rakuljic, George A., to Accuwave Corporation. Fixing method for narrow bandwidth volume holograms in photorefractive materials. 5,335,098, Cl. 359-7.000.

Lezzi, Alessandro: *See—*
Roggero, Arnaldo; Pedretti, Ugo; La Mantia, Francesco P.; Citta', Vincenzo; and Lezzi, Alessandro, 5,334,695, Cl. 528-193.000.

Liaw, Yung-Haw: *See—*
Lin, Kwang-Ming; Tsai, Lih-Shyig; Lin, Jiunn-Jyi; and Liaw, Yung-Haw, 5,334,554, Cl. 437-231.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Voigt, Heinz; Fischer, Roland; and Schneider, Rudolf, 5,334,964, Cl. 505-211.000.

Liebert, Gregory R., to Premier Mill Corp. Agitator mill. 5,333,804, Cl. 241-69.000.

Liebold, Gert: *See—*
Schrimpf, Hans; Krebs, Hans; Liebold, Gert; and Frey, Guenter, 5,334,323, Cl. 252-70.000.

Life Support, Inc.: *See—*
Fuller, Ernest, 5,333,623, Cl. 128-875.000.

Life Technologies, Inc.: *See—*
Gebeyehu, Gulilat; Jessee, Joel A.; Ciccarone, Valentina C.; Hawley-Nelson, Pamela; and Chytil, Anna, 5,334,761, Cl. 564-197.000.
Rashtchian, Ayoub; Schuster, David M.; and Buchman, George W., III, 5,334,515, Cl. 435-91.200.
Smith, Michael D.; Schmidt, Brian J.; Longo, Mary C.; and Chatterjee, Deb K., 5,334,526, Cl. 435-199.000.

Ligands Inc.: *See—*
Cavell, Ronald G.; Law, David J.; and Reed, Robert W., 5,334,791, Cl. 585-277.000.

Ligaya Corporation: *See—*
Buchbinder, Ligaya H., 5,333,382, Cl. 30-47.000.

Likibi, Parfait J. M.; Casciani, Robert V.; and McCraw, Gregory L., to Sandoz Ltd. Carboxylate of certain polyoxyalkylene amines. 5,334,756, Cl. 562-565.000.

Lillwitz, Lawrence D.; and Karachewski, Anne M., to Amoco Corporation. Alkylation of alkylaromatics promoted by amine compound. 5,334,796, Cl. 585-467.000.

Lin, Fong-Ing; and Lin, Sheau-Wen. Transparency folder. 5,335,027, Cl. 353-120.000.

Lin, Hsiao-Chih. Instant heating type water heaters. 5,334,819, Cl. 219-628.000.

Lin, Jhy-hong: *See—*
Gaffney, Edward J.; and Lin, Jhy-hong, 5,333,702, Cl. 180-208.000.

Lin, Jiunn-Jyi: *See—*
Lin, Kwang-Ming; Tsai, Lih-Shyig; Lin, Jiunn-Jyi; and Liaw, Yung-Haw, 5,334,554, Cl. 437-231.000.

Lin, Jyh-Kuang; and Yeh, Nai J., to United Microelectronics Corporation. Method of making reverse lightly doped drain (LDD) for buried N+ conductor. 5,334,543, Cl. 437-30.000.

Lin, Kwang-Ming; Tsai, Lih-Shyig; Lin, Jiunn-Jyi; and Liaw, Yung-Haw, to Taiwan Semiconductor Manufacturing Co., Ltd. Nitrogen plasma treatment to prevent field device leakage in VLSI processing. 5,334,554, Cl. 437-231.000.

Lin, Sheau-Wen: *See—*
Lin, Fong-Ing; and Lin, Sheau-Wen, 5,335,027, Cl. 353-120.000.

Lin, Steve T., to Zimmer, Inc. Bone cement composition and method of manufacture. 5,334,626, Cl. 523-116.000.

Lin, Sung-Wei: *See—*
Coffman, Tim M.; and Lin, Sung-Wei, 5,335,200, Cl. 365-218.000.
McElroy, David J.; Lin, Sung-Wei; and Gill, Manzur, 5,334,550, Cl. 437-65.000.

Lind, Bjorn, to W. Schlafhorst AG & Co. System and method for optimally driving a DC motor. 5,334,917, Cl. 318-254.000.

Lindauer Dornier GmbH: *See—*
Riezler, Rudolf, 5,333,651, Cl. 139-435.500.

Lindberg, Claes J. A.: *See—*
Lofmark, Bengt G.; Oredsson, Jan O. H.; and Lindberg, Claes J. A., 5,335,272, Cl. 379-413.000.

Lindemeier, Heinz; Hope, Jochen; Reiter, Leopold; and Kronberger, Rainer, to U.S. Philips Corporation. Antenna diversity receiving system with antenna switching during line periods and signal quality evaluation during line blanking intervals. 5,335,010, Cl. 348-706.000.

Lindfors, Nils O.: *See—*
Skold, Bror E.; Lindfors, Nils O.; and Wilkstrom, Jan O., 5,333,840, Cl. 266-47.000.

Linear Technology Corporation: *See—*
Dobkin, Robert C.; Nelson, Carl T.; and O'Neill, Dennis P., 5,334,928, Cl. 323-280.000.

Liney, Thomas J.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krabe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Lingyak, Linda S. Long gun stabilizer. 5,333,404, Cl. 42-72.000.

Linhart, Friedrich: *See—*
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,334,287, Cl. 162-175.000.

Linnenbrink, Thomas E.: *See—*
Higgins, Brian P.; Gardner, David W.; Rhea, Kerry D.; Linnenbrink, Thomas E.; Reed, ebecca S.; and Roberts, Peter C. T., 5,334,962, Cl. 333-247.000.

Liow, Ann S.: *See—*
Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., 5,334,784, Cl. 570-165.000.

Lipo, Thomas A.: *See—*
Lorenz, Robert D.; Hung, Kam T.; Lipo, Thomas A.; and Moreira, Julio C., 5,334,923, Cl. 318-805.000.

Lippert, Ferdinand; and Hoehn, Arthur, to BASF Aktiengesellschaft. Preparation of formic acid from carbon monoxide and water. 5,334,759, Cl. 562-609.000.

Lippincott, Louis A.: *See—*
Harney, Kevin; and Lippincott, Louis A., 5,335,321, Cl. 395-162.000.

Lipton, Stuart A., to Children's Medical Center Corporation, The. Method of preventing NMDA receptor-mediated neuronal damage. 5,334,618, Cl. 514-659.000.

Lisec, Peter. Apparatus for inspecting the seal of insulating glass panes. 5,335,012, Cl. 348-92.000.

Lister, David M. Apparatus for patching a break in the sidewall of a chimney. 5,333,349, Cl. 15-235.800.

Little Tikes Company, The: *See—*
Marra, Mark A.; and Quinlan, Robert L., Jr., 5,334,099, Cl. 472-118.000.

Litton Systems, Inc.: *See—*
Stefanowski, Krystyna, 5,334,260, Cl. 148-23.000.

Liu Concept Design & Associates: *See—*
Liu, Dexter C., 5,334,069, Cl. 446-23.000.

Liu, Dexter C., to Liu Concept Design & Associates. Action character figure with sparking mechanism. 5,334,069, Cl. 446-23.000.

Liu, Xin; Spencer, Steven J.; Gupte, Neelkanth S.; Chiang, Robert H. L.; and Gaffaney, Daniel, to Carrier Corporation. Heat exchanger tube. 5,333,682, Cl. 165-133.000.

Lo, Chin-Shyung: *See—*
Sun, Cheng-Yun; and Lo, Chin-Shyung, 5,335,009, Cl. 348-614.000.

Lobel, Gary S.: *See—*
Marko, Paul D.; Patsiokas, Stelios J.; Wadin, Craig P.; and Lobel, Gary S., 5,335,360, Cl. 455-56.100.

Locher, Johannes; Graf, Herbert; Rodriguez-Amaya, Nestor; Schmitt, Alfred; Tauscher, Joachim; and Zimmermann, Werner, to Robert Bosch GmbH. Electronic circuit arrangement for triggering solenoid valves. 5,335,136, Cl. 361-160.000.

LoCicero, Rai-Ann; Morgan, Stuart; Romm, Michael; Bantly, Matthew; and Mangan, Edward O., to Digital Equipment Corporation. Modular equipment support system. 5,333,744, Cl. 211-87.000.

Lockheed Corporation: *See—*
Kalisz, John B.; and Wexler, Mark H., 5,333,817, Cl. 244-97.000.

Loeber, Frederick W.: *See—*
Fujan, Steven J.; and Loeber, Frederick W., 5,333,895, Cl. 280-676.000.

Loewke, Daniel D.: *See—*
Loewke, Eunice R.; and Loewke, Daniel D., 5,333,743, Cl. 211-87.000.

Loewke, Eunice R.; and Loewke, Daniel D. Clothes hook assembly. 5,333,743, Cl. 211-87.000.

Lofmark, Bengt G.; Oredsson, Jan O. H.; and Lindberg, Claes J. A., to Telefonaktiebolaget L M Ericsson. Method and arrangement for supplying direct current to a telephone line. 5,335,272, Cl. 379-413.000.

Lohf, Lloyd W.: *See—*
Kutsch, Duane B.; and Lohf, Lloyd W., 5,335,349, Cl. 455-6.100.

Lombi, Roberto: *See—*
Bastiolo, Catia; Bellotti, Vittorio; Del Giudice, Luciano; and Lombi, Roberto, 5,334,634, Cl. 524-47.000.

Lomet, David B.: *See—*
Lampson, Butler; and Lomet, David B., 5,335,343, Cl. 395-575.000.

Lonardi, Emile; Malivoir, Philippe; Metz, Jean; Roemen, Fernand; and Milen, Patrick, to Paul Wurth S.A. Machine for boring a tap hole of a shaft furnace. 5,333,839, Cl. 266-45.000.

Long, John A. Continuous form. 5,334,432, Cl. 428-43.000.

Longo, Mary C.: *See—*
Smith, Michael D.; Schmidt, Brian J.; Longo, Mary C.; and Chatterjee, Deb K., 5,334,526, Cl. 435-199.000.

Longtin, Andre G., to Moore Business Forms, Inc. Piggyback assembly of static cling decal, intermediate layer and adhesive web. 5,334,431, Cl. 428-40.000.

Longwell, Michael L.: *See—*
Matteson, Keith D.; and Longwell, Michael L., 5,335,234, Cl. 371-40.100.

Loo, De-Kai, to Hercules Incorporated. Fully substituted cyclopolysiloxanes and their use for making organosilicon polymers. 5,334,688, Cl. 528-15.000.

Lorad Corporation: *See—*
Pellegrino, Anthony J.; Mayes, Earl C.; Sharpe, Donald E.; and Bantz, George H., 5,335,161, Cl. 363-61.000.

Lorca Soto, Tomas S.: *See—*
Bannach Sichtermann, Gustavo H.; Pincheira Alverez, Aliro T. N.; Reghezza Inzunza, Andres A.; Cruz Rivera, Alberto S.; Lorca Soto, Tomas S.; Hidalgo Cortes, Luis F.; Menacho Llana, Jorge M.; and Martinez Pereira, Miguel A., 5,334,317, Cl. 210-708.000.

L'Oreal: *See—*
Junino, Alex; Malle, Gerard; and Luppi, Bernadette, 5,334,377, Cl. 424-71.000.

Lorenz, Gisela: *See—*
Sauter, Hubert; Lorenz, Gisela; Steiner, Gerd; Janssen, Bernd; Anke, Timm; and Steglich, Wolfgang, 5,334,607, Cl. 514-378.000.
Wenderoth, Bernd; Brand, Siegbert; Schuetz, Franz; Kuekenhoehner, Thomas; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,334,577, Cl. 504-130.000.

Lorenz, Robert D.; Hung, Kam T.; Lipo, Thomas A.; and Moreira, Julio C., to Wisconsin Alumni Research Foundation. Motor torque control method and apparatus. 5,334,923, Cl. 318-805.000.

Lorimer, D'Arcy H., to SAES Pure Gas, Inc. Method and apparatus for predicting end-of-life of a consumable in a fluid purification system. 5,334,237, Cl. 95-25.000.

Losell, Ingvar: *See—*
Jeppsson, Jan-Bertil; and Losell, Ingvar, 5,334,139, Cl. 604-28.000.

Lotz, Bernhard; and Greier, Gerhard, to Laevosan-Gesellschaft GmbH. Aryloxalkylamine derivatives and uses thereof. 5,334,602, Cl. 514-317.000.

Louat, Norman P.; Provenzano, Virgil; Imam, M. Ashraf; and Sadananda, Kuntimaddi, to United States of America, Navy. Superstrength metal composite material and process for making the same. 5,333,667, Cl. 164-97.000.

Loughlin, Kelsey: *See—*
Kelln, Norman; and Loughlin, Kelsey, 5,334,349, Cl. 422-63.000.

Love, David G.; Moresco, Larry L.; Chou, William T.; Horine, David A.; Wong, Connie M.; and Beilin, Solomon I., to Fujitsu Limited. Wire interconnect structures for connecting an integrated circuit to a substrate. 5,334,804, Cl. 174-267.000.

Lovelady, Kenneth T.; and Sanner, Medford D., to Recognition International Inc. Document processing system and method. 5,335,292, Cl. 382-17.000.

Loving, Ronald E., to Hughes Aircraft Company. Liquid fuel power plant. 5,333,458, Cl. 60-722.000.

LTV Energy Products Co.: *See—*
Hermanson, Dean E.; Hallden, Donald F.; and Isom, Horace G., 5,334,268, Cl. 148-530.000.

Lu, Feng: *See—*
Shinar, Joseph; Swanson, Leland S.; Lu, Feng; and Ding, Yiwei, 5,334,539, Cl. 437-1.000.

Lubrizol Corporation, The: *See—*
Vinci, James N.; and Schwind, James J., 5,334,329, Cl. 252-49.600.
Vinci, James N.; and Scharf, Curtis R., 5,334,318, Cl. 252-38.000.

Lucas Industries public limited company: *See—*
Cananagh, Eric J., 5,333,588, Cl. 123-506.000.

Lucas, Paul L.: *See—*
Kuo, Chung M.; Curtis, Larry G.; and Lucas, Paul L., 5,334,638, Cl. 524-40.000.

Lukas, Bohumir; and Ruppin, Karl H. S., to Ciba-Geigy Corp. Use of sugar derivatives for the prophylaxis and treatment of virus infections. 5,334,583, Cl. 514-8.000.

Lund, Bruce D.: *See—*
Ankenbruck, James B.; Antolin, Jose V.; Herbstler, Horst D.; Lund, Bruce D.; Vahcic, Anne K.; and Wilson, Lowell T., 5,333,387, Cl. 33-18.100.

Lundquist, Ingemar H.; and Thompson, Russell B. Torquable catheter. 5,334,145, Cl. 604-95.000.

Lundstrom, Mats O.: *See—*
Oskarsson, Rolf G.; and Lundstrom, Mats O., 5,334,459, Cl 428-546.000.

Luppi, Bernadette: *See—*
Junino, Alex; Malle, Gerard; and Luppi, Bernadette, 5,334,377, Cl. 424-71.000.

Lurbiecki, Fred. Self-synchronizing hydraulic control systems for marine engine transmissions. 5,334,062, Cl. 440-86.000.

Lussi, Andre ; Zurbuchen, Hans; and von Gunten, Jurg, to Sintra Holding AG. Device for ejection of ground coffee pressed into a cake from a brewing apparatus of a coffee machine. 5,333,537, Cl. 99-287.000.

Luther, Harry M., to Sharp, Joe. Wheelchair/gurney. 5,333,887, Cl. 280-250.100.

Lutsky, Arthur A., to Thomas & Betts Corporation. Electrical connector mounting posts. 5,334,047, Cl. 439-544.000.

Lutz, Mark A.; and Krueger, William B., to Rosemount Inc. High overpressure low range pressure sensor. 5,333,504, Cl. 73-727.000.

Lynch, John J.: *See—*
Gagliardo, Michael A.; Lynch, John J.; and Tessari, James E., 5,335,337, Cl. 395-500.000.

Lyon, David L.: *See—*
Gough, William A. G., Jr.; and Lyon, David L., 5,335,164, Cl. 364-149.000.

Lyons, Harold W., to Whelen Technologies, Inc. Anti-collision light assembly. 5,335,157, Cl. 362-297.000.

Lyons, James E.: *See—*
Shaikh, Shahid N.; Ellis, Paul E., Jr.; and Lyons, James E., 5,334,780, Cl. 568-910.000.

M. & G. Ricerche S.p.A.: *See—*
Ghisolfi, Guido, 5,334,669, Cl. 525-437.000.

Ma Chi Electric Apparatus Ent. Co., Ltd.: *See—*
Chen, Chao-Hsiung, 5,334,052, Cl. 439-650.000.

Mabuchi, Toshiaki: *See—*
Takayama, Nobutoshi; Kobayashi, Takashi; Mabuchi, Toshiaki; and Takahashi, Koji, 5,335,189, Cl. 364-565.000.

MacDermid, Incorporated: *See—*
Ferrier, Donald R., 5,334,240, Cl. 106-1.220.

Machida, Hisashi: *See—*
Tatara, Yudai; Jufuku, Yasunobu; Machida, Hisashi; and Ito, Hiroyuki, 5,334,097, Cl. 476-8.000.

Machida, Yoshio, to Kabushiki Kaisha Toshiba. Magnetic resonance imaging apparatus. 5,334,936, Cl. 324-309.000.

Machida, Yukihumi: *See—*
Anbo, Tsugio; Machida, Yukihumi; and Iguchi, Hirohumi, 5,334,041, Cl. 439-358.000.

Machinefabriek en Handelmaatschappij Winel B.V.: *See—*
de Rover, Jan, 5,333,920, Cl. 292-48.000.

Mackal, Glenn H. Auto inflator having dissolvable element under low pressure. 5,333,656, Cl. 141-330.000.

Mackintosh, Douglas C.: *See—*
Albion, Stephen R.; Mackintosh, Douglas C.; and Uhl, James F., 5,333,658, Cl. 144-213.000.

MacLean-Fogg Company: *See—*
Hlinsky, Emil J., 5,334,056, Cl. 439-820.000.

MacLean, Neil H., Jr.: *See—*
Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,335,328, Cl. 395-275.000.

MacLeod, Angus M., to Merck Sharpe & Dohme Ltd. Oxazolidindione substituted indole derivatives. 5,334,606, Cl. 514-376.000.

VOL 1165 ISS 1 AG 2 1994 UMI

MacMore, Bruce N.: *See*—
Moutafis, Timothy E.; Elton, Richard K.; DuBois, Thomas C.; and MacMore, Bruce N., 5,333,620, Cl. 128-772.000.

MacNaughton, George; Forti, Steven; Whittington, Douglas; and Ackley, Kevin, to Wear Guard Corp. Apparatus and method for producing a printing screen. 5,334,815, Cl. 219-121.700.

Maddox, Craig E., to NCR Corporation. System and method for monitoring barcode label quality. 5,334,825, Cl. 235-437.000.

Maddy, Steven L.; and Paterson, Graeme S., to SpectraLink Corporation. Fast settling phase locked loop. 5,334,952, Cl. 331-1.00A.

Madsen, Thomas C.: *See*—
Vannelli, Anthony; and Madsen, Thomas C., 5,335,293, Cl. 382-17.000.

Maeda, Nobuhiro: *See*—
Yamamoto, Takushi; Hara, Hiroari; Maeda, Nobuhiro; and Nakamura, Morio, 5,334,679, Cl. 526-200.000.

Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, to Kaken Pharmaceutical Co., Ltd. Amine derivatives, processes for preparing the same and fungicides containing the same. 5,334,628, Cl. 514-311.000.

Maeda, Yoshihiro, to Olympus Optical Co., Ltd. Visual line direction detecting device for the camera. 5,335,035, Cl. 354-219.000.

Machara, Masanori; Kusui, Yoshio; Kumano, Akira; and Yoshida, Shuji, to Sony Corporation. Recording and reproducing apparatus having a tape tension changing mechanism. 5,333,807, Cl. 242-334.600.

Maejima, Tetsuo: *See*—
Yoneda, Noriyuki; Shiroto, Yoshimi; Hamato, Kazuhiko; Asaoka, Sachio; and Maejima, Tetsuo, 5,334,755, Cl. 562-519.000.

Maejima, Yukihito; Ohtsubo, Toko; Masui, Mitsuyuki; Abe, Noriyuki; Yuura, Katsuhiko; and Mochizuki, Kenji, to Hitachi, Ltd. Equipment and method for interactive testing and simulating of a specification of a network system. 5,335,339, Cl. 395-500.000.

Maget, Henri J. R. Electrochemical force sensor. 5,334,304, Cl. 204-421.000.

Magnetic Transportation System Engineering Company: *See*—
Matsui, Kazumi; Matsuoka, Kouichi; and Nakagawa, Shigeru, 5,333,553, Cl. 104-290.000.

Mah, Gordon B. J. Transportation, sanitation and therapy system for handicapped people. 5,333,333, Cl. 5-81.100.

Mahler, Barry A.: *See*—
Felix, Vinci M.; Gumprecht, William H.; and Mahler, Barry A., 5,334,787, Cl. 570-169.000.

Mailey, John W. In situ modular fastening system. 5,333,965, Cl. 403-406.100.

Main, Lauren O.; and Grant, Richard L., to Ethicon, Inc. Sealing means for endoscopic surgical anastomosis stapling instrument. 5,333,773, Cl. 227-179.000.

Mais, Dale E.: *See*—
Halushka, Perry V.; Spicer, Ken M.; and Mais, Dale E., 5,334,369, Cl. 424-1.850.

Makabe, Osamu: *See*—
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.

Makado, Shoichi: *See*—
Fukano, Yoshihiro; Makado, Shoichi; and Doi, Yoshitada, 5,333,647, Cl. 137-884.000.

Makimoto, Mitsuo: *See*—
Shirai, Hirokazu; Sagawa, Morikazu; and Makimoto, Mitsuo, 5,334,961, Cl. 333-204.000.

Makino, Yoshiyuki: *See*—
Imai, Masahiro; and Makino, Yoshiyuki, 5,333,474, Cl. 68-12.160.

Makower, Joshua: *See*—
Vidal, Claude A.; Redmond, Russel J.; and Makower, Joshua, 5,334,216, Cl. 606-213.000.

Makowiecki, Daniel M.; McKernan, Mark A.; Grabner, R. Fred; and Ramsey, Philip B., to University of California, Regents of the. Magnetron sputtering source. 5,333,726, Cl. 204-298.090.

Makris, Angelo: *See*—
Novy, George; and Makris, Angelo, 5,335,310, Cl. 392-434.000.

Maling, George C., Jr.; and Schmidt, Roger R., to International Business Machines Corporation. Disk augmented heat transfer system. 5,335,143, Cl. 361-694.000.

Malivoir, Philippe: *See*—
Lonardi, Emile; Malivoir, Philippe; Metz, Jean; Roemen, Fernand; and Milen, Patrick, 5,333,839, Cl. 266-45.000.

Malle, Gerard: *See*—
Junino, Alex; Malle, Gerard; and Luppi, Bernadette, 5,334,377, Cl. 424-71.000.

Malloy, James M.: *See*—
O'Brien, William H.; and Malloy, James M., 5,334,084, Cl. 452-157.000.

Maloney, Wilfred: *See*—
Sparling, Fred; and Maloney, Wilfred, 5,333,915, Cl. 285-73.000.

Mamiya, Chikao: *See*—
Masutomi, Haruhiko; Ohtani, Hirofumi; Uchida, Naoko; and Mamiya, Chikao, 5,334,359, Cl. 422-225.000.

Management Graphics, Inc.: *See*—
Keeney, Richard A.; and Jensen, Gerald, 5,335,040, Cl. 354-354.000.

Mangan, Edward O.: *See*—
LoCicero, Rai-Ann; Morgan, Stuart; Romm, Michael; Bantly, Matthew; and Mangan, Edward O., 5,333,744, Cl. 211-87.000.

Mangold, Dieter: *See*—
Zimmermann, Gerd; and Mangold, Dieter, 5,334,505, Cl. 435-18.000.

Manini, Michelangelo, to FAAC S.p.A. Asynchronous motor speed control method and device. 5,334,922, Cl. 318-772.000.

Mann, William F.: *See*—
Frank, Steven J.; Burkhardt, Henry, III; Rothnie, James B.; and Mann, William F., 5,335,325, Cl. 395-200.000.

Mannesmann Rexroth GmbH: *See*—
Blendinger, Herbert; Fertig, Gunter; and Stellwagen, Armin, 5,333,450, Cl. 60-459.000.

Manning, George E.; Fortini, Brian E.; and Reymann, Vincent R., Jr., to Hillerich & Bradsby Co., Inc. Golf club irons having improved weighting. 5,333,872, Cl. 273-169.000.

Manning, Monte; and Dennison, Charles H., to Micron Semiconductor, Inc. Thin film transistor (TFT) loads formed in recessed plugs. 5,334,862, Cl. 257-67.000.

Manning, Troy A.; and Bachand, William R., to Micron Semiconductor, Inc. Verifying dynamic memory refresh. 5,335,202, Cl. 365-222.000.

Mannix, Christopher J.; Smith, Richard A. G.; Lewis, Ceri J.; and Harber, Julian S., to Beecham Group p.l.c. Process for purification of streptakinase using a reducing agent. 5,334,384, Cl. 424-94.630.

Marathon Oil Company: *See*—
Plummer, Mark A., 5,334,363, Cl. 423-226.000.

Marbot, Roland, to Bull, S.A. Variable delay circuit for producing a delay which varies as a hyperbolic function of the current intensity. 5,334,891, Cl. 307-603.000.

Maric, Dane: *See*—
Tarrson, Emanuel B.; Maric, Dane; and Blahuta, Lew, 5,333,346, Cl. 15-167.100.

Marie, Bruno; Guerin, Daniel; and Larquet, Christian, to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude. Power laser with uncoated diamond window. 5,335,245, Cl. 372-103.000.

Marinaccio, Paul J.: *See*—
Smirlock, Martin E.; Ribich, William A.; Marinaccio, Paul J.; and Sawaf, Bernard E., 5,333,532, Cl. 89-36.020.

Mark IV Transportation Products Corporation: *See*—
Brady, Robert T.; and Werling, Joseph H., 5,333,574, Cl. 122-367.100.

Markley, Jim. Apparatus for removing a deposit of chewing gum from an underlying surface. 5,333,337, Cl. 15-29.000.

Marko, Paul D.; Patsiokas, Stelios J.; Wadin, Craig P.; and Lobel, Gary S., to Motorola, Inc. Base site selection apparatus and method. 5,335,360, Cl. 455-56.100.

Markoski, Larry J.: *See*—
Martin, David C.; Moore, Jeffrey S.; Markoski, Larry J.; and Walker, Kenneth A., 5,334,752, Cl. 560-360.000.

Marley Mouldings Inc.: *See*—
Cope, Carroll W., 5,334,632, Cl. 524-9.000.
Cope, Carroll W., 5,334,633, Cl. 524-15.000.

Marlingford Holdings Limited: *See*—
Jamison, Mark D.; Banks, Stewart; Williamson, Nicholas; and Roders, George W., 5,333,758, Cl. 222-101.000.

Marocco, Norbert; and Ingram, Ronald W. E. Apparatus for the manufacture of blinds. 5,333,365, Cl. 29-24.500.

Marolewski, Theodore A.; Burkhardt, Eric W.; and Wallfahrer, Uwe H., to Akzo nv. Epoxy functional copolymer of higher A-olefin and unsaturated dicarboxylic acid ester and derivatives thereof. 5,334,682, Cl. 526-273.000.

Marotta Scientific Controls, Inc.: *See*—
Reinicke, Robert H., 5,333,833, Cl. 251-77.000.

Maroushek, Timothy R., to Samar Enterprises Company, Ltd. Modular stacked housing arrangement. 5,335,144, Cl. 361-695.000.

Marquette Electronics, Inc.: *See*—
Hafner, Curtis R., 5,333,617, Cl. 128-697.000.

Marra, Marian N.: *See*—
Scott, Randal W.; and Marra, Marian N., 5,334,584, Cl. 514-012.000.

Marra, Mark A.; and Quinlan, Robert L., Jr., to Little Tikes Company, The. Restraining bar assembly for a swing. 5,334,099, Cl. 472-118.000.

Marshall, Ronald: *See*—
Henry, David M.; and Marshall, Ronald, 5,334,067, Cl. 441-131.000.

Martin, David C.; Moore, Jeffrey S.; Markoski, Larry J.; and Walker, Kenneth A., to Board of Regents acting for and on behalf of University of Michigan, The. Cyclobutabenzene monomers. 5,334,752, Cl. 560-360.000.

Martin, David M. G.: *See*—
Thomas, Andrew P.; Martin, David M. G.; Lee, Stanley A.; and Powell, Lyn, 5,334,718, Cl. 546-118.000.

Martin, Geoffrey S., to Med-Pro Design, Inc. Balloon catheter. 5,334,148, Cl. 604-96.000.

Martin-Lopez, Fernando R.; and Redl, Richard, to Toko America, Inc. Primary side controller for regulated power converters. 5,335,162, Cl. 363-97.000.

Martin Marietta Energy Systems, Inc.: *See*—
Holcombe, Cressie E.; and Pfeiler, William A., 5,333,844, Cl. 266-275.000.

Martin, Michael J.: *See*—
Kluger, Jacob N.; Martin, Michael J.; Moore, Steven R.; and Sokac, Russell J., 5,335,043, Cl. 355-206.000.

Martin, Trevor I.: *See*—
Desilets, Denis; Martin, Trevor I.; Mayo, James D.; Bluhm, Terry L.; and Hsiao, Cheng-Kuo, 5,334,478, Cl. 430-135.000.

Martinez, Carlos D.: *See*—
Le-Normand, Claude P.; Martinez, Carlos D.; and Jones, John M., 5,334,088, Cl. 452-193.000.

Martinez, Jerry R. Method and apparatus for validating credit information during home delivery of order. 5,334,824, Cl. 235-380.000.

Martinez Pereira, Miguel A.: *See*—
Bannach Sichtermann, Gustavo H.; Pincheira Alverez, Aliro T. N.; Reghezza Inzunza, Andres A.; Cruz Rivera, Alberto S.; Lorca Soto, Tomas S.; Hidalgo Cortes, Luis F.; Menacho Llana, Jorge M.; and Martinez Pereira, Miguel A., 5,334,317, Cl. 210-708.000.

Maruyama, Tomoko; and Iizuka, Takashi, to Canon Kabushiki Kaisha. Semiconductor substrate including a single or multi-layer film having different densities in the thickness direction. 5,335,256, Cl. 378-35.000.

Maruyama, Yoshinori: *See*—
Watabe, Masayuki; Maruyama, Yoshinori; and Ono, Takashi, 5,333,714, Cl. 194-206.000.

Maruyuma, Koichi; Wakamiya, Syun'itirou; and Iwaki, Makoto, to Asahi Kogaku Kogyo Kabushiki Kaisha. Method and apparatus for measuring lens performance. 5,335,059, Cl. 356-124.000.

Masaoka, Toshihiro: *See*—
Oguchi, Takahisa; Sugimoto, Kenichi; Aihara, Shin; Itoh, Hisato; Matsumoto, Mansuke; Masaoka, Toshihiro; and Nakamura, Masakazu, 5,334,714, Cl. 540-143.000.

Maschinenfabrik Bezner GmbH & Co. KG: *See*—
Fuchs, Dieter; and Strohhacker, Peter, 5,333,738, Cl. 209-38.000.

Maschinenfabrik J. Dieffenbacher GmbH & Co.: *See*—
Bielfeldt, Friedrich B.; and Kroll, Detlef, 5,333,541, Cl. 100-41.000.

Masi, Robert J.: *See*—
Gallagher, John P., deceased; and Masi, Robert J., 5,334,295, Cl. 204-153.160.

Masino, Albert P.: *See*—
Menon, Raghu; Masino, Albert P.; and Reinking, Mark K., 5,334,567, Cl. 502-116.000.

Massachusetts Institute of Technology: *See*—
Baldwin, Daniel F.; Suh, Nam P.; Park, Chul B.; and Cha, Sung W., 5,334,356, Cl. 422-133.000.
Kramer, Mark A.; Leonard, James A.; and Ungar, Lyle H., 5,335,291, Cl. 382-14.000.

Masuda, Hitoshi; Suzuki, Masatakatsu; Ohno, Masataka; Kobayashi, Kazuyoshi; and Nakamura, Hiromitsu, to NEC Corporation. Extendable telephone. 5,335,274, Cl. 379-433.000.

Masui, Mitsuyuki: *See*—
Maejima, Yukihito; Ohtsubo, Toko; Masui, Mitsuyuki; Abe, Noriyuki; Yuura, Katsuhiko; and Mochizuki, Kenji, 5,335,339, Cl. 395-500.000.

Masutomi, Haruhiko; Ohtani, Hirofumi; Uchida, Naoko; and Mamiya, Chikao, to Konica Corporation. Apparatus for production of sparingly water-soluble salt crystal grains. 5,334,359, Cl. 422-225.000.

Masuzaki, Hidefumi: *See*—
Munemasa, Narihiro; Wakamori, Fumio; Masuzaki, Hidefumi; Fujinawa, Misaaki; and Kurosu, Yasuo, 5,335,084, Cl. 358-403.000.

Matchett, Noel D.; and Birch, J. Neil, to Wireless Security, Inc. Fraud prevention system and process for cellular mobile telephone networks. 5,335,278, Cl. 380-23.000.

Materias Primas Monterrey, S.A. De C.V.: *See*—
Aguirre-Villafana, Juan-Lauro; and Leal-Gonzales, Juan, 5,334,364, Cl. 423-340.000.

Matkovich, Vlado I.; Bormann, Thomas J.; and DelGiacco, Gerard R., to Pall Corporation. Priming system. 5,334,315, Cl. 210-641.000.

Matoba, Hirotsugu; Nomura, Masaru; and Yamaguchi, Takeshi, to Sharp Kabushiki Kaisha. Optical recording track access driving apparatus. 5,335,214, Cl. 369-44.280.

Matrix Technologies, Inc.: *See*—
Ramsey, Charles R.; Holcomb, Russell E.; and Backus, Brian L., 5,333,488, Cl. 73-1.000.

Matsubishi Rayon Co., Ltd.: *See*—
Yamamoto, Naoki; Yanagase, Akira; Nakata, Akira; Koshirai, Atsunori; and Yanai, Toshimi, 5,334,656, Cl. 525-63.000.

Matsuda, Akira: *See*—
Iwai, Hirohisa; Shiroyama, Kaisuke; Matsuda, Akira; Nakamura, Takeo; and Shirakawa, Ryotomo, 5,334,294, Cl. 204-129.550.

Matsuda, Hiromu; Kawakami, Tetsuji; Yubakami, Keiichi; Imai, Akihiro; and Taguchi, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Method for thermal dye transfer printing, dye transfer sheets and method for making same, dye receiving sheets and a thermal printing system. 5,334,574, Cl. 503-227.000.

Matsuda, Keiichi: *See*—
Kohama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, 5,334,587, Cl. 514-99.000.

Matsuda, Kiyofumi: *See*—
Eiju, Tomoaki; Matsuda, Kiyofumi; Barnes, Thomas H.; and Kokaji, Shigeru, 5,335,058, Cl. 356-28.500.

Matsuda, Kunihiro, to Casio Computer Co., Ltd. Thin-film transistor having source and drain electrodes insulated by an anodically oxidized film. 5,334,859, Cl. 257-57.000.

Matsuhisa, Hirohide, to Canon Kabushiki Kaisha. Active energy-ray-curable resin composition, ink jet head having ink path wall formed by use of the composition, process for preparing the head, and ink jet apparatus provided with the head. 5,335,004, Cl. 347-44.000.

Matsui, Izuru: *See*—
Inaba, Yoshihiro; Takashima, Koichi; Matsui, Izuru; and Kubo, Tsutomu, 5,334,480, Cl. 430-138.000.

Matsui, Kazumi; Matsuoka, Kouichi; and Nakagawa, Shigeru, to East Japan Railway Company; Railway Technical Research Institute; and Magnetic Transportation System Engineering Company. Carriers for linear motor vehicle-borne field magnets which straddle ground-side coils. 5,333,553, Cl. 104-290.000.

Matsui, Shigetomo; Matsumura, Hiroyuki; Ikemoto, Yoshikazu; Kumon, Yasuhiro; Nakayama, Shigeru; Tsujita, Keiji; Fukunaga, Keisuke; Kuribayashi, Nobuhiro; and Wakana, Kenichi. High pressure injection nozzle. 5,334,561, Cl. 501-87.000.

Matsui, Tetsu: *See*—
Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, 5,333,846, Cl. 267-140.140.

Matsumoto, Hisato: *See*—
Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, 5,335,002, Cl. 346-76.0PH.

Matsumoto, Mansuke: *See*—
Oguchi, Takahisa; Sugimoto, Kenichi; Aihara, Shin; Itoh, Hisato; Matsumoto, Mansuke; Massoka, Toshihiro; and Nakamura, Masakazu, 5,334,714, Cl. 540-143.000.

Matsumoto, Masayuki; and Ezuka, Daigo, to Fuji Photo Film Co., Ltd. Radiation image information processing system. 5,335,172, Cl. 364-413.130.

Matsumoto, Yoshinori: *See*—
Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, 5,335,002, Cl. 346-76.0PH.

Matsumura, Hiroyuki: *See*—
Matsui, Shigetomo; Matsumura, Hiroyuki; Ikemoto, Yoshikazu; Kumon, Yasuhiro; Nakayama, Shigeru; Tsujita, Keiji; Fukunaga, Keisuke; Kuribayashi, Nobuhiro; and Wakana, Kenichi, 5,334,561, Cl. 501-87.000.

Matsumura, Mitsuma; Mizuno, Kenji; and Hashimoto, Atsuki, to Nitto Kohki Co., Ltd. Remedial device for hand insufficiency. 5,333,605, Cl. 601-40.000.

Matsunaga, Ken-ichi: *See*—
Ogawa, Masahiko; Tagami, Hidetoshi; Yoshihara, Toru; Kawase, Jiro; Kiyomine, Akira; Tamura, Tadashi; Nishizawa, Yoshinori; and Matsunaga, Ken-ichi, 5,334,225, Cl. 8-408.000.

Matsuo, Akinori; Watanabe, Masashi; Fujimoto, Michio; Wada, Masashi; Nagayama, Yoshiharu; and Naito, Kazuo, to Hitachi., Ltd.; and Hitachi VLSI Engineering Corp. Semiconductor integrated circuit device. 5,335,204, Cl. 365-230.010.

Matsuoka, Akihiko: *See*—
Onishi, Hiroshi; Matsuoka, Akihiko; Misaizu, Kouei; and Yamamoto, Yuuri, 5,335,251, Cl. 375-100.000.

Matsuoka, Kouichi: *See*—
Matsui, Kazumi; Matsuoka, Kouichi; and Nakagawa, Shigeru, 5,333,553, Cl. 104-290.000.

Matsuoka, Noriyuki, to Yamaichi Electronics Co., Ltd. Socket for an electric part. 5,334,036, Cl. 439-266.000.

Matsuoka, Tatsuji; Serizawa, Nobufusa; Hosoya, Tsuyoshi; and Furuya, Kouhei, to Sankyo Company Limited. Microbial process for the production of trans-4-hydroxy-L-proline. 5,334,517, Cl. 435-121.000.

Matsuoka, Tomizo; Takeda, Mamoru; and Kobayashi, Ikunori, to Matsushita Electric Industrial Co., Ltd. Method of making thin film transistors. 5,334,544, Cl. 437-40.000.

Matsura, Yoshinori: *See*—
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,334,152, Cl. 604-385.200.

Matsushita Electric Industrial Co., Ltd.: *See*—
Adachi, Naotomo; Kubo, Tetsuya; Kaiwa, Ryoichi; and Kudoh, Michiyoshi, 5,335,367, Cl. 455-90.000.
Fujii, Koji; Haji, Nobuyuki; and Yamada, Minoru, 5,335,309, Cl. 392-421.000.
Fuyama, Seiji, 5,335,171, Cl. 364-405.000.
Inoue, Masao, 5,335,330, Cl. 395-375.000.
Matsuda, Hiromu; Kawakami, Tetsuji; Yubakami, Keiichi; Imai, Akihiro; and Taguchi, Nobuyoshi, 5,334,574, Cl. 503-227.000.
Matsuoka, Tomizo; Takeda, Mamoru; and Kobayashi, Ikunori, 5,334,544, Cl. 437-40.000.
Nagata, Yuji; Fukazawa, Toshio; and Mitani, Satoru, 5,335,127, Cl. 360-113.000.
Naito, Yoshihisa; and Hayashi, Takahiro, 5,334,799, Cl. 174-17.0VA.
Nakatsu, Etsuto; Morioka, Yoshihiro; and Kobayashi, Masaaki, 5,335,125, Cl. 360-10.300.
Onishi, Hiroshi; Matsuoka, Akihiko; Misaizu, Kouei; and Yamamoto, Yuuri, 5,335,251, Cl. 375-100.000.
Shimizu, Ryosuke; and Wakabayashi, Noriaki, 5,335,123, Cl. 360-77.050.
Shiota, Tomio; Hikida, Toshiharu; Sugimoto, Masashi; Kodama, Kazuhiko; and Shimizu, Kaoru, 5,334,434, Cl. 428-188.000.
Shirai, Hirokazu; Sagawa, Morikazu; and Makimoto, Mitsuo, 5,334,961, Cl. 333-204.000.
Sugiyama, Tsutomu, 5,334,816, Cl. 219-121.830.
Takahata, Toshihiro; Kawazoe, Hiroshi; Murakoshi, Toshiichi; and Tokunaga, Masataka, 5,333,800, Cl. 242-7.010.
Tsunehiro, Naoshi; Sekiguchi, Akihiko; and Nakamura, Asako, 5,335,263, Cl. 379-58.000.
Yasui, Juro; and Araki, Kiyoshi, 5,334,466, Cl. 430-5.000.

Matsushita Electric Works, Ltd.: *See*—
Komori, Kiyotaka; Yamakawa, Seishiro; Yamamoto, Shigeru; Naka, Jun; and Kokubo, Tadashi, 5,334,645, Cl. 524-494.000.

Matsuura, Hitoshi, to Fanuc Ltd. Tracer control unit. 5,333,974, Cl. 409-84.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Matsuura, Shizutaka: *See*—
Fujimura, Yoshiichi; and Matsuura, Shizutaka, 5,333,906, Cl. 180-906.000.

Matsuura, Takashi, to Fuji Jukogyo Kabushiki Kaisha. Fuel injection control method and a control apparatus for a cylinder direct-injection engine. 5,333,583, Cl. 123-295.000.

Matsuyama, Yoshinori, to Nidek Co., Ltd. Apparatus for and method of obtaining processing information for fitting lenses in eyeglasses frame and eyeglasses grinding machine. 5,333,412, Cl. 51-165.710.

Mattel, Inc.: *See*—
Hippely, Keith A.; Swisher, Gary; Choy, Terence A.; and Halford, Wayne R., 5,334,078, Cl. 446-470.000.

Matteson, Keith D.; and Longwell, Michael L., to Dell USA, L.P. Error correction code pipeline for interleaved memory system. 5,335,234, Cl. 371-40.100.

Mattison, Phillip E., to VLSI Technology, Inc. Computer display system using system memory in place or dedicated display memory and method therefor. 5,335,322, Cl. 395-164.000.

Mattson, Norman E.: *See*—
Mielke, Richard A.; Mattson, Norman E.; and Cooley, Robert S., 5,333,598, Cl. 126-116.00R.

Mauney, Daniel W.: *See*—
Casali, John G.; and Mauney, Daniel W., 5,333,622, Cl. 128-864.000.

Maurer, Robert: *See*—
Sirianni, Richard; Minutillo, Thomas; Yaworski, John; and Maurer, Robert, 5,333,664, Cl. 160-23.100.

Maurice, Lisa B., to Simmonds Precision Products, Inc. Proximity detector for detecting position of a target. 5,334,831, Cl. 250-227.170.

Maxwell, Horace J., to Keystone International Holdings Corp. Automatic recirculation valve. 5,333,638, Cl. 137-116.000.

Mayenfels, Peter: *See*—
Hartung, Michael; Grabbe, Michael; and Mayenfels, Peter, 5,334,420, Cl. 427-407.100.

Mayes, Douglas. Wheel mounting apparatus for wheelchairs. 5,333,894, Cl. 280-661.000.

Mayes, Earl C.: *See*—
Pellegrino, Anthony J.; Mayes, Earl C.; Sharpe, Donald E.; and Bantz, George H., 5,335,161, Cl. 363-61.000.

Mayo, James D.: *See*—
Desilets, Denis; Martin, Trevor I.; Mayo, James D.; Bluhm, Terry L.; and Hsiao, Cheng-Kuo, 5,334,478, Cl. 430-135.000.

Mazda Motor Corporation: *See*—
Ito, Koki, 5,334,117, Cl. 475-276.000.

Mazzocchi, Carlos. Portable barbeque. 5,333,540, Cl. 99-421.00H.

McAfee, Kevin S.: *See*—
Seelig, David L.; and McAfee, Kevin S., 5,333,802, Cl. 241-65.000.

McAllister, Richard F.: *See*—
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, 5,335,347, Cl. 395-650.000.

McBain, Douglas S.: *See*—
McGarry, Frederick J.; and McBain, Douglas S., 5,334,441, Cl. 428-229.000.

McBride, Terry R. Underground storage system for natural gas. 5,333,465, Cl. 62-53.100.

McCloud, Calvin E. Table soccer playing figure. 5,333,864, Cl. 273-85.00D.

McClurg, Todd A.: *See*—
Davidge, Ronald V.; McClurg, Todd A.; Neer, Jay H.; Nelson, Richard J.; and Noschese, Rocco J., 5,334,038, Cl. 439-267.000.

McCoy, Gary W.: *See*—
Zwigart, John M.; Tweedy, Mark R.; and McCoy, Gary W., 5,333,720, Cl. 198-409.000.

McCracken, William P.: *See*—
Cooper, Alan N.; McCracken, William P.; and Hynecek, Jaroslav, 5,335,015, Cl. 348-302.000.

McCraw, Gregory L.: *See*—
Likibi, Parfait J. M.; Casciani, Robert V.; and McCraw, Gregory L., 5,334,756, Cl. 562-565.000.

McCuaig, Kenneth W. Golf case for separate retention of clubs during travel. 5,333,731, Cl. 206-315.600.

McDermott Cue Manufacturing, Inc.: *See*—
McDermott, James D., 5,334,101, Cl. 473-44.000.

McDermott, James D., to McDermott Cue Manufacturing, Inc. Connector for detachable billiard cue. 5,334,101, Cl. 473-44.000.

McDermott, Ruth E.: *See*—
Goldstein, Steven W.; and McDermott, Ruth E., 5,334,604, Cl. 514-364.000.

McDonald, Daniel J.: *See*—
Felderman, William A.; McDonald, Daniel J.; and Christensen, Laura A., 5,335,350, Cl. 455-17.000.

McDonald, William H., Jr. Chamois water extraction apparatus. 5,333,352, Cl. 15-261.000.

McDonnell, Damien G.: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Hird, Michael; and McDonnell, Damien G., 5,334,327, Cl. 252-299.670.

McElroy, David J.; Lin, Sung-Wei; and Gill, Manzur, to Texas Instruments Incorporated. Method of producing a self-aligned window at recessed intersection of insulating regions. 5,334,550, Cl. 437-65.000.

McFarlane, Ronald G.: *See*—
Mellum, Ronald J.; Hawkins, Peter M., Jr.; Kline, Glennard M.; Klinkert, Deborah A.; McFarlane, Ronald G.; and Hansen, Gary P., 5,333,678, Cl. 165-42.000.

McGarry, Frederick J.; and McBain, Douglas S., to GenCorp Inc. Composite comprising unsaturated polyester-flexible polymer block copolymer coated fiber structures in a polyester or vinyl ester resin matrix. 5,334,441, Cl. 428-229.000.

McGeehan, Joseph P.: *See*—
Kenington, Peter B.; Beach, Mark A.; Bateman, Andrew; and McGeehan, Joseph P., 5,334,946, Cl. 330-144.000.

McGinley, James W.: *See*—
Newman, David L.; Kiernicki, Leopold; Schofield, Philip; and McGinley, James W., 5,335,301, Cl. 385-75.000.

McGrath, Robert G.: *See*—
Vanek, Laurence D.; and McGrath, Robert G., 5,334,878, Cl. 307-64.000.

McGregor, Dickson J., to Krueger International, Inc. File drawer interlock mechanism. 5,333,949, Cl. 312-221.000.

McGuffin, John T., to Honeywell Inc. Terrain referenced navigation—woods data base model. 5,335,181, Cl. 364-443.000.

MCI Communications Corporation: *See*—
Kelly, John F., Jr.; Laird, Robert G.; Baker, Thomas E.; and Torres, Cristobal A., 5,335,268, Cl. 379-112.000.

McIntyre, Jon T.; and Crittenden, James F., to C. R. Bard, Inc. Catheter purge apparatus and method of use. 5,334,153, Cl. 604-99.000.

McKenna, John T. Housing unit. 5,333,421, Cl. 52-86.000.

McKernan, Mark A.: *See*—
Makowiecki, Daniel M.; McKernan, Mark A.; Grabner, R. Fred; and Ramsey, Philip B., 5,333,726, Cl. 204-298.090.

McKinnon, Robert M. Durable lightweight meter box. 5,333,750, Cl. 220-484.000.

McLachlan, Craig J.: *See*—
Short, John P.; McLachlan, Craig J.; Rouse, George V.; and Zibrida, James R., 5,334,273, Cl. 156-87.000.

McLees, Donald J. Automatic needle tip guard for standard hypodermic needles. 5,334,158, Cl. 604-110.000.

McMillen, Kenneth R.: *See*—
Edwards, Wallace L.; McMillen, Kenneth R.; and Briggs, Edward L., 5,333,516, Cl. 74-665.0GC.

McMurtry, David R.; and Sutherland, Alexander T., to Renishaw plc. Method of controlling a coordinate positioning machine for measurement of a workpiece. 5,334,918, Cl. 318-568.160.

McNeely, Michael D.: *See*—
Higgins, Thomas F.; and McNeely, Michael D., 5,333,635, Cl. 137-12.000.

McNeil, Peter G.: *See*—
Dodds, Graeme C.; and McNeil, Peter G., 5,333,785, Cl. 239-69.000.

McNulty, Hugh, Jr.: *See*—
Kubens, Randy L.; Stratton, Frederic P.; Atkinson, Gary M.; McNulty, Hugh, Jr.; and Ward, James W., 5,335,243, Cl. 372-99.000.

McNutt, Christopher W., to Alcatel NA Cable Systems, Inc. Process for color coding an optical fiber. 5,334,421, Cl. 427-513.000.

McPhee, Bruce A. Pallet constructed without nails. 5,333,555, Cl. 108-51.100.

McPhilomy, Charles E. Interchangeable/adjustable hurdle. 5,334,121, Cl. 482-17.000.

McQuaid, Loretta A.: *See*—
Audia, James E.; Hirsch, Kenneth S.; Jones, Charles D.; Lawhorn, David E.; McQuaid, Loretta A.; and Weigel, Leland O., 5,334,767, Cl. 568-327.000.

Mcvay, David M.: *See*—
Herczeg, Karen L.; Mcvay, David M.; Phelps, Daniel J.; and Bell, Kimberley C., 5,335,239, Cl. 372-38.000.

MDT Corporation: *See*—
Young, Barry S., 5,334,018, Cl. 433-77.000.

Mead Corporation, The: *See*—
Stout, James T.; and DeMaio, James B., 5,333,734, Cl. 206-427.000.

Mease, Ronnie C.; Srivastava, Suresh C.; and Gestin, Jean-Francois, to Associated Universities, Inc. Stable radiometal antibody immunoconjugates. 5,334,729, Cl. 548-546.000.

MEC Co., Ltd.: *See*—
Minahara, Hatsuhiro; and Ikuta, Noriko, 5,334,261, Cl. 148-23.000.

Med-Pro Design, Inc.: *See*—
Martin, Geoffrey S., 5,334,148, Cl. 604-96.000.

Medical Discoveries, Inc.: *See*—
Morrow, Robert E., 5,334,383, Cl. 424-94.400.

Medical University of South Carolina: *See*—
Halushka, Perry V.; Spicer, Ken M.; and Mais, Dale E., 5,334,369, Cl. 424-1.850.

Medina, Luis E.: *See*—
Herron, John R.; Beaudry, Edward G.; Jochums, Carl E.; and Medina, Luis E., 5,334,300, Cl. 204-257.000.

Medrad, Inc.: *See*—
Carr, Kenneth L.; Regan, James F.; and Waddell, Seid W., 5,334,141, Cl. 604-50.000.

Medtronic, Inc.: *See*—
Bardy, Gust H., 5,334,221, Cl. 607-14.000.

Mehringer, Ricardo F.; Bardon, Hugo A.; and Pozzetti, Augusto P. Dispenser device for human hair. 5,333,627, Cl. 132-108.000.

Meidan, Moshe: *See*—
Shimoni, Uri; Colman, Lewis; and Meidan, Moshe, 5,334,828, Cl. 250-206.200.

Meier, Johannes, to Alusuisse-Lonza Services Ltd. Apparatus for the production of a honeycomb core from foil strip. 5,334,276, Cl. 156-364.000.

Meiji Milk Products Co., Ltd.: *See*—
Tsunoo, Hajime; Kino, Kousuke; and Yamashita, Akio, 5,334,704, Cl. 530-371.000.

Meiji Seika Kaisha, Ltd.: *See*—
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.

Mekata, Tsuyoshi; and Takagi, Hideyuki, to Technology Research Association of Medical and Welfare Apparatus. Noise suppressing apparatus and its adjusting apparatus. 5,335,312, Cl. 395-2.110.

Meldner, Heiner; and Downs, Roland J., to America[3] Foundation. Material for the fabrication of sails. 5,333,568, Cl. 114-103.000.

Melenyzer, George J.: *See*—
Baugh, John L.; and Melenyzer, George J., 5,333,692, Cl. 166-387.000.

Meletis, Efstathios I., to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College. Titanium plasma nitriding intensified by thermionic emission source. 5,334,264, Cl. 148-222.000.

Meller, Moshe. High speed dental drill with positive pressure air drive. 5,334,013, Cl. 433-132.000.

Melligan, Edmund J. Golf swing training process. 5,334,028, Cl. 434-252.000.

Mellum, Ronald J.; Hawkins, Peter M., Jr.; Kline, Glennard M.; Klinkert, Deborah A.; McFarlane, Ronald G.; and Hansen, Gary P., to Onan Corporation. Auxiliary power unit. 5,333,678, Cl. 165-42.000.

Meltzer, Richard S.: *See*—
Schwarz, Karl; Meltzer, Richard S.; and Church, Charles C., 5,334,136, Cl. 604-4.000.

Memorybank, Inc.: *See*—
Dorney, Keith R.; and Dorney, Robert C., 5,333,908, Cl. 283-38.000.

Memtec America Corporation: *See*—
Barboza, Steven D., 5,334,451, Cl. 428-377.000.

Menacho Llana, Jorge M.: *See*—
Bannach Sichtermann, Gustavo H.; Pincheira Alverez, Aliro T. N.; Reghezza Inzunza, Andres A.; Cruz Rivera, Alberto S.; Lorca Soto, Tomas S.; Hidalgo Cortes, Luis F.; Menacho Llana, Jorge M.; and Martinez Pereira, Miguel A., 5,334,317, Cl. 210-708.000.

Mendes, Frank P. Hanging pot for growing plants. 5,333,409, Cl. 47-67.000.

Meng, James C. S., to United States of America, Navy. Superconducting electromagnetic thruster. 5,333,444, Cl. 60-221.000.

Mennitt, Timothy J.; Warren, John P.; and Sloan, James W., to Motorola, Inc. Semiconductor device with test-only contacts and method for making the same. 5,334,857, Cl. 257-48.000.

Menon, Raghu; Masino, Albert P.; and Reinking, Mark K., to Quantum Chemical Corporation. Cocatalyst for vanadium-containing ethylene polymerization catalyst. 5,334,567, Cl. 502-116.000.

Mercedes-Benz AG: *See*—
Topfer, Bernhard, 5,333,940, Cl. 303-7.000.

Merck & Co., Inc.: *See*—
Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., 5,334,598, Cl. 514-303.000.
Baldwin, John J.; Shepard, Kenneth L.; Ponticello, Gerald S.; and Williams, Theresa M., 5,334,591, Cl. 514-215.000.
DiNinno, Frank; and Guthikonda, Ravindra N., 5,334,590, Cl. 514-210.000.
Hartman, George D.; Halczenko, Wasyl; and Prugh, John D., 5,334,596, Cl. 514-301.000.

Merck Frosst Canada, Inc.: *See*—
Frenette, Richard, 5,334,719, Cl. 546-174.000.
Prasit, Petpiboon; and Blouin, Marc, 5,334,597, Cl. 514-300.000.

Merck Sharpe & Dohme Ltd.: *See*—
MacLeod, Angus M., 5,334,606, Cl. 514-376.000.

Merger, Franz: *See*—
Brudermueller, Martin; Witzel, Tom; and Merger, Franz, 5,334,745, Cl. 558-394.000.

Merrem, Hans J., to Ciba-Geigy Corporation. Positive diazo quinone photoresist compositions containing antihalation compound. 5,334,481, Cl. 430-191.000.

Merritt, Selma J. Live bait fish hook. 5,333,407, Cl. 43-44.400.

Messina, Gene A. Bubble maker. 5,334,087, Cl. 446-15.000.

Messmer, Stephan: *See*—
Hegner, Frank; Schmidt, Elke; Klahn, Thomas; Reimann, Peter; Breitenstein, Heinz; and Messmer, Stephan, 5,334,344, Cl. 420-422.000.

Metheney, Harry P.: *See*—
Foley, Charles F.; Metheney, Harry P.; and Tucker, Bradley J., 5,333,967, Cl. 401-139.000.

Methode Electronics, Inc.: *See*—
Newman, David L.; Kiernicki, Leopold; Schofield, Philip; and McGinley, James W., 5,335,301, Cl. 385-75.000.

Metron AS: *See*—
Br nd Dag A.; Bonvik, Knut; and Wognild, Svein, 5,333,497, Cl. 73-219.000.

Mett, Joachim, to O&K Orenstein & Koppel AG. Fastening of the buckets and possibly also the skim cutters on cutting wheels. 5,333,399, Cl. 37-455.000.

Metz, Jean: *See*—
Lonardi, Emile; Malivoir, Philippe; Metz, Jean; Roemen, Fernand; and Milen, Patrick, 5,333,839, Cl. 266-45.000.

Metzler, Richard A.; and Kalatsky, Mark. Electronic device package. 5,334,874, Cl. 257-678.000.

Meyer, Dean E.: *See*—
Shenoha, James L.; and Meyer, Dean E., 5,333,863, Cl. 273-80.200.

Meyer, Forrest C., to Seagate Technology, Inc. Disc drive with write precompensation using window/pulse timing measurements. 5,335,118, Cl. 360-51.000.

Mezei, Louis M.: *See*—
Mullis, Kary B.; Johnson, Larry; Leath, Richard A.; Wennberg, Timothy J.; Mezei, Louis M.; and Widunas, Joseph T., 5,333,675, Cl. 165-12.000.

MHZ Sonnenschutztechnik GmbH: *See*—
Eger, Heinz, 5,333,663, Cl. 160-22.000.

Michalski, Britta: *See*—
Scherowsky, Gunter; Junghans, Claas; Kaltbeitzel, Anke; Wingen, Rainer; and Michalski, Britta, 5,334,328, Cl. 252-299.610.

Michii, Kazunari: *See*—
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, 5,334,803, Cl. 174-52.400.

Micro Solutions, Inc.: *See*—
Proesel, Ronald J., 5,335,338, Cl. 395-500.000.

Microelectronics and Computer Technology Corporation: *See*—
Hartnett, Mary A.; and Sherman, Kimberly J., 5,334,245, Cl. 118-59.000.

Micron Semiconductor, Inc.: *See*—
Manning, Monte; and Dennison, Charles H., 5,334,862, Cl. 257-67.000.
Manning, Troy A.; and Bachand, William R., 5,335,202, Cl. 365-222.000.
Sandhu, Gurtej; and Fazan, Pierre, 5,335,138, Cl. 361-303.000.

Micron Technology, Inc.: *See*—
Walther, Terry R.; and Schaefer, Scott E., 5,335,201, Cl. 365-222.000.

Microprobe Corporation: *See*—
Adams, Trevor H.; Schwartz, Dennis E.; Vermuelen, Nicolaas M. J.; and Kanemoto, Roy H., 5,334,501, Cl. 435-6.000.

Midland Brake, Inc.: *See*—
Sloka, Alan, 5,334,230, Cl. 55-213.000.

Midorikawa, Ayumu: *See*—
Itoh, Junichi; Dai, Masahiro; Toizumi, Yasushi; Mizokami, Kazunori; Watanabe, Yoji; and Midorikawa, Ayumu, 5,335,029, Cl. 354-106.000.

Midwesco, Inc.: *See*—
Bailey, Douglas S., 5,334,970, Cl. 340-506.000.

Mieda, Michinobu: *See*—
Ohta, Kenji; Inui, Tetsuya; Katayama, Hiroyuki; Takahashi, Akira; Hirokane, Junji; Nishitani, Yukinori; Mieda, Michinobu; and Van, Kazuo, 5,335,220, Cl. 369-288.000.

Mielke, Ingolf: *See*—
Freudenreich, Reinhold; Mielke, Ingolf; Rettenbeck, Karl; and Schottle, Thomas, 5,334,783, Cl. 570-153.000.

Mielke, Richard A.; Mattson, Norman E.; and Cooley, Robert S., to Modine Manufacturing Co. Unit heater and heat exchanger therefor. 5,333,598, Cl. 126-116.00R.

Mijuskovic, Dejan, to Motorola, Inc. Charge pump bias control in a phase lock loop. 5,334,953, Cl. 331-8.000.

Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, to Sharp Kabushiki Kaisha. Vapor deposition apparatus for using solid starting materials. 5,334,250, Cl. 118-724.000.

Mikami, Naoko: *See*—
Hattori, Tatsuya; and Mikami, Naoko, 5,334,713, Cl. 540-113.000.

Mikhail, W. F. Michael. Collateral ligament retractor for use in performing knee surgery. 5,334,194, Cl. 606-88.000.

Milan, Henry. Modular outlet strip. 5,334,033, Cl. 439-214.000.

Milen, Patrick: *See*—
Lonardi, Emile; Malivoir, Philippe; Metz, Jean; Roemen, Fernand; and Milen, Patrick, 5,333,839, Cl. 266-45.000.

Mililo, William D.; and Miller, Gregory P., to Xerox Corporation. Auto paper size sensing mechanism for an adjustable cassette. 5,333,852, Cl. 271-171.000.

Millar, David J.; Greenhalgh, Stephen J.; and Gregory, Richard P., to DCE Voice Processing Limited. Television scrambler. 5,335,275, Cl. 380-4.000.

Millen, Frank, to Pacolet Concrete Company. Composite equipment support pad. 5,333,830, Cl. 248-679.000.

Miller, Barry: *See*—
Dautremont-Smith, William C.; Feldman, Leonard C.; Kalish, Rafael; Katz, Avishay; Miller, Barry; and Moriya, Netzer, 5,334,306, Cl. 205-131.000.

Miller, Gregory P.: *See*—
Mililo, William D.; and Miller, Gregory P., 5,333,852, Cl. 271-171.000.

Miller, Jorge; and Kling, Miguel, to Energia Andina Ltd. Conversion of alkanes to alkanols and glycols. 5,334,777, Cl. 568-859.000.

Miller, Matthew P.: *See*—
Ashjian, Henry; Miller, Matthew P.; Shen, Dong-Ming; and Wu, Margaret M., 5,334,228, Cl. 44-347.000.

Miller, Michael G.: *See*—
Abbott, Jerry J.; Baird, Brian W.; and Miller, Michael G., 5,334,474, Cl. 430-110.000.

Millett Industries: *See*—
Bell, Dennis L.; and Millett, Ray C., 5,333,829, Cl. 248-634.000.

Millett, Ray C.: *See*—
Bell, Dennis L.; and Millett, Ray C., 5,333,829, Cl. 248-634.000.

Mills, Gary N.; and Homayoun, Habib, to Instromedix, Inc. Wrist-worn ECG monitor. 5,333,616, Cl. 128-696.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Mills, Percy E. Steam locomotive-whistle model and toy. 5,334,071, Cl. 446-186.000.
Mills, Peter B. Golf club. 5,333,861, Cl. 273-78.000.
Milner, David J.: *See*—
Cleugh, Ernest S.; and Milner, David J., 5,334,744, Cl. 558-354.000.
MIM Industries, Inc.: *See*—
Frye, Ricky J., 5,333,565, Cl. 112-291.000.
Mimura, Hidenori: *See*—
Kitamura, Koichi; Mimura, Hidenori; Yamamoto, Kazuo; Ohta, Yasumitsu; Sai, Kazuyoshi; and Nagatake, Youichi, 5,335,092, Cl. 358-482.000.
Minahara, Hatsuhiro; and Ikuta, Noriko, to MEC Co., Ltd. Soldering flux composition and solder paste composition. 5,334,261, Cl. 148-23.000.
Minami, Hiroshi; Nakaoka, Yoshihiko; and Yamamoto, Tsuneyoshi, to Takemoto Yushi Kabushiki Kaisha. Method of sizing carbon fibers. 5,334,419, Cl. 427-386.000.
Minami, Yoshitaka; Kakumaru, Hajime; Kubota, Naohiro; Tominaga, Nobuhide; and Ishizaki, Koji, to Hitachi Chemical Co., Ltd.; and Asahi Denka Kogyo Kabushiki Kaisha. Photopolymerizable composition and photopolymerizable element. 5,334,484, Cl. 430-281.000.
Minasi, David H.: *See*—
Bishop, Michael R.; and Minasi, David H., 5,335,133, Cl. 361-56.000.
Mine, Kohichi; and Itoh, Norio, to Toyota Jidosha Kabushiki Kaisha. Method of ironing cylindrical workpiece of austenite stainless steel, with controlled thickness reduction. 5,333,484, Cl. 72-349.000.
Minebea Co., Ltd.: *See*—
Higashino, Morio, 5,333,629, Cl. 134-76.000.
Minebea Kabushiki Kaisha: *See*—
Yip, Kee Keng; Shigenobu, Hirofumi; Kato, Kyoji; Sato, Takuya; and Yagami, Nobuo, 5,333,957, Cl. 384-484.000.
Ministero Dell'Universita' E Della Ricerca Scientifica E: *See*—
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Mirenna, Luigi; and Mirenna, Luigi, 5,334,605, Cl. 514-365.000.
Ministero dell'Universita' e della Ricerca Scientifica e Technologica: *See*—
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; and Mirenna, Luigi, 5,334,609, Cl. 514-393.000.
Ministry of International Trade & Industry: *See*—
Eiju, Tomoaki; Matsuda, Kiyofumi; Barnes, Thomas H.; and Kokaji, Shigeru, 5,335,058, Cl. 356-28.500.
Minnesota Mining and Manufacturing Company: *See*—
Armbruster, June M.; and Leichter, Louis M., 5,334,094, Cl. 462-17.000.
Bedingham, William; Dufresne, Joel R.; and Wirt, David F., 5,333,609, Cl. 128-632.000.
Dieken, Alan P.; Fischer, David J.; Platt, Jonathan C.; and Sondermann, William L., 5,334,223, Cl. 607-31.000.
Graessle, Josef A.; Schwarz, Werner R.; and Foltz, William E., 5,334,841, Cl. 250-458.100.
Schmidt, Juergen K., 5,334,031, Cl. 439-83.000.
Smith, Robert G., 5,334,426, Cl. 428-34.400.
Minnick, Randall B.: *See*—
Perrotta, Anthony J.; and Minnick, Randall B., 5,334,366, Cl. 423-625.000.
Minohara, Kazuyuki: *See*—
Takato, Kenji; Kinoshita. Kazumi; Kurosaki, Kiyoshi; Kosako, Taichi; and Minohara, Kazuyuki, 5,335,271, Cl. 379-382.000.
Minolta Camera Kabushiki Kaisha: *See*—
Kageyama, Hitoshi; Yamada, Osamu; and Mori, Shinichi, 5,335,095, Cl. 358-500.000.
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.
Tanaka, Yoshito; Shintani, Dai; Naruto, Hirokazu; Nanba, Katsuyuki; Taniguchi, Nobuyuki; Ishibe, Hiroshi; and Tanaka, Yoshihiro, 5,335,072, Cl. 348-232.000.
Yamada, Hirokazu; Nakajima, Akio; and Tsuboi, Toshio, 5,335,090, Cl. 358-473.000.
Minutillo, Thomas: *See*—
Sirianni, Richard; Minutillo, Thomas; Yaworski, John; and Maurer, Robert, 5,333,664, Cl. 160-23.100.
Mirenna, Luigi: *See*—
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Mirenna, Luigi; and Mirenna, Luigi, 5,334,605, Cl. 514-365.000.
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Mirenna, Luigi; and Mirenna, Luigi, 5,334,605, Cl. 514-365.000.
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; and Mirenna, Luigi, 5,334,609, Cl. 514-393.000.
Misaizu, Kouei: *See*—
Onishi, Hiroshi; Matsuoka, Akihiko; Misaizu, Kouei; and Yamamoto, Yuuri, 5,335,251, Cl. 375-100.000.
Mischke, Mark R.: *See*—
Grasshoff, Jurgen M.; Mischke, Mark R.; and Telfer, Stephen J., 5,334,489, Cl. 430-335.000.
Mishina, Haruo; and Yamama, Shinya, to Hitachi Techno. Engineering Co., Ltd. Vapor reflow soldering apparatus. 5,333,774, Cl. 228-46.000.
Missana, Adrian; and Gary, Russell A., to General Electric Company. Electric actuators for steam turbine valves. 5,333,989, Cl. 415-17.000.
Mitani, Satoru: *See*—
Nagata, Yuji; Fukazawa, Toshio; and Mitani, Satoru, 5,335,127, Cl. 360-113.000.
Mitani, Youko; Muta, Kenji; and Umemoto, Mitsuo, to Rohto Pharmaceutical Co., Ltd. Pharmaceutical formulation in the form of aqueous suspension. 5,334,378, Cl. 424-78.100.
Mitsuba Electric Mfg. Co., Ltd.: *See*—
Sato, Katsutoshi, 5,333,351, Cl. 15-250.130.
Shirato, Masayoshi, 5,333,350, Cl. 15-250.210.
Mitsubishi Cable Industries Ltd.: *See*—
Anbo, Tsugio; Machida, Yukihumi; and Iguchi, Hirohumi, 5,334,041, Cl. 439-358.000.
Takita, Masatoshi; Hayami, Hiroyuki; and Suzuki, Koichi, 5,335,306, Cl. 385-142.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Andoh, Naoto, 5,334,871, Cl. 257-402.000.
Arimoto, Masao, 5,334,950, Cl. 330-264.000.
Daikuzono, Norio, 5,334,206, Cl. 606-7.000.
Emmoto, Kazuo, 5,334,911, Cl. 315-10.000.
Fukui, Wataru, 5,333,586, Cl. 123-414.000.
Ishii, Tatsuya, 5,334,540, Cl. 437-7.000.
Kishima, Yoshio; and Nishiyama, Itsuo, 5,333,494, Cl. 73-104.000.
Kubo, Kenki, 5,334,866, Cl. 257-207.000.
Kuroda, Toshiki, 5,333,585, Cl. 123-339.000.
Kusui, Masaaki, 5,335,145, Cl. 361-737.000.
Onishi, Ken; Banjyo, Hidenori; and Arano, Yukari, 5,335,116, Cl. 360-9.100.
Sano, Kinjiro; Imanishi, Wataru; Nakajima, Yoshihisa; and Kinoshita, Masaaki, 5,334,086, Cl. 445-62.000.
Takahashi, Yoshiharu; Hirose, Tetsuya; Otani, Hiroshi; and Takemura, Seiji, 5,333,505, Cl. 73-727.000.
Terashima, Tomohide, 5,334,546, Cl. 437-41.000.
Tominaga, Shuusuke, 5,335,148, Cl. 362-26.000.
Ueda, Tetsuya; and Nakagawa, Osamu, 5,334,872, Cl. 257-675.000.
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, 5,334,803, Cl. 174-52.400.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Fushimi, Norio; Kedo, Ko; Inamasa, Kenji; and Takagawa, Makoto, 5,334,794, Cl. 585-452.000.
Mitsubishi Kasei Corporation: *See*—
Noguchi, Masahiro, 5,334,916, Cl. 315-309.000.
Otsuka, Shigenori; Horiuchi, Hiromi; and Hiroi, Masayuki, 5,334,856, Cl. 257-40.000.
Mitsubishi Petrochemical Company Limited: *See*—
Tomida, Masayuki; Nimura, Hitoshi; and Aritomi, Mitsutoshi, 5,334,664, Cl. 525-289.000.
Mitsuhiro, Takashi: *See*—
Sera, Taizo; Mitsuhiro, Takashi; Ozawa, Koichi; and Sakata, Yutaka, 5,333,671, Cl. 164-436.000.
Mitsui Mining Company, Ltd.: *See*—
Tsutsumi, Hidemi, 5,333,573, Cl. 122-39.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Asanuma, Tadashi; and Kawanishi, Kaoru, 5,334,684, Cl. 526-279.000.
Kobayashi, Nobuki; Shiraishi, Yoku; Yamamoto, Takashi; and Shin, Masaaki, 5,334,473, Cl. 430-109.000.
Oguchi, Takahisa; Sugimoto, Kenichi; Aihara, Shin; Itoh, Hisato; Matsumoto, Mansuke; Masaoka, Toshihiro; and Nakamura, Masakazu, 5,334,714, Cl. 540-143.000.
Uchida, Yuji; Yoshida, Yoshio; Kaneda, Toshikazu; Moriya, Toshiaki; and Kumazawa, Tsutomu, 5,334,670, Cl. 525-440.000.
Mittenbuhler, Karl-Heinz; and Blume, Heinrich-Jochen, to VDO Adolf Schindling AG. Method for the manufacture of an indicating instrument. 5,333,371, Cl. 29-595.000.
Miwa, Masahiko: *See*—
Okamoto, Shigetomi; Miwa, Masahiko; Sekine, Takayuki; and Yamaguchi, Hiroshi, 5,334,442, Cl. 428-246.000.
Miwa, Taizo: *See*—
Muramatsu, Masayoshi; Nakakuki, Teruo; Kainuma, Seishiro; and Miwa, Taizo, 5,334,516, Cl. 435-101.000.
Miwon Co., Ltd.: *See*—
Choi, Kyung S.; Joo, Dae K.; Han, Min S.; Hwang, E Nam; and Choi, Hong K., 5,334,746, Cl. 560-38.000.
Miyairi, Kazuki; and Iijima, Akira, to Nissei Plastic Industrial Co., Ltd. Method and apparatus for positioning dies. 5,333,369, Cl. 29-405.000.
Miyamoto, Masaki, to Shima Seiki Mfg., Ltd. Sinker mechanism for flat knitting machines. 5,333,473, Cl. 66-106.000.
Miyamoto, Michikazu; Koyama, Hideho; and Hoshi, Naoki, to SMC Kabushiki Kaisha. Rodless cylinder. 5,333,535, Cl. 92-88.000.
Miyamoto, Takashi: *See*—
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, 5,334,803, Cl. 174-52.400.
Miyamoto, Toshiharu: *See*—
Yamada, Toshihisa; Miyamoto, Toshiharu; Hayashi, Kazuo; Takayama, Ryoichi; Kobayashi, Shinji; and Ohmura, Keizi, 5,333,554, Cl. 105-397.000.
Miyaoh, Yoshio; and Nakaya, Minoru, to Ishikawa Gasket Co., Ltd. Gasket with auxiliary attaching mechanism. 5,333,884, Cl. 277-235.00B.

Miyatake, Shinichi: *See*—
Ishii, Kyoko; Miyatake, Shinichi; Takahashi, Tsutomu; Udo, Shinji; Yoshioka, Hiroshi; Takano, Mitsuhiro; and Morino, Makoto, 5,335,203, Cl. 365-226.000.
Miyoshi, Masahiko; Asanuma, Kiyohisa; and Soutome, Kazuharu, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Blanket to blanket type printing press employing divided plate cylinder. 5,333,546, Cl. 101-216.000.
Mize, Erbie G.: *See*—
Brock, J. Don; Mize, Erbie G.; and Swanson, Malcom L., 5,334,012, Cl. 432-106.000.
Mizokami, Kazunori: *See*—
Itoh, Junichi; Dai, Masahiro; Toizumi, Yasushi; Mizokami, Kazunori; Watanabe, Yoji; and Midorikawa, Ayumu, 5,335,029, Cl. 354-106.000.
Mizokami, Takuya: *See*—
Suzuki, Hiroshi; Mizokami, Takuya; and Shimizu, Kikuo, 5,335,216, Cl. 369-59.000.
Mizuhara, Yukako: *See*—
Takita, Yusaku; Ishihara, Tatsumi; Mizuhara, Yukako; and Noguchi, Masao, 5,334,565, Cl. 501-95.000.
Mizukami, Masami; and Osada, Hatsuo, to Tokyo Electron Limited. Transfer apparatus. 5,333,986, Cl. 414-217.000.
Mizukami, Yuichi: *See*—
Sekiyama, Yasushi; Mizukami, Yuichi; and Yamamoto, Tessei, 5,334,373, Cl. 424-40.000.
Mizukoshi, Masashi: *See*—
Ikeda, Shinji; and Mizukoshi, Masashi, 5,334,983, Cl. 342-70.000.
Mizumura, Takayuki; Sawada, Kenji; Kojima, Naoki; Kawanishi, Yasuyoshi; and Otsuki, Masatoshi, to Sanyo Electric Co., Ltd. Amorphous silicon solar cell and method of manufacture. 5,334,259, Cl. 136-258.000.
Mizuno, Kenji: *See*—
Matsumura, Mitsuma; Mizuno, Kenji; and Hashimoto, Atsuki, 5,333,605, Cl. 601-40.000.
Mizuno, Tsukasa, to NEC Corporation. Cooling abnormality detection system for electronic equipment. 5,333,676, Cl. 165-13.000.
Mobil Oil Corporation: *See*—
Ashjian, Henry; Miller, Matthew P.; Shen, Dong-Ming; and Wu, Margaret M., 5,334,228, Cl. 44-347.000.
Beck, Jeffrey S.; Schmitt, Kirk D.; and Vartuli, James C., 5,334,368, Cl. 423-704.000.
Boyd, Dana M., 5,333,730, Cl. 206-554.000.
Chu, Pochen; Landis, Michael E.; and Le, Quang N., 5,334,795, Cl. 585-467.000.
Del Rossi, Kenneth J.; Dovedytis, David J.; Esteves, David J.; Harandi, Mohsen N.; and Huss, Albin, Jr., 5,334,792, Cl. 585-314.000.
Dobreski, David V.; Eichbauer, George N.; and Leach, Michael E., 5,334,428, Cl. 428-34.900.
Jones, Lloyd G.; and Yates, Tommy J., 5,333,688, Cl. 166-278.000.
Jones, Lloyd G.; and Yates, Tommy J., 5,333,689, Cl. 166-278.000.
Rosinski, Edward J.; and Rubin, Mae K., 5,334,367, Cl. 423-704.000.
Mochizuki, Kenji: *See*—
Maejima, Yukihito; Ohtsubo, Toko; Masui, Mitsuyuki; Abe, Noriyuki; Yuura, Katsuhiko; and Mochizuki, Kenji, 5,335,339, Cl. 395-500.000.
Modak, Shanta M.: *See*—
Fox, Charles L., Jr., deceased; and Modak, Shanta M., 5,334,588, Cl. 514-171.000.
Moder, Kenneth P., to Eli Lilly and Company. 2-aminomethyl-4-exomethylenethiazoline epoxides. 5,334,725, Cl. 548-147.000.
Modine Manufacturing Co.: *See*—
Mielke, Richard A.; Mattson, Norman E.; and Cooley, Robert S., 5,333,598, Cl. 126-116.00R.
Modney, David L.: *See*—
Good, Walter F.; Gur, David; Owen, James F.; Whiting, Bruce R.; Modney, David L.; and Weil, Richard, 5,334,851, Cl. 250-582.000.
MODSEC Systems (Proprietary) Limited: *See*—
Raath, Pieter L., 5,334,971, Cl. 340-550.000.
Mohammed, Shaheed: *See*—
Pearl, David S., II; Webb, Louis H., III; Mohammed, Shaheed; and Bukur, Dragan, 5,333,467, Cl. 62-77.000.
Mohan, Ned; and Peterson, Maximilian R., to Electric Power Research Institute. Standby power supply with load-current harmonics neutralizer. 5,334,877, Cl. 307-46.000.
Mohlmann, Ulrich; Onken, Gerd; Kunze, Dieter; and Wolber, Jorg, to U.S. Philips Corporation. Digital phase-locked loop. 5,335,018, Cl. 348-536.000.
Mohn, Frank, to Framo Developments (UK) Limited. Pipe system with electrical conductors. 5,334,801, Cl. 174-47.000.
Mold-Masters Limited: *See*—
Teng, Alex C., 5,334,010, Cl. 425-563.000.
Molex Incorporated: *See*—
Kachlic, Jerry D.; and Kiat, Toh S., 5,334,049, Cl. 439-567.000.
Molivadas, Stephen. Evacuated two-phase head-transfer systems. 5,333,677, Cl. 165-32.000.
Moll, Richard J. Controlled perforation apparatus for folding machines. 5,334,126, Cl. 493-22.000.
Monsanto Company: *See*—
Udipi, Kishore, 5,334,635, Cl. 524-377.000.
Yu, Jing-Peir, 5,334,452, Cl. 428-397.000.
Montibert, Pierre: *See*—
Bassi, Dario; and Montibert, Pierre, 5,333,652, Cl. 139-455.000.
Moore Business Forms, Inc.: *See*—
Baxter, George, 5,334,571, Cl. 503-226.000.
Longtin, Andre G., 5,334,431, Cl. 428-40.000.
Moore, Daniel D., Jr.: *See*—
Simms, James R.; Simms, Charles G.; and Moore, Daniel D., Jr., 5,334,974, Cl. 340-990.000.
Moore, Jeffrey S.: *See*—
Martin, David C.; Moore, Jeffrey S.; Markoski, Larry J.; and Walker, Kenneth A., 5,334,752, Cl. 560-360.000.
Moore, Ronald J.: *See*—
Kindl, Thomas E.; Moore, Ronald J.; and Rickerl, Paul G., 5,334,487, Cl. 430-312.000.
Moore, Steven R.: *See*—
Kluger, Jacob N.; Martin, Michael J.; Moore, Steven R.; and Sokac, Russell J., 5,335,043, Cl. 355-206.000.
More, Henry S.: *See*—
Vaughan, Susanne F.; and More, Henry S., 5,333,686, Cl. 166-250.000.
Moreira, Julio C.: *See*—
Lorenz, Robert D.; Hung, Kam T.; Lipo, Thomas A.; and Moreira, Julio C., 5,334,923, Cl. 318-805.000.
Moresco, Larry L.: *See*—
Love, David G.; Moresco, Larry L.; Chou, William T.; Horine, David A.; Wong, Connie M.; and Beilin, Solomon I., 5,334,804, Cl. 174-267.000.
Morgan, Stuart: *See*—
LoCicero, Rai-Ann; Morgan, Stuart; Romm, Michael; Bantly, Matthew; and Mangan, Edward O., 5,333,744, Cl. 211-87.000.
Morganti, Carl R.; Singh, Gitanjli; and Sweet, Benjamin D., to Ford Motor Company. Energy-on-demand ignition coil. 5,333,593, Cl. 123-637.000.
Mori, Hiroto: *See*—
Takaki, Akira; Mori, Hiroto; and Hasegawa, Toshihiko, 5,334,660, Cl. 525-84.000.
Mori, Kinji: *See*—
Orimo, Masayuki; Mori, Kinji; Suzuki, Yasuo; Koizumi, Minoru; Kawano, Katsumi; Nakai, Kozo; and Kasashima, Hirokazu, 5,335,324, Cl. 395-200.000.
Mori, Masatomo, to Akebono Brake Industry Co., Ltd.; and Akebono Research and Development Centre Ltd. Brake apparatus for a vehicle. 5,333,706, Cl. 188-156.000.
Mori, Shinichi: *See*—
Kageyama, Hitoshi; Yamada, Osamu; and Mori, Shinichi, 5,335,095, Cl. 358-500.000.
Mori, Takeshi: *See*—
Komiya, Yasuhiro; Mori, Takeshi; and Nagasaki, Tatsuo, 5,335,075, Cl. 348-298.000.
Mori, Toshiaki: *See*—
Takahashi, Kikuo; Kagimasa, Toyohiko; and Mori, Toshiaki, 5,335,334, Cl. 395-425.000.
Morigaki, Masakazu: *See*—
Fujita, Yoshihiro; Morigaki, Masakazu; Kawamoto, Hiroshi; Nakamura, Shigeru; Yagihara, Morio; and Watanabe, Hiroyuki, 5,334,493, Cl. 430-463.000.
Morikawa, Shinsuke; Yoshitake, Masaru; and Tatematsu, Shin, to AG Technology Co., Ltd. Method for producing a hydrogen-containing chloromethane. 5,334,782, Cl. 570-101.000.
Morinaka, Kouji, to Funai Electric Co., Ltd. Cleaning roller for head cylinder of magnetic tape unit. 5,335,128, Cl. 360-128.000.
Morino, Makoto: *See*—
Ishii, Kyoko; Miyatake, Shinichi; Takahashi, Tsutomu; Udo, Shinji; Yoshioka, Hiroshi; Takano, Mitsuhiro; and Morino, Makoto, 5,335,203, Cl. 365-226.000.
Morioka, Yasuji: *See*—
Yamaguchi, Hirohisa; and Morioka, Yasuji, 5,335,081, Cl. 358-342.000.
Morioka, Yoshihiro: *See*—
Nakatsu, Etsuto; Morioka, Yoshihiro; and Kobayashi, Masaaki, 5,335,125, Cl. 360-10.300.
Morioka, Yuji; Chuta, Masanobu; Iwazaki, Kuniyasu; and Ohta, Kihachiro, to Nippon Densan Corporation. Spindle motor with the stator core supported by a resin member. 5,334,895, Cl. 310-67.00R.
Moriya, Netzer: *See*—
Dautremont-Smith, William C.; Feldman, Leonard C.; Kalish, Rafael; Katz, Avishay; Miller, Barry; and Moriya, Netzer, 5,334,306, Cl. 205-131.000.
Moriya, Toshiaki: *See*—
Uchida, Yuji; Yoshida, Yoshio; Kaneda, Toshikazu; Moriya, Toshiaki; and Kumazawa, Tsutomu, 5,334,670, Cl. 525-440.000.
Morley, Richard A.: *See*—
Jorstad, John L.; Morley, Richard A.; Overbagh, William H.; and Steele, George W., 5,333,668, Cl. 164-100.000.
Moroishi, Yutaka: *See*—
Ando, Masahiko; Yamanaka, Takeshi; Moroishi, Yutaka; Tokunaga, Yasuyuki; and Kitamura, Yoshinao, 5,334,686, Cl. 526-307.700.
Morooka, Yasuo: *See*—
Takahashi, Kazunori; Hamada, Nobuhiro; Takato, Masao; Baba, Kenji; Morooka, Yasuo; Kawakami, Junzo; Yokota, Takayoshi; and Kiyokawa, Ryuji, 5,335,180, Cl. 364-436.000.
Moroski, Mark T., to Abbott Laboratories. Dye management system including an administration set with an in-line burette. 5,334,170, Cl. 604-80.000.
Morris, Bernard L., to AT&T Bell Laboratories. Automatic control of buffer speed. 5,334,885, Cl. 307-443.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Morrow, Robert E., to Medical Discoveries, Inc. Electrically hydrolyzed salines as in vivo microbicides for treatment of cardiomyopathy and multiple sclerosis. 5,334,383, Cl. 424-94.400.

Morse, Brenda S.; and Shanbrom, Edward, to Cryolife, Inc. Preparation of bone for transplantation. 5,333,626, Cl. 128-898.000.

Morton, Douglas R.: *See*—
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; and Wallach, Donald P., deceased, 5,334,712, Cl. 540-112.000.

Morton International, Inc.: *See*—
Strahl, Paul; and Frakes, Michael D., 5,333,900, Cl. 280-731.000.

Morton, Murray A.: *See*—
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Moseley, John F. Mobile truck freight dock with impact and restraint means. 5,333,340, Cl. 14-72.500.

Motoki, Nobuyuki: *See*—
Yamamoto, Tsutomu; Okada, Minoru; Ishigami, Takakazu; Motoki, Nobuyuki; Fuse, Eiichi; and Hayashi, Masaaki, 5,335,061, Cl. 356-241.000.

Motorola, Inc.: *See*—
Ballantyne, Wayne W.; Ooi, Leng H.; and Hodges, Eugene W., III, 5,335,365, Cl. 455-76.000.
Bishop, Michael R.; and Minasi, David H., 5,335,133, Cl. 361-56.000.
Cizek, Paul J.; and Chrapkowski, Arthur D., 5,335,353, Cl. 455-17.000.
Cota, Marlo E.; and Johnson, Richard L., 5,333,641, Cl. 137-264.000.
Felderman, William A.; McDonald, Daniel J.; and Christensen, Laura A., 5,335,350, Cl. 455-17.000.
Fennell, Robert D.; and Petreye, David R., 5,335,357, Cl. 455-51.200.
Ghaem, Sanjar, 5,335,361, Cl. 455-66.000.
Hartman, Davis H.; Richard, Fred V.; and Lebby, Michael S., 5,335,300, Cl. 385-37.000.
Kolnick, Frank C., 5,335,323, Cl. 395-164.000.
Leding, Lisa M.; and Tischer, John M., 5,334,956, Cl. 333-33.000.
Marko, Paul D.; Patsiokas, Stelios J.; Wadin, Craig P.; and Lobel, Gary S., 5,335,360, Cl. 455-56.100.
Mennitt, Timothy J.; Warren, John P.; and Sloan, James W., 5,334,857, Cl. 257-48.000.
Mijuskovic, Dejan, 5,334,953, Cl. 331-8.000.
Moyer, Curtis D.; Jaskie, James E.; and Legge, Ronald N., 5,334,855, Cl. 257-13.000.
Penunuri, David, 5,334,960, Cl. 333-193.000.
Pfiester, James R.; and Hayden, James D., 5,334,861, Cl. 257-67.000.
Sherburne, Timothy J.; Ness-Cohn, David J.; and Ekl, Randy L., 5,335,358, Cl. 455-53.100.
Tugenberg, Michelle L.; Altschuler, Barry N.; and Hardy, Douglas A., 5,335,281, Cl. 380-48.000.

Motoshio, Akira: *See*—
Takahashi, Hidehiko; Imada, Katsumi; and Motoshio, Akira, 5,334,518, Cl. 435-125.000.

Mott, Philip J.: *See*—
Cole, Edward H., Jr.; and Mott, Philip J., 5,334,111, Cl. 474-214.000.

Mouri, Toyohiko, to Fuji Jukogyo Kabushiki Kaisha. Steering system for a motor vehicle. 5,333,700, Cl. 180-79.100.

Moutafis, Timothy E.; Elton, Richard K.; DuBois, Thomas C.; and MacMore, Bruce N., to C. R. Bard, Inc. High performance plastic coated medical guidewire. 5,333,620, Cl. 128-772.000.

Moving Magnet Technologies SA: *See*—
Oudet, Claude; and Prudham, Daniel, 5,334,893, Cl. 310-38.000.

Moyer, Curtis D.; Jaskie, James E.; and Legge, Ronald N., to Motorola, Inc. Diamond/phosphor polycrystalline led and display. 5,334,855, Cl. 257-13.000.

MPB Technologies Inc.: *See*—
Paquin, Normand; and Ghosh, A. K., 5,335,106, Cl. 359-180.000.

MRGR Plugs, Inc.: *See*—
Reese, Michael R., 5,333,837, Cl. 251-216.000.

MTS Systems Corporation: *See*—
Tellerman, Jacob, 5,334,933, Cl. 324-207.130.

MTU Motoren- Und Turbinen-Union Muenchen GmbH: *See*—
Berger, Johann, 5,333,459, Cl. 60-723.000.

Mucaro, Salvatore: *See*—
Tilbor, Neil; Garr, Anthony R.; Newton, Jean; and Mucaro, Salvatore, 5,334,073, Cl. 446-308.000.

Mueller, Dale A.: *See*—
Colling, George J.; and Mueller, Dale A., 5,334,095, Cl. 464-101.000.

Mueller, Karl F.; and Plankl, Walter L., to Ciba-Geigy Corporation. Fluorine and/or silicone containing poly(alkylene-oxide)-block copolymer hydrogels and contact lenses thereof. 5,334,681, Cl. 526-243.000.

Mueller, Richard A.; and Partis, Richard A., to G. D. Searle & Co. Cyclic phenolic thioethers compounds which are useful in treating allergies and inflammation. 5,334,616, Cl. 514-473.000.

Mueller, Richard A.: *See*—
Khanna, Ish K.; Mueller, Richard A.; and Weier, Richard M., 5,334,717, Cl. 546-116.000.

Mueller, Ulrich: *See*—
Horn, Peter; Mueller, Ulrich; Hoelderich, Wolfgang; Sattler, Ulf; Taddey, Rudolf; and Tintelnot, Dieter, 5,334,620, Cl. 521-51.000.

Mukai, Akihiro, to Teijin Chemicals, Ltd. Emulsion polymerization method for a brominated styrene. 5,334,680, Cl. 526-207.000.

Mukai, Haruo: *See*—
Kamoi, Jyoei; Hayami, Hichiro; Kato, Yuji; Shimoe, Toshio; Abe, Shunji; Kusayanagi, Michio; Mukai, Haruo; and Soumiya, Toshio, 5,335,222, Cl. 370-60.000.

Muller, Bruce R.; Hall, Douglas O.; Sherburne, David G.; and Glanville, Thomas W., to Eastman Kodak Company. Apparatus for processing photosensitive material. 5,335,039, Cl. 354-324.000.

Muller, Louis; and Verhelst, Gabriel, to Imperial Chemical Industries PLC. Process for preparing flexible polyurethane foams. 5,334,689, Cl. 528-67.000.

Mullis, Kary B.; Johnson, Larry; Leath, Richard A.; Wennberg, Timothy J.; Mezei, Louis M.; and Widunas, Joseph T., to Hoffmann-La Roche Inc. Apparatus and method for performing automated amplification of nucleic acid sequences and assays using heating and cooling steps. 5,333,675, Cl. 165-12.000.

Munemasa, Narihiro; Wakamori, Fumio; Masuzaki, Hidefumi; Fujinawa, Masaaki; and Kurosu, Yasuo, to Hitachi, Ltd. Document image filing system having input color mode selecting capability. 5,335,084, Cl. 358-403.000.

Muntean, George L.: *See*—
Gant, Gary L.; Muntean, George L.; and Osborn, Jeffrey C., 5,333,786, Cl. 239-89.000.

Murai, Fumio: *See*—
Wakabayashi, Hiroaki; Nakayama, Yoshinori; Murai, Fumio; and Okazaki, Shinji, 5,334,845, Cl. 250-492.200.

Murakami, Harunori; Baba, Yuji; Urakami, Kanta; Niizaki, Nobuya; Natsume, Hirofumi; and Arisawa, Masato, to Nippon Sheet Glass Co., Ltd.; and Sumitomo Chemical Company, Ltd. Glass antenna for automobile. 5,334,988, Cl. 343-704.000.

Murakami, Shigeo, to Dainippon Screen Mfg. Co., Ltd. Color tone correcting apparatus. 5,335,097, Cl. 358-520.000.

Murakoshi, Toshiichi: *See*—
Takahata, Toshihiro; Kawazoe, Hiroshi; Murakoshi, Toshiichi; and Tokunaga, Masataka, 5,333,800, Cl. 242-7.010.

Muramatsu, Atsushi: *See*—
Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, 5,333,846, Cl. 267-140.140.

Muramatsu, Hiroshi; and Ye, Xuanjing, to Seiko Instruments Inc. Electrochemical measurement system. 5,334,303, Cl. 204-412.000.

Muramatsu, Masanori, to Canon Kabushiki Kaisha. Recording apparatus having plurality of developing units. 5,335,056, Cl. 355-327.000.

Muramatsu, Masayoshi; Nakakuki, Teruo; Kainuma, Seishiro; and Miwa, Taizo, to Nihon Shokuhin Kako Co., Ltd. Production method of branched fructooligosaccharides. 5,334,516, Cl. 435-101.000.

Muramoto, Hidetoshi: *See*—
Katada, Mitsutaka; Muramoto, Hidetoshi; Fuzino, Seizi; Hattori, Tadashi; and Abe, Katsunori, 5,334,870, Cl. 257-371.000.

Murao, Yutaka; and Wada, Tetsuro, to Kabushiki Kaisha Toshiba. Microcomputer using specific instruction bit and mode switch signal for distinguishing and executing different groups of instructions in plural operating modes. 5,335,331, Cl. 395-375.000.

Murata, Hideo: *See*—
Taniguchi, Shigeru; Kawakami, Akira; and Murata, Hideo, 5,334,267, Cl. 148-425.000.

Murata, Kentaro, to Gold Industries Co., Ltd. Linked container for transporting precision devices. 5,333,733, Cl. 206-330.000.

Murata, Mitsuhiro: *See*—
Abe, Koichi; and Murata, Mitsuhiro, 5,334,969, Cl. 340-426.000.

Murata, Yoshiyasu: *See*—
Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, 5,333,501, Cl. 73-592.000.

Murphy, Raymond: *See*—
Kung, Hank F.; and Murphy, Raymond, 5,334,728, Cl. 548-402.000.

Murray, Christopher K.; Ziebarth, Timothy D.; and Beckvermit, Jeffrey T., to Hauser Chemical Research, Inc. Oxidation of cephalomannine with ozone in the presence of taxol. 5,334,732, Cl. 549-510.000.

Murray, Robert J.: *See*—
Schmiesing, Richard J.; and Murray, Robert J., 5,334,720, Cl. 546-208.000.

Murtagh, Daniel S. Feminine urinary device. 5,333,330, Cl. 4-144.300.

Muscato, Robert: *See*—
Appolonia, Jack; Muscato, Robert; and Wittel, George, 5,334,406, Cl. 426-520.000.

Musselman, Susan G.: *See*—
Starner, William E.; and Musselman, Susan G., 5,334,654, Cl. 524-849.000.

Musselmann, Walter: *See*—
Ortner, Herbert; Bahr, Theodor; and Musselmann, Walter, 5,334,285, Cl. 162-4.000.

Muta, Kenji: *See*—
Mitani, Youko; Muta, Kenji; and Umemoto, Mitsuo, 5,334,378, Cl. 424-78.100.

Muto, Takeo; Sase, Masahiro; and Yoshiaki, Kato, to Citizen Watch Co., Ltd. Display device by means of a hand. 5,335,211, Cl. 368-11.000.

Muzeroll, Martin E., to OSRAM Sylvania Inc. Metal halide arc discharge lamp having short arc length. 5,334,906, Cl. 313-25.000.

Myers, Bruce A.; Isenberg, John K.; Coapman, Christine R.; and Blanton, James A., to Delco Electronics Corp. Electrical connector having energy-formed solder stops and methods of making and using the same. 5,334,422, Cl. 427-552.000.

Myers, Fred D.; and Cardew, Marcus St. E., to Swift 943 Ltd T/A Systems Technologies. Electrical connector. 5,334,032, Cl. 439-140.000.

Myers, Wade D.: *See*—
Dennis, Richard K.; Myers, Wade D.; and Riddle, James A., 5,333,375, Cl. 29-827.000.

Nabi, Nuran; Prencipe, Michael; and Gaffar, Abdul, to Colgate Palmolive Company. Antibacterial antiplaque oral composition. 5,334,375, Cl. 424-52.000.

Nachtkamp, Klaus: *See*—
Zwiener, Christian; Rettig, Rainer; Nachtkamp, Klaus; Pedain, Josef; and Arlt, Dieter, 5,334,637, Cl. 524-539.000.

Naegele, Ewald, to Zinser Textilmaschinen GmbH. Method and apparatus for restarting a textile spinning machine winding operation following a yarn break. 5,333,441, Cl. 57-262.000.

Nag, Bishwajit: *See*—
Clark, Brian R.; and Nag, Bishwajit, 5,334,391, Cl. 424-450.000.

Nagahama, Hidenobu: *See*—
Kawanishi, Makoto; and Nagahama, Hidenobu, 5,334,266, Cl. 148-403.000.

Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, to Rohm Co., Ltd. Printing head and printer incorporating the same. 5,335,002, Cl. 346-76.0PH.

Nagamune, Teruyuki: *See*—
Inaba, Hideki; Endo, Isao; Nagamune, Teruyuki; and Tachikawa, Susumu, 5,334,497, Cl. 435-3.000.

Nagane, Hiromichi, to Canon Kabushiki Kaisha. Circuit substrate holding apparatus for a facsimile. 5,335,083, Cl. 358-400.000.

Nagao, Hiroyuki: *See*—
Toki, Hirotaka; Yamamoto, Hiranaga; Wakuda, Osamu; and Nagao, Hiroyuki, 5,333,849, Cl. 271-9.000.

Nagao, Sumiko, Administrator: *See*—
Yamaguchi, Koshiro; Nagao, Yoshiaki, deceased; and Nagao, Sumiko, Administrator, 5,333,959, Cl. 400-208.000.

Nagao, Yoshiaki, deceased: *See*—
Yamaguchi, Koshiro; Nagao, Yoshiaki, deceased; and Nagao, Sumiko, Administrator, 5,333,959, Cl. 400-208.000.

Nagaoka, Kohji: *See*—
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.

Nagaoka, Kozo: *See*—
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.

Nagasaki, Tatsuo: *See*—
Komiya, Yasuhiro; Mori, Takeshi; and Nagasaki, Tatsuo, 5,335,075, Cl. 348-298.000.

Nagasawa, Toru: *See*—
Yamada, Hideaki; and Nagasawa, Toru, 5,334,519, Cl. 435-129.000.

Nagashima, Shingo: *See*—
Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, 5,333,501, Cl. 73-592.000.

Nagata, Yuji; Fukazawa, Toshio; and Mitani, Satoru, to Matsushita Electric Industrial Co., Ltd. Lamination type magneto-resistive head. 5,335,127, Cl. 360-113.000.

Nagatake, Youichi: *See*—
Kitamura, Koichi; Mimura, Hidenori; Yamamoto, Kazuo; Ohta, Yasumitsu; Sai, Kazuyoshi; and Nagatake, Youichi, 5,335,092, Cl. 358-482.000.

Nagatsuka, Osamu: *See*—
Edakubo, Hiroo; Ushiro, Tatsuzo; Nagatsuka, Osamu; and Kobayashi, Junji, 5,335,129, Cl. 360-132.000.

Nagatsuka, Shintaro: *See*—
Fujioka, Yoshiharu; Nagatsuka, Shintaro; and Tsutaki, Shoji, 5,333,372, Cl. 29-603.000.

Nagayama, Yoji; Tadokoro, Shingo; and Tsukada, Tokio, to Central Glass Company. Automotive window glass antenna. 5,334,989, Cl. 343-713.000.

Nagayama, Yoshiharu: *See*—
Matsuo, Akinori; Watanabe, Masashi; Fujimoto, Michio; Wada, Masashi; Nagayama, Yoshiharu; and Naito, Kazuo, 5,335,204, Cl. 365-230.010.

Nagle, Robert E.; and Butler, Andrew G., to Wedge Innovations Incorporated. Inclinometer which is rescalable through the use of multiple angles. 5,335,190, Cl. 364-571.010.

Nagoshi, Shigeyasu: *See*—
Ito, Noriaki; Nagoshi, Shigeyasu; and Yoshimura, Shigeru, 5,334,920, Cl. 318-685.000.

Nagy, Michael E., to International Business Machines Corporation. Data packet format. 5,335,233, Cl. 371-32.000.

Nagy, William J.: *See*—
Adams, Thomas E.; Lee, Kuo-Hua; Nagy, William J.; and Sung, Janmye, 5,334,541, Cl. 437-8.000.

Nahm, James J. W.; and Wyant, Reece E., to Shell Oil Company. Cementing with blast furnace slag using spacer. 5,333,690, Cl. 166-291.000.

NAI Neway, Inc.: *See*—
Galazin, Gregory T., 5,333,645, Cl. 137-627.500.

Nair, Parameswaran B.: *See*—
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Naito, Hideo, to Casio Computer Co., Ltd. Panel having thin film element formed thereon. 5,334,860, Cl. 257-59.000.

Naito, Kazuo: *See*—
Matsuo, Akinori; Watanabe, Masashi; Fujimoto, Michio; Wada, Masashi; Nagayama, Yoshiharu; and Naito, Kazuo, 5,335,204, Cl. 365-230.010.

Naito, Yoshihisa; and Hayashi, Takahiro, to Matsushita Electric Industrial Co., Ltd. Watertight casing for electronic apparatus. 5,334,799, Cl. 174-17.0VA.

Naka, Akihiro; Ito, Shuichi; Akizuki, Shinya; and Saito, Kiyoshi, to Dai-Ichi Kogyo Seiyaku Co., Ltd.; and Nitto Denko Corporation. Polyhydroxy aromatic compounds, epoxy resins derived therefrom and epoxy resin compositions. 5,334,674, Cl. 525-481.000.

Naka, Jun: *See*—
Komori, Kiyotaka; Yamakawa, Seishiro; Yamamoto, Shigeru; Naka, Jun; and Kokubo, Tadashi, 5,334,645, Cl. 524-494.000.

Nakada, Norio; Fukui, Hideo; Hirono, Hatsuo; and Ito, Seishiro, to Yoshida Kogyo K.K. Method for production of colored article of aluminum or aluminum alloy. 5,334,297, Cl. 204-181.200.

Nakagawa, Chihiro, to Olympus Optical Co., Ltd. Image data compressing/coding apparatus. 5,335,016, Cl. 348-405.000.

Nakagawa, Hiroshi, to Shinko Electric Co., Ltd. Rotary pulse motor. 5,334,894, Cl. 310-49.00R.

Nakagawa, Osamu: *See*—
Ueda, Tetsuya; and Nakagawa, Osamu, 5,334,872, Cl. 257-675.000.

Nakagawa, Shigeru: *See*—
Matsui, Kazumi; Matsuoka, Kouichi; and Nakagawa, Shigeru, 5,333,553, Cl. 104-290.000.

Nakagawa, Yoshitomo: *See*—
Ito, Tetsumasa; and Nakagawa, Yoshitomo, 5,334,834, Cl. 250-288.000.

Nakai, Kozo: *See*—
Orimo, Masayuki; Mori, Kinji; Suzuki, Yasuo; Koizumi, Minoru; Kawano, Katsumi; Nakai, Kozo; and Kasashima, Hirokazu, 5,335,324, Cl. 395-200.000.

Nakai, Shoji: *See*—
Kubo, Susumu; Nakai, Shoji; and Tsunoda, Masumi, 5,334,807, Cl. 187-126.000.

Nakajima, Akio: *See*—
Yamada, Hirokazu; Nakajima, Akio; and Tsuboi, Toshio, 5,335,090, Cl. 358-473.000.

Nakajima, Ikuo: *See*—
Osano, Nagato; Imai, Yukihiro; Hosaka, Akihito; Nakajima, Ikuo; Nishiguchi, Toshiji; and Horie, Akira, 5,334,258, Cl. 134-42.000.

Nakajima, Shigeo: *See*—
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.

Nakajima, Shigeru: *See*—
Kojiri, Katsuhisa; Nakajima, Shigeru; Fuse, Aisaku; and Suda, Hiroyuki, 5,334,613, Cl. 514-452.000.

Nakajima, Yoshihisa: *See*—
Sano, Kinjiro; Imanishi, Wataru; Nakajima, Yoshihisa; and Kinoshita, Masaki, 5,334,086, Cl. 445-62.000.

Nakakuki, Teruo: *See*—
Muramatsu, Masayoshi; Nakakuki, Teruo; Kainuma, Seishiro; and Miwa, Taizo, 5,334,516, Cl. 435-101.000.

Nakama Syokai Company: *See*—
Takita, Yusaku; Ishihara, Tatsumi; Mizuhara, Yukako; and Noguchi, Masao, 5,334,565, Cl. 501-95.000.

Nakamachi, Kazuo: *See*—
Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, 5,333,501, Cl. 73-592.000.

Nakamatu, Tuyoshi: *See*—
Usui, Naoki; Yamamoto, Yoko; and Nakamatu, Tuyoshi, 5,334,510, Cl. 435-66.000.

Nakamori, Tomohiro; Okazawa, Kazuhiko; Tachibana, Tatsuto; Kusano, Akihisa; Sato, Kaoru; and Itoh, Toshiyuki, to Canon Kabushiki Kaisha. Surface temperature control device for maintaining a constant temperature by control of current supply. 5,334,817, Cl. 219-492.000.

Nakamura, Asako: *See*—
Tsunehiro, Naoshi; Sekiguchi, Akihiko; and Nakamura, Asako, 5,335,263, Cl. 379-58.000.

Nakamura, Atsushi: *See*—
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.

Nakamura, Hiromitsu: *See*—
Masuda, Hitoshi; Suzuki, Masatakatsu; Ohno, Masataka; Kobayashi, Kazuyoshi; and Nakamura, Hiromitsu, 5,335,274, Cl. 379-433.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Nakamura, Kunio, to NEC Corporation. Method of manufacturing a semiconductor memory having an increased cell capacitance in a restricted cell area. 5,334,547, Cl. 437-52.000.

Nakamura, Makoto: *See*—
Hara, Seinosuke; Yamada, Yoshiko; and Nakamura, Makoto, 5,333,579, Cl. 123-90.170.

Nakamura, Masahide, to Koyo Seiko Co., Ltd. Safety system for vehicles. 5,335,176, Cl. 364-424.050.

Nakamura, Masakazu: *See*—
Oguchi, Takahisa; Sugimoto, Kenichi; Aihara, Shin; Itoh, Hisato; Matsumoto, Mansuke; Masaoka, Toshihiro; and Nakamura, Masakazu, 5,334,714, Cl. 540-143.000.

Nakamura, Morio: *See*—
Yamamoto, Takushi; Hara, Hiroari; Maeda, Nobuhiro; and Nakamura, Morio, 5,334,679, Cl. 526-200.000.

Nakamura, Shigeru: *See*—
Fujita, Yoshihiro; Morigaki, Masakazu; Kawamoto, Hiroshi; Nakamura, Shigeru; Yagihara, Morio; and Watanabe, Hiroyuki, 5,334,493, Cl. 430-463.000.

Nakamura, Shuji, to Nichia Kagaky Kogyo K.K. Method of vapor-growing semiconductor crystal and apparatus for vapor-growing the same. 5,334,277, Cl. 117-102.000.

Nakamura, Takemichi: *See*—
Kohama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, 5,334,587, Cl. 514-99.000.

Nakamura, Takeo: *See*—
Iwai, Hirohisa; Shiroyama, Kaisuke; Matsuda, Akira; Nakamura, Takeo; and Shirakawa, Ryotomo, 5,334,294, Cl. 204-129.550.

Nakamura, Toru: *See*—
Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,334,468, Cl. 430-7.000.

Nakano, Eiichi: *See*—
Harada, Yasuhiro; Nakano, Eiichi; Tatsumi, Hiroki; and Umezu, Motoaki, 5,334,511, Cl. 435-69.400.
Sando, Yoshiteru; Nakano, Eiichi; Ishidoshiro, Hiroshi; and Sando, Koji, 5,334,224, Cl. 8-108.100.

Nakano, Mitsuhiro; and Kai, Junichi, to Fujitsu Limited; and Fujitsu VLSI Limited. Correction of charged particle beam exposure deflection by detecting stage position and a position detection mark. 5,334,846, Cl. 250-492.200.

Nakano, Yukie: *See*—
Nomura, Takeshi; Nakano, Yukie; Satoh, Akira; and Arashi, Tomohiro, 5,335,139, Cl. 361-4.000.

Nakaoka, Yoshihiko: *See*—
Minami, Hiroshi; Nakaoka, Yoshihiko; and Yamamoto, Tsuneyoshi, 5,334,419, Cl. 427-386.000.

Nakashima, Masazumi, to Kabushiki Kaisha Kouransha. Boron nitride sinter and process for its production. 5,334,339, Cl. 264-65.000.

Nakata, Akira: *See*—
Yamamoto, Naoki; Yanagase, Akira; Nakata, Akira; Koshirai, Atsunori; and Yanai, Toshimi, 5,334,656, Cl. 525-63.000.

Nakata, Toshihiko: *See*—
Yamaguchi, Hiroshi; Noguchi, Minori; Kohno, Makiko; and Nakata, Toshihiko, 5,333,495, Cl. 73-105.000.

Nakatsu, Etsuto; Morioka, Yoshihiro; and Kobayashi, Masaaki, to Matsushita Electric Industrial Co., Ltd. Video signal magnetic recording and reproducing apparatus. 5,335,125, Cl. 360-10.300.

Nakatsuma, Takuji, to Canon Kabushiki Kaisha. Facsimile apparatus. 5,335,085, Cl. 358-404.000.

Nakaya, Hiroaki: *See*—
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.

Nakaya, Minoru: *See*—
Miyaoh, Yoshio; and Nakaya, Minoru, 5,333,884, Cl. 277-235.00B.

Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, to Canon Kabushiki Kaisha. Probe drive mechanism and electronic device which uses the same. 5,334,835, Cl. 250-306.000.

Nakayama, Shigeru: *See*—
Matsui, Shigetomo; Matsumura, Hiroyuki; Ikemoto, Yoshikazu; Kumon, Yasuhiro; Nakayama, Shigeru; Tsujita, Keiji; Fukunaga, Keisuke; Kuribayashi, Nobuhiro; and Wakana, Kenichi, 5,334,561, Cl. 501-87.000.

Nakayama, Yoshinori; and Okazaki, Shinji, to Hitachi, Ltd. Electron beam lithography system and method. 5,334,282, Cl. 156-643.000.

Nakayama, Yoshinori: *See*—
Wakabayashi, Hiroaki; Nakayama, Yoshinori; Murai, Fumio; and Okazaki, Shinji, 5,334,845, Cl. 250-492.200.

Nakazato, Saburou, to Canon Kabushiki Kaisha. Image signal recording apparatus or reproducing apparatus. 5,335,078, Cl. 358-330.000.

Nakazawa, Kiyoshi: *See*—
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.

Nalco Chemical Company: *See*—
Kisalus, John C., 5,334,569, Cl. 502-167.000.

Nam, Joo H., to SamSung Electronics Co., Ltd. Device and method for displaying a residual amount of cartridge ribbon for a color video printer. 5,333,960, Cl. 400-249.000.

Namba, Keizo: *See*—
Nosetani, Tadashi; Namba, Keizo; Sano, Hiromichi; Yonemitsu, Makoto; Kumagai, Masaki; and Tsunekawa, Masanori, 5,334,814, Cl. 219-119.000.

Namekawa, Makoto, to Alpine Electronics, Inc. Method and apparatus for monitoring sound within a vehicle by telephone. 5,335,264, Cl. 379-58.000.

Namikoshi, Hajime: *See*—
Shibata, Tohru; Namikoshi, Hajime; and Okamoto, Ichiro, 5,334,311, Cl. 210-198.200.

Nanami, Masayoshi: *See*—
Inoue, Seiji; and Nanami, Masayoshi, 5,334,063, Cl. 440-88.000.

Nanba, Katsuyuki: *See*—
Tanaka, Yoshito; Shintani, Dai; Naruto, Hirokazu; Nanba, Katsuyuki; Taniguchi, Nobuyuki; Ishibe, Hiroshi; and Tanaka, Yoshihiro, 5,335,072, Cl. 348-232.000.

Narayanan, Kolazi S.: *See*—
Plotkin, Jeffrey S.; Narayanan, Kolazi S.; and Taylor, Paul D., 5,334,772, Cl. 568-609.000

Nardella, Paul C., to American Cardiac Ablation Co., Inc. Fluid cooled ablation catheter. 5,334,193, Cl. 606-41.000.

Nartron Corporation: *See*—
Washeleski, John; Wheeler, Mark R.; and Boisvert, Mario, 5,334,876, Cl. 307-10.100.

Naruto, Hirokazu: *See*—
Tanaka, Yoshito; Shintani, Dai; Naruto, Hirokazu; Nanba, Katsuyuki; Taniguchi, Nobuyuki; Ishibe, Hiroshi; and Tanaka, Yoshihiro, 5,335,072, Cl. 348-232.000.

Nashimoto, Kiyoshi, to Anelva Corporation. Method of and apparatus for controlling temperature in the processing of a substrate. 5,334,251, Cl. 118-725.000.

Nasu, Toshiyuki; and Kai, Mutsunori, to Ishikawajima-Harima Heavy Industries Co., Ltd. Press roll in a paper machine. 5,334,288, Cl. 162-358.100.

National Bancard Corporation: *See*—
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

National Forge Company: *See*—
Khare, Ashok K.; and Scott, Michael, 5,334,269, Cl. 148-638.000.

National Semiconductor: *See*—
Ting, Sai L., 5,334,882, Cl. 307-270.000.

National Semiconductor Corporation: *See*—
Brilliott, Al W., 5,334,030, Cl. 439-75.000.
Fong, Edison; and Nguyen, Nghiem, 5,334,948, Cl. 330-253.000.

Natsume, Hirofumi: *See*—
Murakami, Harunori; Baba, Yuji; Urakami, Kanta; Niizaki, Nobuya; Natsume, Hirofumi; and Arisawa, Masato, 5,334,988, Cl. 343-704.000.

Natsuume, Tadao: *See*—
Hani, Tsutomu; Takahashi, Nobukazu; Kohara, Teiji; and Natsume, Tadao, 5,334,424, Cl. 428-1.000.

Navistar International Transportation Corp.: *See*—
Cagle, Billy J., 5,333,581, Cl. 123-193.500.

Nawa, Hiroshi: *See*—
Satoh, Munetaka; Ito, Sadao; and Nawa, Hiroshi, 5,333,932, Cl. 297-362.000.

Naylor, Elizabeth M.: *See*—
Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., 5,334,598, Cl. 514-303.000.

NCR Corporation: *See*—
Crooks, John F.; and Protheroe, Robert L., 5,335,230, Cl. 371-15.100.
Maddox, Craig E., 5,334,825, Cl. 235-437.000.

Nebon, Jean-Pierre: *See*—
Bur, Marc; and Nebon, Jean-Pierre, 5,334,808, Cl. 200-50.0AA.

NEC Corporation: *See*—
Hatakeyama, Naoto, 5,334,979, Cl. 341-138.000.
Homma, Tetsuya, 5,334,552, Cl. 437-195.000.
Inoi, Takayuki, 5,334,902, Cl. 310-344.000.
Kato, Tadaharu, 5,334,977, Cl. 341-76.000.
Kawai, Hidemasa, 5,334,909, Cl. 315-5.380.
Komatsu, Keiro, 5,334,551, Cl. 437-105.000.
Kono, Shinichi, 5,335,348, Cl. 455-192.200.
Kurashima, Yasumi, 5,334,887, Cl. 307-455.000.
Masuda, Hitoshi; Suzuki, Masatakatsu; Ohno, Masataka; Kobayashi, Kazuyoshi; and Nakamura, Hiromitsu, 5,335,274, Cl. 379-433.000.
Mizuno, Tsukasa, 5,333,676, Cl. 165-13.000.
Nakamura, Kunio, 5,334,547, Cl. 437-52.000.
Ohkawa, Masayoshi; and Hayashi, Fumihiko, 5,334,863, Cl. 257-69.000.
Sawada, Akira, 5,335,021, Cl. 348-664.000.
Sone, Kazuya, 5,334,949, Cl. 330-253.000.
Suzuki, Toshio; and Itoh, Chikashi, 5,335,232, Cl. 371-20.400.
Tamura, Yoshiharu, 5,335,368, Cl. 455-90.000.
Tsujimoto, Ichiro; and Fujimoto, Yoshiyuki, 5,335,359, Cl. 455-52.300.

Neel, Jean M. L.; Nguyen, Quang T.; and Bruschke, Hartmut, to Deutsche Carbone AG. Composition membrane for separating water from fluids containing organic components by means of pervaporation. 5,334,314, Cl. 210-640.000.

Neer, Jay H.: *See*—
Davidge, Ronald V.; McClurg, Todd A.; Neer, Jay H.; Nelson, Richard J.; and Noschese, Rocco J., 5,334,038, Cl. 439-267.000.

Neff, Robert E.: *See*—
Pollard, Howard E.; Neff, Robert E.; and Ajluni, Cheryl J., 5,334,844, Cl. 250-330.000.

Negoro, Masayuki, to Rohm Co., Ltd. Chip network-type resistor array. 5,334,968, Cl. 338-320.000.

Negoto, Hidenori: *See*—
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.

Nehren, William C.: *See*—
Anastase, Constantin; Daily, Jay H.; and Nehren, William C., 5,333,338, Cl. 8-158.000.

Neilan, James P.; and Gosciniak, Donald J., to Zeneca Inc. Method for accelerating oxime production. 5,334,762, Cl. 564-259.000.

Nelson, Carl T.: *See*—
Dobkin, Robert C.; Nelson, Carl T.; and O'Neill, Dennis P., 5,334,928, Cl. 323-280.000.

Nelson, Monte G. Illuminated siphon. 5,333,639, Cl. 137-150.000.

Nelson, Richard J.: *See*—
Davidge, Ronald V.; McClurg, Todd A.; Neer, Jay H.; Nelson, Richard J.; and Noschese, Rocco J., 5,334,038, Cl. 439-267.000.

Nelson, Terence J.: *See*—
Braun, David A.; Nelson, Terence J.; and Smoot, Lanny S., 5,335,022, Cl. 348-744.000.

Nerenberg, Ron. Gasket for a pipe joint. 5,333,919, Cl. 285-363.000.

Neri, Armando: *See*—
Turra, Mario; Cesari, Verter; and Neri, Armando, 5,333,988, Cl. 414-795.800.

Ness-Cohn, David J.: *See*—
Sherburne, Timothy J.; Ness-Cohn, David J.; and Ekl, Randy L., 5,335,358, Cl. 455-53.100.

Ness, Jeremy N.: *See*—
Behan, John M.; Ness, Jeremy N.; Perring, Keith D.; and Smith, William M., 5,334,581, Cl. 512-2.000.

Neu, Dan: *See*—
Rubinsky, Boris; Onik, Gary; Finkelstein, J. J.; Neu, Dan; and Jones, Steve, 5,334,181, Cl. 606-22.000.

Neuner, Andreas: *See*—
Schauer, Friedrich; and Neuner, Andreas, 5,334,023, Cl. 439-164.000.

New York University: *See*—
Paradis, Norman A., 5,334,142, Cl. 604-53.000.

Newacheck, Richard L.; Lamb, Ivan E.; and Tsukimura, R. R., to Aerotest Operations. Neutron detector and method. 5,334,840, Cl. 250-483.100.

Newby, Nicki A.: *See*—
Craelius, William; and Newby, Nicki A., 5,333,615, Cl. 128-696.000.

Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Lesher, H. Daniel, to Lanxide Technology Company, LP. Composite ceramic articles. 5,334,562, Cl. 501-88.000.

Newman, David L.; Kiernicki, Leopold; Schofield, Philip; and McGinley, James W., to Methode Electronics, Inc. Fiber optic connector with sliding key. 5,335,301, Cl. 385-75.000.

Newport News Shipbuilding and Dry Dock Company: *See*—
Stallard, Clinton W., III, 5,333,913, Cl. 285-48.000.

Newton, Jean: *See*—
Tilbor, Neil; Garr, Anthony R.; Newton, Jean; and Mucaro, Salvatore, 5,334,073, Cl. 446-308.000.

Nexus Telecommunication Systems, Ltd.: *See*—
Yokev, Hanoch; and Harel, Haim, 5,335,246, Cl. 375-1.000.

Ngan, Danny Y.: *See*—
Graiff, Leonard B.; Ngan, Danny Y.; Visser, Benton E.; and Webster, Greg E., 5,334,308, Cl. 208-299.000.

NGK Spark Plug Company Limited: *See*—
Iio, Satoshi; Watanabe, Masakazu; Ito, Toshimichi; and Tsubokawa, Masaya, 5,334,453, Cl. 428-408.000.
Okada, Kohji; Ando, Minato; Tokumoto, Jun-ichi; and Katoh, Takashi, 5,334,305, Cl. 204-435.000.

Ngo, Catherine, to Hughes Aircraft Company. Surface treatment of indium phosphide utilizing chemical roughening of the surface. 5,334,284, Cl. 156-656.000.

Nguyen, Nghiem: *See*—
Fong, Edison; and Nguyen, Nghiem, 5,334,948, Cl. 330-253.000.

Nguyen, Quang T.: *See*—
Neel, Jean M. L.; Nguyen, Quang T.; and Bruschke, Hartmut, 5,334,314, Cl. 210-640.000.

Nguyen, Tin A.: *See*—
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, 5,335,347, Cl. 395-650.000.

Nguyen, Uoc H.; Whang, Lipson; and Apostol, George, to Xerox Corporation. Multichannel FIFO device channel sequencer. 5,335,326, Cl. 395-250.000.

Nichia Kagaky Kogyo K.K.: *See*—
Nakamura, Shuji, 5,334,277, Cl. 117-102.000.

Nicholas, David A.: *See*—
Scott, Ian M.; and Nicholas, David A., 5,334,196, Cl. 606-138.000.

Nichols, Michael P.; and Dunn, Philip, to No No, Inc. Golf club brush for woods and irons. 5,333,343, Cl. 15-106.000.

Nicholson, James E.: *See*—
Hart, Rickey D.; Winters, Richard M.; Rice, John T.; and Nicholson, James E., 5,334,198, Cl. 606-52.000.

Nickerson, David C.; and Parker, Gregory, to Rubb, Inc. Tension membrane structure wrinkle elimination. 5,333,425, Cl. 52-222.000.

Nidek Co., Ltd.: *See*—
Matsuyama, Yoshinori, 5,333,412, Cl. 51-165.710.

Niedenbrueck, Matthias; and Patsch, Manfred, to BASF Aktiengesellschaft. Vat dyes. 5,334,734, Cl. 552-278.000.

Niedge, Brian L. Wind powered music machine. 5,334,797, Cl. 84-95.100.

Nielsen, Jorgen F.: *See*—
Jepsen, Erik L.; and Nielsen, Jorgen F., 5,333,630, Cl. 134-104.100.

Nielsen, Paul H., to Vickers Incorporated. Temperature compensated electrical sensor system for measuring ferrous particles in a fluid using a series resonant oscillator and microprocessor. 5,334,932, Cl. 324-204.000.

Nihon Junyaku Co.: *See*—
Ishikawa, Mitsuo; and Watarai, Shigeaki, 5,334,430, Cl. 428-40.000.

Nihon Seiko Kabushiki Kaisha: *See*—
Tatara, Yudai; Jufuku, Yasunobu; Machida, Hisashi; and Ito, Hiroyuki, 5,334,097, Cl. 476-8.000.

Nihon Shokuhin Kako Co., Ltd.: *See*—
Muramatsu, Masayoshi; Nakakuki, Teruo; Kainuma, Seishiro; and Miwa, Taizo, 5,334,516, Cl. 435-101.000.

Niizaki, Nobuya: *See*—
Murakami, Harunori; Baba, Yuji; Urakami, Kanta; Niizaki, Nobuya; Natsume, Hirofumi; and Arisawa, Masato, 5,334,988, Cl. 343-704.000.

Nikaido, Masaya, to Jidosha Kiki Co., Ltd. Flow control valve unit. 5,333,454, Cl. 60-459.000.

Niki, Toru, to Canon Kabushiki Kaisha. Image processing for pattern extraction. 5,335,294, Cl. 382-22.000.

Nikon Corporation: *See*—
Imafuji, Kazuharu; Terui, Nobuhiko; and Katayama, Akira, 5,335,042, Cl. 354-430.000.
Shiraishi, Naomasa, 5,335,044, Cl. 355-53.000.

Nilz, Claudia: *See*—
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,334,287, Cl. 162-175.000.

Nimura, Hitoshi: *See*—
Tomida, Masayuki; Nimura, Hitoshi; and Aritomi, Mitsutoshi, 5,334,664, Cl. 525-289.000.

NiOptics Corporation: *See*—
Winston, Roland, 5,335,152, Cl. 362-217.000.

Nippon Conlux Co., Ltd.: *See*—
Onodera, Akira; and Yamazaki, Koichi, 5,334,930, Cl. 324-103.00P.
Watabe, Masayuki; Maruyama, Yoshinori; and Ono, Takashi, 5,333,714, Cl. 194-206.000.

Nippon Densan Corporation: *See*—
Morioka, Yuji; Chuta, Masanobu; Iwazaki, Kuniyasu; and Ohta, Kihachiro, 5,334,895, Cl. 310-67.00R.

Nippon Electric Glass Co., Ltd.: *See*—
Komori, Kiyotaka; Yamakawa, Seishiro; Yamamoto, Shigeru; Naka, Jun; and Kokubo, Tadashi, 5,334,645, Cl. 524-494.000.

Nippon Mektron, Limited: *See*—
Yamamoto, Yuichi; and Tatsu, Haruyoshi, 5,334,667, Cl. 525-370.000.

Nippon Oil Co., Ltd.: *See*—
Ohno, Hideyuki, 5,334,124, Cl. 492-50.000.
Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,334,468, Cl. 430-7.000.

Nippon Sanso Corporation: *See*—
Sekiyama, Yasushi; Mizukami, Yuichi; and Yamamoto, Tessei, 5,334,373, Cl. 424-40.000.

Nippon Sheet Glass Co., Ltd.: *See*—
Murakami, Harunori; Baba, Yuji; Urakami, Kanta; Niizaki, Nobuya; Natsume, Hirofumi; and Arisawa, Masato, 5,334,988, Cl. 343-704.000.

Nippon Steel Corporation: *See*—
Anzai, Kenji, 5,335,196, Cl. 361-149.000.
Kitamura, Koichi; Mimura, Hidenori; Yamamoto, Kazuo; Ohta, Yasumitsu; Sai, Kazuyoshi; and Nagatake, Youichi, 5,335,092, Cl. 358-482.000.
Oshiba, Hirokazu, 5,335,192, Cl. 364-708.100.

Nippon Steel Semiconductor Corp.: *See*—
Hardee, Kim C., 5,334,890, Cl. 307-530.000.

Nippon Zeon Co., Ltd.: *See*—
Hani, Tsutomu; Takahashi, Nobukazu; Kohara, Teiji; and Natsume, Tadao, 5,334,424, Cl. 428-1.000.
Kawanaka, Takafumi; Ohishi, Takeshi; and Shimizu, Masahiro, 5,334,683, Cl. 526-273.000.
Yagishita, Shigelu, 5,334,666, Cl. 525-327.300.

Nippondenso Co., Ltd.: *See*—
Kamio, Shigeru; and Sakita, Katsuya, 5,333,584, Cl. 123-399.000.
Katada, Mitsutaka; Muramoto, Hidetoshi; Fuzino, Seizi; Hattori, Tadashi; and Abe, Katsunori, 5,334,870, Cl. 257-371.000.
Shinojima, Masaaki, 5,333,577, Cl. 123-90.150.

Nishi, Hironobu; and Terada, Kazuo, to Tokyo Electron Kabushiki Kaisha; and Tokyo Electron Tohoku Kab. Kaisha. Treatment object supporting device. 5,334,257, Cl. 118-500.000.

Nishi, Kunihiko: *See*—
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji;

VOL 1165 ISS 1 AG 2 1994 UMI

Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.
Nishi, Yasuhiko: *See*—
Nishiura, Yozo; and Nishi, Yasuhiko, 5,335,064, Cl. 356-350.000.
Nishiguchi, Toshiji: *See*—
Osano, Nagato; Imai, Yukihiro; Hosaka, Akihito; Nakajima, Ikuo; Nishiguchi, Toshiji; and Horie, Akira, 5,334,258, Cl. 134-42.000.
Nishikawa, Yasuo: *See*—
Ishida, Toshio; Nishikawa, Yasuo; and Yasunaga, Tadashi, 5,334,413, Cl. 427-130.000.
Nishimori, Kadotari: *See*—
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.
Nishimura, Junichi: *See*—
Tsutsumi, Yasuhiro; and Nishimura, Junichi, 5,335,314, Cl. 395-3.000.
Nishimura, Shigeki: *See*—
Sugimoto, Tadashi; Imuro, Yoshihiro; Nishimura, Shigeki; and Arimoto, Tatsuya, 5,334,972, Cl. 340-556.000.
Nishimura, Susumu: *See*—
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.
Nishimura, Toshinori: *See*—
Saito, Shinkichi; Asabuki, Hideyo; Onozato, Atsushi; Nishimura, Toshinori; Kawada, Kazuo; and Yamamoto, Shinji, 5,333,860, Cl. 273-77.00A.
Nishino, Hiroyuki: *See*—
Ito, Yasuo; Kato, Hideo; Yasuda, Shingo; Kado, Noriyuki; Iwasaki, Nobuhiko; Nishino, Hiroyuki; and Takeshita, Makoto, 5,334,594, Cl. 514-291.000.
Nishino, Shuzo: *See*—
Tanizawa, Hideichi; Nishino, Shuzo; and Okamura, Takashi, 5,333,982, Cl. 414-279.000.
Nishino, Toshikazu; Hasegawa, Haruhiro; and Kawabe, Ushio, to Hitachi, Ltd. Superconducting device having superconducting weak coupling. 5,334,580, Cl. 505-191.000.
Nishitani, Yukinori: *See*—
Ohta, Kenji; Inui, Tetsuya; Katayama, Hiroyuki; Takahashi, Akira; Hirokane, Junji; Nishitani, Yukinori; Mieda, Michinobu; and Van, Kazuo, 5,335,220, Cl. 369-288.000.
Nishiura, Yozo; and Nishi, Yasuhiko, to Sumitomo Electric Industries, Ltd. Fiber-optic gyroscope for measuring velocity of an object. 5,335,064, Cl. 356-350.000.
Nishiwaki, Toshihiro, to Obara Corporation. Method of and apparatus for dressing tips for welding machines. 5,333,975, Cl. 409-132.000.
Nishiyama, Akihide: *See*—
Takagi, Hisamitsu; Nishiyama, Akihide; and Tomura, Masashi, 5,335,273, Cl. 379-433.000.
Nishiyama, Itsuo: *See*—
Kishima, Yoshio; and Nishiyama, Itsuo, 5,333,494, Cl. 73-104.000.
Nishizawa, Yoshinori: *See*—
Ogawa, Masahiko; Tagami, Hidetoshi; Yoshihara, Toru; Kawase, Jiro; Kiyomine, Akira; Tamura, Tadashi; Nishizawa, Yoshinori; and Matsunaga, Ken-ichi, 5,334,225, Cl. 8-408.000.
Nissan Motor Co., Ltd.: *See*—
Hara, Seinosuke; Yamada, Yosihiko; and Nakamura, Makoto, 5,333,579, Cl. 123-90.170.
Imaizumi, Katsuhiro, 5,334,926, Cl. 320-15.000.
Iwao, Keijiro, 5,334,096, Cl. 464-146.000.
Yoshioka, Shigeki, 5,333,455, Cl. 60-533.000.
Nissei Plastic Industrial Co., Ltd.: *See*—
Miyairi, Kazuki; and Iijima, Akira, 5,333,369, Cl. 29-405.000.
Nisshinbo Industries Inc.: *See*—
Fukuyo, Kei; and Kawaishi, Shintaro, 5,333,836, Cl. 251-129.150.
Nissho Corporation: *See*—
Inoue, Yoshifumi; and Yoshioka, Hiroshi, 5,334,188, Cl. 604-283.000.
Nitrocarbono S.A.: *See*—
Ember, George; De Castro Netro, Edilberto A.; and De Lacerda, Rogerio F., 5,334,771, Cl. 568-573.000.
Nitto Denko Corporation: *See*—
Ando, Masahiko; Yamanaka, Takeshi; Moroishi, Yutaka; Tokunaga, Yasuyuki; and Kitamura, Yoshinao, 5,334,686, Cl. 526-307.700.
Kitamura, Yoshinao; Yamashita, Shinkiti; Tokunaga, Yasuyuki; Ando, Masahiko; and Yamanaka, Takeshi, 5,334,447, Cl. 428-317.300.
Naka, Akihiro; Ito, Shuichi; Akizuki, Shinya; and Saito, Kiyoshi, 5,334,674, Cl. 525-481.000.
Nitto Kagaku Kogyo Kabushiki Kaisha: *See*—
Yamada, Hideaki; and Nagasawa, Toru, 5,334,519, Cl. 435-129.000.
Nitto Kohki Co., Ltd.: *See*—
Matsumura, Mitsuma; Mizuno, Kenji; and Hashimoto, Atsuki, 5,333,605, Cl. 601-40.000.
Niznick, Gerald A., to Core-Vent Corporation. Transfer abutment. 5,334,024, Cl. 433-173.000.
NKK Corporation: *See*—
Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, 5,333,501, Cl. 73-592.000.
Sera, Taizo; Mitsuhiro, Takashi; Ozawa, Koichi; and Sakata, Yutaka, 5,333,671, Cl. 164-436.000.
Yamada, Takeo; Kazama, Akira; and Oshige, Takahiko, 5,335,066, Cl. 356-364.000.
No No, Inc.: *See*—
Nichols, Michael P.; and Dunn, Philip, 5,333,343, Cl. 15-106.000.
Noble, Myron C., to PiRod, Inc. Modular antenna pole. 5,333,436, Cl. 52-726.300.
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krabe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., to National Bancard Corporation. Systems and methods for operating data card terminals for transaction chargeback protection. 5,334,823, Cl. 235-380.000.
Noda, Koji: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.
Nogle, Thomas D.; and Botosan, Valentin, to Chrysler Corporation. Input compounding torque converter. 5,334,112, Cl. 475-59.000.
Noguchi, Akinori: *See*—
Isobe, Seiichiro; Noguchi, Akinori; and Uemura, Kunihiko, 5,333,556, Cl. 100-93.00S.
Noguchi, Masahiro, to Mitsubishi Kasei Corporation. Apparatus and method for LED emission spectrum control. 5,334,916, Cl. 315-309.000.
Noguchi, Masao: *See*—
Takita, Yusaku; Ishihara, Tatsumi; Mizuhara, Yukako; and Noguchi, Masao, 5,334,565, Cl. 501-95.000.
Noguchi, Minori: *See*—
Yamaguchi, Hiroshi; Noguchi, Minori; Kohno, Makiko; and Nakata, Toshihiko, 5,333,495, Cl. 73-105.000.
Noguchi, Shoji; and Aihara, Satoru, to NSK Ltd. Rolling/sliding part. 5,333,954, Cl. 384-26.000.
Nokia Mobile Phones, Ltd.: *See*—
Heinonen, Jarmo, 5,335,364, Cl. 455-76.000.
Vaisanen, Risto; and Leppanen, Aki, 5,335,362, Cl. 455-67.100.
Nokia Unterhaltungselektronick GmbH: *See*—
Beckerle, Heinz; and Reidinger, Rolf, 5,334,410, Cl. 427-68.000.
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, to Uni-Charm Corporation. Disposable garments. 5,334,152, Cl. 604-385.200.
Nomura, Masaru: *See*—
Matoba, Hirotsugu; Nomura, Masaru; and Yamaguchi, Takeshi, 5,335,214, Cl. 369-44.280.
Nomura, Takeshi; Nakano, Yukie; Satoh, Akira; and Arashi, Tomohiro, to TDK Corporation. Multilayer ceramic chip capacitor. 5,335,139, Cl. 361-4.000.
Nonnenmacher, Klaus. Apparatus for the photometric determination of gas concentrations. 5,334,536, Cl. 436-135.000.
Noonan, John M.; and Burberry, Mitchell S., to Eastman Kodak Company. Dye-containing beads for laser-induced thermal dye transfer. 5,334,575, Cl. 503-227.000.
Norac Company, Inc.: *See*—
Bostick, John V., 5,334,326, Cl. 252-186.260.
Norden Systems, Inc.: *See*—
Owen, Lee A., 5,334,982, Cl. 342-36.000.
Nordlin, William F., to Greenlee Textron Inc. Housing arrangement for compact blower and vacuum. 5,334,000, Cl. 417-360.000.
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., to Stamicarbon B.V. Free-radical curable compositions. 5,334,455, Cl. 428-413.000.
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., to Stamicarbon B.V. Free-radical curable compositions. 5,334,456, Cl. 428-431.000.
Norgren, William P.: *See*—
Arnold, Floyd L.; Bair, Carl J.; Kiraly, Christopher M.; Norgren, William P.; and Wintriss, George V., 5,333,874, Cl. 273-185.00B.
Norman, Timothy J.: *See*—
Hurley, James R.; Childs, Paul J.; and Norman, Timothy J., 5,333,539, Cl. 99-403.000.
North American Philips Corporation: *See*—
Ineson, David J.; O'Connor, Edward M.; and Casali, David C., 5,334,897, Cl. 310-89.000.
North American Specialities Corporation: *See*—
Seidler, Jack, 5,334,059, Cl. 439-876.000.
North Carolina State University: *See*—
Sage, Burton H., Jr.; and Riviere, Jim E., 5,334,138, Cl. 604-20.000.
North Dakota State University Research Foundation: *See*—
Donnelly, Brendan J.; Debbouz, Amar; and Hagen, Kevin R., 5,334,407, Cl. 426-618.000.
Northern Telecom Limited: *See*—
Hogeboom, John G., 5,334,951, Cl. 331-1.00A.
Nortman, Marvin; and Kravets, Arthur A. Post-injection sheath for a hypodermic syringe needle. 5,334,149, Cl. 604-110.000.
Norville, William C., to Clearfix Corporation. Compositions and methods for repairing and removing scratches and other imperfections from plastic surfaces. 5,334,335, Cl. 264-36.000.
Noschese, Rocco J., to Burndy Corporation. Dual-beam electrical contact with preload tabs. 5,334,053, Cl. 439-682.000.
Noschese, Rocco J.: *See*—
Davidge, Ronald V.; McClurg, Todd A.; Neer, Jay H.; Nelson, Richard J.; and Noschese, Rocco J., 5,334,038, Cl. 439-267.000.

Nosetani, Tadashi; Namba, Keizo; Sano, Hiromichi; Yonemitsu, Makoto; Kumagai, Masaki; and Tsunekawa, Masanori, to Sumitomo Light Metal Industries, Ltd. Electrode for spot welding. 5,334,814, Cl. 219-119.000.
Novak, David B.: *See*—
Gardner, David E.; and Novak, David B., 5,334,110, Cl. 474-135.000.
Novamont S.p.A.: *See*—
Bastiolo, Catia; Bellotti, Vittorio; Del Giudice, Luciano; and Lombi, Roberto, 5,334,634, Cl. 524-47.000.
Novy, George; and Makris, Angelo, to Kanthal Corporation, The. Modular heating assembly with heating element support tubes disposed between hangers. 5,335,310, Cl. 392-434.000.
Nozawa, Yusaku: *See*—
Takahashi, Kinya; Nozawa, Yusaku; and Ino, Kazuyuki, 5,333,449, Cl. 60-427.000.
NSK Ltd.: *See*—
Noguchi, Shoji; and Aihara, Satoru, 5,333,954, Cl. 384-26.000.
NTN Corporation: *See*—
Izutsu, Tomoyoshi; and Kawashima, Kazuki, 5,334,109, Cl. 474-135.000.
Nunohiro, Eiji: *See*—
Aida, Kazuhiro; Nunohiro, Eiji; and Sone, Hiroyuki, 5,335,351, Cl. 395-700.000.
Nuns, Jacques; Girault, Alain; and Rancurel, Alain, to Expanchimie S.A.R.L. Molecular distillation apparatus having induction-heating. 5,334,290, Cl. 202-205.000.
Nuovopignone Industrie Meccaniche e Fonderia SpA: *See*—
Bergamini, Giorgio; and Paris, Ernesto, 5,333,655, Cl. 141-59.000.
Nusz, Bary J.; Payne, Robert K.; and Perez, Leslie A., to Halliburton Company. Controlled high pressure relief for small volumes. 5,333,636, Cl. 137-12.000.
Nutt, A. D. Thermostatic animal feeder. 5,333,572, Cl. 119-57.910.
O&K Orenstein & Koppel AG: *See*—
Mett, Joachim, 5,333,399, Cl. 37-455.000.
O. R. Solutions, Inc.: *See*—
Faries, Durward I., Jr.; and Heymann, Bruce R., 5,333,326, Cl. 4-639.000.
Oba, Hidehiro: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.
Obara Corporation: *See*—
Nishiwaki, Toshihiro, 5,333,975, Cl. 409-132.000.
Obata, Koei, to Daikin Industries, Ltd. Polygon division method and apparatus. 5,335,319, Cl. 395-141.000.
Obata, Masao, to Sharp Kabushiki Kaisha. Apparatus for lighting a liquid crystal element. 5,335,100, Cl. 359-49.000.
Oberman, Dave; and Teuber, Christopher L. Compact truss system. 5,333,434, Cl. 52-645.000.
O'Brien, Martin J.; and Spector, George. Floral presentation. 5,334,425, Cl. 428-23.000.
O'Brien, Patrick J.; and Womack, Ronald W., to Ivy Hill Corporation. Compact disc jacket and blank therefor. 5,333,728, Cl. 206-232.000.
O'Brien, William H.; and Malloy, James M., to Texas Beef Group. Method and apparatus for automatically trimming fatty tissue from animal carcasses. 5,334,084, Cl. 452-157.000.
Occhiello, Ernesto: *See*—
Po', Riccardo; Occhiello, Ernesto; Giannotta, Giorgio; and Garbassi, Fabio, 5,334,343, Cl. 264-328.100.
Ochi, Mitsukazu; Tagami, Toshio; and Kiyohara, Osamu, to Tomoegawa Paper Co., Ltd.; and Ochi, Mitsukazu. Epoxy resin reacted with phenolic OH-aramide/ban. 5,334,661, Cl. 525-90.000.
Ochi, Mitsukazu; Tagami, Toshio; and Kiyohara, Osamu, to Tomoegawa Paper Co., Ltd.; and Ochi, Mitsukazu. Epoxy resin/phenolic OH-aramid/ban block copolymer product with CTBN. 5,334,662, Cl. 525-90.000.
O'Connor, Edward M.: *See*—
Ineson, David J.; O'Connor, Edward M.; and Casali, David C., 5,334,897, Cl. 310-89.000.
Odaira, Hiroshi; and Sato, Yoshizumi, to Kabushiki Kaisha Toshiba. Method of producing a three-dimensional wiring board. 5,333,379, Cl. 29-841.000.
O'Daly, John P.: *See*—
Henkens, Robert W.; Zhao, Junguo; and O'Daly, John P., 5,334,296, Cl. 204-153.120.
O'Daniel, Gregory F., to General Motors Corporation. Method of balancing a torque converter assembly. 5,333,500, Cl. 73-468.000.
O'Donnell, Jerry L. Cleaning implement including brace of elastomeric material. 5,333,345, Cl. 15-159.100.
Odorisio, Paul A.: *See*—
Pastor, Stephen D.; Shum, Sai P.; and Odorisio, Paul A., 5,334,739, Cl. 558-78.000.
Oehlbeck, Douglas L.: *See*—
Pond, Karen L.; Chitty, Alton L.; Oehlbeck, Douglas L.; Henry, Marian S.; and Darron, Ward K., 5,334,496, Cl. 430-569.000.
Oertley, Thomas E., to Caterpillar Inc. Undercarriage for track-type machine. 5,333,710, Cl. 180-9.500.
Oestreich, Bruce D.: *See*—
Gentile, Geoffrey E.; and Oestreich, Bruce D., 5,335,060, Cl. 356-213.000.
Oetiker, Hans, to Hans Oetiker AG Mashinen- und Apprate-fabrik. Expandable clamp structure of the earless type. 5,333,360, Cl. 24-20.00R.
Ogata, Akihiro; Hirakawa, Yoshihiro; Soichi, Masakatsu; and Kitano, Fumiyasu, to Kyushu Sumitoku Electronics Co., Ltd. Continuous ultrasonic cleaning apparatus. 5,333,628, Cl. 134-64.00R.
Ogawa, Hirofumi: *See*—
Kamino, Toshihide; Sonoda, Junichi; Ogawa, Hirofumi; and Endo, Takeshi, 5,335,140, Cl. 361-608.000.
Ogawa, Hirohisa: *See*—
Okuda, Akihito; Kanamaru, Yoshihiro; Tane, Toshiaki; and Ogawa, Hirohisa, 5,333,453, Cl. 60-487.000.
Ogawa, Masahiko; Tagami, Hidetoshi; Yoshihara, Toru; Kawase, Jiro; Kiyomine, Akira; Tamura, Tadashi; Nishizawa, Yoshinori; and Matsunaga, Ken-ichi, to Kao Corporation. Keratinous fiber dye composition containing a 2-substituted amino-5-alkylphenol derivative coupler. 5,334,225, Cl. 8-408.000.
Ogawa, Yuji, to Asahi Kogaku Kogyo Kabushiki Kaishi. Apparatus for changing the size of the photographing aperture in a camera. 5,335,031, Cl. 354-159.000.
Ogihara, Masaki, to Kabushiki Kaisha Toshiba. Dram using word line potential control circuit. 5,335,205, Cl. 365-230.060.
Ogren, Del: *See*—
Knowles, Terrence J.; and Ogren, Del, 5,334,805, Cl. 178-18.000.
Oguchi, Takahisa; Sugimoto, Kenichi; Aihara, Shin; Itoh, Hisato; Matsumoto, Mansuke; Masaoka, Toshihiro; and Nakamura, Masakazu, to Mitsui Toatsu Chemicals, Incorporated; and Yamamoto Chemicals, Incorporated. Method for preparing alkoxyphthalocyanine. 5,334,714, Cl. 540-143.000.
Oguchi, Takuro; Sasaki, Shunroku; and Asahara, Masaru, to Fujitsu Limited. Radio communication adapter connected to mobile station and mobile communication system using the radio communication adapter. 5,335,262, Cl. 379-58.000.
Ogura, Seiki: *See*—
Doerre, George W.; Ogura, Seiki; and Rovedo, Nivo, 5,334,281, Cl. 156-636.000.
Ogura, Takashi: *See*—
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.
Oh, Heung-kwun: *See*—
Shin, Jong-cheol; and Oh, Heung-kwun, 5,334,867, Cl. 257-222.000.
Ohashi, Yukihiro: *See*—
Kawamata, Akira; Kikuchi, Yoko; Suzuki, Yuji; Suzuki, Toshiyuki; Suda, Mituo; and Ohashi, Yukihiro, 5,334,372, Cl. 424-78.030.
Ohenoki, Hitoshi: *See*—
Tomizawa, Hirotaka; Umemoto, Noboru; and Ohenoki, Hitoshi, 5,334,319, Cl. 252-46.006.
Tomizawa, Hirotaka; Umemoto, Noboru; and Ohenoki, Hitoshi, 5,334,320, Cl. 252-46.600.
Ohfune, Yasufumi; Shimamoto, Keiko; Shinozaki, Haruhiko; and Ishida, Michiko, to Suntory Limited. 2-(2,3-dicarboxycyclopropyl) glycine and method for producing the same. 5,334,757, Cl. 562-568.000.
Ohgasu Co., Ltd.: *See*—
Takita, Yusaku; Ishihara, Tatsumi; Mizuhara, Yukako; and Noguchi, Masao, 5,334,565, Cl. 501-95.000.
Ohio Art Company, The: *See*—
Ankenbruck, James B.; Antolin, Jose V.; Herbstler, Horst D.; Lund, Bruce D.; Vahcic, Anne K.; and Wilson, Lowell T., 5,333,387, Cl. 33-18.100.
Ohishi, Takeshi: *See*—
Kawanaka, Takafumi; Ohishi, Takeshi; and Shimizu, Masahiro, 5,334,683, Cl. 526-273.000.
Ohita Gas Co., Ltd.: *See*—
Takita, Yusaku; Ishihara, Tatsumi; Mizuhara, Yukako; and Noguchi, Masao, 5,334,565, Cl. 501-95.000.
Ohkawa, Masayoshi; and Hayashi, Fumihiko, to NEC Corporation. Semiconductor memory device having a meshlike grounding wiring. 5,334,863, Cl. 257-69.000.
Ohmura, Keizi: *See*—
Yamada, Toshihisa; Miyamoto, Toshiharu; Hayashi, Kazuo; Takayama, Ryoichi; Kobayashi, Shinji; and Ohmura, Keizi, 5,333,554, Cl. 105-397.000.
Ohmura, Takao: *See*—
Kobayashi, Kaoru; Kuwae, Shinobu; Ooya, Tomoshi; Fukutsuka, Hirotoshi; Sumi, Akinori; Ohtani, Wataru; Ohmura, Takao; and Yokoyama, Kazumasa, 5,334,512, Cl. 435-69.600.
Ohnishi, Hirofumi: *See*—
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,334,152, Cl. 604-385.200.
Ohno, Hideyuki, to Nippon Oil Co., Ltd. Guide rolls. 5,334,124, Cl. 492-50.000.
Ohno, Masataka: *See*—
Masuda, Hitoshi; Suzuki, Masatakatsu; Ohno, Masataka; Kobayashi, Kazuyoshi; and Nakamura, Hiromitsu, 5,335,274, Cl. 379-433.000.
Ohnuki, Masamichi: *See*—
Saburi, Masahiko; Ohnuki, Masamichi; and Uchida, Yasuzo, 5,334,758, Cl. 562-590.000.
Ohsaki, Hajime; and Shimizu, Keiichi, to Toshiba Lighting & Technology Corporation. Operating circuit arrangement for a discharge lamp. 5,334,915, Cl. 315-307.000.
Ohsawa, Masahiro, to Fuji Electric Co., Ltd. Spindle motor for magnetic disk devices. 5,334,896, Cl. 310-67.00R.
Ohta, Kenji; Inui, Tetsuya; Katayama, Hiroyuki; Takahashi, Akira; Hirokane, Junji; Nishitani, Yukinori; Mieda, Michinobu; and Van,

VOL 1165 ISS 1 AG 2 1994 UMI

Kazuo, to Sharp Kabushiki Kaisha. Optical recording element and driving system. 5,335,220, Cl. 369-288.000.

Ohta, Kenji: *See*—
Inoue, Yoshiyuki; Takahashi, Masaaki; and Ohta, Kenji, 5,334,879, Cl. 307-112.000.

Ohta, Kihachiro: *See*—
Morioka, Yuji; Chuta, Masanobu; Iwazaki, Kuniyasu; and Ohta, Kihachiro, 5,334,895, Cl. 310-67.00R.

Ohta, Yasumitsu: *See*—
Kitamura, Koichi; Mimura, Hidenori; Yamamoto, Kazuo; Ohta, Yasumitsu; Sai, Kazuyoshi; and Nagatake, Youichi, 5,335,092, Cl. 358-482.000.

Ohtani, Hirofumi: *See*—
Masutomi, Haruhiko; Ohtani, Hirofumi; Uchida, Naoko; and Maniya, Chikao, 5,334,359, Cl. 422-225.000.

Ohtani, Wataru: *See*—
Kobayashi, Kaoru; Kuwae, Shinobu; Ooya, Tomoshi; Fukutsuka, Hirotoshi; Sumi, Akinori; Ohtani, Wataru; Ohmura, Takao; and Yokoyama, Kazumasa, 5,334,512, Cl. 435-69.600.

Ohtsubo, Toko: *See*—
Maejima, Yukihito; Ohtsubo, Toko; Masui, Mitsuyuki; Abe, Noriyuki; Yuura, Katsuhiko; and Mochizuki, Kenji, 5,335,339, Cl. 395-500.000.

Okabe, Kouichi: *See*—
Kanai, Makoto; and Okabe, Kouichi, 5,335,049, Cl. 355-215.000.

Okabe, Satoshi: *See*—
Kai, Masanori; Okabe, Satoshi; Hatori, Nobuyoshi; Koike, Toshio; and Iwamoto, Tamio, 5,335,047, Cl. 355-200.000.

Okada, Kohji; Ando, Minato; Tokumoto, Jun-ichi; and Katoh, Takashi, to NGK Spark Plug Co., Ltd. Reference electrode. 5,334,305, Cl. 204-435.000.

Okada, Koji: *See*—
Ueda, Hiroshi; Takamoto, Tamotsu; and Okada, Koji, 5,334,770, Cl. 568-463.000.

Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, to Tokyo Gas Co., Ltd.; and NKK Corporation Abnormality monitoring apparatus for a pipeline. 5,333,501, Cl. 73-592.000.

Okada, Minoru: *See*—
Yamamoto, Tsutomu; Okada, Minoru; Ishigami, Takakazu; Motoki, Nobuyuki; Fuse, Eiichi; and Hayashi, Masaaki, 5,335,061, Cl. 356-241.000.

Okada, Nobuko: *See*—
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.

Okada, Satoshi; Sawada, Kozo; Kuroda, Akio; Watanabe, Shinya; and Tanaka, Hirokazu, to Fujisawa Pharmaceutical Co., Ltd. Heterocyclic derivatives. 5,334,716, Cl. 546-112.000.

Okahashi, Toshio: *See*—
Imoto, Takayoshi; and Okahashi, Toshio, 5,334,429, Cl. 428-36.200.

Okajima, Hiroyuki; and Uratani, Shinichi, to Sharp Kabushiki Kaisha. Liquid crystal display device. 5,334,993, Cl. 345-102.000.

Okamoto, Ichiro: *See*—
Shibata, Tohru; Namikoshi, Hajime; and Okamoto, Ichiro, 5,334,311, Cl. 210-198.200.

Okamoto, Noriaki: *See*—
Tokyuama, Mikio; Ichikawa, Ryoichi; and Okamoto, Noriaki, 5,335,126, Cl. 360-104.000.

Okamoto, Shigetomi; Miwa, Masahiko; Sekine, Takayuki; and Yamaguchi, Hiroshi, to Alcare Co., Ltd. Orthopedic sheet-like composition. 5,334,442, Cl. 428-246.000.

Okamura, Takashi: *See*—
Tanizawa, Hideichi; Nishino, Shuzo; and Okamura, Takashi, 5,333,982, Cl. 414-279.000.

Okaniwa, Kiyoshi: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,334,252, Cl. 118-726.000.

Okazaki, Hiroshi: *See*—
Sakakura, Daisuke; and Okazaki, Hiroshi, 5,333,999, Cl. 417-309.000.

Okazaki, Kichizaemon: *See*—
Kano, Kiyoshi; and Okazaki, Kichizaemon, 5,333,770, Cl. 226-15.000.

Okazaki, Shinji: *See*—
Nakayama, Yoshinori; and Okazaki, Shinji, 5,334,282, Cl. 156-643.000.
Wakabayashi, Hiroaki; Nakayama, Yoshinori; Murai, Fumio; and Okazaki, Shinji, 5,334,845, Cl. 250-492.200.

Okazawa, Kazuhiko: *See*—
Nakamori, Tomohiro; Okazawa, Kazuhiko; Tachibana, Tatsuto; Kusano, Akihisa; Sato, Kaoru; and Itoh, Toshiyuki, 5,334,817, Cl. 219-492.000.

Oki Electric Industry, Co., Ltd.: *See*—
Hisaka, Katsuhiro, 5,334,889, Cl. 307-475.000.
Saito, Tadashi; and Inokuchi, Kazuyuki, 5,334,542, Cl. 437-40.000.

Okibayashi, Katsushi: *See*—
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.

Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, to Meiji Seika Kaisha, Ltd. 2-piperidinecarboxylic acid derivative, oncogene suppressor and agent for obtaining revertants. 5,334,723, Cl. 546-298.000

Okorocha, Livyn O.: *See*—
Rothfuss, Robert G.; Okorocha, Livyn O.; Bishop, Gregory D.; Sambi, Narinderjit S.; Bedi, James J.; Privitera, Salvatore; and Sherrill, Michael, 5,333,772, Cl. 227-176.000.

Okuda, Akihito; Kanamaru, Yoshihiro; Tane, Toshiaki; and Ogawa, Hirohisa, to Honda Giken Kogyo Kabushiki Kaisha. High-efficiency reduced-noise swash-plate-type hydraulic device. 5,333,453, Cl. 60-487.000.

Okuda, Masahiro: *See*—
Ono, Takeo; and Okuda, Masahiro, 5,334,854, Cl. 257-13.000.

Okuda, Shigeru: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,334,252, Cl. 118-726.000.

Okuma Corporation: *See*—
Kato, Minoru, 5,335,231, Cl. 371-15.100.

Okumoto, Takaharu: *See*—
Teramoto, Mitsutake; Okumoto, Takaharu; Goto, Teruo; Saito, Shinkichi; and Asabuki, Hideyo, 5,333,859, Cl. 273-77.00A.

Okumura, Toshiyuki; Inoguchi, Kazuhiko; Konushi, Fumihiro; and Takiguchi, Haruhisa, to Sharp Kabushiki Kaisha. Buried stripe type semiconductor laser device. 5,335,241, Cl. 372-46.000.

Olaleye, Aina: *See*—
Fathimulla, Ayub; and Olaleye, Aina, 5,334,865, Cl. 257-192.000.

Olin Corporation: *See*—
Corzine, Alan J.; and Eberhart, Gerald E., 5,333,552, Cl. 102-509.000.

Oliver, David C.; and Petrillo, Micheal J., to Gould, Inc. Non-integral frequency division using regulated digital divider circuits. 5,335,253, Cl. 377-48.000.

Oliver, John D.: *See*—
Christie, C. Dale; Gallagher, Michael T.; Hendricksen, Michael J.; Oliver, John D.; and Polzin, Mark A., 5,333,926, Cl. 295-21.000.

Olmr, Jaroslav J., to Kohler Co. Internal combustion engine using lubricating oil for effective and uniform cooling. 5,333,575, Cl. 123-41.420.

Olmstead, David. Adaptive data rate packet communications system. 5,335,247, Cl. 375-1.000.

Olsen, Harold M.: *See*—
Kimura, Hiroshi; Hadeishi, Tetsuo, deceased; Olsen, Harold M.; and Bak, Chan S., 5,333,487, Cl. 73-23.310.

Olson, Larry D.; Kamla, Jeffrey R.; and Johnson, Henry R., to Allied Signal Inc. Polyimide resin laminates. 5,334,696, Cl. 528-322.000.

Olympus Optical Co., Ltd.: *See*—
Fukuyama, Hiroya; Kitagawa, Hisao; Yamamoto, Mitsunori; and Kashima, Shingo, 5,334,830, Cl. 250-216.000.
Hasegawa, Akira; Omura, Masayoshi; Imade, Shinichi; and Ikuta, Eishi, 5,333,503, Cl. 73-642.000.
Itoh, Junichi; Dai, Masahiro; Toizumi, Yasushi; Mizokami, Kazunori; Watanabe, Yoji; and Midorikawa, Ayumu, 5,335,029, Cl. 354-106.000.
Koitabashi, Masanobu; Toda, Masato; and Handa, Keiji, 5,335,154, Cl. 362-294.000.
Komiya, Yasuhiro; Mori, Takeshi; and Nagasaki, Tatsuo, 5,335,075, Cl. 348-298.000.
Maeda, Yoshihiro, 5,335,035, Cl. 354-219.000.
Nakagawa, Chihiro, 5,335,016, Cl. 348-405.000.
Yamamoto, Tsutomu; Okada, Minoru; Ishigami, Takakazu; Motoki, Nobuyuki; Fuse, Eiichi; and Hayashi, Masaaki, 5,335,061, Cl. 356-241.000.

Omandam, Ismael C.; and Spector, George. Strap-on massager with vibratory unbalanced weight. 5,334,131, Cl. 601-71.000.

Omron Corporation: *See*—
Tsutsumi, Yasuhiro; and Nishimura, Junichi, 5,335,314, Cl. 395-3.000.

Omura, Masayoshi: *See*—
Hasegawa, Akira; Omura, Masayoshi; Imade, Shinichi; and Ikuta, Eishi, 5,333,503, Cl. 73-642.000.

Ona, Isao: *See*—
Kennoki, Masakado; Ona, Isao; and Ozaki, Masaru, 5,334,653, Cl. 524-714.000.

Onan Corporation: *See*—
Mellum, Ronald J.; Hawkins, Peter M., Jr.; Kline, Glennard M.; Klinkert, Deborah A.; McFarlane, Ronald G.; and Hansen, Gary P., 5,333,678, Cl. 165-42.000.

O'Neill, Dennis P.: *See*—
Dobkin, Robert C.; Nelson, Carl T.; and O'Neill, Dennis P., 5,334,928, Cl. 323-280.000.

Ong, Beng S.: *See*—
Sacripante, Guerino G.; Kmiecik-Lawrynowicz, Grazyna; and Ong, Beng S., 5,334,471, Cl. 430-106.600.

Ong, Helen H.; Hrib, Nicholas J.; Perez, Joseph; and Jurcak, John G., to Hoechst-Roussel Pharmaceuticals Inc. 1-piperazinyl-2-butenes and -2-butynes. 5,334,715, Cl. 544-392.000.

Onik, Gary: *See*—
Rubinsky, Boris; Onik, Gary; Finkelstein, J. J.; Neu, Dan; and Jones, Steve, 5,334,181, Cl. 606-22.000.

Onishi, Hiroshi; Matsuoka, Akihiko; Misaizu, Kouei; and Yamamoto, Yuuri, to Matsushita Electric Industrial Co., Ltd. Diversity receiver. 5,335,251, Cl. 375-100.000.

Onishi, Ken; Banjyo, Hidenori; and Arano, Yukari, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for recording analog video signal in compressed digital format. 5,335,116, Cl. 360-9.100.

Onken, Gerd: *See*—
Mohlmann, Ulrich; Onken, Gerd; Kunze, Dieter; and Wolber, Jorg, 5,335,018, Cl. 348-536.000.

Ono, Masato: *See*—
Yagi, Shigeru; Higashi, Taketoshi; Fukuda, Yuzuru; Ono, Masato; Yokoi, Masaki; and Watanabe, Masao, 5,334,476, Cl. 430-126.000.

Ono, Masumi: *See*—
Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ono, Masumi; and Yasuda, Kouichi, 5,335,213, Cl. 369-121.000.

Ono, Takashi: *See*—
Watabe, Masayuki; Maruyama, Yoshinori; and Ono, Takashi, 5,333,714, Cl. 194-206.000.

Ono, Takeo; and Okuda, Masahiro, to Canon Kabushiki Kaisha. Optical semiconductor device with wavelength selectivity and method for amplifying or emitting the light using the same. 5,334,854, Cl. 257-13.000.

Onodera, Akira; and Yamazaki, Koichi, to Nippon Conlux Co., Ltd. Peak detection circuit. 5,334,930, Cl. 324-103.00P.

Onozato, Atsushi: *See*—
Saito, Shinkichi; Asabuki, Hideyo; Onozato, Atsushi; Nishimura, Toshinori; Kawada, Kazuo; and Yamamoto, Shinji, 5,333,860, Cl. 273-77.00A.

Ontec, Ltd.: *See*—
Gelfgat, Yuri; El-Boher, Arie; and Branover, Herman, 5,333,672, Cl. 164-468.000.

Onuki, Ichiro; and Shikaumi, Masao, to Canon Kabushiki Kaisha. Image stabilizing apparatus. 5,335,032, Cl. 354-195.100.

Ooi, Leng H.: *See*—
Ballantyne, Wayne W.; Ooi, Leng H.; and Hodges, Eugene W., III, 5,335,365, Cl. 455-76.000.

Oomori, Norio; Ikeda, Fumio; Kodama, Keiichi; Kanai, Makoto; and Terayama, Tatsuya, to Toyoda Gosei Co., Ltd. Hose device. 5,333,914, Cl. 285-54.000.

Ootomo, Hideo; Takeda, Hiroshi; and Yachi, Shunichiro, to Hitachi, Ltd. Method for manufacturing a resin pattern, and a method for vacuum sealed molding process using resin pattern same. 5,333,666, Cl. 164-45.000.

Ooya, Tomoshi: *See*—
Kobayashi, Kaoru; Kuwae, Shinobu; Ooya, Tomoshi; Fukutsuka, Hirotoshi; Sumi, Akinori; Ohtani, Wataru; Ohmura, Takao; and Yokoyama, Kazumasa, 5,334,512, Cl. 435-69.600.

OPtex Biomedical, Inc.: *See*—
Koss, Nadhir B.; Twiggs, Gene J.; Salter, James R.; Singh, Raghuvir; Costello, David J.; and Schlain, Leslie A., 5,335,305, Cl. 385-147.000.

Optex Co., Ltd.: *See*—
Sugimoto, Tadashi; Imuro, Yoshihiro; Nishimura, Shigeki; and Arimoto, Tatsuya, 5,334,972, Cl. 340-556.000.

Optigraphics Corporation: *See*—
Larkin, Ross M.; and DeAguiar, John R., 5,335,296, Cl. 382-47.000.

Optima Spanntechnik GmbH: *See*—
Reifenrath, Werner; and Braun, Eduard, 5,333,543, Cl. 100-53.000.

Opton Corporation: *See*—
Sable, Arthur J., 5,335,082, Cl. 358-350.000.

Optronics, Ltd.: *See*—
Wilson, Donald A., 5,333,875, Cl. 273-187.100.

Orbeck, Gary A.; and Waugh, Arthur, to BTU International. Walking beam furnace. 5,334,014, Cl. 432-121.000.

Oredsson, Jan O. H.: *See*—
Lofmark, Bengt G.; Oredsson, Jan O. H.; and Lindberg, Claes J. A., 5,335,272, Cl. 379-413.000.

Orimo, Masayuki; Mori, Kinji; Suzuki, Yasuo; Koizumi, Minoru; Kawano, Katsumi; Nakai, Kozo; and Kasashima, Hirokazu, to Hitachi, Ltd. Distributed processing system and method for job execution using a plurality of processors and including identification of replicated data. 5,335,324, Cl. 395-200.000.

Orlov, Vladislav K.: *See*—
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

O'Rourke, Patrick E.: *See*—
Prather, William S.; and O'Rourke, Patrick E., 5,335,067, Cl. 356-436.000.

Orpin, Murray R.: *See*—
Francis, Robert S.; and Orpin, Murray R., 5,334,630, Cl. 523-216.000.

Ortho-Kinetics, Inc.: *See*—
Gaffney, Edward J.; and Lin, Jhy-hong, 5,333,702, Cl. 180-208.000.

Ortner, Herbert; Bahr, Theodor; and Musselmann, Walter, to J. M. Voith GmbH. Process for the treatment of wastepaper using drum soaker. 5,334,285, Cl. 162-4.000.

Osada, Hatsuo: *See*—
Mizukami, Masami; and Osada, Hatsuo, 5,333,986, Cl. 414-217.000.

Osada, Yasuo, to Sony Corporation. Disc loading transfer mechanism for plural disc changer. 5,335,218, Cl. 369-178.000.

Osano, Nagato; Imai, Yukihiro; Hosaka, Akihito; Nakajima, Ikuo; Nishiguchi, Toshiji; and Horie, Akira, to Canon Kabushiki Kaisha. Washing method. 5,334,258, Cl. 134-42.000.

Osbon, Edward E., to Thompson, Greg D. Programmable electrically controlled photoeye linked applicator for glue guns. 5,334,249, Cl. 118-679.000.

Osborn, Jeffrey C.: *See*—
Gant, Gary L.; Muntean, George L.; and Osborn, Jeffrey C., 5,333,786, Cl. 239-89.000.

Osborn Laboratories, Inc.: *See*—
Sangha, Jangbir S., 5,334,502, Cl. 435-7.210.

Osbourne, William G.; and Sanchez-Banos, Julio A., to Xerox Corporation. Adjustable support assembly. 5,335,050, Cl. 355-221.000.

Oshiba, Hirokazu, to Nippon Steel Corporation. Portable computer with pivotally mounted cover. 5,335,192, Cl. 364-708.100.

Oshige, Takahiko: *See*—
Yamada, Takeo; Kazama, Akira; and Oshige, Takahiko, 5,335,066, Cl. 356-364.000.

OSi Specialties, Inc.: *See*—
Grabowski, Wojciech, 5,334,227, Cl. 44-320.000.

Oskarsson, Rolf G.; and Lundstrom, Mats O., to Sandvik AB. Compound body. 5,334,459, Cl. 428-546.000.

Osmotek, Inc.: *See*—
Herron, John R.; Beaudry, Edward G.; Jochums, Carl E.; and Medina, Luis E., 5,334,300, Cl. 204-257.000.

OSRAM Sylvania Inc.: *See*—
Muzeroll, Martin E., 5,334,906, Cl. 313-25.000.

Osterloh, William T., to Texaco Inc. Long chain alcohol additives for surfactant foaming agents. 5,333,687, Cl. 166-272.000.

Otani, Hiroshi: *See*—
Takahashi, Yoshiharu; Hirose, Tetsuya; Otani, Hiroshi; and Takemura, Seiji, 5,333,505, Cl. 73-727.000.

O'Toole, Mark J. Baking stone and method of manufacture thereof. 5,334,242, Cl. 106-711.000.

Otsuka Electronics Co., Ltd.: *See*—
Hirao, Konomu, 5,333,610, Cl. 128-633.000.

Otsuka, Shigenori; Horiuchi, Hiromi; and Hiroi, Masayuki, to Mitsubishi Kasei Corporation. Image readout element with oxytitanium phthalocyanine. 5,334,856, Cl. 257-40.000.

Otsuka, Takayuki, to Toyota Jidosha Kabushiki Kaisha. Apparatus for detecting malfunction in evaporated fuel purge system. 5,333,589, Cl. 123-520.000.

Otsuki, Masatoshi: *See*—
Mizumura, Takayuki; Sawada, Kenji; Kojima, Naoki; Kawanishi, Yasuyoshi; and Otsuki, Masatoshi, 5,334,259, Cl. 136-258.000.

Otsuki, Yutaka: *See*—
Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,334,468, Cl. 430-7.000.

Otts, Paul J.: *See*—
Waterman, Timothy J.; and Otts, Paul J., 5,334,231, Cl. 55-493.000.

Oudet, Claude; and Prudham, Daniel, to Moving Magnet Technologies SA. Monophase electromagnetic rotary actuator of travel between 60 and 120 degrees. 5,334,893, Cl. 310-38.000.

Ouellette, Joseph F., to Ouellette Machinery Systems, Inc. Apparatus for diverting a lane of successive articles to plural lanes. 5,333,722, Cl. 198-436.000.

Ouellette Machinery Systems, Inc.: *See*—
Ouellette, Joseph F., 5,333,722, Cl. 198-436.000.

Ovadia, David, to Kansas State University Research Foundation. Heat processing of a product. 5,334,402, Cl. 426-241.000.

Overbagh, William H.: *See*—
Jorstad, John L.; Morley, Richard A.; Overbagh, William H.; and Steele, George W., 5,333,668, Cl. 164-100.000.

Ovshinsky, Stanford R.; Hudgens, Stephen J.; Strand, David A.; Czubatyj, Wolodymyr; Gonzalez-Hernandez, Jesus; Fritzsche, Hellmut; Ye, Qiuyi; Kostylev, Sergey A.; and Chao, Benjamin S. Homogeneous composition of microcrystalline semiconductor material, semiconductor devices and directly overwritable memory elements fabricated therefrom, and arrays fabricated from the memory elements. 5,335,219, Cl. 369-288.000.

Owen, James F.: *See*—
Good, Walter F.; Gur, David; Owen, James F.; Whiting, Bruce R.; Modney, David L.; and Weil, Richard, 5,334,851, Cl 250-582.000.

Owen, Lee A., to Norden Systems, Inc. Airport surface vehicle identification. 5,334,982, Cl. 342-36.000.

Owens, John C.: *See*—
Hoge, David T.; and Owens, John C., 5,333,810, Cl. 242-332.400.

Ozaki, Masaru: *See*—
Kennoki, Masakado; Ona, Isao; and Ozaki, Masaru, 5,334,653, Cl. 524-714.000.

Ozasa, Hitoshi, to Terumo Kabushiki Kaisha. Catheter balloon having varying wall thickness. 5,334,146, Cl. 604-96.000.

Ozawa, Koichi: *See*—
Sera, Taizo; Mitsuhiro, Takashi; Ozawa, Koichi; and Sakata, Yutaka, 5,333,671, Cl. 164-436.000.

Pachaly, Bernd; Frey, Volker; and Straussberger, Herbert, to Wacker-Chemie GmbH. Process for the preparation of methylchlorosilanes. 5,334,738, Cl. 556-472.000.

Packinox SA: *See*—
Jullien, Claude; and Couillard, Yves, 5,333,681, Cl. 165-82.000.

Pacolet Concrete Company: *See*—
Millen, Frank, 5,333,830, Cl. 248-679.000.

Pacropis, Donald R.: *See*—
Ibsen, Robert L.; Pacropis, Donald R.; and Glace, William R., 5,334,625, Cl. 523-115.000.

Paes, Jose A.: *See*—
Gutierrez, Antonio; Soled, Stuart L.; and Paes, Jose A., 5,334,775, Cl. 568-791.000.

Paffrath, Edgar C.: *See*—
Hanson, Brian A.; and Paffrath, Edgar C., 5,335,155, Cl. 362-267.000.

Palestrant, Aubrey. Apparatus and method for wetting hydrophilic-coated guide wires and catheters. 5,334,166, Cl. 604-265.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Paliard, Maurice; and Duputs, Jacques, to CLE. Method and system for pounding brittle material. 5,333,798, Cl. 241-24.000.

Pall Corporation: *See—*
Huggett, David J.; and Collard, Jamie, 5,334,309, Cl. 210-133.000.
Matkovich, Vlado I.; Bormann, Thomas J.; and DelGiacco, Gerard R., 5,334,315, Cl. 210-641.000.

Palm, Bernhard. Snap-on quick release extension and drivers. 5,333,523, Cl. 81-177.850.

Palmer, Harvey J.: *See—*
Columbus, Richard L.; and Palmer, Harvey J., 5,334,247, Cl. 118-411.000.

Palum, Russell J., to Eastman Kodak Company. Apparatus for mechanically dithering a CCD array. 5,335,091, Cl. 358-474.000.

Panasonic Technologies, Inc.: *See—*
Stec, Kevin J., 5,335,074, Cl. 348-537.000.

Pannell, Lorris O.; and Faircloth, W. C., Jr. Apparatus for handling plastic eating utensils. 5,333,718, Cl. 198-397.000.

Paolella, Giovanni: *See—*
Sproat, Brian; Lamond, Angus; and Paolella, Giovanni, 5,334,711, Cl. 536-24.500.

Papa, George M. Automotive main bearing. 5,333,955, Cl. 384-291.000.

Paquin, Normand; and Ghosh, A. K., to MPB Technologies Inc. Optically-based frequency synthesizer for generating an electric output signal at a preselected frequency that can be changed over a wide band of frequencies for communication purpose. 5,335,106, Cl. 359-180.000.

Paradis, Norman A., to New York University. Selective aortic perfusion system. 5,334,142, Cl. 604-53.000.

Parikh, Nalin R.; and Hunn, John D., to University of North Carolina at Chapel Hill, The. Process for selectively etching diamond. 5,334,283, Cl. 156-654.000.

Paris, Ernesto: *See—*
Bergamini, Giorgio; and Paris, Ernesto, 5,333,655, Cl. 141-59.000.

Park, Chul B.: *See—*
Baldwin, Daniel F.; Suh, Nam P.; Park, Chul B.; and Cha, Sung W., 5,334,356, Cl. 422-133.000.

Park, Ku-man; and Kim, Tae-eung, to Samsung Electronics Co., Ltd. Digital magnetic recording/reproducing method and apparatus therefor for recording re-arranged sync blocks. 5,335,117, Cl. 360-48.000.

Park, Seung C., to Goldstar Co., Ltd. Apparatus and method for generating video picture adjustment signals in VCR. 5,335,080, Cl. 358-335.000.

Parker, Gregory: *See—*
Nickerson, David C.; and Parker, Gregory, 5,333,425, Cl. 52-222.000.

Parker, James E.; and Herranen, Aileen, to V-Tech, Inc. Gold sol immunoassay system and device. 5,334,538, Cl. 436-525.000.

Parker, William S.: *See—*
Goldsmith, Daniel S.; and Parker, William S., 5,334,016, Cl. 433-29.000.
Goldsmith, Daniel S.; Howell, Michael P.; and Parker, William S., 5,334,019, Cl. 433-88.000.

Parlex Corporation: *See—*
Kenney, Stephen O., 5,334,800, Cl. 174-35.00R.

Particle Interconnect, Inc.: *See—*
DiFrancesco, Louis, 5,334,809, Cl. 200-262.000.

Partis, Richard A.: *See—*
Mueller, Richard A.; and Partis, Richard A., 5,334,616, Cl. 514-473.000.

Parus, Roger: *See—*
Boiteau, Catherine; and Parus, Roger, 5,335,177, Cl. 364-424.060.

Pastor, Stephen D.; Shum, Sai P.; and Odorisio, Paul A., to Ciba-Geigy Corporation. Process an alpha monoclinic crystalline modification of 2,2',2''-nitrilo[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl)phosphite]. 5,334,739, Cl. 558-78.000.

Paszkiewicz, George, to Illinois Tool Works Inc. Voltage divider. 5,334,967, Cl. 338-95.000.

Pat Pyka Design Consultants, Inc.: *See—*
Harris, Edward D.; Schimmelpfennig, Fred J., Jr.; Badgett, James F.; and Bonner, Jeffrey O., 5,333,416, Cl. 52-27.000.

Patel, Amrit: *See—*
Robbins, Clarence R.; Patel, Amrit; and Clarke, Jane, 5,334,376, Cl. 424-70.000.

Patel, Naresh R.: *See—*
Boka, Jeffrey B.; Patel, Naresh R.; Kim, Kevin D.; and Shaw, David S., 5,335,179, Cl. 364-434.000.

Paterson, Graeme S.: *See—*
Maddy, Steven L.; and Paterson, Graeme S., 5,334,952, Cl. 331-1.00A.

Patil, Mallanagouda D.: *See—*
Beauseigneur, Patricia A.; Lachman, Irwin M.; Patil, Mallanagouda D.; Swaroop, Srinivas H.; and Wusirika, Raja R., 5,334,570, Cl. 502-304.000.

Patsch, Manfred: *See—*
Niedenbrueck, Matthias; and Patsch, Manfred, 5,334,734, Cl. 552-278.000.

Patsiokas, Stelios J.: *See—*
Marko, Paul D.; Patsiokas, Stelios J.; Wadin, Craig P.; and Lobel, Gary S., 5,335,360, Cl. 455-56.100.

Patterson, John H.: *See—*
Bernadic, Thomas J.; Patterson, John H.; and Brockett, Brendan L., 5,333,972, Cl. 407-113.000.

Patz, Byron M.; and Schwartz, Glenn R., to Regal-Beloit Corporation. Method of shaft mounting a single tapered bushing. 5,333,380, Cl. 29-898.070.

Paul Wurth S.A.: *See—*
Lonardi, Emile; Malivoir, Philippe; Metz, Jean; Roemen, Fernand; and Milen, Patrick, 5,333,839, Cl. 266-45.000.
Stomp, Hubert; Kremer, Andre; Fries, Daniel; Reichert, Marc; and Devillet, Serge, 5,333,842, Cl. 266-226.000.

Pavkovich, John M.: *See—*
Seppi, Edward J.; Pavkovich, John M.; and Shapiro, Edward G., 5,335,255, Cl. 378-4.000.

Pawlenko, Ivan: *See—*
Dunaenko, Charles, Jr.; Pawlenko, Ivan; and Samson, Larry P., 5,333,521, Cl. 81-9.510.

Pawletko, Joseph G.: *See—*
Van Buskirk, Michael A.; Plouse, Kevin W.; Pawletko, Joseph G.; Chang, Chi; Haddad, Sameer S.; and Gutala, Ravi P., 5,335,198, Cl. 365-185.000.

Payne, Robert K.: *See—*
Nusz, Bary J.; Payne, Robert K.; and Perez, Leslie A., 5,333,636, Cl. 137-12.000.

PCR Group, Inc.: *See—*
Baucom, Keith B.; Alty, Adam C.; and Kimmel, Earl J., 5,334,788, Cl. 570-175.000.

Peak, Mary A.: *See—*
Powers, Thomas O.; Hertrick, Timothy T.; and Peak, Mary A., 5,334,458, Cl. 428-517.000.

Pearl, Amy: *See—*
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, 5,335,347, Cl. 395-650.000.

Pearl, David S., II; Webb, Louis H., III; Mohammed, Shaheed; and Bukur, Dragan, to Uniweld Products, Inc. Apparatus and method of preventing fluid escape from a conduit. 5,333,467, Cl. 62-77.000.

Pearson, Timothy B.: *See—*
Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., 5,333,438, Cl. 53-399.000.

Peck, David M.: *See—*
Dietz, Raymond L.; and Peck, David M., 5,334,558, Cl. 501-41.000.

Peck, Timothy L.; and Ghosh, Pratik. Magnetic field gradient coil and assembly. 5,334,937, Cl. 324-318.000.

Peczkowski, Joseph L.; and Suh, Peter J., to Allied-Signal Inc. Anti-skid brake control system. 5,333,942, Cl. 303-94.000.

Pedain, Josef: *See—*
Zwiener, Christian; Rettig, Rainer; Nachtkamp, Klaus; Pedain, Josef; and Arlt, Dieter, 5,334,637, Cl. 524-539.000.

Pedretti, Ugo: *See—*
Roggero, Arnaldo; Pedretti, Ugo; La Mantia, Francesco P.; Citta', Vincenzo; and Lezzi, Alessandro, 5,334,695, Cl. 528-193.000.

Peifer, Ralph D. Muzzle loading rifles. 5,333,403, Cl. 42-69.020.

Pellegrino, Anthony J.; Mayes, Earl C.; Sharpe, Donald E.; and Bantz, George H., to Lorad Corporation. High voltage multipliers and filament transformers for portable X-ray inspection units. 5,335,161, Cl. 363-61.000.

Peller, Allen E.: *See—*
Freund, Richard A.; and Peller, Allen E., 5,333,740, Cl. 211-40.000.

Penunuri, David, to Motorola, Inc. Conjugately matched acoustic wave transducers and method. 5,334,960, Cl. 333-193.000.

Pepin, John G., to Du Pont de Nemours, E. I., and Company. Multilayer ceramic capacitor manufacturing process. 5,334,411, Cl. 427-79.000.

Perdue, John L. Chemical mixing chamber. 5,333,952, Cl. 366-336.000.

Perez, Joseph: *See—*
Ong, Helen H.; Hrib, Nicholas J.; Perez, Joseph; and Jurcak, John G., 5,334,715, Cl. 544-392.000.

Perez, Leslie A.: *See—*
Nusz, Bary J.; Payne, Robert K.; and Perez, Leslie A., 5,333,636, Cl. 137-12.000.

Pering, Claude O.: *See—*
Clewett, Richard H.; Pering, Claude O.; and Sharitz, Daniel B., 5,334,204, Cl. 606-73.000.

Perkin-Elmer Corporation, The: *See—*
Dorfman, Mitchel R.; Garcia, Jorge E.; and Kushner, Burton A., 5,334,235, Cl. 75-255.000.

Perkins, Lynn K.: *See—*
Brackett, Anne W.; Durham, Marcus O.; Perkins, Lynn K.; and Thoman, Gregory E., 5,333,498, Cl. 73-304.00R.

Perot, Marc: *See—*
Lemaire, Gilles; and Perot, Marc, 5,333,705, Cl. 188-71.500.

Perring, Keith D.: *See—*
Behan, John M.; Ness, Jeremy N.; Perring, Keith D.; and Smith, William M., 5,334,581, Cl. 512-2.000.

Perrotta, Anthony J.; and Minnick, Randall B., to Aluminum Company of America. Transition alumina and method for its production. 5,334,366, Cl. 423-625.000.

Perry Creek Group Corporation: *See—*
Simons, R. Kaye; and Wadenstorer, Frazer A., 5,334,182, Cl. 604-32.000.

Personalized Mass Media Corporation, The: *See—*
Harvey, John C.; and Cuddihy, James W., 5,335,277, Cl. 380-20.000.

Peterson, Maximilian R.: *See—*
Mohan, Ned; and Peterson, Maximilian R., 5,334,877, Cl. 307-46.000.

Petrakov, Alexandr F.: *See—*
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

Petralia, Richard C.: *See—*
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.

Petreye, David R.: *See—*
Fennell, Robert D.; and Petreye, David R., 5,335,357, Cl. 455-51.200.

Petrillo, Micheal J.: *See—*
Oliver, David C.; and Petrillo, Micheal J., 5,335,253, Cl. 377-48.000.

Petroff, Alan M.; and Fullerton, Larry W., to ADS Environmental Services, Inc. Velocity measurement system. 5,333,508, Cl. 73-861.250.

Petropoulos, Mark C.: *See—*
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.

Pettazzi, Giancarlo: *See—*
Ferracini, Bruno; Gonzalez-Lopez, Jorge; and Pettazzi, Giancarlo, 5,335,295, Cl. 382-47.000.

Petterson, Bo; and Gustafsson, Carl E., to C E Johansson AB. Absolute measurement scale system. 5,333,390, Cl. 33-706.000.

Petteruti, Alfred J.; Petteruti, Steven F.; Bouthillier, Robert J.; and Petteruti, Robert A., to Comtec Information Systems, Inc. Modular system for inventory control. 5,335,170, Cl. 364-403.000.

Petteruti, Robert A.: *See—*
Petteruti, Alfred J.; Petteruti, Steven F.; Bouthillier, Robert J.; and Petteruti, Robert A., 5,335,170, Cl. 364-403.000.

Petteruti, Steven F.: *See—*
Petteruti, Alfred J.; Petteruti, Steven F.; Bouthillier, Robert J.; and Petteruti, Robert A., 5,335,170, Cl. 364-403.000.

Pettit, Neville T.: *See—*
Smith, Rowland C.; Pettit, Neville T.; and Guttoriello, Angelo, 5,333,506, Cl. 73-756.000.

Pews, R. Garth: *See—*
Shankar, Ravi B.; Pews, R. Garth; and Romer, Duane R., 5,334,603, Cl. 514-363.000.

Pfeiler, William A.: *See—*
Holcombe, Cressie E.; and Pfeiler, William A., 5,333,844, Cl. 266-275.000.

Pfiester, James R.; and Hayden, James D., to Motorola Inc. Semiconductor memory cell. 5,334,861, Cl. 257-67.000.

Pfisterer, Alexander; and Rodi, Anton, to Heidelberger Druckmaschinen AG. Gripper apparatus on sheet-processing machines. 5,333,547, Cl. 101-409.000.

Pfizer Inc.: *See—*
Goldstein, Steven W.; and McDermott, Ruth E., 5,334,604, Cl. 514-364.000.

Pflibsen, Kent P.; and Stuppi, Albert N., to Kaman Aerospace Corporation. Laser light beam homogenizer and imaging lidar system incorporating same. 5,335,070, Cl. 348-31.000.

Phelps, Daniel J.: *See—*
Herczeg, Karen L.; Mcvay, David M.; Phelps, Daniel J.; and Bell, Kimberley C., 5,335,239, Cl. 372-38.000.

Phillips, Allyn E., to Reliance Electric Industrial Company. Change gear apparatus and method. 5,333,377, Cl. 29-893.200.

Phillips, Christopher P.; and Snow, Robert A., to Sterling Winthrop Inc. Lyophilized polyethylene oxide modified catalase composition, polypeptide complexes with cyclodextrin and treatment of diseases with the catalase compositions. 5,334,382, Cl. 424-94.300.

Phillips, Edward H. Tool for laparoscopic surgery. 5,334,140, Cl. 604-35.000.

Phillips Petroleum Company: *See—*
Ahmed, Iqbal; and Hsieh, Henry L., 5,334,685, Cl. 527-300.000.
Ash, Carlton E.; Geibel, Jon F.; Hagenson, Randy L.; and Soules, David A., 5,334,701, Cl. 528-486.000.

Philmon, Gregory A.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Linsey, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Phoenix Precision Graphics, Inc.: *See—*
Bliss, Arthur E., 5,335,055, Cl. 355-326.00R.

Photonix Industries: *See—*
Levinson, Frank H.; and Wisecarver, Martin L., 5,334,832, Cl. 250-227.240.

Piazza, Gastone, to Alfa Costruzioni Meccaniche S.p.A. Device for positioning nebulizer pumps destined to be screwed to liquid containers. 5,333,719, Cl. 198-399.000.

Pickles, Charles S.: *See—*
Brouillette, Peter; and Pickles, Charles S., 5,334,046, Cl. 439-540.000.

Piedmont, Gregory H.; and Spector, George. Modified sanitary toothbrush holder. 5,333,742, Cl. 211-65.000.

Piegay, Yves; and Bauvois, Jean, to Skis Rossignol S.A. Board for sliding, provided with a device for damping vibrations. 5,333,889, Cl. 280-602.000.

Pierre Fabre Medicament: *See—*
Bougaret, Joel; and Sournac, Michel, 5,334,393, Cl. 424-469.000.

Pierrot, Francois: *See—*
Toyama, Osamu; Uchiyama, Masaru; and Pierrot, Francois, 5,333,514, Cl. 74-479.0BW.

Pies, John R.: *See—*
Hayes, Donald J.; and Pies, John R., 5,334,415, Cl. 427-231.000.

Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., to Xerox Corporation. Dip coat process material handling system. 5,334,246, Cl. 118-69.000.

Pilaczynski, Clarence L.: *See—*
Wingfield, William R.; Childs, Leslie A.; and Pilaczynski, Clarence L., 5,333,724, Cl. 198-495.000.

Pillai, Subramonia; and Eby, Ronald, to American Cyanamid Company. Cytokine and hormone carriers for conjugate vaccines. 5,334,379, Cl. 424-85.200.

Pilot Industries, Inc.: *See—*
Thomson, Jon, 5,333,590, Cl. 123-520.000.

Pincheira Alverez, Aliro T. N.: *See—*
Bannach Sichtermann, Gustavo H.; Pincheira Alverez, Aliro T. N.; Reghezza Inzunza, Andres A.; Cruz Rivera, Alberto S.; Lorca Soto, Tomas S.; Hidalgo Cortes, Luis F.; Menacho Llana, Jorge M.; and Martinez Pereira, Miguel A., 5,334,317, Cl. 210-708.000.

Pinciaro, John. Hydrotherapy hot tub structure for neck and shoulder massage. 5,333,324, Cl. 4-567.000.

Pinedo, Jose M.: *See—*
Chen, Kent; Sumer, Suleyman O.; and Pinedo, Jose M., 5,335,159, Cl. 362-421.000.

Pinhas, Hanna: *See—*
Landa, Benzion; Pinhas, Hanna; and Fenster, Paul, 5,335,054, Cl. 355-279.000.

Pinnavaia, Thomas J.; and Amarasekera, Jayantha, to Board of Trustees operating Michigan State University. Method for the preparation of highly reactive clay composites for the removal of SO_x from flue gas streams. 5,334,564, Cl. 502-84.000.

Piot, Michel: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 5,334,408, Cl. 426-57.000.

Piper, Michael; Rienecker, Reimund; Kleinert, Rudi; and Schneider, Walter, to J. M. Voith GmbH. Stuffing box seal. 5,333,883, Cl. 277-102.000.

Pires, Paul B., to Epilogics. Continuously or infinitely variable transmission free of over-running clutches. 5,334,115, Cl. 475-169.000.

PiRod, Inc.: *See—*
Noble, Myron C., 5,333,436, Cl. 52-726.300.

Piskorsky, Vadim P.: *See—*
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

Pitney Bowes Inc.: *See—*
Kulpa, Walter J., 5,333,851, Cl. 271-225.000.

Pittau, Serge F., to Societe Nationale Industrielle et Aerospatiale. Device for connecting connexion elements into connectors. 5,333,374, Cl. 29-748.000.

Pitts, Alan J.; and Fowler, Charles E., to Halliburton Company. Automatic level control system and method. 5,335,185, Cl. 364-510.000.

Planeta, Mirek. Strip unwinding machine. 5,333,803, Cl. 242-555.300.

Plankl, Walter L.: *See—*
Mueller, Karl F.; and Plankl, Walter L., 5,334,681, Cl. 526-243.000.

Plastedil, S.A.: *See—*
Cretti, Piero, 5,333,429, Cl. 52-309.700.

Platt, Jonathan C.: *See—*
Dieken, Alan P.; Fischer, David J.; Platt, Jonathan C.; and Sondermann, William L., 5,334,223, Cl. 607-31.000.

Platzek, Johannes: *See—*
Gries, Heinz; Raduchel, Bernd; Platzek, Johannes; Weinmann, Hanns-Joachim; Press, Wolf-Rudiger; and Speck, Ulrich, 5,334,371, Cl. 424-9.000.

Playoff Corporation: *See—*
Feldman, William, 5,333,549, Cl. 101-483.000.

Plotkin, Jeffrey S.; Narayanan, Kolazi S.; and Taylor, Paul D., to ISP Investments Inc. Polyalk-1-enyl ethers. 5,334,772, Cl. 568-609.000.

Plouse, Kevin W.: *See—*
Van Buskirk, Michael A.; Plouse, Kevin W.; Pawletko, Joseph G.; Chang, Chi; Haddad, Sameer S.; and Gutala, Ravi P., 5,335,198, Cl. 365-185.000.

Plummer, Mark A., to Marathon Oil Company. Process for recovering sulfur and hydrogen from hydrogen sulfide. 5,334,363, Cl. 423-226.000.

PLX Inc.: *See—*
Bleier, Zvi, 5,335,111, Cl. 359-529.000.

Po', Riccardo; Occhiello, Ernesto; Giannotta, Giorgio; and Garbassi, Fabio, to Enichem S.p.A. Polyester compositions with a high crystallization rate. 5,334,343, Cl. 264-328.100.

Poclain Hydraulics: *See—*
Lemaire, Gilles; and Perot, Marc, 5,333,705, Cl. 188-71.500.

Pohang Iron & Steel Co., Ltd.: *See—*
Seong, Byeong G.; Hwang, Soon Y.; Song, Jin H.; and Kim, Kyoo Y., 5,334,416, Cl. 427-252.000.

Polaroid Corporation: *See—*
Grasshoff, Jurgen M.; Mischke, Mark R.; and Telfer, Stephen J., 5,334,489, Cl. 430-335.000.
Schild, Howard G., 5,334,573, Cl. 503-227.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Polhemus, Stanley J.: *See*—
DuBois, Neil J.; and Polhemus, Stanley J., 5,333,570, Cl. 114-144.00R.

Poli, Robert G.; Thomas, V. Stanton; Adolf, Wayne F.; and Rudzena, William L., to Abbott Laboratories. Latching piercing pin for use with fluid vials of varying sizes. 5,334,179, Cl. 604-403.000.

Pollard, Howard E.; Neff, Robert E.; and Ajluni, Cheryl J., to Space Systems/Loral, Inc. Optical illumination and inspection system for wafer and solar cell defects. 5,334,844, Cl. 250-330.000.

Polle, Hubert, to Siemens Aktiengesellschaft. Light waveguide lead having a filling compound and method for manufacture of the lead. 5,335,302, Cl. 385-100.000.

Polyshot Corporation: *See*—
Hepler, Douglas C.; and Pursel, David L., 5,334,006, Cl. 425-190.000.

Polzin, Mark A.: *See*—
Christie, C. Dale; Gallagher, Michael T.; Hendricksen, Michael J.; Oliver, John D.; and Polzin, Mark A., 5,333,926, Cl. 295-21.000.

Pompei, Francesco, to Exergen Corporation. Radiation detector with thermocouple calibration and remote temperature reference. 5,333,784, Cl. 236-91.00C.

Pond, Karen L.; Chitty, Alton L.; Oehlbeck, Douglas L.; Henry, Marian S.; and Darron, Ward K., to Eastman Kodak Company. Process and apparatus for reproducible production of non-uniform product distributions. 5,334,496, Cl. 430-569.000.

Ponticello, Gerald S.: *See*—
Baldwin, John J.; Shepard, Kenneth L.; Ponticello, Gerald S.; and Williams, Theresa M., 5,334,591, Cl. 514-215.000.

Poongsan Corporation: *See*—
Kim, Young G.; and Hwang, In Y., 5,334,346, Cl. 420-4.850.

Popat, Pravin N.; Unterweger, Diethard; Baskin, Gennady; Candelet, Ronald J.; and Tonnies, Gary L., to Texas Instruments Incorporated. Telecommunication equipment protector. 5,334,553, Cl. 437-209.000.

Pope, Gregory M.; Stone, Jeffrey F.; and Gregory, John A., to Tiburon Systems, Inc. Automated software testing system. 5,335,342, Cl. 395-575.000.

Pope, Rodney T.; Barber, Steven D.; and Hall, Daniel R., to Specialty Products Incorporated. Playground device. 5,334,098, Cl. 472-116.000.

Poppas, Dix P.; Schlossberg, Steven M.; Choma, Theodore J.; Klioze, Scott D.; and Boll, James H., to Poppas, Dix Phillip; Schlossberg, Steven Mark; Choma, Theodore John; and Klioze, Scott David. Laser tissue welding control system. 5,334,191, Cl. 606-12.000.

Poppas, Dix Phillip: *See*—
Poppas, Dix P.; Schlossberg, Steven M.; Choma, Theodore J.; Klioze, Scott D.; and Boll, James H., 5,334,191, Cl. 606-12.000.

Porambo, Bernard A.; and Usrey, Carolyn L. Self-adhesive wallboard finishing tape and tape-and-wallboard panel system. 5,333,433, Cl. 52-417.000.

Poss, Michael G.: *See*—
Bruggemann, Charles J.; Poss, Michael G.; and Shah, Sanjay M., 5,333,775, Cl. 228-157.000.

Posthumus, Albert, to A & P Mfg., Inc. Bale cutting machine. 5,333,799, Cl. 241-27.000.

Potier, Thierry: *See*—
Bronoel, Guy; Potier, Thierry; Tassin, Noelle; Bugnet, Bernard; Doniat, Denis; and Rouget, Robert, 5,334,465, Cl. 429-222.000.

Powell, Lyn: *See*—
Thomas, Andrew P.; Martin, David M. G.; Lee, Stanley A.; and Powell, Lyn, 5,334,718, Cl. 546-118.000.

Power Poxy Adhesives, Inc.: *See*—
Clark, Bryan J., 5,333,737, Cl. 206-568.000.

Powers, Thomas O.; Hertrick, Timothy T.; and Peak, Mary A., to Geauga Company. Rubber/plastic co-extrusion. 5,334,458, Cl. 428-517.000.

Pozzetti, Augusto P.: *See*—
Mehringer, Ricardo F.; Bardon, Hugo A.; and Pozzetti, Augusto P., 5,333,627, Cl. 132-108.000.

PPG Industries, Inc.: *See*—
Rice, William B., 5,334,639, Cl. 524-47.000.
Williams, William A., Jr., 5,334,322, Cl. 252-52.00A.

Prais, A. Wes: *See*—
Alchas, Paul G.; and Prais, A. Wes, 5,334,144, Cl. 604-68.000.

Prasit, Petpiboon; and Blouin, Marc, to Merck Frosst Canada, Inc. Indole carbamates as leukotriene antagonists. 5,334,597, Cl. 514-300.000.

Prather, Don G.; and Prather, Hugh M. Oil filter wrenches with self tightening capabilities. 5,333,522, Cl. 81-64.000.

Prather, Hugh M.: *See*—
Prather, Don G.; and Prather, Hugh M., 5,333,522, Cl. 81-64.000.

Prather, William S.; and O'Rourke, Patrick E., to United States of America, Energy. Spectrophotometric probe. 5,335,067, Cl. 356-436.000.

Pratt, John D.; and Eshraghi, Soheil A., to Textron, Inc. Buckling semi-solid rivet. 5,333,980, Cl. 411-501.000.

Precision Fukuhara Works, Ltd.: *See*—
Takemoto, Sumio; and Hayaski, Kiyoshi, 5,333,354, Cl. 15-301.000.

PreJean, Ronald M. Sun shield for a windshield. 5,333,927, Cl. 296-97.700.

Premier Gear & Machine Works: *See*—
Albion, Stephen R.; Mackintosh, Douglas C.; and Uhl, James F., 5,333,658, Cl. 144-213.000.

Premier Mill Corp.: *See*—
Liebert, Gregory R., 5,333,804, Cl. 241-69.000.

Premier Technology: *See*—
Tanzer, Raymond C.; and Hanchar, Peter J., 5,333,866, Cl. 273-118.00R.

Prencipe, Michael: *See*—
Nabi, Nuran; Prencipe, Michael; and Gaffar, Abdul, 5,334,375, Cl. 424-52.000.

Press, Wolf-Rudiger: *See*—
Gries, Heinz; Raduchel, Bernd; Platzek, Johannes; Weinmann, Hanns-Joachim; Press, Wolf-Rudiger; and Speck, Ulrich, 5,334,371, Cl. 424-9.000.

Price, Francis W., Jr. Corneal press. 5,334,213, Cl. 606-166.000.

Price, James F.: *See*—
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Pridgeon, Jay G.; Green, Patricia; and Spector, George. Method of playing a board game. 5,333,877, Cl. 273-248.000.

Pridham, Ronald G.: *See*—
Johnston, Robert W.; Hooper, Alan L.; Byar, Peter D.; and Pridham, Ronald G., 5,334,354, Cl. 422-104.000.

Priem, Curtis; and Boynton, Charles, to Sun Microsystems, Inc. Method and apparatus for utilizing blanking on both zero setup and pedestal setup display monitors with a conventional computer system. 5,334,998, Cl. 345-185.000.

Prins, Roel: *See*—
Kouwenhoven, Herman W.; Bertea, Leopoldo; and Prins, Roel, 5,334,781, Cl. 568-927.000.

Privitera, Salvatore: *See*—
Rothfuss, Robert G.; Okorocha, Livyn O.; Bishop, Gregory D.; Sambi, Narinderjit S.; Bedi, James J.; Privitera, Salvatore; and Sherrill, Michael, 5,333,772, Cl. 227-176.000.

Procter & Gamble Company, The: *See*—
Buenger, Daniel E.; Horney, James C.; and Hammons, John L., 5,334,176, Cl. 604-367.000.
Scheibel, Jeffrey J.; Connor, Daniel S.; Shumate, Robert E.; and St. Laurent, James B., 5,334,764, Cl. 564-487.000.
Trokhan, Paul D.; and Boutilier, Glenn D., 5,334,289, Cl. 162-358.200.
Van Phan, Dean; and Trokhan, Paul D., 5,334,286, Cl. 162-158.000.

Procter & Gample Pharmaceuticals, Inc.: *See*—
Ebetino, Frank H.; and Benedict, James J., 5,334,586, Cl. 514-85.000.

Product Suppliers AG: *See*—
Aarts, Mathias L. C., 5,333,492, Cl. 73-49.300.

Proesel, Ronald J., to Micro Solutions, Inc. General purpose parallel port interface. 5,335,338, Cl. 395-500.000.

Projan, Steven J.: *See*—
Blackburn, Peter; Projan, Steven J.; and Goldberg, Edward B., 5,334,582, Cl. 514-2.000.

Pronovost, Normand; and Pronovost, Rejean. Bale loading, transporting and unloading trailer. 5,333,981, Cl. 414-24.500.

Pronovost, Rejean: *See*—
Pronovost, Normand; and Pronovost, Rejean, 5,333,981, Cl. 414-24.500.

Propst, Robert L. Floor system. 5,333,423, Cl. 52-126.600.

Protheroe, Robert L.: *See*—
Crooks, John F.; and Protheroe, Robert L., 5,335,230, Cl. 371-15.100.

Provenzano, Virgil: *See*—
Louat, Norman P.; Provenzano, Virgil; Imam, M. Ashraf; and Sadananda, Kuntimaddi, 5,333,667, Cl. 164-97.000.

Prudham, Daniel: *See*—
Oudet, Claude; and Prudham, Daniel, 5,334,893, Cl. 310-38.000.

Prugh, John D.: *See*—
Hartman, George D.; Halczenko, Wasyl; and Prugh, John D., 5,334,596, Cl. 514-301.000.

Pruss, Ludwig; and Kappel, Reinhard, to Volkswagen AG. Multistage transmission with an automatic load-shift spur gear. 5,333,512, Cl. 74-331.000.

Pryor, Timothy B.: *See*—
Brandt, David E.; Young, Ronald L.; and Pryor, Timothy B., 5,333,818, Cl. 244-118.600.

Przybelski, Robert J., to Baxter International. Administration of low dose hemoglobin to increase perfusion. 5,334,706, Cl. 530-385.000.

Pullen, Michael W., to United States of America, Navy. Target detection for vision systems. 5,335,297, Cl. 382-50.000.

Pullman, Gene A. Fishing cart apparatus. 5,333,885, Cl. 280-47.190.

Purcell, Robert J., to Caterpillar Inc. Hydraulic recoil and belt tension control system. 5,334,106, Cl. 474-110.000.

Purdham, Robert, to Guinness Brewing Worldwide Limited. Beverage package. 5,334,400, Cl. 426-112.000.

Pure Software Inc.: *See*—
Hastings, Reed, 5,335,344, Cl. 395-575.000.

Pursel, David L.: *See*—
Hepler, Douglas C.; and Pursel, David L., 5,334,006, Cl. 425-190.000.

Pursley, Matt D.: *See*—
Brown, Joe E.; and Pursley, Matt D., 5,334,169, Cl. 604-282.000.

Purtell, Rufus J.; and Hoch, Forest M. Agricultural irrigation. 5,333,796, Cl. 239-734.000.

Purves, Frances C.: *See*—
Roizman, Bernard; and Purves, Frances C., 5,334,498, Cl. 435-5.000.

Putnam, Matthew D. Apparatus and method for dividing transverse carpal ligament. 5,334,214, Cl. 606-170.000.

Q-Dot Inc.: *See*—
Higgins, Brian P.; Gardner, David W.; Rhea, Kerry D.; Linnenbrink, Thomas E.; Reed, ebecca S.; and Roberts, Peter C. T., 5,334,962, Cl. 333-247.000.

Quantrille, Thomas E.; Austin, Jared A.; and Zimmerman, G. Stanley, to Fiberweb North America, Inc. Composite elastic nonwoven fabric. 5,334,446, Cl. 428-284.000.

Quantum Chemical Corporation: *See*—
Menon, Raghu; Masino, Albert P.; and Reinking, Mark K., 5,334,567, Cl. 502-116.000.

Quin, Louis D.; and Jankowski, Stefan, to Research Corporation Technologies, Inc. Phosphorylation with monomeric metaphosphates. 5,334,741, Cl. 558-110.000.

Quin Tics Corporation: *See*—
Ashbrook, Clifford L., 5,333,367, Cl. 29-275.000.

Quinlan, Robert L., Jr.: *See*—
Marra, Mark A.; and Quinlan, Robert L., Jr., 5,334,099, Cl. 472-118.000.

Quoin Industrial Inc.: *See*—
Lane, Wallace E.; Lane, Michael L.; Whitney, Lowell T.; and Gerstenkorn, Michael D., 5,333,763, Cl. 222-386.500.

R. A. Jones & Co., Inc.: *See*—
Stevie, John W., 5,333,721, Cl. 198-418.600.

R&D of North Carolina Inc.: *See*—
Foley, Charles F.; Metheney, Harry P.; and Tucker, Bradley J., 5,333,967, Cl. 401-139.000.

R. J. Reynolds Tobacco Company: *See*—
Wolfe, Patricia K., 5,333,729, Cl. 206-268.000.

R. R. Donnelley & Sons Company: *See*—
Xie, Zhenhua; and Rodriguez, Michael A., 5,335,089, Cl. 358-456.000.

Raath, Pieter L., to MODSEC Systems (Proprietary) Limited. Security device kit, a security device and a security installation. 5,334,971, Cl. 340-550.000.

Raczek, Kendall K.: *See*—
Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., 5,333,438, Cl. 53-399.000.

Radman, Miroslav: *See*—
Resnick, Michael A.; and Radman, Miroslav, 5,334,522, Cl. 435-172.300.

Raduchel, Bernd: *See*—
Gries, Heinz; Raduchel, Bernd; Platzek, Johannes; Weinmann, Hanns-Joachim; Press, Wolf-Rudiger; and Speck, Ulrich, 5,334,371, Cl. 424-9.000.

Raehse, Wilfried: *See*—
Zeise, Christiane; Jacobs, Jochen; and Raehse, Wilfried, 5,334,324, Cl. 252-91.000.

Rafaelides, Anthony; and Spector, George. Car air freshener. 5,334,361, Cl. 422-305.000.

Rafferty, Kevin; and Rowe, Bruce. Method for forming a pack cementation coating on a metal surface by a coating tape. 5,334,417, Cl. 427-253.000.

Raffoni, Giuseppe. Laminar joining staple. 5,333,979, Cl. 411-477.000.

Rageot, Alain: *See*—
Cereghetti, Marco; and Rageot, Alain, 5,334,766, Cl. 568-14.000.

Railway Equipment Company, Inc.: *See*—
Fox, David K., 5,333,912, Cl. 285-39.000.

Railway Technical Research Institute: *See*—
Matsui, Kazumi; Matsuoka, Kouichi; and Nakagawa, Shigeru, 5,333,553, Cl. 104-290.000.

Rajeshwar, Krishnan; and Bose, Chalasani S. C., to Board of Regents, The University of Texas System. Conducting polymer films containing nanodispersed catalyst particles: a new type of composite material for technological applications. 5,334,292, Cl. 204-59.00R.

Rakuljic, George A.: *See*—
Leyva, Victor; and Rakuljic, George A., 5,335,098, Cl. 359-7.000.

Ralston, Ronald R.: *See*—
Blaha, James R.; Underwood, Herbert N.; Salle, Ralph; and Ralston, Ronald R., 5,333,969, Cl. 404-91.000.

Rammler, David H.: *See*—
Tickner, Ernest G.; Short, Robert E.; and Rammler, David H., 5,333,613, Cl. 128-662.020.

Ramsden, John W., Jr., to American Mining Electronics, Inc. Radiation sensor. 5,334,838, Cl. 250-361.00R.

Ramsey, Charles R.; Holcomb, Russell E.; and Backus, Brian L., to Matrix Technologies, Inc. Gauging system with improved setup and operating method. 5,333,488, Cl. 73-1.00J.

Ramsey, Philip B.: *See*—
Makowiecki, Daniel M.; McKernan, Mark A.; Grabner, R. Fred; and Ramsey, Philip B., 5,333,726, Cl. 204-298.090.

Rancurel, Alain: *See*—
Nuns, Jacques; Girault, Alain; and Rancurel, Alain, 5,334,290, Cl. 202-205.000.

Rashtchian, Ayoub; Schuster, David M.; and Buchman, George W., III, to Life Technologies, Inc. Method for altering a nucleotide sequence. 5,334,515, Cl. 435-91.200.

Rasmussen, Aaron P. Gravity sled exercise machine. 5,334,120, Cl. 482-97.000.

Rauta, M.: *See*—
Brasoveanu, Dan; and Rauta, Mihai C., 5,335,017, Cl. 348-426.000.

Rauta, Mihai C.: *See*—
Brasoveanu, Dan; and Rauta, Mihai C., 5,335,017, Cl. 348-426.000.

Raychem Corporation: *See*—
Reamey, Robert H., 5,335,101, Cl. 359-52.000.

RB-Maxim Visual Aids Ltd.: *See*—
Bennett, Reginald S.; and Hretsina, Gary, 5,335,112, Cl. 359-530.000.

RCA Thomson Licensing Corporation: *See*—
Dieterich, Charles B., 5,335,020, Cl. 348-614.000.

Re, John; and Cuomo, Robert. Automatic animal feeding device. 5,333,571, Cl. 119-56.100.

Ream, Ronald L.; Corriveau, Christine L.; and Wokas, William J., to Amurol Products Company. Bubble gum formulation. 5,334,397, Cl. 426-5.000.

Reamey, Robert H., to Raychem Corporation. Method of making liquid crystal material including polymerizing dispersion of prepolymer and liquid crystal which is immiscible in the prepolymer. 5,335,101, Cl. 359-52.000.

Recognition International Inc.: *See*—
Lovelady, Kenneth T.; and Sanner, Medford D., 5,335,292, Cl. 382-17.000.

Red Wing Shoe Company, Inc.: *See*—
Hausch, Duane D., 5,333,397, Cl. 36-3.00B.

Redden, Joseph D.: *See*—
Smith, Ronald R.; Foreman, Richard D.; Graf, Todd S.; and Redden, Joseph D., 5,333,835, Cl. 251-129.120.

Redding, John C.; and Brouwer, Douglas J., to Kohler Co. Apparatus for opening and closing a drain. 5,333,327, Cl. 4-693.000.

Redford, Daniel S. Environmentally controlled commercial/public toilet. 5,333,321, Cl. 4-348.000.

Redl, Richard: *See*—
Martin-Lopez, Fernando R.; and Redl, Richard, 5,335,162, Cl. 363-97.000.

Redmond, Russel J.: *See*—
Vidal, Claude A.; Redmond, Russel J.; and Makower, Joshua, 5,334,216, Cl. 606-213.000.

Reed, ebecca S.: *See*—
Higgins, Brian P.; Gardner, David W.; Rhea, Kerry D.; Linnenbrink, Thomas E.; Reed, ebecca S.; and Roberts, Peter C. T., 5,334,962, Cl. 333-247.000.

Reed, Robert W.: *See*—
Cavell, Ronald G.; Law, David J.; and Reed, Robert W., 5,334,791, Cl. 585-277.000.

Reese, Michael R., to MRGR Plugs, Inc. Valve plug. 5,333,837, Cl. 251-216.000.

Reeves Brothers, Inc.: *See*—
Byers, Joseph L.; Flint, W. Toriran; and Kerr, Richard C., 5,334,418, Cl. 427-373.000.

Reflection Technology: *See*—
Wells, Benjamin A.; Smith, Frank D.; Feldstein, Michael A.; and Hutner, Greg, 5,334,991, Cl. 345-8.000.

Regal-Beloit Corporation: *See*—
Patz, Byron M.; and Schwartz, Glenn R., 5,333,380, Cl. 29-898.070.

Regan, James F.: *See*—
Carr, Kenneth L.; Regan, James F.; and Waddell, Seid W., 5,334,141, Cl. 604-50.000.

Regent Lighting Corporation: *See*—
Chen, Kent; Sumer, Suleyman O.; and Pinedo, Jose M., 5,335,159, Cl. 362-421.000.

Reghezza Inzunza, Andres A.: *See*—
Bannach Sichtermann, Gustavo H.; Pincheira Alverez, Aliro T. N.; Reghezza Inzunza, Andres A.; Cruz Rivera, Alberto S.; Lorca Soto, Tomas S.; Hidalgo Cortes, Luis F.; Menacho Llana, Jorge M.; and Martinez Pereira, Miguel A., 5,334,317, Cl. 210-708.000.

Reh, Carter K.; and Robak, Edward, to General Production Services, Inc. Soft shroud for screen display device. 5,335,076, Cl. 348-794.000.

Reich, Erhard: *See*—
Horn, Peter; Reich, Erhard; Adams, Stefan; and Chakrabarti, Sarbananda, 5,334,448, Cl. 428-319.700.

Reichardt, Manfred; and Bleier, Robert, to Amphenol-Tuchel Electronics GmbH. Chip card reader with an end position switch. 5,334,034, Cl. 439-188.000.

Reichardt, Manfred: *See*—
Bleier, Robert; and Reichardt, Manfred, 5,334,827, Cl. 235-492.000.

Reichert, Marc: *See*—
Stomp, Hubert; Kremer, Andre; Fries, Daniel; Reichert, Marc; and Devillet, Serge, 5,333,842, Cl. 266-226.000.

Reidinger, Rolf: *See*—
Beckerle, Heinz; and Reidinger, Rolf, 5,334,410, Cl. 427-68.000.

Reifenrath, Werner; and Braun, Eduard, to Optima Spanntechnik GmbH. Ram locking device for a chipless press with statically cushioned and pressure-relievable tension rod. 5,333,543, Cl. 100-53.000.

Reimann, Peter: *See*—
Hegner, Frank; Schmidt, Elke; Klahn, Thomas; Reimann, Peter; Breitenstein, Heinz; and Messmer, Stephan, 5,334,344, Cl. 420-422.000.

Reinicke, Robert H., to Marotta Scientific Controls, Inc. Rotary ball valve with lifting ball. 5,333,833, Cl. 251-77.000.

Reinking, Mark K.: *See*—
Menon, Raghu; Masino, Albert P.; and Reinking, Mark K., 5,334,567, Cl. 502-116.000.

Reiter, Leopold: *See*—
Lindemeier, Heinz; Hope, Jochen; Reiter, Leopold; and Kronberger, Rainer, 5,335,010, Cl. 348-706.000.

Reliance Electric Industrial Company: *See*—
Phillips, Allyn E., 5,333,377, Cl. 29-893.200.

VOL 1165 ISS 1 AG 2 1994 UMI

Renick, James T.: *See—*
Adolf, Wayne F.; Helgren, R. Hayes; Renick, James T.; and Szempruch, Walter T., 5,334,180, Cl. 604-411.000.

Renishaw plc: *See—*
McMurtry, David R.; and Sutherland, Alexander T., 5,334,918, Cl. 318-568.160.

Renner, Michael: *See—*
Clarke, Norman B.; Cook, Lawrence G.; Doyle, Robert G.; and Renner, Michael, 5,334,931, Cl. 324-757.000.

Renz, Mark B.: *See—*
Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., 5,333,438, Cl. 53-399.000.

Research Corporation Technologies, Inc.: *See—*
Quin, Louis D.; and Jankowski, Stefan, 5,334,741, Cl. 558-110.000.

Research Institute of Industrial Science & Technology: *See—*
Seong, Byeong G.; Hwang, Soon Y.; Song, Jin H.; and Kim, Kyoo Y., 5,334,416, Cl. 427-252.000.

Reserve Bank of Australia: *See—*
Jackson, Wayne K.; and Goodman, Richard A., 5,335,113, Cl. 359-569.000.

Resnick, Michael A.; and Radman, Miroslav, to United States/National Institutes of Health. System for isolating and producing new genes, gene products and DNA sequences. 5,334,522, Cl. 435-172.300.

Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. Polyhalodihydrodioxins and polyhalodioxoles. 5,334,731, Cl. 549-455.000.

Rettenbeck, Karl: *See—*
Freudenreich, Reinhold; Mielke, Ingolf; Rettenbeck, Karl; and Schottle, Thomas, 5,334,783, Cl. 570-153.000.

Rettig, Rainer: *See—*
Zwiener, Christian; Rettig, Rainer; Nachtkamp, Klaus; Pedain, Josef; and Arlt, Dieter, 5,334,637, Cl. 524-539.000.

Rexene Products Company: *See—*
Gage, Paul D., 5,334,643, Cl. 524-232.000.

Reymann, Vincent R., Jr.: *See—*
Manning, George E.; Fortini, Brian E.; and Reymann, Vincent R., Jr., 5,333,872, Cl. 273-169.000.

Reynolds Metals Company: *See—*
Jorstad, John L.; Morley, Richard A.; Overbagh, William H.; and Steele, George W., 5,333,668, Cl. 164-100.000.

Reynolds, Richard P.: *See—*
Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,335,328, Cl. 395-275.000.

Rhea, Kerry D.: *See—*
Higgins, Brian P.; Gardner, David W.; Rhea, Kerry D.; Linnenbrink, Thomas E.; Reed, ebecca S.; and Roberts, Peter C. T., 5,334,962, Cl. 333-247.000.

Rheem Manufacturing Company: *See—*
Roden, James S., 5,334,299, Cl. 204-196.000.

Rheinmetall GmbH: *See—*
Heitmann, Thomas; Bocker, Jurgen; and Hahn, Ulf, 5,333,551, Cl. 102-439.000.

Rhone-Poulenc Agriculture Ltd: *See—*
Bennetau, Bernard; and Cain, Paul A., 5,334,753, Cl. 562-405.000.

Rhone-Poulenc Chimie: *See—*
Blanchard, Gilbert; Bordes, Elisabeth; and Ferre, Gilbert, 5,334,743, Cl. 558-319.000.
Derian, Paul-Joel; and Guerin, Gilles, 5,334,585, Cl. 514-74.000.
Desmurs, Jean-Roger; and Jouve, Isabelle, 5,334,735, Cl. 552-308.000.
Ferrero, Rose-Marie; and Jacquot, Roland, 5,334,769, Cl. 568-435.000.

Ribich, William A.: *See—*
Smirlock, Martin E.; Ribich, William A.; Marinaccio, Paul J.; and Sawaf, Bernard E., 5,333,532, Cl. 89-36.020.

Rice, Harold D. Apparatus for prevention of loss of refrigerant. 5,333,468, Cl. 62-174.000.

Rice, John T.: *See—*
Hart, Rickey D.; Winters, Richard M.; Rice, John T.; and Nicholson, James E., 5,334,198, Cl. 606-52.000.

Rice, William B., to PPG Industries, Inc. Starch oil sizing composition and glass fibers treated therewith. 5,334,639, Cl. 524-47.000.

Rich, Dennis E. Accumulator paddle apparatus. 5,333,723, Cl. 198-484.100.

Richard, Fred V.: *See—*
Hartman, Davis H.; Richard, Fred V.; and Lebby, Michael S., 5,335,300, Cl. 385-37.000.

Richard Hirschmann GmbH: *See—*
Wehrle, Gerhard; and Sonn, Michael, 5,334,035, Cl. 439-252.000.

Richard, Michael A.; De Deken, Jacques; and Yee, David K., to Catalytica. Process and catalyst for partially hydrogenating aromatics to produce cycloolefins. 5,334,790, Cl. 585-271.000.

Richardson, Charles T., Jr.; Austin, Kevin L.; and Billingsley, Samuel F., III, to United States Advance Network, Inc. Automated telecommunication peripheral system. 5,335,266, Cl. 379-88.000.

Richardson, William F.: *See—*
Shen, Bingn W.; Richardson, William F.; and Doering, Robert R., 5,334,548, Cl. 437-52.000.

Rickerl, Paul G.: *See—*
Kindl, Thomas E.; Moore, Ronald J.; and Rickerl, Paul G., 5,334,487, Cl. 430-312.000.

Ricoh Company Ltd.: *See—*
Cullen, John F.; and Ejiri, Koichi, 5,335,290, Cl. 382-9.000.
Katano, Yasuo, 5,335,001, Cl. 346-76.00R.
Shimada, Tomoyuki; Sasaki, Masaomi; Aruga, Tamotsu; and Adachi, Hiroshi, 5,334,470, Cl. 430-59.000.
Tani, Tatsuo, 5,335,051, Cl. 355-245.000.
Yoshiyama, Yasushi, 5,335,215, Cl. 369-50.000.

Ricoh Corporation: *See—*
Cullen, John F.; and Ejiri, Koichi, 5,335,290, Cl. 382-9.000.

Riddle, James A.: *See—*
Dennis, Richard K.; Myers, Wade D.; and Riddle, James A., 5,333,375, Cl. 29-827.000.

Riedel, Karlheinz: *See—*
Kugler, Karl-Heinz; Langner, Arnd-Matthias; Riedel, Karlheinz; Schleupen, Richard; and Zimmermann, Christian, 5,334,938, Cl. 324-399.000.

Rienecker, Reimund: *See—*
Piper, Michael; Rienecker, Reimund; Kleinert, Rudi; and Schneider, Walter, 5,333,883, Cl. 277-102.000.

Riezler, Rudolf, to Lindauer Dornier GmbH. Pneumatic weft guide in an auxiliary reed. 5,333,651, Cl. 139-435.500.

Rijksuniversiteit te Groningen: *See—*
Witholt, Bernard; and Lageveen, Roland G., 5,334,698, Cl. 528-354.000.

Riordan, Neil H. Method for detecting intestinal pathogen dientamoeba fragilis. 5,334,509, Cl. 435-34.000.

Riou, Christophe N.: *See—*
Heyden, Eddy F. M. G.; LaCour, Christian; Lechevalier, Michel M. A. A.; and Riou, Christophe N., 5,333,644, Cl. 137-614.180.

Ripberger, Richard A.: *See—*
Dunn, Edwin C.; Fry, Scott M.; Jackson, Scott A.; MacLean, Neil H., Jr.; Reynolds, Richard P.; and Ripberger, Richard A., 5,335,328, Cl. 395-275.000.

Risch, Sara J.; and Brandberg, Lawrence C., to Golden Valley Microwave Foods Inc. Microwave food heating package with accordion pleats. 5,334,820, Cl. 219-730.000.

Rittal-Werk Rudolf Loh GmbH & Co. KG: *See—*
Zachrai, Jurgen, 5,333,950, Cl. 312-265.100.

Rittner, Wolfgang: *See—*
Schnoor, Christian; Thometschek, Roderich; and Rittner, Wolfgang, 5,333,748, Cl. 220-343.000.

Riva, Raul: *See—*
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; Mirenna, Luigi; and Mirenna, Luigi, 5,334,605, Cl. 514-365.000.
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Riva, Raul; Garavaglia, Carlo; and Mirenna, Luigi, 5,334,609, Cl. 514-393.000.

Rives, Claude, to Valeo Vision. Fastener for securing a lighting or indicating unit on a motor vehicle. 5,333,978, Cl. 411-389.000.

Riviere, Jim E.: *See—*
Sage, Burton H., Jr.; and Riviere, Jim E., 5,334,138, Cl. 604-20.000.

Rix, John F., to AlliedSignal Inc. Integrated cabin pressure controller. 5,334,090, Cl. 454-72.000.

Roarabaugh, Virginia M.: *See—*
Christopher, Kenneth W., Jr.; Roarabaugh, Virginia M.; and Waldron, Theodore C., III, 5,335,332, Cl. 364-400.000.

Robak, Edward: *See—*
Reh, Carter K.; and Robak, Edward, 5,335,076, Cl. 348-794.000.

Robbins, Clarence R.; Patel, Amrit; and Clarke, Jane, to Colgate-Palmolive Company. Compositions for conditioning hair. 5,334,376, Cl. 424-70.000.

Robbins, John D.: *See—*
Addeo, Eric J.; Robbins, John D.; and Shtirmer, Gennady, 5,335,011, Cl. 348-15.000.

Robert Bosch GmbH: *See—*
Benedikt, Walter; Betz, Dieter; Grewe, Werner; and Haist, Gerhard, 5,333,592, Cl. 123-634.000.
Dreyer, Adolf, 5,333,489, Cl. 73-35.000.
Friese, Karl-Hermann; Gruenwald, Werner; Wiedenmann, Hans-Martin; and Hoetzel, Gerhard, 5,334,350, Cl. 422-98.000.
Kugler, Karl-Heinz; Langner, Arnd-Matthias; Riedel, Karlheinz; Schleupen, Richard; and Zimmermann, Christian, 5,334,938, Cl. 324-399.000.
Locher, Johannes; Graf, Herbert; Rodriguez-Amaya, Nestor; Schmitt, Alfred; Tauscher, Joachim; and Zimmermann, Werner, 5,335,136, Cl. 361-160.000.
Schafer, Jochen; Frank, Thomas; and Bederna, Frank, 5,335,178, Cl. 364-426.020.
Wehberg, Josef, 5,334,921, Cl. 318-721.000.

Roberts Consolidated Industries, Inc.: *See—*
Klein, James H., 5,333,401, Cl. 38-89.000.

Roberts, Jane A. E.: *See—*
Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., 5,334,784, Cl. 570-165.000.

Roberts, Peter C. T.: *See—*
Higgins, Brian P.; Gardner, David W.; Rhea, Kerry D.; Linnenbrink, Thomas E.; Reed, ebecca S.; and Roberts, Peter C. T., 5,334,962, Cl. 333-247.000.

Roberts, Samuel E. Adjustable visor apparatus for bicycle helmet. 5,333,328, Cl. 2-422.000.

Robinson, James E., to K-Star International Corp. Ku-band satellite dish antenna. 5,334,990, Cl. 343-840.000.

Robinson, Mery C.: *See—*
Colasito, Dominic J.; Robinson, Mery C.; and Smith, Alvin J., 5,334,533, Cl. 435-264.000.

Robinson, Robert. Gun with variable gas power. 5,333,594, Cl. 124-73.000.

Roccaforte, Harry I., to Waldorf Corporation. Recloseable carton with pouring spout. 5,333,781, Cl. 229-229.000.

Rochat, Roxanna F.; Taylor, Joann M.; and Weiman, Novia A., to Tektronix, Inc. Computer display color control and selection system. 5,334,992, Cl. 345-22.000.

Rochester Medical Corporation: *See—*
Conway, Anthony J.; Conway, Philip J.; and Fryar, Richard D., Jr., 5,334,175, Cl. 604-352.000.

Rockefeller University, The: *See—*
Ulrich, Peter C.; and Cerami, Anthony, 5,334,617, Cl. 514-562.000.

Rockwell International Corporation: *See—*
Capigatti, Andrew C.; and Zdenek, John M., 5,333,961, Cl. 400-490.000.
Fadner, Thomas A., 5,333,548, Cl. 101-467.000.
Harker, Alan B.; DeNatale, Jeffrey F.; Hood, Patrick J.; and Flintoff, John F., 5,334,342, Cl. 264-317.000.
Snodgrass, Timothy E., 5,335,248, Cl. 375-1.000.
Steinlicht, Joseph C., 5,335,269, Cl. 379-266.000.

Roden, James S., to Rheem Manufacturing Company. Water heater having improved sacrificial anode assembly therein. 5,334,299, Cl. 204-196.000.

Roders, George W.: *See—*
Jamison, Mark D.; Banks, Stewart; Williamson, Nicholas; and Roders, George W., 5,333,758, Cl. 222-101.000.

Rodi, Anton: *See—*
Pfisterer, Alexander; and Rodi, Anton, 5,333,547, Cl. 101-409.000.

Rodi, Norbert: *See—*
Ganter, Udo; and Rodi, Norbert, 5,333,545, Cl. 101-76.000.

Rodney, Stanley; and Barr, Larry H., to Teledyne McCormick Selph. Tin alloy sheath material for explosive-pyrotechnic linear products. 5,333,550, Cl. 102-331.000.

Rodrigues, Manoel A.: *See—*
Cole, Robert G.; Fendick, Kerry W.; and Rodrigues, Manoel A., 5,335,224, Cl. 370-84.000.

Rodriguez-Amaya, Nestor: *See—*
Locher, Johannes; Graf, Herbert; Rodriguez-Amaya, Nestor; Schmitt, Alfred; Tauscher, Joachim; and Zimmermann, Werner, 5,335,136, Cl. 361-160.000.

Rodriguez-Cavazos, Enrique; and Altmanshofer, Robert D., to Thomson Consumer Electronics, Inc. Automatic kinescope bias arrangement. 5,335,024, Cl. 348-806.000.

Rodriguez, Michael A.: *See—*
Xie, Zhenhua; and Rodriguez, Michael A., 5,335,089, Cl. 358-456.000.

Roehl, Franz: *See—*
Wenderoth, Bernd; Brand, Siegbert; Schuetz, Franz; Kuekenhoehner, Thomas; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,334,577, Cl. 504-130.000.

Roemen, Fernand: *See—*
Lonardi, Emile; Malivoir, Philippe; Metz, Jean; Roemen, Fernand; and Milen, Patrick, 5,333,839, Cl. 266-45.000.

Roepke, Ronald W. Multi-position grip system for barbells. 5,334,113, Cl. 482-106.000.

Roger, Loic: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 5,334,408, Cl. 426-57.000.

Roggenbuck, David C.; Roggenbuck, Paul; and Roggenbuck, Vincent. Strip-till seed bed preparation apparatus. 5,333,694, Cl. 172-156.000.

Roggenbuck, Paul: *See—*
Roggenbuck, David C.; Roggenbuck, Paul; and Roggenbuck, Vincent, 5,333,694, Cl. 172-156.000.

Roggenbuck, Vincent: *See—*
Roggenbuck, David C.; Roggenbuck, Paul; and Roggenbuck, Vincent, 5,333,694, Cl. 172-156.000.

Roggero, Arnaldo; Pedretti, Ugo; La Mantia, Francesco P.; Citta', Vincenzo; and Lezzi, Alessandro, to Enitricherche S.p.A. Thermotropic copolyester, process for preparing it and use thereof in the preparation of vulcanized rubbers. 5,334,695, Cl. 528-193.000.

Rohm Co., Ltd.: *See—*
Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, 5,335,002, Cl. 346-76.0PH.
Negoro, Masayuki, 5,334,968, Cl. 338-320.000.

Rohm and Haas Company: *See—*
Carlson, Virginia A.; Curry-Nkansah, Maria E.; Gebhard, Matthew S.; and Lauer, Rosemarie P., 5,334,655, Cl. 524-804.000.
Hsu, Adam C.; and Tice, Colin M., 5,334,726, Cl. 548-263.200.

Rohto Pharmaceutical Co., Ltd.: *See—*
Mitani, Yoako; Muta, Kenji; and Umemoto, Mitsuo, 5,334,378, Cl. 424-78.100.

Roizman, Bernard; and Purves, Frances C., to Arch Development Corporation. Herpes simplex virus 1 UL13 gene product: methods and compositions. 5,334,498, Cl. 435-5.000.

Roland, Dennis M.: *See—*
Van Duzer, John H.; and Roland, Dennis M., 5,334,600, Cl. 514-309.000.

Rollinson, Michelle. Table and chair assembly. 5,333,928, Cl. 297-142.000.

Romanelli, Michael G.: *See—*
Yezrielev, Albert I.; Wellman, William E.; Kowalik, Ralph M.; Knudsen, George A.; and Romanelli, Michael G., 5,334,671, Cl. 525-443.000.

Romeo, Frank C.; and Holmes, Harlan A., to Home Fashions, Inc. Method and apparatus for stacking and fabricating honeycomb insulating material. 5,334,275, Cl. 156-264.000.

Romer, Duane R.: *See—*
Shankar, Ravi B.; Pews, R. Garth; and Romer, Duane R., 5,334,603, Cl. 514-363.000.

Romm, Michael: *See—*
LoCicero, Rai-Ann; Morgan, Stuart; Romm, Michael; Bantly, Matthew; and Mangan, Edward O., 5,333,744, Cl. 211-87.000.

Ronningen Research & Development Company: *See—*
Eickhoff, Jon H., 5,333,557, Cl. 108-65.000.

Rosario, Jeanne M.: *See—*
Jacobs, Keith G.; Rosario, Jeanne M.; and Fisher, Michael H., 5,333,995, Cl. 415-209.200.

Rosemount Inc.: *See—*
Gravel, James L., 5,333,637, Cl. 137-83.000.
Lutz, Mark A.; and Krueger, William B., 5,333,504, Cl. 73-727.000.

Rosen, Winfried: *See—*
Kaufmann, Dieter; Jelich, Klaus; Braden, Rudolf; and Rosen, Winfried, 5,334,724, Cl. 546-345.000.

Rosenberg, Burkard; and Schacher, Gottlieb, to Hoffmann-La Roche Inc. Apparatus for separating cuvettes. 5,333,717, Cl. 198-389.000.

Rosenfeld, Stuart A.: *See—*
Schlingmann, Gerhard; and Rosenfeld, Stuart A., 5,334,535, Cl. 435-280.000.

Rosenthal, Bruce D., to Elantec, Inc. Circuit for introducing hysterisis. 5,334,883, Cl. 307-290.000.

Rosinski, Edward J.; and Rubin, Mae K., to Mobil Oil Corp. Zeolite ZSM-45. 5,334,367, Cl. 423-704.000.

Roslund, Richard N., Jr.: *See—*
Kriener, Michael; Uhlenbrock, Johannes; Wilkerson, Larry A.; and Roslund, Richard N., Jr., 5,333,368, Cl. 297-301.000.

Rossi, Louis J.; and Chavan, Sunita P., to Eastman Kodak Company. Ink-jet recording liquids. 5,334,435, Cl. 428-195.000.

Rossmere, David: *See—*
Herz, William; and Rossmere, David, 5,335,019, Cl. 348-607.000.

Roth, Oscar. Container for stacks of sheets. 5,333,777, Cl. 229-117.160.

Rothfuss, Robert G.; Okorocha, Livyn O.; Bishop, Gregory D.; Sambi, Narinderjit S.; Bedi, James J.; Privitera, Salvatore; and Sherrill, Michael, to Ethicon, Inc. Multiple fire endoscopic stapling mechanism. 5,333,772, Cl. 227-176.000.

Rothnie, James B.: *See—*
Frank, Steven J.; Burkhardt, Henry, III; Rothnie, James B.; and Mann, William F., 5,335,325, Cl. 395-200.000.

Rott & Company: *See—*
Brockman, James W., 5,333,529, Cl. 89-14.300.

Rouget, Robert: *See—*
Bronoel, Guy; Potier, Thierry; Tassin, Noelle; Bugnet, Bernard; Doniat, Denis; and Rouget, Robert, 5,334,465, Cl. 429-222.000.

Rouse, George V.: *See—*
Short, John P.; McLachlan, Craig J.; Rouse, George V.; and Zibrida, James R., 5,334,273, Cl. 156-87.000.

Rouse, Michael W. Rubber asphalt mix. 5,334,641, Cl. 524-71.000.

Rovedo, Nivo: *See—*
Doerre, George W.; Ogura, Seiki; and Rovedo, Nivo, 5,334,281, Cl. 156-636.000.

Rowe, Bruce: *See—*
Rafferty, Kevin; and Rowe, Bruce, 5,334,417, Cl. 427-253.000.

Rowlette, John J., to Bipolar Power Corporation. Lightweight battery plates. 5,334,464, Cl. 429-210.000.

Rowlette, John R., to Whitaker Corporation, The. Anisotropically electrically conductive composition with thermal dissipation capabilities. 5,334,330, Cl. 252-512.000.

Rubb, Inc.: *See—*
Nickerson, David C.; and Parker, Gregory, 5,333,425, Cl. 52-222.000.

Ruben, Paul L.; and Burnham, William L., to Eastman Kodak Company. Lensless camera viewfinder. 5,335,033, Cl. 354-219.000.

Ruben, Paul L.: *See—*
Lewis, Alan E.; and Ruben, Paul L., 5,335,034, Cl. 354-219.000.

Rubin, Mae K.: *See—*
Rosinski, Edward J.; and Rubin, Mae K., 5,334,367, Cl. 423-704.000.

Rubinsky, Boris; Onik, Gary; Finkelstein, J. J.; Neu, Dan; and Jones, Steve, to Cryomedical Sciences, Inc. Cryosurgical system for destroying tumors by freezing. 5,334,181, Cl. 606-22.000.

Rubscha, Robert F., to Xerox Corporation. Retard feeder. 5,333,848, Cl. 271-3.100.

Rudling, Peter, to ABB ATOM AB. Zirconium-based alloy for components in nuclear reactors. 5,334,345, Cl. 420-422.000.

Rudy, Thomas P.: *See—*
Goodson, Forrest R.; and Rudy, Thomas P., 5,334,238, Cl. 95-59.000.

Rudzena, William L.: *See—*
Poli, Robert G.; Thomas, V. Stanton; Adolf, Wayne F.; and Rudzena, William L., 5,334,179, Cl. 604-403.000.

Ruf, Alan F., legal representative: *See—*
Fox, Charles L., Jr., deceased; and Modak, Shanta M., 5,334,588, Cl. 514-171.000.

Ruhe, William R., Jr.: *See—*
Harrison, James J.; and Ruhe, William R., Jr., 5,334,321, Cl. 252-51.50A.

Ruhrgas Aktiengesellschaft: *See—*
Korsmeier, Wilhelm; Wolf, Dieter; Hoppe, Manfred; and Schollmeyer, Holns J., 5,333,591, Cl. 123-527.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Rundpack AG: *See—*
Schellenberg, Walter, 5,333,749, Cl. 220-462.000.

Ruppin, Karl H. S.: *See—*
Lukas, Bohumir; and Ruppin, Karl H. S., 5,334,583, Cl. 514-8.000.

Russ, Werner H.: *See—*
Dannheim, Jorg; and Russ, Werner H., 5,334,709, Cl. 534-618.000.

Rutherford, Wayne. Tilting exercise apparatus for the back. 5,334,123, Cl. 482-144.000.

Rutland Plastic Technologies, Inc.: *See—*
Bergvist, Robert C., 5,334,622, Cl. 521-74.000.

Ruyter, Herman P.; Hortulanus, Anton; and Dekker, Jan, to Shell Oil Company. Cellulosic fibrous aggregate and a process for its preparation. 5,334,445, Cl. 428-284.000.

Ryan, James G.: *See—*
Cronin, John E.; Farrar, Paul A., Sr.; Kaanta, Carter W.; Ryan, James G.; and Watts, Andrew J., 5,334,467, Cl. 430-5.000.

Rzesutock, Michael P.; and Clevenger, Neal A., to Dover Corporation. Inflatable manhole sealing device. 5,333,653, Cl. 141-1.000.

S. C. Johnson & Son, Inc.: *See—*
Chaussee, James G., 5,334,325, Cl. 252-174.160.

Sabbah, Abbas T.: *See—*
Dean, Patrick D.; and Sabbah, Abbas T., 5,334,914, Cl. 315-291.000.

Sabee, Janet M.; and Terranova, Joseph C., to Twin Disc, Incorporated. Synchronized clutch. 5,333,712, Cl. 192-53.00B.

Sable, Arthur J., to Opton Corporation. Method and apparatus for using monochrome images to form a color image. 5,335,082, Cl. 358-350.000.

Saburi, Masahiko; Ohnuki, Masamichi; and Uchida, Yasuzo, to Takasago International Corporation. Process for preparing optically active carboxylic acid. 5,334,758, Cl. 562-590.000.

Sacripante, Guerino G.; Kmiecik-Lawrynowicz, Grazyna; and Ong, Beng S., to Xerox Corporation. Low gloss encapsulated compositions. 5,334,471, Cl. 430-106.600.

Sadananda, Kuntimaddi: *See—*
Loust, Norman P.; Provenzano, Virgil; Imam, M. Ashraf; and Sadananda, Kuntimaddi, 5,333,667, Cl. 164-97.000.

SAES Pure Gas, Inc.: *See—*
Lorimer, D'Arcy H., 5,334,237, Cl. 95-25.000.

Safar, Samir H. Portable shade system. 5,333,665, Cl. 160-84.10D.

Safety-Kleen Corp.: *See—*
Gavlin, Gilbert; Langdon, William M., deceased; Goltsin, Boris; Erlebacher, Gunther; and Larson, Douglas A., 5,334,291, Cl. 202-234.000.

Sagara, Kazuhiko: *See—*
Sueyasu, Ryoichi; Ueda, Kunio; and Sagara, Kazuhiko, 5,334,398, Cl. 426-36.000.

Sagawa, Morikazu: *See—*
Shirai, Hirokazu; Sagawa, Morikazu; and Makimoto, Mitsuo, 5,334,961, Cl. 333-204.000.

Sage, Burton H., Jr.; and Riviere, Jim E., to North Carolina State University; and Becton Dickinson and Company. Method and composition for increased skin concentration of active agents by iontophoresis. 5,334,138, Cl. 604-20.000.

Sai, Kazuyoshi: *See—*
Kitamura, Koichi; Mimura, Hidenori; Yamamoto, Kazuo; Ohta, Yasumitsu; Sai, Kazuyoshi; and Nagatake, Youichi, 5,335,092, Cl. 358-482.000.

Saika, Toshihiro: *See—*
Kaifu, Noriyuki; Saika, Toshihiro; Endo, Tadao; and Shimada, Tetsuya, 5,335,094, Cl. 358-494.000.

St. Laurent, James B.: *See—*
Scheibel, Jeffrey J.; Connor, Daniel S.; Shumate, Robert E.; and St. Laurent, James B., 5,334,764, Cl. 564-487.000.

St-Louis, Jonathan P.; and St-Louis, Kai G., to Equipments St-Louis & Fils, Inc. System for pre-marking for street striping. 5,333,966, Cl. 404-84.050.

St-Louis, Kai G.: *See—*
St-Louis, Jonathan P.; and St-Louis, Kai G., 5,333,966, Cl. 404-84.050.

Saito, Kiyoshi: *See—*
Naka, Akihiro; Ito, Shuichi; Akizuki, Shinya; and Saito, Kiyoshi, 5,334,674, Cl. 525-481.000.

Saito, Koichiro; and Shimizu, Kaoru, to Sakai, Yoshisuke. Urine sampler. 5,334,348, Cl. 422-61.000.

Saito, Shinkichi; Asabuki, Hideyo; Onozato, Atsushi; Nishimura, Toshinori; Kawada, Kazuo; and Yamamoto, Shinji, to Yokohama Rubber Co., Ltd., The. Golf club sets. 5,333,860, Cl. 273-77.00A.

Saito, Shinkichi: *See—*
Teramoto, Mitsutake; Okumoto, Takaharu; Goto, Teruo; Saito, Shinkichi; and Asabuki, Hideyo, 5,333,859, Cl. 273-77.00A.
Teramoto, Mitsutake; Saito, Shinkichi; and Asabuki, Hideyo, 5,333,862, Cl. 273-80.00C.

Saito, Tadashi; and Inokuchi, Kazuyuki, to Oki Electric Industry Co., Ltd. Method of forming T-shaped electrode. 5,334,542, Cl. 437-40.000.

Saitoh, Hisao: *See—*
Hatouchi, Gokichi; Saitoh, Hisao; Shimizu, Kiyoshi; and Hagisu, Yasushi, 5,333,983, Cl. 414-331.000.

Sakaguchi, Suguru: *See—*
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.

Sakaguchi, Yutaka: *See—*
Wachi, Toshio; Sakaguchi, Yutaka; and Fujita, Kotaro, 5,334,760, Cl. 562-817.000.

Sakai Chemical Industry Co., Ltd.: *See—*
Wachi, Toshio; Sakaguchi, Yutaka; and Fujita, Kotaro, 5,334,760, Cl. 562-817.000.

Sakai, Kenji: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Sakai, Kenji, 5,334,460, Cl. 428-552.000.

Sakai, Yoshisuke: *See—*
Saito, Koichiro; and Shimizu, Kaoru, 5,334,348, Cl. 422-61.000.

Sakakura, Daisuke; and Okazaki, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Variable displacement compressor. 5,333,999, Cl. 417-309.000.

Sakakura, Shinya: *See—*
Sakikawa, Shigenori; and Sakakura, Shinya, 5,333,451, Cl. 60-468.000.

Sakamoto, Masaaki: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Sakai, Kenji, 5,334,460, Cl. 428-552.000.

Sakamoto, Yuji, to Kirin Beer Kabushiki Kaisha. Alginate gel bead. 5,334,229, Cl. 47-57.600.

Sakata, Shinji: *See—*
Imaizumi, Masahiro; and Sakata, Shinji, 5,334,593, Cl. 514-274.000.

Sakata, Yutaka: *See—*
Sera, Taizo; Mitsuhiro, Takashi; Ozawa, Koichi; and Sakata, Yutaka, 5,333,671, Cl. 164-436.000.

Sakikawa, Shigenori; and Sakakura, Shinya, to Kanzaki Kokyukoki Mfg. Co., Ltd. Oil pressure control valve assembly for hydrostatic transmissions. 5,333,451, Cl. 60-468.000.

Sakita, Katsuya: *See—*
Kamio, Shigeru; and Sakita, Katsuya, 5,333,584, Cl. 123-399.000.

Sakura Color Products Corporation: *See—*
Fujita, Hisanori, 5,334,649, Cl. 524-558.000.

Sakurai, Hiroshi: *See—*
Sugiyama, Toshinobu; and Sakurai, Hiroshi, 5,334,555, Cl. 437-241.000.

Salecker, Roy W., to Spartan Tool Div. of Pettibone Corp. Fluid control nozzle for conduit cleaner. 5,333,448, Cl. 60-325.000.

Salle, Ralph: *See—*
Blaha, James R.; Underwood, Herbert N.; Salle, Ralph; and Ralston, Ronald R., 5,333,969, Cl. 404-91.000.

Salo, Rodney W.; Spinelli, Julio C.; and Tockman, Bruce A., to Cardiac Pacemakers, Inc. Cardiac stimulating apparatus and method for heart failure therapy. 5,334,222, Cl. 607-17.000.

Salomon S.A.: *See—*
Bejean, Alain, 5,333,890, Cl. 280-609.000.

Salter, James R.: *See—*
Kosa, Nadhir B.; Twiggs, Gene J.; Salter, James R.; Singh, Raghuvir; Costello, David J.; and Schlain, Leslie A., 5,335,305, Cl. 385-147.000.

Samar Enterprises Company, Ltd.: *See—*
Maroushek, Timothy R., 5,335,144, Cl. 361-695.000.

Sambi, Narinderjit S.: *See—*
Rothfuss, Robert G.; Okorocha, Livyn O.; Bishop, Gregory D.; Sambi, Narinderjit S.; Bedi, James J.; Privitera, Salvatore; and Sherrill, Michael, 5,333,772, Cl. 227-176.000.

Samson, Larry P.: *See—*
Dunaenko, Charles, Jr.; Pawlenko, Ivan; and Samson, Larry P., 5,333,521, Cl. 81-9.510.

Samson, Wilfred J.; Sirhan, Motasim M.; and Fernando, Jovito L., to Advanced Cardiovascular Systems, Inc. Perfusion type dilatation catheter having perfusion ports with depressed proximal edges. 5,334,154, Cl. 604-102.000.

Samsung Electron Devices Co., Ltd.: *See—*
Sohn, Chang-min; and Jeong, Su-min, 5,334,409, Cl. 427-64.000.

SamSung Electronics Co., Ltd.: *See—*
An, Hong-jo, 5,335,122, Cl. 360-70.000.
Bae, Young D.; and Kim, Jin B., 5,333,472, Cl. 62-503.000.
Kim, Jung H., 5,335,069, Cl. 348-630.000.
Kim, Sung Y., 5,335,103, Cl. 359-80.000.
Lee, Song J., 5,334,278, Cl. 117-57.000.
Nam, Joo H., 5,333,960, Cl. 400-249.000.
Park, Ku-man; and Kim, Tae-eung, 5,335,117, Cl. 360-48.000.
Shin, Hyun-ku, 5,335,071, Cl. 348-392.000.
Shin, Jong-cheol; and Oh, Heung-kwun, 5,334,867, Cl. 257-222.000.

Sanchez-Banos, Julio A.: *See—*
Osbourne, William G.; and Sanchez-Banos, Julio A., 5,335,050, Cl. 355-221.000.

Sanden Corp.: *See—*
Yamada, Yasuo, 5,333,471, Cl. 62-476.000.

Sanders, David. Hand truck for magnetic base tools. 5,333,886, Cl. 280-47.280.

Sandford, Paul A.: *See—*
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., 5,334,640, Cl. 524-56.000.

Sandhu, Gurtej; and Fazan, Pierre, to Micron Semiconductor, Inc. High dielectric constant capacitor and method of manufacture. 5,335,138, Cl. 361-303.000.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshiteru; Nakano, Eiichi; Ishidoshiro, Hiroshi; and Sando, Koji, 5,334,224, Cl. 8-108.100.

Sando, Koji: *See—*
Sando, Yoshiteru; Nakano, Eiichi; Ishidoshiro, Hiroshi; and Sando, Koji, 5,334,224, Cl. 8-108.100.

Sando, Yoshiteru; Nakano, Eiichi; Ishidoshiro, Hiroshi; and Sando, Koji, to Sando Iron Works Co., Ltd. Method for continuous pretreatment of a cloth. 5,334,224, Cl. 8-108.100.

Sandoz Ltd.: *See—*
Ahlheim, Markus; and Lehr, Friedrich, 5,334,710, Cl. 534-852.000.
Likibi, Parfait J. M.; Casciani, Robert V.; and McCraw, Gregory L., 5,334,756, Cl. 562-565.000.

Sandvik AB: *See—*
Fischer, Udo K.; Akerman, Jan; Asberg, Bengt A.; and Lagerberg, Stig E., 5,333,520, Cl. 76-108.200.
Oskarsson, Rolf G.; and Lundstrom, Mats O., 5,334,459, Cl. 428-546.000.

Sanford, Michael D., to Universal Computer Technologies Inc. Method and system for inventoring a distributed plurality of items on a supply. 5,334,822, Cl. 235-385.000.

Sang, Harry; Keany, Lorne D.; and Jin, Iljoon, to Alcan International Limited. Process for producing shaped slabs of particle stabilized foamed metal. 5,334,236, Cl. 75-415.000.

Sangha, Jangbir S., to Osborn Laboratories, Inc. Method of collecting, identifying, and quantifying saliva. 5,334,502, Cl. 435-7.210.

Sanitor S.L.: *See—*
Serrano Gonzalez, Antonio, 5,334,156, Cl. 604-110.000.

Sankyo Company, Limited: *See—*
Kohama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, 5,334,587, Cl. 514-99.000.
Matsuoka, Tatsuji; Serizawa, Nobufusa; Hosoya, Tsuyoshi; and Furuya, Kouhei, 5,334,517, Cl. 435-121.000.

Sanne, Sreemukh: *See—*
Crout, James O.; and Sanne, Sreemukh, 5,333,918, Cl. 285-286.000.

Sanner, Medford D.: *See—*
Lovelady, Kenneth T.; and Sanner, Medford D., 5,335,292, Cl. 382-17.000.

Sano, Hiromichi: *See—*
Nosetani, Tadashi; Namba, Keizo; Sano, Hiromichi; Yonemitsu, Makoto; Kumagai, Masaki; and Tsunekawa, Masanori, 5,334,814, Cl. 219-119.000.

Sano, Kinjiro; Imanishi, Wataru; Nakajima, Yoshihisa; and Kinoshita, Masaaki, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for high voltage treatment of cathode ray tube. 5,334,086, Cl. 445-62.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Inoue, Seiji; and Nanami, Masayoshi, 5,334,063, Cl. 440-88.000.

Sansone, Stanley A. Method for conducting multiple natural frequency seismic surveys. 5,335,208, Cl. 367-49.000.

Sansonetti, Pierre: *See—*
Lequime, Michel; and Sansonetti, Pierre, 5,335,065, Cl. 356-351.000.

Santilli, Albert N. Device for capping and uncapping a hypodermic needle. 5,334,151, Cl. 604-192.000.

Santo Industries Co., Ltd.: *See—*
Katagiri, Takashi, 5,333,356, Cl. 16-340.000.

Santucci, Vincent J., Sr., to Elite Mushroom Company, Inc. Mushroom display tray and package. 5,333,751, Cl. 220-512.000.

Sanyo Electric Co., Ltd.: *See—*
Mizumura, Takayuki; Sawada, Kenji; Kojima, Naoki; Kawanishi, Yasuyoshi; and Otsuki, Masatoshi, 5,334,259, Cl. 136-258.000.
Tajima, Osamu; Sumi, Shingo; Shindo, Koji; Yamamoto, Satoshi; and Yoneda, Fumiiki, 5,334,463, Cl. 429-9.000.
Yamamoto, Yuji, 5,335,073, Cl. 348-738.000.

Sapp, Gordon K., to FKI Industries, Inc. Sorting conveyor system and divert switch and crossover switch for said system. 5,333,715, Cl. 198-372.000.

Saragovi, Horacio U.: *See—*
Greene, Mark I.; Saragovi, Horacio U.; and Kahn, Michael, 5,334,702, Cl. 530-323.000.

Sardanowsky, Wladimir, to Deutsche Aerospace AG. Imaging system for a missile. 5,333,815, Cl. 244-3.160.

Sasahara, Osamu, to Hitachi Medical Corp. Medical diagnosis image display method and apparatus. 5,335,173, Cl. 364-413.220.

Sasaki, Hitoshi: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, 5,334,803, Cl. 174-52.400.

Sasaki, Kazuya: *See—*
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, 5,334,628, Cl. 514-311.000.

Sasaki, Masaomi: *See—*
Shimada, Tomoyuki; Sasaki, Masaomi; Aruga, Tamotsu; and Adachi, Hiroshi, 5,334,470, Cl. 430-59.000.

Sasaki, Shunroku: *See—*
Oguchi, Takuro; Sasaki, Shunroku; and Asahara, Masaru, 5,335,262, Cl. 379-58.000.

Sasaki, Tohru: *See—*
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,334,152, Cl. 604-385.200.

Sase, Masahiro: *See—*
Muto, Takeo; Sase, Masahiro; and Yoshiaki, Kato, 5,335,211, Cl. 368-11.000.

Sato, Haruyoshi: *See—*
Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,334,468, Cl. 430-7.000.

Sato, Jun, to Shimano Inc. Clutch structure for a fishing reel. 5,333,812, Cl. 242-261.000.

Sato, Kaoru: *See—*
Nakamori, Tomohiro; Okazawa, Kazuhiko; Tachibana, Tatsuto; Kusano, Akihisa; Sato, Kaoru; and Itoh, Toshiyuki, 5,334,817, Cl. 219-492.000.

Sato, Katsutoshi, to Mitsuba Electric Mfg. Co., Ltd. Wiper system. 5,333,351, Cl. 15-250.130.

Sato, Keiji, to Fuji Jukogyo Kabushiki Kaisha. Control system for continuously variable transmission. 5,334,102, Cl. 474-18.000.

Sato, Kenji; and Tokutake, Naoto, to Konica Corporation. Image recording apparatus with belt-type transfer device. 5,335,052, Cl. 355-271.000.

Sato, Kensaku; and Shirai, Akira, to Hirose Electric Co., Ltd. Electrical connector. 5,334,055, Cl. 439-723.000.

Sato, Masanori; and Koizumi, Osamu, to Sony Corporation. Tape cartridge having a transparent panel covering the tape sensing opening. 5,335,131, Cl. 242-347.000.

Sato, Shinichi; and Katoh, Hiroaki, to Fujitsu Limited. Method and apparatus for extending and confirming the service life of semiconductor laser of bar code reader by detecting current increase corresponding to temperature of semiconductor laser. 5,334,826, Cl. 235-455.000.

Sato, Takuya: *See—*
Yip, Kee Keng; Shigenobu, Hirofumi; Kato, Kyoji; Sato, Takuya; and Yagami, Nobuo, 5,333,957, Cl. 384-484.000.

Sato, Yoshizumi: *See—*
Odaira, Hiroshi; and Sato, Yoshizumi, 5,333,379, Cl. 29-841.000.

Satoh, Akira: *See—*
Nomura, Takeshi; Nakano, Yukie; Satoh, Akira; and Arashi, Tomohiro, 5,335,139, Cl. 361-4.000.

Satoh, Munetaka; Ito, Sadao; and Nawa, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Seat reclining apparatus. 5,333,932, Cl. 297-362.000.

Satoh, Yoshikazu: *See—*
Tanigaki, Yasushi; Satoh, Yoshikazu; and Kobayashi, Yoshiharu, 5,334,996, Cl. 345-152.000.

Satomura, Masato: *See—*
Fukushige, Yuuichi; Iwakura, Ken; and Satomura, Masato, 5,334,749, Cl. 560-67.000.

Sattler, Ulf: *See—*
Horn, Peter; Mueller, Ulrich; Hoelderich, Wolfgang; Sattler, Ulf; Taddey, Rudolf; and Tintelnot, Dieter, 5,334,620, Cl. 521-51.000.

Saugnac, Frederic, to Societe Nationale Industrielle et Aerospatiale. Composite material with a refractory fibrous reinforcement and its production process. 5,334,438, Cl. 428-212.000.

Saunders Group, The: *See—*
Saunders, Harold D., 5,334,134, Cl. 602-19.000.

Saunders, Harold D., to Saunders Group, The. Lumbosacral back support releasably secured to a stabilizing belt. 5,334,134, Cl. 602-19.000.

Sauter, Hubert; Lorenz, Gisela; Steiner, Gerd; Janssen, Bernd; Anke, Timm; and Steglich, Wolfgang, to BASF Aktiengesellschaft. Methods for treating mycoses. 5,334,607, Cl. 514-378.000.

Savant Instruments, Inc.: *See—*
Glater, Michael; Barreda, Carlos; and Zlobinsky, Yury, 5,334,130, Cl. 494-4.000.

Savich, Alexandr N.: *See—*
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.

Savoca, Paul F., to Duraline. Mast-type outdoor lighting system. 5,335,160, Cl. 362-431.000.

Sawa, Kiyohiko, to Kabushiki Kaisha Kobe Seiko Sho. Food extruder machine. 5,333,538, Cl. 99-353.000.

Sawa, Takao; and Yagi, Masaaki, to Kabushiki Kaisha Toshiba; and Yagi, Masaaki. Method of production of very thin soft magnetic alloy strip. 5,334,262, Cl. 148-121.000.

Sawada, Akira, to NEC Corporation. Logical comb filter and chroma signal separation circuit. 5,335,021, Cl. 348-664.000.

Sawada, Kenji, to Sumitomo Heavy Industries, Ltd. Linear accelerator operable in TE 11N mode. 5,334,943, Cl. 328-233.000.

Sawada, Kenji: *See—*
Mizumura, Takayuki; Sawada, Kenji; Kojima, Naoki; Kawanishi, Yasuyoshi; and Otsuki, Masatoshi, 5,334,259, Cl. 136-258.000.

Sawada, Kozo: *See—*
Okada, Satoshi; Sawada, Kozo; Kuroda, Akio; Watanabe, Shinya; and Tanaka, Hirokazu, 5,334,716, Cl. 546-112.000.

Sawaf, Bernard E.: *See—*
Smirlock, Martin E.; Ribich, William A.; Marinaccio, Paul J.; and Sawaf, Bernard E., 5,333,532, Cl. 89-36.020.

Sawara Co., Ltd.: *See—*
Shinozuka, Morio, 5,334,076, Cl. 446-456.000.

Scallon, David. Foot-operated computer control. 5,334,997, Cl. 345-167.000.

Scanpower: *See—*
Seiersen, Ole S., 5,335,163, Cl. 363-126.000.

Schacher, Gottlieb: *See—*
Rosenberg, Burkard; and Schacher, Gottlieb, 5,333,717, Cl. 198-389.000.

Schade, Otto H., Jr., to Harris Corporation. Circuit for providing a current proportional to absolute temperature. 5,334,929, Cl. 323-315.000.

Schadt, Martin: *See—*
Buchecker, Richard; Chen, Xin H.; Funfschilling, Jurg; Herr, Rolf-Peter; Schadt, Martin; and Schmitt, Klaus, 5,335,303, Cl. 385-122.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Schaede, Peter, to W. A. Deutsher Pty. Ltd. Keeper clip. 5,333,361, Cl. 24-182.000.

Schaefer, Ronald H.: *See*—
Edwards, Gary C.; and Schaefer, Ronald H., 5,334,818, Cl. 219-539.000.

Schaefer, Scott E.: *See*—
Walther, Terry R.; and Schaefer, Scott E., 5,335,201, Cl. 365-222.000.

Schaeffer, Dorothy V. B. Combination book with magnifying page insert. 5,333,907, Cl. 281-42.000.

Schaeffer, Jon C., to General Electric Company. Substrate stabilization of diffusion aluminide coated nickel-based superalloys. 5,334,263, Cl. 148-217.000.

Schafer, Jochen; Frank, Thomas; and Bederna, Frank, to Robert Bosch GmbH. Slip control deceleration signal filtering system. 5,335,178, Cl. 364-426.020.

Schafheutle, Markus A.; and Klein, Heinz-Peter, to Hoechst Aktiengesellschaft. Polyurethane dispersions. 5,334,690, Cl. 528-71.000.

Scharf, Curtis R.: *See*—
Vinei, James N.; and Scharf, Curtis R., 5,334,318, Cl. 252-38.000.

Schauer, Friedrich; and Neuner, Andreas, to Kabelmetal electro Gesellschaft mit beschrankter Haftung. Device for transferring a signal between two end points which are movable relative to each other. 5,334,023, Cl. 439-164.000.

Scheibel, Jeffrey J.; Connor, Daniel S.; Shumate, Robert E.; and St. Laurent, James B., to Procter & Gamble Company, The. Process for preparing n-alkaly polyhydroxy amines. 5,334,764, Cl. 564-487.000.

Schellenberg, Walter, to Rundpack AG. Packing container. 5,333,749, Cl. 220-462.000.

Schenna, Anthony G.: *See*—
Budny, Thomas F.; Schenna, Anthony G.; and Durham, Larry D., 5,333,732, Cl. 206-316.100.

Schering Aktiengesellschaft: *See*—
Gries, Heinz; Raduchel, Bernd; Platzek, Johannes; Weinmann, Hanns-Joachim; Press, Wolf-Rudiger; and Speck, Ulrich, 5,334,371, Cl. 424-9.000.

Schering Corporation: *See*—
Billah, M. Motasim, 5,334,592, Cl. 514-220.000.

Scherkenbeck, Jurgen; Himmler, Thomas; Hagemann, Hermann; Dutzmann, Stefan; Dehne, Heinz-Wilhelm; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Azolymethyl-cyclopropyl derivatives. 5,334,608, Cl. 514-383.000.

Scherowsky, Gunter; Junghans, Claas; Kaltbeitzel, Anke; Wingen, Rainer; and Michalski, Britta, to Hoechst Aktiwengesellschaft. Chiral azetidinone derivatives, and their use as dopes in liquid-crystal mixtures. 5,334,328, Cl. 252-299.610.

Schiapparelli Biosystems, Inc.: *See*—
Kelln, Norman; and Loughlin, Kelsey, 5,334,349, Cl. 422-63.000.

Schild, Howard G., to Polaroid Corporation. Sheet material for thermal transfer imaging. 5,334,573, Cl. 503-227.000.

Schimmelpfennig, Fred J., Jr.: *See*—
Harris, Edward D.; Schimmelpfennig, Fred J., Jr.; Badgett, James F.; and Bonner, Jeffrey O., 5,333,416, Cl. 52-27.000.

Schinkitz, Dieter; and Thumm, Hans, to Kronos, Inc. Process for the production of disposable products from metal chlorides in a titanium dioxide chloride process. 5,334,362, Cl. 423-1.000.

Schlain, Leslie A.: *See*—
Kosa, Nadhir B.; Twiggs, Gene J.; Salter, James R.; Singh, Raghuvir; Costello, David J.; and Schlain, Leslie A., 5,335,305, Cl. 385-147.000.

Schlegel, Mark D., to General Electric Company. Apparatus and method for producing motor laminations from a blank. 5,333,525, Cl. 83-23.000.

Schleupen, Richard: *See*—
Kugler, Karl-Heinz; Langner, Arnd-Matthias; Riedel, Karlheinz; Schleupen, Richard; and Zimmermann, Christian, 5,334,938, Cl. 324-399.000.

Schlingmann, Gerhard; and Rosenfeld, Stuart A., to American Cyanamid Company. Process for the preparation of optically pure diastereoisomers of tetrahydrofolate compounds using 10-formyltetrahydrofolate synthetase from clostridium. 5,334,535, Cl. 435-280.000.

Schlossberg, Steven M.: *See*—
Poppas, Dix P.; Schlossberg, Steven M.; Choma, Theodore J.; Klioze, Scott D.; and Boll, James H., 5,334,191, Cl. 606-12.000.

Schlossberg, Steven Mark: *See*—
Poppas, Dix P.; Schlossberg, Steven M.; Choma, Theodore J.; Klioze, Scott D.; and Boll, James H., 5,334,191, Cl. 606-12.000.

Schlumberger Technology Corporation: *See*—
Case, Charles; Watson, Charles; and Lawrence, Richard, 5,334,833, Cl. 250-270.000.

Schluter Systems GmbH: *See*—
Schluter, Werner, 5,333,432, Cl. 52-396.100.

Schluter, Werner, to Schluter Systems GmbH. Device for forming an expansion joint in a floor covered with ceramic tiles. 5,333,432, Cl. 52-396.100.

Schmeisser, Heinz; and Franz, James A. Can blank handling apparatus. 5,333,985, Cl. 414-790.300.

Schmidt, Adam R.: *See*—
Levien, Robin H.; and Schmidt, Adam R., 5,333,325, Cl. 4-584.000.

Schmidt, Brian J.: *See*—
Smith, Michael D.; Schmidt, Brian J.; Longo, Mary C.; and Chatterjee, Deb K., 5,334,526, Cl. 435-199.000.

Schmidt, Elke: *See*—
Hegner, Frank; Schmidt, Elke; Klahn, Thomas; Reimann, Peter; Breitenstein, Heinz; and Messmer, Stephan, 5,334,344, Cl. 420-422.000.

Schmidt, Juergen K., to Minnesota Mining and Manufacturing Company. Contact device for an electrical component and method for manufacture. 5,334,031, Cl. 439-83.000.

Schmidt, Roger R.: *See*—
Maling, George C., Jr.; and Schmidt, Roger R., 5,335,143, Cl. 361-694.000.

Schmiesing, Richard J.; and Murray, Robert J., to Fisons Corporation. Diphenyl-1-(aminoalkyl)-2-piperidinone and -2-pyrrolidinone derivatives having anticonvulsant properties. 5,334,720, Cl. 546-208.000.

Schmitt, Alfred: *See*—
Locher, Johannes; Graf, Herbert; Rodriguez-Amaya, Nestor; Schmitt, Alfred; Tauscher, Joachim; and Zimmermann, Werner, 5,335,136, Cl. 361-160.000.

Schmitt, Kirk D.: *See*—
Beck, Jeffrey S.; Schmitt, Kirk D.; and Vartuli, James C., 5,334,368, Cl. 423-704.000.

Schmitt, Klaus: *See*—
Buchecker, Richard; Chen, Xin H.; Funfschilling, Jurg; Herr, Rolf-Peter; Schadt, Martin; and Schmitt, Klaus, 5,335,303, Cl. 385-122.000.

Schmitt, Peter J.: *See*—
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.

Schmitt, Werner H.: *See*—
Hoppmann, Kurt H.; Vaughn, Charles; Anderson, Phillip S.; and Schmitt, Werner H., 5,333,716, Cl. 198-380.000.

Schnaitmann, Dieter: *See*—
Stuber, Werner; and Schnaitmann, Dieter, 5,334,506, Cl. 435-23.000.

Schneider, James; and Kee, Kok-Hiong, to Sherwood Medical Company. Method for using a respirator accessory access port and adaptor therefore. 5,333,606, Cl. 128-200.240.

Schneider, James G.: *See*—
Kee, Kok-Hiong; Schneider, James G.; and Bruno, Robert H., 5,333,607, Cl. 128-204.180.

Schneider, Rudolf: *See*—
Voigt, Heinz; Fischer, Roland; and Schneider, Rudolf, 5,334,964, Cl. 505-211.000.

Schneider, Walter: *See*—
Piper, Michael; Rienecker, Reimund; Kleinert, Rudi; and Schneider, Walter, 5,333,883, Cl. 277-102.000.

Schneider, William C. Motorcycle throttle control. 5,333,515, Cl. 74-489.000.

Schnoor, Christian; Thometschek, Roderich; and Rittner, Wolfgang, to Dragerwerk AG. Container door for an oxygen supply unit. 5,333,748, Cl. 220-343.000.

Schoettle, Klaus, to BASF Aktiengesellschaft. Cassette with recording medium. 5,335,130, Cl. 360-132.000.

Schofield, Brian: *See*—
Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., 5,334,784, Cl. 570-165.000.

Schofield, Philip: *See*—
Newman, David L.; Kiernicki, Leopold; Schofield, Philip; and McGinley, James W., 5,335,301, Cl. 385-75.000.

Schollmeyer, Holns J.: *See*—
Korsmeier, Wilhelm; Wolf, Dieter; Hoppe, Manfred; and Schollmeyer, Holns J., 5,333,591, Cl. 123-527.000.

Schon, Norbert; Langer, Reinhard; Buysch, Hans-Josef; and Wagner, Paul, to Bayer Aktiengesellschaft. Process for the continuous preparation of diaryl carbonates from dialkyl carbonates. 5,334,742, Cl. 558-274.000.

Schopper, Bernd: *See*—
Volz, Peter; and Schopper, Bernd, 5,333,945, Cl. 303-119.200.

Schott Glass Technologies, Inc.: *See*—
Hayden, Joseph S., 5,334,559, Cl. 501-48.000.

Schottle, Thomas: *See*—
Freudenreich, Reinhold; Mielke, Ingolf; Rettenbeck, Karl; and Schottle, Thomas, 5,334,783, Cl. 570-153.000.

Schramm, Eugene C.: *See*—
Akkapeddi, Kaushik S.; Bonanni, Rocco; Gashler, Robert J.; German, Michael G.; Lambert, William R.; and Schramm, Eugene C., 5,334,029, Cl. 439-66.000.

Schrimpf, Hans; Krebs, Hans; Liebold, Gert; and Frey, Guenter, to BASF Aktiengesellschaft. Deicing or antiicing fluids for aircraft. 5,334,323, Cl. 252-70.000.

Schroeder, Gordon M.: *See*—
Gardner, Richard K.; and Schroeder, Gordon M., 5,334,003, Cl. 417-393.000.

Schubert, Steven A.: *See*—
Day, Melanie A.; Kaschak, Ronald A.; and Schubert, Steven A., 5,334,461, Cl. 428-610.000.

Schuch, Horst: *See*—
Blumenstein, Uwe; Klaerner, Peter; Schuch, Horst; and Walter, Hans-Michael, 5,334,658, Cl. 525-71.000.
Voelker, Heinz; Alicke, Gerhard; Weilbacher, Manfred; Weilbacher, Manfred; Weber, Reinhold; and Schuch, Horst, 5,334,337, Cl. 264-45.300.

Schuchardt, Heinrich; and Ullrich, Martin, to Bayer Aktiengesellschaft. Self-cleaning reactor/mixer with large useful volume. 5,334,358, Cl. 422-210.000.

Schuermans, Rafael, to VCST, naamloze vennootschap. Transmission unit for motor vehicles. 5,334,104, Cl. 474-28.000.

Schuetz, Franz: *See*—
Wenderoth, Bernd; Brand, Siegbert; Schuetz, Franz; Kuekenhoehner, Thomas; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,334,577, Cl. 504-130.000.

Schulz-Schlitte, Wolfgang: *See*—
Hess, Bernhard; Schulz-Schlitte, Wolfgang; Kirsch, Jurgen; Freitag, Dieter; Arndt, Uwe; Gehrke, Hans-Georg; and Zander, Klaus, 5,334,692, Cl. 528-126.000.

Schumacher, Gunther: *See*—
Schumacher, Gustav, II; and Schumacher, Gunther, 5,333,348, Cl. 15-235.400.

Schumacher, Gustav, II; and Schumacher, Gunther. Smoothing tool handle mounting assembly. 5,333,348, Cl. 15-235.400.

Schuman, Daniel. Endoscope with palm rest. 5,333,603, Cl. 128-7.000.

Schuppert, Leo V., Jr.: *See*—
Camsell, Edwin; Schuppert, Leo V., Jr.; and Stakem, Kerry J., 5,333,373, Cl. 29-739.000.

Schuster, David M.: *See*—
Rashtchian, Ayoub; Schuster, David M.; and Buchman, George W., III, 5,334,515, Cl. 435-91.200.

Schwab, Michael; Frank, Udo; and Walz, Gerd, to Hoechst Aktengesellschaft. Water-thinnable two-component coating preparation, a process for its preparation, and its use. 5,334,651, Cl. 524-591.000.

Schwartz, Dennis E.: *See*—
Adams, Trevor H.; Schwartz, Dennis E.; Vermuelen, Nicolaas M. J.; and Kanemoto, Roy H., 5,334,501, Cl. 435-6.000.

Schwartz, Glenn R.: *See*—
Patz, Byron M.; and Schwartz, Glenn R., 5,333,380, Cl. 29-898.070.

Schwarz, Karl; Meltzer, Richard S.; and Church, Charles C. System for treating blood processed in a cardiopulmonary bypass machine and ultrasound filtration apparatus useful therein. 5,334,136, Cl. 604-4.000.

Schwarz, Werner R.: *See*—
Graessle, Josef A.; Schwarz, Werner R.; and Foltz, William E., 5,334,841, Cl. 250-458.100.

Schwedock, Marvin J.: *See*—
Simpson, Howard D.; Schwedock, Marvin J.; and Ward, John W., 5,334,307, Cl. 208-254.00H.

Schweiss, Jon W.: *See*—
Boyum, Gerald A.; and Schweiss, Jon W., 5,333,511, Cl. 73-864.340.

Schwind, James J.: *See*—
Vinci, James N.; and Schwind, James J., 5,334,329, Cl. 252-49.600.

Science Incorporated: *See*—
Kriesel, Marshall S.; Thompson, Thomas N.; and Kazemzadeh, Farhad, 5,334,197, Cl. 604-132.000.

Scimed Life Systems, Inc.: *See*—
Ellis, Louis G., 5,334,160, Cl. 604-167.000.

Scobbo, James J., Jr.; and Stoddard, Gregory J., to General Electric Company. Elastomeric blends and method for their preparation. 5,334,659, Cl. 525-71.000.

Scofield, Trevor N.: *See*—
Clayton, John C.; and Scofield, Trevor N., 5,335,194, Cl. 364-724.100.

Scot Young Research Limited: *See*—
Taylor, Michael, 5,333,353, Cl. 15-264.000.

Scott, Ian M.; and Nicholas, David A., to United States Surgical Corporation. Endoscopic fastener remover. 5,334,196, Cl. 606-138.000.

Scott, John C. Printable diskette envelope form. 5,333,780, Cl. 229-75.000.

Scott, Michael: *See*—
Khare, Ashok K.; and Scott, Michael, 5,334,269, Cl. 148-638.000.

Scott, Randal W.; and Marra, Marian N., to INCYTE Pharamaceuticals, Inc. Recombinant, non-glycosylated bpi protein and uses thereof. 5,334,584, Cl. 514-012.000.

Seagate Technology, Inc.: *See*—
Meyer, Forrest C., 5,335,118, Cl. 360-51.000.

Seattle Silicon Corporation: *See*—
Krueger, Thomas E.; and Astrof, Kenneth L., 5,335,249, Cl. 375-1.000.

Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and North Ireland United Kingdom Atomic Energy Authority, The: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Hird, Michael; and McDonnell, Damien G., 5,334,327, Cl. 252-299.670.

Seeger, Christoph, to Fox Chase Cancer Center. Hepadnavirus polymerase gene product having RNA-dependent DNA priming and reverse transcriptase activities and methods of measuring the activities thereof. 5,334,525, Cl. 435-194.000.

Seelig, David L.; and McAfee, Kevin S., to Conec, Inc.; and Air Products and Chemicals, Inc. Method and apparatus for producing chunks or kibbles of a foodstuff. 5,333,802, Cl. 241-65.000.

Seidler, Jack, to North American Specialities Corporation. Solder-bearing lead. 5,334,059, Cl. 439-876.000.

Seiersen, Ole S., to Scanpower. Power supply circuit with integrated magnetic components. 5,335,163, Cl. 363-126.000.

Seiichi, Sato, to Kato Hatsuji Kaisha, Ltd. Damper device. 5,333,845, Cl. 267-711.000.

Seiko Electronic Components Ltd.: *See*—
Kawashima, Hirofumi, 5,334,900, Cl. 310-370.000.

Seiko Epson Corporation: *See*—
Kato, Kazutoshi; Katada, Toshiharu; and Yokoyama, Osamu, 5,335,026, Cl. 351-159.000.
Koizumi, Shuzo; Uehara, Noriaki; and Kobayashi, Toru, 5,335,187, Cl. 364-526.000.

Seiko Instruments Inc.: *See*—
Ito, Tetsumasa; and Nakagawa, Yoshitomo, 5,334,834, Cl. 250-288.000.
Muramatsu, Hiroshi; and Ye, Xuanjing, 5,334,303, Cl. 204-412.000.

Seiler, Theo, to Summit Technology, Inc. Laser thermokeratoplasty methods and apparatus. 5,334,190, Cl. 606-5.000.

Seitz, Karlheinz: *See*—
Goossens, Andre F. L.; Seitz, Karlheinz; and Lauer, Josef, 5,333,946, Cl. 303-119.200.

Sekiguchi, Akihiko: *See*—
Tsunehiro, Naoshi; Sekiguchi, Akihiko; and Nakamura, Asako, 5,335,263, Cl. 379-58.000.

Sekiguchi, Hideki: *See*—
Kashiwabara, Masuo; Tanaka, Yoshikazu; and Sekiguchi, Hideki, 5,333,943, Cl. 303-112.000.

Sekine, Takayuki: *See*—
Okamoto, Shigetomi; Miwa, Masahiko; Sekine, Takayuki; and Yamaguchi, Hiroshi, 5,334,442, Cl. 428-246.000.

Sekiyama, Yasushi; Mizukami, Yuichi; and Yamamoto, Tesuei, to Nippon Sanso Corporation; and Green Cross Corporation, The. Allyl isothiocyanate sprays. 5,334,373, Cl. 424-40.000.

Sellers, Charles A., to Compag Computer Corporation. Expanded area printing methods and associated apparatus for an image reproduction machine. 5,335,005, Cl. 346-160.000.

Senior Engineering Investments, B.V: *See*—
Davey, Mark J.; and Goodrich, Michael R., 5,333,917, Cl. 285-205.000.

Senior Engineering Investments, B.V.: *See*—
Goodrich, Michael R., 5,333,447, Cl. 60-278.000.

Senju Metal Industry Co., Ltd.: *See*—
Ishikawa, Mitsuo; and Watarai, Shigeaki, 5,334,430, Cl. 428-40.000.

Sentry Equipment Corp.: *See*—
Henszey, Richard R.; and Weiss, Bruce W., 5,333,648, Cl. 138-26.000.

Seo, Young S. Lace fastening cleat and shoe. 5,333,398, Cl. 36-50.100.

Seong, Byeong G.; Hwang, Soon Y.; Song, Jin H.; and Kim, Kyoo Y., to Pohang Iron & Steel Co., Ltd.; and Research Institute of Industrial Science & Technology. Heat resistant stainless steel coated by diffusion of aluminum and the coating method thereof. 5,334,416, Cl. 427-252.000.

Seppi, Edward J.; Pavkovich, John M.; and Shapiro, Edward G. X-ray scanner with a source emitting plurality of fan beams. 5,335,255, Cl. 378-4.000.

Sera, Taizo; Mitsuhiro, Takashi; Ozawa, Koichi; and Sakata, Yutaka, to Sumitomo Heavy Industries, Ltd.; and NKK Corp. Thickness adjustable mold for continuous casting. 5,333,671, Cl. 164-436.000.

Serdiuk, Paul; and Steinmetz, Alan L., to BASF Corporation. Polyurethane coating composition derived from long-chain aliphatic polyol. 5,334,650, Cl. 524-591.000.

Serizawa, Kohji: *See*—
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.

Serizawa, Nobufusa: *See*—
Matsuoka, Tatsuji; Serizawa, Nobufusa; Hosoya, Tsuyoshi; and Furuya, Kouhei, 5,334,517, Cl. 435-121.000.

Serrano Gonzalez, Antonio, to Sanitor S.L. Throw-away syringe. 5,334,156, Cl. 604-110.000.

Seto, Rodney K.: *See*—
Dean, James L.; Seto, Rodney K.; and Kovit, Sheldon L., 5,333,691, Cl. 166-341.000.

Severeid, Donald R. Tractor mounted implement for removing tree stumps and the like buried in the ground. 5,333,693, Cl. 171-82.000.

Severeid, Donald R. Foldable christmas tree stand. 5,333,828, Cl. 248-519.000.

Sextant Avionique: *See*—
Boiteau, Catherine; and Parus, Roger, 5,335,177, Cl. 364-424.060.

Shaffer, W. Hal, Jr.: *See*—
Hulse, Mark M.; and Shaffer, W. Hal, Jr., 5,334,942, Cl. 324-694.000.

Shah, Sanjay M.: *See*—
Bruggemann, Charles J.; Poss, Michael G.; and Shah, Sanjay M., 5,333,775, Cl. 228-157.000.

Shaikh, Shahid N.; Ellis, Paul E., Jr.; and Lyons, James E., to Sun Company, Inc. Oxidation of hydrocarbons over ordered arrays of heteropolyacids and polyoxoanions on graphite. 5,334,780, Cl. 568-910.000.

Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., to Aura System Inc. Magnetic metal. 5,334,265, Cl. 148-302.000.

Shalo, Sami: *See*—
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, 5,335,347, Cl. 395-650.000.

Shama, Sami A.: *See*—
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,455, Cl. 428-413.000.
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,456, Cl. 428-431.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Shams, Iden: *See—*
Butler, Clive; and Shams, Iden, 5,333,388, Cl. 33-559.000.
Shanafelt, Armen B.: *See—*
Skold, Carl N.; Shanafelt, Armen B.; Ghazarossian, Vartan; and Ullman, Edwin F., 5,334,513, Cl. 435-7.920.
Shanbrom, Edward: *See—*
Morse, Brenda S.; and Shanbrom, Edward, 5,333,626, Cl. 128-898.000.
Shane, Patrick R.: *See—*
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.
Shankar, Ravi B.; Pews, R. Garth; and Romer, Duane R., to Dow Chemical Company, The. Composition and use of 3-phenyl-5-thiocyano-methylthio-1,3,4-thiadiazole-2(3h)thione. 5,334,603, Cl. 514-363.000.
Shapiro, Edward G.: *See—*
Seppi, Edward J.; Pavkovich, John M.; and Shapiro, Edward G., 5,335,255, Cl. 378-4.000.
Sharitz, Daniel B.: *See—*
Clewett, Richard H.; Pering, Claude O.; and Sharitz, Daniel B., 5,334,204, Cl. 606-73.000.
Sharp, Joe: *See—*
Luther, Harry M., 5,333,887, Cl. 280-250.100.
Sharp Kabushiki Kaisha: *See—*
Iguchi, Katsuji; Kakimoto, Seizo; and Shinmura, Naoyuki, 5,334,869, Cl. 257-309.000.
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.
Kawawaki, Fumiaki, 5,335,193, Cl. 364-709.120.
Matoba, Hirotsugu; Nomura, Masaru; and Yamaguchi, Takeshi, 5,335,214, Cl. 369-44.280.
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.
Obata, Masao, 5,335,100, Cl. 359-49.000.
Ohta, Kenji; Inui, Tetsuya; Katayama, Hiroyuki; Takahashi, Akira; Hirokane, Junji; Nishitani, Yukinori; Mieda, Michinobu; and Van, Kazuo, 5,335,220, Cl. 369-288.000.
Okajima, Hiroyuki; and Uratani, Shinichi, 5,334,993, Cl. 345-102.000.
Okumura, Toshiyuki; Inoguchi, Kazuhiko; Konushi, Fumihiro; and Takiguchi, Haruhisa, 5,335,241, Cl. 372-46.000.
Toki, Hirotaka; Yamamoto, Hiranaga; Wakuda, Osamu; and Nagao, Hiroyuki, 5,333,849, Cl. 271-9.000.
Sharpe, Donald E.: *See—*
Pellegrino, Anthony J.; Mayes, Earl C.; Sharpe, Donald E.; and Bantz, George H., 5,335,161, Cl. 363-61.000.
Shaw, David S.: *See—*
Boka, Jeffrey B.; Patel, Naresh R.; Kim, Kevin D.; and Shaw, David S., 5,335,179, Cl. 364-434.000.
Shaw, Julia H.; and Hallam, Andrew G., to York Technology Limited. Measuring geometry of optical fibre coatings with transverse incident beams. 5,335,057, Cl. 356-73.100.
Shell Oil Company: *See—*
Beshouri, Sharon M., 5,334,621, Cl. 521-64.000.
Gibler, Carma J.; and Wilson, Stanley E., 5,334,566, Cl. 502-113.000.
Graiff, Leonard B.; Ngan, Danny Y.; Visser, Benton E.; and Webster, Greg E., 5,334,308, Cl. 208-299.000.
Nahm, James J. W.; and Wyant, Reece E., 5,333,690, Cl. 166-291.000.
Ruyter, Herman P.; Hortulanus, Anton; and Dekker, Jan, 5,334,445, Cl. 428-284.000.
Shen, Bingn W.; Richardson, William F.; and Doering, Robert R., to Texas Instruments Incorporated. High performance composed pillar dRAM cell. 5,334,548, Cl. 437-52.000.
Shen, Dong-Ming: *See—*
Ashjian, Henry; Miller, Matthew P.; Shen, Dong-Ming; and Wu, Margaret M., 5,334,228, Cl. 44-347.000.
Shenoha, James L.; and Meyer, Dean E., to Wilson Sporting Goods Co. Symmetrical golf putter. 5,333,863, Cl. 273-80.200.
Shepard, Kenneth L.: *See—*
Baldwin, John J.; Shepard, Kenneth L.; Ponticello, Gerald S.; and Williams, Theresa M., 5,334,591, Cl. 514-215.000.
Sheppard, Kenneth: *See—*
Stanley, Donald; Sheppard, Kenneth; and Skaar, Leif, 5,333,806, Cl. 242-342.000.
Sheppard, Sherman H.: *See—*
Edmundson, Donald J.; and Sheppard, Sherman H., 5,333,475, Cl. 68-27.000.
Sherburne, David G.: *See—*
Muller, Bruce R.; Hall, Douglas O.; Sherburne, David G.; and Glanville, Thomas W., 5,335,039, Cl. 354-324.000.
Sherburne, Timothy J.; Ness-Cohn, David J.; and Ekl, Randy L., to Motorola, Inc. Subscriber incompatibility display arrangement. 5,335,358, Cl. 455-53.100.
Sherman, Kimberly J.: *See—*
Hartnett, Mary A.; and Sherman, Kimberly J., 5,334,245, Cl. 118-59.000.
Sherrill, Michael: *See—*
Rothfuss, Robert G.; Okorocha, Livyn O.; Bishop, Gregory D.; Sambi, Narinderjit S.; Bedi, James J.; Privitera, Salvatore; and Sherrill, Michael, 5,333,772, Cl. 227-176.000.
Sherwood Medical Company: *See—*
Cummins, Christopher K. M., 5,333,608, Cl. 128-207.140.
Kee, Kok-Hiong; Schneider, James G.; and Bruno, Robert H., 5,333,607, Cl. 128-204.180.
Schneider, James; and Kee, Kok-Hiong, 5,333,606, Cl. 128-200.240.
Sherwood, William H.: *See—*
Thigpen, Gary M.; and Sherwood, William H., 5,333,699, Cl. 175-431.000.
Shetty, Jayarama K.: *See—*
Charles, Robert L.; and Shetty, Jayarama K., 5,334,524, Cl. 435-193.000.
Shibahara, Seiji: *See—*
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.
Shibata, Tohru; Namikoshi, Hajime; and Okamoto, Ichiro, to Daicel Chemical Industries, Ltd. Separation agent comprising aliphatic or aromatic ester of polysaccharide. 5,334,311, Cl. 210-198.200.
Shibata, Yoshifumi: *See—*
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.
Shiber, Samuel, to Surgical System & Instruments, Inc. Lumen tracking atherectomy system. 5,334,211, Cl. 606-159.000.
Shigenobu, Hirofumi: *See—*
Yip, Kee Keng; Shigenobu, Hirofumi; Kato, Kyoji; Sato, Takuya; and Yagami, Nobuo, 5,333,957, Cl. 384-484.000.
Shih-Chin, Shao, to Holmes Products Corp. Window fan. 5,334,091, Cl. 454-210.000.
Shih, Lionel C.; and Wood, Tracy G., to Ampex Corporation. Data recording system having unique nonrecording detection. 5,335,119, Cl. 360-53.000.
Shikaumi, Masao: *See—*
Onuki, Ichiro; and Shikaumi, Masao, 5,335,032, Cl. 354-195.100.
Shilling, Neil D.: *See—*
Blake, Charles B.; Forsyth, James M.; Liow, Ann S.; Adams, Stephen J.; Doy, Ralph J.; Brierley, Rowland J. P.; Roberts, Jane A. E.; Schofield, Brian; and Shilling, Neil D., 5,334,784, Cl. 570-165.000.
Shima Seiki Mfg., Ltd.: *See—*
Miyamoto, Masaki, 5,333,473, Cl. 66-106.000.
Shimada, Tetsuya: *See—*
Kaifu, Noriyuki; Saika, Toshihiro; Endo, Tadao; and Shimada, Tetsuya, 5,335,094, Cl. 358-494.000.
Shimada, Tomoyuki; Sasaki, Masaomi; Aruga, Tamotsu; and Adachi, Hiroshi, to Ricoh Company, Ltd. Electrophotographic element with M-phenylenediamine derivatives therein. 5,334,470, Cl. 430-59.000.
Shimada, Yasuhiro: *See—*
Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, 5,334,835, Cl. 250-306.000.
Shimamoto, Keiko: *See—*
Ohfune, Yasufumi; Shimamoto, Keiko; Shinozaki, Haruhiko; and Ishida, Michiko, 5,334,757, Cl. 562-568.000.
Shimano Inc.: *See—*
Hitomi, Yasuhiro, 5,333,811, Cl. 242-232.000.
Sato, Jun, 5,333,812, Cl. 242-261.000.
Shimazaki, Osamu, to Fuji Photo Film Co., Ltd. Method and apparatus for processing images. 5,335,096, Cl. 358-518.000.
Shimer, Herbert G., Jr.: *See—*
Holliday, George L.; Holliday, Brightman K.; and Shimer, Herbert G., Jr., 5,333,519, Cl. 76-107.800.
Shimizu, Jiro: *See—*
Shimura, Yasuo; Kudoh, Takahiro; and Shimizu, Jiro, 5,333,578, Cl. 123-90.170.
Shimizu, Kaoru: *See—*
Saito, Koichiro; and Shimizu, Kaoru, 5,334,348, Cl. 422-61.000.
Shiota, Tomio; Hikida, Toshiharu; Sugimoto, Masashi; Kodama, Kazuhiko; and Shimizu, Kaoru, 5,334,434, Cl. 428-188.000.
Shimizu, Keiichi: *See—*
Ohsaki, Hajime; and Shimizu, Keiichi, 5,334,915, Cl. 315-307.000.
Shimizu, Kikuo: *See—*
Suzuki, Hiroshi; Mizokami, Takuya; and Shimizu, Kikuo, 5,335,216, Cl. 369-59.000.
Shimizu, Kiyoshi: *See—*
Hatouchi, Gokichi; Saitoh, Hisao; Shimizu, Kiyoshi; and Hagisu, Yasushi, 5,333,983, Cl. 414-331.000.
Shimizu, Masahiro: *See—*
Kawanaka, Takafumi; Ohishi, Takeshi; and Shimizu, Masahiro, 5,334,683, Cl. 526-273.000.
Shimizu, Ryosuke; and Wakabayashi, Noriaki, to Matsushita Electric Industrial Co., Ltd. Apparatus and method for head-positioning on a rotatable recording medium. 5,335,123, Cl. 360-77.050.
Shimizu, Tadafumi: *See—*
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.

Shimoe, Toshio: *See—*
Kamoi, Jyoei; Hayami, Hichiro; Kato, Yuji; Shimoe, Toshio; Abe, Shunji; Kusayanagi, Michio; Mukai, Haruo; and Soumiya, Toshio, 5,335,222, Cl. 370-60.000.
Shimokawa, Shinji; and Kita, Katsuo, to Ashimori Kogyo Kabushiki Kaisha. Plug for blocking a branched pipe opening. 5,333,649, Cl. 138-89.000.
Shimomura, Akihiko: *See—*
Kashiwazaki, Akio; Kobayashi, Masatsune; Arai, Ryuichi; Kobayashi, Junichi; and Shimomura, Akihiko, 5,334,999, Cl. 347-65.000.
Shimoni, Uri; Colman, Lewis; and Meidan, Moshe, to Israel Aircraft Industries Ltd. Boresight system and calibration method. 5,334,828, Cl. 250-206.200.
Shimura, Yasuo; Kudoh, Takahiro; and Shimizu, Jiro, to Honda Giken Kogyo Kabushiki Kaisha. Four-cycle engine. 5,333,578, Cl. 123-90.170.
Shin-Etsu Chemical Co., Ltd.: *See—*
Ikeno, Masayuki, 5,334,687, Cl. 528-15.000.
Takita, Masatoshi; Hayami, Hiroyuki; and Suzuki, Koichi, 5,335,306, Cl. 385-142.000.
Shin-Etsu Handotai Co., Ltd.: *See—*
Hashimoto, Hiromasa, 5,333,413, Cl. 51-165.750.
Shin, Hyun-ku, to SamSung Electronics Co., Ltd. Apparatus for enhancing image quality of a videotape recorder using motion adaptive method. 5,335,071, Cl. 348-392.000.
Shin, Jong-cheol; and Oh, Heung-kwun, to Samsung Electronics Co., Ltd. Image sensor device with insulation film. 5,334,867, Cl. 257-222.000.
Shin, Masaaki: *See—*
Kobayashi, Nobuki; Shiraishi, Yoku; Yamamoto, Takashi; and Shin, Masaaki, 5,334,473, Cl. 430-109.000.
Shin, Suk K. Stereo multi-vision scope for sightseeing. 5,335,110, Cl. 359-480.000.
Shinar, Joseph; Swanson, Leland S.; Lu, Feng; and Ding, Yiwei, to Iowa State University Research Foundation, Inc. Fabrication of poly(p-phenyleneacetylene) light-emitting diodes. 5,334,539, Cl. 437-1.000.
Shindo, Koji: *See—*
Tajima, Osamu; Sumi, Shingo; Shindo, Koji; Yamamoto, Satoshi; and Yoneda, Fumiiki, 5,334,463, Cl. 429-9.000.
Shingarev, Eduard N.: *See—*
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piskorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.
Shinko Electric Co., Ltd.: *See—*
Nakagawa, Hiroshi, 5,334,894, Cl. 310-49.00R.
Shinmura, Naoyuki: *See—*
Iguchi, Katsuji; Kakimoto, Seizo; and Shinmura, Naoyuki, 5,334,869, Cl. 257-309.000.
Shinohara, Takeshi: *See—*
Takata, Yukio; and Shinohara, Takeshi, 5,334,272, Cl. 156-69.000.
Shinojima, Masaaki, to Nippondenso Co., Ltd. Variable valve operation timing control device. 5,333,577, Cl. 123-90.150.
Shinozaki, Haruhiko: *See—*
Ohfune, Yasufumi; Shimamoto, Keiko; Shinozaki, Haruhiko; and Ishida, Michiko, 5,334,757, Cl. 562-568.000.
Shinozuka, Morio, to Sawara Co., Ltd. Radio control car. 5,334,076, Cl. 446-456.000.
Shinsho, Katsuhiko: *See—*
Kaneko, Norio; Shinsho, Katsuhiko; and Yamamoto, Keisuke, 5,335,197, Cl. 365-153.000.
Shinskey, Francis G., to Foxboro Company, The. Method and apparatus for adaptive deadtime process control. 5,335,165, Cl. 364-162.000.
Shintani, Dai: *See—*
Tanaka, Yoshito; Shintani, Dai; Naruto, Hirokazu; Nanba, Katsuyuki; Taniguchi, Nobuyuki; Ishibe, Hiroshi; and Tanaka, Yoshihiro, 5,335,072, Cl. 348-232.000.
Shiono, Manzo: *See—*
Takahashi, Takashi; and Shiono, Manzo, 5,334,740, Cl. 548-110.000.
Shiota, Tomio; Hikida, Toshiharu; Sugimoto, Masashi; Kodama, Kazuhiko; and Shimizu, Kaoru, to Matsushita Electric Industrial Co., Ltd. Vibration or shock absorbing member. 5,334,434, Cl. 428-188.000.
Shipley, Charles R., Jr., to Shipley Company Inc. Method for manufacture of multilayer circuit board. 5,334,488, Cl. 430-315.000.
Shipley Company Inc.: *See—*
Shipley, Charles R., Jr., 5,334,488, Cl. 430-315.000.
Shirai, Akira: *See—*
Sato, Kensaku; and Shirai, Akira, 5,334,055, Cl. 439-723.000.
Shirai, Hirokazu; Sagawa, Morikazu; and Makimoto, Mitsuo, to Matsushita Electric Industrial Co., Ltd. Strip-line type bandpass filter. 5,334,961, Cl. 333-204.000.
Shirai, Kenji; and Katsuno, Sumio, to Toyota Jidosha Kabushiki Kaisha. Electrically controlled vehicle brake system having means for controlling braking based on detected actual braking effect and determined target value. 5,333,944, Cl. 303-105.000.
Shiraishi, Naomasa, to Nikon Corporation. Projection type exposure apparatus and method of exposure. 5,335,044, Cl. 355-53.000.
Shiraishi, Yoku: *See—*
Kobayashi, Nobuki; Shiraishi, Yoku; Yamamoto, Takashi; and Shin, Masaaki, 5,334,473, Cl. 430-109.000.
Shirakawa, Ryotomo: *See—*
Iwai, Hirohisa; Shiroyama, Kaisuke; Matsuda, Akira; Nakamura, Takeo; and Shirakawa, Ryotomo, 5,334,294, Cl. 204-129.550.
Shirasaki, Toshiyuki: *See—*
Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, 5,335,002, Cl. 346-76.0PH.
Shirato, Masayoshi, to Mitsuba Electric Manufacturing Co., Ltd. Unidirectional wiper apparatus for a vehicle. 5,333,350, Cl. 15-250.210.
Shiroto, Yoshimi: *See—*
Yoneda, Noriyuki; Shiroto, Yoshimi; Hamato, Kazuhiko; Assoka, Sachio; and Maejima, Tetsuo, 5,334,755, Cl. 562-519.000.
Shiroyama, Kaisuke: *See—*
Iwai, Hirohisa; Shiroyama, Kaisuke; Matsuda, Akira; Nakamura, Takeo; and Shirakawa, Ryotomo, 5,334,294, Cl. 204-129.550.
Sholder, Jason A., to Siemens Pacesetter, Inc. Dual-chamber implantable pacemaker having an adaptive AV interval that prevents ventricular fusion beats and method of operating same. 5,334,220, Cl. 607-9.000.
Short, John P.; McLachlan, Craig J.; Rouse, George V.; and Zibrida, James R., to Harris Corporation. Wafer bonding using trapped oxidizing vapor. 5,334,273, Cl. 156-87.000.
Short, Robert: *See—*
Thomas, Fred C.; Bero, James; Short, Robert; and Johnson, Paul R., 5,334,849, Cl. 250-559.000.
Short, Robert E.: *See—*
Tickner, Ernest G.; Short, Robert E.; and Rammler, David H., 5,333,613, Cl. 128-662.020.
Showalter, Michael S.; Dawson, John G., Jr.; and Gusky, Frank J., to ESAB Group, Inc., The. Nozzle insert for use in metal scarfing apparatus. 5,333,841, Cl. 266-51.000.
Shriver, Earl. Saw blade sharpening apparatus. 5,333,518, Cl. 76-40.000.
Shroff, Arvind, to Thomson Tubes Electroniques. Process for the manufacture of an impregnated cathode and a cathode obtained by this process. 5,334,085, Cl. 445-51.000.
Shtirmer, Gennady: *See—*
Addeo, Eric J.; Robbins, John D.; and Shtirmer, Gennady, 5,335,011, Cl. 348-15.000.
Shum, Sai P.: *See—*
Pastor, Stephen D.; Shum, Sai P.; and Odorisio, Paul A., 5,334,739, Cl. 558-78.000.
Shumate, Robert E.: *See—*
Scheibel, Jeffrey J.; Connor, Daniel S.; Shumate, Robert E.; and St. Laurent, James B., 5,334,764, Cl. 564-487.000.
Sidel: *See—*
Denis, Gerard; and La Barre, Paul, 5,334,007, Cl. 425-526.000.
Sielcken, Otto E.: *See—*
van Hinsberg, Johannes G.; van de Moesdijk, Cornelis G. M.; Spaargaren, Ivo; and Sielcken, Otto E., 5,334,768, Cl. 568-341.000.
Siemens Aktiengesellschaft: *See—*
Polle, Hubert, 5,335,302, Cl. 385-100.000.
Stein, Christian; Guggenmos, Xaver; and Krause, Joachim, 5,335,134, Cl. 361-56.000.
Siemens Elema AB: *See—*
Stunberg, Stefan, 5,335,257, Cl. 378-37.000.
Siemens Energy & Automation, Inc.: *See—*
Kinney, Michael A., 5,335,135, Cl. 361-79.000.
Siemens Pacesetter, Inc.: *See—*
Cappa, Armando M.; and Heer, Warren R., 5,334,045, Cl. 439-506.000.
Siemens Pacesetter, Inc.: *See—*
Sholder, Jason A., 5,334,220, Cl. 607-9.000.
Sierra Sun Holdings Ltd.: *See—*
Evans, Kenneth W., 5,335,149, Cl. 362-61.000.
Signode Corporation: *See—*
Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., 5,333,438, Cl. 53-399.000.
Silin, Connie J.; and Fowler, David E., to Silin, Connie J. Baseball pitching analyzer. 5,333,855, Cl. 273-26.00A.
Silvestri, George J., Jr., to Westinghouse Electric Corporation. Operation between valve points of a partial-arc admission turbine. 5,333,457, Cl. 60-646.000.
Simmen, Christen, to Coltene/Whaledent, Inc. Dispensing and mixing apparatus. 5,333,760, Cl. 222-137.000.
Simmonds Precision Products, Inc.: *See—*
Maurice, Lisa B., 5,334,831, Cl. 250-227.170.
Simmons, David O. Tackle box with interior illumination. 5,333,408, Cl. 43-54.100.
Simmons, John W., to L'Air Liquide, S.A. Polyimide gas separation membranes. 5,334,697, Cl. 528-353.000.
Simms, Charles G.: *See—*
Simms, James R.; Simms, Charles G.; and Moore, Daniel D., Jr., 5,334,974, Cl. 340-990.000.
Simms, James R.; Simms, Charles G.; and Moore, Daniel D., Jr. Personal security system. 5,334,974, Cl. 340-990.000.
Simon, Georges; and Baubois, Michel, to Giat Industries. System for loading a round into a pivoting chamber of a gun. 5,333,530, Cl. 89-13.100.
Simon Marketing, Inc.: *See—*
Filo, Andrew S., 5,334,836, Cl. 250-316.100.
Simonetti, Stelio: *See—*
Artusi, Giovanni; and Simonetti, Stelio, 5,333,363, Cl. 24-685.00K.
Simons, R. Kaye; and Wadenstorer, Frazer A., to Perry Creek Group Corporation. Pulmonary artery catheter monitoring bridge. 5,334,182, Cl. 604-32.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Simpson, Howard D.; Schwedock, Marvin J.; and Ward, John W., to Union Oil Company of California. Resid hydroprocessing catalyst. 5,334,307, Cl. 208-254.00H.
Simpson Strong-Tie Company, Inc.: *See*—
Leek, William F., 5,333,435, Cl. 52-704.000.
Singh, Gitanjli: *See*—
Morganti, Carl R.; Singh, Gitanjli; and Sweet, Benjamin D., 5,333,593, Cl. 123-637.000.
Singh, Raghuvir: *See*—
Kosa, Nadhir B.; Twiggs, Gene J.; Salter, James R.; Singh, Raghuvir; Costello, David J.; and Schlain, Leslie A., 5,335,305, Cl. 385-147.000.
Sinhuber, Franz, to Elin Energieversorgung GmbH. Cooling system for the chamber of a generator/transmission unit. 5,333,680, Cl. 165-47.000.
Sinko, George E.: *See*—
Klein, James K.; and Sinko, George E., 5,334,157, Cl. 604-160.000.
Sinnett, Kevin B. Apparatus for preparing and administering a dose of a fluid mixture for injection into body tissue. 5,334,163, Cl. 604-236.000.
Sinram, Bryan W.: *See*—
Becker, John C.; Cameron, John D., Jr.; Cameron, William L.; and Sinram, Bryan W., 5,333,797, Cl. 241-19.000.
Sintra Holding AG: *See*—
Lussi, Andre ; Zurbuchen, Hans; and von Gunten, Jurg, 5,333,537, Cl. 99-287.000.
Sirhan, Motasim M.: *See*—
Samson, Wilfred J.; Sirhan, Motasim M.; and Fernando, Jovito L., 5,334,154, Cl. 604-102.000.
Sirianni, Richard; Minutillo, Thomas; Yaworski, John; and Maurer, Robert. Shower door protector shade. 5,333,664, Cl. 160-23.100.
Sjobom, Borje. Method for pulling bearings, a bearing puller and use thereof. 5,333,378, Cl. 29-898.080.
Skaar, Leif: *See*—
Stanley, Donald; Sheppard, Kenneth; and Skaar, Leif, 5,333,806, Cl. 242-342.000.
Skis Rossignol S.A.: *See*—
Fagot, Jacques, 5,333,858, Cl. 273-73.00G.
Piegay, Yves; and Bauvois, Jean, 5,333,889, Cl. 280-602.000.
Skold, Bror E.; Lindfors, Nils O.; and Wilkstrom, Jan O., to SSAB TunnplÅt AB. Blast pipe and tuyere arrangement for a blast furnace and method. 5,333,840, Cl. 266-47.000.
Skold, Carl N.; Shanafelt, Armen B.; Ghazarossian, Vartan; and Ullman, Edwin F., to Syntex (U.S.A.) Inc. Method for immunochromatographic analysis. 5,334,513, Cl. 435-7.920.
Skroski, Mitchell E. Infant carrier apparatus and method. 5,333,769, Cl. 224-158.000.
Skybyk, Dymytro. Polyphase brushless DC and AC synchronous machines. 5,334,898, Cl. 310-268.000.
Skybyk, Dymytro. Polyphase brushless DC and AC synchronous machines. 5,334,899, Cl. 310-268.000.
Slagerman Engineering Ltd.: *See*—
Slagerman, Gordon L., 5,333,929, Cl. 297-155.000.
Slagerman, Gordon L., to Slagerman Engineering Ltd. Wheelchair tray. 5,333,929, Cl. 297-155.000.
Slamenik, Manfred: *See*—
Kneis, Leopold; and Slamenik, Manfred, 5,333,843, Cl. 266-271.000.
Sloan, Donald I.: *See*—
Campo, James A.; Anderson, Fred J.; Embree, Donald M.; Hofstetter, Charles J.; and Sloan, Donald I., 5,334,821, Cl. 235-380.000.
Sloan, James W.: *See*—
Mennitt, Timothy J.; Warren, John P.; and Sloan, James W., 5,334,857, Cl. 257-48.000.
Sloka, Alan, to Midland Brake, Inc. Sealed air dryer wtih turbosaver valve. 5,334,230, Cl. 55-213.000.
SMC Corporation: *See*—
Fukano, Yoshihiro; Makado, Shoichi; and Doi, Yoshitada, 5,333,647, Cl. 137-884.000.
SMC Kabushiki Kaisha: *See*—
Miyamoto, Michikazu; Koyama, Hideho; and Hoshi, Naoki, 5,333,535, Cl. 92-88.000.
Smedley, William H.: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,334,178, Cl. 604-415.000.
Smirlock, Martin E.; Ribich, William A.; Marinaccio, Paul J.; and Sawaf, Bernard E., to Foster-Miller, Inc. Survivability enhancement. 5,333,532, Cl. 89-36.020.
Smith, Alan D.: *See*—
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.
Smith, Alvin J.: *See*—
Colasito, Dominic J.; Robinson, Mery C.; and Smith, Alvin J., 5,334,533, Cl. 435-264.000.
Smith, Carter C.; and Gehman, John B., to Hughes Missile Systems Company. Airborne metal detecting radar. 5,334,981, Cl. 342-27.000.
Smith, Dale; and Behrmann, Gregory P., to United States of America, Army. Connector distribution assembly for a fiber optic detector system. 5,335,304, Cl. 385-135.000.
Smith, Frank D.: *See*—
Wells, Benjamin A.; Smith, Frank D.; Feldstein, Michael A.; and Hutner, Greg, 5,334,991, Cl. 345-8.000.
Smith, Jay L.; Trubey, Bradley S.; and Walker, Anthony D., to International Business Machines Corporation. Serial network topology and recognfiguration generator. 5,335,227, Cl. 370-95.100.
Smith, Leary W.; and Boylston, Clifford H. Nozzle with self controlled oscillation. 5,333,787, Cl. 239-227.000.
Smith, Michael D.; Schmidt, Brian J.; Longo, Mary C.; and Chatterjee, Deb K., to Life Technologies, Inc. Cloning and expression of *AluI* restriction endonuclease. 5,334,526, Cl. 435-199.000.
Smith, Richard A. G.: *See*—
Mannix, Christopher J.; Smith, Richard A. G.; Lewis, Ceri J.; and Harber, Julian S., 5,334,384, Cl. 424-94.630.
Smith, Richard W.: *See*—
Devine, Edward B.; and Smith, Richard W., 5,334,051, Cl. 439-583.000.
Smith, Robert G., to Minnesota Mining and Manufacturing Company. High temperature ceramic composite. 5,334,426, Cl. 428-34.400.
Smith, Ronald R.; Foreman, Richard D.; Graf, Todd S.; and Redden, Joseph D., to American Standard Inc. Electric motor driven air valve. 5,333,835, Cl. 251-129.120.
Smith, Ronald T., to Hughes Aircraft Company. Veiling glare control holographic windshield. 5,335,099, Cl. 359-15.000.
Smith, Rowland C.; Pettit, Neville T.; and Guttoriello, Angelo, to ITW Limited. Gauge for measuring the atomization air pressure in a paint spray gun. 5,333,506, Cl. 73-756.000.
Smith, Steven W. Bull nose applicator. 5,333,483, Cl. 72-325.000.
Smith, Wallace A., to United States of America, Navy. Composite piezoelectrics utilizing a negative Poisson ratio polymer. 5,334,903, Cl. 310-358.000.
Smith, William M.: *See*—
Behan, John M.; Ness, Jeremy N.; Perring, Keith D.; and Smith, William M., 5,334,581, Cl. 512-2.000.
Smolik, Klaus: *See*—
Hobbs, Karin; Hoffmann, Regina; and Smolik, Klaus, 5,334,436, Cl. 428-195.000.
Smoot, Lanny S.: *See*—
Braun, David A.; Nelson, Terence J.; and Smoot, Lanny S., 5,335,022, Cl. 348-744.000.
SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Guse, Rudolf, 5,333,366, Cl. 29-33.00C.
Snodgrass, Timothy E., to Rockwell International Corporation. Apparatus for correlating multi-frequency signals. 5,335,248, Cl. 375-1.000.
Snow Brand Milk Products Co., Ltd.: *See*—
Sueyasu, Ryoichi; Ueda, Kunio; and Sagara, Kazuhiko, 5,334,398, Cl. 426-36.000.
Snow, Robert A.: *See*—
Phillips, Christopher P.; and Snow, Robert A., 5,334,382, Cl. 424-94.300.
Snowbarger, Jim L.; and Halbleib, Harold W., to Fisher-Rosemount Systems, Inc. Integrity mapping in data communication system. 5,335,221, Cl. 370-13.000.
Snyder, Brian A.; Contestable, Paul B.; Abrams, Catherine T.; and Grogan, Elizabeth A., to Eastman Kodak Company. Test kit and method for the detection of microorganisms associated with periodontal diseases using surfactant mixture as extraction composition. 5,334,503, Cl. 435-7.320.
Snyder, Margaret A.: *See*—
Flynn, Robert G.; Bakal, Abraham I.; and Snyder, Margaret A., 5,334,399, Cl. 426-42.000.
Sobel, Daniel. Hypodermic syringe needle guard. 5,334,155, Cl. 604-110.000.
Societe Nationale D'Etude et de Construction de Moteurs D'Aviation: *See*—
Heyden, Eddy F. M. G.; LaCour, Christian; Lechevalier, Michel M. A. A.; and Riou, Christophe N., 5,333,644, Cl. 137-614.180.
Societe Nationale Industrielle et Aerospatiale: *See*—
Pittau, Serge F., 5,333,374, Cl. 29-748.000.
Saugnac, Frederic, 5,334,438, Cl. 428-212.000.
Soda, Hiroyuki: *See*—
Kohno, Hiromi; and Soda, Hiroyuki, 5,335,174, Cl. 364-424.100.
Soderberg, Paul B., to Soderberg Research & Development, Inc. Valve driver. 5,333,834, Cl. 251-86.000.
Soderberg Research & Development, Inc.: *See*—
Soderberg, Paul B., 5,333,834, Cl. 251-86.000.
Soehendra, Nib; and Grosse, Carsten, to Wilson-Cook Medical Inc. Method for retrieving stents. 5,334,208, Cl. 606-108.000.
Sohn, Chang-min; and Jeong, Su-min, to Samsung Electron Devices Co., Ltd. Cathode ray tube and process for producing same. 5,334,409, Cl. 427-64.000.
Soichi, Masakatsu: *See*—
Ogata, Akihiro; Hirakawa, Yoshihiro; Soichi, Masakatsu; and Kitano, Fumiyasu, 5,333,628, Cl. 134-64.00R.
Sokac, Russell J.: *See*—
Kluger, Jacob N.; Martin, Michael J.; Moore, Steven R.; and Sokac, Russell J., 5,335,043, Cl. 355-206.000.
Solar Turbines Incorporated: *See*—
Dunlop, Donald L.; and Ervin, Douglas R., 5,333,482, Cl. 72-307.000.
Soled, Stuart L.: *See*—
Gutierrez, Antonio; Soled, Stuart L.; and Paes, Jose A., 5,334,775, Cl.,568-791.000.
Solomon, Neil; Solomon, Theodore C.; and Freed, Allen J. Method for tabacco dehabituation. 5,334,390, Cl. 424-439.000.
Solomon, Theodore C.: *See*—
Solomon, Neil; Solomon, Theodore C.; and Freed, Allen J., 5,334,390, Cl. 424-439.000.
Solvay Enzymes, Inc.: *See*—
Charles, Robert L.; and Shetty, Jayarama K., 5,334,524, Cl. 435-193.000.

Solvay (Societe Anonyme): *See*—
Demiddeleer, Leopold; Kempeneer, Yvan; and Desvachez, Laurence, 5,334,568, Cl. 502-119.000.
Sommer, William F. Precision electric motor speed. 5,335,307, Cl. 388-814.000.
Sonberg, Kenneth W.: *See*—
Cooper, John R.; and Sonberg, Kenneth W., 5,335,265, Cl. 379-59.000.
Sondermann, William L.: *See*—
Dieken, Alan P.; Fischer, David J.; Platt, Jonathan C.; and Sondermann, William L., 5,334,223, Cl. 607-31.000.
Sone, Hiroyuki: *See*—
Aida, Kazuhiro; Nunohiro, Eiji; and Sone, Hiroyuki, 5,335,351, Cl. 395-700.000.
Sone, Kazuya, to NEC Corporation. Differential amplifiers. 5,334,949, Cl. 330-253.000.
Soneda, Hideo: *See*—
Yamashita, Junichi; Soneda, Hideo; and Sugawara, Satoshi, 5,335,317, Cl. 395-119.000.
Sonerud, John T. Coupling of drive systems to an accessory or an excavator of the like. 5,333,400, Cl. 37-468.000.
Song, Jin H.: *See*—
Seong, Byeong G.; Hwang, Soon Y.; Song, Jin H.; and Kim, Kyoo Y., 5,334,416, Cl. 427-252.000.
Sonn, Michael: *See*—
Wehrle, Gerhard; and Sonn, Michael, 5,334,035, Cl. 439-252.000.
Sonoda, Junichi: *See*—
Kamino, Toshihide; Sonoda, Junichi; Ogawa, Hirofumi; and Endo, Takeshi, 5,335,140, Cl. 361-608.000.
Sony Corporation: *See*—
Fujinaka, Akihiko, 5,335,261, Cl. 379-58.000.
Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ono, Masumi; and Yasuda, Kouichi, 5,335,213, Cl. 369-121.000.
Hamasaki, Masaharu, 5,335,008, Cl. 348-301.000.
Kitagawa, Keiko; and Yasuda, Shiro, 5,334,022, Cl. 434-340.000.
Machara, Masanori; Kusui, Yoshio; Kumano, Akira; and Yoshida, Shuji, 5,333,807, Cl. 242-334.600.
Osada, Yasuo, 5,335,218, Cl. 369-178.000.
Sato, Masanori; and Koizumi, Osamu, 5,335,131, Cl. 242-347.000.
Sugiyama, Toshinobu; and Sakurai, Hiroshi, 5,334,555, Cl. 437-241.000.
Ueno, Takahisa; and Abe, Hideshi, 5,334,829, Cl. 250-208.100.
Yokoya, Satoshi; and Takao, Nobutaka, 5,334,945, Cl. 330-129.000.
Sony Electronics, Inc.: *See*—
Gioscia, Richard, 5,333,827, Cl. 248-289.100.
Herz, William; and Rossmere, David, 5,335,019, Cl. 348-607.000.
Soon-Shiong, Patrick: *See*—
Dessi, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., 5,334,640, Cl. 524-56.000.
Sorapec S.A.: *See*—
Bronoel, Guy; Potier, Thierry; Tassin, Noelle; Bugnet, Bernard; Doniat, Denis; and Rouget, Robert, 5,334,465, Cl. 429-222.000.
Sordyl, Allen D.: *See*—
Gurak, Ronald W.; Bobren, Allan J.; Clochon, Frank A.; Figiel, Janusz; Lesner, Kenneth W.; Pearson, Timothy B.; Raczek, Kendall K.; Renz, Mark B.; and Sordyl, Allen D., 5,333,438, Cl. 53-399.000.
Sorensen, Thomas M., to BGK Finishing Systems, Inc. Movable heat treat apparatus with sighting means. 5,335,308, Cl. 392-412.000.
Soukoulis, Costas: *See*—
Ho, Kai-Ming; Chan, Che-Ting; and Soukoulis, Costas, 5,335,240, Cl. 372-39.000.
Soules, David A.: *See*—
Ash, Carlton E.; Geibel, Jon F.; Hagenson, Randy L.; and Soules, David A., 5,334,701, Cl. 528-486.000.
Soumiya, Toshio: *See*—
Kamoi, Jyoei; Hayami, Hichiro; Kato, Yuji; Shimoe, Toshio; Abe, Shunji; Kusayanagi, Michio; Mukai, Haruo; and Soumiya, Toshio, 5,335,222, Cl. 370-60.000.
Sournac, Michel: *See*—
Bougaret, Joel; and Sournac, Michel, 5,334,393, Cl. 424-469.000.
South Bend Controls, Inc.: *See*—
Gilchrist, Jon P.; and Klebusch, William C., 5,333,643, Cl. 137-605.000.
Southwire Company: *See*—
Berry, William M., III; Charles, Doyle B.; and Flagg, Michael F., 5,333,809, Cl. 242-578.100.
Soutome, Kazuharu: *See*—
Miyoshi, Masahiko; Asanuma, Kiyohisa; and Soutome, Kazuharu, 5,333,546, Cl. 101-216.000.
Soya, Yoshihiro; and Emi, Shigenori, to Toyo Boseki Kabushiki Kaisha. Composition for measurement of potassium ion concentration and composition for elimination of ammonium ions. 5,334,507, Cl. 435-25.000.
Spaargaren, Ivo: *See*—
van Hinsberg, Johannes G.; van de Moesdijk, Cornelis G. M.; Spaargaren, Ivo; and Sielcken, Otto E., 5,334,768, Cl. 568-341.000.
Space Systems/Loral, Inc.: *See*—
Pollard, Howard E.; Neff, Robert E.; and Ajluni, Cheryl J., 5,334,844, Cl. 250-330.000.
Sparling, Fred; and Maloney, Wilfred. Coupling. 5,333,915, Cl. 285-73.000.
Spartan Tool Div. of Pettibone Corp.: *See*—
Salecker, Roy W., 5,333,448, Cl. 60-325.000.
Spater, Stuart S.: *See*—
Kolton, Chester; and Spater, Stuart S., 5,334,274, Cl. 156-93.000.
Spath, Walter. Apparatus for spatial uncoiling and stretch-bending process in combination with a bending mandrel station. 5,333,481, Cl. 72-150.000.
Specialty Products Incorporated: *See*—
Pope, Rodney T.; Barber, Steven D.; and Hall, Daniel R., 5,334,098, Cl. 472-116.000.
Speck, Ulrich: *See*—
Gries, Heinz; Raduchel, Bernd; Platzek, Johannes; Weinmann, Hanns-Joachim; Press, Wolf-Rudiger; and Speck, Ulrich, 5,334,371, Cl. 424-9.000.
Specker, Erich, to Dividella AG. Packaging with integrated partitioning. 5,333,778, Cl. 229-120.240.
Spector, George: *See*—
O'Brien, Martin J.; and Spector, George, 5,334,425, Cl. 428-23.000.
Omandam, Ismael C.; and Spector, George, 5,334,131, Cl. 601-71.000.
Piedmont, Gregory H.; and Spector, George, 5,333,742, Cl. 211-65.000.
Pridgeon, Jay G.; Green, Patricia; and Spector, George, 5,333,877, Cl. 273-248.000.
Rafaelides, Anthony; and Spector, George, 5,334,361, Cl. 422-305.000.
Spectra-Physics Laserplane, Inc.: *See*—
Dugan, John P.; Hayes, James N.; and Elliott, Steve M., 5,335,244, Cl. 372-101.000.
Teach, Ted L., 5,334,987, Cl. 342-357.000.
SpectraLink Corporation: *See*—
Maddy, Steven L.; and Paterson, Graeme S., 5,334,952, Cl. 331-1.00A.
Spectrum Sciences B.V.: *See*—
Landa, Benzion; Pinhas, Hanna; and Fenster, Paul, 5,335,054, Cl. 355-279.000.
Spego, Inc.: *See*—
Goforth, Henry E., 5,333,524, Cl. 82-127.000.
Spence, Rosamund A.: *See*—
Crowley, Patrick J.; Glen, Alasdair T.; Spence, Rosamund A.; and Lawson, Kevin R., 5,334,722, Cl. 546-289.000.
Spencer, Gayland F.: *See*—
Vaughn, Steven F.; and Spencer, Gayland F., 5,334,619, Cl. 514-675.000.
Spencer, Steven J.: *See*—
Liu, Xin; Spencer, Steven J.; Gupte, Neelkanth S.; Chiang, Robert H. L.; and Gaffaney, Daniel, 5,333,682, Cl. 165-133.000.
Sperk, James M., Jr.; Lee, Biing-lin; Summers, James W.; and Faber, Edward M., deceased (by Faber, Sharon M., executrix), to B.F. Goodrich Company, The. Fiber-reinforced thermoplastic molding compositions. 5,334,647, Cl. 524-507.000.
Spicer, Ken M.: *See*—
Halushka, Perry V.; Spicer, Ken M.; and Mais, Dale E., 5,334,369, Cl. 424-1.850.
Spinelli, Julio C.: *See*—
Salo, Rodney W.; Spinelli, Julio C.; and Tockman, Bruce A., 5,334,222, Cl. 607-17.000.
Spinelli, Steven J.: *See*—
Bugner, Douglas E.; Hays, David S.; Kaeding, Jeanne E.; and Spinelli, Steven J., 5,334,477, Cl. 430-126.000.
Spitzmesser, Jonathan B.: *See*—
Doty, F. David; Spitzmesser, Jonathan B.; and Wilson, David G., 5,333,994, Cl. 415-202.000.
Sponsler, Edward E.: *See*—
Kossovsky, Nir; Gelman, Andrew E.; and Sponsler, Edward E., 5,334,394, Cl. 424-494.000.
Spraying Systems Co.: *See*—
Haruch, James, 5,333,794, Cl. 239-600.000.
Sproat, Brian; Lamond, Angus; and Paolella, Giovanni, to Europaisches Laboratorium fur Molekularbiologie (EMBL). Synthetic catalytic oligonucleotide structures. 5,334,711, Cl. 536-24.500.
Srivastava, Suresh C.: *See*—
Mease, Ronnie C.; Srivastava, Suresh C.; and Gestin, Jean-Francois, 5,334,729, Cl. 548-546.000.
SSAB TunnplÅt AB: *See*—
Skold, Bror E.; Lindfors, Nils O.; and Wilkstrom, Jan O., 5,333,840, Cl. 266-47.000.
Stakem, Kerry J.: *See*—
Camsell, Edwin; Schuppert, Leo V., Jr.; and Stakem, Kerry J., 5,333,373, Cl. 29-739.000.
Stallard, Clinton W., III, to Newport News Shipbuilding and Dry Dock Company. Galvanic isolation device. 5,333,913, Cl. 285-48.000.
Stamicarbon B.V.: *See*—
Castelijns, Anna M. C. F.; Arts, Henricus J.; and Green, Richard, 5,334,721, Cl. 546-251.000.
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,455, Cl. 428-413.000.
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,456, Cl. 428-431.000.
Standard Oil Company, The: *See*—
Lemanski, Michael F.; Hazen, Joseph B.; and Blum, Patricia R., 5,334,751, Cl. 560-265.000.
Standex International Corporation: *See*—
Bryson, Rodney; and Borgman, Milton H., 5,333,517, Cl. 74-810.100.

VOL 1165 ISS 1 AG 2 1994 UMI

Stange, Andreas: *See—*
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,334,287, Cl. 162-175.000.

Stanker, Larry H.; Vanderlaan, Martin; and Watkins, Bruce E., to University of California, The Regents of the. Monoclonal antibodies to cyclodiene insecticides and method for detecting the same. 5,334,528, Cl. 435-240.270.

Stanley, Donald; Sheppard, Kenneth; and Skaar, Leif, to Verbatim Corporation. Magnetic tape cartridge. 5,333,806, Cl. 242-342.000.

Stanley Electric Co., Ltd.: *See—*
Suzuki, Kazuhiro, 5,335,114, Cl. 359-602.000.

Starner, William E.; and Musselman, Susan G., to Air Products and Chemicals, Inc. Flexibilized polyepoxide resins. 5,334,654, Cl. 524-849.000.

Staubli-Verdol SA: *See—*
Bassi, Dario; and Montibert, Pierre, 5,333,652, Cl. 139-455.000.

Stayer, Mark L., Jr.: *See—*
Lawson, David F.; Stayer, Mark L., Jr.; and Antkowiak, Thomas A., 5,334,665, Cl. 525-289.000.

Stec, Kevin J., to Panasonic Technologies, Inc. Phase locked loop synchronizer for a resampling system having incompatible input and output sample rates. 5,335,074, Cl. 348-537.000.

Steelcase Inc.: *See—*
Knoblock, Glenn A., 5,333,934, Cl. 297-452.150.

Steele, George W.: *See—*
Jorstad, John L.; Morley, Richard A.; Overbagh, William H.; and Steele, George W., 5,333,668, Cl. 164-100.000.

Stefanowski, Krystyna, to Litton Systems, Inc. No-clean, low-residue, volatile organic compound free soldering flux and method of use. 5,334,260, Cl. 148-23.000.

Steffen, Klaus-Dieter, to Huls Aktiengesellschaft. Method of preparing substituted malonic ester anilides and malonic acid mono-anilides. 5,334,747, Cl. 560-43.000.

Steglich, Wolfgang: *See—*
Sauter, Hubert; Lorenz, Gisela; Steiner, Gerd; Janssen, Bernd; Anke, Timm; and Steglich, Wolfgang, 5,334,607, Cl. 514-378.000.

Stein, Christian; Guggenmos, Xaver; and Krause, Joachim, to Siemens Aktiengesellschaft. Circuit configuration for protecting terminals of integrated circuits. 5,335,134, Cl. 361-56.000.

Steinbach, Thomas: *See—*
Wagle, Sudhakar S.; Steinbach, Thomas; Lawyer, Carl H.; Hermann, William J., Jr.; and Gawish, Ali A. S., 5,334,395, Cl. 424-553.000.

Steiner, Gerd: *See—*
Sauter, Hubert; Lorenz, Gisela; Steiner, Gerd; Janssen, Bernd; Anke, Timm; and Steglich, Wolfgang, 5,334,607, Cl. 514-378.000.

Steiner, Gottfried: *See—*
Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; Wuerthner, Hubert; and Steiner, Gottfried, 5,333,892, Cl. 280-625.000.

Steinlicht, Joseph C., to Rockwell International Corporation. Two dimensional routing apparatus in an automatic call director-type system. 5,335,269, Cl. 379-266.000.

Steinmetz, Alan L.: *See—*
Serdiuk, Paul; and Steinmetz, Alan L., 5,334,650, Cl. 524-591.000.

Stellwagen, Armin: *See—*
Blendinger, Herbert; Fertig, Gunter; and Stellwagen, Armin, 5,333,450, Cl. 60-459.000.

Stelte, Norbert, to Bodenseewerk Geratechnik GmbH. Method and apparatus for sorting bulk material. 5,333,739, Cl. 209-582.000.

Stephan, Roy: *See—*
Lekhtman, Gregory; and Stephan, Roy, 5,333,618, Cl. 128-734.000.

Stephen, Keith H.: *See—*
Foster, David G.; Stephen, Keith H.; and Craver, Mary E., 5,334,491, Cl. 430-393.000.

Stephens, Eric: *See—*
Tour, James M.; Stephens, Eric; and Davis, Joanna F., 5,334,668, Cl. 525-416.000.

Stephenson, Stanley V., to Halliburton Company. Method of operating a sand screw. 5,335,166, Cl. 364-166.000.

Sterling Winthrop Inc.: *See—*
Flynn, Robert G.; Bakal, Abraham I.; and Snyder, Margaret A., 5,334,399, Cl. 426-42.000.
Josef, Kurt A.; Bacon, Edward R.; Estep, Kimberly G.; Illig, Carl R.; and Douty, Brent D., 5,334,370, Cl. 424-5.000.
Phillips, Christopher P.; and Snow, Robert A., 5,334,382, Cl. 424-94.300.
Wentland, Mark P., 5,334,595, Cl. 514-293.000.

Stetson, John B., Jr., to General Electric Company. Self tuning motion/vibration suppression system. 5,333,819, Cl. 244-164.000.

Stevens, Jeffrey C.: *See—*
Jackson, Mike T.; Stevens, Jeffrey C.; and Tipley, Roger E., 5,335,335, Cl. 395-425.000.

Stevens, John: *See—*
Hartley, Philip S.; and Stevens, John, 5,334,374, Cl. 424-45.000.

Stevens, Wayne R., to CalComp Inc. Ink vapor aerosol pen for pen plotters. 5,335,000, Cl. 347-82.000.

Stevenson, Verne W., Jr. Airborne overspin putter improving ball accuracy. 5,333,870, Cl. 273-164.100.

Stevie, John W., to R. A. Jones & Co., Inc. Pouch transfer apparatus and method. 5,333,721, Cl. 198-418.600.

Stills, James T.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Stocks, Charles D., to United States of America, National Aeronautics and Space Administration. Metal inert gas welding system for use in vacuum. 5,334,813, Cl. 219-72.000.

Stoddard, Gregory J.: *See—*
Scobbo, James J., Jr.; and Stoddard, Gregory J., 5,334,659, Cl. 525-71.000.

Stomp, Hubert; Kremer, Andre; Fries, Daniel; Reichert, Marc; and Devillet, Serge, to Paul Wurth S.A. Apparatus for supplying media to a blowing lance. 5,333,842, Cl. 266-226.000.

Stone, Jeffrey F.: *See—*
Pope, Gregory M.; Stone, Jeffrey F.; and Gregory, John A., 5,335,342, Cl. 395-575.000.

Stora Feldmuhle Aktiengesellschaft: *See—*
Bergmann, Werner; and Dahling, Paul H., 5,334,449, Cl. 428-327.000.

Storage Technology Corporation: *See—*
Hoge, David T.; and Owens, John C., 5,333,810, Cl. 242-332.400.

Stork PMT: *See—*
van den Nieuwelaar, Adrianus J.; and van Harskamp, Cornelis D., 5,334,083, Cl. 452-106.000.

Stout, James T.; and DeMaio, James B., to Mead Corporation, The. Heavy duty article carrier for cans arranged in a horizontal position. 5,333,734, Cl. 206-427.000.

Strahl, Paul; and Frakes, Michael D., to Morton International, Inc.; and Chrysler Corporation. Airbag cover retainer with wire retention feature and ground. 5,333,900, Cl. 280-731.000.

Straka, Alfred: *See—*
Lang, Hans W.; and Straka, Alfred, 5,334,017, Cl. 433-57.000.

Strand, David A.: *See—*
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Strand, David A.; Czubatyj, Wolodymyr; Gonzalez-Hernandez, Jesus; Fritzsche, Hellmut; Ye, Qiuyi; Kostylev, Sergey A.; and Chao, Benjamin S., 5,335,219, Cl. 369-288.000.

Stranders, Rolf. Device for cleaning the inner surfaces of the front and rear windows of automobiles. 5,333,347, Cl. 15-220.100.

Stratton, Frederic P.: *See—*
Kubena, Randy L.; Stratton, Frederic P.; Atkinson, Gary M.; McNulty, Hugh, Jr.; and Ward, James W., 5,335,243, Cl. 372-99.000.

Straussberger, Herbert: *See—*
Pachaly, Bernd; Frey, Volker; and Straussberger, Herbert, 5,334,738, Cl. 556-472.000.

Street, Norman A., to W. L. Gore & Associates, Inc. Personal waste disposal garments. 5,334,174, Cl. 604-313.000.

Streicher, Eric; and German, Randall M., to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude. Process for controlling carbon content of injection molding steels during debinding. 5,334,341, Cl. 419-53.000.

Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; and Wuerthner, Hubert, to HTM Sport- und Freizeitgeraete Aktiengesellschaft. Front jaw. 5,333,891, Cl. 280-625.000.

Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; Wuerthner, Hubert; and Steiner, Gottfried, to HTM Sport -und Freizeitgeraete Aktiengesellschaft. Device for a ski binding. 5,333,892, Cl. 280-625.000.

Strnad, Edward F. Cable signal interference suppressor. 5,334,955, Cl. 333-12.000.

Strohhacker, Peter: *See—*
Fuchs, Dieter; and Strohhacker, Peter, 5,333,738, Cl. 209-38.000.

Strong, Michael D., to Whitaker Corporation, The. Byte-swap hardware simulator for a sixteen bit microprocessor coupled to an eight bit peripheral unit. 5,335,340, Cl. 395-500.000.

Stuber, Werner; and Schnaitmann, Dieter, to Behringwerke Aktiengesellschaft. Chromogenic method of detecting endoproteases. 5,334,506, Cl. 435-23.000.

Stucke, Robert F., to International Business Machines Corporation. High density packaging for device requiring large numbers of unique signals utilizing orthogonal plugging and zero insertion force connetors. 5,335,146, Cl. 361-785.000.

Stueber, Henry B.; Baehre, Eric E.; Albrecht, Richard W.; Glynn, Christopher C.; and Hemmelgarn, Robert J., to General Electric Company. Stator seal assembly providing improved clearance control. 5,333,993, Cl. 415-164.500.

Stunberg, Stefan, to Siemens Elema AB. Method and apparatus for controlling the compression force in x-ray equipment for mammographic examinations. 5,335,257, Cl. 378-37.000.

Stuppi, Albert N.: *See—*
Pflibsen, Kent P.; and Stuppi, Albert N., 5,335,070, Cl. 348-31.000.

Stutz, Michael, to TRW Repa GmbH. Gas bag restraining system for vehicles. 5,333,898, Cl. 280-730.00A.

Sublette, Mark A.: *See—*
Kirkland, Daniel R.; and Sublette, Mark A., 5,333,631, Cl. 134-104.100.

Subsurface Technology Corporation: *See—*
Franz, James J.; and Hutchinson, Richard A., 5,334,336, Cl. 264-45.300.

Suda, Hiroyuki: *See—*
Kojiri, Katsuhisa; Nakajima, Shigeru; Fuse, Aisaku; and Suda, Hiroyuki, 5,334,613, Cl. 514-452.000.

Suda, Mituo: *See—*
Kawamata, Akira; Kikuchi, Yoko; Suzuki, Yuji; Suzuki, Toshiyuki; Suda, Mituo; and Ohashi, Yukihiro, 5,334,372, Cl. 424-78.030.

Sueyasu, Ryoichi; Ueda, Kunio; and Sagara, Kazuhiko, to Snow Brand Milk Products Co., Ltd. Processes for the production of a cheese curd and cheese containing whey protein. 5,334,398, Cl. 426-36.000.

Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, to Hitachi, Ltd.; and Hitachi Tobu Semiconductor, Ltd. Stacked semiconductor memory device and semiconductor memory module containing the same. 5,334,875, Cl. 257-686.000.

Sugawara, Minoru, to Ishion Corporation Co., Ltd. Bolt having a locking means. 5,333,977, Cl. 411-271.000.

Sugawara, Satoshi: *See—*
Yamashita, Junichi; Soneda, Hideo; and Sugawara, Satoshi, 5,335,317, Cl. 395-119.000.

Sugden, Peter G., to Coherent, Inc. Optical stencil. 5,335,003, Cl. 346-107.00R.

Sugimoto, Kenichi: *See—*
Oguchi, Takahisa; Sugimoto, Kenichi; Aihara, Shin; Itoh, Hisato; Matsumoto, Mansuke; Masaoka, Toshihiro; and Nakamura, Masakazu, 5,334,714, Cl. 540-143.000.

Sugimoto, Masashi: *See—*
Shiota, Tomio; Hikida, Toshiharu; Sugimoto, Masashi; Kodama, Kazuhiko; and Shimizu, Kaoru, 5,334,434, Cl. 428-188.000.

Sugimoto, Shuji: *See—*
Hisano, Kiyoshi; Hirashima, Ken; Kurosawa, Hiroyuki; Kubota, Kenji; and Sugimoto, Shuji, 5,335,327, Cl. 395-250.000.

Sugimoto, Tadashi; Imuro, Yoshihiro; Nishimura, Shigeki; and Arimoto, Tatsuya, to Optex Co., Ltd. Infrared intruder-detection system. 5,334,972, Cl. 340-556.000.

Sugimura, Masashi: *See—*
Yoshida, Masakichi; Ikehata, Kenjiro; and Sugimura, Masashi, 5,335,315, Cl. 395-109.000.

Sugiyama, Toshinobu; and Sakurai, Hiroshi, to Sony Corporation. Method of determining conditions for plasma silicon nitride film growth and method of manufacturing semiconductor device. 5,334,555, Cl. 437-241.000.

Sugiyama, Tsutomu, to Matsushita Electric Industrial Co., Ltd. Laser beam machining apparatus and method for adjusting the height of its condenser lens. 5,334,816, Cl. 219-121.830.

Suh, Nam P.: *See—*
Baldwin, Daniel F.; Suh, Nam P.; Park, Chul B.; and Cha, Sung W., 5,334,356, Cl. 422-133.000.

Suh, Peter J.: *See—*
Peczkowski, Joseph L.; and Suh, Peter J., 5,333,942, Cl. 303-94.000.

Sulzer Papertec Krefeld GmbH: *See—*
Conrad, Hans-Rolf, 5,333,544, Cl. 100-53.000.

Sumer, Suleyman O.: *See—*
Chen, Kent; Sumer, Suleyman O.; and Pinedo, Jose M., 5,335,159, Cl. 362-421.000.

Sumi, Akinori: *See—*
Kobayashi, Kaoru; Kuwae, Shinobu; Ooya, Tomoshi; Fukutsuka, Hirotoshi; Sumi, Akinori; Ohtani, Wataru; Ohmura, Takao; and Yokoyama, Kazumasa, 5,334,512, Cl. 435-69.600.

Sumi, Shingo: *See—*
Tajima, Osamu; Sumi, Shingo; Shindo, Koji; Yamamoto, Satoshi; and Yoneda, Fumiiki, 5,334,463, Cl. 429-9.000.

Sumimoto Electric Industries, Ltd.: *See—*
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,334,252, Cl. 118-726.000.

Suminski, Joe. Antler sound simulating game call. 5,334,074, Cl. 446-418.000.

Sumitomo Chemical Co., Ltd.: *See—*
Ashida, Keiji, 5,334,850, Cl. 250-577.000.
Fujii, Takeshi; and Ishikawa, Manabu, 5,334,636, Cl. 524-449.000.
Kogure, Kayoko; Kimura: Kazuo; Kawasaki, Michihiro; Toma, Masaaki; and Imamura, Eiji, 5,334,774, Cl. 568-754.000.
Komatsu, Masashi; Yamamoto, Michio; Ishino, Masaru; and Suzukamo, Gohfu, 5,334,789, Cl. 570-203.000.
Murakami, Harunori; Baba, Yuji; Urakami, Kanta; Niizaki, Nobuya; Natsume, Hirofumi; and Arisawa, Masato, 5,334,988, Cl. 343-704.000.
Ueda, Hiroshi; Takamoto, Tamotsu; and Okada, Koji, 5,334,770, Cl. 568-463.000.

Sumitomo Electric Industries, Ltd.: *See—*
Hirakata, Noriyuki, 5,334,944, Cl. 330-6.000.
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,334,579, Cl. 505-474.000.
Kawashima, Maumi, 5,334,578, Cl. 505-400.000.
Nishiura, Yozo; and Nishi, Yasuhiko, 5,335,064, Cl. 356-350.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Sawada, Kenji, 5,334,943, Cl. 328-233.000.
Sera, Taizo; Mitsuhiro, Takashi; Ozawa, Koichi; and Sakata, Yutaka, 5,333,671, Cl. 164-436.000.

Sumitomo Light Metal Industries, Ltd.: *See—*
Nosetani, Tadashi; Namba, Keizo; Sano, Hiromichi; Yonemitsu, Makoto; Kumagai, Masaki; and Tsunekawa, Masanori, 5,334,814, Cl. 219-119.000.

Sumitomo Seika Chemicals Co., Ltd.: *See—*
Yamamoto, Takushi; Hara, Hiroari; Maeda, Nobuhiro; and Nakamura, Morio, 5,334,679, Cl. 526-200.000.

Summers, James W.: *See—*
Sperk, James M., Jr.; Lee, Biing-lin; Summers, James W.; and Faber, Edward M., deceased, 5,334,647, Cl. 524-507.000.

Summit Technology, Inc.: *See—*
Seiler, Theo, 5,334,190, Cl. 606-5.000.

Sumner, Charles E., Jr.; Gustafson, Bruce L.; Arnold, Ernest W., III; Fugate, Eric J.; and Fuller, Dewey W., Jr., to Eastman Chemical Company. Process for preparing 2,5-diphenylterephthalic acid by oxidation. 5,334,754, Cl. 562-416.000.

Sun, Cheng-Yun; and Lo, Chin-Shyung, to Industrial Technology Research Institute. Television broadcasting and receiving systems utilizing hybrid ghost reference signals in single field for fast ghost cancellation. 5,335,009, Cl. 348-614.000.

Sun Company, Inc.: *See—*
Shaikh, Shahid N.; Ellis, Paul E., Jr.; and Lyons, James E., 5,334,780, Cl. 568-910.000.

Sun, Lumin; and Falck, John R., to University of Texas System Board of Regents. Functionalizing carbohydrate derivatives by base-induced β-eliminatiom forming bioactive derivatives containing hydroxy-diene subunits. 5,334,736, Cl. 554-148.000.

Sun Microsystems, Inc.: *See—*
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, 5,335,347, Cl. 395-650.000.
Priem, Curtis; and Boynton, Charles, 5,334,998, Cl. 345-185.000.

Sung, Janmye: *See—*
Adams, Thomas E.; Lee, Kuo-Hua; Nagy, William J.; and Sung, Janmye, 5,334,541, Cl. 437-8.000.

Suntory Limited: *See—*
Ohfune, Yasufumi; Shimamoto, Keiko; Shinozaki, Haruhiko; and Ishida, Michiko, 5,334,757, Cl. 562-568.000

Surgical System & Instruments, Inc.: *See—*
Shiber, Samuel, 5,334,211, Cl. 606-159.000.

Susil, Michael J.: *See—*
Bayne, Jimmy O.; and Susil, Michael J., 5,333,984, Cl. 414-408.000.

Suspa Compart Aktiengesellschaft: *See—*
Bauer, Hans J., 5,333,968, Cl. 403-377.000.

Sutherland, Alexander T.: *See—*
McMurtry, David R.; and Sutherland, Alexander T., 5,334,918, Cl. 318-568.160.

Sutter Corporation: *See—*
Green, Robert S.; and Focht, Louise M., 5,333,604, Cl. 601-33.000.

Sutton, James E.; Gasper, John; Tsaur, Allen K.; and Tarn, Ann, to Eastman Kodak Company. Photographic processes for producing spectral image records retrievable by scanning. 5,334,469, Cl. 430-21.000.

Suzuka, Shinya, to Asahi Kogaku Kogyo Kabushiki Kaisha. View finder of zoom lens camera. 5,335,030, Cl. 354-149.100.

Suzukamo, Gohfu: *See—*
Komatsu, Masashi; Yamamoto, Michio; Ishino, Masaru; and Suzukamo, Gohfu, 5,334,789, Cl. 570-203.000

Suzuki, Hiroshi; Mizokami, Takuya; and Shimizu, Kikuo, to Hitachi, Ltd. Reproducing apparatus reproducing data from a recording medium having a preformatted address area at a starting position of each sector. 5,335,216, Cl. 369-59.000.

Suzuki, Kazuhiro, to Stanley Electric Co., Ltd. Optical reflecting unit. 5,335,114, Cl. 359-602.000.

Suzuki, Koichi: *See—*
Takita, Masatoshi; Hayami, Hiroyuki; and Suzuki, Koichi, 5,335,306, Cl. 385-142.000.

Suzuki, Masatakatsu: *See—*
Masuda, Hitoshi; Suzuki, Masatakatsu; Ohno, Masataka; Kobayashi, Kazuyoshi; and Nakamura, Hiromitsu, 5,335,274, Cl. 379-433.000.

Suzuki, Ryuji: *See—*
Kawai, Tohru; Tamura, Masahisa; Suzuki, Ryuji; and Yamanouchi, Haruhiko, 5,335,115, Cl. 359-696.000.

Suzuki, Shigeru; Hoshino, Tatsuyuki; Hiramatsu, Osamu; and Goto, Kunifumi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Climate control system for motor vehicle. 5,333,679, Cl. 165-43.000.

Suzuki, Toshio; and Itoh, Chikashi, to NEC Corporation. Data exchange capable of minimizing loss of a data block. 5,335,232, Cl. 371-20.400.

Suzuki, Toshiyuki: *See—*
Kawamata, Akira; Kikuchi, Yoko; Suzuki, Yuji; Suzuki, Toshiyuki; Suda, Mituo; and Ohashi, Yukihiro, 5,334,372, Cl. 424-78.030.

Suzuki, Yasuo: *See—*
Orimo, Masayuki; Mori, Kinji; Suzuki, Yasuo; Koizumi, Minoru; Kawano, Katsumi; Nakai, Kozo; and Kasashima, Hirokazu, 5,335,324, Cl. 395-200.000.

Suzuki, Yoshio: *See—*
Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, 5,334,835, Cl. 250-306.000.

Suzuki, Yuji: *See—*
Kawamata, Akira; Kikuchi, Yoko; Suzuki, Yuji; Suzuki, Toshiyuki; Suda, Mituo; and Ohashi, Yukihiro, 5,334,372, Cl. 424-78.030.

Suzuki, Yukitomo, to Heian Corporation. Automatic control system of a numerical control router. 5,333,370, Cl. 29-563.000.

Suzuki, Yukitomo, to Heian Corporation. Running saw system. 5,333,526, Cl. 83-256.000.

Svec, Frantisek: *See—*
Frechet, Jean M. J.; and Svec, Frantisek, 5,334,310, Cl. 210-198.200.

Svedala Industries, Inc.: *See—*
Lees, John N., Jr., 5,333,558, Cl. 110-346.000.

Swain, Eugene A.: *See—*
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.

Swanson, Leland S.: *See—*
Shinar, Joseph; Swanson, Leland S.; Lu, Feng; and Ding, Yiwei, 5,334,539, Cl. 437-1.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Swanson, Malcom L.: *See*—
Brock, J. Don; Mize, Erbie G.; and Swanson, Malcom L., 5,334,012, Cl. 432-106.000.

Swaroop, Srinivas H.: *See*—
Beausoigneur, Patricia A.; Lachman, Irwin M.; Patil, Mallanagouda D.; Swaroop, Srinivas H.; and Wusirika, Raja R., 5,334,570, Cl. 502-304.000.

Swartzmiller, Steven B.; Donald, Robert J.; and Bonekamp, Jeffrey E., to Dow Chemical Company, The. Thermoformable, chemical resistant polymer blends. 5,334,657, Cl. 525-71.000.

Sweet, Benjamin D.: *See*—
Morganti, Carl R.; Singh, Gitanjli; and Sweet, Benjamin D., 5,333,593, Cl. 123-637.000.

Swift, Steven M.; and Houghton, Jon C. Flow divider to receive, split, and distribute a substance, consisting of multiple small units, being moved via flow gas under pressure into respective passageways. 5,333,640, Cl. 137-262.000.

Swift 943 Ltd T/A Systems Technologies: *See*—
Myers, Fred D.; and Cardew, Marcus St. E., 5,334,032, Cl. 439-140.000.

Swisher, Gary: *See*—
Hippely, Keith A.; Swisher, Gary; Choy, Terence A.; and Halford, Wayne R., 5,334,078, Cl. 446-470.000.

Sykora, John M.; and Hough, Graham, to Field Container Company, L.P. Flat blank for containers and method case II. 5,333,779, Cl. 229-125.080.

Symbiosis Corporation: *See*—
Turkel, David, 5,334,159, Cl. 604-158.000.

Synowczyk, Andreas W.: *See*—
Heinze, Jurgen; and Synowczyk, Andreas W., 5,334,351, Cl. 422-90.000.

Syntex (U.S.A.) Inc.: *See*—
Skold, Carl N.; Shanafelt, Armen B.; Ghazarossian, Vartan; and Ullman, Edwin F., 5,334,513, Cl. 435-7.920.

Szempruch, Walter T.: *See*—
Adolf, Wayne F.; Helgren, R. Hayes; Renick, James T.; and Szempruch, Walter T., 5,334,180, Cl. 604-411.000.

T.O.W. Inc.: *See*—
Jordan, Frank W., 5,334,241, Cl. 106-487.000.

T-Systems International, Inc.: *See*—
DeFrank, Michael, 5,333,793, Cl. 239-533.100.

Tachi-S Co. Ltd.: *See*—
Urai, Muneharu; Katsuta, Kazuo; Hosoya, Minoru; Abe, Tatafumi; and Wada, Ryosuke, 5,333,933, Cl. 297-452.100.

Tachibana, Noriki: *See*—
Wada, Yoshihiro; Kobayashi, Tohru; and Tachibana, Noriki, 5,334,457, Cl. 428-480.000.

Tachibana, Tatsuto: *See*—
Nakamori, Tomohiro; Okazawa, Kazuhiko; Tachibana, Tatsuto; Kusano, Akihisa; Sato, Kaoru; and Itoh, Toshiyuki, 5,334,817, Cl. 219-492.000.

Tachikawa, Susumu: *See*—
Inaba, Hideki; Endo, Isao; Nagamune, Teruyuki; and Tachikawa, Susumu, 5,334,497, Cl. 435-3.000.

Tackney, Charles; Hoppe, Jurgen; Eichner, Wolfram; and Weich, Herbert, to ImClone Systems Incorporated. PDGF-B fusion protein, vectors, and host cells for use in production thereof. 5,334,532, Cl. 435-252.330.

Taddey, Rudolf: *See*—
Horn, Peter; Mueller, Ulrich; Hoelderich, Wolfgang; Sattler, Ulf; Taddey, Rudolf; and Tintelnot, Dieter, 5,334,620, Cl. 521-51.000.

Tadokoro, Shingo: *See*—
Nagayama, Yoji; Tadokoro, Shingo; and Tsukada, Tokio, 5,334,989, Cl. 343-713.000.

Taga, Yutaka: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.

Tagami, Hidetoshi: *See*—
Ogawa, Masahiko; Tagami, Hidetoshi; Yoshihara, Toru; Kawase, Jiro; Kiyomine, Akira; Tamura, Tadashi; Nishizawa, Yoshinori; and Matsunaga, Ken-ichi, 5,334,225, Cl. 8-408.000.

Tagami, Toshio: *See*—
Ochi, Mitsukazu; Tagami, Toshio; and Kiyohara, Osamu, 5,334,661, Cl. 525-90.000.
Ochi, Mitsukazu; Tagami, Toshio; and Kiyohara, Osamu, 5,334,662, Cl. 525-90.000.

Taguchi, Nobuyoshi: *See*—
Matsuda, Hiromu; Kawakami, Tetsuji; Yubakami, Keiichi; Imai, Akihiro; and Taguchi, Nobuyoshi, 5,334,574, Cl. 503-227.000.

Taiwan Semiconductor Manufacturing Co., Ltd.: *See*—
Lin, Kwang-Ming; Tsai, Lih-Shyig; Lin, Jiunn-Jyi; and Liaw, Yung-Haw, 5,334,554, Cl. 437-231.000.

Tajima, Osamu; Sumi, Shingo; Shindo, Koji; Yamamoto, Satoshi; and Yoneda, Fumiiki, to Sanyo Electric Co., Ltd. Hybrid fuel battery system and the operation method thereof. 5,334,463, Cl. 429-9.000.

Takagawa, Makoto: *See*—
Fushimi, Norio; Kedo, Ko; Inamasa, Kenji; and Takagawa, Makoto, 5,334,794, Cl. 585-452.000.

Takagi, Hideyuki: *See*—
Mekata, Tsuyoshi; and Takagi, Hideyuki, 5,335,312, Cl. 395-2.110.

Takagi, Hisamitsu; Nishiyama, Akihide; and Tomura, Masashi, to Fujitsu Limited. Portable telephone and multifunctional protective housing therefor. 5,335,273, Cl. 379-433.000.

Takagi, Shiro, to Kabushiki Kaisha Toshiba. Image display device having multi-window system. 5,334,994, Cl. 345-127.000.

Takahama, Manabu: *See*—
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.

Takahashi, Akira: *See*—
Ohta, Kenji; Inui, Tetsuya; Katayama, Hiroyuki; Takahashi, Akira; Hirokane, Junji; Nishitani, Yukinori; Mieda, Michinobu; and Van, Kazuo, 5,335,220, Cl. 369-288.000.

Takahashi, Hidehiko; Imada, Katsumi; and Motoshio, Akira, to Yakurigaku Chuo Kenkyusho. Process for preparation of gamma-pyrone derivatives. 5,334,518, Cl. 435-125.000.

Takahashi, Kazunori; Hamada, Nobuhiro; Takato, Masao; Baba, Kenji; Morooka, Yasuo; Kawakami, Junzo; Yokota, Takayoshi; and Kiyokawa, Ryuji, to Hitachi, Ltd. Method and apparatus for controlling moving body and facilities. 5,335,180, Cl. 364-436.000.

Takahashi, Kikuo; Kagimasa, Toyohiko; and Mori, Toshiaki, to Hitachi, Ltd. Data processing apparatus having a real memory region with a corresponding fixed memory protection key value and method for allocating memories therefor. 5,335,334, Cl. 395-425.000.

Takahashi, Kinya; Nozawa, Yusaku; and Ino, Kazuyuki, to Hitachi Construction Machinery Co., Ltd. Pressure compensating valve assembly. 5,333,449, Cl. 60-427.000.

Takahashi, Koji: *See*—
Takayama, Nobutoshi; Kobayashi, Takashi; Mabuchi, Toshiaki; and Takahashi, Koji, 5,335,189, Cl. 364-565.000

Takahashi, Masaaki: *See*—
Inoue, Yoshiyuki; Takahashi, Masaaki; and Ohta, Kenji, 5,334,879, Cl. 307-112.000.

Takahashi, Nobukazu: *See*—
Hani, Tsutomu; Takahashi, Nobukazu; Kohara, Teiji; and Natsume, Tadao, 5,334,424, Cl. 428-1.000.

Takahashi, Takashi; and Shiono, Manzo, to Kurary Co., Ltd. Cyclohexanetriol derivatives. 5,334,740, Cl. 548-110.000.

Takahashi, Tsutomu: *See*—
Ishii, Kyoko; Miyatake, Shinichi; Takahashi, Tsutomu; Udo, Shinji; Yoshioka, Hiroshi; Takano, Mitsuhiro; and Morino, Makoto, 5,335,203, Cl. 365-226.000.

Takahashi, Yoshiharu; Hirose, Tetsuya; Otani, Hiroshi; and Takemura, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor pressure sensor for use at high temperature and pressure and method of manufacturing same. 5,333,505, Cl. 73-727.000.

Takahata, Toshihiro; Kawazoe, Hiroshi; Murakoshi, Toshiichi; and Tokunaga, Masataka, to Matsushita Electric Industrial Co., Ltd. Apparatus for winding wire into a coil on the inner surface of a cylindrical body. 5,333,800, Cl. 242-7.010.

Takaki, Akira; Mori, Hiroto; and Hasegawa, Toshihiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride resin composition. 5,334,660, Cl. 525-84.000.

Takamatsu, Osamu: *See*—
Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, 5,334,835, Cl. 250-306.000.

Takamoto, Hiroshi, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit device. 5,335,207, Cl. 365-233.500.

Takamoto, Tamotsu: *See*—
Ueda, Hiroshi; Takamoto, Tamotsu; and Okada, Koji, 5,334,770, Cl. 568-463.000.

Takanashi, Yoji: *See*—
Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, 5,333,501, Cl. 73-592.000.

Takano, Mitsuhiro: *See*—
Ishii, Kyoko; Miyatake, Shinichi; Takahashi, Tsutomu; Udo, Shinji; Yoshioka, Hiroshi; Takano, Mitsuhiro; and Morino, Makoto, 5,335,203, Cl. 365-226.000.

Takano, Satoshi: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,334,252, Cl. 118-726.000.

Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, to Minolta Camera Kabushiki Kaisha. Efficient control system of image forming apparatus. 5,335,048, Cl. 355-204.000.

Takao, Nobutaka: *See*—
Yokoya, Satoshi; and Takao, Nobutaka, 5,334,945, Cl. 330-129.000.

Takaoka, Shigekazu, to Daifuku Co., Ltd. Automated high-raised parking system. 5,333,987, Cl. 414-264.000.

Takasago International Corporation: *See*—
Saburi, Masahiko; Ohnuki, Masamichi; and Uchida, Yasuzo, 5,334,758, Cl. 562-590.000.

Takase, Mituo: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, 5,334,628, Cl. 514-311.000.

Takashima, Koichi: *See*—
Inaba, Yoshihiro; Takashima, Koichi; Matsui, Izuru; and Kubo, Tsutomu, 5,334,480, Cl. 430-138.000.

Takata Corporation: *See*—
Fujimura, Yoshiichi; and Matsuura, Shizutaka, 5,333,906, Cl. 280-806.000.
Zushi, Takayasu, 5,334,340, Cl. 264-161.000.

Takata, Yukio; and Shinohara, Takeshi, to Idemitsu Petrochemical Co., Ltd. Method for producing an easily openable container. 5,334,272, Cl. 156-69.000.

Takato, Kenji; Kinoshita, Kazumi; Kurosaki, Kiyoshi; Kosako, Taichi; and Minohara, Kazuyuki, to Fujitsu Limited. Ring trip detection circuit. 5,335,271, Cl. 379-382.000.

Takato, Masao: *See*—
Takahashi, Kazunori; Hamada, Nobuhiro; Takato, Masao; Baba, Kenji; Morooka, Yasuo; Kawakami, Junzo; Yokota, Takayoshi; and Kiyokawa, Ryuji, 5,335,180, Cl. 364-436.000.

Takayama, Nobutoshi; Kobayashi, Takashi; Mabuchi, Toshiaki; and Takahashi, Koji, to Canon Kabushiki Kaisha. Rotation phase control device. 5,335,189, Cl. 364-565.000.

Takayama, Ryoichi: *See*—
Yamada, Toshihisa; Miyamoto, Toshiharu; Hayashi, Kazuo; Takayama, Ryoichi; Kobayashi, Shinji; and Ohmura, Keizi, 5,333,554, Cl. 105-397.000.

Takeda, Hiroshi: *See*—
Ootomo, Hideo; Takeda, Hiroshi; and Yachi, Shunichiro, 5,333,666, Cl. 164-45.000.

Takeda, Mamoru: *See*—
Matsuoka, Tomizo; Takeda, Mamoru; and Kobayashi, Ikunori, 5,334,544, Cl. 437-40.000.

Takemoto, Sumio; and Hayaski, Kiyoshi, to Precision Fukuhara Works, Ltd. Device for collecting dust as fiber waste and the like on creel stand. 5,333,354, Cl. 15-301.000.

Takemoto Yushi Kabushiki Kaisha: *See*—
Minami, Hiroshi; Nakaoka, Yoshihiko; and Yamamoto, Tsuneyoshi, 5,334,419, Cl. 427-386.000.

Takemura, Seiji: *See*—
Takahashi, Yoshiharu; Hirose, Tetsuya; Otani, Hiroshi; and Takemura, Seiji, 5,333,505, Cl. 73-727.000.

Takeshima, Hirotaka; and Takeuchi, Hiroyuki, to Hitachi Medical Corp. Magnetostatic field generator for magnetic resonance imaging apparatus. 5,334,966, Cl. 335-306.000.

Takeshita, Makoto: *See*—
Ito, Yasuo; Kato, Hideo; Yasuda, Shingo; Kado, Noriyuki; Iwasaki, Nobuhiko; Nishino, Hiroyuki; and Takeshita, Makoto, 5,334,594, Cl. 514-291.000.

Takeuchi, Hiroyuki: *See*—
Takeshima, Hirotaka; and Takeuchi, Hiroyuki, 5,334,966, Cl. 335-306.000.

Takeuchi, Katsuhiko: *See*—
Tsuboi, Akira; and Takeuchi, Katsuhiko, 5,335,183, Cl. 364-474.370.

Takiguchi, Haruhisa: *See*—
Okumura, Toshiyuki; Inoguchi, Kazuhiko; Konushi, Fumihiro; and Takiguchi, Haruhisa, 5,335,241, Cl. 372-46.000.

Takita, Masatoshi; Hayami, Hiroyuki; and Suzuki, Koichi, to Shin-Etsu Chemical Co., Ltd.; and Mitsubishi Cable Industries, Ltd. Ultraviolet resistant silica glass fiber. 5,335,306, Cl. 385-142.000.

Takita, Yusaku; Ishihara, Tatsumi; Mizuhara, Yukako; and Noguchi, Masao, to Nakama Syokai Company; Tokai Kogyo Company; Takita, Yusaku; Ohita Gas Co., Ltd.; and Ohgasu Co., Ltd. Method of manufacturing silicon nitride whiskers. 5,334,565, Cl. 501-95.000.

Takizawa, Naoki, to Kabushiki Kaisha Miyake Design Jimusho. Method of pleating garments. 5,333,765, Cl. 223-28.000.

Tamglass Engineering Oy: *See*—
Anttonen, Kauko K.; and Vehmas, Jukka H., 5,334,234, Cl. 65-351.000.

Tamura, Masahisa: *See*—
Kawai, Tohru; Tamura, Masahisa; Suzuki, Ryuji; and Yamanouchi, Haruhiko, 5,335,115, Cl. 359-696.000.

Tamura, Tadashi: *See*—
Ogawa, Masahiko; Tagami, Hidetoshi; Yoshihara, Toru; Kawase, Jiro; Kiyomine, Akira; Tamura, Tadashi; Nishizawa, Yoshinori; and Matsunaga, Ken-ichi, 5,334,225, Cl. 8-408.000.

Tamura, Yoshiharu, to NEC Corporation. Portable radio apparatus having variable impedance matching circuit between antenna and radio circuit. 5,335,368, Cl. 455-90.000.

Tanaka, Hirokazu: *See*—
Okada, Satoshi; Sawada, Kozo; Kuroda, Akio; Watanabe, Shinya; and Tanaka, Hirokazu, 5,334,716, Cl. 546-112.000.

Tanaka, Koichi: *See*—
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.

Tanaka, Masayuki; and Ito, Koichi, to Kabushiki Kaisha Toshiba. Mobile radio communication system utilizing analog and digital modulation. 5,335,355, Cl. 455-33.100.

Tanaka, Saburo: *See*—
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,334,579, Cl. 505-474.000.

Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Sakai, Kenji, to Daido Metal Company. CU-PB system alloy composite bearing having overlay. 5,334,460, Cl. 428-552.000.

Tanaka, Yoshihiro: *See*—
Tanaka, Yoshito; Shintani, Dai; Naruto, Hirokazu; Nanba, Katsuyuki; Taniguchi, Nobuyuki; Ishibe, Hiroshi; and Tanaka, Yoshihiro, 5,335,072, Cl. 348-232.000.

Tanaka, Yoshikazu: *See*—
Kashiwabara, Masuo; Tanaka, Yoshikazu; and Sekiguchi, Hideki, 5,333,943, Cl. 303-112.000.

Tanaka, Yoshito; Shintani, Dai; Naruto, Hirokazu; Nanba, Katsuyuki; Taniguchi, Nobuyuki; Ishibe, Hiroshi; and Tanaka, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Photographic system capable of storing information on photographed image data. 5,335,072, Cl. 348-232.000.

Tane, Toshiaki: *See*—
Okuda, Akihito; Kanamaru, Yoshihiro; Tane, Toshiaki; and Ogawa, Hirohisa, 5,333,453, Cl. 60-487.000.

Tani, Tatsuo, to Ricoh Company, Ltd. Foreign material removing device and developing apparatus comprising the same. 5,335,051, Cl. 355-245.000.

Tanigaki, Yasushi; Satoh, Yoshikazu; and Kobayashi, Yoshiharu, to U.S. Philips Corporation. Color display apparatus. 5,334,996, Cl. 345-152.000.

Taniguchi, Kouji: *See*—
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.

Taniguchi, Nobuyuki: *See*—
Tanaka, Yoshito; Shintani, Dai; Naruto, Hirokazu; Nanba, Katsuyuki; Taniguchi, Nobuyuki; Ishibe, Hiroshi; and Tanaka, Yoshihiro, 5,335,072, Cl. 348-232.000.

Taniguchi, Shigeru; Kawakami, Akira; and Murata, Hideo, to Hitachi Metals, Ltd. Sputtering target for magnetic recording medium and method of producing the same. 5,334,267, Cl. 148-425.000.

Tanimoto, Michio: *See*—
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsuhi, 5,334,875, Cl. 257-686.000.

Tanizawa, Hideichi; Nishino, Shuzo; and Okamura, Takashi, to Daifuku Co., Ltd. Load transport system for automated warehousing. 5,333,982, Cl. 414-279.000.

Tanzer, Raymond C.; and Hanchar, Peter J., to Premier Technology. Pinball machine having an interactive playfield. 5,333,866, Cl. 273-118.00R.

Taprogge GmbH: *See*—
Czolkoss, Wolfgang, 5,333,674, Cl. 165-11.100.

Tarbet, Bryon J.: *See*—
Bruening, Ronald L.; Tarbet, Bryon J.; Bradshaw, Jerald S.; and Izatt, Reed M., 5,334,316, Cl. 210-670.000.

Tarn, Ann: *See*—
Sutton, James E.; Gasper, John; Tsaur, Allen K.; and Tarn, Ann, 5,334,469, Cl. 430-21.000.

Tarrant, Richard T., to Texas Instruments Incorporated. Intelligent programmable sensing. 5,335,186, Cl. 364-550.000.

Tarrson, Emanuel B.; Maric, Dane; and Blahuta, Lew, to John O. Butler Company, Inc. Toothbrush. 5,333,346, Cl. 15-167.100.

Tassin, Noelle: *See*—
Bronoel, Guy; Potier, Thierry; Tassin, Noelle; Bugnet, Bernard; Doniat, Denis; and Rouget, Robert, 5,334,465, Cl. 429-222.000.

Tatara, Yudai; Jufuku, Yasunobu; Machida, Hisashi; and Ito, Hiroyuki, to Toyota Jidosha Kabushiki Kaisha; and Nihon Seiko Kabushiki Kaisha. Toroidal type continuously variable transmission supported by a common bearing and reaction stationary shaft. 5,334,097, Cl. 476-8.000.

Tatematsu, Shin: *See*—
Morikawa, Shinsuke; Yoshitake, Masaru; and Tatematsu, Shin, 5,334,782, Cl. 570-101.000.

Tatsu, Haruyoshi: *See*—
Yamamoto, Yuichi; and Tatsu, Haruyoshi, 5,334,667, Cl. 525-370.000.

Tatsumi, Hiroki: *See*—
Harada, Yasuhiro; Nakano, Eiichi; Tatsumi, Hiroki; and Umezu, Motoaki, 5,334,511, Cl. 435-69.400.

Tauscher, Joachim: *See*—
Locher, Johannes; Graf, Herbert; Rodriguez-Amaya, Nestor; Schmitt, Alfred; Tauscher, Joachim; and Zimmermann, Werner, 5,335,136, Cl. 361-160.000.

Taylor, Delbert. Inverse umbrella tent. 5,333,634, Cl. 135-98.000.

Taylor, George S.; and Benedict, Barry, to Big Unlimited. Method and apparatus for creating design insulated glass. 5,333,428, Cl. 52-308.000.

Taylor, Joann M.: *See*—
Rochat, Roxanna F.; Taylor, Joann M.; and Weiman, Novia A., 5,334,992, Cl. 345-22.000.

Taylor, Michael, to Scot Young Research Limited. Mop wringers and buckets. 5,333,353, Cl. 15-264.000.

Taylor, Paul D.: *See*—
Plotkin, Jeffrey S.; Narayanan, Kolazi S.; and Taylor, Paul D., 5,334,772, Cl. 568-609.000.

Taylor, Robert H., Jr., to Thiokol Corporation. Controlled burn rate, reduced smoke, solid propellant formulations. 5,334,270, Cl. 149-19.400.

TDK Corporation: *See*—
Nomura, Takeshi; Nakano, Yukie; Satoh, Akira; and Arashi, Tomohiro, 5,335,139, Cl. 361-4.000.
Tominaga, Junji, 5,334,433, Cl. 428-64.000.

TEAC Corporation: *See*—
Yamaguchi, Hirohisa; and Morioka, Yasuji, 5,335,081, Cl. 358-342.000.

Teach, Ted L., to Spectra-Physics Laserplane, Inc. Agricultural aircraft control system using the global positioning system. 5,334,987, Cl. 342-357.000.

Technology Research Association of Medical and Welfare Apparatus: *See*—
Mekata, Tsuyoshi; and Takagi, Hideyuki, 5,335,312, Cl. 395-2.110.

VOL 1165 ISS 1 AG 2 1994 UMI

Tecogen, Inc.: *See*—
Hurley, James R.; Childs, Paul J.; and Norman, Timothy J., 5,333,539, Cl. 99-403.000.
Teijin Chemicals, Ltd.: *See*—
Mukai, Akihiro, 5,334,680, Cl. 526-207.000.
Tekonsha Engineering Company: *See*—
Austin, Barry G.; Albright, Marcia S.; and Eccleston, Larry, 5,333,948, Cl. 303-24.100.
Tektronix, Inc.: *See*—
Rochat, Roxanna F.; Taylor, Joann M.; and Weiman, Novia A., 5,334,992, Cl. 345-22.000.
Telect, Inc.: *See*—
Kutsch, Duane B.; and Lohf, Lloyd W., 5,335,349, Cl. 455-6.100.
Teledyne McCormick Selph: *See*—
Rodney, Stanley; and Barr, Larry H., 5,333,550, Cl. 102-331.000.
Telefonaktiebolaget L M Ericsson: *See*—
Andersson, Hans E., 5,335,356, Cl. 455-54.100.
Lofmark, Bengt G.; Oredsson, Jan O. H.; and Lindberg, Claes J. A., 5,335,272, Cl. 379-413.000.
Telenokia OY: *See*—
Brax, Veikko, 5,335,225, Cl. 370-84.000.
Telfer, Stephen J.: *See*—
Grasshoff, Jurgen M.; Mischke, Mark R.; and Telfer, Stephen J., 5,334,489, Cl. 430-335.000.
Tellerman, Jacob, to MTS Systems Corporation. Variable rejection method for improved signal discrimination in a magnetostrictive position transducer. 5,334,933, Cl. 324-207.130.
Telxon Corporation: *See*—
Campo, James A.; Anderson, Fred J.; Embree, Donald M.; Hofstetter, Charles J.; and Sloan, Donald I., 5,334,821, Cl. 235-380.000.
Temro Division, Budd Canada Inc.: *See*—
Edwards, Gary C.; and Schaefer, Ronald H., 5,334,818, Cl. 219-539.000.
Teng, Alex C., to Mold-Masters Limited. Valve gated injection molding apparatus with a spring in the piston. 5,334,010, Cl. 425-563.000.
Tensor, Inc.: *See*—
Vaughan, Susanne F.; and More, Henry S., 5,333,686, Cl. 166-250.000.
Terada, Kazuo: *See*—
Nishi, Hironobu; and Terada, Kazuo, 5,334,257, Cl. 118-500.000.
Terada, Kousuke: *See*—
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.
Teramoto, Mitsutake; Okumoto, Takaharu; Goto, Teruo; Saito, Shinkichi; and Asabuki, Hideyo, to Yokohama Rubber Co., Ltd., The. Constant swing golf club set by varied club length. 5,333,859, Cl. 273-77.00A.
Teramoto, Mitsutake; Saito, Shinkichi; and Asabuki, Hideyo, to Yokohama Rubber Co., Ltd., The. Wood type golf club. 5,333,862, Cl. 273-80.00C.
Terasaki Denki Sangyo Kabushiki Kaisha: *See*—
Kamino, Toshihide; Sonoda, Junichi; Ogawa, Hirofumi; and Endo, Takeshi, 5,335,140, Cl. 361-608.000.
Terashima, Tomohide, to Mitsubishi Denki Kabushiki Kaisha. Method of forming a semiconductor device which prevents field concentration. 5,334,546, Cl. 437-41.000.
Terayama, Tatsuya: *See*—
Oomori, Norio; Ikeda, Fumio; Kodama, Keiichi; Kanai, Makoto; and Terayama, Tatsuya, 5,333,914, Cl. 285-54.000.
Terex Corporation: *See*—
Fujan, Steven J.; and Loeber, Frederick W., 5,333,895, Cl. 280-676.000.
Terranova, Joseph C.: *See*—
Sabee, Janet M.; and Terranova, Joseph C., 5,333,712, Cl. 192-53.00B.
Terui, Nobuhiko: *See*—
Imafuji, Kazuharu; Terui, Nobuhiko; and Katayama, Akira, 5,335,042, Cl. 354-430.000.
Terumo Kabushiki Kaisha: *See*—
Ozasa, Hitoshi, 5,334,146, Cl. 604-96.000.
Tesche, Claudia D., to International Business Machines Corporation. Three junction squid mixer. 5,334,884, Cl. 307-306.000.
Tessari, James E.: *See*—
Gagliardo, Michael A.; Lynch, John J.; and Tessari, James E., 5,335,337, Cl. 395-500.000.
Tetherton, Cyril F., to Cubic Automatic Revenue Collection Group. Controllable barrier system for preventing unpaid admission to a fee-paid area. 5,333,410, Cl. 49-35.000.
Teuber, Christopher L.: *See*—
Oberman, Dave; and Teuber, Christopher L., 5,333,434, Cl. 52-645.000.
Texaco Inc.: *See*—
Osterloh, William T., 5,333,687, Cl. 166-272.000.
Texas Beef Group: *See*—
O'Brien, William H.; and Malloy, James M., 5,334,084, Cl. 452-157.000.
Texas Instruments Incorporated: *See*—
Baughman, David W., 5,335,279, Cl. 380-38.000.
Coffman, Tim M.; and Lin, Sung-Wei, 5,335,200, Cl. 365-218.000.
Cooper, Alan N.; McCracken, William P.; and Hynecek, Jaroslav, 5,335,015, Cl. 348-302.000.
Eklund, Robert H., 5,334,549, Cl. 437-59.000.
Guldi, Richard L., 5,334,556, Cl. 437-248.000.
Lamson, Michael A., 5,334,802, Cl. 174-52.200.
McElroy, David J.; Lin, Sung-Wei; and Gill, Manzur, 5,334,550, Cl. 437-65.000.
Popat, Pravin N.; Unterweger, Diethard; Baskin, Gennady; Candelet, Ronald J.; and Tonnies, Gary L., 5,334,553, Cl. 437-209.000.
Shen, Bingn W.; Richardson, William F.; and Doering, Robert R., 5,334,548, Cl. 437-52.000.
Tarrant, Richard T., 5,335,186, Cl. 364-550.000.
Thompson, E. Earle; and Birdwell, Gerald G., 5,335,276, Cl. 380-21.000.
Texas Microsystems, Inc.: *See*—
Cox, Stanley E.; and Ish, Mark E., 5,335,329, Cl. 395-325.000.
Textron Inc.: *See*—
Hopkins, John W., 5,333,580, Cl. 123-185.300.
Pratt, John D.; and Eshraghi, Soheil A., 5,333,980, Cl. 411-501.000.
Thames Group Ltd., The: *See*—
James, Robert C.; and Cherney, Dale M., 5,333,703, Cl. 180-271.000.
Thigpen, Gary M.; and Sherwood, William H., to Baroid Technology, Inc. Drill bit having polycrystalline diamond compact cutter with spherical first end opposite cutting end. 5,333,699, Cl. 175-431.000.
Thimineur, Raymond J.; Traver, Frank J.; and Van Valkenburgh, Virgina M., to General Electric Company. Liquid silicone esters. 5,334,737, Cl. 556-440.000.
Thiokol Corporation: *See*—
Taylor, Robert H., Jr., 5,334,270, Cl. 149-19.400.
Thoman, Gregory E.: *See*—
Brackett, Anne W.; Durham, Marcus O.; Perkins, Lynn K.; and Thoman, Gregory E., 5,333,498, Cl. 73-304.00R.
Thomas, Andrew P.; Martin, David M. G.; Lee, Stanley A.; and Powell, Lyn, to Zeneca Limited. Chemical process and intermediates used therein. 5,334,718, Cl. 546-118.000.
Thomas & Betts Corporation: *See*—
Lutsky, Arthur A., 5,334,047, Cl. 439-544.000.
Thomas, Frank P., to United States of America, National Aeronautics and Space Administration. Slip joint connector. 5,333,964, Cl. 403-339.000.
Thomas, Fred C.; Bero, James; Short, Robert; and Johnson, Paul R., to Iomega Corporation. Apparatus for and method of verifying etching of optical servo information on magnetic media. 5,334,849, Cl. 250-559.000.
Thomas Josef Heimbach GmbH & Co.: *See*—
Halterbeck, Walter; and Huser, Martin, 5,334,440, Cl. 428-222.000.
Thomas, Mark S.: *See*—
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petropoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.
Thomas, Paul: *See*—
Falossi, Aldo; and Thomas, Paul, 5,334,044, Cl. 439-491.000.
Thomas, V. Stanton: *See*—
Poli, Robert G.; Thomas, V. Stanton; Adolf, Wayne F.; and Rudzena, William L., 5,334,179, Cl. 604-403.000.
Thometschek, Roderich: *See*—
Schnoor, Christian; Thometschek, Roderich; and Rittner, Wolfgang, 5,333,748, Cl. 220-343.000.
Thompson, Danny C.: *See*—
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,455, Cl. 428-413.000.
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,456, Cl. 428-431.000.
Thompson, E. Earle; and Birdwell, Gerald G., to Texas Instruments Incorporated. Communication system and methods for enhanced information transfer. 5,335,276, Cl. 380-21.000.
Thompson, Greg D.: *See*—
Osbon, Edward E., 5,334,249, Cl. 118-679.000.
Thompson, Russell B.: *See*—
Lundquist, Ingemar H.; and Thompson, Russell B., 5,334,145, Cl. 604-95.000.
Thompson, Thomas N.: *See*—
Kriesel, Marshall S.; Thompson, Thomas N.; and Kazemzadeh, Farhad, 5,334,197, Cl. 604-132.000.
Thomson Consumer Electronics, Inc.: *See*—
Rodriguez-Cavazos, Enrique; and Altmanshofer, Robert D., 5,335,024, Cl. 348-806.000.
Thomson-CSF: *See*—
Colineau, Joseph; and Valet, Thierry, 5,335,120, Cl. 360-63.000.
Thomson, Jon, to Pilot Industries, Inc. Diagnostic system for canister purge system. 5,333,590, Cl. 123-520.000.
Thomson Tubes Electroniques: *See*—
Desmur, Henri; and Duret, Robert, 5,334,907, Cl. 313-36.000.
Shroff, Arvind, 5,334,085, Cl. 445-51.000.
Thumm, Hans: *See*—
Schinkitz, Dieter; and Thumm, Hans, 5,334,362, Cl. 423-1.000.
Thumma, Mark R.: *See*—
Bowers, Michael D.; Klinger, Robert E.; Thumma, Mark R.; and Wike, David P., 5,334,048, Cl. 439-567.000.
Tiburon Systems, Inc.: *See*—
Pope, Gregory M.; Stone, Jeffrey F.; and Gregory, John A., 5,335,342, Cl. 395-575.000.
Tice, Colin M.: *See*—
Hsu, Adam C.; and Tice, Colin M., 5,334,726, Cl. 548-263.200.
Tickner, Ernest G.; Short, Robert E.; and Rammler, David H., to Delineate. Microparticles as ultrasonic contrast media. 5,333,613, Cl. 128-662.020.

Tilbor, Neil; Garr, Anthony R.; Newton, Jean; and Mucaro, Salvatore, to Tyco Investment Corporation. Crash dummy figures. 5,334,073, Cl. 446-308.000.
Ting, Sai L., to National Semiconductor. Driver for backplane transceiver logic bus. 5,334,882, Cl. 307-270.000.
Tintelnot, Dieter: *See*—
Horn, Peter; Mueller, Ulrich; Hoelderich, Wolfgang; Sattler, Ulf; Taddey, Rudolf; and Tintelnot, Dieter, 5,334,620, Cl. 521-51.000.
Tipley, Roger E.: *See*—
Jackson, Mike T.; Stevens, Jeffrey C.; and Tipley, Roger E., 5,335,335, Cl. 395-425.000.
Tischer, John M.: *See*—
Leding, Lisa M.; and Tischer, John M., 5,334,956, Cl. 333-33.000.
Tischer, Leo A.: *See*—
Drews, Stephen F.; and Tischer, Leo A., 5,334,648, Cl. 524-512.000.
Tiwary, Gyanendra: *See*—
Hinton, Glenn J.; and Tiwary, Gyanendra, 5,335,333, Cl. 395-400.000.
TNS Mills, Inc.: *See*—
Tsuzuki, Kiyohiro, 5,333,440, Cl. 57-90.000.
Tockman, Bruce A.: *See*—
Salo, Rodney W.; Spinelli, Julio C.; and Tockman, Bruce A., 5,334,222, Cl. 607-17.000.
Toda, Fumio, to Daicel Chemical Industries, Ltd. Compound and separating agent. 5,334,776, Cl. 568-813.000.
Toda, Masato: *See*—
Koitabashi, Masanobu; Toda, Masato; and Handa, Keiji, 5,335,154, Cl. 362-294.000.
Toeppen, John S., to United States of America, Energy. Long pulse production from short pulses. 5,335,236, Cl. 372-25.000.
Toftejorg A/S: *See*—
Jepsen, Erik L.; and Nielsen, Jorgen F., 5,333,630, Cl. 134-104.100.
Tohoku Electric Power Company Inc.: *See*—
Kato, Hiroyuki, 5,333,991, Cl. 415-112.000.
Toizumi, Yasushi: *See*—
Itoh, Junichi; Dai, Masahiro; Toizumi, Yasushi; Mizokami, Kazunori; Watanabe, Yoji; and Midorikawa, Ayumu, 5,335,029, Cl. 354-106.000.
Tokai Kogyo Company: *See*—
Takita, Yusaku; Ishihara, Tatsumi; Mizuhara, Yukako; and Noguchi, Masao, 5,334,565, Cl. 501-95.000.
Tokai Rubber Industries, Ltd.: *See*—
Goto, Katsuhiro; Ide, Akiyoshi; Ishioka, Yutaka; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; Ishiba, Keiichi; and Funahashi, Yoshiki, 5,333,846, Cl. 267-140.140.
Kanda, Ryouji, 5,333,847, Cl. 267-140.120.
Tokheim Corporation: *See*—
Faeth, Warren P., 5,333,654, Cl. 141-1.000.
Toki, Hirotaka; Yamamoto, Hiranaga; Wakuda, Osamu; and Nagao, Hiroyuki, to Sharp Kabushiki Kaisha. Rotatable cassette type feeding apparatus. 5,333,849, Cl. 271-9.000.
Toko America, Inc.: *See*—
Martin-Lopez, Fernando R.; and Redl, Richard, 5,335,162, Cl. 363-97.000.
Tokumoto, Jun-ichi: *See*—
Okada, Kohji; Ando, Minato; Tokumoto, Jun-ichi; and Katoh, Takashi, 5,334,305, Cl. 204-435.000.
Tokunaga, Hiroyuki; and Yonehara, Takao, to Canon Kabushiki Kaisha. Process for selective formation of II-VI group compound film. 5,334,864, Cl. 257-78.000.
Tokunaga, Masataka: *See*—
Takahata, Toshihiro; Kawazoe, Hiroshi; Murakoshi, Toshiichi; and Tokunaga, Masataka, 5,333,800, Cl. 242-7.010.
Tokunaga, Yasuyuki: *See*—
Ando, Masahiko; Yamanaka, Takeshi; Moroishi, Yutaka; Tokunaga, Yasuyuki; and Kitamura, Yoshinao, 5,334,686, Cl. 526-307.700.
Kitamura, Yoshinao; Yamashita, Shinkiti; Tokunaga, Yasuyuki; Ando, Masahiko; and Yamanaka, Takeshi, 5,334,447, Cl. 428-317.300.
Tokutake, Naoto: *See*—
Sato, Kenji; and Tokutake, Naoto, 5,335,052, Cl. 355-271.000.
Tokyo Electric Power Company Inc., The: *See*—
Kato, Hiroyuki, 5,333,991, Cl. 415-112.000.
Tokyo Electron Kabushiki Kaisha: *See*—
Nishi, Hironobu; and Terada, Kazuo, 5,334,257, Cl. 118-500.000.
Tokyo Electron Limited: *See*—
Kubo, Kenichi; Kobayashi, Yasuo; and Koizumi, Koji, 5,334,302, Cl. 204-298.180.
Mizukami, Masami; and Osada, Hatsuo, 5,333,986, Cl. 414-217.000.
Tokyo Electron Tohoku Kab. Kaisha: *See*—
Nishi, Hironobu; and Terada, Kazuo, 5,334,257, Cl. 118-500.000.
Tokyo Gas Co., Ltd.: *See*—
Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, 5,333,501, Cl. 73-592.000.
Tokyo Keiki Co., Ltd.: *See*—
Akaba, Noriyuki, 5,334,984, Cl. 342-149.000.
Tokyuama, Mikio; Ichikawa, Ryoichi; and Okamoto, Noriaki, to Hitachi, Ltd. Magnetic disk device without slider and having magnetic head mounted directly on magnetic head support including integral gas pressure generating structure. 5,335,126, Cl. 360-104.000.
Toma, Masaaki: *See*—
Kogure, Kayoko; Kimura: Kazuo; Kawasaki, Michihiro; Toma, Masaaki; and Imamura, Eiji, 5,334,774, Cl. 568-754.000.
Tomida, Masayuki; Nimura, Hitoshi; and Aritomi, Mitsutoshi, to Mitsubishi Petrochemical Company Limited. Method for producing graft-modified copolymers. 5,334,664, Cl. 525-289.000.
Tominaga, Junji, to TDK Corporation. Optical recording medium. 5,334,433, Cl. 428-64.000.
Tominaga, Nobuhide: *See*—
Minami, Yoshitaka; Kakumaru, Hajime; Kubota, Naohiro; Tominaga, Nobuhide; and Ishizaki, Koji, 5,334,484, Cl. 430-281.000.
Tominaga, Shuusuke, to Mitsubishi Denki Kabushiki Kaisha. Illuminated knob device. 5,335,148, Cl. 362-26.000.
Tomizawa, Hirotaka; Umemoto, Noboru; and Ohenoki, Hitoshi, to Tonen Corporation. Composition for hydraulic lubrication and coupling. 5,334,319, Cl. 252-46.006.
Tomizawa, Hirotaka; Umemoto, Noboru; and Ohenoki, Hitoshi, to Tonen Corporation. Compositions for hydraulic, lubricating and coupling. 5,334,320, Cl. 252-46.600.
Tomlonovic, Vincent J.: *See*—
Hodapp, Gary D.; Johnson, James A.; and Tomlonovic, Vincent J., 5,333,559, Cl. 111-152.000.
Tomoegawa Paper Co., Ltd.: *See*—
Aoki, Nobuyuki; Fujita, Hideo; and Aoshima, Jiro, 5,334,472, Cl. 430-109.000.
Ochi, Mitsukazu; Tagami, Toshio; and Kiyohara, Osamu, 5,334,661, Cl. 525-90.000.
Ochi, Mitsukazu; Tagami, Toshio; and Kiyohara, Osamu, 5,334,662, Cl. 525-90.000.
Tomura, Masashi: *See*—
Takagi, Hisamitsu; Nishiyama, Akihide; and Tomura, Masashi, 5,335,273, Cl. 379-433.000.
Tomy Company, Ltd.: *See*—
Kakizaki, Katsumi; and Iimura, Taichi, 5,334,075, Cl. 446-438.000.
Tonen Corporation: *See*—
Furuhashi, Hiroyuki; Koyama, Naomi; and Ueki, Satoshi, 5,334,678, Cl. 526-169.200.
Tomizawa, Hirotaka; Umemoto, Noboru; and Ohenoki, Hitoshi, 5,334,319, Cl. 252-46.006.
Tomizawa, Hirotaka; Umemoto, Noboru; and Ohenoki, Hitoshi, 5,334,320, Cl. 252-46.600.
Tonnies, Gary L.: *See*—
Popat, Pravin N.; Unterweger, Diethard; Baskin, Gennady; Candelet, Ronald J.; and Tonnies, Gary L., 5,334,553, Cl. 437-209.000.
Tonti, William R.: *See*—
Abadeer, Wagdi W.; El-Kareh, Badih; Ellis, Wayne F.; Galbi, Duane E.; Hiltebeitel, Nathan R.; Tonti, William R.; and Watts, Josef S., 5,334,880, Cl. 307-219.000.
Topfer, Bernhard, to Mercedes-Benz AG. Tractor/trailer brake pressure regulation method and system. 5,333,940, Cl. 303-7.000.
Toppan Printing Co., Ltd.: *See*—
Yoshida, Masakichi; Ikehata, Kenjiro; and Sugimura, Masashi, 5,335,315, Cl. 395-109.000.
Torasson, Clifford M.: *See*—
Behm, Michael E.; and Torasson, Clifford M., 5,334,061, Cl. 440-75.000.
Torii, Katsuhiko, to Kabushiki Kaisha Kawai Gakki Seisakusho. Loudspeaker apparatus for electronic keyboard musical instrument. 5,335,283, Cl. 381-118.000.
Torres, Cristobal A.: *See*—
Kelly, John F., Jr.; Laird, Robert G.; Baker, Thomas E.; and Torres, Cristobal A., 5,335,268, Cl. 379-112.000.
Toshiba Audio Video Engineering Co., Limited: *See*—
Koike, Masatoshi, 5,335,354, Cl. 455-192.200.
Toshiba Lighting & Technology Corporation: *See*—
Ohsaki, Hajime; and Shimizu, Keiichi, 5,334,915, Cl. 315-307.000.
Total Containment, Inc.: *See*—
Webb, Michael C., 5,333,490, Cl. 73-40.50R.
Tour, James M.; Stephens, Eric; and Davis, Joanna F., to University of South Carolina. Precursor polyphenylene for and method of producing glassy carbon. 5,334,668, Cl. 525-416.000.
Tovey, H. Jonathan, to United States Surgical Corporation. Surgical attaching apparatus. 5,333,624, Cl. 128-897.000.
Toyama, Osamu; Uchiyama, Masaru; and Pierrot, Francois, to Toyoda Koki Kabushiki Kaisha; Uchiyama, Masaru; and Pierrot, Francois. Parallel robot. 5,333,514, Cl. 74-479.0BW.
Toyne, Kenneth J.: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Hird, Michael; and McDonnell, Damien G., 5,334,327, Cl. 252-299.670.
Toyo Boseki Kabushiki Kaisha: *See*—
Soya, Yoshihiro; and Emi, Shigenori, 5,334,507, Cl. 435-25.000.
Toyo Sekkei Co., Ltd.: *See*—
Wakoh, Mitsumi, 5,333,951, Cl. 366-71.000.
Toyoda Gosei Co., Ltd.: *See*—
Oomori, Norio; Ikeda, Fumio; Kodama, Keiichi; Kanai, Makoto; and Terayama, Tatsuya, 5,333,914, Cl. 285-54.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Toyama, Osamu; Uchiyama, Masaru; and Pierrot, Francois, 5,333,514, Cl. 74-479.0BW.
Toyoda Koki Kagbushiki Kaisha: *See*—
Tsuboi, Akira; and Takeuchi, Katsuhiko, 5,335,183, Cl. 364-474.370.
Toyokura, Yoichi, to Canon Kabushiki Kaisha. Output method and apparatus. 5,335,316, Cl. 395-115.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Ikeda, Shinji; and Mizukoshi, Masashi, 5,334,983, Cl. 342-70.000.
Itoh, Tokiji, 5,333,446, Cl. 60-274.000.
Mine, Kohichi; and Itoh, Norio, 5,333,484, Cl. 72-349.000.
Otsuka, Takayuki, 5,333,589, Cl. 123-520.000.
Shirai, Kenji; and Katsuno, Sumio, 5,333,944, Cl. 303-105.000.
Tatara, Yudai; Jufuku, Yasunobu; Machida, Hisashi; and Ito, Hiroyuki, 5,334,097, Cl. 476-8.000.

Transco Inc.: *See—*
Avery, Elliott L., 5,334,806, Cl. 181-286.000.

Traver, Frank J.: *See—*
Thimineur, Raymond J.; Traver, Frank J.; and Van Valkenburgh, Virgina M., 5,334,737, Cl. 556-440.000.

Trelleborg Tyre Aktiebolag: *See—*
Victor, Carl-Gustav B. C., 5,333,661, Cl. 152-379.300.

Troemner, Inc.: *See—*
Johnston, Robert W.; Hooper, Alan L.; Byar, Peter D.; and Pridham, Ronald G., 5,334,354, Cl. 422-104.000.

Trokhan, Paul D.; and Boutilier, Glenn D., to Procter & Gamble Company, The. Papermaking belt and method of making the same using differential light transmission techniques. 5,334,289, Cl. 162-358.200.

Trokhan, Paul D.: *See—*
Van Phan, Dean; and Trokhan, Paul D., 5,334,286, Cl. 162-158.000.

Trubey, Bradley S.: *See—*
Smith, Jay L.; Trubey, Bradley S.; and Walker, Anthony D., 5,335,227, Cl. 370-95.100.

Trutzschler GmbH & Co. KG: *See—*
Leifeld, Ferdinand, 5,333,358, Cl. 19-105.000.

TRW Inc.: *See—*
Grimm, Gary E., 5,334,848, Cl. 250-548.000.

TRW Repa GmbH: *See—*
Eyrainer, Heinz; and Kissendorfer, Hans, 5,333,903, Cl. 280-743.00R.
Fohl, Artur, 5,334,025, Cl. 439-188.000.
Stutz, Michael, 5,333,898, Cl. 280-730.00A.

Tsai, Lih-Shyig: *See—*
Lin, Kwang-Ming; Tsai, Lih-Shyig; Lin, Jiunn-Jyi; and Liaw, Yung-Haw, 5,334,554, Cl. 437-231.000.

Tsaur, Allen K.: *See—*
Sutton, James E.; Gasper, John; Tsaur, Allen K.; and Tarn, Ann, 5,334,469, Cl. 430-21.000.

Tschirschwitz, Herbert; and Jager, Wolfgang, to Brose Fahrzeugteile GmbH & Co. KG. Cable window winder, particularly for installation in motor vehicles. 5,333,411, Cl. 49-352.000.

Tsuboi, Akira; and Takeuchi, Katsuhiko, to Toyoda Koki Kagbushiki Kaisha. Method and apparatus for determining profile of cylindrical object. 5,335,183, Cl. 364-474.370.

Tsuboi, Toshio: *See—*
Yamada, Hirokazu; Nakajima, Akio; and Tsuboi, Toshio, 5,335,090, Cl. 358-473.000.

Tsubokawa, Masaya: *See—*
Iio, Satoshi; Watanabe, Masakazu; Ito, Toshimichi; and Tsubokawa, Masaya, 5,334,453, Cl. 428-408.000.

Tsujimoto, Ichiro; and Fujimoto, Yoshiyuki, to NEC Corporation. Diversity receiver using matched filter and decision feedback equalizer. 5,335,359, Cl. 455-52.300.

Tsujita, Keiji: *See—*
Matsui, Shigetomo; Matsumura, Hiroyuki; Ikemoto, Yoshikazu; Kumon, Yasuhiro; Nakayama, Shigeru; Tsujita, Keiji; Fukunaga, Keisuke; Kuribayashi, Nobuhiro; and Wakana, Kenichi, 5,334,561, Cl. 501-87.000.

Tsukada, Tokio: *See—*
Nagayama, Yoji; Tadokoro, Shingo; and Tsukada, Tokio, 5,334,989, Cl. 343-713.000.

Tsukamoto, Kazumasa: *See—*
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.

Tsukimura, R. R.: *See—*
Newacheck, Richard L.; Lamb, Ivan E.; and Tsukimura, R. R., 5,334,840, Cl. 250-483.100.

Tsukui, Seiichiro: *See—*
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.

Tsumura, Kiyoaki: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, 5,334,803, Cl. 174-52.400.

Tsunehiro, Naoshi; Sekiguchi, Akihiko; and Nakamura, Asako, to Matsushita Electric Industrial Co., Ltd. Power supply switching circuit for a compact portable telephone set. 5,335,263, Cl. 379-58.000.

Tsunekawa, Masanori: *See—*
Nosetani, Tadashi; Namba, Keizo; Sano, Hiromichi; Yonemitsu, Makoto; Kumagai, Masaki; and Tsunekawa, Masanori, 5,334,814, Cl. 219-119.000.

Tsunoda, Masumi: *See—*
Kubo, Susumu; Nakai, Shoji; and Tsunoda, Masumi, 5,334,807, Cl. 187-126.000.

Tsunoo, Hajime; Kino, Kousuke; and Yamashita, Akio, to Meiji Milk Products Co., Ltd. Glycoprotein isolated from ganoderma having immunosuppressive activity. 5,334,704, Cl. 530-371.000.

Tsuruoka, Tsutomu: *See—*
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.

Tsurusaki, Masayuki; and Watanabe, Takashi, to Kabushiki Kaisha Toshiba. Bell signal generating circuit. 5,335,270, Cl. 379-253.000.

Tsutaki, Shoji: *See—*
Fujioka, Yoshiharu; Nagatsuka, Shintaro; and Tsutaki, Shoji, 5,333,372, Cl. 29-603.000.

Tsutsumi, Hidemi, to Mitsui Mining Company, Ltd. Steam generator for a steam bath. 5,333,573, Cl. 122-39.000.

Tsutsumi, Yasuhiro; and Nishimura, Junichi, to Omron Corporation. Fuzzy inference apparatus. 5,335,314, Cl. 395-3.000.

Tsuyuki, Mikio: *See—*
Kushima, Hiroshi; and Tsuyuki, Mikio, 5,333,850, Cl. 271-164.000.

Tsuzuki, Kiyohiro, to TNS Mills, Inc. Automated spinning apparatus and process. 5,333,440, Cl. 57-90.000.

Tu, Nang-Ping; and Chen, Ming-Daw, to Industrial Technology Research Institute, Taiwan. Shift register system for driving active matrix display. 5,335,254, Cl. 377-76.000.

Tucker, Bradley J.: *See—*
Foley, Charles F.; Metheney, Harry P.; and Tucker, Bradley J., 5,333,967, Cl. 401-139.000.

Tucker, Stephen P.; and Colegrove, Samuel B. Azimuth range velocity display and cursor for use therewith. 5,334,985, Cl. 342-176.000.

Tugenberg, Michelle L.; Altschuler, Barry N.; and Hardy, Douglas A., to Motorola, Inc. Network controller and method. 5,335,281, Cl. 380-48.000.

Turkel, David, to Symbiosis Corporation. Thoracentesis needle assembly utilizing check valve. 5,334,159, Cl. 604-158.000.

Turner, Gilbert A. Propeller control system. 5,335,175, Cl. 364-424.010.

Turner, Laura J.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.

Turra, Mario; Cesari, Verter; and Neri, Armando, to G.D. S.p.A. Device for supplying products ordered in series to a successive work station. 5,333,988, Cl. 414-795.800.

Tweedy, Mark R.: *See—*
Zwigart, John M.; Tweedy, Mark R.; and McCoy, Gary W., 5,333,720, Cl. 198-409.000.

Twiggs, Gene J.: *See—*
Kosa, Nadhir B.; Twiggs, Gene J.; Salter, James R.; Singh, Raghuvir; Costello, David J.; and Schlain, Leslie A., 5,335,305, Cl. 385-147.000.

Twin Disc, Incorporated: *See—*
Sabee, Janet M.; and Terranova, Joseph C., 5,333,712, Cl. 192-53.00B.

Tyco Investment Corporation: *See—*
Tilbor, Neil; Garr, Anthony R.; Newton, Jean; and Mucaro, Salvatore, 5,334,073, Cl. 446-308.000.

Tyndale Plains-Hunter Ltd.: *See—*
Gould, Francis E.; and Johnston, Christian W., 5,334,691, Cl. 528-76.000.

Ublacker, Peter, to Austria Metall Aktiengesellschaft. Process for flattening the end section of a tube. 5,333,485, Cl. 72-367.000.

Uchida, Naoko: *See—*
Masutomi, Haruhiko; Ohtani, Hirofumi; Uchida, Naoko; and Maniya, Chikao, 5,334,359, Cl. 422-225.000.

Uchida, Yasuzo: *See—*
Saburi, Masahiko; Ohnuki, Masamichi; and Uchida, Yasuzo, 5,334,758, Cl. 562-590.000.

Uchida, Yuji; Yoshida, Yoshio; Kaneda, Toshikazu; Moriya, Toshiaki; and Kumazawa, Tsutomu, to Mitsui Toatsu Chemicals, Inc. Elastomer and process for production thereof. 5,334,670, Cl. 525-440.000.

Uchihara, Hiroshi: *See—*
Ikeda, Masahiko; and Uchihara, Hiroshi, 5,334,837, Cl. 250-339.000.

Uchiyama, Masaru: *See—*
Toyama, Osamu; Uchiyama, Masaru; and Pierrot, Francois, 5,333,514, Cl. 74-479.0BW.

Udagawa, Toshiki: *See—*
Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ono, Masumi; and Yasuda, Kouichi, 5,335,213, Cl. 369-121.000.

Udipi, Kishore, to Monsanto Company. Antistatic thermoplastic polymers. 5,334,635, Cl. 524-377.000.

Udo, Shinji: *See—*
Ishii, Kyoko; Miyatake, Shinichi; Takahashi, Tsutomu; Udo, Shinji; Yoshioka, Hiroshi; Takano, Mitsuhiro; and Morino, Makoto, 5,335,203, Cl. 365-226.000.

Ueda, Eiichi; Fukazawa, Fumie; and Yagi, Toshihiko, to Konica Corporation. Silver halide photographic light-sensitive material. 5,334,494, Cl. 430-533.000.

Ueda, Hiroshi; Takamoto, Tamotsu; and Okada, Koji, to Sumitomo Chemical Company, Limited. Process of aldol condensation by gas-phase reaction. 5,334,770, Cl. 568-463.000.

Ueda, Kunio: *See—*
Sueyasu, Ryoichi; Ueda, Kunio; and Sagara, Kazuhiko, 5,334,398, Cl. 426-36.000.

Ueda, Naoto: *See—*
Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, 5,334,803, Cl. 174-52.400.

Ueda, Tetsuya; and Nakagawa, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Encapsulated semiconductor device having a hanging heat spreading plate electrically insulated from the die pad. 5,334,872, Cl. 257-675.000.

Uehara, Noriaki: *See—*
Koizumi, Shuzo; Uehara, Noriaki; and Kobayashi, Toru, 5,335,187, Cl. 364-526.000.

Ueki, Satoshi: *See—*
Furuhashi, Hiroyuki; Koyama, Naomi; and Ueki, Satoshi, 5,334,678, Cl. 526-169.200.

Uemura, Kunihiko: *See—*
Isobe, Seiichiro; Noguchi, Akinori; and Uemura, Kunihiko, 5,333,556, Cl. 100-93.00S.

Ueno, Takahisa; and Abe, Hideshi, to Sony Corporation. Package for solid state imager with heating means to repair imager lattice defect. 5,334,829, Cl. 250-208.100.

Uhl, James F.: *See—*
Albion, Stephen R.; Mackintosh, Douglas C.; and Uhl, James F., 5,333,658, Cl. 144-213.000.

Uhlenbrock, Johannes: *See—*
Kriener, Michael; Uhlenbrock, Johannes; Wilkerson, Larry A.; and Roslund, Richard N., Jr., 5,333,368, Cl. 297-301.000.

Uhlik, James M., to Anchor Hocking Corporation. Decorative utilitarian glass block. 5,333,427, Cl. 52-306.000.

Ullman, Edwin F.: *See—*
Skold, Carl N.; Shanafelt, Armen B.; Ghazarossian, Vartan; and Ullman, Edwin F., 5,334,513, Cl. 435-7.920.

Ullrich, Bernt, to Heraeus Instruments GmbH. Immersible lamp for a photochemical reactor. 5,334,905, Cl. 313-22.000.

Ullrich, Martin: *See—*
Schuchardt, Heinrich; and Ullrich, Martin, 5,334,358, Cl. 422-210.000.

Ulrich, Peter C.; and Cerami, Anthony, to Rockefeller University, The; and Alteon Inc. Amino acids useful as inhibitors of the advanced glycosylation of proteins. 5,334,617, Cl. 514-562.000.

Umemoto, Mitsuo: *See—*
Mitani, Youko; Muta, Kenji; and Umemoto, Mitsuo, 5,334,378, Cl. 424-78.100.

Umemoto, Noboru: *See—*
Tomizawa, Hirotaka; Umemoto, Noboru; and Ohenoki, Hitoshi, 5,334,319, Cl. 252-46.006.
Tomizawa, Hirotaka; Umemoto, Noboru; and Ohenoki, Hitoshi, 5,334,320, Cl. 252-46.600.

Umezu, Motoaki: *See—*
Harada, Yasuhiro; Nakano, Eiichi; Tatsumi, Hiroki; and Umezu, Motoaki, 5,334,511, Cl. 435-69.400.

Underwood, Herbert N.: *See—*
Blaha, James R.; Underwood, Herbert N.; Salle, Ralph; and Ralston, Ronald R., 5,333,969, Cl. 404-91.000.

Ungar, Lyle H.: *See—*
Kramer, Mark A.; Leonard, James A.; and Ungar, Lyle H., 5,335,291, Cl. 382-14.000.

Unger, Evan C. Liposomes as contrast agents for ultrasonic imaging and methods for preparing the same. 5,334,381, Cl. 424-9.000.

Uni-Charm Corporation: *See—*
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,334,152, Cl. 604-385.200.

Uni-King Toys Ltd.: *See—*
Yu, Yiu K.; and Au, Bryan K. F., 5,334,070, Cl. 446-31.000.

Unilever Patent Holdings B.V.: *See—*
Behan, John M.; Ness, Jeremy N.; Perring, Keith D.; and Smith, William M., 5,334,581, Cl. 512-2.000.

Union Oil Company of California: *See—*
Simpson, Howard D.; Schwedock, Marvin J.; and Ward, John W., 5,334,307, Cl. 208-254.00H.
Van Slyke, Donald C., 5,333,698, Cl. 175-65.000.

Union Switch & Signal Inc.: *See—*
Gilcher, Heinz, 5,333,820, Cl. 246-249.000.

Unisia Jecs Corporation: *See—*
Hara, Seinosuke; Yamada, Yosihiko; and Nakamura, Makoto, 5,333,579, Cl. 123-90.170.

United Memories, Inc.: *See—*
Hardee, Kim C., 5,334,890, Cl. 307-530.000.

United Microelectronics Corporation: *See—*
Lin, Jyh-Kuang; and Yeh, Nai J., 5,334,543, Cl. 437-30.000.

United Solar Systems Corp.: *See—*
Guha, Subhendu; Yang, Chi C.; and Xu, XiXiang, 5,334,423, Cl. 427-575.000.

United States Advance Network, Inc.: *See—*
Richardson, Charles T., Jr.; Austin, Kevin L.; and Billingsley, Samuel F., III, 5,335,266, Cl. 379-88.000.

United States/National Institutes of Health: *See—*
Resnick, Michael A.; and Radman, Miroslav, 5,334,522, Cl. 435-172.300.

United States of America
Administrator, National Aeronautics and Space Administration: *See—*
Weddendorf, Bruce, 5,333,931, Cl. 297-334.000.
Agriculture: *See—*
Vaughn, Steven F.; and Spencer, Gayland F., 5,334,619, Cl. 514-675.000.
Air Force: *See—*
Cain, James E., 5,334,205, Cl. 606-96.000.
Army: *See—*
Babbitt, Richard W.; Koscica, Thomas E.; and Drach, William C., 5,334,958, Cl. 333-156.000.
Hevenor, Richard A.; and Chen, Pi-Fuay, 5,335,298, Cl. 382-54.000.
Smith, Dale; and Behrmann, Gregory P., 5,335,304, Cl. 385-135.000.
Energy: *See—*
Choe, Hwang; and Fallas, Thomas T., 5,334,239, Cl. 95-261.000.
Kronberg, James W., 5,334,847, Cl. 250-506.100.
Prather, William S.; and O'Rourke, Patrick E., 5,335,067, Cl. 356-436.000.
Toeppen, John S., 5,335,236, Cl. 372-25.000.
Warren, John L.; and Brandt, James E., 5,333,422, Cl. 52-115.000.
Zapata, Luis E., 5,335,237, Cl. 372-33.000.
Environmental Protection Agency: *See—*
Boyum, Gerald A.; and Schweiss, Jon W., 5,333,511, Cl. 73-864.340.
National Aeronautics and Space Administration: *See—*
Alston, William B.; and Gratz, Roy F., 5,334,733, Cl. 552-114.000.
Dolgin, Benjamin P., 5,334,965, Cl. 335-216.000.
Stocks, Charles D., 5,334,813, Cl. 219-72.000.
Thomas, Frank P., 5,333,964, Cl. 403-339.000.
Navy: *See—*
DuBois, Neil J.; and Polhemus, Stanley J., 5,333,570, Cl. 114-144.00R.
Kirkpatrick, Thomas I., 5,334,881, Cl. 307-241.000.
Louat, Norman P.; Provenzano, Virgil; Imam, M. Ashraf; and Sadananda, Kuntimaddi, 5,333,667, Cl. 164-97.000.
Meng, James C. S., 5,333,444, Cl. 60-221.000.
Pullen, Michael W., 5,335,297, Cl. 382-50.000.
Smith, Wallace A., 5,334,903, Cl. 310-358.000.
Whitlock, Robert R., 5,335,258, Cl. 378-122.000.
Yoder, Max N., 5,334,853, Cl. 257-10.000.
Zirino, Albert, 5,334,629, Cl. 523-137.000.

U.S. Philips Corporation: *See—*
Bombeeck, John M., 5,335,121, Cl. 360-65.000.
Edwards, Martin J., 5,335,023, Cl. 348-800.000.
Fernhout, Herman C., 5,334,986, Cl. 342-357.000.
Lindemeier, Heinz; Hope, Jochen; Reiter, Leopold; and Kronberger, Rainer, 5,335,010, Cl. 348-706.000.
Mohlmann, Ulrich; Onken, Gerd; Kunze, Dieter; and Wolber, Jorg, 5,335,018, Cl. 348-536.000.
Tanigaki, Yasushi; Satoh, Yoshikazu; and Kobayashi, Yoshiharu, 5,334,996, Cl. 345-152.000.

United States Surgical Corporation: *See—*
Guy, Thomas D.; and Ianniruberto, Alex, 5,334,164, Cl. 604-248.000.
Scott, Ian M.; and Nicholas, David A., 5,334,196, Cl. 606-138.000.
Tovey, H. Jonathan, 5,333,624, Cl. 128-897.000.

United Technologies Corporation: *See—*
Del Monte, Berardino, 5,333,816, Cl. 244-50.000.
Goodson, Forrest R.; and Rudy, Thomas P., 5,334,238, Cl. 95-59.000.
Kane, Daniel E.; and Haddad, Donald E., 5,333,992, Cl. 415-138.000.
Vine, Raymond W.; and Anderson, Neal P., 5,334,462, Cl. 428-697.000.

Universal Computer Technologies Inc.: *See—*
Sanford, Michael D., 5,334,822, Cl. 235-385.000.

Universal Dynamics Limited: *See—*
Gough, William A. G., Jr.; and Lyon, David L., 5,335,164, Cl. 364-149.000.

University of Alabama in Huntsville, The: *See—*
Wessling, Francis C., 5,334,963, Cl. 335-2.000.

University of California, Regents of the: *See—*
Georges, John B.; and Lau, Kam Y., 5,335,107, Cl. 359-181.000.
Kossovsky, Nir; Gelman, Andrew E.; and Sponsler, Edward E., 5,334,394, Cl. 424-494.000.
Makowiecki, Daniel M.; McKernan, Mark A.; Grabner, R. Fred; and Ramsey, Philip B., 5,333,726, Cl. 204-298.090.
Stanker, Larry H.; Vanderlaan, Martin; and Watkins, Bruce E., 5,334,528, Cl. 435-240.270.

University of Illinois: *See—*
Greene, Mark I.; Saragovi, Horacio U.; and Kahn, Michael, 5,334,702, Cl. 530-323.000.

University of Iowa Research Foundation, The: *See—*
Bahns, John T., 5,335,238, Cl. 372-37.000.

University of Maryland, The: *See—*
Lee, Cheng S.; and Huang, Ping Y., 5,334,537, Cl. 436-518.000.

University of Minnesota, Regents of the: *See—*
Das, Gladwin S., 5,334,217, Cl. 606-213.000.

University of Missouri of Columbia, Missouri, The Curators of the: *See—*
Hulse, Mark M.; and Shaffer, W. Hal, Jr., 5,334,942, Cl. 324-694.000.

University of North Carolina at Chapel Hill, The: *See—*
Parikh, Nalin R.; and Hunn, John D., 5,334,283, Cl. 156-654.000.

University of Pennsylvania, Trustees of the: *See—*
Greene, Mark I.; Saragovi, Horacio U.; and Kahn, Michael, 5,334,702, Cl. 530-323.000.
Kung, Hank F.; and Murphy, Raymond, 5,334,728, Cl. 548-402.000.

University of Pittsburgh: *See—*
Good, Walter F.; Gur, David; Owen, James F.; Whiting, Bruce R.; Modney, David L.; and Weil, Richard, 5,334,851, Cl. 250-582.000.

VOL 1165 ISS 1 AG 2 1994 UMI

University of South Carolina: *See—*
Tour, James M.; Stephens, Eric; and Davis, Joanna F., 5,334,668, Cl. 525-416.000.
University of Texas System Board of Regents: *See—*
Sun, Lumin; and Falck, John R., 5,334,736, Cl. 554-148.000.
University of Toledo, The: *See—*
Lee, Harold H.; Fraleigh, Peter C.; and Lemma, Aklilu, 5,334,386, Cl. 424-195.100.
Uniweld Products, Inc.: *See—*
Pearl, David S., II; Webb, Louis H., III; Mohammed, Shaheed; and Bukur, Dragan, 5,333,467, Cl. 62-77.000.
Unterweger, Diethard: *See—*
Popat, Pravin N.; Unterweger, Diethard; Baskin, Gennady; Candelet, Ronald J.; and Tonnies, Gary L., 5,334,553, Cl. 437-209.000.
UOP: *See—*
Kocal, Joseph A., 5,334,793, Cl. 585-323.000.
Upjohn Company, The: *See—*
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; and Wallach, Donald P., deceased, 5,334,712, Cl. 540-112.000.
Urai, Muneharu; Katsuta, Kazuo; Hosoya, Minoru; Abe, Tatafumi; and Wada, Ryosuke, to Tachi-S Co. Ltd. Seat with a trim cover assembly having plural stitches thereon. 5,333,933, Cl. 297-452.100.
Urakami, Kanta: *See—*
Murakami, Harunori; Baba, Yuji; Urakami, Kanta; Niizaki, Nobuya; Natsume, Hirofumi; and Arisawa, Masato, 5,334,988, Cl. 343-704.000.
Uratani, Shinichi: *See—*
Okajima, Hiroyuki; and Uratani, Shinichi, 5,334,993, Cl. 345-102.000.
Urbanek, Otto; and Aumayer, Walter, to Engel Maschinenbau Gesellschaft m.b.H. Handling device for removing formed plastic parts from the space between die platens carrying the mould halves of an injection moulding machine. 5,334,009, Cl. 425-556.000.
Uren, Dean P.; and Anderson, James D. Water ski boot and binding. 5,334,065, Cl. 441-70.000.
Urquhart, Andrew W.: *See—*
Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Lesher, H. Daniel, 5,334,562, Cl. 501-88.000.
Ury, Michael G.; and Wood, Charles H., to Fusion Systems Corporation. Microwave powered lamp having a non-conductive reflector within the microwave cavity. 5,334,913, Cl. 315-248.000.
Ushiro, Tatsuzo: *See—*
Edakubo, Hiroo; Ushiro, Tatsuzo; Nagatsuka, Osamu; and Kobayashi, Junji, 5,335,129, Cl. 360-132.000.
USI Lighting, Inc.: *See—*
Counts, Richard C., 5,334,912, Cl. 315-119.000.
Usrey, Carolyn L.: *See—*
Porambo, Bernard A.; and Usrey, Carolyn L., 5,333,433, Cl. 52-417.000.
Usui, Naoki; Yamamoto, Yoko; and Nakamatu, Tuyoshi, to Ajinomoto Co., Inc. Process for producing riboflavin by fermentation. 5,334,510, Cl. 435-66.000.
Usui, Takayuki: *See—*
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.
Uyama, Shintaro, to Jidosha Kiki Co., Ltd. Booster. 5,333,534, Cl. 91-376.00R.
V-Tech, Inc.: *See—*
Parker, James E.; and Herranen, Aileen, 5,334,538, Cl. 436-525.000.
Vahapesola, Jari, to Valmet Paper Machinery Inc. Martensite roll. 5,334,125, Cl. 492-58.000.
Vahcic, Anne K.: *See—*
Ankenbruck, James B.; Antolin, Jose V.; Herbstler, Horst D.; Lund, Bruce D.; Vahcic, Anne K.; and Wilson, Lowell T., 5,333,387, Cl. 33-18.100.
Vaisanen, Risto; and Leppanen, Aki, to Nokia Mobile Phones Ltd. Method of tuning and compensating the received signal strength indicator in a radio telephone. 5,335,362, Cl. 455-67.100.
Valence Technology, Inc.: *See—*
Koksbang, Rene, 5,334,334, Cl. 264-28.000.
Valenite Inc.: *See—*
Bernadic, Thomas J.; Patterson, John H.; and Brockett, Brendan L., 5,333,972, Cl. 407-113.000.
Valeo: *See—*
Hagnere, Raymon; and Warnke, Pierre, 5,333,713, Cl. 192-89.220.
Valeo Vision: *See—*
Rives, Claude, 5,333,978, Cl. 411-389.000.
Valet, Thierry: *See—*
Colineau, Joseph; and Valet, Thierry, 5,335,120, Cl. 360-63.000.
Valleylab, Inc.: *See—*
Wuchinich, David G., 5,334,183, Cl. 606-46.000.
Valmet Paper Machinery Inc.: *See—*
Vahapesola, Jari, 5,334,125, Cl. 492-58.000.
Van Doorne's Transmissie B.V.: *See—*
Lamers, Hendrikus F., 5,334,108, Cl. 474-8.000.
Van, Kazuo: *See—*
Ohta, Kenji; Inui, Tetsuya; Katayama, Hiroyuki; Takahashi, Akira; Hirokane, Junji; Nishitani, Yukinori; Mieda, Michinobu; and Van, Kazuo, 5,335,220, Cl. 369-288.000.
Vana, James G., Jr.: *See—*
Bullock, Roddy M.; Cedrone, Alfredo L.; Eckert, Michael L.; and Vana, James G., Jr., 5,334,271, Cl. 156-51.000.
Van Buskirk, Michael A.; Plouse, Kevin W.; Pawletko, Joseph G.; Chang, Chi; Haddad, Sameer S.; and Gutala, Ravi P., to Advanced Micro Devices, Inc. Flash eeprom array with high endurance. 5,335,198, Cl. 365-185.000.
Vandeberg, John T.: *See—*
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,455, Cl. 428-413.000.
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,456, Cl. 428-431.000.
van de Moesdijk, Cornelis G. M.: *See—*
van Hinsberg, Johannes G.; van de Moesdijk, Cornelis G. M.; Spaargaren, Ivo; and Sielcken, Otto E., 5,334,768, Cl. 568-341.000.
van den Nieuwelaar, Adrianus J.; and van Harskamp, Cornelis D., to Stork PMT. Method and device for mechanically drawing slaughtered poultry. 5,334,083, Cl. 452-106.000.
Vanderlaan, Martin: *See—*
Stanker, Larry H.; Vanderlaan, Martin; and Watkins, Bruce E., 5,334,528, Cl. 435-240.270.
Van Duzer, John H.; and Roland, Dennis M., to Ciba-Geigy Corporation. Isoquinolyl substituted hydroxylamine derivatives. 5,334,600, Cl. 514-309.000.
Vanek, Laurence D.; and McGrath, Robert G., to General Electric Company. Inverter control for third rail head end power. 5,334,878, Cl. 307-64.000.
Vanevic, C. Daniel: *See—*
Hunt, Christopher J.; and Vanevic, C. Daniel, 5,335,229, Cl. 370-110.100.
van Harskamp, Cornelis D.: *See—*
van den Nieuwelaar, Adrianus J.; and van Harskamp, Cornelis D., 5,334,083, Cl. 452-106.000.
Van Havenbergh, Jan; Dooms, Philip; Aertbelien, Jozef; and Blum, Harald, to Agfa-Gevaert, N.V. Radiographic screen. 5,334,842, Cl. 250-483.100.
van Hinsberg, Johannes G.; van de Moesdijk, Cornelis G. M.; Spaargaren, Ivo; and Sielcken, Otto E., to DSM N.V. Process for the production of a cycloalkanone and/or a cycloalkanol. 5,334,768, Cl. 568-341.000.
Vanier, Noel R.; and Brust, David P., to Eastman Kodak Company. Interlayer for slipping layer in dye-donor element used in thermal dye transfer. 5,334,572, Cl. 503-227.000.
Van Iseghem, Lawrence C.; and Gybin, Alexander S., to Chromaline Corporation, The. Acid soluble photo-resist comprising a photosensitive polymer. 5,334,485, Cl. 430-287.000.
Vannelli, Anthony; and Madsen, Thomas C., to Key Technology, Inc. Product inspection method and apparatus. 5,335,293, Cl. 382-17.000.
Van Phan, Dean; and Trokhan, Paul D., to Procter & Gamble Company, The. Tissue paper treated with tri-component biodegradable softener composition. 5,334,286, Cl. 162-158.000.
Van Slyke, Donald C., to Union Oil Company of California. White mineral oil-based drilling fluid. 5,333,698, Cl. 175-65.000.
Van Valkenburgh, Virgina M.: *See—*
Thimineur, Raymond J.; Traver, Frank J.; and Van Valkenburgh, Virgina M., 5,334,737, Cl. 556-440.000.
Varoglu, Erol, to Forintek Canada Corporation. Wood frame construction system with prefabricated components. 5,333,426, Cl. 52-236.700.
Vartuli, James C.: *See—*
Beck, Jeffrey S.; Schmitt, Kirk D.; and Vartuli, James C., 5,334,368, Cl. 423-704.000.
Vaughan, Susanne F.; and More, Henry S., to Tensor, Inc. Measuring while drilling system. 5,333,686, Cl. 166-250.000.
Vaughn, Charles: *See—*
Hoppmann, Kurt H.; Vaughn, Charles; Anderson, Phillip S.; and Schmitt, Werner H., 5,333,716, Cl. 198-380.000.
Vaughn, Steven F.; and Spencer, Gayland F., to United States of America, Agriculture. Inhibition of postharvest fruit decay by 2-nonanone. 5,334,619, Cl. 514-675.000.
VCST, naamloze vennootschap: *See—*
Schuermans, Rafael, 5,334,104, Cl. 474-28.000.
VDO Adolf Schindling AG: *See—*
Mittenbuhler, Karl-Heinz; and Blume, Heinrich-Jochen, 5,333,371, Cl. 29-595.000.
Vehmas, Jukka H.: *See—*
Anttonen, Kauko K.; and Vehmas, Jukka H., 5,334,234, Cl. 65-351.000.
Veitscher-Magnesitwerke-Actien-Gesellschaft: *See—*
Kneis, Leopold; and Slamenik, Manfred, 5,333,843, Cl. 266-271.000.
Venet, Francois: *See—*
Arriulou, Pascal; Grelaud, Alain; and Venet, Francois, 5,333,683, Cl. 165-166.000.
Garnier, Catherine; and Venet, Francois, 5,333,463, Cl. 62-24.000.
Verbatim Corporation: *See—*
Stanley, Donald; Sheppard, Kenneth; and Skaar, Leif, 5,333,806, Cl. 242-342.000.
Verhelst, Gabriel: *See—*
Muller, Louis; and Verhelst, Gabriel, 5,334,689, Cl. 528-67.000.
Verkleeren, Ronald L., to Ford Motor Company. Noise attenuation device for air induction system for internal combustion engine. 5,333,576, Cl. 123-184.530.
Vermeer Manufacturing Company: *See—*
Edwards, Wallace L.; McMillen, Kenneth R.; and Briggs, Edward L., 5,333,516, Cl. 74-665.0GC.
Vermuelen, Nicolaas M. J.: *See—*
Adams, Trevor H.; Schwartz, Dennis E.; Vermuelen, Nicolaas M. J.; and Kanemoto, Roy H., 5,334,501, Cl. 435-6.000.

Verneau, Alain: *See—*
Lefevre, Paul; and Verneau, Alain, 5,334,004, Cl. 417-420.000.
Vesuvius Crucible Company: *See—*
Brandy, Gilbert; Compagnon, Jean-Claude; and Vignot, Jean-Marie, 5,333,670, Cl. 164-364.000.
Vevjurko, Alexandr I.: *See—*
Shalin, Rady E.; Savich, Alexandr N.; Kachanov, Evgeny B.; Petrakov, Alexandr F.; Piakorsky, Vadim P.; Vevjurko, Alexandr I.; Orlov, Vladislav K.; Shingarev, Eduard N.; Ivanov, Sergei I.; Khaskin, Jury V.; Buinovsky, Alexandr S.; and Kondakov, Vladimir M., 5,334,265, Cl. 148-302.000.
Vickers Incorporated: *See—*
Nielsen, Paul H., 5,334,932, Cl. 324-204.000.
Victor, Carl-Gustav B. C., to Trelleborg Tyre Aktiebolag. Vehicle wheel with a rim. 5,333,661, Cl. 152-379.300.
Vidal, Claude A.; Redmond, Russel J.; and Makower, Joshua, to Howmedica Inc. Hemostatic plug. 5,334,216, Cl. 606-213.000.
Vidal, Francisco J. L. Paving and wall tile. 5,333,430, Cl. 52-311.200.
Viertl, John R. M., to General Electric Company. Eddy current probe apparatus and interlaced scanning method for interior inspection of metal devices. 5,334,934, Cl. 324-220.000.
Vignot, Jean-Marie: *See—*
Brandy, Gilbert; Compagnon, Jean-Claude; and Vignot, Jean-Marie, 5,333,670, Cl. 164-364.000.
Vinci, James N.; and Schwind, James J., to Lubrizol Corporation, The. Lubricant and functional fluid compositions exhibiting improved demulsibility. 5,334,329, Cl. 252-49.600.
Vine, Raymond W.; and Anderson, Neal P., to United Technologies Corporation. Ceramic material and insulating coating made thereof. 5,334,462, Cl. 428-697.000.
Vinei, James N.; and Scharf, Curtis R., to Lubrizol Corporation, The. Compositions containing active sulfur. 5,334,318, Cl. 252-38.000.
VIP Kokusai Kyumei Center, Inc.: *See—*
Kawamura, Yoshihisa, 5,333,736, Cl. 206-524.800.
Vishlitzky, Natan: *See—*
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, 5,335,352, Cl. 395-800.000.
Visser, Benton E.: *See—*
Graiff, Leonard B.; Ngan, Danny Y.; Visser, Benton E.; and Webster, Greg E., 5,334,308, Cl. 208-299.000.
VITS Maschinenbau GmbH: *See—*
Bulcsu, Istvan, 5,333,395, Cl. 34-79.000.
VLSI Technology, Inc.: *See—*
Mattison, Phillip E., 5,335,322, Cl. 395-164.000.
Vobach, Arnold R. Random sum cipher system and method. 5,335,280, Cl. 380-42.000.
Voelker, Heinz; Alicke, Gerhard; Weilbacher, Manfred; Weilbacher, Manfred; Weber, Reinhold; and Schuch, Horst, to BASF Aktiengesellschaft. Production of foam boards of high compressive strength using a blowing agent mixture. 5,334,337, Cl. 264-45.300.
Voest-Alpine Bergtechnik Gesellschaft m.b.H.: *See—*
Zitz, Alfred, 5,333,936, Cl. 299-64.000.
Vogler, Jes V.; and Adelheim, Jurgen W., to Danfoss A/S. Pressure sensor and a method for the manufacture thereof. 5,333,507, Cl. 73-756.000.
Vogt, Diane T.: *See—*
Noblett, Paul W., Jr.; Brady, Mark; Cavicchi, Peter R.; Choudhuri, Kumar S.; Depew, Timothy W.; Evans, John C.; Friedman, Shelley K.; Hamilton, James H.; Kligfeld, Edward G.; Krahe, Holly B.; Liney, Thomas J.; Morton, Murray A.; Nair, Parameswaran B.; Philmon, Gregory A.; Price, James F.; Stills, James T.; Turner, Laura J.; and Vogt, Diane T., 5,334,823, Cl. 235-380.000.
Vogue Vanity SDN BHD: *See—*
Kam, Mok S., 5,333,332, Cl. 4-326.000.
Voigt, Heinz; Fischer, Roland; and Schneider, Rudolf, to Licentia Patent-Verwaltungs-GmbH. Current limiting choke coil. 5,334,964, Cl. 505-211.000.
Volk, Benjamin L.; Volk, Joseph A., Jr.; and Kniepmann, Mark R., to Beta Raven Inc. Hoist for retracting a liner from a bulk bag as material is dispensed therefrom. 5,333,757, Cl. 222-94.000.
Volk, Joseph A., Jr.: *See—*
Volk, Benjamin L.; Volk, Joseph A., Jr.; and Kniepmann, Mark R., 5,333,757, Cl. 222-94.000.
Volkswagen AG: *See—*
Pruss, Ludwig; and Kappel, Reinhard, 5,333,512, Cl. 74-331.000.
Witte, Bastian, 5,333,899, Cl. 280-730.00A.
Volz, Peter; and Schopper, Bernd, to Alfred Teves GmbH. Brake pressure control apparatus. 5,333,945, Cl. 303-119.200.
von Gunten, Jurg: *See—*
Lussi, Andre ; Zurbuchen, Hans; and von Gunten, Jurg, 5,333,537, Cl. 99-287.000.
W. A. Deutsher Pty. Ltd.: *See—*
Schaede, Peter, 5,333,361, Cl. 24-182.000.
W. Hegenscheidt Gesellschaft mbH: *See—*
Berstein, Garri, 5,333,480, Cl. 72-110.000.
W. L. Gore & Associates, Inc.: *See—*
Bullock, Roddy M.; Cedrone, Alfredo L.; Eckert, Michael L.; and Vana, James G., Jr., 5,334,271, Cl. 156-51.000.
Street, Norman A., 5,334,174, Cl. 604-313.000.
W. L. Walker Co., Inc.: *See—*
Brackett, Anne W.; Durham, Marcus O.; Perkins, Lynn K.; and Thoman, Gregory E., 5,333,498, Cl. 73-304.00R.
W. Schlafhorst AG & Co.: *See—*
Lind, Bjorn, 5,334,917, Cl. 318-254.000.
Wachi, Toshio; Sakaguchi, Yutaka; and Fujita, Kotaro, to Sakai Chemical Industry Co., Ltd. Method of producing a phosphinyl-carboxylic acid derivative. 5,334,760, Cl. 562-817.000.
Wachob, David E.; and Krisbergh, Hal M. Residential time reference system. 5,334,975, Cl. 340-825.210.
Wacker-Chemie GmbH: *See—*
Pachaly, Bernd; Frey, Volker; and Straussberger, Herbert, 5,334,738, Cl. 556-472.000.
Wada, Masashi: *See—*
Matsuo, Akinori; Watanabe, Masashi; Fujimoto, Michio; Wada, Masashi; Nagayama, Yoshiharu; and Naito, Kazuo, 5,335,204, Cl. 365-230.010.
Wada, Ryosuke: *See—*
Urai, Muneharu; Katsuta, Kazuo; Hosoya, Minoru; Abe, Tatafumi; and Wada, Ryosuke, 5,333,933, Cl. 297-452.100.
Wada, Shinobu, to Kabushiki Kaisha Toshiba. Semiconductor device of tab structure, capable of ensuring ease of testing of same in final form. 5,334,858, Cl. 257-48.000.
Wada, Tetsuro: *See—*
Murao, Yutaka; and Wada, Tetsuro, 5,335,331, Cl. 395-375.000.
Wada, Yoshihiro; Kobayashi, Tohru; and Tachibana, Noriki, to Konica Corporation. Plastic film having a coating layer comprising a copolyester and a conductive polymer and light-aensitive photographic material using the same. 5,334,457, Cl. 428-480.000.
Waddell, Seid W.: *See—*
Carr, Kenneth L.; Regan, James F.; and Waddell, Seid W., 5,334,141, Cl. 604-50.000.
Wade, Stephen E. Device for controlled diffusion of a chemical substance. 5,334,189, Cl. 604-890.100.
Wadenstorer, Frazer A.: *See—*
Simons, R. Kaye; and Wadenstorer, Frazer A., 5,334,182, Cl. 604-32.000.
Wadin, Craig P.: *See—*
Marko, Paul D.; Patsiokas, Stelios J.; Wadin, Craig P.; and Lobel, Gary S., 5,335,360, Cl. 455-56.100.
Wagle, Sudhakar S.; Steinbach, Thomas; Lawyer, Carl H.; Hermann, William J., Jr.; and Gawish, Ali A. S., to Kremers-Urban Company. Method of treating an epstein-barr viral infection. 5,334,395, Cl. 424-553.000.
Wagner, Erik J., to AMEI Technologies Inc. Spinal fixation system and methods. 5,334,203, Cl. 606-61.000.
Wagner, Paul: *See—*
Schon, Norbert; Langer, Reinhard; Buysch, Hans-Josef; and Wagner, Paul, 5,334,742, Cl. 558-274.000.
Wakabayashi, Hiroaki; Nakayama, Yoshinori; Murai, Fumio; and Okazaki, Shinji, to Hitachi Limited. Charged beam exposure method and apparatus as well as aperture stop and production method thereof. 5,334,845, Cl. 250-492.200.
Wakabayashi, Noriaki: *See—*
Shimizu, Ryosuke; and Wakabayashi, Noriaki, 5,335,123, Cl. 360-77.050.
Wakamiya, Syun'itirou: *See—*
Maruyuma, Koichi; Wakamiya, Syun'itirou; and Iwaki, Makoto, 5,335,059, Cl. 356-124.000.
Wakamori, Fumio: *See—*
Munemasa, Narihiro; Wakamori, Fumio; Masuzaki, Hidefumi; Fujinawa, Masaaki; and Kurosu, Yasuo, 5,335,084, Cl. 358-403.000.
Wakana, Kenichi: *See—*
Matsui, Shigetomo; Matsumura, Hiroyuki; Ikemoto, Yoshikazu; Kumon, Yasuhiro; Nakayama, Shigeru; Tsujita, Keiji; Fukunaga, Keisuke; Kuribayashi, Nobuhiro; and Wakana, Kenichi, 5,334,561, Cl. 501-87.000.
Wakashima, Yoshiaki: *See—*
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.
Wakoh, Mitsumi, to Toyo Sekkei Co., Ltd. Roll mixing machine and method. 5,333,951, Cl. 366-71.000.
Wakuda, Osamu: *See—*
Toki, Hirotaka; Yamamoto, Hiranaga; Wakuda, Osamu; and Nagao, Hiroyuki, 5,333,849, Cl. 271-9.000.
Waldorf Corporation: *See—*
Roccaforte, Harry I., 5,333,781, Cl. 229-229.000.
Waldron, Theodore C., III: *See—*
Christopher, Kenneth W., Jr.; Roarabaugh, Virginia M.; and Waldron, Theodore C., III, 5,335,332, Cl. 364-400.000.
Walendy, Hans: *See—*
Kittel, Christoph; Walendy, Hans; Burak, Gerhard; and Hoffmann, Manfred, 5,334,338, Cl. 264-46.400.
Walker, Anthony D.: *See—*
Smith, Jay L.; Trubey, Bradley S.; and Walker, Anthony D., 5,335,227, Cl. 370-95.100.
Walker, Kenneth A.: *See—*
Martin, David C.; Moore, Jeffrey S.; Markoski, Larry J.; and Walker, Kenneth A., 5,334,752, Cl. 560-360.000.
Walker, Richard E., to Compaq Computer Corporation. Computer system with power-down mode for monitor. 5,335,168, Cl. 364-707.000.
Wallach, Donald P., deceased: *See—*
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; and Wallach, Donald P., deceased, 5,334,712, Cl. 540-112.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Wallach, Vera M., Legal Representative: *See—*
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; and Wallach, Donald P., deceased, 5,334,712, Cl. 540-112.000.

Walles, Wilhelm E. Oil with bactericidal and virucidal properties. 5,334,615, Cl. 514-467.000.

Wallfahrer, Uwe H.: *See—*
Marolewski, Theodore A.; Burkhardt, Eric W.; and Wallfahrer, Uwe H., 5,334,682, Cl. 526-273.000.

Wallis, Graham P., to British Aerospace Public Limited Co. Towed aerodynamic bodies. 5,333,814, Cl. 244-1.0TD.

Walsh, Thomas F.: *See—*
Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., 5,334,598, Cl. 514-303.000.

Walsh, William C.: *See—*
James, Lawrence E.; and Walsh, William C., 5,334,255, Cl. 134-38.000.

Walter, George E., Jr.: *See—*
Walter, James C.; Bruton, Billy R.; and Walter, George E., Jr., 5,333,684, Cl. 166-54.000.

Walter, Hans-Michael: *See—*
Blumenstein, Uwe; Klaerner, Peter; Schuch, Horst; and Walter, Hans-Michael, 5,334,658, Cl. 525-71.000.

Walter, James C.; Bruton, Billy R.; and Walter, George E., Jr., to Walter, James C. Downhole gas separator. 5,333,684, Cl. 166-54.000.

Walter, Karl-Heinz, to Lehnhoff Hartstahl GmbH & Co. Quick change device. 5,333,695, Cl. 172-272.000.

Walther, Terry R.; and Schaefer, Scott E., to Micron Technology, Inc. Method for providing synchronous refresh cycles in self-refreshing interruptable DRAMs. 5,335,201, Cl. 365-222.000.

Walz, Gerd: *See—*
Schwab, Michael; Frank, Udo; and Walz, Gerd, 5,334,651, Cl. 524-591.000.

Wandrey, Christian: *See—*
Kittelmann, Matthias; Ghisalba, Oreste; Klein, Teresa; Kragl, Udo; and Wandrey, Christian, 5,334,514, Cl. 435-84.000.

Wang, An, to Wang Laboratories, Inc. Keyboard with finger-actuable and stylus-actuable keys. 5,334,976, Cl. 341-22.000.

Wang, Bruce A.: *See—*
Wang, Scott G.; and Wang, Bruce A., 5,333,755, Cl. 222-1.000.

Wang, Fue-Jye. Variable speed mechanism. 5,334,105, Cl. 474-69.000.

Wang, King-Yuan. A spray gun including a governing ring assembly to provide several different water flow patterns. 5,333,792, Cl. 239-440.000.

Wang Laboratories, Inc.: *See—*
Wang, An, 5,334,976, Cl. 341-22.000.

Wang, Li; Barder, Timothy J.; Kaiser, Mark; Johnson, Russell W.; and Arena, Blaise J., to Allied-Signal Inc. Process for the manufacture of 1,1,1,2-tetrafluoroethane. 5,334,785, Cl. 570-165.000.

Wang, Scott G.; and Wang, Bruce A. Method of manufacture of a static mixing dispenser. 5,333,755, Cl. 222-1.000.

Wang, Wen T. Detachable mounting for sunshade and sunglasses on vision correcting eyeglasses. 5,335,025, Cl. 351-47.000.

Ward, James W.: *See—*
Kubena, Randy L.; Stratton, Frederic P.; Atkinson, Gary M.; McNulty, Hugh, Jr.; and Ward, James W., 5,335,243, Cl. 372-99.000.

Ward, John W.: *See—*
Simpson, Howard D.; Schwedock, Marvin J.; and Ward, John W., 5,334,307, Cl. 208-254.00H.

Warner-Lambert Company: *See—*
Ferraro, Frank A., 5,333,383, Cl. 30-87.000.

Warnke, Pierre: *See—*
Hagnere, Raymon; and Warnke, Pierre, 5,333,713, Cl. 192-89.220.

Warren, John L.; and Brandt, James E., to United States of America, Energy. Lightweight extendable and retractable pole. 5,333,422, Cl. 52-115.000.

Warren, John P.: *See—*
Mennitt, Timothy J.; Warren, John P.; and Sloan, James W., 5,334,857, Cl. 257-48.000.

Washeleski, John; Wheeler, Mark R.; and Boisvert, Mario, to Nartron Corporation. Power window or panel controller. 5,334,876, Cl. 307-10.100.

Washington, Samuel J.; and Grant, Tony F., to Dow Chemical Company, The. Processes for making ethanolamines. 5,334,763, Cl. 564-475.000.

Wasowski, Stanley F., Jr. Spinnaker gybing apparatus. 5,333,566, Cl. 114-102.000.

Watabe, Masayuki; Maruyama, Yoshinori; and Ono, Takashi, to Nippon Conlux Co., Ltd. Bill discriminating apparatus. 5,333,714, Cl. 194-206.000.

Watanabe, Hiroyuki: *See—*
Fujita, Yoshihiro; Morigaki, Masakazu; Kawamoto, Hiroshi; Nakamura, Shigeru; Yagihara, Morio; and Watanabe, Hiroyuki, 5,334,493, Cl. 430-463.000.

Watanabe, Masakazu: *See—*
Iio, Satoshi; Watanabe, Masakazu; Ito, Toshimichi; and Tsubokawa, Masaya, 5,334,453, Cl. 428-408.000.

Watanabe, Masao: *See—*
Yagi, Shigeru; Higashi, Taketoshi; Fukuda, Yuzuru; Ono, Masato; Yokoi, Masaki; and Watanabe, Masao, 5,334,476, Cl. 430-126.000.

Watanabe, Masashi: *See—*
Matsuo, Akinori; Watanabe, Masashi; Fujimoto, Michio; Wada, Masashi; Nagayama, Yoshiharu; and Naito, Kazuo, 5,335,204, Cl. 365-230.010.

Watanabe, Masayuki: *See—*
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji; Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.

Watanabe, Shinya: *See—*
Okada, Satoshi; Sawada, Kozo; Kuroda, Akio; Watanabe, Shinya; and Tanaka, Hirokazu, 5,334,716, Cl. 546-112.000.

Watanabe, Takashi: *See—*
Tsurusaki, Masayuki; and Watanabe, Takashi, 5,335,270, Cl. 379-253.000.

Watanabe, Yasutaka, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Shoulder anchor weight adjusting apparatus. 5,333,905, Cl. 280-801.200.

Watanabe, Yoji: *See—*
Itoh, Junichi; Dai, Masahiro; Toizumi, Yasushi; Mizokami, Kazunori; Watanabe, Yoji; and Midorikawa, Ayumu, 5,335,029, Cl. 354-106.000.

Watanabe, Yutaka: *See—*
Hayashida, Masami; Fukuda, Yasuaki; and Watanabe, Yutaka, 5,335,259, Cl. 378-161.000.

Watarai, Shigeaki: *See—*
Ishikawa, Mitsuo; and Watarai, Shigeaki, 5,334,430, Cl. 428-40.000.

Waterman, Timothy J.; and Otts, Paul J., to Carrier Corporation. Paired retaining clips for gas furnace filter wire. 5,334,231, Cl. 55-493.000.

Watkins, Bruce E.: *See—*
Stanker, Larry H.; Vanderlaan, Martin; and Watkins, Bruce E., 5,334,528, Cl. 435-240.270.

Watkins, Bruce J., to Dril-Quip, Inc. Connector. 5,333,911, Cl. 285-18.000.

Watson, Charles: *See—*
Case, Charles; Watson, Charles; and Lawrence, Richard, 5,334,833, Cl. 250-270.000.

Watts, Andrew J.: *See—*
Cronin, John E.; Farrar, Paul A., Sr.; Kaanta, Carter W.; Ryan, James G.; and Watts, Andrew J., 5,334,467, Cl. 430-5.000.

Watts, Josef S.: *See—*
Abadeer, Wagdi W.; El-Kareh, Badih; Ellis, Wayne F.; Galbi, Duane E.; Hiltebeitel, Nathan R.; Tonti, William R.; and Watts, Josef S., 5,334,880, Cl. 307-219.000.

Waugh, Arthur: *See—*
Orbeck, Gary A.; and Waugh, Arthur, 5,334,014, Cl. 432-121.000.

Wear Guard Corp.: *See—*
MacNaughton, George; Forti, Steven; Whittington, Douglas; and Ackley, Kevin, 5,334,815, Cl. 219-121.700.

Webb, Jimmy L.: *See—*
Jordan, Therese C.; and Webb, Jimmy L., 5,334,672, Cl. 525-446.000.

Webb, Louis H., III: *See—*
Pearl, David S., II; Webb, Louis H., III; Mohammed, Shaheed; and Bukur, Dragan, 5,333,467, Cl. 62-77.000.

Webb, Michael C., to Total Containment, Inc. Secondary containment system using flexible piping. 5,333,490, Cl. 73-40.50R.

Webb, Winston S. Shellfish cracker, shucker. 5,334,080, Cl. 452-16.000.

Webber, James L.: *See—*
Landis, Paul M.; Webber, James L.; and Worrell, Barry C., 5,333,897, Cl. 280-728.00A.

Weber, Reinhold: *See—*
Voelker, Heinz; Alicke, Gerhard; Weilbacher, Manfred; Weilbacher, Manfred; Weber, Reinhold; and Schuch, Horst, 5,334,337, Cl. 264-45.300.

Weber S.r.l.: *See—*
DiSilvestro, Maurizio; and Giovannini, Flavio, 5,333,587, Cl. 123-456.000.

Weber, William F., to Alcatel Network Systems, Inc. EMI shield apparatus and methods. 5,335,147, Cl. 361-818.000.

Webster, Greg E.: *See—*
Graiff, Leonard B.; Ngan, Danny Y.; Visser, Benton E.; and Webster, Greg E., 5,334,308, Cl. 208-299.000.

Wecotec, Ltd.: *See—*
Weir, Henry J., 5,333,402, Cl. 38-143.000.

Weddendorf, Bruce, to United States of America, Administrator, National Aeronautics and Space Administration. Portable seat lift. 5,333,931, Cl. 297-334.000.

Wedge Innovations Incorporated: *See—*
Nagle, Robert E.; and Butler, Andrew G., 5,335,190, Cl. 364-571.010.

Weerts, Allen L.; and Ledin, Richard E. Soil rooster for cleaning hydrocarbon contaminated soil. 5,333,632, Cl. 134-105.000.

Wehberg, Josef, to Robert Bosch GmbH. Circuit arrangement for operating a multi-phase synchronous motor in a direct voltage network. 5,334,921, Cl. 318-721.000.

Wehrle, Gerhard; and Sonn, Michael, to Richard Hirschmann GmbH. Plug connector. 5,334,035, Cl. 439-252.000.

Weich, Herbert: *See—*
Tackney, Charles; Hoppe, Jurgen; Eichner, Wolfram; and Weich, Herbert, 5,334,532, Cl. 435-252.330.

Weier, Richard M.: *See—*
Khanna, Ish K.; Mueller, Richard A.; and Weier, Richard M., 5,334,717, Cl. 546-116.000.

Weigel, Leland O.: *See—*
Audia, James E.; Hirsch, Kenneth S.; Jones, Charles D.; Lawhorn, David E.; McQuaid, Loretta A.; and Weigel, Leland O., 5,334,767, Cl. 568-327.000.

Weil, Richard: *See—*
Good, Walter F.; Gur, David; Owen, James F.; Whiting, Bruce R.; Modney, David L.; and Weil, Richard, 5,334,851, Cl. 250-582.000.

Weilbacher, Manfred: *See—*
Voelker, Heinz; Alicke, Gerhard; Weilbacher, Manfred; Weilbacher, Manfred; Weber, Reinhold; and Schuch, Horst, 5,334,337, Cl. 264-45.300.
Voelker, Heinz; Alicke, Gerhard; Weilbacher, Manfred; Weilbacher, Manfred; Weber, Reinhold; and Schuch, Horst, 5,334,337, Cl. 264-45.300.

Weiman, Novia A.: *See—*
Rochat, Roxanna F.; Taylor, Joann M.; and Weiman, Novia A., 5,334,992, Cl. 345-22.000.

Weinmann, Hanns-Joachim: *See—*
Gries, Heinz; Raduchel, Bernd; Platzek, Johannes; Weinmann, Hanns-Joachim; Press, Wolf-Rudiger; and Speck, Ulrich, 5,334,371, Cl. 424-9.000.

Weir, Donald H., to Fox Pool Corporation. Add-on seat module for swimming pool. 5,333,322, Cl. 4-496.000.

Weir, Henry J., to Wecotec, Ltd. Sheet corner transfer system. 5,333,402, Cl. 38-143.000.

Weiss, Bruce W.: *See—*
Henszey, Richard R.; and Weiss, Bruce W., 5,333,648, Cl. 138-26.000.

Wellman, William E.; Yezrielev, Albert I.; and Kowalik, Ralph M., to Exxon Chemical Patents, Inc. Polyester-based coating compositions having high pigment-to-binder ratios. 5,334,652, Cl. 524-601.000.

Wellman, William E.: *See—*
Yezrielev, Albert I.; Wellman, William E.; Kowalik, Ralph M.; Knudsen, George A.; and Romanelli, Michael G., 5,334,671, Cl. 525-443.000.

Wells, Benjamin A.; Smith, Frank D.; Feldstein, Michael A.; and Hutner, Greg, to Reflection Technology. Dual image head-mounted display. 5,334,991, Cl. 345-8.000.

Wenderoth, Bernd; Brand, Siegbert; Schuetz, Franz; Kuekenhoehner, Thomas; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, to BASF Aktiengesellschaft. Oxime ether derivatives, their preparation and fungicides containing these derivatives. 5,334,577, Cl. 504-130.000.

Wennberg, Timothy J.: *See—*
Mullis, Kary B.; Johnson, Larry; Leath, Richard A.; Wennberg, Timothy J.; Mezei, Louis M.; and Widunas, Joseph T., 5,333,675, Cl. 165-12.000.

Went, Werner: *See—*
Wernicke, Ubbo; and Went, Werner, 5,334,492, Cl. 430-398.000.

Wentland, Mark P., to Sterling Winthrop Inc. Pyrazoloquinolones as anticancer agents. 5,334,595, Cl. 514-293.000.

Werling, Joseph H.: *See—*
Brady, Robert T.; and Werling, Joseph H., 5,333,574, Cl. 122-367.100.

Werner, Ronald H.: *See—*
Frisbee, Claude M.; and Werner, Ronald H., 5,333,697, Cl. 172-821.000.

Wernicke, Ubbo; and Went, Werner, to Agfa Gevaert Aktiengesellschaft. Photographic processing method and apparatus. 5,334,492, Cl. 430-398.000.

Werrbach, Donn, to Aphex Systems, Ltd. Logic enhanced noise gate. 5,334,947, Cl. 330-149.000.

Wertman, Richard C.: *See—*
Karsten, Kenneth S.; and Wertman, Richard C., 5,334,910, Cl. 315-5.350.

Wesbar Corporation: *See—*
Hanson, Brian A.; and Paffrath, Edgar C., 5,335,155, Cl. 362-267.000.

Wessling, Francis C., to University of Alabama in Huntsville, The. Inertia and inductance switches. 5,334,963, Cl. 335-2.000.

Westinghouse Air Brake Company: *See—*
Hart, James E.; and Carroll, John B., 5,333,941, Cl. 303-40.000.

Westinghouse Electric Corp.: *See—*
Clark, William C., Jr.; Jacko, Richard J.; and Burtner, Lee W., 5,333,502, Cl. 73-623.000.
Decker, Martin J., 5,334,980, Cl. 342-25.000.
Jaenke, Paul E.; and Gingerich, Larry T., 5,335,209, Cl. 367-155.000.
Krafcsik, David M.; and Chan, David W., 5,334,959, Cl. 333-164.000.
Silvestri, George J., Jr., 5,333,457, Cl. 60-646.000.

Wexler, Mark H.: *See—*
Kaliaz, John B.; and Wexler, Mark H., 5,333,817, Cl. 244-97.000.

Whang, Lipson: *See—*
Nguyen, Uoc H.; Whang, Lipson; and Apostol, George, 5,335,326, Cl. 395-250.000.

Wheeler, Mark R.: *See—*
Washeleski, John; Wheeler, Mark R.; and Boisvert, Mario, 5,334,876, Cl. 307-10.100.

Whelen Technologies, Inc.: *See—*
Lyons, Harold W., 5,335,157, Cl. 362-297.000.

Wherlock, Terry. Big game fish training and exercise device and method. 5,334,027, Cl. 434-247.000.

Whitaker Corporation, The: *See—*
Bowers, Michael D.; Klinger, Robert E.; Thumma, Mark R.; and Wike, David P., 5,334,048, Cl. 439-567.000.
Camsell, Edwin; Schuppert, Leo V., Jr.; and Stakem, Kerry J., 5,333,373, Cl. 29-739.000.
Hotea, Gheorghe, 5,334,058, Cl. 439-839.000.
Lawruk, Stephen P., 5,333,376, Cl. 29-861.000.
Rowlette, John R., 5,334,330, Cl. 252-512.000.
Strong, Michael D., 5,335,340, Cl. 395-500.000.

White Consolidated Industries, Inc.: *See—*
Anastase, Constantin; Daily, Jay H.; and Nehren, William C., 5,333,338, Cl. 8-158.000.
Kirkland, Daniel R.; and Sublette, Mark A., 5,333,631, Cl. 134-104.100.

White, Jack D., Jr., to Dayco Products, Inc. Belt construction, the combination of the belt construction and a pulley and methods of making the same. 5,334,107, Cl. 474-238.000.

White, Jacob K.: *See—*
Kundert, Kenneth S.; and White, Jacob K., 5,335,191, Cl. 364-578.000.

Whiteside, Ross C., Jr.: *See—*
Anderson, Kenneth W.; Haynes, Deborah I.; and Whiteside, Ross C., Jr., 5,334,676, Cl. 525-524.000.

Whitfield, Raymond E. Telescoping rid for protecting the side body structure of a vehicle. 5,333,923, Cl. 293-128.000.

Whiting, Bruce R.: *See—*
Good, Walter F.; Gur, David; Owen, James F.; Whiting, Bruce R.; Modney, David L.; and Weil, Richard, 5,334,851, Cl. 250-582.000.

Whitlock, Robert R., to United States of America, Navy. Submicrosecond, synchronizable x-ray source. 5,335,258, Cl. 378-122.000.

Whitney, Lowell T.: *See—*
Lane, Wallace E.; Lane, Michael L.; Whitney, Lowell T.; and Gerstenkorn, Michael D., 5,333,763, Cl. 222-386.500.

Whittington, Douglas: *See—*
MacNaughton, George; Forti, Steven; Whittington, Douglas; and Ackley, Kevin, 5,334,815, Cl. 219-121.700.

Widenhorn, Leonhard, to Asea Brown Boveri Ltd. Multiphase switching system and generator arrangement having such a switching system. 5,334,927, Cl. 322-100.000.

Widunas, Joseph T.: *See—*
Mullis, Kary B.; Johnson, Larry; Leath, Richard A.; Wennberg, Timothy J.; Mezei, Louis M.; and Widunas, Joseph T., 5,333,675, Cl. 165-12.000.

Wiedenmann, Hans-Martin: *See—*
Friese, Karl-Hermann; Gruenwald, Werner; Wiedenmann, Hans-Martin; and Hoetzel, Gerhard, 5,334,350, Cl. 422-98.000.

Wiedmann, Wolfgang: *See—*
Breyer, Karl-Hermann; Aubele, Eugen; Grupp, Gunter; Ebersbach, Peter; and Wiedmann, Wolfgang, 5,333,386, Cl. 33-1.00M.

Wiegand, Norbert: *See—*
Hass, Thomas; Wiegand, Norbert; and Arntz, Dietrich, 5,334,778, Cl. 568-862.000.

Wike, David P.: *See—*
Bowers, Michael D.; Klinger, Robert E.; Thumma, Mark R.; and Wike, David P., 5,334,048, Cl. 439-567.000.

Wike, John R. Method and apparatus for securing a draw band to a drum. 5,333,747, Cl. 220-320.000.

Wild, John J. Volumetric breast interogation device. 5,333,612, Cl. 128-660.900.

Wilkerson, Larry A.: *See—*
Kriener, Michael; Uhlenbrock, Johannes; Wilkerson, Larry A.; and Roslund, Richard N., Jr., 5,333,368, Cl. 297-301.000.

Wilkstrom, Jan O.: *See—*
Skold, Bror E.; Lindfors, Nils O.; and Wilkstrom, Jan O., 5,333,840, Cl. 266-47.000.

Willard, Frank G., to Cleaveland/Price Inc. Motor control system having improved dynamic braking. 5,334,919, Cl. 318-375.000.

Willbrant, Margaret B.: *See—*
Azibert, Henri V.; Willbrant, Margaret B.; and Attenasio, Ann T., 5,333,882, Cl. 277-1.000.

William, David L., Jr.: *See—*
Bagley, Scott W.; Chakravarty, Prasun K.; Chen, Anna; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Naylor, Elizabeth M.; Walsh, Thomas F.; and William, David L., Jr., 5,334,598, Cl. 514-303.000.

Wm. Wrigley Jr. Company: *See—*
Yatka, Robert J., 5,334,396, Cl. 426-3.000.

Williams, John R.: *See—*
France, Paul W.; Carter, Steven F.; and Williams, John R., 5,334,232, Cl. 65-388.000.

Williams Pump Co., The: *See—*
Williams, Richard L., 5,334,001, Cl. 417-360.000.

Williams, Randall W.: *See—*
Kohlmann, Michael J.; and Williams, Randall W., 5,333,660, Cl. 141-263.000.

Williams, Richard A., to Digital Equipment Corporation. Communications system with reliable collision detection method and apparatus. 5,335,226, Cl. 370-85.200.

Williams, Richard L., to Williams Pump Co., The. Mounting arrangement for a positive displacement slurry pump. 5,334,001, Cl. 417-360.000.

Williams, Theresa M.: *See—*
Baldwin, John J.; Shepard, Kenneth L.; Ponticello, Gerald S.; and Williams, Theresa M., 5,334,591, Cl. 514-215.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Williams, William A., Jr., to PPG Industries, Inc. Water dilutable chain belt lubricant for pressurizable thermoplastic containers. 5,334,322, Cl. 252-52.00A.

Williamson, Nicholas: *See*—
Jamison, Mark D.; Banks, Stewart; Williamson, Nicholas; and Roders, George W., 5,333,758, Cl. 222-101.000.

Wilmes, Manfred: *See*—
Conrad, Horst; Diekmann, Jorg; Wilmes, Manfred; and Hanning, Walter, 5,334,054, Cl. 439-716.000.

Wilson-Cook Medical Inc.: *See*—
Soehendra, Nib; and Grosse, Carsten, 5,334,208, Cl. 606-108.000

Wilson, David G.: *See*—
Doty, F. David; Spitzmesser, Jonathan B.; and Wilson, David G., 5,333,994, Cl. 415-202.000.

Wilson, Donald A., to Optronics, Ltd. Alignment system for golf ball driving and hitting mat. 5,333,875, Cl. 273-187.100.

Wilson, Lowell T.: *See*—
Ankenbruck, James B.; Antolin, Jose V.; Herbstler, Horst D.; Lund, Bruce D.; Vahcic, Anne K.; and Wilson, Lowell T., 5,333,387, Cl. 33-18.100.

Wilson, Robert D.: *See*—
Black, Donald L.; and Wilson, Robert D., 5,334,495, Cl. 430-567.000.

Wilson Sporting Goods Co.: *See*—
Shenoha, James L.; and Meyer, Dean E., 5,333,863, Cl. 273-80.200

Wilson, Stanley E.: *See*—
Gibler, Carma J.; and Wilson, Stanley E., 5,334,566, Cl. 502-113.000.

Wingen, Rainer: *See*—
Scherowsky, Gunter; Junghans, Claas; Kaltbeitzel, Anke; Wingen, Rainer; and Michalski, Britta, 5,334,328, Cl. 252-299.610.

Wingfield, William R.; Childs, Leslie A.; and Pilaczynski, Clarence L. Oven-conveyor cleaning apparatus and method. 5,333,724, Cl. 198-495.000.

Winston, Roland, to NiOptics Corporation. Nonimaging optical illumination system. 5,335,152, Cl. 362-217.000.

Winters, Richard M.: *See*—
Hart, Rickey D.; Winters, Richard M.; Rice, John T.; and Nicholson, James E., 5,334,198, Cl. 606-52.000.

Wintriss, George V.: *See*—
Arnold, Floyd L.; Bair, Carl J.; Kiraly, Christopher M.; Norgren, William P.; and Wintriss, George V., 5,333,874, Cl. 273-185.00B.

Wireless Security, Inc.: *See*—
Matchett, Noel D.; and Birch, J. Neil, 5,335,278, Cl. 380-23.000.

Wirt, David F.: *See*—
Bedingham, William; Dufresne, Joel R.; and Wirt, David F., 5,333,609, Cl. 128-632.000.

Wisconsin Alumni Research Foundation: *See*—
Lorenz, Robert D.; Hung, Kam T.; Lipo, Thomas A.; and Moreira, Julio C., 5,334,923, Cl. 318-805.000.

Wisecarver, Martin L.: *See*—
Levinson, Frank H.; and Wisecarver, Martin L., 5,334,832, Cl. 250-227.240.

Wishon, Thomas W., to Dynacraft Golf Products, Inc. Golf club head. 5,333,871, Cl. 273-169.000.

Witholt, Bernard; and Lageveen, Roland G., to Rijksuniversiteit te Groningen. Process for producing polyesters by fermentation: a process for producing optically active carboxylic acids and esters: articles of manufacture comprising polyester. 5,334,698, Cl. 528-354.000.

Witte, Bastian, to Volkswagen AG. Side airbag safety arrangement for vehicle occupants. 5,333,899, Cl. 280-730.00A.

Wittel, George: *See*—
Appolonia, Jack; Muscato, Robert; and Wittel, George, 5,334,406, Cl. 426-520.000.

Witzel, Tom: *See*—
Brudermueller, Martin; Witzel, Tom; and Merger, Franz, 5,334,745, Cl. 558-394.000.

Wladar, Helmut: *See*—
Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; and Wuerthner, Hubert, 5,333,891, Cl. 280-625.000.
Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; Wuerthner, Hubert; and Steiner, Gottfried, 5,333,892, Cl. 280-625.000.

Wognild, Svein: *See*—
Br nd Dag A.; Bonvik, Knut; and Wognild, Svein, 5,333,497, Cl. 73-219.000.

Wokas, William J.: *See*—
Ream, Ronald L.; Corriveau, Christine L.; and Wokas, William J., 5,334,397, Cl. 426-5.000.

Wolber, Jorg: *See*—
Mohlmann, Ulrich; Onken, Gerd; Kunze, Dieter; and Wolber, Jorg, 5,335,018, Cl. 348-536.000.

Wolf, Dieter: *See*—
Korsmeier, Wilhelm; Wolf, Dieter; Hoppe, Manfred; and Schollmeyer, Holns J., 5,333,591, Cl. 123-527.000.

Wolfe, Lee M.: *See*—
Dvorak, George J., Jr.; and Wolfe, Lee M., 5,334,043, Cl. 439-482.000.

Wolfe, Patricia K., to R. J. Reynolds Tobacco Company. Packaged cigarettes. 5,333,729, Cl. 206-268.000.

Womack, Ronald W.: *See*—
O'Brien, Patrick J.; and Womack, Ronald W., 5,333,728, Cl. 206-232.000.

Wong, Connie M.: *See*—
Love, David G.; Moresco, Larry L.; Chou, William T.; Horine, David A.; Wong, Connie M.; and Beilin, Solomon I., 5,334,804, Cl. 174-267.000.

Wong, Hon-Sum P., to International Business Machines Corporation. Sidewall charge-coupled device with trench isolation. 5,334,868, Cl. 257-244.000.

Wood, Charles H.: *See*—
Ury, Michael G.; and Wood, Charles H., 5,334,913, Cl. 315-248.000.

Wood, Paul R.; and Corner, Leigh A., to Commonwealth Scientific & Industrial Research Organisation. In vitro assay for detecting cell-mediated immune responses. 5,334,504, Cl. 435-7.320.

Wood, Tracy G.: *See*—
Shih, Lionel C.; and Wood, Tracy G., 5,335,119, Cl. 360-53.000.

Woods, John E.: *See*—
Woods, Susan H.; and Woods, John E., 5,334,530, Cl. 435-240.480.

Woods, Susan H.; and Woods, John E. Method and media for the somatic embryogenesis and regeneration of bamboo. 5,334,530, Cl. 435-240.480.

Woollard, Howard W.; and Hart, David C., to Woollard, Howard W. Tennis ball retriever and racquet. 5,333,854, Cl. 273-73.00R.

World Class Packaging Systems, Inc.: *See*—
Gorlich, Michael P., 5,334,405, Cl. 426-396.000.

Worrell, Barry C.: *See*—
Landis, Paul M.; Webber, James L.; and Worrell, Barry C., 5,333,897, Cl. 280-728.00A.

Wu, Margaret M.: *See*—
Ashjian, Henry; Miller, Matthew P.; Shen, Dong-Ming; and Wu, Margaret M., 5,334,228, Cl. 44-347.000.

Wu, Shenshen, to Acushnet Co. Polyurethane golf ball. 5,334,673, Cl. 273-235.00R.

Wuchinich, David G., to Valleylab, Inc. Endoscopic electrosurgical apparatus. 5,334,183, Cl. 606-46.000.

Wuerthner, Hubert: *See*—
Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; and Wuerthner, Hubert, 5,333,891, Cl. 280-625.000.
Stritzl, Karl; Wladar, Helmut; Janisch, Andreas; Wuerthner, Hubert; and Steiner, Gottfried, 5,333,892, Cl. 280-625.000.

Wusirika, Raja R.: *See*—
Beauseigneur, Patricia A.; Lachman, Irwin M.; Patil, Mallanagouda D.; Swaroop, Srinivas H.; and Wusirika, Raja R., 5,334,570, Cl. 502-304.000.

Wyant, Reece E.: *See*—
Nahm, James J. W.; and Wyant, Reece E., 5,333,690, Cl. 166-291.000.

Wylie, David. Replaceable cover for fishing lures. 5,333,406, Cl. 43-42.090.

Xerox Corporation: *See*—
Chen, Allan K., 5,334,479, Cl. 430-137.000.
Desilets, Denis; Martin, Trevor I.; Mayo, James D.; Bluhm, Terry L.; and Hsiao, Cheng-Kuo, 5,334,478, Cl. 430-135.000.
Fan, Zhigang, 5,335,088, Cl. 358-429.000.
Harris, Ellis D., 5,335,108, Cl. 359-209.000.
Hsieh, Bing R., 5,334,699, Cl. 528-373.000.
Kluger, Jacob N.; Martin, Michael J.; Moore, Steven R.; and Sokac, Russell J., 5,335,043, Cl. 355-206.000.
Milillo, William D.; and Miller, Gregory P., 5,333,852, Cl. 271-171.000.
Nguyen, Uoc H.; Whang, Lipson; and Apostol, George, 5,335,326, Cl. 395-250.000.
Osbourne, William G.; and Sanchez-Banos, Julio A., 5,335,050, Cl. 355-221.000.
Pietrzykowski, Stanley J., Jr.; Antonelli, Alexander A.; Darcy, John J., III; Petralia, Richard C.; Petrcpoulos, Mark C.; Schmitt, Peter J.; Shane, Patrick R.; Swain, Eugene A.; Thomas, Mark S.; and Smith, Alan D., 5,334,246, Cl. 118-69.000.
Rubscha, Robert F., 5,333,848, Cl. 271-3.100.
Sacripante, Guerino G.; Kmiecik-Lawrynowicz, Grazyna; and Ong, Beng S., 5,334,471, Cl. 430-106.600.

Xie, Zhenhua; and Rodriguez, Michael A., to R. R. Donnelley & Sons Company. Electronic high-fidelity screenless conversion system and method using a separable filter. 5,335,089, Cl. 358-456.000.

Xu, XiXiang: *See*—
Guha, Subhendu; Yang, Chi C.; and Xu, XiXiang, 5,334,423, Cl. 427-575.000.

Yachi, Shunichiro: *See*—
Ootomo, Hideo; Takeda, Hiroshi; and Yachi, Shunichiro, 5,333,666, Cl. 164-45.000.

Yagami, Nobuo: *See*—
Yip, Kee Keng; Shigenobu, Hirofumi; Kato, Kyoji; Sato, Takuya; and Yagami, Nobuo, 5,333,957, Cl. 384-484.000.

Yagi, Masaaki: *See*—
Sawa, Takao; and Yagi, Masaaki, 5,334,262, Cl. 148-121.000.

Yagi, Shigeru; Higashi, Taketoshi; Fukuda, Yuzuru; Ono, Masato; Yokoi, Masaki; and Watanabe, Masao, to Fuji Xerox Co., Ltd. Electrophotographic process for simultaneously transferring and fixing an image. 5,334,476, Cl. 430-126.000.

Yagi, Takayuki: *See*—
Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, 5,334,835, Cl. 250-306.000.

Yagi, Toshihiko: *See*—
Ueda, Eiichi; Fukazawa, Fumie; and Yagi, Toshihiko, 5,334,494, Cl. 430-533.000.

Yagihara, Morio: *See*—
Fujita, Yoshihiro; Morigaki, Masakazu; Kawamoto, Hiroshi; Nakamura, Shigeru; Yagihara, Morio; and Watanabe, Hiroyuki, 5,334,493, Cl. 430-463.000.

Yagishita, Shigelu, to Nippon Zeon Co., Ltd. Vulcanizable elastomer composition comprising epoxy group-containing elastomer, organic compound having at least two -C(X)-NH-C(Y)-bonds (X=O or S, Y=O or S), quaternary ammonium or phosphonium salt, and optionally a urea or thiourea compound. 5,334,666, Cl. 525-327.300.

Yakurigaku Chuo Kenkyusho: *See*—
Takahashi, Hidehiko; Imada, Katsumi; and Motoshio, Akira, 5,334,518, Cl. 435-125.000.

Yamada, Hideaki; and Nagasawa, Toru, to Nitto Kagaku Kogyo Kabushiki Kaisha. Process for biological production of amides with *R. rhodochrous* J-1. 5,334,519, Cl. 435-129.000.

Yamada, Hideki: *See*—
Yamamoto, Shigeru; and Yamada, Hideki, 5,333,479, Cl. 172-3.000.

Yamada, Hirokazu; Nakajima, Akio; and Tsuboi, Toshio, to Minolta Camera Kabushiki Kaisha. Image reading apparatus having detachable optical system. 5,335,090, Cl. 358-473.000.

Yamada, Minoru: *See*—
Fujii, Koji; Haji, Nobuyuki; and Yamada, Minoru, 5,335,309, Cl. 392-421.000.

Yamada, Osamu: *See*—
Kageyama, Hitoshi; Yamada, Osamu; and Mori, Shinichi, 5,335,095, Cl. 358-500.000.

Yamada, Takeo; Kazama, Akira; and Oshige, Takahiko, to NKK Corporation. Measuring method for ellipsometric parameter and ellipsometer. 5,335,066, Cl. 356-364.000.

Yamada, Toshihisa; Miyamoto, Toshiharu; Hayashi, Kazuo; Takayama, Ryoichi; Kobayashi, Shinji; and Ohmura, Keizi, to Hitachi, Ltd. Vehicle and method of producing the same. 5,333,554, Cl. 105-397.000.

Yamada, Yasuo, to Sanden Corp. Adsorption cooling system. 5,333,471, Cl. 62-476.000.

Yamada, Yoshiko: *See*—
Hara, Seinosuke; Yamada, Yoshiko; and Nakamura, Makoto, 5,333,579, Cl. 123-90.170.

Yamaguchi, Hirohisa; and Morioka, Yasuji, to TEAC Corporation. Multiple display presentation system capable of sequencing prerecorded scenes for joint reproduction. 5,335,081, Cl. 358-342.000.

Yamaguchi, Hiroshi; Noguchi, Minori; Kohno, Makiko; and Nakata, Toshihiko, to Hitachi, Ltd. Method and apparatus for processing a minute portion of a specimen. 5,333,495, Cl. 73-105.000.

Yamaguchi, Hiroshi: *See*—
Okamoto, Shigetomi; Miwa, Masahiko; Sekine, Takayuki; and Yamaguchi, Hiroshi, 5,334,442, Cl. 428-246.000.

Yamaguchi, Koshiro; Nagao, Yoshiaki, deceased; and Nagao, Sumiko, Administrator, to Brother Kogyo Kabushiki Kaisha. Printing device including a cassette accommodation chamber for accommodating cassettes of different thicknesses. 5,333,959, Cl. 400-208.000.

Yamaguchi, Masayoshi: *See*—
Nagahata, Takaya; Shirasaki, Toshiyuki; Fukumoto, Hiroshi; Kishimoto, Tokihiko; Yamaguchi, Masayoshi; Matsumoto, Yoshinori; Matsumoto, Hisato; Ishizaki, Yoshihiro; and Kishimoto, Yoshinobu, 5,335,002, Cl. 346-76.0PH.

Yamaguchi, Takeshi: *See*—
Matoba, Hirotsugu; Nomura, Masaru; and Yamaguchi, Takeshi, 5,335,214, Cl. 369-44.280.

Yamaichi Electronics Co., Ltd.: *See*—
Matsuoka, Noriyuki, 5,334,036, Cl. 439-266.000.

Yamakawa, Seishiro: *See*—
Komori, Kiyotaka; Yamakawa, Seishiro; Yamamoto, Shigeru; Naka, Jun; and Kokubo, Tadashi, 5,334,645, Cl. 524-494.000.

Yamama, Shinya: *See*—
Mishina, Haruo; and Yamama, Shinya, 5,333,774, Cl. 228-46.000.

Yamamoto Chemicals, Incorporated: *See*—
Oguchi, Takahisa; Sugimoto, Kenichi; Aihara, Shin; Itoh, Hisato; Matsumoto, Mansuke; Masaoka, Toshihiro; and Nakamura, Masakazu, 5,334,714, Cl. 540-143.000.

Yamamoto, Hiranaga: *See*—
Toki, Hirotaka; Yamamoto, Hiranaga; Wakuda, Osamu; and Nagao, Hiroyuki, 5,333,849, Cl. 271-9.000.

Yamamoto, Kazuo: *See*—
Kitamura, Koichi; Mimura, Hidenori; Yamamoto, Kazuo; Ohta, Yasumitsu; Sai, Kazuyoshi; and Nagatake, Youichi, 5,335,092, Cl. 358-482.000.

Yamamoto, Keisuke: *See*—
Kaneko, Norio; Shinsho, Katsuhiko; and Yamamoto, Keisuke, 5,335,197, Cl. 365-153.000.
Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, 5,334,835, Cl. 250-306.000.

Yamamoto, Koichi: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Sakai, Kenji, 5,334,460, Cl. 428-552.000.

Yamamoto, Michio: *See*—
Komatsu, Masashi; Yamamoto, Michio; Ishino, Masaru; and Suzukamo, Gohfu, 5,334,789, Cl. 570-203.000.

Yamamoto, Mitsunori: *See*—
Fukuyama, Hiroya; Kitagawa, Hisao; Yamamoto, Mitsunori; and Kashima, Shingo, 5,334,830, Cl. 250-216.000.

Yamamoto, Naoki; Yanagase, Akira; Nakata, Akira; Koshirai, Atsunori; and Yanai, Toshimi, to Matsubishi Rayon Co., Ltd. Polyester resin compositions. 5,334,656, Cl. 525-63.000.

Yamamoto, Satoshi: *See*—
Tajima, Osamu; Sumi, Shingo; Shindo, Koji; Yamamoto, Satoshi; and Yoneda, Fumiiki, 5,334,463, Cl. 429-9.000.

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Komori, Kiyotaka; Yamakawa, Seishiro; Yamamoto, Shigeru; Naka, Jun; and Kokubo, Tadashi, 5,334,645, Cl. 524-494.000.

Yamamoto, Shinji: *See*—
Saito, Shinkichi; Asabuki, Hideyo; Onozato, Atsushi; Nishimura, Toshinori; Kawada, Kazuo; and Yamamoto, Shinji, 5,333,860, Cl. 273-77.00A.

Yamamoto, Takahiko: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,334,252, Cl. 118-726.000.

Yamamoto, Takashi: *See*—
Kobayashi, Nobuki; Shiraishi, Yoku; Yamamoto, Takashi; and Shin, Masaaki, 5,334,473, Cl. 430-109.000.

Yamamoto, Takushi; Hara, Hiroari; Maeda, Nobuhiro; and Nakamura, Morio, to Sumitomo Seika Chemicals Co., Ltd. Method for production of water-soluble cationic polymer. 5,334,679, Cl. 526-200.000.

Yamamoto, Tessei: *See*—
Sekiyama, Yasushi; Mizukami, Yuichi; and Yamamoto, Tessei, 5,334,373, Cl. 424-40.000.

Yamamoto, Toshiyuki: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, 5,334,628, Cl. 514-311.000.

Yamamoto, Tsuneyoshi: *See*—
Minami, Hiroshi; Nakaoka, Yoshihiko; and Yamamoto, Tsuneyoshi, 5,334,419, Cl. 427-386.000.

Yamamoto, Tsutomu; Okada, Minoru; Ishigami, Takakazu; Motoki, Nobuyuki; Fuse, Eiichi; and Hayashi, Masaaki, to Olympus Optical Co., Ltd. Endoscope holding apparatus for inspecting the interiors of a reciprocating engine and rotary engine having ignition plug holes, endoscope apparatus including the endoscope holding apparatus and inspecting method. 5,335,061, Cl. 356-241.000.

Yamamoto, Yoko: *See*—
Usui, Naoki; Yamamoto, Yoko; and Nakamatu, Tuyoshi, 5,334,510, Cl. 435-66.000.

Yamamoto, Yoshihisa: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,334,114, Cl. 475-119.000.

Yamamoto, Yuichi; and Tatsu, Haruyoshi, to Nippon Mektron, Limited. Vulcanizable, fluorine-containing elastomer composition. 5,334,667, Cl. 525-370.000.

Yamamoto, Yuichi: *See*—
Okonogi, Tsuneo; Makabe, Osamu; Yamamoto, Yuichi; Itoh, Osamu; Tsuruoka, Tsutomu; Usui, Takayuki; Shibahara, Seiji; Nagaoka, Kozo; Inouye, Shigeharu; Okada, Nobuko; and Nishimura, Susumu, 5,334,723, Cl. 546-298.000.

Yamamoto, Yuji, to Sanyo Electric Co., Ltd. Sound and image reproduction system. 5,335,073, Cl. 348-738.000.

Yamamoto, Yuuri: *See*—
Onishi, Hiroshi; Matsuoka, Akihiko; Misaizu, Kouei; and Yamamoto, Yuuri, 5,335,251, Cl. 375-100.000.

Yamamura, Ken; Ueda, Naoto; Michii, Kazunari; Fujimoto, Hitoshi; Tsumura, Kiyoaki; Sasaki, Hitoshi; and Miyamoto, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device and method of producing the same. 5,334,803, Cl. 174-52.400.

Yamanaka, Takeshi: *See*—
Ando, Masahiko; Yamanaka, Takeshi; Moroishi, Yutaka; Tokunaga, Yasuyuki; and Kitamura, Yoshinao, 5,334,686, Cl. 526-307.700.
Kitamura, Yoshinao; Yamashita, Shinkiti; Tokunaga, Yasuyuki; Ando, Masahiko; and Yamanaka, Takeshi, 5,334,447, Cl. 428-317.300.

Yamane, Mitsuo: *See*—
Kawaguchi, Takashi; and Yamane, Mitsuo, 5,334,439, Cl. 428-212.000.

Yamanoi, Yoshiaki. Sewing method and apparatus. 5,333,563, Cl. 112-262.300.

Yamanouchi, Haruhiko: *See*—
Kawai, Tohru; Tamura, Masahisa; Suzuki, Ryuji; and Yamanouchi, Haruhiko, 5,335,115, Cl. 359-696.000.

Yamasa Shoyu Kabushiki Kaisha: *See*—
Imaizumi, Masahiro; and Sakata, Shinji, 5,334,593, Cl. 514-274.000.

Yamashita, Akio: *See*—
Tsunoo, Hajime; Kino, Kousuke; and Yamashita, Akio, 5,334,704, Cl. 530-371.000.

Yamashita, Junichi; Soneda, Hideo; and Sugawara, Satoshi, to Hitachi, Ltd. Method and apparatus for displaying three dimensional physical quantity. 5,335,317, Cl. 395-119.000.

Yamashita, Shinichi; Ikeda, Shingo; and Gohda, Makoto. Time base correcting device. 5,335,077, Cl. 358-320.000.

Yamashita, Shinkiti: *See*—
Kitamura, Yoshinao; Yamashita, Shinkiti; Tokunaga, Yasuyuki; Ando, Masahiko; and Yamanaka, Takeshi, 5,334,447, Cl. 428-317.300.

Yamashita, Takuo: *See*—
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsu-

VOL 1165 ISS 1 AG 2 1994 UMI

shi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.
Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; Yuasa, Hitoshi; and Otsuki, Yutaka, to Nippon Oil Co., Ltd. Method for producing color filter. 5,334,468, Cl. 430-7.000.
Yamatake-Honeywell Co., Ltd.: *See*—
Kon, Akihiko, 5,333,953, Cl. 374-109.000.
Yamazaki, Koichi: *See*—
Onodera, Akira; and Yamazaki, Koichi, 5,334,930, Cl. 324-103.00P.
Yanagase, Akira: *See*—
Yamamoto, Naoki; Yanagase, Akira; Nakata, Akira; Koshirai, Atsunori; and Yanai, Toshimi, 5,334,656, Cl. 525-63.000.
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, to EMC Corporation. Reconfigurable, multi-function data storage system controller selectively operable as an input channel adapter and a data storage unit adapter. 5,335,352, Cl. 395-800.000.
Yanai, Toshimi: *See*—
Yamamoto, Naoki; Yanagase, Akira; Nakata, Akira; Koshirai, Atsunori; and Yanai, Toshimi, 5,334,656, Cl. 525-63.000.
Yang, Chi C.: *See*—
Guha, Subhendu; Yang, Chi C.; and Xu, XiXiang, 5,334,423, Cl. 427-575.000.
Yang, Kyung H. Display case for compact discs. 5,333,741, Cl. 211-40.000.
Yano, Kozo: *See*—
Kanemori, Yuzuru; Katayama, Mikio; Nakazawa, Kiyoshi; Kato, Hiroaki; Yano, Kozo; Kondo, Naofumi; Fujiki, Hiroshi; Fujihara, Toshiaki; Negoto, Hidenori; and Takahama, Manabu, 5,335,102, Cl. 359-59.000.
Yarborough, J. Michael: *See*—
Hobart, James L.; Yarborough, J. Michael; Dallarosa, Joseph; and Gardner, Phillip, 5,335,242, Cl. 372-95.000.
Yarbrough, Garrett S., to Cooper Industries, Inc. Ground fault circuit breaker test circuit for panelboards having minimum penetrations and testing circuit breakers without opening panelboard enclosure. 5,334,939, Cl. 324-424.000.
Yariv, Amnon: *See*—
Hofmeister, Rudolf; and Yariv, Amnon, 5,335,062, Cl. 356-347.000.
Yaskow, Jeffrey J.: *See*—
Boutet, John C.; Bubie, Walter C.; DeWolff, Darryl D.; and Yaskow, Jeffrey J., 5,334,852, Cl. 250-589.000.
Yasuda, Kouichi: *See*—
Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ono, Masumi; and Yasuda, Kouichi, 5,335,213, Cl. 369-121.000.
Yasuda, Masaru: *See*—
Okada, Masumi; Nagashima, Shingo; Nakamachi, Kazuo; Hattori, Kazuo; Takanashi, Yoji; Yasuda, Masaru; Ishikawa, Masami; and Murata, Yoshiyasu, 5,333,501, Cl. 73-592.000.
Yasuda, Shingo: *See*—
Ito, Yasuo; Kato, Hideo; Yasuda, Shingo; Kado, Noriyuki; Iwasaki, Nobuhiko; Nishino, Hiroyuki; and Takeshita, Makoto, 5,334,594, Cl. 514-291.000.
Yasuda, Shiro: *See*—
Kitagawa, Keiko; and Yasuda, Shiro, 5,334,022, Cl. 434-340.000.
Yasui, Juro; and Araki, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. X-ray mask and process comprising convex-concave alignment mark with alignment reflection film. 5,334,466, Cl. 430-5.000.
Yasunaga, Tadashi: *See*—
Ishida, Toshio; Nishikawa, Yasuo; and Yasunaga, Tadashi, 5,334,413, Cl. 427-130.000.
Yates, Tommy J.: *See*—
Jones, Lloyd G.; and Yates, Tommy J., 5,333,688, Cl. 166-278.000.
Jones, Lloyd G.; and Yates, Tommy J., 5,333,689, Cl. 166-278.000.
Yatka, Robert J., to Wm. Wrigley Jr. Company. Chewing gum sweetened with alitame and having a high level of lecithin. 5,334,396, Cl. 426-3.000.
Yaworski, John: *See*—
Sirianni, Richard; Minutillo, Thomas; Yaworski, John; and Maurer, Robert, 5,333,664, Cl. 160-23.100.
Yazaki Corporation: *See*—
Iino, Tadashi, 5,334,995, Cl. 345-7.000.
Kanda, Masahiro, 5,334,039, Cl. 439-271.000.
Kubota, Minoru, 5,335,153, Cl. 362-240.000.
Yazu, Shuji: *See*—
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,334,579, Cl. 505-474.000.
Ye, Qiuyi: *See*—
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Strand, David A.; Czubatyj, Wolodymyr; Gonzalez-Hernandez, Jesus; Fritzsche, Hellmut; Ye, Qiuyi; Kostylev, Sergey A.; and Chao, Benjamin S., 5,335,219, Cl. 369-288.000.
Ye, Xuanjing: *See*—
Muramatsu, Hiroshi; and Ye, Xuanjing, 5,334,303, Cl. 204-412.000.
Yee, David K.: *See*—
Richard, Michael A.; De Deken, Jacques; and Yee, David K., 5,334,790, Cl. 585-271.000.
Yeh, Nai J.: *See*—
Lin, Jyh-Kuang; and Yeh, Nai J., 5,334,543, Cl. 437-30.000.
Yezrielev, Albert I.; Wellman, William E.; Kowalik, Ralph M.; Knudsen, George A.; and Romanelli, Michael G., to Exxon Chemical Patents Inc. Phenol terminated diester compositions derived from dicarboxylic acids, polyester polymers or alkyd polymers, and curable compositions containing same. 5,334,671, Cl. 525-443.000.
Yezrielev, Albert I.: *See*—
Wellman, William E.; Yezrielev, Albert I.; and Kowalik, Ralph M., 5,334,652, Cl. 524-601.000.
Yip, Kee Keng; Shigenobu, Hirofumi; Kato, Kyoji; Sato, Takuya; and Yagami, Nobuo, to Minebea Kabushiki Kaisha. Ball bearing with seal. 5,333,957, Cl. 384-484.000.
Ylitalo, Howard. Manual sliding calculator. 5,334,026, Cl. 434-203.000.
Yoder, Max N., to United States of America, Navy. Semiconductor cold electron emission device. 5,334,853, Cl. 257-10.000.
Yokev, Hanoch; and Harel, Haim, to Nexus Telecommunication Systems, Ltd. Pager with reverse paging facility. 5,335,246, Cl. 375-1.000.
Yokohama Rubber Co., Ltd., The: *See*—
Saito, Shinkichi; Asabuki, Hideyo; Onozato, Atsushi; Nishimura, Toshinori; Kawada, Kazuo; and Yamamoto, Shinji, 5,333,860, Cl. 273-77.00A.
Teramoto, Mitsutake; Okumoto, Takaharu; Goto, Teruo; Saito, Shinkichi; and Asabuki, Hideyo, 5,333,859, Cl. 273-77.00A.
Teramoto, Mitsutake; Saito, Shinkichi; and Asabuki, Hideyo, 5,333,862, Cl. 273-80.00C.
Yokoi, Masaki: *See*—
Yagi, Shigeru; Higashi, Taketoshi; Fukuda, Yuzuru; Ono, Masato; Yokoi, Masaki; and Watanabe, Masao, 5,334,476, Cl. 430-126.000.
Yokoo, Mamoru: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, 5,334,628, Cl. 514-311.000.
Yokota, Takayoshi: *See*—
Takahashi, Kazunori; Hamada, Nobuhiro; Takato, Masao; Baba, Kenji; Morooka, Yasuo; Kawakami, Junzo; Yokota, Takayoshi; and Kiyokawa, Ryuji, 5,335,180, Cl. 364-436.000.
Yokota, Yuji, to Canon Denshi Kabushiki Kaisha. Disk drive. 5,335,124, Cl. 360-99.060.
Yokoya, Satoshi; and Takao, Nobutaka, to Sony Corporation. Power control circuit. 5,334,945, Cl. 330-129.000.
Yokoyama, Kazumasa: *See*—
Kobayashi, Kaoru; Kuwae, Shinobu; Ooya, Tomoshi; Fukutsuka, Hirotoshi; Sumi, Akinori; Ohtani, Wataru; Ohmura, Takao; and Yokoyama, Kazumasa, 5,334,512, Cl. 435-69.600.
Yokoyama, Osamu: *See*—
Kato, Kazutoshi; Katada, Toshiharu; and Yokoyama, Osamu, 5,335,026, Cl. 351-159.000.
Yoneda, Fumiiki: *See*—
Tajima, Osamu; Sumi, Shingo; Shindo, Koji; Yamamoto, Satoshi; and Yoneda, Fumiiki, 5,334,463, Cl. 429-9.000.
Yoneda, Noriyuki; Shiroto, Yoshimi; Hamato, Kazuhiko; Asaoka, Sachio; and Maejima, Tetsuo, to Chiyoda Corporation. Process for the production of acetic acid from methanol and carbon monoxide using supported rhodium catalyst. 5,334,755, Cl. 562-519.000.
Yonehara, Takao: *See*—
Tokunaga, Hiroyuki; and Yonehara, Takao, 5,334,864, Cl. 257-78.000.
Yonemitsu, Makoto: *See*—
Nosetani, Tadashi; Namba, Keizo; Sano, Hiromichi; Yonemitsu, Makoto; Kumagai, Masaki; and Tsunekawa, Masanori, 5,334,814, Cl. 219-119.000.
Yoon, InBae. Ligating instrument and methods of ligating tissue in endoscopic operative procedures. 5,334,199, Cl. 606-144.000.
Yoon, InBae. Multi-functional instruments and stretchable ligating and occluding devices. 5,334,209, Cl. 606-141.000.
York Technology Limited: *See*—
Shaw, Julia H.; and Hallam, Andrew G., 5,335,057, Cl. 356-73.100.
Yoshiaki, Kato: *See*—
Muto, Takeo; Sase, Masahiro; and Yoshiaki, Kato, 5,335,211, Cl. 368-11.000.
Yoshida, Hideo, to Fuji Photo Optical Co., Ltd. Camera provided with light emitting device. 5,335,037, Cl. 354-288.000.
Yoshida, Hiroshi; and Kakuda, Mitsuru, to Jidosha Kiki Co., Ltd. Pintle fixing construction for radial plunger pump. 5,333,998, Cl. 417-273.000.
Yoshida Kogyo K.K.: *See*—
Kawanishi, Makoto; and Nagahama, Hidenobu, 5,334,266, Cl. 148-403.000.
Nakada, Norio; Fukui, Hideo; Hirono, Hatsuo; and Ito, Seishiro, 5,334,297, Cl. 204-181.200.
Yoshida, Masakichi; Ikehata, Kenjiro; and Sugimura, Masashi, to Toppan Printing Co., Ltd. Method for determining a graphic area ratio of a printing plate and an apparatus therefor. 5,335,315, Cl. 395-109.000.
Yoshida, Masaru: *See*—
Mikami, Akiyoshi; Ogura, Takashi; Terada, Kousuke; Yoshida, Masaru; Yamashita, Takuo; Tanaka, Koichi; Okibayashi, Katsushi; Nakajima, Shigeo; Nakaya, Hiroaki; and Taniguchi, Kouji, 5,334,250, Cl. 118-724.000.
Yoshida, Noriyuki, to Brother Kogyo Kabushiki Kaisha. Programmed lock stitch sewing machine having display. 5,333,560, Cl. 112-121.110.
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, to Sumimoto Electric Industries, Ltd. Method of and apparatus for preparing oxide superconducting film. 5,334,252, Cl. 118-726.000.
Yoshida, Shuji: *See*—
Maehara, Masanori; Kusui, Yoshio; Kumano, Akira; and Yoshida, Shuji, 5,333,807, Cl. 242-334.600.
Yoshida, Tohru: *See*—
Sugano, Toshio; Nagaoka, Kohji; Tsukui, Seiichiro; Wakashima, Yoshiaki; Tanimoto, Michio; Watanabe, Masayuki; Sakaguchi, Suguru; Nishi, Kunihiko; Kaneda, Aizo; Serizawa, Kohji;

Honda, Michiharu; Yoshida, Tohru; Komaru, Takeshi; and Nakamura, Atsushi, 5,334,875, Cl. 257-686.000.
Yoshida, Yoshio: *See*—
Uchida, Yuji; Yoshida, Yoshio; Kaneda, Toshikazu; Moriya, Toshiaki; and Kumazawa, Tsutomu, 5,334,670, Cl. 525-440.000.
Yoshihara, Toru: *See*—
Ogawa, Masahiko; Tagami, Hidetoshi; Yoshihara, Toru; Kawase, Jiro; Kiyomine, Akira; Tamura, Tadashi; Nishizawa, Yoshinori; and Matsunaga, Ken-ichi, 5,334,225, Cl. 8-408.000.
Yoshimura, Shigeru: *See*—
Ito, Noriaki; Nagoshi, Shigeyasu; and Yoshimura, Shigeru, 5,334,920, Cl. 318-685.000.
Yoshimura, Shunji: *See*—
Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ono, Masumi; and Yasuda, Kouichi, 5,335,213, Cl. 369-121.000.
Yoshioka, Hiroshi: *See*—
Inoue, Yoshifumi; and Yoshioka, Hiroshi, 5,334,188, Cl. 604-283.000.
Ishii, Kyoko; Miyatake, Shinichi; Takahashi, Tsutomu; Udo, Shinji; Yoshioka, Hiroshi; Takano, Mitsuhiro; and Morino, Makoto, 5,335,203, Cl. 365-226.000.
Yoshioka, Shigeki, to Nissan Motor Co., Ltd. Displacement magnifier for piezoelectric element. 5,333,455, Cl. 60-533.000.
Yoshitake, Masaru: *See*—
Morikawa, Shinsuke; Yoshitake, Masaru; and Tatematsu, Shin, 5,334,782, Cl. 570-101.000.
Yoshiyama, Tsugihito: *See*—
Takano, Yoshiaki; Shimizu, Tadafumi; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotari; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,335,048, Cl. 355-204.000.
Yoshiyama, Yasushi, to Ricoh Company, Ltd. Semiconductor integrated circuit for signal processing of optical disk of write-once type and semiconductor device. 5,335,215, Cl. 369-50.000.
Young, Barry S., to MDT Corporation. Dental control unit with removable cover. 5,334,018, Cl. 433-77.000.
Young, Ronald L.: *See*—
Brandt, David E.; Young, Ronald L.; and Pryor, Timothy B., 5,333,818, Cl. 244-118.600.
Youngdale, Gilbert A.: *See*—
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; and Wallach, Donald P., deceased, 5,334,712, Cl. 540-112.000.
Yu, Jing-Peir, to Monsanto Company. Carpet fibers having multifoliate cross-sectional configuration. 5,334,452, Cl. 428-397.000.
Yu, Yiu K.; and Au, Bryan K. F., to Uni-King Toys Ltd. Tethered controlled flying toy. 5,334,070, Cl. 446-31.000.
Yuasa, Hitoshi: *See*—
Yamasita, Yukio; Sato, Haruyoshi; Nakamura, Toru; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,334,468, Cl. 430-7.000.
Yubakami, Keiichi: *See*—
Matsuda, Hiromu; Kawakami, Tetsuji; Yubakami, Keiichi; Imai, Akihiro; and Taguchi, Nobuyoshi, 5,334,574, Cl. 503-227.000.
Yuda, Lawrence F. Piston and method of manufacture. 5,333,536, Cl. 92-155.000.
Yuen, Henry C.; and Kwoh, Daniel S., to Gemstar Development Corporation. Apparatus and method using compressed codes for recorder preprogramming. 5,335,079, Cl. 358-335.000.
Yuura, Katsuhiko: *See*—
Maejima, Yukihito; Ohtsubo, Toko; Masui, Mitsuyuki; Abe, Noriyuki; Yuura, Katsuhiko; and Mochizuki, Kenji, 5,335,339, Cl. 395-500.000.
Zabrocki, Vincent S.; and Kelch, Robert H., to Dow Chemical Company, The. Weatherable styrenic film structures with intermediate tie layer and laminates thereof. 5,334,450, Cl. 428-332.000.
Zachrai, Jurgen, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Control cabinet with rack and mounting plate. 5,333,950, Cl. 312-265.100.
Zafiroglu, Dimitri P., to Du Pont de Nemours, E. I., and Company. Spunlaced fabric comprising a nonwoven Batt hydraulically entangled with a warp-like array of composite elastic yarns. 5,334,437, Cl. 428-219.000.
Zander, Klaus: *See*—
Hess, Bernhard; Schulz-Schlitte, Wolfgang; Kirsch, Jurgen; Freitag, Dieter; Arndt, Uwe; Gehrke, Hans-Georg; and Zander, Klaus, 5,334,692, Cl. 528-126.000.
Zapata, Luis E., to United States of America, Energy. Parasitic oscillation suppression in solid state lasers using absorbing thin films. 5,335,237, Cl. 372-33.000.
Zarowitz, Michael A.: *See*—
Adams, Tommy L.; and Zarowitz, Michael A., 5,334,529, Cl. 435-240.400.
Zdenek, John M.: *See*—
Capigatti, Andrew C.; and Zdenek, John M., 5,333,961, Cl. 400-490.000.
Zeise, Christiane; Jacobs, Jochen; and Raehse, Wilfried, to Henkel Kommanditgesellschaft auf Aktien. Bleach activators in granular form. 5,334,324, Cl. 252-91.000.
Zeman, Herbert D. Composite scintillator screen. 5,334,843, Cl. 250-486.100.
Zeneca Inc.: *See*—
Neilan, James P.; and Gosciniak, Donald J., 5,334,762, Cl. 564-259.000.
Zeneca Ltd.: *See*—
Cleugh, Ernest S.; and Milner, David J., 5,334,744, Cl. 558-354.000.
Edwards, Philip N.; and Large, Michael S., 5,334,614, Cl 514-459.000.
Thomas, Andrew P.; Martin, David M. G.; Lee, Stanley A.; and Powell, Lyn, 5,334,718, Cl. 546-118.000.
Zeneca Pharma SA: *See*—
Edwards, Philip N.; and Large, Michael S., 5,334,614, Cl. 514-459.000.
Zexel Corporation: *See*—
Kohno, Hiromi; and Soda, Hiroyuki, 5,335,174, Cl. 364-424.100.
Zhao, Junguo: *See*—
Henkens, Robert W.; Zhao, Junguo; and O'Daly, John P., 5,334,296, Cl. 204-153.120.
Zibrida, James R.: *See*—
Short, John P.; McLachlan, Craig J.; Rouse, George V.; and Zibrida, James R., 5,334,273, Cl. 156-87.000.
Ziebarth, Timothy D.: *See*—
Murray, Christopher K.; Ziebarth, Timothy D.; and Beckvermit, Jeffrey T., 5,334,732, Cl. 549-510.000.
Zimmer, Inc.: *See*—
Lin, Steve T., 5,334,626, Cl. 523-116.000.
Zimmerman, G. Stanley: *See*—
Quantrille, Thomas E.; Austin, Jared A.; and Zimmerman, G. Stanley, 5,334,446, Cl. 428-284.000.
Zimmerman, John M.: *See*—
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,455, Cl. 428-413.000.
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,334,456, Cl. 428-431.000.
Zimmerman, Steven M., to International Business Machines Corporation. Structures and processes for fabricating field emission cathode tips using secondary cusp. 5,334,908, Cl. 313-336.000.
Zimmermann, Christian: *See*—
Kugler, Karl-Heinz; Langner, Arnd-Matthias; Riedel, Karlheinz; Schleupen, Richard; and Zimmermann, Christian, 5,334,938, Cl. 324-399.000.
Zimmermann, Gerd; and Mangold, Dieter, to Boehringer Mannheim GmbH. N- and O-substituted aminophenols, method and use for diagnosis. 5,334,505, Cl. 435-18.000.
Zimmermann, Werner: *See*—
Locher, Johannes; Graf, Herbert; Rodriguez-Amaya, Nestor; Schmitt, Alfred; Tauscher, Joachim; and Zimmermann, Werner, 5,335,136, Cl. 361-160.000.
Zinser Textilmaschinen GmbH: *See*—
Naegele, Ewald, 5,333,441, Cl. 57-262.000.
Zirino, Albert, to United States of America, Navy. Control of continuous phase pH using visible light to activate pH-dependent fibers and gels in a controlled and reversible manner. 5,334,629, Cl. 523-137.000.
Zitz, Alfred, to Voest-Alpine Bergtechnik Gesellschaft m.b.H. Low profile mining machine having a cutter mounted on a slidable carriage. 5,333,936, Cl. 299-64.000.
Zlobinsky, Yury: *See*—
Glater, Michael; Barreda, Carlos; and Zlobinsky, Yury, 5,334,130, Cl. 494-4.000.
Zurbuchen, Hans: *See*—
Lussi, Andre ; Zurbuchen, Hans; and von Gunten, Jurg, 5,333,537, Cl. 99-287.000.
Zushi, Takayasu, to Takata Corporation. Method of producing a modular cover for an air bag assembly. 5,334,340, Cl. 264-161.000.
Zwicker, Harry R.: *See*—
Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Lesher, H. Daniel, 5,334,562, Cl. 501-88.000.
Zwiener, Christian; Rettig, Rainer; Nachtkamp, Klaus; Pedain, Josef; and Arlt, Dieter, to Bayer Aktiengesellschaft. Isocyanatocarboxylic acids, a process for their preparation and their use in coating compositions as cross-linking agents. 5,334,637, Cl. 524-539.000.
Zwigart, John M.; Tweedy, Mark R.; and McCoy, Gary W., to Carl Strutz & Co., Inc. Apparatus to manipulate workpieces. 5,333,720, Cl. 198-409.000.
886 496 Ontario Inc.: *See*—
Blumentrath, Fred, 5,333,963, Cl. 403-301.000.

VOL 1165 ISS 1 AG 2 1994 UMI

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF AUGUST, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Negishi, Kiyoshi; Negoro, Ikuo; and Kita, Masahiro, Re. 34,685, Cl. 355-206.000.

Fischer, Rich; and Jones, Michael T., to Fresh Choice Produce, Inc. Harvesting apparatus for leafy vegetables. Re. 34,678, Cl. 56-12.900.

Fresh Choice Produce, Inc.: *See*—
Fischer, Rich; and Jones, Michael T., Re. 34,678, Cl. 56-12.900.

Hollenberg, David H.: *See*—
Maynard, Patrick L.; Schmelzer, Michael A.; Pawlowski, Thomas D.; Hollenberg, David H.; Katz, Leon; and VanHandel, Gerald J., Re. 34,683, Cl. 219-703.000.

Imaginative Research Associates, Inc.: *See*—
Vishnupad, Mohan; and Ramirez, Jose, Re. 34,682, Cl. 524-601.000.

James River Corporation of Virginia: *See*—
Maynard, Patrick L.; Schmelzer, Michael A.; Pawlowski, Thomas D.; Hollenberg, David H.; Katz, Leon; and VanHandel, Gerald J., Re. 34,683, Cl. 219-703.000.

Jones, Michael T.: *See*—
Fischer, Rich; and Jones, Michael T., Re. 34,678, Cl. 56-12.900.

Katz, Leon: *See*—
Maynard, Patrick L.; Schmelzer, Michael A.; Pawlowski, Thomas D.; Hollenberg, David H.; Katz, Leon; and VanHandel, Gerald J., Re. 34,683, Cl. 219-703.000.

Kita, Masahiro: *See*—
Negishi, Kiyoshi; Negoro, Ikuo; and Kita, Masahiro, Re. 34,685, Cl. 355-206.000.

Kitahara, Haruo; and Ohshita, Takeshi, to Nagano Nidec Corporation. Drive motor for magnetic disks, optical disks, and magneto-optical disks. Re. 34,684, Cl. 310-67.00R.

Lieser, Karl, to Wera Werk Hermann Werner GmbH & Co. Screw tool. Re. 34,680, Cl. 81-59.100.

Maynard, Patrick L.; Schmelzer, Michael A.; Pawlowski, Thomas D.; Hollenberg, David H.; Katz, Leon; and VanHandel, Gerald J., to James River Corporation of Virginia. Control of microwave interactive heating by patterned deactivation. Re. 34,683, Cl. 219-703.000.

Nagano Nidec Corporation: *See*—
Kitahara, Haruo; and Ohshita, Takeshi, Re. 34,684, Cl. 310-67.00R.

Negishi, Kiyoshi; Negoro, Ikuo; and Kita, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Form feeding control device. Re. 34,685, Cl. 355-206.000.

Negoro, Ikuo: *See*—
Negishi, Kiyoshi; Negoro, Ikuo; and Kita, Masahiro, Re. 34,685, Cl. 355-206.000.

Ohshita, Takeshi: *See*—
Kitahara, Haruo; and Ohshita, Takeshi, Re. 34,684, Cl. 310-67.00R.

Pawlowski, Thomas D.: *See*—
Maynard, Patrick L.; Schmelzer, Michael A.; Pawlowski, Thomas D.; Hollenberg, David H.; Katz, Leon; and VanHandel, Gerald J., Re. 34,683, Cl. 219-703.000.

Polando, Scott: *See*—
Ritzenthaler, Hugo A.; and Polando, Scott, Re. 34,679, Cl. 73-317.000.

Ramirez, Jose: *See*—
Vishnupad, Mohan; and Ramirez, Jose, Re. 34,682, Cl. 524-601.000.

Ritzenthaler, Hugo A.; and Polando, Scott, to VDO Adolf Schindling AG. Level measuring device. Re. 34,679, Cl. 73-317.000.

Schmelzer, Michael A.: *See*—
Maynard, Patrick L.; Schmelzer, Michael A.; Pawlowski, Thomas D.; Hollenberg, David H.; Katz, Leon; and VanHandel, Gerald J., Re. 34,683, Cl. 219-703.000.

VanHandel, Gerald J.: *See*—
Maynard, Patrick L.; Schmelzer, Michael A.; Pawlowski, Thomas D.; Hollenberg, David H.; Katz, Leon; and VanHandel, Gerald J., Re. 34,683, Cl. 219-703.000.

VDO Adolf Schindling AG: *See*—
Ritzenthaler, Hugo A.; and Polando, Scott, Re. 34,679, Cl. 73-317.000.

Vishnupad, Mohan; and Ramirez, Jose, to Imaginative Research Associates, Inc. Aqueous dispersions of polyester and polyesteramides cross-linked with metallic ions and casts made therefrom. Re. 34,682, Cl. 524-601.000.

Wera Werk Hermann Werner GmbH & Co.: *See*—
Lieser, Karl, Re. 34,680, Cl. 81-59.100.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Ganzi, Gary C.: *See*—
Giuffrida, Anthony J.; Jha, Anil D.; and Ganzi, Gary C., B1 4,925,541, Cl. 204-182.500.

Giuffrida, Anthony J.; Jha, Anil D.; and Ganzi, Gary C., to Millipore Corp. Electrodeionization apparatus and method. B1 4,925,541, 8-2-94, Cl. 204-182.500.

Jha, Anil D.: *See*—
Giuffrida, Anthony J.; Jha, Anil D.; and Ganzi, Gary C., B1 4,925,541, Cl. 204-182.500.

Millipore Corp.: *See*—
Giuffrida, Anthony J.; Jha, Anil D.; and Ganzi, Gary C., B1 4,925,541, Cl. 204-182.500.

Mitsue, Naoki; and Takahashi, Hideki, to Nippon Seiko Kabushiki Kaisha. Seal assembly with radially overlapping seal. B1 4,516,783, 8-2-94, Cl. 277-50.000.

Nippon Seiko Kabushiki Kaisha: *See*—
Mitsue, Naoki; and Takahashi, Hideki, B1 4,516,783, Cl. 277-50.000.

Takahashi, Hideki: *See*—
Mitsue, Naoki; and Takahashi, Hideki, B1 4,516,783, Cl. 277-50.000.

Telephone Lottery Company, Inc.: *See*—
Tsakanikas, Peter J., B1 4,427,848, Cl. 379-88.000.

Tsakanikas, Peter J., to Telephone Lottery Company, Inc. Telephonic alphanumeric data transmission system. B1 4,427,848, 8-2-94, Cl. 379-88.000.

LIST OF DESIGN PATENTEES

Abrams, Randy L., to Safety 1st, Inc. Baby teether toy. 349,345, 8-2-94, Cl. D24-195.000.

Abrams, Randy L., to Safety 1st, Inc. Baby teether toy. 349,346, 8-2-94, Cl. D24-195.000.

Adam, Daniel. Christmas tree stand. 349,259, 8-2-94, Cl. D11-130.100.

Adams, Jack E. Vacuum cannister. 349,369, 8-2-94, Cl. D32-21.000.

Adams, Ronald D.: *See*—
Youtsler, Mary B.; Adams, Ronald D.; O'Brian, Kevin R.; O'Grady, Richard M.; Marvin, Robert L., Jr.; Deutsch, Kenneth C.; and White, John O., 349,339, Cl. D24-133.000.

Aiken, Brian L.: *See*—
Cousins, Morison S.; and Aiken, Brian L., 349,213, Cl. D7-543.000.

AKP-Tekno Oy: *See*—
Salo, Heikki; and Nurmi, Pekka, 349,370, Cl. D32-31.000.

Aladdin Industries, Inc.: *See*—
Booten, Richard D., 349,240, Cl. D9-422.000.

Albertsson, Stig L. Motorized utility cart. 349,264, 8-2-94, Cl. D12-1.000.

Albrecht, Leonard N.: *See*—
Christensen, Donald R.; Albrecht, Leonard N.; Hendriks, Ronald E.; and Lewis, Jerry M., 349,290, Cl. D14-217.000.

Albritton, Rose M. Tub support base. 349,332, 8-2-94, Cl. D23-304.000.

Alcon Laboratories, Inc.: *See*—
Van Noy, Stephen J.; and Hambleton, Robert, 349,342, Cl. D24-143.000.

Alpha Enterprises, Inc.: *See*—
Essick, Gale W., 349,230, Cl. D8-347.000.

Altman, Michael; and Smit, Michael, to California Pacific Group, Ltd. Joy stick support. 349,306, 8-2-94, Cl. D21-48.000.

American Cord & Webbing Co., Inc.: *See*—
Krauss, Mark J., 349,262, Cl. D11-216.000.

American Greetings Corporation: *See*—
Eliadis, Luke; Melton, James R.; and Vlah, John A., 349,202, Cl. D6-467.000.

American Trading and Production Corporation: *See*—
Chan, Eric P., 349,234, Cl. D8-381.000.

Anthro Corporation: *See*—
McCaffrey, Jeffrey T., 349,383, Cl. D34-19.000.

Aqua-Leisure Industries, Inc.: *See*—
Wolfe, Henry, 349,322, Cl. D21-237.000.

Bayer, Sylvester. Putter head. 349,319, 8-2-94, Cl. D21-217.000.

Bedney, Paul R., Jr.: *See*—
Kian, Ahmad A.; and Bedney, Paul R., Jr., 349,274, Cl. D13-128.000.

Bellinger, Rebecca R.: *See*—
Bellinger, Steven E.; and Bellinger, Rebecca R., 349,256, Cl. D10-114.000.

Bellinger, Steven E.; and Bellinger, Rebecca R. Emergency flashing strobe light. 349,256, 8-2-94, Cl. D10-114.000.

Berti, Enzo, to Libman Company, The. Dust mop frame. 349,375, 8-2-94, Cl. D32-50.000.

Bird, David A.; and Wilgus, Mitchell L., to Rubbermaid Incorporated. Hamper. 349,372, 8-2-94, Cl. D32-37.000.

Blue Giant Equipment Corporation: *See*—
Larsen, Kurt K., 349,229, Cl. D8-331.000.

Bollenbacher, John E., to Kohler Co. Escutcheon for a bathroom fitting. 349,208, 8-2-94, Cl. D6-550.000.

Bollenbacher, John E., to Kohler Co. Faucet. 349,326, 8-2-94, Cl. D23-238.000.

Bollenbacher, John E., to Kohler Co. Handle for a plumbing fitting. 349,328, 8-2-94, Cl. D23-252.000.

Bollenbacher, John E., to Kohler Co. Spout. 349,331, 8-2-94, Cl. D23-257.000.

Bonnell, Thomas A., to Kohler Co. Housing for a plumbing fixture control. 349,327, 8-2-94, Cl. D23-249.000.

Booten, Richard D., to Aladdin Industries, Inc. Container. 349,240, 8-2-94, Cl. D9-422.000.

Bristol, Hope C. Infant bib. 349,182, 8-2-94, Cl. D2-861.000.

Brown, Joseph E. Pedometer. 349,253, 8-2-94, Cl. D10-97.000.

Buzzard, Jon D., to Sensormatic Electronics Corporation. Control unit for a surveillance system. 349,254, 8-2-94, Cl. D10-106.000.

California Pacific Group, Ltd.: *See*—
Altman, Michael; and Smit, Michael, 349,306, Cl. D21-48.000.

Canon Kabushiki Kaisha: *See*—
Ichiyoshi, Hiroyuki, 349,296, Cl. D16-242.000.

Canvas & Leather Bag Co., Inc.: *See*—
Mason, Jeffrey V., 349,191, Cl. D3-289.000.

Capella, Joanne M., to Pfaltzgraff Co., The. Decalcomania for china dinnerware. 349,210, 8-2-94, Cl. D7-396.500.

Carl Jimuki Kabushiki Kaisha: *See*—
Mori, Chuzo, 349,301, Cl. D19-72.000.

Carpenter Co.: *See*—
Sleboda, Bruce; and Rose, Robert J., 349,201, Cl. D6-601.000.

Casio Computer Co., Ltd.: *See*—
Goto, Atsushi, 349,251, Cl. D10-39.000.
Moriai, Ryusuke, 349,250, Cl. D10-38.000.
Nakai, Toshio, 349,246, Cl. D10-38.000.
Nakai, Toshio, 349,249, Cl. D10-38.000.
Sugita, Shoichi, 349,247, Cl. D10-38.000.
Yamamoto, Hideyuki, 349,248, Cl. D10-38.000.

Catheter Imaging Systems: *See*—
Snoke, Phillip J.; Gamper, Steven C.; Gillespie, Lionel D.; Rowley, David S.; and Copeland, Bruce W., 349,340, Cl. D24-138.000.

Cerato, Gregg W. Coffee filter. 349,211, 8-2-94, Cl. D7-400.000.

Chan, Eric P., to American Trading and Production Corporation. Bracket for supporting office desk trays. 349,234, 8-2-94, Cl. D8-381.000.

Cheng, Peter S. C. Shirt. 349,181, 8-2-94, Cl. D2-842.000.

Choi, Byung T., to Kim, Dong I. Bowling glove. 349,365, 8-2-94, Cl. D29-113.000.

Christensen, Donald R.; Albrecht, Leonard N.; Hendriks, Ronald E.; and Lewis, Jerry M., to Grass Valley Group, Inc., The. Controller for a video editing system. 349,290, 8-2-94, Cl. D14-217.000.

Chunn, Daniel A., to Ryobi Motor Products Corp. Oscillating spindle sander. 349,292, 8-2-94, Cl. D15-125.000.

Cislo, Daniel M., to Securecase Company, The. Locking case bracket. 349,231, 8-2-94, Cl. D8-349.000.

Close, Judith R.; Russell, Wayne M.; and Morris, E. Scott, to Reebok International Ltd. Element of a shoe upper. 349,187, 8-2-94, Cl. D2-972.000.

Cooper Industries: *See*—
Layne, Bruce N., 349,356, Cl. D26-63.000.

Cooper, Lee H. Water-resistant shoe cover for cyclist. 349,185, 8-2-94, Cl. D2-911.000.

Copeland, Bruce W.: *See*—
Snoke, Phillip J.; Gamper, Steven C.; Gillespie, Lionel D.; Rowley, David S.; and Copeland, Bruce W., 349,340, Cl. D24-138.000.

Cousins, Morison S.; and Aiken, Brian L., to Dart Industries Inc. Serving bowl. 349,213, 8-2-94, Cl. D7-543.000.

Crinion, Jonathan, to Teknion Furniture Systems. Combined heating and cooling panel unit for placement in a modular office panelling system. 349,338, 8-2-94, Cl. D23-386.000.

Crinion, Jonathan, to Teknion Furniture Systems. Support trolley for a CPU (computer processing unit). 349,384, 8-2-94, Cl. D34-23.000.

Csati, David. Door insert panel. 349,352, 8-2-94, Cl. D25-103.000.

Dart Industries Inc.: *See*—
Cousins, Morison S.; and Aiken, Brian L., 349,213, Cl. D7-543.000.

Delaney, Timothy J.; and Stutz, Mark W., to Walt Disney Company, The. Robotic figure. 349,313, 8-2-94, Cl. D21-150.000.

Deutsch, Kenneth C.: *See*—
Youtsler, Mary B.; Adams, Ronald D.; O'Brian, Kevin R.; O'Grady, Richard M.; Marvin, Robert L., Jr.; Deutsch, Kenneth C.; and White, John O., 349,339, Cl. D24-133.000.

Diehl, Rodney E. Bulls eye target playing card. 349,305, 8-2-94, Cl. D21-42.000.

Duracraft Corporation: *See*—
O'Grady, Richard M.; and Peng, Johnson, 349,334, Cl. D23-360.000.

Dziersk, Mark D.: *See*—
Furcron, Kent J.; and Dziersk, Mark D., 349,371, Cl. D32-32.000.

Ehrenfels, Alfred L.: *See*—
Hoffman, Ernest G.; and Ehrenfels, Alfred L., 349,276, Cl. D13-133.000.

Eliadis, Luke; Melton, James R.; and Vlah, John A., to American Greetings Corporation. Merchandise display. 349,202, 8-2-94, Cl. D6-467.000.

Elonex PLC: *See*—
Wetrin, Israel, 349,278, Cl. D14-106.000.

Empire Brushes, Inc.: *See*—
Sloan, James F.; and Joyner, David B., 349,193, Cl. D4-118.000.

Englen, Joseph. Dropped ceiling support element. 349,351, 8-2-94, Cl. D25-58.000.

Essick, Gale W., to Alpha Enterprises, Inc. Release key for a security container. 349,230, 8-2-94, Cl. D8-347.000.

Ethan Allen Inc.: *See*—
Stone, Philip; and Stout, Craig, 349,197, Cl. D6-379.000.

Ethicon, Inc.: *See*—
Youtsler, Mary B.; Adams, Ronald D.; O'Brian, Kevin R.; O'Grady, Richard M.; Marvin, Robert L., Jr.; Deutsch, Kenneth C.; and White, John O., 349,339, Cl. D24-133.000.

Eutech Enterprise Ltd.: *See*—
Wang, Allen Y. L., 349,335, Cl. D23-366.000.

Evans, Graeme R., to Singleton Industries Pty. Ltd. Non-refrigerated container. 349,218, 8-2-94, Cl. D7-628.000.

Eversole, Anthony C. Golf putting receptacle. 349,321, 8-2-94, Cl. D21-234.000.

Fact Games, Ltd.: *See*—
Kennedy, George, 349,315, Cl. D21-187.000.

Fairform Mfg. Co., Ltd.: *See*—
Huen, Hing-Wah, 349,347, Cl. D24-214.000.

Fennell, Anne M. Home recycler. 349,381, 8-2-94, Cl. D34-7.000.

Fischer, Dan L.; and Fischer, Rickie C. Shower soap holder. 349,206, 8-2-94, Cl. D6-536.000.

Fischer, Rickie C.: *See*—
Fischer, Dan L.; and Fischer, Rickie C., 349,206, Cl. D6-536.000.

Fiskars Consumer Oy Ab: *See*—
Linden, Erkki O.; and Ronnholm, Karl S., 349,222, Cl. D8-10.000.

Fok, Chin T., to VTECH Industries, Inc. Housing for electronic instructional game apparatus. 349,299, 8-2-94, Cl. D19-60.000.

Forbush, Edward. Mulcher blade. 349,291, 8-2-94, Cl. D15-17.000.

VOL 1165 ISS 1 AG 2 1994 UMI

Forland, David M.: *See*—
Passke, Joel L.; Forland, David M.; and Sarkinen, Larry R., 349,186, Cl. D2-961.000.
Francis, Ron. Wiring panel for motor vehicles. 349,267, 8-2-94, Cl. D13-147.000.
Franklin Electronic Publishers, Incorporated: *See*—
Luong, Ngoc M., 349,281, Cl. D14-114.000.
Fujino, Michimasa: *See*—
Inoue, Kazuo; and Fujino, Michimasa, 349,271, Cl. D12-337.000.
Furcron, Kent J.; and Dziersk, Mark D., to TRC Acquisition Corporation. Base for an upright vacuum cleaner. 349,371, 8-2-94, Cl. D32-32.000.
Gallant, Joseph P., to GTE Products Corporation. Electric lamp. 349,353, 8-2-94, Cl. D26-2.000.
Gamper, Steven C.: *See*—
Snoke, Phillip J.; Gamper, Steven C.; Gillespie, Lionel D.; Rowley, David S.; and Copeland, Bruce W., 349,340, Cl. D24-138.000.
Gillespie, Lionel D.: *See*—
Snoke, Phillip J.; Gamper, Steven C.; Gillespie, Lionel D.; Rowley, David S.; and Copeland, Bruce W., 349,340, Cl. D24-138.000.
Gillette Company, The: *See*—
Lazarchik, Daniel B.; and Shurtleff, Jill M., 349,242, Cl. D9-444.000.
Goldberg, Alan E., to Mobil Oil Corp. Service station building. 349,349, 8-2-94, Cl. D25-34.000.
Goldberg, Alan E., to Mobil Oil Corp. Service station island. 349,350, 8-2-94, Cl. D25-56.000.
Gonsior, Stanley W., to S&S Asset Management Co. Lens for an auxiliary vehicle signal. 349,360, 8-2-94, Cl. D26-125.000.
Goto, Atsushi, to Casio Computer Co., Ltd. Wrist watch. 349,251. 8-2-94, Cl. D10-39.000.
Granick, Stewart E.; Kannett, Irving K.; and Skwarek, Gary M., to Schering-Plough HealthCare Products Inc. Egg tong. 349,219, 8-2-94, Cl. D7-687.000.
Grannen, Walter A., III. Golf glove with removal tabs. 349,179, 8-2-94, Cl. D2-616.000.
Grass Valley Group, Inc., The: *See*—
Christensen, Donald R.; Albrecht, Leonard N.; Hendriks, Ronald E.; and Lewis, Jerry M., 349,290, Cl. D14-217.000.
Griffin, John, to McCulloch Corporation. Electric grass trimmer and edger. 349,220, 8-2-94, Cl. D8-8.000.
Griffin, John, to McCulloch Corporation. Electric grass trimmer and edger. 349,221, 8-2-94, Cl. D8-8.000.
GTE Products Corporation: *See*—
Gallant, Joseph P., 349,353, Cl. D26-2.000.
Haber, Terry M., to Habley Medical Technology Corp. Pill dispenser housing. 349,238, 8-2-94, Cl. D9-339.000.
Habley Medical Technology Corp.: *See*—
Haber, Terry M., 349,238, Cl. D9-339.000.
Hagen, Robert S., to Heddon Bowling Corporation. Bowling lane return shroud and rail. 349,320, 8-2-94, Cl. D21-233.000.
Hall, James L. Container with brush-holding lid. 349,237, 8-2-94, Cl. D9-337.000.
Hambleton, Robert: *See*—
Van Noy, Stephen J.; and Hambleton, Robert, 349,342, Cl. D24-143.000.
Handi-Pac, Inc.: *See*—
Thornell, Ernest L., 349,309, Cl. D21-59.000.
Hankey, Richard A., Sr. Handle for paint roller pan. 349,376, 8-2-94, Cl. D32-53.100.
Hannon, William J.; and Keohan, Richard J., to Medical Scientific, Inc. Electrosurgical generator unit. 349,343, 8-2-94, Cl. D24-170.000.
Harbison, Brian P. Ear flap hat. 349,183, 8-2-94, Cl. D2-870.000.
Harris, Ryan R. Door for utility vehicles. 349,269, 8-2-94, Cl. D12-196.000.
Hartmann, Gerd, to J. A. Henckels Zwillingswerk AG. Combination nail file and nail cleaner with a two-piece case. 349,361, 8-2-94, Cl. D28-57.000.
Haskins, Harold A. Device for washing the bottom of a boat. 349,368, 8-2-94, Cl. D32-4.000.
Heddon Bowling Corporation: *See*—
Hagen, Robert S., 349,320, Cl. D21-233.000.
Hendriks, Ronald E.: *See*—
Christensen, Donald R.; Albrecht, Leonard N.; Hendriks, Ronald E.; and Lewis, Jerry M., 349,290, Cl. D14-217.000.
Hersch, Willam M. Bottle watch. 349,243, 8-2-94, Cl. D10-33.000.
Hersch, William M. Can watch. 349,244, 8-2-94, Cl. D10-33.000.
Hersch, William M. Baseball cap watch. 349,245, 8-2-94, Cl. D10-33.000.
Herst, Douglas J.; and Salman, Utkan, to Peerless Lighting Corporation. Indirect lighting fixture. 349,357, 8-2-94, Cl. D26-85.000.
Herst, Douglas J.; and Salman, Utkan, to Peerless Lighting Corporation. Indirect lighting fixture. 349,358, 8-2-94, Cl. D26-85.000.
Hess, Stephen C., to Winston Furniture Company of Alabama, Inc. Chair. 349,195, 8-2-94, Cl. D6-376.000.
Hewell, Gerald M.: *See*—
Kelemen, Donald D.; Hewell, Gerald M.; and Suttles, J. Marshall, 349,203, Cl. D6-470.000.
Hoffman, Ernest G.; and Ehrenfels, Alfred L., to Hubbell Incorporated. Dead front electrical connector for recharging electric vehicles. 349,276, 8-2-94, Cl. D13-133.000.
Hokazono, Manabu, to Sharp Kabushiki Kaisha. Combined digital audio disc player, radio tuner and tape recorder. 349,287, 8-2-94, Cl. D14-168.000.
Holland, Janusz L.: *See*—
Hughes, Mark C.; and Holland, Janusz L., 349,224, Cl. D8-42.000.
Hollander, Milton B., to Omega Engineering, Inc. Electrical connector for temperature measuring equipment. 349,275, 8-2-94, Cl. D13-133.000.
Hollis, Frank J. Folding portable stadium seat. 349,194, 8-2-94, Cl. D6-368.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Inoue, Kazuo; and Fujino, Michimasa, 349,271, Cl. D12-337.000.
Ito, Jun; Ikeda, Toshimitsu; and Kita, Masato, 349,270, Cl. D12-302.000.
Hong, Seung D., to Logos Co., Ltd. Key holder. 349,189, 8-2-94, Cl. D3-208.000.
Howard, William A. Revolver Safety Lock. 349,323, 8-2-94, Cl. D22-108.000.
Huang, George S. K. Cake decoration. 349,261, 8-2-94, Cl. D11-184.000.
Hubbell Incorporated: *See*—
Hoffman, Ernest G.; and Ehrenfels, Alfred L., 349,276, Cl. D13-133.000.
Huen, Hing-Wah, to Fairform Mfg. Co., Ltd. Combined massager and massaging heads. 349,347, 8-2-94, Cl. D24-214.000.
Hughes, Mark C.; and Holland, Janusz L. Corkscrew. 349,224, 8-2-94, Cl. D8-42.000.
Hunter Fan Company: *See*—
Tsuji, Masao, 349,336, Cl. D23-377.000.
Tsuji, Masao, 349,337, Cl. D23-377.000.
Hurd, Harold C. Water line flow control meter. 349,252, 8-2-94, Cl. D10-96.000.
Ichiyoshi, Hiroyuki, to Canon Kabushiki Kaisha. Portable panhead for broadcast camera. 349,296, 8-2-94, Cl. D16-242.000.
Ikeda, Toshimitsu: *See*—
Ito, Jun; Ikeda, Toshimitsu; and Kita, Masato, 349,270, Cl. D12-302.000.
Inoue, Kazuo; and Fujino, Michimasa, to Honda Giken Kogyo Kabushiki Kaisha. Airplane. 349,271, 8-2-94, Cl. D12-337.000.
International Business Machines Corporation: *See*—
Merino, Tristan A.; and Sapper, Richard F., 349,277, Cl. D14-100.000.
International Packaging Corporation: *See*—
Lefebvre, Joseph G., 349,204, Cl. D6-476.000.
Ironworks Manufacturing, Inc.: *See*—
Rhoton, William L., 349,293, Cl. D15-130.000.
Isaacs, Michael S., to U.S. Balloon Manufacturing Co., Inc. Crayon balloon. 349,311, 8-2-94, Cl. D21-84.000.
Isaacson, Jerry D. Combination re-sealable closure and handle for screw top bottles. 349,241, 8-2-94, Cl. D9-443.000.
Ito, Jun; Ikeda, Toshimitsu; and Kita, Masato, to Honda Giken Kogyo Kabushiki Kaisha. Canoe. 349,270, 8-2-94, Cl. D12-302.000.
Ito, Masafumi; Sube, Minoru; Takita, Haruki; and Watanabe, Hiroyuki, to TEAC Corporation. Combined digital audio disc player and radio receiver. 349,288, 8-2-94, Cl. D14-168.000.
J. A. Henckels Zwillingswerk AG: *See*—
Hartmann, Gerd, 349,361, Cl. D28-57.000.
J. C. Decaux: *See*—
Starck, Philippe, 349,379, Cl. D34-1.000.
JADO Bathroom and Hardware Manufacturing Corp.: *See*—
Jans, Franz W., 349,228, Cl. D8-308.000.
Jans, Franz W., to JADO Bathroom and Hardware Manufacturing Corp. Door handle. 349,228, 8-2-94, Cl. D8-308.000.
Jones, Ed F. Brake system regulator. 349,325, 8-2-94, Cl. D23-235.000.
Jones, Edgar W. Combined window and frame. 349,268, 8-2-94, Cl. D12-183.000.
Jorgensen, Gary L.; Martine, Dale R.; Oenes, Leon C.; and Volan, Gregory D., to Storage Technology Corporatino. Cabinet for tape drives. 349,279, 8-2-94, Cl. D14-108.000.
Joyner, David B.: *See*—
Sloan, James F.; and Joyner, David B., 349,193, Cl. D4-118.000.
Kallista, Inc.: *See*—
Robbins, Tom E., 349,329, Cl. D23-252.000.
Kaneko, Steven T., to Microsoft Corporation. Computer mouse. 349,280, 8-2-94, Cl. D14-114.000.
Kannett, Irving K.: *See*—
Granick, Stewart E.; Kannett, Irving K.; and Skwarek, Gary M., 349,219, Cl. D7-687.000.
Kao, Stan: *See*—
Wenzel-Murphy, Karen; and Kao, Stan, 349,302, Cl. D20-10.000.
Kaplan, Andrew J., to Kinderworks Corporation. Game board. 349,303, 8-2-94, Cl. D21-9.000.
Kelemen, Donald D.; Hewell, Gerald M.; and Suttles, J. Marshall, to Mead Corporation, The. Refrigerator and merchandise rack support structure for check out aisles. 349,203, 8-2-94, Cl. D6-470.000.
Keller, C. Stephen, to Murus Company, The. Cam locking assembly for joining the ends of prefabricated wall units. 349,235, 8-2-94, Cl. D8-384.000.
Kelley, James O., to Sligh Furniture Co. Desk. 349,200, 8-2-94, Cl. D6-427.000.
Kennedy, George, to Fact Games, Ltd. Jack rabbit doll. 349,315, 8-2-94, Cl. D21-187.000.
Keohan, Richard J.: *See*—
Hannon, William J.; and Keohan, Richard J., 349,343, Cl. D24-170.000.
Khuhawar, Mamoon M. Shower caddy. 349,205, 8-2-94, Cl. D6-525.000.
Kian, Ahmad A.; and Bedney, Paul R., Jr., to Rosemount Inc. Clip for mounting electrical equipment on a rail. 349,274, 8-2-94, Cl. D13-128.000.

Kim, Dong I.: *See*—
Choi, Byung T., 349,365, Cl. D29-113.000.
Kim, Hyunkyu: *See*—
Roberts, Dennis E.; Robbins, Richard J.; and Kim, Hyunkyu, 349,324, Cl. D22-140.000.
Kinderworks Corporation: *See*—
Kaplan, Andrew J., 349,303, Cl. D21-9.000.
King, Donald. Heat recovery unit. 349,333, 8-2-94, Cl. D23-314.000.
Kinney Shoe Corporation: *See*—
Oliver, Norwood D.; and Wenzel-Murphy, Karen, 349,260, Cl. D11-160.000.
Kita, Masato: *See*—
Ito, Jun; Ikeda, Toshimitsu; and Kita, Masato, 349,270, Cl. D12-302.000.
Kohler Co.: *See*—
Bollenbacher, John E., 349,208, Cl. D6-550.000.
Bollenbacher, John E., 349,326, Cl. D23-238.000.
Bollenbacher, John E., 349,328, Cl. D23-252.000.
Bollenbacher, John E., 349,331, Cl. D23-257.000.
Bonnell, Thomas A., 349,327, Cl. D23-249.000.
Krauss, Mark J., to American Cord & Webbing Co., Inc. Buckle. 349,262, 8-2-94, Cl. D11-216.000.
Kritzman, Richard. Dog figure for kicking. 349,314, 8-2-94, Cl. D21-161.000.
Kudlak, Robert M. Traction unit. 349,344, 8-2-94, Cl. D24-183.000.
Kuhn, Charles J.; and Kuhn, Ledell. Pet house. 349,366, 8-2-94, Cl. D30-108.000.
Kuhn, Ledell: *See*—
Kuhn, Charles J.; and Kuhn, Ledell, 349,366, Cl. D30-108.000.
Kurtz, Michael, to Northern Telecom Limited. Wireless basestation. 349,283, 8-2-94, Cl. D14-142.000.
KuryAkyn Holdings, Inc.: *See*—
Rudd, Tom; and Stahel, Alwin J., 349,266, Cl. D12-117.000.
Larsen, Kurt K., to Blue Giant Equipment Corporation. Restraint latch for trucks. 349,229, 8-2-94, Cl. D8-331.000.
Lau, Pui C., to Vtech Industries, Inc. Electronic apparatus housing. 349,300, 8-2-94, Cl. D19-62.000.
Lawson, Richard L. Combined bird toy and beak sharpener. 349,367, 8-2-94, Cl. D30-119.000.
Layne, Bruce N., to Cooper Industries. Adjustable spot light. 349,356, 8-2-94, Cl. D26-63.000.
Lazarchik, Daniel B.; and Shurtleff, Jill M., to Gillette Company, The. Dispenser cover. 349,242, 8-2-94, Cl. D9-444.000.
Lebow, Dwight R. Pipe shoe guide. 349,232, 8-2-94, Cl. D8-354.000.
Lee, Chun S., to Schnadig Corporation. Chair. 349,198, 8-2-94, Cl. D6-379.000.
Lefebvre, Joseph G., to International Packaging Corporation. Jewelry display. 349,204, 8-2-94, Cl. D6-476.000.
Leung, Chi K., to VTECH Industries, Inc. Electronic educational game for the teaching of children. 349,298, 8-2-94, Cl. D19-60.000.
Leung, Jhi Hung, to Star Industrial Co., Ltd. Crate. 349,192, 8-2-94, Cl. D3-313.000.
Lewis, Jerry M.: *See*—
Christensen, Donald R.; Albrecht, Leonard N.; Hendriks, Ronald E.; and Lewis, Jerry M., 349,290, Cl. D14-217.000.
Libman Company, The: *See*—
Berti, Enzo, 349,375, Cl. D32-50.000.
Lichtman, Philip R.; and May, Eric E., to Microsurge, Inc. Endoscopic grasper. 349,341, 8-2-94, Cl. D24-143.000.
Linden, Erkki O.; and Ronnholm, Karl S., to Fiskars Consumer Oy Ab. Trowel. 349,222, 8-2-94, Cl. D8-10.000.
Logos Co., Ltd.: *See*—
Hong, Seung D., 349,189, Cl. D3-208.000.
Lohmeyer, Hartmut. Chair. 349,196, 8-2-94, Cl. D6-379.000.
Lunka, Harold A.; Reichenberg, George; and Volan, Gregory D., to Storage Technology Corporation. Housing for magnetic tape cartridge magazine autoloader. 349,282, 8-2-94, Cl. D14-124.000.
Luong, Ngoc M., to Franklin Electronic Publishers, Incorporated. Computer card package for providing additional memory and data for a digital book. 349,281, 8-2-94, Cl. D14-114.000.
Lynch, C. Richard. Combined cup and plate holder. 349,212, 8-2-94, Cl. D7-505.000.
Mariol, James F.: *See*—
Ragland, H. Nicholas; and Mariol, James F., 349,227, Cl. D8-99.000.
Marley, Harry B., to Marley, Harry B. Protecting scrub glove. 349,373, 8-2-94, Cl. D32-43.000.
Marsolais, Robert, to Marsolais, Robert. Tridimensional game board. 349,304, 8-2-94, Cl. D21-23.000.
Martine, Dale R.: *See*—
Jorgensen, Gary L.; Martine, Dale R.; Oenes, Leon C.; and Volan, Gregory D., 349,279, Cl. D14-108.000.
Marvin, Robert L., Jr.: *See*—
Youtsler, Mary B.; Adams, Ronald D.; O'Brian, Kevin R.; O'Grady, Richard M.; Marvin, Robert L., Jr.; Deutsch, Kenneth C.; and White, John O., 349,339, Cl. D24-133.000.
Mason, Jeffrey V., to Canvas & Leather Bag Co., Inc. Combination food and beverage carry bag. 349,191, 8-2-94, Cl. D3-289.000.
Maturino, Leo. Home recycling center bin. 349,380, 8-2-94, Cl. D34-7.000.
May, Eric E.: *See*—
Lichtman, Philip R.; and May, Eric E., 349,341, Cl. D24-143.000.
McCaffrey, Jeffrey T., to Anthro Corporation. Equipment rack cart. 349,383, 8-2-94, Cl. D34-19.000.
McCulloch Corporation: *See*—
Griffin, John, 349,220, Cl. D8-8.000.
Griffin, John, 349,221, Cl. D8-8.000.
McGrath RentCorp: *See*—
McGrath, Robert P., 349,348, Cl. D25-1.000.
McGrath, Robert P., to McGrath RentCorp. Modular building. 349,348, 8-2-94, Cl. D25-1.000.
McLaughlin, William E., II. Decorative light enclosure. 349,359, 8-2-94, Cl. D26-101.000.
Mead Corporation, The: *See*—
Kelemen, Donald D.; Hewell, Gerald M.; and Suttles, J. Marshall, 349,203, Cl. D6-470.000.
Medical Scientific, Inc.: *See*—
Hannon, William J.; and Keohan, Richard J., 349,343, Cl. D24-170.000.
Melton, James R.: *See*—
Eliadis, Luke; Melton, James R.; and Vlah, John A., 349,202, Cl. D6-467.000.
Mercado, Victor. Combined cooler and stereo. 349,215, 8-2-94, Cl. D7-605.000.
Merino, Tristan A.; and Sapper, Richard F., to International Business Machines Corporation. Combined integrated computer and display cover. 349,277, 8-2-94, Cl. D14-100.000.
Microsoft Corporation: *See*—
Kaneko, Steven T., 349,280, Cl. D14-114.000.
Microsurge, Inc.: *See*—
Lichtman, Philip R.; and May, Eric E., 349,341, Cl. D24-143.000.
Miller, Randy; and Wendt, David W., to Miller, Randy. Physical exerciser. 349,316, 8-2-94, Cl. D21-191.000.
Millers Falls Tool Company: *See*—
Ragland, H. Nicholas; and Mariol, James F., 349,227, Cl. D8-99.000.
Mobil Oil Corp.: *See*—
Goldberg, Alan E., 349,349, Cl. D25-34.000.
Goldberg, Alan E., 349,350, Cl. D25-56.000.
Moore, Kenneth S., to Precise Plastics, Ltd. Spray bottle. 349,236, 8-2-94, Cl. D9-300.000.
Mori, Chuzo, to Carl Jimuki Kabushiki Kaisha. Punch. 349,301, 8-2-94, Cl. D19-72.000.
Moriai, Ryusuke, to Casio Computer Co., Ltd. Wrist watch. 349,250, 8-2-94, Cl. D10-38.000.
Morris, E. Scott: *See*—
Close, Judith R.; Russell, Wayne M.; and Morris, E. Scott, 349,187, Cl. D2-972.000.
Motorola, Inc.: *See*—
Taylor, Terrance N., 349,273, Cl. D13-108.000.
Mukai, Fumie, to Yoshida Kogyo K.K. Slider for slide fasteners. 349,263, 8-2-94, Cl. D11-221.000.
Murus Company, The: *See*—
Keller, C. Stephen, 349,235, Cl. D8-384.000.
Nakai, Toshio, to Casio Computer Co., Ltd. Wrist watch. 349,246, 8-2-94, Cl. D10-38.000.
Nakai, Toshio, to Casio Computer Co., Ltd. Wrist watch. 349,249, 8-2-94, Cl. D10-38.000.
Newell, Robert D. Dust mop head. 349,374, 8-2-94, Cl. D32-50.000.
Nike, Inc.: *See*—
Passke, Joel L.; Forland, David M.; and Sarkinen, Larry R., 349,186, Cl. D2-961.000.
Nix, Robert J.; and Pycha, Charles, to Signode Corporation. Hand operated strapping tool. 349,294, 8-2-94, Cl. D15-145.000.
Northern Telecom Limited: *See*—
Kurtz, Michael, 349,283, Cl. D14-142.000.
Nurmi, Pekka: *See*—
Salo, Heikki; and Nurmi, Pekka, 349,370, Cl. D37-31.000.
Nyffeler, Mark R. Gardening tool. 349,223, 8-2-94, Cl. D8-11.000.
O'Brian, Kevin R.: *See*—
Youtsler, Mary B.; Adams, Ronald D.; O'Brian, Kevin R.; O'Grady, Richard M.; Marvin, Robert L., Jr.; Deutsch, Kenneth C.; and White, John O., 349,339, Cl. D24-133.000.
Oenes, Leon C.: *See*—
Jorgensen, Gary L.; Martine, Dale R.; Oenes, Leon C.; and Volan, Gregory D., 349,279, Cl. D14-108.000.
Offutt, James C. Basketball goal. 349,317, 8-2-94, Cl. D21-201.000.
O'Grady, Richard M.; and Peng, Johnson, to Duracraft Corporation. Evaporative humidifier. 349,334, 8-2-94, Cl. D23-360.000.
O'Grady, Richard M.: *See*—
Youtsler, Mary B.; Adams, Ronald D.; O'Brian, Kevin R.; O'Grady, Richard M.; Marvin, Robert L., Jr.; Deutsch, Kenneth C.; and White, John O., 349,339, Cl. D24-133.000.
Oldham, Floyd. Shirt and sock stay. 349,180, 8-2-94, Cl. D2-624.000.
Oliver, Norwood D.; and Wenzel-Murphy, Karen, to Kinney Shoe Corporation. Figure. 349,260, 8-2-94, Cl. D11-160.000.
Omega Engineering, Inc.: *See*—
Hollander, Milton B., 349,275, Cl. D13-133.000.
Passke, Joel L.; Forland, David M.; and Sarkinen, Larry R., to Nike, Inc. Bladder for a shoe sole. 349,186, 8-2-94, Cl. D2-961.000.
Patton, John M. Vehicle for clearing snow and ice from roadways. 349,265, 8-2-94, Cl. D12-14.000.
Peerless Lighting Corporation: *See*—
Herst, Douglas J.; and Salman, Utkan, 349,357, Cl. D26-85.000.
Herst, Douglas J.; and Salman, Utkan, 349,358, Cl. D26-85.000.
Peng, Johnson: *See*—
O'Grady, Richard M.; and Peng, Johnson, 349,334, Cl. D23-360.000.
Pentel Kabushiki Kaisha: *See*—
Shimizu, Kazuhisa, 349,297, Cl. D19-57.000.
Pfaltzgraff Co., The: *See*—
Capella, Joanne M., 349,210, Cl. D7-396.500.

VOL 1165 ISS 1 AG 2 1994 UMI

Piebenga, William C. Built in hydraulic jack. 349,386, 8-2-94, Cl. D34-31.000.
Polenberg, Myron, to Swiss Army Brands, Ltd. Watch strap. 349,257, 8-2-94, Cl. D11-3.000.
Powers, Scott E. Holster-type ski carrier. 349,188, 8-2-94, Cl. D3-221.000.
Precise Plastics, Ltd.: *See*—
Moore, Kenneth S., 349,236, Cl. D9-300.000.
Pycha, Charles: *See*—
Nix, Robert J.; and Pycha, Charles, 349,294, Cl. D15-145.000.
Ragland, H. Nicholas; and Mariol, James F., to Millers Falls Tool Company. Retractable blade utility knife. 349,227, 8-2-94, Cl. D8-99.000.
Rasmussen, Corey. Billiard glove. 349,364, 8-2-94, Cl. D29-113.000.
Reebok International Ltd.: *See*—
Close, Judith R.; Russell, Wayne M.; and Morris, E. Scott, 349,187, Cl. D2-972.000.
Reichenberg, George: *See*—
Lunka, Harold A.; Reichenberg, George; and Volan, Gregory D., 349,282, Cl. D14-124.000.
Rhoton, William L., to Ironworks Manufacturing, Inc. Armature test stand. 349,293, 8-2-94, Cl. D15-130.000.
Robbins, Richard J.: *See*—
Roberts, Dennis E.; Robbins, Richard J.; and Kim, Hyunkyu, 349,324, Cl. D22-140.000.
Robbins, Tom E., to Kallista, Inc. Handle for plumbing fittings. 349,329, 8-2-94, Cl. D23-252.000.
Roberts, Dennis E.; Robbins, Richard J.; and Kim, Hyunkyu, to Zebco Corporation. Baitcast reel. 349,324, 8-2-94, Cl. D22-140.000.
Robertus, Johannes G., to U.S. Philips Corporation. Delegate unit for conference system. 349,284, 8-2-94, Cl. D14-159.000.
Robertus, Johannes G., to U.S. Philips Corporation. Chairman unit for conference system. 349,285, 8-2-94, Cl. D14-159.000.
Robertus, Johannes G., to U.S. Philips Corporation. Interpreter unit for conference system. 349,286, 8-2-94, Cl. D14-159.000.
Rockwell, Paul H. Chess set. 349,307, 8-2-94, Cl. D21-52.000.
Rohner, Eduard: *See*—
Stutzer, Franz A.; and Rohner, Eduard, 349,377, Cl. D32-70.000.
Ronnholm, Karl S.: *See*—
Linden, Erkki O.; and Ronnholm, Karl S., 349,222, Cl. D8-10.000.
Rose, Robert J.: *See*—
Sleboda, Bruce; and Rose, Robert J., 349,201, Cl. D6-601.000.
Rosemount Inc.: *See*—
Kian, Ahmad A.; and Bedney, Paul R., Jr., 349,274, Cl. D13-128.000.
Rosenberger, Feige. Shpitzel religious hair article. 349,184, 8-2-94, Cl. D2-875.000.
Rowenta-Werke GmbH: *See*—
Stutzer, Franz A.; and Rohner, Eduard, 349,377, Cl. D32-70.000.
Rowley, David S.: *See*—
Snoke, Phillip J.; Gamper, Steven C.; Gillespie, Lionel D.; Rowley, David S.; and Copeland, Bruce W., 349,340, Cl. D24-138.000.
Rubbermaid Incorporated: *See*—
Bird, David A.; and Wilgus, Mitchell L., 349,372, Cl. D32-37.000.
Wolff, Stacy L., 349,207, Cl. D6-536.000.
Rubin, Allen C. Anchored golf tee. 349,318, 8-2-94, Cl. D21-208.000.
Rudd, Tom; and Stahel, Alwin J., to KuryAkyn Holdings, Inc. Motorcycle frame cover. 349,266, 8-2-94, Cl. D12-117.000.
Russell, John P. Face shield. 349,362, 8-2-94, Cl. D29-110.000.
Russell, Wayne M.: *See*—
Close, Judith R.; Russell, Wayne M.; and Morris, E. Scott, 349,187, Cl. D2-972.000.
Ruyts, Paul. Grinding wheel dressing tool. 349,226, 8-2-94, Cl. D8-74.000.
Ryobi Motor Products Corp.: *See*—
Chunn, Daniel A., 349,292, Cl. D15-125.000.
S&S Asset Management Co.: *See*—
Gonsior, Stanley W., 349,360, Cl. D26-125.000.
Safety 1st, Inc.: *See*—
Abrams, Randy L., 349,345, Cl. D24-195.000.
Abrams, Randy L., 349,346, Cl. D24-195.000.
Sundberg, Brian, 349,310, Cl. D21-59.000.
Sage, George E. Battery charger for a trapezoidal battery. 349,272, 8-2-94, Cl. D13-107.000.
Salman, Utkan: *See*—
Herst, Douglas J.; and Salman, Utkan, 349,357, Cl. D26-85.000.
Herst, Douglas J.; and Salman, Utkan, 349,358, Cl. D26-85.000.
Salo, Heikki; and Nurmi, Pekka, to AKP-Tekno Oy. Suction terminal housing for a central vacuum cleaner system. 349,370, 8-2-94, Cl. D32-31.000.
Sapper, Richard F.: *See*—
Merino, Tristan A.; and Sapper, Richard F., 349,277, Cl. D14-100.000.
Sarkinen, Larry R.: *See*—
Passke, Joel L.; Forland, David M.; and Sarkinen, Larry R., 349,186, Cl. D2-961.000.
Sauter, Bruce M.; and Short, Kevin G., to Sterling Plumbing Group, Inc. Spout. 349,330, 8-2-94, Cl. D23-255.000.
Schering-Plough HealthCare Products Inc.: *See*—
Granick, Stewart E.; Kannett, Irving K.; and Skwarek, Gary M., 349,219, Cl. D7-687.000.
Schnadig Corporation: *See*—
Lee, Chun S., 349,198, Cl. D6-379.000.
Securecase Company, The: *See*—
Cislo, Daniel M., 349,231, Cl. D8-349.000.
Sensormatic Electronics Corporation: *See*—
Buzzard, Jon D., 349,254, Cl. D10-106.000.
Sharp Kabushiki Kaisha: *See*—
Hokazono, Manabu, 349,287, Cl. D14-168.000.
Shimizu, Kazuhisa, to Pentel Kabushiki Kaisha. Cap for a writing instrument. 349,297, 8-2-94, Cl. D19-57.000.
Short, Kevin G.: *See*—
Sauter, Bruce M.; and Short, Kevin G., 349,330, Cl. D23-255.000.
Shurtleff, Jill M.: *See*—
Lazarchik, Daniel B.; and Shurtleff, Jill M., 349,242, Cl. D9-444.000.
Signode Corporation: *See*—
Nix, Robert J.; and Pycha, Charles, 349,294, Cl. D15-145.000.
Simmon, Sean, to Singer Company, N.V., The. Electric iron. 349,378, 8-2-94, Cl. D32-70.000.
Singer Company, N.V., The: *See*—
Simmon, Sean, 349,378, Cl. D32-70.000.
Singleton Industries Pty. Ltd.: *See*—
Evans, Graeme R., 349,218, Cl. D7-628.000.
Skwarek, Gary M.: *See*—
Granick, Stewart E.; Kannett, Irving K.; and Skwarek, Gary M., 349,219, Cl. D7-687.000.
Sleboda, Bruce; and Rose, Robert J., to Carpenter Co. Combined seat and back support cushion. 349,201, 8-2-94, Cl. D6-601.000.
Sligh Furniture Co.: *See*—
Kelley, James O., 349,200, Cl. D6-427.000.
Sloan, James F.; and Joyner, David B., to Empire Brushes, Inc. Combined brush and scraper. 349,193, 8-2-94, Cl. D4-118.000.
Smit, Michael: *See*—
Altman, Michael; and Smit, Michael, 349,306, Cl. D21-48.000.
Smith, Frederick M. Combined condiment holder and stirrer. 349,209, 8-2-94, Cl. D7-300.200.
Snoke, Phillip J.; Gamper, Steven C.; Gillespie, Lionel D.; Rowley, David S.; and Copeland, Bruce W., to Catheter Imaging Systems. Catheter imaging light source. 349,340, 8-2-94, Cl. D24-138.000.
Spencer, Jeff. Holder for drink containers. 349,217, 8-2-94, Cl. D7-625.000.
Stahel, Alwin J.: *See*—
Rudd, Tom; and Stahel, Alwin J., 349,266, Cl. D12-117.000.
Star Industrial Co., Ltd.: *See*—
Leung, Jhi Hung, 349,192, Cl. D3-313.000.
Starck, Philippe, to J. C. Decaux. Bin. 349,379, 8-2-94, Cl. D34-1.000.
Steenland, Gerard Th.H., to Steenland's Chocoladefabriek B.V. Package. 349,239, 8-2-94, Cl. D9-415.000.
Steenland's Chocoladefabriek B.V.: *See*—
Steenland, Gerard Th.H., 349,239, Cl. D9-415.000.
Steinfels, Victor E., III. Beverage container holder. 349,216, 8-2-94, Cl. D7-623.000.
Sterling Plumbing Group, Inc.: *See*—
Sauter, Bruce M.; and Short, Kevin G., 349,330, Cl. D23-255.000.
Stone, Philip; and Stout, Craig, to Ethan Allen Inc. Arm chair. 349,197, 8-2-94, Cl. D6-379.000.
Storage Technology Corporatino: *See*—
Jorgensen, Gary L.; Martine, Dale R.; Oenes, Leon C.; and Volan, Gregory D., 349,279, Cl. D14-108.000.
Storage Technology Corporation: *See*—
Lunka, Harold A.; Reichenberg, George; and Volan, Gregory D., 349,282, Cl. D14-124.000.
Stout, Craig: *See*—
Stone, Philip; and Stout, Craig, 349,197, Cl. D6-379.000.
Stutz, Mark W.: *See*—
Delaney, Timothy J.; and Stutz, Mark W., 349,313, Cl. D21-150.000.
Stutzer, Franz A.; and Rohner, Eduard, to Rowenta-Werke GmbH. Steam iron. 349,377, 8-2-94, Cl. D32-70.000.
Sube, Minoru: *See*—
Ito, Masafumi; Sube, Minoru; Takita, Haruki; and Watanabe, Hiroyuki, 349,288, Cl. D14-168.000.
Suggs, Donald R., Sr., to Tire Shuttle, Inc. Tire dolly. 349,385, 8-2-94, Cl. D34-26.000.
Sugita, Shoichi, to Casio Computer Co., Ltd. Wrist watch. 349,247, 8-2-94, Cl. D10-38.000.
Sundberg, Brian, to Safety 1st, Inc. Activity toy. 349,310, 8-2-94, Cl. D21-59.000.
Suttles, J. Marshall: *See*—
Kelemen, Donald D.; Hewell, Gerald M.; and Suttles, J. Marshall, 349,203, Cl. D6-470.000.
Swiss Army Brands, Ltd.: *See*—
Polenberg, Myron, 349,257, Cl. D11-3.000.
Takita, Haruki: *See*—
Ito, Masafumi; Sube, Minoru; Takita, Haruki; and Watanabe, Hiroyuki, 349,288, Cl. D14-168.000.
Taylor, Terrance N., to Motorola, Inc. Battery charger. 349,273, 8-2-94, Cl. D13-108.000.
TEAC Corporation: *See*—
Ito, Masafumi; Sube, Minoru; Takita, Haruki; and Watanabe, Hiroyuki, 349,288, Cl. D14-168.000.
Teknion Furniture Systems: *See*—
Crinion, Jonathan, 349,338, Cl. D23-386.000.
Crinion, Jonathan, 349,384, Cl. D34-23.000.
Terrell, Betty L. Furniture leg cap. 349,233, 8-2-94, Cl. D8-374.000.
Thornell, Ernest L., to Handi-Pac, Inc. Push toy. 349,309, 8-2-94, Cl. D21-59.000.
Tire Shuttle, Inc.: *See*—
Suggs, Donald R., Sr., 349,385, Cl. D34-26.000.

TRC Acquisition Corporation: *See*—
Furcron, Kent J.; and Dziersk, Mark D., 349,371, Cl. D32-32.000.
Triner, Robert D. Skill and amusement toy. 349,308, 8-2-94, Cl. D21-59.000.
Tsuji, Masao, to Hunter Fan Company. Ceiling fan. 349,336, 8-2-94, Cl. D23-377.000.
Tsuji, Masao, to Hunter Fan Company. Ceiling fan. 349,337, 8-2-94, Cl. D23-377.000.
U.S. Balloon Manufacturing Co., Inc.: *See*—
Isaacs, Michael S., 349,311, Cl. D21-84.000.
U.S. Philips Corporation: *See*—
Robertus, Johannes G., 349,284, Cl. D14-159.000.
Robertus, Johannes G., 349,285, Cl. D14-159.000.
Robertus, Johannes G., 349,286, Cl. D14-159.000.
Vananderoye, Dirk J. N., 349,289, Cl. D14-217.000.
Vananderoye, Dirk J. N., to U.S. Philips Corporation. Infra-red language distribution receiver. 349,289, 8-2-94, Cl. D14-217.000.
Van Noy, Stephen J.; and Hambleton, Robert, to Alcon Laboratories, Inc. Intraocular lens folder. 349,342, 8-2-94, Cl. D24-143.000.
Vlah, John A.: *See*—
Eliadis, Luke; Melton, James R.; and Vlah, John A., 349,202, Cl. D6-467.000.
Volan, Gregory D.: *See*—
Jorgensen, Gary L.; Martine, Dale R.; Oenes, Leon C.; and Volan, Gregory D., 349,279, Cl. D14-108.000.
Lunka, Harold A.; Reichenberg, George; and Volan, Gregory D., 349,282, Cl. D14-124.000.
Von Fange, Eric. Theatrical C-clamp. 349,225, 8-2-94, Cl. D8-73.000.
VTECH Industries, Inc.: *See*—
Fok, Chin T., 349,299, Cl. D19-60.000.
Lau, Pui C., 349,300, Cl. D19-62.000.
Leung, Chi K., 349,298, Cl. D19-60.000.
WAECO-Wahning & Co. GmbH: *See*—
Wedi, Heiner, 349,214, Cl. D7-605.000.
Walt Disney Company, The: *See*—
Delaney, Timothy J.; and Stutz, Mark W., 349,313, Cl. D21-150.000.
Wang, Allen Y. L., to Eutech Enterprise Ltd. Air freshener. 349,335, 8-2-94, Cl. D23-366.000.
Wasserman, Harold F. Bottle holder. 349,190, 8-2-94, Cl. D3-229.000.
Watanabe, Hiroyuki: *See*—
Ito, Masafumi; Sube, Minoru; Takita, Haruki; and Watanabe, Hiroyuki, 349,288, Cl. D14-168.000.
Wedi, Heiner, to WAECO-Wahning & Co. GmbH. Cooler lid. 349,214, 8-2-94, Cl. D7-605.000.
Weidemann, Peter. Pocket microscope. 349,295, 8-2-94, Cl. D16-131.000.
Wendt, David W.: *See*—
Miller, Randy; and Wendt, David W., 349,316, Cl. D21-191.000.
Wenzel-Murphy, Karen; and Kao, Stan. Conical channel for retail displays. 349,302, 8-2-94, Cl. D20-10.000.
Wenzel-Murphy, Karen: *See*—
Oliver, Norwood D.; and Wenzel-Murphy, Karen, 349,260, Cl. D11-160.000.
Wetrin, Israel, to Elonex PLC. Notebook computer housing. 349,278, 8-2-94, Cl. D14-106.000.
Whalen, Jason P. Stuffed toy. 349,312, 8-2-94, Cl. D21-148.000.
White, John O.: *See*—
Youtsler, Mary B.; Adams, Ronald D.; O'Brian, Kevin R.; O'Grady, Richard M.; Marvin, Robert L., Jr.; Deutsch, Kenneth C.; and White, John O., 349,339, Cl. D24-133.000.
Wilgus, Mitchell L.: *See*—
Bird, David A.; and Wilgus, Mitchell L., 349,372, Cl. D32-37.000.
Windle, G. Richard. Face protective mask. 349,363, 8-2-94, Cl. D29-110.000.
Winston Furniture Company of Alabama, Inc.: *See*—
Hess, Stephen C., 349,195, Cl. D6-376.000.
Witte, Paul. Ornament. 349,258, 8-2-94, Cl. D11-121.000.
Wolfe, Henry, to Aqua-Leisure Industries, Inc. Recreational floatation device with cross-bar. 349,322, 8-2-94, Cl. D21-237.000.
Wolff, Stacy L., to Rubbermaid Incorporated. Soap case. 349,207, 8-2-94, Cl. D6-536.000.
Woodhams, Walter B. Bunk bed frame. 349,199, 8-2-94, Cl. D6-393.000.
World Hint Limited: *See*—
Yau, Kai C. A., 349,354, Cl. D26-37.000.
Yau, Kai C. A., 349,355, Cl. D26-37.000.
Wu, Ching-Chang. Top bag holder of golf cart. 349,382, 8-2-94, Cl. D34-15.000.
Yamamoto, Hideyuki, to Casio Computer Co., Ltd. Wrist watch. 349,248, 8-2-94, Cl. D10-38.000.
Yau, Kai C. A., to World Hint Limited. Flashlight. 349,354, 8-2-94, Cl. D26-37.000.
Yau, Kai C. A., to World Hint Limited. Flashlight. 349,355, 8-2-94, Cl. D26-37.000.
Yoshida Kogyo K.K.: *See*—
Mukai, Fumie, 349,263, Cl. D11-221.000.
Youtsler, Mary B.; Adams, Ronald D.; O'Brian, Kevin R.; O'Grady, Richard M.; Marvin, Robert L., Jr.; Deutsch, Kenneth C.; and White, John O., to Ethicon, Inc. Surgical adhesion barrier applicator. 349,339, 8-2-94, Cl. D24-133.000.
Zaleski, Erick: *See*—
Zaleski, Nicholas; and Zaleski, Erick, 349,255, Cl. D10-109.000.
Zaleski, Nicholas; and Zaleski, Erick. Boat distress signal kit. 349,255, 8-2-94, Cl. D10-109.000.
Zebco Corporation: *See*—
Roberts, Dennis E.; Robbins, Richard J.; and Kim, Hyunkyu, 349,324, Cl. D22-140.000.

VOL 1165 ISS 1 AG 2 1994 UMI

LIST OF PLANT PATENTEES

Bear Creek Gardens, Inc.: *See*—
Zary, Keith W., 8,850, Cl. 8.100.

Buszard, eborah; and Shahrokh, Khanizadeh, to McGill University. June-bearing strawberry named Chambly. 8,853, 8-2-94, Cl. 48.000.

Fruehwirth, Franz, to Paul Ecke Ranch. Poinsettia plant '585'. 8,854, 8-2-94, Cl. 86.200.

Fruehwirth, Franz, to Paul Ecke Ranch. Poinsettia plant 'F-29'. 8,855, 8-2-94, Cl. 86.300.

Gruppe, Werner; and Schmidt, Hanna, to Inter-Plant Patent Marketing, Inc. Cherry rootstock GI 148/8. 8,852, 8-2-94, Cl. 37.000.

Inter-Plant Patent Marketing, Inc.: *See*—
Gruppe, Werner; and Schmidt, Hanna, 8,852, Cl. 37.000.

McGill University: *See*—
Buszard, eborah; and Shahrokh, Khanizadeh, 8,853, Cl. 48.000.

Nicolai, Johan, to N.V. Jo Nicolai & Co. Jonagold apple tree: Jored variety. 8,851, 8-2-94, Cl. 34.100.

N.V. Jo Nicolai & Co.: *See*—
Nicolai, Johan, 8,851, Cl. 34.100.

Paul Ecke Ranch: *See*—
Fruehwirth, Franz, 8,854, Cl. 86.200.
Fruehwirth, Franz, 8,855, Cl. 86.300.

Schmidt, Hanna: *See*—
Gruppe, Werner; and Schmidt, Hanna, 8,852, Cl. 37.000.

Shahrokh, Khanizadeh: *See*—
Buszard, eborah; and Shahrokh, Khanizadeh, 8,853, Cl. 48.000.

Zary, Keith W., to Bear Creek Gardens, Inc. Minature rose plant named 'JACimin'. 8,850, 8-2-94, Cl. 8.100.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 2ND DAY OF AUGUST, 1994

Akiyama, Seiji: *See*—
Saitou, Mitsuo; Hirano, Katsumi; Murai, Ashita; and Akiyama, Seiji, H1343, Cl. 430-567.000.

Baldauf, Frederick C.; Busey, Brent R.; and Thames, Kenneth E., to United States of America, Army. Portable automatic sensor for toxic gases. H1344, 8-2-94, Cl. 435-20.000.

Biller, Scott A., to Bristol-Myers Squibb Company. Method for preventing or treating hepatitis D. H1345, 8-2-94, Cl. 514-108.000.

Bristol-Myers Squibb Company: *See*—
Biller, Scott A., H1345, Cl. 514-108.000.

Busey, Brent R.: *See*—
Baldauf, Frederick C.; Busey, Brent R.; and Thames, Kenneth E., H1344, Cl. 435-20.000.

Fuji Photo Film Co., Ltd.: *See*—
Saitou, Mitsuo; Hirano, Katsumi; Murai, Ashita; and Akiyama, Seiji, H1343, Cl. 430-567.000.

Godsey, James H.: *See*—
Hughes, Charles W.; Godsey, James H.; and Keller, Robert F., H1341, Cl. 149-19.400.

Greeninger, Daniel R.; and Thompson, David L., to Medtronicm Inc. Audio feedback for implantable medical device instruments. H1347, 8-2-94, Cl. 607-30.000.

Hirano, Katsumi: *See*—
Saitou, Mitsuo; Hirano, Katsumi; Murai, Ashita; and Akiyama, Seiji, H1343, Cl. 430-567.000.

Hughes, Charles W.; Godsey, James H.; and Keller, Robert F. High energy propellant formulation. H1341, 8-2-94, Cl. 149-19.400.

Keller, Robert F.: *See*—
Hughes, Charles W.; Godsey, James H.; and Keller, Robert F., H1341, Cl. 149-19.400.

Kluttz, Robert Q., to Shell Oil Company. Functionalization of polyketone polymers. H1346, 8-2-94, Cl. 524-417.000.

Medtronicm Inc.: *See*—
Greeninger, Daniel R.; and Thompson, David L., H1347, Cl. 607-30.000.

Murai, Ashita: *See*—
Saitou, Mitsuo; Hirano, Katsumi; Murai, Ashita; and Akiyama, Seiji, H1343, Cl. 430-567.000.

Saitou, Mitsuo; Hirano, Katsumi; Murai, Ashita; and Akiyama, Seiji, to Fuji Photo Film Co., Ltd. Direct positive silver halide emulsion and a color diffusion transfer photographic film unit having the emulsion. H1343, 8-2-94, Cl. 430-567.000.

Shell Oil Company: *See*—
Kluttz, Robert Q., H1346, Cl. 524-417.000.

Thames, Kenneth E.: *See*—
Baldauf, Frederick C.; Busey, Brent R.; and Thames, Kenneth E., H1344, Cl. 435-20.000.

Thompson, David L.: *See*—
Greeninger, Daniel R.; and Thompson, David L., H1347, Cl. 607-30.000.

United States of America
Army: *See*—
Baldauf, Frederick C.; Busey, Brent R.; and Thames, Kenneth E., H1344, Cl. 435-20.000.
Navy: *See*—
Whitesell, Eric J., H1342, Cl. 395-275.000.

Whitesell, Eric J., to United States of America, Navy. Effectuating full duplex digital data transfer. H1342, 8-2-94, Cl. 395-275.000.

CLASSIFICATION OF PATENTS

ISSUED AUGUST 2, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

422 5,333,328
424 5,333,329

CLASS 4

144.3 5,333,330
324 5,333,331
326 5,333,332
348 5,333,321
496 5,333,322
5,333,323
567 5,333,324
584 5,333,325
639 5,333,326
693 5,333,327

CLASS 5

81.1 5,333,333
85.1 5,333,334
625 5,333,335
654 5,333,336

CLASS 8

108.1 5,334,224
158 5,333,338
[illegible] 5,334,225

CLASS 14

71.1 5,333,339
72.5 5,333,340

CLASS 15

29 5,333,337
104.002 5,333,341
105 5,333,342
106 5,333,343
146 5,333,344
159.1 5,333,345
167.1 5,333,346
220.1 5,333,347
235.4 5,333,348
235.8 5,333,349
250.13 5,333,351
250.21 5,333,350
261 5,333,352
264 5,333,353
301 5,333,354

CLASS 16

300 5,333,355
340 5,333,356

CLASS 19

99 5,333,357
105 5,333,358
159 R 5,333,359

CLASS 24

20 R 5,333,360
182 5,333,361
433 5,333,362
685 K 5,333,363

CLASS 28

172.2 5,333,364

CLASS 29

24.5 5,333,365
33 C 5,333,366
275 5,333,367
405 5,333,369
563 5,333,370
595 5,333,371
603 5,333,372
623.2 5,334,226
739 5,333,373
748 5,333,374
827 5,333,375
[illegible] 5,333,379
[illegible] 5,333,376
893.2 5,333,377
898.07 5,333,380
[illegible] 5,333,378

CLASS 30

2 5,333,381
47 5,333,382
87 5,333,383
120.2 5,333,384
371 5,333,385

CLASS 33

1 M 5,333,386
18.1 5,333,387
559 5,333,388
564 5,333,389
706 5,333,390
760 5,333,391

CLASS 34

79 5,333,395
166 5,333,396
363 5,333,392
440 5,333,393
467 5,333,394

CLASS 36

3 B 5,333,397
50.1 5,333,398

CLASS 37

455 5,333,399
468 5,333,400

CLASS 38

89 5,333,401
143 5,333,402

CLASS 42

69.02 5,333,403
72 5,333,404

CLASS 43

42.06 5,333,405
42.09 5,333,406
44.4 5,333,407
54.1 5,333,408

CLASS 44

320 5,334,227
347 5,334,228

CLASS 47

57.6 5,334,229
67 5,333,409

CLASS 49

35 5,333,410
352 5,333,411

CLASS 51

165.71 5,333,412
165.75 5,333,413
170 EB 5,333,414
281 R 5,333,415

CLASS 52

11 5,333,417
27 5,333,416
39 5,333,418
[illegible] 5,333,419
67 5,333,420
[illegible] 5,333,421
115 5,333,422
126.6 5,333,423
173.2 5,333,424
222 5,333,425
236.7 5,333,426
[illegible] 5,333,427
[illegible] 5,333,428
309.7 5,333,429
311.2 5,333,430
314 5,333,431
396.1 5,333,432
417 5,333,433
645 5,333,434
704 5,333,435
726.3 5,333,436

CLASS 53

284.3 5,333,437
399 5,333,438
450 5,333,439

CLASS 55

213 5,334,230
493 5,334,231

CLASS [illegible]

12.9 Re.34,678

CLASS 57

[illegible] 5,333,440
262 5,333,441
314 5,333,442

CLASS [illegible]

39.31 5,333,443
221 5,333,444
270.1 5,333,445
274 5,333,446
278 5,333,447
325 5,333,448
427 5,333,449
459 5,333,450
5,333,454
[illegible] 5,333,451
[illegible] 5,333,452
487 5,333,453
533 5,333,455
605.2 5,333,456
[illegible] 5,333,457
722 5,333,458
723 5,333,459

CLASS 62

6 5,333,460
11 5,333,461
24 5,333,462
5,333,463
51.1 5,333,464
53.1 5,333,465
55.5 5,333,466
77 5,333,467
174 5,333,468
181 5,333,469
333 5,333,470
476 5,333,471
503 5,333,472

CLASS 65

171 5,334,233
351 5,334,234
388 5,334,232

CLASS 66

106 5,333,473

CLASS 68

12.16 5,333,474
27 5,333,475

CLASS 70

38 A 5,333,476
209 5,333,478
226 5,333,477

CLASS 72

110 5,333,480
150 5,333,481
307 5,333,482
325 5,333,483
349 5,333,484
367 5,333,485
391.2 5,333,486

CLASS 73

1 J 5,333,488
23.31 5,333,487
35 5,333,489
40.5 R 5,333,490
49.3 5,333,491
5,333,492
73 5,333,493
104 5,333,494
105 5,333,495
202 5,333,496
219 5,333,497
304 R 5,333,498
317 Re.34,679
[illegible] 5,333,499
[illegible] 5,333,500
592 5,333,501
623 5,333,502
642 5,333,503
727 5,333,504
5,333,505
756 5,333,506
5,333,507
861.25 5,333,508
862.391 5,333,509
862.581 5,333,510
864.34 5,333,511

CLASS 74

331 5,333,512
335 5,333,709
424.8 A 5,333,513
479 BW 5,333,514
[illegible] 5,333,515
665 GC 5,333,516
810.1 5,333,517

CLASS 75

255 5,334,235
415 5,334,236

CLASS 76

[illegible] 5,333,518
107.8 5,333,519
108.2 5,333,520

CLASS 81

9.51 5,333,521
59.1 Re.34,680
64 5,333,522
177.85 5,333,523

CLASS 82

127 5,333,524

CLASS 83

23 5,333,525
256 5,333,526

CLASS 84

95.1 5,334,797
291 5,333,527

CLASS 89

1.51 5,333,528
13.1 5,333,530
14.3 5,333,529
26 5,333,531
36.02 5,333,532

CLASS 91

361 5,333,533
376 R 5,333,534

CLASS 92

88 5,333,535
155 5,333,536

CLASS 95

12 5,334,248
25 5,334,237
59 5,334,238
261 5,334,239

CLASS 99

287 5,333,537
353 5,333,538
403 5,333,539
421 H 5,333,540

CLASS 100

41 5,333,541
45 5,333,542
53 5,333,543
5,333,544
93 S 5,333,556

CLASS 101

76 5,333,545
216 5,333,546
[illegible] 5,333,547
467 5,333,548
483 5,333,549

CLASS [illegible]

331 5,333,550
439 5,333,551
[illegible] 5,333,552

CLASS [illegible]

[illegible] 5,333,553

CLASS [illegible]

397 5,333,554

CLASS [illegible]

1.22 5,334,240
487 5,334,241
711 5,334,242
794 5,334,243

CLASS [illegible]

51.1 5,333,555
65 5,333,557

CLASS 110

346 5,333,558

CLASS 111

152 5,333,559

CLASS 112

121.11 5,333,560
121.14 5,333,561
262.1 5,333,562
262.3 5,333,563
275 5,333,564
291 5,333,565

CLASS 114

102 5,333,566
5,333,567
103 5,333,568
5,333,569
144 R 5,333,570

CLASS 117

57 5,334,278
102 5,334,277

CLASS 118

19 5,334,244
59 5,334,245
69 5,334,246
411 5,334,247
500 5,334,257
679 5,334,249
724 5,334,250
725 5,334,251
726 5,334,252

CLASS 119

56.1 5,333,571
57.91 5,333,572

CLASS 122

39 5,333,573
367.1 5,333,574

CLASS 123

41.42 5,333,575
90.15 5,333,577
90.17 5,333,578
5,333,579
184.53 5,333,576
185.3 5,333,580
193.5 5,333,581
254 5,333,582
295 5,333,583
339 5,333,585
399 5,333,584
414 5,333,586
456 5,333,587
[illegible] 5,333,588
520 5,333,589
5,333,590
527 5,333,591
634 5,333,592
637 5,333,593

CLASS 124

73 5,333,594
88 5,333,595

CLASS 126

41 R 5,333,596
110 R 5,333,597
116 R 5,333,598
299 D 5,333,599
343.5 A 5,333,600
523 5,333,601
[illegible] 5,333,602

CLASS 127

63 5,334,253

CLASS [illegible]

7 5,333,603
200.24 5,333,606
204.18 5,333,607
207.14 5,333,608
632 5,333,609
633 5,333,610
660.9 5,333,612
[illegible] 5,333,613
[illegible] 5,333,614
[illegible] 5,333,615
5,333,616
697 5,333,617
734 5,333,618
754 5,333,619
772 5,333,620
[illegible] 5,333,621
[illegible] 5,333,622
875 5,333,623
897 5,333,624
[illegible] 5,333,625
5,333,626

CLASS 132

108 5,333,627

CLASS 134

25.4 5,334,254
38 5,334,255
5,334,256
42 5,334,258
64 R 5,333,628
76 5,333,629
104.1 5,333,630
5,333,631
105 5,333,632
182 5,333,633

CLASS 135

98 5,333,634

CLASS 136

258 5,334,259

CLASS 137

12 5,333,635
5,333,636
83 5,333,637
116 5,333,638
150 5,333,639
262 5,333,640
264 5,333,641
557 5,333,642
605 5,333,643
614.18 5,333,644
627.5 5,333,645
827 5,333,646
[illegible] 5,333,647

CLASS 138

26 5,333,648
89 5,333,649
109 5,333,650

CLASS 139

435.5 5,333,651
455 5,333,652

CLASS 141

1 5,333,653
5,333,654
59 5,333,655
263 5,333,660
330 5,333,656

CLASS 142

24 5,333,657

CLASS 144

213 5,333,658
231 5,333,659

CLASS 148

23 5,334,260
5,334,261
121 5,334,262
217 5,334,263
222 5,334,264
302 5,334,265
403 5,334,266
425 5,334,267
530 5,334,268
638 5,334,269

CLASS 149

19.4 5,334,270

CLASS 152

379.3 5,333,661
510 5,333,662

CLASS 156

51 5,334,271
[illegible] 5,334,272
[illegible] 5,334,273
93 5,334,274
264 5,334,275
[illegible] 5,334,276
630 5,334,279
635 5,334,280
[illegible] 5,334,281
643 5,334,282
[illegible] 5,334,283
[illegible] 5,334,284

VOL 1165 ISS 1 AG 2 1994 UMI

CLASS 160

22 5,333,663
23.1 5,333,664
84.1 D 5,333,665

CLASS 162

4 5,334,285
158 5,334,286
175 5,334,287
358.1 5,334,288
358.2 5,334,289

CLASS 164

45 5,333,666
97 5,333,667
100 5,333,668
160.1 5,333,669
364 5,333,670
436 5,333,671
468 5,333,672
528 5,333,673

CLASS 165

11.1 5,333,674
12 5,333,675
13 5,333,676
32 5,333,677
42 5,333,678
43 5,333,679
47 5,333,680
82 5,333,681
133 5,333,682
166 5,333,683

CLASS 166

54 5,333,684
123 5,333,685
250 5,333,686
272 5,333,687
278 5,333,688
5,333,689
291 5,333,690
341 5,333,691
387 5,333,692

CLASS 171

82 5,333,693

CLASS 172

3 5,333,479
156 5,333,694
272 5,333,695
772 5,333,696
821 5,333,697

CLASS 174

17 VA 5,334,799
35 R 5,334,798
5,334,800
47 5,334,801
52.2 5,334,802
52.4 5,334,803
267 5,334,804

CLASS 175

65 5,333,698
431 5,333,699

CLASS 178

18 5,334,805

CLASS 180

9.5 5,333,710
79.1 5,333,700
5,333,701
208 5,333,702
271 5,333,703

CLASS 181

5,334,806

CLASS 184

11.4 5,333,704

CLASS 187

126 5,334,807

CLASS 188

71.5 5,333,705
156 5,333,706
296 5,333,707
322.14 5,333,708

CLASS 192

53 B 5,333,712
71 5,333,711
89.22 5,333,713

CLASS 194

5,333,714

CLASS 198

372 5,333,715
5,333,716
5,333,717
397 5,333,718
5,333,719
409 5,333,720
418.6 5,333,721
436 5,333,722
484.1 5,333,723
495 5,333,724
632 5,333,725

CLASS 200

50 AA 5,334,808
262 5,334,809
294 5,334,810
302.3 5,334,811

CLASS 202

205 5,334,290
234 5,334,291

CLASS 204

59 R 5,334,292
5,334,293
129.55 5,334,294
153.12 5,334,296
153.16 5,334,295
181.2 5,334,297
182.5 B1 4,925,541
192.12 5,334,298
196 5,334,299
257 5,334,300
267 5,334,301
298.09 5,333,726
298.18 5,334,302
412 5,334,303
421 5,334,304
435 5,334,305

CLASS 205

131 5,334,306

CLASS 206

6.1 5,333,727
232 5,333,728
5,333,729
315.6 5,333,731
316.1 5,333,732
330 5,333,733
427 5,333,734
5,333,735
524.8 5,333,736
554 5,333,730
5,333,737

CLASS 208

254 H 5,334,307
299 5,334,308

CLASS 209

38 5,333,738
582 5,333,739

CLASS 210

133 5,334,309
198.2 5,334,310
5,334,311
610 5,334,312
624 5,334,313
5,334,314
5,334,315
5,334,316
5,334,317

CLASS 211

5,333,740
5,333,741
65 5,333,742
87 5,333,743
5,333,744
5,333,745
187 5,333,746

CLASS 219

68 5,334,812
72 5,334,813
119 5,334,814
121.7 5,334,815
121.83 5,334,816
492 5,334,817
539 5,334,818
628 5,334,819
703 Re.34,683
730 5,334,820

CLASS 220

320 5,333,747
343 5,333,748
462 5,333,749
5,333,750
512 5,333,751
565 5,333,752

CLASS 221

33 5,333,753
75 5,333,754

CLASS 222

1 5,333,755
5,333,756
5,333,757
101 5,333,758
129.1 5,333,759
137 5,333,760
212 5,333,761
238 5,333,762
386.5 5,333,763
602 5,333,764

CLASS 223

28 5,333,765

CLASS 224

42.21 5,333,766
158 5,333,769
183 5,333,767
215 5,333,768

CLASS 226

15 5,333,770
92 5,333,771

CLASS 227

176 5,333,772
179 5,333,773

CLASS 228

46 5,333,774
157 5,333,775
219 5,333,776

CLASS 229

75 5,333,780
117.16 5,333,777
120.24 5,333,778
125.08 5,333,779
229 5,333,781

CLASS 232

28 5,333,782

CLASS 235

5,334,821
5,334,823
5,334,824
385 5,334,822
437 5,334,825
455 5,334,826
492 5,334,827

CLASS 236

13 5,333,783
91 C 5,333,784

CLASS 238

5,333,785
5,333,786
227 5,333,787
241 5,333,788
318 5,333,789
391 5,333,790
428.5 5,333,791
5,333,792
533.1 5,333,793
5,333,794
663 5,333,795
734 5,333,796

CLASS 241

19 5,333,797
24 5,333,798
27 5,333,799
46.02 5,333,801
65 5,333,802
69 5,333,804

CLASS 242

7.01 5,333,800
160.3 5,333,805
232 5,333,811
261 5,333,812
322 5,333,813
332.4 5,333,810
334.6 5,333,807
342 5,333,806
347 5,335,131
555.3 5,333,803
578.1 5,333,809
598.3 5,333,808

CLASS 244

1 TD 5,333,814
3.16 5,333,815
5,333,816
97 5,333,817
118.6 5,333,818
5,333,819

CLASS 246

249 5,333,820

CLASS 248

52 5,333,821
71 5,333,822
146 5,333,823
159 5,333,824
188.2 5,333,825
229 5,333,826
289.1 5,333,827
519 5,333,828
634 5,333,829
679 5,333,830

CLASS 250

206.2 5,334,828
208.1 5,334,829
216 5,334,830
227.17 5,334,831
227.24 5,334,832
270 5,334,833
288 5,334,834
5,334,835
316.1 5,334,836
330 5,334,844
339 5,334,837
361 R 5,334,838
5,334,839
458.1 5,334,841
483.1 5,334,840
5,334,842
486.1 5,334,843
492.2 5,334,845
5,334,846
506.1 5,334,847
5,334,848
559 5,334,849
577 5,334,850
582 5,334,851
589 5,334,852

CLASS 251

1.3 5,333,832
11 5,333,831
77 5,333,833
5,333,834
129.12 5,333,835
129.15 5,333,836
216 5,333,837
305 5,333,838

CLASS 252

38 5,334,318
46.006 5,334,319
46.6 5,334,320
49.6 5,334,329
51.5 A 5,334,321
52 A 5,334,322
70 5,334,323
91 5,334,324
174.16 5,334,325
186.26 5,334,326
299.61 5,334,328
299.67 5,334,327
512 5,334,330
542 5,334,331
548 5,334,332
582 5,334,333

CLASS 257

5,334,853
13 5,334,854
5,334,855
5,334,856
5,334,857
5,334,858
5,334,859
57 5,334,860
59 5,334,861
67 5,334,862
5,334,863
78 5,334,864
192 5,334,865
207 5,334,866
222 5,334,867
244 5,334,868
309 5,334,869
371 5,334,870
402 5,334,871
5,334,873
675 5,334,872
678 5,334,874
686 5,334,875

CLASS 264

28 5,334,334
36 5,334,335
45.3 5,334,336
5,334,337
46.4 5,334,338
65 5,334,339
161 5,334,340
317 5,334,342
328.1 5,334,343

CLASS 266

45 5,333,839
47 5,333,840
51 5,333,841
226 5,333,842
271 5,333,843
275 5,333,844

CLASS 267

140.12 5,333,847
140.14 5,333,846
711 5,333,845

CLASS 271

3.1 5,333,848
5,333,849
164 5,333,850
171 5,333,851
225

CLASS 273

1.5 A 5,333,853
26 A 5,333,855
5,333,856
67 A 5,333,857
73 G 5,333,858
73 R 5,333,854
77 A 5,333,859
5,333,860
78 5,333,861
80 C 5,333,862
80.2 5,333,863
85 D 5,333,864
94 5,333,865
118 R 5,333,866
129 M 5,333,867
138 A 5,333,868
153 S 5,333,869
164.1 5,333,870
169 5,333,871
5,333,872
175 5,333,873
185 B 5,333,874
187.1 5,333,875
195 B 5,333,876
235 R 5,334,673
248 5,333,877
283 5,333,878
400 5,333,879
411 5,333,880
416 5,333,881

CLASS 277

1 5,333,882
50 B1 4,516,783
102 5,333,883
235 B 5,333,884

CLASS 280

47.19 5,333,885
47.28 5,333,886
250.1 5,333,887
5,333,888
5,333,889
5,333,890
625 5,333,891
5,333,892
642 5,333,893
661 5,333,894
676 5,333,895
5,333,896
728 A 5,333,897
730 A 5,333,898
5,333,899
731 5,333,900
732 5,333,901
733 5,333,902
743 R 5,333,903
789 5,333,904
801.2 5,333,905
806 5,333,906

CLASS 281

42 5,333,907

CLASS 283

38 5,333,908
56 5,333,909

CLASS 285

12 5,333,910
18 5,333,911
39 5,333,912
48 5,333,913
54 5,333,914
73 5,333,915
97 5,333,916
205 5,333,917
286 5,333,918
363 5,333,919

CLASS 292

48 5,333,920
339 5,333,922

CLASS 293

128 5,333,923

CLASS 294

15 5,333,924
5,333,925

CLASS 295

21 5,333,926

CLASS 296

97.7 5,333,927

CLASS 297

142 5,333,928
155 5,333,929
219.1 5,333,921
219 11 5,333,930
5,333,368
334 5,333,931
362 5,333,932
452.1 5,333,933
452.15 5,333,934
471 5,333,935

CLASS 299

64 5,333,936
70 5,333,937
5,333,938

CLASS 301

124.1 5,333,939

CLASS 303

7 5,333,940
24.1 5,333,948
40 5,333,941
94 5,333,942
105 5,333,944
112 5,333,943
119.2 5,333,945
5,333,946
5,333,947

CLASS 307

10.1 5,334,876
5,334,877
5,334,878
112 5,334,879
219 5,334,880
241 5,334,881
270 5,334,882
290 5,334,883
306 5,334,884
443 5,334,885
455 5,334,886
5,334,887
471 5,334,888
475 5,334,889
530 5,334,890
603 5,334,891

CLASS 310

12 5,334,892
5,334,893
49 R 5,334,894
67 R Re.34,684
5,334,895
5,334,896
89 5,334,897
5,334,898
5,334,899
321 5,334,901
344 5,334,902
358 5,334,903
370 5,334,900

CLASS 312

9.57 5,334,904
221 5,333,949
265.1 5,333,950

CLASS 313

22 5,334,905
25 5,334,906
36 5,334,907
336 5,334,908

CLASS 315

5.35 5,334,910
5.38 5,334,909
10 5,334,911
119 5,334,912
248 5,334,913
291 5,334,914
307 5,334,915
309 5,334,916

CLASS 318

254 5,334,917
375 5,334,919
568.16 5,334,918
5,334,920
721 5,334,921
772 5,334,922
805 5,334,923
811 5,334,924

CLASS 320

5 5,334,925
15 5,334,926

CLASS 322

100 5,334,927

CLASS 323

280 5,334,928
315 5,334,929

CLASS 324

103 P 5,334,930
204 5,334,932
207.13 5,334,933
220 5,334,934
253 5,334,935

309 5,334,936
318 5,334,937
399 5,334,938
424 5,334,939
442 5,334,940
637 5,334,941
694 5,334,942
757 5,334,931

CLASS 328

233 5,334,943

CLASS 330

5,334,944
129 5,334,945
144 5,334,946
149 5,334,947
253 5,334,948
5,334,949
264 5,334,950

CLASS 331

1 A 5,334,951
5,334,952
8 5,334,953
20 5,334,954

CLASS 333

12 5,334,955
33 5,334,956
131 5,334,957
156 5,334,958
164 5,334,959
193 5,334,960
204 5,334,961
247 5,334,962

CLASS 335

2 5,334,963
216 5,334,965
306 5,334,966

CLASS 338

95 5,334,967
320 5,334,968

CLASS 340

426 5,334,969
506 5,334,970
550 5,334,971
556 5,334,972
605 5,334,973
825.21 5,334,975
990 5,334,974

CLASS 341

22 5,334,976
76 5,334,977
94 5,334,978
138 5,334,979

CLASS 342

25 5,334,980
27 5,334,981
36 5,334,982
70 5,334,983
149 5,334,984
176 5,334,985
357 5,334,986
5,334,987

CLASS 343

704 5,334,988
713 5,334,989
840 5,334,990

CLASS 345

7 5,334,995
8 5,334,991
22 5,334,992
102 5,334,993
127 5,334,994
152 5,334,996
167 5,334,997
185 5,334,998

CLASS 346

76 PH 5,335,002
76 R 5,335,001
107 R 5,335,003
5,335,007
160 5,335,005

CLASS 347

44 5,335,004
65 5,334,999
82 5,335,000

CLASS 348

15 5,335,011
31 5,335,070
82 5,335,006
92 5,335,012
104 5,335,013
159 5,335,014
232 5,335,072
298 5,335,075
301 5,335,008
302 5,335,015
392 5,335,071
5,335,016
426 5,335,017
536 5,335,018
537 5,335,074
607 5,335,019
614 5,335,009
5,335,020
630 5,335,069
664 5,335,021
674 5,335,068
706 5,335,010
738 5,335,073
744 5,335,022
794 5,335,076
5,335,023
806 5,335,024

CLASS 351

47 5,335,025
159 5,335,026

CLASS 353

120 5,335,027

CLASS 354

64 5,335,028
106 5,335,029
149.1 5,335,030
159 5,335,031
195.1 5,335,032
219 5,335,033
5,335,034
5,335,035
246 5,335,036
288 5,335,037
319 5,335,038
324 5,335,039
354 5,335,040
5,335,041
430 5,335,042

CLASS 355

53 5,335,044
72 5,335,045
73 5,335,046
5,335,047
204 5,335,048
206 Re.34,685
5,335,043
215 5,335,049
221 5,335,050
245 5,335,051
271 5,335,052
274 5,335,053
279 5,335,054
326 R 5,335,055
327 5,335,056

CLASS 356

28.5 5,335,058
73.1 5,335,057
124 5,335,059
213 5,335,060
241 5,335,061
347 5,335,062
350 5,335,063
5,335,064
5,335,065
351 5,335,066
364 5,335,067
436

CLASS 358

320 5,335,077
330 5,335,078
335 5,335,079
5,335,080
342 5,335,081
350 5,335,082
400 5,335,083
403 5,335,084
5,335,085
429 5,335,088
431 5,335,086
432 5,335,087
456 5,335,089
473 5,335,090
474 5,335,091
5,335,092
487 5,335,093
494 5,335,094
500 5,335,095
518 5,335,096
520 5,335,097

CLASS 359

7 5,335,098
15 5,335,099
49 5,335,100
52 5,335,101
59 5,335,102
5,335,103
110 5,335,104
135 5,335,105
5,335,106
181 5,335,107
5,335,108
341 5,335,109
5,335,110
529 5,335,111
530 5,335,112
569 5,335,113
602 5,335,114
5,335,115

CLASS 360

9.1 5,335,116
10.3 5,335,125
48 5,335,117
51 5,335,118
53 5,335,119
63 5,335,120
65 5,335,121
70 5,335,122
77.05 5,335,123
99.06 5,335,124
104 5,335,126
113 5,335,127
128 5,335,128
132 5,335,129
5,335,130

CLASS 361

4 5,335,139
18 5,335,132
56 5,335,133
5,335,134
79 5,335,135
149 5,335,196
160 5,335,136
220 5,335,137
303 5,335,138
608 5,335,140
680 5,335,141
5,335,142
694 5,335,143
695 5,335,144
737 5,335,145
785 5,335,146
5,335,147

CLASS 362

26 5,335,148
61 5,335,149
118 5,335,150
153.1 5,335,151
217 5,335,152
240 5,335,153
267 5,335,155
291 5,335,156
294 5,335,154
297 5,335,157
303 5,335,158
421 5,335,159
431 5,335,160

CLASS 363

61 5,335,161
97 5,335,162
126 5,335,163

CLASS 364

149 5,335,164
162 5,335,165
166 5,335,166
167.01 5,335,167
5,335,332
403 5,335,170
5,335,171
408 5,335,169
413.13 5,335,172
413.22 5,335,173
424.01 5,335,175
424.05 5,335,176
424.06 5,335,177
424.1 5,335,174
426.02 5,335,178
434 5,335,179
436 5,335,180
443 5,335,181
470 5,335,182
474.37 5,335,183
507 5,335,184
510 5,335,185
526 5,335,187
550 5,335,186
551.01 5,335,188
565 5,335,189
571.01 5,335,190
578 5,335,191
707 5,335,168
708.1 5,335,192
709.12 5,335,193
724.1 5,335,194
736 5,335,195

CLASS 365

153 5,335,197
185 5,335,198
218 5,335,200
222 5,335,201
5,335,202
226 5,335,203
230.01 5,335,204
230.05 5,335,199
230 06 5,335,205
233.5 5,335,206
5,335,207

CLASS 366

71 5,333,951
336 5,333,952

CLASS 367

49 5,335,208
155 5,335,209
163 5,335,210

CLASS 368

11 5,335,211
107 5,335,212

CLASS 369

44.28 5,335,214
50 5,335,215
59 5,335,216
77.2 5,335,217
121 5,335,213
178 5,335,218
288 5,335,219
5,335,220

CLASS 370

13 5,335,221
60 5,335,222
65.5 5,335,223
84 5,335,224
5,335,225
85.2 5,335,226
95.1 5,335,227
100.1 5,335,228
110.1 5,335,229

CLASS 371

15.1 5,335,230
5,335,231
20.4 5,335,232
32 5,335,233
40.1 5,335,234
49.2 5,335,235

CLASS 372

25 5,335,236
33 5,335,237
37 5,335,238
38 5,335,239
39 5,335,240
46 5,335,241
95 5,335,242
99 5,335,243
101 5,335,244
103 5,335,245

CLASS 374

109 5,333,953

CLASS 375

1 5,335,246
5,335,247
5,335,248
5,335,249
10 5,335,250
100 5,335,251

CLASS 376

402 5,335,252

CLASS 377

48 5,335,253
76 5,335,254

CLASS 378

5,335,255
35 5,335,256
37 5,335,257
122 5,335,258
161 5,335,259
207 5,335,260

CLASS 379

58 5,335,261
5,335,262
5,335,263
5,335,264
59 5,335,265
88 5,335,266
B1 4,427,848
100 5,335,267
112 5,335,268
253 5,335,270
266 5,335,269
382 5,335,271
413 5,335,272
433 5,335,273
5,335,274

CLASS 380

5,335,275
20 5,335,277
21 5,335,276
23 5,335,278
38 5,335,279
42 5,335,280
5,335,281

CLASS 381

92 5,335,282
118 5,335,283
152 5,335,284
187 5,335,285
191 5,335,286
197 5,335,287

CLASS 382

4 5,335,288
9 5,335,289
5,335,290
14 5,335,291
17 5,335,292
5,335,293
22 5,335,294
47 5,335,295
5,335,296
50 5,335,297
54 5,335,298
56 5,335,299

CLASS 384

26 5,333,954
291 5,333,955
483 5,333,956
484 5,333,957

CLASS 385

37 5,335,300
75 5,335,301
100 5,335,302
122 5,335,303
135 5,335,304
142 5,335,306
147 5,335,305

CLASS 388

814 5,335,307

CLASS 392

412 5,335,308
421 5,335,309
434 5,335,310
457 5,335,311

CLASS 395

2.11 5,335,312
2.84 5,335,313
3 5,335,314
5,335,315
115 5,335,316
119 5,335,317
131 5,335,318
141 5,335,319
155 5,335,320
162 5,335,321
164 5,335,322
5,335,323
5,335,324
5,335,325
250 5,335,326
5,335,327
275 5,335,328
325 5,335,329
375 5,335,330
5,335,331
400 5,335,333
425 5,335,334
5,335,335
5,335,336
500 5,335,337
5,335,338
5,335,339
5,335,340
575 5,335,341
5,335,342
5,335,343
5,335,344
600 5,335,345
5,335,346
650 5,335,347
700 5,335,351
5,335,352

CLASS 400

208 5,333,959
249 5,333,960
490 5,333,961

CLASS 401

139 5,333,967

CLASS 402

5,333,962

CLASS 403

301 5,333,963
339 5,333,964
377 5,333,968
406.1 5,333,965

CLASS 404

84.05 5,333,966
91 5,333,969

CLASS 405

281 5,333,971
286 5,333,970

CLASS 407

113 5,333,972

CLASS 408

56 5,333,973

CLASS 409

84 5,333,974
132 5,333,975

CLASS 411

263 5,333,976
271 5,333,977
389 5,333,978
477 5,333,979
501 5,333,980

CLASS 414

24.5 5,333,981
217 5,333,986
264 5,333,987
279 5,333,982
331 5,333,983
5,333,984
790.3 5,333,985
795.8 5,333,988

CLASS 415

17 5,333,989
58.4 5,333,990
5,333,991
138 5,333,992
164.5 5,333,993
202 5,333,994
209.2 5,333,995

CLASS 416

197 A 5,333,996

CLASS 417

216 5,333,997
273 5,333,998
309 5,333,999
360 5,334,000
5,334,001
393 5,334,003
420 5,334,004

CLASS 418

32 5,334,002

CLASS 419

53 5,334,341

CLASS 420

4.85 5,334,346
422 5,334,344
5,334,345

CLASS 422

24 5,334,347
5,334,348
63 5,334,349
5,334,351
98 5,334,350
99 5,334,352
100 5,334,353
104 5,334,354
122 5,334,355
133 5,334,356
197 5,334,357
210 5,334,358
225 5,334,359
230 5,334,360
5,334,361

CLASS 423

1 5,334,362
226 5,334,363
340 5,334,364
596 5,334,365
625 5,334,366
704 5,334,367
5,334,368

CLASS 424

1.85 5,334,369
5,334,370
9 5,334,371
5,334,381
5,334,373
45 5,334,374
52 5,334,375
70 5,334,376
71 5,334,377
78.03 5,334,372
78.1 5,334,378
85.2 5,334,379
5,334,380
94.3 5,334,382
94.4 5,334,383
94.63 5,334,384

VOL 1165 ISS 1 AG 2 1994 UMI

195.1 5,334,385
5,334,386
[illegible] 5,334,387
402 5,334,388
[illegible] 5,334,389
439 5,334,390
450 5,334,391
[illegible] 5,334,392
[illegible] 5,334,393
494 5,334,394
553 5,334,395

CLASS 428

188 5,334,005
[illegible] 5,334,006
526 5,334,007
549 5,334,008
556 5,334,009
563 5,334,010

CLASS 430

3 5,334,396
5 5,334,397
36 5,334,398
42 5,334,399
57 5,334,408
112 5,334,400
241 5,334,402
5,334,403
383 5,334,404
396 5,334,405
[illegible] 5,334,406
618 5,334,407

CLASS 427

64 5,334,409
68 5,334,410
[illegible] 5,334,411
[illegible] 5,334,412
130 5,334,413
[illegible] 5,334,414
231 5,334,415
252 5,334,416
253 5,334,417
373 5,334,418
386 5,334,419
407.1 5,334,420
513 5,334,421
552 5,334,422
575 5,334,423

CLASS 428

1 5,334,424
23 5,334,425
34.4 5,334,426
34.5 5,334,427
34.9 5,334,428
36.2 5,334,429
40 5,334,430
5,334,431
43 5,334,432
64 5,334,433
188 5,334,434
195 5,334,435
5,334,436
212 5,334,438
5,334,439
219 5,334,437
222 5,334,440
229 5,334,441
246 5,334,442
261 5,334,443
280 5,334,444
284 5,334,445
5,334,446
317.3 5,334,447
319.7 5,334,448
327 5,334,449
332 5,334,450
377 5,334,451
397 5,334,452
408 5,334,453
412 5,334,454
413 5,334,455
431 5,334,456
480 5,334,457
517 5,334,458
546 5,334,459
552 5,334,460
610 5,334,461
697 5,334,462

CLASS 429

9 5,334,463
210 5,334,464
222 5,334,465

CLASS 430

5 5,334,466
5,334,467
7 5,334,468
21 5,334,469
59 5,334,470
106.6 5,334,471
109 5,334,472
5,334,473
110 5,334,474
114 5,334,475
126 5,334,476
5,334,477
135 5,334,478
137 5,334,479
138 5,334,480
191 5,334,481
203 5,334,482
207 5,334,483
281 5,334,484
287 5,334,485
288 5,334,486
312 5,334,487
315 5,334,488
335 5,334,489
382 5,334,490
393 5,334,491
398 5,334,492
463 5,334,493
533 5,334,494
567 5,334,495
569 5,334,496

CLASS 431

153 5,334,011

CLASS 432

106 5,334,012
121 5,334,014

CLASS 433

18 5,334,015
29 5,334,016
57 5,334,017
77 5,334,018
88 5,334,019
132 5,334,013
166 5,334,020
173 5,334,024

CLASS 434

203 5,334,026
247 5,334,027
252 5,334,028
340 5,334,022
344 5,334,021

CLASS 435

3 5,334,497
5 5,334,498
[illegible] 5,334,499
5,334,501
7.21 5,334,502
7.32 5,334,503
5,334,504
7.92 5,334,513
18 5,334,505
23 5,334,506
25 5,334,507
5,334,508
34 5,334,509
[illegible] 5,334,510
69.4 5,334,511
69.6 5,334,512
[illegible] 5,334,514
91.2 5,334,515
101 5,334,516
121 5,334,517
125 5,334,518
129 5,334,519
136 5,334,520
172.1 5,334,521
172.3 5,334,522
193 5,334,524
194 5,334,525
199 5,334,526
240.23 5,334,527
240.27 5,334,528
240.4 5,334,529
240.48 5,334,530
252.31 5,334,531
252.33 5,334,532
264 5,334,533
[illegible] 5,334,534
5,334,535

CLASS 436

135 5,334,536
518 5,334,537
525 5,334,538

CLASS 437

1 5,334,539
7 5,334,540
8 5,334,541
30 5,334,543
[illegible] 5,334,542
5,334,544
41 5,334,545
5,334,546
52 5,334,547
5,334,548
59 5,334,549
65 5,334,550
105 5,334,551
195 5,334,552
209 5,334,553
231 5,334,554
241 5,334,555
248 5,334,556

CLASS 439

[illegible] 5,334,029
75 5,334,030
[illegible] 5,334,031
118 5,334,037
140 5,334,032
164 5,334,023
188 5,334,025
5,334,034
214 5,334,033
252 5,334,035
266 5,334,036
267 5,334,038
271 5,334,039
358 5,334,041
369 5,334,042
482 5,334,043
491 5,334,044
[illegible] 5,334,045
540 5,334,046
544 5,334,047
567 5,334,048
5,334,049
579 5,334,050
583 5,334,051
650 5,334,052
682 5,334,053
716 5,334,054
723 5,334,055
820 5,334,056
839 5,334,057
5,334,058
876 5,334,059

CLASS 440

[illegible] 5,334,060
75 5,334,061
[illegible] 5,334,062
88 5,334,063

CLASS 441

42 5,334,064
70 5,334,065
129 5,334,066
131 5,334,067

CLASS 445

51 5,334,085
62 5,334,086

CLASS 446

15 5,334,087
23 5,334,069
31 5,334,070
34 5,334,068
[illegible] 5,334,071
224 5,334,072
[illegible] 5,334,073
418 5,334,074
438 5,334,075
456 5,334,076
[illegible] 5,334,077
470 5,334,078
[illegible] 5,334,079

CLASS 450

31 5,334,082

CLASS 452

16 5,334,080
35 5,334,081
106 5,334,083
157 5,334,084
193 5,334,088

CLASS 454

62 5,334,089
72 5,334,090
210 5,334,091
369 5,334,092

CLASS 455

6.1 5,335,349
17 5,335,350
5,335,353
33.1 5,335,355
51.2 5,335,357
52.3 5,335,359
53.1 5,335,358
54.1 5,335,356
56.1 5,335,360
66 5,335,361
67.1 5,335,362
73 5,335,363
76 5,335,364
5,335,365
89 5,335,366
[illegible] 5,335,367
5,335,368
116 5,335,369
192.2 5,335,348
5,335,354

CLASS 460

83 5,334,093

CLASS 462

17 5,334,094

CLASS 464

101 5,334,095
146 5,334,096

CLASS 472

116 5,334,098
118 5,334,099
127 5,334,100

CLASS 473

44 5,334,101

CLASS 474

8 5,334,108
18 5,334,102
5,334,103
28 5,334,104
[illegible] 5,334,105
110 5,334,106
135 5,334,109
5,334,110
214 5,334,111
238 5,334,107

CLASS 475

59 5,334,112
119 5,334,114
169 5,334,115
204 5,334,116
276 5,334,117

CLASS 476

8 5,334,097

CLASS 482

16 5,334,119
17 5,334,121
93 5,334,118
97 5,334,120
106 5,334,113
130 5,334,122
144 5,334,123

CLASS 492

50 5,334,124
58 5,334,125

CLASS 493

22 5,334,126
194 5,334,127
351 5,334,129
439 5,334,128

CLASS 494

4 5,334,130

CLASS 501

5,334,558
5,334,559
5,334,561
5,334,562
5,334,565
5,334,563

CLASS 502

5,334,564
5,334,566
5,334,567
5,334,568
5,334,569
5,334,570

CLASS 503

226 5,334,571
227 5,334,572
5,334,573
5,334,574
5,334,575

CLASS 504

128 5,334,576
130 5,334,577

CLASS 505

191 5,334,580
211 5,334,964
400 5,334,578
474 5,334,579
500 5,334,557

CLASS 512

2 5,334,581

CLASS 514

5,334,582
8 5,334,583
74 5,334,585
85 5,334,586
99 5,334,587
012 5,334,584
171 5,334,588
185 5,334,589
210 5,334,590
215 5,334,591
220 5,334,592
274 5,334,593
291 5,334,594
293 5,334,595
300 5,334,597
301 5,334,596
303 5,334,598
304 5,334,599
309 5,334,600
311 5,334,628
312 5,334,601
317 5,334,602
363 5,334,603
364 5,334,604
365 5,334,605
376 5,334,606
378 5,334,607
383 5,334,608
393 5,334,609
401 5,334,610
410 5,334,611
[illegible] 5,334,612
452 5,334,613
459 5,334,614
467 5,334,615
473 5,334,616
562 5,334,617
[illegible] 5,334,618
675 5,334,619

CLASS 521

51 5,334,620
[illegible] 5,334,621
74 5,334,622
130 5,334,624

CLASS 523

100 5,334,623
115 5,334,625
116 5,334,626
137 5,334,629
216 5,334,630
459 5,334,631

CLASS 524

9 5,334,632
15 5,334,633
[illegible] 5,334,638
47 5,334,634
5,334,639
56 5,334,640
71 5,334,641
[illegible] 5,334,642
232 5,334,643
377 5,334,635
[illegible] 5,334,636
474 5,334,646
487 5,334,644
494 5,334,645
507 5,334,647
512 5,334,648
539 5,334,637
558 5,334,649
591 5,334,650
5,334,651
[illegible] Re.34,682
5,334,652
714 5,334,653
804 5,334,655
[illegible] 5,334,654

CLASS 525

63 5,334,656
71 5,334,657
5,334,658
5,334,659
[illegible] 5,334,660
[illegible] 5,334,661
5,334,662
194 5,334,663
289 5,334,664
5,334,665
327.3 5,334,666
370 5,334,667
416 5,334,668
437 5,334,669
440 5,334,670
443 5,334,671
[illegible] 5,334,672
481 5,334,674
[illegible] 5,334,675
524 5,334,676

CLASS 526

114 5,334,677
169.2 5,334,678
200 5,334,679
207 5,334,680
243 5,334,681
273 5,334,682
5,334,683
279 5,334,684
307.7 5,334,686

CLASS 527

300 5,334,685

CLASS 528

15 5,334,687
5,334,688
67 5,334,689
71 5,334,690
76 5,334,691
126 5,334,692
185 5,334,693
5,334,694
5,334,695
193 5,334,696
322 5,334,697
353 5,334,698
354 5,334,699
373 5,334,700
392 5,334,701
486

CLASS 530

323 5,334,702
330 5,334,703
371 5,334,704
385 5,334,705
5,334,706
5,334,707
391.5 5,334,708

CLASS 534

618 5,334,709
852 5,334,710

CLASS 536

24.5 5,334,711

CLASS 540

112 5,334,712
113 5,334,713
143 5,334,714

CLASS 544

392 5,334,715

CLASS 546

112 5,334,716
116 5,334,717
118 5,334,718
174 5,334,719
[illegible] 5,334,720
251 5,334,721
289 5,334,722
298 5,334,723
345 5,334,724

CLASS 548

110 5,334,740
147 5,334,725
263.2 5,334,726
373.1 5,334,727
[illegible] 5,334,728
[illegible] 5,334,729

CLASS 549

13 5,334,730
455 5,334,731
510 5,334,732

CLASS 552

114 5,334,733
278 5,334,734
308 5,334,735

CLASS 554

148 5,334,736

CLASS 556

440 5,334,737
472 5,334,738

CLASS 558

78 5,334,739
110 5,334,741
274 5,334,742
319 5,334,743
354 5,334,744
394 5,334,745

CLASS 560

38 5,334,746
43 5,334,747
60 5,334,748
67 5,334,749
104 5,334,750
265 5,334,751
360 5,334,752

CLASS 562

405 5,334,753
416 5,334,754
519 5,334,755
565 5,334,756
568 5,334,757
590 5,334,758
609 5,334,759
817 5,334,760

CLASS 564

197 5,334,761
259 5,334,762
475 5,334,763
487 5,334,764
510 5,334,765

CLASS 568

14 5,334,766
327 5,334,767
341 5,334,768
435 5,334,769
463 5,334,770
573 5,334,771
609 5,334,772
734 5,334,773
754 5,334,774
791 5,334,775
813 5,334,776
[illegible] 5,334,777
862 5,334,778
[illegible] 5,334,779
910 5,334,780
927 5,334,781

CLASS 570

101 5,334,782
153 5,334,783
165 5,334,784
5,334,785
[illegible] 5,334,786
169 5,334,787
175 5,334,788
203 5,334,789

CLASS 585

271 5,334,790
277 5,334,791
314 5,334,792
323 5,334,793
452 5,334,794
467 5,334,795
5,334,796

CLASS 601

33 5,333,604
40 5,333,605
71 5,334,131

CLASS 602

4 5,334,132
[illegible] 5,334,133
19 5,334,134
26 5,334,135

CLASS 604

[illegible] 5,334,136
[illegible] 5,334,137
[illegible] 5,334,138
28 5,334,139
32 5,334,182
35 5,334,140
50 5,334,141
53 5,334,142
54 5,334,143
[illegible] 5,334,144
[illegible] 5,334,170
95 5,334,145
[illegible] 5,334,146
5,334,147
5,334,148
[illegible] 5,334,153
102 5,334,154
110 5,334,149
5,334,155
5,334,156
5,334,158
132 5,334,197
158 5,334,159
[illegible] 5,334,157
164 5,334,150
5,334,161
5,334,185
167 5,334,160
[illegible] 5,334,186
192 5,334,151
194 5,334,187
232 5,334,162
236 5,334,163
248 5,334,164
249 5,334,165
263 5,334,173
265 5,334,166
[illegible] 5,334,167
281 5,334,168
282 5,334,169
5,334,171
283 5,334,188
[illegible] 5,334,172
313 5,334,174
352 5,334,175
367 5,334,176
378 5,334,177
385.2 5,334,152
[illegible] 5,334,179
411 5,334,180
415 5,334,178
890.1 5,334,189

CLASS 606

5 5,334,190
7 5,334,206
5,334,207
12 5,334,191
22 5,334,181
41 5,334,193
[illegible] 5,334,183
52 5,334,198
58 5,334,202
61 5,334,203
63 5,334,184
73 5,334,204
88 5,334,194
[illegible] 5,334,192
5,334,205
[illegible] 5,334,208
131 5,334,195
138 5,334,196
141 5,334,209
144 5,334,199
[illegible] 5,334,200
151 5,334,210
159 5,334,211
162 5,334,212
166 5,334,213
170 5,334,214
210 5,334,215
213 5,334,216
5,334,217
235 5,334,218

CLASS 607

[illegible] 5,334,219
[illegible] 5,334,220
14 5,334,221
17 5,334,222
31 5,334,223

CLASS 623

[illegible] 5,334,201

CLASSIFICATION OF DESIGNS

D2— 616 349,179
624 349,180
842 349,181
861 349,182
870 349,183
875 349,184
911 349,185
961 349,186
972 349,187
D3— 208 349,189
221 349,188
229 349,190
289 349,191
313 349,192
D4— 118 349,193
D6— 368 349,194
376 349,195
379 349,196
349,197
349,198
393 349,199
427 349,200
467 349,202
470 349,203
476 349,204
525 349,205
536 349,206
349,207
550 349,208
601 349,201
D7— 300.2 349,209
396.5 349,210
[illegible] 349,211
503 349,212
543 349,213
605 349,214
349,215
623 349,216
625 349,217
[illegible] 349,218
687 349,219
D8— 8 349,220
349,221
10 349,222
11 349,223
42 349,224
73 349,225
74 349,226
[illegible] 349,227
308 349,228
331 349,229
347 349,230
349 349,231
354 349,232
374 349,233
381 349,234
384 349,235
D9— [illegible] 349,236
337 349,237
339 349,238
415 349,239
422 349,240
443 349,241
[illegible] 349,242
D10— 33 349,243
349,244
349,245
38 349,246
349,247
349,248
349,249
349,250
39 349,251
96 349,252
97 349,253
106 349,254
109 349,255
114 349,256
D11— 3 349,257
121 349,258
130.1 349,259
160 349,260
184 349,261
216 349,262
221 349,263
D12— 1 349,264
14 349,265
117 349,266
183 349,268
196 349,269
302 349,270
337 349,271
D13— 107 349,272
[illegible] 349,273
128 349,274
133 349,275
349,276
147 349,267
D14— [illegible] 349,277
[illegible] 349,278
108 349,279
114 349,280
349,281
124 349,282
142 349,283
159 349,284
349,285
349,286
168 349,287
97 349,288
217 349,289
349,290
D15— 17 349,291
125 349,292
130 349,293
145 349,294
D16— 131 349,295
242 349,296
D19— 57 349,297
60 349,298
349,299
62 349,300
72 349,301
D20— 10 349,302
D21— 9 349,303
23 349,304
42 349,305
[illegible] 349,306
52 349,307
59 349,308
349,309
349,310
[illegible] 349,311
[illegible] 349,312
150 349,313
161 349,314
187 349,315
191 349,316
201 349,317
[illegible] 349,318
217 349,319
233 349,320
234 349,321
237 349,322
D22— 108 349,323
140 349,324
D23— 235 349,325
238 349,326
249 349,327
252 349,328
349,329
255 349,330
257 349,331
[illegible] 349,332
314 349,333
[illegible] 349,334
377 349,336
349,337
386 349,338
D24— 133 349,339
138 349,340
143 349,341
349,342
170 349,343
183 349,344
195 349,345
349,346
214 349,347
D25— 1 349,348
34 349,349
[illegible] 349,350
[illegible] 349,351
103 349,352
D26— 2 349,353
37 349,354
349,355
63 349,356
85 349,357
349,358
101 349,359
125 349,360
D28— 57 349,361
D29— 110 349,362
349,363
113 349,364
349,365
D30— [illegible] 349,366
119 349,367
D32— [illegible] 349,368
21 349,369
31 349,370
32 349,371
37 349,372
43 349,373
[illegible] 349,374
349,375
53.1 349,376
70 349,377
349,378
D34— 1 349,379
7 349,380
349,381
15 349,382
19 349,383
23 349,384
26 349,385
31 349,386

CLASSIFICATION OF PLANTS

P.— 8.1 8,850
34.1 8,851
37 8,852
48 8,853
86.2 8,854
86.3 8,855

STATUTORY INVENTION REGISTRATIONS

149— 19.4 H1341
395— 275 H1342
430— 567 H1343
435— 20 H1344
514— 108 H1345
524— 417 H1346
607— 30 H1347

VOL
1165
ISS
1
AG
2
1994
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 5,333,339
5,333,508
5,333,931
5,333,952
5,333,964
5,334,133
5,334,270
5,334,299
5,334,352
5,334,813
5,334,838
5,334,963
[redacted] 5,333,328
5,333,527
5,333,641
5,333,790
5,333,909
5,333,955
5,334,090
5,334,166
5,334,381
5,334,824
5,334,855
5,334,953
5,334,960
5,335,070
5,335,281
5,335,300
5,335,322
5,335,328
05 : 5,333,572
[redacted] : Re.34,678
5,333,321
5,333,329
5,333,333
5,333,337
5,333,355
5,333,389
5,333,401
5,333,410
5,333,422
5,333,434
5,333,435
5,333,458
5,333,476
5,333,478
5,333,487
5,333,528
5,333,550
5,333,567
5,333,568
5,333,594
5,333,604
5,333,613
5,333,633
5,333,665
5,333,675
5,333,698
5,333,731
5,333,732
5,333,742
5,333,743
5,333,767
5,333,793
5,333,801
5,333,806
5,333,817
5,333,831
5,333,833
5,333,856
5,333,868
5,333,874
5,333,888
5,333,894
5,333,908
5,333,927
5,333,980
5,334,024
5,334,027
5,334,030
5,334,044
5,334,045
5,334,047
5,334,049
5,334,057
5,334,068
5,334,078
5,334,081
5,334,082
5,334,115
5,334,120
5,334,123
5,334,140
5,334,143
5,334,145
5,334,154
5,334,178
5,334,179
5,334,181
5,334,184
5,334,202
5,334,204
5,334,212
5,334,216
5,334,220
5,334,237
5,334,238
5,334,239
5,334,279
5,334,284
5,334,304
5,334,307
5,334,321
5,334,326
5,334,332
5,334,334
5,334,336
5,334,342
5,334,347
5,334,391
5,334,394
5,334,464
5,334,513
5,334,528
5,334,529
5,334,533
5,334,538
5,334,584
5,334,625
5,334,629
5,334,640
5,334,646
5,334,790
5,334,804
5,334,809
5,334,832
5,334,836
5,334,840
5,334,844
5,334,848
5,334,874
5,334,881
5,334,882
5,334,883
5,334,888
5,334,925
5,334,928
5,334,941
5,334,947
5,334,948
5,334,955
5,334,965
5,334,981
5,334,998
5,335,000
5,335,013
5,335,019
5,335,055
5,335,062
5,335,076
5,335,079
5,335,098
5,335,099
5,335,101
5,335,107
5,335,108
5,335,119
5,335,142
5,335,188
5,335,190
5,335,191
5,335,198
5,335,236
5,335,237
5,335,242
5,335,243
5,335,255
5,335,282
5,335,290
5,335,296
5,335,297
5,335,299
5,335,313
5,335,326
5,335,342
5,335,344
5,335,347
[redacted] 5,333,810
5,333,829
5,333,880
09 : Re.34,682
5,333,324
5,333,383
5,333,624
5,333,769
5,333,780
5,333,816
5,333,851
5,333,992
5,334,042
5,334,053
5,334,164
5,334,196
5,334,240
5,334,462
5,334,604
5,334,739
5,334,833
5,334,897
5,334,982
5,335,157
5,335,161
5,335,310
5,335,366
10 : 5,333,384
5,334,174
5,334,333
5,334,365
5,334,411
5,334,437
5,334,562
5,334,688
5,334,693
5,334,697
5,334,727
5,334,731
5,334,762
5,334,765
5,334,932
11 : 5,335,258
12 : 5,333,331
5,333,340
5,333,382
5,333,457
5,333,467
5,333,470
5,333,483
5,333,603
5,333,656
5,333,703
5,333,761
5,333,976
5,334,038
5,334,080
5,334,121
5,334,147
5,334,159
5,334,273
5,334,295
5,334,452
5,334,588
5,334,601
5,334,788
5,334,823
5,335,063
5,335,133
5,335,233
5,335,332
5,335,357
5,335,360
5,335,365
13 : 5,333,398
5,333,626
5,333,734
5,333,746
5,333,787
5,333,809
5,333,861
5,334,169
5,334,825
5,335,067
5,335,266
15 : 5,335,169
16 : 5,333,704
5,334,862
5,334,962
5,335,137
5,335,138
5,335,201
5,335,202
17 : 5,333,346
5,333,380
5,333,393
5,333,403
5,333,438
5,333,439
5,333,447
5,333,448
5,333,482
5,333,533
5,333,548
5,333,552
5,333,574
5,333,642
5,333,673
5,333,696
5,333,710
5,333,758
5,333,779
5,333,781
5,333,794
5,333,853
5,333,863
5,333,866

VOL 1165 ISS 1 AG 2 1994 UMI

5,333,870
5,333,904
5,333,917
5,333,926
5,333,938
5,333,961
5,333,969
5,334,000
5,334,037
5,334,051
5,334,056
5,334,093
5,334,106
5,334,118
5,334,131
5,334,180
5,334,210
5,334,242
5,334,260
5,334,291
5,334,396
5,334,397
5,334,425
5,334,455
5,334,456
5,334,498
5,334,589
5,334,616
5,334,619
5,334,706
5,334,717
5,334,785
5,334,793
5,334,796
5,334,805
5,334,806
5,334,811
5,334,937
5,334,956
5,334,967
5,334,970
5,335,089
5,335,152
5,335,269
5,335,279
5,335,286
5,335,301
5,335,338
5,335,350
5,335,353
5,335,358
5,335,361
18 : 5,333,433
5,333,436
5,333,488
5,333,581
5,333,597
5,333,643
5,333,654
5,333,786
5,333,795
5,333,835
5,333,942
5,334,005
5,334,074
5,334,116
5,334,162
5,334,168
5,334,213
5,334,231
5,334,422
5,334,524
5,334,626
5,334,725
5,334,767
5,334,978
5,335,024
19 : 5,333,345
5,333,930
5,334,539
5,334,997
5,335,221
5,335,238
5,335,240
5,335,248
20 : 5,333,352
5,334,077
5,334,113
5,334,402
5,334,502
5,334,509
5,334,798
21 : 5,333,715
5,333,721
5,333,772
5,333,872
5,334,675
5,335,260
22 : 5,333,442
5,333,925
5,334,249
5,334,264
5,334,763
23 : 5,333,381
5,333,425
5,334,254

24 : 5,333,468
5,333,566
5,333,677
5,333,877
5,333,885
5,334,155
5,334,173
5,334,187
5,334,199
5,334,209
5,334,256
5,334,390
5,334,451
5,334,515
5,334,526
5,334,537
5,334,545
5,334,761
5,334,865
5,334,913
5,334,959
5,334,974
5,334,980
5,335,017
5,335,209
5,335,278
5,335,304
5,335,363
25 : 5,333,466
5,333,532
5,333,539
5,333,620
5,333,744
5,333,753
5,333,762
5,333,784
5,333,822
5,333,823
5,333,854
5,333,928
5,334,043
5,334,046
5,334,091
5,334,141
5,334,153
5,334,161
5,334,171
5,334,193
5,334,198
5,334,356
5,334,441
5,334,488
5,334,489
5,334,553
5,334,558
5,334,573
5,334,618
5,334,635
5,334,673
5,334,741
5,334,800
5,334,815
5,334,976
5,334,991
5,335,046
5,335,165
5,335,210
5,335,226
5,335,235
5,335,265
5,335,287
5,335,291
5,335,325
5,335,337
5,335,343
5,335,352
4,925,541
26 : Re.34,679
5,333,341
5,333,391
5,333,420
5,333,499
5,333,500
5,333,557
5,333,590
5,333,593
5,333,595
5,333,623
5,333,645
5,333,694
5,333,745
5,333,752
5,333,764
5,333,775
5,333,901
5,333,934
5,333,935
5,333,948
5,333,956
5,333,962
5,333,965
5,333,972
5,334,016
5,334,019
5,334,020
5,334,033

5,334,110
5,334,111
5,334,112
5,334,167
5,334,182
5,334,200
5,334,241
5,334,243
5,334,255
5,334,386
5,334,423
5,334,564
5,334,603
5,334,615
5,334,650
5,334,657
5,334,712
5,334,752
5,334,876
5,334,914
5,335,219
27 : 5,333,397
5,333,504
5,333,559
5,333,609
5,333,612
5,333,637
5,333,660
5,333,678
5,333,727
5,333,912
5,334,026
5,334,095
5,334,134
5,334,160
5,334,175
5,334,197
5,334,214
5,334,217
5,334,219
5,334,222
5,334,223
5,334,426
5,334,485
5,334,820
5,334,877
5,335,040
5,335,118
5,335,144
5,335,267
5,335,308
5,333,452
5,333,918
5,334,641
29 : 5,333,456
5,333,516
5,333,606
5,333,607
5,333,657
5,333,722
5,333,757
5,333,855
5,334,107
5,334,122
5,334,230
5,334,942
30 : 5,333,515
5,334,253
5,334,797
31 : 5,333,879
33 : 5,333,882
5,334,014
5,334,021
5,334,211
5,334,431
5,334,906
5,334,973
5,335,252
34 : 5,333,323
5,333,418
5,333,421
5,333,521
5,333,615
5,333,728
5,333,740
5,333,827
5,333,838
5,333,881
5,334,013
5,334,029
5,334,073
5,334,079
5,334,144
5,334,165
5,334,172
5,334,177
5,334,228
5,334,274
5,334,306
5,334,312
5,334,331
5,334,367
5,334,368
5,334,375
5,334,376
5,334,387

5,334,399
5,334,444
5,334,521
5,334,576
5,334,590
5,334,592
5,334,598
5,334,599
5,334,600
5,334,617
5,334,652
5,334,691
5,334,715
5,334,771
5,334,775
5,334,792
5,334,795
5,334,901
5,334,929
5,334,958
5,335,011
5,335,020
5,335,022
5,335,060
5,335,074
5,335,132
5,335,179
5,335,224
5,335,228
5,335,229
35 : 5,335,181
36 : 5,333,336
5,333,460
5,333,464
5,333,477
5,333,509
5,333,513
5,333,571
5,333,600
5,333,621
5,333,625
5,333,650
5,333,664
5,333,682
5,333,730
5,333,760
5,333,768
5,333,783
5,333,797
5,333,805
5,333,824
5,333,848
5,333,852
5,333,989
5,334,006
5,334,015
5,334,028
5,334,059
5,334,060
5,334,072
5,334,087
5,334,128
5,334,130
5,334,136
5,334,142
5,334,149
5,334,150
5,334,183
5,334,191
5,334,195
5,334,235
5,334,246
5,334,247
5,334,280
5,334,281
5,334,310
5,334,315
5,334,361
5,334,370
5,334,379
5,334,404
5,334,428
5,334,435
5,334,443
5,334,461
5,334,469
5,334,477
5,334,487
5,334,490
5,334,491
5,334,495
5,334,496
5,334,499
5,334,503
5,334,532
5,334,535
5,334,570
5,334,575
5,334,582
5,334,586
5,334,595
5,334,659
5,334,672
5,334,681
5,334,682
5,334,699

5,334,720
5,334,729
5,334,737
5,334,772
5,334,852
5,334,868
5,334,884
5,334,886
5,334,892
5,334,898
5,334,899
5,334,908
5,334,931
5,334,933
5,334,934
5,334,939
5,334,957
5,335,033
5,335,034
5,335,038
5,335,039
5,335,041
5,335,043
5,335,050
5,335,088
5,335,091
5,335,104
5,335,111
5,335,143
5,335,146
5,335,158
5,335,160
5,335,239
5,335,277
5,335,321
5,335,345
37 : 5,333,364
5,333,407
5,333,417
5,333,519
5,333,524
5,333,580
5,333,631
5,333,718
5,333,729
5,333,886
5,333,910
5,333,923
5,333,967
5,334,098
5,334,138
5,334,283
5,334,296
5,334,330
5,334,389
5,334,421
5,334,522
5,334,639
5,334,705
5,334,756
5,335,135
5,335,227
38 : 5,334,407
39 : 5,333,330
5,333,349
5,333,387
5,333,394
5,333,405
5,333,424
5,333,443
5,333,445
5,333,469
5,333,510
5,333,565
5,333,596
5,333,653
5,333,708
5,333,773
5,333,871
5,333,887
5,333,897
5,333,993
5,333,995
5,333,996
5,334,001
5,334,003
5,334,061
5,334,099
5,334,151
5,334,176
5,334,194
5,334,263
5,334,286
5,334,289
5,334,313
5,334,318
5,334,329
5,334,417
5,334,450
5,334,458
5,334,567
5,334,571
5,334,647
5,334,648
5,334,665
5,334,733

5,334,751
5,334,764
5,334,821
5,334,987
5,335,230
5,335,244
5,335,307
40 : 5,333,465
5,333,498
5,333,518
5,333,636
5,333,895
5,334,135
5,334,207
5,334,218
5,334,685
5,334,935
5,335,166
5,335,185
41 : 5,333,357
5,333,511
5,333,616
5,333,658
5,333,659
5,334,018
5,334,185
5,334,300
5,334,992
42 : 5,333,322
5,333,373
5,333,375
5,333,376
5,333,427
5,333,490
5,333,502
5,333,525
5,333,576
5,333,638
5,333,709
5,333,720
5,333,751
5,333,776
5,333,802
5,333,804
5,333,819
5,333,820
5,333,896
5,333,907
5,333,916
5,333,941
5,334,048
5,334,071
5,334,126
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5,334,910
5,334,919
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5,335,212
5,335,340
45 : 5,333,409
5,333,444
5,333,570
5,334,069
5,334,534
5,335,170
5,333,377
5,333,404
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5,333,536
5,333,830
5,333,841
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5,334,369
5,334,405
5,334,414
5,334,418
5,334,446
5,334,622
5,334,668

5,334,847
5,335,167
47 : 5,333,496
5,333,517
5,333,747
5,333,844
5,334,012
5,334,137
5,334,530
5,334,638
5,334,644
5,334,754
5,334,779
5,334,843
48 : 5,333,338
5,333,343
5,333,367
5,333,406
5,333,408
5,333,416
5,333,419
5,333,475
5,333,522
5,333,529
5,333,549
5,333,635
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5,333,864
5,333,911
5,333,922
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5,334,415
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49 : 5,333,428
5,333,634
5,333,639
5,333,723
5,333,875
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5,334,316
5,334,335
5,334,355
5,334,383
5,334,388
5,334,849
50 : 5,334,467
5,334,831
5,334,880
51 : 5,333,326
5,333,461
5,333,622
5,333,667
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5,333,867
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5,335,305
5,335,329
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5,335,346
5,335,428
5,335,634
5,335,639
5,335,723
5,335,875
53 : 5,333,423
5,333,640
5,333,693
5,333,726
5,333,763
5,333,828
5,333,937
5,334,065
5,334,067
5,334,158
5,334,221
5,334,349
5,334,501
5,335,156
5,335,184
5,335,249
5,335,293
5,335,349
55 : Re.34,683
5,333,327
5,333,523
5,333,558

5,334,064
5,334,520
5,334,632
5,334,633
5,334,853
5,334,903
5,335,247
5,335,298
4,427,848
5,333,423
5,333,640
5,333,693
5,333,726
5,333,763
5,333,828
5,333,937
5,334,065
5,334,067
5,334,158
5,334,221
5,334,349
5,334,501
5,335,156
5,335,184
5,335,249
5,335,293
5,335,349
55 : Re.34,683
5,333,327
5,333,523
5,333,558

5,333,575
5,333,598
5,333,614
5,333,617
5,333,632
5,333,648
5,333,697
5,333,702
5,333,712
5,333,737
5,333,755
5,333,766
5,333,771
5,333,808
5,333,818
5,333,825
5,333,865
5,333,985
5,334,089
5,334,094
5,334,101
5,334,163
5,334,205
5,334,325
5,334,353
5,334,395
5,334,643
5,334,696
5,334,773
5,334,923
5,335,155

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01 : 349,195
349,229
349,362
: 349,220
349,221
349,318
349,364
: 349,183
349,190
349,231
349,238
349,261
349,269
349,290
349,306
349,313
349,315
349,329
349,332
349,348
349,357
349,358
349,366
349,367
349,373
349,380

: 349,381
349,185
349,206
349,212
349,237
349,279
349,282
349,293
09 : 349,197
349,275
349,276
349,334
349,349
349,350
10 : 349,305
12 : 349,213
349,233
349,254
349,320
349,322
13 : 349,203
349,340
17 : 349,198
349,219
349,241
349,253

349,265
349,273
349,294
349,312
349,317
349,330
349,356
18 : 349,179
349,199
349,256
19 : 349,217
349,369
21 : 349,353
25 : 349,187
349,188
349,211
349,242
349,310
349,341
349,343
349,345
349,346
349,351
349,376
26 : 349,200
349,291

349,314
349,368
27 : 349,274
349,360
29 : 349,309
31 : 349,205
349,223
33 : 349,303
34 : 349,182
349,215
349,255
349,260
349,281
36 : 349,184
349,191
349,210
349,234
349,257
349,311
349,378
37 : 349,193
349,374
349,386
39 : 349,202
349,207
349,216

349,227
349,230
349,268
349,308
349,333
349,339
349,372
40 : 349,321
349,324
41 : 349,186
349,383
42 : 349,235
349,258
349,267
349,302
349,359
44 : 349,204
349,262
45 : 349,225
349,292
349,323
47 : 349,240
349,252
349,336
349,337
349,371

48 : 349,180
349,194
349,226
349,232
349,277
349,307
349,342
349,363
349,385
49 : 349,209
50 : 349,264
51 : 349,201
53 : 349,272
349,280
349,325
55 : 349,208
349,243
349,244
349,245
349,266
349,316
349,319
349,326
349,327
349,328
349,331

PLANT PATENTS

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8,854
8,855

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06 : H1342
24 : H1344
27 : H1347
34 : H1345
: H1346
49 H1341

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VOL
1165

ISS
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AG
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1165

ISS
1

AG
2

1994

UMI

VOL
1165

ISS
2

AG
9

1994

UMI

Vol. 1165 Number 2

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VOL
1165
ISS
2
AG
9
1994
UMI

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UNITED STATES PATENT AND TRADEMARK OFFICE
August 9, 1994 Volume 1165 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1165 OG 25
Notice of Maintenance Fees Payable	1165 OG 25
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1165 OG 26
Notification of Acceptance of Delayed Payment of Maintenance Fee	1165 OG 32
Reissue Applications Filed	1165 OG 32
Requests for Reexaminations Filed	1165 OG 32
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1165 OG 32
Erratum	1165 OG 35
Service by Publication	1165 OG 35
Service by Publication	1165 OG 35
Registration To Practice	1165 OG 35
Removal From Register	1165 OG 42
Patents Available For License or Sale	1165 OG 45
Request for Comments on Preliminary Draft	1165 OG 46
Disclaimer	1165 OG 46
Disclaimer and Dedication	1165 OG 47
Patent Certificates of Correction	1165 OG 47
Summary of Final Decisions Issued by the Trademark Trial and Appeal Board	1165 OG 49
Special Boxes for Mail	1165 OG 51
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1165 OG 52
Patent Examining Corps	1165 OG 54
Condition of Trademark Applications	1165 OG 55
Reexaminations	739
Reissue Patents Granted (34,686)	741
Plant Patents Granted (8,856)	745
Patents Granted	
General and Mechanical (5,335,370)	747
Chemical (5,336,271)	1063
Electrical (5,336,844)	1227
Design Patents Granted (349,387)	1429
Index of Patentees	PI 1
Indices of Reissue, Reexaminations, Design and Plant Patents	PI 90
Classification of	
Patents (Including Reissues and Reexaminations)	PI 97
Designs and Plants Applications	PI 101
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 103
Designs and Plant Applications	PI 105
Change of Address Form	PI 107
Subscription Order Form	PI 109

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VOL
1165
ISS
2
AG
9
1994
UMI

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 6, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,036,547 through 5,038,406
Reissue Patents based on the above identified patents.

VOL 1165 ISS 2 AG 9 1994 UMI

Attention is drawn to the patents which were issued on August 4, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,683,592 through 4,685,150
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 2, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,395,781 through 4,397,042
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 29, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,814	07/058,261	01/03/89
(4,590,765)	(06/633,462)	(05/27/86)
Re. 34,266	07/647,701	06/01/93
(4,590,866)	(06/580,804)	(05/27/86)
Re. 34,485	07/891,844	12/21/93
(4,929,221)	(07/280,589)	(05/29/90)
4,332,037	06/216,114	06/01/82
4,332,038	06/218,186	06/01/82
4,332,131	06/272,345	06/01/82
4,332,135	06/228,836	06/01/82
4,332,136	06/256,403	06/01/82
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4,332,196	06/236,146	06/01/82
4,332,286	06/225,817	06/01/82
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4,332,993	06/259,366	06/01/82
4,333,047	06/251,374	06/01/82
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VOL
1165
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1994
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Patent Number	Serial Number	Issue Date
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4,928,398	07/335,765	05/29/90
4,928,399	07/288,487	05/29/90
4,928,405	06/871,733	05/29/90
4,928,406	07/291,166	05/29/90
4,928,407	07/274,910	05/29/90
4,928,408	07/240,908	05/29/90
4,928,411	07/218,794	05/29/90
4,928,413	07/204,248	05/29/90
4,928,414	07/267,436	05/29/90
4,928,415	07/366,511	05/29/90
4,928,416	07/226,203	05/29/90
4,928,418	07/353,401	05/29/90
4,928,419	07/316,234	05/29/90
4,928,420	07/314,307	05/29/90
4,928,422	07/421,908	05/29/90
4,928,426	07/278,942	05/29/90
4,928,432	07/237,844	05/29/90
4,928,437	07/102,019	05/29/90
4,928,441	07/387,751	05/29/90
4,928,442	07/349,483	05/29/90
4,928,445	07/283,803	05/29/90
4,928,449	07/378,770	05/29/90
4,928,450	07/238,179	05/29/90
4,928,452	07/329,767	05/29/90
4,928,455	07/346,376	05/29/90
4,928,456	07/207,778	05/29/90
4,928,460	07/187,947	05/29/90
4,928,461	07/244,837	05/29/90
4,928,462	07/354,180	05/29/90
4,928,466	07/361,318	05/29/90
4,928,467	07/193,584	05/29/90
4,928,468	07/279,895	05/29/90
4,928,469	07/304,859	05/29/90
4,928,472	07/342,992	05/29/90
4,928,473	07/364,259	05/29/90

VOL 1165 ISS 2 AG 9 1994 UMI

Patent Number	Serial Number	Issue Date
4,928,481	07/218,252	05/29/90
4,928,484	07/286,690	05/29/90
4,928,488	07/309,133	05/29/90
4,928,490	07/384,408	05/29/90
4,928,491	07/213,198	05/29/90
4,928,492	07/281,282	05/29/90
4,928,501	07/393,030	05/29/90
4,928,502	07/386,116	05/29/90
4,928,505	06/907,846	05/29/90
4,928,508	07/054,522	05/29/90
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4,928,523	07/319,098	05/29/90
4,928,531	07/179,720	05/29/90
4,928,533	07/374,480	05/29/90
4,928,535	07/317,091	05/29/90
4,928,546	07/233,333	05/29/90
4,928,554	07/291,778	05/29/90
4,928,558	07/284,737	05/29/90
4,928,560	07/305,404	05/29/90
4,928,565	07/406,400	05/29/90
4,928,570	07/300,228	05/29/90
4,928,572	07/339,339	05/29/90
4,928,573	07/262,656	05/29/90
4,928,578	07/123,786	05/29/90
4,928,580	07/302,371	05/29/90
4,928,581	07/277,772	05/29/90
4,928,594	07/339,258	05/29/90
4,928,601	07/377,599	05/29/90
4,928,603	07/203,006	05/29/90
4,928,611	07/433,225	05/29/90
4,928,620	07/239,407	05/29/90
4,928,624	07/240,075	05/29/90
4,928,631	07/310,213	05/29/90
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4,928,661	07/324,666	05/29/90
4,928,665	07/308,738	05/29/90
4,928,666	07/246,566	05/29/90
4,928,668	07/425,112	05/29/90
4,928,671	07/071,992	05/29/90
4,928,673	07/332,046	05/29/90
4,928,675	07/274,568	05/29/90
4,928,676	07/315,760	05/29/90
4,928,682	07/252,141	05/29/90
4,928,684	07/354,610	05/29/90
4,928,687	07/255,400	05/29/90
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4,928,745	06/843,687	05/29/90
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4,928,790	07/380,515	05/29/90
4,928,795	07/156,425	05/29/90
4,928,797	07/272,385	05/29/90
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4,928,804	07/315,160	05/29/90
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4,928,812	07/203,732	05/29/90
4,928,814	07/044,234	05/29/90
4,928,818	07/399,027	05/29/90
4,928,819	07/407,262	05/29/90
4,928,821	07/216,893	05/29/90
4,928,822	07/202,573	05/29/90
4,928,824	07/096,732	05/29/90
4,928,831	07/419,079	05/29/90
4,928,834	07/203,172	05/29/90
4,928,836	07/252,813	05/29/90
4,928,842	07/407,815	05/29/90
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4,928,855	07/226,865	05/29/90
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4,928,858	07/184,928	05/29/90
4,928,863	07/307,106	05/29/90
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4,928,881	07/176,792	05/29/90
4,928,891	07/289,038	05/29/90
4,928,893	07/335,224	05/29/90
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4,928,901	07/311,927	05/29/90
4,928,903	07/415,062	05/29/90
4,928,907	07/161,714	05/29/90
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4,928,913	07/321,378	05/29/90
4,928,914	07/312,202	05/29/90
4,928,929	07/152,626	05/29/90
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4,928,932	07/214,215	05/29/90
4,928,936	07/406,813	05/29/90
4,928,938	07/337,370	05/29/90
4,928,939	07/389,167	05/29/90
4,928,942	07/183,210	05/29/90
4,928,944	07/286,608	05/29/90
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4,928,951	07/261,993	05/29/90
4,928,954	07/182,426	05/29/90
4,928,956	07/244,046	05/29/90
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4,928,969	07/390,982	05/29/90
4,928,970	07/347,587	05/29/90
4,928,971	07/332,977	05/29/90
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4,928,976	07/368,413	05/29/90
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4,928,982	07/170,002	05/29/90
4,928,984	07/363,680	05/29/90
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4,928,986	07/190,927	05/29/90
4,928,989	07/279,682	05/29/90
4,928,993	07/371,197	05/29/90
4,928,995	07/329,724	05/29/90
4,928,998	07/332,736	05/29/90
4,928,999	06/605,378	05/29/90
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4,929,004	07/329,319	05/29/90
4,929,008	07/309,849	05/29/90
4,929,010	07/426,563	05/29/90
4,929,016	07/320,510	05/29/90
4,929,022	07/314,164	05/29/90
4,929,026	07/324,010	05/29/90
4,929,027	07/261,421	05/29/90
4,929,028	07/193,774	05/29/90
4,929,030	07/302,895	05/29/90
4,929,031	07/274,339	05/29/90
4,929,032	07/217,313	05/29/90
4,929,037	07/317,937	05/29/90
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4,929,048	07/271,234	05/29/90
4,929,063	06/821,291	05/29/90
4,929,074	07/261,749	05/29/90
4,929,075	07/387,443	05/29/90

Patent Number	Serial Number	Issue Date
4,929,082	07/218,624	05/29/90
4,929,087	07/033,148	05/29/90
4,929,090	07/261,588	05/29/90
4,929,091	07/329,405	05/29/90
4,929,092	07/198,495	05/29/90
4,929,094	07/369,868	05/29/90
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4,929,110	07/291,860	05/29/90
4,929,112	06/782,027	05/29/90
4,929,117	07/344,349	05/29/90
4,929,122	07/316,597	05/29/90
4,929,126	07/144,087	05/29/90
4,929,128	07/370,826	05/29/90
4,929,133	07/338,039	05/29/90
4,929,135	07/417,760	05/29/90
4,929,141	07/312,276	05/29/90
4,929,145	07/243,429	05/29/90
4,929,147	07/194,679	05/29/90
4,929,149	07/265,284	05/29/90
4,929,150	07/330,911	05/29/90
4,929,154	07/302,327	05/29/90
4,929,163	07/172,755	05/29/90
4,929,164	07/259,974	05/29/90
4,929,172	07/343,084	05/29/90
4,929,174	07/326,793	05/29/90
4,929,181	07/386,994	05/29/90
4,929,183	07/073,680	05/29/90
4,929,191	07/355,494	05/29/90
4,929,205	07/254,720	05/29/90
4,929,208	07/334,344	05/29/90
4,929,212	07/385,424	05/29/90
4,929,213	07/371,625	05/29/90
4,929,214	07/115,372	05/29/90
4,929,215	07/369,657	05/29/90
4,929,216	07/255,763	05/29/90
4,929,222	07/402,557	05/29/90
4,929,234	07/330,643	05/29/90
4,929,237	07/268,242	05/29/90
4,929,238	07/275,272	05/29/90
4,929,249	07/347,223	05/29/90
4,929,253	07/227,949	05/29/90
4,929,261	07/329,573	05/29/90
4,929,262	07/134,184	05/29/90
4,929,267	06/938,872	05/29/90
4,929,269	07/259,762	05/29/90
4,929,270	07/177,536	05/29/90
4,929,273	07/412,635	05/29/90
4,929,280	07/244,233	05/29/90
4,929,282	07/124,783	05/29/90
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4,929,311	07/344,659	05/29/90
4,929,323	07/392,985	05/29/90
4,929,324	07/392,972	05/29/90
4,929,329	07/127,655	05/29/90
4,929,334	07/272,958	05/29/90
4,929,335	07/386,173	05/29/90
4,929,336	07/420,790	05/29/90
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4,929,345	07/375,883	05/29/90
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4,929,351	07/357,685	05/29/90
4,929,365	07/408,851	05/29/90
4,929,367	06/916,069	05/29/90
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4,929,392	06/774,941	05/29/90
4,929,396	06/661,705	05/29/90
4,929,401	07/301,968	05/29/90
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4,929,423	07/331,189	05/29/90
4,929,426	07/266,474	05/29/90
4,929,434	07/321,009	05/29/90
4,929,436	07/372,185	05/29/90
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4,929,443	07/050,470	05/29/90
4,929,460	07/416,403	05/29/90
4,929,461	07/262,127	05/29/90
4,929,483	07/205,314	05/29/90
4,929,488	07/225,851	05/29/90
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4,929,496	07/291,958	05/29/90
4,929,498	07/304,981	05/29/90
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4,929,515	07/302,480	05/29/90
4,929,517	07/429,893	05/29/90
4,929,519	07/383,376	05/29/90
4,929,520	07/335,290	05/29/90
4,929,522	07/286,504	05/29/90
4,929,534	07/236,916	05/29/90
4,929,537	07/385,747	05/29/90
4,929,542	07/114,986	05/29/90
4,929,545	07/339,051	05/29/90
4,929,551	07/393,795	05/29/90
4,929,557	07/176,344	05/29/90
4,929,560	07/151,707	05/29/90
4,929,574	07/330,484	05/29/90
4,929,575	07/171,099	05/29/90
4,929,577	07/024,265	05/29/90
4,929,579	07/366,295	05/29/90
4,929,587	07/314,611	05/29/90
4,929,588	07/363,037	05/29/90
4,929,606	07/267,585	05/29/90
4,929,608	06/729,723	05/29/90
4,929,613	07/222,608	05/29/90
4,929,619	07/389,962	05/29/90
4,929,621	07/399,983	05/29/90
4,929,622	07/272,045	05/29/90
4,929,630	07/404,791	05/29/90
4,929,642	07/212,816	05/29/90
4,929,643	07/345,168	05/29/90
4,929,659	07/220,333	05/29/90
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4,929,689	07/250,014	05/29/90
4,929,696	07/434,260	05/29/90
4,929,702	07/211,897	05/29/90
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4,929,733	07/207,861	05/29/90
4,929,736	07/117,531	05/29/90
4,929,738	07/350,064	05/29/90
4,929,740	07/217,241	05/29/90
4,929,749	07/323,977	05/29/90
4,929,751	07/109,804	05/29/90
4,929,752	07/352,652	05/29/90
4,929,754	07/305,255	05/29/90
4,929,762	07/318,117	05/29/90
4,929,764	06/776,753	05/29/90
4,929,780	06/861,820	05/29/90
4,929,783	07/372,272	05/29/90
4,929,791	07/217,111	05/29/90
4,929,800	07/230,017	05/29/90
4,929,805	07/239,894	05/29/90
4,929,812	07/410,014	05/29/90
4,929,839	07/256,005	05/29/90
4,929,843	07/372,580	05/29/90
4,929,848	07/304,510	05/29/90
4,929,849	07/283,148	05/29/90
4,929,857	07/344,793	05/29/90
4,929,858	07/354,562	05/29/90
4,929,859	07/283,386	05/29/90
4,929,860	07/194,806	05/29/90
4,929,861	07/286,150	05/29/90

VOL 1165 ISS 2 AG 9 1994 UMI

Patent Number	Serial Number	Issue Date
4,929,862	07/302,051	05/29/90
4,929,865	07/321,632	05/29/90
4,929,890	07/118,294	05/29/90
4,929,894	07/235,404	05/29/90
4,929,899	07/159,751	05/29/90
4,929,904	07/383,694	05/29/90
4,929,905	07/320,133	05/29/90
4,929,906	07/299,950	05/29/90
4,929,926	07/337,675	05/29/90
4,929,927	07/050,000	05/29/90
4,929,929	07/358,885	05/29/90
4,929,936	07/170,949	05/29/90
4,929,943	07/214,704	05/29/90
4,929,948	07/321,241	05/29/90
4,929,950	07/293,599	05/29/90
4,929,957	07/380,912	05/29/90
4,929,960	07/323,474	05/29/90
4,929,967	07/337,855	05/29/90
4,929,968	07/399,657	05/29/90
4,929,972	07/049,982	05/29/90
4,929,993	06/856,460	05/29/90
4,930,000	07/243,206	05/29/90
4,930,017	07/256,767	05/29/90
4,930,020	06/947,390	05/29/90
4,930,025	07/298,203	05/29/90
4,930,026	07/170,851	05/29/90
4,930,028	07/343,709	05/29/90
4,930,033	07/228,686	05/29/90
4,930,034	07/217,970	05/29/90
4,930,045	07/428,272	05/29/90
4,930,046	07/260,270	05/29/90
4,930,049	07/290,005	05/29/90
4,930,052	07/365,481	05/29/90
4,930,054	07/281,702	05/29/90
4,930,073	07/066,909	05/29/90
4,930,075	07/221,798	05/29/90
4,930,080	07/192,973	05/29/90
4,930,091	07/116,999	05/29/90
4,930,101	06/861,527	05/29/90
4,930,124	07/086,082	05/29/90
4,930,139	07/359,206	05/29/90
4,930,140	07/297,412	05/29/90
4,930,143	07/199,033	05/29/90
4,930,151	07/352,515	05/29/90
4,930,153	07/338,514	05/29/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re. 32,622	06/880,721	03/15/88	07/01/86	03/16/94
(4,546,810)	(06/531,082)	(10/15/85)	(08/11/83)	
Re. 33,702	07/529,658	10/01/91	05/29/90	06/01/94
(4,848,074)	(07/251,234)	(07/18/89)	(09/30/88)	
Re. 34,571	07/853,998	03/29/94	03/19/92	06/10/94
(4,909,996)	(07/293,439)	(03/20/90	(01/04/89)	
4,483,188	06/470,020	11/20/84	04/18/83	06/13/94
4,516,393	06/529,344	05/14/85	09/06/83	06/13/94
4,525,959	06/459,918	07/02/85	01/21/83	06/13/94
4,552,532	06/560,199	11/12/85	12/12/83	05/25/94
4,544,546	06/510,506	10/01/85	07/05/83	05/26/94
4,844,847	07/143,621	07/04/89	01/13/88	09/13/93
4,845,580	07/090,154	07/04/89	07/21/87	06/13/94
4,859,585	06/853,240	08/22/89	04/17/86	04/15/94
4,913,684	07/288,258	04/03/90	02/02/89	05/25/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,264,138, Re. S.N. 08/251,963, June 1, 1994, Cl. 210/784, METHOD AND APPARATUS FOR TREATING A FIBER SUSPENSION, Jukka Heino, et. al., Owner of Record: *A. Ahlstrom Corp., Noormarkku, Finland,* Attorney or Agent: Robert A. Vanderhye, Ex. Gp.: 1306

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,706,147, Reexam. No. 90/003,250, Nov. 5, 1993, Cl. 360/128, CASSETTE FOR CLEANING THE HEADS OF A MAGNETIC TAPE RECORDER, Hans Muller, Owner of Record: *Inventor, Stuttgart, Fed'l Republic of Germany,* Attorney or Agent: Ronald E. Greigg, Arlington, Va., Ex. Gp.: 2512, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JUNE 13, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
93,327	71/056,447	09/09/1913
306,021	71/337,716	09/05/1933
306,051	71/337,298	09/05/1933
306,063	71/337,073	09/05/1933
306,070	71/335,661	09/05/1933
306,085	71/329,400	09/05/1933
306,111	71/336,317	09/05/1933
306,117	71/336,719	09/05/1933
444,789	71/507,993	09/08/1953
579,526	71/569,013	09/08/1953
579,527	71/589,454	09/08/1953
579,529	71/592,918	09/08/1953
579,531	71/597,469	09/08/1953
579,532	71/597,770	09/08/1953
579,543	71/601,260	09/08/1953
579,546	71/602,741	09/08/1953
579,557	71/608,712	09/08/1953
579,567	71/613,663	09/08/1953
579,571	71/615,359	09/08/1953
579,575	71/617,221	09/08/1953
579,592	71/620,943	09/08/1953
579,596	71/621,522	09/08/1953
579,599	71/621,922	09/08/1953
579,607	71/623,921	09/08/1953
579,609	71/623,960	09/08/1953
579,613	71/624,279	09/08/1953
579,619	71/624,793	09/08/1953
579,637	71/626,946	09/08/1953
579,644	71/627,320	09/08/1953
579,645	71/627,449	09/08/1953
579,647	71/627,702	09/08/1953
579,652	71/628,557	09/08/1953
579,656	71/628,892	09/08/1953
579,660	71/628,896	09/08/1953
579,661	71/628,897	09/08/1953
579,666	71/629,121	09/08/1953
579,667	71/629,122	09/08/1953
579,670	71/629,347	09/08/1953
579,673	71/629,732	09/08/1953
579,674	71/629,733	09/08/1953
579,679	71/629,951	09/08/1953
579,682	71/630,099	09/08/1953
579,683	71/630,360	09/08/1953
579,685	71/630,944	09/08/1953
579,688	71/631,215	09/08/1953
579,709	71/633,268	09/08/1953
579,716	71/633,735	09/08/1953
579,718	71/633,772	09/08/1953
579,720	71/633,967	09/08/1953
579,727	71/634,338	09/08/1953
579,731	71/634,448	09/08/1953
579,741	71/635,127	09/08/1953
579,742	71/635,308	09/08/1953
579,746	71/635,574	09/08/1953
579,759	71/636,740	09/08/1953
579,761	71/636,852	09/08/1953
579,762	71/637,036	09/08/1953
579,764	71/637,069	09/08/1953
579,768	71/637,131	09/08/1953
579,771	71/637,311	09/08/1953
579,773	71/637,460	09/08/1953
579,785	71/638,572	09/08/1953
579,787	71/638,691	09/08/1953
579,789	71/638,827	09/08/1953
579,795	71/639,108	09/08/1953
579,799	71/639,339	09/08/1953
579,810	71/640,025	09/08/1953
579,811	71/640,136	09/08/1953
579,812	71/640,137	09/08/1953
579,813	71/640,138	09/08/1953
579,818	71/640,375	09/08/1953
579,826	71/640,383	09/08/1953
579,836	71/641,122	09/08/1953
579,837	71/641,208	09/08/1953
579,839	71/641,466	09/08/1953
579,845	71/643,576	09/08/1953
579,846	71/643,577	09/08/1953
579,858	71/639,783	09/08/1953
579,859	71/547,960	09/08/1953
579,860	71/626,448	09/08/1953
579,862	71/565,388	09/08/1953
579,865	71/606,710	09/08/1953
579,866	71/606,712	09/08/1953
579,873	71/620,865	09/08/1953
579,877	71/626,702	09/08/1953
579,878	71/627,477	09/08/1953
579,882	71/634,719	09/08/1953
967,269	72/329,177	09/04/1973
967,271	72/392,301	09/04/1973
967,272	72/392,302	09/04/1973
967,273	72/392,303	09/04/1973
967,274	72/392,304	09/04/1973
967,275	72/392,305	09/04/1973
967,276	72/392,620	09/04/1973
967,278	72/412,537	09/04/1973
967,281	72/427,595	09/04/1973
967,283	72/428,413	09/04/1973
967,284	72/429,929	09/04/1973
967,286	72/430,284	09/04/1973
967,290	72/415,757	09/04/1973
967,296	72/410,817	09/04/1973
967,303	72/405,267	09/04/1973
967,308	72/429,950	09/04/1973
967,309	72/430,812	09/04/1973
967,312	72/415,443	09/04/1973
967,313	72/426,486	09/04/1973
967,317	72/428,298	09/04/1973
967,323	72/433,065	09/04/1973
967,324	72/434,040	09/04/1973
967,325	72/434,662	09/04/1973
967,328	72/435,095	09/04/1973
967,332	72/381,801	09/04/1973
967,335	72/391,085	09/04/1973
967,338	72/407,256	09/04/1973
967,339	72/411,672	09/04/1973
967,348	72/413,354	09/04/1973
967,353	72/429,815	09/04/1973
967,358	72/431,777	09/04/1973
967,360	72/353,168	09/04/1973
967,363	72/431,955	09/04/1973
967,367	72/426,189	09/04/1973
967,368	72/432,444	09/04/1973
967,371	72/405,306	09/04/1973
967,376	72/396,278	09/04/1973
967,378	72/408,123	09/04/1973
967,383	72/436,428	09/04/1973
967,392	72/423,742	09/04/1973
967,394	72/425,010	09/04/1973
967,395	72/425,097	09/04/1973
967,399	72/364,597	09/04/1973
967,412	72/404,737	09/04/1973
967,415	72/413,607	09/04/1973
967,416	72/413,766	09/04/1973
967,419	72/423,928	09/04/1973
967,421	72/428,752	09/04/1973
967,423	72/430,673	09/04/1973
967,427	72/432,932	09/04/1973
967,429	72/410,298	09/04/1973
967,430	72/420,587	09/04/1973
967,433	72/431,062	09/04/1973
967,436	72/436,982	09/04/1973
967,437	72/437,507	09/04/1973
967,439	72/437,847	09/04/1973
967,443	72/438,936	09/04/1973
967,444	72/438,982	09/04/1973
967,451	72/395,028	09/04/1973
967,454	72/397,669	09/04/1973
967,456	72/402,329	09/04/1973
967,462	72/409,040	09/04/1973
967,468	72/416,119	09/04/1973
967,470	72/419,728	09/04/1973
967,471	72/420,012	09/04/1973

VOL 1165 ISS 2 AG 9 1994 UMI

Reg. No.	Serial Number	Reg. Date
967,474	72/421,415	09/04/1973
967,476	72/422,245	09/04/1973
967,484	72/434,167	09/04/1973
967,487	72/435,634	09/04/1973
967,488	72/435,654	09/04/1973
967,490	72/436,661	09/04/1973
967,497	72/398,247	09/04/1973
967,500	72/400,293	09/04/1973
967,501	72/405,727	09/04/1973
967,502	72/415,274	09/04/1973
967,503	72/421,145	09/04/1973
967,505	72/427,745	09/04/1973
967,506	72/428,229	09/04/1973
967,508	72/428,739	09/04/1973
967,512	72/417,014	09/04/1973
967,514	72/410,829	09/04/1973
967,515	72/440,855	09/04/1973
967,517	72/431,320	09/04/1973
967,519	72/434,308	09/04/1973
967,523	72/433,281	09/04/1973
967,524	72/433,818	09/04/1973
967,525	72/436,441	09/04/1973
967,527	72/403,838	09/04/1973
967,528	72/432,076	09/04/1973
967,530	72/433,116	09/04/1973
967,532	72/433,505	09/04/1973
967,539	72/436,668	09/04/1973
967,540	72/361,605	09/04/1973
967,550	72/434,194	09/04/1973
967,551	72/443,840	09/04/1973
967,552	72/361,640	09/04/1973
967,553	72/370,338	09/04/1973
967,556	72/393,057	09/04/1973
967,558	72/403,962	09/04/1973
967,559	72/406,850	09/04/1973
967,568	72/424,130	09/04/1973
967,570	72/427,805	09/04/1973
967,574	72/431,550	09/04/1973
967,582	72/434,702	09/04/1973
967,584	72/438,161	09/04/1973
967,587	72/400,124	09/04/1973
967,595	72/422,625	09/04/1973
967,597	72/424,518	09/04/1973
967,602	72/428,021	09/04/1973
967,607	72/429,600	09/04/1973
967,618	72/434,184	09/04/1973
967,620	72/435,433	09/04/1973
967,625	72/437,090	09/04/1973
967,629	72/433,172	09/04/1973
967,630	72/408,398	09/04/1973
967,632	72/420,434	09/04/1973
967,634	72/432,522	09/04/1973
967,635	72/432,523	09/04/1973
967,636	72/432,526	09/04/1973
967,638	72/433,501	09/04/1973
967,639	72/433,502	09/04/1973
967,640	72/433,503	09/04/1973
967,641	72/433,504	09/04/1973
967,642	72/436,154	09/04/1973
967,643	72/436,155	09/04/1973
967,644	72/436,156	09/04/1973
967,647	72/436,908	09/04/1973
967,649	72/437,389	09/04/1973
967,651	72/437,391	09/04/1973
967,653	72/438,092	09/04/1973
967,654	72/438,093	09/04/1973
967,657	72/430,456	09/04/1973
967,658	72/438,027	09/04/1973
967,667	72/304,962	09/04/1973
967,673	72/419,673	09/04/1973
967,679	72/344,956	09/04/1973
967,680	72/389,884	09/04/1973
967,687	72/406,125	09/04/1973
967,693	72/410,928	09/04/1973
967,698	72/414,785	09/04/1973
967,701	72/415,240	09/04/1973
967,703	72/417,071	09/04/1973
967,705	72/418,301	09/04/1973
967,706	72/419,100	09/04/1973
967,707	72/419,742	09/04/1973
967,709	72/421,677	09/04/1973
967,716	72/428,923	09/04/1973
967,717	72/429,242	09/04/1973
967,727	72/434,281	09/04/1973
967,729	72/435,178	09/04/1973
967,730	72/435,179	09/04/1973
967,732	72/437,049	09/04/1973
967,733	72/437,722	09/04/1973
967,735	72/439,124	09/04/1973
967,736	72/439,166	09/04/1973
967,748	72/442,509	09/04/1973
967,749	72/442,533	09/04/1973
967,750	72/442,916	09/04/1973
967,752	72/443,473	09/04/1973
967,753	72/443,476	09/04/1973
967,755	72/444,419	09/04/1973
967,757	72/444,667	09/04/1973
967,758	72/444,680	09/04/1973
967,759	72/444,740	09/04/1973
967,760	72/444,851	09/04/1973
967,761	72/444,866	09/04/1973
967,763	72/371,283	09/04/1973
967,769	72/435,443	09/04/1973
967,770	72/442,184	09/04/1973
967,771	72/443,014	09/04/1973
967,772	72/384,179	09/04/1973
967,775	72/417,738	09/04/1973
967,776	72/428,354	09/04/1973
967,778	72/432,057	09/04/1973
967,779	72/396,447	09/04/1973
967,782	72/397,461	09/04/1973
967,784	72/403,840	09/04/1973
967,785	72/408,024	09/04/1973
967,787	72/421,942	09/04/1973
967,788	72/421,956	09/04/1973
967,791	72/422,777	09/04/1973
967,792	72/424,235	09/04/1973
967,793	72/425,002	09/04/1973
967,794	72/425,663	09/04/1973
967,795	72/426,239	09/04/1973
967,798	72/432,959	09/04/1973
967,802	72/435,309	09/04/1973
967,808	72/421,941	09/04/1973
967,809	72/430,959	09/04/1973
967,811	72/357,611	09/04/1973
967,813	72/392,193	09/04/1973
967,816	72/413,472	09/04/1973
967,823	72/423,737	09/04/1973
967,828	72/428,637	09/04/1973
967,832	72/432,941	09/04/1973
967,833	72/432,997	09/04/1973
967,834	72/433,235	09/04/1973
967,835	72/434,041	09/04/1973
967,841	72/387,734	09/04/1973
967,842	72/393,056	09/04/1973
967,845	72/402,086	09/04/1973
967,848	72/419,465	09/04/1973
967,852	72/424,990	09/04/1973
967,853	72/425,378	09/04/1973
967,855	72/426,731	09/04/1973
967,859	72/429,412	09/04/1973
967,865	72/404,173	09/04/1973
967,867	72/421,682	09/04/1973
967,868	72/426,126	09/04/1973
967,872	72/386,983	09/04/1973
967,873	72/396,927	09/04/1973
967,874	72/399,929	09/04/1973
967,879	72/426,712	09/04/1973
967,880	72/426,713	09/04/1973
967,883	72/431,468	09/04/1973
967,886	72/412,755	09/04/1973
967,889	72/431,309	09/04/1973
967,892	72/414,232	09/04/1973
967,898	72/425,258	09/04/1973
967,901	72/389,857	09/04/1973
967,902	72/421,996	09/04/1973

Reg. No.	Serial Number	Reg. Date
967,903	72/425,302	09/04/1973
967,905	72/436,085	09/04/1973

Erratum

"All reference to Patent No. 5,328,366 to Lars E. Callne et. al., of Calif. for 'DENTAL CAST TRAY SUBASSEMBLY' appearing in the *Official Gazette* of July 12, 1994 should be deleted since no patent was granted."

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter as appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Cosmopolitan Publications, Inc., Chicago, Ill., Reg. No. 1,510,092, for the mark "BUSINESS LINES", Canc. No. 21,641.

United Fidelity Life Insurance Company, Dallas, Tex., Reg. No. 978,343, for the mark "CLASS" and Design, Canc. No. 21,856.

Ice Cold Auto Air of Clearwater, Inc., Clearwater, Fla., Reg. No. 1,636, for the mark "ICE COLD AIR" and 1,636,347, for the mark "ICE COLD AUTO AIR", Canc. No. 21,900.

Tele-Data Advanced Information Systems, Inc., Miami, Fla., Reg. No. 1,225,351, for the mark "TELE-DATA", Canc. No. 22,017.

Foremost Dairies, Inc., La Jolla, Calif., Reg. Nos. 614,915 and 1,106,220, for the mark "DAIRYLAND", Canc. No. 22,332.

Popper-Strong Communications, Inc., Mamaroneck, N.Y., Reg. No. 1,334,903, for the mark "WOMEN'S NEWS" (Stylized), Canc. No. 22,411.

Exports International, Inc., Virginia Beach, Va., Reg. No. 1,654,357, for the mark "4 SAIL" and Design, Canc. No. 22,519.

Kirby & Wilson Manufacturing Inc., Mississauga, Ontario, Canada, Reg. No. 1,538,953, for the mark "MR. SHAVER", Canc. No. 22,520.

Interstyle, Inc., St. Louis, Mo., Reg. No. 1,290,236, for the mark "CHAMELEON" and Design, Canc. No. 22,525.

Avicenna Corp., Tampa, Fla., Reg. No. 1,666,015, for the mark "TROPICAL GROVE" and 1,655,723 for the mark "TROPIC FRUIT GROVES" and Design, Canc. No. 22,629.

Topaz Productions, Inc., Orlando, Fla., Reg. No. 1,526,860, for the mark "AWARENESS MAGAZINE", Canc. No. 22,650.

Kansas Microtech, Inc., Chanute, Kans., Reg. No. 1,552,706, for the mark "CAR COP", and Design, Canc. No. 22,699.

Michael Machat, New York, N.Y., Reg. No. 1,626,211, for the mark "VAMPIRE", Canc. No. 22,715.

JEAN BROWN
Administrator,
Trademark Trial and
Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Allegheny Body Company, Inc., dba Space Saver Shelving Company, Philadelphia, Pa., Reg. No. 882,730. for the mark "SPACE SAVERS AND DESIGN", Canc. No. 22,179.

Cotter & Company, Chicago, Ill., Reg. No. 633,414 for the mark "TRU-Bond", Canc. No. 21,044.

Sami Robbins Ltd., New York, N.Y., Reg. No. 1,435,747 for the mark "SAMI", Canc. No. 21,300.

JEAN BROWN
Administrator,
Trademark Trial and
Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Registration To Practice

The results of the examination for registration to practice before the United States Patent and Trademark Office held on April 13, 1994 were mailed to 1,399 candidates. There were 656 persons who successfully passed the examination. The following list contains the names of those persons who passed the examination and have been given provisional recognition pursuant to 37CFR § 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. 37 CFR § 10.7(a). Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds should be furnished to the Director of Enrollment and Discipline on or before August 23, 1994.

July 15, 1994 CAMERON WEIFFENBACH, Director
Office of Enrollment and Discipline

Aaronson, Lawrence Alan, 63 Varnum Rd., Norristown, Pa. 19403
Abramonte, Frank, 4124 Evanston Ave. N., Seattle, Wash. 98103-7727
Allison, Craig Y., 3837 La Selva Dr., Palo Alto, Calif. 94306
Allison, Scott Brian, 4849 Connecticut Ave., N.W., #803, Washington, D.C. 20008
Anderson, Jay H., 19 Teller Ave., Beacon, N.Y. 12508
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VOL 1165 ISS 2 AG 9 1994 UMI

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VOL
1165
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2
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9
1994
UMI

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VOL
1165
ISS
2
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9
1994
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VOL 1165 ISS 2 AG 9 1994 UMI

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Removal From Register

Pursuant to 37 CFR § 10.11(b), a survey letter was directed on January 18, 1994 to the last post office address furnished to the Office of Enrollment and Discipline by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of forty-five (45) days therein set. Other letters were returned to the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address or the forwarding had expired.

Accordingly, the names of the following persons have been removed from the Register of Patent Attorneys and Agents.

July 15, 1994 Cameron Weiffenbach, *Director*
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VOL
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4,231,163		LEVEL INDICATING AND ELEVATION INDICATING DEVICE
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4,619,049		CENTERING DEVICE AND METHOD
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5,111,188		ELECTRONIC FLUID-LEVEL SENSOR WITH THREE STATE INDICATOR
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5,164,708		SINGLE UNIT, MULTI-SIGNAL, VARIABLE PLANE MEASURING AND LEVELING DEVICE
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5,269,530		WORD-SPELLING GAME AND METHOD OF PLAYING SUCH A GAME
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5,277,158		MULTIPLE VANE ROTARY INTERNAL COMBUSTION ENGINE
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5,322,084		FOOT OPERATED CONTROL DEVICE
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VOL 1165 ISS 2 AG 9 1994 UMI

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Department of Commerce
Patent and Trademark
Request for Comments on
Preliminary Draft of the Report of the Working Group on Intellectual Property Rights

Agency: Patent and Trademark Office, Commerce
Action: Notice of draft report and request for public comments
Summary: The Working Group on Intellectual Property Rights of the White House Information Infrastructure Task Force has issued a preliminary draft of its report, "Intellectual Property and the National Information Infrastructure," and is soliciting public comment. Copies of the preliminary report may be obtained by calling the U.S. Patent and Trademark Office at (703) 305-9300 or by sending a written request to the Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231, marked to the attention of Terri A. Southwick, Office of Legislative and International Affairs. Public hearings will be announced at a later date.
Dates: Written comments should be submitted on or before September 7, 1994. Comments in reply to initial written comments may be submitted no later than September 28, 1994.
Addresses: An original and four copies of comments should be submitted to the Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231, marked to the attention of Terri A. Southwick, Attorney-Advisor, Office of Legislative and International Affairs. Alternatively, comments may be submitted electronically to the following Internet address: nii-ip@uspto.gov. Comments received will be available for public inspection at the Scientific and Technical Information Center of the Patent and Trademark Office, Room 2CO1, Crystal Plaza 3/4, 2021 Jefferson Davis Highway, Arlington, Virginia, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except holidays.
For Further Information Contact: Terri A. Southwick, Attorney-Advisor, Office of Legislative and International Affairs, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231. Telephone: (703) 305-9300 / Fax: (703) 305-8885.
Supplementary Information: The Working Group on Intellectual Property Rights, chaired by Assistant Secretary of Commerce and Commissioner of Patents and Trademarks Bruce A. Lehman, was established as part of the White House Information Infrastructure Task Force. The Task Force, chaired by Secretary of Commerce Ronald H. Brown, was created to work with Congress and the private sector to develop comprehensive telecommunications and information policies aimed at articulating and implementing the Administration's vision for the National Information Infrastructure (NII).

The Preliminary Draft of the Report of the Working Group on Intellectual Property Rights represents the Working Group's examination and analysis to date of the intellectual property implications of the NII, and includes the Group's draft findings and recommendations. While it addresses each of the major areas of intellectual property law, including patent, trademark and trade secret, the preliminary draft focuses primarily on copyright law and its application and effectiveness in the context of the NII.

July 8, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Disclaimer

D. 338,032—*Arnold N. Wagers*, Barrington, Ill. NUMERAL FONT. Patent dated August 3, 1993. Disclaimer filed March 17, 1994, by the assignee, The Hedman Company.

Hereby enters this disclaimer to the remaining term of said patent.

D. 343,067—*Ronald I. Pass*, St. Louis County, Mo. ADJUSTABLE COMPUTER CHAIR. Patent dated January 11, 1994. Disclaimer filed May 2, 1994, by the assignee, JDI Group, Incorporated.

Hereby enters this disclaimer to the claim of said patent.

Re. 33,592—*Jan Gerritsen; Johannes C. J. Aerts*, both of Eindhoven, Netherlands. COLOR DISPLAY TUBE WITH REDUCED DEFLECTION DEFOCUSSING. Patent dated May 21, 1991. Disclaimer filed July 15, 1993, by the assignee, U.S. Philips Corporation.

The term of this patent subsequent to May 3, 2003, has been disclaimed.

4,766,516—*Faik S. Ozdemir*, Thousand Oaks; *Robert L. Seliger*, Agoura; *Gerald B. Rosenberg*, San Mateo, all of Calif. METHOD AND APPARATUS FOR SECURING INTEGRATED CIRCUITS FROM UNAUTHORIZED COPYING AND USE. Patent dated August 23, 1988. Disclaimer filed February 22, 1994, by the assignee, Hughes Aircraft Company.

Hereby enters this disclaimer to claims 1-37 of said patent.

4,826,673—*Richard T. Dean; Youlin Lin*, both of Chesterfield; *Robert W. Weber*, Manchester; *David H. White*, Florissant, all of Mo. METHODS AND COMPOSITIONS FOR ENHANCING MAGNETIC RESONANCE IMAGING. Patent dated May 2, 1989. Disclaimer filed May 31, 1994, by the assignee, Mallinckrodt Medical, Inc.

Hereby enters this disclaimer to claims 1-22 of said patent.

4,918,055—*Victor J. Hruby, Mac E. Hadley, Robert Dorr, Norman Levine*, all of Tucson, Ariz. METHOD OF STIMULATING MELANOCYTES BY TOPICAL APPLICATION OF ANALOGS OF ALPHA-MSH, AND COMPOSITIONS FOR USE IN SAME. Patent dated April 17, 1990. Disclaimer filed June 3, 1994, by the assignee, University Patents, Inc.

The term of this patent subsequent to September 12, 2006, has been disclaimed.

4,947,112—*Howard N. Gaston; Walter W. Jones, Jr.*, both of Benton, Ark. APPARATUS AND METHOD FOR TESTING PRINTED CIRCUIT BOARDS. Patent dated August 7, 1990. Disclaimer filed April 17, 1994, by the assignee, AT&T Bell Laboratories.

Hereby enters this disclaimer to all claims of said patent.

5,064,497—*Jim E. Clemans*, Trenton, N.J.; *Theophilus I. Ejim*, Fairless Hills, Pa.; *Maria J. Yuen*, Hopewell, N.J. CRYSTAL GROWTH METHOD AND APPARATUS. Patent dated November 12, 1991. Disclaimer filed April 20, 1994, by the assignee, American Telephone and Telegraph Company.

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

5,100,594—*Charles M. Zvosec*, Lorrain, Ohio; *Leon P. Mottet*, Nalinnes, Belgium. CERAMIC REPAIR. Patent dated March 31, 1992. Disclaimer filed May 12, 1994, by the assignees, Glaverbel and Fosbel Inc.

Hereby enters this disclaimer to claim 7 of said patent.

5,110,335—*Thomas J. Miller*, Alpharetta, Ga.; *Douglas W. Monroe*, Newtown, Pa. METHOD OF GLASS SOOT DEPOSITION USING ULTRASONIC NOZZLE. Patent dated May 5, 1992. Disclaimer filed April 26, 1994, by the assignee, American Telephone and Telegraph Company.

Hereby enters this disclaimer to claims 1, 2, 3, 5, 6, 7, 8 and 10 of said patent.

5,117,086—*Cecipe Boudot; Jacques Griffaton*, both of Chalon S/Saone, France. PROCESS AND HEAD FOR LASER WORKING IN A TUBE. Patent dated May 26, 1992. Disclaimer filed October 28, 1993, by the assignee, Framatome.

Hereby enters this disclaimer to claim 1 of said patent.

5,134,925—*Arthur H. Bunn*, Springfield; *James H. Anson*, Auburn; *David F. Ford*, Springfield, all of Ill. AUTOMATIC BREWER. Patent dated August 4, 1992. Disclaimer filed April 4, 1994, by the assignee, Bunn-O-Matic Corporation.

Hereby enters this disclaimer to claims 1, 7, 23 and 32 of said patent.

5,142,768—*Joseph A. Aboaf; Edward V. Denison; Vincent N. Kahwaty; Gerald Steving*, all of Tucson, Ariz. METHOD FOR MAKING MAGNETIC HEAD WITH ENHANCED POLETIP. Patent dated September 1, 1992. Disclaimer filed May 20, 1994, by the assignee, International Business Machines Corporation.

Hereby enters this disclaimer to all claims of said patent.

5,162,565—*Jean-Roger Desmurs*, Saint Syphorien d'Ozon, France. PROCESS FOR PREPARING DITERTIARY-ALKYL DICARBONATE. Patent dated November 10, 1992. Disclaimer filed April 12, 1994, by the assignee, Rhone-Poulenc Chimie.

Hereby enters this disclaimer to claim 8 of said patent.

5,191,274—*Robert D. Floyd*, Boca Raton, Fla. *David R. Dworkin*, Lawrenceville, Ga.; *Tuan Nguyen*, Boca Raton, Fla. METHOD AND APPARATUS FOR CONTROLLING THE SELF-DISCHARGE RATE OF A BATTERY. Patent dated March 2, 1993. Disclaimer filed March 28, 1994, by the assignee, Motorola, Inc.

Hereby enters this disclaimer to claims 2, 8, and 9 of said patent.

5,211,077—*Joseph E. Louis; Alan W. Johnson*, both of Ames, Iowa. HYDROSTATIC TRANSMISSION CENTER SECTION. Patent dated May 18, 1993. Disclaimer filed March 31, 1994, by the assignee, Sauer Inc.

Hereby enters this disclaimer to claims 5, 7 and 9 of said patent.

5,227,010—*John S. Lubert*, Binghamton; *Donald M. McGarigle*, Vestal, both of N.Y. REGENERATION OF FERRIC CHLORIDE ETCHANTS. Patent dated July 13, 1993. Disclaimer filed May 9, 1994, by the assignee, International Business Machines Corporation.

Hereby enters this disclaimer to all claims of said patent.

5,251,961—*Ronald I. Pass*, Ladue, Mo. ADJUSTABLE COMPUTER CHAIR. Patent dated October 12, 1993. Disclaimer filed May 2, 1994, by the assignee, JDI Group Incorporated.

Hereby enters this disclaimer to all claims of said patent.

Disclaimer and Dedication

4,548,257—*William R. Williamson*, Pensacola, Fla. BAYONET TUBE HEAT EXCHANGER. Patent dated October 11, 1985. Disclaimer and Dedication filed April 15, 1994, by the inventor.

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,726,766—*G. Wayne Stewart*, Plano; *Bill E. Davis*, Irving; *William M. Thomas*, Garland; *Michael J. Dobie*, Plano; *Carlos Bacigalupe*, The Colony, all of Tex. AIR CIRCULATION AND EXHAUST CONTROL SYSTEM FOR COMMERCIAL OVENS. Patent dated February 23, 1988. Disclaimer and Dedication filed March 31, 1994, by the assignee, Stewart Systems, Inc.

Hereby disclaims and dedicates to the Public claims 1-3 of said patent.

4,731,164—*William R. Williamson*, Pensacola, Fla. MULTI-STAGE FLASH EVAPORATOR. Patent dated March 15, 1988. Disclaimer and Dedication filed April 15, 1994, by the inventor.

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,804,639—*Eli Yablonovitch*, Scotch Plains Township, Union County, N.J. METHOD OF MAKING A DH LASER WITH STRAINED LAYERS BY MBE. Patent dated February 14, 1989. Disclaimer and Dedication filed June 9, 1994, by the assignee, Bell Communications Research, Inc.

Hereby disclaims and dedicates to the Public the entire term of said patent.

Certificates of Corrections
Issue of August 9, 1994

D. 328,785 D. 335,421 D. 337,418 D. 342,780 D. 343,349 D. 345,407 D. 346,078 D. 346,356 D. 346,414 D. 346,603
4,640,088 4,846,806 4,874,990 4,897,290 4,899,099 4,933,355 4,963,524 5,000,875 5,002,716 5,005,968 5,024,690 5,027,853 5,033,301 5,034,419 5,041,351 5,055,401 5,060,203 5,061,159 5,064,343 5,076,475 5,078,503 5,085,124 5,085,984 5,097,841 5,098,263 5,108,837 5,116,742 5,119,589 5,130,740
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5,257,491	5,269,742	5,279,871	5,285,697	5,290,844	5,296,306	5,301,188	5,305,692
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5,258,858	5,270,493	5,280,312	5,286,138	5,291,127	5,297,346	5,301,503	5,306,332
5,259,404	5,270,558	5,280,361	5,286,484	5,291,219	5,297,399	5,301,544	5,306,353
5,259,414	5,271,010	5,280,520	5,286,817	5,291,403	5,297,413	5,302,001	5,306,432
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5,264,435	5,274,554	5,283,846	5,287,746	5,293,963	5,298,989	5,302,740	5,308,563
5,264,876	5,275,197	5,283,960	5,287,835	5,293,974	5,298,997	5,303,171	5,308,702
5,265,043	5,275,792	5,284,387	5,287,899	5,294,068	5,299,417	5,303,311	5,309,216
5,265,556	5,275,870	5,284,663	5,287,919	5,294,151	5,299,634	5,303,592	5,309,606
5,265,952	5,275,958	5,284,680	5,288,174	5,294,356	5,299,790	5,303,687	5,309,975
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5,266,499	5,276,163	5,285,134	5,288,741	5,294,773	5,300,217	5,303,985	5,310,297
5,266,971	5,277,136	5,285,161	5,288,910	5,294,900	5,300,361	5,304,313	5,310,539
5,267,065	5,277,161	5,285,245	5,289,210	5,295,004	5,300,506	5,304,424	5,310,738
5,267,536	5,277,748	5,285,376	5,289,547	5,295,082	5,300,525	5,304,491	5,310,771
5,267,809	5,277,812	5,285,402	5,289,827	5,295,128	5,300,652	5,304,527	5,311,218
5,267,848	5,277,899	5,285,413	5,289,854	5,295,548	5,300,831	5,304,532	5,312,970
5,267,879	5,278,318	5,285,420	5,289,954	5,296,033	5,300,912	5,304,562	5,313,617
5,268,203	5,278,419	5,285,436	5,290,009	5,296,195	5,300,924	5,304,877	
5,268,904	5,279,403	5,285,488	5,290,371	5,296,264	5,301,140	5,305,442	
5,269,091	5,279,527	5,285,560	5,290,829				

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
June 20-24, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods, Cited by Examining Attorney	Recommended for Publication
6-20	EX	74/011,838	United Technologies Motor Systems, Inc.	whether matter asserted for registration is registrable on the Supplemental Register	Refusal Reversed		"MOTOR SYSTEMS" [electric motors for use with automobiles, boats, aircraft and machines, and parts thereof]		No
6-20	EX	74/103,585	Advanced Technology Laboratories, Inc.	2(d)	Refusal Reversed		"HDI" [medical ultrasound diagnostic apparatus]	HDi (and design) [computer programs for biomedical research]	No
6-20	EX	74/105,284	Syfo Water Company, Inc.	whether the phrase 100% PURIFIED has become distinctive so that mark may be registered under Section 2(f) without a disclaimer of the phrase	Refusal Reversed		"SYFO" 100% PURIFIED (and design) [drinking and seltzer water]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case*	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-20	EX	74/119,088	South Carolina Tees, Inc.	2(d)	Refusal Affirmed		"MY SHIRT" [t-shirts, sweatshirts, sportshirts, and jackets]	"MY" [women's sportswear, namely, pants, skirts, jackets, blouses, shirts, etc.]	No
6-20	EX	74/160,268	Donnay International Societe Anonyme	2(d)	Refusal Reversed		"GHOST" [sports articles, namely, rackets and bags, for tennis, table tennis, squash, and badminton]	"THE GHOST" [soccer balls]	Yes
6-20	EX	74/259,048	J.P.R. Enterprises, Inc	whether mark identifies goods rather than services	Refusal Affirmed		"SYNERSHAPE" (stylized) [physical fitness instruction, planning and supervision of weight reduction diets]		No
6-23	EX	74/161,840	David Harley Sportswear Limited	2(d)	Refusal Affirmed		"VALHALLA PURE" (and design) [women's clothing, namely, tops, blouses, shirts, skirts, etc. and men's clothing, namely, tops, t-shirts, pants, etc.]	"WALHALLA" [men's and women's clothing, namely, shirts, pants, skirts, blouses, etc.]	No
6-23	EX	74/174,172	Star-Kist Foods, Inc	whether LUNCH KIT must be disclaimed	Requirement Affirmed		"CHARLIE'S LUNCH KIT" [packaged combinations consisting of tuna, cheese, crackers, condiments, and dessert]		No

(1)EX=EX PARTE APPEAL, OPP=OPPOSITION, C=CANCELLATION, CU=CONCURRENT USE, (R)=REQ. FOR RECONSIDERATION

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VOL 1165 ISS 2 AG 9 1994 UMI

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	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

VOL
1165
ISS
2
AG
9
1994
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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	08/23/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	06/17/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	11/01/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	08/30/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/04/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/05/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/11/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	07/20/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	07/25/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/02/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	12/30/92
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	10/27/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	08/02/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	07/12/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	08/19/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	02/26/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/22/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during July 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents ..... Numbers 4,032,989 to 4,038,696 inclusive
Plant Patents ..... 4,069 to 4,085

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/16/94	05/23/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/08/94	01/21/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	03/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/02/94	03/09/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	05/02/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/07/94	04/19/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/22/94	04/28/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/94	04/01/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/14/94	05/16/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	03/16/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/10/94	04/20/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/23/94	03/03/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/01/94	—0—
Renewals (All Classes)	03/24/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

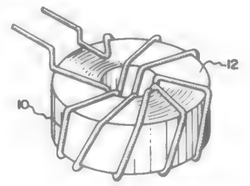
VOL
1165
ISS
2
AG
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1994
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REEXAMINATIONS

AUGUST 9, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,262,233 (2350th)
TREATMENT OF AMORPHOUS MAGNETIC ALLOYS TO PRODUCE A WIDE RANGE OF MAGNETIC PROPERTIES
Joseph J. Becker; Fred E. Luborsky; Israel S. Jacobs, and Richard O. McCary, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Reexamination Request No. 90/002,932, Jan. 8, 1993.
Reexamination Certificate for Patent No. 4,262,233, issued Apr. 14, 1981, Ser. No. 911,976, Jun. 2, 1978.
Division of Ser. No. 719,914, Sep. 2, 1976, Pat. No. 4,116,728
Int. Cl.[5] H05B *41/16, 41/24*
U.S. Cl. 315—248



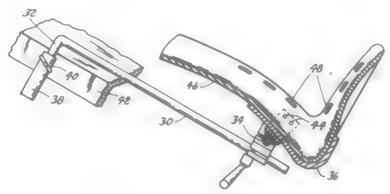
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–17** are cancelled.

New claims **18–20** are added and determined to be patentable.

18. A magnetic core comprising a ribbon of amorphous alloy heated to a temperature above the Curie temperature sufficient to achieve stress relief but less than that required to initiate crystallization and then controllably cooled through the Curie temperature in the presence of a magnetic field to produce a dc remanence ratio Mr/Ms of approximately 0.9, the rate of cooling being between approximately 0.1° C. per minute and approximately 100° C. per minute, said cooled ribbon being disposed in a spirally wound toroid.

B1 4,564,164 (2351st)
ADJUSTABLE SUPPORT SYSTEM
R. Daniel Allen, Newbury, Ohio, and Howard F. Fink, Bradenton, Fla., assignors to A.S. Leasing, Inc., Cleveland, Ohio
Reexamination Request No. 90/003,098, Jul. 12, 1993.
Reexamination Certificate for Patent No. 4,564,164, issued Jan. 14, 1986, Ser. No. 618,817, Jun. 8, 1984.
Int. Cl.[5] A61G *13/12*
U.S. Cl. 248—118



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **4** and **7** is confirmed.

Claims **1**, **5** and **6** are determined to be patentable as amended.

Claims **2**, **3** dependent on an amended claim are determined to be patentable.

New claims **8–13** are added and determined to be patentable.

1. An adjustable *formed limb* support system comprising:
a first block having a cylindrical passage therethrough and a slot extending from one side of said first block to said cylindrical passage;
said first block also having a hole drilled at right angles to said cylindrical passage and through said slot;
the portion of said hole beyond said slot having threads therein;
a first rod *having a longitudinal axis and* sized to [be] *support a limb support and rotatably* contained in the cylindrical passage of said first block *so as to permit relative rotation of the first rod and the first block on the axis of the first rod;*
a second block having a cylindrical passage therethrough and slot extending from one side of said second block to said cylindrical passage;
said second block also having a hole drilled at right angles to said cylindrical passage and through said slot;
the hole in said second block extending completely through said second block;
a second rod *having a longitudinal axis and* sized to be *attached to a table to support the limb support system and rotatably* contained in the cylindrical passage of said second block *so as to permit relative rotation of the second block on the second rod about the axis of the second rod;* [and]
a compression head having a threaded member extending therefrom long enough to pass through the hole in said second block and through the hole in said first block to mate with the threads in said first block, *the threaded member defining an axis about which the blocks are relatively rotatable so as to permit relative rotation of said first and second blocks and said relative rotation of the rods and respective blocks when the head is loosened and locking the blocks in position when the head is tightened; and*
a limb support on said first rod positionable by the relative rotation of said rods and blocks on the three axes, whereby positioning of a limb in the limb support can be accomplished by movement of the limb support about the three axes when the compression head is loosened and tightening of the compression head secures the limb against such movement about the three axes.

B1 4,566,294 (2352nd)
METHOD FOR THE MOUNTING OF GEMS AND RESULTING PRODUCT
Jan Brzozowski, 150 E. 69th St., New York, N.Y. 10021
Reexamination Request No. 90/003,262, Nov. 23, 1993.
Reexamination Certificate for Patent No. 4,566,294, issued Jan. 28, 1986, Ser. No. 576,214, Feb. 2, 1984.
Int. Cl.[5] A44C *9/00, 17/02*
U.S. Cl. 63—15

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

VOL 1165 ISS 2 AG 9 1994 UMI

The patentability of claims 1–15 is confirmed.

1. A method for the mounting of gems, said method comprising forming a groove in a metallic support with rims upstanding on opposite sides of the groove, arranging the gems in a row in said groove, and deforming the rims to peripherally overlap the gems in the groove, the gems having apices, said apices being spaced above the bottom of the groove, the gems having girdles, the girdles of adjacent gems in said row abutting each other, the groove being formed with a symmetrical generally V-shaped base against which the girdles are forced during the deforming step, the gems having pavilions of generally similar angles and the V-shaped base being formed with a smaller angle, the rims prior to the deforming step being spaced apart at a distance which is at least as great as the size of the gems at the girdles thereof.

B1 4,741,043 (2353rd)

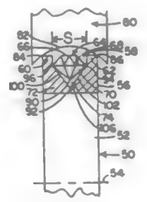
METHOD OF AND APPARATUS FOR IMAGE ANALYSES OF BIOLOGICAL SPECIMENS

James W. Bacus, Hinsdale, Ill., assignor to Cell Analysis Systems, Inc., Chicago, Ill.

Reexamination Request No. 90/003,042, Apr. 30, 1993.
Reexamination Certificate for Patent No. 4,741,043, issued Apr. 26, 1988, Ser. No. 794,937, Nov. 4, 1985.

Int. Cl.[5] **G06K** *9/00*

U.S. Cl. 382—6



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT

The patentability of claims **24–29**, **32–37**, **39** and **40** is confirmed.

Claims **1**, **7–12**, **14–18**, **20–23**, **30**, **38**, **41**, **42**, **46**, **57** and **58** are determined to be patentable as amended.

Claims **2–6**, **13**, **19**, **31**, **43–45** and **47–56**, dependent on an amended claim, are determined to be patentable.

1. A method of analyzing cell objects on a support in automatic analyzing apparatus comprising the steps of:

providing a support means which has previously prepared control calibration material thereon,

adding specimen cell objects to the support means adjacent the **[**calibation**]** *calibration* material,

treating the **[**speciment**]** *specimen* cell objects and the calibration material at the same time with an image enhancing material,

calibrating the automatic cell object analyzing apparatus by analyzing the treated calibration material on the support means with light and imaging apparatus and adjusting the apparatus based on the analysis, and

measuring and analyzing the specimen cell objects on the support means.

B1 4,913,396 (2354th)

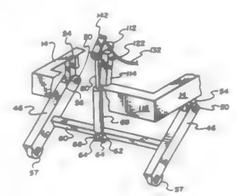
ADJUSTABLE INCLINE SYSTEM FOR EXERCISE EQUIPMENT

William T. Dalebout; S. Ty Measom, and Scott R. Watterson, all of Logan, Utah, assignors to Weslo, Inc., Logan, Utah

Reexamination Request No. 90/002,969, Feb. 26, 1993.
Reexamination Certificate for Patent No. 4,913,396, issued Apr. 3, 1990, Ser. No. 256,486, Oct. 12, 1988.

Int. Cl.[5] **F16M** *11/00*

U.S. Cl. 248—649



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–19** were previously cancelled.

Claims **20**, **23** are cancelled.

Claims **21**, **22**, **24**, **25** are determined to be patentable as amended.

New claims **26–44** are added and determined to be patentable.

21. An adjustable incline system in combination with a treadmill, said adjustable incline system being adapted to lift and support said treadmill above an underlying floor in different angular orientations relative to said underlying floor, said combination comprising:

said treadmill having a first end, a second end, a bottom surface, and a top surface;a fulcrum support mounted spacedly from said second end of said treadmill for supporting said treadmill above said underlying floor;

a support means pivotally mounted to said treadmill proximate said first end for engaging said underlying floor and for lifting and supporting said first end of said treadmill above said underlying floor;

an adjustable pneumatic spring means mechanically associated with said support means and said treadmill for applying a force against said support means for urging said support means outwardly away from said bottom *surface* of said treadmill, said adjustable pneumatic spring means including an actuation pin adapted for controlling said force exerted by said adjustable pneumatic spring means; and

control means mechanically associated with said adjustable pneumatic spring means for operating said actuation pin, said control means including a control member, linkage means and an actuating lever member, said actuating lever member being actuated by said control member and said linkage means to mechanically engage said actuation pin, said actuation lever member being displaceable to effect a corresponding displacement of said actuation pin, said control means being operable by an unright user positioned on said top surface to displace said actuation pin and vary the inclination of said treadmill upon movement of said upright user *along said top surface* relative to said fulcrum support **[**along said top surface**]**.

BI 4,947,506(2355)

Patent Not Issued For This Number

REISSUES

AUGUST 9, 1994

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,686

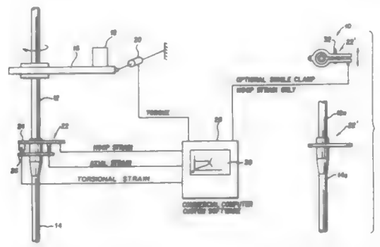
METHOD, SYSTEM AND DEVICE FOR DETERMINING QUALITY OF ASSEMBLY OF TOOL PARTS

William E. Coyle, Jr., Houma, and Dennis J. Pennison, Raceland, both of La., assignors to Bilco Tools, Inc., Houma, La.

Original No. 4,957,002, dated Sep. 18, 1990, Ser. No. 315,830, Feb. 27, 1989. Application for reissue Jul. 12, 1991, Ser. No. 729,204

Int. Cl.[5] **G01B** *7/16*

U.S. Cl. 73—761 **84 Claims**



1. A method for determining, *during the assembly of tool parts,* the quality of assembly of *the* tool parts, wherein a first tool part is assembled with a second tool part by rotatably inserting the first tool part into the second tool part to form a tool joint, the method comprising the steps of:

(a) measuring at least one of the **[**rates of**]** rotation of the first **[**and**]** *tool part, the rotation of the* second tool **[**parts and**]** *part,* the torque imposed on the first **[**and second**]** tool **[**parts**]** *part, and the torque imposed on the second tool part* to obtain a first set of data;

(b) measuring at least two of axial strain, torsional strain and hoop strain imposed on *one of* the *first and second* tool **[**joint**]** *parts* to obtain a second set of data; and

(c) processing the first and second sets of data to determine the quality of assembly of the tool parts;

wherein the measuring steps (a) and (b) take place during assembly of the tool parts, whereby the quality of assembly of the tool parts is determined from the data obtained during the assembly of the tool parts.

Re. 34,687

CONSTANT VOLUME SAMPLING SYSTEM

R. Wilson Spencer, P.O. Box 22586, Houston, Tex. 77227

Original No. 4,987,785, dated Jan. 29, 1991, Ser. No. 505,051, Apr. 4, 1990. Application for reissue Sep. 4, 1992, Ser. No. 943,866

Int. Cl.[5] **G01N** *1/18, 1/28*

U.S. Cl. 73—863.71 **17 Claims**

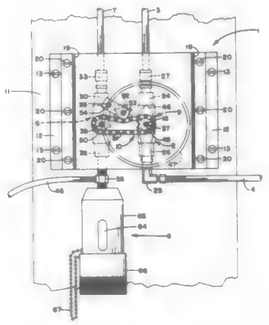
16. A constant volume sampling system, comprising:

a. a sample loop including a section of tubing having a predetermined volume and having a first end and a second end;

b. a first valve having a first port, connectable to a process line at a first point, a second port connectable to said first end of said sample loop, a third port, connectable to a pressurized gas line, and a selector means for selectively establishing flow between said first and second ports or between said second and third ports;

c. a second valve having a first port, connected to said process line at a second point wherein a pressure differential exists in said process line between said first point and said second point, a second port connectable to said second end of said sample loop, a third port, connectable to a sample means for receiving a sample. and a selector means for selectively establishing flow between said first and second ports or between said second and third ports;

d. an actuator means, for operating said first valve and said second valve; and



e. a linkage means, for mechanically linking said actuator means and said first and second valves such that said actuator means operates said first and second valves simultaneously, said linkage means being operably connected externally of said sample loop to said first valve, said second valve and said actuator means.

Re. 34,688

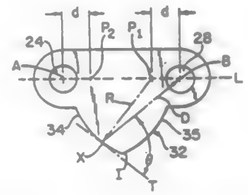
LINK CHAIN BELT

James M. Lapeyre, late of New Orleans, La., by The Laitram Corporation, New Orleans, La. (under 35 USC 118).

Original No. 4,993,543, dated Feb. 19, 1991, Ser. No. 483,210, Apr. 14, 1983. Continuation of Ser. No. 228,154, Jan. 23, 1981, abandoned, which is a continuation of Ser. No. 13,165, Feb. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 801,904, May 31, 1977, abandoned. Application for reissue Feb. 2, 1993, Ser. No. 12,390

Int. Cl.[5] **B65G** *23/06*

U.S. Cl. 198—834 **37 Claims**



1. A linked belt and sprocket assembly comprising:

a plurality of identical linked modules, each having a plurality of links of the same length and width and sufficiently rigid to resist bending in the plane of an associated sprocket wheel, each module having a first plurality of link ends of substantially identical width, and a second plurality of link ends of substantially identical width, each link end circumscribing a pivotal hole, said holes of said first plurality being arranged coaxially along a first pivotal axis, said holes of said second plurality being arranged

VOL 1165 ISS 2 AG 9 1994 UMI

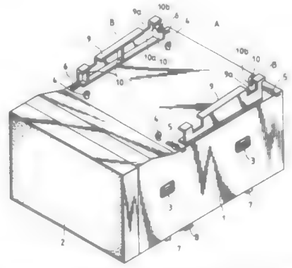
coaxially along a second pivotal axis parallel to said first axis;
said link ends having no driving engagement with an associated sprocket wheel;
each of said modules having at least one driving tooth integral with and protruding therefrom substantially normal to the pitch line between said pivotal axes and intermediate the latter;
said tooth having a pair of working surfaces, each of the working surfaces having a shape in the range between and including that of a cylindrical segment and a chord of said segment;
the [axis] *axes* of [each] *the* working [surface] *surfaces* being *spaced apart and* parallel with the pivotal axes of the link and positioned intermediate the pivotal axes [or coincident with the pivotal axis furthest from that surface];
the pair of working surfaces being part of a pair of intersecting loci;
the shape of each of the working surfaces being such that the tangent angle of each such surface is not more than 90°;
one of said pluralities of link ends of each said module being engaged between one of said pluralities of link ends of an adjacent module except for the individual link ends positioned at the extreme sides of said belt;
means extending through said holes pivotally connecting said modules at engaged link ends;
a toothed sprocket wheel having recesses between adjacent teeth thereof, each of said recesses including a pair of facing surfaces of shape corresponding to the pair of working surfaces of said driving tooth; and
only the teeth of said connected links being in driving engagement with the recesses of said sprocket wheel, the engaged linked belt and sprocket wheel exhibiting minimal scrubbing action and chordal action.

Re. 34,689

MULTIPLE PROJECTION TELEVISION RECEIVER

Toshiya Wakasa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Original No. 4,903,137, dated Feb. 20, 1990, Ser. No. 280,919, Dec. 6, 1988. Application for reissue Feb. 7, 1992, Ser. No. 832,337
Claims priority, application Japan, Mar. 8, 1988, 63-52574
Int. Cl.[5] H04N *5/74*
U.S. Cl. 348—383 **19 Claims**



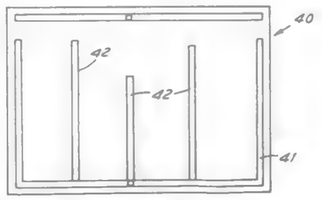
1. A multiple projection television receiver comprising a plurality of projection television receiver modules, each including:
a Fresnel lens;
a screen located at the front of said receiver modules;
three cathode-ray tubes corresponding to the colors red, green and blue, respectively, for projecting a picture from said tubes onto said screen through said Fresnel lens;
means for vertically and horizontally coupling each module to other modules wherein the front surfaces of said modules adjoining each other are adjacent and located in substantially the same plane, *wherein each of said modules further includes a recess portion provided in the upper surface thereof and rearward of the front surface,*
and wherein said coupling means includes a coupler disposed in said recess portion and a foot member disposed on the under surface of said module,
said coupler and said foot member being configured and positioned for cooperative engagement between the coupler of a lower module and the foot member of a vertically adjacent upper module.
10. A multiple projection television receiver comprising a plurality of projection television receiver modules, each including:
a Fresnel lens;
a screen located at the front of said receiver module;
means for projecting a picture onto said screen through said Fresnel lens; and
means for vertically and horizontally coupling each module to other modules wherein the front surfaces of said modules adjoining each other are adjacent and located in substantially the same plane, wherein each of said modules further includes a recess portion provided in the upper surface thereof and rearward of the front surface,
and wherein said coupling means includes a coupler disposed in said recess portion and a foot member disposed on the under surface of said module,
said coupler and said foot member being configured and positioned for cooperative engagement between the coupler of a lower module and the foot member of a vertically adjacent upper module.

Re. 34,690

DISPLAY DEVICE HAVING A RESERVOIR AND A VACUUM CHANNEL FOR FILLING THE DISPLAY REGION WITH THE LIQUID CRYSTAL MATERIAL

Andrew N. Carrington, Hemel Hempstead, England, assignor to Thorn EMI plc, Middlesex, England

Original No. 4,976,516, dated Dec. 11, 1990, Ser. No. 356,297, May 24, 1989. Application for reissue Apr. 16, 1993, Ser. No. 47,179
Claims priority, application United Kingdom, May 24, 1988, 8812262
Int. Cl.[5] G02F *1/133*
U.S. Cl. 354—80 **18 Claims**



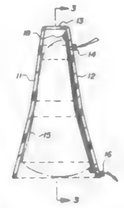
1. A cell for a liquid crystal display device, the cell comprising;
a first and a second substrate located in a substantially parallel relative arrangement to define an active display region therebetween which can be filled with liquid crystal material, said first and said second substrate being separated in the active display region by a gap having a gap thickness;
a reservoir for filling the active display region with liquid crystal material, the reservoir being positioned intermediate the first and said second substrate and having an outlet port which extends along at least a part of an edge of the active display region, *and a vacuum channel for applying a suction pressure between the substrates and extending along at least a part of a further edge of the active display region,* wherein the reservoir [has] *and the vacuum channel each have* a width in the dimension corresponding to said gap *thickness* which is greater than said gap thickness.

Re. 34,691

FLUID CHARGED ROADWAY BARRIER

John M. White, 9821 Fox Rest La., Vienna, Va. 22181

Original No. 4,978,245, dated Dec. 18, 1990, Ser. No. 396,336, Aug. 21, 1989. Application for reissue Dec. 18, 1992, Ser. No. 992,920
Int. Cl.[5] E01F *13/00*
U.S. Cl. 404—6 **4 Claims**



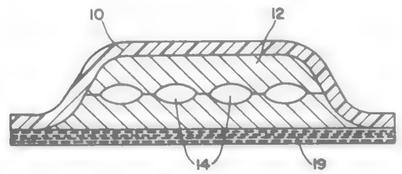
1. A roadway barrier comprising:
[inverted U shaped] *generally rigid* shell means [having] *including* forward and rearward portions, [having inner and outer surfaces, and] *said forward and rearward portions* defining [a space between said inner surfaces] *an interior volume between said forward and rearward portions;*
expandable bladder means for containing [a fluid] *fluent material,* said bladder means being secured to [an inner surface of only] *a first* one of [either of] said forward or rearward portions, said bladder means [closely following said inner surface of said portion to which it is connected throughout the height of said inner surface] *containing fluent material substantially filling said interior volume* and [when said bladder is empty of fluid,] said bladder *means* resiliently collapsing against [said] *an* inner surface *of said first portion when said bladder means is substantially empty of fluent material*; and
valve means for [enabling] *retaining,* charging and discharging of fluent material from within said bladder means, whereby
when fluent material is charged into said bladder *means,* said bladder *means* expands and substantially [entirely] fills said [space] *interior volume* between said forward and rearward portions of said shell means, and when said bladder *means* is discharged, said bladder *means* resiliently collapses within said shell *means* to enable nested stacking of said shell means.

Re. 34,692

TRANSDERMAL THERAPEUTIC SYSTEM

Frank Becher, Koblenz, Fed. Rep. of Germany, assignor to LTS Lohmann Therapi-Systeme GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Original No. 5,066,494, dated Nov. 19, 1991, Ser. No. 327,810, Jun. 21, 1988. Application for reissue Jan. 19, 1993, Ser. No. 5,732
Int. Cl.[5] A61F *13/02*
U.S. Cl. 424—448 **15 Claims**



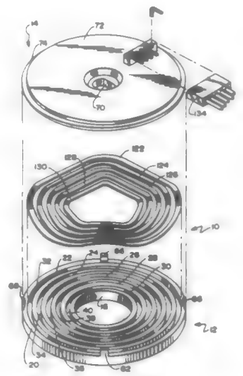
1. A transdermal therapeutic system for the controlled administration of active substance to the skin with a backing layer remote from the skin, an active substance depot, an active substance delivery control device controlling the delivery of the active substance through the system and a [contact] *pressure sensitive* adhesive fixing means for fixing the therapeutic system to the skin, characterized in that the active substance depot is a multichamber system, in which the chambers are interconnected by channels and are provided with active substance delivery control means.

Re. 34,693

ELECTRICAL CONNECTOR ASSEMBLY FOR VEHICULAR STEERING WHEEL

Edward J. Plocek, Lisle; Stephen Z. Weiss, Highland Park, and Maciej Pike-Biegunski, Warrenville, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Original No. 5,009,604, dated Apr. 23, 1991, Ser. No. 445,514, Dec. 4, 1989. Continuation-in-part of Ser. No. 252,308, Oct. 3, 1988, Pat. No. 4,904,190. Application for reissue Apr. 20, 1993, Ser. No. 49,887
Int. Cl.[5] H01R *39/02, 39/06*
U.S. Cl. 439—15 **16 Claims**



16. An electrical connector assembly for achieving electrical connection between first and second members at least one of which is rotatable relative to the other, said assembly comprising:
a first housing mountable to said first member and comprising a nonconductive portion having a mating face and at least one annular conductive portion fixedly disposed on said mating face;
a second housing mountable to said second member and comprising a nonconductive portion having a mating face disposed in generally opposed relationship to the mating face of said first housing, said second housing having at least one resilient annular conductive portion nonrotatably disposed on the mating face thereof generally in register with the annular conductive portion on the mating face of said first housing, the resilient annular conductive portions of said second housing including resilient undulations therein, said undulations being in direct electrical and direct mechanical contact with the annular conductive portions of the first housing in register therewith, each said resilient annular conductive portion including an electrical connection to an electrical connector nonrotatably mounted to the second housing; and
wherein the mating face of at least one of said first and second housings comprises at least one annular recess, with at least part of the resilient annular conductive portion of said second housing being disposed in said annular recess, whereby said annular recess retains the resilient annular conductive portion at a radial position for electrically contacting the annular conductive portions in the first housing.

VOL
1165
ISS
2
AG
9
1994
UMI

PLANT PATENTS

GRANTED AUGUST 9, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,856
MINIATURE ROSE PLANT NAMED 'POULVERT'
Mogens N. Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Bear Creek Gardens, Inc., Medford, Oreg.
Filed Jul. 23, 1993, Ser. No. 96,698
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—8.2 **1 Claim**

1. A new and distinct variety of rose plant of the miniatue class, substantially as herein shown and described, characterized particularly as to novelty by the unique combinatin of its yellow flower color and many prickles on the flower stems.

8,857
ROSE PLANT NAMED SELARGON
Peter J. A. Vander Meer, Carlsbad, Calif., assignor to Terra Nigra B.V., De Kwakel, Netherlands
Filed Mar. 10, 1994, Ser. No. 208,213
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of greenhouse rose, substantially as herein shown and described, characterized by its continuous and profuse production of medium, red-pink and creamy-white flowers borne singly on strong, upright stems on a sturdy bush of medium height having abundant foliage.

8,858
HEUCHERA VARIETY CV. ABSI
Adrian J. R. Bloom, Diss, England, assignor to Blooms of Bressingham Ltd., Bressingham, England
Filed Aug. 19, 1993, Ser. No. 109,604
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct variety of Heuchera plant called 'Absi' as herein illustrated and described.

8,859
LILY PLANT LILIUM 'EGYPT'
Johan A. Mak, 5595 Halls Ferry Rd., Independence, Oreg. 97351, assignor to Johan A. Mak, Independence, Oreg.
Filed May 11, 1993, Ser. No. 61,067
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinctive variety of Oriental hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season; and in particular by its unique upright to semi-upright flowers with sharply ascending pecidels, its lightly ruffled tepal margins, and its soft pink coloration shading into a yellow midrib, accented with noticeable magenta rose papillae on the basal half of each tepal, a combination unique among Oriental hybrid lillies suited to forcing and to mass commercial cultivation.

8,860
GERANIUM PLANT NAMED FISTIFFY
Ingeborg Schumann, Albstadt, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland
Filed Jul. 21, 1993, Ser. No. 94,329
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of geranium plant named Fistiffy, as illustrated and described.

VOL
1165

ISS
2

AG
9

1994

UMI

PATENTS

GRANTED AUG. 9, 1994

ERRATA

For CLASS	See PATENT NO.
132-218	5,335,465
068-004	5,335,516
066-185	5,335,517
066-108	5,335,518
070-349	5,335,520
070-298	5,335,521
477-131	5,335,565
477-124	5,335,566
475-120	5,335,567
477-109	5,335,568
100-119	5,335,604
119-017	5,335,617
119-019	5,335,618
119-057	5,335,619
601-024	5,335,649
607-045	5,335,657
251-026	5,335,688
165-001	5,335,708
206-438	5,335,769
206-433	5,335,770
206-328	5,335,771
206-349	5,335,772
206-221	5,335,773
206-153	5,335,774
206-063	5,335,775
209-260	5,335,784
209-170	5,335,785
209-003	5,335,786
134-147	5,335,793
221-279	5,335,800
215-249	5,335,801
215-235	5,335,802
221-010	5,335,810
221-045	5,335,811
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221-297	5,335,826
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VOL 1165 ISS 2 AG 9 1994 UMI

ERRATA—CONTINUED

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269-051	5,335,900
297-482	5,335,957
303-007	5,335,974
405-046	5,336,017
405-052	5,336,018
411-478	5,336,038
454-056	5,336,128
474-057	5,336,134
607-097	5,336,183
604-022	5,336,220
149-019	5,336,343
117-075	5,336,360
437-042	5,336,361
117-042	5,336,362
427-433	5,336,392
423-021	5,336,450
623-001	5,336,518
437-209	5,336,649
437-209	5,336,650
424-282	5,336,666
430-507	5,336,761
560-227	5,336,801
560-245	5,336,802
177-146	5,336,853
177-210	5,336,854
324-537	5,337,013
324-613	5,337,014
324-671	5,337,015
324-632	5,337,016
324-682	5,337,017
324-693	5,337,018
310-156	5,337,030
355-260	5,337,032
347-077	5,337,071
346-076	5,337,072
345-109	5,337,077
347-088	5,337,079
342-069	5,337,082
353-119	5,337,103
348-234	5,337,152
348-441	5,337,153
348-448	5,337,154
348-473	5,337,155
392-417	5,337,393
395-002	5,337,394
395-027	5,337,395

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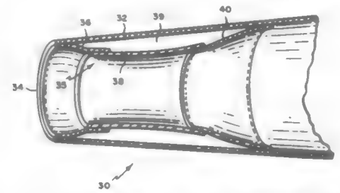
GENERAL AND MECHANICAL

5,335,370

PARTIAL PRESSURE CUFF SEAL FOR UTILIZATION IN A FULL PRESSURE SUIT

John W. Bassick, Paxton, and Edward A. Dubois, Auburn, both of Mass., assignors to David Clark Company Inc., Worcester, Mass.

Filed Mar. 23, 1993, Ser. No. 35,687
Int. Cl.[5] A62B *17/00*
U.S. Cl. 2—214 **18 Claims**



1. A cuff seal in combination with a pressure suit which envelops a limb of a wearer's body, said pressure suit defining at least one pressure compartment, said cuff seal comprising:

a gas impermeable outer sheath configured to envelop a portion of said limb, said sheath including a first end in pressurized communication with said pressure compartment, and a second end having an opening through which said portion of said limb exteriorly protrudes from the interior of said pressure compartment; and

a gas impermeable inner sleeve having an outer end, an intermediate section and an inner end which are disposed within said sheath, said outer end of said sleeve being joined in a sealed relationship to the interior of said sheath proximate to said second end, and said intermediate section of said sleeve being adapted to surround and coact in a sealed relationship with said portion of said limb, wherein

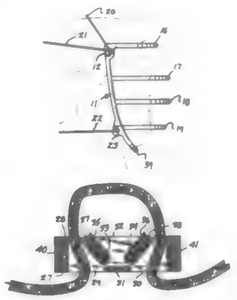
said sleeve is adapted to interiorly seal said pressure compartment from said opening to the exterior of said pressure compartment when donned by said wearer.

5,335,371

BASEBALL INFIELDER'S MASK

Gerald W. Spessard, 19107 Wood Hill Dr., Hagerstown, Md. 21742-2845

Filed Oct. 4, 1993, Ser. No. 130,707
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—9 **1 Claim**



1. A baseball infielder's mask, comprising,

a U-shaped lower frame, having a first leg spaced from a second leg, with the lower frame having a first end and a second end at the respective first leg and second leg, with an upper frame of a U-shaped configuration extending between the first end and the second end, with the upper frame oriented at an acute angle relative to the lower frame, with the lower frame further including a U-shaped connecting bar extending between the first leg and the second leg at a respective first intersection and second intersection with the respective first leg and second leg, the first intersection having a first ear, and the second intersection having a second ear,

and

a first strap extending from the first end to the second end, and a second strap extending from the first to the second end, with the first strap and the second strap pivotally mounted relative to the first end and the second end, and a third strap secured to the first ear and the second ear,

and

a first U-shaped guard frame parallel to the upper frame, with the first U-shaped guard frame extending between the first leg and the second leg, a second U-shaped guard frame extending between the first leg and the second leg in adjacency to the first U-shaped guard frame, and a third U-shaped guard frame extending between the first leg and the second leg at the respective first intersection and the second intersection, with the first U-shaped guard frame, the second U-shaped guard frame, the third U-shaped guard frame, and the upper frame arranged in a parallel relationship,

and

a transparent eye shield directed coextensively between the upper frame and the first U-shaped guard frame,

and

at least the second strap includes a strap adjustment block with the second strap extending through the strap adjustment block, with the strap adjustment block including a block front wall spaced from a block rear wall, and a first side wall spaced from a second side wall, with a first channel and a second channel arranged in a parallel relationship relative to one another and extending between the front wall and the rear wall between the first side wall and the second side wall, and a central bar coplanar with the front wall defining the first channel between the central bar and the first side wall, and the second channel between the central bar and the second side wall, with the second strap extending through the first channel and the second channel, with the rear wall having a rear wall opening and the second strap projecting through the rear wall opening, and a first axle and a second axle mounted within respective first channel and second channel, and a first arresting leg pivotally mounted to the first channel, a second arresting leg pivotally mounted to the second axle, the first arresting leg having a first ribbed end wall, and the second arresting leg having a second ribbed end wall, with the first ribbed end wall and the second ribbed end wall arranged in engagement with the second strap.

5,335,372

ARTICLE OF CLOTHING, IN PARTICULAR FOR THE MEDICAL OR CHEMICAL FIELD

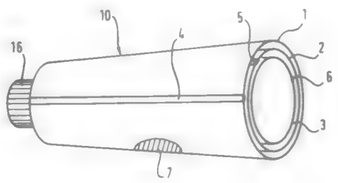
Guenther Wiedner, Seeshaupt, Fed. Rep. of Germany; John A. Duncan, Glenrothes, and Suresh R. Patel, Dalgety Bay, both of Scotland, assignors to Rotecno AG, Zurich, Switzerland

Filed Apr. 7, 1992, Ser. No. 864,839
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—16 **18 Claims**

1. An article of clothing comprising a portion having an inner, outer and intermediate layer, said inner and outer layers

VOL 1165 ISS 2 AG 9 1994 UMI

comprising hydrophobic fabric, said intermediate layer separating the inner and outer layers in a region of said portion and preventing contact between the inner and outer layers in said



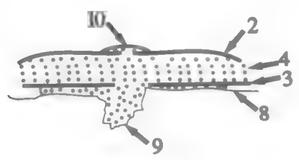
region, said inner and outer layers each having a seam, said seams being spaced from one another so that they do not overlie one another.

5,335,373

PROTECTIVE MEDICAL GLOVES AND METHODS FOR THEIR USE

Karl P. Dresdner, Jr., 235 W. 48th St. Apt. #18N, New York City, N.Y. 10036; Kenneth H. Dangman, 400 Riverside Dr. Apt. #1A, New York City, N.Y. 10032, and Edward A. Jazlowiecki, P.O. Box 9333, 11 Lincoln Ave. Suite 6, Forestville, Conn. 06010

Filed Nov. 29, 1991, Ser. No. 800,487
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161.7 20 Claims



1. A flexible protective glove with a liquid-impermeable wall having the capability to provide a liquid antiseptic composition treatment to a hand and to a hand wound should the wound occur underneath the glove while the glove is being worn when a wall of the glove is punctured by an object that may be contaminated with an infectious pathogen, comprising:

(a) a glove wall with a liquid-impermeable outer layer comprised of a first material having a thickness of about 1 mil to about 40 mils and a liquid-impermeable less elastic inner layer composed of a second material having a thickness of about 0.3 mils to about 30 mils wherein the first material and the second material form the walls of a compartment capable of containing a liquid antiseptic composition;

(b) the liquid antiseptic composition in the compartment which comprises an antiseptic in a liquid;

(c) the glove wall capable of providing a physical barrier as a means of protective to the hand while the glove is being worn by an individual until a portion of the glove wall is punctured by an object;

(d) the glove wall capable of being punctured by the object while the glove is being worn on the hand;

(e) the glove wall having the flexibility to allow the hand of an individual in need of wearing the glove to easily and adequately perform delicate, dexterous and complex work including the work performed by a surgeon, a medical doctor, a dentist, a laboratory worker, a health care worker, a law enforcement worker, a hospital worker, and other workers;

(f) the glove having the capability to provide a coating to at least a portion of the object puncturing the glove wall; the coating comprising the liquid antiseptic composition; the coating on the object providing a means for immediately transferring some of the liquid antiseptic composition onto the hand and into the hand wound by the object puncturing the glove wall while the glove is being worn; the liquid antiseptic composition transferred to the hand and to the hand wound having the capability to provide an immediate liquid antiseptic composition treatment to the hand and hand wound;

(g) the glove having the additional capability to leak some of the liquid antiseptic composition from a section of the glove wall having a hole resulting from the object puncturing the glove wall; the hole in the outer layer may shrink while the hole in the less elastic inner layer of the glove is not as capable of contracting to a small size; the liquid antiseptic composition leaking from the hole having the capability of flowing onto the hand and into the hand wound as a means for providing a treatment of liquid antiseptic composition to the hand and to the hand wound; more liquid antiseptic composition may leak from the glove wall onto the hand and into the hand wound than from the glove wall onto the outer surface of the glove; and

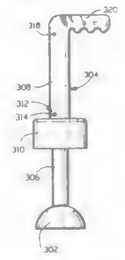
(h) the glove having the capability of treating the hand and the hand wound with the liquid antiseptic composition when the object punctures the glove wall, when the object contacts the hand, when the object may wound the hand, and when the object may contaminate the hand and the hand wound with the infectious pathogen; wherein the liquid antiseptic composition transferred to the hand and the hand wound can help to protect the hand, the hand wound, and the systemic circulation of the individual by killing, inactivating, and otherwise destroying the infectious pathogen that may be contaminating the hand and the hand wound.

5,335,374

PLUNGER ASSEMBLY AND ASSOCIATED METHOD

Marilyn M. Wilk, and Peter J. Wilk, both of 185 W. End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 864,601, Apr. 7, 1992, which is a division of Ser. No. 505,064, Apr. 5, 1990, Pat. No. 5,114,006. This application Nov. 29, 1993, Ser. No. 158,958
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—255.11 12 Claims



1. A household implement comprising:

a cup-shaped plunger member contactable with a household surface;

a collapsible handle attached to said plunger member, said handle having an outer tubular handle part and an inner tubular handle part telescopingly inserted therein, said inner tubular handle part being fixed at one end to said plunger member, an opposite end of said inner tubular handle part being disposed inside a first end of said outer tubular handle part, said first end of said outer tubular handle part being provided with an aperture;

a hollow casing member attached to said outer tubular handle part at said first end thereof, said hollow casing member being larger than said plunger member, whereby said casing member substantially surrounds said plunger member upon movement of said outer tubular handle part over said first tubular handle part towards said plunger member; and

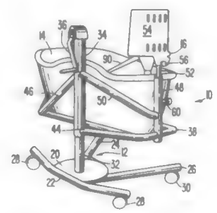
locking means for locking said collapsible handle in an extended, operative configuration, said locking means including at least one spring-loaded latch element provided on said inner tubular handle part proximately to said opposite end and spaced from said plunger member, said latch element being insertable through said aperture to lock said inner tubular handle part to said outer tubular handle part in said extended, operative configuration.

5,335,375

WHIRLPOOL BATH WITH A TANK WITH RECESSED SUMP

Lawrence E. Madson, Jr., 61 Lambeth Dr., Upper St. Clair, Pa. 15241

Continuation-in-part of Ser. No. 12,944, Feb. 3, 1993, Pat. No. 5,289,598. This application Nov. 3, 1993, Ser. No. 145,081
Int. Cl.[5] E03C *1/328*
U.S. Cl. 4—541.1 13 Claims



1. A whirlpool bath comprising:

a support frame for resting on a support surface, said support frame including a support section and means for raising or lowering said support section relative to said support surface,

a tank for containing water removably supported on said support section but not attached thereto, said tank having a tank bottom wall and a water receiving sump formed adjacent to one end of said tank bottom wall and being recessed below said tank bottom wall,

impeller means for creating a stream of water under pressure in said tank and including a water discharge system and an external discharge nozzle connected to said water discharge system, said impeller means including an impeller head section for immersion in water contained in said tank and being operative alternatively to either create a stream of water under pressure in said tank or to pump water from said tank through said water discharge system to said external discharge nozzle, and

said support frame having impeller mounting means thereon for separately and removably mounting said impeller means on said support section to extend into said tank with said impeller head section in alignment with said water receiving sump, said impeller mounting means operating to permit said impeller means to be raised or lowered relative to both said support section and tank and to permit said impeller head section to be inserted into said water receiving sump,

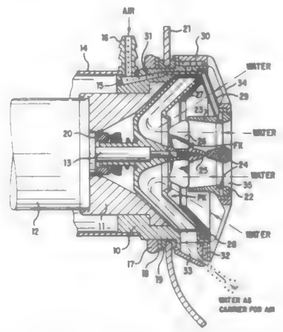
said tank and said impeller means being independently removable from said support section.

5,335,376

WHIRLPOOL BATHTUB

Franz-Dieter Kaldewei, Beckumer Strasse 33, D-4730 Ahlen, Fed. Rep. of Germany

PCT No. PCT/DE90/00149, § 371 Date Nov. 9, 1990, § 102(e) Date Nov. 9, 1990, PCT Pub. No. WO90/10428, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 2, 1990, Ser. No. 613,867
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1989, 3912810
Int. Cl.[5] A61H *33/02*
U.S. Cl. 4—541.6 24 Claims



1. In a whirlpool bathtub having a plurality of devices for generating at least one of a plurality of water jets and a plurality of water and air jets to a tub interior, said devices being built into individual positions on at least one of said tub wall and said tub floor, said devices being provided with drive energy from an outside of said tub, each of said positions having a nozzle housing open towards said tub interior with a pump wheel chamber and a pump wheel, said pump wheel disposed on a drive shaft driven by said drive energy, said pump wheel being fixed against relative rotation in one direction of rotation thereby aspirating water from said tub interior and air from the ambient through aspirating openings in a cover, said cover closing off said nozzle housing towards said tub interior and supplying said water and air from said pump wheel chamber to at least one discharge opening directed into said tub interior,

the improvement comprising:

each of said devices being driveable in both directions of rotation,

said nozzle housing having an impeller (26) facing said tub interior, said impeller (26) being disposed on said drive shaft (13), and fixed against relative rotation in at least one direction of rotation, said impeller (26) aspirating said water from said tub interior through said aspirating openings (34) in an opposite direction of rotation from said pump wheel (27) and supplying said water to said tub interior through a central outlet opening (35) in said cover (30) as said water jet.

5,335,377

HANDICAP BATH CHAIR

Frank G. Masyada, 4416 N.W. 43rd Pl., Gainesville, Fla. 32606, and Edward L. C. Williams, Box 0661, High Springs, Fla. 32643

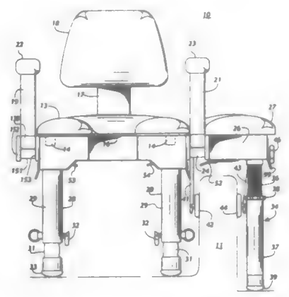
Filed Sep. 23, 1993, Ser. No. 126,067
Int. Cl.[5] A47K *3/12*
U.S. Cl. 4—578.1 34 Claims

1. A handicap chair comprising:

a chair frame including means for supporting a user and having rear and two side portions;

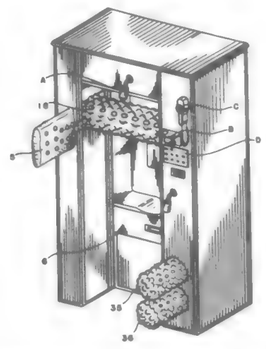
VOL 1165 ISS 2 AG 9 1994 UMI

support means detachably mounted to said chair frame for supporting said chair frame at a fixed height;
first and second protective means for providing lateral support for the user disposed at the side portions of said chair frame, said protective means being pivotally mounted to said chair frame;
an auxiliary bench frame member;
means for detachably mounting said bench frame member to one of said side portions of said chair frame;



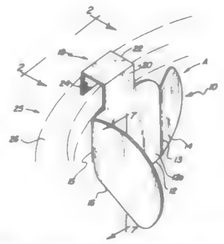
adjustable support means detachably mounted to said bench frame member for supporting said member at a fixed height;
first clamping means detachably mounted to said bench frame member; and
second adjustable clamping means mounted to said bench frame member spaced from said first clamping means and movable toward and away from said first clamping means to fix said handicap chair in a predetermined position, whereby said handicap chair may be supported partially within a bathtub and fixedly positioned relative thereto.

5,335,378
AUTOMATIC BATHING APPARATUS
Chou C. Chiang, 4th Floor, No. 11, Lane 48, Lunden Street, Shihlin District, Taipei City, Taiwan
Filed Mar. 16, 1993, Ser. No. 33,241
Int. Cl.[5] A47K 7/02
U.S. Cl. 4—606 4 Claims



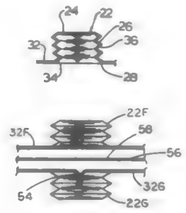
1. An automatic bathing apparatus comprising:
a housing having a concealable slidable sink on an inside thereof;
a main roller transversely disposed inside and housing for rubbing the body and having two opposite ends coupled to a carrier;
a water spray pipe transversely disposed inside said housing and having two opposite ends coupled to said carrier;
massaging means coupled to said carrier;
a lifting mechanism controlled to move said carrier vertically up and down inside said housing, said lifting mechanism comprising two upright racks bilaterally disposed inside said housing, a top revolving shaft transversely disposed at a top of the housing, a bottom revolving shaft transversely disposed at a bottom of the housing and linked to said top revolving shaft by tension roller-controlled transmission belts, two gears mounted on said carrier and respectively meshing with said upright racks, and a first motor drive controlled to turn said bottom revolving shaft through a driving belt and belt pulley assembly to cause said carrier to move along said upright racks;
a second motor drive controlled to turn said main roller on said carrier through a transmission belt and a belt pulley assembly;
a pair of auxiliary rollers fastened to said housing on an outside of the housing; and
a third motor drive controlled to turn said auxiliary rollers through a transmission belt and belt pulley assembly.

5,335,379
TOILET BOWL FLUSHING ATTACHMENT
David L. Waldo, 43 Summit St., W. Franklin, N.H. 03235
Filed Aug. 3, 1993, Ser. No. 101,022
Int. Cl.[5] A47K 4/00
U.S. Cl. 4—661 11 Claims



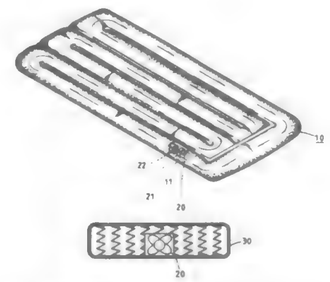
1. A toilet bowl flushing attachment comprising:
a main body section having a central portion defining generally a plane bounded by a pair of opposed sides; a first water deflecting fin having a first generally planar surface extending angularly from one side opposed sides of said main body in one direction; a second water deflecting fin having a second generally planar surface extending angularly from said opposed side of said main body and a mounting means extending upwardly from said central portion, said mounting means being dimensioned to snugly receive and grasp a rim of a toilet bowl in a manner wherein said main body and said first and second deflecting fins lie within said toilet bowl, with said first deflecting fin extending outwardly towards an inner wall of said toilet bowl so as to direct flushing water over said first planar surface, and onto said central portion, and said second deflecting fin extends inwardly so as to direct said water from said plane towards a central area of said toilet bowl.

5,335,380
SPRING INSERT FOR CUSHIONING INSERT
Lynn D. Larson, 1052 N. Lakeshore Dr., Lincoln, Nebr. 68528
Continuation of Ser. No. 849,471, Mar. 11, 1992, Pat. No. 5,159,725. This application Nov. 3, 1992, Ser. No. 970,706
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] A47C 23/04, 23/047, 23/05, 23/053
U.S. Cl. 5—255 2 Claims



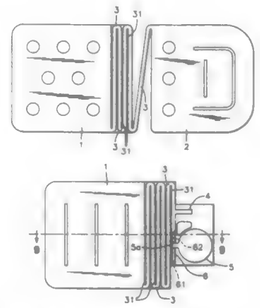
1. A spring insert for a cushioning member comprising,
a plurality of spring bellows units, each having at least one end wall and a pleated sidewall and each being collapsible from a normal expanded height to a shortened compressed height wherein the internal volume of the unit is substantially reduced, each bellows unit further including a bleeder opening in one wall thereof,
means for supporting said bellows units relative to one another and in upright relation,
said insert adapted for placement within a cushioning member whereby downward force exerted on a bellows unit tends to collapse the unit against the spring action of the sidewall thereof and against the hydraulic action thereof;
valve means operatively associated with at least some of said spring bellows units for adjusting the hydraulic action of said units; and
communication means operatively interposed between said spring bellows units to adjust fluid communication between them.

5,335,381
BED HAVING A WARMING DEVICE
Chung-Tai Chang, P.O. Box 1032, Tainan, Taiwan
Filed Nov. 12, 1993, Ser. No. 150,824
Int. Cl.[5] A47C 27/08, 27/00
U.S. Cl. 5—423 5 Claims



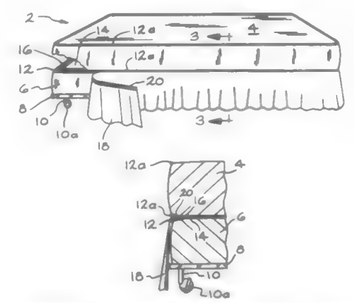
1. A bed comprising:
a cushion including an enclosed, airtight space formed therein, said space containing air, a heating device disposed in said enclosed space of said bed, said heating device including a heating element adapted to warm the air within said space, and a fan for circulating said warm air within said enclosed space, in order to warm said cushion.

5,335,382
INFLATABLE CUSHION DEVICE
Yin-jun Huang, 15, Zerbo Yi Street, Kaohsiung City, Taiwan
Filed Nov. 23, 1992, Ser. No. 990,173
Int. Cl.[5] A47C 27/08; B62J 1/26; A43B 13/20
U.S. Cl. 5—454 9 Claims



1. An air cushion having at least one extension tube with one end communicating with the interior of the cushion, said tube being integrally formed with said cushion and having a zig-zag form with adjacent limbs which can be moved apart and together so as to adjust the spacing between the cushion and a second end of the tube.

5,335,383
REMOVABLY ATTACHABLE FLAT SHEET-SKIRTING COMBINATION
Wilma M. Schwind, 636 Apple Ave., Toledo, Ohio 43609-1742
Filed Jul. 19, 1993, Ser. No. 92,988
Int. Cl.[5] A47G 21/00
U.S. Cl. 5—493 27 Claims



1. A removably attachable flat sheet-skirting combination for a conventional bed, said bed comprising a frame, a box spring and a mattress, and said combination further comprising:
(a) A flat sheet adapted to fit between said box spring and said mattress of said bed, said flat sheet comprising peripheral areas and a top side and a bottom side and said flat sheet further comprising surface dimensions which substantially coincide with upper surface dimensions of said box spring;
(b) A first strip of fastening material comprising a plurality

VOL 1165 ISS 2 AG 9 1994 UMI

of flexible hooks, said first strip being adhered to said top side of said flat sheet at said peripheral areas;

(c) A skirting material adapted for quick and effortless attachment to and removal from said flat sheet and being of sufficient length to cover at least two sides of said box spring and said frame, said skirting material comprising an upper edge, a lower edge, an inside surface and an outside surface of sufficient height to allow close proximity of said lower edge of said skirting material to flooring upon which said conventional bed rests;

(d) A second strip of fastening material designed for releaseable cooperation with said first strip, said second strip comprising a plurality of flexible loops adhered to said inside surface of said skirting material at substantially said upper edge of said skirting material;

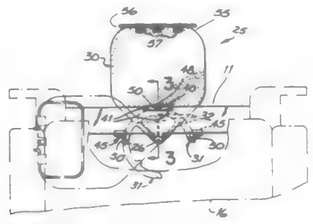
whereby upon positioning said flat sheet between said box spring and said mattress, with said bottom side of said flat sheet resting upon said box spring, and upon aligning and contacting said second strip of said skirting material with said first strip of said flat sheet, said skirting material becomes securely attached to said flat sheet and said skirting material drapes downwardly to cover said box spring and said frame and said outside surface provides decorative and aesthetic features, and whereby said skirting material is readily removable from said flat sheet for cleaning and/or for replacement without having to remove said flat sheet from between said box spring and said mattress, by merely tugging said skirting material at an angle away from said flat sheet.

5,335,384

HOSPITAL BED HEAD EXTENDER AND ACCESSORY THERFOR

L. Dale Foster, and Ryan A. Reeder, both of Brookville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Nov. 10, 1992, Ser. No. 974,143
Int. Cl.[5] A47C *20/00*
U.S. Cl. 5—622 **8 Claims**



1. An extender for the head end of a hospital bed having a frame comprising,

a head support plate,

means for pivotally mounting said plate to the head end of said frame to permit said plate to move between an operative position extending horizontally beyond said frame and a concealed position under said frame about an axis generally perpendicular to a plane defined by said head end of said bed,

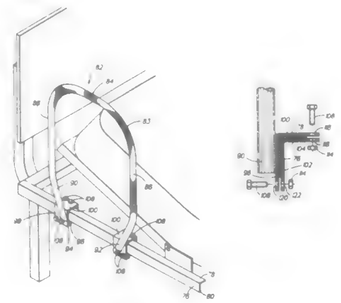
whereby, when in the operative position, the head end of a patient, shifted toward the head end of the bed, can be supported by said plate.

5,335,385

SUPPORT MECHANISM FOR A BED

David J. Brown, 289 Chesterfield Rd., Westhampton, Mass. 01027

Continuation-in-part of Ser. No. 59,096, May 10, 1993. This application Aug. 19, 1993, Ser. No. 109,095
Int. Cl.[5] A47C *21/00*
U.S. Cl. 5—662 **7 Claims**



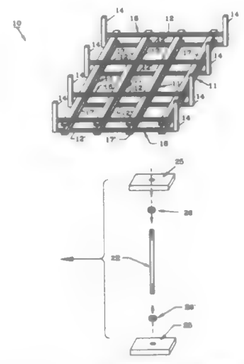
1. A support mechanism for assisting a person into and out of a bed having a frame including vertically and horizontally extending side rails, the support mechanism comprising: a support member having an upper portion and first and second legs adapted to connect to the vertical extending side rail, an upper bracket and a lower bracket, said upper bracket comprises a vertically extending plate and a horizontally extending plate each having a free end, said free end of said vertically extending plate of said upper bracket extends a distance below the vertically extending side rail of the frame and said free end of said horizontally extending plate of said upper bracket extends a distance beyond the horizontally extending side rail of the frame.

5,335,386

BRIDGE STRUCTURE

Donald J. Newell, 129 Lick Meadow Rd., Bristol, Tenn. 37620

Filed Apr. 8, 1993, Ser. No. 44,019
Int. Cl.[5] E01D *1/00*
U.S. Cl. 14—74.5 **14 Claims**



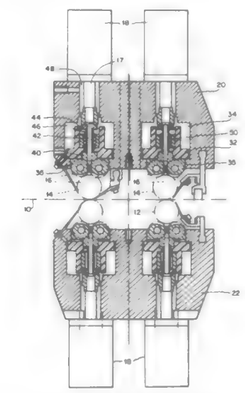
1. A bridge structure comprising: a plurality of longitudinal girders which are affixed in place by a plurality of lateral braces jointed thereto, each lateral brace comprising a pair of lateral members, one of said lateral members positioned continuously across the top of said plurality of longitudinal girders and the second of said lateral members positioned across the underside of said longitudinal girders, said first of said pair of lateral members vertically aligned with said second of said lateral members, a plurality of parallel tie rods, said tie rods adjacent to said longitudinal girders, at least one of said tie rods positioned on each of opposite sides of each of said girders, said tie rods affixed to said lateral members.

5,335,387

DEVICE FOR DRYING A ROLLED METAL STRIP

Alain Grillat, Lambersart, France, assignor to Dujardin-Montbard-Somenor Z. I. Lille Seclin, Seclin Cedex, France

Filed Apr. 19, 1993, Ser. No. 49,122
Claims priority, application France, Apr. 29, 1992, 92 05316
Int. Cl.[5] B30B *3/04*
U.S. Cl. 15—102 **5 Claims**



1. A device for wiping moisture off the opposite sides of a rolled metal strip, comprising

(a) at least two rolls disposed at the opposite sides of the metal strip transversely to a direction of conveyance of the rolled metal strip between the oppositely disposed rolls,

(b) rollers distributed regularly along the length of the rolls and arranged to support the rolls and to apply the rolls against the opposite sides of the metal strip,

(c) fluid-operated jacks acting upon the rollers to pinch the rolled metal strip between the oppositely disposed rolls,

(d) means for controlling the fluid pressure in the jacks to control the pressure applied to the rollers supporting the rolls by fluid-operated jacks,

(e) a support frame including a respective cross beam on each one of the opposite sides of the rolled metal strip, each cross beam defining

(1) a housing extending along the cross beam and having opposite ends, and

(2) the fluid-operated jacks being mounted on the cross beams, and

(f) a support bar disposed in each housing and carrying a respective one of the rolls and the rollers supporting the respective rolls,

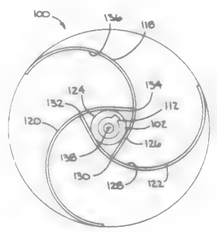
(1) each one of the support bars and the roll and rollers carried thereby constituting an assembly removable from the housing thereof at one of the ends thereof.

5,335,388

CUTTER ASSEMBLY FOR CONDUIT CLEANER

Roy W. Salecker, Mendota, Ill., assignor to Spartan Tool Div. of Pettibone Corp., Mendota, Ill.

Filed Apr. 13, 1993, Ser. No. 47,102
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—104.12 **19 Claims**



1. A blade assembly for attachment to a shaft that is rotatable about an axis on a conduit cleaner, said blade assembly comprising:

a hub defining an axis to be coaxial with the rotational axis on a shaft to which the blade is mounted,

said hub having a peripheral outer surface;

first and second cutting blades;

means for attaching the cutting blades to the hub so that the cutting blades do not project through the hub axis,

whereby a fastener can be directed axially through the hub to engage a shaft to which the hub is mounted; and

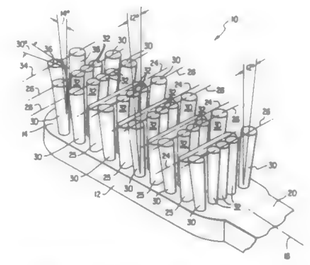
means connecting the first and second cutting blades to each other so that the first and second cutting blades reinforce each other.

5,335,389

PLAQUE REMOVING TOOTHBRUSH

John P. Curtis, Bloomsbury; Kedar N. Rustogi, Kendall Park, both of N.J.; John C. Crawford, Lake Mahopac, N.Y.; James H. Kemp, Piscataway, N.J.; Thomas E. Mintel, Rahway, N.J.; Bert D. Heinzelman, Tenafly, N.J.; Donald R. Lamond, Lynbrook, and Laura H. Edelman, New York, both of N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 29, 1990, Ser. No. 501,992
Int. Cl.[5] A46B *7/04*
U.S. Cl. 15—167.1 **24 Claims**



1. A toothbrush head and a handle, the head having a surface, the head having a longitudinal axis and terminating in a free end remote from said handle, tufts of bristles extending generally upwardly from said surface, the tufts arranged in three group of rows wherein each row of said three groups is transverse to said longitudinal axis and is longitudinally spaced from next adjacent rows, the tufts of each row of the first group being shorter in height than those of the other rows, the

VOL 1165 ISS 2 AG 9 1994 UMI

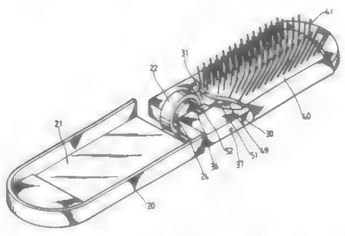
tufts in each row of the second group so arranged that the endmost tuft in each row thereof tilts laterally outwardly toward a respective side of said head and the remaining tufts of each row of said second group extend substantially perpendicularly to said head surface, some of said first and second groups alternating with each other along the longitudinal axis of the head, said third group of tufts located nearest said head free end and including two tufts each tilting laterally outwardly toward a respective side of said head.

5,335,390

STRUCTURE OF FOLDABLE COMB

Chin-Yan Chen, San Chung, Taiwan, assignor to Jong Ching Brushes Co., Ltd., Taipei Hsien, Taiwan

Filed Feb. 2, 1993, Ser. No. 12,396
Int. Cl.[5] A46B *7/00*; A45D *24/06*
U.S. Cl. 15—185 **2 Claims**



1. An improved structure of a foldable comb having a handle, and a hollowed frame pivotally connected therewith, wherein:

an eccentric wheel is provided at the pivotal connection and being disposed in a notch in said hollowed frame; a push rod having a block thereon, said block being placed into said notch and having an elongated shank integral therewith, the elongated shank being inserted into a rod sheath disposed beneath an elastic member, the elastic member being disposed in a cavity of said hollowed frame to move therewith;

said block of said push rod being connected to said eccentric wheel for moving therewith;

whereby when said handle is spread from said hollowed frame, the elongated shank of the push rod stretches the elastic member upward thereby causing a plurality of brush pins disposed on an upper surface of said elastic member to be urged into the proper position for brushing hair, and when said handle is folded into said hollowed frame, the elastic member is relaxed, thus causing the brush pins to contract into a storage position within the hollowed frame.

5,335,391

Patent Not Issued For This Number

5,335,392

TOOL FOR STRIPPING EXCESS PAINT FROM A PAINT ROLLER

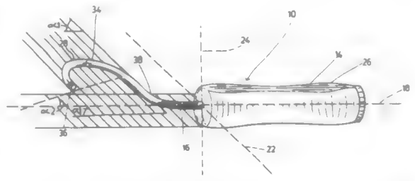
Stuart Evans, 620 Haines Rd., Newmarket Ontario, Canada L3Y 6V5

Filed Sep. 2, 1993, Ser. No. 114,828
Int. Cl.[5] A47L *13/022*
U.S. Cl. 15—236.03 **9 Claims**

1. A tool for stripping excess paint from a paint roller of designated radius, the tool comprising,

an elongate handle having a peripheral surface and a longitudinal axis and having a major and a minor axis perpendicular to the longitudinal axis whereby the thickness of the handle is greater over the major axis than it is over the minor axis so that the peripheral surface is suitable for manual grip by a single hand in at least one specific orientation;

a shaft extending from one end of the handle, the shaft initially extending from the handle parallel to the longitudinal axis of the handle and then three dimensionally veering away from the longitudinal axis and ending in a distal arcuate hook of a radius to fit about an arc of the paint roller, the arcuate hook lying in a plane at an acute angle



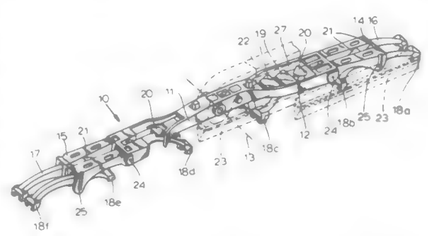
to a plane containing said major axis of the peripheral surface of the handle, and a chord of the arc of the hook taken from the free end of the hook lying at an angle to the longitudinal axis of the handle.

5,335,393

DUAL-BLADE WINDSHIELD-WIPER ASSEMBLY

Cedric S. K. Charng, Taipei, Taiwan, assignor to China Wiper Special Rubber Co. Ltd., Taipei, Taiwan

Continuation-in-part of Ser. No. 543,136, Jun. 22, 1990. This application Oct. 31, 1991, Ser. No. 784,236
Claims priority, application United Kingdom, Jan. 22, 1990, 9001392.1
Int. Cl.[5] B60S *1/38*
U.S. Cl. 15—250.41 **8 Claims**



1. A dual wiper blade assembly for mounting on an end of a wiper arm to engage a windshield, the assembly comprising:

an elongate main yoke generally pivotable at a transverse central pivot on the wiper arm and having a pair of outer ends spaced longitudinally outward from the pivot;

respective one-piece elongated secondary yokes pivoted at outer axes on the outer ends of the main yoke and having inner and outer ends;

a pair of separate and laterally spaced elongated backing strips each carrying a respective wiper blade; and

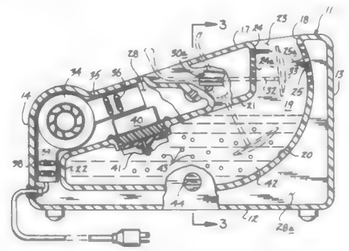
a pair of laterally spaced and separated claws on each of the inner and outer secondary-yoke ends each claw, of each pair of claws, having two projections defining a channel in which a respective backing strip is received, each claw of each pair of claws gripping the respective backing strips and holding same parallel to each other and spaced transversely of the yokes with each wiper blade engageable against the windshield.

5,335,394

EYEGLASS CLEANING APPARATUS

James W. Cunningham, Jr., and Barbara A. Cunningham, both of 3819 Florida Blvd., Palm Beach Gardens, Fla. 33410

Filed Oct. 20, 1993, Ser. No. 139,170
Int. Cl.[5] A47L *5/38*
U.S. Cl. 15—302 **6 Claims**



1. An eyeglass cleaning apparatus, comprising,

a housing, said housing having a housing bottom wall spaced from a housing front wall, a housing rear wall spaced from said housing front wall, and a housing first side wall spaced from a housing second side wall, and a housing top wall extending over the housing bottom wall, the top wall including a top wall U-shaped opening extending into the housing, and

a fluid chamber mounted within the housing, with the fluid chamber in communication through the housing top wall to include an entrance conduit, with the fluid chamber including an arcuate floor spaced from the housing bottom wall extending along the housing bottom wall and spaced from the housing front wall, and

the fluid chamber having a fluid chamber rear wall spaced from the housing rear wall, and a fluid chamber top wall spaced from the housing top wall, with a first pneumatic chamber oriented between the housing top wall and the fluid chamber top wall, and a second pneumatic chamber oriented between the housing bottom wall and the fluid chamber arcuate floor, with the second pneumatic chamber extending between the fluid chamber arcuate floor and the housing front wall, and

the entrance conduit including an entrance conduit rear wall having rear wall openings in pneumatic communication with the first pneumatic chamber, and the entrance conduit having an entrance conduit front wall having front wall openings, with the front wall openings in pneumatic communication with the second pneumatic chamber, and blower means mounted within the first pneumatic chamber, the blower means having a first outlet conduit directing pressurized air to the rear wall openings, and a second outlet conduit in pneumatic communication with the blower motor directing pressurized air into the second pneumatic chamber and through the front wall openings, and

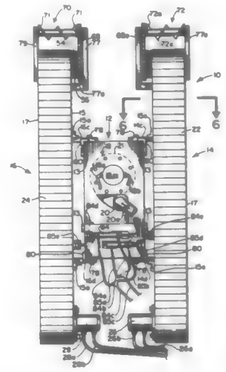
a self-reversing drive motor mounted to the housing, having a drive motor shaft, with the drive motor shaft extending through the housing first side wall and the housing second side wall, and the shaft having a first clamp and a second clamp, the top wall wall U-shaped opening including a first opening portion extending to the entrance conduit, and the top wall U-shaped opening including a second opening portion positioned in adjacency to the first side wall and a third opening portion extending in adjacency to the second side wall, with the first clamp mounted within the second opening, and the third clamp mounted within the third opening, with the first clamp and the second clamp arranged to secure respective first and second legs of an eyeglass assembly therebetween, with the eyeglass assembly including eyeglass lenses arranged for oscillation into the fluid chamber.

5,335,395

REMOTE CONTROLLED SLUDGE REMOVAL APPARATUS

Henry W. Allen, P.O. Box 77966, Baton Rouge, La. 70809

Continuation of Ser. No. 829,475, Feb. 3, 1992, Pat. No. 5,269,041, which is a continuation-in-part of Ser. No. 504,418, Jun. 13, 1990, Pat. No. 5,138,741. This application May 19, 1993, Ser. No. 64,767
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] B08B *9/08*
U.S. Cl. 15—340.1 **13 Claims**



1. A movable sludge pumping apparatus for insertion into a contained sludge area for pumping sludge from said contained sludge area, comprising:

a. a platform,

b. pump means connected to said platform for pumping sludge from said contained sludge area,

c. drive assembly means connected to said platform means for supporting and moving said platform means and said pump means to pump said sludge from selected areas of said contained sludge area, and

d. rotatable cutter means connected to said platform means for cutting and channeling said sludge to said pump means.

5,335,396

DOOR STOP

Randall S. Dolan, 1607 Fourth Ave. SE., Austin, Minn. 55912

Continuation-in-part of Ser. No. 963,080, Oct. 19, 1992, abandoned. This application Aug. 4, 1993, Ser. No. 101,967
Int. Cl.[5] E05F *5/02*
U.S. Cl. 16—82 **1 Claim**

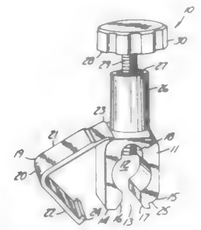
1. A stop for maintaining a closing mechanism having a rod operable within a cylinder in an open position, comprising:

(a) a body portion having a bore defined therein, said body portion being split so as to defined spaced shoulders each having a bevelled edge providing a passage between said bore and the exterior of said body portion;

(b) a locking member extending from an extension surface opposite of the bevelled edges of said body portion and being operable within said body portion to engage said

VOL 1165 ISS 2 AG 9 1994 UMI

rod so as to frictionally secure said body portion to said rod; and



(c) a closure flap secured to said body portion and being operable across said passage between an open position and a closed position.

5,335,397

TWO-APRON DRAFTING UNIT FOR SPINNING MACHINES

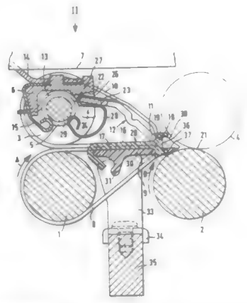
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of Fed. Rep. of Germany

Filed Jun. 15, 1993, Ser. No. 76,782

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1992, 4221154

Int. Cl.[5] D01H *5/86*

U.S. Cl. 19—255 26 Claims



1. A multiple-apron drafting unit for spinning machines comprising:

at least one drivable bottom cylinder,

a bottom apron arrangement surrounding the at least one bottom cylinder,

a pressure roller twin arrangement including a pressure roller shaft with a pair of pressure rollers,

top aprons surrounding each of the pressure rollers,

a movable load carrier operably arranged to carry the pressure roller shaft and associated pressure rollers and top aprons for movement between an open non-operating position and a closed operating position with the top aprons and bottom apron arrangement defining sliver drafting paths therebetween,

a top apron cradle for guiding the top aprons, said top apron cradle including upper deflecting guides for the top aprons,

a lower deflecting guide arrangement for guiding the bottom apron arrangement,

stops with first and second stop faces aligned with the lower deflecting guide arrangement,

and a spring arrangement for positioning the upper deflecting guides of the top apron cradle by contact pressure against the first and second stop faces such that the first stop face determines the distance between the upper and lower deflecting guides and the second stop face serves for the parallel alignment of the upper and lower deflecting guides when the load carrier is moved to the closed operating position,

wherein the pressure roller shaft is held in a pressure roller holder carried by the load carrier with the pressure roller shaft being unguided in the radial direction in the pressure roller holder such that a pressure roller holder moves independently of the top apron cradle in the movements against the first and second stop faces.

5,335,398

DEVICE FOR SEALING THE END OF A HEAT-SHRUNK SLEEVE

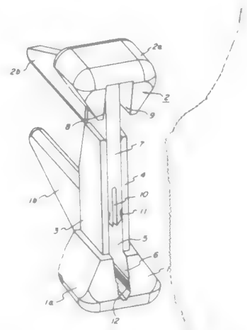
Reinhard Schöttker, Lauenhagen, and Franz Grajewski, Stadthagen, both of Fed. Rep. of Germany, assignors to Kabelmetal electro GmbH, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 955,518

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 4132961

Int. Cl.[5] H02G *15/08*

U.S. Cl. 24—528 15 Claims



1. A device for sealing a heat-shrunk sleeve surrounding branching cables comprising:

first and second parts having two parallel arms which grip the sleeve between the branching cables and keep opposing surfaces of the sleeve in contact with each other between the cables during cooling after heat-shrinking of the sleeve, each of the first and second parts having one of said two parallel arms, a head portion located at the end of its respective arm and a connector protruding from the head portion, the connector of the first part having two beams forming a gap therebetween, the connector of the second part having a single beam located in the gap, the beam of the second part having catch elements at a free end thereof interlocked with catch elements in a recess in the first part so that the distance between the arms can be changed with the arms remaining generally parallel to each other at any distance between them, wherein recesses are provided on both sides of the beam in the head portion of the second part and ends of the beams of the first part are located in the recess of the second part.

5,335,399

CLIP

Kuo H. Chou, Suite 1, 11F, 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

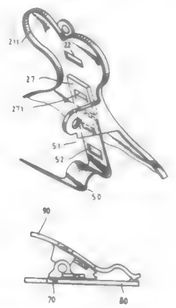
Filed Apr. 13, 1992, Ser. No. 867,375

Int. Cl.[5] B42F *1/00*

U.S. Cl. 24—67.7 4 Claims

1. A clip comprised of two pivoted parts with a V-shaped plate spring means retained thereinbetween, and characterized in that;

said two pivoted parts are each comprised of a heart-shaped knob at one end and a heart-shaped clamping portion longitudinally aligned, said knob having an elongated retaining hole, said clamping portion having a first vertical side wall and a second vertical side wall at two opposite sides, a rectangular pressure board curving inwards between said first and second vertical side walls, and a clamping end spaced from said knob, said clamping end having a series of rectangular teeth, said rectangular pressure board having a projecting strip obliquely projecting



upwards and outwards, said first vertical side wall having an eye end, said second vertical side wall having a stubbed tube, the stubbed tube on the second vertical side wall of one of said two pivoted parts being inserted into said eye end on the first vertical side wall of the other of said two pivoted parts;

said V-shaped plate spring comprised of two opposite spring boards extending from a corrugated connecting portion, said spring boards each having a projecting strip inserted into said elongated retaining hole and an elongated retaining hole into which the projecting strip of said rectangular pressure board is inserted.

5,335,400

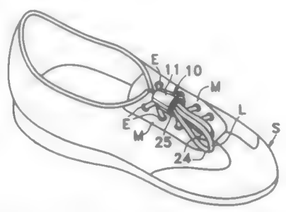
DRAWSTRING PULLER AND FASTENER FOR SHOELACES

Buenaventura Z. Sales, P.O. Box 9154, San Jose, Calif. 95157

Filed Oct. 9, 1992, Ser. No. 959,123

Int. Cl.[5] A43C *7/00*

U.S. Cl. 24—712.5 9 Claims



1. A drawstring puller and fastener for separable members having drawstring engaging means, said drawstring puller and fastener comprising:

(a) a drawstring received by said drawstring engaging means to draw said separable members toward one another, said drawstring having free ends;

(b) a hollow socket with a closed end from which a frustoconical hollow wall has a taper widening toward an open end, apertures formed in said frustoconical wall through which pass the free ends of said drawstring, the free ends of said drawstring continue therefrom to pass through the open end of said hollow socket, said frustoconical wall having a smooth inner surface without projections; and

(c) a tapered drawstring pull plug having a wide end and a narrow end, said plug having an axial opening at the wide end thereof for receiving the free ends of said drawstring which have passed through said open end of said hollow socket, the free ends of said drawstring received by said plug being disposed within said axial opening, said plug at its narrow end being inserted into said open end of said socket and press fitted into and directly with said socket after said drawstring has been tightened and while said drawstring remains taut for wedging said drawstring between said frustoconical wall of said socket and said plug to interlace securely the separable members, said plug having an outer wall formed with ridges to provide a non-slip fit for the wedging of the drawstring between said socket and said plug, said plug having a smooth entry into said socket without interference from said socket except to provide a direct press fit therebetween.

5,335,401

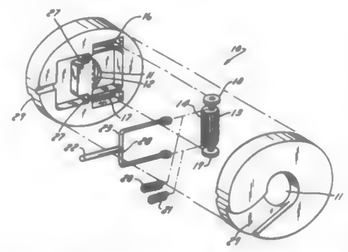
SHOELACE TIGHTENING AND LOCKING DEVICE

Gary L. Hanson, W63 N14346 Washington Ave., No. 2, Cedarburg, Wis. 53012

Filed Aug. 17, 1993, Ser. No. 107,917

Int. Cl.[5] F16G *11/00*

U.S. Cl. 24—712.5 8 Claims



1. A device for tightening and locking shoelaces comprising:

a body unit with a slotted opening therein;

a chamfered side edge extending across one side of the slotted opening;

a shaft rollable laterally across a width of the slotted opening toward and away from the chamfered side edge thereof;

the shaft having a set of chamfered ridges extending axially down the length of the shaft;

first and second geared rails adjacent to first and second ends of the slotted opening, respectively;

first and second round gears on the first and second ends of the shaft rotatably engageable with the first and second geared rails, respectively;

spring biasing means for urging the shaft toward the chamfered side edge of the slotted opening; and

quick release means for rolling the shaft away from the chamfered side edge of the slotted opening;

whereby a shoelace introduced into the slotted opening is pinchable between the chamfered side edge of the slotted opening and the chamfered ridges of the shaft and whereby the shoelace is releasable therefrom by activating the quick release means to roll the shaft away from the chamfered side edge of the slotted opening.

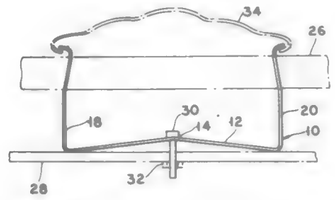
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,402

BURIAL CASKET STATIONERY HARDWARE BAR SECUREMENT

Joseph R. Semon, Clarks Summit, Pa., assignor to Casket Shells, Inc., Eynon, Pa.

Filed Jun. 9, 1992, Ser. No. 895,778
Int. Cl.[5] A61G *17/00*
U.S. Cl. 27—2 9 Claims



8. A casket having a base, top, ends and opposed sides, a stationary bar on each of the opposed sides and at least two spaced stationary bar hardware system coupling each bar to the casket side, each stationary bar hardware system comprising in combination:

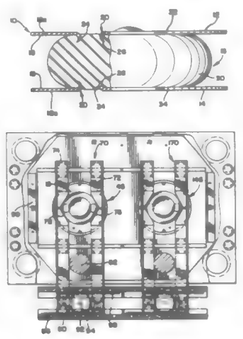
a side lug with connection with a wall of a casket, the lug including an arch shaped base for securement to the wall of the casket and a pair of spaced arms extending outwardly from the base, each arm having an opening for receiving a bar, whereby upon flattening of the arch shaped base upon securement of the base to the casket wall, the arms bite into the bar to secure it against lateral movement, a corner lug for connection with a corner of the casket, the lug having at least one arm having an opening for receiving and supporting a bar, and at least one spaced wall against which the end of the associated bar rests or can engage to prevent lateral movement of the bar, the arms being provided with means for coupling with decorative hardware.

5,335,403

METHOD FOR MAKING AN ELASTOMERIC SPRING ASSEMBLY

Erik D. Jensen, Batavia, Ill., assignor to Miner Enterprises, Inc., Geneva, Ill.

Filed Jul. 2, 1993, Ser. No. 85,383
Int. Cl.[5] B21F *35/00*
U.S. Cl. 29—173 12 Claims



1. A method of making an elastomeric spring assembly comprising the steps of:

locating a first plate having a profiled periphery within a first fixture;

locating a second plate having a profiled periphery substantially identical to that on the first plate within a second fixture such that the peripheral profiles of said plates are commonly oriented;

laying an annular spring member formed of an elastomer having a ratio of plastic strain to elastic strain that is greater than 1.5 to 1 upon one of said plates;

moving first and second arms along a predetermined path of movement inwardly toward and into contact with said annular member thereby positioning said spring member at a predetermined location relative to the plate it was laid upon; and

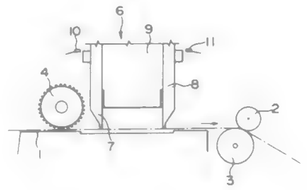
compressing said spring member between said plates with a force sufficient to establish a cold-formed interlock between said plates and the spring member and thereby forming said spring assembly.

5,335,404

METHOD OF FORMING SPACE PORTIONS IN SLIDE FASTENER CHAIN

Masahide Ozaki; Makoto Yamazaki, and Kenji Dono, all of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,415
Claims priority, application Japan, Aug. 26, 1992, 4-269057
Int. Cl.[5] B21D *53/50*
U.S. Cl. 29—408 2 Claims



1. A method of forming successive space portions in a slide fastener chain, comprising the steps of:

(a) moving a slide fastener chain, by a feed roller disposed on forward side of a prospective space portion and adapted to be driven selectively in one of forward and backward directions, until it arrives at a position right under a coupling element cutting unit;

(b) positioning the slide fastener chain, as the feed roller is rotated forwardly, in such a manner that a coupling element contiguous to a backward end of the prospective space portion is brought into engagement with a first positioning pin upstream of the coupling element cutting unit;

(c) positioning the slide fastener chain in such a manner that a second positioning pin downstream of the coupling element cutting unit which has been set to be out of engagement with a coupling element contiguous to a forward end of the prospective space portion is brought into engagement with said coupling element contiguous to the forward end of the prospective space portion as the feed roller is rotated forwardly by extending the slide fastener chain slightly, and thereupon that said coupling element contiguous to the forward end of the prospective space portion is brought into engagement with said second positioning pin as the feed roller is rotated backwardly so as to restore the chain from being extended; and

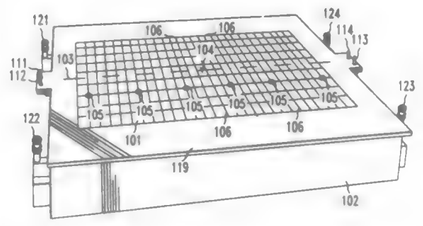
(d) cutting off coupling elements of the prospective space portion and removing the cut coupling elements from the prospective space portion.

5,335,405

METHOD AND APPARATUS FOR ALIGNING PHOTOTOOLS FOR PHOTOPROCESSING OF PRINTED CIRCUIT BOARDS

Hans H. Ammann, Chester; Richard F. Kovacs, Morris Plains; Henry B. Micks, Jr., Richmond; Jamey N. Potechin, Oak Ridge; Everett F. Simons, Cedar Knolls, and John G. Tetz, Succasunna, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 751,472, Aug. 29, 1991, abandoned.
This application Jun. 1, 1993, Ser. No. 69,657
Int. Cl.[5] B23Q *7/00*
U.S. Cl. 29—407 10 Claims



1. A method of attaching phototools for photoprocessing of printed circuit panels;

comprising the steps of:

loading a first and a second phototool on a first and second alignment fixture, respectively;

aligning the first and second phototools with a reference point and axis on the first and second alignment fixtures, respectively, and securing the first and second phototools to a substantially planar surface of the first and second alignment fixtures, respectively;

mechanically deflecting corners of the first phototool from the plane of the planar surface of the first alignment fixture;

loading a panel to be processed onto the first phototool secured in the first alignment fixture and aligning it with the reference point and axis of the first alignment fixture;

inserting adhesive appliances between corners of the first phototool and the panel and pressing the corners of the first phototool through the adhesive appliance into contact with the corners of the panel thereby securing the panel and the first phototool to each other;

mechanically deflecting corners of the second phototool from the plane of the planar surface of the second alignment fixture;

loading the panel and the first phototool as a unit onto the second phototool secured in the second alignment fixture and aligning it with the reference point and axis of the second alignment fixture;

inserting adhesive appliances between corners of the second phototool and corners of the panel and pressing the corners of the second phototool through the adhesive appliance into contact with the corners of the panel thereby securing the panel and the second phototool to each other;

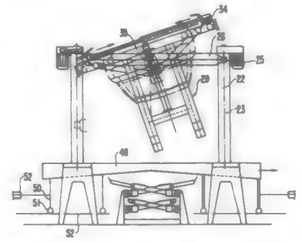
placing the panel with its attached phototools in a printer for exposure.

5,335,406

METHOD AND DEVICE FOR DISMANTLING AUTOMOBILES

Franciscus L. M. T. Van Den Mosselaar, Dongen; Gerrit J. Termaten, Lochem, and Leonardus T. M. Reuser, Ede, all of Netherlands, assignors to Car Recycling Systems "CRS" B.V., Ede, Netherlands

Filed Nov. 27, 1992, Ser. No. 982,681
Claims priority, application Netherlands, Nov. 28, 1991, 9101985
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—426.3 10 Claims



1. A method of dismantling an automobile comprising the steps of:

A) placing the automobile on a transporting member disposed on rails so that a bottom side of the automobile faces the transporting member;

B) moving the transporting member with the automobile thereon over the rails and past a plurality of disassembly stations, one of the disassembly stations including a rotating device;

C) stopping the transporting member with the automobile thereon at selected ones of the disassembly stations;

D) disassembling parts of the automobile at the selected ones of the disassembly stations;

E) stopping the transporting member with the automobile thereon at the rotating device and utilizing the rotating device to lift the automobile off of the transporting member; and

F) rotating the lifted automobile with the rotating device so that the bottom side of the automobile faces approximately directly opposite from the transporting member whereby the bottom side of the automobile is accessible from above.

5,335,407

METHOD AND APPARATUS FOR REMOVING ANTENNA BEARINGS

Neil H. Verkerk, Santa Clarita, Calif., assignor to Datron Systems, Inc., Simi Valley, Calif.

Filed Mar. 1, 1993, Ser. No. 24,403
Int. Cl.[5] B23P *19/00, 19/04;* B66F *3/00;* B25B *27/14*
U.S. Cl. 29—426.3 7 Claims

1. A method for removing an antenna bearing from an antenna pedestal on which an antenna is mounted, said pedestal having elevation and azimuth bearing housings for containing said bearing, said method comprising the steps of:

installing a support hinge between the elevation and azimuth housings of the pedestal on one side thereof;

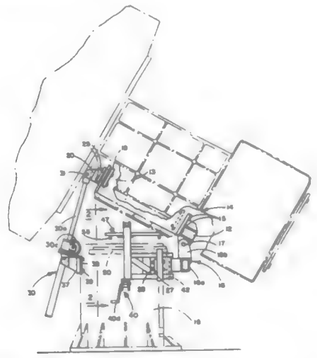
installing a jack between the elevation and azimuth housings of the pedestal on the side opposite to said one side thereof;

operating said jack to pivotally raise said elevation housing away from said azimuth housing, thereby exposing said bearing contained within said azimuth housing;

installing a winch on the support hinge, said winch having a bearing adapter suspended therefrom for attachment to said bearing;

VOL 1165 ISS 2 AG 9 1994 UMI

operating said winch to lower said adapter onto said bearing and attaching said bearing to said adapter; and



operating said winch to lift said bearing out of said azimuth housing and to lower said bearing to a position below said antenna.

5,335,408

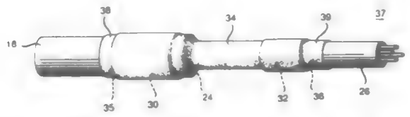
METHOD OF MAKING A WATER BLOCKED OPTICAL FIBER CABLE

Gary S. Cobb, Norcross, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 443,300, Nov. 29, 1989, Pat. No. 5,217,808. This application Feb. 24, 1993, Ser. No. 21,822

Int. Cl.[5] H01B *13/06*

U.S. Cl. 29—447 **9 Claims**



1. A method of causing a portion of an optical fiber cable to be water blocked, said method comprising the steps of:

providing an optical fiber cable comprising at least one optical fiber, a longitudinally extending core tube within which the optical fiber is disposed and a longitudinally extending outer jacket disposed about the core tube;

removing the outer jacket from a portion of the cable, the removal of the outer jacket being effective to expose a portion of the core tube;

causing a first water blocking material to be disposed about an outer surface of a portion of the outer jacket adjacent to the exposed portion of the core tube;

causing a second water blocking material to be disposed about an outer surface of a portion of the core tube adjacent to the outer jacket;

causing a heat shrinkable plastic tube to be disposed about the portion of the cable and to extend to cover at least a portion of the first water blocking material disposed about the outer jacket of the cable and at least a portion the second water blocking material disposed about the portion of the core tube; and

applying heat energy to the heat shrinkable plastic tube, said step of applying heat energy being effective to cause the heat shrinkable plastic tube to shrink to cause compressive engagement of a portion of the inner surface of the heat shrinkable plastic tube with the water blocking materials and to provide a seal between a portion of the inner surface of the heat shrinkable plastic tube and a portion of the outer surface of the outer jacket of the cable and between a portion of the inner surface of the heat shrinkable plastic tube and a portion of an outer surface of the core tube.

5,335,409

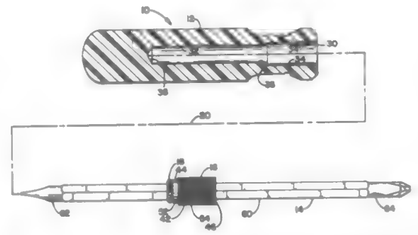
SCREWDRIVER INCLUDING A HANDLE WITH AN O-RING THEREIN FOR RETAINING A REMOVABLE BIT AND METHOD OF ASSEMBLY THEREFOR

Dale D. Elvebak, Albert Lea, Minn., assignor to Enderes Tool Co., Inc., Apple Valley, Minn.

Filed Jun. 18, 1993, Ser. No. 79,644

Int. Cl.[5] B23P *11/02;* **B25B** *23/00*

U.S. Cl. 29—451 **18 Claims**



10. A method of assembling a tool comprising the steps of:

providing a bit with a shaft extending between a first end and a second end;

positioning an O-ring around the shaft;

positioning an insert around the shaft;

inserting the first end of the bit into an opening in a handle;

inserting the O-ring positioned around the shaft of the bit into the opening in the handle by pushing the insert positioned around the shaft of the bit into the opening of the handle wherein an outer surface of the insert engages an inner surface of the handle which defines the opening to mount the insert to the handle.

5,335,410

METHOD OF MAKING ULTRA SMALL DIAMETER CATHETERS AND OF REINFORCED TUBULAR PRODUCT

Warren R. Burnham, 10036 Saratoga Rd., South Glen Falls, N.Y. 12803

Filed Mar. 15, 1993, Ser. No. 31,329

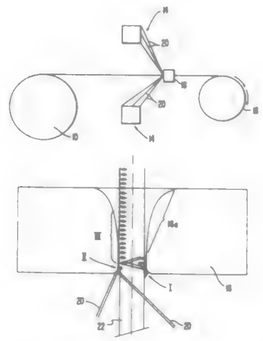
Int. Cl.[5] B23P *11/02;* **B32B** *31/30;* **D01D** *5/24*

U.S. Cl. 29—452 **7 Claims**

1. A method of forming small diameter reinforced tubing comprising the steps of:

winding reinforcing strands under a predetermined tension onto ambient temperature tubing in which a mandrel has been inserted;

introducing said tubing with said reinforcing strands wound thereon into a die, said die being adapted to apply both radiant and conductive heat thereto, said die being sized and configured to produce an interference as the strands and the portion of the tube on which the strands are wound enter a mouth of said die, thereby producing a compression force which compresses the strands against said tubing simultaneously as said strands and said tubing are simultaneously heated by both radiant and conductive heat from said die; and



removing the compressive force and allowing said radiant heat and the tension in the strands to move the strands to a predetermined position within a wall of the tubing.

5,335,411

METHOD OF ATTACHING A FASTENING ELEMENT TO A PANEL

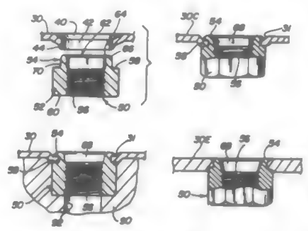
Rudolf R. M. Muller, Frankfurt, and Jiri Babej, Lich, both of Fed. Rep. of Germany, assignors to Profil Verbindungstechnik GmbH & Co. KG, Stadtteil Koppern, Fed. Rep. of Germany

Continuation of Ser. No. 786,204, Oct. 31, 1991, Pat. No. 5,251,370. This application Aug. 4, 1993, Ser. No. 101,920

The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—512 **12 Claims**



1. A method of attaching a fastening element to a plastically deformable panel, said fastening element including a generally tubular barrel portion and a generally radial bearing surface extending from adjacent said barrel portion, said method comprising the following steps:

(a) supporting a first face of said panel on a die support surface of a die member, said die member having an annular die recess, and said die support surface surrounding said die recess;

(b) driving a punch against a second face of said panel opposite said die member, said punch first drawing and deforming said panel into said die recess forming a generally conical depression in said panel, then said punch piercing an opening in said panel having a width greater than said fastening element barrel portion but less than said bearing surface;

(c) then inserting said barrel portion of said fastening element into said panel opening from said first face of said panel;

(d) driving said bearing surface of said fastening element against said first panel face, flattening said generally conical depression and reducing said panel opening width into contact with said fastening element barrel portion; and

(e) receiving said panel in a generally radial recess in said barrel portion forming a mechanical interlock between said barrel portion and said panel.

5,335,412

WORKING DEVICE FOR FORCING ARMATURE SHAFT

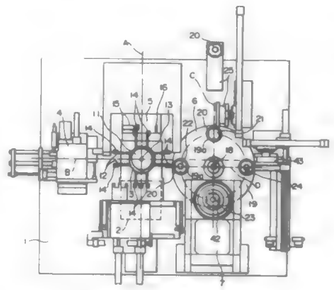
Yasushi Kawakami, Kiryu, Japan, assignor to Mitsuba Electric Mfg. Co., Ltd., Kiryu, Japan

Filed Dec. 10, 1992, Ser. No. 989,041

Claims priority, application Japan, Dec. 18, 1991, 3-104512[U]

Int. Cl.[5] H02K *15/02*

U.S. Cl. 29—564.1 **16 Claims**



1. A device for forcing an armature shaft a predetermined distance into a bore of an armature core of an electric motor, comprising:

a first turret rotationally mounted to a base, said first turret being adapted to receive an armature shaft at a first receiving point of said first turret and support said received armature shaft throughout the rotation of said first turret, said first turret being stopable at stop-points spaced around the first turret;

means for storing and individually supplying armature shafts to said first receiving point of said first turret, said storing and supplying means being located at a first stop-point;

means for forming a knurl along a portion of the armature shaft, said knurl forming means being operational at a second stop-point, said second stop-point being spaced from said first stop-point along the periphery of the first turret;

a second rotationally mounted turret for supporting armature cores at predetermined core-receiving positions on said second turret, said rotation of said second turret transporting said received cores to predetermined stop-points located about said second turret;

means for individually supplying armature cores to said core-receiving positions on said second turret, said core supplying means being located at a first stop-point of said second turret;

means for aligning said knurled armature shaft with the bore of an armature core;

means for pressing the knurled armature shaft into the bore of the armature core; and

means for removing said armature cores having a pressed armature shafts from said second turret at a second stop-point.

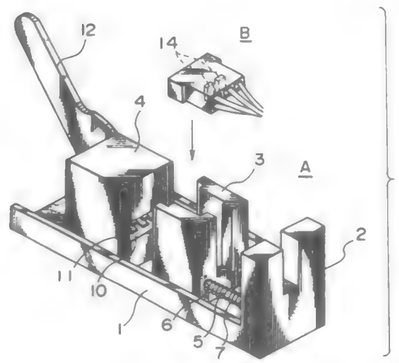
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,413

CONNECTOR TERMINAL INSPECTION DEVICE AND INSPECTION METHOD

Hiroshi Yamamoto, and Hitoshi Sakai, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 27, 1993, Ser. No. 96,989
Claims priority, application Japan, Jul. 27, 1992, 4-199610
Int. Cl.[5] G01R *31/04*
U.S. Cl. 29—593 24 Claims



1. A connector terminal inspection device comprising a support for a connector to be inspected and an inspection device body being disposed to be freely movable with respect to a base, said connector support being energized by means of a spring in the direction of said inspection device body, connector engaging pins being fixed to the base side within said connector support to go into the connector to be inspected, a plurality of inspection pins being disposed in a row within said inspection device body with their leading ends projected, said connector support and said connector to be inspected being moved by the movement of said inspection device body for the inspection, said inspection pins being moved back as contacted with the terminal fitting of said connector to flow electricity through a circuit within said inspection device body, and said connector engaging pins causing an incompletely inserted terminal fitting to move in a completely inserted position in said connector as the connector moves.

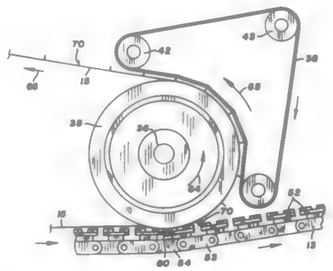
6. A connector terminal inspection method comprising disposing a support for a connector to be inspected and an inspection device body to be freely movable with respect to a base, energizing said connector support in the direction of said inspection device body by means of a spring, fixing connector engaging pins which go into the connector to be inspected to the base side within said connector support, disposing a plurality of inspection pins in a row within said inspection device body with their respective leading ends projected, fitting said connector into said connector support with said connector engaging pins moved into the connector, moving said inspection device body under that state so as to move said connector support which is energized in the direction of said inspection device body and the connector to be inspected and also contacting the inspection pins with the terminal fitting of said connector to move backward to pass electricity through a circuit within said inspection device body, and moving the terminal fitting in the incompletely inserted state into a completely inserted position in the connector by means of said connector engaging pins in the moving process of said connector.

5,335,414

HEAT TRANSFER CELL AND MANUFACTURING APPARATUS

Roger L. Joyce, New Brighton, and Ron Westby, Anoka, both of Minn., assignors to Exaire Co., New Brighton, Minn.

Filed Mar. 29, 1993, Ser. No. 38,381
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—726 3 Claims



1. An apparatus for the formation of a plurality of generally regularly spaced-apart upstanding fins along a web of metallic material, the apparatus comprising:

(a) a frame means, an endless chain operatively coupled to the frame means, and means for driving the endless chain along a predetermined path, said chain having a plurality of generally equally spaced-apart work-supporting anvil links; and

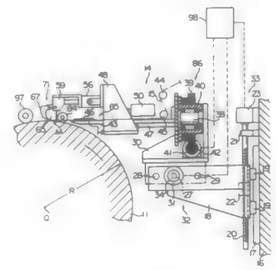
(b) a path-deflecting, chain-deflecting idler roller operatively coupled to the frame means and arranged to deflect the endless chain arcuately away from a preceding plane to thereby reduce the space between adjacent anvil links and simultaneously capture between said adjacent links a length of metallic material traveling thereacross to form an upstanding fin from said length of captured metallic material.

5,335,415

APPARATUS FOR WINDING AND PRESSURE-FITTING A SMALL WIDTH STRIP TO A ROTATING BODY

Yukitaka Okufuji, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 969,563
Claims priority, application Japan, Oct. 30, 1991, 3-311993; Oct. 30, 1991, 3-311994
Int. Cl.[5] B23P *19/02;* B29D *30/08*
U.S. Cl. 29—820 18 Claims



1. An apparatus for winding a small width member for feeding a starting end thereof to a rotating body and for pressure-fitting the same onto the rotating body, said apparatus comprising:

holding means for holding the starting end of the small width member from both obverse and reverse surface sides thereof and for pressure-fitting the starting end of the small width member onto the rotating body; and

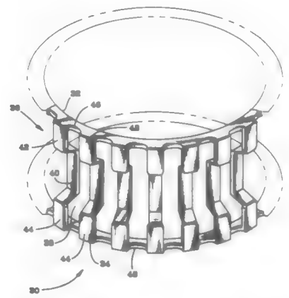
feeding means for feeding the starting end of the small width member to the rotating body by moving the starting end thereof from a holding position where the small width member is held to the rotating body as said holding means is moved, said holding means including a holding member for holding the small width member, a holding-member moving member, said holding member swung as said holding-member moving member moves in a direction of a tangent to the rotating body parallel with an equatorial plane of the rotating body, to pressure-fit the starting end of the small width member onto the rotating body, wherein the rotating body is rotatable about an axis of rotation, and a radius of the rotating body from the axis of rotation to an outer periphery thereof changes in correspondence with an axial position, and said feeding means includes moving means for moving said holding means in parallel with the direction of the tangent to the rotating body.

5,335,416

ROLLER BEARING SIGMA CAGE

Richard L. Alling, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Division of Ser. No. 977,315, Nov. 17, 1992, Pat. No. 5,255,985.
This application Feb. 16, 1993, Ser. No. 17,727
Int. Cl.[5] B23P *15/00;* F16C *33/54*
U.S. Cl. 29—898.067 12 Claims



1. A method of forming a roller bearing cage, the method comprising the steps of:

providing a strip of metal having a first side and a second side and two edges;

piercing the strip of metal intermediate the edges thereof to form slots for rollers by striking the strip of metal with a piercing tool in a direction from the first side toward the second side;

bending the pierced strip of metal adjacent the two edges thereof to form first and second flanges, each bend intersecting the slots such that the slots wrap around the bends into the first and second flanges; and

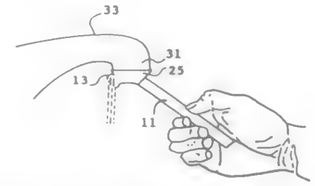
forming the pierced and bent strip of metal into a circular hoop such that the flanges form axially spaced apart end rims for limiting axial movement of the rollers.

5,335,417

HAND RAZOR

Claude P. Genero, and Gail A. Genero, both of 30 Phillips Street, Dianella, WA 6062, Australia

Filed Jul. 22, 1993, Ser. No. 95,672
Claims priority, application Australia, Jul. 27, 1992, PL3738; Nov. 2, 1992, PL5596
Int. Cl.[5] B26B *21/40*
U.S. Cl. 30—41.5 18 Claims



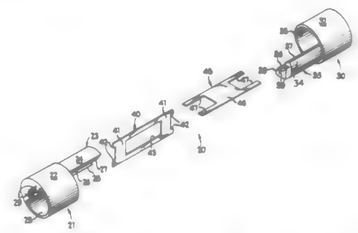
1. A hand razor comprising a head portion, an inlet having an entry end for receiving and delivering water to the head portion to flush a blade supported therein, and an outlet having a discharge end for discharging said water from the head portion, the entry end having an engaging portion for engaging an outlet spout of a tap, said engaging portion comprising means for sealingly engaging with the outlet spout of the tap, the entry and discharge ends being integral with and fixed in relation to each other and being in opposed relation whereby in use water enters the entry end and leaves the discharge end in generally the same direction of flow.

5,335,418

PIVOTAL HAND TOOL WITH FLEXURAL PIVOT JOINT AND METHOD OF ASSEMBLING SAME

Bert Krivec, Waukesha, Wis., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Continuation-in-part of Ser. No. 833,944, Feb. 10, 1992, abandoned. This application Jan. 13, 1993, Ser. No. 3,783
Int. Cl.[5] B26B *13/28;* B23K *31/02;* F16D *1/00*
U.S. Cl. 30—266 19 Claims

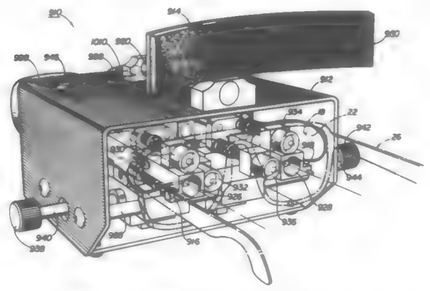


1. A pivotal hand tool comprising: first and second lever members respectively having cooperating jaws at adjacent ends thereof, said lever members being disposed in intersecting relationship and respectively having arcuate openings therein aligned along a common axis, first and second cylindrical members respectively coaxially disposed in said openings in axially spaced-apart relationship and respectively fixedly secured to said first and second lever members for movement therewith, spacer means formed of a material having a very low coefficient of friction discrete from said first and second cylindrical members and disposed therebetween for preventing axial movement thereof toward each other, and first and second thin flexural leaf spring elements disposed in crossed but non-contacting relationship within said cylindrical members, each of said flexural elements being spaced from said spacer means and having edge portions respectively fixedly secured to said first and second cylindrical members for interconnect-

VOL 1165 ISS 2 AUG 9 1994 UMI

ing same, said spacer means serving to absorb axial compressive forces applied to said cylindrical members and to minimize transmission thereof to said leaf spring elements.

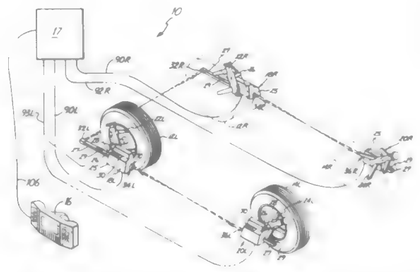
5,335,419
DETERMINING AND MARKING APPARATUS AND METHOD FOR USE IN OPTOMETRY AND OPHTHALMOLOGY
Forrest A. Marshall, P.O. Box 649, Dublin, Ga. 31021
Continuation-in-part of Ser. No. 739,616, Aug. 2, 1991, Pat. No. 5,148,602, which is a continuation-in-part of Ser. No. 642,299, Jan. 17, 1991, Pat. No. 5,046,257, which is a continuation-in-part of Ser. No. 467,269, Jan. 19, 1990, Pat. No. 5,036,592. This application Sep. 18, 1992, Ser. No. 948,140
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] B43L *13/00*
U.S. Cl. 33—28 **14 Claims**



1. A device for marking a lens worn by a patient having a visual axis, comprising:
a. a housing for positioning adjacent the lens;
b. a marker connected to the housing and moveable relative to the lens; and
c. means for detecting the distance between the marker and the lens so that, when moved, the marker contacts the lens.

5,335,420
WHEEL ALIGNMENT SYSTEM
Michael J. Kling, III, Mequon; Michael P. Alusick, Hartland; Gary R. Kercheck, Colgate; Jeff C. Krueger, Milwaukee; Duane M. Schmitz, Shorewood, and James L. Visser, New Berlin, all of Wis., assignors to SPX Corporation, Muskegon, Mich.
Division of Ser. No. 4,779, Jan. 14, 1993, which is a continuation of Ser. No. 753,896, Aug. 30, 1991, abandoned. This application May 19, 1993, Ser. No. 64,405
The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.
Int. Cl.[5] G01B *11/275, 7/315*
U.S. Cl. 33—288 **3 Claims**

1. An automotive vehicle wheel alignment system for aligning wheels of an automotive vehicle, the system comprising:
a left front head unit for coupling to a left front wheel of the automotive vehicle and providing an angle measurement output;
a right front head unit for coupling to a right front wheel of an automotive vehicle and providing an angle measurement output;
a left rear head unit for coupling to a left rear wheel of the automotive vehicle and providing an angle measurement output;
a right rear head unit for coupling to a right rear wheel of the automotive vehicle and providing an angle measurement output; and
a hand held module including a front panel operably coupled to the left front head unit, the right front head unit, the left rear head unit, and the right rear head unit for obtaining wheel alignment measurements and providing alignment information to an operator, the hand held module comprising:
communications means operably coupled to the head units for receiving angle measurements and providing an output;
memory means for storing computer program instructions and for storing icons representative of operator steps to perform an alignment test;
input means for receiving an input from the operator comprising a first plurality of buttons positioned along a first side of the front panel, and a second plurality of buttons positioned along a second side of the front panel;



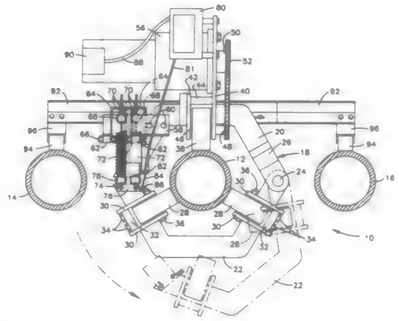
display means positioned generally in a center portion of the front panel between the first plurality of buttons and the second plurality of buttons for receiving information and producing display outputs dependent on the received information;
processor means for processing the output from the communications means based upon the input from the operator and upon computer program instructions in the memory means;
means for receiving information from the input means related to an alignment test selected by the operator;
means for retrieving from the memory means icons which are related to a series of operator steps to perform the alignment test selected by the operator; and
output means for providing retrieved icons to the display means, thereby directing the operator through the series of operator steps to perform the selected alignment test.

5,335,421
RULES
James F. Jones, Jr., 2108 Pear St., Michigan City, Ind. 46360
Filed Jul. 19, 1993, Ser. No. 93,343
Int. Cl.[5] G01B *3/02*
U.S. Cl. 33—494 **3 Claims**



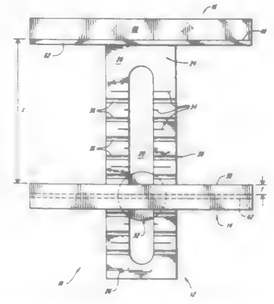
1. A rule the opposite edges of which are graduated with a median strip extending therebetween and the graduations on the rule being in inches and one-half, one-quarter, one-eighth and one-sixteenth fractions and indicated by parallel lines extending transversely of the rule,
the inch, one-half inch, quarter-inch and one-eighth inch graduations along a first opposite edge being all in a first color and the one-sixteenth graduations being in a second color,
the inch, one-half inch and one-quarter inch graduations along the second opposite edge being all in said first color and the one-eighth graduations being in a third color, and
said median strip having thereon a first legend readable toward said first edge indicating that said second color indicates one-sixteenth inch graduations and a second legend readable toward said second edge indicating that said third color indicates one-eighth inch graduations.

5,335,422
TUBE VARIATION MEASURING DEVICE
Clayton L. Ferguson, Montezuma, Kans., assignor to Farmland Industries, Inc., Kansas City, Mo.
Filed Apr. 27, 1992, Ser. No. 873,753
Int. Cl.[5] G01B *5/08, 5/20*
U.S. Cl. 33—553 **15 Claims**



1. Apparatus for detecting changes in the diameter of a tube, said apparatus comprising:
a frame comprising a pair of frame sections each having opposite first and second ends and means for connecting the first ends of said frame sections together for pivotal movement between an open condition for insertion onto the tube and for removal therefrom and a closed condition of the frame, said frame sections together extending around the tube in the closed condition with the second ends of said frame section adjacent to but spaced apart from one another to form a gap therebetween;
a plurality of rotatable wheels on said frame engaging the outside of the tube in the closed condition of the frame and mounted on the frame to roll along the outside of the tube in a longitudinal direction thereon;
power means for driving some of said wheels to propel said frame longitudinally along the tube;
yieldable means for holding said frame in the closed condition while accommodating pivotal movement of said wheels radially of the tube when the tube diameter changes as the frame moves longitudinally along the tube; and
means for detecting variations in the tube diameter as the frame moves along the tube by detecting changes in the dimension of said gap between the second ends of said frame sections.

5,335,423
SIDING SPACER AND METHOD
Michael F. McLaughlin, 7 Beechnut Lane, Hudson, Mass. 01749
Filed Sep. 8, 1992, Ser. No. 941,656
Int. Cl.[5] G01D *21/00*
U.S. Cl. 33—647 **9 Claims**



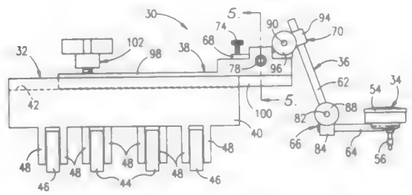
1. An apparatus for the application of siding to an architectural structure, said siding including at least first and second pieces of siding, said apparatus comprising:
a.) a longitudinally extending gage member having a first portion, a second portion, a first face surface and a second face surface, said gage member having a slot means extending from said first portion to said second portion, said first face surface having indicia means extending substantially continuously thereon, said indicia means being in juxtaposition to said slot means;
b.) a means for engaging said first piece of siding, said first piece of siding being affixed to said architectural structure, said means for engaging said first piece of siding being slidable on and along said slot means of said gage member and having a surface for supportingly receiving said first piece of siding, said means for engaging said first piece of siding being slidable on and along said slot means of said gage member such that said supporting surface is selectably positionable relative to said indicia means of said first face surface of said gage means, said supporting surface being in abutting relation to said indicia means of said gage member to indicate a selected distance, said means for engaging said first piece of siding having a locking means for securing said means for engaging said first piece of siding in a selected position relative to said gage member;
c.) a means for engaging said second piece of siding, said means for engaging said second piece of siding being secured to said first portion of said gage member and extending in a direction substantially perpendicular to said gage member; and
d.) a handle means, said handle means having an end portion secured to said first portion of said gage member, said handle means extending in a direction substantially parallel to said gage member.

5,335,424
GAUGE FOR MEASURING RADIAL DISTANCES ON A CYLINDRICAL SURFACE
David Spangler, 7641 Aberdeen, Prairie Village, Kans. 66208
Filed Mar. 19, 1993, Ser. No. 34,511
Int. Cl.[5] G01B *3/22, 5/06*
U.S. Cl. 33—834 **7 Claims**

1. An apparatus for measuring radial distances relative to the surface of a cylinder formed about a central longitudinal axis, the apparatus comprising:
a chassis including a body having a center line adapted to be aligned parallel with the longitudinal axis of the cylinder,

VOL 1165 ISS 2 AG 9 1994 UMI

and first, second and third wheels for supporting the chassis on the cylindrical surface, the first and second wheels being rotatable about a first axis of rotation and the third wheel being rotatable about a second axis of rotation parallel to the first axis of rotation and disposed to a side of the center line opposite the first axis of rotation, the first, second and third wheels being offset from one another in the direction of the center line;



a gauge for measuring radial distances relative to the surface of the cylinder when the chassis is supported on the cylinder by the wheels;

a support means for supporting the gauge on the chassis, the support means including a height adjustment means for adjusting the height of the gauge relative to the chassis and a slide adjustment means for adjusting the position of the gauge relative to the chassis in a direction parallel to the center line.

5,335,425

DRY-PROCESSING APPARATUS FOR HEATING AND DRYING OBJECTS TO BE PROCESSED

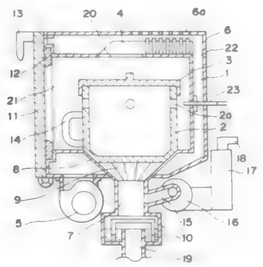
Takeshi Tomizawa, Ikoma; Tatsuo Fujita, Osaka; Kunihiro Ukai, Ikoma, and Jiro Suzuki, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 12, 1992, Ser. No. 928,436

Claims priority, application Japan, Aug. 14, 1991, 3-204184; Nov. 27, 1991, 3-312063; Dec. 27, 1991, 3-346019; Apr. 27, 1992, 4-107385; May 18, 1992, 4-124364; May 25, 1992, 4-132768

Int. Cl.[5] F26B *3/34*

U.S. Cl. 34—265 **26 Claims**



1. A dry-processing apparatus for disposing of garbage, comprising:

a shielding container made of a microwave shielding material;

a garbage receptacle having a heat-insulating property for containing garbage, said garbage receptacle being installed inside said shielding container with a space, through which vapor is allowed to pass, formed around said garbage receptacle;

a microwave oscillator means for generating microwave radiation and directing the microwave radiation to the garbage accommodated in said garbage receptacle to thereby heat the garage;

cooling means for cooling the wall of said shielding container so as to condense vapor emitted from the heated garbage; and

temperature sensor means for detecting temperature in the atmosphere inside said garbage receptacle and detecting the temperature of the vapor emitted from the heated garbage, whereby a heating and drying operation is terminated at the moment the temperature detected by said temperature sensor means exceeds a predetermined temperature threshold in the final phase of the heating and drying operation.

5,335,426

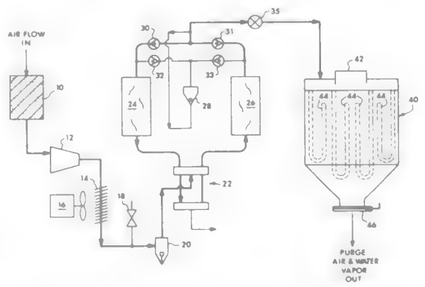
METHOD AND APPARATUS FOR THERMAL REGENERATION OF MOLECULAR SIEVE MATERIAL USED IN OXYGEN CONCENTRATORS

Bernard W. Settlemyer, Longmont; William A. Johnson, Littleton, and Robert L. Johnson, Highlands Ranch, all of Colo., assignors to Foothills Medical Equipment, Inc., Littleton, Colo.

Filed Sep. 22, 1992, Ser. No. 949,047

Int. Cl.[5] F26B *21/06*

U.S. Cl. 34—80 **9 Claims**



1. An apparatus for thermal regeneration of molecular sieve material contaminated with water comprising:

a vessel for containing a quantity of said molecular sieve material;

means for heating said molecular sieve material within said vessel to a temperature in the range of approximately 450° to 950° F.

a first drying chamber containing a desiccating material;

at least a second drying chamber containing a desiccating material;

means for alternately cycling a flow of sweep gas through said first drying chamber to said vessel, and then through said second drying chamber to said vessel, said sweep gas entering said vessel having a dew point in the range of approximately −80° to −100° F.; and

means for alternately purging water from said desiccating material in said drying chambers during that portion of said cycle when each drying chamber is not supplying sweep gas to said vessel.

5,335,427

DEVICE FOR REMOVING LIQUID FROM INSIDE A ROTATING CYLINDER OR ROLL

Martti E. O. Partio, Uudenmaankatu 36, Kouvola, Finland SF-45130

PCT No. PCT/FI91/00138, § 371 Date Jan. 25, 1993, § 102(e) Date Jan. 25, 1993, PCT Pub. No. WO91/19853, PCT Pub. Date Dec. 26, 1991

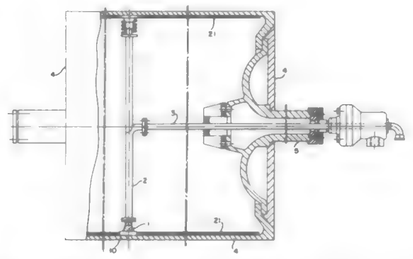
PCT Filed May 3, 1991, Ser. No. 962,573

Claims priority, application Finland, Jun. 19, 1990, 903073

Int. Cl.[5] F26B *13/18*

U.S. Cl. 34—119 **5 Claims**

1. A device for removing liquid from inside a rotating cylinder comprising a rotating siphon including a liquid-removing nozzle disposed within said cylinder over an annular relatively narrow area of an inner surface of said cylinder, which nozzle is located in spaced relation from said inner surface, spoiler bars extending longitudinally over a major surface area of the inner surface of said cylinder adjacent said narrow area for effecting turbulence of condensate to improve the heat transfer through said major area during the rotation of said cylinder



and said siphon, an elevation part secured to the inner surface of the cylinder and covering said annular relatively narrow area and being slightly spaced from said nozzle whereby a relatively thick layer of condensate will be maintained in said cylinder adjacent said elevation part whereby the spoiler bars will function uniformly and with a high degree of efficiency and the siphon will be close to an inner surface of the cylinder to prevent a detrimental quantity of steam being removed with the condensate.

5,335,428

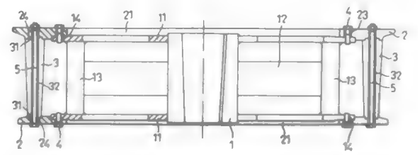
ROLL UP AND DRYING DEVICE TO BE INCORPORATED IN A RUST CLEANING MACHINE

Shunn-Gone Wang, No. 1, Alley 30, Lane 220, Chung-Cheng S. Rd., Yung-Kang Hsiang, Tainan Hsien, Taiwan

Filed Sep. 22, 1992, Ser. No. 949,393

Int. Cl.[5] F26B *13/00*

U.S. Cl. 34—625 **2 Claims**



1. A roll up and drying device for a rust cleaning machine, said roll up and drying device for drying and rolling up an iron wire which is cleaned of rust by said rust cleaning machine, said roll up and drying device comprising;

a main shaft having a pair of spaced, identical circular plates concentrically and fixedly mounted thereon, a pair of outer plates, each of said outer plates having an inner diameter that is larger than the diameter of said circular plates and each being detachably attached to an external surface of one of said circular plates and concentric thereto and a plurality of truncated cone-shaped connecting rods screw-connecting said pair of outer plates adjacent to the peripheries of said pair of outer plates, each of said connecting rods being spaced from one another at a predetermined angular distance.

5,335,429

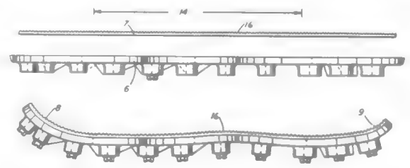
CLEATED OUTER SOLE

Ross Hansen, 361 Saunders St., Fredericton, N.B., Canada E3B 1N9

Filed Nov. 21, 1990, Ser. No. 616,613

Int. Cl.[5] A43B *3/10, 3/12*

U.S. Cl. 36—7.5 **11 Claims**



1. A detachable outer sole for wearing over a footwear member having toe and heel portions, said outer-sole comprising:

(1) a generally planar, flexible lower tread portion having corresponding toe and heel portions to said a footwear member;

(2) an elastically extensible, generally planar, upper footwear-contacting portion bonded to the upper surface of the lower tread portion, said upper footwear-contacting portion, having toe and heel regions; and

(3) attachment means, for attaching the outer sole to the lower surface of the aforesaid a footwear member

wherein the toe region of said upper footwear-contacting portion has been bonded to said lower tread portion while such toe region is in an elastically extended state to thereby cause the toe region of the tread portion to be curled upwards in the absence of a footwear member, and to press preferentially against the toe portion of the lower surface of said a footwear member when the outer sole is attached thereto.

5,335,430

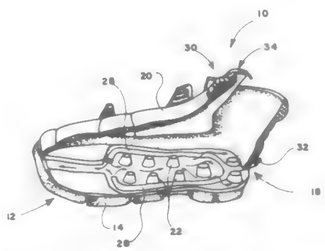
INFLATABLE ATHLETIC SHOE WITH DETACHABLE PUMP

Joseph F. Fiso, 4030 California Ave., S.W., and Tae S. Lee, P.O. Box 16783, both of Seattle, Wash. 98116

Filed Feb. 5, 1993, Ser. No. 14,272

Int. Cl.[5] A43B *7/14, 13/20, 23/00*

U.S. Cl. 36—88 **8 Claims**



1. An inflatable shoe comprising a sole, an upper and a tongue, said shoe having a rear,

means defining a plurality of independent inflatable chambers for being inflated with an inflation medium, including at least a first chamber located in said sole and at least one subsequent chamber located in an air sock forming part of said upper,

said first chamber having first inflation valve means including first access means disposed at and exteriorly of said rear of said shoe, and first outlet valve means extending exteriorly of said shoe,

said air sock having second inflation valve means including

VOL 1165 ISS 2 AG 9 1994 UMI

second access means disposed at and extending exteriorly of said rear of said shoe, and second outlet valve means extending exteriorly of said shoe,

said first and second inflation valve means having means detachably attachable to a source of pressurized fluid, whereby said shoe fluid chambers are capable of being pressurized by a pump and by a prepressurized cannister,

a cooperating detachably mounted pump including means defining a groove for engaging a tether, and

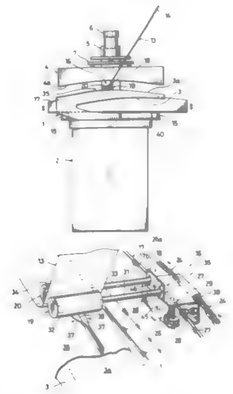
means for releasably retaining said pump mounted on said tongue, comprising tether means for interfitting with and partial surrounding said groove of said pump.

5,335,431

PRESSING MACHINE FOR UNFOLDING SEAMED AND FOLDED MARGINS IN CLOTHING

Yasuzo Ohnishi, Higashiosaka, Japan, assignor to Naomoto Industry Co., Ltd., Osaka, Japan

Filed Jun. 16, 1993, Ser. No. 77,087
Int. Cl.[5] D06F *71/30*; D05B *35/02*
U.S. Cl. 38—1 B 5 Claims



1. A pressing machine comprising a trestle, an unfolded prearranger means to preliminarily unfold sewing margins seamed and folded in a workpiece mounted on the trestle, a pad cloth which covers the sewing margins as preliminarily unfolded, a pressurizing means which operates through the pad cloth to force the sewing margins as preliminarily unfolded against the trestle, and a conveyor means which moves the unfolding prearranger means and the pressuring means in an integrated form along seams of the workpiece.

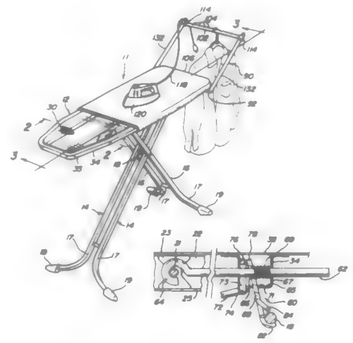
5,335,432

IRONING BOARD WITH LEG LOCKING MEMBER AND HANGER ATTACHMENT

Danny Simpson, Seymour, Ind., assignor to Seymour Housewares Corporation, Seymour, Ind.

Division of Ser. No. 911,671, Jul. 9, 1992, Pat. No. 5,272,825.
This application Jun. 30, 1993, Ser. No. 85,327
Int. Cl.[5] D06F *81/04*; A47B *9/16*
U.S. Cl. 38—106 7 Claims

1. An adjustable ironing table having first and second legs moveable between a collapsed stored position adjacent a top board but not contacting said top board, and an open extended position away from said top board, said first and second legs pivotable with respect to each other about a pivot axle between said collapsed stored position and said open extended position, an elongated control element connected to one of said legs and slidably connected to said top board, a lock plate member interacting with said control element and moveable between a first release position which allows said legs to move toward either said collapsed stored position or said open extended position, and a second locked position which prevents said legs from moving toward said collapsed stored position, a first section of said lock plate member which when in the locked position, engages said pivot axle of said legs when in



said collapsed stored position to prevent said legs from moving toward said open extended position, the improvement characterized by:

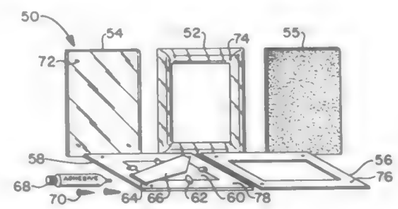
said lock plate member having a second section engaged with said axle to define said collapsed position and prevent said legs from further collapsing thereby preventing the distal sections of said legs from abutting said top board.

5,335,433

DECORATIVE FRAMING BORDER OR ENCLOSURE DEVICE

Mary E. Borden, 88 Hawthorne, Akron, Ohio 44303

Division of Ser. No. 842,946, Feb. 27, 1992, Pat. No. 5,197,213, which is a continuation-in-part of Ser. No. 660,649, Feb. 25, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 709
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] A47G *1/06*
U.S. Cl. 40—152 5 Claims



1. A kit for framing objects comprising:

(a) an essentially transparent base frame member having a front and a rear surface, each said surface having a peripheral region and an interior region;

(b) a plurality of enclosing frame members about a periphery of the base frame member, at least one frame member having only a single longitudinal channel open along a substantial portion of a length of the channel, said at least one frame member being transparent, the longitudinal channel of the enclosing frame members opening toward the rear surface of the base frame member, wherein the enclosing frame members extend in their entirety only upwardly from the front surface of the base frame member;

(c) a means for closing the opening of the longitudinal channel, thereby adapting the channel to receive an appearance-altering material therein, the means additionally being in associative contact with the enclosing frame members;

(d) a backing member on the rear surface of the base frame member adapted to repeatedly receive and remove an object to be frame without affecting the positioning of the appearance-altering material disposed in the channel, wherein associative contact is made with at least a portion of the interior region of the rear surface of the base frame member when an object to be framed is inserted into the backing member and

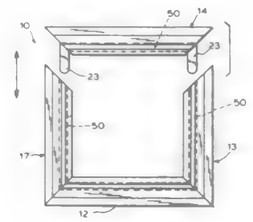
(e) a securing means for attaching the backing member to the rear surface of the base frame member.

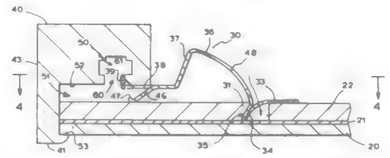
5,335,434

PICTURE FRAME

Julius Shultz, North White Plains, N.Y., and Joseph Nicolay, South Plainfield, N.J., assignors to Dax Manufacturers, Inc., Orangeburg, N.Y.

Filed Sep. 9, 1991, Ser. No. 756,522
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—156 4 Claims





1. A rectangular picture frame having four elongated mitered wood frame rails (11, 12, 13, 14) connected together to define a closed picture frame with a narrow front profile for supporting superposed glass, artwork and backing board for display in which:

(a) each of said wood frame rails (11, 12, 13, 14) has a generally J-shaped profile defined by a wide rear wall portion (40) connected at right angles to a side wall portion (43) connected at right angles to a short narrow front wall portion (41);

(b) each frame rail having an elongated receiving groove (51) formed therein having a front groove wall (53) parallel to said front wall portion (41) of the picture frame, a rear groove wall (52) parallel to said rear wall portion (40) of the picture frame; and a side groove wall (54) parallel to an outer surface of the side wall portion (43) extending between the front groove wall (53) and rear groove wall (52);

(c) said rear wall portion (40) of said frame rail having an elongated narrow assembly groove (50) formed therein and having a perpendicular slot (60) communicating with an inner face of said frame rail, said slot (60) forming a locking wall (61);

(d) three of said frame rail portions (11, 12, 13) being permanently interconnected at the rear wall portions (40) by adhesive and angular nail elements (15) to form an open U-shaped frame element;

(e) a fourth frame rail means (14) being removably connected to said U-shaped frame element;

(f) a flat L-shaped guide member (23) disposed at each end of said fourth rail (14) in said assembly groove (50) and adapted to be inserted in the assembly groove (50) of rails (11, 13) of the open U-shaped frame element;

(g) said U-shaped frame element having an end-loadable circumscribing groove formed by said elongated receiving grooves (51) in said side wall portion (43) of said frame rails;

(h) a rectangular glass plate (20) and a rectangular backing board (22) each having side edges of which are slidable into said circumscribing groove through the open end of said U-shaped frame;

(i) said backing board (22) having four locking slots (32), each locking slot being formed proximate to each of the edges of said board at generally central portions thereof; and

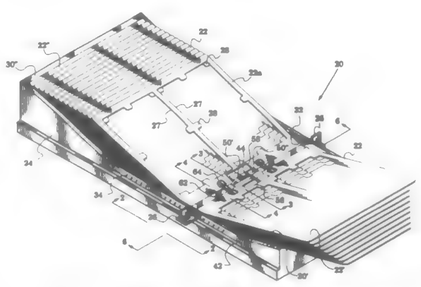
(j) resilient spring locking/biasing clip (30) engaging each of said four locking slots in said backing board at one end of the clip and engaging said locking wall (61) in the assembly groove (50) of said frame rail at the other end of the clips; one of said clips locking said fourth framing rail to the backing board; the other clips rigidifying the entire frame and urging the backing board toward said glass plate at the front wall portion of said frame to display any artwork interposed between said glass plate and said backing board.

5,335,435

MEDIA HOLDER AND DISPLAY

Manny Cotton, 11473 Riverside Dr., #302, Studio City, Calif. 91607; George Sanchez, 19147 Kinzie St., Northridge, Calif. 91324, and Bernardo Baran, 6311 Rhea Ave., Reseda, Calif. 91335

Filed Oct. 20, 1992, Ser. No. 964,027
Int. Cl.[5] B42F *17/22*
U.S. Cl. 40—395 19 Claims



1. Apparatus for storing a plurality of media and displaying a selected one thereof, comprising:

a base;

a plurality of frames configured to carry said media, each of said frames pivotally mounted to said base to pivot between first and second rest positions;

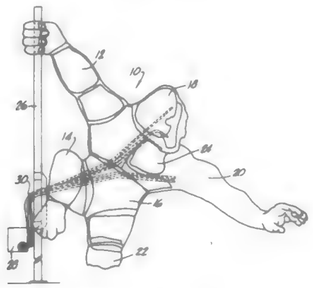
an abutment member defined on each of said frames;

a striking member; and

means for directing said striking member along said base in first and second opposed directions to successively strike each abutment member to pivot its associated frame between said first and second rest positions.

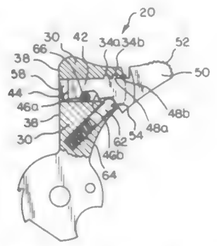
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,436
ANIMAL PROP USING AIR BAGS
Robert H. Garr, Los Angeles, Calif., assignor to MCA Recreation Services, Inc., North Hollywood, Calif.
Continuation of Ser. No. 665,369, Mar. 5, 1991, abandoned. This application Jan. 27, 1993, Ser. No. 9,380
Int. Cl.[5] G09F *19/08*
U.S. Cl. 40—412 9 Claims



1. An inflatable figure comprising:
a fixed rigid frame;
at least one frame extension articulated to the frame;
a plurality of flexible air bags attached around the frame extension;
means for supplying air at first pressure to at least one of the plurality of air bags, the means for supplying also connected and supplying air at a second pressure, different from the first pressure, to at least another of the plurality of air bags; and
a flexible simulated skin supported on the air bags.

5,335,437
GUN HAMMER
Frank B. Andersen, 589 Noowick Rd., R.R. #1, Millbay, B.C., Canada V0R 2P0
Filed Mar. 22, 1993, Ser. No. 35,277
Int. Cl.[5] F41A *17/74*
U.S. Cl. 42—70.08 2 Claims



1. A new and improved gun hammer assembly comprising:
a main hammer body having a hole running through the length of the hammer body;
a combined spur and strikeface piece having a spur at one end and a strikeface at the opposite end which at least partially fits within the hole in said main hammer body and which is adapted to slide within the hole in said hammer body between a firing position flush with the front of said main hammer body and a safe position inwardly offset from the front of said hammer body;
first holding means on said main hammer body;
second holding means on said combined spur and strikeface piece adapted to engage said first holding means in a first position wherein said strikeface piece assumes a firing position within said hole flush with the front of said main hammer body and in a second position wherein said strikeface piece assumes a safe position within said hole inwardly offset the front of said main hammer body;
a forcing means which urges said second holding means to engage said first holding means;
whereby pressure on said spur of said combined piece is adapted to move said strikeface piece relative to said main hammer body between said first firing position and said second safe position against the force provided by said forcing means and cause said second holding means to engage said first holding means.

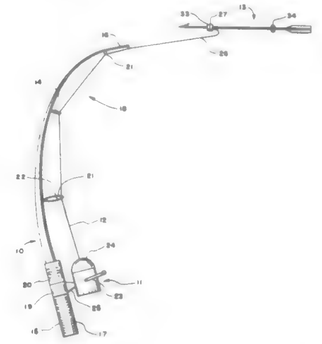
5,335,438
DEER FLAGGING APPARATUS
David E. Terrill, Rte. 1, Box 29-7, Gore, Okla. 74435
Continuation-in-part of Ser. No. 811,641, Dec. 23, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 972,687
Int. Cl.[5] A01M *31/06*
U.S. Cl. 43—1 14 Claims



1. A deer flagging apparatus for attracting whitetail deer by simulating the exposure of the flag of a whitetail deer; wherein, the apparatus comprises:
a support unit including an elongated support member;
a housing member disposed on said support member;
a flag unit disposed on said housing member and including first and second contoured panels having inner and outer surfaces wherein said panels are hingedly connected together; and
means for pivoting said second panel relative to said first panel to visibly expose the inner surfaces of said first and second panels.

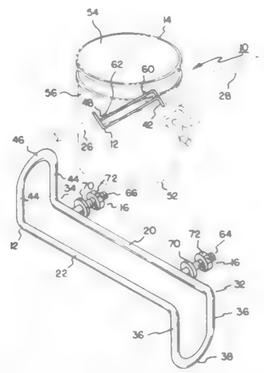
5,335,439
CASTABLE HARPOON APPARATUS
Randolph Horton, 2506 Coles St., Richmond, Va. 23234
Filed Nov. 29, 1993, Ser. No. 158,312
Int. Cl.[5] A01K *81/00*
U.S. Cl. 43—6 3 Claims

1. Spearfishing apparatus comprised of:
a) a fishing rod comprised of an elongate shaft tapered between stiff proximal and flexible distal extremities, said rod having a grip region associated with said proximal extremity and a guide region associated with said distal extremity, said grip region having a reel mounting seat and tactile grip surface, said guide region having a plurality of line guides having a corresponding plurality of aligned line passage apertures,
b) a fishing reel having a line storage spool, line retrieval and release mechanism, resistive line drag system, and reel mounting foot adapted to be affixed to said reel seat,
c) a fishing line spirally wound upon said spool and having a free extremity adapted to be deployed and retrieved through said line passage apertures,
d) a collar of annular shape having a central cylindrical bore and means for securing the free extremity of said line, and
e) a spear having a shaft elongated between forward and rear



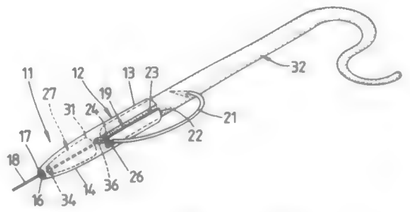
extremities and adapted to slide in close proximity within said cylindrical bore, said shaft having forward and rear stop means adapted to limit longitudinal travel of said shaft with respect to said collar, said spear having a barbed point associated with said forward extremity and a plurality of flights attached to said rear extremity.

5,335,440
FISHING ROD HOLDER SYSTEM
Roosevelt Williams, 7601 Macedonia Rd., Oakwood, Ohio 44146
Filed Aug. 19, 1993, Ser. No. 108,234
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 3 Claims



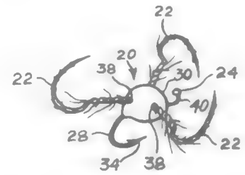
3. A fishing rod holder adapted to support a fishing rod comprising:
a member formed of a rigid material, the member being shaped to form two parallel long extents spaced a distance from each other sufficient to receive the handle of a fishing rod, the long parallel extents having a forward end whereat the member is down-turned to form two short parallel extents terminating in a closed end for receiving thereabove a forward portion of a fishing rod handle, the long parallel extents having a rearward end whereat the rod is up-turned to form two short parallel extents terminating in a closed end for receiving therebeneath a rearward portion of a fishing rod handle; and
a pair of bolts secured to one of the long extents at the opposite ends thereof and extending away from the other long extent and in a common plane therewith for releasable coupling to a bucket.

5,335,441
LURE PROTECTION DEVICE
Russell Blackwell, 2109 Arcadia Rd., Birmingham, Ala. 35214
Filed Apr. 27, 1993, Ser. No. 52,625
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.36 8 Claims



1. An apparatus for protecting and prolonging the functional life-span of artificial fishing lures in combination with a fishing line and hook attached thereto, comprising:
(a) a generally tubular body having a cylindrical portion, defining an open end, integrally connected to a conically tapered portion which tapers radially inwardly to define an orifice distal said open end; and
(b) a bayonet slot defined in said cylindrical portion extending from said open end toward said orifice, said line passing through said orifice in said tubular body and connected to an eyelet of said hook, such that a lure, attached to said hook at the end distal said eyelet, and said hook may be concomitantly urged into said tubular body and captured therein by slightly turning said tubular body until said hook is retained by said bayonet slot.

5,335,442
MOISTURE ACTIVATED SELF-PROPELLED FISHING LURE
James C. Ahlsten, 1200 White Oak Dr., Santa Rosa, Calif. 95409
Filed Nov. 13, 1992, Ser. No. 975,653
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.37 7 Claims

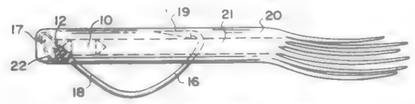


1. A fish lure comprising a body and one or more coiled leg-like appendages, each appendage having two ends, one end attached by means to said body, and an opposite unattached end extending externally of said body, said appendages being made of coiled hairy-like tails attached to seeds of many plants, each tail being naturally responsive to immersion in water by setting into motion and uncoiling, thereby spontaneously pro-

VOL 1165 ISS 2 AG 9 1994 UMI

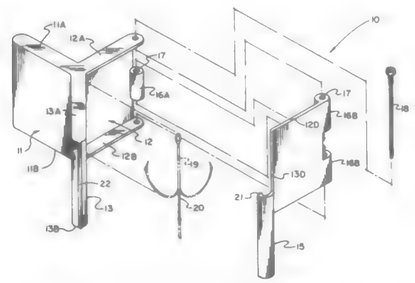
ducing life-like movement, said lure having line attachment means and hook means.

5,335,443
WEIGHT FOR FISH LURE
Shaw Grigsby, Jr., 3508 NW. 27th St., Gainesville, Fla. 32605
Filed Apr. 2, 1993, Ser. No. 41,855
Int. Cl.[5] A01K *83/06*
U.S. Cl. 43—44.81 18 Claims



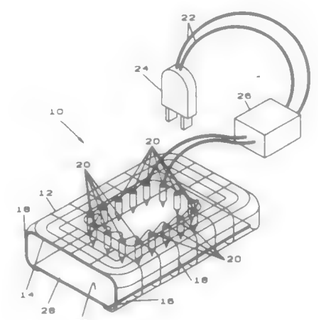
1. A fishing apparatus comprising a weight having a cylindrical body of heavy metal, said body having opposite ends with a longitudinal axis through said body between said ends, and a planar loop of wire extending outwardly from one said end of said body and bent at an angle from said longitudinal axis, a fishing lure, a short C-shaped hook having an elongated shank portion and having opposite end portions with an eye at one said end portion and a barbed point at said other end portion, a wire spring clip adjacent said eye for attachment of said lure thereto, said lure having an elongated hollow therein with said shank of said hook threaded therethrough to dispose said point below and adjacent an outer surface of said lure, said weight body lying within said hollow and adjacent said eye with said shank of said hook being threaded through said weight loop.

5,335,444
TREBLE HOOK PROTECTOR
Joe C. Janeiro, 325 Mary St Unit #1, Hamilton, Ontario, Canada L8L 8A2
Filed Mar. 23, 1993, Ser. No. 35,657
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—57.1 4 Claims



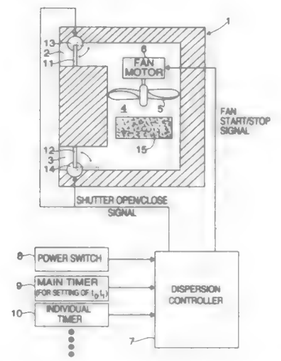
1. A treble hook protector comprising:
a top member being substantially flat and defining a trefoil shape;
a bottom member being substantially identically shaped with respect to said top member;
a first compartment having a pair of substantially parallel, spaced first sides each fixedly secured at a top end thereof to said top member, said sides each being further fixedly secured at a bottom end thereof to said bottom member, said sides each having inboard and outboard ends wherein said first sides curve towards each other and connect at said outboard ends thereof;
a second compartment fixedly secured to said first compartment and orientated 120 degrees relative to said first compartment, said second compartment having a second side fixedly secured at a top end thereof to said top member, said second side being further fixedly secured at a bottom end thereof to said bottom member, said second side having inboard and outboard ends wherein said inboard end of said second side is fixedly secured to said inboard end of one of said first sides;
a third compartment fixedly secured to said first compartment and orientated 120 degrees relative to both said first compartment and said second compartment, said third compartment having a third side fixedly secured at a top end thereof to said top member, said third side being further fixedly secured at a bottom end thereof to said bottom member, said third side having inboard and outboard ends wherein said inboard end of said third side is fixedly secured to said inboard end of one of said first sides;
a first movable side having inboard and outboard ends, said outboard end of said first movable side being pivotally coupled to said outboard end of said second side of said second compartment;
a second movable side having inboard and outboard ends, said inboard end of said second movable side being fixedly secured to said inboard end of said first movable side to define an angle of approximately 120 degrees between said first and second movable sides;
a ridge coupled to a portion of said third compartment; and,
a closure tab coupled to said outboard end of said second movable side, said closure tab being releasably engagable to said ridge to facilitate a complete enclosing of a treble hook positioned within said compartments.

5,335,445
MOVING LIGHT INSECT TRAP
Theodore A. Kuepper, 4907 Marlin Way, Oxnard, Calif. 93035
Filed Aug. 26, 1993, Ser. No. 112,137
Int. Cl.[5] A01M *1/04*
U.S. Cl. 43—114 14 Claims



1. An insect trap comprising:
a framework formed of open-mesh material,
a plurality of lights located within said framework,
means for respectively actuating said lights in a manner to simulate motion, and
means located adjacent said lights for trapping insects.

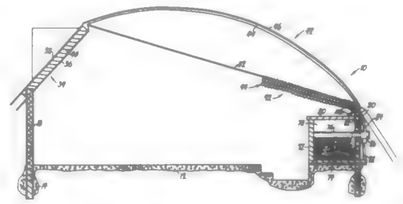
5,335,446
ROOM INSECTICIDE DISPENSER
Hiromi Shigetoyo, Tokyo, Japan, assignor to Nihon Naishi Inc., Japan
Filed Nov. 18, 1992, Ser. No. 977,667
Claims priority, application Japan, Nov. 21, 1991, 3-332621; Oct. 16, 1992, 4-304661
Int. Cl.[5] A01M *13/00*
U.S. Cl. 43—125 10 Claims



1. In a room insecticide dispenser having an air inlet port and an insecticide outlet port; a plurality of insecticide plates, said plates being juxtapositioned with one another and having a set spacing between each of said plates, said plates being positioned inside said dispenser; a motorized fan for drawing air in through said inlet port and over said plates and expelling said air through said insecticide outlet port; a heater for heating the plates to vaporize insecticide when the temperature is below about 20° C.; and a main timer for setting the operating time for said fan and said heater, the improvement comprising:
an inlet shutter means mounted in said dispenser for opening said inlet when said dispenser is in use and closing said inlet when said dispenser is not in use;
an outlet shutter means mounted in said dispenser for opening said outlet when said dispenser is in use and closing said outlet when said dispenser is not in use;
a controller means mounted in said dispenser for controlling both said inlet shutter means and said outlet shutter means, said fan and said heater such that when said inlet shutter means opens said inlet and said outlet shutter means opens said outlet, said fan is on, and when said inlet shutter means closes said inlet and said outlet shutter means closes said outlet, said fan is off thereby preventing the escape of insecticide from said dispenser.

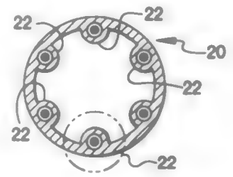
5,335,447
THERMALLY EFFICIENT INTEGRATED GREENHOUSE SYSTEM
Richard A. Bee, 1641 Mount Vernon, St. Charles, Mo. 63303
Filed Nov. 26, 1991, Ser. No. 798,523
Int. Cl.[5] A01G *9/00*
U.S. Cl. 47—17 9 Claims

1. An integrated greenhouse system including in combination a greenhouse comprising a pair of insulated side walls, a pair of insulated end walls and a transparent roof supported by said walls, an extendible and retractible thermal barrier within said greenhouse below said roof, said barrier comprising a plurality of elongated inflatable tubes, means supporting said tubes below said roof for sliding movement of the tubes along a path transversely of the length of the tubes from a retracted condition of said barrier in which said tubes are deflated to an extended condition of said barrier as said tubes are inflated, said barrier comprising at least one layer of adjacent tubes, the lengths of which extend across the barrier, means forming bonds between said adjacent tubes in the direction of the lengths thereof, means forming respective pluralities of spaced air passages in the regions of said bonds between said adjacent tubes, means for alternatively supply air to at least one of said tubes during the daytime to cause said tubes to be successively inflated through said passages to extend the barrier and to



exhaust air during the night from at least one of said tubes to deflate said tubes to retract the barrier, a heat storage box within said greenhouse, a heat storage medium in said box, a plurality of solar panels adapted to be heated by sunlight, means for conducting heat from said panels to said heat storage medium and means for supplying heat from said storage medium to the inside of said greenhouse.

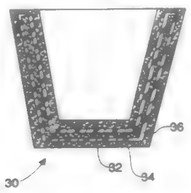
5,335,448
AGRICULTURAL SUPPORT STAKES
Rodolfo M. Martinez, and Gabrial M. Martinez, both of Guadalajara Jalisco, Mexico, assignors to Mangueras Especializadas Agricolas, S.A. De C.V., Col. Valle Del Alamo, Mexico
Filed Dec. 6, 1991, Ser. No. 802,893
Int. Cl.[5] A01G *17/06*
U.S. Cl. 47—47 10 Claims



1. An agricultural support stake for supporting a plant, comprising an extruded plastic hollow tube, said hollow tube having an inner wall surface and an outer wall surface, a plurality of conduits being disposed between said inner wall surface and said outer wall surface of said hollow tube and distributed radially around the circumference of said hollow tube, each of said conduits having an inner wall, each of said conduits extending axially along said hollow tube, said agricultural support stake further comprising a plurality of flexible metal wires disposed within said plurality of conduits, each of said flexible metal wires being spaced from said inner wall a sufficient distance to provide a space between said flexible metal wires and said inner wall of said conduits to receive an adhesive material after the insertion of said flexible metal wires.

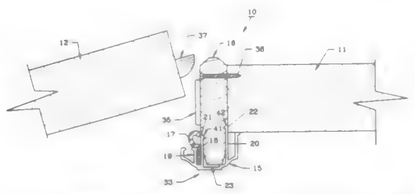
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,449
DELIVERY SYSTEM FOR AN AGRICULTURALLY ACTIVE CHEMICAL
Charles L. Beatty, Gainesville, Fla., assignor to Net/Tech International, Inc., Baldwin, N.Y.
Filed Aug. 15, 1991, Ser. No. 745,635
Int. Cl.[5] A01G *29/00*
U.S. Cl. 47—48.5 **22 Claims**



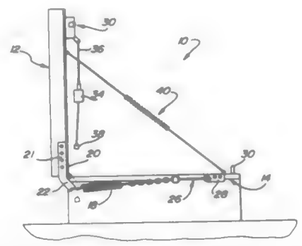
1. A delivery system for a biocide comprising:
a body portion including a first water dispersible agriculturally inert and essentially nontoxic composition containing an amount of the biocide effective to substantially terminate the functioning of a significant number target agricultural pests upon application of said biocide to a substrate via the delivery system, said body portion having a predetermined size and a predetermined shape; and
a protective coating, about said body portion, of a second water dispersible agriculturally inert and essentially nontoxic composition,
wherein at least one of said first or second water dispersible compositions includes a cellulose ether, stearic acid or one of its related salt compositions and cellulose fiber.

5,335,450
ASTRAGAL
Brad I. Procton, High Point, N.C., assignor to Endura Products, Inc., Greensboro, N.C.
Filed Jul. 14, 1993, Ser. No. 91,772
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—368 **3 Claims**



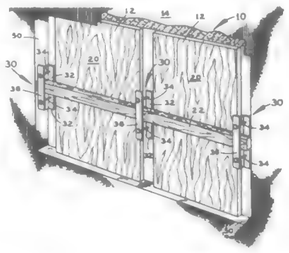
1. In an astragal having an extruded exterior portion which clads a wooden interior portion, the improvement comprising: a pair of substantially parallel extending center walls of unequal length, said center walls attached to said exterior portion to form a channel therebetween, said channel being offset from the center of said exterior portion , said center walls configured to receive said interior portion therebetween, each of said center wall members having a barbed terminal end, said wooden interior portion having a exposed and clad sections, said clad section for inserting between said center walls, and said clad section having a lesser width than said exposed section, said clad section having a rounded front end to expedite insertion of said clad section between said center walls, said clad section having two grooves at unequal distances from said rounded front end for receiving said barbed terminal ends, each of said barbed terminal ends having a biased interior face to expedite reception of said clad section of said wooden interior portion upon assembly of said astragal.

5,335,451
INSULATED SMOKE DOORS FOR COOLER/FREEZER APPLICATIONS
Frank C. Druzynski, Daytona Beach, Fla., assignor to Aluma Shield Industries, Inc., Daytona Beach, Fla.
Filed Oct. 29, 1992, Ser. No. 968,440
Int. Cl.[5] E05F *1/08*
U.S. Cl. 49—379 **14 Claims**



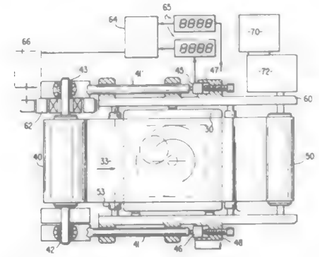
1. A heavily insulated smoke hatch door for a cooler or freezer, said smoke hatch door comprising:
a frame disposed within an opening in said cooler or freezer, said frame defining a chamber in communication with the interior of said cooler or freezer;
a heavily insulated door plug having one end pivotally secured to said frame, said door plug moveable between an open position and a closed position;
extension spring means for urging said door plug into said opening position, said extension spring means disposed outside of said chamber defined by said frame and outside of said cooler or freezer, said extension spring means coupled with said pivot end of said door plug and said frame;
latching means for holding said door plug in said closed position against the urging of said extension spring means; and
a gasket disposed between said door plug and said frame when said door plug is in said closed position, said gasket operable to seal said opening in said cooler or freezer.

5,335,452
HURRICANE PANEL APPARATUS
Alva R. Taylor, 206 SE. 10th St., Apt. 101, Dania, Fla. 33004
Filed Aug. 2, 1993, Ser. No. 100,447
Int. Cl.[5] E06B *3/32*
U.S. Cl. 49—463 **16 Claims**



1. A storm shutter apparatus for protectively covering openings in buildings such as windows and doors, comprising:
a panel member for fitting over a building opening,
a brace member having an end and extending across said panel member,
means for removably securing said end of said brace member to said building adjacent to said building opening, said means comprising an anchor member for attaching to said building, two spaced-apart leg members extending from said anchor member for receiving between them said end of said brace member, a retaining member removably secured over said end of said brace member for retaining said end between said leg members.

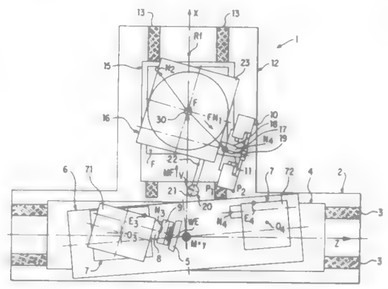
5,335,453
POLISHING MACHINE HAVING A TAUT MICROABRASIVE STRIP AND AN IMPROVED WAFER SUPPORT HEAD
André Baldy, Seyssins; Gérard Barrois, Le Fontanil; Henri Blanc, Saint Julien de Ratz, and Marcel Dominiak, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Continuation of Ser. No. 893,057, Jun. 3, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,120
Claims priority, application France, Jun. 6, 1991, 91 06866; Jun. 6, 1991, 91 06869
Int. Cl.[5] B24B *21/04, 7/22*
U.S. Cl. 51—67 **14 Claims**



1. A polishing machine comprising: a taut microabrasive strip positioned above a rigid planar upper face of a fixed polishing disk between a delivery roll and a receiving roll, the delivery roll comprising means for exerting thereon a resistant torque, and the receiving roll being controlled by a motor;
a support head for supporting a sample to be polished with a face of the sample to be polished facing the abrasive strip, the sample support head comprising a rigid part and a flexible disk made from a flexible material having a certain thickness, said flexible disk being fixed to said rigid part and receiving said sample to be polished; and
means for displacing the sample support head in a circular translatory movement, the rigid part of the sample support head being connected by a self-aligning bearing and a vertical shaft to said displacing means.

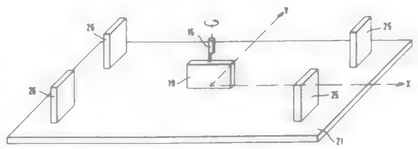
5,335,454
PROCEDURE FOR THE NUMERICAL CONTROL OF A WORKPIECE ON A GRINDING MACHINE
Anton Ilek, Eggersriet; Hugo Thurnherr, St. Gallen, and Emil Eugster, Appenzell, all of Switzerland, assignors to L. Kellenberger & Co. AG, St. Gallen, Switzerland
Filed Oct. 19, 1992, Ser. No. 961,818
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.75 **13 Claims**

1. A procedure for the numerically controlled processing of a workpiece on a grinding machine having a workholder for the workpiece as well as a wheelhead equipped with a grinding wheel, the wheelhead being pivoted on a wheelslide and able to be shifted together with the wheelslide in relation to the workholder, comprising
detecting positions of a set of points situated within a working range of the grinding machine,
converting coordinates of the set of points into basic data for a processing program of the grinding machine, and
taking the basic data of the coordinates of the set of points into account while the workpiece is processed,
wherein a first gauge is attached to the wheelhead, or optionally attached to a housing of the wheelhead, and to a measuring device in at a zero (M) of the machine,
wherein a spherical measuring head of the first gauge presents a measuring point (V) for detecting an initial position of the spherical measuring head in a coordinate system (X,Z) of the machine,
wherein coordinates of an existing position of the spherical measuring head, are detected with the aid of the measuring device,



wherein subsequently a control unit, being a component part of the grinding machine, enables an end position of the spherical measuring head to be detected where the measuring point (V) of the spherical measuring head would be if the wheelhead, which can be swivelled around a swivel axis (F), is swivelled through a specified angle, whereby the measuring point (V) passes through a displacement path (B) and,
wherein a check is performed to verify whether there is any discrepancy between an actual position of the spherical measuring head and the end position of the spherical measuring head.

5,335,455
OSCILLATING GRINDER
Joao Bergner, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 5, 1993, Ser. No. 58,497
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1992, 4221029
Int. Cl.[5] B24B *23/00*
U.S. Cl. 51—170 MT **11 Claims**



1. Oscillating grinder comprising
a housing;
a drive motor mounted in the housing and operable to provide a rotary motion;
a grinder plate connected with the housing by at least one elastic supporting means;
an eccentric device connected to the drive motor for converting the rotary motion of the drive motor into a motion of said grinder plate, said eccentric device comprising an

VOL 1165 ISS 2 AG 9 1994 UMI

eccentric element driven rotatably by the drive motor; and

transmission means comprising a transmission element connected between the eccentric element and the grinder plate,

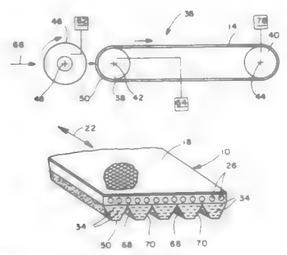
wherein said transmission element has angular moments of inertia transverse to a first predetermined direction and angular moments of inertia in said first predetermined direction, said angular moments of inertia of said transmission element transverse to said first predetermined direction are small compared to said angular moments of inertia of said transmission element in said first predetermined direction; and said at least one supporting means has angular moments of inertia transverse to a first predetermined direction and angular moments of inertia in said first predetermined direction, and said angular moments of inertia of said at least one supporting element transverse to said first predetermined direction are large compared to said angular moments of inertia of said at least one supporting element in said first predetermined direction, so that a displacement of said eccentric element in said first predetermined direction is completely transmitted to said grinder plate, but a displacement of said eccentric element in a second predetermined direction transverse to said first predetermined direction is no more than incompletely transmitted to said grinder plate.

5,335,456

METHOD OF FORMING RIB SURFACES ON A POWER TRANSMISSION BELT

Kyoichi Mishima, Kobe, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Sep. 16, 1992, Ser. No. 945,737
Claims priority, application Japan, Sep. 20, 1991, 3-270208
Int. Cl.[5] B24B *19/02*
U.S. Cl. 51—281 R **26 Claims**



1. A method of forming a rib on a power transmission belt, said method comprising the steps of:

providing an endless belt body having an elastic material to define at least a part of a longitudinal rib on a completed power transmission belt;

providing a grinding wheel with a peripheral cutting surface,

said peripheral cutting surface having a radius;

rotating the grinding wheel in a first rotational direction;

pressing the peripheral cutting surface of the grinding wheel against the belt body and grinding the body to define a rib thereon with an exposed surface defined by the elastic material; and

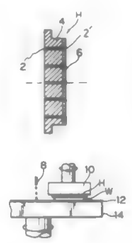
increasing the rotational velocity of the peripheral cutting surface amount calculated based on cumulative grinding time to maintain the rotational velocity of the peripheral surface at a predetermined relationship to cumulative grinding time to compensate for wear on the grinding wheel that alters cutting characteristics of the cutting surface regardless of whether or not the radius of the cutting surface has changed appreciably.

5,335,457

METHOD OF CHUCKING SEMICONDUCTOR WAFERS

Akira Matsuda; Shigeki Shudo; Noboru Shimamoto, all of Annaka; Kohichi Tanaka, Takasaki; Hiromasa Hashimoto, Fukushima, and Fumio Suzuki, Gunma, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1992, Ser. No. 966,484
Claims priority, application Japan, Oct. 28, 1991, 3-308417
Int. Cl.[5] B24B *7/22*
U.S. Cl. 51—284 R **1 Claim**



1. A method of chucking semiconductor wafers, comprising the steps of:

forming a silicone elastic layer with high flatness on a front surface of a hard substrate having fine through-holes for vacuum chucking, said silicone layer being also provided with fine through-holes, each communicating with said fine through-holes of said hard substrate wherein said silicone elastic layer has surface adhesion and contains an adhesion-donative agent, which is selected from organopolysiloxanes having SiO_2 units and $R'_3SiO_{0.5}$ units, where R′ is a hydrogen atom, a methyl, a vinyl or a phenyl group, having a molar ratio of 1 mol of SiO_2 to 0.4 to 1.5 mols of $R'_3SiO_{0.5}$ in each molecule;

holding a semiconductor wafer on said hard substrate through said silicone elastic layer by vacuum chucking from a back side of said substrate; and

discontinuing said vacuum chucking while continuing to hold said semiconductor wafer securely on said substrate only by surface adhesion of said silicone elastic layer during a polishing process to said wafer.

5,335,458

PROCESSING OF MAGNETIC HEAD FLEXURES WITH SLIDER ELEMENTS

Mark A. Stoffers, San Jose, Calif.; Dulyarat Mokorarat, Bangkok, Thailand, and Bradley T. Peceimer, Fremont, Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Sep. 23, 1991, Ser. No. 763,591
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—317 **15 Claims**

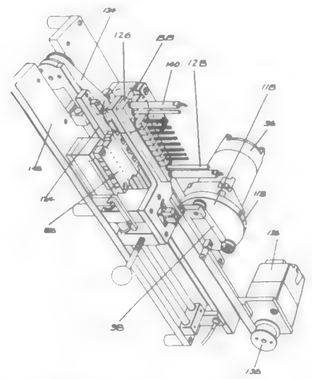
1. A method of processing magnetic head flexure assemblies supporting air bearing sliders on which thin film transducers are deposited comprising the steps of:

loading one or more transfer tools or pucks to each of a jig fixture;

loading a plurality of head flexure assemblies with said sliders to pucks;

unloading said pucks with said head flexure assemblies from said jig fixture;

securely positioning said pucks loaded with said assemblies in a lapping machine comprising a lapping plate assembly, and lapping said sliders independently with independent dead weight assemblies to obtain a predetermined geometry of the air bearing surfaces of said sliders and to provide a desired throat height for said transducers.

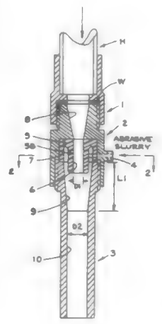


5,335,459

NOZZLE FOR ABRASIVE CLEANING OR CUTTING

Brian D. Dale, Ronda House, Terry's Lane Cookham Dene, Maidenhead; Berks, England

Filed Jul. 27, 1992, Ser. No. 919,842
Claims priority, application United Kingdom, Jul. 27, 1991, 9116263
Int. Cl.[5] B24C *5/04*
U.S. Cl. 51—439 **11 Claims**



1. A mixing nozzle for producing a high velocity jet of airborne abrasive slurry comprising:

a cylindrical shaped mixing section (2),

a cylindrical shaped wear resistant insert (5) mounted in said mixing section having a pair of coaxial cylindrical shapes (5A,5B) spaced apart to form an open end annular chamber (7) therebetween,

said cylindrical shaped insert (5) having a central cylindrical air passage (6) therethrough, said air passage having a length (L1) and a diameter (D1), wherein a ratio of the passage length to the passage diameter is at least 2.2,

an abrasive slurry inlet 4) through said mixing section (2) and said insert (5) terminating into said annular chamber (7) on a substantially tangential angle,

an outlet nozzle portion (3) coupled to said mixing section (2) and coaxially aligned to receive abrasive slurry directly from said annular chamber (7) of said insert (5) and to receive high velocity air through said air passage (6) of said insert (5), and

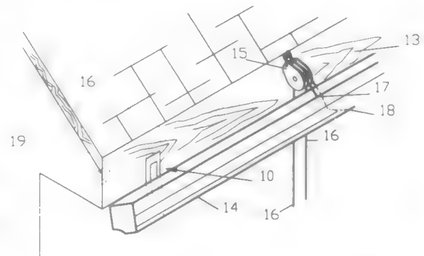
an air hose adapter (1) coupled to said mixing section (2) for introducing a high velocity jet of air into said air passage (6) of said insert (2) and for propelling a high velocity mixture of abrasive slurry and air from said outlet nozzle portion (3).

5,335,460

TILT TO CLEAN GUTTER SYSTEM

Joseph H. Smith, Jr., 31 Broadmoor La., Rotunda West, Fla. 33947

Continuation-in-part of Ser. No. 874,415, Apr. 27, 1992, abandoned. This application May 7, 1993, Ser. No. 57,634
Int. Cl.[5] E04D *13/06*
U.S. Cl. 52—11 **1 Claim**



1. A hinged hanger system for pivotably attaching a rain gutter to the fascia of a building beneath the edge of a roof comprising:

a plurality of hinged hanger rain gutter supports for mounting and supporting a rain gutter on a building, said supports having an "L-shaped" support bracket and an "L-shaped" hinge section,

said support bracket having a vertical panel with holes for mounting screws, two horizontal supports extending horizontally from said vertical panel, spaced apart, and parallel to each other and having hinge loops formed on said horizontal supports, said support bracket being affixed to said building with said mounting screws, and being sufficiently long to hold and support said rain gutter,

said hinge section having a vertical panel with holes for mounting fasteners, a horizontal support panel extending from said vertical panel, and having at least one hole for a mounting fastener, and a hinge loop formed on said horizontal panel, said hinge section being attached to said rain gutter with said mounting fasteners, and being sufficiently long to hold and support said rain gutter,

said hinge section being nested between said horizontal supports with said hinge loops in alignment with each other and, pinned together with a hinge pin, and a pulley means attached to said fascia, said pulley means having a first length of line threaded therethrough and attached to said rain gutter at a first position, and a second length of line threaded therethrough and attached to said rain gutter at a second position, whereby pulling on said first line results in tilting said gutter to a dumping position and pulling on said second line results in resetting said gutter to a receiving position.

VOL 1165 ISS 2 AG 9 1994 UMI

5,335,461

BALCONY WINDOW WITH SIDE RAILING FOR INSTALLATION IN AN INCLINED ROOF

Flemming O. Petersen, Bloustrod; Claes Lindgren, Farum; Brent Moller, Gentofte, and Stig F. Vigenberg, Gilleleje, all of Denmark, assignors to V. Kann Rasmussen Industri A/S, Soborg, Denmark

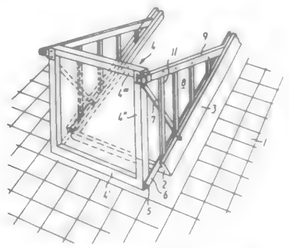
PCT No. PCT/DK91/00033, § 371 Date May 7, 1992, § 102(e) Date May 7, 1992, PCT Pub. No. WO90/09493, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 6, 1991, Ser. No. 849,382

Claims priority, application Denmark, Mar. 7, 1990, 589/90

Int. Cl.[5] E04B *7/18*

U.S. Cl. 52—72 6 Claims



1. A window for installation in an inclined roof having an actual inclination within a specified angular range of roof inclinations, the range including a smallest roof inclination, the window having a main frame (2, 3), in which an upper window frame and a bottom-hinged lower window frame (4) are journalled, which frames in their closed position are situated in extension of each other in the height direction of the main frame and together cover the main frame opening, wherein the lower window frame by opening may be turned outwards into a substantially vertical position to form a breast wall of a balcony, characterized in that handrails (9) connected between the lower window frame (4) and each of the side portions (3) of the main frame form in the open balcony position of the window the upper edge of a side railing (8), each handrail having a length suitable for installation of the window at the smallest roof inclination within the specified angular range and being designed to be cut off for adaptation of said length to the actual roof inclination after having been permanently connected in a generally horizontal position to the lower window frame (4) and an adjacent one of said side portions of the main frame (3), and vertical rail bars (11) of each side railing (8) being connected to an adjacent one of the handrails by means of pivotal joints (19), which are longitudinally displaceable in relation to the handrails (9) and can be fastened in arbitrary positions along same.

5,335,462

BUILDING STRUCTURE

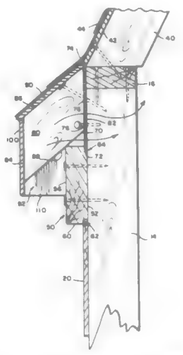
Owen H. Park, Carmel, Ind., assignor to Heartland Industries, Inc., Carmel, Ind.

Filed Jan. 14, 1993, Ser. No. 4,703

Int. Cl.[5] E04B *1/74*

U.S. Cl. 52—95 19 Claims

1. A building structure having outer walls, a roof having a portion that overhangs at least one of said outer walls and a frame for supporting said outer walls and said roof, wherein said frame includes a plurality of spaced-apart studs and a top frame member having a top edge and a bottom edge, said top frame member being secured to said studs and forming a portion of said outer wall, a wall panel secured to said studs adjacent said bottom edge of said top frame member, and a board member having first and second edges, said board member being secured to said studs wherein said first edge of said board member is disposed adjacent said top edge of said top frame member, and said second edge of said board member is disposed adjacent said roof, such that said outer wall comprises said board member, said top frame member and said wall panel,



said board member having a plurality of holes therein such that air may pass therethrough.

5,335,463

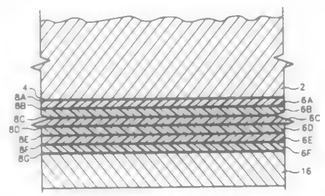
COMPOSITION FOR VIBRATION DAMPING

Per Reinhall, 10758 Riviera Pl. NE., Seattle, Wash. 98125

Filed Sep. 16, 1991, Ser. No. 760,163

Int. Cl.[5] E04B *1/98*

U.S. Cl. 52—167 R 19 Claims



1. A composition for vibration damping of a structure releasing vibrational energy through its surface, said composition comprising:

an elastromeric damping layer on the surface of the structure such that the vibrational energy released through the surface of the structure is converted into strain energy and is dissipated as heat by said damping layer, said damping layer being discontinuously attached to the surface of the structure such that the strain energy dissipated as heat by said damping layer is increased.

5,335,464

MAGNETICALLY SHIELDED ROOM WITH SLIDING DOOR

Frank W. Vanesky, Vista; Chris A. Isaacson, Poway, and Bert M. Christie, Alta Loma, all of Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Filed Nov. 14, 1991, Ser. No. 792,283

Int. Cl.[5] H05K *9/00*

U.S. Cl. 52—173.1 5 Claims

1. A magnetically shielded room, comprising:

three walls, a ceiling, and a floor, each of the three walls, ceiling, and floor having two layers of a high magnetic permeability material and two layers of an electrically conductive material;

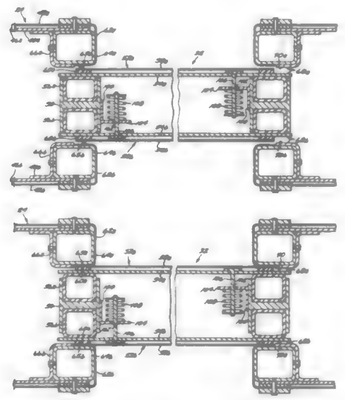
a fourth wall having a doorway therethrough, the fourth wall having an outer wall segment and an inner wall segment inwardly spaced from the outer wall segment,

the outer wall segment comprising an electrically conductive metal plate and an outwardly facing layer of a high magnetic permeability material, and

the inner wall segment comprising an electrically conductive metal plate and an inwardly facing layer of a high magnetic permeability material;

a sliding door that is disposed between the two wall segments of the fourth wall and is supported to slide parallel to the fourth wall from a first position wherein the door covers the doorway to a second position wherein the door does not cover the doorway, the door comprising an outer door segment and an inner door segment,

the outer door segment comprising an outer electrically conductive metal plate and an outwardly facing layer of a high magnetic permeability material, and



the inner door segment comprising an inner electrically conductive metal plate and an inwardly facing layer of a high magnetic permeability material; and

a pair of inflatable bladders that seal the sliding door against the fourth wall when the sliding door is in the first position, the pair of inflatable bladders including an outer bladder that forces the outer door segment outwardly to seal against the outer wall segment of the fourth wall, and an inner bladder that forces the inner door segment inwardly to seal against the inner wall segment of the fourth wall such that the respective outer conductive metal plates and outwardly facing layers of high magnetic permeability material seal against each other, and the respective inner conductive metal plates and inwardly facing layers of high magnetic permeability material seal against each other.

5,335,465

MASCARA BRUSH AND METHOD OF MANUFACTURE

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Jun. 12, 1990, Ser. No. 536,462

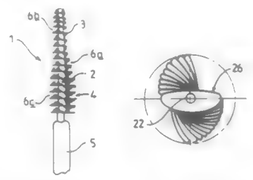
Claims priority, application France, Jul. 26, 1989, 89 10084

The portion of the term of this patent subsequent to Feb. 6, 2007, has been disclaimed.

Int. Cl.[5] A45D *40/26*

U.S. Cl. 132—218 9 Claims

1. A brush for applying mascara to the eyelashes, comprising an elongated core defined by a metal wire folded to have at least two branches between which are disposed a row of bristles and which are twisted to form spirals to hold said bristles between said branches so that said core is at least partially surrounded by bristles held to extend radially from said core and distributed in substantially regular fashion so as to form at least one crest of long bristles surrounded by shorter bristles, the ends of the bristles defining a contour in projection in a



plane perpendicular to the core, and the thickness of the crests measured at the periphery of the brush being equal to at most 3 mm, characterized in that the crests form a helix the pitch of which equals 1 to 4 times the length of the brush.

5,335,466

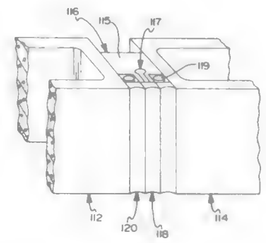
WIDE VERTICAL JOINT SEAL

Donald R. Langohr, 11538 Norway, Hartland, Mich. 48235

Filed Dec. 1, 1992, Ser. No. 984,861

Int. Cl.[5] F04B *1/62;* E04F *15/14*

U.S. Cl. 52—396.04 8 Claims



1. A seal for effecting a joint in a gap between adjacent substrates of a structure, the seal comprising:

(a) a backer comprising a planar member for insertion into the gap and for retention in the gap and for retention of the seal within the gap,

(b) a keyway disposed partly within the backer and extending substantially the length of the backer, and

(c) a cured sealant, the cured sealant being disposed upon the keyway and the backer.

5,335,467

COMPACT TRUSS SYSTEM

Dave Oberman, 3609 Paseo del Campo, Palos Verdes Estates, Calif. 90274, and Christopher L. Teuber, 919 Palms Blvd., Venice, Calif. 90291

Continuation-in-part of Ser. No. 947,161, Sep. 18, 1992, Pat. No. 5,237,792. This application Jun. 29, 1993, Ser. No. 86,172

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] E04H *12/18*

U.S. Cl. 52—645 5 Claims

1. A truss system comprising:

first and second lateral members;

first and second end members connected to said lateral members;

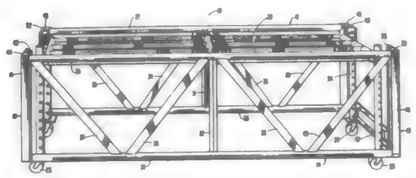
a platform for mounting components connected to said lateral and end members and adapted to move vertically relative to said members;

a set of legs adjustably mounted to said platform and mem-

VOL 1165 ISS 2 AG 9 1994 UMI

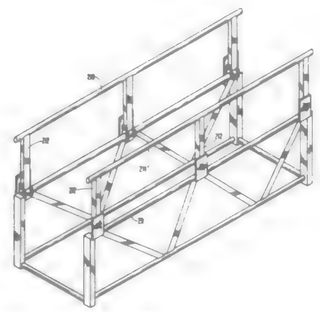
bers, said legs movable from a contracted to an extended position;

a set of casters, one caster connected to each of said legs; and



bumper means for absorbing shock connected to said legs and adapted to engage a portion of said end members when said legs are contracted.

5,335,468
COMPACT TRUSS SYSTEM
Dave Oberman, 3609 Paseo del Campo, Palos Verdes Estates, Calif. 90274, and Christopher L. Teuber, 919 Palms Blvd., Venice, Calif. 90291
Continuation-in-part of Ser. No. 947,161, Sep. 18, 1992, Pat. No. 5,237,792. This application Jan. 29, 1993, Ser. No. 86,175
Int. Cl.[5] E04H *12/18*
U.S. Cl. 52—645 **4 Claims**



1. A truss system comprising:

opposing first and second lateral members, each of said members having two spaced apart longitudinally extending beams connected to each other by cross-beams;

two end members, one each connected to an opposite longitudinal end of said first and second lateral members, each end member having a lateral beam bridging the two lateral members and forming with the end members a U-shaped construction when viewed from an end of the truss system;

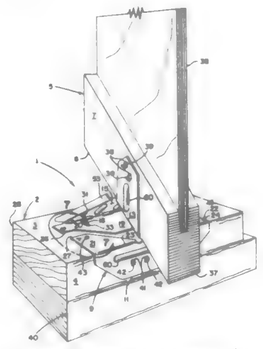
a platform positioned between and connected to said lateral members and vertically moveable relative to the lateral members for mounting components;

extensions connected to each of said lateral member, each of said extensions being mounted to the uppermost of said spaced apart longitudinally extending beams and including an additional longitudinally extending beam parallel to and spaced from the uppermost of said spaced apart longitudinally extending beams of the lateral members;

pivotal support arms connected at one end to one of the uppermost of said spaced apart longitudinal extending beams of the lateral members and at the other end to one of said additional longitudinally extending beams; and

means for mounting said support arms for allowing said support arms to pivot between a horizontally disposed closed position and a vertically disposed open position.

5,335,469
RAFTER TO PLATE CONNECTION
Todd W. Stuart, Castro Valley, Calif., assignor to Simpson Strong-Tie Company, Inc., San Leandro, Calif.
Filed Oct. 13, 1992, Ser. No. 960,002
Int. Cl.[5] E04B *1/36*
U.S. Cl. 52—655.1 **5 Claims**



1. A rafter to plate connection comprising:

a. a wood top plate having an upper surface and an outside edge surface;

b. a wood rafter having a bottom surface and first and second side surfaces and;

c. a variable pitch connector including:

1) a rafter seat dimensioned to receive a portion of said bottom surface of said wood rafter,

2) a fixed base member joined to said rafter seat along a fixed base bend line, and dimensioned and positioned in registration with a portion of said outside edge surface of said wood top plate,

3) first and second side members joined to said rafter seat and dimensioned for registration with said first and second side surfaces of said wood rafter,

4) an adjustable base member joined to said rafter seat along a rafter seat bend line and having a lower end in contact with said upper surface of said wood top plate;

d. plate edge fastener means inserted through and connecting said fixed base member to said outside edge surface of said wood top plate;

e. First top plate fastener means connecting said adjustable base member to said upper surface of said wood top plate;

f. rafter fastener means connecting said wood rafter respectively to said side members;

g. First and second fixed base extension members joined to said fixed base member along bend lines; and

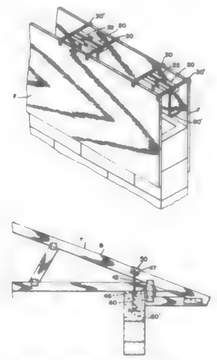
h. second top plate fastener means connecting said first and second fixed base extension members to said upper surface of said wood top plate.

5,335,470
ADJUSTABLE BEAM HOLDER
Gustavo O. Alvarez, 1705 W. 42 St., #102, Hialeah, Fla. 33012
Filed Jan. 28, 1993, Ser. No. 10,046
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—699 **5 Claims**

1. An adjustable beam holder adapted to be used with parallel spaced apart forming boards having upper edges aligned with respect to each other to define a plane and said holder being adapted to securely hold a truss assembly having a plurality of beams, comprising:

A) an elongated case member having two ends and said case member being defined by top, lateral and bottom walls defining a space therein and said top wall includes a longitudinally extending slot having an enlarged opening;

B) two detachable arm members transversely disposed across said case member and said detachable arm members adapted to rest over the upper edges of said forming boards;

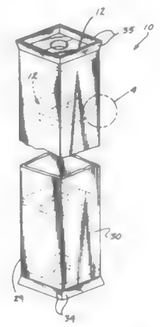


C) anchorage means rigidly mounted to said bottom wall and said anchorage means extending perpendicularly and away from said bottom wall;

D) clamp means adapted to engage one of said beams of said truss assembly; and

E) fastening means for urging said clamp means towards said case member and said fastening means being removably and slidably mounted to said case member.

5,335,471
COLUMN ENCLOSING KIT
Daniel J. Kupiec, 49 Memorial Dr., Feeding Hills, Mass. 01030
Filed Mar. 8, 1993, Ser. No. 27,654
Int. Cl.[5] E04C *3/30*; E04B *1/94*
U.S. Cl. 52—727 **4 Claims**



1. A column enclosing kit, comprising,

a plurality of collar pairs arranged for securement about a column member in a spaced parallel relationship, wherein each of the collar pairs includes a first collar and a second collar, and

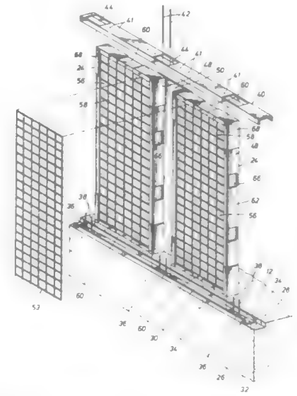
the first collar and the second collar include respective first and second confronting mirror image semi-cylindrical recesses arranged to receive the column member therewithin, the first collar and the second collar having respective first and second collar front walls arranged for facing contiguous communication relative to one another, with the first collar front wall including the first semi-cylindrical recess directed therewithin, and the second collar front wall having the second semi-cylindrical recess directed therewithin, and the first and second collars having first and second collar rear walls, and first and second collar side walls, and

a first cover plate arranged for mounting to one of the first and second collar side walls, and a third cover plate arranged for securement to a further one of the first and second collar side walls, and

a second cover plate arranged for securement to the second collar rear wall, and a fourth cover plate arranged for securement to the first collar rear wall, and

cover plate fasteners directed through the first, second, third, and fourth cover plates into the first and second collars.

5,335,472
CONCRETE WALLS FOR BUILDINGS AND METHOD OF FORMING
Charles N. Phillips, 8135 Jackrabbit Rd., Houston, Tex. 77095
Filed Nov. 30, 1992, Ser. No. 983,305
Int. Cl.[5] E04C *3/30*
U.S. Cl. 52—743 **16 Claims**



1. A method of forming a vertical wall for a concrete building including a plurality of prefabricated modules, said method comprising the following steps:

prefabricating a plurality of generally similar modules for the vertical wall with each prefabricated module having an outer frame of a rectangular shape with a layer of insulation material therein, said outer frame including a pair of spaced parallel side members;

providing a pair of vertically spaced horizontally extending support members for the vertical wall at the construction site to define upper and lower module support members;

placing a pair of said prefabricated modules in a side by side vertical relation between said upper and lower module support members with adjacent side members of said modules spaced horizontally from each other a substantial predetermined distance to form a space for a concrete column;

providing a separate backing member to span the space between said adjacent side members, and securing said

VOL 1165 ISS 2 AG 9 1994 UMI

backing member to said adjacent side members of the pair of prefabricated modules; and

applying concrete from one side of the modules against said modules and against said backing member to cover said modules with concrete and to form a concrete column in the space between said adjacent side members of said modules.

5,335,473

TONGUE AND GROOVE BOARD PRODUCT

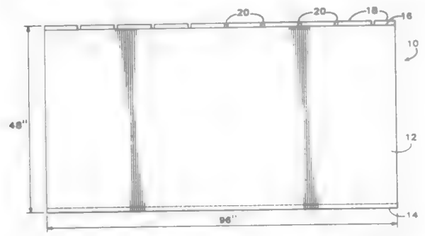
Peter D. Chase, Houlton, Me., assignor to Louisiana Pacific Corporation, Hayden Lake, Id.

Division of Ser. No. 746,228, Aug. 15, 1991, Pat. No. 5,182,892. This application Sep. 4, 1992, Ser. No. 940,977

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] **E04B** *1/00*

U.S. Cl. 52—745.08 **20 Claims**



1. A method for making a tongue and groove board comprising the steps of:

forming a tongue and groove board having first and second major surfaces, a first and second laterally-extending end, a first longitudinally-extending edge including means defining a longitudinally-extending groove extending inwardly of said first longitudinally-extending edge between said first and second major surfaces, and a second longitudinal edge including means defining a longitudinally-extending protruding tongue for interconnectingly engaging a grooved edge of an adjacent tongue and groove board, said protruding tongue having an outer portion including upper and lower longitudinally-extending surfaces; and

forming in at least one of said first and second laterally-extending ends at least one opening, each said opening extending through said tongue and groove board from said longitudinally-extending upper surface to said longitudinally-extending lower surface for providing at least one drain path for water to drain by gravity from said first major surface downwardly through each said opening, thereby preventing an accumulation of water on a tongue and groove board interconnectingly engaged with an adjacent tongue and groove board.

5,335,474

APPARATUS FOR SUPPLYING CONTAINERS TO A SEALING DEVICE

Heinz Rüetschi, Suhr, and Hansrudolf Hediger, Aarau, both of Switzerland, assignors to Ferrum AG, Rupperswil, Switzerland

Filed Nov. 19, 1992, Ser. No. 979,618

Claims priority, application Switzerland, Nov. 27, 1991, 3469/91-4

Int. Cl.[5] **B65B** *7/28*

U.S. Cl. 53—282 **8 Claims**

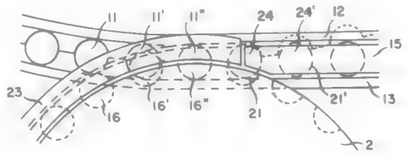
8. An apparatus for supplying lids to metallic or plastic containers filled by a filling device and transporting said containers with lids thereon to a sealing device for sealing the lids onto said containers, comprising:

a) a lid supply means (2) arranged in juxtaposition to said filling device (1) at a transfer area (5) for said containers whereby lids are placed on said containers, said lid supply means being a star wheel having an outer radius;

b) an outer, arcuate lid guide (23) for guiding the lids (16″) from said star wheel into position for covering the containers (11″), said lid guide having an inner radius corresponding approximately to said outer radius of said star wheel at said container transfer area (5), said lid guide having an inner area and said inner area having a slot (22) on a side of the path of said lids;

the star wheel of said lid supply means having retaining springs (26) located in a perimeter of said star wheel on the side of the lid path opposite to said slot (22) in said lid guide so as to laterally retain said lids;

said slot (22) having a downwardly widened portion (22′) at said container transfer area whereby the lids slide along said widened area onto the containers;



c) a conveying unit (7) for conveying said containers (11) having lids placed thereon from said container transfer area to said sealing device (4), said conveying unit including:

A) two container guides (12,13) for guiding said containers to said sealing device,

B) drivers (9) for driving said containers, each driver including an arm (20) for engaging a container, and

C) a movable support for supportingly moving said containers in conjunction with said drivers between said container transfer area and sealing device, said movable support comprising a horizontal plane surface defined by a top stringer of a conveyor belt;

said sealing device being spaced from both said filling device and said lid supply means.

5,335,475

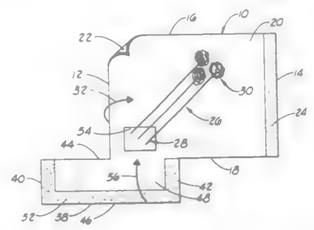
METHOD FOR WRAPPING A FLORAL GROUPING WITH WATER HOLDING AND RELEASING MATERIAL

Donald E. Weder, and Joseph G. Stracter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Filed Jul. 30, 1992, Ser. No. 922,293

Int. Cl.[5] **B65B** *11/02, 11/48, 25/02, 55/22*

U.S. Cl. 53—397 **73 Claims**



1. A method for wrapping a floral grouping comprising:

providing a sheet of material;

providing the floral grouping having a bloom end and a stem end;

providing a water holding and releasing material capable of holding water and releasing the water over a period of time;

disposing the water holding and releasing material on the sheet of material;

disposing the floral grouping on the sheet of material; and

wrapping the sheet of material about the floral grouping with the sheet of material covering at least a portion of the floral grouping to form a wrapper wrapped about at least portion of the floral grouping and with the water holding and releasing material being disposed in the wrapper in communication with at least a portion of the floral grouping.

5,335,477

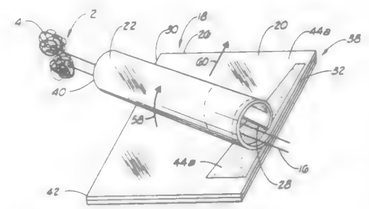
METHOD OF WRAPPING A FLORAL GROUPING

Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Jul. 30, 1992, Ser. No. 922,294

Int. Cl.[5] **B65B** *11/56, 61/06*

U.S. Cl. 53—399 **16 Claims**



1. A wrapping method, comprising the steps of:

providing a wrapping material, comprising:

a pad, comprising a plurality of sheets of material having a top sheet of material with a next sheet of material disposed thereunder and all other sheets of material in the pad being disposed under the next sheet of material, each sheet of material having an upper surface, a lower surface, and an outer periphery, each sheet of material having an adhesive disposed upon at least a portion of the upper surface of the sheet of material, the adhesive having portions of varying tack, the adhesive disposed upon each sheet of material such that at least one portion of the adhesive has a lesser tack while at least one other portion of the adhesive has a greater tack, the portion of the adhesive having a lesser tack having a greater releasability and the portion of the adhesive having a greater tack having a lesser releasability, the plurality of sheets of material connected together via the adhesive disposed thereon and the plurality of sheets of material cooperating to form the pad of sheets of material;

providing a floral grouping having a flower portion and a stem portion;

disposing the floral grouping on the upper surface of the top sheet of material such that the stem portion is disposed adjacent the portion of the adhesive with greater tack and lesser releasability;

wrapping the top sheet of material about the floral grouping by rolling the top sheet of material and the floral grouping in a direction permitting the portion of the adhesive with greater tack and lesser releasability on the top sheet of material to be wrapped adjacent the stem portion of the floral grouping, the portion of the adhesive with greater tack and lesser releasability adhesively connecting to a portion of the top sheet of material, thereby securing said portion of the top sheet of material about the stem portion and simultaneously releasing the wrapped portion of the top sheet of material from a portion of the next sheet of material and the adhesive having greater tack and lesser releasability thereupon, and permitting the portion of the adhesive having lesser tack and greater releasability to adhesively connect to a portion of the top sheet of material during wrapping, thereby securing this portion of the top sheet of material loosely about the flower portion, thereby forming a wrapper containing the floral grouping; and

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5,335,476

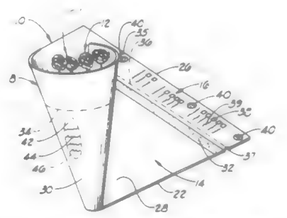
SHEETS AND SHEET ROLLS OF WRAPPING MATERIAL HAVING INFORMATION SELECTABLE BY CHOICE BLOCKS

Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 979,510, Nov. 19, 1992, and Ser. No. 965,585, Oct. 23, 1992, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 28, 1993, Ser. No. 68,482

Int. Cl.[5] **B65B** *25/02, 11/02, 5/06, 47/04*

U.S. Cl. 53—397 **24 Claims**



1. A method of wrapping objects with a sheet of material, the steps of the method comprising:

providing a sheet of material having a wrapping area and a detachable label area, the label area having a plurality of choice blocks with an information area corresponding to each one of the choice blocks, the wrapping area having a bonding material disposed thereupon for securing the wrapping area around the objects;

placing the objects upon a medial portion of the wrapping area; and

wrapping the wrapping area of the sheet of material about the objects with the bonding material lapped over the wrapping area and the label area to the outside.

VOL 1165 ISS 2 AG 9 1994 UMI

disconnecting the wrapper containing the floral grouping from the pad by lifting the top sheet of material forming the wrapper from the next sheet of material and the portion of the adhesive having lesser tack and greater releasability disposed thereupon, thereby facilitating both the release of the wrapper from the pad and simultaneously protecting the wrapped floral grouping from damage by providing easier releasability during disconnection of the wrapper from the pad.

5,335,478

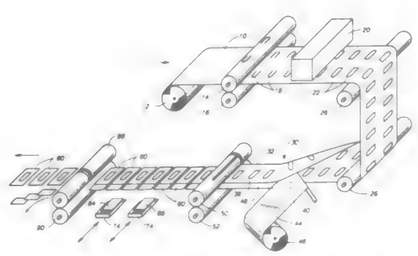
MULTI-COMPARTMENT DISPENSER POUCH AND METHOD OF MAKING

Arthur N. Aronsen, 24 La Espiral, Orinda, Calif. 94563

Filed Jan. 8, 1993, Ser. No. 2,253

Int. Cl.[5] **B65B** *3/02, 9/08*

U.S. Cl. 53—412 **5 Claims**



1. A method of forming a flexible dispenser pouch having two compartments containing product, at least one of said compartments containing a sheet material product, said dispenser pouch having opposed, flexible outer walls having peripheral edges joined together to define a closed interior and a divider wall disposed between said outer walls and secured between said peripheral edges dividing said interior into two separate compartments containing product, said outer walls each defining a dispensing aperture communicating with one of said compartments spaced from said peripheral edges and allowing selective manual access to the compartments to dispense product therefrom, and said dispenser pouch further including a closure flap connected to each of said outer walls and selectively positionable over a dispensing aperture, said method comprising the steps of:

transporting a first web of flexible material along a predetermined path of movement;

during said transporting step, cutting said first web to form said dispensing apertures at spaced locations on said first web;

during said transporting step, folding said first web along a fold line to bring portions of said first web into overlapping relationship and form said opposed outer walls, each of said portions defining dispensing apertures;

positioning a second web between the overlapping portions of said first web to form said divider wall and divide the interior into said two compartments;

initially sealing said outer walls and said divider wall together at preselected locations thereon to form a dispenser pouch having an open end communicating with both compartments of said interior;

inserting product into both of said compartments through said open end, said inserting step for sheet material product being accomplished in sequential first and second stages, said first stage comprising supporting the sheet material product and conveying the supported sheet material product to a first location wherein the sheet material product is located at an open end communicating with a compartment and said second stage comprising pushing the sheet material product from the first location to a second location wherein said sheet material product is wholly within a compartment; and

after said inserting step, further sealing said outer walls and said divider wall to close said open end to seal product in each compartment and maintain separation between product in different compartments.

5,335,479

METHOD FOR STERILIZING A PACKAGING MACHINE, AND APPARATUS FOR PERFORMING THE METHOD

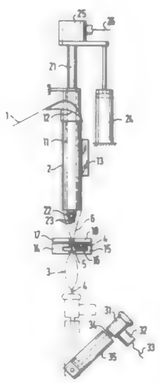
Kuno Lemke, Bietigheim-Bissingen; Guenther Voegele, Schoenaich, and Harro Stehle, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 19, 1993, Ser. No. 19,484

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1992, 4205655

Int. Cl.[5] **B65B** *55/00, 39/00, 3/02*

U.S. Cl. 53—426 **7 Claims**



1. A method for sterilizing parts of a packaging machine of the type in which a tube of packaging material is formed, a product intended for filling packages is introduced through a filling tube into an opening towards a sealed-off end portion of the tube, the tube is advanced, and the filled end portion is sealed off and cut off by a sealing and cutting device, before the machine is put into operation and before changing to a different packaging material a sterilizing agent is passed through the filling tube of the packaging machine, which comprises connecting the outlet end of the filling tube to a connecting element which includes a drain, advancing the packaging material tube to below the connection of the outlet end of said filling tube to said connecting element, securing the packaging material tube about the connection element, passing a sterilizing agent through said filling tube, said connection element and said drain; subsequent to sterilizing the filling tube, the filling tube is withdrawn from the connecting element to a position above the sealing and cut-off device, sealing the packaging material tube by the sealing device and cutting the sealed packaging material tube to provide a closed end, whereby the closed end of the packaging material tube maintains a sterile condition with the filling tube.

5,335,480

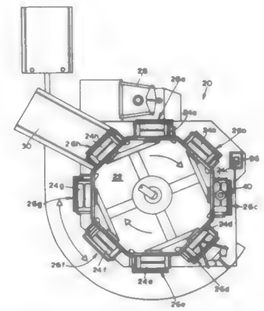
METHODS OF AND APPARATUS FOR PACKAGING A PRODUCT

Donald A. Zaeske, Cudahy; Raymond E. Ceplina, South Milwaukee; Rick V. Weber, Cudahy, and Gregory A. Tweed, South Milwaukee, all of Wis., assignors to Emmber Foods, Inc., Milwaukee, Wis.

Filed Dec. 21, 1992, Ser. No. 993,626

Int. Cl.[5] **B65B** *25/22, 29/08*

U.S. Cl. 53—431 **22 Claims**



15. A method of loading a product into a container, the method comprising the steps of:

positioning the container in alignment with a delivery apparatus and a spray apparatus wherein the delivery apparatus and the spray apparatus are movable toward and away from a travel limit;

moving the delivery apparatus and the spray apparatus into the container toward the travel limit;

operating the spray apparatus to deposit a coating on an inner wall of the container as the spray apparatus is moving toward the travel limit;

reversing the direction of movement of the delivery apparatus at the travel limit; and

operating the delivery apparatus after operation of the spray apparatus to deliver product into the container,

wherein the container comprises a heat-sealable bag adapted to be sealed by a seal bar in a certain portion of the bag after the product is loaded therein and wherein the step of operating the spray apparatus includes the step of creating a coating pattern only on portions of the bag other than the certain portion.

5,335,481

APPARATUS AND METHOD FOR AUTOMATIC PACKAGING OF PIPETTE TIPS

Glen N. Ward, 45450 Industrial Pl. #15, Fremont, Calif. 94538

Filed Jan. 22, 1993, Ser. No. 7,587

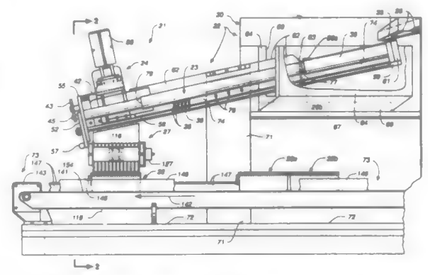
Int. Cl.[5] **B65B** *5/08, 23/22, 35/56, 35/14*

U.S. Cl. 53—446 **61 Claims**

6. An apparatus for automated loading of hollow, tapered, pipette tips into container means comprising:

a pair of tip-orienting, elongated roller means mounted in spaced apart relation by a distance sufficient to enable said tips to be supported therebetween by large diameter ends with small ends of each of said tips extending between said roller means;

a spacer assembly mounted proximate said roller means and having a plurality of spacer elements each aligned between said roller means and mounted for movement transverse to said roller means into releasable interengagement with large diameter ends of each of said tips as supported on said roller means, said spacer assembly being mounted for displacement of said pusher elements, while interengaged with said tips, to align said small ends of each of said tips in a predetermined alignment, and said spacer assembly further being mounted for movement of said spacer elements in a direction toward said roller means



while said small ends of each of said tips is in said predetermined alignment until said large ends of each of said tips passes between said roller means.

5,335,482

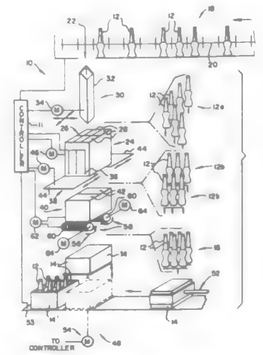
LOADING OF CONTAINERS IN CARTONS

Panagiotis Kinigakis, West Windsor; William A. McGovern, and John J. McGovern, both of Jamesburg, all of N.J., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Feb. 17, 1993, Ser. No. 18,648

Int. Cl.[5] **B65B** *5/08, 21/04, 21/18*

U.S. Cl. 53—448 **31 Claims**



1. An apparatus for continuously loading containers into cartons in oriented arrays comprising:

a supply of the containers;

a first collection means for collecting the containers in rows and columns corresponding to the array, said first collection means including a matrix of dedicated channels similar to the array;

a depositing means for individually depositing respective containers into said channels in a sequential manner from said supply of the containers whereby said matrix is repeatedly filled with the containers row by row;

a second collection means for collecting the containers in separated rows, said second collection means including respective bays for each row of the array of containers;

a first feeding means for individually and sequentially feeding each row of containers in said first collection means to an associated said bay of said second collection means

VOL 1165 ISS 2 AG 9 1994 UMI

after each associated row of said matrix is filled by said depositing means;

a presenting means for presenting a carton adjacent said second collection means; and

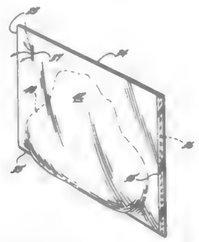
a second feeding means for feeding the separated rows of containers in said bays of said second collection means as the array into the presented carton after said bays of said second collection means are filled with the separated rows.

5,335,483

METHOD AND APPARATUS FOR PRODUCING FOAM CUSHIONS FOR PACKAGING PURPOSES

German Gavronsky, and Ramiro Guarderas, both of Stamford, Conn., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Sep. 2, 1992, Ser. No. 939,451
Int. Cl.[5] B65B *9/08*
U.S. Cl. 53—451 11 Claims



1. A method of successively forming foam filled cushions for packaging purposes of the type in which a bag containing foam precursors is added to a container so that as the foam precursors form foam, the bag forms a custom cushion adjacent objects in the container, the method comprising:

advancing a sheet of plastic film material folded longitudinally along its center in face to face contact to form one closed side edge defined by the center fold and one open side edge defined by the adjacent edges of the folded sheet along a predetermined path of travel in face to face contact from a stock supply;

periodically sealing the leading edge of the folded sheet together transversely to the path of travel to form a leading edge of a bag;

periodically introducing a foamable composition between the folded sheet into each bag being formed;

attaching an adherable strip to the open side edge of the folded sheet as the sheet is being advanced to join and seal the folded sheet together and form a sealed edge of the bag;

periodically sealing and severing the folded sheet upstream of the leading edge to form a trailing edge of the bag while severing the completed bag form the next succeeding bag being formed; and

forming a ventilation opening in each bag other than in the edge sealed with said adherable strip.

5. An apparatus for forming foam filled cushions for packaging purposes of the type in which a bag containing foam precursors is added to a package so that as the foam precursors form foam, the bag forms a custom cushion adjacent objects to be packaged, said apparatus comprising:

means for advancing a sheet of plastic film material folded longitudinally along its center along a predetermined path of travel in face to face contact from a stock supply;

means for periodically sealing the leading edge of the folded sheet together transversely to the path of travel to form the leading edge of a bag being formed while concurrently forming the trailing edge of the previous bag and while severing the previous bag from the bag being formed;

means for periodically introducing a foamable composition between the folded sheet into each bag being formed;

means for attaching an adherable strip to the open side edge of the folded sheet as the sheet is being advanced to join and seal the folded sheet together and form a sealed edge of the bag; and

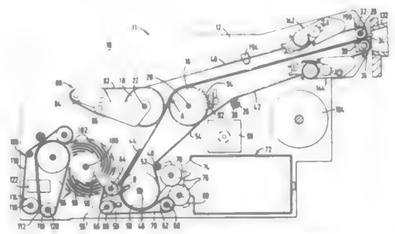
means for forming a ventilation opening in each bag other than in the edge sealed with said adherable strip.

5,335,484

SHEET HANDLING APPARATUS

David A. Hain, Monifieth, Scotland, assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 785,971, Oct. 31, 1991, abandoned.
This application Apr. 8, 1993, Ser. No. 44,928
Claims priority, application United Kingdom, Jun. 4, 1991, 9112025.3
Int. Cl.[5] B65B *27/08*
U.S. Cl. 53—582 4 Claims



1. A currency note handling apparatus including a housing and an opening in said housing comprising an exit port for providing access to a stack of currency notes at the exit port by a user for removal of said stack of currency notes and also including a container for receiving said stack of currency notes when said stack is not removed from said exit port by said user, comprising:

transport means adapted to feed said stack of currency notes along a path from said exit port to said container; and

stack banding means operatively associated with said transport means and located in the path of said transport means between said exit port and said container, said stack banding means being arranged to form a band around said stack of currency notes during feeding of said stack of currency notes from said exit port into said container, said band comprising first and second strip elements, said stack banding means including first and second dispensing means for dispensing said first and second strip elements;

said first and second dispensing means being respectively adapted to hold first and second carrier strips in the form of rolls, each of said carrier strips carrying a series of separate strip elements each having an adhesive bearing surface adhered to the respective carrier strip, said stack banding means also comprising: strip element peeling means for causing said first and second strip elements to be separately peeled away from said first and second carrier strips with the adhesive bearing surfaces of said first and second strip elements facing each other; and band forming means for bringing together first ends of said first and second strip elements downstream of a leading edge of said stack, with said stack positioned between the first and second strip elements, and for subsequently bringing together the other ends of said first and second strip elements upstream of a trailing edge of said stack;

said band forming means including first and second roll means between which said stack passes during feeding of said stack from said exit port to said container, said first and second roll means being urged resiliently together during the formation of said band and defining a nip therebetween;

said stack banding means also comprising means for bringing about relative movement between said first and second roll means, whereby said first and second roll means may be set to be in cooperative relationship for the purpose of forming said band, or may be set so as to be spaced apart, in which spaced apart setting said band is not formed, said transport means being arranged to feed said stack from a nonaccessible position to said exit port between said first and second roll means while said first and second roll means are spaced apart;

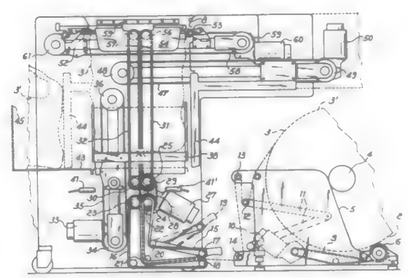
whereby said stack of currency notes is banded before being fed into said container.

5,335,485

FLEXIBLE BAG DISPENSING APPARATUS FOR USE IN SUPERMARKETS AND THE LIKE

Angelo Cappi, Modena, and Renato Rimondi, Bologna, both of Italy, assignors to A.W.A.X. Progettazione E Ricerca S.R.L., Vignola, Italy

Continuation of Ser. No. 613,234, Nov. 14, 1990, abandoned.
This application Jul. 31, 1992, Ser. No. 924,367
Claims priority, application Italy, Nov. 21, 1989, 22456 A/89
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] B65B *41/12, 43/26, 67/12*
U.S. Cl. 53—570 19 Claims



1. Apparatus for feeding a single flexible bag with handles and lateral pleats to an article-receiving station from a continuous web of successively joined, preformed bags disposed so that the bottom of each bag in the web is frangibly attached to the handles at the top of the next following bag in the web and wound about a central core (4) so as to form a reel (1) of the web, said apparatus comprising:

means for delivering the web to the article receiving station with the top of each bag downstream of the bottom of each respective bag;

first means for isolating a single bag portion of said continuous web corresponding to a single leading bag, for detaching said single bag portion from said continuous web (2) by retracting said continuous web from said leading bag to create a single detached leading bag (3), and for delivering said single, closed, detached leading bag to the article-receiving station so that the top of the leading bag is delivered to the article receiving station prior to the bottom of said bag, said first means comprising a pair of cooperating lower drive belt units (15, 16) arranged to contact opposite faces of said web; and

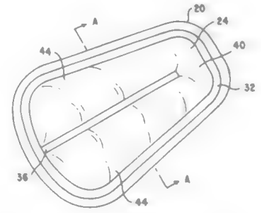
second means at the article receiving station for opening the closed, detached leading bag (3) delivered by said first means and for maintaining the detached leading bag in an open condition at the article-receiving station to enable the selective introduction of articles into the open bag, said second means including a pair of opposed and relatively movable grippers (52, 53) operable for grasping opposed sides of the detached leading bag so as to open the bag and then maintain the open condition of the bag as the bag is filled with articles.

5,335,486

APPARATUS AND METHOD FOR PRODUCING FLUID-CONTAINING ENVELOPES

W. Mark Davis, Lewisville, Colo., assignor to Alden Laboratories, Inc., Boulder, Colo.

Filed Oct. 21, 1992, Ser. No. 964,453
Int. Cl.[5] B65B *3/02, 3/17, 43/00*
U.S. Cl. 53—452 43 Claims



1. A multiple station assembly for producing at least one enclosure from at least one section of material to provide at least partially superimposed first and second layers, said at least one enclosure having a fluid retained therein, said assembly comprising:

a support for said at least one section of material, wherein said first layer is positionable between said support and said second layer;

first means for positioning said support at a first station, wherein a first means for joining joins said first and second layers together to define at least a portion of a perimeter of said at least one enclosure;

means for maintaining at least a portion of each of said first and second layers in a predetermined position on said support, wherein said first means for joining comprises said means for maintaining; and

second means for positioning said support at a second station in a predetermined position, said second station comprising means for introducing a fluid between said first and second layers, wherein said fluid is introduced while said at least a portion of said first and second layers is maintained in said predetermined position on said support.

5,335,487

ENGINE SPEED CONTROL APPARATUS FOR A WORKING VEHICLE

Masatake Murakawa; Akira Minoura; Kazuaki Kurohara; Ryozo Imanishi; Nobuyuki Yamashita, and Eriya Harada, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Mar. 4, 1993, Ser. No. 26,368
Claims priority, application Japan, Mar. 6, 1992, 4-049444; Jun. 25, 1992, 4-167342; Dec. 24, 1992, 4-343041
Int. Cl.[5] A01D *34/00*
U.S. Cl. 56—10.5 19 Claims

1. A rotating rate control apparatus for adjusting rotation of an engine of a working vehicle between a minimum rate and a maximum rate, comprising:

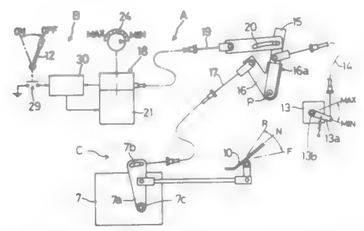
a first rotating rate adjusting means for establishing a basic rotating rate of said engine within the range of said minimum rate and said maximum rate;

a second rotating rate adjusting means shiftable between an ON position and an OFF position, said second rotating rate adjusting means being operable, when in said ON position, to set said engine to a predetermined rotating

VOL 1165 ISS 2 AG 9 1994 UMI

rate between said minimum rate and said maximum rate inclusive; and

a third rotating rate adjusting means operable, when said



second rotating rate adjusting means is in said OFF position, to adjust the rotating rate of said engine between said basic rotating rate established by said first rotating rate adjusting means and said maximum rate.

5,335,488

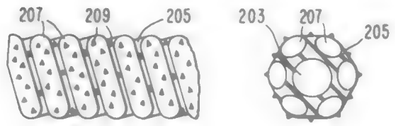
APPARATUS FOR ATTACKING ROTATING WING AIRCRAFT

Richard F. Honigsbaum, A-21 Barry Gardens, 245 Passaic Ave., Passaic, N.J. 07055

Division of Ser. No. 643,799, Jan. 18, 1991, Pat. No. 5,177,316. This application Oct. 8, 1992, Ser. No. 959,453

Int. Cl.[5] D07B *1/16*; B23D *45/00*

U.S. Cl. 57—223 **3 Claims**



1. A cable comprising:

a stretchable core;

a plurality of outer strands helically wound about said core at a helical angle; and

a rubber or rubber-like material interposed as a spacer between said outer strands and between said outer strands and said core;

wherein said helical angle is such that when said cable is acted upon by an external force at least a portion of said core is stretched before said outer strands are loaded in tension, and wherein said rubber or rubber-like material has a sufficiently high hysteresis to distribute along a length of said cable an impulsive force impacting said cable and to inhibit said cable from bouncing in response to the impulsive force impacting said cable.

5,335,489

GAS TURBINE VECTORING EXHAUST NOZZLE

Edward B. Thayer, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 9, 1993, Ser. No. 89,921

Int. Cl.[5] F02K *1/12*

U.S. Cl. 60—230 **9 Claims**

1. An exhaust nozzle for an aircraft gas turbine engine comprising:

convergent flap means defining a variable throat area;

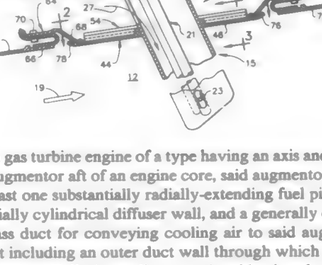
divergent flap pivot connections at the downstream end of said convergent flap means;

divergent flap means connected to said divergent flap pivot connections, and extending downstream therefrom;

ejector flap pivot connections rigidly supported from said convergent flap means outboard of said convergent flap means;

ejector flap means connected at their upstream end to said ejector flap pivot connections;

a ram air supply duct connected to deliver ram air between said divergent flap means and said ejector flap means;



vector drive means for vectoring said ejector flap means to various selected vector angles; and

link means for maintaining said ejector flap means and said divergent flap means substantially parallel to each other.

5,335,490

THRUST AUGMENTOR HEAT SHIELD

Kenneth L. Johnson, Cincinnati; Mark S. Zlatic, Wyoming; Leonard P. Grammel, Jr., Cincinnati, all of Ohio, and John A. Manteiga, North Andover, Mass., assignors to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 816,000, Jan. 2, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 84,886

Int. Cl.[5] F02K *3/10*

U.S. Cl. 60—261 **20 Claims**

1. In a gas turbine engine of a type having an axis and including an augmentor aft of an engine core, said augmentor including at least one substantially radially-extending fuel pipe and a substantially cylindrical diffuser wall, and a generally cylindrical bypass duct for conveying cooling air to said augmentor, said duct including an outer duct wall through which said fuel pipe extends radially inwardly towards said axis, a heat shield comprising:

a hollow, elongate housing enclosing said fuel pipe substantially entirely along its length; and

means for removably mounting said housing on said outer duct wall, said mounting means permitting removal of said housing by access from within said augmentor without requiring access from outside said outer duct wall.

5,335,491

COMBUSTION CHAMBER WITH AXIALLY DISPLACED FUEL INJECTORS

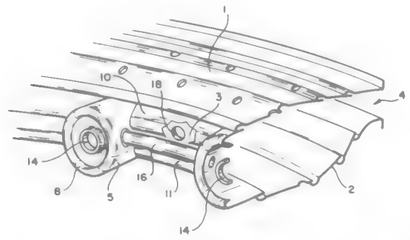
Gérard Y. G. Barbier, Morangis; Xavier M. H. Bardey, Chartrettes, and Michel A. A. Desaulty, Vert Saint Denis, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A., Paris, France

Filed Sep. 9, 1993, Ser. No. 118,249

Claims priority, application France, Sep. 9, 1992, 92 10742

Int. Cl.[5] F23R *3/48*

U.S. Cl. 60—39.37 **8 Claims**



1. A generally annular combustion chamber for a gas turbine engine, the combustion chamber having an upstream wall interconnecting generally annular inner and outer walls with a longitudinal axis extending between the forward, upstream wall and a rear, downstream end, and comprising:

a) a plurality of generally cylindrical walls extending forwardly from the upstream wall of the combustion chamber, each generally cylindrical wall having an upstream end and defining therein a combustion cavity in communication with the annular combustion chamber;

b) a first fuel injection head located adjacent to the upstream end of each generally cylindrical wall, the first fuel injection heads being located at a first axial position on the longitudinal axis;

c) a plurality of second fuel injection heads located adjacent to the upstream wall of the annular combustion chamber at a second axial position downstream of the first axial position; and,

d) a hollow tube connected between adjacent generally cylindrical walls upstream of the upstream wall of the annular combustion chamber such that the combustion cavities defined by the respective generally cylindrical walls are in communication with each other through the hollow tube.

5,335,492

EXHAUST GAS FILTER AND/OR A CATALYTIC CONVERTER

Herbert Zirkel, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to Schwaebische Huettenwerke GmbH, Wasseralfingen, Fed. Rep. of Germany

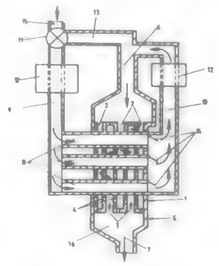
Filed Mar. 16, 1992, Ser. No. 851,617

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109227

Int. Cl.[5] F01N *3/02*

U.S. Cl. 60—298 **10 Claims**

1. A filter for the removal of harmful constituents from the exhaust gas of an internal combustion engine, having a feed duct to a filter unit made from metal materials, which form a unit penetrated by cavities through which the exhaust gas is conveyed, said filter unit having compression-moulded fibers in a form consisting of at least one of a tangled mass, braided fabric, knitted fabric, woven cloth, powder, granules or chip, and having a delivery duct for the exhaust gas emitted by said filter unit, said filter unit also functioning as a heat exchanger unit for said exhaust gas, and said filter unit is penetrated by heat exchanger pipes through which the exhaust gas flows and into which the exhaust gas can be introduced before its entry into the actual filter unit, said heat exchanger pipes being



provided with shut-off valves which can be operated individually or jointly.

5,335,493

DUAL SENSOR TYPE AIR FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

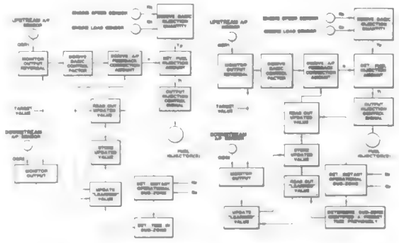
Masaaki Uchida, and Mikio Matsumoto, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 23, 1991, Ser. No. 645,975

Claims priority, application Japan, Jan. 24, 1990, 2-14632; Jan. 25, 1990, 2-13566; Mar. 7, 1990, 2-55826

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—274 **9 Claims**



1. In an air-fuel ratio feedback control system,

first sensor means;

second sensor means;

a control unit operatively connected with said first and second sensor means, said control unit comprising:

memory means containing an engine operation map which is divided into a predetermined number of sub-regions and corresponding data addresses at which data which corresponds to the sub-region can be stored;

means for comparing the output of the first sensor means with a first predetermined level and for determining when the output of the first sensor means traverses the first predetermined level;

means for reading out the data which is recorded at the memory address which corresponds to one of (a) the sub-region which was identified a predetermined time before the output of the first sensor traversed the first predetermined level, and (b) the sub-region in which the engine operation has continued to fall for the predetermined time following the output of the first sensor traversing the first predetermined limit;

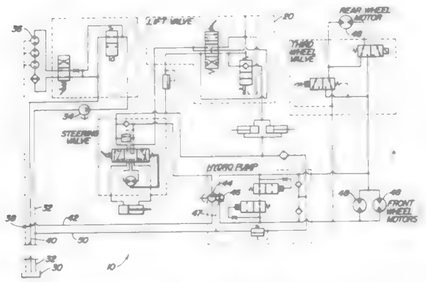
means for comparing the output of the second sensor means with a second predetermined level and for determining if the output is indicative of a mixture richer or leaner than a predetermined target ratio; and

means responsive to the output of the second sensor for

VOL 1165 ISS 2 AG 9 1994 UMI

updating the data which is read out and for storing the updated data at the address from which it was read out.

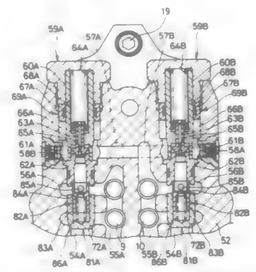
5,335,494
HYDRAULIC SYSTEM FOR REEL MOWER VEHICLES
Andrew T. Benko; James A. Swartzendruber, both of West Bend; John L. Bocksnick, Beaver Dam, all of Wis., and Gary W. Clark, Savage, Minn., assignors to Deere & Company, Moline, Ill.
Filed Jan. 21, 1993, Ser. No. 6,897
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—428 **28 Claims**



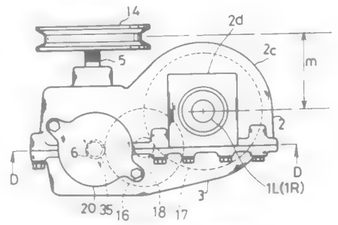
1. A hydraulic system for a vehicle adapted for operating a plurality of components, said vehicle including a power source which generates heat, said hydraulic system comprising:
a fluid reservoir located generally remotely from the vehicle power source,
an input line operatively coupled with the reservoir for drawing fluid therefrom,
a first pump means operatively coupled with the input line for receiving fluid therefrom,
a first driving means operatively coupled to receive fluid from the first pump means for driving a first vehicle component,
a branched hydraulic line for receiving fluid from the first driving means, and having first and second branches, the first branch being a first return line extending to the reservoir,
a second pump means operatively coupled with the second branch for receiving fluid therefrom,
a second driving means operatively coupled for receiving fluid from the second pump for driving a second vehicle component,
a second return line operatively coupled with the second driving means for receiving output fluid therefrom, said second return line being operatively coupled with the input line for allowing said output fluid from the second return line and second drive means to flow to the first pump means without first flowing to the reservoir.

5,335,495
BRAKE VALVE
Hitoshi Sato, Tsuchiura, and Yukio Kanno, Chiyoda, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
Filed May 13, 1993, Ser. No. 50,342
Claims priority, application Japan, Sep. 30, 1991, 3-278374
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—461 **4 Claims**

1. A fluid control system including a casing, a pair of oil passages provided in said casing and connected between a hydraulic pressure source and an actuator, a counterbalance valve located within said oil passages at positions closer to said hydraulic pressure source, a pair of relief valves located within of said oil passages at positions closer to said actuator and each provided with a floating piston to hold an opening pressure for each said relief valve at a low level for a predetermined time period, and a pair of check valves located within said oil passages at positions between one of said relief valves and said counterbalance valve to permit hydraulic pressure flow from said pressure source toward said actuator while blocking hydraulic pressure flows in the reverse direction, characterized in that said check valves are located in particular positional relations with said relief valves and arranged to restrict the flow of hydraulic pressure from said pressure source to the corresponding one of said relief valves when opened, thereby suppressing low pressure relief actions by said relief valves.

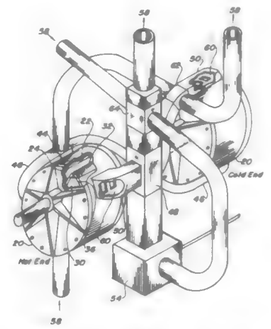


5,335,496
AXLE DRIVING APPARATUS
Toshiro Azuma; Kazuhiko Yano, and Koichiro Fujisaki, all of Amagasaki, Japan, assignors to Kanzaki Kokyukoki Mfg. Co. Ltd., Amagasaki, Japan
Filed Apr. 7, 1992, Ser. No. 864,932
Claims priority, application Japan, Dec. 18, 1991, 3-335226
Int. Cl.[5] F16D *39/00*
U.S. Cl. 60—487 **19 Claims**



1. An axle driving apparatus, comprising:
first and second casing sections joined along a junction surface to form a casing, wherein the junction surface of said first and second casing sections lies in a first plane;
a hydraulic non-stage transmission disposed within said casing having an input shaft to which engine power is transmitted from an engine and an output shaft through which said engine power is transmitted out of said transmission, wherein the longitudinal axis of said output shaft lies along said first plane;
an axle rotatably supported within one of said first and second casing sections, wherein the longitudinal axis of said axle lies in a second plane different from said first plane, wherein said casing provides a housing for both said transmission and said axle; and
a transmission means connecting said output shaft and said axle.

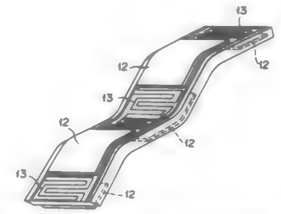
5,335,497
ROTARY STIRLING CYCLE ENGINE
Bennie D. Macomber, 2214 W. Las Flores, Ridgecrest, Calif. 93555
Filed Feb. 10, 1993, Ser. No. 971,811
Int. Cl.[5] F02G *1/04*
U.S. Cl. 60—519 **22 Claims**



1. A rotary Stirling cycle heat engine comprising:
a) at least a pair of hollow chambers oriented in parallel relationship, each having sidewalls and endwalls also a first port and a second port penetrating said sidewalls,
b) an elliptical rotor disposed within each chamber in constant rotatable contact against the chambers having movable orientation means integral therewith, for coordination position of the rotor in the chamber,
c) a crankshaft, connecting the rotors together in tandem at an opposed offset orientation, having stationary orientation means thereon interfacing with said movable orientation means for synchronizing the rotors in opposed concert,
d) a cooling heat exchanger connected between the first ports of each chamber for heat extraction,
e) a heating heat exchanger connected between the second ports of each chamber for adding heat to actuate the cycle, and
f) working fluid sealably contained at a constant volume within said chambers and heat exchangers providing the operational potential to rotate each rotor when the volume of one chamber in communication with the first ports is at a maximum condition on one side and the volume of another chamber in communication with both second ports is minimum on an opposed side with heat from the heating heat exchanger expanding the fluid and the heat extracted from the cooling heat exchanger contracting the fluid creating a volumetric divergence hence a pressure differential applying pressure on one side of the rotor which applies force to an offset portion of the crankshaft causing torque on the crankshaft producing work while sweeping the fluid around the chambers through the ports.

5,335,498
CONTRACTION-EXTENSION MECHANISM TYPE ACTUATOR
Kiyoshi Komatsu; Takehisa Mori, and Masao Takinami, all of Kanagawa, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 29, 1993, Ser. No. 10,788
Claims priority, application Japan, Jan. 30, 1992, 4-015165
Int. Cl.[5] F03G *7/06*
U.S. Cl. 60—528 **6 Claims**

1. A contraction-extension mechanism type actuator providing its own drive source and comprising a joint array having a plurality of joints comprised of a shape-memorizing alloy, said joint array further having a shape-controlling heater thermally coupled to each of the joints of said joint array.



5,335,499
MULTIPLE HYDRAULIC ACTUATORS WITH SERIES/PARALLEL OPERATION
Terrence L. Thompson, Minneapolis, Minn., and Jack W. Gresham, Armuchee, Ga., assignors to Viking Engineering & Development, Incorporated, Fridley, Minn.
Filed Sep. 24, 1992, Ser. No. 950,252
Int. Cl.[5] F15B *7/00, 11/00, 13/00*
U.S. Cl. 60—546 **10 Claims**

1. A loop having a first and a second hydraulic actuator in communication with an energy source for moving a load with hydraulic fluid and energy transferred to the actuators from the energy source, the loop comprising:
a series network for transferring hydraulic fluid between the first and the second hydraulic actuators when the actuators are disengaged from the load;
a parallel network for transferring energy in hydraulic fluid from the energy source to each of the first and the second hydraulic actuators separately when the actuators engage the load, the parallel network including means for blocking transfer of the hydraulic fluid between the first and second actuators when at least one actuator engages the load; and
a series-parallel network;
for transferring fluid from the second actuator to the first actuator and for transmitting energy in hydraulic fluid from the energy source to the first actuator when the actuators are approaching the load; and
for transferring fluid from the first actuator to the second actuator and for transferring fluid from the first actuator to a drain when the actuators are retracting from the load, the loop only switching from the series-parallel network to the parallel network when a load is applied to both of the actuators.

VOL 1165 ISS 2 AG 9 1994 UMI

5,335,500

INTERNAL COMBUSTION ENGINE WITH COMBINED PRESSURE CHARGING

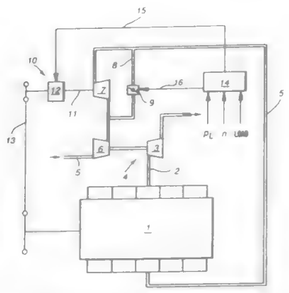
Klaus Wunderlich, Waiblingen; Franz Neubrand; Erwin Schmidt, both of Baltsmannsweiler; Hans-Wilhelm Buhl, Leinfelden-Echterdingen; Friedrich Wirbeleit, Esslingen-Rüdern, and Horst Hanauer, Althütte, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Mar. 19, 1993, Ser. No. 34,712

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1992, 4210070

Int. Cl.[5] F02B *33/44*

U.S. Cl. 60—609 3 Claims



1. An internal combustion engine comprising a turbine acted upon by exhaust gas and operable to drive a compressor in an exhaust conduit of the engine, a mechanically-driven supercharger arranged downstream of the compressor in an intake conduit of the engine and connected to the engine via a coupling device, a bypass conduit bypassing the mechanically-driven supercharger, a bypass air flow control device arranged in the bypass conduit, a speed sensor for detecting engine speed, a load sensor for detecting engine load, a control device for controlling the coupling device and the bypass airflow control device, and a pressure sensor for detecting charge-air pressure, wherein the coupling device has a speed-varying device via which a driving speed of the mechanically-driven supercharger transmitted to an engine drive shaft can be varied continuously between a maximum speed and a minimum speed, and the charge-air pressure is adjusted by the control device to a predetermined set point value as a function of the engine speed and the engine load via the bypass air flow control device and via the driving speed transmitted by the speed-varying device from the drive shaft to the mechanically driven supercharger, wherein the control device is configured such that the drive speed of the mechanically-driven supercharger is increased only when the bypass air flow control device is completely open.

5,335,501

FLOW SPREADING DIFFUSER

Jack R. Taylor, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 16, 1992, Ser. No. 976,793

Int. Cl.[5] F02C *1/00*

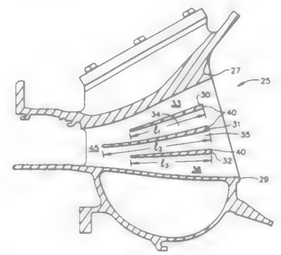
U.S. Cl. 60—751 7 Claims

1. A diffuser for a gas turbine engine having a compressor providing compressed airflow, said gas turbine engine having a longitudinal axis therethrough, comprising:

(a) an outer wall;

(b) an inner wall spaced radially inward from said outer wall;

(c) at least three circumferential splitter vanes disposed between said outer and inner walls, each of said splitter vanes being spaced radially from each other and said inner and outer walls to define a plurality of passages between said outer and inner walls for diffusing airflow channeled therethrough, wherein a middle splitter vane of said at least three splitter vanes extends further upstream than



said other splitter vanes in order to enhance the ability of the compressed airflow to flow through said passages.

5,335,502

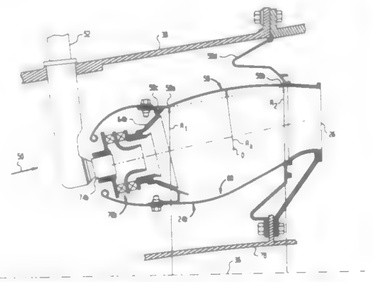
ARCHED COMBUSTOR

Hubert S. Roberts, Jr.; Adrian M. Ablett, both of Cincinnati, and Ambrose A. Hauser, Wyoming, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 942,473, Sep. 9, 1992. This application Nov. 27, 1992, Ser. No. 982,359

Int. Cl.[5] F02C *3/14*

U.S. Cl. 60—752 10 Claims



1. A gas turbine combustor having an axial centerline axis, comprising:

(a) an annular outer liner disposed coaxially about said centerline axis and having a forward end and an aft end;

(b) an annular inner liner disposed coaxially about said centerline axis and spaced radially inward from said outer liner to define a combustion zone therebetween and having a forward end and an aft end;

(c) an annular dome fixedly joined to said forward ends of said outer and inner liners having apertures for receiving circumfentially spaced carburetors;

(d) stationary casing means for supporting said inner and outer liners to inner and outer casings, respectively, said stationary casing means being positioned at said outer and inner liner aft ends, wherein compressed airflow provided to said combustor effects an axial force against said dome which is transmitted through said liners to said stationary casing means; and

(e) said outer liner having a substantially uniform thickness from said forward to said aft ends and being arcuate in a longitudinal plane from said forward to said aft ends for providing buckling resistance of said outer liner.

5,335,503

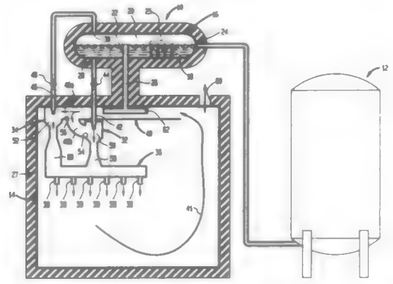
COOLING METHOD AND APPARATUS

Ron C. Lee, Bloomsbury, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Continuation-in-part of Ser. No. 896,701, Jun. 10, 1992, abandoned. This application Mar. 1, 1993, Ser. No. 24,713

Int. Cl.[5] F25D *17/02, 25/00*

U.S. Cl. 62—50.1 15 Claims



1. A method of circulating a heat transfer fluid along a circulation path to cool a heat load, said method comprising:

containing a cryogen within a pressure vessel as a saturated liquid and as a saturated vapor separated from one another by a liquid-vapor interface;

maintaining the liquid-vapor interface at a predetermined level by withdrawing excess amounts of the saturated liquid from the pressure vessel, vaporizing the excess amounts of the saturated liquid and thereafter reintroducing the vaporized saturated liquid into the pressure vessel;

introducing the cryogen, at a temperature no greater than the saturation temperature of the cryogen, into the pressure vessel;

discharging the cryogen from the pressure vessel in a form of a least one of the saturated liquid and the saturated vapor;

transferring heat from the heat transfer fluid to the cryogen after discharge thereof; and

circulating the heat transfer fluid through the circulation path so that the heat transfer fluid cools the heat load and is thereby heated and thereafter, is cooled by the cryogen discharged from the pressure vessel;

the excess amounts of the saturated liquid being vaporized by transferring further heat from the heat transfer fluid to the saturated liquid prior to the heat transfer from the heat transfer fluid to the cryogen and after the heat transfer fluid has been heated by the heat load;

the circulation of the heat transfer fluid at least promoted by converting a portion of the total available thermodynamic energy of the saturated cryogen, after discharge thereof, to circulation work.

5,335,504

CARBON DIOXIDE RECOVERY PROCESS

Charles A. Durr, Houston, Tex.; David B. Manley, Rolla, Mo., and Robert L. McKee, Houston, Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Mar. 5, 1993, Ser. No. 26,937

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—20 22 Claims

1. A process for recovering CO_2 from a mixture of light hydrocarbons, comprising the steps of:

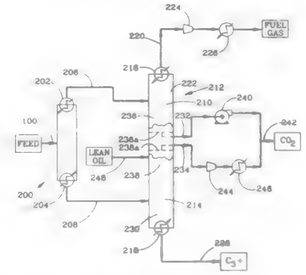
feeding the mixture to a distributive distillation zone to distill the mixture into a CO_2containing overhead stream enriched in methane and a CO_2-containing bottoms stream enriched in propane and heavier hydrocarbons;

feeding the overhead stream from the distributive zone to a first concentrating distillation zone;

withdrawing a bottoms product CO_2 stream from a stripping section of the first concentrating zone;

obtaining a CO_2-lean, methane enriched distillate from a rectifying section of the first concentrating zone;

feeding the bottoms stream from the distributive zone to a second concentrating distillation zone;



refluxing a lean oil stream to an enriching section of the second concentrating zone;

withdrawing a CO_2 distillate stream from the enriching section of the second concentrating zone; and

obtaining a CO_2-lean bottoms product from a stripping section of the second concentrating zone.

5,335,505

PULSE TUBE REFRIGERATOR

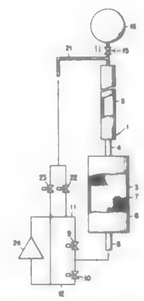
Yasumi Ohtani; Hideo Hatakeyama; Toru Kuriyama, all of Yokohama; Hideki Nakagome, Tokyo, and Yoichi Matsubara, Funabashi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 25, 1993, Ser. No. 65,900

Claims priority, application Japan, May 25, 1992, 4-132523; Sep. 18, 1992, 4-249988

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—6 18 Claims



1. A pulse tube refrigerator, comprising:

a regenerator having an inlet port and an outlet port;

a pulse tube having one end portion connected in series to the outlet port of the regenerator;

a gas compressor connected to the inlet port of the regenerator;

a first valve disposed between the discharge port of the gas compressor and the inlet port of the regenerator;

a second valve disposed between the suction port of the gas compressor and the inlet port of the regenerator;

a first valve control means for selectively opening/closing

VOL 1165 ISS 2 AG 9 1994 UMI

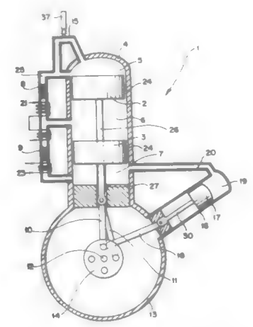
alternately the first and second valves to permit a high pressure coolant gas discharged from the discharge port of the gas compressor to be guided into the pulse tube through the regenerator and, then, to permit said coolant gas to be sucked into the gas compressor through the suction port thereof via the reverse passageway so as to generate coldness;

a third valve disposed between the other end portion of the pulse tube and the discharge port of the gas compressor;

a fourth valve disposed between the other end portion of the pulse tube and the suction port of the gas compressor; and

a second valve control means serving to open/close the third and fourth valves in relation to the opening/closing of the first and second valves.

5,335,506
REGENERATIVE HEAT PUMP
Lee Byoung-Moo, Kyonggi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Dec. 31, 1992, Ser. No. 999,400
Claims priority, application Rep. of Korea, Jan. 7, 1992, 92-65
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 **4 Claims**



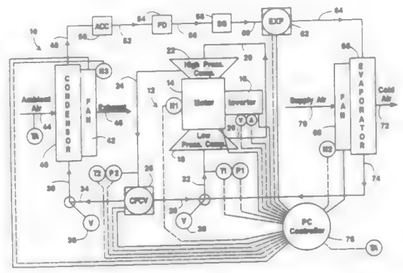
1. In a regenerative heat pump, comprising a main compartment containing a gas; heating means for heating the gas; a high displacer and a low displacer slidably disposed in said main compartment and dividing said main compartment into three chambers of different temperature; a drive mechanism connected to said high and low displacers for displacing said high and low displacers; a start-up motor connected to said drive mechanism for initially driving said drive mechanism; and a secondary compartment containing a piston; the improvement comprising:

a gas flow path interconnecting said chambers, said gas flow path including high and low temperature regenerators, and a heat exchanging unit for conducting output heat away from the heat pump;

said drive mechanism comprising a crank member, a first connecting rod connecting said high displacer to said crank member, and a second connecting rod connecting said low displacer to said crank member at a location spaced ninety degrees ahead of a location where said first connecting rod is connected to said crank member;

said main and secondary compartments forming therebetweeen and angle no greater than ninety degrees.

5,335,507
CONTROL SYSTEM FOR AN AIR CONDITIONING/REFRIGERATION SYSTEM
James W. Powell, Guilford, Conn., assignor to Ecoair Corporated, New Haven, Conn.
Division of Ser. No. 23,690, Feb. 26, 1993, Pat. No. 5,284,026, which is a division of Ser. No. 845,675, Mar. 4, 1992, Pat. No. 5,203,179. This application Nov. 12, 1993, Ser. No. 152,287
Int. Cl.[5] G01L *3/00*
U.S. Cl. 62—129 **6 Claims**



1. A method of monitoring a variable speed centrifugal compressor in a refrigeration system having a working fluid, comprising:

a) during an initiation period, accelerating rotation of said compressor while:

i) measuring the acceleration of said compressor;

ii) measuring power input to said compressor; and

iii) measuring rate of change of temperature or pressure of the working fluid at said compressor;

b) repeating step (a) to assemble a plurality of said measurements;

c) storing said acceleration, power input and working fluid rate of change of temperature or pressure measurements during said initiation period;

d) subsequent to said initiation period, accelerating rotation of said compressor while:

i) measuring the acceleration of said compressor;

ii) measuring power input to said compressor; and

iii) measuring rate of change of temperature or pressure of the working fluid at said compressor; and

e) determining all indication of deterioration of said compressor by comparing said acceleration, power input and working fluid rate of change of temperature or pressure measurements during said subsequent period with said acceleration, power input and working fluid rate of change of temperature or pressure measurements during said initiation period.

5,335,508
REFRIGERATION SYSTEM
Edward J. Tippmann, 4538 Doenges Dr., Fort Wayne, Ind. 46815
Filed Aug. 19, 1991, Ser. No. 746,886
Int. Cl.[5] F25B *7/00*
U.S. Cl. 62—129 **21 Claims**

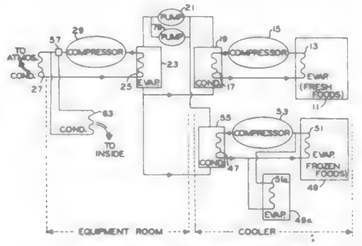
14. A refrigeration system comprising:

a refrigerated fixture for the refrigeration of foods;

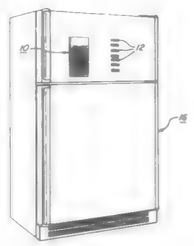
a first stage compressor, a first stage evaporator coil and a first stage condensor coil connected together in a first stage closed loop refrigeration circuit, the first stage compressor, condensor, and evaporator being located at the refrigerated fixture and the first stage evaporator coil being adapted to maintain the food in the refrigerated fixture within a desired temperature range;

a second stage compressor, a second stage evaporator coil and a second stage condensor coil connected together in a second stage closed loop refrigeration circuit, the second stage compressor, condensor, and evaporator being located in a remote environment; and

a liquid heat transfer loop extending between the refrigerated fixture and the remote environment and interconnecting the second stage evaporator and the first stage condenser in continuous communication to transfer heat from the first stage condenser to the second stage evaporator.



5,335,509
FOOD INVENTORY SYSTEM
Dianna Namisniak, and Lee Namisniak, both of 22592 Le Dana, Mission Viejo, Calif. 92691
Filed Jul. 28, 1993, Ser. No. 98,521
Int. Cl.[5] G09F *9/00*
U.S. Cl. 62—125 **23 Claims**



1. A method to ensure the consumption of an item of perishable food before the item has been held in a storage location beyond its useful storage lifetime, comprising the steps of:

providing a base unit, located near the storage location, bearing at least one numeric display which displays elapsed time;

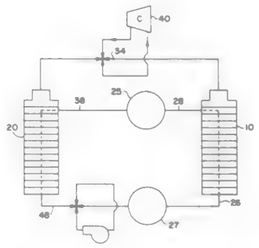
placing the item of food into the storage location;

recording the name and storage lifetime of the item of food on the base unit; and

activating the numerical display,

whereby the stored food item listed on the base unit may be safely consumed until the numeric display shows that the item has been stored beyond its safe lifetime.

5,335,510
CONTINUOUS CONSTANT PRESSURE PROCESS FOR STAGING SOLID-VAPOR COMPOUNDS
Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.
Division of Ser. No. 716,065, Jun. 17, 1991, Pat. No. 5,241,831, which is a continuation-in-part of Ser. No. 436,431, Nov. 14, 1989, Pat. No. 5,025,635. This application May 27, 1993, Ser. No. 68,662
Int. Cl.[5] F25B *17/00*
U.S. Cl. 62—106 **3 Claims**



1. An improved method of operating a mechanical or pressure driven heat pump comprising:

(a) selecting a plurality of two or more different compounds comprising a solid reactant absorbent and a gaseous reactant absorbed thereon, wherein each of said compounds has a different gaseous reactant vapor pressure, substantially independent of the concentration of the gaseous reactant and wherein at least one of said compounds is selected from the following:
$Ba\ Cl_2 \cdot 0–8\ (NH_3)$, $Sr\ Cl_2 \cdot 1–8\ (NH_3)$, $Sr\ Br_2 \cdot 2–8\ (NH_3)$,
$Ca\ Cl_2 \cdot 0–1\ (NH_3)$, $Ca\ Cl_2 \cdot 1–2\ (NH_3)$, $Ca\ Cl_2 \cdot 2–4\ (NH_3)$,
$Ca\ Cl_2 \cdot 4–8\ (NH_3)$, $Ca\ Br_2 \cdot 2–6\ (NH_3)$, $Ni\ Cl_2 \cdot 2–6\ (NH_3)$,
$Fe\ Cl_2 \cdot 2–6\ (NH_3)$, $Fe\ Br_2 \cdot 2–6\ (NH_3)$,
$Co\ Cl_2 \cdot 2–6\ (NH_3)$, $Co\ Br_2 \cdot 2–6\ (NH_3)$,
$Mg\ Cl_2 \cdot 2–6\ (NH_3)$, $Mg\ Br_2 \cdot 2–6\ (NH_3)$,
$Mn\ Cl_2 \cdot 2–6\ (NH_3)$, $Mn\ Br_2 \cdot 2–6\ (NH_3)$,
$Cu\ SO_4 \cdot 2–5\ (NH_3)$, $Zn\ Cl_2 \cdot 1–4\ (NH_3)$, or
$Na\ BF_4 \cdot 0.5–2.5\ (NH_3)$,

(b) locating a first set of the said different compounds in a first reactor and a second set of the said different compounds in a second reactor, wherein the compounds of each of said first and second sets are located in said first and second reactors in successive ascending order of compound vapor pressure,

(c) in a first reaction cycle, pressurizing said first reactor at a first pressure with said gaseous reactant and said second reactor at a second pressure with said gaseous reactant, higher than said first pressure, supplying a heat transfer fluid at a first temperature along said first reactor in thermal communication with said first set of compounds, whereby said compounds desorb said gaseous reactant in endothermic reactions, supplying a heat transfer fluid at a second temperature, higher than said first temperature, along said second reactor in thermal communication with said second set of compounds, whereby said compounds absorb said gaseous reactant in exothermic reactions, and

(d) in a second reaction cycle, pressurizing said second reactor at said first pressure with said gaseous reactant and said first reactor at said second pressure with said gaseous reactant, supplying heat transfer fluid at a first temperature along said second reactor in thermal communication with said second set of compounds, whereby said compounds desorb said gaseous reactant in endothermic reactions, and supplying heat transfer fluid at a second temperature, along said first reactor in thermal communication with said first set of compounds, whereby said compounds absorb said gaseous reactant in exothermic reactions, and

VOL 1165 ISS 2 AG 9 1994 UMI

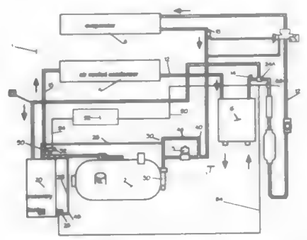
(e) wherein desorbed and absorbed gaseous reactant is directed to and from a mechanical or pressure driven compressor, respectively.

5,335,511

REFRIGERANT RELEASE PREVENTION SYSTEM

Dennis McKeown, 114 Summer La., Biloxi, Miss. 39532

Continuation-in-part of Ser. No. 2,176, Jan. 8, 1993, Pat. No. 5,259,204. This application Sep. 9, 1993, Ser. No. 118,872
Int. Cl.[5] F25B *41/00*
U.S. Cl. 62—174 **4 Claims**



1. An apparatus for preventing the release of refrigerant from a mechanical refrigeration system having piping within which is placed a system safety pressure relief value having a relief set point, and having a compressor having a suction side, comprising:

an auxiliary receiving tank;

a refrigerant flow line in fluid connection to said tank from a pressure relief valve in the system line having a system relief valve, which conducts flow of refrigerant to said tank upon opening of said pressure relief valve;

a refrigerant flow return line in fluid connection from said tank to a second valve located in a low pressure point in the mechanical refrigeration system; and

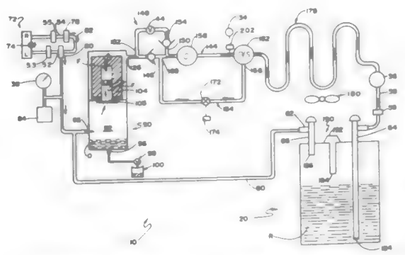
control means for opening said second valve responsive to refrigerant pressure in said auxiliary tank and a drop in the pressure of refrigerant adjacent the system relief valve to below a set point.

5,335,512

REFRIGERANT RECOVERY DEVICE

John P. Hancock, and Ralph A. McClelland, both of Indianapolis, Ind., assignors to K-Whit Tools, Inc., Fishers, Ind.

Continuation of Ser. No. 676,740, Mar. 28, 1991, Pat. No. 5,168,721. This application Dec. 7, 1992, Ser. No. 987,352
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 **16 Claims**



1. A combination oil separator and filter device for a refrigerant recovery apparatus, the device comprising

(a) a canister means having a first chamber portion for separating oil from refrigerant, and a second chamber portion for filtering the refrigerant,

(b) an inlet means through which refrigerant can be introduced into the first chamber portion,

(c) an oil outlet means for conducting oil from the first chamber portion,

(d) a filter cartridge placeable in the second chamber portion,

(e) a refrigerant outlet means through which refrigerant can be withdrawn from the second chamber portion,

(f) a refrigerant hose connector means for connecting a downstream end of a low side refrigerant hose and a downstream end of a high side refrigerant hose to the inlet means, and

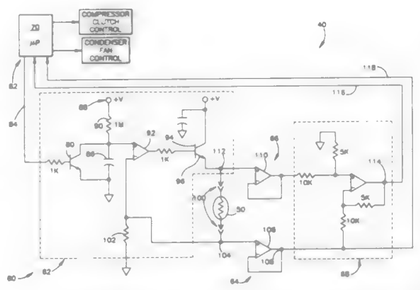
(g) an extended capillary tube means extending between the downstream end of the high side refrigerant hose and the inlet means.

5,335,513

APPARATUS AND METHOD FOR DETECTING CHARACTERISTICS OF A WORKING FLUID

Chester D. Campbell, Rancho Santa Margarita; Sandra L. Harper, Dana Point; Virender Jain, Lake Forest; Richard L. Kenyon, Irvine, all of Calif.; Alan Matthies, Milwaukee, Wis., and Roy M. Yabuki, Los Angeles, Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 19, 1993, Ser. No. 6,235
Int. Cl.[5] F25B *49/02*; G01D *25/02*
U.S. Cl. 62—228.3 **20 Claims**



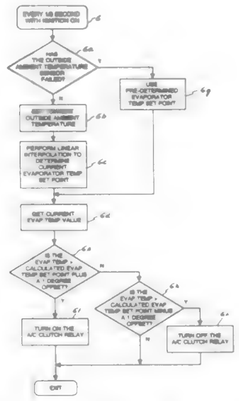
1. In a heat transfer system of the type having a fluid circuit comprising a compressor for pressurizing a working fluid received from an evaporator, a condenser for cooling working fluid received from the compressor, and an expansion valve for controlling flow of the working fluid between the condenser and the evaporator, the improvement comprising: a working fluid sensor, said sensor comprising a temperature dependent resistance means between the condenser and the valve, said resistance means being in heat exchange relationship with the working fluid so as to locally heat the fluid in response to a control signal applied thereto; and control means for applying said control signal to said resistance means and for determining a minimum thermal resistance between said resistance means and the working fluid.

5,335,514

VEHICLE AIR CONDITIONER REFRIGERATION, AUTOMATIC VARIABLE SET POINT EVAPORATOR SYSTEM THEREFOR

Robert P. Hennessee, Rochester Hills; David A. Barwin, Troy; Robert G. Rudzewicz, Sterling Heights, and Richard M. Rajala, Auburn Hills, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 1, 1993, Ser. No. 71,147
Int. Cl.[5] B60H *3/00*
U.S. Cl. 62—227 **5 Claims**



1. An automatic variable set point evaporator system for a vehicle air condition system comprising:

(A) an input power device having terminals for receiving electric power from a designated source and generating therefrom regulated power used by components in the system, the input device including an ON and OFF switch for applying and removing electric power from the system when desired;

(B) a refrigeration system having:

(1) a pulley drive for coupling the air condition system to a rotation source of an engine of the vehicle;

(2) a compressor clutch coupler to the pulley drive for coupling in and out the rotation source of the engine;

(3) a fixed capacity compressor having a pulley attached to the clutch for receiving rotations from the engine rotational source when the clutch engages the rotational source and having an input port for receiving a flow of refrigerant which is compressed to a fixed capacity pressure as the pulley rotates and, after compressing the refrigerant, producing at an output port the refrigerant at a high temperature and under a fixed discharge pressure caused by the compressing;

(4) a condenser disposed at the front of the vehicle to receive outside ambient air and having an input port for receiving the compressed refrigerant and, after being cooled by cooler outside ambient air, the refrigerant liquifies and exits the condenser through an output port;

(5) a filter dryer having a port coupled to a high pressure liquid line receives the high pressure liquid and remove contaminates which might appear and thereafter filtering the liquid refrigerant producing at an output port the filtered refrigerant;

(6) an automatic expansion valve having an input port for receiving the filtered refrigerant and producing therefrom at an output port a low pressure mist;

(7) an evaporator disposed to receive outside air blown across fins arranged on a front surface by a fan disposed to blow the outside air across the fins and having an input port for receiving the refrigerant as the low pressure mist and after the mist evaporates due to absorbing the latent heat from the air blown against the front surface and through the evaporator producing therefrom cooled air with latent heat removed from a back surface of the evaporator;

(8) a climate control unit connected between a passenger compartment of the vehicle and the back surface of the evaporator for directing the cooled air into the passenger compartment; and

(9) a clutch relay having input terminals for receiving a control signal used for energizing or deenergizing the relay and producing at an output terminal activating or deactivating signals to the compressor clutch so as to turn ON and OFF the compressor at a rates permitting varying the rate of supplying refrigerant to the evaporator so as to vary the steady state set point temperature of the evaporator probe as a function of the ambient temperature;

(C) an evaporator probe wedged in the fins of the evaporator on the front surface which protrudes to the rear surface of the evaporator and producing from the measurements an analog signal representation of the fin temperature, the end of the probe being the sensing area that contacts the downstream portion of the fin;

(D) an ambient sensor mounted on a front surface of the vehicle for measuring the ambient temperature in proportionate to the ambient environment created by a moving vehicle and producing therefrom at an output terminal an analog signal representative of the measured temperature;

(E) a compressor clutch control circuit having a switching device for energizing and deenergizing the clutch relay in response to control signals for establishing a clutch set point time that is proportional to the steady state set point temperature of the evaporator probe;

(F) a microcontroller unit (MCU) having:

(1) a timer system which provides a reference clock signal and operates in conjunction with RAM based counters to provide therefrom at an output terminal a clock signal proportioned to a chosen frequency of the reference clock signal;

(2) a first analog to digital converter having a terminal connected to receive the analog signal from the evaporator probe and producing therefrom digital values representative of the evaporator temperature which are stored in RAM of the MCU;

(3) a second analog to digital converter having a terminal connected to receive the analog signal from the ambient sensor and producing therefrom digital values representative of the ambient temperature while the vehicle is moving which are also stored in RAM of the MCU;

(4) a look-up table stored in an EEPROM of the MCU which relates ambient temperature values to desired evaporator steady state set point temperature values for a selected temperature related environments;

(5) interpolation firmware stored in an ROM of the MCU for providing a means for determining evaporator probe steady state set point temperatures which do not appear in the look-up table stored in the EEPROM;

(6) an output switching circuit connected to the compressor clutch relay for turning ON and OFF the clutch relay in a manner that causes the compressor to provide refrigerant to the evaporator so that the set point temperature of the evaporator varies automatically in proportionate to changes in the ambient temperature; and

(7) compressor clutch set point control firmware stored in ROM for providing instructions to a CPU in the MCU for obtaining from RAM changes in ambient temperature values and for obtaining from RAM changes in evaporator fin temperature and for computing various set point values and thereafter providing instructions to the CPU for producing output signals to the output switching circuit for causing the switching circuit to turn ON and OFF the clutch relay in a manner that causes the compressor to provide refrigerant to the

VOL 1165 ISS 2 AG 9 1994 UMI

evaporator so that the set point temperature of the evaporator varies automatically in proportionate to changes in the ambient temperature so as to provide optimum cooling to the passenger compartment of the vehicle and so as to prevent frost from building up on the fins of the evaporator.

5,335,515

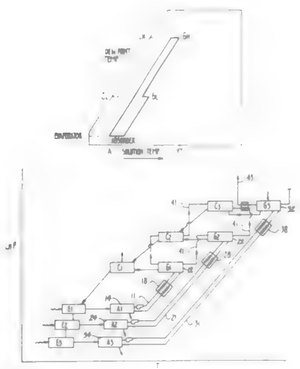
TRIPLE EFFECT ABSORPTION CYCLE APPARATUS

Uwe Rockenfeller, and Paul Sarkisian, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

Continuation of Ser. No. 800,636, Nov. 27, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 47,625

Int. Cl.[5] **F25B** *7/00*

U.S. Cl. 62—476 **61 Claims**



1. A triple effect absorption cycle apparatus, comprising:

first, second and third generators each containing an aqueous absorption fluid and operating at successively higher temperatures, respectively;

first, second and third condensers operating at successively higher temperatures, respectively, and operatively communicating with said first, second and third generators, respectively;

first heat exchange means cooperating between said third condenser and said second generator, and between said second condenser and said first generator, for directing energy therebetween, respectively;

one, two or three absorbers and one, two or three fluid loops cooperating therewith for directing aqueous absorption fluid between said one, two or three absorbers and any one or more of said first, second and third generators;

second heat exchange means cooperating with said fluid loops for exchanging energy between aqueous absorption fluid flows in said loops; and

one, two or three evaporators operatively communicating with said one, two or three absorbers, respectively; and

said aqueous absorption fluid in each of said fluid loops, respectively, comprising an aqueous salt solution of one of the following groups of salts:

(a) $LiNO_2$, LiCNS, $LiClO_3$, LiI and mixtures thereof;

(b) LiBr, LiCl or LiI, and a salt selected from Ni $(NO_3)_2$, $CaBr_2$, $FeCl_2$ and MnI_2;

(c) a mixture of $ZnBr_2$ and $CaBr_2$;

(d) NaOH, KOH, and mixtures thereof; or

(e) $LiNO_2$, LiCNS, $LiClO_3$, or LiI, and mixtures thereof with LiBr, LiCl or mixtures thereof.

5,335,516

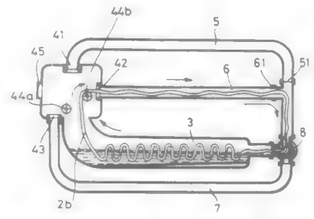
DYEING MACHINE

Chen C. Hsiang, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan

Filed Jul. 8, 1993, Ser. No. 87,535

Int. Cl.[5] **D06B** *3/28*

U.S. Cl. 68—4 **6 Claims**



1. An improved dyeing machine, comprising:

a cylindrical dyeing bath extending longitudinally from a first end to a second end for passage of cloth therethrough, said first end being disposed at a higher elevation than said second end;

a head portion coupled to said first end of said cylindrical dyeing bath, said head portion having a driven roller disposed therein;

a first conduit extending between said head portion and said second end of said cylindrical dyeing bath; said first conduit being disposed above said cylindrical dyeing bath;

a second conduit extending between said head portion and said second end of said cylindrical dyeing bath, said second conduit being disposed below said cylindrical dyeing bath; and,

valve means interposed between said second end of said cylindrical dyeing bath and each of said first and second conduits to provide selective communication between said cylindrical dyeing bath and either of said first conduit or said second conduit for passing cloth from one of said first or second ends of said cylindrical dyeing bath through a selected one of said first or second conduits to the other of said first or second ends of said cylindrical dyeing bath.

5,335,517

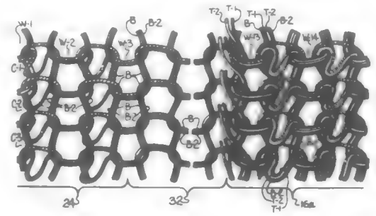
ANATOMICAL ISOTONIC SOCK AND METHOD OF KNITTING THE SAME

James L. Throneburg, 625 West Bell St., Statesville, N.C. 28677, and George L. Thorneburg, Statesville, N.C., assignors to James L. Throneburg, Statesville, N.C.

Filed Jul. 23, 1993, Ser. No. 96,708

Int. Cl.[5] **D04B** *1/02, 1/26;* **A41B** *11/02*

U.S. Cl. 66—185 **25 Claims**



1. An anatomical isotonic sock for providing enhanced protection and cushioning comfort to the foot of the wearer, the sock having a knit foot and comprising a relatively thick density of terry loops forming ball and heel portions of said foot of the sock and being formed of at least three terry yarns, a relatively thin density of terry loops forming at least an arch portion of said foot of the sock and being formed of at least a single terry yarn, and a stretchable body yarn knit throughout said ball, heel, and arch portions of said foot of the sock and cooperating with said terry yarns for positioning said terry loops in a closer more compact relation so as to enhance the relative density in said terry loop portions throughout the knit sock, and wherein said at least three terry yarns are knit with the stretchable body yarn.

5,335,518

CIRCULAR KNITTING MACHINE FOR MANUFACTURING SOCKS, STOCKINGS AND THE LIKE, WITH DEVICE FOR PRODUCING PATTERNS WITH TOWELING STITCHES

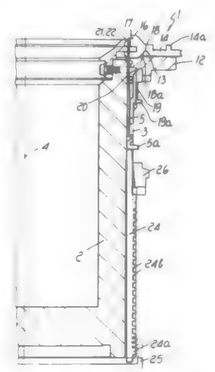
Francesco Lonati; Ettore Lonati; Fausto Lonati, and Tiberio Lonati, all of Brescia, Italy, assignors to Santoni S.r.l., Brescia, Italy

Filed Dec. 14, 1992, Ser. No. 989,662

Claims priority, application Italy, Dec. 19, 1991, MI91 A 003411

Int. Cl.[5] **D04B** *9/12, 9/46*

U.S. Cl. 66—108 R **1 Claim**



1. Circular knitting machine for manufacturing socks r stockings, with a device for producing patterns with toweling stitches, comprising;

a needle cylinder having a needle cylinder axis and skirt on which a plurality of axial grooves is defined, each one of said grooves slideably accommodating a needle slideable along directions which are parallel to the needle cylinder axis, and having a heel protruding radially from the related axial groove and engageable within paths defined by needle actuation cams arranged around the needle cylinder upon a rotation of the needle cylinder about said needle cylinder axis with respect to said needle actuation cams;

a sinker ring arranged proximate to the upper end of the needle cylinder, said sinker ring being rigidly associated with the needle cylinder, a plurality of radial grooves being defined in said sinker ring, said radial grooves being angularly offset with respect to said axial grooves, each radial groove slideably accommodating a casting-off sinker defining two casting-off surfaces which are mutually spaced in a direction which is parallel to the needle cylinder axis;

auxiliary jacks operatively connected to selectors, said auxiliary jacks each having an upper end and being individually accommodated in said axial grooves proximate to said needles, actuating means for moving said auxiliary jacks parallel to said needle cylinder axis whereby said upper end acts on said casting-off sinkers to move them along a direction radial to the needle cylinder from a rearward position, which produces the resting of two threads engaged by the contiguous needles on a same one of said two casting-off surfaces to form loops with two threads of equal length, to an advanced position in the direction of the axis of the needle cylinder, which causes the resting of two threads engaged by the contiguous needles respectively on one of said two casting-off surfaces and on the other one of said two casting-off surfaces to form loops with two threads of mutually different lengths, and;

a reset cam laterally facing the needle cylinder substantially at the level of said auxiliary jacks, said reset cam having a descending portion arranged upstream of the ascending portion of cams for the actuation of said selectors, along the direction of rotation o the needle cylinder with respect to said cams, said reset cam being engageable with the heel of the auxiliary jacks in said activation position to shift them to said deactivation position,

wherein said auxiliary jack actuation cam and said reset cam are movable, when actuated, in a radial direction with respect to eh needle cylinder from an insertion position, in which they engage the heels of the auxiliary jacks in said activation position, to an extraction position, in which they are spaced laterally to the needle cylinder so as to not interfere with the heel of said auxiliary jacks.

5,335,519

PLANT FOR PRODUCING COLD BY SOLID/GAS REACTION, REACTOR COMPRISING MEANS OF COOLING

Jacques Bernier, Houilles, France, assignor to Societe Nationale Elf Aquitaine, France

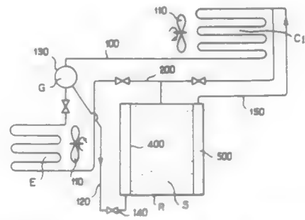
PCT No. PCT/FR92/00736, § 371 Date May 24, 1993, § 102(e) Date May 24, 1993, PCT Pub. No. WO93/03314, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 24, 1992, Ser. No. 30,133

Claims priority, application France, Jul. 26, 1991, 91 09498

Int. Cl.[5] **F25B** *17/08, 35/04*

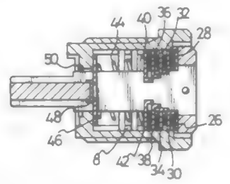
U.S. Cl. 62—481 **12 Claims**



1. A plant for producing cold, using at least one solid and a fluid, comprising at least one reactor containing the solid and connected to an evaporator and a condenser by tubing in which the fluid circulates in a refrigeration cycle, said reactor including cooling means for providing heat exchange with the solid contained in the reactor, said cooling means comprising a heat exchanger filled with the same fluid used in the refrigeration cycle and being connected by tubing to the same condenser used in the refrigeration cycle.

VOL 1165 ISS 2 AG 9 1994 UMI

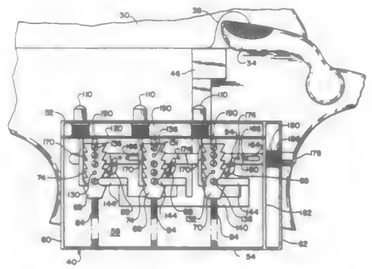
5,335,520
FLAT LOCK
Miko Lee, No. 5, Li Hsing Hsiang, Chung Cheng Rd., Hsin Chuang City, Taipei Hsien, Taiwan
Filed Mar. 2, 1993, Ser. No. 25,180
Int. Cl.[5] E05B *21/06*
U.S. Cl. 70—349 **3 Claims**



1. A flat lock set comprising
a flat lock comprising:
a cylinder comprising a first opening and a second opening and an inner surface formed with a number of groups of ribs, each group including a number of separate ribs defining a number of passages extending perpendicular to a length of the cylinder;
a tumbler comprising a disk integrating with a relatively slender key receiver integrating with a still relatively slender latch carrier, the disk defining a keyhole, the key receiver being separated into a number of prongs by a number of slots;
the disk fitting in the first opening, the key receiver sited in the cylinder, the latch carrier inserted through the second opening;
a number of rings and springs alternatively mounted on the key receiver, the rings each having an outer rim along which a number of ears are formed and an inner rim along which a number of arms are formed, the springs biasing the rings toward the disk so that the ears protruding from the rings are trapped between the ribs; and
a key comprising a number of stepped blades each having a number of shoulders formed thereon, the blades of the key being insertable between the prongs of the key receiver so that the shoulders formed thereon push the arms formed on the rings and that the ears protruding from the rings align with the passages.

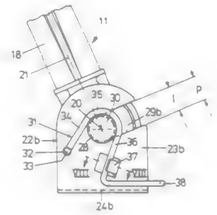
5,335,521
GRIP LOCK ASSEMBLY
Frank Brooks, 7689 SE Rivers Edge St., Jupiter, Fla. 33458
Division of Ser. No. 645,566, Jan. 24, 1991, Pat. No. 5,229,532, which is a continuation-in-part of Ser. No. 556,016, Jul. 20, 1990, Pat. No. 5,090,148, which is a continuation-in-part of Ser. No. 202,988, Jun. 6, 1988, Pat. No. 4,987,693. This application Jul. 20, 1993, Ser. No. 94,300
Int. Cl.[5] F41A *17/00;* **E05B** *37/00*
U.S. Cl. 70—298 **1 Claim**

1. A lock, comprising:
elongated ratchet members within a lock housing and push members extending through said lock housing adapted to move said ratchet members substantially along the long axis of the ratchet members;
biasing members adapted to urge said ratchet members to an initial position;
catch members adapted to engage said ratchet members following movement by the push member to retain said ratchet members against movement by the biasing member;
a slide bolt substantially adjacent to each of said ratchet members and being operatively connected to a lock portion;
corresponding channel and protrusion portions on said ratchet members and said slide bolt, said protrusions and said channels being aligned by movement of said ratchet members a distance corresponding to a lock combination to permit movement of said protrusions into said channels,



whereby movement of said slide bolt and said lock portion will be permitted; and,
reset means for returning said ratchet members to the initial position.

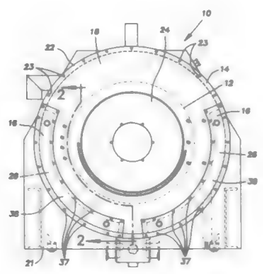
5,335,522
WASHING MACHINE
Ludwig Stadelmann, Altdorf, and Dieter Mayer, Sulzbach-Rosenberg, both of Fed. Rep. of Germany, assignors to Suspa Compart Aktiengesellschaft, Altdorf, Fed. Rep. of Germany
Division of Ser. No. 834,090, Feb. 12, 1990, Pat. No. 5,230,229. This application Jun. 10, 1993, Ser. No. 74,663
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1991, 4105763
Int. Cl.[5] D06F *37/22*
U.S. Cl. 68—23.1 **28 Claims**



1. A washing machine comprising:
a washing machine housing (6);
a washer unit (2) with a horizontal drum axis (1) arranged in the washing machine housing (6);
at least one vibration damper (11) having a first articulated bush (15) being supported in a bearing (16) on the washer unit (2) to pivot about a pivot axis (17) and having a second articulated bush (19) being supported in a bearing (22) on the washing machine housing (6) to pivot about a pivot axis (20), each pivot axis (17, 20) being parallel with the drum axis (1) and each bearing (16, 22) having two cheeks (23) which accommodate between them one of said articulated bushes (15, 19) and in which bearing openings (28) are provided, in each of which a bearing body (26, 30) connected with the articulated bush (15, 19) is supported, and the vibration damper (11) having a central longitudinal axis (21) intersecting the pivot axes (17, 20),
wherein each bearing opening (28) of at least one bearing (16, 22) is provided with an inlet (29) for the bearing body (26, 30) open towards an edge (40, 41) of the respective cheek (23) and wherein the bearing body is retained in the bearing openings (28) by means of an elastic locking in the direction of the inlets (29),

wherein the bearing body is in the form of a bearing bolt (30) and in that the bearing bolt is arrested by elastic locking by means of at least one safety clamp (31).

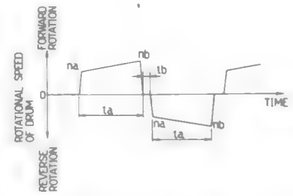
5,335,523
REMOVABLE HEAT EXCHANGER FOR INDUSTRIAL LAUNDRY MACHINES
Constantin Anastase; William C. Nehren, both of Wichita Falls; Russell C. Kissick, Plano; Thomas C. Campbell, and Jay H. Daily, both of Wichita Falls, all of Tex., assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Sep. 30, 1992, Ser. No. 954,973
Int. Cl.[5] D06B *23/22*
U.S. Cl. 68—16 **20 Claims**



15. A fabric treating machine, comprising:
an outer shell and a perforated spin tub, said spin tub and outer shell each being generally cylindrical and having front and rear ends, said front end of said outer shell being covered by a front shell head and said rear end of said outer shell being covered by a rear shell head, said front shell head having a an opening formed therein;
a removable heat exchanger, said heat exchanger being removably mounted within said machine intermediate said perforated spin tub and said outer shell, said heat exchanger comprising spacers to maintain the heat exchanger a distance from an inner surface of said outer shell;
mounting means for removably mounting the heat exchanger to said outer shell, said mounting means including heat exchanger guide means and retainer means, said guide means guiding the heat exchangers during installation and removal, and said retainer means retaining the heat exchangers in position relative to the spin tub during operation of the machine, wherein a heat exchanger access cover is provided by the heat exchanger, said access cover being removably mounted to the front shell head and providing ports for the fluid communication of a heat exchanging medium between an interior of the heat exchanger and an exterior of the machine, said heat exchanger being removed from said washing machine by detaching the access cover from the front shell head and pulling the heat exchanger out through the opening in the front shell head.

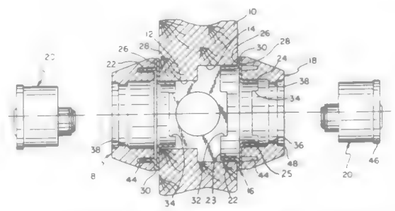
5,335,524
DRUM TYPE WASHING MACHINE
Sakio Sakane, Nagoya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 841,365, Feb. 25, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 116,208
Claims priority, application Japan, Mar. 1, 1991, 3-061182
Int. Cl.[5] D06F *33/02*
U.S. Cl. 68—12.04 **8 Claims**

5. A drum type machine comprising:
a) a drum mounted on a suitable support so as to be rotated about a transverse axis thereof, the drum accommodating clothes to be washed with liquid;
b) drive means for rotating the drum in a wash step so that the clothes are agitated with the liquid in the drum, the drive means including an electric motor; and
c) rotational speed control means for controlling the drive means so that a rotational speed of the drum is varied during rotation thereof in the wash step in a range including a variety of rotational speeds wherein the clothes in the drum are caused to fall down from different angular positions around an inner peripheral surface of the drum against a centrifugal force;
wherein the rotational speed control means includes means



for controlling either voltage applied to the motor or frequency thereof so that the rotational speed of the motor is varied; and
wherein the rotational speed control means acts to very rapidly bring the rotational speed up to a first predetermined rotational speed in one rotational direction and thereafter to gradually change the rotational speed to a second predetermined rotational speed in said one rotational direction; thereafter to reduce the rotational speed to zero; to thereafter rapidly bring the rotational speed up to a third predetermined value which is in the opposite rotational direction; and thereafter to gradually change the rotational speed to a fourth predetermined rotational speed which is in said opposite rotational direction.

5,335,525
UNIVERSAL ADAPTOR FOR DEADBOLT
Paul G. Solovieff, Tustin, Calif., assignor to Emhart Inc., Newark, Del.
Continuation of Ser. No. 928,602, Aug. 13, 1992, abandoned. This application Mar. 8, 1994, Ser. No. 207,251
Int. Cl.[5] E05B *9/08*
U.S. Cl. 70—370 **14 Claims**



1. A reversible adaptor for facilitating the assembly of a component of a lock assembly with a door to preclude axially lateral movement of the assembled component where the door is formed with a hole of a first prescribed shape or a hole of a second prescribed shape different from the first prescribed shape, which comprises:
a first structural section formed in a shape having at least portions complementary to the first prescribed shape for insertion into the hole of the first prescribed shape;
a second structural section formed in a shape having at least portions complementary to the second predetermined

VOL 1165 ISS 2 AG 9 1994 UMI

shape for insertion into the hole of the second prescribed shape;

a third structural section formed integrally with and between the first and second structural sections for linking together the first and second structural sections; and

the component formed in one face with structure for receipt of the first or second structural sections;

wherein, when the first structural section is located in the hole of the door, the second structural section extends outwardly from a plane in which the face of the door is located and into the structure of the component and, when the second structural section is located in the hole of the door, the first structural section extends outwardly from the plane in which the face of the door is located and into the structure of the component.

5,335,526

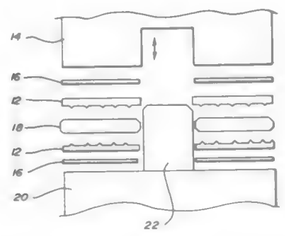
METHOD OF MANUFACTURING SUBSTRATES FOR MEMORY DISKS

Marvin C. Garrison, deceased, late of Colorado Springs, Colo., and by Eleanor Garrison, legal representative, 6979 Gayle Lyn La., Colorado Springs, Colo. 80919

Continuation of Ser. No. 648,816, Jan. 29, 1991, abandoned. This application Jan. 30, 1992, Ser. No. 827,863

Int. Cl.[5] B21C *23/22*

U.S. Cl. 72—47 **22 Claims**



1. A method of manufacturing a substrate for a memory disk from a metal blank, the substrate having at least one surface for attaching a recording medium over which recording heads will slide and fly during use of the memory disk, said method comprising:

pressing the metal blank between a pair of platen faces, at least one of the platen faces containing a replica of a surface texture pattern to be formed on the substrate,

heating the substrate to a predetermined temperature while pressing the substrate between the platen faces to cause the metal of the blank to yield without flowing to take a permanent set and to acquire a flat contour, and while at the same time

applying a predetermined pressure by pressing the substrate between the platen faces to emboss a surface texture pattern from the face of the one platen onto the surface of the substrate,

said predetermined pressure and said predetermined temperature being insufficient to create cold flow of the metal of the blank, and

selecting said predetermined temperature to prevent relief of any cold work stresses in the metal of the blank that remain after the flat contour and the embossed surface texture have been created from pressing, when the substrate is later heated to a temperature less than the predetermined temperature during a subsequent application of a data recording medium to the surface of the substrate.

5,335,527

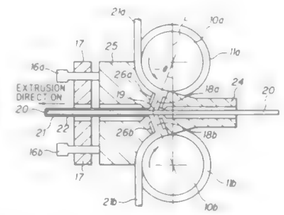
METHOD AND APPARATUS FOR MANUFACTURING A COMPOSITE METAL WIRE BY USING A TWO WHEEL TYPE CONTINUOUS EXTRUSION APPARATUS

Masahiro Nagai, Ibaraki, Japan; Kazuo Abe, Dubrin, Calif.; Tadashi Nireki, Ibaraki, Japan; Hisanobu Yamagishi, Ibaraki, Japan, and Yasuhiko Miyake, Ibaraki, Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Nov. 20, 1992, Ser. No. 978,932

Int. Cl.[5] B21C *23/24*

U.S. Cl. 72—262 **7 Claims**



1. An apparatus for manufacturing a composite metal wire by using a two wheel type continuous extrusion apparatus, comprising:

two rotary wheels each having an endless groove on an outer periphery thereof, endless grooves of said two rotary wheels being formed symmetrically relative to a direction of extruding of said composite metal wire;

a fixed shoe block having two portions facing said grooves of said two rotary wheels, respectively, to define two passage-ways and a die for extruding said composite metal wire, said two passage-ways receiving covering material rods supplied thereto;

an abutment block having two portions for closing said two passage-ways and a nipple for supplying a core metal wire;

a covering chamber including said nipple and said die;

two covering material inlet apertures defined between said fixed shoe block and said abutment block for communicating said two passage-ways to said covering chamber including said nipple and said die; and

means for adjusting said fixed shoe block at a predetermined position with respect to said two rotary wheels,

wherein said two covering material inlet apertures are inclined relative to a line connecting rotary axes of said two rotary wheels in directions reverse to directions of rotation of said two rotary wheels, respectively, by an angle ranging between 10° and 40°, and

said adjusting means is positioned to act against said fixed shoe block in a direction opposite to said direction of extrusion of said composite metal wire.

5,335,528

RAPID LOADING SHORT-STROKE EXTRUSION PRESS, AND PROCESS

Giancarlo Cristiani, Gorizia, Italy, assignor to Techint-Compagnia Tecnica Internazionale S.p.A., Milan, Italy

Filed Oct. 22, 1992, Ser. No. 970,492

Claims priority, application Italy, Oct. 30, 1991, MI91 A 002856

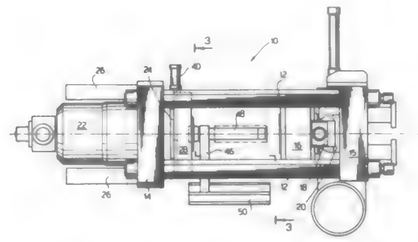
Int. Cl.[5] B21C *33/00*

U.S. Cl. 72—263 **9 Claims**

1. An extrusion press comprising, on a fixed structure (**12, 14, 15**), a cross member (**28**) which is movable along a longitudinal or extrusion axis (**a**) of the press, a cylinder assembly (**22**) for driving the cross member; a container (**16**) having an axial cavity for receiving a billet to be extruded; a die holder slide (**48**) characterized in that it also comprises

an arm (**46**) pivotally carried on the said cross member (**28**), said arm carrying a plunger (**48**) and a billet loader (**50**)

spaced out from each other, the said arm (**46**) being rotatable between a condition in which it locates the plunger in a working position on the extrusion axis a of the press and the loader (**50**) in a position for receiving the billets on one



side of the press, and a condition in which it locates the loader in a position on the extrusion axis (a) of the press and the plunger in a rest position on the said side of the press.

5,335,529

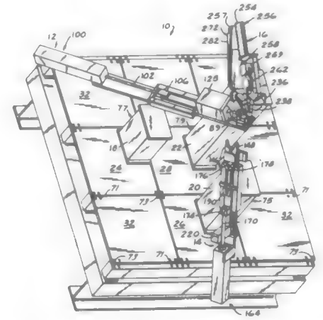
BENDING FIXTURE AND METHOD OF ASSEMBLING THE BENDING FIXTURE

Robert A. Crowdus, Mount Clemens, Mich.; Gary L. Knirk, Lexington, and John K. Silverson, Richmond, both of Ky., assignors to Bundy Corporation, Warren, Mich.

Continuation of Ser. No. 670,794, Mar. 18, 1991, abandoned. This application Jun. 8, 1992, Ser. No. 894,241

Int. Cl.[5] B21D *7/16, 7/00*

U.S. Cl. 72—404 **22 Claims**



1. A tube bending fixture, comprising a plurality of standardized tube bending tools, a separate pedestal for each of said standardized tube bending tools, a separate standardized grid plate for each of said pedestals and having locators thereon, said grid plates being flat, generally rectangular and substantially identical in thickness, perimeter and position of said locators thereon, a rigid grid plate support for all of said grid plates, complementary locators on said grid plate support engagable with said locators on said grid plates for accurately locating a plurality of grid plates thereon in a predetermined fixed grid relative to three orthogonal axes with uniform spacing between said complementary locators, for each tube bending tool a separate sub-assembly of a tool mounting plate, a pedestal, and one of said grid plates which sub-assembly was prefabricated remote from said grid support with an adjustable locating fixture having adjustable means locating such one grid plate and such tool mounting plate in a predetermined position relative to such three orthogonal axes and said complementary locators while they are being rigidly secured to such pedestal disposed between them to produce a rigid sub-assembly for mounting a tube bending tool on said rigid grid plate support in a predetermined position relative to such three orthogonal axes and said complementary locators on said grid plate support, means mounting each said tube bending tool on its respective sub-assembly in a predetermined position relative to such three orthogonal axes, and means releasably mounting each said sub-assembly with its grid plate on said grid plate support with its locators engaging some of the complementary locators on said support to secure such grid plate in a plane parallel to two of such orthogonal axes and in a grid accurately locating its grid plate relative to such two orthogonal axes in a predetermined location and arrangement for the sequential operation of said standardized tube bending tools in a tube to bend the tube to a predetermined configuration.

5,335,530

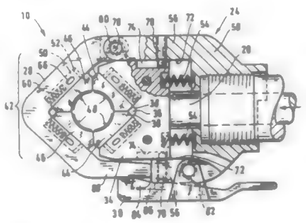
PRESSING TOOL FOR PRESSING A CYLINDRICAL PRESSING MEMBER OR A PRESSING MEMBER COMPRISING A CYLINDRICAL PORTION ONTO A ROUND PROFILE, PARTICULARLY A PIPE CONDUIT

Karl G. Homm, Marl, Fed. Rep. of Germany, assignor to Hewing GmbH, Ochtrup, Fed. Rep. of Germany

Filed Sep. 9, 1992, Ser. No. 943,394

Int. Cl.[5] B21D *41/04*

U.S. Cl. 72—402 **7 Claims**



1. A pressing tool for pressing a cylindrical pressing member onto a round pipe conduit, comprising

a plurality of press dies (**44, 46**) for pressing a cylindrical pressing member (**49**) onto a round pipe conduit (**96**) from all sides,

a plurality of holding members (**26, 28**) provided with receiving portions for holding the press dies (**44, 46**), means for creating a pressing force by moving at least one of said holding members (**26, 28**) or away from another of said holding members (**26, 28**) linearly in a radial direction relative to the cylindrical pressing member (**49**),

means for guiding each pressing die (**44, 46**) in its associated receiving portion for displacement in a direction extending at an angle other than 0° with respect to said radial direction of the pressing force,

the holding members (**26, 28**) move each of the press dies (**44, 46**) in a direction extending at an angle other than 0° with respect to the radial direction of the cylindrical pressing member (**49**),

the press dies (**44, 46**) prior to the pressing process can be moved into a starting position in which they are in abutment against the cylindrical pressing member (**49**) and have a defined distance from each other in a circumferential direction,

the press dies (**44, 46**), because of displacement in their receiving portions and the movement of the holding members (**26, 28**) towards each other, approach each other until reaching a final pressing position,

each of said press dies (**44, 46**) include a lateral face extending in the direction of displacement of said press dies,

a spring-based projecting locking element (**64**) projecting from each lateral face, a receiving recess (**52**) formed in

VOL 1165 ISS 2 AUG 9 1994 UMI

said holding members (**26, 28**) receiving therein an associated one of said pressing dies (**44, 46**), and

a longitudinal locking recess (**66**) formed in a lateral face of each receiving recess (**52**) opposite an associated locking element (**64**) into which the locking element (**64**) is moved during displacement of the press dies (**44, 46**).

5,335,531

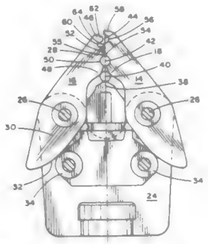
COMPRESSION TOOL HEAD ASSEMBLY

Steven W. Mann, Mt. Olive, and Jerald C. Todd, Birmingham, both of Ala., assignors to Square D Company, Palatine, Ill.

Filed May 4, 1993, Ser. No. 57,367

Int. Cl.[5] H01R *43/042*

U.S. Cl. 72—416 **7 Claims**



1. A compression tool head assembly including a pair of rotatably mounted, opposite jaw members, each jaw member having a compression end, which is movable between a first position in engagement with the compression end of said opposite jaw member and a second position spaced apart from engagement with the compression end of said opposite jaw member, and an opposite end;

said compression end of each jaw member having a distal portion and an interior portion and at least the following four distinct surfaces:

l) an interior nib surface;

2) a semicircular groove surface;

3) an engagement surface; and

4) a distal compression surface;

said engagement surfaces in direct engagement with each other and said distal compression surfaces forming a generally hook-shaped inlet in response to movement of said jaw members to said first position; and

a center nib operably associated with the interior nib surface of each jaw member to provide three generally equidistant points of contact around the circumference of a connector placed therebetween for compression.

5,335,532

BODY MAKER APPARATUS

Peter M. Mueller, Littleton, and Robert J. Schreiner, Commerce City, both of Colo., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 16, 1992, Ser. No. 899,201

Int. Cl.[5] B21J *9/18, 9/20;* **B30B** *1/06*

U.S. Cl. 72—450 **18 Claims**

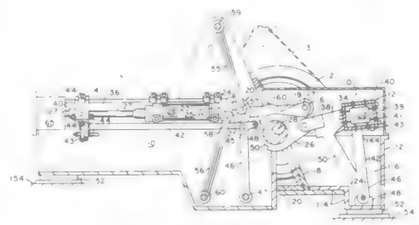
1. A counterbalance system for use in combination with a can body maker having a frame and ram means mounted in said frame for reciprocal, straight line motion comprising:

(a) a counterbalance system frame attached to said can body maker frame;

(b) a crankshaft mounted in the can body maker frame for rotation about a first axis, said crankshaft effecting the reciprocal motion of said ram means;

(c) a member mounted on said crankshaft for eccentric motion relative to said first axis;

(d) counterbalance mass structure means operatively associated with said member and mounted in said counterbalance system frame for pivotal reciprocal motion relative to a pivot point in the counterbalance system frame; and



(e) a mass member adjustably mounted in the counterbalance mass structure means whereby the center of mass of the counterbalance mass structure means is adjustable relative to the pivot point.

5,335,533

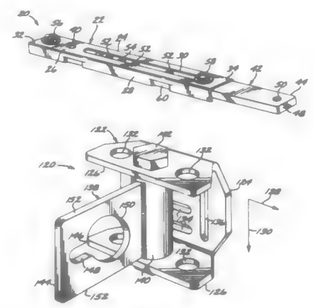
PULL CLAMPS FOR STRAIGHTENING AUTOMOBILE UNDERFRAMES AND DOOR HINGE PILLARS, AND THEIR USE

Tommy L. Rehus, 2814 Esturion Ct., Carlsbad, Calif. 92009

Filed Jun. 8, 1993, Ser. No. 73,718

Int. Cl.[5] B21D *1/12*

U.S. Cl. 72—422 **16 Claims**



1. An auto frame pull clamp, comprising:

a first elongated member comprising

an elongated first member body,

a slot in the first member body extending parallel to the direction of elongation of the first member body, and

a threaded hole at a first end of the first member body;

a second elongated member comprising

an elongated second member body having a bore therethrough at one end thereof,

a threaded hole in the second elongated member, the threaded hole being in registry with the slot in the first member body, and

at least one bore through a second end of the second member body disposed oppositely to the first end of the first member body; and

means for retaining the first elongated member and the second elongated member in sliding contact.

5,335,534

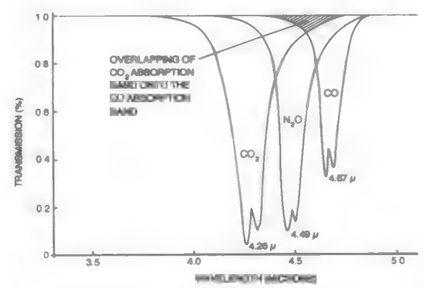
FUNCTIONAL TESTING METHOD FOR TOXIC GAS SENSORS

Jacob Y. Wong, Santa Barbara, Calif., assignor to Gaztech International Corporation, Goleta, Calif.

Filed Jun. 8, 1992, Ser. No. 894,919

Int. Cl.[5] G01N *21/35;* **G01C** *25/00;* **G01D** *18/00;* **G12B** *13/00*

U.S. Cl. 73—1 G **2 Claims**



1. A method of testing a toxic gas sensor, said toxic gas sensor being of a type in which the absorption of radiation is monitored in an absorption band peculiar to the toxic gas and in which the presence of the toxic gas is indicated by an increase in absorption of the radiation, said method comprising the steps of:

applying to said sensor a sample of a non-toxic gas, said sample known to contain none of the toxic gas, said sample including a gas that absorbs radiation, to a known extent, in the absorption band peculiar to the toxic gas; and,

comparing the absorption produced by the sample of a non-toxic gas with the absorption produced by a sample of the same non-toxic gas at an earlier time when the toxic gas sensor was known to have been operating satisfactorily.

5,335,535

MONITORABLE DEVICE AND METHOD FOR MONITORING A DEVICE FOR SEALING OFF A BODY

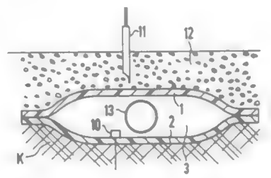
Klaus Ruthrof, Nürnberg; Peter Jax, Erlangen; Karl-Heinz Bode, München, and Klaus Günther, Hamburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 977,101

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137473

Int. Cl.[5] G01M *3/20*

U.S. Cl. 73—40.7 **6 Claims**



1. A monitorable device for sealing off a body, comprising:

two seals sealing off a body and being mutually spaced-apart defining a control chamber between said seals;

said control chamber having connections for an inlet opening and an outlet opening and being otherwise closed;

a permeable channel or hose being connected between said inlet opening and said outlet opening in said control chamber for carrying a transport medium;

a lance for supplying a tracer gas; and

a sensor connected to said outlet opening for detecting the tracer gas.

5,335,536

LEAK DETECTION IN ROOFS

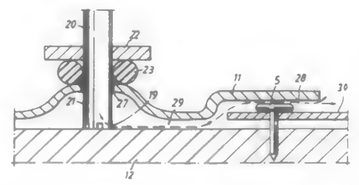
Lars Runnevik, Helsingborg, Sweden, assignor to AB Mataki, Sweden

Filed Jan. 29, 1993, Ser. No. 11,296

Claims priority, application Sweden, Jan. 29, 1992, 9200244-3

Int. Cl.[5] G01M *3/20*

U.S. Cl. 73—40.7 **14 Claims**



1. A method for detection of leaks in roofs and exterior and interior floors clad with single seam sealing layer products forming a sealing layer having an inner side and an outer side, the inner side facing a support that is being sealed by the sealing layer, said method comprising:

feeding smoke or mist into a space bordering to the inner side of the sealing layer to spread within said space,

detecting, at the outer side of the sealing layer, smoke or mist penetrating outwardly through holes in the sealing layer to determine the location of the holes.

5,335,537

METHOD OF INSPECTING LIMITED SLIP DIFFERENTIAL FOR VEHICLE

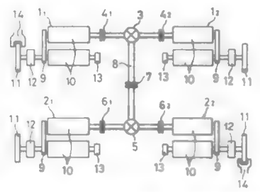
Takao Shibayama; Keiichiro Maekawa; Akihito Fukutome; Yoshiharu Nakazono, and Yoshimichi Matsumoto, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,190

Claims priority, application Japan, Sep. 19, 1991, 3-239841; Aug. 21, 1992, 4-223083

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117 **7 Claims**



1. A method of inspecting a limited slip differential which is incorporated into a differential gear for driving one wheel and the other wheel of a vehicle, said method comprising the steps of:

mounting said one wheel on one roll and said the other wheel on another roll;

accelerating said vehicle while said one roll on which said one wheel is mounted is being subjected to a force of restraining the rotation of said one roll;

measuring, during said accelerating step, a difference in

VOL 1165 ISS 2 AG 9 1994 UMI

rotational speed between said one roll and said another roll on which said the other wheel is mounted;

measuring a torque which operates on said one roll;

obtaining from said measured torque a limited slip differential torque which is generated by said limited slip differential; and

comparing a standard value of said limited slip differential torque, which is generated at said measured difference in rotational speed, and said obtained limited slip differential torque, whereby a judgement is made whether said limited slip differential is acceptable or not.

5,335,538

METHOD AND ARRANGEMENT FOR DETERMINING THE STORAGE CAPACITY OF A CATALYTIC CONVERTER

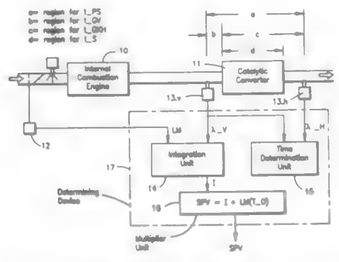
Frank Blischke, Stuttgart; Erich Schneider, Kirchheim, and Eberhard Schnaibel, Hemmingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart

Filed Aug. 31, 1992, Ser. No. 937,411

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128823

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—118.1 **5 Claims**



1. A method for determining a value SPV for the oxygen storage capacity of a catalytic converter in the exhaust gas flow of a motor vehicle equipped with a control apparatus, the method comprising the steps of:

providing a first signal λ_V from an oxygen-indicating first probe mounted upstream of said catalytic converter with said first signal λ_V showing the change from rich to lean and vice versa;

providing a second signal λ_H from an oxygen-indicating second probe mounted downstream of said catalytic converter with said second signal λ_H likewise showing the change from rich to lean and vice versa;

determining said value SPV in said control apparatus by integrating an integration variable with said integration variable being the product Δλ_V(t)·LM(t);

starting the integration at a time point T_0 at which said first signal changes from rich to lean or vice versa; and,

ending the integration after a time span t_S with said time span t_S being dependent upon a measured phase shift time t_PS of said first and second signals of said probes and from the gas running time t_GV and t_GKH, wherein:

Δλ_V(t)=λ_V(t)−1=instantaneous deviation of the lambda value of 1;

LM(t)=air mass flow in the engine;

t_S=t_PS−(t_GV+t_GKH)=direction of the integration;

t_PS=measured phase shift time of the signals of said first and second probes;

t_GV=k1/LM=gas running time from said first probe to the upstream end of the catalytic converter;

t_GKH=k2/LM=gas running time from said upstream end of said catalytic converter to said second probe downstream of said catalytic converter; and,

k1 and k2=constants dependent upon the arrangement of said probes and the volume of said catalytic converter.

5,335,539

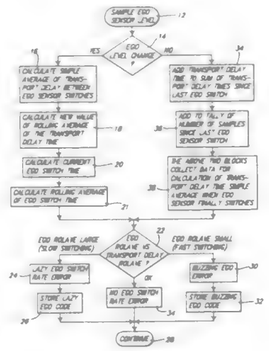
ONBOARD DETECTION OF OXYGEN SENSOR SWITCH RATE FOR DETERMINING AIR/FUEL RATIO CONTROL SYSTEM FAILURE

Michael S. Sweppy, Ypsilanti, and James M. Kerns, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 752,744, Aug. 30, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 95,810

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—118.1 **4 Claims**



1. A method of determining air/fuel ratio control system failure in an internal combustion engine having an exhaust gas oxygen sensor feedback control loop as part of an engine control system including the steps of:

determining an expected transport delay time of the engine;

generating a signal indicative of an average of a plurality of previously determined expected transport delay times of the engine;

detecting level switching of the exhaust gas oxygen sensor;

generating a signal indicating level switching of the exhaust gas oxygen sensor;

determining a time between the signal level switching of the exhaust gas oxygen sensor;

generating a signal indicative of an average of a plurality of times between level switching of the exhaust gas oxygen sensor;

comparing the signal indicating average transport delay time to the signal indicating average exhaust gas oxygen sensor level switching time; and

determining an EGO sensor switching rate fault exists if the comparison indicates that one average is different from the other average by a predetermined amount.

5,335,540

TIRE MONITORING APPARATUS AND METHOD

Paul R. Bowler, Surrey, Canada; John Mackay, South Durham, England; Shawn D. Lammers, Delta, and Robert H. Fulton, North Delta, both of Canada, assignors to TTC Truck Tech Corp., Richmond, Canada

Division of Ser. No. 658,025, Feb. 21, 1991, Pat. No. 5,231,872. This application May 21, 1993, Ser. No. 64,597

Int. Cl.[5] B60C *23/02*

U.S. Cl. 73—146.5 **15 Claims**

9. An apparatus for measuring and monitoring a plurality of

remotely located devices at a central location, the apparatus comprising:

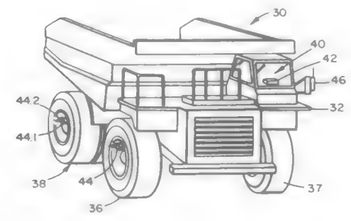
(a) a plurality of measurement and transmission circuits, each circuit having:

(i) a transducer for developing a signal in response to a respective physical quantity, property or condition;

(ii) sampling means for sampling said signal to produce an instantaneous signal value;

(iii) assigning means for assigning a first code to said instantaneous signal value;

(iv) transmitting means for transmitting a transmission including the code and an identifier unique to the circuit;



(b) a receiver for receiving a received transmission from each of said measurement and transmission circuits, said receiver including:

(i) extracting and storing means for extracting and storing said identifier and said code from said received transmission;

(ii) determining means for determining which identifier has been received; and

(iii) display means for displaying a representation of said received code while providing an identification of the received code.

5,335,541

PORTABLE APPARATUS FOR MEASUREMENT AND DISPLAY OF INTERNAL PRESSURE OF TIRES

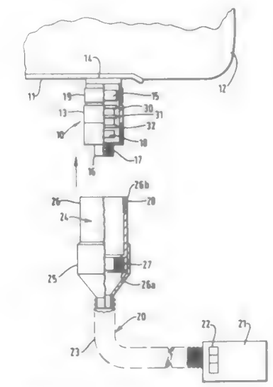
Brian A. J. Sharpe, Ryde, England, assignor to Westland Aerospace Limited, England

Filed Feb. 22, 1993, Ser. No. 20,774

Claims priority, application United Kingdom, Feb. 20, 1992, 9203693

Int. Cl.[5] B60C *23/02*

U.S. Cl. 73—146.5 **12 Claims**



1. Portable hand held apparatus for energizing discrete pressure sensing apparatus located on an inflated article, receiving a pressure signal output by the pressure sensing apparatus when energized and displaying an inflation pressure value; the portable hand held apparatus comprising an electrical power source, power signal generator means connected with the electrical power source, power signal transmission means connected with the power signal generator means and adapted for transmitting a power signal to energize the discrete pressure sensing apparatus when the hand held portable apparatus is brought into proximity with the pressure sensing apparatus, pressure signal receiver means for receiving a pressure signal output by the pressure sensing apparatus when energized, pressure signal processor means connected with the receiver means and adapted for processing the pressure data signals, and display means connected with the pressure signal processor means and adapted for displaying an inflation pressure value.

5,335,542

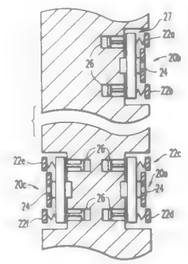
INTEGRATED PERMEABILITY MEASUREMENT AND RESISTIVITY IMAGING TOOL

T. S. Ramakrishnan, Bethel; David Rossi, Newtown; Yogesh Dave, Stamford; William Murphy, Redding, all of Conn.; Richard Plumb, Cambridge, England; Peter Goode, Rostrevor, Australia; Fikri Kuchuk, New Fairfield, Conn.; James Helwig, Dallas, Tex.; François M. Auzerais, and Elizabeth B. Dussan V., both of Ridgefield, Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 761,213, Sep. 17, 1991, Pat. No. 5,269,180. This application Feb. 12, 1993, Ser. No. 16,933

Int. Cl.[5] E21B *47/06, 47/09, 49/08, 49/10*

U.S. Cl. 73—152 **25 Claims**



1. Apparatus for the investigation of an earth formation transverse by a borehole, comprising:

a) a plurality of electrode means for making electrical contact with a segment of a wall of said borehole and for making electrical measurements relating to an electromagnetic investigation of said earth formation adjacent said segment of said borehole wall;

b) hydraulic port means for making hydraulic contact with said formation;

c) flow means coupled to said hydraulic port for accomplishing at least one of injecting fluid into said formation and withdrawing fluid from said formation via said hydraulic port;

d) hydraulic property measurement means for determining pressures at said hydraulic port during withdrawal of fluid from said formation or during injection of fluid into said formation, wherein, said plurality of electrode means make said electrical measurements during said withdrawal of fluid from said formation or during said injection of fluid into said formation, and said hydraulic port means is sufficiently adjacent said plurality of electrode means such that said electrical measurements are impacted by said withdrawal of fluid or said injection of fluid.

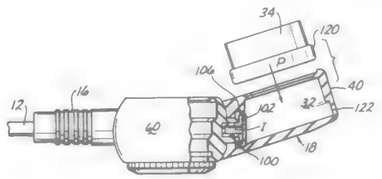
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,543

DIVER'S PIVOTAL GAUGE BOOT

Frank Hermansen, Newport Beach, Calif., assignor to U.S. Divers Co., Inc., Santa Ana, Calif.

Filed Mar. 16, 1993, Ser. No. 33,165
Int. Cl.[5] G01D *11/24*; G01L *19/14*
U.S. Cl. 73—431 **20 Claims**



17. A gauge boot for receipt of a depth gauge and a tank pressure gauge comprising:

a first portion of said gauge boot which receives the depth gauge therein;

a second portion of said gauge boot which receives the tank pressure gauge therein;

means within said second portion of said gauge boot for receiving an instrument mounted on the opposite side from said tank pressure gauge;

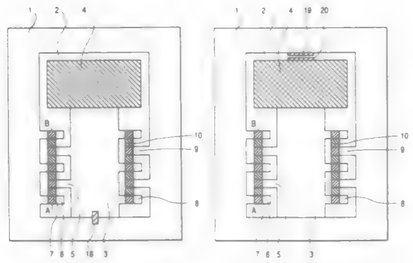
connection means between said first portion and said second portion providing a rotational connection between said first portion and said second portion so that said first portion can be rotated for reading said depth gauge with respect to either said tank pressure gauge or said instrument.

5,335,544

APPARATUS FOR MEASURING MECHANICAL FORCES AND FORCE ACTIONS

Bernhard Wagner; Wolfgang Benecke; Werner Riethmüller, and Uwe Schnakenberg, all of Berlin, Fed. Rep. of Germany, assignors to Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e.V., Fed. Rep. of Germany

PCT No. PCT/DE90/00412, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO91/00522, PCT Pub. Date Jan. 10, 1991
PCT Filed May 31, 1990, Ser. No. 778,893
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1989, 3920645
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—517 R **8 Claims**



1. Apparatus for measuring mechanical forces and force actions, comprising:

a fixed body;

a movable mass which is displaceable relative to said fixed body in at least two directions;

a resilient restoring element coupling said fixed body to said movable mass; and

first and second means for limiting displacement of said movable mass in each of said two directions, each of said first and second means comprising:

at least a pair of first rigid tongues connected at an end thereof to one of said restoring element and said movable mass, and at least a pair of second rigid tongues connected at an end thereof to said fixed body;

said first and second rigid tongues being parallel to and overlapping each other;

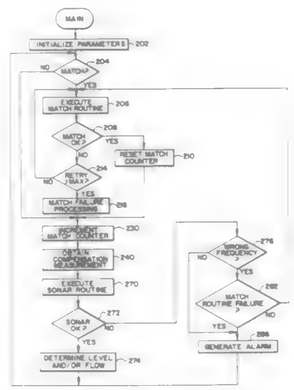
and a bridge element arranged at right angles to said tongues, said bridge element being connected to one of said pairs of rigid tongues, and extending over the other of said pairs of rigid tongues, in a direction of displacement of said movable mass.

5,335,545

ULTRASONIC DETECTOR WITH FREQUENCY MATCHING

Nicholas Leszczynski, Amherst, N.Y., assignor to Magnetrol International, Inc., Downers Grove, Ill.

Filed Sep. 4, 1990, Ser. No. 578,558
Int. Cl.[5] G01N *9/24*
U.S. Cl. 73—602 **14 Claims**



1. A detector which discriminates between echoes of transmitted bursts of energy and spurious echoes, based on the frequency of the echoes, and which is responsive only to echoes having substantially the same frequency as the transmitted bursts, said detector comprising:

means for transmitting a plurality of successive bursts of energy at a transmission frequency and for generating a plurality of echo signals in response to receiving echoes of said energy bursts, said successive bursts of energy being transmitted at substantially the same frequency;

means coupled to said transmitting means for detecting the frequency of said echo signals;

frequency-check means for determining whether the frequency of said echo signals substantially matches the transmission frequency of said transmitting means; and

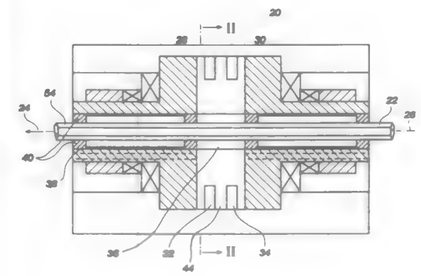
means for generating a parameter based only upon said echo signals whose frequency substantially matched the frequency of the corresponding energy bursts.

5,335,546

ULTRASONIC TESTING OF ELONGATED, PRISMSHAPED SECTIONS WITH AT LEAST ONE PLANE OUTER SURFACE EXTENDING ALONG THE LONGITUDINAL AXIS OF THE SECTION

Bernhard Karbach, Erftstadt-Friesheim; Reinhard Prause, Augustin, and Heinrich Weber, Lindlar-Frielingsd., all of Fed. Rep. of Germany, assignors to Krautkrämer GmbH & Co., Hürth, Fed. Rep. of Germany

PCT No. PCT/DE90/00204, § 371 Date Sep. 19, 1991, § 102(e) Date Sep. 19, 1991, PCT Pub. No. WO90/11516, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 17, 1990, Ser. No. 761,788
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1989, 3908967
Int. Cl.[5] G01N *29/04*
U.S. Cl. 73—622 **9 Claims**



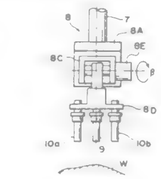
1. Process for ultrasonic testing of elongated, prismatic workpieces, which workpieces have at least one planar outer surface extending along the longitudinal axis, to detect one of material defects and geometric data of the workpieces, wherein a workpiece to be tested is subjected to ultrasonic beams from several ultrasonic probes installed in a probe carrier, and the workpiece to be tested is fed along its longitudinal axis in relation to the probe carrier which is installed in a rotor of a rotary testing machine rotating about the longitudinal axis of the workpiece, the ultrasonic probes being installed in the probe carrier for displacement transversely to both the longitudinal axis and the direction of ultrasonic beams emitted by the ultrasonic probes, wherein the individual ultrasonic probes are adjusted so that central beams of said ultrasonic beams emitted by each ultrasonic probe impinge either simultaneously or at different times upon the planar outer surface of the workpiece at points of incidence which are adjacent to one another, thus forming adjacent scanning zones in the volume of the workpiece, and wherein the ultrasonic probes are activated individually by an arrangement for determining the angle of rotation between the rotor and the workpiece, the testing being only performed when the angle of rotation between a central beam of the ultrasonic beam emitted by an individual ultrasonic probe and the planar outer surface lies within a predetermined angular range of about 90°.

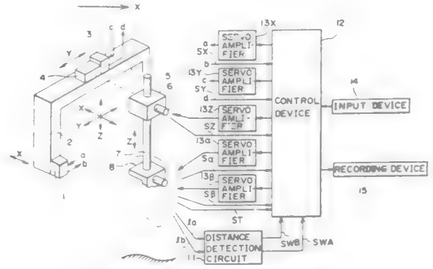
5,335,547

ULTRASONIC FLAW DETECTOR

Kichio Nakajima; Kazuo Honma; Yukio Sumiya; Takeshi Yamaguchi; Hiroshi Inamitsu, and Eiji Minamiyama, all of Ibaragi, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01054, § 371 Date Feb. 4, 1992, § 102(e) Date Feb. 4, 1992, PCT Pub. No. WO91/02971, PCT Pub. Date Mar. 7, 1991
PCT Filed Oct. 20, 1990, Ser. No. 793,392
Claims priority, application Japan, Aug. 21, 1989, 1-214365; Oct. 9, 1989, 1-263418
Int. Cl.[5] G01N *29/10, 29/26*
U.S. Cl. 73—622 **14 Claims**





1. An ultrasonic flaw detector comprising:

an ultrasonic probe for radiating an ultrasonic flaw-detecting signal onto each flaw detection point within a flaw detection area which is specified on a surface of a target, and receiving an ultrasonic wave reflected from the detection point;

distance sensor means for radiating a distance measuring signal onto a measuring point within a position storing area including the flaw detection area to detect a distance between the measuring point and said distance means;

coupling means for integrally coupling said distance sensor means and said ultrasonic probe in such a manner that said distance sensor means scans a preceding scanning line;

position and orientation control means for controlling position and orientation of said ultrasonic probe and said distance sensor means;

shape information calculation means for calculating information on the shape of the position storing area including the flaw detection area on the basis of a detection result of said distance sensor means and a current position of said distance sensor means;

storing means for storing the shape information;

position and orientation calculation means for calculating position and orientation of said ultrasonic probe on the basis of the shape information stored in said storing means to thereby radiate the flaw detecting signal onto the measuring point at predetermined angle and distance from said ultrasonic probe; and

control means for performing a shape-measurement scanning operation of said distance sensor means and a flaw-detection scanning operation of said ultrasonic probe in parallel with each other.

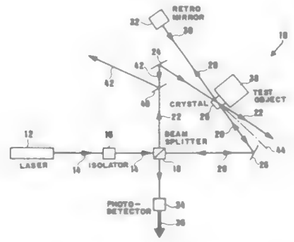
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,548

NON-LINEAR OPTICAL CRYSTAL VIBRATION SENSING DEVICE

Ralph Kalibjian, Livermore, Calif., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 19, 1992, Ser. No. 901,289
Int. Cl.[5] G01H *1/00, 9/00*
U.S. Cl. 73—655 16 Claims



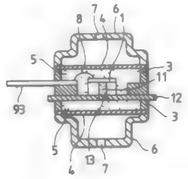
1. An improved vibration sensor, comprising:
a photorefractive crystal, said photorefractive crystal being positioned such that said photorefractive crystal is physically disturbed by vibrations which are to be sensed;
a coherent light source for generating at least two laser beams;
laser beam redirection means for redirecting the laser beams such that the laser beams each pass through said photorefractive crystal and further such that mixing of the laser beams occurs within said photorefractive crystal;
photodetection means positioned for interception at least one of the laser beams at a position such that after the laser beam which is intercepted has passed through said photorefractive crystal, wherein:
a velocity bias is imposed internally on said photorefractive crystal by the action of counter-propagating one of the laser beams back upon itself such that the laser beam which is counter-propagated passes twice through said photorefractive crystal.

5,335,549

SEMICONDUCTOR PRESSURE SENSOR HAVING DOUBLE DIAPHRAGM STRUCTURE

Kazuyuki Kato, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 982,655
Claims priority, application Japan, Nov. 29, 1991, 3-315694
Int. Cl.[5] G01L *7/00*
U.S. Cl. 73—706 3 Claims



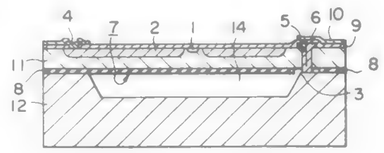
1. A semiconductor pressure sensor for detecting a pressure differential, comprising:
a semiconductor chip having first and second surfaces, the first surface having a recessed portion, the semiconductor chip further having a plurality of distortion gages formed on the recessed portion and constituting a bridge circuit;
a substrate having first and second surfaces, the substrate having a hole extending from the first surface to the second surface, the first surface of the semiconductor chip being airtightly coupled to the first surface of the substrate to cover the hole in the substrate;
a first container wall having first and second ends, the first end being airtightly coupled to the periphery of the first surface of the substrate;
a first sealed diaphragm having its periphery airtightly coupled with the second end of the first container wall and positioned opposite the second surface of the semiconductor chip;
wherein a first closed space is defined by the second surface of the semiconductor chip, the first surface of the substrate, the first container wall, and the first sealed diaphragm;
a first liquid filling the first closed space;
a first container cover having its periphery airtightly coupled to the periphery of the first sealed diaphragm, the first container cover having a hole for communicating a first pressure with the first sealed diaphragm;
a second container wall having first and second ends, the first end being airtightly coupled to the periphery of the second surface of the substrate;
a second sealed diaphragm having its periphery airtightly coupled with the second end of the second container wall and positioned opposite the first surface of the semiconductor chip;
wherein a second closed space is defined by the first surface of the semiconductor chip, the second surface of the substrate, the second container wall, and the second sealed diaphragm;
a second liquid filling the second closed space; and
a second container cover having its periphery airtightly coupled to the periphery of the second sealed diaphragm, the second container cover having a hole for communicating a second pressure with the first sealed diaphragm.

5,335,550

SEMICONDUCTOR PRESSURE SENSOR INCLUDING MULTIPLE SILICON SUBSTRATES BONDED TOGETHER AND METHOD OF PRODUCING THE SAME

Kimitoshi Satou, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,262
Claims priority, application Japan, Apr. 1, 1992, 4-079617
Int. Cl.[5] G01L *9/06*
U.S. Cl. 73—727 14 Claims



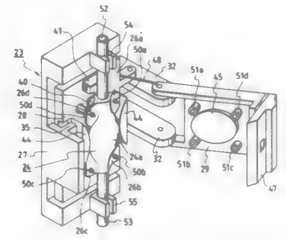
1. A semiconductor pressure sensor comprising:
a first silicon substrate having a primary surface and including a recess serving as a vacuum chamber;
a second silicon substrate having a primary surface, circuitry disposed on said primary surface of said second silicon substrate comprising diffused resistors and diffused wiring, and a secondary surface bonded to said primary surface of said first silicon substrate;
an interface insulating film interposed between said primary surface of said first silicon substrate and said secondary surface of said second silicon substrate; and
a silicon oxide film disposed on said primary surface of said second silicon substrate to protect said device.

5,335,551

PILLOW TYPE PRESSURE DETECTOR

Michikazu Ohnishi, Hyogo; Hiroshi Ogoshi, Shiga, and Kazuoki Takikawa, Hyogo, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 12, 1992, Ser. No. 973,397
Int. Cl.[5] G01L *7/08, 9/00*
U.S. Cl. 73—731 4 Claims



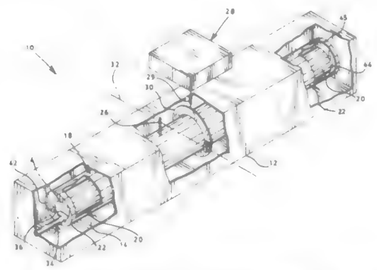
1. A pillow type pressure detector, comprising:
a base board on the front surface of which a load cell type load sensor is mounted;
a holder cover having means for spacing said holder cover a predetermined distance from said base board;
a flat-plate-shaped load transmitting board and a flat-plate-shaped retaining board positioned between said base board and said holder cover;
a pillow type pressure reaction jig positioned between said load transmitting board and said retaining board, said pillow type pressure reaction jig including a bag capable of having a pressure medium supplied therein; and
a pillow holding member for clamping predetermined portions of said pressure reaction jig over said base board and said holder cover.

5,335,552

DEVICE FOR ACCURATELY MEASURING MASS FLOW OF GASES

James O. Hylton, Clinton, and Carl J. Remenyik, Knoxville, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Jul. 7, 1993, Ser. No. 88,122
Int. Cl.[5] G01F *1/00;* G01G *11/04*
U.S. Cl. 73—861 20 Claims



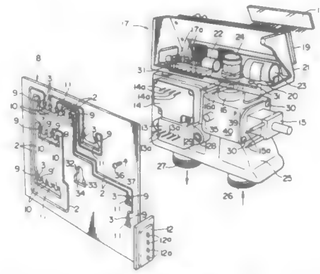
1. A device for accurately measuring mass flow of gases, said device comprising:
an enclosure defining an internal cavity;
a fluid within said internal cavity, said fluid having a selected level in said enclosure;
a pressure vessel within said fluid, said pressure vessel having a buoyancy such that said pressure vessel is maintained suspended within said fluid below said level;
a weight measuring device connected to said pressure vessel; and
a gas line penetrating said enclosure and being in gas flow communication with an interior of said pressure vessel, said gas line including a capillary tube whereby said gas line applies substantially no loading upon said pressure vessel to affect weighing of said pressure vessel by said weight measuring device.

5,335,553

FLUIDIC GAS METER PROVIDED WITH A PRINTED WIRING BOARD

Takashi Ueki; Katsuhito Sakai, both of Tokyo; Koichi Kanda, Kuwana, and Hideo Kamiya, Okazaki, all of Japan, assignors to Tokyo Gas Co. Ltd., Tokyo and Aichi Tokei Denki Co., Ltd., Nagoya, both of Japan

Filed Nov. 13, 1991, Ser. No. 791,249
Claims priority, application Japan, Nov. 15, 1990, 2-120199[U]; Nov. 15, 1990, 2-310701; Nov. 15, 1990, 2-310702; Nov. 30, 1990, 2-129632[U]
Int. Cl.[5] G01F *1/32*
U.S. Cl. 73—861.19 11 Claims



11. A fluidic gas meter, including a flow path structure provided with a fluidic element; a cut-off valve, a pressure switch, a flow sensor, a piezoelectric film sensor, an electronic circuit unit, and a wiring board serving as a mother board having the function of lead wires;
each of the cut-off valve, the pressure switch, the flow sensor and the piezoelectric film sensor being fixed to the flow path structure;
the electronic circuit unit being made up of a counter board and a control circuit board, the counter board being mounted with an electronic circuit for counting up flow-rate signals from the flow sensor and the piezoelectric-film sensor and with a liquid crystal display device for displaying the amount of gas consumed;
a control circuit for controlling the cut-off valve is mounted on the control circuit board, wherein each of the cut-off valve, the pressure switch, the flow sensor, the piezoelectric-film sensor and the electronic circuit unit are provided with a plurality of terminals extending perpendicularly to said wiring board;
said wiring board being provided with a printed circuit for the interconnection among the terminals, said wiring board having a plurality of V-shaped guide grooves formed therein for receiving said terminals and guiding said terminals to through holes formed at an apex of the V-shape of the guide grooves, wherein said terminals form an electrical connection with the printed circuit of the circuit board, thereby avoiding wiring errors.

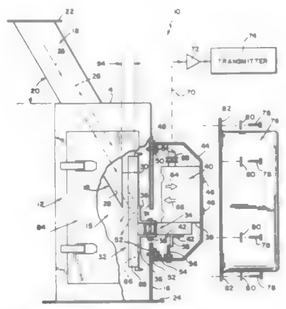
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5,335,554

IMPACT FLOWMETER

David Kempf, Nineveh, and William P. McCarthy, Indianapolis, both of Ind., assignors to Endress + Hauser Inc., Greenwood, Ind.

Filed Oct. 1, 1992, Ser. No. 955,289
Int. Cl.[5] G01F *1/30*
U.S. Cl. 73—861.73 30 Claims



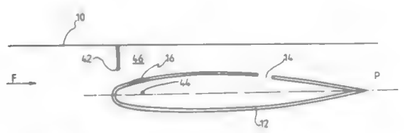
25. An impact flowmeter comprising:
a housing having an inlet end, an outlet end, and an interior region;
an inlet chute coupled to the inlet end of the housing, the inlet chute having an open end for discharging material into the interior region of the housing;
a load cell coupled to the housing for generating an output signal;
an impact plate coupled to the load cell, the impact plate being aligned with the inlet chute so that material entering the housing strikes the impact plate, the impact plate deflecting the load cell in a measurement direction to change the output signal from the load cell based on the flow rate of material;
means for adjusting a vertical position of the impact plate relative to the inlet chute so that the impact plate is properly aligned with the inlet chute in a vertical direction; and
means for adjusting a horizontal position of the impact plate relative to the inlet chute so that the impact plate is properly aligned with the inlet chute in a horizontal direction.

5,335,555

VOLUME FLOW METER THAT MEASURES TRANSIT TIME

Jean-Luc Guizot, Charentonle Pont; Bradley King, Malakoff, and Alain Zarudiansky, Vélizy, all of France, assignors to Schlumberger Industries S.A., Montrouge, France

Filed Oct. 28, 1993, Ser. No. 141,977
Claims priority, application France, Nov. 10, 1992, 92 13651
Int. Cl.[5] G01F *1/708, 1/68*
U.S. Cl. 73—861.95 15 Claims



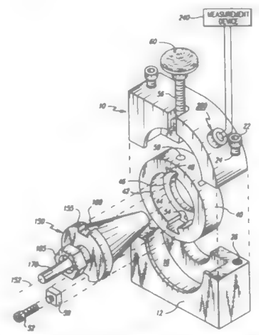
1. A volume flow meter that measures transit time and that is suitable for being placed in a duct having a fluid flowing therealong, the flow meter comprising:
an enclosure provided with an opening suitable for enabling fluid exchange to take place between the inside and the outside of the enclosure, the fluid inside the enclosure being substantially at rest;
a single heater element mounted flush with the wall of the enclosure and suitable for emitting modulated thermal pulses simultaneously to the inside and to the outside of the enclosure;
a first thermal sensor placed outside the enclosure without making contact with the enclosure and in the proximity of the heater element;
a second thermal sensor placed inside the enclosure without making contact with the enclosure and in the proximity of the heater element;
measurement means for measuring a first transit time between the emission of thermal pulses and the detection thereof by the first thermal sensor, and a second transit time between the emission of thermal pulses and the detection thereof by the second thermal sensor; and
means responsive to the first and second transit times for deducing a volume flow rate that is compensated in temperature and pressure and that is independent of the composition of the fluid.

5,335,556

TIGTHENING FIXTURE WITH BUILT-IN TORQUE READOUT DEVICE

Victor D. Mogilnicki, Raleigh, N.C., assignor to Kennametal Inc., Latrobe, Pa.

PCT No. PCT/US91/04688, § 371 Date Jan. 6, 1993, § 102(e) Date Jan. 6, 1993, PCT Pub. No. WO92/01213, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 1, 1991, Ser. No. 965,256
Int. Cl.[5] G01L *5/24*
U.S. Cl. 73—862.21 13 Claims



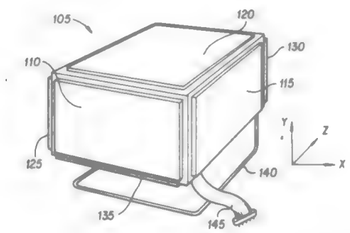
1. A tightening fixture for holding a chuck and indicating the torque applied to a lock nut attached to the chuck while the nut is rotatably tightened on the chuck about the chuck centerline, comprising:
(a) a stationary block;
(b) a torque transmitting collar for receiving and holding the chuck, said collar being mounted to permit rotation in the stationary block about the chuck centerline;
(c) locking means for holding the chuck nonrotatable with respect to the collar so that the chuck and collar rotate as a unit; and
(d) torque indicator means responsive to the rotation of the collar for indicating the tightening torque being applied to the lock nut of the chuck wherein the torque indicator means is comprised of a resistance means for providing resistance to rotation of the collar and a displacement measuring means for determining the tangential force on the collar at a known distance from the chuck centerline as a result of a torque applied to the lock nut; and
(e) said stationary block including an annular recess and the torque transmitting collar is mounted to permit rotation in the annular recess.

5,335,557

TOUCH SENSITIVE INPUT CONTROL DEVICE

Taizo Yasutake, 776 Danforth Ter., Sunnyvale, Calif. 94807

Filed Nov. 26, 1991, Ser. No. 798,572
Int. Cl.[5] G01L *3/00*
U.S. Cl. 73—862.043 14 Claims



1. A touch-sensitive manually operable controller for providing positive and negative control signals relative to three axes, the controller having six sensors mounted on its outer surface, two sensors mounted on opposing sides of the controller relative to each axis of a Cartesian coordinate system, the six sensors including:
a first sensor mounted along the negative X-axis for providing a positive X-axis control signal in response to pressure;
a second sensor mounted along the positive X-axis for providing a negative X-axis control signal in response to pressure;
a third sensor mounted along the negative Y-axis for providing a positive Y-axis control signal in response to pressure;
a fourth sensor mounted along the positive Y-axis for providing a negative Y-axis control signal in response to pressure;
a fifth sensor mounted along the negative Z-axis for providing a positive Z-axis control signal in response to pressure; and
a sixth sensor mounted along the positive Z-axis for providing a negative Z-axis control signal in response to pressure, wherein the controller further includes means for providing combined X-axis control information in response to the integral of the difference between the positive and negative X-axis control signals, providing combined Y-axis control information in response to the integral of the difference between the positive and negative Y-axis control signals, and providing combined Z-axis control information in response to the integral of the difference between the positive and negative Z-axis control signals.

5,335,558

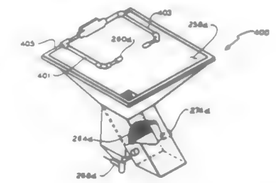
Patent Not Issued For This Number

5,335,559

FIRE FIGHTING TRAINER AND APPARATUS

William Rogers, Hopatcong; James J. Ernst, Livingston; Steven Williamson, Haledon, and Dominick J. Musto, Middlesex, all of N.J., assignors to Symtron Systems, Inc., Fair Lawn, N.J.

Continuation of Ser. No. 873,965, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 625,210, Dec. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 387,348, Aug. 9, 1989, Pat. No. 4,983,124, which is a continuation-in-part of Ser. No. 238,453, Aug. 30, 1988, Pat. No. 4,861,270. This application May 11, 1993, Ser. No. 59,308
The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.
Int. Cl.[5] G09B *19/00;* G01N *21/59, 33/00*
U.S. Cl. 73—866 6 Claims



1. A fire fighting trainer comprising:
one or more chambers having respective contents including items chosen from a group of items including furniture and fixtures and equipment;
a smoke generating means having a plurality of outlets disposed in the respective chambers;
a flame generating means having a plurality of outlets disposed in the respective chambers; and
a sensing means having a plurality of sensor assemblies disposed in the respective chambers and each sensor assembly connecting to a main control panel, wherein
each said sensor assembly includes a plurality of sensors and each said sensor is capable of sensing and reporting a particular extinguishing agent,
recording and control means for controlling the operation of the trainer and recording the results, and
a powder sensor for use in the sensor assembly for sensing the utilization of powder as an extinguishing agent comprising:
a collection funnel for collecting a portion of the powder, and
an infrared source and detector mounted inside the collection funnel for detecting the presence of the powder.

5,335,560

TABLE-TOP GRINDER POWER TRANSMISSION MECHANISM

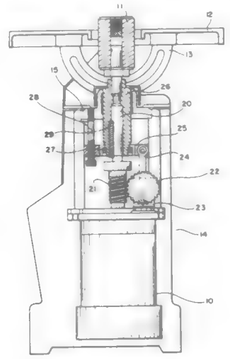
Tian-Wang Wang, No.45, Yi Chang E. Rd., Tai Ping Hsiang, Taichung Hsien, Taiwan

Filed Jan. 22, 1993, Ser. No. 8,349
Int. Cl.[5] F16H *21/22;* B24B *7/08*
U.S. Cl. 74—22 R 1 Claim

1. A table-top grinder power transmission mechanism including a motor for driving a grinding wheel to polish the surface of a workpiece, the transmission mechanism comprising: a worm coupled to a rotatable output shaft of the motor so as to rotate therewith; a worm wheel meshed with said worm such that rotation of the worm causes rotation of the worm wheel; a spindle coupled between said grinding wheel and said output shaft of said motor such that rotation of the output shaft causes the grinding wheel to rotate; a bearing block non-rotatably mounted on said spindle by a bearing; a link having one end connected to said bearing block and an opposite end attached to said worm wheel at an eccentric location such that rotation of the worm wheel causes reciprocation of the link; and a plurality of fixed guide bolts inserted through said bearing

VOL 1165 ISS 2 AG 9 1994 UMI

block so as to guide the movement of the bearing block, whereby said motor causes said output shaft to turn said grinding wheel via said spindle, and simultaneously causes said link to reciprocate said grinding wheel via said bearing block and said spindle.



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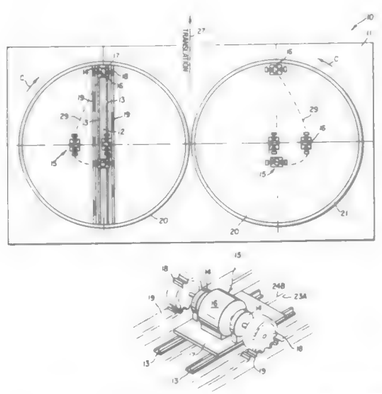
IMPULSE CONVERTER

James Harvey, 6040 Edsall Rd., Apt. 103, Alexandria, Va. 22304

Filed Oct. 23, 1992, Ser. No. 965,761

Int. Cl.[5] F16H *33/20*

U.S. Cl. 74—84 R **8 Claims**



1. An impulse converter for converting angular impulses into linear impulses comprising:

a frame;

frame members on said frame adapted to be oppositely rotated on said frame;

means to rotate said frame members;

radial arms in communication with said frame members;

masses in communication with said radial arms to be radially and tangentially accelerated by said radial arms on said rotating frame members;

retrieval means to return said masses back along said arms;

said retrieval means includes a rack and a pinion with a constant running motor having a magnetic clutch thereon;

whereby the radial and tangential acceleration of the masses is converted into linear impulses.

5,335,562

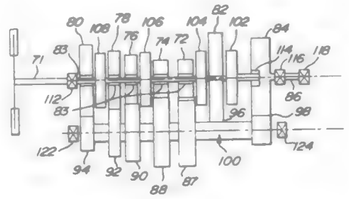
MULTI-SPEED REAR WHEEL DRIVE TRANSMISSION WITH REDUCED IN-NEUTRAL GEAR RATTLE

Cesare G. Mastroianni, 8111 Darwen La., Denver, N.C. 28037, and Timothy E. Mick, 2165 Belle Vernon Dr., Rochester Hills, Mich. 48309

Filed Dec. 8, 1992, Ser. No. 988,292

Int. Cl.[5] F16H *3/08*

U.S. Cl. 74—329 **10 Claims**



1. A multi-speed transmission for a vehicle for connection to a driving source; said transmission comprising:

a driven input shaft;

a first plurality of gears rotatably supported on said input shaft, one of said gears being smaller than a remainder of said first plurality of gears;

at least two synchronizers for coupling a selective one of the first plurality of gears to said input shaft, each of said synchronizers being of the same minimum size, said minimum size being equal to a synchronizer sized for use with said smaller gear;

a countershaft having a second plurality of gears fixed thereto, each of said second plurality of gears meshing with a different one of the first plurality of gears;

an output shaft parallel with said countershaft, said output shaft independently rotatable with respect to said input shaft when said first plurality of gears are not coupled to said input shaft; and

means for meshing engagement of said countershaft to said output shaft;

wherein when said driving source is running and said vehicle is stopped and, said first and second plurality of gears are not rotating whereby neutral roll-over noise is eliminated.

5,335,563

FOOT-OPERATED PARKING BRAKES FOR CARS AND ONE-WAY DAMPERS FOR USE THEREIN

Katsuhiko Yamamoto, Aki; Masamitsu Kojima, Fujisawa, and Kazuo Kato, Yamato, all of Japan, assignors to Kuroishi Iron Works Co., Ltd., Hiroshima and Oiles Corporation, Tokyo, both of Japan

Filed Oct. 20, 1992, Ser. No. 963,757

Claims priority, application Japan, Oct. 29, 1991, 3-311983; Apr. 9, 1992, 4-117948; Sep. 1, 1992, 4-257513

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—512 **7 Claims**

1. A foot-operated parking brake for a car, comprising:

a frame;

a brake pedal attached rotatably to the frame for movement from a home position by a stepping down stroke on the brake pedal and a return stroke to the home position;

one forming member fixed to the frame for forming an accommodating chamber in which a viscous fluid is accommodated;

other forming member disposed rotatably relative to the one forming member and forming the accommodating chamber in association with the one forming member;

a first coil spring connected at one end thereof to the brake pedal and disposed about the other forming member, the first coil spring being wound in a direction to slide relative to the other forming member in the stepping-down stroke of the brake pedal, and to contact the other forming member with high frictional resistance on the return stroke of the brake pedal to the home position;

a second coil spring connected at one end thereof to the frame and disposed at the brake pedal, the second coil spring being wound in a direction to loosely contact the brake pedal in the stepping-down stroke of the brake pedal, and to contact the brake pedal with high frictional resistance in the brake pedal return stroke to the home position;

a return spring stretched between the frame and the brake pedal to return the brake pedal to the home position by a resiliency of the return spring; and

release means for releasing a contact of the second coil spring to the brake pedal with high frictional resistance.

5,335,564

CAM FOR REVOLVING DOBBY

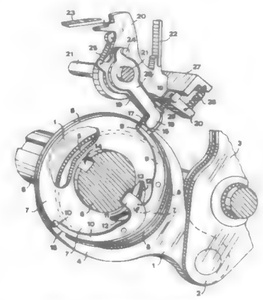
Costantino Vinciguerra, Florence, Italy, assignor to Nuovopignone - Industrie Meccaniche e Fonderia S.p.A., Florence, Italy

Filed Feb. 24, 1993, Ser. No. 21,777

Claims priority, application Italy, Feb. 25, 1992, MI9-[illegible]

Int. Cl.[5] D03C *1/00;* **F16H** *53/00*

U.S. Cl. 74—567 **2 Claims**



1. A cam and dobby apparatus comprising,

a dobby and an intermittent-motion drive shaft including longitudinally extending, oppositely positioned grooves;

a cam and plate member, said cam being positioned between said intermittent-motion drive shaft and a head of a main connecting rod that is installed idling on said intermittent-motion drive shaft, said plate member having a peripheral edge that extends outwardly from a surface of said plate member and includes oppositely positioned notches therein, first and second spring biased key levers pivotally connected to the surface of said plate member, one of said key levers having a first end that can be received by and cooperates with one of said grooves to lock said cam in rotatable position with said intermittent-motion drive shaft, said key levers each having second free ends terminating adjacent to said notches, said second free ends being supported and protected by said outwardly extending peripheral edge of said plate member; and

a drive pusher and a rotatably hinged auxiliary pusher mounted on a common axis, thereby superimposing said drive pusher on said auxiliary pusher, each of said drive and auxiliary pushers have a thrust tooth at one end thereof that can be received by either of said notches, first spring means urging one end of said auxiliary pusher towards a fixed support and said auxiliary pusher thrust tooth into engagement with one of said notches and, second spring means engaging a shoulder of said drive pusher to force said thrust tooth of said drive pusher into said notch to engage one of said key levers and to disengage said first end of said key lever from said groove of said shaft.

5,335,565

ELECTRONIC CONTROL TYPE AUTOMATIC SPEED CHANGER

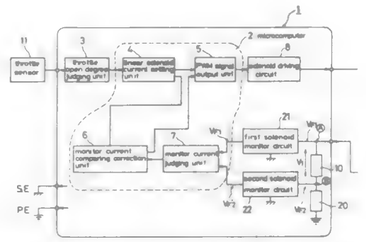
Yasunobu Ito, Okazaki, and Makoto Hatasa, Anjo, both of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Dec. 28, 1990, Ser. No. 633,618

Claims priority, application Japan, Dec. 28, 1989, 1-338194

Int. Cl.[5] F16H *59/24*

U.S. Cl. 477—131 **11 Claims**



1. An electronic control circuit for a linear solenoid which controls oil pressure in an automatic speed changer, said control circuit comprising:

a current monitor device having a first side connecting with the linear solenoid and a second connection;

a first solenoid monitor circuit for monitoring the potential at said first, linear solenoid side of said current monitor device relative to a signal ground;

potential difference compensation means connected in series between said second connection of said current monitor device and a power ground, for providing a compensation voltage drop between the second connection and the power ground; and

a second solenoid monitor circuit for monitoring the potential at said second connection relative to the signal ground;

solenoid current determining means, connected to said first and second solenoid monitor circuits for determining actual current through the solenoid, wherein voltage differences between the signal and power grounds are eliminated.

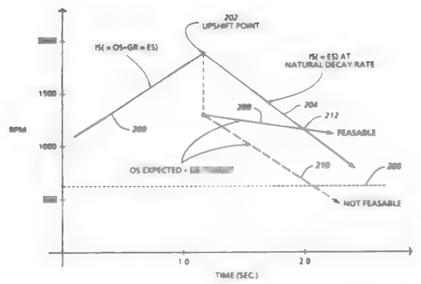
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,566

SHIFT CONTROL METHOD/SYSTEM

Thomas A. Genise, Dearborn, and Ronald K. Markyvech, Allen Park, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 6, 1992, Ser. No. 909,332
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[5] B60K *41/18, 41/06*
U.S. Cl. 477—124 20 Claims



1. A control system for controlling at least partially automated implementation of selected shifts of a vehicular mechanical change gear transmission system comprising a controlled fuel throttle controlled engine (E), a multi-speed change gear mechanical transmission (10) having an input shaft (16) and an output shaft (90) adapted to drive vehicular drive wheels, said input shaft having a determinable expected acceleration during a gear ratio change operation, a master friction clutch (C) drivingly interposed between the engine and the transmission, a first sensor (98) for providing a first input signal indicative of transmission input shaft (16) rotational speed, a second sensor (100) for providing a second input signal indicative of vehicle speed, a third sensor (DL) for providing an input signal indicative of engine torque and a transmission actuator (112, 70, 96) for controlling shifting of the transmission, said control system characterized by;

means for determining selection of a shift from a currently engaged transmission ratio to a target gear ratio,

means for determining as a function of at least said input signals indicative of (i) current engine torque and (ii) current vehicle acceleration, the expected vehicle acceleration (A_0) under current vehicle operating conditions and at zero engine torque to the drive wheels;

means for determining as of function of (i) expected vehicle acceleration (A_0) under current vehicle operating conditions and zero engine torque to the drive wheel, (ii) the gear ratio of the selected target gear ratio and (iii) the expected input shaft acceleration during a shift into the target gear ratio, feasibility or infeasibility of achieving substantially synchronous conditions for engagement of the target ratio if the selected shift is implemented, and

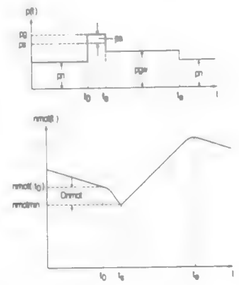
means for causing the initiation of a selected shift only upon a determination of feasibility of achieving substantially synchronous conditions for engagement of the target gear ratio.

5,335,567

PROCESS FOR CONTROLLING THE ACTUATING PRESSURE IN A CONTROL ELEMENT OF AN ELECTROHYDRAULICALLY CONTROLLED MOTOR VEHICLE TRANSMISSION

Willi Seidel, Eberdingen-Hochdorf, and Joseph Petersmann, Wimsheim, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F Porsche AG, Fed. Rep. of Germany

Filed Jul. 27, 1992, Ser. No. 919,403
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1991, 4124603
Int. Cl.[5] F16H *61/08;* B60K *41/18*
U.S. Cl. 475—120 13 Claims



1. A process for controlling actuating pressure in a control element of an electrohydraulically controlled automatic transmission system of a motor vehicle during a change of gear position, the automatic transmission system having at least one electromagnetically actuated pressure control valve which is controlled by a control unit as a function of operating parameters and by means of which a pressure medium from a pressure source can be fed into a hydraulic circuit and a certain pressure can be controlled via control operations into the hydraulic circuit which is a function of operating parameters and which, during the change of gear position, is increased by a certain amount, and having a shift valve which is controlled by the control unit and which connects the control element alternately with the pressure-controlled hydraulic circuit or with a pressure sink, the process comprising:

setting a pressure during the change of gear position;

controlling the control element with the pressure control valve in a time-limited manner out of a pressureless condition caused by the shift valve, including:

adjusting an increased pressure in the hydraulic circuit which has been increased with respect to the pressure set during the change of gear position, wherein, starting from a presettable basic value of the pressure, in the course of the operation of the transmission system, the increased pressure is automatically and in steps for each of said control operations adapted to a target value such that a rotational speed decrease of an input rotational speed of the transmission system is within preset limits;

wherein the increased pressure is adjusted only from a start of the change of gear position to a point in time at which the rotational speed of the driving engine passes through a minimum rotational speed;

wherein the amount of pressure adaptation of the basic value is limited by a calculated value which is obtained when the transmission system is situated at system wear limits;

wherein the control element actuates a clutch or a brake of a multi-gear transmission system with planetary trains, and the control element engages at least one gear position of the transmission system, the control element adjusting the pressure in the hydraulic circuit to a variable value which is a function of operating conditions of the motor vehicle and at least of the torque to be transmitted by the transmission system, wherein the increased pressure is a function of the gear positions to be changed and of the direction of the change of gear positions; and

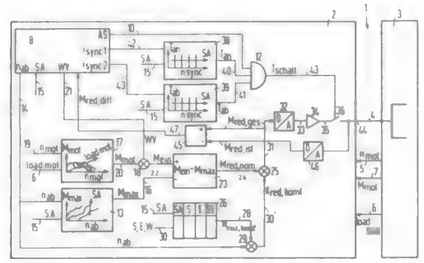
wherein the increased pressure is set by the control unit only in the event of the downshifts in a coasting operation of the motor vehicle.

5,335,568

CONTROL FOR A MOTOR VEHICLE DRIVE HAVING AN AUTOMATIC TRANSMISSION

August Kammerl, Brunn, and Friedrich Graf, Regensburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 937,548
Claims priority, application European Pat. Off., Aug. 30, 1991, 91114629.8
Int. Cl.[5] B60K *41/06*
U.S. Cl. 477—109 5 Claims



1. In a motor vehicle drive having an engine producing torque and an automatic transmission, a control for the motor vehicle drive, comprising:

an engine control for controlling a variable influencing the torque of the engine; and

a transmission control for controlling shifting events of the transmission, said transmission control having means for generating and for transmitting an intervention signal to the engine control for initiating a shifting event, said transmission control including:

a first device for ascertaining a current transmission input torque,

a memory for storing torque values being maximally allowable during a shifting event, as a function of engine rpm and shifting type,

a second device connected to said first device and to said memory for comparing the current transmission input torque with the maximum allowable torque value at any given time and ascertaining a proportion by which the engine torque is to be varied during the shifting event, and

a pulse former circuit connected to said second device and to said engine control for converting the proportion into a pulse modulated signal to be transmitted to said engine control as a control signal for controlling a variation in the engine torque during the shifting event.

5,335,569

EYE SCREW DRIVING DEVICE

John H. Rowley, Gastonia, N.C., assignor to R. H. Rowley Co., Gastonia, N.C.

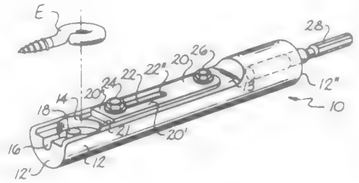
Filed Mar. 2, 1993, Ser. No. 24,723
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—125 12 Claims

1. A device for use in driving insertion and removal of a plurality of differently-sized eye screws and hooks of the type having an eyelet-shaped head portion and a shank extending therefrom for rotational penetration of a supporting member, wherein said eye screws and hooks have respective head portions and respective shanks of a common cross-sectional dimension, but differ in the overall size of their respective head portions, said driving device comprising:

a body defining a rotational driving axis about which said body may be rotatably driven;

a recess in said body, said recess having a main area sized and configured in conformity to the head portion of the eye screw or hook of said plurality of eye screws and hooks which has the largest-sized head portion and a channel portion which opens to one end of said body and is sized and configured in conformity to the common cross-sectional dimension of the respective shanks of said plurality of eye screws and hooks, said recess being capable of receiving interchangeably any selected one of said plurality of eye screws and hooks with the respective head portion thereof disposed within the main area of the recess and the respective shank disposed within the channel portion of the recess to extend outwardly from said one end of said body in alignment with said rotational axis;

a cover device mounted on said body for selective sliding movement between an extended position disposed in covering relation to said recess for retaining the head portion of the eye screw or hook therein and a retracted position out of covering relation to said recess for selective insertion and removal of eye screws and hooks into and from said recess; and



an upstanding post formed in said main area of said recess for insertion through the eyelet portion of any eye screw or hook received therein, said post being of a size and configuration to occupy no greater than the area within the eyelet portion of the eye screw or hook of said plurality of eye screws and hooks which has the smallest-sized head portion and to occupy less than the entirety of the area within the eyelet portion of each other eye screw or hook of said plurality of eye screws and hooks, said post being disposed at an offset within the main area of said recess to be spaced most closely to said channel portion, the spacing of said post to said channel portion corresponding to said common cross-sectional dimension of the head portions of said plurality of eye screws and hooks to prevent shifting movement within the main area of the recess by any eye screw or hook received therein.

5,335,570

AUTOMATIC PIPE CUTTING DEVICE

Jong-Ho Ro, Seoul, Rep. of Korea, assignor to Hankook Metal Co., Ltd., Kyungki, Rep. of Korea

Filed Mar. 29, 1993, Ser. No. 38,647
Claims priority, application Rep. of Korea, Apr. 7, 1992, 92-5769
Int. Cl.[5] B23B *5/14, 13/00*
U.S. Cl. 82—48 12 Claims

1. An automatic pipe cutting device comprising:

a box-shaped main body having an opened top;

two generally parallel supporting frames fixed to the main body;

first and second guide bars transversely fixed to the supporting frames;

a base plate having first and second bearing housings movable along the guide bars;

VOL 1165 ISS 2 AG 9 1994 UMI

a pair of springs wound around said second guide bar, the springs being disposed between said bearing housing and one of said supporting frames;

a pipe fixing member including a first air cylinder disposed in a pipe entrance on said base plate, a hollow piston rod movable within a space in said first air cylinder, the hollow piston rod being moved in response to air supplied by the first air cylinder, the pipe fixing member further including a slotted clamp and a pressure rod, the slotted clamp being attached to said hollow piston rod through nuts which guide delivery of a pipe, the pressure rod being fixed to a rear portion of said slotted clamp, whereby upon delivery, the pipe is clamped by pressing the pressure rod centrally inwardly when the hollow piston rod moves to the pipe entrance area;

a pipe cutting member including

a second air cylinder fixed to said base plate adjacent to said pipe fixing member,

a hollow piston rod for moving along an interior wall of said second air cylinder in response to a direction of air supply to the second air cylinder,

a fixing pipe having a slant face for slidably contacting with a tapered slant face of said pressure rod, said fixing pipe inserting between said piston rod and said pipe fixing member and fixing to said second air cylinder,

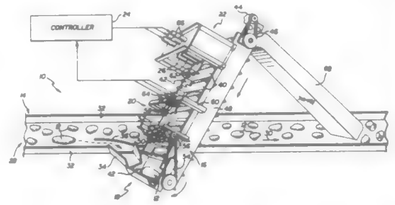
a pulley having a first bearing disposed on a circumferential surface of a rear portion of said piston rod,

5,335,571

PRODUCT LENGTH CONTROL SYSTEM

Gayle B. Pike, Twin Falls, Id., assignor to J. R. Simplot Company, Boise, Id.

Filed Mar. 11, 1993, Ser. No. 29,560
Int. Cl.[5] B26D *1/09, 7/06*
U.S. Cl. 83—13 14 Claims



12. A method of cutting oversized products products to control product length distribution, said method comprising the steps of:

conveying the products along a predetermined laterally tilted path in single file and in a predetermined orientation to extend generally transversely with respect to said predetermined path with one end of each product contacting a reference base wall;

detecting the length of each one of the products; and

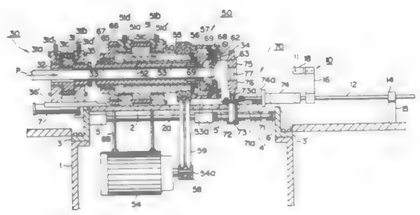
cutting each product having a length greater than a selected threshold at one of a plurality of different positions in response to detected product length.

5,335,572

METHOD AND APPARATUS FOR PROCESSING SHEETS OF MATERIAL IN REGISTER, IN PARTICULAR FOR MAKING SECURITY THREADS

Wittich Kaule, Emmering, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation, Fed. Rep. of Germany

Division of Ser. No. 472,371, Feb. 1, 1990, Pat. No. 5,239,902.
This application Jun. 17, 1993, Ser. No. 77,532
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1989, 3902960
Int. Cl.[5] B65H *23/032*
U.S. Cl. 83—74 8 Claims



a tubular member having a plurality of guide rails disposed on a gradually narrowing slant face, the tubular member being connected to said pulley for rotating with the pulley, and

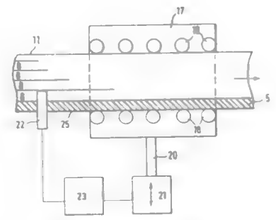
a bit holding member supported by a second bearing disposed on a rear edge of the fixing pipe, said bit holding member being provided with a cutting bit fixed to one edge and

said guide rail being fixed to an other edge thereof, whereby the pipe cutting member cuts the pipe by the cutting bit which rotates when the pipe fixing member presses the pipe, the piston rod pulls the rotating tubular member to the pipe entrance area and the bit holding member engaged with the guide rails is transported to a center thereof;

an operating bar being fixed to said base plate at one end and being supported by a bearing housing at an other end thereof;

a pipe cutting length adjusting member for adjustably fixing a position of said operating bar and for detecting passage of the pipe continuously and then immediately transmitting a signal to clamp a delivered pipe; and

a pipe discharging member and for detecting completion of pipe cutting by the pipe cutting member and for discharging a cut pipe from the pipe cutting apparatus.



1. A sheet processing apparatus comprising:

a transport means for feeding a sheet of material to a processing unit;

feeding means, disposed before the processing unit, for feeding the sheet of material and guiding it on at least one edge to the processing unit in a predetermined position relative thereto;

a measuring means, disposed before the feeding device, for determining the position of a marking on said sheet relative to an edge of said material;

a control unit responsive to said measuring means; and

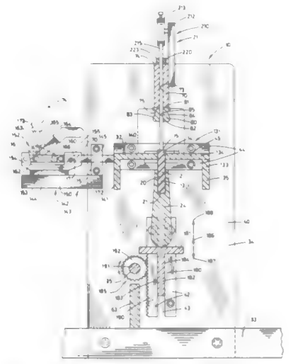
an actuator means for positioning the feeding device responsive to said control unit.

5,335,573

APPARATUS FOR TRIMMING A DEFORMABLE SUBSTRATE

George M. Rogers, 3750 S. 91 St., Milwaukee, Wis. 53228

Filed Mar. 22, 1993, Ser. No. 18,861
Int. Cl.[5] B26D *7/02*
U.S. Cl. 83—870 17 Claims



1. An apparatus for trimming a deformable substrate, comprising:

a main frame;

a track borne by the main frame;

a cutter assembly borne by and movable along the track;

a support assembly borne by the main frame for supporting the deformable substrate, the support assembly being movable along a path of travel from a first position to a second position, and wherein the support assembly when disposed in the second position is operable to support the deformable substrate in a trimming position relative to the cutter assembly;

a holding assembly borne by the main frame and disposed in spaced relation relative to the cutter assembly, the holding assembly operable to contact opposing sides of the deformable substrate to secure the deformable substrate in the trimming position; and

an arresting assembly borne by the holding assembly and disposed in juxtaposed relation against an end of the deformable substrate to impede longitudinal deformation of the substrate as it is trimmed by the cutter assembly.

5,335,574

SELF PLAYING PIANO AND AN APPARATUS FOR AUTOMATIC PLAYING OF A PIANO

Hiroshi Matsunaga, and Tetsusai Kondo, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

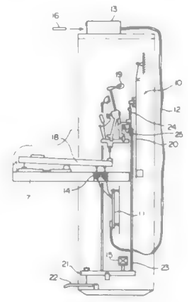
Filed Mar. 24, 1993, Ser. No. 36,661
Claims priority, application Japan, Apr. 7, 1992, 4-113199; Apr. 14, 1992, 4-119569
Int. Cl.[5] G10F *1/02, 5/00;* G10G *3/04*
U.S. Cl. 84—21 4 Claims

1. A self-playing piano having keys, which activates operation terminals in consonance with received play data to play music, comprising:

input means for receiving play data, including, at the least, soft pedal event information and key event information;

soft pedal history holding means for, when said soft pedal event information is received from said input means, holding the ON/OFF history of a soft pedal in consonance with said soft pedal event information;

conversion means for, when said key event information is received from said input means and said soft pedal history holding means is holding an ON event for said soft pedal, performing a predetermined conversion of key depression



force data that is included in said key event information, said predetermined conversion being dependent on a key which corresponds to said soft pedal ON event; and

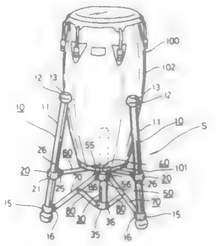
control means for controlling said operation terminals in consonance with said key depression force data that has been converted by said conversion means.

5,335,575

CONGA STAND

Yoshiki Hoshino, Aichi, Japan, assignor to Roland Meinl Company, Neustadt/Aisch, Fed. Rep. of Germany

Filed Apr. 22, 1993, Ser. No. 51,197
Claims priority, application Japan, Aug. 24, 1992, 4-248787
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—421 1 Claim



1. A conga stand (S) comprising:

three leg members (10) positioned at each vertex of an almost equilateral triangle viewed in plane, each leg member (10) having on its upper end a presser portion (12) to be pressed against a conga drum (102) and on its lower end a leg lower hinge portion (15);

three leg slide members (20) attached along the respective leg members (10), each leg slide member (20) being provided with a hinge portion (25) and being lockable by a locking means (N);

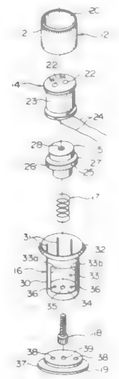
a shank member (30) positioned at almost the center among the three leg members (10) and having a lower hinge portion (35) on a lower end thereof;

a shank upper slide member (40) attached along the shank member (30), provided with three hinge portions (45) corresponding to the respective hinge portions (25) of the

VOL 1165 ISS 2 AG 9 1994 UMI

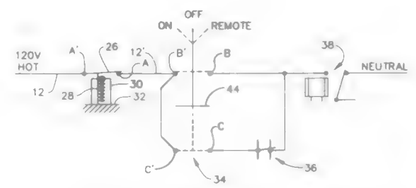
leg slide members (20), and lockable by a locking means (B1);
a shank lower slide member (50) attached along the shank member (30), provided with three hinge portions (55) corresponding to the respective leg lower hinge portions (15), and lockable by a locking means (B2);
three holding stays (60), both ends of each holding stay (60) being pivotably attached to the hinge portion (25) of the leg slide member (20) and to the hinge portion (45) of the shank upper slide member (40), respectively;
three support stays (70), both ends of each support stay (70) being pivotably attached to the leg lower hinge portion (15) and to the hinge portion (55) of the shank lower slide member (50), respectively; and
three auxiliary stays (80), both ends of each auxiliary stay (80) being pivotably attached to the middle portion of the support stay (70) and the lower hinge portion (35) of the shank member (30), respectively.

5,335,576
PICKUP FOR GUITAR
Nobuaki Hayashi, 5882-2 Sasaga, Matsumoto, Nagano, Japan
Filed Nov. 25, 1992, Ser. No. 981,829
Int. Cl.[5] G10H *3/14*
U.S. Cl. 84—727 **4 Claims**



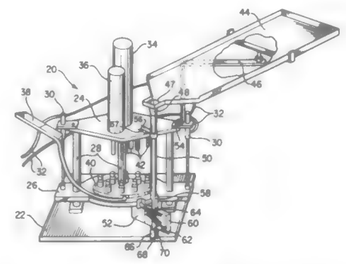
4. An electric guitar comprising:
a body;
a plurality of strings mounted on the body;
a pickup for each string, each pickup disposed in an aperture defined by the guitar body proximate a corresponding string, each pickup including electromagnetic means for receiving sounds or vibrations from a string, and means for adjusting the position of the electromagnetic means and varying the distance between the pickup and a corresponding string;
said electromagnetic means including:
a holder mounted in the aperture,
a magnet body mounted in the holder,
said magnet body being rotatable in the holder and movable inwardly and outwardly of the holder,
said magnet body including a bobbin and a cylindrical cover disposed around the bobbin.

5,335,577
METHOD AND APPARATUS FOR PREVENTING HAZARDOUS EXPLOSION OF AMMONIUM NITRATE
Steven J. Babb, and John L. Harmon, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.
Filed May 13, 1993, Ser. No. 60,133
Int. Cl.[5] F42B *3/20;* **F23N** *5/22*
U.S. Cl. 86—21 **20 Claims**



1. A device for preventing explosion of a potentially explosive chemical solution inside a pump, said pump having a motor controlled by a motor control circuit and a casing with a suction inlet and a discharge outlet, comprising:
thermal cutoff means for opening said motor control circuit when said thermal cutoff means reaches a predetermined threshold temperature; and
means for attaching said thermal cutoff means to said pump casing.

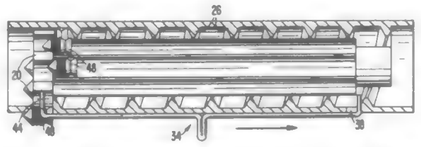
5,335,578
AUTOMATIC SHELL FEEDING ATTACHMENT FOR A RELOADING MACHINE
Paul R. Lorden, 3129 Grier Nursery Rd., Forest Hill, Md. 21050, and Edward L. Bonham, 1360 Quaker Church Rd., Street, Md. 21154
Filed Jul. 13, 1993, Ser. No. 90,320
Int. Cl.[5] F42B *33/00*
U.S. Cl. 86—45 **11 Claims**



1. An automatic shotgun shell feeding attachment for use with a shotgun shell reloading machine having a vertically reciprocating plate member, comprising, hopper means in the form of a tray member, hopper support means, vertically oriented feed tube means leading from said hopper means and having both an upper opening and a lower opening, and a plunger block means disposed at the lower portion of said feed tube means, wherein said plunger block means includes shell sliding means, whereby said plunger block means further includes linkage means connected to said shell sliding means and attachable to said vertically reciprocating plate member of said reloading machine, wherein said linkage means translates the up and down motion of said vertically reciprocating plate member into horizontal motion through said shell sliding means, whereby said hopper means has lower surfaces which converge toward a shell discharge port, and wherein said linkage means comprises:

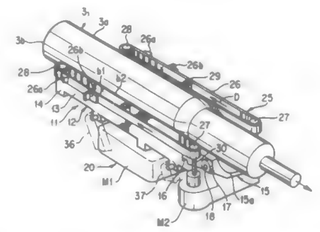
control rod means having joined to its upper end a throttle ball mechanism connected to a control plate having a number of apertures for accepting bolts for rigid attachment to said vertically reciprocating plate member of said reloading machine;
a number of shaft collars spaced along the middle portion of said control rod means;
spring means disposed between said shaft collars;
control link means disposed between said shaft collars and having both a first aperture accepting said control rod means and a second aperture running at a right angle with respect to said first aperture;
control arm means having an upper elongated portion with a slot cut therealong, a middle portion pivotally connected to said second aperture of said control link means, and a lower portion having an aperture for pivotal attachment to a base rod member extending laterally from the lower portion of said plunger block means; and
screw means passing through said slot on said upper elongated portion of said control arm means and into said shell sliding means.

5,335,579
INDEXING HELICAL FEED MAGAZINE
James C. David, Bakersfield, Calif., assignor to Calico Light Weapon Systems, Bakersfield, Calif.
Filed Apr. 12, 1993, Ser. No. 45,093
Int. Cl.[5] F41A *9/03*
U.S. Cl. 89—34 **15 Claims**



1. A magazine for a cooperating gun for feeding projectiles from said magazine into said gun, said magazine being of a generally elongated configuration, said magazine comprising an outer housing, a drive member for said projectiles rotatably mounted within said outer housing, said drive member being formed with a plurality of ribs extending axially inwardly, said ribs defining flutes between adjacent said ribs, each of said flutes being so configured as to permit a succession of said projectiles to pass therethrough in end-to-end relationship, a drive spring strong enough to rotate said drive member within said housing even with all of said flutes filled with said projectiles, said housing comprising a helical thread portion on the inside surface thereof cooperable with the projectiles in said flutes of said drive member; feed means at an exit end of said magazine to permit the projectiles therein to be fed one by one out of said magazine and into said gun; manual spring winder means for said drive spring mounted on said magazine, said magazine also comprising an exit end cap and an escapement member, wherein said escapement member, said drive member, said outer housing and said drive spring cooperate with a portion of said gun to cause indexing operation of said magazine synchronously with the operation of said gun.

5,335,580
SYSTEM FOR AUTOMATICALLY LOADING AMMUNITION INTO THE CHAMBER OF A BARREL OF A GUN
Renaud Mouterde, Versailles, and Michel Bouzianne, Bois D'Arcy, both of France, assignors to Giat Industries, Versailles, France
Filed Oct. 16, 1992, Ser. No. 961,627
Claims priority, application France, Oct. 17, 1991, 91 12795
Int. Cl.[5] F41A *9/43*
U.S. Cl. 89—47 **14 Claims**



1. A system for automatically loading ammunition into a chamber of a barrel of a gun supported by a turret, comprising a delivery block which supports a cradle adapted to receive ammunition withdrawn from a magazine; means for displacing said delivery block so as to align the ammunition along the axis of the barrel of the gun; a first drive device for axially displacing said cradle with respect to said delivery block to bring the ammunition into the vicinity of the entrance of the barrel of the gun; and a second drive device for axially displacing the ammunition with respect to said cradle so as to engage the ammunition inside said barrel, wherein said second drive device comprises means for retaining the ammunition on said cradle during displacement of said delivery block and for displacing the ammunition with respect to said cradle, the retaining and displacing means comprising two endless belts disposed respectively on either side of said cradle and parallel thereto, each of said endless belts being wound around two end rollers, an intermediate roller disposed within each belt, said endless belts being situated at a level with respect to said cradle such that they contact an outer surface of the ammunition, one of said end rollers being driven by an output shaft of a second motor.

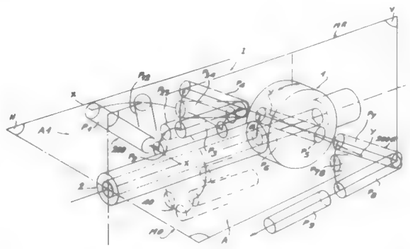
5,335,581
SYSTEM FOR LOADING A ROUND, SUCH AS A TELESCOPED ROUND, INTO A PIVOTING CHAMBER OF A GUN
Georges Simon, Saint-Germain-du-Puy, and Michel Baubois, Bourges, both of France, assignors to Giat Industries, Versailles, France
Filed May 20, 1993, Ser. No. 64,706
Claims priority, application France, May 21, 1992, 92 06197
Int. Cl.[5] F41A *9/02, 9/45*
U.S. Cl. 89—156 **20 Claims**

1. A gun comprising
a support frame;
an oscillating mass pivotally mounted to said support frame for movement about a substantially horizontal trunnion axis;
a recoil mass mounted for movement relative to said oscillating mass during recoil of the gun following the firing of a round; said recoil mass including a gun barrel, a sleeve at one end of said gun barrel, an a pivoting chamber mounted to said sleeve for pivoting movement in a vertical plane between a firing position and a loading position, wherein said firing position and said loading position are angularly offset by an angle between 0° to 90°;
a control device cooperating with said chamber for control-

VOL 1165 ISS 2 AG 9 1994 UMI

ling pivoting of the chamber between said firing position and said loading position;

a feed device for feeding rounds, said feed device being carried by said oscillating mass and located laterally offset relative to said barrel and between said horizontal trunnion axis of the gun and said pivoting chamber;



an insertion device for inserting a round into the chamber when the chamber is in its loading position, said insertion device being secured to said recoil mass and situated above said barrel and substantially in the vertical pivot plane of said chamber; and

a feed star mounted for rotation about the sleeve of the gun and operable for conveying each round from said feed device to said insertion device.

5,335,582

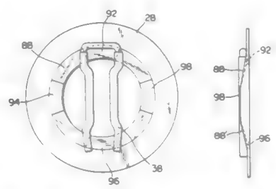
VACUUM BRAKE BOOSTER

Charles B. Horner, Jr., South Bend, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Mar. 6, 1992, Ser. No. 846,844

Int. Cl.[5] F15B *9/10*

U.S. Cl. 91—369.3 **3 Claims**



1. In a brake booster having a front shell joined to a rear shell to define a housing which is divided into first and second chambers by a wall, said wall having a bore therein for retaining a control valve, said control valve being connected to a brake pedal in a vehicle through a linkage member, said linkage member responding to an input force by moving the control valve from a rest position to an actuation position to develop an output force through the creation of a pressure differential across the wall, the improvement comprising:

stop means on said rear shell having an annular surface which uniformly varies from a first base section to a first apex section to a second base section to a second apex section and back to said first base section, said first and second base sections being located in a first plane while said first and second apex sections are located in a second plane, said wall engaging corresponding locations on said annular surface for establishing a desired fixed linear distance between a peripheral surface on said rear shell and an eye in said linkage member which is joined to said brake pedal, said fixed linear distance establishing a corresponding fixed distance between the brake pedal and a floor panel in the vehicle when the control valve is in the rest position.

5,335,583

STOPPER MOUNTING STRUCTURE FOR USE ON RODLESS CYLINDER

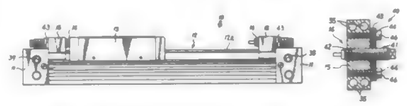
Junya Kaneko, and Hitoshi Yamamoto, both of Soka, Japan, assignors to SMC Corporation, Tokyo, Japan

PCT No. PCT/JP91/00036, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO92/13199, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 16, 1991, Ser. No. 930,391

Int. Cl.[5] F01B *31/14*

U.S. Cl. 92—13.5 **3 Claims**



1. A stopper mounting structure for a rodless cylinder which comprises:

a cylinder body,

a piston fitted in the cylinder body for reciprocating movement thereon,

a moving member for reciprocatingly moving in synchronism with said piston,

a stopper support base having a stopper member for adjustment of a stroke range of said moving member and mounted on top of said cylinder body, said cylinder body having downwardly facing runway surfaces on both outer sides of the cylinder body wherein said stopper support base has a height which is less than that of the top side of said moving member on said cylinder body, and is provided with inclined surfaces on opposite outer sides of the cylinder body symmetrically and facing toward said inclined surfaces of said cylinder body; and

clamp members are positioned between said inclined surfaces for holding said stopper support base firmly to said cylinder body and are provided with inclined surfaces in parallelly facing said inclined surfaces of said cylinder body respectively;

said stopper support base being mounted on said cylinder body by setting bolts which are passed therethrough and threaded into said clamp members.

5,335,584

IMPROVED DIAPHRAGM

Dayne E. Baird, 705 Claybrook Dr., Altoona, Pa. 16602

Filed Mar. 30, 1993, Ser. No. 39,785

Int. Cl.[5] F01B *19/00*

U.S. Cl. 92—98 R **25 Claims**

1. In a diaphragm composed of generally inelastic material and having an annular outer flange which is engageable with a retainer for said diaphragm, and an inner portion coaxial with and deflectable relative to said outer flange, the improvement in said inner portion comprising, in combination:

a center;

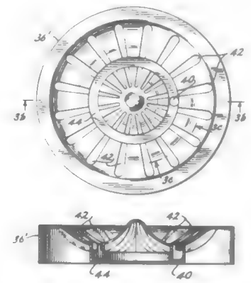
a lone, primary annular wave connecting said center and said outer flange and having a general shape, as viewed in cross-section along a radius of said diaphragm, of one full cosine wave;

a plurality of radial waves integrally superimposed upon said primary annular wave, each of said radial waves radiating from said center toward said outer flange and having a ridge fairing in amplitude from a maximum, generally midway in length of a ridge of said radial wave, to zero generally at said center and at said outer flange; and

each said radial wave having a general shape, as viewed in cross-section generally normal to said length, of one full cosine wave.

13. In a diaphragm assembly, having a diaphragm composed of generally inelastic material and an annular outer flange which is engageable with a retainer of said assembly and an inner portion coaxial with and deflectable relative to said outer flange, the improvement comprising:

means for preventing sharp hinging of said material, and



failure of said diaphragm resulting therefrom, in a generally annular region of intersection between said inner portion and said outer flange;

said sharp hinging preventing means being an entity which is physically distinct from and engageable with said diaphragm and comprising backing means for providing gradually curving support of said annular region, during deflection of said inner portion relative to said outer flange, in order to prevent said sharp hinging.

5,335,585

MASTER CYLINDER

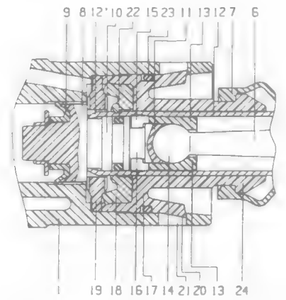
Bernhard Fischenich; Eckhart Rudiger, both of Ebern, and Herbert Sauer, Pfarrweisach, all of Fed. Rep. of Germany, assignors to Fahrzeugtechnik Ebern GmbH, Fed. Rep. of Germany

Filed Feb. 19, 1993, Ser. No. 19,610

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1992, 4212107

Int. Cl.[5] F01B *29/00*

U.S. Cl. 92—128 **16 Claims**



1. A master cylinder for use on a hydraulically actuated clutch or brake system of a motor vehicle, or for the like uses, comprising:

a housing with a tubular opening;

a tubular piston-shaft sleeve in the housing opening and axially shiftable therealong;

a piston which is disposed in the piston-shaft sleeve to be axially displaceable with the sleeve along the housing opening;

a piston rod in the housing opening, movable forward in a working stroke relative to said housing and movable rearward in a return stroke relative to said housing;

means connecting the piston rod with the piston to be movable together and be free of play, but being swingable with respect to each other, whereby the piston rod may swing with respect to the piston in the sleeve; the connecting means between the piston and the piston rod comprising:

a generally ball shaped head on the piston rod;

two partial shells in the piston-shaft sleeve and shaped to partially surround the piston rod head, and being so shaped that the partial shells in the sleeve are form locked on the head;

the piston having a rearward projecting neck with receiving grooves in it and the partial shells having projections which extend to and engage in the grooves in the neck whereby the piston and the partial shells move together through the sleeve while the latter is being assembled with said piston.

5,335,586

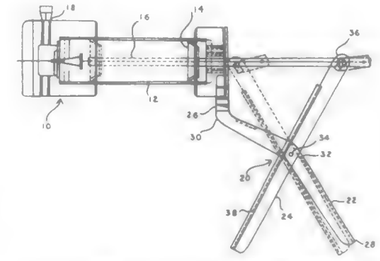
HANDLE LINKAGE

Mark R. Casto, Washington Court House; Jeffrey A. Batten, Piqua, and Raymond J. Mathieu, Ludlow Falls, all of Ohio, assignors to MAC Tools, Inc., Washington Court House, Ohio

Filed Sep. 10, 1992, Ser. No. 943,441

Int. Cl.[5] F01B *9/00*

U.S. Cl. 92—140 **8 Claims**



1. A handle assembly for use on a hand operated tool comprising:

a first handle arm having a proximal end rigidly secured to a body portion of said tool and a distal end extending from said proximal end;

a second handle arm rotatably secured to a location on said first handle arm, said second handle arm having a proximal end linked with an actuatable member of said tool and a distal end extending from said proximal end of said second handle arm, such that as said second handle arm is forced to rotate about said location in a direction that would bring said distal end of said second handle arm closer to said distal end of said first handle arm, said actuatable member is caused to move in a linear direction; and

at least one link having a pivot end and a swing end pivotably attached at its pivot end to said actuatable member and movably engaged at its swing end to said proximal end of said second handle arm, wherein said swing end of said link includes a flange turned at substantially 90° to said pivot end and said swing end is engaged within a generally hourglass shaped slot in said proximal end of said second handle arm.

VOL 1165 ISS 2 AG 9 1994 UMI

5,335,587

HOUSING FOR A DRIVE CYLINDER

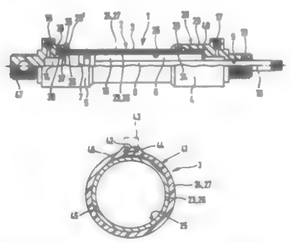
Kurt Stoll, Esslingen, Fed. Rep. of Germany, assignor to Festo KG, Bundesrepublik, Fed. Rep. of Germany

Filed May 19, 1993, Ser. No. 63,415

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1992, 9207582[U]

Int. Cl.[5] F01B *11/02*

U.S. Cl. 92—169.2 13 Claims



1. Pneumatically operated piston and cylinder unit, having a housing (2), comprising a cylinder barrel (3) and a cylinder cap (4, 5) on both ends thereof, a piston (7) arranged within the cylinder barrel (3) for axial movement therein, a piston rod (8) mounted on said piston (7) and extending through at least one of said cylinder caps (4, 5,) said cylinder caps (4, 5) being provided each with a port (16, 17) for supply and removal of pneumatic fluid power medium for reciprocation of the piston (7), said cylinder barrel (3) consisting of an inner tube (23) of metal material and an outer tube (24) of non-reinforced synthetic resin material, said outer tube (24) coaxially encircling said inner tube (23) and said outer tube and inner tube being in direct radial contact with each other and fixed with each other by a pressfit, said inner tube (23) consisting of a non-magnetic material, at least one radially proud rib-shaped projection (44) being provided at the outer surface (41) of the outer tube (24), said projection being integral with the outer tube (24) and consisting of the same synthetic resin material as the outer tube (24) and having an attachment groove (42) for detachable attachment of a sensor (43) able to detect a position of the piston and extending parallel to the longitudinal axis (18) of the housing, said cylinder caps (4, 5) both consisting of non-reinforced synthetic material and being connected with the outer tube (24) of the housing.

5,335,588

DEVICE FOR PREPARING MILK FROTH FOR CAPPUCCINO

Gotthard Mahlich, Kronberg, Fed. Rep. of Germany, assignor to Arthur Eugster AG Elektrohaushaltsgeräte, Romanshorn, Switzerland

Filed Jun. 28, 1993, Ser. No. 82,468

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1992, 4220986

Int. Cl.[5] A47J *31/40*

U.S. Cl. 99—293 14 Claims

1. A device for preparing milk froth comprising

(a) a steam pipe for carrying hot water steam therein in a flow direction; said steam pipe having a pipe outlet;

(b) a venturi adjoining said pipe outlet; said venturi including

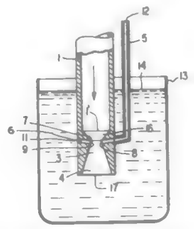
(1) an acceleration path adjoining said pipe outlet and narrowing in said flow direction;

(2) a neck portion adjoining said acceleration path; said neck portion constituting a venturi zone of greatest vacuum in said venturi;

(3) a diffusion path adjoining said neck portion and widening in said flow direction;

(4) a venturi outlet constituting an end of said diffusion path;

(c) an air intake conduit for carrying air therein; said air intake conduit having a terminal portion opening into said neck portion for introducing air into said venturi zone; and



(d) a milk intake conduit for carrying milk therein; said milk intake conduit having a terminal portion opening into said neck portion for introducing milk into said venturi zone for generating in said diffusion path a stem-air-milk mixture, whereby milk froth is formed at said venturi outlet.

5,335,589

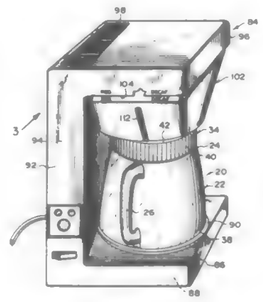
MULTIPLE BEVERAGE DISPENSER

Kenneth A. Yerves, Jr., 32 Rollstone Ave., West Sayville, and William R. Seegull, 608 Birchwood Park Dr., Middle Island, N.Y.

Filed Aug. 2, 1993, Ser. No. 100,272

Int. Cl.[5] A47J *31/14*

U.S. Cl. 99—295 14 Claims



1. A multiple beverage dispenser which comprises:

a) a container having an opened neck:

b) a handle on said container to be gripped by a hand of a person;

c) means within said container for dividing said container into two separate compartments for holding two different types of beverages therein, wherein said dividing means is a partition extending down from said open neck to the bottom of said container; and,

d) means on said opened neck of said container for selectively discharging each of the beverages from each said compartment within said container, wherein said selectively discharging means includes a collar which fits about said opened neck of said container; and, a ring having a pouring spout that rides upon said collar, so that said ring can be manually manipulated on said collar to position said pouring spout over one of said compartments.

5,335,590

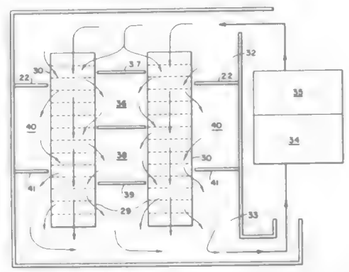
APPARATUS FOR TREATMENT OF SOLID MATERIAL

John C. Crump, III, Richmond; Eugene B. Fischer, Chester, both of Va.; Robert C. Wilson, Redmond, Wash.; Warren D. Winterson, Midlothian, Va.; Leif E. B. Jaxmar, Vallakra, Sweden; Gustav M. Norberg, Bjarred, Sweden, and Lennart F. Olsson, Nyhamnslage, Sweden, assignors to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,798

Int. Cl.[5] F24C *15/32;* F24D *1/00;* A47J *37/00;* A21B *1/00*

U.S. Cl. 99—479 18 Claims



1. An apparatus for treatment of solid material, comprising:

(a) a conveyor belt at least a portion of which travels within a housing;

(b) means for circulating gas through the housing;

(c) wherein, inside the housing, the conveyor belt follows a spiral path for at least a portion of its length, the conveyor belt comprising a plurality of conveyor links and a plurality of bottom members, such that the conveyor belt forms a conveyor stack of conveyor belt tiers in the shape of a hollow cylinder having a perforated inner wall and a perforated outer wall;

(d) an inner partition positioned in the center of the hollow cylinder, such that the inner partition is adapted to obstruct the flow of gas down the inside of the hollow cylinder;

(e) an outer partition positioned between the perforated outer wall of the hollow cylinder and the housing, such that the outer partition is adapted to obstruct the flow of gas down the outside of the hollow cylinder, such that the housing, outer partition, inner partition, and hollow cylinder form an upper chamber and a lower chamber; and

(f) a first partition positioned within the hollow cylinder and above the inner partition, whereby the inner partition, the outer partition, and the first partition direct the flow of gas through the conveyor stack of conveyor belt tiers as the circulating means circulates gas through the housing.

5,335,591

TEA BAG SQUEEZER

Josef Pozar, 8902 W. Jewell Pl., Lakewood, Colo. 80227

Continuation-in-part of Ser. No. 972,107, Nov. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 861,137, Mar. 31, 1992, abandoned. This application May 28, 1993, Ser. No. 43,160

Int. Cl.[5] B30B *9/06*

U.S. Cl. 100—116 9 Claims

1. Squeezers for handling and squeezing a tea bag in the hot water of a cup on a saucer, said squeezers comprising:

a pair of arms each having first and second ends;

said arms overlapping at a corresponding location between said first and second ends;

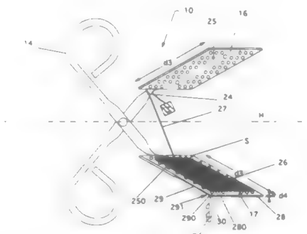
means pivotally connecting said arms together at said corresponding location;

said first arm ends being formed into oppositely extending cooperating handle means;

an upper and lower plate member approximately two inches square each having drainage holes wherein each member is connected to each arm at its second end;

said plate members further comprising a front, rear and side edges;

said squeezers having a closed position for gripping a tea bag wherein said upper and lower plate members spacedly



overlie one another in a parallel generally superimposed orientation at a distance of approximately 0.125 inch and an open position;

said handle means for pivotally moving said arms about said pivot connecting means;

said lower plate member further comprising a spout, thereby allowing drainage therefrom from said tea bag during squeezing when said lower plate member is substantially parallel to the ground.

5,335,592

DEVICE FOR APPLYING PRESSURE TO THE SURFACE OF ADVANCING WORK

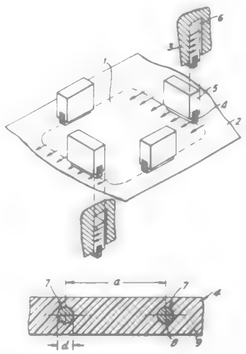
Rolf Röttger, Melle, Fed. Rep. of Germany, assignor to Firma Theodor Hymmen, Bielefeld, Fed. Rep. of Germany

Filed Mar. 23, 1992, Ser. No. 855,285

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1991, 4111022

Int. Cl.[5] B30B *5/04*

U.S. Cl. 100—151 6 Claims



1. A device for applying pressure to a surface of a workpiece, comprising: at least one continuous belt movable in a direction of travel and having one surface for contacting one surface of a workpiece and means forming a pressure chamber with the at least one continuous belt to apply pressure to said one surface of the workpiece comprising a body and a frame

VOL 1165 ISS 2 AG 9 1994 UMI

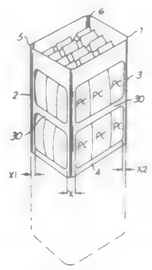
slidably mounted in the body for movement towards the at least one continuous belt to close the chamber and having a plastic sealing strip at one end facing the at least one continuous belt, wherein the sealing strip has one surface facing the at least one continuous belt for contacting the at least one continuous belt when the chamber is closed and pieces of solid lubricant embedded in the sealing strip and having shapes selected from the group consisting of pins, plugs, blebs, strips and polygonal blocks and having an exposed active surface facing the at least one continuous belt and constituting a portion of the one surface of the sealing strip, the exposed active surface contacting the at least one continuous belt when the chamber is closed.

5,335,593

DISPLAY STAND

David C. F. Stoddard, Atlanta; Ladd M. Orr, Clarkston, both of Ga.; Alan D. Cooper, Winston Salem, N.C., and Jeffrey J. Jarmuz, Colgate, Wis., assignors to The Mead Corporation, Dayton, Ohio

Filed May 1, 1992, Ser. No. 877,658
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—165 **21 Claims**



1. A display stand formed of corrugated paperboard and comprising base structure, vertical corner posts supported by said base structure, a plurality of horizontal shelves supported by said vertical corner posts, a horizontal cross section of each of said corner posts being at least in part of arcuate cross sectional configuration, and support means interconnecting each of said shelves with said part of each of said corner posts which is of arcuate configuration.

5,335,594

MULTICOLOR PRINTING SYSTEM FOR THE SILK-SCREEN PRINTING OF COMPACT DISCS

William M. Karlya, 602 Chestnut St., Lynnfield, Mass. 01940; Frederick C. Pink, 14 Mile Stretch Rd., Biddeford Pool, Me. 04006; William L. Lamarre, 119 Water St., Unit 63, Beverly, Mass. 01915, and Edward J. Berry, 157 Newton St., Revere, Mass. 02151

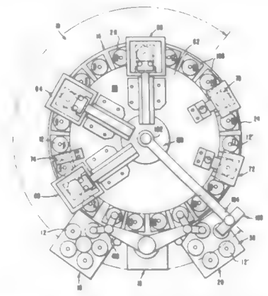
Division of Ser. No. 665,242, Mar. 6, 1991, Pat. No. 5,165,340. This application Oct. 7, 1992, Ser. No. 957,158
Int. Cl.[5] B41F *17/00*
U.S. Cl. 101—35 **8 Claims**

8. System for the automatic screen printing of information on a horizontally disposed top planar surface of a compact disc such surface being the surface opposite from that on which recording is provided comprising in combination:

(a) an annular-shaped, fixed body member defined by a planar, horizontally disposed, top surface and by predetermined inner and outer radii extending from a center point, said body member being further defined by a first planar, annular-shaped bottom surface parallel to said top surface and having an outer radius less than the outer radius of the top surface and a second, planar, annular-shaped bottom surface parallel to the top surface and being located between said first bottom surface and the top surface of the fixed body member, said second bottom surface being defined by predetermined inner and outer radii, the outer radius being less than that of said top surface but greater than that of said first bottom surface and a vertically disposed peripheral surface connecting the said second bottom surface at its inner radius to the first bottom surface at its outer radius whereby an annular-shaped overhang surface is provided defined by the second bottom surface and the vertically disposed peripheral surface, and an opening being provided in the fixed body member for communication with a vacuum source;

(b) an annular-shaped rotatable transport member for transporting a plurality of compact discs in predetermined spaced-apart locations in a predetermined circular defined path from a loading point to an off-loading point for the compact discs, said transport member being located in a plane below the fixed body member and being defined by horizontally disposed planar top and bottom surfaces and being of predetermined outer and inner radii extending from a center point in the same vertical axis as the center point of the fixed body member and terminating in vertically disposed outer and inner peripheral edges, the outer radius of said transport member being a predetermined length greater than the outer radius of the fixing body member;

(c) a plurality of silk-screen printers being mounted to the fixed body member and being operatively associated with the top surface of said annular-shaped rotatable member in



predetermined spaced-apart radial fixed dispositions with respect to one another and the annular-shaped fixed body member, each said printer comprising a squeegee facing outwardly from the center point of the fixed body member and being moveable inwardly and outwardly in a direction along a radius of the transport member, and a horizontally disposed silk-screen frame having a screen therein, said squeegee and screen being in operative combination with one another, said silk-screen frame facing outwardly from the center point of the annular-shaped transport member and overlying the top surface thereof inwardly from said outer peripheral edge whereby the squeegee will be caused to move in radial fashion inwardly a predetermined distance toward the center point of the transport member and across the top planar surface of each compact disc to be printed during the printing cycle and then outwardly to its initial position;

(d) a plurality of disc fixtures each for holding one of said plurality of compact discs, said fixtures being located in spaced-apart predetermined radial locations on the top surface of the rotatable transport member, each of said disc fixture being defined by top and bottom planar surfaces and being in parallel disposition to one another and to the top horizontally disposed planar surface of the rotatable transport member, the bottom surface of the fixture being supported by and in contact with the rotatable member top surface, a circular-shaped well being

provided in the top surface of the disc feature defined by a planar horizontally disposed annular-shaped bottom surface parallel to the fixture top surface and being of predetermined inner and outer radii extending from the center point of the circular-shaped well, an outer circular-shaped peripheral edge extending vertically upwardly from the bottom surface of the well at the outer circumference defined by its outer radius and terminating at the top surface of the disc fixture, the compact disc fixture being further defined by a circular-shaped well provided in, and extending inwardly from the bottom surface of the fixture, said bottom well being defined by a bottom annular-shaped horizontally disposed planar surface and by inner and outer radii the same as the inner and outer radii defining the bottom surface of the well provided in the top surface of the disc fixture, the bottom surfaces of the two wells being parallel to one another and defining a horizontally disposed annular-shaped bridge separating the two wells, and a plurality of spaced-apart openings being provided in the bridge for communication between the two wells, and an opening being provided in the said rotatable member at each disc fixture location extending from the bottom surface to said top surface of the rotatable member and being in communication with the bottom surface, and a vacuum conduit being connected to the opening at the bottom surface of the rotatable member;

(e) vacuum means comprising an annular-shaped vacuum manifold defined by top and bottom planar surfaces parallel to one another, and by predetermined outer and inner radii defining outer and inner peripheries, and by a vertically disposed inner peripheral edge connecting the said top and bottom surfaces at their inner peripheries, said inner radius being only slightly greater than the outer radius of the first bottom surface whereby the inner peripheral edge of the vacuum manifold is in abutting sliding contact with the vertically disposed peripheral surface of the fixed body member, an annular-shaped groove being provided in, and extending inwardly from, the top surface of the vacuum manifold, said groove being in communication with said opening provided in the fixed body member for communication with said vacuum source, the top surface of the manifold being in sliding contact with said overhang surface and a plurality of conduits being provided between and interconnecting the vacuum manifold to each of the vacuum conduits connected to the bottom surface of the rotatable member for providing vacuum to each said fixture and to the bottom surface of a compact disc located therein;

(f) a plurality of means operatively associated with each of said plurality of disc fixtures being located on the bottom surface of the rotatable transport member for precisely registering of each compact disc being loaded onto the transport member; and

(g) means being provided in each said vacuum conduit for allowing vacuum to be applied to each said fixture at the time that a compact disc is being registered in the disc fixture and for closing off said vacuum after the disc is printed and just prior to being off-loaded.

5,335,595

ROLLER OFFSET PRINTING APPARATUS

Kenkichi Yamashita, and Hideaki Oyanagi, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 84,608
Claims priority, application Japan, Jul. 1, 1992, 4-197794
Int. Cl.[5] B41F *3/36, 3/66*
U.S. Cl. 101—158 **9 Claims**

1. A roller offset printing apparatus including:

a base (**3**);

a linear stage (**4**) movable forwards and backwards on said base;

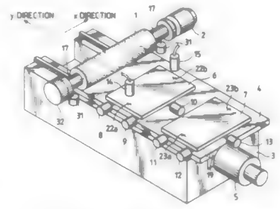
a stage driving means (**5**) for driving said linear stage;

a master plate (**6**) and a work plate (**7**) disposed at a predetermined interval on said linear stage (**4**), said master plate (**6**) having ink pits (**21**) formed in a surface of said master plate (**6**) for reserving ink (**20**);

a roller transfer drum (**1**) supported rotatably; and

a roller transfer drum driving means (**2, 52, 53**) for driving said roller transfer drum (**1**) so that a roller offset printing including a first transfer operation, in which said roller transfer drum (**1**) rotates on the surface of said master plate (**6**) to transfer the ink (**20**) in said ink pits (**21**) of said master plate (**6**) onto the outer circumferential surface of said roller transfer drum (**1**), and a second transfer operation, in which said roller transfer drum (**1**) rotates on a surface of said work plate (**7**) to thereby transfer the ink (**20**) from the outer circumferential surface of said roller transfer drum (**1**) onto the surface of said work plate (**7**), is conducted,

wherein said roller offset printing apparatus comprising:



a rotation force transmission control means (**30**) for controlling on/off of transmission of rotation force from said roller transfer drum driving means (**2**) to said roller transfer drum (**1**);

a rotation angle detection means (**32**) for detecting the rotation angle of said roller transfer drum (**1**); and

a transfer control means (**24**) for turning off said rotation force transmission control means (**30**) at the time of start of said first and second transfer operations to thereby cut off transmission of the rotation force from said roller transfer drum driving means (**2**) to said roller transfer drum (**1**) and for turning on said rotation force transmission control means (**30**) after completing one of said first and second transfer operations to thereby return said roller transfer drum (**1**) to a transfer start position in accordance with an output signal of said rotation angle detection means (**32**).

5,335,596

COATING APPARATUS FOR SHEET-FED, OFFSET ROTARY PRINTING PRESSES

Howard W. DeMoore, 10954 Shady Trail, Dallas, Tex. 75220, and Steven M. Person, Seagoville, Tex., assignors to Howard W. DeMoore, Dallas, Tex.

Continuation of Ser. No. 879,841, May 6, 1992, Pat. No. 5,207,159, which is a continuation-in-part of Ser. No. 752,778, Aug. 30, 1991, Pat. No. 5,176,077. This application Apr. 26, 1993, Ser. No. 52,763
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] B41F *31/00*
U.S. Cl. 101—350 **10 Claims**

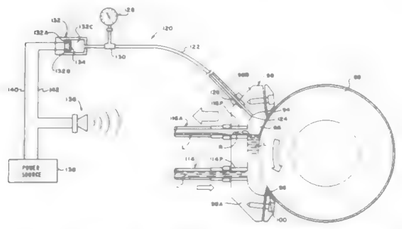
1. Coating apparatus for applying liquid material from a supply drum to an applicator roller which is engagable in an operative position with a doctor blade head having an elongated reservoir for receiving liquid material from the supply drum, said doctor blade head being adapted to extend in parallel with the applicator roller in the operative position with a portion of the peripheral surface of the applicator roller extending into said reservoir for wetting contact with liquid material contained therein, characterized in that:

seal means are coupled to the doctor blade head for sealing

VOL 1165 ISS 2 AUG 9 1994 UMI

engagement against the applicator roller in the operative position, whereby the doctor reservoir is sealed with respect to atmospheric pressure; and,

circulation means are coupled to the doctor reservoir for



inducing the flow of liquid material from said supply drum into the doctor reservoir, for returning liquid material by suction flow from the doctor reservoir to the supply drum, and for maintaining the doctor reservoir at a pressure level below atmospheric pressure.

5,335,597

METHOD AND DEVICE FOR STARTING AND STOPPING A SHEET TURNING OPERATION AND FOR FORMAT ADJUSTING DURING SHEET TRANSPORT THROUGH A PRINTING PRESS

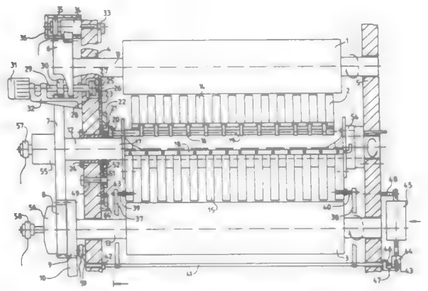
Karl-Heinz Helmstädter, Snh-Adersbach, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jul. 15, 1993, Ser. No. 91,967

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1992, 4223188; Jul. 6, 1993, 4322477

Int. Cl.[5] **B41F** *5/02*

U.S. Cl. 101—485 **3 Claims**



3. Method for starting and stopping a sheet-turning operation and for sheet-format adjusting during sheet transport through a first-form and perfector or a recto-and-verso printing press, wherein the sheets are singly transported in succession, by at least one transport drum, between two printing units;

including, at a changeover of the printing press from recto-printing mode to recto-and-verso printing mode and back again and for sheet-format adjusting, starting from a changeover position, adjusting phase positions of printing units of the press with respect to one another by locking in position part of a drive system of the printing press which is not to be rotated, and rotating a remaining part of the drive system through a defined angle relative to the part locked in position;

adjusting gripper-opening timings of sheet-accepting and sheet-surrendering transport drums in the printing press so that, in the recto-printing mode, sheets are surrendered and accepted by a leading edge thereof and, in recto-and-verso-printing mode, the sheets are accepted by a trailing edge thereof;

if required for sheet-format adjusting, on a transport drum serving as a storage drum and having devices for holding the trailing edge of the sheets, adjusting the holding devices at the trailing end of the respective sheet in accordance with the sheet format by displacing the holding devices through a defined angle about a common shaft in relation to grippers holding the leading edge of the sheet;

positioning and fixing transport-drum elements which are to be moved in starting and stopping the sheet-turning operation and in sheet-format adjusting by means of a control device connected to actuating elements for the transport-drum elements and to sensor elements for detecting the positions of the transport-drum elements;

which comprises starting the sheet-turning and manually adjusting the format for recto-and-verso printing mode,

a) rotating the storage drum by means of the main motor of the printing press into a defined position wherein a bolt is disposed which is fastened to a part of the storage drum whereon the devices for holding the trailing edge of the sheets are also seated, as viewed in the press running direction before a latching position in a latch formed with a starting inclination swivelably attached to the frame of the printing press, the latch forming part of a two-sided asymmetrically operating latch-locking mechanism,

b) releasing position-locking means between the devices for holding the trailing edge of the sheets and the grippers for holding the leading edge of the sheets, and bringing the latch into a capture position for the bolts,

c) by means of the main motor of the printing press, rotating part of the storage drum carrying the grippers for holding the leading edge of the sheets into a position which at least corresponds to a maximum sheet format, initially rotating the storage drum altogether and, after rotating through a previously set format-dependent angle, the bolt engages in the latch so that the device for holding the trailing edge of the sheets are held fast in the engaging position,

d) again placing into operation the position-locking means between the devices for holding the trailing edge of the sheets and the grippers for holding the leading edge of the sheets, bringing the latch into the starting position thereof, and rotating the storage drum and the printing press altogether approximately into the zero position by means of the main motor of the printing press,

e) manually rotating the storage drum and the printing press altogether into the precise zero position with an adjusting device, and bringing an adjusting gear transmission into meshing engagement for adjusting gripper-opening times and the phase position of the printing units, thereby releasing and placing into operation, respectively, the position-locking means necessary for changeover, and bringing the latch again into the capture position thereof for the bolts,

f) manually rotating, with the adjusting device, the storage drum altogether with the gripper control elements and the part of the printing press, which is to be rotated, through a basic changeover angle until the latch latches onto the bolts, which hold the devices holding the trailing edge of the sheets fast, whereby the gripper control of the turning drum simultaneously changed over,

g) further manually rotating, with the adjusting device, the part of the storage drum carrying the grippers, together with the gripper-control elements and the part of the printing press, which is to be rotated, through a format-dependent angle until the respective format is attained,

h) bringing the latch into the starting position thereof, again placing in operation and releasing, respectively, the position-locking means required for the changeover, and bringing out of engagement the adjusting gear transmission and the adjusting device, and

which comprises stopping the sheet-turning,

i) releasing the position-locking means between the parts of the storage drum, bringing the latch into capture position, slightly exceeding the zero position with the aid of the main motor until the latch latches onto the bolts,

j) by means of the adjusting device, precisely attaining the zero position manually and bringing the adjusting gear transmission into meshing engagement, and releasing and placing into operation, respectively, the position-locking means required for stopping,

k) rotating the part of the printing press to be rotated, the part of the storage drum which carries the grippers for holding the leading edge of the sheets, and the gripper-control elements through a format-dependent angle until a respective format is attained, bringing the latch into the starting position thereof, further rotating the part of the press to be rotated and the storage drum altogether together with the gripper control elements until the recto-printing position is reached, whereby the gripper control of the turning drum is simultaneously changed over,

l) placing into operation and releasing, respectively, the position-locking means required for stopping, and disengaging the adjusting device and the adjusting gear transmission, and

which comprises adjusting the format in recto-printing mode,

m) bringing the latch into the working position thereof after releasing the position-locking means between the devices for holding the trailing edge of the sheets and the grippers for holding the leading edge of the sheets on the storage drum, and bringing the latch into the working position thereof,

n) rotating the storage drum until the latch latches onto the bolts,

o) with the latch latching onto the bolts, adjusting the gripper-carrying part of the storage drum through an angle so that the sheet-holding grippers and the devices for holding the trailing edge of the sheets assume the position corresponding to the sheet format to be used in the recto-printing, and

p) placing the position-locking means again in operation, bringing the latch into the rest position thereof.

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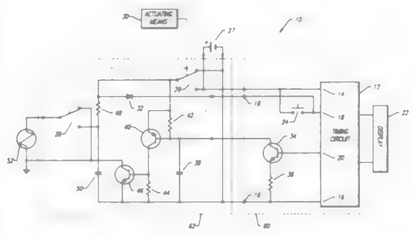
TIMING AND FIRING CIRCUITRY

Donald J. Lewis, Scottsdale, and Larry C. LaClair, Mayer, both of Ariz., assignors to Universal Propulsion Company, Inc., Phoenix, Ariz.

Filed May 7, 1993, Ser. No. 59,450

Int. Cl.[5] **F42C** *11/06*

U.S. Cl. 102—218 **22 Claims**



1. In combination,

first means for providing an electronic timing for a pre-selected period,

a pyrotechnic device,

switching means having first and second operative relationships,

energy storage means,

second means operative in the first operative relationship of the switching means for shorting the pyrotechnic device and the energy storage means to prevent the pyrotechnic device from being energized by the energy storage means,

third means operative in the second operative relationship of the switching means for storing energy in the energy storage means and for initiating the timing of the pre-selected period by the electronic timing means, and

fourth means responsive to the timing of the pre-selected period by the electronic timing means and operative in the second operative relationship of the switching means for energizing the pyrotechnic device.

5,335,599

AMMUNITION UNIT

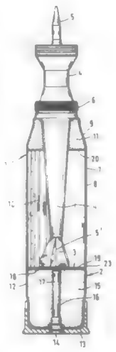
Stefan Thiesen, Erkrath, and Eckhard Rahnenführer, Dormagen, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 20, 1992, Ser. No. 980,197

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1991, 4138269

Int. Cl.[5] **F42B** *5/18, 5/02*

U.S. Cl. 102—431 **8 Claims**



1. An ammunition unit comprising:

a front ammunition component including a combustible propelling charge casing having a rear cylindrical section and a front inwardly tapering section with a front opening, and a fin stabilized projectile having its rear fin component extending via said opening into said casing to the bottom of said first component; a rear ammunition component having a non-combustible casing bottom with a centrally disposed bottom igniter, a combustible propelling charge casing with a cylindrical section having a diameter corresponding to that of said front component fastened to said casing bottom, and a combustible ignition tube for a propelling charge igniter in operative engagement with said bottom igniter and extending axially essentially over the entire length of said rear ammunition component; a combustible disc separating said front and rear ammunition components; a member of compressed propelling charge powder filling said propelling charge casing of said rear ammunition component and surrounding said ignition tube; rods of propelling charge powder extending longitudinally within and substantially along an entire length of said cylindrical section of said charge casing of said front ammunition component; and bulk propelling charge powder disposed in said inwardly tapering section of said front component in front of said powder rods.

VOL 1165 ISS 2 AG 9 1994 UMI

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PROPELLANT CHARGE IGNITER

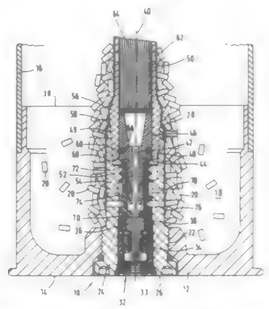
Alfred Hörr, Zirndorf; Heinz Reiss, and Uwe Brede, both of Fürth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Dec. 1, 1993, Ser. No. 159,572

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1992, 4240273

Int. Cl.[5] F42C *19/08*; F42B *5/26*

U.S. Cl. 102—470 9 Claims



1. A propellant charge igniter which comprises a bottom part adapted to be positioned within a propellant charge carrier, said bottom part having a hollow chamber for receiving an ignition charge; a flame guide tube having a flame channel extending essentially from the ignition charge to a lead fuse; and an ignition guide tube provided with openings and surrounding the lead fuse, an end portion of said ignition guide tube being fitted in an annular chamber formed between the bottom part and the flame guide tube and surrounding the flame guide tube in a sealing fashion; said annular chamber being open toward an end of the bottom part facing away from a bottom end of the bottom part, and a powder train located in an annular combustion chamber surrounding the flame guide tube and adapted to be ignited by a propellant charge located in the propellant charge carrier via priming openings extending radially through the bottom part; the annular chamber providing a transition zone leading to the combustion chamber at an end facing the bottom end and the powder train comprising an expulsion charge for effecting complete expulsion of the ignition guide tube out of the annular chamber.

5,335,601

AUTOMATIC ARTICLE TRANSPORT FOR BUILDING SYSTEM WITH CENTRALIZED ROUTING CONTROL

Takeji Matsumoto; Nobora Oyamada; Michinori Kiritani, all of Hiroshima; Teruo Fukunaga, Tokyo; Yoshio Abe, Tokyo, and Hiroshi Kondoh, Tokyo, all of Japan, assignors to Mitsubishi Heavy Industries, Ltd. and Shimizu Construction Co., Ltd., both of Tokyo, Japan

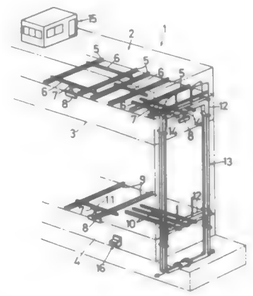
Filed Mar. 4, 1993, Ser. No. 26,301

Claims priority, application Japan, Aug. 24, 1992, 4-223924

Int. Cl.[5] B61J *1/00*

U.S. Cl. 104—88 R 4 Claims

1. An automatic article transport system for building a structure comprising:
fixed rails horizontally provided on a building;
a plurality of movable rails mounted between said fixed rails and each capable of running along said fixed rails;
a plurality of hoists capable of running on said movable rails and of lifting and lowering a member to be transported;
controllers installed on said movable rails and hoists, respectively;
a central controller having a table and means for generating a path for a member to be transported; and
transmitters for transmitting control electric power and control signals between said central controller and said controllers installed on said movable rails and hoists,
wherein a transport path for a member to be transported is determined in said path generating means on the basis of data on members to be transported relating to configuration of various types of members, transport sequence data relating to a building sequence of said members and equipment and structure data relating to the structure to be built, and said movable rails are moved and said hoists are run according to said transport path.



5,335,602

BOGIES FOR RAIL VEHICLES

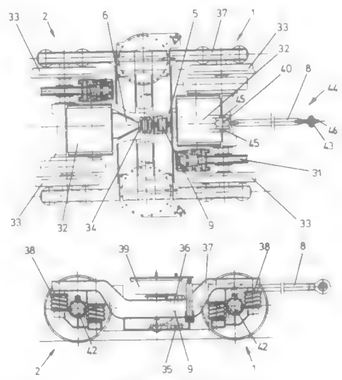
Wolfgang-Dieter Richter, Nuremberg; Ulrich Hachmann, Pyrbaum, and Peter Frahm, München, all of Fed. Rep. of Germany, assignors to Man GHH Schienenverkehrstechnik GmbH, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 842,052, Feb. 26, 1992, abandoned. This application Jun. 2, 1993, Ser. No. 71,180

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1991, 4106070

Int. Cl.[5] B61F *5/00*

U.S. Cl. 105—168 7 Claims



1. A bogie for rail vehicles, comprising:
a bogie frame;
at least two wheelset units;
at least one of said wheelset units including at least one of a drive unit, a brake unit, and a wheelset coupling frame connected to said at least one of said wheelset units;
a primary suspension connecting said at least two wheelset units to said bogie frame;
a secondary suspension for connecting a vehicle body to said bogie frame;
a rigid guide rod interconnecting said bogie and said vehicle body;
said guide rod extending longitudinally of said vehicle;
said guide rod having a first end and a second end;
said guide rod having a coupling means at said first end;
said coupling means being connected to said at least one of said wheelset units;
said coupling means having a horizontal pivotal axis;
said at least one of said wheelset units including a wheel axle interconnecting a pair of wheels;
said wheel axle having a longitudinal axis;
said horizontal pivotal axis extending parallel to said longitudinal axis;
said coupling means being mounted directly on said at least one of said wheelset units and at the center of mass of said at least one of said wheelset units; and
said guide rod extending outwardly from said bogie frame and being connected at said second end to said vehicle body.

5,335,603

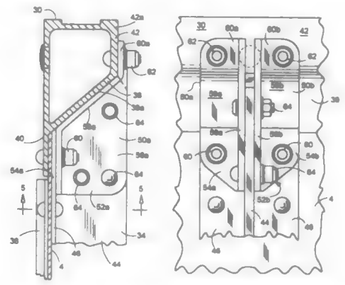
TOP CHORD TO INSIDE CONNECTION FOR GONDOLA CAR

Cloyd Wirick, Mineral Point, and Joseph Majcher, Johnstown, both of Pa., assignors to Johnstown America Corporation, Chicago, Ill.

Filed Apr. 19, 1993, Ser. No. 47,398

Int. Cl.[5] B61D *17/00*

U.S. Cl. 105—406.1 8 Claims



1. A rail car comprising
body means having a vertical side sheet forming an interior longitudinal wall,
a vertical side stake vertically arranged in contact with said interior longitudinal wall,
said vertical side stake having a lateral wall and a longitudinal wall in contact with said interior longitudinal wall,
top chord arranged along the top portion of said vertical side sheet and having a vertical face lying in generally parallel spaced relationship to said interior longitudinal wall of said side sheet,
connection means interconnecting said side sheet, said vertical side stake, and said top chord,
said connection means having a first portion in contact with said lateral wall of said side stake along a lateral plane relative to said interior longitudinal wall,
said connection means further having a second portion in contact with said vertical face of said upper chord,
attachment means affixing said first portion, said second portion, and said third portion of said connection means to said side sheet, said lateral wall of said side stake, said vertical face of said upper chord and said longitudinal wall of said side stake; and
said upper chord including a sloped bottom wall extending below said vertical face, said connection means having an intermediate portion, between said second portion and said third portion, in contacting relationship to said sloped bottom wall.

5,335,604

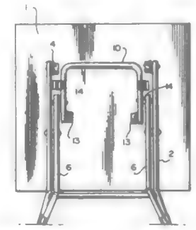
FOLDING TABLE

Wei X. Jiang, PanYu City, China, assignor to Selby Furniture Hardware Company, Inc., Bronx, N.Y.

Filed Dec. 15, 1992, Ser. No. 991,858

Int. Cl.[5] A47B *3/02*

U.S. Cl. 100—119 7 Claims



1. A folding table comprising:
a tablet having a top and bottom surface;
a pair of first legs each having an upper and lower end;
a first pair of connector means each for pivotally connecting one of the respective first upper leg ends to the bottom surface of the tablet;
a pair of second legs each having an upper and lower end, and positioned inwardly between the pair of first legs;
a pair of pivot means each for pivotally joining one of the respective first and second legs so that these legs can extend diagonally underneath the tablet when the table is unfolded to an upright position;
a U-shaped link bar formed with two parallel members and cross member, the bar having first and second free ends;
a pair of further connector means each for pivotally connecting one of the respective link bar free ends to the bottom surface of the tablet;
a pair of further pivot means each for pivotally joining the link bar through a respective one of the parallel members to a respective one of the second legs at the upper end thereof, the link bar being positioned inwardly between the pair of second legs; and
a stop means positioned between the further pivot means and cross member to stop movement of the link bar relative to the second legs when the table is in the upright position, said stop means being formed on the U-shaped link bar and being a brace having a leg extending orthogonally outward from the parallel member.

5,335,605

DECORATIVE PANEL CONSTRUCTION FOR OFFICE FURNITURE

Matthew P. Drabczyk, Westminster, Colo., assignor to Engineered Data Products, Inc., Broomfield, Colo.

Filed Aug. 30, 1991, Ser. No. 752,779

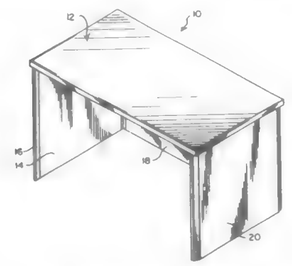
Int. Cl.[5] A47B *3/06*

U.S. Cl. 100—153 19 Claims

1. A support member for office furniture, said support member comprising:
a structural panel member for supporting a horizontally extending surface;
an external finished surface on said structural panel member;
an inner surface on said structural panel member on the opposite side of said external surface;
side edges on said external finished surface on said structural panel member;
a decorative panel having an external finished surface, an

VOL 1165 ISS 2 AG 9 1994 UMI

internal surface, and side edge surfaces on said internal surface, said internal side edge surfaces engaging said side



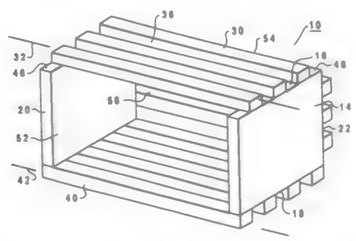
edges on said external finished surface on said structural panel member to enclose said side edges and said inner surface to form corner edges of office furniture.

5,335,606

INTERLOCKING SHELVING UNIT

Verlon E. Whitehead, Austin, and Ronald E. Hunt, Georgetown, both of Tex.

Filed Jan. 5, 1993, Ser. No. 489
Int. Cl.[5] A47B 3/00
U.S. Cl. 108—181 8 Claims



1. A set of shelving units which can be interlockingly mated together and wherein each said shelving unit is removable from the other of said shelving units, each of said shelving units comprising in combination:

at least two end panels having substantially identical dimensions to each other, each having a first edge and an opposite second edge;

at least one elongate cross member joined to said first edge of each of said at least two end panels, said at least one elongate cross member having a longitudinal axis and a width, said at least two end panels being spaced apart along said longitudinal axis thereof; and

at least two elongate cross members joined to said opposite second edge of each of said at least two end panels, said at least two elongate cross members having a longitudinal axis and being parallel and spaced apart from each other, forming a gap having a dimension substantially equal to said width of said at least one elongate cross member, wherein said gap closely receives said at least one elongate cross member of a second shelving unit similarly constructed so that said shelving unit is interlockingly mated with said second shelving unit; and wherein

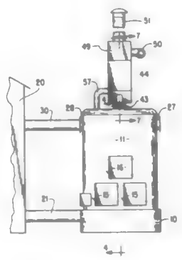
said at least two elongate cross members are parallel to said at least one elongate cross member of said second shelving unit and contact at least one said first edge of said at least two end panels of said second shelving unit when interlockingly mated, so that each shelving unit can slide to a desired position relative to the other along lines parallel to said longitudinal axis of said elongate cross members thereof.

5,335,607

RUBBER TIRE COMBUSTER

Ernest J. Wilcox, Montezuma, Iowa

Continuation-in-part of Ser. No. 978,479, Nov. 18, 1992. This application Oct. 22, 1993, Ser. No. 139,817
Int. Cl.[5] F23B 7/00
U.S. Cl. 110—233 10 Claims



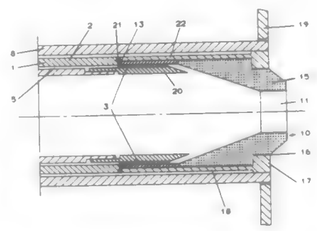
1. An incinerator for burning rubber such as that in rubber tires comprising a fire pot enclosed in a jacket and having a floor, dividing wall means in said fire pot extending from said floor whereby said fire pot is divided into substantially equal parts, said wall being formed with an opening near said floor whereby burning can be started on a first side of said wall and will be continued to the second side as the fuel on said first side is consumed, heat exchanging walls surrounding said fire pot, jacket means surrounding said heat exchanging walls in spaced relationship thereto whereby a heat exchanging chamber is formed between said walls and said jacket means, at least two exits formed in said jacket means, said exit means being arranged so that at least one will be closed while at least another is open so that there are alternate paths of exit, and means to move fluid into said heat exchange chamber as a cooler fluid and through said exit means as a heated fluid.

5,335,608

FURNACE LANCE FOR ATOMIZING A COAL-WATER SUSPENSION

Günther Dehn, Wesel; Horst Möllenhoff, Mülheim, and Rüdiger Wegelin, Dortmund, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Energie- und Umwelttechnik AG, Oberhausen, Fed. Rep. of Germany

Filed Apr. 9, 1993, Ser. No. 46,210
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1992, 4212360
Int. Cl.[5] F23D 1/02
U.S. Cl. 110—264 6 Claims



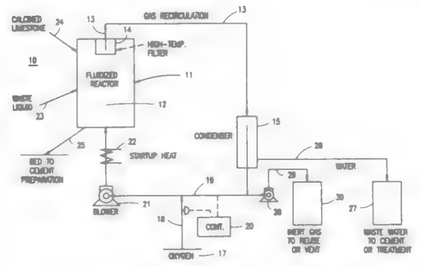
1. A burner lance for atomizing a suspension of coal in water by an atomizing gas, comprising: an inner pipe for conducting a suspension flow therethrough; an outer pipe surrounding radially said inner pipe and spaced from said inner pipe by a gap; atomizing gas flowing through said gap; a nozzle communicating with both said inner pipe and said outer pipe and narrowing in direction of flow of said suspension; said outer pipe extending along the burner lance beyond said inner pipe by an extended section and receiving said nozzle in said extended section; said nozzle having an outside diameter equal to an inside diameter of said outer pipe, said nozzle narrowing at a central angel of 35° to 45° and terminating in a central exit opening; and twist-applying means in said gap, said atomizing of said suspension beginning within said nozzle; said inner pipe having a pipe section at the front of said inner pipe and secured to said outer pipe and fitting onto said inner pipe.

5,335,609

THERMAL AND CHEMICAL REMEDIATION OF MIXED WASTE

Paul A. Nelson, Wheaton, and William M. Swift, Downers Grove, both of Ill., assignors to University of Chicago, Chicago, Ill.

Filed Apr. 29, 1993, Ser. No. 55,360
Int. Cl.[5] F23G 5/00
U.S. Cl. 110—346 20 Claims



1. A process for treating organic waste materials without venting gaseous emissions to the atmosphere, comprising establishing and maintaining a fluidized bed including lime particles operated at a temperature not less than about 500° C. by blowing gas having an oxygen content in the range of from about 20% to about 70% upwardly through the bed particles at a rate sufficient to fluidize the bed particles, introducing an organic waste material into the fluidized bed, the fluidized bed operating at a temperature sufficient thermally to degrade the organic waste material forming reaction products some of the reaction products reacting with lime in the bed forming $CaCO_3$, filtering particulates carried with the off gases from the fluidized bed, cooling the filtered off gases from the fluidized bed to condense water present in the off gases and removing the condensed water, removing a portion of the calcium carbonate formed during operation of the fluidized bed and replacing same with lime particles, and continuously recirculating the off gases from the fluidized bed after water is removed therefrom and oxygen added thereto until the organic waste material in the bed is destroyed.

5,335,610

SUSPENSION FOR COULTER WHEEL ASSEMBLY

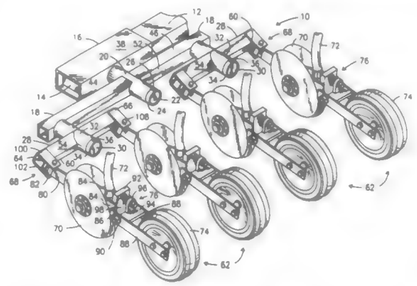
David W. Weber, P.O. Box 2943, Winter Haven, Fla. 33883

Filed Aug. 26, 1992, Ser. No. 935,834
Int. Cl.[5] A01B 49/04
U.S. Cl. 111—136 7 Claims

3. A suspension for a coulter wheel assembly of the type primarily intended for attachment to a tractor, said suspension comprising:

a main support bar comprising a first section attached to the tractor and a second section slidingly attached to said first section for movement away from and toward the tractor;

a first pivoting support pivotally attached to said second section; at least one second pivoting support pivotally attached to said first pivoting support, said main support bar and said first pivoting support each including respective top and bottom surfaces respective forward and rear surfaces, said respective top surfaces lying along a substantially common plane, one to the other, when said respective forward surfaces are substantially parallel, one to the other, and wherein said second pivoting support includes a top and bottom surface, the plane of said second



support top surface being angular with respect to said common plane; and

at least one coulter wheel means operatively attached to said second pivoting support, said coulter wheel means being attached to said second pivoting support by a back angle pivot means, and said coulter wheel means comprising a double disc opener, means for depositing material into a furrow created by said opener, a press wheel following said means for depositing, whereby the furrow containing the material is closed, and depth adjustment means operatively disposed between said opener and said wheel, whereby the depth of the furrow may be adjusted.

5,335,611

EDGE GUIDE FOR A TEXTILE WEB

Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale GmbH & Co. KG, Ochtrup, Fed. Rep. of Germany

PCT No. PCT/DE90/00911, § 371 Date May 19, 1992, § 102(e) Date May 19, 1992, PCT Pub. No. WO91/08334, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 27, 1990, Ser. No. 859,301
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1989, 8914223[U]
Int. Cl.[5] D05B 35/10, 37/08, 27/00
U.S. Cl. 112—153 1 Claim

1. An apparatus for cutting pieces form an elongated web, so that each of said pieces is formed with respective hemmed longitudinal sides, and for delivering the pieces toward a sewing machine, said apparatus comprising:

storing means including a cloth beam with a web wound thereon;

transport means receiving the web from said web for transporting the web downstream along a web path in a first upstream-downstream direction;

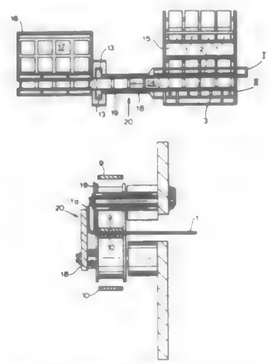
cutting means including a separator movable transversely to said first direction for cutting pieces from said web along said path;

an upstream machine half provided with respective pickup means including respective tongues movable reciprocally parallel to said first direction and communicating with said separator for sequentially clamping said pieces of the web;

VOL 1165 ISS 2 AG 9 1994 UMI

a downstream machine half spaced downstream of said upstream machine half along said web path and provided with respective pickup means including respective tongues movable reciprocally parallel to said first direction and communicating with the respective tongues of the upstream half for further advancing said pieces along said web path;

conveyor means including a longitudinal endless conveyor movable in a second upstream-downstream direction along a piece path transversely to said first direction and having a respective upstream part flanked by said machine halves, said conveyor receiving sequentially said pieces from said machine halves, said conveyor receiving sequentially said pieces from said tongues; and



guiding means extending along said second direction substantially between said cutting means and the sewing machine for guiding respective longitudinal edges of each of said pieces transported by said conveyor, said guiding means being provided along opposite longitudinal flanks of said conveyor and including:

a pair of edged rails extending parallel to said conveyor, and

a pair of abutment rails, each of said abutment rails being provided with a respective upstream portion inclined along and transversely to said second direction, so that respective longitudinal hemmed sides of each of said pieces are bent upwardly at a right angle with respect to a main portion of the web.

5,335,612

ANTI-PUCKER PRESSER FOOT

Jaromir Cizek, Port Elizabeth, and Stanislaw Galuszynski, Natal, both of South Africa, assignors to Pathold Investments Company Limited

Continuation of Ser. No. 648,594, Jan. 31, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,667

Claims priority, application United Kingdom, Feb. 2, 1990, 9002345

Int. Cl.[5] D05B *29/06, 75/00, 35/00*

U.S. Cl. 112—262.1 **21 Claims**

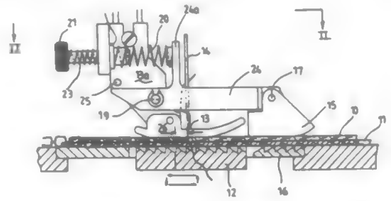
1. In a method of reducing pucker between layers of sheet material during a sewing process, comprising the steps of:

feeding an upper layer and a lower layer of material to a stitch formation zone substantially only by means of a reciprocating lower feed-dog which engages only the lower layer of the material; and

using a first presser foot overlying the feed-dog to urge the layers of material towards the feed-dog, thereby creating greater tension in the upper material layer than in the lower material layer;

the improvement comprising the step of tensioning the lower layer of material relative to the upper layer of material in a tensioning zone which precedes the stitch formation zone by providing a stationary retarding surface in advance of the stitch formation zone; and

urging the lower layer into engagement with the retarding



surface by means of a second presser foot which is disposed in advance of the first presser foot of the sewing machine, and which urges both the upper and lower layers of material into contact with each other and toward said retarding surface.

5,335,613

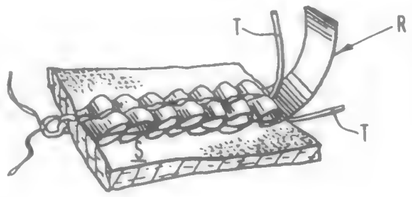
TEXTILE FABRIC

Douglas J. Glenn, Wallburg, N.C., assignor to Sewing Center Supply Co., Inc., Portland, Oreg.

Division of Ser. No. 651,149, Feb. 6, 1991, Pat. No. 5,203,269, which is a division of Ser. No. 489,878, Mar. 6, 1990, Pat. No. 5,031,554, which is a continuation of Ser. No. 343,842, Apr. 26, 1989, abandoned. This application Feb. 19, 1993, Ser. No. 19,779

Int. Cl.[5] D05B *93/00*

U.S. Cl. 112—412 **10 Claims**



1. A decoratively enhanced textile fabric formed of a narrow fabric and a stitching thread, wherein portions of the narrow fabric are arranged in an arcuate pattern and are stitchingly secured by said stitching thread to other portions of said narrow fabric in overlapping relation.

5,335,614

FLOORLESS, NON-SELF-SUPPORTING SHIP CABIN, CONSTRUCTED OF PREFABRICATED PARTS AND PROCESS FOR MANUFACTURING AND ERECTING SAME INCLUDING APPARATUS THEREFORE

Regal Klaus, Langen, Fed. Rep. of Germany, assignor to Lloyd Werft Bremerhaven GmbH, Bremerhaven, Fed. Rep. of Germany

Filed Jun. 15, 1992, Ser. No. 899,674

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119422

Int. Cl.[5] B63B *29/02*

U.S. Cl. 114—71 **19 Claims**

1. A non self-supporting, floorless ship cabin made of prefabricated components comprising:

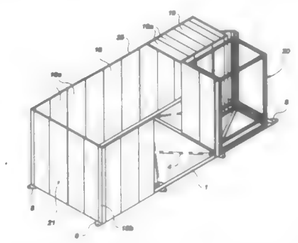
U-shaped foot profiles adapted for connection to a ship deck;

vertical wall panels and corner connectors, inserted into and connected to said foot profiles;

hat profiles in inverse U-shape, each said hat profile having a contact flange, positioned and connected to an upper edge of a respective said wall panel and corner connector;

ceiling panels positioned on and connected to said support flange of said hat profiles; and

a flat sliding frame dimensionally corresponding to the size of a cabin's floor plan, said flat sliding frame having longitudinal and crossbeam frame members, said sliding frame being rigified in a horizontal plane by braces, while being flexible vertically with respect to said horizontal plane;



wherein said foot profiles are attached to said longitudinal and crossbeam frame members, preferably by tack welds, and said wall panels and said corner connectors are connected to said foot profiles and said hat profiles in such a way that a minor non-permanent deformation of the non-rigified ship cabin is possible within certain limits by allowing a movement of said wall panels and said corner connectors in a vertical direction and opposite to each other without causing damage to said wall panels and said corner connectors.

5,335,615

TANKER VESSEL

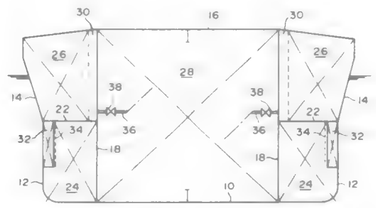
Bengt A. S. Björkman, 6, rue Victor-Hugo, F-06240 Beausoleil, France

Filed May 20, 1993, Ser. No. 64,077

Claims priority, application Sweden, Nov. 23, 1990, 9003736-7

Int. Cl.[5] B63B *25/08*

U.S. Cl. 114—74 R **13 Claims**



1. Tanker vessel, particularly for transport of oil or other liquids, which are lighter than water and present a danger to the environment, which comprises a hull with a bottom (10), two opposite side walls (12, 14), and upper deck (16), at least two mainly vertical longitudinal bulkheads (18) and a number of transverse bulkheads, which together form a number of centre tank compartments (28) and side tank compartments (24,26), wherein a mainly horizontal tween deck (22), located considerably below the vessel's loaded water line, divides at least the side tank compartments into upper and lower side tank compartments (26 resp. 24), the upper side tanks (26) being water ballast tanks while the lower side tanks (24) being cargo oil tanks, which at the head are connected to oil riser trunks (30), which via a pipe branch (36) with a non-return valve are connected to an oil reception tank.

5,335,616

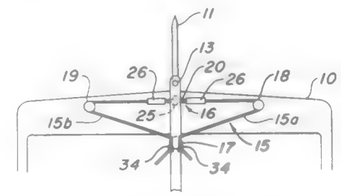
BOAT RUDDER CONTROL SYSTEM

Robin F. Tiesler, 6175 Carversville Rd., Carversville, Pa. 18913-0044

Filed May 4, 1993, Ser. No. 59,422

Int. Cl.[5] B63H *25/06*

U.S. Cl. 114—172 **17 Claims**



1. A rudder control system for a boat rudder pivotally mounted with respect to a boat hull and having a steering arm connected thereto comprising:

rudder control line means comprising first and second control line sections;

means affixing the control line sections to the steering arm at a position displaced along the axis of the steering arm from the pivotal mounting, said first control line section being extended in a first path from the steering arm towards one side of the boat hull and said second control line section being extended in a second path from the steering arm towards the opposite side of said boat hull;

means for frictionally resisting turning movements of the rudder, including first and second guide members for said first and second control line sections, respectively, said first and second guide members each having a fixed guide surface engageable with the respective section of the control line for guiding the respective first and second sections of the control line from the guide members into converging paths;

axially expandable resilient tensioning means interconnecting the first and second control line sections in said converging paths for maintaining a predetermined line tension; and

stop means interacting with said line sections for limiting movement of said line sections to a predetermined range of movements, said resilient tensioning means providing a tensioning force acting to return said steering arm and said rudder towards a position within said predetermined range established by said stop means.

5,335,617

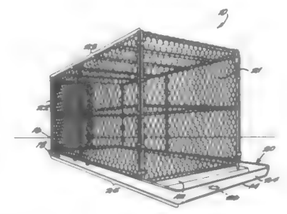
SANITARY DOG KENNEL

Oneal M. Hoffman, Rte. 2 Box 350, St. Matthews, S.C. 29135-9566

Filed Jun. 18, 1993, Ser. No. 79,017

Int. Cl.[5] A01K *1/02*

U.S. Cl. 119—17 **18 Claims**

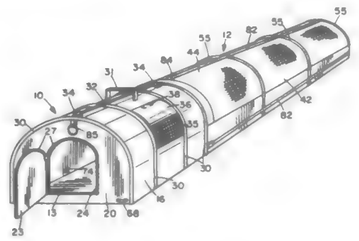


1. A flooring for use in a dog kennel, said flooring comprising a molded sheet of material having a top surface that is

VOL 1165 ISS 2 AG 9 1994 UMI

non-porous and is textured in lanes for traction, said sheet having a first end and an opposing second end, a first side and an opposing second side, said sheet having a rim running along said first end, said first side and said second side, said sheet having a bottom surface having a plurality of ribs formed therein for reinforcing said sheet, said sheet having a trough with a drain formed at said first end, said drain dimensioned for flushing canine waste therethrough.

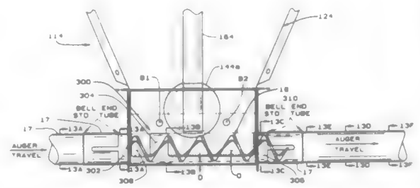
5,335,618
COLLAPSIBLE ANIMAL ENCLOSURE
J. Anthony Zarola, Alpine, Calif., assignor to Stoygap Enterprises, Alpine, Calif.
Filed Jul. 22, 1993, Ser. No. 96,508
Int. Cl.[5] A01K *23/00*
U.S. Cl. 119—19 **19 Claims**



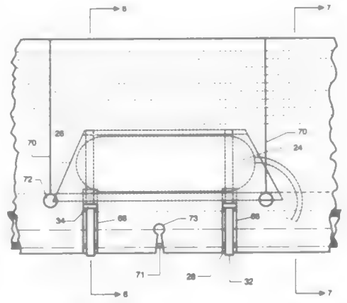
1. An animal enclosure, comprising:
a house unit having spaced side walls, a roof, and opposite ends forming an enclosed area for housing an animal;
at least one end of the house unit having an entry opening for allowing an animal to enter and exit the enclosed area;
at least the side walls and roof of the housing being made of a pliable material;
at least two support bows extending transversely across the side walls and roof of the housing, each support bow comprising a resilient member of shape corresponding to the cross-sectional shape of the house unit and comprising means for holding the side walls and roof of the house unit in an open, erect condition;
a releasable, longitudinal spreader bar extending between the opposite ends of the house unit to hold the opposite end walls apart in an erect condition; and
the house unit being collapsible between an erect, fully extended condition in which the opposite ends are spaced apart by a maximum distance and a collapsed condition in which the ends are urged towards one another to collapse the material between the ends in an accordion-folded manner, the spreader bar being removable from the house unit to allow the house unit to be collapsed axially inwardly into its collapsed condition.

5,335,619
FEED INTAKE CUP
Eugene B. Pollock, Rte. 1, Box 56, Assumption, Ill. 62510
Filed Jan. 15, 1993, Ser. No. 5,905
Int. Cl.[5] A01K *5/02*
U.S. Cl. 119—57.4 **6 Claims**

1. Feed intake apparatus for livestock feeding system, said apparatus comprising a housing having a feed inlet which receives feed from a feed supply and a feed outlet, said housing having a body which generally converges downwardly and inwardly from said feed inlet toward said feed outlet, a feed conveyor extending through said housing, said feed conveyor comprising a conveyor tube with a feed auger housed therein, said feed auger having a multiplicity of substantially equally spaced flights and being driven within said conveyor tube for picking up feed from said intake apparatus and for conveying it through said conveyor tube, and a regulating tube within said feed outlet receiving said auger, said regulating tube including a regulating section having a diameter only somewhat greater than the diameter of said auger thereby to regulate the amount of feed carried by said auger and to insure that a partial void is provided in said conveyor tube downstream from said feed intake apparatus thereby positively preventing overcompaction of feed in said conveyor tube.

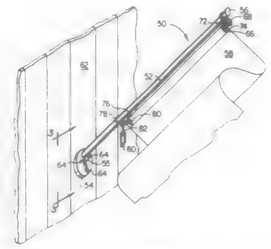


5,335,620
PROTECTIVE FAIRING FOR UNDERWATER SENSOR LINE ARRAY
David C. Small, Long Beach, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 31, 1993, Ser. No. 41,018
Int. Cl.[5] B63B *21/00*
U.S. Cl. 114—243 **20 Claims**



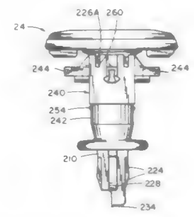
1. A faired underwater sensor line array which can be repeatedly raised and lowered under tension from a ship and wound upon a storage drum on the ship without disassembly, comprising:
a longitudinally-extending support cable;
a plurality of longitudinally-spaced sensors, each generating an electric output signal;
signal transmitting means for transmitting the sensor output signals to the ship, including a plurality of insulated electrical conductors connected respectively to the plurality of sensors;
a continuous, longitudinally-extending fairing having a front leading edge and a back trailing edge, the fairing including at least one longitudinally-extending cavity for receiving the support cable, the sensors, and the insulated electrical conductors, the fairing being formed as a single extrusion of resilient plastic material having a longitudinally-extending center portion and opposite side portions, the center portion being folded longitudinally to define the fairing leading edge, the fairing including fastening means for fastening together the opposite side portions during assembly of the faired underwater sensor line array to define the fairing trailing edge and the at least one longitudinally-extending cavity, the support cable being disposed behind the leading edge of the fairing and the sensors being disposed behind said support cable; and
restraint means for limiting motion of each sensor relative to the insulated electrical conductor connected to the sensor.

5,335,621
FLAG SUPPORT SYSTEM
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.
Filed Apr. 2, 1993, Ser. No. 42,155
Int. Cl.[5] G09F *17/00*
U.S. Cl. 116—173 **22 Claims**



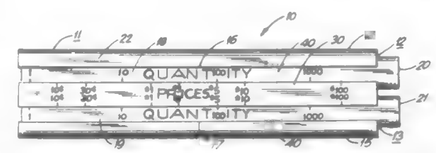
1. An improved flag staff assembly of a type wherein an elongate flag staff is disposed at an angle relative to a generally vertical surface having means for supporting a seamed proximal edge of a flag therefrom and disposed at an angle relative to the ground, wherein the improvement comprises:
a base member adapted for securement to said vertical surface in support of said flag staff therefrom;
a finial adapted for securement to a top end of said flag staff;
a weight;
means for coupling said weight relative to a bottom end of said proximal edge of said flag for causing the proximal edge of said flag to become taut relative to said staff; and
an upper member coupling a top end of the proximal edge of said flag to said finial and a lower member slidingly coupling a bottom end of the proximal edge of said flag to said flag staff.

5,335,622
INDICATOR CAP
James L. Say, Post Office Box 1418, Frisco, Colo. 80443
Continuation-in-part of Ser. No. 796,736, Nov. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 550,162, Jul. 9, 1990, Pat. No. 5,078,077. This application May 18, 1993, Ser. No. 63,629
Int. Cl.[5] G01F *23/00*
U.S. Cl. 116—227 **34 Claims**



27. A universal indicator cap for a dishwasher rinse agent dispenser including a reservoir with an opening positioned in door for a dishwasher for indicating a low level of rinse agent in the reservoir, the door being pivotal between an opened horizontal position and a vertical closed position, the indicator cap comprising in combination:
a body including a head portion having a cavity formed therein and a neck portion;
a gasket adaptor positioned about said neck portion such that said indicator cap is adaptable to different models of the rinse agent dispenser;
means for vertically mounting said body into said opening in the reservoir with said neck portion extending downwardly into a bottommost area of the reservoir;
a first fluid passageway extending through said neck portion from an opened terminal end thereof to said cavity of said head portion; and
visual pump means for pumping rinse agent through said first fluid passageway into said cavity to visually indicate the presence of the rinse agent in said cavity,
whereby, air is allowed to flow upwardly through said first fluid passageway when the level of rinse agent in the reservoir is below said opened terminal end of said first fluid passageway causing drainage of rinse agent in said cavity to visually indicate a low level condition.

5,335,623
INSTRUMENT AND METHOD FOR COMPARING NUMERIC INDICIA
Edward Mahler, 47 Echo La., Larchmont, N.Y. 10538
Filed Aug. 19, 1992, Ser. No. 932,082
Int. Cl.[5] G09F *9/40*
U.S. Cl. 116—323 **6 Claims**



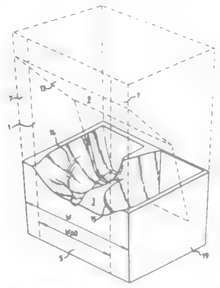
3. An instrument for comparing numeric indicia, which comprises:
a frame;
at least two coextensive members movable relative to the frame, each member corresponding to a product to be compared;
the frame slidably receiving the members and having a sequential array of first numeric indicia which correspond to prices of products positioned for cooperation with a corresponding sequential array of second numeric indicia on each member relating to the product, such that upon selective manipulation of each member so as to align the first and second indicia, the member extending furthest to the left relative to the frame designates the product having the lowest cost per unit of second numeric indicia.

5,335,624
FEED AND DRINK FEEDER
Michael R. Baxter, Isleworth, England, and James M. Bruce, Ellon, Scotland, assignors to ACO Severin Ahlmann GmbH & Co. KG, Rendsburg, Fed. Rep. of Germany
Filed Jan. 22, 1993, Ser. No. 9,307
Int. Cl.[5] A01K *5/01, 7/02*
U.S. Cl. 119—51.5 **11 Claims**

1. A feeding trough for a group of animals intended for slaughter and having a size variation within a predetermined range, the feeding trough comprising separate food and water compartments positioned at horizontally spaced apart locations within the feeding trough; a front wall over which the animal's head can reach into the compartments; an access opening above the front wall through which the head reaches; a hopper for supplying feed to the food compartment to a predetermined depth; wherein the access opening is dimen-

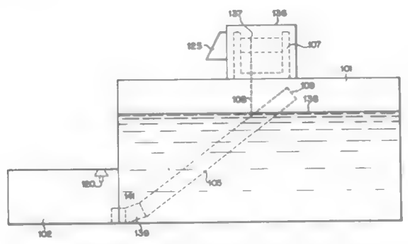
VOL 1165 ISS 2 AG 9 1994 UMI

sioned so that only one animal intended to feed from the feeding trough can reach into the compartments at a time, and the food and water compartments are positioned within the feeding trough and have shapes configured so that the animal when positioned with its head in the feeding trough can move between the food and water compartments by turning its head



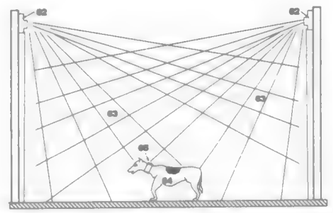
laterally without needing to back out of the feeding trough; and a partition wall for separating the food and water compartments for preventing splashes of water entering the food compartment from the water compartment, the partition wall being higher towards the feeding trough, away from the access opening, than it is at the access opening.

5,335,625
PORTABLE PROGRAMMABLE LIQUID FEED DISPENSING DEVICE
Richard T. Rawlings, 4218 Sunny Ridge Rd., Nampa, Id. 83686; Kirk Bowman, 8899 E. Missouri, Nampa, Id. 83683, and Bradley R. Holton, P.O. Box 176, Greenleaf, Id. 83626
Filed Apr. 29, 1993, Ser. No. 55,811
Int. Cl.[5] A01K *7/02*
U.S. Cl. 119—74 **8 Claims**



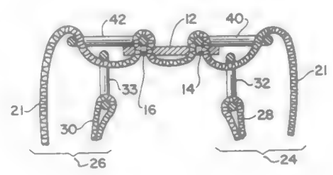
6. A liquid feed dispensing device for livestock which comprises:
- a supply vessel;
- a feeding vessel being attached to the supply vessel and configured to receive a flow of liquid from the supply vessel;
- a transfer tube, being located within the supply vessel, having an inlet end which is freely movable to any elevation within the supply vessel and a second end in fluid communication with the feeding vessel;
- timer means for accruing elapsed time and dispensing liquid into the feeding vessel at predetermined times during the day;
- liquid level sensor means for sensing a high liquid level in the feeding vessel; and
- means for delivering any liquid in the feeding vessel to the livestock.

5,335,626
LINEAR ENERGY CURTAIN
Frank A. Calabrese, P.O. Box 588, Waynesboro, Pa. 17268
Continuation-in-part of Ser. No. 867,892, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 94,075, Sep. 4, 1987, Pat. No. 5,113,962, which is a continuation of Ser. No. 820,644, Jan. 21, 1986, abandoned. This application Feb. 8, 1993, Ser. No. 14,810
Int. Cl.[5] A01K *3/00*
U.S. Cl. 119—721 **11 Claims**



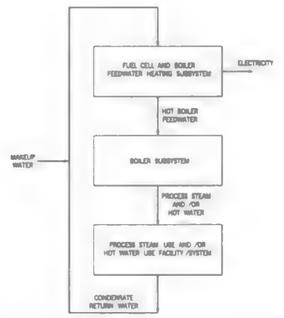
7. An animal confining system comprising
means for establishing a boundary including
a point source of radiated energy, and
optical means for converting said radiated energy into a curtain of radiated energy, and
a collar to be worn by an animal to be confined including
means for issuing an instructional command,
means for receiving said radiated energy when the animal is within said curtain of radiated energy, and converting said received radiated energy into a signal, and
means for operating said instructional command issuing means upon receipt of said signal.

5,335,627
ANIMAL RESTRAINT DEVICE AND METHOD OF USING SAME
John K. Bandimere, Carlsbad, Calif., assignor to Randall K. Inc., San Diego, Calif.
Filed May 10, 1993, Ser. No. 59,708
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—856 **17 Claims**



1. An animal harness for use with a control leash, comprising:
- block and tackle means for helping to provide a mechanical advantage over a pulling force exerted against the control leash;
- said block and tackle means including left front movable slip loop means for helping to establish a portion of said mechanical advantage, said left front movable slip loop means being fixed at one of its terminal ends; right front movable slip loop means for helping to establish another portion of said mechanical advantage, said right front movable slip loop means being fixed at one of its terminal ends; tackle strap means for securing fixedly together said left front movable slip loop means and said right front movable slip loop means at one of their respective terminal ends; ring means engaging said left front movable slip loop means at its other terminal end and said right front movable slip loop means at its other terminal end and adapted to be coupled to the control leash for enabling a person to control an animal restrainably; and restraining strap means adapted to be attached to the control leash and coupled to said ring means for enabling said left front movable slip loop means to move towards and away from its fixed terminal end and for enabling said right front movable slip loop means to move towards and away from its fixed terminal end to help restrain unwanted animal movements.

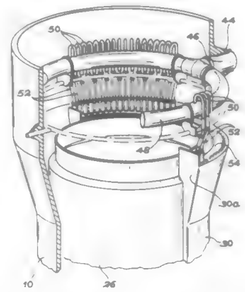
5,335,628
INTEGRATED BOILER/FUEL CELL SYSTEM
William R. Dunbar, Kenosha, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.
Filed Sep. 3, 1993, Ser. No. 118,388
Int. Cl.[5] F22B *33/00*
U.S. Cl. 122—1 R **4 Claims**



1. An integrated boiler/fuel cell system useful for cogenerating electricity and steam or hot water, the system comprising:
- A. a boiler adapted to producing steam or hot water from boiler feedwater;
- B. a fuel cell which produces electricity and as a by-product, thermal energy; and
- C. a fuel cell cooling and boiler feedwater heating apparatus in which water is used as a cooling agent, and in which (i) the water is circulated about the fuel cell subsystem in a manner that captures at least a portion of the by-product heat such that the temperature of the water is elevated, and (ii) this water at the elevated temperature is used as or transferred to and used to at least partially heat the boiler feedwater to a desired temperature.

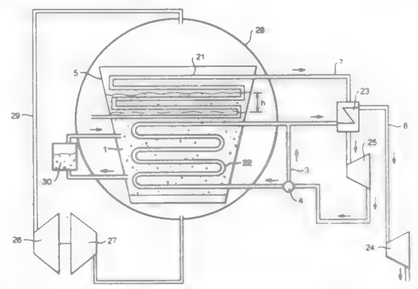
5,335,629
PREHEATING STEAM GENERATOR
Gil Cornic, Aubergenville, France, assignor to FRAMATOME, Courbevoie, France
Filed Dec. 15, 1992, Ser. No. 991,354
Claims priority, application France, Dec. 19, 1991, 91 15800
Int. Cl.[5] F22B *1/02*
U.S. Cl. 122—32 **10 Claims**

9. Preheating steam generator comprising:
- (a) a vertically axed, outer envelope;
- (b) a horizontal tube plate tightly fixed to an interior of said outer envelope;
- (c) a bundle of inverted U tubes, each of said U tubes having two ends fixed to said tube plate and emerging below said tube plate, respectively into a primary fluid entrance collector and a primary fluid exit collector;
- (d) an inner envelope covering said bundle of U tubes and having a lower edge spaced from said tube plate;
- (e) a skirt partly surrounding said inner envelope and defining with said inner envelope a preheating space partly closed in an upward direction by an anti-return plate;
- (f) means for supplying said preheating space with secondary water, said means comprising a supply collector placed above said preheating space, inverted J supply tubes fixed to said supply collector and extensions connected to said J supply tubes and to said anti-return plate;



- (g) means for extracting secondary steam through upper parts of said inner and outer envelopes; and
- (h) wherein each of said extensions has a deformable structure and comprises at least three tubular segments interconnected by swivel connections.

5,335,630
METHOD AND DEVICE FOR CONTROLLING THE POWER OUTPUT DURING COMBUSTION IN A FLUIDIZED BED
Karl-Johan Nilsson, Finspong, Sweden, assignor to ABB Stal AB, Sweden
PCT No. PCT/SE91/00126, § 371 Date Oct. 8, 1992, § 102(e) Date Oct. 8, 1992, PCT Pub. No. WO91/13289, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 20, 1991, Ser. No. 920,576
Claims priority, application Sweden, Feb. 20, 1990, 9000603-2
Int. Cl.[5] F22B *31/00*
U.S. Cl. 122—4 D **4 Claims**



1. A method of controlling the power output during combustion of fuel in a pressurized fluidized bed, comprising the steps of:
- 1) providing heat transfer surfaces arranged in or down stream of the fluidized bed the heat transfer surfaces including a high pressure section with at least one heat transfer surface in the form of an evaporator and a low pressure section with a heat transfer surface in the form of at least one intermediate superheater;
- 2) causing traversing of the heat transfer surfaces by liquid

VOL 1165 ISS 2 AG 9 1994 UMI

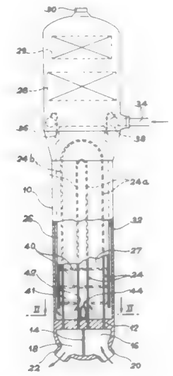
or gaseous medium to at least partially take out, as output heat the energy developed during the combustion;
3) utilizing the output heat in at least one steam turbine connected to the heat transfer surfaces;
4) recovering energy contained in the hot pressurized flue gases in at least one gas turbine arranged in a flue gas path downstream of the fluidized bed;
5) maintaining the power balance between the gas turbine and the steam turbine by controlling the power taken out in the heat transfer surfaces in case of change of the bed depth as a result of a change in the power output, said controlling including the steps of:
a) controlling the production of high pressure steam, the evaporation power, by exposing from and covering by the fluidized bed, respectively, the heat surfaces included in the evaporator though changes in the bed depth;
b) at the same time controlling heat taken from the fluidized bed by means of the intermediate superheater by controlling the mean temperature difference between the fluidized bed and a medium flowing in the intermediate superheater in the form of low pressure steam, and superheating the low pressure steam, and
c) also, at the same time, controlling the temperature/energy contents of the high pressure steam by superheating high pressure steam, produced in the evaporator before it is expanded in a high pressure steam turbine, by means of low pressure steam from the intermediate superheater in at least one heat exchanger arranged outside the fluidized bed.

5,335,631

STEAM GENERATOR EQUIPPED WITH AN IMPROVED DEFLECTION AND PURGING DEVICE

Thierry Daffos, Maurecourt, and Christian Valadon, Paris, both of France, assignors to FRAMATOME, Courbevoie, France

Filed Apr. 15, 1993, Ser. No. 46,943
Claims priority, application France, Apr. 15, 1992, 92 04642
Int. Cl.[5] F22B *37/48*
U.S. Cl. 122—383 **10 Claims**



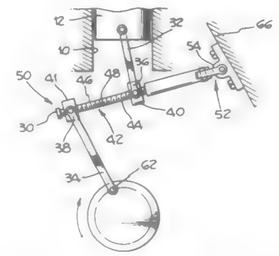
1. Steam generator comprising a vertical outer envelope, a horizontal tube plate tightly fixed within the outer envelope, a bundle of inverted U-tubes having hot and cold branches with ends fixed to the tube plate and issuing below the tube plate, respectively in an inlet manifold and in a discharge manifold for the primary fluid, an inner envelope covering the tube bundle, whereof a lower edge is spaced from the tube plate and forms with the outer envelope an annular recirculation space, secondary water feed means issuing into the outer envelope above the tube plate, secondary steam extraction means through the top parts of the inner and outer envelope above the tube plate, secondary steam extraction means through the top parts of the inner and outer envelopes, a lower flow distribution plate located in a lower part of the inner envelope and comprising a central opening, and deflection and purging means located in a space formed between the tube plate, the lower flow distribution plate and the hot and cold branches of the tubes, wherein the deflection and purging means comprise at least one deflection and purging box extending over all or part of the length of said space up the vicinity of the inner envelope and extending heightwise to the vicinity of the lower edge of the inner envelope, said at least one box being spaced from the tube plate and having purging orifices facing the latter.

5,335,632

VARIABLE COMPRESSION INTERNAL COMBUSTION ENGINE

Carl D. Hefley, 1804 N. Evergreen St., Burbank, Calif. 91505

Filed May 14, 1993, Ser. No. 61,013
Int. Cl.[5] F02B *75/12*
U.S. Cl. 123—48 B **9 Claims**



1. In an internal combustion engine having a cylinder, a piston reciprocable within the cylinder, and a crankshaft located at a fixed distance from the cylinder and driven from the piston, means for varying the piston displacement to match load requirements, comprising:
an arm having one of its ends pivotally supported in fixed relation to both the cylinder and the crank shaft in an intermediate position relative thereto, the other end of said arm carrying two oppositely threaded screws;
a piston rod divided into upper and lower portions, the upper portion having its upper end pivotally coupled to the piston and its lower end threadedly coupled to one of said two screws;
the lower piston rod portion having its lower end pivotally coupled to the crankshaft and its upper end threadedly coupled to the other of said two screws; and
means for rotating said arm so as to change the effective length of the piston rod by laterally displacing the adjacent ends of the top and bottom parts of the piston rod from each other at the point of division while still transmitting energy from the piston to the crank shaft.

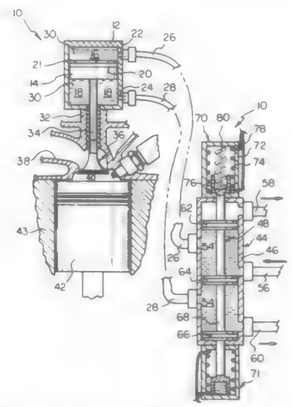
5,335,633

INTERNAL COMBUSTION ENGINE VALVE ACTUATOR APPARATUS

James L. Thien, 3310 Timberview Ct. SW, Issaquah, Wash. 98027

Filed Jun. 10, 1993, Ser. No. 74,356
Int. Cl.[5] F01L *9/02*
U.S. Cl. 123—90.12 **2 Claims**

1. An internal combustion engine valve actuator apparatus comprising:
a substantially cylindrical actuator body having an interior sidewall with first and second actuator body apertures extending through said sidewall, said actuator body being mountable to an engine head and permitting entrance of a valve stem of a valve therewithin;
a valve piston slidably positioned within said actuator body and coupled to said valve stem, said valve piston movably dividing said actuator body into an upper fluid space in communication with said first actuator body aperture and a lower fluid space in communication with said second actuator body aperture, said valve piston including a journal within which a seal is positioned to contact said interior sidewall of said actuator body to prevent fluid communication between said upper fluid space and said lower fluid space;
a first hydraulic line coupled to said actuator body in communication with said first actuator body aperture;
a second hydraulic line coupled to said actuator body in communication with said second actuator body aperture;
a spool valve including a valve body substantially cylindrical in shape having first and second ends and further having an internal fluid space with first and second drain apertures extending through said valve body in communication with said internal fluid space for permitting exit of a drain fluid, said valve body further having a first rod aperture extending longitudinally through said first end of said valve body, a second rod aperture extending longitudinally through said second end of said valve body, a first valve body aperture in fluid communication with said first actuator body aperture, a second valve body aperture in fluid communication with said second actuator body aperture, and a pressure aperture extending through said valve body, said pressure aperture facilitating an introduction of high pressure fluid from a pressure source to within said valve body;
a divider rod having first and second divider rod ends, said divider rod extending longitudinally through said valve body through both said first and second rod apertures;
a first divider sealingly positioned within said valve body, said first divider being mounted to said divider rod;
a third divider sealingly positioned within said valve body, said third divider being mounted to said divider rod spaced from said first divider;
a second divider sealingly positioned within said valve body, said second divider being mounted to said divider rod medially between said first and third dividers, said dividers being cooperatively operable to move from a first position allowing simultaneous passage of said high pressure fluid from said pressure aperture through said first valve body aperture and passage of said drain fluid from said second valve body aperture through said second drain aperture to a second position allowing simultaneous passage of said high pressure fluid from said pressure aperture through said second valve body aperture and passage of said drain fluid from said first valve body aperture through said first drain aperture;
a first solenoid mounted to said first end of said valve body, said first solenoid including a first permanent magnet attached to said first end of said divider rod; and,
a second solenoid mounted to said second end of said valve body, said second solenoid including a second permanent magnet attached to said second end of said divider rod, said solenoids being cooperatively operable to move said divider rod within said valve body between said first position allowing simultaneous passage of said high pressure fluid from said pressure aperture through said first valve body aperture and passage of said drain fluid from said second valve body aperture through said second drain aperture to move said valve stem in a first direction to open said valve, to said second position allowing simultaneous passage of said high pressure fluid from said pressure aperture through said second valve body aperture and passage of said drain fluid from said first valve body aperture through said first drain aperture to move said valve stem in a second direction to close said valve.

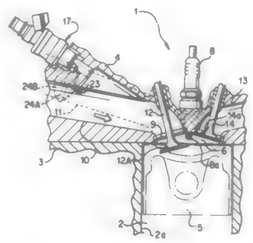


5,335,634

COMBUSTION CHAMBER STRUCTURE FOR AN ENGINE

Kazuhiko Hashimoto; Yoshihiko Imamura; Toshihide Yamamoto, and Yoshihisa Noh, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 14, 1992, Ser. No. 883,335
Claims priority, application Japan, May 14, 1991, 3-139810; Jun. 29, 1991, 3-185757
Int. Cl.[5] F02B *31/00*
U.S. Cl. 123—188.14 **6 Claims**



1. A structure of a combustion chamber for an engine comprising a cylinder block formed with a cylinder bore therein and a cylinder head formed with a generally conically-shaped under wall, said cylinder head being mounted on said cylinder block so as to form a combustion chamber between said cylinder bore, said generally conically-shaped under wall and a piston in said cylinder bore, said structure of the combustion chamber comprising:
an intake port formed in said cylinder head and opening into said combustion chamber, a major straight portion of the intake port being formed so that a lower wall section of the major straight portion is elongated and extends straight from an upstream location to approximately an end opening portion of the intake port, a hypothetical line extending from the lower wall section of the major straight portion into the combustion chamber being located apart from a downstream end portion of an upper wall section of an end opening of the intake port and a center line of the major straight portion of said intake port being at an angle A relative to an interface between said cylinder head and said cylinder block; and
an intake valve having a generally conically-shaped valve head and installed at an angle B relative to a vertical

VOL 1165 ISS 2 AG 9 1994 UMI

center line of said cylinder bore in said cylinder head so as to open and close said intake port, said generally conically-shaped valve head having a base angle C, said angles A, B and C satisfying the following formula:

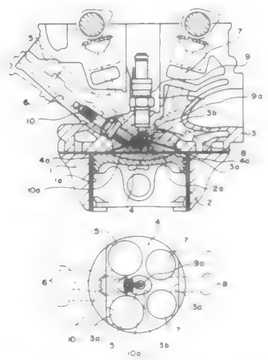
$C \geq A+B$.

5,335,635

COMBUSTION CHAMBER FOR AN INTERNAL COMBUSTION ENGINE

Noriaki Kadoi, Tokyo, and Fujio Takimoto, Chiba, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 72,584
Claims priority, application Japan, Jul. 22, 1992, 4-216441
Int. Cl.[5] F02B *17/00*; F02M *61/14*
U.S. Cl. 123—295 3 Claims



1. A combustion chamber for an internal combustion engine comprising:

a cylinder block and a cylinder head disposed on said cylinder block, and a piston inserted in said cylinder block for reciprocating therein, said cylinder head having a bottom facing a concave crown of said piston, said bottom having a cone-shaped recess facing said crown;

a combustion chamber structure defined between said bottom recess of said cylinder head and a concavity of said piston;

two intake ports formed at a half side of said bottom for inducing air into said combustion chamber structure, an intake valve provided at an end of each of said intake ports for opening and closing thereof, and two exhaust ports formed at another half end of said bottom for exhausting burnt gases, and an exhaust valve provided at an end of each of said exhaust ports;

a fuel injector vertically inserted into said cylinder head for directly injecting fuel at a center of said combustion chamber so as to form a symmetrical fuel flow cone on said concave crown, an injection nozzle of said fuel injector being located at a top of said recess of said cylinder head; and

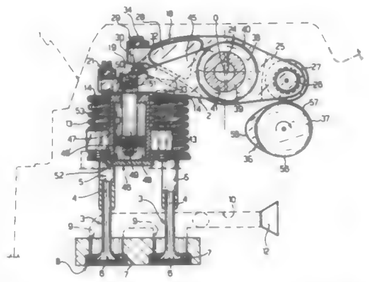
a spark plug diagonally inserted into said cylinder head between said two intake ports for igniting an air-fuel mixture at said center of said combustion chamber, an electrode of said spark plug being located at a center of the fuel flow cone.

5,335,636

ENGINE COMPRISING A CONTINUOUS BRAKING DEVICE, PARTICULARLY FOR AN INDUSTRIAL VEHICLE

Mario Bilei, Settimo Torinese, Italy; Stefan Kirschner, Munich, Fed. Rep. of Germany; Takeo Ogawa, and Kazuaki Noritou, both of Saitama, Japan, assignors to Iveco Fiat S.p.A., Turin, Italy and Nissan Diesel Motor Co., Ltd., Saitama, Japan

Filed Nov. 6, 1992, Ser. No. 972,648
Claims priority, application Italy, Nov. 8, 1991, TO91 A 000859
Int. Cl.[5] F02D *13/04*
U.S. Cl. 123—321 12 Claims



1. An endothermic engine (1) for an industrial vehicle, comprising:

a plurality of cylinders, each fitted with at least one exhaust value (3) capable of intercepting an opening communicating with an exhaust manifold (10);

at least one camshaft (37) fitted with a plurality of cams (36) controlling said exhaust valves (3) by means of respective rocker arms (18) oscillating about their axis (24); and

a continuous braking device (2) capable of controlling an additional opening of said exhaust valves (3) so as to dissipate the compression energy produced inside said cylinders,

wherein said cams (36) each have an associated profile including a first section (56) with null lift, corresponding to one stage of the suction stroke of said respective cylinders, a second section (57) with constant, reduced lift, corresponding to the last stage of the suction stroke and to both compression and power strokes of the relevant cylinders, and a third lobe section (58) corresponding to the exhaust stroke of the relevant cylinders, aid continuous braking device including first actuating means (46) capable of displacing said rocker arms (18) from a first normal operation position (A), in correspondence of which the value of clearance (g) between said rocker arms (18) and said valves (3) is high enough, to cause said second section (57) of the profile to be ineffective, to a second braking position, in correspondence of which the value (g') of said clearance is so reduced, as to activate said second section (57) of said profile.

5,335,637

ENERGY ADJUST FOR A FLEXIBLE FUEL COMPENSATION SYSTEM

Stuart M. Davis, Bloomfield Hills, and Dennis A. Soltis, Lathrup Village, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

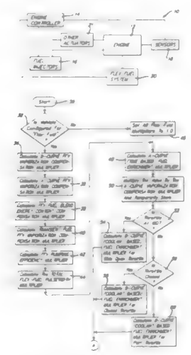
Filed May 4, 1993, Ser. No. 57,246
Int. Cl.[5] F02D *41/04*, *41/06*
U.S. Cl. 123—478 2 Claims

1. A method of energy content adjustment to injection pulsewidth values, said method comprising the steps of:

determining if an internal combustion engine is in a run fuel mode;

calculating a run fuel injector pulsewidth if the internal combustion engine is in the run fuel mode;

interpolating a flexible fuel multiplier (FFVMUL) from a table using a percent methanol (PREMETH) as the interpolation parameter;



calculating a new run fuel injector pulsewidth using the interpolated FFVMUL value and calculated run fuel injector pulsewidth; and

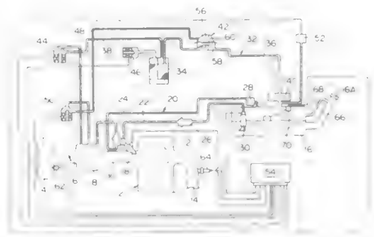
exiting the energy content adjustment if the internal combustion engine is not in the run fuel mode or the new run fuel injector pulsewidth has been calculated.

5,335,638

EVAPORATED FUEL CONTROLLER

Takeshi Mukai, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan

Filed Sep. 20, 1993, Ser. No. 124,329
Claims priority, application Japan, Dec. 28, 1992, 4-361524
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 4 Claims



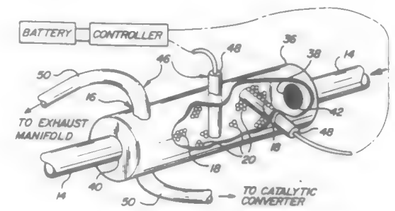
1. An evaporated fuel controller comprising: a canister provided in line with an evaporated fuel path communicating an air intake path of an engine to a fuel tank, said evaporated fuel path having a first path communicating the fuel tank to the canister and a second path communicating the canister to the air intake path; a pressure control valve in line with the first path; a first solenoid valve in line with the second path; a second solenoid valve to communicate the canister with the atmosphere; a control path communicating the air intake path to the pressure control valve; a third solenoid valve provided in line with the control path; a pressure sensor for detecting a pressure in the fuel tank; and control means for opening the third solenoid valve to communicate the fuel tank with the canister when at least one engine operating condition is not satisfied.

5,335,639

HEAT EXCHANGER HAVING CLOSE PACKED SPHERES

Donald Siefkes, 2754 Charter Blvd., Troy, Mich. 48083

Continuation-in-part of Ser. No. 929,285, Aug. 13, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 81,657
Int. Cl.[5] F02M *31/00*
U.S. Cl. 123—545 13 Claims



1. An internal combustion engine (10) comprising:

an internal combustion chamber (12);

a fluid passageway (14) disposed upstream of said chamber (12) for conducting into said chamber (12) combustion fluids such as one of the following: air, fuel and a fuel-air mixture;

heat supplying means (16) for supplying a predetermined amount of heat to the combustion fluid over a predetermined time interval;

said heat supplying means (16) including a heat exchanger (18) for heating the combustion fluid as the combustion fluid flows through said heat exchanger (18) toward said combustion chamber (12);

said heat exchanger (18) comprising a plurality of individual bits (20) of heat conducting material agglomerated to define a porous structure disposed in said passageway (14) and extending across said passageway to conduct heat across said passageway and to present a large heating surface area for heating the combustion fluid as the fluid flows among said bits (20) toward said combustion chamber (12);

characterized by said bits (20) being solid metal beads having a spherical shape and uniform size, each of said beads consisting entirely of metal, said beads being agglomerated to define an array of contiguous high heat conducting elements for efficiently transferring heat across said passageway to thoroughly heat the combustion fluid, said array defining uniform passageways to allow uniform flow of the combustion fluid through said heat exchanger.

5,335,640

ROTOR TO CASING SEALS FOR ROOTS TYPE SUPERCHARGERS

James J. Feuling, Ventura, Calif., assignor to Feuling Engineering, Inc., Ventura, Calif.

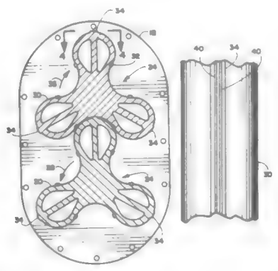
Filed Jun. 19, 1992, Ser. No. 901,092
Int. Cl.[5] F01C *19/00*
U.S. Cl. 123—559.1 23 Claims

1. In a supercharger having a casing with an oval casing and two opposite parallel end plates closing said casing, a pair of parallel cooperating rotors within said casing and mounted on shafts extending through said end plates, each of said rotors having at least two longitudinal parallel lobes adapted to mesh with the lobes on the opposite rotor when said rotors are rotated, and sealing land surfaces between the apex of each lobe and the inside wall of said casing and between ends of said

VOL 1165 ISS 2 AG 9 1994 UMI

rotors and the inside wall of said casing to reduce gas passage across the sealing surfaces, the improvement comprising:

a plurality of groves having depths of from about 0.5 to 3 mm. and widths of from about 0.5 to about 3 mm. formed in at least one of said apex lands, rotor end surfaces and



end plate inside surfaces, said grooves lying approximately perpendicular to the direction of anticipated gas leakage through the seal during at least a part of a rotor rotation cycle, whereby passage of gases across the grooved surface is reduced.

5,335,641

OIL FILLER FOR AN INTERNAL COMBUSTION ENGINE

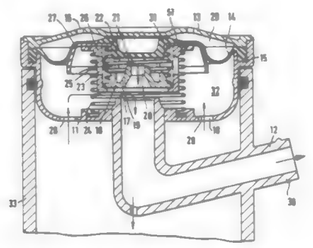
Werner Schnabel, Freiberg, Fed. Rep. of Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Apr. 13, 1993, Ser. No. 46,487

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1992, 4212968

Int. Cl.[5] F01M *13/00*

U.S. Cl. 123—574 **6 Claims**



1. An oil filler for an internal combustion engine having an air intake and a crankcase, said oil filler comprising a filler opening for motor oil and a detachable cap for closing said opening, said oil filler defining an interior space in communication with said crankcase, and said cap (comprising) having a pressure control valve integrated therein for venting the crankcase of said internal combustion engine, said pressure control valve having a substantially cylindrically shaped housing and being provided with a first connection through which crankcase gases from the crankcase enter the valve, said first connection comprising an opening through said housing arranged to open directly into the interior space defined by said oil filler, and a second connection which communicates via a connecting line to the air intake of the internal combustion engine, said connecting line being fixedly mounted on said oil filler opening and separating from said cap when said cap is removed from said oil filler opening.

5,335,642

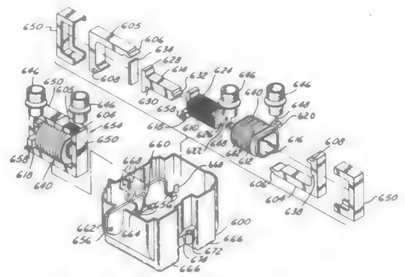
IGNITION COIL

Robert L. Hancock, Ann Arbor; Steven E. Pritz, Westland; Robert C. Bauman, Flat Rock, and Shawn J. Nowlan, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 939,800, Sep. 3, 1992, Pat. No. 5,241,941. This application Jun. 23, 1993, Ser. No. 80,146

Int. Cl.[5] F02P *11/00*

U.S. Cl. 123—634 **15 Claims**



1. A wasted spark ignition coil assembly comprising:

a box-shaped iron core member defining an air gap between two opposed portions of said box-shaped core;

a coil sub-assembly within said air gap comprising a primary coil member and a secondary coil member;

both said primary coil member and said secondary coil member comprising a bobbin, each of said bobbins having a longitudinal axis parallel with one another, and a plurality of windings of electromagnetic material being wound about said longitudinal axis of each said bobbin, said primary coil member received telescopically within said secondary coil member; and

said primary coil member including a permanent magnet member disposed at one end of said bobbin and in intimate contact with said box-shaped core member at said two opposed portions and thereby completely filling said air gap, said permanent magnet member being made of a magnetic material dispersed within an electrically nonconductive matrix and being at substantially less than full density within said matrix.

5,335,643

ELECTRONIC INJECTION FUEL DELIVERY CONTROL SYSTEM

Maurizio Abate, Orbassano; Claudio Carnevale, Nole Canavese; Pietro Nenzioni, Bologna, and Aldo Perotto, Meana Di Susa, all of Italy, assignors to Weber S.r.l., Turin, Italy

Filed Dec. 9, 1992, Ser. No. 988,237

Claims priority, application Italy, Dec. 13, 1991, 000976 A/91

Int. Cl.[5] F02D *41/14*

U.S. Cl. 123—679 **18 Claims**

1. An internal combustion engine having an electronic fuel injection system comprising:

first processing means for determining a theoretical fuel quantity as a function of information signals;

second processing means for determining a correcting parameter;

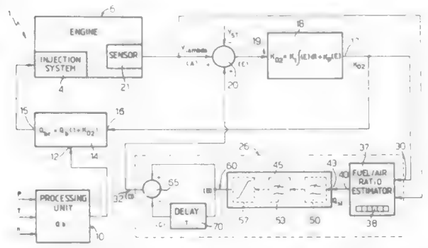
a sensor arranged inside the exhaust manifold of said engine;

said sensor generating a sensing signal representing a transfer function comprising at least a nonlinear characteristic and a time delay;

predicting means receiving at least the value of said correcting parameter and generating a correction signal;

said predicting means at least comprising means for generating a prediction signal simulating said sensing signal minus said time delay;

adding means for adding said prediction signal to said sensing signal, said adding means including means for generating a summation signal;



said second processing means calculating said correcting parameter for correcting said theoretical quantity as a function of said summation signal;

third processing means for calculating a correct fuel quantity as a function of said correcting parameter and having means for generating a fuel signal to the injection system representing the correct fuel quantity.

5,335,644

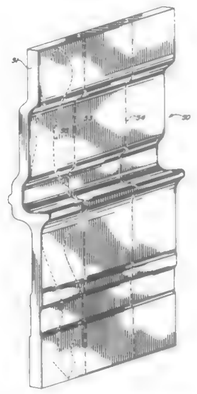
EXTRUDED HANDLE FOR ARCHERY BOW

Allan F. Smith, and Paul E. Shepley, Jr., both of Tucson, Ariz., assignors to Precision Shooting Equipment, Inc., Tucson, Ariz.

Filed Feb. 4, 1993, Ser. No. 13,357

Int. Cl.[5] F41B *5/00*

U.S. Cl. 124—23.1 **8 Claims**



1. An archery bow having a handle and a pair of limbs attached to said handle, characterized in that said handle has a predetermined length and is made from a strip of material extruded in a direction perpendicular to said length.

5,335,645

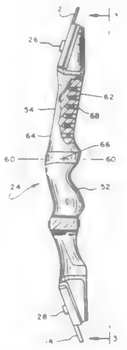
BOW HANDLE

Gary L. Simonds, and Henry M. Gallops, Jr., both of Gainesville, Fla., assignors to Bear Archery Inc., Gainesville, Fla.

Filed Aug. 24, 1992, Ser. No. 933,670

Int. Cl.[5] F41B *5/00*

U.S. Cl. 124—88 **8 Claims**



1. An archery bow having a handle comprising a central handgrip portion said handle having an upper portion and a lower portion for connection to an upper bow limb and a lower bow limb, said handle including an inner surface subjected to compression and an outer surface subjected to tension when said bow is drawn, at least one void recess formed in said handle and extending inwardly from said inner surface toward but short of said outer surface for the purpose of reducing the mass of the handle and wherein said recess extends into said handle to a depth beyond the neutral axis of said handle.

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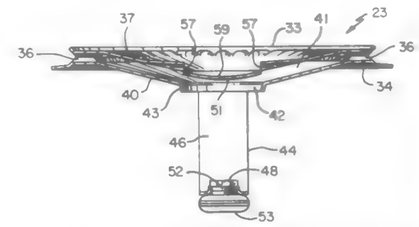
WATER HEATER, A BURNER UNIT THEREFOR AND METHODS OF MAKING THE SAME

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 30, 1993, Ser. No. 114,135

Int. Cl.[5] F24H *1/00*

U.S. Cl. 126—350 R **18 Claims**



10. In a burner means for a water heater comprising a tank for containing water and said burner means for receiving fuel from a fuel source and issuing said fuel so as to burn and heat said tank and, thus, said water by conduction, said tank having a bottom wall means and a flue passage extending upwardly from said bottom wall means for conveying away combustion products of said burner means, said burner means comprising a top burner plate and a bottom burner plate secured together so as to define an outer periphery of said plates and defining a plurality of burner ports disposed around said outer periphery of said plates and a chamber between said plates for receiving

VOL 1165 ISS 2 AG 9 1994 UMI

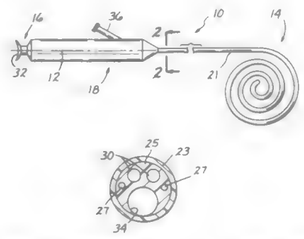
said fuel and issuing said fuel outwardly through said ports, said bottom burner plate having a central opening that passes through said bottom burner plate for receiving said fuel from said source substantially vertically upwardly through said central opening and into said chamber, said top burner plate having a top wall provided with opening means that passes through said top burner plate for draining away water that has accumulated on said top wall and that comprises condensate that has dripped from said flue passage onto said top wall, the improvement wherein said opening means is so constructed and arranged that the water that drains through said opening means is adapted to pass out through said central opening of said bottom burner plate.

5,335,647

POTTED ENDOSCOPE

John R. Brustad, Dana Point, Calif., assignor to Applied Medical Resources Corporation, Laguna Hills, Calif.

Filed Jun. 26, 1992, Ser. No. 886,975
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **17 Claims**



1. A surgical instrument having an elongate configuration and extending from a proximal end to a distal end, the instrument comprising:
a housing disposed at the proximal end of the instrument;
a tube extending from the housing to the distal end of the instrument and defining with the housing at least one channel;
at least one optical fiber disposed in the channel, the fiber having performance characteristics which substantially degrade when the fiber is bent along a first radius;
means disposed around the fiber in the channel for forming a solid structure to relieve bending stresses in the fiber so that the fiber can be bent along a second radius shorter than the first radius without substantially degrading the performance of the fiber; and
the means for forming a solid structure comprising an epoxy which fills the channel around the fiber.

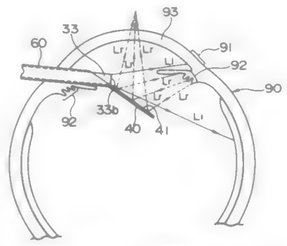
5,335,648

ENTOPTOSCOPIC INSTRUMENT FOR OBSERVING THE INTERIOR OF AN EYE

Tadahiko Kozawa, Ibaragi; Yasuhiro Osakabe, and Takashi Suematu, both of Tokyo, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,501
Claims priority, application Japan, Apr. 30, 1992, 4-036291[U]
Int. Cl.[5] A61B *3/00*
U.S. Cl. 128—6 **6 Claims**

1. An entoptoscopic instrument for use in observing living tissue in a patient, said entoptoscopic instrument comprising:
a light source unit for generating illumination light;
a light transmitting member having an incoming end and an outgoing end for guiding said illumination light from said incoming end to said outgoing end to produce said illumination light through said outgoing end along an optical axis; and
a mirror member having a mirror surface and arranged at said outgoing end of said light transmitting member so that said mirror surface is inclined with respect to the optical axis at an angle between 15° and 45° with said mirror surface facing towards said optical axis and increasing in distance from said optical axis as the mirror



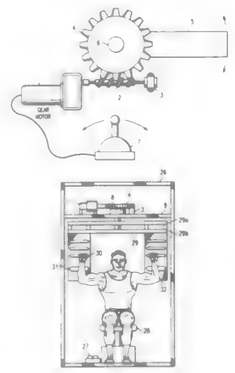
surface extends from said outgoing end of the light transmitting member; and
filter means located in an area between said light source unit and said outgoing end of said light transmitting member for attenuating wavelength components from said illumination light which can damage said living tissue.

5,335,649

STRETCHING DEVICE

John N. Randall, 2906 Ambleside, Richardson, Tex. 75082; James R. Wooley, 20896 Paseo Roble, and William H. Fagan, 26451 Sandy Creek, both of El Toro, Calif. 92630

Continuation of Ser. No. 320,116, Mar. 7, 1989, abandoned. This application Jan. 7, 1991, Ser. No. 637,921
Int. Cl.[5] A61H *1/02*
U.S. Cl. 601—24 **11 Claims**



1. An stretching device, comprising:
a fixed attachment station, configured to provide a fixed rest point for a first portion of a user's body when the user's body is stationed in a substantially predetermined position;
a movable member, connectable to define the rotational position of a predetermined joint of the user's body while the user's body is stationed in said substantially predetermined position,
said movable member having a first restraint, positioned to withstand pressure from an agonist muscle of the predetermined joint, and a second restraint, positioned to withstand pressure from a corresponding antagonist muscle of the predetermined joint,

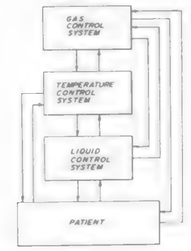
said movable member being connected to a drive motor which can incrementally change the position of said movable member around an axis of rotation, said axis of rotation being aligned with the axis of rotation of the predetermined joint while the user's body is in said predetermined position; and
a control station, electrically connected to control the incremental motion of said drive motor, and physically located to be accessible to the user while the user's body is stationed in said substantially predetermined position; wherein said control station includes a quick-release control which, when activated, immediately releases resistance to the movement of the predetermined joint;
whereby the user can operate said control station to incrementally change the position of said movable member, while the user's body remains in said substantially predetermined position.

5,335,650

PROCESS CONTROL FOR LIQUID VENTILATION AND RELATED PROCEDURES

Thomas H. Shaffer, Lansdown, and Maria R. Wolfson, Philadelphia, both of Pa., assignors to Temple University - Of The Commonwealth System of Higher Education, Pa.

Filed Oct. 13, 1992, Ser. No. 960,611
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.24 **11 Claims**



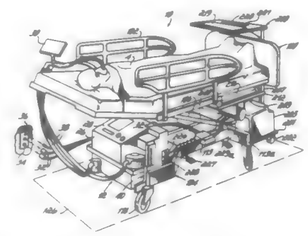
1. A process for guiding, monitoring and regulating a liquid ventilation system wherein said ventilation system is designed to circulate a breathing liquid through at least a portion of a patient's pulmonary pathways, and wherein said liquid ventilation system includes a liquid circuit component, a gas circuit component and a temperature circuit component, said process comprising the steps of:
(a) establishing a set of desired ranges for process parameters associated with the liquid circuit, the gas circuit and the temperature circuit components of said liquid ventilation system, correlating said set of established desired ranges to the physiological needs of the patient, and representing said set of established desired ranges by a first set of signals;
(b) inputting the first set of signals in to a micro-processor;
(c) establishing the patient's initial ventilatory profile by making initial adjustments to the liquid circuit, the gas circuit and the temperature circuit components of said liquid ventilation system such that actual conditions of said liquid ventilation system's liquid circuit, gas circuit and temperature circuit components, occurring while a breathing liquid circulates through at least a portion of said patient's pulmonary pathways, fall within the purview of their corresponding established desired ranges;
(d) circulating a breathing liquid through at least a portion of said patient's pulmonary pathways in accordance with said patient's initial ventilatory profile;
(e) monitoring a set of actual conditions of said liquid ventilation system's liquid circuit, gas circuit and temperature circuit components which occur while said breathing liquid is circulating through at least a portion of said patient's pulmonary pathways, and representing said set of monitored actual conditions by a second set of signals, said monitored set of actual conditions correspond with said set of established desired ranges;
(f) inputting the second set of signals into said micro-processor;
(g) implementing said micro-processor to determine whether said second set of signals fall within the purview of their corresponding ranges represented by said first set of signals, and representing instances wherein said second set of signals fall outside of said first set of signals by a third set of signals; and
(h) making subsequent adjustments to said patient's initial ventilatory profile by implementing said third set of signals such that said second set of signals fall within the purview of their corresponding ranges represented by said first set of signals.

5,335,651

VENTILATOR AND CARE CART EACH CAPABLE OF NESTING WITHIN AND DOCKING WITH A HOSPITAL BED BASE

L. Dale Foster, and Ryan A. Reeder, both of Brookville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Continuation-in-part of Ser. No. 874,586, Apr. 24, 1992, which is a continuation-in-part of Ser. No. 524,038, May 16, 1990, Pat. No. 5,117,521. This application Jul. 13, 1992, Ser. No. 912,826
Int. Cl.[5] A61M *16/00*; A47C *17/86*; A61G *1/02*
U.S. Cl. 128—202.13 **25 Claims**



1. Apparatus comprising:
a wheeled hospital bed having a head end, a foot end and a periphery, which when projected downward to the floor therebelow defines a footprint;
a separate wheeled ventilator cart with a ventilator supported thereon docked to and within the footprint of said bed at said head end; and
a separate wheeled care cart adapted to supply said ventilator with DC electricity, oxygen and air docked to and within the footprint of said bed at said foot end;
whereby said care cart supplies DC electricity, oxygen and air to said ventilator while said ventilator and cart, bed and care cart are rolled as a single unit.

VOL 1165 ISS 2 AG 9 1994 UMI

5,335,652

GAS RATIO CONTROL DEVICE FOR ANESTHETIC APPARATUS

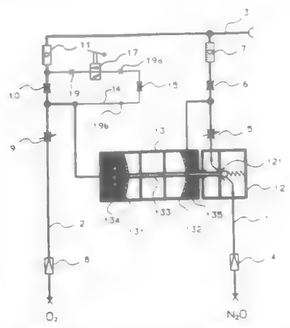
Wolfgang Falb, Krummesse; Karl-Ludwig Gippert; Ulrich Heim, both of Lübeck; Uvo Hölscher, Stockelsdorf; Siegfried Kiske, Krummesse; Götz Kullik, Lübeck; Ralf-Ernst Löser, Kreuzkamp, and Christoph Maurer, Schwartau, all of Fed. Rep. of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Fed. Rep. of Germany

Filed Feb. 10, 1992, Ser. No. 833,308

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1991, 4111139

Int. Cl.[5] A61M *17/00*

U.S. Cl. 128—203.14 10 Claims



1. A gas ratio control device for anesthetic apparatus, comprising:
- an anesthetic gas line which contains in series connection a control valve, an anesthetic gas adjusting valve and an anesthetic flow resistor;
- an oxygen feed line which contains in series connection an oxygen adjusting valve and an oxygen flow resistor;
- a gas outlet connected to said anesthetic gas line and connected to said oxygen feed line, said gas outlet providing a mixture of oxygen and anesthetic gas;
- a proportional member connected upstream of said anesthetic flow resistor and connected upstream of said oxygen flow resistor and connected to said control valve for controlling said control valve based on a differential pressure formed based on pressure upstream of said anesthetic gas flow resistor and pressure upstream of said oxygen flow resistor;
- bridging means for bridging over at least one of said anesthetic gas flow resistor and said oxygen flow resistor with at least one bypass line containing a throttle point thereby changing said differential pressure and changing a proportion of oxygen to anesthetic gas at said gas outlet.

5,335,653

METHOD AND APPARATUS FOR DELIVERING A STABLE GAS MIXTURE TO A PATIENT

Kaj Blomqvist, Espoo; Mika Mustonen, Helsinki; Asko Saarelainen, Espoo, and Pekka Meriläinen, Helsinki, all of Finland, assignors to Instrumentarium Corporation, Finland

Filed Apr. 7, 1992, Ser. No. 864,606

Claims priority, application Finland, Apr. 12, 1991, 911807

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.18 36 Claims

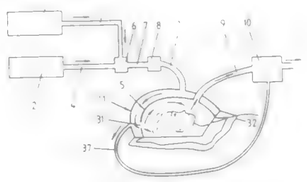
1. A method for supplying a mixture of gases from sources of the gases along a gas flow path to the interior of a gas collection unit for respiration by a patient, the gas collection unit having at least one location at which the ingress of ambient air into the interior of the gas collection unit may occur, said method comprising the steps of:

providing gases from the sources of the gases to the gas flow path;

mixing the gases to form a mixture of gases in the gas flow path;

flowing a first portion of the mixture of gases along the gas flow path into the interior of the gas collection unit for respiration by the patient;

establishing a gas buffer volume in fluid communication with the gas flow path at a point in the gas flow path upstream of the gas collection unit;



discharging a second portion of the mixture of gases from the gas buffer volume to bypass the second portion of the mixture of gases away from the interior of the gas collection unit;

supplying the second portion of the gas mixture to the gas collection unit location so that gas flow of the second portion of the mixture of gases at the location will act to reduce the ingress of ambient air into the interior of the gas collection unit at the location; and

providing the gases exhaled by the patient in the interior of the gas collection unit to a measuring unit.

5,335,654

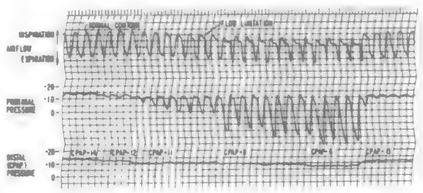
METHOD AND APPARATUS FOR CONTINUOUS ADJUSTMENT OF POSITIVE AIRWAY PRESSURE FOR TREATING OBSTRUCTIVE SLEEP APNEA

David M. Rapoport, New York, N.Y., assignor to New York University, New York, N.Y.

Filed May 7, 1992, Ser. No. 879,578

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.23 13 Claims



1. A method for optimizing the positive airway pressure to a patient, comprising the steps of:
- a) applying an initial level of continuous positive airway pressure to a patient, which is then optimized by:
- b) continuously monitoring the inspiratory flow of air to the patient;
- c) defining an inspiratory waveform contour of said inspiratory flow for each breath;
- d) analyzing each said inspiratory waveform contour to determine the presence or absence of patient airway obstruction; and
- e) increasing said pressure when the contour of said waveform corresponding to inspiration indicates patient airway obstruction, and decreasing said pressure when said waveform corresponding to patient inspiration does not indicate patient airway obstruction.

5,335,655

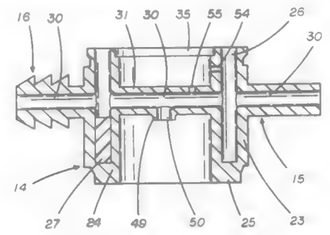
SUCTION CONTROL VALVE

Kok-Hiong Kee, St. Louis, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Sep. 10, 1992, Ser. No. 943,082

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.16 14 Claims



1. A suction control valve comprising:
- a valve body having a suction source connector, a primary suction device connector, and a fluid flow passage for allowing fluid flow passage between said suction source connector and said primary suction device connector,
- an actuator positioned at least partially within said valve body for movement relative thereto between at least a first position in which said primary suction device connector is closed against fluid flow therethrough, and a second position in which said primary suction device is open to fluid flow therethrough, and
- auditory signal means for producing an auditory signal for indicating the location of said actuator between at least said first and said second positions, said auditory signal means including at least one bleed-by opening in said actuator for allowing passage of fluid through said valve body into said fluid flow passage to produce said auditory signal.

5,335,656

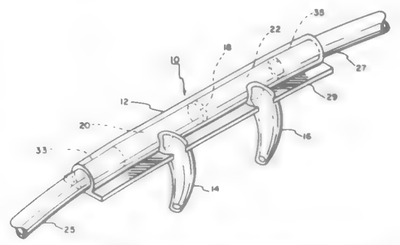
METHOD AND APPARATUS FOR INHALATION OF TREATING GAS AND SAMPLING OF EXHALED GAS FOR QUANTITATIVE ANALYSIS

Edwin A. Bowe; E. F. Klein, Jr., both of Columbia, S.C., and Philip G. Boysen, Gainesville, Fla., assignors to Salter Laboratories, Arvin, Calif.

Continuation of Ser. No. 683,885, Apr. 11, 1991, abandoned, which is a continuation of Ser. No. 458,653, Dec. 15, 1989, abandoned, which is a continuation of Ser. No. 544,501, Jun. 27, 1990, abandoned, which is a continuation of Ser. No. 181,814, Apr. 15, 1988, abandoned. This application Oct. 21, 1992, Ser. No. 964,070

Int. Cl.[5] A61M *15/08*

U.S. Cl. 128—207.18 3 Claims



1. An apparatus for insufflating a treating gas into the nose of a patient and measuring carbon dioxide content in the exhalation of the patient, said apparatus consisting of:
- an elongated hollow body including a tubular portion adapted to be received on the skin surface adjacent the nose;
- a wall within said hollow body defining therein both an inhalation manifold and an exhalation manifold, said wall providing a gas-tight seal positively preventing fluid communication between said inhalation and exhalation manifolds;
- supply means for connecting said inhalation manifold to a supply of treating gas;
- a first hollow prong in fluid communication with said inhalation manifold and adapted to be received in a first nasal passage of the nose for insufflating said treating gas into the nose;
- a second hollow prong in fluid communication with said exhalation manifold and adapted to be received in a second nasal passage of the nose for withdrawing a portion of the exhalation therefrom, said prongs each being substantially smaller in diameter than the respective nasal passages, so as not to occlude said passages; and
- means for delivering substantially all of said withdrawn portion to a means for quantitatively measuring the amount of carbon dioxide of said withdrawn portion, the amount of said carbon dioxide in said withdrawn portion being substantially directly proportional to the amount of said carbon dioxide in the arterial blood of said patient.

5,335,657

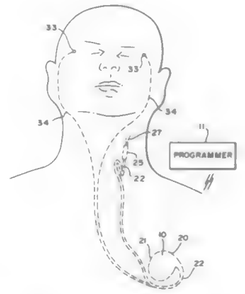
THERAPEUTIC TREATMENT OF SLEEP DISORDER BY NERVE STIMULATION

Reese S. Terry, Jr., Houston, and Joachim F. Wernicke, League City, both of Tex., assignors to Cyberonics, Inc., Webster, Tex.

Filed May 3, 1991, Ser. No. 695,558

Int. Cl.[5] A61N *1/36*

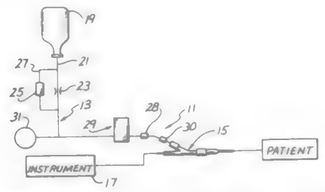
U.S. Cl. 607—45 36 Claims



1. A method of treating patients experiencing sleep disorders, which includes the steps of:
- detecting a physiological event associated with the sleep disorder in the patient to be treated, and
- upon detection of such physiological event, applying a predetermined electrical stimulus to the patient's vagus nerve for modulating the electrical activity of the vagus nerve to alleviate the sleep disorder under treatment.

VOL 1165 ISS 2 AG 9 1994 UMI

5,335,658
INTRAVASCULAR BLOOD PARAMETER SENSING SYSTEM
William Bedingham, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 29, 1992, Ser. No. 906,740
Int. Cl.[5] A61B *5/14*
U.S. Cl. 128—632 **35 Claims**



1. An assembly for the sensing of a blood parameter comprising:
a sensing element for sensing a parameter of blood and providing a signal in response thereto, and an elongated transmission member for transmitting said signal from said sensing element;
a catheter having a proximal end, a distal end, and a lumen extending therethrough, said lumen having an opening in said distal end, said catheter being sized and adapted so that at least said distal end and said opening are receivable within a blood vessel of a patient, said sensing element being located within said lumen at a position away from said proximal end of said catheter and at least 4 mm proximal of said opening, said catheter being configured such that said catheter is capable of being connected to a flush solution source so as to allow for the introduction of flush solution into said lumen;
a volume oscillator in fluid communication with said lumen, said volume oscillator being adapted to periodically cause blood from the blood vessel of the patient to move into and out of said lumen such that said sensing element is exposed to substantially exclusively blood for a portion of the time said volume oscillator is activated and to substantially exclusively said flush solution for another portion of the time said volume oscillator is activated; and
means for calculating the value of said blood parameter based upon both the values sensed by said sensing element when exposed to substantially exclusively blood and when exposed to substantially exclusively said flush solution.

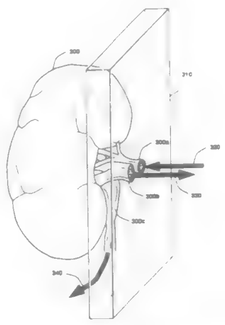
5,335,659
NASAL SEPTUM PROBE FOR PHOTOPLETHYSMOGRAPHIC MEASUREMENTS
Jonas A. Pologe, Boulder, Colo., assignor to Ohmeda Inc., Liberty Corner, N.J.
Filed Apr. 12, 1993, Ser. No. 45,952
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—633 **6 Claims**

1. A probe for releasably attaching to the nasal septum of a patient to perform multi-wavelength photoplethysmographic measurements of the arterial blood flow in said nasal septum, comprising:
probe body;
first probe arm extending outward from a surface of said probe body and of dimensions to be insertable into a patient's nostril;
second probe arm extending outward from said surface of said probe body in a parallel spaced apart relationship with said first probe arm and of dimensions to be insertable into a patient's nostril;
first and second support means attached to said probe body for securing said probe in place on said nasal septum, wherein at least one of said first support means and said second support means is hollow and connected at a first end to a one of said first and second probe arms and connectable at a second end thereof to a supply of gas for transporting said gas from said supply to said nasal septum;
at least two light sources mounted at the distal end of said first probe arm on an interior surface thereof;
light detector mounted at the distal end of said second probe arm on an interior surface thereof;
wherein said interior surface of both said first and said second probe arms face each other to place both said at least



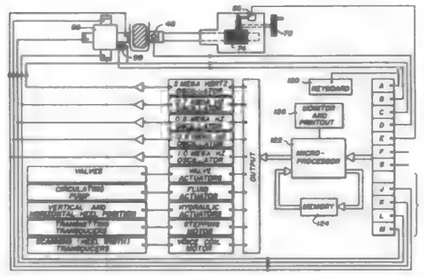
two light sources and said light detector in contact with said nasal septum on opposite sides thereof at a vascularized site on said nasal septum, when said nasal septum is positioned between said first and said second probe arms, to enable light beams produced by said at least two light sources to pass through said vascularized site on said nasal septum before being received by said light detector to perform photoplethysmographic measurements on the arterial blood flowing through said vascularized site on said nasal septum.

5,335,660
MAGNETIC RESONANCE METHOD OF MEASURING KIDNEY FILTRATION RATES
Charles L. Dumoulin, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 12, 1993, Ser. No. 105,239
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.3 **4 Claims**



1. A method of measuring renal function in a living subject comprising the steps of:
a) obtaining a longitudinal spin relaxation time of said subject's blood without any added contrast agents, T_{1B};
b) injecting a longitudinal spin relaxation time contrast agent into said subject's blood shortening the longitudinal spin relaxation time of said blood;
c) measuring a longitudinal spin relaxation time of pre-filtered blood, T_{1A}, prefiltered blood being blood on its way into the kidney, with magnetic resonance (MR) techniques, subsequent to injecting the contrast agent;
d) measuring a longitudinal spin relaxation time of post-filtered blood, T_{1V}, post-filtered blood being blood on its way out of the kidney, with magnetic resonance (MR) techniques, subsequent to injecting the contrast agent; and
e) calculating a filtration fraction, FF, from T_{1A}, T_{1B}, and T_{1V} indicating the fraction of contrast agent filtered from said subject's blood.

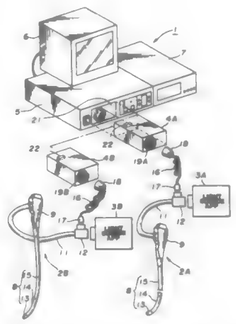
5,335,661
ULTRASONIC SCANNING APPARATUS
John N. Kobianski, 1205 - 4160 Sardis St., Burnaby, British Columbia, Canada V5H 1K2
Filed Feb. 17, 1993, Ser. No. 18,709
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.03 **16 Claims**



1. Apparatus to measure the physical characteristics of a human foot, the apparatus comprising:
a bath to receive the foot;
a brace to receive the foot and to stabilize the position of the foot in the bath;
a strap to hold the foot in the brace;
means to pivotally mount the brace in the bath;
a first bladder on the brace to contact the sole of the foot;
a second bladder on the brace to contact the ankle of the foot;
a fluid supply to said bladders;
means to supply liquid to and from the bath;
means to control temperature so that the liquid temperature is maintained above the temperature of the foot;
ultrasonic transmitter means to send a signal through the foot;
ultrasonic receiver means to receive the signal; and
means to determine the velocity of the signal through the foot.

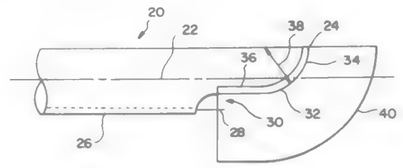
5,335,662
IMAGE PICKUP SYSTEM COMPRISING SIGNAL PROCESSING DEVICE WHICH USES EXCLUSIVE ADAPTOR IN PROBES DIFFERENT IN IMAGE PICKUP SYSTEM FROM EACH OTHER
Kenji Kimura, Tachikawa, and Kiyoshi Tsuji, Musashino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1993, Ser. No. 81,141
Claims priority, application Japan, Aug. 28, 1992, 4-230337
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—662.03 **71 Claims**

1. An image pickup system comprising:
a first probe having an elongated first inserting section, and first image pickup means arranged adjacent to a forward end of said first inserting section, for forming an image of an object;
a second probe having an elongated second inserting section, and second image pickup means arranged adjacent to a forward end of said second inserting section and different in signal form/function from said first image pickup means;
a first adaptor unit detachably connected to said first probe through a cable for generating a drive signal adapted for signal form/function of said first image pickup means;
a second adaptor unit detachably connected to said second probe through a cable for generating a drive signal



adapted for signal form/function of said second image pickup means, said second adaptor unit being separate from said first adaptor unit;
a body unit having a single connecting port to which one of either said first or second adaptor units is detachably connected, said body unit performing signal processing adapted for both said first and second image pickup means, to generate a standard image signal; and
a monitor connected to said body unit, for displaying said image signal.

5,335,663
LAPAROSCOPIC PROBES AND PROBE SHEATHS USEFUL IN ULTRASONIC IMAGING APPLICATIONS
Clyde G. Oakley, Englewood; Lawrence J. Busse; Dennis R. Dietz, both of Littleton; John E. Shishilla, Aurora, and Joseph V. Ranalletta, Englewood, all of Colo., assignors to Tetrad Corporation, Englewood, Colo.
Filed Dec. 11, 1992, Ser. No. 989,515
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662 **35 Claims**



1. A medical ultrasonic imaging apparatus that provides both forward-looking and side-looking imaging capability comprising:
a carrier that is adapted for insertion into a body cavity, said carrier has a first terminal end that is inserted into the body cavity during use of the apparatus, a second terminal end that remains outside of the body cavity during use of the apparatus, and a longitudinal axis that extends between said first terminal end and said second terminal end of said carrier; and

VOL 1165 ISS 2 AG 9 1994 UMI

an array of ultrasonic transducers, operatively attached to said carrier, for receiving ultrasonic signals from the areas forward of said first terminal end of said carrier and to the side of said carrier and generating electrical signals that are representative of the received ultrasonic signals and can be used to construct an ultrasonic image of the tissue adjacent to said array of ultrasonic transducers, said array of ultrasonic transducers includes a first array portion for contributing to the production of an ultrasonic image of the area forward of said first terminal end of said carrier and a second array portion for contributing to the production of an ultrasonic image of the area to a side of said carrier, said first array portion includes at least one transducer that is oriented at an acute angle of less than 90° as measured from the line of said longitudinal axis of said carrier, and said second array portion includes at least two transducers that are oriented relative to one another in a substantially straight line, a first of said at least two transducers located closer to said first terminal end than a second of said at least two transducers.

5,335,664

MONITOR SYSTEM AND BIOLOGICAL SIGNAL TRANSMITTER THEREFOR

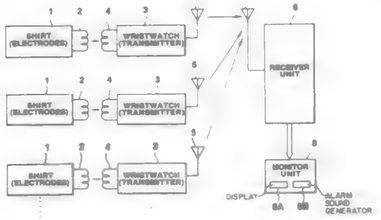
Sadao Nagashima, Tokorozawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1992, Ser. No. 940,181

Claims priority, application Japan, Sep. 17, 1991, 3-235882; Sep. 17, 1991, 3-235883; Dec. 24, 1991, 3-341310

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—696 **8 Claims**



1. A monitor system comprising:

first means which includes biological signal detecting means, which is put on a human body, for detecting a biological signal generated from the human body, and first signal transmitting means for transmitting said biological signal detected by said biological signal detecting means;

second means which includes first signal receiving means for receiving said biological signal transmitted from said first signal transmitting means, said second signal transmitting means for transmitting, when an abnormality is detected in the value of said biological signal received by said first signal receiving means, said biological signal as a radio signal; and

third means, which includes second signal receiving means for receiving said radio signal transmitted from said second signal transmitting means, for monitoring the abnormality on the basis of said radio signal,

wherein said second means includes:

detecting means for detecting the abnormality;

alarm means for generating an alarm sound when the abnormality is detected by said detecting means;

external operation switch means; and

signal transmission controlling means for controlling said second signal transmitting means such that when said external switch means is operated during generating of the alarm sound, said second signal transmitting means is prohibited from transmitting said biological signal, and when said external operation switch means is not operated during generating of the alarm sound in a predetermined period of time, said second signal transmitting means transmits said biological signal as said radio signal.

5,335,665

METHOD OF MEASURING BLOOD PRESSURE, AND AUTOMATIC SPHYGMOMANOMETER FOR IMPLEMENTING SAID METHOD

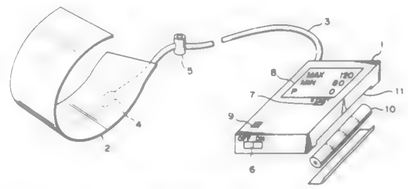
Seigo Suzuki, Fuji, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,067

Claims priority, application Japan, Mar. 7, 1991, 3-041522

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—680 **7 Claims**



1. An automatic sphygmomanometer having a cuff which is fixable to a living body for receiving pulse waves from the living body, pressurizing means for supplying an interior portion of the cuff with pressurized air, cuff-pressure detecting means for detecting a pressure of the pressurized air within the cuff, and venting means for venting the pressurized air from the interior of the cuff, said automatic sphygmomanometer further comprising:

pulse-wave detecting means for detecting pulse waves from a living body, based upon the cuff pressure detected by said cuff-pressure detecting means, during inflation of the cuff by said pressurizing means;

measurement means for measuring an amplitude of the detected pulse waves;

calculation means for calculating a rrate of change in the measured amplitude of the detected pulse waves;

comparing means for comparing the calculated rate of change with a predetermined threshold value, and for outputting a comparison output;

discrimination means for discriminating whether or not an interior pressure of the cuff is beyond a systolic blood pressure of the living body, based on the comparison output, and for outputting a discrimination output; and

control means for controlling said pressurizing means, in accordance with the discrimination output, in such a manner that inflation of the cuff by said pressurizing means is halted;

wherein said calculation means includes means for calculating the rate of change from a change in the measured amplitude of the detected pulse waves from one pulse of said detected pulse waves to a successive pulse of said detected pulse waves, and

said predetermined threshold value is set to be 0.5 to 0.7, based on a ratio of the amplitude of said one pulse to the amplitude of said successive pulse.

5,335,666

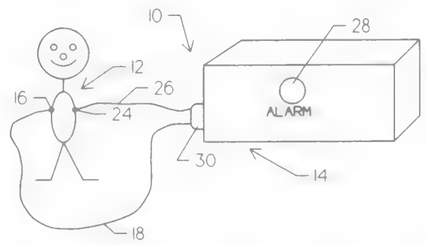
MEDICAL MONITOR WITH INPUT REGULATION

Bruce R. Bowman, Eden Prairie, and Peter Staaz, Mounds View, both of Minn., assignors to Edentec, Eden Prairie, Minn.

Filed Feb. 27, 1992, Ser. No. 842,567

Int. Cl.[5] A61B *5/08*

U.S. Cl. 128—723 **9 Claims**



1. In an apparatus for monitoring a patient's respiration wherein said apparatus has pass band means for defining a pass band and processing an input signal having a first amplitude, and means responsive to the processed signal for controlling a monitor, the improvement comprising:

a. means, connected to said pass band means, for modifying said pass band of said apparatus in response to a transient artifact having a second amplitude within the first amplitude of said input signal; and

b. means for connecting said means for modifying to said pass band means.

5,335,667

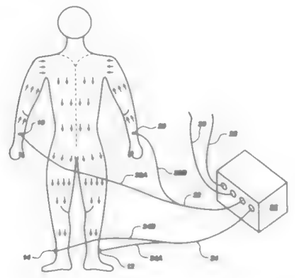
METHOD AND APPARATUS FOR DETERMINING BODY COMPOSITION USING BIOELECTRICAL IMPEDANCE

Kichul Cha, Somervale, Mass., and Kenneth W. Horch, Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Nov. 20, 1992, Ser. No. 979,791

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—734 **28 Claims**



1. A method of determining the body composition of a subject comprising the steps of:

selecting a first body segment, the first body segment comprising substantially less than the whole body of the subject, and determining the characteristics of the first body segment utilizing a method comprising the steps of:

causing a current flow through the first body segment;

measuring the impedance to the current flow of the first body segment;

selecting a second body segment, the second body segment comprising substantially less than the whole body of the subject, and determining the characteristics of the second body segment utilizing a method comprising the steps of:

causing a current flow through the second body segment;

measuring the impedance to the current flow of the second body segment; and

determining the total body composition in accordance with measured impedance of the first body segment and the measured impedance of the second body segment.

5,335,668

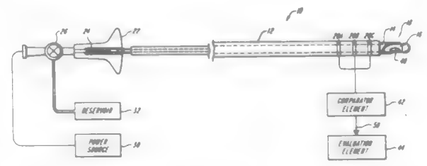
DIAGNOSTIC IMPEDANCE MEASURING SYSTEM FOR AN INSUFFLATION NEEDLE

Paul C. Nardella, North Easton, Mass., assignor to Medical Scientific, Inc., Taunton, Mass.

Filed Apr. 30, 1993, Ser. No. 56,364

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—734 **19 Claims**



1. A diagnostic impedance measuring system comprising:

an elongate tissue-penetrating insufflation needle having a distal end and a proximal end;

a plurality of axially spaced reference electrodes disposed about the distal end of the insufflation needle;

means for supplying a diagnostic level of energy to the electrodes;

first comparator means for comparing the measured impedance adjacent at least a first and a second of the reference electrodes and generating a first signal indicative of the impedance difference therebetween;

second comparator means for comparing the measured impedance adjacent either the first or second reference electrode and one additional reference electrode, and generating a second signal indicative of the impedance difference therebetween;

third comparator means for comparing the first and second signals and generating a third signal indicative of the impedance difference between the first and second signals; and

means for evaluating the third signal to determine the relative position of the insulation needle within a patient's body.

5,335,669

RECTAL PROBE WITH TEMPERATURE SENSOR

Claude Tibon, Eden Prairie; Timothy C. Cook, Wayzata; John H. Burton, and Ronald Svejkovsky, both of Minnetonka, all of Minn., assignors to American Medical Systems, Inc., Minnetonka, Minn.

Filed Apr. 21, 1993, Ser. No. 50,922

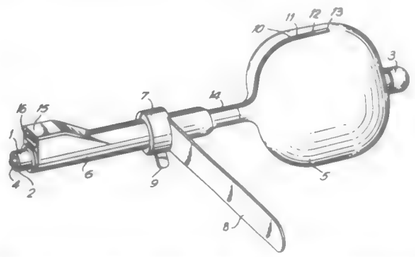
Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—736 **15 Claims**

1. Rectal probe for sensing and monitoring a patient's rectal mucosal temperature comprising a catheter having a longitudinal axis, a proximal end and a distal portion terminating in a distal end, an inflatable, low pressure, compliant balloon mounted along said longitudinal axis within said distal portion, a temperature element associated with a side of the balloon wall with leads from said element attached to a connector located at the proximal end of the catheter, means for holding the probe at a proper position within a patient's rectum and means for inflating the balloon, the balloon being inflated when it is properly positioned to put the temperature element in

VOL 1165 ISS 2 AG 9 1994 UMI

intimate contact with the anterior side of the rectum, the sensing and monitoring means of the probe consisting solely of the



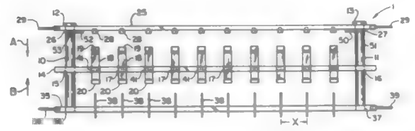
combination of said inflated balloon and said temperature element.

5,335,670

ALLERGY TESTING METHOD AND APPARATUS

Henry Fishman, 5173 Linnean Ter., NW., Washington, D.C. 20008

Continuation of Ser. No. 685,626, Apr. 15, 1991, Pat. No. 5,154,181, which is a continuation of Ser. No. 501,376, Mar. 29, 1990, Pat. No. 5,027,826, which is a continuation of Ser. No. 339,863, Apr. 14, 1989, abandoned, which is a continuation of Ser. No. 204,967, May 31, 1988, abandoned, which is a continuation of Ser. No. 88,139, Aug. 21, 1987, abandoned, which is a continuation of Ser. No. 853,710, Apr. 18, 1986, Pat. No. 4,711,247. This application Aug. 17, 1992, Ser. No. 931,202
The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—743 18 Claims



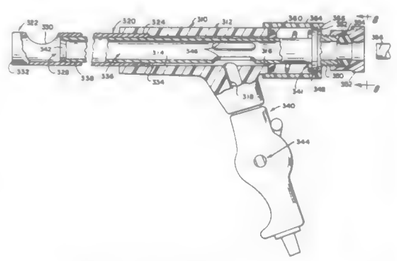
1. An allergy testing apparatus for testing a patient for a plurality of allergies at substantially the same time, comprising:
- a plurality of pricking means for pricking or piercing the skin of a patient;
- carrier means including means for holding and supporting said plurality of pricking means with a given spacing between each of said pricking means, said holding and supporting means of said carrier means holding said plurality of pricking means normally in an inactive position out of contact with the skin of the patient, such that said plurality of pricking means are movable from said inactive position out of contact with the skin of a patient to an active position for pricking or piercing the skin of a patient;
- means for applying respective allergens to at least some of said pricking means, while said pricking means are mounted in said holding and supporting means of said carrier means, so that said pricking means each applies its respective allergen to the skin when said pricking means are moved from said inactive position to said active position;
- said carrier means further including skin engaging means for contacting the skin of a patient; and
- actuating means on said carrier means for substantially simultaneously moving all of said plurality of pricking means from said inactive position to said active position thereof, while said skin engaging means is in contact with the skin of a patient, to prick or pierce the skin of a patient and to thereby substantially simultaneously apply said respective allergens of all of said respective pricking means to the skin of the patient via said pricking means.

5,335,671

TISSUE REMOVAL ASSEMBLY WITH PROVISION FOR AN ELECTRO-CAUTERY DEVICE

Thomas P. Clement, Bloomington, Ind., assignor to Mectra Labs, Inc., Bloomfield, Ind.

Continuation-in-part of Ser. No. 830,580, Feb. 4, 1992, which is a continuation-in-part of Ser. No. 580,945, Sep. 11, 1990, which is a continuation-in-part of Ser. No. 432,084, Nov. 6, 1989, Pat. No. 5,019,054. This application Oct. 5, 1992, Ser. No. 956,601
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—753 37 Claims



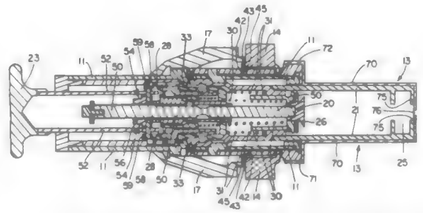
1. A surgical assembly for removal of body tissue during surgery, the assembly comprising:
- an outer cannula having an open proximal end, an open distal end, and a side wall defining an interior region connecting the ends, the distal end being positionable into a patient's body;
- a conduit piece rigidly coupled to the proximal end of the outer cannula, the conduit piece having a first channel in fluid communication with the distal end of the outer cannula;
- a hollow inner cannula defining a cannula passageway and having a proximal end and a distal end, the inner cannula being movably situated in the first channel of the conduit piece and the interior region of the outer cannula and having cutting means formed adjacent the inner cannula distal end for cooperating with the outer cannula to cut patient tissue;
- the conduit piece including a second channel connectable to a vacuum source for removing tissue cut by the cutting means of the inner cannula;
- valve means rigidly coupled with the rigidly coupled conduit piece and outer cannula for controlling flow through the second channel;
- wherein the rigidly coupled conduit piece and valve means has a hand grip portion for holding the coupled conduit piece, outer cannula and valve means for positioning the outer cannula in the patent by a hand gripping the hand grip portion;
- wherein the valve means is actuable by a digit of the hand gripping the hand grip portion while the hand positions the outer cannula in the patient; and
- means for moving the inner cannula and operable by a digit of the hand gripping the hand grip portion while the hand positions the outer cannula in the patient's body.

5,335,672

DUAL ACTION COCKING MECHANISM FOR ADJUSTABLE BIOPSY DEVICE

LaVon L. Bennett, 354 N. 424 East, Alpine, Utah 84004

Filed Nov. 24, 1993, Ser. No. 157,652
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 8 Claims



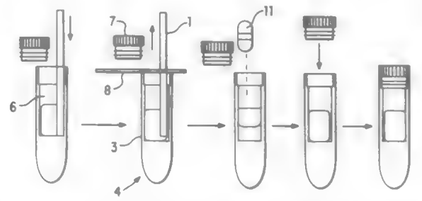
1. In a tissue sampling apparatus of the type comprising (a) an elongate housing having a first end and a second end, (b) a knob at said first end of said housing, (c) a first piston and a coaxial second piston extending from the second end of said housing, (d) means on an extending end of said second piston for connecting a proximal end of an outer, elongate cannula to said extending end of said second piston, wherein the outer elongate cannula has a sharpened distal end for insertion into a sample target area of said tissue, (e) means on an extending end of said first piston for connecting a proximal end of an elongate, inner rod to said extending end of said first piston so that the inner rod, which has a sample receiving notch adjacent to its distal end, is received within said cannula, (f) first and second spring means in said housing, (g) cocking means for moving said first and second pistons in a longitudinal motion into said housing against the biasing force of said first and second spring, respectively, to cocked positions, and (h) triggering means for releasing said first and second pistons to move in successive movements out of said housing wherein the first piston moves first to its fully extended position under the biasing force of said first spring while said second piston remains in its cocked position, and after the first piston has moved to its fully extended position, the second piston moves to its fully extended position under the biasing force of said second spring, an improvement in the cocking means wherein said first and second pistons are moved to their cocked positions in separate distinct operations, said improvement comprising
- an annular ring positioned coaxially around said housing near the second end of said housing, with said annular ring being able to rotate about a longitudinal axis through said housing;
- means associated with said annular ring for moving said second piston into said housing to its cocked position when said annular ring is rotated; and
- means associated with said knob on said first end of said housing for moving said first piston into said housing to its cocked position when said knob is pulled in a direction away from said first end of said housing.

5,335,673

ORAL COLLECTION DEVICE AND METHOD FOR IMMUNOASSAY

Andrew S. Goldstein, Portland; Stefan Gavojdea, and David F. Zogg, both of Tigard, all of Oreg., assignors to Epitope, Inc., Beaverton, Oreg.

Continuation of Ser. No. 865,054, Apr. 8, 1992, abandoned, which is a continuation of Ser. No. 641,739, Jan. 15, 1991, Pat. No. 5,103,836, which is a continuation-in-part of Ser. No. 486,415, Feb. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,401, Sep. 21, 1989, Pat. No. 5,022,409. This application Mar. 1, 1993, Ser. No. 26,217
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—760 28 Claims



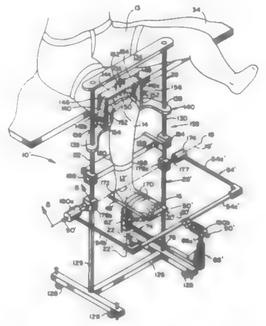
1. A method of preferentially collecting mucosal transudate from an oral cavity for testing comprising the steps of:
- (a) inserting an absorbent pad into the oral cavity,
- (b) contacting the pad with the oral mucosa without masticating said pad,
- (c) removing the pad from the oral cavity, and
- (d) preserving the pad for subsequent removal of the collected mucosal transudate from the pad for testing.

5,335,674

APPARATUS AND METHOD FOR DETERMINING LOAD-DISPLACEMENT AND FLEXIBILITY CHARACTERISTICS OF A JOINT

Sorin Siegler, Merion, Pa., assignor to Drexel University, Philadelphia, Pa.

Continuation-in-part of Ser. No. 738,972, Aug. 1, 1991, Pat. No. 5,228,454. This application Jul. 31, 1992, Ser. No. 923,632
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—782 14 Claims



1. An apparatus for determining load-displacement and flexibility characteristics of an anatomical joint, said joint being formed by a first body portion and a second body portion such that said second body portion is pivotable with respect to said first body portion about a first joint axis and a second joint axis, said apparatus comprising:

VOL 1165 ISS 2 AUG 9 1994 UMI

a first frame for receiving said first body portion, said first frame including first securing means for securely mounting said first body portion to said first frame;

a second frame for receiving said second body portion, said second frame including second securing means for securely mounting said second body portion to said second frame;

pivot means interconnected between said first frame and said second frame such that said second frame is pivotable with respect to said first frame about a first pivot axis and a second pivot axis, said first and second body portions being respectively positionable on said first and second frames such that said first and second joint axes are generally aligned with said first and second pivot axes, respectively;

means for applying an external torque to said joint about at least one of said first and second pivot axes to cause said second body portion to move with respect to said first body portion;

means for determining an angular displacement of said second frame with respect to said first frame about said one of said first and second pivot axes upon application of external torque; and

means for measuring a torque about said one of said first and second pivot axes upon application of said external torque whereby said determined angular displacement and said measured torque are indicative of the load-displacement and flexibility characteristics of said joint.

5,335,675

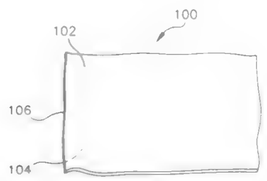
STRESS-SOFTENED ELASTOMERIC FILMS, ARTICLES, AND METHOD AND APPARATUS FOR MAKING SUCH FILMS AND ARTICLES

Robert G. Wheeler, deceased, late of Greenbank, Wash. by Helen J. Wheeler, legal representative , and William D. Hawley, Angier, N.C., assignors to Family Health International, Durham, N.C.

Continuation-in-part of Ser. No. 726,984, Jul. 8, 1991, which is a continuation-in-part of Ser. No. 568,426, Aug. 16, 1990, Pat. No. 5,036,863, which is a division of Ser. No. 271,884, Nov. 15, 1988, Pat. No. 4,961,416. This application Oct. 11, 1991, Ser. No. 775,783

Int. Cl.[5] A61F *6/02;* **A61B** *19/00;* **A01N** *51/00*

U.S. Cl. 128—842 **14 Claims**



1. A stress-softened thermoplastic elastomeric film, having at least one of the following characteristics:

(i) a shear stiffness value of less than 2.5 gf/cm degree;

(ii) a tensile energy value of at least 1.0 gf/cm/cm^2;

(iii) an extensibility at 50 gf/cm load of at least 4.0%;

(iv) a dry heat loss value of at least 16.5 watts/m^2/° C.;

(v) a wet heat loss value of at least 22.0 watts/m^2/° C.; and

(vi) a Q_{max} value of less than 12.25 watts/m^2/° C.

5,335,676

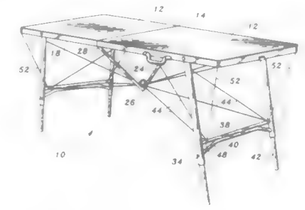
SLIDING CABLE MASSAGE TABLE

Lynwood O'Brien, 5381 Old San Jose Rd., Soquel, Calif. 95073

Filed Aug. 13, 1993, Ser. No. 106,298

Int. Cl.[5] A61G *15/00;* **A47B** *3/00*

U.S. Cl. 128—845 **14 Claims**



1. A portable massage table, comprising:

a rectangular table top composed of a pair of abutting table top sections hingedly connected to one another, each of said pair of abutting table top sections having a perimeter frame rail integral with each of said table top sections, and a pair of inner comers and a pair of outer corners;

a centrally positioned truss having a first end and a second end, said second end being hingedly secured to said pair of abutting rectangular table top sections;

a plurality of circular members, each circular member being positioned in one of said outer corners of said pair of abutting rectangular table top sections;

a pair of leg sets, each leg set comprising a pair of legs, a cross tube, a brace tube, and a telescoping internal height adjustment tube operably secured within each leg;

a plurality of first cables, each cable having a first end and a second end, said first end of each of said first cables is secured to said first end of said truss, said second end of each of said first cables is secured to said cross tube, and a middle portion of each of said first cables is slideably secured to one of said plurality of circular members; and

a plurality of second cables, each of said plurality of second cables having a first end and a second end, said first end of each of said plurality of second cables is secured to said perimeter frame rail, and said second end of each of said cables is secured to a cross tube at a leg set.

5,335,677

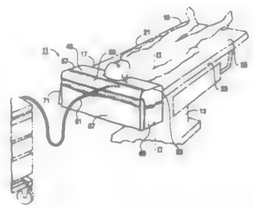
DRAPE FOR USE BY ANESTHESIA PROVIDER

Lyndon J. Busch, 3921 Overton Park East, Fort Worth, Tex. 76109

Continuation-in-part of Ser. No. 626,620, Dec. 7, 1990, Pat. No. 5,156,167, and a continuation-in-part of Ser. No. 684,643, Apr. 12, 1991, Pat. No. 5,095,918. This application Mar. 13, 1992, Ser. No. 850,599

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—852 **22 Claims**



1. A surgical drape for use on a patient support structure, the drape comprising:

a main sheet of flexible, drapable material having first, second and third regions;

the first region adapted to receive at least part of a patient, and including a first fold for receiving accessories;

the second region including a second and a third fold, said second and third folds adapted to be arranged below the part of the patient received by the first region, said second fold adapted to receive at least part of the support structure, said third fold adapted to receive an accessory; and

the third region adapted to depend downwardly from the support structure when the drape is received on the support structure, including a fourth fold for receiving an item.

5,335,678

SMOKING COMPOSITION

Sven B. Andersson, Odakra, Sweden, assignor to Pharmacia AB, Stockholm, Sweden

PCT No. PCT/SE91/00385, § 371 Date Dec. 8, 1992, § 102(e) Date Dec. 8, 1992, PCT Pub. No. WO91/18525, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 3, 1991, Ser. No. 952,511

Claims priority, application Finland, Jun. 8, 1990, 9002052

Int. Cl.[5] A24B *15/18*

U.S. Cl. 131—359 **5 Claims**

1. Smoking composition comprising nicotine in the form of an inclusion complex formed between a cyclisized polysaccharide and nicotine and a smoking material, which composition releases nicotine when it is subjected to elevated temperatures.

5,335,679

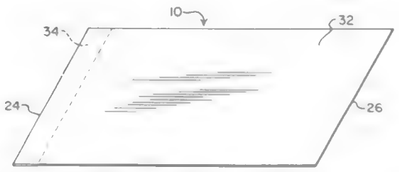
DEVICE AND PROCESS FOR USE IN COLORING HAIR

Michael J. Baxter, Littleton, Colo., assignor to Lightworks International Inc., Littleton, Colo.

Filed May 10, 1993, Ser. No. 58,304

Int. Cl.[5] A45D *19/18*

U.S. Cl. 132—270 **25 Claims**



1. A device for use in hair treatment in the form of a flexible sheet, including in combination:

a thin, flexible strip of liquid-impermeable polymeric material having a first and a second side which have first and second surfaces, respectively, a first end and a second end, and a length dimension and a width dimension, said liquid-impermeable polymeric material exhibiting hydrostatic adhesion when said width of said first surface of said first or second end is wetted and said first and second ends are pressed together to form a loop, said liquid-impermeable polymeric material having sufficient body and stiffness to maintain any such loop which is formed in an open form through which air can pass, said second end of said flexible strip being free of material which will interfere with the hydrostatic adhesion of said first surface of said second end with said first end;

a thin, flat strip of porous material having a first and a second side which have first and second surfaces, respectively, said first surface of said thin, flat strip of porous material being secured to said second surface of said thin, flexible strip of liquid-impermeable polymeric material at least along or substantially adjacent to said first end of said flexible strip; and

a pressure sensitive adhesive element adhered to said second surface of said porous thin, flat strip, at least at the portion which is below and along or substantially adjacent to said first end of said flexible polymeric strip, said pressure sensitive adhesive element being by nature more adherent to said thin, flat porous material than to hair; whereby said pressure sensitive adhesive element may be used to attach the flexible sheet firmly, but releasably, to the hair of the head of a person adjacent to the portion of hair which is to be chemically treated, so that said adhesive will adhere to said porous material more strongly than to the hair when the sheet is removed from the head after use.

5,335,680

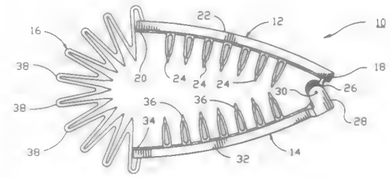
HAIR CLIP

Pamela K. Moore, 145 Bayou Bend Dr., League City, Tex. 77573

Filed Apr. 26, 1993, Ser. No. 51,848

Int. Cl.[5] A45D *8/00*

U.S. Cl. 132—276 **9 Claims**



1. A hair clip comprising:

a first comb member having a forward end and a rearward end;

a second comb member having a forward end and a rearward end, said first comb member and said second comb member having a plurality of teeth extending therefrom; and

a flexible and stretchable accordion-shaped band extending to said rearward ends of said first and second comb members, said first and second comb members movable between a first position in which said forward ends are engaged and a second position in which said forward ends are separated, said first and second comb members movable about said band, said teeth of said first comb member directed toward said teeth of said second comb member in a separated and unintertwined relationship in said first position, said band having a portion extending inwardly of said first and second comb members, the accordion shape being a plurality of interconnected V-shaped segments which are stretchable.

5,335,681

APPARATUS FOR THE TREATMENT OF BOARD-LIKE ARTICLES, PARTICULARLY PRINTED CIRCUIT BOARDS

Christian Schmid, Freudenstadt, Fed. Rep. of Germany, assignor to Gebr. Schmid GmbH & Co., Freudenstadt, Fed. Rep. of Germany

Filed Jun. 22, 1992, Ser. No. 902,320

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1991, 4121032

Int. Cl.[5] D06B *3/02*

U.S. Cl. 134—64 R **20 Claims**

1. Apparatus for treating board-like articles with a fluid treatment medium, comprising:

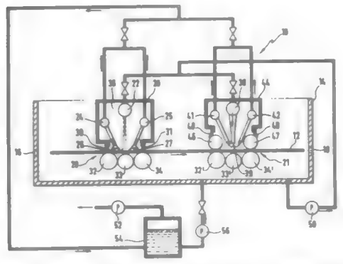
conveying means for conveying said articles on a substan-

VOL 1165 ISS 2 AG 9 1994 UMI

tially horizontal conveying path in a conveying direction through a surface treatment area;

restricted surface area treatment means situated adjacent to the conveying path including:

applicator means situated in said surface treatment area for applying said fluid treatment medium to a restricted surface area of the articles that is limited by boundaries, and



suction means for removing said fluid treatment medium from said articles near at least one of said boundaries by suction;

wherein said restricted surface area treatment means define an operating width adjustable with at least one variable cover to accommodate an overall width extension of the restricted surface area; and

wherein at least one of said covers is a belt, said covers being drivingly adjustable in opposite directions.

5,335,682

APPARATUS FOR DI CAN SURFACE TREATMENT

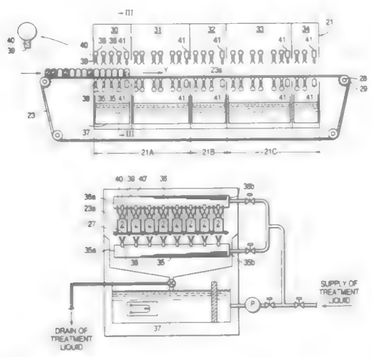
Takayuki Yoshimura, Omiya; Yoshiteru Kondo, Tokyo; Yoshimasa Matsumura, Sagamihara, and Kiyoaki Inoue, Hachioji, all of Japan, assignors to Daiwa Can Company, Tokyo, Japan

Division of Ser. No. 986,038, Dec. 4, 1992. This application Jun. 29, 1993, Ser. No. 83,295

Claims priority, application Japan, Dec. 6, 1991, 3-348592

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—72 **5 Claims**



1. An apparatus for treating the surface of drawn and ironed can bodies, said apparatus comprising: a tunnel in which a series of pre-wash, treatment and post-wash zones are defined; an endless conveyor belt of rods in the form of an open framework, and a plurality of partitions projecting outwardly from an outer surface of the endless conveyor belt defined by said rods, said partitions extending in the direction of travel of the conveyor to form a plurality of separated can feeding sections of the conveyor, and said endless conveyor having upper and lower flights, said upper flight extending through said zones; a plurality of upper and lower nozzles disposed above and beneath said upper flight of the conveyor and oriented to direct sprays of treatment liquid upwardly from beneath and downwardly from above the upper flight of said conveyor belt; and a plurality of flat fan-shaped type side spray nozzles oriented to direct sprays of treatment liquid towards centers of said can feeding sections as taken between said partitions, said upper nozzles being full-cone or pyramid type spray nozzles, said lower nozzles being full-cone, pyramid or flat fan-shaped type spray nozzles, pairs of the upper and lower spray nozzles being vertically coaxially aligned with each other, respectively, and respective ones of said side spray nozzles being disposed at transversely symmetrical positions with respect to the center of each said can feeding section, each pair of spray nozzles disposed at the transversely symmetrical positions oriented to spray treatment liquid toward the center of a respective said can feeding section.

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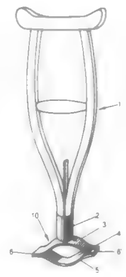
NON-SLIP SUPPORT SHOE FOR A WALKING AID

Robert S. Ledley, Silver Spring, Md., assignor to National Biomedical Research Foundation, Washington, D.C.

Filed Jun. 3, 1993, Ser. No. 71,736

Int. Cl.[5] A45B *1/00*

U.S. Cl. 135—84 **17 Claims**



1. A deformable shoe for a walking aid, comprising:

connecting means for connecting the shoe to a bottom portion of the walking aid;

an upper strip leaf spring and a lower strip leaf spring, said upper strip leaf spring being connected to said connecting means; and

friction means attached to a bottom surface of said lower strip leaf spring for hampering slippage of said deformable shoe;

wherein, when less than a predetermined amount of downward force is exerted on said walking aid, said upper strip leaf spring and said lower strip leaf spring have a configuration such that said upper strip leaf spring is separated from said lower strip leaf spring; and

wherein, when at least said predetermined amount of downward force is exerted on said walking aid, said upper strip leaf spring and said lower strip leaf spring are deformed so that said upper strip leaf spring and said lower strip leaf spring become flattened with no space therebetween, said friction means conforming to the shape of the lower strip leaf spring as said lower strip leaf spring changes configuration under the exertion of at least said predetermined amount of downward force.

5,335,684

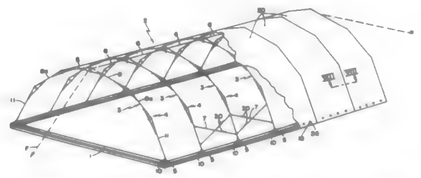
COVERED FRAME SHELTER AND METHOD OF ERECTION

Arvi K. Hanninen, Box 33011, Regina, Saskatchewan, Canada S4T 7X2

Filed Nov. 10, 1992, Ser. No. 974,069

Int. Cl.[5] E04H *15/36*

U.S. Cl. 135—102 **18 Claims**



1. A fabric covered frame shelter comprising in combination, base means formed of a fastener penetratable material, frame means including rib means supporting said fabric cover and partially formed of tubular sections, said tubular sections having tabs with apertures affixed thereto, assembly pins to be received in said tab apertures, coupler means joining said tubular sections, each one of said coupler means including a first end, adjacent ends of a pair of said tubular sections restrained in said first end only by slidable insertion therein, said coupler means including a second end rigidly and integrally joined to said first end and including a linkage linking said tubular sections joined by said first end by said assembly pins engaging said linkage and said tab apertures, fabric cover means covering said frame means including cover movement restricting means for holding said cover means on said frame means, said fabric cover means formed of flexible sheets held in a partial overlapping and sealing relationship, adjustable supporting means pivotally connecting said rib means to said base means so that said frame means may be assembled in a horizontal position and pivoted upwardly to a vertical upright working position.

5,335,685

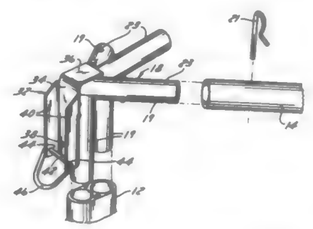
HOLD DOWN CHANNEL ASSEMBLY FOR TENTS, CANOPIES OR AWNINGS

Wayne Dahulich, Castle Creek, N.Y., assignor to Johnson Camping, Inc., Binghamton, N.Y.

Filed Apr. 26, 1993, Ser. No. 52,769

Int. Cl.[5] E04H *15/44*

U.S. Cl. 135—106 **6 Claims**



1. A readily assemblable and disassemblable tent, awning or canopy structure, including tubular beams, rafters and uprights interconnected by slip fit junction fittings in telescope relation with respect to the beams, rafters and uprights each of the fittings having an upright member, the improvement comprising:

a hold down channel assembly mounted on the upright member of the slip fit junction fitting, said channel member assembly including a channel member, wherein said channel member having a lower end, a rod pivotally mounted on the lower end of the channel member, a bail mounted on the ends of said rod, a strip of webbing attached to the tent, awning or canopy top and anchored to said rod, and

a tie down cable connected to said bail for anchoring the channel member to the ground.

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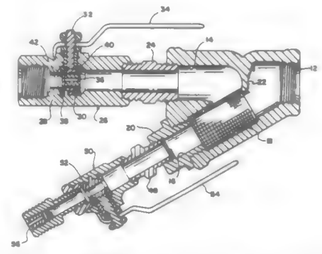
STEAM TRAP

Carl L. Isringhausen, 11723 N. Briarpatch Dr., Midlothian, Va. 23113

Filed Aug. 18, 1993, Ser. No. 107,982

Int. Cl.[5] F17D *1/16;* **F16K** *1/00*

U.S. Cl. 137—14 **5 Claims**



1. A method of selecting a proper jet size for an orifice-type steam trap installed in a steam line, without disassembling the line, comprising steps of,

providing said steam trap with a Y-fitting having an inlet, a primary outlet for normally returning water to a boiler, and a secondary outlet, a main valve connected to said primary outlet and an auxiliary valve connected to said secondary outlet, said main valve containing a replaceable main jet and said auxiliary valve having means for receiving a replaceable test jet in its outlet, and, with the steam line in normal service,

installing a trial test jet in said auxiliary valve, then

opening said auxiliary valve and closing said main valve,

observing flow of steam and/or water through set test jet,

making a determination whether the test jet size is sufficient to prevent collection of water in the steam line, yet sufficiently small to prevent substantial steam from passing through the steam trap,

repeating the preceding four steps, if necessary, with test jets of different sizes, until said determination is positive, and then

replacing said main jet with a jet the same size as the test jet which produced the positive determination.

5,335,687

HOSE STORAGE AND REEL ASSEMBLY AND METHOD

Bennie Odom, P.O. Box 499, Conroe, Tex. 77305

Filed Oct. 6, 1993, Ser. No. 132,639

Int. Cl.[5] F16L *55/18;* **B65M** *75/36*

U.S. Cl. 137—15 **22 Claims**

1. A method of unwinding a coiled flexible elongate member and rewinding the flexible elongate member in a coil, comprising:

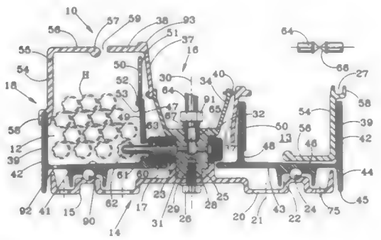
providing a stationary base;

rotatably mounting an enclosure an the stationary base, the enclosure having an annular cavity therein for receiving the flexible elongate member;

securing an arm to the stationary base such that the arm extends across an opening in receiving cavity for preventing the coiled flexible elongate member from unintentionally coming out of the receiving cavity;

VOL 1165 ISS 2 AG 9 1994 UMI

pulling an end of the flexible elongate member to rotate the enclosure relative to the base and the arm in a first direction, thereby withdrawing a selected length of the flexible elongate member from the receiving cavity; and



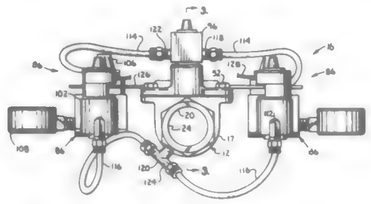
pushing the flexible elongate member toward the receiving cavity to rotate the enclosure relative to the base and the arm in an opposing second direction, thereby coiling a selected length of the flexible elongate member within the receiving cavity.

5,335,688

VARIABLE PRESSURE REGULATING VALVE SYSTEM

Robert A. Caviar, Leawood, Kans., assignor to Imperial Underground Sprinkler Co., Lenexa, Kans.

Filed Mar. 29, 1993, Ser. No. 38,227
Int. Cl.[5] F16K *31/128*
U.S. Cl. 251—26 **16 Claims**



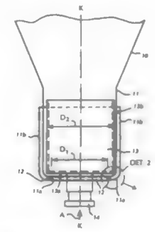
1. A pressure regulating valve system, which comprises:
(a) a body assembly including:
(1) an inlet chamber;
(2) an inlet opening communicating with the inlet chamber;
(3) an outlet chamber;
(4) an outlet opening communicating with the outlet chamber;
(5) a control chamber having a pressure regulating bypass opening and a full flow bypass port fluidically communicating therewith;
(6) a valve body including the inlet and outlet chambers and a valve partition separating same;
(7) a bonnet mounted on said valve body and including said control chamber generally located over said inlet chamber and a full flow bypass valve pocket generally located over said outlet chamber, said full flow bypass port communicating with said bypass valve pocket;
(8) a full flow bypass passage extending from said valve pocket to said outlet chamber and a full flow bypass valve seat surrounding said bypass passage; and
(9) a flow passage selectively communicating said inlet and outlet chambers and including a flow valve seat located generally below said control chamber;
(b) a flow valve assembly including:
(1) an elastomeric, flexible diaphragm gasket mounted between said valve body and said bonnet;
(2) a valve member including:
(i) a valve member cap having a configuration which is generally concave in an upstream direction;
(ii) a sealing washer generally positioned in said valve member cap;
(iii) a flow valve stud having an upstream end positioned in said inlet chamber and a downstream end positioned in said control chamber;
(iv) a flow valve stud bore extending from said stud upstream end to a position in proximity to said stud downstream end;
(v) and inlet screen with openings covering said stud bore at said stud upstream end and a removable inset mounted in said stud in proximity to the downstream thereof, said inset having an inset orifice fluidically communicating with the stud bore; and
(vi) said stud extending through said diaphragm gasket, said valve member cap and said sealing washer;
(3) a closed position with said sealing washer engaging said valve seat, a full flow position with said valve member in spaced relation from said valve seat, and first and second pressure regulating positions intermediate said closed and full flow positions; and
(4) a return spring engaging said bonnet and said valve member for urging said valve member towards its closed position;
(c) a full flow bypass valve including:
(1) a full flow bypass valve member mounted generally within said full flow bypass valve pocket and movable between a closed position engaging said full flow bypass valve seat and an open position in spaced relation therefrom; and
(2) a solenoid magnetically coupled to said full flow bypass valve member for moving same between its open and closed positions;
(d) an inlet T-connector mounted on said bonnet in fluidic communication with said control chamber;
(e) an outlet T-connector mounted on said valve body in fluidic communication with said outlet chamber;
(f) first and second pressure regulating modules each including:
(1) an inlet conduit fluidically connected to said inlet T-connector;
(2) an outlet conduit fluidically connected to said outlet T-connector;
(3) a pressure adjusting valve fluidically connected to said inlet conduit;
(4) a pressure gauge fluidically connected to said pressure adjustable valve; and
(5) a solenoid-actuated pressure regulating valve fluidically connected to said pressure adjustable valve and to said outlet conduit;
(g) a controller including means for selectively actuating said full flow bypass valve assembly solenoid and said pressure regulating module solenoid-actuated valves;
(h) timer means connected to said controller for sequentially controlling said full flow bypass and pressure regulating valves pursuant to a predetermined sequence and timing; and
(i) said valve stud downstream orifice having a greater cross-sectional dimension than a cross-sectional dimension of said screen openings and said full flow bypass valve passage having a greater cross-sectional dimension than said valve stud inset orifice.

5,335,689

FASTENING ARRANGEMENT BETWEEN THE CLOSING PIECE OR VALVE PIECE OF A SONDE BALLOON AND THE NECK OF THE SONDE BALLOON

Osmo Reittu, Espoo, Finland, assignor to Vaisala Oy, Finland

Filed Jun. 1, 1993, Ser. No. 70,273
Claims priority, application Finland, Jun. 3, 1992, 922558
Int. Cl.[5] B64B *1/40*
U.S. Cl. 137—231 **7 Claims**



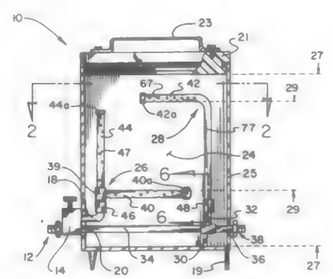
1. Fastening arrangement between a hose-like neck (**11**) of a sonde balloon (**10**) and a cylindrical valve piece (**13**) of the balloon, which valve piece (**13**) is fitted inside the hose-like neck (**11**) of the sonde balloon (**10**) as gas-tight, comprising:
a fastening ring (**12**) configured to fit onto a free mouth part of the neck (**11**) of the sonde balloon, whereupon an outer end (**11***a*) of the mouth part of the neck (**11**) can be folded outside and over the fastening ring (**12**) onto a neck part placed on the cylindrical valve piece (**13**), the neck (**11**) thereby becoming two-fold; and
an inner diameter (D_1) of the fastening ring (**12**) being smaller than a diameter (D_2) of the cylindrical valve piece (**13**), so that, against an outer end (**13***a*) of the valve piece (**13**), a gas-tight and mechanically reliable fastening arrangement is obtained which is self-tightening by means of the lifting force of the sonde balloon (**10**).

5,335,690

WATER AND FERTILIZER DISPENSING APPARATUS

E. Wayne Worth, 620 Wisconsin St., Wisconsin Rapids, Wis. 54494

Filed Sep. 15, 1993, Ser. No. 120,918
Int. Cl.[5] B01D *11/02*
U.S. Cl. 137—268 **12 Claims**



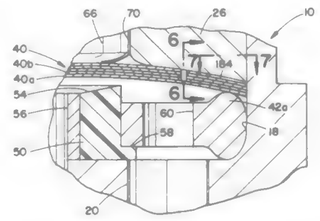
1. A new and improved water and fertilizer dispensing apparatus, comprising:
a water source connector assembly for connecting to a source of pressurized water,
a manually operated diverter valve assembly connected to said water source connector assembly, said manually operated diverter valve assembly including an input channel, a first output channel, a second output channel, and a selector valve assembly located between said input channel and both said first output channel and said second output channel, said selector valve assembly for manually selecting a water flow path from said input channel through either said first output channel, or said second output channel, or both said first output channel and said second output channel,
a mixing chamber defined by a housing, said mixing chamber connected to said first output channel, said mixing chamber for containing a quantity of fertilizer and a quantity of water for the fertilizer, said mixing chamber having a first linear dimension,
an inflow nozzle assembly connected to said first output channel within said mixing chamber, said inflow nozzle assembly for receiving water under pressure from said manually operated diverter valve assembly, said inflow nozzle assembly including a plurality of apertures,
an outflow aperture assembly spaced from said inflow nozzle assembly by a predetermined distance, such that water entering said mixing chamber from said inflow nozzle assembly traverses said predetermined distance along said first linear dimension, before entering said outflow aperture assembly,
a T-connector which includes a first input channel, a second input channel, and an output channel, wherein said first input channel is connected to said outflow aperture assembly, said second input channel is connected to said second output channel, and both said first input channel and second input channel are connected to said output channel, and
a distribution coupling assembly connected to said output channel for connecting to an assembly for distributing material passing through said output channel.

5,335,691

HIGH PRESSURE DIAPHRAGM VALVE

Terrence J. Kolenc, Mentor, Ohio, assignor to Nupro Company, Willoughby, Ohio

Continuation-in-part of Ser. No. 947,428, Sep. 18, 1992, Pat. No. 5,253,691, which is a continuation-in-part of Ser. No. 888,897, May 26, 1992, Pat. No. 5,215,286. This application Apr. 13, 1993, Ser. No. 46,668
Int. Cl.[5] F16K *7/17, 37/00*; G01M *3/04*
U.S. Cl. 137—312 **7 Claims**



1. In a valve having a valve chamber with a valve seat therein, an improved assembly for controlling the flow through the valve seat and providing a controlled failure mode and comprising a reciprocatory actuating rod assembly acting directly against a movable diaphragm assembly that comprises a plurality of thin flexible metal diaphragm layers that have a normally concave side facing the valve seat with a first of said diaphragm layers being exposed to the interior of the valve chamber and directly engageable with the valve seat when deflected by the actuating rod assembly for controlling flow therethrough and a second metal diaphragm layer in contact with the first diaphragm layer and coextensive therewith on the side opposite the valve chamber to move with and provide backing for the first diaphragm layer, said actuating rod assembly directly engaging the diaphragm layer on the side opposite

VOL 1165 ISS 2 AUG 9 1994 UMI

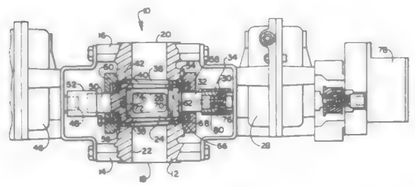
the valve seat for moving the diaphragm against the valve seat and having no positive connection to the second diaphragm layer so that retraction of the actuating rod assembly allows the diaphragm assembly to return to its normal concave valve open configuration, and bleed means for connecting the space between the first and second diaphragm layers to the exterior of the valve to allow the first diaphragm layer to return to its normal concave valve open configuration and prevent pressure build-up between the first and second diaphragm layers if the first diaphragm layer should develop a leak to thereby prevent the first diaphragm layer from an undesired sealing lock-up against the valve seat upon development of a leak therethrough which causes a pressure build-up therebetween when the diaphragm assembly should be in its normal concave valve open configuration.

5,335,692

VALVE HAVING ROTATABLE CAGE

David J. Hobson, Loveland, and Everett DeJager, Cincinnati, both of Ohio, assignors to Xomox Corporation, Cincinnati, Ohio

Continuation of Ser. No. 919,998, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 837,586, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 645,940, Feb. 13, 1991, abandoned, which is a continuation of Ser. No. 175,611, Mar. 24, 1988, abandoned, which is a continuation of Ser. No. 918,283, Oct. 14, 1986, abandoned. This application Mar. 1, 1993, Ser. No. 24,874
Int. Cl.[5] F16K *5/06*
U.S. Cl. 137—614.17 1 Claim



1. A method of throttling the flow of a process media through a valve assembly of the type having a valve body with an inlet, an outlet, and an internal flow passage extending therebetween, a plug member rotatably disposed within the body for selectively controlling the flow of a process media through internal flow passage, a sealing sleeve interposed between the valve body and the plug member for providing a fluid seal therebetween, the plug member being configured to fully protect the sealing sleeve from direct impingement of a process media flowing through the internal flow passage when the plug member is in a selected position, and a cage member rotatably disposed within the plug member, said cage member being operative to controllably vary the rate of fluid flow through the internal passageway in accordance with its relative angular position with respect to the valve body, said method comprising the steps of:

a) rotating the plug member with a first actuator to a first position fully protecting the sealing sleeve from direct fluid impingement from a process media and permitting the flow of the process media through the internal flow passage while the sleeve is fully protected from direct fluid impingement from the process media; and

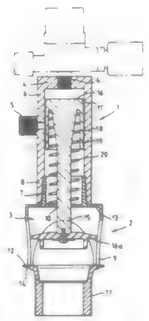
rotating the cage member with a second actuator mechanically decoupled to the first actuator to throttle the flow of the process media through the internal flow passage while the sealing sleeve is fully protected from direct fluid impingement from the process media whereby the rate of process media flow through the internal passage is controllably varied without exposing the sealing sleeve to direct fluid impingement of the process media.

5,335,693

VALVE

Leslie M. Kittlety, 63 Panorama Drive, and Paul J. Oudeman, 33 Cityview Terrace, both of Nambour, Queensland 4560, Australia

Filed Jun. 30, 1993, Ser. No. 85,653
Claims priority, application Australia, Jul. 3, 1992, PL 3299
Int. Cl.[5] F16K *11/02*
U.S. Cl. 137—625.26 7 Claims



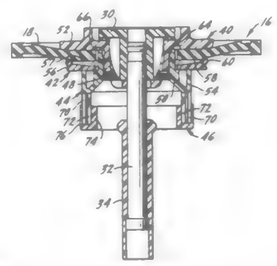
1. An hydraulic valve having a housing with closed and open structured portions in which a plunger is adapted for reciprocal movement; said closed portion incorporating an hydraulic fluid inlet and an hydraulic fluid outlet; said open structured portion incorporating a plug seat and plug stem; said plunger incorporating a sealing member on an end which reciprocates in the closed portion and a plug on the end which reciprocates in the open structured portion, there being provided spring means which normally bias the sealing member towards the inlet to prevent fluid communication between the inlet and the outlet; the construction and arrangement being such that when pressurized hydraulic fluid is passed through the inlet, it impacts upon the sealing member moving the plunger through the open structured portion of the housing to seat the plug on the plug seat, simultaneously bringing the inlet and outlet into fluid communication with one another.

5,335,694

FLUSH VALVE FLOW CONTROL REFILL RING

John F. Whiteside, Franklin Park, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed May 24, 1993, Ser. No. 65,778
Int. Cl.[5] F16K *7/17, 31/385*
U.S. Cl. 137—625.37 16 Claims



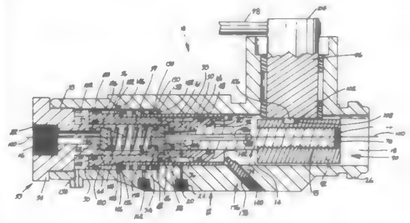
1. A flush valve for use with toilet devices such as urinals and water closets, including a body having an inlet and an outlet, a valve seat between said inlet and outlet, a valve member movable toward and away from said valve seat to control the flow of water to said outlet, said valve member including a diaphragm, a refill ring attached to said diaphragm for controlling water flow between the flush valve inlet and outlet, said refill ring having a plurality of axially extending exterior grooves in communication with said inlet when the valve member is away from said valve seat, said refill ring having radially extending passages connecting a portion of said grooves with the interior of said refill ring, the interior of said refill ring being in communication with the flush valve outlet, said refill ring exterior grooves and radial passages providing communication between said inlet and said outlet when said valve member is away from said valve seat.

5,335,695

HEIGHT CONTROL VALVE WITH ADJUSTABLE SPOOL

William C. Pierce, Muskegon, Mich., assignor to Nai Neway, Inc., Muskegon, Mich.

Filed Jun. 16, 1993, Ser. No. 78,988
Int. Cl.[5] B60G *11/26*
U.S. Cl. 137—627.5 24 Claims



1. In a height control valve for an air spring, said height control valve comprising a valve body having an internal chamber, an inlet port, an exhaust port, and a spring port, each of said ports being in communication with the internal chamber, valve means comprising a piston within the chamber for controlling alternate communication between the inlet port and spring port in a first mode, and between the exhaust port and the spring port in a second mode, and closing communication between all of the ports in a neutral mode, said valve means further comprising a seat within the chamber, and said piston having an end proximal to the seat and being adapted for operative connection to a height sensing means for the air spring, and reciprocally movable within the chamber in response to changes in the height of the air spring between a first position wherein the piston end extends past the seat in the first mode, a second position wherein the piston end is withdrawn from and spaced away from the seat in the second mode, and a neutral position wherein the piston end is aligned with the seat in the neutral mode, the improvement wherein:

a movable body is disposed within the chamber for reciprocal movement therein in first and second axial directions and the seat is carried by the movable body whereby to selectively adjust the neutral position of the piston by movement of the body within the chamber, the movable body further having first and second opposing surfaces; and;

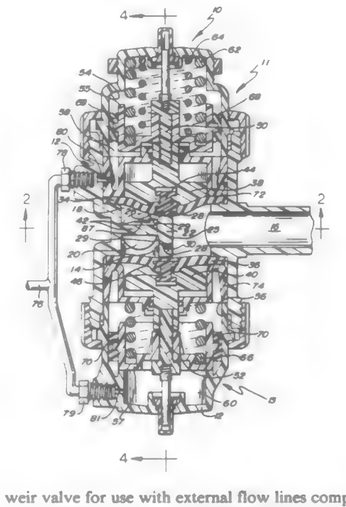
the valve body having first and second control cavities partially defined by the first and second opposing surfaces, respectively, each of said first and second control cavities being in communication with a source of pressurized fluid, wherein admission of pressurized fluid to the first control cavity will urge the movable body in the first axial direction and admission of pressurized fluid to the second control cavity will urge the movable body in the second axial direction so that the neutral position of the piston can be adjusted.

5,335,696

THREE-WAY WEIR STYLE VALVE

Jeffrey J. McKenzie, Watertown, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Mar. 10, 1993, Ser. No. 29,112
Int. Cl.[5] F16K *31/12*
U.S. Cl. 137—883 10 Claims



1. A weir valve for use with external flow lines comprising:

a. a valve housing with an open interior;

b. the open interior comprising a common flow duct, a first flow duct having a distal portion and a second flow duct having a distal portion, the first flow duct positioned transversely to the common flow duct, the second flow duct positioned transversely of the common flow duct, the distal portions of the first and second flow ducts coplanar with the common flow duct, each flow duct connectable to an external flow line;

c. an elongate weir traversing the open interior, the weir with a first edge portion and a second edge portion, defining a first valve seat and a second valve seat respectively, the weir further having a first face facing the common flow duct, the weir positioned substantially coplanar to the distal portions of the first and second flow ducts and to the common flow duct;

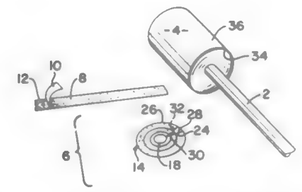
d. a first diaphragm confronting the first valve seat and mounted within the housing to be moveable into and out of a closure position with said valve seat, an operating means for said diaphragm;

e. a second diaphragm confronting the second valve seat and mounted within the housing seat and moveable into and out of a closure position with said valve seat, an operating means for said diaphragm; and

f. the common flow duct communicating with the first flow duct between the first valve seat and the first diaphragm, the common flow duct communicating with the second flow duct between the second valve seat and the second diaphragm, whereby movement of the first diaphragm into the closure position with the first valve seat obstructs the communication between the common flow duct and the first flow duct; and movement of the second diaphragm into the closure position with the second valve seat obstructs the communication between the common flow duct and the second flow duct.

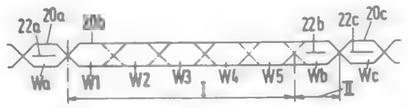
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,697
PIPE INSULATION END CAP
Chris J. Botsolas, Clearwater, Fla., assignor to Carol M. Botsolas, Clearwater, Fla.
Filed Oct. 25, 1991, Ser. No. 782,667
Int. Cl.[5] F16L *58/00*
U.S. Cl. 138—149 5 Claims



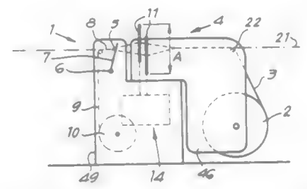
1. A method for sealing an end of an insulated pipe comprising the steps of:
(a) applying tape around the outer surface of the insulation at the terminal end of the insulation;
(b) upsetting a disc having a slit extending from the edge of the disc to the center to reduce the outside diameter of the disc to approximately correspond with the area defined by the inner edge of the tape surrounding the outer surface of the terminal end of the insulation;
(c) securing caulking compound to the terminal end of the insulation; and
(d) securing the end cap to the caulking compound whereby the outer edge of the disc bears against the inner edge of the tape.

5,335,698
METHOD OF RESTARTING A LOOM AFTER STOPPAGE
Klaus Berktold; Kurt Günther, both of Rüti, and Anton Egloff, Galgenen, all of Switzerland, assignors to Sulzer Rueti AG, Winterthur, Switzerland
Filed Apr. 20, 1993, Ser. No. 49,937
Claims priority, application European Pat. Off., Apr. 22, 1992, 92810293.8
Int. Cl.[5] D03D *51/00*
U.S. Cl. 139—1 E 13 Claims



1. A method of restarting a loom after a stoppage, the loom having a predetermined weaving program and comprising a warp let-off means, a cloth take-up means, a shed-forming means, a sley for beating up a weft yarn inserted into a shed and a fell, the method comprising the steps of:
moving the fell from a first position, where the sley is positioned to beat the weft yarn, to a second position removed from the first position;
preventing the weft yarn from being fed into the shed;
driving at least one of the shed-forming means, the warp let-off means and the cloth take-up means through a plurality of weaving cycles independently of the predetermined weaving program;
moving the fell from the second position towards the first position during said weaving cycles, the fell being moved by at least one of the warp let-off means and the cloth take-up means;
restarting the loom according to the predetermined weaving program when the fell returns to the first position; and
the shed-forming means being held in an operative position corresponding with an open position of the shed for at least a portion of said weaving cycles.

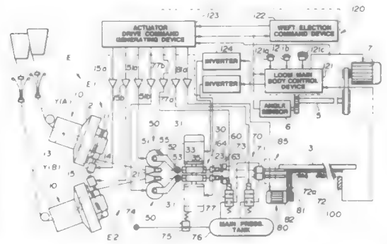
5,335,699
HEIGHT ADJUSTING DEVICE FOR WEAVING DEVICE FOR MACHINE HARNESS ELEMENTS
Daniel Beyaert, Wijtschate-Heuvelland; Ignace Meyns, Reninge; Dirk Sampers, Oostvieteren, and Michel Vandeweghe, Wijtschate-Heuvelland, all of Belgium, assignors to Picanol N.V., naamloze vennootschap, Belgium
Filed Jun. 26, 1992, Ser. No. 904,657
Claims priority, application Belgium, Jun. 26, 1991, 09100613
Int. Cl.[5] D03C *13/00, 9/06*
U.S. Cl. 139—82 13 Claims



1. A device for forming a shed in weaving machines, including drive means and a harness assembly, said harness assembly comprising a harness element which includes a side beam and coupling means made of first and second coupling elements for coupling the harness element to the drive means, the improvement comprising setting means at the side beam of the harness element for enabling individual height adjustment of the harness element relative to one of the coupling elements, wherein the setting means comprises a setting screw, wherein the second coupling element of the harness element is disposed at an end of the setting screw and is movable relative to the side beam in response to movement of the setting screw; and wherein the second coupling element located at the end of the setting screw is formed of a first part and a second part broader than the first part, the second part engaging the first coupling element which is discrete from the second coupling element to couple the harness to the drive means.

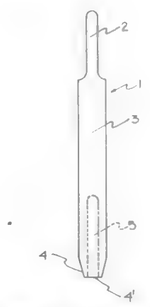
5,335,700
WEFT PICKING SYSTEM FOR A FLUID JET LOOM INCLUDING A ROLLER TYPE TRACTION DEVICE
Takao Ishido; Akio Shindo; Shuichi Kojima; Shuichiro Imamura; Kimimasa Onishi; Hiroshi Tsugane, all of Tokyo; Takashi Ogasawara, Tsukui; Kenichi Nakjima, and Masahiro Adachi, both of Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama City, Japan
Filed Mar. 10, 1993, Ser. No. 29,661
Claims priority, application Japan, Mar. 24, 1992, 4-065535; Mar. 24, 1992, 4-065536; Oct. 8, 1992, 4-269024; Dec. 28, 1992, 4-347897
Int. Cl.[5] D03D *47/34*
U.S. Cl. 139—435.1 27 Claims

1. A weft picking system for a fluid jet loom, comprising:
means for measuring a predetermined length of a weft yarn and storing it prior to a weft picking;
a weft posture regulating nozzle for regulating a posture of the weft yarn fed from said measuring and storing means and to be picked into a shed of warp yarns under influence of a fluid jet ejected from said weft posture regulating nozzle;
a weft traction device disposed between said measuring and storing means and said weft posture regulating nozzle, said weft traction device including a rotatable roller capable of making pressing contact with the weft yarn such that a traction action of said weft traction device rotatable roller on the weft yarn draws the weft yarn from said measuring and storing means to said weft posture regulating nozzle;
means for causing said weft traction device rotatable roller to always rotate at least during a weaving operation of the loom;



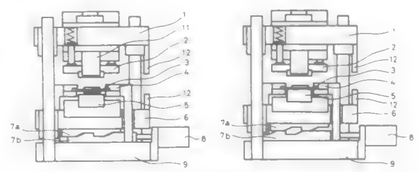
a change-over device which takes a first state to cause the weft yarn to be brought into pressing contact with said weft traction device rotatable roller, and which takes a second state to cause the weft yarn to separate from said weft traction device rotatable roller; and
means for changing said change-over device from said second state to said first state after a starting of ejection of the fluid jet from said weft posture regulating nozzle during a weft picking cycle.

5,335,701
TIE-BAR TOOL FOR ATTACHING FENCING WIRE TO A POST WITH A TIE-WIRE CLIP
Donald L. Frazier, P.O. Box 434, Lordsburg, N. Mex. 88045
Continuation-in-part of Ser. No. 890,841, Jun. 1, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,756
Int. Cl.[5] B21F *15/04*
U.S. Cl. 140—57 8 Claims



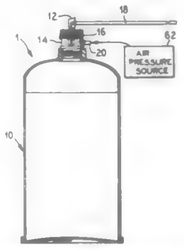
1. A tool for attaching fencing wire to a post with a tie-wire clip, said tool comprising:
an essentially cylindrical bar having a first end, a central grip portion, and a second end, wherein said first end is tapered and ends in a flat surface that extends transverse to a longitudinal direction of said bar, with said flat surface of said first end being provided with a blind hole that extends partially into said bar in said longitudinal direction thereof and beyond where said taper beings, and wherein said second end of said bar is also cylindrical but is of a reduced diameter relative to said central grip portion of said bar, which is disposed between said first and second ends thereof.

5,335,702
CUTTING AND FORMING DEVICE FOR LEAD FRAME FOR THE SEMICONDUCTOR DEVICE
Akihiko Goto, Yamagata, Japan, assignor to NEC Corporation, Japan
Filed Jun. 18, 1992, Ser. No. 900,898
Claims priority, application Japan, Jun. 21, 1991, 3-046705[U]
Int. Cl.[5] B21F *1/00*
U.S. Cl. 140—105 3 Claims



1. A cutting and forming device by which a lead frame of a resin molded semi-finished semiconductor device is cut by a press mechanism having a press ram, means for driving said press ram with deceleration near a dead bottom point of said press ram, said press ram being a single press ram, said device comprising:
a machine base, a lower die base, and an upper die base;
an upper die carried by said upper die base;
a stripper frame carried by said upper die base;
a pair of feeding rails fixed to said machine base; and
a noise reducing means associated with said lower die base and operated by a driving means independent from said means for driving said single press ram, said noise reducing means enabling said lower die to be in a predetermined lowered position during the feeding of a lead frame and to be in a predetermined raised position upon completion of the feeding of said lead frame for said lower die to be in complete contact with said lead frame.

5,335,703
RECHARGEABLE DUST-OFF DEVICE AND A METHOD OF USING THE DEVICE
Michael deJong, 719 Yonge St., Suite 205, Toronto, Ontario, Canada M4Y 2B5
Filed Oct. 20, 1992, Ser. No. 963,642
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—20 6 Claims



1. An apparatus for cleaning a device with pressurized air by spraying air from a chamber filled with pressurized air from an air pump, said chamber capable of repetitively refilling after said air has been depleted, said apparatus comprising:
an adaptor having a first exterior threaded open end for connecting to an open end of said chamber, a second exterior threaded open end opposite said first threaded open end, and an intermediate section integrally connecting said threaded ends having an opening perpendicular to

VOL 1165 ISS 2 AG 9 1994 UMI

said threaded open ends, said opening being interior threaded;

an inlet valve for receiving said air from said air pump having a threaded end connected to said opening of said adaptor and an opposite end for connecting said air pump;

an activator for initiating release of said air from said chamber having a first opening at a base end thereof and a second opening perpendicular to its base end and through a side wall thereof with means associated therewith for spraying said air, whereby said device is cleaned with said air; and

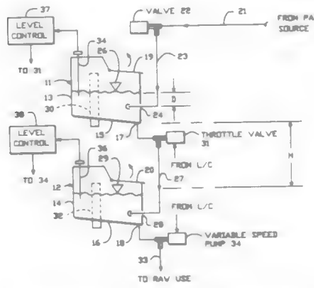
an outlet valve having an end which sealingly fits within said second open end of said adaptor and an opposite end connected to said open end at the base end of said activator wherein said outlet valve responds to pressure applied to said activator to release air from said chamber.

5,335,704

PASTEURIZED TO RAW LIQUID PROCESSING SYSTEM

John R. Haatveit, Martinez, Calif., assignor to Safeway Stores, Inc., Oakland, Calif.

Filed Jun. 9, 1992, Ser. No. 895,797
Int. Cl.[5] G05D *9/00*
U.S. Cl. 141—95 **4 Claims**



1. A pasteurized to raw liquid processing system comprising:

a top and bottom pair of liquid tanks each having a bottom, a side, and a cover to enclose such tank to prevent contamination of said liquid, said top tank being higher in elevation than said bottom tank;

means for continuously venting both of said tanks to atmosphere to prevent buildup of either pressure or vacuum;

inlet means for said liquid at said side of each tank located below said predetermined liquid level for preventing foam or air entrainment due to incoming liquid, said inlet means of said top tank being connected to a source of said pasteurized liquid;

pipe means connecting said bottom of said top tank to said inlet means of said bottom tank for allowing gravity flow of said liquid from said top to bottom tank;

a first independent feedback means attached to said top tank for maintaining the liquid in said top tank at a substantially predetermined level, where said first feedback means includes a means for controlling fluid flow in said pipe means for maintaining said liquid level in said top tank;

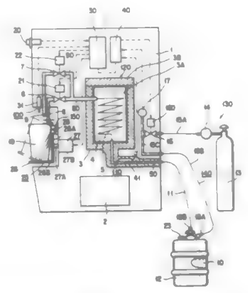
a second independent feedback means attached to said bottom tank for maintaining the liquid in said bottom tank at a substantially predetermined level, where said second feedback means includes a means for controlling fluid flow connected to a bottom outlet of said bottom tank for maintaining said liquid level in said bottom tank.

5,335,705

APPARATUS FOR DISPENSING A SPARKLING OR BUBBLING BEVERAGE

Akira Morishita; Tsuyoshi Ota, both of Numazu; Tatsuya Suzuki, Shizuoka; Sukehide Ito, Numazu, and Yoshikazu Ryuko, Shizuoka, all of Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1992, Ser. No. 906,496
Claims priority, application Japan, Sep. 27, 1991, 3-249778
Int. Cl.[5] B67D *1/04*
U.S. Cl. 141—275 **10 Claims**



1. An apparatus for dispensing a sparkling or bubbling beverage, comprising:

an apparatus body having a beverage dispensing section where a dispensing outlet is provided for dispensing the bubbling beverage;

gas supplying means for supplying a CO_2 gas into a beverage-containing tank;

a beverage passage for drawing the beverage from the tank toward the dispensing outlet by a pressure of the CO_2 gas which is supplied from the gas supply means;

beverage cooling means for cooling the bubbling beverage which is drawn via the beverage passage toward the dispensing outlet;

a dispensing valve for opening/closing the beverage passage leading to the dispensing outlet;

a dispensing valve drive device for driving the dispensing valve to allow the dispensing valve to be opened or closed;

a rotatably displaceable rest base mounted below the beverage dispensing section with a beverage container placeable on said rest base so that the beverage is dispensed into the beverage container;

a base tilting drive device for tilting the rest base;

dispensing start signal input means for inputting a signal for starting the dispensing of the beverage into the container on the rest base;

a liquid level detector for detecting a bubble surface level or liquid level of the beverage dispensed into the container and for inputting level information to the controller; and

a controller including a means for controlling the operation of the dispensing valve drive device and base tilting drive device in response to the signal input from the dispensing start signal input means and the level information from the liquid level detector to control the operation of both the base tilting drive device and the dispensing valve drive device in response to a bubble surface level or liquid level of the beverage so as to move the beverage container from a tilted position to an erect position dependent upon the liquid level or bubble surface within the container;

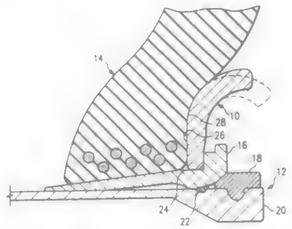
wherein the controller operates the base tilting drive device, upon receiving the signal from the dispensing start signal input means, to allow the container on the rest base to be tilted, while opening the dispensing valve through the operation of the valve drive device to dispense the beverage into the beverage container, controls the base tilting drive device so that the beverage container is held erect after the bubble surface level or liquid level of the beverage has been brought to a predetermined level, and controls the dispensing valve to close the dispensing valve after the bubble or beverage again dispensed in the erect position of the container has been brought to a predetermined level.

5,335,706

ROTARY FORGED CURVED SIDE FLANGE FOR FIVE PIECE RIMS

William C. Foster, 205 Rosemary Ct., Creve Couer, Ill. 61611

Continuation of Ser. No. 764,054, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 260,264, Oct. 20, 1988, abandoned. This application Oct. 9, 1992, Ser. No. 959,170
Int. Cl.[5] B60B *25/04*
U.S. Cl. 152—410 **11 Claims**



1. In a multiple piece rim for mounting a tire on a large industrial vehicle to support a portion of the weight of the vehicle, the tire having a sidewall, the multiple piece rim including a flange, an intermediate member mating with the flange, an inner member mating with the intermediate member and an interposed member between the intermediate member and the inner member, the flange having an inner surface in contact with the side wall of a tire mounted on the multiple piece rim, a portion of the inner surface being an annular surface and a portion of the inner surface being curved, the improvement comprising the flange being formed by rolling and forging a continuous annular member in one piece having no ends joined by welding.

5,335,707

HIGH SPEED HEAVY DUTY CROSS PLY TIRE

Haruyuki Sano, Osaka; Takao Otani, Kakogawa; Masayoshi Nishitani, Kobe; Mikio Takatsu, Takarazuka; Kiyoshi Ueyoko, Osaka; Toshiaki Yamamoto, and Shinichi Miyazaki, both of Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Feb. 12, 1992, Ser. No. 834,342
Claims priority, application Japan, Feb. 15, 1991, 3-044364
Int. Cl.[5] B60C *9/06, 15/05, 15/06*
U.S. Cl. 152—543 **5 Claims**

1. A heavy duty high speed cross ply tire comprising at least one pair of bead cores, one of each of said at least one pair of bead cores being disposed in each bead portion of the tire,

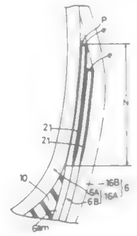
a carcass composed of a plurality of plies of cords laid at angles of 30 to 60 degrees with respect to the tire equator, each said carcass ply turned up around the bead cores to have turned up portions,

said carcass plies including at least one ply of aromatic polyamide fiber cords,

the twist coefficient TN of each said aromatic polyamide fiber cord being in a range of 2.466×10^3 to 3.036×10^3, wherein the twist coefficient TN is defined as the product $T\sqrt{D}$ of the cord twist number T (turns/10 cm) of the cord and the square root of the total denier number D (deniers) of the cord,

each said carcass ply turned up portion provided with a cord spacing between the carcass cords therein and the cords of adjacent carcass plies,

the radially outer edge of each said carcass ply turned up portion wrapped by an edge cover in such a way that: in an end region, the cord spacing being in a range of 0.25 to 2.0 times the diameter of the carcass cords, said end region defined as extending between the radially outermost edge of the carcass ply turnup portions and a point being radially inward thereof by a distance of 60% of the radial



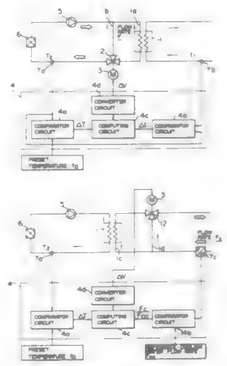
height of said radially outermost edge as measured from the bead base line; and in the remaining region other than said end region, the cord spacing being smaller than that in said end region and being in a range of 0.1 to 1.6 times said diameter of the carcass cords, said edge cover made of a rubber compound having a 100% modulus of 40 to 70 kgf/sq.cm, an elongation at rupture of 200 to 350%, a stress at rupture of 150 to 300 kgf/sq.cm, and a thickness of 0.2 to 2.0 mm.

5,335,708

COOLING APPARATUS AND TEMPERATURE CONTROL METHOD THEREFOR

Kyoshiro Murakami, Shimizu; Tetsuji Yamashita, Shizuoka; Tomio Yoshikawa, Shimizu; Hiromu Yasuda, Shizuoka, and Shizuo Zushi, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 558,514, Jul. 27, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 953,769
Claims priority, application Japan, Sep. 18, 1989, 1-239997
Int. Cl.[5] F28F *27/00, 27/02;* **G05D** *23/00*
U.S. Cl. 165—1 **6 Claims**



1. A method of controlling a temperature of fluid to be cooled by a cooling apparatus, said cooling apparatus including a heat exchanger for performing heat exchange between

VOL 1165 ISS 2 AG 9 1994 UMI

cooling water and said fluid, and a flow rate regulator valve for regulating a flow rate of one of said cooling water and said fluid passing through said heat exchanger, wherein said method comprises the steps of:

presetting a cooling temperature of said fluid; and

determining an opening degree of said flow rate regulator valve, said determining an opening degree being effected in accordance with:

(i) detecting a temperature difference between that of cooled fluid and the preset temperature, and

(ii) simultaneously with step (i) detecting a temperature difference between said cooling water and said fluid so as to effect automatic control of the setting of the sensitivity of said flow rate regulator valve,

whereby temperature control of said fluid is provided through control of said flow rate regulator valve, determined according to step (i), as compensated through controlling of the sensitivity of said flow rate regulator valve according to step (ii).

5. A cooling apparatus for cooling fluid by cooling water, comprising:

a heat exchanger for performing heat exchange between said cooling water and said fluid;

a flow rate regulator valve for regulating a flow rate of one of said cooling water and said fluid passing through said heat exchanger;

first means for presetting a cooling temperature of said fluid;

second means for detecting a temperature of the cooled fluid and determining an opening degree of said flow rate regulator valve when there is a difference between the detected temperature and the preset temperature; and

third means for controlling the setting of the sensitivity of said flow rate regulator valve by detecting a temperature difference between said cooling water and said fluid, whereby compensation of the opening degree, determined by said second means, of said flow rate regulator valve is effected prior to actual control thereof and is in accordance with the setting of the sensitivity of said flow rate regulator valve as determined by said third means.

5,335,709

PELMET SUPPORT STRUCTURE WHICH PROVIDES FOR LONGITUDINAL ADJUSTMENT

Enzo Borzi, via C. Ferrini, 12, Rome, Italy 00173

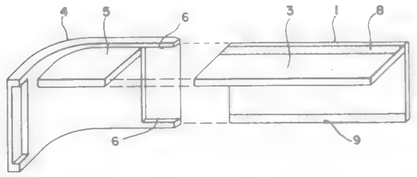
PCT No. PCT/IT91/00101, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO93/00034, PCT Pub. Date Jan. 7, 1993

PCT Filed Nov. 26, 1991, Ser. No. 983,587

Claims priority, application Italy, Jun. 24, 1991, RM 91 A [illegible]

Int. Cl.[5] E06B *9/00*

U.S. Cl. 160—39 **5 Claims**



1. A pelmet support structure which is adapted for longitudinal adjustment, comprising:

a central element having end portions and a frontal surface, said central element having adhesive means provided along its length;

two end parts each having a front portion and a side portion substantially perpendicular to said front portion, wherein each of said front portions are adapted to adjustably secure said central element; and

connecting means for securing said central element to said end parts; wherein,

said front portion of said end parts each include an outer surface and an inner surface opposite said outer surface wherein said inner surface includes a back guide which is adapted to receive one end portion of said central element, said back guide being further adapted to allow for adjustment of said central element within said back guide so as to allow for the longitudinal adjustment of said pelmet support structure.

5,335,710

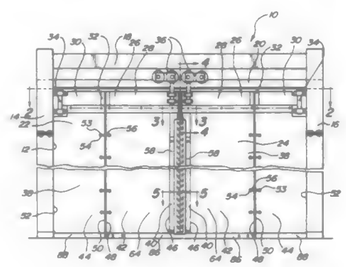
WIND DOOR ASSEMBLY WITH EDGE STIFFENERS

Michael J. Belanger, Walled Lake, Mich., assignor to Belanger, Inc., Northville, Mich.

Filed Oct. 13, 1992, Ser. No. 959,761

Int. Cl.[5] E06B *3/48*

U.S. Cl. 160—118 **19 Claims**



1. A wind door assembly for closing a doorway through which an object may pass, the doorway having a pair of laterally spaced apart uprights and an overhead beam extending therebetween, the wind door assembly comprising:

a door beam cooperating with the doorway and shiftable between open and closed positions, the door beam, in a closed position, having an outboard end adjacent an upright and an inboard end spaced laterally inboard therefrom; and

a door panel including an elongate flexible planar sheet and a vertically extending elongate stiffener, the planar sheet having a generally inboard vertically extending marginal edge, a lower inboard region and an upper marginal edge which connects to the door beam with the planar sheet being freely suspended therefrom in a normal vertical plane, and with the stiffener being affixed to the inboard marginal edge of the planar sheet;

wherein, with the door beam in a closed position, the door panel normally prevents the interchange of ambient air through the doorway with the stiffener preventing the lower inboard region of the planar sheet from curling out of the plane of the doorway in response to wind blowing upon the door panel, while allowing the door panel, in response to an object impinging thereupon, to flex and swingingly incline out of the plane of the doorway so that the object can pass through the doorway without damaging the wind door assembly or the object after which time the wind door swings close.

5,335,711

PROCESS AND APPARATUS FOR METAL CASTING

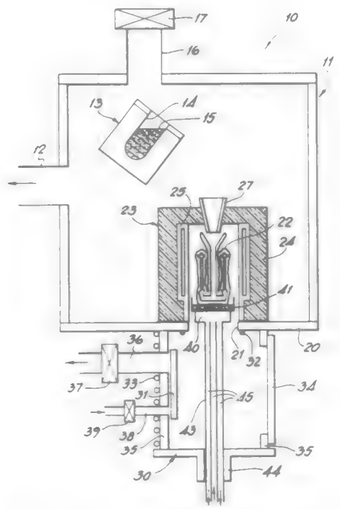
Brian Paine, Bradford, Great Britain, assignor to AE PLC, Rugby, England

Continuation of Ser. No. 655,232, Jan. 17, 1991, abandoned, which is a continuation of Ser. No. 191,958, May 9, 1988, abandoned. This application Apr. 29, 1992, Ser. No. 876,706

Claims priority, application United Kingdom, May 30, 1987, 8712742

Int. Cl.[5] B22D *27/13*

U.S. Cl. 164—66.1 **12 Claims**



1. Apparatus for the production of cast metal components, the apparatus comprising a mould, a casting chamber, metal melting and metal pouring means, a mould chamber adjacent said casting chamber and connected thereto by valve means of sufficient size to allow said mould to pass therethrough, vacuum pump means for producing a reduced pressure in at least said casting chamber, mould heating means, mould moving means to transport said mould between said mould chamber and said casting chamber, and pressurising means connected to said mould chamber for pressurising said mould chamber with a fluid, to a pressure sufficient to achieve at least substantial reduction in shrinkage porosity void formation during solidification of molten metal in the mould chamber wherein said valve means, said mould moving means and said pressurising means are constructed and arranged such that a mould with molten metal therein can be moved from said casting chamber to said mould chamber, said valve means closed and said mould chamber pressurized, all within a time such that said metal is still molten.

7. A process for the production of castings, the process comprising the steps of at least partially melting a metal charge, pouring said metal into a mould which is in a first chamber, withdrawing the filled mould completely into a second chamber while the metal in the mould is still in a molten state, isolating said second chamber from said first chamber with regard to pressure and then pressurising said second chamber with a fluid up to a maximum pressure of 7 MPa such as to preclude shrinkage porosity void formation for at least part of the time required for solidification of the metal in the mould.

5,335,712

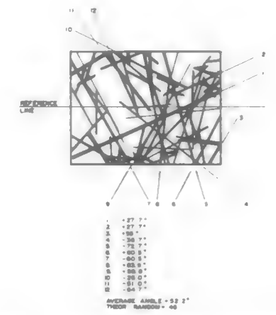
SHAPED BODIES CONTAINING SHORT INORGANIC FIBERS OR WHISKERS AND METHODS OF FORMING SUCH BODIES

William J. Corbett; Marvin C. Lunde, both of Cumming, Ga., and Peter T. B. Shaffer, Grand Island, N.Y., assignors to Technical Ceramics Laboratories, Inc., Alpharetta, Ga.

Division of Ser. No. 690,347, Apr. 24, 1991, Pat. No. 5,153,057, which is a division of Ser. No. 310,381, Feb. 15, 1989, Pat. No. 5,108,964. This application Apr. 6, 1992, Ser. No. 863,765

Int. Cl.[5] B22D *19/14*

U.S. Cl. 164—97 **17 Claims**



1. A method for making a metal matrix composite comprising the steps of:

(a) providing a mass of inorganic short fibers;

(b) providing a mass of hot thermoplastic compound which is heated to a fluid state;

(c) adding the short inorganic fibers into the heated thermoplastic compound to provide a mix having from about 10 to about 40% by volume of fiber;

(d) adding additional organic ingredients to the fiber containing compound to form a moldable mixture;

(e) subjecting the moldable mixture from step (d) to high shear mixing to thereby provide a high degree of three dimensional random orientation of fiber within the mixture;

(f) providing a mold defining a predetermined shaped cavity;

(g) introducing the moldable mixture from step (e) into the mold and cooling the mixture while maintaining the high degree of three dimensional random orientation;

(h) removing the cooled molded or shaped mixture from the mold and extracting at least about 95% by volume of the organic material to thereby provide a shaped preform of fibers having sufficient strength to allow handling of the preform; and

(i) introducing a molten metal into the preform while maintaining the structural integrity of the preform.

5,335,713

INSTALLATION FOR THE MANUFACTURE OF HOT-ROLLED STEEL STRIP

Hans-Dieter Hoppmann, Düsseldorf, and Klaus Frommann, Meerbusch, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 14, 1990, Ser. No. 582,497

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1988, 3809681

Int. Cl.[5] B22D *45/00*

U.S. Cl. 164—441 **14 Claims**

1. An installation for the manufacture of hot-rolled steel strip from continuously cast stock, comprising:

a caster for the continuous casting of the stock into steel strip;

VOL 1165 ISS 2 AG 9 1994 UMI

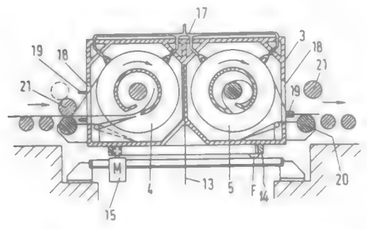
a furnace positioned for receiving the strip after it leaves the caster;

said furnace containing at least two winding/unwinding mandrels placed in proximate locations, respectively;

a first mandrel in a first location adapted to receive and wind the strip into a coil;

transport means positioned within said furnace for transporting the coil and said first mandrel from said first location to a second location and a second mandrel from said second location to said first location, said transport means defining a path of revolution located in a single plane; and

receiving means proximate said furnace for unwinding the strip from said first mandrel in said second location and feeding the strip to a mill, said mandrels being turned with the furnace around a vertical axis.



5,335,714

DUMMY BAR FOR CONTINUOUS CASTING INSTALLATIONS

Giovanni Arvedi, Cremona, Italy; Harald Lüdorff, Langenfeld, Fed. Rep. of Germany; Hans G. Thurm, Duisburg, Fed. Rep. of Germany; Lothar Parschat, Ratingen, Fed. Rep. of Germany; Fritz-Peter Pleschiutschnigg, Duisburg, Fed. Rep. of Germany; Hans-Joachim Paris, Düsseldorf, Fed. Rep. of Germany, and Michael Steuten, Moers, Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

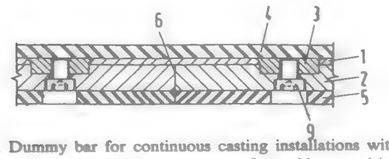
PCT No. PCT/DE91/01005, § 371 Date Sep. 3, 1993, § 102(e) Date Sep. 3, 1993, PCT Pub. No. WO92/11961, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 20, 1991, Ser. No. 84,195

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1991, 4100365

Int. Cl.[5] B22D *11/08*

U.S. Cl. 164—446 **7 Claims**



1. Dummy bar for continuous casting installations with a curved bar guide fitted downstream of a mold, comprising a flexible metallic band (1), spacers (2) and components (3) which are fastened to a surface of the band (1) for detachably connecting the spacers (2) to the band, the spacers being strip-shaped and extending over the width of the band (1) on the band surface transversely to the longitudinal direction of the band, wherein the spacers (2) have mutually adjacent contact areas (6) at least in the region of the components (3) and the free surface of the spacers (2) is covered with congruent plates of highly-resilient material and the free surface of the band (1) is provided with a coating (4) of highly resilient material.

5,335,715

METHOD AND APPARATUS FOR CONTINUOUS CASTING

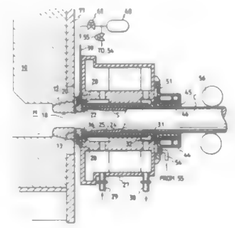
Haruo Ohguro; Toshihiro Kosuge; Ryuuzou Hanzawa; Shogo Matsumura; Hiroyuki Kawai; Youji Ao; Tsutomu Fujii, all of Hikari; Hideo Kaneko, and Hatsuyoshi Kumashiro, both of Kobe, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Kawasaki Jukogyo Kabushiki Kaisha, Kobe, both of Japan

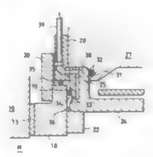
Filed Aug. 8, 1991, Ser. No. 742,422

Claims priority, application Japan, Aug. 9, 1990, 2-209298; Aug. 9, 1990, 2-209299; Jan. 11, 1991, 3-012560; Apr. 10, 1991, 3-077690; Apr. 10, 1991, 3-077691; Jun. 7, 1991, 3-051409

Int. Cl.[5] B22D *11/00*

U.S. Cl. 164—475 **7 Claims**





6. A method of continuous casting, comprising the steps of:

continuously supplying molten metal from a tundish to a cooled mold, the mold having an inlet and an outlet, and the molten metal being supplied through a break ring contacting the inlet of the mold on a contact area;

forming a cast section by continuously cooling the molten metal in the mold that is in direct contact with the mold and starting solidification of the molten metal below the surface thereof;

intermittently withdrawing the cast section relative to the mold through the outlet thereof;

providing a first cut-off space next to the inlet of the mold that is cut off from the inside of the mold by the contact area between the break ring and the inlet of the mold and that is bounded along a closed curve at a diameter larger than the maximum diameter of the contact area between the break ring and the inlet of the mold, and a second cut-off space that has the first cut-off space inside thereof, that is sealed from the first cut-off space, and that is cut off from the atmosphere;

maintaining the pressure in the first cut-off space below atmospheric pressure;

constantly supplying a sealing gas at a pressure higher than atmospheric pressure into the second cut-off space, the sealing gas being soluble in the molten metal;

providing a third cut-off space adjacent the outlet of the mold that is bounded along a closed curve at a diameter larger than the inside diameter of the mold and that is cut off from the atmosphere; and

constantly supplying a sealing gas at a pressure higher than atmospheric pressure into the third cut-off space adjacent the outlet of the mold, the sealing gas being soluble in the molten metal.

5,335,716

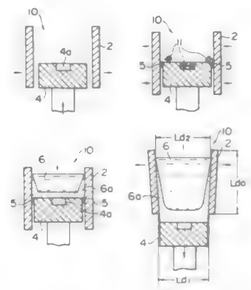
METHOD FOR STARTING CONTINUOUS CASTING IN CONTINUOUS SLAB CASTING AND METHOD FOR SETTING A DUMMY BAR PRIOR TO THE START OF CASTING OF CONTINUOUS SLAB CASTING

Hiromichi Takesue; Eiji Kameyama, both of Futtsu; Tsutomu Terada, and Junichi Kawata, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 997,884

Int. Cl.[5] B22D *11/04, 11/08*

U.S. Cl. 164—483 **24 Claims**



1. A method for starting continuous slab casting in a continuous casting mold, where lateral side plates of the mold are pinched by longitudinal side plates of the mold and are adjustable in the slab width direction, which comprises setting a dummy bar in the mold to a desired level at the center in the vertical direction of the mold, maintaining the lateral side plates vertically, then filling sealing materials into the clearances among the longitudinal side plates, the lateral side plates and the dummy bar, then starting to pour molten steel into the mold, holding the poured molten steel therein, while cooling the molten steel, thereby forming a solidified shell, then starting to withdraw the dummy bar downwardly, making the top ends of the lateral side plates more apart outwardly when no more molten steel passes into the clearances between the formed, solidified shell and the plates, while withdrawing the dummy bar downwardly, thereby giving a downwardly tapered profile to the lateral side plates and conducting continuous casting of the molten steel.

5,335,717

OXIDATION RESISTANT SUPERALLOY CASTINGS

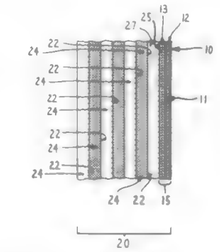
Stephen Chin, Wallingford; Donald R. Parille, South Windsor, both of Conn.; Paul R. Aimone, Muskegon, Mich.; Robert L. McCormick, N. Muskegon, Mich.; Paul R. Johnson, Whitehall, Mich., and Bart M. Kilinski, Montague, Mich., assignors to Howmet Corporation, Greenwich and United Technologies Corporation, Hartford, both of Conn.

Filed Jan. 30, 1992, Ser. No. 828,206

Int. Cl.[5] B22C *1/02*

U.S. Cl. 164—519 **22 Claims**

1. A method of improving the oxidation resistance of a superalloy, comprising reacting the superalloy in the molten state with a magnesium or calcium-bearing ceramic material to introduce magnesium or calcium into the superalloy in an amount effective to increase its oxidation resistance.



5,335,718

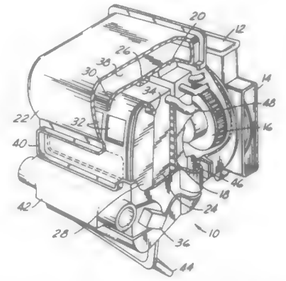
SPACE-EFFICIENT AIR CONDITIONING/HEATING MODULE

Calvin G. Smith, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 2, 1992, Ser. No. 862,033

Int. Cl.[5] F25B *29/00*

U.S. Cl. 165—42 **8 Claims**



1. A space-efficient heating and air conditioning module, comprising:

A) a plurality of radially inwardly directed air handling ducts for selectively receiving a singular or combined flow of air into the module;

B) a rotary air blower adapted to receive the radially inward flow of air from said air handling ducts and discharge the air in a direction coaxial with the axis of rotation of said rotary air blower;

C) an evaporator for receiving the flow therethrough of air from the rotary air blower in a direction substantially normal to a face of said evaporator, said evaporator adapted to circulate therethrough a quantity of refrigerant for cooling the air flowing therethrough;

D) a heating element spaced-apart from the evaporator, for receiving the flow therethrough of air from said evaporator in a direction substantially normal to a face of said heating element, said heating element adapted to thermally stratify the air flowing therethrough, the face of said heating element being substantially equal in area to the face of said evaporator;

E) means for selectively distributing the flow of air from the heating element to any one or a combination of floor, panel, and defrost ducts, said distributing means adapted to provide the thermally stratified warmer air from said heating element to the floor duct; and

F) a defrost supply duct for receiving a flow therethrough of

VOL 1165 ISS 2 AG 9 1994 UMI

air from said distributing means, for communicating the flow of air above the evaporator and heating element in a direction substantially 180° from the direction of flow of air through said rotary blower, evaporator, and heating element.

5,335,719

APPARATUS FOR HEATING AND/OR COOLING A COMPARTMENT

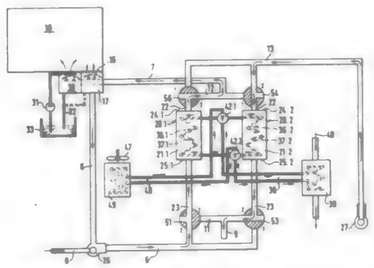
Noureddine Khelifa, Stuttgart, and Roland Burk, Kornwestheim, both of Fed. Rep. of Germany, assignors to Behr GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Oct. 7, 1992, Ser. No. 958,098

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1991, 4133917

Int. Cl.[5] B60H *3/00*

U.S. Cl. 165—42 **23 Claims**



1. Apparatus for heating and/or cooling a motor vehicle passenger compartment, communicating with a supply air duct for supplying air to the compartment and an exhaust air duct for exhausting air from the compartment, comprising:

at least two sorption reactors provided with a sorbent, each of said reactors having a reaction chamber with opposing ends;

a first duct positioned at one end of said reaction chambers, through which first duct a first air stream passes from the exhaust air duct into a selected one of said reaction chambers for adsorbing moisture onto the sorbent and adding adsorption heat to the first air stream, and through which first duct a second air stream flows out of the selected other one of said reaction chambers; and

a second duct positioned at the opposite end of each of said reaction chambers, through which second duct the second air stream passes into the selected other one of said reaction chambers for desorbing the moisture from the sorbent, and through which second duct the first air stream flows out of said selected one of said reaction chambers;

wherein the first and second air streams alternately flow through each of said reaction chambers such that while the first air stream in an adsorption phase is flowing through the first duct into the selected one of the reactors and then out of the second duct and is being fed via the supply air duct and a humidifying source into the compartment, the second air stream in a desorption phase is simultaneously flowing through the second duct into the selected other one of the reactors then out of the first duct and is desorbing the moisture from the sorbent, whereby desorption occurs in a direction of flow opposite the direction of flow of adsorption;

wherein each of said first ducts includes means for selectively controlling and guiding the first air stream from said exhaust air duct, through the selected one or the other of said first ducts and into the selected one or the other of said reaction chambers;

wherein each of said second ducts includes means for selectively controlling and guiding the second air stream from an air conducting duct, through the selected one or the other of said second ducts and into the selected one or the other of said reaction chambers;

wherein, for desorption, heat from an external source including one of waste heat from the motor that powers the motor vehicle and heat from a fuel burner supplied from a fuel tank of an engine is fed through a heat exchanger to a corresponding reaction chamber; and

wherein a dry, heated adsorption air stream issuing from the reaction chamber during adsorption is fed to one of an air moistener to lower an air temperature by evaporative cooling and serve as a cooling air stream to cool the passenger compartment, and to the passenger compartment to raise an air temperature by heating a warm air stream fed to the passenger compartment.

5,335,720

HEAT PIPE

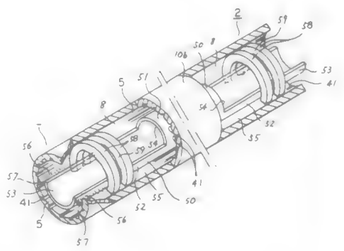
Tetsurou Ogushi; Masaaki Murakami; Kazuyoshi Yabuchi, all of Amagasaki, and Akira Yao, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,162

Claims priority, application Japan, Aug. 9, 1991, 3-200563; Apr. 24, 1992, 4-106474

Int. Cl.[5] F28D *15/02*

U.S. Cl. 165—104.26 **8 Claims**



1. A heat pipe comprising:

a hermetic shell tube defining a closed space including an evaporation section and a condensation section;

a heat conveying fluid disposed within said shell tube, said fluid being transformable between a liquid phase and a vapor phase in said evaporation and condensation sections;

a plurality of capillary axial grooves provided on substantially an entire inner surface of said shell tube;

a circumferential channel structure defining therein a capillary circumferential channel connected to said axial grooves; and

an axial channel structure axially extending through the substantially entire length of said shell tube for defining a capillary axial channel connected to said capillary circumferential channel and having an opening defining therein a meniscus of said heat conveying fluid in the liquid phase at least in said evaporator section and said condenser section.

5,335,721

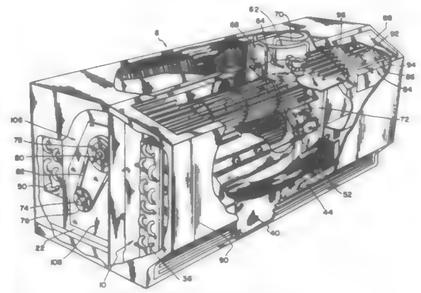
AIR CONDITIONER MODULAR UNIT WITH DUAL CROSS FLOW BLOWERS

Bruce A. Wollaber, Nolensville, and Richard DeVos, Murfreesboro, both of Tenn., assignors to Inter-City Products Corporation (USA), LaVergne, Tenn.

Division of Ser. No. 654,305, Feb. 12, 1991, Pat. No. 5,152,336, which is a continuation-in-part of Ser. No. 478,342, Feb. 12, 1990, abandoned. This application May 22, 1992, Ser. No. 887,703

Int. Cl.[5] F28F *13/12*

U.S. Cl. 165—122 **8 Claims**



1. An air handling module comprising:

a housing including a first and second sidewall, one of said first and second sidewalls including an opening covered by a removable panel, said opening providing access to an interior of said housing;

a first and second tangential blower mounted between said first and second sidewalls of said housing, said tangential blowers being rotatably supported by said removable panel, said opening providing access to said tangential blowers; and

a motor attached to one of said first and second sidewalls for driving at least one of said first and second tangential blowers, said motor externally located in relation to said housing.

5,335,722

COOLING ASSEMBLY FOR AN INTEGRATED CIRCUIT

Shuenn-Jenq Wu, Taipei, Taiwan, assignor to Global Win Technology Co., Ltd and Huei Bin Enterprise Corp., Taiwan

Filed Sep. 30, 1993, Ser. No. 129,754

Int. Cl.[5] H05K *7/20*

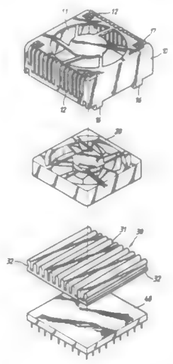
U.S. Cl. 165—122 **5 Claims**

1. A cooling assembly for dissipating heat generated by an integrated circuit, comprising:

a fin including a bottom surface for contacting an upper surface of an integrated circuit and an upper surface from which a plurality of ridges extend, each two adjacent said ridges defining a channel therebetween;

a fan retained above said ridges; and

a hollow housing for fittingly housing said integrated circuit, said fin, and said fan, said hollow housing comprising a top wall, four side walls, and an opening in a bottom thereof, a plurality of venting openings being formed in said top wall, and a plurality of snapping members projecting downward from each of two mutually facing sides of said hollow housing and each of which having a distal flexible



snapping end for releasably engaging with an underside of said integrated circuit.

5,335,723

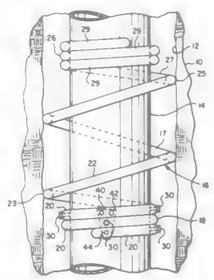
COMBINATION SCRATCHER-CENTRALIZER FOR WELLBORE CASINGS

David E. Mouton, Jakarta, Indonesia, assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 29, 1993, Ser. No. 84,682

Int. Cl.[5] E21B *37/02*

U.S. Cl. 166—173 **9 Claims**



1. A combination scratcher-centralizer for use in installing casing in a wellbore for cleaning the wall of said wellbore of accumulated mud filtercake and for centralizing said casing within said wellbore comprising:

a helical coiled wire including a centralizer portion having at least a 360° helical wrap engageable with said wellbore wall to scrape said wellbore wall during installation and to centralize said casing in said wellbore; and

a first hub part comprising at least one helical wrap of said wire of a diameter less than the diameter of said centralizer portion and engaged with said casing to retain said centralizer in a predetermined axial position on said casing.

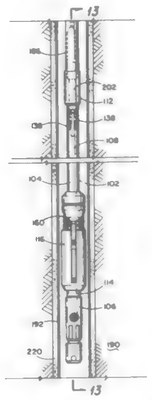
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,724

DIRECTIONALLY ORIENTED SLOTTING METHOD

James J. Venditto, Sugar Land, Tex., and Kenneth D. Caskey, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 28, 1993, Ser. No. 98,469
Int. Cl.[5] E21B *43/114, 43/26, 47/02*
U.S. Cl. 166—298 20 Claims



1. A method for fracturing a subterranean formation having a well bore extending thereinto, said method comprising the steps of:
(a) placing a jetting tool in said well bore such that said jetting tool is positioned within said subterranean formation, said jetting tool including a first jetting nozzle;
(b) orienting, by rotating said jetting tool about a longitudinal axis, said jetting tool such that the directional orientation of said first jetting nozzle substantially corresponds to a selected fracturing direction;
(c) cutting a slot in said subterranean formation by substantially maintaining the first jetting nozzle orientation established in step (b) while both (i) spraying a jetting fluid out of said first jetting nozzle and (ii) moving said jetting tool longitudinally within said well bore along said longitudinal axis.

5,335,725

WELLBORE CEMENTING METHOD

Reece E. Wyant, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 23, 1993, Ser. No. 96,797
Int. Cl.[5] E21B *19/22, 33/138, 33/14*
U.S. Cl. 166—292 7 Claims

1. A method to place cement in a wellbore in communication with a subterranean formation, the method comprising the steps of:
placing into the wellbore a cement slurry comprising at least about 5 percent by weight, based on the total solids in the slurry, of solids having a diameter greater than about 0.04 inches, at least about 5 percent by weight, based on the total solids in the slurry, of solids having a diameter between about 0.004 and 0.04 inches, and at least about 10 percent by weight, based on the total solids in the slurry, of solids having a diameter of less than about 0.004 inches, wherein the slurry density is such that the static head of the wellbore contents would result in a pressure on the formation that would exceed the formation fracture initiation pressure; and
allowing the slurry to hydrate.

5,335,726

WATER CONTROL

Klein A. Rodrigues, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 22, 1993, Ser. No. 141,302
Int. Cl.[5] E21B *33/138*
U.S. Cl. 166—295 16 Claims

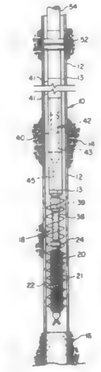
1. A method of decreasing the rate of flow of water from a subterranean formation into a wellbore penetrating said formation, said method being comprised of the steps of
introducing into said formation at least one polymerizable water soluble vinyl monomer and at least one multifunctional vinyl monomer crosslinker together with a water soluble azo initiator and
permitting said polymerizable monomer to polymerize and crosslink in said formation
to thereby decrease the rate of flow of water from said formation.

5,335,727

FLUID LOSS CONTROL SYSTEM FOR GRAVEL PACK ASSEMBLY

H. Mitchell Cornette, Houston; John V. Salerni, Kingwood, and Phillip W. Schmuck, New Waverly, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 4, 1992, Ser. No. 971,494
Int. Cl.[5] E21B *43/08, 43/10*
U.S. Cl. 166—278 15 Claims



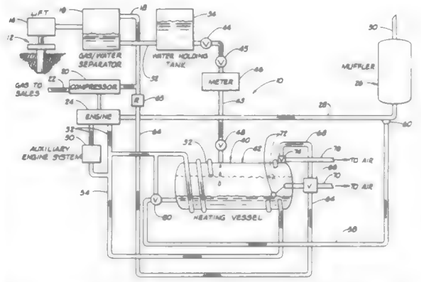
4. A method for installing an auger-type gravel-pack assembly into a gravel pack formed in a wellbore comprising the steps of:
providing a gravel pack assembly including an auger gravel pack screen, closure means disposed in a body connected to said gravel pack screen and a tubing string for lowering the gravel pack screen into said wellbore, said body including port means operable to be in communication with the interior of said body and said wellbore;
providing seal means interposed in said tubing string between the earth's surface and said gravel pack to substantially prevent a fluid column in said wellbore from acting on said gravel pack;
lowering said gravel pack assembly into said wellbore on said tubing string while permitting fluid flow between said wellbore and said tubing string through said gravel pack assembly; and
causing said closure means to substantially prevent fluid flow through at least part of said tubing string and said gravel pack screen and into said gravel pack.

5,335,728

METHOD AND APPARATUS FOR DISPOSING OF WATER AT GAS WELLS

Ronald L. Strahan, 2416 Apple Way, Edmond, Okla. 73013

Filed Jul. 31, 1992, Ser. No. 923,699
Int. Cl.[5] E21B *43/34, 36/00*
U.S. Cl. 166—267 54 Claims



1. A method for disposing of water produced by a gas well assembly which includes a gas compressor including an engine producing hot exhaust and an auxiliary engine system which circulates a hot fluid, the method comprising:
receiving water from the well in a heating vessel;
circulating the hot fluid in the auxiliary engine system under heat exchange conditions around the heating vessel whereby water in the heating vessel is heated;
evacuating heated water from the heating vessel; and
injecting the heated water evacuated from the heating vessel into the hot exhaust from the gas compressor engine whereby the water is vaporized.

43. An apparatus for disposing of water produced at a gas well assembly, which gas well assembly includes a gas compressor driven by an engine which produces hot exhaust which is conducted in a stream directly to a muffler through which the exhaust is vented to the atmosphere, the apparatus comprising:
a water injection assembly adapted to inject water from the gas well into the stream of hot exhaust from the compressor engine whereby the water is vaporized and vented to the atmosphere through the muffler with the exhaust stream.

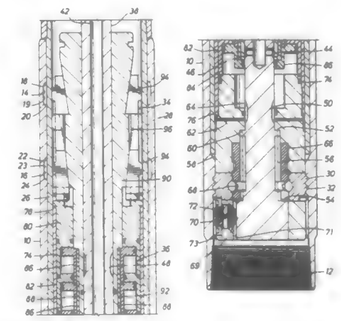
5,335,729

TUBULAR CONNECTION, METHOD FOR MAKING SAME, AND TOOL THEREFOR

Edwin C. Turner, and Charles E. Gibbs, both of Houston, Tex., assignors to Cooper Industries, Inc., Houston, Tex.

Filed May 11, 1992, Ser. No. 880,828
Int. Cl.[5] E21B *33/04*
U.S. Cl. 166—380 6 Claims

1. The method of making a connection between two tubular members, one of which is a tubular housing having both upper and lower spaced apart recesses and the other of which is a section of a tubular member including the steps of
positioning said section of a tubular member within said tubular housing,
positioning said mechanical forging elements within said section at positions immediately within said tubular housing recesses, said mechanical forging elements having an external shape to deform said section into mechanical gripping and sealing engagement within said recesses without overstressing the housing,
releasably supporting said tubular member section within said tubular housing with said forging elements at their desired positions with respect to said housing recesses, and



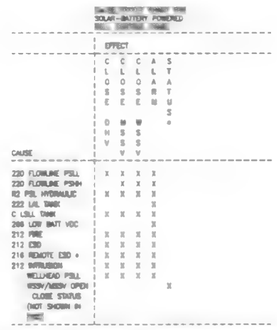
wedging said mechanical forging elements radially outward to deform said section into said tubular housing recesses.

5,335,730

METHOD FOR WELLHEAD CONTROL

Heman C. Cotham, III, P.O. Box 899, Zamil Compound, Khobar, Saudi Arabia

Continuation-in-part of Ser. No. 753,744, Sep. 3, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 14,798
Int. Cl.[5] E21B *34/10*
U.S. Cl. 166—374 16 Claims



1. A method for controlling a wellhead on a well, the well extending from beneath the earth to a surface thereof, the wellhead including a plurality of valves for controlling flow of fluids in flowlines to and from the well, each fluid having a pressure level in a flowline, the plurality of valves including at least a downhole valve and a surface valve, the downhole valve controlling flow of fluid from within the well to the surface and the surface valve controlling flow of fluid from the well to a location, the method comprising the step of:
producing power from an integral stand-alone power apparatus for producing electric power adjacent the well;
delivering power produced by the power apparatus to a control unit and to pumping apparatus;
operating the pumping apparatus to pump operating fluid to the downhole valve to operate the downhole valve and pumping operating fluid to the surface valve to operate the surface valve; and
controlling the pumping and the valves with the control unit.

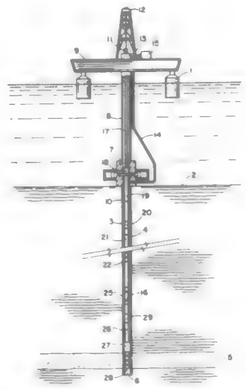
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,731

FORMATION TESTING APPARATUS AND METHOD

Paul D. Ringgenberg, 2101 Brentwood La., Carrollton, Tex. 75006, and Harold K. Beck, 655 Estates Dr., Copper Canyon, Tex. 75067

Filed Oct. 22, 1992, Ser. No. 965,100
Int. Cl.[5] E21B *43/01, 49/08*
U.S. Cl. 166—336 **26 Claims**



1. An apparatus for testing a subterranean formation comprising:

internal-external differential pressure operated circulation tool comprising an elongate tubular housing having a passageway extending longitudinally therethrough, said circulation tool further comprising a reverse circulation valve means for allowing fluid flow from the exterior of said circulation tool to said passageway of said circulation tool and said circulation tool also comprising a first operating means, responsive to changes in fluid pressure differential between said passageway of said circulation tool and the exterior of said circulation tool, for selectively opening said reverse circulation valve means to allow fluid flow from the exterior of said circulation tool to said passageway of said circulation tool and for closing said reverse circulation valve means;

an external pressure operated drill stem testing tool comprising an elongate tubular housing having a passageway extending longitudinally therethrough, said drill stem testing tool further comprising a passageway closure valve means for selectively blocking said passageway of said drill stem testing tool and said drill stem testing tool also comprising a second operating means, responsive to pressure changes exterior to said drill stem testing tool, for selectively closing said passageway closure valve means of said drill stem testing tool in order to block said passageway of said drill stem testing tool and opening said passageway closure valve means of said drill stem testing tool; and

an external pressure operated formation tester tool comprising an elongate tubular housing having a passageway extending longitudinally therethrough, said formation tester tool further comprising a passageway closure valve means for selectively blocking said passageway of said formation tester tool and said formation tester tool also comprising a third operating means, responsive to pressure changes exterior to said formation tester tool, for selectively opening and closing said passageway closure valve means of said formation tester tool to block said passageway of said formation tester tool and to open said passageway of said formation tester tool,

said drill stem testing tool being positioned in a testing string beneath said circulation tool and said formation tester tool being positioned in said testing string beneath said drill stem testing tool, and

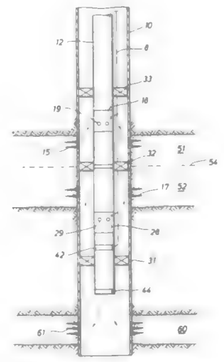
said first operating means being responsive to fluid pressure differential changes between the exterior and the interior of said testing string which will not operate to change the position of said passageway closure valve means of said drill stem testing tool and will not operate to change the position of said passageway closure valve means of said formation tester tool.

5,335,732

OIL RECOVERY COMBINED WITH INJECTION OF PRODUCED WATER

Jack W. McIntyre, 107 N. Overland, Fort Stockton, Tex. 79735

Filed Dec. 29, 1992, Ser. No. 998,018
Int. Cl.[5] E21B *33/124, 43/14*
U.S. Cl. 166—313 **8 Claims**



1. A method for producing hydrocarbons from a stratum in which a hydrocarbon zone overlies and is in pressure communication with an underlying water zone comprising:

drilling and placing casing in a well, the casing extending through the stratum having the hydrocarbon zone and the underlying water zone and through at least a portion of a separate water disposal stratum;

perforating the casing in the hydrocarbon zone, the water zone and the water disposal stratum;

placing tubing in the well, the tubing having packers disposed at selected locations thereon;

setting a packer in the casing between the perforations in the hydrocarbon zone and the perforations in the underlying water zone, the packer having a plug therein;

setting a packer in the casing between the perforations in the water zone and perforations in the water disposal stratum; and

producing two streams, one stream of hydrocarbons from the hydrocarbon zone and a second stream from the underlying water zone, and simultaneously pumping water from the water zone to the water disposal stratum.

5,335,733

METHOD FOR DELAYING GELATION OF A GELABLE POLYMER COMPOSITION INJECTED INTO A SUBTERRANEAN FORMATION

Burton B. Sandiford, Balboa Island; Hoai T. Dovan, Yorba Linda, and Richard D. Hutchins, Placentia, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 940,301, Aug. 31, 1992, Pat. No. 5,246,073. This application Jun. 25, 1993, Ser. No. 83,712
Int. Cl.[5] E21B *33/138*
U.S. Cl. 166—300 **37 Claims**

1. A method for forming a gel in at least a portion of a subterranean formation, the method comprising the steps of:

(A) injecting a composition into at least a portion of a subterranean formation, the composition comprising (i) an ingredient selected from the group consisting of water soluble, crosslinkable polymers and polymerizable monomers capable of forming a crosslinkable polymer and (ii) water;

(B) injecting a crosslinking agent into at least a portion of the subterranean formation, the crosslinking agent being selected from the group consisting of aldehydes, hexamethylenetetramine, and mixtures thereof; and

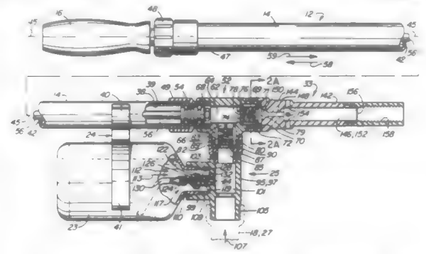
(C) injecting a crosslinking rate retardant selected from the group consisting of epoxides, ethers, and mixtures thereof into at least a portion of the subterranean formation.

5,335,734

RECIPROCATING ADDITIVE MIXING PUMP APPARATUS AND METHOD

Blayney J. Scott, Victoria; Barry G. Gilbert, Sidney, and George R. Gowan, Burnstown, all of Canada, assignors to Scott Plastics Ltd., Vitoria, Canada

Filed May 4, 1993, Ser. No. 55,878
Int. Cl.[5] A62C *15/00, 31/12*
U.S. Cl. 169—15 **24 Claims**



1. A reciprocating pump apparatus for dispensing a liquid and additive mixture, the apparatus comprising:

(a) a hollow pump body providing a pump cylinder having a longitudinal pump axis, the pump cylinder communicating with an intake port having an intake valve, and a discharge port having a discharge valve;

(b) a piston and associated piston rod reciprocable axially within the cylinder to execute intake and discharge strokes, the intake valve opening during an intake stroke to admit liquid while the discharge valve is closed, and the discharge valve opening during a discharge stroke while the intake valve is closed, the stroke of the piston being at least several times greater than diameter of the pump cylinder to provide a relatively long stroke pump;

(c) an additive supply communicating with the pump cylinder to supply additive during an intake stroke so that the additive is admitted into the pump cylinder prior to a discharge stroke,

(d) a mixing means for mixing the additive with liquid from a liquid supply prior to passing into the intake port, the mixing means being located between the additive supply and the intake valve and comprising a mixing body having an intake conduit to conduct the liquid from the liquid supply to the intake port, and an additive conduit communicating the additive supply with the intake conduit, a portion of the intake conduit adjacent the additive conduit being of fixed cross-section to provide an essentially constant restriction to liquid flow therethrough; and

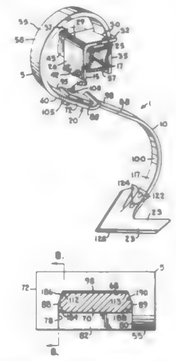
(e) a metering means for metering a first volume of additive in proportion to a second volume of liquid to attain a desired concentration in the mixture, the metering means cooperating with the additive conduit to control rate of additive flow therethrough in proportion to liquid volume flow rate in the intake conduit occurring during an induction stroke, so as to mix the additive with the liquid in an essentially constant concentration irrespective of velocity of liquid flow therethrough.

5,335,735

CULTIVATOR SHANK ASSEMBLY WITH CAMMED SHANK END RECEIVER

Kenneth A. Hake, Tipton, Kans., assignor to Kent Manufacturing Co., Inc., Tipton, Kans.

Continuation-in-part of Ser. No. 602,629, Oct. 24, 1990, Pat. No. 5,133,415. This application Jun. 18, 1992, Ser. No. 900,314
Int. Cl.[5] A01B *23/00*
U.S. Cl. 172—707 **5 Claims**



4. In an agricultural ground-engaging assembly:

(a) means for forming an integral shank receiving slot, said slot having end walls, and a shank having a flat upper surface and generally convex sidewalls;

(b) at least one of said end walls having a cam surface contacting and engaging one of said shank sidewalls and urging said shank against the other of said end walls, thereby locking said shank against lateral motion in said slot.

5,335,736

ROCK BOLT SYSTEM AND METHOD OF ROCK BOLTING

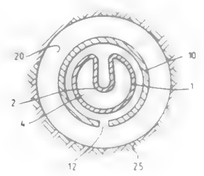
Christopher R. Windsor, Cottesloe, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

PCT No. PCT/AU91/00315, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993, PCT Pub. No. WO92/01859, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 16, 1991, Ser. No. 956,898
Claims priority, application Australia, Jul. 17, 1990, PK1221/90
Int. Cl.[5] E21B *7/00*
U.S. Cl. 175—57 **8 Claims**

1. A rock bolt system comprising an inner part disposed within an outer part, said inner part comprising a fluid expansible elongated tube having an internal closed ended fluid receiving chamber having a fluid inlet through which the expansible

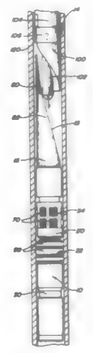
VOL 1165 ISS 2 AG 9 1994 UMI

tube can be pressurized to permanently expand radially, said outer part comprising an elongated tube having a longitudinal



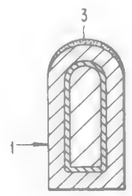
slot, said slot extending at least part way along the length of said tube of said outer part.

5,335,737
RETRIEVABLE WHIPSTOCK
Benton E. Baugh, Houston, Tex., assignor to Smith International, Inc., Houston, Tex.
Filed Nov. 19, 1992, Ser. No. 978,842
Int. Cl.[5] E21B *7/08*
U.S. Cl. 175—61 **19 Claims**



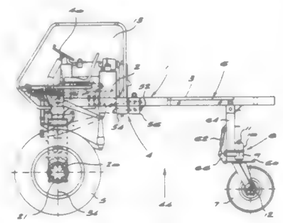
1. A whipstock for changing the direction of drilling within a wellbore comprising:
- a whip for diverting the direction of drilling, said whip including at least one ratchet surface;
- means for setting said whipstock within the wellbore, said means attached to said whip such that said whip and setting means are run into the wellbore in a single trip, said setting means being actuated for setting said whipstock within the wellbore; and
- a retrieval tool for mechanically dislodging said setting means to retrieve said whipstock from the wellbore, said retrieval tool matingly engaging said whip and having at least one ratchet surface for lockingly engaging said at least one ratchet surface on said whip whereby tension applied through said retrieval tool is transmitted to said whipstock to mechanically dislodge said setting means.

5,335,738
TOOLS FOR PERCUSSIVE AND ROTARY CRUSHING ROCK DRILLING PROVIDED WITH A DIAMOND LAYER
Mats G. Waldenström, Bromma; Udo K. R. Fischer, Vällingby; Lars H. Hillert, Saltsjö-Boo, all of Sweden, and Mahlon D. Dennis, Kingwood, Tex., assignors to Sandvik AB, Sandviken, Sweden
Filed Jun. 14, 1991, Ser. No. 715,636
Claims priority, application Sweden, Jun. 15, 1990, 9002135-3
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—420.2 **8 Claims**



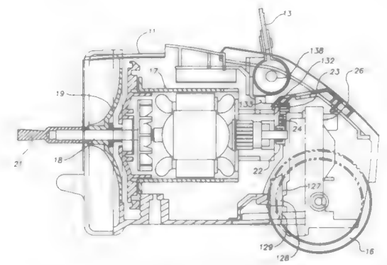
1. A rock bit button for percussive and rotary crushing rock drilling comprising a body of cemented carbide at least partly covered with a diamond layer bonded at high pressure and high temperature, said button having a multi-phase structure with a core containing eta-phase surrounded by a surface zone free of eta-phase.

5,335,739
AGRICULTURAL VEHICLE
Ian Pieterse, 355 Louise Street, Pretoria Tuine, Transvaal; Nicolaas Snyman, Doornlaagte, P.O. Box 1620, Rustenburg, Transvaal, and Andre Minne, 75 Heron Road, Ninapark, Akasia, Transvaal, all of South Africa
Filed Dec. 30, 1992, Ser. No. 998,367
Int. Cl.[5] B62D *11/04*
U.S. Cl. 180—6.3 **8 Claims**



1. A high crop agricultural vehicle comprising, a chassis on which is mounted a drive unit and a drivers cab with steering and drive controls, a pair of front wheels mounted to the chassis and spaced apart from each other in linked parallel relationship, a pair of rear wheels mounted to the chassis and spaced apart from each other, said front and rear wheels pairs defining a space between them, the wheels supporting the chassis at an elevated position such that in use, the vehicle can be driven over relatively high crops, drive means linking the drive unit to the front wheels, steering means controllable by the steering controls which is capable of steering the vehicle to the left and right of a normal forward travel direction, the front wheels being turnable to at least through 90° either to the left or right of said normal forward travel direction so that the front wheels adopt a lateral travel position, the vehicle being capable of being driven in a lateral direction when the front wheels are in said lateral travel position, said front wheels being steerable by the steering means when in the lateral travel position.

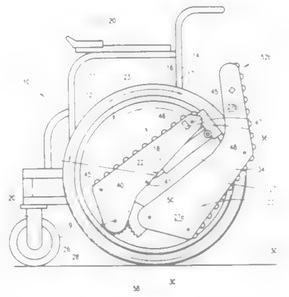
5,335,740
DRIVE SYSTEM
Robert B. Meyer, Middleburg Hts.; John R. Lackner, Westlake, and Hans J. Matuschek, Parma, all of Ohio, assignors to The Scott Fetzer Company, Westlake, Ohio
Continuation of Ser. No. 708,464, May 31, 1991, abandoned, which is a division of Ser. No. 442,615, Nov. 29, 1989, abandoned. This application Jul. 2, 1993, Ser. No. 88,095
Int. Cl.[5] B62D *51/04*
U.S. Cl. 180—19.1 **37 Claims**



1. A reversible drive system for a wheel supported device comprising an input pinion and a pair of constantly meshed counter-rotating gears, the input pinion being in driving engagement with one of said gears, said counter-rotating gears each being supported for rotation about a respective axis parallel to the axis of the other, a pair of sprockets respectively associated with the pair of counter-rotating gear to form first and second sets, means supporting each sprocket in confronting relation to a respective gear and for rotation about its said respective axis, first and second clutching surfaces respectively for the first and second gear and sprocket sets, a common sprocket supported for rotation about an axis parallel to said gear axes, a belt trained around both of said pair of sprockets and said common sprocket, an output shaft operatively connected to said common sprocket and adapted to drive the wheels of the device in forward or reverse rotation as determined by the rotational direction of the sprockets, and clutch actuation means responsive to a manually developed force in a first direction to clutch the first set of said gears and sprockets together through their respective clutching surfaces to drive said sprockets in a first rotary direction and direction opposed to said first direction to clutch the second set of said gears and sprockets together through their respective clutching surfaces to drive said sprockets in a second rotary direction.

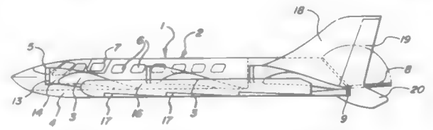
5,335,741
EXTERNALLY MOUNTED TRACK APPARATUS FOR A WHEEL CHAIR
Talmon Rabinovitz, Kfar Saba; Zvi Gilad-Smolinsky, Haifa, and Mordechay Rutenberg, Ra'anana, both of Israel, assignors to Israel Aircraft Industries Ltd., Lod, Israel
Filed May 21, 1992, Ser. No. 887,178
Claims priority, application Israel, May 22, 1991, 098207
Int. Cl.[5] B62D *55/04*
U.S. Cl. 180—8.2 **27 Claims**

1. Wheelchair apparatus comprising:
- a chassis;
- a seat mounted onto said chassis; and
- a travel drive associated with said chassis and comprising:
  - a pair of manually rotatable drive wheels mounted about a rotation axle extending through said chassis at wheel mounting locations therealong, and
  - a pair of castor wheels, said wheels being operative to support said chassis on a travel surface so as to enable wheeled travel of said chassis therealong;



driven tracks mounted externally of the drive wheels and operative to assist travel of said chassis along a travel surface not suitable for traverse by said wheels.

5,335,742
GROUND EFFECT VEHICLE
Albert Blum, Scheiderhohe, 5204 Lohmar 1, Fed. Rep. of Germany
Continuation of Ser. No. 856,035, May 8, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 164,306
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1989, 3937240
Int. Cl.[5] B60V *1/15*
U.S. Cl. 180—117 **10 Claims**



1. A floatable ground effect vehicle comprising:
- an elongated passenger cabin having a boat-like hull;
- at least two pair of stub wings affixed to the sides of said passenger cabin in tandem, each of said stub wings having a first end affixed to said passenger cabin and a second end, a lower surface of each of said stub wings, enclosing a static pressure build-up space;
- a thrust generator associated with each stub wing adapted to generate a sufficient air flow necessary to form both a static pressure build-up under said associated stub wing providing a powerlift of said vehicle in a vertical direction and a propulsion pressure providing a propulsion of said vehicle in a horizontal direction; and
- an airflow duct provided on each of said stub wings, said air flow duct supporting said associated thrust generator forward of said stub wing and directing said airflow to said static pressure build-up space, said airflow duct thereby cooperating with said thrust generator to provide said static pressure build-up and said propulsion pressure.

VOL 1165 ISS 2 AG 9 1994 UMI

5,335,743

OPERATION OF SERVO DEVICES FOR DRIVING A MOTOR VEHICLE - CONTROL, ARRANGEMENT AND METHOD

Per Gillbrand, Mariefred; Hans Johansson, Amal; Per Johansson, Amal, and Bengt Elgh, Amal, all of Sweden, assignors to Saab Automobile Aktiebolag, Sweden

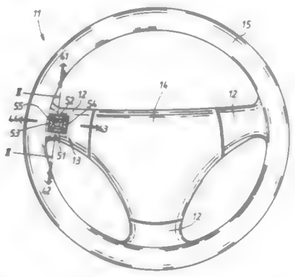
PCT No. PCT/SE91/00689, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO92/06860, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 15, 1991, Ser. No. 39,362

Claims priority, application Sweden, Oct. 19, 1990, 9003318-4

Int. Cl.[5] B60K *26/02, 41/28, 31/02;* **G05G** *9/02*

U.S. Cl. 180—178 **20 Claims**



1. A control for controlling the operation of a motor vehicle, the vehicle having an engine with a throttle, an accelerator control for operating the throttle, a transmission with a gearbox and a vehicle steering wheel;

the control having first, second and third servo devices connected to the control; the first servo device being connected to the accelerator control of the vehicle; the second servo device being connected to the gearbox of the transmission; the third servo device being for controlling the engine throttle;

the steering wheel including a rim and spokes; the control being mounted on the steering wheel of the motor vehicle on at least one of the spokes adjacent the rim, at a location to be manually operable by the driver's fingers while the driver's hand having the operating fingers maintains its grip on the steering wheel;

the control further comprising:

first signal generating means responsive to a first manual operation by the driver's finger for transmitting a first control signal to the first servo device for the accelerator control;

second signal generating means responsive to a second manual operation by the driver's finger for transmitting a second control signal to the second servo device to initiate and execute changing of gears in the vehicle transmission gearbox; and

third signal generating means responsive to a third manual operation by the driver's finger for generating a third control signal to the third servo device representative of a speed at which it is desired to maintain the vehicle for the throttle to be set to maintain the desired speed;

a control element movable in response to the driver's finger in first, second, third, fourth and fifth control directions, and in which the first signal generating means is responsive to movement of the control element in either of the first and second directions, the second signal generating means is responsive to movement of the control element in either of the third and fourth directions, and the third signal generating means is responsive to movement of the control element in the fifth direction.

5,335,744

KNOCK CONTROL SYSTEM FOR AUTOMOBILE INTERNAL COMBUSTION ENGINE

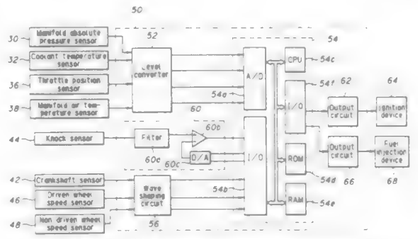
Yoshitaka Takasuka; Yasuyuki Kimura, and Akira Kato, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,460

Claims priority, application Japan, Dec. 27, 1991, 3-113269[U]

Int. Cl.[5] B60K *28/16*

U.S. Cl. 180—197 **10 Claims**



1. A system for controlling combustion knock occurring in an internal combustion engine, comprising:

a knock sensor;

a first means for detecting combustion knock in response to an output signal of said knock sensor;

second means for carrying out knock control by adjusting ignition timing of the engine in a retard direction when combustion knock is detected to occur;

third means for detecting a slipping condition of a driven wheel of a vehicle on which the engine is mounted;

fourth means for carrying out a traction control to reduce engine output torque in response to the detected slipping condition of said driven wheel at least through a supply of fuel to the engine; and

fifth means for discriminating if said traction control is in process;

wherein said second means discontinues said knock control if said traction control is found to be in process and wherein said fourth means carries out said traction control by leaning out a mixture to be supplied to the engine.

5,335,745

ENGINE MOUNTING SYSTEM

Dan Goor, Colorado Springs, Colo., assignor to Goor Associates, Inc., Colorado Springs, Colo.

Continuation-in-part of Ser. No. 832,365, Feb. 7, 1992, Pat. No. 5,213,179, which is a continuation-in-part of Ser. No. 727,891, Jul. 10, 1991, Pat. No. 5,178,230, which is a continuation-in-part of Ser. No. 630,172, Dec. 19, 1990, Pat. No. 5,076,389. This application Aug. 25, 1992, Ser. No. 934,964

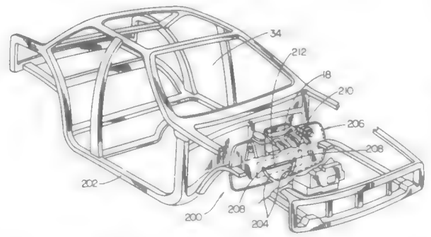
Int. Cl.[5] B60K *5/00;* **B62D** *21/15*

U.S. Cl. 180—232 **15 Claims**

1. An engine mounting system comprising:

a first and a second engine support bar, each said engine support bar having an upper portion and a lower portion;

an engine support wall movably engaged with said first and said second engine support bar to permit the engine support wall to move from said upper portion of each said engine support bar toward said lower portion; and



an engine support plate and rotatably engaged with said engine support wall.

5,335,746

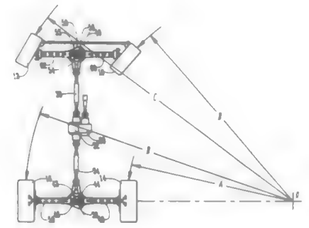
ELECTROMAGNETIC CLUTCH DRIVEN STEERABLE AXLE

Michael A. Betz, Huxley, Iowa, assignor to Sauer Inc., Ames, Iowa

Filed Jan. 19, 1993, Ser. No. 5,452

Int. Cl.[5] B62D *7/14;* **B60K** *23/04*

U.S. Cl. 180—248 **14 Claims**



1. In a powered, four-wheeled vehicle having a primary axle for propulsion, a secondary axle system for drive and steering comprising:

a source of rotary input power;

a mechanical secondary axle for receiving rotary power from said source and converting said rotary power to tractive power for at least one wheel of a set of wheels mounted to the ends of said axle;

a mechanism for steering connected to said set of wheels;

a steer sensing means operatively connected to said steering mechanism, such that a signal representative of the turning angle of said vehicle is generated;

a control means for receiving said steer signal and controlling an electrical current output by said control when said steer signal received exceeds predetermined limits; and

an electromagnetic clutch assembly attached to said secondary axle and operatively connected to said control and power source wherein said clutch assembly, based on said current output from said control, selectively transmits driving power from said power source to said axle to vary the power transmitted to said set of wheels and thereby the tractive capability of the vehicle in both the forward and reverse directions of movement.

5,335,747

ALL-WHEEL DRIVE FOR A MOTOR VEHICLE

Robert Müller, Monsheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

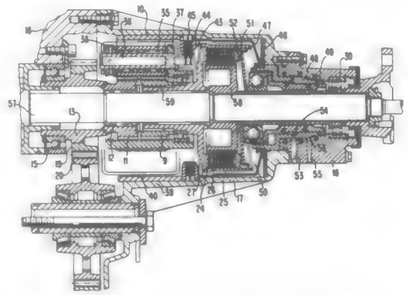
PCT No. PCT/EP91/01113, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO91/19620, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 15, 1991, Ser. No. 955,723

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1990, 4019764

Int. Cl.[5] B60K *17/35*

U.S. Cl. 180—249 **9 Claims**



1. An all-wheel drive for a motor vehicle, comprising:

a central drive shaft and an output shaft;

a first transmission line, which is coupled to a change-speed gearbox and to a first vehicle axle;

a second transmission line which leads to a second vehicle axle, wherein the first transmission line is of one-piece continuous with the central drive shaft and wherein, shiftable separating coupling and a permanently operative all-wheel interaxle differential system are disposed behind one another, by way of which, as a function of the rotational speed difference between the central drive shaft and the output shaft, the second vehicle axle can be connected and;

a shiftable locking coupling coupled to the all-wheel interaxle differential system and which controllably locks the all-wheel interaxle differential system such that the second transmission line is driven rigidly by the first transmission line.

5,335,748

ANTI-THEFT APPARATUS

Richard H. Wilson, 2012 Pierce St., No. 1, San Francisco, Calif. 94115

Filed Oct. 15, 1993, Ser. No. 136,138

Int. Cl.[5] B60R *21/00*

U.S. Cl. 180—270 **17 Claims**

1. Anti-theft apparatus in combination with a motor vehicle including:

a seatbelt having fastened and unfastened states;

a motor;

means for enabling and disabling the motor;

a seatbelt detection circuit for generating first and second signals depending on, respectively, the fastened state or the unfastened state of the seatbelt;

means for generating coded third signals; and

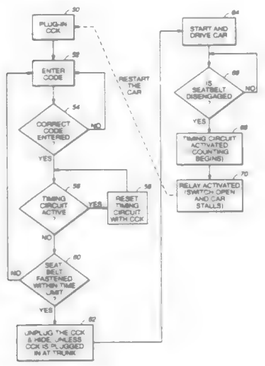
a timing circuit for receiving the first and second signals from the seatbelt detection circuit and the coded third signals from the coded-signal generating means,

the timing circuit generating fourth signals after a preselected period of time after receiving second signals from the seatbelt detection circuit,

VOL 1165 ISS 2 AG 9 1994 UMI

which fourth signals cause the motor enabling/disabling means to disable the motor and

the timing circuit generating fifth signals upon receipt of coded third signals from the coded-signal generating



means and first signals from the seatbelt detection circuit,

which fifth signals cause the motor enabling/disabling means to enable the motor.

5,335,749

CRASH SENSOR

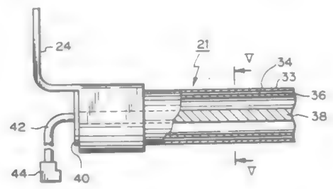
Masahiro Taguchi, Hazu; Motonori Tominaga, Okazaki; Toshiaki Matsuhashi, Gamagori, and Koichi Fujita, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya; Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, all of Japan

Filed Aug. 12, 1992, Ser. No. 928,474

Claims priority, application Japan, Aug. 13, 1991, 3-228460

Int. Cl.[5] **H01H** *35/14*

U.S. Cl. 180—274 **3 Claims**



1. A crash sensor to be attached to a door of an automobile, the door having a space extending along a width of the door; said crash sensor comprising:

a supporting member extending along the width of the door in said space; said supporting member having axially spaced ends;

means for mechanically connecting the supporting member to respective portions of the door;

said supporting member having sufficient rigidity to cause the supporting member to maintain its original state under a normal condition; and

means for detecting a shock occurring in the supporting member, itself, during an impact, and producing a signal indicating the occurrence of said impact,

said detecting means comprising a rigid member which extends to be coaxial with respect to the supporting member, and means for supporting the rigid member with respect to the supporting member so that they are usually spaced apart with each other, said rigid member and the supporting member having at least portions having electrical conductivity on their surfaces facing each other, which are usually spaced form each other, the occurrence of an impact allowing an electrical closed circuit to be created between the surfaces when they are brought into contact with each other upon displacement as a result of an impact occurring so as to obtain an electric signal indicating the occurrence of said impact.

5,335,750

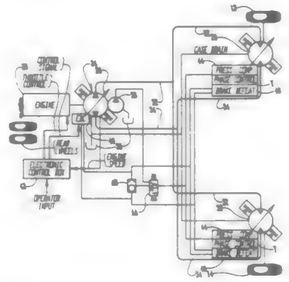
DUAL MODE TRANSMISSION CONTROL

Kerry G. Geringer; Harlos L. Barnum, and Lon A. Jennings, all of Ames, Iowa, assignors to Sauer Inc., Ames, Iowa

Filed Jun. 11, 1992, Ser. No. 897,272

Int. Cl.[5] **B60K** *17/00*

U.S. Cl. 180—307 **10 Claims**



1. A wheeled vehicle having a hydrostatic drive mechanism, and working components normally operated while said vehicle is moving, comprising:

a vehicle chassis;

travel wheel units secured to and supporting said vehicle;

an engine on said chassis for supplying rotary power to said travel wheel units;

a control compartment on said chassis;

a single hydrostatic transmission on said chassis operatively connected to said engine and said travel wheel units;

said transmission having a variable displacement hydraulic pump and at least one variable displacement motor;

electronic and hydraulic control means accessible in said control compartment and connected to said hydrostatic transmission to control said hydrostatic transmission to coordinate the operation of said engine and said travel wheel units;

said electronic and hydraulic control means being operatively connected to said pump and said variable motor;

said electronic and hydraulic control means having a travel mode wherein the displacements of said pump and said variable motor are responsive to the speed of said engine and a work mode wherein the displacements of said pump and said variable motor are independent of the speed of said engine, with control components to coordinate said modes and to permit separate operation of said modes; and

said electronic and hydraulic control means includes a means for phasing the displacements of said variable displacement pump and said variable displacement motor in said hydrostatic transmission to achieve higher vehicle speeds comprising a means connected to said electronic and hydraulic control means for communicating a displacement command signal to said pump and proportionately to said variable motor; a phase control means operatively connected to said variable motor and responsive to said displacement command signal to decrease the displacement of said variable motor when said displacement command signal to said pump reaches a predetermined level.

5,335,751

CONSOLE BOX FOR AN AUTOMOBILE

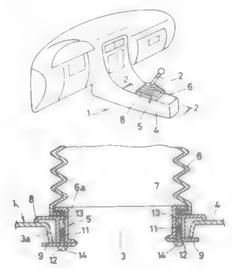
Kenji Kuroki, Hamamatsu, Japan, assignor to Suzuki Motor Corporation, Tokyo, Japan

Filed May 12, 1993, Ser. No. 60,447

Claims priority, application Japan, May 26, 1992, 132993

Int. Cl.[5] **B60K** *23/00*

U.S. Cl. 180—336 **4 Claims**



1. A console box for an automobile having a boot-securing bracket which is fastened to the peripheral edge of a shift lever opening formed in the console box body and a shift lever boot which is installed over said bracket, said console box comprising:

a pair of vertically spaced flanges formed on said bracket, said bracket further including a tightening portion, said tightening portion supporting said flanges and maintaining said flanges in vertically spaced positions with respect to one another, a receiving portion for said shift lever boot being positioned on said tightening portion, the lower flange of said pair of flanges being connected to said tightening portion by a hinge, said lower flange being folded at said hinge around said tightening portion such that said upper and lower flanges are arranged in vertically spaced juxtaposition, said lower flange being fastened to said tightening portion at a point spaced form the location of said hinge, said peripheral edge of said opening for said shift lever formed in said console box body being clamped between said flanges.

5,335,752

AUTOMATIC RETURN LADDER FOR USE ON LAND CONVEYORS

Frank Kozlowski, 1766 Yardville-Hamilton Square Rd., Trenton, N.J. 08650

Filed Nov. 30, 1992, Ser. No. 982,867

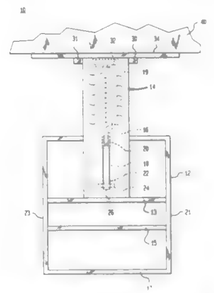
Int. Cl.[5] **E06C** *5/00*

U.S. Cl. 182—127 **14 Claims**

1. A ladder for use on a land conveyance, said ladder comprising:

a ladder section having a pair of side members and a plurality of step members being vertically spaced apart from each other and secured to said side members; and

means for resiliently mounting said ladder section to said land conveyance including a spring having a first end connected to said land conveyance and a second end connected to said ladder section, said spring rotating said ladder section in a forward and backward direction from the vertical position of said ladder section, wherein said ladder section is displaced during movement of said land conveyance upon contact with an object and said spring



automatically returns said ladder to its original position after contact of said object.

5,335,753

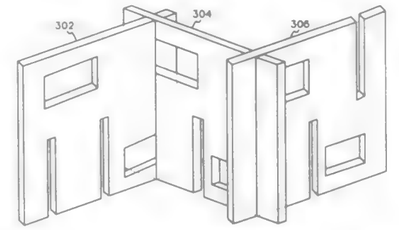
COLLAPSIBLE SUPPORT STAND

Michael J. Campbell, 7986 Ingalls St., Arvada, Colo. 80003

Filed Jun. 22, 1993, Ser. No. 80,740

Int. Cl.[5] **E04G** *1/00*

U.S. Cl. 182—181 **10 Claims**



1. A workpiece supporting stand for supporting a workpiece horizontally, said stand comprising:

a first panel having a generally rectangular shape with two slots therein, wherein said slots are located on opposite edges of said panel, adjacent opposite corners of said panel, and further wherein said slots are substantially the same width as a thickness of said panel, said panel further comprising

a pair of grooves, located adjacent a panel edge containing a slot, wherein one groove of said pair is located on a side of said panel opposite a side of said panel containing the other groove of said pair; and

at least one bracket mounted in said pair of grooves; and

a second panel, identical in shape to said first panel, and connected to said first panel by mating one of said at least two slots of said first panel to one of two slots of said second panel.

5,335,754

SELF-LEVELLING LADDER

Ross Gibson, 856 Finlayson Road, R.R. 6, Victoria, British Columbia, Canada V9B 5T9

Filed Jul. 22, 1993, Ser. No. 94,985

Int. Cl.[5] **E06C** *7/44*

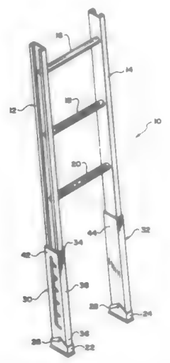
U.S. Cl. 182—204 **1 Claim**

1. A self-levelling ladder comprising:

a pair of spaced-apart side rails, each having a bottom por-

VOL 1165 ISS 2 AG 9 1994 UMI

tion, each said rail having an elongated slot in the bottom portion which is horizontal when the ladder is vertical;
a plurality of spaced-apart rungs extending between the side rails;
a pair of elongated sleeves, each said sleeve having a top and a bottom and slidably embracing the bottom portion of one of the rails, said each sleeve having opposite sides, one of said sides having an elongated slot extending between the top and the bottom of the sleeve and a plurality of



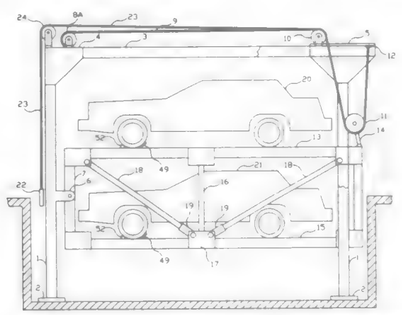
spaced-apart sloping teeth thereon, the teeth being sloped upwardly towards the slot in said each sleeve when the ladder is erect, the teeth being separated by short, angled slots, the short slots communicating with elongated slot in said each sleeve; and
a pawl connected to each of the rails of the ladder, each said pawl being a pin-like member slidably received in the elongated slot of one said side rail and being horizontally movable to engage or disengage from the teeth of one said sleeve.

5,335,755

FAIL-SAFE LOAD SUPPORT SYSTEM

Harry Miller, 5136 N. 68th Pl., Scottsdale, Ariz. 85253-7007

Filed Nov. 30, 1993, Ser. No. 159,368
Int. Cl.[5] B60S *13/00*
U.S. Cl. 187—8.77 **5 Claims**



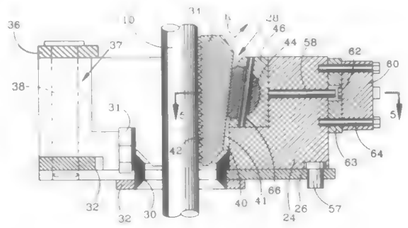
1. A structural fail-safe support system for storing vehicles comprising:
a stationary structure supported by the ground,
an inclinable rigid structure supported by said stationary structure,
a two-bearing axle on said stationary structure providing a pivot for said inclinable rigid structure, which does not change shape when tilted,
two parallel independent means to rotate said inclinable rigid structure about the said axle on the said stationary structure providing a fail- safe characteristic if one of the said independent means should fail,
two parallel rectangular upper and lower decks on said inclinable rigid structure,
a compression member which connects the center of the full span of the said upper deck with the center of the full span of the said lower deck dividing the two said full spans into four smaller spans which can support a greater total load,
two tension members which connect the bottom of the said compression member to the front left and right corners of the said upper deck to provide compression forces on the said bearings of the said axle on the said stationary structure,
two tension members which connect the bottom of the said central compression member to the left and right rear corners of the said upper deck to provide reaction forces for said two means which rotate the said inclinable rigid structure,
means to measure the forces on each of the four said tension members,
means to adjust the forces on each said tension member to values which constrain the said compression member from deflecting when the said upper and lower decks are subjected to loads,
a calibration procedure to equalize the reaction forces on the two said axle bearings and the two said inclinable rigid structure rotation means,
a secondary lift system to counteract the empty weight of the said inclinable structure, eliminating the load of the said empty weight from the primary said independent means for rotating the said inclinable structure, and
an automatic apparatus for restraining the motion of a stored vehicle on the said inclinable deck.

5,335,756

SLIP-TYPE GRIPPING ASSEMBLY

Dennis J. Penisson, Raceland, La., assignor to Bilco Tools, Inc., Houma, La.

Filed Dec. 22, 1992, Ser. No. 994,640
Int. Cl.[5] E21B *19/10*
U.S. Cl. 188—67 **23 Claims**



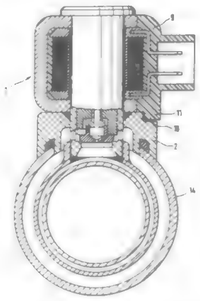
1. A slip-type gripping assembly for gripping an object, comprising:
an outer body defining a longitudinal through opening for receipt of the object and having an inner side;
a plurality of slip bodies disposed generally within the outer body, circumferentially spaced about the through opening, each slip body being radially movable toward and away from the locus of the object, pivotable about a respective generally longitudinal axis generally circumferentially centered with respect to the slip body, and also pivotable about a respective tangential axis, and each slip body having a radially inner side with gripping means thereon and a radially outer side generally opposed to the inner side of the outer body;
respective force transfer means cooperative between each of the slip bodies and the outer body for transferring radial force between the outer body and the slip body while permitting pivoting of the slip body about its respective longitudinal and tangential axes.

5,335,757

HYDRAULIC ADJUSTABLE VIBRATION DAMPER

Heinz Knecht, and Hubert Beck, both of Eitorf, Fed. Rep. of Germany, assignors to Boge AG, Eitorf, Fed. Rep. of Germany

Filed Nov. 4, 1992, Ser. No. 971,483
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137330
Int. Cl.[5] F16F *9/46*
U.S. Cl. 188—299 **9 Claims**



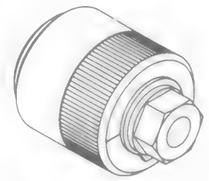
1. A vibration damper for a motor vehicle, said vibration damper comprising:
a first tube having a first end, a second end, a side and a hole;
a work cylinder disposed within said first tube;
a first chamber and a second chamber disposed within said work cylinder;
a piston assembly comprising a piston rod and a piston connected to said piston rod, said piston assembly being disposed within said work cylinder, said piston rod extending past said first end of said first tube, and said piston separating said first chamber from said second chamber;
a first end piece attached to said first end of said first tube, said first end piece having a hole, and said piston rod running through said hole in said first end piece;
a second end piece rigidly connected to said second end of said first tube;
a controllable valve for bypasing damping fluid bbetween said first chamber and said second chamber, said controllable valve comprising a valve body, which valve body has a first screw fitting;
a second screw fitting disposed within said first tube, said second screw fitting threadedly engaging said first screw fitting;
a centering ring disposed in said hole in said first tube, said centering ring being disposed about said controllable valve, said centering ring being sealed against said first tube, said centering ring stiffening said controllable valve against angular movement, said controllable valve being sealed against said centering ring, and said centering ring having a hole;
said centering ring has a first end and a first extension for aligning said centering ring in said hole in said first tube;
said first extension is disposed on said first end of said centering ring;
said first extension is disposed in said hole in said first tube;
said centering ring has means for bracing said centering ring against said first tube; said centering ring is braced against said first tube with said means for bracing said centering ring against said first tube;
said centering ring has first means for holding a gasket, which first means is disposed on said first end of said centering ring;
said means for bracing said centering ring against said first tube comprises a second extension disposed on said first end of said centering ring;
said second extension is in contract with said first tube;
said first means for holding a gasket comprises a groove in said centering ring, said groove being disposed between said first extension and said second extension;
said vibration damper further comprises a first gasket for sealing said centering ring against said first tube, said first gasket being disposed in said groove in said centering ring, and said first gasket being compressed between said centering ring and said first tube, thereby sealing said centering ring against said first tube;
said vibration damper further comprises a cap member for said valve body, said cap member having a hole, said cap member being attached to said valve body, and said cap member being secured against twisting relative to said valve body; and
a second tube, said second tube being disposed in said first tube, said work cylinder being disposed in said second tube, said second tube being attached to said work cylinder, and said second screw fitting being attached to said second tube.

5,335,758

ANTI-THEFT VEHICLE BRAKE SUPERVISING DEVICE

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Filed Apr. 21, 1993, Ser. No. 51,081
Int. Cl.[5] B60T *11/00*
U.S. Cl. 188—353 **4 Claims**



1. An anti-theft vehicle brake-supervising device adapted to be connected in a fluid actuated brake system between a pressure generating brake actuating member and at least one wheel brake actuator, said device selectively activated to prevent reverse flow of a fluid from said at least one wheel brake actuator back to the vehicles pressure generating brake actuating member to thereby maintain the braking function of said fluid within said wheel brake actuator, the improvement comprising a two-cavity flow chamber having a first fluid connection connected from a proximal end of a first flow chamber to said vehicle pressure generating brake actuating member, radially oriented first passageways and a bypass passageway having a one-way valve operatively place connecting said first flow chamber to a second flow chamber, a stepped piston having a small end with a preformed seal mounted thereon and a large end with a preformed seal mounted thereon, said small end being in constant communication with system pressure in said second flow chamber on one side of said preformed seal mounted thereon and vented to atmospheric pressure on the other side of said preformed seal by means of a port connecting the volume between said preformed seal on said large end of said piston and said preformed seal on said small end of said piston with atmospheric pressure, said piston slidably mounted with sufficient travel to move and block said first passageways when system fluid pressure and flow are allowed to communicate with a non-vented side of said preformed seal on said large

VOL 1165 ISS 2 AG 9 1994 UMI

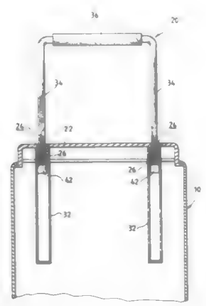
end of said piston, preventing fluid flow from said first flow chamber to said second flow chamber except through said bypass passageway and said one-way valve, a second fluid connection connected from a distal end of said second flow chamber to said vehicle wheel brake actuator, said first and second fluid connections cooperating with said first passageway between said first and second flow chambers to allow opposite direction fluid flow between said vehicle pressure generating brake actuating member and said at least one wheel brake actuator through said first and second flow chambers, means to selectively allow or prevent fluid pressure and flow being directed to said non-vented side of said preformed seal on said larger end of said piston.

5,335,759

EXTENDIBLE HANDLE ASSEMBLY FOR WHEELED LUGGAGE

Tsang-Chieh Yeh, No. 13-1 Alley 2 Lane 129 Chukwang Road, Chungho City Taipei Hsien, Taiwan

Filed Jun. 8, 1993, Ser. No. 73,082
Int. Cl.[5] A45C *9/00, 13/22, 13/26*
U.S. Cl. 190—115 **5 Claims**



1. An extendible handle assembly for wheeled luggage comprising:

a) a pair of cylindrical members for mounting to the luggage, each cylindrical member having a first central axis and a longitudinal hole extending therethrough, the longitudinal hole having a second central axis that is skewed with respect to the first central axis;

b) a tubular member having a first and concentrically engaged on each cylindrical member and forming a noncoaxial extension of the longitudinal hole;

c) a pair of elastically deformable elongate bar members, each bar member including an upper end and a lower end, a handle means joining the upper ends and each lower end being provided with a friction sleeve thereon;

d) each bar member being slidably received through a longitudinal hole to dispose the lower end within a tubular member and permit the bar members to be disposed between fully extended and fully retracted positions by respectively pulling and pushing the handle means; and

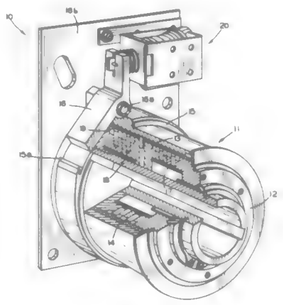
e) wherein each longitudinal hole deforms each elongate bar member in alignment with the second central axis, thereby urging each friction sleeve into frictional engagement against an internal wall of the tubular member to permit the bar members to be maintained at any desired position between the fully extended and fully retracted positions.

5,335,760

MAGNETIC FLUX BREAKER FOR A SOLENOID IN A WRAP SPRING CLUTCH

Michael F. Leone, Sewell, N.J., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 5, 1993, Ser. No. 102,408
Int. Cl.[5] F16D *27/10*
U.S. Cl. 192—26 **20 Claims**



13. A wrap spring clutch comprising:

an input hub having a cylindrical outer surface portion;

an output hub having a cylindrical outer surface portion;

a drive spring wrapped about portions of said cylindrical outer surfaces of said input hub and said output hub; and

a solenoid actuator including:

a housing including an end portion, said end portion of said housing being formed from a first material;

an armature disposed within said housing for movement relative thereto and connected to operate said drive spring, said armature being formed from a second material;

an electromagnetic coil supported on said housing for selectively generating an electromagnetic field to move said armature toward said end portion of said housing; and

a flux breaker disposed between said armature and said end portion of said housing to prevent said armature from contacting said end portion of said housing when said electromagnetic field is generated, said flux breaker being formed from a third material which is harder than said first and second materials.

5,335,761

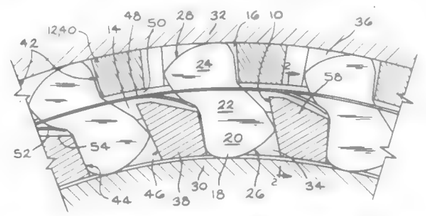
CLAMPING MEMBER FREE-WHEEL WITH AT LEAST ONE PLASTIC CAGE RING

Hermann Leitz, deceased, late of Heidelberg, Fed. Rep. of Germany by Sigrid Leitz, heiress , assignor to Borg-Warner Automotive GmbH, Ketsch, Fed. Rep. of Germany

PCT No. PCT/DE91/00869, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO92/08907, PCT Pub. Date May 29, 1992
PCT Filed Nov. 11, 1991, Ser. No. 854,635
Claims priority, application European Pat. Off., Nov. 9, 1990, 90121441.1
Int. Cl.[5] F16D *41/07*
U.S. Cl. 192—45.1 **40 Claims**

1. A clamping element free-wheel comprising, in combination: an inner ring (**32, 138**) and an outer ring (**32, 140**); a plurality of clamping elements (**18, 116**) arranged between the rings (**30, 32; 138, 140**), the clamping elements (**18, 116**) each having an outer radial thickening (**24**), a central waist (**22, 152**) and an inner radial thickening (**20, 150**) of a specified height; and at least one cage ring (**10, 142**) that guides the clamping elements (**18, 116**) in a synchronous manner and is arranged on

the height of the radial inner thickening (**20, 150**) of the clamping elements, whereby the cage ring consists of two cage ring segments (**34, 144**) that are axially spaced apart and axial webs (**38, 146**) that connect the cage ring segments and whereby pockets (**14, 148**) for the clamping elements (**18, 116**) are formed between the webs and whereby the cage ring (**10, 142**) consists of viscoelastic plastic material; wherein each of the



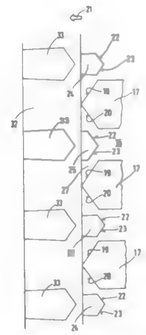
webs (**38, 146**) have at least one axially oriented side of a radial thickness that generally corresponds with the height of the inner radial thickening (**20, 150**) of the clamping elements (**18, 116**) such that the side is impinged on by a clamping elements (**18, 116**) during a rebound of such clamping element caused by an overload and each of the webs (**28, 146**) includes a section (**58**) that protrudes radially outward over the cage ring segments (**34, 144**).

5,335,762

CLUTCH WITH A SYNCHRONIZING DEVICE

Reimund Raue, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

PCT No. PCT/EP91/02411, § 371 Date Jun. 3, 1993, § 102(e) Date Jun. 3, 1993, PCT Pub. No. WO92/11473, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 14, 1991, Ser. No. 70,356
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1990, 4040330
Int. Cl.[5] F16D *23/08, 11/00, 23/06*
U.S. Cl. 192—48.91 **6 Claims**



1. A clutch (**12, 13**) having a synchronizing device comprising:

at least one clutch body (**31**) having a friction cone (**30**) and fixedly supporting a gear (**10, 11**) and a plurality of clutch teeth (**33**), said clutch body (**31**) being rotatably supported on a first shaft (**3**);

at least one synchronizing ring (**28**) having a countercone (**29**), positioned for engagement with said friction cone (**30**), and supporting a plurality of locking teeth (**24, 25, 26**) which have locking surfaces (**22, 23**);

at least one slidable sleeve (**14**) having a plurality of shift teeth (**17, 18**), with oblique end-face surfaces (**19, 20**), being at least partially interactable with locking surfaces (**22, 23**) of said plurality of locking teeth (**24, 25, 26**); and

at least one sleeve guide (**34**) being supported for rotation with said first shaft (**3**), said at least one slidable sleeve (**14**) being axially movable along a surface of said at least one sleeve guide (**34**) to facilitate engagement of a desired gear;

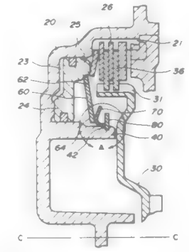
wherein some of said plurality of locking teeth (**24, 25, 26**) have, along a peripheral direction, a relatively wide width and a remainder of said plurality of locking teeth (**24, 25, 26**) have, along a peripheral direction, a relatively narrow width whereby said narrower width locking teeth (**24**) have more play in a space formed between adjacent pairs of said shift teeth (**17, 18**) than said wider width locking teeth (**25, 26**) and, during engagement of said clutch, said locking surfaces (**22, 23**) of said narrower width locking teeth (**24**) mesh with said oblique surfaces (**19, 20**) of said shift teeth (**17, 18**) prior to said wider width locking teeth (**25, 26**) meshing with said oblique surfaces (**19, 20**) of said shift teeth (**17, 18**).

5,335,763

SPRING RETAINER FOR CLUTCH PISTON

Tatsuya Katoh, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Mar. 18, 1993, Ser. No. 33,889
Claims priority, application Japan, Mar. 19, 1992, 4-92460
Int. Cl.[5] F16D *25/06*
U.S. Cl. 192—85 AA **9 Claims**



1. A spring retainer for a piston for use in a hydraulic clutch drum having a shank formed with a groove, a snap ring engaged with the groove and a dish spring, said spring retainer comprising: a first portion having a rear end abutting the snap ring on one side thereof and a forward end, said first portion being in the form of a cylinder which extends from the snap ring along an axial direction of the shank; and

a second portion having a first end connected to said forward end of said first portion and a second end which is free, said second portion having a sectional shape with a diameter expanding from said first portion along an axial direction of the shank, said second portion abutting the dish spring and facing the snap ring with a clearance.

5,335,764

POSITIVELY ENGAGING CLUTCH

Max Leitner, Steyr, and Gerhard J. Frühwirth, Schönau, both of Austria, assignors to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Apr. 20, 1992, Ser. No. 871,076
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1991, 413128
Int. Cl.[5] F16D *11/10, 25/08, 43/284*
U.S. Cl. 192—85 C **21 Claims**

1. An interengaging clutch, comprising

first and second rotatable clutch halves, said first clutch half

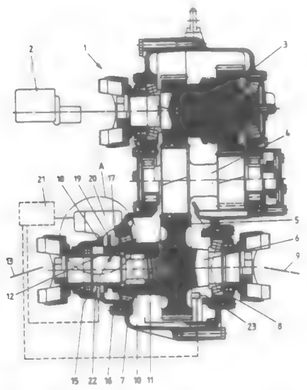
VOL 1165 ISS 2 AG 9 1994 UMI

being a driven clutch element connected to a first wheel drive train, said second clutch half being a driving clutch element and being connected to a main drive train and to a second wheel drive train, one of said first and second clutch halves being movable along an axial direction,

said first and second clutch halves including engagement means with contact surfaces for engaging said first and second clutch halves together, torque being transmitted between said clutch halves when said first and second clutch halves are engaged,

first and second rotational speed sensors which produce signals indicative of the rotational speeds of said first and second clutch halves,

a unidirectional servo component connected to said movable clutch half, said servo component being pressure actuated on one side only so as to move said movable clutch half along said axial direction into engagement with said other clutch half,



electronic control means for causing said servo component to act in a first direction only so as to bring said movable clutch half into engagement with said other clutch half when the signals produced by said first and second rotational speed sensors indicate that the difference in rotational speeds of said first and second clutch halves is greater than a first threshold value but less than a second threshold value, and

spring means permanently acting on said servo component in a second direction which is opposite to said first direction with a force which is sufficient to overcome frictional forces generated on said contact surfaces when the transmitted torque falls to a predetermined level and thereby causes said movable clutch half to disengage from said other clutch half when the transmitted torque falls below said predetermined level.

5,335,765

WET-TYPE FRICTION MEMBER WITH GROOVES SHAPED FOR IMPROVED OIL FILM REMOVING EFFECT

Norio Takakura, and Jin Takahashi, both of Chitose, Japan, assignors to Dynax Corporation, Hokkaido, Japan

Filed Jan. 27, 1993, Ser. No. 9,452

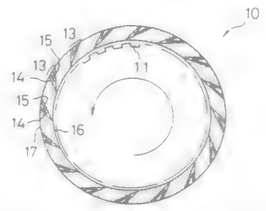
Claims priority, application Japan, Jan. 31, 1992, 4-009133[U]; Dec. 15, 1992, 4-091109[U]

Int. Cl.[5] F16D *69/00, 13/64*

U.S. Cl. 192—107 R **7 Claims**

1. A friction engaging element comprising a wet-type friction member having a center and means for rotating said friction member in a first direction about an axis of rotation extending through said center, and having a disk-like friction engagement surface with an inner edge and an outer edge, and grooves formed in said friction engagement surface, said grooves including a first set of grooves and a second set of grooves,

each groove of the first set having an inner end and an outer end, and extending from said inner edge toward said outer edge in a second direction opposite to said first direction at a first angle measured relative to a first imaginary radius passing through said center and the inner end of the groove, and



each groove of the second set extending obliquely toward said outer edge, in a second direction opposite to said first direction, from an intermediate location on a first groove between said inner and outer edges, at a second angle, measured in relation to a second imaginary radius passing through said center and said intermediate location, said second angle being greater than the first angle of the last-mentioned groove of the first set.

5,335,766

DEVICE FOR FEEDING FILTERS TO A FILTER ASSEMBLY MACHINE

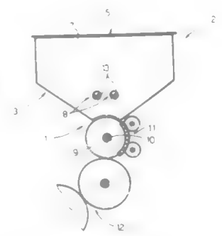
Salvatore Rizzoli, Bologna, and Bruno Belvederi, S. Martino di Monte S. Pietro, both of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

Filed Jul. 17, 1992, Ser. No. 915,943

Claims priority, application Italy, Jul. 19, 1991, B091A 000267

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—347.1 **7 Claims**



1. A device (3) for feeding filters to a filter assembly machine (2), said device (3) comprising a feedbox (5) having two facing lateral walls (6, 7) arranged parallel and at a given distance from each other; and conveying means (8) for feeding filter portions (4), of a length at most equal to said distance, into and perpendicular to the walls (6, 7) of said feedbox (5); characterized by the fact that said conveying means (8) comprise at least an elongated body (13) fitted through the feedbox (5), and rotating abut its axis (14) perpendicular to said lateral walls (6, 7); a supply conduit (32) for said filter portions (4), connected to said elongated body (13); passage means (24) formed in said elongated body (13), for enabling said conduit (32) to communicate internally with said feedbox (5); push means (45) for axially feeding said filter portions (4) along said conduit (32) and said passage means (24); and actuating means (17, 20, 21) for rotating said elongated body (13) and said conduit (32) abut said axis (14).

5,335,767

ARRANGEMENT FOR THE SORTING OF PIECE GOODS

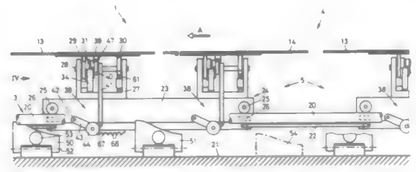
Viktor Killer, Riedikon, and Willy Maier, Kloten, both of Switzerland, assignors to Muller Martini Versand Systeme AG, Zurich, Switzerland

Filed Oct. 29, 1992, Ser. No. 968,271

Claims priority, application Switzerland, Oct. 29, 1991, 3167/91-0

Int. Cl.[5] B65G *47/46*

U.S. Cl. 198—365 **16 Claims**



1. A sorting plant for piece goods which comprises:

a closed rail that forms a loop;

a plurality of carts that are coupled with each other to form an endless chain of carts and are guided on said rail, wherein each of said carts is provided with two receptacles that are arranged behind each other in a transport direction and can be swiveled about an axis that extends in the longitudinal direction of said cart, and wherein said receptacles can be tilted from a horizontal starting position into a tilting position and each said cart is provided with two activation elements for the independent tilting of both of said receptacles between the two said positions;

a drive to move said chain of carts along said rail;

at least one loading station arranged along said loop to order to load said receptacles with the piece goods;

a plurality of target stations arranged along said loop to receive the piece goods, wherein each target station is at least as long in said transport direction as the sum of the length of both said receptacles of each said cart;

two switching elements each assigned to each said target station and which can be individually switched between an inactive and an active condition, wherein said switching elements in their active condition activate one of said two activation elements on the passing cart to tilt the respective receptacle into said tilting position;

a control device by means of which one of said target stations is assigned to the piece goods that are loaded onto said cart at said loading station, whereby said two switching elements of each target station can be separately addressed by said control device in such a way that either both of said switching elements of said target station are simultaneously switched into said active condition, or only a selected one of said switching elements or none of said switching elements is switched into said active condition during passage of the individual cart, so that both of said receptacles of said cart are tilted simultaneously, or that only one or none of the two receptacles is titled at said target station; and

at least one return element arranged along said loop in order to return said tilted receptacles into their said horizontal starting position.

5,335,768

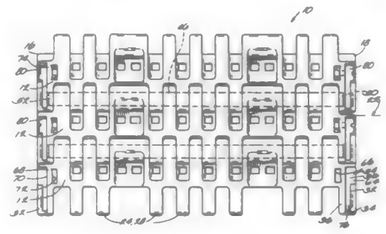
CONVEYOR CHAIN ASSEMBLY

Timothy J. Schladweiler, West Bend, Wis., assignor to Rexnord Corporation, Milwaukee, Wis.

Filed Mar. 12, 1993, Ser. No. 30,621

Int. Cl.[5] B65G *17/06*

U.S. Cl. 198—853 **28 Claims**



1. An apparatus for use in forming a conveyor chain, said apparatus comprising:

a module including a first set of link ends projecting forwardly of said module and a second set of link ends projecting rearwardly of said module with respect to the direction of movement of the conveyor chain, an intermediate section integrally joining said first and second set of link ends, said module including opposite ends, at least some of said link ends including coaxially aligned openings adapted to receive a chain pin having a longitudinal axis, and at least one of said opposite ends including a socket; and

a chain pin retaining plug detachably mounted in said socket for pivotal movement wherein a portion of said chain pin retaining plug is moveable between a first position wherein said portion of said chain pin retaining plug does not restrict axial movement of the chain pin and a second position wherein said portion of said chain pin retaining plug does restrict axial movement of the chain pin.

5,335,769

GLASS CONTAINER INTERNALLY COATED WITH A SILICONE AND HAVING AN IN SITU FREEZE-DRIED SOLID PRODUCT THEREIN, AND PROCESS OF MAKING THE SAME

Karin Klokkers-Bethke, Rödermark, and Wilfried Fischer, Burscheid, both of Fed. Rep. of Germany, assignors to Schwartz Pharma AG, Monheim, Fed. Rep. of Germany

Continuation of Ser. No. 693,925, Apr. 29, 1991. This application Nov. 5, 1992, Ser. No. 972,076

Claims priority, application Fed. Rep. of Germany, May 8, 1990, 4014665

Int. Cl.[5] A61B *19/00*

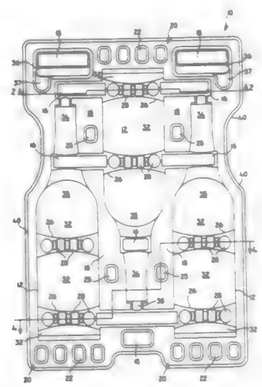
U.S. Cl. 206—438 **5 Claims**

1. An article of manufacture comprising:

a sealed glass container having its inside surface coated with a silicone material and containing an in situ freeze-dried dense compact coherent amount of solid prostaglandin-E_1.

VOL 1165 ISS 2 AG 9 1994 UMI

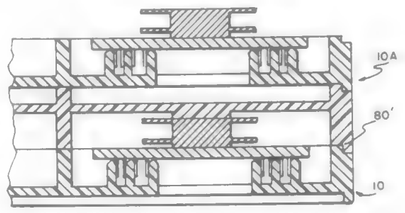
5,335,770
MOLDED PULP FIBER INTERIOR PACKAGE CUSHIONING STRUCTURES
Roger J. Baker, Portland; Matthew P. Noel, Windham, and Brian C. McCullough, Standish, all of Me., assignors to Moulded Fibre Technology, Inc., Westbrook, Me.
Filed Aug. 6, 1992, Ser. No. 927,061
Int. Cl.[5] B65D *81/06*
U.S. Cl. 206—433 44 Claims



1. A new structure for interior package cushioning to protect products shipped in a package comprising:
at least one molded pulp fiber interior package cushioning (IPC) structure formed with at least one cavity defining a cavity surface for receiving and holding a product to be shipped;
said IPC structure comprising a plurality of structural ribs in the form of elongate hollow ridges molded n the IPC structure and extending between different locations on the IPC structure for reinforcing the IPC structure between the locations, said structural ribs of the IPC structure comprising intersecting ribs extending in two orthogonal elongate directions relative to each other;
a product having a breakable element held in said cavity contacting the cavity surface, said breakable element being subject to breakage at a threshold acceleration;
said structural ribs comprising crushable structures positioned and distributed around the cavity of the IPC structure with the bottoms of the structural ribs being spaced from the cavity surface and being constructed for protecting a product held in the cavity by crushing and absorbing energy in response to any mechanical shock and vibration accelerations imparted to the package exceeding said threshold acceleration and by limiting accelerations transmitted to the product to accelerations up to said threshold acceleration.

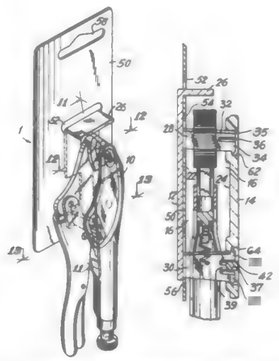
16. A new structure for interior package cushioning to protect products shipped in a package comprising:
a plurality of molded pulp fiber interior package cushioning (IPC) structures each formed with a plurality of cavities, each cavity defining at least one cavity surface for receiving and holding a product to be shipped;
said IPC structures each comprising a plurality of structural ribs in the form of elongate hollow ridges molded in the IPC structure and extending between different locations on the IPC structure for reinforcement between the locations;
a plurality of products each having a breakable element, said products being held in said cavities contacting the respective cavity surface, said breakable elements being subject to breakage at a threshold acceleration;
said structural ribs comprising crushable structures positioned and distributed around the cavities of the IPC structure with the bottoms of the structural ribs being spaced from the respective cavity surfaces for protecting products held in the cavities, said structural ribs being constructed to crush and absorb energy in response to any mechanical shock and vibration accelerations imparted to the package exceeding said threshold acceleration and to limit accelerations transmitted to the products to accelerations up to said threshold acceleration;
said IPC structures comprising a plurality of structural pods in the form of hollow recesses or wells each being substantially symmetrical in cross section around a central axis and being molded with selected depths in the IPC structure at different locations, said structural pods comprising crushable structures positioned and distributed around the cavities of the IPC structure with the bottoms of the pods being spaced from the respective cavity surfaces to provide additional protection for a product held in the cavity by crushing and absorbing energy in response to any mechanical shock and vibration accelerations imparted to the package exceeding said threshold acceleration and by limiting accelerations transmitted to the product to accelerations up to said threshold acceleration, and for directing stacking and loading forces;
said pods including at least one array of pods comprising at least three pods spaced closely together adjacent to each other forming valleys between the pods of the array on the outside of the array of pods, said array of pods being positioned on the IPC structure to enhance product protection, and resist crushing;
said array of pods being formed with fillets of molded pulp fiber deposited in the valleys between adjacent pods on the outside of the array of pods forming a thickness of molded pulp fiber in said valleys greater than the thickness of molded pulp fiber at the adjacent pods, said fillets filling a portion of the valleys between adjacent pods partially joining the pods together for adjusting the crushability of the array of pods by increasing resistance to crushing and to hinging or bending at the valleys between adjacent pods;
said pods being tapered in cross section from a greater cross section area dimension at the opening of the recess or well of the pod to a smaller cross section area dimension at the bottom of the recess or well, said taper being substantially symmetrical about a central axis of the pod.

5,335,771
SPACER TRAYS FOR STACKING STORAGE TRAYS WITH INTEGRATED CIRCUITS
Robert H. Murphy, Merrimack, N.H., assignor to R. H. Murphy Company, Inc., Amherst, N.H.
Continuation of Ser. No. 675,381, Mar. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 587,966, Apr. 25, 1990, Pat. No. 5,103,976. This application Apr. 14, 1993, Ser. No. 47,702
Int. Cl.[5] B65D *73/02*
U.S. Cl. 206—328 14 Claims



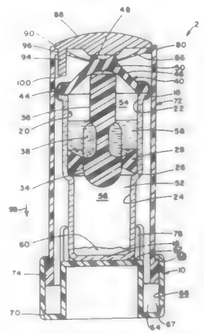
1. A spacer tray for interposition between two storage trays for integrated circuits wherein, in a horizontal orientation of the storage trays, each integrated circuit has a housing means with horizontal top and bottom surfaces and terminals extending therefrom, wherein each storage tray has framework portions for defining discrete storage pocket areas for supporting the integrated circuits and a peripheral wall having top and bottom edges with first and second complementary engaging means on top and bottom edges respectively and with a predetermined depth between an upper horizontal plane at the top peripheral wall edge and a horizontal plane coextensive with the bottom surface of a stored integrated circuit and wherein the integrated circuit housing means protrudes beyond the upper horizontal plane, sad spacer tray comprising:
A. open framework means coextensive with the storage tray framework with portions defining discrete pocket areas and a peripheral wall of a predetermined height having top and bottom edges with first and second engaging means respectively that interlock with the second and first engaging means of adjacent storage trays respectively thereby to position said spacer tray with respect to an adjacent storage tray, and
B. tab means for overlying a portion of the top housing surface, said tab means extending from said storage tray framework, partially spanning from said spacer tray pocket area and being offset from the storage tray support plane by a distance corresponding to the integrated circuit height thereby to retain an integrated circuit stored in a storage pocket area of a storage tray below said spacer tray.

5,335,772
TOOL DISPLAY PACKAGE
Thomas M. Chervenak, Beatrice; Jeffrey Spanski, Lincoln, and Steven Zlomke, Beatrice, all of Nebr., assignors to Petersen Manufacturing Co., Inc., DeWitt, Nebr.
Filed Dec. 28, 1992, Ser. No. 997,456
Int. Cl.[5] A45C *11/26*
U.S. Cl. 206—349 45 Claims



1. A tool display package, enabling a user to manipulate a tool having a first tool opening and a second tool opening, said tool being positioned within said display package, comprising:
a base;
a plate having a plate opening having an edge;
a first support element extending from said base to said plate, said first support element expansively engaging said edge of said plate opening;
a second support element extending from said base to said plate; and
wherein said first support element having a portion thereof having a size sufficient to be inserted through said first tool opening and said second support element having a portion thereof having a size sufficient to be inserted through said second tool opening.

5,335,773
MULTI-PHARMACEUTICAL STORAGE, MIXING AND DISPENSING VIAL
Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.
Filed Jul. 2, 1993, Ser. No. 87,152
Int. Cl.[5] B65D *25/08*
U.S. Cl. 206—221 19 Claims



1. A pharmaceutical storage, mixing and dispensing vial, for storing first and second pharmaceutical components, mixing the pharmaceutical components and then providing access to the mixed pharmaceutical by a needle cannula, at least one of the first and second pharmaceutical components being a liquid component, the vial comprising:
a container having an inner wall and an open end;
a needle-pierceable access member having an outer region secured to the open end of the container so to create a sealed interior defined by the inner wall and the access member, said access member being deflectable inwardly into said interior from a first position to a second position;
a barrier within said interior separating said interior into first and second interior regions housing the first and second pharmaceutical components, respectively;
means for breaching the barrier so to fluidly couple the first and second interior regions upon movement of the access member from the first position to the second position so that the first and second pharmaceutical components mix to create the mixed pharmaceutical; and
a needle cannula shield movable from a storage position to a working position, the needle cannula shield covering the access member in the storage position and exposing at least a portion of the access member in the working position, the needle cannula shield being movable from the working position to the storage position.

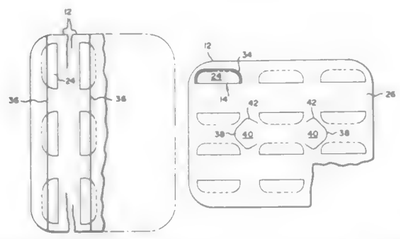
5,335,774
CAN CARRIER
Robert H. Ganz, Saddle River, N.J., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Jul. 19, 1993, Ser. No. 93,483
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—153 10 Claims

1. A can carrier comprising a sheet of a foldable and deformable material including paperboard, said sheet having for each can to be packaged a pair of transversely aligned cutouts defining foldable flaps, each of said flaps being hingedly connected to said sheet along a longitudinal fold line, and said fold lines of each pair of flaps being remote from one another to define double thickness can retaining flaps arranged in opposed relation for engagement beneath a can chime, said sheet has an

VOL 1165 ISS 2 AG 9 1994 UMI

upper surface and an under surface, and said flaps of each pair of flaps are foldable from said sheet below said under surface in opposite remotely facing relation, said sheet under surface has thereon adjacent said fold line glue for retaining said flaps in folded positions relative to said sheet under surface.

8. A can carrier comprising a sheet of a foldable and deformable material including paperboard, said sheet having for each can to be packaged a pair of transversely aligned cutouts defining foldable flaps, each of said flaps being hingedly connected to said sheet along a longitudinal fold line, and said fold lines of



each pair of flaps being remote from one another to define double thickness can retaining flaps arranged in opposed relation for engagement beneath a can chime, said sheet has an upper surface and an under surface, and said flaps of each pair of flaps are foldable from said sheet below said under surface in opposite remotely facing relation, said sheet under surface has thereon adjacent said fold line glue for retaining said flaps in folded positions relative to said sheet under surface, each of said flaps has extending longitudinally across said flap and into adjacent portions of said sheet in bonded relation a reinforcing thread.

5,335,775

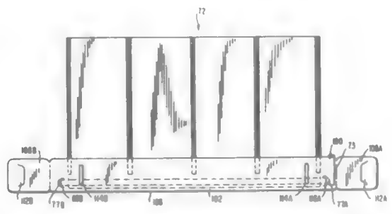
SUTURE DISPLAY RACK AND PROCEDURE KIT

Christopher Scanlon, Milford, and David L. Brown, Wallingford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 628,567, Dec. 17, 1990. This application Oct. 9, 1992, Ser. No. 958,982

Int. Cl.[5] A61B *17/06*; B65D *85/48*

U.S. Cl. 206—63.3 5 Claims



1. A sterilizable package for retaining surgical elements, said package comprising:

a sheath member having at least one retaining portion formed therein, said sheath member configured to permit sterilization;

at least one suture package disposed in said retaining portion of said sheath;

a sealed pouch enclosing said sheath member having said at least one suture package disposed in said retaining portion thereof, said pouch including means for permitting sterilization of an interior of said pouch;

shielding means disposed adjacent at least a portion of said sheath member for preventing direct engagement of said portion of said sheath member and said pouch, said shielding means comprising at least first and second interconnected panels disposed about a lower portion of said sheath, wherein said first panel comprises a front cover and said second panel comprises a back cover for receiving said lower portion of said sheath, wherein said first panel further comprises two slots formed adjacent opposing ends of said panel and said second panel further comprises two side closure flaps having locking tabs formed therein which are configured and dimensioned to engage said two slots.

5,335,776

ASSEMBLY FOR INDEPENDENTLY TRANSPORTING YARN PACKAGES HAVING PATH DIVERTING CAPABILITY

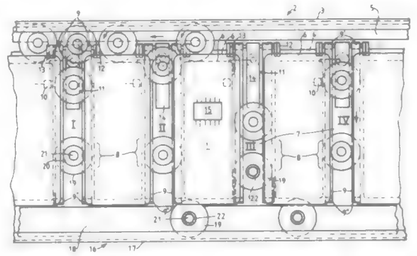
Jürgen Backhaus, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst AG & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Dec. 23, 1992, Ser. No. 996,178

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1991, 4142790

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—368 11 Claims



1. An assembly for transporting tube support members, each tube support member having a base and a support portion thereon for supporting a textile tube in a generally upright disposition for transport and handling of the textile tube independent of other textile tubes, comprising:

means forming a delivery path for transport therealong of tube support members;

means forming a transport path extending transversely from said delivery path at a transfer location for receiving tube support members from the delivery path, the transport path means and the delivery path means being operable in coordination with one another to transfer tube support members from the delivery path to the transport path at the transfer location when tube support members arriving thereat are supported on the delivery path at a predetermined height relative to the transport path; and

means for selectively increasing the relative height of the delivery path at the transfer location such that tube support members arriving at the transfer location on the delivery path continue along the delivery path without transfer onto the transport path.

5,335,777

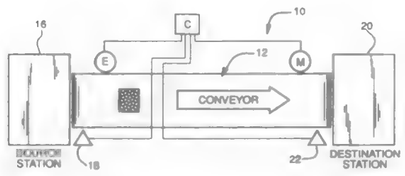
METHOD AND APPARATUS FOR BELT CONVEYOR LOAD TRACKING

Christopher J. Murphy, Ann Arbor, and Ronald E. Bliss, Ypsilanti, both of Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Oct. 15, 1993, Ser. No. 137,846

Int. Cl.[5] B65G *43/00*

U.S. Cl. 198—502.3 20 Claims



1. A method of tracking data associated with a load being conveyed on a belt conveyor between a source station including a source station load sensor and a destination station including a destination station load sensor comprising the steps of:

generating a load record for the load at the source station;

sensing the leading edge of the load by the source station load sensor;

loading the load record into a programmable controller and establishing a data field for controlling the conveyor;

generating a pulse signal having a number of pulses directly proportional to the travel of the belt conveyor;

establishing a distance field for the load record comprising the smaller of the distance between the load and any preceding load on the belt conveyor computed from pulse signals and the distance between the load and the destination station load sensor;

establishing an expectation window of belt conveyor length indicating expected arrival of the load at the destination station based on the number of pulse signals;

sensing the leading edge of the load by the destination station load sensor and generating a signal;

communicating the signal to the controller;

comparing the distance between the source and destination load sensors with the distance the conveyor belt traveled in the time it took the load to travel between the source station and destination station load sensors and detecting any slippage of the load on the belt; and

updating the data record in the controller, based on the detected load slippage, to coincide with the actual position of the load on the conveyor at the destination station.

5,335,778

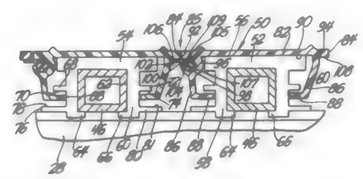
RECIPROCATING FLOOR CONVEYOR FLOOR SLAT AND SEAL

Arthur L. Wilkens, Osborne, Kans., assignor to Wilkens Manufacturing, Inc., Osborne, Kans.

Filed Mar. 24, 1993, Ser. No. 36,472

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—750 15 Claims



1. A reciprocating floor conveyor having a floor slat support and guide assembly, a plurality of side by side parallel floor slats supported by the floor slat support and guide assembly and a drive assembly for reciprocating the floor slats back and forth on the floor slat support assembly to convey cargo supported by the floor slats toward one end of the floor slats and wherein the floor slats are elongated members each having a cargo support surface, a lip with a downwardly facing sealing surface on one side of and extending the length of the cargo support surface, and a seal including a resilient material secured to the other side of each floor slat that is in contact with the downwardly facing sealing surface on the lip of an adjacent floor slat and wherein the seal slides on the sealing surface on said lip during reciprocating movement of adjacent floor slats and said seal seals between two adjacent floor slats when the slats are stationary relative to the floor slat support and guide assembly as well as when the floor slats are reciprocated by said drive assembly to convey cargo.

5,335,779

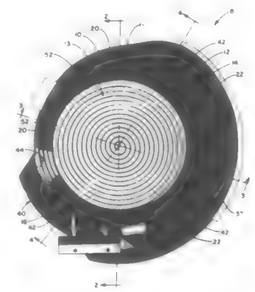
VIBRATORY FEEDER

Steven E. Negrete, Woodstock, Conn., assignor to Spirol International Corporation, Danielson, Conn.

Filed Jul. 2, 1993, Ser. No. 86,927

Int. Cl.[5] B65G *27/02*

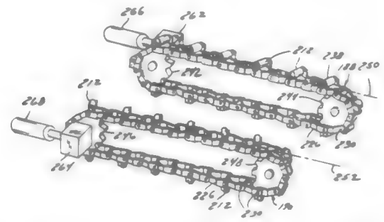
U.S. Cl. 198—756 17 Claims



1. In a vibratory feeder having a track and means for vibrating the track for conveying parts along the track, the track having a tooling section for feeding the parts in a predetermined manner to an associated device and a supply track section with a smooth part support surface with a lower end for receiving the parts and extending generally helically upwardly from its lower end to the tooling section, the vibrating means being operable to vibrate the track to convey parts up the generally helical track surface by generally helical vibratory movement with advancement and retraction phases at an angle which provides for propelling the parts upwardly from the generally helical track surface during the advancement phase of the vibratory movement and for retracting the support surface below the parts during the retraction phase of the vibratory movement; the improvement wherein the generally helical track surface has perforations generally uniformly arranged along the full length thereof from its lower end to the tooling section, the perforations having a size substantially less than the size of the parts and covering at least approximately 40% of the total area of the perforations and track surface to reduce the area of contact between the parts and track surface so that the parts are propelled upwardly from the track surface with greater effect during the advancement phase of the vibratory movement to enable the track surface to be retracted below the parts during the retraction phase of the vibratory movement.

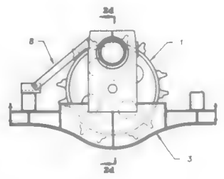
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,780
MULTI-DIRECTION PACKAGE MOVEMENT DEVICE
Thomas H. Watson, 2061 Via Taormina, Monterey, Calif. 93940
Filed Jun. 7, 1993, Ser. No. 72,553
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—787 3 Claims



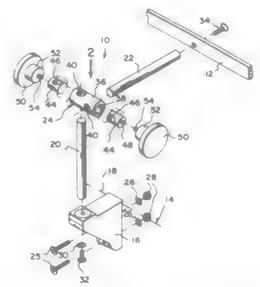
1. A conveying apparatus for conveying an article in a chosen direction of a multitude of directions, in a substantially horizontal plane, comprising the following:
at least one chain;
a plurality of rollers with mounting means attached to said at least one chain;
the bottom surface of said article resting upon, and at least partially supported by, at least one of said rollers;
said mounting means including bearing means allowing for free rotation of said rollers;
said mounting means including bearing means allowing for free rotation of said rollers;
said rollers are attached to said at least one chain so that the axis of rotation of said rollers is at an acute angle with respect to the longitudinal direction of said at least one chain.

5,335,781
COMPACT DRIVE UNIT FOR AN OVERHEAD CONVEYOR SYSTEM
Kozo Miyagawa, Hendersonville, and Gregory A. Clark, Gallatin, both of Tenn., assignors to Tsubaki Conveyor of America, Inc., Portland, Tenn.
Filed Sep. 22, 1992, Ser. No. 949,023
Int. Cl.[5] B65G *23/06*
U.S. Cl. 198—834 13 Claims



1. A compact drive unit for a conveyor system comprising:
conveyor means for transporting articles between various locations, said conveyor means comprising a conveyor chain;
drive means for driving said conveyor system;
a main drive shaft for transmitting drive from said drive means to said conveyor means;
sprocket means, engaging said main drive shaft, for transmitting drive from said main drive shaft to said conveyor means;
a drive unit frame upon which is mounted said main drive shaft, said drive unit frame adapted to partially enclose said sprocket means;
bearing means, provided between said main drive shaft and said drive unit frame, for reducing the frictional resistance between said main drive shaft and said drive unit frame;
wherein said conveyor chain passes into said drive unit frame in a first direction, engages said sprocket means, and exits said drive unit frame in a second direction substantially equal to said first direction.

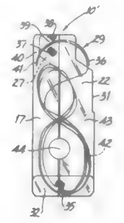
5,335,782
CONVEYOR POST RAIL CLAMP
Kenneth J. Herzog, 200 Mill Rd., Riverhead, N.Y. 11901
Filed May 13, 1993, Ser. No. 60,651
Int. Cl.[5] B65G *21/20*
U.S. Cl. 198—836.3 3 Claims



1. A conveyor post clamp for a conveyor rail on a packaging and bottling conveyor which comprises:
a) a base;
b) means for mounting said base to a conveyor belt frame on said conveyor;
c) a pair of studs;
d) means for mounting said first stud in a vertical position on said base;
e) means for mounting said second stud in a horizontal position on the conveyor rail;
f) means for securing in an adjustable manner the distal free ends of said studs transversely together; wherein said first mounting means includes:
g) a pair of button head bolts, each to extend horizontally through a front portion of said base and the conveyor belt frame;
h) a pair of lock washers, each to fit into one end of one said button head bolt;
i) a pair of nuts, each to thread onto one end of one said button head bolt; wherein said second mounting means includes:
j) a button head bolt; and
k) a lock washer to fit onto an end of said button head bolt, so that the end can extend vertically and upwardly through an extended portion of said base and thread into a lower end of said first stud.

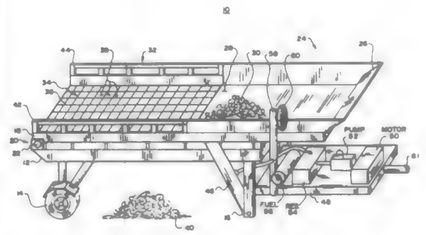
5,335,783
RETAINER FOR A COMBINED SURGICAL NEEDLE-SUTURE DEVICE
Hans-Jurgen F. Sinn, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Apr. 16, 1992, Ser. No. 870,492
Int. Cl.[5] A61B *17/06*
U.S. Cl. 206—63.3 24 Claims

1. A retainer for a combined surgical needle-suture device, the retainer comprising:
a) front and rear panels joined along common edges to provide an enclosure, said front and rear panels each possessing a top edge and at least one side edge at least a portion of which is generally orthogonal to said top edge, wherein said front and rear panels are joined by a weld positioned in such a manner as to provide a separate compartment within the enclosure for receiving the pointed section of a surgical needle;
b) a cut-out section formed along a portion of said top edge of the enclosure, the cut-out section providing an open needle access region; and,



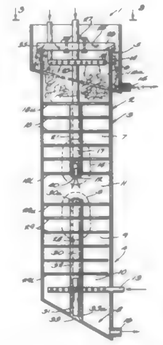
c) a slot formed along a portion of said side edge of the enclosure, the slot providing a lateral opening which is continuous with the open needle access region.

5,335,784
DUMP PLATFORM MATERIALS SCREENER
Terry Tyler, West Dummerston, Vt., assignor to Tyler and Kerouac Manufacturing and Development, Nashua, N.H.
Filed Oct. 30, 1992, Ser. No. 969,778
Int. Cl.[5] B07B *1/28, 1/49*
U.S. Cl. 209—260 16 Claims



1. A dump platform materials screener, comprising:
a horizontally fixed support frame;
a materials staging and screening frame, pivotably coupled proximate a first end to a corresponding first end of said horizontally fixed support frame, said materials staging and screening frame movable between a first horizontal material staging and screening frame movable between a first horizontal material staging position to at least a second screening position, said at least a second screening position inclined with respect to said horizontal staging position;
said materials staging and screening frame including:
a materials staging area proximate a second end of said materials staging and screening frame, said materials staging area including a non-screened first bottom region of said materials staging and screening frame on which materials to be screened are dumped when said materials staging and screening frame is in said first horizontal material staging position; and
a materials screening area, adjacent to said non-screened area and extending from said non-screened area to said first end of said materials staging and screening frame, said materials screening area including a second bottom region of said materials staging and screening frame, said second bottom region including at least one screen having at least a first plurality of openings of at least one uniform size, for allowing materials to be screened which are of lesser dimension than said at least one uniform size of at least first plurality of openings to pass through said at least first plurality of openings when said materials to be screened are moved from said materials staging area to said materials screening area; and
a materials staging and screening frame incliner, including a hydraulic piston coupled between said materials staging and screening frame and said horizontally fixed support frame, and actuatable in response to actuation of a materials staging and screening frame incliner actuator including a hydraulic pump actuator valve, for moving said materials staging and screening frame from said first horizontal staging position to said at least a second inclined screening position, said at least a second inclined screening position causing said materials to be screened which are staged on said materials staging area to move from said materials staging area to said screening area, wherein said hydraulic pump actuator valve is actuatable by a remotely controlled hydraulic pump actuator valve.

5,335,785
FLOTATION COLUMN WITH ADJUSTABLE SUPPORTED BAFFLES
Surendra K. Kawatra, and Timothy C. Eisele, both of Houghton, Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.
Filed May 19, 1993, Ser. No. 64,825
Int. Cl.[5] B03D *1/24, 1/14*
U.S. Cl. 209—170 18 Claims



1. An apparatus for separating by froth flotation hydrophobic and hydrophilic particles contained in an aqueous slurry, said apparatus comprising
a generally vertical tubular column having an upper interior cross section, a lower interior cross section, an upper portion and a lower portion, said upper portion including an upper end, an upper froth zone and an upper separation zone, said lower portion including a bottom, a lower separation zone and an air inlet zone, and said column having an intermediate feed inlet zone interposed between said upper and lower portions;
a feed inlet in said feed inlet zone for introducing said aqueous slurry into said feed inlet zone for separation in said column;
an air inlet in said air inlet zone for introducing gas into said air inlet zone for formation of gas bubbles and upward flow through said column;
a froth outlet for discharging a froth fraction containing hydrophobic particles from said froth zone;
a tailings outlet in said lower portion for discharging a tailing fraction containing hydrophilic particles from said lower portion;
an upper baffle unit, said unit comprising a plurality of horizontally extending upper baffle plates, a vertical upper

VOL 1165 ISS 2 AG 9 1994 UMI

support member including an upper end portion, and first upper means for removably mounting said upper baffle plates on said upper support member at predetermined vertically spaced positions;

each of said upper baffle plates comprising a mounting aperture through which said vertical upper support member extends and a plurality of flow apertures, and each of said upper baffle plates having a periphery substantially conforming to said upper interior cross section of said column; and

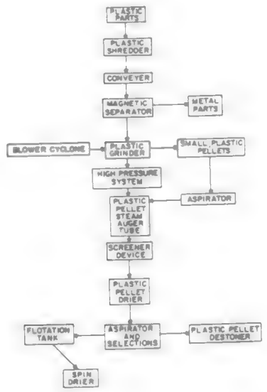
second upper means for removably supporting said upper support member in said column with said upper baffle plates in said upper separation zone, with an uppermost baffle plate below said froth zone and a lowermost baffle plate above said feed inlet zone.

5,335,786

METHOD AND APPARATUS FOR SEPARATION AND RECYCLING PLASTICS

Ronald N. Roberto, P.O. Box 292, Boxford, Mass. 01921

Filed Aug. 27, 1993, Ser. No. 113,605
Int. Cl.[5] B03B *1/00*
U.S. Cl. 209—3 **19 Claims**



1. A method of separating contaminates from plastic parts and recycling the plastic parts to provide plastic pieces free of all material comprising the steps of:

reducing said plastic parts to a first reduced size of plastic pieces;

removing the metal materials from the first reduced size of plastic pieces;

subjecting the first reduced size of plastic pieces to a grinder device to reduce the plastic pieces to smaller pieces;

subjecting the smaller plastic pieces to a sufficient high pressure steam to remove contaminate materials from the smaller plastic pieces; and

drying the plastic pieces and contaminate materials and separating the plastic pieces from the contaminate materials.

11. An apparatus for separating and recycling plastic from plastic parts containing various contaminate materials, said apparatus comprising:

means for reducing the plastic parts to a first predetermined size of plastic pieces;

means for removing light metal particles from the first reduced size of the plastic parts;

means for further reducing the plastic pieces to small pellets;

means for removing small fines and lose labels that are mixed with the plastic pellets;

means for treating said plastic pellets with high temperature pressure steam to remove labels;

means for removing water and drying the plastic pellets and remaining contaminates; and

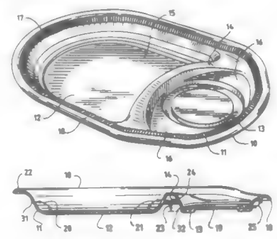
means for separating the plastic pellets from the remaining contaminates.

5,335,787

FOOD AND BEVERAGE TRAY

John A. Finchum, Dunwoody, and Timothy K. Sheehan, Woodstock, both of Ga., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 763,113, Sep. 20, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,335
Int. Cl.[5] B65D *1/34*
U.S. Cl. 206—564 **13 Claims**



1. A food and beverage tray designed so that a user can simultaneously support the tray and a beverage container thereon comfortably with a single hand, said tray comprising a bottom having an upper bottom surface and an outer bottom surface opposite the upper surface; a food containing area; a beverage container recess formed in the bottom; at least one thumb placement surface next to the container recess; and a continuous sidewall radially connected to the bottom with a sidewall outer surface which transitions to the outer surface of the bottom and a continuous flange located on an upper end of the sidewall, said flange extending outwardly toward the outer perimeter of the tray from said continuous sidewall and away from said food containing area and said beverage container recess, and said continuous sidewall being downwardly angled in the region of said container recess so as to form said thumb placement surface, there being a difference in height between the height of the sidewall adjacent the beverage container recess and the height of the sidewall at the thumb placement surface, such that said height of the sidewall adjacent said beverage container recess is about 0.125 to about 0.50 inches greater than said height of the sidewall at the thumb placement surface, where said sidewall height is the distance from the top surface of said sidewall to said outer bottom surface.

5,335,788

SELF-OPENING POLYETHYLENE BAG STACK AND PROCESS FOR PRODUCING SAME

M. Wayne Beasley, Bishopville; Wade D. Fletcher, and Harry B. Wilfong, Jr., both of Hartsville, all of S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Mar. 27, 1992, Ser. No. 859,037
Int. Cl.[5] B65D *27/10*
U.S. Cl. 206—554 **44 Claims**

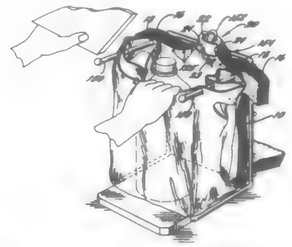
1. A self-opening bag stack comprising:

a plurality of stacked polyethylene film bags comprising at least about 50 wt. % high density polyethylene, based on polymer weight, releasably adhered together in substantial registration;

each of said bags including front and rear polyethylene film walls, said front and rear walls being integrally joined at their sides and secured together at their bottoms and defining an open top mouth portion;

at least an upper portion of the outer surface of the front and rear walls of each of said bags having been corona treated; and

at least one localized compressed area extending transversely through said bag stack in said upper portion of



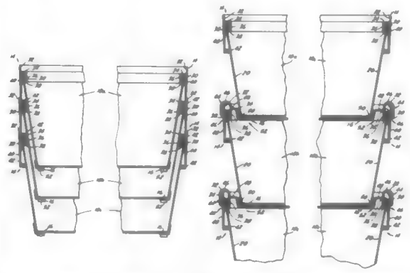
said bags such that said stack has a decreased thickness in said compressed area and wherein adjacent outer wall corona treated surfaces defined by said localized compressed area are releasably adhered together and adjacent inside wall surfaces defined by said localized compressed area are not adhered together.

5,335,789

EDGE MOLDING FOR NESTING STACKABLE SHIPPING CONTAINERS

Philip Taravella, Grosse Pointe Shores; Edward J. Blair, New Baltimore; Ronald S. Domanski, St. Clair Shores, and Joseph C. Shippell, Roseville, all of Mich., assignors to Anchor Bay Packaging Corporation, St. Clair Shores, Mich.

Filed Jan. 13, 1994, Ser. No. 181,276
Int. Cl.[5] B65D *5/44, 5/46*
U.S. Cl. 206—518 **11 Claims**



1. An edge molding for a first stackable shipping container having an open top, a closed bottom, and walls defining an inner volume between said open top and said bottom, the molding comprising:

perimeter defining means for defining the perimeter of said open top when said edge molding is mounted on said first stackable shipping container and for restraining a second shipping container within said perimeter defining means when an edge molding is placed on said another shipping container;

resting means within said perimeter defining means for resting said second shipping container upon said resting means when an edge molding is placed on said second shipping container;

bearing means for bearing on the resting means of a third shipping container having an edge molding mounted thereon; and

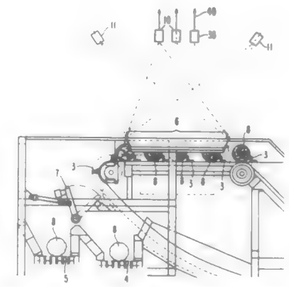
mounting means for mounting said edge molding to said first stackable shipping container.

5,335,790

METHOD AND DEVICE FOR SEPARATING PIECES OF WOOD

Bertram Geiger, and Rainer Grabher, both of Graz, Austria, assignors to Andritz-Patentverwaltungs-Gesellschaft M.B.H., Graz, Austria

Filed Feb. 10, 1992, Ser. No. 833,847
Claims priority, application Austria, Feb. 8, 1991, 275
Int. Cl.[5] B07C *5/14, 5/342*
U.S. Cl. 209—518 **15 Claims**



1. A method of separating a plurality of pieces of wood according to brightness and surface texture of said pieces of wood comprising:

conveying said pieces of wood through a viewing zone, illuminating said pieces of wood and measuring brightness and determining surface texture as a function of the intensity of reflected light of each piece of wood;

measuring said brightness in a plurality f measuring fields on each of said pieces of wood to obtain a plurality of measurements for each piece of wood;

averaging said plurality of measurements to obtain an average measured brightness;

comparing said average measured brightness with a known value; and

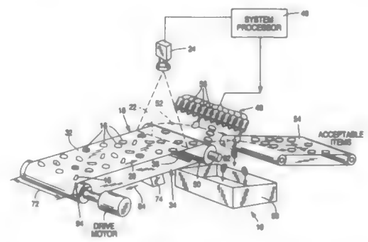
separating said pieces of wood according to said averaged measured brightness and surface texture.

5,335,791

BACKLIGHT SORTING SYSTEM AND METHOD

Neal P. Eason, Central Point, Oreg., assignor to Simco/Ramic Corporation, Medford, Oreg.

Filed Aug. 12, 1993, Ser. No. 105,438
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—588 **20 Claims**



1. A sorting system, comprising:

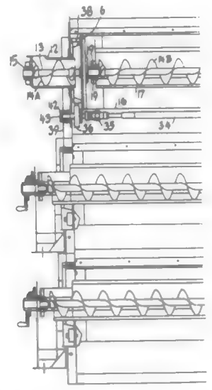
a conveyor belt having a solid translucent sheet segment for carrying a plurality of randomly-arranged articles, ones of which are translucent and others of which are opaque, the conveyor belt carrying plural articles simultaneously through an inspection zone;

VOL 1165 ISS 2 AG 9 1994 UMI

a background light source positioned in the inspection zone to direct light through the translucent sheet segment and the translucent ones of the articles;
a video camera positioned to receive light from the background light source transmitted through the translucent sheet segment and the translucent ones of the articles, the opaque ones of the articles preventing light from the background light source from reaching the video camera, the video camera generating a video signal representing the light it receives;
a processor receiving the video signal and processing it to identify the opaque ones of the articles; and
a separator responsive to the processor for separating the opaque and translucent ones of the articles.

13. A method of sorting opaque foreign objects from a stream of post-consumer translucent plastic articles, comprising the steps of:
transporting the stream of post-consumer translucent plastic articles and opaque foreign objects on a solid, translucent conveyor belt through an inspection zone;
directing light through the conveyor belt and the translucent ones of the post-consumer translucent plastic articles toward a video camera;
generating a signal representative of the light propagating through the belt to the video camera, the signal representing an opaque foreign article by a signal corresponding to the absence of light arriving at the video camera; and
in accordance with a signal corresponding to the absence of light, removing the opaque foreign article from the stream of post-consumer translucent plastic articles.

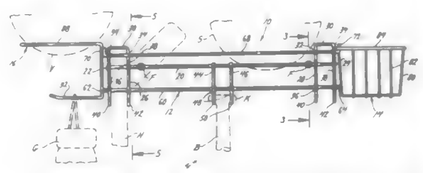
5,335,792
GRAIN SEPARATOR
David A. Hauch, Afton, Minn., assignor to Carter Day International, Inc., Minneapolis, Minn.
Filed Feb. 21, 1992, Ser. No. 839,808
Int. Cl.[5] B07B *13/05*; B65G *33/32*
U.S. Cl. 209—687 9 Claims



1. A grain separator, comprising
a) a plurality of operatively connected separator units;
b) a grain inlet for feeding grain into the grain separator;
c) a rotatable means operatively connected to said grain inlet for moving grain through the separator, wherein said rotatable means comprises a shaft and a rotatable helical screw mounted thereon;
d) a separation means operating in conjunction with said rotatable means for separating the grain from said grain inlet into a first stream of grain and a second stream of grain, wherein said separation means comprises a rotating cylinder surrounding said shaft having indentations on its internal surface and a trough internal to said rotating cylinder having a top opening adjustable with respect to the center line of said shaft;
e) a first grain outlet operatively connected to said separation means;
f) a second grain outlet operatively connected to said separation means;
g) an internal drive means for operating said separator units, wherein said internal drive means comprises:
(1) a first rotatable telescoping drive shaft having a first end and a second end;
(2) a bevel gear box coupled to said first end of said first drive shaft;
(3) a second rotatable telescoping drive shaft having a first end and a second end;
(4) a bevel gear box coupled to said first end of said second drive shaft;
(5) a first pulley coupled to said second end of said second drive shaft;
(6) a second pulley mounted on the separator; and
(7) a drive belt connecting said first and second pulleys; and
h) a coupling means for separably connecting said internal drive means of each unit for operating said units, wherein the number of operating separator units can be varied.

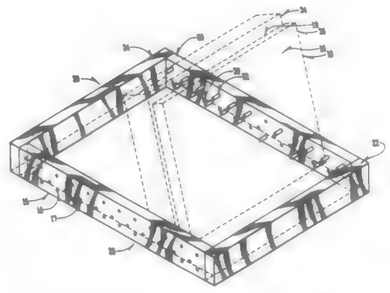
5,335,793
Patent Not Issued For This Number

5,335,794
SPORTS EQUIPMENT SUPPORT RACK
Michael H. Reedy, Edwardsville, Ill., assignor to Lee Rowan Company, St. Louis, Mo.
Filed Jan. 21, 1993, Ser. No. 7,117
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 17 Claims



1. A wire frame support rack for sports equipment, the rack comprising:
mounting means for mounting on a wall;
a plurality of bat retainers supported by the mounting means and projecting forwardly relative to the wall, each bit retainer providing removable and upright support for a plurality of bats, at least one of said bat retainers having a forwardly projecting horizontal segment that is a lower horizontal segment of a C-shaped member comprised of the lower horizontal segment, a rear vertical segment, and an upper horizontal segment;
a ball support assembly supported by the mounting means; the assembly comprising two spaced guide segments extending laterally relative to the wall, and two ball stops disposed in laterally spaced positions relative to the spaced guide segments;
the two guide segments providing spaced apart elongated surface portions for removably supporting a plurality of balls such as basketballs, soccer balls, volleyballs, and the like; the ball stops retaining such removably supported balls therebetween.

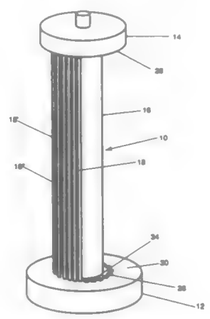
5,335,795
STORAGE RACK FOR CASSETTES AND COMPACT DISCS
Dwight Chizen, 403 Sackville St., Toronto, Ontario, Canada M4X 1S6
Filed Aug. 18, 1992, Ser. No. 931,854
Claims priority, application Canada, Aug. 28, 1991, 2050174
Int. Cl.[5] A47G *19/08*
U.S. Cl. 211—41 7 Claims



1. A rack for cases having flat front and rear faces and narrow bottom, side and top edges comprising:
a pair of parallel spaced side rails having inside surfaces facing each other;
means to hold said rails in spaced parallel relationship;
means on said rails to support said cases and permit limited rotation between a rearward tilted position and a forward tilted position;
said support means comprising a pattern of holes on the inside face of said rails, adapted to receive pins therein;
pins mountable in said holes, with a portion protruding from said inside rail surface, to engage front and rear faces of said cases;
said pattern of holes comprising a top row of holes horizontally spaced to permit a case to be inserted in substantially upright position between a pair of pins mounted in said top holes such that said pins engage the front face and rear face of said case respectively to permit limited movement of said case between a rearward tilted position and a forward tilted position;
means to support said case by engaging the bottom side thereof.

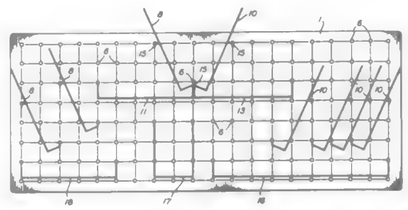
5,335,796
GREETING CARD HOLDER
B. Kenneth Sanford, and Penelope E. Sanford, both of 222 Glenstone Cir., Brentwood, Tenn. 37027
Filed Jun. 7, 1993, Ser. No. 72,557
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—45 7 Claims

1. A holder for greeting cards comprising:
a. a base;
b. a top;
c. a support attached to said base and supporting said top above said base; and
d. plural flexible and semi-rigid rods connected to said base and said top in substantial vertical alignment with said support, each of said rods adapted to retain the spine of said greeting cards in a vertical position, whereby the



front and rear pages of said greeting cards extend outward radially from said holder.

5,335,797
MANUAL PAPER MANAGEMENT SYSTEM
Raymond L. Myers, Endicott, N.Y., assignor to Ray Myers Corporation, Endicott, N.Y.
Filed Nov. 23, 1992, Ser. No. 980,631
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—50 34 Claims



1. A manual paper management system for identifying and processing documents and organizing miscellaneous work station items comprising:
a support panel having a plurality of generally cross-shaped apertures each of the plurality of apertures having sufficient width for engaging up to four separate hanging tabs;
paper management means for identifying paper management functions, having hanging tabs for releasably engaging the cross-shaped apertures; and
support means for supporting the support panel.

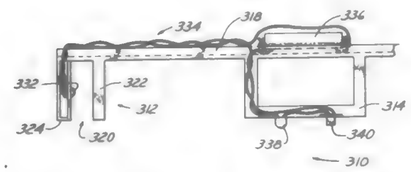
5,335,798
SELF ADHESIVE DENTAL FLOSS DISPENSER
Don Bonwell, 5750 Buckingham, Detroit, Mich. 48224, and Wayne Veal, 5775 Crane, Detroit, Mich. 48213
Filed Feb. 19, 1993, Ser. No. 47,558
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—65 14 Claims

1. A dental floss dispenser with floss reminder to remind a user to floss when the user moves a toothbrush from one to another of two dispositions, the two dispositions including a first disposition being where the toothbrush is supported by a toothbrush supporting means of the dental floss dispenser and a second disposition being where the toothbrush has been taken from said supporting means, the dental floss dispenser comprising:

VOL 1165 ISS 2 AG 9 1994 UMI

said toothbrush supporting means for supporting the toothbrush therein;

switch means for exciting a signal means when said switch means is brought into operation when said toothbrush is moved from one disposition to the other;



a dental floss caddy attached to said toothbrush supporting means, said toothbrush caddy for holding dental floss therein; and

said signal means operatively connected to said switch means so that said signal means is excited when said switch means is brought into operation.

5,335,799

WALL-MOUNTED TOP SUPPORT

Douglas L. Coudron, 2200 Zanzibar La. N., Plymouth, Minn. 55447

Filed Jun. 10, 1993, Ser. No. 74,945
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—65 16 Claims



1. A wall-mounted mop holder comprising:

(a) an upper support member including means for supporting an elongated handle of a mop in a generally vertical position projecting outwardly therefrom, wherein said upper support member includes an angular bracket defining a generally vertical surface and a generally horizontal surface when mounted on a wall and said means for supporting an elongated handle of a mop include at least one hole bored through said horizontal surface; and

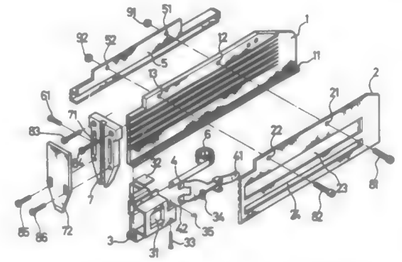
(b) a lower support member including means for supporting a mop head fixedly attached and projecting outwardly therefrom, wherein said upper support member and said lower support member are mounted to a vertical surface at a distance spaced generally vertically so that said members cooperate to support both said elongated handle and said mop head of said mop.

5,335,800

MAGAZINE FOR RIVET GUN

Chung-ho Liu, No. 15, Nan-Chien Rd., Ting-Tai Tsun, Wu-Feng Hsien, Taichung Hsien, Taiwan

Filed Jul. 6, 1993, Ser. No. 86,051
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—279 1 Claim



1. A magazine assembly for a rivet gun comprising:

a) a magazine body for storing rivets, the magazine body including a forward end, a guide plate, a cover plate having a pushing slot and a guiding slot formed therein, and a stopper;

b) a muzzle means mounted to a forward end of the magazine body for receiving rivets from the magazine body and guiding the rivets to a rivet gun;

c) a catch means mounted to the magazine body for movement therealong, the catch means including a finger hole and a catch piece positioned on opposite sides thereof, and the movement of the catch means being guided by the stopper;

d) a pusher secured to the catch means for movement along the pushing slot of the cover plate for pushing rivets forwardly to the muzzle means, the pusher including a guiding portion for movement along the guiding slot of the cover plate to prevent deviation of the rivets from their direction of forward movement; and

e) a coil spring carried by the catch means, the coil spring including an end secured to the muzzle means for urging the catch means and rivets towards the muzzle means.

5,335,801

STOPPER SEALING CAP FOR INJECTABLE FLUID BOTTLE

Yong-Hak Lee, 377-48, Shindang-2-dong Chung-ku, Seoul, Rep. of Korea

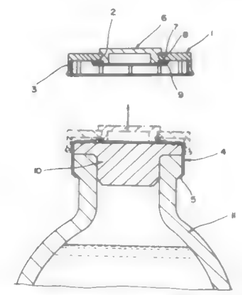
Filed Aug. 3, 1993, Ser. No. 101,068
Claims priority, application Rep. of Korea, Aug. 13, 1992, 15209/92
Int. Cl.[5] B65D *51/18*
U.S. Cl. 215—249 3 Claims

1. A stopper sealing cap for an injectable fluid bottle comprising:

a means for sealing an upper surface of a stopper of said bottle to prevent contaminant infiltration onto said upper surface of said stopper, said means having an annular protrusion for annularly cutting into said upper surface of said stopper to seal a circular section of said upper surface of said stopper;

an aluminum cap member engaging with said sealing means for covering an upper section of said bottle, said aluminum cap member having a center opening for receiving said sailing means to engage with said sealing means; and

a synthetic resin cap member having a top wall with an upper surface and a lower surface and a side wall covering said aluminum cap member and supporting said sealing means, said resin cap member being removed together with said sealing means from said bottle and having a plurality of vertical slots on an inner surface of said side



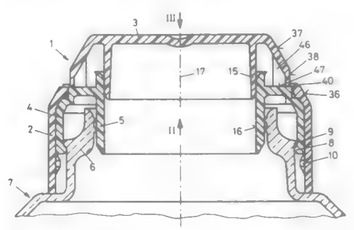
wall for providing exhausting spaces between said side wall and said aluminum cap member.

5,335,802

PLASTIC CLOSURE FOR A CONTAINER

Ulrich Brach, Traben-Trarbach, and Klaus Thanisch, Bullay, both of Fed. Rep. of Germany, assignors to Creanova AG, Baar, Switzerland

Filed Sep. 10, 1992, Ser. No. 942,813
Claims priority, application Switzerland, Sep. 10, 1991, 2658/91-2
Int. Cl.[5] B65D *51/18*
U.S. Cl. 215—235 17 Claims



1. A plastic closure for a container, in particular for bottles, comprising:

a base portion to be placed upon a neck of the container and a cover connected by a snap hinge to the base portion;

the snap hinge having a main bending juncture connecting the base portion directly to the cover which defines a main axis of the closure; and

an intermediate component on both sides of the main bending juncture, with the intermediate components each connected to the base portion by a first auxiliary bending juncture and to the cover by a second auxiliary bending juncture;

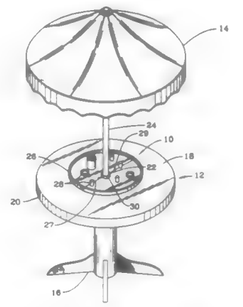
wherein both the main bending juncture and the auxiliary bending junctures, when the closure is in the closed position, are arranged on a substantially cone-shaped surface inclined to a longitudinal axis of the base portion.

5,335,803

ROTATABLE FOOD TRAY FOR OUTDOOR PATIO FURNITURE

Diana A. O'Brien, and Leo J. O'Brien, both of 1012 SW. 8yh St., Fort Lauderdale, Fla. 33315

Filed Sep. 9, 1992, Ser. No. 942,744
Int. Cl.[5] A47F *5/02*
U.S. Cl. 211—163 10 Claims



1. An outdoor service system comprising:

an umbrella support post;

an outdoor patio table having a generally flat eating surface and a centrally disposed aperture, said patio table aperture available for insertion of said umbrella post;

a rotatable food tray, said rotatable food tray comprising two completely separate, substantially semi-circular halves, each of said halves having a substantially semi-circular notch disposed proximate the center of its non-arcuate edge, each of said halves further having an engagable tab disposed along its non-arcuate edge, said tabs frictionally engaging a respective upper and lower surface of said rotatable food tray when said two halves are engaged, securely locking said two halves together, such that said two halves form a centrally disposed aperture, said centrally disposed aperture available for insertion of said umbrella post;

means for maintaining said food tray at a predetermined distance in a substantially parallel plane to the eating surface of said outdoor table; and

a means for rotating said food tray about said umbrella post.

5,335,804

CANISTER

Vera A. Flory, 104 Yost Rd., West Alexandria, Ohio 45381

Continuation of Ser. No. 810,897, Dec. 20, 1991, abandoned. This application Aug. 4, 1993, Ser. No. 101,842
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—78 20 Claims

1. In combination with a circular support base,

at least one canister having means which provides a seating around the edge of said circular support base and allows space for any object located centrally of said base, said canister comprising;

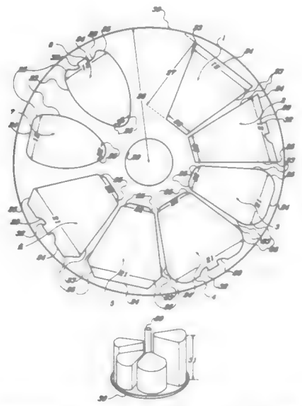
an isosceles trapezoid shaped base having a front, a back and two sides, with the width at the front being wider than the back, said canister base joining with upstanding side walls perpendicular to the base, with the side walls joining each other and forming corners, said canister having a substantially closing lid member,

and the depth of said at least one canister, from front to back, being determined in part, by the radius of said support base and, in part, by any centrally located object on said support base,

the width and height of said at least one canister determining the volume thereof,

VOL 1165 ISS 2 AG 9 1994 UMI

said at least one canister being made of suitable material, such as plastic, so as to keep insects and humidity out of said canister,



and wherein said circular support base is a circular rotating shelf of a kitchen corner cabinet, said shelf having a centrally located object thereon.

5,335,805

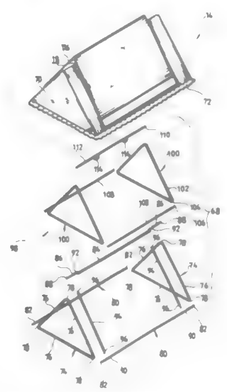
TRASH CAN STRUCTURE

Wen-Kuei Chen, No. 547 Hsi Ta Road, Hsinchu City, Taiwan

Filed Oct. 22, 1993, Ser. No. 141,446

Int. Cl.[5] B65D *5/10*

U.S. Cl. 220—400 **16 Claims**



1. A trash can structure comprising:

a can body comprising:

a body frame comprising four elongated upright bars, each having a lower end releasably mounted to a corner of a rectangular bottom plate and an opposite upper end with one of a plurality of first joint members releasably secured thereto, four first horizontal bars being respectively releasably connected between adjacent ones of the first joint members to hold the upright bars in position to form a parallelepiped frame structure which defines an interior space for receiving therein trash;

a first cover sheet having patterns formed thereon removably fit over the parallelepiped body frame;

said first joint members being made of a material of resilience and each comprising an upright cylinder having a hole to be tightly fit on the upper end of each of the upright bars, each of the first joint members comprising two side cylinders mounted to the upright cylinder in a mutually-perpendicular manner, each of the side cylinders having a hole to tightly receive therein an end of one of the first horizontal bars;

a second joint member having a short cylinder releasably mounted to each of said first joint members and a C-shaped hook defining an upward-facing opening mounted to a cylindrical side surface of said short cylinder;

a cap member comprising:

a gabble-shaped frame comprising two outer triangular side frames, each constituted by three bars connected at three vertexes by reduced necks, said gabble-shaped cap frame being releasably supported on said body frame by two of the four second joint members by having the bars received within the C-shaped hooks through the upward-facing openings thereof, a second horizontal bar having two opposite split ends disposed between the two outer triangular side frames with each of two lower ones of the necks of said outer triangular side frames received within the split ends of the second horizontal bar, a third horizontal bar, having two offset terminal sections each having a split end, being disposed between an upper one of the necks of said outer triangular side frames with the upper necks received within the split ends of the third horizontal bar, at least one of the second horizontal bars having two separated necks formed thereon and the third horizontal bar having two opposite necks corresponding to the necks of the at least one of the second horizontal bars formed at the offset terminal sections thereof, an inclined bar having two split ends being connected between each of the necks of the at least one of the second horizontal bars and the corresponding neck of the third horizontal bar; and

a second cover sheet having patterns formed thereon removably fit over the gabble-shaped cap frame structure and defining thereon an access opening;

a door member comprising:

a gabble-shaped frame comprising two inner triangular side frames, each constituted by three bars connected at three vertexes by reduced necks which bars being shorter than the bars constituting the outer triangular side frames, a fourth horizontal bar shorter than the second horizontal bar and having two opposite split ends disposed between the two inner triangular side frames with each of two lower ones of the necks of said inner side frames received within the split ends of the fourth horizontal bar, a fifth horizontal bar, shorter than the third horizontal bar and having two opposite split ends, being disposed between an upper one of the necks of said inner side frames with the upper necks received within the split ends of the fifth horizontal bar, a plurality of holed lugs secured to the fifth horizontal bar with the third horizontal bar extending therethrough to have said door frame located between the inclined bars of said cap frame and swingable relative to said cap frame; and

a third cover sheet having patterns formed thereon removably fit over the door frame structure; and

a garbage bag hanger releasably mounted to each of the first joint members in such a way to face each other so as to allow a garbage bag to be hung inside the can body.

5,335,806

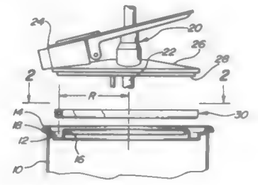
ADAPTER RING FOR A PAINT CAN

John Dedoes, Brighton, Mich., assignor to Dedoes Industries, Inc., Walled Lake, Mich.

Filed Jun. 29, 1993, Ser. No. 84,635

Int. Cl.[5] B65D *53/02*

U.S. Cl. 220—358 **2 Claims**



1. In combination:

a standardized lid of the type used in automatic paint stirring equipment, said lid having a downwardly depending annular flange, said flange having a preset radial width and preset diameter,

at least two different paint cans, each can having an open top with an annular and upwardly facing rim circumscribing said open top, said rims being generally U-shaped in cross section thus having an outer radial wall and an inner radial wall, wherein the radii of the inner and outer radial walls for one paint can differs from the radii of the inner and outer radial walls for the other paint can,

at least two annular adapter rings, each adapter ring having an inner and outer radial side and being generally U-shaped in cross section and having an upwardly facing channel, said channel in each ring having said preset radial width and said preset diameter so that said channel sealingly receives said annular flange on said standardized lid,

wherein the radii of said inner and outer radial sides of one adapter ring corresponds to the radii of the inner and outer walls of the rim of one paint can while the radii of said inner and outer radial sides of the other adapter ring corresponds to the radii of the inner and outer walls of the rim of the other paint can.

5,335,807

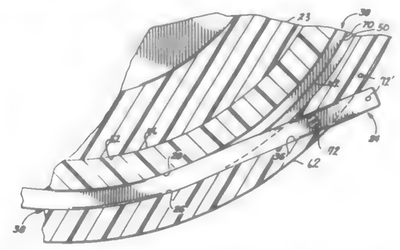
SECURITY LOCK FOR ENCLOSURE

Norman S. Gregory, Carlsbad, N. Mex., assignor to Scientific Ecology Group, Inc., Oak Ridge, Tenn.

Continuation of Ser. No. 843,794, Feb. 27, 1992, abandoned. This application Mar. 23, 1993, Ser. No. 36,011

Int. Cl.[5] B65D *45/32*

U.S. Cl. 220—315 **8 Claims**



1. A container having a bottom, a sidewall attached to the bottom and terminating in a substantially cylindrical open end, said sidewall having an inner wall surface parallel and opposed to an outer wall surface;

a closure member removably affixed to and generally conforming to the configuration of the container open end; said closure member having inner and outer concentric lips downwardly extending therefrom, said inner and outer concentric lips having a common central axis, said inner and outer concentric lips having opposed adjacent wall surfaces spaced from and confronting one another to form a downwardly opening cavity therebetween, an inwardly directed locking groove formed within the outermost of said confronting sidewalls of the cavity, an outwardly directed seal groove formed within the innermost of said confronting sidewalls of the cavity;

a marginal open end of the container is made complementary respective to the closure member cavity; said marginal open end of said container is received in close tolerance relationship within the closure member cavity;

said confronting sidewalls of said cavity are parallel and spaced apart an amount equal to the distance measured between said inner and outer wall surfaces of the container marginal end to thereby slidably adjoin said inner and outer wall surfaces of the container marginal end with the confronting sidewalls of said cavity when the closure member is mated with the container open end;

an outwardly directed, circumferentially extending locking groove formed in the container outer wall surface at a location respective to said locking groove of the outermost of said confronting sidewalls of the cavity such that when the closure member is mated with the container, the locking grooves are brought into registry with one another and jointly cooperate together to form a locking passageway; said locking passageway extends circumferentially about the container and is spaced from the seal groove by the container end when the closure member is mated with the container;

a locking member of a size to be received within the locking passageway and thereby prevent removal of the closure member from the container when said inwardly directed locking groove and said outwardly directed locking groove are brought into alignment with one another; said locking member is a flexible, elongate member that is larger than either of the locking grooves;

port means arranged tangentially respective to the locking passageway and communicating the locking passageway with the exterior of the closure member and thereby admitting the locking member into the locking passageway; and,

seal means in said seal groove for sealingly engaging the inner wall surface of the container.

5,335,808

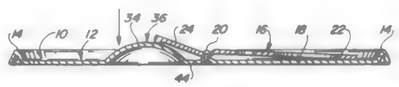
EASY OPENING POP-TOP CAN LID

Robert W. Lee, 515 Vista Del Campo, Camarillo, Calif. 93010

Filed Aug. 9, 1993, Ser. No. 103,367

Int. Cl.[5] B65D *17/34*

U.S. Cl. 220—269 **6 Claims**



1. An improved, easy-opening pop-top can lid, said lid comprising, in combination:

a) a generally horizontally extending can cover plate having an upper surface, a peripheral rim and a scored area medial of said rim;

b) an elongated, generally horizontally extending lift tab pivotally secured to the upper surface of said plate at a pivot point medial of said rim, said lift tab having a lift arm on one side of said pivot point and a drive arm on the opposite side of said pivot point, said tab being aligned

VOL 1165 ISS 2 AG 9 1994 UMI

with said scored area whereby said drive arm is approximately directly over said scored area; and,

c) a flexible convex curved surface integral with said plate and extending upwardly therefrom approximately directly under said drive arm within said scored area, said convex surface defining means for application of downward finger pressure for inverting said convex surface to enable said drive arm to be pivoted downward to automatically raise said lift arm above said plate for easy grasping by a finger and subsequent pivoting upwardly to drive said drive arm down against said scored area to disengage and fold said scored area from said lid to provide a pour opening for said lid.

5,335,809

HEAT INSULATING CONTAINER

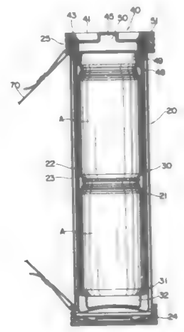
Shoji Tolda; Seiichi Ito; Hidetoshi Ohta, and Isao Ishikawa, all of Tokyo, Japan, assignors to Nippon Sanso Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 994,045, Dec. 15, 1992, abandoned, which is a continuation of Ser. No. 623,428, Jan. 31, 1991, abandoned. This application Jan. 27, 1994, Ser. No. 187,261

Claims priority, application Japan, Apr. 20, 1989, 1-46398[U]; Apr. 21, 1989, 1-47577[U]

Int. Cl.[5] B65D *81/38*

U.S. Cl. 220—425 **3 Claims**



1. A heat-insulating container comprising:

a straight cylindrical container having a heat-insulating vacuum layer disposed between a metal inner cylinder with a closed bottom end and a metal outer cylinder with a closed bottom end, said inner and outer cylinders being joined and sealed to each other and forming an open end of said straight cylinder container;

a synthetic resin inner case with a bottom at one end and a wide mouth at the other end for insertion into said straight cylindrical container; and

a cap for closing said open end of said straight cylindrical container, said cap having a heat-insulating plug member fitted into said mouth of said inner case and a ring for rotatably supporting said plug member, said plug member having an inner surface provided with an engagement portion for abutting an upper peripheral edge of a large-diameter storage container placed in said inner case when said plug member is positioned in a first axial direction in said mouth and having a recess where an upper portion of a small-diameter storage container placed in said inner case is fitted when said plug member is positioned in said first axial direction in said mouth and means on said ring member for engaging said plug member and for moving said plug member in said first axial direction, axially of said heat-insulating container and away from said mouth of said inner case, when said plug member is rotated in a first circumferential direction and for moving said plug member in a second axial direction, axially of said heat-insulating container and toward said mouth of said inner case and into engagement with said mouth, when said plug member is rotated in an opposite circumferential direction;

said cap including a cap mounting member mounted on an upper end of said straight cylindrical container with a support shaft in a tangential direction of said cap mounting member, and a link portion on said ring for engagement with said support shaft, said link portion having a groove in which said cap is movable in an axial direction of said ring.

5,335,810

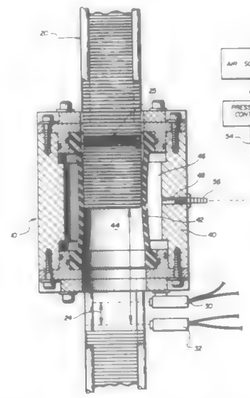
AIR ACTUATED FLOW CONTROL/LOAD BREAKER/GAS SEAL UNIT

Peter W. Holloway, London, England, assignor to Fleetwood Systems, Inc., Countryside, Ill.

Filed May 6, 1993, Ser. No. 58,458

Int. Cl.[5] G07F *11/04*

U.S. Cl. 221—10 **19 Claims**



1. Flow control apparatus for use in an article handling system having a conduit through which articles such as can ends in a facewise nested condition are conveyed from a first location to a second location, said flow control apparatus being interposed in said conduit for controlling the flow of articles therethrough, and comprising: a housing operatively interposed in said conduit; an elastomeric tubular sleeve member mounted in said housing and defining a through passage of a shape generally complementary to the shape of said articles; means defining a pressure chamber; said tubular sleeve member being responsive to the level of pressure in said pressure chamber for applying a corresponding force about the periphery of said articles.

5,335,811

PERFORATED PAPER TOWEL DISPENSER

Michel Morand, Montreal, Canada, assignor to Wyant & Company Limited, Lachine, Canada

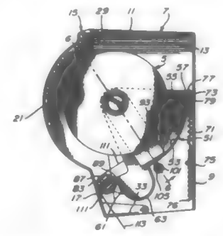
Filed Mar. 24, 1993, Ser. No. 36,260

Claims priority, application United Kingdom, Nov. 3, 1992, 9222968

Int. Cl.[5] B65H *16/00*

U.S. Cl. 221—45 **15 Claims**

1. A dispenser for perforated paper towelling having a casing; the casing having a front cover; mounting means in the top of the casing for rotatably mounting a roll of perforated paper towelling; and outlet in the bottom of the casing for the towelling, the outlet being substantially narrower in width than the paper towelling; a guide roller rotatably mounted in the casing between the mounting means and the outlet for guiding the towelling at its full width from the mounting means, the towelling being gathered in passing from the guide roller to the outlet; biasing means for biasing the roller against the front cover of the casing; whereby when the towelling is pulled from the outlet tearing of a sheet off the towelling begins inwardly of the edges of the towelling along the first line of perforations int eh towelling in the towelling as the first line of perforation passes over the guide roller.



5,335,812

DRINKING VESSEL LID HAVING A DEFINED STRAW PUNCTURABLE AREA

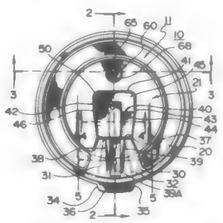
Peter K. Boller, North York, Canada, assignor to Lily Cups Inc., Scarborough, Canada

Filed Oct. 29, 1993, Ser. No. 143,014

Claims priority, application Canada, Sep. 21, 1993, 2106653

Int. Cl.[5] B65D *41/46*; A47G *19/22*

U.S. Cl. 220—709 **7 Claims**



1. A lid for a drinking vessel, said lid being formed from plastics material and having a main disc closure portion for covering an open top end of said vessel and a perimeter wall for mounting the lid on said open top end of said vessel, said lid being characterized by a rupturable depression in said main disc portion and which is capable of receiving and being ruptured by one end of a drink through straw pushed endwise by hand, said depression including an annular sleeve like sidewall terminating in a bottom end wall and which walls at their juncture provide a predetermined tear line, said depression further including a formation in each of a portion of said side and bottom walls and extending from a first selected area of said side wall in a direction toward another second selected area of said side wall spaced from said first area, said formation being engageable with said one end of the straw to facilitate initiating the rupture adjacent said second area.

5,335,813

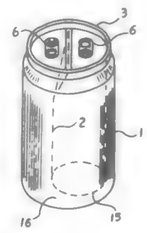
DOUBLE-VESSEL CAN

Hao Qi, 33 Forestbrook Cr., Scarborough, Ontario, Canada M1T 1S7

Continuation-in-part of Ser. No. 984,316, Dec. 2, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 95,847

Int. Cl.[5] B65D *21/02*

U.S. Cl. 220—524 **5 Claims**



1. A multiple cell container comprising:

a hollow outer vessel having a top edge about a perimeter of an open top;

a hollow internal vessel having a top rim about a perimeter of an open top, the internal vessel being housed within the outer vessel, a first portion of the rim being in overlapping juxtaposition with an adjacent portion of the top edge, a second portion of the rim spanning across said open top of the outer vessel;

a cap closing said open tops of both the outer and internal vessels thus defining a first closed cell within the internal vessel and a second closed cell within the outer vessel external to the internal vessel, the cap comprising a one piece formed sheet having an inverted peripheral channel about an outer edge of said cap and an inverted interior channel spanning between and communicating with said peripheral channel, the peripheral channel of the cap being sealingly secured to the top edge of the outer vessel and the overlapping portion of the rim, and the interior channel being sealingly secured to the second portion of the rim, the interior channel and second rim portion defining a seam folded over a top face of the cap,

wherein said internal vessel comprises a substantially cylindrical vessel of a first external radius, said outer vessel comprises a substantially cylindrical vessel of a second internal radius greater than said first radius, the top upper rim of said internal vessel being of substantially semicircular shape of external radius equal to said second radius, and a top portion of said internal vessel comprising a transition surface between said substantially semicircular top rim and a bottom cylindrical portion of said internal vessel of said first radius.

5,335,814

STACKABLE TRAY DISPLAYING SODA BOTTLES

James Hepp, Glen Cove, N.Y., assignor to All Stock Displays Inc., Glen Head, N.Y.

Filed Aug. 9, 1993, Ser. No. 104,356

Int. Cl.[5] B65D *21/02*

U.S. Cl. 220—509 **10 Claims**

1. A nesting tray for shipping bottles, comprising:

vertically extending sidewalls about a periphery of the nesting tray;

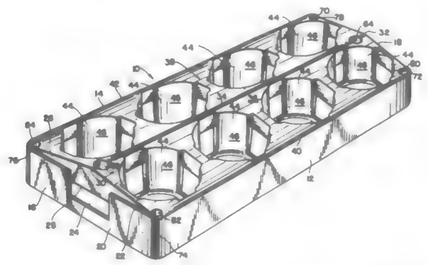
an upper face extending from said sidewalls, said upper face including a plurality of bottle retaining pockets;

vertical channels inwardly adjacent from said vertically extending sidewalls, said vertical channels including means for engaging a rod for disposing a substantially identical successive lower tray and a substantially identical successive upper tray a vertical distance therefrom; and

VOL 1165 ISS 2 AG 9 1994 UMI

nesting means for engaging the substantially identical successive lower and upper trays to the nesting tray;

wherein said sidewalls include a first pair of parallel sidewalls intersecting with a second pair of parallel sidewalls, and wherein said first pair of sidewalls includes an outward portion and an inward portion, said outward portion of a height equal to a height of said second pair of sidewalls, said inward portion extending above the height of



said outward portion and being inset from said outward portion to upwardly engage into the substantially identical successive upper tray so that said inward portion of said nesting tray is immediately inwardly adjacent from and engaging the outward portion of the substantially identical successive upper tray thereby forming at least a portion of said nesting means wherein said inward portion of one of said first pair of sidewalls includes first and second opposed sloping edges meeting in an apex.

5,335,815

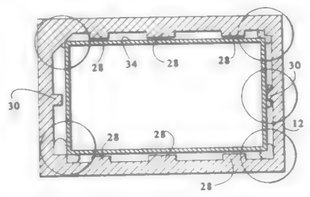
STORAGE TANK IN A PRECAST, PROTECTIVE SHELL

Allan H. Josselyn, Arlington, Va., assignor to The Reinforced Earth Company, Vienna, Va.

Filed Apr. 9, 1993, Ser. No. 45,378

Int. Cl.[5] B65D *90/12*

U.S. Cl. 220—445 **6 Claims**



1. In combination, a cylindrical tank with a cylindrical side wall and closed ends serving as a fluid vessel;

a cylindrical lower half shell with an inside wall on an outer portion of the shell, tank supports integrated with the half shell and defining an inner portion of the shell, and the tank support project from the inside wall, said half shell tank supports compatible with the cylindrical tank and supportive of the tank in the lower half shell spaced from the inside wall of the outer portion of the half shell, the inside wall retains leakage from the tank within the lower half shell, said lower half shell defining spaced corners at the tank ends; and

partially filled, pervious, closed ended, flexible containers being filled with hardenable coagulate material, said flexible containers positioned at said corners intermediate the lower half shell and the cylindrical tank to thereby position and locate the tank within the half shell in a desired orientation, said flexible containers being pervious to air and moisture, but not previous to the coagulate material, said coagulate material in the flexible containers capable of forming a rigid tank support of hard material surrounded by the flexible container when the hardenable coagulate material hardens to thereby retain the cylindrical tank in said orientation in the lower half shell.

5,335,816

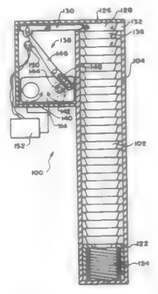
INTERACTIVE MEDICATION DELIVERY SYSTEM FOR MEDICATION PREPACKAGED IN BLISTER PACKS

Stephen B. Kaufman, Highland Park; Alcandro DiGianfilippo, Crystal Lake; Tamara L. Sager, Libertyville, all of Ill.; Clark F. Bow, Newton, and Ralph J. DeVito, Stanhope, both of N.J., assignors to HealthTech Services Corporation, Northbrook, Ill.

Continuation of Ser. No. 784,664, Oct. 24, 1991, abandoned, which is a continuation of Ser. No. 415,085, Sep. 29, 1989, abandoned. This application Jul. 24, 1992, Ser. No. 919,625

Int. Cl.[5] B65G *59/00*

U.S. Cl. 221—13 **7 Claims**



1. A dispensing device for medication prepacked in sealed containers comprising

wall means defining a storage compartment for holding at least two of the medication containers in a vertically stacked orientation, one above the other, that includes an upper-most container and a lower-most container, the wall means including

an upper wall movable between a closed position covering the storage compartment and an opened position for loading medication containers into the storage compartment,

a lower wall for engaging the bottom-most container loaded within the storage compartment and being movable in a vertical path toward and away from the upper wall,

a side wall having a discharge opening adjacent the upper wall,

a push member movable in a horizontal path that is transverse the vertical path of the lower wall and that is aligned with the discharge opening, the push member being movable in its horizontal path between a first position spaced from the discharge opening and a second position adjacent the discharge opening,

spring means for continuously urging the lower movable wall toward the upper wall to thereby urge the stack of containers toward the upper wall and, when the upper wall is in its closed position, for holding the upper-most container against the upper wall in alignment with the discharge opening,

means for reciprocating the push member between its first and second positions, the push member being operative, when moved from its first position toward its second position, for ejecting the then upper-most container from the compartment through the discharge opening, and, when moved from its second position toward its first position, for allowing the next upper-most container to be urged against the upper wall into alignment

with the discharge opening in response to the spring means, and

means for interrupting movement of the push member toward its second position when push member movement is impeded.

5,335,817

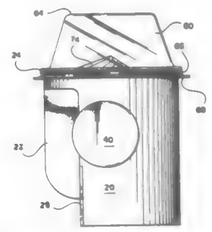
PAPER FILTER DISPENSER

Ernest G. Powers, P.O. Box 192, Clermont, Ga. 30527

Filed Jun. 7, 1993, Ser. No. 72,883

Int. Cl.[5] B65H *3/00*

U.S. Cl. 221—43 **3 Claims**



1. A dispenser for dispensing individual filters from a stack of filters, comprising:

a housing having a top opening with a circumferential lip, a front portion having an exit opening, side portions, a rear portion and a bottom portion;

a friction wheel mounted on an axle having a first end and a second end mounted within said housing for rotary movement;

a drive means in mechanical communication with said axle for rotating said wheel;

a means contacting said wheel for providing a friction passageway comprising a band mounted in said housing with a portion of said band in contact with said friction wheel;

said top opening capable of associating with a removable container top having a bottom, a top, comprising a removable sealing flap, said container containing a prepackaged set of removable filters said container being removably mountable on said top opening by engaging said lip.

5,335,818

COLD DRINK VENDING MECHANISM

Algert J. Maldanis, Heath, Tex.; Robert I. Courts, Caledonia, Mich.; Dennis Dutkevitch, Clifton, and David J. Mooney, Flanders, both of N.J., assignors to C-Power Companies, Inc., Rockwell, Tex.

Filed Jun. 3, 1993, Ser. No. 71,641

Int. Cl.[5] G07T *11/00;* **B65G** *59/00*

U.S. Cl. 221—131 **19 Claims**

1. A vending mechanism for a cylindrical article dispenser of a type having a column of stacked cylindrical articles moved along a dispensing pathway by a force, such as by the force of gravity, said vending mechanism comprising:

(a) an escapement mechanism attachable in operative alignment with a vending pathway of a column of stacked cylindrical articles;

(b) an upstream arm pivotably attached to said escapement mechanism, having a first position blocking a portion of said vending pathway and having a second position retracted from said vending pathway to allow cylindrical articles to move past said upstream arm;

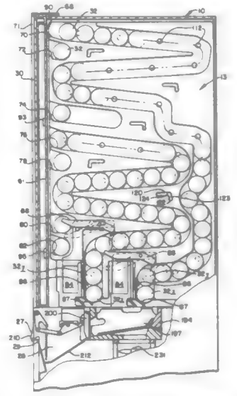
(c) a downstream arm pivotably attached in said escapement mechanism, having a first position blocking a portion of said vending pathway and having a second position retracted from said vending pathway to allow cylindrical articles to move past said downstream arm;

(d) a first rotary cam rotatably attached in said escapement mechanism having a profile shape for moving said upstream arm between its first and second positions;

(e) a second rotary cam coaxially rotatable with said first cam and having a profile shape for moving said downstream arm between its second position and its first position; and

(f) said first and second rotatable cams having their profile shapes offset with respect to each other so that said upstream arm is moved into its blocking position only when said downstream arm is also in its blocking position, and so that said downstream arm is moved into or out of its blocking position only when said upstream arm is in its blocking position, such that co-rotation of said cams does not act to raise either said upstream or said downstream arm against said force which causes said column to move along said dispensing pathway.

14. A delivery door mechanism for use in vending a cylindrical article from inside a temperature controlled cabinet to outside of a cabinet, comprising:



(a) an angled tray attached to said temperature controlled cabinet for receiving cylindrical articles and rolling them to an opening at a lower end of said angled tray;

(b) an insulated door biased closed against said opening at said lower end of said angled tray, which insulated door is mechanically openable to allow said cylindrical article to roll out of said opening at said lower end of said angled tray;

(c) a normally closed delivery chute positioned adjacent said insulated door for receiving articles from said opening;

(d) an access door manually openable from outside of said cabinet to open said normally closed delivery chute to gain access thereinto; and

(e) mechanical linkage operatively connected between said access door and said insulated door to actuate said insulated door to an open position upon manually opening said access door thereby allowing said cylindrical article to enter said delivery chute to which access is obtained through said access door.

5,335,819

POSTMIX BEVERAGE DISPENSER AND A METHOD FOR MAKING A BEVERAGE DISPENSER

Herman H. Martin, Schaumburg, Ill., assignor to Wilshire Partners, Cleveland, Ohio

Filed Nov. 13, 1992, Ser. No. 976,415

Int. Cl.[5] B67D *5/62*

U.S. Cl. 222—146.6 **25 Claims**

1. A modular apparatus for dispensing beverages comprising: at least one metallic soda tube having a bellows element,

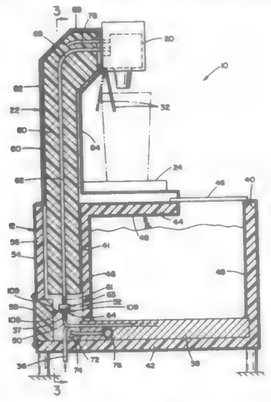
VOL 1165 ISS 2 AG 9 1994 UMI

said tube receiving carbonated water from a source of carbonated water;

a plurality of metallic syrup tubes having a bellows element, said tubes receiving syrup from a plurality of sources of syrup;

a cooler in heat exchange relationship with said soda tube and said syrup tubes;

a plurality of dispensing heads each of said heads adapted to



receive carbonated water and syrup and dispense beverage when actuated;

a tower assembly supporting said heads;

at least one metallic soda conduit having a bellows element and a plurality of metallic syrup conduits having a bellows element within said tower connected to said dispensing heads and to said syrup and soda tubes; and,

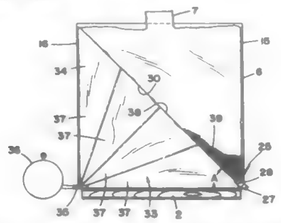
foam insulation within said tower assembly around said syrup and soda conduits.

5,335,820

CONTAINER AND DISPENSER SYSTEM FOR FLOWABLE SOLIDS

Lee O. Christianson, Willmar, Minn., assignor to Christianson Systems, Inc., Blomkest, Minn.

Filed Feb. 26, 1993, Ser. No. 23,355
Int. Cl.[5] B65D *35/56*
U.S. Cl. 222—105 **17 Claims**



1. A container arrangement for storage and dispensing of flowable particulate material; said container arrangement comprising:

(a) a container including a bottom and a wall with a lower dispensing aperture therein; and,

(b) means for selectively erecting a slanted dispensing surface operably positioned underneath particulate material received within said container;

(i) said dispensing surface, when erected, being positioned above said container bottom;

(ii) said slanted dispensing surface, when erected, being oriented to dispense particulate material within said container downwardly toward said wall having said lower dispensing surface therein, under influence of gravity;

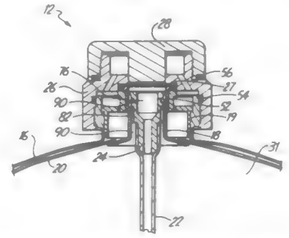
(iii) said means for selectively erecting a slanted dispensing surface, underneath particulate material, comprising a construction including a pedestal framework and flow surface arrangement; said pedestal framework being constructed and arranged to support said flow surface arrangement with a flow surface thereof slanted downwardly toward said lower dispensing aperture; and; said pedestal framework comprising a plurality of longitudinal guide supports supported by a plurality of cross-supports; each of said cross-supports having a slot therein for engagement with each of said longitudinal guide supports; and, each of said longitudinal guide supports having a slot therein for engagement with each of said cross-supports.

5,335,821

LIQUID CHEMICAL CONTAINER AND DISPENSING SYSTEM

Michael L. Osgar, Eagan, Minn., assignor to NOW Technologies, Inc., Bloomington, Minn.

Filed Sep. 11, 1992, Ser. No. 943,900
Int. Cl.[5] B67D *5/54*
U.S. Cl. 222—83 **31 Claims**



1. A container for liquid chemicals, the container comprising:

an outer container having a mouth;

a fluid container having a port and an interior;

means for supporting the fluid container within the outer container;

a dip tube having a fluid passage from an upper end to a lower end of the dip tube;

a dip tube coupling at the upper end of the dip tube for insertion into the port, the dip tube coupling having a cavity in its upper end which is connected to the fluid passage of the dip tube;

vent means intermediate the interior of the fluid container and the cavity for permitting gas flow between the interior of the fluid container and the cavity; and

sealing means for sealing the cavity so that when the sealing means is removed, gas is permitted to escape from the fluid container.

5,335,822

APPARATUS FOR DISPENSING TICKETS FROM A STACK

Kazmier J. Kasper, Hopkinton, Mass., assignor to Algonquin Industries, Inc., Bellingham, Mass.

Filed Mar. 11, 1993, Ser. No. 29,689
Int. Cl.[5] B65G *59/06*
U.S. Cl. 221—259 **10 Claims**

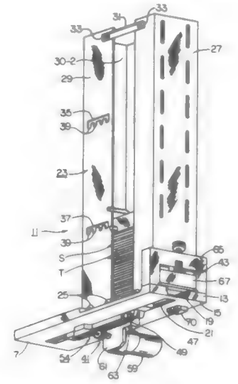
1. Apparatus for dispensing tickets from a stack comprising:

(a) a frame for enclosing a stack of tickets,

(b) a gate for receiving tickets from said stack and allowing only one ticket at a time to pass through,

(c) a toothed blade disposed underneath said frame, and

(d) means coupled to said toothed blade for bringing said toothed blade into engagement with a lowermost ticket in said stack, moving said toothed blade so that the lowermost ticket is transported from said stack into said gate, bringing said toothed blade out of engagement with said ticket and then moving said toothed blade back to engage the next ticket in the stack, said means including a rack and pinion, said rack being coupled to said toothed blade,



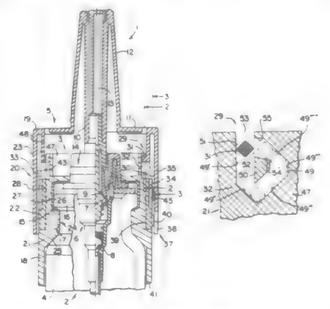
wherein said toothed blade includes a head portion having a serrated edge and a bifurcated stem portion.

5,335,823

DISPENSER FOR MEDIA

Karl-Heinz Fuchs, Radolfzell, and Lothar Graf, Rielasingen-Worblingen, both of Fed. Rep. of Germany, assignors to Ing. Erich Pfeiffer GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 751,159, Aug. 28, 1991, abandoned.
This application May 7, 1993, Ser. No. 59,513
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1990, 4027672
Int. Cl.[5] B67D *5/26*
U.S. Cl. 222—36 **17 Claims**



1. A dispenser for media comprising:

a basic body mountable to a storage vessel for the media;

at least one discharge actuating means for activating a discharge of the media from the vessel, said discharge actuating means being movable in a motion cycle path between an initial position and an actuated position relative to said basic body;

manually releasable catch means, said discharge actuating means being lockable relative to said basic body by said manually releasable catch means against an actuating motion along said motion cycle path, said actuating motion beginning from a starting position on a return path returning back from the actuated position, wherein said catch means repeatedly automatically self-engages only after said discharge actuating means is moved to said actuated position to lock said discharge actuating means relative to said basic body after each movement to said actuated position, said catch means being operationally releasable to an unlocked configuration and remaining unlocked without a discharge actuating operation of the discharge actuating means; and

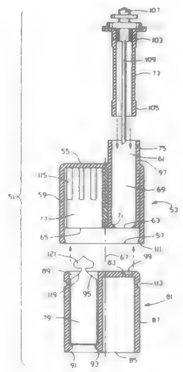
a determining device, wherein a release motion of said catch means substantially simultaneously engages motion of a control device of said determining device to permit functioning of said determining device.

5,335,824

SPRAY DEVICE WITH AMPOULE OPENING MECHANISM

Jack Weinstein, Manchester Township, Ocean County, N.J., assignor to Primary Delivery Systems, Inc., Easton, Pa.

Filed Aug. 6, 1993, Ser. No. 102,818
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—82 **16 Claims**



1. A spray container device for receiving, opening and spray dispensing liquid from an ampoule, which comprises:

(a.) an upper container having a top, a bottom and side walls and having at least one top opening and at least a first bottom opening and a second bottom opening and having a vertical central axis of rotation, said top opening and bottom openings being off-centered from said central axis of rotation, said top opening and said first bottom opening being in vertical alignment so as to create a pump passage through said upper container for receiving a pump, said upper container further having an inside wall adjacent said second bottom opening of sufficient size and strength for breaking the top of an ampoule;

(b.) a lower container rotatably connected to and below said upper container, said lower container having a top, a bottom and side walls and having at least one too orifice and at least one bottom orifice and having the same vertical central axis of rotation as said upper container, said one top and one bottom orifice being in alignment with one another and forming a passage through said lower container adapted to receive a liquid-containing ampoule with a top of said ampoule protruding above the top of said lower container;

whereby said upper container and lower container are adapted to be rotated relative to one another from a first position to a second position, said first position being wherein said second bottom opening of said upper container is located above said top orifice of said lower container, and said second position being wherein said first bottom opening of said upper container is located above said top orifice of said lower container, such that a user may insert an ampoule while said device is in its first

VOL 1165 ISS 2 AG 9 1994 UMI

position, rotate said upper and lower containers relative to one another so as to break off a top of said ampoule, rest the device in its second position and insert a spray mechanism into said device and ampoule for spray dispensing.

5,335,825

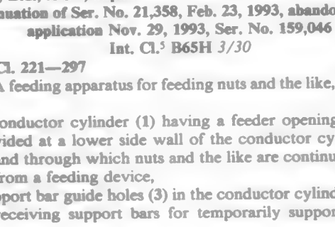
METHOD AND APPARATUS FOR DISPENSING MULTIPLE BEADS OF VISCOUS LIQUID

Wesley Fort, Norcross, Ga., assignor to Nordson Corporation, Westlake, Ohio

Continuation of Ser. No. 786,901, Nov. 1, 1991, abandoned. This application Sep. 13, 1993, Ser. No. 120,638

Int. Cl.[5] B67D *5/00*

U.S. Cl. 222—1 24 Claims



10. The method of discharging a number of extruded beads of thermoplastic material, comprising:

transmitting thermoplastic material from a dispenser outlet to a fluid path in a nozzle via operation of a movable valve means which is movable with respect to the dispenser outlet between an open position for permitting discharge of the material and a closed position for preventing such discharge, the fluid path located downstream of the movable valve means and including a distribution passage and a plurality of discharge passageways having inlet and outlet portions;

directing the thermoplastic material vertically upwardly from the distribution passage, against the influence of gravity, into the inlet portions of the plurality of discharge passageways;

transmitting the thermoplastic material through the discharge passageways at a higher velocity than the velocity at which the thermoplastic material is transmitted through the distribution passage;

extruding a bead of thermoplastic material from the outlet portions of each of the discharge passageways, whereby thermoplastic material is retained in the distribution passage and in the discharge passageways of the fluid path after the movable valve means closes the dispenser outlet, the distribution passage and the discharge passageways remaining in fluid communication during extrusion when the dispenser outlet is open and after extrusion when the dispenser outlet is closed.

5,335,826

APPARATUS FOR FEEDING NUTS OR THE LIKE

Hiroshi Kazino, Komaki, Japan, assignor to Aoyama Seisakusho Co., Ltd., Aichi, Japan

Continuation of Ser. No. 21,358, Feb. 23, 1993, abandoned. This application Nov. 29, 1993, Ser. No. 159,046

Int. Cl.[5] B65H *3/30*

U.S. Cl. 221—297 9 Claims

1. A feeding apparatus for feeding nuts and the like, comprising:

a conductor cylinder (1) having a feeder opening (2) provided at a lower side wall of the conductor cylinder (1) and through which nuts and the like are continuously fed from a feeding device,

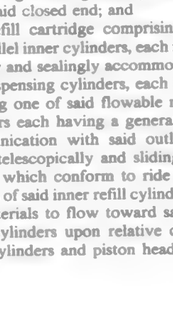
support bar guide holes (3) in the conductor cylinder (1) for receiving support bars for temporarily supporting nuts and the like fed into the conductor cylinder (1) from the feeder opening (2),

ball recesses (4) formed in the conductor cylinder (1) and located above the support bar guide holes (3),

balls (5) having a diameter larger than the thickness of a wall of the conductor cylinder (1) and fitted in respective ball recesses (4),

leaf springs (12) attached to an outer surface portion of the conductor cylinder (1),

a pair of support bars (11) slidably mounted in the support bar guide holes (3) for temporarily and horizontally supporting a single nut and the like fed into the conductor cylinder (1) from the feeder opening (2), each support bar



(11) having an outer end portion coupled to an associated one of the leaf springs (12), the leaf springs (12) urging respective support bars (11) inwardly toward an interior of the conductor cylinder (1), and

a plunger (21) inserted slidably in the conductor cylinder (1) for up and down movement in the conductor cylinder (1), and the plunger (21) having means at a lower portion thereof for engaging the balls (5) to push the engaged balls outward of the conductor cylinder (1) when the plunger is moved downwardly in the conductor cylinder (1) to cause the support bars (11) to release a supported nut and the like for ejecting the released nut and the like from the conductor cylinder.

5,335,827

MULTI-CAVITY DISPENSING REFILL CARTRIDGE

James L. Gentile, Orange, Conn., assignor to Chesebrough-Pond's USA Co., A Division of Conopco, Inc., Greenwich, Conn.

Filed Dec. 22, 1992, Ser. No. 995,049

Int. Cl.[5] B67D *5/00*

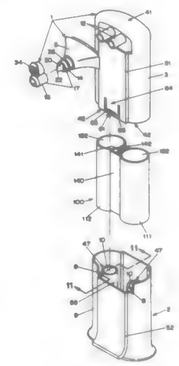
U.S. Cl. 222—137 11 Claims

1. A refillable multi-cavity dispenser for the coextrusion of at least two flowable materials, comprising:

a reusable dispensing head comprising at least two hollow and separate parallel outer cylinders, said outer dispensing cylinders having a first generally closed end and outlet channels at said closed end; and

a disposable refill cartridge comprising two hollow and separate parallel inner cylinders, each inner cylinder being telescopically and sealingly accommodated within one of said outer dispensing cylinders, each inner refill cylinder for containing one of said flowable materials, said inner refill cylinders each having a generally open top end in fluid communication with said outlet channels, and a bottom end telescopically and slidingly accommodating piston heads which conform to ride sealingly along the interior walls of said inner refill cylinder so as to force said flowable materials to flow toward said top ends of said inner refill cylinders upon relative compression of said inner refill cylinders and piston heads, said piston heads being compressibly engageable with piston rods of a reusable base unit; and

an outlet means in fluid communication with said outlet channels, said outlet means including adjacent outlet openings unconnected to each other and having means causing said flowable materials to flow toward each other at said outlet openings to form single banded, unmixed stream of said materials outside of said outlet means; and



a reusable base unit which slidingly and telescopically accommodates said dispensing head, said base unit having piston rods which are compressibly engageably with said piston heads; and

orientating means for allowing each inner refill cylinder to be telescopically accommodated by one of the outer cylinders and not by the other.

5,335,828

PAINT POWDER SUPPLY DEVICE

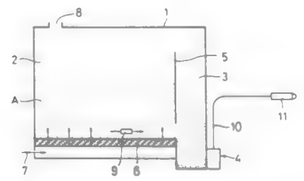
Haruhisa Kaiju, Kobe; Hitoshi Yoshida, Osaka; Junichi Yukikawa, Osaka, and Akihisa Yoshizaki, Osaka, all of Japan, assignors to Matsuo Sangyo Co., Ltd., Osaka, Japan

Division of Ser. No. 813,013, Dec. 24, 1991, Pat. No. 5,240,185. This application Feb. 5, 1993, Ser. No. 14,467

Claims priority, application Japan, Dec. 27, 1990, 2-408025; Dec. 27, 1990, 2-408053; Jun. 18, 1991, 3-145802; Jun. 19, 1991, 3-147378

Int. Cl.[5] B65G *69/06*

U.S. Cl. 222—195 6 Claims



1. A fluidized type paint powder tank having an outer casing forming an enclosure and including walls constituting a top of the tank and a bottom of the tank; a partitioning wall extending vertically within said outer casing and separating the interior of the casing into a fluidizing chamber and a storage chamber, said partitioning wall defining a space at the bottom of the tank and a space at the top of the tank, said fluidizing and storage chambers communicating with one another within said enclosure through each of said spaces so as to allow paint powder to flow from said fluidizing chamber to said storage chamber via the space defined by the partitioning wall at the bottom of the tank and to allow air to flow from said storage chamber to said fluidizing chamber via the space defined by the partitioning wall at the top of the tank; fluidizing means for fluidizing paint powder in only the fluidizing one of said chambers whereby paint powder in the fluidizing chamber will be kept still; and discharge means for discharging paint powder from said storage chamber.

5,335,829

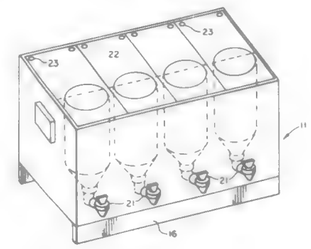
KNOCKDOWN DISPENSER KIT

Nancy Sovana, 1707 Sahara La., Mitchellville, Md. 20716

Filed Dec. 15, 1992, Ser. No. 991,299

Int. Cl.[5] B65D *5/00*

U.S. Cl. 222—183 8 Claims



1. A dispenser for dispensing beverage from a beverage bottle, the dispenser comprising:

a cabinet defining a housing with at least one dispenser nozzle attached to said cabinet housing;

at least one tube attached to said dispenser nozzle and terminating at an inlet fitting tube having at least one side aperture; and

a cap unit for use on the beverage bottle, said cap unit including a cap portion, said cap portion having an apertured top wall integrally connected to a stationary tube having one closed end and at least one side aperture in the stationary tube, a sliding tube, said sliding tube slidingly located within said stationary tube through said apertured top wall, said sliding tube having a closed end, at least one side aperture and a seal means positioned around said sliding tube to form a seal between said stationary tube and said sliding tube, and said sliding tube being movable to an open position from a closed position when said cap portion is placed over the inlet fitting tube and said inlet fitting tube moves the sliding tube such that the side apertures of said inlet fitting tube, sliding tube and stationary tube are all aligned.

5,335,830

PUMP DISPENSER FOR LOTIONS AND/OR LARGE DOSES OF PRODUCT

Miro S. Cater, Newtown, Conn., assignor to Bespak Plc, Norfolk, England

Continuation-in-part of Ser. No. 964,385, Oct. 21, 1992. This application Jan. 27, 1993, Ser. No. 9,964

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[5] B05B *11/00*

U.S. Cl. 222—153 15 Claims

1. A pump dispenser comprising:

a body consisting of upper and lower hollow cylinders of dissimilar diameters which communicate with each other, the diameter of the upper cylinder being larger than the diameter of the lower cylinder, said cylinders defining an outer boundary of a pump chamber;

a piston defining the inner boundary of the pump chamber, the piston having an upper vertical hollow section open at both ends with a first extension in peripheral sealing en-

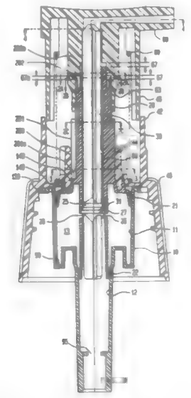
VOL 1165 ISS 2 AG 9 1994 UMI

gagement with the inner surface of the upper cylinder and a lower and smaller second extension in peripheral sealing engagement with the inner surface of the lower cylinder, the second extension having upper and lower ends, the lower end being open, the second extension having an aperture therein located between its ends;

a vertical stem slidable within the upper section of the piston;

first means forming a vertical discharge conduit coaxial with the piston and stem;

an actuator disposed above the body, the actuator being secured to the upper end of the stem and coupled to the upper end of the piston;



second means biasing the stem into position to close the discharge conduit and open the aperture when the dispenser is in rest position;

third means for locking the actuator in a down position;

fourth means for closing a passage between the upper end of the piston and the actuator; and

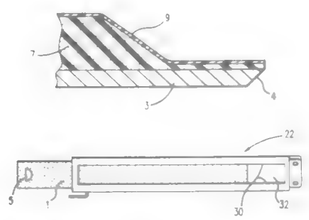
said third and fourth means being manually operable and having a first position at which the actuator is locked in a down position and the passage is closed and a second position at which the actuator is not locked and the passage is open for normal operation of the dispenser.

5,335,831

INSERTABLE TONER HOPPER SEALING STRIP

Mark D. Foster, Lexington, Ky., assignor to Lexmark International, Inc., Greenwich, Conn.

Filed Apr. 30, 1993, Ser. No. 54,178
Int. Cl.[5] G03G *15/06, 21/00*
U.S. Cl. 222—325 **15 Claims**



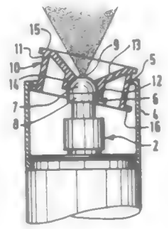
1. An insertable sealing strip for a toner cartridge having a channel around an opening in the toner hopper of such toner cartridge comprising a support lamination smooth on the side constituting the outside of said strip, said support lamination being a first thickness, having a longitudinal dimension, and being stiff in the direction of said longitudinal dimension, a resilient foam lamination attached to said support lamination, and a compliant lamination smooth on the side away from said resilient lamination attached to said resilient lamination on the side opposite said support lamination, said compliant lamination being a second thickness, the ratio of said first thickness to said second thickness being in the order of magnitude of 7 to 1, said strip being rigid against pushing force in the direction of said longitudinal dimension and having a handle portion on one end for pulling said strip from said cartridge when said cartridge is prepared for use in imaging.

5,335,832

DEVICE FOR ACTIVATING A DISPENSING MECHANISM SUCH AS A PUMP OR A VALVE

Vincent de Laforcade, Clamart, France, assignor to L'Oreal, Paris, France

Filed Feb. 16, 1993, Ser. No. 18,246
Claims priority, application France, Feb. 14, 1992, 92 01696
Int. Cl.[5] B65D *83/20*
U.S. Cl. 222—402.13 **6 Claims**



1. A device for activating a dispensing mechanism fitted to a container that contains a product to be dispensed, said dispensing mechanism comprising:

an axially movable push-type tubular control rod provided with a dispensing orifice;

a pushbutton being mounted at an end of the control rod and provided with an outlet nozzle located substantially at a center of an outer face of said pushbutton, said outlet nozzle being aligned and in communication with said rod;

a substantially cylindrical operating part having an annular upper surface constituting an annular force application zone and a support member annularly pivotably supporting said operating part;

a stop member engageable with said support member; and

a ball joint connecting said operating part to said push button;

wherein said support member is formed to cooperate with said stop member such that application of an activation force at any point on said upper annular surface of the operating part triggers displacement of the pushbutton and the control rod to activate the dispensing mechanism.

5,335,833

ZIRCONIA GRAPHITE SLIDE GATE PLATES

Gilbert I. Rancoule, Beaver County, Pa., assignor to Vesuvius Crucible Company, Pittsburgh, Pa.

Filed Sep. 14, 1992, Ser. No. 944,432
Int. Cl.[5] B22D *41/08*
U.S. Cl. 222—600 **10 Claims**

1. A fired refractory shape for use in controlling the flow of molten metal, prepared from a mix consisting of in weight %:

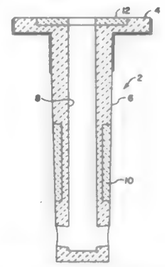
75–86 partially stabilized zirconia,

4–5 silicon metal,

3–6 graphite,

4–7 carbonaceous binder,

3–12 alumina, and



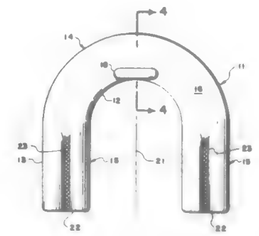
wherein the partially stabilized zirconia includes one or more members selected from the group consisting of magnesia stabilized zirconia and yttria stabilized zirconia.

5,335,834

INFLATABLE CHILD-CARRYING SEAT

Ernest A. Verina, 7040 W. Palmetto Park Rd., Boca Raton, Fla. 33433

Filed Apr. 26, 1993, Ser. No. 51,991
Int. Cl.[5] A61G *1/00*
U.S. Cl. 224—159 **7 Claims**



1. A carrying seat for a child that enables the child to be seated upon the shoulders of an adult with his legs straddling the adult's head and extending downwardly upon the chest region of the adult, said carrying seat comprising an integral inflatable structure fabricated of flexible polymeric sheet material and comprised of a main portion bounded in part by upper and lower surfaces and interior and exterior seams of U-shaped contour, having an inflation valve, an arcuate rear region, and opposed leg portions forwardly disposed as tangential extensions of said rear region, and an abutment member upwardly emergent from said main portion in said rear region adjacent said interior seam, said carrying seat being of substantially symmetrical shape with respect to a plane orthogonal to said upper and lower surfaces and bisecting said rear portion in parallel relationship to said leg portions.

5,335,835

SKI EQUIPMENT CARRYING STRAP

Larry E. Hogan, 9202 Glenbury, Houston, Tex. 77037

Filed May 4, 1993, Ser. No. 56,732
Int. Cl.[5] A45C *13/20;* **B65D** *85/18*
U.S. Cl. 224—257 **8 Claims**

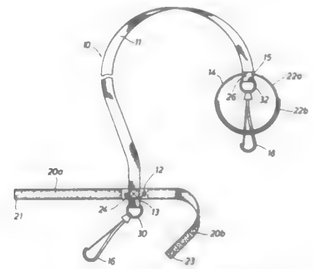
1. A strap for carrying ski equipment, including skis, ski boots, and ski poles, the strap comprising:

a first strap member having first and second strap ends;

a second strap member having third and fourth strap ends, the second strap member affixed transversely relative to the first strap member at the first strap end;

first means for connecting the third and fourth strap ends to form a loop for encircling a pair of skis and a pair of ski poles at a first point;

a third strap member having fifth and sixth strap ends, the third strap member affixed transversely relative to the first strap member at the second strap end;



second means for connecting the fifth and sixth strap ends to form a loop for encircling the pair of skis and the pair of ski poles at a second point;

first means for clipping a ski boot thereto affixed to the first strap end such that the first strap end terminates with the first clipping means; and

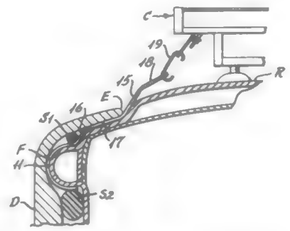
second means for clipping a ski boot thereto affixed to the second strap end such that the second end terminates with the second clipping means.

5,335,836

OVERHEAD CAR CARRIER ATTACHMENTS

Troy R. Waddell, P. O. Box 51168, Amarillo, Tex. 79159

Filed Mar. 10, 1992, Ser. No. 849,618
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—329 **3 Claims**



1. A mounting bracket for use as a tie down for overhead carriers and racks to secure the carriers and racks to a roof of an automotive vehicle having a door which is selectively closed with respect to an inner door frame have an upper frame edge which protrudes outwardly and which is sealed by at least one seal extending between the door and the upper frame edge and wherein the door has an upper edge which is generally flush with the roof, the bracket comprising an inner end portion of a configuration to cooperatively receive the upper frame edge of the door therein, said inner end portion of said mounting bracket being generally semi-cylindrical in configuration having an inner concave surface with is engageable with the upper frame edge of the door, an intermediate strap portion extending from said inner end portion of a length and configuration to extend from the upper edge of the door frame, beyond the at least one seal and through an interface between the door and the roof, said intermediate strap portion having first and second end portions, said first end portion connected to

VOL 1165 ISS 2 AG 9 1994 UMI

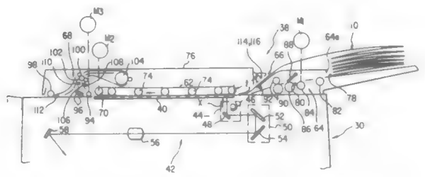
said inner end portion and having an outer surface which is substantially reversely curved with respect to said inner concave surface of said inner end portion, wherein said intermediate strap portion is generally Z-shaped whereby said first and second end portions are generally parallel to one another and are interconnected to one another by an intermediate section, and an outer end portion, said outer end portion having means for anchoring the carriers and racks thereto.

5,335,837

AUTOMATIC DOCUMENT FEEDER RESPONSIVE TO PAPER JAM

Shirou Saeki, Yokohama; Yukitaka Nakazato; Kenji Hashimoto, both of Tokyo, and Tadashi Ikoma, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 704,854, May 21, 1991, Pat. No. 5,295,616, which is a continuation of Ser. No. 356,452, May 24, 1989, abandoned. This application Jul. 14, 1993, Ser. No. 90,936
Claims priority, application Japan, May 24, 1988, 63-126494; Jun. 25, 1988, 63-83438; Jul. 6, 1988, 63-89070
Int. Cl.[5] B65H *20/00*
U.S. Cl. 226—110 2 Claims



2. An automatic document feeder for an image recorder having top open platen comprising:

an inlet for feeding to the platen a continuous document constituted by a sequence of continuous pages and having a plurality of equally spaced holes;

document transporting means located to face the platen for transporting a continuous document onto and along said platen;

document discharging means for discharging said continuous document from said platen;

first sensor means for generating pulses by sensing the holes of the continuous document;

second sensor means for sensing transport of the continuous document; and

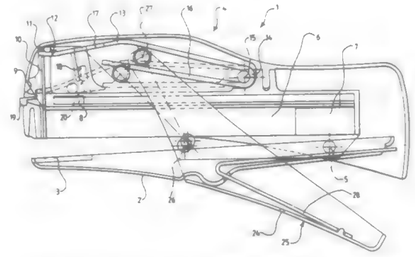
control means for controlling said document transporting means and said document discharging means, said control means producing a return signal for reversing a transport direction of the document transporting means such that said continuous document is driven in a reverse transport direction which is opposite to a direction in which the continuous document is fed to the platen from the inlet, with said control means causing said document transporting means to drive in the reverse transport direction in response to a paper jam and to drive said continuous document in the reverse transport direction until a number of holes in the continuous document have been counted during the reverse transport.

5,335,838

STAPLING MACHINE

Edward M. Harris, Pontyclun, Wales, and Michael Burlington, Mark Cros, England, assignors to ACCO-Rexel Group Services Plc, West Drayton, England

Filed Nov. 17, 1992, Ser. No. 976,342
Claims priority, application United Kingdom, Nov. 19, 1991, 9124499.6
Int. Cl.[5] B25C *5/11*
U.S. Cl. 227—132 6 Claims



1. A stapling machine for stapling together sheets of paper, said stapling machine comprising:

a first arm;

an anvil for clinching the ends of the arms of a staple, said anvil being integral with said first arm;

a second arm being pivotally connected to said first arm;

a magazine for carrying staples, said magazine being mounted on said second arm;

said second arm having a staple ejection slot adjacent said magazine;

means for biasing staples within said magazine towards said staple ejection slot;

a staple ejector blade for ejecting staples through said staple ejection slot towards said anvil, said staple ejector blade being mounted on said second arm adjacent said staple ejection slot;

an actuator element for moving said staple ejector blade relative to said second arm, said actuator element being operatively connected to said staple ejector blade; an actuator lever for applying a first predetermined force and a second predetermined force greater than said first predetermined force to said actuator element; and a toggle, said toggle being pivotally mounted on said second arm, said toggle having a shoulder, said shoulder being engaged with said actuator element during an application of said first predetermined force to retain said actuator element in a stationary position relative to said second arm, and said shoulder being disengaged from said actuator element during an application of said second predetermined force to allow said actuator element to move relative to said second arm.

5,335,839

SPRING ACTUATED FASTENER DRIVING TOOL

William S. Fealey, Jamestown, R.I., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Aug. 13, 1993, Ser. No. 106,373
Int. Cl.[5] B25C *5/11*
U.S. Cl. 227—132 15 Claims

1. A spring actuated fastener driving tool, comprising:

a housing including a magazine for containing an elongated assembly of releasably interconnected fasteners, said magazine having a forward end and a drive track extending past said forward end to an exit opening;

biasing means associated with said magazine for urging an assembly of fasteners contained therein towards said forward end;

a drive element mounted for reciprocal movement along said drive track;

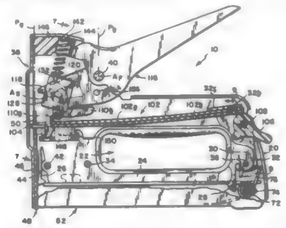
elongated power spring means for reciprocating said drive element, said power spring means being anchored at one end with respect to said housing and being connected at an opposite end to said driver element;

bearing means for establishing a first axis of rotation, said bearing means being carried by said housing;

pawl means for releasably connecting said bearing means to said power spring means, said pawl means being carried by said bearing means for pivotal movement about said first axis into and out of engagement with said power spring means;

return spring means associated with said housing for biasing said pawl means into engagement with said power spring means;

a handle engageable with said bearing means and mounted on said housing for pivotal movement about a second axis of rotation parallel to said first axis, said first axis being located between first and second parallel reference planes respectively containing said drive track and said second axis, said handle being pivotable about said second axis through successive driving cycles each including:



a) a rest position at which said driver element extends across the forward end of said magazine to provide an abutment against which an endmost fastener of said assembly is urged by said biasing means;

b) an intermediate position acting through said bearing means and said pawl means in engagement with said power spring means to resiliently deflect and load said power spring means with an accompanying retraction of said driver element from the forward end of said magazine to thereby permit said endmost fastener to advance into said drive track; and

c) a release position at which said pawl means is disengaged from said power spring means and said power spring means is thus freed to resiliently return said driver element to its location at said rest position, thereby ejecting a fastener in said drive track from said housing through said exit opening; and

guide means associated with said housing for accommodating displacement of said bearing means towards said second reference plane in response to pivotal movement of said handle from said rest position to said release position.

5,335,840

Patent Not Issued For This Number

5,335,841

METHOD OF MANUFACTURING WELDED PIPE WITH EXCELLENT CORROSION-RESISTANT INNER SURFACE

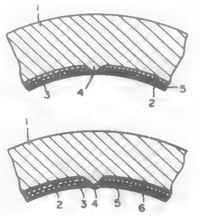
Hiroshi Yamanashi, Mishima, Japan, assignor to USUI Kokusai Sangyo Kaisha Ltd., Sunto, Japan

Division of Ser. No. 785,329, Nov. 1, 1991, Pat. No. 5,277,228.
This application Feb. 24, 1993, Ser. No. 21,982
Claims priority, application Japan, Nov. 2, 1990, 2-298498
Int. Cl.[5] B21C *37/30*
U.S. Cl. 228—149 9 Claims

1. A method of manufacturing a welded pipe having an excellent inner surface corrosion resistance comprising:

forming on at least one surface of a steel strip a first plate layer of one of a first metal comprising at least at least one of Ni, Co and Ni- or Co-base alloys;

then forming a second plate layer of a second metal comprising at least one of a single metal or alloy having a lower melting point than the first metal or allow on top of the first plate layer;



thereafter welding the thus plated steel strip into a pipe with the plated surface being inside the pipe; and

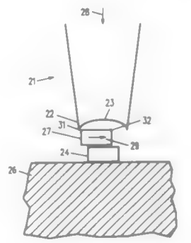
then heat-treating said pipe at a temperature which is higher than the melting point of said second metal but lower than the melting point of said first metal.

5,335,842

SELF-ALIGNING SINGLE POINT BONDING TOOL

Shahram Mostafazadeh, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 19, 1993, Ser. No. 33,933
Int. Cl.[5] H01L *21/603;* B23K *3/00*
U.S. Cl. 228—179.1 11 Claims



1. A single point bonding tool for connecting leads together, said tool including an end portion comprising, a distal end solely having a faceted surface.

5,335,843

SOLDERING PROCESS AND APPARATUS

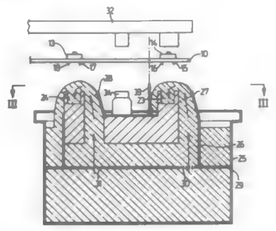
William Sund, 8 Amos Crescent, Downsview, Ontario, Canada M3H 3X9

Filed Oct. 13, 1993, Ser. No. 135,592
Int. Cl.[5] B23K *1/00, 3/00*
U.S. Cl. 228—180.1 12 Claims

1. A soldering process for joining a pair of metallic members comprising providing a flow of liquid solder to a container, terminating said flow of solder when said container is overflowing leaving the container full of solder with a meniscus determined by the viscosity of the solder, moving said metallic

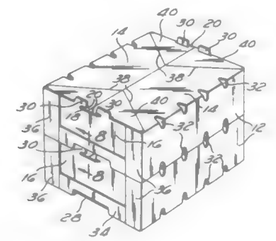
VOL 1165 ISS 2 AUG 9 1994 UMI

members and the container with respect to each other until the metallic members are immersed in the solder, removing said



metallic members from the solder and permitting the metallic members to cool.

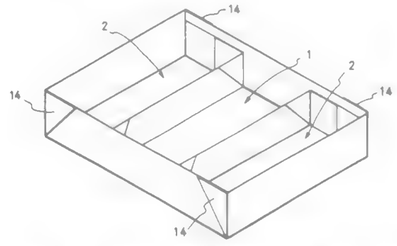
5,335,844
FRUIT AND PRODUCE CONTAINER
Thomas R. Young, 1535 E. Orangewood, No. 118, Anaheim, Calif. 92805
Continuation-in-part of Ser. No. 932,892, Aug. 19, 1992. This application Apr. 8, 1993, Ser. No. 45,756
Int. Cl.[5] B65D *5/32*
U.S. Cl. 229—23 R **16 Claims**



1. A container comprising:
a) a bottom member;
b) a plurality of upwardly extending planar first members formed to said bottom member and defining walls of said container, said first members comprising corrugated cardboard;
c) at least one upwardly extending second member formed to said bottom member and defining reinforcement for increasing the structural strength of the container, said second member(s) comprising solid fiberboard; and
d) wherein said second member(s) define walls of said container.

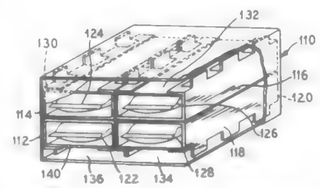
5,335,845
PARTITIONED AND FOLDABLE PAPER FOOD CONTAINER
Yuan-Hsin Liu, 11th-1 Floor, No. 90, Fu Hsin S. Road, Sec. 1, Tah An District, Taipei, Taiwan
Filed Aug. 18, 1993, Ser. No. 107,991
Int. Cl.[5] B65D *5/36, 5/48*
U.S. Cl. 229—120.18 **1 Claim**

1. A paper blank foldable into a partitioned container having multiple compartments, the paper blank having a pattern comprising:
a) a main compartment defined by a main bottom section, a pair of first end wall sections, each first end wall section adjoining an end edge of the main bottom section at a first folding line, a pair of first lateral wall sections, each first lateral wall section adjoining a lateral edge of the main bottom section at a second folding line, and four first corner sections, each first corner section connecting an adjacent first end wall section and an adjacent first lateral wall section, each first corner section including a diagonal folding line for permitting the corner section to fold and form a first adhering section for adhering to the adjacent lateral wall section and form a box body; and
b) a pair of subsidiary compartments, each subsidiary compartment defined by a subsidiary bottom section adjoined to a first end wall section at a third folding line, a second end wall section adjoining an end edge of the subsidiary bottom section at a fourth folding line, a pair of second



lateral wall sections, each second lateral wall section adjoining a lateral edge of a subsidiary bottom section at a fifth folding line; and
c) each subsidiary bottom section including a pair of second corner sections, each second corner section connecting the adjacent second end wall section and a second lateral wall section, and a sixth folding line extending diagonally across the adjacent second end wall section and each second lateral wall section for permitting the second corner section to fold inwardly and form a second adhering section for adhering to the adjacent second lateral wall section.

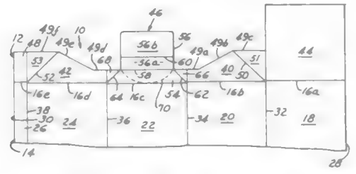
5,335,846
CRUSHABLE SHIPPER
Sidney T. Smith, Lake Forest; James Chase, Grayslake, and Jeffrey R. Sonderman, Island Lake, all of Ill., assignors to Clintec Nutrition Company, Deerfield, Ill.
Filed Dec. 21, 1992, Ser. No. 993,396
Int. Cl.[5] B65D *5/50, 5/48*
U.S. Cl. 229—120.32 **17 Claims**



1. A shipping container for housing at least one product comprising:
a shell having a top wall, a bottom wall and four side walls;
a compartment within the shell for housing the product, the compartment having a top surface, a bottom surface, and two side surfaces and at least one leg projecting from the compartment substantially perpendicularly from one of the surfaces as an extension of and coplanar to at least one of the two side surfaces;
a first zone within the shell, the first zone defined by at least a portion of the shell, the bottom surface and the at least one leg of the compartment, the zone further defining an

open area below the compartment allowing the bottom surface to flex into the first zone in response to a force.

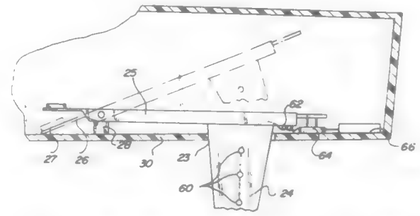
5,335,847
FLAT TOP CONTAINER AND BLANK FOR CONSTRUCTING SAME
Robert E. Lisiecki, Stanwood, Mich., assignor to Elopak Systems A.G., Glattbrugg, Switzerland
Continuation of Ser. No. 822,861, Jan. 21, 1992, abandoned. This application Nov. 13, 1992, Ser. No. 975,674
Int. Cl.[5] B63D *17/32*
U.S. Cl. 229—244 **8 Claims**



1. A thermoplastics coated blank for forming into a container, wherein the blank includes:
(a) a row of first, second, third and fourth body panels,
(b) a side seam flap extending from one of said first and fourth body panels at one end of said row for sealing to the other of said first and fourth body panels at the opposite end of said row,
(c) a row of first, second, third and fourth fold-in closure panels parallel to and extending along the row of body panels, the closure panels being connected to respective ends of the respective body panels, one of said closure panels being a cover panel, and
(d) an extension panel extending from one of said first and fourth closure panels at one end of the row of closure panels and connected to an adjacent end of said side seam flap and to an edge of said one of said first and fourth closure panels for being sealed to the other of said first and fourth closure panels and for subsequently being sealed between said one and said other of said first and fourth closure panels with said first closure panel overlying said fourth closure panel,
characterized in that said fourth closure panel includes means for preventing seepage past the outer end of said extension panel when it is sealed between said one and said other of said first and fourth closure panels, and for controlling film delamination when said cover panel is torn back after being sealed.

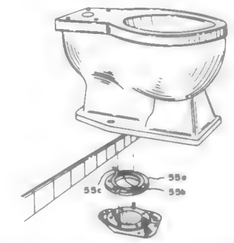
5,335,848
NEWSPAPER DELIVERY BOX SIGNALLING APPARATUS
Lewelyn R. Schreiber, 20 Obsidian Dr., Chambersburg, Pa. 17201
Filed May 24, 1993, Ser. No. 65,477
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—34 **9 Claims**

1. A new and improved newspaper delivery box signalling apparatus, comprising:
housing assembly means for receiving and containing a delivered newspaper, said housing assembly means including a first opening for receiving the newspaper, and including a second opening for permitting signalling of newspaper delivery, and
delivery signal assembly means, supported by said housing assembly means, for signalling delivery of a newspaper, said delivery signal assembly means including a signal flag, a counterweight, and a lever/fulcrum assembly supporting said signal flag and said counterweight.
further including light signaling means on said flag, electrical power means for selectively energizing the light signaling means, and contact switch means responsive to said



delivery signal means for connecting said power means to said light signaling means in order to energize said light signaling means.

5,335,849
CLOSET RING USED IN A REPAIR FLANGE ASSEMBLY
Christopher B. Forbes, 200 W. Hyde Park 15-C, Myrtle Beach, S.C. 29572
Continuation-in-part of Ser. No. 719,942, Jun. 24, 1991, Pat. No. 5,246,255. This application May 10, 1993, Ser. No. 36,860
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—12 **22 Claims**



1. In combination with a closet flange having a neck and a plurality of circumferentially spaced screw holes and a floor surface supporting a toilet bowl base thereon such as commonly found in bathrooms, a repair flange anchored to the floor and secured to the underside of an attachment rim of the closet flange and becoming an integral part of the closet flange so as to extend the anchoring surface of the closet flange over a larger area of said floor surface that exists under the toilet bowl base and received over gaps in deteriorated and poorly cut openings underneath the attachment rim of said closet flange, said repair flange comprising substantially rigid, flat sheet flange members of predetermined shape, each member having an outer, peripheral edge portion which comprises a front, back and side edge, said edges being dimensioned that each flange member is contained within the base of the toilet said flange members also including inner edge portions defining a substantially elliptical opening so that said flange members can accommodate closet flanges of various sizes and shapes, said inner edge portions located medially between said respective outer peripheral edges, said inner edge portions surrounding in close relationship thereto the neck of said closet flange underneath said rim of said closet flange, the flange members fitting neatly under the screw holes of the closet flange, said repair flange members having a plurality of vertically oriented slots spaced in said flange members, fastening means engaging said flange members through said slots to secure said flange members to said underlying floor surface, a plurality of arcuate guide marks located to be radially outward from the rim of the closet flange, countersunk spacers and

VOL 1165 ISS 2 AG 9 1994 UMI

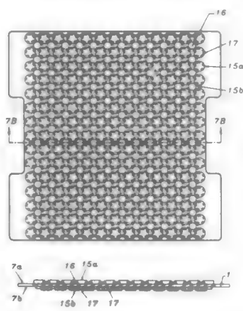
washers adjacent thereto radially spaced around the rim of said closet flange for accommodating fasteners that secure said closet flange to said flange members, a closet ring having a circular opening and the same dimension and shape as the closet flange is fastened proximate the closet flange, said toilet bowl base having a horn fitted directly on said closet flange and sealed, the improvement wherein said closet ring has an under surface and having fixed to said under surface a circular band of instantaneous bonding material, said band extending about a half inch beyond the diameter of said circular opening, said closet ring being covered with a release strip of the same diameter as said bonding material, said release strip being removed just prior to use.

5,335,850

ATTENUATING PAD FOR CONCRETE RAILWAY TIES

Jude O. Igwemezie, 2902 - 95 Thorncliffe Park Drive, Toronto, Ontario, Canada M4H 1L7

Continuation of Ser. No. 447,862, Dec. 8, 1989, abandoned. This application Apr. 7, 1992, Ser. No. 864,713
Int. Cl.[5] E01B *9/68*
U.S. Cl. 238—283 **14 Claims**



1. A railway tie pad adapted to progressively absorb increasing degrees of loading comprising:
(a) a central core of relatively planar proportions having first and second opposed sides and being composed of resilient, shear resisting material, and
(b) a plurality of protruding studs composed of resilient compression-resisting material, distributed over said first and second sides of said core,
wherein said studs distributed across said first side of the pad comprise a first class of primary studs of a given height above the first side, interspersed with a second class of secondary studs of lesser height above the first side, and wherein the studs on the second side of the pad comprise offset studs which are offset from said primary studs and opposed by said secondary studs so that, upon progressive loading of the pad, bending and shear stress form in the core and the interspersed secondary studs of lesser height are progressively exposed to loading.

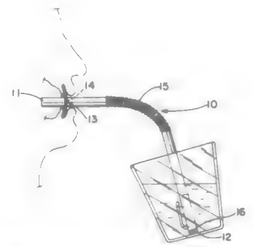
5,335,851

DRINKING STRAW FOR RUNNERS

Jerry Adaska, 1954 - 18th St., Cuyahoga Falls, Ohio 44223, and Don L. Robart, 2223 Hoch Dr., Cuyahoga Falls, Ohio 44221

Filed Sep. 23, 1992, Ser. No. 950,407
Int. Cl.[5] A47G *21//18*
U.S. Cl. 239—33 **6 Claims**

1. A drinking straw comprising:
(a) an elongate cylinder having a proximal end for insertion into a user's mouth and a distal end for insertion into a consumable fluid within a container, said cylinder further having at least one side aperture through the cylinder positioned in close proximity to the distal end thereof, for preventing the cylinder distal end from sealing against the container bottom, and said cylinder having a clip at the distal end thereof to allow the user to attach the straw to an article of clothing; and



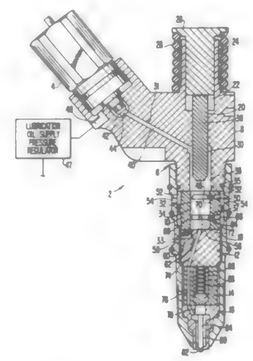
(b) a mouthpiece affixed about a periphery of said proximal end, the mouthpiece having at least one aperture disposed therethrough to permit the user to selectively breathe through said at least one mouthpiece aperture or to drink through the cylinder.

5,335,852

LUBRICATION OIL CONTROLLED UNIT INJECTOR

George L. Muntean; Harry L. Wilson, and Gary L. Gant, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 28, 1993, Ser. No. 10,313
Int. Cl.[5] F02M *47/02*
U.S. Cl. 239—89 **31 Claims**



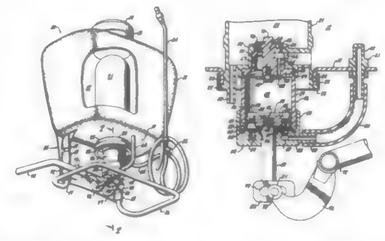
1. A fuel injector for periodic injection of fuel into a combustion chamber of an engine at variable times from cycle to cycle under the control of the engine lubrication fluid, comprising:
an injector body containing an injector cavity and a discharge orifice communicating with one end of said injector cavity to discharge fuel into the combustion chamber, said injector body including a lubrication fluid tinting circuit and a fuel metering circuit separate from said lubrication fluid timing circuit; and
a variable hydraulic timing and metering means for varying the timing and metering of fuel injection by the fuel injector on a cycle by cycle basis by controlling the flow of lubrication fluid in said lubrication fluid timing circuit to form a lubrication fluid link having a variable effective length positioned in said lubrication fluid timing circuit within said injector cavity, said variable hydraulic timing and metering means including a control valve positioned within said lubrication fluid timing circuit for controlling the flow of lubrication fluid in said lubrication fluid timing circuit to vary said variable effective length of said lubrication fluid link to vary the timing of fuel injection, said control valve operable to vary the metering of fuel for fuel injection by the fuel injector on a cycle by cycle basis, wherein said control valve is movable from a first position in which lubrication fluid may flow through said lubrication fluid timing circuit and a second position in which lubrication fluid flow through said lubrication fluid timing circuit to said lubrication fluid link is blocked to define a specific effective length of said lubrication fluid link corresponding to a specific timing for beginning fuel injection.

5,335,853

COMPACT LONG-LASTING SPRAYER, PUMP AND AGITATOR COMBINATION

Pedro Wirz, Panamericana 445, Lagos de Moreno, C.P. 47400, Jalisco, Mexico

Filed Jul. 20, 1992, Ser. No. 916,942
Claims priority, application Mexico, Mar. 27, 1992, 92 01368
Int. Cl.[5] B05B *9/04, 9/08*
U.S. Cl. 239—142 **9 Claims**



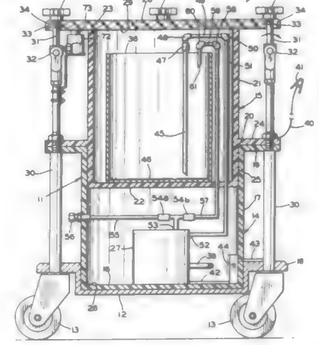
1. Apparatus for applying insecticides, fertilizers, and other liquids to crops and the like, which comprises:
(a) a large liquid-container tank adapted to be carried on the back of an operator,
said container tank having a fill opening therein and an associated fill-opening cover,
said container tank having a bottom interior portion and also having a lower portion,
(b) a pressure vessel mounted within said container tank,
said pressure vessel having a bottom portion extending downwardly to a bottom wall of said container tank,
said bottom portion of said pressure vessel being sealingly associated with said bottom wall of said container tank,
(c) a pumping assembly associated with said bottom portion of said pressure vessel and also with said bottom interior portion of said container tank,
said pumping assembly comprising wall means to define a cylinder chamber,
said pumping assembly further comprising a double-acting piston assembly mounted slidably in said cylinder chamber for reciprocation therein longitudinally thereof,
said pumping assembly further comprising valve and passage means to connect the portion of said cylinder chamber above said piston assembly to said pressure vessel and to said container tank, in such manner that upon reciprocation of said piston assembly said piston assembly pumps liquid from said container tank to said pressure vessel,
said pumping assembly further comprising means to connect the portion of said cylinder chamber below said piston assembly to said lower portion of said container tank, in such manner that upon reciprocation of said piston assembly said piston assembly pumps said liquid back and forth between said lower portion of said container tank and said portion of said cylinder chamber below said piton assembly,
(d) means, including an operator-actuated handle, to effect reciprocation of said piston assembly, and
(e) hose and control-valve means to discharge a liquid from said pressure vessel for application onto crops,
characterized in that there is no diaphragm associated with said pumping assembly, all pumping of said liquid being done by said above-recited pumping assembly, and further characterized in that any liquid which leaks between said piston assembly and said wall means of said cylinder chamber does not drop onto the operator or the earth but instead joins liquid being pumped back and forth between the lower portion of said container tank and the portion of said cylinder chamber beneath said double-acting piston.

5,335,854

ELECTRICALLY INSULATED PRESSURE FEED PAINT RESERVOIR

David M. Seitz, Temperance, Mich., and Michael D. Elbertson, Elm Grove, Wis., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Dec. 11, 1992, Ser. No. 989,351
Int. Cl.[5] A01G *25/09; B05B 9/03*
U.S. Cl. 239—146 **4 Claims**



1. A pressure feed paint reservoir suitable for holding electrically conductive paint which is charged while applying with an electrostatic spray gun comprising an electrically non conducting housing having an open top, an electrically non-conducting lid, means for removably securing said lid to said housing to close said open top, said housing and said lid defining an electrically insulated closed chamber for receiving paint, a pneumatically operated paint pump mounted in said housing, said pump having a paint inlet and a paint outlet, means for delivering paint from a paint container in said chamber to said pump inlet, means for delivering paint under pressure from said pump outlet to a spray gun, and means for preventing stray current leakage between said lid and said housing comprising an electrically conductive wire embedded in said lid, said wire having a first and second ends, said first wire end projecting through said lid into said chamber, and means for electrically grounding said wire.

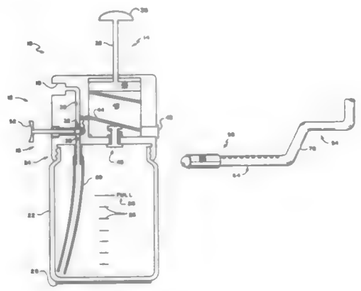
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,855

HYGIENIC SPRAY BOTTLE

Murray Borod, 3723 Parker Hill Rd., Santa Rosa, Calif. 95404

Filed Aug. 24, 1993, Ser. No. 111,117
Int. Cl.[5] B05B *1/16, 9/043*
U.S. Cl. 239—152 **8 Claims**



1. A hygienic spray apparatus for storing a liquid, and dispensing a stream thereof on demand, said hygienic spray apparatus comprising:

a storage container for holding liquid to be dispensed;

a cap connecting to said storage container by friction, said cap having

a pickup tube projecting downwardly from said cap and extending substantially to the bottom of said storage container, for conducting pressurized liquid into said cap,

means defining a conduit conducting liquid through said cap,

a manual valve disposed in series within said conduit, for releasing pressurized liquid from said storage container,

means defining an externally facing port in said cap, said port communicating between said conduit and the exterior of said cap,

a manual air pump for compressing air in said storage container;

a substantially rigid discharge tube insertable into said port, retainable therein by friction, and terminating in a nozzle having means defining upwardly oriented discharge holes, said discharge tube having a first section extending vertically downwardly and a second section having a distal end projecting horizontally radially away from said storage container at a level substantially even with the bottom of said storage container, and wherein said nozzle is below the bottom of said storage container; and

a sleeve slidably mounted on said nozzle, wherein certain said discharge holes being covered and prevented from discharging liquid by said sleeve and remaining said discharge holes discharging liquid when said manual valve is operated, whereby a user selects which of said discharge holes are operative, thus enabling liquid to be discharged selectively, nearer and farther from said storage container.

5,335,856

AIR BOOM SPRAYER TRAILER HITCH AND SUSPENSION

Micha Nathan, Pardess-Hanna, Israel, assignor to FMC Corporation, Chicago, Ill.

Filed Oct. 13, 1992, Ser. No. 959,831
Int. Cl.[5] A01B *59/00;* **B05B** *1/20*
U.S. Cl. 239—164 **8 Claims**

1. A tractor-drawn trailer having an air boom including a central structure for spraying liquid on a crop, comprising:

a frame having lateral sides;

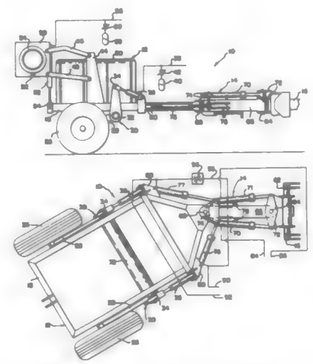
a tank for said liquid mounted on said frame;

a pair of bell cranks, each of which has an actuating arm and a wheel-supporting arm, pivotally connected to said frame, one of said pair of bell cranks being positioned on each of said lateral sides of said frame;

a ground-engaging wheel rotatively mounted on each of said wheel-supporting arms;

first hydraulic cylinders connected between said frame and said actuating arms for raising and lowering said frame relative to the ground;

first accumulator means communicating with said first hydraulic cylinders to isolate said frame from shock loads resulting from said wheels traversing uneven ground;



a pair of upright posts mounted on said frame;

a pair of links pivotally connected to each of said posts and to said central structure;

a second hydraulic cylinder connected between said frame and said air boom to raise and lower said air boom relative to said frame;

and a second accumulator means communicating with second hydraulic cylinder to isolate said boom from shock loads imposed on said frame.

5,335,857

SPRINKLER BREAKAGE, FLOODING AND THEFT PREVENTION MECHANISM

James W. Hagon, Salt Lake City, Utah, assignor to Sprinkler Sentry, Inc., Salt Lake City, Utah

Filed Jul. 14, 1993, Ser. No. 92,321
Int. Cl.[5] B05B *15/10*
U.S. Cl. 239—204 **19 Claims**

1. A device for breakage and flooding prevention for use on a watering system incorporating a pop-up sprinkler head, the device comprising:

a flooding prevention device comprising:

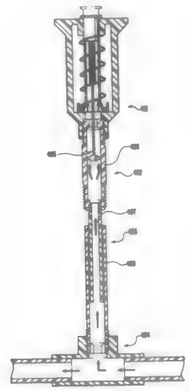
means for conducting pressurized fluid from a source to a destination, said conducting means having an interior fluid passageway and an exterior substantially fluid-tight body, said body including a constrained entry orifice for receiving fluid into said conducting means passageway and a constrained exit orifice at the opposite end of said conducting means passageway, and

a stopper locatable within said conducting means passageway, said stopper including a positioning means and a sealing means attachable to said positioning means, said stopper being slidable within said conducting means passageway, said sealing means being. adapted to form a substantially fluid-tight seal with said conducting means constrained entry orifice and said constrained exit orifice, said positioning means being extendable from within said conducting means to the exterior of said conducting means through said conducting means exit orifice, said positioning means being adapted for resting against a pop-up sprinkler head when water flows from said source to said destination, and

a breakage prevention device comprising:

a first body comprising a substantially fluid-tight outer shell, a first body hollow passageway within the interior of said first body, said first body hollow passageway being adapted to conduct a fluid the length of said first body, and a constrained exit orifice, and

a second body comprising a substantially fluid-tight outer shell, a second body hollow passageway within the interior of said second body, said second body hollow



passageway being adapted to conduct a fluid the length of said second body, and a rim about one end of said second body, said second body being adapted to be slidable within said first body passageway, and said first body constrained exit orifice being adapted to permit said second body to extend from the interior of said first body to the exterior of said first body through said constrained exit orifice;

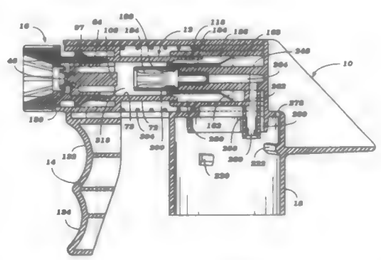
wherein each of said breakage prevention device and said flooding prevention device includes means for establishing a substantially fluid-tight engagement with each other.

5,335,858

PUMP SPRAYER HAVING LEAK PREVENTING SEALS AND CLOSURES

Walter B. Dunning, 21199 Christopher Cir., Sonora, Calif. 95370, and Robert L. Bundschuh, 6534 Miami Lakes Dr., Miami Lakes, Fla. 33014

Filed Apr. 14, 1993, Ser. No. 47,149
Int. Cl.[5] B05B *9/043*
U.S. Cl. 239—333 **40 Claims**



1. In a liquid sprayer of a type comprising a fixed housing part and a movable housing part together defining a variable volume pump chamber between them, wherein said fixed housing part includes a liquid inlet passageway for delivering liquid from a reservoir into the pump chamber, and an inlet valve, and said movable housing part includes a spray forming outlet and an outlet valve, wherein movement of the movable housing part towards the fixed housing part decreases the volume of the pump chamber, closes the inlet valve, opens the outlet valve, and forces liquid out from the pump chamber through the spray forming outlet, and wherein movement of the movable housing part away from the fixed housing part increases the volume of the pump chamber, closes the outlet valve, opens the inlet valve, and draws liquid through said inlet passageway into the pump chamber, the improvement characterized by;

said inlet passageway including an annular sidewall, a forward end, and an internal valve plug socket which opens towards the pump chamber, said socket including an annular base and an annular inlet valve seat at said base,

said movable housing part including an axially movable annular wall surrounding at least a forward portion of the annular sidewall of the inlet passageway, said annular wall forming a sidewall of the pump chamber;

a seal between said annular wall and said annular side wall of said inlet passageway,

said inlet valve including an axially elongated valve plug within said inlet passageway, said valve plug having a closure, first end directed towards the inlet valve seat, and an opposite, second end;

said inlet passageway including an internal valve plug stop spaced axially from the inlet valve seat and confronting the second end of the valve plug, said valve plug stop being spaced rearwardly from the forward end of said inlet passageway,

wherein when the inlet valve is closed the first end of the valve plug is against the inlet valve seat, and the second end of the valve plug is spaced axially from the valve plug stop, and

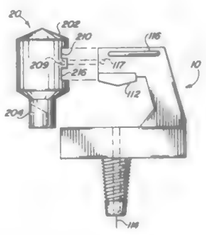
wherein when the inlet valve is open the second end of the valve plug is against the valve plug stop, the first end of the valve plug is spaced axially from the inlet valve seat, and a liquid flow path is formed in the valve plug socket around the valve plug, through which liquid flows into the pump chamber.

5,335,859

LOW-VOLUME IRRIGATION EMITTER WITH CHANGEABLE PATTERNS

Susan S. Thayer, 3808 Gaines Cove Dr., Winter Haven, Fla. 33884, and Timothy D. Wert, 1417 Glendale St., Lakeland, Fla. 33803

Filed Mar. 19, 1993, Ser. No. 34,553
Int. Cl.[5] B05B *1/26*
U.S. Cl. 239—390 **14 Claims**



1. An irrigation emitter, comprising:

a first member having a base, an arm supported in spaced relation to the base, means for attaching the base with a source of water and means for defining a path of water

VOL 1165 ISS 2 AG 9 1994 UMI

flow through the base toward the arm, the arm comprising a side arm position extending generally lateral from the base and spaced from the path of water flow, and a top arm portion extending generally lateral from the side arm portion and across the path of water flow; and

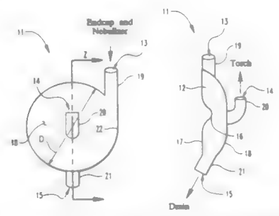
a second member having plural flow diverting surfaces, each flow diverting surface defining a different spray pattern, the second member including means for slidably engaging the arm so that a selected one of the flow diverting surfaces are position in the flow path, the slidable engaging means comprising a shaped slot in the second member, the slot dimensioned to receive the top arm portion in one of a plurality of positions, each position corresponding to one of the flow diverting surfaces.

5,335,860

ROTARY SPRAY CHAMBER DEVICE FOR CONDITIONING AEROSOLS

Gary M. Hieftje, and Min Wu, both of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Jan. 8, 1993, Ser. No. 1,815
Int. Cl.[5] B05B *1/34*
U.S. Cl. 239—469 **22 Claims**



1. A rotary spray chamber device for conditioning an aerosol, comprising:

chamber walls defining an internal chamber, an inlet opening through which aerosol can be directed into the internal chamber, an exit opening through which conditioned aerosol can exit the chamber, and a drain opening through which large droplets removed from the aerosol and collected as liquid in the chamber can exit therefrom;

said inlet opening being located such that an aerosol directed into the chamber through the inlet opening tangentially contacts chamber wall areas for imparting a rotary motion to the aerosol within the chamber;

an impact member extending inwardly into the chamber from a chamber wall location such that the impact member is impacted by the aerosol in its rotary motion, thereby removing large droplets from the aerosol and forming said conditioned aerosol.

5,335,861

FUEL INJECTING APPARATUS

Masanobu Matusaka, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 23, 1992, Ser. No. 996,107
Claims priority, application Japan, Dec. 27, 1991, 3-347017
Int. Cl.[5] F02M *51/06, 61/08*
U.S. Cl. 239—533.7 **5 Claims**

1. A fuel injecting apparatus for injecting a quantity of fuel into an engine, comprising:

a housing;

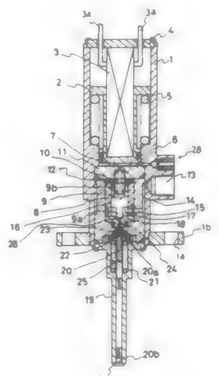
a nozzle connected to the housing and extending into the engine;

a valve member slidably fitted in the nozzle and having an end portion extending outside of the nozzle and closing the nozzle when said valve member is fully inserted in said nozzle;

a first fuel chamber formed in said housing and connected to a source of high pressure fuel;

a second fuel chamber formed in said housing and communicating with said nozzle such that high pressure fuel in said second fuel chamber extends said valve member in said nozzle to open said nozzle;

a metering element disposed in said housing between said first and second fuel chambers for passing a metered quantity of fuel from said first fuel chamber to said second fuel chamber so as to extend said valve member and open said nozzle;



a plunger movably fitted in said housing and exposed to a pressing force of high pressure fuel from said first fuel chamber, said plunger being movable by said pressing force to a first position in which said plunger closes said metering element to prevent the passage of the metered quantity of high pressure fuel therepast; and

a driving element in said housing, said driving element being actuatable to vary the pressing force of high pressure fuel on said plunger such that said plunger can move to and from said first position, whereby high pressure fuel may selectively be permitted to pass said metering element for injection into the engine.

5,335,862

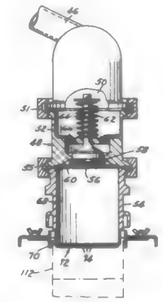
DISCHARGE NOZZLE FOR A LIQUID FILLING ASSEMBLY

Leo J. Esper, Troy, Mich., assignor to Elopak Systems A.G., Glattbrugg, Switzerland

Filed Nov. 5, 1992, Ser. No. 971,570
Int. Cl.[5] F16K *15/14*; B05B *1/30*
U.S. Cl. 239—570 **24 Claims**

1. A nozzle for use at a chamber of a machine for filling cartons with a liquid, said nozzle comprising a coil spring operatively connected to said chamber and including a plurality of coils adapted to retain a volume of liquid in said chamber until such liquid under pressure operates to urge the coils apart to provide clearances between the coils sufficient for the flow therethrough of said liquid to minimize high velocity streams of said liquid flowing between the coils and to develop laminar-like flow characteristic in a selected one of divergent and convergent patterns suitable for both bottom-up and top-down carton filling applications, wherein the adjacent coils of said spring in their liquid-retaining conditions are positioned so as

to provide predetermined spaces therebetween, and wherein the respective and overall areas of the spaces are such that



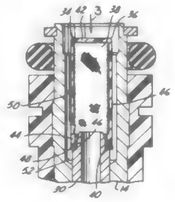
surface tension o the liquid in said chamber will prevent the liquids from passing therethrough under the force of gravity.

5,335,863

FILTER CARTRIDGE MOUNTING FOR A TOP-FEED FUEL INJECTOR

Louis G. DeGrace, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed May 3, 1993, Ser. No. 58,003
Int. Cl.[5] F02M *51/06, 61/16*
U.S. Cl. 239—575 **10 Claims**



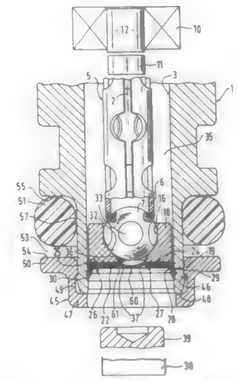
8. A fuel injector comprising a body having a tube through an entrance of which fuel is introduced into a fuel passage that extends through said body to a nozzle from which fuel is injected, an electrically controlled valve mechanism that controls the flow of fuel through said fuel passage, and a filter cartridge disposed at the entrance of said tube for filtering certain particular material from fuel that is to pass through the fuel injector, characterized in that said filter cartridge has an axially outer end that comprises a closed transverse wall facing the entering fuel and a sidewall that in cooperation with said tube forms an annular space into which the entering fuel is constrained to flow because of said closed transverse wall, said annular space being closed at an axially inner end thereof, said cartridge comprising a sidewall that includes a filter medium and bounds an open interior of said cartridge, entering fuel being constrained to flow through said filter medium and into the interior of said cartridge because of said annular space being closed at the axially inner end thereof, and said cartridge comprising an opening at an axially inner end thereof through which fuel that has entered the interior of said cartridge passes from said cartridge.

5,335,864

FUEL-INJECTION VALVE

Peter Romann, Stuttgart; Ferdinand Reiter, Markgroeningen, and Martin Maier, Moeglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00477, § 371 Date Mar. 17, 1993, § 102(e) Date Mar. 17, 1993, PCT Pub. No. WO93/02285, PCT Pub. Date Feb. 4, 1993
PCT Filed Jun. 10, 1992, Ser. No. 30,188
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1991, 4123692
Int. Cl.[5] F02M *51/06*
U.S. Cl. 239—585.1 **4 Claims**



1. A fuel-injection valve for fuel-injection systems of internal-combustion engines, having a moveable valve needle, a valve-seat body which is connected to a seat carrier and which has a valve-seat face cooperating with the valve needle, a thin metallic perforated disc is welded to the valve-seat body downstream of the valve-seat face at and end face (**19**) of the valve-seat body and having at least one spray orifice, a metallic supporting disc (**26**) having a thickness greater than the perforated disc (**22**) is arranged on an end face (**25**) of the perforated disc (**22**) facing away from the valve-seat body (**18**) and is welded, together with the perforated disc (**22**), to the valve-seat body (**18**) at said end face (**19**) by means of a continuous welding seam (**24**), and the supporting disc (**26**) has a passage orifice (**61**) which surrounds a region (**60**) of the perforated disc (**22**) having at least one spray orifice (**37**).

5,335,865

TWO-STAGE VARIABLE INTENSITY REFINER

Gregory R. Kohler, Williamsport, Pa.; William F. Lahner, III, Graz; Heinrich F. Munster, Vienna, both of Austria, and Karl T. G. Dahlqvist, Norrkoping, Sweden, assignors to Andritz Sprout-Bauer, Inc., Muncy, Pa.

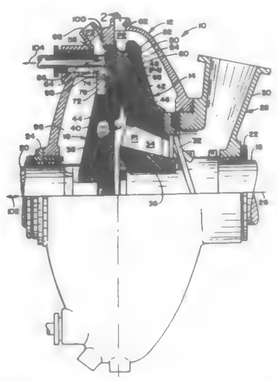
Filed Jun. 26, 1992, Ser. No. 904,856
Int. Cl.[5] B02C *7/04*
U.S. Cl. 241—28 **11 Claims**

1. In a method of operating a high consistency pulp refiner of the type having a pressurized casing (**12**) containing opposed grinding discs (**14,18**) mounted for counter-rotation abut a common axis (**26**) and between which material to be refined is introduced near the axis so as to move generally radially outwardly through an inner refining zone (**40**) between the discs while producing steam as a result of the refining action, the partially refined material and steam then moving through a generally radially outer refining zone (**50**) between one (**14**) of the discs and a stationary grinding surface (**54**) situated generally radially outwardly of the other disc (**18**), whereupon the

VOL 1165 ISS 2 AG 9 1994 UMI

refined material and steam are discharged from the casing through a material outlet (62), wherein the improvement comprises:

removing from the casing, at least some of the steam generated in the inner refining zone (40), by discharging the removed steam from the casing through a dedicated steam discharge opening (66) other than said material outlet (62) before said generated steam enters the outer refining zone



(50), wherein steam situated between the inner and outer refining zones is at a first pressure and the steam discharge opening is at a second pressure;

adjusting the second pressure during operation to control the amount of steam discharged from the casing as between the material discharge outlet (62) and the steam discharge opening (66); and

rotating one disc at a constant speed different from the speed of rotation of the other disc.

5,335,866

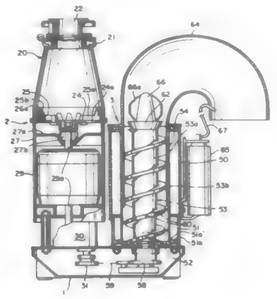
WASTE DISPOSER

Shinya Narao, Tottori, Japan, assignor to Kabushiki Kaisha Nissei Gikea, Tottori, Japan

Filed Jun. 24, 1993, Ser. No. 82,045

Int. Cl.[5] B02C *23/36*

U.S. Cl. 241—46.013 1 Claim



1. A waste disposer comprising:

a shredder section communicated with a drain hole of a sink in a kitchen for shredding waste material;

a water remover section coupled integrally with the shredder for removing water from the waste material, in which the waste material is fed together with a supply of water into and shredded with the shredder section, and the shredded waste material is carried upward throughout a cylindrical screen member mounted in the water remover section by the rotation of a screw provided in the screen member while its containing water being removed and drained through apertures of the screen member before discharged from the upper end of the screen member;

said screw of the water remover section having a projecting reflector of an inverted truncated cone ring-like shape mounted to the upper end thereof; and

said projecting reflector having a downwardly tapered slope arranged on the outer side thereof for narrowing the upper opening of the screen member.

5,335,867

AGITATOR MILL

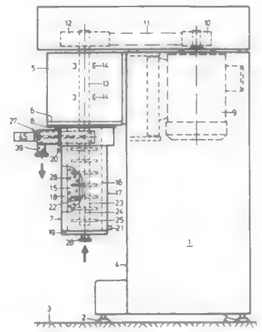
Norbert Stehr, Grünstadt, and Philipp Schmitt, Lampertheim, both of Fed. Rep. of Germany, assignors to Draiswerke GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 9, 1992, Ser. No. 910,926

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1991, 4122680

Int. Cl.[5] B02C *17/16*

U.S. Cl. 241—69 22 Claims



1. An agitator mill for treating free-flowing grinding stock, with a grinding container (7) delimiting a largely closed, essentially cylindrical grinding chamber (15) and an agitator mechanism (22) disposed in the grinding container (7) and rotatably drivable around a common central longitudinal axis (24), a grinding stock inlet pipe (26) opening into the grinding chamber (15), which is partially filled with auxiliary grinding bodies (28), and a grinding stock discharge device (27) opening out of the grinding chamber (15), which discharge device (27) comprises a separating device (30) for retaining the auxiliary grinding bodies (28) in the grinding chamber (15), wherein a mixing device is arranged in the separating device (30), wherein the mixing device comprises a mixing body (40, 40') which is movable in relation to the separating device (30), and which is provided with a scraper (53, 57), the scraper resting on the inner surface (52) of the separating device (30), wherein the separating device (30) is formed cylindrically and a cross-sectional area of the mixing body (40, 40') including the scraper (53, 57) perpendicular to a central longitudinal axis (38) of the mixing body is essentially identical to the inner cross sectional area of the separating device (30), and said cross-sectional area of the mixing body (40, 40') is closed, and wherein the mixing body (40, 40') is displaceably arranged in the separating device (30) to move in a direction parallel to that of said central longitudinal axis (38) of the separating device (30).

5,335,868

WIRE WINDING AND CONNECTING APPARATUS FOR ARMATURE AND COMMUTATOR

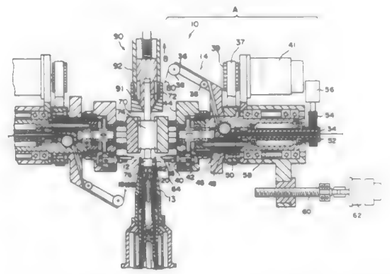
Hideaki Iwase, Toyohashi, Japan, assignor to ASMO Co., Ltd., Kosai, Japan

Filed Feb. 7, 1992, Ser. No. 832,907

Claims priority, application Japan, Feb. 12, 1991, 3-018916; Feb. 6, 1992, 4-021021

Int. Cl.[5] H02K *15/04, 15/09*

U.S. Cl. 242—7.05 B 17 Claims



1. A winding apparatus for automatically providing an armature having a core and a commutator with windings by winding a wire conductor around an outer periphery of the core of the armature and hooking the wire conductor around connector claws that extend from the commutator of the armature, comprising:

means for positioning a commutator of an armature in at least one predetermined set position such that the axis of the commutator extends substantially along a predetermined line;

a hook member positioned adjacent said predetermined set position; and

driving means coupled to said hook member for moving said hook member toward and away from said predetermined line substantially along a line perpendicular to said predetermined line, and for rotating said hook member about said perpendicular line, wherein said driving means is operable to move said hook member toward said predetermined line so that said hook member engages a wire conductor, to subsequently rotate said hook member such that said hook member draws the wire conductor around a connector claw of a commutator positioned by said means for positioning, and to move said hook member away from said predetermined line such that said hook member disengages said wire conductor.

5,335,869

CUT-WEB TAIL EDGE HOLDING MEANS FOR WEB WINDING APPARATUS

Chotaro Yamaguchi, and Katsuaki Shirakawa, both of Kagawaken, Japan, assignors to Kawanoe Zoki Co., Ltd., Ehimeken, Japan

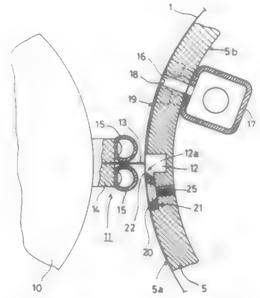
Continuation of Ser. No. 727,658, Jul. 9, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 53,178

Claims priority, application Japan, Jul. 25, 1990, 2-197382

Int. Cl.[5] B65H *19/26*

U.S. Cl. 242—526 2 Claims

1. In a web winding apparatus including a main winding drum and a web separator roll which are operatively interconnected to rotate in synchronism, the main winding drum having a channel in the surface thereof, the web separator roll having web separator means projecting from the surface thereof for separating a web held against the surface of the main winding drum in the channel, the channel and the web separator means being so formed in the main winding drum and the web separator roll respectively that at selected times during synchronous rotation of the main winding drum and the separator roll the web separator means is forced into the channel, the web separator means having a rigid member which forces the web into the channel such that when the rigid member is forced into the channel, the web separator means will move the web into the channel so as to tear the web in the channel, a subsidiary winding drum and a nip roll disposed near said main winding drum, said main winding drum, said subsidiary winding drum and said nip roll being constructed and arranged so as to define a winding space for winding a web upon a core which has been fed into the winding space through a gap between said main winding drum and said subsidiary winding drum until a log of a desired diameter is obtained, said main winding drum having a separated-web tail edge holding device for holding the tail edge of the separated-web adjacent



the channel and in contact with the surface of the main winding drum after the web separation takes place, said separated-web tail edge holding device comprising: a recess formed in the surface of the main winding drum extending in the direction of rotation along the leading edge of the channel of the main winding drum and in continuation to the channel, a hook blade assembly mounted in said recess, said hook blade assembly having an arcuate surface of same diameter as the surface of the main winding drum, the arcuate surface of said hook blade assembly being flush with the surface of the main winding drum, said hook blade assembly having a large number of hooks on a longitudinal edge which confronts the channel so as to hold the tail edge of the web on said large number of hooks after the web separation takes place.

5,335,870

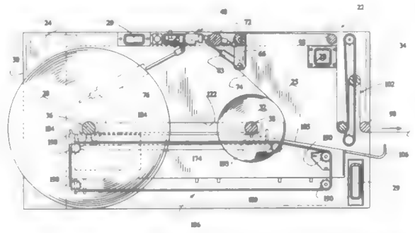
FLYING PASTER

John R. Martin, Rockford, Ill., assignor to Martin Automatic, Inc., Rockford, Ill.

Division of Ser. No. 935,859, Aug. 26, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 136,169

Int. Cl.[5] B65H *19/16, 19/18*

U.S. Cl. 242—555.4 8 Claims



1. An improved flying paster for splicing the leading edge of the leading end of a new web of material, which is wound, as

VOL 1165 ISS 2 AG 9 1994 UMI

a first roll, on and about a first central core, to the trailing end of a running web of material which is wound, as a second roll, on and about a second central core, which is running through and out of the flying paster as it is unwound from the second, running roll, the improved flying paster comprising:

first and second side walls that are spaced apart a distance greater than the widths of the first and second rolls and that have a bottom surface and an upper surface;

means for mounting the ends of the first central core for rotation with respect to the first and second side walls so that the new roll is disposed in a splicing position between the first and second side walls;

means for mounting the ends of the second central core for rotation with respect to the first and second side walls so that the second, running roll is disposed in an operating, unwinding position between the first and second side walls and so that the running web may be unwound from the second roll and may be thereafter run through and out of the flying paster;

a movable brake and roll accelerator assembly mounted in the flying paster adjacent and movable with respect to a side wall, with the movable brake and roll accelerator assembly being movable between a first position adjacent to the splicing position and a second position adjacent to the operating position;

a fixed brake and brake accelerator assembly mounted in the flying paster adjacent to a side wall and to the operating position;

means for selectively connecting an end of the first central core with the movable brake and roll accelerator assembly so as to enable the movable brake and roll assembly to cause and control rotation of the new roll;

means for selectively connecting an end of the second central core with the fixed brake and brake accelerator assembly so as to enable the fixed brake and roll assembly to cause and control the rotation of the second, running roll;

means for controlling the operation of selectively one of the fixed brake and brake accelerator assembly and the movable brake and roll accelerator assembly so that the running web is maintained under positive controlled tension, at all times, as it unwinds;

a tension control dancer mounted with the flying paster and so as to receive the running web as it exits from the flying paster, with the dancer including means for providing an input control signal to the controlling means concerning the web tension condition of the running web as it passes through the dancer, which signal functions to control the operation of the selected assembly so as to maintain the running web under positive tension control at all times;

means for causing a portion of the running web, which is downstream from the second, running roll, to run adjacent to the leading end of the web on the new roll;

means for causing the movable brake and roll accelerator assembly to rotate the new roll so that the speed of the new roll matches the speed of the running web;

means for cutting the running web when the running web is adjacent to the web on the new roll;

means for splicing the leading end of the new roll with the trailing end of the web then running from the second roll when the speed of the new roll matches the speed of the running web;

means for transferring the operational control of the selected brake and accelerator assembly from the fixed brake and brake accelerator assembly to the movable brake and roll accelerator assembly upon the splicing of the leading end of the new roll with the trailing end of the running web from the second roll;

means for disconnecting the second central core from the fixed brake and brake accelerator assembly after transfer of the operational control to the movable brake and roll accelerator assembly;

mean for moving the new, now-running roll from the splicing position to the operating position;

means for connecting an end of the first central core with the fixed brake and brake accelerator assembly so as to enable the fixed brake and brake accelerator assembly to cause and control rotation of the new, now-running roll;

means for disconnecting the end of the first central core from the movable brake and roll accelerator assembly after connection has been made between the first central core and the fixed brake and brake accelerator assembly; and

means for transferring the operational control of the new now running roll from the movable brake and roll accelerator assembly to the fixed brake and brake accelerator assembly upon disconnection of the first central core and the movable brake and roll accelerator assembly.

5,335,871

WINDER FOR REWINDING A WEB, ESPECIALLY A PAPER WEB

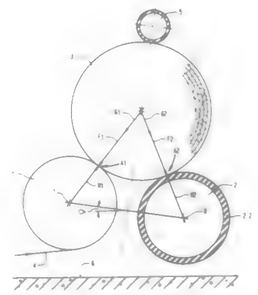
Hans-Joachim Fissmann, and Hans Weiss, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,296

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1992, 4209754

Int. Cl.[5] B65H *18/20*

U.S. Cl. 242—595.1 **12 Claims**



1. A winder for winding a running paper web, the winder comprising a first support roller and a second support roller that together form a winding bed to hold a paper roll with the paper web wound around the first support roller, wherein the winding bed consists of the first and the second support rollers, the first and the second support rollers being fixed into position with the second support roller being positioned lower than the first support roller so that a plane through the axes of the first and the second support rollers forms an angle with a horizontal plane, the first and the second support rollers each having a liner, wherein the liner of the second support roller is considerably more deformable than the liner of the first support roller.

5,335,872

PROTECTIVE CORE

William R. Clubbs, Victoria, Australia, assignor to John Lysaght (Australia) Limited, Sydney, Australia

Filed Jul. 10, 1992, Ser. No. 910,891

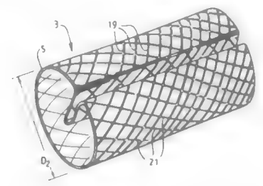
Claims priority, application Australia, Jul. 12, 1991, PK7163

Int. Cl.[5] B65H *16/02*

U.S. Cl. 242—610.6 **6 Claims**

1. A core for a coil of strip material, said core comprising:

a cylindrical wall formed from sheets of plastic material separated by webs moulded integrally with the sheets to form tubular cavities extending transversely to the longitudinal axis of the core, said sheets forming inner and outer surfaces of the wall, with at least one of the inner and outer surfaces of the wall having surface irregularities which selectively reduce a thickness of the wall compared to adjacent regions of the wall so that the wall is sufficiently flexible to be folded to a collapsed form and held



in the collapsed form without permanently damaging the wall so that the wall returns resiliently to its original cylindrical form when unfolded from the collapsed form.

5,335,873

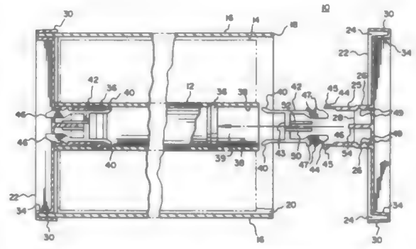
CASSETTE FOR WEB MATERIAL

Clark E. Harris, Fairport; Raymond D. Hulbert, Penfield; Andrew E. Dominesey; Thomas C. Healey, both of Rochester, and Joel R. Shaw, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1992, Ser. No. 955,185

Int. Cl.[5] G03B *1/04*

U.S. Cl. 242—348 **9 Claims**



1. A cassette for a web material comprising:

a web core rotatable about an axis, said web core having a sleeve portion defining a core opening, and at least one circumferential core groove inside said sleeve portion near each opposite end of said core opening;

a pair of end caps each having a hub member insertable into said opposite ends of said core opening for rotatably supporting said web core, each hub member having a free end and at least one radially extending flexible lock at said free end;

a jacket encircling said web core and engagably supported by said end caps, said flexible lock when rotatably engaged with said core groove preventing said end caps from separating away from said jacket;

anti-clockspringing means on said cassette for securing said web core against rotation during web transport from said cassette, said anti-clockspringing means comprising:

at least one fork slidably mounted within at least one of said hub members, said fork at one end being exposed through said hub member and including at least one flexible camming ramp at the opposite end, said fork being movable between a core-braked position in which said camming ramp engages and forces said flexible lock into braking engagement with said core groove for preventing rotation of said web core, and a core-released position in which said camming ramp is disengaged from said core groove for allowing web core rotation.

5,335,874

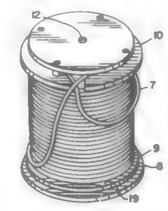
CONNECTORIZED OPTICAL FIBER CABLE REEL

Ralph E. Shrum, Newton, N.C., and David C. Hall, Keller, Tex., assignors to Siecor Corporation, Hickory, N.C.

Filed Nov. 20, 1992, Ser. No. 979,012

Int. Cl.[5] B65H *75/14, 75/18*

U.S. Cl. 242—118.4 **7 Claims**



1. An improved cable reel, comprising

a tubular hub having a hollow interior therein;

a first end flange secured to a first end of said hub, said first end flange having a central aperture therein for receiving a rotating shaft;

a second end flange secured to a second end of said hub, said second end flange having a central aperture therein larger than the central aperture of the first end flange;

a third end flange having a central aperture therein for receiving a rotatable shaft; and,

securing means for mounting the third end flange to, and dismounting the third end flange from, the second end flange.

5,335,875

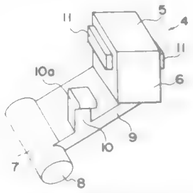
TAPE CASSETTE STRUCTURE

Masaru Watanabe, Nishinomiya, and Tousaku Nishiyama, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 10, 1992, Ser. No. 988,693

Int. Cl.[5] G11B *15/04*

U.S. Cl. 242—341 **9 Claims**



1. A tape cassette for accommodating a length of magnetic tape therein, which comprises:

first and second major walls opposite to each other and spaced a distance corresponding to a width of the length of magnetic tape, a pair of opposite end walls perpendicular to any one of said first and second major walls, and front and rear walls opposite to each other and lying perpendicular to any one of said first and second major walls and also to any one of said end walls assembled together as a casing said front wall having an access opening defined therein for the access of a magnetic head assembly;

at least one of said first and second major walls having an aperture defined therein;

said rear wall having at least one detection hole therein opening outwardly of said casing;

an erroneous erasure preventing member accommodated within said detection hole for selective movement be-

VOL 1165 ISS 2 AUG 9 1994 UMI

tween retracted and projected positions in a direction substantially perpendicular to said rear wall, said erasure preventing member having an outer detection surface which, when said erasure preventing member is held in the projected position, closes said detection hole while lying flush with an outer surface of said rear wall; and

an operating piece for driving the erasure preventing member between the retracted and projected positions accommodated with said aperture in said at least one of said first and second major walls for movement within said aperture and a linkage extending within said casing between said operating piece and said erasure preventing member.

5,335,876

TAPE CASSETTE LID-LOCKING DEVICE

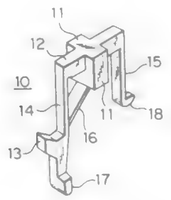
Yoshitaka Yasufuku, and Osamu Shibazaki, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 699,681, May 14, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 990,545

Claims priority, application Japan, May 14, 1990, 2-121167; Sep. 8, 1990, 2-238604; Oct. 2, 1990, 2-263082

Int. Cl.[5] G11B *23/04*

U.S. Cl. 242—347.1 **8 Claims**



1. A tape cassette for use in a recording apparatus, said cassette comprising:

a case body having first and second substantially parallel side walls, a rear wall, and a front wall having a front opening;

a front lid pivotable about a pivot perpendicular to said side walls between an open position and a closed position, said front lid closing said front opening in said closed position, and opening said front opening in said open position; and

a lock member for locking said front lid in said closed position, said lock member comprising:

a support portion for supporting said lock member, said support portion being nested in a corresponding recess formed in said case body, a front extending portion extending from said support portion in a frontal direction toward said front opening,

a front leg portion extending from a front end of said front extending portion,

a lock claw affixed to said front leg portion, said lock claw locking said front lid in said closed position by engaging with an engaging portion of said front lid, and

a reinforcing member formed of a resilient material extending between said support portion and said front leg portion for biasing said front leg portion in said frontal direction toward a locking position.

5,335,877

DEVICE FOR EXCHANGING A TAPE DRIVE MODE

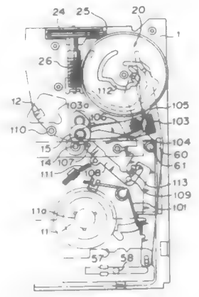
Kunio Sawai; Ryuji Hayashi; Toshiaki Irie; Shigeru Kaneko; Shinya Tanaka, and Tsukasa Shinmi, all of Daito, Japan, assignors to Funai Electric Co., Ltd., Daito, Japan

Filed May 22, 1992, Ser. No. 887,092

Claims priority, application Japan, Jul. 10, 1991, 3-062143[U]; Jul. 10, 1991, 3-062144[U]; Jul. 10, 1991, 3-062145[U]; Jul. 10, 1991, 3-062147[U]; Jul. 15, 1991, 3-063409[U]; Dec. 11, 1991, 3-109852[U]

Int. Cl.[5] G11B *15/18*

U.S. Cl. 242—334.6 **8 Claims**



1. A device for exchanging a tape drive mode comprising:

said device being operated in playing, recording, rewinding and fast-running modes;

a tape cassette having a tape and a pair or reels, said tape cassette situated within a tape deck;

a chassis;

a torque transmission means for alternate rotating in forward and backward direction one of the reels of the tape cassette, said torque transmission means having a plurality of gears;

tape tension means for applying tension to said tape and for preventing looseness of the tape;

a capstan roller;

means for driving said capstan roller;

a pinch roller;

means for operating said pinch roller;

said torque transmission means further including a shift member for exchanging intermeshing of said gears, said shift member having an engaging portion adapted to bring said intermeshing of gears into a rewinding mode, said shift member further including a cam-shaped portion and a brim;

a regulating unit for keeping said tape tension means in a tension position, said regulating unit having a cam following member associated with said cam-shaped portion until the tape being moved through cooperation of the capstan roller and the pinch roller, such cooperation being provided upon said torque transmission means being switched to either one of the tape reels for shifting the device from the playing/recording mode to the rewinding mode;

said tape tension means including a tape tension lever pivotally supported by said chassis, said tape tension lever having a free end, a back-tension post attached to the free end of the tension lever, a rotating member rotatively supported by the chassis, a bias spring member, said bias spring member being stretched between said tape tension lever and said regulating unit placed in its tension condition;

said cam-shaped portion positioned at said brim of the shift member and having three stepped stages, said cam following member being associated with said three stepped stages during the fast-running mode, playing mode and rewinding mode;

whereby a portion of the tape between the reel positioned on the tape deck and the head cylinder can be spanned while supported by the back-tension post, so that said portion of the tape being tightened while the cam following member is moved from the playing/recording mode to the rewinding mode.

5,335,878

THREAD BRAKING DEVICE

Kurt A. G. Jacobsson, Ulricehamm, Sweden, assignor to IRO AB, Ulricehamm, Sweden

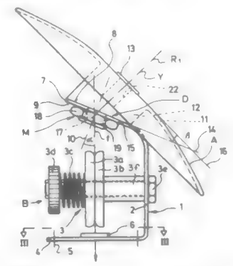
PCT No. PCT/EP91/00414, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO91/14031, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 6, 1991, Ser. No. 941,141

Claims priority, application Sweden, Mar. 6, 1990, 9000808-7

Int. Cl.[5] B65H *59/24*

U.S. Cl. 242—150 R **12 Claims**



1. A thread braking device for use on the supply side of a thread feeder, such as a thread storage and feed device, comprising a support frame, a thread brake having a fixed thread passage axis, a shield member having an enlarged shield surface positionable to extend generally perpendicularly relative to a supply direction of a thread incoming from a supply to the thread brake, the shield member positioned for cooperation with the incoming thread upstream of the brake and having an incoming thread guide opening formed in and extending through said shield surface, direction adjustment means for permitting the shield surface to be adjustably moved between at least first and second positions which correspond to first and second incoming thread supply directions, and positive locking means for maintaining the shield surface at a desired position which is generally perpendicular to the incoming thread direction, said direction adjustment means including an outgoing thread guide opening disposed close to but located downstream of said incoming thread guide opening for permitting the incoming thread when discharged from the direction adjustment means to be supplied to the thread brake along the fixed thread passage axis, said outgoing thread guide opening being positioned for intersecting said fixed thread passage axis when said shield member is in said first and second positions.

5,335,879

Patent Not Issued For This Number

5,335,880

CARGO COMPARTMENT DOOR FOR AN AIRCRAFT

Heinz-Guenter Klug, Buxtehude, Fed. Rep. of Germany, assignor to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

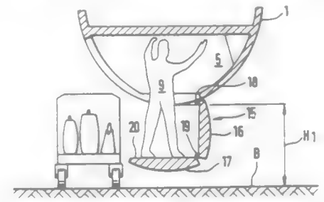
Filed Oct. 16, 1992, Ser. No. 962,147

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134499; Oct. 1, 1992, 4233047

Int. Cl.[5] B64C *1/14*

U.S. Cl. 244—118.3 **7 Claims**

1. A combination comprising a medium sized aircraft fuselage and a cargo compartment door structure for said aircraft fuselage, a floor connected to said fuselage at lateral connecting areas, said floor dividing said fuselage into a passenger cabin above said floor and into a cargo compartment below said floor, said fuselage having a vertical central plane passing longitudinally through said fuselage perpendicularly to said floor, a curved door opening in said fuselage, said curved door opening extending through an angular range beginning at one of said connecting areas and reaching circumferentially and downwardly at least beyond said vertical central plane to form an opening sector having a center where said vertical central plane and said floor intersect to form an opening angle of more than 90°, a curved door for covering said curved door opening in a sealed manner, a first hinge securing said curved door to said fuselage, and a conveyor belt (5A) in said cargo compartment, said conveyor belt extending toward said door opening for loading baggage onto said conveyor belt through said curved door opening, wherein said curved door comprises at least two foldable door sections, and a second hinge foldably interconnecting said door sections, and wherein a lower door section of said at least two foldable door sections (17) forms an inwardly facing surface constructed as a stepping platform (20) extending substantially horizontally when said door is open, and a brace for holding said lower door section in a fixed substantially horizontal position when said door is open, so that said inwardly facing surface of said lower door section can be used as a stepping platform when said door is open.



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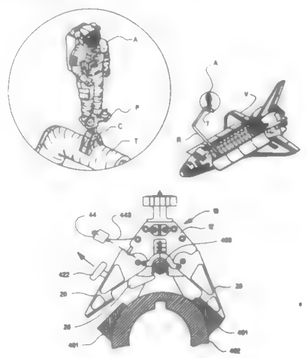
ATTACHMENT DEVICE

Ronald J. Zaguli, League City, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 14, 1993, Ser. No. 48,041

Int. Cl.[5] B64G *1/60*

U.S. Cl. 244—158 R **16 Claims**



1. A capture device for capturing a rod, the device comprising,

a body member with a body recess therein on one side thereof and a shaft channel therethrough,

VOL 1165 ISS 2 AG 9 1994 UMI

a shaft extending through the shaft channel with portions thereof extending beyond opposite sides of the body member, the shaft frictionally engaging an interior surface of the shaft channel and held therein by frictional contact,

a hook on an end of the shaft on the same side of the body member as the body recess,

a portion of the hook and a portion of the body recess defining a capture envelope for receiving and confining the rod,

the rod being secured to a rod support member,

at least one leg extending from the body member for contacting the rod support member to stabilize contact between the device and the rod, and

a contingency release bar releasably secured to the body member in contact with at least one leg, release of the contingency release bar permitting movement of at least one leg to free the device from about the rod.

15. A method for facilitating contingency extra vehicular activity tasks from a space shuttle orbiter which is provided with a remote manipulator arm having a striker bar adjacent the end thereof, said method comprising,

manifesting a lightweight portable foot restraint attachment device on every flight,

attaching the foot restraint attachment device to the remote manipulator arm in the event extra vehicular activity is required, the attachment device provided with a clamp which securely engages the striker bar, outriggers which provide lateral support and a socket to receive a portable foot restraint which secures the feet of a crewmember.

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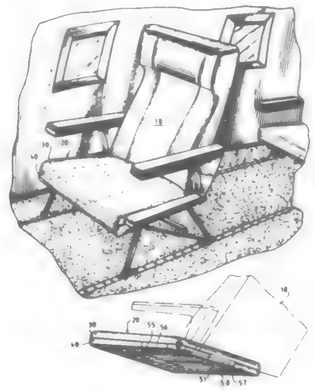
COMBINATION SEAT CUSHION AND LIFE VEST PARTICULARLY ADAPTED TO AN AIRCRAFT CHAIR

Frank Bonacci, 5 Second St., Holbrook, N.Y. 11741

Filed May 10, 1993, Ser. No. 59,105

Int. Cl.[5] B64D *11/06, 25/04*

U.S. Cl. 244—118.5 **10 Claims**



1. A combination seat cushion and life vest particularly adapted for use in an aircraft chair comprising:

a generally rectangular buoyant main rear panel and a buoyant segmented front panel hingedly joined to said rear panel in substantially covering relationship thereto so as to form, in a closed position thereof, a generally rectangular cushion of generally uniform thickness and, in an open position thereof, an openable and wearable life vest sized and dimensioned to cover the rear side and front side of a user from the shoulder to approximately the waist, said front and rear panels each having a top edge, a bottom edge and a pair of lateral side edges, said segmented front panel including a neck cutout slit centrally disposed along and adjacent to said top edge thereof forming a neck flap hingedly joined along a hinge line to said top edge of said rear panel, and a bifurcating vertical slit extending between said bottom edge thereof and terminating at said neck cutout slit so as to divide said segmented front panel into an openable front left flap and an openable front right flap, each flap being hingedly joined along said hinge line to said rear panel, and said front left and right flaps each including an arm cutout slit disposed along a corresponding side lateral edge thereof forming an arm cutout flap hingedly joined to a corresponding side lateral edge of said main rear panel; and

means for releasably securing said openable left and right flaps in a closed relationship.

5,335,883

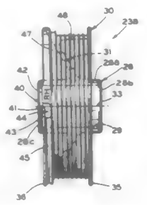
OVERHEAD DOOR CABLE WINDING DRUM

Daniel W. Mawer, Toledo, Ohio, assignor to Apco Power-Unit Corporation, Toledo, Ohio

Filed Feb. 23, 1993, Ser. No. 21,311

Int. Cl.[5] B65M *75/18*

U.S. Cl. 242—602.1 **14 Claims**



1. A cable winding drum for winding a cable attached to an overhead door comprising:

a generally tubular hub having an outer surface extending between a first end and a second end and having a central aperture formed therein for accepting a shaft, said central aperture being formed concentric with a longitudinal axis of said hub and extending between said first and second ends of said hub;

a threaded aperture radially extending through said hub from said outer surface to said central aperture for threadably retaining a threaded fastener for attaching said hub to a shaft for co-rotation therewith;

a generally planar web having an inner periphery attached to said outer surface of said hub, said web extending radially outwardly to an outer periphery thereof at an angle with respect to said longitudinal axis of said hub toward said second end of said hub;

an annular peripheral cable support extending about said hub generally concentric with said longitudinal axis of said hub, said cable support having an outer surface extending between a first end and a second end thereof, said cable support being attached to said outer periphery of said web at said second end of said outer surface, said cable support having a multiturn generally helical cable winding groove formed in said outer surface between said first end and said second end thereof, said cable support having a generally radially outwardly extending circumferential first flange formed at said first end of said outer surface and a generally axially outwardly extending circumferential second flange formed at said second end of said outer surface; and

a cable entry slot formed in said second flange adjacent one end of said groove, said slot including an entry opening and a cavity, said entry opening extending generally radially through said second flange, said cavity being connected between said entry opening and an adjacent end of said cable winding groove and having a pair of generally parallel side walls extending at an angle to a pair of side walls of said groove.

5,335,884

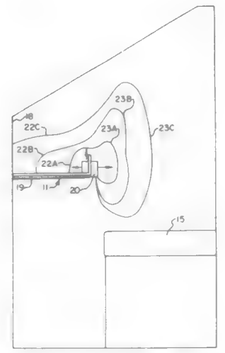
ADAPTABLE AIRCRAFT AIRBAG PROTECTION APPARATUS AND METHOD

Rober C. Kalberer, 7434 Singing Hills Ct., Boulder, Colo. 80301, and Kevin W. Kreutzer, 908 Beelard Drive, Vacaville, Calif. 95687

Continuation-in-part of Ser. No. 973,798, Nov. 9, 1992. This application Apr. 28, 1993, Ser. No. 54,925

Int. Cl.[5] B64D *25/00*

U.S. Cl. 244—121 **10 Claims**



1. Apparatus for minimizing the prospect for loss of control in a craft which has a movable control yoke having a post extending from a control panel to a member which is manually grippable by an individual for multiple degrees of motion thereof for controlling the craft operation comprising:

means for sensing that the craft has experienced an abnormal force,

an airbag assembly including an inflatable airbag mounted relative to the control yoke for responding to an actuation signal by expanding so as to substantially fill the space both between the control yoke and an individual in proximity to the control yoke as well as between the control yoke and the control panel of the craft thereby obtaining a balanced position between the control panel and said individual while allowing said control yoke to remain in a relatively neutral position,

means mounting said airbag assembly for free movement along a line in a direction generally parallel to the control yoke post while retaining said airbag assembly against movement in any other direction, and

means responsive to said sensing means for producing said airbag actuation signal for rapidly expanding said airbag upon the occurrence of the abnormal force relative to the craft whereby said airbag assembly will assume a neutral position along said control yoke post parallel line.

5,335,885

AIRCRAFT WING HAVING A SUPER CRITICAL PROFILE AND A VENTING DEVICE FOR REDUCING COMPRESSION SHOCK

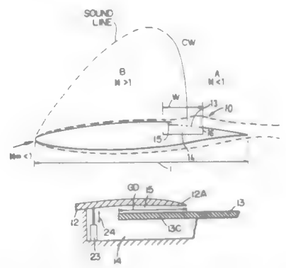
Rainer Bohning, Karlsruhe, Fed. Rep. of Germany, assignor to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 8, 1993, Ser. No. 27,862

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 4207103

Int. Cl.[5] B64C *21/08*

U.S. Cl. 244—204 **11 Claims**



1. An aircraft wing, comprising venting means in an upper surface of said aircraft wing, said venting means extending in the direction of a wing span width for influencing a boundary layer in a zone where a compression shock takes place, said venting means comprising a perforated wall section and a compensation flow chamber extending upstream and downstream on both sides of said compression shock as viewed in a flow direction across the wing, said perforated wall section covering at least a portion of said compensation chamber, said perforated wall section having perforations therein for admitting flow into said compensation chamber downstream and below said compression shock, said compensation chamber comprising a flow exit gap for blowing vented flow medium in a direction of a main flow across said upper wing surface, said flow exit gap being positioned along a forward end of said compensation chamber upstream of said compression shock, and wherein said flow exit gap has a gap depth (GD) in the main flow direction sufficient to enforce a tangential flow of said vented flow medium substantially in parallel to said upper wing surface and substantially in parallel to said boundary layer.

5,335,886

LIFT ENHANCEMENT DEVICE

Samuel Greenhalgh, Doylestown, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 830,206, Jan. 30, 1992, Pat. No. 5,226,618. This application May 26, 1993, Ser. No. 67,763

Int. Cl.[5] B64C *23/00*

U.S. Cl. 244—213 **5 Claims**

1. A solid, semi-span wing that produces increased lift comprising:

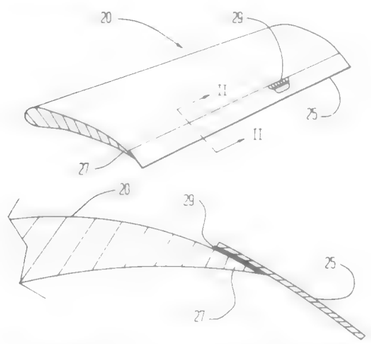
an airfoil section wing having leading and trailing edges;

adhesive means affixed to the upper surface of the trailing edge; and

flap means comprised of a single sheet of stainless steel shim stock of predetermined length, width and thickness at-

VOL 1165 ISS 2 AG 9 1994 UMI

tached to said adhesive means wherein both sides of said single sheet are exposed to air flow and the sheet oscillates



in a limit cycle due to the aerodynamic forces imposed hereon.

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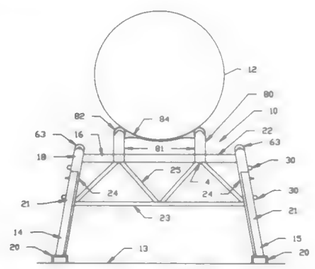
PIPE SUPPORT BRIDGE

Beverly Torrens, and Paul Miron, both of Box 607, Armstrong B.C., Canada V0E 1B0

Continuation-in-part of Ser. No. 668,381, Mar. 21, 1991, Pat. No. 5,163,642, which is a continuation of Ser. No. 263,535, Oct. 27, 1988, abandoned. This application Dec. 24, 1991, Ser. No. 813,000

Int. Cl.[5] F16L *3/00*

U.S. Cl. 248—49 **11 Claims**



1. A pipe support bridge comprising:

a pair of upstanding support brackets, each support bracket having a vertically aligned channel member:

a central truss member having top and bottom edges and side edges, the top edge is shorter than the bottom edge, each side edge, being slidably received in the central channel member of one of the said bracket such that said central truss member is supported between said supporting brackets such that the assembled pipe support bridge is adjustably angled to a supporting surface;

locking means to locate said central truss member at different heights in said channel members of said support brackets;

pipe locating mean fixed to said truss member for positioning a pipe to be supported atop said pipe support bridge.

5,335,888

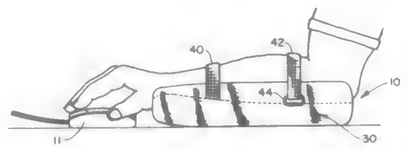
FOREARM SUPPORT CRADLE

Terry H. Thomsen, 200 Duncaster Rd., Bloomfield, Conn. 06002

Filed Jul. 27, 1992, Ser. No. 920,262

Int. Cl.[5] B43L *15/00*

U.S. Cl. 248—118.5 **8 Claims**



1. A forearm cradle for a computer operator for supporting the forearm of the operator above a work surface as the operator's hand and forearm are moved across the work surface for operating a computer input device, the support cradle comprising an inner elongated body having a central, longitudinally extending base and a raised longitudinally extending edge extending from an along each side of the base, which together form a contoured top with a longitudinally extending trough, and an outer elongated fabric sleeve extending around and along the elongated body, said fabric sleeve being suspended and supported by and between the raised edges and across the longitudinally extending trough so that the sleeve forms an open, longitudinally extending channel for receiving and supporting the forearm above the work surface and for elevating the operator's hand to extend over the top of a computer input device for operating the input device without normal cocking and hyperextension of the wrist, the elongated body having a bottom surface opposite the trough and the fabric sleeve having a smooth outer surface along at least the bottom surface of the elongated body which is adapted to glide across the work surface so that the support cradle is retained under the forearm, with the forearm received on the open channel and supported by the cradle, and is moved by and with the forearm as the operator's hand and forearm are moved across the work surface.

5,335,889

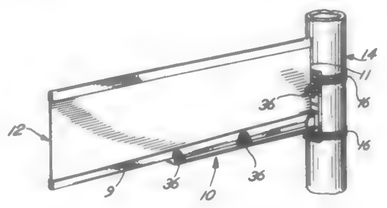
BRACKET MOUNTABLE TO AN UPRIGHT SUPPORT FOR HOLDING A SIGN

Thomas M. Hopkins, Martinsville, and Larry W. Hall, Bloomington, both of Ind., assignors to Hall Signs, Inc., Bloomington, Ind.

Filed Feb. 12, 1993, Ser. No. 17,625

Int. Cl.[5] A47B *96/00*

U.S. Cl. 248—231 **3 Claims**



1. A bracket for attaching a sign to a substantially vertical support structure, said bracket comprising a unitary body member, said body member including a vertical leg and a horizontal foot, said leg and foot being joined together at a junction in a substantially right angular orientation, a plurality of retainer means carried by said leg and foot for engagement with said sign, said retainer means protruding forwardly from said leg and upwardly from said foot, a said retainer means protruding from each of said leg and foot, another said retainer means located at said junction between the leg and foot, each retainer means includes two spaced tab members defining a channel means therebetween for receiving a perimeter edge of said sign.

5,335,890

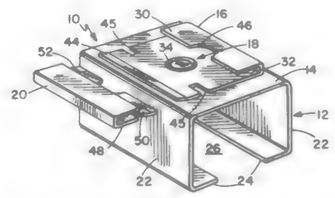
CEILING TRACK MOUNTING APPARATUS

John W. Pryor, Oceanside, and Jeffery W. Pryor, Vista, both of Calif., assignors to Pryor Products, Inc., Oceanside, Calif.

Continuation-in-part of Ser. No. 916,468, Jul. 20, 1992, abandoned. This application Dec. 23, 1992, Ser. No. 995,763

Int. Cl.[5] A47H *1/104*

U.S. Cl. 248—343 **8 Claims**



1. An apparatus for suspending a track from a tile ceiling having a series of tiles supported in a grid of tee-bars, comprising:

a sliding channel member comprising means for sliding engagement over the track, the channel member having an upper wall, spaced side walls depending downwardly from the upper wall, and in-turned rims at lower ends of the side walls to define a generally C-shaped channel;

a clip device having means for releasable sliding engagement over a ceiling tee-bar; and

a fastener securing the clip device to the upper wall of the channel member, the fastener comprising a swivel connector for pivotally connecting the clip device to the channel-member.

5,335,891

STABILIZATION STRUT FORMING A SUPPORTING LEG FOR A TRANSPORTABLE STRUCTURE, SUCH AS AN EQUIPMENT SHELTER, FOR EXAMPLE

Pierre Gibert, Tarbes, France, assignor to Giat Industries, Versailles, France

Filed Dec. 21, 1992, Ser. No. 994,112

Int. Cl.[5] B60S *9/02*

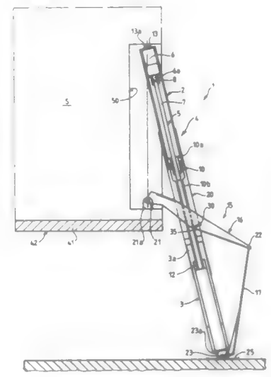
U.S. Cl. 248—354.1 **12 Claims**

1. A stabilization strut for forming a supporting leg for a transportable structure, said strut comprising

upper and lower coaxial tubular elements, said upper element having an upper end adapted to be connected to said structure, and said lower element having a lower free end for supporting the transportable structure,

an extension system telescopically assembling said upper and lower tubular elements together for movement axially towards or away from each other between a folded position in which one of the elements is nested in the other and an unfolded position in which the elements are moved axially apart from each other, and

a pivot system carried by said tubular elements and actuated by deployment of the strut, said pivot system comprising a lever having one end adapted to be connected to the transportable structure, a connecting rod having one end hingedly connected to the opposite end of said lever and having its opposite end connected to the free end of said lower element, and an intermediate tubular element slidably mounted on said upper and lower elements and hingedly connected to said lever.



5,335,892

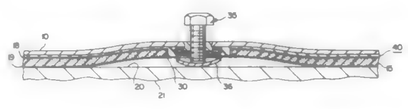
REMOVABLE ADHESIVELY MOUNTED RETENTION PLATE

Paul F. Busch, Palo Alto, Calif., assignor to Anchor Pad International, Huntington Beach, Calif.

Filed Oct. 15, 1992, Ser. No. 961,791

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—551 **3 Claims**



1. In a security hold down device having a stiff metal base plate and a pad, said pad being adhesively bonded to the base plate on one of its faces, and having an adhesive surface on the other of its faces for bonding to a base structure, the improvement comprising means for separating said pad from said structure, said means comprising:

VOL 1165 ISS 2 AG 9 1994 UMI

a plurality of spaced apart threaded openings through said plate, said pad being apertured around said openings, and a jack screw in at least some of said openings adapted to be brought against said base structure to exert a separative force between said base structure and said pad.

5,335,894

Patent Not Issued For This Number

5,335,895

SENSING ROPE GUIDE FOR A HOIST DRUM

Leslie J. Sell, Bothell, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 737,313, Jul. 29, 1991, abandoned. This application Jun. 1, 1993, Ser. No. 69,650

Int. Cl.[5] B66D *1/48, 1/36*

U.S. Cl. 254—271 9 Claims

5,335,893

360 DEGREE ADJUSTABLE VIBRATION DAMPENING AND THERMAL ISOLATING BRACKET

Fred W. Opp, Arlington, Wash., assignor to The Boeing Company

Filed Oct. 23, 1992, Ser. No. 965,837

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—635 5 Claims

1. A 360 degree adjustable bracket comprising:

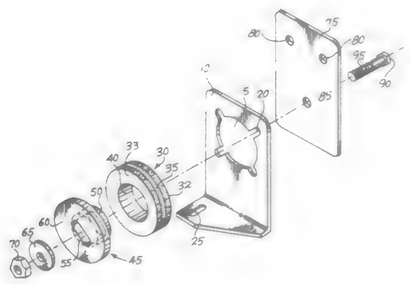
a support plate, said support plate further comprising connection means to connect said support plate to a first predetermined structure;

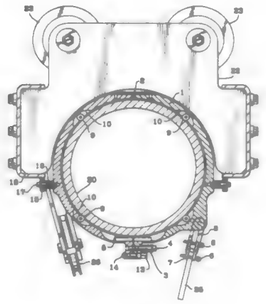
a bracket plate, said bracket plate comprising a notched circular cutout therein, and attachment means to attach said bracket plate to a second predetermined structure;

vibration dampening and thermal isolating means positioned in said notched-circular cutout, said vibration dampening and thermal isolation means further comprising a cylindrical shape and an axially aligned hole therethrough;

a cylindrical slotted-insert positioned in said axially aligned hole within said vibration dampening and thermal isolating means;

connecting means to connect said bracket plate to said support plate such that said vibration dampening and thermal isolating means communicates with said bracket plate and said support plate;





1. A rope guide for guiding rope on a spiral grooved cylindrical drum rotating on its axis comprising:

a guide mounting means encircling at least a portion of the drum in cooperation with the drum groove for mounting a rope guide means;

a plurality of groove cooperating means on said guide mounting means for rotatably securing said guide means to said drum and for tracking said guide mounting means in spiral advance along said drum in response to rotation of said drum;

said rope guide means being in tangential alignment with said guide mounting means and said drum for maintaining rope played on said drum in tangential intersection with the circumference of said drum and alignment perpendicular to said axis of said drum;

said guide mounting means further comprising a resilient split ring encircling said drum in rolling contact with a drum groove, said split ring permitting radial expansion of said split ring in response to an unaligned rope causing said split ring to roll out of a drum groove;

means mounted on said guide mounting means for sensing the radial expansion of said split ring;

said split ring being further comprised of two half rings joined at one end by a hinge and resiliently fastened together at its other end by a resilient fastening means; and

said resilient fastening means further comprises a means for sensing separation of said split ring.

5,335,896

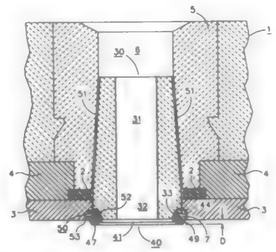
NOZZLE INSERT FOR A STEELMAKING LADLE

Donald J. Idstein, Valparaiso, Ind.; John P. Hoffman, Coopersburg, Pa., and Harry J. Beesley, Valparaiso, Ind., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 3, 1993, Ser. No. 25,543

Int. Cl.[5] B22D *41/50*

U.S. Cl. 266—236 24 Claims



1. A two piece nozzle insert for use in a ladle comprising:

a) a nozzle segment including;

i) a first end having an outside surface corresponding to the shape of a well block bore,

ii) a second end having an undercut portion including a planer surface extending along the periphery of said nozzle segment, and a tapered surface extending in a downward direction from said planer surface, and

iii) a discharge bore extending between said first end and said second end, and

b) a lock ring segment including;

i) a top surface corresponding to said planer surface of said undercut portion,

ii) a bottom surface,

iii) an aperture extending between said top surface and said bottom surface and including an inside wall surface corresponding to said tapered surface of said nozzle segment, and

iv) a lock means for attaching said lock ring portion to said ladle,

where said tapered surface and said corresponding inside wall surface converge and form a slip plane to provide a compressive force within a space extending between said planer surface and said corresponding top surface, and said tapered surface and said corresponding inside wall surface.

5,335,897

INSULATED FURNACE DOOR SYSTEM

Gary L. Coble, R.D. #2, Box 214, DuBois, Pa. 15801

Continuation-in-part of Ser. No. 693,346, Apr. 30, 1991, which is a continuation-in-part of Ser. No. 609,643, Nov. 6, 1990, Pat. No. 5,048,802, which is a continuation-in-part of Ser. No. 373,672, Jun. 28, 1989, abandoned, which is a continuation of Ser. No. 213,699, Jun. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 907,473, Sep. 15, 1986, Pat. No. 4,755,236, which is a division of Ser. No. 732,400, May 9, 1985, Pat. No. 4,611,791, which is a continuation-in-part of Ser. No. 456,823, Jan. 10, 1983, Pat. No. 4,516,758. This application Oct. 31, 1991, Ser. No. 785,775

Int. Cl.[5] F27D *1/18*

U.S. Cl. 266—286 48 Claims

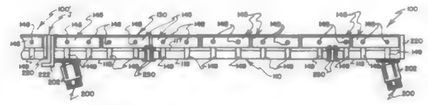
1. A method of forming an assembly of an elongate sheet of steel and an elongate cast refractory member of generally T-shaped cross-section, comprising the steps of:

a) selecting a castable refractory material that, when cast, will form a rigid elongate cast refractory member that will exhibit good service life when exposed to temperatures in excess of 2,000 degrees Fahrenheit;

b) casting said selected castable refractory material so as to mold-form said rigid elongate cast refractory member so that it has a generally T-shaped cross-section that is in direct contact with one side of the sheet of steel;

c) providing reinforcement means that is securely connected to said one side of the sheet of steel and that is configured to extend into and become anchored within the T-shaped cross-section of said rigid elongate cast refractory member;

d) providing at least one bolt hole that extends through the T-shaped cross-section of said rigid elongate cast refractory member in a direction that substantially parallels a plane within which nearby portions of the sheet of steel extend;



e) positioning at least a short length of angle iron so that one of the two right-angle legs of the angle iron is in contact with said one side of the sheet of steel, and so that the other of said legs is intersected by the axis of the bolt hold;

f) providing a hole in the other of the legs with said hole being axially aligned with the bolt hole;

g) installing a bolt in the aligned hole and bolt hole to rigidly connect the angle iron with said rigid elongate cast refractory member; and,

h) welding said one of the legs to said one side of the sheet of steel to securely connect the angle iron with the sheet of steel.

5,335,898

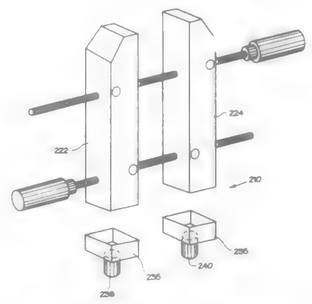
APPARATUS AND METHOD FOR CLAMPING STRUCTURAL MEMBERS DURING JOINDER

Charles E. Johnson, Charlotte, N.C., assignor to Kajur Kulp, Charlotte, N.C., a part interest

Filed Feb. 22, 1993, Ser. No. 20,655

Int. Cl.[5] B25B *5/14*

U.S. Cl. 269—41 8 Claims



1. An apparatus for clamping a pair of structural members during joinder thereof in abutting relation along a joint line between respective edges of the structural members, wherein the structural members are formed with respective symmetrical recesses located on a common line substantially normal to said joint line, the clamping apparatus comprising:

first and second clamping members each having a generally elongate body portion terminating in a clamping end portion having an end surface and an adjacent side wall surface, each body portion having a pair of threaded openings formed therein, at a spacing therealong;

a selectively actuable clamping arrangement connected to

VOL 1165 ISS 2 AG 9 1994 UMI

each clamping member for moving them toward and away from one another for clamping objects therebetween, the clamping arrangement including a pair of threaded drive rods threadedly engaged with the openings formed in each clamping member and extending therebetween, for connecting the clamping members in adjacent side-by-side facing relation and actuating translatory movement of the clamping members in response to rotation of said threaded rods; and

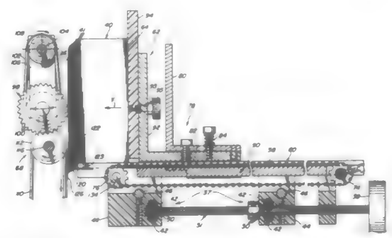
respective first and second removable brackets for selective attachment to and detachment from the clamping members for clamping movement integrally with the clamping members when attached thereto, each bracket having a base portion and a wall portion extending in one direction from the base portion, the base and wall portions being configured in conformity to the end and side wall surfaces of the clamping members for mating engagement of each bracket with the clamping end portion of a respective one of the clamping members, and each bracket further having an engagement pin projecting outwardly from the base portion in a generally opposite direction from the one direction, each engagement pin being configured for mating engagement with a respective one of the recesses in the structural members to fit securely therein for drawing the respective edges of the structural members into abutting relation when the brackets are attached to the clamping members and the engagement pins are received in the recesses, whereby the clamping apparatus may be selectively used for clamping operations both with and without the brackets attached to the clamping members.

5,335,899

APPARATUS AND METHOD FOR AUTOMATICALLY ADJUSTING SHEET FEEDING PRESSURE

Roman M. Golicz, Clinton, Conn., assignor to Roll Systems, Inc., Burlington, Mass.

Filed Oct. 1, 1992, Ser. No. 955,334
Int. Cl.[5] B65H *3/04, 1/18*
U.S. Cl. 271—34 **43 Claims**



1. A high speed sheet feeder comprising:

a support platform for supporting a stack of sheets, faces of the sheets being substantially transverse to the support platform;

a singulator engaging the face of a leading sheet in the stack for driving the sheet out of the stack;

a backing support for engaging an upstream most sheet in the stack;

a drive member for advancing the backing support in a downstream direction to drive the stack pressurably toward the singulator, the drive member advancing the backing support in predetermined length increments;

a linkage interconnected to the drive member and movable in response to each of increased pressure and decreased pressure by the leading sheet on the singulator;

a reciprocating element, mechanically interconnected to the drive member, that applied a reciprocating force to the drive member, each application of the reciprocating force corresponding to an advancing of the backing support a predetermined length increment; and

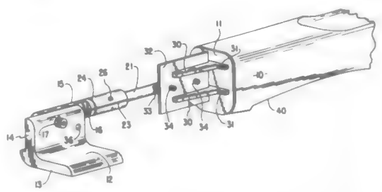
each of the linkage and the drive member being interconnected so that movement of the linkage varies an interconnection period of the reciprocating element to the drive member over a substantially continuous range of interconnection periods so that the predetermined length increments are varied relative to each of the increase and the decrease of pressure by the leading sheet upon the singulator.

5,335,900

MODEL AIRPLANE BUILDERS JIG

Randall W. Bonde, 1335 Highway 69, Box 332, Belmond, Iowa 50421

Filed Jul. 23, 1993, Ser. No. 95,587
Int. Cl.[5] B23Q *1/04*
U.S. Cl. 269—51 **4 Claims**



1. For use in the completion and assembly of a model airplane having a motor mounting bulkhead on the fuselage of said airplane, a holding device for holding the airplane comprising a bracket adapted to be fixedly mounted, attachment means having means attachable to said bulkhead whereby said airplane can be rotated about the centerline of said fuselage, arm means pivotally attached to said bracket whereby the angle of said arm means relative to horizontal can be altered, screw means threadably engaged in said arm means, abutment means slidably engaged in said bracket, said abutment means being slidable to a location in which it will be abutted by an end of said screw means whereby said angle of said arm means can be adjusted by turning said screw means.

5,335,901

PAPER FEEDER

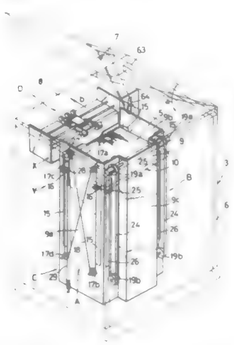
Tomohiro Nonomura, and Hiroshi Kishimoto, both of Hyogo, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 1, 1993, Ser. No. 11,727
Claims priority, application Japan, Feb. 6, 1992, 4-021116
Int. Cl.[5] B65H *3/06*
U.S. Cl. 271—117 **20 Claims**

1. A paper feeder, comprising:

(a) an opening section having an upper part which is openable when the paper feeder is in a paper feeding state during which paper sheets are picked up and fed by a pick-up member, wherein a cover is provided at the opening section which is openable/closeable comprising a rotating axis in a direction parallel to a paper feeding direction of the sheets;

(b) a paper feed table which can be lifted to the opening section or lowered therefrom being held horizontal and onto which paper sheets are loaded only from above through the opening section; and



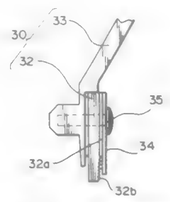
(c) said pick-up member for picking up the paper sheets stacked on the paper feed table one after another for feeding, starting with a top sheet.

5,335,902

SHEET FEEDING DEVICE FOR AN IMAGE FORMING APPARATUS

Nobutaka Suzuki, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,607
Claims priority, application Japan, Mar. 13, 1992, 4-089726
Int. Cl.[5] B65H *3/52*
U.S. Cl. 271—121 **6 Claims**



1. A sheet feeding device for feeding sheets one by one in a predetermined direction, comprising:

a feed roller;

a pick-up roller for picking up the sheets and feeding said sheets toward said feed roller;

a first blade rotatable about a fulcrum and held in contact with a surface of said feed roller at an edge of said first blade, and wherein means for urging said first blade against said feed roller are provided such that only said edge is held against said feed roller without remaining portions of said first blade deforming into pressing relation with said feed roller; and

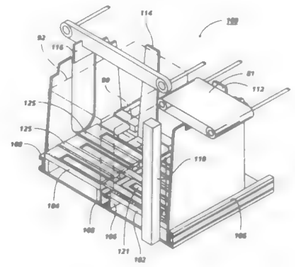
a second blade held in contact with a surface of said feed roller at a location downstream from a location at which said edge of said first blade contacts said feed roller with respect to a feeding direction of the sheets, and wherein means for urging said second blade against said feed roller are provided to hold only an edge of said second blade against said feed roller without remaining portions of said second blade deforming into pressing relation with said feed roller.

5,335,903

HIGH CAPACITY DUAL TRAY VARIABLE SHEET SIZE SHEET FEEDER

Michael J. Martin, Hamlin; George J. Roller, Penfield, and Richard Van Dongen, Newark, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 982,529, Nov. 27, 1992, abandoned.
This application Dec. 1, 1993, Ser. No. 160,454
Int. Cl.[5] B65H *1/26*
U.S. Cl. 271—157 **12 Claims**



1. An apparatus for feeding sheets, comprising:

means for advancing sheets;

means for supporting a first stack of sheets in an operative position enabling said advancing means to advance sheets therefrom and a second stack of sheets in a non-operative position remote from said advancing means in a first operating replenishment mode and supporting only a third stack of sheets in a second nonreplenishment operating mode, said supporting means comprising a first tray for supporting the first and third stacks of sheets therein and a second tray for supporting the second stack of sheets therein;

means for sensing depletion of the first stack of sheets and emitting a signal indicative thereof;

means, responsive to the signal from said sensing means, for transporting the second stack sheets from said second tray to said first tray to replenish said first tray in said first operating mode; and

means for converting said supporting means from supporting the first stack in the operative position and the second stack in the non-operative position in the first operating mode to supporting only the third stack of sheets with the third stack being of a size to overlap said second tray in the second operating mode, wherein only said first tray supports said third stack in the second operating mode.

5,335,904

SHEET TRANSPORT ROLLER DEVICE

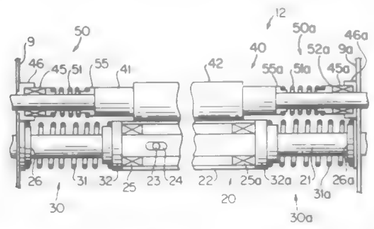
Takahiko Ryuzaki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1993, Ser. No. 47,839
Claims priority, application Japan, Apr. 20, 1992, 4-126751
Int. Cl.[5] B65H *5/00*
U.S. Cl. 271—272 **7 Claims**

1. A sheet transport roller device having a drive roller member and a free roller member facing each other with a specified pressure between them to transport a sheet held between them, a device that allows each roller of the drive and free roller members to move in the axial direction, urging members disposed at both ends of the rollers, in which the roller members

VOL 1165 ISS 2 AG 9 1994 UMI

are moved in the direction lateral to a sheet transport path as a sheet is held by the roller members, in accordance with an



action moving said sheet in the direction lateral to the transport path.

5,335,905

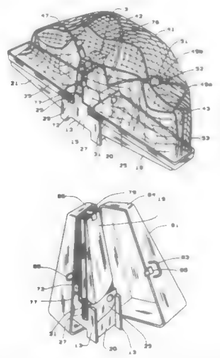
ROBOT TABLE TENNIS NET AND SERVER ASSEMBLY

Joseph E. Newgarden, Jr., 400 N. Belvedere, P.O. Box 959, Gallatin, Tenn. 37066

Division of Ser. No. 959,266, Oct. 9, 1992. This application Nov. 12, 1993, Ser. No. 151,793

Int. Cl.[5] A63B *39/00*

U.S. Cl. 273—30 **4 Claims**



1. A net and trough assembly for a Tobot ball server comprising:

a first net suspended above and along one side of a foldable trough for catching balls dropping from said first net and for feeding the balls to a robot server positioned in front of first net and operatively associated with said trough;

a second net, said second net suspended in front of said first net above and along a second side of said foldable trough, said second net being constructed to allow table tennis balls to pass through said second net from the front but preventing said table tennis balls from passing back through second net from the rear, thereby trapping said balls between said first and second nets and allowing said trapped balls to drop into said trough; and

a pair of ball dams, said ball dams being constructed so as to be removably mountable within said trough, each said ball dam being mountable on an opposite side of said robot server for creating a pool of balls surrounding said robot so that said table tennis balls remain around said robot server when said foldable trough is folded up and to keep balls away from said server if so desired.

5,335,906

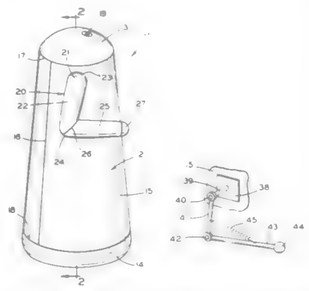
DUMMY APPARATUS FOR FOOTBALL PRACTICE

Charles L. Delker, 6135 S. Chanticleer Dr., Maumee, Ohio 43537

Filed Jul. 17, 1992, Ser. No. 916,177

Int. Cl.[5] A63B *67/00*

U.S. Cl. 273—55 A **8 Claims**



1. A dummy apparatus for practicing football techniques comprising:

a generally upright ground engaging body;

an arm having an upper end attached by attachment means to an upper region of said body and an opposite free end, said arm being hollow and including an arm linkage extending through the interior of said arm, said attachment means being a mounting plate attached to the exterior surface of said body, said one end of said arm linkage being attached to said mounting plate, said arm linkage includes a shoulder post connected between said mounting plate and a shoulder joint, an upper arm link connected between said shoulder joint and an elbow joint, and a forearm link having one end connected to said elbow joint and its other end being said opposite free end of said arm, said upper arm link extending generally vertically downward from said shoulder post to said elbow joint and a forearm portion extending generally horizontally forward from said elbow to said opposite free end adjacent to said body; and

fastener means for releasably retaining a football between said body and said forearm portion of said arm, said fastener means including a first fastener portion attached to said forearm portion of said arm facing said body and a second fastener portion for attaching to a football and being releasably attached to said first fastener portion with a preselected degree of holding whereby a grip of a human football carrier is simulated for practicing football techniques.

5,335,907

VARIABLE WEIGHT PLAYBALL

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Continuation-in-part of Ser. No. 345,405, May 1, 1989, Pat. No. 5,138,721, which is a continuation-in-part of Ser. No. 205,477, Jun. 13, 1988, Pat. No. 4,834,382. This application Aug. 9, 1991, Ser. No. 743,279

Int. Cl.[5] A63B *39/00, 43/00*

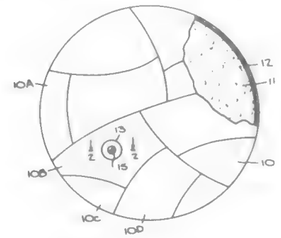
U.S. Cl. 273—58 H **7 Claims**

1. A variable weight squeezable playball in which the weight of the ball is determined by a user, said ball comprising:

(a) an outer casing formed of liquid-impervious, flexible material having a configuration that depends on the nature of the playball;

(b) a low-density compressible body normally having the same configuration as the casing and confined within the casing, the body being formed of flexible foam plastic material having sponge-like characteristics; and

(c) a port formed in the casing to provide access to the body encased therein and a removable closure for said port, said port being reopenable by the user whereby water may be introduced through the port into the body when the playball is squeezed by by the user, the water being absorbed by the body as the body resumes its normal configuration to impart heft to the playball, after which the port is



closed by the closure to retain the water and the playball is then in condition for play, and should it be thereafter necessary to lighten the ball, the port may then be opened and the ball squeezed to extrude water from the body until the ball has the desired reduced weight, said casing being formed of a fabric material whose inner surface is resin coated to render the fabric waterproof.

5,335,908

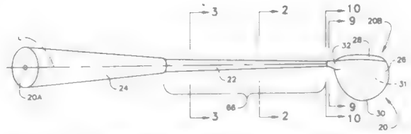
GOLF CLUB SHAFT

Jeffrey V. Bamber, 5023 Village Dr., Cincinnati, Ohio 45244

Filed Dec. 31, 1992, Ser. No. 999,094

Int. Cl.[5] A63B *53/10*

U.S. Cl. 273—80 R **9 Claims**



1. An aerodynamically shaped golf club shaft having a longitudinal axis, a non-circular exterior cross section, a leading edge, and a trailing edge, wherein the leading edge of said shaft has a radius of curvature that is less than about 0.47 cm at the tip and less than about 0.8 cm at the butt and said aerodynamically shaped shaft is provide with a means for equalizing its bending and twisting properties so that said shaft bends in such a way that the deflection of said shaft is the same regardless of how the shaft is rotated about its longitudinal axis, and said shaft twists with respect to its longitudinal axis the same amount in both the clockwise and counterclockwise directions.

5,335,909

WOOD HEAD NO HOSEL GOLF CLUB

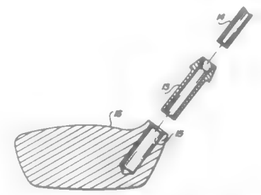
Robert Green, Jr., 9041 Puesta Del Sol, Desert Hot Springs, Calif. 92240

Filed Apr. 16, 1993, Ser. No. 47,180

Int. Cl.[5] A63B *53/02*

U.S. Cl. 273—80.2 **6 Claims**

1. A wood golf club requiring no hosel and having a club head with a neck portion at a top of the head and a base portion at a bottom of the head, a cylindrical opening extending from said neck portion downward to a point adjacent to but spaced from said base portion, a rigid cylindrical sleeve positioned within and cemented to said opening, said sleeve having a shoulder and collar in engagement with and surrounding said neck portion, an elongated club shaft, a lower end of which is positioned within said sleeve and cemented therein, said collar being formed with an outwardly tapering opening which is



greater in diameter than both a inner diameter of said sleeve and an outer diameter of said shaft, a space provided between said shaft and said opening, and cushioning material between said shaft and said collar.

5,335,910

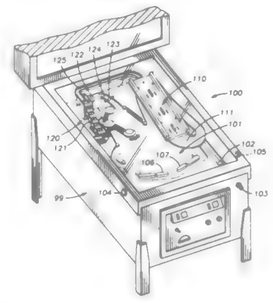
PINBALL MACHINE HAVING A CONVEYOR BELT BALL LIFT

Raymond C. Tanzer, Naperville, and Peter J. Hanchar, Chicago, both of Ill., assignors to Premier Technology, Bensenville, Ill.

Filed Jul. 13, 1993, Ser. No. 90,704

Int. Cl.[5] A63F *7/38*

U.S. Cl. 273—121 E **16 Claims**



1. A pinball machine comprising, in combination:

a housing;

a playfield mounted in said housing for supporting a rolling pinball; and

a ball elevator; said ball elevator including an inclined conveyor belt mounted in said housing for elevating said pinball from an entrance location to an exit location, and a motor coupled to said conveyor belt for driving said conveyor belt to elevate said pinball.

5,335,911

TOY FISHING APPARATUS

Lawrence W. Brown, 568 NW. Wide Ave., Roseburg, Oreg. 97470

Filed Oct. 22, 1993, Ser. No. 139,768

Int. Cl.[5] A63F *9/00*

U.S. Cl. 273—140 **4 Claims**

1. A toy fishing apparatus, comprising,

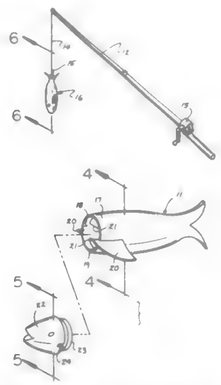
a plurality of target fish members, a fishing pole having a fishing line extending from the fishing pole, with the fishing line including fishing line free distal end, and a hook mounted to the fishing line free distal end,

and

a bait fish member, the bait fish member including a body member having a body rearwardmost end, with fastening

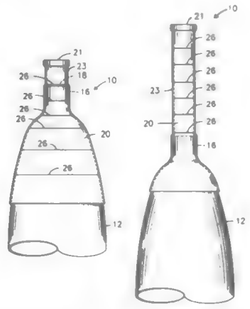
VOL 1165 ISS 2 AG 9 1994 UMI

means mounted to the rearwardmost end for securement to the hook,
and
the bait fish member including a continuous outer shell,
and
a magnetic core positioned coextensively and complementarily within the outer shell,
and
each of the target fish members having an elongate body including a head portion formed of a ferrous metallic



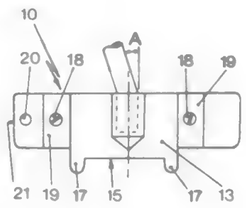
material arranged for magnetic adherence to the bait fish member, and securement means for securing the head portion to the elongate body, and
the securement means includes the head portion having a shank, the shank having a magnetic plate mounted to the shank, and the elongate body having a body cavity, with the elongate body having an entrance end in communication to the body cavity, and spaced coplanar abutment flanges mounted within the cavity in adjacency to the entrance end, with the magnetic plate arranged for magnetic adherence to the abutment flanges.

5,335,912
DEVICE FOR GENERATING RANDOM NUMBERS OF DIFFERING LENGTHS
Dewey L. Brooks, 12001 Belcher Rd. #E70, Largo, Fla. 34643
Filed Sep. 3, 1993, Ser. No. 117,385
Int. Cl.[5] A63F *7/04, 3/06*
U.S. Cl. 273—144 B **2 Claims**



1. A random number generator, comprising:
a bottle having a main body, a bottom wall, and a neck formed integrally with said main body;
a predetermined plurality of numbered balls being loosely received within said main body so that said balls may be randomly scrambled when the bottle is shaken or inverted;
a flexible boot member of elongate, cylindrical configuration when in a position of repose;
said flexible boot member having a lowermost end that grippingly engages said neck when said flexible boot member is in a maximum-ball-retaining configuration;
said lowermost end of said flexible boot member grippingly engaging said neck and said main body when said boot member is displaced toward said bottom wall of said main body to reduce the ball-retaining capacity of said boot member;
said flexible boot member being formed of a resilient material and said flexible boot member continuously conforming to the shape of said neck and main body as said flexible boot member is displaced along the extent of said bottle.

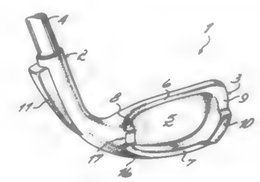
5,335,913
GOLF CLUB
Robert W. D. White, 9 Summers Way, Knutsford, Cheshire WA16 9AQ, United Kingdom
Filed May 4, 1993, Ser. No. 56,387
Claims priority, application United Kingdom, May 21, 1992, 9210986
Int. Cl.[5] A63B *53/02, 53/04*
U.S. Cl. 273—164.1 **13 Claims**



1. A golf club of the putter type, which comprises:
a head;
a shaft attached to the head, the head having a front face for striking a ball and a bottom surface wherein the front face and the bottom surface are generally planar and are substantially mutually perpendicular, and
at least one depending protrusion provided on the bottom surface which extends out of the plane thereof, the head including a body part and a blade which are detachably secured to each other and wherein the front face comprises a surface of the blade.

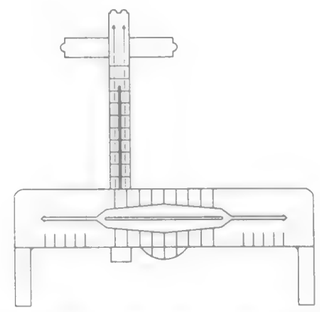
5,335,914
GOLF CLUB HEAD
Clay Long, Albany, Ga., assignor to ProGroup, Inc., Chattanooga, Tenn.
Filed Apr. 13, 1993, Ser. No. 47,262
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—169 **33 Claims**

1. A golf club head having a toe, a heel, a body extending between said toe and said heel, and a hosel extending upwardly from said heel for receiving a golf club shaft, said club head including a center of gravity located between said toe and said heel, and first and second weight members, said first weight member projecting rearwardly from said toe and said second weight member projecting outwardly from an angular segment of the periphery of said hosel, wherein said angular segment is less than 360° and said first and second weight members each have at least a portion thereof positioned above a horizontal line containing the center of gravity, said horizontal line being



generally parallel to a support surface on which said club head rests when said club head is lying at address.

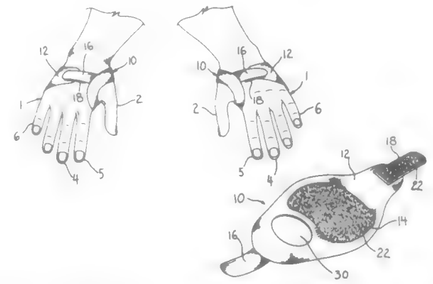
5,335,915
GOLFER'S STANCE GAUGE
Albert J. Baudier, 5106 Montegut, New Orleans, La. 70126
Filed Mar. 25, 1993, Ser. No. 36,954
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187 R **2 Claims**



1. A new and improved golf stance training tool designed to insure a golfer's consistently correct stance in relation to both the ball to be struck and the desired target for every different golf club, comprising:
(a) a base plate in the shape of a non-adjustable arch bearing pre-calibrated foot placement indicia, as determined by a golfer's shoulder width, along with pre-calibrated club selection indicia representing correct club placement for each different club between those foot placement indicia for both right and left-handed golfers;
(b) a first club selector gauge member adjustably connected to said base plate and bearing pre-calibrated indicia representing the proper distancing of the golf ball away from the feet for each different golf club and having ball placement indicator arrows positioned on its top edge so as to not interfere with the clubhead path, said arrows being spaced apart and indicating proper ball placement for both right and left-handed golfers; and
(c) a second target arrow pointer member being perpendicularly mounted to said first club selector gauge member so as to indicate the proper target line for both right and left-handed golfers.

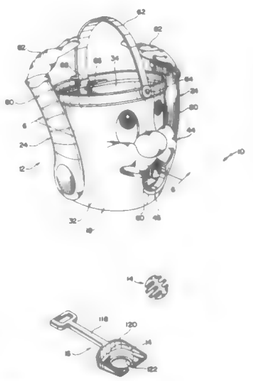
5,335,916
FINGERLESS PALM GLOVE
Victor Nee, 1624 Arcadia, South Bend, Ind. 46635
Filed May 15, 1992, Ser. No. 883,691
Int. Cl.[5] A63B *71/14;* **A41D** *19/00*
U.S. Cl. 273—346 **2 Claims**

1. In combination, a fingerless glove to cover the palm of the user's hand for use in a game of catch comprising a hand wrap constituting means for overlying the palm of either hand of said user having an inner face adapted to lie against said user's palm and an outer face with a central patch constructed of a hook material carried upon said outer face, said wrap having opening means for receiving at least one digit of said user's



hand, fastening means for securing said wrap to said user's hand, and means for use as a projectile in said game of catch with an outer covering constructed of a loop material, wherein said object is received by said glove and clasped by the engagement of said outer covering of said object to said patch of said wrap.

5,335,917
GAME APPARATUS AND MOTORIZED BUCKET ASSEMBLY THEREFORE
Wayne A. Kuna, River Forest, Ill., assignor to Hasbro, Inc., Pawtucket, R.I.
Filed Jan. 13, 1993, Ser. No. 4,099
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—445 **12 Claims**



1. A game apparatus comprising:
a plurality of game balls;
a bucket element having a bottom wall and an outer wall which cooperate to define an upwardly opening interior portion, said outer wall having an aperture therein, said game balls being receivable in said interior portion of said bucket element;
wheel means rotatably mounted on said bucket element for rotatably supporting said bucket element on a supporting surface;
drive means for rotating said wheels;
switch means for selectively activating said drive means,

VOL 1165 ISS 2 AG 9 1994 UMI

said switch means being mounted in a vertical orientation on said outer wall, said switch means being movable between an upper position wherein said drive means is de-activated, and a lower position wherein said drive means is activated;

an upwardly extending handle element on said bucket element, said handle element having an end portion which is operatively attached to said switch means, said handle element being operative for movement of said switch means wherein said drive means is activated when said handle element is moved downwardly and said drive means is de-activated when said handle element is pulled upwardly;

means for periodically causing said bucket element to be turned as it is moved across said supporting surface; and

shooting means in said bucket element for shooting said game balls outwardly from said bucket element through said aperture in said outer wall as said bucket element is moved across said supporting surface.

5,335,918

GOLF CLUB SWING TRAINING DEVICE

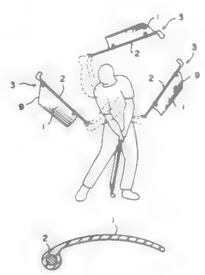
Thomas J. Rupnik, Lodi, and Ron Kite, Nevada City, both of Calif., assignors to Ace Trainer, Inc., Grass Valley, Calif.

Filed Feb. 2, 1993, Ser. No. 12,449

Claims priority, application New Zealand, May 29, 1992, [illegible]

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—186.2 **11 Claims**



1. A golf club including an airfoil attachment wherein said attachment comprises a member curved in cross-section and having a convex upper surface, a concave lower surface, and substantially straight leading and trailing edges, the trailing edge of said airfoil being connected to the shaft of said golf club and extending generally parallel thereto, to thereby promote a correct swing due to the airflow over the airfoil imparting a lift on the convex side of the airfoil.

5,335,919

MOVABLE END CAP FOR THE HANDLE OF A SPORTS ROCKET

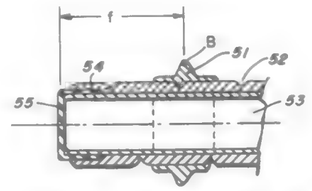
Tsai C. Soong, 1839 Jackson Rd., Penfield, N.Y. 14526

Filed Jul. 29, 1993, Ser. No. 98,525

Int. Cl.[5] A63B *49/08*

U.S. Cl. 273—735 **9 Claims**

1. A sports racket having a frame including a head portion and a shank region supporting a string network, and a handle assembly, the shank region connecting the frame to the handle assembly, the handle assembly comprising, a handle portion connecting the handle assembly to the shank region, and including a gripping means for the hand of a user, an abutment device detachably arranged on the handle portion and along the circumference thereof, said abutment device having a ridge member projecting outwardly from the surface of the handle portion for supporting the hand of the user at a predetermined point thereon, said abutment device being a composite having a plurality of rigid elements embeded in an elastic media and being arranged with said elements ringing around the circumference of the handle portion, said elastic media being



stretched around said circumference thereby enabling said abutment device to be positioned over the handle portion at said predetermined point along the central axis.

5,335,920

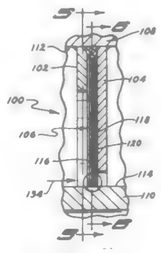
BRUSH SEAL

Wu-Yang Tseng, West Chester; Brent L. Bristol, Milford; Rolf R. Hetico, Cincinnati, and Christopher C. Glynn, Hamilton, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 20, 1992, Ser. No. 932,514

Int. Cl.[5] F16J *15/447*

U.S. Cl. 277—1 **16 Claims**



1. Sealing apparatus for sealing a leakage path extending from an upstream high pressure region to a downstream low pressure region between a rotating and a stationary member of a fluid flow machine, said apparatus comprising:

a brush seal having at least one stage, said stage including upstream and downstream plates, a bristle pack sandwiched between said upstream and downstream plates, said bristle pack defined in part by an axial width defining an axial direction, said axial direction being substantially parallel to the direction of the leakage path, said bristle pack further including a plurality of bristles disposed in multiple layers in said axial direction, each of said bristles being defined by a longitudinal length and a cross sectional area taken substantially transversely to said longitudinal length, the bristles of at least one upstream layer of said bristle pack having a greater cross sectional area than those in downstream layers.

5,335,921

BEARING ALIGNMENT DEVICE FOR PILLOW BLOCKS

David C. Orlowski, Milan, Ill., assignor to Inpro Companies, Inc., Rock Island, Ill.

Filed Jan. 15, 1993, Ser. No. 4,973

Int. Cl.[5] F16J *15/10, 15/54*

U.S. Cl. 277—30 **10 Claims**

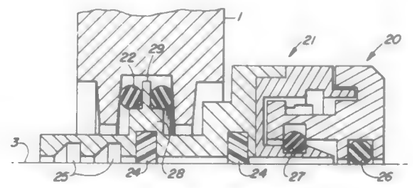
1. An alignment device for aligning a housing and a seal to a shaft in a split self-contained bearing housing unit where the housing unit includes means for securing together the split housing members comprising:

a shaft generally supported by bearings in split housing units, each of said split housing units having at least one radial groove therein;

a rigid circular member surrounding said shaft;

at least two alignment elements axially displaced and positioned radially on said circular member and firmly abutting said shaft;

at least one outwardly radial projection on said circular member having a predetermined axial width less than the



width of the groove in said housing and a radial length less than the depth of said groove in said housing, said projection fitted in said groove in said housing;

a plurality of resilient members affixed to said radial projection and frictionally fitted to the sides of said groove; said resilient members permitting axial and radial rotational movement of said housing units relative to the axial and radial center point of said bearings, thereby facilitating misalignment of the housing to the center line of the shaft and bearing.

5,335,922

CHUCK

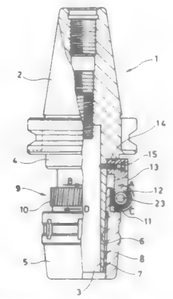
Miyuki Unate, 9-15, Kosaku 4-chome, Funabashi-shi, Chiba-ken, Japan

Filed May 21, 1993, Ser. No. 65,253

Claims priority, application Japan, May 25, 1992, 4-34714; Sep. 14, 1992, 4-244917

Int. Cl.[5] B23B *31/04*

U.S. Cl. 279—9.1 **8 Claims**



1. A chuck comprising:

a main body comprising a taper shank for fixing said chuck to a machine tool and a tool support for clamping a rotary tool;

a fastening ring for regulating fastening force by said tool support;

a needle roller bearing interposed between said fastening ring and said tool support under an inclined state; and

a gear mechanism for rotating said fastening ring, wherein said gear mechanism comprises a worm wheel integrally formed with said fastening ring and a worm meshing with said worm wheel.

5,335,923

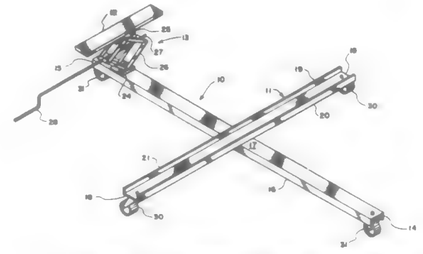
SNOW PLOW DOLLY

John M. Langenback, and Glenn L. Langenback, both of 15 Lakeway Dr., Pittsfield, Mass. 01201

Filed Jan. 4, 1993, Ser. No. 868

Int. Cl.[5] B62B *3/10;* **B66F** *9/065*

U.S. Cl. 280—79.11 **4 Claims**



1. A plow blade dolly adapted to support and transport a plow blade dismounted from a vehicle, said plow blade comprised of an arcuate metal structure horizontally elongated between opposed lateral extremities and having a concave front surface, convex rear surface, and straight lower edge adapted to contact a roadway upon lowering of the plow blade, said plow blade having a support yoke having a forward extremity attached to the rear surface of said blade and a rear extremity adapted to be engaged by lifting means associated with a plowing vehicle, said dolly comprised of:

a) a longitudinal support beam horizontally elongated between front and rear extremities and having top and bottom surfaces,

b) a transverse support beam horizontally elongated between outer extremities and symmetrically disposed about and perpendicular to said longitudinal support beam, said transverse support beam having a lower surface affixed to the top surface of said longitudinal support beam at a point substantially equidistant of said front and rear extremities, and having an upper surface provided with an upwardly directed receiving channel adapted to receive the lower edge of said plow blade,

c) a jack disposed upon the top surface of said longitudinal support beam adjacent the rear extremity thereof,

d) an elongated extension arm configured to engage and activate said jack,

e) an elongated crossbar centrally supported by said jack and disposed in parallel relationship to said transverse support beam, said crossbar adapted to adjustably support said yoke, and

f) four caster wheels, each downwardly disposed from the lower surface of one of said front, rear and outer support beam extremities, respectively, and adapted to roll upon the same plane.

5,335,924

RETRACTABLE BREAK PAD MECHANISM FOR IN-LINE SKATES

Kenneth E. Richards, Sr., Fairwind La., Cumberland, Me. 04096, and Thomas H. Brown, R.R. #7 Box 595, Augusta, Me. 04330

Filed Apr. 26, 1993, Ser. No. 51,644

Int. Cl.[5] A63C *17/14*

U.S. Cl. 280—11.2 **6 Claims**

1. A braking system for a skate having wheels for skating on a ground surface, said braking system comprising:

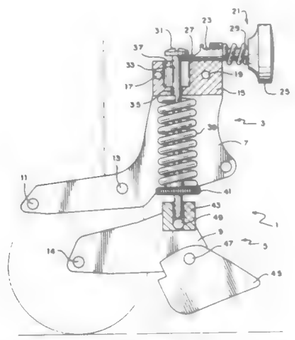
a brake pad retainer;

a brake pad attached to said brake pad retainer, said brake pad having a retracted state when located a first predetermined distance above the ground surface with all wheels of the skate in contact with the ground surface and an

VOL 1165 ISS 2 AG 9 1994 UMI

extended state when located a second predetermined distance above the ground surface with all wheels of the skate in contact with the ground surface, said second predetermined distance being less than said first predetermined distance;

means for retracting said brake pad from said extended state to said retracted state, wherein said means for retracting includes a locking mechanism for maintaining said brake



pad in said retracted position when said brake pad is pushed upwards at least said first predetermined distance so as to enable the engagement of said locking mechanism with said brake pad retainer; and

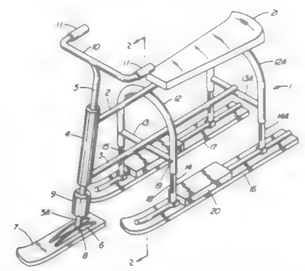
means for extending said brake pad from said retracted state to said extended state, wherein said means for extending includes a compression spring for driving said brake pad from said retracted position to said extended position.

5,335,925

SNOW SLED

Murray Dolson, R.R. #3, Prescott, Ontario, Canada K0E 1T0

Filed Dec. 21, 1992, Ser. No. 993,614
Claims priority, application Canada, Jan. 23, 1992, 2059886
Int. Cl.[5] B62B *13/08*
U.S. Cl. 280—16 5 Claims



1. A snow sled comprising a frame and at least three runners;

said frame including a pair of inverted U-shaped, hollow tubular members fixedly attached to one another by means of horizontally disposed struts or cross-braces;

one of said runners being rotatably mounted and adapted to function as a steering means;

two of said runners adapted to function as support and edging means;

each of said two runners being fixedly attached to two or more vertically oriented legs;

said legs being adapted to slidably fit within said frame;

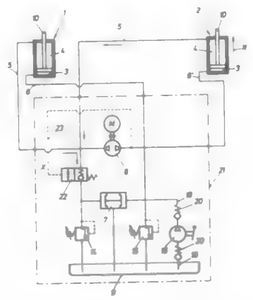
said two runners being functionally connected to one another such that, in operation, a downward movement of one runner produces a proportional upward movement of said other runner.

5,335,926

HYDRAULIC ACTUATING APPARATUS FOR OPENING AND CLOSING A VEHICLE COVER WITH AUXILIARY MANUAL HYDRAULIC PUMP

Klaus Stolle, Altenstadt, Fed. Rep. of Germany, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed Nov. 23, 1992, Ser. No. 980,158
Claims priority, application Austria, Mar. 18, 1992, 554/92
Int. Cl.[5] B60J *7/12*; F16D *31/02*
U.S. Cl. 280—117 3 Claims



1. A vehicle which includes a cover and a hydraulic actuating apparatus for opening and closing the cover, said hydraulic actuating apparatus comprising:

a piston/cylinder device which is mounted in said vehicle and includes a cylinder and a piston, said piston including a head which moves in said cylinder to define first and second variable volume operating spaces in said cylinder and a rod which is connected to open and close said cover,

a versible, motor-driven pump,

a first hydraulic line connecting the first operating space in said cylinder with said reversible pump and a second hydraulic line connecting said reversible pump with said second operating space, said reversible pump supplying hydraulic fluid through said first hydraulic line to said first operating space to cause said piston to move and open said cover or supplying hydraulic fluid through said second hydraulic line to said second operating space to cause said piston to move and close said cover, and

a manual pump connected to said second hydraulic line for supplying hydraulic fluid to said second operating space and causing said piston to move and close said cover in the event of failure of said reversible pump.

5,335,927

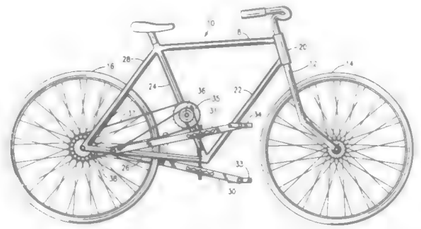
PEDALED PROPULSION SYSTEM

John J. Islas, 6980 Lincoln Knolls North, Canastota, N.Y. 13032

Filed May 10, 1993, Ser. No. 60,090
Int. Cl.[5] B62M *1/04*
U.S. Cl. 280—255 6 Claims

1. A foot powered arrangement for propelling a vehicle comprising a frame; positioning means on said frame for positioning a person thereon; rotary propelling means supported on said frame for moving said frame relative to a stationary environment; a rotary drive member on said frame for imparting rotary motion to said propelling means to drive same; left and right pedal levers mounted on respective pivots; left and right pedals mounted on the respective pedal levers against which said person on the positioning means can apply foot

pressure to move the levers in a reciprocating motion about said pivots; respective left and right one-way rotary members mounted on left and right sides of said frame and rotationally coupled to said rotary drive member such that oscillatory rotating motion of the one-way rotary members produces unidirectional rotation of said rotary drive member; a set of idler pulleys mounted on said frame; a first drive web mounted at one end to the left lever, passing over said left one-way



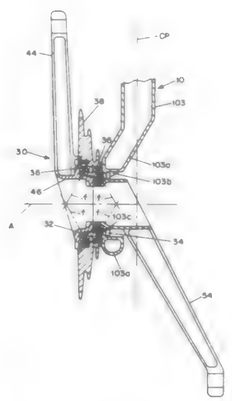
rotary member, then over said set of pulleys to the right side of the frame and connected at its other end to the right lever; and a second drive web mounted at one end to the right lever, passing over said right one-way rotary member, then over said set of pulleys to the left side of the frame, and connected at its other end to the left lever, so that movement by each of said levers corresponds to movement in the opposite direction by the other lever.

5,335,928

BICYCLE BOTTOM BRACKET/CRANK ASSEMBLY

Alex Pong, Langley, and Skooks Pong, Freeland, both of Wash., assignors to Cannondale Corporation, Georgetown, Conn.

Filed Sep. 16, 1993, Ser. No. 122,147
Int. Cl.[5] G05G *1/14*
U.S. Cl. 280—259 9 Claims



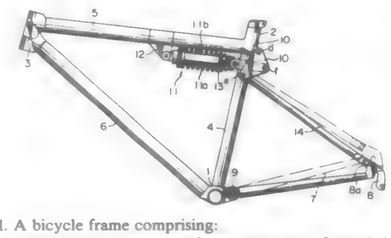
1. A bicycle comprising a frame having a sleeve portion adapted to support a bottom bracket/crank assembly and having an annular opening having its axis oriented substantially orthogonally to a vertical-longitudinal center plane of the bicycle, a bearing support ring attached to the sleeve portion in cantilevered relation and having an external bearing seat surface oriented substantially orthogonally to the vertical-longitudinal center plane, at least one bearing having an inner race received on the bearing seat surface of the ring, a driving sprocket wheel set having an internal bearing seat surface received on an outer race of the bearing, a first crank member having a crank arm located on the side of the sprocket wheel set opposite from the frame sleeve portion, fastened to the sprocket wheel set for rotation therewith and having a portion overlying the opening in the sleeve portion, a second crank member having a crank arm located on the side of the frame sleeve portion opposite from the sprocket wheel set, and having a portion overlying the opening in the sleeve portion, and means for connecting the portions of the crank members that overlie the openings to each other.

5,335,929

BICYCLE FRAME

Makoto Takagaki; Tadashi Karasawa, and Kazumitu Futami, all of Chigasaki, Japan, assignors to Miyata Industry Co., Ltd., Chigasaki, Japan

Filed Nov. 23, 1992, Ser. No. 980,281
Claims priority, application Japan, Jun. 17, 1992, 4-048295
Int. Cl.[5] B62K *25/04*
U.S. Cl. 280—283 5 Claims



1. A bicycle frame comprising:

a substantially triangular frame structure formed by a bracket lug, a seat lug, a head lug, a seat tube extending between and interconnecting said bracket and seat lugs, an upper tube extending between and interconnecting said seat and head lugs and a lower tube extending between and interconnecting said bracket and head lugs,

a chain stay disposed rearwardly of said triangular frame structure and having an end pivotally connected to said bracket lug;

a substantially triangular link having long, medium and short sides, said long and short sides cooperating to define therebetween a first apex, said long and medium sides cooperating to define therebetween a second apex, said medium and short sides cooperating to define therebetween a third apex, said triangular link being pivotally connected at a point thereof adjacent the first apex to said seat lug;

a shock absorbing cylinder assembly including a cylinder connected at an end thereof to said upper tube and a cylinder rod normally urged to project outwardly from said cylinder and having a free end pivotally connected to said triangular link adjacent said third apex; and

a rear fork member extending between and pivotally connected to said triangular link adjacent said second apex and said chain stay adjacent a rear axle support thereof;

wherein when the chain stay pivots about said bracket lug in a counter clockwise direction, said triangular link pivots about said seat lug in a clockwise direction.

5,335,930

CONSTRUCTION SITE HAULING SYSTEM

Peter Tighe, 22 Timmins Rd., Bow, N.H. 03304

Filed Dec. 4, 1992, Ser. No. 986,851
Int. Cl.[5] B60D *1/06*
U.S. Cl. 280—477 20 Claims

1. A hauling system particularly adapted for use at a construction site comprising, in combination:

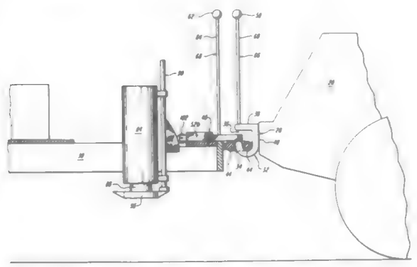
VOL 1165 ISS 2 AG 9 1994 UMI

a self-propelled wheel loader having a cab in which an operator operates said wheel loader;

a trailer having a front end and a rear end that is not self-propelled;

connecting means not directly visible to the operator from the cab for releasably securing said wheel loader to said trailer having a tractor portion secured to the rear of said wheel loader and a trailer portion secured to the front of said trailer, and said tractor and trailer portions achieving said releasably securing through a mutual vertical movement produced by a relative vertical movement of said wheel loader and trailer;

locking means for preventing said tractor portion of said connecting means from disengaging from said trailer portion of said connecting means when said locking means is engaged said locking means operating in coordination with and at least in part in response to said mutual vertical movement;



a pair of alignment members each fixed with respect to one of said wheel loader and said trailer, for aligning said wheel loader and trailer portions, said pair of alignment members being visible from within said cab of said wheel loader to permit the operator to determine by a visual inspection of said pair of alignment members form within said cab when said tractor portion is aligned with and can be connected to said trailer portion of said connecting means;

hydraulic lift means mounted on said trailer near its front end to engage the ground and to raise said front end when extended to vertically adjust said trailer including a power source mounted on said trailer and means for connecting said power source to said lift means; and

control means for operating said lift means and lock means comprising a transmitter operable form the cab of said wheel loader to transmit a wireless control signal and receiver means mounted on said trailer to receive said wireless signal and produce a control signal to actuate at lest said lift means.

5,335,931

SKI HAVING AN UPPER FACE OF VARIABLE WIDTH

Jacques Lacroix, Annecy; Herve Andrevon, Doussard, and Dominique Deville, Annecy le Vieux, all of France, assignors to Salomon S.A., Courbevoie, France

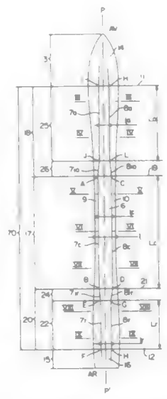
Filed Dec. 14, 1992, Ser. No. 990,402

Claims priority, application France, Dec. 13, 1991, 91 15831

Int. Cl.[5] A63C *5/04*

U.S. Cl. 280—602 **11 Claims**

1. Ski (1) shaped like an elongated beam (2) comprising a lower slide face (3) bounded laterally by two lower edges (4, 5), an upper face (6) bounded laterally by two upper edges (7, 9), and two lateral faces (9, 10), and constituted by a central part (17) extended forwardly (AV) by a front part (18) having a front end (13) ending in a tip (14) and extended rearwardly (AR) by a rear part (20) having a read end (15) ending in a heel-piece (16), wherein said front part (18) is constituted by a front section (25) connected to the central part (17) by an intermediate attachment section (26), while said rear part (20) is constituted by a rear section (22) connected to said central part (17) by a rear intermediate attachment section (24) and the two upper edges (7c, 8c) of said upper face (6) are parallel in



said central part (17), while, at one of said front and rear sections (22, 25) said lateral faces (9, 10) are inclined so as to converge upwardly, and at the other of said front and rear sections, said upper surface is narrower than it is in said central part and has a uniform width (la, lr).

5,335,932

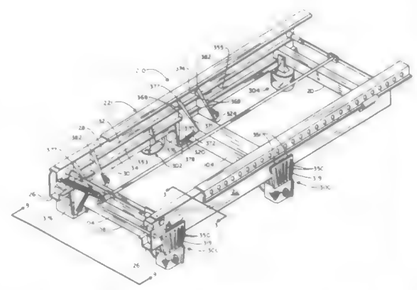
APPARATUS FOR MOUNTING A TRAILING ARM AIR SUSPENSION TO A SLIDING FRAME

William C. Pierce, Muskegon, Mich., assignor to Nai Neway, Inc., Muskegon, Mich.

Filed Jun. 26, 1992, Ser. No. 905,269

Int. Cl.[5] B62D *21/11*

U.S. Cl. 280—788 **17 Claims**



1. In a slider comprising a subframe and a trailing arm air spring suspension, the subframe having a pair of parallel frame rails, the improvement comprising:

a beam disposed beneath the frame rails and extending from one frame rail to the other of the frame rails, said beam having a bottom surface and a front surface;

a hanger bracket having an upper portion thereof mounted to the bottom surface of one end of the beam beneath one frame rail and adapted to pivotably mount the trailing arm;

a beam-frame rail connection between the beam and the frame rail to transfer lateral loads from the hanger bracket to the other frame rail, the beam-frame rail connection

comprising a first gusset mounted to the front surface, the hanger bracket, and the one frame rail, the one frame rail having an inner wall and the first gusset being triangular in shape having first, second, and third edges, the first edge extending from the inner wall toward the hanger bracket, the second edge extending from the hanger bracket toward a point on the front surface, and the third edge extending from said point on the front surface toward the inner wall.

5,335,933

SUSPENSION SYSTEM OF A VEHICLE

Tadanobu Yamamoto, and Hiroyoshi Kumada, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

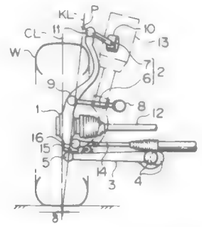
Continuation of Ser. No. 674,211, Mar. 25, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,463

Claims priority, application Japan, Mar. 30, 1990, 2-91382

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] B60G *3/20*

U.S. Cl. 280—675 **3 Claims**



1. A suspension system for a vehicle, having a front and a rear, comprising:

a steering knuckle for supporting a wheel which is used for steering;

two link members for connecting an upper portion of the steering knuckle to a frame of the vehicle, one of said two link members extending along a first axis, the other of said two link members extending along a second axis, the other of said two link members being disposed such that said second axis crosses said first axis at a first cross point; and

a lower arm for connecting a lower portion of the steering knuckle to a frame of the vehicle, said lower arm having at least one inner end connected to the frame of the vehicle and an outer end connected to said steering knuckle, each of said link members also being pivotally connected to the frame of the vehicle at one end thereof and to the steering knuckle at an opposite end thereof, a kingpin axis being defined by a line extending between said first cross point and the outer end of said lower arm, said link members being so disposed as to set a kingpin offset, defined by a distance from a second cross point between the kingpin axis and the ground and a center of a contact surface between the wheel and the ground, at a positive value when said second cross point is located inside of said center of said contact surface in relation to a transverse direction of the vehicle, and increase the kingpin offset as the wheel is turned toward an outward direction wherein the wheel is located radially outwardly in relation to a turning circle, wherein the one of the two link members is disposed in the transverse direction of the vehicle and the other of the two link members is disposed in a longitudinal direction of the vehicle, the two link members being disposed such that, in a neutral position of the wheel, a connection point between the other of the two link members and the steering knuckle is located on the first axis of the one of the two link members in a plan view of the link members, and the other of the two link members extends towards the rear of the vehicle beyond the one of the two link members.

5,335,934

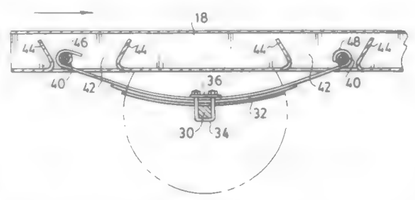
SPRING HANGER ASSEMBLY FOR TRAILER FRAME

James N. Hiller, Spokane, Wash., assignor to EZ Loader Boat Trailers, Inc., Spokane, Wash.

Filed May 26, 1993, Ser. No. 67,014

Int. Cl.[5] B60G *11/10*

U.S. Cl. 280—718 **7 Claims**



1. In a trailer of the type having a tongue for towing, a pair of longitudinal side frame members extending rearwardly from the tongue and formed of tubing having a top, bottom and side surfaces, cross bar members positioned between the side frame members, a wheel bearing axle supporting the trailer for movement over a roadway, fenders for partially covering a portion of each wheel and leaf springs for connecting the wheel bearing axle to the trailer, the center portion of the springs being connected to the axle and the end portions of each spring being connected to the trailer side frame members to provide movement for the axle relative to the trailer, the improvement comprising:

a pair of openings formed in the bottom surface of each longitudinal side frame member to allow the end portions of the leaf springs to be positioned within the interior of the tubing forming the side frame members;

a loop formed at each end of each leaf spring, one loop being substantially closed and the other loop being substantially open; and

spring hanger means for connecting the springs to the trailer, said spring hanger means being substantially contained within the interior of the tubing forming the side frame members.

5,335,935

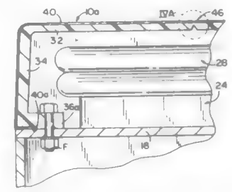
AIR BAG COVER/MOLDED ARTICLE WITH INTEGRAL COVER LAYER OF LEATHER

Gary K. Proos, Grand Rapids; Theodore M. Sarver, Grandville, and Donald W. Boehlke, Grand Rapids, all of Mich., assignors to Plastic Mold Technology Incorporated, Grand Rapids, Mich.

Filed Aug. 31, 1992, Ser. No. 940,206

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 B **27 Claims**



1. A cover for housing an occupant restraint air bag in a vehicle, said cover comprising:

a top wall having an outer surface adapted to face toward

VOL 1165 ISS 2 AG 9 1994 UMI

the interior of a vehicle when installed and an inner surface, a side wall extending at an angle and joined to said top wall and having outer and inner surfaces, and at least one securing member on said top wall for attaching said cover to a fixed vehicle portion over an inflatable air bag, at least said top wall and side wall being molded from resinous, plastic material;

said top and side wall outer surfaces being covered with and joined to a layer of natural leather, said leather layer being a preformed, preshrunk, preshaped leather piece including a top portion and a side portion, said leather layer extending from said top portion to said side portion such that it generally conforms to the desired shape of said cover prior to joining to said top wall and side wall, having an exposed surface and an interior surface, and including a frangible tear seam formed in a desired tear pattern on said interior surface, said tear seam including an indentation forming a reduced thickness portion along said tear pattern in said leather layer;

said top wall having a groove defining a reduced thickness area aligned and in registry with said indentation of said tear seam along said frangible tear pattern;

said resinous plastic material of said top and side wall outer surfaces being securely bonded and joined to said interior surface of said leather layer including said top and side portions during molding of said top and side walls, said top wall extending into said tear seam indentation and bonded to said indentation therewithin whereby said leather layer is smoothly and uniformly attached to said top and side walls without substantial distortion and said cover is frangible along said tear pattern through said aligned tear seam indentation and top wall groove for separation to release the air bag when pressure is applied to said top wall inner surface inflation of the air bag.

5,335,936

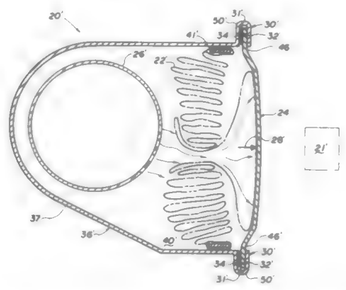
SEPARABLE CONNECTION FOR AN AIR BAG COVER ASSEMBLY

Ernst M. Faigle, Dryden, and Joseph F. Ziomek, W. Bloomfield, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 30, 1991, Ser. No. 816,314

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—728 A **10 Claims**



6. An air bag assembly for a vehicle occupant compartment, said air bag assembly comprising:

a receptacle having an air bag cavity,

an inflatable air bag located in said air bag cavity and coupled to said receptacle,

a closure coupled to said receptacle and interposed between said air bag and the occupant compartment,

a fluid source for supplying fluid to said air bag to cause said air bag to inflate towards the occupant compartment;

said air bag being positioned to apply a force to said closure upon receiving fluid from said source;

said closure defining at least part of a separable connection which opens in response to said force so as to create an opening through which said air bag can be inflated into the occupant compartment;

said separable connection being at least partially defined by a first connection surface, a second connection surface overlapping said first connection surface, and a connection device positioned between and connecting said first and second connection surfaces together;

said separable connection having a structure such that said separable connection opens through movement of said first and second connection surfaces relative to each other in response to said force, said movement being primarily in a shear direction that is generally parallel to said first and second surfaces and that is generally perpendicular to the direction of said force;

said closure having an edge portion which is joined with said receptacle by said separable connection and which is adapted to separate from said receptacle when said separable connection opens through movement of said first and second connection surfaces primarily in said user direction;

said receptacle including a confinement member which permits separation of said first and second connection surfaces only in said shear direction;

said confinement member including an elongated channel which closely encloses said first and second connection surfaces and the connection device and which extends in a direction that is generally perpendicular to the direction of said force; and

said first and second connection surfaces being repeatably connectable connection surfaces.

5,335,937

COVER FOR VEHICLE OCCUPANT IMPACT PROTECTION DEVICE

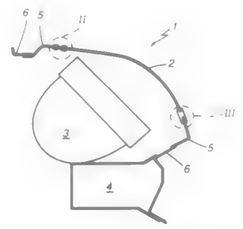
Hans-Wilhelm Uphues, Magstadt; Zivojin Petkovic, Böblingen; Wolfgang Henseler, Tübingen; Manfred Müller, Deizisau; Stephan Schreiner, Mötzingen; Thomas Witkovsky, Grafenau; Thomas Fischer, Calw-Stammheim; Rolf Schumacher, Sindelfingen, and Bruno Möltgen, Tiefenbronn, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Sep. 3, 1993, Ser. No. 115,682

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1992, 4229379

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 B **20 Claims**



1. A cover for an air bag of an impact protection device for occupants of a vehicle, comprising a carrier part, at least one upwardly pivotable cover flap operatively arranged in the dashboard of a vehicle, and a tough elastic plastic surround which is injection molded onto the at least one cover flap and onto the carrier part, wherein the plastic surround has, along a pivot axis edge of the cover flap, a cross-sectional tapering configured to serve as a hinge, and said plastic surround is constructed at at least one further edge of the cover flap as a groove which, in the event of pressure on the at least one cover flap in an opening direction, easily releases an edge which is held in the groove.

5,335,938

AIR BAG APPARATUS

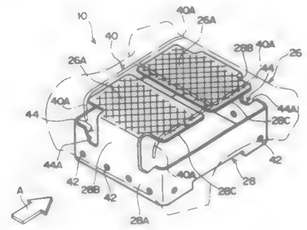
Teruhiko Koide, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Mar. 2, 1993, Ser. No. 25,238

Claims priority, application Japan, Mar. 5, 1992, 4-011215[U]

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 B **10 Claims**



1. An air bag apparatus comprising:

an air bag cover accommodating a bag body in a folded state, said bag body being expandable toward an occupant when a vehicle decelerates rapidly, and having an upper wall and a brittle portion to rapture along a predetermined line provided in said upper wall: and

an insert member embedded in said air bag cover so as to reinforce said air cover;

said insert member having an upper expandable portion embedded in upper wall of said air bag cover to expand together with said upper wall of said air bag cover, and a lower supporting portion for supporting said upper expandable portion, and, a coupling portion which couples said upperexpandable portion and said lower supporting portion; and

guide notch portions provided in said lower supporting portion at both sides of said coupling portion so as to be adjacent to said coupling portion;

wherein a first hypothetical line representing a center of expansion of said insert member is provided between said coupling portion and said lower supporting portion, said first hypothetical line being positioned lower than a second hypothetical line which extends along an uppermost periphery of said lower supporting portion, and said guide notch portions being respectively defined between said second hypothetical line and said first hypothetical line and guiding rupture of said air bag cover by allowing said brittle portion to rupture downwardly into a portion corresponding to said guide notch portion and by allowing a center of expansion of said insert member to be positioned along said first hypothetical line,

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5,335,939

AIR BAG DEVICE

Yuuji Kuriyama; Shoji Sakaida; Hikaru Ando; Masao Ando; Kazumi Ichimaru, all of Inazawa, and Kazutoshi Sakamoto, Ikeda, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Nov. 13, 1992, Ser. No. 974,726

Claims priority, application Japan, Nov. 13, 1991, 3-297356; Dec. 13, 1991, 3-330503; Jan. 20, 1992, 4-001472[U]

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 B **10 Claims**

1. An air bag device comprising:

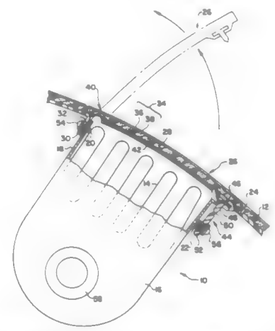
a case having an opening,

a folded air bag provided in said case,

an inflator provided in said case to generate gas for inflating said air bag, and

a cover for closing said case opening, said cover having a thermoplastic layer a softer intermediate layer and an outer surface layer as well as a reinforcing net partially embedded in a major portion of an underside of said base layer,

said cover having a reduced thickness portion defining a hinge including said reinforcing net.



5,335,940

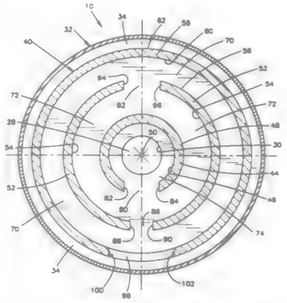
AIR BAG INFLATOR HAVING FLOW CONTROL FOR SLOWING AND FILTERING INFLATION GAS

Jess Cuevas, Scottsdale, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Continuation of Ser. No. 845,183, Mar. 3, 1992, abandoned. This application Sep. 29, 1993, Ser. No. 129,487

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—737 **9 Claims**



1. Apparatus for inflating a vehicle occupant restraint such as an air bag, comprising:

a cylindrical gas source having an outer diameter and having first and second ends and having an axis extending between said ends of said gas source, said gas source being free of filter material;

outlet means in said gas source for establishing axial flow of the gas out of said gas source in a direction axially outwardly from said first axial end of said gas source; and

filter means for filtering the gas flow from said outlet means and for directing the gas flow into a diffuser chamber for inflating the vehicle occupant restraint;

said filter means consisting essentially of a maze disposed outside of said gas source and projecting axially outward

VOL 1165 ISS 2 AG 9 1994 UMI

from said gas source, said maze being coaxial with said gas source, said maze having substantially the same outer diameter as said gas source;

said maze including surfaces disposed in the path of gas flowing from said gas source for splitting the gas flowing from said gas source and for directing a major portion of the split flow of gas into a first flow path and a minor portion of the split flow of gas into a second flow path;

said first flow path being disposed axially outward from said gas source and having substantial circumferential flow path components intermediate said outlet means and said diffuser chamber, said surfaces defining said first flow path including:

(i) a radially extending axial end wall of said maze,

(ii) a first annular wall coaxial with said axis and extending axially between said axial end wall and said outlet means and defining therewith a chamber, said first annular wall having a single radial outlet therethrough,

(iii) a second annular wall coaxial with said axis and extending axially between said axial end wall and said outlet means, said second annular wall being spaced radially outward from said first annular wall and defining an inner circumferential passage therebetween, said second annular wall having first and second radial outlets therethrough, said first radial outlet being radially aligned with said single radial outlet of said first annular wall, said second radial outlet being offset about 180° from said first radial outlet, and

(iv) a third annular wall coaxial with said axis and extending axially between said axial end wall and said outlet means, said third annular wall being spaced radially outward from said second annular wall and defining an outer circumferential passage therebetween, said third annular wall having a single radial outlet therethrough, said single radial outlet of said third annular wall being radially aligned with said single radial outlet of said first annular wall and with said first radial outlet of said second annular wall;

said first flow path including (i) said chamber defined by said end wall and said outlet means and said first annular wall, (ii) said single radial outlet of said first annular wall, (iii) said inner circumferential passage, (iv) said second radial outlet of said second annular wall, (v) said outer circumferential passage, and (vi) and single radial outlet of said third annular wall;

said second flow path being disposed axially outward from said gas source and including (i) said chamber defined by said end wall and said outlet means and said first annular wall, (ii) said single radial outlet of said first annular wall, (iii) said second radial outlet of said second annular wall, and (iv) said single radial outlet of said third annular wall, said second flow path not including said inner and outer circumferential passages and thereby being substantially free of circumferential flow path components intermediate said outlet means and said diffuser chamber and thereby being substantially shorter than said first flow path thereby to establish a rapid initial flow of gas into the vehicle occupant restraint to help establish a desired pressure-time curve for vehicle occupant restraint inflation;

said maze including said inner and outer circumferential passages being free of filter material other than said walls.

5,335,941

VEHICLE DECELERATION SENSOR

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Dec. 10, 1992, Ser. No. 989,033

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 4140691

Int. Cl.[5] B60R *22/46;* **H01H** *35/14*

U.S. Cl. 280—206 **12 Claims**

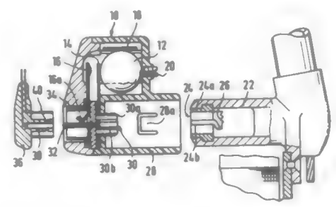
1. A vehicle-sensitive mechanical contactor for activating a belt pretensioner in a safety belt restraining system, said belt pretensioner having a pyrotechnical gas generator with an electrical igniter, and said contactor comprising:

a housing having a wall defining an inner chamber;

an inertial mass body accommodated in said housing and movable therein between a rest position and a release position;

an electrical pair comprising a first contact member and a second contact member, said first and second contact members each having a first end extending into said chamber and a second end extending through said wall and out of said chamber;

said first contact member being spring loaded to bear against said inertial mass body with a predetermined spring bias when said inertial mass body is in said rest position and



said second contact member being spaced from said first contact member when said inertial mass body is in said rest position;

and said first contact member being movable by said inertial mass body into contacting engagement with said second contact member after said predetermined spring bias is overcome by inertial forces developed by said inertial mass body under vehicle deceleration;

said gas generator being generally cylindrical in shape and said housing having an integral socket adapted to be fitted on said gas generator;

said gas generator and said socket having cooperating contact pairs for connecting said electrical igniter to said contactor.

5,335,942

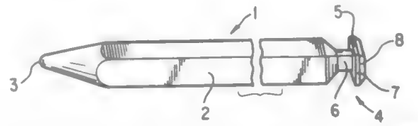
STYLUS FOR AN ERASABLE MARKER SYSTEM

Zvi Grinfas; Georges Weil, and Maurice Miller, all of Herzliya Pituach, Israel, assignors to System RM Ltd., Douglas, Isle of Man

Filed Dec. 17, 1992, Ser. No. 990,951

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—74 **16 Claims**



1. A stylus for marking an arrangement of the type in which a first foil layer can be releasably attached to a second layer at any desired point, points of attachment therebetween being visually distinctive and constituting indicia, wherein said stylus comprises a shaft having a blunt point at one end thereof and having engagement means disposed transversely with respect to the axis of said shaft, said engagement means being adapted to co-operate with a cursor mounted over said first foil layer to convey said cursor in contact with said engagement means along said first foil layer.

5,335,943

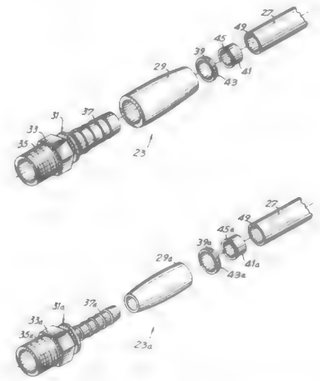
AUTOMOBILE ENGINE HOSE SYSTEM WITH PLURALITY OF ADAPTOR MEMBERS

Duane Duryea, 37 E. Loines Ave., Merrick, N.Y. 11566

Filed Apr. 20, 1993, Ser. No. 49,548

Int. Cl.[5] F16L *33/00*

U.S. Cl. 285—12 **16 Claims**



1. An automobile engine hose replacement system for providing a customized hose member which is selectively connectible to one of a plurality of nozzles found in an automobile engine comprising:

a length of flexible hose having a substantially uniform inside diameter and adapted for being sized to any desired length for providing a hose member having first and second ends of substantially the same size inside diameter; and

a plurality of various sized flexible tapered adaptor members, each of said adaptor members comprising a first adaptor end with a first sized inside diameter for coupling to either end of said hose member in order to selectively adjust hose inside diameter at said end, and a second adaptor end with a different sized inside diameter for selective connection to one of said plurality of nozzles found in said automobile engine.

5,335,944

HOSE COUPLING STRUCTURE

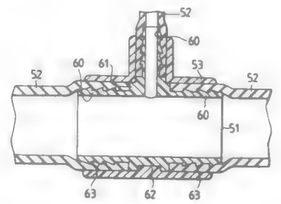
Kenichi Mitsui, and Isao Fukuzono, both of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Mar. 24, 1992, Ser. No. 856,768

Claims priority, application Japan, Mar. 25, 1991, 3-059233; Oct. 14, 1991, 3-265064

Int. Cl.[5] F16L *41/00*

U.S. Cl. 285—156 **8 Claims**



1. A hose coupling structure comprising:

at least one nipple, at lest one hose having a coupling portion coupled to the nipple, and at least one mold portion covering the coupling portion coupled with the nipple, said mold portion being constructed and arranged to tightly couple the coupling portion with the nipple,

said hose including, before being coupled to said nipple:

a general cylindrical part having an inner diameter generally equal to an inner diameter of said nipple;

a first enlarged cylindrical part having an inner diameter enlarged at a fore end of said general cylindrical part, the inner diameter of said first enlarged cylindrical part at a fore end thereof being smaller than an outer diameter of said nipple; and

a second enlarged part having an inner diameter which gradually increases starting from said fore end of the first enlarged cylindrical part, said inner diameter of said second enlarged part at a fore end thereof being larger than the outer diameter of the nipple,

said first and second enlarged parts defining said coupling portion, whereby, when said coupling portion is coupled to said nipple, said nipple is inserted into said second enlarged part and said outer diameter of said nipple enlarges said inner diameter of said first enlarged cylindrical part thereby providing a sealed coupling between said nipple and said hose,

the hose including a reinforcing layer constructed and arranged when under tension to reduce a diameter of said coupling portion when said coupling portion si coupled to said nipple thereby improving a clamping force and a seal between the hose and the nipple.

5,335,945

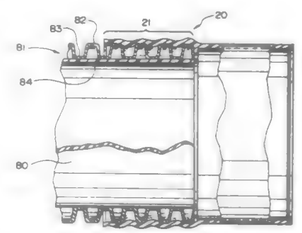
FLEXIBLE PIPE CONNECTOR

Theodore W. Meyers, Inverness, Ill., assignor to Tuf-Tite, Inc., Wauconda, Ill.

Filed Jul. 14, 1992, Ser. No. 913,143

Int. Cl.[5] F16L *21/00*

U.S. Cl. 285—236 **27 Claims**



21. A flexible pipe connector for connecting lengths of smooth-walled pipe, said connector comprising:

a flexible stretchable tube member having a cylindrical wall with inner and outer surfaces, said member defining at least one female end having a receiving length with a mouth at a first end and a stop means formed at a second end, said mouth being adapted to slideably receive an end of said smooth-walled pipe until said pipe end contracts said stop means; wherein said receiving length is capable of stretching sufficiently radially outward and exerting sufficient radially inward compressive forces to create a water-tight seal when a smooth-walled pipe end is inserted into said receiving length.

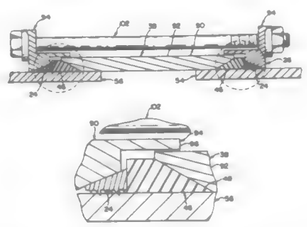
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,946

COOPERATING COMBINATION OF A GLAND AND A GRIP RING INSTALLED IN RESTRAINED SEALED BOLTED JOINTS OF FLUID PIPING SYSTEMS INCLUDING BOTH PLASTIC PIPE AND METALLIC PIPE

Larry G. Dent, Castle Rock, and George F. Denison, Seattle, both of Wash., assignors to Romac Industries Inc., Seattle, Wash.

Filed Jul. 28, 1992, Ser. No. 920,769
Int. Cl.[5] F16L *17/00*
U.S. Cl. 285—243 9 Claims



8. For fluid piping systems, which are primarily water and sewer piping systems, a cooperating combination of a gland and a grip ring for installations in respective types of bolted joints, which include the continuing cooperation of at least one member having a gasket receiving volume, and a pipe end receiving volume, and holes to receive bolts, a gasket, and bolt and nut fasteners to draw together and secure the gland to the member that receives the gasket and the pipe end, comprising:

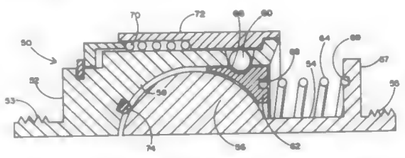
a) the member having a gasket receiving volume and the pipe end receiving volume and holes receiving bolts;
b) the gasket fitted into the gasket receiving volume;
c) bolt and nut fasteners, with the bolts passed through the holes both in the member and in the gland;
d) the pipe end fitted in the pipe end receiving volume;
e) the grip ring having the integral arrangement of:
  i. a radial open through slot to accommodate the reduction of the internal diameter thereof, while providing a limited size reduction of the grip ring;
  ii. a commencing internal diameter exceeding the diameter of the pipe engaged by the grip ring, when the diameter thereof has been reduced;
  iii. an internal surface structure having at least two spaced major size pipe gripping circumferential teeth and several spaced minor size pipe gripping circumferential teeth located between and beyond the major sized teeth and the major teeth extend radially inwardly farther than the minor teeth within the grip ring;
  iv. an external inclined structure, commencing at a larger diameter end thereof, at a larger vertical shoulder thereof, which faces and contacts the gasket, and terminating at a smaller diameter end thereof at a smaller vertical shoulder thereof which faces the gland of the cooperating combination; and
f. the gland having the integral arrangement of:
  i. an internal surface structure, commencing at a larger diameter end thereof, at a vertical shoulder thereof, which faces the grip ring, and which faces in the direction of the gasket, and terminating at a smaller diameter end thereof which faces and is nearer the smaller diameter end of the external inclined structure of the grip ring, when portions of the internal inclined surface structure are in forceful contact with portions of the external inclined structure of the grip ring, upon installation, when the engaging forces have been created when the bolt and nut fasteners have been tightened; and
  ii. variable external surface structures including a central body portion adjacent the internal inclined surface structure thereof; a flange extending out from the central body portion thereof; and spaced receiving hole structures extending out from the flange thereof which receive installation bolts, which are also received in spaced receiving hole structures of the member, which receives the gasket and the pipe end, and respective nuts are threaded and tightened on the respective installation bolts, and the respective type of the bolted joint is completed, insuring both the sealing contact of the gasket around the pipe, and that the grip ring has pressed the gasket into sealing position, providing adequate gripping contact of the grip ring about the pipe.

5,335,947

QUICK DISCONNECT BALL JOINT COUPLING

Ralph Remsburg, Irvine, Calif., assignor to Preece Incorporated, Irvine, Calif.

Filed Feb. 5, 1990, Ser. No. 474,611
The portion of the term of this patent subsequent to Sep. 9, 2008, has been disclaimed.
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—316 4 Claims



1. An improved quick disconnect ball joint coupling of the type having a male member and a female member, both having a fluid passage, the male member having a misalignment ball and the female member having a spherical engaging surface for receiving the misalignment ball in sealing engagement therewith for permitting fluid flow through the coupling from misaligned fluid conduits connected to the male and female members, respectively; the improvement comprising:

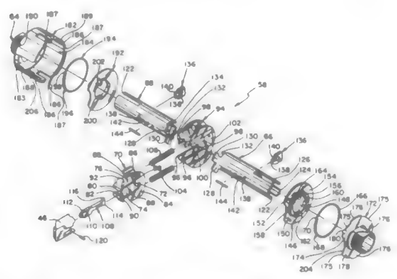
a locking sleeve having a spherical segment interior surface for engaging said misalignment ball in relative moveable relation about the center of said misalignment ball;
said locking sleeve having a grooved exterior surface forming a ball race;
a plurality of locking balls rotatably positioned in said ball race for locking said locking sleeve and said misalignment ball relative to said spherical engaging surface to prevent decoupling of said male member and said female member;
means for selectively constraining said locking balls in said ball race for coupling said male and female members and for alternately releasing said locking balls from said ball race for decoupling said male and female members;
whereby said locking sleeve enables axial misalignment of said male and female members and said locking balls enable relative rotation of said male and female members;
wherein said constraining and releasing means comprises a spring-loaded cylindrical sleeve forming an axially moveable radial surface of said female member, said cylindrical sleeve having an interior surface of at least two different diameters, one such interior surface diameter forcing said locking balls to be positioned within said ball race and the other such interior surface diameter permitting said locking balls to be released from said ball race.

5,335,948

CYLINDRICAL LOCKSET

George H. Norton, II, Higganum; Damon J. Lenk, Bristol, and James E. Robida, Cobalt, all of Conn., assignors to Corbin Russwin, Inc., Berlin, Conn.

Filed Oct. 16, 1992, Ser. No. 962,538
Int. Cl.[5] E05C *1/12*
U.S. Cl. 292—169.23 6 Claims



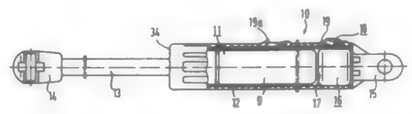
1. A cylindrical lockset comprising
a latchbolt,
a mechanism for moving the latchbolt between a latched position and an unlatched position,
an axially aligned pair of rotatable sleeves operatively associated with said mechanism,
a housing for said mechanism including
a cylindrical shell having closed opposed ends each having an opening therein for receiving one of said rotatable sleeves,
a pair of coil torsion springs inside said shell, one of said coil torsion springs received by each of said rotatable sleeves, and said received coil torsion springs located adjacent said closed ends,
a pair of ring shaped plates inside said shell, one of said ring shaped plates received by each of said rotatable sleeves, said received ring shaped plates located adjacent said coil torsion springs so that each coil torsion spring is captured between one of said closed ends and one of said ring shaped plates,
each rotatable sleeve and said ring shaped plate received thereon including cooperating key and keyway means for establishing a rotational connection therebetween so that rotation of said rotatable sleeve will rotate said rotationally connected ring shaped plate, and
each ring shaped plate and adjacent closed end including cooperating tab means for subjecting said coil torsion springs to an increasing stress as said ring shaped plates are rotated.

5,335,949

TELESCOPIC POSITIONING DEVICE

Horst Maury, St. Sebastian, and Helmut Morgen, Mannebach, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Apr. 8, 1993, Ser. No. 45,492
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1992, 4213818
Int. Cl.[5] E05C *17/44*; F16F *5/00*
U.S. Cl. 292—338 22 Claims



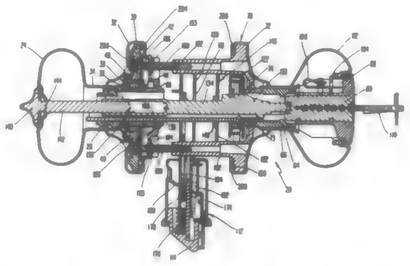
1. A telescopic positioning device having an axis (A) and comprising a core component (9), a shell component (12) which is shiftable on the core component (9) in the direction of the axis (A), and a bolt element (18) attached to the core component (9) for engagement into at least one breach (19*a*) of the shell component (12), so that, when the bolt element (18) engages in the breach (19*a*), relative axial shifting of the core component (9) and the shell component (12) is substantially blocked,
the bolt element (18) being spring-loaded radially away from the axis (A) toward a bolted position, so that, when the bolt element (18) is set in radial alignment with the breach (19*a*), the bolt element (18) enters into its bolted position in the breach (19*a*),
a bolt-releasing surface (40) being disposed at a radially outer end of the bolt element (18), accessible to the action of external radial forces and allowing a radially inward movement of the bolt element (18) for unblocking axial shifting between the core component (9) and the shell component (12), so that, after an axial shifting has been initiated, a sliding surface (40) of the bolt element (18) enters into sliding engagement with a slideway (27*a*) of the shell component (12),
the bolt element (18) having a radial path (H, h) with first and second travel lengths for unblocking, the lengths being different as a function of relative-shift direction of an intentional axial shift between the core component (9) and the shell component (12), a shorter travel length (h) corresponding to a first relative-shift direction, and a longer travel length (H) corresponding to a second relative-shift direction opposite to the first relative-shift direction.

5,335,950

DOOR LOCKSET WITH SPINDLE BEARING

David Mirshafiee, Fountain Valley, and Gary R. Bergen, Yorba Linda, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Aug. 13, 1992, Ser. No. 928,585
Int. Cl.[5] E05B *15/02*
U.S. Cl. 292—356 20 Claims



1. A door lockset for assembly with a door, which comprises:
a latch bolt;
a bolt operating mechanism coupled to the bolt;
an operator subassembly assembled independently of the bolt and bolt operating mechanism, which comprises:
an operator located for coupling to the bolt operating mechanism and movable for actuating the bolt operating mechanism to move the bolt;
a support attached to the operator for movement therewith;
a first bearing member having a first bearing surface positioned adjacent the support;
a bearing support surface spaced from the first bearing member;
a second bearing member having a second bearing surface spaced from the first bearing surface and positioned

VOL 1165 ISS 2 AG 9 1994 UMI

adjacent the bearing support surface; and fastening and holding elements for retaining the first bearing member and the second bearing member in assembly with the door and in a spaced-apart position to provide bearing support for the door lockset.

5,335,951

SHOCK-ABSORBING SAFETY DEVICE FOR SELF-PROPELLED TRUCKS AND THE LIKE

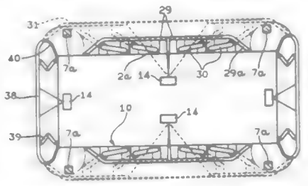
Armando Neri, Bologna; Verter Cesari, Granarolo Emilia; Orlando Roveri, Zola Predosa, and Alberto Manservigi, Bologna, all of Italy, assignors to G.D S.p.A., Bologna, Italy

Filed Jan. 25, 1993, Ser. No. 8,439

Claims priority, application Italy, Jan. 31, 1992, B092 A [illegible]

Int. Cl.[5] **B60R** *19/38, 19/42;* **B60T** *7/22*

U.S. Cl. 293—118 **13 Claims**



1. Shock-absorbing safety device, particularly for a self-propelled truck, comprising lateral protection elements which extend along sides of the truck; actuation means for moving said lateral protection elements transversely with respect to said truck between a loading position whereat said lateral protection elements are arranged adjacent to the sides of the truck and a transport position whereat said lateral protection elements are appropriately spaced therefrom; end protection elements for providing, in said transport position, substantial continuity with said lateral protection elements; and control means for detecting any collisions transmitted by said lateral protection elements and said end protection elements, wherein said lateral protection elements are provided with respective pairs of bumpers articulated symmetrically by connecting-rod means, on the sides of said truck, said lateral protection elements being provided in a median position thereof, with a sliding wall for maintaining continuity of protection when the bumpers are mutually spaced for moving into said transport position, and outer ends of said lateral protection elements have folded portions which, in said transport position, close against opposite ends of said end protection elements, said end protection elements being symmetrically articulated to said truck by means of lever systems and rigidly coupled to said truck by elastic means.

5,335,952

APPARATUS AND METHOD FOR ANIMAL WASTE PICK-UP AND DISPOSAL

Millard Clapper, 8 Ter. Ave., Binghamton, N.Y. 13901

Filed Oct. 28, 1993, Ser. No. 142,078

Int. Cl.[5] **A01K** *29/00;* **E01H** *1/12*

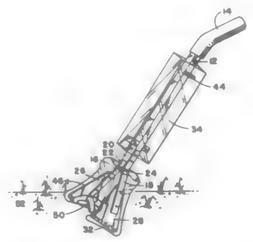
U.S. Cl. 294—1.4 **6 Claims**

1. A method of sanitary retrieval and disposal of animal waste utilizing a device including a hollow sleeve having a pair of opposed sidewalls and upper and lower, open ends, an elongated shaft having proximal and distal ends and carrying engagement means having terminal end portions extending beyond said distal end and movable between a first position, wherein said terminal end portions are in spaced relation, and a second position, wherein said terminal end portions are in closely adjacent relation, and means biasing said engagement means toward said first position, said method comprising:

a) inserting said engagement means into the open end of empty bag and providing slack in the closed end of said bag between said engagement means;

b) moving said engagement means to said second position and inserting said engagement means and bag into said sleeve through said upper end, said engagement means being retained in said second position by said sidewalls;

c) effecting a first relative longitudinal movement of said shaft and said sleeve to move said engagement means and empty bag out of said sleeve lower end, whereby said biasing means moves said engagement means to said first position;



d) holding said device to place said bag closed end over said waste with said terminal end portions of said engagement means on opposite sides of said waste;

e) moving said sleeve longitudinally to move said sleeve lower end over said engagement means, thereby moving said engagement means to said second position and turning said bag inside-out, and

f) effecting a second relative longitudinal movement of said shaft and said sleeve to move said engagement means and waste containing bag out of said sleeve lower end, whereby said biasing means moves said engagement means to said first position, thereby releasing said waste-containing bag.

5,335,953

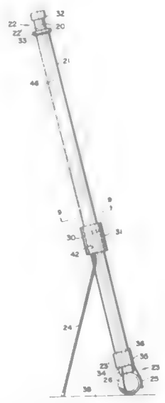
GOLF BALL RETRIEVER AND DISPENSER

Walter C. Luther, Sr., Rte. 4, Box 453, Lake City, Fla. 32059

Filed Dec. 21, 1992, Ser. No. 993,627

Int. Cl.[5] **A63B** *47/02*

U.S. Cl. 294—19.2 **16 Claims**



1. A golf ball retrieving and dispensing apparatus comprising an elongated inner tube and an elongated outer tube mounted

telescopically slidable with respect to each other such that a single longitudinal axis is common to both tubes, said tubes being generally coextensive, each tube having an upper end and a lower end, said outer tube having two legs attached thereto adjacent its lower end and adapted to hold said apparatus in a generally vertical free-standing position when resting on a horizontal surface, said outer tube at its bottom end having an expandable contractible means to expand sufficiently to encircle a golf ball and then contract sufficiently to grip a golf ball and hold it against the lower end of said inner tube when said lower end of said inner tube is retracted partially inside said lower end of said outer tube and then to expand again and release a golf ball when said lower end of said inner tube is further protracted outwardly from said lower end of said outer tube, said expandable, contractible means including a plurality of spring fingers extending downwardly from said lower end of said outer tube and adapted to grip an outer surface of a golf ball when said fingers contract from a sprung position inwardly against a golf ball to grip the same.

5,335,954

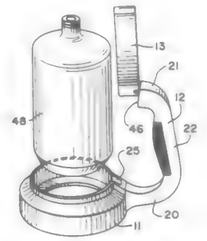
PROPANE BOTTLE CARRIER

Timothy M. Holub, Cheney; Regis Schulte, and Robert Deines, both of Wichita, all of Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Filed Sep. 10, 1993, Ser. No. 118,637

Int. Cl.[5] **B65D** *23/10*

U.S. Cl. 294—31.2 **6 Claims**



1. A fuel container carrier comprising:

an annular base having a cylindrical side wall which provides a central opening which is sized to receive the diameter of a cylindrical propane bottle and bottom support means extending radially inwardly from the side wall for supporting the bottom of the fuel container,

a handle secured to the side wall of the base and extending upwardly therefrom, the handle including a grip portion which extends generally parallel to the axis of the opening int he base and a top end portion,

a top ring pivotally secure to the top end portion of the handle, the top ring having a central opening which is sized to receive the diameter of a cylindrical fuel container and being pivotable between a holding position in which the axis of the opening in the top ring is aligned with the axis of the opening in the base and a loading position which permits a fuel container to be inserted into the base, the axis of the opening in the top ring int he loading position extending generally perpendicularly to the axis of the opening in the base,

the top end of the handle including an abutment surface which extends in a plane which is generally parallel to the axis of the opening in the base, and

the top ring including an abutment surface which is engageable with the abutment surface of the top end of the handle when the handle is in the holding position whereby the top ring is supported in a cantilever fashion.

5,335,955

METHOD AND SYSTEM FOR SETTING THE HYDRAULIC PRESSURE INFLUENCING A GRAB MEMBER

Kolari Pekka, Rengaskatu 55, and Kähönen Vesa, Sorvaajantie 1-3 C 24, both of SF-40900 Saynatsalo, Finland

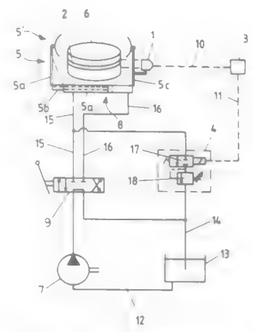
PCT No. PCT/FI91/00204, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/00913, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 1, 1991, Ser. No. 962,807

Claims priority, application Finland, Jul. 11, 1990, 903516

Int. Cl.[5] **B25J** *13/00*

U.S. Cl. 294—88 **5 Claims**



1. A system for setting the hydraulic pressure influencing a hydraulic grab member (**5**), which system comprises a hydraulic operating device including a hydraulic cylinder (**8**) for the grab member (**5**), a source of hydraulic pressure, and a pressure adjustment device, characterized in that a control unit (**3**) is connected to the adjustment device (**4**), the control unit (**3**) being linked to a reading device (**1**), by means of which an identifier (**2**) on the piece (**6**) being handled can be read, the identifier (**2**) either directly or indirectly expressing the force that may be directed onto the piece (**6**) by the grab member (**5**);

at least two electric pressure valves (**4***a*, **4***b*, . . .) which are set to different pressure values; and

a low-pressure hydraulic oil return line (**14**), characterized in that each pressure valve (**4***a*, **4***b*, . . .) is connected between a hydraulic line (**15**) of the compression side of the hydraulic cylinder (**8**) and the aforementioned return line (**14**).

5,335,956

PUCK OR BALL CARRIER

Raffy Panossian, P.O. Box 20534, Cambridge, Ontario, Canada N3C 2V6

Continuation-in-part of Ser. No. 885,981, May 20, 1992. This application Nov. 18, 1993, Ser. No. 153,978

Int. Cl.[5] **B65D** *71/00*

U.S. Cl. 294—161 **12 Claims**

1. A carrier for at least one circular object having a diameter comprising:

an elongate hollow body, C-shaped in cross-section, of resilient material, having two side walls, a rear wall, and an open front wall; the front and rear walls are substantially flat;

the front wall being two flanges extending inwardly from each of the side walls substantially parallel to the rear wall;

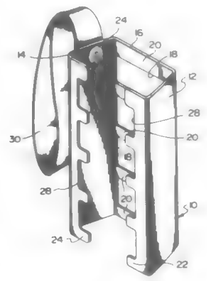
the rear wall joining the side walls; and

a trapping means for the or each circular object, allowing the object to be pressed into or removed from the trapping means from the front of the carrier, comprising in combination:

VOL 1165 ISS 2 AG 9 1994 UMI

a hole in the rear wall of a dimension smaller than the diameter of the object;

a notch in each of the front wall flanges in opposed relationship, having inwardly facing edges aligned with the hole in the rear wall;



wherein the trapping means defines an opening between the notch edges marginally smaller in dimension than the diameter of the object, and a space within the carrier defined by the notch edges, the depth of the side walls, and the hole in the rear wall sufficient to entrap loosely each circular object;

whereby the object engages the side edges to flex apart the side walls when the object is inserted or removed.

5,335,957

RESTRAINT DEVICE

Thomas J. Golder, 3421 Highview Rd., Charlotte, N.C. 28210

Continuation of Ser. No. 669,036, Mar. 14, 1991. This application Jun. 4, 1992, Ser. No. 893,897

Int. Cl.[5] B60R *22/00*

U.S. Cl. 297—482 10 Claims

1. An automotive restraint adjustment device for use with an existing conventional web-type restraint system of a type which includes a lap belt web portion and a shoulder belt web portion, a hasp member connected to said lap belt web portion and to said shoulder belt web portion, and a hasp closure for engagingly receiving the hasp member, said restraint adjustment device comprising a tubular guide member having an exterior surface which is completely and non-releasably closed about its periphery along a substantial portion of its length, open ends defining an inlet and an outlet for said tubular guide member, and an interior passageway extending between the inlet and outlet of said tubular guide member, said automotive restraint adjustment device additionally comprising shoulder belt guide means extending through exterior surfaces of the tubular guide member in generally parallel relation to said interior passageway to provide an open channel for receiving the shoulder belt web portion of the existing web-type restraint system and whereby the hasp of an existing web-type restraint system may be removably inserted in the inlet of said tubular guide member and conveyed through said interior passageway to said outlet while the shoulder belt guide means displaces the relative position of the shoulder belt web portion of the restraint as the hasp is conveyed through the interior passageway and whereby the lap belt web portion and the shoulder belt web portion will be positioned in laterally spaced apart relation to one another within said interior passageway.

5,335,958

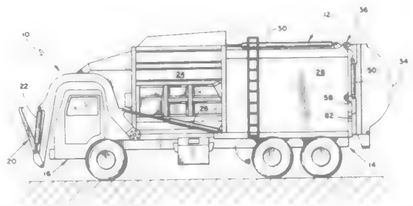
AUTOMATIC POSITIVE TAILGATE LATCHING MECHANISM

Ronald E. Christenson, Kasson, and Brandon McNeilus, Dodge Center, both of Minn., assignors to McNeilus Truck and Manufacturing, Inc., Dodge Center, Minn.

Filed Feb. 18, 1993, Ser. No. 18,962

Int. Cl.[5] B65F *3/00*

U.S. Cl. 296—56 4 Claims



1. A tailgate latching mechanism for latching a vertical tailgate to the rear of a truck body of a rearward compacting, rear discharge refuse truck comprising:

vertically adjustable pivot mounting means including hinge means for pivotally securing the top of the tailgate to the top rear of the truck body structure;

means for vertically adjusting the pivot mounting means;

a pair of oppositely disposed hinged pivot connections each including a hinge pin cooperating with an opening in a hinge member fixed to the truck body and on an opening in a hinge member fixed to the tailgate such that the tailgate is pivotally suspended from the truck body by the hinge pins;

wherein the means for vertically adjusting the pivot mounting means includes means to allow limited vertical displacement of the hinge pins relative to the truck body or the tailgate;

upper and lower spaced pairs of vertically interlocking side latches for absorbing the horizontal force associated with compacting and compacted refuse when latched;

a pair of self-aligning vertical stops to prevent vertical displacement of the tailgate when closed;

a pair of lower latching link members pivotally fixed to each side of the rear of the truck body;

a pair of vertically mounted cylinder means connected between the hinge member fixed to the tailgate and the lower latching link members pivotally fixed to the truck body.

5,335,959

LINK ELEMENT OF VARIABLE EFFECTIVE SUPPORTING LENGTH FOR THE SPRING DRIVE OF A PIVOTING COMPONENT

Jürgen Schrader, Schönbuch; Martin Guckel, Wiernsheim, and Klaus-Peter Claar, Gechingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Aug. 5, 1992, Ser. No. 925,054

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1991, 4126114

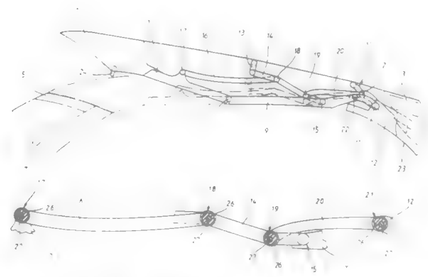
Int. Cl.[5] B60J *7/08*

U.S. Cl. 296—108 4 Claims

1. A device for pivotally driving a structural member of a vehicle folding top, said vehicle folding top having a pivoting component and a counter-component, comprising:

a plurality of parallelogram-like four-bar mechanisms arranged in succession for driving said pivoting component in the manner of a scissor-type lever mechanism, said plurality of parallelogram-like four-bar mechanisms including:

a link element, forming a control link for the four-bar mechanisms, having a variable effective supporting length for the folding top, said link element being articulated at a



distance from a pivot axis of the pivoting component between said pivoting component and said counter-component; and

an accumulator spring allowing for variation of the effective supporting length during pivoting of said pivoting component as a result of deformation of said accumulator spring;

wherein said accumulator spring is formed by a sleeve spring, made of an elastomeric material, providing a radially elastic element located at at least one of a hinge joint on said pivoting component and said counter-component.

5,335,960

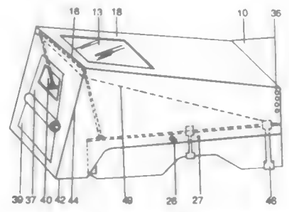
TONNEAU/TENT SHELTER

Edward Benigno, Jr., 921 Dickson St., Marina Del Rey, Calif. 90292

Filed May 8, 1992, Ser. No. 880,513

Int. Cl.[5] B60P *7/04, 3/34*

U.S. Cl. 296—165 4 Claims



1. A combined pickup truck bed cover and tent comprising:

a cover of flexible material detachably fastened to a pickup cab rear wall and upper portions of sidewalls of the pickup bed by fastening means; the cover having a generally planar top wall extending from an upper portion of the cab to a rear portion of the bed, a generally triangular side wall extending from the top wall to one of the bed sidewalls, a C-shaped support frame having pivotal attachment means to upper portions of the bed sidewalls; at least one support holder secured to the upper portion of the cab rear wall for detachable fastening of a bight portion of the support frame;

the support frame underlying and supporting the cover at an acute angular relationship to the upper portions of the bed sidewalls and detachable from the support holder to enable pivotal movement about the pivotal attachment means to a generally upright position to support the cover in an elevated position as a tent; means securing the support frame to the cover in the upright position, and means tensioning the elevated cover and support frame in the upright position, said tensioning means fastened to a tailgate of the bed.

5,335,961

VEHICLE ROOF WITH A SERIES OF PLATES

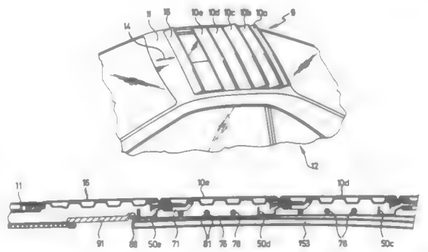
Burkhard Reinsch, Neuried, and Peter Reihl, Starnberg, both of Fed. Rep. of Germany, assignors to Webasto Karosseriesysteme GmbH, Stockdorf, Fed. Rep. of Germany

Filed Sep. 8, 1992, Ser. No. 940,217

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1991, 4129860

Int. Cl.[5] B60J *7/047*

U.S. Cl. 296—213 37 Claims



1. Vehicle roof with a series of strip-like plates for closing and at least partially opening a roof opening in a fixed roof surface, said plates adjoining one another, in a closed position, in a manner forming a flat composite plate assembly in which interconnections are formed between adjoining plates, and said plates being guided along first guideways which form part of a guide means for causing the flat composite plate assembly to perform a translatory movement, in a longitudinal direction of the roof and crosswise relative to lengthwise edged of the strip-like plates, and means for producing an upward pivoting of each plate during said translatory movement, each of the interconnections being disconnected by said upwardly pivoting of each plate in an opening direction on a sequential, plate-by-plate, basis when opening the roof and each interconnection being restored in a reverse manner when closing the roof; wherein a drip molding is hinged to a respective plate of at least some of the plates; and wherein said drip moldings are guided to slide along second guideways so as to follow only the translatory movements of the respective plate in said longitudinal direction of the roof in a manner causing the drip moldings, in each position of the respective plate, to lie under a lengthwise edge of the respective plate which extends crosswise to said longitudinal direction of the roof and which, when the respective plate is pivoted upward, is lower than the other lengthwise edge of the respective plate.

11. Vehicle roof with a series of strip-like plates for closing and at least partially opening a roof opening in a fixed roof surface, said plates adjoining one another, in closed position, in a manner forming a flat composite plate assembly in which interconnections are formed between adjoining plates, and said plates being guided along first guideways which form part of a guide means for causing the flat composite plate assembly to perform a translatory movement, in a longitudinal direction of the roof and crosswise relative to lengthwise edges of the strip-like plates, and means for producing an upward pivoting of each plate during said translatory movement, each of the interconnections being disconnected by said upwardly pivoting of each plate in an opening direction on a sequential, plate-by-plate basis when opening the roof and during which each

VOL 1165 ISS 2 AG 9 1994 UMI

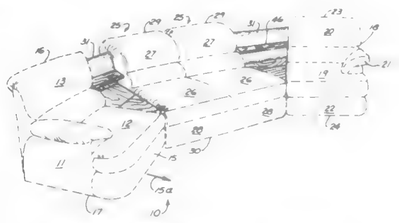
interconnection is restored in a reverse manner when closing the roof; wherein each of the strip-like plates is guided along said first guideways by guide support means that are pivotally connected thereto at first and second guide locations, said first and second guide locations being spaced apart from each other in the longitudinal direction of the roof, and said upward pivoting occurring at at least one of said guide locations; and wherein means is provided for maintaining each said guide support means in engagement with the first guideways over the entire range movements of the plates.

5,335,962

SECTIONAL SOFA

Robert A. Gera, Glencoe, Ill., assignor to Universal Furniture Industries, Inc., High Point, N.C.

Filed Sep. 9, 1992, Ser. No. 942,594
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—232 **35 Claims**



1. A modular sofa seating apparatus comprising,
a) a plurality of upholstered seating units, each having a base and a seating surface having a seating surface rear edge;
b) a plurality of upholstered seat back portions, each extending upwardly from a respective seating surface rear edge and terminating at a seat back upper edge portion; and
c) at least one wedge shaped member positioned between adjacent seating surfaces, each wedge shaped member including:
i) a pair of angularly intersecting upholstered edge portions and a rear portion that define the edges of each wedge shaped member,
ii) a flat table having a table surface extending between the edge portions,
iii) a vertically extended upholstered portion that extends upwardly from the table surface and having an upper edge that approaches the seat back upper edge portions,
d) wherein the intersecting edge portions define an acute angle of about forty-five degrees.

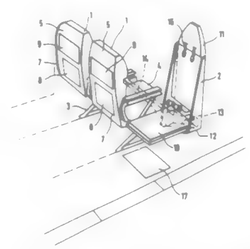
5,335,963

ATTENDANT PASSENGER SEAT ROW INCLUDING ASSIST SPACE

Hans-Jürgen Müller, Henstedt-Ulzburg, and Wilfried Sprenger, Issendorf, both of Fed. Rep. of Germany, assignors to Deutsche Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Aug. 6, 1992, Ser. No. 927,687
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1991, 4125958
Int. Cl.[5] B60N *1/02*
U.S. Cl. 297—244 **8 Claims**

1. An attendant-passenger seat row, comprising:
at least one passenger seat;
a flight attendant seat substantially adjacent to the passenger seat;
one adapter for the flight attendant seat, wherein said adapter is disposed beneath a plane defined by the flight attendant seat when said flight attendant seat is in a use position;
a junction coupling engaging into the adapter and disposed beneath a plane defined by the passenger seat when said passenger seat is in the use position, wherein a support arm is established by the junction coupling engaging into the adapter and holding the flight attendant seat without having any contact with the floor, wherein a free surface remains beneath the flight attendant seat and wherein said



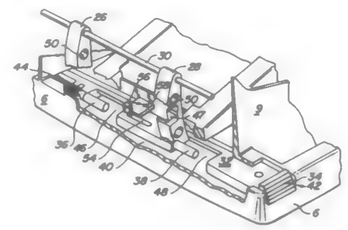
surface is usable as an "assist space" beneath the seat cushion of the flight attendant seat;
a frame substantially supporting said flight attendant seat;
a back rest; and
a seat cushion on said flight attendant seat, wherein said seat cushion is pivotable with respect to the back seat.

5,335,964

AUTOMOBILE INFANT RESTRAINT SEAT

Mark Sedlack, Cuyohoga Falls, and Frances Bernart, Homeworth, both of Ohio, assignors to Century Products Company, Macedonia, Ohio

Filed Oct. 13, 1992, Ser. No. 961,004
Int. Cl.[5] B60N *2/28*
U.S. Cl. 297—256.13 **8 Claims**



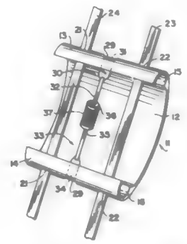
1. A child restraint seat, comprising:
a base;
a seat portion pivotally mounted to the base along an axis, the seat portion having a bottom, a seat back, a left side wall and a right side wall;
a slide bar, the slide bar including a notch and a post extending into the notch, the post having a free end;
an elongated member spaced apart from the axis and extending into the notch, the elongated member having a guide channel and a first and second catch in said guide channel, the free end of the post captured in the guide channel said guide channel guiding relative movement between the post and the elongated member; and
resilient means biasing the post towards the guide channel; wherein sliding movement of the slide bar facilitates selectable mating engagement between the post and the first catch to releasably secure the seat portion at a first angle of inclination relative to the base, and facilitates selectable mating engagement between the post and the second catch to releasably secure the seat portion at a second angle of inclination relative to the base, the first angle of inclination being greater than the second angle of inclination relative to the base.

5,335,965

CUSHION FOR ANATOMICAL SUPPORT, ESPECIALLY FOR THE LUMBAR AND CERVICAL REGIONS, TO FIT ONTO SEAT BACKS

Lorenza Sessini, via Caimi, 32, Vailate, Italy

PCT No. PCT/IT90/00039, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO91/13572, PCT Pub. Date Sep. 19, 1991
PCT Filed Apr. 9, 1990, Ser. No. 917,060
Claims priority, application Italy, Mar. 9, 1990, 19632 A/90
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—284.4 **10 Claims**



1. Adjustable cushion for anatomical support mountable on a back of a seat, said adjustable cushion comprising:
a curved elastic plate having longitudinal ends, said longitudinal ends of said plate being curved backwards so as to form an upper channel and a lower channel and said elastic plate being mountable on said back of said seat projecting convexedly from said back; and
means for adjusting a convexity of said curved elastic plate including a posterior vertical central brace consisting of a pair of aligned threaded rods having posterior ends and threaded in opposite directions and a cylindrical scroll means receiving said aligned threaded rods so that said posterior ends of said threaded rods are securable in said upper and lower channels and said convexity of said curved elastic back can be varied by rotating said scroll

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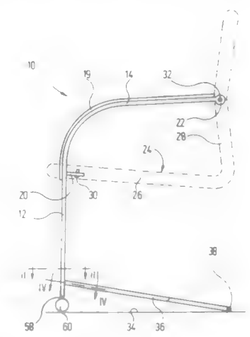
5,335,966

FRAME FOR A CANTILEVER CHAIR

Burkhard Vogtherr, Kandern-Holzen, Fed. Rep. of Germany, assignor to Fritz Hansen A/S, Allerod, Denmark

Filed Mar. 19, 1992, Ser. No. 854,537
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1991, 9103711
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—287 **10 Claims**

1. A frame for a cantilever chair, said frame comprising
(A) two spaced apart frame segments (10) that are adapted to support a seat shell (24) between them, each frame segment (10) comprising
(1) an essentially vertical post portion (12) that has elastic flexure, and being constructed of tubular material having a semicircular section (18) and a flat base wall (16) that is oriented towards the front side of the frame, and
(2) a base portion (36) with elastic flexure connected to the lower part of each vertical post portion (12),
(B) at least one transverse portion (38) connecting the lower portions of the frame segments (10) so as to position the two vertical post sections (12) in essentially parallel alignment, said base portions (36) being constructed of solid



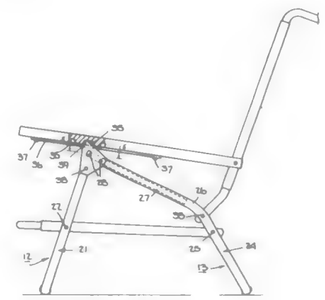
material having a different flexural strength than said vertical post portions (12).

5,335,967

COLLAPSIBLE CHAIR

Robert D. Vanderminden, Sr., Granville, N.Y., assignor to Telescope Casual Furniture Co., Granville, N.Y.

Continuation of Ser. No. 832,402, Feb. 7, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 156,387
Int. Cl.[5] A47C *4/00*
U.S. Cl. 297—35 **14 Claims**



1. A collapsible chair comprising
a seat;
a front leg support frame pivotally connected to said seat;
a back leg support frame pivotally connected to said seat, said back leg support frame including a pair of telescopically extendable legs articulated to said front leg support frame to permit pivoting of said front leg support frame relative to said back leg support frame;
a backrest pivotally mounted on said back leg support frame; and
a pair of arms, each arm being pivotally connected to said backrest and releasably connected to said back leg support frame.

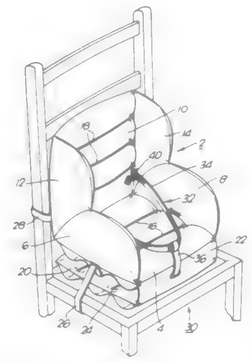
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,968

CHILD'S BOOSTER SEAT

Peter A. J. Sheridan, and Helen J. Sheridan, both of 10 Gordon Drive, East Boldon, Tyne & Wear NE36 OTD, England

Filed Oct. 16, 1992, Ser. No. 962,115
Claims priority, application United Kingdom, Oct. 16, 1991, 9121918
Int. Cl.[5] A47C *1/11*
U.S. Cl. 297—250.1 4 Claims



1. A booster seat comprising:

an inflatable seat member including a primary base chamber, a back chamber comprising an independent chamber upstanding from the rear of said primary base chamber, a pair of opposed side chambers upstanding one from each side of said primary base chamber and which are interconnected with said primary base chamber to be inflatable as a unit, an inflatable secondary base chamber located below, to support thereon, said primary base chamber, said secondary base chamber being selectively inflatable to determine the height of the seat member relative thereto;

means for restraining a child seated in the seat member; and

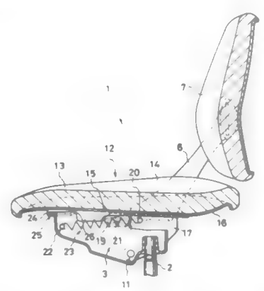
means for securing the booster seat to a supporting chair.

5,335,969

CHAIR

Tomoshige Yamaguchi, Yokosuka, and Nobuaki Nasu, Yokohama, both of Japan, assignors to Okamura Corporation, Japan

Filed Jun. 26, 1992, Ser. No. 904,857
Claims priority, application Japan, Jun. 26, 1991, 3-180463; Jun. 26, 1991, 3-180584
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—301 23 Claims



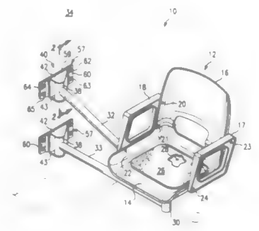
1. A chair and comprising, a forward facing base frame fixedly mounted to an upper end of a pillar, a lower part of a supporting lever provided with a back rest movably and rotatably mounted on a lower rear part of said base frame by a shaft extending from one side of said chair to another side thereof, a seat including in succession a front seat portion and rear seat portion flexibly coupled together by a flexing part adjacent the center of said seat between the front and rear seat portions and being coupled to said supporting lever so as to cooperate therewith, and wherein said front seat portion is locked to a front part of said base frame so as to prevent inclining movement thereof but permit movement thereof only back and forth.

5,335,970

SWINGABLE CHAIR

James D. Bryant, deceased, late of Rockwall, and by Sylvia L. Bryant, executrix, 307 Summit Ridge, Rockwall, both of Tex. 75087

Filed Sep. 24, 1991, Ser. No. 764,896
Int. Cl.[5] A47C *1/00*
U.S. Cl. 297—344.22 3 Claims



1. A swingable chair mountable on a substantially vertical wall of a bathroom within close proximity to a bath tub or shower stall having a sill, comprising:

a seat;

a swing arm having an upper and lower extension, said upper arm extension joining said lower rm extension at an acute angle at one end, said seat being rotatably and detachably mounted on said joined ends of said arm extensions, said upper and lower arm extensions extending in spaced relationship in a substantially vertical plane, free ends thereof terminating a predetermined distance from one another, said lower arm extension being substantially horizontal with respect to said vertical wall;

a first and second wall-mount bracket each having a substantially rigid and planar back portion and a substantially rigid and curved front portion, each said wall-mount bracket being mountable against said wall with said respective back portion being immediately adjacent said wall and said respective front portion overlying and curving toward said respective back portion, said respective curved front portion and said respective back portion defining a vertical slot therebetween, said first wall-mount bracket being mounted on said wall directly above and spaced from said second wall-mount bracket at a distance substantially equal to said predetermined distance between said free ends of said upper and lower arm extensions, said lower wall-mount bracket being mounted at a point higher than said sill; and

a first and second bracket member being pivotally coupled to said free ends of said upper and lower arm extensions respectively, each said bracket member having an appendage adapted for insertion downwardly into said vertical slots of said first and second wall-mount brackets, said seat and said arm extensions being simultaneously and pivotally swingable to a plurality of substantially vertical planes wherein

the seat further comprises locking means for maintaining said seat and said arm extensions in at least one predetermined vertical plane and preventing the swing of said seat with respect to said wall-mount brackets,

said locking means including

a plate having at least one aperture at a predetermined position thereon and coupled to said swing arm,

at least one of said first and second bracket members defining an aperture adapted for alignment with said aperture on said plate, and

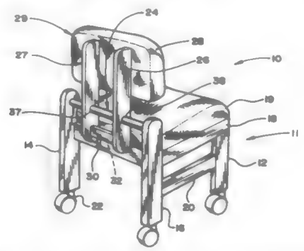
a latching pin for insertion into said apertures in said plate and said bracket member and maintaining said swing arm in a predetermined vertical plane with respect to said wall-mount brackets.

5,335,971

FOLDABLE CHAIR

James O. Kelley, Spring Lake, Mich., assignor to Sligh Furniture Co., Holland, Mich.

Filed Oct. 15, 1992, Ser. No. 961,405
Int. Cl.[5] A47C *4/00*
U.S. Cl. 297—378.12 12 Claims



1. A foldable chair containing a back support for supporting a person in a seating position comprising:

a seat;

two seat front vertical support members attached to a front side of the seat and providing vertical support to the seat;

two seat back vertical support members positioned respectively behind each of the two seat front vertical support members, the seat back vertical support members being connected to a rear side of the seat and providing vertical support to the seat, the seat back vertical support members extending upwardly above the seat;

a pivot rod supported between the two seat back vertical support members above the seat;

a back cushion support mounted on the pivot rod between the seat back vertical support members and being pivotable about the axis of the pivot rod, the pivot rod extending through the back cushion support at a position between upper and lower ends thereof, the lower end of the back cushion support being positioned opposite the rear side of the seat when the back cushion support is in an upright position;

upright holding means connected to the lower end of the back cushion support and the seat for releasably holding the back cushion support in an upright position; and

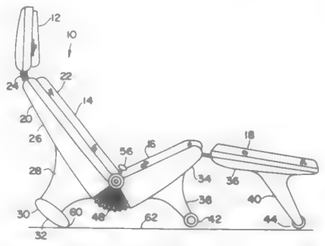
a back cushion connected to the upper end of the back cushion support for rearwardly supporting the person in the seating position.

5,335,972

RECLINING CHAIR

Hans C. Jensen, 901 - 1600L Beach Ave., Vancouver, British Columbia, Canada V6G 1Y6

Filed Jan. 30, 1992, Ser. No. 828,122
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—423.19 18 Claims



1. A reclining chair movable between an upright sitting and an extended reclining orientation comprising:

a) a back-supporting member having upper and lower surfaces;

b) a seat hingedly connected to said back-supporting member and having upper and lower surfaces;

c) means for selectively allowing free pivotal movement between said back-supporting member and said seat and securing said seat and back in a fixed angular relationship;

d) first support means for supporting said chair on a floor, said first support means being secured to the lower surface of said seat and comprising a floor-engaging end; and

e) second support means for supporting said chair on said floor, said second support means being secured in fixed relationship to the lower surface of said back-supporting member and comprising a floor-engaging end mounted in fixed relationship to said second support means and said back-supporting member;

wherein said floor-engaging end of said second support means comprises a lower surface adapted for non-sliding area located towards said first support and having a first surface area located towards said first support means and a second surface area located away from said first support means and said floor-engaging end of said first support means is adapted for movement on said floor whereby when said chair if in said upright sitting orientation said back-supporting member is supported on said first surface area of said lower surface of said floor-engaging end of said second support means and said second surface area of said lower surface of said floor-engaging end of said second support means is raised above said floor, and when said chair is moved to said extended reclining orientation said second surface area of said lower surface of said floor-engaging end of said second support means moves downwardly into load-bearing contact with said floor and said floor-engaging end of said first support means is drawn towards said second support means.

5,335,973

Patent Not Issued For This Number

5,335,974

RETROFIT OF RAILCAR AIR BRAKE SYSTEM WITH ELECTRONIC CONTROLLER AND AIR DISTRIBUTION APPARATUS

Douglas D. Klink, Kansas City, Mo., assignor to Technical Services & Marketing, Inc., Kansas City, Mo.

Filed Mar. 19, 1993, Ser. No. 34,406
Int. Cl.[5] B60T *13/00*
U.S. Cl. 303—7 7 Claims

1. An air distribution apparatus for allowing at least partial

VOL 1165 ISS 2 AG 9 1994 UMI

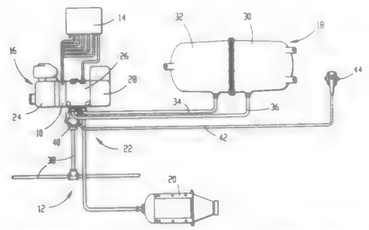
control of a railroad car braking system by an electronic control device in combination with the system, the system including an AB valve, a reservoir of pressurized air, a brake pipe and a brake cylinder, the AB valve including a service portion and a pipe bracket portion, said service and pipe bracket portions including

a first passageway therebetween in communication with said reservoir,

a second passageway therebetween in communication with said brake pipe, and

a third passageway therebetween in communication with said brake cylinder, the third passageway including a service passageway section within the service portion and a pipe bracket passageway section within the pipe bracket portion,

said apparatus comprising:



a distribution body configured for interconnection between the service and pipe bracket portions and presenting a pair of opposed faces with first, second, third and fourth openings therein,

said first and second openings extending through said body between said opposed faces and being oriented for communication with the first and second passageways, respectively,

said third and fourth openings each extending through a respective one of said faces and being oriented for communication with a respective one of the service and pipe bracket passageway sections,

there being structure defining first and second conduits respectively in communication with said third and fourth openings within said body, each of said conduits being configured for connection with the electronic control device.

5,335,975

BODY SUPPORT SYSTEM

Thomas A. Krouskop, Stafford, Tex., and Ruth H. Lusher, Vienna, Va., assignors to The Institute For Rehabilitation And Research, Houston, Tex.

Continuation-in-part of Ser. No. 818,958, Jan. 10, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 90,358

Int. Cl.[5] A47C *7/02*

U.S. Cl. 297—452.63 7 Claims

1. A body support system comprising,

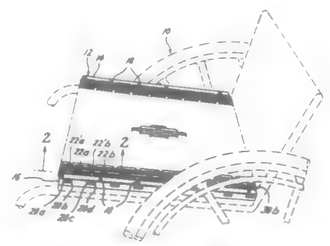
a pair of support rails spaced from each other and being parallel to each other,

a plurality of equally spaced rows of flexible cords positioned between and supported from the rails, said cords being generally perpendicular to the rails and parallel to each other, said rows of flexible cords are formed from a continuous cord connected through the support rails,

a plurality of elongate rigid support links each having first and second ends, each of said links including first and second cord receiving holes adjacent said first and second ends, respectively, one of said holes of each link receives one row of the cords and the other of said holes of the same link receives an adjacent cord row thereby supporting the links, and forming a plurality of columns of links transverse to the rows of cords in which adjacent columns have contacting sides,

alternate columns of links are offset from adjacent columns of links for providing a continuous conformable, low pressure interface, body support surface,

the first and second ends of the links are rounded and the first and second holes in each link are spaced apart a distance of approximately one half of the length of a link



whereby the first ends of the links are positioned closely adjacent the second ends of longitudinally aligned links in each column for maximizing the link support area for supporting a body, and

said links have a width and a height and the width of the links is substantially less than the height for allowing the links to better accommodate to the body shape and provide lower interface pressure, wherein the maximum length of the links is 2 inches.

5,335,976

TREATMENT DISK OF APPARATUS FOR ROUGHENING OR TREATING SURFACES

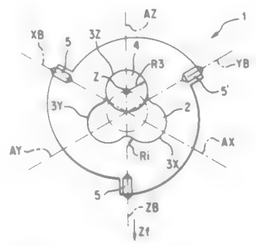
Paul Dummermuth, Zunzgen, Switzerland, assignor to Pamag AG, Switzerland

Filed Feb. 9, 1993, Ser. No. 15,547

Claims priority, application Switzerland, Feb. 10, 1992, 393/92; Jun. 23, 1992, 1973/92

Int. Cl.[5] B28D *1/18;* E01C *23/09*

U.S. Cl. 299—39 19 Claims



1. In a treatment disk having treatment points distributed about a circumference of the treatment disk and having a central cutout for freely movable seating and stringing together on a rotor cage rod of a device for treating surfaces, the improvement comprising: said cutout having a plurality of at least approximately semicircular slideways, a hammer-like treatment point positioned eccentric relative to a cutout center of said cutout and oppositely positioned with respect to one corresponding said slideway, and a transition from one said slideway to a next said slideway forming a convex circular arc having a radius oriented towards said cutout center of said cutout and increasing a mass of a hammer head area of the treatment disk.

5,335,977

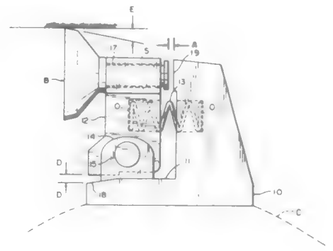
DOUBLE ACTING BIT HOLDER

Roger J. Morrell, Blommington; David A. Larson, Minneapolis, and Peter L. Ruzzi, Eagan, all of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 26, 1993, Ser. No. 67,181

Int. Cl.[5] E21C *25/10*

U.S. Cl. 299—92 9 Claims



1. A double acting bit holder that permits bits held therein to be resharpened during cutting action and reduce dust generation and energy consumption by eliminating the amount of small chips produced comprising:

a stationary base portion capable of being fixed to a cutter head of an excavation machine and having an integral extension therefrom with a bore hole therethrough to accommodate a pin shaft;

a front stop in said base portion to hold the bit in the resharpening position;

a back stop in said base portion to provide an impact force to the bit when in the full back position;

a movable portion coextensive with said base portion having a pin shaft integrally extending therefrom that is insertable in said bore hole of said base member to permit said moveable portion to rotate about the axis of said pin shaft;

a recess in said movable portion of said holder to accommodate the shank of a bit; and

a biased spring disposed in adjoining openings in said base and moveable portions of said holder to permit said moveable portion to pivot around said pin shaft during cutting action of a bit fixed in said recess to allow front, mid and back positions of said bit during cutting to lessen creation of small chips, provide an impact force to the bit, and resharpen said bit during cutting action or by abrading against an artificial surface for the cutting life of said bit.

5,335,978

SERVICE BRAKE INSPECTION SYSTEM

Bernhardt R. laBastide, Jr., Fort Wayne, Ind., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Apr. 23, 1993, Ser. No. 52,252

Int. Cl.[5] B60T *13/00*

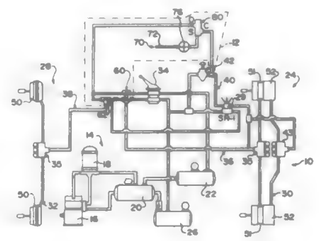
U.S. Cl. 303—13 5 Claims

1. In an air brake equipped vehicle of the type having air pressure actuated service brakes and spring-actuated parking brakes, said parking brakes being released by air pressure supplied through a supply line from a manually-actuated parking brake control valve, an auxiliary service brake inspection system comprising:

manually operated service brake valve means connected to a continuous vehicle air supply source for engaging the inspection system;

means for carrying pressurized air through the inspection system when said service brake valve means are set to engage the inspection system; and

an inversion valve operatively engaged within the air carrying means and disposed to continuously maintain an open air passage from said manually operated service brake valve means to said service brakes upon the absence of pressure in said air supply line to spring actuated parking brakes of the vehicle;



said means for carrying pressurized air being in communication with the service brake system via a double check valve arrangement.

5,335,979

CONTROL DEVICE FOR VEHICLE INCLUDING ANTI-SKID BRAKING SYSTEM AND POWER STEERING CONTROL SYSTEM

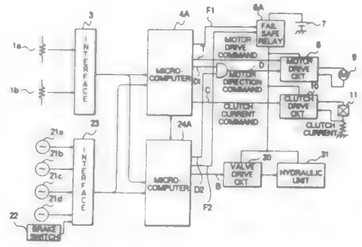
Yasuo Naitou; Shunichi Wada; Kazumichi Tsutsumi, and Shinichi Kohge, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1993, Ser. No. 132,281

Claims priority, application Japan, Oct. 9, 1992, 4-271970; Oct. 13, 1992, 4-274333

Int. Cl.[5] B62D *5/04;* B60T *8/32*

U.S. Cl. 303—100 5 Claims



1. A control device for a vehicle including an anti-skid braking system and power steering control system including an electric motor for proving an assisting steering torque for a steering wheel of said vehicle, said control device comprising:

VOL 1165 ISS 2 AG 9 1994 UMI

torque sensor means for determining a torque of said steering wheel;

road wheel velocity sensor means for detecting velocities of road wheels of said vehicle;

brake sensor means for detecting an operation of a brake of said vehicle;

first control means, coupled to said torque sensor means, for determining a driving direction and a driving torque of said electric motor on the basis of an output of said torque sensor means, said first control means generating a first direction signal and a torque signal for said electric motor on the basis of said driving direction and said driving torque of said electric motor determined by said first control means;

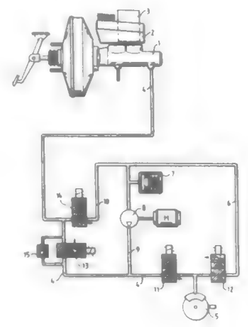
second control means, coupled to said torque sensor means, said road wheel velocity sensor means and said brake sensor means, for generating a brake operation signal for said anti-skid braking system on the basis of outputs of said road wheel velocity sensor means and said brake sensor means, wherein said second control means determines a driving direction of said electric motor on the basis of said output of said torque sensor means and outputs a second direction signal for said electric motor on the basis of said direction of said electric motor determined by said second control means;

logical circuit means, coupled to said first and second control means, for generating a direction command signal, coinciding with said first and second direction signals, only when said first and second direction signals output from said first and second control means, respectively, coincide; and

motor drive circuit means coupled to said first control means and said logical circuit means, said motor drive circuit means driving said electric motor in accordance with said torque signal and said direction command signal.

a master cylinder, including a reservoir for containing a pressure fluid,

a fluid connecting line connecting said master cylinder to at least one wheel brake on a driven wheel;



a low pressure accumulator connected to said fluid connecting line,

a return-delivery pump disposed between said low pressure accumulator and said wheel brake,

wherein said reservoir includes a supply pressure generating means for supplying fluid delivery for traction slip control.

5,335,980

Patent Not Issued For This Number

5,335,981

BRAKE SYSTEM WITH ANTI-LOCK CONTROL AND TRACTION SLIP CONTROL

Peter Volz, Darmstadt, and Dalibor Zaviska, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Fed. Rep. of Germany

Filed Aug. 24, 1992, Ser. No. 934,587

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1991, 4128091

Int. Cl.[5] B60T *13/20*

U.S. Cl. 303—113.3 7 Claims

1. A traction control brake system, comprising:

5,335,982

BRAKE FLUID PRESSURE CONTROL APPARATUS

Hiromi Ando; Kunihiro Matsunaga; Kenji Sano, and Satoru Suga, all of Yamanashi, Japan, assignors to Tokico Ltd., Japan

Division of Ser. No. 904,988, Jun. 26, 1992, Pat. No. 5,312,175. This application Mar. 31, 1993, Ser. No. 40,491

Claims priority, application Japan, Jul. 3, 1991, 3-163118; Nov. 7, 1991, 3-291772; Dec. 16, 1991, 3-332296; Mar. 5, 1992, 4-48917; Mar. 5, 1992, 4-48918

Int. Cl.[5] B60T *13/18*

U.S. Cl. 303—117.1 5 Claims

1. A pressure control apparatus for anti-skid brake systems of wheeled vehicles, comprising:

a master cylinder for delivering pressure by means of a brake fluid in accordance with an operation of a brake pedal;

a wheel cylinder for exerting braking force to a wheel by means of brake fluid pressure,

a normally closed valve for opening and closing at decrease and increase of brake fluid pressure, respectively,

a reservoir for receiving brake fluid at decrease of brake fluid pressure,

a pump for charging with said brake fluid from said reservoir and for discharging said brake fluid, said pump having an intake side and a discharge side,

a flow valve including:

A. a casing having,

i. a master cylinder communication port for communicating with said master cylinder,

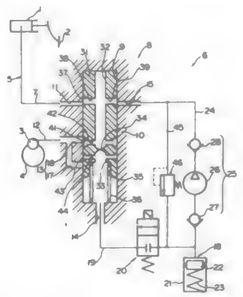
ii. a wheel cylinder communication port for communicating with said wheel cylinder,

iii. a reservoir communication port for communicating with said reservoir and said intake side of said pump through said normally closed valve, and

iv. a pump communication port for communicating with said discharge side of said pump,

B. a spool movable within said casing, and

C. a spring for urging said spool toward a stationary position, wherein when said spool is at said stationary position, communication between said master cylinder communication port and said wheel cylinder communication port is enabled, and when said spool is displaced from said stationary position due to a pressure difference on both sides thereof resultant from opening of



said normally closed valve, communication between said master cylinder communication port and said wheel cylinder communication port is restricted, said wheel cylinder communication port is communicated with said reservoir communication port, and, in a state in which said normally closed valve is closed, an approximate fixed flow amount of said brake fluid from said pump communication port to said wheel cylinder communication port is enabled,

a control by-pass line for connecting said master cylinder and said discharge side of said pump, and

a control valve provided on said control bypass line for closing the bypass line when brake fluid pressure is higher than a predetermined value, and for opening the by-pass line when brake fluid pressure is not higher than said predetermined value.

5,335,983

HYDRAULIC REGULATOR FOR A BRAKE PRESSURE CONTROL APPARATUS

Erhard Beck, Weilburg, and Georg Sonnenschein, Eschborn, both of Fed. Rep. of Germany, assignors to ITT Corporation, New York, N.Y.

PCT No. PCT/EP92/00279, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO92/16397, PCT Pub. Date Oct. 1, 1992

PCT Filed Feb. 10, 1992, Ser. No. 946,450

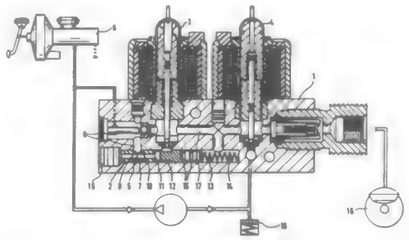
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, 4108028

Int. Cl.[5] F15B *9/12;* F16B *21/08;* B60K *28/16;* B60T *8/36*

U.S. Cl. 303—119.2 17 Claims

1. A hydraulic unit for regulating a volumetric stream of pressure agent flowing through a brake pressure apparatus linking an upstream supply source of said pressure agent to a downstream pressure agent consumer, the pressure control apparatus including a valve accommodation body which accommodates at least one first solenoid valve and at least one second solenoid valve, each said solenoid valves having open and closed switching positions and said solenoid valves cooperation, when said at least one first solenoid valve is open and said at least one second solenoid valve is closed, to provide free passage of said pressure agent from said supply source to said pressure agent consumer, and which accommodates pressure agent ducts, the hydraulic unit comprising:

a hydraulically actuatable slide valve for integration into said valve accommodation body to control the pressure agent volume depending on the switching position of said solenoid valves, said slide valve having an axial duct



within said slide valve and an orifice communicating with said axial duct, said orifice for registering with one of said pressure agent ducts to receive pressure agent through said orifice and through said axial duct when said slide valve is in a first position and said at least one first solenoid valve is open and said at least one second solenoid valve is closed; and

biasing means for exerting a force upon said slide valve to bias said slide valve into said first position.

5,335,984

ELECTROMAGNETICALLY ACTUATABLE VALVE FOR A HYDRAULIC BRAKE SYSTEM

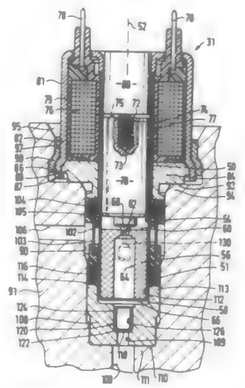
Norbert Alaze, Markgroeningen; Juergen Gruber, Frickenhausen, and Guenter Wolff, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 29, 1993, Ser. No. 10,707

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202389

Int. Cl.[5] B60T *8/36;* F16K *31/06*

U.S. Cl. 303—119.2 9 Claims



1. An electromagnetically actuatable valve for a hydraulic brake system having an anti-skid system for motor vehicles, said electromagnetically actuatable valve is disposed in a receiving bore of a valve receptacle, said valve has a valve seat

VOL 1165 ISS 2 AG 9 1994 UMI

body having a flow bore and a valve seat, a valve closing member movable relative to the valve seat and actuatable by means of an armature and a magnet coil, an elongated housing sheath (**50**) surrounding said armature and containing said valve seat body, and at least one sealing ring on a circumference of said elongated housing sheath, a throttle body (**108**) having a cylindrical part (**113**) and an inside of said cylindrical part being hollow, said hollow cylindrical part (**113**) at least partly surrounding one end of said elongated housing sheath (**113**) in an axial direction, and said throttle body having a through bore (**109**) disposed in the receiving bore (**90**) of the valve receptacle (**91**); that a sealing ring (**116**) is supported on one face end (**114**) of the throttle body (**108**) oriented toward the valve (**31**); and that a throttle restriction (**118**) is provided in the through bore (**109**) of the throttle body (**108**).

5,335,985

STORAGE UNITS FOR COMPUTER TAPE CASSETTES

Rolf Baur, deceased, late of Heubach-Lautern, Fed. Rep. of Germany by Helga Baur, heir , assignor to Grau GmbH & Co., Fed. Rep. of Germany

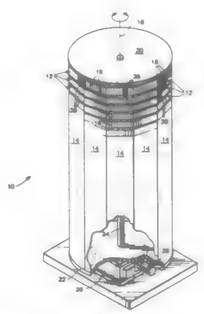
Continuation of Ser. No. 787,917, Nov. 6, 1991, abandoned, which is a continuation of Ser. No. 456,689, Dec. 28, 1989, abandoned, and a continuation-in-part of Ser. No. 456,688, Dec. 28, 1989, Pat. No. 5,088,604, and a continuation-in-part of Ser. No. 869,118, Apr. 15, 1992, Pat. No. 5,158,345, which is a continuation of Ser. No. 551,637, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 306,181, Feb. 6, 1989, abandoned. This application Nov. 25, 1992, Ser. No. 982,182

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1988, 3830486; Oct. 10, 1988, 3834389

The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[5] **A47F** *1/04*

U.S. Cl. 312—9.31 **4 Claims**



1. A storage unit for storing a number of data storage cassettes and for presenting individual ones of the data storage cassettes at an access position where the cassettes may be grasped and removed from the storage unit, said storage unit comprising:

a plurality of storage columns, each column comprising a plurality of vertically stacked shelf units each including generally horizontally disposed cassettes compartments for storing a number of data storage cassettes on edge in a row such that in each column said data storage cassettes are arranged in a vertical storage plane, each of said shelf units including;

(i) a horizontal bottom wall supporting each of said data storage cassettes on one side edge,

(ii) an open front so as to enable individual ones of said storage cassettes to be grasped and removed from the shelf units, and

(iii) a retaining element projecting upwardly from said bottom wall for retaining each cassette on said bottom wall and so substantially preventing said tape cassettes from becoming dislodged from said shelf units by shock,

wherein said storage unit further comprises,

a frame defining a central axis for mounting said plurality of columns a radial dimension from said central axis so that said plurality of columns are rotatable about said central axis;

a motor drive unit operatively coupled to said frame for rotating said columns about said central axis so that a selected one of said columns and individual ones of said data storage cassettes stored therein may be moved into said access position; and

an automated master control unit electrically interconnected to said motor drive unit, said master control unit issuing a control signal to said motor drive unit which responsively causes said motor drive unit to effect preselected annular movement of said columns about said central axis so as to thereby controllably move said selected one of said plurality of columns into said access position to thereby present said individual ones of said data storage cassettes in said selected one of said columns at said access position, whereby said individual ones of said data storage cassettes may be grasped and removed from said selected one of said columns.

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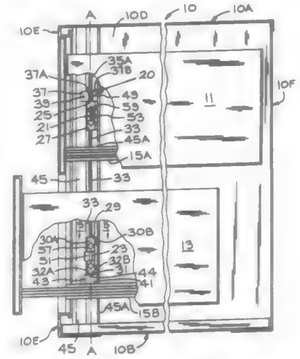
INTERLOCK ASSEMBLY

Laude E. Hartrum, Pentwater, and Raymond J. Smuda, Manistee, both of Mich., assignors to Metalworks, Inc., Ludington, Mich.

Filed Jan. 8, 1993, Ser. No. 2,064

Int. Cl.[5] **E05C** *7/06*

U.S. Cl. 312—220 **34 Claims**



1. In a cabinet apparatus including a housing having a top wall and opposed bottom wall, two opposed side walls, a front wall and a back wall, at least two drawers mounted inside the housing through the front wall so as to slide horizontally away from the front wall to open the drawer and towards the back wall to close the drawer with an interlock assembly mounted inside of and on the housing which engages an arm means from the drawer to prevent both drawers from being opened simultaneously, the improvement which comprises:

(a) a plurality of cam means each of the cam means rotatably mounted around a longitudinal axis defined by each of the cam means and adjacent to each of the drawers, wherein the cam means have opposed ends along the longitudinal axis defined by the cam means with at least one of the ends of each of the cam means having a sinusoidal surface around the longitudinal axis defined by the cam means such that there are lobes of the sinusoidal surface and valleys between the lobes on the sinusoidal surface on each cam means;

(b) block means mounted on the cam means along the longitudinal axis defined by the cam means and mating with the cam means at the one end of each of the cam means having the sinusoidal surface, the block means having mating ends comprising second sinusoidal surfaces with lobes and valleys offset around the end of the block means when the drawers are closed such that the lobes and the valleys of the cam means and the block means mate together, wherein a pin means is mounted only between the cam means and the block means which allows for movement of the cam means relative to the block means along and around the longitudinal axis defined by the cam means;

(c) pivotal means mounted on a side between the ends of each cam means, which engage the arm means for each drawer;

(d) rigid connection means vertically oriented along the longitudinal axis defined by the cam means and mounted on and extending between block means for adjacent drawers and mounted on and extending between block means and the housing; and

(e) guide means mounted inside the housing and supporting the block means for linear movement along the longitudinal axis defined by the cam means without rotational movement around the longitudinal axis defined by the cam means upon rotation of the cam means by the pivot means and by the arm means, wherein the guide means supports the interlock assembly to prevent movement of the connection means, cam means and block means perpendicular to the longitudinal axis defined by the cam means and wherein when one of the cam means is rotated around the longitudinal axis defined by the cam means on the pin means relative to the block means by the pivot means and by the arm means of a first one of the drawers, the lobes of the one cam means and the block means of the first drawer are engaged in a manner which causes the block means to move along the longitudinal axis defined by the cam means and the cam means to rotate on the pin means and to move along the longitudinal axis defined by the cam means with the connection means such that the interlock assembly moves towards an abutment means on the housing such that a second cam means is prevented from being rotated by the pivot means and by the arm means of a second one of the drawers to prevent the second drawer from being opened.

5,335,987

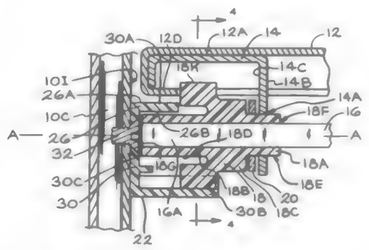
CABINET WITH FLIPPER DOOR

David H. Hodge, Hopkins, and Carl J. Geers, Scottville, both of Mich., assignors to Metalworks, Inc., Ludington, Mich.

Filed Apr. 12, 1993, Ser. No. 44,779

Int. Cl.[5] **A47B** *88/00, 95/00*

U.S. Cl. 312—323 **8 Claims**



1. A cabinet unit comprising;

(a) a casing means having a top wall and a bottom wall spaced apart parallel to a horizontal axis with two opposed sidewalls, connected to the top wall and bottom wall each sidewall having a front portion and a back portion with an inner surface therebetween wherein the walls together provide a front opening in the casing;

(b) a flipper door means having a top portion and a bottom portion adapted for covering the front opening;

(c) a pair of rack means mounted on the inner surface of each sidewall of the casing parallel to a plane of the horizontal axis each having a proximal end located toward the front opening in the casing and a distal end at the back portion and each with first teeth pointed toward the top wall;

(d) a pair of pinion gear means mounted on the door means each having a first extension and a second extension with a central portion having an outer surface extending therebetween and a center bore extending through the first extension, central portion and second extension wherein the outer surface of the central portion is provided with second teeth to rotatably engage the first teeth of the rack means;

(e) a pair of guide means located above and parallel to the rack means wherein the second extension of the pinion gear means slidably engages the guide means to provide guidance for the flipper door means during opening and closing;

(f) a pair of bracket means mounted at the top portion of the flipper door means provided with an inner side and an outer side with an aperture therebetween in a plane perpendicular to the axis wherein the first extension of the pinion gear means extends through the aperture of the bracket means such that the central portion of the pinion gear means is adjacent the outer side of the bracket means wherein the bracket means pivotally mounts the flipper door means onto the casing means;

(g) an axle means extending parallel to the axis having two opposed ends wherein each end extends through the aperture in the bracket means and through the center bore of the pinion gear means for mounting the pair of pinion gear means onto the flipper door such that the axle means and pinion gear means rotate together and wherein the pinion gear means is slidable along the axle means to the extent permitted by the guide means and the bracket means; and

(h) a pair of stop means mounted at the front portion of each sidewall and located in line with the guide means to prevent the second extension of the pinion gear means from moving off the guide means when the door is closed.

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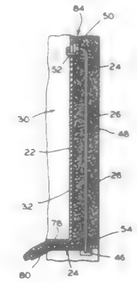
FOIL ACCESS COVER FOR REFRIGERATION DECK

Shelby A. Lyan, Johnson Township, Gibson County, Ind., and Donald R. Howerton, Liverpool, N.Y., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 3, 1993, Ser. No. 12,669

Int. Cl.[5] **F25D** *11/00*

U.S. Cl. 312—406.2 **10 Claims**

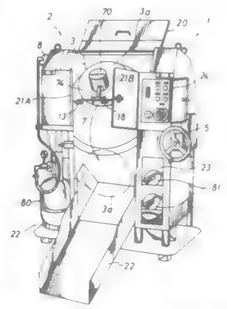


1. In a refrigeration apparatus cabinet having an outer shell and an inner liner to define an insulation space therebetween, the improvement comprising:

VOL 1165 ISS 2 AG 9 1994 UMI

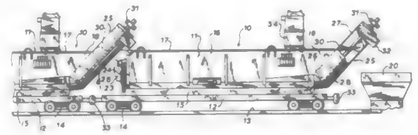
a deck fastened to said shell, said deck defining a bottom wall of said insulation space;
an enlarged opening through said deck;
a conduit extending downwardly along a rear wall of the liner with a distal end of said conduit extending through said deck opening;
a foil access cover adhered to said deck about said opening to cover said opening with said conduit extending outwardly from said space; and
a body of foamed-in-place insulation in said space, said access cover sealing said deck opening to prevent leakage of the foamed-in-place insulation.

5,335,989
ASPHALT RECYCLING APPARATUS
Shigehiro Tanaka, Kyoto, Japan, assignor to Tanaka Giken Co., Ltd., Kyoto, Japan
Filed Aug. 7, 1992, Ser. No. 925,876
Claims priority, application Rep. of Korea, Aug. 30, 1991, 1991-15123
Int. Cl.[5] B28C 5/46
U.S. Cl. 366—25 5 Claims



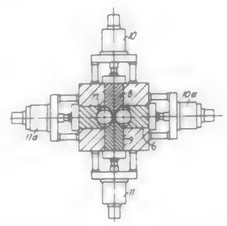
1. An asphalt recycling apparatus comprising a combustion drum having an open top, a frame rotatably supporting said combustion drum, said frame being mounted in a casing;
said combustion drum having a longitudinal axis extending through said open top;
said combustion drum having an outer surface covered by a heat insulating cover, said heat insulating cover having an inner surface spaced uniformly from the outer surface of said combustion drum, an insulating material being disposed between said heat insulating cover and said outer surface of said combustion drum;
driving means for rotating said combustion drum about said longitudinal axis thereof;
said combustion drum being tiltably mounted on said frame and said apparatus including a tilting handle for tilting said combustion drum relative to said frame;
said casing having an open portion having opposite sides and a pair of front doors each hingedly mounted on a said side of said open portion for closing said open portion;
said doors including a cross member extending from one of said doors and being detachably connected to said doors;
said cross member including a burner-supporting member positioned so as to direct the flame of a burner toward said open top of said combustion drum when in use; and
said casing including a chute door disposed below said open portion;
said chute door being pivotally attached to said enclosure so as to pivot about a generally horizontal axis between an up position and a down position.

5,335,990
CONCRETE REMIX AND TRANSFER DEVICE
Glenway W. Maxon, III, Mequon, Wis., assignor to Maxon Industries, Inc., Milwaukee, Wis.
Filed Sep. 28, 1993, Ser. No. 127,810
Int. Cl.[5] B28C 7/16; B01F 15/02
U.S. Cl. 366—42 8 Claims



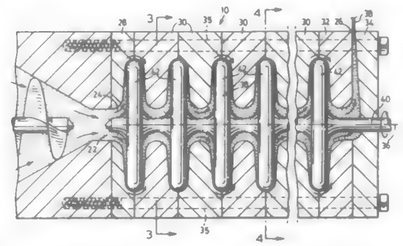
1. In a material remix and transfer device for concrete and the like of the type having an elongate open-topped surge bin having an upper peripheral edge over which material is loaded into the bin, and a remixing and transfer agitator mounted in the bin and rotatable about a longitudinal axis extending between opposite bin ends to move material toward either of said bin ends, the improvement comprising:
a screw conveyor mounted within the bin in one end thereof and positioned with its axis of rotation extending upwardly at an angle from a lower end near the bottom of said one end of the bin to an upper discharge end near the upper edge of the bin, whereby material may be loaded into and discharged from the bin directly adjacent to the upper edge thereof without vertical adjustment of the bin.

5,335,991
PLASTIC MELT EXTRUDER HAVING AN ADJUSTABLE THROTTLING GAP OF NON-UNIFORM WIDTH
Hans Wobbe, Malmsheim, Fed. Rep. of Germany, assignor to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jun. 25, 1993, Ser. No. 83,058
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1992, 4223043
Int. Cl.[5] B29B 1/04
U.S. Cl. 366—79 14 Claims



1. An extruder for processing plastic material comprising a housing having a longitudinal bore, an extruder screw coaxially fitted in said bore for rotation around an axis of the screw to advance plastic material through said bore by threads on said screw, plunger means supported in said housing perpendicular to the axis of said screw, said plunger means providing an inner surface facing an outer contour of said screw to form an annular gap therewith, said inner surface of said plunger means being eccentrically offset from said outer contour of said screw to provide said annular gap with a width which progressively varies over the circumference of said screw in a throttling position of the plunger means.

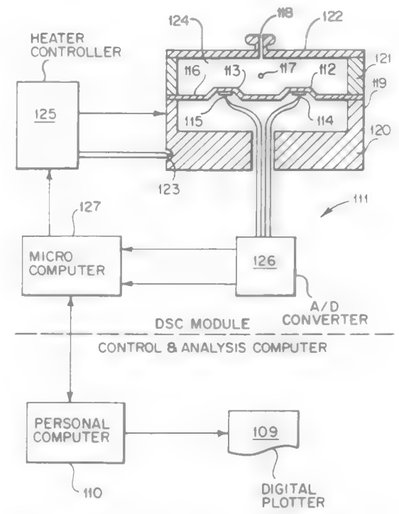
5,335,992
METHODS AND APPARATUS FOR THE MIXING AND DISPERSION OF FLOWABLE MATERIALS
Richard A. Holl, 4171-C5, Market St., Ventura, Calif. 93003
Filed Mar. 15, 1993, Ser. No. 31,334
Int. Cl.[5] B29B 1/04
U.S. Cl. 366—348 14 Claims



1. Apparatus for the mixing and dispersion of flowable materials, the apparatus comprising:
a body member having therein a passage for receiving the flowable material, the passage having an inlet thereto for the material and an outlet therefrom;
the apparatus being used in combination with moving means connected to the passage inlet and for moving the material through the passage under pressure and so as to maintain the passage full of material along its operative length;
wherein the passage is of substantially constant transverse cross-sectional flow area along its operative length and the ratio of the dimensions at right angles to one another of successive transverse cross-sectional areas changes cyclically and repeatedly along its operative length from a lower value within a lower range of values to a higher value within a higher range of values, and vice versa, each increase in ratio being accompanied by cold superplastic spreading deformation of the material from a relatively compact mass to a thin sheet form between the closely spaced passage walls, and by pressure induced viscous shear in the thin sheet of moving material, and each decrease in ratio returning the thin sheet of moving material to the form of a relatively compact mass, thereby producing the required mixing and dispersion.

5,335,993
METHOD AND APPARATUS FOR THERMAL CONDUCTIVITY MEASUREMENTS
Sanford M. Marcus, Wilmington, Del., and Michael Reading, London, England, assignors to TA Instruments, Inc., New Castle, Del.
Continuation-in-part of Ser. No. 844,448, Mar. 2, 1992, Pat. No. 5,224,775. This application Jun. 30, 1993, Ser. No. 85,646
Int. Cl.[5] G01N 25/20
U.S. Cl. 374—11 34 Claims

1. A method for measuring the thermal conductivity of a material comprising:
(a) preparing a first sample of the material in the form of a thin wafer having a known thickness, known dimensions and known weight;
(b) encapsulating the first sample of the material in a thin layer of conforming high thermal conductivity material, the mass of said thin layer of high thermal conductivity material having a first value;
(c) preparing a second sample of the material as a right angle cylinder having flat and parallel top and bottom surfaces, the height of said cylinder being greater than the thickness of the first sample of the material;
(d) providing a differential scanning calorimeter having a sample position and a reference position, said differential scanning calorimeter comprising means for modulating the temperature of the sample and reference positions at selected modulation angular frequencies and modulation amplitudes;
(e) placing the first sample in the sample position of the differential scanning calorimeter;
(f) placing a thin wafer of the high thermal conductivity material on the reference position of the differential scanning calorimeter, the mass of said thin wafer of high thermal conductivity material having the first value;
(g) measuring the effective heat capacity of the first sample by:
(α) selecting a modulation angular frequency and a modulation amplitude,
(β) varying the temperature of the sample position and the reference position according to the selected modulation amplitude and modulation angular frequency, and
(γ) recording a differential signal representative of differential changes in the heat flow to and from the sample position with respect to the heat flow to and from the reference position;
(h) removing the first sample from the sample position;



(i) removing the thin wafer of high thermal conductivity material from the reference position;
(j) placing the second sample on the sample position of the differential scanning calorimeter;
(k) measuring the effective heat capacity of the second sample by:
(α) selecting a modulation angular frequency and a modulation amplitude,
(β) varying the temperature of the sample position and the reference position according to the selected modulation amplitude and modulation angular frequency, and
(γ) recording a differential signal representative of differential changes in the heat flow to and from the sample position with respect to the heat flow to and from the reference position; and
(l) calculating the thermal conductivity of the material from the measured heat capacities of the first sample and of the second sample, from the dimensions and weights of the first sample and of the second sample, and from the modulation angular frequency.

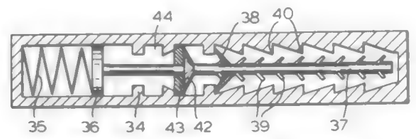
VOL 1165 ISS 2 AG 9 1994 UMI

5,335,994

TEMPERATURE MONITORING DEVICE CONTAINING AT LEAST ONE ELEMENT OF AN ALLOY WHICH MEMORIZES ITS SHAPE

Renée P. Weynant née Girones, Cadenet, France, assignor to G.I.R., Cadenet, France

Division of Ser. No. 619,193, Nov. 27, 1990, Pat. No. 5,143,453, which is a division of Ser. No. 499,333, Jun. 1, 1990, Pat. No. 5,018,874. This application Feb. 14, 1992, Ser. No. 837,074
Claims priority, application France, Oct. 4, 1988, 8813245
Int. Cl.[5] G01K *3/00, 1/02*
U.S. Cl. 374—205 10 Claims



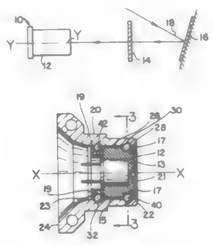
1. A temperature monitoring device, comprising:
an elongated casing formed with at least one window;
a row of cogs formed in said casing and shaped to enable unidirectional travel therealong;
a cursor in said casing shaped to be retained by said cogs and adapted to be stepped therealong in a direction of unidirectional travel;
a spring composed at least in part of a shape-memory alloy and formed with one end bearing against said casing and with an opposite end, said spring being initially deformed upon exposure to a predetermined temperature level; and
a rod fastened at said opposite end and longitudinally shiftable in said casing upon deforming said spring and formed with other cogs engageable with said cursor for stepping said cursor along said rod and said row upon exposure of said spring to another temperature, whereby a position of said cursor along said row can be viewed through said window, said cogs on said rod being spaced by a distance corresponding substantially to a stroke of said spring between said predetermined temperature and said other temperature.

5,335,995

RESILIENT SUPPORT FOR A RAILROAD WHEEL HEAT SENSOR

Luis F. Villar, Westbury, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Jul. 16, 1993, Ser. No. 93,172
Int. Cl.[5] G01K *1/14, 3/08*
U.S. Cl. 374—208 12 Claims



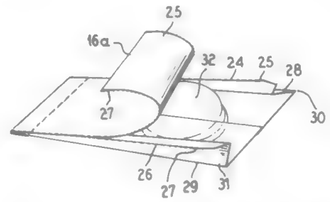
1. A railroad wheel temperature detector for sensing the temperature of railroad wheels on a railroad right of way, said detector comprising;
a heat sensor oriented to monitor the wheels of passing cars along an optical axis;
a sensor housing having a bore surrounding said heat sensor; and
elastic means disposed about said heat sensor for rotatably supporting said sensor within said housing, with said sensor being rotatable with respect to said housing about said optical axis to eliminate the effects of vibrations.

5,335,996

OPENABLE BAG CONSTRUCTION

Jeffery J. Cortopassi, Hinsdale; Ronald Marsik, Willow Springs, both of Ill.; Raymond E. McDonald, Rochester, N.Y., and Nicholas M. Shymanski, Edison, N.J., assignors to Bagcraft Corporation of America, Chicago, Ill.

Filed Jul. 8, 1993, Ser. No. 87,313
Int. Cl.[5] B65D *30/08, 30/10*
U.S. Cl. 383—207 8 Claims



1. A bag for use in carrying, exposing and removing a food item having a width, which bag includes an open end and a V-shaped closed end, a front panel, a back panel, a pair of gusseted side panels each of which is joined to the front and back panels, and said side panels, front and back panels cooperatively joined to form the closed end:
said bag having a width greater than the width of an item to be carried in the bag;
said bag including a pair of lines of perforations spaced from each other, with one located where one of the front and back panels and one of the side panels are joined;
the other line of perforations located where the other side panel and the panel selected from the front and back panels are joined;
said perforation lines being spaced apart a distance substantially equal to the width of the panel selected from the front and back panels;
said bag also defining a pair of slits, each slit extending from the open end of the bag to one of the lines of perforations and along a position where a side panel and the panel selected from the front and back panels are joined;
whereby the bag can be opened by tearing the selected panel along the slits and perforations from the rest of the bag so as to expose a food item carried in the bag and so that item can be removed from said bag.

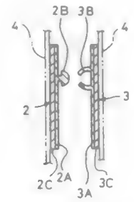
5,335,997

BAG AND SNAP ZIPPER MADE OF DIFFERENT MATERIALS

Toshihiro Kanemitsu, Tokyo; Kaoru Hayashi, and Kazufumi Matsui, both of Himeji, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 335,051, Apr. 7, 1989, abandoned. This application Oct. 21, 1991, Ser. No. 780,376
Claims priority, application Japan, Apr. 7, 1988, 63-86828; Apr. 7, 1988, 63-86829; Apr. 7, 1988, 63-86830; Apr. 21, 1988, 63-99973
Int. Cl.[5] B65D *33/16*
U.S. Cl. 383—63 8 Claims

1. A bag with a snap zipper manufactured by hot-welding a snap zipper comprising a pair of intermeshing half members to a base film which comprises a portion of a wall of the bag, said half members having a hot-welded portion formed of a first material selected from the group consisting of an ionomer resin and a random copolymer resin of an ethylene-acrylic acid



hot-welded directly to said base film, said base film being formed of a second material which is different from the first material of the hot-welded portion.

5,335,998

AXIAL BEARING UNIT

Leo Müntnich, Aurachtal; Wilfried Soyka, and Wolfgang Steinberger, both of Herzogenaurach, all of Fed. Rep. of Germany, assignors to Ina Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Jan. 19, 1993, Ser. No. 5,647
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 9201121[U]
Int. Cl.[5] F16C *33/58*
U.S. Cl. 384—622 7 Claims

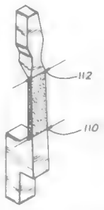
1. An axial bearing unit comprising two bearing discs (1, 2) with rolling elements (3) disposed therebetween, each of the bearing discs (1, 2) comprises an axially oriented cylindrical flange, which cylindrical flanges overlap each other in the axial direction, the flange of one of the bearing discs (1) being made as an overhanging flange (9) comprising a radially projecting end portion (13) at its free end (11), and the flange of the other bearing disc (2) being a retaining flange (10) comprising a retaining surface (14) facing said portion (13), said end portion (13) engaging behind said retaining surface (14) so that the bearing discs are connected to each other secure against loss, characterized in that the radially projecting end portion (13) comprises several elastically yielding bosses (12) made without chip-removal and arranged spaced apart on the circumference of said end portion (13), which bosses (12) engage as a result of radial elastic relaxation behind the retaining surface (14) which retaining surface (14) is made by a conical widening (15) on an end of the retaining flange (10) facing the bearing disc (2) by material forming.

5,335,999

PRINTER HAMMERSPRING

Norman E. Farb, Villa Park, and James Y. Chon, Pomona, both of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed Dec. 8, 1992, Ser. No. 987,377
Int. Cl.[5] B41J *2/245*
U.S. Cl. 400—124.21 24 Claims



1. The improvement in a hammerspring for a dot matrix printer having a plurality of such hammersprings spaced along a hammerbank wherein said hammerbank has permanent magnetic means which draw said hammerspring into a retracted and mechanically stressed mode, and which can then be released by overcoming the permanent magnetic means through an electrical means wherein the improvement comprises:
a base portion of said hammerspring adapted to be connected to said hammerbank;
a spring portion having a thickness and a width extending from said base portion;
an enlarged end portion having a thickness and a width, said end portion uniformly increasing in thickness from said spring portion of said hammerspring to a set thickness for magnetic retention by said permanent magnet means of said hammerbank; said base, spring and enlarged end portion all being formed from a single coextensive piece of metal; and,
said spring portion uniformly and continuously decreasing one of said thickness and width from said base portion to said end portion.

5,336,000

THERMAL TRANSFER TYPE PRINTER AND METHOD OF REJUVENATING AN INK SHEET EMPLOYED IN THE PRINTER

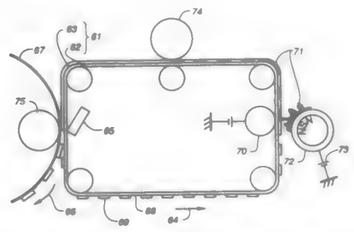
Tsuneo Handa; Noriyoshi Chiba, and Masanao Kunugi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 671,802, May 23, 1991, abandoned. This application Jun. 1, 1993, Ser. No. 71,202
Claims priority, application Japan, Jul. 28, 1989, 1-195849; Jul. 28, 1989, 1-195850; Jul. 28, 1989, 1-195851; Jul. 28, 1989, 1-195852; Jul. 28, 1989, 1-195853; Jul. 28, 1989, 1-195854; Jul. 28, 1989, 1-195855; Jul. 28, 1989, 1-195856; Jul. 28, 1989, 1-195857; Jul. 28, 1989, 1-195858; Jul. 28, 1989, 1-195859; Aug. 10, 1989, 1-207379; Aug. 10, 1989, 1-207380
Int. Cl.[5] B41J *31/16*
U.S. Cl. 400—197 9 Claims

6. A thermal transfer type printer having an elongated continuous ink sheet and an ink sheet rejuvenation system for use in conjunction with said ink sheet comprising:
a plurality of stations, said stations comprising an ink deposition station for selective transfer of powder ink from a powder ink supply means to a surface of said ink sheet when a bias is applied at said deposition station, an ink fixing station for fixing said powder ink to said ink sheet, and a printing station having a thermal print head for engagement of said print head with said ink sheet onto a surface of an output medium for forming images on the output medium by means of selective thermal transfer of ink to the output medium surface in imagewise formation,

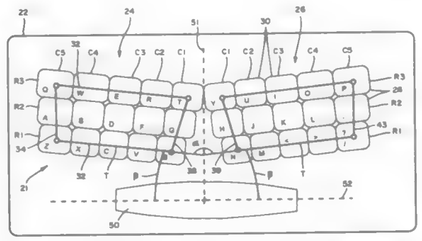
VOL 1165 ISS 2 AG 9 1994 UMI

transport means for moving said ink sheet through said stations along a transport path;
deposition means at said deposition station to selectively transfer a conductive, magnetically responsive powder ink to regions of a surface of said ink sheet void of said ink;
fixing means at said fixing station for fixing said selectively transferred ink to said ink sheet surface so that said ink sheet is rejuvenated for utilization during a printing operation at said printing station, and



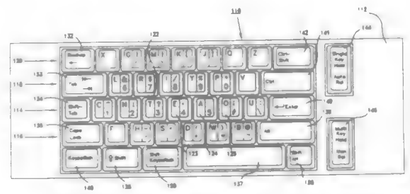
control means for activating said transport means to move said ink sheet in response to a power ON condition applied to said printer to operate said ink deposition station and said ink fixing station until at least a portion of said ink sheet has been rejuvenated prior to activation of a printing operation at said printing station and thereafter terminating activation of said transport means upon completion of rejuvenation of said at least ink sheet portion until said printing operation is initiated at said printing station.

5,336,001
MAXIMUM COMFORT KEYBOARD
Allan C. Lichtenberg, 399 W. Fullerton Ave., Chicago, Ill. 60614
Filed Aug. 4, 1992, Ser. No. 925,796
Int. Cl.[5] B41J *5/10*
U.S. Cl. 400—489 **42 Claims**



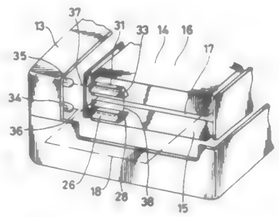
1. A keyboard for computers, typewriters and similar control devices for use by an operator, the keyboard comprising
an inside and two opposing outer sides,
a plurality of keys at least some of which correspond to alphabetic characters,
left and right key sections wherein the left key section is defined by the keys controlled by a left hand and the right key section is defined by the keys controlled by a right hand, and
at least two parallel rows of keys disposed in each key section including at least upper and lower rows wherein each row is defined by keys spaced from an inner to an outer key,
at least two columns of keys disposed in each key section including at least inner and outer columns, each column having a longitudinal axis,
wherein the longitudinal axes of the inner and outer columns, and the upper and lower parallel rows define a substantially trapezoidal shape having two inner bottom angles which are greater than 90 degrees.

5,336,002
ONE-HANDED ALPHANUMERIC KEYBOARD AND METHOD
Malcolm G. Russo, 1810 W. Colonial Dr., Orlando, Fla. 32804
Filed Sep. 18, 1992, Ser. No. 946,843
Int. Cl.[5] B41J *5/10*
U.S. Cl. 400—489 **7 Claims**



1. A manually activated keyboard for use with one hand, comprising:
a plurality of individual alphanumeric keys on the keyboard, each alphanumeric key operable for a different letter of the alphabet when depressed; wherein
the keys are positioned side-by-side on the keyboard in five linear rows, that closest to the vertical center being the central row, the central row including four consecutive home keys for the four fingers of a selected hand;
a home key for the index finger;
a home key for the middle finger;
a home key for the ring finger; and
a home key for the little finger;
the home keys representing the letters "T," "E," "A," and "O" of the English alphabet; and wherein
the letter "T" is on the home key for the index finger for the selected hand, the letter "E" is on the home key for the middle finger of the selected hand, and letter "A" is on the home key for the ring finger of the selected hand, and the letter "O" is on the home key for the little finger of the selected hand.

5,336,003
LABEL PRINTER
Kiyomichi Nagashima, Yanagi, and Hiroshi Uchida, Fujishiro, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Feb. 19, 1993, Ser. No. 19,840
Claims priority, application Japan, Feb. 20, 1992, 4-7207; Apr. 24, 1992, 4-106676
Int. Cl.[5] B41J *29/18*
U.S. Cl. 400—708 **8 Claims**

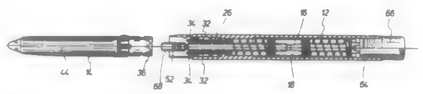


1. A label printer comprising:
a feeding section for feeding a label;
a printing section for printing a given image on the label fed by said feeding section, the printing section having a label issue opening from which the label is issued after the given image is printed thereon by said printing section;
a sensor having a light emitting element and a light receiving element;
a first prism located on one side of said label issue opening so as to lie on an optical axis of said light emitting element, said first prism having a reflecting surface for reflecting light emitted from said light emitting element; and
a second prism located on the other side of said label issue opening so as to lie on an optical axis of said light receiving element, said second prism being completely disconnected from and spaced from said first prism so as to allow for passage of the label therebetween and having a reflecting surface for reflecting the light reflected on said reflecting surface of said first prism to said light receiving element.

5,336,004
DOT PRINTER
Hiroyuki Harada; Akio Tajima; Takashi Kogo; Tadashi Nagakawa; Hajima Oda; Haruo Inoue, and Tsuyoshi Hayakawa, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 747,769, Aug. 20, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 137,901
Claims priority, application Japan, Aug. 20, 1990, 2-218550; Sep. 29, 1990, 2-103075[U]; Oct. 23, 1990, 2-284556
Int. Cl.[5] B41J *11/58, 13/10*
U.S. Cl. 400—624 **47 Claims**

1. A printer comprising:
a casing;
a printer head and a platen disposed in superimposed relationship in said casing;
a paper housing means in said casing disposed on the upstream side of said printer head;
paper feed means in said casing disposed between said paper housing means and said printer means;
paper discharge means in said casing disposed on the downstream side of said printer head;
said paper housing means, said paper feed means, said printer head and platen, and said paper discharge means being disposed in aligned array to provide a substantially straight line path for the paper being printed as said paper passes from said paper housing means of said paper feed means, between said printer head and platen, and to said paper discharge means;
said paper housing means storing a stack of paper sheets which are disposed completely within said casing and which are substantially parallel to said substantially straight line path;
a drive control circuit board means, said drive control circuit board means being disposed in superimposed relationship within said paper housing means; and
a ribbon cassette comprising a ribbon body and arms extending from said ribbon body, said ribbon body being disposed in superimposed relationship with said printer head and said platen, said ribbon body having spaced generally planar side walls generally parallel to said substantially straight line path, said spaced generally planar side walls each having a length and a width each greater than the spacing between said spaced generally planar side walls.

5,336,005
APPLICATOR DEVICE
Gerhard Moeck, Kirchehrenbach, and Robert Finkenauer, Nuremberg, both of Fed. Rep. of Germany, assignors to Schwan-Stabilo Schwanhaeusser GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed Dec. 10, 1993, Ser. No. 165,406
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1992, 9217774[U]
Int. Cl.[5] A45D *40/06, 40/04, 40/20*
U.S. Cl. 401—68 **10 Claims**



1. An applicator device comprising: an elongate gripping portion; in said gripping portion a screwthreaded spindle disposed axially movably therein and an axially immovable nut means through which the screwthreaded spindle is screwable, the nut means having radially resilient screwthread claw means providing a plug-in portion and cooperable with the screwthread of the screwthreaded spindle; a casing front portion having a rearward end part which in the assembled condition of the applicator device is towards the gripping portion and said rearward end part having a coupling means for non-rotatable connection to said plug-in portion whereby said casing front portion is non-rotatably connected to said nut means and said casing front portion and said gripping portion are rotatable relative to each other in the assembled condition thereof in which said claw means are engaged into the screwthread of said screwthreaded spindle by said coupling means, said claw means being out of engagement with said screwthreaded spindle in the condition of the applicator device in which said casing front portion is removed from said gripping portion; a stick comprising a spreadable material which is cast into said casing front portion and which is adapted to be moved out of said casing front portion by means of said screwthreaded spindle; and a spring means operatively disposed in the gripping portion between a part thereof and said screwthreaded spindle and adapted to be mechanically stressed upon a forward feed movement of said screwthreaded spindle and operable to move said screwthreaded spindle back into a starting position into said gripping portion when said casing front portion is removed from said gripping portion.

5,336,006
RETRACTABLE WRITING INSTRUMENT HAVING REPLACEABLE CARTRIDGE
Iskandar Badr, Milford, Conn., and Edgar B. Chiswell, Greenville, S.C., assignors to Bic Corporation, Milford, Conn.
Filed Oct. 9, 1992, Ser. No. 959,166
Int. Cl.[5] B43K *24/06, 24/08*
U.S. Cl. 401—105 **14 Claims**



1. A writing instrument which comprises:
a) a body including an elongated barrel portion and a plunger, said plunger removably maintained at least partially within a rear end of said barrel portion;
b) a replaceable cartridge disposed within said barrel portion;
c) means for biasing said cartridge toward said rear end of said barrel portion; and

VOL 1165 ISS 2 AG 9 1994 UMI

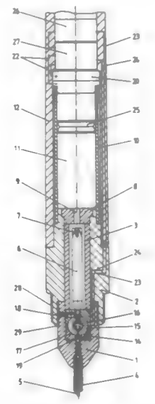
d) means for selectively maintaining said plunger in a first position wherein said cartridge is retracted within said barrel portion and a second position wherein said cartridge is protracted from a front end of said barrel portion, said plunger being dimensioned and configured for axial and rotatable movement with respect to a longitudinal axis of said body for removing said plunger to replace said cartridge, said means for selectively maintaining said plunger including detent means formed on said barrel portion, tab means formed on said barrel portion spaced from said detent means, and clip means pivotably mounted on said plunger which includes latch means for selectively engaging said detent means and notch means for receiving and retaining said tab means.

5,336,007

PLOTTER PEN WITH INDICATOR CIRCUIT

Walter Jozat, Bad Bramstedt, Fed. Rep. of Germany, assignor to Koh-I-Noor Inc., Bloomsbury, N.J.

Continuation of Ser. No. 687,752, Apr. 19, 1991, abandoned.
This application Jun. 8, 1993, Ser. No. 73,620
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1990, 4013011
Int. Cl.[5] B43K *8/18, 5/18, 7/03, 7/10*
U.S. Cl. 401—151 6 Claims



1. In a technical pen comprising a writing tube (4) fixed in the front end of a pen tip (1, 2, 3), a cleaning wire (5), fastened to the front end of a drop weight body (6), and extending into said writing tube from the rear, said drop weight body (6) being disposed so that it is axially movable back and forth in a limited way in an inner bore (7) that is connected with a writing fluid reservoir (10) for holding an electrically conductive writing fluid, the improvement which comprises a device (20, 23, 24) for monitoring the writing fluid level in a buffer chamber (15) disposed between the front end of the said inner bore (7) and the back end of the writing tube (4), said device further comprising means to activate a conveying means that is adapted to transport writing fluid from said inner bore (7) into said buffer chamber (15) when the writing fluid has fallen below a pre-determined amount, wherein said buffer chamber (15) is formed by boundary wall surfaces arranged in a central symmetrical relation to the center axis of the writing tube (4) so as to define inner and outer boundary walls (16, 17), wherein said inner and outer boundary walls (16, 17) of the buffer chamber (15) extend as curves in planes containing the central axis of the writing tube (4), and wherein a front area of said buffer chamber (15) is connected with said writing tube (4) and said inner bore (7) and at least the rearmost sections of the boundary wall surfaces of the buffer chamber (15) are made of an electrically conducting material and are each connected with a contact (23, 24) of an electric control circuit, wherein said contacts will be electrically connected through said electrically conducting writing fluid; whereby said conveying means will be activated when an electrical connection between the contacts (23, 24) of said control circuit is interrupted.

5,336,008

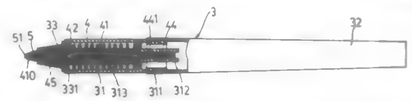
Patent Not Issued For This Number

5,336,009

INK GUIDE FOR A BALLPOINT PEN

Jean Young, 2F., No. 52, Tien Shui Road, Taipei, Taiwan

Filed May 10, 1993, Ser. No. 58,128
Int. Cl.[5] B43K *7/10*
U.S. Cl. 401—209 4 Claims



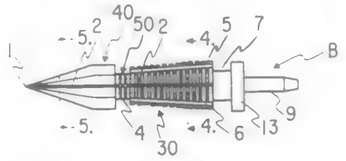
1. An ink guide adapted to be positioned within a barrel of a ballpoint pen in order to guide ink from an ink cartridge within the pen directly to a ballbearing of the pen, said ink guide comprising:
an elongated casing made from a non-absorbent material;
an ink retaining portion formed adjacent a tip end of said casing;
first and second channels that extend longitudinally along said casing and merge at said ink retaining portion, said second channel being smaller in size than said first channel;
a plurality of guide grooves formed in said casing for guiding ink from said ink retaining portion to said tip end;
buffer means positioned along said casing for reducing the hydrodynamic pressure and flow speed of ink within said channels; and
a collar carried by said casing and longitudinally spaced from said tip end for positioning said casing within a barrel of a ballpoint pen with said tip end being located in a predetermined spaced relationship relative to a ballbearing of the pen, whereby said ink guide is adapted to guide ink flowing from an ink cartridge of a ballpoint pen to said ink retaining portion and said tip end and, when said tip end is saturated with ink, to automatically guide an overflow amount of ink back to the ink cartridge through said second channel.

5,336,010

PEN POINT STRUCTURE AND FOUNTAIN PEN EQUIPPED WITH THE SAME

Kuniyoshi Shiomitsu, Hirose-4-chome22-10, Kokubushi, Kagoshima-ken, Japan

Continuation of Ser. No. 858,481, Mar. 27, 1992, abandoned.
This application Aug. 16, 1993, Ser. No. 106,797
Claims priority, application Japan, Oct. 9, 1991, 3-090666[U]
Int. Cl.[5] B43K *5/00*
U.S. Cl. 401—199 16 Claims



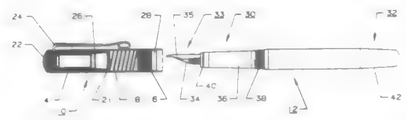
1. A pen point structure, comprising:
a body formed from a mixture of hard inorganic powder and a binder resin, said body including an end portion of an octagonal cross-section and having a writing point, a free end portion, and a small diameter portion forming an annular space extending between said end portion and said free end portion,
a plurality of ink flow channels and an annular ink flow passage formed axially within said body and in communication with said ink flow channels, said ink flow channels extending longitudinally along the length of said body,
a plurality of ink grooves in communication with said ink flow channels formed in said small diameter portion perpendicular to said ink flow channels, and
a plurality of air flow channels extending longitudinally along the length of said end portion and said free end portion of said body.

5,336,011

STORAGE CAP WITH SPRING BIASED FEMALE THREADS

Gregory A. Ferguson, New Bedford, and David Gallot, Fairhaven, both of Mass., assignors to Precision Handling Devices Inc, Fall River, Mass.

Filed Oct. 26, 1993, Ser. No. 143,278
Int. Cl.[5] B43K *9/00*
U.S. Cl. 401—247 17 Claims



14. A removable storage cap for protecting a tool on the working end of an instrument, a non-threaded portion, and a male-threaded portion spaced from said tool along said working end and on an external periphery of said working end, said storage cap comprising:
a. a cylindrical shell having a closure at a first end and being open at a second end to admit said instrument;
b. means for limiting the depth of ingress of said instrument into said shell to prevent said tool from contacting said closure;
c. a cylindrical ring disposed coaxially within said shell for rotational and axial movement with respect to said shell, said ring having on its inner surface a female-threaded portion mateable with said male-threaded portion of said instrument upon insertion and rotation of said instrument in said cap;
d. a coil spring disposed coaxially in partial compression within said shell between said ring and said closure, the force of said spring against said ring being such that when said instrument is inserted into said cap and rotated, said ring is held without turning while said male and female threads are being engaged or disengaged and said ring is permitted only to turn in response to further engaging rotation of said instrument whereby damage to said threads is prevented.

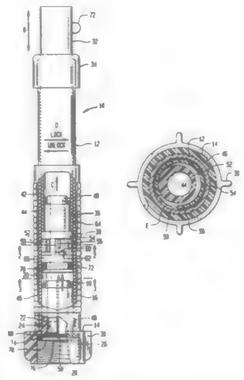
5,336,012

FLOW-THROUGH WASHING AND SCRUBBING BRUSH HANDLE

Duane H. Newville, P.O. Box 40008, St. Petersburg, Fla. 33743

Filed Jan. 11, 1993, Ser. No. 2,652
Int. Cl.[5] A46B *11/06;* A47L *13/22*
U.S. Cl. 401—289 2 Claims

1. An improved flow-through washing and scrubbing brush handle comprising:
an elongated hollow outer tube having a coupling structured for connecting a first end of said outer tube to a pressurized water supply;
an elongated rigid hollow inner tube mounted for slidable rotational and longitudinal movement within said outer tube, a first end of said inner tube extendable beyond a second end of said outer tube and connectable to a flow-through type brush head;
an elongated twist-lock body having a central longitudinal water passage therethrough, a first portion of said twist-lock body connected within a second end of said inner tube positioned within said outer tube;
said twist-lock body having a first sealing ring around the end of said first portion thereof for preventing water passing into said inner tube through said water passage from passing out of said inner tube second end;
a second sealing ring positioned transversely around an end of a second portion of said twist-lock body extending into



said outer tube beyond said inner tube second end, said second sealing ring structured for preventing pressurized water entering said outer tube first end from passing between said inner and outer tubes;
a locking collar loosely positioned transversely around an eccentric cam segment of said twist-lock body second portion;
said locking collar having a radially extending protrusion which lockably engages against an interior wall surface of said outer tube to releasably secure said inner and outer tubes from relative longitudinal movement when said inner tube and twist-lock body are rotated relative to said outer tube.

5,336,013

SEPARABLE CONNECTING DEVICE FOR STEERING COLUMN

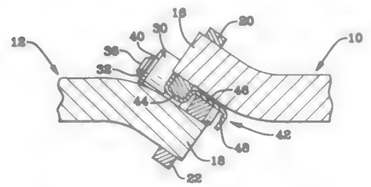
Paul E. Duffy, Winsted; John Hanson, West Hartford; Robert Lugosi, Canton; Spencer H. Guptill, New Milford, and Matthew Kackowski, Torrington, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 680,162, Apr. 3, 1991, Pat. No. 5,248,214. This application Sep. 21, 1992, Ser. No. 947,582
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[5] B62D *1/18*
U.S. Cl. 403—2 14 Claims

1. A separable connecting device between two shaft sections which have a common axis and which include overlapping end portions, said device comprising:
at least one connecting pin on at least one of said end portions;
sleeve means on the end portion opposite said connecting pin for receiving the connecting pin, the connecting pin extending through and beyond the sleeve means, the portion of the connecting pin extending beyond the sleeve means defining an end; and
a retainer attached to the end of the at least one connecting

VOL 1165 ISS 2 AG 9 1994 UMI

pin, the retainer holding the connecting pin within the sleeve means and releasing the connecting pin from the



sleeve means when a predetermined force is applied substantially along the common axis.

5,336,014

MANUALLY OPERATED DISPENSING APPLIANCE, IN PARTICULAR FOR A DOUBLE DISPENSING CARTRIDGE FOR TWO-COMPONENT SUBSTANCES

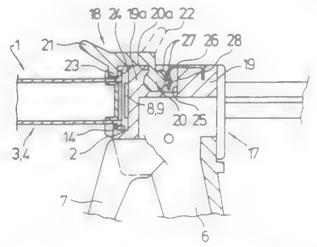
Wilhelm A. Keller, Obstgartenweg 9, CH-6402 Merlischachen, Switzerland

Filed Nov. 18, 1992, Ser. No. 978,119

Claims priority, application Switzerland, Nov. 18, 1991, 03459/91

Int. Cl.[5] B05C *17/005*

U.S. Cl. 403—24 **14 Claims**



1. A manually operated dispensing appliance for a double dispensing cartridge for two-component substances, said appliance including a housing, said cartridge including an attaching flange and being mountable to said appliance by inserting said attaching flange into a cooperating formation of said housing, and attaching means for securing said cartridge to said appliance, said attaching means including a securing flap and an articulation formed by a hinge axle by which said securing flap is hinged on said housing, said hinge axle extending transverse to the longitudinal axis of said cartridge, spring means on said housing, said articulation being influenced by action of said spring means in order to bring said securing flap to a defined position.

5,336,015

SELF CENTERING ELECTRODE JOINT

James R. Stewart; James A. Klotz, both of Columbia, Tenn.; Crescenzo F. Fulgenzi, Rocky River, Ohio, and Philip D. Coleman, Franklin, Tenn., assignors to Ucar Carbon Technology Corporation, Danbury, Conn.

Filed Nov. 25, 1992, Ser. No. 981,606

Int. Cl.[5] H05B *7/14;* **F16B** *12/36*

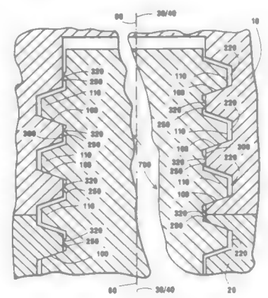
U.S. Cl. 403—296 **8 Claims**

1. As an article of manufacture, a threaded carbon nipple for joining a pair of opposed carbon electrode sections each having respective opposed threaded sockets, each said threaded socket having threaded grooves separated by substantially flat surfaced crests, said threaded carbon nipple comprising

(i) a longitudinally extending root portion;

(ii) spaced apart threads on said root portion extending outward therefrom and integral therewith for threadably engaging threaded grooves of an electrode section;

(iii) an abradable ridge on said root portion integral therewith located adjacently intermediate said spaced apart threads on said root portion and extending outward from



said root portion but to a substantially less extent than said spaced apart threads so that upon threadable engagement of said threaded carbon nipple with an electrode section said ridge is abradably worn away to leave a flat surface which bears against the flat surfaced crests of the threaded socket which separate the grooves of said electrode section socket.

5,336,016

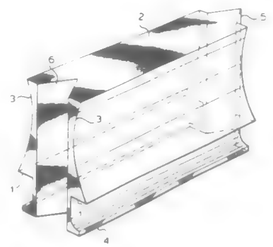
RUBBER VEHICULAR IMPACT BARRIER

Guenter A. Baatz, 33 Pioneer Tower Road, Kitchener, Ontario, Canada N2G 3W6

Filed Sep. 9, 1993, Ser. No. 118,301

Int. Cl.[5] E01F *15/00*

U.S. Cl. 404—6 **14 Claims**



8. A homogeneous moulded solid rubber vehicular barrier, comprising:

80 to 90 percent by weight particles of recycled waste rubber; and

10 to 20 percent by weight virgin cured uncontaminated rubber, and has a Shore hardness of between wherein said barrier has a finished outer surface of between 65 to 70 and wherein the barrier has an elongate body of uniform cross section, said cross section being substantially trapezoidal having a base, a top surface and two inclined concave side surfaces.

5,336,017

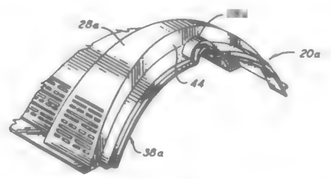
LEACHING SYSTEM CONDUIT WITH INTERLOCKING END JOINT

James M. Nichols, Old Saybrook, Conn., assignor to Infiltrator Systems, Inc., Old Saybrook, Conn.

Continuation of Ser. No. 694,880, May 2, 1991, abandoned, which is a continuation of Ser. No. 341,902, Apr. 24, 1989, Pat. No. 5,017,041. This application Jun. 3, 1992, Ser. No. 893,555

Int. Cl.[5] E02B *11/00*

U.S. Cl. 405—46 **7 Claims**



1. A conduit for burial in the earth to disperse or gather liquids therein, having a wall shaped as an arch; the conduit having an open base and alternating peak corrugations and valley corrugations along its length, with the top of the device during use being the top of the arch; an overlapped end and an opposing overlapping end, the ends adapted to mate in shiplap fashion with the corresponding overlapping and overlapped ends of like devices; characterized by a cantilevered leg attached to and extending from one end, running parallel to the length of the conduit; the leg having a thickness greater than the thickness of the wall and a cross section shaped to provide greater resistance to force applied transverse to the wall than the resistance provided by the wall; the leg forming with the adjacent portions of said one end a female pocket like space, to receive therein a portion of the end of a mating conduit and to transfer vertical forces to and from the mating conduit and decrease the tendency of mating conduits to separate and deflect at their mating joint under vertical forces.

5,336,018

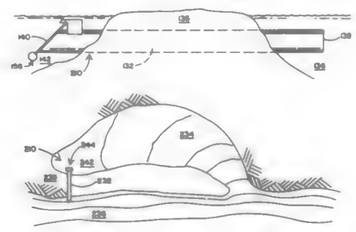
TIDAL SYSTEM AND METHOD FOR CLEANSING A HARBOR

Inge Maudal, 604 Lassen La., Costa Mesa, Calif. 92626

Continuation of Ser. No. 497,489, Mar. 22, 1990, abandoned. This application May 8, 1992, Ser. No. 880,901

Int. Cl.[5] E02B *1/00*

U.S. Cl. 405—52 **7 Claims**



4. A system for cleansing a polluted harbor by achieving general circulation of water between an open ocean and the polluted harbor based on natural wave-like characteristics of cyclic ocean tides, where the tides propagated along a path in the open ocean, through a substantially unobstructed harbor entrance, and thence through the harbor to a back harbor, the system comprising:

a conduit having first and second openings, said openings located substantially along the path of propagation of the tide, said openings having sufficient relative separation to exhibit a hydrostatic pressure differential, said conduit enabling fluid communication responsive to said hydrostatic pressure differential to permit flow of water through said conduit;

said first opening located near the harbor entrance in a first area containing clean water;

said second opening located within the harbor in a second area containing polluted water;

a control valve in at least one of said openings responsive to cyclic hydrostatic pressure differentials resulting from the cyclic ocean tides, said control valve converting said cyclic hydrostatic pressure differential to unidirectional flow of water in said conduit, wherein said control valve is a one-way valve; and

said at least one of said openings is inclined a slant angle, said slant angle being substantially between 30 and 60 degrees, so that said slant angle allows a maximum quantity of water flow through said at least one of said openings following minimum control valve actuation.

5,336,019

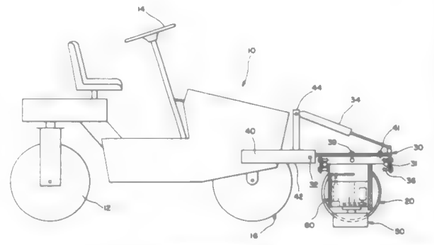
UNIFORM COMPACTION OF ASPHALT CONCRETE

Edmund D. Hollon, 130 Frontier Dr., and Blake D. Hollon, 1941 Park Dr., both of Douglas, Wyo. 82633

Filed May 10, 1993, Ser. No. 60,331

Int. Cl.[5] E01C *19/22*

U.S. Cl. 404—72 **13 Claims**



13. A method for obtaining selected uniform density across the full width of an asphalt concrete lane, the method comprising:

(a) laying an asphalt concrete lane having an outer edge surface;

(b) compacting said asphalt lane with a compacting force;

(c) providing a longitudinally mobile, horizontally translatable confinement edge force in contact with said edge surface; wherein said edge surface is confined by said edge force during said compacting step, and wherein said compacting force and said edge force are balanced in a manner such that the density of said lane across said full width becomes uniform.

5,336,020

SUPPORT AND CONNECTION DEVICE FOR FLEXIBLE HINGE

Sigmund Askestad, Saetre, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO92/00164, § 371 Date May 28, 1993, § 102(e) Date May 28, 1993, PCT Pub. No. WO93/07048, PCT Pub. Date Apr. 15, 1993

PCT Filed Sep. 30, 1992, Ser. No. 70,342

Claims priority, application Norway, Sep. 30, 1991, 913824

Int. Cl.[5] E02D *5/74*

U.S. Cl. 405—224 **18 Claims**

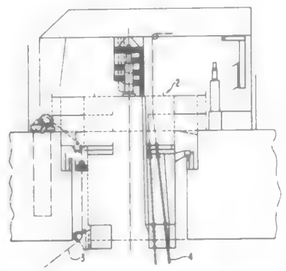
1. In a floating structure such as a drilling or production vessel for the production of oil or gas and including a turret having a pipe system, and a flexible riser extending from a

VOL 1165 ISS 2 AG 9 1994 UMI

seabed wellhead through said turret to said pipe system, the improvement comprising:

a guide pipe mounted in said turret;

a rigid pipe connected to said flexible riser and forming an upper portion thereof extending through said turret from a lower end thereof to said pipe system; and



said rigid pipe extending through said guide pipe and being guided thereby to extend at an angle to the vertical, said angle corresponding substantially to the natural angel of said flexible riser.

5,336,021

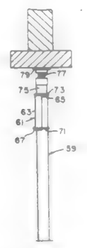
SYSTEM FOR UNDERPINNING A BUILDING

Thomas R. Freeman, III, 8 Woodford, St. Charles, Mo. 63301

Division of Ser. No. 871,122, Apr. 20, 1992, Pat. No. 5,217,325, which is a division of Ser. No. 713,265, Jun. 11, 1991, Pat. No. 5,116,355. This application Apr. 8, 1993, Ser. No. 44,162

Int. Cl.[5] E02D *5/00*

U.S. Cl. 405—230 2 Claims



1. A foundation supporting assembly which is placed on a foundation underpinning pier to support said foundation after said pier has been driven to bed rock, the foundation supporting assembly comprising a body which is placed around said pier and means secured to said for threadedly receiving a bolt, said bolt engaging the underside of said foundation to support said foundation under compression, said bolt receiving means comprises a threaded tube mounted on a plate which in turn is mounted atop said body, said body including a semi-circular elongate plate, having a cover covering the top thereof, said elongate plate having substantial length to lie contiguously against a corresponding length of the underpinning pier, and means provided proximate the bottom of said elongate plate for securing said body to said pier.

5,336,022

METHOD FOR PRODUCING ENHANCED SOIL STABILIZATION REACTIONS BETWEEN LIME AND CLAY SOILS DUE TO THE EFFECT OF SILICA ADDITION

J. T. McKennon, Dallas; Norman L. Hains, Arlington, and David C. Hoffman, Ft. Worth, all of Tex., assignors to Chemical Lime Company, Fort Worth, Tex.

Continuation-in-part of Ser. No. 800,630, Nov. 27, 1991, Pat. No. 5,228,808. This application Sep. 11, 1992, Ser. No. 943,940 The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] C09K *17/00*

U.S. Cl. 405—263 12 Claims

1. An improved method for stabilizing clay bearing soils, comprising the steps of:

applying a lime treatment to the soils, the lime being applied in an amount effective to provide a driving force for promoting a pozzolanic reaction resulting from the combination of native silica and free alumina provided by the clay bearing soils in a high pH environment enhanced by the lime application with calcium donated by the lime, the resulting pozzolanic reaction producing calcium silicate hydrates and calcium aluminate hydrates;

further enhancing the pozzolanic reaction by incorporating into the soils an additional amount of silica over and above the amount of native silica present in the clay bearing soils, the additional amount of silica being added in a concentration effective to promote the formation of calcium silicate hydrates over the formation of calcium aluminate hydrates in the resulting pozzolanic reaction occurring in the clay bearing soils.

5,336,023

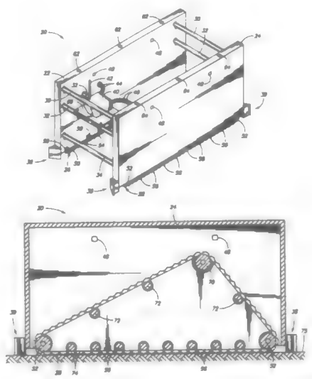
SELF-PROPELLED TRENCH BOX

Clyde Burdine, Rte. 1, Box 34-A, Waitsburg, Wash. 99361

Filed Jan. 12, 1993, Ser. No. 3,647

Int. Cl.[5] E02D *17/08*

U.S. Cl. 405—283 15 Claims



1. A self-propelled trench box apparatus, comprising:

a first side panel positionable adjacent a first wall of a trench;

a second side panel positionable adjacent a second wall of the trench;

multiple cross bars interconnecting the side panels at a distance which corresponds substantially to a width of the trench, the cross bars interconnecting the first and second side panels in a parallel relationship to one another, the cross bars spacing the side panels to create an open work area in which workers may above about to perform work within the trench;

a first drive track operatively connected to and being received within the first side panel;

a second drive track operatively connected to and being received within the second side panel; and

a drive mechanism powering the first and second drive tracks to move the trench box within the trench.

5,336,024

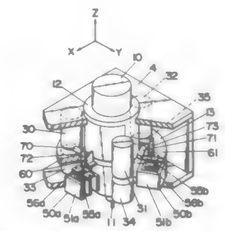
PRECISION DRILLING METHOD

Teruo Nakagawa, Shijonawate, and Shigeki Fujiwara, Izumiotsu, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 17, 1993, Ser. No. 18,392

Int. Cl.[5] B23B *35/00*

U.S. Cl. 408—1 R 19 Claims



1. A precision drilling method for drilling a hole in a work with a drill unit having a drill bit, said drill unit being movably supported to a housing by electromagnetic force consisting of separately controllable restoring and damping elements, said method being characterized to vary at least one of stiffness of said restoring element and damping factor of said damping element between before and after said drill bit comes into engagement into said work.

5,336,025

MULTI-SPINDLE MACHINE TOOL

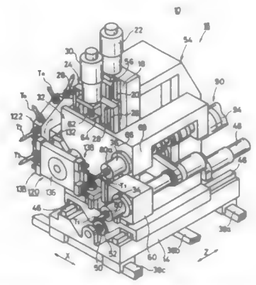
Akira Ozawa; Taizo Matsuyama; Eiichi Homma; Syunroku Hata; Kenzaburo Matsuo, and Kazushige Nakatsuka, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,734

Claims priority, application Japan, Dec. 16, 1991, 3-332171; Feb. 24, 1992, 4-036716

Int. Cl.[5] B23B *39/16*

U.S. Cl. 408—46 6 Claims



1. A multi-spindle machine tool comprising:

a main body movable toward and away from a workpiece;

a first vertically movable table supported by a first pair of guide rails, said first pair of guide rails being disposed on a frontal surface of said main body opposing said workpiece, said first vertically movable table being ascended and descended along said first pair of guide rails by a first actuator;

a second vertically movable table supported by a second pair of guide rails, said second pair of guide rails being disposed on a frontal surface of said first vertically movable table such that said second pair of guide rails are vertically movable with respect to said first pair of guide rails, said second vertically movable table being ascended and descended along said second pair of guide rails by a second actuator;

first and second spindle units fixed respectively to said first and second vertically movable tables.

5,336,026

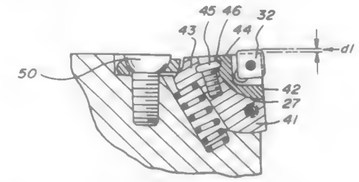
ADJUSTABLE BORING BAR

Kenneth G. Noggle, West Bloomfield, Mich., assignor to Valenite Inc., Troy, Mich.

Filed Dec. 21, 1992, Ser. No. 994,020

Int. Cl.[5] B23B *29/02*

U.S. Cl. 408—147 9 Claims



1. A boring bar assembly, comprising:

a generally cylindrical body rotatable about a centrally disposed axis, said body comprising a peripheral surface area and at least one recess at one end of said bar, said recess having an axial length dimension and spaced walls substantially parallel with respect to each other and said axis, said bar recess further including arcuate seating surface and a key slot way which is arcuate and adjacent to said seating surface, said seating surface and key slot intersect said walls and open radially to the periphery at one end and open to the end of the bar at the other end, said bar recess further equipped with an arcuately shaped recess in said seating surface to accommodate a preloading means; said bar further equipped with a retainer pocket at the peripheral end of said arcuate recess; said pocket having parallel side walls, a planar floor surface and a threaded bore in said floor surface;

an adjustable cartridge for receipt into said bar recess, said cartridge having a planar top surface and a radiused bottom face cooperating with said bar recess seating surface to define a rotational adjustment path and a key to cooperate with said bar key slot way; said cartridge having forward and rear portions, said radiused bottom surface rear portion having a recessed area for cooperative engagment of said preloading means, said cartridge further equipped with an arcuately shaped upper recess having an axial length dimension and spaced walls substantially parallel with respect to each other and said axis, said upper arcuate recess having an upper arcuate seating surface, said upper seating surface having an axial length and separating spaced walls substantially parallel to each other and said axis, and a key slot way which is arcuate and adjacent to said upper arcuate seating surface; said arcuate upper recess extending from said front portion of said cartridge to a point intermediate said rear portion on said top surface; said top surface equipped with a recess comprised of three planar walls and a planar floor and open along the top and rear portions of the cartridge;

a retainer plate means in said retainer pocket and extending to said recess in the top surface portion of said cartridge to cooperate with the preload means;

VOL 1165 ISS 2 AG 9 1994 UMI

an adjustable anvil for receipt into said upper recess having a generally planar top face and a radiused anvil bottom face cooperating with said cartridge upper arcuate seating surface to define a rotational adjustment path and a key to cooperate with said upper key slot way, said top face further comprises axially spaced forward and rear portions, said radiused face extending from front to rear portion of the anvil; said radiused bottom surface rear portion having a recessed area for cooperative engagment with an adjustment means, said anvil further equipped with a pocket for receipt of a polygonal form lay down indexable insert, said insert having a cutting edge and seated in said anvil with said cutting edge spaced axially from said center point so as to impart rotational force about said center point and loading on said bar adjustment means during operation;

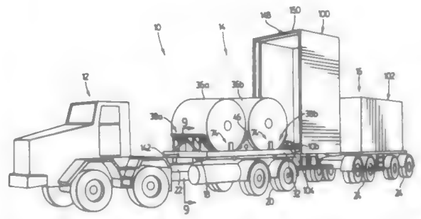
means for adjusting said cartridge in said boring bar along said adjustment path; and means for retaining said anvil in said upper arcuate slot.

5,336,027

VEHICLE FOR CARRYING COILED ROLLS

Martin Paddock, 44 Oceanic Drive, Stoney Creek, Ontario, Canada L8E 4H5

Filed Dec. 16, 1992, Ser. No. 991,270
Claims priority, application Canada, Jul. 20, 1990, 2074240
Int. Cl.[5] B60P *7/14, 7/02, 7/08*
U.S. Cl. 410—49 **12 Claims**



12. A wheeled road vehicle having a front and a rear and adapted for travel longitudinally along a path of travel and for carrying at least a pair of rolls of coiled material, each roll having a pair of ends, said vehicle having:

(a) a floor pan,

(b) at least first and second bunks, each bunk comprising

(i) two opposed inclined members, one of said inclined members sloping upwardly and forwardly from said floor pan and the other sloping upwardly and rearwardly from said floor pan to form a substantially V-shaped surface to support one of said rolls, said members being inclined at angles for maintaining the bottom of said one of said rolls above said floor pan,

(ii) two side locks, one at each side of said bunk, for restraining said one of said rolls in said bunk against movement laterally of said path of travel, each side lock comprising a bar upstanding from said floor pan, a resilient pad on said bar, said pad having a substantially planar face oriented in a plane extending vertically and longitudinally, and mounting means mounting each said side lock for independent lateral movement towards and away from an end of said one of said roller in said bunk. such that said resilient pads can be selectively brought into contact with said ends of said one of said rolls,

(iii) each of said mounting means being located substantially entirely beneath said floor pan,

(d) a cover having a pair of side walls extending substantially to said floor plan,

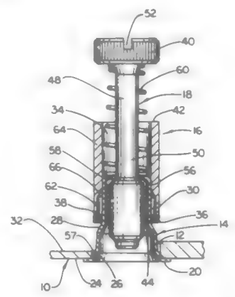
(e) means mounting said cover for movement between a closed position in which said cover forms a tight seal with said floor pan to cover said pair of bunks and to isolate a pair of rolls in said bunks from the weather, and an open position in which said side walls of said cover are spaced longitudinally from said rolls in said bunks to fully uncover all of said rolls including all of said ends thereof, so that said rolls can be laced in or removed from said bunks without said rolls being constructed by said cover.

5,336,028

CAPTIVE SCREW ASSEMBLY

Albert K. Yamamoto, Huntington Beach, Calif., assignor to VSI Corporation, Torrance, Calif.

Filed Apr. 13, 1993, Ser. No. 47,097
Int. Cl.[5] F16B *21/18, 39/00*
U.S. Cl. 411—107 **12 Claims**



1. A captive fastener assembly for use with a panel having a front surface, a back surface and an aperture extending therethrough and for use with a member having a threaded bore positioned below the panel back surface, the assembly comprising:

a generally cylindrical cup adapted for insertion through the panel aperture, the cup having a central opening, a generally cylindrical wall with a lower edge, and a lower flange projecting outwardly from the lower edge and dimensioned to bear against the back surface of the panel;

a sleeve assembly having a central opening, an interior surface sized to engage the exterior surface of the wall of the cup, and having a lower portion; and

a screw having a threaded shank and a head, the screw shank extending through the central opening of the cup and the central opening of the sleeve assembly to threadedly engage the threaded bore positioned below the panel's back surface, the head of the screw urging the interior surface of the sleeve assembly to engage the exterior surface of the wall of the cup and urging the lower portion of the sleeve assembly toward the front surface of the panel, to secure the fastener assembly to the panel.

5,336,029

LOADING APPARATUS HAVING A SUCTION-HOLD MECHANISM

Naoki Kato, Yamato; Eiji Konoshima, Zama; Kyoji Kinokiri, Tokyo, and Jiro Ikeda, Fujieda, all of Japan, assignors to Kabushiki Kaisha Shibaura Seisakusho Sony Corp, Japan

Filed Sep. 12, 1991, Ser. No. 757,982
Claims priority, application Japan, Nov. 30, 1990, 2-336690
Int. Cl.[5] B65G *47/91*
U.S. Cl. 414—217 **18 Claims**

1. A substrate loading apparatus for transferring into a load-lock chamber of a vacuum chamber a disk substrate, from a first position at which the disk substrate is delivered, to a second position situated in said load-lock chamber, comprising:

a shaft rotatable about an axis and having a circumference;

a suction head rotatable about said axis and having two surfaces opposing each other, each surface having a plurality of suction pads provided thereon, said axis extending in a direction parallel to said surfaces of said suction head;

a drive mechanism including: i) means for rotating said suction head such that each of said suction pad pluralities alternatively face said load-lock chamber at a position separated from said load-lock chamber and said first position, and ii) means for reciprocating said suction head to and from said load-lock chamber; and

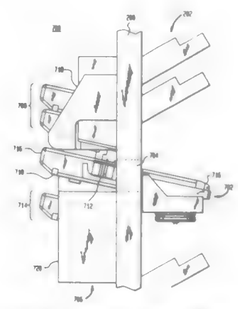
a pair of flexible pipes being circumferentially wound around said rotatable shaft in a helix, each pipe having one end connected to a separate plurality of said suction pads and the respective other end being connected to an exhaust pump.

5,336,030

BUFFERED ACCESS SYSTEM FOR AN AUTOMATED COMPUTER MEDIA STORAGE LIBRARY

Timothy C. Ostwald, Louisville, and David T. Hoge, West Minster, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 16, 1993, Ser. No. 31,896
Int. Cl.[5] B65G *1/06*
U.S. Cl. 414—277 **20 Claims**



14. In an automated storage library system having an enclosed housing defining an interior cartridge storage area having a plurality of cartridge storage cells for holding data storage cartridges and having a robot mechanism for transporting a selected data storage cartridge within the storage area, a buffered access system for automatically transferring a selected data storage cartridge between the interior cartridge storage area and a point outside the automated storage library system, the buffered access system comprising:

an opening in the housing;

a stack loader coupled to an exterior of the housing proximate to said opening; and

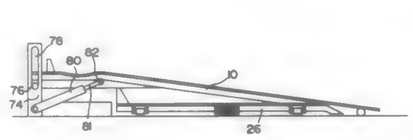
a turntable mechanism disposed within the storage area proximate to said opening.

5,336,031

CAR PARKING SYSTEM

Zeev Golan, 9 Yair Stern Street, Herzlia, Israel

Continuation-in-part of Ser. No. 672,036, Mar. 19, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 3,563
Claims priority, application Israel, Mar. 25, 1990, 93875
Int. Cl.[5] E04H *6/06*
U.S. Cl. 414—229 **13 Claims**



1. A parking system for vehicles which includes vehicle parking apparatus comprising:

a vehicle support platform for supporting a vehicle over a parking area and including:

a rear end portion adapted to permit travel of a vehicle thereacross;

a front end portion; and

side portions extending longitudinally between said rear and front end portions; and

support means for said platform located at a predetermined end portion of the parking area and adapted to engage said platform front end portion only;

said support means also including lifting means which is operative to cause an initial pivoting of said platform about said rear end portion thereof such that said front end portion of said platform becomes elevated above said rear end portion, said lifting means being also operative to cause an additional pivoting of said platform about said front end portion thereof such that said rear end portion of said platform becomes elevated relative to said front end portion thereof, thereby bringing said platform into a raised position so as to provide vertical clearance between said platform and the parking area that is sufficient to enable entry of a vehicle into the parking area beneath said platform;

wherein, when said platform is in said raised position, said support means is further adapted to support said platform over the parking area such that said front end portion of said platform is in vertical registration with a forwardmost portion of the predetermined end portion of the parking area whereat said support means is located; and

wherein said lifting means is also operative to lower said platform to a lowered position whereat said rear end portion thereof is vertically adjacent to a ground surface, thereby allowing travel of a vehicle between said platform and the ground surface.

5,336,032

ARTICLE HANDLING SYSTEM

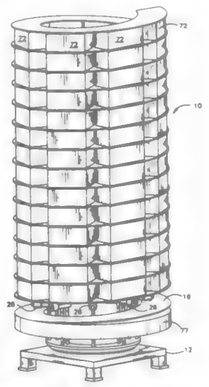
George R. Pipes, Salt Lake City, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 16, 1992, Ser. No. 946,288
Int. Cl.[5] B65G *21/18*
U.S. Cl. 414—331 **10 Claims**

1. Apparatus for handling articles comprising an article receiving member defined by a sheet- like member formed as a spiral having a plurality of coils; means for rotating said article receiving member about its axis, means engaging a coil of said article receiving member to deflect it away from an adjacent coil thereof while it is rotating to define an article receiving space between said coils; and means engageable with said article receiving member for supporting at least a portion of a coil of said article receiving member and articles received thereon for movement along a substantially helical path as said article receiving member rotates, the portions of said article

VOL 1165 ISS 2 AG 9 1994 UMI

receiving member not in engagement with said supporting means and articles received thereon being supported by the



coils of said article receiving member and the articles received thereon beneath them.

5,336,033

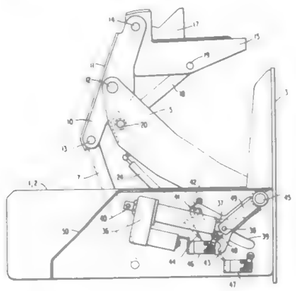
VEHICLE RESTRAINT

James C. Alexander, London, Canada, assignor to The Serco Corporation, London, Canada

Continuation-in-part of Ser. No. 727,172, Jul. 9, 1991, abandoned, which is a continuation of Ser. No. 466,799, Jan. 18, 1990, Pat. No. 5,120,181. This application Feb. 21, 1992, Ser. No. 838,921

Int. Cl.[5] B65G *69/00*

U.S. Cl. 414—401 18 Claims



10. A vehicle restraint device comprising:

a stationary frame;

a lever assembly mounted to said stationary frame for pivotal movement relative to said stationary frame;

a primary vehicle restraining member coupled to said lever assembly and movable on said lever assembly from a lowered stored inoperative position to an extended operative position by vertical movement without any rotation thereof; and

actuating means mounted to said stationary frame and selectively engaged with said lever assembly for initiating movement of said primary vehicle restraining member upward toward an operative position and for moving said primary vehicle restraining member to said inoperative position, said actuating means allowing freedom of vertical movement of said primary vehicle restraining member while in said operative position without any movement of said actuating means.

5,336,034

METHOD AND APPARATUS FOR UNPACKING CONTENTS FROM ENVELOPES

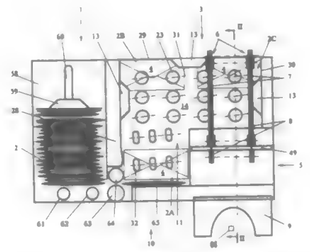
Gerhard Hidding, Heerenveen, Netherlands, assignor to Hadewe B. V., Drachten, Netherlands

Filed Nov. 30, 1992, Ser. No. 983,051

Claims priority, application Netherlands, Nov. 29, 1991, 9101120

Int. Cl.[5] B65G *21/02*

U.S. Cl. 414—403 8 Claims



1. A method for mechanically unpacking contents from envelopes, in which an envelope is at least weakened along three of its folding edges, a first panel of the envelope is folded over relative to a second panel thereof about a fourth of the folding edges, the contents are mechanically separated from the associated envelope and are delivered, and the envelope is discharged separately from its contents along a discharge track for allowing the envelope to be removed from the discharge track, and after each time contents have been delivered, an interval of time passes before the associated envelope is discharged to a position on the discharge track where the associated envelope can be removed.

5,336,035

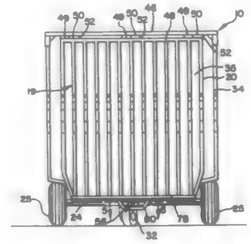
HAY BALE BASKET

Abe B. Kuhns, Arthur, Ill., assignor to E-Z Trail, Inc., Arthur, Ill.

Continuation of Ser. No. 679,763, Apr. 3, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,268

Int. Cl.[5] B65G *67/04*

U.S. Cl. 414—501 25 Claims



1. A mobile basket for accumulating and transporting hay bales comprising:

an axle adapted to support wheels for rotation thereon;

a container mounted upon and supported by said axle for the transport of said container; said container having a front and a rear, and a pair of side walls which are spaced from each other, said side walls having a cage-like structure

with openings of substantial size therethrough in which the bales tend to wedge during loading or discharge from the container;

a bottom wall on said container which slopes upwardly from adjacent said axle toward the front of said container, said side walls extending upwardly from said bottom wall and the spacing of the side walls from each other at least adjacent the bottom wall being of sufficiently greater magnitude at the rear of said container than at the front thereof to prevent the bales from wedging in said openings of substantial size in the side walls when the bales are being loaded into or discharged from said container;

an upwardly extending rear wall on said rear of said container having a top, said side walls, bottom wall and rear wall at least in part defining said container, and

hinge means for hinging said rear wall toward its top to said container and such that said rear wall swings between a shut position to retain the bales in the container and an open position by gravity to discharge the bales from the container.

5,336,036

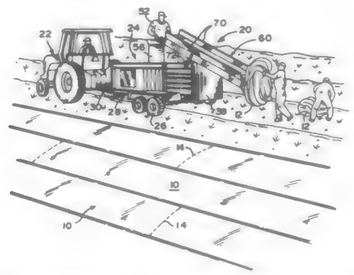
PORTABLE COMPACTOR SYSTEM FOR AGRICULTURAL FILMS

Keith S. Williamson, Hartsville, S.C., and Terry A. Ochab, Orlando, Fla., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Dec. 8, 1992, Ser. No. 986,941

Int. Cl.[5] B60P *1/00*

U.S. Cl. 414—502 8 Claims



1. A disposal system for gathered lengths of field film mulch, a wheeled vehicle adapted to be drawn forwardly along a field for the manual loading of pregathered film mulch, said vehicle having an elongate body with a fore end and an aft end, an elongate fore to aft compaction chamber in said body terminating at said aft end of said body, said aft end being defined by a closure panel selectively movable between a closed position forming a rear abutment wall in said compaction chamber and an open position allowing free discharge from said chamber, said chamber including fore to aft side, top and bottom walls extending from said closure panel, an opening in said top wall in forwardly spaced relation to said closure panel and communicating directly with said chamber, a hopper mounted to said top wall in vertical alignment with said opening, said hopper having a lower outlet end substantially coextensive with said opening and an upper inlet end, said hopper having an unencumbered interior from said upper inlet end to said opening allowing free downward movement of film mulch therethrough and into said chamber and a direct visual inspection of said chamber and the film mulch in said chamber, an elongate conveyor mounted to said body and extending fore to aft in alignment with said hopper and between a forward discharge end overlying said hopper and a rear infeed end rearward of said closure panel, said conveyor having an open upper run extending the length thereof, said conveyor being inclined downward and rearward from said discharge end with said rear infeed end below said top wall and positioned relative to the ground for manual placing of film mulch thereon, a compaction plate in said chamber defining a forward wall of said chamber and mounted for rearward movement from a forward position for compaction of introduced film mulch against said rear abutment wall, and means for selectively elevating said rear infeed end of said conveyor to allow a rearward movement of said closure panel to its open position for discharge of compacted film mulch from said chamber rearward of said body and below said conveyor.

5,336,037

TOW VEHICLE FOR MANUEVERING OF VEHICLES

Franz J. Cürten, and Michael Bammel, both of Ulm, Fed. Rep. of Germany, assignors to Goldhofer Fahrzeugwerk GmbH & co., Fed. Rep. of Germany

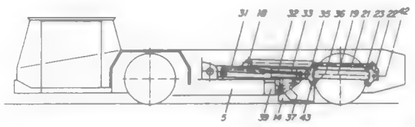
PCT No. PCT/EP88/00044, § 371 Date Jul. 21, 1989, § 102(e) Date Jul. 21, 1989, PCT Pub. No. WO88/05399, PCT Pub. Date Jul. 28, 1988

Continuation of Ser. No. 391,549, Jul. 21, 1989, abandoned. This PCT application Jan. 22, 1988, Ser. No. 6,369

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1987, 3701971; Feb. 20, 1987, 3705402

Int. Cl.[5] B60P *3/11*

U.S. Cl. 414—429 54 Claims



1. A towing vehicle having no draw tongue for maneuvering airplanes having a nose wheel, comprising:

a. a chassis (5) which has spaced sides providing a rearwardly opening receiver space (8) therebetween;

b. a plurality of axles and wheels mounted on said chassis, the rearward axles being disposed on opposite sides of said receiver space;

c. a single scoop (14) in the forward portion of said receiver space and having a bottom wall upon which the nose wheel (24) of an associated airplane may be supported;

d. drive means on said chassis for raising and lowering said scoop;

e. pivot means on said chassis for controllably pivoting said scoop relative to said chassis; and

f. an extensible gripping and retracting device (28, 68) mounted on said chassis and having elements extensible in the rearward direction of said chassis and adjacent said sides thereof, said assembly also having wheel engagement elements adjacent the rearward end of said extensible elements for gripping the nose wheel of an associated aircraft to enable it to be moved onto the bottom wall of the scoop, said extensible elements having an amount of extension in the longitudinal direction of said chassis limited to the length of the receiver space (8), said scoop being dimensioned, configured and pivotable relative to said chassis to support the associated nose wheel on said bottom wall in the area of the nose wheel load line.

5,336,038

LAMINAR STAPLE FOR ANGULARLY JOINING PROFILED STRIPS

Giuseppe Raffoni, Forli, Italy, assignor to Alfamacchine Di Raffoni Giuseppe, Forli, Italy

Filed Sep. 13, 1993, Ser. No. 119,298

Claims priority, application Italy, Sep. 25, 1992, 000190/92[U]

Int. Cl.[5] F16B *15/00*

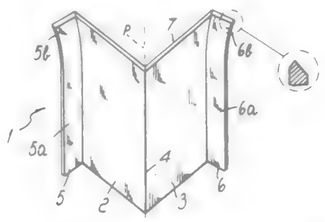
U.S. Cl. 411—478 4 Claims

1. Laminar staple comprising two walls which are substantially at right angles to each other and which form an edge and

VOL 1165 ISS 2 AG 9 1994 UMI

two ribs extending substantially at right angles to said walls, said walls and said ribs forming a cutting edge,

wherein said ribs have two portions substantially parallel to



said edge which progressively diverge proximate to the cutting edge, and

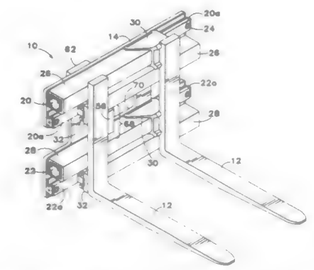
wherein said portions diverge so as to form circular arc portions.

5,336,039

LIFT TRUCK PARALLEL ARM CLAMP FOR COMPATIBLY MAXIMIZING OPERATOR VISIBILITY AND LOAD-CARRYING CAPACITY

Marshall K. House, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Jun. 14, 1993, Ser. No. 77,556
Int. Cl.[5] B66F *9/18*
U.S. Cl. 414—621 **45 Claims**



1. A load-handling structure adapted to be mounted on an elevatable load carriage at the front of a lift truck for operating transversely openable and closable load-handling arms, said load-handling structure comprising:

(a) a slide guide frame, adapted to be mounted vertically on the load carriage, having respective upper and lower pairs of elongate, parallel, vertically-spaced transverse slide guides thereon;

(b) a respective pair of elongate vertically-spaced slide members longitudinally movably mounted on each of said respective upper and lower pairs of transverse slide guides for supporting said load-handling arms, each pair of slide members being longitudinally movable alternatively toward or away from one another in a mutually-overlapping longitudinal relationship;

(c) a pair of selectively extensible and retractable fluid power piston and cylinder assemblies associated with at least one of said upper and lower pairs of slide guides, each of said piston and cylinder assemblies being at least partially surrounded by a respective guide of said one of said pairs of slide guides and being connected to the respective slide member mounted thereon so as to move the respective slide member longitudinally relative to the respective guide;

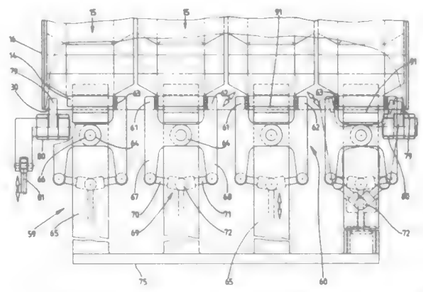
(d) said upper and lower pairs of slide guides being separated vertically by a space extending vertically substantially completely between said upper and lower pairs of slide guides and their associated slide members, said space being substantially centrally located along the length of said slide guides and being unoccupied by any said piston and cylinder assemblies so as to provide viewability through said space between the rearward and forward extremities of said load-handling structure.

5,336,040

PROCESS AND APPARATUS FOR GRASPING LIFTING AND MOVING STACKS OF BLANKS FOR CIGARETTE PACKS

Heinz Focke, Verden, and Henry Buse, Visselhövedo, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Division of Ser. No. 589,566, Sep. 28, 1990, Pat. No. 5,144,789.
This application Jun. 9, 1992, Ser. No. 895,833
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1989, 3933098
Int. Cl.[5] B65B *43/16;* **B65G** *47/34*
U.S. Cl. 414—751 **9 Claims**



1. An apparatus for handling stacks of blanks for hinge-lid packs, each blank (**10**) having a narrow projection, in the form of an inner lid flap (**14**), at a top end of the blank, such that superposed narrow projections of the blanks in each stack form vertically upright oppositely situated side faces at an edge of a stack (**15**) having a height, said apparatus comprising:

a handling unit (**59**) having at least one tongs-like clamping means (**60**) comprising clamping jaws (**61, 62**) for grasping the blank stack (**15**) at the side faces of the stack that are formed by the narrow projections;

wherein the clamping jaws (**61, 62**) of said clamping means (**60**) are arranged vertically upright with a longitudinal dimension in the vertical direction, thereby forming a vertically extending intermediate space; and

said clamping jaws (**61, 62**) are movable toward one another in a horizontal direction and have a length sufficient to extend from a lower edge of the stack up to approximately the same height as the stack.

5,336,041

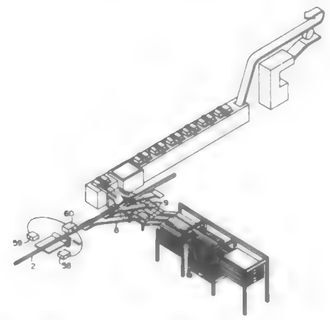
STORAGE AND RETRIEVAL DEVICE AND METHOD FOR IMBRICATED PLANAR ARTICLES

Randy R. Seidel, Allentown; Anthony Kononov, Sumneytown; Roger Honegger, Andalusia, all of Pa., and Robert M. Silva, Milford, N.J., assignors to Graphic Management Associates, Inc., Southborough, Mass.

Continuation-in-part of Ser. No. 850,414, Mar. 12, 1992, abandoned. This application Nov. 24, 1992, Ser. No. 980,768
Int. Cl.[5] B65G *57/00, 59/00;* **B65H** *29/00*
U.S. Cl. 414—788 **34 Claims**

1. A device for stacking and/or destacking a stream of imbricated, substantially planar, units to form and/or destack a layered stack, said device comprising a stacker, adapted to receive a stream of said units from a source thereof, and a plurality of transfer sheets in a sheet stack, at least one portion of said stream being delivered to said stacker;

said stacker comprising at least one staging belt adapted to receive said portion from said stream and deposit said units serially on one of said transfer sheets in a transfer direction, a mechanism for withdrawal of said one of said



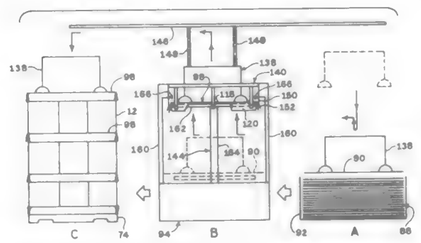
transfer sheets from said sheet stack, as said units are serially deposited to form an imbricated layer comprising said portion and said one of said transfer sheets, said stacker further adapted to deposit said imbricated layer on a removable support and to deposit each successive imbricated layer on an immediately preceding said imbricated layer thereby forming a bundle.

5,336,042

PALLETIZER WITH CAP FORMING

Ernest P. Winski, Oshkosh, and Thomas L. Savoldi, Menasha, both of Wis., assignors to Kinetic Robotics Inc., Menasha, Wis.

Filed Mar. 5, 1992, Ser. No. 847,581
Int. Cl.[5] B65G *57/00*
U.S. Cl. 414—789.5 **29 Claims**



1. Palletizing apparatus for placing a load of material on a pallet in one or more layers, and thereby creating a pallet load, with a formed cap on at least one such layer, said palletizing apparatus comprising:

(a) a load forming station, for receiving a pallet and for receiving material onto the pallet in a layer, wherein such material has a length and a width, and corresponding sides thereabout;

(b) transfer apparatus for placing material onto the pallet at said load forming station;

(c) forming and placing apparatus for forming a cap and pacing such cap on such material in said load forming station, such cap entering said palletizing apparatus as a formable flat sheet, and departing said palletizing apparatus on a pallet load as a formed cap on such material, said forming and placing apparatus comprising

(i) a former for forming the flat sheet into a formed cap, such flat sheet comprising a main panel having a length and a width defining edges of the main panel, generally corresponding to the length and width and the corresponding sides of the material, edge panels extending from the main panel at the edges, and operative lines of bending weakness between the edge panels and the main panel, and

(ii) placing apparatus for placing the cap on such material, said placing apparatus being adapted to place a first such formable flat sheet on a first layer of material in a generally horizontal orientation, with the edges panels of the flat sheet extending outwardly from the sides of the layer, and to place a second such formable flat sheet on a second layer of material, the second layer overlying the first formable flat sheet, and

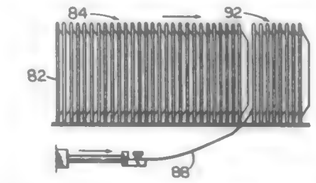
said former being adapted for folding edge panels of the first flat sheet, and for folding edge panels of the second flat sheet while holding edge panels of the first sheet so folded.

5,336,043

METHOD AND APPARATUS FOR HANDLING STACKED PRODUCTS

Bernard R. Bader, 6802 Bristol Way, Yakima, Wash. 98908

Filed Feb. 7, 1992, Ser. No. 832,447
Int. Cl.[5] B65G *47/26*
U.S. Cl. 414—796 **6 Claims**



1. A method for handling stacked products moving forward on a product line, comprising the steps of:

counting stamping actions of a press machine as being indicative of a stacked product count as said stacked products move forward on the product line;

accumulating said stacked product count of said stamping actions;

inserting a separator device between two adjacent stacked products at a reference position after a predetermined number of stacked products have passed a fixed reference point;

moving said separator device forward so as to separate said predetermined number of sucked products from other stacked products so as to create a counted unit according to said predetermined number of said stacked products; and

returning said separator device to said fixed reference position.

5,336,044

BLADE CONTAINMENT SYSTEM AND METHOD

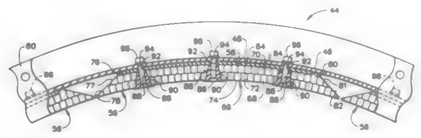
James M. Forrester, Centerville, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Aug. 6, 1993, Ser. No. 102,922
Int. Cl.[5] F01D *25/24*
U.S. Cl. 415—9 **10 Claims**

1. In a gas turbine engine having a plurality of radially extending blades mounted on an annular disk, the blades and disk being rotatable about a longitudinal axis of the engine, a blade containment system comprising:

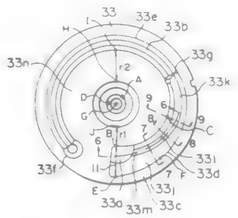
VOL 1165 ISS 2 AG 9 1994 UMI

a) an annular casing positioned radially outward of the blades and in surrounding relationship with the blades;
b) a plurality of circumferentially segmented panels disposed about an interior surface of said casing, said panels being radially outward of the blades;
c) means for supporting said panels so as to fix each of said panels with respect to said forward portion of said casing during normal operation of the engine and so as to allow



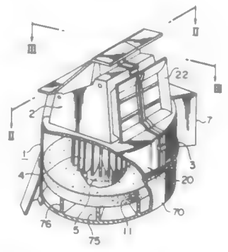
an impacted one of said panels to slide circumferentially when said impacted panel is acted upon by a predetermined blade force caused by a released portion of one of the blades impacting said impacted panel;
d) ramp means for allowing said impacted panel to slidingly engage at least a circumferentially adjacent one of said panels when said impacted panel is impacted by the released blade portion so as to dissipate kinetic energy of the released blade portion.

5,336,045
FUEL PUMP
Hideki Koyama, Okazaki, and Takashi Hamaoka, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jan. 21, 1993, Ser. No. 6,535
Claims priority, application Japan, Jan. 22, 1992, 4-009294
Int. Cl.[5] F04D *29/40, 5/00*
U.S. Cl. 415—55.10 **11 Claims**



1. A fuel pump comprising:
a disk-like impeller to be rotatingly driven;
casing halves which receive said impeller, each casing half having a C-shaped flow channel formed substantially along an outer periphery of said impeller;
each casing half comprising a pressurizing groove constituting a part of said flow channel, said groove having a predetermined sectional lateral length and being formed along the outer periphery of said impeller;
an inlet portion formed at one end of said flow channel and enlarged inside of the outer periphery of said impeller so that the sectional lateral length of the channel at the inlet portion is larger than that of said pressurizing groove, said inlet portion having an inner wall which gradually extends toward the outer periphery of the impeller in a direction of rotation of the impeller;
a suction port for sucking fuel, which extends in an axial direction of said impeller and is positioned inside of the outer periphery of said impeller, said suction port being opened to said inlet portion and merging smoothly therewith for preventing loss of pressure which causes vapor in the fuel;
a discharge port communicating with the other end of said flow channel to discharge the fuel; and
an introduction groove formed between said inlet portion and said pressurizing groove, a sectional lateral length of said introduction groove gradually becoming smaller from said inlet portion toward said pressurizing groove, and a sectional vertical length of said introduction groove gradually becoming smaller from said inlet portion toward said pressurizing groove, while a deepest portion of the introduction groove takes a course gradually shifting from the exit of said suction port toward the outer periphery of said impeller.

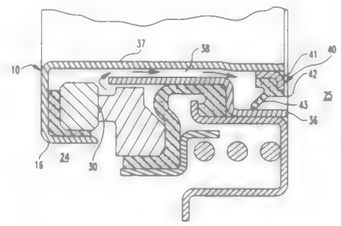
5,336,046
NOISE REDUCED CENTRIFUGAL BLOWER
Katsuhiko Hashimoto, Tsuchiura; Yoshinori Fukasaku; Shinichi Fujino, both of Hitachi, and Mitsuaki Mirumachi, Mito, all of Japan, assignors to Hatachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., Japan
Filed Oct. 7, 1992, Ser. No. 957,103
Claims priority, application Japan, Oct. 9, 1991, 3-261730
Int. Cl.[5] F04D *29/66*
U.S. Cl. 415—119 **9 Claims**



1. A blower, comprising a motor surrounded by an outer peripheral wall, a fan operatively arranged to be rotatably driven by the motor, and a scroll casing in which said fan is disposed, wherein said scroll casing has a first side wall having an air intake opening and a second side wall attached to said outer peripheral wall facing said first side wall and having an opening for a shaft of said motor, and a layer of a porous member is formed on and held by an internal surface of said second side wall wherein a space is provided between said porous member and said second side wall of said scroll housing said space surrounding an outer periphery of said motor, and said second side wall is so configured to at least partially constitute an air passage for guiding cooling air to said motor.

6. A blower for an automotive air conditioner wherein a blowing passage of the blower is defined by the operation of a scroll casing unit having an inside/outside air changer provided around an inlet portion of a bell mouth and of a porous member operatively associated with said second casing part, wherein said second casing unit includes flange portions separated generally at a central portion of a motor, one of said flange portions is positioned below a lower surface of a fan operatively associated with said motor and the other of said flange portions serves as a motor accommodation case covering a rear end portion of the motor, and said porous member is disposed between said split flange portions and is fixed by being sandwiched in the axial direction of a shaft of said motor, wherein a motor cooling air passage is formed in the motor accommodated case, an air layer is formed by said porous member and said motor accommodated case, and a plurality of ribs extending upright from a bottom wall of the second casing unit are brought into abutment against an adjacent wall surface of said porous member to define an air passage for introducing cooling air from said motor cooling air passage into the motor.

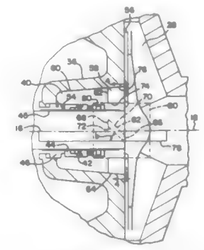
5,336,047
SELF-SEALING WATER PUMP SEAL
J. Steven Kolbouse, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.
Continuation of Ser. No. 917,775, Jul. 21, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 141,478
Int. Cl.[5] F16J *15/32*
U.S. Cl. 415—168 **12 Claims**



1. A water pump comprising:
a water pump housing having an outer wall with a coolant side and an opposite atmosphere side, said outer wall defining a main passageway through said outer wall and weep hole passageway extending between said main passageway and said atmosphere side;
a rotatable shaft disposed in said main passageway and extending in one direction beyond said coolant side and in the opposite direction beyond said atmosphere side; and
a self-sealing water pump seal positioned around said rotatable shaft and including:
(a) a primary seal mounted in said main passageway between the rotatable shaft and the housing to prevent vehicle coolant from escaping to said atmosphere side, said primary seal comprising first and second face seal components resiliently urged into an abutting and sealing relationship to one another, said first face seal component being attached to the rotatable shaft and said second face seal component being attached to the housing, whereby vehicle coolant that escapes through said primary seal is allowed to flow to said atmosphere side by way of said weep hole passageway; and
(b) a barrier positioned between said primary seal and said weep hole passageway and restricting the flow of coolant escaping from said primary seal so as to cause the deposition of solids out of said coolant to gradually form a secondary seal, wherein said barrier includes an elastomeric ring.

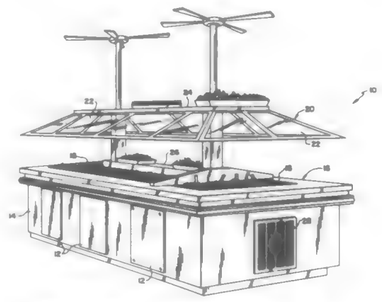
5,336,048
FLUID DIRECTING DEVICE FOR SEAL CHAMBER
Nicolas W. Ganzon; Charles A. Cappellino, both of Seneca Falls, and George Wilson, Skaneateles, all of N.Y., assignors to Goulds Pumps, Incorporated, Seneca Falls, N.Y.
Filed Dec. 22, 1992, Ser. No. 994,892
Int. Cl.[5] F01D *25/18*
U.S. Cl. 415—175 **9 Claims**

1. A flow directing device for a fluid filled seal chamber in a centrifugal fluid handling apparatus, the apparatus having a seal chamber housing, a rotary shaft extending through the housing with an impeller mounted on one end thereof, and a rotary seal mounted about the shaft, the rotary shaft and housing defining said seal chamber opening toward the impeller, the flow directing device comprising:
a plurality of angled vanes radially depending about a circumferential portion of the seal chamber to direct the flow



of fluid in the seal chamber along the rotary shaft, said vanes being attached to the housing.

5,336,049
SALAD BAR FAN
Kenneth M. Herman, Lanham, Md., assignor to Shoppers Food Warehouse Corp., Lanham, Md.
Filed Sep. 26, 1991, Ser. No. 765,934
Int. Cl.[5] A47F *10/02, 10/06*
U.S. Cl. 416—146 R **19 Claims**



1. A display assembly comprising:
a base unit, said base unit having first and second sides, first and second ends, and an upper display surface;
a cover unit mounted so as to be in spaced overlying relation to said upper surface of said base unit; and
at least one fan assembly mounted above said cover unit for circulating air above said upper surface, thereby to provide an air curtain for said upper surface;
wherein each said fan assembly is fixedly secured to said cover unit.

5,336,050
VENTILATOR FAN DEVICE
Joseph Guida, Turnersville, and Hani M. Odeh, Sicklerville, both of N.J., assignors to Penn Ventilator Co. Inc., Philadelphia, Pa.
Filed May 6, 1993, Ser. No. 58,976
Int. Cl.[5] F01D *5/22*
U.S. Cl. 416—186 R **23 Claims**

1. A ventilator fan device comprising:
a male wheel forming an end plate and having an axis of rotation, said end plate having an annular portion including a plurality of slots on the surface thereof and terminating in an annular rim, said end plate having hub means for mounting said wheel to a shaft;
a female wheel forming a ring inlet for axial inlet of air, said

VOL 1165 ISS 2 AG 9 1994 UMI

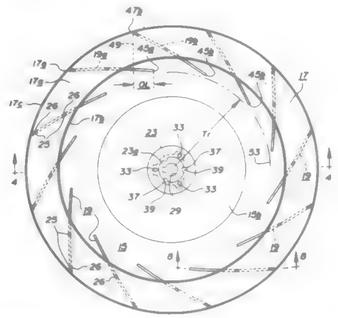
ring inlet having an inner annular lip defining said inlet, and annular inwardly curved face extending from said inlet to an outer terminal lip having substantially the same diameter as said end plate annular rim, said curved face having a plurality of holes on the surface thereof;

a plurality of longitudinally straight arcuate blades, each blade extending between said plate annular portion and said curved face, said blades having a first end conforming to said plate annular portion and having tabs for engagement with said slots, said blades also having a second end conforming to said curved inlet face and having tabs for engagement with said holes, said slot and holes positioning said blades for radial discharge of air upon rotation about said axis, said curved face having a rise of curvature equal to about 1/32 of the length of the chord of said blade; and

substantially uniform robotic welds permanently affixing said blades to said plate annular portion and said ring inlet curved faced.

17. A method of assembling a ventilator fan device comprising the steps of:

forming a male wheel into an end plate having an axis of rotation, said end plate having an annular portion including a plurality of slots on the surface thereof and terminating in an annular rim, said end plate having hub means for mounting said wheel to a shaft;



forming a female wheel into a ring inlet for axial inlet of air, said ring inlet having an inner annular lip defining said inlet, and an annular inwardly curved face extending from said inlet to an outer terminal lip having substantially the same diameter as said end plate annular rim, said curved face having a plurality of holes in the surface thereof;

forming a plurality of longitudinally straight arcuate blades, each having a rise of curvature equal to about 1/32 of the length of the chord of said blade, aligning each blade between said plate annular portion and said curved face, said blades having a first end conforming to said plate annular portion and engaging said slots with tabs on said blade first end, said blades also having a second end conforming to said curved inlet face and engaging said holes with tabs on said second end, said slot and holes positioning said blades for radial discharge of air upon rotation about said axis; and

welding said blades with substantially uniform robotic welds to permanently affix said blades to said plate annular portion and said ring inlet curved face, said blades being configured such that the trailing edge of each blade is positioned proximate the outside diameter of said end plate and said outer terminal lip of said ring inlet to define an outer circle of rotation and the leading edge of each of said blades extends radially inward of the inner annular lip of said ring inlet.

5,336,051

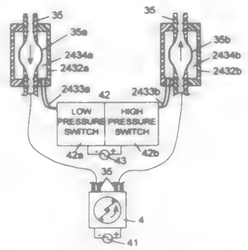
INLINE NON-INVASIVE PRESSURE MONITORING SYSTEM FOR PUMPS

Yehuda Tamari, 21 Singworth St., Oyster Bay, N.Y. 11771-3703

Division of Ser. No. 852,931, Mar. 13, 1992, Pat. No. 5,186,431, which is a continuation of Ser. No. 683,093, Apr. 10, 1991, abandoned, which is a continuation of Ser. No. 410,845, Sep. 22, 1989, abandoned. This application Dec. 31, 1992, Ser. No. 999,215

Int. Cl.[5] **F04B** *49/02*

U.S. Cl. 417—19 **20 Claims**



1. A noninvasive pressure monitoring system for pumps, said system comprising:

(a) a length of tubing having at least one thin walled portion;

(b) a pump having a drive means for pumping fluid through said tubing;

(c) a pressure isolating chamber surrounding said thin walled portion said thin walled portion sealed within said chamber with said chamber having a monitoring port defined therein;

(d) a fluid responsive transducer means connected to said pressure isolating chamber through said monitoring port, said transducer means connected to said drive means for controlling the speed of the pump when the pressure varies from a predetermined value.

5,336,052

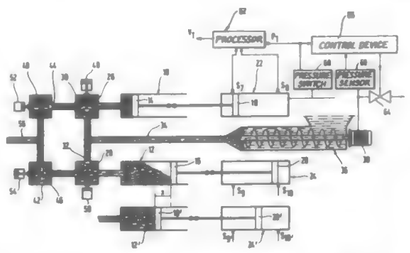
VISCOUS MATERIAL PUMP

Jörg-Peter Zöllner, Glinde, and Winfried Bussmann, Geesthacht, both of Fed. Rep. of Germany, assignors to Abel Pumpen GmbH & Co. KG, Buchen, Fed. Rep. of Germany

Filed Apr. 28, 1993, Ser. No. 54,409

Int. Cl.[5] **F04B** *35/02*

U.S. Cl. 417—20 **5 Claims**



1. A pump for pumping viscous material including in combination:

at least a pump cylinder having a supply line and a delivery line and having a pump piston connected to a drive piston of a hydraulic drive cylinder in order to be operated between a suction stroke for filling the viscous material into said pump cylinder and a pumping stroke for conveying the viscous material out of said pump cylinder;

end position transmitters structured and arranged to said hydraulic drive cylinder for generating a signal indicating the end position of said drive piston;

valve means communicating with said delivery outlet of said pump cylinder and controlled by the signals of said end position transmitters, which valve means operates to connect said pump cylinder to said supply line during said suction stroke and to said delivery line during said pumping stroke, respectively;

pressure switch means connected to said hydraulic drive cylinder for generating a pressure signal in case pressure increase occurs when said pump piston has left its end position at the beginning of said pumping stroke;

a time measuring means for determining the time duration of the travel of said pump piston between said end position at the beginning of said pumping stroke and said occurrence of said pressure signal;

drive means,

supply means driven by said drive means for conveying the viscous material to be pumped into said supply line for delivery to said pump cylinder, with at least one of said drive means and said supply means being controllable to change the flow volume of the viscous material supplied to said pump cylinder; and

comparator means for comparing said time duration of said pumping stroke until said occurrence of said pressure increase with a predetermined time interval and for generating a signal when said measured time duration exceeds a predetermined time interval, with aid signal being transmitted to at least one of said drive means and said supply means for increasing the flow volume of the viscous material to said pump cylinder.

5,336,053

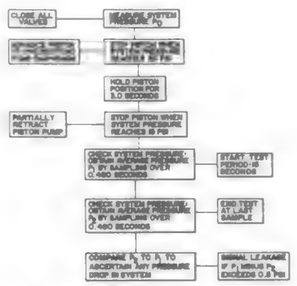
METHOD OF TESTING FOR LEAKAGE IN A SOLUTION PUMPING SYSTEM

Richard D. Wynkoop, Des Plaines, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Jan. 29, 1993, Ser. No. 10,728

Int. Cl.[5] **F04B** *51/00*

U.S. Cl. 417—53 **10 Claims**



1. A method of testing a pumping system including pump means which creates a positive liquid pressure in the system during a pumping stroke, said method comprising the steps of:

operating said pump means to create a positive liquid pressure within the pumping system;

measuring the pressure of liquid in the system to obtain a first liquid pressure P_1;

waiting a predetermined time interval after measurement of pressure P_1;

measuring the pressure of liquid in the system to obtain a second liquid pressure P_2;

comparing the pressure P_1 to the pressure P_2 to ascertain any drop in pressure in the system; and

providing a signal indicating leakage in the system when the difference between P_1 and P_2 exceeds a predetermined value.

5,336,054

AUTOMATIC WATER SHUT-OFF DISPENSERS

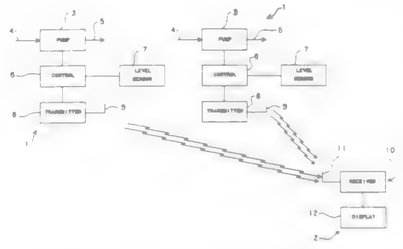
Khen H. Seah; Yeow S. Heng, and Chong W. Chua, all of Singapore, Singapore, assignors to Port of Singapore Authority, Singapore, Singapore

Filed Jun. 18, 1992, Ser. No. 900,725

Claims priority, application United Kingdom, Jun. 20, 1991, 9113301

Int. Cl.[5] **F04B** *49/06*

U.S. Cl. 417—2 **8 Claims**



1. A pumping system for simultaneously supplying a fluid to plural tanks, comprising plural pumping arrangements each adapted to pump a fluid, each pumping arrangement comprising a pump, an inlet for the pump and an outlet for the pump, the pump being associated with a control arrangement which is associated with a level sensor, the control arrangement and level sensor adapted to be moved sequentially from tank to tank, with the level sensor adapted to be inserted sequentially into one of said plural tanks, said one tank being connected to the outlet of the pump, the control arrangement being adapted to de-activate the pump when the level sensor senses fluid, each pumping arrangement further including a transmitter adapted to transmit a signal when the control arrangement de-activates the pump.

5,336,055

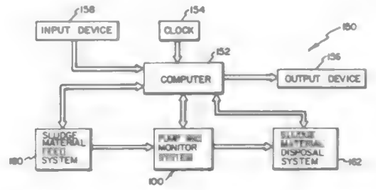
CLOSED LOOP SLUDGE FLOW CONTROL SYSTEM

Thomas M. Anderson, Hugo, Minn., assignor to Schwing America, Inc., White Bear, Minn.

Continuation-in-part of Ser. No. 981,982, Nov. 24, 1992, Pat. No. 5,257,912, which is a division of Ser. No. 595,457, Oct. 10, 1990, Pat. No. 5,106,272. This application Aug. 30, 1993, Ser. No. 113,841

Int. Cl.[5] **F04B** *35/02*

U.S. Cl. 417—63 **10 Claims**



1. A method of controlling operation of a sludge material handling system, the sludge material handling System having a positive displacement piston/cylinder pump, having a sludge material feed system which delivers sludge material to the positive displacement pump, and having a sludge material disposal system which receives and disposes of sludge material from the positive displacement pump, the positive displace-

VOL 1165 ISS 2 AG 9 1994 UMI

ment pump having an inlet for receiving sludge material delivered by the sludge material feed system and an outlet through which sludge material is delivered to the sludge material disposal system under pressure, the sludge material received at the inlet being partially compressible such that a reduction in volume of the sludge material occurs during a pumping cycle as it is pumped from the inlet to the outlet, the method comprising:

sensing a first parameter, the first parameter being related to operation of the pump and bearing a known relationship to an actual volume of sludge material delivered during a pumping cycle;

determining from the sensed first parameter an output value;

providing a control signal as a function of the output value; and

controlling the sludge material disposal system in response to the control signal.

5,336,056

VARIABLE CAPACITY SWASH PLATE TYPE REFRIGERANT COMPRESSOR HAVING A DOUBLE FULCRUM HINGE MECHANISM

Kazuya Kimura, and Hiroaki Kayukawa, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

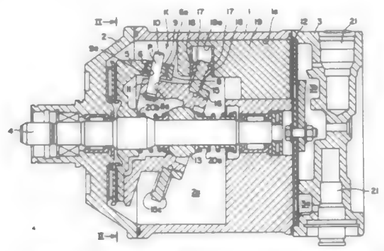
PCT No. PCT/JP92/00384, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO92/17705, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 27, 1992, Ser. No. 952,836

Claims priority, application Japan, Mar. 30, 1991, 3-067365

Int. Cl.[5] F04B *1/12*

U.S. Cl. 417—222.1 **7 Claims**



1. A variable capacity single headed piston swash plate type compressor comprising:

an axially extended cylinder block having front and rear ends thereof and a plurality of axial cylinder bores formed therein;

a front housing sealingly connected to the front end of said cylinder block and defining a closed crank chamber therein extending in front of ends of the cylinder bores;

a rear housing connected to the rear end of said cylinder block and defining therein a suction chamber for a refrigerant gas before compression and a discharge chamber for the refrigerant gas after compression;

a drive shaft rotatably held by said cylinder block and said front housing with a longitudinal axis thereof extending through said crank chamber;

a rotary support element mounted on said drive shaft to be rotated therewith in said crank chamber;

a variable inclination rotary swash plate assembly pivotally held by a hinge means and slidably mounted on said drive shaft via a slidable sleeve element for rotation about an axis perpendicular to the axis of said drive shaft to thereby vary an angle of inclination thereof;

a plurality of reciprocatory single headed pistons fitted in said cylinder bores of said cylinder block and engaged with said swash plate assembly via a motion conversion means for converting rotation of said swash plate assembly into reciprocation of said single headed pistons in said cylinder bores; and

a control valve means for adjusting a fluid pressure in said crank chamber to thereby control the capacity of said compressor,

said hinge means being provided with a pair of hinges separately coupled to said swash plate assembly to provide two fulcrum positions about which said swash plate assembly is pivotally hinged, said two fulcrum positions being spaced apart from one another with respect to a center position which lies in a plane including the axis of said drive shaft and passing through a predetermined position of said swash plate assembly at which said swash plate assembly is engaged with one of said plurality of pistons brought to a top dead center thereof.

5,336,057

MICROPUMP WITH LIQUID-ABSORPTIVE POLYMER GEL ACTUATOR

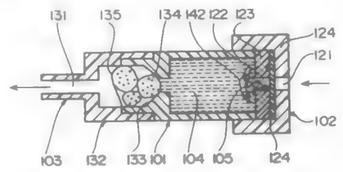
Toshio Fukuda, Nagoya; Shinobu Hattori, and Shigenobu Nagamori, both of Kyoto, all of Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Division of Ser. No. 954,310, Sep. 30, 1992, Pat. No. 5,288,214. This application Jul. 20, 1993, Ser. No. 94,253

Claims priority, application Japan, Sep. 30, 1991, 3-280849; Oct. 8, 1991, 3-290861

Int. Cl.[5] F04B *45/00*

U.S. Cl. 417—395 **7 Claims**



1. A micropump for supplying and feeding fluid comprising:

a pump body member defining a tank chamber to contain fluid;

a fluid inlet portion mounted on said pump body member for receiving a fluid to be contained in said tank chamber;

a fluid outlet portion including an outlet port mounted on said pump body member for discharging fluid contained in said tank chamber;

an actuator for decreasing a volume of the tank chamber to discharge fluid contained in said tank chamber, said actuator comprising a liquid-absorptive polymer gel which increases in volume by absorbing a fluid supplied to said actuator from said fluid inlet portion, wherein the increase in volume of the actuator results in a decrease in volume of the tank chamber so as to discharge fluid in the tank chamber through said fluid outlet portion;

an outlet valve means disposed between said tank chamber and said fluid outlet portion, said outlet valve means comprising a plurality of sealing means formed of a liquid-absorptive polymer gel for opening and closing said outlet port; and

a deviating means disposed between said sealing means and said outlet portion for deviating said sealing means to a closing direction.

5,336,058

SCROLL-TYPE COMPRESSOR WITH VARIABLE DISPLACEMENT MECHANISM

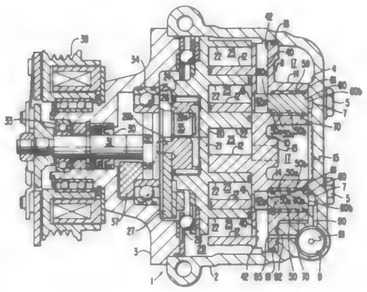
Hiroyuki Yokoyama, Takasaki, Japan, assignor to Sanden Corporation, Isesaki, Japan

Filed Feb. 18, 1993, Ser. No. 19,281

Claims priority, application Japan, Feb. 18, 1992, 4-030664

Int. Cl.[5] F04C *18/02*

U.S. Cl. 417—299 **8 Claims**



1. A variable displacement, scroll-type compressor comprising:

a housing having a fluid inlet port and a fluid outlet port;

a fixed scroll member having a first plate and a first spiral element extending from a first face of said first plate, said fixed scroll member being fixedly disposed in said housing

a discharge port formed at a central portion of said first plate;

an orbiting scroll member having a second plate and a second spiral element extending from a first face of said second plate, such that said first spiral element engages said second spiral element to form a plurality of sealed-off fluid pockets having variable volumes;

a driving mechanism to effect an orbital motion of said orbiting scroll member and a rotation-preventing mechanism for preventing said orbiting scroll member from rotating during its orbital motion, whereby the volumes of said sealed-off fluid pockets change during said orbital motion of said orbiting scroll member;

a suction chamber formed between an outer peripheral surface formed by said fixed scroll member and said orbiting scroll member and an inner peripheral surface of said housing, said suction chamber communicating with said fluid inlet port;

a discharge chamber placing said discharge port in communication with said fluid outlet port;

a pair of bypass passages for selectively placing a pair of corresponding, intermediately located sealed-off fluid pockets in communication with said suction chamber;

a pair of cylinders, each of which is formed within a projection from said fixed scroll member;

at least one valve member corresponding to each of said bypass passages and having a first axial end and a second axial end slidably disposed within one of said pair of cylinders for closing and opening one of said bypass passages, said at least one valve member receiving fluid pressure from one of said sealed-off fluid pockets at said first axial end thereof;

a pair of elastic members, each of which is located solely within one of said cylinders and biases said at least one valve member to open said corresponding bypass passage;

communication control means for selectively controlling a first communication passage between said suction chamber and a cavity defined by said second axial end of each of said at least one valve member and said cylinder in which said at least one valve member is disposed; and

a second communication passage between said discharge chamber and said cavity; wherein said projection is an axial projection from a second face of said first plate, said projection comprising an end surface contacting an inner bottom end surface of said housing; each of said pair of cylinders formed in said projection; and a communication path linking cavities of each of said cylinders, said communication path formed between said end surface of said projection and said inner bottom end surface of said housing.

5,336,059

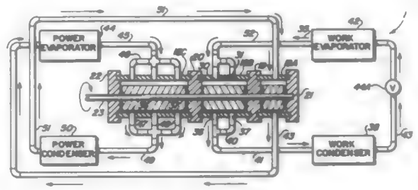
ROTARY HEAT DRIVEN COMPRESSOR

C. Allen Rowley, Mesa, Ariz., assignor to E Squared Inc., Mesa, Ariz.

Filed Jan. 7, 1993, Ser. No. 72,412

Int. Cl.[5] F04B *17/00;* **F01K** *25/00*

U.S. Cl. 417—348 **6 Claims**



1. A rotary heat driven compressor comprising:

a fluid conducting work loop comprising a condenser means connected with an evaporator means,

a rotary engine means comprising a hollow cylinder the periphery of the hollow interior defining an oblong cross sectional configuration, and a rotor mounted within said cylinder offset from the center line of said cylinder with the periphery of said rotor in one area being juxtapositioned to in a vapor tight arrangement with the inside periphery of said cylinder,

reciprocating vane means diagonally mounted on said rotor to extend outwardly thereof for following the inside periphery of said cylinder upon rotation of said rotor,

said reciprocating vane means comprising a pair of vane members interconnected by a rod which rod extends through an opening diagonally positioned in said rotor,

one of said vane members being movable into said opening when said rotor is in said one area while the other of said vane members at that time extending laterally outwardly of said rotor,

said reciprocating vane means comprising a second pair of vane members with each pair being mounted on said rotor ninety degrees from the other,

inlet port means formed to extend into the hollow interior of said cylinder on one side of said vane means,

outlet port means mounted to extend through said cylinder on the other side of said vane means, and

conduit means for connecting said inlet port means to the output end of said evaporator means and said outlet port means to the input end of said condenser means for fluid transmission.

5,336,060

INTEGRALLY FORMED COUNTERWEIGHT FOR ROTOR END RING

Phillip A. Tomell, Adrian, and Michael J. Maertens, Tecumseh, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Jul. 30, 1992, Ser. No. 922,188

Int. Cl.[5] F04B *35/04;* **F04C** *29/02;* **F16F** *15/28*

U.S. Cl. 417—410 D **9 Claims**

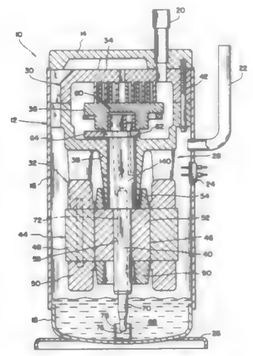
1. A hermetic compressor assembly, comprising;

a housing;

an oil sump within said housing;

VOL 1165 ISS 2 AUG 9 1994 UMI

a motor-compressor unit disposed within said housing, said unit comprising electric motor having a rotor, an end ring connected to said rotor, and a compressor having a crankshaft coaxially disposed within said rotor and drivingly engaged thereby, said crankshaft extending from a lower axial end of said rotor into said oil sump and including means for drawing oil from said oil sump for delivery through an oil passageway in said crankshaft to the compressor for lubrication thereof; and

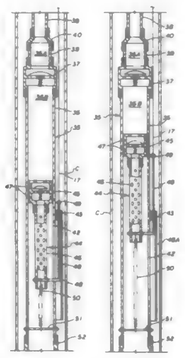


a counterbalance weight formed within said rotor end ring comprising an monolithic annular body member having eccentric mass with respect to the axis of rotation of said rotor, said end ring including a central opening through which said crankshaft extends and a generally smooth annular lower surface facing said oil sump, whereby said rotor end ring may operably rotate without causing turbulence and agitation of oil in said oil sump.

5,336,061
SOLAR POWERED RELATIVELY BALANCED PUMPING SYSTEM

William P. Armstrong, 7311 Barrington Ct., Wichita, Kans. 67212

Filed Jan. 21, 1993, Ser. No. 6,646
Int. Cl.[5] F04B *35/04*
U.S. Cl. 417—411 **17 Claims**



1. An electric powered relatively balanced pumping system having relatively constant and balanced torque requirements for the up and down stroke pump cycle comprising:

a pumping unit at the ground surface including a frame, a longitudinal fulcrum beam pivotally mounted on said frame and having opposed first and second ends, a large diameter flywheel rotatably mounted on said frame and connected with said fulcrum beam for pivoting same, a smaller diameter drive wheel rotatably mounted on said frame and connected with said flywheel for rotating said flywheel, electric motor means operatively connected with said drive wheel and with a source of electrical energy for rotating said drive wheel, a thin steel lift wire connected at an upper end to said fulcrum beam first end and at a lower end to a downhole fluid pump lift rod for moving same in reciprocating movement, and adjustable counterweight means connected at said fulcrum beam second end;

a downhole fluid pump assembly including a pump cylinder having a fluid discharge port at an upper end and a fluid inlet at a lower end, a fluid discharge conduit connected at a lower end to said pump discharge port and extending to the ground surface, a first check valve mounted between said discharge port and said discharge conduit lower end for controlling fluid flow therethrough, a hollow cylindrical piston slidably mounted in said pump cylinder for reciprocating movement relative thereto between an upper position and a lower position, a second check valve mounted in said piston for controlling fluid flow therethrough; and

a short lift rod connected at an upper end to said pumping unit lift wire and at a lower end with said piston; and

a constant tension return spring connected between said piston and said cylinder for returning said piston to the lower position, the spring tension being a predetermined percentage of the weight of the column of fluid to be lifted by said piston, and said adjustable counterweight means adjusted to provide a counterbalance weight of a predetermined percentage of the spring tension;

upon energization, said motor rotates said drive wheel and said flywheel to move said fulcrum beam first and second ends up and down and said piston is lifted on the up stroke by said lift wire and said short lift rod, the lifting force aided by said counterweight means, and said piston and said short lift rod are returned to the lower position by the force of said tension return spring; and

on the down stroke of said piston, said first check valve closes and said second check valve opens to allow fluid to pass through said piston into said pump cylinder and on the up stroke, said first check valve opens and said second check valve closes and the upward movement of said piston forces the fluid in said pump cylinder through said first check valve and into said discharge conduit and on successive up strokes, the fluid is transported through said discharge conduit to the surface;

the tension force of said tension return spring and said counterbalance weight causing the torque forces required to be overcome by said electric motor to be relatively constant and balanced through each up and down stroke of the pump cycle.

5,336,062
MICROMINIATURIZED PUMP

Axel Richter, München, Fed. Rep. of Germany, assignor to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., München, Fed. Rep. of Germany

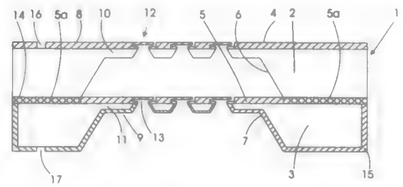
Filed Oct. 20, 1992, Ser. No. 920,584
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1990, 4006152
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—413 A **17 Claims**

1. An electrostatically actuatable microminiaturized pump comprising:

at least one first and one second pump body which are arranged one on top of the other and which are interconnected, at least one of said pump bodies comprising at least partially of a semiconductor material, and both pump bodies having electrically conductive regions, which are electrically insulated from one another;

at least one of said two pump bodies has a thin, flexible diaphragm;

at least one check valve is arranged within said thin, flexible diaphragm, said check valve being formed integrally with said thin, flexible diaphragm and having an inlet aperture



as well as a cover plate, which covers said inlet aperture and which merges with said thin, flexible diaphragm at one of its narrow sides;

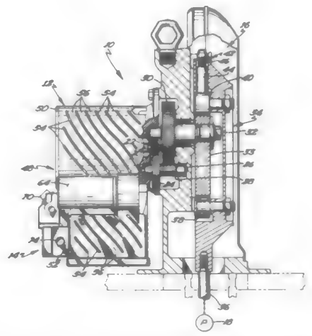
said thin, flexible diaphragm includes at least part of said electrically conductive region of said pump body; and

in relation to the surface dimensions of said thin, flexible diaphragm, said electrically conductive region of said other pump body being arranged at a short distance from said thin, flexible diaphragm.

5,336,063
ELECTRIC DRIVE PUMP

Kennth E. Lehrke, Maple Grove, and Neal A. Werner, Plymouth, both of Minn., assignors to Graco Inc., Golden Valley, Minn.

Continuation of Ser. No. 857,459, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 770,554, Oct. 3, 1991, Pat. No. 5,220,259. This application Apr. 29, 1993, Ser. No. 56,586
Int. Cl.[5] F04B *35/04*
U.S. Cl. 417—415 **1 Claim**



1. A DC motor drive system and reciprocable pump mounted in a compartmentalized explosion-proof housing for efficient cooling, comprising:

a) a main compartment in said housing, containing a main control board for said DC motor drive system, said main compartment comprising a casting having an external surface with a plurality of raised, substantially parallel fins, said fins projecting at least about one-half inch above said external surface;

b) a motor compartment in said housing, containing said DC motor drive, said motor compartment comprising a casting having an external surface with a plurality of raised, substantially parallel fins, said fins projecting at least about one-half inch above said external surface;

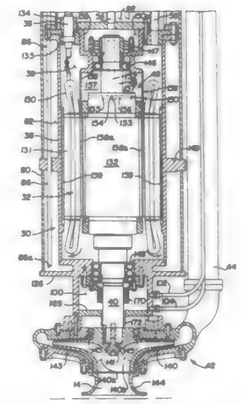
c) means for mounting at least one capacitor to the exterior surface of said housing, said at least one capacitor forming a part of said DC motor drive system;

d) a pump compartment in said housing, containing a reciprocable pump, and means for mechanically connecting said pump to said DC motor drive.

5,336,064
ELECTRIC MOTOR DRIVEN PUMP

Robert P. Lamers, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1993, Ser. No. 162,247
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—423.3 **20 Claims**



1. An electric motor driven pump for pumping a hazardous liquid, said pump comprising:

electric motor means including a housing, energizing means surrounded by said housing and a rotatable output shaft extending from said housing, said housing containing a non-hazardous liquid that displaces oxygen in said housing so that explosions due to an electrical spark caused by failure of said electric motor means are resisted;

impeller means connected to said output shaft for pumping said hazardous liquid; and

an outer shell surrounding said electric motor means, said outer shell and said electric motor means defining an outer space which contains an inert atmosphere and which isolates said electric motor means from said hazardous liquid that is being pumped so that explosions due to an electrical spark caused by failure of said electric motor means and the presence of a hazardous liquid vapor are further resisted.

5,336,065
MANUALLY OPERATED REFRIGERANT RECOVERY DEVICE

James B. Tieken, 2018 Woodlawn Ave., Indianapolis, Ind. 46203

Continuation of Ser. No. 950,463, Sep. 24, 1992. This application Jul. 19, 1993, Ser. No. 93,778
Int. Cl.[5] F04B *1/00*
U.S. Cl. 417—437 **7 Claims**

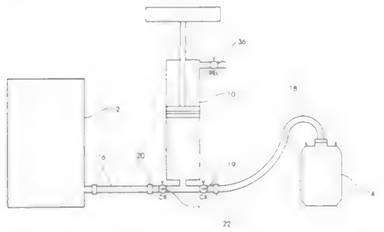
1. A device for manually transferring fluid in a pressurized fluid system, said pressurized fluid system including a fluid source and a fluid reservoir, said device comprising:

a cylinder including an inlet and an outlet;

a piston movably disposed in said cylinder, said piston defin-

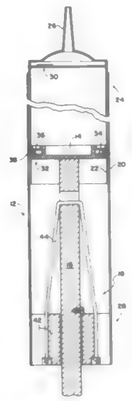
VOL 1165 ISS 2 AG 9 1994 UMI

ing a first and a second fluid chamber in said cylinder, said first fluid chamber being in fluid communication with both said inlet and said outlet;
a rod attached to said piston and extending axially outward from within said cylinder;
a handle attached to said rod external of said cylinder;
a first one-way check valve in fluid communication with said inlet, said first one-way check valve enabling fluid flow into said first fluid chamber;



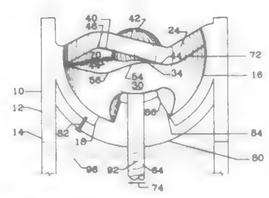
a second one-way check valve in fluid communication with said outlet, said second one-way check valve enabling fluid flow out of said first fluid chamber; and
adjustable valve means for selectively venting said second fluid chamber, said valve means restricting fluid flow out from said second fluid chamber to dampen movement of said handle.

5,336,066
BALLOON PUMP
Thomas M. Myers, 1509 Parker Bend, Austin, Tex. 78734, and James R. Mensing, Austin, Tex., assignors to Thomas M. Myers, Austin, Tex.
Filed Dec. 2, 1992, Ser. No. 984,985
Int. Cl.[5] F04B *39/10*
U.S. Cl. 417—555.1 **2 Claims**



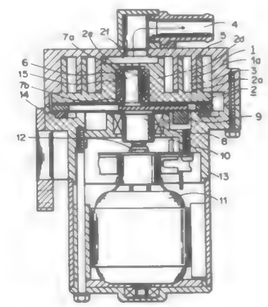
1. A balloon pump comprising:
(a) an elongated cylinder having an outlet end and a second end;
(b) a piston adapted to reciprocate within the cylinder, moving toward the cylinder outlet end during a pump stroke and in the opposite direction toward the cylinder second end during a return stroke;
(c) an elongated piston drive member connected at one end to the piston so that a base end opposite the end connected to the piston extends out of the cylinder through the cylinder second end, the piston drive member having a length sufficient for the base end to extend out of the cylinder second end when the piston is located at any point along the pump stroke;
(d) a drive member guide connected to the cylinder at the second end thereof and through which the piston drive member extends out of the cylinder second end;
(e) a one-way outlet valve mounted at the cylinder outlet end for allowing air from the cylinder to exit the cylinder therethrough during the pump stroke and for preventing air from entering the cylinder therethrough during the return stroke;
(f) a one-way inlet valve for allowing air to enter the cylinder therethrough during the return stroke and for preventing air from exiting the cylinder therethrough during the pump stroke; and
(g) a length of resilient material extending through a transverse opening through the piston drive member at a location near the piston and connected at both ends to the drive member guide, the resilient material for continuously biasing the piston toward the cylinder second end with sufficient force to perform the return stroke by raising the cylinder with respect to the piston drive member when the pump is positioned simultaneously vertically and is supported on the base end of the piston drive member.

5,336,067
SPHERICAL ENGINE
Leon Lim, 29 Red Oak Drive, Richmond Hill, Ontario, Canada L4B 1V5
Filed Jun. 9, 1993, Ser. No. 72,306
Int. Cl.[5] F04C *2/00*
U.S. Cl. 418—49 **21 Claims**



1. A nutating engine comprising:
a casing having a concave bearing surface forming part of a sphere having a notional centre;
a head defining with said concave bearing surface a chamber;
a rotor contained within said chamber;
said rotor having a spherical seat complementary to said bearing surface and an upper surface,
said upper surface and said head forming mutually confronting surfaces each of which has a plurality of cusps alternating with rounded cavities, together forming a plurality of pockets therebetween, the volume of which changes as said rotor undergoes nutational rotation with respect to said head,
a drive shaft connect to said rotor for rotation therewith;
said cusps disposed on said rotor including a first, generally aligned pair respectively locating on opposite sides of said notional centre, and a second pair of minor cusps disposed on said confronting surface thereof at right angles to said first pair of cusps as seen in plan view, said second pair of cusps having a lesser height above rounded cavities associated with said rotor than said first pair of cusps; and
a rocking mechanism coupling said drive shaft to said rotor to permit said rotor to rock in a plane containing said first pair of cusps and to constrain relative rotational movement between said rotor and said drive shaft in other planes.

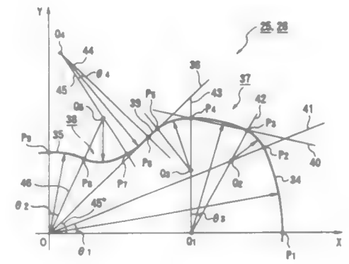
5,336,068
SCROLL-TYPE FLUID MACHINE HAVING THE ECCENTRIC SHAFT INSERTED INTO THE MOVING SCROLL
Mutsuo Sekiya; Satoshi Asada, and Katsuyuki Fukuhara, all of Sanda, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 875,820, Apr. 30, 1992, abandoned. This application Oct. 26, 1993, Ser. No. 141,477
Claims priority, application Japan, Jun. 12, 1991, 3-166240
Int. Cl.[5] F01C *1/04;* **F04C** *18/16*
U.S. Cl. 418—55.2 **4 Claims**



1. A scroll-type fluid machine comprising:
a fixed scroll having a fixed scroll portion;
a moving scroll including a moving scroll portion and a projecting portion projecting to said fixed scroll side with said moving scroll having a shaft hole at a center thereof, said moving scroll portion of said moving scroll being slidably engaged with said fixed scroll portion of said fixed scroll without rotating on an axis of said moving scroll to form at least one compression space;
a moving scroll shaft eccentrically connected to a driving shaft of a motor, said moving scroll shaft being inserted into said shaft hole of said moving scroll;
at least one moving scroll bearing disposed in said shaft hole for supporting said moving scroll shaft; and
a discharge opening formed at a center of said fixed scroll for discharging fluid compressed in said compression space through a discharge space being in connection with said discharge opening, said discharge space being formed by a height of said projecting portion of said moving scroll which is lower than a height of said moving scroll portion of said moving scroll for discharging the fluid without being expanded again through said discharge space to achieve a high efficiency for the fluid machine.

5,336,069
ROTARY PISTON FLUID PUMP
Tatsuo Matsuyama, Gunma, Japan, assignor to Ogura Clutch Co., Ltd., Kiryr, Japan
Filed May 28, 1993, Ser. No. 69,088
Claims priority, application Japan, Mar. 15, 1993, 5-78651
Int. Cl.[5] F01C *1/18*
U.S. Cl. 418—206 **8 Claims**

1. An air pump comprising:
at least two rotors having different rotation phases and designed to come into rolling contact with each other, said rotors being rotatably contained in a rotor housing,
(a) a large arcuated surface having a radius, said radius of said large arcuated surface being equal to a radius of a housing inner circumferential surface and (b) a small arcuated surface having a radius of curvature obtained by subtracting said radius of the large arcuated surface from a distance between rotational centers of said rotors being formed on an outer circumferential surface of each of said rotors,
a transitional surface crossing a virtual boundary line extending from each of said rotational centers of said rotors at an angle of 45° with respect to central axes of the large and small arcuated surfaces of each of said rotors,
said transitional surface being an outer surface of the outer circumferential surface of each of said rotors, said transitional surface being located between said large arcuated surface and said small arcuated surface, said transitional surface comprising an outer transitional surface, an inner transitional surface and a flat connection portion,
said outer transitional surface being formed by connecting a plurality of convex-like arcuated curved surfaces,
wherein a first edge of said outer transitional surface is coupled to said large arcuated surface while a second edge of said outer transitional surface is coupled to said connection portion,
wherein a radius of a first one of said plurality of convex-like arcuated curved surfaces is smaller than a radius of a second one of said plurality of convex-like arcuated surfaces, and the radius of the second convex-like arcuated curved surface is larger than a radius of a third one of said plurality of convex-like arcuated curved surfaces,
wherein said first convex-like arcuated curved surface is adjacent to said large arcuated surface,



said inner transitional surfaces being formed by connecting a plurality of concave-like arcuated curved surfaces,
wherein a first edge of said inner transitional surface is coupled to said flat connection portion while a second edge of said inner transitional surface is coupled to said small arcuated surface,
wherein a radius of a first one of said plurality of concave-like arcuated curved surfaces is larger than a radius of a second one of said plurality of concave-like arcuated curved surfaces,
wherein said first concave-like arcuated curved surface is adjacent to said flat connection portion,
when a leading portion of said large arcuated surface of a first rotor of said rotors in a direction of rotation opposes a leading portion of said small arcuated surface of a second rotor of said rotors in the direction of rotation with a design clearance on a discharge port side, said flat connection portion between said outer and inner transitional surfaces of said second rotor being separated from said outer transitional surface of said first rotor on a suction port side,
a closed space being formed between said outer transitional surface of said first and said inner transitional surface of said second rotor so that said outer transitional surface of said first rotor and said inner transitional surface of said second rotor are not matable.

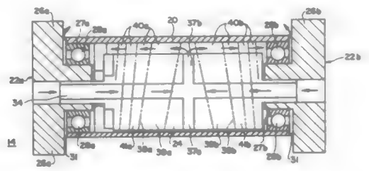
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,070

FLUID COMPRESSOR HAVING ROLLER BEARING

Takayoshi Fujiwara, Tokyo; Masayuki Okuda, Kanagawa, and Takashi Honjo, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 30, 1993, Ser. No. 128,646
Claims priority, application Japan, Jan. 29, 1993, 5-013521
Int. Cl.[5] F01C *21/08*
U.S. Cl. 418—220 18 Claims



1. A fluid compressor comprising:
a closed casing;
a cylinder disposed within said closed casing, said cylinder having at least one discharge end;
a columnar rotating body located inside said cylinder so as to extend in an axial direction of said cylinder and defining a space therebetween, said columnar rotating body including at least one spiral groove along an outer peripheral surface thereof and a spiral blade disposed within said at least one spiral groove, said spiral blade partitioning said space between said rotating body and said cylinder into a plurality of compression chambers;
drive means for rotating said cylinder and said columnar rotating body synchronously;
fluid supply means for supplying operating fluid to said compression chambers;
a bearing member rotatably supporting an end portion of said columnar rotating body with respect to said closed casing; and
a roller bearing assembly located at said at least one discharge end of said cylinder between an inner circumference of said cylinder and said bearing member, said roller bearing assembly rotatably supporting said at least one discharge end of said cylinder and passing said operating fluid therethrough.

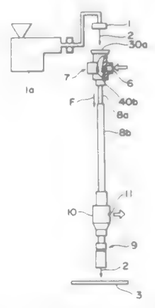
5,336,071

AIR GUN FOR THE PRODUCTION OF NON-WOVEN FABRIC AND NON-WOVEN FABRIC PRODUCING APPARATUS

Keiji Kobayashi; Akira Kaneko; Katsuya Hata, and Yoshinori Kobayashi, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 669,094, Mar. 13, 1991, abandoned.
This application May 19, 1993, Ser. No. 63,429
Claims priority, application Japan, Mar. 14, 1990, 2-63453; Mar. 14, 1990, 2-63454
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] B29C *47/00*
U.S. Cl. 425—66 16 Claims

1. An air gun for the production of a nonwoven fabric by delivering filaments as spun from a spinneret having spinning nozzles onto a screen belt while carrying the filaments together with an air stream, said air gun comprising:
(I) a first nozzle having a filament inlet for receiving filaments delivered from the spinning nozzle, including:
(a) a tapered tube in an interior of said filament inlet and reduced in diameter up to a middle portion thereof, and
(b) a first generally straight tube provided in the interior of said filament inlet, having said same diameter from the middle portion to an extreme end forming a filament outlet;
(II) a second nozzle connected to said first nozzle and including:
(a) a blow port encircling a periphery of the extreme end of the first generally straight tube, an inner surface of the blow port being gradually reduced in diameter from a blow port air inlet side and then gradually increased in diameter downstream of a maximum constriction portion thereof and then forms a second generally straight tube having a slightly larger diameter than that of the filament outlet, and
(b) a slight clearance formed between the inner surface of said blow port and an outer surface of said extreme end of said first generally straight tube;
(III) a compressed air inlet communicated with the blow port air inlet of the blow port, and air introduced into the



blow port from the compressed air inlet increases in flow velocity to a maximum at a time passing through the maximum constriction portion having the minimum inside diameter whereby air is jetted from the compressed air blow port so as to draw the filament;
(IV) an accelerator tube, that is a straight tube having a path inside thereof for carrying filaments, connected to the second nozzle in a direction downstream of the maximum constriction portion to conduct and deliver the filaments, the inside diameter to length ratio of said accelerator tube being set in the range of between 1:50 and 1:100; and
(V) an air flow rate regulator connected to the path for carrying filaments and an exhaust port branched off from said path for exhausting to the exterior a portion of the compressed air delivered from the path and an air cock connected to the exhaust port.

5,336,072

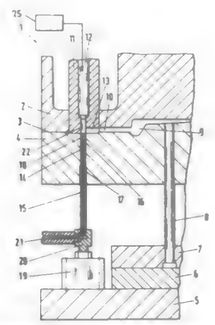
PRESSURIZED FLUID ASSISTED INJECTION MOLDING APPARATUS

Adam Auer, March-Holzhausen, Fed. Rep. of Germany, assignor to Peguform-Werke GmbH, Bötzingen, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 956,044
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 132986
Int. Cl.[5] B29C *45/16, 49/06*
U.S. Cl. 425—130 12 Claims

1. A fluid assisted injection molding apparatus, comprising a mold that defines a mold cavity and an inlet runner leading to the mold cavity; a nozzle comprising a nozzle body having a central passage connected at one end to an injection molding machine, a section of said central passage at an opposite end of said nozzle body forming an outer sleeve, said nozzle body providing a channel at said opposite end through which plasticized resin material can be injected into the mold cavity, the channel connecting the central passage with the inlet runner, said outer sleeve extending at an angle to said channel; a pressurized fluid conduit which is coaxial with said nozzle body

and includes an inner sleeve movable into and out of said outer sleeve of said nozzle for respectively blocking and establishing communication between said outer sleeve and said nozzle body channel, said conduit having a central passage connected at one end to a source of pressurized fluid, said conduit being closed at an opposite end, a channel in said conduit connecting the central passage thereof with the nozzle body channel upon blocking communication between the outer sleeve and the



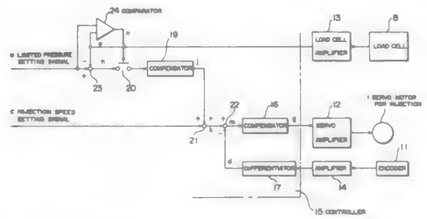
nozzle body channel, said channel extending at an angle relative to said central passage; means for axially shifting said conduit into and out of said outer sleeve, and said sleeves being of substantially like cross-section to effect snug engagement, whereby the inlet runner is alternately supplied with plasticized resin from said nozzle or with pressurized gas from said conduit upon the respective opening and blocking of communication between said outer sleeve and said nozzle body channel.

5,336,073

INJECTION PRESSURE LIMITING DEVICE FOR INJECTION MOLDING MACHINE

Kazuo Hiraoka, Chiba, Japan, assignor to Sumitomo Heavy Industries, Ltd., Japan

Filed Dec. 16, 1992, Ser. No. 991,257
Int. Cl.[5] B39C *45/00*
U.S. Cl. 425—145 4 Claims



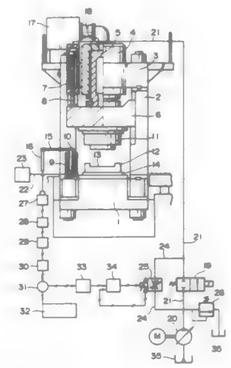
1. An injection molding machine comprising:
(a) a screw mounted within a heating cylinder for rotation and for reciprocating with back and forth linear motion;
(b) driving means for moving said screw forward to fill a resin into a cavity of a mold;
(c) means for detecting filling pressure with which the resin is filled into the mold and for generating a filling pressure detection signal;
(d) means for detecting screw speed and for generating a screw speed detection signal; and
(e) a controller including:
(i) speed feedback means, for controlling injection speed;
(ii) a pressure feedback circuit, connected to said speed feedback means, for limiting the filling pressure in accordance with a pressure limit setting signal, said pressure feedback circuit comprising:
(1) switching means, disposed within said pressure feedback circuit, for selectively starting pressure feedback control; and
(2) comparing means for comparing the pressure limit setting signal with the filling pressure detection signal and for generating a switch signal for operation of said switching means to start pressure feedback control when the filling pressure detection signal is equal to or larger than the pressure limit setting signal.

5,336,074

PRESSING SPEED CONTROLLER FOR HYDRAULIC PRESS

Masahiko Kashiwa, and Masanobu Kurumaji, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 7, 1992, Ser. No. 957,164
Claims priority, application Japan, Oct. 9, 1991, 3-262253
Int. Cl.[5] B29C *45/80*
U.S. Cl. 425—149 1 Claim



1. A hydraulic press including a fixed mold, a movable mold movable toward and away from said fixed mold, a hydraulic cylinder for moving and pressing said movable mold, and a hydraulic circuit for controlling a supply of a pressing oil in said hydraulic cylinder, wherein said hydraulic circuit comprises:
a variable capacity pump connected to said hydraulic cylinder via a first oil tube and a solenoid direction switching valve;
a second oil tube bypassing said solenoid direction switching valve;
a solenoid proportional control valve disposed in said second oil tube for controlling a flow of oil therethrough;
means for determining a speed of said movable mold;
a speed setting means for setting a pressing speed of said movable mold; and
a control means for comparing an output value of said determining means with a speed set-up value and for adjusting an opening of said solenoid proportional flow control valve based on said comparison.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,075

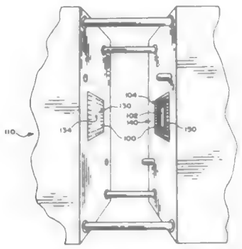
APPARATUS FOR FILLING AN INJECTION MOLD

Stephen A. Motisi, Hampshire, Ill., assignor to D & M Plastics Corporation, Burlington, Ill.

Division of Ser. No. 865,187, Apr. 8, 1992, Pat. No. 5,252,280. This application Jul. 8, 1993, Ser. No. 87,082

Int. Cl.[5] B29C *45/40*

U.S. Cl. 425—190 9 Claims



1. An injection mold for producing a molded article, said injection mold comprising:

a die assembly including a primary gated member and a subgated member;

said primary gated member and said subgated member being movable to an adjoining position;

said adjoining position providing a center cavity and a forming cavity around said center cavity;

a plurality of inner wall defining members positioned on said subgated member, said inner wall defining members separating said center cavity from said forming cavity, at least one of said inner wall defining members being a repositionable subgate providing communication between said center cavity and said forming cavity, said at least one repositionable subgate including means to permit simplified removal of a central portion of the molded article formed by said center cavity; and

a core pin structure being situated in said forming cavity.

5,336,076

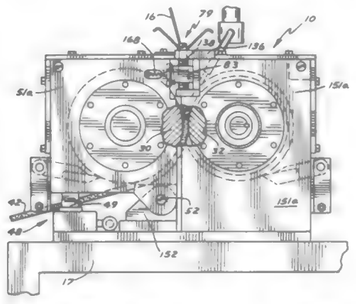
NIP GAP SETTING APPARATUS FOR USE IN A DOUGH PASSING DEVICE

Michael P. Waldherr, Brooklyn Park; Michael L. Johnston, Champlin; James N. Weinstein, Minneapolis, and Thomas G. Cremers, Buffalo, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed May 10, 1993, Ser. No. 59,092

Int. Cl.[5] B29C *43/24*

U.S. Cl. 425—294 15 Claims



1. A nip gap setting apparatus for use in a dough passing device, said nip gap setting apparatus adjusting a nip gap between the peripheries of first and second rollers the dough passes through, said nip gap setting apparatus comprising, in combination: a first pair of end plates, with the first roller being journaled between the first pair of end plates about a first axis; a second pair of end plates, with the second roller being journaled between the second pair of end plates about a second axis; means for pivotally mounting the second pair of end plates relative to the first pair of end plates about a third axis spaced from and parallel to the first and second axes for movement in a pivot direction from a first position towards a second position, with the rollers being more closely spaced in the second position than the first position; a block associated with each of the end plates of one of the first and second pairs, each block including an abutment surface; means for independently moving the blocks along a movement direction generally perpendicular to the pivot direction at a minor acute angle to the abutment surfaces; first and second contact surfaces; first and second means for independently articulately mounting the first and second contact surfaces to the end plates of the other of the first and second pairs allowing rotary motion of the contact surfaces relative to the end plates to flushly abut with the abutment surfaces independent of the position of the blocks along the movement direction and the pivot position of the second pair of end plates relative to the first pair of end plates, the blocks and contact surfaces being located in the pivot direction between the first and second positions; and means for moving the second pair of end plates in the pivot direction towards the second position with the blocks and contact surfaces stopping movement of the second pair of end plates at locations between the first and second positions depending upon the position of the blocks along the movement direction.

5,336,077

ROLLER FOR CONTINUOUS BELT PRESS

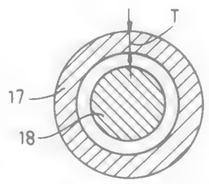
Klaus Gerhardt, Rheurdt, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Dec. 16, 1992, Ser. No. 990,840

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141833

Int. Cl.[5] B29C *43/00*

U.S. Cl. 425—371 5 Claims



1. In a belt press having

a frame having horizontally extending and vertically spaced upper and lower plates defining a horizontally extending gap;

respective upper and lower sets of drums rotatable on the frame;

respective upper and lower endless belts spanned over the respective upper and lower sets of drums and each having a working stretch lying between the plates;

respective upper and lower sets of tubular rollers engaged between the working stretches and the respective plates;

respective upper and lower sets of rods traversing the respective rollers and connected together as upper and lower endless chains;

drive means connected to the drum for advancing the belts to move the working stretches horizontally in a transport direction to displace a workpiece in the direction through the gap; and

means for urging the plates together with a pressure of between 300N/cm^2 and 600N/cm^2, the improvement wherein each tubular roller

has a wall thickness of more than 2 mm,

is formed of a material such that it is not substantially deformed when compressed diametrally between the respective plate and the respective working stretch;

has a mass which is smaller by a factor of between 0.30 and 0.50 than a solid rod of identical material and outside dimensions; and

has a geometrical moment of inertia that is smaller by a factor of between 0.50 and 0.65 than a solid rod of identical material and outside dimensions.

5,336,078

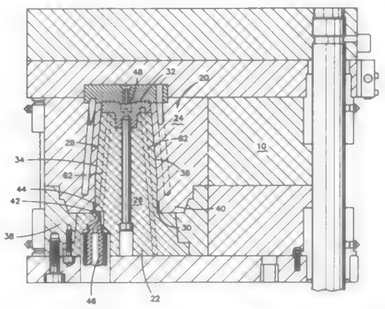
INJECTION MOLD HAVING A VENTED CORE

Bruce Catoen, Georgetown, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Sep. 20, 1993, Ser. No. 123,686

Int. Cl.[5] B29C *45/22*

U.S. Cl. 425—556 11 Claims



1. An apparatus for injection molding a thin-walled plastic article with sidewalls, a base portion, and a lip portion, said sidewalls having a substantially equal thickness, said apparatus comprising:

a two part mold in which a first part defines a mold cavity and a second part defines a mold core;

said first and second parts in a mold closed position defining a mold space in the shape of said plastic article;

means for injecting molten material into said mold space;

means for venting air from said mold space as said molten material is injected therein;

said mold space including means for restricting the flow of said molten material through said space and for improving the operation of said venting means; said restricting means serving to balance the flow of said molten material in said mold space;

said mold space having sidewall defining portions of a first thickness and a bottom defining portion of a second thickness; and

said restricting means comprising said second thickness being smaller than said first thickness.

5,336,079

BIAXIALLY ORIENTED LAMINATED FILM COMPRISING PARTICLES IN A SPECIFIC RATIO OF PARTICLE DENSITY

Iwao Okazaki; Koichi Abe, both of Kyoto; Hidehito Minamizawa, Otsu, and Takeo Fukuyama, Hikone, all of Japan, assignors to Toray Industries, Inc., Japan

Filed Mar. 4, 1992, Ser. No. 847,586

Claims priority, application Japan, Mar. 6, 1991, 3-63783; Mar. 6, 1991, 3-63785; Mar. 25, 1991, 3-82973; Sep. 25, 1991, 3-271805; Sep. 25, 1991, 3-271807; Sep. 26, 1991, 3-273443; Jan. 7, 1992, 4-18247

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—323 20 Claims

1. A biaxially oriented laminated film having at least three layers, wherein an outermost layer contains particles A, said particles A comprising primary particles and secondary particles

the ratio of (a) the particle density of said particles A in said outermost layer at a depth of 3 nm to (b) the particle density of said particles A in said outermost layer at a depth of 30 nm being not less than 0.01,

the ratio E/D of the mean secondary particle size E to the mean primary particle size D of the particles A being in the range of 2–60,

and said mean primary particle size D and thickness T of the outermost layer satisfying the equation $D <= T <= 200D$.

5,336,080

CATHODE-RAY TUBE PHOSPHOR

Miyuki Sumitomo; Ichiro Takeoka, and Shoichi Bando, all of Anan, Japan, assignors to Nichia Chemical Industries, Ltd., Tokushima, Japan

Filed Dec. 17, 1992, Ser. No. 991,746

Claims priority, application Japan, Dec. 26, 1991, 3-345550

Int. Cl.[5] C09K *11/02*

U.S. Cl. 428—407 3 Claims

1. A cathode-ray tube phosphor comprising phosphor particles, a water-insoluble metal alginate and a water-soluble binder, both adhering to surfaces of said phosphor particles, said phosphor being prepared by adding to a water dispersion of the phosphor (i) at least one water-soluble binder selected from the group consisting of gelatin, gum arabic, polymethacrylamide, and polyvinyl alcohol, (ii) an aqueous solution containing ions of at least one metal selected from the group consisting of zinc, aluminum, and alkali earth metal, and (iii) water-soluble alginate, and adjusting pH of said water dispersion to 6 to 11, thereby forming the water-insoluble metal alginate from said alginate and said metal ions and adhering the water-insoluble metal alginate and the water-soluble binder, flocculated by basic salt of said metal ions, to the surfaces of said phosphor particles, wherein said water dispersion contains said water-soluble binder in an amount of 0.001 to 1.0% by weight with respect to said phosphor, said aqueous solution contains said metal ions in an amount of 0.001 to 2.0% by weight with respect to said phosphor, said water dispersion contains said water-soluble alginate in an amount of 0.001 to 1.0% by weight with respect to said phosphor, and the weight ratio of said water-soluble alginate to said water-soluble binder in said dispersion is 0.011 to 10:1

5,336,081

DEVICE AND METHOD FOR REMOVING NITROGEN OXIDES

Hirohisa Saito; Jeremy P. Hoblyn, and Etsuo Abe, all of Tokyo, Japan, assignors to Bluenox Japan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 982,694

Int. Cl.[5] F23J *7/00*

U.S. Cl. 431—4 18 Claims

1. A device for removing nitrogen oxides form exhaust gas of a combustion device including a combustion chamber and

VOL 1165 ISS 2 AG 9 1994 UMI

an exhaust passage, by spraying a treatment agent from an injector into said combustion device, said treatment agent being capable of chemically reducing nitrogen oxides contained in said exhaust gas, comprising:

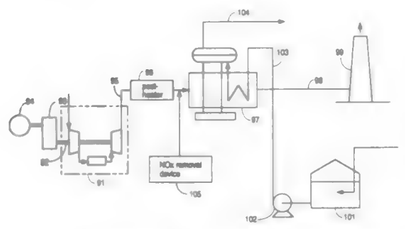
means for detecting a combustion condition of said combustion device;

a water supply;

a tank for storing said treatment agent;

pump means having an inlet connected to said water supply and to said tank and an outlet connected to said injector;

switching means, connected to said inlet of said pump means, for selectively supplying either water or said treatment agent to said inlet; and



means for controlling said switching means according to said combustion condition detected by said detecting

[illegible]

12. A method for removing nitrogen oxides from exhaust gas of a combustion device including a combustion chamber and an exhaust passage, by spraying a treatment agent from an injector into said combustion device, said treatment agent being capable of chemically reducing nitrogen oxides contained in said exhaust gas from said combustion device, comprising the steps of:

detecting a combustion condition of said combustion device; and

supplying water and at least one treatment agent in a selective and alternating manner to said injector according to said detected combustion condition.

5,336,082

JET BURNER CONSTRUCTION AND HEATING APPARATUS UTILIZING THE JET BURNER CONSTRUCTION

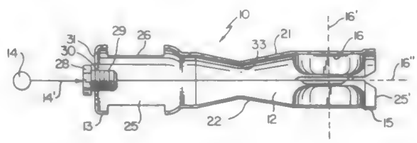
Fred Riehl, Greensburg, Pa., assignor to RobertShaw Controls Company, Richmond, Va.

Continuation of Ser. No. 805,546, Dec. 10, 1991, Pat. No. 5,244,382. This application Jul. 2, 1993, Ser. No. 87,395

The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.[5] F23D *14/58*

U.S. Cl. 431—286 **6 Claims**



1. In a jet burner construction comprising a burner body means having a chamber means therein and having an inlet means leading to said chamber means for directing fuel form a fuel source therein and an outlet means leading from said chamber means and defining an outlet opening means through which said fuel is adapted to issue from said chamber means to burn externally to said burner body means, said outlet opening means having a central opening part and a plurality of spaced apart opening portions interconnected thereto and radiating outwardly therefrom whereby flows of fuel respectively issuing out of said portions and said central part of said outlet opening means merge together in a turbulent manner externally of said outlet opening means, said burner construction comprising flame retainer means carried by said body means and having outer edge means extending beyond said outlet opening means of said body means to prevent flows of induced air from being created between the flows of fuel issuing from said radiating portions of said outlet opening means, said burner body means being formed of two generally similar body sections secured together in superimposed relation and each having generally one-half of said outlet opening means and one-half of said flame retainer means thereon, the improvement wherein said body means has opposed ends and has a fluted portion disposed spaced from and intermediate said opposed ends of said body means, said fluted portion having opposed ends, said fluted portion defining said central opening part and said radiating portions of said outlet opening means, said outlet opening means being generally located in the middle of said fluted portion, said fluted portion expanding and extending axially beyond said central opening part at one of said opposed ends of said fluted portion and comprising part of said flame retainer means, said flame retainer means also comprising a generally ring-like structure between said one of said opposed ends of said fluted portion and one of said opposed ends of said body means, each one-half of said flame retainer means being integral and one-piece with its respective body section.

5,336,083

DETONATION ARRESTOR WITH COOLING SECTION AND QUENCHING SECTION

Robert K. Rajewski, R.R. #1, Donalda, Alberta, Canada T0B 1I10

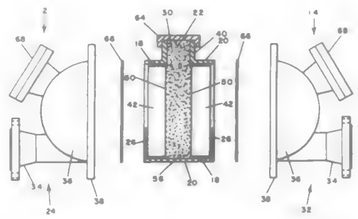
Continuation-in-part of Ser. No. 914,412, Jul. 17, 1992, Pat. No. 5,211,554, which is a continuation-in-part of Ser. No. 659,272, Feb. 22, 1991, Pat. No. 5,145,360. This application Feb. 8, 1993, Ser. No. 14,514

Claims priority, application Canada, Apr. 29, 1992, 2067612

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] F23D *14/82*

U.S. Cl. 431—346 **30 Claims**



1. A detonation arrestor for connection to a line carrying flammable gas, the line having inflow and outflow ends, the detonation arrestor comprising:

a cell housing defining an interior cavity in fluid connection with the line;

a first heat absorbing section comprised of heat absorbing material disposed across one end of the interior cavity and having channels passing through the heat absorbing material;

the heat absorbing material having sufficient heat absorbing capacity to withstand the heat of a prolonged burn;

quenching means forming tortuous passages adjacent the heat absorbing section for quenching a flame front passing through the cell housing;

means to connect the cell housing to the inflow and outflow ends of the line; and

in which the heat absorbing section includes one or more helically wound plates having a long dimension in the direction of flow through the cell housing and a short dimension perpendicular to the direction of flow through the cell housing.

5,336,084

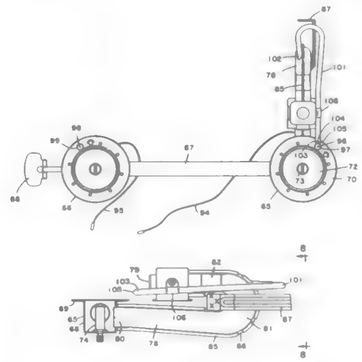
LIQUID FUEL CAMPSTOVE WITH ELECTRONIC IGNITION

Norris R. Long, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Jun. 9, 1993, Ser. No. 74,133

Int. Cl.[5] F23D *14/62*

U.S. Cl. 431—354 **16 Claims**



1. A campstove comprising:

a fuel tank for holding fuel,

a burner assembly for burning the fuel and providing a flame, the burner assembly including a fuel inlet and fuel outlet orifices,

fuel conduit means for conveying fuel from the fuel tank to the burner, the fuel conduit means including a first fuel conduit for conveying fuel from the fuel tank, means for aspirating air into the fuel conveyed by the first fuel conduit, and a second fuel conduit for conveying a fuel and air mixture from the first fuel conduit to the fuel inlet of the burner,

a pilot tube extending from said second fuel conduit to adjacent the fuel outlet orifices of the burner assembly for conveying a fuel and air mixture,

the pilot tube having a first end which is inserted into the second fuel conduit and a second end which is adjacent the fuel outlet orifices, and

fuel ignition means for igniting fuel which flows from the second end of the pilot tube.

5,336,085

MULTI-LAYER FLUID CURTAINS FOR FURNACE OPENINGS

Sudhir K. Sharma, Stormville, N.Y.; Michael F. Riley, Danbury, Conn.; Mark S. Nowotarski, Stamford, Conn., and Alan R. Barlow, Stamford, Conn., assignors to Praxair Technology, Inc., Danbury, Conn.

Division of Ser. No. 746,750, Aug. 19, 1991, Pat. No. 5,195,888. This application Nov. 6, 1992, Ser. No. 972,350

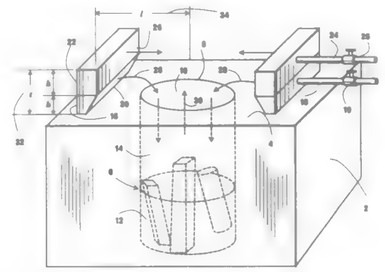
Int. Cl.[5] F27D *7/06*

U.S. Cl. 432—64 **14 Claims**

1. A method for providing with a fluid curtain a selected atmosphere at and within the opening to a contained volume, said method comprising:

(a) emitting laminarly an inner layer of fluid so as to flow over at least a portion of the opening, enter and purge the volume and substantially provide the selected atmosphere at the opening and within the volume;

(b) emitting laminarly an outer layer of another fluid to flow in the same approximate direction as the inner layer and to



extend over at least a portion of the inner layer so as to impede the infiltration of surrounding air into the inner layer;

(c) controlling the emission of said inner and outer layers to a composite height at least 5% of the distance over which said curtain is intended to flow;

(d) controlling the rate of emission of said curtain to produce a composite modified Froude number within the range of from about 0.05 to about 10.

5,336,086

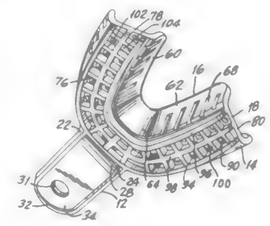
DENTAL IMPRESSION TRAY

Christian Simmen, Mahwah, N.J., and Nathaniel H. Lenchner, Lake Success, N.Y., assignors to Coltene/Whaledent, Inc., Mahwah, N.J.

Filed Nov. 5, 1993, Ser. No. 147,981

Int. Cl.[5] A61C *9/00*

U.S. Cl. 433—37 **28 Claims**



1. A dental impression tray, comprising:

a mouthpiece having:

outer and inner walls;

a rigid base connected between and at a bottom side of both the outer wall and the inner wall together therewith forming a trough shaped to conform with at least a portion of a dental bite radius; and

a handle connected to an outer side of the outer wall, a plurality of holes extending through the base, and a rigid platform structure along the underside of the base and extending between said outer and inner walls and forming a reservoir surrounding each hole in the base for collection of displaced impression material.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,087

DEVICE FOR INTRAORAL DETERMINATION OF THE TWO-DIMENSIONAL MANDIBULAR MOVEMENT AND OF THE JAW CLOSING FORCE

Andreas Vogel; Rolf Heinze, and Klaus-Dieter Wiesinger, all of Leipzig, Fed. Rep. of Germany, assignors to Transcoject Gesellschaft fur medizinische Gerate mbH & Co. KG, Neumunster, Fed. Rep. of Germany

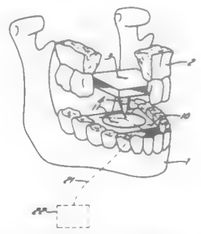
PCT No. PCT/EP91/01515, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO92/03106, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 9, 1991, Ser. No. 980,782

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1990, 3434314

Int. Cl.[5] A61C *19/04*

U.S. Cl. 433—69 **19 Claims**



1. A device for intraoral determination of the two-dimensional mandibular movement and of jaw closing force, comprising:

a first carrier configured for insertion into a first jaw;

a supporting pin protruding from the first carrier;

a second carrier which can be inserted in a second jaw, the second jaw being opposite the first jaw;

a counter plate disposed on the second carrier;

a force sensor disposed on the second carrier, which force sensor supports the counter plate at three points in spaced locations and separately measures force exerted against the counter plate at the three points;

whereby two-dimensional mandibular movement and jaw closing force can be determined by measuring force exerted by a tip of the pin against the counter plate at each of the three points.

5,336,088

SYRINGE AND DISPOSABLE CAPSULE AND METHOD OF FORMING CAPSULE WITH CANNULA

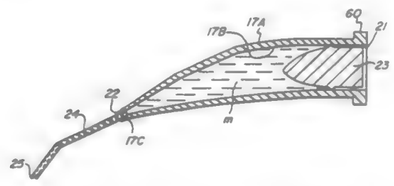
John J. Discko, Jr., Hamden, Conn., assignor to Centrix, Inc., Shelton, Conn.

Continuation of Ser. No. 261,600, Oct. 24, 1988, Pat. No. 5,052,927. This application Apr. 19, 1991, Ser. No. 687,574

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] A61C *5/04*; **A61M** *5/00*

U.S. Cl. 433—90 **16 Claims**



1. A capsule having a plastic body portion defining a reservoir adapted for containing a predetermined amount of material and a connected discharge tip, a needle cannula having an extended end and having a bore therethrough, said needle cannula being projecting through said discharge tip to extend beyond the end of said discharge tip, and means for sealing and rotatably connecting said needle cannula relative to said discharge tip, wherein said means comprises a flared end formed at one end of said cannula, said flared end being forcibly imbedded in the internal wall of said discharge tip for sealing and rotatably connecting said needle cannula to said discharge tip.

5,336,089

DENTAL HANDPIECE

Masatoshi Sakurai, Sakado, Japan, assignor to Promident Manufacturing, Limited, Saitama, Japan

Filed Jun. 11, 1993, Ser. No. 75,666

Int. Cl.[5] A61C *1/08, 1/05*

U.S. Cl. 433—126 **4 Claims**



1. A dental handpiece comprising a handle section and a cartridge which are detachable from each other, said cartridge having at one end a cylindrical frame, which contains a rotational driving source for a burr, and at an other end a cylindrical sleeve into which a tip portion of said handle section is inserted; and wherein:

said cylindrical sleeve of said cartridge is provided with a circumferential groove on its inner surface which, via plastic elasticity of said cylindrical sleeve, prevents said tip portion of said handle section from coming off;

said tip portion of said handle section is provided with a ring-shaped projection which engages with said circumferential groove;

a locking groove is provided on an outer surface of said handle section and a locking projection is provided on an inner surface of said cartridge, said groove and projection engaging with each other so as to prevent a circumferential rotation of said cartridge;

said rotational driving source provided in said cylindrical frame of said cartridge is a turbine assembly comprising a lower ball bearing, a ring, an upper ball bearing and a preload retainer which are mounted on a shaft of a turbine, said preload retainer including an outer race retaining part and an elastic top end, an outer race of said upper ball bearing is press fitted to said outer race retaining part and said elastic top end via elasticity of said elastic top end, said retainer presses said upper ball bearing and keeps an axial space constant relative to a fluctuating load applied to said upper ball bearing;

a shaft of said turbine comprises a hollow straight interior portion for holding said burr straight, a stopper portion of a smaller diameter than that of said burr for preventing said burr from sticking out of said turbine shaft, and a tapered portion provided between said straight portion and said stopper portion for holding said burr; and

said cylindrical frame of said cartridge is provided with a tapered inner surface on which a tapered outer surface of a cap is fitted.

5,336,090

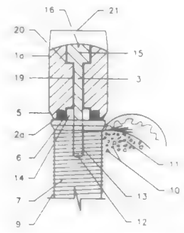
TRANSMUCOSAL HEALING CAP AND LOCKWASHER FOR DENTAL IMPLANTS

Richard S. Wilson, Jr., 1416 Burmont Rd., Havertown, Pa. 19803; Barry Sukoneck, 935 Remington Rd., Wynnewood, Pa. 19096, and Kenneth C. Wenzer, 11538 February Cr. #402, Silver Spring, Md. 20904

Filed Nov. 30, 1993, Ser. No. 159,326

Int. Cl.[5] A61C *8/00, 13/12, 13/225*

U.S. Cl. 433—172 **8 Claims**



1. A specially designed healing cap and implantable fixture, said cap having a centrally located cavity, comprising:

a cap body having a vertical axis that extends through the center of said cavity, a distal surface and a proximal surface, a first circular channel extending inwardly from said distal surface to said cavity said channel having a vertical axis coincident with said axis of the cap body and a seat at the juncture of said channel and said cavity, a second hexagonal channel extending inwardly from said proximal surface and in alignment with said first channel;

said implantable fixture further having a distal surface and a proximal surface, said fixture directly underlying the proximal surface of said cap body, and having a hexagonal fitting on its distal surface, in alignment with and nestled in said hexagonal channel, said fixture having a threaded opening and a vertical axis coincident with the axis of said cavity;

a retaining screw having a grooved head that fits precisely in said seat and a shaft having a threaded end section that extends through said cavity and said hexagonal fitting and screws into said threaded opening in said fixture;

a helical washer between said proximal surface of said healing cap and said distal surface of said fixture and around said hexagonal channel, said helical washer being in the form of a split ring having ends that are inclined from the horizontal, said washer assuming the shape of a flat ring when compressed by turning of said retaining screw so as to join said healing cap and fixture in a tight fit.

5,336,091

MOLDABLE DENTAL MATERIAL AND METHOD

Itzhak Shoher, 50 Shlomo-Hamelech St., Tel-Aviv, Israel 64386 , and Aharon E. Whiteman, J.L Perez St., Petach-Tikvah, Israel 49206

Continuation-in-part of Ser. No. 825,379, Jan. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 801,028, Dec. 2, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 977,637

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[5] A61C *5/00*

U.S. Cl. 433—215 **17 Claims**



1. A moldable dental composition comprising: a uniform mixture of high-fusing temperature metal particles having an average particle size between about 4 to 80 microns, and a melting temperature above a heat treatment temperature; low-fusing temperature metal particles having a melting temperature equal to or below said heat treatment temperature; and a volatile binder, composed substantially or entirely of wax, with the binder in a concentration of between about thirty percent and eighty percent by volume, such that upon heat treatment at said heat treatment temperature, a porous metal structure is formed having a capillary network of voids and a void volume of between thirty to eighty percent.

5,336,092

DENTAL POST CONSTRUCTION

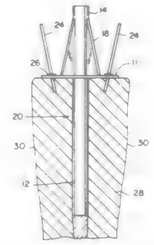
Paul R. Chalifoux, Wellesley, Mass., assignor to Wellesley Research Associates, Inc., Wellesley, Mass.

Continuation-in-part of Ser. No. 908,366, Jul. 6, 1992, which is a continuation-in-part of Ser. No. 896,388, Jun. 10, 1992, which is a continuation-in-part of Ser. No. 739,670, Aug. 3, 1991, Pat. No. 5,277,583. This application Oct. 30, 1992, Ser. No. 969,060

The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.

Int. Cl.[5] A61C *5/08*

U.S. Cl. 433—220 **13 Claims**



1. A dental post for insertion into a bore of a tooth stub which comprises:

a stem comprising a bottom stem section and a top stem section,

a flange secured to an intermediate vertical position on said stem, such that when said post is positioned into said bore, said bottom stem section extends into said bore, said flange rests on a top surface of said tooth stub and said top stem section extends away from the top surface of said tooth stub,

said flange including at least one through hole surrounded by material forming said flange,

and a pin extending through said at least one through hole extending at an angle relative to said stem.

5,336,093

READING INSTRUCTIONS METHOD FOR DISABLED READERS

Carla H. Cox, 1607 Elwell Rd., Belleville, Mich. 48111

Filed Feb. 22, 1993, Ser. No. 20,599

Int. Cl.[5] G09B *17/00*

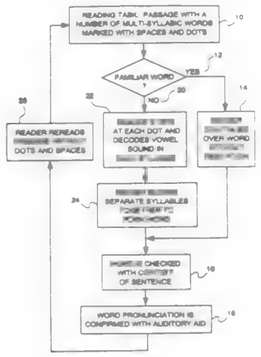
U.S. Cl. 434—178 **5 Claims**

5. A method of making a device for teaching reading skills, the method comprising:

providing text wherein the words are divided into single syllable components by placing a half space between the letters of adjacent syllables, each syllable having a vowel

VOL 1165 ISS 2 AG 9 1994 UMI

combination which contributes to the distinctive vowel sound of the syllable; and



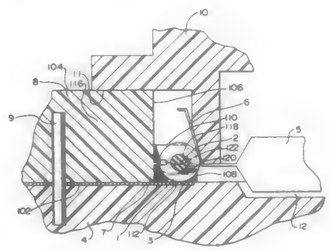
marking the vowel combination in each syllable which contributes to the distinctive vowel sound of the syllable by placing a mark above the vowel combination.

5,336,094

APPARATUS FOR INTERCONNECTING ELECTRICAL CONTACTS

David A. Johnson, St. Louis Park, Minn., assignor to JohnsTech International Corporation, Minneapolis, Minn.

Filed Jun. 30, 1993, Ser. No. 85,292
Int. Cl.[5] H01R *9/09, 23/72*
U.S. Cl. 439—62 **21 Claims**



1. Apparatus for electrically interconnecting corresponding terminals of two devices, comprising:

(a) a housing, said housing having a first surface spaced apart from a second surface and a lateral surface extending therebetween along at least a portion of a perimeter of said first and said second surfaces;

(b) a plurality of ribs projecting from said lateral surface, each of said ribs having a terminal surface distal from said lateral surface and an upper and a lower surface adjacent said terminal surface extending to said lateral surface, wherein any two adjacent ribs define a contact receiving channel, said channel bounded on three sides by said lateral surface, a first lateral surface of one of said adjacent ribs and an opposing lateral surface of the other of said adjacent ribs, wherein the width of said channel is defined by the distance between said first lateral surface and said opposing lateral surface of said adjacent ribs;

(c) a single elastomeric element suspended across said width of said contact receiving channel and captured by said adjacent ribs; and

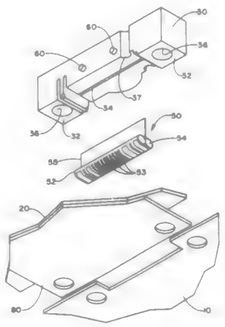
(d) a contact secured to, and freely suspended from, said single elastomeric element, said contact constructed from a conductive material.

5,336,095

FLEX CIRCUIT INTERFACE FOR CO-PLANAR PCBS

Douglas M. Walburn; Morgan J. Bradley, both of Harrisburg; John W. Jones, New Cumberland, all of Pa.; Robert D. Irlbeck, Greensboro, and Robert M. Renn, Pfafftown, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 13, 1993, Ser. No. 61,987
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—67 **12 Claims**



1. An interface for joining two printed circuit ("PC") boards in a co-planar relation, comprising:

a first PC board having a plurality of conductive traces thereon;

a second PC board having a plurality of conductive traces thereon;

a base underlying said first PC board and protruding therefrom to form a ledge for seating said second PC board;

a compressible circuit for bridging said first and second PC boards, said compressible circuit being formed from an elastomeric compression plug and a flexible circuit having a plurality of conductive jumper traces thereon for electrically connecting the conductive traces of the first PC board with the conductive traces of the second PC board, said flexible circuit being wrapped around said compression plug and overlaid at ends thereof to form a tail;

a support housing formed with two supporting struts both having flat mounting surfaces for engaging said first and second PC boards, and a central slot extending between said supporting struts for receiving the tail of said compressible circuit and carrying said compressible circuit therebetween, said support housing being anchorable to said base with said supporting struts and compressible circuit straddling a juncture of said two PC boards;

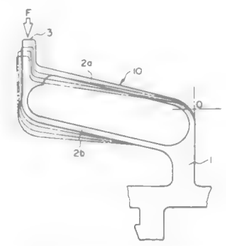
whereby said supporting struts fix the relative vertical positions of the two PC boards in a substantially co-planar relation, and said compressible circuit electrically connects the conductive traces of the first PC board with the conductive traces of the second PC board.

5,336,096

IC SOCKET AND ITS CONTACT PIN

Kazuhisa Ozawa, and Hiroaki Harada, both of Kawagoe, Japan, assignors to ENPLAS Corporation, Kawagoe, Japan

Filed Aug. 18, 1992, Ser. No. 931,925
Claims priority, application Japan, Mar. 22, 1991, 3-041476[U]; Aug. 21, 1991, 3-066160[U]; Aug. 21, 1991, 3-066161[U]
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—72 **3 Claims**



1. An IC socket, comprising in combination:

a socket body having multiple contact pins aligned for electrical connection with leads of an IC device,

actuation fitting projections,

spring means;

an intermediate plate placed to be vertically movable to move up by means of said spring means,

stage means on said intermediate plate for mounting an IC device,

a slope for guiding the leads of the IC device,

a rest for positioning the IC device,

a floating plate for restricting the intermediate plate from moving up,

a cover being linked with the socket body, having a pad with projections capable of fitting with projections of the intermediate plate; and,

characterized by:

said cover projections constructed to press the projections of the intermediate plate to lower the intermediate plate down to restrict the sides of the contact pins as the cover is closed,

said IC device mounted on the stage of the intermediate plate on the rest;

said cover pad pressing the contact pins into electrical connection with the leads.

5,336,097

MODULAR POWER DISTRIBUTION SYSTEM

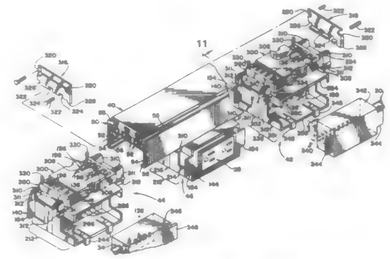
Lawrence J. Williamson, Jr., Hudson, Ind.; Donald C. Smith, Hendersonville, and Charles R. Snyder, Cottontown, both of Tenn., assignors to RHC/Spacemaster Corporation, Melrose Park, Ill.

Continuation of Ser. No. 894,065, Jun. 5, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 146,426
Int. Cl.[5] H01R *25/14*
U.S. Cl. 439—94 **16 Claims**

1. An elongate electrical conducting system with which a multi-terminal power tap assembly can be engaged to conduct electricity into or out of said system, said system comprising:

an elongate, electrically conductive support frame suitable for mounting to a structure along which electrical power distribution is desired, said frame defining an elongate receiving main channel therein with a bottom and an opening opposite said bottom, said frame having an elongate electrical contact ground surface unitary with said frame and located within said main channel adjacent said main channel bottom opposite said opening to face out of said main channel opening for being engaged by a terminal of said power tap assembly;

at least one insulating carrier disposed in said main channel permitting access to said ground surface from outside of said main channel, said carrier having a plurality of spaced-apart walls defining a recess between each pair of adjacent walls; and



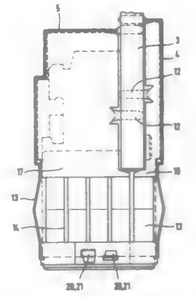
a plurality of elongate conducting elements each disposed within one of said insulting carrier recesses, each said element defining a planar contact surface facing outwardly of said main channel for being engaged by a terminal of said power tap assembly, and all said contact surface lying generally in a common plane.

5,336,098

DEVICE FOR THE ELECTRICAL CONNECTION OF SHIELDINGS OF MULTI-POLE PLUGS TO THE GROUNDED POTENTIAL LAYER OF A PRINTED CIRCUIT BOARD

Karl Zell, Niederpoecking, and Peter Seidel, Groebenzell, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 18, 1993, Ser. No. 78,106
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1992, 9208700
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—108 **16 Claims**



1. A device for the connection of shieldings of multi-pole plugs having a spring strip housing, the plugs associated with a module printed circuit board, to the grounded potential layer of a mother printed circuit board containing a plurality of contact blades residing perpendicularly thereon, comprising:

two longitudinal shields arranged on opposite sides of the module circuit board and having spring elements arranged such that, in the plugged condition of the plug, the spring elements resiliently press against allocated contact blades conductively connected to the grounded potential layer of the mother printed circuit board;

VOL 1165 ISS 2 AG 9 1994 UMI

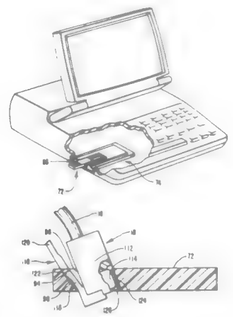
the longitudinal shields each having an angled-off shielding plate shielding a portion of the respective side of the module printed circuit board;
shielding plate hooks that can be engaged to the spring strip housing and are attached to the individual longitudinal shielding plates at lateral edges pointing in the direction of the mother printed circuit board;
press-in pins connected to a lateral edge of the angled-off shielding plates with which the shielding plates are connectable to a grounded potential layer present on the module printed circuit board;
two respective face shielding plates each oriented having an end face plate substantially perpendicular to the module printed circuit board for shielding an end face of the shielded spring strip housing, and having a spring region in the region of the contact blades:
the face shielding plates are bent off from said end face plate adjacent the longitudinal shielding plates and are connected to the longitudinal shielding plates by spot welds;
the face shielding plates are connected to the grounded potential layer of the module printed circuit board via press-in pins at the edges of said end face plates adjacent the module printed circuit board; and
the edge regions of the end face plate of the face shielding plates located in the region of the contact blades and neighboring the spring regions are partially overlapping and are connected to one another by bending over erect sheet metal tabs.

5,336,099

MEDIA CONNECTOR INTERFACE FOR USE WITH A PCMCIA-ARCHITECTURE COMMUNICATIONS CARD

Stephen C. Aldous, Salt Lake City, and Guy M. Dake, Sandy, both of Utah, assignors to Megahertz Corporation, Salt Lake City, Utah

Continuation of Ser. No. 974,253, Nov. 10, 1992, abandoned, which is a division of Ser. No. 866,670, Apr. 8, 1992, Pat. No. 5,183,404. This application Oct. 1, 1993, Ser. No. 131,012
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—131 **31 Claims**



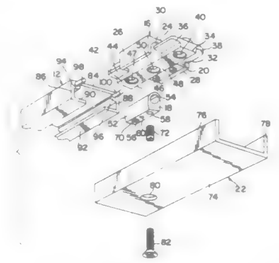
1. A communications connection system allowing connection of a physical/electrical media connector to a communications card, the system comprising:
(a) a portable computer having a PCMCIA communications card slot in a housing;
(b) a PCMCIA credit card type communications card capable of being inserted into the slot within the housing, the communications card being in electrical communication with the computer, the communications card having a retractable access portion and a remainder portion, the retractable access portion having formed therein walls forming an aperture; and
(c) means for selectively moving the retractable access portion of the PCMCIA communications card to a position outside of the computer housing to expose the aperture outside of the computer housing for reception of the physical/electrical media connector.

5,336,100

CONNECTOR FOR TRACK

Algimantas J. Gabrius, Carol Stream; Scott L. Roos, Glenview, and Thomas J. DeCicco, Arlington Heights, all of Ill., assignors to Juno Lighting, Inc., Des Plaines, Ill.

Filed Sep. 3, 1993, Ser. No. 116,377
Int. Cl.[5] H01R *25/14, 4/40*
U.S. Cl. 439—115 **15 Claims**



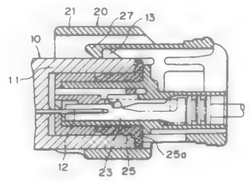
1. A connector for securely mounting on an end of a low voltage track; said track having an insulator body and a pair of spaced conductive wires, said insulator body having a pair of opposed inwardly extending edges, said connector including: a base having a pair of opposed resilient side walls, each of said side walls defining in part a respective longitudinal receptacle groove, said receptacle grooves being parallel to each other, a cantilever tongue integrally connected to the side walls and being substantially parallel to said grooves, said tongue being positioned between the opposed edges, said tongue having opposed portions positionable under the inwardly extending edges of the insulator body, a connector belt mounted in each of the receptacle grooves for receiving a respective said wire therein from the low voltage track, and a screw fastener mounted in each of the connector belts for securing the connector belt to its respective wire to provide electrically conductive connection therebetween.

5,336,101

CONNECTOR ASSEMBLY

Masakuni Kasugai, Mie, and Hisao Ito, Tochigi, both of Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Continuation of Ser. No. 795,029, Nov. 20, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,267
Claims priority, application Japan, Nov. 27, 1990, 2-125955[U]
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—272 **4 Claims**



1. A connector assembly, comprising:
a first connector;
a first engagement portion formed on said first connector;

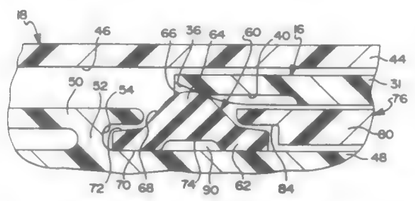
a second connector;
a second engagement portion formed on said second connector;
a first support surface being formed on said first connector;
a second support surface being formed on said second connector; and
an elastic member comprising a tubular first portion extending along an insertion axis of said assembly, and a flanged second portion extending from said first portion at a right angle to said first portion, said second portion being in contact with both of said first and second support surfaces, which are opposed to each other when said first and second connectors are assembled in a mating condition;
said first connector slidable into said second connector so as to press said second portion between said first and second support surfaces, a maximum advancement position of said first connector into said second connector being limited by said second portion of said elastic member.

5,336,102

CONNECTOR INTERFACE SEAL

Thomas M. Cairns, Beverly Hills, Mich., and William N. Moroney, Fairfield Glade, Tenn., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1993, Ser. No. 72,017
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—272 **19 Claims**



1. An interface seal for an electrical connector comprising:
a base portion extending longitudinally and annularly;
at least one rib portion being generally bell-shaped extending radially from said base portion and annularly therealong; and
said base portion including means opposite said at least one rib portion for allowing said base portion to move longitudinally as a result of a displacive force applied to said at least one rib portion and to return to its original position when the displacive force is removed.

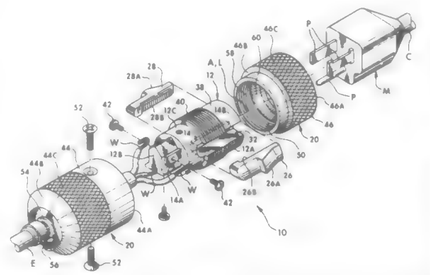
5,336,103

FEMALE SOCKET-BASED MALE PLUG LOCKING DEVICE

John D. Herboldsheimer, 11028 S. Cambridge Pl., Parker, Colo. 80134

Filed Aug. 26, 1993, Ser. No. 112,611
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—346 **20 Claims**

1. A male plug locking device, comprising:
(a) an inner socket body;
(b) electrical contact means disposed on said inner socket body for receiving and engaging contact prongs of a male plug and for providing electrical connections with ends of conductor wires of an electrical cord;
(c) an outer housing disposed over and surrounding said inner socket body and overlying said contact means, said outer housing being mounted on said inner socket body to undergo movement relative thereto between first and second axially displaced positions; and
(d) locking means disposed between said outer housing and said inner socket body and overlying said electrical contact means and the contact prongs of the male plug for respectively clamping the contact prongs against said electrical contact means and releasing the contact prongs from said electrical contact means in response to movement of said outer housing between said first and second axially displaced positions relative to said inner socket body so as to thereby prevent and permit disconnection of the male plug from said inner socket body.

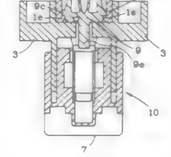


5,336,104

CONNECTOR

Akira Nagamine, Kawasaki, Japan, assignor to The Whitaker Corporation, Wilmington, Del.

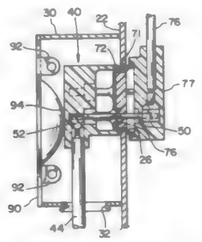
Filed Feb. 17, 1993, Ser. No. 18,670
Claims priority, application Japan, Mar. 6, 1992, 4-011329[U]
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—364 **26 Claims**



1. An electrical connector assembly comprising:
a plug housing including a plurality of electrical contacts;
a cap housing having a plurality of electrical contacts for mating with the contacts of the plug housing;
a housing joining mechanism which cooperates with the cap and plug housings for joining the housings together from a first, distal position to a second, proximal position;
a bolt housing with a cavity therein, said bolt housing further includes a coupling-complete member with two cantilever spring arms disposed in said cavity, and a window formed in a top side of the bolt housing for view a portion of said cantilever spring arm; and
wherein said coupling-complete member includes a base portion, said cantilever spring arms and a spring member being integrally formed on said base portion, said spring member is formed between said cantilever spring arms and extends upwardly from said base portion;
whereby upon activation of said joining mechanism the housings move closer together and the cantilever spring arms bend and become visible at the window thereby indicating complete coupling of the electrical contacts when said housings are in said proximal position.

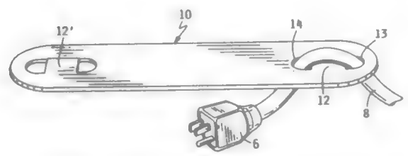
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,105
EXTERNAL TERMINAL SHIELD
Ronald R. Wisner, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Division of Ser. No. 763,918, Sep. 23, 1991, Pat. No. 5,199,898. This application Jan. 27, 1993, Ser. No. 9,722
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—367 5 Claims



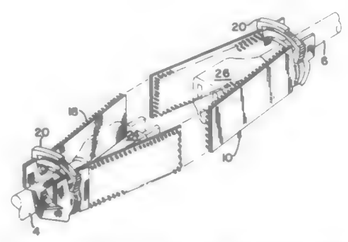
1. A hermetic compressor comprising:
a hermetic housing including an hermetic terminal assembly thereon;
a cluster block having electrical connectors and power supply wires attached to said electrical connectors, said cluster block removably attached to said hermetic terminal assembly permitting said electrical connectors to make an electrical connection with said terminal assembly;
an openable enclosure including a detachable fence cover attached to a fence, said fence attached to said compressor housing with said fence cover over said hermetic terminal assembly, wherein said fence cover has a protuberance means projecting from a side wall thereof for pressing said cluster block into electrical connection with said hermetic terminal assembly, said power supply wires passing through said enclosure to connect with an electric power source, said enclosure interlocking with said cluster block, so that when said enclosure is opened, said cluster block is detached from said terminal assembly and said electrical connection is automatically broken; and
a disconnectable electrical connector connected in series with said wires outside of said enclosure, said connector being intermediate ends of said power supply wires to disconnect said compressor from said power source, whereby continuity field tests may be performed without opening said enclosure.

5,336,106
CORD CONNECTORS
Frederick F. Osten, 11633 239th St. North, Scandia, Minn. 55073
Filed Dec. 22, 1992, Ser. No. 994,980
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—369 11 Claims



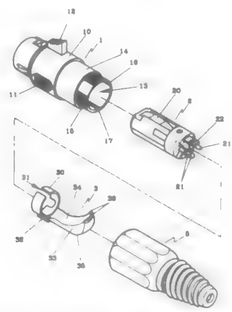
1. A connector for temporarily securing electrical cords in an end-to-end relationship to prevent accidental disconnection comprising:
an elongated, substantially planar member formed from a flexible material, said member having a first end and a second end; and
a first support surface carried by said first end of said planar member;
a first flexible tab integrally formed in said first end of said elongated member, said first flexible tab having an end surface for engaging said first support surface wherein said end surface is located on an opposite side from said first support surface, a first side surface and a second side surface, said first end of said planar member having a first edge and a second edge, said first edge and said first side surface defining a first cord opening, said second edge and said second side surface defining a second cord opening with said openings located on opposite sides of said first flexible tab, said openings sufficiently large to permit passage of a first cord through each of said openings and around said flexible tab, said edges forming cord engaging surfaces for biting and engaging said first flexible tab having sufficient cantilevered resistance to prevent said tab from being pulled free of said first support surface under normal pulling pressure that would not rupture the first cord held therein yet permit pulling the flexible tab free of said first support surface under pulling pressure that would rupture the first cord held therein.

5,336,107
PLUG RETENTION DEVICE
Richard Sheryll, New York, N.Y., assignor to Cyclops Research & Development, Inc., New York, N.Y.
Filed Apr. 26, 1993, Ser. No. 53,998
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—369 8 Claims



1. A retaining device for releasably securing together first and second mutually engaging connectors extending from respective first and second cords each having a lengthwise axis, the retaining device comprising
first and second elongate members having substantially the same overall shape and each having a lengthwise axis, for engaging the first and second cords, and adapted for folding about and surrounding the first and second mutually engaging connectors, respectively, with the lengthwise axis of said first and second elongate members substantially parallel to the lengthwise axis of said first and second cords,
securement elements carried on said first and second elongate members, for releasably Joining together ends of said first and second elongate members when said first and second elongate members are folded about and surround the first and second mutually engaging connectors,
wherein said members have at least one slot formed therein for receiving the cord, whereby the members surround the connectors to prevent separation thereof,
first and second retaining elements, coupled to said first and second elongate members and situated adjacent the first and second connectors, respectively, for retaining the first and second cords to the first and second elongate members, respectively, said first and second retaining elements being clamps adapted for selectively locking about respective ones of said cords, andmaintaining a selected clamping force around respective ones of said cords when said members are folded about said connectors,
wherein said securement elements are cooperatively interacting and inter-engaging pairs of substantially identical elements arrayed over substantially the entire surface of said first and second elongate members.

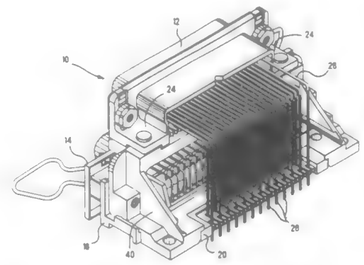
5,336,108
MICROPHONE CONNECTOR
Jia S. Lin, 9F3R, No. 210, Chung Hsueh R., Tainan, Taiwan
Filed Apr. 19, 1993, Ser. No. 47,953
Int. Cl.[5] H01R *13/59*
U.S. Cl. 439—462 6 Claims



1. A microphone connector comprising:
a connector member shaped cylindrically, having at least a proximal hand holding portion, an intermediate smooth portion, a distal male-threaded portion to engage a female-threaded portion of a connector housing, and an axially hole for depositing a terminal carrier or a plug and a pincher therein;
a terminal carrier shape cylindrically to fit in the through hole of said connector member, having a plate on an length-wise surface, a number of terminal holes for terminals to pass through, said terminals having one end soldered with wires of a cable;
a connector housing having a female-threaded portion to engage the male-threaded portion of the connector member and a discrete compact ring on an inner surface of the connector housing;
a cable pincher having an annular wall slot for depositing a cable of various size through the slot, a pinching block lengthwise from the wall having a recessed and surface and two pinching on an outer end thereof, and upper and bottom surfaces gradually curving up to the outer end; and
said compact ring in said connector housing compressing the upper surface of said cable pincher after the connector housing is combined with the connector member, said pinching points of the pincher then sticking in the surface of said cable and said cable being forced to bend up a little according to the curvature of said pinching block of the cable pincher so that the cable pincher may sufficiently pinch the cable immovable and inseparable.

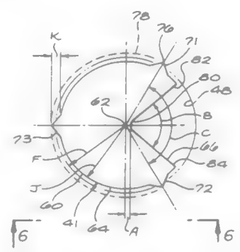
5,336,109
STACKED CONNECTOR ASSEMBLY
Warren C. Hillbish, Hummelstown, and Steven G. Smith, Linglestown, both of Pa. 17112, assignors to The Whitaker Corporation, Wilmington, Del.
Filed Apr. 15, 1993, Ser. No. 47,849
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—540 14 Claims

1. A stacked electrical connector assembly having first and second electrical connectors arranged vertically one above the other for mounting to a surface of a substrate, each connector having solder tails adapted to be electrically connected to circuits on said substrate,
the assembly including a bracket of unitary construction having a first surface for receiving and positioning said first connector, a second surface for receiving and positioning said second connector, a third surface adapted to



be mounted to said surface of said substrate, projections integral with said bracket for securing said first and second connectors to said first and second surfaces respectively, said bracket including a first opening through which said solder tails of said second connector extend and a second opening through which said solder tails of said first connector extend, said solder tails of said first and second connectors extending past said third surface.

5,336,110
PEG HELD CONNECTOR
Rene A. Mosquera, Laguna Niguel, Calif., assignor to ITT Corporation, Secaucus, N.J.
PCT No. PCT/US91/07602, § 371 Date Nov. 12, 1991, § 102(e) Date Nov. 12, 1991, PCT Pub. No. WO93/08619, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 15, 1991, Ser. No. 700,140
Int. Cl.[5] H01R *13/74*
U.S. Cl. 439—554 14 Claims



1. A connector which includes a connector housing having a plurality of depending pegs for insertion in hole walls forming substantially round holes in a circuit board or other board, where each hole has an axis, to hold the connector housing securely to the board, characterized by:
each of said pegs has an axis which can be substantially aligned with the axis of the board hole, a peg body with a periphery and a plurality of ribs extending radially outwardly from said body, and with said ribs extending far enough from said peg axis to form an interference fit with the walls of said board hole;
said peg body has a slot extending inwardly from said body periphery to near said axis, and first and second of said ribs lie on said body periphery near opposite sides of said slot and have radially outer parts that are angled apart by

VOL 1165 ISS 2 AG 9 1994 UMI

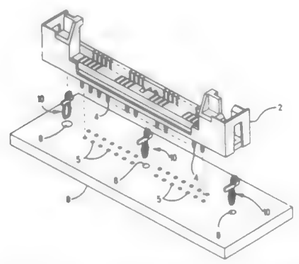
between about 100° and about 140° with respect to said axis, so radially inward forces on said ribs cause said slot to close and allow said ribs to move radially inwardly.

5,336,111

BOARDLOCK FOR AN ELECTRICAL CONNECTOR

Roger L. Thrush, Clemmons, N.C.; Richard C. Tan, Singapore, Singapore, and James R. Lambert, Kernersville, N.C. assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 28, 1993, Ser. No. 127,677
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—567 **8 Claims**



1. A boardlock for an electrical socket, comprising:

a substantially flat integral body lying substantially entirely within a plane and including a socket retention section adapted to self-retain to the socket, and a depending circuit board retention section insertable into a hole in a circuit board and dimensioned to extend beyond an exit of the hole, the integral body being adapted to retain the socket to the circuit board upon board mounting, the circuit board retention section including a pair of legs extending in the plane from fixed origins which are spaced apart along the body until they join together again at a common remote end defined by a tie bar, portions of the legs having respective pairs of inner and outer edges which are divergently angled as the portions extend to a widest dimension of the circuit board retention section, the widest dimension being wider than a widest dimension of the hole exit in the circuit board, the widest dimension being spaced from the fixed origins by a dimension greater than a thickness of the circuit board at a periphery of the hole exit, further portions of the legs having respective pairs of inner and outer edges which are convergently angled as the further portions extend from the widest dimension toward the remote end,

wherein the circuit board retention section is compliant substantially exclusively in the direction of the plane and the divergently angled leg portions are spring biased against the periphery of the hole exit through a range of board thickness and hole diameter variations.

5,336,112

COAXIAL MICROSTRIP LINE TRANSDUCER

Kenji Michishita; Tomoyoshi Ohnishi; Youichi Maruyama, and Shigemi Takahashi, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 30, 1992, Ser. No. 985,189
Claims priority, application Japan, Nov. 30, 1991, 3-342225; Jan. 17, 1992, 4-027376; Mar. 6, 1992, 4-049558
Int. Cl.[5] H01R *17/04*
U.S. Cl. 439—581 **15 Claims**

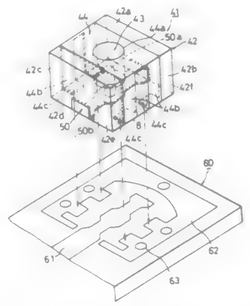
1. A coaxial microstrip line transducer comprising:

a resin case having a recess portion opened upward;

an inner conductor having a center conductor portion arranged in said recess portion and a terminal portion integral with the center conductor portion and formed so as to lead to a lower surface of said resin case; and

an outer conductor having a first conductor portion arranged along at least a part of an inner peripheral surface of said recess portion and a second conductor portion integral with said first conductor portion and extending to the lower surface through an upper surface and a pair of side surfaces opposed to each other of said resin case;

a through hole leading to the lower surface of the resin case being formed in a bottom surface of the recess portion of said resin case;



the center conductor portion of said inner conductor being inserted so as to extend into the recess portion from said through hole; and

said terminal portion being integral with the center conductor portion at the lower surface of said resin case and formed so as to lead to the pair of side surfaces opposed to each other from the lower surface of the resin case;

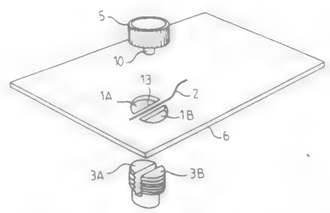
wherein an engaging hole is formed on each of the respective side surfaces of said resin case, and ends of parts, which lead to the side surfaces of the resin case, of the terminal portion of said inner conductor are engaged with said engaging holes.

5,336,113

CONNECTION DEVICE

Pierre Chanteau, La Haye Malherbe, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1993, Ser. No. 46,821
Claims priority, application France, Apr. 15, 1992, 92 04615
Int. Cl.[5] H01R *17/04*
U.S. Cl. 439—581 **5 Claims**



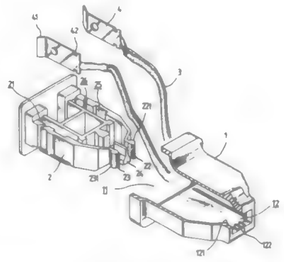
1. A device for fastening a cable comprising an electrically conductive core and for electrically connecting said core to another conductor by means of a tubular member which is secured in a case, said tubular member being longitudinally subdivided into a plurality of limbs wherebetween the conductive core of the cable passes and being provided with a thread for screwing on a threaded cap provided with a stud-like member which bears on the conductive core of the cable, characterized in that said an other conductor is a conductive track of a printed circuit consisting of conductive tracks on an insulating substrate, which substrate is provided with a plurality of orifices to allow passage of the limbs of the tubular member, said orifices forming between themselves a bridge which extends between the limbs of the tubular member, and on which there is provided at least one conductive track on which said stud-like member bears.

5,336,114

COPPER BLADE SECURING STRUCTURE OF TAIL FEMALE RECEPTACLES

Ming Y. Wang, 33-8, Fan Gee Pore, Tai Ho Li, Chupei City, Hsinchu Shien, Taiwan

Filed May 21, 1993, Ser. No. 64,238
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—598 **2 Claims**



1. A copper blade securement structure for tail female receptacles comprising:

(a) a pair of electrical conductor wires;

(b) a pair of copper plates extending in a longitudinal direction, each of said copper plates having a first end section inclined with respect to a second end section, each of said electrical conductor wires being electrically coupled to each of said second end sections of said copper plates;

(c) a hollow housing extending in said longitudinal direction, said hollow housing having a first opening formed through a first end thereof and a second opening formed through a second end thereof, said first opening having a greater cross-sectional area than said second opening, said second end of said housing having a pair of hook members extending transversely at least partially into said housing second opening, and a pair of protrusion members extending in a vertical direction at least partially into said housing second opening; and,

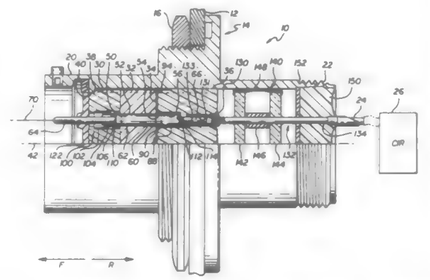
(d) an insertion member having a forward end section for insert into said hollow housing through said housing first end opening, said insertion member having a pair of longitudinally directed and transversely displaced grooves formed therein forming opposing transversely displaced insertion member sidewalls having respective inclined notches formed therein for insert of a respective inclined first end of a respective copper plate, said insertion member forward end section having a pair of transversely displaced pillar members extending in said longitudinal direction and formed integral with a respective insertion member sidewall, each of said transversely displaced pillar members having a transversely directed fastening member for interface with a respective hook member when said insertion member is inserted into said hollow housing, said insertion member having a central pillar member extending longitudinally from said insertion member forward end section between said transversely displaced pillar members for forming a pair of gaps between said pillar members, said gaps in open communication with respective grooves of said insertion member for insertion therein of said electrical conductor wires.

5,336,115

SURGE SUPPRESSION FILTER CONTACT CONNECTOR

Eric J. Paulus, Scottsdale, Ariz., assignor to ITT Corporation, Secaucus, N.J.

Filed Mar. 26, 1993, Ser. No. 37,760
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620 **5 Claims**



1. A connector which includes a shell having a forward mating end for mating with another connector device and having a rearward end, wherein said shell forward end forms a rearwardly-facing internal shoulder, and which includes a plurality of inserts that lie one behind the other in said shell, with one of said inserts abutting said shoulder to prevent said inserts from moving forwardly out of said shell and with each of said inserts having a plurality of holes aligned with those of the other of said inserts to form a plurality of contact-holding passages that each has an axis, and which also includes a plurality of suppression contacts each lying in a different one of said passages wherein each suppression contact forms a forward contact mating portion and a rear contact mating portion, and which also includes a plurality of retainer parts which each lies in one of said passages and retains a corresponding contact to prevent its forward movement out of said passage but which can be operated to release the contact to move forwardly out of the passage, and which also includes a plurality of rear terminals with each rear terminal having a rear end and having a front end which detachably mates to a suppression contact rearwardly-extending pin characterized by:

each of said front contact mating portions is in the form of a pin lying on said axis and each of said terminal front ends is in the form of a socket that has a plurality of leaves lying on different sides of said axes and which mates with said pin in a pin-and-socket connection;

a first rearmost insert has a rear hole portion that closely surrounds a corresponding one of said sockets to keep it aligned with a corresponding passage axis, with each hole in said rearmost inset forming a narrower front hole portion that can guide a corresponding rearwardly-extending pin as it moves rearwardly to mate with a socket.

5,336,116

MALE ELECTRICAL PLUG ASSEMBLY WITH INCREASED ELECTRICAL CREEPAGE DISTANCE BETWEEN CONTACTS

William C. Boteler, Bridgeport, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Aug. 6, 1993, Ser. No. 102,918
Int. Cl.[5] H01R *13/502*
U.S. Cl. 439—690 **20 Claims**

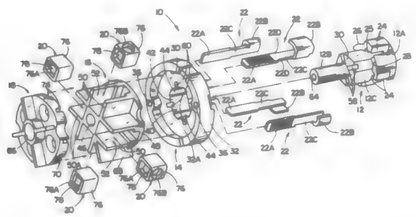
1. A male electrical plug assembly, comprising:

(a) an elongated body of insulating material having a plurality of locating elements defined on an exterior surface of one end portion of said body and a first annular shoulder defined on said body adjacent to said one end portion thereof;

VOL 1165 ISS 2 AG 9 1994 UMI

(b) a mounting flange of insulating material adapted to fit over said elongated body and abut against said first annular shoulder, said mounting flange having an internal annular wall with a plurality of recesses defined therein being alignable with said external locating elements on said body;

(c) a terminal holder of insulating material adapted to fit over said elongated body and abut against said mounting flange, said terminal holder having a plurality of cavities formed thereon and a plurality of slots therein aligned with said cavities, said cavities and slots being alignable with said internal recesses of said mounting flange and said external locating elements of said body;



(d) a terminal retainer of insulating material attachable to an opposite end portion of said elongated body so as to clamp said mounting flange and terminal holder therebetween;

(e) a plurality of electrical terminals disposed in said cavities of said terminal holder A4; and

(f) a plurality of elongated electrical contact elements mounted to said external locating elements on said one end portion of said body and extendable therefrom through said internal recesses of said mounting flange and said cavities and slots of said terminal holder and into said electrical terminals disposed in said cavities of said terminal holder.

5,336,117

SPLIT TPE CARD-EDGE CONNECTOR

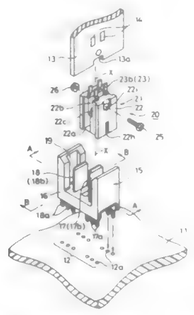
Osamu Mizuguchi, and Teruyuki Mori, both of Kanagawa, Japan, assignors to Kyocera Elco Corporation, Kanagawa, Japan

Filed May 28, 1993, Ser. No. 68,103

Claims priority, application Japan, Sep. 21, 1992, 4-065594[U]

Int. Cl.[5] H01R *9/22*

U.S. Cl. 439—717 **24 Claims**



1. A split type card-edge connector comprising a pair of identical connector halves, each having contacts to be connected to corresponding terminals provided on opposite surfaces of a substrate, and a securing means for securing the connector halves together when the respective contacts are connected to the corresponding terminals of the substrate, said connector halves comprising a provisional securing means for provisionally securing the connector halves so as to be slightly movable relative to each other so that the connector halves can be separated from one another, and said provisional securing means comprising at least a pair of male and female members provided on each of the connector halves, so that when the connector halves are interconnected, the male member of one of the connector halves can be loosely fitted in the female member of the other connector half so as to allow the connector halves to slightly and relatively move.

5,336,118

METHOD OF MAKING A PIN GRID ARRAY AND TERMINAL FOR USE THEREIN

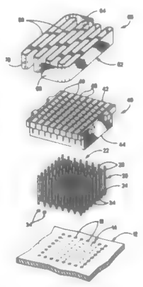
Michael J. McKee, New Cumberland, and Joseph M. Pawlikowski, Lancaster, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 55,657, Apr. 30, 1993, Pat. No. 5,279,028.

This application Oct. 5, 1993, Ser. No. 132,013

Int. Cl.[5] H01R *4/02*

U.S. Cl. 439—876 **2 Claims**



1. A device for use in conjunction with a source of a constant amplitude high frequency alternating current of known frequency to melt a fusible electrically conductive material to interconnect respective ones of said first conducting portions of said conductive members to a corresponding conductive circuit terminus of an electrical article, said conductive members being arranged at least in adjacent rows of known spacing and length defining an array, said first conductive portions of said members being formed of a first metal having low electrical resistance and minimal magnetic permeability, said first metal defining a first layer, said members further having defined on at least said first connecting section and integrally joined to said first layer thereof a second layer of a second metal having high electrical resistance and high magnetic permeability, said second layer having a thickness at least equal to one skin depth of said second metal, given said known frequency, said first connecting section thereby defining a heater body, each of said first connecting portions being adapted to be disposed adjacent and in physical engagement with a corresponding circuit terminus of said electrical article, each first connecting portion having fusible electrically conductive material disposed on a selected location along at least one surface thereof, said device comprising:

an electrical conductor body having electrodes at opposed ends thereof each adapted to be connected to a corresponding electrode of said source of alternating current, said conductor body having a continuous array of section joined by bight portions, each said section being joined to a succeeding one of said sections by said bight portion, said conductor body being shaped so that said sections are configured to be disposed parallel to each other, each said section having a length at least as great as the known length of the rows of said array, and said sections spaced to correspond to said known spacing between said rows of said array, whereby

said conductor body is adapted to be interposed among said rows and proximate each said conductive member in said array.

5,336,119

DRIVE UNIT FOR RELATIVELY SMALL WATERCRAFT

Siegfried Lais, Spay; Gerd Krautkrämer; Stefan Huth, both of Boppard, and Stephan Schneider, Koblenz, all of Fed. Rep. of Germany, assignors to Schottel-Werft Josef Becker GmbH & Co. KG, Spay am Rhein, Fed. Rep. of Germany

Filed Aug. 19, 1992, Ser. No. 932,712

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1991, 4127940

Int. Cl.[5] B60L *11/00*

U.S. Cl. 440—6 **6 Claims**

1. A drive unit for mounting in the bottom of a small watercraft comprising

a cylinder having a sealed bearing on its circumference for enabling the cylinder to be rotatably mounted in the bottom of the watercraft, in fluid-tight relationship therewith, with one end inboard and the other end outboard of the watercraft, said cylinder being completely rotatable about a vertical axis,

a propeller housing mounted adjacent the outboard end of the cylinder,

a propeller shaft having non-lubricated bearings thereon, for rotatably mounting the propeller shaft in the housing,

a propeller mounted on one end of the propeller shaft,

a toothed belt disk fixedly mounted on the propeller shaft,

an electric motor mounted atop, and external to, the inboard end of the cylinder, the motor having an output shaft with a toothed belt disk mounted thereon,

a toothed belt, within the cylinder, mounted about the toothed disks of the motor output shaft and the propeller shaft for transmitting torque from the motor to the propeller,

whereby the watercraft can be quietly driven in any direction without emitting any substances into the water.

5,336,120

CONTROL SYSTEM FOR OPERATING A SHIP'S MOTIVE INSTALLATION

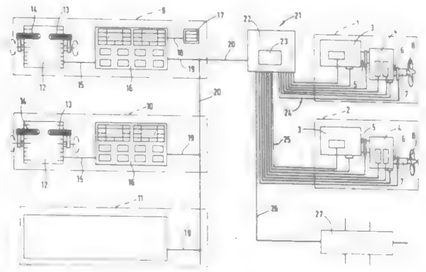
Gerhard Maurer; Manfred Braig, both of Friedrichshafen; Raimund Auer, Eriskirch; Christoph Goebel, Immenstaad; Josef Schwarz, Friedrichshafen, and Thomas Voss, Tettnang, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 937,903

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1990, 4012107

Int. Cl.[5] B60K *41/00*

U.S. Cl. 440—84 **29 Claims**



1. A control system for operating at least a first motive installation (**1, 2**) of a ship, said at least first motive installation (**1, 2**) having an engine (**3**) being drivingly connectable, for forward and astern movement, to a propeller shaft (**7**) via a transmission (**4**) with adjustable clutches (**67, 69**), said control system comprising:

control and sensor devices (**53, 54**) for varying the speed of the engine and a degree of slip of said clutches (**67, 69**);

at least one control post (**9, 10, 11**) for selecting a direction of travel of the ship and a rotational speed of the propeller shaft, said at least one control post having at least one control lever (**13, 14**) for controlling the travel direction and propeller shaft speed; and

control electronics (**21**) for processing input and output signals;

wherein said at least one control lever (**13**) adjusts the speed and the rotational direction of the propeller shaft, said control electronics (**21**) freely defines, depending on operational parameters to be observed by at least one of said engine (**3**) and said transmission (**4**), an operating condition in which the propeller shaft speed and the rotational direction are produced by one of: (a) engaging one of said clutches (**67** or **69**) and changing the speed of the engine, and (b) operating the engine at a given engine speed and changing a degree of slip of one of said clutches (**67, 69**).

5,336,121

ELECTRICALLY INSULATING ELEMENTS FOR PLASMA PANELS AND METHOD FOR PRODUCING SUCH ELEMENTS

Guy Baret, Eybens, France, assignor to Thomson Tubes Electroniques, Velizy, France

PCT No. PCT/FR92/00561, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO93/00698, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 19, 1992, Ser. No. 969,222

Claims priority, application France, Jun. 27, 1991, 91 08004

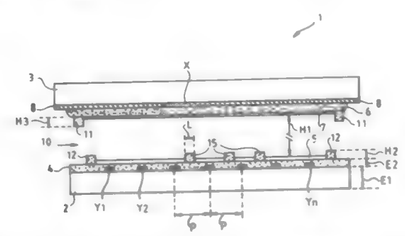
Int. Cl.[5] H01J *9/00, 1/90*

U.S. Cl. 445—25 **19 Claims**

1. A plasma panel display device, comprising two plate (**2,3**) of which at least one carries electrodes (X, Y1 to Yn), the two plates (**2,3**) being assembled such that a space (**10**) is produced

VOL 1165 ISS 2 AG 9 1994 UMI

between these two plates, the space being intended to constitute a gaseous space whose leaktightness is produced by a sealing operation, having at least one dielectric layer (4,6)



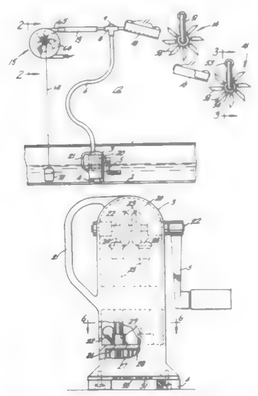
disposed between the gaseous space (10) and electrodes (X, Y1 to Yn), wherein the dielectric layer comprises an organic compound produced from at least one polymerizable organic compound.

5,336,122

EDUCATIONAL APPARATUS WITH PUMP FOR USE IN BATHTUB

James C. Lewis, 2422 N. 15th St., Springfield, Oreg. 97477

Filed Oct. 26, 1992, Ser. No. 966,541
Int. Cl.[5] A63H *23/00*
U.S. Cl. 446—153 10 Claims



1. An apparatus for installation in a water containment area and on a wall adjacent the water containment area, said apparatus including

a positive displacement water pump including a hand crank for placement in the water of said water containment area,

a flexible hose coupled to said pump, and

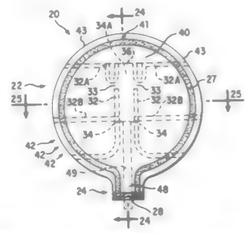
conduit means in communication with said hose for attachment to said wall in a selective manner and including wall attachable suction cups.

5,336,123

INFLATABLE FLEXIBLE POUCH

Louis L. Laske, Libertyville, and John L. LaRoi, Jr., Lindenhurst, both of Ill., assignors to Vonco Products, Inc., Lake Villa, Ill.

Continuation-in-part of Ser. No. 865,130, Apr. 8, 1992, abandoned. This application Jul. 22, 1992, Ser. No. 918,253
Int. Cl.[5] A63H *27/10*
U.S. Cl. 446—224 17 Claims



1. An inflatable flexible pouch comprising:

a first inner web, a second inner web, a first outer web, a second outer web, said first and second inner webs and said first and second outer webs sealably secured about at least a portion of a general periphery of a body portion of said first and second outer webs;

first means for forming at least one inner inflatable chamber between said first inner web and said second inner web and for forming an outer inflatable chamber between said first outer web and said second outer web wherein each said inner inflatable chamber is positioned within said outer inflatable chamber; and

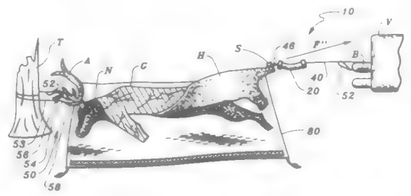
second means for first introducing pressurized fluid within said at least one inner inflatable chamber until backpressure within said at least one inner inflatable chamber is increased enough for said pressurized fluid to flow into said outer inflatable chamber sufficient to seal said at least one inner inflatable chamber in an inflated condition.

5,336,124

HORIZONTAL SKINNING AND PROTECTION APPARATUS

Ted L. Garside, 3083 Northwoods Way, Redding, Calif. 96002

Filed Sep. 24, 1992, Ser. No. 950,163
Int. Cl.[5] A22B *5/16*
U.S. Cl. 452—125 22 Claims



1. A method for removing the skin of a game animal, the steps including:

cutting the skin of the animal in a pattern which facilitates removal of the skin from the animal including a cut around the neck of the animal;

positioning the animal on the ground;

attaching a head of the animal to a first object at a location sufficiently proximate to the ground that the animal remains adjacent the ground;

separating a small skin portion from the animal adjacent and below the neck of the animal;

securing the small skin portion to a second object; and

moving the first and second objects away from each other to remove the skin from the animal without necessitating further elevation of the animal above said head attaching location proximate to the ground;

placing a game bag in the form of a foldable tarp under the animal during said moving step; and

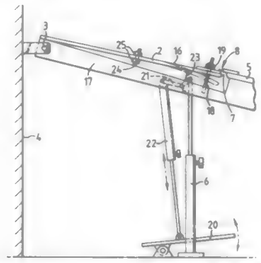
wrapping the game bag around the animal after removal o the skin; whereby the animal shall be isolated from dirt and debris on the ground before removal of the skin.

5,336,125

SKINNING APPARATUS

Simon H. Despointes, St. Vincent, West Indies, assignor to Embankment Investments Limited, Grand Cayman, Cayman Islands

Filed Dec. 9, 1992, Ser. No. 988,165
Claims priority, application United Kingdom, Dec. 11, 1991, 9126341
Int. Cl.[5] A22B *5/16*
U.S. Cl. 452—127 16 Claims



1. Skinning apparatus adapted to remove a layer from a body, the apparatus comprising a generally planar support surface, feeding means for feeding the body along said support surface to a skinning station, the skinning station having a cutting means having a cutting edge to cut a layer from the body and a diverter means to separate the layer so removed from the remainder of the body and wherein the support surface comprises a first table means and a second table means spaced therefrom to form a slot therebetween, the diverter means includes the slot, and the cutting edge extends generally parallel to and adjacent the slot and wherein said first and second table means are supported on a frame, and height setting means are provided to enable the setting of a predetermined relative height between the end of the first table means and the cutting edge, and wherein the first table means in resilient.

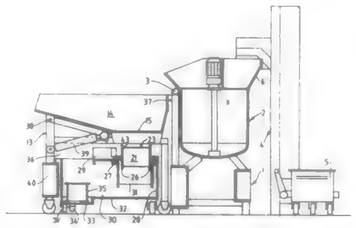
5,336,126

APPARATUS FOR OBTAINING NUTRITIVE SUBSTANCES BY EXTRACTING BONES AND MEAT WHICH OPTIONALLY ADHERES THEREON

Otto Prosenbauer, Innstrasse 23-25, Vienna, Austria A 1201

PCT No. PCT/AT91/00100, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO92/03930, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 4, 1991, Ser. No. 30,095
Claims priority, application Austria, Sep. 12, 1990, 1852/90
Int. Cl.[5] A22C *17/04, 9/00*
U.S. Cl. 452—138 15 Claims

1. Apparatus for extracting nutritive substances from bones comprising a receptacle for the bones and a liquid used for extracting the substances; at least one rotatable stirring member disposed in the receptacle; means for tilting the receptacle about a horizontal axis for the discharge of its contents; a trough carrying a coarse sieve positioned for receiving the contents from the receptacle when it is tilted about the horizontal axis for separating bones and coarse components from liquid and fine components, the trough including an exit; a roller sieve rotatable about a horizontal axis for receiving liquid and fine components from the exit, the rotatable sieve having smaller sieve openings than sieve openings of the coarse sieve and rotating in a given direction; a supply trough between the exit and the rotating sieve for flowing the liquid and fine components from the exit onto an upwardly moving side of the rotating sieve; at least one stripper for removing matter



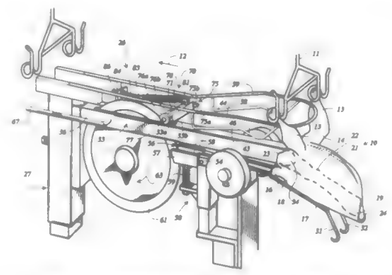
adhering to a surface of the rotating sieve and positioned at a downwardly moving side of the rotating sieve; means for biasing the supply trough and the stripper into engagement with the rotating sieve; and a collection container disposed below the rotating sieve for receiving product comprising liquid and particulates therein which passed through the rotating sieve, the collection container including a discharge conduit for the removal of the product therefrom.

5,336,127

METHOD AND APPARATUS FOR CENTRALLY ALIGNING AND CUTTING THE KEEL BONE OF A POULTRY CARCASS

Jacobus E. Hazenbroek, Burg de Zeeuwstraat 52, Numansdorp, Netherlands

Filed Sep. 22, 1992, Ser. No. 949,429
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—160 21 Claims



1. A method of longitudinally bisecting a poultry breast of a previously eviscerated poultry carcass along its keel bone, comprising the steps of:

moving said carcass suspended by its legs in an inverted attitude with an overhead conveyor along a processing path toward a cutting means with the back of the carcass leading the breast of the carcass;

as the carcass continues to move, tilting the carcass to orient and support the keel bone of said carcass facing upwardly and extending approximately parallel to the processing path;

engaging with a first guide means the exterior of the breast of the carcass in straddling relationship with respect to the keel bone and guiding with said first guide means the keel

VOL 1165 ISS 2 AG 9 1994 UMI

bone of said carcass into longitudinal alignment with said cutting means; and

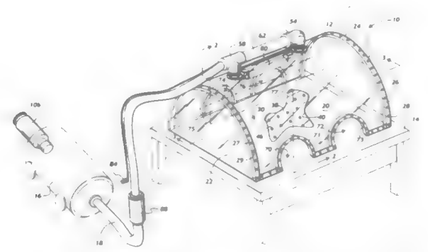
as said keel bone is guided toward said cutting means, moving the previously eviscerated visceral cavity of the carcass about a longitudinal guide to maintain the carcass in position for cutting and to stabilize said keel bone against movement out of alignment with said cutting means to ensure accurate cutting along the keel bone.

5,336,128

NAIL TECHNICIAN'S VENTILATOR

Esau Birdsong, 7841 Dallas Hwy., Douglas, Ga. 30134

Filed Aug. 12, 1993, Ser. No. 105,399
Int. Cl.[5] B08B *15/02*
U.S. Cl. 454—56 **12 Claims**



1. A nail technician's ventilator apparatus for use with a source of reduced pressure for removing fumes and vapors from the work area of a nail technician, said apparatus comprising: a transparent, generally convex hood for defining an interior chamber when placed on a work surface, said hood having a first portion defining a first pair of openings and a second portion defining a second pair of openings positioned generally opposite said first portion for the insertion of the hands of a nail technician and a customer into said interior chamber, said hood having an inner layer and an outer layer spaced from said inner layer by a preselected distance so as to define a plenum therebetween, said inner layer having a plurality of apertures extending from said interior chamber to said plenum, said hood having at least one outlet port in communication with said plenum for connection to the source of reduced pressure for drawing fumes and vapors from within said interior chamber through said apertures, into and through said plenum, and out through said at least one outlet port.

5,336,129

DEVICE FOR HANDLING AND PREPARING GAME ANIMALS

Walter Frith, 12742 Liberty Cir., Duncanville, Ala. 35456

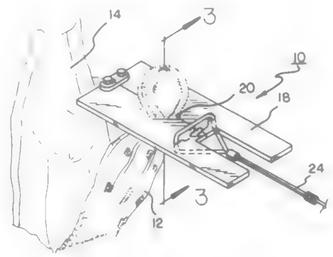
Filed Oct. 4, 1993, Ser. No. 130,792
Int. Cl.[5] A22B *5/16*
U.S. Cl. 452—187 **4 Claims**

1. A device for removing the hide from a carcass of an animal comprising:

a rectangular metal base plate formed of two similarly shaped halves and having a front face, a back face, a leading edge, a trailing edge, two side edges, and a central axis defined from the leading to trailing edge of the base plate, the base plate further including an essentially square clamping hole disposed thereon with the clamping hole having two corners aligned along the central axis, first and second cable receiving holes disposed thereon between the clamping hole and the leading edge of the base plate with the cable receiving holes symmetrically aligned with the central axis and adapted to receive a cable, two guiding holes disposed thereon between the trailing edge of the base plate and the clamping hole with the guiding holes symmetrically aligned with the central axis, and a rectangular notch disposed thereon adjacent to the leading edge and symmetrically aligned with the central axis with the notch adapted to guide a cable disposed through the cable receiving holes along an axis that is essentially planar with the central axis;

a pair of essentially rectangular guiding plates, each having a trailing edge, a leading edge, two side edges, and two guiding holes disposed thereon, the guiding plate having a length such that the distance between its trailing edge and leading edge is less than the distance between the trailing edge of the base plate and the corner of the clamping hole adjacent to the trailing edge of the base plate and having a width such that the distance between its side edges is less than the distance between the side edges of the base plate, the guiding holes of the guiding plate and the guiding holes of the base plate having a common axis of symmetry;

two guiding bolts with cooperative nuts, each bolt disposed through a guiding hole of the base plate and a guiding hole of the guiding plate and fastened with a nut, coupling the guiding plate to the front face of the base plate to define a guiding space therebetween, whereby a cable is routed



through a cable receiving hole of the base plate from the back to the front face, positioned in the guiding space, routed through the other cable receiving hole of the base plate from the front to the back face, then externally secured; and

an essentially spherical ball having a diametric dimension greater than the smallest cross dimension of the clamping hole and adapted to be encompassed with the exposed hide from around an animal's neck, the hide from around the neck being exposed by hanging the animal in an essentially upright position, cutting the hide from around the neck, cutting the hide down the back from the neck to below the animal's hams, then pulling downward, the hide from the carcass being exposed and removed by inserting the hide and ball through the clamping hole of the base plate from the back to the front face, and pulling the base plate with a cable, wedging the hide between the ball and a corner of the clamping hole, particularly the hide in the corner of the clamping hole aligned along the central axis and adjacent to the trailing edge of the base plate.

5,336,130

ADJUSTABLE EXHAUSTER ARM ASSEMBLY

Shaun Ray, Wichita, Kans., assignor to Metal-Fab, Inc., Wichita, Kans.

Filed Mar. 4, 1993, Ser. No. 26,521
Int. Cl.[5] B08B *15/04*
U.S. Cl. 454—65 **44 Claims**

1. An adjustable exhauster arm assembly for conducting gaseous fumes from a work area, the exhauster arm assembly operably connected to a vacuum source and mounted to a supporting surface, the exhauster arm assembly comprising:

a first arm assembly comprising:

a hood member;

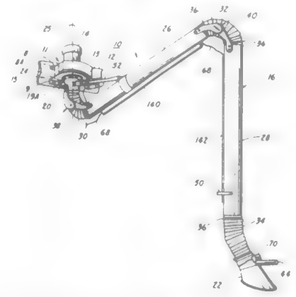
a base collar;

a plurality of rigid tubular members disposed between the base collar and the hood member;

a plurality of flexible tubular members interconnecting the base collar, the rigid tubular members and the hood member in an alternating relationship such that fluid communication is provided between the base collar and the hood member;

joint means for pivotally supporting the hood member and the rigid tubular members in a selected position; and

actuator means for selectively moving and supporting the rigid tubular members;



support means for rotatably interconnecting the base collar and the supporting surface;

switching means, supported by the hood member and electrically connected to the actuator means, for selectively operating the actuator means, the switching means connected to the actuator means by an electric cable; and

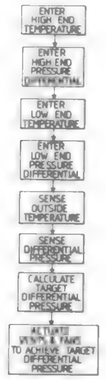
spring means connected to the electric cable for maintaining the electric cable in a substantially taut condition as the hood member and the tubular members are pivotally moved to varied positions.

5,336,131

DIFFERENTIAL PRESSURE CONTROL APPARATUS FOR LIVESTOCK HOUSES

Grant W. Crider, Bremen, and Anthony L. Ellard, Cullman, both of Ala., assignors to Hired Hand Manufacturing, Inc., Bremen, Ala.

Filed Jan. 5, 1993, Ser. No. 741
Int. Cl.[5] B64D *13/00*
U.S. Cl. 454—238 **15 Claims**



1. Apparatus for ventilating an animal enclosure for controlling air quality within said enclosure:

(a) a plurality of fans and closable ventilation openings located along opposing walls of said enclosure;

(b) means for sensing outside ambient temperature;

(c) means for sensing differential pressure between interior and exterior of said enclosure;

(d) means for using said outside ambient temperature to determine a target differential pressure between said interior of said enclosure and said outside of said enclosure; and

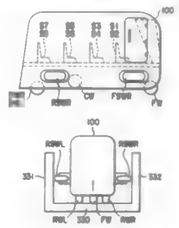
(e) means for actuating said ventilation openings to create said target differential pressure to control the velocity of incoming air.

5,336,132

MULTISENSATION CREATION APPARATUS EMPLOYING STEREOSCOPIC IMAGERY

Kanji Murakami, 7-1-12-102, Minamiaoyama, Minato-ku, Tokyo, Japan

Filed Dec. 31, 1992, Ser. No. 999,152
Claims priority, application Japan, Apr. 7, 1992, 4-085244
Int. Cl.[5] A63G *31/16*
U.S. Cl. 472—59 **11 Claims**



1. A multisensation amusement apparatus for providing simulated multisensation environments comprising:

a vehicle having a plurality of seats for passengers, multiple wheels which are extendable laterally and vertically from the vehicle, means for controlling the speed of rotation of the wheels and means for controlling lateral and vertical extension of the wheels;

stereoscopic imagery protection means provided within the vehicle including a screen and means for projecting stereoscopic images on the screen;

guide path means having a bottom wall and side walls on which the multiple wheels of the vehicle rest, said guide path means defining a path through which the vehicle travels and having multiple path segments connected together, including diverging path segments and converging path segments; and

guide path selecting means for controlling the movement of the vehicle through the guide path means in accordance with contents of the stereoscopic imagery projected by the stereoscopic imagery projection means;

wherein the stereoscopic imagery projection means includes means for generating speed and attitude adjustment signals to alter the speed and attitude of the vehicle as the vehicle travels through the guide path means to simulate to passengers in the vehicle the visual and motion sensations of an environment.

5,336,133

OSCILLATING MECHANISM FOR A CRYSTAL BALL

Joseph Chen, P.O. Box 82-144, Taipei, Taiwan

Filed Feb. 22, 1993, Ser. No. 20,992
Int. Cl.[5] A63H *13/20*
U.S. Cl. 472—6 **1 Claim**

1. An oscillating mechanism for a crystal ball comprising:

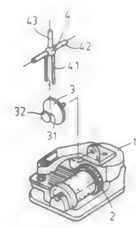
a crystall ball having a frame;

a spring means;

a driving gear connected with said spring means;

VOL 1165 ISS 2 AG 9 1994 UMI

a driven gear engaged with said driving gear and having an eccentric shaft with a circular stop at the end; and



a linking rod provided with two prongs fitted over the eccentric shaft of said driven gear, two arms pivotally mounted on the frame of the crystal ball, and a driving rod connected to a rocking horse disposed within said crystal ball.

5,336,134

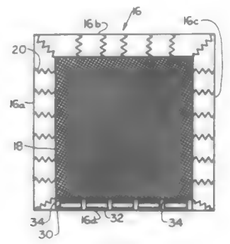
Patent Not Issued For This Number

5,336,135

AMUSEMENT APPARATUS

Daryoush Keyvani, 321 S. San Vicente Blvd. #302, Los Angeles, Calif. 90048

Filed Mar. 6, 1992, Ser. No. 847,354
Int. Cl.[5] A63B *5/00*
U.S. Cl. 472—137 **23 Claims**



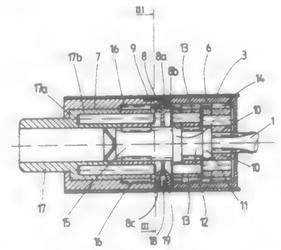
1. A trampoline type amusement device comprising: a series of at least two trampoline assemblies arranged serially laterally adjacent and vertically offset from an uppermost first one of said trampoline assemblies to successive laterally adjacent lower trampoline assemblies to a lowest last one of said trampoline assemblies.

5,336,136

PLANETARY REDUCTION GEAR FOR TUBULAR MOTOR

Thierry Jacqui, Sallanches, France, assignor to Somfy, France

Filed Nov. 23, 1992, Ser. No. 980,463
Claims priority, application France, Dec. 10, 1991, 91 15302
Int. Cl.[5] F16H *1/28*
U.S. Cl. 475—337 **9 Claims**



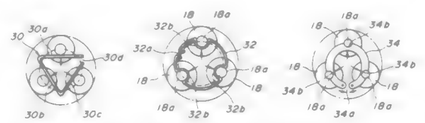
1. A planetary reduction gear mounted in a tube of a tubular motor comprising a ring gear rotationally immobilized, an output shaft, at least an input stage, a satellite holder secured to the output shaft ring gear consists of two ring gear parts one ring gear part meshes with satellites of the input stage and the other ring gear part meshes with satellites of the output stage, said two ring gear parts being connected to one another by an interposed linking component (8; 20) interlocked axially in each of the two ring gear parts and fixed to the tube.

5,336,137

SEAT RECLINING MECHANISM

Tadashi Kawakita, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Jun. 26, 1992, Ser. No. 903,961
Claims priority, application Japan, Jun. 28, 1991, 3-057878[U]
The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.
Int. Cl.[5] F16H *1/28;* **B60N** *2/10*
U.S. Cl. 475—347 **22 Claims**



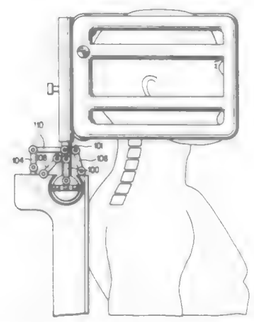
1. A seat reclining mechanism comprising:
a rotatable shaft;
a base plate which has a first through hole for receiving said rotatable shaft therein, said base plate having at a major surface thereof a first cylindrical recess which is coaxial with said rotatable shaft, said base plate having a first ring gear at a cylindrical surface defined by said first cylindrical recess;
a pivotable arm which has a second through hole for receiving said rotatable shaft therein, said pivotable arm having at a major surface thereof a second cylindrical recess which is united with said first cylindrical recess so as to define a substantially cylindrical space between said base plate and said pivotable arm, said pivotable arm having a second ring gear at a cylindrical surface defined by said second cylindrical recess, at least one of said base plate and said pivotable arm having a third cylindrical recess which is merged with one of said first and second cylindrical recesses and coaxial with said rotatable shaft, said third cylindrical recess defining a cylindrical smooth surface;
a control gear securely and coaxially mounted on said rotatable shaft, said control gear being received in said cylindrical space;
a planetary gear which has a toothed portion and a cylindrical projection, said toothed portion being received in said cylindrical space and meshed with said first and second ring gears and said control gear, said cylindrical projection being formed on a rotation center of said planetary gear and received in said third cylindrical recess; and
an elongate resilient member which applies a predetermined force to said planetary gear thereby outwardly biasing said cylindrical projection of said planetary gear against said cylindrical smooth surface of said third cylindrical recess, such that said planetary gear is held in a predetermined revolution orbit around said control gear, said elongate resilient member being spaced from said rotatable shaft.

5,336,138

HEAD, NECK, AND SHOULDER EXERCISE MACHINE

P. Singh Arjawat, 12101 Stoney Creek Rd., Potomac, Md. 20854

Filed Jan. 7, 1993, Ser. No. 2,332
Int. Cl.[5] A63B *23/025*
U.S. Cl. 482—10 **21 Claims**



20. An exercise apparatus for exercising muscles associated with head, neck and shoulder movement, comprising:
a main frame including a back support for supporting a person using the exercise apparatus;
a ball joint mounted at an upper portion of said back support;
a head frame for receiving a head of a person using said exercise apparatus;
a connector connecting said head frame to said ball joint; and
a plurality of resistance devices mounted in a plurality of orientation between said connector and said upper portion of said back support thereby providing resistance to movement as a person using the device moves said head frame with respect to said main frame.

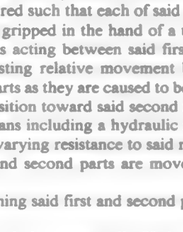
5,336,139

ISOTONIC CERVICAL EXERCISE DEVICE

Bruce W. Miller, P. O. Box 20267, Tampa, Fla. 33622

Continuation-in-part of Ser. No. 29,874, Mar. 11, 1993, abandoned. This application Oct. 12, 1993, Ser. No. 134,800
Int. Cl.[5] A63G *9/16*
U.S. Cl. 482—10 **9 Claims**

1. An apparatus for exercising the muscles surrounding the cervical spine of a person, comprising:
a belt adapted to be secured about the waist of a person, and including frontal and posterior portions;
a chin cup adapted to fit around the person's chin;
head band adapted to fit around the person's head and including frontal and posterior portions;
a first elastic strap having one end attached to the chin cup and a second end attached to the frontal portion of the belt to provide a tensile load therebetween; and



a plurality of elastic straps engaging the frontal portion of the head band, extending across the person's head, and having an end attached to the posterior portion of the belt to provide tensile loads therebetween.

5,336,140

HAND GRIP EXERCISER

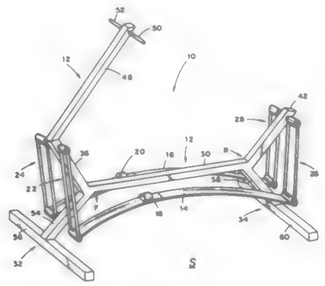
Claude LeBlond, P.O. Box 565, Broad Brook, Conn. 06016

Filed May 21, 1992, Ser. No. 888,405
Int. Cl.[5] A63B *23/16*
U.S. Cl. 482—49 **3 Claims**

1. A self-contained hand exercise device comprising:
a first part and a second part;
means interconnecting said first and second parts to effect relative movement therebetween from a first initial position to a second final position, said first and second parts being configured such that each of said parts is capable of being readily gripped in the hand of a user;
resistance means acting between said first and said second parts for resisting relative movement between said first and second parts as they are caused to be moved from said initial first position toward said second final position, said resistance means including a hydraulic means for providing even nonvarying resistance to said relative movement as said first and second parts are moved relative to one another;
means for returning said first and second parts to said initial position;
said first part includes a generally U-shaped base part defined by two extension portions spaced part form one another by a transversely extending portion integrally connected therewith;
said second part being a sliding part;
guide means provided on each of said extension portions of said base part and on the distal ends of said sliding part for effecting relative linear sliding movement between said base part and said sliding part; and
wherein said interconnecting means is a length of cable.

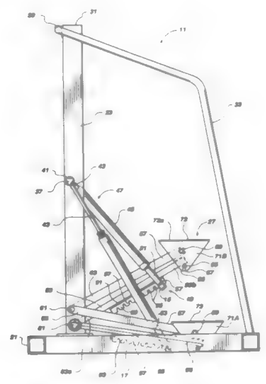
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,141
EXERCISE MACHINE FOR SIMULATING PERAMBULATORY MOVEMENT
Larry W. Vittone, Rte. 2, Box 23, Ollis Dr., Oliver Springs, Tenn. 37840
Filed Sep. 25, 1992, Ser. No. 951,672
Int. Cl.[5] A63B *22/00*
U.S. Cl. 482—51 34 Claims



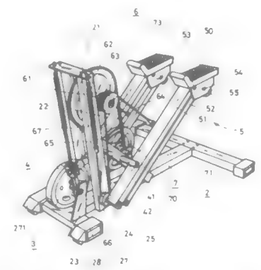
1. An exercise machine for simulating perambulatory movement which comprises a frame, a pair of oscillators, each of said oscillators including foot support means thereon for supporting a foot of a user, oscillator support means supporting said oscillators on said frame with said foot support means in spaced-apart side-by-side relationship to provide oscillatory movement of said foot support means along generally parallel side-by-side step paths, and bias means for biasing said oscillators against deflection to enable said oscillators to resiliently deflect in response to forces applied by the user through said foot support means and to provide resilient movement of said foot support means of said oscillators generally perpendicular to said step paths during movement of said foot support means along said foot paths.

5,336,142
STEPPER WITH ADJUSTABLE RESISTANCE MECHANISM
William T. Dalebout, and Richard B. Ellis, both of Logan, Utah, assignors to Proform Fitness Products, Inc., Logan, Utah
Filed Feb. 4, 1993, Ser. No. 13,746
Int. Cl.[5] A63B *22/04, 21/008*
U.S. Cl. 482—52 14 Claims



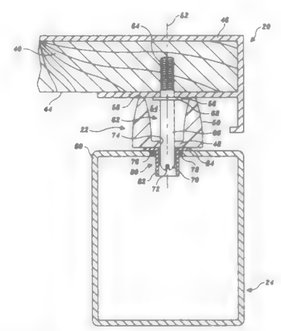
1. An exercise machine comprising:
a frame for positioning on a support surface;
a pair of pivot arms each having a length and respective first ends pivotally connected to said frame to pivot toward and away from said support surface;
resistance means interconnectable between said frame and each of said pair of pivot arms for respectively resisting movement of each of said pair of pivot arms toward said support surface, said resistance means having an engagement member at one end thereof;
connection means associated with each of said pair of pivot arms for removably connecting said resistance means to at least one of said pivot arms, said connection means including a plurality of notches spaced along the length lower of at least one of said pair of pivot arms, each of said notches being sized to removably receive a said engagement member bushing means for providing a rotatable connection between said engagement member and said notches.

5,336,143
MECHANISM OF A STEPPING DEVICE
Hong-Chi Wu, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan
Filed Sep. 13, 1993, Ser. No. 119,542
Int. Cl.[5] A63B *23/04*
U.S. Cl. 482—52 2 Claims



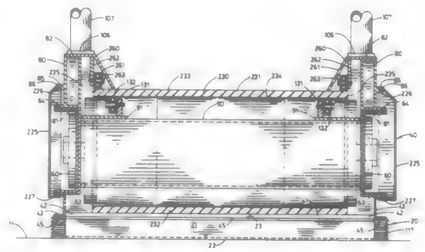
1. An exercise stepping device comprising:
(a) a frame including a vertically extending support bar member, a handrail, and a control panel mounted on said support bar member;
(b) a bottom truss being H-shaped in contour defining a pair of longitudinally displaced and transversely directed truss leg members and a longitudinally directed central truss leg member, said central truss leg member having a pair of support beam members secured thereto on opposing transverse sides thereof and extending in a substantially vertical direction, said support beam having a triangularly contoured plate member secured thereto;
(c) load adjustment means for selectively providing a predetermined resistance force, said load adjustment means being rotatably mounted between said support beam members to a rear one of said longitudinally displaced truss leg members by at least one supporting plate member, said load adjustment means having a rotating wheel member;
(d) a pair of auxiliary plate members rotatably mounted to respective support beam members which extend adjacent said bottom truss, each of said auxiliary plate members having a positioning lever member extending in a transverse direction;
(e) pedal means for being reciprocally displaced, said pedal means including a pair of pedal upper plate members and pair of pedal lower plate members, each of said pedal upper and lower plate members being displaced parallel each to the other, each of said pedal upper plate members being rotatably mounted to a respective support beam at a lower end thereof, each of said pedal lower plate members being rotatably mounted to respective opposing sides of said longitudinally central truss leg members at a lower end thereof, said pedal upper plate members and said pedal lower plate members having respective upper ends thereof rotatably mounted to respective pedal leg base members having respective spring members extending from a lower surface of said pedal by base members, each of said pedal upper and lower plate members in coupled relation to a respective support beam and pedal leg base member forming a parallelogram linkage;
(f) a transversely directed axle rotatably mounted to said triangular plate member, said transversely directed axle having a central axis gear mounted thereon, and a pair of axle pulley members mounted to said transversely directed axle on opposing transverse ends, each of said axle pulley members being coupled to said axle by a one-way rotational bearing, each of said axle pulley members having an inner and an outer slot, a pair of first actuating ropes respectively wound on a respective pulley inner slot on one end and secured to a respective pedal upper plate member at an opposing end, a pair of second actuating ropes respectively wound on a respective pulley outer slot on one end thereof and secured to a support beam spring on a second opposing end thereof; and,
(f) an actuating wheel rotatively coupled to said load adjustment means and said central axis gear.

5,336,144
TREADMILL WITH ELASTOMERIC-SPRING MOUNTED DECK
Patrick T. Rodden, Snohomish, Wash., assignor to Precor Incorporated, Bothell, Wash.
Filed Nov. 5, 1992, Ser. No. 972,009
Int. Cl.[5] A63B *22/02*
U.S. Cl. 482—54 20 Claims



1. An exercise treadmill comprising:
(a) a frame;
(b) first and second roller assemblies rotatably mounted on the frame;
(c) an endless belt trained about the first and second roller assemblies;
(d) a substantially rigid deck disposed between the frame and an upper run of the belt; and
(e) a plurality of elastomeric springs, each including a base portion and a sidewall portion projecting from the base portion to form an internal cavity that opens away from the base portion to define an aperture, the elastomeric springs being supported by the frame and underlying the substantially rigid deck to support the deck spaced apart from the frame, wherein the elastomeric springs reversibly deform to resist deflection of the deck toward the frame resulting from loads imposed by an exerciser on the belt, and wherein the substantially rigid deck distributes impact loads to substantially all of the elastomeric springs.

5,336,145
APPARATUS HAVING A MOVABLE LOAD BEARING SURFACE
Dennis L. Keiser, 10779 E. Ashlan, Sanger, Calif. 93657
Continuation of Ser. No. 36,976, Mar. 25, 1993, abandoned, which is a continuation of Ser. No. 753,424, Aug. 30, 1991, abandoned. This application Dec. 1, 1993, Ser. No. 160,437
Int. Cl.[5] A63B *22/02*
U.S. Cl. 482—54 6 Claims



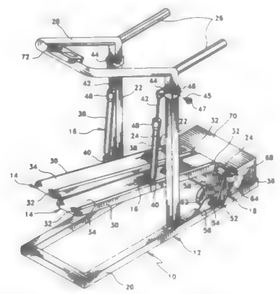
1. An apparatus having a movable load bearing surface, the apparatus comprising a frame having a first pair of laterally spaced conveying assemblies generally extending along a course of movement and mounting a plurality of rollers individually mounted for rotational movement about individual axes of rotation substantially transversely related to said course of movement; a conveying member, having lateral extremities and a lower surface, defining said load bearing surface supported on said conveying assemblies for movement substantially along said course of movement with said plurality of rollers inwardly of the lateral extremities of the conveying member and with the lower surface of the conveying member rested on said rollers and unsupported between the first pair of conveying assemblies; a multiplicity of structural elements mounted on said conveying member and extending substantially transversely to said course of movement and over said conveying assemblies to impart support to the load bearing surface; means for driving the conveying member over the conveying assemblies in said course of movement: and a second pair of conveying assemblies mounted on the frame in spaced, substantially parallel relation to each other and mounting a plurality of rollers individually mounted for rotational movement about individual axes of rotation substantially transversely related to said course of movement in engagement with said load bearing surface inwardly of the lateral extremities of the conveying member and outwardly of the rollers on which the lower surface of the conveying member is rested and with sufficient pressure against the load bearing surface in combination with said structural elements to impart substantially cantilever support to said load bearing surface.

5,336,146
TREADMILL WITH DUAL RECIPROCATING TREADS
Gary D. Piaget, 1435 W. Silvermeadows Dr. #48, and Trace O. Gordon, 3880 W. Lariat Rd., both of Park City, Utah 84060
Filed Dec. 15, 1993, Ser. No. 168,025
Int. Cl.[5] A63B *22/04, 22/00*
U.S. Cl. 482—54 13 Claims

1. Treadmill apparatus comprising:
first and second adjacent treadmills each having a continuous tread, and first and second ends;
a frame pivotably supporting the first ends of said first and second treadmills;
first and second spring means for supporting the respective second ends of said first and second treadmills in a first position above a supporting surface; and
first and second resistance means for resisting downward pivoting movement of said first and second treadmills

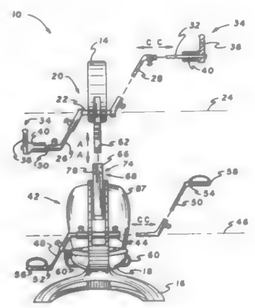
VOL 1165 ISS 2 AG 9 1994 UMI

from said first position to a second position as a user's weight is placed upon said treadmills, said first and second spring means returning said first and second treadmills



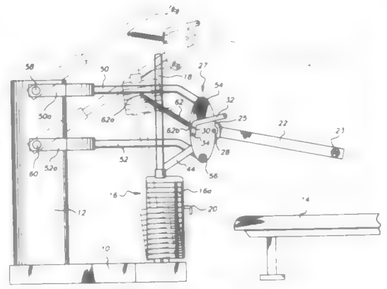
from said second position to said first position when said user's weight is removed from said first and second treadmills, said first and second treadmills alternately pivoting up and down about said first ends as a user treads thereon.

5,336,147
EXERCISE MACHINE
Edward C. Sweeney, III, 100 Kendall Rd., Keene, N.H. 03431
Filed Dec. 3, 1993, Ser. No. 160,743
Int. Cl.[5] A63B *21/00*; G05G *1/14*
U.S. Cl. 482—57 **18 Claims**



1. An exercise apparatus comprising:
a body having an upper portion and a lower portion joined to said upper portion;
a first crank mechanism rotatably attached to said upper portion, said first crank mechanism having a first rotatable main shaft defining a first horizontal axis of rotation and a first pair of moment arms each attached to opposite ends of said first rotatable main shaft, said first pair of moment arms having a first pair of throws, each one of said first pair of throws being attached to one of said first pair of moment arms; and
a second crank mechanism rotatably attached to said lower portion, said second crank having a second rotatable main shaft defining a second horizontal axis of rotation and a second pair of moment arms attached to opposite ends of said second rotatable main shaft, said second pair of moment arms having a second pair of throws, each one of said second pair of throws being attached to one of said second pair of moment arms;
said second horizontal axis of rotation being located vertically above said seat;
at least one of said first and second crank mechanisms having means for adjusting the length of a said respective rotatable main shaft for providing axial adjustment.

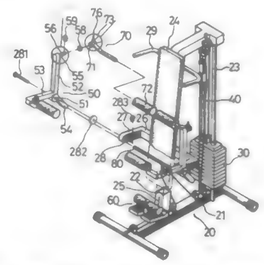
5,336,148
MACHINE FOR PERFORMING PRESS EXERCISES
Arthur B. Ish, III, Renton, Wash., assignor to Vectra Fitness, Inc., Redmond, Wash.
Filed Feb. 19, 1992, Ser. No. 838,472
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—98 **4 Claims**



1. An exercise machine comprising:
an elevated support member;
a head unit in front of said support member;
a load connected to said head unit to resist upward movement thereof;
swing means for connecting said head unit to said support member for vertical swinging movement whereby said head unit will remain parallel to a starting position when swung up and down by said means with respect to said starting position; and
a press frame extending forwardly from a rigid connection with said head unit whereby upward movement of said press frame by an exerciser will be resisted by said load without a mechanical advantage favoring the exerciser, said press frame being mounted on said head unit for vertical swinging adjustment about a horizontal swing axis having a vertical sector plate behind said swing axis with an arcuate pattern of openings therein;
and a latch mechanism mounted on said head unit and including a pawl for optionally fitting into said openings in said sector plate to lock said press frame to said head unit in a selected position.

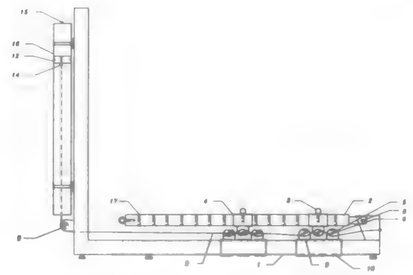
5,336,149
ABDOMINAL AND HIP EXERCISING APPARATUS
Leao Wang, Taichung Hsien, Taiwan, assignor to Greenmaster Industrial Corp., Taichung Hsien, Taiwan
Filed Jan. 28, 1993, Ser. No. 10,172
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—100 **6 Claims**

1. An abdominal and hip exercising apparatus comprising:
a) a machine base;
b) a bevel frame on the machine base;
c) a back rest fastened to the bevel frame;
d) an angle bar on each of two opposite sides of the back rest;
e) a pair of swivel frames, and means for pivotally connecting each swivel frame to an angle bar;
f) each swivel frame including a first branch, a second branch and a third branch, the three branches being radially equiangularly spaced from each other, the first branch including an extension axle provided with two locating holes and an actuating member for fastening to either of the locating holes for exercising the abdominal region, the second branch including an extension axle provided with two locating holes and an actuating member fastenable to either of the locating holes for exercising the hip and leg region, the third branch of one swivel frame being linked to the third branch of the other swivel frame for synchronous movement; and



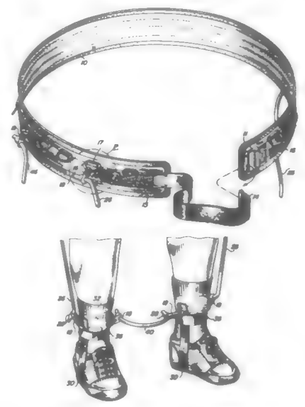
g) a weight means, a pulley block, and a traction cable means connecting the weight means through the pulley block to the swivel frames.

5,336,150
LEVER RESISTANCE SELECTION MECHANISM FOR STRENGTH TRAINING
King L. Mueller, 143 Hillcrest Dr., North Platte, Nebr. 69101, and Reno A. Mueller, R.R. 2 Box 168, Moravia, Iowa 52571
Filed Aug. 20, 1993, Ser. No. 110,184
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—112 **2 Claims**



1. An exercise apparatus comprising:
a frame;
a lifting bar having a proximal end and a distal end, the proximal end pivotally mounted to the frame, the frame having a first portion extending parallel with and adjacent to the lifting bar when the lifting bar is in a rest position;
a first adjustment slider having a single pulley thereon, the first adjustment slider slidably mounted on the lifting bar for sliding movement therealong;
a first locking means for locking the first adjustment slider at a selected position along the lifting bar;
a second adjustment slider having a pair of pulleys thereon, the second adjustment slider slidably mounted on the first frame portion for sliding movement therealong, and the pair of pulleys spaced apart a sufficient distance so as to accommodate the single pulley of the first adjustment slider therebetween;
a second locking means for locking the second adjustment slider at a selected position along the first frame portion;
a resistance mechanism mounted on the frame; and,
a cable connected at one end to the resistance mechanism, passing over one of the pair of pulleys of the second adjustment slider, then passing over the single pulley of the first adjustment slider, then passing over the other of the pair of pulleys of the second adjustment slider, then connected at the other end to the frame, where the user may selectively lock the first adjustment slider to the lifting bar and lock the second adjustment slider to the first frame portion at a position such that the single pulley of the first adjustment slider is located between the pair of pulleys of the second adjustment slider when the lifting bar is in a rest position, and where the position of the first adjustment slider along the lifting bar determines the effective resistance of the resistance mechanism.

5,336,151
BODY EXERCISE DEVICE
Paul Van Ballegooie, Gilbert, Ariz., assignor to Energize International, Inc., Phoenix, Ariz.
Filed Sep. 14, 1993, Ser. No. 129,730
Int. Cl.[5] A63B *21/02*
U.S. Cl. 482—124 **15 Claims**



1. A body exercise kit including in combination:
a waist encircling member with a plurality of connector devices attached thereto and spaced at intervals along the length thereof;
a releasable fastener for securing said waist encircling member about the waist of a user,
first and second foot pieces for releasable attachment to the foot of a user and each having a first portion for encircling the foot and a second portion for encircling the ankle of a user;
at least a first hand piece for grasping by the hand of a user;
first and second elastic members each having first and second ends, with the first ends thereof for connection with said first and second foot pieces, respectively, and the second ends thereof for releasable connection with selected ones of the connector devices on said waist encircling member;
a third elastic member having first and second ends, with the first end thereof for connection with said hand piece and the second end thereof for releasable connection with a selected one of the connector devices on said waist encircling member; and
a fourth elastic member having first and second ends for releasable connection, respectively, with said second portions of said first and second foot pieces.

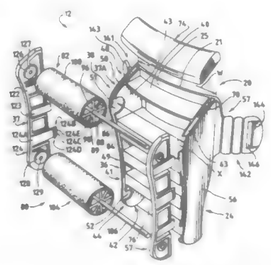
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,152

EXERCISE APPARATUS AND METHOD OF USING SAME

Jeffrey S. Winslow; Lonnie C. Pogue, both of San Diego, and Richard A. Roshon, Olivenhain, all of Calif., assignors to Jeffrey S. Winslow, San Diego, Calif.

Filed Jun. 15, 1993, Ser. No. 78,442
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—132 13 Claims



10. An exercise device worn on a lower back and a buttocks area of a user for use in conjunction with a vertical flat surface, comprising:

base means for engaging releasably the back area, said base means having a left side wall member, a right side wall member spaced apart from said left side member, and a front wall member integrally connected between said left and right side wall members to contact the back area of the user;

said front wall member being generally transversely U-shaped and having an upper convex portion for engaging the lower back area of the user;

said front wall member having a lower concave portion extending continuously from said upper convex portion for engaging the buttocks area in an ergonomical manner for distributing forces over both the back and buttocks areas;

means for attaching the base means to the back side of the user with said upper convex portion engaging the back area of the user and with said lower concave portion engaging the buttocks area of the user;

roller means connected to said base means for engaging rollably the flat surface to permit said base means to traverse bi-directionally the flat surface;

said roller means including an upper cylinder member extending between said left and right side wall members opposite said upper convex portion;

means for journalling for rotation said upper cylinder member at said upper convex portion;

said roller means including a lower cylinder member extending between said left and right side wall members opposite said lower concave portion;

means for journalling for rotation said lower cylinder member at said lower concave portion;

wherein said upper cylinder member is mounted adjacent to said upper convex portion to support the lower back area, and said lower cylinder member is mounted adjacent to said lower concave portion to support the buttocks area for distributing the force applied by said cylinder members evenly across the width of said base means at two separated locations; and

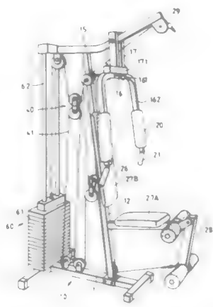
each of said cylinder members being extruded from thermoplastic material and having an axle for rotatably supporting it from said base means, a coaxial hub member extending the entire axial length of its cylinder member for receiving said axle, a plurality of axial rib members integrally connected to said hub member and extending radially outwardly therefrom over the entire axial length of its cylinder member for providing structural strength to said cylinder member, and an outer tubular cylindrical rim member integrally connected to the radially distal ends of said rib members and extending over the entire axial length of its cylinder member.

5,336,153

MULTIPURPOSE GYMNASTIC APPARATUS

Jack Chen, Taichung, Taiwan, assignor to Joong Chean Industry Co., Ltd., Taichung, Taiwan

Filed Feb. 9, 1993, Ser. No. 15,515
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—137 2 Claims



1. A multipurpose gymnastic apparatus comprising:

a frame unit (10) having a bottom base (11), a level beam (12) and an upper beam (15) joined together to form said frame unit (10);

a chair set (26) mounted on said level beam (15);

a leg stretching means (28) mounted in front of a seat (27A) of said chair set (26);

a dual purpose pushing and rotating means (16) mounted on said upper beam (15) above said chair set for permitting a user to switch from a chest building exercise to an arm building exercise;

a pulley unit (40) having two groups mounted respectively at the upper and the lower portions of said frame unit;

said pulley unit (40) having a plurality of ropes (41) running through said pulley unit (40) and having free ends respectively connected to said pushing and rotating means (16) and said leg stretching means (28);

load carrying means (60) engaged to said ropes for lifting and lowering a selected load when said user is exercising,

wherein said dual-purpose pushing and rotating means (16) comprises:

a support frame (17) rotatably pivoted at a first end on said upper beam (15);

a bottom beam (171) transversely fixed to a second end of said support frame (17);

each of a pair L-shaped arms (162) having a first end respectively rotatably pivoted to opposite ends of said bottom beam (171) and a second end having a protective casing (20) and a hand grip (21) extending at an angle;

a protective rod (23) mounted on and extending down from said bottom beam (171);

each of two wheel fitting members (161) rotatably mounted on said bottom beam (171);

each of two arresting pieces having a first body and a second body;

said first body of each of said two arresting pieces joined to said first end of each of said two L-shaped arms;

each of two ropes of said plurality of ropes connected to said pushing and rotating means engaged around one of said two wheel fitting members and to an end of said second body of said two arresting pieces;

an arresting bar mounted on each said first body and engaging said bottom beam to limit rotation of said pair of L-shaped arms;

wherein when said user engages and pushes said each said protective casing (20) to perform said chest building exercise said pair of L-shaped arms rotate on said bottom beam to pull said each of said two ropes around said two wheel fitting members and lift said selected load and,

wherein when said user grasps and pushes each said hand grip (21) to perform said arm building exercise said support frame (17) rotates on said upper beam and said protective rod engages each of said two ropes to preclude rotation of said two ropes around said two wheel fitting members.

5,336,154

APPARATUS FOR PRODUCING PACKAGE MADE OF CARDBOARD

Heinz Focke, and Martin Stiller, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Dec. 15, 1992, Ser. No. 991,539
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1991, 4141678
Int. Cl.[5] B31F *7/00*
U.S. Cl. 493—352 6 Claims

1. An apparatus for the production of a projection (10) or stop in a panel of a package made of cardboard, comprising:

a) a punching piece (24) and a counter tool (28) for simultaneously producing in the cardboard a punch cut (21) and a curved deformation (22) in a region adjoining the punch cut (21);

b) wherein the punching piece (24) takes the form of a cylinder with a circular end face (25) and a circular punching bezel (26) for forming the punch cut (21), and, furthermore, has an cylindrically curved region adjoining the end face (25) for forming the curved deformation (22);

c) wherein the counter tool is arranged on a side of the cardboard opposite to the punching piece (24) and is provided with a depression (29), matching the punching piece (24), for entry of the punching piece (24); and

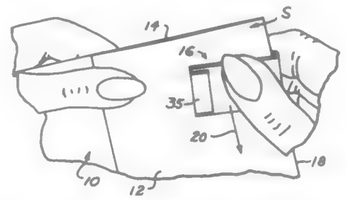
d) wherein the cylindrical punching piece (24) is arranged in an inclined manner relative to a plane of the cardboard so that neither a surfaced area of the cylindrical punching piece (24) nor the end face (25) directly have an effect on the cardboard, but at first the punching bezel (26) enters into the plane of the cardboard, the end face along with a corresponding surface on the depression (29) (25) having a cutting effect on the cardboard and a portion of the curved region of the punching piece (24) forming a deformation (22) in the region of the cardboard adjoining the punch cut (21).

5,336,155

METHOD FOR FOLDING PAPER SHEETS

Charles E. Studebaker, 5753 Greendale Dr., Galloway, Ohio 43119

Continuation-in-part of Ser. No. 831,518, Feb. 5, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 27,093
Int. Cl.[5] B65H *45/12, 45/28*
U.S. Cl. 493—405 3 Claims



1. A method of manually forming a crease in a sheet of paper comprising the steps of:

providing a creasing device comprising a first creasing arm, a second creasing arm laterally alongside said first arm, a hinged portion connecting two adjacent ends of said first arm and said second arm, and means for finger-gripping the device; said arms having a first open, inactive non-creasing condition in which said arms form an acute angle extending from said hinged portion to an open end remote therefrom and a second active creasing condition in which facing inner creasing surfaces of said arms are pressed against paper to be creased by means of inwardly-directed pressure applied to said arms;

gripping the gripping means with at least one finger of one hand;

doubling over a portion of said paper sheet to establish a line to be creased;

grasping the double-over sheet portion from opposite sides in the hand other than said one hand gripping the device;

pinching a starting point for said crease at one end of said doubled-over sheet portion;

placing the open end of the arms, while said arms are in their inactive condition, over opposite sides of the line to be creased in said paper sheet with said line being essentially between said facing creasing surfaces of said arms;

applying inwardly-directed pressure to the doubled-over portion at said starting point by moving said arms to their active creasing condition; and

manually moving said device away from said starting point in a direction along the line to be creased while maintaining the pressure applied to said arms to form the creasing line.

5,336,156

INFANT INCUBATOR HUMIDIFIER

Kenneth G. Miller, Newport Beach, Calif., and James R. Grosholz, New Hope, Pa., assignors to Air-Shields, Inc., Hatboro, Pa.

Continuation of Ser. No. 499,093, Mar. 26, 1990, abandoned. This application Sep. 19, 1991, Ser. No. 762,653
Int. Cl.[5] A61G *11/00;* A61M *15/00;* A01K *41/00*
U.S. Cl. 600—22 27 Claims

1. An infant incubator humidifier comprising:

a heater controller base;

a heater tower mounted on said heater controller base and having a longitudinal axis;

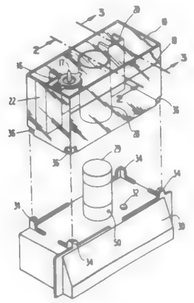
a water reservoir having a top and unattached to said heater controller base and movable relative to said heater con-

VOL 1165 ISS 2 AG 9 1994 UMI

troller base in a direction along said longitudinal axis of said heater tower to and from a position in which said water reservoir rests upon said heater controller base, said water reservoir adapted to contain water and having:

(a) air inlet means opening into said water reservoir only near said top of said water reservoir for introducing inlet air into said water reservoir, and

(b) air outlet means opening into said water reservoir only near said top of said water reservoir for conducting humidified air from said water reservoir;



a tubular metal sleeve mounted within said water reservoir and within which said heater tower is positioned, said sleeve having an outside surface and inside surface in heat transfer disposition with said heater tower when said water reservoir rests on said heater controller base;

a wick disposed on said outside surface of said sleeve;

a heater disposed within said heater tower;

and alignment means for preventing relative rotation between said heater controller base and said water reservoir about said longitudinal axis of said heater tower when said water reservoir rests upon said heater controller base.

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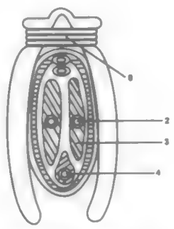
PENILE CLAMP FOR IMPOTENCE

Ralph Hale, 37 Linksland Dr., Hutchinson, Kans. 67502

Filed Dec. 4, 1992, Ser. No. 986,440

Int. Cl.[5] A61B *17/00*

U.S. Cl. 600—41 **2 Claims**



1. A therapeutic clamp for assisting in maintenance of erection in the male penis, comprising a single piece of molded plastic, consisting of a pair of rods having distal and proximal ends and being of generally "C" shape configuration, wherein said pair of rods is connected at said proximal ends by a mid-portion; said mid-portion having a reduced thickness across a transverse region thereof, forming a flexible hinge permitting said rods to be spread apart, said rods having clamping surfaces curved toward each other; said rods further having notches on an outer surface opposite said clamping surfaces adjacent to the hinge, said notches to receive elastic bands transversely of said rods wherein the clamp pressure can be adjusted by manipulation of said bands.

5,336,158

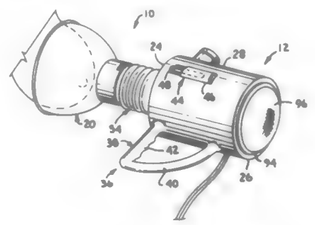
PNEUMATIC VACUUM VIBRATOR APPARATUS

Freddie L. Huggins, P.O. Box 332, Munford, Tenn. 38058, and Donald L. Fleming, 9376 Barley Mills Rd., Memphis, Tenn. 38133

Filed Nov. 12, 1992, Ser. No. 975,060

Int. Cl.[5] A61H *1/00*

U.S. Cl. 601—14 **5 Claims**



1. An electrical pneumatic vacuum vibrator apparatus for contacting a body surface comprising:

(a) a housing having first, second, and third apertures and including a perforate partition segmenting said housing between said first aperture and said second aperture, said housing including a generally hollow cylinder flange member annularly surrounding said first housing aperture and projecting externally therefrom, said flange including an inwardly opening groove for supporting a vibrator conductive ring;

(b) a first body surface contacting assembly for cooperatively applying thereto a pressure differential and vibration force, wherein said first body surface contacting assembly includes a generally cup-shaped member including structure defining a cavity for receiving therein a body surface to be subjected to suction and vibration forces, said cup-shaped body surface contacting assembly including cushioning means for cushioning contact between said body surface and said first body surface contacting assembly, said first body surface contacting assembly further including a generally hollow cylindrical shank presenting a pair of opposed, slot-shaped apertures;

(c) a second body surface contacting assembly for applying thereto a vibration force, wherein said second body surface contacting assembly includes a generally bulb-shaped member having a generally arcuate head for contacting a body surface to be subject to vibration forces, said second body surface contacting assembly including a generally hollow cylindrical shank presenting a pair of opposed, slot-shaped apertures;

(d) a connector assembly including a generally hollow cylindrical sleeve member for supporting a body surface contacting assembly shank in telescoping relationship, said sleeve member having a first end adjacent said body surface containing assembly shank and a second end adjacent said housing, said first end including a pair of opposed clips for mating engagement within said slot-shaped shank apertures, and said second end including a shoulder presenting a recessed lip, said connector assembly including a generally hollow cylindrical bellow having a bore for telescopically receiving and fixedly intercoupling said housing flange and said sleeve member lip, wherein said first and second body surface contacting assemblies are interchangeably intercoupled with said housing b y said connector assembly;

(e) a blower fan coupled with said second aperture for exhausting air from said housing and drawing air therein through said body surface contacting assembly for creating a vacuum suction force in said body surface contacting assembly, said second aperture including a screen member in covering relationship for shielding said blower fan;

(f) a vibrator assembly having a pump, a conductive ring supportingly received within said housing flange groove, and a lead remotely intercoupling said pump and said ring for exerting vibrating action on said body surface contacting assembly;

(g) fan switch means for permitting independent control of said blower fan;

(h) vibrator switch means for permitting independent variable regulation of said vibrator;

(i) an adjustable baffle including a generally hemi-cylindrical sliding plate coupled in longitudinally sliding, overlapping relationship with said third housing aperture and positionable at open, closed and intermediate positions therebetween for permitting admission of air therethrough and adjusting said suction force exerted on said body surface, said baffle being oriented at a position of about 90° from said handle stem to permit positioning by the thumb of a user; and

(j) a generally quadrant-shaped handle coupled with said housing for gripping said apparatus by a user, said handle including a generally arcuate portion coupled with a generally transverse stem, said stem further including groove members for facilitating gripping by the fingers of a user.

5,336,159

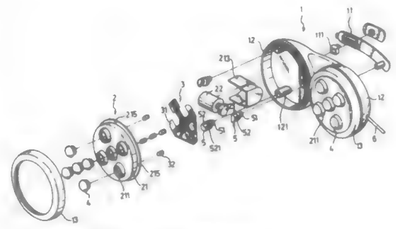
INFRARED MASSAGER

Tzu-Keng Cheng, 197 Shin-Sheng Street, Chung-Ho City, Taipei, Taiwan

Filed Aug. 25, 1992, Ser. No. 934,325

Int. Cl.[5] A61H *1/00*

U.S. Cl. 601—15 **1 Claim**



1. An infrared massager comprising:

a) a casing including two receiving chambers, each receiving chamber having a plurality of stub tubes disposed therein;

b) a massaging device disposed within each receiving chamber, each massaging device including a motor, a cam rotated by the motor, a vibrating plate vibrated by the cam, the vibrating plate having a plurality of holes formed therein and a peripheral flange having a plurality of notches formed therein, and a plurality of silicon rubber massage elements engaged within the holes;

c) a plurality of rubber bolts, each rubber bolt including a retainer head, a projection and a bottom rod, and the projections of the rubber bolts being engaged within the notches of each peripheral flange for capturing the vibrating plate in the receiving chamber;

d) a lock hood mounted on each receiving chamber for locking the massaging device inside the chamber;

e) an infrared device disposed within each receiving chamber and secured to the vibrating plate, each infrared device including a plurality of infrared light emitting elements disposed within the holes of the vibrating plate; and

f) a control handle for moving the casing, the control handle including a switch for connecting an electric power supply source to each massaging device and infrared device to cause vibration of the vibrating plate and emitting of infrared light by the infrared device for providing heated massage through the rubber massage elements.

5,336,160

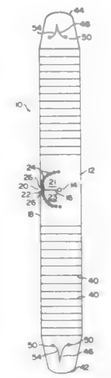
MULTI-PURPOSE WILDERNESS SPLINT

Anna Christensen, Burnaby, Canada, assignor to Wilderness Alert Safety Products Ltd., Vancouver, Canada

Filed Jul. 13, 1992, Ser. No. 912,707

Int. Cl.[5] A61F *5/04*

U.S. Cl. 602—6 **8 Claims**



1. A multi-purpose splint comprising an elongated, foldable strip of semi-rigid material, having upper and lower surfaces, two lateral edges running along either side of said surfaces, and first and second ends, comprising

a) a slit extending, in the area of said strip centrally located between said first and second ends thereof, from one of said lateral edges to a point midway between said lateral edges, said slit thereby forming first and second flaps, the second of said lateral edges being unbroken in the area of said strip opposite said midway point;

b) a semi-circular array of apertures in said first and second flaps describing an arc around said midway point; and

c) pin means extending through said apertures for securing one of said flaps in a position overlapping the other of said flaps;

whereby one of said ends may be rotated relative to the other of said ends about said midway point, thereby causing said apertures on one of said flaps to overlie said apertures on the other of said flaps, and said pin means may be removably extended through said overlying apertures to thereby form an angle between said first and second ends.

5,336,161

KNEE ORTHESIS

Gabor Lengyel, Altensteig, Fed. Rep. of Germany, assignor to Biedermann Motech GmbH, VS-Schweaningen, Fed. Rep. of Germany

Filed Nov. 30, 1992, Ser. No. 983,417

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140554

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—26 **10 Claims**

1. A knee orthesis comprising

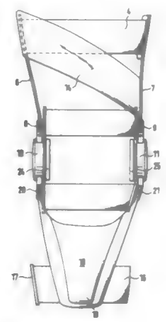
a thigh attachment part (1) having a first strut (6) at a first side, a second strut (7) at a second side and a first strap retainer (4) connecting said first and second struts for attachment to the thigh,

a lower leg attachment part (2) having a first free end (20) at

VOL 1165 ISS 2 AG 9 1994 UMI

said first side and a second free end (21) at said second side,

a joint means (3) providing a hinged connection of said thigh attachment part (1) and said lower leg attachment part (2), said joint means (3) having a first joint member (10) hingedly connecting said first strut (6) to said first free end



(20) and a second joint member (11) hingedly connecting said second strut (7) to said second free end (21) and

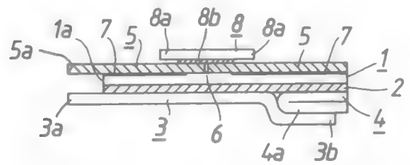
rigid diagonal strut (14) connecting said first and second struts (6,7) and extending from a first point (15) on one of said struts to a second point on the other of said struts, said second point being closer to said joint means (3) than said first point (15).

5,336,162

MEDICAL BANDAGE AND METHOD FOR USING THE SAME

Junzo Ota, Nishinomiya; Hajime Mura, and Toshihiko Kawachi, both of Sakai, all of Japan, assignors to Kyowa Limited, Osaka, Japan

Filed Oct. 8, 1993, Ser. No. 133,334
Claims priority, application Japan, Jun. 18, 1993, 5-172671
Int. Cl.[5] A61F *13/00*
U.S. Cl. 602—41 9 Claims



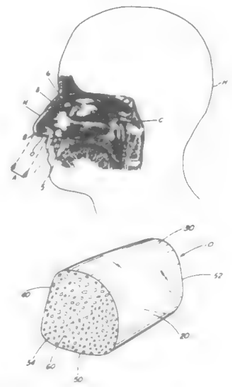
1. An improved medical bandage of the type having a substrate of plastic film or foil, a pressure-sensitive adhesive layer formed on one side of said substrate, and a release paper placed on said pressure-sensitive adhesive layer, wherein the improvement comprises a support consisting of two pieces of plastics film which are butted in the widthwise direction at the middle in the longitudinal direction and are peelably fusion-bonded to the other side of said substrate, such that said support is peeled off at the butting part from said substrate after the bandage has been applied to a patient.

5,336,163

EXPANDABLE NASAL STENT

Catherine DeMane, and Robert Schwarz, both of Memphis, Tenn., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.

Filed Jan. 6, 1993, Ser. No. 1,064
Int. Cl.[5] A61F *13/00*
U.S. Cl. 602—46 10 Claims



1. An expandable nasal stent for postoperative nasal packing, comprising:

(a) a body having outer surfaces corresponding generally to the mucosal surfaces that define a human nasal cavity;

(b) the body being formed of a unitary layer of inherently porous foam material capable of expanding outwardly, and having a nonadherent surface for absorbing fluids from the nasal cavity without adhering to the mucosal surfaces of the nasal cavity; and

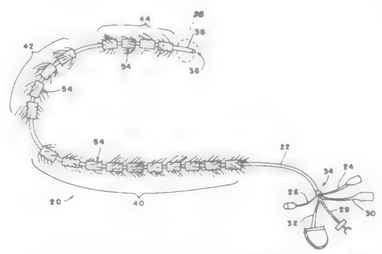
(c) the body being capable of providing a nasal stent for postoperative nasal packing so as to prevent adhesions and scar formation between the mucosal surfaces.

5,336,164

INTRAVASCULAR MEMBRANE LUNG APPARATUS

Michael T. Snider, Hershey; Kane M. High, Middletown, both of Pa.; Georg Panol, Warwick, R.I.; James Ultman, State College, Pa.; Russell B. Richard, Hershey, Pa.; John K. Stene, Hummelstown, Pa., and Garfield B. Russell, Palmyra, Pa., assignors to The Pennsylvania Research Corporation, University Park, Pa.

Filed Jan. 6, 1992, Ser. No. 817,173
Int. Cl.[5] A61M *37/00, 31/00;* A61F *2/02*
U.S. Cl. 604—4 15 Claims



1. Intravascular membrane lung apparatus configured for percutaneous venous insertion into cavities of a living body through which blood flows including an inferior vena cava, a right ventricle, and a pulmonary artery, said apparatus comprising:

elongated multi lumen catheter means having a longitudinal axis receivable in the inferior vena cava, the right ventricle, and the pulmonary artery; and

a plurality of elongated gas exchange means having means for delivering a first gas to the blood and for removing a second gas from the blood, each having a tethered end and a free sealed end and being tethered only at said tethered end to said catheter means and being in fluid communication with at least one lumen of said catheter means and extending transversely of the longitudinal axis to said free sealed end distant from said catheter means;

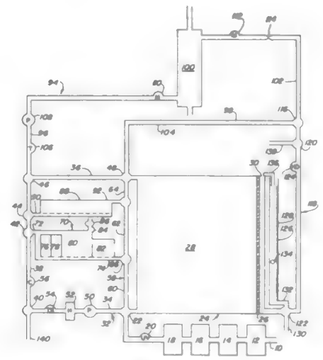
said catheter means including a first conduit operably connecting said gas exchange means to a source of a first gas for delivery of the first gas to said gas exchange means and thence to the blood and a second conduit operably connecting said gas exchange means to an outlet for discharging the second gas from the blood and thence from said gas exchange means by displacement of the second gas by the first gas.

5,336,165

ARTIFICIAL KIDNEY FOR FREQUENT (DAILY) HEMODIALYSIS

Zbylut J. Twardowski, 304 Devine Ct., Columbia, Mo. 65203

Filed Aug. 21, 1991, Ser. No. 748,036
Int. Cl.[5] A61M *37/00;* A61F *2/02;* C02F *1/44;* B01D *11/00*
U.S. Cl. 604—5 25 Claims



1. A hemodialyzer apparatus, which comprises: dialyzer membrane means having first and second sides; dialysate flow path means positioned for passing dialysis solution across the first side of said membrane means; blood flow path means positioned for passing blood across the second side of said membrane means for dialysis thereof;

a solution storage tank connected to said dialysate flow path means; venous and arterial connector means communicating with said blood flow path means for alternative connection with a vascular system of a patient and with each other;

a water inlet conduit;

a first conduit extending from said water inlet conduit to receive purified water therefrom;

a second conduit connected to said first conduit, having means for carrying desired amounts of dialysis solution solutes, whereby a predetermined amount of purified water from said first conduit passing through said second conduit disperses said solutes; further conduit means connected between said second conduit and said solution storage tank to provide a desired quantity of said dialysis solution to said tank in a first operating mode;

a third conduit, also connected to said first conduit, having means for carrying desired amounts of hemodialyzer apparatus antimicrobial and cleaning agent, whereby a predetermined amount of purified water from said first conduit passing through said third conduit disperses said agent and may be conveyed through said further conduit means to said solution storage tank to provide a desired quantity of antimicrobial cleaning solution to said tank in a second operating mode; and

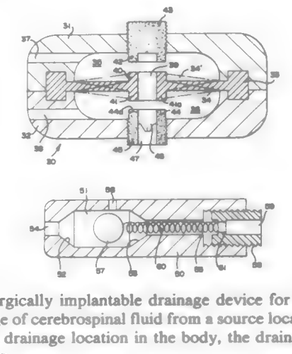
valve and control means to selectively and automatically provide and control fluid flow throughout said apparatus.

5,336,166

THREE STAGE IMPLANTABLE VALVE

Rolando Sierra, Grasse, France, assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Dec. 17, 1992, Ser. No. 991,982
Int. Cl.[5] A61M *27/00*
U.S. Cl. 604—9 15 Claims



8. A surgically implantable drainage device for regulating the passage of cerebrospinal fluid from a source location in the brain to a drainage location in the body, the drainage device comprising:

a biocompatible housing;

a flexible diaphragm mounted within said housing and dividing the interior thereof into an upstream chamber and a downstream chamber, said diaphragm including a central orifice to allow cerebrospinal fluid communication between said upstream and said downstream chambers;

said diaphragm having an upstream valve seal thereon surrounding said orifice on the upstream side thereof and a downstream valve seal surrounding said orifice on the downstream side thereof, said upstream and said downstream valve seals defining a passageway from said upstream chamber to said downstream chamber;

an inflow port for communicating cerebrospinal fluid from the source location to said upstream chamber;

an outflow port for communicating cerebrospinal fluid from said downstream chamber to a drainage location;

an upstream valve seat in said upstream chamber adapted to form a flow-restricting seal with said upstream valve seal on said diaphragm when the pressure differential between said upstream and said downstream chambers is below a first predetermined pressure, thereby preventing cerebrospinal fluid communication between said upstream and said downstream chambers;

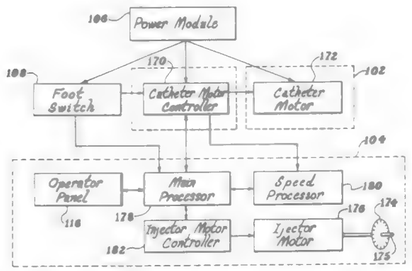
downstream sealing means for forming a flow-restricting seal with said downstream valve seal on said diaphragm when the pressure differential between said upstream and said downstream chambers exceeds a second predetermined pressure, thereby preventing substantial cerebrospinal fluid communication between said orifice and said outflow port; and

VOL 1165 ISS 2 AG 9 1994 UMI

a pressure regulating valve in operative association with said downstream sealing means for allowing cerebrospinal fluid communication between said upstream chamber and the drainage location when said pressure differential exceeds said second predetermined pressure, said pressure regulating valve maintaining a substantially constant pressure differential between said upstream and said downstream chambers.

5,336,167
CONTROLLER FOR INTRAVASCULAR CATHETER SYSTEM

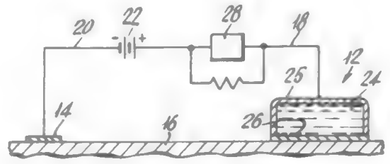
James B. Sullivan, and Eric R. Moore, both of Pittsburgh, Pa., assignors to Theratek International, Inc., Miami Lakes, Fla.
Filed Jul. 22, 1991, Ser. No. 733,498
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 13 Claims



1. An intravascular catheter system comprising:
a catheter member having a rotatable tip attached to a flexible rotatable shaft;
a fluid path for permitting fluid flow towards said rotatable tip;
common means for injecting fluid into said fluid path and thereafter rotating said shaft, said common means monitoring both said rotatable shaft and said fluid flow and disabling both the rotation of said shaft and said fluid flow upon detecting an error with respect to either the rotation of said shaft or said fluid flow;
wherein said common means includes first means for controlling the injection of said fluid, second means for controlling the rotation of said shaft, and processor means for providing signals causing programmed operation of said first and second means;
wherein said first means includes a first motor operable at a first programmed speed to control said injection of said fluid;
wherein said second means includes a second motor operable at a second programmed speed to rotate said shaft;
wherein said common means further includes operator controlled input means coupled to said processor means for being operated to cause said processor means to provide signals to said first and second means to operate said first and second motors at said respective first and second programmed speeds;
wherein said processor means includes first and second processors;
wherein said first processor, in response to said input means, provides signals to said first and second means for controlling the speed of said first and second motors respectively;
wherein said first processor, in response to signals from said first means, monitors the operation of said first motor;
wherein said second processor, in response to signals from said second means, monitors the speed of said second motor and provides an error signal manifesting an error condition in the event the speed of said second motor is different than the second programmed speed; and
wherein said first processor, in response to either said second processor error signal or an error in the operation of said first motor, renders inoperative said first and second motors.

5,336,168
PULSATING TRANSDERMAL DRUG DELIVERY SYSTEM

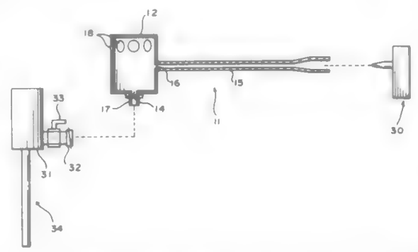
Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems Inc., New York, N.Y.
Continuation of Ser. No. 598,803, Oct. 4, 1990, and a continuation of Ser. No. 323,109, Mar. 13, 1989, abandoned, and a continuation of Ser. No. 55,518, May 28, 1987, abandoned.
This application Apr. 7, 1992, Ser. No. 864,645
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 17 Claims



1. An electrolytic transdermal patch for delivering to the bloodstream of a patient different types of drugs comprising:
(a) means defining a reservoir for containing a drug of said types of drugs and positioned in use in contact with the skin of the patient,
(b) an electrical source of power,
(c) an electrical circuit having an electrode positioned in use in contact with the skin of the patient and electrically connecting the electrode, power source and said reservoir; and
(d) means in said electrical circuit for causing periodic variation of current applied to said reservoir by said source of power in a pulsed mode in synchronization with a natural rhythmical variations of response to a drug by the patient when said drug is foreign to the body of the patient.

5,336,169
ATTACHMENT FOR REMOVAL OF SMOKE IN LAPAROSCOPIC SURGERY

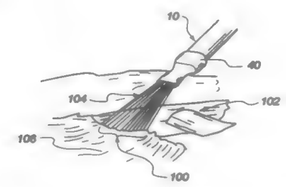
Robert J. Divilio, 10015 Brookmoor Dr., Silver Spring, Md. 20901, and L. Thomas Divilio, P.O. Box 822, Easton, Md. 21601
Filed Mar. 2, 1993, Ser. No. 27,503
Int. Cl.[5] A61B *17/20;* A61M *31/00*
U.S. Cl. 604—22 7 Claims



1. An air quality enhancement device for removal of electrocautery or laser smoke from a patient cavity comprising:
a hollow envelope having a forward, middle and rearward region further having a plurality of apertures located at a rearward region thereof, a first opening means through a wall of the hollow envelope at a forward region thereof for receiving smoke from a patient cavity, and a second opening means through the wall of the hollow envelope at a substantially middle region thereof for dispensing smoke from the patient cavity;
a first connecting means located at the first opening of the hollow envelope for operatively attaching the air quality enhancement device to a laparoscopic assembly; and
a second connecting means located at the second opening of the hollow envelope for operatively attaching the air quality enhancement device to a vacuum pump suction line.

5,336,170
SURGICAL SITE VISUALIZATION WAND

Tomas A. Salerno, Toronto, Canada, and Douglas G. Fox, Holladay, Utah, assignors to Research Medical, Inc., Midvale, Utah
Filed Jul. 29, 1992, Ser. No. 921,553
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—24 7 Claims

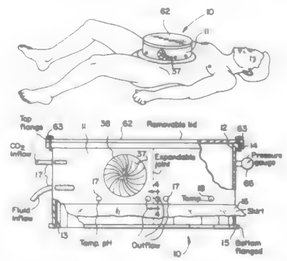


1. A wand for delivering a fluid stream having at least a gas component to a target site on a patient, comprising:
a first conduit defining a tubular barrel having an inlet end for receiving said gas component of said fluid stream from a gas source, and an outlet end;
a flexible tip at said outlet end of said first conduit and defining a laterally elongated aperture for directing said fluid stream in a planar configuration to said target site; and
a second conduit having an inlet end exterior to said first conduit for receiving a liquid component of said fluid stream, and an outlet end located beyond said first conduit outlet end and substantially within said tip for delivery of said liquid component into said gas component of said fluid stream.

5,336,171
ABDOMINO-PELVIC LAVAGE APPARATUS AND METHOD

Paul H. Sugarbaker, 3629 Fulton St. NW., Washington, D.C. 20007
Filed Dec. 9, 1993, Ser. No. 163,552
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—24 29 Claims

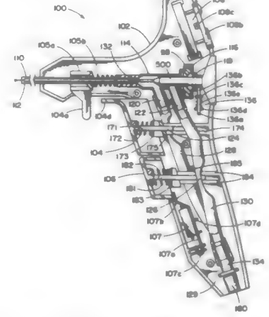
1. An abdomino-pelvic lavage apparatus for attachment in an incision formed through the abdominal wall of a patient to facilitate treatment during an abdomino-pelvic lavage procedure performed on the patient, comprising:
a cylindrical wall impervious to water and air having an upper end and a base end;
means on the base end of the wall for securing and sealing the wall in an incision formed through the abdominal wall;
means for supplying lavage fluid through the wall to the abdomino-pelvic cavity and draining the fluid from the cavity; and
at least one sealed gloved port formed through the cylindrical wall through which a surgeon can insert his hands to gain free access to the abdomino-pelvic cavity during a lavage procedure, said cylindrical wall forming a well



with the abdominal wall for containing the lavage fluid during a lavage procedure.

5,336,172
ENDOSCOPIC SUCTION-IRRIGATION INSTRUMENT HAVING INSERTIBLE PROBES WITH LATERAL PORTS

Thomas O. Bales, Miami, and Dana W. Ryan, Davie, both of Fla., assignors to Symbiosis Corporation, Miami, Fla.
Filed Oct. 9, 1992, Ser. No. 959,260
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—27 18 Claims



1. In an endoscopic suction-irrigation instrument having a cannula, a fluid chamber having an irrigation port and a suction port, with the fluid chamber having a distal end communicating with the cannula and a proximal end, and the fluid chamber having a substantially cylindrical portion, and the suction-irrigation instrument having an opening in the proximal end of the fluid chamber and a first sealing means in the proximal end of the fluid chamber, a probe comprising:
a) a proximal cylindrical portion having an outer surface which extends through and contacts the first sealing means such that said proximal end of the fluid chamber is sealed;
b) a middle portion extending through the substantially cylindrical portion of the fluid chamber, said middle portion having an outer diameter smaller than the inner diameter of the cylindrical portion of the fluid chamber; and
c) a hollow distal portion extending through the cannula and having an outer diameter smaller than the inner diameter of the cannula so as to create a first annular space between said hollow distal portion and the cannula, wherein
said middle portion has an internal passageway in fluid communication with said hollow distal portion, and at least

VOL 1165 ISS 2 AG 9 1994 UMI

one lateral opening communicating with said internal passageway.

5,336,173

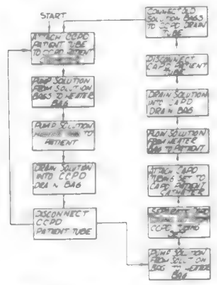
PERITONEAL DIALYSIS TUBING SET AND METHOD OF OPERATION

Thomas I. Folden, Alamo, Calif., assignor to Fresenius USA, Inc., Walnut Creek, Calif.

Continuation-in-part of Ser. No. 821,090, Jan. 16, 1992, Pat. No. 5,250,041, which is a continuation-in-part of Ser. No. 621,421, Nov. 30, 1990, abandoned. This application Sep. 14, 1993, Ser. No. 121,141

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—29 19 Claims



1. A peritoneal dialysis tubing set for attachment to a peritoneal cavity connector in fluid communication with a patient's peritoneal cavity, comprising: a set of tubing for CCPD, including a first CCPD patient connector in fluid communication with the CCPD set of tubing for connection to the peritoneal cavity connector, a CCPD drain bag in fluid communication with the CCPD set of tubing, and a solution bag in fluid communication with the CCPD set of tubing and a heating bag in fluid communication with the CCPD set of tubing; including a CAPD patient connector in fluid communication with the peritoneal cavity connector, a CAPD drain bag in fluid communication with the CAPD set of tubing, and a separable tubing connector for detaching the CAPD set of tubing from the CCPD set of tubing when said reservoir bag in fluid communication with the CAPD set of tubing such that the CCPD set of tubing and CAPD set of tubing use the same reservoir bag.

5,336,174

FLOW CONTROL VALVE

Adib G. Daoud, San Diego, and Emmett B. Anderson, Santee, both of Calif., assignors to Ivac Corporation, San Diego, Calif.

Filed May 7, 1992, Ser. No. 881,745

Int. Cl.[5] A61M *39/00*

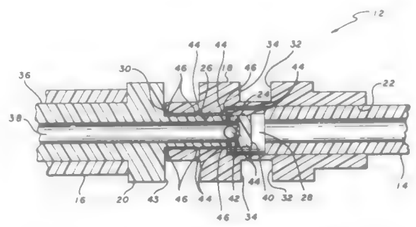
U.S. Cl. 604—30 26 Claims

1. An apparatus for controlling fluid communication between a first and a second conduit, comprising:

a valve body having a first port, a second port, and an interior cavity, said cavity having a first portion having a diameter and a second portion having a diameter and a first and a second end, said diameter of said second portion being substantially the same between said first end and said second end, wherein both said first and second ports are in fluid communication with said interior cavity and said first port is connected to the first conduit, wherein said diameter of said first portion of the interior cavity is larger than said diameter of said second portion, and said first portion is closer to said first port than said second portion is to said first port;

a plunger component having a closed end, a hollow interior and a third port connected to the second conduit and to said hollow interior, said plunger component having a side wall connecting said third port with said closed end, said side wall having an aperture positioned therein adapted to establish a fluid communication path b ·veen a position outside the plunger component with the hollow interior, said plunger being generally uniform in outside diameter between said closed end and the third port side of said aperture, said plunger component being inserted into said valve body through said second port closed end first so that said aperture is selectively slidably situated in said first portion and said second portion of said interior cavity; and

a first seal located on said plunger component between said closed end and said aperture, wherein said first seal and said aperture are selectively locatable in said first and



second portions of said interior cavity, said first seal having a size such that said first seal has an interference fit with said second portion when situated in said second portion, whereby when situated in the second portion, said first seal blocks said fluid communication between said first and second conduits; and

said valve body and plunger component having exterior surfaces formed to facilitate engagement thereof by a mechanized actuation mechanism;

whereby said aperture provides for fluid communication between said first and second conduits when said aperture is positioned in said first portion, and whereby said seal blocks said fluid communication between said first and second conduits when said seal is positioned in said second portion.

5,336,175

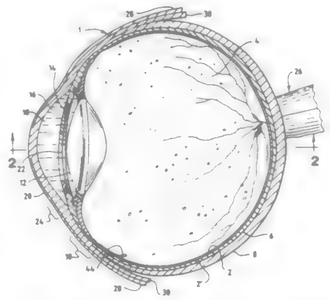
METHOD FOR THE TREATMENT OF RETINAL DETACHMENTS

Robert N. Mames, 23470 Riverview, Southfield, Mich. 48034

Filed Oct. 29, 1992, Ser. No. 968,586

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—49 34 Claims



1. A method for the treatment of retinal detachments including the steps of:

inserting into a vitreous cavity of an eye of a patient having a first gel or liquid therein and a retinal tear a sufficient amount of a transparent liquid or gel retina reattachment enhancing material, such that when said patient is in a position which allows said retina reattachment enhancing material to contact the region of said retinal tear, it presses said retinal tear against an underlying layer of tissue so as to effect retinal reattachment over a given period of time;

leaving said retina reattachment enhancing material in said eye for at least one or more days wherein said patient is in said position during at least said period of time; and,

after said retinal tear has become fixedly reattached to said underlying layer of tissue, selectively removing said retina reattachment enhancing material from said eye and replacing said retina reattachment enhancing material with a replacement material which can remain indefinitely in said eye.

5,336,176

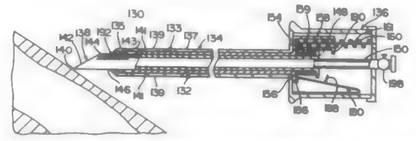
AUTOMATIC RETRACTABLE SAFETY PENETRATING INSTRUMENT

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 805,506, Dec. 6, 1991, abandoned. This application Apr. 15, 1992, Ser. No. 868,578

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—51 22 Claims



1. A method of performing surgical procedures comprising the steps of

penetrating tissue with a sharp tip of a penetrating member disposed within a cannula to position a distal end of the cannula in the tissue;

automatically retracting the sharp penetrating member tip within the cannula in response to desired positioning of the cannula in the tissue;

moving the penetrating member distally within the cannula with the cannula distal end positioned in the tissue to cause the sharp penetrating member tip to protrude beyond the cannula distal end; and

performing a procedural step using the penetrating member.

5,336,177

INTEGRAL PENETRATING SURGICAL DRAIN DEVICE

William Y. Marcus, 8912 Burdette Rd., Bethesda, Md. 20817

Filed Apr. 29, 1993, Ser. No. 54,070

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—51 11 Claims

1. A flexible drainage device consisting essentially of:

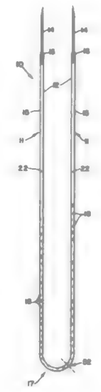
a flexible tube having a substantially constant diameter along its entire length, first and second end sections, and an intermediate zone between said end sections;

said intermediate zone of said tube having spaced perforations for draining of body fluids;

a first hollow penetrating element having a main body with a substantially constant diameter along its entire length and a piercing element at one end, said main body being partly within and connected to said first end section of said flexible tube;

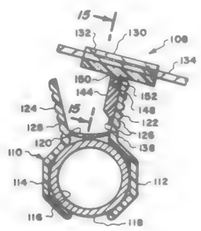
a second hollow penetrating element having a main body with a substantially constant diameter along its entire length and a piercing element at one end, said main body being partly within and connected to said second end section of said flexible tube;

said first and second penetrating elements each having a diameter no greater than and substantially the same as the diameter of said flexible tube along their entire lengths; and



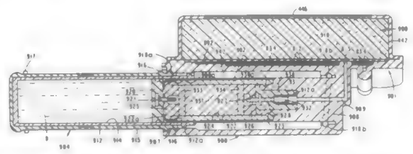
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,179
LINE ORGANIZER
Richard M. Ryan, 19326 Lemarsh St., Northridge, Calif. 91324
Continuation-in-part of Ser. No. 69,504, Jun. 1, 1993. This application Nov. 22, 1993, Ser. No. 155,297
Int. Cl.[5] A61M *5/14, 5/00*
U.S. Cl. 604—80 8 Claims



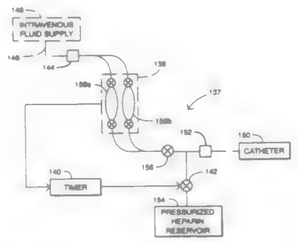
1. An organizer for a plurality of flexible lines comprising:
a clamping apparatus defining a clamping section adapted for secure mounting onto an exterior structure, said clamping apparatus being movable between an unsecured position and a secured position, said secured position being when said clamping apparatus is fixed to the exterior structure, said unsecured position being when said clamping apparatus is not attached to the exterior structure, said clamping apparatus comprising a pair of jaws, a handle connected to each said jaw with there being two in number of said handles, a biasing means connected between said handles exerting a continuous biasing force tending to locate said clamping apparatus in said secured position; and
a block mounted by mounting means on one of said jaws, said block being spaced from said clamping section, said mounting means permitting pivotal movement of said block on said clamping apparatus so as to be pivotable to various angular positions relative to said clamping apparatus, said block having a plurality of spaced-apart slots, each said slot to connect with a said line in a removably engaged manner.

5,336,180
CLOSED DRUG DELIVERY SYSTEM
Marshall S. Kriesel, Saint Paul, and Thomas N. Thompson, Richfield, both of Minn., assignors to Science Incorporated, Bloomington, Minn.
Continuation-in-part of Ser. No. 34,908, Mar. 19, 1993, which is a continuation-in-part of Ser. No. 870,553, Apr. 17, 1992, Pat. No. 5,267,957, which is a continuation-in-part of Ser. No. 513,917, Apr. 24, 1990, Pat. No. 5,122,116. This application Apr. 26, 1993, Ser. No. 54,152
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—82 26 Claims



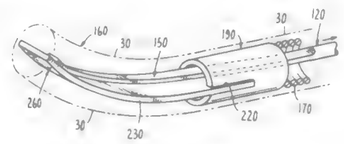
1. An apparatus for use in infusing fluids into a patient at a controlled rate, said apparatus comprising:
(a) a container assembly including:
(i) a container having a fluid flow passageway and walls defining an internal chamber in communication with said fluid passageway;
(ii) adding means disposed within said chamber for adding an additive to fluid flowing through said chamber, said adding means comprising an additive and an additive presentation means for presenting said additive to the fluid; and
(b) an infusion device comprising a housing having first and second portions, said first portion including coupling means for coupling said container assembly with said first portion of said housing, said coupling means having a first passageway adapted to communicate with said fluid flow passageway of said container, said second portion of said housing comprising:
(i) a base having a fluid outlet and first and second fluid passageways formed therein, said first passageway being in communication with said first passageway of said coupling means and said second passageway being in communication with said fluid outlet; and
(ii) a deformable membrane, said membrane being adapted to overlay said base and cooperate therewith to define a reservoir for containing a fluid, said reservoir being in communication with said first and second passageways of said base, said membrane being movable from first position to a second position; and
(c) an expendable member disposed in contact with said deformable membrane for moving said membrane from said first position to said second position whereby the fluid contained within said reservoir will be urged to flow selectively into said first and second passageways of said base.

5,336,181
ANTICLOTTING DEVICE AND METHOD FOR USE WITH IV CATHETERS
Naomi L. Nakao, 303 E. 57th St., New York, N.Y. 10022; Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023, and John V. Mizzi, 30 Cramer Rd., R.F.D. #3, Poughkeepsie, N.Y. 12603
Continuation-in-part of Ser. No. 836,768, Feb. 18, 1992, Pat. No. 5,195,967. This application Apr. 29, 1992, Ser. No. 875,455
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—83 35 Claims



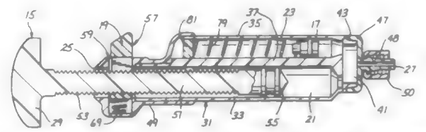
1. A method for use in an intravenous tube assembly, comprising the steps of:
automatically dividing, into a succession of consecutive aliquots of liquid, a liquid flow along a fluid flow path extending through an intravenous catheter;
automatically timing said consecutive aliquots to detect at least a partial cessation of liquid flow along said fluid flow path;
upon detecting at least a partial cessation of liquid flow along said fluid flow path, automatically feeding an anticlotting agent to said fluid flow path; and
upon feeding of said anticlotting agent to said fluid flow path, maintaining said anticlotting agent within a predetermined region of said fluid flow path.

5,336,182
CATHETER STEERING MECHANISM
Ingemar Lundquist, Pebble Beach, and Russell B. Thompson, San Leandro, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 991,474, Dec. 16, 1992, Pat. No. 5,254,088, which is a continuation of Ser. No. 736,384, Jul. 26, 1991, abandoned, which is a division of Ser. No. 473,667, Feb. 2, 1990, abandoned. This application Jul. 30, 1993, Ser. No. 100,555
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 7 Claims



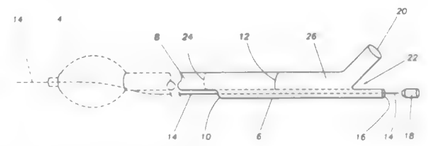
1. A steering mechanism comprising:
a steering shaft having a proximal end and a distal end and a lumen therethrough;
a coiled spring mounted in the steering shaft and having a distal end that terminates within the steering shaft short of the distal end of the steering shaft, the distal end of the steering shaft being free of any coiled spring;
a lead spring having an axis and a bendable portion extending outside the distal end of coiled spring but still within the distal end of the steering shaft that is free of any coiled spring for bending the distal end of the steering shaft in response to an applied force relative to the coiled spring,
a steering wire extending through the lumen, said steering wire having a first end attached to the lead spring at a first location outside the distal end of the coiled spring and having a second end exiting the proximal end; and
a controller positioned at the proximal end and attached to the second end of said steering wire for placing tension on said steering wire, for applying force to said steering wire to bend the distal end of the steering shaft toward said tensed steering wire.

5,336,183
INFLATOR
John P. Greelis, Aliso Viejo; Richard L. Quick, Trabuco Canyon, and Gary M. Woker, Escondido, all of Calif., assignors to Imagyn Medical, Inc., Laguna Niguel, Calif.
Filed Sep. 28, 1993, Ser. No. 127,801
Int. Cl.[5] A61M *29/00*
U.S. Cl. 607—97 18 Claims



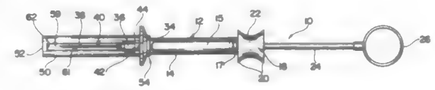
1. An inflator for use with a catheter having an inflatable component, said inflator comprising:
a housing having an elongated plunger passage and an elongated gage passage, said passages extending generally in side-by-side relationship, said plunger passage having a plunger opening;
said housing having a port which communicates with both of said passages and which can be coupled to the inflatable component of the catheter;
a plunger movable longitudinally in said plunger passage and extendible out of the plunger opening of the plunger passage whereby the plunger can be manually moved in the plunger passage, movement of the plunger in one direction longitudinally in the plunger passage forcing a fluid in the plunger passage out of said port whereby the inflatable component of the catheter can be inflated;
a pressure responsive gage member movable longitudinally in said gage passage and responsive to pressure of the fluid adjacent the port whereby such pressure tends to drive the gage member longitudinally in the gage passage;
a biasing member for resisting such longitudinal movement of the gage member; and
an indicator responsive to the longitudinal position of the gage member for providing an indication of the pressure of the fluid adjacent the port.

5,336,184
RAPID EXCHANGE CATHETER
Paul S. Teirstein, 402 Coast Blvd.,S., La Jolla, Calif. 92037
Filed Jul. 15, 1993, Ser. No. 92,332
Int. Cl.[5] A61M *29/00, 31/00*
U.S. Cl. 604—102 13 Claims



1. An improved over the wire rapid exchange catheter having a generally elongated catheter body with a proximal end and a distal end, a first guidewire port at said distal end where the guidewire enters said catheter body, and a second guidewire port spaced proximally from said distal end where the guidewire exits said catheter body, the improvement comprising:
a reference marker affixed to said catheter body near said proximal end;
an elongated guidewire channel formed on said catheter body near said proximal end;
a third guidewire port formed in said proximal guidewire channel where the guidewire enters said proximal guidewire channel distal to said reference marker; and
a fourth guidewire port formed in said proximal guidewire channel where the guidewire exits said proximal guidewire channel at the extreme proximal end of said elongated catheter body.

5,336,185
PROTECTION DEVICE FOR SYRINGE NEEDLES
Richard A. Lynch, 206 Spring St., Cranston, R.I. 02910; William J. Kirk, 327 Gilbert Stuart Dr., East Greenwich, R.I. 02818, and Lawrence J. Dario, Nayatt Point, Barrington, R.I. 02806
Filed Dec. 31, 1992, Ser. No. 999,106
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 18 Claims



1. A device for the safe handling of hypodermic syringes of the type having a hollow cylindrical body with opposed forward and rear ends with a needle assembly mounted at said forward end and including a forwardly projecting normally exposed needle, and an injection assembly mounted at said rear end and including a hand-manipulatable, longitudinally-mova-

VOL 1165 ISS 2 AG 9 1994 UMI

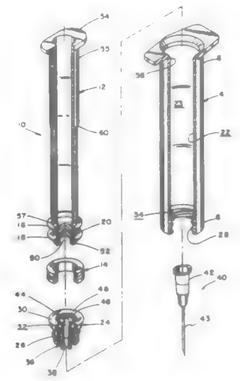
ble piston for injecting fluid housed in said body through said needle and into a patient, said device including a tubular safety sleeve having an inner diameter slightly larger than that of the hollow cylindrical body of the syringe and adapted for telescopic mounting over said body and further adapted for back and forth forward to rearward sliding movement therein from a full rearward position wherein said needle is exposed to a full forward position wherein said needle is housed within the confines of said sleeve and thus protected from coming in contact with users or patients and means associated with said safety sleeve for limiting the forward and rearward motion of said sleeve vis-a-vis said syringe, said means for limiting the forward movement of said sleeve being a stop means positioned at the forward end of said body which in turn contacts rear portions of said sleeve to prevent further forward movement of said sleeve, said sleeve including a longitudinally oriented guide slot in which disc means are mounted at the forward end thereof for frictional contact therewith, said disc means including a body having a central hole and at least one ear radially projecting into said slot so as to guide said sleeve's movement over said cylindrical body, and means for positioning the disc means longitudinally stationary with respect to the forward end of said body, said means for positioning said disc body including a threaded stem forwardly extending from said body into the hole of said disc and a needle assembly having a threaded base to accept said stem, said disc body being separate from said syringe body and said needle assembly.

5,336,186

SAFETY SYRINGE WITH DISPLACEABLE BARREL HUB

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Feb. 10, 1993, Ser. No. 16,817
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 9 Claims



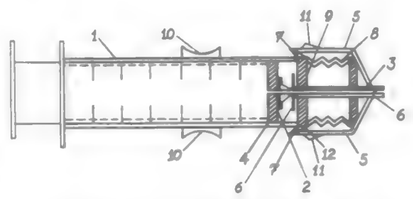
1. A safety syringe comprising:
a barrel having proximal and distal ends and a hollow interior defining an axis;
a barrel hub threadably mountable to and dismountable from the distal end of the barrel;
a plunge, having proximal and distal ends, including a piston at the distal end of the plunger, the piston movable within the hollow interior of the barrel; and
means for releasably mechanically coupling the distal end of the plunger to the barrel hub from within the interior of the barrel, said mechanically coupling means including:
means for rotating the barrel hub about the axis by the plunger so to dismount the barrel hub from the distal end of the barrel, the rotating means including rotary drive surfaces on the distal end of the plunger and the barrel hub, said rotary drive surfaces including axially extending splines formed on the distal end of the plunger and on the barrel hub, the splines mating with each other to provide a positive rotary drive interface; and
means for pulling the barrel hub from the distal end of the barrel and to a storage position within the hollow interior of the barrel by the plunger, the pulling means including an axially segmented bulbous plug on one of the distal end of the plunger and the barrel hub and a complementary bulbous pocket on the other of the distal end of the plunger and the barrel hub.

5,336,187

AUTOMATIC COVER DISPOSABLE SYRINGE

Mark Terry, 1715 Monican St., Philadelphia, Pa. 19138; Harry G. Hughes, Jr., 15413 Birchwood Ave., Roslyn, Pa. 19001, and Edward D. Williams, 1432 E. Washington La., Philadelphia, Pa. 19138

Filed Jun. 24, 1993, Ser. No. 80,307
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 7 Claims



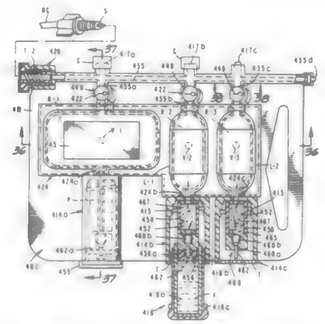
1. An accident-proof, disposable, non-reusable, hypodermic needle syringe assembly that has an automatically and permanently covered needle point at all times for use with clinical apparatus operably applied to a patient by way of skin puncture comprising
a) a hollow syringe body closed at one of its ends and open at the other end,
b) a piston slidably mounted inside the syringe body and defining between the closed end of the syringe body and the piston a compartment for containing a liquid to be injected or withdrawn from a person,
c) an injection needle, the base of which is fastened to a needle support member, said support member and said piston being adapted for allowing at least partial insertion of said support member in said piston and for allowing the needle to communicate with said syringe body compartment upon said insertion,
d) a substantially cylindrical sleeve member which is open at both ends, said needle support member being mounted at one end portion of said sleeve member,
e) retaining means for fastening said sleeve member to the syringe body during the storage of the hypodermic needle assembly and at least until the beginning of the injection,
f) a substantially cylindrical, inter- protective sheath member for protecting the needle, said sheath member being closely adjacent to the needle having a small opening at its forward end approximate size of the needle completely surrounding the needle with the tip of the needle being completely inside the sheath member when the needle is not in use while the other end of said sheath member is supported by support means in the sleeve and is slidably engaged with the sleeve, and
g) a collapsible bellow shaped inner needle shaft cover that surrounds a portion of the needle and abuts at one end against said needle support member and at its other end against said protective sheath member to urge the protective sheath into a rest position where said sheath member protrudes outside said sleeve member and surrounds the needle tip.

5,336,188

FLUID DELIVERY APPARATUS HAVING A STORED ENERGY SOURCE

Marshall S. Kriesel, Saint Paul, Minn., assignor to Science Incorporated, Bloomington, Minn.

Continuation-in-part of Ser. No. 46,438, Apr. 13, 1993, which is a continuation-in-part of Ser. No. 987,021, Dec. 7, 1992, which is a continuation of Ser. No. 870,269, Apr. 17, 1992, Pat. No. 5,205,820, which is a continuation-in-part of Ser. No. 642,208, Jan. 16, 1991, Pat. No. 5,169,389, which is a continuation-in-part of Ser. No. 367,304, Jun. 16, 1989, Pat. No. 5,019,047. This application May 28, 1993, Ser. No. 69,937
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—132 14 Claims



1. A fluid delivery device for delivering fluids to a patient at a controlled rate comprising:
(a) a base having first, second and third adjacent portions and a fourth marginal portion circumscribing said first, second and third portions, said base having a fluid port;
(b) a distendable elastomeric membrane overlying said first, second and third portions of said base;
(c) cover means receivable over said base for encapsulating said membrane, said cover member having a first chamber defining wall superimposed over said first portion of said base, a second chamber defining wall superimposed over said second portion of said base, a third chamber defining wall superimposed over said third portion of said base, and marginal means for urging said membrane into sealing engagement with fourth portion of said base; and
(d) a fluid passageway interconnecting said first, second and third chambers; said fluid passageway being in communication with said fluid port of said base; said membrane being movable from a first position proximate said base to a second distended position proximate said first, second and third chamber defining walls of said cover means upon introduction of fluid under pressure into said fluid port of said base, said membrane in its distended position having a tendency to return to a less distended position.

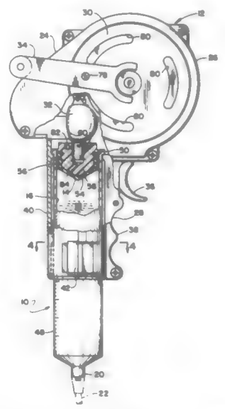
5,336,189

COMBINATION IV PUMP AND DISPOSABLE SYRINGE

Andrew I. Sealfon, 17 Industrial Pl., Middletown, N.Y. 10940

Filed Aug. 23, 1993, Ser. No. 110,699
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—135 4 Claims

1. An IV pump of a type having a housing with an exit opening and a plunger operatively arranged within said housing to partake of a power stroke along a path of movement through said exit opening and for a selected distance lengthwise thereof, a semi-circular sleeve mounted in depending relation from said housing having an upper end portion in alignment with said exit opening and having an orientation along said path of movement of said IV pump plunger, a cooperating pair of clip means adjacent said upper end of said sleeve, a disposable cylindrically-shaped syringe filled with fluid sized to fit in said sleeve operatively disposed to be engaged by said clip means so that said IV pump plunger power



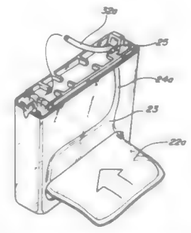
stroke is directed into said syringe, and a slidably disposed piston in an interposed position between said IV pump plunger and said fluid contents of said syringe, said piston hygienically sealing said syringe fluid contents during non-use of said IV pump and during the use thereof in response to said power stroke of said IV pump plunger urging said syringe fluid contents in exiting flow from said syringe, after which said syringe is disposed of preparatory to use of a replacement syringe, whereby the same IV pump is used with plural syringes.

5,336,190

MEDICAL CASSETTE FOR AMBULATORY MEDICAL INFUSION PUMPS WITH ACCESS PORT FOR RESERVOIR BAGS AND METHOD OF RESUPPLYING BAGS IN SAID CASSETTE

Richard Moss, 4928 Panorama Cir., West Bloomfield, Mich. 48323, and Fred Erlich, 34536 Quaker Valley, Farmington Hills, Mich. 48331, assignors to Fred Erlich; Fred Kamienny and Richard Moss

Filed Aug. 12, 1993, Ser. No. 106,054
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—153 14 Claims



1. A method of resupplying a cassette for an ambulatory medical pump with a supply bag, said method characterized by;

VOL 1165 ISS 2 AG 9 1994 UMI

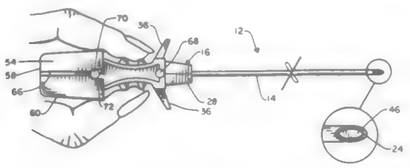
substantially emptying a supply bag located within said cassette of fluid;
supplying an access port to the interior of the cassette large enough to withdraw a drug reservoir bag within the cassette;
removing a lock fastener located at the end of a tube attached to the reservoir bag;
removing said tube from at least one tube retainer in a pumping plate of said cassette;
withdrawing the reservoir bag from the port;
inserting a new unused reservoir bag through said port to the interior of said cassette; and
inserting a tube of a new unused reservoir bag into said at least one tube retainer.

5,336,191

SURGICAL NEEDLE ASSEMBLY

Richard E. Davis, Grand Rapids, and William J. Greenhoe, Rockford, both of Mich., assignors to DLP, Incorporated, Grand Rapids, Mich.

Filed Aug. 13, 1992, Ser. No. 930,098
Int. Cl.[5] A61M *5/158, 5/32*
U.S. Cl. 604—165 **12 Claims**



1. In a surgical needle including a cannula member and a stylet member, the cannula member comprising a cannula handle and a cannula having a proximal end affixed to the cannula handle and a distal end opposite the cannula handle, the stylet member comprising a stylet handle and a stylet having a proximal end affixed to the stylet handle and a distal end opposite the stylet handle, the stylet being removably receivable within the lumen of the cannula, the axial dimensions of the stylet and the cannula being so related that when the stylet is fully received within the cannula with the handles adjacent to each other the respective distal ends are coterminous, the distal ends being respectively contoured to form a predetermined needle tip configuration when the stylet is fully received in the lumen of the cannula in predetermined angular relation therewith, the improvement wherein:
one of the handles includes a receivable projection formed on an exterior surface; and
the other of the handles comprises a hollow body having a locking recess formed on an interior surface thereof, said other handle receiving at least a portion of said one handle within the hollow body when the stylet is fully received in the cannula, the receivable projection and locking recess being so formed and situated that the receivable projection is snap-locked in the locking recess when the cannula and stylet are in said predetermined angular relation.

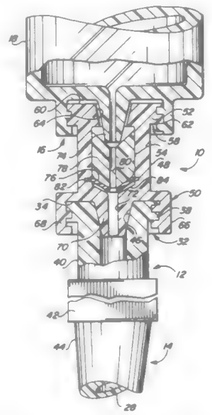
5,336,192

SELF-SEALING VALVE DEVICE FOR ANGIOGRAPHIC CATHETERS

Aubrey M. Palestrant, 6800 N. 47th St., Paradise Valley, Ariz. 85253

Filed Nov. 27, 1991, Ser. No. 800,610
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **20 Claims**

1. A self-sealing valve device for an angiographic catheter, the catheter including a distal end for insertion into a blood or lymph vessel of a patient and an opposing proximal end, the catheter including a lumen extending between the distal and proximal ends for passing fluids therethrough and for receiving a guide wire used to position the catheter with a blood or lymph vessel of a patient, the proximal end of the catheter including a female luer lock connection fitting adapted to receive a complementary male luer lock connection fitting of a syringe, stopcock, or other fluid passage device, to form a fluid tight connection therewith, said self-sealing valve device comprising in combination:
a) a housing having a central bore extending between first and second opposing ends of said housing along a longitudinal axis of said housing;
b) said first end of said housing including a male luer lock connection fitting for forming a fluid tight coupling with the female luer lock connection fitting at the proximal end of the catheter;
c) said second end of said housing including a female luer lock connection fitting adapted to receive a complementary male luer lock connection fitting of a syringe, stopcock, or other fluid passage device, to form a fluid tight connection therewith, said female luer lock connection fitting including an inwardly converging conical bore for receiving a conically-shaped tip of a syringe, stopcock, or other fluid passage device;



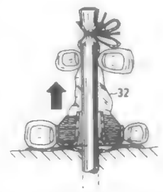
d) a deformable elastomeric seal supported within said housing and extending across the central bore thereof to selectively seal the central bore of said housing, said deformable elastomeric seal including at least one slit substantially aligned with the longitudinal axis of said housing to permit a guidewire to be passed therethrough while sealingly engaging the guidewire to prevent blood inside the catheter from passing beyond said deformable elastomeric seal; and
e) means for deforming said deformable elastomeric seal upon coupling of a male luer lock connection fitting to said second end of said housing to permit passage of blood or other fluids through the deformable elastomeric seal and through the central bore of said housing following connection of a fluid passage device, to said second end of said housing, said deforming means being disposed within said housing proximate the second end thereof, said deforming means having a central bore formed therein, said central bore being substantially concentric with the longitudinal axis of said housing, said central bore having a diameter commensurate with the diameter of a guidewire to be passed through the catheter for centering the guidewire and for stiffening the guidewire as it passes through said deformable elastomeric seal.

5,336,193

APPARATUS FOR SANITARY REMOVAL OF INDWELLING TUBES

Paul F. Rom, Kentwood; Roderick E. Briscoe, Rockford, and Christopher R. Williams, Grand Rapids, all of Mich., assignors to DLP, Inc., Grand Rapids, Mich.

Filed Jun. 22, 1993, Ser. No. 81,559
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—171 **9 Claims**



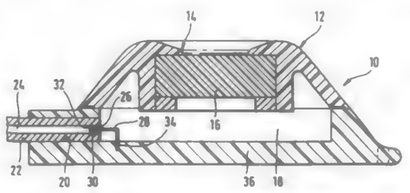
1. An apparatus for the sanitary removal of an indwelling tube from an implantation site of a patient while isolating the tube and the implantation site from an environment thereabout, comprising:
a container having an aperture that can receive an exterior portion of the indwelling tube therethrough to engage a bottom portion of said container in sealing contact with the patient about the implantation site;
an extensible impervious membrane folded within said container and being in sealing contact therewith, said membrane being arranged to form an open sleeve for receiving the tube and being coextensible therewith during withdrawal of the tube;
means for placing said sleeve in sealing contact with the tube; and
means for closing said aperture to enclose the removed tube in said sleeve;
whereby the tube can be withdrawn through said aperture into said coextending sleeve, and the free end of the tube remains accessible to an operator as the tube is withdrawn.

5,336,194

IMPLANTABLE APPARATUS

Hans-Dietrich Polaschegg, Oberursel, and Bernd Steinbach, Bad Homburg v.d.H., both of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Jul. 27, 1993, Ser. No. 97,673
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1992, 4225524
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—175 **4 Claims**



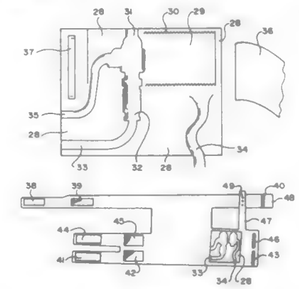
1. Implantable apparatus for dosed administration of liquid medicines in the human body, with a housing having at least one chamber for storing a liquid medicine defined by at least one wall, an inlet aperture in the housing sealed by a perfortable spectum and flow-connected to said chamber, and an outlet aperture in the housing connected to a catheter tube with a lumen and with particle retention means disposed in the area of the outlet aperture, wherein said particle retention means comprises a wire anchored in the chamber wall and projecting into said outlet aperture to form a ring slot in order to restrict the diameter of said outlet aperture.

5,336,195

SPECIAL WRAPS, DILATORS AND FOLEY CATHETERS

Yousef Daneshvar, 21459 Wood Farm, Northville, Mich. 48167

Filed Mar. 19, 1992, Ser. No. 856,087
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—179 **22 Claims**



1. A wrapping unit for holding an invasive device externally on the body comprising a wrap for encircling a portion of the body, said wrap including a support member comprising cradle means facing away from the encircled portion of the body for receiving an external portion of such an invasive device, said wrap including a flap having one end portion thereof attached to said wrap adjacent a first side of said cradle means, bridge means disposed on said wrap adjacent a second side of said cradle means that lies opposite said first side, said flap extending from said one end portion thereof in overlying relation to said cradle means to pass through said bridge means for holding such an invasive device in said cradle means, said flap making a U-turn after passing through said bridge means, and said flap extending from such U-turn over said bridge means to another end portion of said flap, and means releasably securing said another end portion of said flap to said flap at a location that is between said bridge means and the attachment of said one end portion of said flap to said wrap.

5,336,196

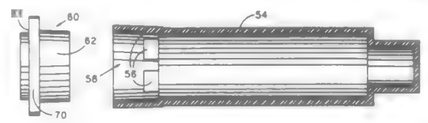
Patent Not Issued For This Number

5,336,197

HARD COVER FOR PROTECTED INJECTION APPARATUS

Thomas C. Kuracina, Ojai; Randall E. Ohnemus, and Craig W. Smith, both of Ventura, all of Calif., assignors to InjectiMed, Inc., Ojai, Calif.

Division of Ser. No. 850,681, Mar. 10, 1992, Pat. No. 5,254,099.
This application Aug. 24, 1993, Ser. No. 111,162
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **4 Claims**



1. A security package for a medical device needle carried by a base comprising:
a) a hollow cover sized to fit over the needle and the base, said cover having a closed end and an inwardly tapering open end into which a mating portion of the base wedgedly fits to hold the base and the needle in said cover;

VOL 1165 ISS 2 AG 9 1994 UMI

b) a cap for closing said open end, said cap having a tapered inner portion shaped to wedgedly fit into said open end, said cap having a square shouldered outer portion abutting said tapered inner portion whereby said tapered inner portion can be twisted to remove it from said open end and said cap and said cover in combination are prevented from rolling off of flat surfaces, said cap further having a flat outer end surface opposite said tapered inner portion, said cover having a flat longitudinal outer sidewall aligned with a flat side of said square shouldered outer portion; and,

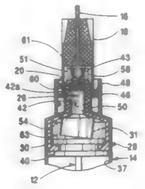
c) a safety strip of a frangible material adhesively attached to and over said flat outer end surface, said flat side of said square shouldered outer portion, and said flat longitudinal outer sidewall whereby breaking of said safety strip prior to use indicates possible lack of sterility of the needle.

5,336,198

HYPODERMIC SYRINGE WITH NEEDLE RETRACTION FEATURE

Jules Silver, Boca Raton, Fla., and Louis C. Ziegler, Englewood Cliffs, N.J., assignors to Ianova Development Corp., Boca Raton, Fla.

Filed Feb. 1, 1993, Ser. No. 11,942
Int. Cl.[5] A61M *5/32, 5/00*
U.S. Cl. 604—195 **60 Claims**



2. A hypodermic syringe comprising:

a barrel having a generally cylindrical cavity extending inward from a proximal end thereof and a needle attachment coupling at a distal end thereof, said needle attachment coupling including an attachment portion, a coupling opening extending therethrough from said generally cylindrical cavity, and a releasable abutment portion;

a needle hub including a mating portion attached to said attachment portion of said needle attachment coupling, a proximal abutment surface, and a needle receiving hole extending therethrough from said proximal abutment surface to a distal end of said hub;

a needle subassembly including a needle with a distal point and with a hole extending axially through said needle, and a needle flange mounted between a distal portion of said needle and a proximal portion of said needle subassembly, with said proximal portion of said needle subassembly extending into said coupling opening, and with said needle flange extending outward between said proximal abutment surface of said needle attachment hub and said releasable abutment portion of said needle attachment coupling; and

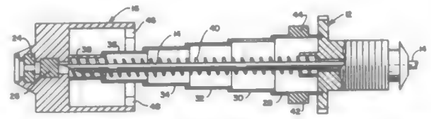
a plunger mounted to slide within said generally cylindrical cavity, including a slide extending outward from said generally cylindrical cavity, a piston forming a sealing engagement with said generally cylindrical cavity, and a needle extractor extending from a distal end of said plunger, said needle extractor including gripping means for engaging said proximal portion of said needle subassembly when said plunger is moved to a distal end of said generally cylindrical cavity, said needle extractor including release means for moving said releasable abutment from a blocking configuration, in which motion of said needle flange past said releasable abutment is prevented, to a released configuration, in which motion of said needle flange past said releasable abutment is permitted.

5,336,199

MEDICAL NEEDLE AND NEEDLE SHEATH ASSEMBLY

Leo S. Castillo, 189 Sterling Glen Dr., Weterville, Ohio 43081, and Gordon G. Lo, 5765 Tacoma Rd. Apt. B, Columbus, Ohio 43229

Filed Nov. 12, 1993, Ser. No. 150,867
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **6 Claims**



1. In a medical needle and needle sheath assembly, in combination;

a core clip element supporting a double-ended medical needle with exposed tips;

a sheath sub-assembly attached to said clip element in surrounding relation to a portion of said double-ended medical needle and having a retracted condition and an extended condition;

a multiplicity of cooperating sheath elements nested with respect to each other in said sub-assembly retracted condition and non-nested with respect to each other in said sub-assembly extended condition;

compression spring means urging said sheath sub-assembly to said sub-assembly extended condition when compressed; and

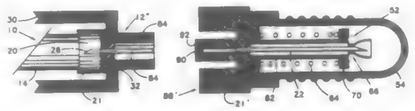
releasable latch means securing said sheath sub-assembly to said clip element in said sheath sub-assembly retracted condition, said latch means being released by rotation relative to said clip element to cause said sheath sub-assembly to assume said sub-assembly extended condition by the action of said compression spring means.

5,336,200

RETRACTABLE SLEEVE-PROTECTION FOR INJECTION APPARATUS EMPLOYING CARPULES

Donald A. Streck, Kailua, Hi.; Thomas C. Kuracina, Ojai, and Randall E. Ohnemus, Ventura, both of Calif., assignors to InjectiMed, Inc., Ventura, Calif.

Filed Mar. 10, 1992, Ser. No. 850,376
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **4 Claims**



1. In a carpule-using syringe assembly wherein a syringe assembly carries a carpule for piercing by a needle also carried by the syringe assembly, the improvement for adding a protective sleeve to the needle comprising:

a) a cap disposed over a pierceable end of the carpule, said cap having a support portion extending concentrically outward therefrom and extend beyond an outer end of the syringe assembly, said support portion having a longitudinal bore therethrough; and,

b) a protected needle assembly carried by said support portion, said protected needle assembly including the needle with an inner portion disposed in said bore and a retractable protective sleeve disposed over an outer tip portion of the needle; wherein,

c) the needle is in two parts comprising a carpule-piercing part and a patient piercing part;

d) said bore comprises an inner bore adjacent said cap on one end carrying an inner portion of said carpule-piercing part and an outer bore of larger diameter than said inner bore on an opposite end concentrically extending over an outer portion of said carpule-piercing part; and,

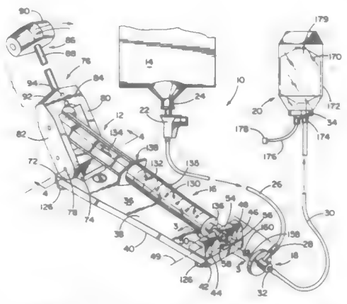
e) said retractable protective sleeve is carried by a base member also carrying said patient piercing part of the needle in a central bore therethrough, said base member having a projection extending therefrom containing a portion of said central bore not carrying said patient piercing part, said projection being sized and shaped to fit within said outer bore with said outer portion of said carpule-piercing part disposed within said portion of said central bore not carrying said patient piercing part.

5,336,201

SYRINGE DRIVING APPARATUS

Claus von der Decken, Aichach, Fed. Rep. of Germany, assignor to Baxter International Inc., Deerfield, Ill.

Filed Jun. 29, 1992, Ser. No. 906,087
Int. Cl.[5] A61M *5/315*
U.S. Cl. 604—223 **28 Claims**



1. An apparatus for driving a syringe, the syringe having an elongate cylinder with a fluid port at a first end of the cylinder and an open second end of the cylinder, a piston riding within the cylinder and a plunger having a proximal end connected to the piston and a distal end extending rearwardly from the open second end of the cylinder, the apparatus comprising:

a frame having a top and a bottom;

cylinder engaging means on top of the frame for engaging a cylinder of a syringe by movement of the cylinder in a first direction transverse the length of the cylinder to secure the cylinder without fasteners against lengthwise movement relative to the frame, and for disengaging the cylinder by movement of the cylinder in a second direction opposite the first direction;

a lever including first and second parallel spaced legs joined together by a transverse bridge, the lever being attached to the frame a selected distance from the cylinder engaging means for pivotable movement about a first axis; and

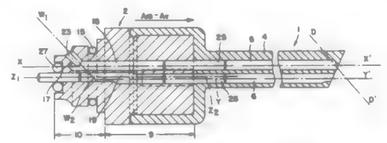
plunger engaging means between the first and second legs proximate to but spaced from the bridge for engaging a distal end of a plunger of a syringe by movement of the plunger in the first direction in a pivotable connection about a second axis between the distal end of the plunger and the lever without fasteners and for disengaging the distal end of the plunger by movement of the plunger in the second direction.

5,336,202

ATTACHMENT FOR A SYRINGE FOR SPRAYING MIXTURES OF FLUIDS

Alain Bailly, 20, rue du Bois des Roches, 91700 Sainte Genevieve Des Bois, France; Gérard Ramsteiner, L'Orme Rond-RN19, 77170 Servon, France, and Michel Saurou, Courbevoie, all of France

PCT No. PCT/FR91/00730, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO92/04878, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 17, 1991, Ser. No. 988,953
Claims priority, application France, Sep. 20, 1990, 90 11605
Int. Cl.[5] A61M *5/31*
U.S. Cl. 604—240 **8 Claims**



1. An attachment for a syringe for spraying mixtures of fluids, comprising:

(a) an adapter having an upstream end for being connected to the syringe, a downstream end, and two supply channels extending therethrough for receiving respective fluids;

(b) a disposable cannula molded of a plastic material and connected to the downstream end of said adapter, said cannula defining two longitudinally-extending distribution channels for communicating respectively with the two supply channels of said adapter to distribute the respective fluids from an upstream end of said cannula to a downstream end of said cannula, said distribution channels converging at the downstream end of said cannula to mix the fluids distributed therethrough;

(c) at least one tubular outlet sleeve connected to a respective one of said two supply channels and extending outwardly from a downstream end face of said adapter, said tubular outlet sleeve received in a corresponding one of said two distribution channels for promoting the passage of fluid from the one of said two supply channels to the one of said two distribution channels; and

(d) at least one inlet passage communicating with a respective one of said two supply channels at an upstream end face of said adapter for directing fluid downstream through the respective one of said two supply channels.

5,336,203

LOW PROFILE GASTROSTOMY DEVICE WITH DOME

Donald J. Goldhardt, Grove City, and William H. Hirsch, Columbus, both of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed May 28, 1993, Ser. No. 69,038
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604.7—247 **23 Claims**

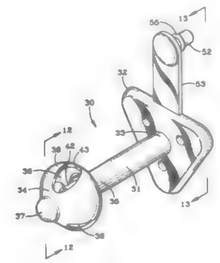
1. A gastrostomy device formed of elastomeric material and designed to be inserted into an existing stoma of a patient, comprising:

a. a hollow tubular shaft portion having an inner end and an outer end and a continuous tubular wall defining a longitudinal passage extending completely through the shaft portion, the outer end of the tubular shaft portion being adapted to extend outwardly of the stoma;

b. an enlarged resiliently deformable hollow dome portion, the dome portion having an apex, a substantially planar bottom wall opposite the apex, and a defining sidewall that has a perimeter and is circular in section and provided with a plurality of oval shaped apertures therethrough about equally spaced about the perimeter, each said oval

VOL 1165 ISS 2 AG 9 1994 UMI

shaped aperture having a major axis, and each major axis lying about on a shortest line from the apex to the bottom wall of the dome portion and an end of each oval opening being adjacent the bottom wall, the bottom wall being attached to the inner end of the hollow tubular shaft portion, the dome portion having a distal end and an attached end, the distal end being the apex extending away from the tubular shaft portion, and the attached end being the bottom wall, the inner end of the tubular shaft portion extending sealingly through the bottom wall and into the dome portion and communicating with the dome portion, the dome portion being particularly characterized by the



defining sidewall thereof being varied in thickness, the thickness of the sidewall gradually decreasing sufficiently from at least about the mid-height of the dome to the bottom wall whereby the dome when elongated with an obturator stretches and elongates smoothly and evenly and readily to substantially the diameter of the hollow tubular shaft; and

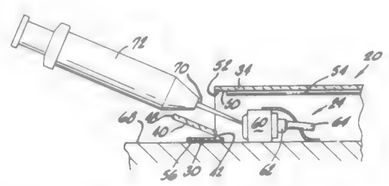
c. a retention flange with a central aperture therethrough and the outer portion of the tubular shaft portion extending slideably therethrough, and the retention flange being adjustably fixable in position upon the tubular shaft portion relative to the dome portion.

5,336,204

PROTECTIVE COVER FOR AN INFUSION DEVICE

Melanie E. Matyas, 301 N. Duane Ave., San Gabriel, Calif. 91775

Filed May 14, 1993, Ser. No. 61,025
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—263 **9 Claims**



1. A protective waterproof cover for use with an infusion device, said device generally permanently affixed to a person for a period of time wherein said device may receive drugs periodically, said cover to waterproof and protect said device from damage comprising:

a transparent plastic housing surrounding and spaced from said infusion device including at least one flat surface and having a bottom edge and including strengthening means to restrict the collapsing of said housing to protect said infusion device from damage;

an annular flange surrounding said housing at said bottom edge and extending radially outward from said housing, said flange having an underside;

a waterproof releasable adhesive on said underside of said flange; and a waterproof door having an edge formed in said one flat surface to be opened for access to said infusion device and said door includes locking means to prevent entry of moisture when closed wherein said locking means includes a tongue projecting from said edge and a groove in said housing to receive said tongue therein by snapping action and lock the same.

5,336,205

FLOW DIRECTED CATHETER

Wendy J. Zenzen, Fremont, and Uriel H. Chee, San Carlos, both of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

Filed Feb. 25, 1993, Ser. No. 23,805
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—280 **17 Claims**



1. A catheter that can be guided by the blood flow within a vessel, said catheter comprising an elongate tubular member having proximal and distal ends and an inner lumen extending between these ends, said member comprising:

(a) a tapered proximal segment that is between about 110 and 160 cm long and has a wall thickness of between about 0.1 and 0.4 mm, an outer diameter of between about 0.6 and 1.2 mm, and an inner diameter of between about 0.2 and 0.6 mm;

(b) a distal segment that is between about 5 and 40 cm long and has a wall thickness of between about 0.1 and 0.3 mm, an outer diameter of between about 0.5 and 0.8 mm, and an inner diameter of between about 0.25 and 0.5 mm; and

(c) a transition section between said proximal and said distal segments that is between about 20 and 40 cm long and has a wall thickness of between about 0.1 and 0.3 mm, an outer diameter of between about 0.5 and 0.9 mm, and an inner diameter of between about 0.2 and 0.5 mm;

wherein said distal segment has a burst pressure of at least about 195 psi and is made of a material which will show a force of about 10^{-4} pounds or less when ten centimeters of the material is deflected 10° from horizontal.

5,336,206

TROCAR PENETRATION DEPTH INDICATOR AND GUIDE TUBE POSITIONING DEVICE

Daniel Shichman, Trumbull, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

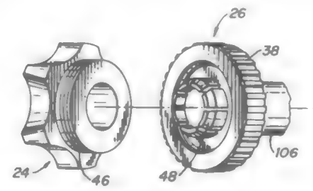
Continuation of Ser. No. 861,164, Mar. 27, 1992, Pat. No. 5,217,441, which is a continuation of Ser. No. 489,482, Mar. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 394,198, Aug. 15, 1989, abandoned. This application Apr. 12, 1993, Ser. No. 46,328
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—283 **5 Claims**

1. A stabilizing device for use with a trocar sleeve, comprising:

a member having an axial aperture therethrough, said aperture configured and dimensioned to receive a trocar sleeve, said member being slidably repositionable along the trocar sleeve, said member including a distally extending sleeve portion, said aperture extending through said sleeve portion;

a releasable locking mechanism associated with said member for constricting a portion of said aperture to releasably fix said member with respect to the trocar sleeve; and

at least one outwardly directed rib along said distally extending sleeve portion configured and dimensioned to engage



body tissue and stabilize said member with respect to the body tissue.

5,336,207

METHOD FOR REMOVAL OF MEDICAL ADHESIVE FROM SKIN

Michael A. Norcia, Safety Harbor, Fla., assignor to Smith & Nephew United Inc., Largo, Fla.

Continuation of Ser. No. 838,466, Feb. 19, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 26,867
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—290 **12 Claims**

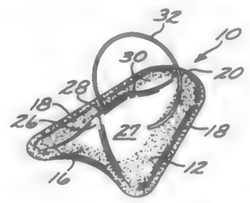
1. A method for removal of a medical adhesive from skin without irritation to the skin, which comprises applying to the medical adhesive on the skin an adhesive cleansing solvent comprising an oxyalkylene alkyl ether and a liquid aliphatic hydrocarbon, rubbing the medical adhesive skin and removing the medical adhesive.

5,336,208

URINARY INCONTINENCE PAD

Robert F. Rosenbluth, Laguna Niguel; Jay A. Lenker, Laguna Beach; George R. Greene, Costa Mesa; Rodney A. Brenneman, Mission Viejo, and Patrick A. Maley, Laguna Niguel, all of Calif., assignors to Advanced Surgical Intervention, Inc., San Clemente, Calif.

Continuation-in-part of Ser. No. 639,921, Jan. 10, 1991, Pat. No. 5,074,855. This application Dec. 20, 1991, Ser. No. 810,845
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] A61F *5/44, 13/15, 13/20;* **A61B** *5/00*
U.S. Cl. 604—329 **45 Claims**



1. An incontinence device for managing urinary incontinence in a human female having external genitalia that include a vulva with a vestibule floor and a pair of labia minora, and having a urethral meatus between the labia minora, comprising:

a body of biocompatible material configured to fit between the labia minora and the vestibule floor, said body having surface means for occlude the urethral meatus;

said surface means having a vestibule floor-contacting surface on the body; and

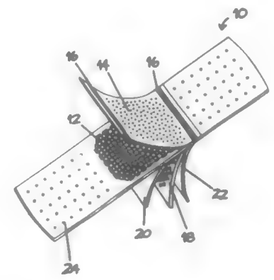
adhesive means on the vestibule floor-contacting surface for providing a sealing engagement between the body and the urethral meatus.

5,336,209

MULTI-FUNCTION WOUND PROTECTION BANDAGE AND MEDICANT DELIVERY SYSTEM WITH SIMULTANEOUS VARIABLE OXYGENATION

Louis B. Porzilli, P.O. Box 374, Rockaway, N.J. 07866

Continuation-in-part of Ser. No. 465,968, Apr. 6, 1990, Pat. No. 5,158,555. This application Oct. 26, 1992, Ser. No. 966,683
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] A61F *13/02*
U.S. Cl. 604—307 **20 Claims**



1. A protective dressing having a covering portion, said covering portion having a first side and a second side, and being divided into at least two sections, wherein

A. the second section of at least two sections of said covering portion has a removable cover affixed to said first side;

B. said second section of the second side of said covering portion having a gauze layer, said gauze layer positioned to be in contact with said covering portion, said gauze layer limiting transmigration of bacteria and other macrophages;

C. an absorbent pad adjacent to said gauze layer, said absorbent pad having perforations, thereby forming fluid wicking channels between said perforations, said wicking channels creating anaerobic and aerobic oxygen chambers and medication reservoirs;

D. a non-stick layer adjacent to said absorbent pad, said non-stick layer covering at least a portion of said gauze layer;

wherein said second section of said covering portion, said absorbent pad and said non-stick layer are perforated to allow for air flow, said perforations being of sufficient size to provide for ventilation, said perforations being aligned with one another.

11. The method of increasing the rate of epitheliazation of a wound through anaerobic to increased oxygenation comprising, providing a protective dressing, said protective dressing consisting of:

a covering portion, said covering portion having a first side and a second side, each side having at least two sections, wherein the second section of said at least two sections in perforated;

said second section of said first side of said covering portion having a removable, reaffixable, perforated cover, said removable, perforated cover having adhesive areas on at least a portion of its periphery;

said second section of said second side of said covering portion having a gauze layer to provide atmospheric oxygenation, said gauze layer being positioned to be in contact with said covering portion;

an absorbent pad adjacent to said gauze layer, said absorbent pad being perforated to allow for air flow, thereby forming wicking channels between said perforations, said wicking channels absorbing moisture and body fluids from the wound,

a non-stick layer adjacent to said absorbent pad, said non-

VOL 1165 ISS 2 AG 9 1994 UMI

stick layer being perforated to allow for air flow, said non-stick layer covering at least a portion of said absorbent pad;

skin release adhesive, said skin release adhesive being on said first section of said second side of said covering portion;

said second portion of said covering portion, said absorbent pad and said non-stick layer being perforated to allow for air flow, said perforations being of sufficient size to provide for ventilation, and said perforations being aligned with one another;

applying said protective dressing to said wound as an adhesive restraint clamp thereby promoting stratified layered coherent cellular cohesion by securing the walls of the wound together;

maintaining said removable cover affixed to said protective dressing to decrease oxygenation;

removing said removably affixed cover to act as a vent to allow for increased oxygenation to enhance epitheliazation; and

reaffixing said removably affixed cover to decrease oxygenation thereby regulating and monitoring oxygenation.

5,336,210

PLASTER AGENT

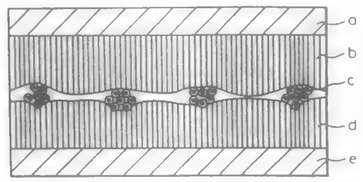
Osafumi Hidaka, Akikawa; Michisuke Ohe, Hino; Osam Magoshi, Urawa; Toshiyuki Kato, Tokorozawa, and Tomoki Sakai, Akishima, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 601,779, Oct. 26, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 7,830

Claims priority, application Japan, Feb. 28, 1989, 1-451780; Jun. 28, 1989, 1-166040; Jun. 28, 1989, 1-166041; Jun. 28, 1989, 1-166042; Aug. 22, 1989, 1-214162

Int. Cl.[5] A61F *13/00;* **A61K** *9/70*

U.S. Cl. 604—307 **11 Claims**



1. A plaster agent comprising layer a which is a water impermeable or water semipermeable film, layer b which is one tackifier layer laminated on one surface of said film, and layer d which is another tackifier layer laminated on said layer b through layer c which is an intermediary knitted fabric having a weight per unit area of 10 to 100 g/m^2 comprising hollow fibers having pores extending therethrough in the outer peripheral direction and substantially free from medicine internally thereof, and at least one of said layer b and said layer d containing at least one medicine selected from the group consisting of nitric acid esters, guayazulene, camphor, menthol, salicylic acid esters, hormones, analgesics and cardiac agents, said knitted fabric having a testure wherein the sum of a number of loops in the longitudinal and lateral directions thereof is 15 to 37 loops/cm.

5,336,211

EXTERNAL MALE CATHETER, APPLICATOR AND METHOD OF USE

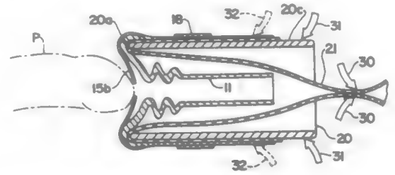
Michael Metz, Chicago, Ill., assignor to Hollister Incorporated, Libertyville, Ill.

Filed Oct. 22, 1992, Ser. No. 964,743

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—352 **18 Claims**

1. An external catheter and applicator combination, said catheter comprising a sheath of thin, stretchable, elastic material having a generally cylindrical body section merging at one end with a tapered neck section terminating in an outlet section of reduced diameter; said applicator including a relatively rigid tube having inner and outer surfaces and having oppositely-facing first and second end openings; said tube having a length substantially less than that of said sheath and having an outside diameter slightly greater than the maximum inside diameter of said sheath in an unstretched state; said applicator also including a flexible, tubular, relatively non-stretchable drawsleeve of substantially greater length than each of said tube and said sheath; said sheath having its neck and outlet sections extending axially within said applicator tube; said sheath extending outwardly through said first end opening and being reverted so that said cylindrical body section is disposed about said tube; said drawsleeve having a first portion disposed within the said



tube between said neck and outlet sections of said sheath and said inner surface of said tube and having a second portion extending a substantial distance outwardly from said tube through said second opening; said drawsleeve also extending through said first end opening and having a reverted third portion interposed between said outer surface of said tube and said cylindrical body section of said sheath; the frictional resistance between said drawsleeve and said tube being substantially less than the frictional resistance between said drawsleeve and said sheath; whereby, said sheath may be applied to a patient by positioning said tube's first end opening at a glans of a penis and then pulling said second portion of said drawsleeve away from said tube to extract said drawsleeve from the interior of said tube and simultaneously evert and advance the sheath's cylindrical section onto the penile shaft.

5,336,212

ANTISEPTIC AND ANTIFERMENTATIVE SANITARY TOWELS PARTICULARLY NAPPIES AND PANTS, FOR INFANTS, WOMEN AND INCONTINENT ADULTS

Giovanni De Francesco, Via Carmelitani Pal.B6 Trappete, 95037 S. Giovanni La Punta (Catania), Italy

Filed Oct. 18, 1991, Ser. No. 768,886

Claims priority, application Italy, Apr. 27, 1989, 8904 B/89[U]

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—360 **11 Claims**

1. Sanitary towels, for organic liquids issuing from the procto-uro-genital areas of the human body, in the form of plugs, panties and the like for women, children, incontinent adults, comprising: impregnation with a chemical preparation possessing high residual disinfecting action that remains unaltered over a period of time and that is activated by reaction with the body liquids thus eliminating or combatting, at the outset, proliferation of bacteria, fungi, fermentation, irritation and unpleasant smells, the chemical preparation being composed of paraoxybenzoate of ethylene-glycol-phenyl-undecyl-ether.

5,336,213

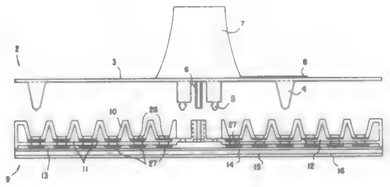
SELECTABLE DOSAGE TRANSDERMAL DELIVERY SYSTEM

Joseph P. D'Angelo, and Henry Schur, both of Miami, Fla., assignors to International Medical Associates, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 927,837, Aug. 10, 1992, which is a continuation-in-part of Ser. No. 865,309, Apr. 8, 1992. This application Sep. 28, 1992, Ser. No. 952,049

Int. Cl.[5] A61K *9/22;* **A61F** *13/00;* **B65D** *83/04*

U.S. Cl. 604—890.1 **22 Claims**



1. A transdermal drug delivery system, comprising a laminate composite of:

(a) a first permeable membrane to be placed in contact with a patient's skin;

(b) a transfer gel layer disposed on said first permeable membrane;

(c) a second permeable membrane disposed on said transfer gel layer;

(d) a reservoir structure disposed above said second permeable membrane, said reservoir structure having a plurality of drug reservoirs formed therein for receiving medicament;

(e) activation means for releasing medicament from said drug reservoirs for contact with the skin of the patient; said activation means comprising a dial rotatably supported on said reservoir structure, and puncture pins supported in said dial.

5,336,214

Patent Not Issued For This Number

5,336,215

EYE STABILIZING MECHANISM FOR USE IN OPHTHALMIC LASER SURGERY

Chi-Fu Hsueh, Escondido; Gregory J. Morris, La Jolla, both of Calif., and Stefan Goelz, Plankstadt, Fed. Rep. of Germany, assignors to Intelligent Surgical Lasers, San Diego, Calif.

Filed Jan. 22, 1993, Ser. No. 8,010

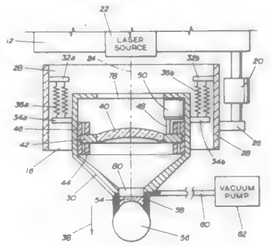
Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—4 **21 Claims**

1. A mechanism for stabilizing an eye with a contact lens and compensating for eye movement relative to the focal point of a laser beam during ophthalmic laser surgery which comprises:

a base;

means for supporting a contact lens, said supporting means being slidably mounted on said base;



means, attached to said base and connected to said supporting means, for generating a force against said supporting means to hold said contact lens against the eye; and

means mounted on said supporting means for moving said focal point along a preselected path relative to said contact lens to perform said surgery.

5,336,216

APPARATUS FOR DELIVERING A DEFOCUSED LASER BEAM HAVING A SHARP-EDGED CROSS-SECTION

David A. Dewey, Sunnyvale, Calif., assignor to Coherent, Inc., Santa Clara, Calif.

Continuation of Ser. No. 775,696, Oct. 10, 1991. This application Jul. 27, 1993, Ser. No. 97,867

Int. Cl.[5] A61B *1/06;* **F21V** *7/04*

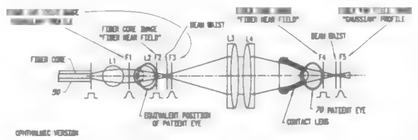
U.S. Cl. 606—4 **13 Claims**

7. An ophthalmic laser system for treating the retina comprising:

means for generating a laser beam;

an optical fiber having an input end for receiving the laser beam and a delivery end out of which the beam is emitted, with the beam emitted at the delivery end having a sharp edge intensity profile;

first lens means for transforming the beam exiting the delivery end of the fiber and creating a magnified image of the delivery end of the fiber and a transformed beam waist;



second lens means for relaying the transformed beam such that the image at the delivery end of the fiber coincides with the plane of the retina; and

VOL 1165 ISS 2 AG 9 1994 UMI

means for adjusting the focus of at least one of said lens means in a manner to vary the position of the relayed transformed beam waist behind the retina while maintaining the image of the delivery end of the fiber in the plane of the retina thereby preserving a sharp edge intensity profile in the retinal plane as the diameter of the beam in the retinal plane is varied.

5,336,217

PROCESS FOR TREATMENT BY IRRADIATING AN AREA OF A BODY, AND TREATMENT APPARATUS USABLE IN DERMATOLOGY FOR THE TREATMENT OF CUTANEOUS ANGIO DYSPLASIAS

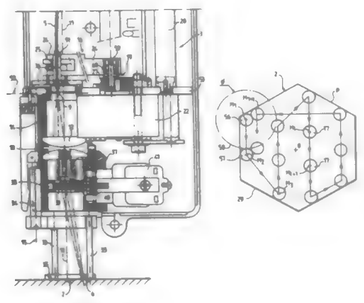
Bruno Buys, Lille; Jean-Pierre Sozanski, Thumeries; Serge Mordon, Villeneuve d'Asco; Jean-Marc Brunetaud, La Madeleine, and Yves Moschetto, Haubourdin, all of France, assignors to Institut National de la Sante et de la Recherche Medicale (INSEPM), Paris, France

Continuation of Ser. No. 505,469, Apr. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 153,838, Dec. 30, 1987, abandoned. This application Jun. 5, 1992, Ser. No. 893,683

Claims priority, application France, Apr. 24, 1986, 86 06581

Int. Cl.[5] A61N *5/02*

U.S. Cl. 606—9 **8 Claims**



1. An apparatus for treating a region of tissue with a laser beam comprising:

a handpiece, said handpiece including a means for supporting the handpiece at a fixed position on the tissue within the region to be treated;

means for coupling the beam into the handpiece;

guide means located within said handpiece for directing the beam to a spot on the tissue within the region to be treated;

adjustment means coupled to said guide means for varying the position of the spot within the region to be treated while the handpiece remains at a fixed position on the tissue; and

processor means for controlling the adjustment means to direct the spot to a series of nonoverlapping continuous positions covering the region to be treated, said processor means further controlling the beam to irradiate each position of the spot with an output, with the output at each spot having a predetermined duration and power and power wherein the tissue is not irradiated during the time the adjustment means varies the position of the spot and with the positions being selected so that if the time period between the delivery of the beam at two different positions is less than the thermal relaxation time of the tissue, then the distance between those two positions will be greater than the thermal diffusion distance thereby avoiding overheating of the tissue while minimizing the time period necessary for treating the entire region.

5,336,218

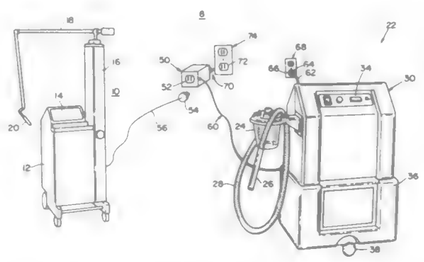
SURGICAL SMOKE EVACUATOR SYNCHRONIZING SYSTEM

Stephen J. Linhares, Taunton, Mass., assignor to Laser Engineering, Inc., Milford, Mass.

Filed Jun. 15, 1993, Ser. No. 77,120

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—10 **4 Claims**



1. A surgical smoke evacuator synchronizing system, comprising:

a smoke evacuator system;

a smoke or debris generating surgical device having a power cord with a plug for connection to a power source;

a monitoring system including a first receptacle for receiving said plug of said power cord; a cable connected to said first receptacle and having a number of lines and having a second plug for connection to a power source receptacle; a current sensing loop for receiving at least one line of said cable; a detector circuit for sensing the current level in said cable; and control means, responsive to a level of current in said cable, representing that said surgical device is operating, for enabling said smoke evacuator system and responsive to a level of current in said cable representing that said surgical device has completed operating for disabling said smoke evacuator system.

5,336,219

SKIN CLOSURE SYSTEM

Kermit E. Krantz, Mission Hills, Kans., assignor to Medi-Flex Hospital Products, Inc., Overland Park, Kans.

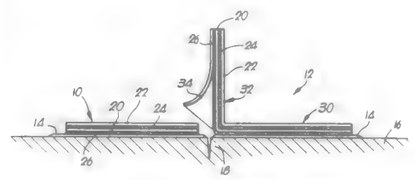
Filed Mar. 23, 1993, Ser. No. 36,055

Int. Cl.[5] A63B *17/00*

U.S. Cl. 606—15 **9 Claims**

1. A skin closure system comprising:

a primary bandage including a fabric layer formed of a first material having a thickness of about 1–5 mils and presenting opposed surfaces, a support layer formed of an elongated strip of a second material, an intermediate adhesive layer between the support layer and one surface of the fabric layer for securing them together, and an exposed adhesive layer on the opposed surface of the fabric layer, the support layer having a thickness less than the thickness



of the fabric layer and being inflexible relative to the first material; and

an elongated strip of backing material that is retained on the exposed adhesive layer of the primary bandage and is removable from the exposed adhesive layer to allow application of the bandage to the skin.

5,336,220

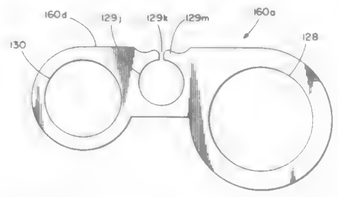
TUBING FOR ENDOSCOPIC ELECTROSURGICAL SUCTION-IRRIGATION INSTRUMENT

Dana W. Ryan, Davie; Charles R. Slater, Fort Lauderdale; Matthew S. Solar, Cooper City, and David Turkel, Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed Oct. 9, 1992, Ser. No. 959,268

Int. Cl.[5] A61B *17/20*

U.S. Cl. 604—22 **10 Claims**



1. A tubing for connection to an endoscopic instrument having suction, irrigation and electrocautery capabilities, said electrocautery capability requiring connection to an electrical wire, said tubing comprising:

an extruded flexible plastic tube having a first suction portion having a first interior substantially circular cylindrical fluid tight passageway, a second irrigation portion having a second interior substantially circular cylindrical fluid tight passageway, and a third portion having a third substantially cylindrical interior passageway for an electrical wire, said third portion joining one of said first suction and second irrigation portions and located substantially between said first and second irrigation portions, wherein said third substantially cylindrical interior passageway has first and second flexible lips defining a peripheral opening in said third substantially cylindrical interior passageway, said peripheral opening being narrower than said electrical wire such that said electrical wire is inserted past said lips and held in said third substantially cylindrical interior passageway and is removable from said third substantially cylindrical interior passageway.

5,336,221

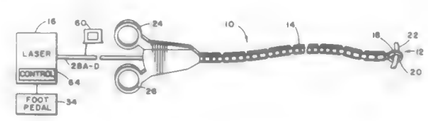
METHOD AND APPARATUS FOR APPLYING THERMAL ENERGY TO TISSUE USING A CLAMP

Dallas W. Anderson, The Woodlands, Tex., assignor to Premier Laser Systems, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 961,165, Oct. 14, 1992, abandoned. This application Nov. 6, 1992, Ser. No. 972,530

Int. Cl.[5] A61B *17/04*

U.S. Cl. 606—27 **4 Claims**



1. An apparatus for causing the formation of a proteinaceous framework from denatured protein in the vicinity of biological tissue to be reconstructed, the apparatus comprising:

an energy source for providing energy which is capable of heating the tissue to form an adhesive denatured proteinaceous substance;

a clamp having a first jaw having a concave surface for engaging with the tissue, sad surface being formed of a layer of transmissive material which is substantially transparent to the energy being emitted by the source, said surface of the transmissive material being selected to have a thickness for maintaining a predetermined spacing between said delivering means and the tissue;

means for delivering said energy from the source through said transmissive material to an area on the biological tissue to be reconstructed when said jaw engages the tissue, said delivery means including a plurality of optical fibers each having one end placed adjacent to the transmissive material, said plurality of fibers being positioned in said first and second jaws to direct energy at a plurality of areas that circumscribe said tissue when said tissue is engaged by said jaws; and

means for controlling substantially all of the energy directed at the area to be within a nondestructive range bonded by a minimum rate at which tissue forms a denatured proteinaceous substance and a maximum rate at which water in the tissue would boil so that anatomical continuity of the tissue is restored after energy is delivered to the tissue.

5,336,222

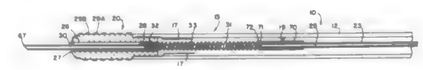
INTEGRATED CATHETER FOR DIVERSE IN SITU TISSUE THERAPY

Russell F. Durgin, Jr., Attelboro; Christopher A. Rowland, Marlborough; Roy H. Sullivan, Uxbridge, all of Mass., and Michael G. Vergano, Cumberland, R.I., assignors to Boston Scientific Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 38,903, Mar. 29, 1993. This application May 14, 1993, Ser. No. 63,094

Int. Cl.[5] A61B *17/39*

U.S. Cl. 606—50 **18 Claims**



1. A catheter assembly for enabling a physician to utilize diverse in situ therapy modalities at selected tissue comprising:

A. catheter means having a lumen therethrough from a proximal to a distal end thereof for extending from a location externally of a patient to tissue being treated,

B. bipolar electrode means attached to the distal end of said catheter means for providing hemostatic therapy to the selected tissue, said bipolar electrode means having a lumen therethrough aligned with said catheter means

VOL 1165 ISS 2 AG 9 1994 UMI

lumen for enabling the transfer of fluids between said catheter means lumen and the selected tissue through said bipolar electrode means lumen, and

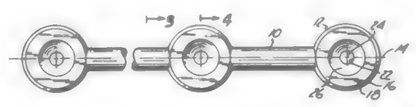
C. needle means for providing injection therapy, said needle means being electrically isolated from said bipolar electrode means and extending from a proximal end externally of the patient through said lumens in said catheter means and said bipolar electrode means for axial displacement whereby a distal portion of said needle means extends distally beyond and retracts proximally of a distal end surface of said bipolar electrode means.

5,336,223
TELESCOPING SPINAL FIXATOR
Charles L. Rogers, 1446 Creekside Ct., Vienna, Va. 22182
Filed Feb. 4, 1993, Ser. No. 15,362
Int. Cl.[5] A61F *5/00*
U.S. Cl. 606—61 9 Claims



1. A telescoping spinal fixator comprising first and second bearing means for engaging respective spinal vertebrae within cavities formed therein and maintaining said engaged vertebrae in an extended relationship from one another; said first and second bearing means being connected together along an axis at an adjustable distance by telescoping connecting, rods axially disposed between them and a rotatable distance adjusting means mounted coaxially on each of said rods intermediate said respective bearing means; each of said bearing means having an open, hollow interior cavity for accommodating at least a portion of one of said rods and said adjusting means when said bearing means are adjusted to be proximate to one another.

5,336,224
BONE FIXATION PLATE
Corey M. Selman, Long Beach, Calif., assignor to Ace Medical Company, Los Angeles, Calif.
Filed Nov. 30, 1992, Ser. No. 983,402
Int. Cl.[5] A61B *17/58*
U.S. Cl. 606—69 18 Claims



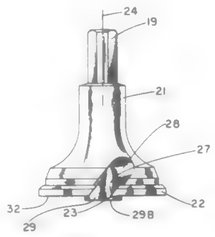
1. An implantable bone plate comprising a solid rod member having a length defining a longitudinal axis, the rod member having a plurality of enlarged bone-engaging members spaced apart along the length of the rod member, cylindrical portions between the bone-engaging members, the cylindrical portions having an essentially circular cross-section defining a first thickness to the rod member, the bone-engaging members and the cylindrical portions being centered on the longitudinal axis, each of the bone-engaging members having a first surface defining a bearing surface for bearing against a bone and having a second surface opposite the first surface, the first and second surfaces defining a second thickness not smaller than the first thickness, the bone-engaging members each having an aperture therein for receiving a bone fastener, each aperture having an aperture axis normal to the bearing surface and intersecting the longitudinal axis of the rod member.

5,336,225
BONE FASTENING DEVICE
Kerry Zang, Paradise Valley, Ariz., assignor to Orthopaedic Biosystems, Ltd., Scottsdale, Ariz., a part interest
Continuation of Ser. No. 705,374, May 24, 1991, abandoned. This application Sep. 17, 1992, Ser. No. 946,815
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—73 14 Claims



1. A bone screw, comprising a shaft portion and a head portion, said shaft portion being threaded on at least a section thereof, and said head portion having a first portion with a circular cross-section taken perpendicular to a longitudinal axis of said head portion and a second portion having a generally ellipsoidal cross-section, taken perpendicular to a longitudinal axis of said head portion, said second portion being generally outwardly convex about its perimeter relative to a central axis of said bone screw, wherein said first portion begins and ends in continuation with said second portion.

5,336,226
BONE FACE CUTTER
John M. McDaniel, and Michael W. Kiser, both of Bloomington, Ind., assignors to Chapman Lake Instruments, Inc., Bloomington, Ind.
Filed Aug. 11, 1992, Ser. No. 928,961
Int. Cl.[5] A61B *17/00;* A61F *2/32*
U.S. Cl. 606—79 4 Claims



1. A bone facing tool comprising:

a body having one end for connection to a power drive, and having another end for working on bone;

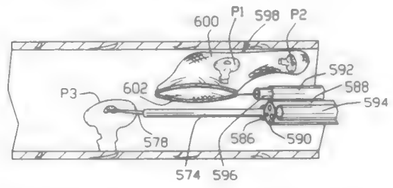
piloting means at the other end and defining a rotational axis perpendicular to the bone surface to be faced and having a piloting surface that is cylindrical about the axis;

a cutter member secured to the piloting means and having a cutting edge lying in a plane perpendicular to the axis, the cutting edge beginning at an inner end point on a circle centered on the axis, and the cutting edge extending outward from the inner end point to an outer end point, the outer and inner end points being located on different radial lines from the axis; and

a chip escape slot having an entrance defined by the cutting edge at one side of the entrance and by another edge of the cutter member at the other side of the entrance, the two edges being on opposite sides of a radius from the axis,

the escape slot beginning at said perpendicular plane and extending generally axially from the plane on a slope from said another edge toward a second plane containing the axis and the radius.

5,336,227
SURGICAL CAUTERIZATION SNARE WITH POLYP CAPTURING WEB NET
Naomi L. Nakao, and Peter J. Wilk, both of New York, N.Y., assignors to Wilk & Nakao Medical Technology Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 788,035, Nov. 5, 1991, Pat. No. 5,201,740, and a continuation-in-part of Ser. No. 892,214, Jun. 2, 1992, Pat. No. 5,190,542. This application Feb. 1, 1993, Ser. No. 12,657
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—114 20 Claims



1. A method for removing a selected portion of internal body tissues of a patient, comprising the steps of:

providing a conductive cauterization loop to which a flexible web member is connected to define an expandable pocket, said web member being attached to said loop in a manner so as to expose said loop to enable effective cauterization of organic tissues by said loop;

inserting an endoscope assembly into a patient;

using said endoscope assembly to visually monitor internal body tissues of the patient upon insertion of said endoscope assembly into the patient;

upon detecting selected internal body tissues to be removed from the patient, ejecting said loop with said web member from a distal end of a biopsy channel of said endoscope assembly;

upon ejection of said loop and said web member from said biopsy channel, at least partially expanding said loop and said web member from a collapsed configuration;

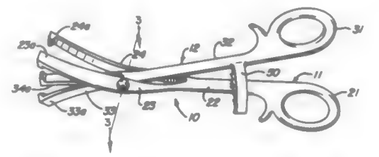
manipulating said loop from outside of the patient to pass the expanded loop over the selected internal body tissues to be removed, so that said web member substantially surrounds said selected internal body tissues;

closing said loop to engage said selected internal body tissues around a base region thereof;

conducting an electrical current through said loop to burn through said selected internal body tissues at said base region, thereby severing said selected internal body tissues at said base region; and

upon a completed burning of said loop through said base region, at least partially closing said loop, thereby capturing the severed internal body tissues.

5,336,228
CERVICAL MANIPULATOR FORCEPS
Hilary J. Cholhan, 141 San Gabriel Dr., Rochester, N.Y. 14610
Filed Jan. 14, 1992, Ser. No. 820,269
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—119 1 Claim



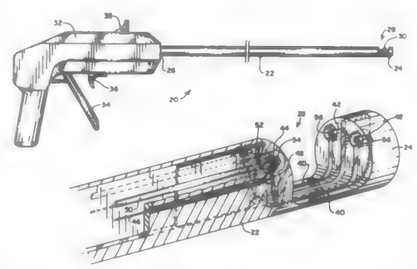
1. A tenaculum useful in the manipulation and excision of a cervix and uterus comprising:

a first forcep piece characterized by a first handle, a first generally cylindrical arm extending from said first handle, said first arm extending into a pair of first split tines at the free end thereof diverging from said arm to form a tapered separation therebetween, each said first tine being formed and twisted to align the free edges thereof along first parts of a circle;

a second forcep piece characterized by a second handle, a second generally cylindrical arm extending from said second handle and aligned for receipt between said first tines within the interior of said tapered separation proximate the juncture thereof with said first arm, and including a pair of second tines at the free end of said second arm, said pair of second tines being formed as a split structure bent and twisted to align the free edges thereof along a second part of said circle; and

pivot means extending through said first and said second arm for pivotal engagement thereof, said pivot means including a first and second ball seat formed in said first tines, a first and second ball receivable in the corresponding ones of said ball seat and a pivot rod connecting said first and second ball whereby the pivotal motion of said second arm into the juncture between said first tines affects the flexure thereof to reduce the spacing between the free ends of said first tines.

5,336,229
DUAL LIGATING AND DIVIDING APPARATUS
Wayne A. Noda, Mission Viejo, Calif., assignor to Laparomed Corporation, Irvine, Calif.
Filed Feb. 9, 1993, Ser. No. 15,220
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—144 61 Claims



1. Ligating apparatus comprising:

a shaft having a distal end, a proximal end, and a slot near the distal end in which tissue may be positioned;

a first suture detachably mounted at the distal end, the suture

VOL 1165 ISS 2 AG 9 1994 UMI

having a free end disposed on a first side of the slot, a knotted loop disposed on a second side of the slot opposite the free end and a cinching line extending proximally from the knotted loop;

means attached to the shaft for threading the free end through the knotted loop while tissue is positioned in the slot such that the suture forms a ligature surrounding the tissue;

means attached to the shaft for tightening the ligature by pulling the free end axially relative to the shaft; and

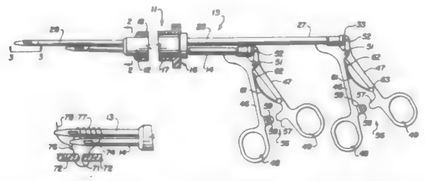
means attached to the shaft for cinching the knotted loop by pulling proximally on the cinching line.

5,336,230

ENDOSCOPIC SUTURE TYING METHOD

Jonathan J. Leichtling, San Francisco, Calif., and Charles S. Taylor, 4380 - 26th St., San Francisco, Calif. 94131, assignors to Charles S. Taylor, San Francisco, Calif.

Filed Nov. 4, 1992, Ser. No. 971,896
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **2 Claims**



1. A method for tying a knot in a suture, comprising providing an endoscopic suture-tying apparatus comprised of a holding sleeve having first and second grasping devices slidably mounted in the holding sleeve and having a grasper at the distal extremity thereof, providing a suture having first and second free ends, using the first grasping device to grasp the first free end, rotating the first grasping device grasping the first free end to form a plurality of helical wraps around the first grasping device, using the second grasping device to grasp the first free end of the suture retained by the first grasping device, operating the first grasping device to release the first free end from the first grasping device, using the first grasping device to grasp the second free end, moving the first grasping device to move the second free end through the helical wraps, moving the first and second grasping devices to pull on the first and second free ends to tighten the helical wraps to form at least a portion of a knot.

5,336,231

PARALLEL CHANNEL FIXATION, REPAIR AND LIGATION SUTURE DEVICE

Edwin L. Adair, 317 Paragon Way, Castle Pines Village, Colo. 80104

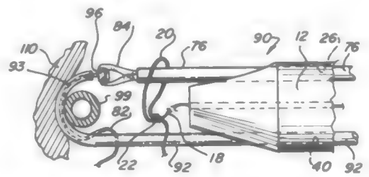
Continuation-in-part of Ser. No. 877,076, May 1, 1992. This application Nov. 23, 1992, Ser. No. 979,931
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **6 Claims**

3. A laparoscopic fixation, repair and ligation suture device adapted to ligate vessels and ducts comprising:

an elongated handle having a first length, a distal end, a proximal end, a central suture receiving passageway extending along the entire length of said handle and having a diameter slightly larger than a diameter of a suture line, a first channel for slidably receiving a ligation assist device, said first channel extending along the entire length of said handle on one side of said passageway, generally parallel to said central passageway, said handle further having a second channel for slidably receiving a carrier device, said second channel extending along the entire length of said handle, generally parallel to said central passageway and spaced oppositely from said first channel;

a suture line extending entirely through said central passageway and having a length greater than the length of said handle, a proximal end of said suture line extending beyond the proximal end of said handle and having a suture line pull attached thereto, said suture line pull having a diameter greater than the diameter of said central passageway, a distal end of said suture line extending beyond the distal end of said handle and having a suture line tab attached thereto, said suture line tab having a diameter greater than the diameter of said carrier device;

a loop with a slip knot formed on said suture line at a point distally spaced from the distal end of said handle, said slip know having a diameter larger than the diameter of said central passageway to prevent said loop from entering said passageway, a distal portion of said suture line distally extending beyond said slip knot;



a ligation assist device slidably received in said first channel, said ligation assist device having a length greater than the length of said handle, a distal end of said ligation assist device extendable beyond the distal end of said handle and having means for grasping said suture line tab; and

a carrier device slidably received in said second channel, said carrier device having a length greater than the length of said handle, a distal end of said carrier device extendable beyond the distal end of said handle, and forming a curved generally U-shaped portion said curved U-shaped portion having a distal end, a curvature diameter equal to the spacing between said first and second channels, and receiving means to receive said distal portion of said suture line such that, when said suture line distal extension portion is held by said receiving means, said suture line tab is axially aligned with said first channel and capable of being directly grasped by said grasping means of said ligation assist device when said ligation assist device is distally extended through said first channel.

5,336,232

APPROXIMATING APPARATUS FOR SURGICAL JAW STRUCTURE AND METHOD OF USING THE SAME

David T. Green, Westport; Henry Bolanos, East Norwalk; Jeffrey J. Blewett, Plantsville; Keith Ratcliff; Frank J. Viola, both of Sandy Hook, and Charles R. Sherts, Southport, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

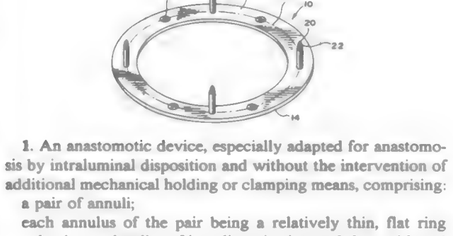
Continuation of Ser. No. 669,352, Mar. 14, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 7,410
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—151 **15 Claims**

9. Apparatus for approximating jaw structure of surgical instrumentation comprising:

a tubular endoscopic housing defining a longitudinal axis, a distal end and a proximal end, said housing an axial bore in said distal end;

first jaw structure extending from distal end of said endoscopic housing and stationary with respect thereto, said first jaw structure having a distal working end and a proximal end;

second jaw structure disposed in spaced relation to and connected with said first jaw structure, said second jaw structure having a distal working end for substantially parallel working interaction with said first jaw structure and a proximal end, said first and second jaw structure being disposed substantially parallel to the longitudinal axis of the surgical instrumentation and interconnected for substantially parallel approximation; and



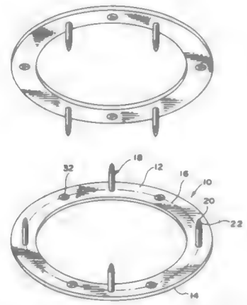
approximating means, at least partially disposed in said axial bore, having camming structure for camming said second jaw structure in substantially parallel relation with respect to said first jaw structure to permit working interaction between said distal working ends of said first and second jaw structure, wherein said working ends of said first and second jaw structure collectively comprise tissue measuring structure.

5,336,233

ANASTOMOTIC DEVICE

Fusen H. Chen, 12 Vernon La., Thompson, Conn. 06277

Continuation-in-part of Ser. No. 902,210, Jun. 22, 1992, Pat. No. 5,250,057, which is a continuation-in-part of Ser. No. 735,950, Jul. 25, 1991, Pat. No. 5,123,908, which is a continuation-in-part of Ser. No. 629,608, Dec. 18, 1990, Pat. No. 5,089,008, which is a continuation-in-part of Ser. No. 472,209, Jan. 26, 1990, Pat. No. 4,997,439, which is a continuation-in-part of Ser. No. 303,326, Jan. 26, 1989, Pat. No. 4,930,502. This application Mar. 26, 1993, Ser. No. 37,399
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—153 **2 Claims**



1. An anastomotic device, especially adapted for anastomosis by intraluminal disposition and without the intervention of additional mechanical holding or clamping means, comprising:

a pair of annuli;

each annulus of the pair being a relatively thin, flat ring having a plurality of impaling pins integral therewith and extending circumferentially and normally from one face thereof;

each pin being pointed at its end to facilitate an impaling function and being transversely serrated at an end section remote from the ring;

each said ring having a plurality of apertures therethrough, said pins and apertures circumferentially alternating with one another;

said one face of each annulus being beveled about each said aperture for a pin guiding function;

each aperture having therein a relatively thin flexible tang that is an extension from the inner periphery of the aperture defining annulus structure;

an alignment indicator element integral with and extending from a periphery of each said ring; and

the parts being configured and dimensioned whereby with the parts to be anastomosed each mounted on and about a respective ring member and the indicator elements aligned, the rings are operatively associated with one another for anastomosis whereby each pin is guided and received within an opposed operatively associated aperture, with the tang of said associated aperture lockingly engaged with a said serration, and said anastomosed parts are claimed between operatively associated flat surfaces of said annuli.

5,336,234

METHOD AND APPARATUS FOR DILATATION OF A STENOTIC VESSEL

Dennis Vigil, San Diego, and Thomas E. Olson, Poway, both of Calif., assignors to InterVentional Technologies, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 870,149, Apr. 17, 1992, Pat. No. 5,209,799. This application May 7, 1993, Ser. No. 58,406
Int. Cl.[5] A61M *25/10*
U.S. Cl. 606—159 **7 Claims**

1. An expanding balloon catheter dilatation system using oscillatory motion, for dilating a stenotic blood vessel, comprising:

a balloon enclosing an expandable chamber;

a hollow catheter tube attached to said balloon in fluid communication with said chamber;

at least one atherotome mounted on the exterior surface of said balloon; and

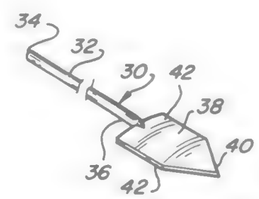
an oscillatory device mechanically linked to said at least one atherotome for imparting oscillatory motion to said at least one atherotome.

5,336,235

KERATOME

William D. Myers, 5855 Wingcroft Ct., Birmingham, Mich. 48010

Filed Jul. 23, 1991, Ser. No. 734,675
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—166 **4 Claims**



1. A keratome for use in eye surgery, said keratome comprising:

an elongated handle having a longitudinal axis and two ends,

a blade secured to one end of said handle, said blade having a left side edge, a right side edge and a thin walled body portion extending between said left side edge and said right side edge, said blade having a cutting edge spaced from and facing away from said one end of said handle, said cutting edge extending between said left side edge

VOL 1165 ISS 2 AG 9 1994 UMI

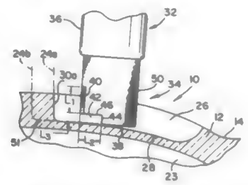
and said right side edge, said blade being curvilinear in shape along a plane substantially perpendicular to said blade so that said blade has a concave inner surface and a cylindrical convex outer surface, said blade having a radius of curvature about an axis substantially parallel to said longitudinal axis of said handle.

5,336,236

SURGICAL KNIFE AND METHOD FOR PERFORMING RADIAL KERATOTOMY ENHANCEMENT SURGERY

Anita S. Nevyas-Wallace, 231 Tower La., Narberth, Pa. 19072

Filed Oct. 12, 1993, Ser. No. 135,203
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—166 9 Claims



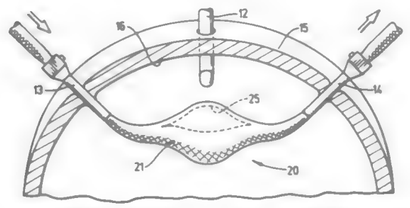
1. A surgical knife for use in radial keratotomy enhancement surgery on an eye having a cornea and a central optical zone, wherein a generally radial incision previously made in the cornea is to be extended centripetally toward the optical zone, the previously made incision having a wall adjacent the optical zone, the knife comprising a knife blade with an end, the blade having a sharpened cutting edge facing in a leading direction, a recess extending inwardly from the cutting edge and from the end of the blade, and a stopping edge at the recess, the stopping edge facing in the leading direction, the knife blade further comprising a measuring edge at the recess, the measuring edge having a predetermined length and extending from the cutting edge to the stopping edge, whereby the knife may be inserted into the previously made incision with the cutting edge facing centripetally and advanced toward the optical zone to extend the incision up to a maximum distance when the stopping edge abuts the wall and prevents further extension, the maximum distance being defined by the predetermined length of the measuring edge.

5,336,237

REMOVAL OF TISSUE FROM WITHIN A BODY CAVITY

Albert K. Chin, Palo Alto; John McIntyre, San Carlos, and Stephen A. Morse, Palo Alto, all of Calif., assignors to Devices for Vascular Intervention, Inc., Redwood City, Calif.

Filed Aug. 25, 1993, Ser. No. 111,984
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 22 Claims



1. A system for removing an organ or other piece of tissue from within a patient's body cavity or lumen including:

a) first and second trocar sheaths configured to be inserted into a patient's body cavity or lumen and having inner lumens in communication with the body cavity or lumen; and

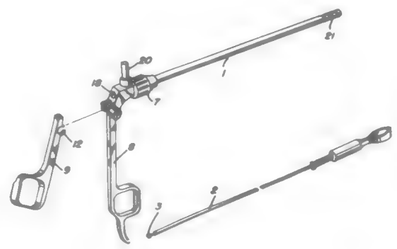
b) a tissue removing means which is configured to be advanced through the inner lumen of the first trocar sheath into the patient's body cavity or lumen and which includes an elongated expandable tubular member which has leading and trailing portions, an impervious lining defining an inner lumen extending therein, an opening in the leading portion to facilitate insertion of the organ or other piece of tissue to be morcellated into the inner lumen and which is configured to pass though the first trocar sheath into a patient's body cavity or lumen, through at least a portion of the patient's body cavity or lumen and out of the patient's body cavity or lumen through the second trocar sheath.

5,336,238

SURGICAL INSTURMENT CAPABLE OF DISASSEMBLY

J. Stephen Holmes, Atlanta, and Timothy Lamartina, Lawrenceville, both of Ga., assignors to Birtcher Medical Systems, Inc., Irvine, Calif.

Filed Jul. 19, 1993, Ser. No. 93,477
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—208 7 Claims



4. A surgical instrument comprising a hollow tube having a longitudinal axis, an inner rod having proximal and distal ends and extending through said hollow tube, handle means for imparting reciprocal movement to said inner rod relative to said hollow tube, a working tip attached to said distal end, said handle means comprising a pair of handles, a locking rod engageable with said handle means and comprising elongated inner and outer portions, one of said portions being of smaller diameter than the other of said portions, each of said portions being of substantially uniform diameter throughout its entire length, and said locking rod being moveable a limited distance such that in one position one of said handles is disengageable with respect to said one of said portions and in another position is interlocked with respect to said other of said portions.

5,336,239

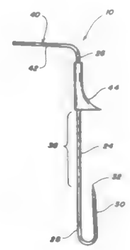
SURGICAL NEEDLE

Richard J. Gimpelson, 1028 Terrace Rock Cir., Ballwin, Mo. 63011

Filed Jan. 15, 1993, Ser. No. 4,925
Int. Cl.[5] A61B *17/06*
U.S. Cl. 606—223 15 Claims

1. A surgical needle having an elongated substantially straight shaft with a proximal end and a distal end,

said shaft having a proximally directed U-shaped hook at its distal end, said hook being of a size and shape that the hook passes through a narrow incision in an abdominal wall opening at its base into an abdominal cavity, said hook having a first leg attached to the distal end of the shaft and a second leg terminating in a point with an eye adjacent the point for receipt of a suture, said second leg is parallel to the shaft at the point and having a length such that the ratio of the length of the leg to the width of the hook is equal to or greater than 2.5 in a point with an eye adjacent the point for receipt of a suture whereby the second leg of the hook has a length such that the point can be inserted from the base of the incision through a selected portion of the abdominal wall surrounding the incision



sufficiently far to expose the eye from the opening of the incision, and

said shaft having a means at its proximal end for indicating the location of the point whereby the needle can be manipulated from the opening of the incision to place the suture through and through the abdominal wall.

5,336,240

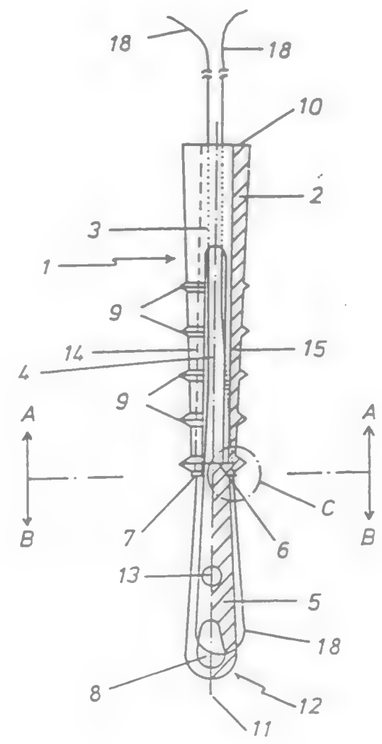
BONE-DOWEL ASSEMBLY FOR ANCHORING A SUTURE

Richard Metzler, Taufkirchen; Reinhold Schmieding, Olching, and Peter M. Schmid, Munich, all of Fed. Rep. of Germany, assignors to Liebscherkunststofftechnik, Gräfelfing and Arthrex Medizinische Instrumente GmbH, Munich, both of Fed. Rep. of Germany

Filed Mar. 3, 1992, Ser. No. 845,156
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1991, 4106823 .
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—232 15 Claims

1. A suture-anchoring bone dowel assembly, comprising:

an approximately cylindrical dowel shank made of a material which is absorbable in vivo having two ends connected by a central longitudinal axis and including a borehole extending from a free end of the shank to a second end of the shank along the longitudinal axis, said shank also including at least two longitudinal slots in communication with the



borehole, said slots being open at said second end of the shank and extending along a portion of the shank; and

an approximately pin-shaped expansion part made of a material which is absorbable in vivo having two ends connected by a second longitudinal axis coincident with that of the shank, and means defining at least one aperture extending approximately perpendicular to the second longitudinal axis for receiving a suture by which a force exceeding a predetermined value is applied to the expansion part,

wherein said expansion part is arranged to be pulled into the borehole at the second end of the shank when said force exceeding predetermined value is applied to the expansion part in a direction parallel to said longitudinal axes, said direction being towards the shank, thereby causing the shank to expand and become wedged against walls of a hole in a bone into which the assembly is inserted.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,241

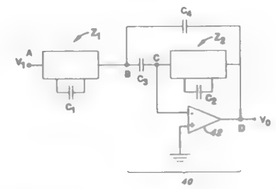
Patent Not Issued For This Number

5,336,242

BAND-PASS FILTER FOR USE IN A SENSE AMPLIFIER OF AN IMPLANTABLE CARDIAC PACER

Ali E. Zadeh, Sierra Madre, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed May 26, 1993, Ser. No. 67,367
Int. Cl.[5] A61N *1/365*
U.S. Cl. 607—11 21 Claims



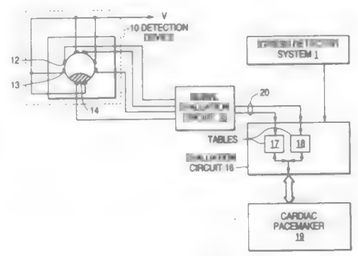
1. An implantable cardiac pacer for delivering therapy to a heart, said cardiac pacer comprising:
a first connection point through which an input signal can be received by said cardiac pacer;
a second connection point through which a therapeutic output signal can be delivered by said cardiac pacer;
a pace amplifier coupled to the second connection point so as to deliver the therapeutic output signal to the second connection point;
a pacing controller, coupled to the pace amplifier, that causes the pace amplifier to generate therapeutic output signal;
a sense amplifier coupled between the pacing controller and the first connection point that receives the input signal from the first connection point;
said sense amplifier including a band-pass filter circuit comprising:
a first bilinear resistor coupled between a terminal (A) and a terminal (B), said terminal (A) being coupled to the first connection point,
a first capacitor that is coupled between the terminal (B) and a terminal (C),
a second capacitor that is coupled between the terminal (B) and a terminal (D), said terminal (D) being coupled to the pacing controller,
a second bilinear resistor that is coupled between the terminal (C) and the terminal (D),
an operational amplifier with an inverting input that is coupled to the terminal (C), a non-inverting input that is coupled to analog ground, and an output that is coupled to the terminal (D),
said first bilinear resistor comprising a switching means for coupling a first lead of a first capacitive element to said terminal (A) and for coupling a second lead of the first capacitive element to said terminal (B) in response to a first state of at least one control signal, and for coupling the first lead of the first capacitive element to terminal (B) and for coupling second lead of the first capacitive element to terminal (A) in response to a second state of the at least one control signal, whereby the electrical orientation of the first capacitive element can be oscillated relative to the terminal (A) and the terminal (B) in response to said first and second states.

5,336,243

PHYSIOLOGICALLY CONTROLLED PACEMAKER AND PACEMAKER CONTROL SYSTEM WITH DETECTION OF THE SPATIAL POSITION OF THE PATIENT

Max Schaldach, Erlangen, Fed. Rep. of Germany, assignor to Biotronik Mess- und Therapiegerate GmbH & Co., Ingenieurburo Berlin, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 859,446, May 29, 1992, abandoned. This application Mar. 16, 1993, Ser. No. 31,911
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1989, 3939900
Int. Cl.[5] A61N *1/365*
U.S. Cl. 607—18 9 Claims



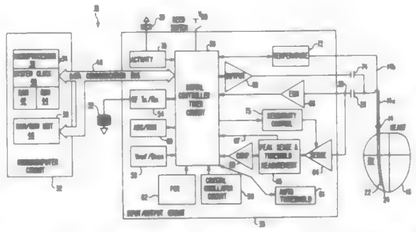
1. A cardiac pacemaker control system for controlling a stimulation pulses of a cardiac pacemaker, including:
stress detector means for controlling a basic stimulation rate of the cardiac pacemaker, by picking up signals within a patient's body related to physical stress and producing signals for physical stresses derived from a pre-ejection period of the patient; and
a orientation detection means including a position pickup, for detecting a spatial orientation of the patient, and outputting a switching signal for changing the basic stimulation rate depending upon the position of the patient which represents an additional measure of physical stress.

5,336,244

TEMPERATURE SENSOR BASED CAPTURE DETECTION FOR A PACER

Koen J. Weijand, Hoensbroek, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 7, 1992, Ser. No. 957,975
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—21 14 Claims



1. An apparatus implanted within a patient for detecting an evoked response of cardiac tissue evoked by a pacing pulse, comprising:
pulse generator means for generating pacing pulses;
means for applying said pacing pulses to a heart;
sensing means for measuring blood temperature of said patient and for generating an electrical signal representative of said temperature;

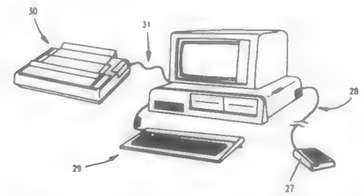
monitoring means coupled to said sensing means for monitoring said electrical signal provided from said sensing means to detect an occurrence of a cardiac evoked response;
capture detect timer means for defining a capture detect window after the generation of a pacing pulse by said pulse generator means; and
capture detect logic means responsive to said monitoring means and said capture detect timer means for detecting the occurrence of a said evoked response occurring within said capture detect window.

5,336,245

STORAGE INTERROGATION APPARATUS FOR CARDIAC DATA

Adams Theodore P., Edina, and Mark W. Kroll, Minnetonka, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed May 20, 1992, Ser. No. 886,325
Int. Cl.[5] A61N *1/02*
U.S. Cl. 607—32 14 Claims



1. An interrogation apparatus, for use by a patient, for transmitting information relating to an implanted medical device to a remote location, comprising:
a. processor means including program control instructions;
b. means, connected to said processor means, for transmitting and receiving RF signals between said interrogator and the implanted medical device;
c. an integrated circuit memory for storing signal data received from said implanted medical device, said memory being connected to said processor means and having the capacity to store at least 172 Kbytes of medical device information; and
d. means to transmit said stored signal data to a location remote from said interrogator, whereby information from the implanted medical device is received in one or more interrogation cycles initiated by the patient and stored, and subsequently transmitted to the remote location.

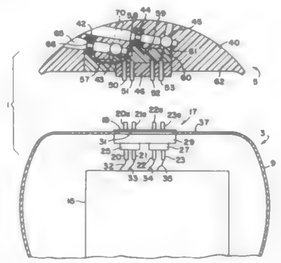
5,336,246

LEAD CONNECTOR ASSEMBLY FOR MEDICAL DEVICE AND METHOD OF ASSEMBLY

Muditha Dantanarayana, North Ryde, Australia, assignor to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Jun. 23, 1993, Ser. No. 81,583
Int. Cl.[5] A61N *1/375*
U.S. Cl. 607—37 10 Claims

1. An implantable electrical device comprising:
a sealed case having electrical circuitry therein and having at least one insulated electrical-feed-through member coupled to said circuitry and extending from the interior of said case to the exterior of said case, said feed-through member including an electrical terminal carried externally of said case;
a connector assembly having an apertured housing adapted to receive a proximal, electrical-terminal-carrying, end portion of an electrical lead in sealing engagement with said housing, whereby the interior of said connector assembly is sealed from the exterior thereof when in engagement with the electrical lead, said connector assembly having at least one electrical contact therein adapted to be engaged by a terminal of the electrical lead and having at least one insulated feed-through member coupled to said contact and extending from the interior of said assembly to the exterior of said assembly, said feed-through member including an electrical terminal carried externally of said assembly; and



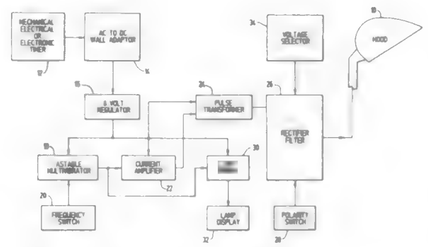
means for fastening said connector assembly and said sealed case together in such a manner that the external terminal of the feed-through member on the assembly electrically contacts the external terminal of the feed-through member on the case.

5,336,247

HAIR REGROWTH METHOD AND APPARATUS

Paul D. Groux, Clovis, and Marvin A. Burgess, La Mesa, both of Calif., assignors to 314613 B.C. Ltd., Vancouver, Canada

Continuation of Ser. No. 604,744, Oct. 26, 1990, Pat. No. 5,251,623. This application Mar. 24, 1993, Ser. No. 36,447
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—72 6 Claims



1. Hair regrowth apparatus comprising:
at least two electrodes;
positioning means for positioning the at least two electrodes closely proximate to, but not touching, a subject's scalp;
voltage pulse generator means electrically coupled to said at least two electrodes for application thereto of a low voltage, low frequency pulse train signal; and,
frequency selector means electrically coupled to said voltage pulse generator means, for varying said frequency.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,248

TREATMENT AND INHIBITION OF RETINOPATHY OF PREMATURITY

Peter A. Good, Birmingham; Christopher J. Morris, Sutton Coldfield; Andrew W. D. Claxson, London, and David R. Blake, Droitwich, all of England, assignors to British Technology Group Ltd., London, England

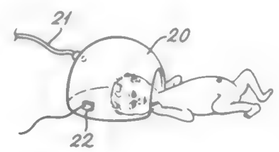
PCT No. PCT/GB90/01101, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO91/01158, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 18, 1990, Ser. No. 778,916

Claims priority, application United Kingdom, Jul. 18, 1989, 8916357

Int. Cl.[5] A61N 5/06

U.S. Cl. 607—90 10 Claims



1. An apparatus for the treatment of or the inhibition of retinopathy of prematurity, comprising:

means for providing substantially only red light in a wave band of at least about 612 nm; and

means for receiving at least the head of a baby and for limiting light which reaches the baby's eyes to substantially only said red light.

5,336,249

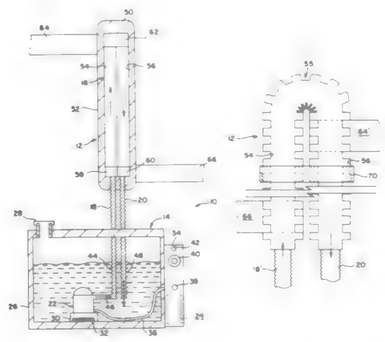
PORTABLE BODY HEATING/COOLING SYSTEM AND METHOD OF USE

Imad Mahawili, 1830 Meadow Green Ct., Caledonia, Mich. 49316

Continuation-in-part of Ser. No. 893,668, Jun. 5, 1992, abandoned. This application Dec. 23, 1992, Ser. No. 996,075

Int. Cl.[5] A61F 7/00

U.S. Cl. 607—104 11 Claims



1. A portable body heating/cooling apparatus for thermal treatment of selected body portions such as joints, muscles and the like, comprising

an insulated reservoir for containing hot/cold fluid,

a thermal pad substantially formed by corrugated conduit means configured to allow substantially rapid fluid circulation within the entire conduit means,

non-collapsible supply and return tubes interconnected between the reservoir and the conduit means in the pad, and pump means for continually circulating fluid from the reservoir through the conduit means and back to the reservoir,

said corrugated conduit means comprising parallel portions formed from a thermally conductive material corrugated on both interior and exterior surfaces and forming alternating ridges and valleys on the exterior surface thereof with corresponding valleys and ridges on the interior surface thereof, the material being sufficiently flexible for conforming to the selected body portion and for producing thermal treatment by the flow of fluid past the valleys and ridges of the entire interior conduit surface, the tubular portions being respectively connected to the supply and return tubes and to each other, the entire pad being elongated for application in extended or flat relation to the body or wrapped around a body joint or limb with the conduit means in direct thermally conductive relation with the heated or cooled circulating fluid therein and the selected body portion to be treated, whereby the use of the corrugated conduit means in combination with the pump means provides rapid and direct thermal change transfer from the circulating heated/cooled fluid across the conduit means to the selected body portion in contact therewith.

5,336,250

THERMAL BLANKET WITH TRANSPARENT UPPER BODY DRAPE

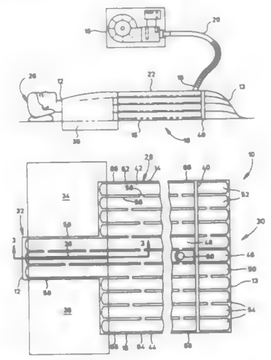
Scott D. Augustine, Bloomington, Minn., assignor to Augustine Medical, Inc., Eden Prairie, Minn.

Continuation of Ser. No. 890,554, May 28, 1992, Pat. No. 5,184,612, which is a continuation-in-part of Ser. No. 703,592, May 20, 1991, Pat. No. 5,324,320, which is a continuation-in-part of Ser. No. 227,189, Aug. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 104,682, Oct. 5, 1987, abandoned. This application Feb. 8, 1993, Ser. No. 14,619

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] A01F 7/00

U.S. Cl. 607—107 12 Claims



1. A thermal blanket for covering and bathing a person in a thermally-controlled inflating medium, comprising:

a flexible base sheet having top and bottom surfaces, a head end, a foot end, two side edges, and a plurality of apertures therethrough;

an overlaying top sheet attached to a first surface of said base sheet by a plurality of seals which form said overlaying top sheet into a plurality of communicating, inflatable chambers, said apertures opening through said base sheet into said chambers;

said base sheet and said top sheet forming an inflatable generally rectangular lower main body section of a first width and an inflatable generally rectangular upper central body section forming a chest cover extension at said head end having a second width less than said first width; and

a non-inflatable transparent chest drape formed by lateral extensions of a film sheet extending laterally from said central body section.

5,336,251

ADAPTOR DEVICE FOR UNIPOLAR ELECTRODE CATHETERS

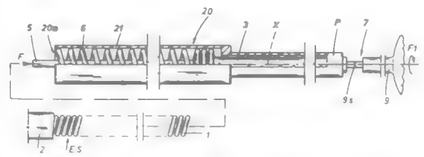
Enzo Borghi, Budrio, Italy, assignor to X-Trode S.r.l., Bologna, Italy

Filed Jan. 12, 1993, Ser. No. 3,440

Claims priority, application Italy, Jun. 9, 1992, B092A 000233

Int. Cl.[5] A61N 1/05

U.S. Cl. 607—116 11 Claims



1. An adaptor device by means of which to connect a cardiac pacemaker to an already implanted unipolar electrode catheter consisting of a first electrically conductive spiral wound wire having a first spiral wound wire end accommodated internally of an insulating flexible tubular sheath, comprising:

an electrically conductive rigid sleeve having an internal surface and with a first sleeve end which coincides with a negative pole if the pacemaker and a second sleeve end which is tubular and affords an open extremity;

an electrically conductive rigid spindle by which the pacemaker is coupled to the electrode catheter, inserted coaxially through and rotatable about its own axis within the sleeve, of which a first spindle end is extended to form a coaxial stilet passing through an beyond the open second sleeve end and insertable coaxially at least into the first spiral wound wire end exposed from the sheath, and a second spindle end remote from the stilet;

a second electrically conductive spiral wound wire having a first end and a second end, interposed between the internal surface of the sleeve, of which the first end is anchored to the internal surface of the sleeve and the second end is anchored to the spindle;

detachable means of rotation, positioned at the second spindle end remote from the stilet and operated . . . and serving to secure the first and the second spiral wound wires permanently together.

5,336,252

SYSTEM AND METHOD FOR IMPLANTING CARDIAC ELECTRICAL LEADS

Donald M. Cohen, 17512 Luther Ave., Irvine, Calif. 92714

Filed Jun. 22, 1992, Ser. No. 901,991

Int. Cl.[5] A61N 1/39

U.S. Cl. 607—119 6 Claims

1. A system for implanting electrical leads in or on the pericardium of a heart, comprising:

a guiding catheter including distal end;

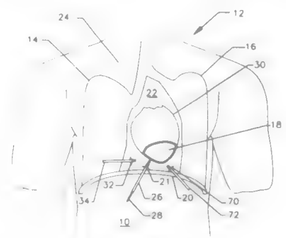
a suction cup having a bore therethrough and mounted to said distal end of said guiding catheter, said suction cup disposed to abut a pericardium surrounding said heart;

a vacuum pump coupled to said guiding catheter to evacuate said guiding catheter so that a pressure differential holds said suction cup to said pericardium when said suction cup abuts said pericardium;

an endoscope fitted through said guiding catheter for observing a surface of said pericardium through said bore of said suction cup;

a wire guide inserted through said guiding catheter, said wire guide having a distal end that includes first anchoring means for providing an anchoring function in the pericardium and a needle selectively deployable a predetermined distance from said distal end of said wire guide for cutting an access hole through a pericardium into said pericardial space;

a dilator having a blunt, tapered distal end and a longitudinal bore slidable over said wire guide so that said blunt end of said dilator may be advanced to penetrate and dilate said access hole;



a flexible sheath having a distal end fitted to slide over said dilator, said flexible sheath and said wire guide forming a channel when said dilator is withdrawn from said wire guide; and

an electrical lead having a distal end equipped with second anchoring means for anchoring the distal end of the electrical lead to body tissue, said electrical lead and distal end being of a size and shape that permits the insertion of the electrical lead through the channel of said flexible sheath so that the distal end of said electrical lead passes through said access hole into said pericardial, space, said distal end being adapted to be anchored in said pericardial space by said second anchoring means.

5,336,253

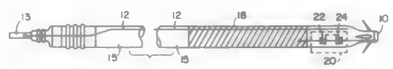
PACING AND CARDIOVERSION LEAD SYSTEMS WITH SHARED LEAD CONDUCTORS

Pat L. Gordon, Austin, Tex.; John T. Meador, Fridley, Minn.; John G. Keimel, New Brighton, Minn., and Rahul Mehra, Stillwater, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 23, 1993, Ser. No. 21,408

Int. Cl.[5] A61N 1/05

U.S. Cl. 607—122 8 Claims



1. A cardioversion and pacing lead for implantation in or on a human heart, comprising:

an elongated insulated lead body;

a first conductor, having a proximal end and a distal end, mounted in said lead body;

a second conductor, having a proximal end and a distal end, mounted within said lead body, insulated from said first conductor;

a first connector, coupled to the proximal end of said first conductor;

VOL 1165 ISS 2 AG 9 1994 UMI

a second connector, coupled to the proximal end of said second conductor;

a first electrode, exposed to the exterior of said lead body and coupled to the distal end of said first conductor for applying electrical energy to and sensing heart signals from heart tissue;

a second electrode exposed to the exterior of said lead body and coupled to the distal end of said second conductor for applying electrical energy to and sensing heart signals from heart tissue;

a third electrode exposed to the exterior of said lead body for applying electrical energy to heart tissue; and

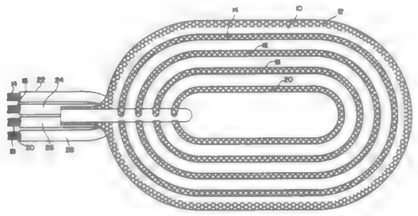
switching means within said lead body coupled between said second conductor and said third electrode for directing the electrical energy of a cardioversion pulse applied to said second connector in common to said second and third electrodes and to said heart tissue, while preventing the electrical energy of a pacing pulse applied to said first and second connectors from being directed to the third electrode.

5,336,254

DEFIBRILLATION LEAD EMPLOYING ELECTRODES FABRICATED FROM WOVEN CARBON FIBERS

Kenneth R. Brennen, Fridley; Terreli M. Williams, Coon Rapids, and Robert A. Gabler, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 23, 1992, Ser. No. 950,533
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—129 **5 Claims**



1. A defibrillation lead, comprising:

an elongated insulated conductor; and

a carbon fiber electrode, coupled to said elongated insulated conductor, said carbon fiber electrode comprising one or more tubular braids of carbon fibers, said tubular braids of carbon fibers arranged to define a generally planar large surface area defibrillation electrode, said tubular braids each provided with an inner core of a flexible biocompatable plastic, said elongated, insulated conductor comprising an extension and continuation of one or more of said tubular braids of carbon fibers.

5,336,255

ELECTRICAL STIMULATION HEAT/COOL PACK

Donald M. Kanare, P.O. Box 2933, Alameda, Calif. 94501; Thomas E. Abdenour, 14644 Outrigger, San Leandro, Calif. 94577, and Jens Axelgaard, 811 Tumbleweed La., Fallbrook, Calif. 92028

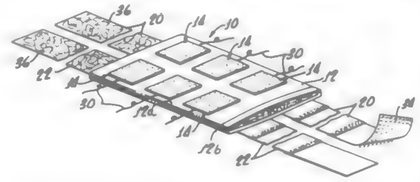
Filed Jan. 11, 1993, Ser. No. 3,101
Int. Cl.[5] A61N *1/18;* **A61F** *7/00*
U.S. Cl. 607—149 **12 Claims**

1. An electrical stimulation body pack comprising:

a flexible electrically non-conductive pouch including means for containing a heat transfer medium, said flexible pouch being formed from a nonelectrically conductive fabric, said pouch including a first surface having moisture barrier means for separating a chilled heat transfer medium from a contacted body and a second surface having insulation means for separating a heated heat transfer medium from a contacted body in order to prevent skin burn;

means for positioning and compressing either of the first and second surfaces of said flexible pouch against a body part;

a flexible electrical nerve and muscle stimulation electrode



attached to the flexible pouch at a position enabling direct contact between the stimulation electrode and the body part when either of the first and second surfaces of said flexible pouch is compressed against the body part; and

a lead wire electrically connected to the flexible nerve and muscle stimulation electrode.

5,336,256

ELASTOMERIC POLYPEPTIDES AS VASCULAR PROSTHETIC MATERIALS

Dan W. Urry, Birmingham, Ala., assignor to UAB Research Foundation, Birmingham, Ala.

Continuation-in-part of Ser. No. 900,895, Aug. 27, 1986, Pat. No. 4,783,523, and a continuation-in-part of Ser. No. 853,212, Apr. 27, 1986, abandoned. This application Apr. 22, 1988, Ser. No. 184,873
Int. Cl.[5] A61F *2/06;* **C07K** *5/02*
U.S. Cl. 623—1 **3 Claims**



1. A vascular prosthetic device which is in a form selected from the group consisting of a tube or vessel comprising three layers, each of which contains an elastomeric material capable of reversibly contracting and relaxing by an inverse temperature transition, wherein said elastomeric material in each of said layers contains repeating units selected from the group consisting of elastomeric tetrapeptide and pentapeptide repeating units, wherein said repeating units comprise amino acid residues selected from the group consisting of hydrophobic amino acid and glycine residues, and wherein said repeating units exist in a conformation having a beta-turn, wherein said elastomeric material in each of said three layers can be the same as or different from each other, and wherein said three layers comprise:

(a) an intimal-inner layer, which comprises said elastomeric material in non-woven form, at least one cell attachment sequence for endothelial cells and at least one chemotactic peptide for endothelial cells;

(b) a medial-middle layer, which comprises said elastomeric material in non-woven form, at least one cell attachment sequence for smooth muscle cells, and at least one chemotactic peptide for smooth muscle cells; and,

(c) an adventitial-outer layer, which comprises said elastomeric material in non-woven form and at least one lysine-containing polypentapeptide which renders said outer layer capable of being covalently crossed-linked to extracellular matrix surrounding said vascular material when implanted.

5,336,257

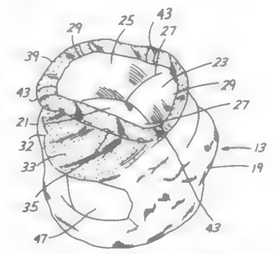
Patent Not Issued For This Number

5,336,258

STENTLESS HEART VALVE AND HOLDER

Lillian J. Quintero, Laguna Niguel, Calif.; Delos M. Cosgrove, Hunting Valley, Ohio, and Diana Nguyen-Thien-Nhon, Santa Ana, Calif., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 579,464, Sep. 7, 1990, Pat. No. 5,197,979. This application Dec. 14, 1992, Ser. No. 990,211
Int. Cl.[5] A61F *2/24*
U.S. Cl. 623—2 **20 Claims**



1. A stentless aortic valve prosthesis comprising an animal aortic segment having an external surface and an internal surface, the aortic segment further comprising an aortic root, an outflow rim adjacent the aortic root, an inflow rim, a left coronary artery, a right coronary artery, a right coronary septal shelf, a plurality of valve leaflets, each valve leaflet having cusps and edges with the adjacent edges of the valve leaflets meeting to form commissures, and a pseudoannulus line located adjacent the commissures along the internal surface of the aortic segment, the improvement comprising:

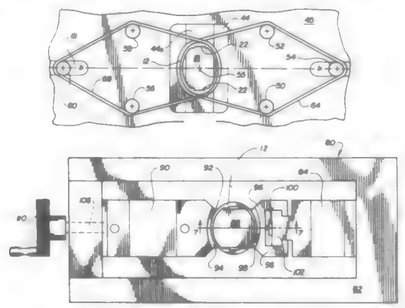
coronary openings formed by cutting away the left and right coronary arteries while leaving intact a band of aortic wall adjacent the outflow rim.

5,336,259

ASSEMBLY OF HEART VALVE BY INSTALLING OCCLUDER IN ANNULAR VALUE BODY

C. Thomas Waits, Pflugerville; Jonathan C. Stupka, Austin; T. Scott Peters, Georgetown, and Alan S. Schwartz, Austin, all of Tex., assignors to Carbon Implants, Inc., Austin, Tex.

Filed Feb. 5, 1993, Ser. No. 14,200
Int. Cl.[5] A61F *2/24*
U.S. Cl. 623—2 **19 Claims**



15. A method of assembling a prosthetic heart valve having an annular valve body and at least one occluder which occluder interengages with support means formed on the interior surface of said valve body to support said occluder in a position to allow its movement between an open position and a closed position, which method comprises

applying oppositely directed compressive forces to two exterior regions of the curvilinear exterior surface of said annular valve body which regions each extend for at least about 120° of arc and for an axial distance equal to at least about one-half the axial length of the valve body,

said forces being applied over said at least about 120° of arc of said exterior surface regions and being of such a magnitude so as to distend said annular valve body from an unstressed generally circular annular configuration so as to elong.te said body in regions where said occluder support means are located, while placing major exterior surface regions of said valve body in compression,

installing said occluder in said distended valve body, and

gradually removing said oppositely directed compressive forces to allow said valve body to return to its unstressed generally circular annular configuration with said occluder secured in interengagement within said valve body.

5,336,260

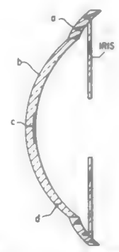
Patent Not Issued For This Number

5,336,261

CORNEAL INLAY LENSES

Graham D. Barrett, Perth, Australia; William J. Link, Irvine, and Cary J. Reich, Laguna Hills, both of Calif., assignors to Chiron IntraOptics, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 759,599, Sep. 16, 1991, Pat. No. 5,196,026. This application Feb. 10, 1993, Ser. No. 15,984
Int. Cl.[5] A61F *2/14*
U.S. Cl. 623—5 **12 Claims**



1. A corneal implant lens for surgical implantation between the layers and in the optic zone of a cornea of an eye to correct refractive errors in a patient, comprising a solid transparent optical lens having no apertures therethrough, of a diameter such that the entire optic zone of said cornea is not covered by said lens, wherein the diameter of said lens is substantially less than the diameter of said optic zone of said cornea, and wherein when implanted in the eye multiple refractive indices and multiple focalities are created only by the presence or absence of said lens.

5,336,262

INTRAOCULAR LENS WITH HAPTICS FOR SCLERAL FIXATION AND METHOD FOR USING IT

Milton W. Chu, 5800 Santa Rosa Rd., Suite 111, Camarillo, Calif. 93012

Continuation-in-part of Ser. No. 456,809, Dec. 26, 1989, abandoned. This application Aug. 11, 1992, Ser. No. 929,887
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—6 **1 Claim**

1. A method of implanting an intraocular lens in the posterior chamber of an eye, comprising the steps off:

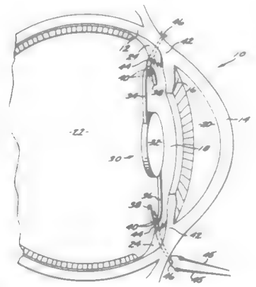
providing an intraocular lens having a disk-shaped lens optic with a transverse plane and first and second curved, flexi-

VOL 1165 ISS 2 AG 9 1994 UMI

ble haptics projecting outwardly from opposite points on the lens optic's periphery, substantially in the lens optic's transverse plane, wherein the haptics each project outwardly from, and then back inwardly toward, the lens optic so as to define an apex, and wherein the haptics each include one or more suture holes having a circular cross-section with a diameter of less than or equal to 0.25 millimeters; and

implanting the lens in the posterior chamber of the eye, the step of implanting including steps of

flexing the first and second haptics radially inwardly a combined distance of at least about 1 millimeter, such that they engage the ciliary sulcus of the eye, and



passing a suture through the one or more suture holes of each of the first and second haptics and through the sclera of the eye, to secure the haptics, and thereby the lens, in place;

wherein the step of providing includes a step of locating the one or more suture holes in each of the first and second haptics such that when the lens is implanted in the eye, at least one suture hole in each haptic is located substantially at the haptic's apex, with the center of the suture hole within the first 1.50 millimeters of tangential contact with the ciliary sulcus.

5,336,263

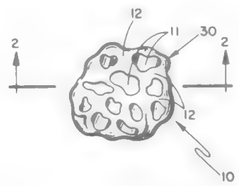
TREATMENT OF UROLOGICAL AND GASTRIC FLUID REFLUX DISORDERS BY INJECTION OF MMICRO PARTICLES

Robert A. Ersek, 62 Pascal, Austin, Tex. 78746; Arthur A. Beisang, 1300 Ingerson Rd., Arden Hills, Minn. 55112, and Arthur A. Beisang, III, 5883 Carlson St., Shoreview, Minn. 55126, assignors to Robert A. Ersek, Austin, Tex.; Arthur A. Beisang, Shoreview and Arthur A. Beisang, III, St. Paul, both of Minn.

Continuation of Ser. No. 863,848, Apr. 6, 1992, abandoned. This application Apr. 22, 1993, Ser. No. 52,234

Int. Cl.[5] A61F *2/02*

U.S. Cl. 623—11 **20 Claims**



1. A method for long-term treatment of urological and gastric disorders comprising the step of injecting submucosally or peri-urethrally into tissue at at least one injection site a composition comprising an effective amount of relatively soft, malleable, elastic, biologically compatible prosthetic micro particles dispersed in a non-retentive compatible physiological vehicle comprising polyvinyl pyrrolidone, the micro particles of the composition further being of a designed average particle size distribution and characterized by a rough surface having a plurality of surface irregularities generally randomly formed therein, such that the effects of average particle size and average particle surface roughness cooperate in combination in an autogenous manner to essentially prevent loss of the micro particles from any injection site, the particles remaining to be incorporated as long-term tissue augmentation.

5,336,264

SITU PREPARED CALCIUM PHOSPHATE COMPOSITION AND METHOD

Brent R. Constanz, Los Gatos; Mark T. Fulmer, Santa Clara, and Bryan M. Barr, Sunnyvale, all of Calif., assignors to Norian Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 722,880, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 650,462, Feb. 4, 1991, abandoned, which is a continuation of Ser. No. 393,579, Aug. 14, 1989, Pat. No. 5,129,905, which is a continuation of Ser. No. 358,716, May 30, 1989, Pat. No. 5,047,031, which is a continuation of Ser. No. 183,770, Apr. 28, 1988, Pat. No. 4,880,610. This application Jul. 23, 1992, Ser. No. 918,233

Int. Cl.[5] A61F *2/28;* **C01B** *15/16*

U.S. Cl. 623—16 **14 Claims**

1. A method for preparing a rapid setting calcium phosphate composition capable of rapidly setting up in a viable mammalian host, said method comprising:

combining with mixing dry precursors for producing a calcium phosphate mineral composition, said precursors comprising a calcium source and a phosphoric acid source free of uncombined water;

combining said combined precursors with a lubricant at a pH in the range of 6–11, wherein said lubricant comprises a member selected from the group consisting of phosphate and carbonate and is from about 15 to 70 weight percent of the total composition;

to form a rapidly setting flowable composition.

5,336,265

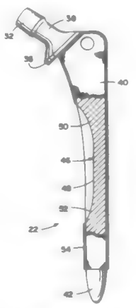
REDUCED STIFFNESS FEMORAL HIP IMPLANT

Jon Serbousek, Warsaw, and Alexandre DiNello, Ft. Wayne, both of Ind., assignors to De Puy, Inc., Warsaw, Ind.

Continuation of Ser. No. 773,027, Oct. 7, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 975,993

Int. Cl.[5] A61F *2/30*

U.S. Cl. 623—18 **9 Claims**



1. A component of an artificial joint for replacing a damaged natural joint in a skeletal structure of a body which includes a prosthesis having a first cooperating member to be secured to a first long bone having an intramedullary canal, the first cooperating member adapted to engage and being relatively movable with a second cooperating member of a second bone to permit relative movement between the first and second bones, comprising:

an elongated stem having an outer surface and a longitudinal axis lying generally in a coronal plane and being integral with the first cooperating member and receivable in the intramedullary canal of the first bone, said stem extending between proximal and distal ends and having a single longitudinally extending, generally medially facing, groove intermediate said proximal and distal ends, said groove and said outer surface intersecting at a single outer rim, said groove including a central concave surface and proximal and distal concave end surfaces, said groove having a longitudinal axis parallel to said longitudinal axis of said stem lying within a central bisecting plane which is generally angularly disposed relative to the coronal plane when said stem is implanted, said central bisecting plane of said longitudinally extending groove being disposed at an angle within a range of 0° to approximately 45° relative to the coronal plane and extending in a lateral posterior to medial anterior direction, said proximal and distal end surfaces extending to said rim and blending smoothly with said central concave surface, said groove having a substantially constant depth between said proximal and distal concave end surfaces chosen so as to obtain a substantially constant stiffness profile of said stem between said proximal and distal ends such that said stem with said groove therein at all locations between said proximal and distal ends has a magnitude of stiffness no greater than a predetermined magnitude corresponding to that at which stress shielding of the first bone would occur.

5,336,266

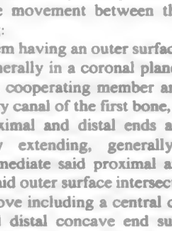
KNEE JOINT PROSTHESIS

Richard B. Caspari, 2192 Sheppard Town Rd., Maidens, Va. 23102; Jeffrey G. Roberts, 3688 Montclair Dr., Palm Harbor, Fla. 34684, and James T. Treace, 2701 Bluffs Dr., Largo, Fla. 34640

Division of Ser. No. 462,528, Jan. 8, 1990, Pat. No. 5,171,276. This application Oct. 9, 1991, Ser. No. 773,410

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 **10 Claims**



1. A prosthesis for implant on the femoral condyle of the knee comprising

a body having an outer curved bearing surface and an inner surface for engaging the femoral condyle including a planar distal portion and a planar posterior portion disposed at an angle relative to said planar distal portion;

recess means in said inner surface for forming a space between said body and the femoral condyle; and

means in said body communicating with said recess means for supplying cement to fill said space with said inner surface engaging the femoral condyle.

5,336,267

ARTIFICIAL JOINT

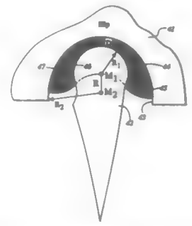
Dietmar Kubein-Meesenburg, Burgweg 1a, D-3350 Kreiensen, and Hans Nägerl, Lange Hecke 41, 3407 Gleichen/OT Klein-Lengden, both of Fed. Rep. of Germany

Continuation of Ser. No. 760,604, Sep. 16, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 9,439

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1989, 3908958

Int. Cl.[5] A61F *2/32, 2/36, 2/30*

U.S. Cl. 623—22 **2 Claims**



1. An artificial joint for replacing human joints and comprising:

at least two joint elements (**21**, **22**; **41**, **42**; **51**, **55**) with moving spherical functional surfaces (**23**, **24**; **43**, **44**; **54**, **56**);

the curvatures of the functional surfaces (**23**, **24**; **43**, **44**; **54**, **56**) being circular in cross section and being convex-concave and having a first and a second center of rotation (M_1,M_2) within the joint element (**22**; **42**; **52**, **53**) with the convex functional surface (**24**; **44**; **54**);

a pressure distribution element having a predetermined thickness, the pressure distribution element being (**25**; **45**; **57**) slideably located between the two functional surfaces and having opposed sliding surfaces (**26**, **27**; **46**, **47**; **56**) that articulate with the functional surfaces (**23**, **24**; **43**, **44**; **54**, **56**) and having a correspondingly curved configuration, with the path of movement of the joint being determined by two joint axes passing through the centers of rotations (M_1, M_2) of the functional surfaces (**23**, **24**; **43**, **44**; **54**, **56**) with the radii (R_1, R_2), where R_1 is the radius of the circular cross-sectional contour of the functional surface (**24**; **44**; **54**) with the first center of rotation (M_1) and R_2 is the radius of the circular cross-sectional contour of the functional surface (**23**; **43**; **56**) with the second center of rotation (M_2); and wherein

the thickness (D) of the pressure distribution element (**25**; **45**; **57**) on a line connecting the centers of rotation (M_1, M_2) is such that the joint axes of the centers or rotation (M_1, M_2) move on a path having a radius $R=R_2-R_1-D$, so that the first center of rotation (M_1) is between the pressure distribution element and the second center of rotation (M_2).

5,336,268

ADJUSTABLE HIP JOINT ENDOPROSTHESIS

Siegfried Rispeter, Besigheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Dec. 15, 1992, Ser. No. 991,347

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1991, 4141527

Int. Cl.[5] A61F *2/34*

U.S. Cl. 623—23 **5 Claims**

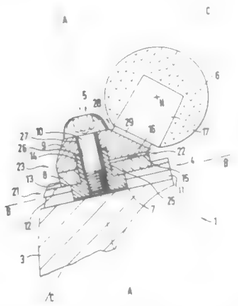
1. A hip joint endoprosthesis comprising:

a stem fixable to a femur;

a prosthesis head connected to the stem, the prosthesis head including an adjusting device, locking devices coupled to the adjusting device that fix the adjusting device, a stationary link area coupled to at least one of the locking devices and a link element guided in the stationary link area;

VOL 1165 ISS 2 AG 9 1994 UMI

an intermediate plate on the stationary link area;
a joint head, having a supporting body, which is held on the link element and the intermediate plate and is adjustable in a medial lateral direction with respect to the link area through the intermediate plate;
a tension element which penetrates the adjusting device and fixes the locking devices with respect to one another; and
a force limiting device in the prosthesis head, said force limiting device limiting to a maximum value a force to be



transmitted by the hip joint endoprosthesis, wherein at least one of the stationary link area, the adjusting devices, the link element, the locking devices, the intermediate plate and the tension element have material cross-sections situated so as to be in a flux of force from the joint head to the stem, and wherein the force limiting device has a material cross-section with a strength of material that is exhausted earlier than all other material cross-sections situated in the flux of force from the joint head to the stem.

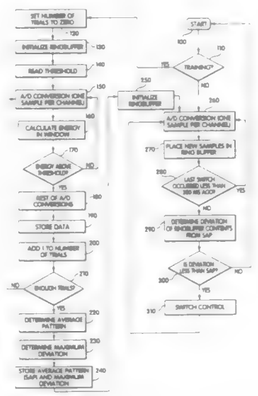
5,336,269

METHOD AND APPARATUS FOR SWITCHING DEGREES OF FREEDOM IN A PROSTHETIC LIMB

Matthijs P. Smits, Brookline, Mass., assignor to Liberty Mutual Insurance Co., Boston, Mass.

Filed Jun. 9, 1992, Ser. No. 896,058
Int. Cl.[5] A61F *2/72*
U.S. Cl. 623—25 **26 Claims**

1. A method for switching amongst a plurality of degrees of freedom of a prosthesis comprising the steps of;
(1) storing a pattern representing myoelectric signals of a muscle corresponding to a predesignated muscle contraction, said pattern comprising a first plurality of data points, each data point being representative of an instantaneous amplitude of said myoelectric signals at an instant in time,
(2) obtaining a second plurality of data points, each of said second plurality of data points being representative of the instantaneous amplitude of myoelectric signals of said muscle in real time,
(3) comparing said second set of data points with said first set of data points, and



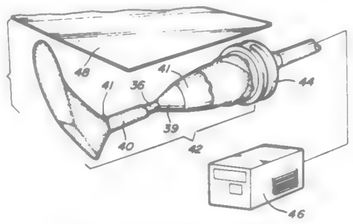
(4) switching amongst said degrees of freedom if said real time myoelectric signals are similar to said stored pattern within a predetermined limit.

5,336,270

CONTINUOUS ONE-PIECE PROSTHESIS

Lawrence A. Lloyd, Lansing, Mich., assignor to Wright & Filippis, Inc., Rochester, Mich.

Division of Ser. No. 757,949, Sep. 12, 1991, Pat. No. 5,219,364.
This application Jun. 8, 1993, Ser. No. 73,775
Int. Cl.[5] A61F *2/60, 2/76*
U.S. Cl. 623—33 **9 Claims**



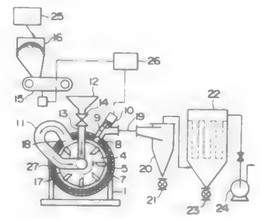
1. A method of forming a prosthesis for a below-knee amputee comprising:
providing a model of the residual limb providing a keel mold to form a keel;
connecting said residual limb model with said keel mold with a pylon mandrel in an aligned relation to form an assembled prosthetic model;
forming a single polymeric sheet over said assembled prosthetic model; removing said assembled prosthetic model; and
forming a continuous prosthesis having a hollow pylon portion, a keel portion having a substantially planar platform with a top and bottom surface which are substantially parallel to one another and a heel and toe, and a limb receiving portion.

5,336,271

METHOD FOR INCREASING THE PROPORTION OF A CRYSTALLINE ORGANIC COMPOUND WHICH REMAINS UNCRYSTALLIZED IN A COMPOSITE PARTICULATE PRODUCT AND SUPPRESSING RECRYSTALLIZATION

Takafumi Ishizaka; Yuji Kikuchi, both of Tokyo, and Masumi Koishi, Sagamihara, all of Japan, assignors to Nara Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 854,840
Claims priority, application Japan, Mar. 26, 1991, 3-086332
Int. Cl.[5] B01J *8/00*
U.S. Cl. 23—293 R **14 Claims**



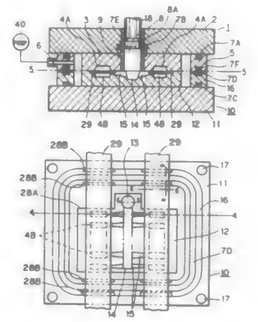
1. A method of making a crystalline organic compound amorphous by mechanical impact means, comprising the step of repeatedly imposing mechanical impacts on a core particle, the crystalline organic compound and a hydrophilic polymer in recycled high-velocity gas streams, thereby forming a solid-solid solution of said hydrophilic polymer dispersed and mixed in said crystalline organic compound on the surface of said core particle so as to make said crystalline organic compound amorphous and to prevent recrystallization thereof.

5,336,272

METHOD FOR MOLDING A SEMICONDUCTOR PACKAGE ON A CONTINUOUS LEADFRAME

Yasutsugu Tsutsumi, and Sueyoshi Tanaka, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 790,016, Nov. 5, 1991, Pat. No. 5,134,458, which is a continuation of Ser. No. 404,882, Sep. 8, 1989, abandoned. This application Apr. 30, 1992, Ser. No. 876,306
Claims priority, application Japan, Oct. 13, 1988, 63-257720
Int. Cl.[5] H01L *21/28, 21/60;* **B28B** *7/00;* **B29C** *43/22*
U.S. Cl. 29—25.01 **4 Claims**



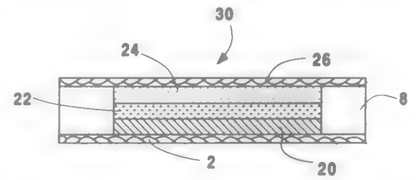
4. A vacuum type resin-sealing apparatus for sealing a semiconductor element mounted on a long size lead frame with resin, comprising:
a cope and a drag provided opposite to each other with respect to a parting plane, said cope comprising an upper wall, an upper cavity block provided on an underside of said upper wall and an upper seal block provided on the underside of said upper wall to surround said upper cavity block, said drag comprising a lower wall, a lower cavity block provided on a top of said lower wall and a lower seal block provided on the top of said lower wall to surround said lower cavity block;
sealing means for sealing between said upper seal block, said lower seal block and said long size lead frame in a state where a portion of said long size lead frame is nipped by said cope and drag;
evacuating means for evacuating a cavity enclosed within said upper and lower cavity blocks; and
injecting means for injecting resin into said cavity to seal said semiconductor element with said resin;
wherein said sealing means includes first and second sealants provided on said upper and lower seal blocks, respectively; and
wherein said long size lead frame has a plurality of lead patterns and is provided with a pair of continuing parts between adjacent said lead patterns to be nipped by said first and second sealants.

5,336,273

LASER SEALED SOLID ELECTROLYTE CELL HOUSED WITHIN A CERAMIC FRAME AND THE METHOD FOR PRODUCING IT

Mary P. Rossoll, Willoughby; Alan J. Revilock, Middleburgh Heights, and Anthony S. Wong, Cleveland Hts., all of Ohio, assignors to Gould Electronics Inc., Eastlake, Ohio

Filed Nov. 27, 1992, Ser. No. 982,621
Int. Cl.[5] H01M *6/00*
U.S. Cl. 29—623.2 **15 Claims**



1. A method for assembling components of a cell within a ceramic frame comprising assembling the components within a ceramic frame having an opening at its center and having a top surface and a bottom surface coated with a metal or metal alloy and sealing a conductive terminal sheet to the top opening using a laser weld and sealing a conductive terminal sheet to the bottom opening using a laser weld.

5,336,274

METHOD FOR FORMING A CELL SEPARATOR FOR USE IN BIPOLAR-STACK ENERGY STORAGE DEVICES

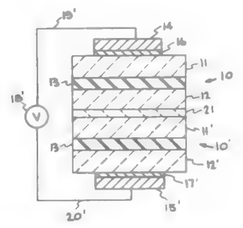
Steven T. Mayer, San Leandro; John H. Feikert, Livermore; James L. Kaschmitter, Pleasanton, and Richard W. Pekala, Pleasant Hill, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jul. 8, 1993, Ser. No. 90,881
Int. Cl.[5] H01M *6/00, 6/46, 2/16;* **H01G** *9/00*
U.S. Cl. 29—623.4 **9 Claims**

1. A method for forming a cell separator between at least a pair of cells each having at least one carbon electrode, comprising the step of:
depositing an adhesive material, having ionic isolation char-

VOL 1165 ISS 2 AG 9 1994 UMI

acteristics, on adjacent surface of at least one carbon electrode of each cell, and
pressing the carbon electrodes together,



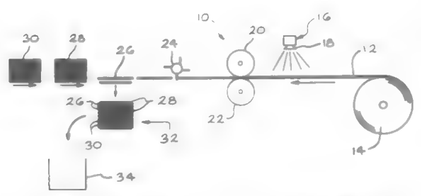
thereby electrically interconnecting the adjacent electrodes while providing ionic isolation therebetween.

5,336,275

METHOD FOR ASSEMBLING BATTERY CELLS CONTAINING PRE-COMPRESSED GLASS FIBER SEPARATORS

George C. Zguris, Canterbury, N.H., and Frank C. Harmon, Jr., Ayer, Mass., assignors to Hollingsworth & Vose Company, East Walpole, Mass.

Filed May 11, 1992, Ser. No. 881,160
Int. Cl.[5] H01M *6/00*
U.S. Cl. 29—623.5 15 Claims



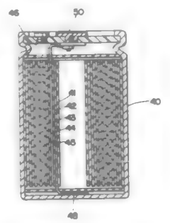
1. A method for producing a valve regulated lead acid battery comprising a battery case and at least one cell made up of a separator comprising glass fibers, at least one positive plate, at least one negative plate and an amount of electrolyte contained in the plates and separator wherein a first portion of said amount of electrolyte is absorbed in and held by the separator, said method comprising the steps of:
producing a substantially binder-free glass fiber separator having a first thickness when dry and containing an amount of liquid which is substantially less than the first portion of said amount of electrolyte and the liquid being substantially free of a binder for the glass fiber separator,
compressing the separator to the extent that, when the compression is released, the separator has a second thickness which is substantially less than said first thickness,
positioning the reduced thickness separator containing said amount of liquid between the positive and negative plates to produce a cell,
easing the cell into the battery case wherein the cell components are under a degree of pressure, and
adding electrolyte to the cell whereby the pressure between the components of the cell is increased by the restoration of the resiliency of the separator as electrolyte is absorbed in it.

5,336,276

ELECTRODE HAVING A CONDUCTIVE CONTACT AREA AND METHOD OF MAKING THE SAME

Saverio F. Pensabene, and Roy L. Royalty, both of Gainesville, Fla., assignors to Eveready Battery Company, Inc., St. Louis, Mo.

Division of Ser. No. 585,575, Sep. 20, 1990, Pat. No. 5,196,281. This application Dec. 3, 1992, Ser. No. 999,789
Int. Cl.[5] H01M *10/44*
U.S. Cl. 29—623.5 9 Claims



1. The process of making an electrically conductive contact area for an electrode of an electrochemical cell, said electrode comprising an electrically conductive porous substrate having at least two major surfaces, a layer of an electrochemically active nickel hydroxide material attached to at least one of said major surfaces and at least partially covering said one major surface and impregnating pores in the substrate, said active nickel hydroxide material being a reducible species of nickel metal, at least one conductive contact area formed of metallic nickel attached to said substrate, said process comprising the steps of exposing said nickel hydroxide reducible species impregnated substrate to a heated hydrogen gas at a selected contact area, converting said reducible species nickel hydroxide at said selected contact area to a reduced metallic form of nickel metal, so as to render said contact area electrically conductive.

5,336,277

COMPOSITION FOR REDUCING IN-TANK FUEL PUMP COPPER COMMUTATOR WEAR AND METHOD

Marc A. Poirier, Sarnia, and Robert J. Falkiner, Mississauga, both of Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 26, 1992, Ser. No. 966,621
Int. Cl.[5] C10L *1/22, 1/24*
U.S. Cl. 44—343 14 Claims

1. A refined petroleum fuel composition comprising at least about 10 mg/liter of elemental sulfur and having increased resistance to causing copper commutator wear in fuel pumps through which the composition is pumped, said composition having added thereto at least about 25 mg/liter of an oil soluble triazole-amine adduct, and at least about 5 mg/liter of at least one organomercaptan compound which, in combination with said metal deactivator, increases the resistance of the fuel composition to cause a copper commutator wear during use.

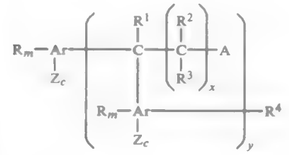
5,336,278

FUEL COMPOSITION CONTAINING AN AROMATIC AMIDE DETERGENT

Paul E. Adams, Willoughby Hills; Richard M. Lange, Euclid, and Stephen H. Stoldt, Concord Township, Lake County, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

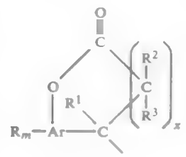
Filed May 13, 1993, Ser. No. 61,377
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—419 74 Claims

1. A fuel composition comprising a major amount of a normally liquid fuel and a minor amount of at least one compound of the general formula



(I)

wherein each Ar is independently an aromatic group having from 5 to about 30 carbon atoms and from 0 to 3 optional substituents selected from the group consisting of amino, hydroxy- or alkyl- polyoxyalkyl, nitro, aminoalkyl, carboxy or combinations of two or more of said optional substituents, each R is independently a hydrocarbyl group, R^1 is H or a hydrocarbyl group, R^2 and R^3 are each, independently, H or a hydrocarbyl group, R^4 is selected from the group consisting of H, a hydrocarbyl group, a member of the group of optional substituents on Ar or lower alkoxy, each m is independently 0 or an integer ranging from 1 to about 6, x ranges from 0 to about 8, and each Z is independently OH, lower alkoxy, $(OR^5)_bOR^6$ or O^- wherein each R^5 is independently a divalent hydrocarbyl group, R^6 is H or hydrocarbyl and b is a number ranging from 1 to about 30 and c ranges from 1 to about 3, y is a number ranging from 1 to about 10 and wherein the sum m+c does not exceed the number of valences of the corresponding Ar available for substitution and each A is independently an amide or an amide-containing group, a carboxyl group, an ester group, an imidazoline-containing group, an oxazoline-containing group, an acylamino group or
when one Z and A are taken together, a lactone group of the formula



(XIV)

provided at least one A is an amide or an amide-containing group.

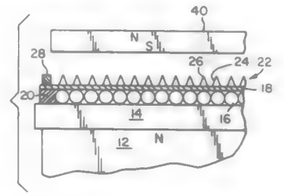
5,336,279

ARTICLE AND A METHOD FOR PRODUCING AN ARTICLE HAVING A HIGH FRICTION SURFACE

Charles Neff, 384 McKinley, Grosse Pointe, Mich. 48236

Division of Ser. No. 952,682, Sep. 24, 1992, which is a division of Ser. No. 453,684, Dec. 20, 1989, Pat. No. 5,181,939. This application Feb. 26, 1993, Ser. No. 22,988
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 17 Claims

1. A method of preparing a structurally viable matrix to provide a pattern of abrasive elements comprising:
covering a plurality of magnetizable protrusion means extending from a base means with a release means for releasing said matrix;
applying magnetizable particles to said release means;
orienting said magnetizable particles by means for generating a first magnetic flux along a flux path generally transverse to said base means; and



applying binding means for at least partially encapsulating said magnetizable particles and forming a structural interconnection therebetween.

5,336,280

ABRASIVE AND/OR REFRACTORY PRODUCTS BASED ON MELTED AND SOLIDIFIED OXYNITRIDES AND PROCESS PREPARING THE SAME

Dominique Dubots, Passy, and Pierre Faure, St Quentin sur Isere, both of France, assignors to Pechiney Electrometallurgie, Paris, France

Filed Jan. 3, 1992, Ser. No. 816,585
Claims priority, application France, Apr. 15, 1991, 91 05419
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 7 Claims

1. An abrasive or refractory product consisting of at least one oxynitride of at least one metal or metalloid selected from the group consisting of Al, Mg, Ca, Sr, Ba, Ti, Zr and B and mixtures thereof, and made according to the following process:
(a) providing a solid charge material consisting of at least one compound of said metal or metalloid, said compound containing oxygen and nitrogen and selected from oxides, nitrides and oxynitrides;
(b) heating said charge material to a temperature high enough to form a molten mass of said charge material;
(c) cooling the resulting molten mass to a temperature low enough to solidify said mass; and,
(d) forming an abrasive or refractory product from the resulting cooled mass of charge material.

5,336,281

BLAST MEDIA CONTAINING SURFACTANT-CLATHRATE COMPOUND

Anthony E. Winston, East Brunswick; Benny S. Yam, Holmdel, both of N.J., and Keith A. Jones, Yardley, Pa., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 6,659, Jan. 21, 1993. This application Feb. 3, 1994, Ser. No. 193,762
Int. Cl.[5] C09C *1/68*
U.S. Cl. 51—307 15 Claims

1. A blast media useful in removing contaminants from a solid surface comprises a mixture of abrasive particles and a surfactant-clathrate compound comprising a surfactant and a compound having clathration capability.

5,336,282

ZIRCONIA CERAMICS AND A PROCESS OF PRODUCING THE SAME

Syamal K. Ghosh; Dilip K. Chatterjee, and Dennis R. Koziol, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 816,646, Dec. 31, 1991, abandoned. This application Dec. 21, 1992, Ser. No. 999,171
Int. Cl.[5] B24D *3/16;* C04B *35/48*
U.S. Cl. 51—309 6 Claims

1. A net shape zirconia ceramic consisting essentially of

VOL 1165 ISS 2 AG 9 1994 UMI

zirconium oxide and a single dopant that is selected from oxides of the group consisting of a rare earth element and calcium, and wherein said ceramic has a molar ratio of dopant to zirconium oxide of about 4:96 to less than about 5:95, and wherein said ceramic consists essentially of tetragonal phase crystal grain.

5,336,283

PAINT MIST REMOVING APPARATUS

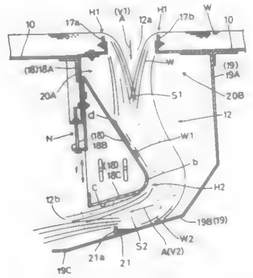
Satoshi Horisawa, Tokyo, Japan, assignor to Taikisha Ltd., Tokyo, Japan

Filed Jun. 15, 1993, Ser. No. 77,860

Claims priority, application Japan, Mar. 10, 1993, 5-009943[U]

Int. Cl.[5] B01D *47/10*

U.S. Cl. 55—240 7 Claims



1. A paint mist removing apparatus comprising:

a first liquid shooting section formed in a constricted passage, said first liquid shooting section scattering cleaning water from opening edges of a passage inlet of the constricted passage into a gas flow passing through said constricted passage;

one side wall including:

an upwardly facing inclined surface disposed under the passage inlet,

a downwardly facing surface continuous from a lower edge of said upwardly facing inclined surface, and

a curved section disposed between said upwardly facing inclined surface and said downwardly facing surface for deflecting the gas flowing through said constricted passage toward said downwardly facing surface;

a second liquid shooting section, which includes said curved section, for causing the cleaning water flowing down said upwardly facing inclined surface to scatter again toward the gas in the constricted passage under the downwardly facing surface;

hollow spaces defined at opposite sides of a gas path from the passage inlet under the opening edges of the constricted passage; and

a first cleaning region formed substantially immediately under the passage inlet, said first cleaning region defining a droplet thick region where the cleaning water scatters from said first liquid shooting section in fine droplets;

wherein said first liquid shooting section includes overflow barriers defined at the opening edges of the passage inlet between cleaning water pans and the constricted passage,

wherein said constricted passage includes said one side wall and an other side wall, said one side wall having a lower wall portion, an upper wall portion vertically extending from the passage inlet to said first cleaning region and pendent from a bottom portion of a first water pan displaced outwardly on one of said overflow barriers, said one side wall further having downstream wall portions with a substantially L-shaped section protruding inwardly of said constricted passage, said other side wall having an upper wall portion pendent from a bottom portion of a second of said overflow barriers, said other wall further having a downstream wall portion inclined forwardly and downwardly to be substantially parallel to said downwardly facing surface,

wherein said lower wall portion of said one side wall includes said upwardly facing inclined surface, said curved section and said downwardly facing surface and is vertically adjustable as a unit along said upper wall portion, and

wherein said hollow spaces are defined by the upper wall portions of the side walls of the constricted passage and by the bottom portions of the cleaning water pans.

5,336,284

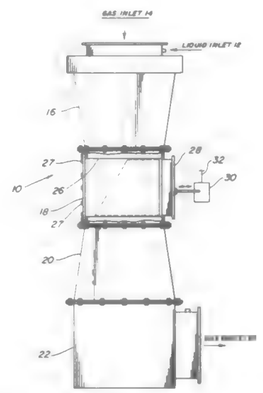
MULTIPLE THROAT, NARROW GAP VENTURI SCRUBBER AND METHOD OF USING SAME

Kenneth C. Schifftner, Encinitas, Calif., assignor to Compliance Systems International, Inc., Carlsbad, Calif.

Filed Mar. 29, 1993, Ser. No. 38,415

Int. Cl.[5] B01F *3/04*

U.S. Cl. 55—241 46 Claims



1. A venturi scrubber apparatus having a passageway for the flow of fluid therein, the passageway comprising, in order:

(a) an upstream zone having an unobstructed upstream section of one or more cross-sectional areas;

(b) a throat zone having a single throat section with multiple throats therein, the throat section having a selected length measured in the direction of the fluid flow, a cross-sectional area and a total area, the throat section cross-sectional area being smaller than the cross-sectional area of the upstream section, the throat section comprising a barrier structure for providing a non-tortuous path through the throat section, the barrier structure including a first plurality of spaced parallel physical barriers oriented parallel to the direction of fluid flow through the throat zone for forming the multiple throats, the physical barriers being flat plates; and

(c) a downstream section of one or more cross-sectional areas, the cross-sectional area of the downstream section being greater than the cross-sectional area of the throat section; and

means for providing a scrubbing liquid upstream of the throat section.

5,336,285

TEXTILE MACHINE HAVING A SUCTION DEVICE WITH A SEPARATOR CHAMBER

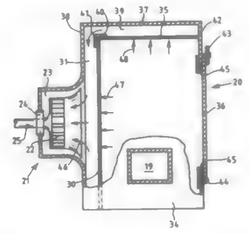
Manfred Grandek, Erkelenz, and Ferdinand Sziics, Willich, both of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 7, 1993, Ser. No. 117,608

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1992, 4229552

Int. Cl.[5] B01D *46/00*

U.S. Cl. 55—324 8 Claims



1. In a textile machine, a suction device for dust and other pneumatically conveyable waste, comprising:

a separator chamber;

a negative pressure line discharging waste into said separator chamber;

a first filter screen in said separator chamber for separating the waste from an air stream and for collecting the waste;

a second filter screen disposed in said separator chamber; and

a negative pressure source acting upon said first and said second filter screens;

said two filter screens being disposed adjacent one another in a configuration causing an increasing outflow of air through said second filter screen with increasing soiling and impermeability of said first filter screen to the air stream; and

said negative pressure line forming a rotating air stream in said separator chamber approximately parallel to said first filter screen for forcing the waste and in particular yarn waste into a motion stripping soiling from said first filter screen.

5,336,286

HIGH EFFICIENCY AIR FILTRATION MEDIA

Paul R. Alexander, Jr.; Donald G. Cain; Erika J. Dougherty, all of Charlotte, N.C., and Theodore S. Thornburg, Rock Hill, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Apr. 26, 1993, Ser. No. 53,029

Int. Cl.[5] B01D *29/03*

U.S. Cl. 55—528 7 Claims

1. A high efficiency air filtration media comprising:

about 5 to about 20% by weight of fibrids;

about 5 to about 20% by weight of binder;

about 60 to about 90% by weight of staple fiber;

said media being substantially free of glass fibers, having a pressure drop of air across a face of said media less than or equal to 0.4 inches of water at a face velocity of 10.5 feet per minute, a sodium chloride particulate test for respirator filter percent efficiency of greater than or equal to 60%, and a basis weight ranging from about 2.5 ounces per square yard to about 5.0 ounces per square yard.

5,336,287

METHOD FOR BONDING GLASS AND METAL

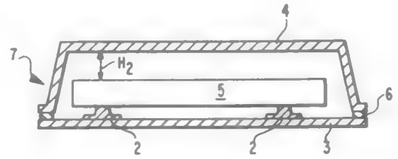
Toshio Akimoto, and Kazuo Shibaoka, both of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jun. 17, 1993, Ser. No. 77,371

Claims priority, application Japan, Jun. 19, 1992, 4-161008

Int. Cl.[5] C03C *27/04;* H01J *9/236*

U.S. Cl. 65—59.5 4 Claims



1. A method for bonding a glass and a metal with a low-melting glass frit, said low-melting glass frit containing a content from 1 to 10% by weight of an aluminum borate whisker, and a difference in linear expansion coefficient between said low-melting glass frit and said glass being 10×10^{-7}/°C. or less.

5,336,288

APPARATUS FOR THE MANUFACTURE OF SHEETS OF GLASS HAVING A COMPLEX SHAPE

Giovanni Carlomagno; Vincenzo Caico, both of Naples; Vittore De Leonibus, Vasto, and Edoardo Tereo, San Salvo, all of Italy, assignors to Societa Italiana - SIV - S.p.A., San Salvo, Italy

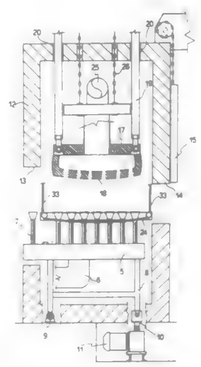
Filed Jul. 10, 1992, Ser. No. 911,940

Claims priority, application Italy, Jul. 10, 1991, RM91A000505

The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.

Int. Cl.[5] C03B *23/03, 23/035*

U.S. Cl. 65—182.2 13 Claims



1. An apparatus for shaping and tempering a glass sheet for use in a motor vehicle, comprising:

a heating station including a furnace and a roller conveyor extending horizontally through said furnace for feeding the glass sheet in a downstream direction through said furnace along a predetermined path;

a shaping station positioned adjacent and downstream of said heating station and including an air bed means for supporting the glass sheet at a floating level on an air bed in a position downstream of said roller conveyor along said predetermined path, and an upper shaping mold spaced above said air bed means and said floating level

VOL 1165 ISS 2 AG 9 1994 UMI

and comprising a perforated shaping surface and a vacuum means for creating suction through said perforated shaping surface to attract the glass sheet thereto;

a tempering station positioned downstream of said shaping station and including tempering nozzle means for rapidly cooling the glass sheet;

a first glass supporting ring for supporting the glass sheet, said first glass supporting ring being mounted in said shaping station for vertical movement between a lowered position below said floating level and a raised position closer to said perforated shaping surface of said upper shaping mold relative to said lowered position;

a second glass supporting ring for supporting the glass sheet;

second ring moving means for moving said second glass supporting ring horizontally from said shaping station toward said tempering station; and

wherein said air bed means comprises an air plenum and a plurality of upwardly directed air nozzles individually removably supported by said air plenum and in fluid communication with said plenum to allow air to be supplied through said nozzles from said plenum to form said air bed, said plenum having a ring-shaped area devoid of said nozzles, said ring-shaped area corresponding to a shape of said first glass supporting ring so as to allow said first glass supporting ring to be positioned in said ring-shaped area below said floating level.

5,336,289

APPARATUS FOR SHEARING A GOB

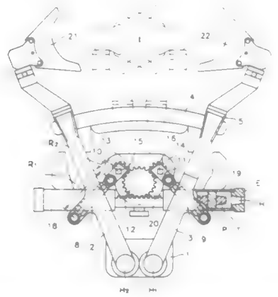
Hancheol Yeom; Hoseong Lee; Yucheol Jeong; Hoyoung An; Juho Choi, and Wonbo Lee, all of Kyungki, Rep. of Korea, assignors to Samsung Corning Co., Ltd., Rep. of Korea

Filed May 19, 1993, Ser. No. 65,219

Claims priority, application Rep. of Korea, May 20, 1992, 92-8581

Int. Cl.[5] C03B *11/00*

U.S. Cl. 65—334 **5 Claims**



1. A gob shearing apparatus for providing a predetermined amount of a molten glass article vertically transferred from a feeder bowl comprising:

a pair of hydraulic reciprocating means for reciprocating a rack gear wherein each of opposite ends of the rack gear is received in one of the reciprocating means;

a driving pinion engaged with and rotated by the reciprocation of the rack gear;

a pair of driven pinions engaged with the driving pinion and rotated by the rotation of the driving pinion;

a pair of fourth links coupled to and co-rotated with a respective one of the pair of driven pinions;

a pair of third links linked to a respective one of the pair of fourth links for performing a link motion;

a pair of second links linked to a respective one of the pair of third links for performing a link motion;

a pair of first links having a middle portion linked to a respective one of the pair of second links for performing a link motion, a side end hinged on a supporting member for achieving a circular movement by the link motion, and a free end portion;

a pair of cutting means for cutting the molten glass article, the cutting means being mounted on a respective one of the free ends of the pair of first links; and

a guide means for guiding the circular movement of the first links.

5,336,290

SEMI-SOLID ACTIVATED SLUDGE BIOREMEDIATION OF HYDROCARBON-AFFECTED SOIL

David B. Jermstad, 4080 N. Canyon Rd., Camino, Calif. 95709

Filed Sep. 27, 1991, Ser. No. 766,851

Int. Cl.[5] C05F *7/00*; A01G *11/00*; C02F *3/00*

U.S. Cl. 71—13 **15 Claims**

1. A method of recycling two waste products, namely hydrocarbon-affected soil and activated sewage sludge, in order to form a balanced non-contaminated soil, said recycling method comprising the steps of:

obtaining a test sample from activated sewage sludge in a semi-solid state characterized as including a substantial amount of water and about twenty percent biomass;

determining from the test sample so obtained the weight of biomass as represented generally in the semi-solid activated sewage sludge;

selecting individual amounts in bulk of hydrocarbon-affected soil and semi-solid activated sewage sludge (biomass and water) in accordance with a weight ratio ranging from about three to one to about one to one of hydrocarbon-affected soil to activated sewage sludge biomass (dry weight);

combining the selected bulk amounts of hydrocarbon-affected soil and semi-solid activated sewage sludge in accordance with a weight ratio within the designated range into a mixture formed from these two waste products;

allowing the core temperature of the combined mixture to increase as bacteria in the activated sewage sludge attack the contaminants in the hydrocarbon-affected soil and soil bacteria in the hydrocarbon-affected soil attack pathogens in the activated sewage sludge;

aerating the combined mixture until contaminants in the two waste products are neutralized by aerobic biologic action; and

recovering a purified non-contaminated soil from the neutralized mixture.

5,336,291

METHOD OF PRODUCTION OF A METALLIC COMPOSITE MATERIAL INCORPORATING METAL CARBIDE PARTICLES DISPERSED THEREIN

Tetsuya Nukami, Susono, and Tetsuya Suganuma, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

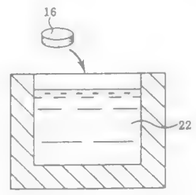
Filed Jul. 1, 1993, Ser. No. 84,491

Claims priority, application Japan, Jul. 2, 1992, 4-199166

Int. Cl.[5] C22C *1/10, 32/00*

U.S. Cl. 75—10.18 **5 Claims**

1. A method of production of a metallic composite material incorporating metal carbide particles dispersed therein, comprising the steps of: forming a preform of a mixture of either or both of Ti powder and Zr powder, graphite powder and Al or Al alloy powder; infiltrating first molten Al or Al alloy into said preform at a maximum temperature of 950° C.; heating said preform infiltrated with said first molten Al or Al alloy to 1000°–1800° C. in an inactive atmosphere so as thereby to generate particles of TiC and/or Zrc in said preform; and



dissolving said preform including TiC and/or ZrC particles in a second molten mass of Al or Al alloy.

5,336,292

TITANIUM-BASED CARBONITRIDE ALLOY WITH WEAR RESISTANT SURFACE LAYER

Gerold Weinl, Alvsjo, and Marian Mikus, Skarholmen, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Jun. 15, 1992, Ser. No. 897,941

Claims priority, application Sweden, Jun. 17, 1991, 9101865

Int. Cl.[5] C22C *29/00*; B22F *3/00*

U.S. Cl. 75—230 **12 Claims**



1. The sintered body of titanium-based carbonitride alloy comprising mainly carbonitride hard constituents in 5–25% binder phase where the hard constituents contain, in addition to Ti, one or more of the metals Zr, Hf, V, Nb, Ta, Cr, Mo and/or W and the binder phase is based on cobalt and/or nickel, said body having at least one surface with a <50 μm thick surface layer containing Ti-N-rich cubic phase below which layer there is a <100 μm thick binder phase enrichment zone in which zone the binder phase content is greater than the binder phase content of the body as a whole, the binder phase content in said zone increasing to a value of >1.2 of the binder phase content in the inner part of the body and below said binder phase enrichment zone, a <250 μm thick binder phase depleted zone in which zone the binder phase content is less than the binder phase content of the body as a whole, the binder phase content in said zone decreasing to a value of <0.9 of the binder phase content in the inner part of the body.

5,336,293

DESULFURIZING AGENT FOR PIG IRON AND CAST IRON, AND PROCESS FOR DESULFURIZATION

Alfred Freissmuth, Alpenblick 7, D-83355 Grabenstätt/Eristätt, Fed. Rep. of Germany, and Eugen Wieser, Am Spitz, Austria, assignors to Alfred Freissmuth, Grabenstatt, Fed. Rep. of Germany

Filed Aug. 12, 1993, Ser. No. 105,751

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1992, 4226833

Int. Cl.[5] C21C *7/00, 7/02*

U.S. Cl. 75—303 **21 Claims**

1. A magnesium based desulfurization agent for the desulfurization or iron melts comprising:

a) granulated magnesium; and,

b) at least 3 percent by weight of at least one metallurgically active silicious mineral, said silicious mineral of about the same grain size as said granulated magnesium.

5,336,294

REMOVAL OF CONTAMINANTS FROM MOLTEN METALS

Steven P. Leyland, and David A. Ford, both of Bristol, England, assignors to Rolls-Royce plc, London, England

Filed Jul. 15, 1993, Ser. No. 91,300

Claims priority, application United Kingdom, Jul. 30, 1992, 9216227

Int. Cl.[5] C22B *9/02*

U.S. Cl. 75—406 **6 Claims**

1. A method of removing from a molten metal an oxide selected from the group consisting of alumina and zirconia, the method comprising the steps of:

(a) preparing a suspension of a material selected from the group consisting of aluminum silicate, magnesium silicate, zirconium oxide and a mixture of equal parts of alumina-calcia and alumina-magnesia,

(b) coating a surface of a ceramic material with the suspension,

(c) drying the coated surface at about 100° C. to convert the coating of suspension to a gel,

(d) heating the ceramic surface to about 500° C.,

(e) applying a further coating of the suspension to the ceramic surface,

(f) firing the surface at about 1000° C., and

(g) contacting the molten metal with the fired ceramic surface whereby said oxide adheres to the ceramic surface.

5,336,295

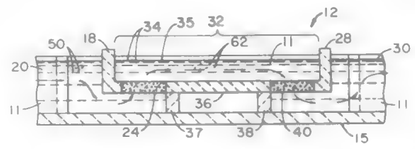
METHOD FOR SEPARATION AND REMOVAL OF SUSPENDED LIQUID PARTICLES FROM MOLTEN METAL AND ASSOCIATED APPARATUS

David H. DeYoung, Export, Pa.; Diran Apelian, Worcester, Mass., and Rajakkannu Mutharasan, Broomall, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 8, 1993, Ser. No. 14,623

Int. Cl.[5] C22B *9/02*

U.S. Cl. 75—407 **61 Claims**



1. A method of treating molten metal containing suspended liquid particles, said method comprising:

passing said molten metal containing said liquid particles through a porous media that is wettable by said suspended liquid particles such that said movement of said molten metal therethrough renders said suspended liquid particles gravity separable, whereby said gravity separable liquid particles rise upwardly or settle downwardly so as to be removable from said molten metal.

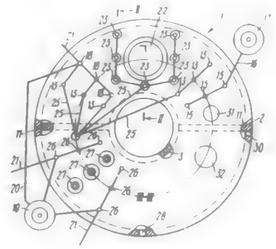
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,296

METHOD OF OBTAINING STEEL IN A LIQUID BATH AND THE DEVICE TO CARRY IT OUT

Vitold M. Lupeiko, Ekaterinburg, U.S.S.R., assignor to Scientific Dimensions USA, Inc., New York, N.Y.

PCT No. PCT/SU91/00183, § 371 Date May 12, 1993, § 102(e) Date May 12, 1993, PCT Pub. No. WO92/05288, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 17, 1991, Ser. No. 30,195
Claims priority, application U.S.S.R., Sep. 18, 1990, [illegible]
Int. Cl.[5] C21B *13/14*
U.S. Cl. 75—434 20 Claims



1. A method for obtaining steel in a liquid bath using charge materials comprising iron containing raw material and slag forming flux material, said method comprising:

providing a melt chamber having an annular closed contour shape, and dividing the melt chamber into an oxidation zone having a first end portion and a second end portion and a reducing zone having a first end portion and a second end portion, with the second end portion of the oxidation zone being adjacent to the first end portion of the reducing zone, and with the second end portion of the reducing zone being adjacent to the first end portion of the oxidation zone;

introducing into said melt chamber an initial mass of molten low carbon steel melt and an initial mass of steel making slag melt in chemical equilibrium with said molten low carbon steel, said molten low carbon steel melt having a top surface with said slag melt being disposed on the top surface of said molten low carbon steel melt;

hermetically sealing a gas phase in the melt chamber above the slag melt in the oxidation zone from a gas phase in the melt chamber above the slag melt in the reducing zone;

practicing a continuous process cycle comprising:

immersing an oxygen-fuel burning torch into said slag melt in said oxidation zone, burning fuel in oxygen in the slag melt in said oxidation zone, and moving the slag melt along the top surface of said molten low carbon steel melt in a selected direction around said closed contour melt chamber by discharging fuel and oxygen containing gas from said oxygen-fuel burning torch;

charging powder slag forming flux material into said slag melt in said oxidation zone, and melting said charged powder slag forming flux material in said oxidation forming additional slag melt in said oxidation zone;

charging iron containing raw material into the low carbon molten steel melt in said oxidation zone, and melting and oxidizing said charged iron containing raw material in said oxidation zone thereby providing low carbon molten steel in the low carbon steel melt and iron oxides in the slag melt;

oxidizing sulphur in said slag melt in said oxidation zone and removing the oxidized sulphur as gas into the gas phase above the slag melt in said oxidizing zone,

heating the slag melt in the oxidation zone to a temperature greater than the low carbon steel melt temperature thereby providing overheated moving slag melt leaving the second end portion of the oxidation zone and entering the first end portion of the reducing zone;

introducing an iron reductant into the overheated moving slag melt in the first end portion of the reducing zone and precipitating low carbon molten metal as molten metal drops from the slag melt into the low carbon steel melt in a precipitation section of said reducing zone and reducing the slag melt chemical content to the initial slag melt chemical composition;

removing from the melt chamber low carbon steel from said low carbon steel melt in the reducing zone at a location after the precipitation section;

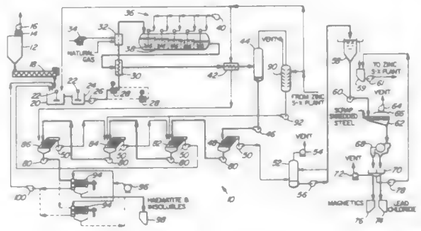
removing from the melt chamber excess slag from said slag melt in the second end portion of said reducing zone with the slag melt leaving the second end portion of said reducing zone and entering the first end portion of said oxidation zone having a mass about equal to the initial slag melt mass.

5,336,297

PROCESS FOR THE TREATMENT OF ELECTRIC ARC FURNACE DUST

Roderick O. McElroy, Vancouver, Canada, assignor to Terra Gaia Environmental Group Inc., Vancouver, Canada

Filed Feb. 16, 1993, Ser. No. 18,032
Int. Cl.[5] C22B *3/46*
U.S. Cl. 75—725 14 Claims



1. A process for the treatment of electric arc furnace dust comprising a mixture of zinc, iron and lead oxides, which comprises the steps of:

leaching the dust with a leach solution containing ferric chloride to produce a slurry containing a hydrous iron oxide; and

converting the hydrous iron oxide to a filterable hematite by heat treatment of the slurry at an elevated pressure.

5,336,298

POLYELECTROLYTE MEMBRANES FOR THE SEPARATION OF ACID GASES

Robert Quinn, East Texas; Daniel V. Laciak, Allentown; John B. Appleby, Perkiomville, and Guido P. Pez, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 29, 1993, Ser. No. 38,780
Int. Cl.[5] B01D *53/22*
U.S. Cl. 95—49 17 Claims

1. A process for separating acid gas from a gas mixture containing acid gas and at least one non-acid gas component, said process comprising bringing said gas mixture into contact with a multilayer composite membrane comprising an essentially nonselective polymeric support layer and an active separating layer comprising a polyelectrolyte polymer which contains cationic groups which are electrostatically associated with anions for which the pK_a of the conjugate acid is greater than 3; such that said multilayer composite membrane selectively permeates the acid gas thereby removing it from the gas mixture.

5,336,299

MULTI-LOADING ELECTROSTATIC AIR FILTER AND METHOD OF FILTRATION

Gary L. Savell, 1110 Montlimar Dr., Suite 530, Mobile, Ala. 36609

Filed Jan. 15, 1993, Ser. No. 6,077
Int. Cl.[5] B03C *3/30*
U.S. Cl. 95—70 13 Claims



1. An air filter comprising:

(a) a filter means comprised of first non-conductive material and having a filter mesh for generating an electrostatic charge;

(b) at least one set of walls comprised of an electrostatically chargeable poly-glass material, said walls defining at least one chamber adjacent to the filter means so that the electrostatic charge generated in the filter means is maintained when particles enter the at least one chamber;

(c) a second filter comprised of second non-conductive material and adjacent to the at least one chamber and said at least one chamber being located between the second filter and the filter means, the second filter further including a first filter element adjacent to the at least one chamber and a second filter element adjacent to the first filter element, and the first filter element having a first mesh equal to or smaller than the filter mesh of the filter means, and the second filter element having a second mesh smaller than the first mesh of the first filter element;

(d) a containment means including two non-conducting screens containing therebetween the filter means, the second filter and the at least one chamber, the containment means holding the second filter sufficiently close to the at least one chamber so that the electrostatic close to the at least one chamber so that the electrostatic charge is maintained between the at least one chamber and the second filter; and

(e) an insulation means positioned between the walls and the containment means for electrostatically isolating the at least one chamber.

9. A method for filtration of air having particles, comprising the steps of:

(a) filtering the air using a first filter comprised of first non-conductive material and having a first mesh for generating an electrostatic charge on the particles forming charged particles;

(b) filtering, after said filtering step (a), the air and the charged particles through at least one set of walls defining a chamber, the at least one set of walls electrostatically isolated and comprised of an electrostatically chargeable poly-glass material which attract and hold the charged particles;

(c) filtering, after said filtering step (b), using a second filter comprised of a second non-conductive material having a second mesh equal to or smaller than the first mesh of the first filter, the air and the charged particles which pass through the at least one set of walls;

(d) filtering, after said filtering step (c), using a third filter comprised of a third non-conductive material having a third mesh smaller than the second mesh of the second filter, the air and the charged particles which pass through the second filter;

(e) containing said chamber and said first, second, and third filters between two non-conducting screens so that the second filter is sufficiently close to the chamber in order to maintain the electrostatic charge between the chamber and the second filter; and

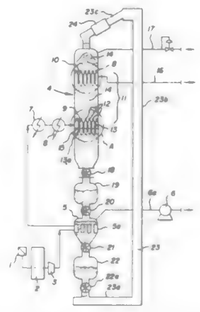
(f) electrostatically isolating the chamber walls by positioning of insulation between the chamber walls and the two non-conducting screens.

5,336,300

METHOD AND APPARATUS FOR SEPARATING MIXED GAS

Akira Yoshino; Hiromi Kiyama, and Nobuhiko Mihoichi, all of Osaka, Japan, assignors to Daidousanso Co., Ltd., Osaka, Japan

Filed Feb. 8, 1993, Ser. No. 14,998
Claims priority, application Japan, Feb. 8, 1992, 4-056659
Int. Cl.[5] B01D *53/08*
U.S. Cl. 95—96 4 Claims



1. A method of separating mixed gas which comprises providing granular adsorbent in a first sealed space in a layered state, blowing the mixed gas from nozzles extending into said granular adsorbent layers thereby adsorbing a first gaseous component of the mixed gas that is easily adsorbed to the granular adsorbent and leaving a second gaseous component of the mixed gas that is hardly adsorbed to the granular adsorbent in said first sealed space, gradually transferring the granular adsorbent from said first sealed space to a second sealed space which is pressure sealed from the first sealed space by pressure sealing means, desorbing said first gaseous component from the granular adsorbent in said second sealed space and thereby reactivating the granular adsorbent, and returning the reactivated granular adsorbent to said first sealed space.

5,336,301

CONDUCTIVE COPPER PASTE

Hiroji Tani, Nagaokakyo, and Kanehito Honma, Shiga, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 19, 1993, Ser. No. 20,135
Claims priority, application Japan, Feb. 20, 1992, 4-033189
Int. Cl.[5] C09D *5/24;* H01B *1/08*
U.S. Cl. 106—1.18 11 Claims

1. A conductive copper paste for formation of copper coatings on ceramic substrates, the conductive copper paste consisting essentially of a solid component dispersed in an organic vehicle, the solid component consisting essentially of about 0.5 to 8 percent by weight of a zinc borosilicate glass frit and the remainder of a copper powder, the glass frit consisting essentially of about 40 to 50% by weight of B_2O_3, about 5 to 20% by weight of SiO_2 and about 30 to 40% by weight of ZnO.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,302

NON-ALCOHOL FOUNTAIN SOLUTIONS

Louis E. Bondurant, P.O. Box 2074, Middleburg, Va. 22117

Continuation-in-part of Ser. No. 846,567, Mar. 5, 1992. This application Mar. 10, 1993, Ser. No. 28,819
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[5] C09K *3/18*
U.S. Cl. 106—2 7 Claims

1. A non-alcohol aqueous stock fountain solution for use in planographic printing, comprising by weight

about 1 to 25% of a buffer selected from the group consisting of monopotassium phosphate, monosodium phosphate, monoammonium phosphate, and monopotassium citrate,

about 1 to 25% of an amine selected from the group consisting of trimethylamine, triethylamine and N-methyl pyrrolidine,

about 1–30% of a humectant selected from the group consisting of ethylene glycol, glycerin, propylene glycol and sorbitol,

about 1 to 15% of an emulsifying and coupling agent selected from the group consisting of ethylene glycol monobutyl ether, ethylene glycol N-butyl ether and propylene glycol butyl ether, and

the balance water.

5,336,303

ELECTROCHEMICALLY ACTIVE PAINT FOR CATHODIC PROTECTION OF ENGINEERING STRUCTURES

Elijah E. Cocks, Durham, N.C., assignor to C-Innovations, Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 700,600, May 15, 1991, abandoned. This application Sep. 2, 1993, Ser. No. 116,223
Int. Cl.[5] C09D *5/08*
U.S. Cl. 106—14.05 4 Claims

1. A corrosion-preventing paint formulation consisting essentially of a vehicle, an electrically conductive pigment, an electrochemically active metal pigment, and a corrosion inhibiting agent, wherein said electrochemically active metal pigment has an electrochemical potential at least as negative as −1.05 volts when measured against a saturated calomel reference electrode in seawater and said corrosion-preventing paint formulation has an electrical resistivity of less than 100,000 ohm-cm when dry, and wherein said electrochemically active metal pigment is selected from the group consisting of magnesium, magnesium-lithium alloy, magnesium-aluminum alloy, and calcium-aluminum alloy powder, said calcium-aluminum alloy having between 0.5 to 50 weight percent calcium, and wherein said magnesium-lithium alloy comprises between 1 to 60 weight percent lithium and said magnesium-aluminum alloy comprises between 1 to 50 weight percent of aluminum and wherein said electrically conductive pigment is selected from the group consisting of carbon black and graphite and wherein said corrosion inhibiting agent is selected from the group consisting of sodium dichromate and potassium dichromate and wherein said corrosion inhibiting agent is present to the extent of between 0.01 and 2.0 percent by weight.

5,336,304

ENVIRONMENTALLY SAFE EPOXY ADHESIVE-COPPER HULL COATING AND METHOD

Graham C. Andoe, Ft. Lauderdale, Fla., assignor to Cresco, Inc., SA., St. John's, Antigua

Filed Jul. 28, 1992, Ser. No. 920,927
Int. Cl.[5] C09D *5/16*
U.S. Cl. 106—18.32 10 Claims

1. A coating for covering a hull of a marine vessel and rendering it impervious to water incursion while repelling marine organisms, comprising a mixture of:

a) 20% to 30%, by volume, of an epoxy adhesive resin comprising a mixture including Diglyidyl Ether of Bisphenol A and Di-N-Butyl Phthalate;

b) an amount of Polyamide containing hardener sufficient to harden said epoxy adhesive resin;

c) 20% to 60%, by volume, of a marine organism repelling copper metal in the form of small particles; and

d) 5% to 30%, by volume, of a water insoluble thixotropic agent;

said coating being coatable on a marine vessel hull, said coating holding its shape while curing through operation of said thixotropic agent, said coating, in use, rendering a hull impervious to water incursion and repelling marine organisms.

5,336,305

FLEXIBLE MATERIAL HAVING BARRIER PROPERTIES

Victor Staats, Miami Beach, Fla., assignor to International Laboratory Technology Corp., Miami, Fla.

Filed Jul. 6, 1993, Ser. No. 86,022
Int. Cl.[5] C09D *5/14*
U.S. Cl. 106—18.32 5 Claims

1. An antimicrobial composition for application to a substrate comprising:

a quaternary ammonium compound in an amount of between 0.02% to 0.06% by weight of said composition,

an ethoxylated nonyl phenol containing 9 moles of ethylene oxide in an amount of between 1% to 10% by weight of said composition,

1,3 butylene glycol in an amount of between 1% to 10% by weight of said composition,

a hydrophobic waterproof polymeric compound in an amount of between 0.5% to 6% by weight of said composition,

a hydrophilic film forming compound in an amount of between 0.5% to 6% by weight of said composition,

an organic solvent including anhydrous ethanol in an amount of between 2% to 8% by weight of said composition,

aloe in an amount of between 1% to 5% by weight of said composition, and

water in an amount of between 55% to 90% by weight of said composition.

5,336,306

WATER SOLUBLE COLORING COMPOSITIONS CONTAINING SPARKLE COMPONENTS

Cleveland L. Hughes, Calimesa; Timothy N. Williams, Marina Del Rey, and Paul M. Mandel, Murietta, all of Calif., assignors to Color Quest Inc., Grand Terrace, Calif.

PCT No. PCT/US89/02675, § 371 Date Oct. 2, 1992, § 102(e) Date Oct. 2, 1992
Continuation-in-part of Ser. No. 25,853, Mar. 16, 1987, Pat. No. 4,840,669, and a continuation-in-part of Ser. No. 25,854, Mar. 16, 1987, Pat. No. 4,840,670, and Ser. No. 26,477, Mar. 16, 1987, Pat. No. 4,859,242. This PCT application Jun. 19, 1989, Ser. No. 834,326
The portion of the term of this patent subsequent to Jun. 20, 2006, has been disclaimed.
Int. Cl.[5] C09D *13/00*
U.S. Cl. 106—19 B 3 Claims

1. A water soluble crayon composition, consisting of: a polymeric thickener to maintain solid components in a uniform and permanent suspension in the composition: 0%–8%; water soluble wax to thicken the composition: 30%–70%; color: 3%–10%; glitter: 20–35%; and preservative: 0%–3% the composition being pourable at about 95° F.–130° F., and formulated in the temperature range of about 90° F.–130° F.

5,336,307

MARKER PENCIL

Ivan Horvat, Weissenburg; Manfred Schweizer, Eckenhaid, and Thomas Stoecklein, Nuremburg, all of Fed. Rep. of Germany, assignors to Schwan-Stabilo Schwanhaeusser GmbH & Co., Nuremburg, Fed. Rep. of Germany

Filed Apr. 2, 1993, Ser. No. 42,610
Claims priority, application Fed. Rep. of Germany, May 19, 1992, 4216497
Int. Cl.[5] C09D *13/00*
U.S. Cl. 106—19 B 16 Claims

1. A marker pencil comprising a casing and a marking pencil material enclosed in the casing, wherein the pencil material comprises:

a dye carrier;

structure forming constituents comprising at least one water soluble metal soap in an amount of between about 5% to about 40% by weight of the pencil material, and at least one member selected from the group consisting of monosaccharides, oligosaccharides and polyols derived therefrom by reduction, in an amount of between about 5% to about 50% by weight of the pencil material; and

water in an amount of between about 15% to about 65% by weight of the pencil material.

5,336,308

FLUID FOR PERMANENT IMPRINTING OF TEXTILES AND OTHER POROUS MATERIALS WITHOUT TREATMENT ACCEPTORS AND LONG LASTING CONVEYABILITY IN A SUBSTRATE

Joy Lynn, 7341 Clairemont Mesa Bl. #162, P.O. Box 85152MB162, San Diego, Calif. 92186

Filed Apr. 2, 1991, Ser. No. 679,291
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—19 R 8 Claims

1. A mixture to which ink, dye or pigments or other materials may be added producing a mixture which is extremely slow to evaporate from a substrate allowing inks, pigments and dyes to remain in a conveyable form in a substrate over an extended period of time, said mixture consisting of diethylene glycol mono butyl ether from approximately 66⅔% to approximately 85% by volume and glycerine from approximately 33⅓% to approximately 15% by volume.

5,336,309

FLAKY PIGMENT

Tamio Noguchi, and Masahiko Yazawa, both of Iwaki, Japan, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 13,867
Claims priority, application Japan, Feb. 6, 1992, 4-065470
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—23 C 19 Claims

1. A flaky pigment comprising composite particles of a flaky substrate and particles of a pigment or dye, whereby said flaky pigment is in the form of an ordered mixture of the substrate and the pigment or dye.

5,336,310

Patent Not Issued For This Number

5,336,311

CATIONIC PIGMENTS

Jerry L. Curtis, Milledgeville, Ga.; Kenneth A. Johnson, Fayetteville, N.Y., and Lester W. House, Macon, Ga., assignors to Nord Kaolin Company, Jeffersonville, Ga.

Filed Jul. 7, 1992, Ser. No. 909,388
Int. Cl.[5] C04B *14/36*
U.S. Cl. 106—416 26 Claims

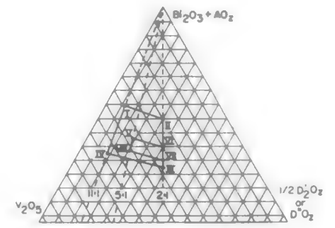
1. A pigment comprising: a structural aggregate of a particulate material and a microgel, and a modified or unmodified epichlorohydrin dimethylamine condensate, wherein said pigment is cationic.

5,336,312

BISMUTH-CONTAINING COLORANTS

Christine J. Byrne, Olmsted Township, Cuyahoga County; Robert P. Blonski, North Royalton, and John J. Welch, Cleveland, all of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation of Ser. No. 690,675, Apr. 24, 1991, abandoned. This application May 10, 1993, Ser. No. 59,732
Int. Cl.[5] C04B *14/30, 14/36*
U.S. Cl. 106—479 7 Claims



1. A colored composition comprising a material capable of being colored and an effective amount of at least one colorant to impart color to said material, said colorant comprising at least one crystalline structure represented by the formula

$$(Bi_2O_2)^{2+}(A_{n-1}D_nO_{3n+1})^{2-}$$

wherein

said crystalline structure comprises one or more layers of $(A_{n-1}D_nO_{3n+1})^{2-}$ stacked between layers of $(Bi_2O_2)^{2+}$;

n is the number of layers $(A_{n-1}D_nO_{3n+1})^{2-}$ stacked between layers of $(Bi_2O_2)^{2+}$ and is at least 1;

A is selected from the group consisting of Bi, Ba, Sr, Ca, Y, La, or a mixture of two or more thereof; and

D comprises V and at least one element selected from the group consisting of Mo, Mn, Ti, Ta, Nb, Sb, Fe, Cr, Sn, and Ce;

with the proviso that when A is Bi, D is other than a mixture consisting of V and Mo.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,313

USE OF PARTIAL ESTERS OF OLIGOGLYCEROLS WITH FATTY ACIDS AS PIGMENT DISPERSANTS FOR WATER-BASED LACQUER DISPERSIONS

Reinhard Bunte, Dormagen; Wolfgang Gress, Wuppertal; Ulrich Nagorny, Hilden, and Manfred Gorzinski, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

PCT No. PCT/EP90/00913, § 371 Date Dec. 16, 1991, § 102(e) Date Dec. 16, 1991, PCT Pub. No. WO90/15847, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 11, 1990, Ser. No. 776,318

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1989, 3920130

Int. Cl.[5] C09D *11/06;* **C11C** *3/00*

U.S. Cl. 106—504 **18 Claims**

1. The process of dispersing pigment particles in a pigment-containing, water-based lacquer dispersion, consisting essentially of adding to said dispersion from about 0.2 to about 100% by weight, based on the weight of said pigment particles, of a partial ester of a C_2–C_{18} fatty acid with an oligoglycerol obtained by condensation of about 2 to about 20 moles of glycerol.

5,336,314

POLYMERS FOR PIGMENT FLUSHING

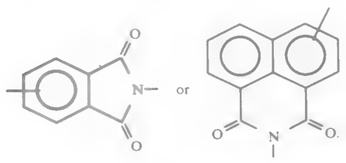
Paul H. Lamers, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 3, 1993, Ser. No. 99,501

Int. Cl.[5] C08K *5/00*

U.S. Cl. 106—506 **14 Claims**

1. A pigment dispersion comprising finely divided pigment dispersed in a polymer containing one or more groups of the structure:



5,336,315

SOIL STABILIZATION PROCESS

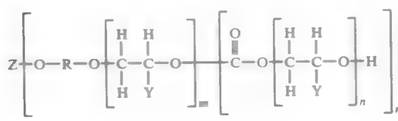
Michael Cuscurida; Edward T. Marquis, both of Austin, and Wheeler C. Crawford, Houston, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Feb. 25, 1993, Ser. No. 22,201

Int. Cl.[5] C04B *12/04, 28/26;* **E02D** *3/12*

U.S. Cl. 106—633 **11 Claims**

1. Soil stabilized by admixture with (1) an aqueous solution of an alkali metal silicate and (2) a carbonate reactant comprising a mixture of about 25 to about 75 wt. % of (a) an alkylene carbonate based on the weight of the mixture with the balance being (b) a polyester polycarbonate of the formula:



wherein Y is H or methyl,

wherein m and n are positive numbers having a value of 1 to about 5,

wherein R is a polyoxyethylene or a polyoxypropylene group having an average molecular weight between about 62 and 600,

wherein r is a positive integer having a value of 1 to 5,

wherein Z is a difunctional group formed by the reaction of an acid anhydride with a polyoxyethylene glycol or a polyoxypropylene glycol, and

wherein the acid anhydride is an anhydride of an organic acid selected from the group consisting of maleic anhydride, succinic anhydride and phthalic anhydride,

wherein the aqueous solution contains about 40 to about 60 wt. % of the said alkali metal silicate, and

wherein the amount of the aqueous silicate solution employed ranges from 85 to 95 wt. % based on the total weight of the aqueous silicate solution and the weight of the carbonate reactant.

5,336,316

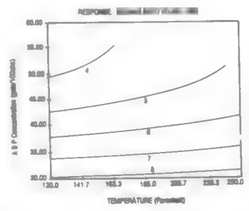
CEMENTING COMPOSITION AND METHOD USING PHOSPHONATED POLYMERS TO IMPROVE CEMENT SLURRY PROPERTIES

Jeffrey C. Dawson, and William R. Wood, both of Spring, Tex., assignors to BJ Services Company, Houston, Tex.

Filed May 6, 1993, Ser. No. 58,295

Int. Cl.[5] C04B *22/16*

U.S. Cl. 106—724 **40 Claims**



1. A cementing composition for oil and gas wells comprising:

hydraulic cement;

an effective amount of an additive to decrease fluid loss from the cementing composition when used during cementing operations, the additive comprising a phosphonated polymer having phosphonate groups pendant to a polymeric backbone, the phosphonate groups being added to a water hydratable, polyhydroxy polymer by reacting phosphonic acid or phosphonate with the water hydratable polymer; and

water.

5,336,317

PROCESS FOR MAKING CEMENT USING LOW-GRADE FUELS

Hans Beisswenger, Bad Soden; Jochim Eschenburg, Friedrichsdorf, and Johannes Löffler, Bad Homburg, all of Fed. Rep. of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

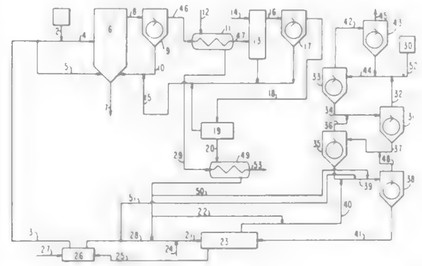
Filed Mar. 11, 1993, Ser. No. 29,784

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1992, 4208977

Int. Cl.[5] C04B *7/45, 18/22, 18/24*

U.S. Cl. 106—745 **20 Claims**

1. In a process for producing cement, said process comprising the steps of preheating a mixture of ground raw materials in a preheating cyclone to form a preheated raw meal, calcining the preheated raw meal in a calciner to form a calcined raw meal, burning the calcined raw meal in a rotary kiln having a main burner with the aid of a high-grade fuel to form a cement clinker and an exhaust gas stream, cooling the cement clinker and grinding the cooled cement clinker, the improvement comprising replacing 50 to 70% of said high-grade fuel with a low-grade fuel, gasifying said low-grade fuel in a fluidized bend to form a resulting fuel gas, supplying a first portion of the resulting fuel gas to the main burner of the rotary kiln, a



second portion of the resulting fuel gas to the exhaust gas stream from the rotary kiln and a third portion of the resulting fuel gas to the calciner.

5,336,318

CLAY-FREE, ASBESTOS-FREE AND GLASS MICROBUBBLE-FREE DRYING TYPE JOINT COMPOUNDS

Peter M. Attard, Elk Grove Village, and Therese A. Espinoza, Wood Dale, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Continuation-in-part of Ser. No. 583,845, Sep. 17, 1990, abandoned. This application Mar. 3, 1993, Ser. No. 25,613

Int. Cl.[5] C04B *11/00, 28/14*

U.S. Cl. 106—780 **20 Claims**

1. A composition which forms a drying type joint compound when mixed with water suitable for use in finishing joints between gypsum wallboards, said composition being free of asbestos and any clay substitute therefor, and containing no glass microbubbles, comprising at least about 50% by weight of a filler selected from the group consisting of calcium carbonate and calcium sulfate dihydrate, a binder, a cellulosic thickener and an acidic acrylate copolymer in-situ thickener.

5,336,319

APPARATUS FOR APPLYING AN ADHESIVE LAYER TO A SUBSTRATE SURFACE

Ram S. Narang, Fairport; Stephen F. Pond; Robert P. Altavela, both of Pittsford; Fredrick A. Warner, Fairport, and Robert A. Harold, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 26, 1992, Ser. No. 888,220

Int. Cl.[5] B05C *1/02, 11/00;* **B41L** *47/14*

U.S. Cl. 118—211 **10 Claims**

1. Apparatus for uniformly coating a planar substrate with an adhesive layer, comprising:

(a) a rotatably mounted sleeve having an axis, a cylindrical outer surface, and closed ends which form an internal cavity in the sleeve, the sleeve having a plurality of holes therein which penetrate the sleeve outer surface in a direction perpendicular to the sleeve axis;

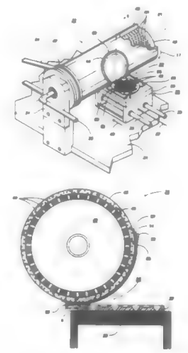
(b) a porous layer of foam being formed on the sleeve outer surface;

(c) means for rotating the sleeve about the sleeve axis at a predetermined angular velocity;

(d) means for applying a vacuum to the sleeve cavity from a vacuum source, while the sleeve is being rotated by said rotating means;

(e) a flexible sheet of polymeric film forming material having a predetermined shape and two opposing surfaces, one surface of the flexible sheet being positioned against the porous layer of foam on the sleeve and firmly held in place thereon by the vacuum in the sleeve cavity acting through the sleeve holes and porous layer of foam, the other surface of the flexible sheet having a uniform adhesive coating thereon of predetermined thickness; and

(f) means for transporting a planar substrate having a surface with recesses therein tangentially past the flexible sheet at a predetermined speed, the transporting means having heater means to heat the planar substrate to a predetermined temperature and concurrently moving the planar substrate into timed registration with the surface of the



flexible sheet having the adhesive coating as said flexible sheet is rotated by the sleeve about the sleeve axis, thereby forming a nip between the planar substrate and the flexible sheet, the transporting means coacting with the porous layer of foam on the sleeve to apply a predetermined pressure between the flexible sheet and planar substrate, so that a consistently uniform thickness of the layer of adhesive is transferred to a plurality of the planar substrates one at a time.

5,336,320

FAST RESPONSE FILM COATER

Patrick T. Hogan, Lorain, and James J. Turner, Amherst, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Jun. 30, 1992, Ser. No. 906,696

Int. Cl.[5] B05C *5/00*

U.S. Cl. 118—300 **9 Claims**

1. A dispensing apparatus for applying a coating material to a substrate, comprising:

a dispenser body formed with an air cavity, a spring cavity, a fluid bore having an inlet for receiving coating material and a discharge outlet, and a transfer bore for selectively communicating a source of pressurized air with said air cavity;

a plunger movable within said fluid bore between an open and closed position relative to said discharge outlet;

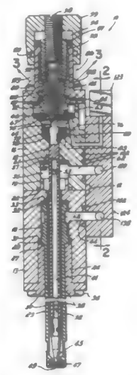
a piston connected to said plunger in position within said air cavity, said piston separating said air cavity into a first portion and a second portion, said transfer bore being connected to said first portion, said dispenser body being formed with a vent which connects said second portion to atmosphere;

plunger opening means, carried by said dispenser body, for directing a flow of pressurized air through said transfer bore into said air cavity and against said piston to move said plunger to said open position; and

plunger return means for returning said plunger to said closed position, said return means including a plurality of spring means stackable atop said piston within said spring

VOL 1165 ISS 2 AG 9 1994 UMI

cavity, said spring means being configured and oriented such that the number of said spring means stacked within



said spring cavity is changeable to provide a selected biasing force against said plunger.

5,336,321

PAINT APPARATUS HAVING TWO ROBOTS

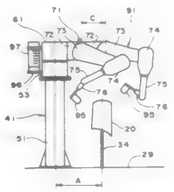
Akihiko Sugata, Okazaki; Kenji Tamura, Nagoya, and Yoshiyuki Mabuchi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

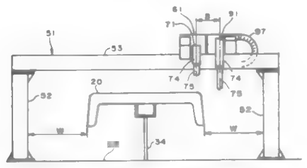
Filed Jan. 27, 1993, Ser. No. 9,918

Claims priority, application Japan, Jan. 27, 1992, 4-33919

Int. Cl.[5] B05D *1/02*

U.S. Cl. 118—315 **9 Claims**





1. A paint apparatus for painting a workpiece at a workpiece painting position comprising:

(a) a framework including a horizontal beam which lies along a first direction, said beam being horizontally spaced from the workpiece painting position;

(b) a moveable carriage which is constrained to move along said beam in said first direction;

(c) a first robot mounted to said carriage at a first mounting location, said first robot including a first painting device and first means for moving said first painting device through a first range of movement; and

(d) a second robot mounted to said carriage at a second mounting location, said second mounting location being separated from the first mounting location in both said first direction and a second direction perpendicular to and horizontal with said first direction, said second robot including a second painting device and second means for moving said second painting device through a second range of movement, wherein said first and second ranges of movement are limited with respect to said first direction such that said ranges of movement do not overlap.

5,336,322

COATING APPARATUS

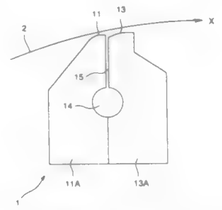
Seiichi Tobisawa, and Hironobu Iwashita, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,970

Claims priority, application Japan, Mar. 6, 1992, 4-084665

Int. Cl.[5] B05C *3/12*

U.S. Cl. 118—410 **5 Claims**



1. An apparatus for extrusion coating a coating solution on a continuously running belt material, said apparatus comprising a coater die having at least one slit, each slit being provided between a respective pair of edges, wherein a part of said coater die which contacts said belt material or said coating solution, is covered with a film having a Vickers hardness of not less than HV 1700, said film being deposited on the die by an ion plating method, said film being formed of TiN, TiC, or diamond-like carbon.

5,336,323

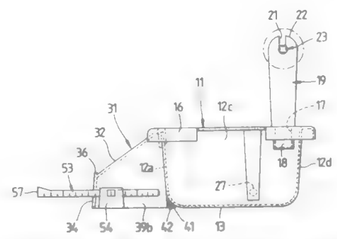
APPARATUS FOR PREPARING WALLPAPER FOR APPLICATION

David Cotton, Gadsden; Adelbert H. Richards, III, and James E. Harris, both of Birmingham, all of Ala., assignors to Paper Draper, Inc., Birmingham, Ala.

Filed Jun. 5, 1992, Ser. No. 894,589

Int. Cl.[5] B05C *3/02*

U.S. Cl. 118—428 **8 Claims**



1. Apparatus for dispensing a roll of wallpaper having glue pre-applied to one side thereof and a repeating pattern on the other side thereof, said dispenser comprising:

(a) a reservoir having a quantity of water therein for wetting said glue;

(b) guide means connected to said reservoir for guiding said wallpaper within said water and across a forward lip of said reservoir;

(c) means connected to said reservoir for indicating a point at a selected distance from said reservoir, wherein a forward margin of said wallpaper may be positioned adjacent to said point such that said wallpaper may be cut adjacent said reservoir a selected length substantially equal to said selected distance; and

(d) a cutting ramp connected to said reservoir adjacent said forward lip and sloping downwardly therefrom, wherein said ramp has a sloping cutting panel with two end panels integrally connected to said sloping panel and a vertical support panel in substantially normal relation thereto and extending adjacent to said reservoir, and said vertical support panel connected to said sloping panel and forming a ridge thereon along which a cutting member is drawn to cut said wallpaper said predetermined length and a bottom integrally connected to a lower edge of said vertical support panel and said end panels, such that said reservoir, sloping panel, vertical support panel and end panels form an enclosed storage chamber, and door means pivotally connected to said sloping panel and forming a portion thereof and of said vertical support panel for accessing said storage chamber.

5,336,324

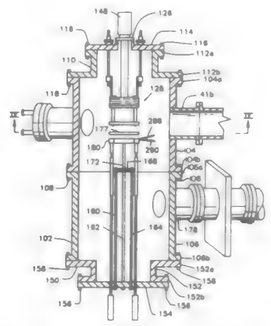
APPARATUS FOR DEPOSITING A COATING ON A SUBSTRATE

Richard A. Stall, Warren; Gary S. Tompa, Somerville; Alexander Gurary, Bridgewater, and Craig R. Nelson, Berkeley Heights, all of N.J., assignors to Emcore Corporation, Somerset, N.J.

Filed Dec. 4, 1991, Ser. No. 803,647

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—719 **67 Claims**



1. A vapor supply device for use in a coating deposition apparatus having a chamber, comprising

at least one inlet for a vapor,

restriction means in said at least one inlet for supplying said vapor from said inlet under molecular flow conditions,

an outlet for said vapor,

means for defining a tortuous path between said at least one vapor inlet and said vapor outlet,

heating means for heating said tortuous path, and

mounting means for mounting said device at a preselected position in said chamber.

5,336,325

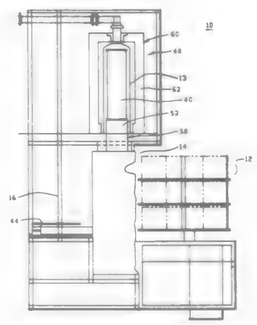
ENHANCED VERTICAL THERMAL REACTOR SYSTEM

John J. Devilbiss, San Mateo; Steve Lugosi, Fremont, and Robert G. Ozarski, Livermore, all of Calif., assignors to ASM VT, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 390,595, Aug. 7, 1989. This application Jan. 18, 1991, Ser. No. 644,235

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—719 **12 Claims**



1. An advanced vertical thermal reactor system comprising:

a wafer handling chamber into which semiconductor wafers are placed into the reactor system for processing and from which wafers are removed from the reactor system;

a process chamber for processing wafers received from said wafer handling chamber, and including a non-metallic ring sealingly coupled around an opening of said process chamber, a load door movable with respect to said ring, and a non-metallic plug which sealingly engages said ring when said door is moved adjacent to said ring; and

a cool down chamber in which processed wafers from said process chamber cool down;

wherein each of said chambers is sealed from one another.

5,336,326

METHOD OF AND APPARATUS FOR A DIRECT VOLTAGE ARC DISCHARGE ENHANCED REACTIVE TREATMENT OF OBJECTS

Johann Karner, Feldkirch, Austria, and Erich Bergmann, Mels, Switzerland, assignors to Balzers Aktiengesellschaft, Furstentum, Liechtenstein

Filed Sep. 11, 1991, Ser. No. 757,712

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1990, 4029268

Int. Cl.[5] C23C *16/50*

U.S. Cl. 118—723 HC **36 Claims**

1. A vacuum treatment arrangement comprising a vacuum chamber having an inlet opening means and means for introducing a process gas into said vacuum chamber through said inlet opening means to react in the vacuum chamber, an exhaust means for removing gaseous reaction products from said vacuum chamber, means for introducing a flow of electrically charged particles into the vacuum chamber, an electrode arrangement for generating a direct voltage arc discharge in the vacuum chamber, said inlet opening means further comprising a plurality of inlet openings distributed over a given area, said means for introducing a flow of electrically charged particles comprising barrier means having a plurality of distribution openings communicating with a inner space of the vacuum chamber for producing arc discharge over a given area;

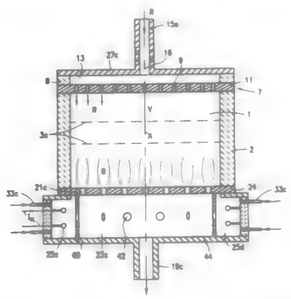
said means for introducing a flow of electrically charged particles further comprising thermal-type electron-emitting means for producing a flow of electrically charged particles, said barrier means separating said thermal-type

VOL 1165 ISS 2 AG 9 1994 UMI

electron-emitting means from the inner space of the chamber;

said thermal-type electron-emitting means comprising a directly heated hot cathode;

said hot cathode being an electrode, and preferably, the cathode electrode of the electrode arrangement; and



at least a part of at least one of the inlet opening means and the exhaust means being a perforated plate arranged so that charged particles and process gas flow through the perforated plate.

5,336,327

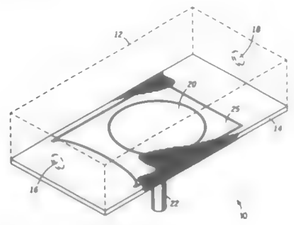
CVD REACTOR WITH UNIFORM LAYER DEPOSITING ABILITY

Hsing-Chung Lee, Woodland Hills, Calif., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 891,013, Jun. 1, 1992. This application Nov. 19, 1993, Ser. No. 154,575

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—730 **9 Claims**



1. A CVD reactor comprising:

a housing defining a cavity having a generally flat surface with a wafer receiving rotatable platform mounted therein, the housing further including a gas inlet to one side of the platform and a gas outlet to an opposite side of the platform for causing gas introduced into the cavity through the gas inlet to flow across a portion of the flat surface and the platform;

a substantially flat susceptor positioned on the flat surface of the cavity and substantially surrounding the rotatable platform so that gas flowing across the portion of the flat surface and platform flows across the susceptor, the susceptor having a leading edge extending from one side of a line through the gas inlet, the rotatable platform and the gas outlet to a side of the line opposite the one side; and

the leading edge of the susceptor having a generally concave curvature relative to the gas inlet.

5,336,328

WHITE WAXY STARCH DEXTRINS FOR USE IN ADHESIVES

David Mauro, Dolton, Ill.; Ronald Kozlowski, Hammond, and Larry Benko, Schererville, both of Ind., assignors to American Maize Technology, Inc., Dimmitt, Tex.

Filed Nov. 5, 1991, Ser. No. 788,257

Int. Cl.[5] C08L *3/02*

U.S. Cl. 127—33 **9 Claims**

1. In a process for manufacturing a waxy corn starch dextrin, the improvement which comprises:

roasting a white waxy corn starch at a temperature between about 300° F. and 350° F. at a pH of not over 3.5 to convert the white waxy corn starch to a dextrin which when added to water in an amount of about 4% by weight produces a solution which has a transmittance from 60% to 85% of light when measured spectrophotometrically at 500 mμ to 800 mμ through a 1 cm cell and a long term viscosity stability.

5,336,329

PROCESS FOR TOXIC AGENT REMOVAL

Eric J. Langenmayr, Laverock, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 7, 1992, Ser. No. 986,405

Int. Cl.[5] B08B *7/00*

U.S. Cl. 134—7 **14 Claims**

1. A process for removing toxic agents from a surface comprising contacting said surface with carbonaceous adsorbent particles having an average particle size of up to about 50 microns in diameter, produced by the controlled thermal decomposition of a macroporous synthetic polymer, and containing a hydroxide of sodium, potassium or lithium within their pores, and removing said toxic agent from said surface.

5,336,330

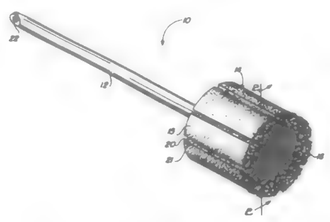
METHOD FOR CLEANING AN INTERIOR CAVITY OF DISHWARE

Craig S. Shumway, and Amy Shumway, both of P.O. Box 149394, Orlando, Fla. 32814

Division of Ser. No. 878,568, May 5, 1992, Pat. No. 5,214,820. This application Jan. 7, 1993, Ser. No. 1,157

Int. Cl.[5] B08B *1/00, 9/00, 9/20;* **A47L** *17/00*

U.S. Cl. 134—8 **6 Claims**



1. A method for cleaning an interior cavity of an item of dishware, the cavity having a circular bottom and internal cylindrical walls surrounding the bottom, the method comprising the steps of:

providing a scrubber including a handle elongated in a longitudinal direction and having opposite ends; and a cylindrical scrubbing element mounted at one end of the handle; the scrubbing element being of laminate construction including a cylindrical first layer of foam material having an outside diameter and opposite ends and a cylindrical second layer of scouring material of matching outside diameter, the second layer having a leading face and being superposed in matching coaxial relationship over the first layer, in a position adjacent one of the first layer ends and longitudinally outward of the first layer relative to the other end of the handle;

inserting the one end of the handle into the cavity so that the leading face of the second layer contacts the bottom, and the outside diameter of the first layer contacts the walls; and

rotating the handle to cause the leading face of the second layer to provide scouring action to the bottom, and the first layer to provide sponge contact cleansing action to the walls.

5,336,331

CONTINUOUS CONDENSER BACKFLUSH AND CLEANING SYSTEMS AND METHODS FOR USE THEREOF

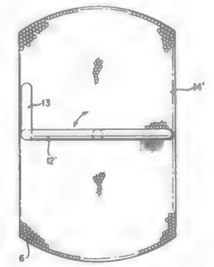
Jerry Y. Jenkins, 583 Parlange Loop, La Place, La. 70068

Continuation-in-part of Ser. No. 824,170, Jan. 22, 1992, Pat. No. 5,238,502. This application Jul. 27, 1993, Ser. No. 97,189

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] B08B *9/02;* **F28G** *3/00*

U.S. Cl. 134—22.11 **34 Claims**



1. A condenser cleaning system comprising:

a first hollow wand;

a hollow shaft attached to said hollow wand;

means for incrementally moving said wand;

means for extending said wand to adjacent the condenser face;

valve means for opening when said wand is extended adjacent the condenser face and for closing before moving said wand to a different position;

means for retracting said wand from adjacent the condenser face;

control means for incrementally moving said wand to a different position, extending said wand to adjacent the condenser face, opening said valve means, closing said valve means, and retracting said wand from the condenser face.

5,336,332

WASHING APPARATUS AND METHOD FOR FLUIDIZED BED PELLETIZING AND DRYING MACHINE

Katsuhiko Satoh, Kawanishi; Itsuo Muto, Shijyonawate; Shigeki Takeda, Takaishi, and Mamoru Miyamoto, Itami, all of Japan, assignors to Kabushiki Kaisha Powrex, Osaka and Kabushiki Kaisha Ariwa Seisakusho, Takarazuka, both of Japan

Filed Sep. 10, 1991, Ser. No. 757,403

Claims priority, application Japan, Jun. 26, 1991, 3-154228

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—22.1 **3 Claims**

1. A washing apparatus, for use in connection with a fluidized bed pelletizing and drying machine comprising a cylindrical body in which is housed a vertically movable bag filter comprising filter elements in the form of bottomed socks disposed in concentric circles, a seat container disposed in a lower region of said body, and a product container removably installed between said body and said seat container,

said washing apparatus further comprising an upright three-dimensional rotary nozzle unit capable of vertically moving in a space above said bag filter, a horizontal three-dimensional rotary nozzle unit capable of horizontally advancing and retracting between a position in said body below an uppermost position of the said bag filter and a position outside said body, and a washing container in which is disposed a multiple two-dimensional horizontal rotary nozzle unit adapted to spout washing liquid in an Upwardly direction toward the inner surface of the said bag filter,

wherein said washing container is detachably attached between said body and said seat container, and said washing container and said product container are selectively mounted between said body and said seat container such that during washing, the washing container is so attached and alternatively, during pelletizing treatment of powder particles, the product container is so attached.

3. A method of washing a fluidized bed pelletizing and drying machine employing a washing apparatus, said apparatus comprising:

a cylindrical body in which is housed a vertically movable bag filter comprising filter elements in the form of bottomed socks disposed in concentric circles, a seat container disposed in a lower region of said body, and a product container removably installed between said body and said seat container, and

said apparatus for washing said machine comprising an upright three-dimensional rotary nozzle unit capable of vertically moving in a space above said bag filter, a horizontal three-dimensional rotary nozzle unit capable of horizontally advancing and retracting between a position in said body below an uppermost position of the said bag filter and a position outside said body, and a washing container in which is disposed a multiple two-dimensional horizontal rotary nozzle unit adapted to spout washing liquid from below toward the inner surface of the said bag filter.

wherein said washing container is detachably attached between said body and said seat container, and said washing container and said product container are selectively mounted between said body and said seat container such that during washing the washing container is so attached and alternatively during pelletizing treatment of powder particles, the product container is so attached.

said method comprising the steps of;

setting said bag filter at its upper position,

spraying washing liquid from the upright and horizontal three-dimensional rotary nozzle units to effect initial washing of said machine, and

upon completion of said initial washing, mounting the washing container in place of the product container between the body and the seat container;

moving the horizontal three-dimensional rotary nozzle unit to the outside of the body,

lowering the bag filter and the upright three-dimensional rotary nozzle unit;

when the bag filter reaches its lower position, spraying washing liquid from the upright three-dimensional rotary nozzle unit and multiple two-dimensional horizontal rotary nozzle unit to effect final washing of said apparatus,

upon completion of final washing of said apparatus, mounting the product container again in place of the washing container between the body and the seat container,

returning the upright three-dimensional rotary nozzle unit and bag filter to their upper positions, and

drying said apparatus with hot air.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,333

METHOD FOR CLEANING WASTE COLLECTION SYSTEMS

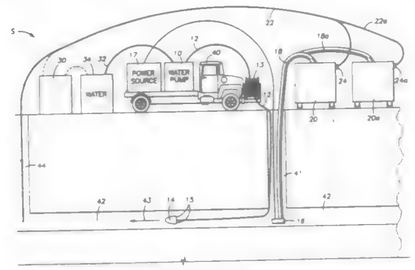
Sheron R. Sheppard, 6942 FM 1960 E. #133, Humble, Tex. 77346, and Henry B. Polston, 2305 Huckleberry, Pasadena, Tex. 77503

Continuation-in-part of Ser. No. 747,084, Aug. 19, 1991, Pat. No. 5,129,957, which is a division of Ser. No. 608,067, Nov. 1, 1990, Pat. No. 5,068,940. This application Dec. 2, 1991, Ser. No. 801,302

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[5] **B08B** *3/02, 9/04*

U.S. Cl. 134—22.11 **5 Claims**



1. A method for cleaning waste collection systems of solid material by suspending the material in a water slurry and pumping the slurry to a waste container under positive pressure wherein the solids separate from the water, drop to the bottom of the container and water is decanted for reuse in cleaning the waste collection system, comprising the steps of:

supplying a source of water;

pressurizing water from said water source;

directing high pressure water against solid materials contained in a waste collection system, whereby the solid material is suspended in a water slurry;

inserting a submersible pump into the waste collection system downstream of the high pressure water;

pumping the water slurry by means of said submersible pump into a waste container under positive pressure;

separating water from the solid material in said waste container;

decanting the water separated from solid material as the solid material settles in said waste container; and

releasing the decanted water from said waste container into the waste collection system upstream of said submersible pump.

5,336,334

METHOD FOR CLEANSING A PORTABLE KEG TAP

Samuel O. Johnson, Statesboro, Ga., assignor to Universal EPSCO, Inc., Atlanta, Ga.

Filed Jul. 13, 1992, Ser. No. 912,881

Int. Cl.[5] **B08B** *3/00, 9/00*

U.S. Cl. 134—22.12 **1 Claim**

1. A method for cleaning portable keg taps, comprising the steps of:

(a) providing a portable cleaning apparatus comprising:

(1) a coupling means for receiving water from a water spigot and for delivering the water to an inlet of a singular portable keg tap;

(2) a shut-off valve adapted to turn on and off the flow of the water through the coupling means;

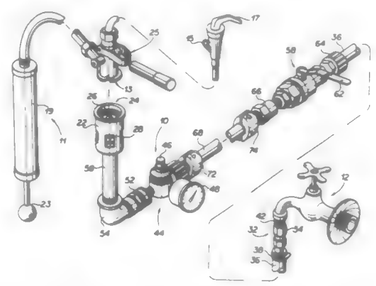
(3) a regulating means for regulating the pressure of the water in the coupling means;

(4) means for detachably coupling said coupling means and said water spigot; and

(5) means for detachably coupling said coupling means and said keg tap;

(b) connecting the portable cleaning apparatus to said water spigot and to said portable keg tap;

(c) cleaning the portable keg tap by delivering water from said water spigot to said inlet of said portable keg tap;



(d) controlling the flow of said water flowing to said inlet by controlling said valve and said regulating means; and

(e) after cleaning said portable keg tap, disconnecting said portable cleaning apparatus from both said water spigot and said portable keg tap.

5,336,335

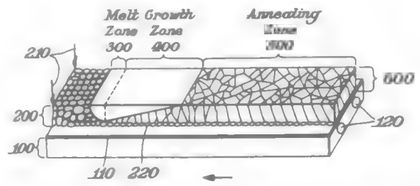
COLUMNAR-GRAINED POLYCRYSTALLINE SOLAR CELL AND PROCESS OF MANUFACTURE

Robert B. Hall; Allen M. Barnett; Jacob E. Brown; Joseph C. Checchi, all of Newark; David H. Ford; Christopher L. Kendall, both of Wilmington; William P. Mulligan, Hockessin, all of Del.; James A. Rand, Oxford, Pa., and Todd R. Ruffins, Newark, Del., assignors to AstroPower, Inc., Newark, Del.

Filed Oct. 9, 1992, Ser. No. 959,009

Int. Cl.[5] **H01L** *31/0392, 31/0368, 31/18*

U.S. Cl. 136—258 **31 Claims**



1. A process of making an improved columnar-grained polycrystalline sheet for functioning as a substrate for a solar cell, comprising (a) applying granular silicon to a setter material having a release coating at its upper surface and which supports the granular silicon, (b) preheating the setter material and granular silicon in a preheat zone, (c) subjecting the setter material and granular silicon to a thermal profile which causes melting of the granular silicon from the top downwardly, wherein 25 to 90% of the granular silicon depth is melted and the partially melted silicon below the melted material functions as a net to stabilize the melt and to minimize molten silicon contact with the underlying setter material and release coating and to nucleate subsequent crystal growth, (d) transporting the melt pool on the silicon net into a growth zone wherein a thermal profile is created to promote columnar growth of a columnar grain size greater than 80 microns from the partially melted silicon net upward in a direction approximately perpendicular to the plane of the setter material and where both liquid and a growing polycrystalline layer coexist and impurities are segregated to the top surface of the sheet as well as gettered to the partially melted back surface, (e) transporting the grown sheet into an anneal zone wherein a linear temperature gradient along the direction of setter material motion is provided to promote low stress cooling of the sheet, (f) removing the polycrystalline sheet from the setter material, facilitated by a release agent, and (g) reusing the setter material for the making of further columnar-grained polycrystalline sheets.

11. The process of claim 1 including utilizing the sheet as a substrate for a solar cell by forming the additional solar cell layers on the substrate.

5,336,336

PROCESS FOR CHEMICAL TREATMENT WITH PHOSPHATE

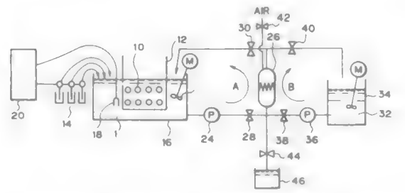
Shigeki Matsuda, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 30, 1992, Ser. No. 875,804

Claims priority, application Japan, May 1, 1991, 3-100138

Int. Cl.[5] **C23C** *22/86*

U.S. Cl. 148—240 **15 Claims**



1. A process for forming a phosphate chemical treatment film on a surface of a steel material by bringing the steel material into contact with a phosphate chemical treatment bath containing a phosphate ion, a nitrate ion, a chemical coating formable metal ion and an oxidizing agent to cause a film formation reaction between the phosphate chemical treatment bath and the surface of the steel material, wherein:

a portion of the phosphate chemical treatment bath is circulated through a circulating path provided therein with a filter comprising an inorganic material composed mainly of SiO_2 and Al_2O_3 by withdrawing the portion of the phosphate chemical treatment bath from a bath vessel and returning the same to the bath vessel,

the circulating phosphate chemical treatment bath is filtered through the filter; and

a thermodynamic energy balance in the solution of the above-mentioned chemical component in the phosphate chemical treatment bath, which governs the thermodynamic condition as a liquid of the phosphate chemical treatment bath, is controlled and stabilized to prevent the formation of solids from the chemical components contained in the phosphate chemical treatment bath.

5,336,337

MAGNETROSTRICTIVE MATERIALS AND METHODS OF MAKING SUCH MATERIALS

Tomomi Funayama; Tadahiko Kobayashi; Isao Sakai, and Masashi Sahashi, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Feb. 4, 1992, Ser. No. 830,569

Claims priority, application Japan, Feb. 5, 1991, 3-035522; Mar. 27, 1991, 3-062333; Oct. 15, 1991, 3-265663

Int. Cl.[5] **H01F** *1/04*

U.S. Cl. 148—301 **8 Claims**

1. A magnetostrictive alloy having a composition whose atomic ratio is expressed by:

$$Re(Fe_{1-q-r}Mn_qM_r)_s$$

where Re is at least one element selected from the group consisting of Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu,

M is at least one element selected from the group consisting of C, Mg, Al, Si, Ca, Zr, Ga and B,

$0.005 \leqq q \leqq 0.5$,

$0.005 \leqq r \leqq 0.2$,

$1.90 \leqq s \leqq 2.10$, and

said alloy including an amount of 1-3 phase of 5 vol % or less.

5,336,338

BEARING COMPONENTS AND PROCESS FOR PRODUCING SAME

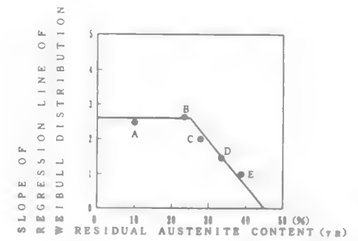
Kazutoshi Toda, Habikino, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Dec. 2, 1992, Ser. No. 983,448

Claims priority, application Japan, Dec. 3, 1991, 3-318307

Int. Cl.[5] **C21D** *1/06;* **C22C** *38/00*

U.S. Cl. 148—319 **13 Claims**



1. A bearing component having a surface hardness of 63 to 67 in terms of Rockwell hardness C and a surface retained austenite content of at least 20% to less than 25%, said bearing component being prepared by subjecting a bearing component workpiece formed of a carburizing steel to a series of treatments including carburizing and quenching, said bearing workpiece having a carbon content of 0.1 to 1.0 weight % carbon.

5,336,339

REFRACTORY SHAPE STEEL MATERIAL CONTAINING OXIDE AND PROCESS FOR PROUCING ROLLED SHAPE STEEL OF SAID MATERIAL

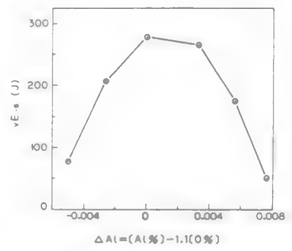
Kohichi Yamamoto; Suguru Yoshida, and Kazuo Watanabe, all of Sakai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 20, 1993, Ser. No. 123,651

Claims priority, application Japan, Sep. 24, 1992, 4-254701

Int. Cl.[5] **C21D** *8/02;* **C22C** *38/14*

U.S. Cl. 148—320 **4 Claims**



1. A cast slab produced by subjecting a molten steel comprising, in terms of % by weight, 0.04 to 0.20% of C, 0.05 to 0.50% of Si, 0.4 to 2.0% of Mn, 0.3 to 0.7% of Mo, 0.003 to 0.015%

VOL 1165 ISS 2 AG 9 1994 UMI

of N, 0.04 to 0.20% of V and 0.005 to 0.025% of Ti with the balance consisting of Fe and unavoidable impurities, to a predeoxidation treatment to regulate the dissolved oxygen concentration to 0.003 to 0.015% by weight, adding metallic aluminum or ferroaluminum to effect deoxidation so as to produce an Al content of 0.005 to 0.015% by weight and to satisfy a requirement of the relationship between the Al content [Al %] and the dissolved oxygen concentration [O %] represented by the formula: $-0.004 \leqq [Al\ \%] - 1.1[O\ \%] \leqq 0.006$, and crystallizing and dispersing an aluminum-titanium compound oxide in an amount of 20 particles/mm^2 or more in the steel.

5,336,340

NI-TI-AL ALLOYS

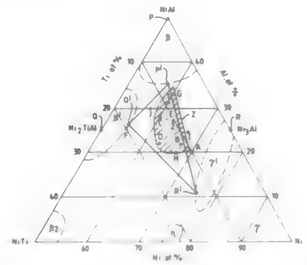
Robert W. Cahn, Cambridge, England, assignor to Rolls-Royce plc, London, England

Filed Apr. 30, 1993, Ser. No. 39,494

Claims priority, application United Kingdom, Nov. 23, 1990, 9025496.3

Int. Cl.[5] C22C *19/03*

U.S. Cl. 148—409 **11 Claims**



1. A Ni—Al—Ti alloy comprising a structure of β' regions and γ' regions distributed in a β matrix, the β' regions and at least a part of the γ' regions being epitaxially related to the β matrix, wherein the β phase is based on the ideal composition NiAl, the β' is a Heusler phase based on ideal composition Ni_2TiAl, and the γ' is a phase based on the ideal composition Ni_3Al.

5,336,341

INFRARED RADIATION ELEMENT AND PROCESS OF PRODUCING THE SAME

Masatsugu Maejima, Tokyo; Koichi Saruwatari, Musashino; Akihito Kurosaka, Tokyo; Mamoru Matsuo, Fukaya; Hiroyoshi Gunji, Tsuchiura, and Toshiki Muramatsu, Fukaya, all of Japan, assignors to Fujikura Ltd. and Sky Aluminium Co., Ltd., both of Tokyo, Japan

Filed Aug. 30, 1991, Ser. No. 753,098

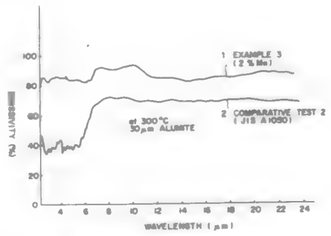
Claims priority, application Japan, Aug. 30, 1990, 2-228971

Int. Cl.[5] C22C *21/00*

U.S. Cl. 148—415 **17 Claims**

1. An infrared radiation element comprising:

an aluminum alloy material consisting essentially of 0.3 to 4.3 weight % of Mn, not more than 0.5 weight % of Fe, balance Al, and impurities; and



an anodic oxide layer formed on a surface of the aluminum alloy.

5,336,342

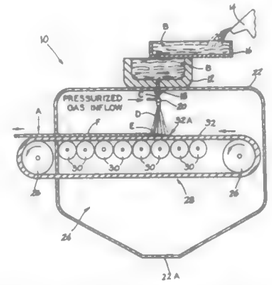
COPPER-IRON-ZIRCONIUM ALLOY HAVING IMPROVED PROPERTIES AND A METHOD OF MANUFACTURE THEREOF

Sankaranarayanan Ashok, Bethany, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 385,034, Jul. 26, 1989, Pat. No. 5,017,250. This application Oct. 31, 1990, Ser. No. 606,382

Int. Cl.[5] C22C *9/00*

U.S. Cl. 148—432 **2 Claims**



1. A spray cast copper base alloy having improved resistance to thermal softening, comprising:

a coalesced multitude of droplets, each said droplet consisting essentially of:

copper; and

iron and zirconium, said iron being present as a uniformly dispersed second phase of dispersoids, said dispersoids having a mean particle size of from about 0.1 micron to about 1.0 micron, said iron being present in the amount of from about 2.0 to about 5.0% by weight.

5,336,343

VINYL ETHERS AS NONAMMONIA PRODUCING BONDING AGENTS IN COMPOSITE PROPELLANT FORMULATIONS

R. Scott Hamilton, Bear River City; Robert B. Wardle, Logan, and Jerald C. Hinshaw, Pleasant View, all of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Apr. 16, 1993, Ser. No. 48,491

Int. Cl.[5] C06B *45/10*

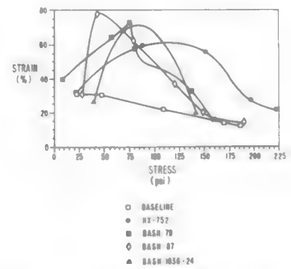
U.S. Cl. 149—19.9 **20 Claims**

1. A solid propellant composition comprising:

an oxidizing salt which functions as a cationic polymeriza-

tion catalyst present in an amount ranging from about 40% to about 86% by weight;

a fuel present in an amount ranging from about 0% to about 21% by weight;



hydroxy-terminated polybutadiene binder present in an amount ranging from about 8% to about 20% by weight; and

a bonding agent comprising a compound having multiple vinyl ether functional groups present in an amount ranging from about 0.1% to about 3% by weight.

5,336,344

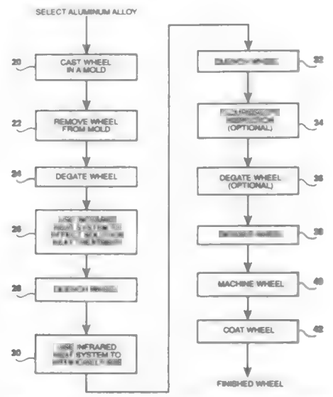
METHOD FOR PRODUCING A CAST ALUMINUM VEHICLE WHEEL

Daniel Wei, Ann Arbor, Mich., assignor to Hayes Wheels International, Inc., Romulus, Mich.

Continuation of Ser. No. 842,942, Feb. 27, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 83,195

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—549 **12 Claims**



1. A method for producing a cast aluminum vehicle wheel comprising the steps of:

(a) casting a vehicle wheel in a mold from a selected aluminum alloy, the wheel defining an axis and having a wheel face formed perpendicular to the axis and an annular wheel rim formed concentric with the axis;

(b) removing the wheel from the mold;

(c) solution heat treating the wheel by directing infrared radiation from a first group of infrared emitters in a first direction toward the wheel face and by directing infrared radiation from a second group of infrared emitters in a second direction toward at least a circumferential portion of the wheel rim, the second direction being nonparallel to the first direction, both the first and second groups of infrared emitters being controlled to supply the infrared radiation at a level to rapidly heat the wheel and thereafter maintain the wheel temperature within a solution heat treatment temperature range for a solution heat treat time period corresponding to the selected aluminum alloy;

(d) simultaneously with step (c), rotating the wheel relative to the emitters to evenly distribute the infrared radiation therethrough;

(e) immediately following said solution heat treat time period, quenching the wheel; and

(f) aging the wheel.

5,336,345

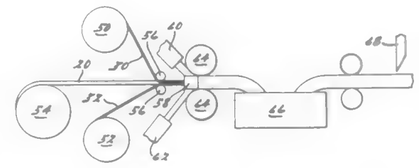
PROCESS FOR MANUFACTURING AN ELONGATED ELECTROLUMINESCENT LIGHT STRIP

Thomas L. Gustafson, Southfield, and Marc A. Brookman, Dearborn, both of Mich., assignors to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 668,862, Mar. 13, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 978,152

Int. Cl.[5] B29C *47/02*

U.S. Cl. 156—67 **14 Claims**



1. A process for manufacture of an elongated electroluminescent light strip comprising the steps of:

a) continuously feeding an elongated electroluminescent lamp having bus elements extending therefrom to an extruder; and

b) extruding a plastic extrudant at a temperature less than that which would damage said elongated electroluminescent lamp about said elongated electroluminescent lamp to entirely encapsulate said electroluminescent lamp.

5,336,346

METHOD FOR FORMING AN ADHESIVELY BONDED SEAM BETWEEN RESILIENTLY COMPRESSIBLE FABRIC SHEETS

Mark J. Meltzer, San Francisco, and Tommas J. Tompkins, Berkeley, both of Calif., assignors to O'Neill, Inc., Santa Cruz, Calif.

Continuation of Ser. No. 557,670, Jul. 24, 1990, abandoned. This application Jan. 8, 1993, Ser. No. 2,082

Int. Cl.[5] B29C *65/08*

U.S. Cl. 156—73.4 **4 Claims**

1. A method of continuously forming an adhesively bonded seam between opposed edges of two pieces of resiliently-compressible, foamed elastomeric fabric, said method comprising the steps of:

providing adhesive on the edge of at least one of said pieces;

moving said pieces continuously past a sonic energy generating adhesive activation device and continuously thereafter directly through a fabric manipulation assembly positioned proximate said adhesive activation device; and

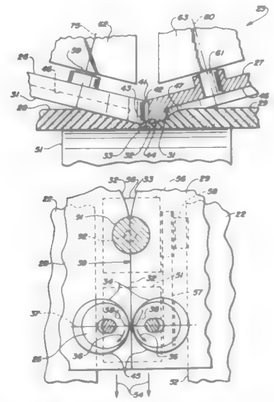
during said step of moving said pieces continuously,

(i) activating said adhesive on said edge of said at least one of said pieces by applying sonic energy to said adhesive with said adhesive activation device; and

(ii) firmly urging said edges laterally against each other to form said bonded seam by progressively compressing each of said pieces in a thickness dimension of said

VOL 1165 ISS 2 AG 9 1994 UMI

pieces and immediately proximate and inward of each of said edges with said fabric manipulating assembly and, as each of said pieces is progressively compressed,



simultaneously applying a lateral force progressively along and inward of said opposed edges to each of said pieces in a direction toward said opposed edges with said fabric manipulating assembly.

5,336,347

FABRICATION PROCEDURE FOR AND STRUCTURE OF A SKI WITH A CURVED END

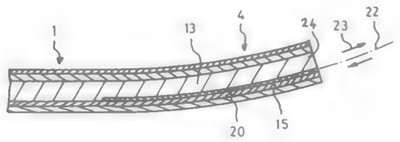
Philippe Grandjacques, Annecy, France, assignor to Salomon S.A., Annecy Cedex, France

Continuation of Ser. No. 577,510, Sep. 5, 1990, abandoned. This application Feb. 4, 1993, Ser. No. 13,659

Claims priority, application France, Sep. 5, 1989, 89 11932

Int. Cl.[5] **A63C** *5/056, 5/14*

U.S. Cl. 156—221 **23 Claims**



1. A process for manufacturing a ski, the ski having a central cambered portion and front and rear curved ends forming a spatula and a heel, respectively, the ski having a structure including a central core, an upper reinforcement element, a lower reinforcement element, and a sole, the sole having a sliding surface, the process comprising:

a first stage comprising the step of assembling the central core, upper reinforcement element, lower reinforcement element and sole, whereby the central core, upper reinforcement element, lower reinforcement element and sole are placed in a mold and heated to form a basic ski structure having a thickness, the basic ski structure being formed with a substantially flat front end zone which comprises an upper part and a lower part glued together by a thermofusible layer in an intermediate position of the basic ski structure;

an intermediate stage comprising the step of finishing at least the sliding surface of the sole;

a recovery stage comprising the steps of:

re-heating at least the front end zone of the basic ski structure to a temperature slightly higher than the softening temperature of the thermofusible layer;

shaping the front end zone into a desired curved form for forming the spatula, while the front end zone is heated for softening and shearing said thermofusible layer which permits the lower part to slide in relation to the upper part; and

a solidification stage comprising the step of cooling the thermofusible layer while maintaining the desired curved form of the spatula, until said layer hardens.

5,336,348

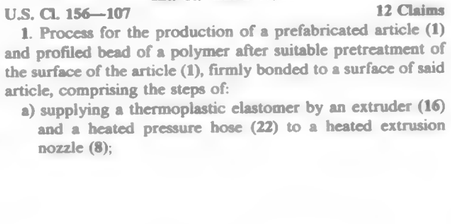
METHOD FOR FORMING A VERMICULITE FILM

Richard E. Mindler, Quakertown, Pa., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,656

Int. Cl.[5] **B28B** *23/00;* **C04B** *41/28;* **B32B** *1/00*

U.S. Cl. 156—231 **21 Claims**



1. A method for forming a vermiculite film, comprising the steps of:

(a) providing a non-flocculated colloidal dispersion of delaminated vermiculite platelets, whereby a moving carrier can be coated with said dispersion on a continuous basis;

(b) providing on a continuous basis a flexible carrier having wet vermiculite film retentiveness and dried vermiculite film releasability, said carrier being comprised of paper, said paper carrier comprising cellulose and said paper carrier being coated at least once with a coating layer comprising latex and a release agent, said coating layer being operative when dry to decrease the extent to which said vermiculite dispersion sinks into said paper;

(c) applying a wet film of said dispersion to said carrier on a continuous basis; and

(d) allowing said film to dry on said carrier, whereby a dried vermiculite film is continuously provided and is releasable from said carrier.

5,336,349

PROCESS AND DEVICE FOR THE PRODUCTION OF AN ARTICLE EQUIPPED WITH A PROFILED BEAD

Gerd Cornils, Merzenich-Girbelsrath, and Heinz Kunert, Köln, both of Fed. Rep. of Germany, assignors to Saint Gobain Vitrage International, Courbevoie, France

Filed Jul. 17, 1992, Ser. No. 916,325

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1991, 4123588

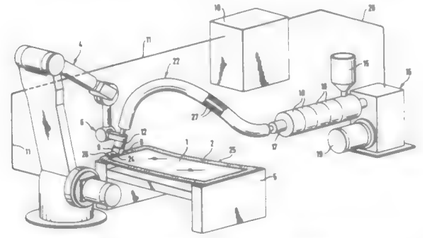
Int. Cl.[5] **B29C** *47/12*

U.S. Cl. 156—107 **12 Claims**

1. Process for the production of a prefabricated article (1) and profiled bead of a polymer after suitable pretreatment of the surface of the article (1), firmly bonded to a surface of said article, comprising the steps of:

a) supplying a thermoplastic elastomer by an extruder (16) and a heated pressure hose (22) to a heated extrusion nozzle (8);

b) guiding said nozzle (8) along said surface by a displacement-controlled automatic handling device (4); and



(c) extruding and laying a bead of said polymer on the surface of the article (1) by means of the extrusion nozzle (8) after suitable pretreatment of the surface of the article (1).

5,336,350

PROCESS FOR MAKING COMPOSITE CONTAINING FIBROUS MATERIAL

Raj N. Singh, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 31, 1989, Ser. No. 429,430

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—155 **34 Claims**

1. A process for producing a composite containing at least about 10% by volume of boron nitride coated fibrous material and having a porosity of less than about 20% by volume which comprises the following steps:

(a) forming tapes comprised of a mixture of infiltration-promoting material and organic binding material;

(b) depositing a coating of boron nitride on fibrous material leaving no significant portion thereof exposed;

(c) depositing a silicon-wettable coating on said boron nitride-coated fibrous material leaving no significant portion of said boron nitride exposed;

(d) disposing a layer of the resulting coated fibrous material between the faces of two of said tapes forming a layered structure;

(e) laminating the layered structure to form a laminated structure;

(f) heating said laminated structure to remove said organic binding material leaving no significant deleterious residue producing a porous body;

(g) infiltrating a molten infiltrant comprised of boron and silicon into said porous body to produce an infiltrated product, said molten infiltrant containing boron in solution in an amount ranging from about 0.1% by weight of silicon to an amount which forms a saturated solution with silicon; and

(h) cooling said infiltrated product producing said composite.

5,336,351

METHOD FOR CONNECTING A PIPE CONNECTOR TO A HARD PLASTIC PIPE

Theodore W. Meyers, Inverness, Ill., assignor to Tuf-Tite, Inc., Wauconda, Ill.

Filed Jul. 14, 1992, Ser. No. 913,140

Int. Cl.[5] **B29C** *65/00*

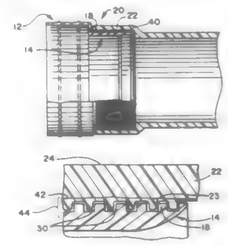
U.S. Cl. 156—158 **7 Claims**

1. A method of sealably interconnecting a flexible pipe connector to a hard, plastic pipe component, said method comprising the steps of:

forming said flexible pipe connector as a tubular element of polyethylene defined by a flexible and stretchable cylindrical wall having an inner surface and an outer surface, at least one of said inner and outer surfaces being formed with a plurality of receiving means for receiving a liquefied layer of said hard plastic pipe component;

applying a solvent weld glue onto a mating surface of said hard plastic pipe component so as to form said liquefied layer, said liquefied layer being adapted to harden into a reconfigured solid layer; and

engaging said at least one inner and outer surface of said cylindrical wall of said flexible pipe connector with said



mating surface of said hard plastic pipe component, so that said liquefied layer flows into said receiving means and hardening said liquefied layer into said reconfigured layer so that said reconfigured solid layer engages said receiving means to create a sealed interlocking interconnection between said flexible pipe connector and said hard plastic pipe component, said sealed interconnection operable to substantially prevent water drainage therethrough.

5,336,352

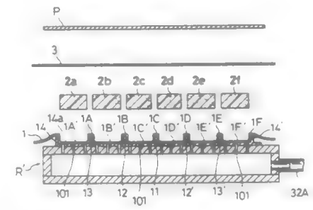
METHOD FOR FORMING A TRIM COVER ASSEMBLY FOR AUTOMOTIVE SEAT

Hisaya Tokura, Ohme, Japan, assignor to TACHI-S Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,212

Int. Cl.[5] **B32B** *31/04, 31/10, 31/20*

U.S. Cl. 156—214 **4 Claims**



1. A method for forming a trim cover assembly for an automotive seat, in which said trim cover assembly is of a three-layer lamination type comprising a top cover layer, a foam wadding and a wadding cover, said method comprising the steps of:

providing a lower die having a working surface formed with a plurality of projected portions thereon, wherein said plurality of projected portions extend in a longitudinal direction of said lower die and comprise a first central projected portion defined at a central line of said working surface and a predetermined number of other spaced-apart projected portions defined at the same working surface, wherein said spaced-apart projected portions are arranged outwardly from and symmetrically relative to said first central projected portion, generally in parallel with one another in a width-wise direction of said lower die;

providing a plurality of upper die elements which are movable toward and away from said lower die, including a

VOL 1165 ISS 2 AUG 9 1994 UMI

first central upper die element having a recessed portion into which said first central projected portion of the lower die is to be engaged, and a predetermined number of other spaced-apart upper die elements disposed outwardly from and symmetrically relative to said first central upper die element;

placing said top cover layer upon said lower die;

then, lowering said first central upper die element towards said lower die such that a central part of said top cover layer is pressed between said recessed portion of said first central upper die element and said first central projected portion of said lower die, so as to stretch the thus-pressed central part of said top cover layer into a first recessed groove pattern without any clearance;

then, lowering a first pair of said other upper die elements on opposite sides of said first central upper die elements towards a first pair of said other projected portions of said lower die which are disposed on opposite sides of said first central projected portion, such as to sandwich each of said first pair of upper die elements between said first central projected portion of said lower die and one of said first pair of other projected portions, respectively, thereby pressing a corresponding area of said top cover layer against said lower die working surface;

lowering a second pair of said other upper die elements, likewise, towards a second pair of said other projected portions of said lower die, such as to sandwich each of said second pair of upper die elements between one of said first pair of said other projected portions and a corresponding one of said second pair of said other projected portions, thereby pressing a corresponding area of said top cover layer against said lower die working surface;

making the same lowering operations for other pairs of said upper die elements, in sequence, with respect to other pairs of said other projected portions of said lower die, in such a manner that they are lowered one pair after another pair in an outward direction from and symmetrically relative to said central line of said lower die, so that the whole top cover layer is neatly stretched on said working surface of said lower die in conformity with and in a close contact with said plural projected portions;

thereafter, drawing and securing the thus-stretched top cover layer to said lower die by use of an air suction device communicating with said lower die;

then, raising all said plurality of upper die elements thus lowered, from said lower die;

placing said foam wadding and said wadding cover, in this order, upon said top cover layer secured on said lower die;

lowering and pressing a pressure plate against all said top cover layer, foam wadding and wadding cover on said lower die, so as to fix them all together integrally to produce the trim cover assembly,

whereby a clear-cut distinctive pattern of recessed grooves are created in a surface of said trim cover assembly.

5,336,353

PROCESS FOR THE PRODUCTION OF A MULTILAYER PRINTED CIRCUIT BOARD

Jiri Masik, Nantes, France, assignor to Polyclad Europe AB, Perstorp, Sweden

Filed Jan. 11, 1993, Ser. No. 946,429
Int. Cl.[5] B32B *31/00, 31/28;* **H01L** *21/306*
U.S. Cl. 156—273.7 **6 Claims**

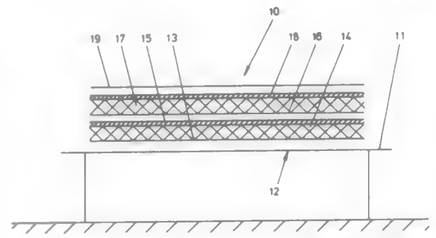
1. Process for the production of a multilayer printed circuit board composed of a plurality of inner layers, each one consisting of an insulating base of thin laminate of reinforcement material impregnated with thermosetting resin, said laminate being provided with a layer of metal or metal alloy on both sides, in which layers a wiring pattern has been formed and prepreg sheets of reinforcement material impregnated with thermosetting resin, whereby the resin is not fully cured, which prepreg sheets are placed between the inner layers, which process comprises centering the position of the inner layers, which are provided with sightmarks, in respect to each other with cameras and fixing them in this position by pressing the prepreg sheets and the inner layers together along two long sides thereof, whereupon energy by means of microwaves is supplied within limited areas along the two long sides, whereby the resin of the prepregs is heated and cured so that all layers are bonded together with each other, in these limited areas, whereupon a package obtained thereby is laminated under heat and pressure together with prepreg sheets and outer layers consisting of an insulating base of thin laminate of reinforcement material impregnated with thermosetting resins, said laminate being provided with a layer of metal or metal alloy on the outer side only and/or foils of metal or metal alloy to a multilayer printed circuit board.

5,336,354

METHOD OF MANUFACTURING A LAMINATED PANEL

Hon Y. Looi, and Phuay E. Teo, both of Block 5043, Ang Mo Kio Ind Park 2, No 01-531, Singapore, Singapore 2056

Filed Oct. 24, 1989, Ser. No. 427,232
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—277 **5 Claims**



1. A method of making a transparent or translucent panel for mounting along one or more edges of a bath or shower tray so as to form an at least partial enclosure for retaining water splashes generated in use of a bath or shower, in which the method comprises the steps of:

laying a first, thin, transparent film on a support surface;

laying a first layer of fiberglass mat on said transparent film;

applying a resin to the exposed surface of the fiberglass mat which permeates the fiberglass layer, the fiberglass mat and the resin being of such a composition as to provide a transparent or translucent composite sheet when set;

applying a non-woven tissue to the exposed face of the resin-impregnated fiberglass mat;

applying a second fiberglass mat to the exposed face of the non-woven tissue;

applying a resin to the exposed face of the second fiberglass mat so as to impregnate the mat;

applying a second, thin, transparent film to said resin-impregnated second fiberglass mat; and

allowing or causing the resin impregnated fiberglass mats to set or cure, so as to form a laminate composed of two layers of resin impregnated fiberglass which are transparent or translucent, with the non-woven tissue arranged therebetween.

5,336,355

METHODS AND APPARATUS FOR CONFINEMENT OF A PLASMA ETCH REGION FOR PRECISION SHAPING OF SURFACES OF SUBSTANCES AND FILMS

Charles B. Zarowin, Rowayton, and L. David Bollinger, Ridgefield, both of Conn., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 13, 1991, Ser. No. 807,535
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **11 Claims**

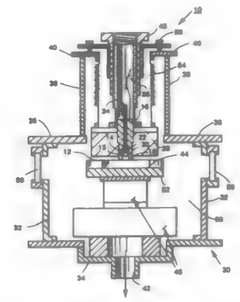
1. A material removal tool for performing confined plasma assisted chemical etching reactions on the surface of a substrate comprising a reactor having:

a housing;

a first dielectric insulator positioned within the housing for defining a plasma chamber cavity for performing a local plasma etching reaction about a localized region of a substrate;

means for supplying the plasma chamber with a flow of reactive gas;

means for providing the reactive gas within the plasma chamber with rf power so as to generate a plasma therein;



a second dielectric insulator positioned within the housing and around the first dielectric insulator, said second dielectric insulator extending outward from the first dielectric insulator such that extinction of any plasma outside the plasma chamber cavity is facilitated, said first dielectric insulator extending a preselected distance beyond said second dielectric insulator proximate the substrate surface such that a region of high plasma and low reactive gas flow conductance circumferentially adjacent to a site where plasma etching is occurring is created;

means for supporting the substrate; and

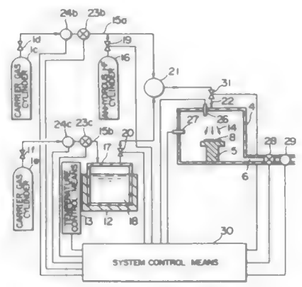
means for adjusting the position of said plasma chamber cavity with respect to said substrate surface.

5,336,356

APPARATUS FOR TREATING THE SURFACE OF A SEMICONDUCTOR SUBSTRATE

Cozy Bao; Toshiaki Ohmori, and Takaaki Fukumoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 914,326
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **4 Claims**



1. An apparatus for treating a surface of a semiconductor substrate comprising:

means for supplying hydrogen fluoride gas;

means for supplying a vapor of a nonaqueous solvent;

a gas mixing device for mixing the hydrogen fluoride gas with the vapor of the nonaqueous solvent to form a hydrogen fluoride solution vapor;

a reaction chamber for containing a semiconductor substrate and to which the hydrogen fluoride solution vapor is supplied from said gas mixing device;

means for supplying a carrier gas for carrying the hydrogen fluoride gas and the vapor of the nonaqueous solvent to said gas mixing device and for carrying the hydrogen fluoride solution vapor from said gas mixing device to said reaction chamber;

measurement means for measuring the pressure, temperature, and concentration of the hydrogen fluoride solution vapor in said reaction chamber;

means for measuring the thickness of a film on a surface of a semiconductor substrate disposed in said reaction chamber;

means for adjustably exhausting gas from said reaction chamber; and

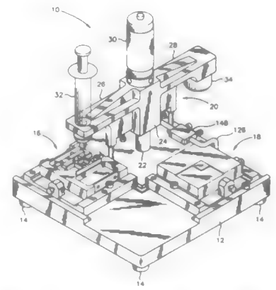
system control means for controlling the quantity of the hydrogen fluoride gas supplied to said gas mixing device, the quantity of the vapor of the nonaqueous solvent supplied to said gas mixing device, the quantity of the carrier gas supplied, and the quantity of gas exhausted by said means for adjustably exhausting in response to pressure, temperature, and concentration measured by said measurement means and the thickness of the film measured by said means for measuring the thickness.

5,336,357

MANUALLY OPERABLE DIE ATTACH APPARATUS

Francis W. Layher, Tucson, Ariz., and Francis A. Sutter, Gardnerville, Nev., assignors to Quantum Materials, Inc., San Diego, Calif.

Filed Mar. 12, 1993, Ser. No. 30,702
Int. Cl.[5] H05K *3/30;* **B23P** *19/00*
U.S. Cl. 156—391 **17 Claims**



1. A manually operable chip assembly apparatus for selectively assembling chips to substrates, comprising:

a support base;

first support means on said base for supporting a substrate preparatory to attachment of a chip thereto;

second support means on said base for supporting a chip preparatory to selection for attachment to a substrate;

a support post mountèd on and extending generally vertically from said support base; and

a manually operable swing arm assembly having a central hub mounted on said support post, for rotation about and reciprocation along said post, said arm assembly having first arm means for placement of an adhesive paste to a surface of a substrate on said first support means, and second arm means having vacuum operated grip means for selecting and placing a chip on said substrate.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,358

APPARATUS FOR MANUFACTURING BEAD ASSEMBLIES FOR TIRES

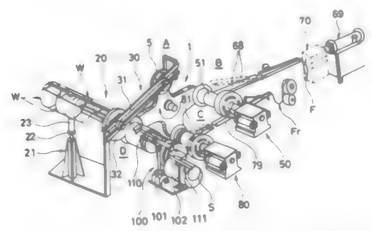
Katuhide Kawaguchi, Numazu; Kouichiro Sugino, Ayase, and Kazuyoshi Yanagisawa, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,704

Claims priority, application Japan, Aug. 22, 1991, 3-210722; Aug. 22, 1991, 3-210726; Aug. 22, 1991, 3-210739; Aug. 22, 1991, 3-210742

Int. Cl.[5] B29D *30/48*

U.S. Cl. 156—422 3 Claims



1. An apparatus for manufacturing bead assemblies, comprising:

a rotary unit having a plurality of rotary arms arranged radially on the circumferential surface of a rotary shaft with each rotary arm having a bead locking drum on a free end portion thereof, each of said plurality of rotary arms being arranged 90° apart from each other, said bead locking drum of each of said plurality of rotary arms including an expansible ring that expands and contracts to lockingly hold a bead core on the bead locking drum;

a loading station having loading means for transferring a bead core to the bead locking drum of a corresponding rotary arm, said loading means including a base plate body slidingly movable along guide rails, said base plate body being provided on its side surface with a plurality of bead core attract-releasing means spaced at predetermined intervals in the circumferential direction thereof, for at least one of attracting and releasing the side surface of a bead core, and push-out means, for pushing out an attracted bead core onto a bead locking drum, each of said bead core attract-releasing means including a magnet for magnetically attracting and releasing the side surface of a bead core;

a building station having a bead filler building means for winding a bead filler around a bead core set on the bead locking drum of a second rotary arm, said bead filler building means being operatively formed so as to engage and disengage with a corresponding bead locking drum having a bead core held thereon, said bead filler building means engaging the corresponding bead locking drum when winding a bead filler around the bead core held on the bead locking drum, said bead filler building means including a bladder drum having a bladder at the outer circumferential portion thereof and a rotary driving shaft engageable with and disengageable from a rotary shaft of said bead locking drum via a clutch mechanism, said bladder drum being provided on an outer circumferential surface thereof with pusher means for moving said bladder towards said locking drum in the direction of said rotary driving shaft so as to push a bead filler into position with a bead core thereby forming a bead core assembly;

a flipper attaching station having a bead core assembly transfer means for transferring a bead core assembly to and from a corresponding bead locking drum, and a flipper building means for attaching a flipper onto a bead core assembly on the bead locking drum of a third rotary arm stopped at the flipper attaching station, said flipper building means including a dual bladder turnup drum, said bead core assembly transfer means having magnet means positioned for attracting and holding a side surface of the bead core assembly thereon to attach a flipper to thereby form a completed bead assembly; and

a recovery station having a recovery means for taking out a completed bead assembly formed on the bead locking drum of a last rotary arm, said recovery means having a vertically disposed rotary shaft for completed products and a vertically disposed rotary shaft for separators, the rotary shafts being spaced by a predetermined distance, said rotary shaft for completed products being provided with a horizontally extending completed product storage arm, said rotary shaft for separators being provided with a horizontally extending separator storage arm, both of the vertically disposed rotary shafts being provided thereabove with a completed bead transfer means for transferring a completed bead assembly from said bead locking drum onto said completed product storage arm, and a separator transfer means for transferring a separator hung on said separator storage arm onto said completed product storage arm, said completed bead assembly transfer means including an attracting unit for attracting a completed bead assembly from a corresponding bead locking drum said attracting unit having magnet means positioned for magnetically attracting a side surface of the bead assembly thereon to take out the completed bead assembly;

said rotary arm unit being formed such that one of the plurality of rotary arms is alignably positioned with at least the loading, building, attaching and recovery stations and in operation each of the rotary arms rotates into position with each of the loading, building, attaching and recovery stations.

5,336,359

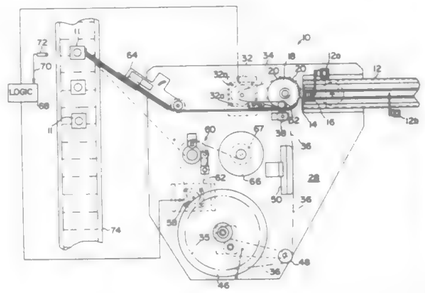
SYSTEM FOR APPLYING LITERATURE TO A WALL OF AN OBJECT

Thomas R. Pituch, Medford, and Thomas M. Basgil, Cinnaminson, both of N.J., assignors to Sancoa International Co., Mt. Laurel, N.J.

Continuation of Ser. No. 648,702, Jan. 31, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 949,100

Int. Cl.[5] B65C *9/00*

U.S. Cl. 156—568 1 Claim



1. A system for applying literature to a wall of an object, said system comprising:

a hopper having an exit for dispensing literature one piece at a time;

a rotatable member having a plurality of literature receiving areas disposed around the periphery thereof, said rotatable member including a finger extending generally radially outwardly from the periphery thereof between each of the literature receiving areas, each literature receiving area for receiving one piece of literature from said exit, said member being positioned such that a portion of the periphery thereof is in facing relationship with said exit of said hopper for allowing one of said literature receiving areas to be aligned with said exit for receiving said one piece of dispensed literature;

drive means drivingly associated with said member for rotating said member in a first direction such that said literature receiving areas pass by said exit one at a time to correspondingly receive a piece of literature from said exit of said hopper, one of said fingers directly engaging and removing a piece of literature from said exit of said hopper as said member is rotated to dispense the piece of literature from said exit of said hopper into a literature receiving area aligned with said exit;

a web having an adhesive coating on one side thereof for receiving and carrying pieces of literature;

guide means for guiding said web past a literature receiving area of said member having a terminal piece of literature positioned thereon such that said adhesive coating on said web is in facing relationship with said terminal piece of literature;

first transfer means for transferring said terminal piece of literature from said literature receiving area having said terminal piece of literature therein into adhering contact with said adhesive coating on said web;

moving means for moving said web past said first transfer means toward an object which is to receive a piece of literature;

second transfer means for transferring a piece of literature from the web to the object,

said drive means and said moving means being synchronized such that as said first transfer means transfers said terminal piece of literature into adhering contact with said adhesive coating on said web, said terminal piece of literature and said web are moving at generally the same velocity,

said drive means further rotating said member in a second direction for agitating a second piece of literature inadvertently dispensed onto said one literature receiving area aligned with said exit from said one literature receiving area so as to remove said second piece of literature such that only a single piece of literature is dispensed onto each literature receiving area.

5,336,360

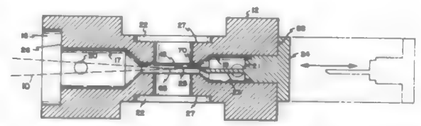
LASER ASSISTED FIBER GROWTH

Paul C. Nordine, Kansas City, Mo., assignor to Clemson University, Clemson, S.C.

Division of Ser. No. 515,665, Apr. 25, 1990, Pat. No. 5,126,200, which is a continuation of Ser. No. 78,316, Jul. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 897,710, Aug. 18, 1986, abandoned. This application Feb. 13, 1992, Ser. No. 835,292

Int. Cl.[5] C30B *25/00*

U.S. Cl. 117—75 27 Claims



1. A method of making pure fibers from a parent material, comprising the steps of:

(a) placing a substrate in a gaseous environment wherein the gaseous environment includes the parent material in a gaseous form; and

(b) heating the substrate with an emitted laser beam such that formation of a continuous, substrate free fiber growth is initiated and maintained, the fiber growth being supplied by accretions of the parent material from the gaseous environment.

5,336,361

METHOD OF MANUFACTURING AN MIS-TYPE SEMICONDUCTOR DEVICE

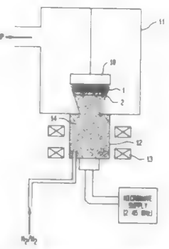
Akiyoshi Tamura, Suita, and Masatoshi Kitagawa, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 674,067, Mar. 21, 1991, abandoned. This application Nov. 2, 1992, Ser. No. 970,991

Claims priority, application Japan, Mar. 23, 1990, 2-73711

Int. Cl.[5] H01L *21/02*

U.S. Cl. 437—42 3 Claims



1. A method of manufacturing an MIS-type semiconductor device, including the steps of:

introducing N_2 gas and H_2 gas into a plasma chamber;

treating at least one surface of a GaAs substrate with an electron cyclotron resonance (ECR) plasma generated from both the N_2 gas and the H_2 gas which was introduced into said plasma chamber, wherein said at least one surface of the GaAs substrate surface is converted to a gallium nitride film as a result of a reaction between said GaAs substrate and said nitrogen during said step of treating said at least one surface of the GaAs substrate.

5,336,362

METHOD FOR PREPARING YTTRIUM 66 BORIDE CRYSTAL FOR SOFT X-RAY MONOCHROMATOR

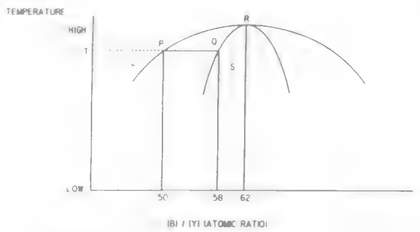
Takaho Tanaka, Tsukuba; Yutaka Kamimura, Tsuchiura; Shigeki Otani, and Yoshio Ishizawa, both of Tsukuba, all of Japan, assignors to National Institute for Research in Inorganic Materials, Tsukuba, Japan

Filed Oct. 19, 1992, Ser. No. 962,871

Claims priority, application Japan, Feb. 29, 1992, 4-078875

Int. Cl.[5] C30B *13/04*

U.S. Cl. 117—42 1 Claim



1. A method for preparing a yttrium 66 boride crystal comprising growing by the floating zone method a YB66 crystal having a composition with an atomic ratio B/Y within a range of from 50 to 75 by use of a YB66 polycrystalline rod, a seed crystal and a YB66 polycrystalline chip sandwiched between said YB66 rod and said seed crystal under conditions such that the molten zone has an atomic ratio B/Y different from said YB66 rod and the growing crystal and an equilibrium is maintained at the growth interface, wherein said YB66 chip has the

VOL 1165 ISS 2 AG 9 1994 UMI

same composition with that of the molten zone and said YB66 crystal is grown by using the molten zone formed by melting said YB66 chip.

5,336,363

LOW TEMPERATURE DRY ETCH OF COPPER

Katsumi Morita, Chiba, Japan, assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Sep. 24, 1993, Ser. No. 126,470
Int. Cl.[5] H01L *21/00, 21/02;* B44C *1/22;* C25F *3/00*
U.S. Cl. 156—625 5 Claims

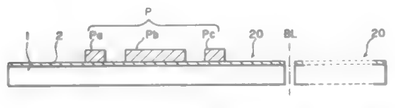
1. A method of etching a copper layer on a substrate in a vacuum etch chamber comprising passing vaporized acetic acid and water into the chamber at a temperature of from about 200° C. and higher.

5,336,364

METHOD OF MANUFACTURING INSULATION SUBSTRATE FOR SEMICONDUCTOR DEVICE AND METAL PATTERN PLATE USED THEREFOR

Shinobu Takahama, and Kunitaka Kamishima, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 734,775, Jul. 23, 1991, Pat. No. 5,271,993.
This application Sep. 9, 1993, Ser. No. 118,260
Claims priority, application Japan, Aug. 3, 1990, 2-207271
Int. Cl.[5] B44C *1/22;* C23F *1/00*
U.S. Cl. 156—630 16 Claims



1. A method of manufacturing an insulation substrate used in a semiconductor device, wherein said insulation substrate comprises a metal plate, an insulation layer provided on said metal plate and a conductive circuit pattern formed on said insulation layer, said method comprising the steps of:
(a) obtaining a metal pattern plate comprising:
a plurality of body portions having a first thickness and having shapes corresponding to respective portions of said circuit pattern; and
linkage portions having a second thickness for linking said plurality of body portions to each other,
wherein said second thickness is smaller than said first thickness;
(b) forming said insulation layer on said metal plate;
(c) fixing said metal pattern plate on said insulation layer; and
(d) removing said linkage portions from said metal pattern plate on said insulation layer to thereby obtain said insulation substrate.

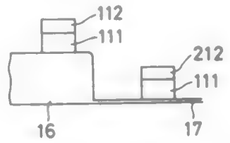
5,336,365

POLYSILICON ETCHING METHOD

Hisashi Goda; Yasutoshi Asahina, both of Tokyo; Masayuki Hashimoto, and Naoki Oka, both of Tateyama, all of Japan, assignors to Nippon Steel Semiconductor Corporation, Japan

Filed Feb. 25, 1993, Ser. No. 22,634
Claims priority, application Japan, Feb. 27, 1992, 4-041567
Int. Cl.[5] H01L *21/302*
U.S. Cl. 156—643 6 Claims

1. A plasma etching method of etching a polysilicon film specimen, comprising:
a first process step in which a mixed gas comprising HBr and He is used as a process gas for etching, said HBr occupying 20–50 vol. % of said mixed gas, and a first bias voltage is applied to said polysilicon film specimen; and
a second process step in which a mixed gas comprising HBr and He is used as the process gas for etching, said HBr occupying 20–50 vol. % of said mixed gas, and a second



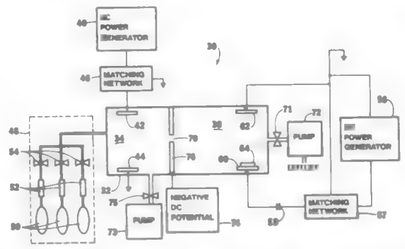
bias voltage lower than said first bias voltage is applied to said polysilicon film specimen.

5,336,366

NEW DRY ETCH TECHNIQUE

John L. Cain, Schertz, and Chang-Ou Lee, San Antonio, both of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Apr. 5, 1993, Ser. No. 42,929
Int. Cl.[5] H01L *21/306;* B44C *1/22*
U.S. Cl. 156—643 21 Claims



17. A method of etching a wafer in an etching device including a first container defining a first chamber and a second container defining a second chamber, the method comprising:
introducing gases into the first chamber;
forming chemically reactive species in the first chamber from the gases using a plasma discharge;
transferring gas including some of the chemically reactive species from the first chamber to the second chamber;
maintaining different gas pressures in the first and second chambers;
forming ions in the second chamber; and
etching the wafer in the second container with the transferred gas by supplying a DC offset on to the wafer so that the ions are attracted to the wafer and the wafer is etched anisotropically.

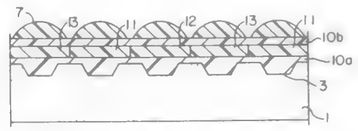
5,336,367

SOLID-STATE IMAGING DEVICE AND METHOD OF MANUFACTURING THE SAME

Toru Nomura, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Division of Ser. No. 891,827, Jun. 1, 1992. This application May 24, 1993, Ser. No. 65,770
Claims priority, application Japan, Oct. 31, 1991, 3-285912
Int. Cl.[5] H01L *31/00*
U.S. Cl. 156—655 4 Claims

1. A method of manufacturing a solid-state imaging device comprising:
a step of forming a colored transparent material layer above a solid-state imaging device substrate,
a step of forming an etching resistant material layer selectively on the colored transparent material layer,
a step of forming a color filter by etching the colored material layer using the etching resistant material layer as a mask, and



a step of forming a microlens on the etching resistant material layer.

5,336,368

METHOD FOR DEPOSITING CONDUCTIVE METAL TRACES ON DIAMOND

Charles D. Iacovangelo, Schenectady; Elihu C. Jerabek, Glenmont, both of N.Y., and Bradley E. Williams, Worthington, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 8, 1993, Ser. No. 87,300
Int. Cl.[5] B44C *1/22;* C23F *1/00*
U.S. Cl. 156—656 15 Claims

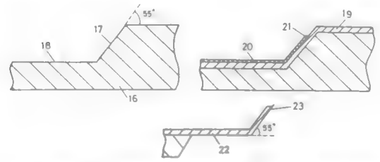
1. A method for depositing conductive metal traces on a diamond surface which comprises:
depositing an undercoat layer of a non-carbide-forming metal on at least a portion of said diamond surface,
patterning said undercoat layer with a first pattern to expose said diamond surface in the trace-receiving areas thereof,
depositing a bond layer of conductive carbide-forming metal on said undercoat layer and the exposed diamond surface, and
removing said undercoat layer and the portion of said top layer deposited thereon.

5,336,369

METHOD OF MAKING A CANTILEVER STYLUS FOR AN ATOMIC FORCE MICROSCOPE

Hiroyuki Kado, Katano, and Takao Tohda, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 699,951, May 14, 1991, Pat. No. 5,239,863.
This application May 27, 1993, Ser. No. 67,612
Claims priority, application Japan, May 16, 1990, 2-127362
Int. Cl.[5] H05K *3/06;* G01R *3/00;* C23F *1/02;* H01L *21/465*
U.S. Cl. 156—659.1 4 Claims



1. A method of making a cantilever stylus, comprising:
forming a film on a surface of a substrate, the film comprising a stylus material different from the material of the substrate;
forming a resist thin film of a material different from the stylus material on a surface of the stylus material so that the resist thin film has a tip;
etching the stylus material with an isotropic etching technique to a depth of etching greater than the radius of curvature of the tip of the resist thin film such that the stylus material, having two principal surfaces, has a tip formed on one of the principal surfaces with a radius of curvature less than 0.1 μm which protrudes beyond a tip of the other principal surface; and
removing at least the resist thin film and the substrate at the tips of the principal surfaces of the stylus material.

5,336,370

PRE-TREATMENT FOR PLATING TECHNIQUE

Makarand H. Chipalkatti, 6 Fiske Rd., Lexington, Mass. 02173, and Elizabeth A. Trickett, 20 Francine Rd., Framingham, Mass. 01701

Filed Dec. 9, 1993, Ser. No. 165,051
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—668 9 Claims

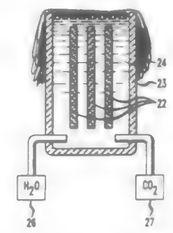
1. A method of preparing an electrically insulating polymer substrate for the reception of an electrically conductive pattern, said substrate having a glass transition temperature or a softening temperature, comprising the steps of:
a) performing a first cleaning of said substrate;
b) heating said substrate in a nitrogen atmosphere for about 3 hours at a temperature of about 20° C. below said glass transition temperature or said softening temperature of said substrate;
c) cooling said substrate to room temperature;
d) roughening said substrate; and
e) performing a second cleaning and drying of said substrate.

5,336,371

SEMICONDUCTOR WAFER CLEANING AND RINSING TECHNIQUES USING RE-IONIZED WATER AND TANK OVERFLOW

Bryan C. Chung, Hampton, N.J.; Gerald N. DiBello, Boyertown, Pa.; Charles W. Pearce, Emmaus, Pa., and Kevin P. Yanders, Allentown, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 18, 1993, Ser. No. 34,938
Int. Cl.[5] H01L *21/00, 21/02;* B44C *1/22;* C03C *15/00*
U.S. Cl. 156—659.1 12 Claims



1. A method for removing a photoresist layer from a semiconductor wafer having aluminum-containing structures thereon comprising the steps of:
exposing the photoresist layer to a photoresist stripper to remove the photoresist layer;
rinsing the photoresist stripper from the semiconductor wafer comprising the step of inserting the wafer in a vessel filled with water;
pumping carbon dioxide into the vessel and simultaneously pumping water into the vessel to cause the water to overflow the vessel;
during the rinsing step, the water completely filling the vessel and overflowing at a rate of at least fifty percent of the volume of the vessel each minute.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,372

PROCESS FOR DEINKING WASTEPAPER UTILIZING ORGANOCLAYS FORMED IN SITU

Charles A. Cody, Robbinsville, and Edward D. Magauran, Mt. Holly, both of N.J., assignors to Rheox, Inc., Hightstown, N.J.

Continuation-in-part of Ser. No. 697,448, May 9, 1991, Pat. No. 5,151,155. This application Sep. 14, 1992, Ser. No. 944,624
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[5] D21F *5/02*
U.S. Cl. 162—5 38 Claims

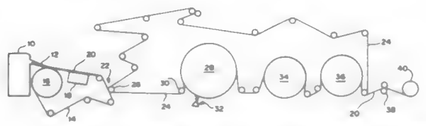
1. A process for deinking wastepaper, which comprises:
(a) forming an organoclay deinking agent in a waste paper containing aqueous system by reacting one or more cation exchangeable clays having a cation exchange capacity of at least 5 millequivalants per 100 grams of clay with one or more ammonium slats;
(b) contacting ink from wastepaper in the aqueous system with an amount of the organoclay deinking agent effective to deink the wastepaper; and
(c) recovering deinked paper pulp from the aqueous system.

5,336,373

METHOD FOR MAKING A STRONG, BULKY, ABSORBENT PAPER SHEET USING RESTRAINED CAN DRYING

Thomas F. Scattolino, Milmont Park, Pa.; Howard J. Stern, Vineland, N.J.; John G. Trumbull, Lima, Pa., and Richard I. Wolkowicz, Turnersville, N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Dec. 29, 1992, Ser. No. 997,829
Int. Cl.[5] D21F *11/02*
U.S. Cl. 162—116 24 Claims



1. A process for making a strong, bulky, absorbent paper sheet having a basis weight between about 7 to about 70 pounds per ream comprising the steps of:
(a) forming a web on a forming fabric with a furnish;
(b) dewatering the web non-compressively such that the web is at least 8% dry;
(c) transferring the web from the forming fabric to an imprinting fabric by means of a vacuum pick-up;
(d) forming a pattern of densifications in the web;
(e) can drying the web on the surface of at least one can dryer to at least 60% dry such that only one side of the web is placed in contact against the surface of the can dryer during said can drying step;
(f) restraining the web between the imprinting fabric and the surface of at least one car dryer during said can drying step until the web is at least 60% dry; and
(g) maintaining the web in registration with the imprinting fabric during steps d, e, and f such that only a single pattern of densifications is formed in the web.

5,336,374

COMPOSITE COMPRISING PAPER AND ELECTRO-CONDUCTING POLYMERS AND ITS PRODUCTION PROCESS

Osamu Oka, Shizuoka, and Katsumi Yoshino, 166-3, Obu-cho, Kishiwada-shi, Osaka, both of Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo and Katsumi Yoshino, Osaka, both of Japan

Continuation of Ser. No. 996,496, Dec. 30, 1992, abandoned, which is a continuation of Ser. No. 696,850, May 7, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 183,773
Claims priority, application Japan, May 10, 1990, 2-118778; Feb. 7, 1991, 3-036570
Int. Cl.[5] D21H *27/00*
U.S. Cl. 162—138 3 Claims

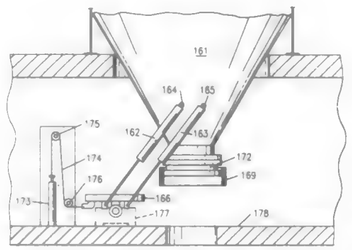
1. A process for producing a composite comprising a paper and a conjugated electroconducting polymer, said conjugated electroconducting polymer existing between fibers or in close contact with fibers of the paper, which comprises subjecting a conjugated compound to electropolymerization in the presence of a paper to form a composite, wherein said conjugated compound is at least one member selected from the group consisting of aniline, aniline derivatives and thiophene.

5,336,375

DELAYED COKER DRUMHEAD HANDLING APPARATUS

Harvey A. Wallskog, Irvine; Frank L. Landon, and William R. Ruble, both of Anaheim, all of Calif., assignors to Fluor Corporation, Irvine, Calif.

Continuation of Ser. No. 921,412, Jul. 23, 1992, abandoned, which is a continuation of Ser. No. 681,098, Apr. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 431,024, Nov. 2, 1989, Pat. No. 5,048,876. This application Dec. 15, 1993, Ser. No. 168,063
Int. Cl.[5] C10B *1/04*
U.S. Cl. 202—96 4 Claims



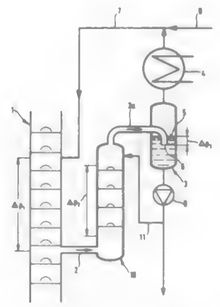
1. In a petroleum coke-producing vessel, including a generally cylindrical drum body, a drum outlet, and a removable drumhead at the drum outlet, the improvement comprising a trammel pivot drumhead handling apparatus comprising a plurality of pivoting hydraulic cylinders connected to said drumhead and pivotally connected to said drum body at an upper pivot, and an offset hydraulic cylinder connected to said drumhead, said pivoting cylinders positioned to lower said drumhead from a closed to an open position, and said offset cylinder positioned to move said drumhead laterally between open and closed positions.

5,336,376

DISTILLATION COLUMN WITH VAPOROUS SIDESTREAM REMOVAL

Siegfried Taurat; Heinrich Steude, both of Leverkusen; Ludwig Deibele, Köln, and Heinz-Jürgen Alpers, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 27, 1993, Ser. No. 54,116
Claims priority, application Fed. Rep. of Germany, May 4, 1992, 4214738
Int. Cl.[5] B01D *3/42*
U.S. Cl. 202—182 3 Claims



1. A distillation column comprising: a column wall; a dip tank having an upper end and a lower end; means extending from the column wall at a first vertical level and in communication with the column for removing a sidestream and comprising a vapor pipe extending into the dip tank between the upper and lower ends and having a discharge outlet in the dip tank; and means for maintaining a liquid level in the dip tank above the discharge outlet of the vapor pipe comprising a condenser connected to the upper end of the dip tank, a discharge pump connected to the lower end of the dip tank and an inert gas pipe disposed at an upper end of the condenser and connected to the column wall for communication with the column at a second vertical level which is above the first vertical level.

5,336,377

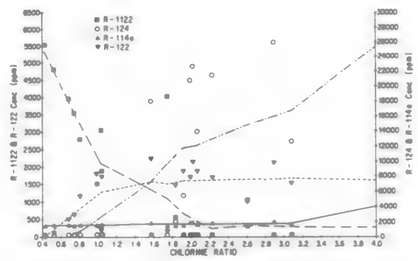
PROCESS FOR REMOVING 2-CHLORO-1,1-DIFLUOROETHYLENE FROM 1,1,1,2-TETRAFLUOROETHANE AND CO-PRODUCING 2-CHLORO-1,1,1,2-TETRAFLUOROETHANE

Stephen F. Yates, Rolling Meadows, Ill.; Daniel F. Harnish, Orchard Park, and Addison M. Smith, Amherst, both of N.Y., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 18, 1991, Ser. No. 809,808
Int. Cl.[5] B01D *3/34*; C07C *17/00*
U.S. Cl. 203—29 8 Claims

1. A process for removing 2-chloro-1,1-difluoroethylene (R-1122) and unsaturated by-product compounds from 1,1,1,2,-tetrafluoroethane (R-134a) comprising
(a) contacting a mixture consisting essentially of R-134a and up to about 10,000 wt. ppm R-1122 with about 1–4 mols of chlorine for each mol of R-1122 in the presence of ultraviolet light having wavelengths between about 300 and 400 nm providing an exposure greater than zero and up to about 1000 watts-hour/kg of said mixture, thereby reducing the concentration of R-1122 to less than 35 wt. ppm by converting said R-1122 to 1,2,2-trichloro-1,-difluoroethane (R-122); and
(b) separating the R-122 formed in (a) from R-134a.

6. A process for producing 2-chloro-1,1,2,-tetrafluoroethane (R-124) from 1,1,1,2-tetrafluoroethane (R-134a) comprising
(a) contacting a mixture consisting essentially of R-134a with greater than zero up to about 0.24 mols of chlorine for each mol of said R-134a to produce a desired amount of R-124 in the presence of ultraviolet light having wavelengths between about 300 and 400 nm providing an exposure greater than zero and up to about 1000 watts-hour/kg of said R-134a to produce R-124 by photochlorination;
(b) separating the R-124 produced in (a) from R-134a.

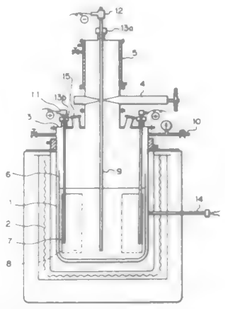


5,336,378

METHOD AND APPARATUS FOR PRODUCING A HIGH-PURITY TITANIUM

Eiji Nishimura; Masami Kuroki, both of Saitama; Naoyuki Kikutake, Tokyo, and Yuuichiro Shindou, Saitama, all of Japan, assignors to Japan Energy Corporation, Tokyo, Japan

Continuation of Ser. No. 684,484, Apr. 12, 1991, abandoned, which is a continuation of Ser. No. 475,491, Feb. 6, 1990, abandoned. This application Sep. 9, 1992, Ser. No. 942,347
Claims priority, application Japan, Feb. 15, 1989, 1-33848; Dec. 6, 1989, 1-315196
Int. Cl.[5] C25C *3/28*
U.S. Cl. 204—64 T 16 Claims



15. A fused-salt, electro-refined titanium, having a purity of at least 5N, except for gaseous impurities, and having an oxygen content of less than 100 ppm, produced by the steps of:
forming a fused salt in an electrolytic apparatus comprising members which are brought into contact with the fused salt and which consist of a high purity nickel having a purity of at least 3N, and a cover which comprises in its inner surface a high-purity nickel having a purity of at least 3N;
preparing a raw material of titanium consisting of metallic material;
connecting the raw material with an anode; and
electrolyzing the raw material in the fused salt at a temperature higher than 658° C., wherein the raw material of titanium has a purity of from 99.9 wt % to 99.99 wt %.

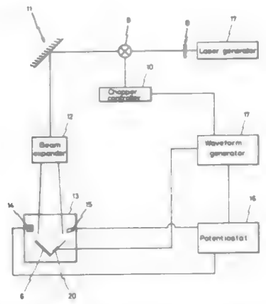
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,379

PHOTOELECTRO-CHEMICAL ETCHING METHOD AND APPARATUS OF COMPOUND SEMICONDUCTOR

Ji H. Chung; Jai K. Wee; Doo H. Lee, and Sang G. Byeon, all of Seoul, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-Do, Rep. of Korea

Filed Oct. 20, 1992, Ser. No. 963,373
Int. Cl.[5] C25F *3/12, 7/00*
U.S. Cl. 204—129.3 **8 Claims**



5. A method of electro-chemically etching a compound semiconductor which comprises:

generating a laser beam as a light source for electro-chemically etching the compound semiconductor;

generating a waveform having a period;

cutting off the laser beam emitted from the laser generator in accordance with the waveform period;

chopping the laser beam to break off laser beam emitted through said shutter;

expanding the chopped laser beam and directing the expanded laser beam onto a primary reflection mirror, the primary reflection mirror comprising a high reflection mirror and a glass plane on which said compound semiconductor is positioned, said reflection mirror and said glass being disposed adjacent to one another at right angles, the expanded laser beam from the expanding means being directed at the primary reflection means and forming an interference etching pattern on the surface of the compound semiconductor;

applying a voltage across the compound semiconductor corresponding to the waveform received from the waveform generator with a potentiostat, the potentiostat being connected to said waveform generating means and across said compound semiconductor;

whereby said semiconductor device is etched in accordance with the waveform generated by said waveform generating means.

5,336,380

METHOD OF MONITORING MAJOR CONSTITUENTS IN PLATING BATHS

Nguyet H. Phan, Los Angeles; Vilambi N. R. K. Reddy, Lakewood; Frank A. Ludwig, Rancho Palos Verdes, and Bruce M. Eliash, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 25, 1993, Ser. No. 37,158
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.1 **15 Claims**

1. A method of monitoring the concentration of major constituents present in a plating bath solution, said method comprising the steps of:

(a) applying a selected dc potential to a working electrode which has been subjected to pretreatment and is positioned within said solution wherein said dc potential has an amplitude range of about 2.4 to −1.5 volts and a sweep rate of about 20 to 1,000 mv/sec;

(b) superimposing a constant ac signal on said dc potential applied to said working electrode, said ac signal having an amplitude of about 20 to 30 mv rms and a frequency of about 50 to 2,000 hertz and producing an ac current;

(c) varying said dc potential at a chosen sweep rate over a chosen range;

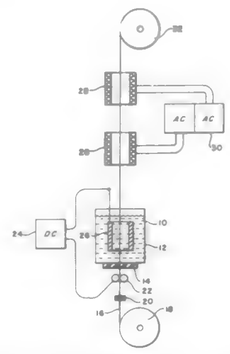
(d) measuring said ac current at one or more phase angles with respect to said constant ac signal between said working electrode and a counter electrode positioned within said solution as said dc potential is varied over said range, said measurement of ac current in relation to varying dc potential being expressed as an ac current spectra wherein each parameter comprising said amplitude of said ac signal, said frequency of said ac signal, said sweep rate of said dc potential, said range of said dc potential, said one or more phase angles, and said pretreatment of said working electrode is varied in combination, to determine the specific value of each said parameter which, when taken in combination with the remaining said parameters, provides maximum spectra detail in said ac current spectra to determine and monitor said major constituents in said solution which affect said plating deposit properties, wherein said major constituents constitute in excess of 5 percent of the total volume of said plating bath solution.

5,336,381

ELECTROPHORESIS PROCESS FOR PREPARATION OF CERAMIC FIBERS

William J. Dalzell, Jr., Jupiter; Robert J. Wright, Tequesta, and Jarrett L. Spence, Jupiter, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 7, 1991, Ser. No. 637,850
Int. Cl.[5] C25D *13/00*
U.S. Cl. 204—180.2 **14 Claims**



1. A process for the preparation of a ceramic fiber, said process comprising the steps of:

a) providing a sol comprising metal hydrate particles selected from the group consisting of aluminum hydrate, yttrium hydrate, and mixtures thereof, said particles being less than 150 Angstroms in size, said sol also comprising an alcohol such that the molar ratio of said alcohol to said metal hydrate is from about 50 to about 70;

b) electrophoretically depositing particles from said sol onto an electrically conductive fiber core by applying a direct current potential between said fiber core and an anode, said potential being from about 0.1 to about 100 volts, for sufficient time to obtain a uniform deposit of metal hydrate on said fiber core, said deposit being of greater thickness than the diameter of said fiber core, while providing means for removal of hydrogen gas generated by said electrophoresis;

c) removing the metal hydrate coated fiber core from said sol;

d) heating the metal hydrate coated fiber core to dry the coating and to transform said metal hydrate to the corresponding metal oxide; and

e) recovering the ceramic fiber.

5,336,382

PROCESS FOR THE ELECTROPHORETIC DEPOSITION OF METAL POWDER FOR THE RECOATING OF A PART BY DIFFUSION BRAZING, AND ELECTROPHORESIS BATH FOR USE THEREIN

Marie-Josephe A. Bodin, Chatellerault, France, assignor to Societe Sochata, Velizy Villacoublay, France

Filed Oct. 7, 1992, Ser. No. 957,166
Claims priority, application France, Oct. 9, 1991, 91 12409
Int. Cl.[5] C25D *13/00*
U.S. Cl. 204—181.6 **1 Claim**

1. Process for electrophoretically depositing metal powder upon a superalloy part to obtain a deposit for producing a coating of the superalloy part by a diffusion brazing heat treatment, comprising the steps of:

providing an electrophoresis bath comprising an aqueous solution of from 7.5 to 17.5 grams per liter of agar-agar and from 1.75 to 2.25 kg per liter of metal particles obtained from a mixture of two powders for the diffusion brazing heat treatment;

providing a cathode position and an anode position in the bath;

placing the superalloy part in said bath at the anode position;

carrying out electrophoresis in said bath in which there is maintained;

a cathode and anode as electrodes;

an inter-electrode distance of from 10 to 80 mm,

a continuous electric field of from 5 to 30 V/cm^2,

a current density of from 0.2 to 2 A/dm^2, and

a temperature of about 20° C., to obtain a deposit of said metal particles on said part having a thickness between 0.1 and 2 mm;

and subsequently air drying said part with said deposit thereon.

5,336,383

PULSED FIELD GEL ELECTROPHORESIS OF LARGE DNA

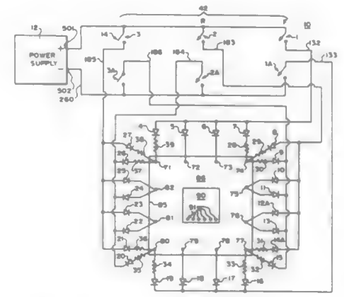
Robert W. Allington, Lincoln, Nebr., assignor to Isco, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 348,679, May 5, 1989, Pat. No. 5,135,628. This application Mar. 15, 1990, Ser. No. 495,899
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—182.8 **11 Claims**

1. A method of pulsed field electrophoresis of substances comprising the steps of:

changing the time average direction of an electric field within an electrophoresis separating unit at a first frequency; and

changing the electric field in another manner at a second frequency at least twice as high as the said first frequency; the step of changing the electric field in the said other



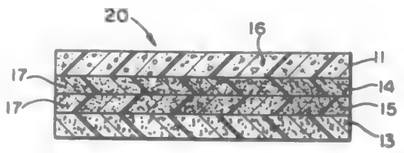
manner including the step of changing the magnitude of the electric field.

5,336,384

MEMBRANE-ELECTRODE STRUCTURE FOR ELECTROCHEMICAL CELLS

Yu-Min Tsou; James W. McMichael, both of Lake Jackson, Tex., and Richard N. Beaver, deceased, late of Angleton, Tex. by Wanda G. Beaver, legal representative , assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 792,325, Nov. 14, 1991, abandoned.
This application Jun. 25, 1993, Ser. No. 82,810
Int. Cl.[5] C25B *11/20*
U.S. Cl. 204—252 **25 Claims**



1. A membrane-electrode structure for use in electrochemical cells which comprises an ion exchange membrane with an electrode layer, and intermediate layers between said membrane and said electrode layer, said intermediate layers comprising at least two layers or zones of inorganic solid particles and an organic binder polymer having a melting point of about 230° F. to 540° F., a first intermediate layer or zone being adjacent to said membrane and comprising more than 50% by weight of inorganic particles, a second intermediate layer or zone being adjacent to said first intermediate layer and the electrode layer and comprising 50% by weight or less of inorganic particles.

23. In an electrochemical cell having an electrode-membrane structure, wherein the improvement comprises said membrane-electrode structure consisting of the structure of claim 1.

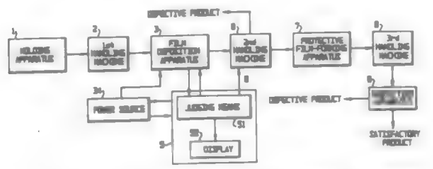
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,385

SPUTTERING APPARATUS

Yuichiro Shimose, Tokyo, and Jiro Ikeda, Fujieda, both of Japan, assignors to Tokuda Seisakusho Co, Ltd. and Sony Corporation, both of Japan

Continuation of Ser. No. 767,400, Sep. 30, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 3,860
Claims priority, application Japan, Jan. 30, 1991, 3-029431
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.03 12 Claims



1. Continuous successive substrate sputtering apparatus comprising:

a vacuum film deposition chamber for depositing a thin film on the surface of each one of successive substrates to be processed at a reduced pressure;

a target of film-deposition material, being incorporated in said film deposition chamber at a position opposing said substrate to be processed;

a power source for supplying discharge power between said substrate to be processed and said target;

means for determining a set of conditions including a predetermined pressure value, a total discharge power value, and a discharge time period, as are necessary for depositing a normal thin film on the surface of said substrates to be processed;

means for detecting a set of results of said predetermined pressure value and said total discharge power value in said discharge time period which corresponds to each one of said successive substrates;

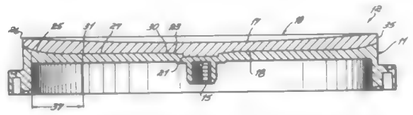
means for comparing the set of results corresponding to each one of said successive substrates transferred from said deposition chamber as detected by said means for detecting; and means for i) determining if said thin film-deposition process has been satisfactorily performed on each one of said successive substrates, and for ii) producing a removal signal to cause removal of an individual one of said substrates as a defective product before further processing, on the basis of comparison results from said comparing means.

5,336,386

TARGET FOR CATHODE SPUTTERING

Daniel R. Marx, West Caldwell, and Steven Hurwitt, Park Ridge, both of N.J., assignors to Materials Research Corporation, Orangeburg, N.Y.

Continuation of Ser. No. 647,288, Jan. 28, 1991, abandoned. This application Oct. 28, 1992, Ser. No. 967,458
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.12 4 Claims



1. A sputter target assembly for a cathode comprising:

a backplate having upper and lower surfaces, the upper surface having a mounting surface configuration including a central recess surrounded by an outer annular substantially concave region with a radius of curvature R_1;

means for securing the backplate to the cathode, said means depending from the lower surface of the backplate; and

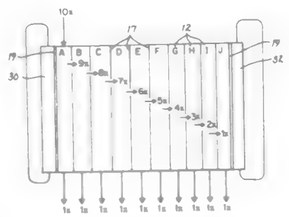
a target adapted to be mounted to the backplate, the target having a substantially continuously concave top surface, said top surface having a radius of curvature R_2, said target further having a bottom surface complementarily configured to conform to said backplate mounting surface configuration and including a downwardly directed hub surrounded by an outer annular substantially convex region, the hub and the convex region sized and shaped to fit in the recess and the outer annular substantially concave region of the backplate, respectively, wherein R_1 is less than R_2 so as to define target portions of greater cross-sectional thickness in areas of maximum target erosion to promote maximum target utilization.

5,336,387

ELECTRICAL SEPARATOR APPARATUS AND METHOD OF COUNTERFLOW GRADIENT FOCUSING

Ned B. Egen; Garland E. Twitty, and David W. Sammons, all of Tucson, Ariz., assignors to BioSeparations, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 580,959, Sep. 11, 1990, Pat. No. 5,173,164. This application Nov. 16, 1992, Ser. No. 977,279
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—301 26 Claims



1. Apparatus for electrophoretic separation of charged species in a sample solution, comprising:

at least one of a plurality of planar enclosures defining a longitudinal interior separation chamber therein;

at least one sample inlet port and at least one sample outlet port in fluid flow communication with said separation chamber;

thermal cooling means for cooling the sample solution within said separation chamber, said thermal cooling means being provided to expose the sample solution to a cooling surface area;

a plurality of ion non-selective permeable membranes disposed adjacent to each planar aspect of said planar enclosure, adjacent to said separation chamber and oriented generally parallel to the direction of flow of the sample solution within said separation chamber;

means for applying an electrical potential to the sample solution within said separation chamber;

first pump means for pumping the sample solution at an input flow rate into said inlet port of a first one of said plurality of planar enclosures; and

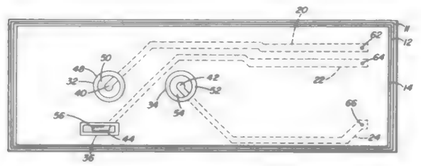
second pump means for withdrawing separated sample solution at an withdrawal flow rate from said outlet port of each of said plurality of planar enclosures.

5,336,388

ANALYTE AND PH MEASURING SENSOR ASSEMBLY AND METHOD

Matthew J. Leader, Laguna Niguel, Calif., and Kee Van Sin, White Bear Lake, Minn., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 26, 1991, Ser. No. 814,383
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—406 20 Claims



1. A combined electrochemical sensor assembly for measuring coupled analytes, comprising:

a) means for holding the electrodes in space apart, insulated relationship and in electrical conducting contact with electrical circuitry for each electrode, where the means is a nonconducting substrate;

b) a first electrode mounted on the substrate for electrical connection to an external lead from the substrate and positioned to contact sample fluid, wherein the electrode has: a conductor electrically connected to electrical circuitry, an ion selective membrane selective for permeation by a first analyte of the coupled analytes and electrolyte that maximizes the electronic response of the first analyte and that minimizes the electric response of the second analyte of the coupled analytes in converting the ionic potentials to electronic potentials and;

c) a second electrode mounted on the substrate for electrical connection to an external lead from the substrate and in spaced apart relation to the first electrode and positioned to contact sample fluid, wherein the second electrode has; a conductor electrically connected to electrical circuitry, an ion selective membrane, and an electrolyte to maximize the electronic response of the other analyte in the coupled multi-analytes while minimizing the electronic response of the first analyte in the conversion of the ionic potentials of the multi-analytes to electronic potentials, wherein both electrodes give some electronic response for both analytes, wherein the membranes for each electrode have a first and second side and the membrane is positioned in the electrode for one side to be in contact with the electrolyte of that electrode and the other side available for exposure to analyte-containing fluids and calibration fluids for analysis and the membrane holds the electrolyte in contact with the electrodes and provides for entry of the analyte into the electrolyte;

d) reference electrode mounted on the substrate for electrical connection to an external lead from the substrate and in spaced apart relation to the first and second electrodes and positioned to contact the sample fluid;

e) electric circuitry on the substrate to electrically connect the electrodes to an external lead from the substrate for conveyance of electrical potentials and for electrical connection of the reference electrode to the first and second electrodes;

f) fluid circuit in liquid contact with the first, second and reference electrodes and insulated from the conductive pathways from the electrodes and from any external leads from the substrate;

g) analyzing means electrically connected to the external leads of the substrate to receive the electrical potentials from the electrodes and to calculate the numerical values from simultaneous equations as follows:

Equation 1
$$\text{delta } mVA1 = -SE1A1 \times \text{delta pH} - SE1A2 \times \log A2f/A2i$$

Equation 2
$$\text{delta } mVA2 = -SE1A2 \times \text{delta pH} - SE2A2 \times \log A2f/A2i$$

Equation 3
$$A2f = A2i \times 10^{n}$$

where

Equation 4
$$n = \frac{[SE2A1 \times \text{delta } mVA1 - SE1A1 \text{ delta } mVA2]}{[-SE2A1 \times SE1A2 + SE1A1 \times SE2A2]}$$

$$A1f = \text{delta } mVA1 + \frac{SE1A2 \times \log A2f/A2i}{-SE1A1} + A1i$$

where:

delta mV=change in millivolts

A1=first analyte

A2=second analyte

E1=electrode constructed to favor the first analyte

E2=electrode constructed to favor the second analyte

SE1A1=sensitivity of the electrode favoring the first analyte for the first analyte

SE1A2=sensitivity of the electrode favoring the first analyte for the second analyte

SE2A1=sensitivity of the electrode favoring the second analyte for the first analyte

SE2A2=sensitivity of the electrode favoring the second analyte for the second analyte

f=final measurement

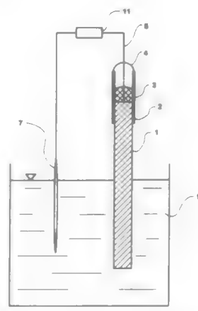
i=initial measurement.

5,336,389

LONG LASTING ALKALI AND ALKALINE EARTH METAL SENSOR

Alain Dubreuil, Hull, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Mines and Resources, Ottawa, Canada

Filed Jun. 8, 1992, Ser. No. 895,044
Int. Cl.[5] G01N *27/411*
U.S. Cl. 204—422 9 Claims



1. A sensor for determining the alkali and/or alkaline earth metal content of molten aluminum comprising: a molten aluminum working electrode at one end of a solid electrolyte rod, made of either β- or β''-alumina; a reference electrode in contact with the other end of the solid electrolyte rod, the reference electrode being formed by a calibrated quantity of sodium-gallium or sodium-indium alloy; means for connecting the working electrode and the reference electrode and means for determining the emf generated therebetween; said sensor being arranged such that, during operation of the sensor, the sodium-gallium or sodium-indium alloy of the reference electrode is maintained as a mixture of a liquid phase of gallium or

VOL 1165 ISS 2 AG 9 1994 UMI

indium and a solid phase of an intermetallic compound of sodium and gallium or sodium and indium.

5,336,390

ELECTROCHEMICAL GAS SENSOR WITH DISK-SHAPED ELECTRODES, WHICH ARE ALSO ELECTRICAL CONTACT LEADS

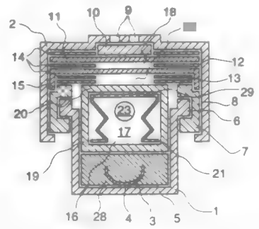
Hans-Jürgen Bussack; Klaus Karobs; Bernd Lindner, all of Lübeck; Rudolf Gambert, Arfrade, and Horst-Peter Bleichert, Böbs, all of Fed. Rep. of Germany, assignors to Dragerwerk AG, Lubeck, Fed. Rep. of Germany

Filed Aug. 11, 1993, Ser. No. 105,895

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1992, 4232295

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—431 **12 Claims**



1. An electrochemical gas sensor for detecting gaseous components in a gaseous environment with a disk-shaped measuring electrode, comprising:

a pot-shaped sensor housing having a sealing edge;

a counterelectrode positioned within said sensor housing in electrical contact with said sensor housing;

a pot-shaped cover including a cover edge projecting over said pot-shaped sensor housing;

diffusion path means including an opening in said pot-shaped cover and a diffusion membrane;

a measuring electrode including a contact surface forming a part of an electrode surface of said measuring electrode, said measuring electrode being positioned between said cover and said housing;

a sealing ring positioned around said sealing edge of said pot-shaped sensor housing, said sealing ring establishing electrical insulation between said cover and said pot-shaped sensor housing upon a sealing clamping of said cover on said sealing edge;

an electrolyte filled electrolyte space including an electrolyte impregnated wick including a wick disk positioned between said cover and said housing in contact with an electrolyte-side surface of said measuring electrode;

said measuring electrode and said diffusion membrane each being formed as a disk and cooperating with a sealing disk and/or a pressing disk to form a disk stack, said wick disk being positioned adjacent an electrolyte side surface of said measuring electrode;

a compression spring supported between said wick disk and said pot-shaped sensor housing to press said disk stack, said cover edge being in contact with said contact surface of said measuring electrode to form a contact point.

5,336,391

METHOD FOR PRODUCING A CIRCUIT BOARD MATERIAL EMPLOYING AN IMPROVED ELECTROPLATING BATH

James M. Rice, Sylmar, Calif., assignor to Ohmega Electronics, Inc., Culver City, Calif.

Continuation of Ser. No. 415,721, Oct. 2, 1989, abandoned, which is a division of Ser. No. 91,990, Sep. 2, 1990, Pat. No. 4,892,776. This application Sep. 21, 1992, Ser. No. 948,476

Int. Cl.[5] C25D *3/56, 7/06*

U.S. Cl. 205—152 **16 Claims**

1. In a method for preparing a circuit board material comprising a conductive layer having an electrical resistance material layer electroplated thereon, the improvement comprising electro-plating a nickel-phosphorus electrical resistance layer on said conductive layer using an electroplating bath consisting essentially of at least about 0.25 moles per liter nickel ions and at least about 0.05 moles per liter hypophosphite ions at a temperature within the range of from about 20° to 50° C., wherein said electrical resistance layer comprises about 10 to about 50 percent by weight of phosphorus.

5,336,392

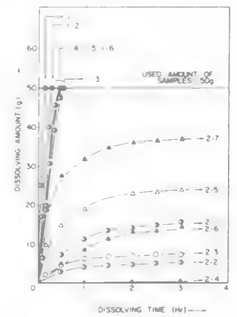
METHOD FOR PREPARATION OF A ZN-NI ELECTROPLATING OR HOT-DIP GALVANIZING BATH USING A ZN-NI ALLOY, AND METHOD FOR PRODUCING A ZN-NI ALLOY

Hiroshi Tasaki, and Eiji Nishimura, both of Saitama, Japan, assignors to Nippon Mining Co., Ltd., Saitama, Japan

Filed Sep. 15, 1992, Ser. No. 944,920

Int. Cl.[5] B05D *1/18*

U.S. Cl. 427—433 **3 Claims**



1. A method for supplying Ni and Zn into a hot-dip galvanizing bath using a Zn-Ni alloy, comprising supplying a Zn-Ni alloy to a hot-dip galvanizing bath for plating a Zn-Ni alloy layer consisting essentially of Zn and Ni, wherein said alloy comprises from 4 to 50% by weight of Ni, the balance being essentially Zn, and wherein said alloy is produced by using a flux comprising a fused-salt former, which forms a salt having a melting temperature of 700° C. or less, and $Na_2B_4O_7$.

5,336,393

PROCESS FOR CATALYTICALLY CONVERTING ORGANIC COMPOUNDS

Kozo Takatsu; Yasushi Wakushima; Hiroharu Masunaga, and Masahiko Sawa, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed May 28, 1992, Ser. No. 890,580

Claims priority, application Japan, Jun. 12, 1991, 3-166153; Dec. 11, 1991, 3-350480

Int. Cl.[5] C07C *2/00;* **C10G** *11/05*

U.S. Cl. 208—120 **27 Claims**

1. A process for catalytically aromatizing or cracking at least one organic compound not less than five carbon atoms in the presence of a catalyst including a step wherein the catalyst comes into contact with steam, which process comprises contacting the organic compound with the catalyst and regenerating the catalyst at intervals of 150 hours or less, the catalyst comprising an MFI zeolite, the MFI zeolite being synthesized by using a material mixture consisting essentially of inorganic compounds and a zeolite as a seed crystal, the MFI zeolite having a molar ratio of $SiO_2/(Al_2O_3+GaO_3)$ of 20 to 200 and a molar ratio of Ga_2O_3/Al_2O_3 of 0 to 50, the MFI zeolite having the characteristic that when the MFI zeolite is formed substantially into an H zeolite by ion exchange, the MFI zeolite has a ratio of peak intensity of SiOH, I_{SiOH}, to peak intensity of acidic OH, I_{H+}, determined by ^{1}H-NMR, I_{SiOH}/I_{H+}, of 0 to 0.5.

5,336,394

PROCESS FOR HYDRODESULFURIZING A SULFUR-CONTAINING HYDROCARBON

Akira Iino; Ryuichiro Iwamoto, and Tsuyoshi Mitani, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd. and Petroleum Energy Center, both of Tokyo, Japan

Division of Ser. No. 959,285, Oct. 9, 1992, Pat. No. 5,280,004. This application Nov. 18, 1993, Ser. No. 154,702

Claims priority, application Japan, Oct. 24, 1991, 3-303855

Int. Cl.[5] G10G *45/08, 49/04*

U.S. Cl. 208—216 R **19 Claims**

1. A process for hydrodesulfurizing a sulfur-containing hydrocarbon which comprises contacting the sulfur-containing hydrocarbon with a catalyst composition under hydrodesulfurizing conditions in the presence of hydrogen, the catalyst composition comprising (a) a Group VIA metal, (b) a Group VIII metal and (c) an alumina, the Group VIA metal and the Group VIII metal being in a combined amount 20% to 70% by weight based on the total of the Group VIA metal, the Group VIII metal and the alumina, calculated on the basis that the Group VIA metal and the Group VIII metal are stable oxides thereof, and the alumina is Al_2O_3,

the catalyst composition being characterized by (i) an X-ray diffraction pattern having no diffraction peak other than a diffraction peak of the alumina, and (ii) after being air-calcined at 550° C. for three hours, being characterized by a TPR spectrum from a temperature-programmed reduction of the air-calcined catalyst in a stream of hydrogen with a temperature being elevated from 25° C. to above 1000° C. at a rate of 10° C./min, wherein the TPR spectrum results in a ratio L/H of 0.1 to 0.45, wherein L is an area of a low temperature reduction peak within a temperature from not lower than 25° C. to lower than 500° C. and H is an area of a high temperature reduction peak within a temperature from 500° C. to 1000° C., with the proviso that when the low temperature reduction peak is not completely separated from the high temperature reduction peak, the areas L and H are calculated by dividing the low temperature reduction peak and the high temperature reduction peak from each other at a temperature exhibiting the least consumption of hydrogen.

5,336,395

LIQUEFACTION OF COAL WITH AQUEOUS CARBON MONOXIDE PRETREATMENT

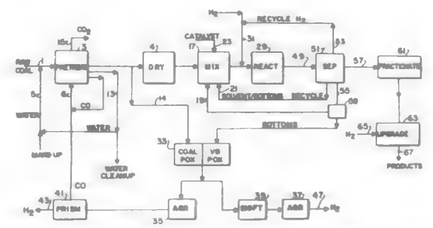
Joanne K. Pabst, Crosby, Tex.; William E. Winter, Jr., Baton Rouge, La.; Stephen N. Vaughn, Baton Rouge, La.; Claude C. Culross, Baton Rouge, La., and Steve D. Reynolds, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 762,059, Sep. 19, 1991, abandoned, which is a continuation of Ser. No. 455,689, Dec. 21, 1989, abandoned. This application Mar. 29, 1993, Ser. No. 41,135

The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.

Int. Cl.[5] C10G *1/06*

U.S. Cl. 208—403 **35 Claims**



1. A process for hydroconverting coal to produce a hydrocarbonaceous liquid which comprises the steps of:

(a) pretreating the coal by forming a mixture of coal, carbon monoxide and water and subjecting the mixture to a temperature of 550° to 650° F. and a carbon monoxide partial pressure of 500 to 5000 psia for a period of at least 10 minutes to cause hydrogenation of the coal;

(b) removing gases and water from the pretreated coal mixture;

(c) forming a subsequent mixture of said pretreated coal, organic solvent, and a catalyst, wherein the catalyst is comprised of dispersed submicron size particles of a metal sulfide-containing compound, said metal being selected from the group consisting of Groups VA, VIA, VIIA, and VIIIA of the Periodic Table of the Elements and mixtures thereof, said catalyst being present in the mixture in an amount ranging from about 10 to less than 5000 weight parts per million, calculated as the elemental metal, based on the weight of coal in said mixture, and wherein the catalyst is formed in situ from an oil-soluble precursor metal compound;

(d) reacting the resulting mixture containing said catalyst under coal hydroconversion conditions at a temperature of 650° to 850° F. in the presence of hydrogen, in a hydroconversion zone; and

(e) separating the contents of said hydroconversion zone into at least three fractions; (1) an effluent product comprising a hydrocarbonaceous liquid; essentially free of coal residue solids; (2) a bottoms comprising coal residue solids; and (3) a gaseous top.

5,336,396

WASTE OIL MANAGEMENT SYSTEM

Michael C. Shetley, 2100-C Cove Lane, N. Palm Beach, Fla. 33408

Filed Mar. 29, 1993, Ser. No. 38,710

Int. Cl.[5] B01D *35/147*

U.S. Cl. 210—90 **15 Claims**

11. The fuel management system for blending waste oil with diesel fuel and the continuous filtration thereof before delivery to the fuel injection system of a conventional diesel engine, said system comprising

first storage means for storing therein a supply of conventional diesel fuel, said first storage means having a means

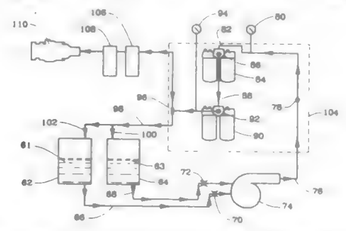
VOL 1165 ISS 2 AUG 9 1994 UMI

for restricting the amount of diesel fuel deliverable therefrom;

second storage means for storing therein a supply of waste oil, said second storage means having a means for restricting the amount of waste oil deliverable therefrom;

a self-priming variable delivery air operated diaphragm pump having a first and second inlet and an outlet, said first inlet coupled to said means for restricting of fuel flow from said first storage tank by a first conduit, said second inlet coupled to said means for restricting oil flow from said second storage tank by a second conduit, said pump including means for blending said diesel fuel with said waste oil to form blended fuel oil;

at least two fiberglass filters for contaminant reduction of said blended fuel oil said filters disposed in a parallel arrangement using a single die cast head having at least



one bypass valve, said die cast head including an inlet and an outlet;

means for fluidly connecting the inlet of said head to an outlet of said pump;

means for determining filter replacement;

metering means for directing a first portion of said blended fuel oil to the injection system of the engine and a second portion of said blended fuel oil directed to said first and second storage means;

means for fluidly connecting an inlet of said metering means to an outlet of said head;

polishing fiberglass filtration means interposed between said metering means and said fuel injection system for filtering said first portion of said blended fuel; and

a mounting means for mounting said diaphragm pump and said filtration means in alignment with said fuel injection system.

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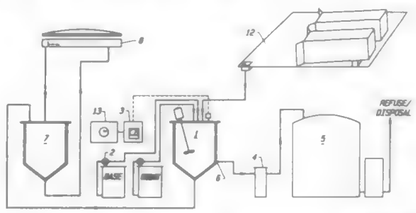
Patent Not Issued For This Number

5,336,398

WATER TREATMENT DEVICE

Larry L. Russell, Tiburn, and Louis Mohar, Castro Valley, both of Calif., assignors to Container-Care International, Inc., Richmond, Calif.

Filed Feb. 11, 1993, Ser. No. 16,788
Int. Cl.[5] C02F *1/52*
U.S. Cl. 210—143 **6 Claims**



1. A mobile, batch wastewater treatment device comprising:

a) a reactor/settling tank within which wastewater is treated to yield a supernatant and a sludge;

b) a filter through which the supernatant from the reactor/-settling tank is pumped;

c) a holding tank to which filtered supernatant is pumped;

d) a second holding tank to which the sludge from the reactor/settling tank is pumped to be accumulated and thickened;

e) a solar dewatering unit to which the accumulated and thickened sludge is pumped from the second holding tank, wherein said dewatering unit comprises a drying pan with an underdrain system to allow for drainage of liquids from the sludge into said second holding tank, and a solar collector positioned over said pan; and

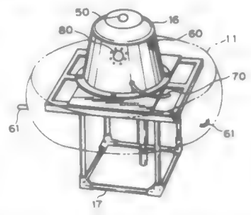
f) a cargo container wherein the reactor/settling tank, the filter, the holding tank and the second holding tank are placed within the cargo container and the solar dewatering unit is placed on the roof of the cargo container.

5,336,399

APPARATUS FOR PURIFYING AND ACTIVATING WATER

Takekazu Kajisono, 259-13-15-102, Kamihirose, Sayama-shi, Saitama-ken, Japan

Filed Apr. 16, 1992, Ser. No. 869,378
Claims priority, application Japan, Dec. 27, 1991, 3-347172
Int. Cl.[5] B01F *3/04*; C02F *1/74, 7/00*
U.S. Cl. 210—169 **11 Claims**



1. An apparatus for injecting gas into a body of water having a surface, said apparatus comprising;

a base;

float means connected with said base for supporting said apparatus base in a position floating on the water surface and with said base extending generally parallel to and above the water surface;

a non-rotatable outer casing fixed to said base and projecting from said base in a direction transverse to said base and downward into the water from the water surface when said apparatus is floating on the water surface, said outer casing having an axis extending generally vertically when said apparatus is floating on the water surface, said outer casing having upper and lower end portions and a cylindrical inner surface;

a rotatable inner shaft disposed within said outer casing in a coaxial relationship with said outer casing, said inner shaft having upper and lower end portions and a cylindrical outer surface;

bearing means connected with said base and supporting said inner shaft for rotation relative to said base;

said cylindrical inner surface of said outer casing and said cylindrical outer surface of said inner shaft defining between them an annular outer gas flow passage extending axially between said inner shaft and said outer casing, said outer gas flow passage for receiving therethrough a downwardly flowing first gas flow for injection into the water;

said outer gas flow passage having a first gas inlet opening disposed in air above the water surface when said apparatus is floating on the water surface, said outer gas flow passage having a first gas outlet opening disposed in water

below the water surface when said apparatus is floating on the water surface;

said inner shaft having an inner surface defining an inner gas flow passage extending axially through said inner shaft, said inner gas flow passage for receiving therethrough a downwardly flowing second gas flow for injection into the water;

said inner gas flow passage having a second gas inlet opening disposed in air above the water surface when said apparatus is floating on the water surface;

said inner shaft lower end portion projecting in the water below said outer casing lower end portion;

said inner gas flow passage terminating in a gas outlet chamber at least partially defined by a cylindrical capsule fixed for rotation with said inner shaft, said capsule including surfaces defining a plurality of second gas outlet openings extending radially from said chamber through said capsule for injecting said second gas flow into the water; and

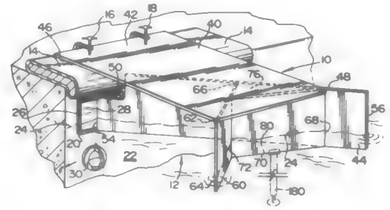
means for generating negative pressure adjacent to said lower end portion of said outer casing, comprising a motor connected with said base and with drive shaft for rotating said drive shaft and said capsule about said axis to thereby generate negative pressure adjacent to said lower end portion of said outer casing to draw gas into said first gas inlet and through said first gas flow passage and to draw gas into said second gas inlet and through said second gas flow passage.

5,336,400

POOL SKIMMER DIVERTER ASSEMBLY

Andre M. Patrice, 6724 Arthur Street, Orleans, Ontario, Canada K1C 1J3

Filed Feb. 3, 1993, Ser. No. 12,922
Int. Cl.[5] E04H *3/16*
U.S. Cl. 210—169 **11 Claims**



1. Apparatus for enhancing the surface cleaning of a swimming pool having a skimmer inlet in a wall of the pool, the inlet having side edges and top and bottom edges and the pool having peripheral water movement generally along the wall, comprising:

a first rigid plate having an upper edge, lower edge and inner and outer ends, the width of the first plate at the inner end being at least substantially equivalent to the depth of water in the pool from water level to the bottom edge of the skimmer inlet; and

support means for supporting the first plate generally vertically adjacent the skimmer inlet wherein the upper edge of the first plate is above water level, the inner end of the first plate extends generally vertically downward intermediate the sides of said skimmer inlet and dividing it into upstream and downstream portions and said plate extends inwardly away from the skimmer toward the center of the pool at an angle with the pool wall in a direction opposite the direction of water movement, the lower edge of at least the inner end of the first plate being substantially adjacent the bottom edge of said skimmer inlet;

a second plate supported by said support means and extending outwardly from said first plate at an angle thereto wherein said apparatus is to be mounted on the wall of the pool adjacent said skimmer inlet such that said second plate slants in the direction of water flow and has its lower edge below water level and including flotation means for supporting the outer ends of said first and second plates in the pool;

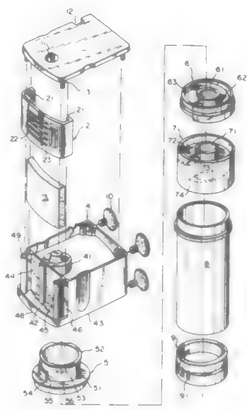
said support means being a generally horizontal plate to which said upper edges of said first and second plates are secured and said flotation means comprises an air pocket formed by said horizontal plate, said first and second plates and by a third plate, said third plate extending vertically downwardly from the support plate and having its ends connected to portions of said first and second plates.

5,336,401

WATER FILTRATION AND AERATION SYSTEM FOR AQUARIUMS

Chih - Yao Tu, Fl. 3, No. 241, Sec. 1, Ta-an Road, Taipei, Taiwan

Filed May 14, 1993, Ser. No. 61,015
Int. Cl.[5] A01K *63/04*
U.S. Cl. 210—169 **4 Claims**



1. A water filtration and aeration system comprising a gas diffusing unit fastened inside an aquarium, a coupler connected to said gas diffusing unit at a bottom thereof, a flow guide assembly connected to said coupler at a bottom thereof, an extension cylinder having a top end connected to said flow guide assembly and a bottom end covered with a bottom cover and dipped in water contained in said aquarium, wherein water from said aquarium is guided through a filter pad to a mixing chamber defined within said coupler and stirred by a motor-driven vane to mix with gas delivered from a gas supply through a gas passageway through said gas diffusing unit, wherein treated from the gas diffusing unit is guided down within said flow guide assembly through said extension cylinder to outlet holes on said bottom cap back into said aquarium,

wherein the gas diffusing unit includes a top cover, a face panel and said filter pad, said gas diffusing unit having an intake pipe at one side in a vertical position, a chamber at a bottom having being in fluid communication with said gas passageway which extends through a height of the gas diffusing unit, two water inlets in fluid communication with the chamber, and vertically disposed on a casing at two opposite sides relative to the water inlets, two spaced bottom retaining lugs bilaterally disposed by the chamber, a vane coupled to an output shaft of the motor and disposed in the chamber at the bottom.

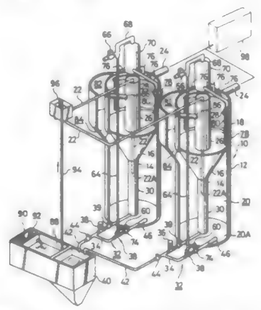
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,402

SEWAGE TREATMENT APPARATUS

Tatsuro Yamamoto, and Yoshinao Kashino, both of Aichi, Japan, assignors to INAX Corporation, Tokoname, Japan

Filed Jun. 29, 1992, Ser. No. 905,398
Claims priority, application Japan, Jul. 18, 1991, 3-178047
Int. Cl.[5] B01D *21/02*; C02F *3/12*
U.S. Cl. 210—194 13 Claims



1. A sewage treatment apparatus comprising:

aeration chamber means including means to aerate the sewage;

settling chamber means mounted to said aeration chamber means and vertically above the aeration chamber means and having means connected between the aeration chamber means and the settling chamber means for conducting aerated water from said aeration chamber means to said settling chamber means for sedimentation of sludges contained in the aerated water at the settling chamber means, said settling chamber means having means to discharge a clarified effluent therefrom, a bottom portion formed as hopper unit means having a surface tapered downwards to an opening for discharging the sludges and means to transfer said sludge to said aeration chamber means;

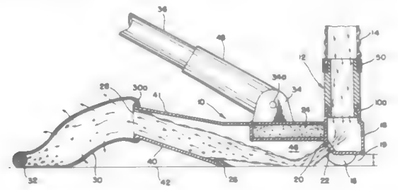
means for feeding a sewage influent in flow communication with said aeration chamber means; and washing water supply unit means situated above the settling chamber means for flowing out washing water for washing away the sludges deposited in the settling chamber means towards said hopper unit means.

5,336,403

SUBMERSIBLE SWIMMING POOL CLEANER

Gerard Marbach, Buhl, France, assignor to Sevylor International, SA, Buhl, France

Filed Oct. 25, 1993, Ser. No. 140,413
Int. Cl.[5] E04H *3/20*
U.S. Cl. 210—169 7 Claims



1. An apparatus for submersibly cleaning a swimming pool bottom comprising:

a housing having front, side and rear walls and a closed top portion;

an intake fitting, disposed in the closed top portion of said housing for delivering pressurized water into the housing;

manifold means, disposed within the housing, for constricting the pressurized water into a plurality of water jets;

said manifold means being angularly positioned within the housing to direct the plurality of water jets onto the pool bottom at a downward and rearward angle;

a wiper blade mounted on said manifold at a portion thereof adjacent the pool bottom for sealing and directing debris on the pool bottom during operation of the apparatus;

an exhaust aperture formed at a rear of the housing for exhausting debris from a cavity of the housing;

a collection bag attached to the rear of the housing over the exhaust aperture for the collection of loosened debris;

a pair of wheel members positioned at the front end of the housing for transport of the housing across the pool bottom;

said wheel members being positioned to create a space between the leading edge of the housing and the pool bottom to allow debris to pass into the central cavity of the housing; and

a sealed ballast chamber disposed within the housing for balancing and weighting said housing.

5,336,404

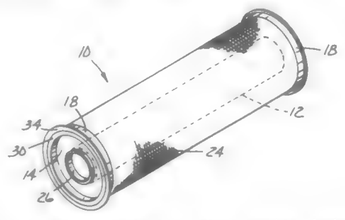
Patent Not Issued For This Number

5,336,405

FILTER CARTRIDGE END CAP ASSEMBLY

Yuan-Ming Tang, New Brighton, and Gregory H. C. Stephan, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 20, 1990, Ser. No. 512,141
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—232 6 Claims



1. An end cap assembly for a filter cartridge including a tubular filter element comprising:

an end cap having an inner surface, an outer surface, an outer circumference connecting said inner and said outer surfaces and having dimensions such that the inner surface of said filter element may be drawn over said circumference, and a projection coextensive with said circumference and extending beyond said outer surface, said projection having a small volume relative to said end cap volume;

a lock ring having an inner surface, an outer surface, an inner circumferential surface connecting said inner and said outer surfaces and sized to capture said filter element between said lock ring inner circumferential surface and said end cap outer circumference and a projection coextensive with said lock ring inner circumferential surface and having a small volume relative to said lock ring volume and extending beyond said lock ring outer surface a distance substantially equal to the extension of said end cap projection so that, when said end cap and said lock ring are assembled to capture said filter element, and with said end cap outer surface and said lock ring outer surface aligned, said end cap projection and said lock ring projection extend substantially equally from said end cap and said lock ring outer surfaces and capture said filter element therebetween;

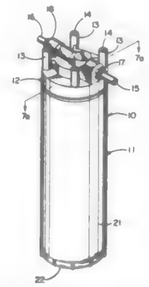
said projections being supplied so that heat may be applied to said projections after assembly of said lock ring to said end cap to fuse said lock ring to said end cap to provide a leak-proof seal therebetween.

5,336,406

REPLACEABLE FILTER CARTRIDGE AND HEAD ASSEMBLY WITH SAFETY SHUT-OFF VALVE

Ralph F. Stanford, Clinton, Iowa, and Stephen E. Gatz, Galt, Ill., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Filed Jan. 26, 1993, Ser. No. 9,566
Int. Cl.[5] B01D *27/08*, *27/10*
U.S. Cl. 210—235 25 Claims



1. A filter assembly adapted for connection between fluid supply and delivery lines to filter fluid flowing therethrough, comprising, in combination,

a replaceable filter cartridge enclosing a filter medium and having at one end concentric entrance and exit passages confined within an axially outwardly projecting annular wall,

a mounting head having inlet and outlet ports adapted for substantially fixed connection to said supply and delivery lines, respectively, said mounting head having a cylindrical recess for sealingly receiving said annular wall of said filter cartridge therein,

said filter cartridge and said mounting head each having complementary interfitting means thereon for permitting quick locked connection and unlocked disconnection of said filter cartridge to and from said mounting head incident to axial rotation of said filter cartridge in opposite directions, respectively, relative to said mounting head,

inlet passage means in said mounting head for communicating between said inlet port and said cylindrical recess,

valve means disposed in said inlet passage means, said valve means being biased to a normally closed position,

and valve operating means on said one end of said filter cartridge for opening said valve means incident to axial rotation of said filter cartridge into fully locked connection with said mounting head.

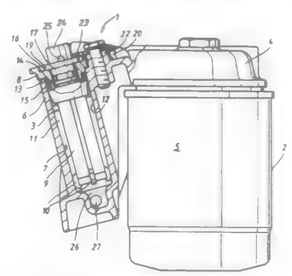
5,336,407

FUEL FILTER ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Gerd Niemeier, Stuttgart, and Frank Schneider, Filderstadt, both of Fed. Rep. of Germany, assignors to Mercedes-Benzag, Stuttgart, Fed. Rep. of Germany

Filed Jul. 19, 1993, Ser. No. 94,521
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1992, 4228156
Int. Cl.[5] B01D *35/02*
U.S. Cl. 210—249 6 Claims

1. A fuel filter arrangement for disposition in a fuel line of an internal combustion engine, said fuel filter arrangement comprising a filter mounting head for mounting said filter arrangement in an engine compartment and having opposing first and second surfaces, a main filter box having a filter media therein, means for removably mounting said filter box to the first surface of said mounting head, a filter holder with a cylindrical cavity formed integrally with said mounting head at one side thereof and extending from said first surface adjacent said main filter box, said cavity defining an opening on the second surface of said mounting head, a cylindrical strainer disposed in said cylindrical cavity and including an open end and a closed end, said strainer including at its open end a mounting plug provided with a sealing ring engaging an inner surface of said



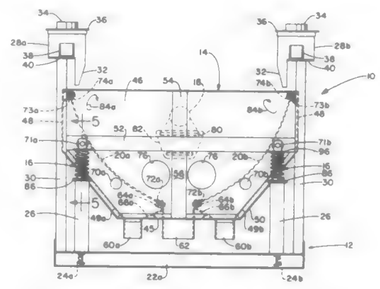
cylindrical cavity upon insertion of said strainer into said cylindrical cavity through said opening, said mounting plug having a passage in communication with the interior of said strainer for supplying fuel thereto and said filter holder having an outlet at a closed end of said cylindrical cavity opposite said opening for the discharge of prefiltered fuel therefrom, and means for locking said mounting plug with said strainer in position within said cavity.

5,336,408

APPARATUS FOR SEPARATING PARTICLES FROM A FLUID STREAM

Masataka Tsutumi, Canton, Ohio, assignor to Sizetec, Inc., Canton, Ohio

Filed Mar. 29, 1993, Ser. No. 38,611
Int. Cl.[5] B01D *33/03*
U.S. Cl. 210—384 20 Claims



1. An apparatus for separating course particles from a fluid or wet stream, optionally containing fine particles, the apparatus comprising:

a frame;

a screen box having opposing ends;

means attached to the frame and to the screen box for movably suspending the screen box on the frame for vibrating motion;

a pair of laterally disposed screens mounted to the screen box, each screen having an elevated leading end near one of said opposing ends of the screen box, and each screen having a lowered discharge end near a central region of the screen box intermediate between said opposing ends of the screen box, whereby liquids and fine particles depos-

VOL 1165 ISS 2 AG 9 1994 UMI

ited onto each of the screens near said opposing ends of the screen box pass through the screens and coarse particles deposited on each of the screens near said opposing ends of the screen box pass over the screens and downwardly towards said central region of the screen box intermediate between said opposing ends of the screen box; and

motor means attached to the screen box for vibrating the screen box and screens mounted thereto.

5,336,409

COMPOSITE REVERSE OSMOSIS MEMBRANE AND NOVEL ACID CHLORIDE

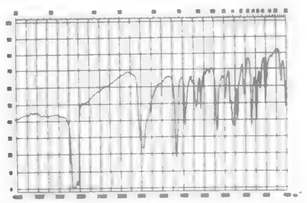
Hisao Hachisuka; Katsuhide Kojima; Yutaka Nakazono; Mitsuru Shimizu; Masahiko Hirose; Yasuo Kihara; Masatoshi Maeda; Hisashi Ikebata, and Kenji Matsumoto, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

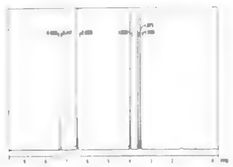
Filed Jan. 22, 1993, Ser. No. 7,763

Claims priority, application Japan, Jan. 22, 1992, 4-032536; Jul. 29, 1992, 4-202384; Aug. 20, 1992, 4-221348

Int. Cl.[5] **B01D** *71/56*

U.S. Cl. 210—490 **5 Claims**





1. A composite reverse osmosis membrane comprising a thin membrane and a microporous supporting membrane supporting it, wherein said thin membrane mainly comprises a cross-linked polyamide comprising;

(a) an amine component containing at least one member selected from the group consisting of substantially monomeric amine compounds each having at least two primary and/or secondary amino groups, and

(b) an acid halide component containing at least one member selected from the group consisting of substantially monomeric cyclic acid halide compounds each having at least two acid halide groups and comprising at least two rings.

5,336,410

THREE CHAMBER VESSEL FOR HYDROCYCLONE SEPARATOR

Kevin J. O'Brien, Houston, Tex.; Pete A. Thompson, Gloucester, England, and Stephen T. McCoy, Missouri City, Tex., assignors to Conoco Specialty Products Inc., Houston, Tex.

Filed Aug. 1, 1991, Ser. No. 739,283

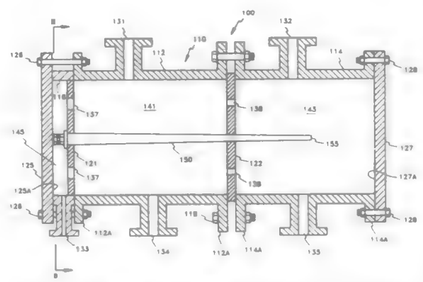
Int. Cl.[5] **B01D** *21/26;* **B04C** *5/28, 5/12*

U.S. Cl. 210—512.1 **28 Claims**

1. A hydrocyclone apparatus for separating a fluid mixture into at least two constituent parts based on density, said apparatus comprising:

a generally cylindrical hollow pressure vessel having at least one open end, an end cap for closing said open end, first and second spaced apart dividing plates disposed generally transversely within the vessel to divide the vessel into a medial inlet chamber and two end discharge chambers;

at least one longitudinally extensive hollow liner disposed through openings in each of said dividing plates so as to be free to rotate within said opening and wherein said liner has a shoulder portion shaped to limit rotation within said openings of said dividing plates by contacting at least one of an inside wall of said vessel and a portion of another liner and further wherein said at least one liner includes a



fluid inlet along a peripheral portion thereof spaced inwardly from the ends thereof to be in fluid communication with said medial inlet chamber of said pressure vessel and outlets adjacent its opposite ends to be in fluid communication with respective end discharge chambers of said vessel; and

sealing means for sealing the portion of the openings around the periphery of said liner in each of said dividing plates so that the chambers are sealingly isolated from one another except through said at least one liner.

5,336,411

HYDROCYCLONE ASSEMBLY

Roine Andersson, Järfälla, Sweden, assignor to Celleco Hedemora AB, Stockholm, Sweden

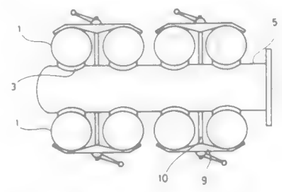
PCT No. PCT/SE91/00301, § 371 Date Oct. 20, 1992, § 102(e) Date Oct. 20, 1992, PCT Pub. No. WO91/16987, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 29, 1991, Ser. No. 934,503

Claims priority, application Sweden, May 7, 1990, 9001635-3

Int. Cl.[5] **B01D** *21/26*

U.S. Cl. 210—512.1 **3 Claims**



1. A hydrocyclone assembly comprising at least one hydrocyclone, cylindrical pipes having outer surfaces for the conveyance of liquid to and from said hydrocyclone, through flow members extending between the hydrocyclone and the pipes, means for attaching the hydrocyclone to the pipes by clamping the through flow members to the pipes, each of said pipes having a radial bore connected to each flow member and each flow member having an annular wall extending around the radial bore of the pipe to which it connects, and a gasket extending around the bore to seal the connection between the annular wall and the outer surface of the pipe.

5,336,412

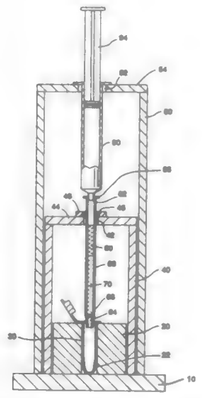
PUSH COLUMN CHROMATOGRAPHY METHOD

William D. Huse, Del Mar; Anthony M. Sorge, La Jolla, and Keith V. Sylvester, San Diego, all of Calif., assignors to Stratagene, La Jolla, Calif.

Division of Ser. No. 827,995, Jan. 30, 1992, which is a continuation of Ser. No. 292,808, Jan. 3, 1989, abandoned. This application Jun. 28, 1993, Ser. No. 84,534

Int. Cl.[5] **B01D** *15/08*

U.S. Cl. 210—635 **3 Claims**



3. A chromatography method for separating polyadenylated RNA from nonpolyadenylated RNA, said method comprising the steps of:

providing a column with a chromatography material including oligo(dT)-cellulose;

introducing into the column a sample of polyadenylated RNA and nonpolyadenylated RNA;

attaching a syringe to one end of the column;

using the syringe to induce a pneumatic pressure differential across said column sufficient to cause said sample to pass through said chromatography material; and

collecting eluent containing said nonpolyadenylated RNA substantially free of polyadenylated RNA in a collection vial at the discharge of the column.

5,336,413

PROCESS AND APPARATUS FOR THE PURIFICATION OF WATER

Nicolaas A. van Staveren, Kessel, Netherlands, assignor to E.M. Engineering F.T.S. B.V., Kessel, Netherlands

Filed Mar. 16, 1993, Ser. No. 33,177

Claims priority, application Netherlands, Mar. 19, 1992, 9200509

Int. Cl.[5] **B01D** *31/00*

U.S. Cl. 210—650 **22 Claims**

1. A process for the purification of water, said process comprising:

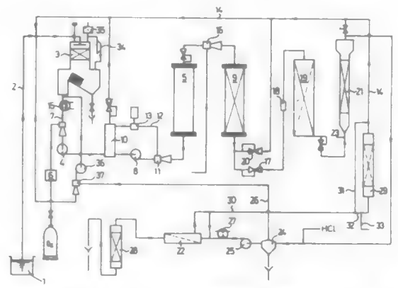
purifying the water in a purification stage by dissolving under high pressure an oxygen/ozone-gas mixture in the water to produce oxygen/ozone enriched water, and passing the oxygen/ozone enriched water through a reactor means to effect the oxidation of the enriched water;

discharging the water from the reactor means;

feeding the discharged water to a membrane filter unit;

retaining part of the water at the membrane filter unit and discharging part of the water from the membrane filter unit as purified water; and

recycling the retained water at the membrane filter to the purification stage to purify the retained water by dissolving the oxygen/ozone-gas mixture in the retained water to produce oxygen/ozone enriched water, and



passing the oxygen/ozone enriched water through reactor means to effect the oxidation of the enriched water.

5,336,414

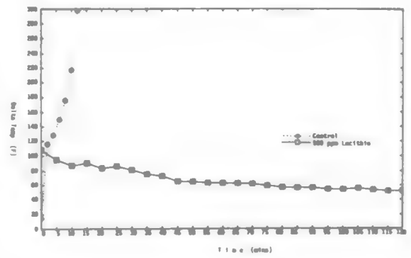
METHODS FOR INHIBITING THE DEPOSITION OF PROTEINACEOUS MATERIALS ON HEAT TRANSFER SURFACES

Nancy A. DiAngelo, Feasterville, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 17, 1993, Ser. No. 32,069

Int. Cl.[5] **C02F** *5/14*

U.S. Cl. 210—698 **9 Claims**



1. A method for inhibiting organic fouling of heat transfer surfaces in contact with an aqueous, proteinaceous solution wherein said proteinaceous solution is a wet corn milling steep-water having an acidic pH, comprising adding to said solution an effective inhibiting amount of lecithin.

5,336,415

REMOVING POLYVALENT METALS FROM AQUEOUS WASTE STREAMS WITH CHITOSAN AND HALOGENATING AGENTS

John R. Deans, Bellevue, Wash., assignor to Vanson L.P., Redmond, Wash.

Filed Feb. 10, 1993, Ser. No. 12,572

Int. Cl.[5] **C02F** *1/54*

U.S. Cl. 210—725 **18 Claims**

1. A process for the removal of soluble polyvalent metal impurities from aqueous streams, the polyvalent metal selected from groups IIIA, IIIB, IVA, IVB, VA, VB, VIB, VIIB, and VIII in the periodic table of elements, the process comprising, in order:

(1) dissolving (a) chitosan or a water soluble salt thereof and (b) a halogenating agent capable of converting chitosan to an N-halochitosan in an aqueous stream that (i) contains said polyvalent metal impurity as a cationic or complex

VOL 1165 ISS 2 AG 9 1994 UMI

anionic moiety and (ii) is at a pH of 2 to 5.5, wherein an effective amount of N-halochitosan is formed in said aqueous stream to remove said polyvalent metal impurity;

(2) raising the pH of the aqueous stream to a pH greater than 6, the pH being sufficiently high to form an insoluble product containing the polyvalent metal impurity and said N-halochitosan; and

(3) separating the insoluble product from the aqueous stream.

5,336,416

TRIVALENT COPPER WATER TREATMENT COMPOSITIONS

Marvin S. Antelman, Rehovot, Israel, assignor to N. Jonas & Co., Inc., Bensalem, Pa.

Filed Jul. 12, 1993, Ser. No. 90,308
Int. Cl.[5] C02F *1/50*
U.S. Cl. 210—764 **1 Claim**

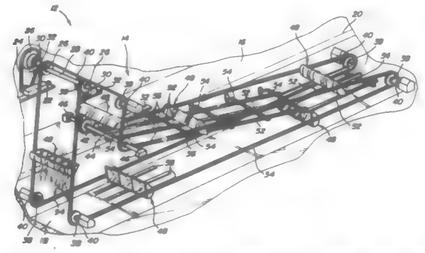
1. A method for controlling the growth of bacteria and algae in utilitarian bodies of water including swimming pools, industrial cooling towers, hot tubs and reservoirs which comprises adding to the water a stable trivalent copper compound selected from the group consisting of copper periodate, chelate complex of tris(hydroxymethyl) aminomethane, and chelate complex of biuret.

5,336,417

BUCKET GRIT ELEVATOR SYSTEM

Joseph R. Hannum, Blue Bell, Pa., assignor to The Budd Company, Troy, Mich.

Filed Sep. 18, 1992, Ser. No. 946,910
Int. Cl.[5] B01D *21/18*
U.S. Cl. 210—803 **18 Claims**



15. A method of waste water treatment for removing waste solids from a settling tank partially filled with waste water comprising the steps of:

providing a conveyor system having a pair of chains in the settling tank;

providing at least two non-metallic bucket members;

providing coupling means for coupling the bucket members in a serial fashion between the chains;

dragging the bucket members along a bottom surface of the settling tank for collecting the water solids;

lifting the bucket members to carry the waste solids above a waste water level in the settling tank;

separating the majority of the waste water carried above the waste water level from the collected waste solids prior to disposing of the collected waste solids; and

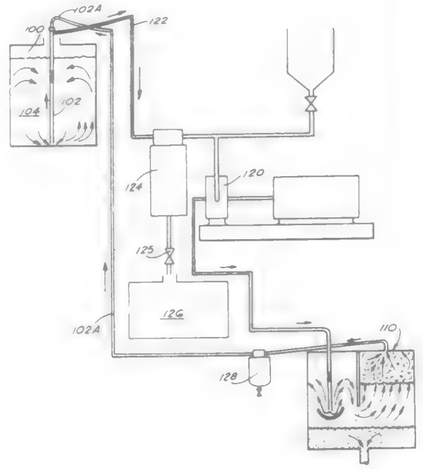
disposing of the waste solids onto a surface of a disposal system located above the waste water level in the settling tank.

5,336,418

FUEL TANK CLEANING SYSTEM AND METHOD OF REDUCING CONTAMINANTS IN FUEL

P. J. Thomas Rawlins, 216 Sena Dr., Metairie, La. 70005

Filed Nov. 3, 1992, Ser. No. 970,552
Int. Cl.[5] B01D *17/02*
U.S. Cl. 210—799 **2 Claims**



1. A process for collecting and concentrating contaminants and free water from fuel contained in a tank, the system comprising:

a) providing means for suctioning the fuel from the fuel tank;

b) providing a primary filtration/separation vessel for receiving the suctioned fuel, and for separating the free water and contaminants into the bottom of the vessel, and the lighter cleaner fluid into the top portion of the vessel;

c) filtering the cleaner fuel in the top portion of the vessel and transporting the cleaner fuel out of the primary filtration/separation vessel to a tertiary filter for return to the fuel tank;

d) routing samples of the contaminated fuel and free water from the bottom of the filtration/separation vessel and bottom of the tertiary filter into a first transparent vessel for visually inspecting the fuel routed thereinto;

e) draining relatively clean fuel from the upper portion of the transparent vessel into a clean fuel collection tank and concentrating the contaminants in the lower portion of the transparent vessel which become progressively more concentrated as subsequent samples of contaminated fuel are obtained from the bottom of the separator and the bottom of the tertiary filter;

f) draining the concentrated contaminants from the lower portion of the transparent vessel into a container for disposal; and

g) routing samples of the clean fuel from the tertiary filter into a clean fuel transparent container; and

h) inspecting and comparing the clean fuel with samples in the transparent container used to collect dirty fuel contaminants, and water.

5,336,419

SILICONE GEL FOR EASE OF IRONING AND BETTER LOOKING GARMENTS AFTER IRONING

Timothy W. Coffindaffer, Loveland; Robert G. Bartolo, Cincinnati, both of Ohio, and Kathleen A. Belfiore, Beaver Falls, Pa., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 534,109, Jun. 6, 1990, Pat. No. 5,064,543, and a continuation-in-part of Ser. No. 534,110, Jun. 6, 1990, Pat. No. 5,062,971. This application May 8, 1991, Ser. No. 695,357
The portion of the term of this patent subsequent to Jan. 24, 2006, has been disclaimed.
Int. Cl.[5] D06M *11/00*; C11D *3/00*
U.S. Cl. 252—8.6 **36 Claims**

1. A liquid fabric care composition comprising:

(1) a substantially cured emulsified amine functional polymeric silicone gel;

wherein said polymeric silicone is curable and has

T (tri-functional units)=R'' $SiO_{3/2}$;

Q (quat-functional units)=$SiO_{4/2}$;

D (di-functional units)=R'$_2$ $SiO_{2/2}$; and

M (mono-functional units)=(RO)R'$_2$ $SiO_{1/2}$;

wherein R', R'' is a C_{1-20} alkyl or an amine group selected from cyclic amines, polyamines and alkylamines having from about 2 to about 7 carbon atoms in their alkyl chain and wherein at least one of R' or R'' is an amine group; wherein R is a hydrogen or a C_{1-3} alkyl; wherein said polymeric silicone contains from about 3% to about 30% of said T or said Q functional units, or mixtures thereof; from about 70% to about 97% of said D functional units; and from 0.1% M functional units to about 10%; and

(2) an effective amount of another fabric care compound selected from starches, surfactants, fabric softener and mixtures thereof; and

(3) a suitable carrier to deposit an effective amount of said silicone gel on said fabric;

wherein said fabric softener is selected from the group consisting of:

i. quaternary ammonium compounds;

ii. fatty amine fabric softening compounds;

iii. fatty amide compounds;

iv. fatty acids;

v. fatty alcohols; and

vi. mixtures thereof;

wherein said silicone gel is substantially cured via crosslinking prior to deposition on treated fabric; and wherein the said polymeric silicone has a molecular weight of from about 150,000 to about 10^{15}.

5,336,420

ANTIOXIDANTS FOR FUNCTIONAL FLUIDS

Andrew G. Horodysky, Cherry Hill, N.J.; Shih-Ying Hsu, Morrisville, Pa.; Andrew Jeng, Paulsboro, and Leslie R. Rudnick, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 697,039, May 8, 1991, Pat. No. 5,194,167. This application Dec. 14, 1992, Ser. No. 989,861
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] C10M *135/36*
U.S. Cl. 252—34 **27 Claims**

1. An improved functional fluid composition comprising a major proportion of an aromatic functional fluid and a minor proportion of a reaction product of a mercaptoheterocyclic compound selected from the group consisting of mercaptobenzothiazoles and dimercaptothiadiazoles and a quaternary ammonium salt at temperatures ranging from about 0° C. to about 50° C.

5,336,421

SPINEL-TYPE SPHERICAL, BLACK IRON OXIDE PARTICLES AND PROCESS FOR THE PRODUCING THE SAME

Eiichi Kurita; Haruki Kurokawa, and Kazuo Fujioka, all of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Continuation-in-part of Ser. No. 784,940, Oct. 31, 1991, abandoned. This application Aug. 10, 1993, Ser. No. 104,401
Claims priority, application Japan, Nov. 22, 1990, 2-319101
Int. Cl.[5] C04B *35/26*
U.S. Cl. 252—62.62 **3 Claims**

1. Spinel-type spherical black iron oxide particles having the formula:

$$Zn_xFe_{1-x}O.Fe_2O_3$$

wherein x is a number in the range of 0.05 to 0.62, said particles containing 1.5 to 17.0 wt % of Zn, and having a specific surface area of 5 to 15 m^2/g, a magnetization of not less than 70 emu/g in an external magnetic field of 1 kOe and a coercive force (Hc) of not more than the value obtained from the following expression:

$$Hc(Oe)=15+3\times(\text{specific surface area of the particles}).$$

3. A process for producing spinel-type spherical black iron oxide particles having the formula:

$$Zn_xFe_{1-x}O.Fe_2O_3$$

wherein x is a number in the range of 0.05 to 0.62, said particles containing 1.5 to 17.0 wt % of Zn, and having a specific surface area of 5 to 15 m^2/g, a magnetization of not less than 70 emu/g in an external magnetic field of 1 kOe and a coercive force (Hc) of not more than the value obtained from the following expression:

$$Hc(Oe)=15+3\times(\text{specific surface area of the particles}),$$

said process comprising the steps of:

(a) preparing a mixed suspension which contains ferrous hydroxide and sufficient zinc hydroxide to produce black iron oxide particles containing 1.5 to 17.0 wt % zinc by weight based upon the product and which has a pH of 6 to 9 in a non-oxidizing atmosphere by using an aqueous ferrous salt solution, a zinc compound and an aqueous alkaline solution; and

(b) oxidizing the ferrous hydroxide by blowing an oxygen-containing gas into the mixed suspension so as to oxidize ferrous hydroxide until the pH reaches a value in the range of 4 to 6 and the oxidation degree is such that Fe^{3+} in the mixed suspension is 60 to 70 mol % based on the total amount of iron and zinc in the oxidation step.

5,336,422

POLARIZED PRODUCTS AND PROCESSES

Jerry I. Scheinbeim, Somerset; Brian N. Newman, Highland Park; Jar W. Lee, East Brunswick, all of N.J., and Yoshihiko Takase, Shiroishi, Japan, assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Continuation-in-part of Ser. No. 360,788, Jun. 2, 1989, Pat. No. 5,204,013, which is a continuation-in-part of Ser. No. 62,014, Jun. 25, 1987, Pat. No. 4,863,648, which is a continuation-in-part of Ser. No. 881,828, Jul. 3, 1986, Pat. No. 4,830,795. This application Mar. 20, 1992, Ser. No. 854,189
Int. Cl.[5] C04B *35/00*
U.S. Cl. 252—62.9 **27 Claims**

1. A polarized material which is essentially stable to about the crystal melting temperature range of the polar crystals of the material or to about the softening temperature range or

VOL 1165 ISS 2 AG 9 1994 UMI

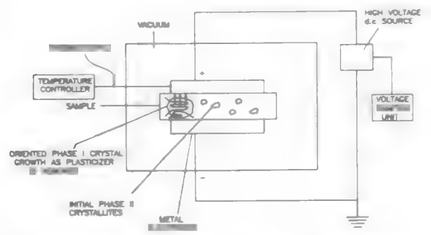
glass transition temperature range of the material if it is non-crystalline.

10. A method for preparing polarized material which comprises the following steps:

a) providing a melted composition of one or more polymers in the form of a film capable of being polarized in a preselected form;

b) quenching the melted polymeric composition;

c) cold drawing the polymeric composition;



d) polarizing the cold drawn polymeric composition by applying an effectively high electric field which is of less intensity than that which would cause substantial dielectric breakdown of the polymeric composition; and

e) annealing the polarized polymeric composition at an annealing temperature less than the melting temperature of the crystals of the polarized polymeric composition whereby the polarization is retained and a thermal stability of the polarization is provided at or near the crystal melting point of the polar crystals of the polymeric composition.

5,336,423

POLYMERIC SALTS AS DISPERSED PARTICLES IN ELECTRORHEOLOGICAL FLUIDS

Joseph W. Pialet, Euclid; Kasturi Lal, Willoughby, and Charles P. Bryant, Euclid, all of Ohio, assignors to the Lubrizol Corporation, Wickliffe, Ohio

Filed May 5, 1992, Ser. No. 878,797

Int. Cl.[5] C10M *169/00, 171/00*

U.S. Cl. 252—76 **12 Claims**

1. A method for increasing the apparent viscosity of a fluid comprising (a) a hydrophobic liquid phase which comprises a liquid which is stable up to about 120° C., and (b) particles of a polymer dispersed therein, said polymer comprising an alkenyl substituted aromatic comonomer, a maleic acid comonomer or derivative thereof, and 0 to about 20 mole percent of at least one third comonomer, wherein the polymer contains acid functionality which is at least partly in the form of a salt;

said method comprising subjecting the fluid to an electric field.

5,336,424

IMPROVED URINAL BLOCK COMPOSITION

Eftichios Van Vlahakis, 16727 Bolero La., Huntington Beach, Calif. 92649; John A. Manolas, 325 Brampton Ct., Lake Forest, Ill. 60045, and Michael J. Marrese, 2813 W. Scottlynne, Park Ridge, Ill. 60068

Division of Ser. No. 996,055, Dec. 23, 1992. This application Apr. 12, 1993, Ser. No. 45,939

Int. Cl.[5] C11D *17/00, 3/48, 1/825, 3/386*

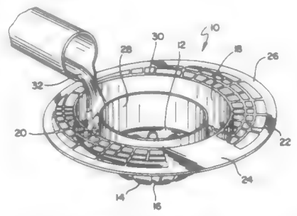
U.S. Cl. 252—89.1 **21 Claims**

1. An improved urinal block composition comprising:

a. a mineral acid in an amount of from about 3.0% to about 8.0% by weight of said composition;

b. an acid stable protease in an amount sufficient to have a theoretical yield of 200 Acid Stable Protease Units Per Gram (ASPu/gm) and in an amount of from about 3.0% to about 8.0% by weight of 5000 Acid Stable Protease Units Per Gram (ASPu/gm);

c. an amphoteric surfactant in an amount of from about 2.0% to about 4.0% by weight of said composition and in an amount sufficient to increase wetting properties;



d. a non-ionic surfactant in an amount of from about 50.0% to about 70.0% by weight of said composition, and containing a sufficient amount of ethylene oxide to provide a urinal block melting point above approximately 100° F.; and,

e. a germicide in an effective amount to reduce the bacterial count wherein the pH ranges from 6.5 to about 1.8.

5,336,425

ACIDIC ALUMINUM CLEANER CONTAINING AN OXIDANT AND A NONIONIC SURFACTANT STABILIZED BY A GLYCOL

Tomoyuki Aoki; Yasuo Iino; Yoji Ono, and Shinichiro Asai, all of Kanagawa, Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US91/04263, § 371 Date Dec. 21, 1993, § 102(e) Date Dec. 21, 1993

PCT Filed Jun. 14, 1992, Ser. No. 971,924

Claims priority, application Japan, Jun. 19, 1990, 2-160442

Int. Cl.[5] C11D *1/72;* **C23F** *1/20, 1/22;* **C23G** *1/12*

U.S. Cl. 252—100 **20 Claims**

1. An acidic liquid cleaner for aluminum having a pH not greater than 2.0 and consisting essentially of water and:

(A) a mineral acid component selected from the group consisting of phosphoric acid, sulfuric acid, nitric acid, and mixtures thereof, with the concentrations of phosphoric acid and sulfuric acid not more than 20 g/L each and the concentration of nitric acid not more than 10 g/L,

(B) from 0.02 to 3.0 g/L of nitrite ions or hydrogen peroxide,

(C) from 0.02 to 5 g/L of ferric ions,

(D) from 0.1 to 5 g/L of nonionic surfactant, and

(E) from 0.05 to 5 g/L of a component selected from the group of glycols containing from 2 to 10 carbon atoms per molecule and mixtures thereof, and, optionally,

(F) a chelating agent which sequesters aluminum ions.

5. A process for cleaning aluminum, comprising contacting the aluminum with an acidic liquid cleaner having a pH of not more than 2.0 and comprising mineral acid, oxidant, polyvalent metal ions, surfactant, and from 0.05 to 5 g/L of a component selected from the group consisting of glycols containing from 2 to 10 carbon atoms per molecule and mixtures thereof.

5,336,426

PHASE STABLE VISCOELASTIC CLEANING COMPOSITIONS

James E. Rader, 1781 Beachwood Way, and William L. Smith, 3227 Runnymede Ct., both of Pleasanton, Calif. 94566

Continuation-in-part of Ser. No. 121,549, Nov. 17, 1987, Pat. No. 5,055,219. This application Jul. 15, 1991, Ser. No. 729,664

Int. Cl.[5] C11D *7/54*

U.S. Cl. 252—102 **12 Claims**

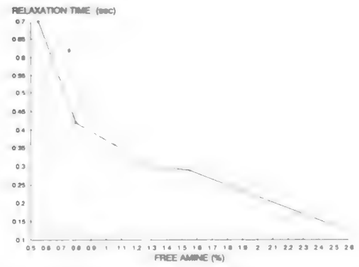
1. A thickened, phase-stable cleaning composition having a viscoelastic rheology comprising, in aqueous solution

(a) a hypochlorite compound, present in a cleaning effective amount;

(b) a viscoelastic thickening system present in a thickening effective amount consisting essentially of:

(i) a quaternary ammonium compound;

(ii) an organic counterion selected from the group consisting of alkyl and aryl carboxylates, alkyl and aryl sulfonates, sulfated alkyl and aryl alcohols, and mixtures thereof; and



(iii) a free amine being a primary, secondary or tertiary amine and wherein the free amine is present in the composition in an amount of about 0.1–2.5% by wt. based on the quaternary ammonium compound: and wherein

the resulting Composition has a relative elasticity of greater than about 0.03 sec/Pa and is phase stable and has an ionic strength of 0.09 g-ions/kg solution.

5,336,427

LAVATORY CLEANSING AND SANITIZING BLOCKS CONTAINING A HALOGEN RELEASE BLEACH AND A SILICONE OIL STABILIZER

Charles J. Bunczk, Norristown; Peter A. Burke, Downingtown; William R. Camp, Reading, and John L. Orehotsky, Gilbertsville, all of Pa., assignors to Kiwi Brands, Inc., Douglasville, Pa.

Division of Ser. No. 725,538, Jul. 3, 1991, Pat. No. 5,205,955. This application Jan. 14, 1993, Ser. No. 4,262

Int. Cl.[5] C11D *3/20, 3/37, 3/395, 3/43*

U.S. Cl. 252—104 **12 Claims**

1. An extruded lavatory cleansing block comprising about 20 to 40% by weight of a halogen release bleaching agent, about 0.1 to 8% by weight of a siloxane oil to stabilize the bleaching agent, about 50 to 65% by weight of an oxidation resistant surfactant and about 2 to 10% of a solubility control agent.

5,336,428

OFFSHORE RIG CLEANER

Roy I. Kaplan, Missouri City, and Jerry E. Pardue, Sugar Land, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jan. 23, 1990, Ser. No. 468,846

Int. Cl.[5] C11D *7/22;* **C02F** *5/10*

U.S. Cl. 252—162 **9 Claims**

1. An aqueous cleaning composition for degreasing offshore oil rig platforms consisting of from 5–7 wt. % d-limonene, from 15–21 wt. % nonionic surfactant and from 0.2–0.4 wt. % of an acrylic copolymer thickening agent, the composition being a viscous, substantially clear solution.

5,336,429

VIRTUALLY CONSTANT BOILING POINT COMPOSITIONS BASED ON ISOFLURANE

Pierre Barthélemy, Jodoigne; Mireille Paulus, Brussels, both of Belgium; Hans Buchwald, Ronneaberg, Fed. Rep. of Germany; Joachim Hellmann, Hanover, Fed. Rep. of Germany, and Boleslaus Raszkowski, Wiedensahl, Fed. Rep. of Germany, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Aug. 3, 1992, Ser. No. 923,689

Claims priority, application Belgium, Aug. 1, 1991, 09100711

Int. Cl.[5] C11D *7/30, 7/50*

U.S. Cl. 252—171 **20 Claims**

1. A virtually constant boiling point composition consisting essentially of a binary mixture of isoflurane and one compound selected from the group consisting of methanol, ethanol, methyl acetate, methyl formate and ethyl formate, said composition containing

from about 0.1% to 30% by weight of methanol and from about 99.9 and 70% by weight of isoflurane, said composition having a boiling point at atmospheric pressure of approximately 49.5°±2.5° C.;

from about 0.01% to 15% by weight of ethanol and from about 99.99 to 85% by weight of isoflurane, said composition having a boiling point at atmospheric pressure of approximately 51.4°±2° C.;

from about 15% to 75% by weight of methyl acetate and from about 85 to 25% by weight of isoflurane, said composition having a boiling point at atmospheric pressure of approximately 61.5°±2.5° C.;

from about 0.1% to 30% by weight of methyl formate and from about 70% to 99.9% by weight of isoflurane, said composition having a boiling point at atmospheric pressure of approximately 47.2°±3° C.; or

from about 10% to 70% by weight of ethyl formate and from about 30 to 90% by weight of isoflurane, said composition having a boiling point at atmospheric pressure of approximately 57.2°±2.5° C.

5,336,430

LIQUID DETERGENT COMPOSITION CONTAINING BIODEGRADABLE STRUCTURANT

William S. Bahary, Pearl River, N.Y., and Michael P. Hogan, Rochelle Park, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Nov. 3, 1992, Ser. No. 970,725

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[5] C11D *3/22, 3/395, 17/08*

U.S. Cl. 252—174.17 **10 Claims**

1. A liquid automatic dishwashing detergent composition comprising:

(a) 0.1 to 0.35 wt. % of a xanthan gum;

(b) 10 to 40 wt. % of a builder;

(c) 0 to about 25 wt. % of an alkalinity agent;

(d) 0.01 wt. % to 1 wt. % of a chlorine scavenger agent;

(e) about 0.2 to about 3.0 wt. % available chlorine provided in wax encapsulates, each encapsulate prepared in a fluidized bed having a coherent paraffin wax coating which is stable in an alkaline environment; and

(f) water.

7. A method of washing dishware using a liquid automatic dishwashing compositions having the following formula:

(a) 0.1 to 0.35 wt. % of a xanthan gum;

(b) 10 to 40 wt. % of a builder;

(c) 0 to about 25 wt. % of an alkalinity agent;

(d) 0.01 wt. % to 1 wt. % of a chlorine scavenger agent;

(e) about 0.2 to about 3.0 wax wt. % available chlorine source provided as a wax encapsulate, each encapsulate prepared in a fluidized bed and having a coherent paraffin wax coating which is stable in an alkaline environment; and

(f) water;

VOL 1165 ISS 2 AG 9 1994 UMI

wherein said dishware is contacted with said composition in an aqueous dishwashinq liquor.

5,336,431

COMPOSITION AND METHOD FOR SULFIDE CONTROL

Bruce E. Richards, Streator; Tyrone G. Goodart, Peru; Philip A. Vella, and John R. Walton, both of Ottawa, all of Ill., assignors to Carus Corporation, Peru, Ill.

Division of Ser. No. 903,006, Jun. 23, 1992, Pat. No. 5,200,092. This application Jan. 6, 1993, Ser. No. 971

Int. Cl.[5] C02B *1/34*

U.S. Cl. 252—184 **13 Claims**

1. A composition for the control of odor of sulfides in sulfide containing water, the composition comprising:

an alkali metal permanganate and a water soluble nitrate salt, the composition comprising from about 0.5 to about 95.5 weight percent permanganate; and from about 0.5 to about 95.5 weight percent nitrate salt.

5,336,432

COMPOSITION FOR MICROEMULSION GEL HAVING BLEACHING AND ANTISEPTIC PROPERTIES

John Petchul, 2221 Windy Hill La., Lake Orion, Mich. 48363, and Rosemary Gaudreault, Park Ridge, Ill., assignors to John Petchul, Lake Orion, Mich.

Filed Jan. 24, 1992, Ser. No. 825,560

Int. Cl.[5] C01B *15/01*; B01J *13/00*; A61K *7/135*

U.S. Cl. 252—186.28 **7 Claims**

1. A composition of matter comprising:

a water phase consisting of between 8.0 and 64.0 percent by weight water and between 0.5 and 8.0 percent by weight propylene glycol;

an oil phase consisting of between 1.5 and 40.0 percent by weight a polyethylene glycol ether of isocetyl alcohol, between 0.5 and 12.0 percent by weight polyethylene glycol ether of oleyl alcohol, and between 1.5 and 10.0 percent by weight a polypropylene glycol ether of stearyl alcohol; and

between 6.0 and 35.0 percent by weight hydrogen peroxide.

5,336,433

BLEACHING AGENT

Hans Lagnemo, Göteborg, Sweden; Robert E. Sparks, Kirkwood, and Irwin C. Jacobs, Eureka, both of Mo., assignors to Eka Nobel AB, Bohus, Sweden

Filed Jun. 8, 1992, Ser. No. 891,735

Int. Cl.[5] C11D *17/06*

U.S. Cl. 252—186.23 **15 Claims**

1. A particle comprising a peroxy compound core with a hydrophobic coating, said coating comprising:

(a) a hydrophobic substance selected from the group consisting of a saturated fat, a wax, a phosphatide and combination thereof;

(b) a surfactant dissolved in the hydrophobic substance; and

(c) water-swellable grains;

wherein the components (a), (b) and (c) in the coating are substantially inert with respect to the peroxy compound.

13. A method for bleaching an article, comprising contacting the article with a bleaching agent, wherein the bleaching agent comprises a plurality of particles each having a peroxy compound core within a hydrophobic coating, said coating comprising:

(a) a hydrophobic substance selected from the group consisting of a saturated fat, a wax, a phosphatide and mixtures thereof;

(b) a surfactant dissolved in the hydrophobic substance; and

(c) water-swellable grains;

wherein the components (a), (b) and (c) in the coating are substantially inert with respect to the peroxy compound.

5,336,434

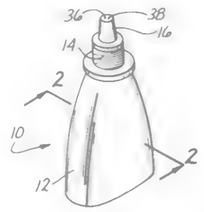
METHODS, COMPOSITIONS AND APPARATUS TO DISINFECT LENSES

John Y. Park, Santa Ana; Paul S. Ripley, Irvine, both of Calif., and Anthony J. Dziabo, Lake Forest, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 906,817, Jun. 30, 1992, which is a continuation-in-part of Ser. No. 664,601, Mar. 4, 1991, which is a continuation-in-part of Ser. No. 416,074, Oct. 2, 1989, Pat. No. 5,078,908, and Ser. No. 461,405, Jan. 5, 1990, Pat. No. 5,279,673, and Ser. No. 461,540, Jan. 5, 1990, Pat. No. 4,997,626. This application Nov. 10, 1992, Ser. No. 974,399

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—187.21 **17 Claims**



1. A method for disinfecting a lens which comprises:

contacting a lens to be disinfected with a liquid medium containing stabilized chlorine dioxide effective to form chlorine dioxide and an activator component selected from the group consisting of chlorine dioxide reducing components effective to chemically reduce chlorine dioxide in an amount effective to effect formation of a lens disinfecting amount of chlorine dioxide from said stabilized chlorine dioxide in said liquid medium, thereby disinfecting said lens to be disinfected.

9. A composition useful for disinfecting a contact lens comprising:

a liquid medium containing stabilized chlorine dioxide effective to form chlorine dioxide in an amount more than that effective to form a contact lens disinfecting amount of chlorine dioxide; and

an activator component selected from the group consisting of chlorine dioxide reducing components effective to chemically reduce chlorine dioxide in an amount effective to effect formation of a contact lens disinfecting amount of chlorine dioxide from said stabilized chlorine dioxide in said liquid medium.

5,336,435

HIGH POLYMER AND FERROELECTRIC LIQUID CRYSTAL COMPOSITION UTILIZING SAME

Hiroyuki Endo; Satoshi Hachiya, and Fumio Moriwaki, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

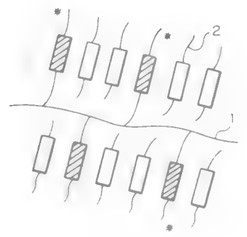
Division of Ser. No. 992,050, Dec. 17, 1992, Pat. No. 5,264,517. This application Jun. 28, 1993, Ser. No. 82,381

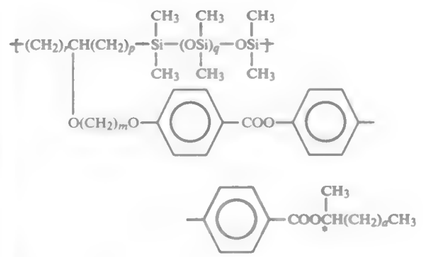
Claims priority, application Japan, Dec. 20, 1991, 3-354443

Int. Cl.[5] C09K *19/34, 19/52*

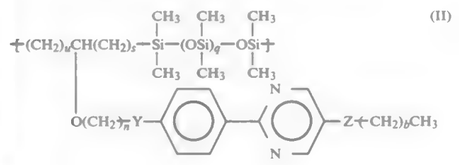
U.S. Cl. 252—299.61 **13 Claims**

1. A ferroelectric liquid crystal composition comprising a high polymer comprising a recurring unit (I) represented by the formula:





and a recurring unit (II) represented by the formula:



wherein

r, u, p and s each represent an integer of 2 to 5,

q represents a number of 0 to 20,

m represents an integer of 8 to 12,

n represents an integer of 6 to 15,

a represents an integer of 1 to 8,

b represents an integer of 5 to 15,

Y represents —O— or —COO—,

Z represents —O— or a single bond,

and * represents an asymmetric carbon, and

a low molecular weight smectic liquid crystal.

5,336,436

OPTICALLY ACTIVE OXIRANE DERIVATIVES, AND THEIR USE AS DOPES IN LIQUID-CRYSTAL MIXTURES

Günter Scherowsky, and Kirsten Grüneberg, both of Berlin, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

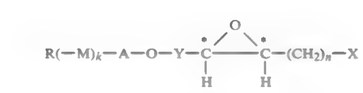
Filed Jun. 22, 1992, Ser. No. 902,990

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1991, 4120783

Int. Cl.[5] C09K *19/34*; C07D *239/02, 303/12*

U.S. Cl. 252—299.61 **6 Claims**

1. An oxirane derivative of the formula (I)



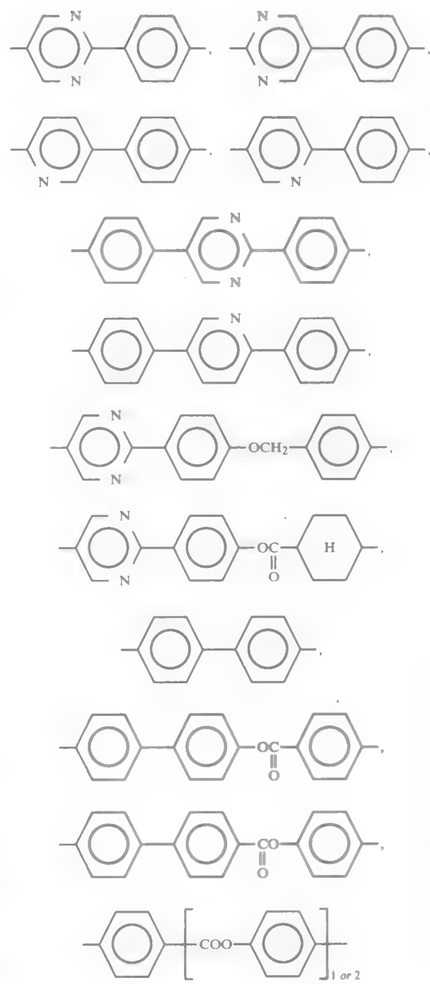
in which:

R is a straight-chain or branched alkyl or alkenyl radical having 6 to 12 carbon atoms and possibly containing an asymmetrical carbon atom;

M is —O, —S, —O—CO, —CO—O or —CO,

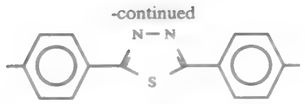
A is a radical of the subformulae below, in which the phenylene ring may also be monosubstituted or disubstituted by F

(I)



VOL 1165 ISS 2 AG 9 1994 UMI

-continued



X is $H_3COCH_2CH_2OCH_2O$—, halogen, trialkylsilyloxy or tetrahydropyranyloxy,
Y is —CH_2— or —CO—,
n is 1 to 10, and
k is 0 or 1.

5,336,437

PROCESS FOR MAKING APATITIC PHOSPHORS

Robert T. McSweeney, Wakefield, Mass., assignor to Osram Sylvania Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 902,125, Jun. 22, 1992, Pat. No. 5,232,626. This application Jun. 1, 1993, Ser. No. 69,899
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] C09K *11/73*
U.S. Cl. 252—301.4 P 2 Claims

1. A method of preparing an alkaline earth halophosphor having an antimony content greater than about 0.70 weight percent and having the general formula $Ca_{10-x-z}Mn_xSb_z(F_{2-y-z}Cl_yO_z)(PO_4)_6$, where x is from 0.15 to 0.5, z is from greater than about 0.06 to about 0.2 and y is from 0 to 0.4, by the steps of:

forming a uniform mixture of starting raw materials in sufficient amounts to produce an alkaline earth halophosphate of a similar formulation and an air-fired alkaline earth halophosphate of said formula, said air-fired halophosphate having been fired in air at a temperature of 1150° C. to 1200° C.; and

firing said uniform mixture of starting raw materials and said air-fired alkaline earth halophosphate in an inert atmosphere at a temperature from about 1100 to about 1160 degrees Centigrade wherein said air-fired alkaline earth halophosphate is refired in an atmosphere containing volatile species comprising H_2O, CO_2, Sb_2O_4, $SbCl_3$, H_2 and CO produced from said starting raw materials.

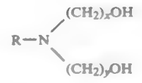
5,336,438

RAPID AND MEDIUM SETTING HIGH FLOAT BITUMINOUS EMULSIONS FROM DIFFICULT ASPHALTS

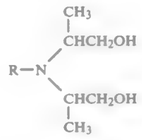
Peter Schilling, and Hans G. Schreuders, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 354,123, May 22, 1989, abandoned. This application Jul. 3, 1991, Ser. No. 725,422
Int. Cl.[5] B01J *13/00;* C08L *95/00*
U.S. Cl. 252—311.5 7 Claims

1. A method of forming a high float rapid set aqueous bituminous emulsion comprising bitumen and water portions; wherein from about 0.3% to about 0.5%, based on the weight of the emulsion, of an anionic emulsifier in the form of an acid salt, comprised of a mixture of a first fatty acid and the reaction product of the first fatty acid with a member of the group consisting of acrylic acid, methacrylic acid, fumaric acid, maleic acid, and maleic anhydride is added to the water portion; and wherein from 0.1% to about 0.7%, based on the weight of the asphalt, of an asphalt additive comprised of a condensation reaction product of a second fatty acid reacted with an amino alcohol selected from a member of the group consisting of



where R=CH_3—, C_2H_5— through $C_{18}H_{30-36}$—, $HO(CH_2)_z$— and where x, y, z=2–6 and



where R=CH_3—, C_2H_5— through $C_{18}H_{30-36}$—,



and $HO(CH_2)_z$, where z=2–6, is added to the bitumen portion prior to emulsification by combining the bitumen and water proportions; and wherein the bitumen contains a high naphthenic acid or a high wax content and has an acid number of from 3.0 to 5.0.

5,336,439

SALT COMPOSITIONS AND CONCENTRATES FOR USE IN EXPLOSIVE EMULSIONS

John W. Forsberg; Richard W. Jahnke, both of Mentor; Richard M. Lange, Euclid, and Marvin B. DeTar, Wickliffe, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

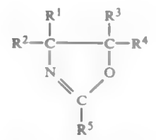
Continuation-in-part of Ser. No. 265,877, Nov. 1, 1988, Pat. No. 5,047,175, which is a division of Ser. No. 137,301, Dec. 23, 1987, Pat. No. 4,828,633. This application Aug. 8, 1991, Ser. No. 743,537
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] B01F *17/16, 17/36;* C07C *69/40*
U.S. Cl. 252—356 78 Claims

1. A composition comprising:

(A) at least one salt moiety derived from (A)(I) at least one high-molecular weight hydrocarbyl-substituted polycarboxylic acylating agent, said hydrocarbyl-substituent of said acylating agent (A)(I) having a number average molecular weight of at least about 280, and (A)(II) one or more members selected from the group consisting of ammonia, at least one amine, at least one alkali or alkaline earth metal, and at least one alkali or alkaline earth metal compound;

(B) at least one salt moiety derived from (B)(I) at least one low-molecular weight polycarboxylic acylating agent, said acylating agent (B)(I) optionally having at least one hydrocarbyl substituent having up to about 18 carbon atoms, and (B)(II) one or more members selected from the group consisting of ammonia, at least one amine, at least one alkali or alkaline earth metal, and at least one alkali or alkaline earth metal compound;

said moieties (A) and (B) being coupled together (C) by at least one compound comprising component (C)(I) and optionally component (C)(II), component (C)(I) being at least one oxazoline represented by the formula



(I)

wherein in Formula (I)
R^1, R^2, R^3, R^4 and R^5 are independently (i) hydrogens, (ii) hydrocarbyl groups, (iii) hydroxy-substituted hydrocarbyl groups, (iv) hydroxy-substituted poly(hydrocarbyloxy) groups, (v) amino-substituted hydrocarbyl groups or (vi) amino-substituted poly(hydrocarbyloxy) groups, with the proviso that at least two of R^1, R^2, R^3, R^4 and R^5 independently are (iii), (iv), (v) or (vi);
optional component (C)(II) being at least one compound other than component (C)(I) having (i) two or more primary amino groups, (ii) two or more secondary amino groups, (iii) at least one primary amino group and at least one secondary amino group, (iv) at least two hydroxyl groups or (v) at least one primary or secondary amino group and at least one hydroxyl group.

5,336,440

PROCESS FOR DECOMPOSITION OF METHANOL

Tadamitsu Kiyoura; Takashi Jimbo; Yasuo Kogure, and Kazuo Kanaya, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 793,288, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 551,088, Jul. 11, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 975,951
Claims priority, application Japan, Jul. 21, 1989, 1-187469
Int. Cl.[5] C07C *1/02*
U.S. Cl. 252—373 5 Claims

1. A process for the decomposition of methanol or a mixture of methanol and water to prepare a mixed gas of CO and H_2 which comprises carrying out the decomposition reaction of methanol in the temperature range of from 270 to 400° C. and in the pressure range of atmospheric pressure to 20 kg/cm^2 and in the presence of a catalyst containing chromium oxide and zinc oxide as main components and containing a compound selected from the group consisting of lanthanum oxide, lanthanum hydroxide, cerium oxide, cerium hydroxide and an oxide of didymium which is a mixture of rare earth elements said compound being present in an amount of from 0.5 to 5% by weight based on the total weight of chromium oxide and zinc oxide wherein the contents of iron and nickel in the catalyst are each maintained at 0.5% by weight or less.

5,336,441

CORROSION INHIBITION IN HIGHLY ACIDIC ENVIRONMENTS BY USE OF PYRIDINE SALTS IN COMBINATION WITH CERTAIN CATIONIC SURFACTANTS

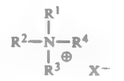
Sayed S. Shah; William F. Fahey, and Bernardus A. Oude Alink, all of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed May 29, 1991, Ser. No. 706,661
Int. Cl.[5] C23F *11/14*
U.S. Cl. 252—390 18 Claims

1. A method for inhibiting corrosion of ferrous surfaces in an acidic, aqueous medium, comprising incorporating into the medium a corrosion-inhibiting amount of (1) a pyridine salt composition containing a pyridine salt selected from the group consisting of quaternary pyridine salts, pyridine.HCl salts and mixtures thereof, and (2) a cationic surfactant that forms a bilayer on the ferrous surfaces in the medium.

12. A method as set forth in claim 1, wherein the cationic surfactant is selected from the group consisting of

(a) quaternary ammonium halides of the formula:



wherein R^1 is an alkyl or alkylaryl group of from about 12 to about 18 carbon atoms, the aryl portion of the alkylaryl group containing no more than about six carbon atoms, are R^2–R^4 are independently selected from among methyl, ethyl and benzyl, provided that at most only one of R^2–R^4 is benzyl, and X is a halide; and

(b) quaternary salts of mono-haloalkyl ethers or dihaloalkyl ethers of from two to about six carbon atoms and trialkyl amines of the formula:



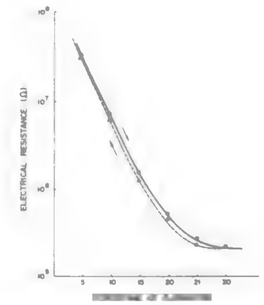
wherein R^5 is an alkyl group of from about 12 to about 18 carbon atoms, and R^6 and R^7 are independently selected from among methyl, ethyl and propyl, provided that the total number of carbon atoms of R^6 and R^7 is at most about four.

5,336,442

EXTENSION TYPE CONDUCTIVE RUBBER AND PROCESS FOR MAKING AND METHOD FOR USING SAME

Hiroshi Kuramochi, Kawaguchi, Japan, assignor to Kabushiki Kaisha Fine Rubber Kenkyuusho, Kawaguchi, Japan

Filed Feb. 21, 1990, Ser. No. 482,875
Int. Cl.[5] H01B *1/00, 1/20, 1/24*
U.S. Cl. 252—511 11 Claims



1. An extension conductive rubber formed by impregnating a cross-linked conductive silicone rubber that contains suspended carbon particles at a ratio of ten to eighty parts by weight for one hundred parts by weight of said conductive silicone rubber with a silicon oil that has a compatibility with said conductive silicone rubber whereby said extension conductive silicone rubber will exhibit high electrical resistance value when it is not under deformation and will exhibit a decrease in its electrical resistance value in response to a magnitude of extension deformation applied thereof.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,443
ANISOTROPICALLY ELECTROCONDUCTIVE ADHESIVE COMPOSITION

Satoshi Odashima, Saitama, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

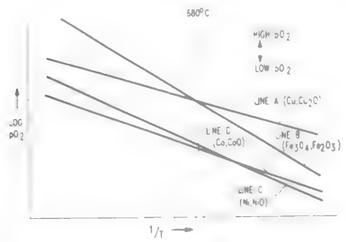
Filed Feb. 22, 1993, Ser. No. 20,564
Int. Cl.[5] H01B *1/00, 1/04, 1/20, 1/24*
U.S. Cl. 252—511 **6 Claims**

1. An anistropically electroconductive adhesive composition which is a uniform blend comprising:
(a) an electrically insulating adhesive resin as the matrix of the composition; and
(b) electrically conductive particles of carbon dispersed in the matrix, each particle having a spherical particle configuration with at least four projections projecting therefrom, the endpoint of the projections being at least 0.5 μm above the surface of the inscribed sphere to the particle, said particles having a compressive strength of at least 10 kgf/mm^2.

5,336,444
CERAMIC VIA COMPOSITION, MULTILAYER CERAMIC CIRCUIT CONTAINING SAME, AND PROCESS FOR USING SAME

Jon A. Casey, Poughkeepsie, N.Y.; Renuka S. Divakaruni, Ridgefield, Conn.; Govindarajan Natarajan, Pleasant Valley; Srinivasa S. N. Reddy, LaGrangeville, both of N.Y., and Manfred Sammet, Schoenaich, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1992, Ser. No. 890,898
Int. Cl.[5] H01B *1/00, 1/02*
U.S. Cl. 252—513 **5 Claims**



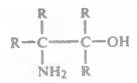
5. A fritless metallurgical paste composition for co-firing with a glass-ceramic material, said fritless metallurgical paste composition consisting essentially of:
a conductive first metal wherein said conductive first metal is copper;
an oxidizable second metal selected from the group consisting of iron, nickel and cobalt wherein said oxidizable second metal is provided in an amount sufficient to bring the volume shrinkage of said fritless paste composition upon sintering to from about 35% to 45%; and
an organic medium in which said first and second metals are dispersed.

5,336,445
LIQUID HARD SURFACE DETERGENT COMPOSITIONS CONTAINING BETA-AMINOALKANOLS

Daniel W. Michael, Cincinnati, and Dennis R. Bacon, Milford, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 628,065, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 499,858, Mar. 27, 1990, abandoned. This application Aug. 11, 1992, Ser. No. 928,143
Int. Cl.[5] C11D *1/92, 3/30, 3/34*
U.S. Cl. 252—548 **22 Claims**

1. An aqueous liquid hard surface detergent compositions comprising: (a) from about 0.1% to about 40% detergent surfactant; (b) from about 0.05% to about 10% beta-aminoalkanol of the formula:



wherein each R is selected from the group consisting of hydrogen and alkyl groups containing from one to four carbon atoms and the total of carbon atoms in the compound is from three to six and optional cosolvent in addition to said beta-aminoalkanol which has cleaning activity and a hydrogen bonding parameter of less than about 7.7 and which, when present, is at a level of from about 1% to about 30%; and (c) the balance being an aqueous solvent system and minor ingredients, said aqueous solvent system comprising water and optional non-aqueous polar solvent having minimal cleaning action selected from the group consisting of methanol, ethanol, isopropanol, ethylene glycol, propylene glycol, and mixtures thereof, and which, when present, is at a level of from about 0.5% to about 40%.

5,336,446
COMPOSITIONS AND PROCESS FOR NON-IRRITATING DENSE FOAMING OF BATH WATER AND PERI-VAGINAL CLEANING

Robert M. Goodman, 1402 Astor Ave., Bronx, N.Y. 10469

Continuation of Ser. No. 577,951, Sep. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 312,924, Feb. 21, 1989, abandoned. This application May 1, 1992, Ser. No. 922,010
Int. Cl.[5] C11D *1/90, 1/94, 1/12*
U.S. Cl. 252—554 **5 Claims**

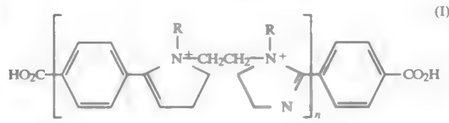
1. A composition comprising (I) anionic surfactant salts and (II) an N-substituted, N,N-dimethyl betaine of glycine, wherein the N substituent is selected from the group consisting of a C_{10-18} straight-chain saturated aliphatic primary alkyl group, or a C_{10-18} fatty amido alkyl group, or mixtures thereof; wherein the mass ratio of I to II is from 1:1 to 6:1; wherein the anionic surfactant salts (I) are selected from the group consisting of (III) a monoester of alkali metal lauryl sulfosuccinate with a straight-chain saturated primary alcohol, (IV) a monoester of sulfosuccinate with a 1-6 mole ethoxylate of a straight-chain saturated primary alcohol, and (V) a sulfonation product, wherein the compound to be sulfonated is selected from the group consisting of C_{10-18} alkyl (ethyl ether) $_{1-7}$, alkyl (ethyl ether)$_{1-7}$ alcohol, alkane, olefin, alkyl benzene, alcohol, and alkyl ester; wherein the anionic surfactants of (I) are in the relationship $(a+2b)/c-b)=r$, wherein a, b, and c are the mass proportions of IV, V, and III, respectively, and r is from 0 to 4.6 wherein at least about 59% by weight of the anionic surfactant is (III).

5,336,447
PROCESS AND COMPOSITION FOR TREATING FABRICS

Anthony H. Clements, Cefn-y-Bedd, Wales, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 797,518, Nov. 22, 1991, abandoned. This application Jun. 15, 1993, Ser. No. 77,888
Claims priority, application United Kingdom, Nov. 30, 1990, 9026050.6
Int. Cl.[5] C11D *3/42, 3/28;* **D06L** *3/12*
U.S. Cl. 252—554 **6 Claims**

1. A fabric or a textile treatment composition comprising:
(a) 0.01 to 60 wt. % of a quenching agent of formula



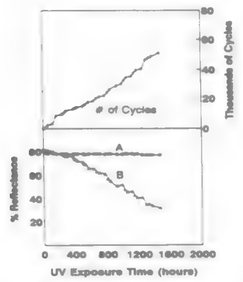
(I)

where n is about 20; and
b. 1 to 50 wt. % of a detergent active selected from the group consisting of a soap, a non-soap anionic detergent material, a nonionic detergent material, a zwitterionic synthetic detergent material, an amphoteric synthetic detergent material, a cationic fabric softening material, a nonionic fabric softening material, a zwitterionic fabric softening material, an amphoteric softening material, and mixtures thereof.

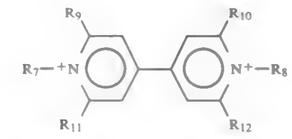
5,336,448
ELECTROCHROMIC DEVICES WITH BIPYRIDINIUM SALT SOLUTIONS

Harlan J. Byker, Zeeland, Mich., assignor to Gentex Corporation, Zeeland, Mich.

Filed Jun. 25, 1991, Ser. No. 720,177
The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.
Int. Cl.[5] G02F *1/01, 1/00*
U.S. Cl. 252—583 **42 Claims**



14. A solution-phase electrochromic device in which the solution of variable transmittance comprises a solvent; an anodic electrochromic compound which, upon oxidation of its zero-potential equilibrium state, undergoes an increase in molar extinction coefficient at at least one wavelength in the visible range; and a cathodic electrochromic compound which is a salt of a cation of Formula IV



IV

wherein R_7 and R_8 are independently selected from the group consisting of an alkyl group with 1–20 carbon atoms and benzyl; and R_9, R_{10}, R_{11}, and R_{12} are independently selected from the group consisting of alkyl groups with 1–4 carbon atoms.

5,336,449
LUMINESCENT COMPOSITIONS AND STRUCTURES INCORPORATING THEM

John F. Ackerman, Cheyenne, Wyo., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 29, 1991, Ser. No. 751,847
Int. Cl.[5] F21V *9/00;* **C09K** *11/08;* **C01B** *7/00*
U.S. Cl. 252—582 **8 Claims**

1. A phosphorescent article comprising a luminescent compound having the formula M_2AOF_5, wherein:
(a) M is potassium, rubidium or cesium;
(b) A is tantalum or niobium;
(c) said luminescent compound has a crystal lattice of the Cs_2ZrF_6 type; and
(d) said phosphorescent article is deposited on a glass envelope support.

5,336,450
PROCESS TO REMOVE RARE EARTH FROM IFR ELECTROLYTE

John P. Ackerman, Downers Grove, and Terry R. Johnson, Wheaton, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 31, 1992, Ser. No. 999,339
Int. Cl.[5] G21F *9/00*
U.S. Cl. 423—21.1 **14 Claims**

1. A process for purifying a molten chloride salt electrolyte of rare earth fission product values when these values are contained in the salt together with uranium, plutonium, cesium, strontium and minor actinide values selected from the group consisting of neptunium, americium and curium, comprising:
contacting the salt with a molten cadmium metal reductant solution whereby most of the uranium, plutonium and minor actinide values together with some of the rare earth values are reduced and taken up by the cadmium metal while minor amounts of uranium, plutonium, minor actinides, and most of the rare earth values remain in the salt together with the cesium and strontium,
separating the molten cadmium metal reductant solution from the salt,
contacting the salt with a molten cadmium metal extractant solution containing uranium metal whereby the uranium displaces most of the remaining plutonium and minor actinide values remaining in the salt which are taken up by the cadmium metal,
separating the salt from the molten cadmium metal extractant solution,
contacting the molten salt with a molten cadmium metal strip solution containing lithium whereby the lithium reduces the rare earths and uranium remaining in the salt, said reduced rare earths and uranium being taken up by the molten cadmium metal strip solution, thereby purifying the salt of rare earths,
separating the cadmium metal strip solution containing the rare earths and the uranium from the molten purified salt,

VOL 1165 ISS 2 AG 9 1994 UMI

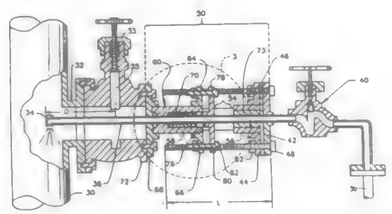
mixing the molten purified salt with an oxidant to form an oxidizing salt,
mixing the molten cadmium reductant and molten cadmium extractant solutions to form an actinide return stream, and
contacting the oxidizing salt with the actinide return stream whereby the plutonium, uranium and other values in the cadmium solution are oxidized to the chloride salt and taken up by the salt, thereby forming a purified molten chloride electrolyte salt suitable for recycling.

5,336,451

DESUPERHEATER APPARATUS AND METHOD

James M. Lovick, Fernandina Beach, Fla., assignor to ITT Rayonier, Inc., Stamford, Conn.

Continuation of Ser. No. 7,741, Jan. 22, 1993, abandoned. This application Dec. 8, 1993, Ser. No. 164,624
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—116 5 Claims



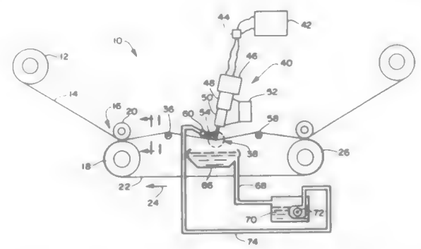
1. A desuperheating device for desuperheating steam flowing through a steam header at an elevated pressure, wherein the interior of said steam header is accessible through a valved opening, said desuperheater device comprising:
a hollow member mountable to said valved opening, said hollow member defining an internal lumen having a tapered region that tapers from a first diameter to a smaller second diameter, wherein said hollow member has a plurality of apertures formed therein that extend into said internal lumen proximate said tapered region and a plurality of flange members that radially extent away from said hollow member proximate the apertures;
a fluid conduit disposed in said hollow member, said fluid conduit having a distal end for discharging fluid flowing through said fluid conduit;
positioning means coupled between said hollow member and said fluid conduit, wherein said positioning means moves said distal end of said fluid conduit relative said hollow member between a first position external of said steam header, and a second position within said steam header;
a sealing element disposed in said hollow member around said fluid conduit;
a tamping element disposed within said hollow member, said tamping element having a plurality of bracket members radially extending therefrom that extend through said plurality of apertures in said hollow member, whereby the relative movement of said tamping element with respect to said tubular member is limited by the presence of the bracket members within the apertures; and
fastening means for fastening said plurality of bracket members extending from said tamping element to said plurality of flange members extending from said hollow member, wherein said fastening means moves said tamping element with respect to said hollow member, thereby selectively advancing said tamping element against said sealing element, wherein said advancing means selectively compresses said sealing means between a first compressive force, where steam is permitted to pass between said fluid conduit and said sealing element, and a second compressive force where said sealing element is biased against said fluid conduit by said tapered region creating a steam impervious seal around said fluid conduit.

5,336,452

PROCESS FOR HYDROSONICALLY AREA EMBOSSING THIN THERMOPLASTIC FILM MATERIALS

Bernard Cohen, Berkley Lake, and Lee K. Jameson, Roswell, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 23, 1992, Ser. No. 950,095
Int. Cl.[5] B29C *59/00*
U.S. Cl. 264—23 26 Claims



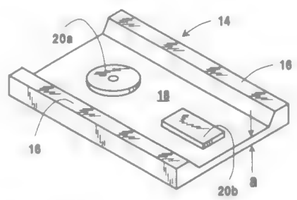
1. A method for forming a pattern of embossed areas in a thermoplastic film material having a thickness of about 10 mils or less, the method comprising the steps of:
(a) placing the thermoplastic film on a pattern anvil having a pattern of raised areas wherein the height of the raised areas is generally less than the thickness of the film;
(b) conveying the thermoplastic film, while placed on the pattern anvil, through an area where a liquid is applied to the film; and
(c) subjecting the thermoplastic film to a sufficient amount of ultrasonic vibrations in the area where the liquid is applied to the film material to emboss at least a portion of the film in a pattern generally the same as the pattern of raised areas on the pattern anvil.

5,336,453

METHOD FOR PRODUCING CERAMIC-BASED ELECTRONIC COMPONENTS

Russell S. Giller, Berlin, and James D. Horrigan, Cheshire, both of Conn., assignors to Aerospace Coating Systems, Inc., Berlin, Conn.

Filed Jun. 11, 1993, Ser. No. 75,683
Int. Cl.[5] C04B *35/46*
U.S. Cl. 264—57 19 Claims



1. A method of heat treating ceramic-based electonic components comprising barium titanate, said method comprising the steps of:
a) providing a furnace fixture adapted to support ceramic-based electronic components comprising a substrate selected from the group consisting of silicon carbide (SiC), cordierite ($2MgO.2Al2O_3.5SiO_2$), mullite ($3Al_2O_3.2SiO_2$),

stabilized zirconia, and alumina containing a glassy bond phase;
b) depositing a cladding layer of zirconia on said furnace fixture substrate by plasma deposition;
c) providing a ceramic-based electronic component comprising barium titanate;
d) placing said ceramic-based electronic component on said zirconia-coated substrate; and
e) firing said ceramic-based electronic component and zirconia-clad substrate to a desired temperature of at least about 1000° C. to heat treat said ceramic-based electronic component.

5,336,454

CERAMIC COMPOSITE AND METHOD

Lionel C. Montgomery, Bay Village, Ohio, assignor to Advanced Ceramics Corporation, Lakewood, Ohio

Filed Mar. 26, 1993, Ser. No. 37,751
Int. Cl.[5] C04B *35/58*
U.S. Cl. 264—63 9 Claims

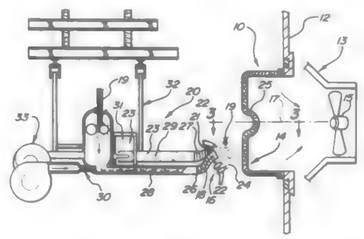
1. A method for cold forming a ceramic composite into a machinable article having good corrosion/erosion resistance to molten metal comprising the steps of:
(a) blending a mixture comprising from 18.5 to 29 wt % mullite, 35 to 18 wt % aluminum nitride, balance boron nitride in a minimum concentration of at least about 40 percent by weight;
(b) milling the blend to an average particle size of less than about 5 microns;
(c) coating the particles with a resinous lubricant composed of a vinyl chloride-vinyl acetate resin dissolved in an organic solvent;
(d) compressing the particles into a cold formed shape; and
(e) pressureless sintering the cold formed shape.

5,336,455

METHOD OF ADDING SHREDDED STRUCTURAL REINFORCED INJECTED MOLDED PLASTIC TO A PREFORM

Josh Kelman, Dover, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Oct. 8, 1992, Ser. No. 957,870
Int. Cl.[5] B27N *1/02*
U.S. Cl. 264—113 14 Claims



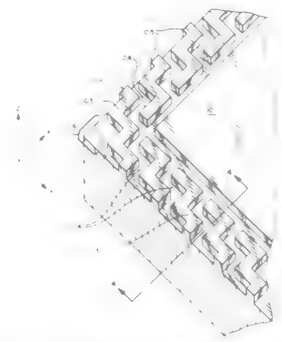
1. A process of forming a fibrous preform for a motor vehicle bumper, said process comprising the steps of;
directing chopped glass fibers and binder onto a center section of a screen that has a contour corresponding to a surface of said motor vehicle bumper;
directing shredded structural reinforced injection molded plastic having glass fibers embedded therein and binder onto a peripheral portion of said screen; and
curing said binder to form a motor vehicle bumper preform having a chopped glass fiber center section and having ends and flanges made from shredded structural reinforced injection molded plastic.

5,336,456

METHOD OF PRODUCING A SCRIBELINED LAYOUT STRUCTURE FOR PLASTIC ENCAPSULATED CIRCUITS

Steven R. Eskildsen, Folsom; Suresh V. Golwalkar, Orangevale, and Tito Barrios, Sacramento, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 698,381, May 10, 1991. This application Dec. 15, 1992, Ser. No. 990,358
Int. Cl.[5] B29C *59/14, 45/14*
U.S. Cl. 264—157 4 Claims



1. A method for reducing fracturing of molding compound surrounding an encapsulated integrated circuit die and preventing the movement of said molding compound with respect to the surface of said integrated circuit die, said method comprising the steps of:
a) producing a plurality of surface features in the scribeline areas of a wafer adjacent to said die, such that said plurality of surface features have topological variance;
b) separating said wafer into individual dies such that said plurality of surface features remain adjacent to said die:
c) encapsulating said die with said molding compound such that said molding compound extends into and makes contact with said surface features present in said scribeline areas, thereby locking said molding compound around said die and further wherein the step of producing surface features includes the step of producing a plurality of trenches etched into said scribeline areas in patterns designed such that said molding compound locks said die in both the x and y directions along the surface of said die when said die is encapsulated with said molding; and wherein said trenches are arranged in patterns such that additional corners are produced in said scribeline areas to alleviate stresses in said molding compound.

5,336,457

METHOD OF MAKING A COMPOSTABLE POLYMERIC COMPOSITE SHEET

Pai-Chuan Wu, Cincinnati, Ohio; Thomas R. Ryle, Burlington, Ky., and Leopoldo V. Cancio, Cincinnati, Ohio, assignors to Clopay Plastic Products Company, Inc., Cincinnati, Ohio

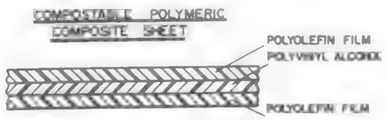
Division of Ser. No. 663,445, Mar. 1, 1991, Pat. No. 5,196,247. This application Oct. 30, 1992, Ser. No. 969,090
Int. Cl.[5] B29C *47/06, 59/04*
U.S. Cl. 264—171 8 Claims

1. A method of making a compostable polymeric composite sheet comprising
coextruding a water insoluble and impermeable top film of thermoplastic polymer and a film of water soluble polymer,
combining a water insoluble bottom layer of thermoplastic polymer on the coextrusion side adjacent said water soluble film to form a composite with said top film and said

VOL 1165 ISS 2 AG 9 1994 UMI

bottom layer having said water soluble polymer therebetween, and

stretching said composite along lines spaced substantially uniformly across the surfaces thereof and through the



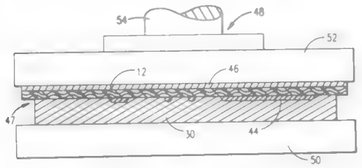
depth of the composite, said stretched areas being separated by unstretched areas and having a thickness less than the unstretched areas, said stretched areas for weakening the strength of said composite while maintaining its water impermeability.

5,336,458

PROCESS OF MANUFACTURING EMBOSSED SIGNAGE FOR HANDICAPPED INDIVIDUALS

Glenn E. Hutchison, Prairie Village, and Tracy M. Allen, Kansas City, both of Kans., assignors to Universal Engraving, Inc., Overland Park, Kans.

Filed Jun. 8, 1992, Ser. No. 895,560
Int. Cl.[5] B29C *43/20*
U.S. Cl. 264—220 **15 Claims**



1. A process for producing signage having a message-defining image that can be read by sighted individuals and a series of dots presenting a corresponding encoded message in Braille characters that can be touch deciphered by visually impaired persons, said process including the steps of:

providing a master female mold having a surface including grooves therein presenting said visually observable message and a series of indentations defining a corresponding message in said Braille characters;

depositing a layer of a flowable synthetic resin composition on said surface of the master female mold in filling relationship to said grooves and indentations,

said composition possessing the property of becoming a solid mass upon application of elevated heat and pressure relative to ambient conditions;

placing a backing member over said surface of the master mold in covering relationship to said flowable layer of the synthetic resin composition, said backing member being formed of an at least partially cured epoxy resin composite;

laying a pressure-compensating element over the backing member, the pressure compensating element being flexible and compressible relative to the backing member;

applying sufficient pressure and supplying adequate heat to the mold with the backing member and element thereon for a time period to effect conversion of the composition into a solid while at the same time expressing the composition from the space between the mold and said backing member except for the material in said grooves and indentations;

causing said quantity of material in said grooves and indentations to adhere to the adjacent portions of the backing member; and

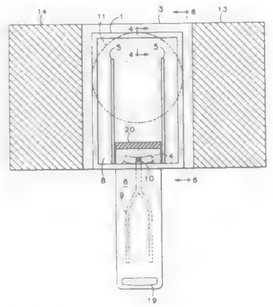
thereafter removing the backing member with the message-defining solid composition firmly adhering thereto from between the mold and said element.

5,336,459

APPARATUS AND METHOD FOR FORMING A GAIT-SIMULATED IMPRESSION OF A FOOT

Randall Barna, P.O. Box 71, Bend, Oreg. 97709

Filed Feb. 26, 1993, Ser. No. 23,083
Int. Cl.[5] B29C *33/40*
U.S. Cl. 264—223 **15 Claims**



8. A method of forming an impression of a foot, comprising the steps of:

(a) positioning a foot on particulate matter that is within a container wherein an insert is located so as to displace a quantity of said particulate matter; and

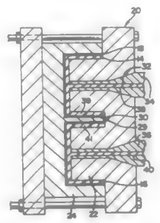
(b) moving said insert thereby causing said particulate matter to shift and said foot to be relocated thereby forming an impression of said foot in said particulate matter.

5,336,460

PROCESS FOR MAKING MOLDED-IN LAMINA HINGE

Siebolt Hettinga, 2123 NW. 111th St., Des Moines, Iowa 50325

Continuation-in-part of Ser. No. 759,929, Sep. 24, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,617
Int. Cl.[5] B29C *45/04, 45/14, 45/16*
U.S. Cl. 264—251 **12 Claims**



1. A process of injection molding for forming a housing having a top thermoplastic enclosing member, a bottom thermoplastic enclosing member, and a hinge formed from a deformable lamina at least partially extending over a surface of said top enclosing member and a surface of said bottom enclosing member, said deformable lamina thereby hinging said top and said bottom enclosing members together, said process comprising the steps of:

(a) providing a mold unit having a first mold section and a second mold section opposite to and in mating alignment with said first mold section, said first mold section having an extended mold cavity dividing member, said second mold section having a recess for receiving therein said extended mold cavity dividing member of said first mold section, upon clamping together of said first and second mold sections;

(b) placing said deformable lamina between said first mold section and said second mold section, said deformable lamina extended between said mold cavity dividing member on said first mold section and said corresponding recess on said second mold section to form a hinge portion therebetween;

(c) clamping said first mold section and said second mold section together using clamping means thereby forming mold cavities for said top enclosing member and said bottom enclosing member;

(d) placing said mold cavity dividing member over at least said hinge portion of said deformable lamina, said mold cavities separated by said mold cavity dividing member, said mold cavity dividing member allowing said deformable lamina to pass between said mold cavities;

(e) providing a first gate through which a plastic injection material will be injected from outside said mold cavity of said top enclosing member into said mold cavity of said top enclosing member;

(f) providing a second gate through which said plastic injection material will be injected from outside said mold cavity of said bottom enclosing member into said mold cavity of said bottom enclosing member;

(g) injecting said plastic material through said first and said second gates into said mold cavities and in bonding securement of said deformable lamina, said mold cavity dividing member preventing said plastic material from passing between said mold cavities, from contacting said hinge portion of said deformable lamina, and from being deposited on said hinge portion of said deformable lamina; and

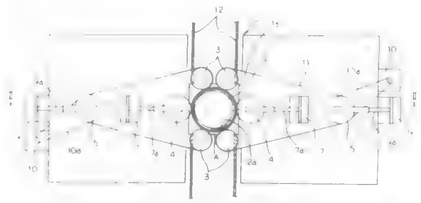
(h) removing said resultant housing from said mold cavities with said deformable lamina hinge portion integrated with said top and bottom enclosing members.

5,336,461

METHOD FOR VULCANIZING ENDLESS RUBBER BELTS

Ken-ichi Ohtani; Osamu Sakamoto; Masahiko Houzouji, and Hiroshi Yamamoto, all of Kobe, Japan, assignors to Bando Kagaku Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 755,283, Sep. 5, 1991, Pat. No. 5,256,045. This application May 10, 1993, Ser. No. 59,070
Claims priority, application Japan, Sep. 7, 1990, 2-237725
Int. Cl.[5] B29C *35/04*
U.S. Cl. 264—294 **2 Claims**



1. A method of forming endless rubber belts on a cylindrical vulcanizing drum, said forming method comprising the step of winding and molding rubber belt materials over an outer circumferential surface of said cylindrical vulcanizing drum, and the subsequent step of vulcanizing said rubber belt materials, wherein

said vulcanizing step comprises a plurality of vulcanizing substeps carried out at different stations and said vulcanizing drum is sequentially transferred to said different stations and held for a specified period for each of said plurality of vulcanizing substeps,

the first of said vulcanizing substeps utilizing a pair of opposing rubber rolls or a pair of opposing endless pressurizing bands and comprising pressing said rolls or bands against the rubber belt materials on the vulcanizing drum, rotating said rubber rolls or pressurizing bands to turn the vulcanizing drum, and simultaneously heating an interior of the vulcanizing drum,

in each of the second of said vulcanizing substeps through the penultimate of said vulcanizing substeps, arcuately surrounding the vulcanizing drum with a pair of endless pressurizing bands and pressing said pressurizing bands against the rubber belt materials on the vulcanizing drum, rotating said pressurizing bands to turn the vulcanizing drum, and simultaneously heating the interior of the vulcanizing drum, and

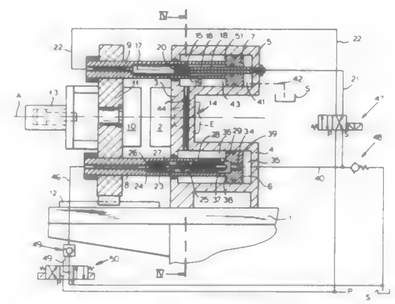
in the final vulcanizing substep, moving said vulcanizing drum into a heating chamber to heat the drum from its sides.

5,336,462

MOLD-CLOSING APPARATUS FOR INJECTION-MOLDING MACHINE

Walter Wohlrab, Weissenburg, Fed. Rep. of Germany, assignor to Krauss-Maffei AG, Munich, Fed. Rep. of Germany

Filed Mar. 2, 1993, Ser. No. 25,943
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1992, 4209392
Int. Cl.[5] B29C *45/68*
U.S. Cl. 264—328.1 **10 Claims**



10. A method of operating a molding system having:

a base;

a fixed mold plate secured to the base;

a fixed mold half carried on the fixed mold plate;

a movable mold plate displaceable on the base longitudinally forward away from the fixed mold half and backward toward the fixed mold half;

a movable mold half carried on the movable plate and fittable with the fixed mold half;

a pair of main cylinders fixed to the fixed mold plate;

respective main pistons subdividing the main cylinders into respective front and rear main compartments and each having a piston rod secured to the movable mold plate and formed with a longitudinally extending chamber, one of the main pistons being formed with a main longitudinal passage extending between a rear end of the respective longitudinally extending chamber and the respective rear main compartment and with a secondary radial passage extending between the rear end of the respective longitudinally extending chamber and the respective front main compartment;

a small closing piston subdividing the chamber of the other main piston into a front opening compartment and a rear closing compartment and having a rearwardly extending piston rod fixed to the fixed mold plate, the small closing piston having a front face in the front opening compart-

VOL 1165 ISS 2 AG 9 1994 UMI

ment and a smaller annular rear face in the rear closing compartment;

a pressure-amplifying piston subdividing the chamber of the one piston into a front control compartment and a rear pressure-amplifying compartment, being freely longitudinally movable therein, and having

a front face in the front control compartment,

a smaller annular rear face in the rear pressure-amplifying compartment, and

a piston rod extending longitudinally rearward from the pressure-amplifying piston;

a valve element longitudinally slidable on the rod of the pressure-amplifying piston and engageable sealingly in the main passage of the one main piston to block flow therethrough;

means interconnecting the valve element and the pressure-amplifying piston for displacement of the valve element out of blocking engagement in the main passage of the one main piston on displacement of the pressure-amplifying piston into a front position and into blocking engagement in the main passage on displacement of the pressure-amplifying piston into a rear position;

a conduit interconnecting the front main compartments; and

a source of fluid having a high-pressure side and a low-pressure side, the method comprising the steps of

in a closing position of the mold halves, connecting the closing compartment of the other piston to the high-pressure side of the source and the opening compartment to the low-pressure side and preventing fluid flow into or out of the control compartment and thereby arresting the pressure-amplifying piston in its chamber,

in an opening position of the mold halves connecting the closing compartment to the low-pressure side and the opening compartment to the high-pressure side and connecting the control compartment to the low-pressure side; and

in a pressurizing position of the mold halves connecting the control compartment to the high-pressure side and thereby displacing the pressure-amplifying piston toward its rear position.

5,336,463

MOLD FOR PRESS MOLDING AND PROCESS FOR PRESS MOLDING OF THERMOPLASTIC RESIN USING THE SAME

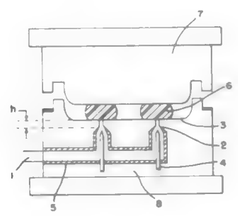
Takahisa Hara, Kawanishi; Masahito Matsumoto, Osaka; Nobuhiro Usui, Osaka, and Shigeyoshi Matubara, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 24, 1992, Ser. No. 955,756

Claims priority, application Japan, Apr. 24, 1991, 3-094265

Int. Cl.[5] B29C *45/28, 45/38*

U.S. Cl. 264—328.7 **10 Claims**



1. A process for press molding a thermoplastic resin comprising the steps of:

providing opposing upper and lower mold halves;

providing a molten resin supply passage in at least one of the upper and lower mold halves;

providing at least one nozzle member formed in said molten resin supply passage;

spacing a tip of said at least one nozzle apart from an inner surface of said at least one of the upper and lower mold halves by a distance of from 10–100 mm;

bidirectionally actuating a pin in said at least one nozzle member for opening and closing the tip of said nozzle within said molten resin supply passage;

supplying the thermoplastic resin from the molten resin passage through said at least one nozzle to a cavity between opened upper and lower mold halves;

terminating the supply of thermoplastic resin by closing the tip of the nozzle; and

clamping together the opposing mold halves after closing the tip of the nozzle.

5,336,464

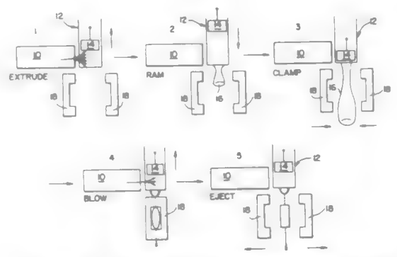
EXTRUSION BLOW MOLDING OF THERMOTROPIC LIQUID CRYSTALLINE POLYMERS

Cheryl F. Corallo, Charlotte, N.C.; Robert B. Sandor, Cliffside Park, N.J., and Ralph S. Blake, Lake Wylie, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Nov. 20, 1992, Ser. No. 979,102

Int. Cl.[5] B29C *49/04*

U.S. Cl. 264—540 **6 Claims**



1. A method for extrusion blow molding a liquid crystalline polymer, said method comprising the steps of; heat-treating a liquid crystalline polymer so to enhance the melt strength of said polymer, said heat-treatment being conducted at a temperature near said polymer's melt temperature; melting said heat-treated liquid crystalline polymer at a suitable parison-forming temperature; forming a parison by vertically extruding the polymer melt generally downward into space; clamping a forming mold around said parison; blowing gas into the clamped parison to form a molded part; and opening said mold to provide the formed part.

5,336,465

METHOD OF MAKING BONE-IMPLANTS

Noboru Matsunaga; Kazuyoshi Azeyanagi; Ichirou Sogaishi, all of Tokyo; Takeo Katakura; Yoshihisa Ueda, both of Kanagawa, and Takaaki Ohsawa, Kanagawa, all of Japan, assignors to Janome Sewing Machine Co., Ltd. and Terumo Corporation, both of Tokyo, Japan

Filed Dec. 3, 1992, Ser. No. 985,833

Claims priority, application Japan, Dec. 3, 1991, 3-347940; Dec. 3, 1991, 3-347941; Dec. 3, 1991, 3-347942

Int. Cl.[5] B22F *3/06*

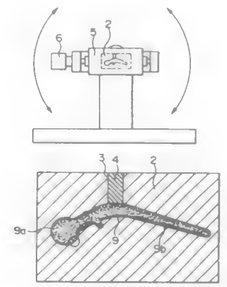
U.S. Cl. 419—2 **6 Claims**

1. Method of making a bone-implant comprising the steps of:

(a) injecting a slurry compound consisting essentially of a powdery sintering material and a binder into a mold having an inner cavity wall defining the shape of the desired bone implant through a gate opening of said mold, said mold being made of porous material capable of absorbing liquid components of said slurry compound;

(b) closing said gate opening;

(c) imparting a kind of movement to said mold to apply a centrifugal force to said slurry compound urging the slurry compound outwardly into the inner cavity wall, during which a major portion of liquid components of said slurry compound is absorbed into said mold, so that the rest of the slurry compound is remaining in the mold



formed into a body having a hollow interior which is completely closed with no communication with the exterior;

(d) removing a formed body from said mold;

(e) debinding said formed body; and

(f) subjecting said formed body to sintering.

5,336,467

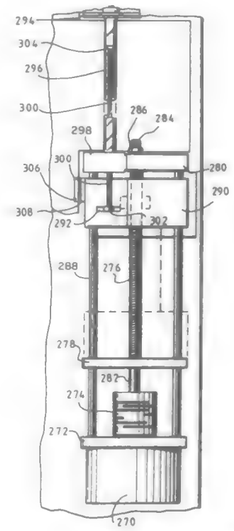
CHEMICAL ANALYZER

Thomas Heidt, Long Valley; Henry Will, Dover; Greydon Rhodes, Chester; Armand Plasensia, Hopatcong, all of N.J., and Roger Clampitt, Hemel Hempstead, United Kingdom, assignors to VetTest S.A., Neuchatel, Switzerland

Division of Ser. No. 806,071, Dec. 6, 1991, Pat. No. 5,250,262, which is a continuation of Ser. No. 441,451, Nov. 22, 1989, Pat. No. 5,089,229. This application Jul. 2, 1993, Ser. No. 87,180

Int. Cl.[5] G01N *21/00*

U.S. Cl. 422—64 **1 Claim**



1. A method of compensating for the backlash between a lead screw and a lead screw engaging member of a fluid sample metering device, the lead screw engaging member moving reciprocatingly in the axial direction of the lead screw upon rotation of the lead screw, which method comprises the steps of:

measuring the axial distance the lead screw engaging member moves in a first axial direction to a first position when the lead screw is rotated in a first rotational direction a predetermined number of revolutions;

measuring the axial distance the lead screw engaging member moves in a second axial direction which is opposite to the first axial direction from the first position when the lead screw is rotated the predetermined number of revolutions in a second rotational direction which is opposite to the first rotational direction;

determining the difference in the distances which the lead screw engaging member moved in the opposite first and second axial directions;

storing a value corresponding to the difference in distance in a storage memory;

sensing whenever the lead screw is to change direction of rotation from the first rotational direction to the second-rotational direction; and

adding a rotational amount corresponding to the difference value to the number of rotations the lead screw is turned in the second rotational direction to compensate for the backlash between the lead screw and the lead screw engaging member.

5,336,466

HEAT RESISTANT MAGNESIUM ALLOY

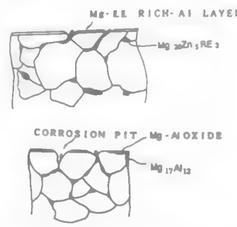
Hideki Iba, and Chikatoshi Maeda, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 24, 1992, Ser. No. 918,602

Claims priority, application Japan, Jul. 26, 1991, 3-210305; Dec. 20, 1991, 3-355893

Int. Cl.[5] C22C *23/00*

U.S. Cl. 420—406 **4 Claims**



1. A heat resistant magnesium alloy, consisting essentially of:

0.1 to 6.0% by weight of aluminum (Al);

1.0 to 6.0% by weight of zinc (Zn);

0.1 to 2.0% by weight of rare earth element;

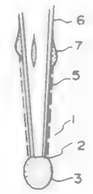
0.1 to 2.0% by weight of zirconium (Zr);

0.1 to 3.0% by weight of silicon (Si); and

balance of magnesium (Mg) and inevitable impurities.

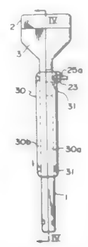
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,468
PIPETTE TIP
Sigeru Tezuka; Masao Kitajima, both of Saitama, and Nobuyyki Kita, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 15, 1990, Ser. No. 597,889
Claims priority, application Japan, Oct. 16, 1989, 1-268582
Int. Cl.[5] B01L 3/00
U.S. Cl. 422—100 2 Claims



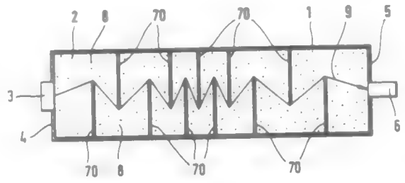
1. A pipette tip obtained from molding of a plastic material, wherein at least part of the outer surface but not the inner surface of the pipette tip has been coated with a water-repellent material selected from the group consisting of silicone rubber to prevent a liquid droplet from clinging to the outer surface of the pipette tip.

5,336,469
REAGENT FEEDER
Hisao Tobiki, and Hiroaki Matsushima, both of Takarazuka, Japan, assignors to Nihon Medi-Physics Co., Ltd., Nishinomiya, Japan
Filed Apr. 6, 1992, Ser. No. 863,962
Claims priority, application Japan, Apr. 15, 1991, 3-25025[U]
Int. Cl.[5] B01L 3/02; B65H 3/00
U.S. Cl. 422—100 5 Claims



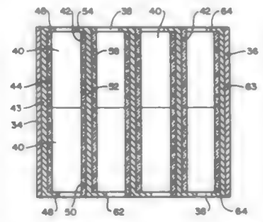
1. A reagent feeder, comprising: a case body having a slot at an upper end formed in a side wall thereof and a bottom portion defining a sphere discharge port at the other end; a discharge means supported in the case body to be freely movable in a vertical direction; elastic means for urging the discharge means and the case body defining a chamber housing a plurality of spheres to each of which a reagent adheres, the discharge means being adapted to stop at least one sphere situated at a position immediately before the discharge port, release the stopped sphere, thereby discharging said stopped sphere to the discharge port when the discharge means is pushed downward from said upper waiting position, and receive the next sphere to the position immediately before the discharge port when the discharge means is returned to said upper waiting position; an operating lever extending outwardly from the slot in the side wall of the case body to allow a finger operated pushdown operation of the discharge means, the operation lever being formed as part of the discharge means; and a pipe-shaped slide cover open at both ends, the slide cover being connected to and surrounding an outer periphery of the case body in such a way that the slide cover can be moved freely in the vertical direction and can be detached from the case body, the slide cover being engaged with the operation lever so as to be moved integrally with the discharge means.

5,336,470
CHEMICAL OXYGEN GENERATOR HAVING A MULTI-COMPONENT REACTION-CONTROL MEMBER
Hans-Christoph Bechthold, Hamburg; Udo Burchardt, Gross Grönau; Rainer Ernst, Curau, and Karsten Vogeler, Brunsbek, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany
Filed Dec. 21, 1992, Ser. No. 994,332
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142504
The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.
Int. Cl.[5] A62B 7/08
U.S. Cl. 422—120 14 Claims



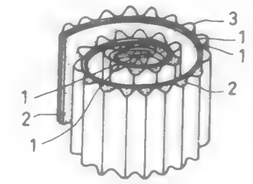
1. A chemical oxygen generator for generating and releasing oxygen, the chemical oxygen generator comprising:
a housing having a housing wall defining an interior;
a chemical charge disposed in said interior and containing chemicals which release oxygen in an exothermal reaction when ignited;
said housing having an outlet formed in said housing wall for passing released oxygen from said interior;
ignition means for initiating the exothermal reaction so as to cause the exothermal reaction to travel as a reaction front through said chemical charge in a predetermined direction of movement;
said ignition means being disposed in said housing in spaced relationship to said outlet so as to place said chemical charge between said ignition means and said outlet wherein said chemical charge defines a path between said ignition means and said outlet along which said reaction front moves through said charge chemical;
a reaction-control wall mounted in said housing and extending from said housing wall partially into said chemical charge transversely to said predetermined direction of movement so as to alter said path and compel said reaction front to move around said reaction-control wall;
said path having a first path segment on one side of said reaction-control wall and a second path segment on the other side of said reaction-control wall;
a first portion of said chemical charge lying along said first path segment and a second portion of said chemical charge lying along said second path segment; and,
said reaction-control wall having a sandwich configuration including a thermally-insulating layer for preventing heat from being conducted from said first portion of said chemical charge into said second portion of said chemical charge lying on said other side of said reaction-control wall thereby slowing the reaction through said housing and a thermally-conducting layer sandwiched to said thermally-insulating layer, said thermally-conducting layer being connected directly to said housing and facing one of said path segments for absorbing heat away from the reaction as said reaction front moves along said one path segment while at the same time conducting the absorbed heat to said housing wall and through said housing wall to the ambient thereby further slowing the reaction through said housing.

5,336,471
SUPPORT OF CERAMIC CATALYST
Mark E. Brophy; Robin B. Rhodes, and Wayne S. Counterman, all of Wellsville, N.Y., assignors to ABB Air Preheater, Inc., Wellsville, N.Y.
Filed May 19, 1993, Ser. No. 64,814
Int. Cl.[5] F01N 3/10; F28D 19/04
U.S. Cl. 422—175 4 Claims



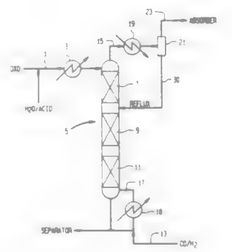
1. A heat exchanger basket module for a rotary regenerative heat exchanger having open top and bottom surfaces for the passage of gases therethrough comprising:
a. a frame having inboard and outboard ends, two sides and open top and bottom surfaces;
b. a plurality of rows of ceramic blocks having channels therethrough with said rows extending parallel to said inboard and outboard ends and from one of said sides to the other side, each row having an inboard surface and an outboard surface and said channels extending between said open top and bottom surfaces of said frame for the passage of gases through said channels;
c. an inboard compressible packing material layer adjacent to the inboard surface of each row, each inboard layer having an inboard surface and an outboard surface;
d. an outboard compressible packing material layer adjacent to the outboard surface of each row, each outboard layer having an inboard surface and an outboard surface;
e. an inboard support plate attached to said frame adjacent to said inboard end of said frame, said inboard support plate having top and bottom edges and a bottom lip extending toward the outboard end of said frame from said bottom edge of said inboard support plate and under the adjacent inboard layer and partially under the adjacent row to support the adjacent inboard layer and the adjacent row;
f. an outboard support plate attached to said frame adjacent to said outboard end of said frame, said outboard support plate having top and bottom edges and a top lid extending toward the inboard end of said frame from said top edge of said outboard support plate and over the adjacent outboard layer and partially over the adjacent row to support the adjacent outboard layer and the adjacent row;
g. an intermediate support plate adjacent to the outboard surface of each of said outboard layers, said intermediate support plates being attached to said frame in a position to maintain said outboard layers in a compressed state and having top and bottom edges;
h. a top lip extending from the top edge of each intermediate support plate and extending toward the inboard end of said frame over the adjacent outboard layer and partially over the adjacent row to support the adjacent outboard layers and the adjacent rows; and
i. a bottom lip extending from the bottom edges of each intermediate support plate and extending toward the outboard end of said frame under the adjacent inboard layer and partially under the adjacent row to support the adjacent inboard layers and the adjacent rows.

5,336,472
HONEYCOMB STRUCTURE FOR PURIFYING EXHAUST GAS AND METHOD OF MANUFACTURING SAME
Tetsuro Toyoda, and Katsunori Matsuoka, both of Akishima, Japan, assignors to Showa Aircraft Industry Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 879,931, May 8, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 80,189
Claims priority, application Japan, May 9, 1991, 3-135784
Int. Cl.[5] B01D 53/34
U.S. Cl. 422—177 11 Claims



1. A honeycomb structure having a wound configuration comprising: a strip of metallic corrugated plate having a plurality of folds forming corrugations;
first continuous and second continuous separate flat metallic sheets in overlapping relation with respect to each other, wherein said first and second separate flat metallic sheets are not welded to each other;
said corrugated plate welded to at least one of said first and second separate flat metallic sheets;
wherein the first and second separate flat metallic sheets in overlapping relation provide for reduced stresses in said honeycomb structure, thereby reducing excessive stresses which could result in failure within said honeycomb structure.

5,336,473
STRIPPER-REACTOR FOR VOLATILE COBALT RECOVERY
Kirk C. Nadler, Baton Rouge; Thomas R. Broussard, Pride, and Joseph K. Pitre, Baton Rouge, all of La., assignors to Exxon Chemical Patents Inc., Linden, N.J.
Division of Ser. No. 891,339, May 29, 1992, Pat. No. 5,235,112. This application May 11, 1993, Ser. No. 60,187
Int. Cl.[5] B01J 10/00; C07C 45/00
U.S. Cl. 422—193 4 Claims



1. A stripper-reactor capable of removing volatile cobalt from a crude product of a cobalt-catalyzed hydroformylation reaction which comprises:
a means for feeding said crude product to a stripper-reactor, said stripper-reactor comprising an intermediate stripper section disposed between an upper stripper section and a lower stripper section;

VOL 1165 ISS 2 AG 9 1994 UMI

a means for feeding a stripping gas to said stripper-reactor such that said crude product is contacted with said stripping gas thereby entraining volatile cobalt compounds within said stripping gas whereby the entrained volatile cobalt compounds are taken out overhead and organic hydroformylation reaction products and water containing water soluble cobaltous salts are taken out as bottoms;

a means for withdrawing said organic hydroformylation reaction products and said water containing water soluble cobaltous salts from said stripper-reactor;

a means for withdrawing the stripping gas with said entrained volatile cobalt compounds from said stripper-reactor and carrying it to an external refluxing means to produce a concentrated volatile cobalt product and a reflux product; and

a means for recycling said reflux product to said intermediate stripper section via a reflux conduit, wherein a stripping zone is formed in said upper stripper section and a reaction zone is formed in said intermediate stripper section and said lower stripper section.

5,336,475

PROCESS FOR CHROMIUM REMOVAL USING AN INORGANIC SULFUR COMPOUND

John R. Jackson, Wilmington, N.C., assignor to Huron Tech Corp., Delco, N.C.

Continuation-in-part of Ser. No. 872,110, Apr. 22, 1992, Pat. No. 5,254,321, which is a continuation-in-part of Ser. No. 759,656, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 611,796, Nov. 19, 1990, abandoned. This application Jul. 28, 1993, Ser. No. 99,092

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[5] C10G *37/02;* **B01D** *21/00*

U.S. Cl. 423—55 **7 Claims**

1. A process for the removal of chromium from an aqueous liquid or sludge, said process comprising:

A) adding to a first, aqueous liquid or sludge a reducing agent selected from the group consisting of an inorganic sulfur containing compound in which sulfur is present in the 4+ oxidation state, said inorganic sulfur containing compound being added in an amount required to react with said chromium in said first, aqueous liquid or sludge,

B) reacting at a temperature of about 56° about 100° C. and a pH of about 5 to about 7 in order to precipitate a chromium compound comprising substantially chromium oxide, and

C) separating said chromium oxide from said first aqueous liquid or sludge to obtain a second, aqueous liquid or sludge characterized as essentially chromium ion free.

5,336,474

PROCESS FOR LEACHING OF PRECIOUS METALS

Manfred Diehl; Karl-Heinz Koenig, both of Frankfurt am Main; Eckhart Krone, Bad Vilbel; Juergen Loroesch, Hanau-Steinheim; Norbert Steiner, Albstadt; Jochen Ullmann, Erlensee, and Annette Ziegler, Offenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 875,340, Apr. 29, 1992, abandoned, and a continuation-in-part of Ser. No. 899,595, Jun. 18, 1992, abandoned. This application Oct. 6, 1992, Ser. No. 956,317

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1990, 4017899; May 3, 1991, 4114514

Int. Cl.[5] B01D *11/00*

U.S. Cl. 423—29 **31 Claims**

1. A process for leaching gold or silver or mixtures thereof from particulate solid material containing at least one of said gold or silver, comprising:

leaching said solid material by intimately contacting said solid material with an aqueous leaching solution having a pH in the range of 8 to 13, said leaching solution comprising 0.005 to 2.5% by weight of cyanide, said contacting taking place in the presence of an oxygen-releasing peroxo compound, said peroxo compound being present in an amount of from 1 to 100 equivalents peroxoborate per ton of said solid material, said contacting being for a sufficient period of time to obtain a desired degree of extraction of gold and/or silver, thus forming cyano complexes of gold and/or silver; and

separating the cyano complexes of gold and/or silver from the leaching solution,

wherein at least one peroxoborate compound is used as said peroxo compound and wherein said peroxoborate is added as a solid product, an aqueous suspension or an aqueous solution before or during said leaching.

5,336,476

PROCESS FOR REMOVING NITROGEN OXIDES IN EXHAUST GASES TO NITROGEN

Yoshiaki Kintaichi; Hideaki Hamada; Takehiko Ito; Motoi Sasaki, all of Ibaraki; Mitsunori Tabata, Saitama, and Kazushi Usui, Chiba, all of Japan, assignors to Agency of Industrial Science and Technology and Cosmo Research Institute, both of Tokyo, Japan

Continuation of Ser. No. 705,405, May 24, 1991, abandoned. This application Oct. 27, 1992, Ser. No. 967,578

Claims priority, application Japan, May 28, 1990, 2-139340; Aug. 1, 1990, 2-204102; Aug. 1, 1990, 2-204103; Aug. 1, 1990, 2-204104

Int. Cl.[5] B01D *53/36*

U.S. Cl. 423—239.1 **12 Claims**

1. A process for reducing nitrogen oxides to nitrogen in exhaust gases, which comprises:

bringing an exhaust gas containing nitrogen oxides into contact with an acidic metal oxide catalyst which consists essentially of alumina, titanium oxide, zirconium oxide, silica-alumina, silica-magnesia, silica-zirconia, or alumina-titania by reaction with a hydrocarbon or an oxygen-containing organic compound in an oxidizing atmosphere containing excess oxygen with respect to the amount of oxygen required to effect complete oxidation of the carbon monoxide, hydrogen, said hydrocarbon and said oxygen-containing organic compound, all of which are present in the exhaust gases, to thereby yield water and carbon dioxide.

5,336,477

PROCESS FOR PRODUCING A COMPOSITE ALKALI METAL OXIDE

Yoshiaki Koga, Tokuyama, and Genji Taga, Shinnanyo, both of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Division of Ser. No. 922,837, Jul. 31, 1992, Pat. No. 5,262,142. This application May 26, 1993, Ser. No. 67,003

Claims priority, application Japan, Aug. 6, 1991, 3-196490; Feb. 4, 1992, 4-18846; Apr. 28, 1992, 4-109636

Int. Cl.[5] C01B *33/26*

U.S. Cl. 423—328.1 **1 Claim**

1. A process for producing an amorphous composite oxide with the formula $iR_2O.jAl_2O_3.kTiO_2.mSiO_2.nH_2O$, wherein R denotes an alkali metal, i is 0.3 to 1, k is 0 to 0.9, j+k=1, m is 7 to 70, and n is 0.2 to 0.4, said composite oxide having a cumulative specific pore volume of 2.0 to 3.0 cc/g, with respect to pores having a pore radius of 10^4 angstroms or less, the process comprising the steps of:

a) reacting an aqueous acidic solution, which is capable of forming a composite oxide by reaction with an alkali silicate, with an alkali silicate aqueous solution that contains an alkali silicate concentration of 7% to 10% by weight, calculated as silica, in the presence of a salt at a temperature of 10° C. to 45° C., such that the neutralization ratio becomes 20% to 40%, and

b) heating the reaction solution from step (a) at a temperature of from 90° C. to the solutions's boiling point and then adding sufficient aqueous acidic solution, which is capable of forming a composite oxide by reaction with an alkali silicate, so that the pH of said reaction solution becomes 3 to 5.

5,336,478

HIGHLY SILICEOUS POROUS CRYSTALLINE MATERIAL

Francis G. Dwyer, West Chester, and Ernest W. Valyocsik, Yardley, both of Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation of Ser. No. 695,609, Jan. 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 373,451, Apr. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 629,743, Jul. 10, 1984, Pat. No. 4,902,406, which is a continuation of Ser. No. 373,452, Apr. 30, 1982, abandoned. This application Aug. 2, 1993, Ser. No. 101,791

The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—708 **12 Claims**

1. A siliceous porous crystalline ZSM-22 zeolite material having a composition, expressed in terms of moles of anhydrous oxides, as follows comprising:

$$(y)M_{2/n}O: (z)L_2O_3: 100SiO_2$$

wherein M is an alkali or alkaline earth metal having a valence n, y=0 to 2.0, z=0 to 5, and L is aluminum (Al), and having an X-ray diffraction pattern of Table I.

5,336,479

HIGH YIELD SODIUM HYDROSULFITE GENERATION

David C. Munroe, Beverly, Mass., assignor to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 764,752, Sep. 24, 1991, Pat. No. 5,188,807, which is a division of Ser. No. 609,129, Nov. 1, 1990, Pat. No. 5,094,833, which is a continuation of Ser. No. 294,076, Jan. 5, 1989, abandoned. This application Sep. 11, 1992, Ser. No. 943,842

Int. Cl.[5] B01F *5/00;* **C01B** *17/66*

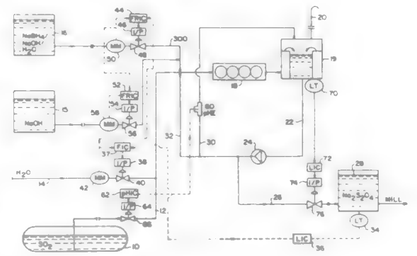
U.S. Cl. 423—515 **7 Claims**

1. A method for producing sodium hydrosulfite comprising the steps of:

a) establishing a parent flow stream comprising an aqueous mixture of at least sodium hydrosulfite and sodium bisulfite; and

b) adding a first reaction mixture comprising sodium borohydride, sodium hydroxide and water and a second reaction mixture comprising,

i) an aqueous solution of sodium bisulfite and sulfur dioxide,



ii) sulfur dioxide and water, or

iii) an aqueous solution of sodium bisulfite and sulfuric acid,

to said parent flow stream at the same point to form an aqueous solution containing additional sodium hydrosulfite.

5,336,480

STEAM PRODUCING PROCESS

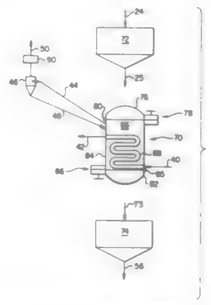
Chanakya Misra, Pittsburgh, Pa., and Steven W. Sucech, Lake Villa, Ill., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 514,292, Apr. 24, 1990, Pat. No. 5,141,734, which is a continuation-in-part of Ser. No. 729,542, May 2, 1985, abandoned, which is a continuation of Ser. No. 548,948, Nov. 7, 1983, Pat. No. 4,770,869. This application Jun. 26, 1992, Ser. No. 904,610

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] C01B *5/00;* **C01F** *7/44*

U.S. Cl. 423—580.1 **24 Claims**



1. In a process utilizing steam, a method of producing and supplying at least a portion of said steam, comprising the steps of

(a) heating a solid substance in a decomposer at a pressure greater than one atmosphere gage pressure

i. for decomposing said substance to drive off chemically combined water, and

ii. for yielding said water in the form of steam which is at least 50% by volume H_2O at a pressure greater than one atmosphere gage pressure,

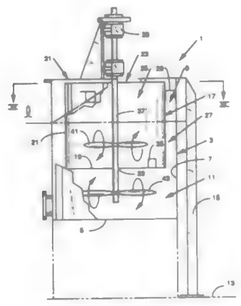
VOL 1165 ISS 2 AG 9 1994 UMI

(b) removing said steam from the decomposer while keeping said steam at a pressure greater than one atmosphere gage pressure,
(c) capturing said steam, still at a pressure greater than one atmosphere gage pressure, for said process, said process being external to said decomposer, and
(d) feeding said steam, still at a pressure greater than one atmosphere gage pressure, to said process.

5,336,481
METHOD OF SLAKING LIME

Charles J. Muzik, McKee Rocks, and Kenneth L. Yoest, Pittsburgh, both of Pa., assignors to Dravo Lime Company, Pittsburgh, Pa.

Division of Ser. No. 48,736, Apr. 16, 1993, Pat. No. 5,294,408. This application Dec. 2, 1993, Ser. No. 160,245
Int. Cl.[5] C01B *13/14*
U.S. Cl. 423—640 **7 Claims**



1. A method of slaking lime comprising:
charging lime and water to an inner vessel forming an initial slaking chamber and agitating said lime and water to slake said lime, with heat provided by said slaking heating the same to an elevated temperature;
passing a supply of said slaked lime at elevated temperature to an outer slaking vessel which forms a final slaking chamber surrounding said inner vessel, such that said slaked lime, at said elevated temperature in said outer vessel, insulates said inner vessel, and agitating said slaked lime in said final slaking chamber;
removing slaked lime from said outer vessel; and
returning a major portion of said slaked lime back to the final slaking chamber of said outer vessel.

5,336,482
TECHNETIUM-99M COMPLEXES WITH N-SUBSTITUTED 3-HYDROXY-4-PYRIDINONES

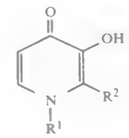
David S. Edwards, Burlington, Mass.; Christopher E. R. Orvig, Vancouver, Canada, and Michael J. Potrier, Nashua, N.H., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed Dec. 5, 1991, Ser. No. 804,315
Int. Cl.[5] A61K *49/02*
U.S. Cl. 424—1.65 **10 Claims**

1. Cationic complexes of the formula:

$^{99m}TcL_3^+$

where L represents ligands having the structure:



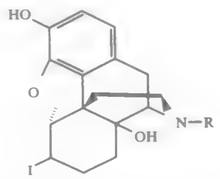
wherein:
R^1 is hydrogen or is selected from the group consisting of C_1 to C_{20} alkyl; C_3 to C_{12} cycloalkyl; C_7 to C_{24} aralkyl; C_2 to C_{16} alkyl ethers, thioethers, ketones or esters; C_7 to C_{27} aralkyl ethers;
R^2 is hydrogen or is a C_1 to C_4 lower alkyl radical selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, sec-butyl and tert-butyl.

5,336,483
RADIOLABELED N-SUBSTITUTED-6-IODO-3,14-DIHYDROXY-4, 5α-EPOXYMORPHINANS, INTERMEDIATES FOR PRODUCING THE SAME, AND A PROCESS FOR THE PREPARATION AND METHODS OF DETECTING OPIOID RECEPTORS

Brian R. de Costa, Gaithersburg, Md.; Michael J. Iadarola, Washington, D.C.; Kenner C. Rice, Bethesda; Richard B. Rothman, Silver Spring, both of Md., and Karen F. Berman, Washington, D.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 715,762, Jun. 14, 1991, Pat. No. 5,208,338. This application Jan. 13, 1993, Ser. No. 3,731
Int. Cl.[5] A61K *49/02*; C07D *489/08*
U.S. Cl. 424—1.85 **8 Claims**

1. A method of radioimaging opioid receptors which comprises
contacting a tissue sample containing said opiate receptors with a sufficient amount of radioimaging agent having the formula



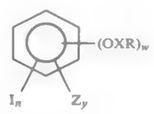
wherein I is selected from the group consisting of ^{123}I and ^{125}I; and where R is alkyl having from about 1 to 6 carbon atoms, cycloalkylloweralkyl or allyl to detect the presence of any of said opiate receptors; and
radio detecting the presence of said opioid receptors.

5,336,484
COMPOSITIONS OF IODOPHENYL ESTERS AND IODOPHENYL SULFONATES IN FILM-FORMING MATERIALS FOR VISUALIZATION OF THE GASTRONINTESTINAL TRACT

Edward R. Bacon, East Green Bush; Sol J. Daum; Kimberly G. Estep, both of Albany; Kurt A. Josef, Clifton Park, all of N.Y.; Brent D. Douty, Coatesville, and Carl R. Illig, Phoenixville, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Mar. 31, 1993, Ser. No. 40,702
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.
Int. Cl.[5] A61K *49/04, 31/715, 31/075*
U.S. Cl. 424—5 **23 Claims**

1. An x-ray contrast composition designed for depositing a thin, flexible film membrane onto the mucosal lining of the nutrient absorbing inner surface of the intestine of a patient to form a barrier between said nutrient absorbing inner surface and the content of said intestine, said flexible film membrane to remain bound to said mucosal lining until eliminated by normal cell turnover comprising based on w/v:
(a) of from about 0.1 to about 15% of a polymeric material capable of forming a film membrane on the gastrointestinal tract in the pH range of from about 5 to about 8, said polymeric material is selected from the group consisting of
anionic polymers carrying negative charges in the ionized form,
cationic polymers carrying positive charges in the ionized form, and
neutral polymers, said neutral polymers having polarizable electrons selected from the group consisting of oxygen, nitrogen, sulfur, fluoride, chloride, bromide and iodide; in combination with
(b) of from about 0.1 to about 15% of a divalent cation to potentiate the binding of said flexible film membrane to said mucosal lining selected from the group consisting of Ca^{++}, Mg^{++}, Zn^{++} and Ba^{++}; and
(c) of from about 0.001 to about 75% of an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



wherein
X is



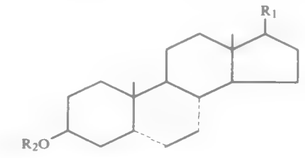
Z is H, halo, C_5–C_{20} alkyl, cycloalkyl, lower alkoxy, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;
R is C_1–C_{25} alkyl, cycloalkyl, or aryl each of which may be optionally substituted with lower-alkoxy, hydroxy, carboxy or lower-alkoxy carbonyl, lower-alkenyl, lower-alkynyl, lower-alkylene or lower-alkoxy-carbonyloxy,
n is 1–5;
y is 0–4; and
w is 1–4
in a pharmaceutically acceptable carrier.

5,336,485
METHOD FOR PROTECTING ANIMALS AGAINST TACRINE INDUCED CYTOTOXIC INJURY USING STEROL COMPOUNDS

Marc W. Fariss, Manakin-Sabot, Va., assignor to Center for Innovative Technology, Herndon and Virginia Commonwealth University, Richmond, both of Va.

Continuation of Ser. No. 678,110, Apr. 1, 1991, Pat. No. 5,198,432, which is a continuation-in-part of Ser. No. 316,789, Feb. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 149,764, Jan. 29, 1988, abandoned. This application Mar. 10, 1993, Ser. No. 28,831
Int. Cl.[5] G01N *33/15*; A61K *31/56, 31/44*
U.S. Cl. 424—10 **1 Claim**

1. A method for protecting patients against chemically induced cytotoxic injury from tacrine, comprising the step of:
administering to a patient who will be provided with tacrine, prior to said patient receiving tacrine, an effective amount of an ionizable congener of a sterol compound having the formula:



where the dashed lines denote either a single or double bond between the carbons, R_1 is an alkyl moiety, and R_2 is an ionizable moiety selected from the group consisting of succinate, sulfate, and phthalate and subsequently administering tacrine to said patient.

5,336,486
APPETITE CONTROL METHOD

Ramesh N. Acharya, Lake Forest, Ill., assignor to TheraTech, Inc., Salt Lake City, Utah

Filed Mar. 28, 1991, Ser. No. 676,328
Int. Cl.[5] A61K *31/74, 9/20*
U.S. Cl. 424—78.01 **14 Claims**

1. A method for suppressing appetite in a subject comprising administering polycarbophil by mouth to the subject in an amount of about 0.010 to about 0.500 gram which is effective to suppress the appetite of the subject without inducing a laxative effect in the subject.

5,336,487
METHOD OF TREATING EYE DISORDERS WITH SILICON/FLUOROSILICONE COPOLYMER OIL

Miguel F. Refojo, 2 Lowell Rd., Wellesley, Mass. 02181, and Felipe I. Tolentino, 9 Hawthorne Pl., Unit 16E, Boston, Mass. 02114

Filed Mar. 5, 1993, Ser. No. 27,253
Int. Cl.[5] A61K *31/74, 31/695*
U.S. Cl. 424—78.04 **21 Claims**

1. A method of manipulating the retina, holding the retina in place, displacing a dislocated lens, or delaminating tissue in the eye, comprising introducing into the eye a liquid silicone/-fluorosilicone copolymer oil in an amount effective to accomplish the method.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,488

METHOD OF TREATING OR PREVENTING MASTITIS IN ANIMALS WITH INVOLUTING MAMMARY GLANDS BY ADMINISTERING RECOMBINANT CYTOKINES

Michael J. Daley, Yardley, Pa.; Gary J. Furda, Trenton, N.J., and Phillip W. Hayes, Rushland, Pa., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 741,278, Aug. 7, 1991. This application Jun. 29, 1992, Ser. No. 905,969

Int. Cl.[5] A61K *37/02*

U.S. Cl. 424—85.2 4 Claims

1. A method for increasing milk production in lactations subsequent to a warm-blooded animal's dry period, said method comprising: administering to said warm-blooded animal in the early lactation stages or stage wherein said animal has an involuting mammary gland, a interleukin-2.

5,336,489

TREATMENT OF ALLOGRAFT REJECTION WITH IL-2 RECEPTOR-SPECIFIC CYTOTOXINS

Terry B. Strom, Brookline, Mass., assignor to The Beth Israel Hospital Association, Boston, Mass.

Continuation of Ser. No. 692,830, Apr. 26, 1991, abandoned, which is a continuation of Ser. No. 492,616, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 772,893, Sep. 5, 1985, Pat. No. 5,011,684. This application Feb. 27, 1992, Ser. No. 842,463

The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.

Int. Cl.[5] A61K *37/02, 37/64, 39/395*

U.S. Cl. 424—85.2 6 Claims

1. A method of inhibiting the T-lymphocyte induced rejection of an allograft in a mammal, said T-lymphocytes, in connection with said allograft rejection, undergoing a proliferative burst characterized by the presence of IL-2 receptors on the surface of said T-lymphocytes, said method comprising administering to said mammal, following said allograft, and during said proliferative burst, a cytotoxin linked to an IL-2 receptor-specific substance, which substance has a specific affinity for the IL-2 receptor.

5,336,490

HAEMOPHILUS INFLUENZAE PILUS VACCINES

Charles C. Brinton, Jr., Export, and Sam C. To, Pittsburgh, both of Pa., assignors to Bactex, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 207,767, Jun. 16, 1988, abandoned. This application Sep. 30, 1991, Ser. No. 767,479

Int. Cl.[5] A61K *39/02*

U.S. Cl. 424—242.1 8 Claims

1. A vaccine composition for protecting subjects against infections caused by piliated *Haemophilus influenzae* organisms which comprises a pharmaceutically acceptable carrier and whole *H. influenzae pili,* designated vaccine pili, previously separated from other *H. influenzae* components, in an amount which raises the antibody level of the subject to a level sufficient to provide protection, said vaccine comprising pili of at least one type selected from a group of pili types designated LKP1 through LKP8, said vaccine pili being agglutinable by anti sera derived from pili from at least one of the following organisms

H. influenzae (86-0295) (ATCC 53775), LKP type 1 pilus;
H. influenzae (81-0568) (ATCC 53776), LKP type 2 pilus;
H. influenzae (KL/8434-1/B) (ATCC 53777), LKP type 3 pilus;
H. influenzae (86-1249) (ATCC 53778), LKP type 4 pilus;
H. influenzae (81-0384) (ATCC 53779), LKP type 5 pilus;
H. influenzae (86-0612) (ATCC 53780), LKP type 6 pilus;
H. influenzae (87-0297) (ATCC 53781), LKP type 7 pilus;
H. influenzae (FIN 48) (ATCC 53782), LKP type 8 pilus.

5,336,491

METHODS AND COMPOSITIONS FOR THE TREATMENT AND DIAGNOSIS OF SHIPPING FEVER

Peter Berget, Pittsburgh, Pa.; Michael Engler, Houston, Tex.; Sarah Highlander, Houston, Tex., and George Weinstock, Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 540,261, Jun. 18, 1990, which is a continuation of Ser. No. 85,430, Aug. 13, 1987, Pat. No. 4,957,739, which is a continuation of Ser. No. 935,806, Nov. 28, 1986, abandoned. This application Jun. 15, 1992, Ser. No. 899,100

The portion of the term of this patent subsequent to Sep. 18, 2007, has been disclaimed.

Int. Cl.[5] A61K *39/00, 39/02;* C12P *21/06;* C07K *3/00*

U.S. Cl. 424—190.1 22 Claims

1. An antigen purified relative to a naturally occurring state or produced by recombinant means, the antigen having the following properties:

(a) binding affinity for immune sera obtained from a pasteurellosis infected cow;
(b) an approximate reference molecular weight of 105K Daltons, the molecular weight being ascertainable by SDS polyacrylamide gel electrophoresis and immunoblot analysis;
(c) immunological cross-reactivity with a 105K Dalton *P. haemolytica* antigen found in cell-free supernatant following growth of *P. haemolytica* cells in culture.

5,336,492

BACILLUS THURINGIENSIS ISOLATES DENOTED B.T. PS81F, ACTIVE AGAINST LEPIDOPTERAN PESTS

Jewel Payne, and August J. Sick, both of San Diego, Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation of Ser. No. 629,504, Dec. 18, 1990, abandoned, which is a division of Ser. No. 263,567, Oct. 27, 1988, abandoned. This application Nov. 17, 1993, Ser. No. 153,840

Int. Cl.[5] A01N *63/02;* C10N *1/21*

U.S. Cl. 424—93.2 15 Claims

5. An insecticidal composition comprising insecticide-containing cells, wherein said cells are treated so as to have prolonged pesticidal activity when applied to the environment of a target pest, wherein said insecticide is a polypeptide toxic to lepidopteran insects, is intracellular, and is produced as a result of expression of a transformed microbe capable of expression the B.t. toxin having the amino acid sequence shown in FIG. 3.

5,336,493

SUPEROXIDE DISMUTASE-CATALASE CONJUGATES

Mark J. Poznansky, 12 St. Georges Cres., Edmonton, Alberta T5N 3M7, and Guo D. Mao, 11055 - 81 Avenue, Edmonton, Alberta T6G 0S2, both of Canada

PCT No. PCT/CA90/00279, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO91/03548, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 30, 1990, Ser. No. 836,274

Claims priority, application United Kingdom, Aug. 31, 1989, 8919661.2

Int. Cl.[5] A61K *37/62, 37/50;* C12N *9/08, 9/96*

U.S. Cl. 424—94.2 7 Claims

7. A pharmaceutical composition comprising a multi-component conjugate comprising superoxide dismutase linked to catalase.

5,336,494

PET CHEWABLE PRODUCTS WITH ENZYMATIC COATING

Michael A. Pellico, 3024 Military Ave., Los Angeles, Calif. 90172

Filed Jan. 29, 1993, Ser. No. 10,841

Int. Cl.[5] A61K *37/50*

U.S. Cl. 424—94.4 18 Claims

1. An orally chewable, enzymatically coated, pet product comprising raw hide, beef hide or non-toxic plastic wherein an enzymatic coating is developed, in substantially dry form, from an enzymatic solution comprising a fluidic component and an enzymatic component:

said fluidic component containing water and non-toxic water soluble thickener in an amount to provide the enzymatic solution with a viscosity from about 1,000 to about 50,000 centipoises; and

said enzymatic component comprising an enzymatic system containing, per gram of fluidic component, from about 0.015 to about 0.6 millimole of oxidizable substrate and from about 0.5 to about 5,000 International Units of oxidoreductase enzyme specific to such substrate for producing hydrogen peroxide upon oral chewing of the enzymatically coated pet product.

5,336,495

USE OF STAPHYLOKINASE FOR THE PREPARATION OF A PHARMACEUTICAL COMPOSITION FOR TREATING ARTERIAL THROMBOISI

Désiré J. Collen, Schoonzichtlaan 20, B-3020 Winksele-Herent; Jean-Marie Stassen, Wilsele, and Henri R. Lijnen, Herent, all of Belgium, assignors to Leuven Research & Development vcw and Désiré J. Collen, Belgium

Continuation of Ser. No. 760,343, Sep. 16, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 91,885

Claims priority, application European Pat. Off., Jun. 28, 1991, 91201670.6

Int. Cl.[5] A61K *37/547*

U.S. Cl. 424—94.64 3 Claims

1. A method for treating arterial thrombosis attributable to at least one platelet-rich thrombus comprising administering an amount of staphylokinase, effective to treat arterial thrombosis attributable to at least one platelet-rich thrombus, to a human for which such treatment is indicated, said amount comprising between 0.05 and 10 mg. per kilogram body weight of said human.

5,336,496

INHIBITOR FOR DELTA5-DESATURASE

Kengo Akimoto, Osaka; Yoshifumi Shinmen, Kyoto; Hideaki Yamada, Kyoto; Sakayu Shimizu, Kyoto, and Michihiro Sugano, Fukuoka, all of Japan, assignors to Suntory Limited, Osaka, Japan

Continuation of Ser. No. 488,997, Mar. 6, 1990, abandoned. This application Apr. 14, 1992, Ser. No. 867,086

Claims priority, application Japan, Mar. 7, 1989, 1-52950; Feb. 1, 1990, 2-20469

Int. Cl.[5] A61K *35/78, 31/675*

U.S. Cl. 424—195.1 4 Claims

1. A method for inhibiting Δ^5-desaturase in an animal which is in need of Δ^5-desaturase inhibition, which method comprises administering to said animal in need of Δ^5-desaturase inhibition at least a Δ^5-desaturase inhibitory amount of at least one compound selected from the group consisting of sesamin, sesaminol, episesamin, episesaminol, sesamolin, 2-(3,4-methylenedioxyphenyl) -6-(3-methoxy-4-hydroxyphenyl)-3,7-dioxabicyclo[3.3.0]octane, 2,6-bis-(3-methoxy-4-hydroxyphenyl)-3,7-dioxabicyclo[3.3.0]-octane,2-(3,4-methylenedioxyphenyl)-6-(3-methoxy-4-hydroxyphenoxy)-3,7-dioxabicyclo[3.3.0]octane, and piperonyl butoxide.

5,336,497

COSMETIC COMPOSITION

Angel A. Guerrero, Huntington, Conn., and Anthony Vargas, Mahwah, N.J., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 5,200, Jan. 15, 1993, abandoned, which is a continuation of Ser. No. 867,940, Apr. 13, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 140,622

Int. Cl.[5] A61K *7/00*

U.S. Cl. 424—401 5 Claims

1. A skin-conditioning cosmetic composition comprising:

(i) from about 0.01 to about 30% by weight of dimethicone copolyol sulfosuccinate;
(ii) from about 0.01 to about 30% by weight of cocamidopropyl betaine; and
(iii) from about 1 to about 99.95% of a pharmaceutically acceptable vehicle.

5,336,498

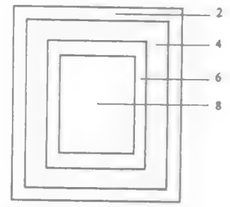
METHOD AND APPARATUS FOR ALLEVIATING BACK PAIN

Max H. Snider, 68 Harrington Crescent, Willowdale, Ontario, M2M 2Y5, Canada

Filed May 29, 1991, Ser. No. 706,973

Int. Cl.[5] A01N *25/34*

U.S. Cl. 424—402 4 Claims



1. A pad for self application of pressure to specific areas of one's own body comprising:

a top layer of vinyl-magnetic tape measuring 1½ inches by 1½ by 0.03 inches thick,
a middle layer of resiliently flexible polymer foam, wool felt or rubber material measuring 2½ inches by 2½ inches by ½ inch thick,
1 base layer of resiliently flexible synthetic polymer foam measuring 3 inches by 2¾ inches by ½ inch thick.

5,336,499

MOLECULAR CRYSTAL DEVICE FOR PHARMACEUTICALS

Marvin S. Antelman, Rehovot, Israel, assignor to Antelman Technologies, Ltd., Providence, R.I.

Division of Ser. No. 820,282, Jan. 10, 1992, abandoned. This application Nov. 5, 1992, Ser. No. 971,933

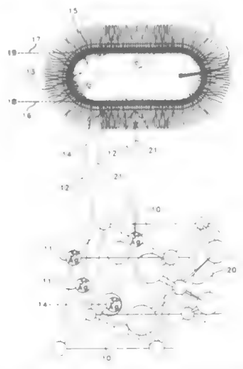
Int. Cl.[5] A61K *7/00*

U.S. Cl. 424—405 1 Claim

1. A method of inhibiting the growth of pathogens in pharmaceutical and cosmetic products, said pathogens selected from the group consisting of E. coli, Micrococcus Luteus, Staphylococcus aureus, Staphylococcus epidermidis, Pseudomonas aeruginosa, Streptococcus pyogenes, Candida Albicans,

VOL 1165 ISS 2 AG 9 1994 UMI

and Saccharomycetpideae, which comprises introducing molecular semiconductor crystal devices of the molecule tetrasil-



ver tetroxide (Ag_4O_4) in the presence of an oxidizing agent comprising a persulfate.

5,336,500

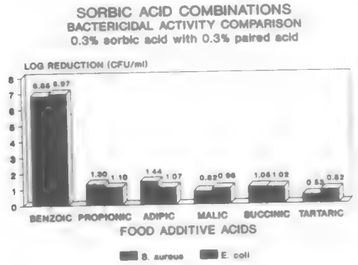
SANITIZING COMPOSITION COMPRISING A BLEND OF AROMATIC AND POLYUNSATURATED CARBOXYLIC ACID

Francis L. Richter, Circle Pines; Daniel E. Pedersen, Cottage Grove; May J. Biedscheid, St. Paul, and Dale L. Fredell, Lindstrom, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Continuation of Ser. No. 710,095, Jun. 4, 1991, abandoned. This application Dec. 11, 1992, Ser. No. 989,506

Int. Cl.[5] **A01N** *25/02, 37/06*

U.S. Cl. 424—405 **1 Claim**



1. A method of sanitizing hard surfaces with an aqueous sanitizing composition, said method comprising:

(a) diluting with an aqueous carrier an antimicrobial composition consisting essentially of:

(i) from about 0.05 wt % to 80 wt % of sorbic acid, a sorbic acid salt or mixtures thereof;

(ii) from about 0.05 wt % to 80 wt % of benzoic acid, a benzoic acid salt or mixtures thereof;

(iii) a solubilizing amount of a C_1–C_6 alcohol; and

(iv) an amount of acidulant to maintain the pH between about 2.0 to 6.5,

to obtain from about 0.05 wt % to about 3 wt % sorbic acid, a sorbic acid salt, or mixtures thereof, and about 0.05 wt % to about 6 wt % of benzoic acid, a benzoic acid salt, or mixtures thereof; and

(b) applying said diluted sanitizing composition to a surface for a sufficient period of time to result in a 5 $\log_{10}$ reduction in a microbial population on the surface.

5,336,501

CROSS-LINKED HYDROGELS AND THEIR USE AS WOUND DRESSINGS

Zbigniew Czech, Koblenz, and Kurt Seeger, Neuwied, both of Fed. Rep. of Germany, assignors to Lohmann GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Division of Ser. No. 475,608, Feb. 6, 1990, Pat. No. 5,135,755. This application Apr. 29, 1992, Ser. No. 875,488

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1989, 3903672

Int. Cl.[5] **A61K** *9/10, 47/10;* **A61L** *15/16;* **A61F** *13/02*

U.S. Cl. 424—445 **3 Claims**

1. An elastic, foliar, transparent secretion-absorbing wound dressing including a cross-linked secretions-absorbing hydrogel built up of biopolymers and synthetic polymers which are inter-crosslinked and derived from the following components;

(a) 20 to 70% by weight of at least one polyhydric alcohol selected from the group consisting of glycerol, ethylene glycol, diethylene glycol, 1,2-propanediol, 1,3-propanediol, 1,2-butanediol, 1,3-butanediol, 2,3-butanediol, 1,4-butanediol and glycerol monoacetate,

(b) 10 to 35% by weight of at least one natural thickener (biopolymer) selected from the group consisting of collagen, gelatin, pectins and a mixture of gelatin/sodium alginate in the ratio of 30:1 to 5:1,

(c) 0.05 to 12% by weight of at least one uncross-linked copolymer of one or more vinyl-carboxylic acids and their salts (synthetic polymer),

(d) 0.05 to 10% by weight of a cross-linking agent selected from the group consisting of metal chelates, orthotitanic acid esters, epoxides, aziridines, triazines and melamine formaldehyde resins, and

(e) 0 to 50% by weight of water or physiological saline.

5,336,502

Patent Not Issued For This Number

5,336,503

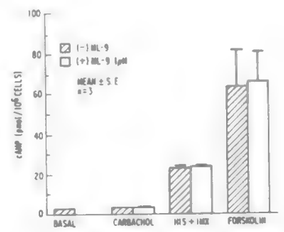
ANTI-PEPTIC ULCER AGENT

Junichiro Wakasugi, Tokyo, Japan, assignor to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1992, Ser. No. 861,310

Int. Cl.[5] **A61K** *9/48*

U.S. Cl. 424—451 **6 Claims**



1. A method for treatment of peptic ulcers, which comprises administering an anti-peptic ulcer effective amount of a myosin light chain kinase inhibitor to a patient suffering from a peptic ulcer.

5,336,504

DILTIAZEM FORMULATIONS AND METHODS OF TREATMENT

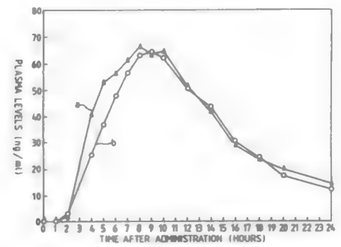
Edward J. Geoghegan, Athlone, Ireland; Seamus Mulligan, Gainesville, Ga., and Donald E. Panoz, Tuckerstown, Bermuda, assignors to Elan Corporation, plc, Athlone, Ireland

Continuation of Ser. No. 918,925, Jul. 22, 1992, Pat. No. 5,219,621. This application May 19, 1993, Ser. No. 64,401

Claims priority, application Ireland, Oct. 16, 1987, 2790/87

Int. Cl.[5] **A61K** *9/16, 9/58*

U.S. Cl. 424—462 **4 Claims**



1. A method of controlling or preventing angina attacks or reducing the incidence of angina attacks in a subject suffering from angina pectoris, comprising administering to said subject on a once per 12 hour basis a dose effective to improve the blood supply and hence increase the oxygen supply in the myocardium of said subject throughout said 12 hour period, of a diltiazem containing controlled absorption pellet formulation, said pellet comprising a core of diltiazem or a pharmaceutically acceptable salt thereof in association with an organic acid, said core surrounded by a multi-layered polymeric membrane, each layer containing a major proportion of a pharmaceutically acceptable film-forming, water insoluble synthetic polymer and a minor proportion of a pharmacetutically acceptable film-forming water soluble synthetic polymer, the ratio of said diltiazem to organic acid and the ratio of water insoluble polymer to water soluble polymer being effective to provide peak myocardium oxygenating levels int eh blood 4 to 12 hours following administration.

5,336,505

BIOERODIBLE POLYMERS USEFUL FOR THE CONTROLLED RELEASE OF THERAPEUTIC AGENTS

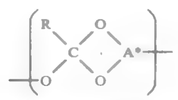
Steve Y. W. Ng, San Francisco, and Jorge Heller, Woodside, both of Calif., assignors to Pharmaceutical Delivery Systems, Menlo Park, Calif.

Continuation-in-part of Ser. No. 568,433, Aug. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 556,645, Jul. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 400,532, Aug. 28, 1989, Pat. No. 5,030,457. This application Jul. 8, 1991, Ser. No. 725,319

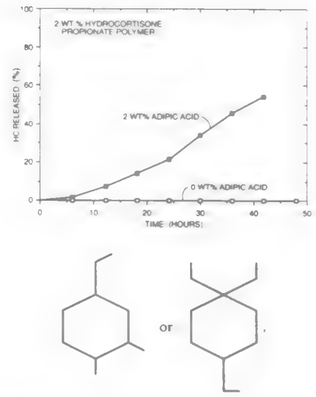
Int. Cl.[5] **A61K** *9/14;* **A61F** *2/00*

U.S. Cl. 424—486 **31 Claims**

1. A polymer comprising repeating mer units of the structure



wherein R is hydrogen or (C_1–C_{10})alkyl and A* is



and mixtures thereof.

5,336,506

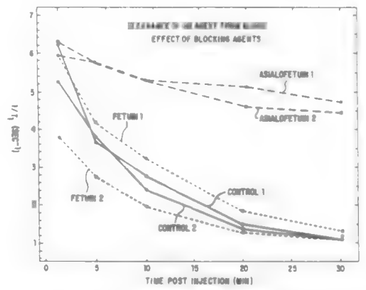
TARGETING OF THERAPEUTIC AGENTS USING POLYSACCHARIDES

Lee Josephson, Arlington; Ernest V. Groman, Brookline; Chu Jung, Arlington, and Jerome M. Lewis, Newton, all of Mass., assignors to Advanced Magnetics Inc., Cambridge, Mass.

Continuation of Ser. No. 630,017, Dec. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 679,526, Apr. 2, 1991, Pat. No. 5,141,739, and a continuation-in-part of Ser. No. 384,991, Jul. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 228,640, Aug. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 67,586, Jun. 26, 1987, Pat. No. 4,827,945, which is a continuation-in-part of Ser. No. 882,044, Jul. 3, 1986, Pat. No. 4,770,183. This application Aug. 27, 1992, Ser. No. 936,873

Int. Cl.[5] **A01K** *31/715*

U.S. Cl. 424—488 **13 Claims**



1. A method for the targeting of a therapeutic agent to a selected population of cells capable of receptor mediated endocytosis (RME) comprising:

(i) forming a complex of the therapeutic agent with a polysaccharide molecule selected from the group consisting of arabinogalactan and hydrolyzed products thereof, the polysaccharide molecule being capable of interacting with an RME cell receptor; and

(ii) allowing the complex to be internalized into the selected population of cells by receptor mediated endocytosis.

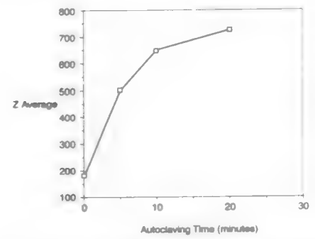
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,507

USE OF CHARGED PHOSPHOLIPIDS TO REDUCE NANOPARTICLE AGGREGATION

George C. Na, Fort Washington, and Natarajan Rajagopalan, Phoenixville, both of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 11, 1992, Ser. No. 989,281
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—489 13 Claims



1. A composition comprised of nanoparticles comprised of a therapeutic or diagnostic agent having 0.1 to 90% by weight of said nanoparticles of a non-ionic surfactant as a surface modifier adsorbed on the surface of said therapeutic or diagnostic agent, said nanoparticles having from 0.005 to 20% by weight of said composition of a charged phospholipid as a cloud point modifier on the surface of said nanoparticles.

5,336,508

PRESERVATIVE FOR PHARMACEUTICAL PRODUCTS

Herbert Marty, Uitikon, Switzerland, assignor to Similasan Corporation, Kent, Wash.

Continuation of Ser. No. 763,341, Sep. 20, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 3,835
Int. Cl.[5] A61K *33/38, 33/14*
U.S. Cl. 424—618 12 Claims

1. A pharmaceutical composition comprising a therapeutically effective amount of at least one active ingredient, a carrier substance and a preservative dissolved in said carrier substance, said preservative comprising sodium silver chloride compound.

5,336,509

WAX-FREE LOW CALORIE, HIGH BASE CHEWING GUM

Gordon McGrew, Evanston, Ill., and Steven P. Synosky, Green Brook, N.J., assignors to The Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation-in-part of Ser. No. 906,921, Jun. 30, 1992, Pat. No. 5,286,500. This application Dec. 29, 1992, Ser. No. 997,876
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 54 Claims

1. A low calorie, high base chewing gum comprising:
at least 70% by weight of a wax-free gum base;
less than 30% by weight of a bulking agent; and
less than or equal to 7%, by weight of the gum base, of a flavor.

5,336,510

COLOR-STABLE SYRUP AND BEVERAGE COMPOSITIONS FORTIFIED WITH VITAMIN C, AND METHODS OF MAKING SUCH COMPOSITIONS

Pei K. Chang, Montrose, N.Y., assignor to PepsiCo, Inc., Purchase, N.Y.

Filed Mar. 31, 1993, Ser. No. 40,592
Int. Cl.[5] A23L *1/27*
U.S. Cl. 426—72 20 Claims

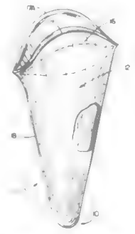
1. A composition for formulating a colored syrup or beverage, the composition comprising vitamin C, an azo food dye and a color-stabilizing amount of riboflavin.

5,336,511

EDIBLE CONE AND APPARATUS AND METHOD FOR MAKING SAME

Daniel V. Der Beek, 253A Glascow Turnpike, Woodstock, N.Y. 12498

Filed Jun. 8, 1992, Ser. No. 894,992
Int. Cl.[5] A21B *5/02;* A21C *15/02;* A21D *13/00*
U.S. Cl. 426—138 36 Claims



1 An edible cone adapted to contain edible contents comprising
a) a closed vertex portion,
b) a flexible body of substantially right elliptical cone shape with opposed rounded proximate and remote sides flairing from the vertex portion to and including a mouth portion, and
c) opposed lip segments defining said mouth portion and having arcuate edges joined end-to-end at the opposed remote sides of the body and curving away from one another and from the vertex portion so that the lip segment edges are farthest from one another and from the vertex portion at the proximate sides of the body.

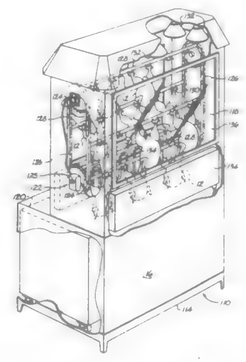
5,336,512

METHOD OF PREPARING AND HANDLING POULTRY FOR CONSUMPTION

Robert M. Stuck, 17 Old Stage Trail, Lake Wylie, S.C. 29710, and Samuel H. Maw, 290 Indian Creek Rd., Spartanburg, S.C. 29302-9411

Continuation-in-part of Ser. No. 561,287, Jul. 31, 1990, abandoned, and a continuation-in-part of Ser. No. 881,050, May 11, 1992, Pat. No. 5,173,320. This application Dec. 3, 1992, Ser. No. 985,567
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—523 15 Claims

1. A method for preparing a whole poultry carcass for consumption comprising the steps of severing a poultry carcass along its breast bone and opening the carcass into a generally flat condition wherein its internal chest and abdominal cavity form one side of the poultry carcass and its breast, back, wings, thighs, and legs form the opposite side of the poultry carcass, generating energy sufficient at least to warm the poultry carcass at a predetermined serving temperature within a defined area for temporary residence by the poultry carcass and maintaining the poultry carcass in said generally flat condition during residence within said defined area by suspending the poultry carcass by its legs while holding the legs sufficiently spread from each other to maintain the poultry carcass opened in said generally flat condition.



5,336,513

BITTERNESS INHIBITORS

Jed A. Riemer, Scarsdale, N.Y., assignor to Kraft General Foods, Inc., Northfield, Ill.

Division of Ser. No. 27,568, Mar. 5, 1993, which is a continuation of Ser. No. 840,651, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 658,146, Feb. 20, 1991, abandoned. This application Dec. 7, 1993, Ser. No. 163,494
Int. Cl.[5] A23L *1/236*
U.S. Cl. 426—548 4 Claims

1. A process for reducing the bitterness of a food preparation containing artificial sweeteners having bitter flavor notes comprising the addition of about 0.001% to about 0.2% by weight of a bitterness inhibitor to said food, said bitterness inhibitor comprising ferulic acid or a food acceptable salt thereof.

5,336,514

WHIPPABLE NON-DIARY CREAM BASED ON LIQUID OIL

Malcolm G. Jones, Stevington; Ian M. Kimsey, Radwell; Anthony Morrison; Jeanette Y. Wong, both of Bedford, and Jan van Heteren, Esher, all of Great Britain, assignors to Van Den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Continuation of Ser. No. 737,090, Jul. 29, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,911
Claims priority, application European Pat. Off., Jul. 30, 1990, 90202076.7; United Kingdom, Sep. 27, 1990, 9021011
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] A23C *13/00*
U.S. Cl. 426—564 20 Claims

1. A whippable non-dairy cream (NDC) consisting essentially of:
an emulsion of a water-continuous phase having one or more milk components and thickeners; and
a fat phase comprising a fat and an emulsifier system,
wherein the non-dairy cream contains 15–60 wt. % of a substantially globular vegetable fat having a mean droplet size of less than 5.0 microns,
and 20–85 wt. % of the vegetable fat is a liquid oil having a polyunsaturated fatty acid (PUFA) content of 10–80 wt. %, a saturated fatty acid (SAFA) content of 4–18 wt. % and a monounsaturated fatty acid (MUFA) content of 12–80 wt. %, the PUFA/SAFA weight ratio of the total fat ranges being between 0.2 and 3.0 and the liquid oil is selected from the group consisting of sunflower oil, safflower oil, rapeseed oil, maize oil, bean oil, groundnut oil, olive oil and cottonseed oil, and the rest of the vegetable fat being a hard fat,
wherein the non-dairy fat cream contains at least 5 wt. % of the hard fat and is whippable within 6 minutes when using an electrical whipper,
and one or more optional ingredients selected from the group consisting of a flavorant, a colorant and mixtures thereof, the amount of each ingredient being an effective amount.

5,336,515

POLYSACCHARIDE HYDROCOLLOID-CONTAINING FOOD PRODUCTS

Gregory B. Murphy, Sands Point; Kevin W. Lang, Lloyd Neck; Barry N. Frake, Northport, and William J. Entenmann, Islip, all of N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.

PCT No. PCT/US90/03408, § 371 Date Dec. 15, 1992, § 102(e) Date Dec. 15, 1992
Continuation-in-part of Ser. No. 366,902, Jun. 15, 1989, abandoned. This PCT application Jun. 15, 1990, Ser. No. 965,389
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] A23L *1/0534, 1/054*
U.S. Cl. 426—573 14 Claims

1. A reduced fat or fat free food product having a moisture content above 45% by weight wherein the reduced fat level is effected by substituting an aqueous dispersion for fat, said dispersion containing polysaccharide hydrocolloid, insoluble fiber and protein at a weight ratio of from 1:0.2–3.5:1.1–4.5 and wherein the dispersion is added to the food product at a level of from 0.05 to 2.0 parts of polysaccharide hydrocolloid per 100 parts of water.

5,336,516

KIMCHI-LIKE FOOD AND METHOD FOR PRODUCING THE SAME

Matsuo Yamamoto; Toshiaki Nakata, and Hideaki Yabunchi, all of Uji, Japan, assignors to Joyu Incorporated, Kyoto, Japan

Filed Feb. 19, 1993, Ser. No. 19,681
Claims priority, application Japan, Feb. 26, 1992, 4-076133
Int. Cl.[5] A23L *1/218*
U.S. Cl. 426—615 4 Claims

2. A method for producing a kimchi-like food, comprising the successive steps of
(a) soaking dried sanzo-sai stalks in hot water;
(b) cutting said stalks into pieces having processable lengths;
(c) pickling said pieces with salt;
(d) repeatedly washing said pieces with water to remove harsh-tasting components;
(e) mixing garlic, fruit, ginger, table salt, red pepper, fermented fish viscera, seasoning, acidifying agent(s), preservative(s), and soy sauce with said pieces in a sealable container;
(f) aging said mixture at about 2°–6° C. for at least 12 hours;
(g) adjusting the pH of said mixture to about 4.5–4.8 by adding an acidifying agent, if necessary;
(h) adjusting the salt concentration of said mixture to about 1.3–1.8 wt % by adding table salt, if necessary;
(i) vacuum packing said mixture;
(j) further aging said mixture at about 2°–6° C. for at least one day;
(k) sterilizing said mixture; and
(l) rapidly cooling said mixture.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,517

AIR CLASSIFICATION OF FLOUR

Aris Graveland, Vlaardingen; Matthijs H. Henderson, Rotterdam, and Leonie J. M. Linders, Bakel, all of Netherlands, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Feb. 11, 1993, Ser. No. 15,196

Claims priority, application European Pat. Off., Feb. 12, 1992, 92200385.8

Int. Cl.[5] A23J *3/18*

U.S. Cl. 426—622 9 Claims

1. A method for the air classification of flour having a particle size distribution of 5–160 μm, comprising

enhancing the water content by 10–30% of the original moisture content of the flour

remilling the flour of enhanced water content at least once, to give a remilled flour having a specific size diameter X-50 of less than 40 μm,

air classifying the resulting remilled flour by applying the air flow rate setting and a classifier speed with which a predetermined cut point can be achieved, to form a protein enriched fraction and a starch-enriched fraction and

collecting the protein-enriched fraction as a fine fraction in a yield of at least 30 wt %, and the starch-enriched fraction as a coarse fraction in a yield of at most 70 wt. %.

5,336,518

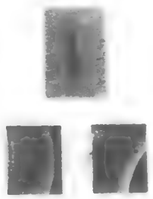
TREATMENT OF METALLIC SURFACES USING RADIOFREQUENCY PLASMA DEPOSITION AND CHEMICAL ATTACHMENT OF BIOACTIVE AGENTS

Pallassana V. Narayanan, Davie; Stephen M. Rowland, and Kimberly D. Stanley, both of Miami, all of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Dec. 11, 1992, Ser. No. 989,105

Int. Cl.[5] A61F *2/00*; A61M *23/00*

U.S. Cl. 623—1 16 Claims



1. A method for rendering biocompatible a metal surface of a medical device, comprising the steps of:

coating said metal surface with a layer of heptafluorobutylmethacrylate monomer to form a polymer coating on said surface;

treating said polymer coating with water vapor plasma to provide reactive groups thereon; and

applying a biologically active agent to said polymer coating;

the thus formed device being a biocompatible metallic member which, when implanted within a blood vessel, prevents substantial thrombus from occurring on its surface while not significantly interfering with endothelialization of said surface.

5,336,519

Patent Not Issued For This Number

5,336,520

HIGH DENSITY-HIGH PURITY GRAPHITE PREPARED BY HOT ISOSTATIC PRESSING IN REFRACTORY METAL CONTAINERS

Clarence L. Hoenig, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 18, 1990, Ser. No. 539,270

Int. Cl.[5] C01B *31/04*

U.S. Cl. 427—154 8 Claims

1. A method of making high density crystalline graphite comprising:

providing graphite starting material consisting essentially of graphite selected from graphite powder and a preformed porous graphite body in a sealed refractory metal container formed of tantalum, niobium, tungsten, molybdenum or alloys thereof having a wall thickness of about 1.6 mm;

hot isostatically pressing the sealed refractory container filled with the graphite starting material at about 1800° C. up to about 2200° C. and at up to about 30 KSI (206.8 MPa) for about two to eight hours.

5,336,521

METALLIC OXIDES

Graham P. Dransfield, Stockton on Tees, and Denis J. King, Middlesbrough, both of England, assignors to Tioxide Group Services Limited, London, England

Filed Nov. 3, 1992, Ser. No. 970,813

Claims priority, application United Kingdom, Nov. 2, 1991, 9123280.1

Int. Cl.[5] B05D *7/00*

U.S. Cl. 427—220 41 Claims

1. A process for the manufacture of coated particulate zirconia suitable for forming a ceramic composition comprising the steps of:

a) forming an aqueous dispersion of particulate zirconia with an initial pH value of at least 7.5,

b) adding a water-soluble hydrolyzable compound of a stabilizing metal for zirconia selected from the group consisting of yttrium, calcium, magnesium, barium, strontium, cerium, lanthanum, rare earth metals and mixtures thereof, to the dispersion, and

c) adjusting the pH of the dispersion to deposit a coating of a hydrous oxide of said stabilizing metal on the particulate zirconium.

5,336,522

METHOD OF MANUFACTURING PARTS MADE OF CERAMIC MATRIC COMPOSITE MATERIAL

Aline Balhadere, Vendays Montalivet; Bruno Bernard, Fystnes; Jacques A. Moreau, Bordeaux; Isabelle Mouricou, Arsac, and Christian Robin-Brosse, Le Haillan, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Feb. 2, 1993, Ser. No. 13,816

Claims priority, application France, Feb. 4, 1992, 92 01237

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—226 12 Claims

1. A method of manufacturing a part made of a ceramic matrix composite material comprising the steps of:

making a fiber preform having a shape substantially similar to a shape of the part being manufactured;

consolidating the fiber preform by:

impregnating the fiber preform with a liquid composition comprising a mixture of a thermosetting monomer and a ceramic precursor polymer to form an impregnated preform;

heating the impregnated preform to cause cross-linking of the thermosetting monomer and thereby achieving in-situ cross-linking of the ceramic precursor polymer throughout the impregnated preform and bringing the ceramic precursor polymer to a non-meltable state; and

applying a heat treatment to transform the ceramic precursor polymer into ceramic which bonds fibers of the fiber preform together providing a consolidated preform; and

densifying the consolidated preform with a ceramic matrix.

5,336,523

METHOD OF COATING AND TESTING A TANK

Garry D. Chater, Toongabbie, and George Wilson, Winston Hills, both of Australia, assignors to Rheem Australia Limited, Rydalmere, Australia

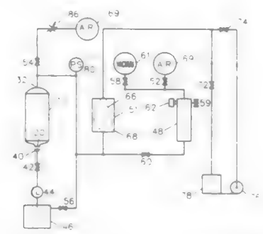
PCT No. PCT/AU89/00226, § 371 Date Dec. 27, 1990, § 102(e) Date Dec. 27, 1990, PCT Pub. No. WO89/11344, PCT Pub. Date Nov. 30, 1989

PCT Filed May 23, 1989, Ser. No. 602,288

Claims priority, application Australia, May 24, 1988, PI8405

Int. Cl.[5] B05D *7/22*

U.S. Cl. 427—231 7 Claims



1. A method of applying a vitreous enamel slip liquid coating material to the interior surface of a tank and pressure testing the tank, the method comprising the steps of placing the interior of the tank into liquid flow communication through a first opening with a supply of a liquid coating material, evacuating air from the tank through a second opening to cause the coating material to fill the tank, closing the second opening, increasing hydraulic pressure inside the tank by forcing additional coating material into the tank through the first opening from an accumulator connected to the first opening, maintaining said increased hydraulic pressure as a pressure test required on every tank coated using the method, reducing said hydraulic pressure in the tank, forcibly expelling the excess coating material from the tank through the first opening leaving a residual coating layer on an interior surface, drying the residual coating layer and causing the dried layer to be hardened to a protective coating on the interior surface.

5,336,524

EVAPORATOR

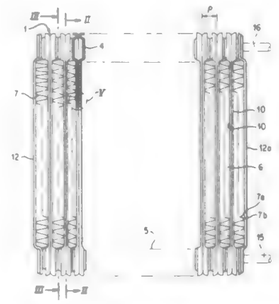
Noriyuki Tanaka; Takashi Takishita; Kiyoshi Fukushima; Yasuyuki Nagakura, all of Konan; Kaoru Inoue, Fuchu; Tsuyoshi Nishijima, Fuchu, and Haruhiro Inada, Fuchu, all of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 866,663, Feb. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,054, Apr. 18, 1991, abandoned, which is a division of Ser. No. 432,219, Nov. 6, 1989, abandoned. This application Dec. 30, 1992, Ser. No. 999,782

Claims priority, application Japan, Nov. 8, 1988, 63-282689

Int. Cl.[5] B05D *3/12*

U.S. Cl. 427—240 5 Claims



1. A process for forming odor-free and hydrophilic coating layers on surfaces of component parts of an evaporator, comprising the steps of:

a) immersing an assembly of said component parts in an aqueous solution consisting essentially of water glass, colloidal silica, and water, the ratio in solids content between said water glass and said colloidal silica being 10–50% by weight water glass and 50–90% by weight colloidal silica;

b) removing said assembly from said aqueous solution, and subjecting said assembly to centrifugal separation to such an extent that the amount of said aqueous solution attached to surfaces of said assembly is reduced to a level such that said assembly may be dried by heating until said water glass and colloidal silica are attached to said surfaces of said assembly in the form of solids in an amount within a range of 0.010 to 0.066 g/m^2; and

c) drying said assembly by heating same at a temperature for a period of time until said water glass and colloidal silica are attached to said surfaces of said assembly in the form of solids in an amount within a range of 0.010 to 0.066 g/m^2.

5,336,525

STAMP PAD AND THE METHOD FOR PRODUCING THE SAME

Richard Jen, Kaohsiung City, Taiwan, assignor to Sheenya Enterprises Co., Ltd., Feng Shan City, Taiwan

Filed Jan. 21, 1993, Ser. No. 6,319

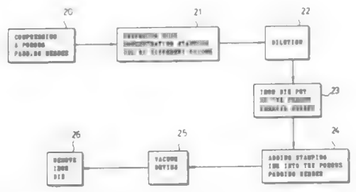
Int. Cl.[5] B05D *5/00*

U.S. Cl. 427—256 4 Claims

1. A method for producing a stamp pad comprising the steps of:

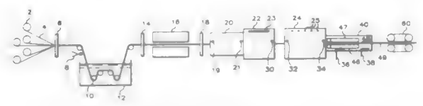
VOL 1165 ISS 2 AG 9 1994 UMI

(1) compressing a piece of porous padding member by means of a hot pressing plate;
(2) preparing stamping ink of different colors;
(3) diluting said stamping ink with a diluent to a viscosity of 1500 cps in order to increase the flowability and permeability of said stamping ink;



(4) depressing a die with a plurality of partitions on said porous padding member in order to form different regions on said porous padding member;
(5) adding said diluted stamping ink of different colors into said regions of said porous padding member;
(6) vacuum drying sad porous padding member to remove said diluent in said porous padding member; and then
(7) removing said die.

5,336,526
PRIMARY PROCESSING OF LAMINATED THERMOPLASTIC SHEETS
Kevin J. Spoo, and Roy G. Thompson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 12, 1991, Ser. No. 684,105
Int. Cl.[5] B05D *1/32*
U.S. Cl. 427—372.2 **7 Claims**



1. A process for improving the physical properties of a pultruded laminate of arylene sulfide polymer containing reinforcing filaments, said laminate being formed in a pultrusion machine including a cooling zone to set said laminate to a rigid form, said process comprising the step of annealing said rigid laminate in an apparatus comprising:
(a) a chamber attached to said cooling zone of said pultrusion machine for receiving and passing said rigid laminate therethrough, said chamber defining a heated annealing zone;
(b) means for pulling said rigid laminate through a central portion of said annealing zone;
(c) a first perforated diffuser tube having one end fixed to an end of said chamber above said rigid laminate and extending along a significant portion of the length of said chamber for flowing a gaseous heating medium over the top side of said rigid laminate so as to heat the top side of said rigid laminate to its glass transition temperature as it moves through said chamber; and
(d) a second perforated diffuser tube having one end fixed to an end of said chamber below said rigid laminate and extending along a significant portion of the length of said annealing zone for flowing a gaseous heating medium over the under side of said rigid laminate so as to heat the underside of said rigid laminate to its glass transition temperature as it moves through said chamber.

5,336,527
METHOD OF COVERING SUBSTRATE SURFACE WITH SINTERED LAYER AND POWDERY RAW MATERIAL USED FOR THE METHOD
Sakae Takahashi, Mishima, and Minoru Umehara, Numazu, both of Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan
Filed Nov. 26, 1991, Ser. No. 797,952
Claims priority, application Japan, Nov. 30, 1990, 2-338635
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—357 **13 Claims**

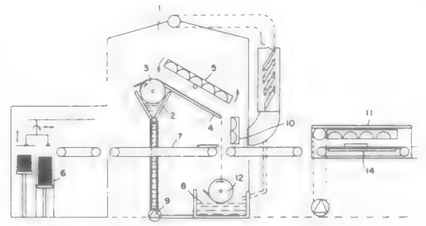


1. A method of covering a substrate surface with a sintered layer, comprising the steps of:
loading a powdery raw material onto a region of said substrate to be covered with said sintered layer, said powdery raw material containing at least two elements and having a melting temperature region in which a solid phase and a liquid phase are present together, said liquid phase being wettable with said substrate, and at least one member defines said region of said substrate; and
sintering said loaded powdery raw material at a temperature within said melting temperature region in which said solid phase and said liquid phase are present together so as to form said sintered layer covering said substrate surface, wherein said sintering step comprises the steps of:
heating at a rate of 5° to 10° C./min. until a first temperature lower by 20° to 30° C. than said melting temperature region is reached,
soaking at said first temperature so as to make said temperature uniform over the entire region of said substrate being sintered,
heating at a rate of 0.1° to 5° C./min. until said sintering temperature is reached,
sintering at said sintering temperature for about 20 minutes, and
furnace cooling.

5,336,528
HEAT SEALABLE PAPER AND METHOD FOR ITS MANUFACTURE
Reinhard D. Bohme, Riegelsville, Pa., assignor to James River Paper Company, Inc., Milford, Ohio
Filed Jan. 15, 1993, Ser. No. 3,995
Int. Cl.[5] B65D *3/12*
U.S. Cl. 427—361 **11 Claims**

10. A method of making paper having a heat sealable coating, which method comprises:
a) applying to a surface-sized paper web an aqueous dispersion of a microcrystalline wax having a melting point of at least 80 degrees C. and a copolymer of ethylene and a comonomer which is acrylic acid or methacrylic acid, with the ratio of the wax to the copolymer being between about 1:4 to about 1:10, and
b) drying the coating by passing the coated web over the surface of a heated drum, with the composition of the coating being such that the coating does not adhere to the drum or leave a substantial residue on the drum.

5,336,529
METHOD FOR COATING CIRCUITBOARDS
Hans J. Schafer, Viersen, Fed. Rep. of Germany, assignor to Rutgerswerke Aktiengesellschaft, Fed. Rep. of Germany
PCT No. PCT/EP93/00004, § 371 Date Mar. 9, 1992, § 102(e) Date Mar. 9, 1992, PCT Pub. No. WO93/14444, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 4, 1993, Ser. No. 30,217
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1992, 4200149; Feb. 8, 1992, 9201546[U]
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—487 **3 Claims**

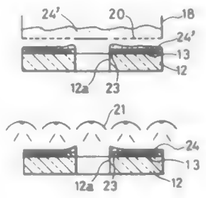


1. A curtain pouring method of coating circuit boards with a photopolymerizable lacquer comprising removing a photopolymerizable lacquer with a high solids contact of 80 to 100% by weight from a vat at a temperature of 48° to 60° C. with a heatable roll, applying the lacquer to a doctor-blade heated at 60° to 90° C., subjecting the doctor blade to infra red lamps whereby the lacquer flows and pouring the lacquer at a viscosity of 100 to 500 mPa·s onto circuit boards cooled to −20° to 25° C. to form a coating.

5,336,530
PROCESS FOR PRODUCING DECORATIVE MATERIAL
Seiji Ikemoto; Katsuhiko Taki; Takashi Matano; Ichiro Kawahata; Kiyoshi Oguchi; Shigeki Ito, and Tatsuo Miyauchi, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd. and The Inctec, Inc., both of Japan
Division of Ser. No. 738,634, Jul. 31, 1991, Pat. No. 5,271,988.
This application Sep. 2, 1993, Ser. No. 115,097
Claims priority, application Japan, Aug. 3, 1990, 2-206216
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—503 **4 Claims**

1. A process for producing a decorative sheet, comprising the steps of:
coating an ionizing radiation curing coating composition comprising an ionizing radiation-polymerizable oligomer, an ionizing radiation-polymerizable monomer and a releasing agent, said composition having a viscosity regulated to 1000 cps or less, on a base material to form an ionizing radiation curing coating composition layer; and
irradiating the coating composition layer with an ionizing radiation to cure the coating composition layer.

5,336,531
MAGNETO-OPTICAL DISK AND MANUFACTURING METHODS THEREOF
Junichiro Nakayama, Shiki; Hiroyuki Katayama, Nara, and Kenji Ohta, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation-in-part of Ser. No. 714,933, Jun. 13, 1991, Pat. No. 5,233,597, and a continuation-in-part of Ser. No. 650,283, Feb. 4, 1991. This application Aug. 4, 1992, Ser. No. 925,370
Claims priority, application Japan, Feb. 6, 1990, 2-26477; Jun. 13, 1990, 2-158070; Jul. 20, 1990, 2-193225
Int. Cl.[5] B05D *3/06, 5/12*
U.S. Cl. 427—510 **10 Claims**



6. A manufacturing method of a magneto-optical disk having a substrate, a recording layer and a protective layer on the substrate and an antisticking layer comprising the steps of:
applying resin for forming the antisticking layer for a floating head of said magneto-optical disk, said resin applied through screen means onto the substrate having the recording layer and protective layer successively formed thereon, said screen means having meshes that are gradually finer from an innermost portion toward a circumferential portion of the magneto-optical disk; and
hardening the resin,
wherein a thickness of the antisticking layer is substantially inversely proportional to a radial position on the magneto-optical disk raised to the ½ power.

5,336,532
LOW TEMPERATURE PROCESS FOR THE FORMATION OF CERAMIC COATINGS
Loren A. Haluska, and Keith W. Michael, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed Feb. 21, 1989, Ser. No. 312,457
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—515 **39 Claims**

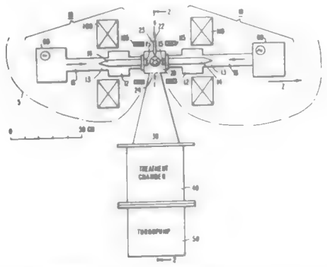
1. A process for the formation of a ceramic or ceramic-like coating on a substrate comprising the steps of:
(a) coating said substrate with a solution comprising a hydrogen silsesquioxane resin diluted in a solvent;
(b) evaporating said solvent to thereby deposit a preceramic coating on said substrate; and
(c) ceramifying said preceramic coating to a silicon dioxide-containing ceramic by heating said preceramic coating to a temperature of between about 40° to about 400° C. in the presence of ozone.

5,336,533
METHOD AND APPARATUS FOR THE PRODUCTION OF A DISSOCIATED ATOMIC PARTICLE FLOW
Alexander A. Balmashnov, Moscow, , assignors to Ruxam, Inc., New York, N.Y.
Division of Ser. No. 896,169, Jun. 10, 1992, Pat. No. 5,282,899.
This application Oct. 22, 1993, Ser. No. 142,248
Int. Cl.[5] B05D *3/06;* **B44C** *1/22;* **B23K** *9/00*
U.S. Cl. 427—562 **29 Claims**

1. A method for providing a flux of dissociated and excited molecules comprising:

VOL 1165 ISS 2 AG 9 1994 UMI

providing a first resonant cavity and a second resonant cavity;
providing a first plasma discharge chamber in the first resonant cavity and a second plasma discharge chamber in the second resonant cavity;
providing a reaction chamber connected between the first and second plasma discharge chambers, the reaction chamber having a gas flow path including an inlet for a working gas and an outlet for dissociated and excited molecules;
evacuating the first and second discharge chambers and the reaction chamber and filling the first and second discharge chambers with a plasma supporting gas having a background pressure of less than 10^{-3} Torr;
subjecting the first and second discharge chambers and the



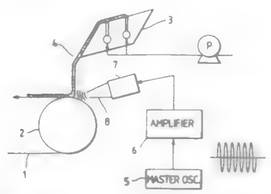
reaction chamber to a net magnetic field profile and propagating energy into the first and second resonant cavities at a frequency to ignite a plasma in the first and second discharge chambers at or near electron cyclotron resonance (ECR) conditions;
producing first and second plasma streams from the first and second plasma discharge chambers;
combining the first and second plasma streams in the reaction chamber and confining the combined plasma stream in the reaction chamber by the net magnetic field profile;
passing a working gas flow through the confined plasma to form neutral species of dissociated and excited molecules and charged species of electrons and ions; and
confining the formed charged species to the reaction chamber by said net magnetic field so that the neutral species will flow out the outlet.

5,336,534

COATING METHOD EMPLOYING ULTRASONIC WAVES

Kenji Nakajima, and Kimiaki Miyamoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 16, 1993, Ser. No. 48,257
Claims priority, application Japan, Apr. 21, 1992, 4-126657
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—600 **6 Claims**



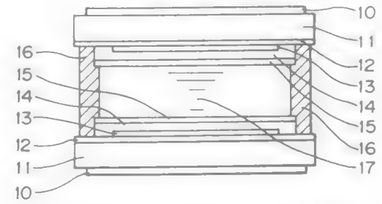
1. A coating method for coating a continuously running flexible support with a coating solution by expelling said coating solution from a coating device onto said support so as to form a contact line between said coating solution and said support, wherein the improvement comprises continuously radiating ultrasonic waves from an ultrasonic wave generator separate from said coating device on or near a contact line between said support and said coating solution from a position rearward of said contact line so as to continuously vibrate an air layer accompanying said support immediately before contact of said support with said coating solution.

5,336,535

PLASTIC LIQUID CRYSTAL DISPLAY DEVICE

Shunsei Fukuchi; Kyouhei Isohata, both of Nara; Makoto Iwamoto, Yamato Koriyama; Kenji Misono, Nara, and Hiroshi Takanashi, Souraku, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 23, 1992, Ser. No. 980,209
Claims priority, application Japan, Nov. 27, 1991, 3-097534[U]
Int. Cl.[5] G02F *1/133, 1/1337*
U.S. Cl. 428—1 **12 Claims**



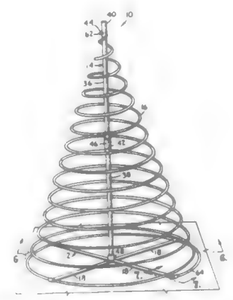
1. A plastic liquid crystal display device comprising:
a pair of plastic substrates, located on either side of a pair of transparent electrodes, and
a pair of insulating films for protecting said pair of transparent electrodes, wherein said pair of insulating films are formed by dispersing any one of acrylic-silanic resin, epoxy-silanic resin, and silanic resin in a solvent to produce a solution, coating the solution on said pair of transparent electrodes and sintering a resulting coating at 200° C. or less.

5,336,536

COLLAPSIBLE CONE STRUCTURE

August J. Oberzan, 8000 W. 113th St., Overland Park, Kans. 66210

Filed Mar. 31, 1993, Ser. No. 40,831
Int. Cl.[5] A47G *33/06*
U.S. Cl. 428—8 **7 Claims**



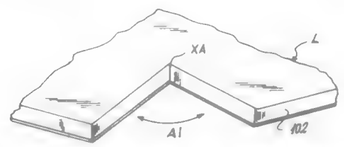
1. A collapsible cone structure comprising:
(a) a generally X-shaped base including a pair of transversely connected slat members each presenting a pair of opposed ends;
(b) a generally upright support member having a lowermost end and an uppermost end, said lowermost end being coupled with said base;
(c) a spiral coil member having a centrally oriented first end portion and a second end portion forming a perimeter, said perimeter portion being coupled with said base slat ends, said member being shiftable between a generally cone-shaped extended configuration and a generally flattened disc-shaped resting configuration;
(d) coupling means coupling said coil first end portion to said support member end for maintaining said spiral coil member in said cone-shaped configuration; and
(e) a detachable theme head comprising:
(1) a generally upright head support member having an uppermost first end and a lowermost second end, said second end being detachably coupled with said cone support member uppermost end;
(2) a plurality of curvet members, each having a pair of opposed ends and a midportion, said ends each including means coupling said ends with said head support member second end; and
(3) means reversibly coupling said head support first end with said curvet member mid portion.

5,336,537

METHOD AND APPARATUS FOR BEVELLING INTERIOR ANGLES OF SHEETS OF COLORED OR NON-COLORED PLAIN GLASS, PLATE GLASS OR FLATTENED GLASS, AND THE PRODUCT OBTAINED

Luigi Bovone, Via Pernigotti, 19-15070 Belforte Monferrato(Alessandria), Italy

Division of Ser. No. 807,235, Dec. 16, 1991, abandoned, which is a division of Ser. No. 493,980, Mar. 15, 1990, Pat. No. 5,099,617.
This application Apr. 13, 1993, Ser. No. 47,098
Claims priority, application Italy, Apr. 19, 1989, 20196 A/89
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—34 **15 Claims**



1. A sheet of plain glass, plate glass or flattened glass having at least one bevelled interior angle formed by a pair of interior sides of said sheet of glass, a vertex being formed at an intersection of said interior sides, whereby the intersection is sharply defined.

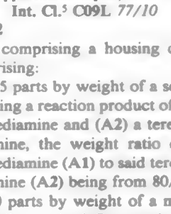
5,336,538

IMPACT ABSORBING AIR BAG AND METHOD FOR MANUFACTURING SAME

Atsushi Kitamura, Kanazawa, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP88/01253, § 371 Date Sep. 28, 1989, § 102(e) Date Sep. 28, 1989, PCT Pub. No. WO89/05250, PCT Pub. Date Jun. 15, 1989
PCT Filed Dec. 10, 1988, Ser. No. 423,449
Claims priority, application Japan, Dec. 11, 1987, 62-314934
Int. Cl.[5] B60R *21/16;* **D03D** *3/02*
U.S. Cl. 428—35.2 **8 Claims**

1. An air bag comprising:
a seamless woven fabric having a central zone of substantially circular shape and formed by a non-connected portion (B2) of a tubular weave structure (B) to provide front and back layers in the central zone, and a circumferential zone of ring-like shape and formed by a connected portion (B1) of the tubular weave structure (B) and a non-tubular weave structure (A), wherein the transition between the non-tubular weave structure (A) and the tubular weave structure (B) is continuous;



at least one side of said non-connected tubular woven fabric being provided with a polymer covering layer (2); and
a gas introducing hole (3) in the non-connecting portion (B2) of the tubular weave structure (B) in one of the front and back layers of the central zone.

5,336,539

FUSER ROLL CONTAINING NICKEL OXIDE PARTICLES FOR FIXING TONER TO A SUBSTRATE

John J. Fitzgerald, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1993, Ser. No. 159,013
Int. Cl.[5] B32B *1/08*
U.S. Cl. 428—36.8 **9 Claims**

1. A fuser roll useful for heat-fixing an electrographic toner to a substrate, wherein the roll comprises a core having thereon a base cushion layer comprising a condensation-cross-linked poly(dimethylsiloxane) elastomer, said base cushion layer having nickel oxide particles dispersed therein in a concentration of from 20 to 40 percent of the total volume of the base cushion layer.

5,336,540

CONNECTOR

Tetsuo Kato; Masahiro Kanda, both of Shizuoka; Tatsuo Tsumiyama, and Satoru Nakamoto, both of Yamaguchi, all of Japan, assignors to Yazaki Corporation, Tokyo and UBE Industries, Ltd., Yamaguchi, both of Japan

Filed Dec. 28, 1992, Ser. No. 997,318
Claims priority, application Japan, Dec. 27, 1991, 3-347070
Int. Cl.[5] C09L *77/10*
U.S. Cl. 428—36.92 **12 Claims**

1. A connector comprising a housing comprising a resin composition comprising:
(A) from 50 to 95 parts by weight of a semi-aromatic polyamide comprising a reaction product of (A1) an adipate of hexamethylenediamine and (A2) a terephthalate of hexamethylenediamine, the weight ratio of said adipate of hexamethylenediamine (A1) to said terephthalate of hexamethylenediamine (A2) being from 80/20 to 50/50, and
(B) from 5 to 50 parts by weight of a modified polyolefin comprising (B1) a polyolefin copolymer comprising a reaction product of (B11) propylene and (B12) ethylene, the molar ratio of propylene (B11) to ethylene (B12) being from 90/10 to 99/1, said polyolefin copolymer (B1) being graft-modified with (B2) from 0.05 to 5 parts by weight of an α,β-unsaturated carboxylic acid or a derivative thereof per 100 parts by weight of said polyolefin copolymer (B1).

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,541

LINERLESS PRESSURE-SENSITIVE LABEL

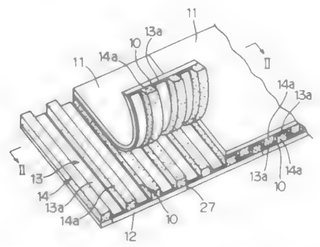
Junichi Kobayashi, Tokyo, Japan, assignor to Ko-Pack Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 7,373, Jan. 21, 1993, which is a continuation of Ser. No. 740,987, Aug. 6, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 27,112

Claims priority, application Japan, May 9, 1991, 3-132236

Int. Cl.[5] B32B *7/06, 7/14*

U.S. Cl. 428—40 **10 Claims**



1. A linerless pressure-sensitive label comprising:

top and bottom label sheets having mutually facing inner surfaces that are adhered together via an adhesive and a release agent;

strips of release agent provided on an inner surface of said top label sheet and on a mutually facing inner surface of said bottom label sheet, said strips of release agent being provided on said inner surfaces of each of said label sheets with a given spacing between adjacent strips of release agent, said strips of release agent on said top label sheet being positionally staggered from said strips of release agent on said bottom label sheet;

strips of adhesive arranged between said strips of release agent on said top label sheet and said inner surface of said bottom label sheet, and arranged between said strips of release agent on said bottom label sheet and said inner surface of said top label sheet;

said strips of release agent and said strips of adhesive having respective widths in a direction of a plane of said inner surfaces of said top and bottom label sheets, and having respective thicknesses in a direction perpendicular to said inner surfaces of said top and bottom label sheets;

said strips of adhesive on said top label sheet all being separated in a width direction of said strips from strips of adhesive on said bottom label sheet which are adjacent to said strips of adhesive on said top label sheet by means of a non-adhesive narrow gap between said adjacent strips of adhesive; and

said strips of adhesive having a thickness which is substantially greater than the thickness of said strips of release agent.

5,336,542

INSULATION OF THERMAL MACHINES

Anton Wirth, Kollbrunn, Switzerland, assignor to Isolfeu AG, Zürich, Switzerland

PCT No. PCT/CH92/00110, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO93/00506, PCT Pub. Date Jan. 7, 1993

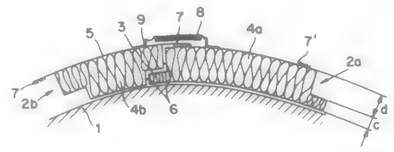
PCT Filed Jun. 10, 1992, Ser. No. 989,011

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1991, 4121340

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—73 **9 Claims**

1. Thermal insulating layer for body-like components such as machines, apparatuses, containers, equipment, gas and steam turbines and the like, which includes a plurality of planarly shaped elements or mats or pads, respectively located in an adjoining manner at an outside of the component, wherein the individual elements join each other substantially tightly by front surfaces extending substantially perpendicularly to a surface of the component located underneath the elements, whereby any two adjoining front surfaces comprise mutually a



complimentary step, such that the joint of separation between two elements which extends substantially perpendicularly to the surface of the component comprises a step and the two elements engage each other or overlap each other, respectively by their front surfaces along this step.

5,336,543

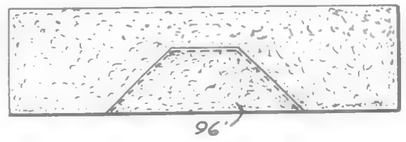
HAIR DRYING TOWEL

Norman R. Pyle, 2817 S. Walkers Mill Rd., Griffin, Ga. 30223

Continuation-in-part of Ser. No. 551,284, Jul. 12, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 918,916

Int. Cl.[5] D03D *27/08;* **B32B** *3/14, 5/14*

U.S. Cl. 428—78 **6 Claims**



1. A towel for wrapping and drying hair on a human head, said towel comprising:

a cloth having front and back sides, a central portion having a weight per unit area and end portions attached to said central portion, each of said end portions having a weight per unit area uniformly less than the weight per unit area of said central portion;

the flexibility of said end portions being greater than the flexibility of said central portion;

the water absorbency per unit area of said central portion being greater than the water absorbency per unit area of each of said end portions;

said cloth comprising a first base fabric and a first pile of first height attached to said first base fabric and substantially completely covering said central portion on said front and back sides; and

a water-absorbing enhancing element comprising a second base fabric and a second pile attached to said second base fabric and substantially completely covering a first side of said second base fabric, said enhancing element attached to said first base fabric by sewing said enhancing element peripheral boundaries to said first base fabric and over a portion of said first pile within said central portion of said towel, said enhancing element being attached along a side boundary of said towel.

5,336,544

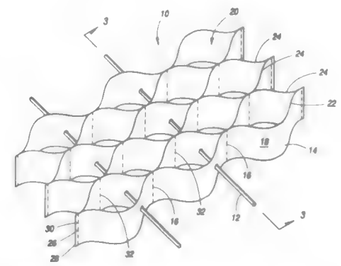
REINFORCED CELL MATERIAL

Gary M. Bach, Appleton, Wis., and Robert E. Crowe, Milton, Canada, assignors to Reynolds Consumer Products Inc., Appleton, Wis.

Filed Feb. 18, 1993, Ser. No. 19,101

Int. Cl.[5] B32B *3/12*

U.S. Cl. 428—117 **15 Claims**



1. In a cell material structure for confinement of concrete and earth material, comprising:

a plurality of plastic strips bonded together on their faces in a side by side relationship at bonding areas which are staggered from strip to strip such that the plurality of strips may be stretched in a direction perpendicular to the faces of the strips to form a unitary web of cells, the strips forming cell walls,

the improvement wherein adjacent strips of the plurality of strips have apertures, and reinforcing means extending through said apertures of said adjacent strips.

5,336,545

COMPOSITE ELASTIC NECKED-BONDED MATERIAL

Michael T. Morman, Alpharetta, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 452,154, Dec. 15, 1989, Pat. No. 5,226,992, which is a division of Ser. No. 248,518, Sep. 23, 1988, abandoned. This application Jul. 12, 1993, Ser. No. 89,869

Int. Cl.[5] B32B *27/14*

U.S. Cl. 428—152 **19 Claims**



1. A composite elastic necked-bonded material formed by a process comprising:

providing at least one neckable nonelastic material;

applying a tensioning force to the neckable nonelastic material to neck said material;

superposing the necked nonelastic material on an elastic sheet; and

joining said tensioned, necked nonelastic material and said elastic sheet at least at two places.

5,336,546

ORGANIC ELECTROLUMINESCENCE DEVICE

Yoshio Hironaka; Hiroshi Tokailin; Chishio Hosokawa, and Tadashi Kusumoto, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00835, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO93/01252, PCT Pub. Date Jan. 21, 1993

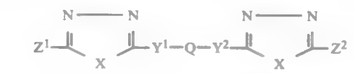
PCT Filed Jul. 2, 1992, Ser. No. 971,817

Claims priority, application Japan, Jul. 12, 1991, 3-172090

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 **20 Claims**

1. In an organic electroluminescence device, the improvement comprising the device containing a compound represented by the formula:



(I)

wherein Z^1 and Z^2 are each an unsubstituted aromatic group or an aromatic group being substituted with $C_{1\text{-}5}$ alkyl groups, $C_{1\text{-}5}$ alkyloxy groups, cyano groups, chlorines, bromines or fluorines; Y^1 and Y^2 are each an unsubstituted aromatic group or an aromatic group being substituted with $C_{1\text{-}5}$ alkyl groups; Z is —O—, —CH_2—, —CH_2—CH_2—, or —$C(CH_3)_2$—; and X is —O— or —S—.

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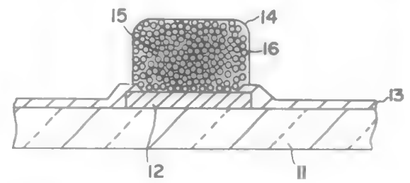
ELECTRONIC COMPONENTS MOUNTING/CONNECTING PACKAGE AND ITS FABRICATION METHOD

Tetsuo Kawakita, Takatsuki; Takayuki Yoshida, Irakata, and Kenzo Hatada, Katano, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Feb. 26, 1993, Ser. No. 23,106

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 **4 Claims**



1. An electronic components mounting/connecting package comprising bump electrodes of a composition wherein resin particles having diameters in the range of 1–5 μm are dispersed in metal.

5,336,548

MULTIPLE-USE THERMAL IMAGE TRANSFER RECORDING MEDIUM

Keiichi Shiokawa, Numazu; Mihoko Akiyama, Susono; Yoji Ide, Mishima; Yoshihiko Hiyoshi; Masahiro Sato, both of Shizuoka, and Kumi Surizaki, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,041

Claims priority, application Japan, Dec. 19, 1991, 3-355099; Jun. 16, 1992, 4-181724

Int. Cl.[5] B41M *5/26*

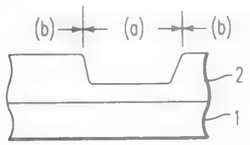
U.S. Cl. 428—212 **13 Claims**

1. A multiple-use thermal image transfer recording medium comprising:

a heat-resistant support;

VOL 1165 ISS 2 AG 9 1994 UMI

a thermal image transfer layer formed on said heat-resistant support, said thermal image transfer layer comprising a plurality of thermofusible ink layers, which is overlaid on said heat-resistant support and comprises a thermofusilbe ink component comprising a coloring agent and a thermo-



fusible material, the melt viscosity of said thermofusible ink component in each of said thermofusible ink layers being in such relationship that the melt viscosity increases toward said heat-resistant support; and

a porous resin layer formed on said thermal image transfer layer.

5,336,549

BIAXIALLY ORIENTED LAMINATED FILM

Yoshiharu Nishimoto; Kengo Yamazaki, and Takashi Sato, all of Iwaki, Japan, Eiichi Hayashi, Gorssel, Netherlands; Hajime Tukamoto, Niihara, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1991, Ser. No. 744,577

Claims priority, application Japan, Aug. 20, 1990, 2-218602

Int. Cl.[5] **B32B** *7/02, 27/32, 27/34, 27/36*

U.S. Cl. 428—213 **7 Claims**

1. A biaxially oriented, coextruded laminated film having a heat shrinkable property in both machine and transverse directions, said film comprising at least a surface layer of a polyester containing not less than 88 mol. % of terephthalic acid as an acid ingredient, an intermediate layer of a polyamide having a melting point of greater than 160° C. and less than 210° C. and a heat sealing layer of a polyolefin, the thickness of said polyester layer being 1 to 10 μm and thinner than the thickness of said polyamide layer.

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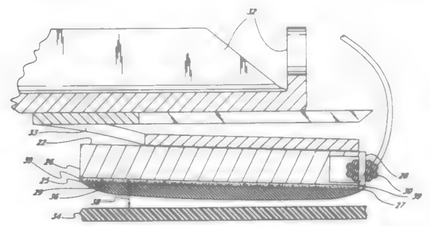
CARBON OVERCOAT FOR MAGNETIC HEAD SLIDERS

Srinivasan K. Ganapathi, Goleta; Robert B. Love, and Paul W. Smith, both of Santa Barbara, all of Calif., assignors to Applied Magnetics Corporation, Goleta, Calif.

Filed May 18, 1993, Ser. No. 63,282

Int. Cl.[5] **G11B** *5/60*

U.S. Cl. 428—216 **12 Claims**



1. A slider, for use with a rotatable magnetic disk, the slider having a first end and a second end, a top surface, an air bearing surface, a first edge at the intersection of said first end with said air bearing surface and a second edge at the intersection of said second end with said air bearing surface, the air bearing surface having a crown of continuous carbon coating thereon, said coating having a maximum distance of between 6 and 10 nm from a straight line connecting said first and second edges.

5,336,551

REINFORCED POLYVINYL ALCOHOL HYDROGELS CONTAINING UNIFORMLY DISPERSED CRYSTALLINE FIBRILS AND METHOD FOR PREPARING SAME

Daniel Graiver, Midland, and Arnold W. Lomas, Rhodes, both of Mich., assignors to Miza Systems, Inc., Midland, Mich.

Filed Dec. 14, 1992, Ser. No. 990,390

Int. Cl.[5] **B05B** *3/00;* **B29C** *35/02;* **B32B** *5/00*

U.S. Cl. 428—220 **4 Claims**

1. A reinforced composite structure consisting essentially of a matrix and a dispersed phase, where

the matrix is a hydrogel comprising water and a solubilized vinyl alcohol homopolymer, and the dispersed phase comprises a plurality of uniformly distributed acicular regions consisting essentially of fibrils of an oriented crystalline vinyl alcohol polymer wherein at least 50 percent of the repeating units are—$CH_2CH(OH)$—, the diameter of said fibrils is less than 1 millimeter, the aspect ratio of said fibrils is from 2:1 to 1000: 1, and

where said composite is characterized by a continuous transition in the degree of crystallinity at the interfaces between said matrix and said fibrils.

5,336,552

NONWOVEN FABRIC MADE WITH MULTICOMPONENT POLYMERIC STRANDS INCLUDING A BLEND OF POLYOLEFIN AND ETHYLENE ALKYL ACRYLATE COPOLYMER

David C. Strack, Canton; Linda A. Connor, Atlanta; Sharon W. Gwaltney, Woodstock; Ann L. McCormack, Cumming; Susan E. Shawver, and Jay S. Shultz, both of Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 26, 1992, Ser. No. 936,142

Int. Cl.[5] **B32B** *5/26, 27/02;* **D01F** *8/06;* **D04H** *3/14*

U.S. Cl. 428—224 **75 Claims**

1. A nonwoven fabric comprising extruded multicomponent polymeric strands including first and second polymeric components, the multicomponent strands having a cross-section, a length, and a peripheral surface, the first and second components being arranged in substantially distinct zones across the cross-section of the multicomponent strands and extending continuously along the length of the multicomponent strands, the second component constituting at least a portion of the peripheral surface of the multicomponent strands continuously along the length of the multicomponent strands and including a blend of a polyolefin and ethylene alkyl acrylate copolymer.

5,336,553

INK RIBBON FOR PRINTER AND INK THEREFOR

Masayuki Tanaka, Date; Hiromichi Suzawa, Fukushima; Masayuki Kubota, Date; Chiaki Sekioka, Date; Minako Sato, Date, and Hisashi Uemura, Fukushima, all of Japan, assignors to Fujitsu Isotec Limited, Tokyo, Japan

Continuation of Ser. No. 894,664, Jun. 5, 1992, abandoned, which is a division of Ser. No. 489,114, Mar. 5, 1990, Pat. No. 5,135,803. This application Mar. 8, 1993, Ser. No. 28,623

Claims priority, application Japan, Mar. 6, 1989, 1-052133; Mar. 13, 1989, 1-058004; Mar. 17, 1989, 1-063882

Int. Cl.[5] **D03D** *3/00*

U.S. Cl. 428—229 **4 Claims**

1. An ink ribbon for a printer comprising a 6,6-nylon cloth having 15 to 25 filaments with a mono-filament fineness of 10 to 25 deniers as warps and 15 to 30 filaments with a monofila-

ment fineness of 15 to 30 deniers as wefts, a warp density of 220 to 300 (monofilament number/inch) and a weft density of 120



to 180 (monofilament number/inch), with a thickness of 70 to 110 μm, as the base cloth.

5,336,554

STRETCHABLE TEAR RESISTANT POROUS ELASTOMERIC FILM ELEMENTS AND PROCESSES

David Knight, 196 Brushy Hill Rd., Newtown, Conn. 06470-0124

Filed May 14, 1993, Ser. No. 62,826

Int. Cl.[5] **B23K** *26/00;* **B65B** *33/01*

U.S. Cl. 428—230 **5 Claims**

1. A stretchable, tear-resistant porous elastomeric film element comprising a film of natural or synthetic elastomeric composition which has a thickness of up to about 0.125 inch and which can be stretched at room temperature to at least twice its original length, held for 5 minutes and, upon release, will return to within 10% of its original length within 5 minutes, said film being provided with a sufficient plurality of laser-perforations to impart the desired degree of air-permeability thereto, said perforations having an average maximum diameter of about 0.06 inch, and having smooth, fused walls free of imperfections which represent weakness points when the film is stressed during stretching.

5,336,555

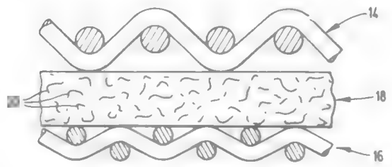
SURGICAL GLOVE COMPRISING CARBON FIBER WHISKERS

Robert L. Darras, 2219 Mount Shasta Dr., San Pedro, Calif. 90732, and Tau-chao Fan, 30571 Rue De La Pierre, Rancho Palos Verdes, Calif. 90274

Filed May 10, 1991, Ser. No. 698,550

Int. Cl.[5] **A41D** *19/00;* **D03D** *15/00;* **B32B** *5/12*

U.S. Cl. 428—247 **4 Claims**



1. A surgical hand glove having a body shaped in the form of a hand, said body comprising

(a) first and second layers comprising a fibrous material, and, sandwiched between said first and second layers,

(b) a layer of a composite material which comprises

(i) a polymeric matrix, and, embedded therein,

(ii) whiskers selected from the group consisting of carbon whiskers, silicon carbide whiskers and mixtures thereof.

5,336,556

HEAT RESISTANT NONWOVEN FABRIC AND PROCESS FOR PRODUCING SAME

Makoto Yoshida, Ibaraki; Nobuo Takahashi, and Koichi Hosoyama, both of Ikoma, all of Japan, assignors to Teijin Limited, Osaka, Japan

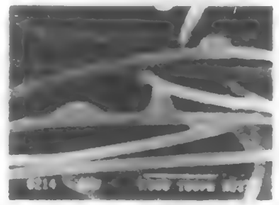
PCT No. PCT/JP91/01111, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO92/06238, PCT Pub. Date Apr. 16, 1992

PCT Filed Aug. 21, 1991, Ser. No. 852,270

Claims priority, application Japan, Oct. 3, 1990, 2-263730; May 22, 1991, 3-145212

Int. Cl.[5] **D04H** *1/58*

U.S. Cl. 428—288 **8 Claims**



1. A heat-resistant nonwoven fabric comprising 50 to 95% by weight of heat-resistant fibers and 5 to 50% by weight of thermoplastic resin melt-bonding members melt-adhered to at least portions of the heat resistant fibers to thereby bond said fibers to each other,

said thermoplastic resin melt-bonding members through which the heat resistant fibers are bonded to each other, being extended in the form of pillars bonding the heat resistant fibers to each other throughout the fabric,

said nonwoven fabric having a density of 0.005 to 0.05 g/cm^3 and a density gradient satisfying the relationship, $0.025n^2-0.200n+1.1875 \geqq Wn/W_1 \geqq 0.0738n^2-0.680n+1.6062$,

wherein, when the nonwoven fabric is cut into five equal slices in parallel to the surface of the fabric, W_1 represents a weight of a lowest slice, n is a number of a slice counted from the lowest slice, when the nonwoven fabric is cut into five equal slices in parallel to the fabric surface, and Wn represents a weight of a slice in a number of n counted from the lowest slice when the nonwoven fabric is cut into five equal slices in parallel to the fabric surface.

5,336,557

CARBON FIBER FELTING MATERIAL AND PROCESS FOR PRODUCING THE SAME

Akio Takamatsu, and Yoshiyuki Nishimura, both of Kamisu, Japan, assignors to Petoca Ltd., Tokyo, Japan

Filed Aug. 22, 1991, Ser. No. 748,726

Claims priority, application Japan, Aug. 23, 1990, 2-220061

Int. Cl.[5] **B32B** *5/06, 11/10, 31/16, 31/26;* **D01F** *9/145*

U.S. Cl. 428—300 **3 Claims**

1. A melt-blown pitch type carbon fiber felting material excellent in heat insulating properties in a high-temperature range, which is substantially in the form of a felt formed of a pitch type carbon fiber through interfiber entanglement and having a bulk density of 0.01 to 0.5 g/cm^3, a thermal conductivity of at most 1.0 kcal/m·hr·°C. in the thickness-wise direction thereof at a temperature of 2,200° C., and an average filament diameter of 1 to 9 μm.

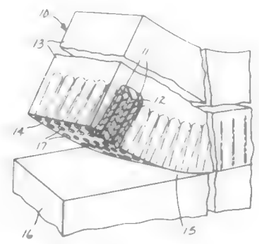
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,558

COMPOSITE ARTICLE COMPRISING ORIENTED MICROSTRUCTURES

Mark K. Debe, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 24, 1991, Ser. No. 720,188
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—323 37 Claims



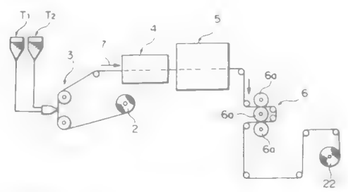
1. A composite article comprising a layer having a dense array of discrete microstructures partially encapsulated therein by an encapsulant, wherein one distal end of each of said microstructures is exposed, wherein said exposed distal ends of said microstructures and a surface of said layer are on a common side of said layer, said microstructures are selected from the group consisting of organic microstructures and inorganic semiconductor microstructures, and said microstructures have a mean diameter in the range from about 1 to about 5000 nanometers, said discrete microstructures being formed on a surface of a substrate, said substrate having a surface topography, and said exposed distal ends of said microstructures, which have been delaminated from said substrate, form a surface topography that is the inverse of said surface topography of said substrate.

5,336,559

MAGNETIC RECORDING MEDIUM

Hiroaki Yamagishi; Yasushi Nakano; Setsuko Kawahara, and Noboru Koyama, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 456,365, Dec. 26, 1989, abandoned. This application Aug. 18, 1992, Ser. No. 931,898
Claims priority, application Japan, Dec. 28, 1988, 63-331752; Mar. 28, 1989, 1-77452
Int. Cl.[5] B32B *5/16*; G11B *5/66*
U.S. Cl. 428—329 3 Claims



1. A magnetic recording medium having a non-magnetic support, a non-magnetic layer on said support, and a magnetic layer on said non-magnetic layer, said magnetic layer applied by wet-on-wet coating;

wherein said non-magnetic layer consists essentially of at least one binder selected from the group consisting of polyvinyl chlorides containing sulfonic groups, vinyl chloride-vinyl acetate copolymers containing sulfonic groups, and polyurethane containing sulfonic groups, 40 to 140 parts by weight of carbon black per 100 parts of said binder, said magnetic layer having a dry thickness of 0.3 to 4.0 μm, and containing ferromagnetic metal particles comprising iron and aluminum or tabular-shaped magnetic particles having an axis of easy magnetization perpendicular to a surface of said tabular particles, and a binder selected from the group consisting of a polyvinyl chloride resin containing sulfonic groups, a vinyl chloride-vinyl acetate copolymer resin containing sulfonic groups and a polyurethane resin containing sulfonic groups.

5,336,560

GAS TURBINE ELEMENTS BEARING ALUMINA-SILICA COATING TO INHIBIT COKING

Jarrett L. Spence, Jupiter, and Robert J. Wright, Tequesta, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1991, Ser. No. 811,194
Int. Cl.[5] B32B *9/06*
U.S. Cl. 428—336 20 Claims

1. A metallic alloy element having an adherent mixed oxide layer on the surface thereof, said mixed oxide layer formed by depositing a sol on said element, drying said sol to form a green coating, and heating said coating to cure said coating, wherein the improvement comprises preparing a sol consisting essentially of alumina, silica, and carrier, by:

a. Preparing an alumina sol by combining, in the absence of air, from about 50 to about 400 moles of water, from about 1.0 to about 2.0 moles of aluminum organo-metallic compound, from about 0.1 to about 0.5 moles of peptizer, and a vaporizable carrier, at a temperature of from about 175° to about 210° F., for sufficient time to form a clear sol;

b. Preparing a silica sol by combining from about 0.5 to about 2.0 moles of water, from about 3 to about 10 moles of alcohol, and from about 0.1 to about 0.5 moles of a silicon organo-metallic compound, for sufficient time to form a clear sol;

c. Combining the alumina sol and the silica sol to obtain an alumina-silica sol having a ratio of alumina to silica of from about 10:1 to about 1:10; and

d. Depositing sufficient alumina-silica sol on said substrate so as to achieve a thickness of from about 0.00005 inches to about 0.001 inches after curing.

5,336,561

MAGNETIC RECORDING MEDIUM

Hiroshi Hashimoto; Akira Ushimaru; Kenichi Masuyama; Yasuyuki Tanaka, and Hiroyuki Kobayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 14, 1992, Ser. No. 868,096
Claims priority, application Japan, Apr. 19, 1991, 3-088781
Int. Cl.[5] B32B *5/16*; G11B *5/66*
U.S. Cl. 428—336 12 Claims

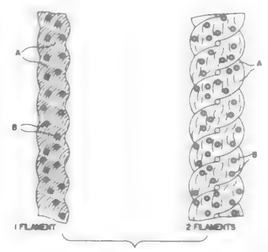
1. A magnetic recording medium comprising a non-magnetic support having thereon an undercoating layer and a magnetic layer, wherein the undercoating layer is provided between the non-magnetic support and magnetic layer, and a binder used for the undercoating layer comprises a resin having an elution amount of 0.05 to 0.4 mg/cm^2 when placed in a mixed solvent of methyl ethyl ketone and cyclohexanone having a weight ratio of 1:1 at 25° C. for 30 seconds, and wherein the magnetic layer comprises a binder which contains a resin having at least one polar group selected from the group consisting of —COOM, —SO_3M, —PO_3M_2, —OSO_3M and —OPO_3M_2 in which M represents a hydrogen atom, an alkali metal ion or an ammonium ion; and said binder used for the undercoating layer is a resin containing 0.1 meq/g to 3.0 meq/g of at least one polar group selected from the group consisting of —COOM, —SO_3M, —PO_3M_2, —OSO_3M and —OPO_3M_2, in which M represents a hydrogen atom, an alkali metal ion, or an ammonium ion.

5,336,562

POLYOLEFINE YARNS WITH GOOD PERFORMANCE FOR RUGS AND CARPETS AND METHOD OF PRODUCING THE SAME

Miguel Forero, Bogota, Colombia, assignor to Pavco S.A., Santafe de Bogota, Colombia

Filed Aug. 5, 1992, Ser. No. 925,964
Claims priority, application Colombia, Feb. 28, 1992, 356239
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—373 4 Claims



1. A polyolefin yarn, comprising a plurality of polypropylene filaments and a plurality of polyethylene filaments, with said polypropylene and polyethylene filaments welded to each other in an unorderly manner in randomly distributed welding spots along the yarn, and with said welding spots being the result of the melting of said polyethylene filaments.

5,336,563

PRIMARY COATINGS FOR OPTICAL GLASS FIBERS INCLUDING POLYETHER ACRYLATES

Clive J. Coady, Hanover Park; Erwin S. Poklacki, Arlington Heights; John M. Zimmerman, Crystal Lake; Timothy E. Bishop, Algonquin, and John L. Derer, Arlington Heights, all of Ill., assignors to DSM Desotech, Inc., Elgin, Ill.

Division of Ser. No. 859,344, Mar. 27, 1992, Pat. No. 5,219,896, which is a continuation-in-part of Ser. No. 730,589, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 558,260, Jul. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 403,596, Sep. 6, 1989, abandoned. This application Jan. 26, 1993, Ser. No. 9,324
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—375 2 Claims

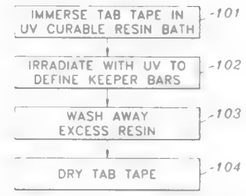
1. An optical fiber coated with a photocurable liquid coating composition adapted to provide a primary coating for an optical glass fiber comprising: (1) about 30 to about 80 weight percent, based on the total weight of the coating composition, of an acrylate-terminated polyurethane having a number average molecular weight of about 2,500 to about 8,000 daltons and being the reaction product of (i) a prepolymer having a number average molecular weight of about 700 to about 2,000 daltons wherein the prepolymer is selected from the group consisting of polycarbonates and mixtures of polycarbonates and polyethers having an average of at least two groups that are reactive with an isocyanate group, (ii) a diisocyanate and (iii) a hydroxy acrylate; (2) about 20 to about 60 weight percent of an acrylate of an unsubstituted or C_7–C_{10} alkyl substituted phenol that is alkoxylated with a C_2–C_4 alkylene oxide and contains about 1 to about 5 moles of the oxide per mole of the phenol; and (3) about 5 to about 30 weight percent of at least one alkylacrylate having a T_g below about −45° C.

5,336,564

MINIATURE KEEPER BAR

Boris Moldavsky, Dana Point, Calif., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 6, 1993, Ser. No. 163,364
Int. Cl.[5] B32B *15/04*, *15/08*
U.S. Cl. 428—418 16 Claims



9. TAB tape having a keeper bar formed thereupon for maintaining position of leads formed thereupon during excise and form operations, integrated circuit placement, and lead bonding, said TAB tape formed by a process comprising the steps of:

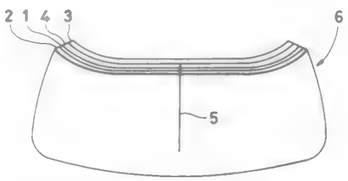
(a) immersing TAB tape into a bath of resin;
(b) curing the resin to define the keeper bars;
(c) washing away uncured resin; and
(d) drying the TAB tape.

5,336,565

AUTOMOTIVE WINDOW GLASS

Takashi Muromachi, Kawasaki; Jun Kawaguchi, Yokohama, and Hidemi Nakai, Tsukuba, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation of Ser. No. 837,158, Feb. 18, 1992, abandoned. This application Jul. 13, 1993, Ser. No. 91,469
Claims priority, application Japan, Feb. 28, 1991, 3-058186
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—432 7 Claims



1. An automotive window glass comprising a pair of transparent sheet glasses and a transparent resin film with which the pair of sheet glasses are stuck together,

further comprising a second film sandwiched between one of said pair of sheet glasses and said transparent resin film so as to screen the inside of a car from solar radiation with visible-light reflectivity between 7.7 and 9.5, said second film having any of one of the following compositions represented by chemical formulas whose atomic rates are defined;

(A) ZrN_xO_y, $0.5 \leqq x \leqq 0.8$, and $0.8 \leqq x+y \leqq 1.2$
(B) TiN_xO_y, $0.2 \leqq y \leqq 0.8$, and $1.4 \leqq x+y \leqq 1.8$
(C) CrN_xO_y, $0.1 \leqq y \leqq 0.8$, and $1.4 \leqq x+y \leqq 1.8$

VOL 1165 ISS 2 AG 9 1994 UMI

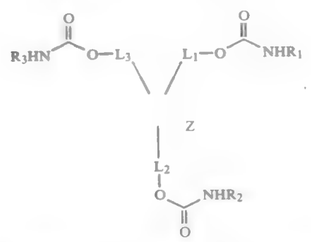
5,336,566

TRI-CARBAMATE-FUNCTIONAL CROSSLINKING AGENTS

John W. Rehfuss, West Bloomfield, Mich., assignor to BASF Corporation, Southfield, Mich.

Filed Apr. 30, 1993, Ser. No. 56,514
Int. Cl.[5] C08G 8/28, 18/77; C08L 61/00
U.S. Cl. 428—524 15 Claims

1. A coating composition comprising:
(a) a component having a plurality of functional groups that are reactive with carbamate,
(b) a component according to the formula:



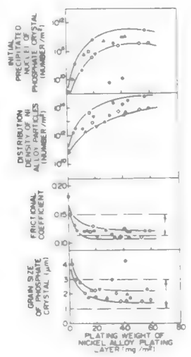
Z represents a cyanuric ring nucleus or the residue of a polyol,
L_1, L_2, and L_3 each independently represents a divalent linking group or a covalent bond, and
R_1, R_2, and R_3 each independently represents H, alkyl, cycloalkyl, or aryl.

5,336,567

NICKEL ALLOY ELECTROPLATED COLD-ROLLED STEEL SHEET EXCELLENT IN PRESS-FORMABILITY AND PHOSPHATING-TREATABILITY

Toyofumi Watanabe; Akihiko Furuta; Tadashi Ono; Yoshinori Yomura, and Shuichi Iwado, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 816,372
Claims priority, application Japan, Jan. 25, 1991, 3-025696
Int. Cl.[5] C25D 11/02
U.S. Cl. 428—629 16 Claims



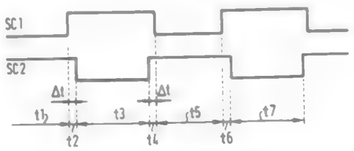
1. A nickel alloy electroplated cold-rolled steel sheet excellent in press-formability and phosphating-treatability, which comprises:
a cold-rolled steel sheet consisting essentially of:
carbon (C): up to 0.06 wt. %,
silicon (Si): up to 0.5 wt. %,
manganese (Mn): up to 2.5 wt. %,
phosphorus (P): up to 0.1 wt. %,
sulfur (S): up to 0.025 wt. %
soluble aluminum (Sol. Al): up to 0.10 wt. %,
nitrogen (N): up to 0.005 wt. %, and
the balance being iron (Fe) and incidental impurities;
a nickel alloy electroplating layer, formed on at least one surface of said cold-rolled steel sheet, said nickel alloy electroplating layer consisting of particles of a nickel alloy, precipitated at a distribution density of at least $1\times10^{12}/m^2$, said nickel alloy particles containing at least one of phosphorus (P), boron (B) and sulfur (S) in an amount within a range of from 1 to 15 wt. %, the plating weight of said nickel alloy electroplating layer being within a range of from 5 to 60 mg/m^2 per surface of said cold-rolled steel sheet; and
a nickel alloy oxide film, formed on the surface of said nickel alloy electroplating layer, having an average thickness within a range of from 0.0002 to under 0.0008 μm.

5,336,568

DEVICE FOR OPTIMIZING THE DISCHARGE OF A LEAST TWO ELECTROCHEMICAL CELLS

Xavier Andrieu, Bretigny-sur-Orge, France, assignor to Alcatel Alsthom Compagnie General D'Electricite, Paris Cedex, France

PCT No. PCT/FR92/00427, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO92/21174, PCT Pub. Date Nov. 26, 1992
PCT Filed May 14, 1992, Ser. No. 972,446
Claims priority, application France, May 17, 1991, 91 06032
Int. Cl.[5] H01M 10/46
U.S. Cl. 429—7 10 Claims



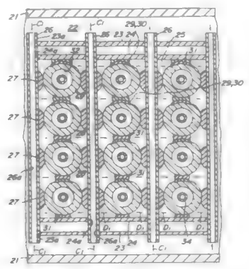
1. A device for discharging N electrochemical cells (20, 21) into a load (Rc), N being greater than or equal to 2, said device comprising: N switching means (25, 26) each for cooperating with a different one of said electrochemical cells (20, 21); said N switching means (25, 26) being controlled sequentially by a generator (23) providing N pulse trains (SC1, SC2) which are offset relative to one another and which have a period T, each electrochemical cell (20, 21) being connectable to said load (Rc) for the duration of a pulse, through the switching means (25, 26) with which the cell cooperates, wherein the pulses of each train (SC1, SC2) have an interval of overlap (Δt) with the pulses of another train (SC1, SC2), such that said load (Rc) is constantly supplied by at least one of said N electrochemical cells (20, 21) said overlap interval (Δt) being smaller than the duration of each of said pulses, and such that each cell is disconnected from said load (Rc) for substantially said duration (T/2) of a pulse, said load being supplied by only two said electrochemical cells during said overlap interval.

5,336,569

POWER GENERATING EQUIPMENT

Hidenobu Misawa, Toyoake, and Shoji Seike, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 17, 1992, Ser. No. 852,540
Claims priority, application Japan, Mar. 20, 1991, 3-080634; Mar. 20, 1991, 3-080635; Mar. 22, 1991, 3-081221
Int. Cl.[5] H01M 8/10
U.S. Cl. 429—31 87 Claims



1. A power generating device comprising:
a plurality of cylindrical solid oxide fuel cell elements being electrically connected to each other to define a collecting cell;
first and second current collecting means being connected to positive and negative electrodes of said collecting cell, respectively;
a power generating chamber containing said collecting cell;
an oxidizing gas chamber being separated from said power generating chamber by a first partition;
a fuel gas chamber being separated from said power generating chamber by a second partition;
an oxidizing gas supply means for supplying an oxidizing gas from said oxidizing gas chamber into an internal space of each of said solid oxide fuel cell elements through said first partition;
fuel gas supply means for supplying a fuel gas from said fuel gas chamber to said power generating chamber through said second partition, said oxidizing gas being reacted with said fuel gas to generate electric power; and
a fuel gas introducing means for introducing said fuel gas into said power generating chamber such that a fuel gas concentration in said power generating chamber is substantially constant along a longitudinal direction of said solid oxide fuel cell elements, said fuel gas introducing means comprising fuel gas supply tubes arranged between said solid oxide fuel cell elements in a first direction which is substantially perpendicular to a longitudinal direction of said solid oxide fuel cell elements.

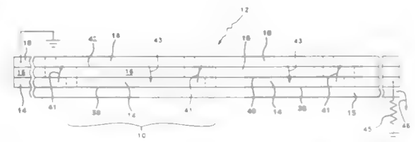
5,336,570

HYDROGEN POWERED ELECTRICITY GENERATING PLANAR MEMBER

Cleveland E. Dodge, Jr., P.O. Box 178, Hoosick Falls, N.Y. 12090

Continuation-in-part of Ser. No. 929,706, Aug. 12, 1992, abandoned. This application Feb. 9, 1993, Ser. No. 15,411
Int. Cl.[5] H01M 8/10
U.S. Cl. 429—31 38 Claims

1. A hydrogen fuel cell having a layered electrode structure said fuel cell comprising:
a) a layered porous anodic electrode;
b) ducting to supply hydrogen to said porous anodic electrode;
c) a layered porous cathodic electrode exposable to oxygen;
d) a layered electrolytic member between and in contact with said anode and with said cathode for transporting ions therebetween;
e) catalytic means at said anodic and said cathodic electrodes for ionizing hydrogen and oxygen respectively;
f) a support for said electrolytic structure, said support engaging one of said electrodes; and



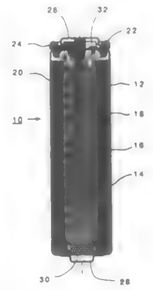
g) restraining means engaging said electrodes to constrain said electrolytic member between and in contact with said electrodes;
wherein said restraining means acts to displace transverse swelling of said electrolytic member in directions generally parallel to said layered electrodes.

5,336,571

MANGANESE DIOXIDE CATHODE FOR A RECHARGEABLE ALKALINE CELL, AND CELL CONTAINING THE SAME

Klaus Tomantschger, and Christopher Michalowski, both of Mississauga, Canada, assignors to Battery Technologies Inc., Mississauga, Canada

Continuation of Ser. No. 824,208, Jan. 22, 1992, Pat. No. 5,204,195, which is a division of Ser. No. 497,908, Mar. 23, 1990, Pat. No. 5,108,852. This application Apr. 6, 1993, Ser. No. 42,789
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] H01M 4/62, 2/18
U.S. Cl. 429—66 21 Claims

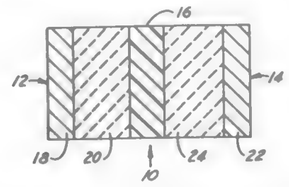


1. A rechargeable electrochemical cell, comprising:
a container having inner and bottom surfaces;
an anode disposed within said container;
a manganese dioxide cathode disposed within said container, and having an outer peripheral surface, a bottom surface, and a top surface;
an ion conductive alkaline electrolyte disposed within said container;
a separator comprising at least a first ion permeable membrane, disposed within said container between said cathode and said anode; and
a closure member disposed over the top of said container so as to seal the components disposed therein within said container;
wherein said cathode is restricted from significantly changing its dimensions during cycling by interference at its

VOL 1165 ISS 2 AG 9 1994 UMI

outer periphery and at its bottom with said container, and by interference at its top with said separator.

5,336,572
VANADIUM OXIDE CATHODE ACTIVE MATERIAL AND METHOD OF MAKING SAME
Rene Koksbang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.
Filed Jun. 14, 1993, Ser. No. 77,485
Int. Cl.[5] H01M *4/02*
U.S. Cl. 429—218 **25 Claims**



1. A positive electrode comprising a carbon-containing material intermingled with an active material, said active material comprising a vanadium oxide compound represented by the nominal general formula $M_xV_3O_8$, where M in the compound is a metal or semi-metal element other than Group I alkali metals, and where x has a value greater than zero and less than two.

5,336,573
BATTERY SEPARATOR
David Zuckerbrod, Baltimore, and Richard T. Giovannoni, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Jul. 20, 1993, Ser. No. 95,134
Int. Cl.[5] H01M *2/14*
U.S. Cl. 429—252 **31 Claims**

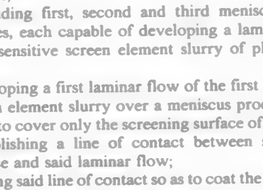
1. A microporous sheet product having a length and breadth and a thickness of less than about 50 mils between a first major surface and a second major surface composed of a uniform mixture of a polyolefin having a weight average molecular weight of at least about 250,000 and an inert filler in a weight ratio of from 1:2.5 to 1:30 and a fibrous sheet extending the length and breadth and encapsulated within said thickness of the sheet product.

5,336,574
CURABLE COMPOSITION AND PROCESS FOR PRODUCING SHADOW MASK USING THE SAME
Ichiro Igarashi, Tokai; Hiroshi Sasaki, Nagoya, both of Japan; Tetsuji Jitsumatsu, Scarsdale, N.Y.; Hiroyuki Ota, Anjo, Japan; Masanobu Sato, Kurita, Japan, and Hirofumi Nishimuta, Hikone, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan
Filed Oct. 2, 1992, Ser. No. 955,206
Claims priority, application Japan, Oct. 4, 1991, 3-284020; Oct. 4, 1991, 3-284021
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—23 **2 Claims**

1. A process for producing a shadow mask, comprising the following steps (1) to (4), wherein a curable composition, comprising a compound having one carboxyl group and one (meth)acryloyl group in the molecule, a compound having two or more (meth)acryloyl groups in the molecule, a leveling agent, and a chain transfer agent, is used as a secondary etching resist material in the step (2):

(1) a primary etching step of applying etching to at least one side of a metal sheet for a shadow mask, which sheet consists of a thin metal plate and etching resist films formed on both sides of the plate in a desired pattern, to form dented portions at the exposed places provided in the side of the metal sheet,

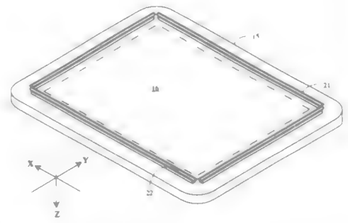
(2) a step of coating a secondary etching resist material on the side or one of the two sides of the metal sheet having the dented portions formed in the primary etching step (1),



(3) a secondary etching step of applying etching to the side of the metal sheet on which no secondary etching resist material was coated in the step (2), to form small perforations communicating with the dented portions of the other metal sheet side formed in the step (1), and

(4) a step of removing all of the etching resist films and material by using an aqueous alkali solution.

5,336,575
METHOD OF PRODUCING CRT SCREENS USING MENISCUS COATING
Hua-Sou Tong, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Nov. 3, 1992, Ser. No. 970,744
Int. Cl.[5] B05D *1/30;* **G03C** *5/56*
U.S. Cl. 430—25 **13 Claims**



1. A method of creating a luminescent display screen for a color CRT comprising:

a) providing a faceplate with a screening surface on one side thereof;

b) providing first, second and third meniscus producing devices, each capable of developing a laminar flow of a photosensitive screen element slurry of phosphor particles;

c) developing a first laminar flow of the first photosensitive screen element slurry over a meniscus producing surface sized to cover only the screening surface of said faceplate;

d) establishing a line of contact between said screening surface and said laminar flow;

e) moving said line of contact so as to coat the first photosensitive slurry onto the screening surface to a depth of approximately 25 microns;

f) exposing the first coated screening surface with light actinic to said first photosensitive slurry and developing the first coated screening surface to produce a first pattern of spaced screen elements fixed to said screening surface and removing unwanted slurry coating; and

g) repeating steps c–f with second and third photosensitive slurries passing through the second the third meniscus producing devices, respectively.

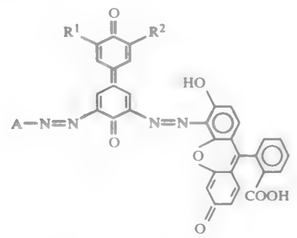
5,336,576
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER HAVING A PHOTOSENSITIVE LAYER COMPRISING THE AZO COMPOUND
Eiichi Miyamoto, Osaka; Yasuyuki Hanatani, Sakai; Hiroaki Iwasaki, Hirakata; Yasufumi Mizuta, Kishiwada, and Akihiko Kawahara, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Nov. 24, 1992, Ser. No. 980,632
Claims priority, application Japan, Nov. 27, 1991, 3-311144; Nov. 28, 1991, 3-312896
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—58 **21 Claims**

1. An electrophotographic photosensitive member comprising a conductive substrate and a photosensitive layer deposited on the conductive substrate,

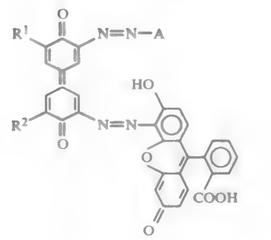
wherein the photosensitive layer comprises a charge generating material and a charge transporting material;

the charge generating material comprising an azo compound having a diphenoquinone structure selected from the group consisting of structures represented by the following general formulas IA, IB, IC, IIA, IIB and IIC:

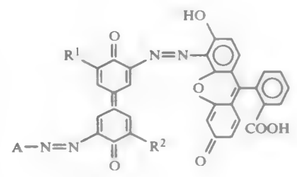
(IA)



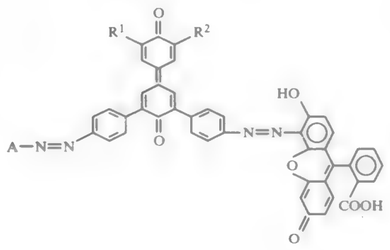
(IB)



(IC)

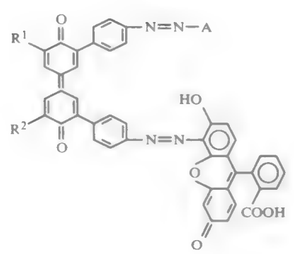


(IIA)

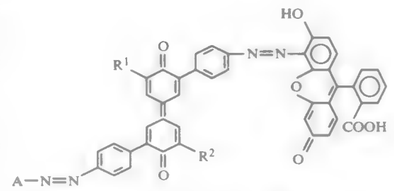


-continued

(IIB)



(IIC)



wherein R^1 and R^2 are the same or different from each other and indicate a hydrogen atom, an alkyl group, an alkenyl group, a hydroxyl group, an alkoxy group, a carboxy group, an alkoxy carbonyl group, an acyl group, an aryl group, a halogen group or a cyano group, respectively; R^{14} indicates a hydrogen atom, a halogen group, an alkyl group, an alkoxy group, an aryl group, an amino group, a cyano group, a nitro group or a sulfoxide group; and A indicates a coupler residue having an acceptor property.

5,336,577
SINGLE LAYER PHOTORECEPTOR
John W. Spiewak, Webster; John F. Yanus, both of Webster; Damodar M. Pai, Fairport; Joseph Mammino, Penfield; Dennis A. Abramsohn, Pittsford; William W. Limburg, Penfield; Dale S. Renfer, Webster; Chei-Jen Chen, Rochester; Paul DeFeo, Sodus Point; Steven J. Grammatica, Penfield; J. Michael Ishler, Ontario; Merlin E. Scharfe, and Donald S. Sypula, both of Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 814,631, Dec. 30, 1991, abandoned.
This application Jun. 2, 1993, Ser. No. 71,032
Int. Cl.[5] G03G *5/04*
U.S. Cl. 430—59 **28 Claims**

1. An ambipolar photoresponsive device comprising:

a supporting substrate;

a single organic layer on said substrate for both charge generation and charge transport, for forming a latent image from a positive or negative charge source, such that said layer transports either electrons or holes to form said latent image depending upon the charge of said charge source, said layer comprising a photoresponsive pigment or dye, a hole transporting small molecule or polymer and an electron transporting material, said electron transporting material comprising a fluorenylidene malonitrile derivative; and said hole transporting polymer comprising a dihydroxy tetraphenyl benzidine containing polymer.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,578

PHTHALOCYANINE MIXED CRYSTAL AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING THE SAME

Katsumi Nukada; Akira Imai; Katsumi Damion, and Masakazu Iijima, all of Minami-Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,251
Claims priority, application Japan, Jan. 13, 1992, 4-021681
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—78 12 Claims

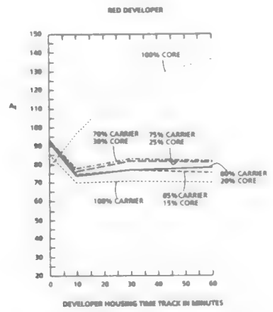
1. A phthalocyanine mixed crystal comprising a dihalogentin phthalocyanine and a halogenogallium phthalocyanine, wherein said mixed crystal has an intense X-ray diffraction peak at a Bragg angle ($2\theta \pm 0.2°$) of 26.9°.

5,336,579

COLOR DEVELOPER COMPOSITIONS CONTAINING BARE CARRIER CORES AND COATED CARRIER CORES

Charles D. Zimmer, Ontario; Edward J. Gutman, and Mark D. Ballou, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 3, 1992, Ser. No. 940,141
Int. Cl.[5] G03G *9/00*
U.S. Cl. 430—106 28 Claims



1. A developer composition comprising color toner particles, bare carrier core particles and coated carrier particles, wherein the color toner particles comprise red colorant particles, blue colorant particles, or green colorant particles, wherein the bare carrier core particles are present in an amount ranging from about 10% to about 40% by weight for the developer composition comprised of the blue colorant particles or the red colorant particles, and wherein the bare carrier core particles are present in an amount ranging from about 10% to about 20% by weight for the developer composition comprised of the green colorant particles, based on the total weight of the bare carrier core particles and the coated carrier particles.

5,336,580

CARRIER COMPOSITION FOR ELECTROPHOTOGRAPHY

Serge Tavernier, Lint; Werner Op de Beeck, Keerbergen; Danny Van Wunsel, Nijlen, and Paul Märksch, Antwerpen, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 8, 1993, Ser. No. 14,533
Claims priority, application European Pat. Off., Feb. 29, 1992, 92200591.3
Int. Cl.[5] G03G *9/107*
U.S. Cl. 430—106.6 10 Claims

1. Magnetic carrier particles suitable for use in magnetic brush toner-carrier development of electrostatic charge patterns, said carrier particles incorporating finely divided magnetic pigment particles dispersed in a resin binder, characterized in that said carrier particles comprise a mixture of magnetic pigment particles wherein a portion (A) of said pigment particles has a coercive force of more than 300 Oe and another portion (B) of said pigment particles has a coercive force of less than 300 Oe, the weight ratio of said portions (A) and (B) being in the range of 0.1 to 10.

5,336,581

MICROCAPSULE, MICROCAPSULE TONER AND PROCESS FOR PREPARATION THEREOF

Yoshihiro Inaba, and Takeshi Mikami, both of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 26, 1992, Ser. No. 887,049
Claims priority, application Japan, May 30, 1991, 3-153829; Jan. 10, 1992, 4-020718
Int. Cl.[5] B01J *13/16, 13/22;* G03C *1/72;* G03G *9/093*
U.S. Cl. 430—110 6 Claims

4. A microcapsule toner comprising a capsule shell having at least one polymer structure selected from the group consisting of a polyurea resin, a polyurethane resin, a polyamide resin, a polyester resin and an epoxy resin and a block and/or graft copolymer formed by vinyl polymerization of vinyl monomers containing charge controlling groups to said capsule shell,
wherein said vinyl polymerization is initiated by the decomposition of a polymerization-initiating azo group that has been previously incorporated in at least one shell-forming monomer that forms said polymer structure.

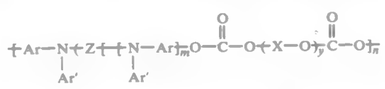
5,336,582

ELECTROPHOTOGRAPHIC IMAGE FORMATION COMPRISING AN ARYLAMINE IN A CHARGE TRANSPORT LAYER AND AN ENCAPSULATED TONER

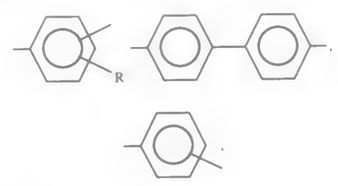
Ichiro Takegawa; Tsutomu Kubo, both of Minami-ashigara; Keiko Ariie, Yokohama, and Tomoo Kobayashi, Minami-ashigara, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 928,316
Claims priority, application Japan, Aug. 13, 1991, 3-226334
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—120 4 Claims

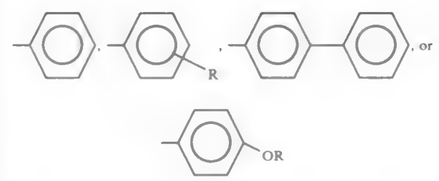
1. An electrophotographic method for image formation comprising forming an electrostatic latent image on an electrophotographic photoreceptor comprising a conductive substrate having formed thereover a photosensitive layer containing a charge transporting material comprising a high polymeric arylamine compound represented by formula (I):



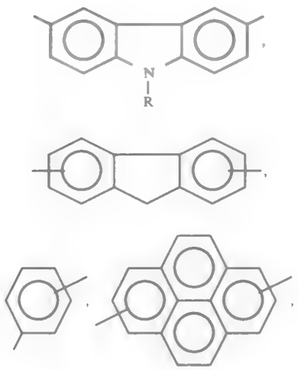
wherein n represents n integer of from 5 to 5000; m represents 0 or 1; y represents 1, 2, or 3; Ar represents



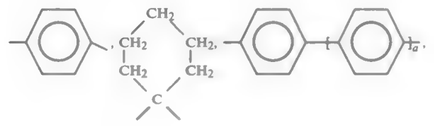
wherein R represents a methyl group, an ethyl group, a propyl group, or a butyl group; Ar′ represents

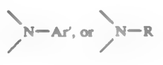


wherein R is as defined above; X represents an alkylene or isoalkylene group having from 2 to 10 carbon atoms; and z represents



or —Ar—$(W)_k$—Ar—, wherein Ar is as defined above; W represents —CH_2—, —$C(CH_3)_2$—, —O—, —S—,





(wherein s represents 0, 1, or 2; and R and Ar′ are as defined above); and k represents 0 or 1, developing the latent image with a microcapsule toner containing in its core at least a polymer dispersed in a solvent and containing on its shell a charge control agent, and transferring the toner image to paper.

5,336,583

POSITIVE QUINONEDIAZIDE RESIST COMPOSITION UTILIZING MIXED SOLVENT OF ETHYL LACTATE AND 2-HEPTANONE

Yasunori Uetani, Toyonaka; Yasunori Doi, Takatsuki; Kazuhiko Hashimoto, Ibaraki; Haruyoshi Osaki, Toyonaka, and Ryotaro Hanawa, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 873,240, Apr. 24, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 161,440
Claims priority, application Japan, Apr. 26, 1991, 3-097267; Nov. 29, 1991, 3-316499
Int. Cl.[5] G03F *7/023;* G03C *1/61*
U.S. Cl. 430—191 3 Claims

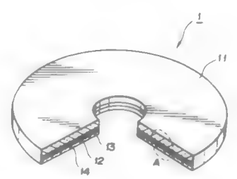
1. A positive resist composition consisting essentially of, in admixture, an alkali-soluble resin, a quinone diazide compound and a mixed solvent of ethyl lactate and 2-heptanone in a weight ratio of 5:95 to 80:20, wherein the weight ratio of said quinone diazide compound to said alkali-soluble resin is from 1:1 to 1:7, and said mixed solvent is contained in an amount that the total amount of said quinone diazide compound and said alkali-soluble resin is from 3 to 50% by weight based on the total weight of the positive resist composition.

5,336,584

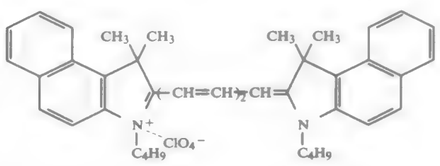
OPTICAL RECORDING MEDIUM

Shuichi Yanagisawa; Tatsuro Sakai; Takashi Chuman; Yasushi Araki, and Fumio Matsui, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 24, 1991, Ser. No. 690,479
Claims priority, application Japan, Oct. 4, 1990, 2-267280
The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.
Int. Cl.[5] G03C *1/72*
U.S. Cl. 430—273 3 Claims

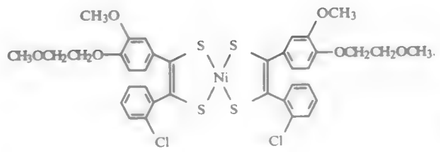


1. An optical recording medium which can be applied to a compact disc comprising:
a light transmissive substrate having a thickness of 1.0 to 1.5 mm;
a light absorption layer provided on the light transmissive substrate and having a thickness of 20 to 2000 μm;
a light reflecting layer provided on the light absorption layer and having a thickness of 0.02 to 2.0 μm;
a protective layer provided on the light reflecting layer and having a thickness of 0.1 to 100 μm; and
said light absorption layer containing a cyanine type dye:



and a quencher:

VOL 1165 ISS 2 AG 9 1994 UMI

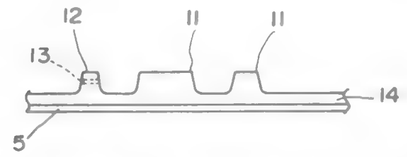


5,336,585

PHOTOSENSITIVE RESIN COMPOSITION FOR USE IN FORMING A RELIEF STRUCTURE

Gensho Takahashi, and Reijiro Sato, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki, Osaka, Japan

Continuation of Ser. No. 579,952, Sep. 10, 1990, abandoned. This application Dec. 30, 1992, Ser. No. 999,578
Claims priority, application Japan, Nov. 16, 1989, 1-296113
Int. Cl.[5] G03C 1/725
U.S. Cl. 430—284 6 Claims



1. A photosensitive resin composition for use in forming a relief structure, comprising:

(A) a liquid photosensitive resin component comprising:

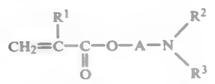
(a) 100 parts by weight of a urethane prepolymer comprising a plurality of diol segments linked through a urethane linkage and having an addition-polymerizable ethylenically unsaturated group at both terminals thereof, said plurality of diol segments comprising at least one polyoxyalkylene diol segment and at least one saturated polyester diol segments, said urethane prepolymer having a number average molecular weight of from 2.0×10^3 to 3.0×10^4, and

(b) 10 to 200 parts by weight, relative to 100 parts by weight of said urethane prepolymer (a), of an addition-polymerizable ethylenically unsaturated monomer,

(B) 0.1 to 10 parts by weight, relative to 100 parts by weight of said resin component (A), of a photopolymerization initiator,

(C) 0.01 to 5 parts by weight, relative to 100 parts by weight of said resin component (A), of a thermal polymerization inhibitor; and

(D) 0.1 to 5 parts by weight, relative to 100 parts by weight of said resin component (A), of at least one unsaturated amine compound represented by the formula:



(I)

wherein R^1 represents a hydrogen atom or a methyl group, R^2 and R^3 each represents an alkyl group, and A represents a straight chain or branched alkylene group,

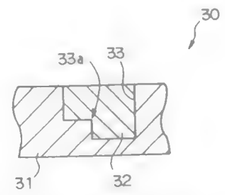
said photosensitive resin composition being for use in forming a relief structure which has a relief depth of greater than 1.5 mm and is free of a tunnel void.

5,336,586

MAGNETIC MEDIUM AND METHOD OF MANUFACTURING THE SAME

Masayuki Togawa, and Kiyoshi Toyama, both of Gifu, Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Division of Ser. No. 842,057, Feb. 26, 1992. This application Feb. 1, 1993, Ser. No. 11,791
Claims priority, application Japan, Mar. 1, 1991, 3-034935; May 1, 1991, 3-099354; May 1, 1991, 3-099355
Int. Cl.[5] H01L 21/306
U.S. Cl. 430—316 4 Claims



1. A method of manufacturing a magnetic medium comprising the steps of:

forming a first groove in a substrate by etching;

forming a second groove in said first groove or in a portion adjacent to said first groove by said etching, the second groove being different in depth from the first groove; and

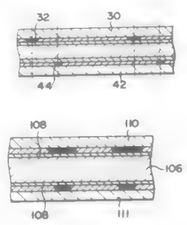
burying magnetic substances into said first and second grooves.

5,336,587

METHOD OF MANUFACTURING MAIN PLATES FOR EXPOSURE PRINTING

Hiroshi Tanaka, Fukaya, and Makoto Kudou, Kumagaya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 733,015, Jul. 19, 1991, abandoned, which is a continuation of Ser. No. 354,288, May 19, 1989, abandoned. This application Feb. 8, 1993, Ser. No. 15,291
Claims priority, application Japan, May 24, 1988, 63-124911
Int. Cl.[5] G03C 5/00
U.S. Cl. 430—322 2 Claims



1. A method of manufacturing a pair of main plates for exposure printing on opposite sides of a shadow mask material, comprising the steps of:

(a) drawing a first pattern on a first original dry plate and a second pattern on a second original dry plate;

(b) developing the first and second patterns drawn on said first and second original dry plates;

(c) transcribing the first pattern developed on said first original dry plate to an intermediate dry plate having a negative-type emulsion layer;

(d) transcribing the first pattern from said intermediate dry plate to a first dry main plate having a negative-type emulsion layer;

(e) transcribing the second pattern developed on said second original dry plate to a second dry main plate having a positive-type emulsion layer;

(f) positioning said first and second dry main plates on opposite sides of the shadow mask material such that said second pattern aligns with said first pattern; and

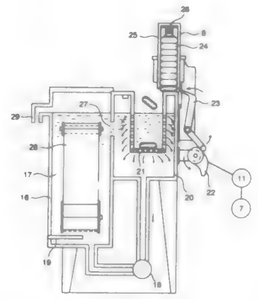
(g) transcribing the first and second patterns from said first and second dry main plates to opposite sides of said shadow mask material.

5,336,588

SOLID PHOTOGRAPHIC COLOR DEVELOPING COMPOSITION FOR SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yutaka Ueda, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 119,029
Claims priority, application Japan, Sep. 22, 1992, 4-253076
Int. Cl.[5] G03C 7/407
U.S. Cl. 430—465 9 Claims



1. A solid photographic color developing composition comprising a photographic color developing agent and at least one of monosaccharides.

5,336,589

PHOTOGRAPHIC MATERIAL

Yasuo Mukunoki; Yukio Shinagawa; Junichi Yamanouchi, and Kiyokazu Hashimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 760,042, Sep. 13, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 13,995
Claims priority, application Japan, Sep. 14, 1990, 2-245794; Sep. 14, 1990, 2-245800; Sep. 14, 1990, 2-245807; Jan. 21, 1991, 3-207117; Apr. 4, 1991, 3-097887
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] G03C 1/76, 3/00
U.S. Cl. 430—501 16 Claims

1. A photographic material comprising (1) a silver halide photographic material which has a magnetic recording layer having a coercive force of at least 400 Oe provided on a transparent support, and (2) a patrone for silver halide photographic materials wherein a leading end of a silver halide photographic material wound around a spool is delivered from a film leading-out port of a main body of the patrone to the outside by rotating said spool in the direction of film delivery, said spool being rotatably provided in the main body of the patrone,

wherein the magnetic recording layer has a ferromagnetic fine powder content of from 4×10^{-3} to 1 g/m^2 of the support,

wherein the magnetic recording layer is present either on the whole surface of the back of the support or in a stripe form on the back of the support.

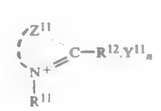
5,336,590

SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Akio Mitsui, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

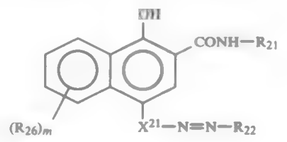
Continuation of Ser. No. 596,665, Oct. 11, 1990, abandoned. This application Sep. 28, 1992, Ser. No. 952,157
Claims priority, application Japan, Oct. 12, 1989, 1-265698; Jun. 28, 1990, 2-170834
Int. Cl.[5] G03C 7/22
U.S. Cl. 430—547 16 Claims

1. A silver halide color photographic direct positive photosensitive material comprising a transparent support on which there is provided at least one cyan color forming coupler containing layer, at least one magenta color forming coupler containing layer, at lease one yellow color forming coupler containing layer, and at least one light-sensitive layer, wherein a compound represented by formula (I), a colored coupler represented by formula (IIa) or (IIb) or both, and an internal image forming silver halide grain are contained in the photographic material:

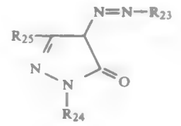


(I)

wherein Z^{11} represents a group of non-metal atoms which is required to form a five or six membered heterocyclic ring, and Z^{11} may be substituted with substituent groups; R^{11} is an aliphatic group; and R^{12} is a hydrogen atom, an aliphatic group or an aromatic group; R^{11} and R^{12} may be substituted with substituent groups; R^{12} may be joined to the heterocyclic ring completed by Z^{11} to form a ring; provided that at least one of the groups R^{11}, R^{12} and Z^{11} contains an alkyl group, an acyl group, a hydrazine group or a hydrazone group, or R^{11} and R^{12} may be combined to form a dihydropyridinium skeleton; moreover, at least one of the groups R^{11}, R^{12} and Z^{11} may have a group which promotes adsorption on silver halide; and Y^{11} is a charge balancing counter ion and n is 0 or 1:

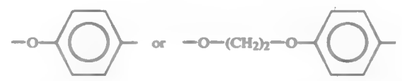


(IIa)



(IIb)

wherein R_{21} and R_{23} each represents an aliphatic group, an aromatic group, or a heterocyclic group; R_{22} represents an aliphatic group, an aromatic group, or a heterocyclic group; R_{25} represents an aniline group or an acylamino group; R_{24} represents a substituted phenyl group; X^{21} represents



and X^{21} may not exist; R26 represents a group which can be

VOL 1165 ISS 2 AUG 9 1994 UMI

substituted on a benzene ring; and m represents an integer of 0 to 4.

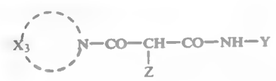
5,336,591

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Mitsuru Yamamoto, and Akira Ogawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

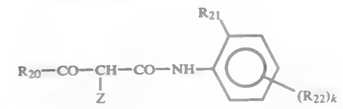
Filed Mar. 4, 1992, Ser. No. 845,589
Claims priority, application Japan, Mar. 5, 1991, 3-62433
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] G03C 7/36
U.S. Cl. 430—549 10 Claims

1. A silver halide color photographic material comprising a support having thereon at least one blue-sensitive silver halide emulsion layer, wherein said blue-sensitive silver halide emulsion layer contains at least one yellow dye-forming coupler of the following general formula (2):



(2)

wherein X_3 represents an organic residue which forms a nitrogen-containing heterocyclic group together with >N—; Y represents an aryl group or a heterocyclic group; and Z represents a 5—or 6—membered nitrogen-containing heterocyclic group which is bonded at the coupling position through a nitrogen atom, or a 5—or 6—membered heterocyclic thio group; and at least one yellow dye forming coupler represented by the following general formula (F):



(F)

wherein R_{20} represents a tertiary alkyl group; R_{21} represents a hydrogen atom, a halogen atom, an alkoxy group, an aryloxy group, an alkyl group or a dialkylamino group; R_{22} represents a substituent group capable of being attached to the benzene ring; Z represents a hydrogen atom or a releasing group which is capable of being released by the coupling reaction with an oxidation product of an aromatic amine developing agent; and k represents an integer of 0 to 4, and when k is 2 or greater, two or more R_{22} groups may be the same or different.

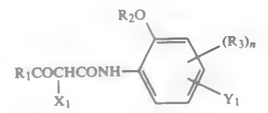
5,336,592

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shigeo Chino; Takashi Kadowaki, and Toyoki Nishijima, all of Odawara, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Nov. 3, 1992, Ser. No. 970,939
Claims priority, application Japan, Nov. 12, 1991, 3-323838
Int. Cl.[5] G03C 1/08, 7/26, 7/32
U.S. Cl. 430—557 6 Claims

1. A silver halide photographic light-sensitive material comprising a support having thereon photographic layers including a silver halide emulsion layer wherein the outermost surface of said photographic material has a pH value of from 5.4 to 5.9 and said silver halide emulsion layer contains a compound represented by the following formula I;



(I)

wherein R_1 is an alkyl group, a cycloalkyl group or an aryl group; R_2 is an alkyl group, a cycloalkyl group, an acyl group or an aryl group; R_3 is a group capable of being a substituent of the benzene ring, n is 0 or 1; X_1 is a substituent capable of splitting off upon coupling reaction with the oxidation product of a color developing agent; and Y_1 is an organic group.

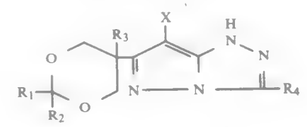
5,336,593

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

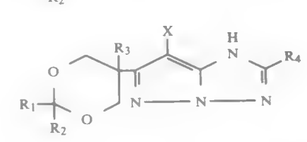
Koji Daifuku; Hiroshi Kita, and Yutaka Kaneko, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 85,192
Claims priority, application Japan, Jul. 6, 1992, 4-202021
Int. Cl.[5] G03C 7/38
U.S. Cl. 430—558 7 Claims

1. A silver halide color photographic material containing at least one pyrazolotriazole base magenta coupler represented by the following general formula [Ia] or [Ib]:



[Ia]



[Ib]

where R_1, R_2 and R_3 are each a hydrogen atom, an alkyl group, a cycloalkyl group or an aryl group; R_4 is an aliphatic or aromatic group each of which may optionally have a substitutent; X is a hydrogen atom, a chlorine atom, a bromine atom, a fluorine atom, an alkoxy group, an aryloxy group, a heterocycloxy group, an alkylthio group, an arylthio group, a heterocyclothio group, an amino group, an acylamino group, a sulfonamido group or a nitrogenous heterocyclic group bound to the pyrazolotriazole nucleus by a nitrogen atom of the heterocyclic group.

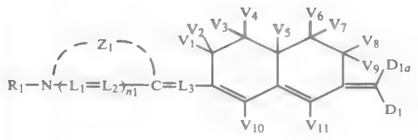
5,336,594

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takanori Hioki, Kawagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 4, 1993, Ser. No. 56,753
Claims priority, application Japan, May 12, 1992, 4-145015
Int. Cl.[5] G03C 1/12
U.S. Cl. 430—577 9 Claims

1. A silver halide photographic material comprising a light-sensitive silver halide emulsion layer spectrally sensitized with a spectral sensitizing dye represented by a formula (I):



(I)

M_1m_1

wherein Z_1 represents an atomic group necessary for forming a 5-membered or 6-membered nitrogen-containing heterocyclic ring;
R_1 represents an alkyl group;
D_1 and D_{1a} each represents an atomic group necessary for forming an acyclic or cyclic acidic nucleus;
V_1, V_2, V_3, V_4, V_5, V_6, V_7, V_8, V_9, V_{10} and V_{11} each represents a hydrogen atom or a monovalent substituent;
L_1, L_2 and L_3 each represents a methine group;
M_1 represents a charge-neutralizing pair ion;
m_1 represents a number of 0 or more necessary for neutralizing the charge in the molecule; and
n_1 represents 0 or 1.

5,336,595

METHOD OF USING HUMAN NEUROKININ-1 RECEPTOR SHORT FORM

Catherine D. Strader, Verona, and Tung M. Fong, Somerset, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 17, 1991, Ser. No. 701,935
Int. Cl.[5] C12Q 1/68
U.S. Cl. 435—6 4 Claims

1. A method of determining the binding of a test sample to human neurokinin-1 receptor short form having the amino acid sequence (SEQ ID:26:)

Met Asp Asn Val Leu Pro Val Asp Ser Phe Ala Ile Cys Trp Leu Pro Phe His
1 5 260 265
Asp Leu Ser Pro Asn Ile Ser Ile Phe Phe Leu Leu Pro Tyr
10 15 270
Thr Asn Thr Ser Glu Pro Asn Gln Phe Ile Asn Pro Asp Leu Tyr Leu Lys Lys
20 25 275 280
Val Gln Pro Ala Trp Gln Ile Phe Ile Gln Gln Val Tyr Leu
30 285
Val Leu Trp Ala Ala Ala Tyr Thr Val Ala Ile Met Trp Leu Ala Met Ser Ser
35 40 290 295
Ile Val Val Thr Ser Val Val Thr Met Tyr Asn Pro Ile Ile
45 300
Gly Asn Val Val Val Met Trp Ile Ile Tyr Cys Cys Leu Asn Asp Arg
50 55 305 310
Leu Ala His Lys Arg Met Arg
Thr Val Thr Asn Tyr Phe Leu Val Asn
65 70
Leu Ala Phe Ala Glu Ala Ser
75 80
Met Ala Ala Phe Asn Thr Val Val Asn
Phe Thr Tyr Ala Val His Asn
90 95
Glu Trp Tyr Tyr Gly Leu Phe Tyr Cys
100 105
Lys Phe His Asn Phe Phe Pro
110
Ile Ala Ala Val Phe Ala Ser Ile Tyr
115 120

-continued

Ser Met Thr Ala Val Ala Phe
125
Asp Arg Tyr Met Ala Ile Ile His Pro
130 135
Leu Gln Pro Arg Leu Ser Ala
140
Thr Ala Thr Lys Val Val Ile Cys Val
145 150
Ile Trp Val Leu Ala Leu Leu
155 160
Leu Ala Phe Pro Gln Gly Tyr Tyr Ser
165
Thr Thr Glu Thr Met Pro Ser
170 175
Arg Val Val Cys Met Ile Glu Trp Pro
180 185
Glu His Pro Asn Lys Ile Tyr
190
Glu Lys Val Tyr His Ile Cys Val Thr
195 200
Val Leu Ile Tyr Phe Leu Pro
205
Leu Leu Val Ile Gly Tyr Ala Tyr Thr
210 215
Val Val Gly Ile Thr Leu Trp
220
Ala Ser Glu Ile Pro Gly Asp Ser Ser
225 230
Asp Arg Tyr His Glu Gln Val
235 240
Ser Ala Lys Arg Lys Val Val Lys Met
245
Met Ile Val Val Val Cys Thr
250 255

expressed by a Chinese hamster ovarian cell line, the cell line comprising a mammalian expression system encoding human neurokinin-1 receptor short form, the method comprising:
(a) adding a test sample to a solution containing ^{125}I-substance P;
(b) incubating the solution of step (a) with cells from the cell line:
(c) separating the ^{125}I-substance P which is not bound to the human neurokinin-1 receptor short form from the ^{125}I-substance P which is bound;
(d) determining the amount of the ^{125}I-substance P which is bound to the human neurokinin-1 receptor short form; and
(e) comparing the amount of ^{125}I-substance P which is bound to the human neurokinin-1 receptor short form in the presence of test sample to the amount which is bound in the absence of the test sample as an indication of the bond-

VOL 1165 ISS 2 AG 9 1994 UMI

ing of the test sample to human neurokinin-1 receptor short form.

5,336,596

MEMBRANE FOR CHEMILUMINESCENT BLOTTING APPLICATIONS

Irena Bronstein, Newton; Brooks Edwards, Cambridge, and John Voyta, Sudbury, all of Mass., assignors to Tropix, Inc., Bedford, Mass.

Filed Dec. 23, 1991, Ser. No. 811,620
Int. Cl.[5] C12B *1/68;* G01N *33/545;* B32B *27/00*
U.S. Cl. 435—6 **6 Claims**

1. A membrane suitable for use in a blotting assay, comprising a support bearing a polymer coating, said support selected from the group consisting of nitrocellulose, nylon and PVDF, said polymer coating being selected from the group consisting of polyvinyl benzyl dimethyl hydroxyethyl ammonium chloride, polyvinyl benzyl benzoyl aminoethyl dimethyl ammonium chloride, polyvinyl benzyl tributyl ammonium chloride, copolymers of polyvinyl benzyl trihexyl ammonium chloride and polyvinyl benzyl tributyl ammonium chloride, copolymers of polyvinyl benzyl benzyl dimethyl ammonium chloride and polyvinyl aminoethyl dimethyl ammonium chloride and copolymers of polyvinyl benzyl phenyl ureidoethyl dimethyl ammonium chloride and polyvinyl benzyl benzyl dimethyl ammonium chloride, the molecular weight of said polymer being from 800–200,000, wherein said membrane is washed with a solution of sodium dodecyl sulfate.

3. A method of conducting a blotting assay wherein the presence of absence of a component of an analyte is determined, comprising the steps of:

fixing said analyte on a membrane of claim 1,

exposing said analyte on said membrane to a complex selected from an antibody enzyme complex and a nucleic acid probe-enzyme complex,

allowing said antibody or nucleic acid probe to bind to any of said component present in said analyte,

incubating the enzyme complex treated analyte with an an enzyme-cleavable 1,2-dioxetane to cleave an enzyme-labile protecting group from said dioxetane thereby causing said dioxtane to decompose and chemiluminesce, and

measuring the degree of chemiluminescence obtained, wherein the amount and presence of chemiluminescence indicates detection of said component.

5,336,597

CELL SURFACE ANTIGEN DETECTION METHOD

Robert McMillan, Del Mar, Calif., assignor to The Scripps Research Institute, La Jolla, Calif.

Continuation of Ser. No. 124,905, Nov. 24, 1987, Pat. No. 5,176,998, which is a continuation-in-part of Ser. No. 936,125, Dec. 1, 1986, Pat. No. 4,810,632. This application Oct. 28, 1992, Ser. No. 967,449
The portion of the term of this patent subsequent to Mar. 7, 2006, has been disclaimed.
Int. Cl.[5] G01N *33/538, 33/543, 33/564*
U.S. Cl. 435—7.2 **6 Claims**

1. A method of assaying platelet compatibility between donor and patient comprising the steps of:

(a) admixing an aliquot of serum of plasma from a patient with platelets of a prospective donor to form an aqueous, liquid admixture,

(b) maintaining said admixture under biological assay conditions for a predetermined time period sufficient for any alloantibodies present in the serum or plasma to immunoreact with a platelet antigen to form a platelet antigen-alloantibody immunocomplex,

(c) lysing the platelets of said admixture to form cellular debris and solubilize and platelet antigen-alloantibody immunocomplex, when said alloantibodies and said platelet antigen were present in said admixture,

(d) separating the cellular debris from any solubilized immunocomplex formed in step (c),

(e) affixing any of said separated, solubilized immunocomplex of step (d) present to a solid phase support capable of specifically binding said solubilized immunocomplex to form a solid phase-affixed platelet antigen-alloantibody immunocomplex, and

(f) thereafter, assaying for the presence of said platelet antigen-alloantibody immunocomplex as a solid phase-affixed immunocomplex by reacting the immunocomplex present with a labeled specific binding agent that specifically binds to the immunocomplex, whereby the absence of immunocomplex indicates compatibility and the presence of immunocomplex indicates incompatibility of said donor and patient.

5,336,598

METHOD FOR DIAGNOSING A SUPERANTIGEN CAUSED PATHOLOGIAL CONDITION VIA ASSAY OF T-CELLS

Brian L. Kotzin; Philippa Marrack; John Kappler, and Youngwon Choi, all of Denver, Colo., assignors to National Jewish Center for Immunology and Respiratory Medicine, Denver, Colo.

Filed Nov. 15, 1989, Ser. No. 437,370
Int. Cl.[5] C12Q *1/68;* G01N *33/577*
U.S. Cl. 435—7.24 **4 Claims**

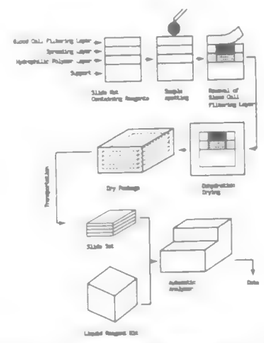
4. Method for diagnosing toxic shock syndrome comprising assaying a T-cell containing sample of a human patient to determine a level of Vβ2 subtype T cells in said sample and comparing said level to normals levels in a comparable sample, wherein an increase in said Vβ2 subtype level is indicative of toxic shock syndrome.

5,336,599

METHOD OF MEASURING ANALYTE USING DRY ANALYTICAL ELEMENT

Masao Kitajima, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 916,944, Jul. 20, 1992, abandoned. This application Dec. 15, 1993, Ser. No. 167,629
Claims priority, application Japan, Jul. 19, 1991, 3-203738
Int. Cl.[5] C12Q *1/48;* G01N *31/22, 21/77*
U.S. Cl. 435—15 **13 Claims**



1. A method for quantitatively measuring an analyte using a dry analytical element which comprises:

supplying a measuring reagent solution to an analytical element comprising at least a hydrophilic polymer layer and a spreading layer which functions to evenly spread components contained in an aqueous liquid sample to supply the components to the hydrophilic polymer layer at a constant rate per unit area, said measuring reagent reacting directly with analyte in the liquid sample to produce a chemical change which is optically detectable,

the analytical element having been prepared by applying a liquid sample comprising blood to the element and then drying the element under a drying temperature of from 10° to 60° C. up to a moisture content of the hydrophilic polymer of less than 20% to fix the sample thereon prior to supplying the reagent solution thereto; and

optically measuring the chemical change.

5,336,600

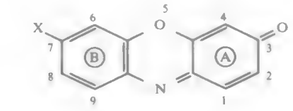
METHOD AND REAGENTS FOR THE DETECTION OF MICROORGANISMS

Daniel Monget, Saint Sorlin en Bugey, France, assignor to Bio Merieux, Charbonnieres Les Bains, France

Division of Ser. No. 600,919, Oct. 22, 1990, abandoned. This application Oct. 16, 1992, Ser. No. 961,625
Claims priority, application France, Oct. 20, 1989, 8914087
Int. Cl.[5] C12Q *1/04, 1/18;* G01N *21/76, 1/00*
U.S. Cl. 435—34 **29 Claims**

1. A method for the detection of microorganisms such as microbes, bacteria and yeasts, comprising the steps of:

bringing at least one sample suspected of containing a microorganism into contact with at least one aqueous phase reaction medium containing at least one carbon source and a marker, said marker emitting light by fluorescence directly without hydrolytic splitting and being a chemical compound corresponding to a member selected from the group consisting of the following formula, and its anionic form:



in which:

positions (4), (6), (8) and (9) are each occupied by one of a hydrogen atom and a substituent selected from the group consisting of fluorine, chlorine, bromine and alkyl, alkoxy, carboxylate, carboxyl, amide and cyano substituents;

positions (1) and (2) are each occupied by one of a hydrogen atom and a substituent selected from the group consisting of fluorine, chlorine, bromine and alkyl, alkoxy, carboxylate, carboxyl, amide and cyano substituents, or positions (1) and (2) belong in common to the ring (A) and to an unsaturated ring;

and X is one of a hydroxyl and amine function;

incubating said at least one reaction medium with said at least one sample suspected of containing a microorganism;

observing the fluorescence of the marker whereby an observed decrease in the emitted light indicates the presence of a microorganism in said at least one sample.

5,336,601

ENZYMATIC MEMBRANE METHOD FOR THE SNYTHESIS AND SEPARATION OF PEPTIDES

Guillermo A. Iacobucci, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 342,418, Apr. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 78,504, Jul. 28, 1987, Pat. No. 5,002,871, which is a continuation-in-part of Ser. No. 897,679, Aug. 18, 1986, Pat. No. 5,037,741. This application Dec. 10, 1991, Ser. No. 809,087
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] C12P *21/02;* C12N *11/18;* C12M *1/00*
U.S. Cl. 435—68.1 **20 Claims**

1. A method for the enzymatic synthesis of a peptide, in and oil/water contactor, comprising the steps of:

in a first hollow fiber membrane module reacting a protected, peptide first reactant having a C-terminal carboxylate group with a protected peptide, second reactant having an N-terminal ammonium group, in the presence of a condensation enzyme in an aqueous reaction phase under conditions in which the C-terminal carboxylate group and the N-terminal ammonium group condense forming a protected, uncharged, peptide product;

transporting the protected, uncharged, peptide product from the first hollow fiber membrane module into a water-immiscible hydrophobic phase;

transporting the protected, uncharged, peptide product from the water-immiscible hydrophobic phase into an aqueous product phase in a second hollow fiber membrane module; and

wherein in the first membrane module the hollow fibers have an inner lumen side and an outer surface side connected by pores and the aqueous reaction phase circulates on one side of the fibers and the water immiscible hydrophobic phase circulates on the other side the fibers creating an oil/water interface between the aqueous reaction phase and the water-immiscible hydrophobic phase; and

wherein in the second membrane module the hollow fibers have an inner lumen and an outer surface connected by pores and the water-immiscible hydrophobic phase circulates on one side of the fibers and the aqueous product phase ciruclates on the other side of the fibers creating an oil/water interface between the water-immiscible hydrophobic phase and the aqueous product phase.

5,336,602

EXPRESSION ENHANCER AND USE THEREOF TO INCREASE THE YIELD IN THE EXPRESSION OF RECOMBINANT GENES

Ulrich Brinkmann, Hamm; Ralf Mattes, Stuttgart, and Peter Buckel, Bernried, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Continuation of Ser. No. 435,358, Nov. 13, 1989, abandoned. This application Jan. 22, 1993, Ser. No. 7,405
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1988, 3838377
Int. Cl.[5] C12P *21/02;* C12N *15/67*
U.S. Cl. 435—69.1 **7 Claims**

1. Method for increasing yield of an arginine containing protein coded for by a gene, comprising:

(a) transforming an *Escherichia coli* host cell with

(1) a DNA sequence which codes for an arginine tRNA molecule wherein a segment of said DNA sequence

(i) is complementary to an oligonucleotide having the sequence 5'-TTAGAAG-3', and

(ii) encodes an anticodon loop of said arginine tRNA molecule, and

(2) an expression vector comprising said gene coding for a protein, and

(b) cultivating said *Escherichia coli* host cell under conditions favoring expression of said protein wherein expression of said protein is enhanced as compared to expression in the absence of said DNA sequence which codes for said arginine tRNA in said *Escherichia coli* cultivated under identical conditions.

5,336,603

CD4 ADHESON VARIANTS

Daniel J. Capon, San Mateo, and Timothy J. Gregory, Hillsborough, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 842,777, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 250,285, Sep. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 104,329, Oct. 2, 1987, abandoned. This application Aug. 26, 1992, Ser. No. 936,190
Int. Cl.[5] C07K *13/00;* C12N *15/62*
U.S. Cl. 435—69.7 **12 Claims**

1. A heterofunctional immunoadheson comprising a fusion

VOL 1165 ISS 2 AG 9 1994 UMI

protein in which a polypeptide comprising a human CD4 antigen variable (V) region is fused at its C-terminus to the N-terminus of a polypeptide comprising a constant region of an immunoglobulin chain disulfide bonded to a companion immunoglobulin heavy chain-light chain pair bearing a V_LV_H antibody combining site capable of binding a predetermined antigen.

5,336,604

Patent Not Issued For This Number

5,336,605

PRODUCTION OF PODOPHYLLOTOXINS USING PODOPHYLLUM

Ko Sakata; Eitaroh Morita, and Tetsuya Takezono, all of Yokohama, Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Division of Ser. No. 603,361, Oct. 26, 1990, Pat. No. 5,225,343. This application Feb. 1, 1993, Ser. No. 11,671

Claims priority, application Japan, Oct. 26, 1989, 1-277223; Mar. 14, 1990, 2-61098; Mar. 14, 1990, 2-61099

Int. Cl.[5] C12P *17/18;* C12N *5/00, 5/02*

U.S. Cl. 435—119 1 Claim

1. A process for the production of a podophyllotoxin compound, comprising the steps of:

preparing an adventive embryo of a plant belonging to the genus Podophyllum by the process comprising the steps of preparing cells of said plant in the form of a callus or cells in a liquid culture, incubating the cells in a sugar-free medium or a medium containing up to 2%, inclusive, by weight of sugar, and then incubating the cells in a medium containing more than 2% by weight of sugar;

culturing the adventive embryo to generate an adventitious organ;

culturing the adventitious organ to produce a podophyllotoxin compound; and

recovering the podophyllotoxin compound by extracting said cultured adventitious organ with an organic solvent.

5,336,606

Patent Not Issued For This Number

5,336,607

REGULATED GENE EXPRESSION IN STREPTOMYCETES

Wolfgang Wohlleben, Bielefeld; Günter Muth, Enger; Alfred Pühler, Bielefeld, and Günther J. Rieb, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 683,062, Apr. 10, 1991, abandoned. This application Jul. 23, 1993, Ser. No. 95,481

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1990, 4011863

Int. Cl.[5] C12N *15/74, 15/63*

U.S. Cl. 435—172.3 1 Claim

1. A process for the regulated expression of a gene in a Streptomycetes host strain, which comprises employing as a switch the kilA-KorA system, where the gene to be expressed is coupled to the kilA regulatory region, and is switched on by the elimination of the KorA protein when the korA gene is expressed from a plasmid with temperature-sensitive replication, and the temperature is raised above the plasmid's threshold.

5,336,608

PROCESS FOR PRODUCING NADH OXIDASE

Youichi Niimura; Michio Kozaki, both of Tokyo; Hisashi Yamagata, Toride, and Hideaki Yukawa, Ami, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 483,814, Feb. 23, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,163

Claims priority, application Japan, Feb. 28, 1989, 1-45445; Aug. 16, 1989, 1-211167

Int. Cl.[5] C12N *9/02*

U.S. Cl. 435—189 1 Claim

1. A process for producing NADH oxidase, which comprises culturing an alkalophilic, facultative anaerobic NADH oxidase-producing bacterium, strain Ep01 (FERM BP-2744), having an optimum growth pH in an alkaline region in a medium, and recovering from the cultured cells NADH oxidase having the following enzymological properties:

(1) reaction

oxidizes NADH to form NAD^+ and hydrogen peroxide as shown by the following reaction scheme:

$$NADH+H^++O_2 \rightarrow NAD^++H_2O_2;$$

(2) optimum pH pH 8–9;

(3) optimum temperature about 37° C. when measured using phosphate buffer (pH 7.0)

(4) temperature stability

no activity reduction is observed when kept in a phosphate buffer, pH 7.0, at 37° C. for 100 hours;

(5) auxotrophy for monovalent cations

Activated with monovalent cations;

(6) present in the supernatant fraction obtained after the cell-free extract is subjected to ultracentrifugation at 100,000× g for an hour; and

(7) no production of succinic acid occurs from L-malic acid when used in a coupling reaction with malate dehydrogenase.

5,336,609

TRANSFORMED YEASTS FOR PRODUCING LYSOZYME, PLASMIDS USED FOR THIS TRANSFORMATION, METHOD OF PRODUCING LYSOZYME

Jacques Oberto, Steenokkerzeel, and John R. N. Davison, Brussels, both of Belgium, assignors to Labofina, S.A., Belgium

Filed Dec. 5, 1989, Ser. No. 804,774

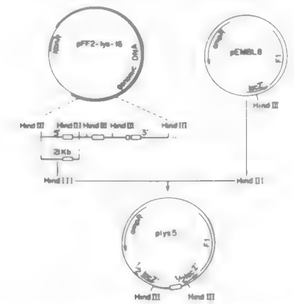
Claims priority, application Belgium, Dec. 6, 1984, 0/214124

Int. Cl.[5] C12N *15/56, 15/81*

U.S. Cl. 435—206 38 Claims

1. A process for preparing lysozyme comprising the following steps:

(a) growing in a culture medium Saccharomyces yeasts transformed with DNA comprising at least one copy of an expression cassette appropriately constructed for the expression of a 1,4-β-N-acetylmuramidase;



(b) separating the yeast thus obtained from the culture medium; and

(c) recovering the lysozyme present in said medium.

5,336,610

METHOD FOR PURIFICATION OF THE ZYMOGEN OF PROTEIN C OR THE HEAVY CHAIN THEREOF USING MONOCLONAL ANTIBODY HPC-4

Charles T. Esmon, and Naomi L. Esmon, both of Oklahoma City, Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla.

Division of Ser. No. 730,040, Jul. 12, 1991, Pat. No. 5,202,253, which is a continuation of Ser. No. 292,447, Dec. 30, 1988, abandoned. This application Nov. 30, 1992, Ser. No. 982,832

Int. Cl.[5] C12N *9/48;* C07K *3/20, 15/28*

U.S. Cl. 435—212 2 Claims

1. A method for isolating the zymogen of Protein C or the heavy chain thereof comprising

(1) providing an immobilized calcium dependent monoclonal antibody specific for an epitope in the activation peptide region of the heavy chain of Protein C and calcium, wherein the antibody is produced by the hybridoma cell line HPC-4 deposited with the American Type Culture Collection, Rockville, Md., on Nov. 2, 1988, and assigned accession No. HB 9892;

(2) providing a solution containing calcium and the zymogen of Protein C or the heavy chain thereof to be isolated under conditions that allow the antibody to bind the activation peptide region in combination with binding calcium; and

(3) eluting the zymogen of Protein C or heavy chain thereof from the antibody by removing calcium.

5,336,611

PB92 SERINE PROTEASE MUTEINS AND THEIR USE IN DETERGENTS

Christiaan A. G. van Eekelen, Bergschenhoek; Leonardus J. S. M. Mulleners, SV Rijen; Johannes C. Van Der Laan, Amsterdam; Onno Misset, Delft; Roelck A. Cuperus, Amsterdam, and Johan H. A. Lensink, Deift, all of Netherlands, assignors to Gist-brocades N.V., Delft, Netherlands

PCT No. PCT/NL89/00005, § 371 Date Oct. 11, 1989, § 102(e) Date Oct. 11, 1989, PCT Pub. No. WO89/07642, PCT Pub. Date Aug. 24, 1989

PCT Filed Feb. 13, 1989, Ser. No. 427,103

Claims priority, application European Pat. Off., Feb. 11, 1988, [redacted]

Int. Cl.[5] C12N *9/54;* C11D *3/386*

U.S. Cl. 435—221 8 Claims

1. A substantially pure serine protease mutein comprising:

a substitution of an amino acid residue at a selected site corresponding to a residue position selected from the group consisting of 116, 126, 127, 128, 160, and 216 of mature PB92 protease obtained from Bacillus novo species PB92, wherein said mature PB92 protease has an amino acid sequence as shown in FIG. 4; and wherein

relative to said mature PB92 protease prior to said substitution, the mutein has demonstrated (a) improved wash performance or (b) retained wash performance and improved stability against oxidizing agents.

5,336,612

Patent Not Issued For This Number

5,336,613

CEPHALOSPORIN C ACYLASE

Mineo Niwa, Muko; Yoshimasa Saito, Kawanishi; Hitoshi Sasaki, Tsukuba, and Yoshinori Ishii, Kobe, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 19, 1993, Ser. No. 19,870

Claims priority, application United Kingdom, Feb. 27, 1992, 9204439

Int. Cl.[5] C12N *9/80, 15/52*

U.S. Cl. 435—228 11 Claims

1. A mutant cephalosporin C acylase derived from a precursor of the formula:

$$A^{1\text{-}268}—X^1—Tyr—X^2—A^{272\text{-}304}—X^3—A^{306\text{-}773}$$

(SEQ ID NO:1), wherein:

$A^{1\text{-}268}$ is the same amino acid sequence as that from Thr^1 to Gly^{268} of native CC acylase,

$A^{272\text{-}304}$ is the same amino acid sequence as that from Gln^{272} to Tyr^{304} of native CC acylase,

$A^{306\text{-}773}$ is the same amino acid sequence as that from Val^{306} to Ala^{773} of native CC acylase,

X^1 is Met or other amino acid,

X^2 is Ala or Tyr, and

X^3 is Cys or Ser,

provided that when X^1 is Met and X^2 is Ala, X^3 is Ser; and that said mutant cephalosporin C acylase has a property selected from the group consisting of higher enzymatic potency and higher processing efficiency, as compared to said native CC acylase.

5,336,614

SOFT AGAR ASSAY AND KIT

Ronald L. Brown, Rockville, and Gretchen Schwartz, Wheaton, both of Md., assignors to Quality Biological, Inc., Gaithersburg, Md.

Filed Aug. 14, 1991, Ser. No. 745,263

Int. Cl.[5] C12N *5/00*

U.S. Cl. 435—240.2 12 Claims

1. A kit for growing eukaryotic cells, comprising:

a container; and

a solidified gel in said container which comprises modified agarose containing hydroxyethylated agarose in a concentration of 1.75 to 7 mg/ml and thixotropic methylcellulose which forms a gel at 33–40° C., wherein said thixotropic methylcellose is present in a concentration of 6.5 to 26 mg/ml, said gel having a gel strength at 37° C. which is low enough to allow eukaryotic cells applied to the upper surface thereof to settle below said upper surface of said gel, wherein eukaryotic cells applied to the top surface of the gel can be evenly spread over the surface of the gel.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,615

GENETICALLY ENGINEERED ENDOTHELIAL CELLS EXHIBITING ENHANCED MIGRATION AND PLASMINOGEN ACTIVATOR ACTIVITY

Leonard Bell, Woodbridge; Joseph A. Madri, North Branford; Stephen L. Warren, Orange, all of Conn., and Daniel J. Luthringer, Beverly Hills, Calif., assignors to Yale University, New Haven, Conn.

Filed Jan. 6, 1992, Ser. No. 820,011
Int. Cl.[5] C12N *5/10, 5/06, 15/85;* **A61F** *2/06*
U.S. Cl. 435—240.2 **19 Claims**

1. An in vitro culture of endothelial cells, said cells containing a heterologous vector which comprises DNA coding for a c-src polypeptide, wherein the c-src DNA supplied by the heterologous vector effects, upon expression of the c-src polypeptide encoded thereby, enhanced migration or enhanced urokinase plasminogen activator activity or enhanced tyrosine kinase activity compared endothelial to cells which do not contain the heterologous vector, and said endothelial cells containing the heterologous vector retain the nontransformed endothelial cell phenotype.

5,336,616

METHOD FOR PROCESSING AND PRESERVING COLLAGEN-BASED TISSUES FOR TRANSPLANTATION

Stephen A. Livesey, Eltham, Australia; Anthony A. del Campo; Abhijit Nag, both of Houston, Tex.; Ken B. Nichols, The Woodlands, Tex., and Christopher Coleman, Houston, Tex., assignors to LifeCell Corporation, The Woodlands, Tex.

Continuation-in-part of Ser. No. 835,138, Feb. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 709,504, Jun. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 581,584, Sep. 12, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 4,752
Int. Cl.[5] C12N *5/00;* **A01N** *1/02;* **A61F** *2/10*
U.S. Cl. 435—240.2 **4 Claims**

1. A method for processing collagen-based tissue for transplantation comprising:

(a) procuring said collagen-based tissue and placing said collagen-based tissue into a stabilizing solution to prevent osmotic, hypoxic, autolytic and proteolytic degradation and to protect against microbial contamination;

(b) incubating said collagen-based tissue in a processing solution to produce processed tissue, said processing solution extracting viable cells from the structural protein and collagen matrix of said collagen-based tissue;

(c) cryopreparing said processed tissue by incubation in a cryoprotective solution and freezing at cooling rates such that minimal functional damage occurs to the structural protein and collagen matrix of said processed tissue to produce cyoprepared, processed tissue;

(d) drying said cryoprepared, processed tissue under temperature and pressure conditions that permit removal of water without substantial ice recrystallization or ultrastructural damage, said drying resulting in a residual moisture content of said cyroprepared, processed tissue that permits both storage and rehydration of said tissue, to produce dried, cryoprepared, processed tissue;

(e) incubating said dried cyroprepared, processed tissue in a rehydration solution, said rehydration solution said rehydration solution preventing osmotic, hypoxic, autolytic, or proteolytic damage, microbial contamination and ultrastructural damage and to result in a rehydrated tissue having a final water content of 20% to 70%; and

(f) inoculation of said rehydrated tissue with viable cells selected from the group consisting of autogeneic cells, allogeneic cells or combinations thereof or allowing viable cells to repopulate said collagen matrix following transplantation.

5,336,617

PROCESS FOR PREPARING TREHALULOSE AND ISOMALTULOSE

Toshiaki Sugitani; Kenichiro Tsuyuki, both of Kamakura; Yukie Miyata, Tokyo; Tadashi Ebashi, Nagaregama; Hideaki Okui, Chiba; Yoshikazu Nakajima, Yamato, and Kenzo Sawada, Tokyo, all of Japan, assignors to Mitsui Sugar Co., Ltd., Tokyo, Japan and Suedzucker AG Mannheim/Ochsenfurt, Mannheim, Fed. Rep. of Germany

Division of Ser. No. 782,657, Oct. 25, 1991, Pat. No. 5,229,276. This application Apr. 12, 1993, Ser. No. 45,128
Int. Cl.[5] C12N *1/20;* **C12P** *19/18, 19/04*
U.S. Cl. 435—252.1 **2 Claims**

1. A biologically pure strain of *Pseudomonas mesoacidophila* MX-45, FERM BP3619, having an activity of converting sucrose into trehalulose and isomaltulose.

5,336,618

FIBRINOGEN BLOCKING MONOCLONAL ANTIBODY

Barry S. Coller, Dix Hills, N.Y., assignor to Research Foundation for the State University of N.Y., Albany, N.Y.

Continuation of Ser. No. 742,208, Jun. 7, 1985, abandoned. This application Nov. 22, 1988, Ser. No. 274,627
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] C12N *5/20;* **C07K** *15/28;* **C12P** *21/08*
U.S. Cl. 435—240.27 **3 Claims**

1. A continuing hybridoma cell line which secretes recoverable quantities of a monclonal antibody of the class IgG_1, designated 7E3, which antibody:

(i) reacts readily with normal human blood platelets and with dog blood platelets,

(ii) fails to react with thrombasthenic human platelets or human platelets whose GPIIb/IIIa complex is disassociated with EDTA,

(iii) reacts slowly with unactivated human platelets and more rapidly with ADP activated human platelets, and

(iv) completely blocks the interaction of fibrinogen with platelets induced by ADP.

5,336,619

PROCESS FOR PRODUCING OPTICALLY ACTIVE 1,3-BUTANEDIOL

Akinobu Matsuyama, and Yoshinori Kobayashi, both of Niigata, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 31, 1991, Ser. No. 778,918
Claims priority, application Japan, Oct. 15, 1990, 2-276100
Int. Cl.[5] C12P *41/00*
U.S. Cl. 435—280 **11 Claims**

1. A process for producing optically active 1,3-butanediol, comprising contacting an enantiomorphic mixture of 3-butanediol with a microorganism or cells thereof which have been ground, acetone-treated, or lyophilized, selected from the group consisting of *Kloeckera africana* and *Streptomyces netropsis* capable of assimilating an enantiomorphic mixture of 1,3-butanediol so as to leave (R)-1,3-butanediol unaffected, and then recovering the remaining optically active (R)-1,3-butanediol.

5,336,620

PROCESS FOR THE PRODUCTION OF AN ANTICOAGULANT COMPOSITION

Edward Mancilla, Waunakee, Wis., and Elizabeth M. Lagwinska, Chesterfield, Mo., assignors to American Home Products Corporation, Madison, N.J.

Continuation of Ser. No. 9,627, Jan. 27, 1993, abandoned. This application Jul. 22, 1993, Ser. No. 96,123
Int. Cl.[5] G01N *1/00*
U.S. Cl. 436—18 **17 Claims**

1. A process for the production of an anticoagulant composition comprising

a) contacting an aqueous solution of sodium heparin with an acidic ion exchange resin for a period sufficient such that aqueous effluent produced possesses a pH of about 3 or less;

b) reacting said effluent with a heavy metal-containing compound suitable to produce a heavy metal heparin salt; and

c) reacting said heavy metal heparin salt with an aqueous solution of lithium salts in sufficient amounts such that the resulting solution exhibits a pH of about 6 to about 7.

5,336,621

DIVALENT HAPTEN DERIVATIVES

Kathleen J. Primes; Gerald F. Sigler, both of San Diego, Calif.; Gerd Grenner, and Wolfgang Kapmeyer, both of Marburg, Fed. Rep. of Germany, assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 69,747, Jul. 6, 1987, Pat. No. 4,760,142, which is a continuation-in-part of Ser. No. 825,425, Feb. 3, 1986, abandoned, which is a continuation-in-part of Ser. No. 675,374, Nov. 27, 1984, abandoned. This application Jun. 27, 1988, Ser. No. 211,940
Int. Cl.[5] G01N *33/546*
U.S. Cl. 436—534 **10 Claims**

1. A method for conducting a turbidimetric assay comprising:

a) obtaining an antibody to the hapten to be assayed;

b) immobilizing said antibody on a macromolecular carrier to form an immobilized antibody;

c) incubating said immobilized antibody with a divalent hapten derivative comprising two hapten moieties connected by means of bifunctional spacer having the formula

A—X—A

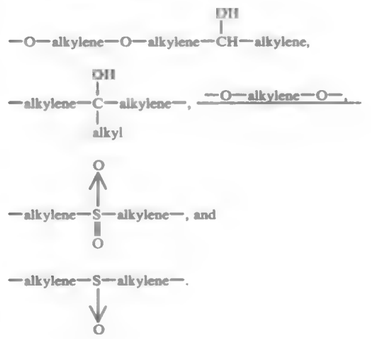
wherein A is a hapten moiety and X is a bifunctional spacer having the formula

$(B)_m$—Y—$(CH_2)_n$—Z—$(CH_2)_n$—Y—$(B)_m$

wherein m is independently 0 or 1, B is $(CH_2)_{n'}$, wherein n' is an integer from 1 to 4, or $CO(CH_2)_{n''}$, wherein n'' is an integer from 2–4; Y is independently —CONH—, —NHCO—, —OOC—, —COO—, —O—, —S—, or —NR—, wherein R is hydrogen or alkyl; n is an integer from 1 to 10; and Z is selected from the group consisting of -alkylene-O-alkylene-, alkylene-NH-alkylene,



—NH—alkylene—NH,



where the term alkyl means a straight or branched chain saturated hydrocarbon group having 1 to 6 carbon atoms and the term alkylene refers to a bivalent radical of the branched or unbranched alkyl group having valence bonds from two terminal carbons thereof to form an extended complex;

d) measuring the turbidity of said extended complex;

e) incubating said extended complex with the sample to be assayed to form the assay solution;

f) measuring the turbidity of said assay solution;

g) comparing the measurement obtained from measuring the turbidity of said extended complex with the measurement obtained from measuring the turbidity of said assay solution to obtain a comparison; and

h) calculating the amount of the hapten to be assayed which is present in said sample.

5,336,622

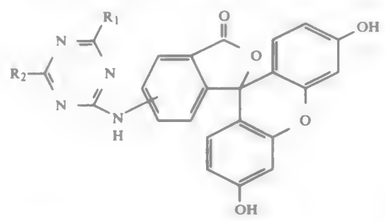
TRACERS FOR USE IN FLECAINIDE FLUORESCENCE POLARIZATION IMMUNOASSAY

Daniel F. Heiman, Libertyville, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 132,083, Dec. 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 856,079, Apr. 25, 1986, abandoned. This application Apr. 11, 1989, Ser. No. 336,574
Int. Cl.[5] G01N *33/542;* **C07D** *405/14*
U.S. Cl. 436—537 **6 Claims**

6. A method for determining the presence or amount of flecainide in a test sample, comprising the steps of:

a) contacting the sample with a tracer and an antibody capable of recognizing and binding the analyte and said tracer, whereby binding of (i) said analyte or (ii) said tracer to said antibody blocks binding of (i) said tracer or (ii) said analyte, respectively, to said antibody; wherein said tracer comprises a compound of the formula:



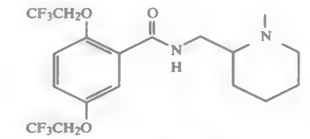
wherein

R_1 is a halogen;

R_2 is —X—R_3;

X is —$(CH_2)_3NH$— or —CH_2—C(O)$NH(CH_2)_3NH$—; and

R_3 is



b) passing plane polarized light through said test solution to obtain a fluorescence polarization response; and

c) detecting the fluorescence polarization response as a measure of the presence or amount of flecainide analyte in the test sample.

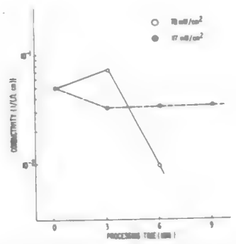
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,623

PROCESS FOR PRODUCING INTEGRATED SOLAR CELL

Porponth Sichanugrist, Kanagawa, and Tetsuro Nii, Tokyo, both of Japan, assignors to Showa Shell Sekiyu K.K., Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,128
Claims priority, application Japan, Mar. 2, 1992, 4-44375
Int. Cl.[5] H01L *31/036*
U.S. Cl. 437—4 3 Claims



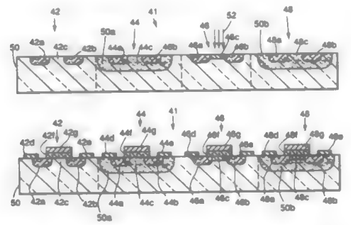
1. A process for producing an integrated solar cell for accelerating the ohmic property of an n-p junction, the integrated solar cell comprising unit cells having a p-i-n junction, with an n-type layer having a reduced resistance and forming an n-p junction between unit cells comprising a michrocrystalline amorphous silicon layer, in which the process includes a step of subjecting said michrocrystalline amorphous silicon layer to a hydrogen discharge treatment for a given period of time to reduce resistance.

5,336,624

METHOD FOR DISGUISING A MICROELECTRONIC INTEGRATED DIGITAL LOGIC

Robert H. Walden, Newbury Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 742,799, Aug. 9, 1991, Pat. No. 5,202,591.
This application Dec. 7, 1992, Ser. No. 986,637
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—29 14 Claims



1. A method of fabricating a microelectronic integrated digital logic circuit designed to operate at an operating switching speed so that the circuit is resistant to reverse engineering testing performed at a test switching speed that is slower than said operating switching speed, comprising the steps of:

(a) forming a first microelectronic digital switching element on a substrate, the first switching element including a first field-effect transistor (FET) having a first channel with a first doping concentration which produces a corresponding first threshold voltage for said first switching element, and a corresponding first switching speed capability for said first switching element which is higher than said operating switching speed; and

(b) forming a second microelectronic digital switching element which is connected in a logic circuit with the first switching element on the substrate, the second switching element including a second FET having a second channel with a second doping concentration which produces a corresponding second threshold voltage for said second switching element, and a corresponding second switching speed capability for said second switching element which is slower than said operating switching speed, slower than the first switching element's switching speed capability, but faster than said test switching speed;

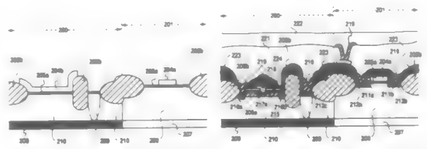
the first and second switching element both being capable of switching at said test switching speed, but only the first switching element being capable of switching at the operating switching speed, such that the circuit operates differently at the test switching speed than at the operating switching speed.

5,336,625

BICMOS PROCESS WITH LOW BASE RECOMBINATION CURRENT BIPOLAR TRANSISTORS

Paul C. F. Tong, San Jose, Calif., assignor to Samsung Semiconductor Corporation, San Jose, Calif.

Division of Ser. No. 873,484, Apr. 22, 1992, Pat. No. 5,304,501, which is a continuation of Ser. No. 613,191, Nov. 14, 1990, abandoned. This application Oct. 1, 1993, Ser. No. 130,249
Int. Cl.[5] H01L *21/265, 29/70*
U.S. Cl. 437—31 16 Claims



1. A process for manufacturing field effect and bipolar transistor structures in respective active areas, said bipolar transistor active area comprising a base-emitter junction area and a base-collector junction area, comprising the steps of:

forming a layer of gate material over said field effect transistor active area and said bipolar transistor active area;

forming from said layer of gate material a gate over a first region of said field effect transistor active area, and a protective structure over said base-emitter junction area of said bipolar transistor active area;

implanting source and drain regions in said field effect transistor active area, proximate to said first region, said protective structure being intact over said base-emitter junction area of said bipolar transistor active area during said source drain implanting step;

removing said gate material from said base-emitter junction area of said bipolar transistor active area; and

forming an emitter region in said bipolar transistor active area.

5,336,626

METHOD OF MANUFACTURING A MESFET WITH AN EPITAXIAL VOID

Yong H. Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do

Filed Mar. 18, 1993, Ser. No. 33,745
Claims priority, application Rep. of Korea, Mar. 18, 1992, 92-4436
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—39 11 Claims

1. A method for fabricating a MESFET, comprising:

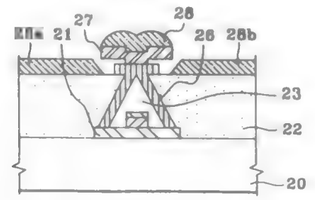
exposing a surface of a semi-insulating compound semiconductor substrate oriented at an angle to the <$\bar{1}$10> crystalline plane of said substrate and forming an insulating layer on said exposed surface;

forming a fist semiconductor layer on said substrate, using said insulating layer as a mask, so as to form a void above said insulating layer and a first hole in said first semiconductor layer;

forming a nitride layer on said first semiconductor layer and through said first hole on an exposed surface of said insulating layer;

forming an oxide layer on said nitride layer;

forming a second hole in said nitride layer by selectively etching said nitride layer under said oxide layer through said first hole, said second hole having a larger diameter than that of said first hole;



forming a second semiconductor layer on surfaces defining said second hole, such as to completely fill said second hole, and on inversely sloped surfaces defining said void;

depositing a first metal layer on an exposed surface of said second semiconductor layer and on said oxide layer, and patterning said first metal layer so as to form a gate electrode;

removing said oxide and nitride layers; and,

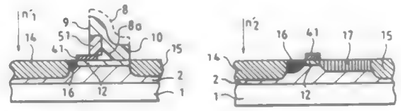
depositing a second metal layer on said first semiconductor layer on opposite sides of said gate electrode, to thereby form source and drain electrodes.

5,336,627

METHOD FOR THE MANUFACTURE OF A TRANSISTOR HAVING DIFFERENTIATED ACCESS REGIONS

Thierry Pacou, Les Ulis; Patrice Arsene-Henry, Massy; Tung N. Pham, Paris, and Yann Genuist, Massy, all of France, assignors to Thomson-CSF Semiconducteurs Specifiques, Puteaux, France and Thomson-CSF Semiconducteurs Specifiques, Puteaux, France

Filed Jan. 13, 1993, Ser. No. 4,088
Claims priority, application France, Jan. 24, 1992, 92 00748
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—41 4 Claims



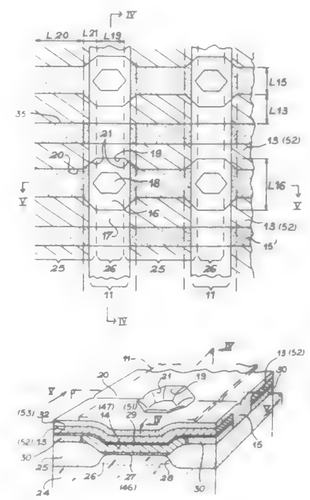
1. A method for the manufacture of a transistor, wherein access regions of said transistor, on each of a control region are differentiated, said method implementing techniques of self-alignment and using a four-layer mask comprising a first metal layer formed above a substrate, a first resin layer which is annealed and formed on said first metal layer, a second metal layer formed on said first resin layer, and a second resin layer formed on said second metal layer.

5,336,628

METHOD FOR FABRICATING SEMICONDUCTOR MEMORY DEVICE

Joel Hartmann, Claix, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 726,965, Jul. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 425,825, Oct. 23, 1989, abandoned. This application Apr. 13, 1993, Ser. No. 47,161
Claims priority, application France, Oct. 25, 1988, 88 13934
Int. Cl.[5] H01L *21/28*
U.S. Cl. 437—43 8 Claims



1. A method for producing an integrated circuit comprising the steps in sequence of:

a. providing a semiconductor substrate and defining active areas by establishing outside these active areas insulating zones of field oxide in an upper face of a semiconductor substrate;

b. forming a first insulating layer on the upper surface of the substrate;

c. depositing a conductive layer;

d. depositing a second insulating layer on the conductive layer;

e. patterning the second insulating layer and the conductive layer down to the first insulating layer so as to create conductive strips having reduced areas, said strips being separated by intervals having enlarged parts at locations corresponding to said reduced areas, these conductive strips forming control gates of the circuit;

f. creating source and drain regions in the active areas in said intervals;

g. depositing a third insulating layer to completely cover the structure produced at step (f) and completely refill the intervals outside the enlarged parts;

h. masklessly anisotropically etching the third insulating layer and the first insulating layer down to the substrate to create contact openings in the enlarged parts of the intervals but leaving unaffected the refilling of the intervals by the third insulating layer outside the enlarged parts, the second insulating layer still covering the circuit outside the contact openings; and

i. forming electrical connection lines extending into the contact openings.

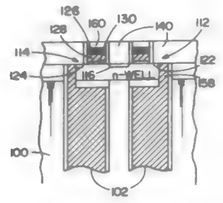
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,629

FOLDER BITLINE DRAM HAVING ACCESS TRANSISTORS STACKED ABOVE TRENCH STORAGE CAPACITORS, EACH SUCH TRANSISTOR EMPLOYING A PLANAR SEMICONDUCTOR BODY WHICH SPANS ADJACENT CAPACITORS

Sang H. Dhong, Mahopac; Wei Hwang, Armonk; Lewis M. Terman, South Salem, and Matthew R. Wordeman, Mahopac, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 740,758, Aug. 5, 1991, Pat. No. 5,214,603.
This application Nov. 13, 1992, Ser. No. 975,655
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 3 Claims



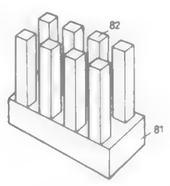
1. A method for fabricating folded bitline DRAM cells on a semiconductor substrate in which a plurality of trench capacitors have been formed, the method comprising the steps of:
depositing a planar semiconductor region that partially overlaps and spans a pair of adjacent trench capacitors;
forming at least first, second and third contact areas within said planar semiconductor region, at least said first and second contact areas arrayed at extremities of said planar semiconductor region and in contact with terminals of said adjacent trench capacitors;
constructing a bitline stud in contact with said third contact area;
depositing a pair of gate structures between said third contact area and said first and second contact areas, respectively; and
producing wordlines that contact said gate structures, and passing wordlines that are insulated from said gate structures.

5,336,630

METHOD OF MAKING SEMICONDUCTOR MEMORY DEVICE

Kwang H. Yun; Hee G. Lee; Seong J. Jang, and Young K. Jun, all of Seoul, Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Nov. 13, 1992, Ser. No. 975,884
Claims priority, application Rep. of Korea, Nov. 15, 1991, 20387/1991; Jan. 15, 1992, 477/1992
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 8 Claims



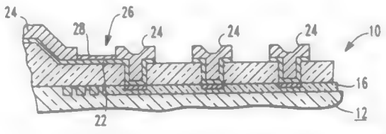
1. A method of making a semiconductor memory device comprising the steps of:
forming a transistor on a semiconductor substrate; forming a polysilicon film over exposed surfaces of the semiconductor substrate;
preparing a glass mask having a plurality of phase shifters;
coating a photoresist over the polysilicon film;
primarily photo exposing the semiconductor substrate under the condition of fixing the glass mask at a position spaced a distance from the semiconductor substrate;
secondarily photo exposing the semiconductor substrate under the condition of rotating 90° the semiconductor substrate at the same position as in the step of primarily photo exposing the semiconductor substrate;
developing the photoresist to form a photoresist pattern;
etching the polysilicon film using the photoresist pattern as a mask, to form a storage node having a plurality of pillars;
removing the photoresist;

5,336,631

METHOD OF MAKING AND TRIMMING BALLAST RESISTORS AND BARRIER METAL IN MICROWAVE POWER TRANSISTORS

Paul A. Potyraj, Dundalk; Kenneth J. Petrosky, and John A. Ostop, both of Severna Park, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 26, 1993, Ser. No. 67,192
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—60 15 Claims



1. A method of making a transistor having current elements made of at least one contact metal, the transistor further having ballast resistors connecting selected current elements, comprising the steps of:
(a) providing a body of semiconductor material;
(b) depositing a layer of barrier material onto the semiconductor material, the barrier material having a selected resistance;
(c) placing current elements on the barrier material by depositing at least one layer of contact metal at selected locations on the barrier material;
(d) removing selected portions of barrier material so as to leave barrier material beneath all contact metal and at selected ballast resistor locations between selected contact metal locations such that the barrier material also forms the ballast resistors; and
(e) increasing the resistance of the barrier material at the ballast resistor locations; wherein the resistance of the barrier material is increased by oxidizing an exposed surface of the barrier material at the ballast resistor locations.

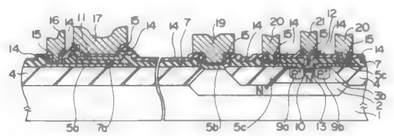
5,336,632

METHOD FOR MANUFACTURING CAPACITOR AND BIPOLAR TRANSISTOR

Hironobu Imamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 27, 1993, Ser. No. 96,987
Claims priority, application Japan, Jul. 27, 1992, 4-199339
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—60 8 Claims

1. A method for manufacturing a capacitor and a bipolar transistor by using a semiconductor substrate including a capacitor forming area and a bipolar transistor forming area, comprising the steps of:
forming a first insulating layer on the capacitor forming area of said semiconductor substrate;
forming a capacitor lower electrode on said first insulating layer and, at least one of first and second electrodes of said bipolar transistor on the bipolar transistor forming area of said semiconductor substrate;
forming a plurality of second insulating layers on said capacitor lower electrode and said first electrode;
removing at least one of said plurality of second insulating layers on said capacitor lower electrode to form a capacitor dielectric layer by the remainder of said plurality of second insulating layers; and
forming a capacitor upper electrode on said capacitor dielectric layer and a third electrode of said bipolar transistor on the bipolar transistor forming area of said semiconductor substrate.

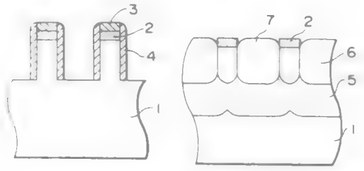


5,336,633

METHOD OF GROWING SINGLE CRYSTAL SILICON ON INSULATOR

Masataka Tsuruta, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 23, 1992, Ser. No. 965,783
Claims priority, application Japan, Oct. 25, 1991, 3-279074
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—62 2 Claims



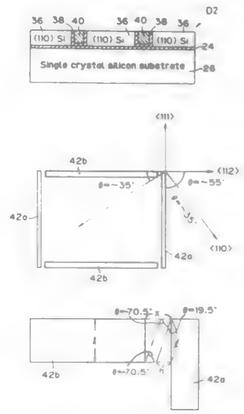
1. A method of growing crystal silicon on a substrate, said method comprising the steps of:
etching a Si substrate masked with a silicon oxide film and a silicon nitride film to form Si seed crystals on which the mask is left,
forming a nitride film over the mask, an entire side surface of each of the Si seed crystals, and an exposed surface of the Si substrate;
removing the nitride film from the surface of the Si substrate while leaving the nitride film on the entire side surface of each of the seed crystals and on the mask by subjecting the nitride film to an anisotropic etching process,
oxidizing the surface of the Si substrate to form an oxide layer which insulates the seed crystals from the Si substrate at an upper portion of the Si substrate,
subsequently removing the nitride film from the side surface of each of the seed crystals while leaving the oxide film of the mask on the seed crystals, and
thereafter epitaxially growing the seed crystals from the side surfaces thereof in a lateral direction of the seed crystals to form on the upper portion of the oxide layer a series of single crystal layers mutually combined in the same crystal orientation as the Si substrate.

5,336,634

DIELECTRICALLY ISOLATED SUBSTRATE AND A PROCESS FOR PRODUCING THE SAME

Masatake Katayama, Takasaki; Makoto Sato, Maebashi; Yutaka Ohta, Annaka; Mitsuru Sugita, Fukushima, and Konomu Ohki, Annaka, all of Japan, assignors to Shin-Etsu Handotui Co., Ltd., Chiyoda, Japan

Division of Ser. No. 762,990, Sep. 20, 1991, abandoned. This application Mar. 2, 1993, Ser. No. 25,256
Claims priority, application Japan, Nov. 16, 1990, 2-310723
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—63 5 Claims



1. A process for producing a dielectrically isolated substrate for use in integrated circuits, which comprise the steps of:
(a) coating a single crystal bond substrate with a dielectric film, bringing the bond substrate, having a <110> plane be a main crystal plane, into intimate contact with a single crystal silicon base substrate and heat-treating the same into a composite structure;
(b) polishing the composite structure on a front surface of said bond substrate to reduce its thickness;
(c) forming an oxide film for photo-lithography over the polished surface of the bond substrate;
(d) photo-lithographing the oxide film selectively with the use of a rectangular form mask pattern having two opposite pairs of rectangular members, a first pair being normal to the <111> orientation and a second pair being normal to the <112> orientation, wherein the first pair of members has a greater width than said second pair of members, to thereby open a plurality of windows;
(e) anisotropically etching the bond substrate through said windows under alkaline conditions sufficient to thereby form a plurality of substantially rectangular cross-section moats terminating at the dielectric film and a plurality of islands each positioned contiguous to each of the moats wherein the walls of said islands are substantially normal to said dielectric film;
(f) coating a dielectric isolation film onto the bond substrate;
(g) depositing a polycrystalline silicon layer in a thickness greater than the depth of said moats onto the dielectric isolation film;
(h) lapping the polycrystalline silicon layer until the surface of each of the islands is exposed; and
(i) subsequently removing the dielectric isolation film from the surface of said islands to form islands of a substantially rectangular cross-section shape.

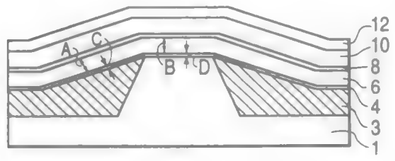
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,635

MANUFACTURING METHOD OF SEMICONDUCTOR LASER OF PATTERNED-SUBSTRATE TYPE

Chikashi Anayama; Toshiyuki Tanahashi, and Makoto Kondo, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 15, 1993, Ser. No. 76,790
Claims priority, application Japan, Jun. 24, 1992, 4-165157
Int. Cl.[5] H01L 21/205
U.S. Cl. 437—129 11 Claims



1. A manufacturing method of a semiconductor laser comprising a heterostructure grown on a patterned-substrate, the heterostructure comprising at least a lower clad layer, an active layer and an upper clad layer, and the patterned-substrate comprising a substrate with a mesa-stripe and current blocking layers burying both sides of the mesa-stripe, said method comprising the following steps of manufacturing the patterned-substrate:

providing a GaAs substrate having a (100) surface,

forming a selectively patterned mask layer having a stripe shape on said substrate, the stripe being formed in the <110> direction of the substrate,

etching selectively said substrate, forming a mesa-stripe having (111)B surfaces on both sides of the mesa-stripe,

growing the current blocking layer of GaAs by a MOVPE method on said substrate, wherein a trimethyl-gallium (TMG) is used as a gallium source gas, thereby the grown layer having a sloped surface on both sides of the mesa-stripe, the surface having an inclination smaller than that of (311)B surface of the substrate, and

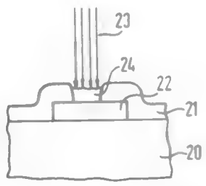
removing the mask layer.

5,336,636

METHOD FOR CONTACTING CONDUCTIVE STRUCTURES IN VLSI CIRCUITS

Christian Burmer, Rohrdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 17, 1992, Ser. No. 852,951
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 4109536
Int. Cl.[5] H01L 21/268, 21/306, 21/441
U.S. Cl. 437—173 9 Claims



1. A method for contacting a conductive structure covered by at least one UV-transparent insulating layer on a semiconductor substrate, comprising the steps of:

providing the substrate in a vacuum chamber;

providing at least one gaseous metal compound in the vacuum chamber;

irradiating a surface of the insulating layer in a defined region with a laser beam having a wavelength lying in the UV range;

forming a metal containing layer on the irradiated surface of the insulating layer, said metal-containing layer being radiation-absorbent in said UV range of said laser beam;

due to absorption of the radiation energy in the metal-containing layer, said metal-containing layer and at least a portion of the underlying insulating layer being eroded as the underlying insulating layer is exposed, thereafter a metal-containing layer again being formed on the irradiated surface of the insulating layer and the metal-containing layer and a further portion of the underlying insulating layer again being eroded, and repeating the foregoing steps until the conductive structure is uncovered; and

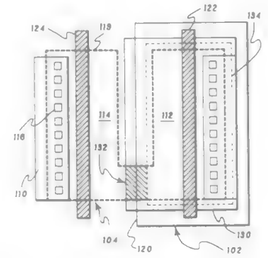
irradiating the uncovered conductive structure with a laser beam so that a metallic layer is deposited from the gaseous metal compound as a contact on the uncovered conductive structure.

5,336,637

SILICIDE INTERCONNECTION WITH SCHOTTKY BARRIER DIODE ISOLATION

Edward J. Nowak, Essex, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 762,277, Sep. 19, 1991, Pat. No. 5,250,834.
This application Jun. 24, 1993, Ser. No. 82,139
Int. Cl.[5] H01L 27/02, 29/80
U.S. Cl. 437—175 3 Claims



1. A method of forming a semiconductor device comprising the steps of:

providing a substrate of a first conductivity type having a well region therein of a second conductivity type;

creating in said substrate a first diffusion region of said second conductivity type, said first diffusion region being defined by a first blocking mask;

creating in said well region a second diffusion region of said first conductivity type, said second diffusion region being defined by a second blocking mask;

using said first mask and said second mask in combination to define an interconnect region, said interconnect region coupling said first diffusion region and said second diffusion region;

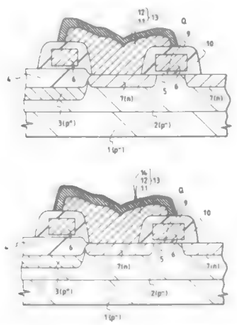
forming an interconnecting layer in said interconnect region, said interconnecting layer forming a schottky barrier diode to said substrate and said well region and an ohmic contact to said first diffusion region and said second diffusion region.

5,336,638

PROCESS FOR MANUFACTURING SEMICONDUCTOR DEVICES

Masayuki Suzuki; Ryo Haruta, both of Kokubunji; Hiroshi Shinriki, Tokyo, and Masayuki Nakata, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 846,828
Claims priority, application Japan, Mar. 6, 1991, 3-38837; Dec. 6, 1991, 3-322735
Int. Cl.[5] H01L 21/44
U.S. Cl. 437—190 29 Claims



1. A process for manufacturing a semiconductor device, comprising:

(a) a step of forming a first electrode comprised of a first film of a mixture of first and second metals over a semiconductor substrate;

(b) a step of depositing a dielectric film made of an oxide film of said first metal on said first electrode;

(c) a step of oxidizing said first electrode and said dielectric film in an oxidizing atmosphere such that said first metal is oxidized and said second metal is not oxidized; and

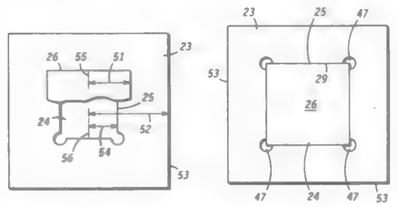
(d) a step of forming a second electrode over said dielectric film.

5,336,639

METHOD FOR SECURING A SEMICONDUCTOR CHIP TO A LEADFRAME

Benamanahalli K. Nagaraj, and Vera Hause, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1993, Ser. No. 82,642
Int. Cl.[5] H01L 21/60
U.S. Cl. 437—217 17 Claims



1. A method for nonadhesively securing a semiconductor chip to a leadframe, comprising the steps of:

providing the leadframe, wherein the leadframe has a semiconductor chip receiving region;

forming a semiconductor chip receiving cavity in the semiconductor chip receiving region, the semiconductor chip receiving cavity having a first shape and a first area;

providing the semiconductor chip, wherein the semiconductor chip has a second shape and a second area, the second shape corresponding to the first shape and the second area being larger than the first area;

expanding the semiconductor chip receiving cavity such that the semiconductor chip receiving cavity has a third area, wherein the third area is larger than the second area;

placing the semiconductor chip in the semiconductor chip receiving cavity; and

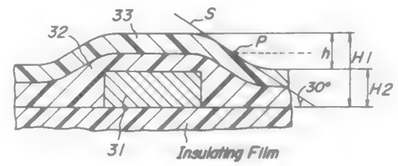
shrinking the semiconductor chip receiving cavity.

5,336,640

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING AN INSULATING LAYER COMPOSED OF A BPSG FILM AND A PLASMA-CVD SILICON NITRIDE FILM

Nobuyoshi Sato, Chiba, Japan, assignor to Kawasaki Steel Corporation, Japan

Filed Jan. 27, 1992, Ser. No. 826,145
Claims priority, application Japan, Jan. 28, 1991, 3-25240
Int. Cl.[5] H01L 21/316
U.S. Cl. 437—240 12 Claims



1. A method of manufacturing a semiconductor device comprising the steps of:

forming active regions in a surface of a semiconductor substrate;

forming at least one metal wiring pattern on said surface of the semiconductor substrate;

forming a borophosphosilicate glass film directly on said metal wiring pattern and on an exposed portion of said surface of the semiconductor substrate by chemical vapor deposition by introducing the semiconductor substrate into a reaction vessel kept at atmospheric pressure and supplying a gaseous mixture of an organic silane, alkoxides of boron and phosphorus and ozone into the reaction vessel; and

forming a plasma-CVD silicon nitride film on said borophosphosilicate glass film.

5,336,641

RAPID THERMAL ANNEALING USING THERMALLY CONDUCTIVE OVERCOAT

Jim Fair, Meadow Vista, and John Mehlhaff, Auburn, both of Calif., assignors to Aktis Corporation, Rocklin, Calif.

Filed Mar. 17, 1992, Ser. No. 852,601
Int. Cl.[5] H01L 21/324
U.S. Cl. 437—248 15 Claims

1. A method of heating a film on a substrate of a semiconductor device, comprising the steps of:

processing the semiconductor device to create the film on the substrate, the film being an amorphous film;

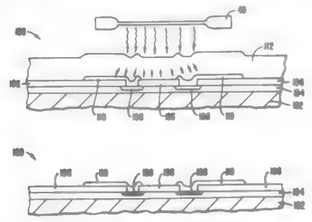
covering the film with a radiant energy absorbent layer;

exposing said radiant energy absorbent layer to a radiant energy source for a predetermined period, said radiant energy absorbent layer absorbing some radiant energy from said radiant energy source;

VOL 1165 ISS 2 AG 9 1994 UMI

choosing said predetermined period such that said amorphous film is crystallized;

dissipating some of said absorbed radiant energy from said radiant energy absorbent layer to the film as heat energy



more uniformly than a radiant heat energy absorption distribution of the film alone; and

removing said radiant energy absorbent layer from the semiconductor device.

5,336,642

CANASITE-APATITE GLASS-CERAMICS

Christine C. Wolcott, Horseheads, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Sep. 1, 1993, Ser. No. 114,759

Int. Cl.[5] C03C *10/16, 3/112*

U.S. Cl. 501—3 **11 Claims**

1. A glass-ceramic biomaterial having a bending strength greater than 25,000 psi (172 MPa), a fracture toughness greater than 2.3 Kpsi×in$^{\frac{1}{2}}$(2.5 MPa m$^{\frac{1}{2}}$), a primary crystal phase of F-canasite, a secondary crystal phase of F-apatite, a crystal phase structure including interlocking blades of F-canasite with at least a portion of the F-apatite crystals within the interlocking F-canasite blades, and a residual glassy phase.

5,336,643

LOW EXPANSION TRANSPARENT CRYSTALLIZED GLASS-CERAMIC

Naoyuki Goto, and Hisao Yatsuda, both of Sagamihara, Japan, assignors to Kabushiki Kaisha Ohara, Kanagawa, Japan

Filed Mar. 18, 1993, Ser. No. 32,977

Claims priority, application Japan, Sep. 14, 1992, 4-270989

Int. Cl.[5] C03C *10/14*

U.S. Cl. 501—4 **4 Claims**

1. A low expansion transparent crystallized glass-ceramic formed by melting and subjecting to heat treatment a base glass consisting essentially of in weight percent:

SiO_2	50–62.5%
P_2O_5	0–7%
Al_2O_3	20–27%
Li_2O	3–6%
MgO + BaO + ZnO	3–10%
in which	
MgO	0.6–5%
BaO	0.5–5%
ZnO	0.3–5%
TiO_2	1–5%
ZrO_2	1–5%
As_2O_3 and/or Sb_2O_3	0–2%

wherein the weight ratio of Al_2O_3 to $(SiO_2+P_2O_5)$ is between 0.38 and 0.50, said crystallized glass ceramic containing beta-quartz solid solution as a main crystalline phase and having a coefficient of thermal expansion ($\alpha\times10^{-7}$/° C.) within the range of from −10 to +10.

5,336,644

SEALING GLASS COMPOSITIONS

Masyood Akhtar; Kim C. Le, both of San Diego; Jess Pedigo, La Mesa, and Charles H. Smith, Ramona, all of Calif., assignors to Johnson Matthey Inc., Wayne, Pa.

Filed Jul. 9, 1993, Ser. No. 89,370

Int. Cl.[5] C03C *8/24, 8/14, 3/21*

U.S. Cl. 501—15 **16 Claims**

1. A sealing glass composition suitable for use in bonding to a ceramic surface at low temperatures comprising in weight percent 0.5–50% thallium oxide, 10–40% vanadium oxide, 5–30% tellurium oxide, 1–15% arsenic oxide, 1–5% phosphorous oxide, 0–10% magnesium chloride, 0–10% barium oxide, 0–10% barium chloride, 0–10% strontium oxide, 0–10% strontium chloride, 0–5% antimony oxide, 0–3% indium oxide, 0–5% silica, 0–5% alumina, 0–15% copper oxide, 0–10% cobalt oxide, 0–15% of each of lithium oxide, sodium oxide and potassium oxide, 0–25% lead oxide and 0–10% silver oxide.

5,336,645

SOLUBLE, CELLULATED MOLD AND FOAMABLE MIXTURE

Hermann L. Rittler, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Sep. 27, 1993, Ser. No. 127,313

Int. Cl.[5] C04B *38/10*

U.S. Cl. 501—84 **19 Claims**

1. A ceramic mold member having open cells dispersed in a matrix that is predominantly a soluble crystal phase selected from the group consisting of borates, borophosphates and phosphates of alkali metals, divalent metals, aluminum, manganese, vanadium and copper, the mold member dissolving and disintegrating in an aqueous medium.

5,336,646

METHOD OF SURFACE STRENGTHENING ALUMINA-ZIRCONIA COMPOSITES USING MOO_2 AS AN ACCELERANT FOR PHASE TRANSFORMATION OF ZIRCONIA FROM TETRAGONAL TO MONOCLINIC

Suk-Joong L. Kang, Taijeon; Yu S. Shin, Kyonggi-do; Nong M. Whang, Taijeon; Duk Y. Yoon, Seoul, and Deug J. Kim, Taeku, all of Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Taijeon, Rep. of Korea

Filed May 25, 1993, Ser. No. 66,417

Claims priority, application Rep. of Korea, Nov. 14, 1992, 1992-21431

Int. Cl.[5] C04B *35/10, 35/48;* **B05D** *3/02*

U.S. Cl. 501—105 **6 Claims**

4. A method of strengthening the surface of an alumina-zirconia composite which comprises heating said alumina-zirconia composite in the presence of 0.3 to 10% by weight of MoO_2-ZrO_2 mixed powder.

5,336,647

ORGANOCLAY COMPOSITIONS PREPARED WITH A MIXTURE OF TWO ORGANIC CATIONS AND THEIR USE IN NON-AQUEOUS SYSTEMS

Hemi N. Naé, Princeton; William W. Reichert, Freehold, and Alice C. Eng, Princeton Junction, all of N.J., assignors to Rheox, Inc., Hightstown, N.J.

Filed Nov. 14, 1991, Ser. No. 791,318

Int. Cl.[5] C04B *33/02*

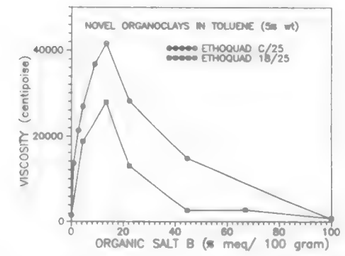
U.S. Cl. 501—146 **12 Claims**

1. An organophilic clay comprising the reaction product of:

(a) a smectite-type clay selected from the group consisting of montmorillonite, bentonite, beidellite, hectorite, saponite, stevensite, and mixtures thereof;

(b) a first organic cation provided by a compound selected from the group consisting of quaternary ammonium salts, phosphonium salts, sulfonium salts, and mixtures thereof, in an amount of from about 75% to about 150% of the cation exchange capacity of the smectite-type clay,

wherein the first organic cation is not provided by a polyalkoxylated quaternary ammonium salt; and



(c) a second organic cation provided by a polyalkoxylated quaternary ammonium salt; wherein the second organic cation is present in an amount of from about 0.01% to about 20% by weight of the total organic cation content.

5,336,648

ZEOLITE CATALYSTS SUITABLE FOR HYDROCARBON CONVERSION

Anthony H. P. Hall, Surrey, and Alistair W. Winstanley, Middlesex, both of England, assignors to The British Petroleum Company p.l.c., London, Great Britain

Division of Ser. No. 728,914, Jul. 12, 1991, Pat. No. 5,235,122. This application Apr. 30, 1993, Ser. No. 56,217

Claims priority, application United Kingdom, Jul. 12, 1990, 9015355

Int. Cl.[5] B01J *29/06, 29/28*

U.S. Cl. 502—61 **6 Claims**

1. A catalyst composition comprising a crystalline aluminosilicate having a molar ratio of silica to alumina of at least 5:1, said aluminosilicate carrying gallium and copper.

5,336,649

REMOVABLE ADHESIVES FOR ATTACHMENT OF SEMICONDUCTOR DIES

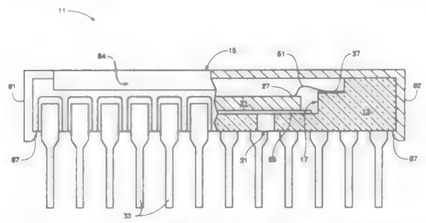
Larry D. Kinsman; Derek J. Gochnour; Alan G. Wood, all of Boise, and Warren M. Farnworth, Nampa, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 889,008, May 26, 1992, Pat. No. 5,173,451, which is a continuation-in-part of Ser. No. 788,065, Nov. 5, 1991, which is a continuation-in-part of Ser. No. 709,858, Jun. 4, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,221

The portion of the term of this patent subsequent to Dec. 22, 2010, has been disclaimed.

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **44 Claims**



1. Method for temporarily connecting a semiconductor circuit die to external equipment for testing purposes in order to generate reliability and test data concerning the die, whereby the die may be subsequently disconnected, characterized by:

a) placing the die in a die carrier having a die receiving portion thereon, said die carrier having a plurality of connectors thereon for connection to test circuitry, and said die carrier having a plurality of electrical contacts in close proximity of the die receiving portion;

b) attaching the die to the die carrier with an adhesive;

c) attaching leadwires to the die at bondpads on the die and attaching the leadwires to the bondpads on the die carrier, said attachment of leadwires to the bondpads on the die being with sufficient bonding force to provide an electrical connection and to retain the leadwires on the bondpads on the die during a test sequence, and said bonding force being less than an attachment force of the bondpads on the die to the die and less than the tensile strength to separate the leadwires from the bondpads;

d) providing signals to at least one of the bondpads on the die carrier in response to signals to at least one of the connectors, and providing signals to at least one of the connectors in response to signals which are present at least one of the bondpads;

e) removing the leadwires from the bondpads on the die, resulting in the detachment of the leadwires to the bondpads on the die, wherein during said removal of the leadwires, bond attachment of the leadwires to the bondpads on the die is removed while the bondpads remain intact on the die; and

f) removing the die from the die carrier.

5,336,650

METHOD OF MAKING TAPE CARRIER SEMICONDUCTOR DEVICE

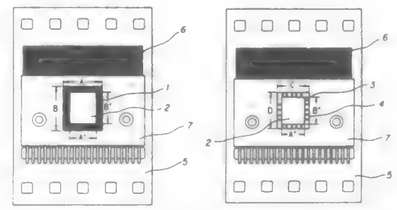
Yasunori Chikawa, Kitakatsuragi; Yoshiaki Honda, Tenri; Katsunobu Mori, Nara; Naoyuki Tajima, Kitakatsuragi; Takaaki Tsuda, Tenri, and Takamichi Maeda, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 796,431, Nov. 22, 1991, Pat. No. 5,281,848. This application Aug. 27, 1993, Ser. No. 112,315

Claims priority, application Japan, Dec. 11, 1990, 2-401252

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **2 Claims**



1. A method of making a tape carrier semiconductor device, said method comprising the steps of:

connecting a semiconductor chip to conductive leads within a mounting hole in a tape carrier that provides a gap between the chip and hole edges that is no more than about 0.3 mm;

thereafter applying to said chip and said gap an epoxy resin having a viscosity in the range of 500 to 1200 ps which resin is limited by its viscosity and by said gap size to extend when cured.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,651

CATALYSTS AND METHODS FOR DENITRIZATION

Masafumi Yoshimoto; Tadao Nakatsuji, and Hiromitsu Shimizu, all of Osaka, Japan, assignors to Sakai Chemical Industry Co., Ltd., Osaka, Japan

Continuation of Ser. No. 693,295, May 1, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 84,332

Claims priority, application Japan, May 3, 1990, 2-116365; May 19, 1990, 2-129942; May 19, 1990, 2-129943; May 19, 1990, 2-129944; May 23, 1990, 2-132850; May 23, 1990, 2-132851; May 26, 1990, 2-136177; May 26, 1990, 2-136178

Int. Cl.[5] B01J *29/06;* B01D *53/00*

U.S. Cl. 502—74 9 Claims

1. A catalyst for denitrizing nitrogen oxides in the presence of a hydrocarbon as a reducing agent, which comprises:

(A) a substituted zeolite having the general formula

$$M^1_A M^2_B[(AlO_2)_x(SiO_2)_y].Z\ H_2O$$

in which M^1 represents an alkali metal ion or an alkaline earth metal ion or hydrogen ion having a valence of n_1; M^2 is at least one metal ion selected from the group consisting of Ti^{4+}, Zr^{4+} and Sn^{4+} having a valence of N_2; $n_1A+n_2B=X$ and $Y/X \geqq 5$; the M^2 ion being contained in an amount of 0.1–20% by weight based on the zeolite; and

(B) at least one metal or an oxide of a metal selected from the group consisting of Pd and Pt supported on the substituted zeolite in an amount of 0.1–10% by weight based on the zeolite.

5,336,652

HIGH ACTIVITY POLYETHYLENE CATALYSTS PREPARED WITH ALKOXYSILANE REAGENTS

Robert I. Mink, Warren, and Thomas E. Nowlin, West Windsor, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 6, 1991, Ser. No. 788,386

Int. Cl.[5] B01J *31/12*

U.S. Cl. 502—125 23 Claims

1. A catalyst composition for copolymerization of ethylene with an alpha-olefin to produce linear low density product of narrow molecular weight distribution, prepared by a process which consists essentially of the steps of:

(i) contacting, at a temperature of about 40° to about 60° C., a solid, porous carrier having reactive OH groups with a liquid, said liquid containing a non-polar solvent and at least one organomagnesium composition which is at least partially soluble in said non-polar solvent and wherein the organomagnesium composition has the empirical formula

$$R_m\ Mg\ R'_n$$

where R and R' are the same or different C_1–C_{12} alkyl groups, and where $m+n=2$,

to form a product of step (i) which contains said carrier and incorporated therein a source of magnesium;

(ii) contacting, at a temperature of about 40° to about 60° C., said product of step (i) with at least one compound of the formula

$$(R_w\text{—O—})_4Si$$

wherein Si is silicon atom; wherein O is oxygen and R_w is hydrocarbyl of 1 to 10 carbon atoms; wherein the said at least one compound is added to provide a molar ratio of silane to Mg on the solid carrier of about 0.30 to about 0.9

to form an intermediate to step (ii),

(iii) contacting said intermediate of step (ii) with at least one transition metal compound in a liquid medium, the number of moles of said transition metal compound being in excess of the number of OH groups on said carrier prior to reaction with said organomagnesium composition in step (i), said transition metal compound being soluble in said liquid, and said magnesium of said carrier being substantially insoluble in said liquid medium, whereby a reacted form of transition metal which is insoluble in said liquid medium becomes supported on said carrier; and

contacting said reacted form of transition metal with an activating amount of trimethylaluminum.

5,336,653

CATALYST FOR ASYMMETRIC SYNTHESIS

Masakatsu Shibasaki, Mitaka, and Hiroaki Sasai, Chiba, both of Japan, assignors to Chisso Corporation, Osaka, Japan

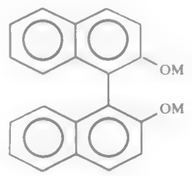
Filed Nov. 3, 1992, Ser. No. 970,867

Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—170 23 Claims

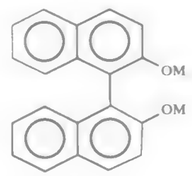
1. A catalyst for asymmetric synthesis comprising a dialkali metal salt of an optically active 2,2'-dihydroxy-1,1'-binaphthyl represented by the formula (I_R)

(I_R)



or the formula (I_S)

(I_S)



(wherein M is Li, K or Na), a lanthanum compound represented by LaX_3 (wherein X is F, Cl, Br, I, NO_3 or CH_3CO_2) and an alkali metal alkoxide or an alkali metal hydroxide represented by MOR or MOH (wherein M is Li, K or Na, and R is isopropyl or t-butyl), respectively, and a water-containing solvent.

5,336,654

METHOD FOR THE PREPARATION OF SUPPORTED HYDROGENATION AND HYDROTREATING CATALYSTS

Clyde L. Aldridge, and Kenneth L. Riley, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 632,723, Dec. 24, 1990, Pat. No. 5,198,100. This application Mar. 11, 1993, Ser. No. 30,751

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] B01J *37/20, 37/08, 27/049, 27/043*

U.S. Cl. 502—170 17 Claims

1. A method for preparing a catalyst composition suitable for removing heteroatoms from a heteroatom containing feedstock, which method comprises:

(a) impregnating an inorganic oxide support material with a Group VIII metal salt of an acid and with a Group VI heteropolyacid, wherein the acidity of the acid of the salt of the Group VIII metal is less than that of the Group VI heteropolyacid;

(b) drying the impregnated inorganic oxide support such

that substantially all of the free water is driven from the impregnated inorganic oxide support at a temperature less than, or equal to, 180° C.; and at a pressure of less than about 400 mm of mercury; and

(c) sulfiding said impregnated support, thereby forming the catalyst.

5,336,655

CATALYTIC SYSTEM AND PROCESS FOR PRODUCING SYNTHESIS GAS BY REFORMING LIGHT HYDROCARBONS WITH CO_2

Luca Basini; Mario Marchionna; Stephano Rossini, all of Milan, and Domenico Sanfilippo, Paullo, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Continuation of Ser. No. 641,510, Jan. 15, 1991, abandoned. This application Jun. 2, 1992, Ser. No. 892,480

Claims priority, application Italy, Jan. 26, 1990, 19162 A/90

Int. Cl.[5] B01J *21/00, 23/1, 23/40*

U.S. Cl. 502—252 12 Claims

1. A catalytic system for the production of synthesis gas by reforming light hydrocarbons with CO_2, characterized by being formed from:

one or more compounds of metals of the platinum group;

a support consisting of silicated aluminum, magnesium, cerium or lanthanum oxides; in which the weight percentage of the metal or metals of the platinum group in the catalytic system is between 0.01 and 20%,

said support being prepared by a process consisting essentially of the condensation of an aluminum, magnesium, cerium or lanthanum oxide with a silicon compound containing hydrolyzable organic groups, and the subsequent removal of the non-hydrolyzed organic residues by combustion in the presence of water vapor,

said catalytic system being obtained either

1) by impregnating the silicated oxides with a solution of a salt of the metals of the platinum group, followed by thermal drying and calcination, or

2) by dispersing the silicated oxides in an organic solvent and then reacting them, in a carbon monoxide atmosphere or in an inert atmosphere, with solutions of said one or more compounds of metals of the platinum group.

5,336,656

CATALYST FOR PRODUCTION OF NITRIC ACID BY OXIDATION OF AMMONIA

Larry E. Campbell, Knoxville, Tenn., assignor to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation of Ser. No. 39,733, Mar. 30, 1993, abandoned, which is a division of Ser. No. 983,042, Nov. 30, 1992, Pat. No. 5,242,882, which is a division of Ser. No. 881,073, May 11, 1992, Pat. No. 5,217,939. This application Sep. 10, 1993, Ser. No. 120,306

Int. Cl.[5] B01J *23/06, 23/74, 23/80*

U.S. Cl. 502—329 10 Claims

1. A catalyst structure for the oxidation of ammonia to produce nitric oxide consisting essentially of a substrate of reticulated ceramic foam or reticulated metal foam having coated substantially uniformly thereover from 1 to 70 weight % cobalt compound and a minor amount of a zinc compound.

7. The method of preparing a catalyst structure for the oxidation of ammonia to produce nitric oxide comprising a substrate of reticulated ceramic foam or reticulated metal foam having coated substantially uniformly thereover from 1 to 70 weight % cobalt comprising:

(a) preparing a first solution comprising an organic solvent and a carboxylate salt of zinc;

(b) immersing foamed ceramic structure or foamed metal structure in said first solution to cover said substrate with said first solution;

(c) preparing a second solution comprising an organic solvent and from about 1 to 30 wt.% of a carboxylate salt of cobalt;

(d) immersing said foamed ceramic structure or foamed metal structure in said second solution to cover said substrate with said second solution;

(e) removing said solution covered substrate from said solution; and

(f) heating at 260° to 800° C. for a sufficient time to oxidize said salts to produce a coating over the substrate.

5,336,657

PROCESS FOR HEAT TRANSFER RECORDING

Noritaka Egashira, Ichikawa; Yoshikazu Ito, Setagaya; Tatsuya Kita, Shinjuku; Masahisa Yamaguchi, Nerima; Masaki Kutsukake, Fujimi, and Kazunobu Imoto, Kita, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

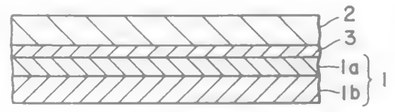
Continuation of Ser. No. 795,827, Nov. 21, 1991, Pat. No. 5,276,004, which is a continuation of Ser. No. 612,994, Nov. 15, 1990, abandoned, which is a continuation of Ser. No. 168,908, Mar. 16, 1988, Pat. No. 5,001,106. This application Sep. 2, 1992, Ser. No. 939,461

Claims priority, application Japan, Mar. 20, 1987, 62-66879; Mar. 20, 1987, 62-66880

The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 1 Claim



1. A process for heat transfer recording comprising the steps of:

providing (a) a heat transfer sheet and (b) an image-receiving sheet to be used in combination with the heat transfer sheet, said image-receiving sheet comprising a base sheet and a receiving layer provided on one surface of said base sheet for receiving a dye or a pigment migrating from a heat transfer sheet during said heat transfer recording, said receiving layer comprising a resin for receiving the thus migrated dye or pigment from the heat transfer sheet, said base sheet comprising a laminate of (i) a first layer comprising a foamed sheet of polyolefin or polyester and (ii) a second layer comprising a non-foamed plastic film, said first layer being disposed between said second layer and said receiving layer;

bringing the heat transfer sheet into contact with the receiving layer of the image-receiving sheet; and

carrying out heat transfer recording in accordance with information for printing, thereby transferring said dye or pigment to the image-receiving sheet.

5,336,658

THERMAL TRANSFER PRINTING RECEIVER

Paul A. Edwards, Harwich, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Nov. 2, 1992, Ser. No. 970,389

Claims priority, application United Kingdom, Nov. 1, 1991, 9123267.8

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 13 Claims

1. A receiver sheet for thermal transfer printing comprises a substrate having particulate metal salts or metal oxides dispersed therein or in a coating supported by the substrate, and an overlying receiver coat consisting essentially of a dye-

VOL 1165 ISS 2 AG 9 1994 UMI

receptive polymer composition doped with a crosslinked silicone release system, characterised in that there is provided between the receiver coat and the particulate metal salts or oxides, a protective polymeric interlayer comprising an acidic polymer composition selected from:

a) an addition polymer in which at least 30% of its monomer molecule residues contain at least one carboxylic acid group,

b) a blend of at least two addition polymers which at least 30% of monomer molecule residues in the blend contain at least one carboxylic acid group,

c) a crosslinked addition polymer wherein the addition polymer molecules are substantially crosslinked to form an insoluble polymer matrix in the presence of excess strong organic acid.

5,336,659

ANTISTATIC SUBBING LAYER FOR SLIPPING LAYER IN DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

Charles L. Bauer, Webster, N.Y., and Noel R. Vanier, Fort Collins, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 22, 1993, Ser. No. 125,451

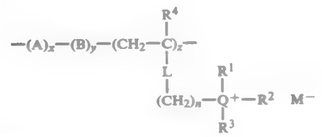
Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **12 Claims**

5. A process of forming a dye transfer image comprising:

(a) imagewise-heating a dye-donor element comprising a support having on one side thereof a dye layer and on the other side thereof, in order, a subbing layer and a slipping layer, and

(b) transferring a dye image to a dye receiving element to form said dye transfer image, wherein said subbing layer has antistatic properties and comprises a mixture of 1) a polymer having a molecular weight of at least about 100,000 and containing at least 25 wt. % of a repeating unit containing an alkylene oxide segment, and 2) a copolymer having the formula:



wherein:

A represents units of an addition polymerizable monomer containing at least two ethylenically unsaturated groups;

B represents units of a copolymerizable α,β-ethylenically unsaturated monomer;

L is a carboxylic group or an aromatic ring;

Q is N or P;

R^1, R^2 and R^3 each independently represents an alkyl or cycloalkylgroup having from about 1 to about 20 carbon atoms, or an aryl or aralkyl group having from about 6 to about 10 carbon atoms;

R^4 is H or CH_3;

M is an anion;

n is an integer of from 1 to 6;

x is from about 0 to about 20 mole %;

y is from about 0 to about 90 mole %; and

z is from about 10 to about 100 mole %;

said copolymer 2) being present in said mixture in an amount from about 30 to about 75 wt. %.

5,336,660

HEAT TRANSFER

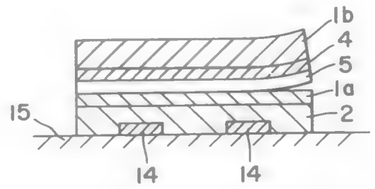
Noritaka Egashira, Ichikawa; Yoshikazu Ito, Setagaya; Tatsuya Kita, Shinjuku; Masahisa Yamaguchi, Nerima; Masaki Kutsukake, Fujimi, and Kazunobu Imoto, Kita, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 5,806, Jan. 19, 1993, Pat. No. 5,292,710, which is a continuation of Ser. No. 798,354, Nov. 21, 1991, Pat. No. 5,210,068, which is a continuation of Ser. No. 612,994, Nov. 15, 1990, abandoned, which is a continuation of Ser. No. 168,908, Mar. 16, 1988, Pat. No. 5,001,106. This application Nov. 30, 1993, Ser. No. 159,499

Claims priority, application Japan, Mar. 20, 1987, 62-66879; Mar. 20, 1987, 62-66880

Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **2 Claims**



1. A heat transfer sheet for use in thermal transfer recording, comprising:

a substrate; and

a dye layer formed on the substrate, said dye layer comprising a dye and a binder, said dye comprising Disperse Yellow 201.

5,336,661

METHOD FOR ENHANCING TURF QUALITY OF BENT GRASS

Leon T. Lucas, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.

Filed Jan. 13, 1993, Ser. No. 3,632

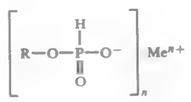
Int. Cl.[5] **A01N** *47/14, 57/12, 59/06*

U.S. Cl. 504—126 **3 Claims**

1. A process for treating bentgrass to enhance turf quality which comprises applying to said bentgrass in an amount effective to enhance turf quality:

(a) one party by weight of a monoester salt of a phosphorous acid of formula (I):

(I)



in which

R is an ethyl radical

Me is an aluminum atom, and

n is equal to 3 and

(b) from 1.5 to 2.5 part by weight of the contact fungicide manganese-zinc ethylene bisdithiocarbamate.

5,336,662

HETEROCYCLIC DIONES AS PLANT GROWTH REGULATORS

Shy-Fuy Lee, Sunnyvale, Calif., assignor to Sandoz Ltd., Basel, Switzerland

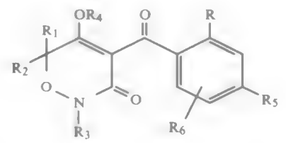
Continuation of Ser. No. 902,609, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 604,708, Oct. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 497,154, Mar. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 343,093, Apr. 25, 1989, abandoned. This application Dec. 14, 1992, Ser. No. 994,048

Int. Cl.[5] **A01N** *43/72;* **C07D** *265/02;* **A61K** *31/535*

U.S. Cl. 504—223 **15 Claims**

1. A compound having the formula Ia

Ia



wherein,

each of R_1, R_2 and R_3 is independently hydrogen, C_{1-8}alkyl, carboxyl, C_{1-8}alkoxycarbonyl, phenyl or phenyl substituted by one to three groups as R_5, or R_1 and R_2 together form a C_{3-6}alkylene bridge.

R_4 is hydrogen, C_{1-8}alkyl, C_{1-8}alkylcarbonyl, C_{1-8}alkoxycarbonyl,-C(O)NR_7R_8, C_{1-8}alkylsulphonyl, P(O)-$(OR_9)_2$, R_7P(O)-OR_9, benzoyl or a cation

R is C_{1-8}alkyl optionally substituted by 1 to 6 halogen atoms, C_{1-8}-alkoxy optionally substituted by 1 to 6 halogen atoms, C_{1-8}alkylcarbonyl, C_{1-8}alkoxycarbonyl, NR_7R_8, $O_nS(O)_{n'}R_{10}$, $NR_7SO_2R_8$, halogen, cyano or nitro

each of R_5 and R_6 is independently hydrogen or selected from the meanings given for R; or

R_5 and R_6 together form the group -Y-W-Z-;

each R_7 and R_8 is independently hydrogen or C_{1-8}alkyl;

R_9 is C_{1-8}alkyl;

R_{10} is C_{1-8}alkyl optionally substituted by 1 to 6 halogen atoms;

W is -$(CR_{11}R_{12})_r$-$(CR_{13}R_{14})_{r'}$- or sulphonyl;

each of Y and Z is independently oxygen. sulphur, sulphonyl, carbonyl or CR_7R_8 with the proviso that Y and Z are attached to adjacent carbon atoms;

each of R_{11} and R_{12} is independently hydrogen, halogen or C_{1-8}alkyl optionally substituted by 1 to 6 halogen atoms or together form an oxo group;

each of R_{13} and R_{14} is independently hydrogen, halogen or C_{1-8}alkyl optionally substituted by 1 to 6 halogen atoms;

n is 0 or 1;

n' is 0, 1 or 2;

t is 1 or 2;

t' is 0 or 1.

5,336,663

3-ARYLURACIL DERIVATIVES AND THEIR USE FOR WEED CONTROL

Jean Wenger, Wallbach; Paul Winternitz, Greifensee, and Martin Zeller, Baden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 4, 1992, Ser. No. 971,445

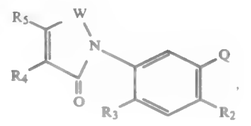
Claims priority, application Switzerland, Nov. 13, 1991, 3302/91

Int. Cl.[5] **A01N** *43/48;* **C07D** *239/54*

U.S. Cl. 504—243 **26 Claims**

1. A 3-aryluracil derivative of the formula I

(I)



in which

—W— is the group



where the ring nitrogen atom is bonded via the C atom;

R_1 is hydrogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_3alkenyl or C_4alkenyl or C_3alkynyl or C_4alkynyl;

R_2 is halogen or cyano;

R_3 is hydrogen or halogen;

R_4 is hydrogen, halogen or C_1–C_4alkyl;

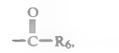
R_5 is C_1–C_4alkyl or C_1–C_4haloalkyl; or R_4 and R_5 together are —$(CH_2)_n$—;

n is the number 3 or 4;

R_{13} is C_1–C_4alkyl, C_3alkenyl or C_4alkenyl or C_3alkynyl or C_4alkynyl; and

Q is one of the groups a) to e):

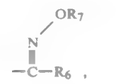
a)



(1)

where R_6 is hydrogen, C_1–C_8alkyl, C_3–C_7cycloalkyl or C_3–C_7cycloalkyl-C_1–C_4alkyl;

b)

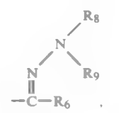


(2)

where R_6 is as defined under a);

R_7 is hydrogen, C_1–C_8alkyl, C_2–C_8alkenyl, C_2–C_8alkynyl, C_3–C_7cycloalkyl, phenyl, or phenyl which is substituted by halogen, C_1–C_4alkyl or C_1–C_4alkoxy, or benzyl, or benzyl which is substituted by halogen, C_1–C_4alkyl or C_1–C_4alkoxy;

c)



(3)

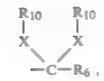
where R_6 is as defined under a);

R_8 and R_9 independently of one another are hydrogen, C_1–C_8alkyl, C_2–C_8alkenyl, C_2–C_8alkynyl, phenyl, or phenyl which is substituted by halogen, C_1–C_4alkyl or C_1–C_4alkoxy, or benzyl, or benzyl which is substituted by halogen, C_1–C_4alkyl or C_1–C_4alkoxy; or R_8 and R_9 together are -$(CH_2)_m$-; and

m is the number 3, 4 or 5;

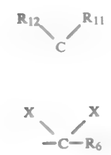
d)

VOL 1165 ISS 2 AG 9 1994 UMI



(4)

where R_6 is as defined under a);
R_{10} is C_1–C_8alkyl, C_2–C_8alkenyl, C_2–C_8alkynyl, C_1–C_4alkoxy-C_1–C_6alkyl, hydroxy-C_1–C_6alkyl or C_1–C_8haloalkyl; and
X is oxygen or sulfur;
e)



(5)

where R_6 is as defined under a);
R_{11} and R_{12} independently of one another are hydrogen or C_1–C_4alkyl;
t is the number 2, 3 or 4; and
X is oxygen or sulfur; and
if R_1 is hydrogen, also an agrochemically acceptable salt of a compound of the formula I.

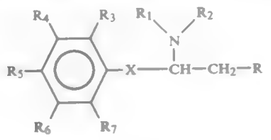
5,336,664

COMPOSITIONS HAVING HERBICIDAL ACTIVITY CONTAINING N-ALKYL-AMIDES AS ACTIVE INGREDIENT

Giovanni Camaggi, Novara; Dario Chiarino, Monza; Mario Fantucci, Milan, and Giovanni Meazza, Saronno, all of Italy, assignors to Zambon Group S.p.A., Vincenza and Agrimont S.r.l., Milan, both of Italy

Filed Apr. 22, 1991, Ser. No. 688,828
Claims priority, application Italy, Apr. 24, 1990, 20130 A/90
Int. Cl.[5] **A01N** *47/12, 43/713, 37/34*
U.S. Cl. 504—261 **5 Claims**

1. A method for selectively controlling weeds in crop plants comprising applying thereto a post-emergence herbicidally effective amount of a compound of the formula

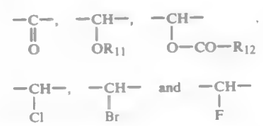


(I)

R is a hydrogen atom, alkyl, hydroxy, alkoxy, a fluorine, chlorine or bromine atom, a cyano group, alkylcarbonyloxy, alkylcarbonylthio, mercapto or alkylthio;
one of R_1 and R_2 is a hydrogen atom or a C_1–C_3 alkyl and the other group is a



or SO_2R_9 wherein R_8 is a hydrogen atom, alkoxy, aminocarbonyl, carboxy, alkoxycarbonyl, alkylcarbonyl, alkyl optionally substituted by from 1 to 3 substituents selected among fluorine, chlorine or bromine atoms, hydroxy, cyano, alkoxy, mercapto, C_3–C_6 cycloalkyl optionally substituted by 1 or 2 chlorine atoms, amino, mono or dialkylamino, formylamino, aminocarbonyl, alkylthio, alkylsulfinyl, alkylsulfonyl, hydroxyimino, alkoxyimino, carboxy, alkoxycarbonyl, alkylcarbonyloxy, tetrazolyl, alkylcarbonyl, phenyl and azido; C_2–C_6 alkylene optionally substituted by 1 or 2 fluorine or chlorine atoms or alkoxy; a C_2–C_6 alkynyl; a C_3–C_6 cycloalkyl; R_9 is alkyl, mono or dichloroalkyl, phenyl optionally substituted by from 1 to 3 fluorine, chlorine or bromine atoms or alkyl;
R_3, R_4, R_5, R_6 end R_7 equal to or different from each other, each are hydrogen, fluorine, chlorine or bromine atom, trifluoromethyl, alkyl, alkoxy, hydroxy, alkylthio, alkylsulfinyl, alkylsulfonyl, wherein alkyl is optionally substituted by from 1 to 3 fluorine, chlorine or bromine atoms; C_2–C_6 alkenylthio, benzylthio, C_2–C_6 alkenylsulfinyl, C_2-C_6 alkenylsulfonyl; enzylsulfinyl, benzylsulfonyl, benzenesulfonyl; cyano, alkylcarbonyl, alkylcarbonylamino; amino, mono or dialkylamino, trifluoroacetylamino, alkylsulfonylamino, benzoylamino wherein the phenyl may be substituted by from 1 to 3 substituents selected among fluorine, chlorine or bromine atoms or alkyl, or one of R_3, R_4, R_5, R_6, and R_7 is a phenyl, phenoxy, pyridyloxy, such groups being optionally substituted by from 1 to 3 substituents selected among fluorine, chlorine or bromine atoms, alkyl or alkoxy groups;
X is a



wherein R_{11} is a hydrogen atom, alkyl, acyl of a mineral acid selected among nitric, phosphoric and sulfuric acid or an acyl of alkylsulfonic or benzenesulfonic acid; R_{12} is a hydrogen atom, alkyl optionally substituted by from 1 to 3 substituents selected among fluorine, chlorine or bromine atoms, alkyl, nitro, alkoxy; a C_2–C_6 alkenyl;
and agriculturally acceptable salts and, optionally agriculturally acceptable carriers.

5,336,665

PERFUME PARTICLES

Peter F. Garner-Gray, Preston; Alexander Martin, Warrington; John R. Martin, Birkenhead, and Maurice Webb, Chester, all of England, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 955,077, Oct. 1, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 104,391
Claims priority, application United Kingdom, Oct. 2, 1991, 9120951.0
Int. Cl.[5] **B01J** *13/06;* **C11D** *17/00*
U.S. Cl. 512—4 **7 Claims**

1. A hydrophobic porous inorganic carrier particle having at least a pore volume of 0.1 ml/g consisting of pores with a diameter of 7 to 50 Å and having a perfume absorbed into said particle.

5,336,666

IMMUNOSTIMULANT DRUG BASED ON POLAR GLYOPEPTIDOLIPIDS OF MYCOBACTERIUM CHELONAE

Tsehay Neway, 14, rue Jean-Pierre-Laurens, F-92260 Fontenay-aux-Roses, France, and Charles Pilet, 8, avenue du Buisson, F-94100 St. Maur, France

PCT No. PCT/FR91/00449, § 371 Date Apr. 3, 1992, § 102(e) Date Apr. 3, 1992, PCT Pub. No. WO91/18617, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 6, 1991, Ser. No. 828,855
Claims priority, application France, Jun. 6, 1990, 90 06997
Int. Cl.[5] **A61K** *37/10, 37/02*
U.S. Cl. 424—282.1 **18 Claims**

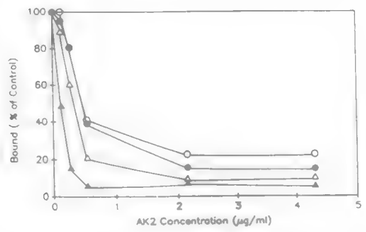
1. A pharmaceutical composition characterized in that it comprises, as an active ingredient, an extraction fraction, at least partially purified, of a polar glycopeptidolipid from *Mycobacterium chelonae,* or a derivative of a polar glycopeptidolipid of *M. chelonae,* which derivative is active as an immunostimulant.

5,336,667

METHOD FOR INHIBITING THE AHESION OF PLATELET WITH ALBOAGGREGINS: PLATELET AGONISTS WHICH BIND TO PLATELET MEMBRANE GLYCOPROTEIN IB

Edward P. Kirby, Philadelphia, and Man-ling Peng, Bensalem, both of Pa., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Continuation-in-part of Ser. No. 803,630, Dec. 3, 1991, abandoned. This application Jun. 5, 1992, Ser. No. 893,929
Int. Cl.[5] **A61K** *37/00;* **A01N** *37/18;* **C07H** *17/00;* **C07K** *3/00*
U.S. Cl. 514—12 **32 Claims**



1. A method for inhibiting the adhesion of platelets to exposed subendothelial components of blood vessel walls comprising treating the platelets with a polypeptide which binds to the about 45 kDa N-terminal domain of human platelet glycoprotein Ib to inhibit the binding of von Willerbrand factor to said domain,
said polypeptide comprising a native polypeptide having an amino acid sequence selected from the group consisting of:
SEQ ID NO:1,
SEQ ID NO:2,
SEQ ID NO;3,
SEQ ID NO:4,
SEQ ID NO:5,
SEQ ID NO:6,
SEQ ID NO:7,
SEQ ID NO:8,
SEQ ID NO:9 and
SEQ ID NO:10, or
an analog of said native polypeptide having an amino acid sequence of at least 80% sequence identity with the amino acid sequence of a native polypeptide selected from the above group, wherein one or more amino acids have been changed from the amino acid sequence of said native polypeptide, wherein the change is a conservative amino acid change, which analog retains the property of binding to the about 45 kDa N-terminal domain of human platelet glycoprotein Ib to inhibit the binding of von Willerbrand factor to said domain.

5,336,668

ESTERS OF ALGINIC ACID

Francesco della Valle, Padova, and Aurelio Romeo, Rome, both of Italy, assignors to Fidia, S.p.A., Abano Terme, Italy

Continuation of Ser. No. 66,133, Jun. 24, 1987, abandoned. This application Jun. 20, 1991, Ser. No. 722,398
Claims priority, application Italy, Jun. 30, 1986, 48201A/86
The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.
Int. Cl.[5] **A61K** *9/70, 31/725;* **C07H** *1/00*
U.S. Cl. 514—023 **17 Claims**

1. A total, substantially water-insoluble ester of alginic acid in which the esterifying alcohol is selected from the group consisting of nonyl alcohol, dodecyl alcohol, cetyl alcohol, myristyl alcohol, a lower unsaturated alcohol, benzyl alcohol and a steroidal alcohol.

5,336,669

CYCLOPHOSPHAMIDE MONOHYDRATE AND LACTOSE

Nageswara R. Palepu, Lansdale, and Tomaz R. Herzyk, King of Prussia, both of Pa., assignors to Erbamont, Inc., Dublin, Ohio

Continuation of Ser. No. 805,181, Dec. 10, 1991, abandoned. This application May 20, 1993, Ser. No. 65,076
Int. Cl.[5] **A61K** *31/715, 31/66, 47/00*
U.S. Cl. 514—53 **4 Claims**

1. A pharmaceutical preparation consisting essentially of a lyophilized cake of cyclophosphamide monohydrate and lactose wherein said cake is prepared by the process of
freezing a bulk solution containing cyclophosphamide, lactose, and water;
removing a first portion of the water from said frozen solution by lyophilization, such that upon melting said cake a solution supersaturated with said cyclophosphamide and said lactose is obtained;
melting said solution to produce said supersaturated solution;
precipitating said cyclophosphamide as a hydrated polymorph;
re-freezing said solution; and
removing by lyophilization water not bound to said cyclophosphamide or said lactose to yield a lyophilizate consisting essentially of cyclophosphamide monohydrate and said lactose.

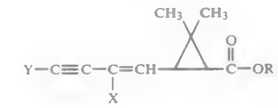
5,336,670

2,2-DIMETHYL-3-(BUT-1-EN-3-YNYL)-CYCLOPROPANE CARBOXYLATES

Marc Benoit, Rooueveaire; Jean-Pierre Demoute, Neuilly Plaisance, and Jean-Marc Girodeau, Chelles, all of France, assignors to Roussel-Uclaf, France

Filed Dec. 17, 1992, Ser. No. 992,452
Claims priority, application France, Feb. 21, 1992, 92 02009
Int. Cl.[5] **A01N** *55/00;* **C07C** *69/743*
U.S. Cl. 514—63 **12 Claims**

1. A compound of the formula

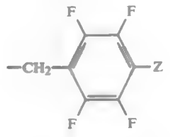


I

in all possible stereoisomeric forms and mixtures thereof wherein X is selected from the group consisting of hydrogen,

VOL 1165 ISS 2 AG 9 1994 UMI

halogen and alkyl, alkenyl, alkynyl and cycloalkyl, all having up to 8 carbon atoms and optionally substituted with at least one halogen, Y is selected from the group consisting of a) hydrogen, alkyl, alkenyl, alkynyl and cycloalkyl all having up to 8 carbon atoms optionally substituted iwth at least one member of the group consisting of halogen, —CN, —OH and alkoxy of 1 to 6 carbon atoms, b) phenyl and phenylalkyl of up to 16 carbon atoms optionally substituted with at least one member of the group consisiting of halogen, alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 8 carbon atoms, —$(CH_2)_m$—$Si(Alk_1)_3$, —$(CH_2)_n$—$OAlk_2$, —$(CH_2)_p$—$SAlk_3$, halogen and hydrogen, m, n and p are integers from 0 to 6, Alk_1, Alk_2 and Alk_3 being alkyl or cycloalkyl of up to 8 carbon atoms and R is



wherein Z is selected from the group conssiting of hydrogen, fluorine, NH_2, cycloalkyl, alkyl, alkenyl, alkynyl, O-alkyl, O-alkenyl, S-alkyl or S-alkenyl of up to 8 carbon atoms all optionally substituted by at least one halogen.

5,336,671

FUNGICIDAL COMPOSITIONS CONTAINING BENZYL-TRIS(ARYL)PHOSPHONIUM SALTS

Heinz-Manfred Becher, Bingen; Guido Albert, Hackenheim, and Jürgen Cartze, Johannisberg, all of Fed. Rep. of Germany, assignors to Shell Research Limited, United Kingdom

PCT No. PCT/EP91/00293, § 371 Date Oct. 18, 1991, § 102(e) Date Oct. 18, 1991, PCT Pub. No. WO91/13073, PCT Pub. Date Sep. 5, 1991

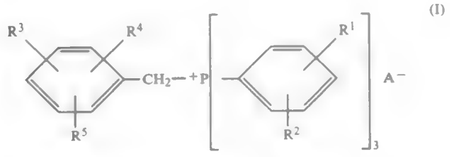
PCT Filed Feb. 20, 1991, Ser. No. 761,970

Claims priority, application European Pat. Off., Mar. 1, 1990, 90103999

Int. Cl.[5] C07F *9/54;* A01N *57/34*

U.S. Cl. 514—96 6 Claims

1. A method for the control of fungus which comprises contacting said fungus with a fungicidally effective amount of a compound of the formula:



(I)

in which R^1 represents an optionally substituted C_{1-12} alkyl or C_{1-12} alkoxy group;

R^2 represents a hydrogen atom or an optionally substituted C_{1-12} alkyl group;

R^3, R^4 and R^5 independently represent a hydrogen or halogen atom or an optionally substituted C_{1-12} alkyl or C_{1-12} alkoxy group; and

A^- represents a halide, thiocyanate, salicylate, saccharinate or toluenesulphonate or dodecylbenzene-sulphonate anion; and

said optional substituents being selected form the group consisting of halogen atoms, nitro, cyano, hydroxyl, C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino, formyl, C_{1-4} alkoxycarbonyl, carboxyl, C_{1-4} alkanoyl, C_{1-4} alkylthio, C_{1-4} alkylsulphinyl, C_{1-4} alkylsulphonyl, carbamoyl and C_{1-4} alkylamido groups.

5,336,672

INCREASING EGG PRODUCTION IN POULTRY

Lincoln L. Southern, Jr., Denham Springs, and Timothy G. Page, Walker, both of La., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Filed Jul. 21, 1992, Ser. No. 917,766

Int. Cl.[5] A61K *31/555, 31/28*

U.S. Cl. 514—188 12 Claims

1. A method of increasing egg production in a laying bird, comprising the administration of chromium picolinate to the bird in an amount sufficient to increase the average level of egg production.

5,336,673

3-SUBSTITUTED CEPHEM COMPOUNDS

Chi J. Moon, Seongnam; Sae C. Park, Seoul; Myoung G. Kim, Seoul; Sea H. Oh, Seoul; Seong S. Yim, Seongnam; Nam J. Park, Seoul; Young K. Choi, Seongnam, and Moo J. Sung, Seoul, all of Rep. of Korea, assignors to Dae Woong Pharmaceutical Co., Ltd., Seongnam, Rep. of Korea

PCT No. PCT/KR91/00012, § 371 Date Feb. 26, 1992, § 102(e) Date Feb. 26, 1992, PCT Pub. No. WO92/00981, PCT Pub. Date Jan. 23, 1992

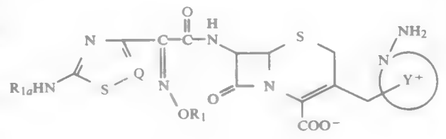
PCT Filed Apr. 19, 1991, Ser. No. 834,310

Claims priority, application Rep. of Korea, Jul. 5, 1990, 90-10143; Feb. 28, 1991, 91-3397

Int. Cl.[5] C07D *501/38;* A61K *31/545*

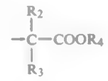
U.S. Cl. 514—202 14 Claims

1. A compound of the formula



wherein,

R_1 represents a $C_1 \sim C_4$ alkyl group or

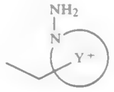


wherein, R_2 and R_3, independently, represent hydrogen or a $C_1 \sim C_3$ alkyl group and R_4 represents hydrogen or a $C_1 \sim C_4$ alkyl group;

R_{1a} represents hydrogen or an amino-protecting group;

Q represents CH or N; and

the formula



represents a substituent selected from the group consisting of:

1-aminopyrrolidinium methyl, 1-aminopiperidinium methyl, (4-aminomorpholin-4-ium)methyl, (1-amino-1,2,3,6-tetrahydropyridinium)methyl, (1-amino-3-pyrrolin-1-ium)methyl, 1-aminoindolinium methyl,

1-aminopyrrolium methyl, 1-aminoindolium methyl, (1-amino-4-hydroxypiperidinium)methyl, (2-amino-1,2,3,4-tetrahydroisoquinolin-2-ium)methyl, (1-amino-1-methyl-4-piperazinium)methyl, (4-amino-1,2,4,-triazol-2-ium)methyl, (1-amino-1,2,3-triazol-3-ium)methyl, (1-amino-1,2,4-triazol-4-ium)methyl, (1-aminobenzotriazol-3-ium)methyl, (1-aminobenzimidazol-3-ium)methyl, (1-aminoimidazol-3-ium)methyl, (1-aminopyrazol-2-ium)methyl, (1-aminotetrazol-4-ium)methyl, (1-amino-1,4,5,6-tetrahydropyrimidin-3-ium)methyl and (1-aminoindazol-2-ium)methyl,

or a pharmaceutically acceptable salt thereof; and mixtures thereof.

5,336,674

2-PHENANTHRIDINYL CARBAPHENEM ANTIBACTERIAL AGENT

Frank P. Dininno, Old Bridge; Mark L. Greenlee, Rahway; Thomas A. Rano, Somerville, all of N.J., and Wendy Lee, Chicago, Ill., assignors to Merck & Co., Inc., Rahway, N.J.

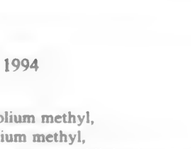
Filed Jan. 27, 1993, Ser. No. 9,626

The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.

Int. Cl.[5] C07D *487/00;* A61K *31/395;* A01N *43/00*

U.S. Cl. 514—210 19 Claims

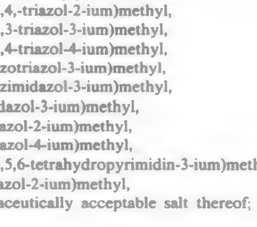
1. A compound of the formula:

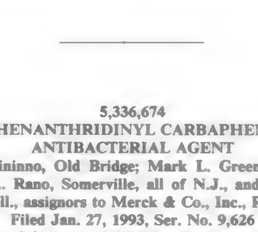


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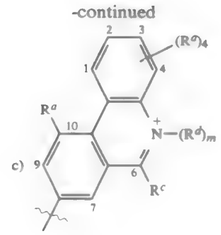
wherein

Y is

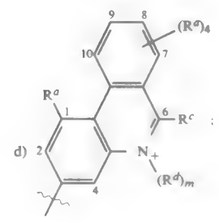




-continued



or



R is H or CH_3;

R^1 and R^2 are independently H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2—, or $(CH_3)_2C(F)$—;

R^a are independently selected from the group consisting of hydrogen and the radicals set out below, provided that not more than four R^a radicals are other than hydrogen:

a) a trifluoromethyl group: —CF_3;

b) a halogen atom: —Br, —Cl, —F, or —I;

c) C_1–C_4 alkoxy radical: —OC_{1-4} alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

R^q is a member selected from the group consisting of —OH, —OCH_3, —CN, —$C(O)NH_2$, —$OC(O)NH_2$, CHO, —$OC(O)N(CH_3)_2$, —SO_2NH_2, —$SO_2N(CH_3)_2$, —$SOCH_3$, —SO_2CH_3, —F, —CF_3, —$COOM^a$ (where M^a is hydrogen, alkali metal, methyl or phenyl), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above) and —SO_3M^b (where M^b is hydrogen or an alkali metal);

d) a hydroxy group: —OH;

e) a carbonyloxy radical: —$O(C{=}O)R^s$, where

R^s is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;

f) a carbamoyloxy radical: —$O(C{=}O)N(R^y)R^z$ where

R^y and R^z are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or —$S(O)_2$— to form a ring (where the ring is optionally mono-substituted with Rq as defined above);

g) a sulfur radical: —$S(O)_n$—R^s where n = 0–2, and R^s is , defined above;

h) a sulfamoyl group: —$SO_2N(R^y)R^z$ where R^y and R^z are as defined above;

i) azido: N_3

j) a formamido group: —$N(R^t)(C{=}O)H$, where

R^t is H or C_{1-4} alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;

k) a (C_1–C_4 alkyl)carbonylamino radical: —$N(R^t)(C{=}O)C_{1-4}$ alkyl, where R^t is as defined above, and the

VOL 1165 ISS 2 AG 9 1994 UMI

alkyl group is also optionally mono-substituted by R^q as defined above;

l) a (C_1–C_4 alkoxy) carbonylamino radical: —$N(R^t)$(—C═O)OC_{1-4} alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

m) a ureido group: —$N(R^t)(C{=}O)N(R^y)R^z$ where R^t, R^y and R^z are as defined above;

n) a sulfonamido group: —$N(R^t)SO_2R^z$, where R^z and R^t are as defined above;

o) a cyano group: —CN;

p) a formyl or acetalized formyl radical: —(C═O)H or —$CH(OCH_3)_2$;

q) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is acetalized: —$C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

r) carbonyl radical: —(C═O)R^z, where $R^z$is as defined above;

s) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group: —(C═NOR^t)R^y where R^y and R^z are as defined above, except they may not be joined together to form a ring;

t) a (C_1–C_4 alkoxy)carbonyl radical: —(C═O)OC_{1-4} alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

u) a carbamoyl radical: —(C═O)N(R^y)R^z where R^y and R^z are as defined above;

v) an N-hydroxycarbamoyl or N(C_1–C_4 alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group: —(C═O)—N(OR^y)R^z where R^y and R^z are as defined above, except they may not be joined together to form a ring;

w) a thiocarbamoyl group: —(C═S)N(R^y)(R^z) where R^y and R^z are as defined above;

x) carboxyl: —$COOM^b$, where M^b is as defined above;

y) thiocyanate: —SCN;

z) trifluoromethylthio: —SCF_3;

aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;

ab) an anionic function selected from the group consisting of: phosphono; [P═O(OM^b)$_2$]; alkylphosphono {P═O(OM^b)-[O(C_1–C_4 alkyl)]}; ; alkylphosphinyl; [P═(OM^b)-(C_1–C_4alkyl)]; phosphoramido [P═O(OM^b)N(R^y)R^z and P═O(OM^b)NHR^x]; sulfino (SO_2M^b); sulfo (SO_3M^b); acylsulfonamides selected from the structures $CONM^bSO_2R^x$, $CONM^bSO_2N$(R^y)R^z, $SO_2NM^bCON(R^y)R^z$; and SO_2NM^bCN, where R^x i s phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^y and R^z are as defined above;

ac) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or N(C_1–C_4 alkyl) and in which one additional carbon atom may be replaced by NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;

ad) C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents a) to ac) above and phenyl which is optionally substituted by R^q as defined above;

ae) C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents a) to ac) above;

af) C_1–C_4 alkyl radical;

ag) C_1–C_4 alkyl mono-substituted by one of the substituents a)–ac) above;

ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from —S— and NR^t (where R^t is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents a) to ag) above;

ai) an amine group: —NR^eR^f, where

R^e and R^f are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 4- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above);

R^c is selected from the group consisting of hydrogen and the radicals set out below:

ba) C_1–C_4 alkyl radical;

bb) C_1–C_4 alkyl mono-substituted by one of the substituents a)–ac) described hereinabove;

bc) C_1–C_4 alkoxy radical: —OC_{1-4} alkyl, wherein the alkyl is optionally mono-substituted by R^q, where R^q is as described hereinabove; and

bd) an amine group: —NR^gR^h, where

R^g and R^h are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 4- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or R^g is combined with R^d to form a diradical selected from the group consisting of: —CH_2CH_2—, —$CH_2CH_2CH_2$— and —CH═CH—;

R^d is —NH_2, —O^-, C_1–C_4-alkyl (where the alkyl group is optionally monosubstituted with R^q as defined above), or hydrogen, or R^d is combined with R^g to form a diradical selected from the group consisting of: —CH_2CH_2—, —$CH_2CH_2CH_2$— and —CH═CH—;

provided that R^d is hydrogen only if at least one R^a or R^c is an amine group;

m is 0 to 1, if at least one R^a or R^c is an amine group;

m is 1 if neither R^a nor R^c is an amine group; and

M is selected from:

i) hydrogen;

ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group;

iii) an alkali metal or other pharmaceutically acceptable cation; or

(iv) a negative charge.

18. A method of treating bacterial infections in human or animal subjects in need of such treatment comprising coadministering to such subject an antibacterially effective amount of a compound of claim **1** and an inhibitorily effective amount of a DHP inhibitor.

5,336,675

METHOD OF TREATING MANIA IN HUMANS

Ernir Snorrason, Stigahlid 80, IS-105 Reykjavik, Iceland

Filed Feb. 28, 1992, Ser. No. 842,322

Claims priority, application Iceland, May 14, 1991, 3706; Jul. 31, 1991, 3706; Denmark, Feb. 13, 1992, 183/92

Int. Cl.[5] **A61K** *31/55*

U.S. Cl. 514—215 **18 Claims**

1. A method for the treatment of mania, comprising administering, to a human patient in need thereof, an effective amount of a pharmaceutically acceptable acetylcholinesterase inhibitor which is active selectively at nicotinic receptor sites, and which is capable of passing the blood-brain barrier in humans.

5,336,676

[3H,7H]THIAZOLO[3,4-A]PYRIDINES WITH ANTIASTHMATIC AND ANTIINFLAMMATORY ACTIONS ON THE RESPIRATORY TRACT

Carmelo A. Gandolfi; Giampiero De Cillis; Giorgio Long, and Licia Gallico, all of Milan, Italy, assignors to Boehringer Mannheim Italia S.p.A., Milan, Italy

PCT No. PCT/EP91/01028, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO91/18906, PCT Pub. Date Dec. 12, 1991

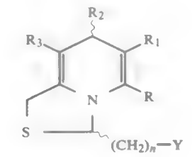
PCT Filed Jun. 4, 1991, Ser. No. 949,629

Claims priority, application Italy, Jun. 8, 1990, 20585 A90

Int. Cl.[5] **A61K** *31/54, 31/535, 31/495, 31/50*

U.S. Cl. 514—222.5 **7 Claims**

1. Compounds of formula (I)

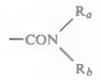


I

in which:

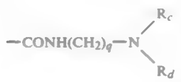
R is (C_1–C_4) alkyl;

R_1 is a cyano, free or salified carboxyl, C_1–C_6alkoxycarbonyl, hydroxyaminocarbonyl group or a carboxyamide group of the formula



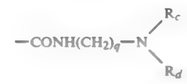
wherein Ra and

Rb are as defined below or a group of the formula



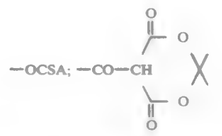
wherein q is an integer from 2 to 4;

R_c is hydrogen, (C_1–C_6) alkyl, benzyl; Rd is hydrohydrogen or (C_1–C_6) alkyl or Rc and Rd, taken together with the nitrogen atom, form a pyrrolidine, piperidine, morpholine, thiomorpholine, (C_1–C_4) alkylpiperazine; R_2 is a (C_3–C_7) cycloalkyl group, α, β or γ-pyridyl, a phenyl group optionally containing from 1 to 3 substituents selected from the group consisting of (C_1–C_4) alkyl; (C_1–C_4) alkoxy; (C_1–C_4) alkylthio; phenoxy; 4-hydroxyhenoxy; phenylthio; 4-hydroxyhenylthio; halogen atoms; cyano, azido, nitro, amino, (C_1–C_6) acylamino, trihaloacetylamino; methaneor trifluoromethanesulphonamido, benzene-or paratolyl-sulphonamido, trihalomethyl, dihalomethoxy groups, a free or salified carboxy group and (C_1–C_4) alkoxycarbonyl or a bicyclic ring selected from the group con sis ting of benzo-1,3-dioxolan-4-yl, 1,4-benzodioxolan-6-yl, 1,4-benzodioxolan-5-yl, benzofuran-4-yl or benzofurazan-4-yl; R_3 is a free or salified carboxy group, a C_1–C_6 alkoxycarbonyl group or a —$CONR_aR_b$ or



group as defined above;

Y is one of the following groups: COOX; —NHCOA; —NCO; —COA; —$CONHOR_e$; —OCOA; A; —CO—CH_2—CO—R_f; —NHCSA;



R_e is hydrogen, (C_1–C_6) alkyl, phenyl or benzyl ring optionally substituted as above;

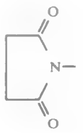
$R_f$is (C_1–C_6) alkoxy,

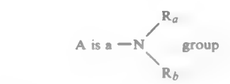


group wherein R_a and

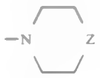
R_b are as defined below or a (pyridin-2-yl)amino group;

X is hydrogen, (C_1–C_4) alkyl, allyl, propargyl or an N-succinimidyl group of formula



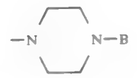


wherein R_a or R_b, which are the same or different, are hydrogen, (C_1–C_4) alkyl, allyl, propargyl, (C_3–C_7) cycloalkyl, phenyl ring optionally substituted as above, benzyl unsubstituted or substituted by hydroxy and/or methoxy groups, benzhydryl unsubstituted or substituted by halogens or, taken together with the nitrogen atom, they form an aziridine, azetidine group or a ring of formula



wherein Z is O, S, CH_2 or —S—S— or a ring of formula

VOL 1165 ISS 2 AG 9 1994 UMI



wherein B is hydrogen, (C_1–C_4) alkyl, benzyl unsubstituted or substituted by hydroxy and/or C_1–C_4 alkoxy groups, benzhydryl unsubstituted or substituted by halogen atoms, unsubstituted or as above substituted phenyl, pyridin-2-yl pyrimidin-4-yl, pyrimidin-2-yl or 1,3,5-triazinyl-2-yl, optionally substituted by 1 or 2 amino groups such as amino, methylamino, ethylamino, 2-propenylamino, 2 propynylamino, propylamino, isopropylamino or dialkylamino such as dimethylamino, diethylamino, ethylallylamino, piperidin-1-yl, morpholin-4-yl, pyrrolidin-1-yl groups;

n is the integer 1 or 2, their salts, enantiomers, diastereoisomers or racemic mixtures.

5,336,677

SUBSTITUTED AMINOPYRIMIDINES AS ANTIHYPERTENSIVES

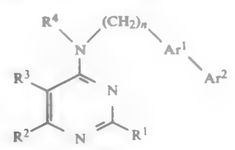
Dimitri Sarantakis, Newtown, Pa.; James J. Bicksler, Cranbury, N.J.; John W. Ellingboe, Princeton, N.J., and Madelene Nikaido, Plainsboro, N.J., assignors to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 782,026, Oct. 24, 1991, abandoned. This application Jun. 18, 1992, Ser. No. 900,639

Int. Cl.[5] A61K *31/505;* **C07D** *239/42*

U.S. Cl. 514—256 **27 Claims**

1. A compound having the formula:



wherein

R^1 is alkyl of 1–6 carbon atoms, perfluoroalkyl of 1–6 carbon atoms, cycloalkyl of 3–7 carbon atoms, fluoro, chloro, or bromo;

R^2 is hydrogen, alkyl of 1–6 carbon atoms, perfluoroalkyl of 1–6 carbon atoms, trifluoromethylalkyl of 1–6 carbon atoms, cycloalkyl of 3–7 carbon atoms, alkoxy of 1–6 carbon atoms, fluoro, chloro, bromo, or cyano;

R^3 is hydrogen, perfluoroalkyl of 1–6 carbon atoms, trifluoromethylalkyl of 1–6 carbon atoms, alkyl of 1–6 carbon atoms, alkenyl of 3–5 carbon atoms, alkynyl of 3–5 carbon atoms, aryl of 6–10 carbon atoms; aryl of 6–10 carbon atoms substituted with fluorine, chlorine or bromine; aralkyl of 7–12 carbon atoms; aralkyl of 7–12 carbon atoms substituted with alkyl of 1–6 carbon atoms, fluorine, chlorine or bromine, alkoxy of 1–6 carbon atoms or alkyl of 1–6 carbon atoms, cycloalkyl of 3–7 carbon atoms, pyridylmethyl, thienylmethyl, fluoro, chloro, bromo, cyano, hydroxyalkyl of 1–6 carbon atoms, $(CH_2)_mCO_2R^5$, $(CH_2)_mCONR^5R^6$;

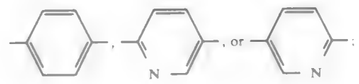
m is 1 to 4;

n is 0 to 3;

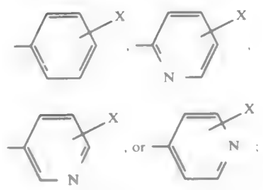
R^4 is hydrogen, alkyl of 1–6 carbon atoms, aryl of 6–10 carbon atoms, aryl of 6–10 carbon atoms substituted with halogen, alkylcarbonyl of 1–6 carbon atoms, pyridyl, or pyrimidinyl;

R^5 and R^6 are H or alkyl of 1–6 carbon atoms;

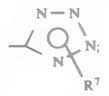
Ar^1 is



Ar^2 is



wherein X is CO_2H, CO_2R^7, $NHSO_2CF_3$, or



wherein R^7 is hydrogen, alkyl of 1–6 carbon atoms, benzyl, triphenylmethyl, or Sn(alkyl of 1–6 carbon atoms)$_3$;

and the pharmaceutically acceptable salts thereof.

5,336,678

USE OF MINOXIDIL FOR TREATING ERECTILE IMPOTENCE

Giorgio Cavallini, Via Montebello 49, Ferrara, Italy

PCT No. PCT/EP91/00711, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO91/16052, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 15, 1991, Ser. No. 938,060

Claims priority, application Italy, Apr. 19, 1990, 9007 A/90

Int. Cl.[5] A61K *31/505*

U.S. Cl. 514—275 **2 Claims**

1. A method of treating erectile impotence in humans comprising the topical administration on the penis of topical formulations containing from 0.1 to 10% of minoxidil.

5,336,679

TETRAHYDROIMIDAZOPYRIDINE DERIVATIVES AND SALTS THEREOF

Mitsuaki Ohta; Takeshi Suzuki; Jun-ya Ohmori; Keiji Miyata, all of Ibaraki, and Isao Yanagisawa, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00689, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO91/18900, PCT Pub. Date Dec. 12, 1991

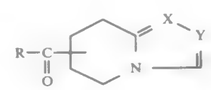
PCT Filed May 23, 1991, Ser. No. 955,735

Claims priority, application Japan, May 25, 1990, 2-135850

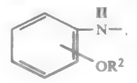
Int. Cl.[5] C07D *471/04;* **A61K** *31/44*

U.S. Cl. 514—300 **9 Claims**

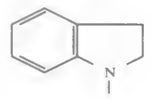
1. Tetrahydroimidazopyridine derivative represented by the following formula,



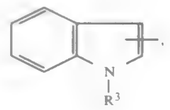
wherein either one of X and Y is nitrogen and the other one is a radical represented by the formula $=C(R^1)—$; and R is a radical of the formula



a radical of the formula



or a radical of the formula



in which R^1, R^2 and R^3 are same or different hydrogen atom or a lower alkyl group, and salts thereof.

5,336,680

SMOKING SUPPRESSANT AND METHOD OF APPLICATION THEREOF

Ronald S. Nietupski, 16500 Spaniel Dr., Lockport, Ill. 60441

Filed May 18, 1993, Ser. No. 63,258

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—354 **8 Claims**

1. A method of smoking suppression which comprises administration by inhalation to a person in need thereof, a volatile smoking suppressant composition comprising an effective amount 2-acetylpyridine.

5,336,681

DERIVATIVES OF P-SUBSTITUTED PHENYL ESTER OF PIVALIC ACID

Katsuhiro Imaki; Yoshinobu Arai, and Tadao Okegawa, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

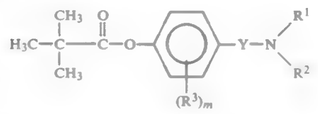
Continuation of Ser. No. 681,364, Apr. 8, 1991, abandoned, which is a division of Ser. No. 364,994, Jun. 12, 1989, Pat. No. 5,017,610. This application Oct. 13, 1992, Ser. No. 960,301

Claims priority, application Japan, Jun. 13, 1988, 63-145450; Mar. 6, 1989, 1-53541

Int. Cl.[5] A61K *31/40, 31/44;* **C07D** *213/70, 207/12*

U.S. Cl. 514—347 **7 Claims**

1. A compound of the formula:



(I)

wherein

Y represents sulfonyl ($—SO_2—$) or carbonyl



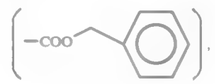
one of R^1 and R^2 represents

(1) hydrogen or

(2) an alkyl of up to 16 carbon atoms or a 2-carboxyethyl

and the other of R^1 and R^2 represents a group of the formula: $—X—(R^4)n$ wherein

X represents a single-bond, sulfonyl ($—SO_2—$), an alkylene of up to 4 carbon atoms, an alkylene of up to 4 carbon atoms unsubstituted or substituted by —COOH, or benzyloxycarbonyl



represent a pyridine or pyrrole ring,

n represents an integer of 1 or 2,

R^4, which may be the same or different, represents

(1) hydrogen, or an alkyl group of up to 8 carbon atoms,

(2) a group of the formula: $—Z^{41}—COOR^{43}$ wherein

Z^{41} represent a single-bond, an alkylene of up to 4 carbon toms, or an alkenylene of from 2 to 4 carbon atoms, and

R^{43} represents hydrogen, an alkyl of up to 4 carbon atoms or benzyl,

R^3 represents

(1) hydrogen,

(2) hydroxy,

(3) an alkyl of up to 6carbon atoms,

(4) halogen,

(5) an alkoxy of up to 4 carbon atoms,

(6) an acyloxy of 2 to 5 carbon atoms,

m represents an integer of 1 or 2,

or a pharmaceutically acceptable salt thereof.

5,336,682

HETEROCYCLIC COMPOUNDS AS FUNGICIDES

Paul deFraine, Wokingham; Brian K. Snell, Reading; Kevin Beautement, Wokingham; Vivienne M. Anthony, Maidenhead, and John M. Clough, Marlow, all of United Kingdom, assignors to Imperial Chemical Industries Public Limited Company, London, United Kingdom

Division of Ser. No. 442,436, Nov. 24, 1989, Pat. No. 5,091,407, which is a continuation of Ser. No. 872,687, Jun. 10, 1986, abandoned. This application Dec. 10, 1991, Ser. No. 804,991

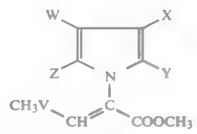
Claims priority, application United Kingdom, Jun. 18, 1985, 8515385; Apr. 17, 1986, 8609453

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] A01N *43/36;* **C07D** *407/06*

U.S. Cl. 514—422 **6 Claims**

1. A compound of formula:



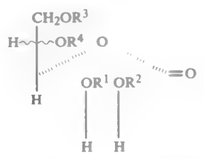
or a stereoisomer thereof, wherein W, X and Y are independently hydrogen, halogen, nitro, cyano, C_{1-4} alkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{1-4} alkoxy, amino, $COOR^3$, $CONR^3R^4$, COR^3, $S(O)_nR^3$ or $CR^3{=}NR^4$, where R^3 and R^4 are hydrogen or C_{1-4} alkyl and n is 0, 1 or 2; Z is COOR′, CONR′R″ or

VOL 1165 ISS 2 AG 9 1994 UMI

COR′, were R″ is hydrogen or C_{1-4} alkyl, R′ is thienyl which is optionally substituted with C_{1-4} alkyl, C_{1-4} alkoxy, halogen, halo(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkenyl, phenyl, cyano or nitro; and V is oxygen or sulphur.

5,336,683
ANTIOXIDANTS
Horst Pauling, Bottmingen, and Christof Wehrli, Witterswil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Jan. 13, 1993, Ser. No. 3,763
Claims priority, application Switzerland, Jan. 24, 1992, 203/92; Nov. 25, 1992, 3610/92
Int. Cl.[5] C07D *307/33*
U.S. Cl. 514—443 **9 Claims**

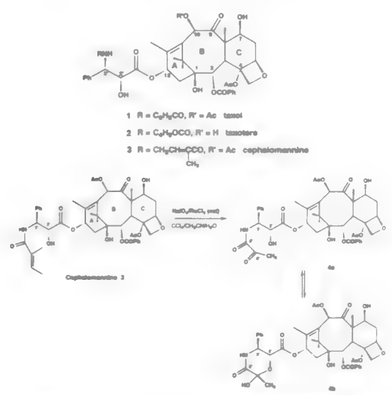
1. A compound of the formula



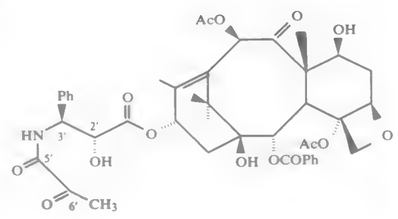
I

wherein R^1 and R^2 together represent the —S(O)— group and R^3 and R^4 represent hydrogen, or R^3 and R^4 together represent the —S(O)— group and R^1 and R^2 represent hydrogen, its epimers, racemates, diastereomers, and stereoisomers.

5,336,684
OXIDATION PRODUCTS OF CEPHALOMANNINE
Christopher K. Murray; Jeffrey T. Beckvermit, and Timothy D. Ziebarth, all of Boulder, Colo., assignors to Hauser Chemical Research, Inc., Boulder, Colo.
Filed Apr. 26, 1993, Ser. No. 53,902
Int. Cl.[5] A61K *31/335;* **C07D** *305/14*
U.S. Cl. 514—449 **5 Claims**

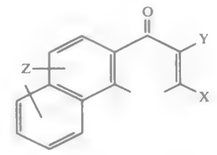


1. An antineoplastic derivative of taxol having the following formula:



5,336,685
USE OF FLAVONOIDS TO TREAT MULTIDRUG RESISTANT CANCER CELLS
Hans J. Prochaska, New York, and Kathleen W. Scotto, Middle Village, both of N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.
Filed Apr. 12, 1993, Ser. No. 46,082
Int. Cl.[5] A61K *31/35*
U.S. Cl. 514—455 **3 Claims**

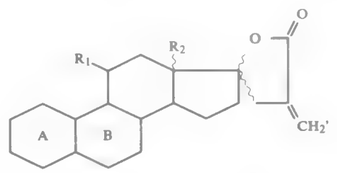
1. A method of inhibiting the growth of multidrug resistant cells comprising contacting said multidrug resistant cells with an amount effective to inhibit the growth of multidrug resistant cells of a flavonoid compound having the following structure:



wherein X is a phenyl group or is a phenyl group substituted with one or more of the following: —OH, —OR, —NH_2, —NHR, R being a C_1–C_5 alkyl group, and wherein Y is —H or —OH, and wherein Z is —H or —OH, —OR, —NH_2, —NHR, R being a C_1–C_5 alkyl group.

5,336,686
17 METHYLENE LACTONES OF STEROIDS
Lucien Nedelec, Le Rainey; Francois Nique, Pavillons Sous Bois, and Daniel Philibert, La Varenne Saint Hilaire, all of France, assignors to Roussel-Uclaf, France
Filed Feb. 19, 1993, Ser. No. 20,053
Claims priority, application France, Feb. 27, 1992, 92 02282
Int. Cl.[5] A61K *31/335;* **C07D** *307/33*
U.S. Cl. 514—462 **9 Claims**

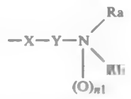
1. A compound selected from the group consisting of a compound of the formula



I

wherein R_1 is either selected from the group consisting of phenyl, biphenyl, benzyl, thienyl, furyl, isothienyl, isofuryl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, thiadiazolyl, pyridinyl or piperidinyl, each optionally substituted by at least

one member of the group consisting of a) alkyl, alkenyl and alkynyl of up to 8 carbon atoms optionally substituted by at least one member of the group consisting of hydroxyl, halogen, oxo, trialkylsilyl, alkoxy and alkylthio of 1 to 4 alkyl carbon atoms, b) alkoxy, alkenyloxy and alkylthio optionally oxidized in the form of sulfoxide or sulfone of up to 4 alkyl carbon atoms, c) halogen, d) trialkylsilyl of 1 to 4 carbon atoms, e) hydroxyl, trifluoromethyl, acyl of 1 to 6 carbon atoms, free esterified or salified carboxy, and f)



wherein X is selected from the group consisting of a single bond, oxygen, sulfur and

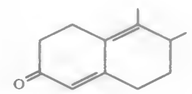


is selected from the group consisting of a single bond, alkylene, alkenylene and alkynylene of up to 8 carbon atoms, nl is 0 or 1, Ra and Rb are individually selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms optionally substituted by free, esterified or salified carboxy or trialkylsilyl of 1 to 4 alkyl carbon atoms, acyl of 1 to 8 carbon atoms, or Ra and Rb form with the nitrogen atom to which they are attached a heterocycle optionally containing another heteroatom chosen from oxygen or nitrogen and optionally substituted by alkyl of 1 to 4 carbon atoms, with the proviso that when X is sulfur or oxygen or

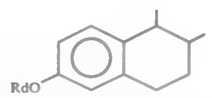


cannot be a single bond or a methylene, Rc is hydrogen or alkyl of 1 to 4 carbon atoms, or R_1 is indenyl or quinolinyl optionally substituted by alkyl of 1 to 4 carbon atoms and optionally hydrogenated, R_2 in the α or β position is alkyl of 1 to 4 carbon atoms, the wavy lines in position 17 indicate that the lactone ring can be found in one or other of the possible positions, rings A and B are one of the two following structures:

a) either A and B are:



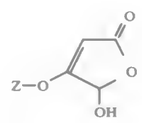
b) or A and B are:



in which Rd is hydrogen or alkyl of 1 to 4 carbon atoms optionally substituted by at least one hydroxyl or halogen, or Rd is arylalkyl of up to 12 carbon atoms or acyl of 1 to 6 carbon atoms, and their non-toxic, pharmaceutically acceptable salts with acids and bases.

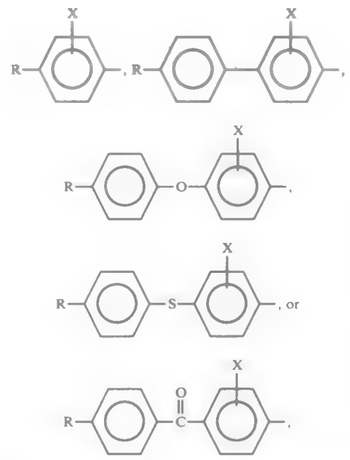
5,336,687
INHIBITION OF BONE LOSS BY 4-ARYLOXY-5-HYDROXY-2(5H)-FURANONES
Joseph P. Sabatucci, Cranbury, N.J., assignor to American Home Products Corporation, Madison, N.J.
Filed Aug. 4, 1993, Ser. No. 101,885
Int. Cl.[5] C07D *307/62;* **A61K** *31/34*
U.S. Cl. 514—473 **11 Claims**

1. A compound according to the formula:

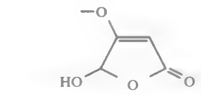


I

where Z is a group selected from:



where R is H, halogen, C_1–C_8 alkyl, C_3–C_5 cycloalkyl, trifluoromethyl, or



and X is H, C_1–C_8 alkyl, —O—C_1–C_8 alkyl or halogen.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,688

COMPOSITION CONTAINING ORGANOGERMANIUM COMPOUND AND IMMUNITY ADJUSTING AGENTS COMPRISING THE COMPOSITIONS

Kiichi Sawai, Funabashi; Massayasu Kurono; Juichi Awaya, both of Nagoya; Akio Kojima, Kasugai; Hideako Ninomiya; Yoshiro Ishiwata, both of Nagoya, and Masahiro Nakajima, Gifu, all of Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Nagoya, Japan

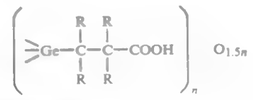
Division of Ser. No. 428,675, Oct. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 224,279, Jul. 25, 1988, Pat. No. 4,889,715, which is a continuation-in-part of Ser. No. 809,819, Dec. 17, 1985, abandoned. This application Jan. 25, 1993, Ser. No. 8,876

Claims priority, application Japan, Dec. 25, 1984, 59-272057

Int. Cl.[5] **A01N** *55/02;* **A61K** *31/28*

U.S. Cl. 514—492 **2 Claims**

1. A method of stabilizing an organo germanium polymer having the formula:



against hydrolysis upon contact with water, which method comprises admixing such compound with a stabilizing amount of about 0.5 to 10% by weight of at least one high molecular weight compound selected from the group consisting of gelatin, lactose, hydroxypropyl cellulose, hydroxypropyl methyl cellulose, serum, serum albumen, polyvinyl pyrrolidone and pepsin.

5,336,689

TRI- AND TETRA-SUBSTITUTED GUANIDINES AND THEIR USE AS EXCITATORY AMINO ACID ANTAGONISTS

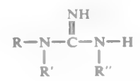
Eckard Weber, Laguna Beach, Calif., and John F. W. Keana, Eugene, Oreg., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University and the University of Oregon, Eugene, Oreg.

Division of Ser. No. 663,134, Mar. 4, 1991, Pat. No. 5,262,568, which is a continuation-in-part of Ser. No. 487,036, Mar. 2, 1991, abandoned. This application Aug. 11, 1993, Ser. No. 105,458

Int. Cl.[5] **C07C** *279/00, 311/02;* **A61K** *31/13, 31/135*

U.S. Cl. 514—634 **51 Claims**

1. A method for treating a disease of the nervous system in which the pathophysiology of the disorder involves excessive excitation of nerve cells by agonists of NMDA-receptors, comprising the administration to a mammal exhibiting symptoms of such disorders or is susceptible to such disorders an effective amount of a N,N,N′-trisubstituted guanidine having the formula:



wherein R R′ and R″ are a C_1–C_8 alkyl group, a C_2–C_8 alkenyl group, C_2–C_6 alkynyl group, cycloalkyl group, cycloalkyl group substituted by one or more substituents, cycloalkenyl group, cycloalkenyl group substituted with one or more substituents, carbocyclic aryl group, carbocyclic aryl group substituted by one or more substituents, alkaryl group, alkaryl group substituted by one or more substituents, aralkyl group, aralkyl group substituted with one or more substituents, heterocyclic group, heterocyclic group substituted by one or more substituents, heteroaryl group, or a heteroaryl group substituted by one or more substituents; or a physiologically acceptable salt thereof; wherein said substituent is chloro, fluoro, bromo, iodo, C_1–C_8 alkyl, C_1–C_8 alkoxy, cyano. C_3–C_{15} dialkylaminoalkyl, carboxy, carboxamido, C_1–C_8 alkylthio, allyl, aralkyl, alkaryl, C_3–C_6 cycloalkyl, aroyl, aralkoxy, C_2–C_8 acyl, aryl, heteroaryl, an aryl fused to a benzene ring, a heteroaryl fused to a benzene ring, C_3—C_8 heterocycloalkyl, a C_3–C_6 heterocycloalkyl ring fused to a benzene ring, C_1–C_8 alkylsulfonyl, arylthio, amino, C_1–C_8 alkylamino, C_2–C_{15} dialkylamino, hydroxy, hydroxyalkyl, carbamoyl, C_1–C_8 N-alkylcarbamoyl, C_2–C_{15} N,N-dialkylcarbamoyl, nitro, azido or C_2–C_{15} dialkylsulfamoyl; and wherein said guanidine exhibits high binding to the PCP receptor in mammalian nerve cells.

5,336,690

AMINOSULFONYL CARBAMATES COMPOSITION AND METHOD OF USE TO TREAT HYPERCHOLESTEROLEMIA AND ATHEROSCLEROSIS

Joseph A. Picard, and Drago R. Sliskovic, both of Ypsilanti, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

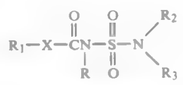
Division of Ser. No. 747,031, Aug. 19, 1991, Pat. No. 5,254,715, which is a continuation-in-part of Ser. No. 610,487, Nov. 7, 1990, abandoned. This application Jun. 10, 1993, Ser. No. 75,083

Int. Cl.[5] **A61K** *31/18*

U.S. Cl. 514—605 **11 Claims**

1. A pharmaceutical composition comprising a compound of the formula

Formula II



wherein X is oxygen or sulfur; R is hydrogen, a straight or branched alkyl group having from 1 to 8 carbon atoms, or benzyl;

wherein R_1 is

(a) phenyl substituted with from one to three substituents selected from:
phenyl,
alkyl having from one to six carbon atoms and which is straight or branched,
alkoxy having from one to six carbon atoms and which is straight or branched,
phenoxy,
hydroxy,
fluorine,
bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from one to four carbon atoms and which is straight or branched,
$—(CH_2)_pNR_4R_5$ wherein p is zero or one, and each of R_4 and R_5 is hydrogen or a straight or branched alkyl group having one to four carbon atoms;

(b) 1- or 2-naphthyl which is unsubstituted or substituted with one to three substituents selected from
phenyl,
alkyl having from one to six carbon atoms and which is straight or branched,
alkoxy having from one to six carbon atoms and which is straight or branched,
phenoxy,
hydroxy,
fluorine,
chlorine,
bromine,
nitro,
trifluoromethyl,
—COOH,

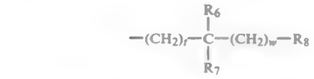
—COOalkyl wherein alkyl has from one to four carbon atoms and is straight or branched,
$—(CH_2)_pNR_4R_5$ wherein p, R_4, and R_5 have the meanings defined above; or

(c) $—(CH_2)_s—Q$ wherein s is a number of from zero to three and Q is a 5- or 6-membered monocyclic or fused bicyclic heterocycle containing at least one to four nitrogen, oxygen or sulfur atoms in at least one ring member;

wherein each of R_2 and R_3 is

(a) hydrogen;

(b) the group



wherein t is zero or one to four; w is zero or one to four with the proviso that the sum of t and w is not greater than five; R_6 and R_7 are independently selected from hydrogen or alkyl having from one to six carbon atoms, or when R_6 is hydrogen, R_7 can be selected from the groups defined for R_8; and R_8 is phenyl or phenyl substituted with from one to three substituents selected from straight or branched alkyl having from one to six carbon atoms, straight or branched alkoxy having from one to six carbon atoms, phenoxy, hydroxy, fluorine, chlorine, bromine, nitro, trifluoromethyl, —COOH, COOalkyl wherein alkyl has from one to four carbon atoms and is straight or branched, or $—(CH_2)_pNR_4R_5$ wherein p, R_4 and R_5 have the meanings defined above;

(c) a straight or branched hydrocarbon chain having from 1 to 20 carbon atoms and which is saturated or contains from one to three double bonds;

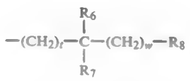
(d) an alkyl group having from one to six carbon atoms wherein the terminal carbon is substituted with hydroxy or $—NR_6R_7$ wherein R_6 and R_7 have the meanings defined hereinabove;

(e) $—(CH_2)_s—Q$ wherein s and Q have the meanings defined above;

(f) phenyl or phenyl substituted with from one to three substituents selected from
phenyl,
alkyl having from one to six carbon atoms and which is straight or branched,
alkoxy having from one to six carbon atoms and which is straight or branched,
phenoxy,
hydroxy,
fluorine,
chlorine,
bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein the alkyl moiety has from one to four carbon atoms and is straight or branched, or
$—(CH_2)_pNR_4R_5$ wherein p, R_4 and R_5 have the meanings defined above; or

(g) NR_2R_3 taken together form a monocyclic heterocyclic group selected from pyrrolidino, piperidino, morpholino, or piperazino, each of which is unsubstituted or substituted with one substituent selected from phenyl, straight or branched alkyl having from one to six carbon atoms; and pharmaceutically acceptable salts thereof; with the provisos:

(i) when each of R2 and R3 is the group



R_7 is hydrogen or alkyl having from one to six carbon atoms;

(ii) at least one of R_1, R_2, R_3 is phenyl or substituted phenyl;

(iii) both R_2 and R_3 are not hydrogen at the same time;

(iv) when R_1 is phenyl disubstituted on the 2,6-positions with alkyl having from one to four carbon atoms or with methoxy, or trisubstituted on the 4,6-positions with alkyl having from one to four carbon atoms, neither of R_2 or R_3 is phenyl; and

(v) the following compound wherein Ph means phenyl is excluded:

R_1	R_2	R_3
4(Cl)—Ph	H	$—CH_2CH=CH_2$.

5,336,691

COMPOSITION COMPRISING A TRAMADOL MATERIAL AND ACETAMINOPHEN AND ITS USE

Robert B. Raffa, Norristown, and Jeffrey L. Vaught, Perkosie, both of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Continuation-in-part of Ser. No. 755,924, Sep. 6, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 974,865

Int. Cl.[5] **A61K** *31/165*

U.S. Cl. 514—629 **15 Claims**

1. A pharmaceutical composition comprising a tramadol material and acetaminophen, wherein the ratio of the tramadol material to acetaminophen is a weight ratio from about 1:1 to about 1:1600.

5,336,692

OINTMENT BASE AND METHOD OF USE

Eugene H. Gans, Westport, Conn., and Hans R. Süess, Starrkirch, Switzerland, assignors to Medicis Pharmaceutical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 545,940, Jun. 28, 1990, abandoned. This application Jun. 18, 1991, Ser. No. 714,311

Int. Cl.[5] **A61K** *47/00, 31/01, 31/695, 7/42*

U.S. Cl. 514—772 **42 Claims**

1. An ointment base for use on a surface, in which at least 10 percent by weight thereof is composed of an admixture comprising:

a. 2.5 to 90 percent by weight of high molecular weight petrolatum fractions in which the ratio by weight of solid constituents to constituents that are liquid at 20° to 50° C. is greater than 3:1;

b. approximately 4 to 40 percent by weight of a solvent material for the petrolatum fractions; and

c. between approximately 0.5% and 10% by weight of a material that is both hydrophobic and hydrophilic.

5,336,693

EMBOSSING COMPOSITION FOR PREPARING TEXTURED POLYMERIC MATERIALS

Rudolf Frisch, Yardley, Pa., assignor to Congoleum Corporation, Mercerville, N.J.

Continuation of Ser. No. 759,837, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 118,973, Nov. 10, 1987, abandoned. This application Nov. 30, 1992, Ser. No. 983,119

Int. Cl.[5] **C08J** *9/18*

U.S. Cl. 521—72 **45 Claims**

1. A water-based embossing composition for use in chemi-

VOL 1165 ISS 2 AG 9 1994 UMI

cally embossing a foamable polymeric material having a blowing agent incorporated therein comprising:

(A) a film-forming resin dissolved or dispersed in said aqueous composition;

(B) a modifier which is effective in modifying the activity of the blowing agent comprising particulate solids which are substantially insoluble and uniformly dispersible in the liquid medium of the embossing composition and which have an average particle size of no greater than about 100 microns, said modifier being present in the composition in an amount of at least about 3 wt. %; and

(C) optionally, a colorant; and wherein said modifier is present in the composition in the absence of a material which is present in an amount which is effective in solubilizing the modifier.

5,336,694

EXPANDED POLYMER PRODUCT WITH HIGH DISTORTION TEMPERATURE, HIGH FLAME RESISTANCE AND LOW SMOKE TOXICITY AND OPACITY

Leone Lauri, Ponte Nelle Alpi, Italy, assignor to Prima, S.p.A., Venice, Italy

Continuation-in-part of Ser. No. 703,156, May 20, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,426
Claims priority, application Italy, May 22, 1990, 20397 A90
Int. Cl.[5] C08J *9/10*
U.S. Cl. 521—92 **5 Claims**

1. An expanded polymer product characterized by comprising in combination:

between 18% and 25% of a mixture of at least two organic diisocyanates;

between 8% and 11% of a styrene and maleic anhydride copolymer;

between 19% and 42% of a polyvinyl chloride resin in emulsion form;

between 4% and 7% of at least one expanding agent;

between 0.5% and 1% of at least one temperature stabilizer;

between 16% and 49% of TiO_2.

5,336,695

HYDROPHILIC FOAMS AND PROCESSES FOR THEIR MANUFACTURE

Martina Naase, and Heidi Sacker, both of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

PCT No. PCT/DE92/00192, § 371 Date Oct. 4, 1993, § 102(e) Date Oct. 4, 1993, PCT Pub. No. WO92/17518, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 6, 1992, Ser. No. 129,068
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1991, 4111098
Int. Cl.[5] C08G *18/30*
U.S. Cl. 521—109.1 **14 Claims**

1. Hydrophilic foams based on a polyurethane gel material which can be obtained from

one or more polyether-polyols selected from the group consisting of substances formed by the addition of propylene oxide and optionally ethylene oxide on to starter molecules,

said starter molecules being selected from the group consisting of pentaerythritol, sorbitol, trimethylolpropane or ethylenediamine,

one or more diisocyanates,

one or more superabsorbers,

said superabsorbers being selected from the group consisting of sodium salts of polyacrylates, or

the group consisting of carboxymethyl cellulose derivatives, karaya, cellulose, pectin, polyvinyl alcohol, polyvinylpyrrolidone and gelatin,

one or more accelerators selected from the group consisting of conventional accelerators for polyurethanes,

water, and optionally

conventional auxiliary substances and/or additives.

5,336,696

HALOGEN-FREE BLOWING AGENTS THAT INCLUDE CYCLOALIPHATIC HYDROCARBONS AND ARE SUITABLE FOR ISOCYANATE-BASED POLYMERIC FOAMS

Kaneyoshi Ashida, Farmington Hills, Mich., assignor to Nisshinbo Industries, Inc., Japan

Filed Dec. 10, 1993, Ser. No. 165,362
Int. Cl.[5] C08G *18/14*
U.S. Cl. 521—113 **34 Claims**

1. A process of making an isocyanate-based polymeric foam characterized by the use of a halogenfree organic liquid as a physical blowing agent for said foam; said organic liquid containing a positive azeotrope having a minimum boiling temperature in the range of about 15° C. to about 80° C. at normal atmospheric pressure and constituted by a cycloaliphatic hydrocarbon containing at least 5 but no more than 7 carbon atoms and a compound selected from the group consisting of an aliphatic ether containing 4 carbon atoms, an aliphatic carboxylic acid ester containing at least 2 but no more than 5 carbon atoms, an aliphatic ketone containing 4 carbon atoms, and mixtures thereof.

5,336,697

MOLDED CELLULAR CROSSLINKED VINYL LACTAM POLYMER GEL AND METHOD OF PREPARATION

Philip F. Wolf, Bridgewater, N.J., and Susan Y. Tseng, Staten Island, N.Y., assignors to ISP Investments Inc., Wilmington, Del.

Division of Ser. No. 104,301, Aug. 9, 1993, Pat. No. 5,280,049. This application Sep. 2, 1993, Ser. No. 115,529
Int. Cl.[5] C08J *9/28*
U.S. Cl. 521—189 **10 Claims**

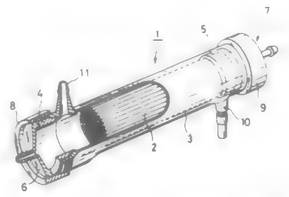
1. A foamed, cellular 0.01 to 10% polyalkenyl crosslinked N-vinyl-lactam polymer in a rigid, molded water non-swellable form.

5,336,698

BLOOD-COMPATIBLE MEDICAL MATERIAL

Nobuyoshi Kashiwagi, Saitama, and Masatomi Sasaki, Kanagawa, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 540,138, Jun. 19, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 873,990
Claims priority, application Japan, Jun. 21, 1989, 1-159323
Int. Cl.[5] A61F *2/00;* **C08L** *1/00*
U.S. Cl. 523—113 **10 Claims**



1. A blood-compatible medical material comprising:

a base material (A) comprising at least one member selected from the group consisting of cellulose, polyvinyl alcohol, polyvinyl acetate, copolymers of ethylenevinyl alcohol, copolymers of ethylenevinyl acetate. poly(meth)acrylic acid, chitin, chitosan, collagen, and polyacrylamide;

a copolymer (B) covalently bonded to said base material having as a component at least one member selected from the group consisting of glycidyl (meth)acrylate, alkyl(meth)acrylate, glycidyl (meth)acrylate-(meth)acrylic acid, (meth)acryloxy alkyl alkoxy silane, (meth)acrylic and alkyl(meth)acrylic acid; and

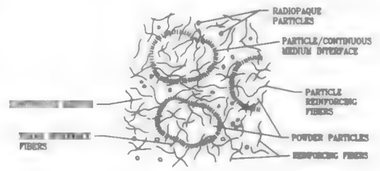
a component selected from the group consisting of a fatty acid ester of a fatty acid and an alkylene glycol or an amide of fatty acid and alkylene diamine, covalently bonded to said copolymer (B).

5,336,699

BONE CEMENT HAVING CHEMICALLY JOINED REINFORCING FILLERS

Francis W. Cooke, Wichita, Kans.; Thomas R. Marrero, and Hirotsuga K. Yasuda, both of Columbia,, Mo., assignors to Orthopaedic Research Institute, Wichita, Kans.

Continuation of Ser. No. 838,317, Feb. 20, 1992, abandoned. This application Dec. 28, 1992, Ser. No. 998,881
Int. Cl.[5] A61F *2/00*
U.S. Cl. 523—115 **83 Claims**



1. An orthopaedic composition, comprising:

an amount of a physiologically acceptable polymeric matrix material; and

a quantity of fibers disbursed in said matrix for enhancing functional qualities of the composition, said fibers having a layer of a sizing material thereover which is chemically joined to the surface of the fibers, said sizing material on the fibers also being chemically joined with the matrix material,

said fibers being present in said composition in an effective amount for reinforcing said matrix and having an average length of from about 1 μm to about 2 cm,

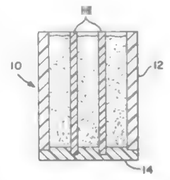
said fibers having a stiffness defined as the product of the tensile elastic modulus of the fibers and the area moment of inertia of the fibers, said stiffness being from about 1.0×10^{-13} to 150×10^{-13} Nm^2.

5,336,700

DENTAL AND ORTHOPEDIC CEMENT METHODS AND PREFORMS

William M. Murray, 145 Bryce Rd., Camp Hill, Pa. 17011

Division of Ser. No. 904,468, Jun. 25, 1992, Pat. No. 5,236,971, which is a division of Ser. No. 833,323, Feb. 10, 1992, Pat. No. 5,219,897. This application Apr. 12, 1993, Ser. No. 44,689
Int. Cl.[5] C08K *5/11;* **C08F** *265/06;* **A61M** *31/00*
U.S. Cl. 523—116 **20 Claims**



1. The method of making a rigid body from bone or dental cement powder, comprising the steps of:

a) forming bone or dental cement powder into a body having bonds joining particles together at points of contact and a network of interior passages within the body; and

b) forming integral bonds between adjacent particles in the body.

5,336,701

PROCESS IMPROVEMENT FOR IMPROVED COLOR REDUCED GLOSS THERMOPLASTIC COMPOSITIONS

Robert H. Wildi, Parkersburg; Keith E. Cox, Mineral Wells, and Jack A. Hill, Vienna, all of W. Va., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 28, 1992, Ser. No. 951,600
Int. Cl.[5] C08K *3/20;* **C08L** *63/02*
U.S. Cl. 523—211 **19 Claims**

1. A process for making an improved color reduced gloss thermoplastic composition, said process comprising:

(a) compounding an acrylonitrile polymer with an electrophilic reagent to form polymeric gels;

(b) admixing an effective amount of water with said polymeric gels sufficient to reduce the yellowness index of said gels; and

(c) blending an effective gloss reducing amount of said reduced color gels with a thermoplastic resin.

5,336,702

AQUEOUS RESIN DISPERSIONS

Koji Kamikado, Yokohama, Japan, assignor to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Dec. 3, 1992, Ser. No. 985,218
Claims priority, application Japan, Dec. 5, 1991, 3-348372
Int. Cl.[5] C08K *3/20;* **C08L** *63/00*
U.S. Cl. 523—417 **29 Claims**

1. An aqueous resin dispersion containing as an aqueous resin component a polyurethane-modified epoxypolyamine resin comprising a reaction product of

(A) an epoxy group-containing polyurethane compound obtained by the reaction of

(a) a polyhydroxy compound having a number average molecular weight of 50 to 8,000,

(b) a polyisocyanate compound, and

(c) a compound containing one hydroxyl group and at least one alicyclic epoxy group in a molecule,

(B) a bisphenol compound,

(C) a bisphenol diglycidyl ether compound, and

(D) an active hydrogen-containing amine compound.

5,336,703

TWO PACK TYPE CURABLE COMPOSITION COMPRISING EPOXY RESIN AND SILICON-CONTAINING ELASTOMERIC POLYMER

Michihide Homma, Takasago; Atsuko Yoshihara, Kobe; Hiroshi Wakabayashi, Kobe, and Katsuhiko Isayama, Kobe, all of Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

Continuation of Ser. No. 441,150, Nov. 27, 1989, abandoned. This application Sep. 13, 1993, Ser. No. 119,823
Claims priority, application Japan, Nov. 25, 1988, 63-299088; Nov. 25, 1988, 63-299089
Int. Cl.[5] C08L *63/00*
U.S. Cl. 523—435 **11 Claims**

1. A two-pack type curable composition comprising:

a first composition containing (A-1) an organic elastomeric polymer having at least one silicon-containing group to the silicon atom of which a hydroxyl group and/or a hydrolyzable group are bonded and which is cross linkable through formation of a siloxane linkage in a molecule, 2,4,6-tris-(dimethylaminomethyl)phenol as a curing agent for an epoxy resin and (A-3) calcium carbonate, and

B. a second composition containing (B-1) an epoxy resin, (B-2) a curing catalyst for the organic elastomeric polymer having at least one silicon-containing reactive group and (B-3) a mixture of calcium carbonate and at least one carboxylic acid.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,704

PROCESS FOR INSOLUBILIZING ABSORBED METAL IONS

Norman B. Rainer, 2008 Fondulac Rd., Richmond, Va. 23229-4219

Continuation-in-part of Ser. No. 808,884, Dec. 18, 1991, Pat. No. 5,187,200. This application Feb. 16, 1993, Ser. No. 17,598
Int. Cl.[5] C08L *11/00*; C08J *5/20*; C08G *69/26*; B01D *15/00*
U.S. Cl. 524—30 12 Claims

1. A process for insolubilizing toxic metal cations absorbed within a hydrogel chelation polymer comprising treating said polymer in water-swollen form with a precipitative anion selected from the group consisting of carbonate, aluminate, hydroxide, phosphate, silicate and sulfide.

5,336,705

POLYMER-MODIFIED, OXIDIZED ASPHALT COMPOSITIONS AND METHODS OF PREPARATION

Martin L. Gorbaty, Westfield, and Nicholas C. Nahas, Chatham, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 846,366, Mar. 5, 1992, abandoned. This application Apr. 1, 1993, Ser. No. 41,072
Int. Cl.[5] C08L *95/00*
U.S. Cl. 524—68 11 Claims

1. A road paving binder composition, which comprises a base neutralized blend of an oxidized asphalt, and a polymer selected from the group consisting of sulfonated EPDM, sulfonated styrene-butadiene linear diblock and sulfonated styrene-butadiene-styrene linear and radial triblock copolymers, wherein the polymer is present in an amount by weight percent of total composition that is sufficient for the blend to have a softening point greater than about 55° C. and a viscosity in the range from about 150 cPs to about 2000 cPs or from about 3000 cPs to about 8000 cPs measured at 135° C., and wherein said amount of polymer is less than about 4 wt % when the polymer is sulfonated EPDM and wherein said amount of polymer is from about 2 wt % to about 7 wt % when the polymer is selected from the group consisting of sulfonated styrene-butadiene linear diblock and sulfonated styrene-butadiene-styrene linear and radial triblock copolymers, and wherein the blend has asphalt and polymer interdispersed in at least one continuous phase such that the blend is storage stable and substantially phase compatible having a softening point variation between a sample of the top third and bottom third of the blend stored at elevated temperature of equal to or less than about 4° C.

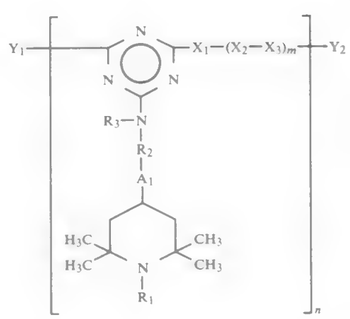
5,336,706

PIPERIDINE-TRIAZINE COMPOUNDS FOR USE AS STABILISERS FOR ORGANIC MATERIALS

Valerio Borzatta; Roberto Scrima, and Graziano Vignali, all of Bologna, Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

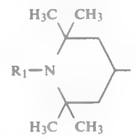
Division of Ser. No. 971,446, Nov. 4, 1992, Pat. No. 5,256,787, which is a division of Ser. No. 769,982, Sep. 30, 1991, Pat. No. 5,187,275. This application Sep. 29, 1993, Ser. No. 128,507
Claims priority, application Italy, Oct. 3, 1990, 21632 A/90
Int. Cl.[5] C08L *101/02*; C07D *401/14*
U.S. Cl. 524—100 6 Claims

1. A composition comprising an organic material susceptible to degradation induced by light, heat and oxidation and an effective stabilising amount of a compound of the formula (I)



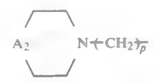
(I)

in which R_1 is hydrogen, C_1–C_8alkyl, O., OH, NO, CH_2CN, C_1–C_{18} alkoxy, C_5–C_{12}cycloalkoxy, C_3–C_6alkenyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di or tri-substituted on the phenyl by C_1–C_4 alkyl or C_1–C_8acyl, A_1 is —O— or >N—R_4 where R_4 is methyl, C_1–C_8acyl or (C_1–C_8alkoxy)-carbonyl, R_2 is C_2–C_{12} alkylene, R_3 is hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or a group of the formula (II)



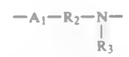
(II)

with R_1 being as defined above, or —A_1—R_2— is a direct bond and, in this case, R_3 is a group of the formula (III)

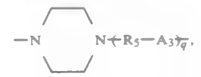


(III)

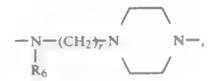
in which A_2 is a direct bond, —O—, —CH_2—, —CH_2CH_2— or >N—CH_3 and p is an integer from 2 to 6, or



is also one of the groups of the formulae (IVa)–(IVd)

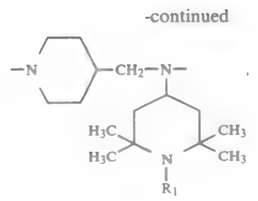


(IVa)

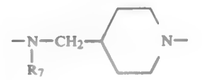


(IVb)

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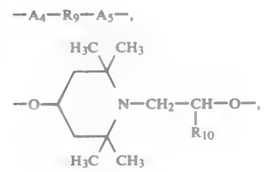


(IVc)

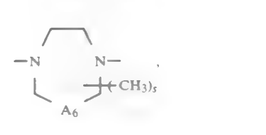


(IVd)

in which R_5 is C_2–C_6alkylene, A_3 is —O— or a group >N—R_8 where R_8 is as defined for R_3, q is zero or 1, R_6 and R_7 are as defined for R_4, r is an integer from 2 to 6 and R_1, is as defined above, X_1 and X_3 which are identical or different are one of the groups of the formulae (Va)–(Ve)



(Va)

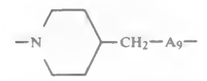


(Vb)

(Vc)

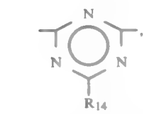


(Vd)



(Ve)

in which A_4, A_5, A_7, A_8 and A_9 which are identical or different are as defined for A_3, R_9 is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms or by 1 or 2>N—R_{13} groups where R_{13} is as defined for R_3 or is C_1–C_8acyl or (C_1–C_8alkoxy)-carbonyl; C_5–C_7cycloalkylene unsubstituted or mono-substituted by C_1–C_4alkyl, C_5–C_7cycloalkylene-di-(C_1–C_4alkylene), C_1–C_4alkylene-di-(C_5–C_7cycloalkylene), C_2–C_4alkylidene-di-(C_5–C_7cycloalkylene), phenylene, phenylene-di-(C_1–C_4alkylene), (C_1–C_4alkylene)-diphenylene or (C_2–C_4alkylidene)-diphenylene, where each phenylene group is unsubstituted or mono- or di-substituted by C_1–C_4alkyl, R_{10} is hydrogen, C_1–C_8alkyl or phenyl, A_6 is a direct bond or —CH_2—, s is zero, 1, 2 or 3, R_{11} and R_{12} which are identical or different are C_2–C_6alkylene and t is zero or 1, X_2 is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms; 2-hydroxytrimethylene, xylylene, carbonyl or one of the groups of the formulae (VIa)–(VIe)



(VIa)

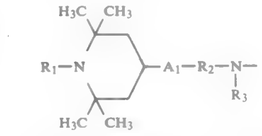
—CO—R_{15}—CO—, (VIb)

—COO—R_{16}—OOC—, (VIc)

—$(CH_2)_u$—CO— (VId)

—CONH—R_{17}—NHCO— (VIe)

in which R14 is a group of the formula (VII)



(VII)

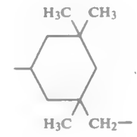
in which R_1, A_1, R_2 and R_3 are as defined above, or R_{14} is a group —OR_{18}, —SR_{18} or



in which R_{18}, R_{19} and R_{20} which are identical or different are hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cyclaolkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_3–C_1.salkenyl, phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl or C_1–C_4alkoxy;, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; tetrahydrofurfuryl, a group of the formula (II), C_2–C_4alkyl substituted in the 2-, 3- or 4-position by C_1–C_8alkoxy or by di-(C_1–C_4alkyl)-amino or by a group of the formula (III); or the group

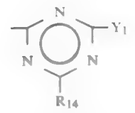


is a 5-membered to 7-membered heterocyclic group, R_{15} is a direct bond, C_1–C_{12}alkylene, cyclohexylene, methylcyctohexylene or phenylene, R_{16} is as defined for R_9, u is an integer from 1 to 10 and R_{17} is as defined for R_9 or is a group

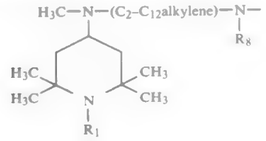


m is zero, 1, 2, 3 or 4, n is a number from 1 to 50, Y_1 is Cl, OH, ONa, OK, a group R_{14} or a group —X_1Z or —X_3Z where Z is hydrogen, methyl, benzyl, C_1–C_8acyl or (C_1–C_8alkoxy)-carbonyl and Y_2 is Z, a group

VOL 1165 ISS 2 AG 9 1994 UMI



or a group $—X_2OH$, and, if m is zero and n is 1, the only definition of Y_1 is the group $—X_1Z$, with the proviso that the said group $—X_1Z$ is other than the group of the formula



and, in the individual recent structural units of the formula (I), each of the groups R_1, A_1, R_2, R_3, X_1, X_2, X_3 and m have the same or different definitions.

5,336,707

SURFACE SEGREGATION THROUGH THE USE OF A BLOCK COPOLYMER

Ronald S. Nohr, Roswell, and John G. MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 6, 1992, Ser. No. 972,678

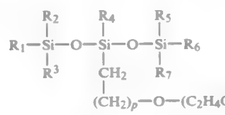
Int. Cl.[5] C08K *5/54;* **C08L** *53/00, 83/12*

U.S. Cl. 524—265 **7 Claims**

1. A surface-segregatable, melt-extrudable thermoplastic composition which comprises:

(A) a thermoplastic polypropylene-polyethylene block copolymer in which the polyethylene blocks constitute from about 1 to about 10 percent by weight of the copolymer; and

(B) an additive having the general formula,



in which:

(1) R_1–R_7 are independently selected monovalent C_1–C_3 alkyl groups;

(2) R_8 is hydrogen or a monovalent C_1–C_3 alkyl group;

(3) p represents an integer of from 0 to about 5;

(4) x represents an integer of from 1 to about 15;

(5) said additive has a weight average molecular weight of from about 350 to about 1,400; and

(6) said additive is present in an amount of from about 0.1 to about 5 percent by weight, based on the amount of thermoplastic block copolymer.

5,336,708

GELATINOUS ELASTOMER ARTICLES

John Y. Chen, Pacifica, Calif., assignor to Applied Elastomerics, Inc., Pacifica, Calif.

Continuation-in-part of Ser. No. 705,711, May 23, 1991, Pat. No. 5,262,468, which is a continuation-in-part of Ser. No. 211,426, Jun. 24, 1988, Pat. No. 5,153,254, which is a continuation-in-part of Ser. No. 921,752, Oct. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 572,172, Jan. 18, 1984, Pat. No. 4,618,213, which is a continuation-in-part of Ser. No. 458,703, Jan. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 134,977, Mar. 28, 1980, Pat. No. 4,369,284, which is a continuation-in-part of Ser. No. 916,731, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 815,315, Jul. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 778,343, Mar. 17, 1977, abandoned. This application Aug. 24, 1992, Ser. No. 935,540

Int. Cl.[5] C08K *5/01;* **C08C** *53/00;* **A42B** *3/00*

U.S. Cl. 524—474 **6 Claims**

1. A composite article comprising a thermoplastic, heat formable and heat reversible gelatinous elastomer composition, G, which is physically interlocked with a selected material M_n, said gelatinous elastomer composition formed from (a) 100 parts by weight of a high viscosity triblock copolymer of the general configuration poly(styrene-ethylene-butylene-styrene); (b) from about 300 to about 1,600 parts by weight of a plasticizing oil; said composition characterized by a gel rigidity of from about 20 to about 800 gram Bloom; said composite formed from the combination $G_nM_nG_n$, $M_nG_nM_n$, $M_nG_nG_n$, $G_nG_nM_n$, $M_nG_nG_nM_n$, $G_nM_nG_nG_n$, $G_nM_nM_nG_n$, $G_nM_nM_nG_n$, $G_nG_nM_nM_n$, $G_nG_nM_nG_nM_n$, $G_nM_nG_nG_n$, $G_nG_nM_n$, $G_nM_nG_nM_nM_n$, $M_nG_nM_nG_nM_nG_n$, $G_nG_nM_nM_nG_n$, or $G_nG_nM_nG_nM_nG_n$, wherein when n is a subscript of M, n is the same or different selected from the group consisting of foam, plastic, fabric, metal, concrete, wood, glass, ceramics, synthetic resin, synthetic fibers or refractory materials; wherein when n is a subscript of G, n denotes the same or a different gel rigidity.

5,336,709

UNDRAWN PRE-ORIENTED PET YARNS WITH IMPROVED PRODUCTION EFFICIENCY

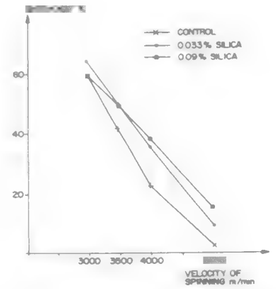
Paul Antikow, Lyon, and Francois Pinaud, Brignais, both of France, assignors to Rhone Poulenc Fibres, Lyon, France

Division of Ser. No. 626,766, Dec. 13, 1990, Pat. No. 5,207,959. This application Oct. 1, 1992, Ser. No. 955,039

Claims priority, application France, Dec. 20, 1989, 89 17216

Int. Cl.[5] C08K *3/34;* **D02G** *3/00*

U.S. Cl. 524—493 **4 Claims**



1. Undrawn preoriented polyester yarns containing 0.03 to 0.1% of fumed silica with a particle size of between 5 and 15 nm, exhibiting a delay in crystallization.

5,336,710

COMPOSITION FOR MOLDING OF VEHICLE BODY PANELS

Nippani R. Rao, Farmington Hills; Saad M. Abouzahr, Highland; Russ Spencer, W. Bloomfield, and Denis E. Falkowski, Farmington Hills, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 8, 1993, Ser. No. 28,077

Int. Cl.[5] C08K *3/40, 3/26, 3/34*

U.S. Cl. 524—494 **2 Claims**

1. A composition for resin transfer molding of composite body panels of a vehicle consisting essentially of:

from about 38% to about 44% by weight of a resin suitable for resin transfer molding;

from about 28% to about 32% of glass fibers;

from about 28% to about 30% of a filler material

wherein said resin is a modified acrylic resin with low profile additives.

5,336,711

BINDER COMPOSITION AND ITS USE FOR THE PRODUCTION OF COATING OR SEALING COMPOSITIONS

Volker Schneider; Harald Blum, both of Wachtendonk; Werner Kubitza, and Joachim Probst, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 9, 1992, Ser. No. 973,366

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1991, 4137896

Int. Cl.[5] C08L *67/00*

U.S. Cl. 524—507 **10 Claims**

1. An aqueous binder composition comprising

A) an aqueous solution or dispersion of a water-dilutable organic polyol component containing at least one polyester resin having carboxylate and hydroxyl groups and grafted with vinyl monomers and

B) a polyisocyanate component which is emulsified in the aqueous solution or dispersion A), has a viscosity at 23° C. of 50 to 10,000 mPa.s and contains at least one organic polyisocyanate,

wherein the binder composition has an NCO/OH equivalent ratio of 0.5:1 to 5:1, based on the isocyanate groups of component B) and the alcoholic hydroxyl groups of component A).

5,336,712

PROCESS FOR MAKING SUBMICRON STABLE LATEXES OF BLOCK COPOLYMERS

David M. Austgen, Jr., Missouri City, and Jeffrey G. Southwick, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 880,796, May 8, 1992, abandoned. This application Mar. 23, 1993, Ser. No. 35,870

Int. Cl.[5] C08J *3/03, 3/215*

U.S. Cl. 524—530 **16 Claims**

1. A process for producing stable polymer latexes with an average particle size of less than one micron, which comprises:

(a) making a polymer cement of a block copolymer of a conjugated diene and a vinyl aromatic hydrocarbon and a blend of a non-aromatic solvent for the block copolymer and from 5 to 50 weight percent of the blend of at least one non-aromatic cosolvent having a solubility parameter in the range from 8.7 to 9.9;

(b) emulsifying the polymer cement at an aqueous phase to cement weight ratio of from 10:1 to 1:3 by adding it to an aqueous phase containing from 0.1 to 10 weight percent of the aqueous phase of one or more surfactants, and

(c) removing solvent, cosolvent and excess water from the emulsion.

5,336,713

RESIN COMPOSITION

Kenji Nagaoka, Ichihara, and Satoru Gotoh, Sodegaura, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 3, 1993, Ser. No. 55,305

Claims priority, application Japan, May 22, 1992, 4-130596

Int. Cl.[5] C08L *71/12*

U.S. Cl. 524—540 **9 Claims**

1. A resin composition comprising (A) a polyphenylene ether and (B) a polyarylene sulfide having a temperature-mediated crystallization of not greater than 225° C. and a melting viscosity of 500 to 2000 poise under the condition of a temperature at 316° C. and a shear rate of 1000 sec^{-1}.

5,336,714

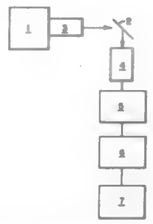
WATER-DISSIPATABLE POLYESTERS AND AMIDES CONTAINING NEAR INFRARED FLUORESCENT COMPOUNDS COPOLYMERIZED THEREIN

James J. Krutak; Michael R. Cushman; William W. Parham; Clarence A. Coates; Max A. Weaver, all of Kingsport, Tenn., and Gabor Patonay, Stone Mountain, Ga., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 19,535, Feb. 18, 1993, Pat. No. 5,292,855. This application Dec. 30, 1993, Ser. No. 175,447

Int. Cl.[5] C08K *3/20*

U.S. Cl. 524—608 **7 Claims**



1. A coating composition comprising

(I) about 20 weight percent to about 35 weight percent of a water-dissipatable polyester comprising:

(i) monomer residues of at least one dicarboxylic acid;

(ii) about 4 to 25 mole percent, based on the total of all acid, hydroxy and amino equivalents, of monomer residues of at least one difunctional sulfo monomer containing at least one sulfonate group bonded to an aromatic ring where the functional groups are hydroxy, carboxyl or amino;

(iii) monomer residues of at least one diol or a mixture of a diol and a diamine; and optionally,

(iv) monomer residues of at least one difunctional monomer reactant selected from hydroxycarboxylic acids, aminocarboxylic acids and aminoalkanols;

provided that at least 20 percent of the groups linking the monomeric units are ester linkages; said water dissipatable polyester having from about 0.1 ppm by weight to about 10% by weight of a thermally stable near infrared flouorphoric compound copolymerized therein; and

(II) about 65 weight percent to about 80 weight percent of water.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,715

ORGANOPOLYSILOXANE COMPOSITION

Johann Sejpka, Markti; Dieter Gerhardinger, and Franz Wimmer, both of Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie, Munich, Fed. Rep. of Germany

Filed Feb. 8, 1993, Ser. No. 14,587

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204306

Int. Cl.[5] C08K 5/05

U.S. Cl. 524—765 8 Claims

1. An organopolysiloxane composition which comprises;

(A) a salt of a water-soluble organic or inorganic acid and an organopolysiloxane which has at least one SiC-bonded organic radical containing basic nitrogen, of the general formula

$$R_aY_bSi(OR^1)_cO_{\frac{4-a-b-c}{2}} \quad (I)$$

in which R is a hydrogen atom or a monovalent organic radical free of basic nitrogen, R^1 is a hydrogen atom or an alkyl radical, Y is a monovalent SiC-bonded radical containing basic nitrogen, a is 0, 1, 2 or 3, b is 0, 1, or 2 and c is 0, 1, 2 or 3, with the proviso that the sum of a, b and c in the units of formula (I) is less than or equal to 3 and that at least one radical Y is present per molecule,

(B) an alkoxylated alcohol, and

(C) a salt of a water-insoluble organic acid and the organopolysiloxane (A) of the general formula (I).

5,336,716

PAINTS, AND USE OF THE PAINTS FOR THE FINISHING OF AUTOMOBILE BODIES

Elisabeth Kappes, Mannheim, and Ulrich Poth, Münster, both of Fed. Rep. of Germany, assignors to BASF Lacke + Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

PCT No. PCT/EP91/01151, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO92/01025, PCT Pub. Date Jan. 23, 1992

PCT Filed Jun. 21, 1991, Ser. No. 958,337

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1990, 4021126

Int. Cl.[5] C08L 67/06

U.S. Cl. 525—23 9 Claims

1. A paint comprising at least one member selected from the group consisting of:

(i) a resin (A) which comprises hydroxyl groups and wherein α,β-unsaturated carbonyl groups have been introduced by reacting a part of the hydroxyl groups with a diisocyanate and a compound containing α,β-unsaturated carbonyl groups, the content of hydroxyl groups being between 0.01 and 50 mol and the content of α,β-unsaturated carbonyl groups being between 0.01 and 20 mol, per kg of resin, or a mixture of such resins, and

(ii) a mixture comprising of

a) a hydroxyl-containing resin (B) having a hydroxyl content of between 0.01 and 50 mol per kg of resin, or a mixture of such resins and

b) a crosslinking agent (C) having on statistical average at least two α,β-unsaturated carbonyl groups in the molecule, or a mixture of such crosslinking agents, the components a) and b) being in a weight ratio of 99.99:0.01 to 50:50,

and wherein the paint further includes a catalyst (D) which catalyzes the reaction of hydroxyl groups with α,β-unsaturated carbonyl groups or a mixture of such catalysts, wherein the catalyst (D) is a Brönsted acid whose pKa value of the first dissociation state, measured at 25° C., is below 1.0.

5,336,717

GRAFT COPOLYMERS CONTAINING FLUOROALIPHATIC GROUPS

Richard J. Rolando, Oakdale; Thomas A. Kotnour, Faribault, and James E. Sax, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 665,271, Mar. 6, 1991. This application Jan. 26, 1994, Ser. No. 188,454

Int. Cl.[5] C08L 51/04, 51/06; C08F 255/02, 255/08, 265/04, 279/02, 263/04; C08J 5/00, 7/04

U.S. Cl. 525—64 12 Claims

1. A graft copolymer comprising a base polymer comprising polymerized units derived from monomers having terminal olefinic double bonds, having grafted thereto a moiety of the formula

$$—CH_2—CHR—Q—R_f$$

wherein

R is hydrogen, trifluoromethyl, or lower alkyl;

Q is a divalent linking group that does not substantially interfere with free radical polymerization; and

R_f is a fluoroaliphatic group comprising a fully fluorinated terminal group containing at least seven fluorine atoms,

said graft copolymer being in the form of a film or a coating.

2. A process for preparing a fluorochemical graft copolymer comprising a base polymer comprising polymerized units derived from monomers having terminal olefinic double bonds, having grafted thereto a moiety of the formula

$$—CH_2—CHR—Q—R_f$$

wherein

R is hydrogen, trifluoromethyl, or lower alkyl,

Q is a divalent linking group that does not substantially interfere with free radical polymerization; and

R_f is a fluoroaliphatic group comprising a fully fluorinated terminal group containing at least seven fluorine atoms,

which process comprises:

(1) feeding to a reactor materials comprising:

(a) a base polymer comprising polymerized units derived from monomers having terminal olefinic double bonds;

(b) an effective amount of a free radical initiator system comprising one or more free radical initiators; and

(c) a fluorochemical olefin comprising a fluoroaliphatic group and a polymerizable double bond, wherein all materials are substantially free of oxygen;

(2) reacting the materials in the reactor to provide the fluorochemical graft copolymer; and

(3) withdrawing the fluorochemical graft copolymer from the reactor.

3. An annealing method for increasing the amount of grafted fluorochemical at the surface of a composition comprising a fluorochemical graft copolymer, comprising the steps of:

a) providing a surface comprising a fluorochemical graft copolymer comprising a base polymer comprising polymerized units derived from monomers having terminal olefinic double bonds, having grafted thereto a moiety of the formula

$$—CH_2—CHR—Q—R_f$$

wherein

R is hydrogen, trifluoromethyl, or lower alkyl;

Q is a divalent linking group that does not substantially interfere with free radical polymerization; and

R_f is a fluoroaliphatic group comprising a fully fluorinated terminal group containing at least seven fluorine atoms, and

b) annealing the surface by heating it at a temperature and for a time effective to increase the amount of the grafted fluorochemical at the surface.

5. A polymer blend comprising a fluorochemical graft copolymer comprising a base polymer comprising polymerized units derived from monomers having terminal olefinic double bonds, having grafted thereto a moiety of the formula

$$—CH_2—CHR—Q—R_f$$

wherein R is hydrogen, trifluoromethyl, or lower alkyl;

Q is a divalent linking group that does not substantially interfere with free radical polymerization; and

R_f is a fluoroaliphatic group comprising a fully fluorinated terminal group containing at least seven fluorine atoms.

12. A method for reducing the surface energy of a polymer comprising polymerized units derived from monomers having terminal olefinic double bonds, comprising the step of grafting to said polymer a moiety of the formula

$$—CH_2—CHR—Q—R_f$$

wherein

R is hydrogen, trifluoromethyl, or lower alkyl;

Q is a divalent linking group that does not substantially interfere with free radical polymerization; and

R_f is a fluoroaliphatic group comprising a fully fluorinated terminal group containing at least seven fluorine atoms.

5,336,718

IMPACT MODIFIER AND MOLDING MATERIAL CONTAINING IT

Norbert Niessner, Freidelsheim; Wolfgang Fischer, Ludwigshafen; Norbert Guentherberg, Speyer; Karl Ruppmich, Ludwigshafen, and Friedrich Seitz, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 23, 1992, Ser. No. 996,410

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1991, 4142910

Int. Cl.[5] C08L 51/00; C08F 257/02, 265/04

U.S. Cl. 525—67 3 Claims

1. A graft copolymer A consisting of, in the order of A1 to A4 from inside to outside and based in each case on the sum of A1 to A4,

A1: from 5 to 90% by weight of a core having a glass transition temperature T_g above 25° C. and consisting of, based on A1,

A11: from 50 to 99.9% by weight of a vinylaromatic monomer,

A12: from 0.1 to 10% by weight of a polyfunctional crosslinking monomer or a graft-linking monomer having two or more functional groups of different reactivities, where the crosslinking and graft-linking apply to a single monomer, and

A13: up to 49.9% by weight of one or more copolymerizable ethylenically unsaturated monomers,

A2: from 5 to 90% by weight of a first shell of elastomeric material having a glass transition temperature T_g below 10° C. and consisting of, based on A2,

A21: from 50 to 99.8% by weight of an alkyl acrylate where the alkyl radical is of 1 to 18 carbon atoms or of a diene,

A22: from 0.1 to 10% by weight of a polyfunctional crosslinking monomer or of at least one graft-linking monomer having two or more functional groups of different reactivities, where the crosslinking and graft-linking apply to a single monomer,

A23: from 0 to 49.8% by weight of one or more copolymerizable unsaturated monomers and

A24: from 0.1 to 10% by weight of one or more α,β-unsaturated monomers containing carboxylic, vinylsulfonic, vinylbenzenesulfonic, or cinnamic acidic groups,

A3: from 5 to 90% by weight of a second shell of rigid material having a glass transition temperature T_g above 25° C. and consisting of, based on A3,

A31: from 50 to 99.9% by weight of a vinylaromatic monomer,

A32: up to 10% by weight of a polyfunctional cross-linking monomer or of at least one graft-linking monomer having two or more functional groups of different reactivities,

A33: up to 49.9% by weight of one or more copolymerizable ethylenically unsaturated monomers and

A34: from 0.1 to 20% by weight of an unsaturated monomer containing one or more basic groups containing a tertiary amino group or a heteroaromatically bonded nitrogen in the molecule, and

A4: up to 85% by weight of a third shell of a copolymer of, based on A4,

A41: from 1 to 99% by weight of one or more vinylaromatic monomers and

A42: from 1 to 99% by weight of one or more copolymerizable ethylenically unsaturated monomers.

3. A thermoplastic molding material containing, based on the sum of A, B and C,

A: from 5 to 95% by weight of a graft copolymer A as claimed in claim 1,

B: from 95 to 5% by weight of polyvinyl chloride or of at least one copolymer (B) of, based on B,

B1: from 50 to 90% by weight of styrene, alpha-alkylstyrene, styrene substituted in the nucleus, alkyl (meth)acrylate where the alkyl radical is 1 to 18 carbon atoms or a mixture thereof (B1) and

B2: from 10 to 50% by weight of (meth)acrylonitrile, maleic anhydride, alkyl (meth)-acrylate, N-substituted maleimide or a mixture thereof (B2),

C: up to 90% by weight of at least one polycarbonate C and

D: up to 100% by weight, based on the mixture of A, B and C, of conventional additives.

5,336,719

TRANSPARENT TOUGHENED PLASTICS

Ronald J. Thompson, Enniskillen Township; James Lunt, Bright's Grove, both of Canada; John C. Lamont, Westminster, and John C. Kwok, Holden, both of Mass., assignors to Polysar Limited, Sarnia, Canada

Division of Ser. No. 382,896, Jul. 21, 1989, Pat. No. 5,079,296. This application Apr. 26, 1993, Ser. No. 51,835

Int. Cl.[5] C08L 9/02, 9/06, 25/12

U.S. Cl. 525—71 4 Claims

1. An impact modified thermoplastic polymer blend having a transparency of not less than 90% as measured using sheet material 0.0040 inches thick comprising:

(i) from 50 to 39.9 weight % of at least one transparent block copolymer comprising:

(a) from 60 to 85 weight % of at least one block of at least one C_{8-12} vinyl aromatic monomer; and

(b) from 40 to 15 weight % of at least one C_{4-6} conjugated diolefin,

which transparent block copolymer when blended with one or more clear glassy polymers of component iii) below gives a transparent blend;

(ii) from 0.1 to 10 weight % of a rubbery polymer comprising 100–60 weight % of a conjugated diolefin and 0–40 weight % of one or more monomers selected from the group consisting of C_{2-6} alkenyl nitrile monomers and styrene,

which rubbery polymer is in a particulate form having a volume moment average particle diameter from 0.1 to 0.3 microns; and

(iii) from 40 to 60 weight % of a clear glassy polymer comprising:

(a) from 70 to 90 weight % of one or more C_{8-12} vinyl aromatic monomers; and

(b) from 30 to 10 weight % of a C_{3-6} alkenyl nitrile monomer, wherein said rubbery polymer is introduced into the blend in the form of an impact modified glassy polymer of component (iii) above comprising from 0.1

VOL 1165 ISS 2 AG 9 1994 UMI

to 20 weight % of said rubber in particulate form and from 99.9 to 80 weight % of said clear glassy polymer.

5,336,720

IMPACT RESISTANT POLYMERS

Susanna E. Richards, Chalfont, Pa.; William L. Wills, Roebling, N.J.; Donna Wetzel, Bensalem, and Anibal Rosado, Bristol, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 5, 1991, Ser. No. 710,496
Int. Cl.[5] C08L *33/02*
U.S. Cl. 525—78 **19 Claims**

1. An impact resistant graft polymer composition comprising:

from about 60 to about 95 parts by weight based on 100 parts of total graft copolymer composition of an agglomerated rubber (C) latex having the following composition:

(a) 100 parts by weight based on the sum of the parts of synthetic rubber latex and polymeric additive, of a synthetic rubber latex (A) having a particle distribution between about 60 nm. and about 200 nm., and a pH from about 8.0 to about 10.0; and

(b) from about 0.1 to about 5.0 parts by weight based on the sum of the parts of synthetic rubber latex and polymeric additive, of a polymerized polymeric additive (B) having an average particle diameter of about 100 nm. to about 300 nm., and formed by polymerizing:

(1) at least 38% to about 90% by weight of at least one unsaturated carboxylic acid selected from acrylic acid, methacrylic acid, itaconic acid, acryloxypropionic acid, or crotonic acid;

(2) from about 5 to 57% by weight of methyl methacrylate;

(3) from 5 to 10% by weight of butyl acrylate; and

2) from about 5 to about 40 parts by weight based on 100 parts of total graft copolymer composition of a grafted polymer (D) having the following composition:

(a) at least 30% by weight of at least one monomer selected from styrene, acrylonitrile, methyl methacrylate, hydroxyethyl methacrylate, hydroxyethyl acrylate, butyl acrylate, ethyl acrylate, itaconic acid, methacrylic acid, or acryloxypropionic acid; and

(b) less than 30% by weight of a vinyl monomer having $CH_2=C<$copolymerizable therewith.

5,336,721

ADHESIVE BLENDS OF ETHYLENE-ALKYL ACRYLATE COPOLYMERS AND MODIFIED PROPYLENE-ETHYLENE COPOLYMERS

Webster W. Kiang, West Chester, Ohio, assignor to Quantum Chemical Corporation, Cincinnati, Ohio

Filed Apr. 6, 1993, Ser. No. 46,251
Int. Cl.[5] C08L *33/02*
U.S. Cl. 525—78 **13 Claims**

1. An adhesive blend consisting essentially of (a) 89 to 98 weight percent of an ethylene-C_{1-6} alkyl acrylate copolymer having a melt index of 0.3 to 125 g/10 min and (b) 2 to 11 weight percent of a copolymer of propylene and ethylene selected from the group consisting of statistical propylene-ethylene copolymers containing from about 1 to 10 weight percent ethylene and having a melt flow rate less than 15 g/10 min and impact propylene-ethylene copolymers containing from 5 to 30 weight percent ethylene and having a melt flow rate less than 15 g/10 min and grafted with 1 to 6 weight percent of an ethylenically unsaturated carboxylic acid or derivative thereof.

5,336,722

POLYMERIC REACTION PRODUCTS

Dieter Faul, Bad Duerkheim; Gerhard Hoffmann, Otterstadt; Klaus Huemke, Friedelsheim; Ulrich Heimann, Muenster, all of Fed. Rep. of Germany, and John A. Gilbert, Beverly Hills, Mich., assignors to BASF Lacke+Farben Aktiengesellschaft, Muenster, Fed. Rep. of Germany

Filed Nov. 20, 1992, Ser. No. 979,313
Int. Cl.[5] C08J *3/24;* **C08L** *63/10*
U.S. Cl. 525—113 **7 Claims**

1. A composition consisting essentially of polymeric reaction product which is obtained by reacting

I) prepolymers obtained from

A) polyoxyalkylenes which have an average molecular weight $\overline{M}_n$ of from 140 to 10,000 and contain on average from 1.5 to 3.0

a_1) primary or secondary amino groups or

a_2) epoxy groups per molecule and

B) polymers which are based on conjugated dienes, have an average molecular weight $\overline{M}_n$ of from 250 to 50,000 and contain on average from 1.5 to 3.0

b_1) primary or secondary amino groups or

b_2) epoxy groups per molecule, the components (a_1) and (b_2) or (a_2) and (b_1) being reacted with one another so that from at least an amino equivalent excess to 3 amino equivalents of component (a_1) or (b_1) are present per epoxide equivalent of component (a_2) or (b_2), with

II) at least one compound which forms free radicals.

5,336,723

PHENOLIC RESIN MOLDING MATERIALS

Shinji Ikeda, Fujieda; Keiji Ooi, Tsu, and Ken Katoh, Fujieda, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 41,461
Claims priority, application Japan, Sep. 30, 1992, 4-262298; Oct. 20, 1992, 4-282025
Int. Cl.[5] C08L *61/10, 61/06, 9/02*
U.S. Cl. 525—139 **7 Claims**

1. A phenolic resin molding material which is mainly composed of (1) 25–55 parts by weight of a phenolic resin containing 60% by weight or more of a resol phenolic resin, (2) 2–10 parts by weight of a partially crosslinked NBR, and (3) 35–70 parts by weight of an inorganic filler, on the basis of 100 parts by weight in total of these components.

5,336,724

PHENOLIC RESIN MOLDING COMPOUNDS AND THE ARTICLES THEREOF

Toshifumi Okuno, Ibaraki, and Teruo Miyaji, Kitakatsuragi, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 929,491, Aug. 18, 1992, abandoned, which is a continuation of Ser. No. 578,303, Sep. 5, 1990, abandoned. This application Mar. 25, 1993, Ser. No. 36,881
Claims priority, application Japan, Sep. 8, 1989, 1-234114
Int. Cl.[5] C08L *61/04, 61/10, 33/06*
U.S. Cl. 525—143 **5 Claims**

1. An article which is produced by compression molding of a resol phenolic resin sheet molding composition comprising (1) a resin paste comprising a resol phenolic resin and polyvinyl acetate and (2) a reinforcing fiber,

the proportion of the polyvinyl acetate being about 5 to 20 weight parts based on 100 parts of the total resin, and the amount of the reinforcing fiber being about 5 to 70 weight % of the total molding composition.

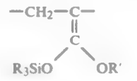
5,336,725

METHOD FOR PREPARING GRAFT COPOLYMER

Seiji Tone; Akira Nakata, and Naoki Yamamoto, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,210
Claims priority, application Japan, Jun. 21, 1991, 3-150424
Int. Cl.[5] C08F *265/06, 220/18*
U.S. Cl. 525—254 **10 Claims**

1. A method for preparing a graft copolymer comprising the step of carrying out a living polymerization of at least one (meth)acrylic ester constituting the branch portions of the graft copolymer, by the use of a polymeric compound initiator of a polyacrylic ester having a glass transition temperature of 0° C. or less, methacrylic ester-acrylic ester copolymer or ethylene-acrylic ester copolymer having a number average molecular weight from 1,000 to 1,000,000 and having incorporated therein one or more initiators having the following formula (I) substantially in the absence of water and in the presence of a Lewis acid or a donor compound of an anion selected from the group consisting of HF_2^-, $(CH_3)_3SiF_2^-$ and F:



wherein R is hydrogen or an alkyl group having 1 to 6 carbon atoms, and R′ is an alkyl group having 1 to 12 carbon atoms, and the living polymerization is carried out at a temperature from −100° to 100° C. and wherein said polymeric compound initiator constitutes the backbone of the graft copolymer.

5,336,726

BUTADIENE POLYMERS HAVING TERMINAL SILYL GROUPS

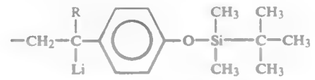
Donn A. DuBois, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 11, 1993, Ser. No. 29,866
Int. Cl.[5] C08F *297/04*
U.S. Cl. 525—272 **5 Claims**

1. A polymer, comprising:

polymerized 1,3-butadiene having hydrogenation of at least 90% of the unsaturation; and

at least one terminal silyl group per molecule, wherein the silyl group forms the structure



wherein R is hydrogen or an alkyl having up to 10 carbon atoms.

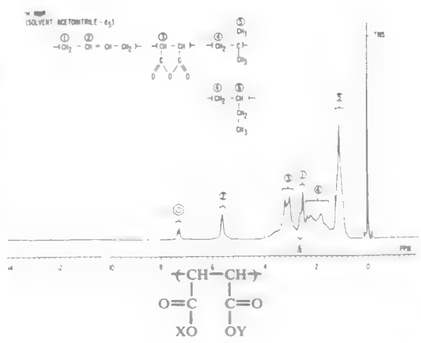
5,336,727

MALEIC ANHYDRIDE COPOLYMER

Tomoyuki Okazawa; Seiichi Tokumaru; Hideo Ohira, all of Yokkaichi; Masao Ishii, Suzuka, and Yoshiaki Kano, Yokkaichi, all of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed Jul. 15, 1991, Ser. No. 729,756
Claims priority, application Japan, Jul. 16, 1990, 2-187495; May 9, 1991, 3-133565
Int. Cl.[5] C08F *222/06, 236/04, 210/00*
U.S. Cl. 525—327.8 **12 Claims**

1. A water-soluble maleic acid copolymer comprising units of maleic acid represented by formula (VII):



wherein X and Y are the same or different and are members selected from the group consisting of hydrogen, alkali metals, alkaline earth metals ammonium and alkyl ammoniums, units of at least one conjugated diene represnted by formula (II):



wherein R^1, R^2, R^3 and R^4 respectively represents hydrogen or an alkyl group having 1 to 8 carbon atoms, and units of at least one aliphatic monoolefin represented by formula (III):



wherein R^5, R^6, R^7 and R^8 respectively represents hydrogen or an alkyl group having 1 to 6 carbon atoms, wherein the weight-average molecular weight of the copolymer ranges from 500 to 50000, the molar ratio of unit (VII)/(unit (II)+unit (III)) ranges from 30/70 to 90/10 and the molar ratio of unit (II)/unit (III) ranges from 5/95 to 90/10.

5,336,728

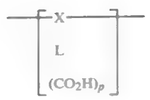
ORAL HYGIENE COMPOSITIONS AND POLYMERS ACTIVE THEREIN

Martyn Humphries, Manchester; Jozef Nemcek; Joseph F. Jaworzyn, both of Cheshire; John B. Cantwell, Merseyside, and John J. Gerrard, Cheshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 496,150, Mar. 19, 1990, Pat. No. 5,079,288, which is a continuation of Ser. No. 16,257, Feb. 19, 1987, abandoned, which is a division of Ser. No. 793,763, Nov. 1, 1985, abandoned. This application Sep. 18, 1991, Ser. No. 761,463
Claims priority, application United Kingdom, Nov. 12, 1984, 8428523
Int. Cl.[5] C08F *8/14*
U.S. Cl. 525—328.2 **28 Claims**

1. A polymer having utility as an active component of oral hygiene compositions which polymer consists of one or more repeating units of general structure A

VOL 1165 ISS 2 AUG 9 1994 UMI



and one or more repeating units of general structure B



wherein X, which in the repeating units of structure A may be the same or different, and Y, which in the repeating units of structure B may be the same or different, are optionally substituted hydrocarbyl residues providing a backbone for the polymer;

R^1, which in the same repeating unit of structure B (when n or q is 2 or more) or in different repeating units of structure B may be the same or different, is hydrogen or methyl;

R^2, which in the same repeating unit of structure B (when n or q is 2 or more) or in different repeating units of structure B may be the same or different, is hydrogen or methyl;

except that R^1 and R^2 in a single unit (CHR^1CHR^2O) cannot both be methyl;

R^3, which in the same repeating unit of structure B (when q is 2 or more) or in different repeating units of structure B may be the same or different, is hydrogen, or a lower alkyl group containing up to 5 carbon atoms, or an acyl group derived from an alkanoic acid having up to 5 carbon atoms;

n is a number of from 1 to 60;

p is a number of from 1 to 4, and q is a number of from 1 to 4;

and wherein each (CO_2H) group is joined via an intermediary or intermediaries L to the hydrocarbyl residue X, and in cases where p is 2 to 4 may be joined by L to the same or different carbon atoms of X;

and wherein L represents one or more intermediaries, and wherein L may be the same or different in the repeating units of structure A and is selected from one or more direct links and one or more groups of atoms each group providing a chain of one or more atoms for linking a (CO_2H) group with X, except that more than two (CO_2H) groups cannot be directly linked to the same carbon atom in X;

and wherein each $(CHR^1CHR^2O)_n$ group is joined via an intermediary or intermediaries M to the hydrocarbyl residue Y, and in cases where q is 2 to 4 may be joined by M to the same or different carbon atoms of Y;

and wherein M represents one or more intermediaries, and wherein M maybe the same or different in the repeating units of structure B and is selected from one or more direct links and one or more groups of atoms each group providing a chain or one or more atoms for linking a $(CHR^1CHR^2O)_n$ group with Y, except that more than two (CHR^1CHR^2O) groups cannot be directly linked to the same carbon atom in Y;

and wherein the ratio of the number of —CO_2H groups to the number of —CHR^1CHR^2O— groups is within the range of from 1:20 to 20:1.

5,336,729

ACRYLAMIDE CO-POLYMERS WITH (2-ACRYLAMIDO-2-HYDROXYETHYL) LOWER TRIALKYL AMMONIUM SALTS

Dodd W. Fong, Naperville, and Frederick J. Swiecinski, Algonquin, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Aug. 18, 1993, Ser. No. 109,183

Int. Cl.[5] C08F *220/60, 8/30, 8/28*

U.S. Cl. 525—329.4 **8 Claims**

1. An acrylamide copolymer comprising 1–60 mole percent (2-acrylamido-2-hydroxy alkyl) lower trialkyl ammonium salt groups.

5,336,730

TIRE WITH SILICA REINFORCED TREAD

Paul H. Sandstrom, Tallmadge; Richard G. Bauer, Kent; Donald J. Burlett, Wadsworth, and Mark S. Sinsky, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 79,191, Jun. 18, 1993, abandoned. This application Dec. 2, 1993, Ser. No. 160,718

Int. Cl.[5] C08K *5/54*

U.S. Cl. 525—332.6 **16 Claims**

1. A pneumatic tire having a tread comprised of (A) 100 parts by weight of at least one diene-based elastomer, (B) about 5 to about 90 phr particulate silica, (C) about zero to about 80 phr carbon black, and (D) a silica coupler selected from (i) dithiodipropionic acid or from (ii) about 95 to about 25 weight percent dithiodipropionic acid and, correspondingly, about 5 to about 75 weight percent bis-(3-triethoxysilylpropyl)tetrasulfide; wherein the weight ratio of said silica coupler to silica is in a range of about 0.01/1 to about 0.2/1; wherein the weight ratio of silica to carbon black, if the tread contains carbon black, is at least about 0.1/1 and where the total of silica and carbon black, if the tread contains carbon black, is in a range of about 30 to about 120.

5,336,731

FRACTIONAL MELT FLOW RATE POLYMER POWDERS AND PROCESS FOR THEIR PREPARATION

Daniel J. Ondrus, West Chester, and Manfred Heimberg, Cincinnati, both of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Division of Ser. No. 784,862, Oct. 30, 1991, abandoned. This application May 21, 1993, Ser. No. 66,359

Int. Cl.[5] C08C *19/00*

U.S. Cl. 525—370 **12 Claims**

1. A process for producing substantially spherical microfine polymer powders of reduced melt flow rate comprising:

(1) combining

(a) an olefin copolymer having a melt index greater than 1 comprised of

(i) an α-olefin having from 2 to 8 carbon atoms

(ii) an unsaturated alkoxysilane of the formula

$$R—Si(R^\bullet)_n(Y)_{3-n}$$

where R is an ethylenically unsaturated hydrocarbon radical having from 2 to 6 carbon atoms, $R^\bullet$ is a hydrocarbon radical having from 1 to 10 carbon atoms, Y is an alkoxy group having from 1 to 4 carbon atoms and n is an integer from 0 to 2; and,

(iii) optionally, a comonomer selected from the group consisting of vinyl esters of C_{2-6} aliphatic carboxylic acids, C_{1-6} alkyl acrylates and C_{1-6} alkyl methacrylates;

(b) 4 to 50 percent, based on the weight of the olefin copolymer, of a nonionic surfactant which is a block copolymer of ethylene oxide and propylene oxide;

(c) 0.001 to 10 percent, based on the weight of the olefin copolymer, of a catalyst selected from the group consisting of organic bases, mineral acids, C_{2-22} carboxylic acids, adducts of unsaturated carboxylic acids or carboxylic acid anhydrides, organic titanates and complexes or carboxylates of lead, cobalt, iron, nickel, zinc and tin; and

(d) a polar liquid medium which is not a solvent for the olefin copolymer and which does not react with (a), (b) or (c) under the conditions employed, the weight ratio of the polar liquid medium to the olefin copolymer ranging from 0.8:1 to 9:1;

(2) heating the mixture to a temperature above the melting point of the olefin polymer;

(3) dispersing the mixture to form droplets of the desired size;

(4) maintaining the dispersion for a period of time sufficient to reduce the melt index of the olefin copolymer;

(5) cooling the dispersion to below the melting point of the olefin copolymer; and

(6) recovering the olefin copolymer powder.

5,336,732

PROCESS FOR FORMING POLYAMIDE/POLY(PHENYLENE ETHER) BLENDS

George J. Samuels, Bridgewater, N.J., assignor to AlliedSignal Inc., Morristownship, Morris County

Filed Feb. 12, 1993, Ser. No. 17,663

Int. Cl.[5] C08L *77/00, 71/02*

U.S. Cl. 525—397 **15 Claims**

1. A process for forming a blend comprising a poly(phenylene ether) domains dispersed in a polyamide matrix, said process comprising the steps of:

(a) forming a reaction mixture comprising a substituted or unsubstituted poly(phenylene ether) and a polyamide; and

(b) polymerizing said precursor to form a blend comprising a polyamide matrix having poly(phenylene ether) domains dispersed therein, wherein the average diameter of said poly(phenylene ether) domains is from about 0.4 to about 4 microns with a maximum diameter of not more than about 6 microns and wherein said poly(phenylene ether) domains include occluded polyamide domains.

5,336,733

HIGH PERFORMANCE POLYURETHANE BASE RESINS

Terrence L. Hartman, Franklin Park, and Charles A. Cody, Robbinsville, both of N.J., assignors to Rheox, Inc., Hightstown, N.J.

Continuation of Ser. No. 697,016, May 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 336,001, Apr. 10, 1989, abandoned. This application Aug. 25, 1993, Ser. No. 111,431

Int. Cl.[5] C08L *67/02, 67/04, 75/06*

U.S. Cl. 525—411 **9 Claims**

1. A polyurethane base resin for systems used at elevated service temperatures formed by reacting polyisocyanates with polyol compounds, wherein the polyisocyanates consist of polycarbodiimide-modified 4, 4′-diphenylmethane diisocyanate, and wherein the polyol compounds consist of (a) a hydroxyl-terminated, linear, saturated, liquid copolyester diol having a glass transition temperature of at most −10° C. and of at least −60° C., and (b) a homopolyester polyol that is a ring-opened polymer of a cyclic ester.

5,336,734

TEXTILE FIBERS OF SULFONATED POLY(P-PHENYLENE TEREPHTHALAMIDE)

Michael W. Bowen; Hamid M. Ghorashi, both of Midlothian, and Hung H. Yang, Richmond, all of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 19, 1993, Ser. No. 47,394

Int. Cl.[5] C08F *283/04;* **C08G** *69/42*

U.S. Cl. 525—420 **2 Claims**

1. A textile quality fiber that is rapidly dyeable to deep shades consisting essentially of sulfonated poly(p-phenylene terephthalamide) having an inherent viscosity of about 1.5 to 4 measured at 30° C. at a concentration of 0.5 gram of polymer in 100 ml of 96% H_2SO_4 and from 5 to 20 mols of sulfur as sulfonate groups per 100 mols of p-phenylene terephthalamide polymer repeat units, the said fiber exhibiting a modulus of less than 200 grams per denier and an elongation greater than 6%.

5,336,735

FLAME-RETARDANT THERMOPLASTIC RESIN COMPOSITION, FLAME RETARDANT, AND PROCESS FOR PREPARING THE FLAME RETARDANT

Katsuji Takahashi; Yuji Sath, and Takehisa Mizuno, all of Chiba, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 853,594, Mar. 18, 1992, abandoned. This application Sep. 14, 1992, Ser. No. 944,004

Claims priority, application Japan, Mar. 19, 1991, 3-054614; May 31, 1991, 3-129421

Int. Cl.[5] C08L *63/10*

U.S. Cl. 525—423 **7 Claims**

1. A flame-retardant thermoplastic resin composition comprising (A) a thermoplastic resin and (B-1) a halogenated epoxy resin whose epoxy groups are capped by a long chain saturated aliphatic monocarboxylic acid or (B-2) a mixture prepared by melt mixing (b1) a halogenated epoxy resin or (b2) a halogenated epoxy resin whose epoxy groups are capped with (b3) a long chain saturated aliphatic monocarboxylic acid.

5,336,736

POLYSILANE AND POLYSILANE COMPOSITION

Yoshihiko Nakano, Tokyo; Shuzi Hayase, Kawasaki; Shinji Murai, Yokohama; Yukihiro Mikogami, Yokohama, and Akira Yoshizumi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

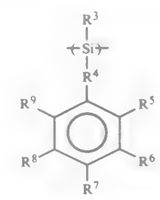
Continuation of Ser. No. 858,867, Mar. 27, 1992, abandoned. This application Apr. 29, 1993, Ser. No. 53,810

Claims priority, application Japan, Mar. 29, 1991, 3-91613; Oct. 24, 1991, 3-278028

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—474 **15 Claims**

1. A polysilane composition comprising a polysilane having a repeating unit represented by general formula (2) given below and a crosslinking agent of a polyfunctional compound capable of reaction with the phenolic hydroxyl group:



(2)

where, R^3 is hydrogen, a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms, or a substituted or unsubstituted aryl group having 6 to 24 carbon atoms, R^4 is a covalent bond, or a substituted or unsubstituted alkylene group having 1 to 24 carbon atoms or a substituted or unsubstituted arylene group having 6 to 24 carbon atoms; and each of R^5 to R^9 is hydrogen, hydroxyl group, a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms, or a substituted or unsubstituted aryl group having 6 to 24 carbon atoms, at least one of R^5 to R^9 being hydroxyl group.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,737

PROCESS FOR THE PREPARATION OF RANDOM COPOLYMERS OF CONJUGATED DIENES AND VINYL AROMATIC COMPOUNDS

Hendrik van Ballegooijen, Amsterdam, Netherlands; Joseph P. M. Peters, Berre L'Etang, France, and Johannes T. A. Plum, Gravenhage, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 15, 1990, Ser. No. 567,843

Claims priority, application United Kingdom, Aug. 16, 1989, 8918702

Int. Cl.[5] C08F *2/06, 236/10*

U.S. Cl. 526—70 15 Claims

1. An improved process for the preparation of a random copolymer of at least one conjugated diene and at least one vinyl aromatic compound wherein the monomers are reacted with the aid of an initiator based on lithium in the presence of an essentially inert solvent, the improvement comprising reacting the monomers in a solvent comprising at least 60 percent by weight of cyclopentane and withdrawing the heat of reaction by reflux cooling.

5,336,738

KILL-GAS INTRODUCTION TO A FLUIDIZED BED REACTOR CONTAINING CHROMIUM OXIDE CATALYST

Laszlo Havas, Martigues; Claudine Lalanne-Magne, Lavera, and John G. Speakman, Martigues, all of France, assignors to BP Chemicals Limited, London, England

Continuation-in-part of Ser. No. 733,343, Jul. 22, 1991, abandoned. This application Aug. 2, 1991, Ser. No. 739,814

Claims priority, application France, Aug. 7, 1990, 9010281

Int. Cl.[5] C08F *2/42*

U.S. Cl. 526—82 12 Claims

1. A process for stopping an olefin polymerisation which is carried out in a low pressure gas phase reactor, which process comprises introducing an effective quantity of deactiving agent into the reactor characterised in that the olefin polymerisation is carried out using a chromium oxide catalyst and in that the deactivating agent is selected from the group consisting of oxygen, ammonia, water and carbon monoxide and is introduced over a relatively short period of time.

5,336,739

ALKYL TETRAHYDROFURFURYL ETHERS AS ANIONIC POLYMERIZATION MODIFIER IN THE SYNTHESIS OF RUBBERY POLYMER

Wen-Liang Hsu, Copley; Adel F. Halasa, Bath, and Barry A. Matrana, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 864,264, Apr. 6, 1992, Pat. No. 5,231,153. This application Jul. 22, 1993, Ser. No. 94,736

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[5] C08F *4/48, 4/50, 136/08, 236/10*

U.S. Cl. 526—181 10 Claims

1. A process for the synthesis of a rubbery polymer which comprises copolymerizing styrene and isoprene in an inert organic solvent in the presence of a catalyst system which is comprised of (a) an initiator selected from the group consisting of organolithium compounds, organosodium compounds, organomagnesium compounds, and organobarium compounds, and (b) a modifier selected from the group consisting of ethyl tetrahydrofurfuryl ether, propyl tetrahydrofurfuryl ether and butyl tetrahydrofurfuryl ether.

5,336,740

METHOD FOR PREPARING POLY(VINYL TRIFLUOROACETATE) AND POLY(VINYL TRIFLUOROACETATE/VINYL ESTER) IN THE ABSENCE OF CHLOROFLUOROCARBON SOLVENT

Gilbert L. Eian, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 12, 1993, Ser. No. 152,393

Int. Cl.[5] C08F *4/16*

U.S. Cl. 526—194 39 Claims

1. A method for the free-radical (co)polymerization of vinyl trifluoroacetate monomer comprising the steps of:

(a) preparing a mixture comprising:

(i) vinyl trifluoroacetate monomer;

(ii) optionally, vinyl ester monomer(s);

(iii) a solvent selected from the group consisting of siloxane oligomers, organosiloxanes, polyorganosiloxanes, and mixtures thereof;

(iv) a free-radical polymerization initiator;

(v) optionally, a water scavenger; and

(b) activating the mixture to effect (co)polymerization of the monomers and form a (co)polymer.

5,336,741

FLUORINATED POLYMER AND MONOMERS

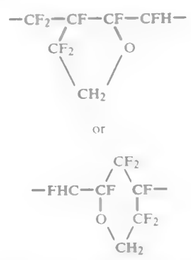
Zhen-Yu Yang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1993, Ser. No. 169,917

Int. Cl.[5] C08F *16/24*

U.S. Cl. 526—247 8 Claims

1. A polymer, comprising, the repeat unit



or

or both, provided that the polymer is totally amorphous.

5,336,742

POLYMERIC SUPPORTS

Steven M. Heilmann, Afton; Jerald K. Rasmussen, Stillwater; Larry R. Krepski, White Bear Lake; Dean S. Milbrath, Stillwater, and Patrick L. Coleman, Minneapolis, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 335,835, Apr. 10, 1989, Pat. No. 5,292,840, which is a continuation-in-part of Ser. No. 158,258, Feb. 19, 1988, Pat. No. 4,871,824, which is a continuation-in-part of Ser. No. 25,605, Mar. 13, 1987, Pat. No. 4,737,560. This application Jun. 1, 1992, Ser. No. 891,781

The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.

Int. Cl.[5] C08F *226/06, 220/58;* C12N *11/08*

U.S. Cl. 526—260 13 Claims

1. A crosslinked, azlactone-functional polymer support having more than 5 and up to 99 molar parts of multifunctional ethylenically unsaturated crosslinking monomer incorporated therein, and wherein said polymer support swells less than three-fold in water.

5,336,743

CAST RESIN FOR OPTICAL USE

Toshiaki Takaoka; Katsuyoshi Tanaka, and Kenji Kato, all of Oita, Japan, assignors to NOF Corporation, Tokyo, Japan

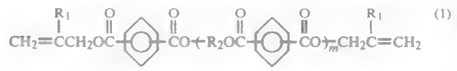
Filed Oct. 19, 1992, Ser. No. 962,939

Claims priority, application Japan, Nov. 1, 1991, 3-288097; Nov. 1, 1991, 3-288099

Int. Cl.[5] C08F *18/18, 18/24, 222/26*

U.S. Cl. 526—292.4 17 Claims

1. A cast resin for optical use obtained by polymerizing 40–90% by weight of a polymerizable component 1 of a diallylphthalate component represented by the formula:



(1)

wherein —R_1 stands for a hydrogen atom or a methyl group, —OR_2 for a dihydric alcohol residue having 1–5 carbon atoms, and m for an integer of 0–20 wherein the fraction of said component 1 where m=0 ranges from 20–70% by weight, where m=1 ranges from 20–40% by weight, where m=2 ranges from 1–20% by weight, where m=3 ranges from 0–20% by weight, where m=4 ranges from 0–15% by weight, where m=5 ranges from 0–10% by weight, and where $6 \leqq m \leqq 20$ ranges from 0–10% by weight;

with 10–60% by weight of a polymerizable component 2 of an alkyleneglycol bis-allylcarbonate component represented by the formula:



(2)

wherein —R_4 stands for a hydrogen atom or a methyl group, —OR_3 for a dihydric alcohol residue having 1–10 carbon atoms and n for an integer of 1–10 wherein the fraction of said component 2 where n=1 ranges from 20–60% by weight, where n=2 ranges from 25–40% by weight, where n=3 ranges from 5–25% by weight, where n=4 ranges from 1–20% by weight, and where $5 \leqq n \leqq 10$ ranges from 0–15% by weight.

5,336,744

PROCESS FOR POLYMERIZATION OF ITACONIC ACID

Graham Swift, Blue Bell, and Kathryn M. Yocom, Oreland, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 17, 1993, Ser. No. 32,221

Int. Cl.[5] C08F *22/02*

U.S. Cl. 526—318.2 8 Claims

1. A process for preparing homopolymers of itaconic acid comprising:

(a) adding an initial charge of a monomer solution of itaconic acid water and a polyvalent metal ion to a reactor wherein the polyvalent metal ion is ferric ammonium sulfate at a level of from about 0.2 ppm to about 0.05 ppm percent by weight based on the weight of the total monomer;

(b) adding a base for partial neutralization of the monomer solution; and,

(c) adding under uniform addition rates an initiator solution.

(d) running the reactor at a temperature sufficient to produce polymers of itaconic acid.

5,336,745

TERMINALLY-SUBSTITUTED POLYMERIC COMPOSITIONS FROM CATIONICALLY POLYMERIZABLE MONOMERS AND INITIATORS

Herve M. Cheradame, Latronche, France; Robert D. Lundberg, Bridgewater; Frank J. Chen, Edison, both of N.J., and Jean de la Crois Habimana, Grenoble, France, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 212,689, Jun. 28, 1988, Pat. No. 5,032,653. This application May 16, 1991, Ser. No. 700,980

Int. Cl.[5] C08F *110/04*

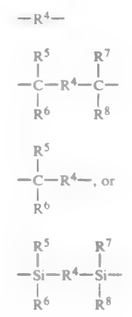
U.S. Cl. 526—347.1 17 Claims

1. Novel terminally-substituted polymeric compositions comprising at least one member selected from the group consisting of:

(a) R-(polymer*)-Y, and

(b) Y-(polymer*)-Z-(polymer*)-Y

wherein "polymer*" comprises a polymer derived from at least one cationically polymerizable monomer, R comprises hydrocarbyl, Y comprises a member selected from the group consisting of —N_3, —CN, —OCN, and —SCN, and Z comprises



(i)

(ii)

(iii)

, or

(iv)

wherein R^5, R^6, R^7 and R^8 are the same or difference and are H or hydrocarbyl, and R^4 comprises—C_aH_{2a}— and —Ar—, wherein "a" is an integer of from 3 to 20 and wherein said polymeric compositions have been prepared by a direct synthesis from said at least one cationically polymerizable monomer and a nitrogen-containing initiator having the formula $R—(Y)_n$ or the formula Y-Z-Y, wherein R, Y and Z are as previously defined and n is an integer of from 1 to 10.

5,336,746

PROPYLENE RANDOM COPOLYMERS AND PROCESSES FOR PREPARING SAME

Toshiyuki Tsutsui, and Akinori Toyota, both of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 459,834, Jan. 31, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 901,972

Claims priority, application Japan, Dec. 26, 1988, 63-328731; Dec. 26, 1988, 63-328732; Dec. 26, 1988, 63-328734; Jan. 24, 1989, 1-14596; Jul. 21, 1989, 1-189044

Int. Cl.[5] C08F *210/06, 4/642*

U.S. Cl. 526—348.6 15 Claims

1. In a propylene random copolymer composed of structural units (a) derived from propylene and structural units (b) derived from α-olefin of 4 to 20 carbon atoms, the improvement which comprises that the propylene random copolymer has

(i) the structural units (a) in an amount of 90 to 99 mol % and the structural units (b) in an amount of 1 to 10 mol %,

(ii) an intrinsic viscosity (η) as measured in decahydronaphthalene at 135° C. of 0.5 to 6 dl/g,

(iii) a melting point (Tm) as measured by a differential scanning calorimeter falling with in the range of

VOL 1165 ISS 2 AG 9 1994 UMI

$$90<Tm<155-3.5\,(100-P)$$

wherein P is the propylene content (mol %) present in the copolymer,

(iv) a ratio ($\overline{M}w/\overline{M}n$) of a weight average molecular weight ($\overline{M}w$) to a number average molecular weight ($\overline{M}n$) as measured by gel permeation chromatography of less than 3.5, and

(v) a boiling trichloroethylene-insoluble content of less than 5% by weight.

5,336,747

RANDOM 1-BUTENE/ETHYLENE COPOLYMER

Masaki Kohyama, Ichihara; Takeshi Muranaka, Iwakuni; Kunisuke Fukui, Ohno, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 860,123, Mar. 31, 1992, abandoned, which is a continuation of Ser. No. 175,391, Mar. 30, 1988, abandoned, which is a division of Ser. No. 792,668, Oct. 29, 1985, Pat. No. 4,778,870. This application Oct. 16, 1992, Ser. No. 961,854

Claims priority, application Japan, Nov. 2, 1984, 59-230392

Int. Cl.[5] **C08F** *210/16, 210/08*

U.S. Cl. 526—348.6 **3 Claims**

1. A highly crystalline semi-rigid random 1-butene/ethylene copolymer consisting of 1-butene and ethylene, said copolymer having the following characteristics (A) to (K)

(A) it consisting of from 98.5 to 92.3 mole % of the 1-butene component and from 1.5 to 7.7 mole % of the ethylene component;

(B) it has an intrinsic viscosity (η), measured in decalin at 130° C., of from 0.5 to 6 dl/g;

(C) it has a DSC melting point (Tm) measured by a differential scanning calorimeter, of from 100° to 120° C.;

(D) it has a crystallinity, measured by X-ray diffractometry, of from 20 to 58%;

(E) the amount (W_1 in % by weight) of that portion of it which is soluble in boiling methyl acetate is not more than 2%;

(F) the amount (W_2 in % by weight) of that portion of it which is soluble in a 1:1 volume mixture of acetone and n-decane at 10° C. is less than $5 \times (\eta)^{-1.2}$;

(G) it has a yield strength of 30 to 180 kg/cm^2;

(H) it has a tensile strength at break of 200 to 800 kg/cm^2;

(I) it has an elongation at break of from 350 to 800%;

(J) it has a torsional rigidity of 200 to 2000 kg/cm^2; and

(K) it has a Young's modulus of 400 to 4000 kg/cm^2.

5,336,748

EPOXY AND AMINO TRIALKOXYSILANE REACTION PRODUCTS

Nicholas T. Castellucci, San Pedro, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Division of Ser. No. 959,873, Oct. 13, 1992, Pat. No. 5,270,428, which is a continuation of Ser. No. 631,562, Dec. 21, 1990, Pat. No. 5,206,285. This application Jul. 8, 1993, Ser. No. 89,151

Int. Cl.[5] **C08G** *77/18, 77/26*

U.S. Cl. 528—38 **6 Claims**

1. A silane polymer coating composition for forming coatings having excellent bonding properties for metallic surfaces and capable of rendering said metallic surfaces resistant to corrosion, said silane polymer coating composition being formed by anhydrously reacting an epoxy trialkoxy silane with a primary amino trialkoxy silane in relative stoichiometric amounts providing one epoxy group for reaction with each primary amino hydrogen site,

said reaction occurring for a period of approximately twenty-four hours at room temperature, and under an inert gas atmosphere,

said silane polymer coating composition being applicable to a metal surface and hydrolyzable thereon to form a silanol polymer capable of being dehydrated and crosslinked thereon, whereby a corrosion-resistant coating strongly bonded to said metal surface is formed.

5,336,749

ALICYCLIC DIAMINES, ALICYCLIC DIISOCYANATES AND POLYISOCYANATO-ISOCYANURATES AND METHOD FOR THE PREPARATION THEREOF

Ryuji Haseyama; Masatoshi Takagi; Kouzou Hayashi; Katsuyoshi Sasagawa; Kazuyuki Kuroda; Taisaku Kano, all of Kanagawa, and Kiyoshi Shikai, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 866,551, Apr. 10, 1992, Pat. No. 5,210,286, which is a division of Ser. No. 511,183, Apr. 19, 1990, Pat. No. 5,126,426. This application Feb. 17, 1993, Ser. No. 18,717

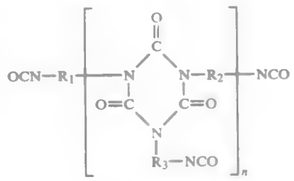
Claims priority, application Japan, Apr. 21, 1989, 1-100121; May 8, 1989, 1-113820

Int. Cl.[5] **C08G** *18/75*

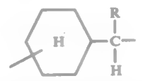
U.S. Cl. 528—73 **10 Claims**

1. A polyisocyanato-isocyanurate represented by the following general formula (IV):

(IV)



wherein R_1, R_2 and R_3 may be the same or different and each represents a group represented by the following general formula:



wherein R represents hydrogen atom or an alkyl group having 1 to 5 carbon atoms and n is an integer ranging from 1 to 5.

5,336,750

PROCESS FOR THE PREPARATION OF POLYCARBONATES

Hendrik E. Tuinstra, and Harold D. Myers, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 741,925, Aug. 8, 1991, Pat. No. 5,189,139. This application Feb. 22, 1993, Ser. No. 20,502

Int. Cl.[5] **C08G** *64/24*

U.S. Cl. 528—196 **14 Claims**

1. A process for producing a polycarbonate comprising the steps of:

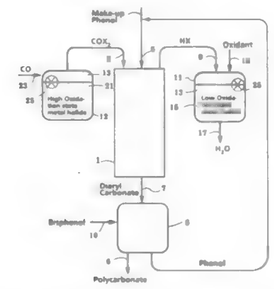
A. reacting a diaryl carbonate with a bisphenol to produce a bisphenol polycarbonate and a phenol;

B. separating the polycarbonate and phenol;

C'. reacting a carbonyl halide with at least a portion of the phenol byproduct from step A to produce a hydrogen halide and a diaryl carbonate, and recycling the diaryl carbonate to step A;

D. contacting at least some of the hydrogen halide produced in step C' with a low oxidation state metal halide and an oxidant to generate water and the corresponding high oxidation state metal halide;

E. on or before exhaustion of the low oxidation state metal halide, contacting carbon monoxide with the high oxidation state metal halide formed in step D to generate carbonyl halide and regenerate the low oxidation state metal halide; and



F. recycling at least a portion of the carbonyl halide formed in step E into step C'.

5,336,751

PREPARATION OF COPOLYCARBONATE FROM RESORCINOL

Paul C. Raymond, III, Evansville, Ind., assignor to General Electric Company, Mass.

Filed Apr. 6, 1992, Ser. No. 863,918

Int. Cl.[5] **C08G** *64/24*

U.S. Cl. 528—204 **6 Claims**

1. A process for preparing an aromatic copolycarbonate having from about 2 to 30 mole % of the total repeating carbonate units derived from resorcinol which comprises reacting a dihydric phenol and resorcinol with a carbonate precursor under interfacial conditions wherein the amount of said resorcinol is sufficient to provide from about 2 to 30 mole % resorcinol derived carbonate units of the total carbonate units, and wherein said dihydric phenol and said resorcinol are a reaction formulation which is purged with an inert gas prior to reaction with the carbonate precursor.

5,336,752

METHOD FOR PRODUCING PHENOLIC RESIN

Fumiaki Oshimi; Susumu Kubota; Masami Enomoto, and Yutaka Otsuki, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,603

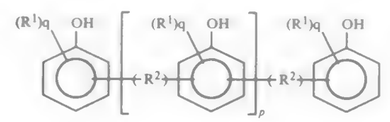
Claims priority, application Japan, Jan. 31, 1992, 4-017110

Int. Cl.[5] **C08G** *63/78, 63/87*

U.S. Cl. 528—205 **13 Claims**

1. A method for producing a phenolic resin represented by the formula (I)

(I)



wherein R_1 is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R_2 is a divalent cyclic hydrocarbon residue having 5 to 18 carbon atoms, p is a number of from 0 to 10 and q is a number of 1 or 2, said method comprising:

reacting a phenol with an unsaturated cyclic hydrocarbon compound having two or more carbon-carbon double bonds in the presence of an acid catalyst; and

processing the resulting phenolic resin product and acid catalyst by a hydrotalcite compound represented by the formula (II) to deactivate said acid catalyst

$$M_{1-x}^{2+}M_x^{3+}(OH)_{2+x-ny}A_y^{n-}.m(H_2O) \qquad (II)$$

where M^{2+} is a divalent magnesium ion, a divalent zinc ion, a divalent calcium ion, a divalent nickel ion, a divalent cobalt ion, a divalent manganese ion or a divalent copper ion, M^{3+} is a trivalent aluminum ion, a trivalent iron ion or a trivalent chromium ion, A^{n-} is HCO_3^-, CO_3^{2-} or OH^-, and x, y and m each are $0.1<x<0.5$, $0.1<y<0.4$ and $0 \leqq m<1$.

5,336,753

POLYCONDENSATION AND/OR ADDITION PRODUCT CONTAINING CARBOXYL GROUPS AND TERTIARY AMINO GROUPS, COATING AGENTS BASED THEREON, AND THE USE THEREOF

Werner A. Jung; Udo Vorbeck, both of Ascheberg; Arno Schmitz, Nottuln; Wilhelm Heise, Munster, and Lutz-Werner Gross, Haltern, all of Fed. Rep. of Germany, assignors to BASF Lacke + Farben Ag, Münster, Fed. Rep. of Germany

Continuation of Ser. No. 328,583, Feb. 27, 1989, Pat. No. 5,179,191. This application Jan. 8, 1993, Ser. No. 2,291

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1986, 3629470

Int. Cl.[5] **C08G** *69/26*

U.S. Cl. 528—335 **26 Claims**

1. A polyester resin containing carboxyl groups and amino groups produced by the reaction of:

a) a carboxylic acid or anhydride;

b) a polyol, and

c) a component which is reacted with a), b) or the reaction product of a) and b) to form a product having tertiary amino groups which originate from component a) or b), an amine number from 3 to 150 and an acid number form 5 to 200.

5,336,754

PREPARATION OF AMORPHOUS/SEMICRYSTALLINE SEMI-AROMATIC (CO)POLYAMIDES

Pierre-Yves Lahary, Lyons, and Serge Roy, Charly, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 808,239, Dec. 16, 1991, abandoned, which is a division of Ser. No. 482,509, Feb. 21, 1990, Pat. No. 5,109,106. This application Jan. 4, 1993, Ser. No. 572

Claims priority, application France, Feb. 21, 1989, 89 02467

Int. Cl.[5] **C08G** *69/28*

U.S. Cl. 528—349 **4 Claims**

1. A process for the preparation of an amorphous or semicrystalline semi-aromatic (co)polyamide, comprising polycondensing a starting monomer/comonomer composition comprising an acidic monomer which comprises at least one aromatic dicarboxylic acid having from 8 to 18 carbon atoms with an amino comonomer consisting essentially of an alkylpentamethylenediamine, or salt thereof, in a closed reaction zone and which further comprises:

(a) stage 1: progressively increasing the temperature of the starting monomer/comonomer composition to a certain value T1 above 110° C.; then, at a constant pressure P higher than atmospheric pressure, removing water present in the reaction mass by steady distillation while simultaneously progressively increasing the temperature of the reaction mass to a value T2 which is higher than the temperature T1 attained prior to distillation;

(b) stage 2: progressively decreasing the pressure from such autogenous pressure to atmospheric pressure with or without simultaneously increasing the temperature of the reaction mass to a value T3 which is higher by some ten to several tens of degrees centigrade than the temperature T2 attained prior to decompression, while continuously maintaining said steady distillation of water during said period of decompression;

VOL 1165 ISS 2 AG 9 1994 UMI

(c) stage 3: completing the polycondensation by stirring the reaction mass at atmospheric pressure or at a lower pressure with a mass temperature equal to or higher than the temperature T2 or T3 attained at the end of stage 2, for a sufficient period of time as to produce a polyamide having the desired molecular and viscosity characteristics; with the provisos that:

(d) the starting monomer/comonomer composition includes sufficient amount of water as to permit the distillation of stage 1 to be carried out under the particular conditions of temperatures (T1 and T2) and pressure (P) indicated below, and which starting composition comprises a catalyst for polycondensing said starting monomer/comonomer composition; and

(e) the temperature of the starting composition in said closed reaction zone is progressively increased in the stage 1 to a value T1 ranging from 160° C. to 190° C.; then, at a constant pressure P equal to the autogenous steam pressure attained, ranging from 0.5 to 1.2 megapascals, removing the water present in the reaction mass by steady distillation by simultaneously progressively increasing the temperature of the reaction mass to a value T2 ranging from 210° C. to 235° C.

5,336,755

PROCESS FOR THE RECOVERY OF POLYMERS DISSOLVED IN AQUEOUS ALKALINE OR ACID MEDIA

Richard F. Pape, Gerlafingen, Switzerland, assignor to Belland AG, Switzerland

Filed Jan. 27, 1993, Ser. No. 10,203

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1992, 4202248

Int. Cl.[5] **C08J** *3/07, 11/16, 11/26*

U.S. Cl. 528—486 **30 Claims**

1. A process for the recovery of polymers dissolved in aqueous alkaline or acid media by precipitating the polymers with acid or alkaline precipitants, wherein the precipitation is initiated in a turbulent flow and the precipitated polymers are separated from the aqueous medium.

5,336,756

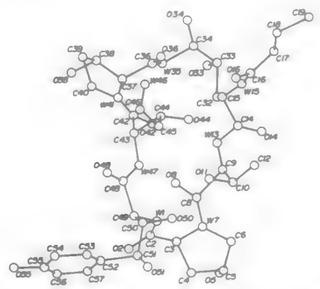
PROCESS FOR CRYSTALLINE CYCLIC LIPOPEPTIDES

Robert E. Schwartz, Westfield, N.J.; August J. Kempf, Staten Island, N.Y., and David J. Mathre, Edison, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

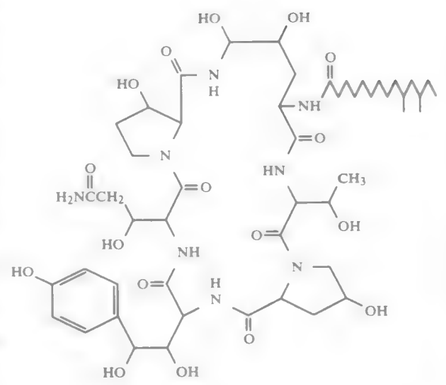
Continuation-in-part of Ser. No. 692,073, May 1, 1991, abandoned. This application Aug. 27, 1991, Ser. No. 750,379

Int. Cl.[5] **C07K** *1/14, 7/54*

U.S. Cl. 530—317 **3 Claims**



1. A process for obtaining in crystalline form a compound (SEQ ID No. 1) having the formula:



which comprises

(1) solubilizing the compound in aqueous n-propanol at about 55° to 65° C. and

(2) allowing the solution to stand at ambient temperature until crystal formation is substantially complete.

5,336,757

ANTIBACTERIAL PEPTIDE AND METHODS OF USE

Nanda K. Gulavita, Palm Bay; Sarath P. Gunasekera, Vero Beach; Shirley A. Pomponi, Fort Pierce; Ross E. Longley, and Peter J. McCarthy, both of Vero Beach, all of Fla., assignors to Harbor Branch Oceanographic Institution, Inc., Fort Pierce, Fla.

Filed Feb. 7, 1992, Ser. No. 831,137

Int. Cl.[5] **A61K** *37/00, 37/02;* **C07K** *5/00, 7/00*

U.S. Cl. 530—317 **15 Claims**

1. A compound having the structure shown in FIG. 1, wherein R is Na, H, or CH_3; and R_1, R_2, and R_3 are H or Ac.

5,336,758

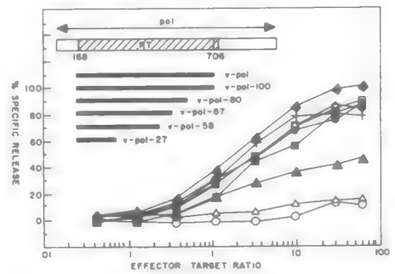
PEPTIDES STIMULATING CYTOTOXIC T CELLS IMMUNE TO HIV RT

Jay A. Berzofsky; Anne Hosmalin; Mario S. Clerici, all of Bethesda; Ronald N. Germain, Potomac; Gene Shearer, Bethesda; Bernard Moss, Bethesda, and Charles D. Pendleton, Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 9, 1990, Ser. No. 489,825

Int. Cl.[5] **A61K** *37/02;* **C07K** *7/08*

U.S. Cl. 530—326 **3 Claims**



1. A peptide consisting essentially of the following amino acid sequence:

Cys-Thr-Glu-Met-Glu-Lys-Glu-Gly-Lys-Ile-Ser-Lys-Ile-Gly-Pro.

5,336,759

BIOLOGICALLY ACTIVE PEPTIDE DERIVED FROM FROG (FROG CNP)

Hisayuki Matsuo, 5-15-141, 5-chome, Onoharahigashi, Minoo-shi, Osaka; Kenji Kangawa, Miyazaki, and Naoto Minamino, Osaka, all of Japan, assignors to Suntory Limited and Hisayuki Matsuo, Osaka, Japan

Filed Sep. 4, 1991, Ser. No. 754,958

Claims priority, application Japan, Sep. 7, 1990, 2-238294

Int. Cl.[5] **C07K** *7/00;* **A61K** *37/02*

U.S. Cl. 530—326 **1 Claim**

1. An isolated biologically active peptide having the formula:



wherein (1) and (2), (3) and (4) directly bind, and the cystein residues (Cys) at positions 6 and 22 form an intramolecular disulfide bond, and an acid addition salt thereof (see SEQ ID NO:1).

5,336,760

METHOD AND USEFUL APPARATUS FOR PREPARING PHARMACEUTICAL COMPOSITIONS

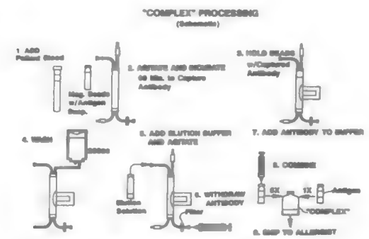
R. Alan Hardwick, El Toro; Alan K. Smith, Mission Viejo; William C. Lake, Laguna Niguel, and Dennis E. Chenoweth, Laguna Hills, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

PCT No. PCT/US90/05228, § 371 Date Mar. 12, 1992, § 102(e) Date Mar. 12, 1992

Continuation of Ser. No. 407,487, Sep. 14, 1989, abandoned. This PCT application Sep. 14, 1990, Ser. No. 838,711

Int. Cl.[5] **B03C** *1/32;* **C07K** *3/18, 17/14;* **G01N** *33/553*

U.S. Cl. 530—413 **23 Claims**



1. A magnetic separator apparatus comprising:

a housing defining a chamber, which includes at least a first inlet and at least a first outlet for gaining entrance to the chamber;

a support platform to which the housing is releasably mounted, the support platform including one or more magnets located at a surface of the support platform against which the housing is releasably mounted;

a base having at least two spaced apart portions between which the support platform is positioned;

one or more arms selectively connected at one location to the support platform and at a second location to one of the base portions, with one of such connections of each of the one or more arms being by means all owing for rotation of the support platform about an axis defined by the arms; and

spring biased means associated with the one or more arms to hold the support platform at a location about the axis of rotation.

5,336,761

HEAT-DEVELOPABLE DIFFUSION TRANSFER COLOR PHOTOGRAPHIC MATERIAL

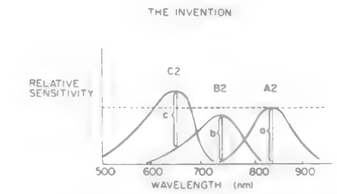
Hiroyuki Ozaki, and Takuya Yokokawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 4, 1992, Ser. No. 845,948

Claims priority, application Japan, Mar. 5, 1991, 3-063925; May 1, 1991, 3-126553

Int. Cl.[5] **G03C** *5/54, 5/16, 7/20*

U.S. Cl. 430—507 **4 Claims**



1. A heat-developable diffusion transfer color photographic material comprising a support having

(a) at least one light-sensitive silver halide emulsion layer A having a color sensitivity peak to light in a range of from 790 nm to 860 nm and containing a first non-diffusible dye donor compound capable of releasing or forming a diffusible dye; and

(b) at least one light-sensitive silver halide emulsion layer B having a color sensitivity peak to light in a range of from 720 nm to 780 nm and containing a second non-diffusible dye donor compound capable of releasing or forming a diffusible dye;

wherein the first non-diffusible dye donor compound may be the same as or different from the second non-diffusible dye donor compound; and

wherein the maximum sensitivity of the light-sensitive layer B is lower than the maximum sensitivity of the light-sensitive layer A, and the light-sensitive layer A contains a dye which absorbs light in the range of from 720 to 780 nm .

5,336,762

POLYCHELATING AGENTS FOR IMAGE AND SPECTRAL ENHANCEMENT (AND SPECTRAL SHIFT)

David F. Ranney, Dallas, Tex., assignor to Access Pharmaceuticals, Inc., Dallas, Tex.

Division of Ser. No. 86,692, Aug. 7, 1987, abandoned, which is a continuation-in-part of Ser. No. 799,757, Nov. 18, 1985, abandoned. This application Jan. 16, 1991, Ser. No. 642,033

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] **A61K** *49/00;* **C08B** *37/02*

U.S. Cl. 534—16 **28 Claims**

1. An image-enhancing agent or spectral enhancing agent comprising:

a biodegradable, water-soluble polysaccharide or oligosaccharide carrier-material comprising repeating hydrophilic monomeric units having amino, quaternary ammonium, sulfate, carboxyl or hydroxyl groups; and

a chelating agent comprising functional groups bound noncovalently by strong ionic interaction to an amino, quaternary ammonium, sulfate, hydroxyl or carboxyl group of the monomeric units, said chelating agent having a formation constant for divalent or trivalent metal cations at

VOL 1165 ISS 2 AG 9 1994 UMI

physiological temperature and pH, of at least about 10^8; and

a paramagnetic metal ion bound to the chelating agent, usable to enhance internal images or spectra, arising from induced magnetic resonance signals;

wherein the image-enhancing agent has a molecular diameter of less than about 3 nanometers, contains less than about 5% (w/w) cross-linked or microaggregated species and is biodegradable by hydrolytic or other enzymatic or physiologic mechanisms of animals or intestinal microorganisms, to intermediary metabolites, excretable chelates, polymers, oligomers, monomers or combinations thereof, all of low toxicity.

5,336,763

TRISAZO DYE AND DYE COMPOSITION CONTAINING THE SAME

Takashi Ono, Takatsuki; Tatsuya Yagyu; Yoshihiro Sawatari, both of Neyagawa, and Masaki Yonezawa, Kadoma, all of Japan, assignors to Orient Chemical Industries, Ltd., Osaka, Japan

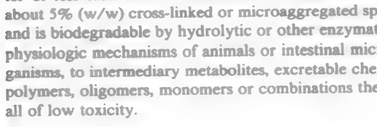
Filed Feb. 12, 1993, Ser. No. 17,291
Claims priority, application Japan, Feb. 12, 1992, 4-024880
Int. Cl.[5] C09B *35/46*; C09D *11/00*
U.S. Cl. 534—680 **24 Claims**

1. A trisazo dye represented by the formula:



(I)

wherein A is a phenyl group substituted with at least one substituent selected from the group consisting of an amino group, a substituted amino group and a hydroxyl group, B is a substituted or non-substituted phenyl group, X is a group of the formula:



Q is a group of the formula:

wherein n is 1 or 2, and M is hydrogen, alkali metal, aliphatic alkyl ammonium or alkanol ammonium.

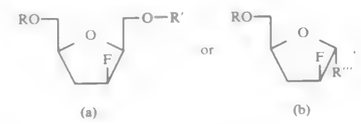
5,336,764

2'-FLUOROFURANOSYL DERIVATIVES AND NOVEL METHOD OF PREPARING 2'-FLUOROPYRIMIDINE AND 2'-FLUOROPURINE NUCLEOSIDES

Victor E. Marquez, Bethesda; John S. Driscoll, Rockville; Ronald J. Wysocki, Jr., Potomac, and Maqbool A. Siddiqui, Gaithersburg, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 556,713, Jul. 23, 1990. This application Oct. 29, 1992, Ser. No. 968,567
Int. Cl.[5] C07G *3/00*
U.S. Cl. 536—4.1 **6 Claims**

1. A compound of the formula



(a) (b)

wherein

R is selected from the group consisting of H, $(C_7–C_{20})$aroyl, $(C_6–C_{20})$aryl, alkylaryl and arylalkyl, and $(C_1–C_{10})$alkyldi$(C_6–C_{20})$aryl Si; and

R′ is selected from the group consisting of hydrogen, $(C_1–C_{10})$alkyl, $(C_7–C_{20})$aroyl and $(C_2–C_{12})$acyl, all of which may be further substituted with O, S, N or alkyl; and

R"" is selected from the group consisting of halogen, $(C_1–C_{10})$alkoxy, $(C_1–C_{10})$acyloxy, O-methanesulfonyl and O-p-toluenesulfonyl.

5,336,765

PROCESS OF PREPARING N-SUBSTITUTED ALDOBIONAMIDES

Van Au, Peekskill, N.Y., and Bijan Harirchian, South Orange, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 816,422, Dec. 13, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 23,529
The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.[5] C07H *15/00*
U.S. Cl. 536—18.5 **20 Claims**

1. A process of preparing an N-substituted aldobionamide, the process comprising the steps of:

i) preparing a homogeneous mixture comprising an aldobionolactone, an organic polar solvent, and an amine HNR^1R^2, wherein R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen, an aliphatic hydrocarbon radical, an aromatic radical, a cycloaliphatic radical, and mixtures thereof, except that R^1 and R^2 are not both hydrogen at the same time, wherein the molar ratio of the aldobionolactone to the amine is in the range of from about 1:1.5 to about 1:1;

ii) reacting the homogeneous mixture at a temperature not greater than 65° C. to obtain a reaction product including a solution comprising the aldobionamide and a corresponding ammonium salt of an aldobionic acid; and

iii) passing the solution through an anionic exchange column and eluting the column with an organic polar solvent to obtain an eluate comprising the starting amine and the aldobionamide.

5,336,766

INDOLEACETIC ACID SYNTHETASE-ENCODING GENE

Jinichiro Koga; Takashi Adachi, and Hidemasa Hidaka, all of Saitama, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Feb. 28, 1991, Ser. No. 662,223
Claims priority, application Japan, Feb. 28, 1990, 2-45718
Int. Cl.[5] C12N *15/60, 9/88, 15/00*; C12P *19/34*
U.S. Cl. 536—23.2 **3 Claims**

1. A nucleic acid comprising an isolated structural gene of *Enterobacter cloacae* which encodes an enzyme with an amino acid sequence illustrated as SEQ ID NO. 2 involved in the biosynthesis of indoleacetic acid from tryptophan via indolepyruvic acid and indoleacetaldehyde as intermediates.

5,336,767

TOTAL OR PARTIAL ESTERS OF HYALURONIC ACID

Francesco della Valle, Padova, and Aurelio Romeo, Rome, both of Italy, assignors to Fidia, S.p.A., Abano Terme, Italy

Division of Ser. No. 794,703, Nov. 20, 1991, Pat. No. 5,202,431, which is a division of Ser. No. 663,324, Mar. 1, 1991, abandoned, which is a division of Ser. No. 562,267, Aug. 3, 1990, abandoned, which is a division of Ser. No. 339,919, Apr. 19, 1989, Pat. No. 4,965,353, which is a division of Ser. No. 881,454, Jul. 2, 1986, Pat. No. 4,851,521. This application Dec. 30, 1992, Ser. No. 998,749
Claims priority, application Italy, Jul. 8, 1985, 48322 A/85; Jun. 30, 1986, 48202 A/86
Int. Cl.[5] C07H *5/04*
U.S. Cl. 536—55.1 **10 Claims**

1. A total or partial ester of hyaluronic acid with an alcohol selected from the group consisting of cortisone, hydrocortisone, prednisone, prednisolone, fluorocortisone, dexamethasone, betamethasone, corticosterone, deoxycorticosterone, paramethasone, flumethasone, fluocinolone, flucinolone acetonide, fluprednylidene, clobetasol, and beclomethasone, or a salt of such partial ester with an inorganic or organic base.

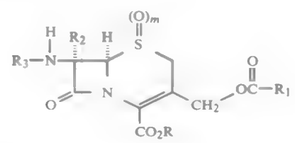
5,336,768

ANTIBACTERIAL CEPHALOSPORIN COMPOUNDS

Harry A. Albrecht, Towaco; Dennis D. Keith, Montclair; Frederick M. Konzelmann, West Paterson; Pamela L. Rossman, Nutley, and Manfred Weigele, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

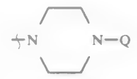
Filed May 24, 1988, Ser. No. 197,943
Int. Cl.[5] C07D *501/18*; A61K *31/545*
U.S. Cl. 540—222 **26 Claims**

1. A compound of the formula

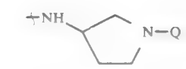


I

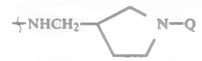
wherein R is hydrogen or a carboxylic acid-protecting group; R_1 represents a piperazinyl group of formula



or a pyrrolidinylamino group of formula



or a pyrrolidinylmethylamino group of formula



where the piperazinyl or pyrrolidinyl group may be unsubstituted or substituted with one or more lower alkyl groups, and where Q represents a substituted quinolonyl or naphthpridonyl group; R_2 is selected from the group consisting of hydrogen, lower alkoxy, lower alkylthio and amino; R_3 is an acyl group; and m is 0, 1 or 2; of corresponding readily hydrolyzable ester, pharmaceutically acceptable salt of hydrate thereof.

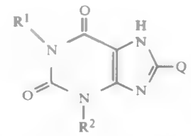
5,336,769

XANTHINE DERIVATIVES

Fumio Suzuki, Mishima; Junichi Shimada; Akio Ishii, both of Shizuoka, and Shizuo Shiozaki, Fuji, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 18,209
Claims priority, application Japan, Feb. 17, 1992, 4-029662
Int. Cl.[5] C07D *473/06*
U.S. Cl. 544—273 **5 Claims**

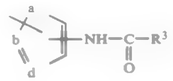
1. A xanthine derivative of the formula (I):



(I)

wherein R^1 represents lower alkyl which is optionally substituted with alicyclic alkyl having 3 to 8 carbon atoms, lower alkenyl, lower alkynyl, alicyclic alkyl which is optionally substituted with 1 to 3 substituents independently selected from the group consisting of alkyl having 1 to 6 carbon atoms, hydroxy, alkoxy having 1 to 6 carbon atoms, halogen, nitro and amino, phenyl which is optionally substituted with 1 to 3 substituents independently selected from the group consisting of alkyl having 1 to 6 carbon atoms, hydroxy, alkoxy having 1 to 6 carbon atoms, halogen, nitro and amino, or which is optionally substituted with 1 to 3 substituents independently selected from the group consisting of alkyl having 1 to 6 carbon atoms, hydroxy, alkoxy having 1 to 6 carbon atoms, halogen, nitro and amino;

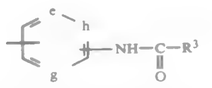
R^2 represents $—(CH_2)_m—X$, wherein m is 2 or 3, and X is



wherein a is NH, O or S, b and d are independently CH or N and R^3 is lower alkyl, alicyclic alkyl which is optionally substituted with 1 to 3 substituents independently selected from the group consisting of alkyl having 1 to 6 carbon atoms, hydroxy, alkoxy having 1 to 6 carbon atoms, halogen, nitro and amino, or phenyl which is optionally substituted with 1 to 3 substituents independently selected from the group consisting of alkyl having 1 to 6 carbon atoms, hy-

VOL 1165 ISS 2 AG 9 1994 UMI

droxy, alkoxy having 1 to 6 carbon atoms, halogen, nitro and amino, or



wherein e, g and h are independently CH or N, and R^3 is as defined above; Q represents alicyclic alkyl which is optionally substituted with 1 to 3 substituents independently selected form the group consisting of lower alkyl having 1 to 6 carbon atoms, hydroxy, alkoxy having 1 to 6 carbon atoms, halogen, nitro and amino,



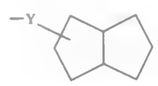
wherein R^4 and R^5 are independently alicyclic alkyl which is optionally substituted with 1 to 3 substituents independently selected from the group consisting of lower alkyl having 1 to 6 carbon atoms, hydroxy, alkoxy having 1 to 6 carbon atoms, halogen, nitro and amino,



wherein Y is a single bond or alkylene; and n is 0 or 1,



wherein K-M is $—CH_2—CH_2—$ or $—CH=CH—$, and Y is as defined above, or



wherein Y is as defined above; or a pharmacologically acceptable salt thereof.

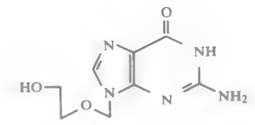
5,336,770

TRANSGLYCOSILATION PROCESS FOR PRODUCING ACYCLIC NUCLEOSIDES

Hiroshi Shiragami; Yoshihito Koguchi, and Kunisuke Izawa, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 917,357
Claims priority, application Japan, Sep. 18, 1991, 3-238247
Int. Cl.[5] C07D *473/18*; C07B *43/04*
U.S. Cl. 544—276 **2 Claims**

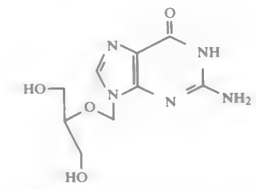
1. A process for producing 9-((2-hydroxyethoxy)-methyl)-guanine represented by the formula (IV):



(IV)

which comprises reacting guanosine, under an acid catalyst, with an acid anhydride and 2-oxa-1,4-butanediol diacetate, followed by saponification.

2. A process for producing 9-((1,3-dihydroxy-2-propoxy) methyl)guanine represented by the formula (V):



(V)

which comprises reacting guanosine, under an acid catalyst, with an acid anhydride and acetoxymethyl-2,3-diacetoxy-1-propyl ether, followed by saponification.

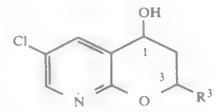
5,336,771

CERTAIN 3,4-DIHYDRO-2H-PYRANO[2,3-B]PYRIDINES

Charles W. Murtiashaw, and George J. Quallich, both of North Stonington, Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 750,787, Aug. 27, 1991, abandoned, which is a division of Ser. No. 490,906, Mar. 7, 1990, Pat. No. 5,068,333. This application Oct. 14, 1992, Ser. No. 961,049
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] C07D *491/052, 491/04*
U.S. Cl. 546—116 **4 Claims**

1. A compound of the formula having the S configuration



wherein R^3 is (C_1–C_4) alkyl.

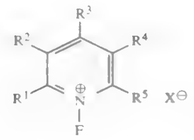
5,336,772

METHOD FOR PREPARING N-FLUOROPYRIDINIUM SALT

Yukinori Saiki, and Kazunori Nukui, both of Tokyo, Japan, assignors to Onoda Cement Co., Ltd., Onoda, Japan

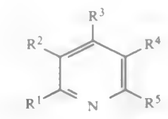
Filed Dec. 26, 1991, Ser. No. 813,477
Claims priority, application Japan, Jan. 11, 1991, 3-012583
Int. Cl.[5] C07D *213/00*
U.S. Cl. 546—286 **18 Claims**

1. A method for preparing N-fluoropyridinium salt of the general formula (I):



(I)

by reacting a pyridine compound of the following general formula (II) with a Br nsted acid of the general formula XH but excluding hydrogen halide and fluorine characterized by using a mole ratio of said formula (II) pyridine compound to said Br nsted acid that is in the range of 1.01 to 1.2:



(II)

and wherein in each of said general formula (I) and (II) R^1 to R^5 each represents hydrogen, halogen, alkyl, aryl, acyl, aldoxycarbonyl, aryloxycarbonyl, carbamoyl, nitro, cyano, alkylsulfonyl, arylsulfonyl hydroxy, alkoxy, aryloxy, acyloxy, acylthyio, amido, alkansulfonyloxy or arenesulfonyloxy.

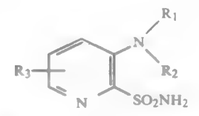
5,336,773

CERTAIN-3-AMINO-2-PYRIDINE-SULFONAMIDE INTERMEDIATES

Werner Föry, Riehen, and Rolf Schurter, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 705,459, May 24, 1991, Pat. No. 5,221,315. This application Apr. 6, 1993, Ser. No. 43,231
Claims priority, application Switzerland, May 30, 1990, 1826/90
Int. Cl.[5] C07D *213/69, 213/70*
U.S. Cl. 546—294 **9 Claims**

1. A compound of the formula II



(II)

in which

R_1 and R_2 independently of one another are hydrogen, C_1–C_8alkyl or C_3–C_8cycloalkyl; C_2–C_8alkyl or C_3–C_8cycloalkyl, each of which is substituted by halogen; C_1–C_8alkyl or C_3–C_8cycloalkyl, each of which is substituted by $—NR_5R_6$, C_1–C_4alkoxy or C_1–C_4alkyl—$S(O)_n$—; C_1–C_4alkyl or C_3–C_6cycloalkyl, each of which is substituted by C_2–C_4alkenyl, C_5–C_6cycloalkenyl, C_2–C_6alkynyl or C_4–C_8alkadienyl, wherein the C_2–C_4alkenyl, C_5–C_6cycloalkenyl or C_4–C_8alkadienyl radicals are optionally substituted by halogen; or R_1 and R_2 together are a 4–5-membered C_4–C_{10}alkylene chain which can be interrupted by oxygen, sulfur or N—R_7; R_3 is hydrogen, halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4alkylthio; or C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4alkylthio which is substituted by halogen; R_5, R_6 and R_7 independently of one another are hydrogen or C_1–C_4alkyl, and n is 0, 1 or 2; with the provisos that R_1, R_2 and R_3 are not simultaneously hydrogen and that R_1 and R_2 are not simultaneously hydrogen when R_3 is C_1–C_4alkyl.

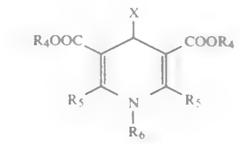
5,336,774

1,4-DIHYDROPYRIDINE 3,5 CARBOXYL COMPOUNDS

Kazuo Achiwa, 15-5, Kamikutsunoya-cho, Shizuoka-shi, Shizuoka, Japan

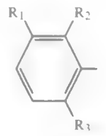
Division of Ser. No. 752,796, Aug. 30, 1991, Pat. No. 5,234,821. This application May 10, 1993, Ser. No. 58,362
Claims priority, application Japan, Sep. 1, 1990, 2-231345; Feb. 28, 1991, 3-059582; Jul. 15, 1991, 3-199976
Int. Cl.[5] C07D *213/02*
U.S. Cl. 546—322 **2 Claims**

1. A 1,4-dihydropyridine compound represented by formula (I):



(I)

wherein X represents an alkyl group, or a group of



in which R_1, R_2, and R_3 may be the same or different and each represent a hydrogen atom, a halogen atom, a nitro group, a nitrile group, or a trifluoromethyl group; R_4 represents an acyloxymethyl group in which the acyl moiety is an alkanoyl group having not more than 5 carbon atoms; R_5 represents a lower alkyl group or a substituted alkyl group; and R_6 represents a hydrogen atom, a lower alkoxymethyl group, or a lower acyloxymethyl group.

5,336,775

METHOD OF PRODUCING TERTIARY AMINE-SULPHUR-TRIOXIDE-COMPLEXES

Zeljko Guberovic, Koprivnica; Marijan Hohnjec, Zagreb; Josip Kuftinec, Hrvatski/Leskovak, and Milan Oklobzija, Zagreb, all of Yugoslavia, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/DK90/00173, § 371 Date Mar. 24, 1992, § 102(e) Date Mar. 24, 1992, PCT Pub. No. WO91/00852, PCT Pub. Date Jan. 24, 1991
PCT Filed Jul. 6, 1990, Ser. No. 655,410
Claims priority, application Switzerland, Jul. 7, 1989, 2672/86-6
Int. Cl.[5] C07D *213/18, 213/20*; C07C *211/62*
U.S. Cl. 546—347 **7 Claims**

1. In a process of producing tertiary amine-sulphur trioxide complexes of the general formula

$R_3N{:}SO_3$

where R is a methyl, ethyl or propyl group or R_3N is a pyridyl group, by adding chlorosulfonic acid to a tertiary amine in a chlorinated organic solvent to form a reaction mixture, where said tertiary amine is pyridine or R_3N, where R has been defined previously and in which amine hydrochloride is formed as a by-product in said reaction mixture, the improvement wherein gaseous ammonia is passed into said reaction mixture to recover said amine from amine hydrochloride in said reaction mixture.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,776

NOVEL 3-ACETOXYMETHYL-7-(IMINOACETAMIDO)-CEPHALOSPORANIC ACID

René Heymes, Romainville, and Andr Lutz, Strasbourg, both of France, assignors to Roussel UCLAF, France

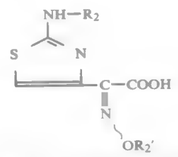
Division of Ser. No. 582,386, Sep. 13, 1990, Pat. No. 5,103,012, which is a division of Ser. No. 359,870, May 31, 1989, Pat. No. 4,988,811, which is a division of Ser. No. 181,658, Apr. 14, 1988, abandoned, which is a division of Ser. No. 449,680, Dec. 14, 1982, Pat. No. 4,843,164, which is a division of Ser. No. 257,984, Apr. 23, 1981, Pat. No. 4,376,203, which is a division of Ser. No. 71,295, Aug. 30, 1979, abandoned, which is a division of Ser. No. 917,985, Jun. 22, 1978, Pat. No. 4,283,396, which is a division of Ser. No. 817,114, Jul. 13, 1977, Pat. No. 4,152,432, which is a continuation-in-part of Ser. No. 761,270, Jan. 21, 1977, abandoned. This application Oct. 16, 1991, Ser. No. 777,614

Claims priority, application France, Jun. 11, 1976, 76 07307; Jun. 23, 1976, 76 25651; Jul. 11, 1976, 76 01834; Aug. 18, 1979, 76 17743

Int. Cl.[5] **C07D** *277/593*

U.S. Cl. 548—194 **1 Claim**

1. A syn isomer of a compound of the formula



wherein R_2 is selected from the group consisting of hydrogen and a group easily removable by acid hydrolysis or hydrogenolysis and R_2' is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl and alkynyl of 2 to 4 carbon atoms and a group easily removable by acid hydrolysis or hydrogenolysis with the proviso that R_2' is not hydrogen when R_2 is other than hydrogen.

5,336,777

PROCESS FOR THE PREPARATION OF ISOTHIAZOLINONES

Frank S. Moffatt, Berkshire, and David Winstanley, Lancashire, both of England, assignors to Zeneca Limited, London, England

Continuation of Ser. No. 582,261, Sep. 13, 1990, abandoned. This application Nov. 5, 1992, Ser. No. 971,809

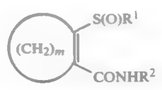
Claims priority, application United Kingdom, Sep. 20, 1989, 8921220

Int. Cl.[5] **C07D** *275/04*

U.S. Cl. 548—209 **14 Claims**

1. A process for the preparation of an aqueous solution of an isothiazolin-3-one derivative which comprises

(a) reacting a compound of the general formula II



II

in the presence of a water immiscible organic solvent with a carbonyl halide of the formula RCOX; wherein:

R is a halogen atom or an alkyl group;

R^1 is an alkyl group of an aralkyl group;

R^2 is a hydrogen atom or an optionally substituted hydrocarbyl group;

m is 3 or 5; and

X is a halogen atom;

to form a cyclised product mixture comprising an isothiazolin-3-one derivative;

(b) mixing the above product mixture with water to extract the isothiazolin-3-one derivative from the water immiscible organic solvent into water; and

(c) separating the two phases to obtain an aqueous solution of the isothiazolin-3-one derivative.

5,336,778

SUBSTITUTED TRIAZOLES AS ANGIOTENSIN II ANTAGONISTS

Wallace T. Ashton, Clark; Christine L. Cantone, Hazlet; Linda L. Chang, Wayne; Malcolm Maccoss, Freehold; Prasun K. Chakravarty, Edison; William J. Greenlee, Teaneck; Arthur A. Patchett, and Thomas F. Walsh, both of Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 503,352, Apr. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 382,138, Jul. 19, 1989, abandoned. This application Jun. 22, 1992, Ser. No. 902,353

Int. Cl.[5] **A61K** *31/41, 31/505;* **C07D** *257/00, 249/00*

U.S. Cl. 548—250 **6 Claims**

1. A compound of the formula (I):

(I)

wherein

R^1 is

(a) $—CO_2R^4$,

(b)

wherein R^4 is H,

R_6 is straight chain or branched C_1–C_6alkyl, which can be optionally substituted with a substituent selected from the group consisting of aryl, wherein aryl is phenyl or naphthyl, optionally substituted with a substituent selected from the group consisting of (Cl, Br, I, F), C_{1-4}-alkyl, C_{1-4}-alkoxy, NO_2, CF_3, C_{1-4}-alkylthio, OH or NH_2; and —O—C_{1-4}-alkyl, C_3–C_7-cycloalkyl, halo (Cl, Br, I, F), —OH, $—NH_2$, $—NH(C_1–C_4\text{-alkyl})$, $—N(C_1–C_4\text{-alkyl})_2$, $—NH—SO_2R^4$, $—COOR^4$, $—SO_2NHR^9$;

A is S(O)p, wherein p is 0 to 2;

R^7 is

(a) C_1–C_{10}-alkyl;

(b) substituted C_1–C_{10} alkyl in which one or two substituent(s) are selected from

(1) halogen,

(2) hydroxy,

(3) C_1–C_{10}-alkoxy,

(4) C_1–C_5-alkoxycarbonyl,

(5) C_1–C_4-alkylcarbonyloxy,

(6) C_3–C_8-cycloalkyl,

(7) aryl, as defined above,

(8) di-substituted aryl, as defined above, in which the substituents are V and W, defined below

(9) C_1–C_{10}-alkyl-S(O)p,

(10) C_3–C_8-cycloalkyl-S(O)p,

(11) phenyl-S(O)p,

(12) di-substituted phenyl-S(O)p in which the substituents are V and W,

(13) oxo,

(14) carboxy,

(15) NR^9R^{10},

(16) C_1–C_5-alkylaminocarbonyl,

(17) $di(C_1–C_5\text{-alkyl})$aminocarbonyl,

(18) cyano;

(c) perfluoro-C_1–C_4-alkyl, selected from CF_3, CF_3CF_2, $CF_3CF_2CF_2$, $CF_3CF_2CF_2CF_2$;

(d) C_2–C_{10}-alkenyl,

(e) C_2–C_{10}-alkynyl,

(f) C_3–C_8-cycloalkyl,

(g) substituted C_3–C_8-cycloalkyl in which one or two substituent(s) are selected from:

(1) halogen,

(2) hydroxy,

(3) C_1–C_{10}-alkoxy,

(4) C_1–C_5-alkoxycarbonyl,

(5) C_1–C_5-alkylcarbonyloxy,

(6) C_3–C_8-cycloalkyl,

(7) aryl, as defined above,

(8) di-substituted aryl, as defined above, in which the substituents are V and W,

(9) C_1–C_{10}-alkyl-S(O)p in which p is 0 to 2,

(10) C_3–C_8-cycloalkyl-S(O)p,

(11) phenyl-S(O)p,

(12) di-substituted phenyl-S(O)p in which the substituents are V and W,

(13) oxo,

(14) carboxy,

(15) NR^9R^{10},

(16) C_1–C_5-alkylaminocarbonyl,

(17) $di(C_1–C_5\text{-alkyl})$aminocarbonyl,

(18) cyano,

(19) C_1–C_4-alkylcarbonyl;

(h) aryl, as defined above,

(i) di-substituted aryl in which the substituents are V and W,

(j) aryl-$(CH_2)_r$-$(B)_b$-$(CH_2)_t$—, wherein aryl is defined above,

(k) substituted aryl-$(CH_2)_r$-$(B)_b$-$(CH_2)_t$— in which the aryl group is defined above and di-substituted with V and W; wherein

B is —C(O)—, —S—, —O—, $—NR^4$, $—NR^4C(O)—$, or $—C(O)NR^4$;

b is 0 or 1;

r and t are 0 to 2;

R^4 is defined above;

V and W are each independently selected from;

(a) H,

(b) C_1–C_5-alkoxy,

(c) C_1–C_5-alkyl,

(d) hydroxy,

(e) C_1–C_5-alkyl-S(O)p,

(f) —CN,

(g) $—NO_2$,

(h) $—NR^9R^{10}$,

(i) C_1–C_4-alkyl-$CONR^9R^{10}$,

(j) $—CO_2R^9$,

(k) C^1–C^5-alkyl-carbonyl,

(l) trifluoromethyl,

(m) halogen,

(n) hydroxy-C^1–C^4-alkyl,

(o) C^1–C^4-alkyl-CO_2R^9,

(p) -1H-tetrazol-5-yl,

(q) $—NHSO_2CF_3$,

(r) aryl as defined above,

(s) $—OCONR^9R^{10}$,

(t) $—NR^4CO_2R^9$,

(u) $—NR^4CONR^9R^{10}$,

(v) $—NR^4CON(CH_2CH_2)_2Q$ where Q is O, S(O)p or NR^9,

(w) $—OCON(CH_2CH_2)_2Q$ where Q is as defined above;

(x) $—CONR^9R^{10}$;

R^9 is H,C_1–C_5alkyl, phenyl or benzyl;

R^{10} is H, C_1–C_4-alkyl; or

R^{11} is H, C_1–C_6-alkyl, C_2–C_4-alkenyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, or $—CH_2–C_6H_4R^{20}$;

R^{20} is H, $—NO_2$, $—NH_2$, —OH or $—OCH_3$;

R^9 and R^{19} together may be $—(CH_2)_m—$ where m is 3–6;

or a pharmaceutically acceptable salt thereof.

5,336,779

METHOD OF PRODUCING FORMYLIMIDAZOLES

Toshio Yamamoto, Ogaki; Kazumasa Hirata, Osaka; Shigenori Wakabayashi, Osaka, and Akio Katsuura, Osaka, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1993, Ser. No. 125,220

Claims priority, application Japan, Oct. 8, 1992, 4-297705; Feb. 16, 1993, 5-51515; Feb. 16, 1993, 5-51516

Int. Cl.[5] **C07D** *233/64*

U.S. Cl. 548—333.5 **5 Claims**

1. A method of producing formylimidazoles by catalytic oxidation of a 4- or 5-hydroxymethylimidazole compound which comprises effecting the catalytic oxidation by blowing oxygen or air into the reaction system in the presence of a noble metal catalyst.

5,336,780

5-AMINO-1-HYDROXIMOYL PYRAZOLES

Klaus Kirschke, Eiche; Gerhard Lutze; Ernst Schmitz, both of Berlin, and Erich Wolff, Solingen, all of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 25, 1993, Ser. No. 36,962

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1992, 4211479

Int. Cl.[5] **C07D** *231/38*

U.S. Cl. 548—371 **1 Claim**

1. A 5-amino-1-hydroximoyl-pyrazole of the formula IV,

IV

in which

R^1 represents an optionally substituted alkyl, aralkyl or aryl radical;

R^2 represents an optionally substituted alkyl radical;

R^3 represents hydrogen or chlorine; and

R^5 represents hydrogen or an alkyl- or arylsulphonyl radical.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,781

PROCESS

Robert Giles, and Timothy C. Walsgrove, both of Tonbridge, England, assignors to SmithKline & French Laboratories Limited, Welwyne Garden City, England

PCT No. PCT/GB91/00587, § 371 Date Oct. 14, 1992, § 102(e) Date Oct. 14, 1992, PCT Pub. No. WO91/16306, PCT Pub. Date Oct. 31, 1991

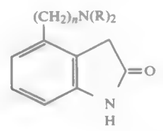
PCT Filed Apr. 15, 1991, Ser. No. 934,492

Claims priority, application United Kingdom, Apr. 17, 1990, 9008605

Int. Cl.[5] C07D *209/34*

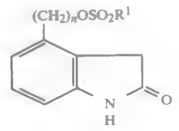
U.S. Cl. 548—486 8 Claims

1. A process for the preparation of a compound of structure (I)



(I)

in which n is 1 to 3 and each group R is hydrogen or C_{1-4}alkyl, which comprises, reaction of a compound of structure (II)



(II)

in which R^1 is C_{1-4}alkyl, phenyl or phenyl substituted by C_{1-4} alkyl and n is 1 to 3, with an amine $NH(R)_2$ in which R is as described for structure (I), and optionally thereafter forming a salt.

5,336,782

LONG CHAIN CARBOXYLIC ACID IMIDE ESTER

Iwao Ebashi; Tetsuo Takigawa, both of Kurashiki, and Masayasu Inoue, Kumamoto, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

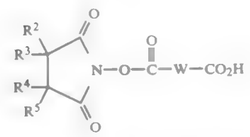
Filed Apr. 23, 1992, Ser. No. 872,534

Claims priority, application Japan, Apr. 24, 1991, 3-122491; Apr. 24, 1991, 3-122737

Int. Cl.[5] C07D *207/46*

U.S. Cl. 548—542 18 Claims

1. A compound of the formula



(I)

or a salt thereof, wherein W is a divalent long chain hydrocarbon radial having from 8 to 28 principal chain atoms; and wherein each of R^2, R^3, R^4 and R^5, which can be the same or different, is a hydrogen atom; an alkyl radical; an aryl radical; an aralkyl radical; an —SO_3H group; a radical of the formula —OR^6 wherein R^6 is selected from the group consisting of a hydrogen atom, an alkyl radical, an aryl radical, an aralkyl radical and an acyl radical; a radical of the formula —NR^7R^8 wherein each of R^7 and R^8, which can be the same or different, is selected from the group consisting of an alkyl radical, an aryl radical, an aralkyl radical and an acyl radical; or a radical of the formula —CO_2R^9 wherein R^9 is selected from the group consisting of a hydrogen atom, an alkyl radical, an aryl radical and an aralkyl radical; or R^2 and R^3 and/or R^4 and R^5, in combination, can be a methylene or isopropylidene group.

5,336,783

CALPAIN INHIBITOR CYSTAMIDIN A AND ITS PRODUCTION

Satoshi Omura; Haruo Tanaka; Kazuro Shiomi, all of Tokyo, Japan, and Jing R. Liu, Beijing, China, assignors to The Kitasato Institute, Tokyo, Japan

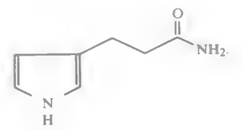
Filed Mar. 23, 1993, Ser. No. 57,731

Claims priority, application Japan, Apr. 20, 1992, 4-099666; Feb. 5, 1993, 5-019001

Int. Cl.[5] C07D *207/323*

U.S. Cl. 548—561 2 Claims

1. Cystamidin A of the formula



[I]

5,336,784

SYNTHESIS OF 1,3,3-TRINITROAZETIDINE

Michael A. Hiskey, and Michael D. Coburn, both of Los Alamos, N. Mex., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 7, 1993, Ser. No. 74,098

Int. Cl.[5] C07D *205/04*

U.S. Cl. 548—953 19 Claims

1. A process of preparing 1,3,3-trinitroazetidine comprising:

forming a 5-hydroxymethyl-5-nitro-1-alkyltetrahydro-1,3-oxazine;

ring opening said 5-hydroxymethyl-5-nitro-1-alkyltetrahydro-1,3-oxazine to form a 3-alkylamino-2-hydroxymethyl-2-nitro-1-propanol salt;

ring closing said 3-alkylamino-2-hydroxymethyl-2-nitro-1-propanol salt to form a 3-hydroxymethyl-3-nitro-1-alkylazetidine salt;

nitrating said 3-hydroxymethyl-3-nitro-1-alkylazetidine salt to form a 1-alkyl-3,3-dinitroazetidine; and,

converting said 1-alkyl-3,3-dinitroazetidine into 1,3,3-trinitroazetidine.

5,336,785

METHOD FOR PREPARATION OF TAXOL

Robert A. Holton, Tallahassee, Fla., assignor to Florida State University, Tallahassee, Fla.

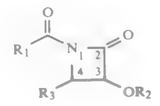
Continuation of Ser. No. 415,028, Sep. 29, 1989, Pat. No. 5,175,315, which is a continuation-in-part of Ser. No. 359,634, May 31, 1989, abandoned. This application Oct. 26, 1992, Ser. No. 968,003

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] C07D *305/14*

U.S. Cl. 549—214 23 Claims

1. A process for the preparation of a taxol intermediate comprising contacting an alcohol having the tetracyclic nucleus of baccatin III with a β-lactam having the formula:



wherein

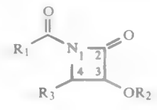
R_1 is phenyl, α-naphthyl, β-naphthyl, alkyl, alkenyl, or alkynyl,

R_2 is a hydroxyl protecting group, and

R_3 is phenyl, α-naphthyl, β-naphthyl, alkyl, alkenyl, or alkynyl,

the contacting of said alcohol and β-lactam being carried out in the presence of a sufficient amount of an activating agent to cause the β-lactam to react with the alcohol to form a β-amido ester which is suitable for use as an intermediate in the synthesis of a taxol.

12. A process for the preparation of a taxol which comprises contacting an alcohol having the tetracyclic nucleus of baccatin III with a β-lactam having the formula:



wherein

R_1 is aryl, alkyl, alkenyl, or alkynyl,

R_2 is a hydroxyl protecting group, and

R_3 is aryl, alkyl, alkenyl, or alkynyl,

the contacting of said alcohol and β-lactam being carried out in the presence of a sufficient amount of an activating agent to cause the β-lactam to react with the alcohol to form a β-amido ester which is suitable for use as an intermediate in the synthesis of a taxol, and converting said intermediate to a taxol.

5,336,786

ORGANIC SILICON COMPOUNDS

Toshio Shiobara; Koji Futatsumori; Satoshi Okuse; Takayuki Aoki; Miyuki Wakao, and Shigeki Ino, all of Annaka, Japan, assignors to Shin-Etsu Chemical Company, Limited, Tokyo, Japan

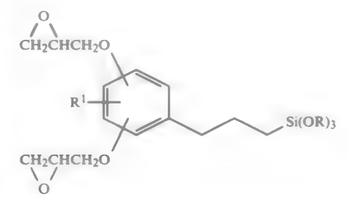
Filed Dec. 3, 1993, Ser. No. 160,912

Claims priority, application Japan, Dec. 7, 1992, 4-351267

Int. Cl.[5] C07F *7/08*; C07D *303/02*

U.S. Cl. 549—215 6 Claims

1. An organic silicon compound of the following general formula (1):



(I)

wherein R^1 is selected from the group consisting of a hydrogen atom, a substituted or unsubstituted monovalent hydrocarbon radical having 1 to 6 carbon atoms, and a halogen atom, and

R is a substituted or unsubstituted monovalent hydrocarbon radical having 1 to 6 carbon atoms.

5,336,787

PROCESS OF MAKING SELECTED POLY(DIANHYDRIDES) COMPOUNDS

Murray A. Ruggiero, East Haven; Renata C. Stegmeier, Bethany; Bruce A. Marien, Woodbridge, all of Conn., and Keith O. Wilbourn, Floyds Knobs, Ind., assignors to Olin Corporation, Stamford, Conn.

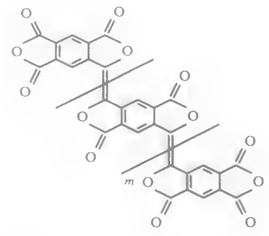
Continuation-in-part of Ser. No. 808,141, Dec. 16, 1991, Pat. No. 5,206,335. This application Feb. 1, 1993, Ser. No. 11,552

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] C07D *307/89*; C08G *67/04, 67/00*

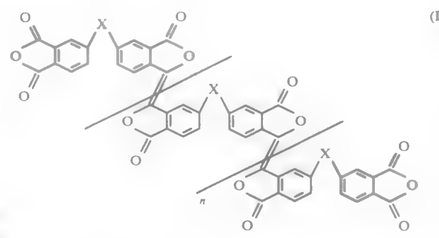
U.S. Cl. 549—239 23 Claims

1. A process of making a poly(dianhydride) having a structure selected from the group consisting of formulae (I) and (II):



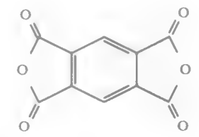
(I)

where m is 0 to 50; and

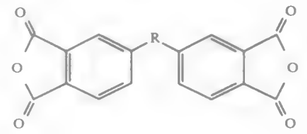


(II)

wherein n is from 0 to 20 and X is selected from the group consisting of: bond junction, oxygen atom, sulfur atom, SO_2, $C(CF_3)_2$, CO, $C(CH_3)_2$, CF_2—O—CF_2, CH_2, and CHOH, which comprises polymerizing a dianhydride precursor having a structure selected from the group consisting of formulae (A) and (B)



(A)



(B)

wherein R is the same as X, above.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,788

METHOD OF MAKING OXYDIPHTHALIC ANHYDRIDE

Viesturs Lesins, Buffalo, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 15, 1993, Ser. No. 151,653
Int. Cl.[5] C07D *307/89*
U.S. Cl. 549—241 20 Claims

1. A method of making oxydiphthalic anhydride from dry oxydiphthalic acid comprising

(A) forming a slurry of said oxydiphthalic acid with an organic liquid;

(B) adding to said slurry about one to about 4 moles of acetic anhydride or propionic anhydride per mole of oxydiphthalic acid;

(C) heating said slurry to a temperature between 50° C. and the boiling point of said organic liquid; and

(D) exposing the solids from said slurry to a temperature between about 180° C. and the melting point of said solids for a time sufficient to reduce the oxydiphthalic acid content of said solids to less than 0.1 wt %.

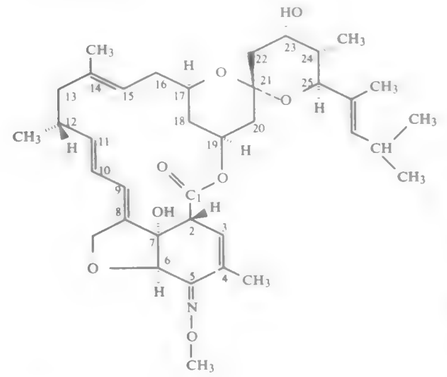
5,336,789

MACROLIDE COMPOUNDS

Derek R. Sutherland, Chalfont St. Giles; Michael V. J. Ramsay, South Harrow; Edward P. Tiley, Pinner; John B. Ward, Bushey; Neil Porter, Pinner; Hazel M. Noble, Slough; Richard A. Fletton, Ruislip; David Noble, Slough, and Brian M. Bain, High Wycombe, all of England, assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 670,770, Mar. 18, 1991, Pat. No. 5,185,456, which is a continuation of Ser. No. 24,762, Mar. 11, 1987, abandoned. This application Aug. 27, 1992, Ser. No. 936,222
Claims priority, application United Kingdom, Mar. 12, 1986, 8606106; Mar. 12, 1986, 8606109; Oct. 29, 1986, 8625856; Oct. 29, 1986, 8625862
Int. Cl.[5] C07D *313/00*
U.S. Cl. 549—264 1 Claim

1. The compound having the formula



and salts thereof.

5,336,790

MOLYBDENUM RECOVERY

Edward T. Marquis; Howard F. Payton, both of Austin, Tex., and Robert A. Meyer, Ballwin, Mo., assignors to Texaco Chemical Company, White Plains, N.Y.

Division of Ser. No. 971,741, Nov. 5, 1992, Pat. No. 5,290,527. This application Nov. 18, 1993, Ser. No. 154,321
Int. Cl.[5] C07D *301/19;* C07F *11/00*
U.S. Cl. 549—529 5 Claims

1. In a process for manufacturing a hydrocarbon epoxide and an alcohol, comprising:

(a) reacting, in an epoxidation zone, an olefin and an organic hydroperoxide in solution with an organic solvent in the presence of a soluble molybdenum catalyst to form an epoxidation reaction product mixture comprising unreacted olefin, unreacted hydroperoxide, organic solvent, epoxide product, alcohol product, molybdenum catalyst and side reaction products;

(b) fractionally distilling, in a fractionation zone, epoxidation reaction product mixture into distillate fractions containing epoxide product and alcohol product, and a non-distillate residual fraction comprising molybdenum catalyst, unreacted hydroperoxide, alcohol, and side reaction products;

(c) mixing, in a mixing zone, non-distillate residual fraction with an organic liquid diluent for forming a liquid mixture containing less than about 8000 ppm molybdenum;

(d) reacting, in a precipitation zone, liquid mixture with ammonia for producing a precipitation zone product comprising a solid precipitate containing a major portion of molybdenum from the liquid mixture and a liquid filtrate containing a minor portion of molybdenum from the liquid mixture;

(e) separating, in a solid-liquid separation zone, the precipitation zone product into a solid phase and a solids-free liquid phase;

(f) evaporating in an evaporation zone, the separator liquid phase at a reduced pressure and an elevated temperature to form an evaporator overhead vapor product comprising about 80 to 95 wt % of the separator liquid phase essentially free of molybdenum, and an evaporator concentrate product containing molybdenum;

(g) condensing evaporator overhead vapor into a molybdenum free liquid product in the presence of about 1 to 3 wt % water, sufficient to prevent deposition of solid ammonium salts from the evaporator overhead vapor; and

(h) rapidly cooling evaporator concentrate from evaporation temperature to about room temperature or lower at a rate of at least about 5° C. per minute, sufficient to convert the cooled evaporator concentrate into a brittle, nontacky solid product suitable for recovery and further treatment.

5,336,791

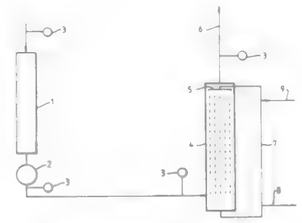
PRODUCTION OF ETHYLENE OXIDE

James R. Jennings, Yarm, and Percy Hayden, Hutton Meadows, both of England, assignors to Imperial Chemical Industries PLC, London, England

PCT No. PCT/GB91/00976, § 371 Date Feb. 19, 1992, § 102(e) Date Feb. 19, 1992, PCT Pub. No. WO91/19706, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 18, 1991, Ser. No. 955,725
Claims priority, application United Kingdom, Jun. 19, 1990, 9013662; Apr. 8, 1991, 9107345
Int. Cl.[5] C07D *301/10, 301/32, 303/04*
U.S. Cl. 549—538 9 Claims

1. A process in which a gas stream from a reaction in which ethylene oxide is produced by reacting ethylene with oxygen which gas stream comprises oxides of nitrogen and steam is

treated by contacting it with an aqueous alkaline quench solution, thereby removing nitrogen oxides and/or organic nitro-



gen containing compounds from the gas stream, and subsequently recovering ethylene oxide from the gas stream.

5,336,792

PROCESS FOR ENRICHMENT OF FAT WITH REGARD TO POLYUNSATURATED FATTY ACIDS AND PHOSPHOLIPIDS, AND APPLICATION OF SUCH ENRICHED FAT

Einar Sola, Svartediksvei 7c, N-5000 Bergen; Jan Røttingen, Ortugrenden 44, N-5033 Fyllingsdalen, both of Norway; Per Grimstad, Seestr. 24, D-2308 Pohnsdorff, Fed. Rep. of Germany, and Atle Askeland, Oshaugen 29, N-5000 Bergen, Norway

PCT No. PCT/NO90/00048, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO91/13957, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 12, 1990, Ser. No. 934,680
Int. Cl.[5] A23D *5/00;* C11B *3/12*
U.S. Cl. 554—21 7 Claims

1. A process for enrichment of fat with polyunsaturated fatty acids and phospholipids, said process comprising the steps of

dissolving a fat containing at least a polyunsaturated fatty acid and a phospholipid in a fat dissolving polar alcohol to obtain a liquid solution thereof;

concentrating said liquid solution by evaporation of a part of the alcohol therefrom and to a point at which precipitation of a first fat fraction occurs;

thereafter separating said first fat fraction from the remainder of said liquid solution;

evaporating the remainder of said liquid solution to a point at which precipitation of a second fat fraction occurs; and

thereafter separating said second fat fraction from the remainder of said liquid solution to obtain a second fat fraction with a higher content of polyunsaturated fatty acids and phospholipids than said first fat fraction.

5,336,793

PREPARING CARBOXYLIC ACIDS OR ESTERS BY OXIDATIVE CLEAVAGE OF UNSATURATED FATTY ACIDS OR ESTERS

Andrea Gardano, Trino; Giampiero Sabarino, Vercelli, and Marco Foa, Novara, all of Italy, assignors to Novamont S.p.A., Milan, Italy

Filed Dec. 10, 1992, Ser. No. 988,671
Claims priority, application Italy, Dec. 11, 1991, T091A00963
Int. Cl.[5] C11C *1/00;* C07C *51/25, 67/00*
U.S. Cl. 554—138 9 Claims

1. A method for the preparation of carboxylic acids or esters thereof, the method comprising the oxidative cleavage of an unsaturated fatty acid or ester thereof in a two-phase aqueous-organic system, the organic phase containing the unsaturated fatty acid or ester thereof and the aqueous phase containing hydrogen peroxide, wherein the oxidative cleavage is carried out in the presence of a catalytic system, said catalytic system comprising (a) a catalyst selected from the group consisting of tungstic acid, molybdic acid, alkaline salts of tungstic acid and alkaline salts of molybdic acid, and (b) an onium salt which acts as a phase-transfer agent for the catalyst, the onium salt having the formula:

$$(R_2R_3R_4R_5M)^+Y^-$$

in which R_2, R_3, R_4 and R_5 represent hydrocarbon groups of which at least one must have more than 10 carbon atoms,

M is N or P, and

Y^- is an inorganic anion.

5,336,794

DUAL PHASE ADSORPTION AND TREATMENT OF GLYCERIDE OILS

James N. Pryor, West Friendship; James M. Bogdanor, Columbia, and William A. Welsh, Highland, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 191,094, May 6, 1988, which is a continuation-in-part of Ser. No. 863,208, May 14, 1986, abandoned. This application Aug. 1, 1990, Ser. No. 561,850
Int. Cl.[5] C11B *3/10*
U.S. Cl. 554—206 33 Claims

1. A dual phase adsorption and treatment process for the removal of impurities from glyceride oil comprising:

(a) selecting a glyceride oil which comprises impurities selected from the group gums, soaps, and phospholipids, and which also comprises pigments,

(b) contacting said oil with a sufficient amount of an amorphous silica adsorbent to reduce the levels of said impurities to levels which are noninhibitory to operation of the packed bed of step (c), and

(c) passing said oil through a packed bed of a pigment removal agent, the quantity of said agent in said packed bed being at least about 50% of the total quantity of said agent used in the adsorption and treatment process.

5,336,795

PROCESS FOR THE PREPARATION OF TRANSITION METAL COMPLEXES HAVING MONOSUBSTITUTED CYCLOPENTADIENYL LIGANDS

Richard Lisowsky, Kamen, Fed. Rep. of Germany, assignor to Witco GmbH, Bergkamen, Fed. Rep. of Germany

Filed Feb. 15, 1994, Ser. No. 196,638
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1993, 4312270
Int. Cl.[5] C07F *17/00, 17/02, 15/00, 7/28*
U.S. Cl. 556—56 5 Claims

1. A process for the preparation of transition metal complexes having monosubstituted cyclopentadienyl ligands of the general formula:



where

R is a C_1–C_{30}-alkyl group, C_2–C_{30}-alkenyl group, C_7–C_{30}-alkylaryl group, C_8–C_{30}-alkenylaryl group, C_3–C_{12}-alkoxyalkyl group, C_1–C_{30}-fluoroalkyl group or C_1–C_6-alkyl-tri(C_1–C_{10}-alkyl)-silyl;

M″ is a transition metal selected from the group consisting of Ti, Zr, Hf, Fe, V, Cr, Sc, and mixture thereof;

X′ is selected from the group consisting of Cl, Br, Y, I, and mixtures thereof;

n is the oxidation number of the transition metal;

a is at least 1 and a is ≦n,

comprising reacting monomeric cyclopentadiene with an organic halide in the presence of a metallating agent comprising a mixture of an alkali metal oxide or hydroxide and an alkaline earth metal oxide or hydroxide in glycol di-

VOL 1165 ISS 2 AG 9 1994 UMI

ether as solvent, thereby forming an intermediate mono-substituted cyclopentadiene, and reacting said intermediate in situ with a transition metal halide to form the final product.

5. Bis(octadecylcyclopentadienyl)$ZrCl_2$).

5,336,796

DIASTEREOMERIC MONO- AND DI-SUBSTITUTED DIAMINO CYCLOHEXANE COMPOUNDS AND THE METHOD OF PREPARATION THEREOF

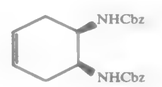
Donald T. Witiak, Mt. Vernon, Ohio, and David P. Rotella, State College, Pa., assignors to Ohio State University, Columbus, Ohio

Division of Ser. No. 882,258, Jul. 7, 1986, Pat. No. 5,206,400. This application Apr. 16, 1993, Ser. No. 49,672

Int. Cl.[5] C07F *15/00*

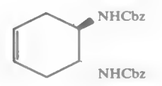
U.S. Cl. 556—137 **6 Claims**

1. A process for preparing a diastereomeric SP-1, 2-dihydroxylated-4,5-diaminocylohexane compound which comprises the steps: dihydroxylating a bis(benzylcarbamate) (Cbz) compound of either one of the formula



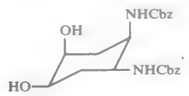
I

and

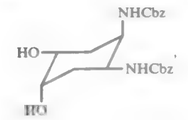


II

to give the corresponding dihydroxylated benzylcarbamate-protected diamine compound of one of the formula



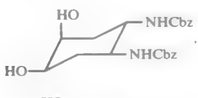
IIIa



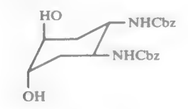
IIIb



IIIc



IIId



IIIe

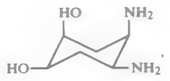
and

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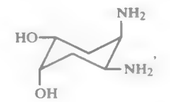


IIIf

and thereafter liberating, by catalytic hydrogenation, said diastereomeric 1,2-dihydroxylated-4,5-diaminocyclohexane compound of one of the formulae:



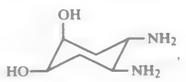
IVa



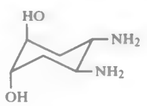
IVb



IVc



IVd



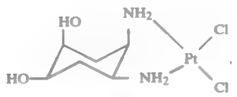
IVe

and

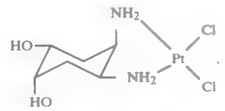


IVf

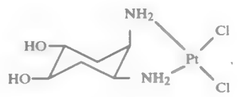
wherein said diastereomeric 1,2-dihydroxylated-4,5-diaminocyclohexane compound of one of the formulae IVa, IVb, IVc, IVd, IVe and IVf immediately after hydrogenation is platinated to form a SP-4,2-dichloro(4,5-dihydroxy-1,2-cyclohexanediamine-N, N')-platinum compound of one of the formulae, respectively



Xa

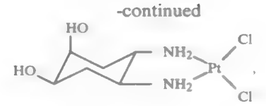


Xb



Xc

-continued



and



5,336,797

SILOXANE MACROMONOMERS

Joseph A. McGee, Dewitt, and Paul L. Valint, Jr., Pittsford, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,346

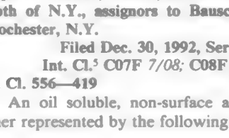
Int. Cl.[5] C07F *7/08*; C08F *230/08, 228/02*

U.S. Cl. 556—419 **26 Claims**

1. An oil soluble, non-surface active siloxane macromonomer represented by the following structural formula:

wherein each B is a polymerizable end group containing at least one ethylenically unsaturated group and a functional group which reacts to form an ester, amide, urea, urethane, carbonate or epoxy type linkage with the rest of the macromonomer; E is a functionalized chain transfer agent;

T has the following structural formula:



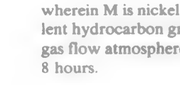
wherein n is an integer from 1 to 6, A is O,



NH or



R^1 is H or CH_3; and each R^2 is independently selected from a C_1–C_8 alkyl group, a phenyl group and a group of the following structural formula:



Xd

wherein each Y is independently selected from a C_1–C_8 alkyl group, a phenyl group and a $(R)_3OSi$-group wherein each R is independently a lower alkyl group; and

Xe m is an integer from 1 to 120.

5,336,798

PREPARATION OF POLYSILANE OLIGOMERS

Motoo Fukushima, and Shigeru Mori, both of Kawasaki, Japan, assignors to Shin-Etsu Chemical Company, Limited, Tokyo, Japan

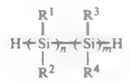
Filed Mar. 17, 1993, Ser. No. 32,109

Claims priority, application Japan, Mar. 17, 1992, 4-091903

Int. Cl.[5] C07F *7/08*

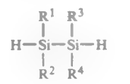
U.S. Cl. 556—430 **3 Claims**

Xf 1. A method for preparing a polysilane oligomer having a terminal SiH group represented by the structural formula (1):



(1)

wherein R^1 to R^4 are monovalent hydrocarbon groups with the proviso that at least one of R^1 to R^4 is an aryl group, n and m are integers of 1 or more, and n+m is equal to 3, 4, 5 or 6 comprising the step of reacting a disilane of the structural formula (2):



(2)

wherein R^1 to R^4 are as defined above, in the presence of a Group VIII transition metal complex catalyst of the formula:

$$MCl_2(R_3P)_2 \quad (3)$$

wherein M is nickel, palladium or platinum and R is a monovalent hydrocarbon group having 1 to 7 carbon atoms, in an inert gas flow atmosphere at a temperature of 30° to 120° C. for ½ to 8 hours.

5,336,799

PROCESS FOR THE REMOVAL OF HYDROGEN-CONTAINING SILANES FROM METHYLCHLOROSILANES

Wilfried Kalchauer, and Bernd Pachaly, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 1, 1993, Ser. No. 143,591

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1992, 4240717

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—466 **6 Claims**

1. A process for the removal of silanes, containing hydrogen atoms bonded directly to silicon, from product mixtures obtained during methylchlorosilane synthesis, wherein the silanes, containing hydrogen atoms bonded directly to silicon, are reacted with chlorohydrocarbons in the presence of palladium or platinum as catalysts to give the corresponding chlorosilanes.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,800

MIXED OXAMIDES

Bernd Siegel, Ludwigshafen; Manfred Patsch, Wachenheim, and Knut Kessel, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

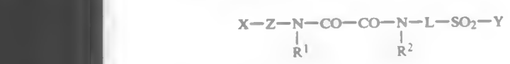
Filed Jan. 4, 1993, Ser. No. 295

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1992, 4201669

Int. Cl.[5] C07C *305/12, 317/06, 205/06, 205/42, 69/003, 69/12; C07D 241/04*

U.S. Cl. 558—30 4 Claims

1. Oxamides of the formula I



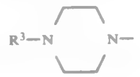
(I)

where

R^1 and R^2 are independently of each other hydrogen, C_1-C_4-alkyl or phenyl,

X is hydroxyl, nitro or a radical of the formula $—NR^3R^4$, where R^3 is hydrogen or C_1-C_4-alkanoyl and R^4 is hydrogen, C_1-C_4-alkyl or phenyl,

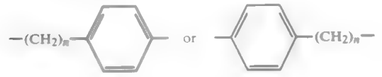
Z is C_2-C_8-alkylene, substituted or unsubstituted phenylene or substituted or unsubstituted naphthylene, or X—Z and R^1 are, together with the nitrogen atom joining them together, the radical of the formula



where

R^3 is as defined above,

L is C_2-C_6-alkylene, a radical of the formula



where

n is 1 or 2, or substituted or unsubstituted phenylene or naphthylene, and

Y is vinyl or a radical of the formula $—C_2H_4—A$, where A is hydroxyl or a group which is detachable under alkaline reaction conditions.

5,336,801

PROCESSES FOR THE PREPARATION OF 2,2,3,3-TETRAFLUOROPROPIONATE SALTS AND DERIVATIVES THEREOF

Carl G. Krespan, Wilmington, Del., and Allen C. Sievert, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 15, 1992, Ser. No. 945,074

Int. Cl.[5] C07C *69/63*

U.S. Cl. 560—227 21 Claims

1. Process comprising contacting and reacting a cyanide salt selected from the group consisting of MCN wherein M is an alkali metal having an atomic number greater than or equal to 11, $Ca(CN)_2$, $Mg(CN)_2$, and R_4NCN where R is C_1-C_4 alkyl; water and tetrafluoroethylene in the presence of an alcohol, wherein the alcohol is selected from the group consisting of ROH where R is C_1-C_8 alkyl, ethylene glycol, propylene glycol, 1,4-butanediol, and mixtures thereof.

5,336,802

PRETREATMENT OF PALLADIUM-GOLD CATALYSTS USEFUL IN VINYL ACETATE SYNTHESIS

David W. Smith, Cincinnati; Ronnie M. Hanes, Loveland, both of Ohio; John A. Scheben, Erlanger, Ky., and Steve M. Augustine, Cincinnati, Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Continuation of Ser. No. 964,591, Oct. 21, 1992, abandoned, which is a division of Ser. No. 802,653, Dec. 5, 1991, Pat. No. 5,194,417. This application May 21, 1993, Ser. No. 67,258

Int. Cl.[5] C07C *67/05*

U.S. Cl. 560—245 4 Claims

1. In a process for the production of vinyl acetate where ethylene, acetic acid, and oxygen are passed over a catalyst, the improvement which comprises pretreatment of the catalyst by the method comprising in sequence:

heating a virgin catalyst comprising metallic palladium and gold, for at least 15 minutes at a temperature at least sufficient to partially oxidize the palladium, in the presence of an oxidizing agent selected from the group consisting of oxygen, nitrogen oxides, nitrate salts, and hydrogen peroxide;

withdrawing the oxidizing agent and introducing an inert gas;

heating the catalyst at a temperature up to 500° C. for at least 15 minutes in the presence of a reducing agent; and

introducing a reaction mixture comprising ethylene, acetic acid, and oxygen following the reducing agent.

5,336,803

PROCESS FOR PRODUCING AN ORGANIC CARBONATE

Hiroaki Kezuka, Tochigi, and Fumio Okuda, Sodegaura, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,117

Claims priority, application Japan, Mar. 14, 1991, 3-073621; Jan. 16, 1992, 4-005613

Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—277 19 Claims

1. A process for producing an organic carbonate which comprises reacting (i) an aromatic hydroxy compound which is at least one compound selected from the group consisting of an aromatic monohydroxy compound and an aromatic polyhydroxy compound, (ii) carbon monoxide, and (iii) oxygen in the presence of a catalyst comprising (a) palladium or a palladium compound, (b) a cuprous compound or a cupric compound, (c) at least one compound selected from the group consisting of a quinone and an aromatic diol formed by reduction of the quinone, and (d) a halogenated onium compound.

5,336,804

AMMOXIDATION OF SATURATED HYDROCARBONS

Gilbert Blanchard, Le Plessis Belleville, and Gilbert Ferre, Livry Gargan, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Feb. 8, 1993, Ser. No. 14,757

Claims priority, application France, Feb. 6, 1992, 9201536

Int. Cl.[5] C07C *253/24*

U.S. Cl. 558—319 21 Claims

1. A process for the ammoxidation of an alkane into an α,β-ethylenically unsaturated nitrile, by reacting an acyclic alkane containing at least 3 carbon atoms per molecule with ammonia and oxygen, in vapor phase, and in the presence of a catalytically effective amount of a solid catalyst, said catalyst having a single active phase represented by the empirical formula (I):

$$VSb_aBi_bO_x \quad (I)$$

in which a is a number equal to or greater than 1, b is a number equal to or greater than 0.01, and x is a number provided by the oxidation number of the other elements of said active catalytic phase, and said active catalytic phase represented by formula

(I) being the sole ammoxidation catalytic component in the process.

5,336,805

PROCESS FOR PREPARING AN α-AMINO ACID, THE CORRESPONDING ESTER AND AMIDE

Wilhelmus H. J. Boesten, Sittard, and Nicolaas A. de Heij, Leende, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

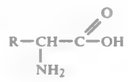
Filed Aug. 12, 1992, Ser. No. 928,317

Claims priority, application Netherlands, Aug. 13, 1991, 9101380

Int. Cl.[5] C07C *229/00*

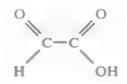
U.S. Cl. 562—444 9 Claims

1. Process for preparing an α-amino acid having the general formula (1):



(1)

wherein R represents aryl, substituted aryl, cycloalkyl, substituted cycloalkyl, alkyl, or substituted alkyl in which process glyoxylic acid with the formula (2):



(2)

or a precursor or derivative thereof is contacted with at least one unsaturated compound selected from the group consisting of aromatic compounds, cycloalkenes and alkenes, in the presence of a N-containing compound, wherein sulphamic acid is used as the N-containing compound.

5,336,806

PURIFICATION OF 2,4,5-TRIFLUOROBENZOIC ACID

Jian S. Qi, Amherst, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Sep. 20, 1993, Ser. No. 122,947

Int. Cl.[5] C07C *51/46, 51/43, 51/42*

U.S. Cl. 562—494 3 Claims

1. A method of isolating and purifying 2,4,5-trifluorobenzoic acid from a first solution of about 10 to about 50 wt % solids in N-methyl pyrrolidone which contains about 5 to about 8 wt % 2,3,5-trifluorobenzoic acid comprising:

(A) adding to said first solution about a stoichiometric amount of sodium hydroxide, whereby the sodium salt of 2,4,5-trifluorobenzoic acid precipitates forming a slurry;

(B) adding toluene to said slurry and evaporating toluene-water azeotrope from said slurry;

(C) filtering said slurry to collect said sodium salt of 2,4,5-trifluorobenzoic acid;

(D) washing said sodium salt of 2,4,5-trifluorobenzoic acid with toluene;

(E) dissolving said sodium salt of 2,4,5-trifluorobenzoic acid in water to form a second solution of about 5 to about 50 wt % solids;

(F) passing said second solution over activated carbon;

(G) adding a strong mineral acid to said second solution in an amount approximately stoichiometric with said sodium salt of 2,4,5-trifluorobenzoic acid, whereby 2,4,5-trifluorobenzoic acid precipitates; and

(H) collecting said precipitated 2,4,5-trifluorobenzoic acid.

5,336,807

CROSSLINKING AGENTS FOR COATING AND ADHESIVE APPLICATIONS

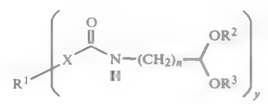
William F. Burgoyne, Jr., Allentown, and Jeremiah P. Casey, Emmaus, both of Pa., assignors to Air Products & Chemicals, Inc., Allentown, Pa.

Filed Jun. 15, 1993, Ser. No. 77,580

Int. Cl.[5] C07C *49/00*

U.S. Cl. 564—153 2 Claims

1. A crosslinking agent which is stable in both the solid state and in solution without undergoing uncontrolled self-crosslinking reactions represented by the structural formula:



wherein R^1 is a C_4-C_{10} aliphatic or aromatic multiradical; R^2 and R^3 are independently C_1-C_6 linear or branched alkyl, aryl or glycol, or R^2 and R^3 together form a C_2-C_6alkylene group; X is a single bond, an oxygen atom, or NH; n is from 1 to 4; and y is an integer from 2 to 5.

5,336,808

PROCESS FOR THE PREPARATION OF 3,5-DIAMINOBENZOTRIFLUORIDE

Ramesh Krishnamurti, Amherst, N.Y.; Mahendra K. Dosi, Alpharetta, Ga., and Henry C. Lin, Grand Island, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Dec. 10, 1990, Ser. No. 624,846

Int. Cl.[5] C07C *209/36*

U.S. Cl. 564—412 10 Claims

1. A process for the preparation of 3,5-diamino benzotrifluoride comprising reacting 4-chloro-3,5-dinitro benzotrifluoride, as a solution in acetic acid, with an alkali metal formate in the presence of an alkali metal acetate and palladium on carbon catalyst.

5,336,809

PROCESS FOR PREPARING 1-FLUOROCYCLOPROPYL METHYL KETONE

Stefan Böhm, Cologne, and Albrecht Marhold, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

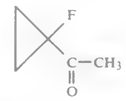
Filed Mar. 2, 1993, Ser. No. 25,194

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1992, 4206917

Int. Cl.[5] C07C *45/54*

U.S. Cl. 568—354 8 Claims

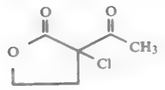
1. A process for the preparation of 1-fluoro-cyclopropyl methyl ketone of the formula



which process comprises

a) in a first step, reacting 2-acetyl-2-chloro-4-butanolide of the formula

VOL 1165 ISS 2 AG 9 1994 UMI

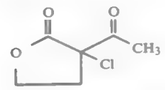


with an addition product of triethylamine and hydrogen fluoride of the formula

$(C_2H_5)_3N$-n HF

in which
n represents the numbers 1, 2 or 3,
in the presence of a diluent at a temperature between 20° C. and 120° C. and

b) in a second step, reacting the resulting 2-acetyl-2-fluoro-4-butanolide of the formula



with a nucleophilic agent selected from the group consisting of an alkalimetal halide, a cylic amine, tetramethylammonium bromide and triethyl-benzyl-ammonium chloride, in the presence of a diluent at a temperature between 50° C. and 200° C.

5,336,810

HYDROGENATION OF BENZOIC ACID AND CATALYST SUITABLE THEREFOR

Paul C. Van Geem, Schinnen; Xinoding Xu, Delft, and Joseph J. F. Scholten, Sittard, all of Netherlands, assignors to DSM N.V., Netherlands

Filed May 7, 1993, Ser. No. 52,358
Claims priority, application Netherlands, May 7, 1992, 9200817
Int. Cl.[5] C07C *45/27, 45/00;* **B01J** *31/00, 37/00*
U.S. Cl. 568—435 **14 Claims**

1. A catalyst suitable for the conversion of a benzoic acid into the corresponding benzalehyde, said catalyst being obtained by:

(i) coprecipitating a manganese salt, a second salt from which an acid support is formed and a zinc salt at a pH between 4 and 10 wherein the amount of manganese, calculated as metal with respect to the total amount of catalyst, is 10 to 30 wt. %; and

(ii) calcining the precipitate of step (i) at a temperature of between 300° C. and 700° C.

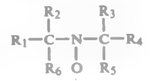
5,336,811

PROCESS FOR THE PREPARATION OF ALDEHYDES

Herbert E. Fried, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 18, 1993, Ser. No. 108,361
Int. Cl.[5] C07C *45/00*
U.S. Cl. 568—436 **25 Claims**

1. A process for the preparation of an aldehyde which comprises reacting the corresponding aryl methanol with a stable free radical nitroxide having the formula:



wherein

(1) (a) each of R_1, R_2, R_3 and R_4 is an alkyl, aryl or hetero-atom substituted alkyl group having 1 to about 15 carbon atoms, and (b) R_5 and R_6 (i) each is an alkyl group having 1 to about 15 carbon atoms provided that R_1–R_6 are not all alkyl groups, or a substituted alkyl group having 1 to about 15 carbon atoms wherein the substituent is hydrogen, cyano, —$CONH_2$, —OCOCH, $OCOC_2H_5$, carbonyl, alkenyl wherein the double bond is not conjugated with the nitroxide moiety, or —COOR wherein R of the —COOR group is alkyl or aryl, or (ii) together form part of a ring that contains at least 3 carbon atoms and up to two heteroatoms of O or N,

(2) the



moiety individually are aryl, or

(3) the



moiety together form a bicyclic ring with the proviso that the group directly adjacent to the N—O is a bridgehead C—H, or a fully alkylated carbon, in the presence of a NO_x-generating compound, at, a temperature in the range of from about 0° C. to about 100° C. and thereafter separating out the aldehyde.

5,336,812

METHOD OF MAKING 1,1-BIS-(4-HYDROXYPHENYL)-3,3,5-TRIMETHYLCYCLOHEXANE

Jeffrey S. Salek, Oakdale Borough; Joseph Pugach, Monroeville Borough, and Mark R. Rubino, Municipality of Monroeville, all of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 12, 1993, Ser. No. 150,893
Int. Cl.[5] C07C *37/20, 39/15, 39/17*
U.S. Cl. 568—721 **11 Claims**

1. In a method of making 1,1-bis-(4-hydroxyphenyl)-3,3,5-trimethylcyclohexane in the form of an adduct with phenol wherein 3,3,5-trimethylcyclohexanone is reacted with phenol in the presence of an acid condensation catalyst and an alkane thiol of the formula R^1R^2CHSH where R^1 is an alkyl, aryl or alkaryl group having from 1 to about 20 carbon atoms and R^2 is H or R^1, to obtain a reaction mixture including 1,1-bis-(4-hydroxyphenyl)-3,3,5-trimethylcyclohexane in the form of an adduct with phenol, the improvement comprising adding water to said reaction mixture to obtain a slurry, filtering said slurry to obtain 1,1-bis-(4-hydroxyphenyl)-3,3,5-trimethylcyclohexane phenol adduct as a solid, and a filtrate having an organic phase and an aqueous phase, recovering said organic phase, contacting said organic phase with an acid condensation catalyst at a temperature of about 0° C. to about 150° C., and adding phenol and 3,3,5-trimethylcyclohexanone to the organic phase so treated to make additional 1,1-bis-(4-hydroxyphenyl)-3,3,5-trimethylcyclohexane.

5,336,813

PROCESS FOR LOW COLOR BISPHENOL

Michael J. Cipullo, and John W. Fulmer, both of Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 611,562, Nov. 13, 1990, abandoned. This application Jan. 29, 1993, Ser. No. 10,898
Int. Cl.[5] C07C *37/70, 37/68*
U.S. Cl. 568—724 **6 Claims**

1. An improved process for making a bisphenol comprising

(a) reacting a mono phenol with an aldehyde or ketone in the presence of an acid ion exchange resin catalyst thereby producing a process stream comprising the said mono phenol and a bisphenol,

(b) separating the said mono phenol from the said bisphenol by distillation at an elevated temperature

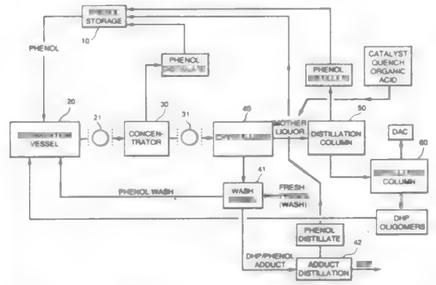
wherein the improvement comprises adding to the process stream prior to distillation but after reaction, a degradation inhibiting effective amount of an amine (i) having a boiling point above that of the said mono phenol and (ii) being substantially soluble in the process stream, separating the mono phenol from the amine-containing process stream during distillation and subsequently separating the amine from the bisphenol product, in the process stream whereby the bisphenol in the process stream is stabilized when subjected to heat treatment and the color of the bisphenol product is reduced.

5,336,814

METHOD FOR RECOVERING BIS HYDROXY AROMATIC ORGANIC VALUES AND BIS ARYL CARBONATE VALUES FROM SCRAP AROMATIC POLYCARBONATE

Sheldon J. Shafer, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 7, 1993, Ser. No. 116,631
Int. Cl.[5] C07C *37/70, 37/74*
U.S. Cl. 568—753 **6 Claims**



1. A method for recovering dihydric phenol and diarylcarbonate values from scrap aromatic polycarbonate comprising carbonate repeat units having the formula,



(1)

where R is a $C_{(6-30)}$ divalent aromatic organic group, which method comprises,

(1) heating the scrap aromatic polycarbonate at a temperature in the range of about 60° C. to about 250° C. in the presence of about 3 to about 50 moles of a monohydric phenol having the formula,

R^1OH, (2)

per mole of the carbonate repeat unit and an effective amount of a basic depolymerization catalyst to produce a mixture comprising the monohydric phenol, dihydric phenol having the formula,

HOROH, and (3)

diarylcarbonate having the formula,

(4)

where R^1 is a $C_{(6-13)}$ monovalent organic radical,

(2) distilling monohydric phenol from the resulting mixture of (1), or in the event the scrap aromatic polycarbonate contains insoluble polycarbonate contaminants, initially filtering the insoluble contaminants from the mixture, where the distillation of monohydric phenol from the mixture is continued until a concentration of about 10% to about 35% of dihydric phenol is achieved, based on total weight of the resulting mixture,

(3) separating dihydric phenol/monohydric phenol adduct from the resulting mixture of (2) at a temperature of about 40° C. to about 80° C.,

(4) vacuum distilling monohydric phenol from the resulting mother liquor of the mixture of (3) in the presence of an effective amount of an organic acid, and

(5) vacuum distilling diarylcarbonate from the residue from the mixture of (4).

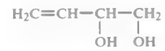
5,336,815

PREPARATION OF VINYL GLYCOLS

Rainer Becker, Bad Duerkheim; Walter Gramlich, Heidelberg; Michael Huellmann, Heppenheim, and Hans-Ulrich Scholz, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 29, 1993, Ser. No. 54,819
Claims priority, application Fed. Rep. of Germany, May 16, 1992, 4216315
Int. Cl.[5] C07C *29/56, 33/035*
U.S. Cl. 568—857 **7 Claims**

1. A process for the preparation of 1-butene-3,4-diol of formula



I

which comprises: isomerizing 2-butene-1,4-diol of the formula



II

under acid free conditions in the presence of a catalyst selected from the group consisting of rhenium, a rhenium compound and mixtures thereof.

5,336,816

METHOD FOR PREPARING 1,1-DICHLORO-1-FLUOROETHANE

Betty J. Achord, and C. Bradford Boyce, both of Baton Rouge, La., assignors to Laroche Chemicals, Inc., Baton Rouge, La.

Filed Dec. 17, 1992, Ser. No. 992,146
Int. Cl.[5] C07C *17/08*
U.S. Cl. 570—168 **20 Claims**

1. A method for preparing 1,1-dichloro-1-fluoroethane (HCFC-141b) in high yield, comprising reacting vinylidene chloride and hydrogen fluoride in the presence of a catalyst and a solvent selected from the group consisting of tetramethylene sulfone, dimethyl sulfone, nitromethane, and nitrobenzene.

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,817

METHOD OF PREPARING 1,1,1,2-TETRAFLUOROETHANE

Johannes Eicher, Garbsen; Karl-Heinz Fazniewscy, Lehrte; Matthias Rieland, and Werner Rudolph, both of Hanover all of Fed. Rep. of Germany, assignors to Solvay Fluor und Derivate GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 25, 1992, Ser. No. 950,497

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1991, 04133247

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] C07C *17/08, 19/08*

U.S. Cl. 570—168 11 Claims

1. A method of preparing CH_2FCF_3 comprising catalytically reacting $CHF{=}CCl_2$ with hydrofluoric acid in liquid phase in the presence of a catalytically active preparation comprising a niobium fluorosulfonate compound, a tantalum fluorosulfonate compound, a molybdenum fluorosulfonate compound, or a mixture of a niobium, tantalum or molybdenum pentahalide and a sulfonic acid derivative selected from the group consisting of fluorosulfonic acid and perfluoro (C1–C12) alkanesulfonic acid, the hydrofluoric acid being used in at least the quantity stoichiometrically required to react the $CHF{=}CCl_2$ to CH_2FCF_3, and the molar ratio of $CHF{=}CCl_2$ to catalytically active compound being from about 10:1 to 1:100.

5,336,818

PROCESS FOR THE PREPARATION OF SUBSTANTIALLY FLUORINATED ALKYL BROMIDES

Andreas Winterfeldt, Barsinghausen; Günter Bartels, Großburgwedel, and Reinhard Knieps, Hanover, all of Fed. Rep. of Germany, assignors to Riedel-de Haen Aktiengesellschaft, Seelze, Fed. Rep. of Germany

PCT No. PCT/EP91/01502, § 371 Date Feb. 16, 1993, § 102(e) Date Feb. 16, 1993, PCT Pub. No. WO92/04307, PCT Pub. Date Mar. 19, 1992

PCT Filed Aug. 8, 1991, Ser. No. 971,820

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1990, 4027766

Int. Cl.[5] C07C *17/20, 19/08*

U.S. Cl. 570—170 19 Claims

1. Process for the preparation of substantially fluorinated alkyl bromides, starting from substantially fluorinated alkyl iodides, comprising reacting a substantially fluorinated alkyl iodide with an organic bromine compound selected from an alkyl bromide, aryl bromine, acid bromide or an N-brominated amide wherein the fluorinated alkyl bromides differ from the fluorinated alkyl iodides only by the halo moiety being replaced.

5,336,819

LIQUEFACTION OF CELLULOSE

Charles A. McAuliffe, and Frederick R. Benn, both of Manchester, England, assignors to Man-Oil Limited, Manchester, United Kingdom

Filed Jun. 11, 1992, Ser. No. 897,567

Int. Cl.[5] C07C *1/00, 4/00*

U.S. Cl. 585—240 9 Claims

1. A process for converting cellulose to hydrocarbon product comprising subjecting the cellulose to a temperature of from 320° to 380° C. and a pressure of at least 40 atmospheres in the presence of a nickel catalyst and a cellulose derived oil without the use of any additional reducing species to produce said hydrocarbon product; said cellulose derived oil being obtained from said hydrocarbon product.

5,336,820

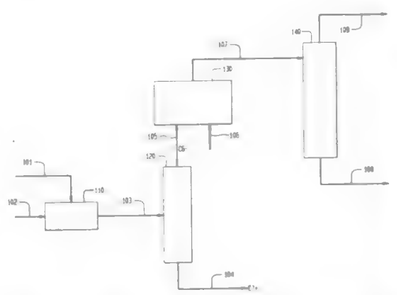
PROCESS FOR THE ALKYLATION OF BENZENE-RICH GASOLINE

Hartley Owen, Worton, Md., and Mohsen N. Harandi, Langhorne, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 11, 1993, Ser. No. 104,689

Int. Cl.[5] C07C *2/66*

U.S. Cl. 585—323 22 Claims



1. A process for enhancing the alkylation conversion rate for a benzene-rich gasoline boiling range hydrocarbon feedstream alkylated with C_2–C_5 olefins to produce product gasoline having a reduced benzene content, said process comprising:

contacting said benzene-rich stream and said olefins with solid, shape selective aluminosilicate catalyst particles in a catalyst bed under benzene alkylation conditions wherein said benzene is sequentially contacted with said olefins in decreasing order of olefin oligomerization reactivity comprising a first contact with C_3–C_5 olefins followed by contact with C_2 olefin, whereby an effluent stream is produced comprising said gasoline having a reduced benzene content representing an enhanced conversion rate for said benzene.

5,336,821

ALKYLATION PROCESS WITH REACTOR EFFLUENT HEAT RECOVERY

Richard R. DeGraff, Deerfield; Peter J. Van Opdorp, Naperville, and Russell C. Schulz, Darien, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed May 6, 1993, Ser. No. 57,397

Int. Cl.[5] C07C *15/02, 5/09, 2/64*

U.S. Cl. 585—402 11 Claims

7. A process for alkylating aromatic hydrocarbons which comprises the steps of:

a. alkylating at least one aromatic hydrocarbon with at least one addition compound in a first alkylation zone to produce a first effluent stream comprising alkylaromatic hydrocarbons;

b. passing a first portion of said first effluent stream into a second alkylation zone or a first separation zone and recovering therefrom a second effluent stream comprising alkylaromatic hydrocarbons and having a molecular weight that is greater than the molecular weight of said first effluent stream;

c. flashing at least a portion of said second effluent stream;

d. heat exchanging in a means for indirect heat exchange at least a portion of said second effluent stream after flashing;

e. heat exchanging in said means for indirect heat exchange a second portion of said first effluent stream;

f. recycling to said first alkylation zone at least a portion of said second portion of said first effluent stream after heat exchanging; and

g. recovering alkylaromatic hydrocarbons in a second separation zone from at least a portion of said portion of said second effluent stream after heat exchanging.

5,336,822

PROCESS FOR THE PRODUCTION OF STYRENE

Dennis A. Hucul, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 827,131, Jan. 28, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 75,962

Int. Cl.[5] C07C *5/367, 5/48*

U.S. Cl. 585—444 26 Claims

1. A process for the production of styrene from 4-vinylcyclohexene, comprising contacting a feed stream in the gas phase with a catalyst comprising tin, antimony, and oxygen under conditions sufficient to produce styrene, the feed stream comprising 4-vinylcyclohexene, water, and molecular oxygen, the molar ratio of water to 4-vinylcyclohexene in the feed stream being at least about 12:1 and less than about 30:1, the catalyst having a half-life of at least about 1000 hours, and the catalyst having been prepared by coprecipitating a tin halide and an antimony halide to form a precipitate and calcining the precipitate at a temperature in the range from about 850° C. to about 1000° C.

5,336,823

Patent Not Issued For This Number

5,336,824

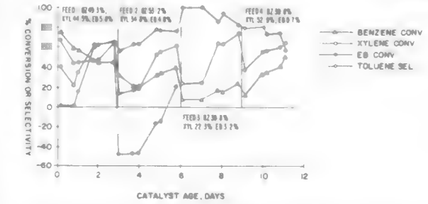
MORDENITE CATALYSTS IN TOLUENE SYNTHESIS

Edwar S. Shamshoum, and Ashim K. Ghosh, both of Clear Lake, Tex., assignors to Fina Technology, Inc., Dallas, Tex.

Filed Jan. 29, 1993, Ser. No. 11,029

Int. Cl.[5] C07C *2/66, 5/52*

U.S. Cl. 585—475 13 Claims



1. A process for the conversion of aromatic hydrocarbons including benzene, xylene(s) and ethylbenzene to hydrocarbon components comprising primarily toluene, the steps comprising:

(a) establishing a catalyst reaction zone having a metal-loaded mordenite zeolite catalyst, said metal selected from the group consisting of zinc, gallium, a combination of zinc and nickel, or a combination of gallium and nickel;

(b) introducing into said reaction zone a mixed feedstock of aromatic hydrocarbons comprising benzene and xylene(s);

(c) contacting said feedstock with said metal-loaded mordenite catalyst;

(d) operating the reaction zone under temperature and pressure conditions to effect the conversion of said feedstock to hydrocarbon components containing primarily toluene; and

(e) recovering the conversion product containing toluene from the reaction zone.

5,336,825

INTEGRATED TWO STEP PROCESS FOR CONVERSION OF METHANE TO LIQUID HYDROCARBONS OF GASOLINE RANGE

Vasant R. Choudhary; Subhash D. Sansare, and Sopan T. Chaudhari, all of Maharashtra, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Jul. 10, 1992, Ser. No. 912,969

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—500 15 Claims

1. An improved integrated two-step process for the conversion of methane to liquid hydrocarbons of gasoline range which comprises

(i) passing continuously a gaseous mixture comprising methane and oxygen over a basic solid rare earth metal promoted alkaline earth metal oxide catalyst suitable for oxidative coupling of methane to C_2 hydrocarbons in a fixed bed reactor at a pressure in the range of 1–50 atmospheres, a temperature in the range of 500°–1000° C., a CH_4/O_2 ratio in the feed in the range of 1.5–100, and a gas hourly space velocity in the range of 500–5,000,000 h^{-1} and separating the water from the product stream by known methods, and

(ii) passing continuously the gaseous product stream of step (i) over a solid acid catalyst containing high silica pentasil zeolite having a channel diameter of 5–6 Å in a fixed bed reactor at a pressure in the range of 1–50 atmospheres, a temperature in the range of 200°–700° C. and at a gas hourly space velocity in the range of 100–50,000 h^{-1}, separating the liquid hydrocarbons and oxides of carbon by known methods and recycling the C_1–C_2 hydrocarbons and unconverted oxygen to step (i).

5,336,826

OXIDATION OF METHANE OVER HETEROGENEOUS CATALYSTS

John H. Brophy, Camberley, and Steven R. Wade, Chertsey, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Dec. 22, 1986, Ser. No. 944,939

Claims priority, application United Kingdom, Jan. 7, 1986, 8600260

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—500 10 Claims

1. A process for the production of higher hydrocarbons from methane which comprises reacting methane in a temperature range of about 600° to 800° C. with an oxygen-containing gas having a ratio of methane to oxygen of greater than the stoichiometric ratio for complete combustion in the presence of a lithium-doped material as catalyst under reaction conditions sufficient to convert said methane to said higher hydrocarbons, said catalyst consisting essentially of:

(i) a compound selected from the group consisting of niobia, zirconia, thoria, tantala and boria; and

(ii) a lithium-dopant.

5,336,827

PROCESS FOR PRODUCING AN OLIGOMER

Takashi Ohno, and Toshiyuki Tsubouchi, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1993, Ser. No. 78,822

Claims priority, application Japan, Jul. 9, 1992, 4-182379; Jul. 9, 1992, 4-182395

Int. Cl.[5] C07C *2/02, 7/00, 7/10*

U.S. Cl. 585—502 9 Claims

1. A process for producing an oligomer by oligomerizing a raw material comprising a mono-unsaturated bicyclo [2.2.1] heptane, which comprises the step of restricting the contents of dienes contained in said raw material to at most 1% by weight.

5,336,828

HYDROCARBON PROCESSING USING FULLERENE CATALYSTS

Ripudaman Malhotra, San Carlos; Doris S. Tse, San Jose, and Donald F. McMillen, Menlo Park, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Mar. 3, 1993, Ser. No. 25,502

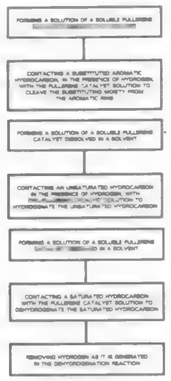
Int. Cl.[5] C07C *5/327*

U.S. Cl. 585—654 10 Claims

10. A dehydrogenation process for forming a hydrocarbon product from a different hydrocarbon starting material which comprises contacting with one or more fullerene catalysts a hydrocarbon starting material selected from the group consist-

VOL
1165
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ing of a saturated aliphatic hydrocarbon, an olefinic hydrocarbon, a cyclic hydrocarbon, an aromatic hydrocarbon, and a substituted aromatic hydrocarbon, while maintaining said hydrocarbon starting material at a temperature ranging from



about 25° C. to about 500° C. and at a pressure of at least about 1 Torr, to cause said hydrocarbon starting material to react to form said different hydrocarbon product, with hydrogen removed as it is released from said hydrocarbon starting material during said dehydrogenation reaction.

5,336,829

CONTINUOUS PROCESS FOR THE DEHYDROGENATION OF PARAFFINIC TO OLEFINIC HYDROCARBONS

Jean-Paul Boitiaux, Poissy; Jean De Bonneville, Rueil Malmaison; Jean-Pierre Burzynski, Sainte-Foy-Les Lyon; Gérard Leger, Caluire; Fabienne Le Peltier, Rueil Malmaison, and Germain Martino, Poissy, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Mar. 25, 1993, Ser. No. 37,117

Claims priority, application France, Mar. 26, 1992, 92 03790

Int. Cl.[5] C07C *5/333*

U.S. Cl. 585—659 **10 Claims**

1. A continuous process for the dehydrogenation of paraffinic hydrocarbons having at least two carbon atoms per molecule in the presence of a catalyst to form olefinic hydrocarbons,

said process comprising:

introducing a charge containing said paraffinic hydrocarbons successively through a first and at least one other moving bed reaction zone arranged in series;

continuously or intermittently circulating the catalyst successively through each of the reaction zones from one end of a reaction zone to its opposite end;

withdrawing the catalyst from the opposite end of each reaction zone, except for the last reaction zone, and conveying the withdrawn catalyst with a gas to one end of the next reaction zone;

withdrawing the catalyst from the last reaction zone through which the charge passes and passing the withdrawn catalyst to a regeneration zone having an outlet; and

withdrawing regenerated catalyst from said outlet and reintroducing the regenerated catalyst continuously or intermittently to the first reaction zone,

said process further comprising:

injecting at least one element selected from the group consisting of sulphur and compounds of sulphur into the first reaction zone before or simultaneously with the introduction of the charge;

continuously or intermittently passing said catalyst withdrawn from said last reaction zone into a stripping zone; and

stripping the sulphur therefrom with a gas or gas mixture before said catalyst withdrawn from the stripping zone is passed continuously or intermittently into the regeneration zone.

5,336,830

DEHYDROISOMERISATION CATALYST AND ITS USE IN THE PREPARATION OF ISOBUTENE FROM N-BUTANE

Giuseppe Bellussi, Piacenza; Aldo Giusti, Lucca, and Laura Zanibelli, Milan, all of Italy, assignors to Eniricerche S.p.A. and Snamprogetti S.p.A., both of Milan, Italy

Division of Ser. No. 737,067, Jul. 29, 1991, Pat. No. 5,275,995. This application Oct. 21, 1993, Ser. No. 140,572

Claims priority, application Italy, Aug. 1, 1990, 21157/A 90

Int. Cl.[5] C07C *5/333, 5/373*

U.S. Cl. 585—660 **23 Claims**

1. A process for the preparation of isobutene by dehydroisomerisation of n-butane, comprising contacting, under dehydroisomerization conditions, a gaseous flow of n-butane and hydrogen, at 450°–600° C., with a fixed catalytic bed formed of a solid granular support of porous gamma-alumina on the surface of which are deposited, as the catalyst, 0.1 to 1% by weight of platinum and 0.5 to 5% by weight of silica.

5,336,831

OLEFIN ISOMERIZATION PROCESS

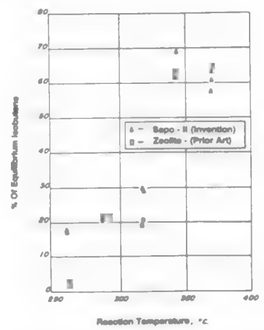
Gregory J. Gajda, Mt. Prospect; Paul T. Barger, Arlington Heights, and Hayim Abrevaya, Wilmett, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 814,167, Dec. 30, 1991, Pat. No. 5,191,146, which is a continuation-in-part of Ser. No. 670,129, Mar. 15, 1991, Pat. No. 5,132,484, which is a continuation-in-part of Ser. No. 442,879, Nov. 29, 1989, abandoned. This application Dec. 22, 1992, Ser. No. 995,471

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[5] C07C *5/13, 5/27*

U.S. Cl. 585—667 **14 Claims**



1. A process for the isomerization of olefins, comprising one or both of butenes and pentenes, which comprises contacting an olefin-containing feedstock at isomerization conditions with a catalyst containing at least one non-zeolitic molecular sieve and having the substantial absence of Group VIII metals to provide a product containing a greater concentration of one or more of the group consisting of isobutenes and isopentenes than in the feedstock.

5,336,832

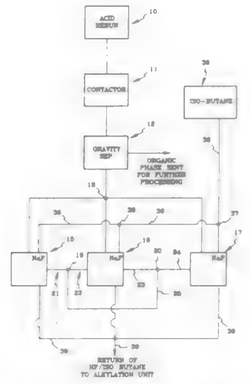
RECOVERY OF HF FROM HYDROCARBON STREAMS

Alfred E. Keller, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Nov. 6, 1992, Ser. No. 972,664

Int. Cl.[5] C07C *2/60, 2/62*

U.S. Cl. 585—710 **26 Claims**



1. A process for recovering HF from acid soluble oils (ASO) generated by the HF regeneration unit of an HF alkylation unit comprising:

a) contacting the ASO with water in order to form a hydrocarbon phase and an aqueous HF containing phase,

b) separating the aqueous HF containing phase from the hydrocarbon phase,

c) contacting said aqueous HF containing phase with at least one bed of NaF crystals in order to form salts of NaF and HF followed by,

d) regenerating said bed of NaF with release of anhydrous HF

e) condensing the released anhydrous HF.

5,336,833

CATALYST BASED ON SILICA AND SULPHURIC ACID AND ITS USE FOR THE ALKYLATION OF PARAFFINS

Jean-Francois Joly, Paris; Christian Marcilly, Houilles, and Eric Benazzi, La Celle Saint Cloud, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Oct. 26, 1992, Ser. No. 966,648

Claims priority, application France, Oct. 25, 1991, 91 13303; Feb. 28, 1992, 92 02482

Int. Cl.[5] C07C *2/62*

U.S. Cl. 585—731 **20 Claims**

1. Catalyst comprising silica and an acid wherein the acid comprises between 5% and 100% by weight of sulfuric acid, and wherein the acid is in a solid phase state in the silica, the silica having been calcined and then impregnated by said acid and having a specific surface between 0.01 and 1500 m^2/g and a total pore volume of between 0.005 and 1.5 cm^3/g, the acid occupying between 5% and 100% of the total pore volume.

5,336,834

HYDROCARBON CONVERSION WITH ADDITIVE LOSS PREVENTION

Andrew S. Zarchy, Amawalk, and Chien C. Chao, Millwood, both of N.Y., assignors to UOP, Des Plaines, Ill.

Filed May 20, 1993, Ser. No. 63,801

Int. Cl.[5] C07C *5/22*

U.S. Cl. 585—737 **22 Claims**

1. A process for the catalytic conversion of a feedstream comprising hydrocarbons in the presence of a beneficient material that enhances performance of the conversion zone, said process comprising,

(a) contacting a first stream comprising hydrocarbons with a catalyst in a reaction zone in the presence of a beneficent material at hydrocarbon conversion conditions to convert hydrocarbons and produce a second stream comprising converted hydrocarbons and said material;

(b) passing at least a portion of said second stream to an adsorption zone containing an adsorbent having adsorption capacity for said material and contacting said second stream with said adsorbent at adsorption conditions, adsorbing said material on said adsorbent and producing an adsorption zone effluent stream having a reduced concentration of said material relative to said second hydrocarbon stream; and,

(c) passing a hydrocarbon feedstream comprising hydrocarbons to said adsorption zone after adsorption of said material at desorption conditions to desorb said material from said adsorbent and produce at least a portion of said first stream.

5,336,835

PRODUCT/PROCESS/APPLICATION FOR REMOVAL OF MERCURY FROM LIQUID HYDROCARBON

James D. McNamara, Crafton, Pa., assignor to Calgon Carbon Corporation, Pittsburgh, Pa.

Division of Ser. No. 441,034, Nov. 22, 1989, abandoned. This application Jun. 2, 1992, Ser. No. 892,080

Int. Cl.[5] C07C *7/12*

U.S. Cl. 585—820 **7 Claims**

1. A process for removing mercury from liquid hydrocarbon comprising contacting said liquid hydrocarbon with an adsorbent comprising an activated carbon impregnated with a reactant metal halide wherein said metal is selected from the group consisting of the metals from Group Ia and Group II of the periodic table of elements and said halide is selected from the group consisting of I, Br and Cl, said metal halide comprising from about 0.5% to 25% by weight of said impregnated carbon adsorbent.

5,336,836

REMOVAL OF ACETALDEHYDE FROM HYDROCARBONS

Ulrich Mueller, Neustadt; Ralf Weiss, Ludwigshafen; Klaus Diehl, Hassloch; Gerhard Sandrock, Frankenthal, and Lothar Sauvage, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 29, 1993, Ser. No. 98,730

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1992, 4226302

Int. Cl.[5] C07C *7/12*

U.S. Cl. 585—824 **7 Claims**

1. A process for removing acetaldehyde from C_3–C_{15} hydrocarbons, which comprises contacting the C_3–C_{15} or a hydrocarbon mixture of C_3–C_{15} hydrocarbon in liquid phase with a zeolite whose pores have a width which is greater than 0.3 nm and up to 0.75 nm.

5,336,837

SEPARATION OF DIETHYLBENZENE ISOMERS ON SILICALITE IN THE PRESENCE OF HIGH PRESSURE CARBON DIOXIDE AND PROPANE

Chung-Sung Tan, Hsinchu, and Shiaw-Tseh Chiang, Taoyuan, both of Taiwan, assignors to Taiwan Styrene Monomer Corporation, Taipei, Taiwan

Filed Mar. 25, 1993, Ser. No. 37,995

Int. Cl.[5] C07C *7/12*

U.S. Cl. 585—828 **20 Claims**

1. A process for separating p-diethylbenzene from a diethylbenzene isomers mixture comprising:

VOL 1165 ISS 2 AG 9 1994 UMI

a) separating p-diethylbenzene from the mixture by selective adsorption of the p-diethylbenzene on a silicalite adsorbent bed, wherein a fixed amount of the mixture is introduced into the adsorbent bed by using a compressed high pressure gaseous CO_2 stream, having a pressure of 27–48 atm, as a carrier, and a first stage effluent stream containing a diethylbenzene isomers composition having substantially no p-diethylbenzene is obtained from the adsorbent bed; and

b) desorbing the adsorbed p-diethylbenzene from the adsorbent bed when the diethylbenzene isomers composition contained in the first stage effluent stream has a desired p-diethylbenzene percentage, wherein a much higher pressurized CO_2 stream having a pressure of 50–102 atm, as a desorbent, is fed to the adsorbent bed to obtain a second stage effluent stream containing a diethylbenzene isomers composition having substantially pure p-diethylbenzene.

5,336,838

ABSORPTION COLUMN WITH INTERNAL MIXING CHAMBER FOR ABSORPTION OF ACETYLENE

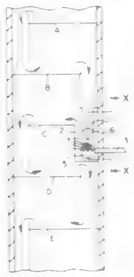
Peter-Clemens Haehn, Geretsried, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 933,590, Aug. 24, 1992, abandoned. This application Nov. 24, 1992, Ser. No. 980,868

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4127988

Int. Cl.[5] C07C *7/10;* **B01D** *19/00*

U.S. Cl. 585—833 **11 Claims**



1. In a process for removing acetylene from a crude gas mixture containing mostly C_2 hydrocarbons by scrubbing with an absorption agent in a plate absorption column having a head and a bottom wherein the crude gas mixture is fed into a lower zone of the absorption column; fresh or regenerated absorption agent is fed into an upper zone of the absorption column, loaded absorption agent is withdrawn from the bottom of the absorption column and is fed to a regeneration stage, a substantially acetylene-free product gas stream is withdrawn from the head of the absorption column and substantially acetylene-free liquid C_2 stream is introduced into the absorption column at a location between the feed point for the crude gas mixture and the feed point for absorption agent, the improvement which comprises introducing said substantially acetylene-free liquid C_2 stream as finely distributed droplets into a mixing zone in the column, said mixing zone containing accumulated absorption agent.

5,336,839

ABSORPTION COLUMN WITH EXTERNAL MIXING FOR ABSORPTION OF ACETYLENE

Peter-Clemens Haehn, Geretsried, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 933,538, Aug. 24, 1992, abandoned. This application Nov. 24, 1992, Ser. No. 980,886

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4127987

Int. Cl.[5] C07C *7/10;* **B01D** *19/00*

U.S. Cl. 585—833 **17 Claims**

1. In a process for removing acetylene from a crude gas mixture containing mostly C_2 hydrocarbons by scrubbing with an absorption agent in a plate absorption column having a head and a bottom wherein the crude gas mixture is fed into a lower zone of the absorption column; fresh or regenerated absorption agent is fed into an upper zone of the absorption column, loaded absorption agent is withdrawn from the bottom of the absorption column and is fed to a regeneration stage, and an acetylene-free product gas stream is withdrawn from the head of the absorption column, the improvement comprising mixing absorption agent, a substantially acetylene-free liquid C_2 stream and/or a partial stream of reflux condensate outside the absorption column, and passing resultant mixture into the absorption column, thereby diminishing foam formation.

5,336,840

PROCESS FOR THE SEPARATION OF AROMATIC HYDROCARBONS WITH ENERGY REDISTRIBUTION

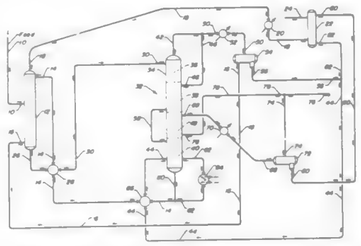
Paulino Forte, Yonkers, N.Y., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 657,923, Feb. 20, 1991, Pat. No. 5,191,152. This application Mar. 2, 1993, Ser. No. 25,294

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] C07C *7/10*

U.S. Cl. 585—833 **17 Claims**



1. A continuous solvent extraction process for the separation of aromatic hydrocarbons from a feedstock comprising aromatic and non-aromatic hydrocarbons, said process comprising:

(a) passing said feedstock with a first lean solvent stream and a recycle stream into an extraction zone operated at extraction conditions effective to separate said feedstock into a raffinate stream comprising non-aromatic hydrocarbons and a first rich solvent stream comprising solvent, aromatic hydrocarbons and non-aromatic hydrocarbons;

(b) passing said first rich solvent stream to a stripping zone, contacting said solvent stream with a stripping stream at stripping conditions in a first section of said stripping zone, recovering a first vapor stream from said first stripping zone section and discharging a second rich solvent stream from said first stripping zone section;

(c) separating a mixed hydrocarbon phase comprising non-aromatic hydrocarbons and aromatic hydrocarbons from said first vapor stream and passing said mixed hydrocarbon phase to said extraction zone as at least a portion of said recycle stream;

(d) passing said second rich solvent stream to a second section of said stripping zone, contacting said second rich solvent stream with a stripping stream in said second stripping zone section, discharging a second vapor stream from said second stripping zone section, and withdrawing a second lean solvent stream from said second stripping zone section;

(e) recovering an aromatic product stream from said second vapor stream; and

(f) cooling at least a portion of said second lean solvent stream and producing said first lean solvent stream by transferring heat from said portion of said second lean solvent stream to said second rich solvent stream as it passes from said first section to said second section of said stripping zone.

5,336,841

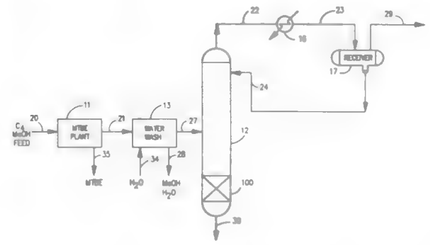
OXYGENATE REMOVAL IN MTBE PROCESS

John R. Adams, Pasadena, Tex., assignor to Chemical Research & Licensing Company, Pasadena, Tex.

Filed Apr. 5, 1993, Ser. No. 42,716

Int. Cl.[5] C07C *7/10*

U.S. Cl. 585—834 **5 Claims**



1. A process for removing dimethyl ether (DME), methyl tertiary butyl ether (MTBE), tertiary butyl alcohol (TBA), methanol or mixtures thereof from a C_4 hydrocarbon stream comprising:

(a) feeding a substantially normal C_4 hydrocarbon feed stream containing minor amounts of dimethyl ether (DME), methyl tertiary butyl ether (MTBE), tertiary butyl alcohol (TBA), methanol or mixtures thereof to a distillation column reactor; and

(b) simultaneously in said distillation column reactor:

(i) contacting said methyl tertiary butyl ether (MTBE) and tertiary butyl alcohol (TBA) with a dissociation catalyst in the form of a catalytic distillation structure thereby decomposing at least a portion of the methyl tertiary butyl ether (MTBE) and tertiary butyl alcohol (TBA) to form a decomposition product comprising isobutene, methanol and water, and

(ii) fractionating the feed stream and decomposition product in said distillation column reactor to provide a vaporous overhead fraction containing hydrocarbons and substantially all of the dimethyl ether (DME) and methanol and a liquid bottoms fraction containing substantially less dimethyl ether (DME), methyl tertiary butyl ether (MTBE), tertiary butyl alcohol (TBA) and methanol than said feed stream.

5,336,842

PROCESS AND DEVICE FOR CLEANING POLLUTED SOLIDS

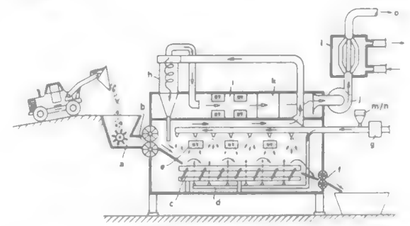
Karl F. Massholder, Altneudorf, and Wilfried Werz, Schriesheim, both of Fed. Rep. of Germany, assignors to Ultra Systems GmbH UV-Oxidation, Heidelberg, Fed. Rep. of Germany

Filed May 11, 1992, Ser. No. 880,655

Claims priority, application Fed. Rep. of Germany, May 9, 1991, 4115177

Int. Cl.[5] B01J *8/18;* **A61L** *2/10*

U.S. Cl. 588—227 **17 Claims**



1. Process for cleaning polluted solids comprising the steps of:

crushing the solids, mechanically fluidizing the crushed solids, blowing air through the crushed solids, irradiating the crushed solids with UV light, and subsequently removing dust from the air flow and irradating the air flow with UV light.

5,336,843

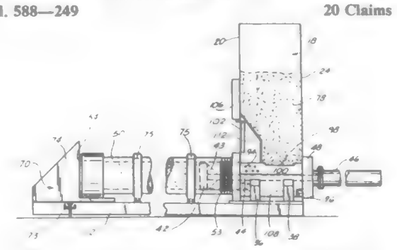
PROCESS FOR COMPACTING NORMALLY OCCURRING RADIOACTIVE MATERIAL (NORM) IN SEALED TUBULAR MEMBERS

John Zimmer, 4308 W. Admiral Doyle Dr., New Iberia, La. 70560

Filed Dec. 7, 1992, Ser. No. 986,277

Int. Cl.[5] B09B *1/00*

U.S. Cl. 588—249 **20 Claims**



1. A process for compacting normally occurring radioactive material (NORM) into a cylinder, such as a pipe, comprising the following steps:

a. providing a cylinder having a continuous sidewall, a first open end and a second closed end, and a cavity formed by the side wall defining a NORM storage space therein;

b. providing a hopper for holding a quantity of the NORM;

c. positioning the open end of the cylinder against the hopper, so that there is communication between the hopper space containing the NORM and the cylinder space so that no NORM can escape between the hopper space and the cylinder space during the compaction process;

d. moving a ram member through the hopper into the open end of the cylinder for forcing a quantity of the NORM contained within the hopper into the cylinder as the ram member moves through the cylinder;

e. repeating step d until the cylinder is substantially filled with the NORM; and

f. closing off the open end of the cylinder so that the NORM cannot move from the cylinder by welding the end cap.

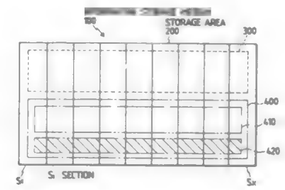
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5,336,844

INFORMATION STORAGE MEDIUM AND APPARATUS FOR REPRODUCING INFORMATION THEREFROM

Keiichi Yamauchi; Toshihiko Shimizu, and Satomi Sudo, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 2, 1991, Ser. No. 725,092
Claims priority, application Japan, Jul. 6, 1990, 2-179794
Int. Cl.[5] G09B *15/04;* G10H *7/00*
U.S. Cl. 84—602 12 Claims



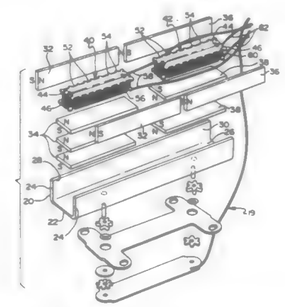
1. An information storage medium comprising a storage area divided into a plurality of sections, for storing digital audio information and digital image information, said digital image information containing digital picture information and digital character information, said digital picture information and said digital character information being stored separately and independently of each other and separately and independently of said digital audio information, and a proportion of storage capacities of the digital audio information and the digital image information being alterable.

5,336,845

PICK-UP ASSEMBLY FOR A STRINGED MUSICAL INSTRUMENT

Donald A. Lace, Sr., Huntington Beach, Calif., assignor to Actodyne General, Inc., Huntington Beach, Calif.

Continuation of Ser. No. 396, Jan. 4, 1993. This application Oct. 29, 1993, Ser. No. 145,489
Int. Cl.[5] G10H *3/18*
U.S. Cl. 84—726 20 Claims



17. A pick-up assembly for a stringed musical instrument having a plurality of moveable strings comprising:

a case having a longitudinal channel;

at least one first magnet disposed in said longitudinal channel along an interior side of said case;

at least one coil disposed in the interior of said longitudinal channel and having a vertical height less than a vertical height of the interior side of said case; and

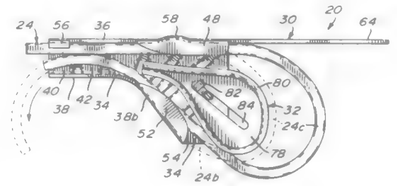
a plurality of second magnets disposed in the interior of said longitudinal channel and stacked horizontally between an interior bottom of said case and said coil such that an upper surface of said coil is near an upper surface of the interior side of said case.

5,336,846

CABLE CLAMP HAVING LOOP-FORMING WEDGE

Isaac Sachs, 283 Newton, Dollard-Des-Ormeaux, Quebec, Canada H9A 3G1

Filed Jun. 25, 1992, Ser. No. 904,147
Int. Cl.[5] H02G *7/00;* F16L *3/00*
U.S. Cl. 174—40 CC 23 Claims



1. A cable clamp for holding a cable suspended from a support, comprising:

a shell member having a planar base wall and first and second elongated walls extending transversely of said base wall and in opposed spaced-apart relation to one another to define at one end a mouth opening for the passage of said cable, said first and second elongated walls defining a side opening in said shell member, said first and second walls including respectively first and second elongated inner abutment surfaces against which first and second portions of said cable are adapted to bear, said first and second inner abutment surfaces extending along respective longitudinal axes which intersect one another at an acute angle;

a movable wedge member having first and second outer abutment surfaces cooperating with said first and second inner abutment surfaces, respectively, adapted to cooperate for wedging said first and second cable portions, and a third outer abutment surface intermediate said first and second outer abutment surfaces, said wedge member being slidably mounted on the base wall of said shell member for sliding movement between a non-wedging position and a wedging position whereat said first and second cable portions are adapted to be clamped between said first inner and outer abutment surfaces and said second inner and outer abutment surfaces, respectively, said wedge member further including a planar side wall extending substantially parallel to and adjacent said base wall;

means for guiding said wedge member during movement thereof between said wedging and non-wedging positions, said means for guiding said wedge member comprising a tongue projecting outwardly from the base wall of said shell member and a guide slot formed in the side wall of said wedge member, said tongue extending through said guide slot for limited guided movement and retention of said wedge member within said shell member so as to permit said cable to be inserted sideways into said shell member through said side opening when said wedge member is in said non-wedging position, and be looped about said wedge member so as to extend in a direction towards said mouth opening with said first and second cable portions extending between said first inner and outer abutment surfaces and said second inner and outer abutment surfaces, respectively, such that when said cable is pulled in said direction, a loop portion of said cable intermediate said first and second cable portions engages said third outer abutment surface to thereby move said wedge member from said non-wedging position to said wedging position; and

VOL 1165 ISS 2 AG 9 1994 UMI

attachment means for attaching said shell member to said support such that said shell member is spaced from said support.

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STATIONARY INDUCTION APPARATUS CONTAINING UNINFLAMMABLE INSULATING LIQUID

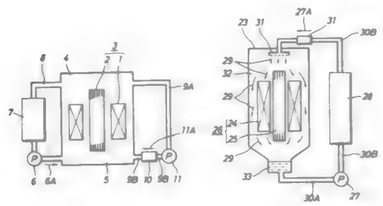
Yoshitake Nakagami, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 30, 1992, Ser. No. 876,483

Claims priority, application Japan, May 9, 1991, 3-102901; May 14, 1991, 3-107690

Int. Cl.[5] H01F *27/10*

U.S. Cl. 174—17 LF **3 Claims**



1. A stationary induction apparatus comprising a tank containing an uninflammable insulating liquid therein and a stationary induction body, said uninflammable insulating liquid consisting of an insulating liquid containing a fluorocarbon liquid and an emulsifying agent which is added to said insulating liquid to render the fluorocarbon liquid and the insulating liquid together in an emulsified condition when stirred; a pump arranged outside said tank for supplying the uninflammable insulating liquid; a first liquid pipe for supplying said uninflammable insulating liquid to said tank, said first liquid pipe connected to a suction port of said pump; a second liquid pipe for supplying said uninflammable insulting liquid to a discharge port of said pump and thereafter to the inside of said tank; and a separate stirrer disposed on said first or second liquid pipe, for stirring said uninflammable insulating liquid.

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LAP-TOP COMPUTER OPERATORS PROTECTIVE DEVICE

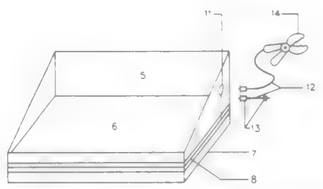
Joseph M. Katz, 11 Meadon Rd., Old Wesbury, N.Y. 11568

Continuation-in-part of Ser. No. 708,222, May 31, 1991, Pat. No. 5,134,245. This application Aug. 24, 1993, Ser. No. 110,922

The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 R **6 Claims**



1. An assembly for diverting the passage of electro-magnetic energy emitted from lap-top computers, notebook computers and portable computers, said assembly comprising:

(a) a tray having a base with upright sides;

(b) an electro-magnetic radiation shielding affixed under the base of the tray;

(c) a horizontal cushion affixed to the electro-magnetic radiation shielding and the base of the tray;

(d) a grounding connector being connected to the electro-magnetic radiation shielding;

(e) wires with connectors that can be attached to said grounding connector to form a ground.

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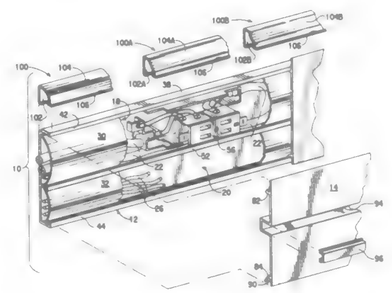
RACEWAY ASSEMBLY FOR POWER AND COMMUNICATIONS CONDUCTORS

Charles A. Whitney, Canton, Conn., assignor to The Wiremold Company, Hartford, Conn.

Filed Jan. 17, 1992, Ser. No. 822,627

Int. Cl.[5] H01R *25/16*; **H01B** *17/18*; **E04F** *17/08*

U.S. Cl. 174—48 **17 Claims**



1. A wiring management assembly comprising

a raceway including an elongated base and an elongated removable cover for the base, the base being divided into first and second longitudinally extending raceway channels, the base and cover being interengageable for removably attaching the cover to the base in a ready position, the cover including an upper latching lip and underlying latching recess formed in the inside wall surface of the cover, the latching lip and recess longitudinally extending along the cover, and

an elongated latching member formed of a resilient, form-sustaining material with a length coextensive with that of the cover, the latching member being removably engageable with the base and its cover continuously along coextending lengths of the base and the cover, the latching member having a rear wall and integral trim face projecting from the top of the rear wall, the trim face having a bottom edge formed by an offset latching foot extending the length of the latching member, the latching foot being in abutting engagement with both the base and its cover in said ready portions and wedged within the latching recess of the cover in a latched position of the assembly, thereby preventing undesired disassembly of the cover relative to the base.

5,336,850

ELECTRICAL POWER CORD ENTRY DEVICE

Brian M. Mitsch, Perrysville, Ohio, assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 624,827, Dec. 10, 1990. This application Oct. 19, 1992, Ser. No. 963,202

Int. Cl.[5] H02G *15/013*

U.S. Cl. 174—65 SS **5 Claims**

1. Apparatus for providing sealing engagement comprising:

a wall having a face and a threaded bore extending through the face thereof; said bore having a truncated conical seat therein and internal threads;

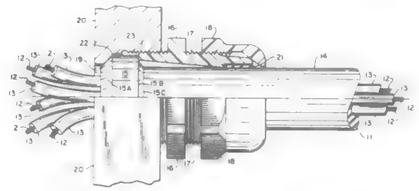
a cord containing a plurality of insulated conductors

means for producing a first fluid seal;

means for producing a second fluid seal;

a molded assembly that is affixed to said cord;

a cord grip that has substantially a cylindrical section shape and external threads, said cord grip abutting said molded assembly;



means for urging said molded assembly radially inward to insure said first fluid seal; and means for urging said molded assembly axially to insure said second fluid seal, said first and second seals being disposed in serial relationship.

5,336,851

INSULATED ELECTRICAL CONDUCTOR WIRE HAVING A HIGH OPERATING TEMPERATURE

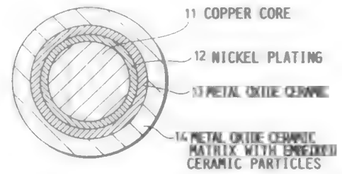
Kazuo Sawada; Shinji Inazawa, and Kouichi Yamada, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 743,428, Aug. 22, 1991, abandoned. This application Dec. 11, 1992, Ser. No. 989,064

Claims priority, application Japan, Dec. 27, 1989, 1-343489

Int. Cl.[5] H01B *7/00*

U.S. Cl. 174—110 A **15 Claims**



1. An insulated electrical conductor wire for use under high temperature operating conditions of at least 600° C., comprising an electrical conductor core having a clean surface, said electrical conductor core having a first melting point within the range of up to 1500° C., a first electrically insulating ceramic layer having a thickness of 1 to 10 μm bonded to said clean surface of said conductor core, said first electrically insulating ceramic layer having a second melting point higher than said first melting point of said electrical conductor core, and a second electrically insulating ceramic layer bonded to said first electrically insulating ceramic layer, said second electrically insulating ceramic layer comprising a ceramic matrix and ceramic particles uniformly dispersed and embedded in said ceramic matrix, said second ceramic layer having a third melting point also higher than said first melting point of said electrical conductor core.

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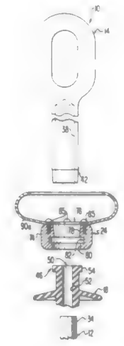
ELECTRICAL ASSEMBLY WITH END COLLARS FOR COUPLING ENDS OF A WEATHERSHED HOUSING TO THE END FITTINGS

Waymon P. Goch, Clinton, and John D. Sakich, Wadsworth, both of Ohio, assignors to Hubbell Incorporated, Orange, Conn.

Continuation of Ser. No. 853,619, Mar. 18, 1992, abandoned, which is a division of Ser. No. 658,848, Feb. 22, 1991, Pat. No. 5,214,249. This application Nov. 10, 1993, Ser. No. 150,260

Int. Cl.[5] H01B *17/06*

U.S. Cl. 174—176 **10 Claims**



1. An electrical assembly, comprising;

a core member with an end fitting coupled to one end;

an elastomeric weathershed housing overlying a portion of said core member;

a tubular end collar having a first end, a second end and an axially extending bore extending between said first and second ends for receiving a portion of said weathershed housing and a tapered portion of said end fitting, said bore including

a frustoconical inner surface portion with an inner diameter sized to receive said end fitting for electrically and mechanically coupling said tubular end collar to said tapered portion of said end fitting by press-fitting said tubular end collar onto said end fitting, said frustoconical inner surface sloping inwardly from said first end towards said second end to narrow said axially extending bore as said frustoconical inner surface approached said second end; and

an annular groove with an inner diameter sized to receive an end flange of said weathershed housing, said annular groove being positioned between said second end and said frustoconical inner surface for receiving said end flange of said weathershed housing therein to couple said tubular end collar to said weathershed housing.

5,336,853

WEIGHING APPARATUS

Ian Davidson, Lutterworth, England, assignor to Bagfilla Overseas Limited, Lutterworth, England

Filed Oct. 13, 1992, Ser. No. 959,764

Claims priority, application United Kingdom, Oct. 15, 1991, 9121817.2

Int. Cl.[5] G01G *19/52*

U.S. Cl. 177—146 **21 Claims**

1. Weighing apparatus comprising:

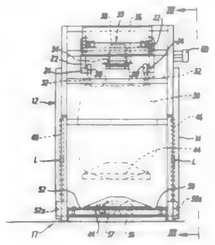
support means to support an article to be weighed;

a base member movable relative to the support means from a first position spaced from the bottom of the article to a second position in contact with the bottom of the article;

first and second screws fixedly mounted on the support

VOL 1165 ISS 2 AG 9 1994 UMI

means, and first and second screw receiving members threadably mounted on said first and second screws respectively, said screw receiving members being connected



to the base member whereby, upon rotation of said screw receiving members relative to said screws, the base member can be moved between said first and second positions.

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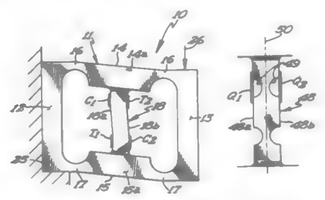
ELECTRONIC FORCE SENSING LOAD CELL

Thomas H. Johnson, Winnebago, Minn., assignor to Weigh-Tronix, Inc., Fairmont, Minn.

Filed Apr. 3, 1992, Ser. No. 862,827

Int. Cl.[5] G01G *3/14, 3/08;* **G01B** *7/16;* **G01L** *1/22*

U.S. Cl. 177—210 FP **1 Claim**



1. A load cell device for measuring loads applied thereto as a weight determination, comprising:

a single-piece load cell structure including a pair of vertically spaced apart horizontal elements, a pair of longitudinally spaced apart opposed vertical elements, and flexures, integral with said horizontal and vertical elements, for connecting each horizontal element with said vertical elements,

a bending beam integrally connected with said pair of horizontal elements of said load cell and being spaced from said flexures, said bending beam being symmetrically spaced from and substantially parallel to said pair of vertical elements and being disposed substantially normal to said pair of horizontal elements, said bending beam having opposed vertical surfaces, each vertical surface having a pair of vertically spaced apart recesses therein,

electronic sensor means mounted on said bending beam, said sensor means including a pair of frequency resonator crystal elements, each bending beam having opposed vertical surfaces, each vertical surface having a pair of vertically spaced apart recesses therein,

electronic sensor means mounted on said bending beam, said sensor means including a pair of frequency resonator crystal elements, each being positioned across one of said recesses, whereby, when a load is applied vertically and perpendicularly to the plane of one of said horizontal elements, said load cell structure will elastically deform at said flexures as a parallelogram to thereby transfer shear force to said bending beam and cause shear-induced bending of said bending beam, and

electronic circuitry including said sensor means producing an output signal caused by deformation of said bending beam and being operable to convert said output signal to a perceptive weight readout.

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MULTILAYER PRINTED CIRCUIT BOARD, IN PARTICULAR, FOR HIGH-FREQUENCY OPERATION

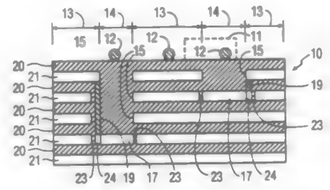
Joachim Kahlert; Klaus P. May, and Joachim Noll, all of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 6, 1992, Ser. No. 817,238

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1991, 4100238

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—250 **10 Claims**



1. A multilayer printed circuit board comprising:

an uppermost dielectric layer for accommodating a plurality of interconnection paths and components, the interconnection paths having equal cross-section;

a first metallic layer having a window;

a further dielectric layer positioned below the first metallic layer;

a second metallic layer positioned below the further dielectric layer for supplying a supply voltage to the interconnection paths and the components;

a second dielectric layer positioned below the second metallic layer;

a lower metallic layer positioned below the second dielectric layer having an island corresponding to an area of the window; and

each of the interconnection paths having a predetermined impedance controlled by a thickness of the dielectric layers between the interconnection path and the island.

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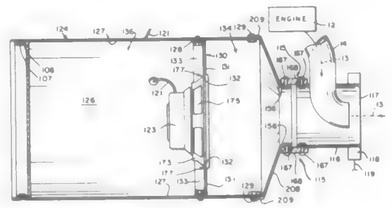
ELECTRONIC MUFFLER ASSEMBLY WITH EXHAUST BYPASS

James K. Krider, North Vernon; Wilbur H. Crawley, III, and David E. Wright, both of Columbus, all of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Continuation of Ser. No. 909,965, Jul. 7, 1992, abandoned. This application Nov. 26, 1993, Ser. No. 157,470

Int. Cl.[5] F01N *1/06*

U.S. Cl. 181—206 **64 Claims**



1. An exhaust processor assembly comprising

a housing formed to include an interior chamber and outlet means for emitting sound waves generated in the interior chamber,

means for providing an acoustical mixing chamber in acoustical communication with the outlet means,

means for conducting combustion product from an engine to the acoustical mixing chamber without passing through the interior chamber of the housing,

means for producing sound was to attenuate noise generated by combustion product introduced into the acoustical mixing chamber through the conducting means, and

means for mounting the producing means in the interior chamber to partition the interior chamber, the mounting means and producing means cooperating to define a first sub-chamber having an opening communicating with the outlet means and a second sub-chamber providing a chamber in spaced-apart relation from the outlet means.

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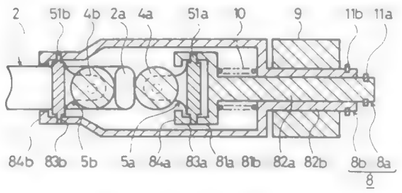
ROLLER CONTACT DEVICE

Kazuo Yoshida, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,042

Int. Cl.[5] H01H *1/06, 1/16*

U.S. Cl. 200—277 **13 Claims**



1. A roller contact device, comprising:

a) first and second fixed electrical contacts (**1,2**) arranged in parallel to each other;

b) at least one pair of electrically conductive roller contacts (**4a,4b**) comprising front and rear roller contacts disposed facing each other with said first and second fixed contacts therebetween so that they can bridge-contact said first and second fixed contacts from front and rear sides thereof;

c) front and rear roller contact support members (**5a,5b**) for individually rotatably supporting said front and rear roller contacts, respectively;

d) means provided between said first and second fixed contacts for pivotally mounting said front and rear roller contact support members in parallel to said first and second fixed contacts, via respective first and second centrally disposed fulcrum pins (**51a,51b**); and

spring means for pressing said front and rear roller contacts against said first and second fixed contacts,

e) wherein the rotatable mounting of the roller contacts and the pivotal mounting of the support members enables the roller contacts to equalize contact forces thereof against the fixed contacts.

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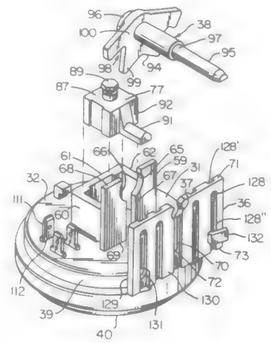
PRESSURE OPERATED SWITCH CONSTRUCTION, PARTS THEREFOR AND METHODS OF MAKING THE SAME

William J. Kaigler, North Huntington, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 990,907, Dec. 15, 1992, abandoned, which is a division of Ser. No. 817,453, Jan. 6, 1992, Pat. No. 5,192,840, which is a division of Ser. No. 479,957, Feb. 14, 1990, Pat. No. 5,109,144. This application Aug. 19, 1993, Ser. No. 110,612

Int. Cl.[5] H01H *35/34*

U.S. Cl. 200—83 R **2 Claims**



1. In a bracket with a pressure operated switch construction that comprises a housing means having an external surface means and carrying an electrical switch unit and a diaphragm assembly therein and a compression spring means that is operatively associated with said switch unit and said diaphragm assembly to control the operation thereof in relation to the compressive setting of said compression spring means, said housing means having a bracket member extending outwardly from said external surface means thereof in a flange-like manner and having first means for interconnecting a first movable actuator means to said housing means that is operatively associated with said compression spring means to select the desired compressive setting thereof, the improvement wherein said bracket has interconnection means interconnected to second means of said bracket member and has means adapted to carry a second movable actuator means that is operatively associated with said compression spring means to select the desired compressive setting thereof, said interconnection means of said bracket comprising a substantially flat surface of said bracket that is disposed parallel to and against said bracket member of said housing means and has a plurality of spaced apart projections extending outwardly therefrom and received in said second means of said bracket member, said bracket having opposed end portions one of which has said interconnection means that is interconnected to said second means of said bracket member and the other of which has means interconnected with a projection that extends from the external surface means of said housing means, said other end portion being disposed substantially parallel to said substantially flat surface of said one end portion and spaced therefrom, said bracket having an intermediate portion thereof that is disposed substantially at a right angle to said end portions, said means of said bracket adapted to carry a second movable actuator means comprising an opening passing through said intermediate portion and in a direction that is parallel to said end portions of said bracket.

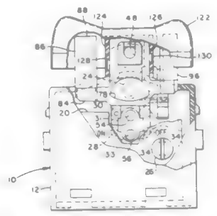
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,859

ILLUMINATED SWITCH

Guy A. Wojtanek, West Chicago; Jaime Lopez, Chicago, and G. Scott Grafer, Huntley, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 1, 1993, Ser. No. 40,722
Int. Cl.[5] H01H *9/16*
U.S. Cl. 200—315 11 Claims



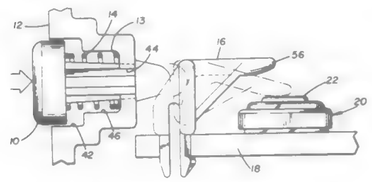
1. An illuminated switch assembly comprising:
(a) housing means;
(b) a switching mechanism disposed within said housing means and upon actuation and de-actuation adapted to effect opening and closing of a set of electrical contacts;
(c) actuator means mounted for pivotal movement on said housing means and operable upon user initiation of said pivotal movement to effect said actuation and de-actuation of said switching mechanism, said actuator means including a transparent means for piping light defining
(i) a first light input surface operative for transmitting light to a plurality of individual main light output surfaces;
(ii) a second light input surface spaced from said first input surface and operative for transmitting light only to a secondary output surface; and,
(d) a first light-emitting source associated with said housing means and disposed for illuminating said first input surface, and a second light-emitting source associated with said housing means and disposed for illuminating said second input surface.

5,336,860

PUSHBUTTON ACTUATOR

Richard T. Slocum, Aliso Viejo, Calif., assignor to WangDat, Inc., Irvine, Calif.

Filed Apr. 16, 1992, Ser. No. 869,600
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—332.1 17 Claims



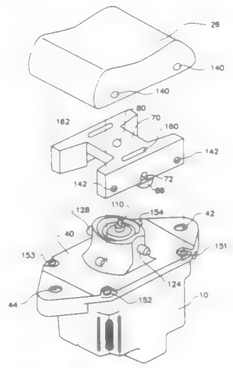
1. An apparatus for transmitting a function to a switch, comprising:
an actuator mounted in a first supporting member and having a shaft which extends through a bore in the first supporting member, wherein force is alternately applied and removed from the actuator to activate and de-activate the function, wherein the first supporting member comprises a cavity centered about the center of the bore;
a link member, remotely disposed between both the actuator and the switch, mounted in a second supporting member, the link member comprising:
a first contact surface adapted to be contacted by the shaft of the actuator and having a sufficiently large projection onto a plane normal to the shaft of the actuator to allow for misalignment of the shaft actuator and the link in the plane normal to the shaft of the actuator;
a second contact surface adapted to press against a contact surface of the switch when force is applied to the first contact surface, the second contact surface having a sufficiently large projection onto a plane parallel to the contact surface of the switch to allow for misalignment of the link member and the switch in the plane parallel to the contact surface of the switch; and
means for hinging the link so that when the shaft presses against the first contact surface of the link, the link pivots about its point of mounting with the second supporting member in a plane that is substantially normal to the second supporting member so that the second contact surface of the link is pushed downward to activate the function; and
a coil spring mounted in the cavity of the first supporting member and held in place there by the actuator, wherein the coil acts to remove the shaft of the actuator from the first contact surface of the link when force is removed from the actuator.

5,336,861

SWITCH WITH REMOVABLE BUTTON FRAME

Brad L. Cummins; William A. Pick; Ronald R. Sorn, and Karl F. Stocker, all of Stephenson, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 28, 1993, Ser. No. 54,383
Int. Cl.[5] H01H *3/00*
U.S. Cl. 200—339 20 Claims



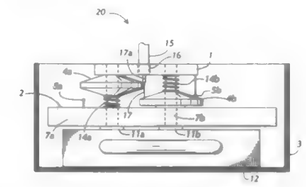
1. A switch, comprising:
an actuator pin;
a pivot pin extending perpendicularly through said actuator pin;
a support structure, said pivot in being supported by said support structure, said actuator pin being rotatable about a central axis of said pivot pin, said pivot pin having first and second ends which extend away from said actuator pin and from said support structure; and
a button frame having a first opening surrounded by a wall portion and a second opening surrounded by a wall portion formed therein and shaped to receive said first and second ends of said pivot pin, said button frame having a third opening formed to receive a first end of said actuator pin therein, said button frame having first and second cam surfaces formed in said respective wall portions and extending, respectively from said first and second openings to edges of said button frame, said first and second cam surfaces being spaced apart by a preselected distance to permit said second end of said pivot pin to slide on said cam surface and into said second opening when said first end of said pivot pin is disposed within said first opening of said button frame.

5,336,862

APPARATUS FOR DESTROYING SYRINGE-TYPE NEEDLES BY ELECTRICAL CURRENT

Richard D. Yelvington, Jacksonville, Fla., assignor to Inventive Services, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 981,775, Nov. 25, 1992. This application Jun. 11, 1993, Ser. No. 75,670
Int. Cl.[5] B23K *11/22*
U.S. Cl. 219—68 6 Claims



1. An apparatus for destroying or rendering safe metal needles having a shaft, hub and a tip comprising:
first and second electrodes being generally disc shaped, each having an upper surface, a lower surface and a circumferential surface and spaced apart in an overlapping relationship to each other by a distance of up to about one-half of the length of the needle to be destroyed;
a power source connected across to said first and second electrodes;
a housing for said electrodes and said power source and having an opening for receiving the needle;
wherein the needle is inserted into said opening of the housing so that the needle shaft contacts the circumferential surface of said final electrode at a point along the needle shaft up to approximately one-half inch (½″) from the needle tip which contacts the upper surface of said second electrode to establish a flow of current through the portion of the needle shaft between said electrodes whereby said first electrode is initially located a distance of between approximately one-eighth of an inch and three-sixteenths of an inch (⅛″–3/16″) from said second electrode until substantially all of the needle shaft is destroyed by electrical resistance of the shaft, with the first electrode being slidably movable toward the second electrode so that the needle shaft is displaced axially until substantially all of the remaining portion of the needle shaft is destroyed.

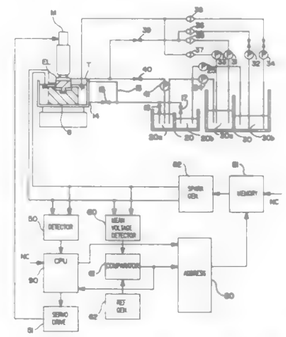
5,336,863

METHOD OF, AND AN APPARATUS FOR, ELECTRICAL-DISCHARGE MACHINING

Koji Terui, Tamayama, Japan, assignor to Sodick Co., Ltd., Yokohama, Japan

PCT No. PCT/JP92/00590, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/19661, PCT Pub. Date Dec. 11, 1992
PCT Filed May 8, 1992, Ser. No. 960,395
Claims priority, application Japan, May 10, 1991, 3-135529
Int. Cl.[5] B23H *1/10*
U.S. Cl. 219—69.14 20 Claims

1. A method of die sinking electrical-discharging machining a workpiece using water and oil based working fluids and a tool electrode, comprising:
machining the workpiece using a water based working fluid;
discharging the water based working fluid from a machined portion formed between the tool electrode and the workpiece and replacing said water based working fluid in said machined portion with an oil based working fluid;



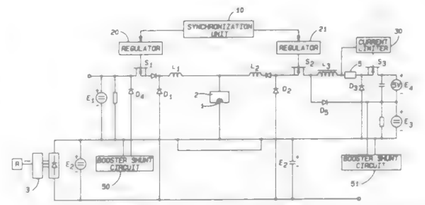
removing any residual water based working fluid remaining in the machined portion by electrical-discharge machining after said step of replacing; and
electrical-discharge machining under working conditions for oil based working fluids using the oil based working fluid after said step of removing.

5,336,864

PULSES GENERATOR FOR ELECTRODISCHARGE MACHINING

Roland Martin, Bloux-Dingy-en-Vuache, France, assignor to Charmilles Technologies SA, Switzerland

Filed Jun. 1, 1992, Ser. No. 891,795
Claims priority, application Switzerland, Jun. 1, 1991, 01624/91
Int. Cl.[5] B23H *1/02*
U.S. Cl. 219—69.18 7 Claims



1. A generator for machining by intermittent electrical discharges in which a high output power source of current is arranged to supply, at high frequency, a machining area between electrodes with short, steep and controlled pulses of large amplitude and in which energy accumulated by inductivity in a machining line is restored to the machining area during the time intervals separating two successive pulses emitted by the high power output source, characterized by an intermediate power source connected in series with an electrode-tool and a workpiece to be machined in a circuit constructed so that a recovery current, which is supplied by the energy accumulated by inductivity in the machining line, flows through said intermediate power source in an opposite direction to that of the current supplied by said intermediate power source, and means for returning said energy from said intermediate power source to said high power source, said means for returning the inductive energy comprises a modifying voltage circuit with a

VOL 1165 ISS 2 AG 9 1994 UMI

voltage stabilizer connected between the two power sources and arranged to effect recovery of the energy as a stabilized potential difference.

5,336,865

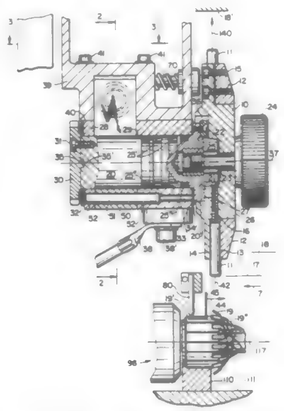
METHOD AND APPARATUS FOR FUSING

Alessandro Rossi, Florence, Italy, assignor to Axis USA, Inc., Marlboro, Mass.

Continuation of Ser. No. 765,574, Sep. 25, 1991, Pat. No. 5,266,767. This application Aug. 4, 1993, Ser. No. 101,943

Int. Cl.[5] B23K *11/30*

U.S. Cl. 219—117.1 **31 Claims**



19. A method for fusing electrical conductors to electric motor parts with a fusing apparatus having fusing means, each electrical conductor being fused to a region of an electric motor part adjacent to said electrical conductor by applying heat and pressure to said region to thereby deform said region to permanently mechanically and electrically contact said electrical conductor, said method comprising the steps of:

determining the perpendicular distance of a reference plane of an electric motor part from said fusing apparatus; and

activating said fusing means to move toward said electric motor part in a direction substantially perpendicular to said reference plane to fuse an electrical conductor based on the perpendicular distance of said reference plane from said fusing apparatus;

wherein the distance of said reference plane from said fusing apparatus after fusing is the same as the distance of said reference plane from said fusing apparatus before fusing.

5,336,866

FABRIC SAMPLE TREATMENT APPARATUS

Charles D. Winstead, Pacolet Mills, and Ralph A. Cantrell, Chesnee, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 16, 1993, Ser. No. 122,884

Int. Cl.[5] F27B *9/06;* **F27D** *3/12*

U.S. Cl. 219—411 **6 Claims**

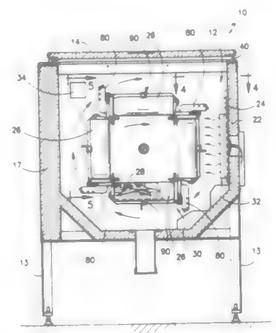
1. A fabric sample treatment apparatus comprising:

a heating chamber;

a rotatable sample rack for holding sample containers disposed within said heating chamber wherein said rotatable sample rack includes a carriage assembly, said carriage assembly being adjustable between open and closed positions and said carriage assembly including mating cradles and leaf springs for maintaining said sample containers in place when said carriage assembly is in the closed position;

a plurality of radiant heating elements disposed adjacent to said rotatable sample rack within said heating chamber;

a plurality of fans for introducing air into said heating chamber through a plurality of ventilation openings disposed within said heating chamber;



a motor for rotating said rotatable sample rack; and

control means for controlling said plurality of radiant heating elements and said plurality of fans, such that the temperature within said heating chamber may be controlled.

5,336,867

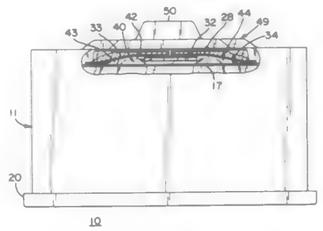
CONVECTION OVEN TAPERED AIR HEATING CHAMBER

Matthew S. Miller, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 13, 1993, Ser. No. 165,796

Int. Cl.[5] A21B *1/26;* **F27D** *7/04;* **F24H** *3/04*

U.S. Cl. 219—400 **10 Claims**



1. A forced air convection oven comprising:

a liner defining a cooking compartment therein, said housing including top, bottom, side and rear walls and an open front providing access to said compartment for inserting and removing food;

a door mounted for movement to selectively open and close said compartment front;

an air heating chamber positioned adjacent a predetermined one of said cooking compartment walls; an air circulation fan mounted in said chamber and air heating means mounted adjacent said fan, an air inlet opening in said predetermined cooking chamber wall aligned with said fan and a plurality of air outlet openings in said predetermined compartment wall remote from said fan, so that operation of said fan draws air into said air heating chamber from said cooking compartment through said inlet opening over said heating means and discharges heated air from said chamber into said cooking compartment through said air outlet openings; and

said air heating chamber including an elongated section extending away from said fan along said predetermined compartment wall, the cross section area of said elongated section uniformly decreasing in the direction away from said fan; predetermined ones of said outlet openings being substantially uniformly spaced apart along said predetermined compartment wall; and each of said predetermined outlet openings having an effective cross section area substantially equal to the cross section area of said elongated heating chamber section adjacent said fan divided by the total number of said predetermined outlet openings.

5,336,868

DEVICE FOR INDUCTIVELY HEATING FLAT METAL MATERIALS

Dieter Schluckebier, Simmerath, Fed. Rep. of Germany, assignor to Otto Junker GmbH, Simmerath, Fed. Rep. of Germany

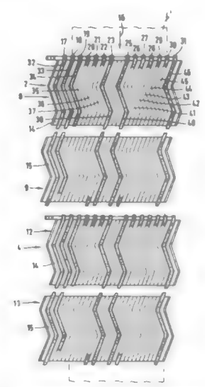
PCT No. PCT/DE90/00654, § 371 Date Feb. 19, 1992, § 102(e) Date Feb. 19, 1992, PCT Pub. No. WO91/03916, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 27, 1990, Ser. No. 835,975

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1989, 3928629

Int. Cl.[5] H05B *6/36*

U.S. Cl. 219—675 **9 Claims**



1. A device for inductively heating flat metal objects comprising:

at least one pair of induction coils which are spaced apart to present a heating gap therebetween through which an object to be heated is moved along a path of travel which extends laterally between said coils,

each of said coils including an elongated iron core positioned to extend along said path of travel, each of said cores having a plurality of longitudinally extending grooves therein,

the grooves in the iron core of at least one of said coils each having a plurality of segments disposed in a zig-zag or undulating configuration,

said segments being disposed at respective angles not greater than 60° relative to said path of travel,

said coils including a plurality of elongated, individually electrically connectable current conductors, each of said conductors being disposed within a respective groove to extend therealong.

5,336,869

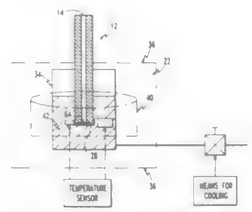
METHOD AND APPARATUS FOR MANIPULATING FLUID

M. Lalith Kumar, 457 Dover Dr., Pittsburgh, Pa. 15238

Filed Nov. 27, 1991, Ser. No. 800,572

Int. Cl.[5] H05B *6/00*

U.S. Cl. 219—687 **13 Claims**



1. An apparatus for manipulating fluid flow comprising:

a member having a channel through which fluid flows, said member having a restrictor having at least one opening of a predetermined diameter in communication with the channel, said restrictor controlling the fluid flow thereacross, at least a portion of said restrictor in thermal contact with the opening and made of a material reactive with electromagnetic energy, said restrictor comprised of ruby or sapphire; and

means for providing electromagnetic energy, said providing means in communication with said portion of the member reactive to electromagnetic energy wherein the electromagnetic energy heats the portion of the member.

5,336,870

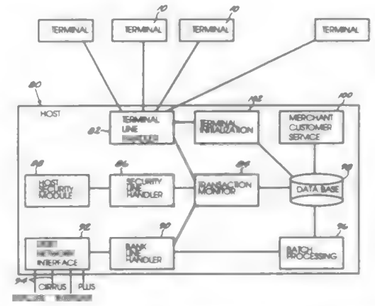
SYSTEM FOR REMOTE PURCHASE PAYMENT TRANSACTIONS AND REMOTE BILL PAYMENTS

Thomas S. Hughes, 31310 Eagle Haven Cir., Ste. 100, Rancho Palos Verdes, Calif. 90274, and Gustavo Molina, 24292 Rhona Dr., Laguna Niguel, Calif. 92656

Filed May 26, 1992, Ser. No. 888,780

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **5 Claims**



1. A system including a host computer system for allowing a user to conduct remote point of sale transactions, said system comprising:

an unitary terminal having a top surface;

a QWERTY alphabetic keyboard for entering alphabetic information integral to said terminal and accessible on said top surface of said terminal;

a numeric keypad for entering numeric information integral to said terminal and accessible on said top surface of said terminal;

a magnetic card reader for reading a magnetically encoded

VOL 1165 ISS 2 AG 9 1994 UMI

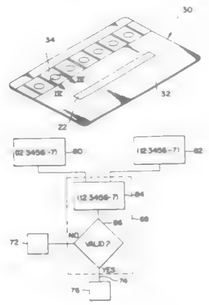
card integral to said terminal and accessible on said top surface of said terminal;
a display integral to said terminal and visible on said top surface of said terminal;
a printer integral to said terminal;
a modem for communication on telephone lines integral to said terminal; and
control means for operating said terminal and communicating to said host computer system coupled to said QWERTY alphabetic keyboard, said numeric keyboard, said magnetic card reader, said display, said printer, and said modem;
first memory means coupled to said control means for storing a transaction log of purchase payment transactions stored as a stack wherein each purchase payment transaction in said transaction log comprises a date and time of said purchase payment transaction, an amount of said purchase payment transaction, an account number of said user, a terminal number of said terminal, a merchant number for said purchase payment transaction, a trace number for said purchase payment transaction, a purchased item identifier for said purchase payment transaction, an account type of said user, a transaction sequence number, an authorization number for said purchase payment transaction, a retrieval reference number for said purchase payment transaction, and a merchant name for said purchase payment transaction;
wherein said trace number uniquely identifies a specific user;
wherein said account type specifies a specific account of said user;
wherein said transaction sequence number is incremented by one for each approved transaction;
wherein said authorization number is issued by said host computer system; and
wherein said retrieval reference number is generated by said host computer system to aid in tracking a transaction within said system.

5,336,871

HOLOGRAPHIC ENHANCEMENT OF CARD SECURITY

Gilbert Colgate, Jr., New York, N.Y., assignor to American Bank Note Holographics, Incorporated, New York, N.Y.

Filed Feb. 7, 1992, Ser. No. 831,267
Int. Cl.[5] G06K *19/10, 19/12, 19/16*
U.S. Cl. 235—380 **8 Claims**



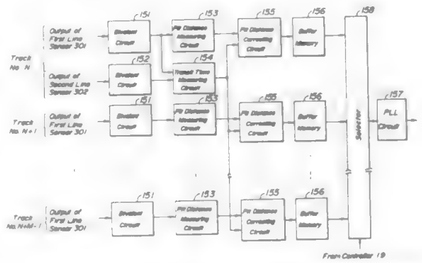
1. A method of enhancing security of an identification card comprising the steps of:
coding onto a magnetic stripe a partial string of identifying digits;
coding onto an optically readable portion at least one further identifying digit;
appending said at least one further identifying digit to the partial string of identifying digits to fully identify the card; and
coding onto said magnetic stripe a check digit determined from the appendage of both the partial string of digits on said magnetic stripe and the at least one further identifying digit on said optically readable portion.

5,336,872

INFORMATION RECORDING/REPRODUCING APPARATUS FOR USE IN AN OPTICAL CARD

Toshio Horiguchi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 8, 1992, Ser. No. 879,898
Claims priority, application Japan, May 10, 1991, 3-133286
Int. Cl.[5] G06K *7/10, 7/14, 7/00;* **H04N** *5/76*
U.S. Cl. 235—454 **20 Claims**



1. An optical information recording/reproducing apparatus for use in an optical recording medium, comprising:
an optical head for detecting information signals from an optical recording medium;
a transfer means for transferring said optical recording medium in a track direction with respect to said optical head;
a demodulating means for demodulating said information signal detected by the optical head;
a controlling means for controlling the optical head, the demodulating means and the transfer means;
a detection means for detecting a transferring speed of the optical recording medium from said information signal detected by the optical head; and
a correction means for correcting said information signal detected by the optical head in accordance with the transferring speed of the optical recording medium detected by said detection means.

5,336,873

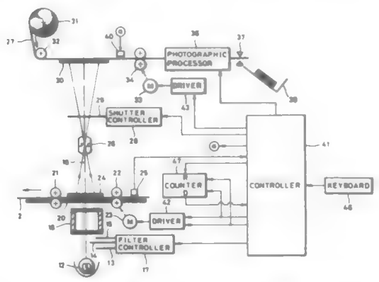
PHOTOGRAPHIC FILM HAVING FRAME NUMBER BAR CODES

Takashi Imamura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 941,328, Sep. 14, 1992, abandoned, which is a division of Ser. No. 826,191, Jan. 21, 1992, Pat. No. 5,179,266, which is a continuation of Ser. No. 446,263, Dec. 5, 1989, abandoned. This application Dec. 17, 1993, Ser. No. 168,358
Claims priority, application Japan, Dec. 5, 1988, 63-307607
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **17 Claims**

1. In a photographic film having a series of plurality of frame identifying bar codes which are printed on a lateral side at a predetermined pitch, said frame identifying bar codes representing a respective symbol identifying a picture frame to be formed by photography, said frame identifying symbols including serial numbers at least from "1" to "N" assigned serially to N frames to be arranged from a film leader end toward a film trailer end, and an extra symbol assigned to an extra frame disposed after said frame numbered as said N, where said N is a standardized number of available frames for exposure associated with a length of said photographic film, an improvement comprising:

a frame number bar code, for said N-numbered picture frame, signaling that a picture frame following said N-



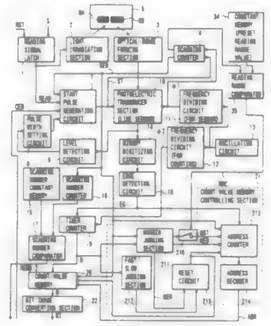
numbered picture frame is said extra frame, in addition to said number N.

5,336,874

BAR CODE READER WITH ERROR DETECTION AND DECODE CONTROL

Kazuo Hasegawa, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 839,463
Claims priority, application Japan, Feb. 22, 1991, 3-048681; Feb. 25, 1991, 3-050089; Feb. 25, 1991, 3-050277; Feb. 25, 1991, 3-050278; Feb. 25, 1991, 3-050279
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—466 **1 Claim**



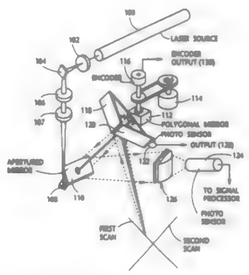
1. An optical reading apparatus comprising:
means for producing a first clock signal,
a scanning counter for counting pulses of the first clock signal and for generating
a scanning count value equal to the number of counted pulses,
a line sensor having a scanning range of a size corresponding to a plurality of bar codes for converting optical data representing the plurality of bar codes printed on a print medium and for generating an output signal representing the bar codes,
means for receiving and binary digitizing the output signal of said line sensor and for generating a binary signal,
an edge detector for detecting edges of the binary signal and for generating an edge signal,
means for generating a second clock signal,
a timer counter for counting pulses of the second clock signal for each edge signal and for generating a plurality of first count values corresponding to widths of bars of the bar codes,
a count value memory for receiving and storing the first count values,
means for receiving and decoding the first count values stored in said count value memory and for generating character data of the bar codes,
a memory for storing a second count value equal to a portion of the predetermined number of pulses of the first clock signal,
means for comparing the second count value with the scanning count value and for generating a control signal when the scanning count value is greater than the second count value, and
means responsive to the control signal for allowing only the first count values associated with a bar code which has a starting and detected prior to transmission of the control signal to be written into said count value memory, thereby allowing only one of a plurality of bar codes to be read and decoded by said optical reading apparatus.

5,336,875

METHOD AND ARRANGEMENT OF GENERATING A NON-DIFFRACTIVE BEAM AT A LOCATION WHICH IS REMOTE FROM OPTICAL ELEMENT AND APPLICATION THEREOF

Yuzo Ono, and Kazuhisa Shirakabe, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,786
Claims priority, application Japan, Jul. 31, 1991, 3-190425; Dec. 19, 1991, 3-335399
Int. Cl.[5] G06K *7/10;* **G02B** *5/32, 26/08, 27/30*
U.S. Cl. 235—467 **7 Claims**



1. A bar code reader, comprising:
means for producing a laser beam;
a first beam converging element which is illuminated by said laser beam;
a second beam converging element which is illuminated by a beam which has passed through said first beam converging element, said first and second beam converging elements being arranged in a manner to issue a ring beam which is parallel with an optical axis;
a third beam converging element which is illuminated by said ring beam, said third beam converging element generating a diffraction-free Bessel beam at a location which is remote from said third beam converging element;
means for deflecting said diffraction-free Bessel beam so as to form a scan pattern comprised of first and second scan lines, said first and second scan lines being oriented at a predetermined angle with respect to one another; and
means for detecting the beginning of the scan pattern and for discriminating between said first and second scan lines.

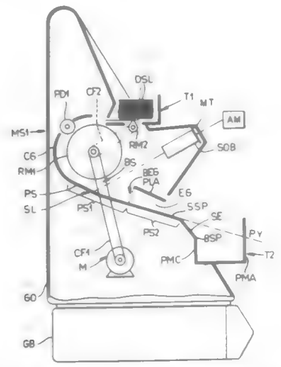
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,876

HIGH-SPEED, GRAVITY-FED DOCUMENT FEEDER FOR BAR-CODE SCANNER

Roberto E. Martinez Taylor, Buenos Aires, Argentina, assignor to Compudata SA, La Plata, Argentina

Continuation-in-part of Ser. No. 529,892, May 29, 1990. This application Aug. 28, 1992, Ser. No. 938,299
Claims priority, application Argentina, Nov. 20, 1989, 315232; May 5, 1992, 322275
Int. Cl.[5] G06K *13/00*; B65H *5/22, 83/00, 85/00*
U.S. Cl. 235—475 8 Claims



1. An apparatus for reading bar codes printed on sheets, the apparatus comprising:

a housing;

a supply hopper in the housing adapted to hold a stack of the coded sheets;

an outfeed hopper below the supply hopper in the housing;

a guide defining a path in the housing starting at the supply hopper and ending at the outfeed hopper and having

a basically planar upstream guide plate having, relative to an upstream-to-downstream direction of travel of the sheets along the path, an upstream edge and a downstream edge below the upstream edge, and

a basically planar downstream guide plate having an upstream edge joined to the downstream edge of the upstream plate and a downstream edge below the upstream edge of the downstream plate, the downstream plate lying in a plane forming with the upstream plate an angle of slightly less than 180° while forming with the horizontal an angle of between 17° and 30°, the outfeed hopper having an upright end wall having an upper edge projecting above the extending plane of the downstream guide plate;

stripper means in the housing at the supply hopper for pulling a lowermost sheet off the stack and feeding it edgewise in the direction to an upstream end of the guide path;

drive means in the housing at the upstream end of the guide path for gripping the sheets an name are received from the stripper means and for delivering the sheets in the travel direction edgewise to the upstream guide plate so that the sheets slide freely and adjacent along the guide plates, then strike the outfeed-hopper wall and come to rest in the outfeed hopper;

a deflector plate in the housing above the downstream guide plate, generally parallel thereto, and having an upstream edge; and

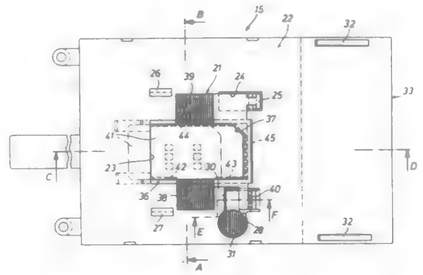
means including an optical scanner in the housing directed downward at the guide plates upstream of the upstream edge of the deflector plate for reading bar codes on documents as same slide in the direction over the plates.

5,336,877

CONTACTING DEVICE FOR STANDARD CHIP CARD AND SIM CARD

Eberhard Raab, Bad Wimpfen; Manfred Reichardt, Weinsberg, and Bernd Schuder, Schwaigern, all of Fed. Rep. of Germany, assignors to Amphenol-Tuchel Electronics GmbH, Fed. Rep. of Germany

PCT No. PCT/EP91/01778, § 371 Date Mar. 18, 1993, § 102(e) Date Mar. 18, 1993, PCT Pub. No. WO92/05513, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 18, 1991, Ser. No. 27,151
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1990, 4029576
Int. Cl.[5] G06K *13/00*
U.S. Cl. 235—475 20 Claims



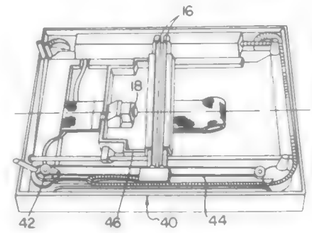
1. A contacting device for contacting cards having card contacts arranged in a same pattern, comprising a chip card reader which includes means for reading a chip card and card receiving means for receiving a card which has a different size from that of said chip card, wherein said card receiving means has the form of a chip card and comprises means defining a recess into which the different size card is inserted, and further comprising means consisting of an adhesive foil for retaining said different size card in said recess.

5,336,878

VARIABLE SPEED SINGLE PASS COLOR OPTICAL SCANNER

David W. Boyd, Greeley, and Greg A. Degi, Fort Collins, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 10, 1993, Ser. No. 60,289
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 14 Claims



1. An optical scanner device for producing machine-readable data representative of a color image of a scanned object comprising:

a) light source means for illuminating said object;

b) imaging means for focusing imaging light from an aligned portion of said object onto an image region for providing

an image of said aligned portion of said object at said image region;

c) a photosensor assembly operable in successive sampling intervals for generating image data representative of a color image of said object comprising:

i) a first linear photosensor means located in said image region and having a predetermined photosensor line width for generating a first data signal representative of the intensity of imaging light impinged thereon; and

ii) a second linear photosensor means located in said image region and having said predetermined photosensor line width for generating a second data signal representative of the intensity of imaging light impinged thereon, said second linear photosensor means being positioned parallel to said first linear photosensor means and spaced therefrom by a first photosensor gap distance;

d) first and second color filter means operatively associated with said first and second linear photosensor means respectively for filtering imaging light focused on said linear photosensor means whereby said first photosensor means receives only light of a first preselected color and said second photosensor means receives only light of a second preselected color;

e) displacement means for producing relative displacement between said object and said imaging means for producing a sweeping scan image of said object in said image region;

f) scan speed indicating means for generating a scan speed signal indicating a selected one of different scan speeds of said displacement means;

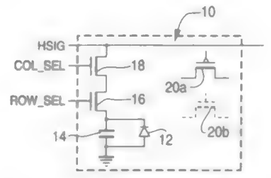
g) data processing means responsive to said scan speed signal for correlating data from said first data signal with data from said second data signal such that the correlated data are representative of the intensity of light from the same general location on said object regardless of the selected scan speed.

5,336,879

PIXEL ARRAY HAVING IMAGE FORMING PIXEL ELEMENTS INTEGRAL WITH PERIPHERAL CIRCUIT ELEMENTS

Donald J. Sauer, Allentown, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed May 28, 1993, Ser. No. 68,340
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 14 Claims



1. A pixel array comprising:

a plurality of select lines;

a plurality of signal lines;

an array of pixel elements, a pixel element including:

phototransducer means;

switching means coupled between the phototransducer means and one of the plurality of signal lines; wherein the switching means is responsive to signals on one of the plurality of select lines for conveying signals between the phototransducer and the one signal line;

at least one configurable transistor in each of a plurality of pixel elements, the configurable transistor being independent of the switching means; and

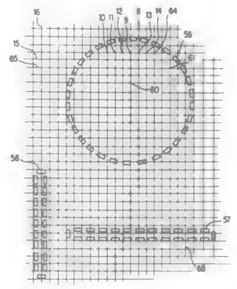
means for coupling a plurality of configurable transistors on a respective plurality of pixel elements to implement peripheral circuitry within the array of pixel elements.

5,336,880

PROCESS FOR THE CORRECTION OF DISTORTIONS IN RADIOLOGICAL IMAGES

Vincent Leclerc; Catherine Picard, both of Paris, and Blandine Lavayssiere, Ville d'Avray, all of France, assignors to General Electric CGR S.A., Issy les Moulineaux, France

PCT No. PCT/FR89/00375, § 371 Date Jan. 13, 1992, § 102(e) Date Jan. 13, 1992, PCT Pub. No. WO91/01071, PCT Pub. Date Jan. 24, 1991
PCT Filed Jul. 13, 1989, Ser. No. 793,351
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 VT 20 Claims



1. A process for the correction of the distortion of radiological images acquired with a luminance intensifier tube, said images comprising a collection of addresses of image elements in relation with grey levels assigned to said elements, said process comprising:

acquiring a real image of a test chart, formed by horizontal and vertical bars, said this test chart being placed in front of the input face of said tube,

assessing the distortion of said test chart with respect to its expected theoretical shape,

and correcting said radiological images as a function of said assessment, wherein said assessing step includes

automatically detecting the position of control pixels by

searching, by operations of mathematical morphology, for the positions of bars of each of two types,

following and labelling said bars,

and localizing and labelling points of intersection of said bars of said two types, and

assessing localized shifts of said points of intersection.

5,336,881

HIGH LIGHT RESOLUTION CONTROL OF AN IMAGE INTENSIFIER TUBE

Joseph N. Caserta, and Nathan R. Schlotthober, both of Roanoke, Va., assignors to ITT Corporation, New York, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,410
Int. Cl.[5] H01V *40/14*
U.S. Cl. 250—214 VT 20 Claims

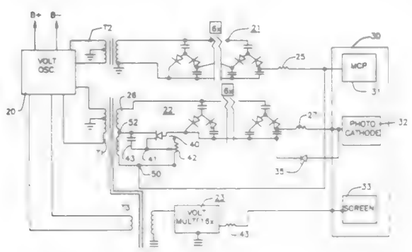
1. In an image intensifier tube having a photocathode which draws a current in response to the input values of light over an operating range, the improvement therewith comprising;

pulsing means for pulsing said photocathode ON and OFF at a predetermined rate;

variable control means for selectively varying said predeter-

VOL 1165 ISS 2 AG 9 1994 UMI

mined rate, thereby enabling said predetermined rate to be selectively varied to supply a relatively constant resolution for said intensifier over said operating range of light input values.



5,336,882

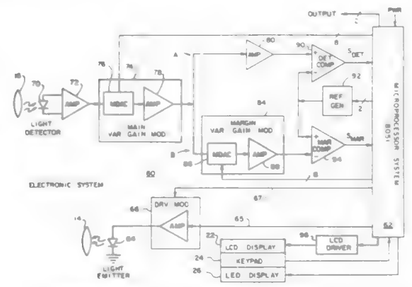
SYSTEM FOR DETERMINING OPERATIONAL STABILITY OF A PHOTOELECTRIC CONTROL UNIT HAVING A MARGIN VARIABLE GAIN MODULE

Elik I. Fooks, Lexington; Patrick J. Delaney, III, Sudbury, and Philip E. Johnson, Worcester, all of Mass., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Dec. 30, 1992, Ser. No. 999,475

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—221 **9 Claims**



1. An apparatus for providing an indication of the operational stability of a photoelectric control unit which is operative for detecting target objects by periodically emitting light pulses and synchronously detecting return pulses, comprising:

means for measuring photoelectric operating margin;

means for measuring background noise;

means for generating an operational stability figure characterized by a magnitude level as a function of both operating margin and background noise; and

means for indicating the level of said operational stability figure to a human operator.

5,336,883

OPTICAL FIBER SENSOR FOR PRODUCING A VARIABLE TRANSVERSE STRAIN IN A LOCALIZED PORTION OF THE FIBER

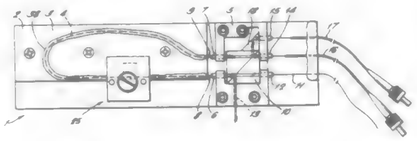
James D. Hobby, Didcot, and Steven J. Butcher, Kidlington, both of United Kingdom, assignors to Focas Limited, Swindon, United Kingdom

Continuation-in-part of Ser. No. 877,628, May 1, 1992, abandoned. This application Apr. 27, 1993, Ser. No. 53,736

Claims priority, application United Kingdom, May 3, 1991, 9109715.4

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.17 **23 Claims**



1. A sensor comprising an optical fibre and a transducer operable to produce a variable transverse strain in a localised portion of the fibre in a manner respresentative of the value of a physical parameter to be sensed whereby in use light transmitted through the fibre undergoes a change of polarisation state which is detectable to obtain an output representative of the parameter, the fibre comprising an inner core encased by a cladding layer of different refractive index from that of the core and an outer jacket of relatively deformable material, wherein the localised portion of the fibre does not include the jacket but is embedded in a first body of a relatively rigid first matrix material and the transducer is cooperable with the first body so as to produce strain in the localised portion of the fibre by applying stress to the first body.

5,336,884

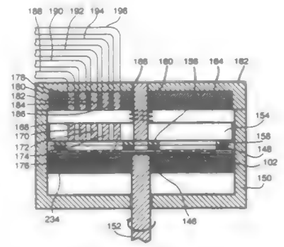
HIGH RESOLUTION OPTICAL HYBRID ABSOLUTE INCREMENTAL POSITION ENCODER

Mohsen Khoshnevisan, Newbury Park; Jeffrey S. Schoenwald, Thousand Oaks; Jonathan P. Rode, Westlake Village; Raymond J. D. Smith, Newbury Park, all of Calif.; Bruce G. Kolloff, Sussex, N.J., and Steve Beccue, Oxnard, Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 1, 1992, Ser. No. 907,412

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.18 **30 Claims**



1. An interferometrically readable optical encoder for sensing angular position, comprising:

a rotatable optical medium having a data storage layer and an axis of rotation perpendicular to the layer, a plurality of uniformly sized angular sectors being defined in the layer;

an angular absolute track defined in the layer concentric with the axis;

a plurality of absolute marks formed in the layer in sequence along the absolute track within each sector, each such absolute mark being detectable by interferometric reflection of coherent light as representative of a binary 1 or a binary 0 and each such plurality of absolute marks defining a binary word;

a first annular incremental track defined in the layer concentric with the axis; and

a first series of incremental marks formed in the layer and evenly spaced around the first incremental track, each such incremental mark being detachable by interferometric reflection of coherent light,

whereby the binary word in a sector can be read to identify the angular position of that sector and thereby indicate the approximate angular position of the medium, and

whereby the first series of incremental marks can be detected to refine the approximate angular position indication and thereby indicate a more precise angular position of the medium.

5,336,885

ELECTRON BEAM APPARATUS

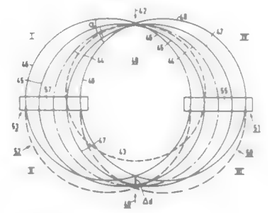
Harald Rose, Darmstadt; Ralf Degenhardt, Offenbach, both of Fed. Rep. of Germany, and Karel D. Van der Mast, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1992, Ser. No. 963,647

Claims priority, application European Pat. Off., Oct. 24, 1991, 91202753.9

Int. Cl.[5] H01J *37/295*

U.S. Cl. 250—305 **18 Claims**



1. Electron beam apparatus comprising:

an electron source for producing an electron beam;

an electro-optical system for directing said beam along an optical apparatus of the apparatus; and

an energy selective filter having an entrance plane at which the electron beam is received, said filter comprising a first deflecting system for directing the beam away from the optical axis and a second deflecting system for re-directing the beam in line with the optical axis, the two deflecting systems causing electrons of different energies in the beam to traverse different substantially circular paths in a plane which passes through said filter but which does not include the optical axis, the energy dispersed beam emerging from an exit plane of said filter.

5,336,886

APPARATUS FOR MEASURING A DIFFRACTION PATTERN OF ELECTRON BEAMS HAVING ONLY ELASTIC SCATTERING ELECTRONS

Kazuhiko Itoh, Tokyo, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed Apr. 19, 1993, Ser. No. 48,244

Claims priority, application Japan, Apr. 24, 1992, 4-106754

Int. Cl.[5] H01J *37/295*

U.S. Cl. 250—305 **3 Claims**

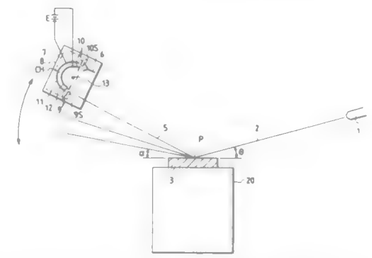
1. An electron beam diffraction measuring apparatus comprising:

means for positioning an object to be measured at a predetermined location in a vacuum;

an electron beam source for irradiating a portion of said object with an electron beam having a preset energy;

energy discriminator means on which electron beams diffracted by said object are incident;

drive means for moving said energy discriminator means around said portion of said object being irradiated by said electron beam from said electron beam source;



said moving energy discriminator means being operative to emit therefrom only a beam of electrons having said preset energy among the electron beams that have been diffracted by said object and that are incident with substantially no loss of energy on said energy discriminator means; and

electron beam detector means responsive to the beam of electrons having said preset energy emitted from said moving energy discriminator means for detecting a diffraction pattern of the energy discriminated electron beams diffracted by said object.

5,336,887

SCANNING PROBE MICROSCOPE

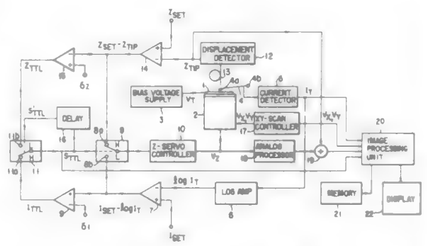
Akira Yagi, Sagamihara, and Hirofumi Miyamoto, Tokyo, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,598

Claims priority, application Japan, Nov. 15, 1991, 3-300687; May 27, 1992, 4-135318

Int. Cl.[5] H01J *37/00*

U.S. Cl. 250—306 **18 Claims**



1. A scanning probe microscope for observation of a surface of a sample, comprising:

a conductive probe;

a cantilever for holding said probe at a free end of said cantilever, the free end of said cantilever being displaced by a force existing between said probe and the sample;

displacement detecting means for detecting said displacement of the free end of said cantilever, and for sending out a displacement signal representing a magnitude of said

VOL 1165 ISS 2 AG 9 1994 UMI

displacement, and wherein a reference displacement value is predetermined;

bias voltage applying means for applying a potential difference between the sample and said probe;

electric current detecting means for detecting a current flowing between said probe and the sample, and for sending out a current signal representing a changing rate of said current detected by said electric current detecting means, and wherein a reference current value is predetermined;

control means for controlling the distance between said probe and the sample so as to hold one of said displacement signal and said current signal equal to the corresponding reference value, said control means including:

first comparison means for comparing said current signal with said reference current value;

second comparison means for comparing said displacement signal with said reference displacement value;

selector means for selecting an output signal from one of said first comparison means and said second comparison means; and

servo means for controlling the distance between said probe and the sample to hold the value of the selected output signal at zero;

scanning means for scanning said probe across a surface of the sample; and

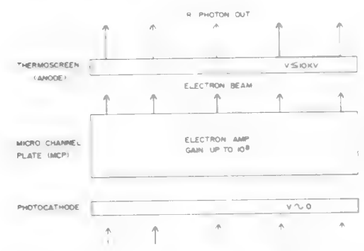
image processing means for forming images of said sample surface by processing positional data from said scanning means and data from said control means.

5,336,888

HIGH RESOLUTION INFRARED SCENE SIMULATOR

Thomas B. Odom, San Dimas, Calif., assignor to Aerojet-General Corporation, Rancho Cordova, Calif.

Filed Jul. 30, 1992, Ser. No. 923,269
Int. Cl.[5] H01J *43/00*
U.S. Cl. 250—495.1 **11 Claims**



1. An apparatus for converting a visual or photon image into a thermal image; the apparatus comprising:

a photocathode for converting incident photons of said visual or photon image into a corresponding pattern of electrons;

an electron amplifier for receiving said pattern of electrons and generating a corresponding electron beam pattern; and

means for converting said electron beam pattern into said thermal image comprising a plurality of thermally isolated pixels arrayed on a thermal imaging surface;

wherein said converting means comprises a membrane having a plurality of layers of conductive material and a plurality of layers of insulative material; and

an optically transparent substrate spaced from said membrane;

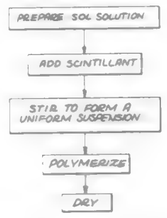
said photocathode, said electron amplifier and said converting means being optically aligned and being contained in a common substantially evacuated volume.

5,336,889

COMPOSITION AND APPARATUS FOR DETECTING GAMMA RADIATION

Kenneth J. Hofstetter, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 4, 1993, Ser. No. 309
Int. Cl.[5] G01T *1/20*
U.S. Cl. 250—361 R **16 Claims**



9. A gamma radiation detector, said detector comprising:

a composition, said composition consisting essentially of a porous glass matrix and a scintillant, said scintillant emitting light in a characteristic wavelength region when gamma radiation is incident thereon and said matrix transmitting at least a portion of the emitted light, said composition prepared by a process including the steps of

mixing particles of said scintillant with a sol to form a mixture,

polymerizing said mixture to form a gel, and

drying said gel; and

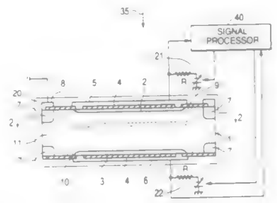
means for detecting the transmitted light, said light-detecting means positioned to intercept at least a portion of the transmitted light.

5,336,890

SEMICONDUCTOR DETECTION APPARATUS FOR DETECTING NUCLEAR RADIATION

Hiroshi Kitaguchi, Naka, and Shigeru Izumi, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 798,129, Nov. 26, 1991, abandoned.
This application Oct. 1, 1993, Ser. No. 130,425
Claims priority, application Japan, Nov. 28, 1990, 2-322867
Int. Cl.[5] G01T *1/24*
U.S. Cl. 250—370.06 **33 Claims**



1. A semiconductor detection apparatus for detecting nuclear radiation comprising:

a single semiconductor wafer having a first surface and a second surface;

a first pn junction formed in said first surface of said wafer;

a second pn junction formed in said second surface of said wafer;

a first voltage supply coupled to provide a first reverse bias voltage to said first pn junction;

a second voltage supply coupled to provide a second reverse bias voltage to said second pn junction;

a first signal output electrode connected to said first pn junction;

a second signal output electrode connected to said second pn junction;

signal acquisition means for retrieving output signals from said electrodes; and

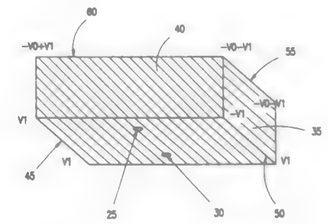
analysis means for analyzing radiation on the basis of said output signals.

5,336,891

ABERRATION FREE LENS SYSTEM FOR ELECTRON MICROSCOPE

Albert V. Crewe, Palos Park, Ill., assignor to ARCH Development Corporation, Chicago, Ill.

Filed Jun. 16, 1992, Ser. No. 899,433
Int. Cl.[5] H01J *37/10*
U.S. Cl. 250—396 R **8 Claims**



1. A system for reducing aberration of a charged particle beam, comprising:

means for generating a charged particle beam; and

building block means for generating at least one of (1) a magnetic field and (2) a combination of a magnetic field and an electrostatic field for controlling said charged particle beam from a focal point at an entrance to said building block means to a focal point at an exit from said building block means and each building block of said building block means having coefficients of spherical and chromatic aberration equal and opposite and having a numerical value which is an integral multiple of one-half a characteristic length l being a distance at which said charged particle beam is focused along the axis of a uniform magnetic field generated by said building block means.

5,336,892

METHOD AND SYSTEM FOR ELECTRON BEAM LITHOGRAPHY

Elizabeth A. Dobisz, Owings; Christie R. K. Marrian, Marbury; Martin C. Peckerar, and Kee W. Rhee, both of Silver Springs, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1992, Ser. No. 882,230
Int. Cl.[5] H01J *3/40*
U.S. Cl. 250—492.2 **13 Claims**

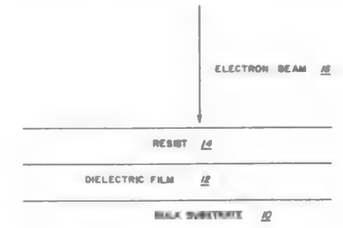
1. A system for making an article of manufacture comprising

(a) a substrate which is designed to backscatter high voltage electrons,

(b) a dielectric layer disposed on said substrate said dielectric layer is selected from the group consisting of silicon nitride and silica,

(c) a single level resist layer disposed on said dielectric layer, and

(d) a high voltage electron beam source operating at about 1 to 500 keV for directing high voltage electrons at said resist layer, wherein said dielectric layer is designed to produce a linewidth written with said high voltage electron beam on said resist layer disposed on said substrate which is at least 10% less than a linewidth written by said



electron beam on said resist layer in absence of said dielectric layer.

5,336,893

HAFNIUM STANNATE PHOSPHOR COMPOSITION AND X-RAY INTENSIFYING SCREEN

Kyle Smith, Pittsford; Barbara J. Fisher, Rochester; Philip S. Bryan, Webster, and Paul M. Hoderlein, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1993, Ser. No. 63,178
Int. Cl.[5] C09K *11/67*
U.S. Cl. 250—483.1 **16 Claims**

1. A phosphor composition comprising oxygen and elements satisfying the relationship:

$$[(Hf_{1-x}Zr_z)_{1+x}Sn_{1-x}]_{1-y}Ti_{2y}$$

wherein:

x is in the range of from −0.4 to 0.95,

2y is in the range of from 0 to 0.5, and

z is in the range of from 0 to 0.5

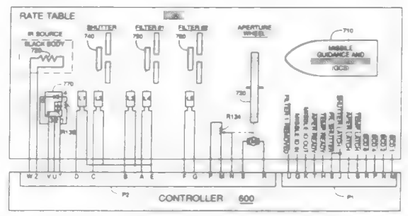
wherein said phosphor comprises an orthorhombic crystal structure.

5,336,894

UNIVERSAL INFRARED HEAT SOURCE CONTROLLER

Eric Ellers, Okinawa, Japan, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 21, 1992, Ser. No. 871,782
Int. Cl.[5] G21K *5/04*
U.S. Cl. 250—504 R **5 Claims**



1. A controller for an infrared heat source capable of being programmed to act as a target for a missile target seeker, in a system for testing a guidance and control section of missiles of different types, with a missile mounted on a stand with the infrared heat source; wherein the infrared heat source includes a black body, a shutter, filter means, and an aperture wheel having a plurality of apertures, a motor coupled to the aperture wheel to rotate it to select an aperture, and position detecting means for the aperture wheel, the motor and position detecting

VOL 1165 ISS 2 AG 9 1994 UMI

means being electrically coupled to the controller; solenoid means for operating the shutter and the filter means; means on the stand for sending to the controller temperature data, aperature data, shutter-filter data and missile identification data;

wherein the controller comprises;

a CPU comprising a microprocessor, input/output ports, and a read only memory coupled together, with the read only memory having a program stored therein for the microprocessor;

aperture control means including means in the CPU for receiving signals from the position detecting means, means for reading aperture data from the stand, means for comparing the signals from the position detecting means to the aperture data, means for sending signals to operate the motor to select an aperture such that the means for comparing indicates equality, and means for sending an aperature ready signal from the controller to the stand;

means for reading the missile identification data so that subsequent operation may be controlled depending on missile type;

temperature control means including means in the CPU, a resistance bridge circuit comprising first, second, third and fourth legs, with the black body forming resistance of the first leg is series with a resistor forming the second leg, a resistor forming the third leg, means including electronic switching means for selecting resistance means to form the fourth leg with a variable value of resistance, a power supply having first and second terminals, means including electronic device means coupled between said first terminal and a junction of the first and third legs for supplying power to the black body at different power levels, with a junction of the second and fourth legs connected to said second terminal, an instrumentation amplifier having non-inverting and inverting inputs, with the non-inverting input connected to a junction of the third and fourth legs and the inverting input connected to a junction of the first and second legs, with the voltage at the non-inverting input used as a reference voltage, means for reading temperature data designating a temperature value from the stand to the CPU, means in the CPU for converting the temperature data to a temperature code and using it to control said electronic switching means so that the reference voltage is a function of said temperature value, means coupling an output of the instrumentation amplifier to an input of the electronic device means so that a differential voltage between the non-inverting and inverting inputs of the instrumentation amplifier is used to control power supplied to the black body from said power supply, and the differential voltage is approximately zero when the black body is at the designated 55 temperature;

means for reading shutter-filter data from the stand into the CPU, and means including the CPU for using the shutter-filter data to generate signals to control the solenoid means, depending on the missile type and the shutter-filter data, to thereby move the shutter and the filter means in and out of position.

5,336,895

IMPURITY FREE REFERENCE GRID FOR USE CHARGED PARTICE BEAM SPECTROSCOPES

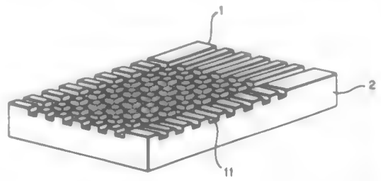
Akihiko Nakano, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 25, 1992, Ser. No. 903,467

Int. Cl.[5] **G01N** *23/00*

U.S. Cl. 250—505.1 **5 Claims**

1. A reference grid in a charged particle beam spectroscope having inspection means for analyzing an impurity contained in a semiconductor substrate or film formed on said substrate during the manufacture of semiconductor devices on said substrate, said reference grid composed of a material free of said impurity in said substrate or film being analyzed with said spectroscope, wherein said grid material is formed of an im-



purity-free substance also used to form said substrate and wherein said grid includes an engraved grid pattern groove.

5,336,896

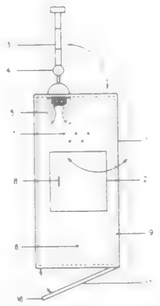
CELLULAR TELEPHONE USERS PROTECTIVE DEVICE

Joseph M. Katz, 11 Meadow Rd., Old Westbury, N.Y. 11568

Filed Feb. 4, 1993, Ser. No. 13,399

Int. Cl.[5] **H05K** *9/00*

U.S. Cl. 250—515.1 **1 Claim**



1. An assembly for attenuating the passage of electro-magnetic radiation emitted from a cellular telephone, said assembly comprising:

a) an oblong box having four closed sides, a closed top side and a closed bottom side, a middle of a front closed side of said four closed sides provides a front door, said front door has means for opening and closing to provide access to dialing telephone numbers in an open position, said closed bottom side provides a bottom door, and said bottom door has means for opening and closing said bottom door to insert said cellular telephone into said oblong box;

b) an electro-magnetic radiation shielding affixed to the entire inside of said four closed sides including said front door, said closed top side and said closed bottom side including said bottom door of said oblong box;

c) a handle means mounted to an outside of a rear side of said four closed sides of said oblong box for carrying the cellular telephone;

d) a telescoping antenna means connected to a tilt and swivel base connector means, said tilt and swivel base connector means is attached to said closed top side of the oblong box and penetrated through said closed top side and said electro-magnetic radiation shielding, said tilt and swivel base connector means connects to a cuplike antenna connector means to form an antenna circuit for effecting an antenna circuitry, wherein said cuplike antenna connector means attached to an inside of said electro-magnetic radiation shielding and said oblong box; and

e) several small holes provided on above and below said front door of said front side of said oblong box, said small holes penetrate through said front side of said oblong box and electro-magnetic radiation shielding for talking into and listening from said cellular telephone.

5,336,897

OPTICAL DATA TRANSMISSION APPARATUS FOR TRANSMITTING A SIGNAL BETWEEN A ROTATABLE PORTION AND FIXED PORTION OF AN X-RAY CT SCANNER

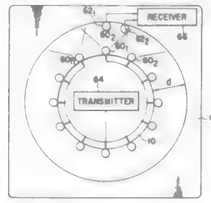
Naofumi Watanabe, and Yasuo Nobuta, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 13, 1993, Ser. No. 3,658

Claims priority, application Japan, Jan. 14, 1992, 4-005091; Aug. 5, 1992, 4-208856

Int. Cl.[5] **G02B** *27/00*

U.S. Cl. 250—551 **33 Claims**



1. An optical data transmission apparatus comprising:

first and second members at least one of which rotates to change a relative relationship in position and which respectively have first and second planes perpendicular to a rotation axis;

light emitting means, arranged at the first plane of said first member, for emitting light in accordance with transmission data, said light emitting means comprising light emitting elements for emitting lights in accordance with said transmission data;

light receiving means, arranged at the second plane of said second member, for receiving light emitted form said light emitting means, said light receiving means comprising two light receiving elements for receiving lights emitted from the light emitting elements, and means for adding together outputs from the two light receiving elements; and

wherein said light emitting elements are arranged at an interval D, and said two light receiving elements are arranged at an interval nD/2, with n being an odd number.

5,336,898

METHOD AND DEVICE FOR AUTOMATICALLY DETERMINING THE DIMENSIONS OF PRINTING CYLINDERS HAVING A DIAMETER COUNTER

Ruediger Ettelbrueck, Aschheim, Fed. Rep. of Germany, assignor to Maschinenfabrik Kaspar Walter GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Jul. 8, 1993, Ser. No. 87,366

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1992, 4224253

Int. Cl.[5] **G01N** *21/86*

U.S. Cl. 250—560 **5 Claims**

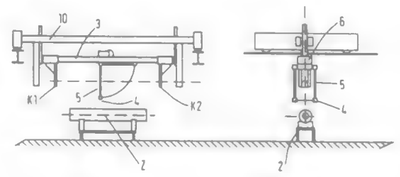
1. Method for automatically determining the geometrical dimensions of printing cylinders (A to D, Z) to be fed to a treatment process, characterised in that

starting from a fixed vertical position above a printing cylinder (Z) mounted horizontally on a positionally precisely defined support, a vertically displaceable on-off photocell control device (4) is lowered in such a manner that the light path is interrupted by the printing cylinder (Z) presented and is then cleared again when the lower horizontal tangent to the cylinder casing is reached,

the distance the on-off photocell control device (4) is lowered is determined as a summed first count value up to the instant the on-off photocell control device (4) is cleared again,

the distance over which the on-off photocell control device is interrupted by the printing cylinder (Z) is determined as a second count value,

from the relationship of the first to the second count value, the diameter of the printing cylinder (Z) and the actual position of the cylinder axis are determined, and



two clamping jaws (K1, K2), opposite one another in the cylinder axis direction, of a pickup device for the printing cylinder are brought to the position found for the cylinder axis and are displaced axially from fixed axial starting positions until the printing cylinder (Z) is clamped, the axial displacement distance of the clamping jaws (K1, K2) being determined as the third count value and the face length of the printing cylinder (Z) being determined therefrom.

5,336,899

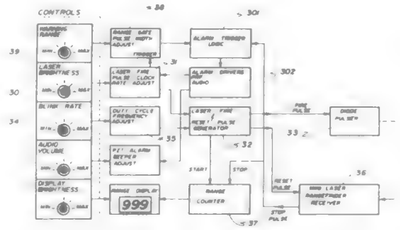
ADJUSTABLE NEAR INFRARED RANGEFINDER ILLUMINATOR

John E. Nettleton, Fairfax Station; Dallas N. Barr, Woodbridge, and Brian C. Redman, Alexandria, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 24, 1992, Ser. No. 980,088

Int. Cl.[5] **G01N** *21/86*

U.S. Cl. 250—561 **4 Claims**



1. A near infrared illuminator for enhancing viewing of a target viewed with an infrared viewing device when the target falls within a predetermined range, the illuminator including:

pulse generator means for generating a laser pulse in the near infrared;

pulse clock rate means for control of laser brightness;

pulse frequency means for control of laser blink rate;

pulse transmitting means for transmitting along an optical path a near infrared laser pulse at a specific brightness and blink rate to a target;

detector means within the optical path for detecting a reflected infrared signal from the target and converting the signal to an electrical signal;

processing means for processing the electrical signal to obtain target range information;

logic means for control of the pulse clock rate means whereby when the target range falls within a predeter-

VOL 1165 ISS 2 AG 9 1994 UMI

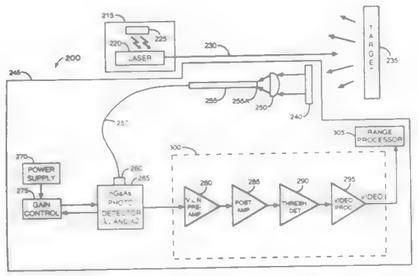
mined range the laser pulse rate is increased such that increased illumination of the target is viewable with an infrared viewing device.

5,336,900

SINGLE CHANNEL, DUAL WAVELENGTH LASER RANGEFINDER APPARATUS

Rodney E. Peters, Apopka, and Michael G. Croteau, Ocoee, both of Fla., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jan. 22, 1993, Ser. No. 7,494
Int. Cl.[5] G01C *3/08*
U.S. Cl. 250—561 **2 Claims**



1. An optical transceiver for transmitting a light pulse to a target and for receiving a reflected light pulse from said target comprising:

a dual wavelength optical transmitter for transmitting a coherent light pulse along an optical path to a target, the wavelength of said coherent light pulse being selectable between first and second wavelengths, said light pulse being reflected by said target as a reflected light pulse back along said optical path;

a single, wideband photodetector exhibiting a sufficiently wide bandwidth to detect both reflected light pulses exhibiting said first wavelength and reflected light pulses exhibiting said second wavelength, said photodetector providing a detect signal corresponding to the amplitude of the light pulse supplied thereto;

a very low noise preamplifier coupled to said photodetector to amplify said detect signal;

a fiber optic cable having first and second ends, the first end of said cable being positioned to capture reflected light pulses; and

an achromatic lens for capturing said reflected light pulses and for focusing said reflected light pulses on the first end of said fiber optic cable, the second end of said fiber optic cable being coupled to said single photodetector.

5,336,901

COMPOSITE SEMICONDUCTOR STRUCTURE FOR REDUCING SCATTERING OF CARRIERS BY OPTICAL PHONONS AND A SEMICONDUCTOR DEVICE THAT USES SUCH A COMPOSITE SEMICONDUCTOR STRUCTURE

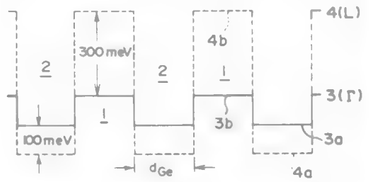
Takuma Tsuchiya, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 924,486, Aug. 4, 1992, abandoned. This application Mar. 7, 1994, Ser. No. 206,220
Claims priority, application Japan, Aug. 5, 1991, 3-195325
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—6 **13 Claims**

1. A semiconductor structure for transporting carriers therethrough, comprising an alternate stacking of:

a first material layer of a homopolar material, said first material layer having upper and lower major surfaces and having a conduction band characterized by a Γ valley and an L valley such that the L valley has an energy level lower than the Γ valley when in a bulk crystal state, said Γ valley and said L valley providing respective effective masses of carrier such that the effective mass of the carriers in said Γ valley is substantially smaller than the effective mass of the carriers in said L valley; and

a second material layer of a polar compound provided on said first material layer, said second material layer having upper and lower major surfaces and having a conduction band characterized by a Γ valley and an L valley such that the Γ valley has an energy level lower than the L valley when in a bulk crystal state, said first material layer and



said second material layer having respective lattice constants such that said first material layer and said second material layer are formed with an epitaxial relationship with each other;

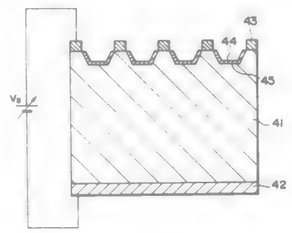
said first material layer having a thickness such that there is formed a plurality of quantum levels in said first material layer, said plurality of quantum levels include a first quantum level that is the lowest quantum level formed in correspondence to the Γ valley and a second quantum level that is the lowest quantum level formed in correspondence to the L valley, said thickness of said first material layer being set smaller than 23 Å such that said quantum level has an energy level higher than said first quantum level.

5,336,902

SEMICONDUCTOR PHOTO-ELECTRON-EMITTING DEVICE

Minoru Nigaki; Tuneo Ihara; Toru Hirohata; Tomoko Suzuki; Kimitsugu Nakamura; Norio Asakura; Masami Yamada; Yasuharu Negi; Tomihiko Kuroyanagi, and Yoshihiko Mizushima, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Oct. 5, 1992, Ser. No. 956,283
Int. Cl.[5] H01L *29/48*
U.S. Cl. 257—10 **18 Claims**



1. A semiconductor photo-electron-emitting device for emitting photoelectrons excited from a valence band to a conduction band as a result of incident photons, comprising:

a semiconductor layer having at least one concavity surface and one convexity surface on a first side;

a first conductor layer provided on the concavity surface, the first conductor layer having an emitting surface for emitting photoelectrons;

an electrode provided on the convexity surface, the electrode having a pattern exposing the emitting surface in a substantially uniform manner; and

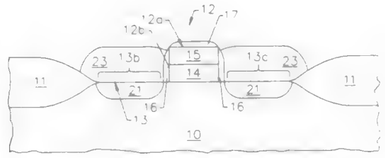
a second conductor layer provided on a second side of the semiconductor layer opposite to the first side, the electrode and the second conductor layer being adapted to accept a bias voltage between them to cause excited photoelectrons to be transferred to the emitting surface.

5,336,903

SELECTIVE DEPOSITION OF DOPED SILICON-GERMANIUM ALLOY ON SEMICONDUCTOR SUBSTRATE, AND RESULTING STRUCTURES

Mehmet C. Ozturk, Cary, N.C.; Douglas T. Grider, Pleasanton, Calif.; Mahesh K. Sanganeria, Raleigh, N.C.; Stanton P. Ashburn, Cary, N.C., and Jimmie J. Wortman, Chapel Hill, N.C., assignors to North Carolina State University at Raleigh, Raleigh, N.C.

Division of Ser. No. 919,735, Jul. 27, 1992, Pat. No. 5,242,847. This application May 28, 1993, Ser. No. 69,030
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—19 **12 Claims**



1. A semiconductor structure comprising:

a semiconductor substrate having a face; and

a layer of silicon-germanium alloy on said face, wherein said layer of silicon-germanium alloy is doped with a predetermined dopant; and

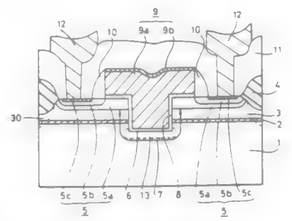
wherein said semiconductor substrate is doped with said predetermined dopant at said face, beneath said layer of silicon-germanium alloy.

5,336,904

FIELD EFFECT ELEMENT UTILIZING RESONANT-TUNNELING AND A METHOD OF MANUFACTURING THE SAME

Shigeru Kusunoki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1992, Ser. No. 864,897
Claims priority, application Japan, May 10, 1991, 3-105878
Int. Cl.[5] H01L *27/12*
U.S. Cl. 257—23 **7 Claims**



1. A field effect transistor, comprising:

a substrate having a main surface wherein said main surface of said substrate has a concave part and;

a pair of source/drain regions formed on the main surface of said substrate, spaced a predetermined distance apart from each other on either side of the concave part of said substrate;

an insulating layer formed on the main surface of said substrate;

a gate electrode formed on the surface of said insulating layer; wherein a part of said gate electrode is formed inside said concave part through said insulating layer;

a channel region formed in said substrate along a surface of the substrate between said pair of source/drain regions wherein said channel region is formed along a surface of said concave part; and

first and second semiconductor layers formed of a material having a bandgap larger than that of silicon in said channel region, spaced a predetermined distance apart from each other and extending to prevent movement of majority carriers moving between said pair of source/drain regions,

wherein said substrate includes, at least a first monocrystalline silicon layer and a second monocrystalline silicon layer formed on the surface of said first monocrystalline silicon layer through said first and second semiconductor layers, and wherein

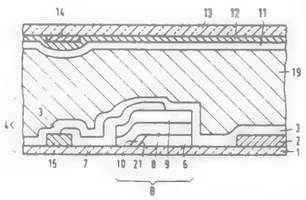
said concave part extends through said second monocrystalline silicon layer and through at least a portion of said first monocrystalline silicon layer.

5,336,905

SEMICONDUCTOR DEVICE HAVING AN INSULATING SUBSTRATE AND SCHOTTKY DIODES

Antonie J. Bosman; Teunis J. Vink, both of Eindhoven; Richard C. van Dijk, Rotterdam, and Frederikus R. J. Huisman, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 1, 1992, Ser. No. 907,423
Claims priority, application European Pat. Off., Jul. 4, 1991, 91201724.1
Int. Cl.[5] H01L *29/48; G02F 1/1343*
U.S. Cl. 257—54 **6 Claims**



1. A semiconductor device having an insulating substrate and comprising at least one Schottky diode which is formed between a metal layer situated on the substrate and a semiconductor layer of one of polycrystalline and amorphous silicon which lies partly on the metal layer and which extends partly outside the metal layer over a lateral surface of the metal layer, characterized in that the lateral surface of the metal layer is separated from the semiconductor layer by a dielectric.

VOL 1165 ISS 2 AUG 9 1994 UMI

5,336,906

IMAGE SENSOR AND METHOD OF MANUFACTURE

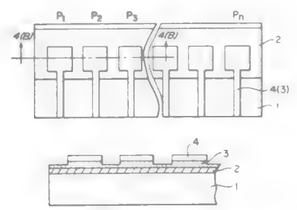
Hisao Ito, and Teiichi Suzuki, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 711,713, Jun. 7, 1991, abandoned, which is a continuation of Ser. No. 403,786, May 23, 1988, abandoned, which is a continuation of Ser. No. 46,450, May 6, 1987, abandoned. This application Sep. 17, 1993, Ser. No. 122,182

Claims priority, application Japan, Sep. 9, 1986, 61-211897

Int. Cl.[5] H01L *31/04, 27/14*

U.S. Cl. 257—72 4 Claims



1. A close type high resolution image sensor comprising:

an insulating substrate;

an elongated metal electrode formed on said substrate;

an amorphous silicon hydride photo-electric conversion layer formed on said metal electrode and made of a single film;

a plurality of individual, spaced-apart translucent electrodes made of indium tin oxide and formed on first portions of said photo-electric conversion layer, so as to provide a plurality of individual, spaced-apart photo-electric conversion elements;

wherein said metal electrode serves as a common electrode for said individual, spaced-apart photo-electric conversion elements; and

wherein said photo-electric conversion layer includes second portions not covered by said translucent electrodes and having a thickness less than the thickness of said first portions of said photo-electric conversion layer.

5,336,907

MOS GATE CONTROLLED THYRISTOR HAVING IMPROVED TURN ON/TURN OFF CHARACTERISTICS

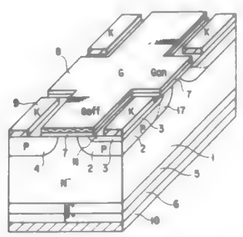
Hidetoshi Nakanishi, Kawasaki, and Yasunori Usui, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1992, Ser. No. 969,491

Claims priority, application Japan, Oct. 31, 1991, 3-311422

Int. Cl.[5] H01L *29/74, 29/10, 29/78*

U.S. Cl. 257—133 12 Claims



1. A MOS gate type thyristor comprising:

a semiconductor substrate of a first conductivity type having first and second major surfaces;

a first semiconductor region of a second conductivity type formed in said first major surface of said semiconductor substrate;

a second semiconductor region of the first conductivity type formed in a surface of said first semiconductor region;

a third semiconductor region of the second conductivity type formed in said first major surface of said semiconductor substrate;

a fourth semiconductor region of the second conductivity type formed in said second major surface of said semiconductor substrate;

a fifth semiconductor region of the second conductivity type formed at one end of said first semiconductor region, said fifth semiconductor region contacting said second semiconductor region and having an impurity concentration which is lower than that of said first semiconductor region;

a first electrode formed on said second semiconductor region;

a second electrode formed on said third semiconductor region;

a third electrode formed on said fourth semiconductor region;

a gate oxide film formed on said semiconductor substrate, said first, second, and third semiconductor regions so as to overlap said semiconductor substrate, a first boundary between said semiconductor substrate and said first semiconductor region, a second boundary between said first and second semiconductor regions, and a third boundary between said semiconductor substrate and said fifth semiconductor region; and

a gate electrode formed on said gate oxide film, said gate electrode including an ON gate region and an OFF gate region, said ON gate region being located above said fifth semiconductor region, and said OFF gate region being located in a position between said first and third semiconductor regions.

5,336,908

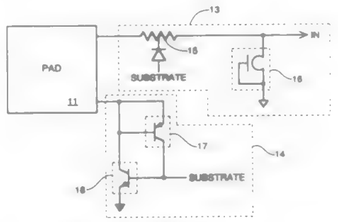
INPUT EDS PROTECTION CIRCUIT

Gregory N. Roberts, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Continuation of Ser. No. 935,605, Aug. 26, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 116,100

Int. Cl.[5] H01L *27/04, 29/08, 29/52*

U.S. Cl. 257—173 9 Claims



1. An electrostatic discharge (ESD) input protection circuit for a semiconductor device constructed in a substrate comprising:

a primary input protection circuit electrically connected to a secondary input protection circuit at an input pad conductor;

wherein said primary circuit is an SCR structure formed between said input pad, said common potential bus and said substrate, said SCR structure comprising:

first and second regions of first and second type conductive materials, respectively, both said regions being connected to said input pad conductor and residing inside a first well region of first type conductive material; and

a third region of said first type conductive material connected to said common potential bus, said third region being spaced apart and bordering said first well region on three sides;

said SCR structure further comprising first an second bipolar transistors wherein said input pad is connected to the base and emitter of said first bipolar transistor and to the collector of said second bipolar transistor, the collector of said first bipolar transistor is connected to the base of said second bipolar transistor as well as to said substrate, and the emitter of said second bipolar transistor is connected to said common potential bus; and

wherein said secondary input protection circuit comprises:

a first region of first type conductive material bridging between said input pad conductor and an input trace conductor, said first region having first and second ends with said first end connecting to said input pad conductor and said second end connecting to said input trace conductor, said first region residing inside a well region comprising said first type conductive material; and

a second region of said second type conductive material bridged apart from said first region by a conductive terminal, said second region connected to a common potential bus;

wherein said first region forms an active area resistance residing in said well and said second region bridged apart said first region by said conductive terminal forms a shunt transistor.

5,336,909

BIPOLAR TRANSISTOR WITH AN IMPROVED COLLECTOR STRUCTURE

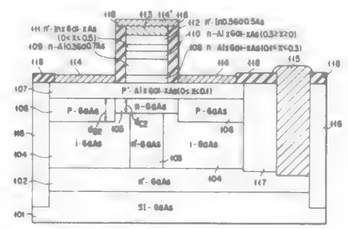
Riichi Katoh, and Kunio Tsuda, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 14, 1992, Ser. No. 929,524

Claims priority, application Japan, Aug. 16, 1991, 3-205949; Nov. 7, 1991, 3-291562

Int. Cl.[5] H01L *31/072, 31/109, 27/082, 27/102*

U.S. Cl. 257—197 16 Claims



1. A bipolar transistor comprising:

a substrate;

a first collector layer of a first conductivity type having a high carrier concentration and formed only in an intrinsic transistor region defined on said substrate;

a second collector layer of the first conductivity type having a carrier concentration lower than that of said first collector layer and formed on said first collector layer;

a third collector layer having a high resistance and formed to surround said first collector layer;

a collector electrode conneoted to said first collector layer;

an external base layer of a second conductivity type formed on said third collector layer to surround said second collector layer;

a main base layer of the second conductivity type having a carrier concentration higher than that of said external base layer and formed on said external base layer and said second collector layer, said second collector layer being interposed between said first collector layer and said main base layer;

a base electrode connected to said main base layer;

an emitter layer of the first conductivity type formed only in said intrinsic transistor region on said main base layer; and

an emitter electrode connected to said emitter layer;

wherein when plan view areas of said first collector layer, said second collector layer, and said emitter layer are represented by S_{C1}, S_{C2}, and S_E, respectively, conditions of $S_{C1} < S_{C2}$ and $S_{C2} < S_E$ are satisfied, and said external base layer is arranged so as not to contact said first collector layer.

5,336,910

CHARGE COUPLED DEVICE OF HIGH SENSITIVITY AND HIGH INTEGRATION

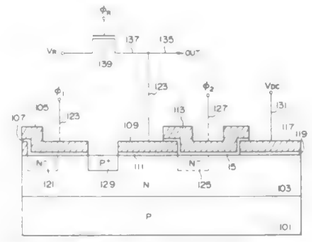
Norio Murakami, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 7,923

Claims priority, application Japan, Jan. 27, 1992, 4-011880

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—239 5 Claims



1. A charge coupled device comprising:

a semiconductor substrate having a main surface, including first, second and third regions, both the first and second regions defining the third region therebetween, said semiconductor substrate being formed of a first conductivity type;

a charge supply formed adjacent to the first region, for supplying an electric charge to the first region;

a first impurity layer formed of a second conductivity type, formed in the first region, for transferring the electric charge to the third region;

a floating gate electrode overlying the third region for detecting the electric charge in a first condition and for transferring the electric charge to the second region in a second condition;

a transfer electrode overlying the second region for receiving the electric charge in response to a control signal having a first logic level when the floating gate electrode is in the second condition, the control signal having either the first or a second logic level; and

a second impurity layer formed of the first conductivity type formed in the second region adjacent to the third region, wherein said second impurity layer has a first impurity density and the semiconductor substrate has a second impurity density greater than the first impurity density.

5,336,911

SEMICONDUCTOR DEVICE

Tomoyuki Furuhata, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 691,448, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 329,561, Mar. 28, 1989, abandoned. This application Nov. 12, 1992, Ser. No. 975,129

Claims priority, application Japan, May 10, 1988, 63-111421

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—273 2 Claims

1. A Bi-MOS type semiconductor device comprising a first bipolar element and at least one of a CMOS element, said

VOL 1165 ISS 2 AG 9 1994 UMI

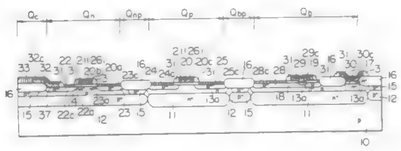
CMOS element comprising p- type and n- type MOS transistors, and second bipolar element are provided in one principal surface of a semiconductor substrate having an element isolation region provided in said semiconductor substrate and having a first semiconductor region of a same conductivity type as said semiconductor substrate and a selective insulation layer, wherein:

a polycrystalline silicon layer of one conductive type forms at least one of emitter or collector electrodes of at least one of said first and second bipolar elements;

a low-resistivity polycrystalline silicon layer forms a gate electrode of said CMOS element;

a low-resistivity polycrystalline silicon layer with a buried contact forms an electrode selected from source and drain electrodes of said CMOS element;

a metal silicide layer comprised of at least one metal element selected from a group consisting of Ti, W, Mo, Pt and Co is formed on each of diffusion layers forming said source and drain electrodes of said CMOS element and a base



region of at least one of said first and second bipolar elements; and

a high-resistivity polycrystalline silicon layer forms a high resistive element connected to said low-resistivity polycrystalline silicon layer,

said low-resistivity silicon layers being in one layer formation,

said element isolation region comprising said first semiconductor region in said semiconductor substrate having the same conductivity type a said semiconductor substrate, an independent second semiconductor region of said same conductivity type contiguous to said first semiconductor region at the bottom thereof and in a semiconductor layer of a conductivity type different from that of said semiconductor substrate, and a selective insulation layer formed on said semiconductor region,

and the composition and width of said first semiconductor region, second semiconductor region and selective isolation layer being at least similar with one another.

5,336,912

BURIED PLATE TYPE DRAM

Sumito Ohtsuki, Matsudo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 13, 1993, Ser. No. 90,261
Claims priority, application Japan, Jul. 13, 1992, 4-208477
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—304 **8 Claims**

1. A semiconductor memory device comprising:

a semiconductor substrate of a first conductivity type;

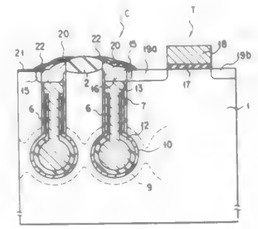
a trench formed in a main surface of the semiconductor substrate and having a region wider than an opening portion thereof;

a first insulating layer formed on a side wall of the trench;

an impurity diffusion region of a second conductivity type formed around a bottom portion of the trench in the semiconductor substrate;

a first conductive layer formed on the impurity diffusion region and the first insulating layer in the trench;

a second insulating layer covering the first conductive layer; and



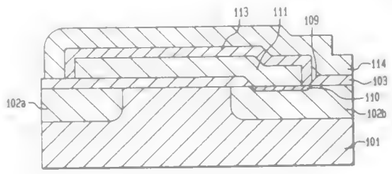
a second conductive layer covering the second insulating layer and filled in the trench.

5,336,913

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE AND A METHOD FOR FABRICATING THE SAME

Takao Kakiuchi, and Kazuo Sato, both of Takatsuki, Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Continuation of Ser. No. 664,207, Mar. 4, 1991, Pat. No. 5,210,597. This application Jul. 17, 1992, Ser. No. 916,342
Claims priority, application Japan, Mar. 8, 1990, 2-57192
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] H01L *29/68, 29/34;* **G11C** *11/34*
U.S. Cl. 257—321 **3 Claims**



1. A non-volatile semiconductor memory device comprising:

a silicon substrate having a source region and a drain region each formed by a diffusion layer;

a first gate insulating film formed on said silicon substrate, said first gate insulating film having a window;

a recess formed on said silicon substrate within said window, said recess having a bottom face and a plurality of side faces, said bottom face having a (100) plane, and said side faces each having a (110) plane;

a second gate insulating film formed on said silicon substrate within said window;

a floating gate formed on said first gate insulating film, said floating gate covering fully said second gate insulating film;

a third gate insulating film formed on said floating gate; and

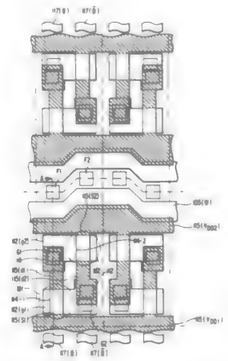
a control gate formed on said third gate insulating film.

5,336,914

STATIC SEMICONDUCTOR MEMORY DEVICE

Takeshi Andoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,021
Claims priority, application Japan, Jun. 19, 1991, 3-146375
Int. Cl.[5] H01L *29/06, 29/78*
U.S. Cl. 257—368 **9 Claims**



1. A semiconductor memory device having a plurality of memory cells formed in a semiconductor substrate,

each of said memory cells comprising:

(a) a first inverter composed of a first drive MOSFET and a first load eiement;

(b) a second inverter composed of a second drive MOSFET and a second load element;

(c) first and second transfer MOSFETs;

(d) a first resistive element connected between said first transfer MOSFET and a second node; and

(e) a second resistive element connected between said second transfer MOSFET and a first node,

said first drive MOSFET having a gate connected to said second load element at the first node,

said first node being further connected to said second drive MOSFET,

said second drive MOSFET having a gate connected to said first load element at the second node, and

said second node being further connected to said first drive MOSFET, wherein

said first transfer MOSFET is connected to a first bit line and said second transfer MOSFET is connected to a second bit line,

said first and second drive MOSFETs are connected in common to a reference potential point,

and the following two equations are satisfied:

$R_1 > R_2$; and

$R_3 > R_4$,

where

R_1 is the resistance between said second node and said first bit line, and comprises the resistance of said first transfer MOSFET and the resistance of said first resistive element,

R_2 is the resistance between said second node and said reference potential point, and comprises the resistance of said first drive MOSFET,

R_3 is the resistance between said first node and said second bit line, and comprises the resistance of said second transfer MOSFET and the resistance of said second resistive element, and

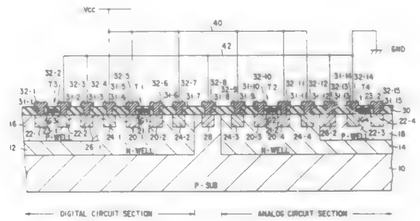
R_4 is the resistance between said first node and said reference potential point, and comprises the resistance of said second drive MOSFET.

5,336,915

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING ANALOG CIRCUIT AND DIGITAL CIRCUIT FORMED ON ONE CHIP

Yasuhiko Fujita, Kanagawa, and Haruyuki Miyata, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 31, 1991, Ser. No. 814,802
Claims priority, application Japan, Jan. 9, 1991, 3-1232
Int. Cl.[5] H01L *29/784, 27/02*
U.S. Cl. 257—369 **7 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor substrate of a first conductivity type;

a first well region of a second conductivity type formed in said semiconductor substrate;

a second well region of the second conductivity type which is formed in said semiconductor substrate at a position separated from said first well region and in which an analog circuit comprising complementary metal oxide silicon transistors is formed; and

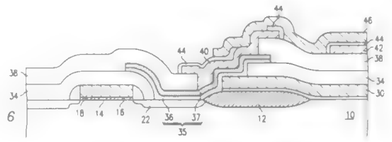
bias means for biasing said semiconductor substrate by a constant potential, said bias means including a semiconductor region of the first conductivity type formed is that portion of said semiconductor substrate which lies between said first and second well regions and having an impurity concentration higher than said semiconductor substrate, a potential supplying source, and a power source line connected between said semiconductor region and said potential supplying source.

5,336,916

SRAM CELL AND STRUCTURE WITH POLYCRYSTALLINE P-CHANNEL LOAD DEVICES

Tsiu C. Chan, Carrollton; Frank R. Bryant, Denton, and Lisa K. Jorgenson, Colleyville, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 709,354, Jun. 3, 1991, Pat. No. 5,204,279. This application Jul. 27, 1992, Ser. No. 919,958
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—377 **5 Claims**



1. A structure consisting of a portion of a semiconductor integrated circuit, comprising:

a substrate;

a first field effect transistor formed within the substrate, and having a gate electrode separated therefrom by a gate oxide layer;

a second field effect transistor formed within the substrate, and having a gate electrode separated therefrom by a gate oxide layer, the second transistor gate electrode further

VOL 1165 ISS 2 AG 9 1994 UMI

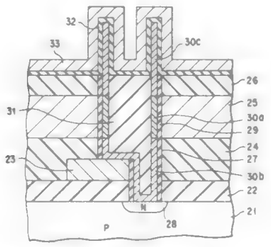
extending over a portion of a field oxide layer formed within the substrate;
a first insulating layer disposed over a portion of the substrate and the first and second transistor gate electrodes, with an opening to expose a source/drain region of the first transistor and a portion of the second transistor gate electrode;
a doped polysilicon layer over a portion of the first insulating layer and in the opening;
a conductive barrier layer overlying the doped polysilicon layer, wherein the doped polysilicon layer and the barrier layer define an intermediate interconnect layer in a shared contact opening;
a second insulating layer disposed over the intermediate interconnect layer and the first insulating layer, the second insulating layer having an opening therein to expose a portion of the intermediate interconnect layer;
a polysilicon interconnect layer over the second insulating layer and contacting the intermediate interconnect layer through the opening in the second insulating layer, wherein a field effect transistor is formed in the polysilicon interconnect layer.

5,336,917

DYNAMIC MEMORY CELL USING HOLLOW POST SHAPE CHANNEL THIN-FILM TRANSISTOR

Yusuke Kohyama, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 4, 1992, Ser. No. 985,951
Claims priority, application Japan, Dec. 6, 1991, 3-322629; Jun. 25, 1992, 4-167392; Nov. 20, 1992, 4-312031
Int. Cl.[5] H01L *29/68, 29/10*
U.S. Cl. 257—401 **9 Claims**



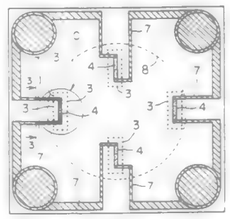
1. A semiconductor device comprising:
a first insulating layer;
a gate electrode layer formed on said first insulating layer;
a second insulating layer formed on said gate electrode layer;
an opening formed through said first insulating layer, said gate electrode layer and said second insulating layer;
a gate insulating layer formed within said opening to overlay at least said gate electrode layer;
a first semiconductor layer formed on said gate insulating layer to oppose said gate electrode layer within said opening;
a second semiconductor layer formed within said opening so as to make contact with said first semiconductor layer and oppose said first insulating layer; and
a third semiconductor layer formed within said opening so as to make contact with said first semiconductor layer and oppose said second insulating layer, each layer of said first, second and third semiconductor layers having a respective hollow post shape.

5,336,918

SEMICONDUCTOR PRESSURE SENSOR AND METHOD OF FABRICATING THE SAME

Takashi Ipposhi, and Tadashi Nishimura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,914
Claims priority, application Japan, Sep. 9, 1992, 4-240625
Int. Cl.[5] H01L *29/84, 29/06*
U.S. Cl. 257—419 **21 Claims**



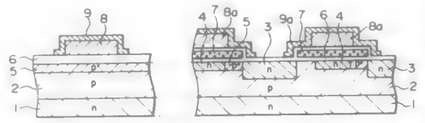
1. A semiconductor pressure sensor comprising:
a monocrystal semiconductor substrate having a major surface;
a first insulating layer being formed on a prescribed region of said major surface of said monocrystal semiconductor substrate;
a plurality of seed crystal regions being formed on other regions of said major surface of said monocrystal semiconductor substrate provided with no said first insulating layer;
a piezoresistance layer prepared from a monocrystal layer being formed by laterally growing monocrystals from said seed crystal regions on said first insulating layer, said piezoresistance layer being provided on a prescribed region of said first insulating layer;
a second insulating layer being formed to cover said piezoresistance layer and said first insulating layer, said second insulating layer having an opening on a prescribed region of said piezoresistance layer; and
an interconnection layer being formed on said second insulating layer to be electrically connected to said piezoresistance layer through said opening,
said seed crystal regions being formed at prescribed intervals to enclose said piezoresistance layer,
said interconnection layer, in plan view, passing between and non-overlapping with adjacent said seed crystal regions, with a prescribed distance between said interconnection layer and each of the adjacent seed crystal regions.

5,336,919

SOLID-STATE IMAGE PICKUP DEVICE WITH HIGH MELTING POINT METAL SHIELD

Keiji Toriyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,137
Claims priority, application Japan, Nov. 26, 1990, 2-321912
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—435 **5 Claims**



1. A solid-state image pickup device, comprising:

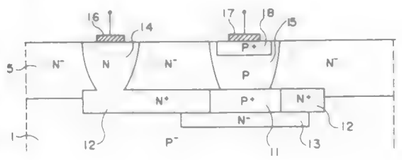
a plurality of photoelectric conversion elements formed in a photoelectric conversion portion for converting incident light into electrical signals;
aluminum wirings formed on a semiconductor substrate outside the photoelectric conversion portion; and
a film made of a high melting point metal serving as a light shielding film which forms openings of the photoelectric conversion elements in the photoelectric conversion portion as well as a protective film for the aluminum wirings which covers the aluminum wirings, said film having a thickness less than that of the aluminum wirings, said film also having a first surface which faces the aluminum wirings and a second surface which is opposite said first surface, said second surface lacking an aluminum layer thereon.

5,336,920

BURIED AVALANCHE DIODE HAVING LATERALLY ADJACENT SEMICONDUCTOR LAYERS

Jean Jimenez, Voiron, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Mar. 17, 1993, Ser. No. 32,500
Claims priority, application France, Mar. 20, 1992, 92 03762
Int. Cl.[5] H01L *29/90*
U.S. Cl. 257—481 **20 Claims**



15. An avalanche diode structure incorporated in an integrated circuit, comprising:
a lateral junction between two adjacent buried layers, a first buried layer having a first conductivity type and a second buried layer having a second conductivity type, the two buried layers being of opposite conductivity types and each having a high doping level;
a third buried layer of the second conductivity type disposed adjacent to the first buried layer;
a substrate of the integrated circuit;
wherein the first buried layer is physically separated from the substrate by the second buried layer and the third buried layer.

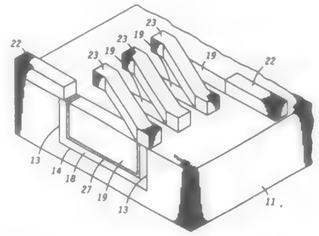
5,336,921

VERTICAL TRENCH INDUCTOR

Lalgudi M. G. Sundaram, Scottsdale, and Neil Tracht, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 27, 1992, Ser. No. 826,553
Int. Cl.[5] H01L *27/02, 29/06*
U.S. Cl. 257—531 **8 Claims**

1. A vertical trench inductor structure comprising: a layer having a plurality of trenches extending vertically therein, wherein each trench has a trench surface comprising a bottom surface, a first set of opposed sidewalls, and a second set of opposed sidewalls; a conductive liner lining the first set of opposed sidewalls and the bottom surface of each trench; a dielectric material covering the conductive liner; and conductive interconnects coupling one end of the conductive liner in



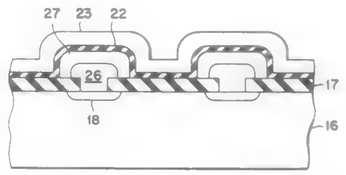
a first trench to an opposite end of the conductive liner in an adjacent trench.

5,336,922

DEVICE COMPRISING LOWER AND UPPER SILICON LAYERS AS CAPACITOR ELECTRODES AND METHOD OF MANUFACTURING SUCH DEVICES

Mitsuru Sakamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,426
Claims priority, application Japan, Jul. 31, 1990, 2-203314; Oct. 26, 1990, 2-288906
Int. Cl.[5] H01L *29/68, 29/78*
U.S. Cl. 257—534 **2 Claims**



1. A semiconductor device, comprising: a semiconductor substrate having a substrate surface, an insulator film on said substrate surface, and a charge storage capacitor which comprises a patterned electrode patterned on said insulator film and having electrode side surfaces and an electrode top surface, a dielectric film on said electrode side surfaces and said electrode top surface, and a covering electrode on said dielectric film and in which said patterned electrode is composed of a lower silicon layer patterned on said insulator film and having layer side surfaces and a layer top surface and an upper silicon layer having said electrode side surfaces and said electrode top surface and being in electric contact with said lower silicon layer at said layer side surfaces and said layer top surface, wherein said upper silicon layer is in direct contact with said dielectric film at said electrode side surfaces and said electrode top surface and wherein said lower silicon layer is doped with a first impurity to a concentration between 10^{15} and 10^{18} atoms per cubic centimeter, and said upper silicon layer is doped with a second impurity to a concentration between 10^{18} and 10^{20} atoms per cubic centimeter.

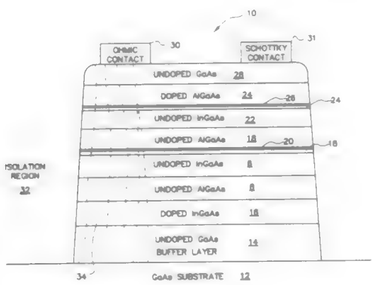
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,923

VARACTOR DIODE HAVING A STEPPED CAPACITANCE-VOLTAGE PROFILE

John J. Geddes, Minneapolis, and Donald R. Singh, Dakota, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Dec. 31, 1992, Ser. No. 999,247
Int. Cl.[5] H01L *29/92*
U.S. Cl. 257—596 6 Claims



1. A heterostructure varactor diode having a stepped capacitance-voltage profile, comprising:
a GaAs substrate;
a first undoped GaAs layer formed on said GaAs substrate;
a doped InGaAs layer formed on said first undoped GaAs layer;
a first undoped AlGaAs layer formed on said doped InGaAs layer;
a first undoped InGaAs layer formed on said first undoped AlGaAs layer;
a second undoped AlGaAs layer formed on said first undoped InGaAs layer;
a first undoped silicon layer formed on said second undoped AlGaAs layer;
a third undoped AlGaAs layer formed on said first undoped silicon layer;
a second undoped InGaAs layer formed on said third undoped AlGaAs layer;
a first doped AlGaAs layer formed on said second undoped InGaAs layer;
a second undoped silicon layer formed on said first doped AlGaAs layer;
a second doped AlGaAs layer formed on said second layer of undoped silicon; and
a second undoped GaAs layer formed on said second doped AlGaAs layer.

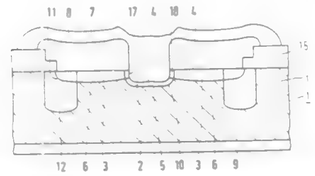
5,336,924

ZENER DIODE HAVING A REFERENCE DIODE AND A PROTECTIVE DIODE

Johannes H. M. M. Quint, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1992, Ser. No. 989,630
Claims priority, application European Pat. Off., Dec. 16, 1991, 91203310.7
Int. Cl.[5] H01L *29/90*
U.S. Cl. 257—603 7 Claims

1. A zener diode having a semiconductor body with a surface zone doped with more than 10^{18} atoms/cc in which at least two regions are provided through diffusion with substantially the same concentration of doping atoms, which regions adjoin a surface of the surface zone and form p-n junctions with the surface zone, a first region having a smaller lateral cross-section and a smaller depth than a second region and both regions being connected to a first connection electrode provided on the surface, and a second connection electrode, spaced apart from the regions, on the semiconductor body, characterized in that the first region has a side edge formed by



lateral diffusion which is at least partly spaced apart from the second region.

5,336,925

POSITIVE WORKING POLYAMIC ACID/IMIDE PHOTORESIST COMPOSITIONS AND THEIR USE AS DIELECTRICS

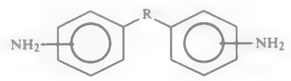
Mary G. Moss; Terry Brewer; Ruth M. Cuzmar, all of Rolla; Dan W. Hawley, and Tony D. Flaim, both of St. James, all of Mo., assignors to Brewer Science, Inc., Rolla, Mo.

Continuation of Ser. No. 606,460, Oct. 31, 1990, Pat. No. 5,138,424, which is a division of Ser. No. 268,023, Nov. 7, 1988, Pat. No. 5,024,922. This application Jan. 29, 1992, Ser. No. 827,342
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] H01L *29/34*
U.S. Cl. 257—643 4 Claims



10- METAL LAYER. 11-POSITIVE POLYIMIDE LAYER.

1. A multilevel metal or oxide article of manufacture on an integrated circuit having a photoimaged dielectric insulation between the metal or oxide levels said dielectric insulation comprising:
a. the condensation product of an aromatic dianhydride and an aromatic di-primary amine having from about 10 to about 50 mole percent of the di-primary amine having the formula:



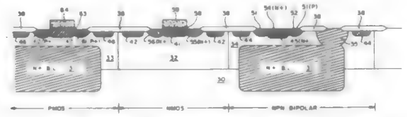
where R contains one or more phenyl rings connected by oxygen, SO_2, alkyl, fluoroalkyl, or biphenyl linkages; and
b. a diazoquinone photoactive sensitizer; and
whereby the dielectric insulation is characterized by less tendency to outgas to form pinholes, greater solubility difference between exposed and unexposed regions, unexposed and undeveloped regions having resistivity in the range of 1×10^{16} ohm cm., a dielectric strength greater than 5×10^{5} volt/cm, while also having less susceptibility to cracking due to mismatch of thermal coefficients, and the dielectric insulation serving as a photoresist which need not be removed after imaging.

5,336,926

BIPOLAR JUNCTION EXHIBITING SUPPRESSED KIRK EFFECT

James A. Matthews, Milpitas, Calif., assignor to MicroUnity Systems Engineering, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 840,853, Feb. 25, 1992, abandoned. This application Aug. 27, 1993, Ser. No. 113,510
Int. Cl.[5] H01L *29/72, 21/265*
U.S. Cl. 257—657 26 Claims



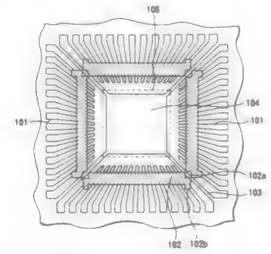
1. A bipolar junction transistor (BJT) formed in a semiconductor substrate comprising:
a collector disposed in said substrate, said collector including a lightly doped region disposed above a more heavily doped buried layer;
a base disposed above said collector region, said base comprising an extrinsic region disposed laterally about an intrinsic region;
an emitter disposed above said intrinsic base region; and
said BJT including a localized region disposed in said collector directly beneath said intrinsic base region and above said buried layer, said localized region having a higher doping concentration than said lightly-doped collector region, said localized region and said emitter region having substantially the same width so as to increase the current handling capability while preserving high frequency performance when said BJT is operated in a high injection region.

5,336,927

LEAD FRAME HAVING ELECTRICALLY INSULATING TAPES ADHERED TO THE INNER LEADS

Kenji Suetake, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 25, 1993, Ser. No. 8,741
Claims priority, application Japan, Feb. 3, 1992, 4-017402
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—670 7 Claims



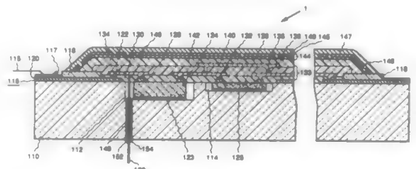
1. A lead frame for a semiconductor device comprising:
an element mounting portion, arranged at a central portion of a lead frame, for mounting a semiconductor element thereon, said element mounting portion being formed in a generally square shape;
suspending leads for supporting four corners of said element mounting portion from a peripheral portion of said lead frame;
a large number of inner leads formed to extend from the peripheral portion of said lead frame toward four sides of said element mounting portion, said inner leads having distal ends for making connections to electrodes portions of the semiconductor elements; and
insulating tapes formed in substantially rectangle shapes, each of said tapes having cut portions which are obtained by partially cutting two corners at both ends thereof, and on a side near said element mounting portion, said insulating tape having projection portions projecting from two corners and on a side far from said element mounting portion, said projecting portions being at the both ends thereof, said insulating tapes being adhered on said inner leads and in positions extending parallel to the four sides of said element mounting portions, and both ends of each of said insulating tapes respectively extending over two adjacent ones of said suspending leads in order to fixedly adhere said inner leads, corresponding to one side of said element mounting portion, together with the adjacent suspending leads.

5,336,928

HERMETICALLY SEALED PACKAGED ELECTRONIC SYSTEM

Constantine A. Neugebauer, deceased, late of Schenectady, N.Y. by Martha M. Neugebauer, executrix , and Robert J. Wojnarowski, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 18, 1992, Ser. No. 947,190
Int. Cl.[5] H01L *23/48, 23/538*
U.S. Cl. 257—758 9 Claims



1. A hermetically sealed packaged electronic system, comprising:
a substrate;
a plurality of module contact pads disposed on a desired surface of said substrate;
a barrier support frame disposed on said desired surface, said frame having a perimeter dividing each of said plurality of module contact pads into an inner portion and an outer portion;
a plurality of electronic components having interconnection pads thereon, all of said components being positioned within the perimeter of said barrier support frame;
a polymer dielectric film overlying and bridging said electronic components, said polymer dielectric film having a plurality of via openings therein, with each of said via openings being aligned with at least some of said interconnection pads and said inner portions of said module contact pads;
a pattern of interconnection conductors disposed on said polymer dielectric film and extending through associated via openings to provide electrical connection between at least some of said interconnection pads and said inner portions of said module contact pads;
a polymer barrier layer disposed on said polymer dielectric film so as to entirely cover an area enclosed within said barrier support frame and also partially cover said barrier support frame about the entire periphery thereof;
a metal barrier layer disposed on said polymer barrier layer and adhering to said barrier support frame about the entire periphery thereof so as to entirely cover a sealed area enclosed within said polymer barrier layer and said barrier support frame; and
a protective layer disposed on said polymer barrier layer and

VOL 1165 ISS 2 AG 9 1994 UMI

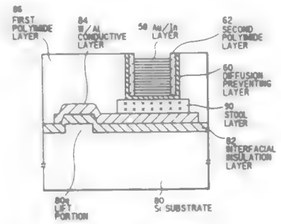
bridging any voids that may be present in said metal barrier layer, so as to hermetically seal the volume bounded by said substrate, barrier support frame, metal barrier layer and protective layer.

5,336,929

SEMICONDUCTOR STRUCTURE AND METHOD FOR FABRICATING THE SAME

Yoshihiro Hayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,373
Claims priority, application Japan, Nov. 19, 1991, 3-302950
Int. Cl.[5] H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 257—772 1 Claim



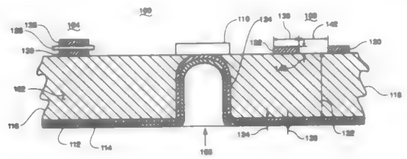
1. A semiconductor structure, comprising:
a substrate on which a conductive pattern is formed, said substrate having a top surface profile with a raised portion;
a platform layer of conductive material, which is formed on said conductive pattern to have a height greater than that of said raised portion;
a first polyimide layer which is formed on said substrate, and has an aperture with an inner side surface and a bottom reaching said platform layer;
a diffusion preventing layer of conductive material, which is formed on said inner side surface and said bottom of said aperture; and
a brazing metal layer having a low melting point, which is formed in said aperture without extending beyond adjacent portions of a top surface of said semiconductor structure.

5,336,930

BACKSIDE SUPPORT FOR THIN WAFERS

Tony K. Quach, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 26, 1992, Ser. No. 904,618
Int. Cl.[5] H01L *29/78, 29/44*
U.S. Cl. 257—774 4 Claims



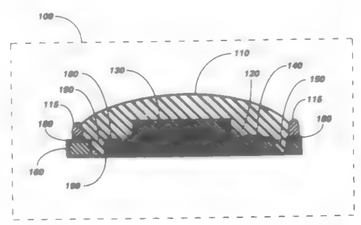
1. Microwave monolithic integrated electrical circuit die apparatus comprising the combination of:
a die substrate member portion of a gallium arsenide semiconductor wafer, said substrate member having a thickness less than two hundred micrometers;
a multiple layered microwave monolithic integrated electrical circuit disposed over a frontal surface portion of said die substrate member;
a metallic layer member disposed over a backside surface portion of said die substrate member, said metallic layer member having electrical connection with a predetermined frontal surface electrical node of said electrical circuit; and
a thin film layer of die strengthening electrical insulating material received over said metallic layer member on said backside surface portion of said die substrate member;
said thin film layer being comprised of one of the materials of silicon nitride, silicon dioxide, monocrystalline diamond, polycrystalline diamond, and diamond-like carbon.

5,336,931

ANCHORING METHOD FOR FLOW FORMED INTEGRATED CIRCUIT COVERS

Frank J. Juskey, Coral Springs, and Douglas W. Hendricks, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 3, 1993, Ser. No. 115,971
Int. Cl.[5] H01L *23/28, 23/29*
U.S. Cl. 257—787 12 Claims



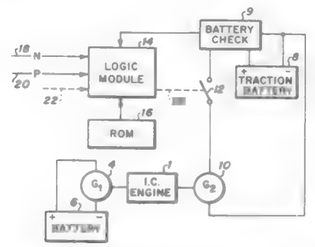
1. A flow formed encapsulated integrated circuit package comprising:
a printed circuit substrate having a predetermined thickness, upper and lower opposed surfaces, and one or more anchor holes, said one or more anchor holes comprising an upper aperture in the upper surface and a lower aperture in the lower surface, the anchor hole apertures having predetermined diameters, wherein the predetermined diameters of the upper and lower apertures of the one or more anchor holes are substantially equivalent to the predetermined thickness of the substrate;
one or more integrated circuit die electrically and mechanically attached to the upper surface of the substrate;
a solder mask attached to at least the lower surface of said substrate which covers the lower aperture of the one or more anchor holes; and
flow form material formed around the integrated circuit die so as to encapsulate the one or more integrated circuits, said flow form material covering at a least a portion of the upper surface of the printed circuit substrate and extending substantially into the one or more anchor holes.

5,336,932

METHOD FOR CONTROLLING A GENERATOR

Heiko Barske, Grafelfing, Fed. Rep. of Germany, assignor to Audi AG, Ingolstadt, Fed. Rep. of Germany

PCT No. PCT/EP91/02233, § 371 Date Jun. 25, 1993, § 102(e) Date Jun. 25, 1993, PCT Pub. No. WO92/13380, PCT Pub. Date Aug. 6, 1992
PCT Filed Nov. 26, 1991, Ser. No. 81,248
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1991, 4102150
Int. Cl.[5] H02P *9/04;* F02D *29/06*
U.S. Cl. 290—1 R 6 Claims



1. A computer-based method for controlling a generator associated with an internal combustion engine wherein the generator is operated to provide electric power only during specific operating conditions of the internal combustion engine, said method comprising the steps of:
a) storing an engine consumption characteristic map in a ROM, said engine consumption characteristic map having a first family of curves representing identical specific fuel consumption and a second family of curves representing identical power output;
b) inputting to a control module a plurality of signals which represent a plurality of engine operating parameters;
c) selecting an engine operating point from said engine consumption characteristic map corresponding to said signals input to said control module;
d) determining from said selected engine operating point a power consumption value corresponding to the amount of fuel required to activate said generator; and
e) selectively activating and deactivating said generator in dependence of said determined power consumption value.

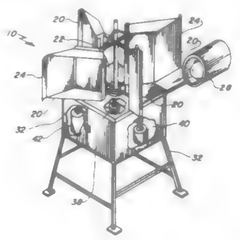
5,336,933

FLUID-AUGMENTED FREE-VORTEX POWER GENERATING APPARATUS

Melvin J. Ernster, Sun Valley, Calif., assignor to Bru-Mel Corporation, Los Angeles, Calif.

PCT No. PCT/US90/03949, § 371 Date Feb. 10, 1992, § 102(e) Date Feb. 10, 1992
PCT Filed Jul. 16, 1990, Ser. No. 834,222
Int. Cl.[5] F03D *3/00*
U.S. Cl. 290—55 10 Claims

1. A fluid driven power generating apparatus comprising:
(a) a turbine having a plurality of aerodynamic shaped sails,
(b) a vortex excitation fluid mover tangentially directing a flow of fluid under elevated velocity and pressure onto the turbine sails inducing rotation thereof combined with naturally occurring fluid flow creating an unconfined vortex of fluid around the turbine, and
(c) a power generator connected to the turbine producing energy from a rotational force developed by the vortical effect causing a partial vacuum to occur directly above said apparatus thus creating an intensified regenerated spiral fluid motion around said turbine, the kinetic energy



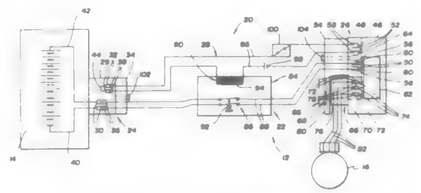
of the fluid impinging directly on the sails rotating said turbine and generator.

5,336,934

ELECTRICAL CONNECTION AND INTERLOCK CIRCUIT SYSTEM FOR VEHICLE ELECTRIC DRIVE

Craig B. Toepfer, Dearborn, and Robert K. Brown, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1992, Ser. No. 991,881
Int. Cl.[5] H02G *3/00*
U.S. Cl. 307—10.1 14 Claims



1. In a vehicle electric drive including a battery and an electric drive motor for driving vehicle wheels, an electrical connection and interlock circuit system, comprising: a connection circuit having a first connector for detachably connecting to the battery upon movement between a detached position and a fully connected position through a partially connected position; the connection circuit also having a second connector for detachably connecting to the drive motor upon movement between a detached position and a fully connected position through a partially connected position; and an electrical interlock circuit that: (a) electrically connects the first and second connectors with each other when both connectors are in their fully connected positions to thereby permit electrical operation of the drive motor through the connection circuit, and (b) electrically disconnects the first and second connectors from each other when either connector is in its partially connected position to ensure that the drive motor is then not electrically energized through the connection circuit.

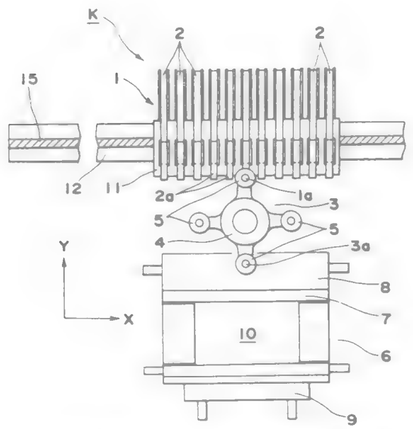
VOL 1165 ISS 2 AUG 9 1994 UMI

5,336,935

ELECTRONIC PARTS MOUNTING APPARATUS

Motoshi Shitanda, Toyonaka; Takao Eguchi, Nishinomiya, and Yuji Miyoshi, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 615,011, Nov. 19, 1990, abandoned.
This application Feb. 1, 1993, Ser. No. 11,826
Claims priority, application Japan, Nov. 17, 1989, 1-300437
Int. Cl.[5] B23Q *17/24*; B23P *21/00*
U.S. Cl. 307—116 5 Claims



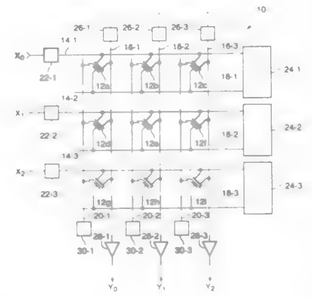
1. An electronic parts mounting apparatus comprising:
a parts feeding section including a plurality of parallel parts feeder units each having a distal end and adapted to accommodate a plurality of electronic parts and to sequentially feed the electronic parts to a predetermined parts pickup position defined thereon, and means for moving said feeder units to selectively position one of the parts feeder units at a predetermined parts feeding position;
positioning means for positioning a member which is to have electronic parts from said parts feeding section secured thereto;
parts mounting means for seizing an electronic part from the parts pickup position defined on the parts feeder unit located at said predetermined parts feeding position and for transferring the seized electronic part to a member positioned by said positioning means; and
detection means for detecting the distal end of a said parts feeder unit at a predetermined location in the apparatus corresponding to said parts feeder unit being located precisely at said predetermined parts feeding position, said detection means including a slit defined in the distal end of each of said parts feeding units, and a light emitting member and a visual monitoring device disposed opposite one another across said predetermined location such that said visual monitoring member will receive light from said light emitting member through the slit in the distal end of a said parts feeding unit which is located precisely at said predetermined parts feeding position, whereby deviation of the distal end of said parts feeder unit from said predetermined location can be determined prior to said parts mounting means seizing an electronic part from the parts pickup position defined on the parts feeder unit located at said predetermined parts feeding position so that a positional deviation of said parts feeder unit from the parts feeding position can be eliminated.

5,336,936

ONE-TRANSISTOR ADAPTABLE ANALOG STORAGE ELEMENT AND ARRAY

Timothy P. Allen, Los Gatos, and James B. Cser, Santa Clara, both of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Filed May 6, 1992, Ser. No. 879,964
Int. Cl.[5] H03K *19/08, 19/094*
U.S. Cl. 307—201 2 Claims



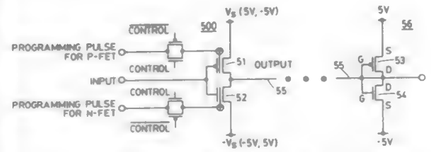
1. An analog storage array comprising a plurality of cells arranged as a plurality of rows and a plurality of columns, said array disposed on an n-type semiconductor substrate and including:
a p-type well disposed in said n-type substrate;
a plurality of N-channel MOS transistors disposed in said rows and columns in said p-type well of said n-type semiconductor substrate, a single one of said N-channel MOS transistors comprising each cell, each of said N-channel MOS transistors including a source, a drain, and a floating gate forming a tunneling junction with a tunneling electrode;
an input line associated with each of said rows, each input line connected to the source of each of the N-channel MOS transistors disposed in the row with which the input line is associated;
a bias line associated with each of said rows, each bias line capacitively coupled to the floating gate of each of the N-channel MOS transistors disposed in the row with which the bias line is associated;
a tunnel line associated with each of said columns, each tunnel line connected to the tunneling electrode of each of the N-channel MOS transistors disposed in the column with which the bias line is associated;
a current-sum line associated with each of said columns, each current-sum line connected to the drain of each of the N-channel MOS transistors disposed in the column with which the bias line is associated;
means for forward biasing said p-well with respect to said substrate in order to inject minority electrons into said p-well; and
means for selectively raising the drain and source voltages of a selected one of said N-channel floating gate transistors to accelerate the said injected minority electrons enough to enable them to migrate onto the floating gate of said selected one of said N-channel floating gate transistors; and
means for simultaneously driving a selected one of said bias lines low while driving a selected one of said tunnel lines high, for causing electron tunneling from the floating gate of the one of the N-channel MOS transistors common to said selected one of said bias lines and said selected one of said tunnel lines.

5,336,937

PROGRAMMABLE ANALOG SYNAPSE AND NEURAL NETWORKS INCORPORATING SAME

Ramalingam Sridhar, East Amherst; Seokjin Kim, Amherst; Yong-Chul Shin, Amherst, and Naidu C. R. Bogineni, Amherst, all of N.Y., assignors to State University of New York, Buffalo, N.Y.

Filed Aug. 28, 1992, Ser. No. 937,804
Int. Cl.[5] H03K *19/20, 19/0944*
U.S. Cl. 307—201 11 Claims



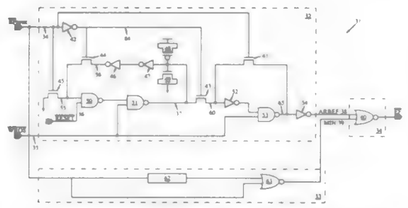
1. In an artificial neural-network composed of a plurality of analog synapses having programmable synaptic weights and at least one neuron, where said analog synapses each have a signal input line and an output line, said output line being connected to said neuron, to provide an output which is a function of the input signal on said input line and the synaptic weights presented by said synapses, characterized in that each of said plurality of synapses comprises two complementary floating gate MOSFETs in an inverter structure having an output connected to said output line, the gates of said MOSFETs being connected to said input line, each said MOSFET having separate means for setting a weight value therein, and means for transmitting a programming pulse to said MOSFETs floating gate for programming each weight of said MOSFETs.

5,336,938

APPARATUS FOR GENERATING AN ASYNCHRONOUS STATUS FLAG WITH DEFINED MINIMUM PULSE

Stefan P. Sywyk, San Jose, Calif., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Jun. 25, 1992, Ser. No. 904,431
Int. Cl.[5] H03K *19/00, 19/21*
U.S. Cl. 307—265 13 Claims



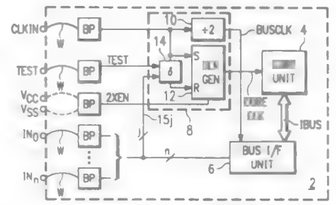
1. An apparatus for generating a status flag comprising:
first input means for providing a first signal wherein said signal activates said status flag:
second input means for providing a second signal wherein said second signal deactivates said status flag;
circuit means for generating said status flag from said first and second signals wherein said status flag has a predefined minimum active pulse length wherein said circuit means comprises:
sequential logic means coupled to said first and said second input means for generating an arbitrary length signal which is defined by the time delay between said first and said second signals;
minimum pulse generating means coupled to said first input means for generating a pulse which has a predefined length upon initiation of said first signal; and
combinational logic means coupled to said sequential logic means and to said minimum pulse means for generating said status flag with a minimum defined pulse length from said arbitrary length signal and said pulse.

5,336,939

STABLE INTERNAL CLOCK GENERATION FOR AN INTEGRATED CIRCUIT

John K. Eitrheim, and Richard B. Reis, both of Garland, Tex., assignors to Cyrix Corporation, Richardson, Tex.

Filed May 8, 1992, Ser. No. 880,550
Int. Cl.[5] H03K *3/017, 3/26*
U.S. Cl. 307—269 30 Claims



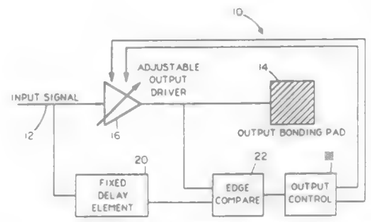
1. A clock generator circuit for generating, at its output, a first output clock signal responsive to an input clock signal received at its input, comprising:
a first delay stage, having an input connected to the clock generator input and having an output for presenting a delayed input clock signal;
a latch, having an input, and having an output coupled to the clock generator output;
a set circuit, having an input coupled to the clock generator input and having an output coupled to the latch input, for setting the latch responsive to a first transition of said input clock signal; and
a reset circuit, having an input coupled to the output of the first delay stage, and having an output coupled to the latch input, for resetting the latch responsive to a first transition of the delayed input clock signal.

5,336,940

DELAY-COMPENSATED OUTPUT PAD FOR AN INTEGRATED CIRCUIT AND METHOD THEREFOR

Peter H. Sorrells, Chandler, and Ned D. Garinger, Tempe, both of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 7, 1992, Ser. No. 926,981
Int. Cl.[5] H03K *5/13, 5/24*
U.S. Cl. 307—269 10 Claims



1. An output pad for an integrated circuit comprising, in combination:
circuitry means for driving a logic output of said integrated circuit to a conductor external to said integrated circuit;
first input means for providing said logic output from said integrated circuit to said circuitry means, said circuitry means delaying said logic output thereby providing a

VOL 1165 ISS 2 AG 9 1994 UMI

delayed output signal, said circuitry means providing a delay within a predetermined tolerance which does not substantially vary with variations in power supply voltage, temperature and manufacturing process; and

output means coupled to said circuitry means for coupling said delayed output signal to said conductor;

said circuitry means comprising, in combination:

adjustable output driver means having an input coupled to said first input means and having an output coupled to said output means for driving said logic output on said first input means to said output means thereby providing said delay;

delay means having an input coupled to said first input means for delaying said logic output;

edge detector means coupled to said output of said adjustable output driver means and to an output of said delay means for detecting an edge of said output of said adjustable output driver means and an edge of said output of said delay means to determine which of the two said edges occurs first, and having status output means for providing an output that changes depending on which of the two said edges occurs first; and

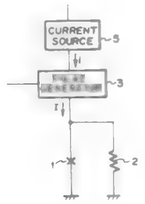
output control means for changing said delay of said adjustable output driver means having an input coupled to said status output means and an output coupled to said adjustable output driver means, said output control means increasing said delay when said edge of said output of said adjustable output driver means occurs before said edge of said output of said delay means, said output control means decreasing said delay when said edge of said output of said delay means occurs before said edge of said output of said adjustable output driver means, and said output control means maintaining said delay when said edge of said output of said adjustable output driver means occurs coincident with said edge of said output of said delay means within a predetermined tolerance.

5,336,941

SUPERCONDUCTING CIRCUIT AND METHOD FOR DRIVING THE SAME

Ichiro Ishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 925,019
Claims priority, application Japan, Aug. 6, 1991, 3-196325
Int. Cl.[5] H03K *3/38*
U.S. Cl. 307—277 **9 Claims**



1. A superconducting circuit comprising;

a Josephson tunnel junction;

a load resistor connected in parallel to the Josephson tunnel junction;

a current source connected to an input terminal of said Josephson tunnel junction, and

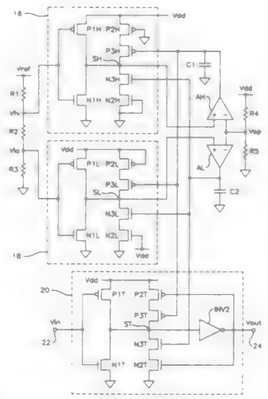
means for changing a current supplied from said current source to the input terminal of said Josephson tunnel junction within a range below a critical current of said Josephson tunnel junction and wherein a rate of change of the current supplied to the input terminal of the Josephson tunnel junction is used as a controlling factor for switching said Josephson tunnel junction.

5,336,942

HIGH SPEED SCHMITT TRIGGER WITH PROCESS, TEMPERATURE AND POWER SUPPLY INDEPENDENCE

Joseph M. Khayat, Ontario, Calif., assignor to Western Digital (Singapore) Pte, Ltd., Singapore

Filed Aug. 12, 1992, Ser. No. 928,896
Int. Cl.[5] H03K *3/29, 5/153*
U.S. Cl. 307—290 **28 Claims**



20. A Schmitt trigger circuit, comprising:

means for establishing HI and LO threshold voltages,

a HI bias circuit having operative circuitry that is responsive to said HI threshold voltage for establishing a HI bias signal,

a LO bias circuit having operative circuitry that is responsive to said LO threshold voltage for establishing a LO bias signal, and

a trigger circuit that is connected to receive an input signal, said trigger circuit including:

a HI section that substantially matches the operative circuitry of said HI bias circuit, and is biased by said HI bias signal to switch from a LO to a HI trigger circuit output in response to said input signal rising from a level below said LO threshold voltage to a level above said HI threshold voltage, and

a LO section that substantially matches the operative circuitry of said LO bias circuit, and is biased by said LO bias signal to switch from a HI to a LO trigger circuit output in response to said input signal falling from a level above said HI threshold voltage to a level below said LO threshold voltage, corresponding nodes in the matching circuitry of said HI bias circuit and said HI trigger circuit section being connected together to bias said HI trigger circuit section, and corresponding nodes in the matching circuitry of said LO bias circuit and said LO trigger circuit section being connected together to bias said LO trigger circuit section,

the operative circuitry of said HI bias circuit including:

a positive voltage supply line,

a lower voltage reference,

first, second and third positive conductivity transistors and a first negative conductivity transistor having respective control electrodes and current circuits,

said first positive and first negative conductivity transistors being connected with their current circuits in series between said positive voltage supply line and said lower voltage reference,

said second and third positive conductivity transistors being connected with their current circuits in a series circuit that is connected in parallel with the current circuit of said first positive conductivity transistor,

means for applying said HI switching voltage to the control electrodes of said first positive and first negative conductivity transistors, and

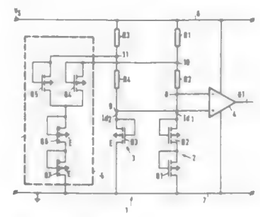
means setting said second positive conductivity transistor in an ON state.

5,336,943

TEMPERATURE SENSING CIRCUIT

Brendan P. Kelly, and Royce Lowis, both of Stockport, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 1, 1992, Ser. No. 907,477
Claims priority, application United Kingdom, Jul. 19, 1991, 9115677; Nov. 8, 1991, 9123784
Int. Cl.[5] G06G *7/10;* **H03K** *5/22*
U.S. Cl. 307—310 **25 Claims**



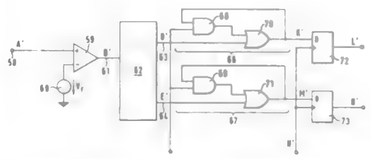
1. A temperature sensing circuit comprising: a first insulated gate field effect device, a second insulated gate field effect device, means for operating the first insulated gate field effect device in its subthreshold region so that the voltage across the first insulated gate field effect device varies with temperature, means for comparing the voltages across the first and second insulated gate field effect devices, and means for operating the second insulated gate field effect device in an area of its square law region where the voltage across the second insulated gate field effect device is substantially independent of temperature so that the comparing means provides a signal indicative of the temperature sensed by the first insulated gate field effect device.

5,336,944

DETECTOR CIRCUIT FOR DETECTING STATE CHANGES OF A BINARY SIGNAL

Martin Fischer, Heilbronn, Fed. Rep. of Germany, assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Oct. 22, 1992, Ser. No. 964,921
Claims priority, application European Pat. Off., Nov. 11, 1991, 91119165
Int. Cl.[5] H03K *5/153, 3/284;* **G06G** *7/14;* **G01R** *19/14*
U.S. Cl. 307—350 **10 Claims**



1. A detector circuit for detecting state changes of a level of a binary signal comprising:

comparator circuit means for receiving said level of said binary signal and for providing an output indicative of a comparison of said level of said binary signal with a reference;

a 1-of-n decoder coupled where n is an integer to said output of said comparator circuit means; and

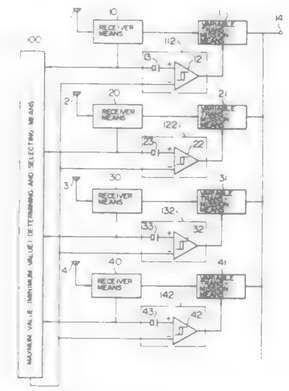
latch circuit means connected with at least one output of said 1-of-n decoder, said latch circuit means including a feedback loop activatable by a control signal.

5,336,945

COMPARATOR DEVICE HAVING MAXIMUM (MINIMUM) VALUE DETERMINING AND SELECTING MEANS FOR SELECTING RECEIVED SIGNALS

Masaharu Ikeda, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 30, 1991, Ser. No. 814,590
Claims priority, application Japan, Feb. 18, 1991, 3-023153
Int. Cl.[5] H03K *5/22, 17/00*
U.S. Cl. 307—355 **4 Claims**



1. A comparator device for comparing signal levels of a plurality of input signals and outputting independently comparison results for each input signal, said device comprising:

determining means for determining one of an input signal having a maximum level among said plurality of input signals and an input signal having a minimum level among said plurality of input signals and outputting a signal corresponding to the determined input signal;

a plurality of comparator means, each including a first terminal and a second terminal and each for comparing a level of a signal applied to said first terminal with a level of a signal applied to said second terminal and for outputting a binary signal (a) which has a first value when the level of the signal applied to said first terminal minus the level of the signal applied to said second terminal is greater than a first predetermined level, (b) which has a second value when the level of the signal applied to said first terminal minus the level of the signal applied to said second terminal is less than a second predetermined level, said first predetermined level being larger than said second predetermined level and both having the same sign, and (c) which maintains one of said first and second values when the level of the signal applied to said first terminal minus the level of the signal applied to said second terminal is less than said first predetermined level and greater than said second predetermined level, so that said binary signal takes a fixedly determined one of said first value and said second value when the level of the signal applied to said first terminal is equal to the level of the signal applied to said second terminal;

means for applying said input signals to the first terminals of said comparator means respectively;

means for applying the signal output from said determining

VOL 1165 ISS 2 AG 9 1994 UMI

means to the second terminal of each comparator means; and

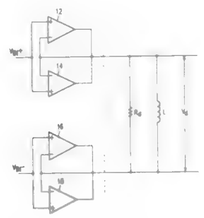
means for outputting the binary signals output from said comparator means as the comparison results of said comparator device.

5,336,946

DIFFERENTIAL OUTPUT STAGE WITH REDUCED IDLE CURRENT

Para K. Segaram, Campbell, and Shu-Ing Ju, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 22, 1992, Ser. No. 995,193
Int. Cl.[5] H03K *5/22*
U.S. Cl. 307—355 17 Claims



12. A differential output stage for generating a differential signal across an external resistor in response to the difference in voltages between a first signal and a second signal, the differential output stage comprising:

a forward node and a reverse node, the external resistor being connectable therebetween;

a forward current source that generates a reverse current into the forward node in response to the voltage of the first signal and the voltage at the forward node;

a reverse current source that generates a reverse current into the reverse node in response to the voltage of the second signal and the voltage at the reverse node;

a forward current sink that sinks a first current from the forward node in response to the voltage of the first signal and the voltage at the forward node;

a reverse current sink that sinks a second current from the reverse node in response to the voltage of the second signal and the voltage at the reverse node,

whereby when the voltage of the first signal and the voltage of the second signal are substantially equivalent, the magnitude of the forward current is substantially equivalent to the magnitude of the first current, and the magnitude of the reverse current is substantially equivalent to the magnitude of the second current, thereby causing no current to flow across the external resistor,

whereby when the difference between the voltage of the first signal and the voltage of the second signal is positive, the magnitude of the forward current is greater than the magnitude of the first current, and the magnitude of the reverse current is less than the magnitude of the second current, thereby causing a current to flow across the external resistor from the forward node to the reverse node, and

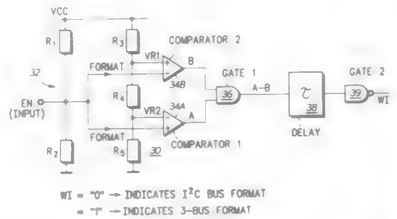
whereby when the difference between the voltage of the first signal and the voltage of the second signal is negative, the magnitude of the forward current is less than the magnitude of the first current, and the magnitude of the reverse current is greater than the magnitude of the second current, thereby causing a current to flow across the external resistor from the reverse node to the forward node.

5,336,947

DISCRIMINATOR DEVICE

Heinz Lehning, Nyon, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 9, 1993, Ser. No. 15,375
Claims priority, application United Kingdom, Feb. 20, 1992, 9203587
Int. Cl.[5] H03K *5/153*
U.S. Cl. 307—360 10 Claims



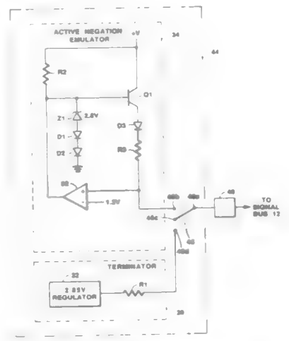
1. A discriminator device for discriminating between two types of signal applied to an input port, the first type being a binary logic signal having high and low values, and the second type of signal being a continuously variable signal or a floating voltage, the device comprising a voltage divider network for coupling to the input port and a voltage supply in order to provide a format signal, means providing first and second voltage reference signals having values intermediate the high and low values of the binary logic signal, comparator means coupled to receive the format signal and the voltage reference signals, an output of the comparator means being coupled to output means which provides a logic output signal of a value depending on the type of signal present at the input port.

5,336,948

ACTIVE NEGATION EMULATOR

Mark Jordan, Goffstown, N.H., assignor to Unitrode Corporation, Billerica, Mass.

Filed Dec. 16, 1992, Ser. No. 991,168
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—443 37 Claims



1. A circuit for improving the noise margin of logic signals carried by a signal interface bus by raising the voltage level thereof when such signals transition from a logic low state to a logic high state, said circuit comprising:

a sensor for sensing the voltage on said bus;

a variable current source, coupled to said sensor, for supplying a current to said bus when said bus voltage exceeds a first predetermined value; and

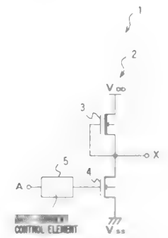
a first switch for selectively coupling said variable current source to bus.

5,336,949

LOGIC CIRCUIT WITH ENHANCEMENT TYPE FET AND SCHOTTKY GATE

Takashi Mimura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 5, 1992, Ser. No. 924,948
Claims priority, application Japan, Aug. 20, 1991, 3-208291
Int. Cl.[5] H03K *19/017, 19/094*
U.S. Cl. 307—448 11 Claims



1. A logic circuit having high and low potential power supply terminals, an input terminal and an output terminal and comprising:

at least one inverter stage having an output node and comprising:

a load element having a first end connected to the high potential power supply terminal and a second end connected to the output node,

an enhancement type N-channel field-effect transistor having a Schottky gate, a drain connected to the output node, and thereby to the second end of the load element, and a source connected to the low-potential power supply terminal,

gate-current control means, having a negative resistance characteristic, connecting the input terminal to the Schottky gate of the enhancement type N-channel field-effect transistor, for controlling the level of gate current flowing through the enhancement type N-channel field-effect transistor; and

the input and output terminals of the logic circuit being connected respectively to the gate-current control means and the output node of the at least one inverter stage.

5,336,950

CONFIGURATION FEATURES IN A CONFIGURABLE LOGIC ARRAY

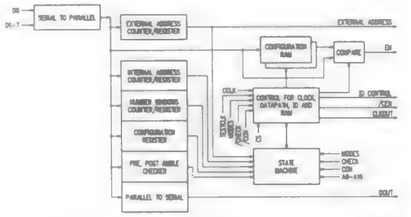
Sanjay Popli, Sunnyvale; Scott Pickett, Los Gatos; David Hawley, Belmont; Shankar Moni, Santa Clara, and Rafael C. Camarota, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 752,282, Aug. 29, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,415
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 10 Claims

1. A configurable logic array comprising:

a plurality of individually configurable logic cells arranged in a matrix; and

reconfiguration logic connected to the matrix and operable for sequential access of multiple configurable logic cells in the matrix for reconfiguration of said multiple configurable logic cells thereby allowing for partial reconfiguration of the matrix.

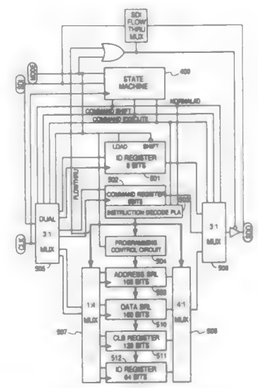


5,336,951

STRUCTURE AND METHOD FOR MULTIPLEXING PINS FOR IN-SYSTEM PROGRAMMING

Gregg R. Josephson, Aloha, Oreg.; Ju Shen, San Jose, Calif.; Roy D. Darling, Forest Grove, Oreg., and Chan-Chi J. Cheng, San Jose, Calif., assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Division of Ser. No. 695,356, May 3, 1991, Pat. No. 5,237,218. This application Aug. 13, 1993, Ser. No. 106,498
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 2 Claims



1. An integrated circuit comprising:

a mode pin for specifying alternatively a programming mode and a functional mode of said integrated circuit;

a register for storing data under said functional mode;

a plurality of pins each performing a programming function under programming mode and an input/output function under functional mode; and

a program control unit for controlling programming of said integrated circuit under said programming mode, wherein, upon entering said programming mode, said program control unit keeps said data in said register unchanged.

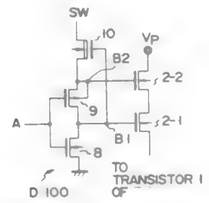
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,952

SEMICONDUCTOR INTEGRATED CIRCUIT PROTECTED FROM ELEMENT BREAKDOWN BY REDUCING THE ELECTRIC FIELD BETWEEN THE GATE AND DRAIN OR SOURCE OF A FIELD EFFECT TRANSISTOR

Hiroshi Iwahashi; Toshiyuki Fujimoto, both of Yokohama, and Akira Narita, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 401,923, Sep. 1, 1989, abandoned. This application May 26, 1993, Ser. No. 67,102
Claims priority, application Japan, Sep. 2, 1988, 63-220226
Int. Cl.[5] H03K *17/687*; G11C *16/06*
U.S. Cl. 307—571 5 Claims



1. A semiconductor integrated circuit, comprising:
a first supply potential terminal for supplying a first supply potential;
first and second transistors connected in series between said first supply potential terminal and an output node, and respectively having first and second gates; and
control means for receiving a data signal, and for supplying a first potential equal to said first supply potential to said first and second gates of said first and second transistors when the data signal is a first logic value, and for supplying a ground potential to said second gate of said second transistor and a second potential to said first gate of said first transistor when the data signal is a second logic value, the second potential being lower than the first potential and higher than the ground potential;
wherein said first transistor is protected from element breakdown by reducing an electric field between a gate and one of a source and drain of said first transistor.

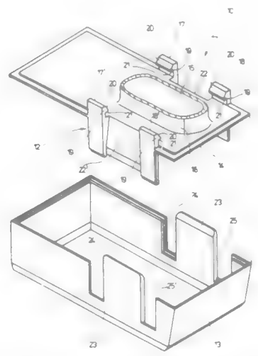
5,336,953

BATTERY-POWERED ELECTRICAL HAND-TOOL

Markus Allemann, Zuchwil, Switzerland, assignor to Scintilla AG, Solothurn, Switzerland

Filed Dec. 21, 1992, Ser. No. 994,135
Claims priority, application Japan, Dec. 21, 1991, 4-142699
Int. Cl.[5] H02K *7/14*
U.S. Cl. 310—50 19 Claims

1. A batter-powered hand-tool comprising
a tool mechanism housing,
a battery housing,
an effective locking connection means for locking the battery housing together with the tool mechanism housing, said locking connection means comprising at least one lock element connected with the tool mechanism housing, said at least one lock element including a resilient U-shaped clasp member having two U-legs and a plurality of lock catches provided on opposite side walls of the battery housing, said lock catches engaging over the at least one lock element in a locked state of the locking connection means to connect the battery housing to the tool mechanism housing; and
means for release of the battery housing from the tool mechanism housing when the battery housing is connected to the tool mechanism housing, said means for release including said resilient U-shaped clasp member and being such that the battery housing can be released from the tool mechanism housing when the locking connection means is in the locked state.

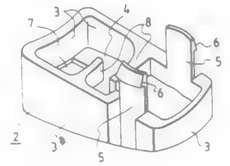


5,336,954

DRAIN UNIT OF STARTER

Shigeru Shiroyama, Hyogo, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Dec. 24, 1991, Ser. No. 813,092
Claims priority, application Japan, Dec. 28, 1990, 2-406138
Int. Cl.[5] H02K *5/10*
U.S. Cl. 310—88 1 Claim



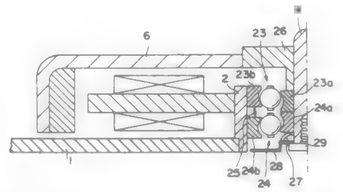
1. A drain unit of a starter comprising:
a cover having a side wall and a bottom plate, positioned so as to cover a drain hole formed in a bottom portion of said starter;
a plurality, projections extending upward from said cover, said projections being inserted into and fixed hole by engagement between a fixing hook formed at a top end of said each projection and said bottom portion;
a drain outlet, provided on said bottom plate, at a position which is offset in a horizontal direction with respect to said drain hole;
at least one water preventing wall, provided in said cover, so as to define a labyrinthial path between said drain hole and said drain outlet; and
said drain unit being integrally formed of a resin material.

5,336,955

OUTER - ROTOR TYPE SPINDLE MOTOR

Yuzuru Suzuki, Sizuoka; Sakae Fujitani, Hamamatsu; Masaaki Inagaki, Sizuoka, and Hitoshi Uchida, Nagano, all of Japan, assignors to Minebea Kabushiki-Kaisha (Minebea Co., Ltd.), Nagano, Japan

Filed Dec. 18, 1992, Ser. No. 992,662
Claims priority, application Japan, Dec. 20, 1991, 3-111731[U]
Int. Cl.[5] H02K *5/16*; F16C *23/04*
U.S. Cl. 310—90 2 Claims



1. An outer-rotor type spindle motor comprising in combination:
(a) a rotor yoke (6) which has its central portion fitted to a spindle (4) and which has a permanent magnet (5) mounted on the inside of its outer peripheral flange portion;
(b) a pair of ball bearings (8) arranged one above the other, each of the ball bearings (8) having its ball interposed between an inner ring (8*a*) and an outer ring (8*b*), said inner rings (8*a*) of said pair of ball bearings (8) being fitted to said spindle (4) in a condition so that said inner rings (8*a*) are urged toward each other, said outer rings (8*b*) of said pair of ball bearings (8) being firmly fitted to the inner surface of a stator holder (2) so as to be axially spaced apart from each other, whereby a gap (25) is formed between said outer rings (8*b*);
(c) a stator (3) which is firmly connected to said outer rings (8*b*) of said ball bearings (8) directly or through a stator holder (2) that is mounted on the outer peripheral surfaces of said outer rings (8*b*), said stator (3) being provided with a plurality of pole plates (3*a*) on which solenoids (3*b*) are mounted, and
(d) a shielding plate (28) firmly fitted over the lower end of said spindle (4) to prevent dust from entering the interior of said motor, the central portion of said shielding plate (28) being provided with a spring portion (27) that applies pressure against the bottom surface of the lower inner ring (8*a*) of said pair of ball bearings (8).

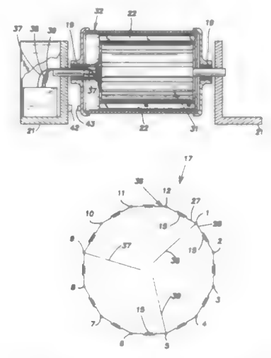
5,336,956

BRUSHLESS DYNAMO MACHINE WITH NOVEL ARMATURE CONSTRUCTION

Lambert Haner, 1975 Wynwood Dr., Rocky River, Ohio 44116

Filed Nov. 23, 1992, Ser. No. 980,304
Int. Cl.[5] H02K *1/00, 3/00*
U.S. Cl. 310—179 16 Claims

1. A dynamoelectric machine comprising a central armature with a core centered on an axis, the core having a periphery and a plurality of generally axially oriented slots spaced angularly about its periphery, a field winding in the core slots, the field winding comprising a plurality of separate coils, each of said coils being wound with a plurality of separate turns, each of said turns being in a pair of generally diametrally opposed slots, the coils each being electrically connected in a closed ring circuit that encircles the core axis, a set of three conductor leads connected to the ring circuit of coils, each of the conductor leads being connected at a point in the ring circuit that is angularly spaced on the ring circuit about 120° from the other of said leads, a housing shell surrounding the armature, bearing means for supporting the armature and the housing shell for relative rotation therewith, the housing shell and armature dynamoelectrically interacting when there is relative rotation between the housing shell and the armature and there is three phase electrical power in the winding.

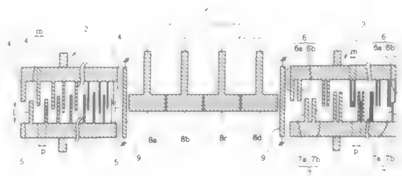


5,336,957

SURFACE ACOUSTIC WAVE CONVOLVER

Kazuhiko Yamanouchi, 37-13, Matsugaoka, Taihaku-ku, Sendai-shi, Miyagi-ken; Norihito Mihota, Sendai; Shunji Kato, Ageo; Hiromu Terada, and Junichi Ogata, both of Sendai, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo and Kazuhiko Yamanouchi, Miyagi, both of Japan

Filed Dec. 18, 1992, Ser. No. 993,112
Claims priority, application Japan, Jul. 24, 1992, 4-217371
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 D 20 Claims



1. A surface acoustic wave convolver having first and second interdigital electrodes for exciting surface acoustic waves and an output electrode for detecting the surface acoustic waves to extract a convolution output as an electrical signal, said first and second interdigital electrodes and said output electrode being formed on a piezoelectric or electrostrictive substrate, wherein
each of said first and second interdigital electrodes has a predetermined thickness,
said first interdigital electrode is arranged such that positive and negative electrodes are alternately arranged so as to have electrodes widths and periods which are gradually decreased toward said output electrode,
said second interdigital electrode is arranged such that positive and negative electrodes are alternately arranged so as to have electrode widths and periods which are gradually increased toward said output electrode, and
said first interdigital electrode has a single electrode structure and said second interdigital electrode has a double electrode structure.

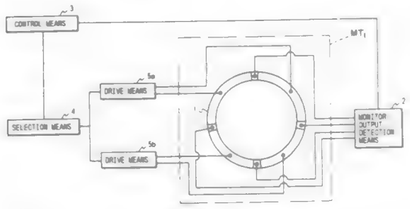
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,958

ULTRASONIC MOTOR UNIT

Daisuke Saya, and Ryoichi Suganuma, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 806,279, Dec. 13, 1991, abandoned. This application Oct. 19, 1993, Ser. No. 137,882
Claims priority, application Japan, Dec. 19, 1990, 2-412141
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—316 **23 Claims**



1. An ultrasonic motor unit comprising:

a stator including a piezoelectric member and an elastic member adapted to be excited by said piezoelectric member to generate a travelling vibration wave for driving a moving member;

a first input electrode set having two input electrodes arranged on said piezoelectric member and each corresponding to a respective plurality of polarized portions of said piezoelectric member which collectively exhibit a plurality of polarization directions;

a second input electrode set having two input electrodes arranged on said piezoelectric member and each corresponding to a respective plurality of polarized portions of said piezoelectric member which collectively exhibit a plurality of polarization directions; and

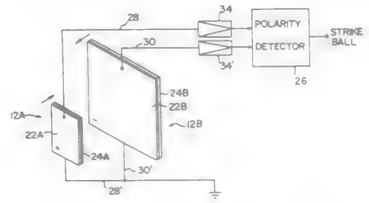
means for selectively driving said first and second input electrode sets such that at least one of said first and second input electrode sets can be driven independently of the other.

5,336,959

IMPACT ZONE DETECTION DEVICE

Kyung-Tae Park, Berwyn, Pa., and Raymond F. Gastgeb, Doylestown, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 758,443, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 476,864, Feb. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 285,190, Dec. 16, 1988, abandoned. This application Dec. 11, 1992, Ser. No. 990,359
Int. Cl.[5] H01L *41/113*
U.S. Cl. 310—328 **5 Claims**



1. Apparatus for detecting the impact of an object in an impact area, at least a portion of the impact area comprising a plurality of impact zones, comprising:

(a) a plurality of transducers, each having a surface coextensive with one impact zone, each transducer including a layer of piezoelectric film having first and second surfaces, the first and second surfaces having opposite polarity; and

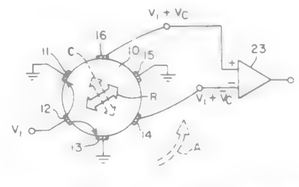
(b) signal processing means responsive to the transducers, adapted to detect electrical outputs from the transducers, thereby determining which impact zone, if any, is struck by the object, wherein the signal processing means includes means for detecting a time delay among electrical outputs from the plurality of transducers.

5,336,960

GYROSCOPE USING CIRCULAR ROD TYPE PIEZOELECTRIC VIBRATOR

Hiroshi Shimizu; Tetsuo Yoshida, and Chikara Mashiko, all of Sendai, Japan, assignors to Tokin Corporation and Hiroshi Shimizu, both of Miyagi, Japan

Continuation of Ser. No. 800,481, Nov. 29, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,963
Claims priority, application Japan, Nov. 29, 1990, 2-335987; Jan. 25, 1991, 3-023844; Feb. 27, 1991, 3-053721
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—369 **24 Claims**



1. A piezoelectric vibrator for use in a gyroscope, comprising:

a circular rod formed of a piezoelectric material, said circular rod having a circular cylindrical outer surface and a central axis extending along a longitudinal direction of said circular rod;

said circular rod being simultaneously bendable and vibratable in any preselected radial direction at a resonant frequency thereof;

a plurality of elongated electrodes formed on said outer surface of said circular rod, said plurality of elongated electrodes being formed in parallel with each other and extending in the direction of said central axis of said circular rod;

said circular rod being polarized by said plurality of elongated electrodes in a direction away from a particular odd-numbered one of said plurality of elongated electrodes and in a direction away from at least one other odd-numbered one of said plurality of elongated electrodes, when counted in a direction away from said particular odd-numbered one of said plurality of elongated electrodes, and in a direction toward at least a given even-numbered one of said plurality of elongated electrodes, when counted in said direction away from said particular odd-numbered one of said plurality of elongated electrodes, said at least a given even-numbered one of said plurality of elongated electrodes being positioned adjacent to at least one odd-numbered one of said plurality of elongated electrodes, including said particular odd-numbered one of said plurality of elongated electrodes;

at least two of said plurality of elongated electrodes also being input electrodes for receiving a driving signal, said driving signal having a frequency corresponding to said resonant frequency, for vibrating said circular rod in a predetermined diametric direction and for simultaneously bending and vibrating said circular rod in said preselected radial direction; and

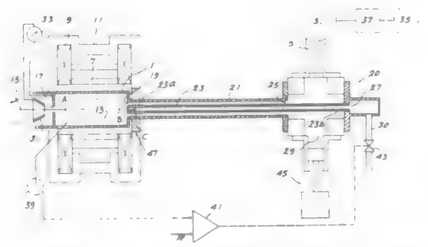
at least two of said plurality of elongated electrodes also being output electrodes for providing output signals, said output electrodes being those ones of said plurality of elongated electrodes that are positioned symmetrically with respect to said predetermined diametric direction, said output signals being formed by vibrations caused by a Coriolis' force generated by a rotation of said circular rod at a rotational speed.

5,336,961

SOURCE OF IONS WITH ELECTRONIC CYCLOTRONIC RESONANCE

Bernard Jacquot, Novy-Chevrieres, and Marc Delaunay, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 1, 1992, Ser. No. 877,544
Claims priority, application France, May 14, 1991, 91 05803
Int. Cl.[5] H01J *1/50;* **H05H** *1/02*
U.S. Cl. 313—153 **3 Claims**



1. A source of ions with electronic cyclotronic resonance comprising, in combination,:

a chamber containing a plasma of ions and electrons formed by electronic cyclotronic resonance;

a magnetic structure comprising an outer armouring, said structure surrounding the chamber and creating inside the latter two radial and axial magnetic fields ensuring a confinement of the plasma inside the chamber;

a transition cavity connected to an electromagnetic wave generator; and

a first and a second dielectric pipe connecting the chamber and the cavity, the second pipe comprising a transparent portion opposite the armouring in which a resonance is produced at a specific point,

wherein the source of ions comprises means for moving the resonance point so as to optimally adjust the position of said resonance point in the second dielectric pipe, wherein the means for moving the resonance point comprises a tubular piece comprising, on its external peripheral portion, a threading so as to form, along with the armouring, a screw/nut system, said tubular piece being placed around the second pipe at the level of the transparent portion, said piece being translatably parallel to the pipes.

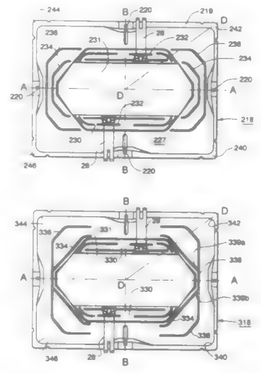
5,336,962

CATHODE-RAY TUBE HAVING INTERNAL MAGNETIC SHIELD WITH STRENGTHENING RIBS

Raymond E. Keller, Clarks Summit, Pa., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jul. 6, 1992, Ser. No. 909,522
Int. Cl.[5] H01J *29/06*
U.S. Cl. 313—402 **8 Claims**

1. In a color cathode-ray tube having a rectangular faceplate panel with a major axis and a minor axis and a viewing screen on an internal surface thereof, said panel being sealed to a funnel along an edge of a sidewall of said panel, a color selection electrode assembly being spaced from said screen and attached to said sidewall of said panel, an internal magnetic shield having a substantially rectangular base with four corners secured to said color selection electrode assembly and a flange circumscribing an aperture with a substantially continuous shield sidewall extending between said base and said flange, said shield sidewall being directed along an inner surface of said funnel, the improvement comprising said shield sidewall



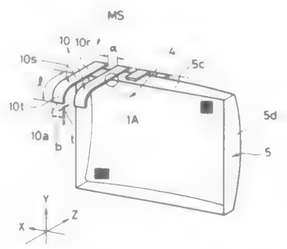
having two pairs of strengthening ribs formed in opposite sides thereof, said ribs being substantially parallel to the minor axis of said panel and in proximity to said flange, at least one rib extending around two adjacent corners of said shield sidewall.

5,336,963

COLOR CATHODE-RAY TUBE

Akira Haga, Sendai; Hiroshi Nasuno, Kurihara, and Takeo Fujimura, Nagaokakyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Tohoku Gakuin University, Sendai, both of Japan

Continuation of Ser. No. 892,589, Jun. 3, 1992, abandoned. This application Oct. 22, 1993, Ser. No. 140,711
Claims priority, application Japan, Jun. 11, 1991, 3-138728
Int. Cl.[5] H01J *29/07*
U.S. Cl. 313—402 **20 Claims**



1. A color cathode-ray tube comprising:

an envelope having a generally rectangular front panel;

a phosphor screen provided on an inner surface of said front panel;

a shadow mask positioned to face said phosphor screen and having apertures for passage of an electron beam;

an electron gun positioned to face the phosphor screen and emitting an electron beam toward the shadow mask;

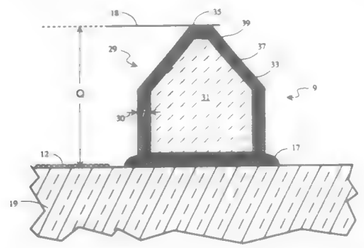
a frame for reinforcing the periphery of the shadow mask and fixing the shadow mask with respect to the inner surface of said front panel; and

a magnetic shield comprising a plurality of strips of a magnetic material each of the strips having a first end fixed to said frame and a second end disposed closer to said electron gun;

VOL 1165 ISS 2 AG 9 1994 UMI

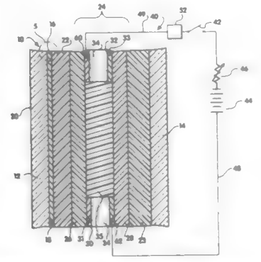
wherein said second end of each of the strips is not in contact with a high-permeability magnetic member.

5,336,964
CRT TENSION MASK SUPPORT STRUCTURE
Raymond G. Capek, Elmhurst; Siegfried M. Greiner, Crystal Lake, and Hua S. Tong, Arlington Heights, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Aug. 24, 1992, Ser. No. 934,596
Int. Cl.[5] H01J *29/81*
U.S. Cl. 313—407 **6 Claims**



1. A front panel assembly for a color CRT comprising;
a) a glass panel adapted to be affixed to a CRT funnel;
b) a phosphor screen adhered to a surface of the glass panel;
c) a discrete mask support structure affixed to the panel and bounding the screen, the mask support structure comprising:
1) an inert substrate of near net shape to the desired mask support structure;
2) a layer of electrically conductive material adhered to the substrate;
3) a layer of weldable plating adhered to the layer of conductive material, the layer of weldable plating being substantially in the range of forty to one hundred twenty microns thickness to accept a direct weld capable of retaining the shadow mask in tension thereon,
d) a tensed foil shadow mask directly welded to the plating of the mask support structure.

5,336,965
SOLAR LOAD REDUCTION GLAZING UNIT WITH ELECTROLUMINESCENT ELEMENT
John H. Meyer, Milford, and Kenneth J. Gajewski, Woodhaven, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 21, 1990, Ser. No. 632,212
Int. Cl.[5] H05B *33/22*
U.S. Cl. 313—498 **10 Claims**



1. A laminated glazing unit having an area substantially transparent to visible light, comprising:
a first ply which is substantially transparent; and
electroluminescent means coupled to the first ply comprising first and second flexible, substantially inextensible polymer layers, each having an inward surface facing the other, first and second electrodes and a layer of electroluminescent material between the electrodes, the electroluminescent material being controllably switchable to a condition in which it generates visible light by selectively passing electrical current through the electrodes, the first and second electrodes, at least one of which is substantially transparent to visible light, being on the inward surface of the first and second polymer layers, respectively, and substantially coextensive with the layer of electroluminescent material, the layer of electroluminescent material being sandwiched between the electrodes.

5,336,966
4-LAYER STRUCTURE REFLECTION TYPE PHOTOCATHODE AND PHOTOMULTIPLIER USING THE SAME
Kiyoshi Nakatsugawa; Kazuyoshi Oguri; Hiroyuki Onda, and Hiroyuki Watanabe, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan
Filed Sep. 11, 1992, Ser. No. 943,524
Claims priority, application Japan, Sep. 11, 1991, 3-231938
Int. Cl.[5] H01J *1/34, 43/08*
U.S. Cl. 313—532 **12 Claims**

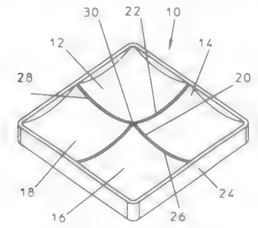


1. A reflection type photocathode for use in a photomultiplier tube, comprising:
a substrate
a first layer containing chromium as a major component and being deposited over said substrate;
a second layer containing aluminum as a major component and being deposited over said first layer; and
a third layer containing antimony and at least one kind of alkaline metal and being deposited over said second layer.

5,336,967
STRUCTURE FOR A MULTIPLE SECTION PHOTOMULTIPLIER TUBE
Charles M. Tomasetti, Leola; Fred A. Helvy, and Donald B. Kaiser, both of Lancaster, all of Pa., assignors to Burle Technologies, Inc., Wilmington, Del.
Filed Jun. 22, 1992, Ser. No. 902,361
Int. Cl.[5] H01J *40/06, 40/16, 43/18*
U.S. Cl. 313—533 **7 Claims**

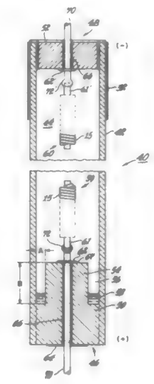
1. An internal structure for a multiple section photomultiplier tube comprising:
a faceplate with its surface internal to the tube including at least two photocathodes;
at least two dynodes operating as part of at least two electron multipliers located within the tube;
separator electrodes located adjacent to the photocathodes and in the region between the photocathodes and the dynodes, and dividing the region adjacent to the photocathodes into the same number of individual spatial sections as there are photocathodes; and

divider means attached to the faceplate, the divider means separating the faceplate into individual isolated photo-



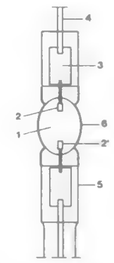
cathodes and serving as a means for engaging the separator electrodes with the faceplate.

5,336,968
DC OPERATED SODIUM VAPOR LAMP
Jack M. Strok, Garrettsville; Rolf S. Bergman, Cleveland Heights, and John H. Ingold, Bratenahl, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Jun. 30, 1992, Ser. No. 906,802
Int. Cl.[5] H01J *61/22, 61/34*
U.S. Cl. 313—571 **15 Claims**



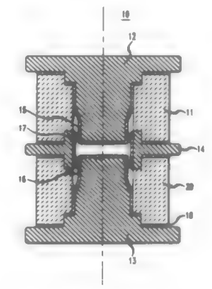
10. A DC operated HPS metal vapor arc discharge lamp comprising an elongated, light-transmissive arc chamber containing an amalgam of mercury and sodium having a sodium content of at least 20 wt % along with a starting gas and having an electrode sealed in each end to form an anode end and a cathode end with the temperature of said cathode end at least 50° C. higher than the temperature at said anode end during operation of said lamp and a cathode to anode sodium metal pressure ratio no greater than 5 during operation of said lamp.

5,336,969
HIGHLY THERMALLY LOADED ELECTRIC LAMP WITH REDUCED UV LIGHT EMISSION, AND METHOD OF ITS MANUFACTURE
Werner Weiss, Stadtbergen, and Manfred Deisenhofer, Unterschoeneberg, both of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft Fuer Elektrische Gluehlampen MBH, Munich, Fed. Rep. of Germany
Filed Jun. 9, 1992, Ser. No. 895,945
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1991, 4120797
Int. Cl.[5] H01K *1/26*
U.S. Cl. 313—580 **16 Claims**



1. Electric lamp having a bulb (**1**) of quartz glass;
light emitting means (**2, 2', 20**) within said bulb, said light emitting means, in operation, generating heat; and
an ultraviolet (UV) absorbing coating (**6**) on the quartz glass, wherein, in accordance with the invention,
the UV absorbing coating (**6**) comprises a glaze which includes, as a major or equal constituent, cerium fluoride (CeF_3) and, as an equal or minor constituent, a mixture of aluminum trioxide, (Al_2O_3) and silicon dioxide (SiO_2) ($Al_2O_3{\cdot}SiO_2$).

5,336,970
GAS TUBE PROTECTOR
Itamar B. Einbinder, Overland Park, Kans., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 813,553, Dec. 26, 1991, abandoned. This application Nov. 17, 1993, Ser. No. 153,832
Int. Cl.[5] H01J *61/06;* **H02H** *9/06*
U.S. Cl. 313—631 **7 Claims**



1. A gas tube protector comprising:
an insulating housing;
a pair of electrodes mounted within the housing so as to form a spark gap therebetween; and
a coating formed on a surface of at least one electrode adjacent to the gap, said coating comprising both barium

VOL 1165 ISS 2 AG 9 1994 UMI

titanate and titanium in its final form and a glass thermionic composition.

5,336,971

ELECTRODELESS LOW-PRESSURE SODIUM VAPOR DISCHARGE LAMP HAVING A DISCHARGE VESSEL OF IMPROVED CONSTRUCTION

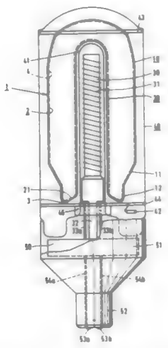
Adrianus J. A. Vermeulen, and Robert J. Pet, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1992, Ser. No. 891,304

Claims priority, application European Pat. Off., May 30, 1991, 91201298.6

Int. Cl.[5] H01J *61/00*

U.S. Cl. 313—635 **3 Claims**



1. An electrodeless low-pressure sodium vapour discharge lamp having

a discharge vessel which is closed in a vacuumtight manner, has an internal surface, and contains a filling comprising sodium vapour and rare gas, which discharge vessel comprises an enveloping part and a sunken part, which parts are interconnected at a first end of the discharge vessel,

a body of soft magnetic material which is surrounded by an electric coil and which is provided together with said coil in the sunken part of the discharge vessel,

an evacuated outer bulb in which the discharge vessel is accommodated, wherein the improvement comprises that the internal surface of the discharge vessel has a layer of borate glass, of which at least the borate glass covering the sunken part is sintered.

5,336,972

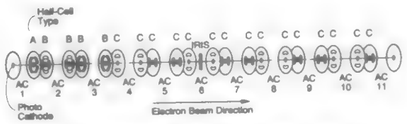
HIGH BRIGHTNESS ELECTRON ACCELERATOR

Richard L. Sheffield; Bruce E. Carlsten, and Lloyd M. Young, all of Los Alamos, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1992, Ser. No. 914,327

Int. Cl.[5] H05H *9/00*

U.S. Cl. 315—5.41 **7 Claims**



1. A linear accelerator, using an exciting energy at an rf frequency to produce an alternating magnetic field for accelerating along an axial beam direction electrons emitted from a photocathode source, comprising:

a first plurality of accelerating cavities aligned along said axial beam direction and serially connected for accelerating said electrons from said source to a relativistic velocity, each one of said first plurality of cavities having end walls with four coupling slots aligned for passing said alternating magnetic field therethrough, wherein none of said four coupling slots introduce a quadrupole lens effect on said electrons; and

a second plurality of accelerating cavities serially connected for receiving said electrons at said relativistic velocity from said first plurality of accelerating cavities, each one of said second plurality of cavities having end walls with two coupling slots, wherein said coupling slots are in a type-T configuration to define two quadrupole lens with a net quadrupole effect approaching zero;

wherein said exciting energy operatively connects said first and second plurality of accelerating cavities for accelerating said electrons.

5,336,973

SYSTEM MAKING IT POSSIBLE TO CONTROL THE SHAPE OF A CHARGED PARTICLE BEAM

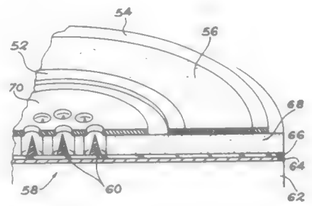
Thierry Leroux, Ips, and Christophe Py, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 31, 1992, Ser. No. 999,227

Claims priority, application France, Dec. 31, 1991, 9116401

Int. Cl.[5] H01J *29/46*

U.S. Cl. 315—14 **21 Claims**



1. A system for controlling the shape of a charged particle beam, emitted from a particle source (**32**, **70**, **80**, **82**), said source being associated with a collecting electrode for collecting these particles, said system comprising at least one resistive zone (**56**; **72**; **78**; **78***a*, **78***b*; **78***c*, **78***d*; **84**; **84***a*, **84***b*; **90***a*, **90***b*; **118**) and at least two control electrodes (**48**; **52**, **54**; **74**, **76**; **88**; **86**, **88***a* to **88***b*; **92**, **94**, **96**; **88**, **98**; **88**, **100**; **108**, **120**), said resistive zone and said control electrodes being arranged substantially at the same level as the source, said control electrodes also being placed on either side of the resistive zone and serving to polarize the latter, the electric resistance profile of the resistive zone being chosen so as to have a potential distribution making it possible to obtain the desired shape of the beam from the source, when the control electrodes are appropriately polarized.

5,336,974

HIGH-PRESSURE DISCHARGE LAMP

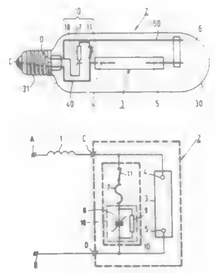
Gerardus M. J. F. Luijks, and Hubertus A. M. Coenen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1992, Ser. No. 988,621

Claims priority, application European Pat. Off., Dec. 23, 1991, 91203377.6

Int. Cl.[5] H01J *7/44*

U.S. Cl. 315—58 **15 Claims**



1. A high pressure discharge lamp, comprising:

a) an outer lamp envelope;

b) a discharge device within said outer envelope which is energizeable for emitting radiation including visible light;

c) means for supporting said discharge device within said outer lamp envelope and for connecting said discharge device to a source of electric potential outside of said lamp envelope; and

d) an igniter circuit within said outer lamp envelope electrically connected to said discharge device for igniting said discharge device, said igniter circuit comprising an integrated planar component comprising a planar, voltage dependent capacitor and a resistor electrically in parallel with said capacitor, said resistor being comprised by a ceramic substrate against said capacitor and a thick film resistive pattern on said substrate, said integrated component being arranged in said outer envelope with said thick film resistive pattern facing said discharge device and said capacitor facing away from said discharge device so that the radiation emitted by the discharge device impinges on the resistor and not directly on the capacitor.

5,336,975

CROSSED-FIELD PLASMA SWITCH WITH HIGH CURRENT DENSITY AXIALLY CORROGATED CATHODE

Dan M. Goebel, Tarzana; Robert L. Poeschel, Thousands Oaks, and Ronnie M. Watkins, Agoura, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 20, 1992, Ser. No. 963,792

Int. Cl.[5] H01J *7/24*

U.S. Cl. 315—111.41 **29 Claims**

1. A plasma switch, comprising:

a vacuum housing,

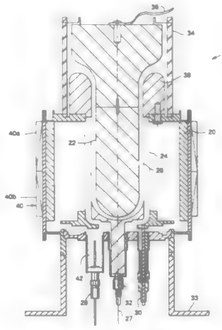
a generally cylindrical cold cathode within said housing providing a source of secondary electrons, the interior surface of said cathode comprising generally axially extending corrugations that project inward from an outer base surface and have rounded outer edges,

a generally cylindrical anode disposed coaxially inward of the cathode and having a diameter less than half the diameter of said cathode base surface,

a generally cylindrical source grid coaxially disposed between said anode and cathode,

means for introducing an ionizable gas into the space between the cathode and source grid, said cathode and source grid maintaining a plasma therebetween in response to a predetermined voltage differential between them,

a generally cylindrical control grid disposed between said source grid and anode for selectively enabling a plasma path between the cathode and anode, and thereby closing the switch, in response to a control voltage signal applied to the control grid, and



magnet means for producing a magnetic field that extends into the area between the cathode and source grid and, in cooperation with a predetermined voltage differential between said cathode and source grid, causes secondary electrons from said cathode to follow cycloidal orbits in said area that do not substantially enter said corrugations,

said axially corrugated cathode having a greater current density capability in said plasma switch than a cathode of similar diameter but with a smooth electron emitting surface.

5,336,976

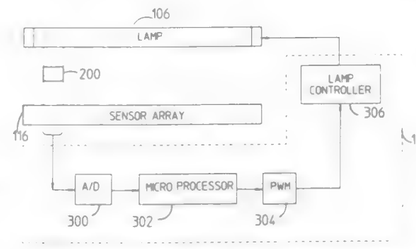
ILLUMINATION WARM-UP CONTROL IN A DOCUMENT SCANNER

Steven L. Webb, Loveland, and Kevin J. Youngers, Greeley, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 26, 1993, Ser. No. 54,649

Int. Cl.[5] H05B *41/39*; **G03B** *27/72*

U.S. Cl. 315—134 **4 Claims**



1. A method for determining when a scan in a document scanning device is initiated after initial application of power to a lamp, the method comprising the following steps:

a. applying electrical power to the lamp;

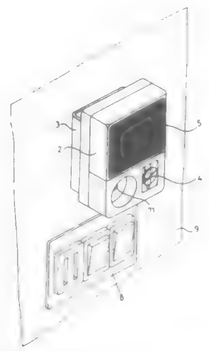
b. monitoring intensity of a particular portion of the lamp;

c. controlling power to the lamp to maintain the intensity of the particular portion of the lamp within a predetermined intensity range;

VOL 1165 ISS 2 AG 9 1994 UMI

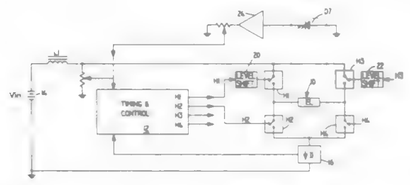
d. monitoring power to the lamp; and
e. initiating the scan by the scanning device if the intensity of the particular portion of the lamp is within the predetermined intensity range and if the power to the lamp is substantially constant for a predetermined amount of time.

5,336,977
EMERGENCY LIGHTING DEVICE
Ming-Chun Li, No. 16, Lane 1, Tang-Pei Rd., Chiao-Tou Hsiang, Kaohsiung Hsien, Taiwan
Filed May 18, 1993, Ser. No. 62,628
Int. Cl.[5] H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—159 3 Claims



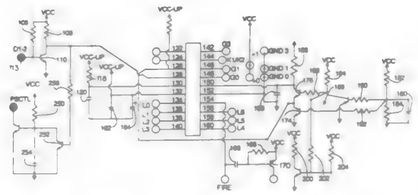
1. An emergency lighting device, comprising:
a hollow casing positioned adjacent to an electric outlet;
a magnetic field detecting unit disposed inside said casing, said detecting unit detecting the absence of a magnetic field from said electric outlet;
a lamp unit mounted operatively on said casing; and
a driving unit disposed inside said casing and connected electrically to said lamp unit and said detecting unit, said driving unit including a light-sensitive switch unit and being responsive to said detecting unit so as to activate said lamp unit only when said magnetic field from said electric outlet is absent and there is weak surrounding light.

5,336,978
DRIVE CIRCUIT FOR ELECTROLUMINESCENT LAMPS
David S. Alessio, 10 Buckley La., Prospect, Conn. 06712
Filed Nov. 18, 1991, Ser. No. 793,847
Int. Cl.[5] G09G *3/10*
U.S. Cl. 315—169.3 10 Claims



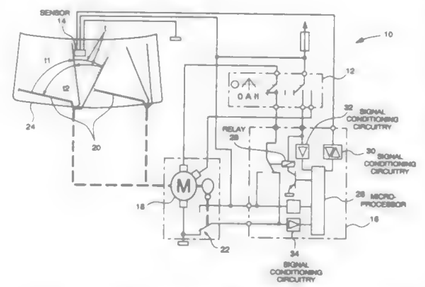
1. Apparatus for providing electrical power to a capacitive load comprising:
a source of direct current;
a first solid state switch device, said first switch device having first and second terminals and conductive and non-conductive states, a current flow path being established between said terminals when said switch device is in the conductive state, said first switch device being responsive to gating control signals for switching between said states;
a second solid state switch device, said second switch device having first and second terminals and conductive and non-conductive states, a current flow path being established between said terminals when said switch device is in the conductive state, said second switch device being responsive to gating control signals for switching between said states;
first connecting means for connecting a capacitive load between said first terminals of said first and second switch devices;
second connecting means for connecting said second terminals of said first and second switch devices to a first polarity terminal of said direct current source;
a third solid state switch device, said third switch device having first and second terminals and conductive and nonconductive states, a current flow path being established between said terminals when said switch device is in the conductive state, said third switch device being responsive to gating control signals for switching between said states;
fourth solid state switch device, said fourth switch device having first and second terminals and conductive and nonconductive states, a current flow path being established between said terminals when said switch device is in the conductive state, said fourth switch device being responsive to gating control signals for switching between said states;
third connecting means for connecting said second terminal of said third switch device to said first terminal of said first switch device;
fourth connecting means for connecting said second terminal of said fourth switch device to said first terminal of said second switch device;
fifth connecting means for connecting said first terminals of said third and fourth switch devices to a second polarity terminal of said direct current source, said fifth connecting means including an inductance;
means for sensing a parameter of said load and generating timing control signals commensurate therewith;
means for generating periodic gating control signals at first and second frequencies for said switch devices, said first frequency being greater than said second frequency, said first frequency gating control signals being applied to said first and second switch devices and said second frequency gating control signals being applied to said third and fourth switch devices whereby the conductive state of said switch devices will be controlled to cause current to alternately flow through said load in opposite directions, said load current also flowing through said fifth connecting means inductance, said gating control signal generating means including pulse width modulator means for varying the duration of at least said first frequency gating control signals; and
means for delivering said timing control signals to said pulse width modulator means of said gating control signal generating means.

5,336,979
MICROPROCESSOR BASED TOUCH DIMMER SYSTEM TO CONTROL THE BRIGHTNESS OF ONE OR MORE ELECTRIC LAMPS USING SINGLE OR MULTI-KEY DEVICES
Douglas R. Watson, Sanford, Conn.; Lev Bogorad, Roosevelt Island, N.Y.; Albert Lombardi, LaGrangeville, N.Y.; Benjamin Neiger, Floral Park, N.Y.; Lester Rivera, Glendale, N.Y.; Joseph G. Justiniano, Bethpage, N.Y., and Zvi Aluma, Plainview, N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Nov. 12, 1992, Ser. No. 975,371
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—362 20 Claims



1. A touch dimmer system comprising:
latching switch means comprising an input terminal, an output terminal, and a control terminal, said control terminal being adapted to have applied to it a switching signal for causing said switch means to permit current from an AC line voltage source to flow through said latching switch means during a sub-cycle of said AC line voltage, said current operating to brighten one or more lamps connected in series with said output terminal;
zero crossing circuit means for generating a zero crossing signal in response to zero crossing points of said AC line voltage source;
a microprocessor comprising a self-contained clock oscillator connected to said zero crossing circuit means to receive said signal therefrom, said microprocessor producing a triggering signal output based on its own operating clock oscillator frequency; key switch circuit means connected to said microprocessor, and said zero crossing signal;
output circuit means connected to said microprocessor to receive said triggering output signal therefrom and to thereupon generate said switching signal which is applied to said control terminal of said switching means;
power supply circuit means connected to said AC line current source and to said zero crossing circuit means, said power supply circuit means functioning to interrupt current flow through said latching switching means when voltage from said AC line voltage source reaches a certain level or when a predetermined time has elapsed since the most recent of said zero crossing points of said AC line voltage source; and
one or more respective dimmer key switches for setting various lamp brightness levels and for turning said one or more lamps on or off; and comprising
said key switch circuit means connected to said key switches and to said microprocessor for indicating the state of said respective dimmer key switches to said microprocessor.

5,336,980
APPARATUS AND METHOD FOR CONTROLLING A WINDSHIELD WIPING SYSTEM
Juergen Levers, Bochum, Fed. Rep. of Germany, assignor to Leopold Kostal GmbH & Co., Fed. Rep. of Germany
Filed Dec. 10, 1992, Ser. No. 989,052
Int. Cl.[5] H02P *1/04*
U.S. Cl. 318—444 16 Claims



1. An apparatus for controlling a vehicular windshield wiping system including a motor and at least one windshield wiper, the apparatus including a sensor mounted to the windshield for monitoring a portion of the windshield wiped by the wiper during each wipe cycle, the sensor generating a signal having a value which varies as a coating collects on the monitored portion, the wiping system being activated when the sensor value crosses a switch-on threshold such that the at least one wiper leaves a resting position and wipes the windshield, passing over the monitored portion of the windshield at least once during each wipe cycle, the apparatus further comprising:
detecting means for determining when the at least one wiper passes over the monitored portion of the windshield for the last time during a first wipe cycle; and
means for controlling the windshield wiping system based on the sensor value generated only after determining when the wiper passes over the monitored portion of the windshield for the last time during the first wipe cycle.

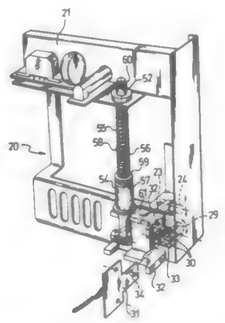
5,336,981
CONTROL UNIT FOR AN ELECTRIC DRIVE MOTOR OF INDUSTRIAL PROCESSING MACHINERY
Alessandro Zorzolo, Vigevano-Pavia, Italy, assignor to Comelz S.p.A., Vigevano-Pavia, Italy
Filed Mar. 19, 1992, Ser. No. 853,932
Claims priority, application European Pat. Off., Mar. 27, 1991, 91830119.3
Int. Cl.[5] D05B *69/06*
U.S. Cl. 318—551 8 Claims

1. A control unit for an electric drive motor of industrial processing machinery, comprising a control arrangement operating a sensor device effective to drive the electric motor consistently with the setting of the control arrangement, characterized in that said control arrangement is adapted to move a stem along an axial direction, said stem is slidable across a bearing structure, said stem is mounted with a plurality of spiral springs disposed sequentially thereon, said springs elastically opposing the sliding movement of the stem and having different degrees of stiffness from one another to resist the sliding movement of the stem along different sections of the stem travel stroke.

2. A control unit for an electric drive motor of industrial processing machinery, comprising a control arrangement effective to move a magnetic flux generating means and a Hall effect sensor swept by said magnetic flux generating means relatively to each other, thereby the Hall effect sensor will

VOL 1165 ISS 2 AG 9 1994 UMI

output an electrical signal which varies consistently with the position of the control arrangement and drives the electric motor accordingly, characterized in that the magnetic flux generating means and the Hall effect sensor are moved relatively to each other of rotary motion, and wherein said magnetic flux generating means comprises a pair of oppositely located magnets, having opposite poles facing each other, wherebetween the Hall effect sensor is disposed, and further comprising a bearing structure whereon a shaft is journalled which is driven rotatively by said control arrangement, made fast with said shaft there being a substantially C-shaped member of a ferromagnetic material whose opposed wings have said magnets mounted thereto.



7. A control unit for an electric drive motor of industrial processing machinery, comprising a control arrangement effective to move a magnetic flux generating means and a Hall effect sensor swept by said magnetic flux generating means relatively to each other, thereby the Hall effect sensor will output an electrical signal which varies consistently with the position of the control arrangement and drives the electric motor accordingly, characterized in that the magnetic flux generating means and the Hall effect sensor are moved relatively to each other of rotary motion, and wherein the Hall effect sensor drives an electric motor provided with an electromagnetic clutch and an electromagnetic brake, through a microprocessor-type processing and control unit, and between the sensor and said unit there being interposed a variable resistor and an adjustable gain amplifier.

5,336,982

DUAL-ARM GENERALIZED COMPLIANT MOTION WITH SHARED CONTROL

Paul G. Backes, La Crescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 24, 1993, Ser. No. 34,608
Int. Cl.[5] G05B *19/18*
U.S. Cl. 318—568.22 44 Claims

1. A multiple arm generalized compliant motion robot control system for governing a robot comprising dual multi-joint robot arms handling an object with both of said arms, comprising:

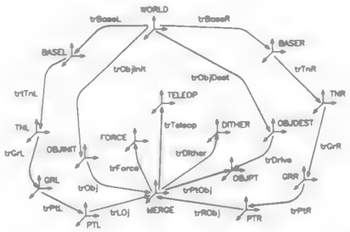
means for defining plural input parameters governing plural respective behaviors to be exhibited by the robot in respective behavior spaces simultaneously;

a move-squeeze decomposition processor means for computing actual move and squeeze decomposition forces based upon current robot force sensor outputs;

compliant motion processor means for transforming plural object position perturbations of said plural behaviors from the respective behavior spaces to a common space, and computing a relative transformation to a behavior-commanded object position in accordance with the object position perturbations of said plural behaviors;

kinematics processor means for updating a transformation to a current commanded object position based upon the relative transformation to the behavior-commanded object position;

multiple arm squeeze control processor means for computing, from appropriate squeeze force input parameters and



from actual squeeze forces for each of the arms, a squeeze control position perturbation for each of the arms, whereby to provide squeeze control; and

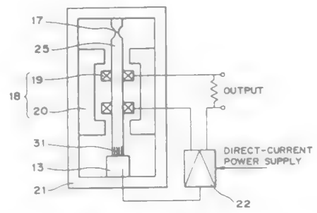
inverse kinematics processor means for computing, from the commanded object position transformation and from the squeeze control position perturbation, new robot arm grasp points, and for controlling respective joints of said robot arms in accordance with said new robot arm grasp points.

5,336,983

ACCELEROMETER AND ANGULAR ACCELEROMETER

Norito Watanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,306
Claims priority, application Japan, Jan. 31, 1992, 4-046267
Int. Cl.[5] G01P *15/13*
U.S. Cl. 318—651 14 Claims



10. An angular accelerometer for measuring an angular acceleration of a rotary member, comprising:

a displacing member mounted on said rotary member and having a displacing portion capable of being displaced relative to said rotary member at least in a direction of angular acceleration measurement in accordance with a rotational force applied;

a scale provided in one of said rotary member and said displacing portion to detect the rotational displacement in the direction of angular acceleration measurement; and

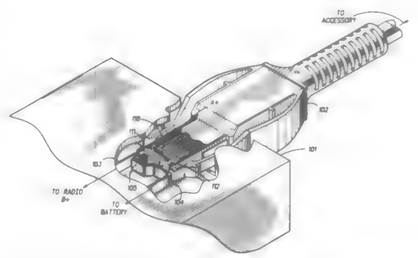
detecting means provided in the other one of said rotary member and said displacing portion than said scale to optically read the relative rotational displacement of said scale, the angular acceleration applied to said rotary member being detected by the reading of the relative rotational displacement of said scale by said detecting means during relative rotational displacing of said displacing portion.

5,336,984

ELECTRONIC DEVICE POWERING SYSTEM

Nicholas Mischenko, Mount Prospect, and Scott B. Davis, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 2, 1992, Ser. No. 939,336
Int. Cl.[5] H01R *13/703*
U.S. Cl. 320—2 3 Claims



1. An electronic device powering system, a first electronic device being powered by a second electronic device having a battery, electronic components, an internal powering mode, an external powering mode, and accepting external powering means, the electronic device powering system comprising:

a first flexible contact coupled to the battery;

a second contact coupled to the electronic components and coupled to the first flexible contact in the internal powering mode; and

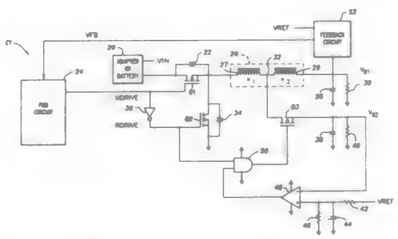
a third, flexible contact located in the external powering means, the third contact having a first protrusion portion coupled to the first flexible contact in the external powering mode and a second protrusion portion coupled to the second contact in the external powering mode, the first protrusion portion being less flexible than the second protrusion portion, thus forcing the first contact away from the second contact in the external powering mode.

5,336,985

TAPPED INDUCTOR SLAVE REGULATING CIRCUIT

Philip J. McKenzie, Houston, Tex., assignor to Compaq Computer Corp., Houston, Tex.

Filed Nov. 9, 1992, Ser. No. 973,267
Int. Cl.[5] G05F *1/56*
U.S. Cl. 323—266 8 Claims



1. A switching converter for providing a first output to a first load and a second output to a second load, comprising:

means for providing an unregulated DC voltage;

a storage inductor having a first end, a second end for coupling to the first load and for providing the first output, and a center tap;

a pulse width modulating means receiving a feedback signal for providing a square wave with variable duty cycle, wherein said duty cycle is determined by said feedback signal and wherein each cycle comprises a power phase followed by a freewheel phase;

a first switching means coupled to said unregulated DC voltage and said first end of said storage inductor and receiving said square wave from said pulse width modulating means, for coupling said unregulated DC voltage to said storage inductor during said power phase of each cycle, and for essentially isolating said storage inductor from said unregulated DC voltage and coupling said storage inductor first end to ground during said freewheel phase of each cycle;

a feedback circuit for coupling to the first output and providing said feedback signal indicative of the level of the first output; and

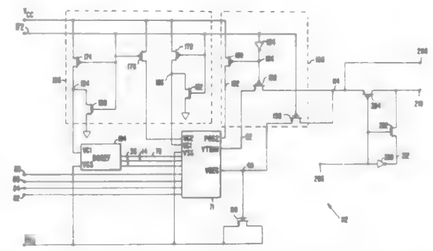
a second switching means having a control terminal receiving said square wave and a current path coupled between said center tap and the second output for providing the second output, wherein said second switching means current path is enabled during said freewheel phase and disabled during the power phase of each cycle.

5,336,986

VOLTAGE REGULATOR FOR FIELD PROGRAMMABLE GATE ARRAYS

Gary L. Allman, San Jose, Calif., assignor to Crosspoint Solutions, Inc., Santa Clara, Calif.

Filed Feb. 7, 1992, Ser. No. 831,211
Int. Cl.[5] G05F *1/59*
U.S. Cl. 323—268 7 Claims



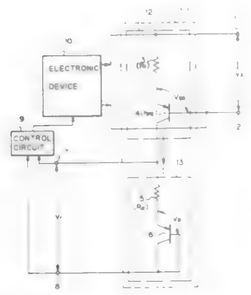
VOL 1165 ISS 2 AG 9 1994 UMI

a voltage detecting circuit, operatively connected to said output terminals of said electronic device, for detecting a control voltage in response to said output voltage; and

a control circuit, operatively connected between said voltage detecting circuit and said electronic device, for stabilizing, based on said control voltage, said output voltage of said electronic device;

said voltage detecting circuit including:

a first series circuit consisting of a first resistor and a first transistor connected in series, said first transistor having a first electrode connected through said first resistor to one of said output terminals, a base electrode connected to another one of said output terminals, and a second electrode; and



a second series circuit connected in series with said first series circuit and consisting of a second resistor and a second transistor connected in series, said second transistor being connected to function as a diode and having a third electrode connected through said second resistor to said second electrode of said first transistor; wherein

said control voltage is generated across said second series circuit by said second resistor and second transistor thereof and said first resistor and said second resistor have substantially the same resistances so that said control voltage is made to be substantially the same as said output voltage.

5,336,988

SCALAR S-PARAMETER TEST SET FOR NMR INSTRUMENTATION MEASUREMENTS

Thomas Chmielewski, Highland Heights; David A. Molyneaux, Willowick, and William O. Braum, Twinsburg, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Feb. 10, 1993, Ser. No. 16,042
Int. Cl.[5] G01R *33/00*
U.S. Cl. 324—76.19 **15 Claims**

1. An RF parameter test system comprising:

first and second connecting means for interconnection with first and second terminals of a radio frequency device to be tested;

a third connecting means for receiving an RF tracking signal;

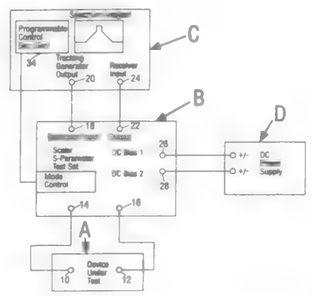
a fourth connecting means for providing an RF output signal to a spectrum analyzer means;

a switching means for selectively interconnecting the first, second, third, and fourth electrical connection means and a termination means such that:

in a first reflection mode, the first and third connection means are interconnected, the third and fourth connection means are interconnected, and the second connection means is connected with the termination means,

in a second reflection mode, the second and third connection means are interconnected, the third and fourth connection means are interconnected, and the first connection means is connected with the termination means,

in a transmission mode, the first and third connection means are electrically connected and the second and



fourth connection means are electrically interconnected;

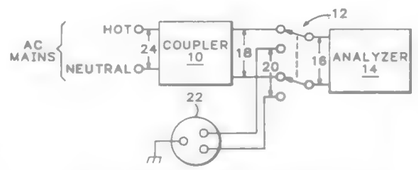
a mode selection means for selectively controlling the switching means to select among the first and second reflection modes and the transmission mode.

5,336,989

AC MAINS TEST APPARATUS AND METHOD

Bruce E. Hofer, Portland, Oreg., assignor to Audio Presicion, Beaverton, Oreg.

Filed Sep. 19, 1991, Ser. No. 762,917
Int. Cl.[5] G01R *13/20, 15/08*
U.S. Cl. 324—115 **12 Claims**



1. In an audio signal measurement instrument having an ac mains power input and a signal measurement input, a test circuit for measuring the electrical characteristics of an ac mains, comprising:

(a) switch means, having a first input for receiving an audio signal to be measured, a second input connected to said ac mains power input and an output connected to said signal measurement input, for selecting as an input to said signal measurement input either said audio signal to be measured or a signal representative of said ac mains; and

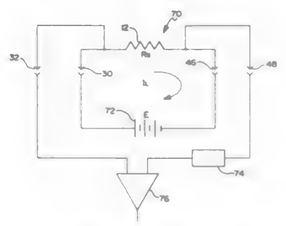
(b) coupler means, having an input connected to said ac mains power input and an output connected to said second input of said switch means, for coupling to said signal measurement input as said signal representative of said ac mains an attenuated portion of said ac mains.

5,336,990

ELECTRICAL TEST SHUNT HAVING DUAL CONTACT POINT MATING TERMINALS

H. Winston Mane, Farmington Hills, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Jan. 13, 1993, Ser. No. 2,854
Int. Cl.[5] G01R *27/08*
U.S. Cl. 324—126 **8 Claims**



1. A shunt for coupling to a circuit forming a first current loop within which an external load is disposed in a manner such that terminal resistances of the shunt do not significantly affect voltage measurements made by a voltage sensing apparatus when said shunt is coupled within said first current loop, said shunt comprising:

a shunt member having a main body portion and a plurality of terminals electrically coupled thereto;

said plurality of electrical terminals being operable to couple said main body portion to said first current loop to form a second current loop independent of said first current loop; and

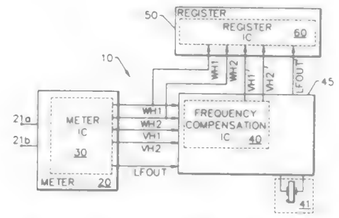
said terminals being further operable to enable an external voltage sensing apparatus to be coupled across said main body portion of said shunt such that said terminal resistances of said shunt do not significantly affect said measurements made by said voltage sensing apparatus.

5,336,991

APPARATUS AND METHOD FOR MEASURING ELECTRICAL ENERGY AND QUADERGY AND FOR PERFORMING LINE FREQUENCY COMPENSATION

Kenneth W. Atherton, Saco, Me.; Gerard Chevalier, Quebec City, Canada; Jokin Galletero, Bilbao, Spain; Donald F. Bullock, Madbury, N.H.; Curtis W. Crittenden, Dover, N.H.; David D. Elmore, Somersworth, N.H., and Warren R. Germer, Dover, N.H., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1993, Ser. No. 49,039
Int. Cl.[5] G01K *1/04*
U.S. Cl. 324—142 **25 Claims**



1. A meter for measuring electrical energy, comprising:

means for sensing a line voltage, a load current and a line frequency, during an energy measurement time interval;

means, electrically connected to said sensing means, for determining real load energy from the sensed line voltage and the sensed load current, during the energy measurement time interval;

means, electrically connected to said sensing means, for determining reactive load quadergy from the sensed line voltage and the sensed load current, during the energy measurement time interval; and

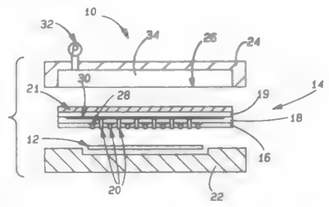
compensation means, connected to said real load energy determining means and said reactive load quadergy determining means, for adjusting the determined reactive load quadergy, based upon deviations between the sensed line frequency and a rated line frequency.

5,336,992

ON-WAFER INTEGRATED CIRCUIT ELECTRICAL TESTING

Yoshio Saito, Westchester; James C. Lau, Torrance; Steven S. Chan, Alhambra, and Richard P. Malmgren, Rancho Dominguez, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 3, 1992, Ser. No. 892,908
Int. Cl.[5] G01R *1/06, 31/02*
U.S. Cl. 324—754 **18 Claims**



1. An electrical testing device for testing integrated circuits on a wafer, said device comprising:

circuit means including a multilayer thin film test circuit fabricated in a flexible dielectric material, said test circuit having a plurality of conductive contacts extending therefrom for contacting contact points on circuitry on the wafer to be tested;

a dimensionally stable support material having a coefficient of thermal expansion substantially matching a coefficient of thermal expansion of said wafer located on top of said circuit means and directly above said contacts;

actuation means for forcibly contacting said support material so as to cause said conductive contacts to contact the contact points of the integrated circuit on said wafer; and

said circuit means having a plurality of conductive traces embedded within said flexible dielectric material, each of said traces being isolated therebetween and having said contacts connected thereto.

5,336,993

ASSEMBLY FOR TESTING RECTIFIERS AND REGULATORS OF AUTOMOTIVE ALTERNATORS

Richard E. Thomas, 47A Apple Tree La., Old Bridge, N.J. 08857, and Arthur R. Besozzi, 30-29 85th St., Jackson Heights, N.Y. 11370

Filed Sep. 9, 1992, Ser. No. 942,186
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—158.1 **22 Claims**

1. A testing assembly for testing regulators and rectifiers of alternators, comprising:

a) a drive alternator to be spun by an alternator tester including a dual-conductor wire in place of a regulator and a triple-conductor wire in place of a rectifier, wherein said dual-conductor wire is connected to a modified brush assembly of the drive alternator and wherein said triple-conductor wire is connected to the stator of the drive alternator;

VOL 1165 ISS 2 AG 9 1994 UMI

b) a test board including a regulator test station for receiving and testing a regulator, a rectifier test station for receiving and testing a rectifier, said dual-conductor wire for connection to a brush/test board connector, and said triple-conductor wire for connection to a stator/test board connector;

c) said regulator test station including regulator clamping means for clamping a test regulator to be tested to said regulator test station, regulator mounting means for mounting said test regulator on said regulator test station, and regulator electrical contact means for electrical contact with said test regulator; and

d) said rectifier test station including rectifier clamping means for clamping a test rectifier to be tested to said rectifier test station, heat sink means for contacting said test rectifier, rectifier mounting means for mounting said test rectifier on said rectifier test station, and rectifier electrical contact means for electrical contact with said test rectifier.

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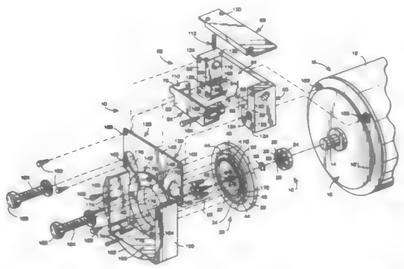
MAGNETO-RESISTIVE TACHOMETER ASSEMBLY WITH REVERSIBLE COVER AND RELATED METHOD

Neil C. Griffen, Westerville, and Mark Ayzenberg, Columbus, both of Ohio, assignors to Lake Shore Cryotronics, Inc., Westerville, Ohio

Filed Nov. 20, 1992, Ser. No. 979,655

Int. Cl.[5] G01R *1/00;* **H01S** *4/00;* **B65D** *81/00*

U.S. Cl. 324—174 **31 Claims**



1. A tachometer assembly comprising a sensor module assembly; a magnetic drum assembly; and a cover supporting said sensor module assembly and said magnetic drum in predetermined radial alignment with each other in a first orientation of said cover; said cover adapted to partially enclose and protect said sensor module assembly and said magnetic drum assembly in a second orientation reversed relative to said first orientation.

5,336,995

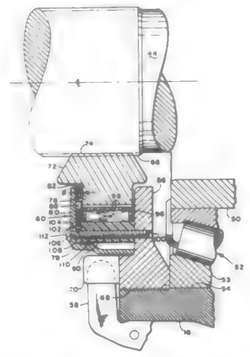
ANNULAR SPEED SENSOR WITH STRAIN RELIEF

LaVerne A. Caron, Kalamazoo, Mich., assignor to Eaton Corporati, Cleveland, Ohio

Continuation-in-part of Ser. No. 622,108, Dec. 3, 1990, Pat. No. 5,227,719, which is a continuation-in-part of Ser. No. 578,383, Sep. 7, 1990, abandoned. This application Nov. 23, 1992, Ser. No. 980,038

Int. Cl.[5] G01P *3/48, 3/54;* **F16D** *1/00*

U.S. Cl. 324—174 **2 Claims**



1. An annular rotational speed sensor assembly for sensing the rotational speed of a shaft passing through a bore in a fixed ferromagnetic member, said assembly comprising a ferromagnetic rotor mountable to said shaft for rotation therewith, a first annular array of teeth extending from said rotor, an annular ferromagnetic stator mountable to said ferromagnetic member and defining a second annular array of teeth to define an air gap therebetween, a substantially annular magnet and a coil with an annular retainer member having a plurality of fasteners received therethrough for retaining said stator on said fixed member; the improvement characterized in that said retaining member has portions thereof relieved about each of said fasteners to permit localized deflection of said retaining member in the region of each of said fasteners; and, said stator has voids formed therein to accommodate said localized deflection.

5,336,996

HALL EFFECT MONITORING OF WEAR OF BEARING SUPPORTING A ROTOR WITHIN A STATIONARY HOUSING

Dennis M. Rusnak, Miamisburg, Ohio, assignor to The Duriron Company, Inc., Dayton, Ohio

Filed Aug. 21, 1992, Ser. No. 933,336

Int. Cl.[5] G01B *7/14;* **F04B** *51/00;* **G01M** *13/04;* **G01P** *3/487*

U.S. Cl. 324—207.2 **16 Claims**

1. An apparatus for monitoring a rotor within a stationary housing including bearing means for mounting said rotor for rotation about a rotor axis, said apparatus comprising:

at least one magnet mounted about the circumference of said rotor;

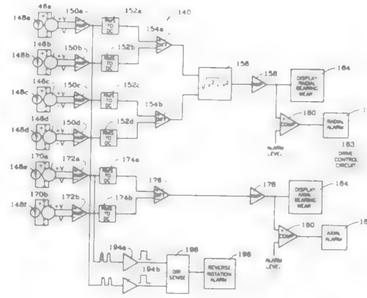
first radial hall effect means fixedly mounted in said housing radially adjacent to the circumference of said rotor for sensing magnetic flux density as said at least one magnet passes thereby and for generating a first distance signal representative of the distance separating said first radial hall effect means and said rotor in response to said magnetic flux density;

second radial hall effect means fixedly mounted in said housing radially adjacent to the circumference of said rotor for sensing magnetic flux density as said at least one magnet passes thereby and for generating a second distance signal representative of the distance separating said second radial hall effect means and said rotor in response to said magnetic flux density;

third radial hall effect means fixedly mounted in said housing radially adjacent to the circumference of said rotor for sensing magnetic flux density as said at least one magnet passes thereby and for generating a third distance signal representative of the distance separating said third radial hall effect means and said rotor in response to said magnetic flux density;

fourth radial hall effect means fixedly mounted in said housing radially adjacent to the circumference of said rotor for sensing magnetic flux density as said at least one magnet passes thereby and for generating a fourth distance signal representative of the distance separating said fourth radial hall effect means and said rotor in response to said magnetic flux density, said first, second, third and fourth radial hall effect means being spaced substantially equidistantly about a circumferential portion of said housing; and

signal comparison means for comparing said first and second distance signals to one another to generate a first comparison signal which is representative of the difference between the distance separating said first radial hall effect means and said rotor and the distance separating said second radial hall effect means and said rotor, for comparing said third and fourth distance signals to one another to generate a second comparison signal which is representative of the difference between the distance separating said third radial hall effect means and said rotor and the distance separating said fourth radial hall effect means and said rotor, said first comparison signal being representative of radial wear of said bearing means along a first axis which passes through said first and second radial hall effect means and said second comparison signal being representative of radial wear of said bearing means along a second axis which passes through said third and fourth radial hall effect means, said first and second axes being substantially perpendicular to one another and defining a plane which is substantially perpendicular to said rotor axis, said signal comparison means further generating a resultant wear signal indicative of resultant radial wear of said bearing means by taking the square root of the sum of the squares of said first and second comparison signals.



5,336,997

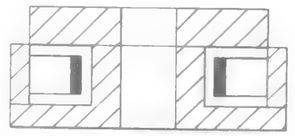
NON-SYMMETRICAL INDUCTIVE SENSORS HAVING FERRITE COIL GEOMETRIES WITH DIFFERENT TOP AND BASE GEOMETRIES

Kofi D. Anim-Appiah, Milwaukee, Wis.; Sedki M. Riad, and Shinzo Onishi, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Filed Sep. 21, 1992, Ser. No. 947,101

Int. Cl.[5] G01B *7/14;* **G01R** *33/00;* **H01F** *17/04;* **G01N** *27/72*

U.S. Cl. 324—207.16 **12 Claims**



1. A non-symmetrical ferrite core for use in an inductive sensor that concentrates and focuses a magnetic field produced by a current-carrying winding, said core comprising:

a disk shaped base portion;

a disk shaped top portion; and

an intermediate portion of reduced diameter to define a coil receiving location for receiving the current-carrying winding, said intermediate portion joining said base and top portions in a spaced essentially parallel relationship, said tip portion having a diameter equal to or less than the diameter of said base portion, and said base portion being thicker than said top portion.

5,336,998

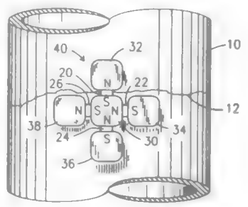
SENSOR FOR DETECTING FAULTS IN A MAGNETIZED FERROUS OBJECT USING HALL EFFECT ELEMENTS

Kenneth J. Watts, and Stephen A. Ingram, both of Birmingham, Ala., assignors to United States Pipe and Foundry Company, Birmingham, Ala.

Filed Jun. 22, 1992, Ser. No. 902,207

Int. Cl.[5] G01N *27/83;* **G01R** *33/06*

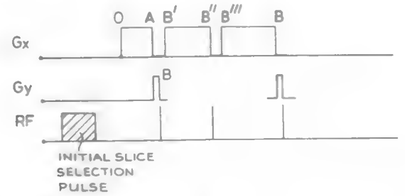
U.S. Cl. 324—235 **11 Claims**



1. A sensor for detecting faults in a magnetized ferrous object comprising a first sensing element and a second sensing element in which said first sensing element comprises a centrally located ferrite disc and two Hall Effect semiconductors, said Hall Effect semiconductors being affixed to opposite sides of said ferrite disc and in which said second sensing element comprises a centrally located ferrite disc and two Hall Effect semiconductors being affixed to opposite sides of said ferrite disc, said ferrite disc of said first sensing element and of said second sensing element being common to each of said elements, said first sensing element and said second sensing element being positioned at a right angle to each other, said first sensing element and said second sensing element emitting output signals upon detection of magnetic flux.

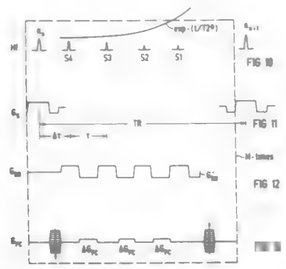
VOL 1165 ISS 2 AG 9 1994 UMI

5,336,999
ECHO PLANAR IMAGING USING 180 DEGREES PULSES
Peter Mansfield; David N. Guilfoyle, both of Nottingham, England, and Roger J. Ordidge, Detroit, Mich., assignors to British Technology Group Limited, London, England
Filed Mar. 6, 1992, Ser. No. 828,902
Claims priority, application United Kingdom, Aug. 8, 1989, 8911105.1
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 5 Claims



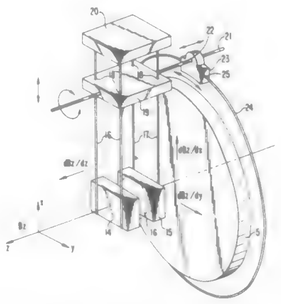
1. A method of producing a magnetic resonance image of an object by an echo planar imaging process in which the object is subjected to an initial slice selection procedure to define an active region of spin magnetisation, characterised in that the active region, during a data acquisition period, is further subjected to
a) a plurality of transverse spin inversion 180° RF pulses,
b) an amplitude modulated x gradient G_x, and
c) an amplitude modulated y gradient G_y in the form of short duration unipolar blips to produce an echo planar image of the object.

5,337,000
METHOD FOR FAST IMAGING IN NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY
Herbert Bruder, Hoechstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jun. 18, 1993, Ser. No. 78,107
Claims priority, application European Pat. Off., Jul. 3, 1992, 92111274.4
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 11 Claims



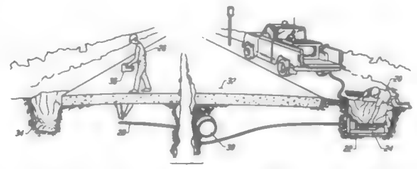
1. A method for operating a nuclear magnetic resonance tomography apparatus for the acquisition of nuclear magnetic resonance signals from an examination region of a subject, the subject containing nuclei having a prescribed spin lattice relaxation time, said method comprising the steps of:
(a) generating a uniform magnetic field in which said examination region is disposed and thereby aligning nuclear spins in said examination region in a prescribed direction;
(b) generating a radio-frequency pulse in said examination region for deflecting said nuclear spins from said prescribed direction by a prescribed flip angle of less than 90°;
(c) after each radio-frequency pulse, generating a read-out gradient having a plurality of sub-pulses of alternating polarity and thereby causing a nuclear magnetic resonance signal in the form of an echo to arise under each subpulse, and reading out at least a portion of said nuclear magnetic resonance signals;
(d) generating a phase-coding gradient in a direction perpendicular to the direction of said read-out gradient before each read-out gradient and thereby impressing respectively different phase information on each nuclear magnetic resonance signal which is read out;
(e) repeating steps (b) through (d) M times with the same flip angle, while maintaining a chronological spacing between successive radio-frequency pulses constant and shorter than said spin lattice relaxation time; and
(f) reconstructing an image of said examination region of said subject from said read-out nuclear magnetic resonance signals.

5,337,001
MAGNETIC FIELD GENERATING ASSEMBLY
Ian L. McDougall; Alan G. M. Armstrong, both of Oxon, and Robert C. Hawkes, Cambridgeshire, all of England, assignors to Oxford Medical Limited, Witney, England and E. I. Du Pont de Nemours & Company, Wilmington, Del.
PCT No. PCT/GB91/00663, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO91/17454, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 26, 1991, Ser. No. 941,430
Claims priority, application United Kingdom, Apr. 27, 1990, 9009577.9
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 10 Claims



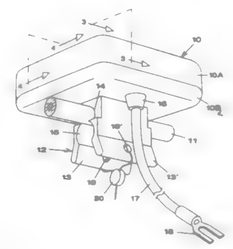
1. A magnetic field generating assembly for use in NMR apparatus, the assembly comprising:
a primary magnetic field generating means for generating magnetic flux in a direction defined by a primary magnetic field which is substantially homogeneous in a working region, the primary magnetic field generating means being constructed such that an object to be examined is introduced from outside the assembly into the working region in a direction transverse to the direction of magnetic flux through the working region; and
a gradient magnetic field generating means for imposing one or more magnetic field gradients through the working region, the gradient magnetic field generating means being movable relative to the primary magnetic field generating means for positioning locally to the position of an object to be examined in the working region; and
wherein the gradient magnetic field generating means is mounted to a support structure which is fixed relative to said primary magnetic field generating means and which enables the gradient magnetic field generating means to be moved in any one or more of three orthogonal directions relative to the working region.

5,337,002
LOCATOR DEVICE FOR CONTINUOUSLY LOCATING A DIPOLE MAGNETIC FIELD TRANSMITTER AND ITS METHOD OF OPERATION
John E. Mercer, 23401 94th Ave. South, Kent, Wash. 98031
Continuation-in-part of Ser. No. 662,939, Mar. 1, 1991, Pat. No. 5,155,442. This application Oct. 9, 1992, Ser. No. 958,941
Int. Cl.[5] G01V *3/11, 3/165;* H04B *13/02*
U.S. Cl. 324—326 16 Claims



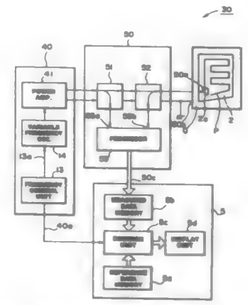
6. A locator for continuously locating a dipole magnetic field transmitter disposed beneath a generally horizontal surface, comprising:
a main housing defining a forward/rearward axis which extends in a horizontal direction during normal operation of the locator device;
first and second antennae capable of measuring the field strength of the signal transmitted by the transmitter and oriented orthogonally to each other, each of said antennae being carried by said housing in a vertical plane and at an angle of 45° to said forward/rearward axis during normal operation of the locator device;
processor means contained within said housing for generating a vector sum of the field strengths measured by the first and second antennae; and
display means contained within the housing for indicating the distance between the locator and the transmitter.

5,337,003
SELF-CONTAINED, CLIP-ON ENGINE OPERATING TIME LOG
Edward W. Carmichael, 4373 Sequoyah Rd., Oakland, Calif. 94605, and Robert B. Legge, 1465 Kring Way, Los Altos, Calif. 94024
Filed Dec. 28, 1992, Ser. No. 997,519
Int. Cl.[5] F02P *17/00;* G04F *8/00;* G04B *117/00*
U.S. Cl. 324—402 16 Claims



1. An engine operating time log for mounting onto an ignition wire of an engine having an electrical system, comprising:
a case made of a heat resistant material, so that said case can be conveniently located adjacent said engine, said case having an opening, said opening having a concentric tube extending inwardly into said case,
combination of sensing and mounting means extending rigidly from said case for mounting said case directly onto said ignition wire of said engine, said combination of sensing and mounting means being installable on said ignition wire by hand and without the need for tools, said combination member having an integral shaft extending into said opening of said case for rigidly mounting said combination member thereto, and
circuit means disposed within said case for monitoring an accumulated operating time of said engine, said circuit means being electrically connected to said combination of sensing and mounting means for sensing an electrical current in said ignition wire said circuit means including an electronic digital display visible through said case for displaying said accumulated operating time.

5,337,004
SYSTEM FOR INSPECTING ELECTRICALLY CONDUCTIVE PATTERNS SUCH AS ANTENNA PATTERNS ON WINDOW GLASS
Harunori Murakami, and Shobei Ohara, both of Toride, Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan
Filed Jul. 24, 1992, Ser. No. 919,532
Claims priority, application Japan, Jul. 24, 1991, 3-207336
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—505 2 Claims



1. A system for inspecting an inspection electrically conductive pattern on an insulative material, comprising:
an electrically conductive layer adapted to be spaced from the inspection electrically conductive pattern;
variable frequency signal supply means for successively supplying high-frequency signals in a predetermined range of frequencies to the electrically conductive pattern;
reflected signal measuring means for measuring means for measuring impedances with respect to reflected signals from the electrically conductive pattern; and
decision means for determining whether the electrically conductive pattern is acceptable, based on whether, with respect to a ratio between reflected signals and the high-frequency a frequency signals, a difference between the reference ratio with respect to a reference electrically conductive pattern and the inspection ratio with respect to the inspection electrically conductive pattern is less than a predetermined value.

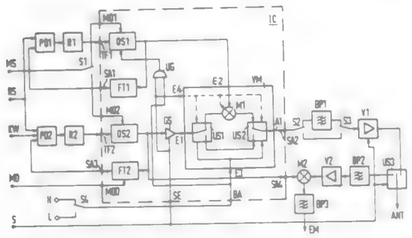
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,005

INTEGRATED FREQUENCY SYNTHESIZER CIRCUIT FOR TRANSMIT-AND-RECEIVER OPERATION

Josef Fenk, Eching/Ottenburg, and Volker Thomas, München, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 14, 1992, Ser. No. 931,040
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4126915
Int. Cl.[5] H03L *7/22*
U.S. Cl. 328—14 5 Claims



1. An integrated circuit, comprising:
a first oscillator having a frequency control input, a modulation input, a switch input, and a signal output;
a second oscillator having a frequency control input, a modulation input, and a signal output;
a controllable switch having a signal input connected to the signal output of said second oscillator, and having a signal output and a control input;
a modulator having two signal inputs each being coupled to the signal output of a respective one of said first oscillator and said controllable switch, and having a signal output;
at least one controllable reversing switch having two signal inputs each being connected to the signal output of a respective one of said modulator and said controllable switch, and having a signal output and a control input;
a controllable frequency divider having a signal input connected to the signal output of said second oscillator, and having a signal output and a control input;
two signal input terminals each being connected to the modulation input of a respective one of said oscillators, and two input terminals each being connected to the frequency control input of a respective one of said oscillators;
signal output terminals each being connected to the signal output of a respective one of said first oscillator, said at least one controllable reversing switch, said frequency divider, and said second oscillator; and
control terminals respectively connected to the control input of said frequency divider, to the control input of said controllable switch and the switch input of said first oscillator, and to the control input of said at least one controllable reversing switch.

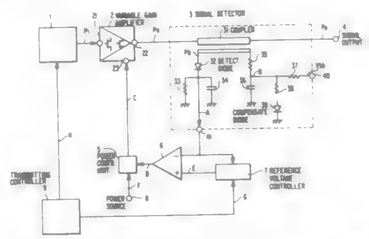
5,337,006

OUTPUT LEVEL CONTROL CIRCUIT FOR USE IN RF TRANSMITTER

Shinichi Miyazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 915,545
Claims priority, application Japan, Jul. 19, 1991, 3-179841
Int. Cl.[5] H03G *3/20*
U.S. Cl. 330—130 13 Claims

1. An output level control circuit for use in a radio-frequency transmitter, comprising:
variable gain amplifier means for amplifying an intermittently supplied radio-frequency input signal with a gain corresponding to a control signal to produce an amplified signal;
detector means having a detecting diode biased by a bias voltage, said detector means detecting the power level of said amplified signal and producing a detector output which is the sum of the detected power level and said bias voltage;



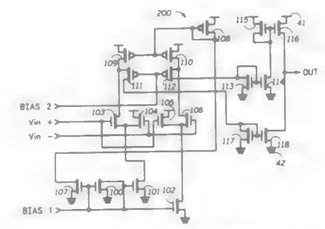
control signal generating means responsive to a difference between said detector output and a reference voltage for generating said control signal; and
reference voltage control means for generating said reference voltage by adding said bias voltage to an input reference voltage supplied in synchronism with the turning-on of said transmitting signal.

5,337,007

HIGH EFFICIENCY CLASS AB TRANSCONDUCTANCE AMPLIFIER

Raymond L. Barrett, Jr., Ft. Lauderdale, and Barry W. Herold, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1993, Ser. No. 147,235
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 6 Claims



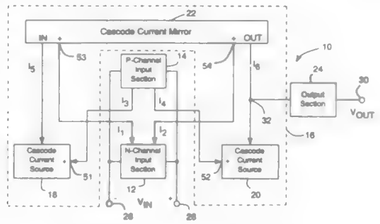
1. A class AB transconductance amplifier, comprising:
first and second differential input amplifier stages adapted for receiving first and second differential input signals;
first and second input cascode stages coupled to said first and second differential input amplifier stages for providing first and second differential folded cascode signals;
an output stage coupled to the first and second input cascode stages for providing an output signal indicative of a difference between the first and second differential input signals; and
a bias stage coupled to said first and second differential input amplifier stages and said first and second input cascode stages for biasing the first and second differential input amplifier stages to operate as a class AB folded cascode amplifier circuit, said bias stage generating class AB biasing signals.

5,337,008

HIGH GAIN RAIL-TO-RAIL CMOS AMPLIFIER

Rejeev Badyal, Corvallis, Oreg., assignor to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Feb. 25, 1993, Ser. No. 23,254
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 16 Claims



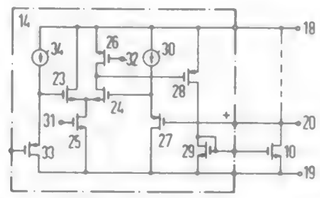
1. A CMOS amplifier circuit comprising:
a differential input and a single-ended output;
a P-channel input section having a differential input coupled to the differential input of the amplifier, and a differential output;
an N-channel input section having a differential input coupled to the differential input of the amplifier, and a differential output;
a cascode current mirror having an input, an output, and a pair of summing nodes coupled to the differential output of the N-channel input section;
a first cascode current source having an output coupled to the input of the cascode current mirror, and a summing node;
a second cascode current source having an output coupled to the output of the cascode current mirror, and a summing node, wherein the summing nodes of the first and second cascode current sources are coupled to the differential output of the P-channel input section; and
a rail-to-rail output section having an input coupled to the output of the cascode current mirror and an output coupled to the single-ended output of the amplifier, the rail-to-rail section including means for limiting the current through the output section.

5,337,009

ERROR AMPLIFIER

Rudolf Koch, Unterhaching, and Fritz Mistlberger, Moosburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 869,473, Apr. 15, 1992, abandoned.
This application Apr. 12, 1993, Ser. No. 46,124
Claims priority, application European Pat. Off., Apr. 16, 1991, 91106067.1
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 4 Claims



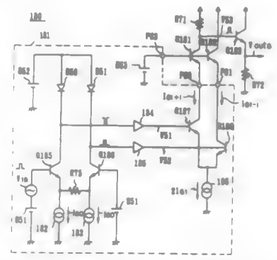
1. An error amplifier comprising: a first MOS transistor of one conduction type having a drain terminal connected to a first source potential, a gate terminal receiving a first input signal and a source terminal,
a second MOS transistor of the one conduction type having a gate terminal receiving a second input signal, a drain terminal and a source terminal,
a current source connected between a second source potential and the coupled source terminals of said first and second MOS transistors,
a load connected between the drain terminal of said second MOS transistor and the first source potential,
a third MOS transistor of the opposite conduction type having a source terminal connected to the first supply potential, a gate terminal connected to the drain terminal of said second MOS transistor and a drain terminal forming an output of the error amplifier; and
a fourth MOS transistor of the one conduction type having a drain terminal connected to the drain terminal of said third MOS transistor, a gate terminal connected to the drain terminal of said third MOS transistor and a source terminal connected to the second source potential.

5,337,010

WIDE-BAND AMPLIFIER APPARATUS

Seiichi Nishiyama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,667
Claims priority, application Japan, Jan. 31, 1992, 4-041923; Mar. 23, 1992, 4-095825
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—255 8 Claims



1. A wide-band amplifier circuit, comprising:
differential amplification means constructed of a first and a second transistors, collectors being connected to a first and a second output terminals each, and driven by an input voltage supplied to bases;
a third transistor provided externally of an integrated circuit with said differential amplification means mounted thereon, having the base connected to a direct current power terminal, and cascaded to said first transistor through said first output terminal;
a fourth transistor connected to said third transistor, and also cascaded to said second transistor through said second output terminal;
an external load resistance connected to a collector of said third transistor, and transforming a collector current supplied from said third transistor to said first transistor through said first output terminal into an output voltage; and
a load capacity parasitic on said first output terminal being driven by said collector current.

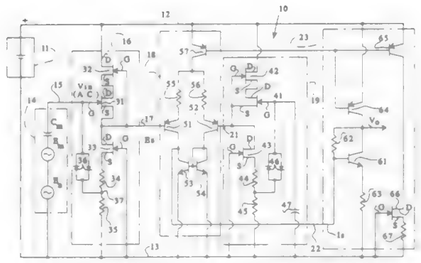
VOL 1165 ISS 2 AUG 9 1994 UMI

5,337,011

PRE-AMPLIFIER

John S. French, Arlington Heights, and Richard W. Peters, Algonquin, both of Ill., assignors to Knowles Electronics, Inc., Itasca, Ill.

Filed Dec. 14, 1992, Ser. No. 989,714
Int. Cl.[5] H03F 3/45
U.S. Cl. 330—258 11 Claims



1. A pre-amplifier for a small, low voltage, high impedance input signal source such as an electret microphone, adapted to use in a hearing aid or other application which requires minimal size, low noise, minimal power demand, and substantial independence from power supply variations, the pre-amplifier circuit comprising:

first and second D.C. power supply conductors of opposed relative polarity;

an input cascode stage comprising first and second field-effect transistors (FETs) interconnected with each other in a cascode amplifier circuit with the drain-source conduction path of the second FET connecting the drain electrode of the first FET to the first power supply conductor and the source electrode of the first FET connected to the gate of the second FET;

input connection means for applying an A.C. input signal from a high impedance source to the gate electrode of the first FET in the input cascode stage;

the input cascode stage further comprising a bias current circuit for the first FET, the bias current circuit including two small diodes connected in parallel with each other, in opposed polarities, between the gate electrode of the first FET and the second power supply conductor, and a bias resistance connected from the source electrode of the first FET to the second power supply conductor;

first connection means for deriving a first intermediate A.C. signal from the input cascode stage;

a balancing cascode stage, comprising first and second field-effect transistors (FETs) and bias current circuit means connected across the power supply conductors in a cascode amplifier circuit matched to the input cascode stage;

second connection means for deriving a second intermediate A.C. signal from the balancing cascode stage;

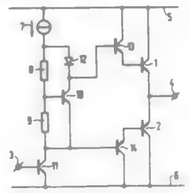
and a differential amplifier stage having first and second inputs respectively connected to the first and second connection means, for developing an A.C. pre-amplifier output signal representative of the differential between the first and second intermediate A.C. signals.

5,337,012

AMPLIFIER HAVING TEMPERATURE COMPENSATED BIAS CONTROL

Eise C. Dijkmans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 2, 1993, Ser. No. 25,302
Claims priority, application European Pat. Off., Mar. 18, 1992, 92200774.5
Int. Cl.[5] H03F 3/26
U.S. Cl. 330—266 14 Claims



1. An amplifier arrangement comprising a first and a second output transistor each having a base, a collector and an emitter, an input terminal an output terminal, a first and a second supply terminal, and a bias stage for generating a bias voltage between the bases of the first and the second output transistor, the bases of the first and the second output transistor being coupled to the input terminal, the collectors of the first and the second output transistor being coupled to the first and the second supply terminal, respectively, the emitters of the first and the second output transistor being coupled to the output terminal, the bias voltage having a negative thermal response, and an element of the bias stage being thermally coupled to the first and the second output transistor, wherein for generating the bias voltage the bias stage is adapted to generate a first voltage having a first negative thermal response by means of the element of the first bias stage and to generate a second voltage opposite to the first voltage and having a second negative thermal response, the bias voltage being equal to the sum of the first and the second voltage, the first voltage being larger in absolute value than the second voltage, the negative thermal response of the bias voltage being determined by the effect of the first and the second negative thermal response, and the first negative thermal response being larger in absolute value than the second negative thermal response.

5,337,013

METHOD AND APPARATUS FOR MONITORING THE OPERATION OF ELECTRICAL LOADS IN AN AUTOMOTIVE VEHICLE

Peter Langer, Troy; Karl W. Wojcik, Sterling Heights, and Todd A. Snover, Oak Park, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 10, 1992, Ser. No. 896,779
Int. Cl.[5] G01R 31/02
U.S. Cl. 324—537 14 Claims

1. An apparatus for monitoring the operation of a plurality of electrical loads in an automotive vehicle, the loads collectively requiring an output current from a power supply, the apparatus comprising:

single detecting means for detecting the output current and generating an output signal based on the output current, the single detecting means being serially connected to the power supply and the loads;

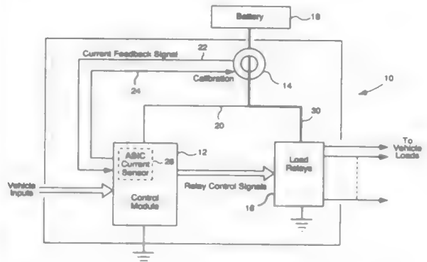
a plurality of devices, each of the devices selectively completing or breaking a current path from the power supply to its respective load in response to a control signal; and

control means coupled to the single detecting means and the plurality of devices, the control means including a memory for storing a plurality of delay values corresponding to electrical characteristics of the loads, the control means:

(1) receiving the output signal and an input signal corresponding to a first load;

(2) generating a first control signal in response to the input signal, a first one of the devices completing its corresponding current path at a given time in response to the first control signal, so that a change in the output current occurs;

(3) retrieving a first delay value corresponding to the first load from the memory in response to the input signal;



(4) detecting a change in the output signal corresponding to the change in the output current after a first time delay from the given time based on the first delay value; and

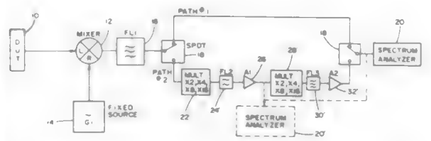
(5) generating a diagnostic signal in response to the change in the output signal, the diagnostic signal being related to an operating condition of the first load.

5,337,014

PHASE NOISE MEASUREMENTS UTILIZING A FREQUENCY DOWN CONVERSION/MULTIPLIER, DIRECT SPECTRUM MEASUREMENT TECHNIQUE

Esteban G. Najle, Orlando, Fla., and Robert M. Buckley, Medford, N.Y., assignors to Harris Corporation, Melbourne, Fla. and Advanced Testing Technologies, Inc., Commack, N.Y.

Continuation-in-part of Ser. No. 718,952, Jun. 21, 1991, Pat. No. 5,179,344. This application Dec. 24, 1992, Ser. No. 996,791
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] G01R 27/00
U.S. Cl. 324—613 16 Claims



1. A phase noise measuring circuit for measuring the noise a device under test, comprising:

a. a frequency mixer circuit, having a first input signal from a device under test and a second input signal from a reference stable oscillator having ultra low phase noise and a fixed center frequency, for mixing the first and second input signals to produce a down converted signal comprising the frequency difference signal of the first and second input signals;

b. a down converted signal lowpass filter for passing the down converted signal;

c. a frequency multiplier circuit, having the down converted signal as an input, for producing at its output a second harmonic signal, a fourth harmonic signal, an eighth harmonic signal, a sixteenth harmonic signal, and higher harmonic signals, of the down converted signal;

d. a narrow bandpass filter, coupled to the output of said frequency multiplier circuit, for passing to its output one of the second harmonic, fourth harmonic, eighth harmonic, sixteenth harmonic, or higher harmonic, signals of the frequency multiplier circuit;

e. an amplifier, coupled to the output of said narrow bandpass filter, for multiplying the output signal of the narrow bandpass filter and passing the amplified signal to its output; and

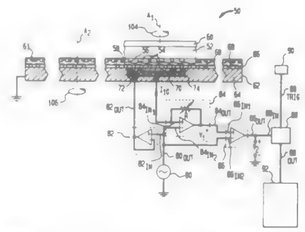
f. a direct approach spectrum analyzer, connected directly to said amplifier output, for analyzing the output signal of said amplifier to measure the phase noise of the device under test.

5,337,015

IN-SITU ENDPOINT DETECTION METHOD AND APPARATUS FOR CHEMICAL-MECHANICAL POLISHING USING LOW AMPLITUDE INPUT VOLTAGE

Naftali E. Lustig, Croton on Hudson; Randall M. Feenstra, Mt. Kisco, and William L. Guthrie, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 75,628
Int. Cl.[5] G01R 27/26
U.S. Cl. 324—671 21 Claims



1. An apparatus for monitoring the thickness of a dielectric film layer on a surface of a workpiece during polishing in a polishing machine, the polishing machine having an electrically grounded rotatable polishing table and further being provided with a conductive polishing slurry, said apparatus comprising:

a) a center electrode embedded within and electrically isolated from the polishing table of the polishing machine, said center electrode electrically contacting the workpiece via the conductive polishing slurry;

b) at least one guard electrode embedded within and electrically isolated from the polishing table of the polishing machine, said guard electrode being concentric with and surrounding said center electrode and further electrically contacting the workpiece via the conductive polishing slurry;

c) means for generating a sinusoidal voltage signal, said signal generating means providing an output signal on an output thereof, the output signal having a frequency in the range of 500 to 50,000 hertz and an amplitude of less than one-half volt;

d) a voltage follower having an input and an output, the voltage follower input being electrically connected to the output of said signal generating means and the voltage follower output being electrically connected to said guard electrode;

e) a current-to-voltage converter having first and second inputs and an output, the first input being electrically connected to said center electrode and the second input being electrically connected to the output of said signal generating means, said current-to-voltage converter for

VOL 1165 ISS 2 AG 9 1994 UMI

converting a current passing through the center electrode into a voltage signal; and

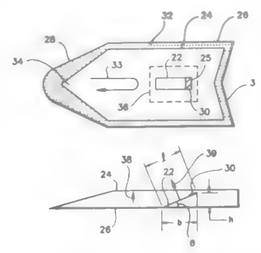
f) a differential amplifier having first and second inputs, the first input being electrically connected to the output of said current-to-voltage converter and the second input being electrically connected to the output of said signal generating means, said differential amplifier further having an output for providing an output voltage representative of the current passing through said center electrode, whereby the amplitude of the differential amplifier output voltage is inversely proportional to the thickness of the film layer of the workpiece being polished during movement of said center electrode and said at least one guard electrode through a detection region.

5,337,016

METHOD AND APPARATUS FOR TRAVELING WAVE ATTENUATION MEASUREMENT

Sam Wozniak, Costa Mesa; Hung B. Tran, Orange, both of Calif.; Charles A. Newstrom, Tulsa, Okla., and Pravit Tulyathan, Torrance, Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 9, 1993, Ser. No. 88,024
Int. Cl.[5] G01S *7/40*
U.S. Cl. 324—632 **12 Claims**



1. An apparatus for the measurement of the traveling wave attenuation characteristics of RAM materials, comprising:

a) a parallel plate system comprising an upper parallel plate and a lower parallel plate, for reflection measurements of electromagnetic waves scattered from a target located between said plates, said parallel plate system further comprising:

electromagnetic wave generating means for generating plane electromagnetic waves having a direction of propagation, said electromagnetic waves further having an electric field vector oriented in a direction perpendicular to said parallel plates; and,

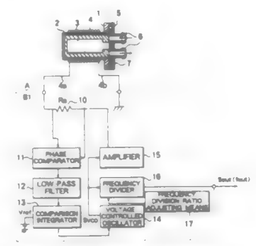
b) a ramp positioned between said two parallel plates for supporting a target RAM material, said ramp having a lower end positioned closest to said electromagnetic wave generating means and being in electrical contact with said lower parallel plate, and an upper end positioned further away from said electromagnetic wave generating means, said upper end being spaced from said upper parallel plate, said ramp further comprising a reflective surface thereon between said lower end and said upper end, said reflective surface having a normal vector thereto, said normal vector and said direction of propagation forming a plane of incidence, said electric field vector having a substantial component in said plane of incidence, said substantial component thereby generating an electric current traveling on said reflective surface between said lower end and said upper end and commensurate traveling wave scattering of electromagnetic energy.

5,337,017

APPARATUS FOR DETECTING ALCOHOL CONTENT OF LIQUID

Kenji Ogawa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1993, Ser. No. 96,270
Claims priority, application Japan, Aug. 11, 1992, 4-214138
Int. Cl.[5] G01N *27/22, 33/22*
U.S. Cl. 324—682 **4 Claims**



1. An apparatus for detecting an alcohol content of a liquid, comprising:

dielectric constant detecting means including a resonance circuit whose resonance frequency changes in accordance with dielectric constant of a liquid containing alcohol;

resonance frequency detecting means for outputting a frequency signal having a same frequency as the resonance frequency of said resonance circuit of said dielectric constant detecting means;

frequency divider means for dividing the output frequency of said resonance frequency detecting means to thereby output a signal indicative of said dielectric constant on the basis of which said alcohol content can be determined; and

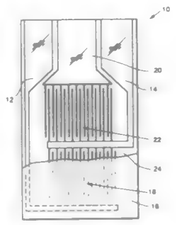
frequency division ratio adjusting means for adjusting a frequency division ratio of said frequency divider means.

5,337,018

ELECTRONIC SENSOR FOR DETERMINING ALCOHOL CONTENT OF FUELS

Frederick G. Yamagishi, Newbury Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 13, 1992, Ser. No. 976,074
Int. Cl.[5] G01N *27/12;* **G01R** *27/22*
U.S. Cl. 324—693 **25 Claims**



1. An electronic sensor for measuring the alcohol concentration of mixtures comprising liquid hydrocarbons and alcohol, comprising:

(a) at least two electrically conducting electrodes supported on a substrate; and

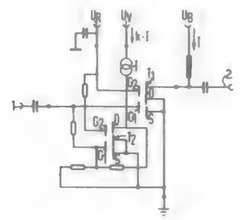
(b) a conducting polymer shorting said at least two electrodes, said conducting polymer having a resistance that changes as a function of said alcohol concentration.

5,337,019

INTEGRATED CIRCUIT ARRANGEMENT

Lothar Musiol, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 19, 1993, Ser. No. 5,738
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1992, 4205198
Int. Cl.[5] H03F *3/16;* **H03G** *3/30*
U.S. Cl. 330—277 **14 Claims**



1. A circuit arrangement, comprising:

a field effect transistor amplifier, said amplifier having a first field effect transistor having at least first and second gate electrodes, the first gate electrode forming a signal input and the second gate electrode forming a DC voltage control input;

control circuit means for setting a voltage at said first gate electrode of the first field effect transistor dependent on a variable voltage present at said second gate electrode of the first field effect transistor, a source potential of the field effect transistor remaining unaltered;

said control circuit means comprising a second field effect transistor that has at least first and second gate electrodes as well as substantially same electrical behavior as said first field effect transistor except for a reduction factor in power consumption, said second transistor being connected to the first transistor such that a control characteristic of the second field effect transistor is transferred onto the first field effect transistor; and

means for applying a voltage which tracks and is proportional to but lower than a drain voltage of the second transistor onto the second transistor first gate electrode.

5,337,020

DIFFERENTIAL RADIO FREQUENCY DETECTOR/COMPARATOR FOR POWER LEVEL CONTROL

Earl A. Daughtry, Lawrenceville, and Richard M. Stone, Duluth, both of Ga., assignors to Matsushita Communication Industrial Corporation of America, Peachtree City, Ga.

Filed Mar. 12, 1993, Ser. No. 30,789
Int. Cl.[5] H03G *3/30*
U.S. Cl. 330—279 **8 Claims**

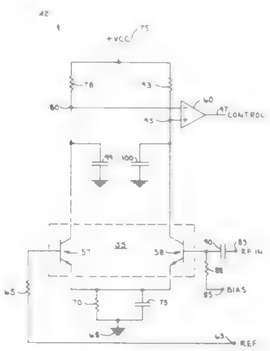
1. A circuit for providing a control signal to select the output power of a radio frequency (RF) amplifier, comprising:

a first transistor having a base, an emitter, and a collector, said base being connected to a reference signal, and said collector providing a first complementary output;

a second transistor having a base, an emitter, and a collector, said base being functionally connected to the output of said RF amplifier, said collector providing a second complementary output, and said emitter being connected to said emitter of said first transistor;

a first resistor having a first terminal connected between said emitters of said first and second transistors and a first source of operating voltage for said transistors; and

a first capacitor connected in parallel with said first resistor;



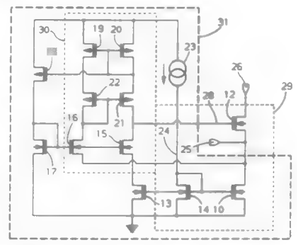
whereby a predetermined one of said first and second complementary outputs provides said control signal.

5,337,021

HIGH DENSITY INTEGRATED CIRCUIT WITH HIGH OUTPUT IMPEDANCE

Seyed R. Zarabadi, Kokomo, Ind., and Mohammed Ismail, Columbus, Ohio, assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Jun. 14, 1993, Ser. No. 75,941
Int. Cl.[5] H03F *1/56, 3/45, 1/22*
U.S. Cl. 330—288 **15 Claims**



1. A circuit apparatus comprising:

(i) a current mirror circuit with a cascode output, comprising a first transistor and a second transistor connected in series, the first transistor coupled between a ground and the second transistor;

(ii) a single stage gain loop comprising a transresistance amplifier coupled between a control input of the second transistor and the series connection of the first and second transistors; and

(iii) a saturation compensation circuit coupled across the first transistor and comprising means, responsive to a current through the first transistor, for maintaining the first transistor in saturation, wherein the circuit apparatus provides an output with high impedance and is suitable for integration on a very small scale.

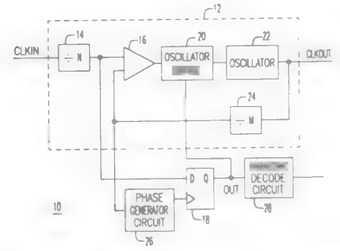
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,022

HARMONIC LOCK DETECTOR

Robert L. Pritchett, East Allen Township, Northampton County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 30, 1992, Ser. No. 982,817
Int. Cl.[5] H03L 7/00
U.S. Cl. 331—1 A 18 Claims



1. An integrated circuit for detecting harmonic lock of a phase-locked loop comprising:

a frequency synthesizer for receiving a reference clock signal and a control signal, the frequency synthesizer for generating an oscillator clock signal defining a frequency;

a phase generator for receiving the oscillator clock signal and for generating a phase of the oscillator clock signal; and

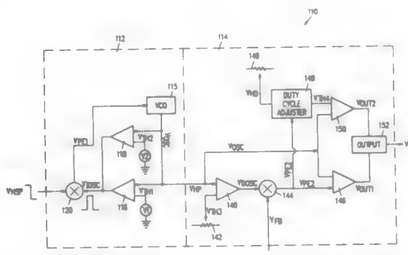
a shift register for receiving the reference clock signal as an input and for receiving the phase of the oscillator clock signal as a clock signal, the shift register providing an output that is a sequence of logic states, the shift register output providing the control signal to the frequency synthesizer to change the frequency of the oscillator clock signal when the frequency synthesizer is harmonically locked.

5,337,023

REDUCED PHASE-JITTER HORIZONTAL SWEEP CONTROL PHASE-LOCK-LOOP AND METHOD

Stephen W. Hobrecht, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 1, 1993, Ser. No. 69,617
Int. Cl.[5] H03L 7/06, 7/07
U.S. Cl. 331—20 17 Claims



1. A synchronization circuit for controlling a phase relationship between a first input signal and a second input signal, the first input signal having a pulse waveform, the second input signal being generated by a resonance circuit in response to a control signal produced by the synchronization circuit, the synchronization circuit comprising:

a controlled oscillator that generates an oscillator signal having a ramp waveform in response to a first phase error signal, the phase of the oscillator signal varying with the first phase error signal;

a dual comparator stage that generates a first intermediate oscillator signal having a pulse waveform in response to the oscillator signal, a first threshold voltage, and a second threshold voltage;

a first detector that locks an edge of the first input signal to the center of the first intermediate oscillator signal, and that generates the first phase error signal in response thereto, the first phase error signal indicating the phase difference between the edge of the first input signal and the center of the first intermediate oscillator signal;

a horizontal position comparator that generates a second intermediate oscillator signal having a pulse waveform in response to the oscillator signal and a third threshold voltage;

a second detector that locks an edge of the second intermediate oscillator signal to the center of the second input signal, and that generates a second phase error signal having a voltage in response thereto, the second phase error signal indicating the phase difference between the edge of the second intermediate oscillator signal and the center of the second input signal;

a combiner that generates a fourth threshold voltage by combining the voltage of the second phase error signal and a duty cycle voltage; and

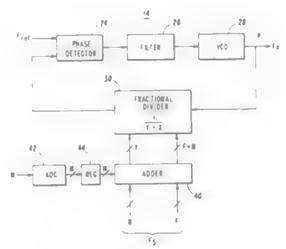
a phase shifter that produces the control signal having a pulse waveform in response to the oscillator signal, the voltage of the second phase error signal, and the fourth threshold voltage, the control signal having a phase which varies with the second phase error signal.

5,337,024

PHASE LOCKED LOOP FREQUENCY MODULATOR USING FRACTIONAL DIVISION

Ray L. Collins, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 22, 1993, Ser. No. 81,034
Int. Cl.[5] H03C 3/09
U.S. Cl. 332—127 14 Claims



1. A frequency modulation circuit, comprising:

a phase-locked loop having a reference frequency input and a controlled frequency output, the phase-locked loop having a phase detector, a filter and a voltage-controlled oscillator, the phase-locked loop also having a frequency divider in a feedback path between the output and the phase detector;

a circuit providing a digital modulation signal M;

an adder, responsive to the digital modulation signal M and a first digital word F representing a selected frequency, the adder inverting the most significant bit of the digital modulation signal M and providing a second digital word; and

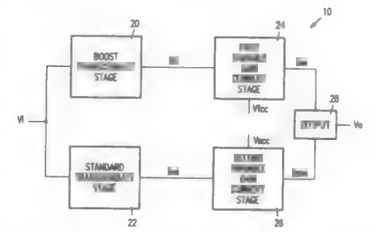
in response to the adder providing the second digital word, the frequency divider dividing the controlled frequency output by a fractional number Y.X, where Y is an integer part of the fractional number, and X is a fractional part of the fractional number.

5,337,025

ADAPTIVE EQUALIZATION CIRCUIT FOR EQUALIZING THE FREQUENCY RESPONSE OF VARYING LENGTHS OF TRANSMISSION LINE

Gary D. Polhemus, Limerick, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 21, 1993, Ser. No. 7,340
Int. Cl.[5] H03H 11/06
U.S. Cl. 333—28 R 21 Claims



1. An adaptive equalization circuit for equalizing the frequency response of varying lengths of transmission line, the adaptive equalization circuit comprising:

a boost transconductance stage that responds to an input voltage signal provided on a transmission line by compensating for the frequency attenuation associated with maximum length of transmission line to produce an equalized current signal, the boost transconductance stage including;

a first boost transistor having a base connected to a first input signal of a pair of complementary input signals, a collector connected to a first node, and an emitter connected to a common node by a first current source,

a second boost transistor having a base connected to a second input signal of the pair of complementary input signals, a collector connected to a second node, and an emitter connected to the common node by a second current source, and

a plurality of waveshaping components, connected between the emitter of the first boost transistor and the emitter of the second boost transistor;

a standard transconductance stage that generates an unequalized current signal in response to the input voltage signal;

a first variable gain current stage that amplifies the equalized current Signal to produce an amplified equalized current signal in response to a first current control signal;

a second variable gain current stage that amplifies the unequalized current signal to produce an amplified unequalized current signal in response to a second current control signal; and

an output stage that combines the amplified equalized current signal and the amplified unequalized current signal to produce an output current and that generates an equalized output signal in response to the output current,

wherein, when the maximum length of transmission line is utilized, the first current control signal increases the gain of the first variable gain current stage while the second current control signal reduces the gain of the second variable gain current stage so that the output current is substantially formed by only the amplified equalized current, and

wherein, when a minimum length of transmission line is utilized, the first current control signal reduces the gain of the first variable gain current stage while the second current control signal increases the gain of the second variable gain current stage so that the output current is substantially formed by only the amplified unequalized current, and

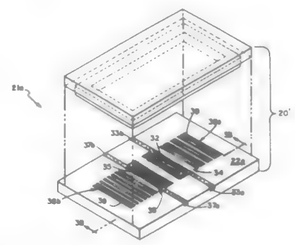
wherein, when an intermediate length of transmission line is utilized, the first current control Signal varies the gain of the first variable gain current stage and the second current control inversely varies the gain of the second variable gain current stage so that the output current is formed by combining a portion of both the amplified equalized current and the amplified unequalized current.

5,337,026

SAW DEVICE AND METHOD OF MANUFACTURING

Earl F. Borchelt, Cambridge, and Thomas E. Parker, Framingham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 650,017, Sep. 13, 1984. This application Apr. 26, 1985, Ser. No. 727,967
Int. Cl.[5] H03H 9/00
U.S. Cl. 333—150 20 Claims



3. An oscillator comprising:

a surface wave delay line comprising:

(i) a base comprising a crystalline material having a surface which supports surface wave propagation and a pair of transducers coupled to said surface wave propagation surface;

(ii) a cover comprising a crystalline material;

(iii) a glass frit disposed completely around peripheral surface portions of said base and cover to provide a continuous closed ring layer between said cover and base;

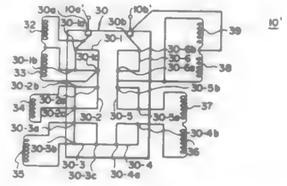
means, including an amplifier mounted on an outer surface of said cover, for providing in combination with the delay line the oscillator.

5,337,027

MICROWAVE HDI PHASE SHIFTER

Mooshi R. Namordi; Mark R. Lang, both of Fayetteville, and Michael J. Fithian, Liverpool, all of N.Y., assignors to General Electric Company, Philadelphia, Pa.

Filed Dec. 18, 1992, Ser. No. 992,808
Int. Cl.[5] H03H 7/18
U.S. Cl. 333—161 17 Claims



1. Apparatus for providing an output radio-frequency (RF) signal having a phase controllably varied from a reference phase of an input RF signal, comprising:

a common substrate;

a plurality of phase-shifting stages each having at least one switching element formed in a semiconductor die which is separately attached to the common substrate;

VOL 1165 ISS 2 AG 9 1994 UMI

a first layer of a dielectric material covering at least a portion of said common substrate and said switching elements, said first layer having a surface;

at least one non-monolithic phase-shift element for each stage, each having at least one conductive element fabricated upon said first layer surface but not in any portion of said semiconductor die, and having first and second element ends; and

via means extending through said first layer dielectric material to interconnect each one of said element ends and an associated switching element on said semiconductor die.

5,337,028

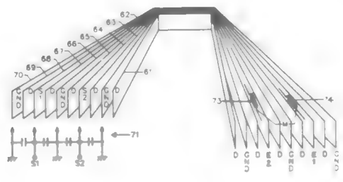
MULTILAYERED DISTRIBUTED FILTER

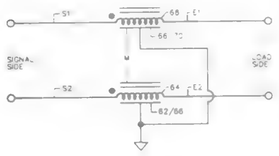
Curtis B. White, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed May 27, 1992, Ser. No. 889,211

Int. Cl.[5] H03H *7/09*

U.S. Cl. 333—181 **16 Claims**





1. A combined capacitive/inductive device, said capacitive-/inductive device comprising a plurality of layers wound into a coil, said plurality of layers including, in order, a first sheet of dielectric material, a first sheet of conducting material, a second sheet of dielectric material, a second sheet of conducting material, a third sheet of dielectric material, a third sheet of conducting material, a fourth sheet of dielectric material, a fourth sheet of conducting material, a fifth sheet of dielectric material, and a fifth sheet of conducting material, said first, third, and fifth sheets of conducting material being connected to ground.

5,337,029

POLARIZED RELAY

Kazuhiro Nobutoki; Kyoji Ueda, both of Matsusaka, and Hiroyuki Kita, Tamaki, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 22, 1992, Ser. No. 995,007

Claims priority, application Japan, Dec. 24, 1991, 3-340486; Apr. 23, 1992, 4-103379; Jun. 25, 1992, 4-166609

Int. Cl.[5] H01H *50/00*

U.S. Cl. 335—78 **16 Claims**

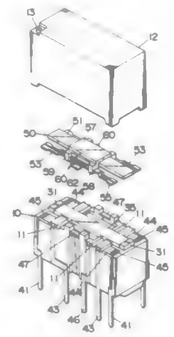
1. A polarized relay comprising:

a coil block having an elongated coil bobbin, a core inserted therein, and excitation coil means wound about said coil bobbin, said core having opposed pole ends projecting upwardly from longitudinal ends of said coil bobbin, said coil block including a permanent magnet interposed between said pole ends;

an armature block having an elongated generally flat armature and a set of movable springs carrying movable contacts and held together with said armature by means of an electrically insulating harness molded on said armature, said armature pivotally supported on said coil block to be movable between two contact operating positions and constituting a magnetic circuit with said core and said permanent magnet for polarized operation of said armature; and

a terminal assembly including coil terminals leading to said coil means and fixed contact terminals provided respectively with fixed contacts at contact ends of said contact terminals;

said polarized relay characterized in that said coil block and



said terminal assembly are molded together from an electrically insulating material into a single integral base unit on which said armature block is assembled with said movable contacts held in an engageable relation with said fixed contacts;

wherein said coil bobbin is formed integrally on its upper end with supports upon which said contact ends of said fixed contact terminals rest, respectively, said supports adapted to hold said contact ends against an upper molding die when molding said coil block into said base unit between said upper molding die and a lower molding die in order to retain said fixed contacts in place.

5,337,030

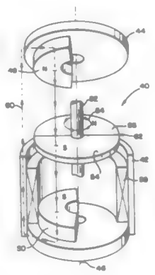
PERMANENT MAGNET BRUSHLESS TORQUE ACTUATOR

David B. Mohler, Tipp City, Ohio, assignor to Lucas Industries, Inc., Reston, Va.

Filed Oct. 8, 1992, Ser. No. 957,862

Int. Cl.[5] H02K *21/12, 33/00*

U.S. Cl. 310—156 **26 Claims**



1. A permanent magnet brushless torque actuator having a limited rotational motion in two directions, said actuator comprising:

an output shaft having an axis of rotation;

at least one permanent magnet rotor fixedly mounted on said output shaft, said at least one rotor having at least two adjacent magnets disposed at different rotational positions, each of said at least two magnets having a direction of magnetization parallel to said axis of rotation and opposite the direction of magnetization of an adjacent magnet;

magnetically conductive housing means including means for mounting said output shaft for rotation relative to said housing means about said axis of rotation, said housing means including at least two magnetically conductive stator pole pieces said at least two pole pieces comprising at least one pair, said at least one pair located at one aligned rotational position but said pole pieces in a pair located at different axial positions along said output shaft, said at least two pole pieces separated by said at least one rotor with one working air gap separating each of said at least two pole pieces from said at least one rotor; and

coil means for generating a magnetic flux in a flux direction, said flux direction dependent upon the direction of current flow in said coil means, said flux flow direction passing through said housing means from one of said at least two stator pole pieces, across one of said working air gaps, through said at least one rotor, across another of said working air gaps, through another of said at least two stator pole pieces and back through said housing means.

10. A permanent magnet brushless torque actuator according to claim **1**, wherein said at least one permanent magnet rotor comprises only one permanent magnet rotor comprised of only two permanent magnets, said two permanent magnets having parallel but opposite polarization directions, said housing means comprises a cylindrical sleeve and two endplates, each of said endplates closing one end of said sleeve, each endplate including one of said stator pole pieces, wherein each of said pole pieces extend along a rotational arc of about 180°, and wherein said coil means comprises a single cylindrically wound coil located inside said sleeve and said endplates.

5,337,031

COST-EFFICIENT INDUSTRIAL-RATED MOLDED CASE [illegible]

Roger N. Castonguay, Terryville; David Arnold, Chester; Roger J. Morgan, Simsbury; Frederic W. Glabau, Kensington, all of Conn.; Henry J. Tucholski, Fremont Center, N.Y., and Thomas T. B. Reyes, Arecibo, P.R., assignors to General Electric Company, New York, N.Y.

Filed Aug. 20, 1993, Ser. No. 109,871

Int. Cl.[5] H01H *9/30*

U.S. Cl. 335—201 **1 Claim**

1. A movable contact arm carrier for molded case circuit breakers comprising:

a first U-shaped support having a pair of downward depending first sidearms integrally-formed from a first planar surface, said first planar surface including an opening formed therein;

a cradle support bracket extending from a top of said first planar surface and adapted for supporting an operating cradle;

a pair of main movable contact arms arranged between said first sidearms and having a main contact fastened to one end;

an arcing movable contact arm intermediate said main contact arms and having an arcing contact fastened to one end;

a locating bracket attached to said first depending sidearms, said locating bracket integrally formed from a second U-shaped support having a pair of second sidearms upwardly extending from a second planar surface, said locating bracket including a pair of upwardly extending first tabs intermediate said main contact arms and said arcing contact arm;

a pair of second tabs formed on said second support; and

an arc shield supported on a bottom part of said second U-shaped support by means of said second tabs;

a locating bracket attached to said first depending sidearms, said locating bracket integrally formed from a second U-shaped support having a pair of second sidearms upwardly extending from a second planar surface, said locating bracket including a pair of upwardly extending first tabs intermediate said main contact arms and sis arcing contact arm;

a pair of second tabs formed on said second support; and

an arc shield supported on a bottom part of said second U-shaped support by means of said second tabs.

5,337,032

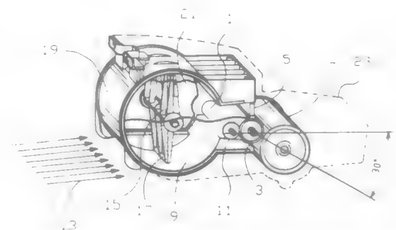
REDUCED COMPONENT TONER CARTRIDGE

Ronald W. Baker, Versailles; Robert L. Burdick, Nicholasville; Martin V. DiGirolamo, Lexington; Paul D. Horrall, Lexington; David L. Merrifield, Lexington; James J. Molloy, Lexington; Earl D. Ward, II, Lexington, and Bernard L. Wilzbach, Lexington, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Feb. 26, 1993, Ser. No. 23,459

Int. Cl.[5] G03G *15/06, 15/08, 21/00*

U.S. Cl. 355—260 **9 Claims**



1. An electrophotographic imaging toner cartridge comprising a developer roller, a doctor blade in contact with said developer roller near the top of said developer roller, a toner applying roller in contact with said developer roller and located on substantially the same horizontal plane as said developer roller, a chamber for electrophotographic toner positioned predominantly below said developer roller and on the side of said toner applying roller away from said developer roller, said chamber extending downward from the top of said

VOL 1165 ISS 2 AG 9 1994 UMI

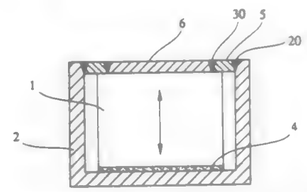
toner applying roller more than twice the diameter of said toner applying roller.

5,337,033

PERMANENT MAGNET ASSEMBLY FOR STABLY FIXING DENTURE

Yohsuke Kinouchi, Tokushima; Minoru Ai, Tokyo; Hiroshi Mizutani, Hino; Osamu Okuno, Tokyo; Kiyotaka Yamauchi, Kumagaya; Akira Yamataka, Saitama, and Hiroya Suzuki, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jan. 15, 1992, Ser. No. 820,415
Claims priority, application Japan, Jun. 13, 1991, 3-141691
Int. Cl.[5] H01F *7/02;* **A61C** *13/235*
U.S. Cl. 335—302 **7 Claims**



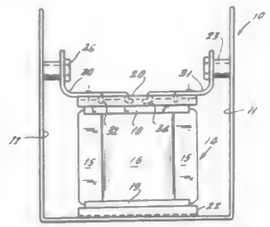
1. A permanent magnet assembly for stably fixing a denture comprising:
(a) a casing made of a corrosion-resistant, magnetic material having a cavity
(b) a permanent magnet in said cavity of said casing, said permanent magnet being magnetized along a depth direction of said cavity of said casing; and
(c) a seal plate for covering an opening of said casing to prevent said permanent magnet from being exposed to the outside, said seal plate consisting of a seal ring member made of a corrosion-resistant, non-magnetic material and a disc plate made of a corrosion-resistant, soft-magnetic material and having substantially the same outer diameter as the inner diameter of said seal ring member, said seal ring member and said disc plate being concentrically arranged in the same plane, said disc plate being welded to said seal ring member in their abutment, and said seal ring member being welded to said casing.

5,337,034

TRANSFORMER MOUNTING ASSEMBLY

Frank H. Grimes, Athens, Ga., assignor to ABB Power T & D Company Inc., Pa.

Filed Apr. 2, 1993, Ser. No. 41,757
Int. Cl.[5] H01F *27/06, 27/26*
U.S. Cl. 336—92 **10 Claims**



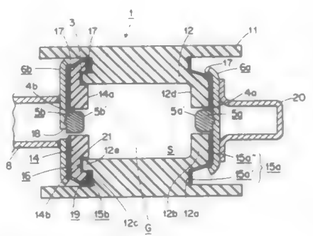
1. An assembly mounting a transformer in a tank, comprising:
a top frame secured to the top of said transformer;
a row of a plurality of slots disposed in said top frame; and
first and second securing means for securing said top frame to respective ones of opposite interior walls of said tank,
each of said securing means having a first portion connectable to a wall of said tank, and a second portion having a toggled end and a shear lug located interior of said toggled end,
said toggled end of each of said securing means being disposed through a selected one of said respective plurality of slots in said top frame and under the top frame adjacent said selected one of said slots to secure the transformer to the tank,
said shear lug of each of said securing means being slipped into a respective one of said slots of said frame which are spaced from said slots receiving said toggled ends, said plurality of slots allowing placement of said securing means along said top frame, in accordance with the size of said transformer.

5,337,035

DISCHARGE TUBE

Gijun Idei; Takuji Kinoshita, and Kunio Hoshino, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,669
Claims priority, application Japan, Apr. 27, 1992, 4-107661
Int. Cl.[5] H01H *61/00*
U.S. Cl. 337—28 **8 Claims**



1. A discharge tube comprising:
a cylindrical body made of an insulating material in which a discharge gas is sealed, the cylindrical body having a body portion and an inwardly drawn portion, said body portion having at least two ends thereof, the inwardly drawn portion being inwardly drawn from at least one of the at least two ends of the body portion; and
a pair of opposing discharge electrodes located inside and at each of said at least two ends of the body portion, one of the discharge electrodes being disposed inside the inwardly drawn portion so that said one discharge electrode is enclosed by the inwardly drawn portion and that a front end portion of the one discharge electrode is recessed from an inner end surface of the inwardly drawn portion facing the other discharge electrode of said pair of discharge electrodes, said one electrode being recessed in a direction away from the other electrode.

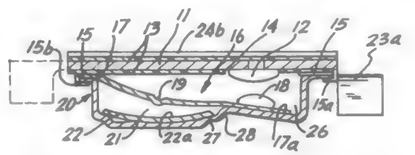
5,337,036

MINIATURIZED THERMAL PROTECTOR WITH PRECALIBRATED AUTOMATIC RESETTING BIMETALLIC ASSEMBLY

Robert A. Kuczynski, 520 Springfield Ave., Westfield, N.J. 07090

Filed Jul. 28, 1993, Ser. No. 98,960
Int. Cl.[5] H01H *37/44*
U.S. Cl. 337—343 **15 Claims**

1. A miniaturized thermal protector for protecting an electrical accessory in a current carrying circuit comprising,
a. first conductive terminal means connected to the current carrying circuit for the accessory, defines an isolated stationary contact,
b. a precalibrated bimetallic element freely positioned in said thermal protector operative in response to abnormal changes in the ambient temperature about said accessory to be protected,
c. actuating means including;
i. an intermediate member,
ii. resilient means formed on and operable separately from the intermediate member is curved and shaped so that in assembled position it lies in a plane below the plane of the intermediate member,
iii. said resilient means having at least one free end and, a



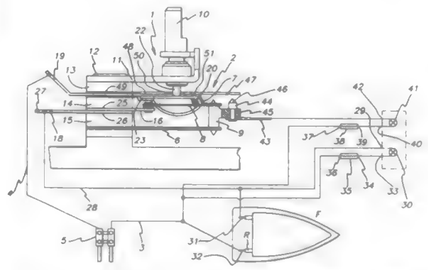
contact fixed to said free end and movable with the resilient means is disposed in assembled position for operative coaction with said stationary contact, and
iv. fulcrum means on the resilient means disposed for coaction with the bimetallic element for actuation of said resilient means, and
d. said bimetallic element and fulcrum means operative on actuation of the resilient means to exert a predetermined moment of force to control the pressure acting between the movable contact and the stationary contact during actuation of the thermal protector.

5,337,037

DEVICE FOR CONTROLLING AT LEAST TWO LUMINOUS CONDITION INDICATING SIGNALS

Gerard L. H. Guillot, Radon, and Jean-Paul A. Bouleau, Champfleur, both of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France

Filed Sep. 2, 1993, Ser. No. 115,422
Claims priority, application France, Sep. 10, 1992, 92 10819
Int. Cl.[5] H01H *37/52, 37/12*
U.S. Cl. 337—363 **6 Claims**



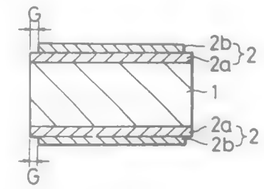
1. In a control device for at least two luminous condition indicating signals (30, 41) mounted on a domestic electrical appliance provided with a quick opening adjustable thermostat (2) which passes over center, comprising an insulating support (13, 14, 15) receiving a thermostat arm (11), a blade (16) forming a fixed contact, a movable blade (7) provided with a flexible tongue (20) on which bears an insulating plug (22) controlled by a rotatable screw (10) permitting obtaining a predetermined temperature, and another movable blade (8) fixed to the movable blade (7) and whose free end bears against the fixed contact as well as an insulating partition (9) fixed to the bimetal (6) and controlling the movable blades (7 and 8), the blade forming a fixed contact (16) and the movable blades (7 and 8) being fixed to the insulating support, connected respectively to electrical terminals by electrical connections (3, 4) and supplying the two luminous signals (30, 41); the improvement wherein the device further comprises a resilient conductive blade (48) having a free end (47) and an end (49) fixed to the insulating support (13, 14, 15), connected electrically by this end to the terminal (19) and in engagement with the flexible tongue (20) by pressing means (51), and a conductive element (44) fixed on the insulating partition (9), connected by an electrical connection to one of the two luminous signals and adapted to come into contact with the free end (47) of the resilient conductive blade when the heating temperature is higher than the predetermined temperature.

5,337,038

PTC THERMISTOR

Masaaki Taniguchi; Keitsugu Nohara, both of Akita, and Nobuo Kaihara, Honjo, all of Japan, assignors to TDK Corporation, Japan

Filed Jun. 3, 1993, Ser. No. 72,318
Claims priority, application Japan, Jun. 11, 1992, 4-152184
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—22 R **11 Claims**



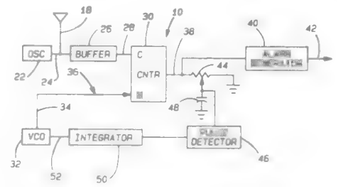
1. A PTC thermistor comprising:
a PTC thermistor body;
a first electrode plated onto said PTC thermistor body and comprising Ni having a thickness of 0.2 to 0.7 μm; and
a second electrode arranged on said first electrode and primarily comprising Ag, thereby having a low contact resistance.

5,337,039

PROXIMITY DETECTION SYSTEM WITH DIGITAL FREQUENCY VARIATION DETECTION MEANS

Arvin B. Simon, Cleveland, Ohio, assignor to SDR Metro Inc., Euclid, Ohio

Filed Jul. 16, 1992, Ser. No. 915,097
Int. Cl.[5] G08B *13/26*
U.S. Cl. 340—562 **19 Claims**



1. A proximity detection system comprising:
an antenna,
oscillator means for producing a continuous wave signal of a preset frequency and for connecting said continuous wave signal to said antenna,
means for detecting changes in said preset frequency having a rate of change greater than a predetermined amount,

VOL 1165 ISS 2 AG 9 1994 UMI

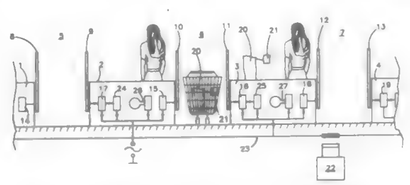
means responsive to said detecting means for generating an output signal,
means for automatically compensating for frequency variations of said oscillator means having a rate of frequency change less than said predetermined amount,
wherein said detecting means comprises
a counter having an input connected to said continuous wave signal,
means for producing a reset signal having a second preset frequency, said second frequency being less than said first preset frequency,
means for connecting said reset signal to a reset input of said counter,
whereby said counter generates an output signal indicative of changes in said first preset frequency.

5,337,040

DETECTION APPARATUS FOR SHOPLIFTING-PREVENTING LABELS

Burckart Kind, Zürich, Switzerland, assignor to Actron Entwicklungs AG, Rotkreuz, Switzerland

Filed Oct. 13, 1992, Ser. No. 959,991
Claims priority, application Switzerland, Oct. 31, 1991, 03 185/91-1; Apr. 3, 1992, 01 098/92-3; Aug. 4, 1992, 02 446/92-5
Int. Cl.[5] G08B *13/24*
U.S. Cl. 340—572 **16 Claims**



1. Apparatus for the detection of labels (21) for the prevention of the shoplifting of goods (20), said labels being provided with an electrical resonant circuit having a resonant frequency (f_R) in the MHz range, the apparatus comprising a plurality of pairs of transmitting and receiving antennas (8 to 13), which in each case bound passages (5 to 7) which are to be monitored, in which the transmitting antennas (8, 10, 12) of the pairs in each case radiate electromagnetic waves, the frequency of which is wobbled in wobble cycles with a fundamental wobble frequency (f_1) over the predetermined resonant frequency of the labels. the wobble cycles of all the pairs being synchronized with one another and in which to the receiving antenna (9, 11, 13) of each pair is connected a receiving circuit (17 to 19) for detecting the presence of a label, characterized in that the radiated electromagnetic waves are generated by decentralized h.f. -generators (14 to 16) in each case individually associated with the transmitting antennas and that the wobble cycles are synchronized with one another using a synchronization signal with at least one frequency different from the resonant frequency (f_R) generated in a central unit (22) and supplied to the h.f.-generators.

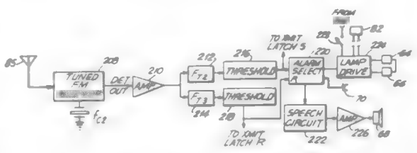
5,337,041

PERSONAL SAFETY GUARD SYSTEM FOR STRAY PERSON OR PET

Lorri Friedman, 51 Forest Ct., Yorktown Heights, N.Y. 10598

Continuation of Ser. No. 868,631, Apr. 13, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 128,054
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—573 **18 Claims**

1. A personal safety guard system for enhancing the safety of a person or pet under the care of a guardian in an unconfined environment, comprising:
a guardian unit including;
a first housing constructed to be carried by a guardian having care of a person or a pet,
alarm signal means contained in said first housing, for producing an alarm condition signal at a certain radio frequency,
first antenna means for radiating said alarm condition signal over a certain range when coupled to an output of said alarm signal means, and
transmit switch means coupled to said alarm signal means, for operating said alarm signal means to produce the alarm condition signal in response to an alarm command entered by the guardian, and
an alarm unit including;
a second housing constructed to be worn by said person or said pet,
alarm receiver means contained in said second housing for detecting said alarm condition signal and for producing a corresponding alarm set signal,



second antenna means coupled to an input of said alarm receiver means for responding to the alarm condition signal radiated from said first antenna means,
speech circuit means for emitting a voice message prior to arrival of the guardian, including means for sounding said voice message to persons other than said guardian near the person or pet wearing the alarm unit, the voice message informing said persons that the person or pet is under a guardian's care and needs to be kept from potential harm until said guardian arrives, and
alarm control means coupled to an output of said alarm receiver means and to said speech circuit means, for operating said speech circuit means to emit said voice message in response to said alarm set signal produced by the alarm receiver means;
wherein the alarm unit remains in a receive only mode of operation and the sounding means of said speech circuit means is inoperative prior to detection by the alarm receiver means of the alarm condition signal radiated from the first antenna means of the guardian unit.

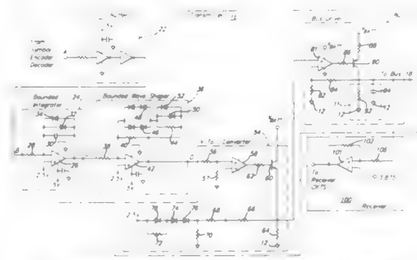
5,337,042

VEHICLE COMMUNICATIONS NETWORK TRANSCEIVER, TRANSMITTER CIRCUIT THEREFOR

Ronald F. Hormel, Clinton Township, and Frederick O. Miesterfeld, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 28, 1992, Ser. No. 951,988
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—826.08 **8 Claims**

1. A transceiver in nodes of a multiple node vehicle communications network having a communications bus prescribed for use in an automotive industrial standard data link, interconnecting the nodes, each node providing means for translating a chosen measurand into digital pulses appearing at varying rates in response to changes of the measurand into symmetrical, variable pulse width modulated (VPWM) trapezoidal shaped waveform signals containing symbol information expressing the magnitudes of the measurand, each node containing a regulated power source connected to a vehicle battery to provide regulated logic voltages referenced with respect to a signal ground return; each node also containing a microcontroller (MCU) connected between the input device and a symbol encoder decoder (SED) for receiving signals representing magnitudes of the measurands, formatting the received signals into digital messages, polling input and output ports connected to the SED, and initiating transmission over the bus via the SED, the SED being interconnected between the MCU and the transceiver for translating the digital messages from the MCU into variable pulse width modulated (VPWM) square wave line codings sent to other transceivers connected to the bus and for converting square wave digital signals received from other transceivers into digital messages used by the MCU for updating or controlling other peripherals associated with the network, said transceiver comprising:
(a) an integrator with an input for receiving the VPWM square-wave pulses from SED having pulse widths that define symbol information with respect to time and logic levels and producing at an output terminal trapezoid type waveform signals with pulses 180 degrees out of phase with the square wave pulses and referenced with respect to a fixed voltage level;
(b) a waveshaper having an input for receiving the trapezoid waveform signals from the integrator and reshaping both corners at the extremities of each edge of the pulses over a chosen duration and then producing at an output terminal other trapezoid waveform signals in phase with the input waveform signals having the same pulse width as the input trapezoid signals at trip point voltage so as to retain the symbol information contained in the original square-



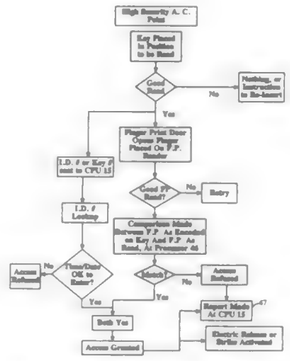
wave signals, the reshaped trapezoid signals being referenced with respect to another fixed voltage level;
(c) a voltage-to-current converter having an input for receiving the reshaped trapezoid waveform signals from the waveshaper, and providing at an output a replica of the reshaped trapezoid waveform signals as control current source signals, said control current source signals being routed to a current sensor circuit within the voltage-to-current converter to provide pulse voltage potentials with respect to signal ground return of magnitudes proportional to the voltage across the current sensor;
(d) a bus driver connected between the battery of the vehicle and the signal ground return having an input for receiving the pulse voltage potentials from said voltage-to-current converter and producing at a single-ended output amplifications of the reshaped trapezoid pulse signals referenced with respect to the signal ground return which route over the bus to other listening nodes, said amplified signal retaining the symbol information contained in the original square-wave pulse signals; and
(e) a receiver circuit interconnected between the bus and SED for receiving reshaped trapezoid waveform signals from the bus and extracting symbol information contained in the waveform signals and converting the extracted symbol information into digital pulse signals with pulse durations equivalent to the symbol information.

5,337,043

ACCESS CONTROL SYSTEM WITH MECHANICAL KEYS WHICH STORE DATA

Asil T. Gokcebay, San Francisco, Calif., assignor to Security People, Inc., San Francisco, Calif.

Continuation of Ser. No. 343,663, Apr. 27, 1989, Pat. No. 5,245,329. This application May 10, 1993, Ser. No. 59,950
Int. Cl.[5] G06K *9/78, 9/62*
U.S. Cl. 340—825.31 **8 Claims**



1. A mechanical key with keyholder authentication, comprising,
a mechanical key with a mechanical configuration providing lock access features, operable to permit access to open a lock having cooperating mechanical features,
encoded user authentication data physically located on the key without limiting the mechanical lock opening ability of the key, the encoded data comprising a personal identifying number (PIN) known to the intended keyholder, such personal identifying number being capable of use for verification and authentication that a keyholder is the intended keyholder by comparison of the personal identifying number to a number separately input by the keyholder to gain access.

5,337,044

SYSTEM FOR REMOTE COMPUTER CONTROL USING MESSAGE BROADCASTING SYSTEM

David Folger; David Arnold, both of Mountain View, and Maureen Lambert, Moss Beach, all of Calif., assignors to Nomadic Systems, Inc., Mountain View, Calif.

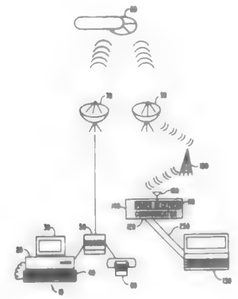
Filed Oct. 8, 1991, Ser. No. 772,915
Int. Cl.[5] H04Q *7/00*
U.S. Cl. 340—825.44 **14 Claims**

3. A method for communication between a first processor and a second processor, comprising the steps of:
sending a command message from the first processor to a message broadcast system addressed to the second processor, where said command message includes a identification field identifying the second processor and an instruction to the second processor to open a bi-directional channel between the first processor and the second processor;
receiving said command message from said first processor by said message broadcast system, wherein said message broadcast system is configured to broadcast multiple command messages from multiple first processors addressed to multiple second processors within a broadcast region;
unidirectionally broadcasting said command message from said message broadcast system over said broadcast region to the second process;
receiving said command message at the second processor

VOL 1165 ISS 2 AG 9 1994 UMI

when the second processor is within said broadcast region; and

initializing said bi-directional channel, when said command



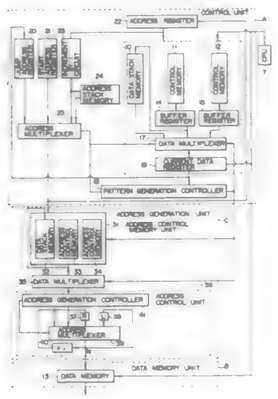
message instructing said second processor to open bi-directional channel is received by the second processor, thereby opening a bi-directional communication session between the first processor and the second processor.

5,337,045

PATTERN GENERATOR

Hisatoshi Shirasaka, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 17, 1992, Ser. No. 822,131
Claims priority, application Japan, Jan. 18, 1991, 3-004577
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.52 **3 Claims**



1. A pattern generator comprising:

a control unit having a plurality of control memories for storing first information of the scanning order of addresses, said control unit outputting an address to an address generation unit, said address for accessing address control memories in accordance with said first information stored in said control memories;

said address generation unit including,

a plurality of said address control memories for storing second information which is used for controlling generation of addresses, said addresses for accessing a data memory unit, said second information corresponding to said first information stored in said control memories,

a data multiplexer for selecting and outputting said second information outputted from said plurality of address control memories, and

an address control unit for controlling generation of said addresses in accordance with said second information outputted from said data multiplexer, said address generation unit outputting said addresses generated upon control by said address control unit; and

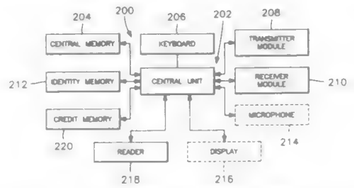
said data memory unit, coupled to an object to be measured, for storing test pattern data to be supplied to said object to be measured, said data memory unit being accessed in accordance with said addresses outputted from said address generation unit and outputting said test pattern data stored at said addresses.

5,337,046

SYSTEM FOR COMMUNICATION BETWEEN PEDESTRIANS AND VEHICLES

Michel Grasset, Paris, France, assignor to Finance Techniques et Systemes, Paris, France

PCT No. PCT/FR91/00145, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO83/01698, PCT Pub. Date May 11, 1983
PCT Filed Feb. 22, 1991, Ser. No. 920,328
Claims priority, application France, Feb. 23, 1990, 90 02264
Int. Cl.[5] G08G *1/095*
U.S. Cl. 340—944 **16 Claims**



1. System for communication between pedestrians and vehicles, intended to make contact between pedestrians desiring to go to a given destination and vehicles capable of transporting pedestrians to the destinations, said system comprising:

portable transmitter/receiver means to be carried by the pedestrians for generating a request signal, the request signal comprising codes representing the destination desired by the pedestrians and the location of the pedestrians transmitting the request signals, and said portable transmitter/receiver means capable of automatically detecting a pick up offer signal emanating from a vehicle, and

vehicle transmitter/receiver means installed in vehicles for detecting the request signals generated by the portable transmitter/receiver means whose code coincides with a specific code relating to the trip of the associated vehicle, and in response for generating a pick up offer signal for transmission to the transmitter/receiver means which sent the coinciding request signal.

5,337,047

AIRCRAFT EXTERNAL LIGHTING APPARATUS, METHOD AND CODING SYSTEM FOR AIRCRAFT IDENTIFICATION

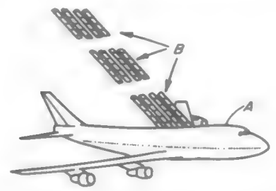
Michael V. Myers, 1504 E. Sheridan Ave., Olathe, Kans. 66062

Filed Aug. 26, 1992, Ser. No. 935,864
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—945 **29 Claims**

1. An apparatus installable on an aircraft for providing external aircraft lighting to facilitate visual identification of the aircraft, said external aircraft lighting apparatus comprising:

(a) means, disposed on the aircraft, for generating a light beam on the aircraft; and

(b) means, disposed on the aircraft and being optically coupled to said generating means, for receiving said light beam therefrom and for projecting said light beam from the aircraft into space in a preselected pattern based upon



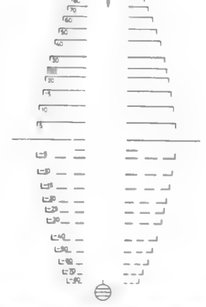
at least one property of said preselected pattern coding a physical characteristic identifying the aircraft.

5,337,048

IMPROVED HEAD-UP DISPLAY PITCH BAR SYSTEM FOR AIRCRAFT

John C. Penwill, Bedford, United Kingdom, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, England

PCT No. PCT/GB90/01107, § 371 Date Feb. 17, 1993, § 102(e) Date Feb. 17, 1993, PCT Pub. No. WO92/01906, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 19, 1990, Ser. No. 971,826
Int. Cl.[5] G01C *23/00*
U.S. Cl. 340—975 **7 Claims**



1. A head-up display system including means for generating a pitch ladder pattern having pitch bars which are straight lines with a central gap, the pitch bars representing climb angles being solid lines and the pitch bars representing dive angles being dashed lines, the display having a scale which is unity in a central region and which decreases smoothly from the central region towards the extremes of the pattern, said pattern including:

a. a central pitch bar representing level flight is considerably longer than any other pitch bar, and the lengths of the pitch bars decrease according to a relationship with their displacement from the central bar;

b. a 90° climb angle is indicated by a distinctive star symbol and a 90° dive angle is indicated by a distinctive earth symbol, and

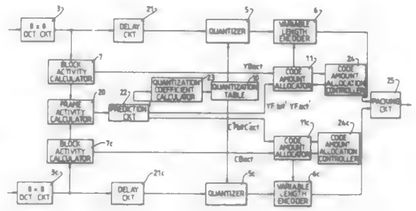
c. the pattern has two inner regions on either side of the central region, and two outer regions between the inner regions and the star symbol and the earth symbol, respectively, and graduation intervals between pitch bars in the outer regions are considerably greater than graduation intervals between pitch bars in the inner regions, so that the first graduation interval in each outer region is considerably wider than the last graduation interval in each inner region, thus providing distinctive indications of the angles at which the inner regions end and the outer regions begin.

5,337,049

EFFICIENT CODING SIGNAL PROCESSOR

Kenji Shimoda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 30, 1992, Ser. No. 953,819
Claims priority, application Japan, Oct. 1, 1991, 3-253709
Int. Cl.[5] H04N *7/12*
U.S. Cl. 341—50 **12 Claims**



1. A signal processor for efficiently encoding information signals input in a sequence of predetermined units, so that each of said units has a similar amount of information, comprising:

first activity calculation means for calculating a first activity of a sub-unit of said information signals of a present unit;

second activity calculation means for calculating a second activity from the first activity of the sub-unit calculated in a preceding unit of said information signals;

code amount allocation means for providing coding that can be utilized by every sub-unit during the encoding process using the second activity; and

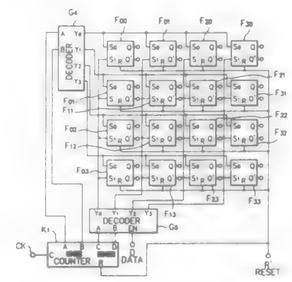
code amount allocation control means for setting an amount of coding provided by said code amount allocation means for every sub-unit so that a preselected bit rate is not exceeded, by monitoring the amount of coding allocated by the code allocation means for the period of one unit of said information signals.

5,337,050

SERIAL-TO-PARALLEL CONVERTER CIRCUIT

Mitsutoshi Sugawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 8, 1993, Ser. No. 14,780
Claims priority, application Japan, Feb. 13, 1992, 4-026984
Int. Cl.[5] H03M *9/00*
U.S. Cl. 341—100 **3 Claims**



1. A serial-to-parallel converter circuit comprising:

a plurality of register blocks, each of the register blocks

VOL 1165 ISS 2 AG 9 1994 UMI

having a flip-flop circuit developing a function to keep therein data and to output therefrom the data and a gate circuit for receiving as inputs thereto two selection signals for selecting the flip-flop circuit; and

an address decoder for receiving as an input thereto address data for selecting, in response to the address data, a predetermined register block from the plurality of register blocks,

wherein the flip-flop circuit comprises and R-S flip-flop circuit including a first NAND gate and a second NAND gate, the gate circuit including a third NAND gate connected to a set signal input side of the R-S flip-flop circuit, and wherein the R-S flip-flop circuit is selected depending on set signals inputted to the third NAND gate,

wherein the address decoder includes:

a counter for receiving as inputs thereto a serial clock and a reset signal, for accumulating the serial clock, and for outputting a result of accumulation of the serial clocks; and

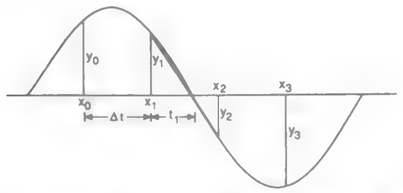
a first decoder and a second decoder.

5,337,051

APPROXIMATE ZERO CROSSINGS FOR FREQUENCY DETERMINATION

David C. Tsui, Centerville, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 1, 1993, Ser. No. 85,269
Int. Cl.[5] G01S *7/36*
U.S. Cl. 342—13 **2 Claims**



1. A frequency measurement receiver comprising input means coupling a source of input signals to a single analog-to-digital converter operated at a sampling frequency which is at least four times the frequency of the input signals to provide a set of digitized samples at points (x,y), where x represents time and y represents the digitized value of the amplitude;

means for selecting two of said samples at points designated (x_1,y_1) and (x_2,y_2) each of which is not more than $\pi/2$ radians away from a selected zero crossing, means for finding a zero crossing along a linear line between the two points using the relationship:

$$x_{crossing} = x_1 - y_1\left[\frac{x_2 - x_1}{y_2 - y_1}\right]$$

means for calculating successive zero crossings, counting the number of zero crossings and then computing a value for the frequency of the input signals using the relationship:

$$\text{frequency} = \frac{n}{2 \times \text{time difference}}$$

where

n=number of zero crossings

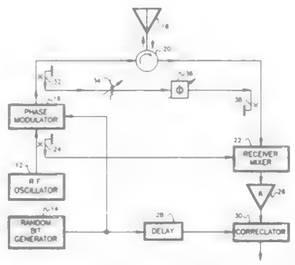
time difference=distance between the first of the n crossings and last of the n crossings.

5,337,052

RANDOM BINARY MODULATED SENSOR

Dieter R. Lohrmann, Lanham, Md., and Herbert Dropkin, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 20, 1989, Ser. No. 386,794
Int. Cl.[5] G01S *13/32*
U.S. Cl. 342—68 **1 Claim**



1. A random binary phase modulated sensor, which comprises:

r. f. oscillator means for generating a continuous wave (cw) r. f. signal;

random bit generator means for generating a binary random bit pair code signal;

phase modulator means, connected to receive the r. f. signal and the binary code signal, for phase modulating the r.f. signal with the binary code signal;

antenna means for transmitting the phase modulated r. f. signal toward a target and for receiving a return signal reflected from the target;

receiver mixer means, connected to receive the return signal and the r. f. signal generated by the oscillator means for modulating the return signal with the r. f. signal;

circulator means, connected to the phase modulator means, the antenna means, and the receiver mixer means, for directing the phase modulated r. f. signal front the phase modulator means to the antenna means and the return signal from the antenna means to the receiver mixer means;

signal delay means, connected to receive the binary code signal generated by the random bit generator means, for delaying the binary code signal by a predetermined time;

correlator means connected to receive the modulated return signal and the delayed binary code signal for producing a Doppler output signal;

a first r. f. signal path from the r. f. oscillator means to the receiver mixer means via the phase modulator means and the circulator means to the antenna means and from the antenna means to the receiver mixer means via the circulator means; and

a second r.f. signal path from the r.f. oscillator means directly to the receiver mixer means;

wherein the length of the first r. f. signal path differs, from the length of the second r. f. signal path by one quarter of the wavelength of the r. f. signal.

5,337,053

METHOD AND APPARATUS FOR CLASSIFYING TARGETS

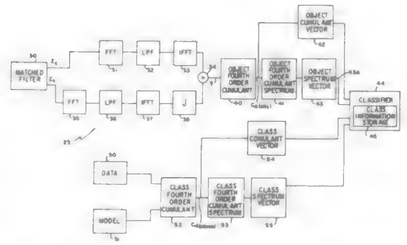
Roger F. Dwyer, Niantic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1993, Ser. No. 147,238
Int. Cl.[5] G01S *7/292, 15/00, 7/52*
U.S. Cl. 342—90 **22 Claims**

1. Apparatus for cataloging physical objects into one of a plurality of predetermined classes based upon energy received from the object, said apparatus comprising:

means for receiving the energy from the object;

means connected to said receiving means for generating an object vector based upon a fourth order cumulant function for the received energy;



means for storing class information based upon the fourth order cumulant functions for each of the plurality of predetermined classes; and

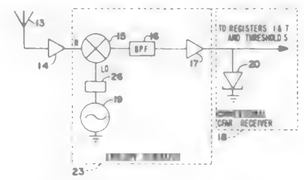
means for classifying the object into one of the predetermined classes based upon the class information.

5,337,054

COHERENT PROCESSING TUNNEL DIODE ULTRA WIDEBAND RECEIVER

Gerald F. Ross, Longboat Key, Fla., and Richard M. Mara, Tewksbury, Mass., assignors to Anro Engineering, Inc., Lexington, Mass.

Filed May 18, 1992, Ser. No. 885,300
Int. Cl.[5] G01S *7/34*
U.S. Cl. 342—93 **10 Claims**



1. A system for receiving ultra-wideband (UWB) signals, said system comprising:

means for receiving oscillatory short pulse microwave signal bursts;

preamplifier means coupled to said receiving means for amplifying each of said oscillatory short pulse microwave signal bursts;

oscillator means for generating an attenuated microwave signal at a predetermined frequency;

mixing means, coupled to said preamplifier means and said oscillator means, and responsive to said oscillatory short pulse microwave signal bursts and said attenuated microwave signal at said predetermined frequency for generating an envelope signal equal to the sum and difference between said attenuated microwave signal bursts wherein said predetermined frequency is selected such that a video or baseband pulse at the output of said mixing means has a maximum positive area at some time;

bandpass filter means coupled to said mixing means and responsive to said envelope signal to generate a baseband unipolar pulse for said each of said oscillatory short pulse microwave signal bursts;

IF amplifier means coupled to said bandpass filter means for amplifying each of said baseband unipolar pulses;

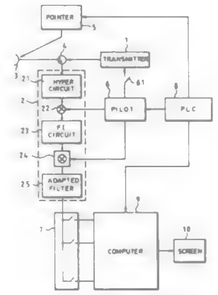
tunnel diode means coupled to said IF amplifier means and responsive to each of said amplified baseband unipolar pulses for maximizing the sensitivity of said tunnel diode means by maximizing the charge through a junction since said each of said amplified baseband unipolar pulses provides an envelope of said amplified burst of microwave energy which in its net charge through the junction exceeds a prescribed number of picocoulombs.

5,337,055

METHOD AND EQUIPMENT FOR ADJUSTING A RADAR DETECTION THRESHOLD

Jean-François Ghignoni, Asnieres, France, assignor to Thomson-CSF, Puteaux, France

Filed Sep. 16, 1993, Ser. No. 121,636
Claims priority, application France, Sep. 18, 1992, 92 11144
Int. Cl.[5] G01S *7/292, 7/34*
U.S. Cl. 342—93 **13 Claims**



1. Method for adjusting a radar detection threshold, which consists in:

breaking down the area monitored by the radar in one sweep period into sectors,

for each sector, determining the histogram y(x) relating the possible values x of signal moduli received by the radar in the sector considered during one sweep period, with their frequencies of appearance y,

approximating the histogram y(x) measured for each sector by means of at least one model m(x) defined analytically by an equation of variable x containing an exponential function on a polynomial of log x and/or a polynomial of x, in which the coefficients are adjusted so as to minimize the differences between the model m(x) and the measured histogram, and

for each sector, deducing the value S of the radar detection threshold, starting from a set value of the false alarm probability value Pfa by using the relation with the model:

$$Pfax N = \int_s^\infty m(x)dx$$

where N is the total number of values of received signal moduli contained in the model.

5,337,056

DYNAMICALLY TUNABLE NOTCH FILTER

Clifford D. Dax, Mission Viejo, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

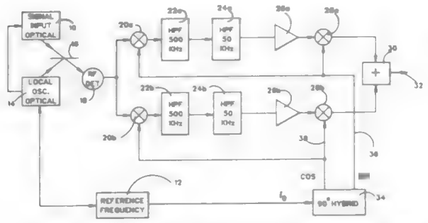
Filed Jun. 11, 1993, Ser. No. 74,621
Int. Cl.[5] G01C *3/08*
U.S. Cl. 342—128 **14 Claims**

1. A dynamically tunable filter for processing a frequency modulated input signal, said filter comprising

VOL 1165 ISS 2 AUG 9 1994 UMI

a first mixer means for mixing said input signal with a reference modulated frequency to frequency shift said input signal to a predetermined frequency,

band pass filtering means connected to said first mixer means, said filtering means for filtering said frequency-



shifted input signal to generate a filtered frequency-shifted input signal, and

a second mixer means for mixing said filtered frequency-shifted input signal with said reference modulated frequency.

5,337,057

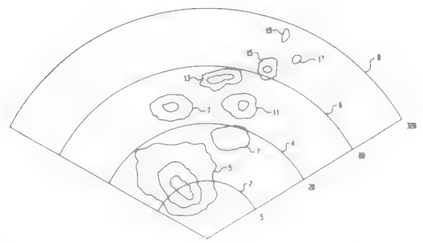
NON-LINEAR RADAR RANGE SCALE DISPLAY ARRANGEMENT

Terry K. Michie, Olathe, Kans., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jul. 12, 1993, Ser. No. 88,958

Int. Cl.[5] **G01S** *7/10, 7/06*

U.S. Cl. 342—176 **10 Claims**



1. A non-linear radar range scale display arrangement, comprising:

means for receiving radar signals transmitted from a target and for providing signals proportional thereto;

oscillator means for providing oscillating signals;

control means connected to the oscillating means for controlling the frequency of the oscillating signals therefrom;

mixing means connected to the receiving means and to the oscillator means for mixing the proportional signals and the oscillating signals and for providing mixed signals;

means connected to the mixing means for detecting the mixed signals and for providing detected mixed signals;

means connected to the detecting means for sampling and holding the detected mixed signals, and connected to the control means and controlled thereby for applying sampled and held signals to the control means;

clock generator means connected to the control means and controlled thereby for quantizing a selected non-linear radar range scale and for providing quantized signals;

means connected to the detector means and to the clock generator means and responsive to the detected signals and the quantized signals for providing signals corresponding to the selected non-linear radar range scale; and

memory means connected to the non-linear range scale signal means for storing the range scale signals and for applying said signals to a display means.

5,337,058

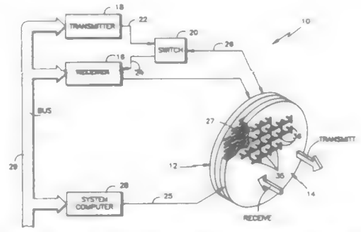
FAST SWITCHING POLARIZATION DIVERSE RADAR ANTENNA SYSTEM

John H. Cross, Weston, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 16, 1993, Ser. No. 49,096

Int. Cl.[5] **G01S** *13/00*

U.S. Cl. 342—188 **8 Claims**



1. A fast switching polarization diverse radar system, comprising:

a radar transmitter;

a radar receiver;

a transmit and receive antenna which radiates electromagnetic energy of wavelength λ received from said radar transmitter during transmit mode and receives electromagnetic energy during receive mode and routes the received energy to said radar receiver;

a variable polarization lens placed over the aperture of said transmit and receive antenna at a certain distance from said transmit and receive antenna, comprising

a) means for coupling said radiated electromagnetic energy to said lens and for providing a coupled electromagnetic energy signal;

b) means for transforming the polarization of said coupled electromagnetic energy signal as commanded to either horizontal, vertical, circular left, circular right, elliptical left or elliptical right polarization, and for providing a variably polarized electromagnetic waveform having the commanded polarization; and

c) means for radiating said variably polarized electromagnetic waveform from said lens and receiving a return signal at said lens.

5,337,059

APPARATUS AND METHOD FOR DETERMINING THE APERTURE ILLUMINATION OF A PHASED-ARRAY ANTENNA

Peter Kölzer, Korntal-Münchingen, and Rolf-Hans Mundt, Ditzingen, both of Fed. Rep. of Germany, assignors to Alcatel Sel Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1993, Ser. No. 110,364

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1992, 4227857

Int. Cl.[5] **H01Q** *3/00*

U.S. Cl. 342—360 **10 Claims**

1. Apparatus for determining an aperture illumination of a phased-array antenna, comprising:

a plurality of radiating elements (SE1 . . . SEn) respectively coupled via coupling apertures to at least one integral monitor waveguide (MH);

a first signal-conditioning circuit (SAB1) connected to a first output (A1) of said at least one integral monitor wave-

guide (MH), for determining at least one real part and any existing imaginary parts of a time-dependent complex monitor signal provided by said at least one integral monitor waveguide (MH);

said signal-conditioning circuit (SAB1) feeding said at least one real part and said any existing imaginary parts of said complex monitor signal to a signal processing circuit (SV) having a signal processor (SP) therein, for continuously calculating the aperture illumination of the phased-array antenna from said at least one real part and said any existing imaginary parts of said complex monitor signal determined by said first signal-conditioning circuit (SAB1);

said at least one integral monitor waveguide (MH of FIG. 3 or MH1, MH2 of FIG. 5) having a second output (A2) which is spatially separated from said first output (A1 of

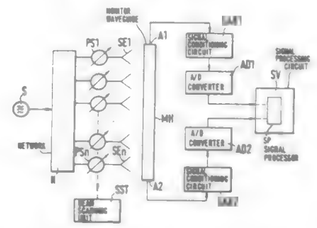


FIG. 3), said second output (A2) being connected to a second signal-conditioning circuit (SAB2 of FIG. 3) which determines said at least one real part and said any existing imaginary parts of said complex monitor signal that are provided at said second output (A2) of said at least one integral monitor waveguide (MH);

said first signal-conditioning circuit (SAB1) and said second signal-conditioning circuit (SAB2) respectively feeding at least said at least one real part of said complex monitor signal to said signal processing circuit (SV); and wherein:

said signal processing circuit (SV) further calculates from said at least one real part and said any existing imaginary parts of said complex monitor signal determined by said second signal-conditioning circuit (SAB2), the aperture illumination of the phased-array antenna.

5,337,060

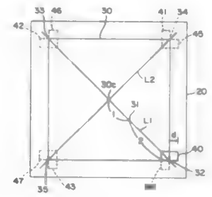
MICRO-STRIP ANTENNA

Takuji Harada, Kanagawa, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 910,832

Int. Cl.[5] **H01Q** *1/38*

U.S. Cl. 343—700 MS **6 Claims**



1. A micro-strip antenna in which a radiating conductor and a grounding conductor are provided on either side of a dielectric, wherein a plate-form conductor is attached to said radiating conductor approximately at a position where an extension line, that is extended from a line which connects a center of gravity of said radiating conductor and a feeding point, intersects an edge of said radiating conductor, and a portion of said plate-form conductor projects outwardly from said edge of said radiating conductor.

5,337,061

HIGH PERFORMANCE ANTENNA FOR HAND-HELD AND PORTABLE EQUIPMENT

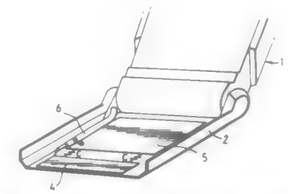
Michael R. Pye, Winchester, and Stephen A. Williams, Southampton, both of England, assignors to Shaye Communications Limited, Winchester, England

Filed Feb. 12, 1992, Ser. No. 833,923

Claims priority, application United Kingdom, Feb. 12, 1991, 9102935

Int. Cl.[5] **H01Q** *1/24*

U.S. Cl. 343—702 **12 Claims**



1. A portable electronic apparatus having a housing made, at least in part, of insulating material, and incorporating an antenna comprising an active element and a ground plane, said active element comprising a length of conductive material disposed parallel to the ground plane and fed from one end; wherein the antenna is mounted on a sheet of insulating material forming part of said housing, and comprises a first rectangular sheet of conductive material forming said ground plane, and a second, elongate, rectangular sheet of conductive material forming said active element; and wherein the housing is in two sections which are movable with respect to one another, and wherein said sheet of insulating material forms part of one of said sections, and wherein the other section contains electronic circuitry which is electrically connected to said antenna; and wherein said other section includes a second antenna which is likewise electrically connected to said electronic circuitry; and wherein both antennae are connected to said electronic circuitry via the same node; and wherein said antennae are electrically mismatched as seen by the electronic circuitry; and wherein a mechanical tuning element is attached for movement with one of said sections of the housing, said tuning element being positioned such that as the two sections are moved with respect to one another, the element detunes one of the antennae, but not the other, thus introducing an electrical mismatch between them.

5,337,062

DEPLOYABLE SATELLITE ANTENNA FOR USE ON VEHICLES

William J. Sherwood, West Burlington, and Charles E. Rodeffer, Burlington, both of Iowa, assignors to Winegard Company, Burlington, Iowa

Filed Nov. 18, 1992, Ser. No. 977,907

Int. Cl.[5] **H01Q** *1/32*

U.S. Cl. 343—711 **17 Claims**

1. A deployable antenna system to be mounted on a support surface, said antenna system comprising:

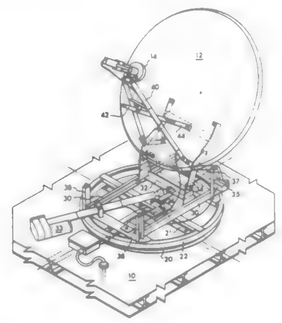
a reflector having a face, a focal point, a proximal portion adjacent said support surface, and a distal portion that is remote from said support surface when said antenna system is deployed;

a feed horn for receiving electrical signals reflected by said reflector;

azimuth control means for rotating said reflector in an azimuth direction with respect to said support surface; and

VOL 1165 ISS 2 AG 9 1994 UMI

elevation control means coupled to said azimuth control means and to said reflector for raising said reflector in an elevational direction having;
(a) a track substantially parallel to said support surface;
(b) slider means for translational movement along said track;
(c) a reflector frame having a lower portion pivotally attached to said slider means and an upper portion attached to said reflector;
(d) a reflector pivot arm having a first portion pivotally attached with respect to said reflector and a second por-



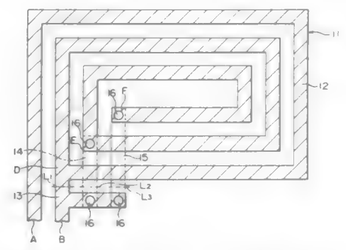
tion pivotally attached to a predetermined point relative to said track; and
(e) means for adjustably controlling the position of said slider means along said track between said stowed position and said deployed position, thereby causing the proximal portion of said reflector to slide in a direction across said azimuth control means to raise the distal portion of said reflector from a stowed position wherein said reflector faces said support surface to a deployed position wherein said reflector faces upward.

5,337,063

ANTENNA CIRCUIT FOR NON-CONTACT IC CARD AND METHOD OF MANUFACTURING THE SAME

Kenichi Takahira, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1992, Ser. No. 867,538
Claims priority, application Japan, Apr. 22, 1991, 3-90323
Int. Cl.[5] H01Q *11/12*
U.S. Cl. 343—741 **5 Claims**



3. An inductor for forming an antenna circuit of a non-contact IC card comprising:
a substrate of a non-contact IC card, the substrate including opposed first and second surfaces;
an electrically conducting coil layer disposed on the first surface of the substrate having at least one turn with first and second ends disposed on the first surface of the substrate, the second end being located inside the at least one turn;
an electrically conducting adjusting pattern disposed on the first surface of the substrate outside the turn electrically connected to the electrically conducting coil layer; and
an electrically conducting pattern disposed on the second surface of the substrate and penetrating through the substrate at the adjusting pattern and at the second end, electrically connecting the second end to the adjusting pattern.

5,337,064

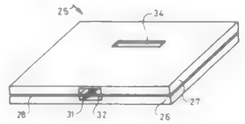
Patent Not Issued For This Number

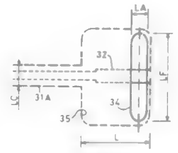
5,337,065

SLOT HYPERFREQUENCY ANTENNA WITH A STRUCTURE OF SMALL THICKNESS

Georges Bonnet, Genneviluers; Yves Commault, Paris; Jacques Roquencourt, Cormeilles en Parisis, and Alain Sehan, Tregastel, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Nov. 25, 1991, Ser. No. 797,067
Claims priority, application France, Nov. 23, 1990, 90 14621
Int. Cl.[5] H01Q *13/10*
U.S. Cl. 343—767 **18 Claims**





1. A slot hyperfrequency thin antenna including a suspended stripline type structure comprising:
a feeder having two plates of electrically conductive material with a dielectric film inserted between said plates and a channel formed therein;
a stripline having a core in said feeder, the end of the core penetrating a cavity, one of said plates having at least one slot extending through said one plate to form an opening into said cavity, with the depth of the cavity being approximately equal to the thickness of said channel of the feeder.

5,337,066

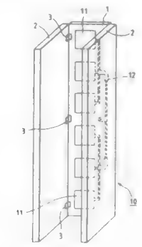
ANTENNA SYSTEM WITH A LIMITABLE COMMUNICATION AREA

Tatsuya Hirata, Ichinomiya; Atsushi Watanabe, Toyokawa, and Naoki Tokitsu, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 14, 1992, Ser. No. 943,429
Claims priority, application Japan, Sep. 13, 1991, 3-234617
Int. Cl.[5] H01Q *1/52, 17/00*
U.S. Cl. 343—841 **11 Claims**

1.An antenna system used in a movable object discriminator, comprising:
an antenna for transmitting a radio wave of a predetermined band of frequencies in a direction to produce a communication area of said radio wave in said direction;
means, provided in said direction, for intercepting and absorbing part of said radio wave to reduce a gain of said antenna and thereby narrow down said communication area independently of said frequencies;
means for enabling said intercepting and absorbing means to be pivotable about a pivot at a fixed position to set an angle α between said intercepting and absorbing means

and said antenna to determine said communication area; and
a light transmitter disposed adjacent to said antenna, said



light transmitter transmitting a beam of light so that a cross-sectional area of said beam of light exiting from said intercepting and absorbing means indicates a transmission area S of said radio wave.

5,337,067

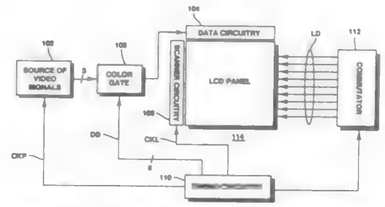
Patent Not Issued For This Number

5,337,068

FIELD-SEQUENTIAL DISPLAY SYSTEM UTILIZING A BACKLIT LCD PIXEL ARRAY AND METHOD FOR FORMING AN IMAGE

Roger G. Stewart, Neshanic Station, and William R. Roach, Rocky Hill, both of N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Continuation of Ser. No. 455,195, Dec. 22, 1989, abandoned.
This application Feb. 1, 1993, Ser. No. 12,981
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—88 **16 Claims**



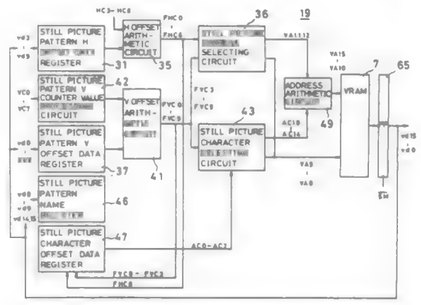
6. Apparatus for generating a color image, comprising:
display panel means, including a matrix of light valves the light transmissive properties of which can be individually controlled, wherein, single-color images representing separate components of the color image are formed by activating the light valves in the matrix of light valves in a predetermined sequence; and
a plurality of single color light sources each including a plurality of separately operable light sources which directly emit light of a single color wherein the separately operable light sources of said plurality of single color light sources are interleaved; and
means for sequentially and selectively strobing each of said plurality of separately operable light sources of each of said plurality of single color light sources in synchronism with the formation of each respective single-color image on said matrix of light valves to provide light for transmission through the matrix of light valves.

5,337,069

STILL PICTURE DISPLAY APPARATUS AND EXTERNAL STORAGE DEVICE USED THEREIN

Masahiro Otake, Kyoto; Toyofumi Takahashi, Tokyo; Satoshi Nishiumi, Kyoto, and Takuo Mukai, Tokyo, all of Japan, assignors to Nintendo Co., Ltd., Kyoto and Ricoh Co., Ltd., Tokyo, both of Japan

Continuation of Ser. No. 749,533, Aug. 26, 1991, abandoned.
This application Nov. 16, 1993, Ser. No. 152,928
Claims priority, application Japan, Aug. 27, 1990, 2-225672
Int. Cl.[5] G09G *1/16*
U.S. Cl. 345—123 **7 Claims**



1. A still picture display apparatus which displays still pictures containing an arrangement of a predetermined number of characters each constituted by a combination of a predetermined number of dots on a screen of a raster scan monitor, said still picture display apparatus comprising:
first storage means for storing character data of the characters;
second storage means for storing a plurality of vertical offset data per one horizontal line, each of said plurality of vertical offset data being a vertical offset amount in each of a plurality of horizontally divided portions of said screen of said raster scan monitor;
first read means for reading one of said plurality of vertical offset data every time a corresponding one of said plurality of horizontally divided portions of said screen to be scanned;
second read means for reading the character data from said first storage means based on one of the vertical offset data read by said first read means and a horizontal position and a vertical position on said raster scan monitor to apply the same to said raster scan monitor,
wherein said second storage means includes a readable/writable memory, and said apparatus further comprising vertical offset data write means for writing the vertical offset data corresponding to each character into said memory, and
wherein said vertical offset data write means includes vertical offset data changing means for changing and writing the vertical offset data per each frame of said raster scan monitor, so that a vertical scrolling is performed in at least one of said plurality of horizontally divided portions of said screen of said raster scan monitor.

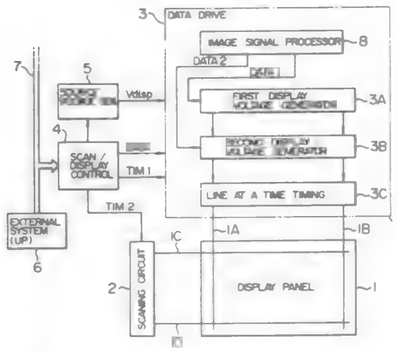
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,070

DISPLAY AND THE METHOD OF DRIVING THE SAME

Masaaki Kitajima, Hitachiota; Ikuo Hiyama, and Yoshiharu Nagae, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,397
Claims priority, application Japan, Jul. 31, 1991, 3-191500
Int. Cl.[5] G09G *3/00*
U.S. Cl. 345—211 30 Claims



11. A display device including scanning electrodes, display electrodes, a display panel on which display dots are formed, with respect to a plan view, at intersections between said scanning electrodes and said display electrodes, a display electrode drive circuit generating a display voltage for each display dot in correspondence to an input digital image signal and applying the same to the respective display electrode, and a scanning electrode drive circuit generating a scanning voltage to thereby display an image on said display panel, said display electrode drive circuit comprising:

a first data latch circuit latching an input digital image signal in a predetermined timing at least in units of dot;

a second data latch circuit latching simultaneously digital image signals latched in said first data latch circuit, synchronously with a timing of a line-at-a-time driving operation of the scanning circuit;

means for dividing each of said digital image signals latched in said second data latch circuit into at least a first bit image signal and a second bit image signal in units of display dot;

first display voltage generating means, coupled to receive said first bit image signal and plural source voltages which have values that vary at a predetermined period independently of said input digital image signal, for sampling each of said plural source voltages in accordance with said first bit image signal to provide output signals;

second display voltage generating means, coupled to receive plural output signals of said first display voltage generating means and said second bit image signal from the dividing means, for selecting each of the plural output signals of said first display voltage generating means in accordance with contents of said second bit image signal to thereby provide display voltages for the respective display electrodes; and

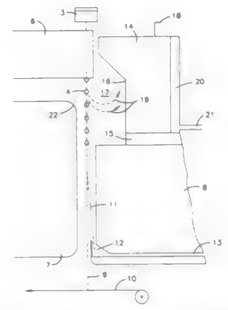
a line-at-a-time timing circuit outputting output signals from said second display voltage generating means synchronously with a timing of a line-at-a-time driving operation of the scanning circuit.

5,337,071

CONTINUOUS INK JET PRINTER

Amanda H. East, and Richard W. Janse Van Rensburg, both of Cambridge, England, assignors to Elmjet Limited, Cambridge, England

PCT No. PCT/GB89/01518, § 371 Date Aug. 12, 1991, § 102(e) Date Aug. 12, 1991, PCT Pub. No. WO90/06854, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 20, 1989, Ser. No. 688,564
Claims priority, application United Kingdom, Dec. 20, 1988, [illegible]29620.7
Int. Cl.[5] G01D *15/18*
U.S. Cl. 347—77 24 Claims



1. In a continuous ink jet printer of the kind comprising means for producing at least one jet of ink, a modulating mechanism for causing the jet to break up into a train of main droplets and micro-droplets, a charging electrode assembly for selectively applying an electrostatic charge to the droplets, and at least one deflection electrode for producing an electrostatic field to deflect charged ones of the droplets so that either the deflected charged droplets or the undeflected charged droplets are used for printing, the other main droplets being collected by a gutter; the improvement comprising:

a subsidiary electrode portion adjacent to an upstream end of said deflection electrode and to a side of the train towards which the charged droplets are deflected, said subsidiary electrode portion defining a cavity which opens toward the path of the train of droplets and arranged such that air entrained by the train of droplets produces, in use, a vortex in said cavity, said subsidiary electrode portion being at an electric potential such that any charged ones of the micro-droplets in the train are initially deflected out of the train towards said subsidiary electrode portion, whereupon they are entrained by air flow and carried into said cavity where they are deposited.

5,337,072

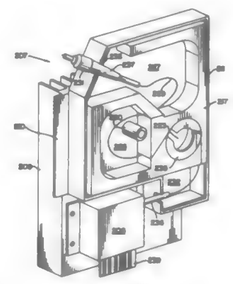
LASER DIODE WITH CARD-EDGE CONNECTOR

John D. Gentzke, Ogden, and Roger S. Kerr, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 762,829, Sep. 19, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 123,767
Int. Cl.[5] G01D *15/10*; H01R *9/09*
U.S. Cl. 346—76 L 3 Claims

1. A laser diode assembly comprising a laser diode mounted on a planar support member, an enclosure member mounted on said support member and enclosing said laser diode, an optical fiber guide having an inlet and an exit mounted adjacent said diode laser, said fiber guide including means forming an inlet chamber adjacent said diode laser, a substantially cylindrical chamber an outlet chamber and a connector chamber said inlet chamber extending into said cylindrical chamber which communicates through said outlet chamber to said connector chamber to said exit from said guide means, a cover plate

disposed over said fiber guide on the opposite side thereof from said support member, a pair of support and alignment ribs substantially coplanar with and extending along opposite edges of said support member arranged to slideably engage mating members to align and support said diode assembly, an electrical connector in the form of a card edge connector rigidly attached to and extending through a wall of said enclosure member at the opposite end of said assembly from said outlet chamber, said connector comprising a substantially rigid planar insulator portion having a plurality of electrical conductors formed on at least one surface thereof, means for connecting at least a portion of said conductors to said laser diode inside of said enclosure member, said connector lying in a plane parallel to the plane of said support and alignment ribs and arranged to mate with a card edge socket, said connector extending outwardly from an edge of said planar support that connects the edges thereof which include said support and alignment ribs.

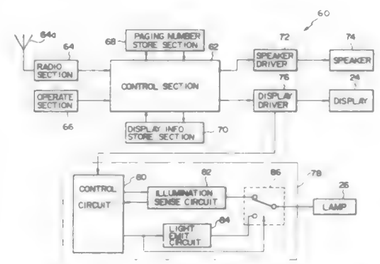


5,337,073

PORTABLE RADIO EQUIPMENT WITH A DISPLAY BACK-LIGHTING FUNCTION

Hideyuki Tsunoda, Tokyo, and Toshirou Nishiyama, Shizuoka, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 434,051, Nov. 9, 1989, abandoned. This application Jul. 13, 1992, Ser. No. 911,385
Claims priority, application Japan, Nov. 9, 1988, 63-281440
Int. Cl.[5] G09G *3/18*
U.S. Cl. 345—102 2 Claims



1. Portable radio equipment having a display for displaying a message, comprising:

illuminating means comprising an electroluminescent lamp, having a function of back-lighting the display and a function of sensing illumination on a display surface of the display;

first driver means for driving said illuminating means to sense illumination on the display surface of the display;

second driver means for driving said illuminating means to cause said illuminating means to emit light;

switching means for selecting either one of an illumination sense mode wherein said illuminating means senses illumination and a back-light mode wherein said illuminating means emits light; and

control means for controlling said first and second driver means and said switching means to select either one of said illumination sense mode and said back-light mode, wherein said control means comprises:

a first and second input port connected to said first driver means and said switching means;

an output port connected to said switching means and said second driver means;

a timer having an input terminal connecting to said first input port;

an AND gate having one input terminal connecting to an output terminal of said timer and the other input terminal connecting to said second input port;

an inverter having an input terminal connecting to said first input port; and

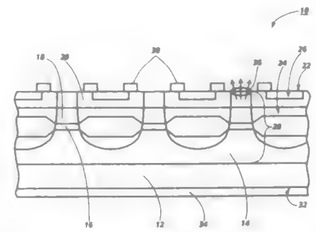
a D-type flip-flop having a C terminal connecting to an output terminal of said AND gate, an R terminal connecting to an output terminal of said inverter, and a Q terminal connecting to said output port.

5,337,074

OPTO-ELECTRONIC LINE PRINTER HAVING A HIGH DENSITY, INDEPENDENTLY ADDRESSABLE, SURFACE EMITTING SEMICONDUCTOOR LASER/LIGHT EMITTING DOIDE ARRAY

Robert L. Thornton, East Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 636,524, Dec. 28, 1990, Pat. No. 5,062,115. This application Aug. 5, 1991, Ser. No. 740,237
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] B41J *2/45, 2/455*
U.S. Cl. 346—107 R 12 Claims



1. An opto-electronic line printer comprising:

a high density, surface emitting, semiconductor light emitting diode array including

a first semiconductor confinement layer deposited on a substrate, said first confinement layer and said substrate having an identical conductivity type,

an active semiconductor layer deposited on said first confinement layer, said active layer providing lightwave generation and propagation,

a second semiconductor confinement layer deposited on said active layer, said second confinement layer having an opposing conductivity type to said first confinement layer and said substrate,

a semiconductor contact layer deposited on said second confinement layer, said contact layer and said second confinement layer having an identical conductivity type,

disordered regions extending through said contact layer, said second confinement layer, said active layer and at least partially through said first confinement layer, said disordered regions having an identical opposing conductivity type to said first confinement layer and said substrate,

VOL 1165 ISS 2 AG 9 1994 UMI

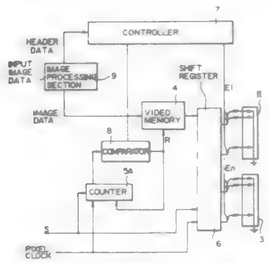
contacts formed on said contact layer, one of said contacts aligned with each of said disordered regions,
at least one contact formed on said substrate, and
optical cavities formed between said disordered regions, so that current injected between one of said contacts on said contact layer and said at least one contact on said substrate will cause light emission from one of said optical cavities through the surface of said contact layer,
means for modulating said light emission from said light emitting diode array,
a recording medium, and
optical means aligned between said light emitting diode array and said recording medium for imaging said modulated light emission from said light emitting diode array onto said recording medium.

5,337,075

IMAGE FORMING APPARATUS CAPABLE OF READILY CHANGING THE PIXEL DENSITY OF AN IMAGE

Tomoko Takahashi, Yokohama, and Hisashi Shoji, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 845,590
Claims priority, application Japan, Mar. 4, 1991, 3-037309
Int. Cl.[5] B41J *2/435*
U.S. Cl. 346—107 R **1 Claim**



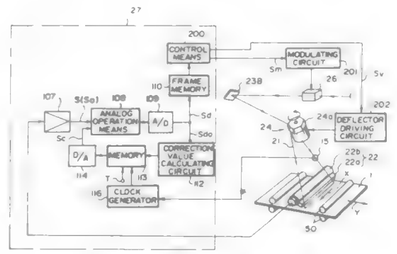
1. An image forming apparatus for forming an image on an image carrier in response to input image data, having pixels and a pixel density comprising:
exposing means comprising an array of light emitting elements arranged in a main scanning direction of said image carrier for exposing said image carrier in response to the input image data, said light emitting elements being arranged in a density higher than the pixel density of said input image data;
control means for controlling said exposing means such that a number of said light emitting elements are turned on for each of said pixels of the input image data, wherein said number of said light emitting elements which are turned on for each pixel of input image data changes in response to a change in the pixel density of said input image data, and a turn-on time of said light emitting elements also changes in response to said change in the pixel density of said input image; and
a processor means for processing said input image data;
wherein said control means comprises:
a video memory storing said processed image data and receiving a reset signal as an input;
a counter sequentially incrementing a count value in response to pixel clock pulses and for outputting the count value;
a controller outputting a signal matching the pixel density of the input image data;
a comparator comparing said signal from said controller and said count value of said counter and, when said signal and said count value coincide, feeding said reset signal to said video memory, wherein said video memory updates the image data upon receiving said reset signal; and
a shift register receiving the processed image data from said video memory and outputting a signal for turning on said number of said light emitting elements for each of said pixels of the input image data.

5,337,076

METHOD AND APPARATUS FOR REPRODUCING IMAGES INCLUDING A MULTIPLE SCANNING OPERATION

Toshitaka Agano, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 17, 1992, Ser. No. 870,307
Claims priority, application Japan, Apr. 19, 1991, 3-088571
Int. Cl.[5] H04N *1/21;* **B41J** *2/435*
U.S. Cl. 346—108 **16 Claims**



1. An image reproducing method, wherein a light beam is modulated in accordance with an image signal, which is made up of a series of image signal components representing an image recorded on a recording medium, and the modulated light beam is caused by a light beam scanning system, which includes a rotating polygon mirror, to two-dimensionally scan a recording material, whereby the image is reproduced on the recording material,
the image reproducing method comprising the steps of:
i) utilizing the light beam modulated in accordance with image signal components of said image signal, which correspond to positions lying along each scanning line on said recording medium, to scan along a plurality of scanning lines on said recording material such that parts of adjacent scanning lines on said recording material overlap one upon the other, and
ii) changing the intensity of said light beam each time said light beam scans along one of the plurality of said scanning lines on said recording material.

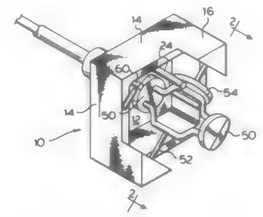
5,337,077

ELECTROMAGNETIC SHUTTER

John Browne, Oakville, Canada, assignor to Mark IV Industries Limited, Ontario, Canada

Filed Mar. 20, 1992, Ser. No. 855,063
Int. Cl.[5] G09G *3/16*
U.S. Cl. 345—109 **19 Claims**

1. Shutter for optic fibre emission about a cone in a selected viewing direction, comprising:
mounting means for mounting an optic fibre having an end oriented to emit light in said cone,
rotor mounting means for pivotally mounting a rotor on an axis transverse relative to the axis of said cone,
a rotor for rotatable mounting on said mounting means,
said fibre end being centrally located relative to said mounting means as viewed in the viewing direction,
ON and OFF stop means limiting rotation of said rotor to approximately 90° between ON and OFF limiting positions, respectively,
said rotor being shaped to define in the ON position an opening on said rotor axis for passage of said cone of light from said fibre,
said rotor being shaped to provide a panel disposed intermediate said rotor axis and said fibre end and overlying said fibre end in the OFF position to occlude rays from said fibre within said cone, and
means for selectively driving said rotor between the ON and OFF positions.

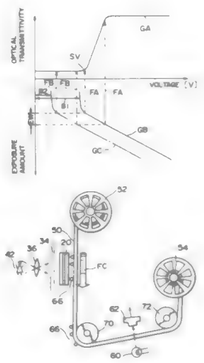


5,337,078

APPARATUS AND METHOD FOR RECORDING INFORMATION CARRIED BY ELECTRO-MAGNETIC RADIATION BEAM

Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Miura; Tsutou Asakura; Masato Furuya, both of Yokohama; Yoshihisa Koyama, Yokosuka, and Yuji Uchiyama, Chigasaki, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 21, 1992, Ser. No. 886,286
Claims priority, application Japan, May 22, 1991, 3-146745
Int. Cl.[5] H04N *1/21;* **B41J** *2/435*
U.S. Cl. 346—108 **3 Claims**



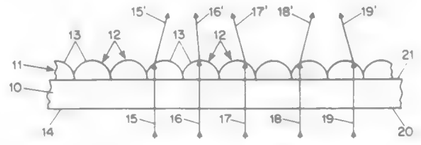
3. A method of recording information carried by an electromagnetic radiation beam, the method comprising the steps of:
providing two electrodes, a photoconductive member and a recording member of liquid crystals capable of holding electric charges;
arranging the members so as to face each other between the electrodes;
applying a specific voltage across the electrodes;
directing an electro-magnetic radiation beam carrying information to be recorded to the photoconductive member under presence of the voltage so that an electric field corresponding to a conductivity variation of the photoconductive member is applied to the recording member to form a charge latent image on the recording member; and
heating the recording member with the recorded information so that an intensity of the applied electric field exceeds a specific threshold level at which the optical characteristic begins to vary according to the charge latent image, thus the information being recorded in the recording member as the optical characteristic variation.

5,337,079

POST-PROCESSING OF COLORED HOT MELT INK IMAGES

Charles W. Spehrley, Jr., Hartford; Paul A. Hoisington, Norwich, both of Vt.; Steven J. Fulton, Hanover, N.H.; Lawrence R. Young, West Lebanon, N.H., and Robert R. Schaffer, Canaan, N.H., assignors to Spectra, Inc., Hanover, N.H.

Continuation-in-part of Ser. No. 202,488, Jun. 3, 1988, Pat. No. 4,951,067, which is a continuation-in-part of Ser. No. 94,664, Sep. 9, 1987, Pat. No. 4,751,528, and a continuation-in-part of Ser. No. 416,158, Oct. 2, 1989, Pat. No. 5,023,111, which is a continuation-in-part of Ser. No. 230,797, Aug. 10, 1988, Pat. No. 4,873,134. This application Jun. 1, 1990, Ser. No. 532,206
Int. Cl.[5] G01D *15/16;* **B41J** *2/01*
U.S. Cl. 347—88 **40 Claims**



1. A method for producing a phase-change ink printed substrate, which comprises:
providing a substrate;
applying to at least one surface of said substrate a predetermined pattern of a light-transmissive phase-change ink which transmits light in a nonrectilinear path; and
forming a layer of light-transmissive phase-change ink printed on said substrate in which said pattern of solidified phase-change ink has been reoriented and said ink layer has a substantially uniform thickness and transmits light in a substantially rectilinear path.

5,337,080

AMORPHOUS SILICON ELECTROGRAPHIC WRITING HEAD ASSEMBLY WITH PROTECTIVE COVER

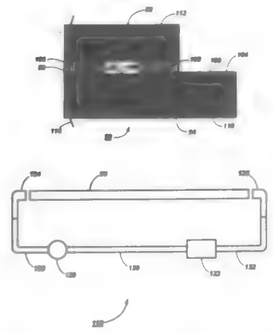
Patrick A. O'Connell; Robert L. Battey, both of Freemont; Maria S. Donigan, Pleasanton; So V. Tien, San Jose, and John C. Knights, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 27, 1993, Ser. No. 53,644
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—155 **32 Claims**

1. An amorphous silicon electrographic writing head assembly, comprising:
a substrate having a first surface and a second surface, said first surface having thin film elements fabricated thereon, said first surface having a first region, a second region, and a third region, said first region including an array of writing electrodes, said second region including an array of high voltage transistors for driving said writing electrodes, and said third region including interconnection circuitry;
a first protective member fixed to said first surface and overlying said first region;

VOL 1165 ISS 2 AG 9 1994 UMI

a second protective member fixed to said first surface and overlying said third region; and

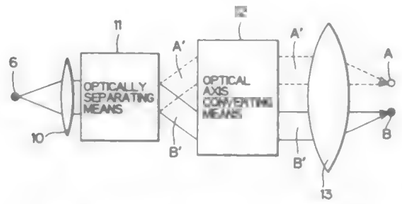


a third protective member fixed to said first and said second protective members whereby a channel is formed over said second region.

5,337,081
TRIPLE VIEW IMAGING APPARATUS

Kiyoshi Kamiya; Shigeru Uchiyama; Hideaki Ohishi; Norikazu Sugiyama; Yoshinori Mizuguchi, and Masahiko Hirano, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Dec. 17, 1992, Ser. No. 991,751
Claims priority, application Japan, Dec. 18, 1991, 3-335088
Int. Cl.[5] H04N *9/04*
U.S. Cl. 348—61 **18 Claims**



1. A triple view imaging apparatus for measuring quantitative distribution of material or property in a sample, comprising:

an optical system for receiving an original optical image of the sample and for separating the original optical image into a plurality of secondary optical images;

image pick-up means for receiving a composite image of the plurality of secondary optical images and producing an image signal representing the plurality of secondary optical images of the composite image; and

image processing means for receiving the image signal and processing the image signal to quantitatively calculate a relationship between the image signals for respective ones of the plurality of secondary optical images, to thereby determine quantitative distribution of material or property in the sample,

wherein said optical system receives an original light ray bearing thereon the original optical image of the sample and separates the original light ray into a plurality of secondary light rays bearing thereon the plurality of secondary optical images, respectively, the plurality of secondary light rays having optical properties different from one another, the secondary optical image formed on each of the plurality of secondary light rays having a relation to the distribution of the material or property in the sample which is determined dependently on the optical property of the each of the plurality of secondary light rays,

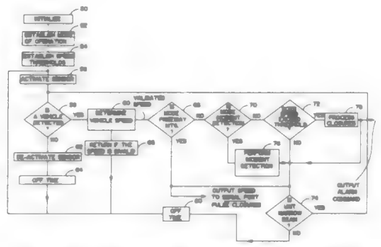
wherein said image processing means calculates a value representative of the relationship between the image signals for the respective ones of the plurality of secondary optical images, to thereby determine the quantitative distribution of the material or property in the sample, and

wherein said image pick-up means produces the image signal representative of light intensity of each of a plurality of points on each of the plurality of secondary optical images of the composite image, wherein said image processing means calculates a value representative of the relationship between the image signals for the respective ones of the plurality of secondary optical images for the each point thereof and produces a tertiary optical image in which the calculated values are distributed at positions corresponding to the respective ones of the plurality of points in the respective ones of the plurality of secondary optical images, the tertiary optical image quantitatively defining the distribution of the material or property in the sample, and further comprising image display means for displaying the tertiary optical image.

5,337,082
TRAFFIC MANAGEMENT SYSTEM

Thomas M. Fredericks, Westbrook, Conn., assignor to Whelen Technologies, Inc., Chester, Conn.

Filed Dec. 7, 1992, Ser. No. 986,996
Int. Cl.[5] G01S *13/91*
U.S. Cl. 342—69 **17 Claims**



1. A method for obtaining information concerning vehicular traffic flow comprising the steps of:

energizing a transmitter to cause emission of electromagnetic energy at a known frequency in the microwave range;

directing the emitted energy to cause a preselected region of a highway to be illuminated thereby;

receiving, at a pair of spacially displaced points, electromagnetic energy reflected from a vehicle moving through the illuminated region, the spacing of said receiving points being commensurate with a known phase relationship for energy reflected from a stationary vehicle;

transducing the reflected energy received at said pair of points into a pair of phase-related cyclic signals, the frequency of said signals being commensurate with vehicle speed;

employing said phase-related signals to perform a first determination of the speed of the vehicle;

employing said first speed determination to establish a valid speed range;

receiving additional electromagnetic energy reflected from the vehicle;

transducing said additional reflected energy into a further pair of phase-related signals;

employing said further pair of phase-related signals to perform a second determination of the speed of the vehicle;

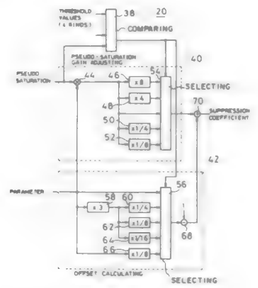
comparing the second determined speed of the vehicle with the established valid speed range; and

outputting a signal commensurate with the second vehicle speed if the determined second speed is within the valid speed range.

5,337,083
DIGITAL VIDEO CAMERA SUPPRESSING LOW-SATURATION CHROMINANCE

Haruhiko Murata, Moriguchi; Yukio Mori, Yawata; Akihiro Maenaka, Moriguchi; Masao Takuma, Toyonaka; Kiyotada Kawakami, Osaka; Tooru Yamamoto, Daito, and Tooru Asaeda, Ikoma, all of Japan, assignors to Sanyo Electric Co., Ltd, Moriguchi, Japan

Filed Apr. 14, 1993, Ser. No. 45,738
Claims priority, application Japan, Apr. 16, 1992, 4-096224
Int. Cl.[5] H04N *9/68*
U.S. Cl. 348—256 **5 Claims**



1. A digital video camera, comprising:

saturation calculating means for calculating a saturation on the basis of two color difference signals;

suppression coefficient calculating means for calculating a suppression coefficient according to said saturation; and

multiplying means for multiplying each of said two color difference signals by the same suppression coefficient;

wherein said saturation calculating means includes a pseudo-saturation calculating circuit for calculating a pseudo-saturation equal to an actual saturation, said pseudo-saturation calculating circuit including two first absolute value circuits for respectively calculating absolute values of said two color difference signals, a first subtracting circuit for calculating a difference of two absolute values, a selecting circuit for selecting one of said two absolute values, a second absolute value circuit for calculating an absolute value of said difference, a multiplying circuit for multiplying an output signal from said second absolute value circuit by a gain, and a second subtracting circuit for subtracting an output signal of said multiplying circuit from an output signal of said selecting circuit.

5,337,084
AUTOMATIC FOCUSING DEVICE UTILIZING A TREND OF VARIATION AND DEGREE OF RELIABILITY OF A FOCUSSING EVALUATION VALUE SIGNAL TO IMPROVE IMAGE FOCUSING

Takahiro Nakamura, Tochigi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1992, Ser. No. 862,361
Claims priority, application Japan, Apr. 3, 1991, 3-071159
Int. Cl.[5] H04N *5/232, 5/30, 5/138*
U.S. Cl. 348—345 **4 Claims**

1. An automatic focusing device comprising:

lens means for changing a focused field of an object;

moving means for moving said lens means;

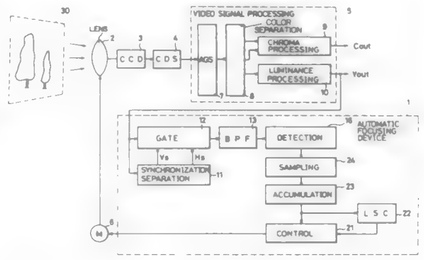
extracting means for image-sensing the object through said lens means to extract a luminance signal;

signal outputting means for outputting a focusing evaluation value signal for evaluating a focusing condition of the object on the basis of said extracted luminance signal;

determination means for determining reliability of the focusing evaluation value signal; and

control means for controlling said moving means on the basis of the determined reliability to improve focusing of the object;

wherein said signal outputting means outputs the focusing evaluation signal for every field or every frame;



wherein said determination means calculates a trend of variation and reliability based on a variation of the focusing evaluation value signal output for each field or each frame;

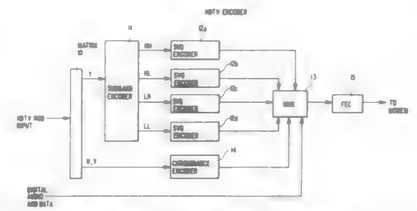
wherein said determination means determines the trend of variation and reliability of the focusing evaluation value signal using an approximation method;

wherein said control means controls said moving means so that said lens means is still when the determined reliability is less than a predetermined value.

5,337,085
CODING TECHNIQUE FOR HIGH DEFINITION TELEVISION SIGNALS

Lin-Nan Lee, Potomac; Ashok K. Rao, Germantown, and Sanjai Bhargava, Bethesda, all of Md., assignors to Comsat Corporation, Bethesda, Md.

Filed Apr. 10, 1992, Ser. No. 866,851
Int. Cl.[5] H04N *7/137*
U.S. Cl. 348—398 **16 Claims**



1. A television signal coding method comprising the steps of:

(a) dividing an image into a plurality of two-dimensional blocks, each block being composed of a predetermined number of pixels;

(b) for each block exhibiting an intensity variation within that block, calculating first and second means values based on said variation;

(c) calculating distortion values between said each block and a respective plurality of basic vectors in a codebook based on said first and second mean values, said vectors corresponding to the most common patterns to which the human visual system is highly sensitive;

VOL 1165 ISS 2 AG 9 1994 UMI

(d) identifying one of said vectors producing a minimum one of said distortion values as a selected pattern; and

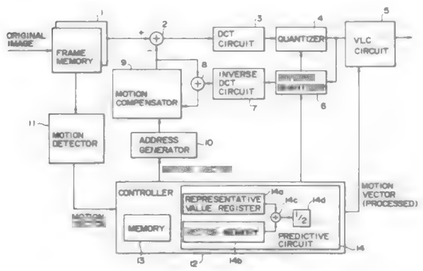
(e) generating a digital signal including a plurality of first bits representing said selected pattern, a plurality of second bits representing said first mean value and a plurality of third bits representing step size of a pattern edge in said selected pattern.

5,337,086

IMAGE SIGNAL CODING AND DECODING APPARATUS WITH MULTIPLE-PROCESS MOTION COMPENSATION

Yasushi Fujinami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 956,293
Claims priority, application Japan, Oct. 22, 1991, 3-302503
Int. Cl.[5] H04N *7/133, 7/137*
U.S. Cl. 348—402 14 Claims



1. An image signal coding apparatus for executing orthogonal transformation of an image signal composed of groups of unitary macroblocks each formed of subblocks, then quantizing the transformed data, and subsequently coding the data thus quantized, said apparatus comprising:

inverse means for decoding and inversely quantizing said quantized data;

motion detector means for calculating actual motion vectors of individual subblocks of said macroblocks for motion compensation of a dynamic image;

motion vector generating means for generating a representative motion vector of a current macroblock by selecting the actual motion vectors of one of said subblocks;

motion vector predictive means for determining a predicted motion vector for each of the remaining subblocks of the current macroblock, said predicted motion vector being derived from said representative motion vector of the current macroblock and from a representative motion vector of an adjacent macroblock;

first difference calculator means for calculating the difference between the predicted motion vector of each subblock obtained from said predictive means and the actual motion vector of each subblock of the current macroblock, thereby forming difference vectors;

motion compensator means for forming a predictive image by executing a motion compensation in conformity with an output of said inverse means, said representative motion vector and said difference vectors;

second difference calculator means for calculating the difference between the predictive image formed by said motion compensator means and the original image signal corresponding to said predictive image; and

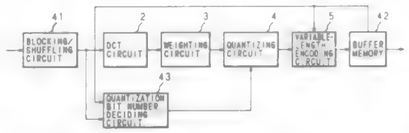
multiplexer means for multiplexing at least said quantized data, said difference vectors and said representative motion vector of the current macroblock.

5,337,087

VIDEO SIGNAL ENCODING APPARATUS

Hidetoshi Mishima, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 820,913, Jan. 15, 1992, abandoned. This application Mar. 9, 1993, Ser. No. 29,941
Claims priority, application Japan, Jan. 17, 1991, 3-003758; Jun. 13, 1991, 3-141531; Jun. 18, 1991, 3-145752; Jan. 7, 1992, 4-000904
Int. Cl.[5] H04N *7/133*
U.S. Cl. 348—405 7 Claims



1. A video signal encoding apparatus for compressing and encoding a digital video signal, comprising:

block structuring means for structuring blocks each consisting of a plurality of pixels in the video signal;

transformation means for performing an orthogonal transform on each of the structure blocks to obtain a transform coefficient;

quantizing means for quantizing the transform coefficient;

encoding means for encoding the quantized data to obtain coded data; and

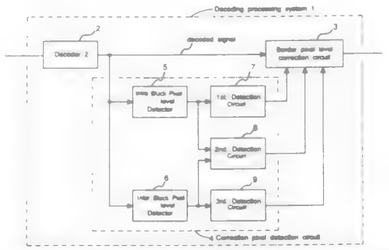
decision means for determining a number of quantization bits for said quantizing means on the basis of an activity index of each block and an amount of the obtained coded data.

5,337,088

METHOD OF CORRECTING AN IMAGE SIGNAL DECODED IN BLOCK UNITS

Masahiro Honjo, Sakai, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Continuation-in-part of Ser. No. 870,633, Apr. 20, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,553
Claims priority, application Japan, Apr. 18, 1991, 3-086955
Int. Cl.[5] H04N *7/133*
U.S. Cl. 348—420 3 Claims



1. A method of correcting an image signal decoded in block units consisting of a predetermined number of pixels comprising the steps of:

detecting an inter-block pixel level difference between border pixels in two adjacent blocks;

comparing said inter-block pixel level difference with a predetermined threshold value; and

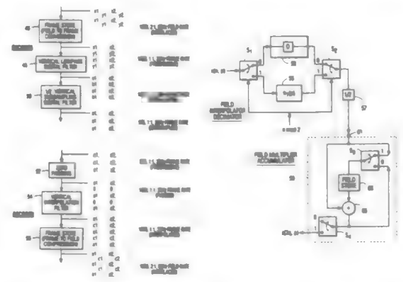
correcting the levels of said border pixels such that the difference between said levels of said border pixels falls within said predetermined threshold value if said inter-block pixel level difference is greater than said predetermined threshold value.

5,337,089

APPARATUS FOR CONVERTING A DIGITAL VIDEO SIGNAL WHICH CORRESPONDS TO A FIRST SCAN LINE FORMAT INTO A DIGITAL VIDEO SIGNAL WHICH CORRESPONDS TO A DIFFERENT SCAN

Eberhard Fisch, Yonkers, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Jun. 7, 1993, Ser. No. 73,402
Int. Cl.[5] H04N *7/01*
U.S. Cl. 348—446 6 Claims



1. Apparatus for converting a received digital signal representing a video image having a first scan line format into an output digital signal representing a video image having a second scan line format; the first format having a number N of scan lines per sequential frame of two successive interleaved fields, each field having a number N/2 of scan lines; the second format having progressive frames, each frame having a number N/2 scan lines, the field frequency of the first format being substantially twice the frame frequency of the second format; said apparatus having an input terminal for the received digital signal and comprising:

first multiplexing means coupled to said input terminal and having a pair of outputs which are alternately multiplexed to said input terminal during alternate fields of the received signal;

a pair of transmission paths each having an input and an output, the inputs thereof being respectively coupled to the respective outputs of said first multiplexing means so that even-numbered fields are supplied to a first of said paths and odd-numbered fields are supplied to a second of said paths;

second multiplexing means having respective inputs coupled to the outputs of said first and second paths and having an output which is alternately multiplexed to said inputs in synchronism with said first multiplexing means, so that even-numbered fields transmitted by said first transmission path and odd-numbered fields transmitted by said second transmission path are alternately produced at the output of said second multiplexing means;

delay means in said first transmission path for delaying each even-numbered field therein for substantially one field period and supplying successive delayed even-numbered fields to the output of said first transmission paths;

lowpass digital filter means in said second transmission path for vertically (line-by-line) lowpass filtering each odd-numbered field and supplying successive filtered odd-numbered fields to the output of said second transmission path; and

field store means coupled to the output of said second multiplexing means for receiving the delayed even-numbered fields and the filtered odd-numbered fields, and adapted to derive therefrom subsampled fields having scan lines which each correspond to an average of a scan line of a filtered odd-numbered field and the equivalent scan lines of the adjoining even-numbered fields;

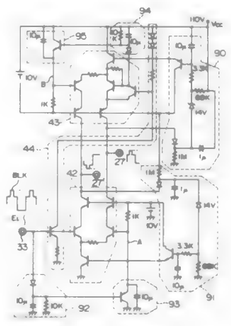
said field store means being further adapted to produce said subsampled fields at an output thereof in synchronism with the even-numbered fields of the received signal, so that said subsampled fields constitute said digital output signal.

5,337,090

VIDEO OUTPUT CIRCUIT WITH WIDE BANDWIDTH AND LOW POWER CONSUMPTION FOR HIGH RESOLUTION DISPLAY

Masanori Ogino; Takeo Yamada; Miyuki Ikeda, all of Yokohama; Tsuneo Fujikura, Chigasaki, and Takahiko Fujiwara, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1992, Ser. No. 986,033
Claims priority, application Japan, Dec. 10, 1991, 3-325519
Int. Cl.[5] H04N *5/21*
U.S. Cl. 348—626 9 Claims



1. A wide bandwidth video output circuit with a low-pass filter whose order is equal to or greater than 4, the circuit comprising:

a first terminal;

a first inductor means connected with the first terminal;

a first stray capacitor means present equivalently at a connection of the first terminal means and said first inductor means;

a bridged T-type circuit including:

first capacitor means,

coil means connected in parallel to said first capacitor means and having a center tap, the parallel connected first capacitor and coil means being connected with the first inductor means such that the first inductor means is connected in series with the first terminal and said bridged T-type circuit, and

third inductor means at least equivalently connected to said center tap of said coil means;

a second terminal connected to third inductor means such that the third inductor means is connected in series between the second terminal and the coil means center tap, one of the first and second terminals being supplied with a video signal and the other outputting a filtered video signal;

a second stray capacitance means present equivalently at a connection of the second terminal and said third inductor means;

a shunt circuit connected in series with said bridged T-type circuit the shunt circuit including;

second inductor means and

first resistor means, the second inductor means and the first resistor means being connected in parallel with each other and in series with the parallel connected first capacitor and coil means of said bridged T-type circuit;

second resistor means connected in series to the parallel connected second inductor and first resistor means of said shunt circuit means;

VOL 1165 ISS 2 AG 9 1994 UMI

a third stray capacitor means present equivalently in parallel to said second resistor means;

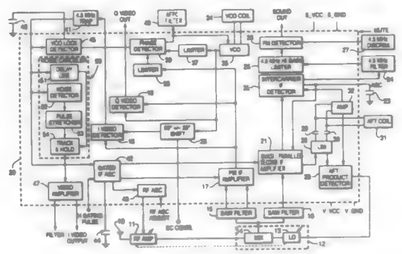
whereby said bridged T-type circuit means, said first inductor means, said shunt circuit means and said second resistor means constitute together with said first, second, and third stray capacitor means a low-pass filter whose order is equal to or more than 4.

5,337,091

VIDEO IF AMPLIFIER WITH AUXILIARY IF AMPLIFIER FOR INTERCARRIER SOUND & AFT

Jack R. Harford, Flemington, and Alvin R. Balaban, Lebanon, both of N.J., assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Jul. 1, 1993, Ser. No. 84,605
Int. Cl.[5] H04N *5/62*
U.S. Cl. 348—737 **10 Claims**



1. In a television signal receiver, suitable for incorporation into a television set or video recorder, a combination comprising:

a downconverter for responding to a selected television signal to supply first and second output signals each of which includes intermediate frequencies including a downconverted in-channel sound carrier and a downconverted picture carrier, said intermediate frequencies subject to at times including an adjacent-channel sound carrier downconverted from a non-selected adjacent-channel television signal, said downconverter including a local oscillator for generating oscillations at a frequency controlled in response to an automatic fine tuning signal;

a first intermediate-frequency amplifier including respective tuning elements, said first intermediate-frequency amplifier generating as an output signal therefrom a first-IF-amplifier response to said first output signal supplied by said downconverter;

a first adjacent-channel sound carrier trap included in the tuning elements of said first intermediate-frequency amplifier, for reducing said first-IF-amplifier response to adjacent-channel sound carrier, which first adjacent-channel sound carrier trap also reduces said first-IF-amplifier response for said downconverted picture carrier;

an in-channel sound carrier trap included in said first intermediate-frequency amplifier tuning elements, for reducing said first-IF-amplifier response to in-channel sound carrier;

a video detector for generating a composite video signal in response to said first-IF-amplifier response;

a second intermediate-frequency amplifier including respective turning elements, said second intermediate-frequency amplifier generating as an output signal therefrom a second-IF-amplifier responsive to said second output signal supplied by said downconverter, said in-channel sound carrier not being trapped out from said second-IF-amplifier response;

a second adjacent-channel sound carrier trap included in the tuning elements of said second intermediate-frequency amplifier, for reducing said second-IF-amplifier response for said downconverted picture carrier, but reducing said second-IF-amplifier response for said downconverted picture carrier less than said first-IF-amplifier response is reduced for said downconverted picture carrier by said first adjacent-channel sound carrier trap;

means for generating a mixing signal in selective response to said second-IF-amplifier response, said mixing signal being generated responsive to the portion of said second-IF-amplifier response descriptive of picture carrier as translated to an intermediate frequency, rather than to other portions of said second-IF-amplifier response;

a first product detector for mixing said second-IF-amplifier response with said mixing signal, thereby to generate a first product signal comprising intercarrier-sound-IF response and its image;

a filter for separating said intercarrier-sound-IF response from its image, as applied to said intercarrier sound intermediate-frequency amplifier as an input signal thereof;

an intercarrier sound intermediate-frequency amplifier for amplifying said intercarrier-sound-IF response, thereby to supply an amplifier intercarrier-sound-IF signal;

a sound detector for generating a sound signal responsive to said amplified intercarrier-sound-IF signal; and

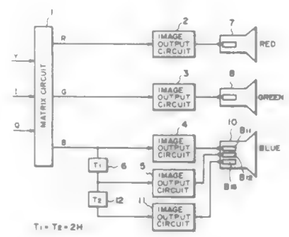
an automatic fine tuning detector for generating said automatic fine tuning signal, responsive to sand second-IF-amplifier response.

5,337,092

IMAGE DISPLAY APPARATUS

Nobuo Minoura, c/o Canon Kabushiki Kaisha 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Filed Apr. 25, 1991, Ser. No. 691,537
Claims priority, application Japan, Apr. 27, 1990, 2-111963
Int. Cl.[5] H04N *9/16, 9/64, 5/46*
U.S. Cl. 348—776 **33 Claims**



1. A television apparatus which displays an image corresponding to a television signal, comprising:

(a) an image signal generating means for receiving an image signal and for generating a first image signal and a second image signal from the received image signal with a deviation whose amount is limited by an amount of overscanning being provided between a time axis of the first and second image signals; and

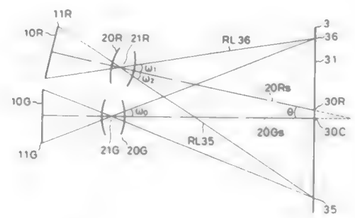
(b) a cathode ray tube which simultaneously emits a first electron beam corresponding to the first image signal generated by said image signal generating means and a second electron beam corresponding to the second image signal generated by said image signal generating means.

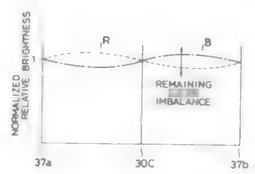
5,337,093

PROJECTION TELEVISION SYSTEM INCLUDING A PLURALITY OF DISPLAY ELEMENTS WITH CORRESPONDING OPTICAL AXES INCIDENT TO A SCREEN AT DIFFERENT POINTS OFFSET FROM THE SCREEN CENTER

Toshihide Kaneko, and Eiichi Toide, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 809,155, Dec. 18, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 98,256
Claims priority, application Japan, Dec. 19, 1990, 2-403503; May 30, 1991, 3-127218; Oct. 30, 1991, 3-283418
Int. Cl.[5] H04N *9/31, 5/74, 9/78*
U.S. Cl. 348—778 **21 Claims**





14. A projection television system comprising:

a plurality of display elements, each respectively displaying images of a different one of a plurality of respective colors;

a screen, onto which a color image, formed by magnifying and synthesizing the display images of the respective colors, is projected;

projection lenses, provided for the respective display elements for magnifying the display images displayed on the respective display elements and for projecting the display images onto the screen to form the color image;

a first one of the projection lenses being disposed so that its corresponding optical axis is incident at a point offset from a reference point at the center of the screen;

at least one of the other project lenses being disposed that its corresponding optical axis is incident to the screen at an angle with respect to the optical axis of the first project lens and at a point offset from a reference point of the center of the screen;

the optical axes of the first one of the projection lenses and the other projection lenses each being incident at points aligned on a horizontal line offset from the reference point of the center of the screen;

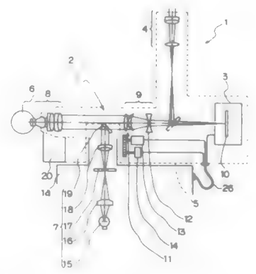
wherein at least one of said display elements is provided with a filter having a transmittance varied from one position to another such that normalized brightness is substantially uniform throughout the entire screen, with said normalized brightness being defined as a ratio of the brightness of the image projected onto a given point on the screen by said at least one of the other projection lenses to the brightness of the image projected onto said given point by said first projection lens.

5,337,094

EYE OBSERVATION APPARATUS

Seinosuke Mizuno, and Yoshihiko Yamada, both of Nagoya, Japan, assignors to Tomey Corporation, Nagoya, Japan

Filed Feb. 13, 1992, Ser. No. 834,761
Claims priority, application Japan, Feb. 15, 1991, 3-006232[U]; Jan. 16, 1992, 4-005509
Int. Cl.[5] A61B *3/14*
U.S. Cl. 351—206 **3 Claims**



1. Eye observation apparatus, comprising:

illumination optics which is fixed on a frame of a main body, said illumination optics illuminating a portion for inspection;

a photographing means movably mounted within said frame of the main body along with an optical axis; and

a biasing means for biasing said photographing means so that a tip portion of said photographing means comes into slight contact with an eye, wherein said photographing means includes an eye piece and a camera having an image plane which is emitted from said portion for inspection to reach said image plane, said photographic optics having an object compound lens and an image compound lens,

wherein said photographic means has object compound lens and image compound lens having convex compound lens and concave compound lens,

wherein said convex compound lens located in a side of said object compound lens and alienated from said concave compound lens in a side of said image plane, and

wherein one of said convex compound lens and said concave compound lens is movable on the optical axis.

5,337,095

OPHTHALMOLOGICAL INSTRUMENT

Kenjiro Katsuragi, and Akira Tanabe, both of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan

Continuation of Ser. No. 513,275, Apr. 24, 1990, abandoned. This application Oct. 19, 1992, Ser. No. 963,048
Claims priority, application Japan, Apr. 26, 1989, 1-106351
Int. Cl.[5] A61B *3/14*
U.S. Cl. 351—208 **12 Claims**

1. An ophthalmological instrument comprising:

a base means;

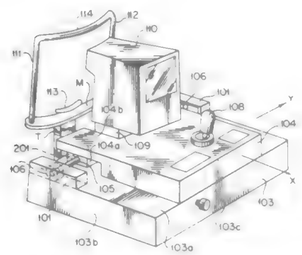
an eye-testing unit disposed on the base means facing an eye to be tested, including an anterior portion observation system for observing an anterior portion of an eye,

said anterior portion observation system having a focusing position shifting means for properly focusing on the anterior portion of the eye in at least two different defined positions of said eye-testing unit;

shift mechanism means for shifting said eye-testing unit on said base in a forward and backward direction with re-

VOL 1165 ISS 2 AG 9 1994 UMI

spect to the eye to be tested to establish one of the at least two different defined positions; and



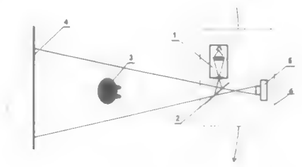
means responsive to the shift mechanism means for operating the focusing position shifting means as a function of movement of the eye testing unit.

5,337,096

METHOD FOR GENERATING THREE-DIMENSIONAL SPATIAL IMAGES

Zhimin Qu, and Shaugun Pan, both of Coralville, Iowa, assignors to Pantech, Inc., Coralville, Iowa

Filed Aug. 23, 1993, Ser. No. 109,941
Int. Cl.[5] G03B *21/00, 35/00*
U.S. Cl. 353—7 **6 Claims**



1. A method for generating a 3-D spatial image display that has a background scene and foreground objects, said method comprising the steps of: generating a series of stereoscopic image pairs of a background scene from different positions around the scene which image pairs will form the background scene of the final image display; and synthesizing the foreground objects with the said series of projected stereoscopic background image pairs to produce a new series of stereoscopic pairs including both foreground objects and the background scene.

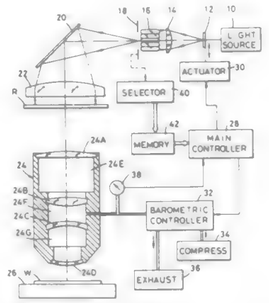
5,337,097

PROJECTION OPTICAL APPARATUS

Kazuaki Suzuki, Tokyo; Yukio Kakizaki, and Tetsuo Taniguchi, both of Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 999,455, Dec. 29, 1992, abandoned, which is a continuation of Ser. No. 859,238, Mar. 26, 1992, abandoned, which is a continuation of Ser. No. 740,871, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 464,621, Jan. 3, 1990, abandoned, which is a continuation of Ser. No. 326,391, Mar. 17, 1989, abandoned, which is a continuation of Ser. No. 945,648, Dec. 23, 1986, abandoned. This application Nov. 19, 1993, Ser. No. 154,997
Claims priority, application Japan, Dec. 26, 1985, 61-256986; Oct. 30, 1986, 60-292286
Int. Cl.[5] G03B *27/34*
U.S. Cl. 353—101 **3 Claims**

1. Apparatus for projecting an image of an object along an optical axis onto a workpiece including, in combination, an illumination optical system, an optical lens system and a control system, with said illuminating optical system comprising:
light source means for generating a beam of light energy to illuminate said object;
shutter means for interrupting said beam of light energy at given time intervals with said interrupted beam reaching full illumination in each time interval over a time constant dependent upon the numerical aperture of said illumination optical system;
reticle means containing a pattern representing said
aperture means having an adjustable aperture;
means for adjusting the size of the aperture;
means for directing said beam of light energy through said aperture means and upon said reticle means for forming said image;
said optical lens system comprising means including a sealed pressurized lens chamber containing a plurality of lenses for projecting light onto said workpiece and having an



optical characteristic responsive to an accumulation of heat in said pressurized lens chamber from said light energy, and
said control system comprising means responsive to said aperture means for varying the light distribution to said optical lens system in accordance with changes in the numerical aperture of said illuminating optical system,
storage means for storing a plurality of time constant or coefficients of change, given as a ratio of the numerical aperture of the illumination optical system to the numerical aperture of the optical lens system, corresponding to a multiplicity of different numerical aperture sizes of said aperture means;
selector means responsive to said aperture means for selecting the time constant or coefficient of change from said storage means corresponding to the numerical aperture size of said aperture means; and
means for controlling the pressure in said optical lens system corresponding to the selection of said time constant.

5,337,098

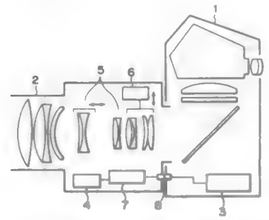
CAMERA-SHAKE PREVENTING DEVICE

Kazuharu Imafuji, Yokohama, and Nobuhiko Terui, Ichikawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 5,566
Claims priority, application Japan, Feb. 14, 1992, 4-059643
Int. Cl.[5] G03B *39/00*
U.S. Cl. 354—70 **2 Claims**

1. A camera-shake preventing device comprising:
camera-shake detecting means for detecting a camera-shake caused by hand movement;
computing means for computing a proper camera-shake compensation quantity from the camera-shake detected by said camera-shake detecting means;
a camera-shake compensating lens drivable for compensating the camera-shake;

lens driving means for driving said camera-shake compensating lens in accordance with the compensation quantity computed by said computing means so as to compensate the camera-shake;
a manually operable compensating mode selecting switch for selecting between a regular compensating mode and a release compensating mode; and



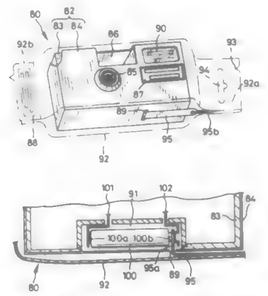
control means for starting compensation of the camera-shake through said lens driving means in response to half-depression of a release button when said compensating mode selecting switch selects the regular compensating mode, and starting compensation of the camera-shake through said lens driving means in response to full-depression of said release button when said compensating mode selecting switch selects the release compensating mode.

5,337,099

LENS-FITTED PHOTOGRAPHIC FILM UNIT WITH FLASH DEVICE AND BATTERY-INSULATING WRAPPER

Hisashi Tasaka; Hidefumi Obo; Takashi Kubo, and Kazuo Kamata, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 1, 1993, Ser. No. 84,717
Claims priority, application Japan, Jul. 1, 1992, 4-174358; Jul. 14, 1992, 4-187072; Jul. 23, 1992, 4-197308
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—76 **7 Claims**



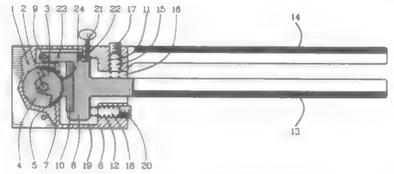
1. A lens-fitted photographic film unit including photographic film preloaded therein, a photograph-taking mechanism for forming an image of a subject on said photographic film, a flash device for projecting a flash of light to said subject, a battery for supplying said flash device with electrical energy, and first and second terminals in contact with first and second electrodes of said battery for connecting said battery with said flash device electrically;
a wrapper containing said lens-fitted photographic film unit, said wrapper being adapted to be torn in order to remove said lens-fitted photographic film unit; and
an insulating material having first and second end portions, said first end portion being removably inserted between said first electrode and said first terminal to prevent said first electrode and said first terminal from being in electrical connection, said second end portion being fixed on said wrapper, whereby when said wrapper is removed from said lens-fitted photographic film unit, said first end portion is drawn from between said first electrode and said first terminal so as to connect said first electrode electrically with said first terminal.

5,337,100

CAMERA QUICK RELEASE

Jerry J. Oxford, 61 Jordan Ct., Lawrenceville, Ga. 30244

Filed Oct. 28, 1993, Ser. No. 144,635
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—81 **28 Claims**



27. A method for using a camera quick-release tripod fastener comprising:
a fastener axle having an attachment bolt extended from an attachment end of the fastener axle,
a fastener-lock section intermediate bearing sections on a circumferential outside periphery of the fastener axle,
a fastener housing with a fastener bay having a cylindrical inside periphery in which the fastener axle is insertable with the bearing sections on the outside periphery of the fastener axle in rotational contact with the cylindrical inside periphery of the fastener bay,
a lock latch that is pivotal on a latch axle that is attached to the fastener housing in parallel relationship to axes of the fastener bay and the fastener axle,
a fastener lock on the lock latch in pivotally engageable relationship with the fastener-lock section on the circumferential outside periphery of the fastener axle,
a latch handle extended from the lock latch perpendicularly to the latch axle,
a housing handle extended from the fastener housing in a direction selectively parallel to the latch handle,
a fastener spring positioned in distance-decreasing tensional relationship between the fastener-lock and the fastener-lock section on the circumferential outside periphery of tile fastener axle and with the fastener spring positioned in distance-increasing tensional relationship between the latch handle and the housing handle,
at least one attachment-bolt hole oppositely disposed from the fastener bay in the fastener housing,
a thread-lock means on the attachment bolt,
lock-engagement bolt that is threadable selectively in a lock-engagement-bolt orifice that is in communication between a latch-handle bay and an outside periphery of the fastener housing,
an internal end of the lock-engagement bolt being thread-positioned selectively in contact with the latch handle, and
an external end of the lock-engagement bolt having a hand-rotatable head;
the method comprising the following steps:
attaching the fastener axle to a camera by screwing the attachment bolt into an attachment-bolt hole in the camera,
actuating the thread-lock means to lock threads of the

VOL 1165 ISS 2 AG 9 1994 UMI

attachment bolt to threads of the attachment-bolt hole in the camera,

attaching the fastener housing to a desired camera stand by screwing a stand-attachment bolt into an attachment-bolt hole in the fastener housing,

attaching the camera to the desired camera stand by inserting the fastener axle into the fastener bay while the latch handle is squeezed towards the housing handle to pivot the lock latch to a disengagement position,

releasing the latch handle to allow spring pressure of the fastener spring to engage the lock latch with the fastener-lock section in order for the fastener axle and the camera attached to the fastener axle to be retained thereby in a desired circumferential position relative to the fastener housing and the camera stand,

hand-squeezing the latch handle in a direction towards the housing handle for pivoting the lock latch to a position of disengagement with the fastener-lock section in order to rotate the fastener axle and the camera attached thereto as desired for changing circumferential positioning of the camera relative to the camera stand, and

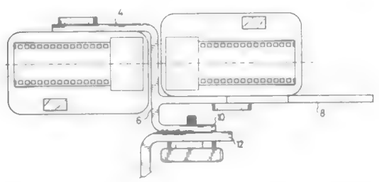
hand-squeezing the latch handle in a direction towards the housing handle for pivoting the lock latch to a position of disengagement with the fastener-lock section in order to remove and to replace the fastener axle and the camera attached thereto as desired.

5,337,101

METHOD AND APPARATUS FOR PRODUCING STEREOSCOPIC EFFECTS

Shao-Chia Lin, 6th Fl., No. 15-1, Sec. 2, Keelung Rd., Taipei, Taiwan

Filed Jan. 19, 1993, Ser. No. 4,832
Int. Cl.[5] G03B *35/08, 29/00*
U.S. Cl. 354—113 **2 Claims**



1. An apparatus for providing stereoscopic effects, comprising:

a cassette comprising:

a chamber for enclosing two strips of film;

a first passage communicating with said chamber and diverging into two second passages at an edge;

a first gear mounted below said chamber;

a second gear engaging with said first gear; and

two separate wheels co-axially connecting with said second gear and comprising sprockets radially protruding therefrom for engaging in the perforations of the strips of film so that the strips of film are fed from said chamber along said first passage by means of said wheels and are separated from each other and respectively induced along said second passages when said first gear is rotated; and

a projector comprising:

two pairs of transparent panels defining two third passages communicating with said second passages for the strips of film;

two cheers communicating with said third passages for containing the strips of film;

two light sources projecting light through said pairs of transparent panels for providing visions; and

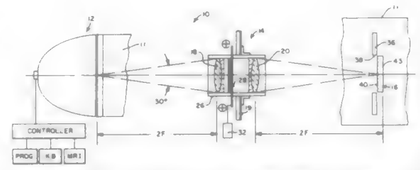
two lenses through which the light passes.

5,337,102

INSTANT PRINTER FOR VOLUMETRIC IMAGING OF DATA FROM MAGNETIC RESONANCE IMAGING APPARATUS

Douglas A. Winnek, 28091 Robinson/Canyon Rd., Carmel, Calif. 93923

Filed Jul. 29, 1991, Ser. No. 736,854
Int. Cl.[5] G03B *35/08*
U.S. Cl. 354—115 **20 Claims**



1. An apparatus for forming three-dimensional images of an object represented by data from a magnetic resonance imaging (MRI) unit comprising:

a housing;

means in the housing for providing a display screen for displaying the MRI data as a two-dimensional image of an object, said means being operable to rotate the image about a selective axis or translate the image relative to a reference with the image being representative of the object analyzed by said MRI unit, the image being in the form of light rays emanating from said screen;

lens means for focusing the light rays on a film plane spaced from said providing means;

a lenticular film at said film plane, said film having a lenticular screen and an emulsion thereon; and

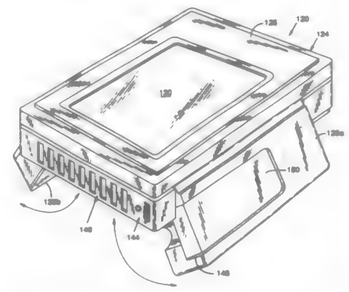
means between the lens system means and the lenticular film for causing the light rays to form a continuum of views of the image applied through the lenticular screen to the film emulsion whereby, when the emulsion is developed, the continuum of views can be viewed through the lenticular screen.

5,337,103

CASE FOR OVERHEAD PROJECTION DISPLAY PANEL

Paul E. Gulick, Tualatin, Oreg., assignor to In Focus Systems, Inc., Tualatin, Oreg.

Filed Jan. 6, 1993, Ser. No. 1,055
Int. Cl.[5] G03B *21/14*
U.S. Cl. 353—119 **38 Claims**



1. An overhead projection display panel case for supporting a light modulating element and encasing modulation control circuitry for controlling the light modulating element, the display panel modulating light transmitted from a light surface to display information on a projection screen, comprising:

an annular case element for supporting the light modulating element to modulate light transmitted from the light surface; and

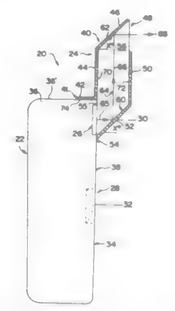
a first occluding panel connected to and extendable from the annular case element for selectively occluding a portion of the light surface, the first occluding panel being pivotable relative to the annular case element and at least one of the annular case element and the first occluding panel encasing modulating control circuitry of the display panel.

5,337,104

APPARATUS AND METHOD FOR REDIRECTING CAMERA FLASH LIGHT SO AS TO AVOID RED-EYE

Neil D. Smith, 159 Maple Ave., and Martin Yate, 9 Central Park, both of Sea Cliff, N.Y. 11579

Filed Nov. 9, 1992, Ser. No. 973,615
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—149.11 **25 Claims**



1. An apparatus for shifting light beams originating from a flash source of a camera, comprising:

a main body having an inlet opening and an outlet opening;

means for mounting the inlet opening of said main body over the flash source of the camera such that the inlet opening extends about and surrounds the flash source so as to avoid a splitting of the light beams originating from the flash source.

said main body including a first reflective surface positioned downstream in a direction of travel of the light beams from the flash source when said main body is mounted on the camera, said first reflective surface being positioned to redirect the beams of light from a first direction of travel to a second direction of travel,

said main body also including a second reflective surface positioned downstream in a direction of light beam travel from said first reflective surface, said second reflective surface being positioned so as to redirect the beams of light reflected by said first reflective surface from the second direction of travel to a third direction of travel which extends through the outlet opening of said main body.

5,337,105

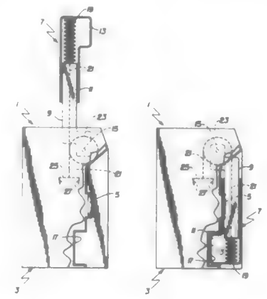
COMPACT CAMERA WITH AUTOMATICALLY EXTENDING FLIP-UP FLASH UNIT

Mikhail Vaynshteyn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1993, Ser. No. 3,032
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—149.11 **5 Claims**

1. A compact camera comprising a camera body, a taking lens, and a pivotally supported electronic flash unit adapted to be flipped up from said camera body to distance said flash unit from said taking lens for flash photography and to be flipped down towards the camera body for storage, is characterized by:

means, responsive to said flash unit being flipped up from said camera body, for automatically extending the flash unit from the camera body to distance the flash unit from



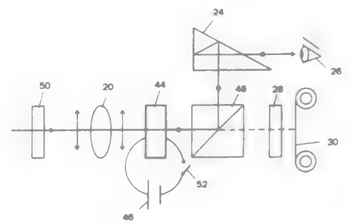
said taking lens farther than it is distanced from the taking lens when the flash unit is flipped up from the camera body, and, responsive to the flash unit being flipped down towards the camera body, for automatically retracting the flash unit towards the camera body the same amount it was automatically extended.

5,337,106

LIQUID-CRYSTAL IMAGE DIRECTOR FOR SINGLE-LENS-REFLEX CAMERA

Suganda Jutamulia, Fremont; Hideaki Niwa, and Shinji Toyoda, both of Cupertino, all of Calif., assignors to Kowa Company, Ltd., Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 74,227
Int. Cl.[5] G03B *19/12*
U.S. Cl. 354—152 **11 Claims**



1. A light-directing mechanism for replacing a hinged mirror in a single-lens-reflex camera, comprising:

polarizing means for polarizing incident light to provide a beam of polarized incident light,

polarization-rotating means for rotating the polarization of said beam of polarized light to provide an output beam from said polarization-rotating means,

activating means for activating said polarization-rotating means so that said output beam from said polarization-rotating means is not rotated,

a polarizing beam splitter for receiving said output beam from said polarization-rotating means and causing said output beam from said polarization-rotating means to traveling in a first direction when said output beam from said polarization-rotating means is rotated and in a second direction when said output beam from said polarization-rotating means is not rotated,

first utilization means for utilizing light traveling in said first direction from said polarizing beam splitter, and

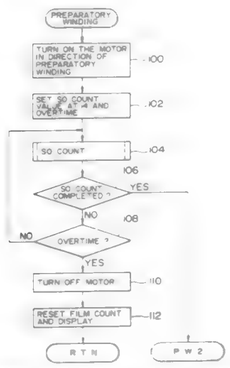
VOL 1165 ISS 2 AG 9 1994 UMI

second utilization means for utilizing light traveling in said second direction from said polarizing beam splitter.

5,337,107
PREPARATORY WINDING TYPE CAMERA

Takao Umetsu, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Aug. 11, 1993, Ser. No. 104,549
Claims priority, application Japan, Aug. 13, 1992, 4-216112
Int. Cl.[5] G03B *1/18, 17/36*
U.S. Cl. 354—173.1 **2 Claims**



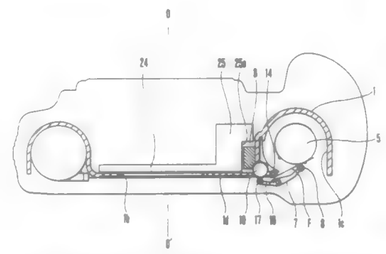
1. A preparatory winding type camera comprising:
a film winding means for electrically winding a film from a patrone;
a film rewinding means for electrically rewinding the film into the patrone;
a film delivery control means for controlling the film winding means and the film rewinding means in such a manner that one frame is rewound after the whole film in the patrone is wound up during the preparatory winding processing and one frame is rewound each time a shutter release is performed after the completion of the preparatory winding;
a film counter adapted to be counted up each time one frame is wound after the film in the patrone is wound by a photographing prohibiting region during the preparatory winding processing and to be counted down each time one frame is rewound;
a display means for displaying the number of film frames on the basis of the count value in the film counter; and
a control means for controlling the display means in such a manner that a value smaller by one than the count value is displayed as the number of film frames at the time of count-up in the film counter during the preparatory winding processing and the display of the number of film frames is maintained as it is at the time of rewinding by one frame during the preparatory processing.

5,337,108
CAMERA

Shoji Kaihara, and Shousuke Haraguchi, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 650,865, Feb. 5, 1991, Pat. No. 5,182,590.
This application Oct. 30, 1992, Ser. No. 969,347
Claims priority, application Japan, Feb. 9, 1990, 2-030021; Feb. 9, 1990, 2-030023
Int. Cl.[5] G03B *1/60, 1/00*
U.S. Cl. 354—218 **8 Claims**

1. A camera, comprising:
a rotatable detecting roller having an outer circumferential face arranged such that a film engaging portion of said face lies in the same plane as that extending from a film guide surface of a film guide disposed in proximity with an aperture of a camera body;
detecting means for detecting a rotational state of said detecting roller; and

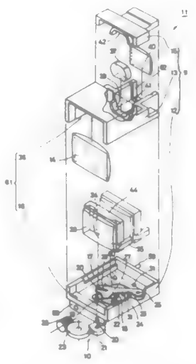


guide means disposed in proximity with said detecting roller and arranged to have a film surface engaging portion which lies in the same plane as that extending from said film guide surface, said detecting roller being disposed between said film guide and said guide means.

5,337,109
ZOOM VIEW FINDER

Yuzi Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 708,205, May 31, 1991, abandoned.
This application Mar. 9, 1993, Ser. No. 29,965
Claims priority, application Japan, Jun. 4, 1990, 2-58957[U]; Jun. 13, 1990, 2-62313[U]; Jun. 13, 1990, 2-62314[U]
Int. Cl.[5] G03B *13/10*
U.S. Cl. 354—222 **20 Claims**

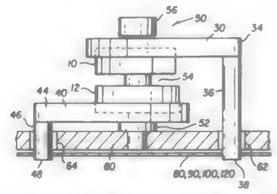


1. A zoom view finder having a stationary lens group and a movable variable power lens group, comprising:
biasing means for biasing said movable variable power lens group in a predetermined optical axis direction;
a drive mechanism for driving said movable variable power lens group;
a unified finder case in which said stationary lens group, said movable variable power lens group, said biasing means and said drive mechanism are supported; and,
a worm wheel mechanism connected to said drive mechanism for maintaining said movable variable power lens group in a predetermined adjusted position against said biasing means.

5,337,110
ELECTROMAGNETIC ACTUATOR

David R. Dowe, Holley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 6, 1993, Ser. No. 162,732
Int. Cl.[5] G03B *9/04, 9/08*
U.S. Cl. 354—230 **18 Claims**

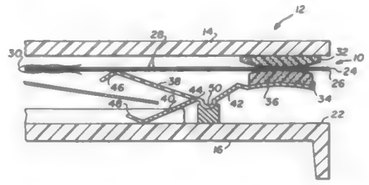


1. An electromagnetically driven actuator supported by a base plate for controlling an aperture blade having at least first and second apertures formed therein for regulating the amount of light entering an imaging lens aperture comprising:
an electromagnetic armature and coil for providing a magnetic field of a forward polarity in response to a forward drive current and a magnetic field of a reverse polarity in response to a reverse drive current;
first and second permanent magnets;
means for supporting said first and second permanent magnets within the influence of their magnetic fields and the forward and reverse magnetic fields and for allowing rotational movement of said first and second magnets about a common axis under the collective influence of said magnetic fields; and
means for coupling said first and second magnets to said blade to position said blade in a stable rest position in the absence of a forward or reverse magnetic field and for transferring rotational movement of said first and second magnets into movement of said blade between said stable rest position when no current is applied to said armature coil to a first aperture position when a forward drive current is applied to said armature coil, so that said blade may position said first aperture over said imaging lens aperture, and to a second aperture position when a reverse drive current is applied to said armature coil, so that said blade may position said second aperture over said imaging lens aperture.

5,337,111
RESPONSIVE LIGHT LOCK FOR A FILM PACKET HOLDER

Jeffrey C. Robertson, Eastman Kodak Company, Rochester, N.Y. 14650

Filed Feb. 23, 1993, Ser. No. 21,394
Int. Cl.[5] G03B *17/26*
U.S. Cl. 354—277 **11 Claims**

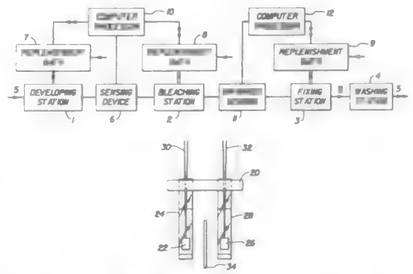


1. A light lock for a film holder, said film holder having a top wall, a bottom wall, a rear wall and a front wall with an opening for receiving photosensitive film in a film packet, said film packet having an envelope with one end held closed with a clip to prevent ingress of light to the photosensitive film within said envelope, said photosensitive film being partially removable from said envelope after insertion of said film packet into said film holder by slidably removing said envelope while leaving said clip attached to said photosensitive film, said light lock comprising:
an upper light lock member attached to said top wall inside said film holder near said opening in said front wall;
a mounting member attached to said bottom wall inside said film holder, said mounting member having an upper spring, a slower spring and an extension arm, said springs and extension arm being attached to one another at a junction; and
a lower light lock member attached to said extension arm, said upper and lower springs riding on said top and bottom walls, respectively, said lower light lock member being pivotable away from said upper light lock member with said extension arm when said film packet is slidably removed from said holder thereby defining an open position at which said lower light lock member is spaced from said upper light lock member and said film packet is free to pass therebetween, and said lower light lock member being pivotable towards said upper light lock member with said extension arm when said film packet is inserted into said holder thereby defining a closed position at which said lower light lock member is in close proximity to said upper light lock member to prevent ingress of light, said upper and lower light lock members being separated only by said film packet at the closed position.

5,337,112
AUTOMATIC PROCESSING DEVICES FOR PROCESSING PHOTOGRAPHIC MATERIALS

David A. Skye, Harpenden, and Peter J. Twist, Great Missenden, both of Great Britain, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/00123, § 371 Date Jul. 21, 1992, § 102(e) Date Jul. 21, 1992, PCT Pub. No. WO91/10940, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 9, 1991, Ser. No. 910,115
Claims priority, application United Kingdom, Jan. 11, 1990, 9000620
Int. Cl.[5] G03D *13/00, 3/02*
U.S. Cl. 359—298 **4 Claims**

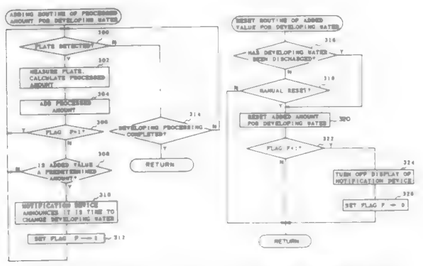


1. An automatic film processing device for treating photographic material including:
at least one developing station for developing a silver image on a carrier substrate;
at least one station for converting metallic silver to silver halide and for dissolving silver halide to provide a fixed image on the carrier substrate;
an infra red sensing device for measuring a parameter of the process, the infra red sensing device being located at a position immediately after the developing station and prior to any subsequent station and is arranged to measure the density of the silver in the developed image on the carrier substrate; and
replenishment means for effecting replenishment of devel-

VOL 1165 ISS 2 AG 9 1994 UMI

oper chemicals according to measurement of the density of the silver in the developed image on the carrier substrate to provide a measure of the replenishment need;
characterized in that the device further comprises a second infra red sensing device located to measure silver halide in the carrier substrate to provide a signal for control of the replenishment of the at least one station for dissolving silver halide to provide a fixed image on the carrier substrate.

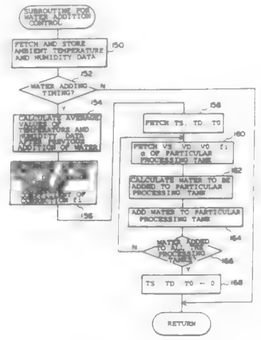
5,337,113
PHOTOSENSITIVE MATERIAL PROCESSING APPARATUS
Yasuhiro Kagawa, and Yohko Takegawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 28, 1992, Ser. No. 936,530
Claims priority, application Japan, Aug. 30, 1991, 3-220448
Int. Cl.[5] G03D *13/00, 3/02*
U.S. Cl. 354—298 **20 Claims**



1. A photosensitive material processing apparatus for processing a photosensitive material upon which an image is exposed, by a processing solution stored in a processing tank, while said photosensitive material is being conveyed, comprising:
a processed amount integration device for integrating a processed amount of said photosensitive material;
first notification means for indicating that a processed amount has been integrated by said processed amount integration device;
discharging means for discharging said processing solution from said processing tank;
first detecting means for detecting that said processing solution has been discharged from said processing tank by said discharging means; and
first resetting means for resetting said processed amount integration device when discharge of said processing solution is detected by said first detecting means.

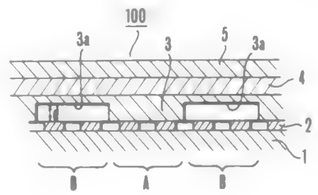
5,337,114
METHOD AND APPARATUS FOR ADDING WATER TO PHOTOSENSITIVE MATERIAL PROCESSOR
Fumio Mogi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 17, 1992, Ser. No. 991,747
Claims priority, application Japan, Dec. 27, 1991, 3-346701
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 **23 Claims**

1. A method of adding water to a photosensitive material processor for adding an amount of water corresponding to an amount of evaporation of a processing solution stored in a processing tank of the photosensitive material processor, to the processing tank, comprising the steps of:
(a) determining in advance relationships between an ambient condition which is determined by a measured ambient vapor pressure at a location of the photosensitive material processor, and the amount of evaporation of the processing solution;
(b) detecting the ambient condition; and



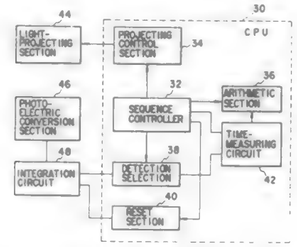
(c) determining the amount of water to be added to said processing tank on the basis of the ambient condition detected and the relationships.

5,337,115
FOCUS DETECTING DEVICE
Hitoshi Mukaiya, Saitama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 873,701, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 403,608, Sep. 6, 1989, abandoned. This application Sep. 24, 1993, Ser. No. 126,807
Claims priority, application Japan, Sep. 12, 1988, 63-226505
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—402 **23 Claims**



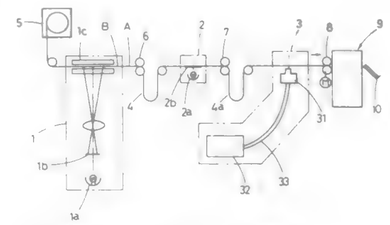
1. A focus detecting device comprising:
(A) image sensing means for photoelectrically converting incident light to produce a video signal and predetermined signal components in image signals which change their levels in accordance with a focusing state;
(B) an optical path control member formed with a plurality of concave portions and convex portions thereon for causing image forming positions of a light incident on an image sensing plane of said image sensing means in a direction of the incident light to vary in relation to said plurality of concave or convex portions; and
(C) computing means for comparing image signals corresponding to said plurality of concave portions with image signals corresponding to said plurality of convex portions and detecting a focusing state on said image sensing plane on the basis of a result of the comparison.

5,337,116
LIGHT PROJECTION TYPE MEASUREMENT APPARATUS EFFECTIVELY UTILIZING A POST OF A ONE-CHIP MICROCOMPUTER
Osamu Nonaka, Sagamihara; Takeshi Kindaichi, Nagano, and Kazunori Mizokami, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Dec. 24, 1992, Ser. No. 996,719
Claims priority, application Japan, Dec. 26, 1991, 3-345166; Feb. 18, 1992, 4-030630; Oct. 22, 1992, 4-284739; Oct. 22, 1992, 4-284740
Int. Cl.[5] G03B *13/36;* **G01C** *3/08*
U.S. Cl. 354—403 **71 Claims**



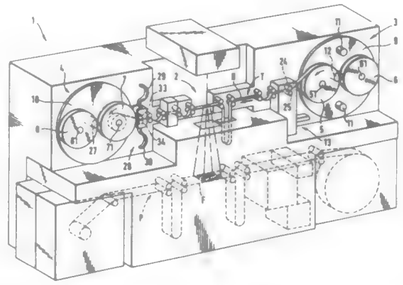
1. A distance measurement apparatus for use in a camera, comprising:
light-projecting means for projecting light toward an object;
first light-receiving means for receiving light reflected from the object and converting the light into a first electric signal;
second light-receiving means located adjacent to said first light-receiving means, for receiving light reflected from the object and converting the light into a second electric signal;
first integration means connected to said first light-receiving means;
second integration means connected to said second light-receiving means;
a first integration reset terminal and first inverter terminal of a microcomputer, both connected to said first integration means;
a second integration reset terminal and second inverter terminal of the microcomputer, both connected to said second integration means;
a time-measuring means incorporated in the microcomputer, for measuring a period of time lapsing from time when said first or second integration means is reset by a signal supplied from said first or second integration reset terminal to time when a first inverter incorporated in the microcomputer and connected to said first inverter terminal or a second inverter incorporated in the microcomputer and connected to said second inverter inverts an input signal;
memory means for storing a first measured period of time lapsing until said first inverter inverts an input signal while said light-projecting means is projecting no light, a second measured period of time lapsing until said second inverter inverts an input signal while said light-projecting means is projecting no light, a third measured period of time lapsing until said first inverter inverts an input signal while said light-projecting means is projecting light, and a fourth measured period of time lapsing until said second inverter inverts an input signal while said light-projecting means is projecting light; and
means for eliminating influence of background light in accordance with a difference between said first and third measured periods of time and a difference between said second and fourth measured periods of time.

5,337,117
IMAGE COMBINING PRINTER
Tohru Tanibata, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan
Filed May 13, 1993, Ser. No. 59,974
Int. Cl.[5] G03B *27/00, 27/02, 27/32*
U.S. Cl. 355—19 **1 Claim**



1. An image combining printer comprising:
a photographic picture stationary surface exposure unit for exposing a photosensitive material to an image projected from a negative film by illumination of a light source;
a stationary surface contact exposure unit for conducting a contact exposure on the photosensitive material which stops running and comes into direct contact with another negative; and
a PLZT line exposure unit of a linear shape arranged at a right angle to a pass line of the photosensitive material for performing a line exposure;
wherein the photosensitive material can be exposed to light in at least one, a selected two, or all three of the exposure units.

5,337,118
PHOTOGRAPHIC COPYING APPARATUS AND PROCESS OF OPERATION
Heinrich Haller, Flurlingen, Switzerland, assignor to Gretag Imaging AG, Regensdorf, Switzerland
Filed Nov. 19, 1992, Ser. No. 979,001
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1991, 91810903
Int. Cl.[5] G03B *27/32, 27/52*
U.S. Cl. 355—27 **21 Claims**



1. Photographic copying apparatus for the processing of lengths of copy masters adhesively bonded into long film strips comprising:
an exposure station, located along a film transport path of a film strip, wherein the film strip is exposed onto an unexposed photographic copy material passed along a paper path extending within the copy apparatus;
two supply spools located on an inlet side of the photo-

VOL 1165 ISS 2 AG 9 1994 UMI

graphic copy apparatus from which the film strip is selectively wound off;

two winding spools located on an outlet side of the copy apparatus onto which the film strip is selectively wound after passage through the copy apparatus, one supply spool and one winding spool being in working positions connected with the film strip being processed, while other supply and winding spools are located in waiting positions, spools connected with the film strip being located in an approximate straight line extension of, and directly adjacent to, the film transport path, and film spools in waiting positions being located in an approximate straight line extension of the film transport path behind the film spools located in working positions;

an automatic film feeder device for transferring a front end of a film strip from the supply spool in the waiting position to a film drawing-in roller pair provided at an inlet of the film transport path; and

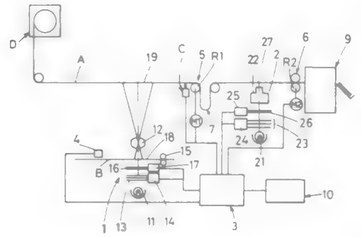
a pivoting arm and a film clamp into which the front end of the film strip from the supply spool in the waiting position is clamped and which is located on a front end of the pivoting arm, said film clamp moving from a rest position into a transfer position wherein the film strip is transferred to the film drawing-in roller pair, said pivoting arm being articulated eccentrically onto a motor driven crank disk located under the film drawing-in roller pair, an end of the pivoting arm opposite the film clamp being guided in a slot guide.

5,337,119

IMAGE COMBINING PRINTER

Tohru Tanibata, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed May 13, 1993, Ser. No. 60,063
Claims priority, application Japan, May 21, 1992, 4-128895
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—40 **24 Claims**



1. An image combining printer comprising:

a transfer means for driving a photosensitive material of long tape shape;

an exposure means for exposing the photosensitive material to an original image projected from a negative film;

an attribute information detecting means for detecting an attribute data, which may include shooting data or a message, from the negative film;

a pattern determining means for determining and producing a pattern which may include characters, symbols, or makings, to be printed which represents the attribute data detected by the attribute information detecting means;

a double exposure means for exposing the photosensitive material to the pattern produced by the pattern determining means;

a vertical position detecting means for detecting the upward and downward or vertical position data of the original image from the negative film;

a vertical position determining means for determining the vertical position of the original image from the vertical position data of the vertical position detecting means;

a cutting-mark applying means for applying-marks to the photosensitive material; and

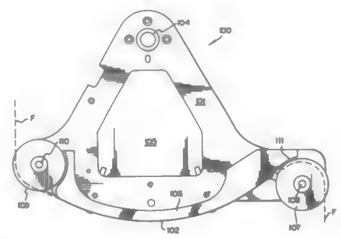
a controller for controlling the double exposure means, the cutting-mark applying means, and the transfer means, for estimating the location of the pattern of the attribute data relative to the original image on the photosensitive material for printing from the attribute data detected material for printing from the attribute data detected by the attribute information detecting means, and for also for estimating the orientation of the pattern from the vertical position data of the vertical position detecting means, and from those estimations, determined a length of feeding and a timing of cutting-mark application for the photosensitive material.

5,337,120

SCANNING APPARATUS GATE DRIVE SYSTEM AND METHOD

Eric P. Hochreiter, Bergen; Franklin D. Ehrne, Rochester; William I. Morris, Oakfield, and Frederick J. Schwab, Churchville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 14, 1992, Ser. No. 943,427
Int. Cl.[5] Q03B *27/62*
U.S. Cl. 355—47 **11 Claims**



1. An apparatus for driving a scanning gate of a photographic film scanning apparatus, said scanning gate having an axis of rotation, said apparatus comprising a drive motor and a gearing arrangement driven by said drive motor and engaging said scanning gate so as to cause said scanning gate to travel back and forth in a pendulum-like motion along an arcuate path about said axis of rotation.

5,337,121

VARIABLE MAGNIFICATION COPYING APPARATUS

Stephen Borostyan, Victor, and David M. Borostyan, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 12, 1993, Ser. No. 30,973
Int. Cl.[5] G03B *27/34*
U.S. Cl. 355—57 **11 Claims**

1. A variable magnification copying apparatus for producing reduced or enlarged copies of an original document moving through a document exposure zone at a variable rate of movement in response to magnification values selected by an operator, said apparatus including:

means for producing output illumination to illuminate incremental line portions of the document as it passes through said exposure zone, line images reflected from said document being transmitted along an optical path, folded into a plurality of segments, onto a photoconductive surface,

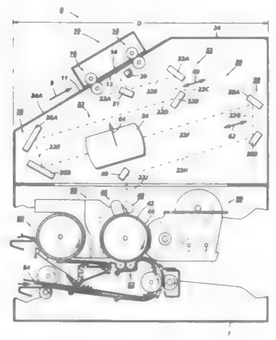
a symmetrical lens for forming an optical image of said original document on said photoconductive surface, said lens movable from a fixed position on a first segment of the optical path to a fixed position on a second segment of the optical path, said first and second segments lying in adjacent, parallel planes,

a first mirror assembly positioned along the optical path between the lens and the exposure zone, said mirror assembly movable along the optical path,

a second mirror assembly positioned between the lens and the photoconductive surface, said second mirror assembly movable along the optical path,

means for moving said lens and first and second mirror assemblies in response to signals representing a selected magnification value, said movement resulting in adjustment of the object and image conjugates for the magnification values selected, and

control means for receiving signals representing said magnification values and for operating said means for moving the lens and mirror assemblies to the required positions along the optical path, said control means further adapted to change the rate of movement of the original document through the exposure zone in response to said magnification value signals.

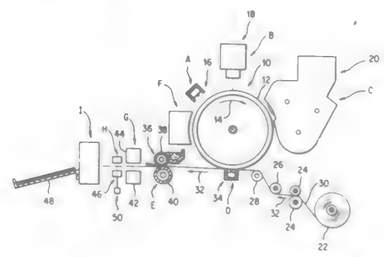


5,337,122

METHOD AND APPARATUS FOR MICR PRINTING QUALITY CONTROL

Fred F. Hubble, III, Rochester; Michael E. Weber, Penfield, both of N.Y.; Gerald Abowitz, Bradenton, Fla.; Raphael F. Bov, Jr., Pittsford, N.Y.; Michael G. Swales, Sodus, N.Y., and Paul W. Eakin, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 23, 1993, Ser. No. 80,151
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 **28 Claims**



1. A method for controlling the application of magnetic ink characters to a substrate, comprising:

generating an electrical signal representative of a magnetic ink character;

comparing an integral representation of said electrical signal with an integral representation of a printed predetermined magnetic ink character; and

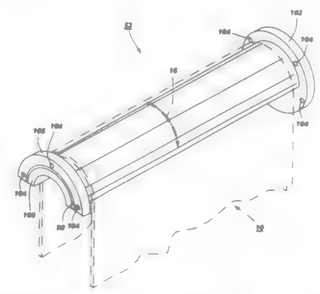
adjusting the application of magnetic ink to a substrate according to said comparing step.

5,337,123

BELT SUPPORTING MEMBER FOR A COLOR IMAGE FORMING APPARATUS

Donald J. Fisher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 19, 1992, Ser. No. 977,373
Int. Cl.[5] G03G *15/01, 5/00*
U.S. Cl. 355—212 **9 Claims**



1. A printing machine of the type in which a plurality of different color images developed on a photoconductive belt are transferred to a sheet of support material in superimposed registration with one another, wherein the improvement includes:

a plurality of stationary arcuate members adapted to support the photoconductive belt, each of said plurality of arcuate members, including a fixedly supported curved surface, being spaced from one another and in contact with the photoconductive belt to provide support therefor; and

a plurality of transfer devices with one of said plurality of transfer devices being positioned opposite the curved surface of one of said stationary arcuate member with the photoconductive belt being interposed therebetween to define a plurality of transfer regions with one of the color images being transferred, at one of the transfer regions, from the photoconductive belt to the sheet of support material in superimposed registration with the other color images transferred thereto forming a multicolor image on the sheet of support material.

5,337,124

LOW BEAD IMPULSE DONOR LOADING

Fred W. Schmidlin, Pittsford, and Robert G. Martin, Irondequoit, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1992, Ser. No. 952,082
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 **7 Claims**

1. Toner delivery apparatus for delivering toner particles to a development zone, said apparatus comprising:

a supply of developer material comprising toner and carrier particles;

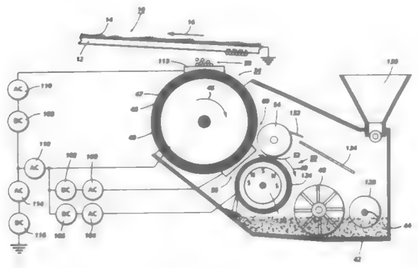
a toner donor member for delivering toner to a development zone;

magnetic brush means for loading toner particles on said donor member, said developer material being conveyed from the supply thereof to a loading zone intermediate said donor member and said magnetic brush means, and

means for scavenging unused toner on said donor member, said donor member, loading means and said scavenging means being positioned adjacent said development zone to form a cavity therebetween and adjacent said development zone for maintaining a predetermined quantity of

VOL 1165 ISS 2 AG 9 1994 UMI

developer whereby high velocity carrier bead impact with the donor member is avoided; and

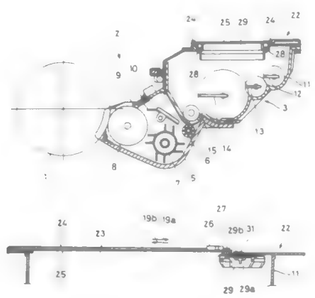


means for preventing formation of extended carrier bead chains in a nip in said loading zone.

5,337,125
TONER FEEDING DEVICE

Kuniaki Nakano, Nara; Kunio Nakai, Osaka; Masahiro Sako, Osaka; Shigeo Kurando, Osaka; Minoru Kishigami, Osaka; Masahiro Higashitani, Osaka; Yasuhiro Matsuo, Osaka; Toshinori Nishimura, Osaka; Tsugio Nakanishi, Osaka; Yasuyuki Hirai, Osaka, and Shingo Mori, Nara, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 28, 1992, Ser. No. 890,622
Claims priority, application Japan, May 29, 1991, 3-126040; May 29, 1991, 3-126041; Jun. 12, 1991, 3-168918
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 21 Claims



1. A toner feeding device in which a cartridge accommodating toner is removably installed at an opening provided at the upper part of the hopper, and the toner accommodated in the cartridge is fed to the hopper through a feeding port provided at the lower part of the cartridge and an accommodating port provided at the opening of the hopper and at the same time the toner accommodated in the hopper is leveled by actuating a leveling member provided downwards from the opening thereof, comprising:

opening/closing means which is slidably installed at the lower part of the cartridge for opening and closing the feeding port; and

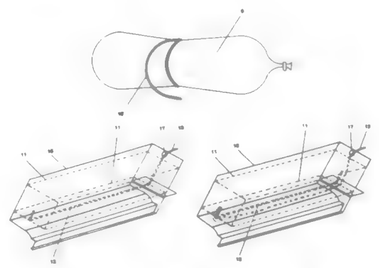
guide means which is installed at the opening of the hopper and slidingly guides the cartridge in parallelism with the opening and closing direction of the opening/closing means from the engaging and disengaging position of the cartridge to the mounted position thereof where the feeding port is confronted to the accommodating port; and

being characterized in that the leveling member is shiftably supported in parallelism with the opening and closing direction of the opening/closing means within the hopper and at the same time the opening/closing means is removably engaged with the leveling member at the engaging and disengaging position of the cartridge, and the leveling member is actuated in line with the engaging and disengaging operation of the cartridge for opening and closing operation of the opening/closing means to level the toner accommodated in the hopper.

5,337,126
COPIER AND PRINTER TONER SHIPPING, HANDLING AND SEALING SYSTEMS

Steven B. Michlin, 5310 Bentley Ste. 105, West Bloomfield, Mich. 48322

Filed Aug. 3, 1993, Ser. No. 100,925
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 16 Claims

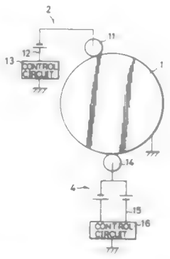


1. A toner delivering means for providing toner to toner hoppers of toner cartridges used in printers, copiers and facsimile machines, said toner delivering means comprising a plastic bag filled with toner, said plastic bag having a pull-tear strip for releasing the toner.

5,337,127
IMAGE FORMING APPARATUS HAVING BIASED TRANSFER ROLLER

Yukihisa Imaue, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1992, Ser. No. 997,694
Claims priority, application Japan, Jan. 7, 1992, 4-000616
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—271 3 Claims



1. An image forming apparatus comprising;

a charger for charging a photosensitive body;

a developing device for developing with a toner an electrostatic latent image formed on the photosensitive body to form a toner image on the photosensitive body; and

a transfer device for transferring the toner image to a transferred sheet of paper by a transfer roller, to which a bias having an opposite polarity to that of the toner is applied,

the bias applied to said transfer roller being set to the same polarity as that of the toner for a time during which the transfer roller rotates by at least one revolution, during a non-transfer period,

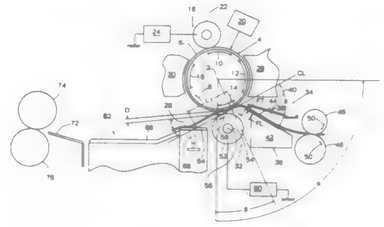
then the bias applied to said transfer roller being once set to zero volt for a time during which the transfer roller rotates by at least one revolution,

and then, the bias applied to said transfer roller being set to an opposite polarity to that of the toner, during a transfer period.

5,337,128
IMAGE-FORMING MACHINE WITH TONER IMAGE TRANSFER MEANS

Masahiro Hashizume; Hiroshi Kimura; Hiroshi Ishida; Masanobu Maeshima; Koichi Yasuda; Shigeki Hayashi; Hiroshi Kubota; Osamu Yoshimura; Susumu Taniguchi, all of Osaka, and Yasuo Hatate, Kagoshima, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 8, 1993, Ser. No. 117,948
Claims priority, application Japan, Oct. 22, 1992, 4-284120
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—271 12 Claims



1. An image-forming machine comprising:

an image forming member movable through a passage having, in a downstream direction, a latent electrostatic image forming zone, a developing zone, and a transfer zone,

latent electrostatic image forming means for forming a latent electrostatic image on a surface of the image forming member in the latent electrostatic image forming zone,

developing means for developing a latent electrostatic image on the surface of the image forming member to a toner image in the developing zone,

transfer material conveying means for conveying a transfer material through the transfer zone, and

toner image transfer means for transferring a toner image on the surface of the image forming member onto a surface of transfer material in the transfer zone;

the toner image transfer means including a conductive charge supply member disposed in opposition to the image forming member, voltage application means for applying a voltage to the charge supply member to cause the charge supply member to apply a discharge current in a range from 0.5 to 10 μA to transfer material in the transfer zone, and transfer material guide means for guiding transfer material being conveyed through the transfer zone such that a surface of transfer material in the transfer zone is brought into contact with the surface of the image forming member to transfer a toner image on the surface of the image forming member onto such surface of transfer material in the transfer zone;

the charge supply member being disposed in opposition to the image forming member at a distance from the image forming member that is greater than the thickness of transfer material conveyed through the transfer zone, and

the transfer material guide means guiding transfer material so that it is conveyed through the transfer zone without coming into contact with the charge supply member.

5,337,129
INTERMEDIATE TRANSFER COMPONENT COATINGS OF CERAMER AND GRAFTED CERAMER

Santokh S. Badesha, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 27, 1993, Ser. No. 141,748
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—275 22 Claims

21. An electrostatographic printing apparatus comprising:

(a) an imaging member for recording a latent image;

(b) a developing device for developing the latent image with a toner composition to form a toner image;

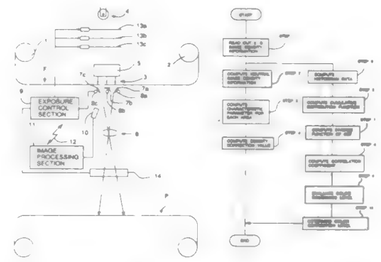
(c) an intermediate toner transfer component, positioned adjacent the imaging member, comprising a substrate and a coating comprised of integral interpenetrating networks of haloelastomer, silicon oxide, and optionally polyorganosiloxane; and

(d) a transfer apparatus for transferring the toner image from the imaging member to the intermediate toner transfer component.

5,337,130
EXPOSURE CONTROL METHOD FOR PHOTOGRAPHIC PRINTING

Yasuaki Satoh, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jul. 27, 1992, Ser. No. 919,908
Claims priority, application Japan, Aug. 9, 1991, 3-200672
Int. Cl.[5] G03B *27/32, 27/80*
U.S. Cl. 355—77 7 Claims



1. An exposure control method for printing an original image from a single image of a frame of a photographic film on a photographic paper, comprising the steps of:

(a) uniformly illuminating the single frame of the original image on the photographic film;

(b) color-separating transmitted light from the illuminated single frame of photographic film into a plurality of colors;

(c) obtaining an average photometric value of the original image of the single frame for each color by measuring the color-separated plurality of colors;

(d) determining a tentative exposure amount for each color based on the obtained average photometric value for each color;

(e) obtaining image information by a color-separated scanning of the original image of the single frame, the image information including image density data that represents a two-dimensional density distribution for each color;

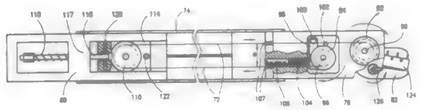
(f) evaluating color dominancy in the original image of the single frame by analyzing the image information obtained by said color-separated scanning of the original image;

(g) determining an exposure correction level based on results obtained in the evaluating step;

VOL 1165 ISS 2 AG 9 1994 UMI

(h) correcting the tentative exposure amount to a corrected amount based on the determined exposure correction level; and
(i) controlling an exposure amount to be the corrected amount.

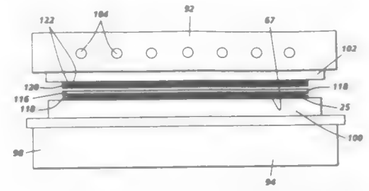
5,337,131
CHARGING APPARATUS OPERATIVE TO CHARGE A SURFACE
Oded Sagiv, Cochav Yair, and Yevgeny Korol, Petach Tikva, both of Israel, assignors to Indigo N.V., Veldhoven, Netherlands
Filed Nov. 12, 1992, Ser. No. 974,465
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—221 31 Claims



1. Imaging apparatus comprising:
a photoreceptor;
a charging station operative to charge the surface of the photoreceptor comprising:
a charging apparatus comprising an active length of corona wire operatively juxtaposed with the surface of the photoreceptor; and
a corona wire dispenser containing an undispensed length of corona wire contiguous with the active length wherein the corona wire dispenser comprises:
a dispensing bobbin around which the undispensed corona wire is wound;
a lever-plate on which the dispensing bobbin is rotatable mounted;
a friction pin; and
means operating on the lever-plate for forcing an edge of the dispensing bobbin into contact with the friction pin with a given force, whereby the undispensed corona wire is dispensed from the dispensing bobbin when tension in the corona wire is greater than a first threshold tension which is directly proportional to the given force and wherein wire continues so long as the tension in the corona wire is greater than a second threshold tension, and wherein the ratio between the first and second threshold tensions is lower than the ratio between the static and dynamic friction forces acting on the dispensing bobbin by the friction pin;
an exposure station operative to selectively discharge portions of the photoreceptor to form a latent image thereon; and
a developer operative to develop the latent image.

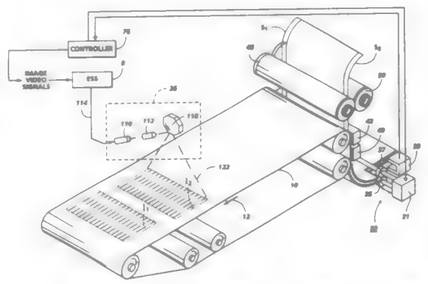
5,337,132
APPARATUS FOR CREATING SIMULATED COLOR PHOTOGRAPHIC PRINTS USING XEROGRAPHY
Abraham Cherian, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jul. 21, 1993, Ser. No. 95,790
Int. Cl.[5] G03G *8/00, 15/14*
U.S. Cl. 355—278 18 Claims

1. Method of forming a simulated photographic print, said method including the steps of:
xerographically forming a wrong reading toner image on one side of a transparent substrate;
contacting said toner image with one side of a light color backing member;
contacting said one side of said light color backing member with an abhesive member;
contacting a non-image side of said transparent substrate with a flat rigid surface;
simultaneously applying heat and pressure at predetermined values to said transparent substrate and backing member



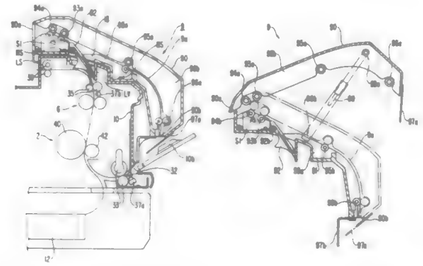
whereby said substrate and said backing member adhere to each other to form said simulated photographic print;
separating said abhesive member from said backing member; and
separating said simulated photographic print from said flat rigid surface.

5,337,133
SYSTEM TO EXTEND FUSER ROLL LIFE
Robert P. Siegel, Penfield; Michael A. Malachowski; Paul A. Garsin, both of Webster, and Rabin Moser, Victor, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 19, 1993, Ser. No. 94,417
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 12 Claims



1. An apparatus for fixing images to a substrate moving along a path, comprising:
a fuser roll;
a pressure member in contact with the fuser roll to form a nip therebetween; and
means for varying the substrate position in a direction transverse to the path, prior to the substrate entering the nip, so that successive substrates move through the nip in a different position.

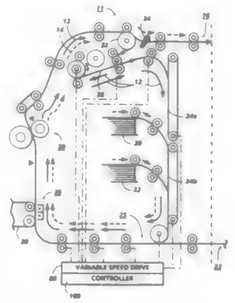
5,337,134
SHEET INVERTING UNIT AND AN IMAGING FORMING APPARATUS EMPLOYING THE SAME
Kazuyasu Sato; Takashi Maekawa; Mitsuru Yamazaki, all of Kawasaki, and Harumichi Oishi, Higashikurume, all of Japan, assignors to Fujitsu Limited, Kawasaki and Daiwa Seiko, Inc., Tokyo, both of Japan
Filed Aug. 10, 1993, Ser. No. 104,016
Claims priority, application Japan, Aug. 11, 1992, 4-214054; Aug. 11, 1992, 4-214055; Sep. 28, 1992, 4-257923
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—319 34 Claims



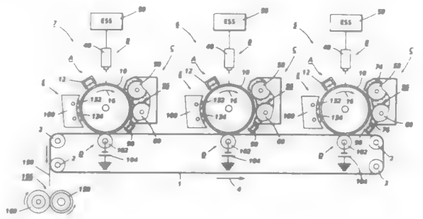
34. A double-side image forming apparatus, for forming images on both sides of a sheet, comprising:
a sheet cassette for retaining sheets;
an image forming mechanism, provided above the sheet cassette, for forming an image on one side of a sheet supplied from the sheet cassette;
a stacker, provided above the image forming mechanism, for holding an image bearing sheet;
a feeding path, along which the sheet supplied from the sheet cassette is conveyed first to the image forming mechanism and then to the stacker;
an insertion port for sheet insertion;
an insertion path, along which an inserted sheet is conveyed from the insertion port to the upstream origin of the feeding path for the image forming mechanism;
a sheet exit port provided downstream along the feeding path of the image forming mechanism;
a switching lever, provided downstream along the feeding path of the image forming mechanism, for selectively guiding the image bearing sheet either toward the stacker or toward the sheet exit port;
switchback rollers for feeding, upward of the stacker, the image bearing sheet guided toward the sheet exit port by the switching lever and then inversely feeding the image bearing sheet;
a guide path that extends from the switchback rollers to a terminus in the vicinity of the insertion port; and
feeding rollers, provided along the guide path, for feeding the image bearing sheet to the insertion port.

5,337,135
HIGHER PRODUCTIVITY TRAYLESS DUPLEX PRINTER WITH VARIABLE PATH VELOCITY
Michael A. Malachowski, and David R. Kamprath, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 30, 1993, Ser. No. 129,973
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—319 16 Claims

11. In a duplexing method wherein copy sheets being duplexed are recirculated for their second side imaging in a trayless loop duplexing path to generate collated sets of duplex copy sheets from a plural sheet input job, which duplex path is at least partially filled with said sheets at the beginning of each input job and depleted at the end of each input job; the improvement wherein said duplexing is done in a burst-interleave mode comprising eliminating skipped sheet feedings and skipped sheet imagings while initially filling said duplexing path with sheets at the beginning of each said input job, and then depleting the sheets in said duplexing path without skipping sheet imagings at the end of each said job, by variably changing the sheet feeding velocity in said duplexing path during the times said duplexing path is filling and depleting as compared to the sheet feeding velocity in said duplexing path during intervening stages of said duplex copy set job printing.



5,337,136
TANDEM TRILEVEL PROCESS COLOR PRINTER
John F. Knapp, Fairport, and Richard F. Koehler, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 23, 1992, Ser. No. 965,451
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R 11 Claims



8. Apparatus for forming toner images, said apparatus comprising:
means for creating a plurality of spot next to spot toner images on different image receiving members, said spot next to spot toner images on said image receiving members being different in physical properties from the spot next to spot toner images on another of said image receiving members;
means for effecting sequential transfer of said plurality of images to an intermediate such that at least one toner image is created on said intermediate.

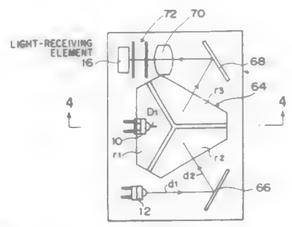
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,137

HEIGHT SENSOR AND AIR SPRING DEVICE INCORPORATING THE SAME

Fumio Ogawa, Yokohama, and Norio Nihei, Kodaira, both of Japan, assignors to Stanley Electric Co., Ltd. and Bridgestone Corp., both of Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 997,870
Claims priority, application Japan, Jan. 9, 1992, 4-002355
Int. Cl.[5] G01C *3/08;* **B60G** *11/26*
U.S. Cl. 356—4 **26 Claims**



1. A height sensor for determining the height from a surface to be measured on the basis of an optical path length from a light-emitting element to the surface to be measured, comprising:

a first light-emitting element and a second light-emitting element disposed at positions spaced apart from the surface to be measured;

an oscillator connected to the first and second light emitting elements for causing the first and second light emitting elements to alternately emit light;

reflecting means for reflecting at least one of a beam of light emitted from said first light-emitting element and a beam of light emitted from said second light-emitting element, said reflecting means being arranged to cause respective optical paths of the beams to be brought into close proximity to each other, wherein said reflecting means is a three-dimensional mirror whose slanting surfaces are mirror surfaces, the beams emitted from said first light-emitting and said second light-emitting element being respectively reflected onto the surface to be measured by means of different slanting surfaces;

a light-receiving element for receiving the beams emitted by said first light-emitting element and said second light-emitting element and reflected by the surface to be measured and for outputting a signal corresponding to a quantity of light received;

a converter for converting the signal output by the light receiving element into a ratio of light output by the first and second light emitting elements; and

a circuit for converting the ratio output by the converter into a signal representing the height from the surface to be measured.

5,337,138

PACKAGE READYING AND INSPECTION APPARATUS

Kenichi Inada; Akihiko Takeshita, both of Ohtsu, and Tetsuji Masai, Kusatsu, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 862,196, Apr. 2, 1992. This application May 28, 1993, Ser. No. 68,080
Claims priority, application Japan, Apr. 9, 1991, 3-31643[U]; Jun. 28, 1991, 3-58567[U]
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—36 **2 Claims**

1. An apparatus for readying and inspecting a package having a yarn end, the apparatus comprising:

an inspection station, the inspection station comprising:

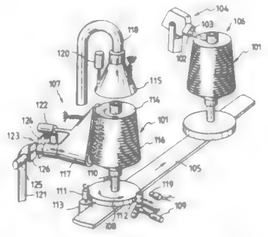
projection means for irradiating a surface of the package,

light receiving means for receiving light reflected from the surface of the package, and

a processing station provided upstream of the inspection station, the processing station comprising:

suction means for applying a suction force to the surface of the package,

means for rotating the package in a first direction whereby the yarn end is released into the suction means,



means for cutting the yarn end released into the suction means to a predetermined length, and

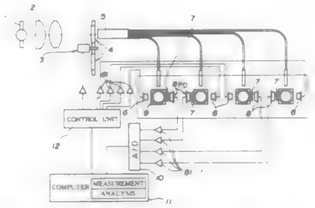
means for rotating the package in a second direction whereby the cut yarn end is wound around the surface of the package prior to delivery of the package to the inspection station.

5,337,139

MULTICHANNEL OPTICAL MEASURING SYSTEM

Yoshiaki Shirasawa, Tsuchiura, Japan, assignor to Kowa Company Ltd., Japan

Filed Apr. 10, 1992, Ser. No. 866,751
Claims priority, application Japan, May 27, 1991, 3-120548
Int. Cl.[5] G01N *21/59, 21/64*
U.S. Cl. 356—73 **20 Claims**



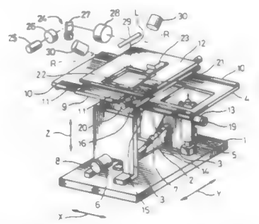
1. A multichannel optical measuring system for measuring optical responses of samples illuminated by light of differing wavelengths, comprising: a plurality of measurement sample cuvettes each for containing a sample to be measured; a first single light source for providing a first illumination light; multibranch optical fiber means comprising a plurality of sets of optical fibers, each set being effective to direct the first illumination light from the first single light source to illuminate along an optical axis the sample contained in a respective sample cuvette; second light source means for illuminating each respective sample cuvette with a second illumination light for measuring an intensity of transmitted light through the sample, the optical axis of the second illumination light being perpendicular to the optical axis of the first illumination light; and a photosensor for each sample cuvette and disposed on the optical axis of the second light source means for measuring both an optical response from each sample to the first illumination light and the intensity of the transmitted light from each sample.

5,337,140

OPTICAL DETECTING SYSTEM WTIH SELF-CORRECTION

Takashi Hagiwara; Toyoki Kanzaki, and Dainichiro Kinoshita, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Jul. 29, 1992, Ser. No. 922,059
Claims priority, application Japan, Jul. 30, 1991, 3-212845
Int. Cl.[5] G01N *21/00*
U.S. Cl. 356—237 **5 Claims**



1. A particle-detecting apparatus for particles on an object comprising:

means for scanning an object with a light beam along discrete scan lines;

means for detecting light from the scanned light beam after incidence with the object;

means for determining any variation in detected light from said means for detecting light indicative of particles on the object to determine the existence of a particle and detect a particle position;

means for providing a correction factor that relates the detected particle position to an actual particle position by using a test substrate with predetermined particle positions; and

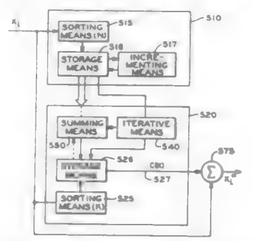
means for modifying the detected particle position relationship based on the provided correction factor.

5,337,141

METHOD AND APPARATUS FOR DISTORTION FREE MEASUREMENTS

Werner H. Egli, and Clair R. Tettemer, both of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 29, 1983, Ser. No. 508,958
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **6 Claims**



1. In a ring laser angular rate sensor of the class wherein two waves propagate in opposite directions along a closed-loop path, wherein the frequency of each of said waves is a function of the rate of rotation of said closed-loop path, said waves establishing a phase difference therebetween, wherein the sensor provides an output signal indicative of the rotation of said closed-loop path, wherein said sensor is provided with a biasing means for introducing a frequency bias in at least one of said waves for preventing said waves from locking in to a common frequency for at least a majority of the time, the sensor comprising:

signal means responsive to said waves capable of providing a measurement value related to said phase difference between said waves, said signal means providing said measurement value for occurrences of selected values of the first derivative of said phase difference;

means coupled to said sensor for selectively causing said phase difference to take on a substantially random value at selected occurrences of said selected values of the first derivative thereby defining random phase measurement values;

first function generating means for generating an empirical probability density function based on said random phase measurement values, said empirical probability density function establishing an empirical probability density value and empirical probability value associated with each measurement value;

second function generator means for generating a correction function capable of providing a correction value for said measurement value, said correction value being related to a probability difference between said empirical probability value of said measurement value derived from said empirical probability density function and the true probability value of said measurement value derived from an equal probability density function; and

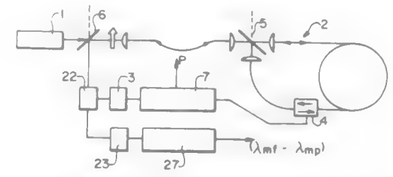
output means for providing a corrected measurement value, said corrected measurement value being the sum of said measurement value and said correction value corresponding to said measurement value.

5,337,142

OPTICAL FIBER MEASURING DEVICE USING PHASE DIFFERENCE

Hervé Lefevre, Paris, and Philippe Martin, Ponchartrain, both of France, assignors to Photonectics, Marly Le Roi, France

Filed Jul. 7, 1992, Ser. No. 910,840
Claims priority, application France, Jul. 11, 1991, 91 08765
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **13 Claims**



1. An optical fiber measuring device in which variations in a measured parameter cause a phase difference between two waves, the measuring device comprising:

a wide spectrum light source, with a spectrum of mean wavelength Λ_m;

a SAGNAC ring interferometer in which two counter-propagative waves travel, a propagation time of the waves between separation and recombination at wavelength Λ_m being τ;

a first detector converting a light flux received from the interferometer into an electrical signal representing the total phase difference $\delta\Phi_t$ between the counter-propagative waves;

a phase modulator generating a phase difference $\delta\Phi_m + \delta\Phi_{CR}$, made up of a biased component $\delta\Phi_m$ and a counter-reaction component $\delta\Phi_{CR}$;

a first electrical means receiving an electrical signal from the first detector and supplying a signal that is a function of the measured parameter,

the signal, a function of the measured parameter, producing a phase modulator command component Φ_{CR}, which is

VOL 1165 ISS 2 AG 9 1994 UMI

determined in such a way that the phase difference $\delta\Phi_{CR}$ that the phase modulator command component Φ_{CR} produces between the counter-propagative waves compensates for the phase difference $\delta\Phi_p$ created by the measured parameter;

a narrow, stable spectral filter, inserted between the interferometer and the first detector, which splits the incident flux into a main flux sent to the first detector, and a filtered flux,

the first electronic means having first means for measuring and slaving the gain of the modulation chain starting from an operation performed by first processing means in response to the signal received from the first detector; and

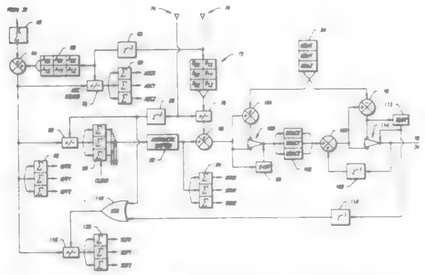
a second detector which receives the filtered flux, a response of the second detector being processed by second electronic means which in response to the signal received from the second detector, using second electronic processing means, measures a gain of the modulation chain, the gain measurement being identical to that performed by the first processing means on the signal received from the first detector, thereby supplying a signal that is a function of the difference between the mean wavelength Λ_{mf} of the filtered flux and the mean wavelength Λ_{mp} of the main flux.

5,337,143

LOOP CONTROLLER FOR MULTIPLEXED TRIAXIAL GYRO

John G. Mark, Pasadena, and Daniel A. Tarzartes, West Hills, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 13, 1992, Ser. No. 959,972
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **14 Claims**



1. Apparatus for measuring rotation rates about three orthogonal axes comprising, in combination:

a) three fiber optic gyroscopes, each of said gyroscopes being arranged to measure rotation about one of said axes and to provide an analog output in response thereto;

b) three phase modulators, each of said modulators being arranged to impose a predetermined optical phase bias to a counterpropagating beam pair within one of said gyroscopes in response to a modulating voltage waveform;

c) means for multiplexing the analog outputs of said gyroscopes into an output analog waveform;

d) an analog-to-digital converter for converting said output analog waveform to digital form;

e) a loop controller for receiving said digital output waveform and generating a digital waveform for biasing said gyroscopes, said biasing waveform comprising sequences of digital words, alternating by axis, wherein said words describe voltage levels for biasing said gyroscopes;

f) a digital-to-analog converter for receiving said digital biasing waveform and converting it to analog form for driving said phase modulators;

g) said loop controller being arranged so that digital words relating to a particular axis are determined independently of those relating to any other axis;

h) means for inputting a modulation sequence; and

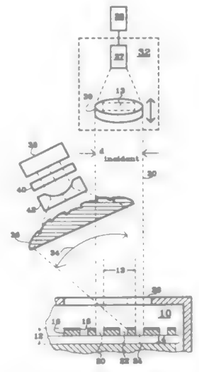
i) said loop controller including (i) means for generating voltage values for incrementing said biasing waveform, (ii) said means being responsive to said means for inputting a modulation sequence; and (iii) said means for generating voltage values includes means for deriving said voltage values independently by axis.

5,337,144

ETCH RATE MONITOR USING COLLIMATED LIGHT AND METHOD OF USING SAME

Bruno Strul, Palo Alto; Richard de Geus, Cupertino, and Peter Ebbing, Los Altos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 794,324, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 540,660, Jun. 19, 1990, abandoned. This application May 5, 1992, Ser. No. 880,464
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—357 **19 Claims**



1. An etch rate monitor for monitoring the etch rate of a substrate being etched in an etch chamber comprising

a) a light transmissive window in said etch chamber;

b) means for applying a collimated light beam through said window near the periphery thereof to said substrate at a normal angle of incidence to the surface of the substrate being etched;

c) means for collecting reflected light having multiple diffraction orders of time varying intensity through said window at a substantial angle to the path of said collimated light;

d) a photodetector, for said reflected light; and

e) means coupled to said photodetector and responsive to the time varying intensity of the collected light for monitoring etch rate in said chamber.

5,337,145

TWO COMPONENT STRAIGHTNESS INTERFEROMETER APPARATUS FOR MEASURING MOVEMENTS OF PARTS OF A MACHINE

Raymond J. Chaney, Berkeley, United Kingdom, assignor to Renishaw Transducer Systems, Limited, Gloucestershire, United Kingdom

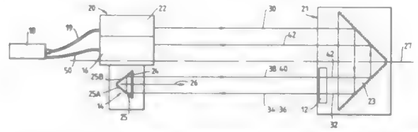
Filed Feb. 3, 1993, Ser. No. 12,729
Claims priority, application United Kingdom, Feb. 8, 1992, 9202691.3
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—363 **6 Claims**

1. A straightness interferometer having a bed and a spindle,

the interferometer measuring movements of the bed and the spindle, the interferometer comprising:

a first optical component mounted on one of said bed and said spindle, the first optical component comprising a light source and a straightness reflector; and

a second optical component mounted on the other one of said bed and said spindle, the second optical component comprising a beam diverging prism and a retro-reflector,



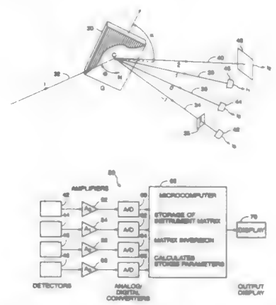
wherein the first optical component emits an incoming light source towards the second optical component, the second optical component producing two diverging beams from the incoming light beam and directing the two diverging beams towards the first optical component, the first optical component reflecting the two diverging beams towards the second optical component, the second optical component combining the beams into a single outgoing beam, the single outgoing beam containing information indicative of the movements of the bed and the spindle.

5,337,146

DIFFRACTION-GRATING PHOTOPOLARIMETERS AND SPECTROPHOTOPOLARIMETERS

Rasheed M. A. Azzam, Metairie, La., assignor to University of New Orleans, New Orleans, La.

Filed Mar. 30, 1992, Ser. No. 859,817
Int. Cl.[5] G01J *4/00*
U.S. Cl. 356—367 **15 Claims**



1. An instrument for measuring the state of polarization of light as determined by the four Stokes parameters, comprising:

a diffraction grating having a surface including a plurality of parallel grating grooves thereon, said grating having a spatial frequency selected to produce at least four diffracted orders;

a source of an incident light beam whose state of polarization is to be measured, said source oriented such that said incident light beam is directed at said grating so as to form an oblique incidence angle with said surface and such that said grating grooves are inclined at an inclination angle greater than 0° and less than 90° with respect to a plane of incidence defined by said light beam and a line normal to said surface at the point of incidence of said light beam on said surface;

at least four photodetectors, each of said photodetectors positioned on the surface of an imaginary cone defining conical diffraction of said incident light beam from said grating cone so as to intercept a different diffracted order from said incident light beam; and

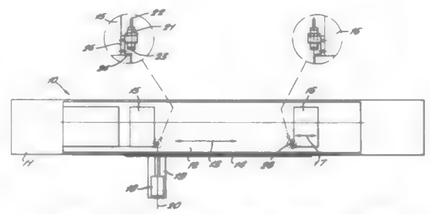
calculating means responsive to said photodetectors for determining the four Stokes parameters descriptive of the polarization state of said light beam.

5,337,147

METHODS AND CONTROL SYSTEMS FOR REGISTERING A DATUM POSITION BETWEEN TWO RELATIVELY MOVABLE COMPONENTS OF A MACHINE TOOL

James S. Hargreaves, 8 Ashfield Rd., Shipley West Yorkshire BD18 4JX, United Kingdom

Filed Apr. 12, 1993, Ser. No. 45,105
Claims priority, application United Kingdom, Apr. 15, 1992, 9208310.4
Int. Cl.[5] G01B *11/14*
U.S. Cl. 356—375 **7 Claims**



1. A method of registering a datum position between two components of a machine tool having a path of relative movement, comprising the steps of monitoring relative movement of the components in said path, directing a beam of parallel electro-magnetic radiation from a source on one of the components across said path of relative movement, providing a receiver for receiving the beam at one position in said relative movement between the components to define a datum position, monitoring electro-magnetic radiation received at said receiver location and detecting when the radiation received is equivalent to one half of the full beam emitted by the source to define said datum position; wherein the improvement comprises controlling the speed of relative movement between the components and using initial sensing of radiation on the receiver from the source to cause a reduction in relative speed of the components whereby the components move towards said datum position relatively slowly.

5,337,148

APPARATUS FOR MONITORING A GUARD WINDOW OF AN ARC SENSOR

Nobutoshi Torii, Hachioji; Ryo Nihei, and Hiroshi Wakio, both of Minamitsuru, all of Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

PCT No. PCT/JP92/00409, § 371 Date Dec. 2, 1992, § 102(e) Date Dec. 2, 1992, PCT Pub. No. WO92/17754, PCT Pub. Date Oct. 15, 1992
PCT Filed Apr. 2, 1992, Ser. No. 952,501
Claims priority, application Japan, Apr. 2, 1991, 398088
Int. Cl.[5] G01J *1/04*; B23K *9/10*
U.S. Cl. 356—376 **3 Claims**

1. A welding robot apparatus including guard window monitoring apparatus for an arc sensor guard window (**28**) of the robot, said apparatus comprising:

robot controller means (**7**);

an arc sensor unit (**20**) having laser scanner means (**22**) controlled by arc sensor control means (**10**) for directing a laser beam to scan a welding area for determining a welding point of work, said arc sensor unit (**20**) including a light receptive element (**25**) providing signals to signal

VOL 1165 ISS 2 AG 9 1994 UMI

detecting means (13) representing intensity of reflected light from an object being worked to determine said welding point;

a standard reflecting plate (30) located at a position a determined distance from a front surface of said guard window (28) at a side of said guard window (28) opposite from a position of said light receptive element (25);

means in said controller means (7) selectively operable to cause said laser scanner means (22) to direct said laser beam to scan a surface of said standard reflecting plate (30) through said guard window (28) such that said light receptive element (25) provides a signal to said signal detecting means (13) representing a first quality of light reflected from a scanning area of said standard reflecting

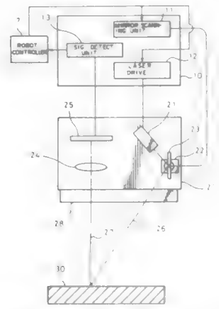


plate (30) through said guard window (28) before using said guard window (28) for an arc welding operation and provides a signal to said signal detecting means (13) representing a second quantity of light reflecting from the scanning area of said standard reflecting plate (30) after using said guard window (28) for an arc welding operation; and

means in said robot controller means (7) for storing signals from said signal detecting means (13) representative of said first and second quantities of light, and for determining a replacement time of said guard window based upon a comparison between signals representing said first quantity of light and said second quantity of light to determine a magnitude of difference therebetween.

5,337,149

COMPUTERIZED THREE DIMENSIONAL DATA ACQUISITION APPARATUS AND METHOD

Ghassan F. Kozah, and Charles M. Donoghue, both of 3530 Bee Caves Rd., #210, Austin, Tex. 78746

Filed Nov. 12, 1992, Ser. No. 974,924

Int. Cl.[5] G01B *11/24*

U.S. Cl. 356—376 **14 Claims**

1. An apparatus for obtaining a computer model of a large three dimensional object or space, comprising:

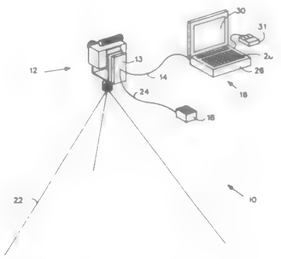
(a) a reference frame establishment means for establishing a stationary local reference frame;

(b) model element selection means for selecting a model element from a computer menu of available model elements;

(c) a measuring means for obtaining data in the local reference frame on the dimensional properties of an actual element in a three dimensional object or space that is being modeled;

(d) a data transmission means for transmitting the data from the measuring means;

(e) a computer means for receiving the transmitted data and for creating a model of the actual element that becomes part of a model of the object or space as the data is acquired; and



(f) a display means for displaying a visual image of the model of the object or space.

5,337,150

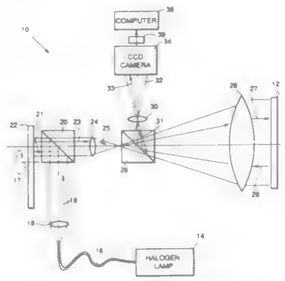
APPARATUS AND METHOD FOR PERFORMING THIN FILM LAYER THICKNESS METROLOGY USING A CORRELATION REFLECTOMETER

Peter B. Mumola, Huntington, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 4, 1992, Ser. No. 925,721

Int. Cl.[5] G01B *11/06*

U.S. Cl. 356—382 **18 Claims**



1. A method for measuring the thickness of a test layer of material having a front and a rear surface, wherein said material of said layer has a property that allows radiation to be transmitted therethrough, said method comprising the steps of:

providing a reference layer of material having a front and a rear surface, wherein said material of said reference layer has a property like that of said layer of material undergoing measurement, wherein the thickness of said reference layer of material varies over a specific range of known thicknesses, and wherein the thickness of said layer of material undergoing measurement falls within said specific range of knows thickness;

irradiating said front surface of said reference layer of material with collimated broadband radiation, wherein said collimated broadband radiation is reflected from said front and rear surfaces of said reference layer of material to provide reflected reference radiation having a unique spectral signature that corresponds to the thickness of said reference layer of material;

receiving and collimating said reflected reference radiation to provide collimated reference radiation;

projecting said collimated reference radiation onto said front surface of said layer of material undergoing measurement, wherein said reference radiation is reflected from said front and rear surfaces of said test layer of material undergoing measurement to provide reflected test radiation having a characteristic that is indicative of the thickness of said layer of material undergoing measurement;

receiving said reflected test radiation having said thickness indicative characteristic for a full aperture image of said test layer;

detecting said thickness indicative characteristic

correlating said thickness indicative characteristic with one of said thicknesses in said specific range of known thicknesses of said reference layer of material; and

providing an output that corresponds to the thickness of said layer of material undergoing measurement.

5,337,151

DOUBLE-SIDED CIRCUIT BOARD EXPOSURE MACHINE AND METHOD WITH OPTICAL REGISTRATION AND MATERIAL VARIATION COMPENSATION

Gregory R. Baxter, Orange; Jeffrey Tesone, Rialto, and Glenn Rivard, Pasadena, all of Calif., assignors to Optical Radiation Corporation, Azusa, Calif.

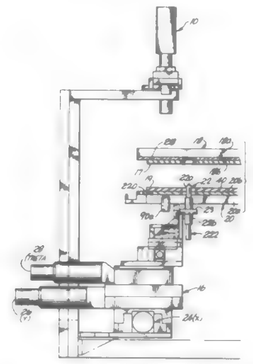
Filed Jul. 28, 1992, Ser. No. 921,501

Int. Cl.[5] G01B *11/00;* **G01N** *21/84*

U.S. Cl. 356—401 **26 Claims**

MICROFICHE APPENDIX INCLUDED

(406 Microfiche, 7 Pages)



1. A method of alignment of a workpiece between upper and lower artworks held in upper and lower artwork holders of an exposure system for printing a pattern from the upper and lower artworks on upper and lower sides of the workpiece, the method executed within an exposure chamber, the method comprising the step of:

aligning an upper artwork with a lower artwork; and

moving a workpiece onto a lower artwork holder and gripping the workpiece by at least one align taper pin protruding upward from the lower artwork hold through the lower artwork and through the workpiece;

closing an upper artwork holder in relation tot he lower artwork holder to an off-contact position proximate the workpiece;

moving the workpiece in at least one of X, Y, and Theta directions by movement of the at least one align taper pin to align the workpiece with at least one of the upper and lower artworks;

closing the upper artwork holder in relation to the lower artwork holder to contact with the workpiece;

measuring misalignment of the workpiece with respect to the upper and lower artworks and computing at least one of X, Y, and Theta compensation factors; and

moving the workpiece in at least one of X, Y and Theta directions using the X, Y, and Theta compensation factors to re-align the workpiece with at least one of the upper and lower artworks.

5,337,152

SOLID-STATE COLOR IMAGING APPARATUS

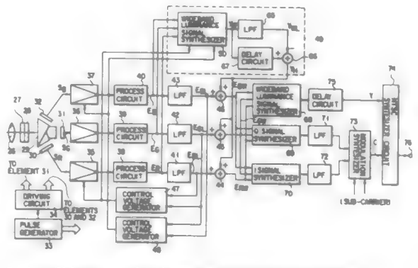
Hiroaki Kotaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 18, 1993, Ser. No. 33,356

Claims priority, application Japan, Mar. 18, 1992, 4-062123

Int. Cl.[5] H04N *9/04, 9/07, 9/097*

U.S. Cl. 348—234 **11 Claims**



1. A solid-state color imaging apparatus comprising:

color separation means for resolving an optical image of a subject shot into first, second and third different color components;

first, second and third solid-state imaging elements provided for said first, second and third color components, respectively, where three optical images corresponding to said first, second and third color components are formed respectively, wherein at least one of either said first solid-state imaging element or said second and third solid-state imaging elements are shifted spatially from each other so that a light-sensitive portion of each pixel of said second and third solid-state imaging elements may corresponds to a light-insensitive portion of each pixel of said solid-state imaging element;

high-frequency luminance-signal generating means for producing high-frequency components of a luminance signal on the basis of a mixed signal obtained by mixing output signals of said second and third solid-state imaging elements and an output signal of said first solid-state imaging element;

wideband color signal generating means for producing three kinds of wideband color signals corresponding to said first through third color components by combining said high-frequency components of said luminance signal from said high-frequency luminance-signal generating means, and said low-frequency components of respective output signals for said first through third solid-state imaging elements;

luminance-signal generating means for producing a luminance signal by combining said three kinds of wide-band color signals from the wideband color signal generating means in a specified mixing ration; and

control means for controlling a mixing ratio of the output signal of said second and third solid-state imaging elements such that one of said output signal which has a higher level is of a greater proportion than said output signals which have a lower level when said output signals are mixed by said high-frequency luminance-signal generating means.

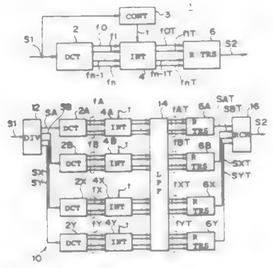
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,153

IMAGE TRANSFORMING DEVICE FOR CHANGING FRAME FREQUENCIES OF A VIDEO IMAGE

Jun Takayama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 28, 1992, Ser. No. 826,829
Claims priority, application Japan, Jan. 31, 1991, 3-032085
Int. Cl.[5] H04N 7/01
U.S. Cl. 348—441 5 Claims



1. An image transforming device comprising:
means for transforming an inputted video signal into perpendicularly intersected frequency components in a spatial frequency range;
interpolating means for generating frequency components which are frame-interpolated according to a change in said perpendicularly intersected frequency components with a progression of frames; and
means or reverse transforming said frame-interpolated frequency components reversely to the transformation effected by said means for transforming.

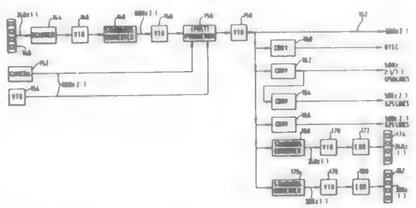
5,337,154

FORMAT CONVERSION OF DIGITAL VIDEO SIGNALS, INTEGRATION OF DIGITAL VIDEO SIGNALS INTO PHOTOGRAPHIC FILM MATERIAL AND THE LIKE, ASSOCIATED SIGNAL PROCESSING, AND MOTION COMPENSATED INTERPOLATION OF IMAGES

Martin R. Dorricott, Basing; Clive H. Gillard, Chineham; John W. Richards, Chilbolton, all of United Kingdom; Tsuneo Morita, Tokyo, Japan; James J. Galt, Glendale, Canada; Morgan W. A. David, Farnham, United Kingdom; James E. Burns, Basingstoke, United Kingdom, and Shima R. Varsani, Basingstoke, United Kingdom, assignors to Sony United Kingdom Limited, Staines, United Kingdom

Division of Ser. No. 789,754, Nov. 8, 1991. This application Jul. 19, 1993, Ser. No. 94,472
Claims priority, application United Kingdom, Nov. 15, 1990, 9024816.2; Nov. 15, 1990, 9024817.0; Nov. 15, 1990, 9024818.8; Nov. 15, 1990, 9024825.3; Nov. 15, 1990, 9024826.1; Nov. 15, 1990, 9024827.9; Nov. 15, 1990, 9024828.7; Nov. 15, 1990, 9024829.5; Nov. 15, 1990, 9024835.2; Nov. 15, 1990, 9024836.0; Nov. 15, 1990, 9024837.8; Nov. 15, 1990, 9024838.6
Int. Cl.[5] H04N 7/00
U.S. Cl. 348—448 6 Claims

1. A method of converting an input 24 frame/s progressive scan format digital video signal into an output 60 field/s 2:1 interlace scan format digital video signal, comprising the step of forming fields of the output signal from frames of the input signal such that at least four of every five output fields are produced by motion compensated interpolation between successive pairs of the input frames, and wherein a series of five successive output fields are produced from a series of three successive input frames such that:
a) the first output field is produced from the first input frame without motion compensated interpolation;
b) the second output field is produced by motion compensated interpolation two-fifths of the way between the first and second input frames;
c) the third output field is produced by motion compensated interpolation four-fifths of the way between the first and second input frames;



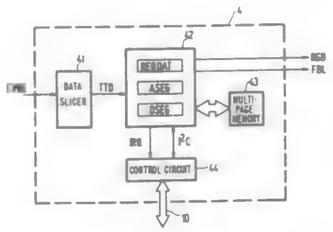
d) the fourth output field is produced by motion compensated interpolation one-fifth of the way between the second and third input frames; and
e) the fifth output field is produced by motion compensated interpolation three-fifths of the way between the second and third input frames.

5,337,155

TELEVISION RECEIVER INCLUDING A TELETEXT DECODER WITH ROTATING PAGE CONTROL

Ronny M. P. Cornelis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 23, 1992, Ser. No. 919,005
Claims priority, application European Pat. Off., Jul. 24, 1991, 91201939
Int. Cl.[5] H04N 7/087
U.S. Cl. 348—473 10 Claims



1. A television receiver including a teletext decoder, said teletext decoder for extracting and displaying a page of selected teletext information included in a video signal each page of teletext information having a page number and a sub-code, said teletext decoder comprising:
control means for extracting the teletext information from the video signal;
means for selecting a predetermined page of teletext information;
storage means for storing the selected page;
first display means for displaying the selected page;
means for displaying a further page when a sub-code of the further page is the same as the sub-code of the displayed page.

5,337,156

IMAGE OUTPUT DEVICE AND FACSIMILE MANAGEMENT REPORT OUTPUT METHOD

Toshifumi Nakamura; Gen Okabe, and Susumu Yamamoto, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,178
Claims priority, application Japan, Jun. 22, 1991, 3-177516
Int. Cl.[5] H04N 1/21
U.S. Cl. 358—404 4 Claims



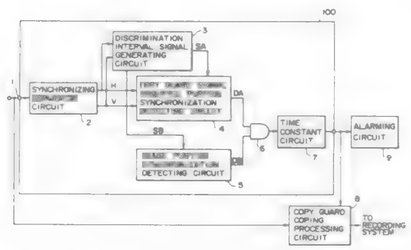
3. A facsimile management report output method comprising the steps of:
dividing data corresponding to a page of a management report and developing the divided data to a RAM in a font code;
converting said font code developed to said RAM into a font image and transferring said font image to a buffer memory;
converting said font image developed to said buffer memory into code data by a compression/expansion unit and transferring said code data to a code storage unit;
converting said code data in said code storage unit into a font image by said compression/expansion unit and transferring said font image to said buffer memory; and
outputting said font image in said buffer memory by means of an image recording unit which is adapted to operate continuously.

5,337,157

COPY GUARD PROCESSING DETECTING APPARATUS

Shingo Nakata, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 4,942
Claims priority, application Japan, Jan. 16, 1992, 4-025725
Int. Cl.[5] H04N 5/91
U.S. Cl. 358—335 4 Claims



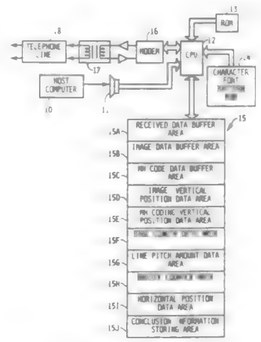
1. A copy guard processing detecting apparatus, comprising:
first means for receiving an input video signal which includes a plurality of false synchronizing signals for prevention of duplication inserted in a vertical blanking interval thereof and for counting the number of the false synchronizing signals;
second means for counting the number of synchronizing signals in an image interval of the input video signal except the vertical blanking interval; and
discriminating means for discriminating whether or not copy guard processing is applied to the input video signal from the count values of said first and second means.

5,337,158

FACSIMILE DATA PROCESSING APPARATUS

Satoshi Okimoto, Komaki; Kiyotaka Ohara, Nagoya; Takao Seki, Nagoya, and Hifumi Kato, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 27, 1991, Ser. No. 813,822
Claims priority, application Japan, Dec. 27, 1990, 2-415278
Int. Cl.[5] H04N 1/41
U.S. Cl. 358—426 6 Claims



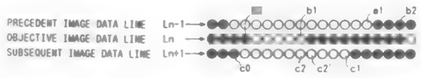
1. A facsimile data processing apparatus connectable to a hot computer, comprising:
received code memory means for receiving and storing printer control code and character code output from the host computer;
first conversion means for converting the character code, stored in said received code memory means, into image data;
second conversion means for converting the converted image data into transmission code;
detecting means for detecting the last character code of a page stored in said received code memory means; and
return code adding means for adding a return code indicating end of page following the transmission code for the last character code detected by said detecting means, wherein any space at an end of the page following a last character line is neither converted into image data nor converted into transmission code thereby reducing both conversion and transmission time.

5,337,159

IMAGE DATA SMOOTHING METHOD

Masahiro Iida, Kyoto, and Yoshihisa Takeuchi, Joyo, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Nov. 4, 1991, Ser. No. 787,072
Claims priority, application Japan, Nov. 7, 1990, 2-301703
Int. Cl.[5] H04N 1/415; G06K 9/40
U.S. Cl. 358—447 1 Claim



1. An image data smoothing method comprising the steps of:
identifying an object image data line comprising a plurality of pixels,
identifying an adjacent image data line comprising a plurality of pixels adjacent to the object image data line,

VOL 1165 ISS 2 AG 9 1994 UMI

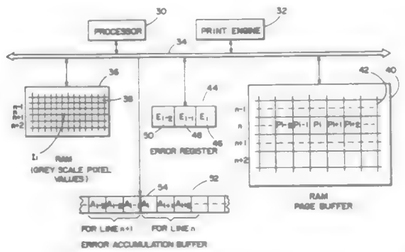
identifying an object changing pixel in the object image data line,
identifying a reference changing pixel in the adjacent image data line, the object changing pixel and the reference changing pixel defining a positional relationship,
generating a correction image data line by reversing a specified number of pixels adjacent to the object changing pixel in the object image data line, wherein the specified number of pixels is a function of the positional relationship between the object changing pixel and the reference changing pixel, and
inserting the correction image data line between the object image data line and the adjacent image data line,
whereby an image comprising the object image data line, the correction image data line and the adjacent image data line is produced.

5,337,160

ERROR DIFFUSION PROCESSOR AND METHOD FOR CONVERTING A GREY SCALE PIXEL IMAGE TO A BINARY VALUE PIXEL IMAGE

Arlin R. Jones, Boise, Id., assignor to Hewlett-Packard, Palo Alto, Calif.

Filed Jul. 1, 1992, Ser. No. 907,006
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—447 **6 Claims**



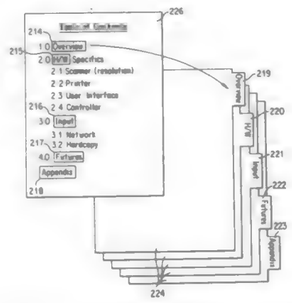
1. In a data processing system for converting a raster image of grey scale value pixels into an image of binary value pixels and for diffusing pixel error values that result from said conversion, the method comprising the steps of:
converting, sequentially, grey scale value pixels to binary value pixels on scan lines of said raster image;
for each said grey scale value pixel, determining a pixel error value that results from said converting step, said pixel error value being the difference between a grey scale equivalent to the binary value of a pixel and said pixel's grey scale value;
attributing a portion of each said pixel error value from a pixel position on a first scan line to an immediately adjacent pixel position on a next scan line;
accumulating and storing all pixel error value portions attributed to each adjacent pixel position on said next scan line so as to provide a summed, attributed error value for each said adjacent pixel position on said next scan line; and
modifying a grey scale value of a pixel to be entered in said immediately adjacent pixel position on said next scan line in accordance with a summed, attributed error value for said immediately adjacent pixel position only when said immediately adjacent pixel position is reached, in sequence, for conversion from a grey scale value to a binary value.

5,337,161

TAB IMAGE EXTRACTION AND PLACEMENT

Randall R. Hube, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1993, Ser. No. 83,582
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—448 **28 Claims**



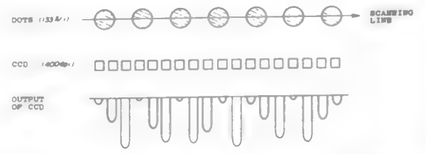
1. A method for producing tab images for a print job, comprising the steps of:
supplying image data comprising page images;
supplying a type of tab stock cut having at least one tab extension;
supplying tab image parameters based in part on the type of tab stock cut;
selecting at least one tab image from a portion of any one of the page images;
processing the tab image according to the tab image parameters; and
storing the at least one processed tab image in a sequential order corresponding to a tab sequence for the type of tab stock cut.

5,337,162

IMAGE PROCESSING APPARATUS FOR PREVENTING OCCURRENCE OF MOIRE IN OUTPUT IMAGE

Yukio Sakano, Fucyu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,493
Claims priority, application Japan, Jun. 30, 1991, 3-185375
Int. Cl.[5] H04N *1/23*
U.S. Cl. 358—458 **13 Claims**



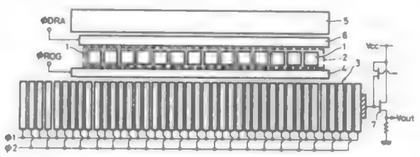
1. An image processing apparatus in which a multilevel image signal generated from an original image by means of a scanner is input and processed so as to produce a set of multilevel image data describing a gray level of each pixel of an output image, said image processing apparatus comprising:
detection means for repeatedly detecting a peak of said multilevel image signal and a valley thereof with respect to pixels of the original image aligned in a scanning direction of the scanner, and for outputting the detected peak of said multilevel image signal and the detected valley thereof;
correction means for correcting a gray level of the multilevel image data with respect to each of said pixels depending on a difference between the peak and the valley output by said detection means, so as to reduce changes in gray level of pixels of the output image; and
delay means for delaying the output of the detected peak and valley by said detection means until a prescribed number of pixels aligned in the scanning direction is received by said delay means.

5,337,163

LINEAR IMAGE SENSOR WITH VARIED ELECTRIC CHARGE STORAGE TIME

Seiichi Kawamoto; Maki Sato; Tadakuni Narabu, and Hisanori Miura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 5, 1991, Ser. No. 787,948
Claims priority, application Japan, Nov. 14, 1990, 2-309765
Int. Cl.[5] H04N *1/04, 3/14*
U.S. Cl. 358—482 **3 Claims**



2. A linear image sensor comprising:
(a) an image sensor array having a plurality of image sensing elements to produce signal charges and non-signal charges upon incidence of light rays;
(b) a charge-transfer register disposed on one side of said image sensor array;
(c) A read-out gate provided between said image sensor array and said charge-transfer register to transfer said signal charges produced in said image sensor array to said charge-transfer register;
(d) a drain region disposed on the other side of said image sensor array;
(e) a drain gate provided between said image sensor array and said drain region to transfer charges from said image sensor array to said drain region; and
(f) means for supplying a drain gate signal to said drain gate to switch said drain gate to an ON state after said read-out gate is in an ON state, wherein the timing of said drain gate signal to said drain gate is variable to change the storage time of said plurality of image sensing elements; and
wherein the output signal of said charge-transfer register is used for a facsimile signal.

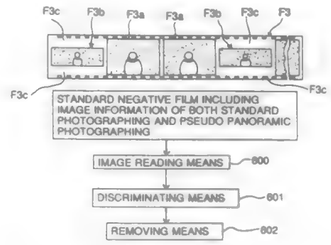
5,337,164

NEGATIVE FILM IMAGE READING DEVICE

Takashi Yabe, and Hiroyuki Yamamoto, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 8,950
Claims priority, application Japan, Jan. 30, 1992, 4-040231; Mar. 26, 1992, 4-100552; Jun. 11, 1992, 4-179045
Int. Cl.[5] H04N *1/387, 1/40, 1/38, 3/36*
U.S. Cl. 358—487 **9 Claims**

1. An apparatus for reading a photographed image on a standard size film, wherein the photographed image is exposed n a photographing frame on the film so that the film has an exposed region on the frame and an unexposed region, and the image exposed on the frame can be formed as a standard size image or a pseudo panoramic image so that the film has an unexposed region in the exposed frame in which the pseudo panoramic image is formed, the apparatus comprising:
reading means for scanning and reading an image on the film and for outputting a density signal representing a density level of the image on the film;
control means for controlling the scanning position of the reading means so that the reading means is controlled to scan the unexposed region on the film in addition to the exposed region;
shading means for receiving density signals obtained from the unexposed region, for generating shading data on the basis of the density signals of the unexposed region, wherein the shading data is used to correct shading caused by uneven sensitivity of the reading means, and for conducting shading correction on the density signal of the unexposed region by the shading data;
processing means for determining a threshold value on the basis of the corrected density signal of the unexposed region so that the threshold value is determined to be lower than the signal level of the corrected density signal of the unexposed region and higher than the signal level of the minimum density of the exposed region;
discriminating means for receiving density signals obtained from both the exposed region and the unexposed region in the frame in which a psuedo panoramic image is formed, wherein the density signals are applied with the shading correction by the shading means, the discriminating means for comparing the signal levels of the density signals with the threshold value, and for discriminating the unexposed region from the exposed region from the comparison results; and
eliminating means for eliminating the density signals of the unexposed region from the density signals of the frame having the pseudo panoramic image.

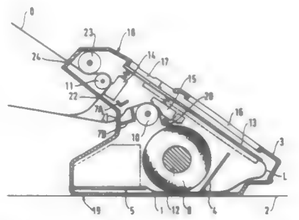


5,337,165

ARCHITECTURE FOR A TELEPHONE FACSIMILE TERMINAL

Denis Riousset, Epinay sur Seine, and Jean-Louis Richiero, Stains, both of France, assignors to Alcatel Business Systems, Paris, France

Filed Jan. 30, 1992, Ser. No. 828,183
Claims priority, application France, Jan. 31, 1991, 91 01077
Int. Cl.[5] H04N *1/23, 1/04*
U.S. Cl. 358—496 **1 Claim**



1. Architecture for a telephone facsimile terminal, compris-

VOL 1165 ISS 2 AG 9 1994 UMI

ing a housing with three parallel rear openings which correspond respectively to an access first opening enabling insertion of a document to be faxed, to an output second opening enabling expulsion of a document previously inserted via said access opening, and to an output third opening for a print medium,

said housing containing a base which contains a roll of print medium, circuits corresponding respectively to a telephone circuit and to a power supply, motors,, a print medium cutting device, and driving rollers for the print medium and document,

said housing also containing a hinged cover which contains a man-machine communication arrangement, an associated monitoring circuit, and printing and scanning heads,

said hinged cover at least partially sloping down toward a front of the housing relative to a plane of abutment of the base on a support,

wherein said access first opening is disposed where said base meets said cover at an end thereof which is opposite from one end via which said cover is hinged on said base near said front of said housing, wherein said output second opening for document expulsion is disposed in a rear wall of said base in proximity to an assembly formed by a scanning roller and said scanning head next to said access first opening so as to minimize the length of a document path inside said housing between said access and output second opening, and wherein said print medium output third opening opens in a recess of said rear wall of said base in proximity to an assembly including said printing head, a printing roller and said cutting device, so as to minimize the length of the medium path towards said medium output third opening, and next to said output second opening for document expulsion, so as to allow use of a same supporting tray for a document and for a page printed on said medium.

5,337,166

COLOR SIGNAL TRANSFORMING APPARATUS

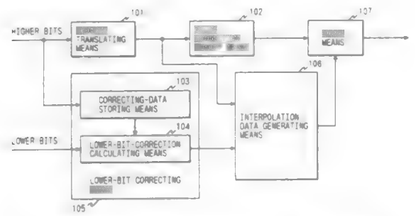
Hiroaki Ikegami, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 962,502, Oct. 16, 1992, and Ser. No. 962,351, Oct. 16, 1992, Pat. No. 5,313,314. This application Feb. 12, 1993, Ser. No. 16,830

Claims priority, application Japan, Feb. 14, 1992, 4-059224

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—518 **9 Claims**



1. A color signal transforming apparatus comprising:

address transforming means for transforming an address signal of a combination of higher bits into another address signal;

basic data color correction memory means for outputting basic data in response to the transformed address signal;

lower-bit correcting means including;

lower-bit correction data storing means for outputting data for lower-bit correction in response to the address signal of the combination of higher bits; and

lower-bit correction calculating means for correcting the lower bits by using the output signal of said lower-bit correcting means;

interpolation data generating means for generating a set of interpolation data on the basis of the transformed address signal output from said address transforming means and the combination of the corrected lower bits output from said lower-bit correcting means; and

adder means for adding together the output signal of said color correction memory means and the output signals of said interpolation data generating means, thereby producing output signals.

5,337,167

HALFTONE IMAGE FORMING APPARATUS INCLUDING DENSITY BASED DOT ENLARGEMENT

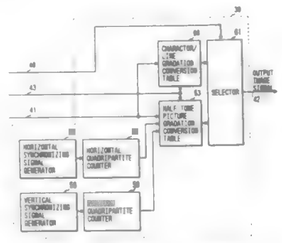
Seiichiro Hiratsuka, Kitakyushu, and Yuuji Toyomura, Fukuoka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 27, 1992, Ser. No. 859,201

Claims priority, application Japan, Apr. 3, 1991, 3-079891; May 7, 1991, 3-101273

Int. Cl.[5] H04N *1/40, 1/46*

U.S. Cl. 358—533 **16 Claims**



1. An image formation apparatus for performing a gradation recording by changing a size of a dot on the basis of an image data inputted, said apparatus comprising:

division means for dividing an image into a plurality of blocks each comprising a predetermined number of dots;

first gradation processing means for giving a preferential order with respect to a position within each of the plurality of divided blocks so as to process said image data so that the size of one of said dots corresponding to a position whose preferential order is higher is first enlarged on the basis of a density of said image data;

second gradation processing means for processing said image data so that the size of one of said dots is enlarged on the basis of the density of said image data irrespective of the position within said block; and

switching means for performing a switching operation between said first and second gradation processing means in accordance with a kind of said image.

5,337,168

IMAGE DATA PROCESSING APPARATUS FOR LOCATING PIXEL HAVING MAXIMUM COINCIDENCE COUNT IN INPUT IMAGE DATA

Tatsuya Fujii, Nishinomiya; Yukihiro Imai, Kawanishi; Yutaka Sato, Minoo; Ryo Fukui, Yao; Kazuo Sakamoto, Kobe; Naoto Shiraishi, Toyonaka, and Yoshiteru Yamada, Kobe, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 29,397

Claims priority, application Japan, Mar. 10, 1992, 4-087720

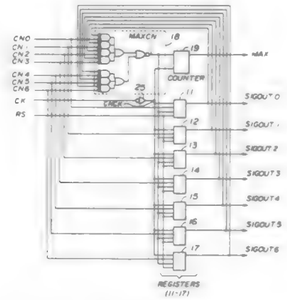
Int. Cl.[5] H04N *1/419*

U.S. Cl. 358—539 **8 Claims**

1. An image data processing apparatus for converting binary input image data into encoded output image data, said apparatus comprising:

a plurality of registers each of which outputs an output signal in accordance with a corresponding signal of a plurality of input coincidence signals derived from the input image data, said output signal indicating whether or not a corresponding register has a maximum count value, and each input coincidence signal indicating whether or not a corresponding pixel among neighborhood pixels of a target pixel of the input image data, which pixel is to be encoded, coincides with a corresponding dot among predetermined reference dots at given locations relative to the location of the target pixel in the input image data; and

state checking means for outputting a state signal indicating whether or not the output signal level of a first register having the maximum count value currently changes from the previous level by detecting the current output signal level of said first register in accordance with said input coincidence signals and in accordance with said output signals of said registers,



each of said registers comprising:

counter means for incrementing or decrementing a count value of the register each time a corresponding input coincidence signal indicating said coincidence is received, so that said count value of the register is output;

control means for controlling counting operations of said counter means in accordance with a corresponding coincidence signal and in accordance with said state signal from said state checking means; and

discrimination means for detecting whether or not said register has the maximum count value in accordance with the count value from said counter means so that the output signal indicating whether or not the register has the maximum count value is output.

5,337,169

METHOD FOR PATTERNING AN OPTICAL DEVICE FOR OPTICAL IC, AND AN OPTICAL DEVICE FOR OPTICAL IC FABRICATED BY THIS METHOD

Nobuo Hori; Yoshinobu Takano; Takashi Takahashi; Shigenori Nagano, and Reiji Hashimoto, all of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan

Continuation of Ser. No. 755,425, Sep. 5, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 24,110

Claims priority, application Japan, Sep. 7, 1990, 2-238743

Int. Cl.[5] G02B *5/32, 6/34;* **G03H** *1/04*

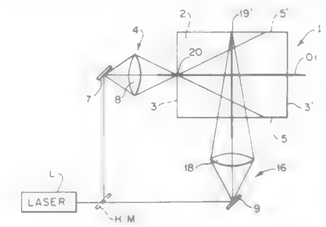
U.S. Cl. 359—3 **8 Claims**

1. A method for forming a diffraction pattern in an optical device, comprising the steps of:

forming a layer of a light-sensitive material as a waveguide on a substrate;

irradiating the layer of light-sensitive material with a first beam of coherent light along a first axis; and

irradiating the layer of light-sensitive material with a second beam of coherent light along a second axis simultaneously with the irradiation along the first axis, the second axis being substantially perpendicular to the first axis, and the



first and second axes being substantially parallel to a surface of the layer of light-sensitive material.

5,337,170

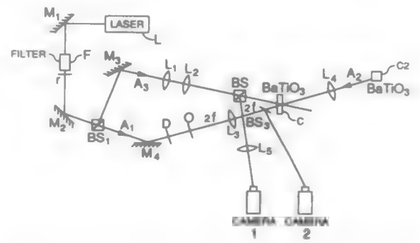
QUADRATIC OPTICAL PROCESSOR FOR REDUCING MULTIPLICATIVE NOISE AND OTHER USES

Jihad Khoury, Arlington, and Charles L. Woods, Stow, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1992, Ser. No. 921,541

Int. Cl.[5] G03H *1/02*

U.S. Cl. 359—7 **22 Claims**



5. Quadratic optical signal processor for processing a coherent optical signal comprising:

(a) a holographic recording member;

(b) projection means for forming the coherent optical signal to be quadratically processed upon said holographic recording member;

(c) means for directing a coherent reference wavefront at said holographic recording member for recording a hologram of said optical signal within said holographic recording member;

(d) phase conjugator means for producing a readout beam having the phase conjugate of said optical signal; and

(e) means for directing said readout beam at said holographic recording member and for producing an output beam therefrom whose amplitude is the square of the magnitude of the complex amplitude of the optical signal.

VOL 1165 ISS 2 AG 9 1994 UMI

5,337,171

ELECTRO-OPTICAL DEVICE

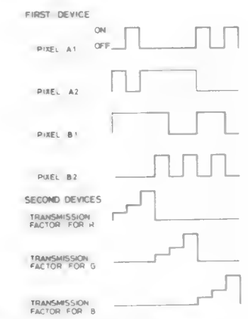
Akira Mase, Aichi, and Shunpei Yamazaki, Tokyo, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Filed Jan. 16, 1992, Ser. No. 821,573

Claims priority, application Japan, Jan. 17, 1991, 3-018487; Jan. 17, 1991, 3-018488; Jan. 17, 1991, 3-018489; Jan. 17, 1991, 3-024210; Feb. 15, 1991, 3-044235

Int. Cl.[5] **G02F** *1/133, 1/1335, 1/137*

U.S. Cl. 359—53 **22 Claims**



1. An electro-optical device comprising:

a first electro-optical panel comprising a pair of substrates, an electro-optical modulating layer provided therebetween, and means for applying an electric field to individually control pixel elements defined in said layer;

a second electro-optical panel for supplying said first panel with light at a variable intensity level, said second panel comprising a pair of substrates, an electro-optical modulating layer provided therebetween, and means for applying an electric field to said layer of said second panel; and

control means for varying the intensity of light transmitted by said second electro-optical panel in a repeating cycle;

wherein said second panel can transmit light incident on one of said substrates of said second panel and said first panel is provided on the side of said second panel opposite to the side of said one of said substrates.

5,337,172

LIQUID CRYSTAL MATRIX CONTROL EMPLOYING DOPED SEMICONDUCTOR PIXEL ELECTRODE SURROUNDED BY UNDOPED CHANNEL REGION

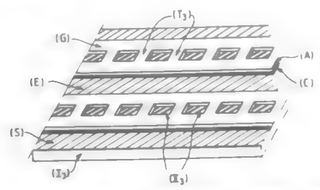
Jean-Claude Lehureau, Sainte Genevievedes Bois, France, assignor to Thomson-CSF, Puteaux, France

Filed Mar. 20, 1992, Ser. No. 855,856

Claims priority, application France, Mar. 26, 1991, 91 03625

Int. Cl.[5] **G02F** *1/1343*

U.S. Cl. 359—59 **10 Claims**



1. A matrix device using electro-optical material, said matrix display device comprising a matrix array of elementary picture zones and, in each elementary zone, an electro-optical material placed between two electrodes, the picture display in each of said zones being a function of an electrical field applied between the two electrodes located in said zone, means for the addressing the electrodes being designed for the selective application, in each of said zones, of a desired electrical field, with a first one of the two electrodes being constituted by a transparent doped semiconductor zone completely surrounded by a substantially undoped semiconductor zone, said substantially undoped semiconductor zone constituting a channel of a control transistor with said first electrode forming a source or a drain of said transistor.

5,337,173

LIQUID CRYSTAL DISPLAY HAVING A REDUNDANT STORAGE CAPACITOR FOR CONNECTION TO ONE OF PLURAL PIXELS

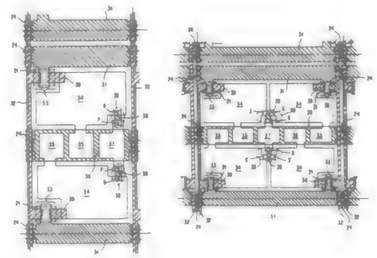
Masakazu Atsumi, Machida; Takeshi Matsumoto, Fujisawa, and Toshihiko Yoshida, Yokohama, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1992, Ser. No. 883,094

Claims priority, application Japan, May 15, 1991, 3-138667

Int. Cl.[5] **G02F** *1/1343*

U.S. Cl. 359—54 **17 Claims**



1. A liquid crystal display comprising:

a plurality of data lines;

a plurality of scan lines crossing said data lines;

a plurality of pixels, each pixel being associated with a crossing of a gate line and a data line, said plurality of pixels being arranged in a plurality of pixel groups, and each of said pixel groups comprising two or more pixels;

a storage capacitor for each pixel;

an auxiliary storage capacitor for each pixel group disposed for connection to any one of said pixels in said pixel group;

a capacitor line extending though said group of pixels, said capacitor line having associated therewith said storage capacitors and said auxiliary storage capacitor; and

means for selectively connecting said auxiliary storage capacitor to one of said pixels in said pixel group.

5,337,174

OPTICAL COMPENSATOR AND LIQUID CRYSTAL DISPLAY

Hiroshi Wada; Shinji Wada; Osamu Okumura, all of Suwa; Rinjiro Ichikawa, Tokyo; Kenji Hashimoto, Tokyo, and Takashi Yamada, Tokyo, all of Japan, assignors to Seiko Epson Corporation and Fujimori Kogyo Co. Ltd., Tokyo, Japan

PCT No. PCT/JP92/00762, § 371 Date Apr. 14, 1993, § 102(e) Date Apr. 14, 1993, PCT Pub. No. WO92/22836, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 15, 1992, Ser. No. 969,156

Claims priority, application Japan, Jun. 17, 1991, 3-173183

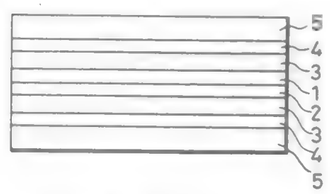
Int. Cl.[5] **G02F** *1/1335*

U.S. Cl. 359—73 **20 Claims**

1. An optical compensator comprising a laminate, wherein the laminate comprises:

(1) at least one oriented film of a first type obtained by stretching, in at least one axis, a polymer film having a refractive index $n_D \geqq 1.60$, an Abbe number $\nu_D \leqq 30.0$ and a glass transition temperature Tg = 60° to 160° C., and

(2) at least one oriented film of a second type laminated to said oriented film of the first type, said oriented film of the second type being obtained by stretching, in at least one axis, a polymer film having a refractive index $n_D < 1.60$, wherein the oriented film of the first type has at least one axis of orientation which is parallel to an axis of orientation of the oriented film of the second type.



5,337,175

OPTICAL COMMUNICATIONS SYSTEM FOR THE SUBSCRIBER AREA WITH OPTICAL AMPLIFIERS

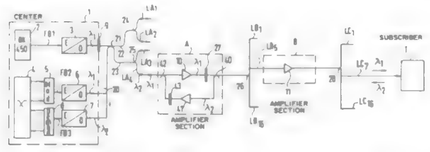
Horst Ohnsorge, Freiberg; Adolf Weygang, Stuttgart, and Rolf Heidemann, Tamm, all of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam

Filed Feb. 11, 1992, Ser. No. 833,935

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1991, 4104084; May 22, 1991, 4116660

Int. Cl.[5] **H04J** *14/00;* **H04B** *10/00, 10/02*

U.S. Cl. 359—125 **20 Claims**



1. Fiber-optic communications systems having a center (**1**) and a plurality of subscribers (T_i) wherein the subscribers (T_i) are connected to the center (**1**) via a multistar fiber-optic network (LA_i, LB_i, LC_i), wherein fiber-optic amplifiers (**10, 11**) are provided between successive branch points of the multistat fiber-optic network (LA_i, LB_i, LC_i), and wherein the center (**1**) distributes broadband information signals, such as television signals, as an optical signal on a first wavelength (λ_1) in a first frequency band (**FB1**), over the multistar fiber-optic network (LA_i, LB_i, LC_i) to the subscribers (T_i), and wherein the optical signal is amplified by the fiber-optic amplifiers (**10, 11**), characterized in that

the center (**1**) has means for transmitting subscriber-assigned information signals, such as telephone signals, to the subscribers (T_i) over the multistar fiber-optic network (LA_i, LB_i, LC_i), the subscriber-assigned information signals being transmitted on the first wavelength (λ_1) in a second frequency band (**FB2**) with separate subscriber-assigned frequencies, the optical signal being amplified in the fiber-optic amplifiers (**10, 11**);

each subscriber (T_i) has means for transmitting subscriber-assigned information signals, such as telephone signals, to the center (**1**), the subscriber-assigned information signals being transmitted on a second wavelength (λ_2) in a third frequency band (**FB3**) with separate subscriber-assigned frequencies; and

the multistat fiber-optic network has at least one means (**40, 41, 43; 51, 54, 52**) for extracting the subscriber-assigned information signals transmitted on the second wavelength (λ_2) from an optical waveguide (LA_4), amplifying them, and reinjetting them into the optical waveguide (LA_4) for transmission to the center (**1**).

5,337,176

OPTICAL AMPLIFIER WITH IMPROVED LINEARITY

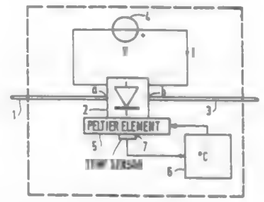
Lukas F. Tiemeijer, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1993, Ser. No. 29,253

Claims priority, application European Pat. Off., Mar. 25, 1992, 92200850.3

Int. Cl.[5] **H01S** *3/19*

U.S. Cl. 359—344 **14 Claims**



1. An optical amplifier, comprising:

a solid-state laser for amplifying an optical input signal to produce an optical output signal; and

a power supply source connected to said solid-state laser for supplying electrical pump energy thereto, said power supply source being a voltage source which generates a constant voltage.

5,337,177

MICROSCOPE

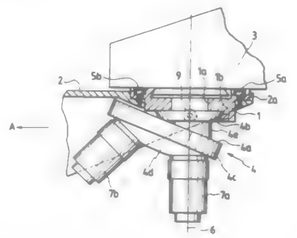
Shuji Toyoda, Yokohama, and Satoru Kumagai, Chigasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 737,604, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 580,182, Sep. 10, 1990, abandoned. This application Sep. 21, 1992, Ser. No. 947,949

Claims priority, application Japan, Sep. 13, 1989, 1-237844

Int. Cl.[5] **G02B** *21/00*

U.S. Cl. 359—384 **8 Claims**



5. A microscope having a microscope body, and comprising:

objective revolver means comprising a revolver portion supporting a plurality of objective lenses and rotatable to enable selection among said objective lenses for viewing a specimen, and a revolver retaining member supporting said revolver portion such that said revolver portion rotates in a plane inclined at a predetermined angle to an optical axis of said objective revolver means, and

attachment means for detachably mounting said revolver retaining member on said microscope body with said optical axis of said objective revolver means coincident

VOL 1165 ISS 2 AG 9 1994 UMI

with a specimen viewing axis of the microscope, said attachment means being constructed such that said revolver retaining member is dismountable therefrom and thereafter remountable thereto, after rotation through about 180° on said optical axis, by movement in each of only two directions, namely: a first direction perpendicular to said optical axis of said objective revolver means and a second direction opposite to said first direction.

5,337,178

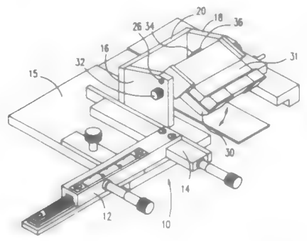
TITLABLE OPTICAL MICROSCOPE STAGE

Paul J. Kung, Hopewell Junction, and David E. Sloman, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,262

Int. Cl.[5] G01N *21/01;* **359** *391, 392, 393;* **250** *442.11*

U.S. Cl. 359—393 **5 Claims**



1. A tiltable optical microscope stage comprising:

a base member;

a specimen support slideably supported by said base member, said specimen support comprising a pair of pivots defining a pivot axis;

a means for controlling two dimensional movement attached to said specimen support and to said base member for controlling movement of said specimen support relative to said base member;

a tiltable specimen holding means for holding a specimen in a position relative to said specimen support and suspended from said pair of pivots, aid pivot axis extending through said specimen holding means and said specimen holding means tiltable about said axis; and a locking means for locking said specimen holding means in a selected position,

whereby a specimen may be translated in at least one direction and tilted about an axis parallel to said one direction to position said specimen at varying orientations relative to said base member.

5,337,179

FLEXIBLE CONTROLLABLE OPTICAL SURFACE AND METHOD OF MAKING THE SAME

Marvin P. Hodges, 1565 Shadowglen Ct., Westlake Village, Calif. 91361

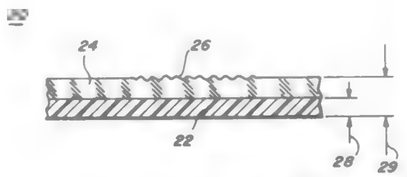
Filed Jul. 27, 1992, Ser. No. 920,206

Int. Cl.[5] G03B *21/56*

U.S. Cl. 359—443 **53 Claims**

1. An optical laminate comprising:

a support substrate defining an optical surface, said support substrate having a sufficiently high modulus of elasticity to define accurately said optical surface and a sufficiently low modulus to permit said support substrate to be rolled into a coil; and



an optical layer secured to said support substrate, said optical layer having a predetermined optical characteristic.

5,337,180

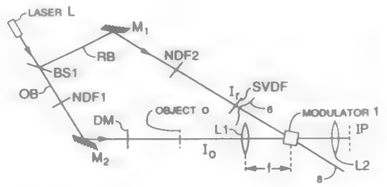
OPTICAL SIGNAL DEPENDENT NOISE REDUCTION BY VARIABLE SPATIAL THRESHOLDING OF THE FOURIER TRANSFORM

Charles L. Woods, Stow, Mass., and Jihad Khoury, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1992, Ser. No. 921,542

Int. Cl.[5] G02B *27/46, 5/23*

U.S. Cl. 359—568 **19 Claims**



1. In a two-beam coupling apparatus for processing an optical signal that reduces additive signal dependent noise associated therewith without substantially affecting the resolution of the optical signal comprising:

(a) a spatially thresholded light modulating element;

(b) Fourier transform means for projecting a Fourier transform of both said optical signal and signal dependent noise upon the thresholded light modulating element;

(c) threshold control means having a substantially bell shaped transmittance over lines extending from substantially its center point to substantially the nearest outer perimeter point for establishing a varying transmittance threshold envelope across said thresholded light modulating element, which envelope is shaped in accordance with the signal dependent noise amplitude distribution across the face of the light modulating element, thereby to threshold out and thus attenuate a substantial portion of said additive signal dependent noise associated with the optical signal without substantially affecting the resolution of said optical signal; and

(d) means for optically transforming the Fourier transform produced by the Fourier transform means of paragraph (b).

5,337,181

OPTICAL SPATIAL FILTER

Shawn L. Kelly, 6423 Hollyhock Trail, Brighton, Mich. 48116

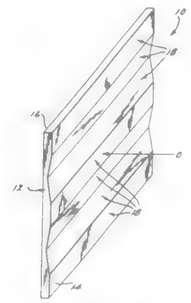
Filed Aug. 27, 1992, Ser. No. 936,755

Int. Cl.[5] G02B *5/04, 27/46;* **H04N** *5/72*

U.S. Cl. 359—574 **1 Claim**

1. An optical fiber for filtering spatial frequencies from an output image of an optical imaging system, said filter comprising:

an optical element located in said optical imaging system comprised of a plurality of light refracting segments adjacently arranged in a predetermined pattern on a surface of said optical element, each of said plurality of light refracting segments having gradients of index of refraction to produce a deviation of light path direction in said optical



imaging system at an angle different than adjacently located light refracting segments, wherein the predetermined pattern and the angle of deviation in light path direction of each said plurality of light refracting segments is based on a desired filtered spatial frequency transfer function of said optical imaging system to filter spatial frequencies from the output image.

5,337,182

OPTICAL SCANNER

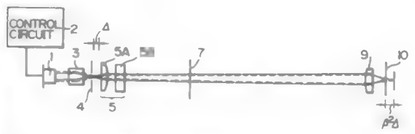
Kan Tomita, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 505,456, Apr. 6, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 895,422

Claims priority, application Japan, Apr. 17, 1989, 1-97017; May 17, 1989, 1-123190; Jan. 31, 1990, 2-21785

Int. Cl.[5] G02B *26/10*

U.S. Cl. 359—217 **4 Claims**



1. An optical scanner comprising:

a varifocal semiconductor laser light source for emitting a laser beam;

a control circuit coupled to said laser light source for changing a radiant angle of a radiated laser beam therefrom in a specific direction perpendicular to an optical axis of a radiant light beam and arranged such that said specific direction corresponds to a cross scanning direction;

a collimator lens for changing the light beam from said varifocal semiconductor laser light source to an approximately parallel light beam in a direction perpendicular to the radiant optical axis and said specific direction;

deflecting means for reflecting the light beam from the collimator lens on a deflection-reflecting face and deflecting the reflected light beam in a main scan-corresponding direction;

a first image forming optical system arranged between said collimator lens and the deflection-reflecting face and converging the light beam from the collimator lens in the main scan-corresponding direction;

a second image forming optical system arranged in a position near a scanned face between said deflection reflecting face and a scanned face wherein the deflection-reflecting face and the scanned face are in an approximately conjugate relation in geometrical optics with respect to the cross scanning direction; and

control means for controlling said circuit which alters the electric field of said semiconductor laser so as to alter a position of a substantial divergent start point of the varifocal semiconductor laser light source so as to correct field curvature in the cross scanning direction caused by the second image forming optical system in synchronization with an optical scanning operation by the deflected light beam.

5,337,183

DISTRIBUTED RESONANT CAVITY LIGHT BEAM MODULATOR

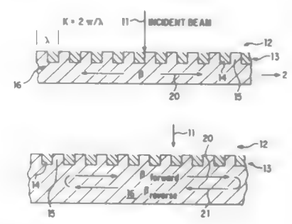
David Rosenblatt, Rehovot, Israel, assignor to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 650,559, Feb. 1, 1991, Pat. No. 5,157,537. This application Oct. 20, 1992, Ser. No. 963,494

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] G02F *1/07, 1/035;* **G02B** *27/44, 1/10*

U.S. Cl. 359—248 **25 Claims**



1. An optical device comprising

a transparent layer means for receiving a coherent polarized beam of electromagnetic radiation having a preselected wavelength, and for supporting at least one resonant mode,

grating means imposed on said layer means for establishing optical interaction with the layer means and having a grating period less than said preselected wavelength, said grating means being characterized by a pair of coupling constants;

controlling means for controlling the coupling constants characterizing said grating means to optimize the angular bandwidth of the grating means relative to its spectral bandwidth, and

the layer means and grating means interacting responsive to receiving the polarized beam to couple the layer means with the grating means to produce a standing wave resonance by Bragg reflection in said layer means.

5,337,184

ACRYLIC THERMOPLASTIC IONIC CONDUCTOR

Jeffrey H. Helms, Plymouth; Joseph W. Holubka, Livonia, both of Mich., and Edmund J. Blais, Windsor, Canada, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,689

Int. Cl.[5] G02F *1/01;* **C08J** *3/00;* **C08K** *3/30;* **C08L** *39/00*

U.S. Cl. 359—270 **12 Claims**

1. A thermoplastic ionic conductor composition comprising (i) a polymeric adduct having an acrylic backbone and polyether side chains, and (ii) an alkali metal salt, said polymeric adduct being made by reacting:

(A) an hydroxy-functional acrylic copolymer (i) having a number average molecular weight Mn between about

VOL 1165 ISS 2 AG 9 1994 UMI

2,000 and 500,000 and a Tg in the range of 0° C. and 100° C. , and (ii) being made by copolymerizing ethylenically unsaturated monomers comprising at least 50% by weight monomers selected from acrylates and methacrylates wherein at least about 20% by weight of said ethylenically unsaturated monomers comprise hydroxy functional ethylenically unsaturated monomers; and

(B) polyether monoisocyanate, wherein said acrylic copolymer and said monoisocyanate are reacted in amounts so as to provide between about 0.5 and about 1.0 reactive isocyanate groups per each hydroxyl functionality present on said acrylic copolymer.

5,337,185

THREE DIMENSIONAL DIFFRACTION GRATING AND CRYSTAL FILTER

Joseph F. Meier, Export, and Nathan T. Melamed, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 16, 1992, Ser. No. 945,754

Int. Cl.[5] G02F *1/00*; G02B *1/00, 5/22*

U.S. Cl. 359—321 **10 Claims**

1. A rigid diffraction optical filter for separating a narrow wavelength band from a broader spectrum of electromagnetic radiation comprising an ABA block copolymer that forms domains, wherein the A domain is polystyrene and the B domain is selected from the group of dienes, wherein the molecular weight of the diene is synthetically controlled to regulate the interelement spacing between polystyrene and domain structure of said filter, thereby regulating the diffraction.

5,337,186

TRANSMISSIVE IMAGE DISPLAY DEVICE

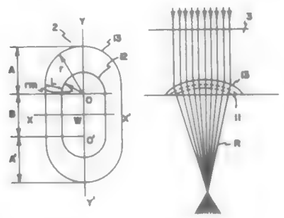
Masahiro Oikawa; Hiroyuki Nemoto; Kenjiro Hamanaka; Takashi Kishimoto, all of Ibaraki; Fumiaki Funada, Nara; Hiroshi Hamada, Nara, and Takashi Shibatani, Nara, all of Japan, assignors to Nippon Sheet Glass, Inc. and Sharp Kabushiki Kaisha, both of Japan

Filed Jun. 3, 1992, Ser. No. 893,321

Claims priority, application Japan, Jun. 3, 1991, 3-160004; Sep. 27, 1991, 3-277022

Int. Cl.[5] G02B *27/00*

U.S. Cl. 359—628 **12 Claims**



1. An image display device comprising:

a light source for emitting light;

a transmissive image display panel having a matrix of pixels arranged at different pitches in different directions perpendicular to each other; and

a planar microlens array for converging the light emitted by said light source onto said transmissive image display panel, said planar microlens array comprising a substrate and a matrix of microlenses disposed on said substrate for converging the light onto the pixels, respectively, each of said microlenses being of an oblong shape and including means for converging light to form a focus line such that an oblong image is formed on an image plane.

5,337,187

ZOOM LENS SYSTEM

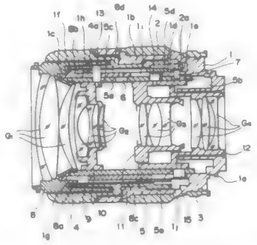
Kunihiro Fukino, Fujisawa; Toru Takayama, Kawasaki; Kiyotaka Inadome, Kawasaki, and Masahiro Nakatsuji, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 977,207, Nov. 16, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,052

Claims priority, application Japan, Nov. 20, 1991, 3-304887

Int. Cl.[5] G02B *15/14*

U.S. Cl. 359—699 **4 Claims**



1. A zoom lens system having a plurality of lens units including a focusing lens unit movable during zooming and having the zooming and focusing functions, wherein when a predetermined movement locus for zooming is expressed with the angle of rotation of a rotatable lens barrel for prescribing the amount of movement of the lens units in the direction of the optical axis thereof as a variable, the movement locus of said focusing lens unit is formed by the combination of a focus cam and a zoom compensation cam, and the movement locus of the movable non-focusing lens units which are not concerned in focusing is formed by the combination of said zoom compensation cam and a zoom cam corresponding to each non-focusing lens unit.

5,337,188

MOTOR VEHICLE REARVIEW MIRROR APPARATUS MOUNTABLE INTERCHANGEABLY ON THE RIGHT OR LEFT SIDE OF THE MOTOR VEHICLE

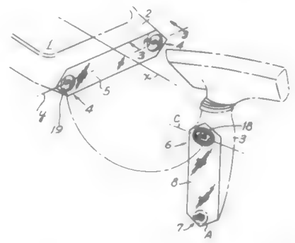
Antonio F. do Espirito Santo, Sao Paulo, Brazil, assignor to Metagal Industria E Comercio Ltda., Sao Paulo, Brazil

Filed Aug. 6, 1992, Ser. No. 926,846

Claims priority, application Brazil, Aug. 12, 1991, MU 7101792

Int. Cl.[5] G02B *7/182, 7/18*; B60R *1/06*

U.S. Cl. 359—872 **4 Claims**



1. A rearview mirror apparatus for a motor vehicle, comprising:

a mounting base attachable to the motor vehicle and having a base face;

a body having a longitudinal "X" axis and an end face attachable to the mounting base with the base face engaging the end face;

a mirror element held in the body;

reversible assembly connecting means for connecting the body to the mounting base, said connecting means comprising two female connecting elements on the end face of the body engageable with the base face of the mounting base and two corresponding male connecting elements on the base face of the mounting base positioned and structured for coupling with the female connecting elements to hold the body on the mounting base; and

attaching means for attaching the body to the mounting base including a fixing screw and a threaded hole provided in the end face of the body in the vicinity of each of the female connecting elements and a hole provided in the mounting base in the vicinity of one of the male connecting elements, so that, when the male connecting element provided with the hole is positioned to engage one of the female elements, the fixing screw can be inserted through the hole in the mounting base and screwed into the threaded hole in the body associated with the female connecting element; and

wherein the female connecting elements are located in the vicinity of respective opposing lateral edges of the end face of the body and are positioned symmetrically on opposite sides of the longitudinal axis "X" of the body and each of the female connecting elements includes a narrow oblong entrances in the body having a longitudinal axis "y" perpendicular to the longitudinal "x" axis of the body, and a comparatively enlarged bottom portion connected to the oblong entrance, and the threaded hole is located in the bottom portion.

5,337,189

SCANNIG EMITTER-RECEIVER OPTICAL DEVICE

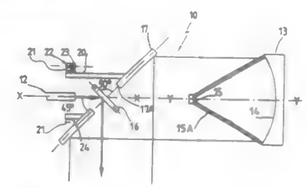
Rodolphe Krawczyk, Antibes; Guy Cerutti-Maori, Cannes-La-Bocca, and Luc Boulissiere, Mandelieu, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed May 11, 1993, Ser. No. 63,078

Claims priority, application France, May 13, 1992, 92 05815

Int. Cl.[5] G01C *3/08*

U.S. Cl. 359—850 **6 Claims**



1. A scanning emitter-receiver optical device comprising:

an optical source for emitting a primary beam along an emission axis;

a deflecting mirror located on said emission axis so as to intercept and deflect said primary beam;

a telescope positioned relative to said optical source so as to have an optical axis which is substantially coaxial with said emission axis, said telescope having a detector disposed on said optical axis; and

a scanning mirror disposed intermediate said optical source and said telescope, said scanning mirror being rotatable about a scan axis which is substantially coaxial with said optical axis of said telescope and having a non-zero inclination with respect to said optical axis, said scanning mirror having a central opening formed therein, said deflecting mirror being secured to said scanning mirror within said central opening so as to be oriented approximately perpendicular to said scanning mirror.

5,337,190

RETRACTABLE REAR UNDER VIEW MIRROR SYSTEM FOR AN AUTOMOTIVE VEHICLE

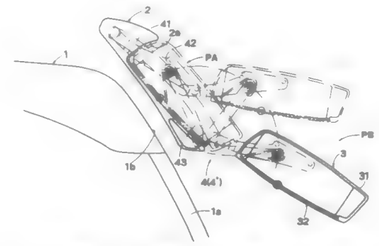
Hidekazu Kogita, Kariya; Masumi Nishikawa, Toyoake, and Shoji Okada, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 26, 1993, Ser. No. 111,957

Claims priority, application Japan, Aug. 31, 1992, 4-232149

Int. Cl.[5] G02B *7/182*

U.S. Cl. 359—877 **11 Claims**



1. A retractable rear under view mirror system mounted rearward of an automotive vehicle in which a rear under field of view from a driver's seat is invisible for ensuring the rear under field of view from the driver's seat, comprising:

a base member provided rearward of said automotive vehicle;

a mirror assembly movably supported by said base member and selectively positionable from a stored position inside said base member to a use position in which the mirror assembly reflects the rear under field of view of the vehicle;

actuating means for actuating said mirror assembly to be positioned in said stored position or said use position;

detection means for detecting at least an operating condition of a component out of a plurality of components of said automotive vehicle; and

control means for controlling said actuating means to move said mirror assembly to a position responsive to said operating condition of said component, wherein said control means includes;

output determination means for determining an output state of said detection means; and

relative position determination means for determining a position of said mirror assembly relative to said base member;

and wherein said control means controls said actuating means in response to said relative position and said output state.

5,337,191

BROAD BAND PASS FILTER INCLUDING METAL LAYERS AND DIELECTRIC LAYERS OF ALTERNATING REFRACTIVE INDEX

R. Russel Austin, Novato, Calif., assignor to Photran Corporation, Lakeville, Minn.

Filed Apr. 13, 1993, Ser. No. 46,232

Int. Cl.[5] G02B *7/18, 5/28*

U.S. Cl. 359—885 **16 Claims**

1. An optical interference filter for a substrate, comprising:

ten layers, said layers designated the first through the tenth in consecutive numerical order beginning with the layer furthest from the substrate;

said first layer of a material having a low refractive index and having an optical thickness of about one-eighth wavelength at a first wavelength in the near-infrared spectral region;

said second and tenth layers of a material having a high

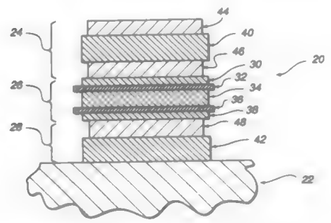
VOL 1165 ISS 2 AG 9 1994 UMI

refractive index and having an optical thickness of about one-quarter wavelength at said first wavelength;

said third and ninth layers of a material having a low refractive index and having an optical thickness between one-quarter and one eighth wavelength at said first wavelength;

said fourth and eighth layers of a material having a high refractive index and having an optical thickness of less than one-quarter wavelength at a second wavelength in the visible spectrum;

said fifth and seventh layers being metal layers and having a thickness between about 12.5 and 30.0 nanometers;



said sixth layer of a material having a high refractive index and having an optical thickness less than one-half wavelength at said second wavelength;

said first wavelength being between about 800 and 1250 nanometers and said second wavelength being between about 480 and 560 nanometers; and

said high refractive index being between about 1.65 and 2.65 at a wavelength of about 520 nm and said low refractive index being between about 1.35 and 1.65 at a wavelength of about 520 nm.

5,337,192

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS HAVING TAPE GUIDE CYLINDER OF REDUCED DIAMETER AND INCREASED TAPE WRAP ANGLE

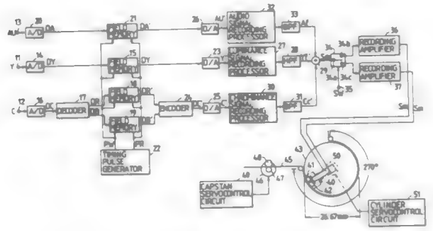
Hideki Fukasawa; Shuichi Ota, both of Kanagawa, and Hiroshi Okada, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,127

Claims priority, application Japan, Apr. 18, 1991, 3-086420

Int. Cl.[5] H04N *5/78*

U.S. Cl. 360—10.3 **8 Claims**



1. A magnetic reproducing apparatus comprising:

time base compressing means for subjecting a video signal to time base compression at a predetermined compression rate to produce a video signal with a compressed time base;

recording signal producing means for forming a recording video signal based on the video signal with a compressed time base from said time base compressing means;

tape guide cylinder means having a periphery thereof providing a running path for a magnetic tape applied to wrap around a part of the periphery of said tape guide cylinder means at a predetermined wrapping angle;

a rotary magnetic head device disposed in said tape guide cylinder means and having magnetic gap portions projecting slightly from the periphery of said tape guide cylinder means to make contact with the magnetic tape on the periphery of said tape guide cylinder means; and

recording signal supplying means for supplying said rotary magnetic head device with the recording video signal;

wherein, given that α represents the diameter of a standard tape guide cylinder employed in a standard apparatus for recording by a standard rotary magnetic head a video signal having an uncompressed time base on a magnetic tape running on the periphery of the standard tape guide cylinder, β represents a tape wrapping angle on the periphery of the standard tape guide cylinder, γ represents the revolving speed of the standard rotary magnetic head device, δ represents the number of magnetic gap portions of the standard rotary magnetic head device, AA represents the ratio of the diameter of the tape guide cylinder means to the diameter of the standard tape guide cylinder, BB represents the ratio of the tape wrapping angle on the periphery of the tape guide cylinder means to the tape wrapping angle on the periphery of the standard tape guide cylinder, CC represents the ratio of the revolving speed of the rotary magnetic head device to the revolving speed of the standard rotary magnetic head device, and EE represents the compression rate of time base compression of the video signal, then:

the diameter of said tape guide cylinder means is selected to be $X\cdot\alpha$, where X is a positive number smaller than 1, the tape wrapping angle around the tape guide cylinder means is selected to be β/X, the revolving speed of said rotary magnetic head device is selected to be $Z\cdot\gamma$, where Z is a positive integer larger than 1 and smaller than 4, and the number of magnetic gap portions of said rotary magnetic head is selected to be δ, $AA\cdot BB=1$ and $BB/(CC\cdot EE)=1$.

5,337,193

APPARATUS FOR SELECTIVELY RECORDING AND/OR REPRODUCING A VIDEO SIGNAL WITH A PCM AUDIO SIGNAL OR WITH AN FM AUDIO SIGNAL

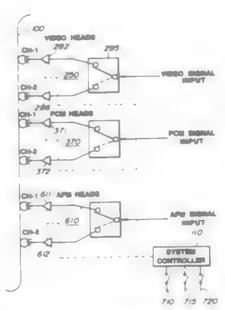
Noboru Murabayashi, Tokyo, and Takahito Seki, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 18, 1989, Ser. No. 408,570

Claims priority, application Japan, Sep. 24, 1988, 63-239272; Jan. 25, 1989, 1-15889; Feb. 14, 1989, 1-34087

Int. Cl.[5] G11B *5/02, 15/12*

U.S. Cl. 360—19.1 **5 Claims**



1. A video tape recorder comprising:

signal source means for providing an FM audio signal, a PCM audio signal and a video signal;

first, second and third recording means including respective rotary magnetic heads and being selectively operative for recording, in a magnetic coating on a magnetic tape, said FM audio signal, said PCM audio signal and said video signal with first, second and third recording current, respectively;

recording mode selecting means for selectively establishing at least a first mode in which said FM audio signal, said PCM audio signals and said video signal are recorded, a second mode in which only said PCM audio signal and said video signal are recorded, a third mode in which only said FM audio signal and said video signal are recorded, and a fourth mode in which only said PCM audio signal and said FM audio signal are recorded; and

recording current controlling means for controlling said first, second and third recording currents so that, in said first mode, a value of said first recording current is larger than a value of said second recording current which is larger than a value of said third recording current; in said second mode, said second and third recording currents have values smaller than their respective recording current values in said first mode and the value of said second recording current is larger than the value of said third recording current; in said third mode, said first and third recording currents have values smaller than their respective recording current values in said first mode and the value of said first recording current is larger than the value of said second recording current; and, in said fourth mode, said first and second recording currents have values smaller than their respective recording current values in said first mode and the value of said first recording current is larger than the value of said second recording current.

5,337,194

METHOD APPARATUS AND METHOD FOR REPRODUCING A FREQUENCY SEPARATED VIDEO SIGNAL STORED ON A RECORDING MEDIUM

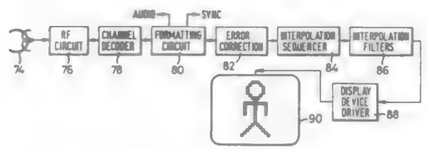
James H. Wilkinson, Tadley, and Terence R. Hurley, Newbury, both of United Kingdom, assignors to Sony United Kingdom Limited, Staines, United Kingdom

Filed Dec. 17, 1991, Ser. No. 809,264

Claims priority, application United Kingdom, Jan. 11, 1991, 9100592.6; Aug. 8, 1991, 9117166.0

Int. Cl.[5] G11B *5/02*

U.S. Cl. 360—24 **7 Claims**



1. An apparatus for reproducing a frequency separated video signal stored on a recording medium, said stored frequency separated video signal having dc luminance information recorded at predetermined locations on said recording medium and other video information recorded at other locations on said recording medium, said apparatus comprising:

a transport mechanism for moving said recording medium in a shuttle mode;

a read mechanism for reading said dc luminance information from said predetermined locations on said recording medium during said shuttle mode; and

a signal processor responsive to said dc luminance information for generating a video signal for display during said shuttle mode.

5,337,195

RECORDING CONTROL APPARATUS FOR USE WITH TAPE RECORDER

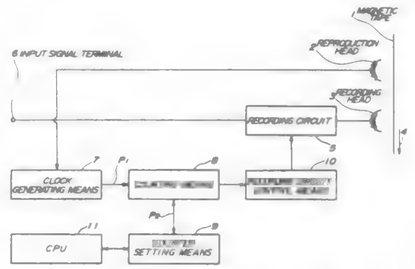
Masayuki Ito, and Takami Makada, both of Chofu, Japan, assignors to Otari, Inc., Chofu, Japan

Filed Sep. 4, 1991, Ser. No. 754,980

Claims priority, application Japan, Sep. 7, 1990, 2-238468

Int. Cl.[5] G11B *5/02*

U.S. Cl. 360—27 **4 Claims**



1. A recording control apparatus for use with a tape recorder having a recording head and a reproduction head for editing information on a recording tape, comprising:

a recording circuit selectively activated to provide recording information to said recording head;

a clock generating means for generating clock pulses that provide the basis for controlling said recording circuit, said clock pulses being detected from said recording tape by said reproduction head;

a counting means for counting said clock pulses beginning with a predetermined value, said counting means including a first counter and a second counter;

a counter setting means for providing said predetermined value to said counting means, said counter setting means setting a first initial value to said first counter and a second initial value to said second counter;

a recording circuit control means for controlling said recording circuit in accordance with an output of said counting means, said recording circuit control means leaving a first state of editing and entering a second state of editing when said first counter ends its counting, said recording circuit control means conversely leaving said second state and returning to said first state when said second counter ends its counting after said first counter; and

a control means for generating said predetermined value and supplying said predetermined value to said counter setting means so that a start time and a stop time for recording said information on said recording tape are controlled by said predetermined value.

5,337,196

STEREO/MULTIVOICE RECORDING AND REPRODUCING VIDEO TAPE RECORDER INCLUDING A DECODER DEVELOPING A SWITCH CONTROL SIGNAL

Sang-uk Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Jan. 31, 1992, Ser. No. 829,104

Claims priority, application Rep. of Korea, Jan. 31, 1991, 91-1892

Int. Cl.[5] G11B *20/06;* **H04N** *7/04, 5/60;* **H04H** *5/00*

U.S. Cl. 360—30 **20 Claims**

1. In a high fidelity video tape recorder having a tuner receiving multichannel television system signals including a stereo signal and a multivoice signal, a stereo/multivoice recording apparatus comprising a decoder for simultaneously demodulating said stereo signal and said multivoice signal

VOL 1165 ISS 2 AG 9 1994 UMI

included in a demodulated signal supplied from said tuner, wherein said decoder comprises:

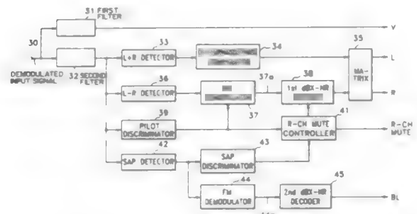
a first filter for filtering a video frequency component including luminance and chrominance signals from an input demodulated signal;

a second filter for filtering a first frequency component including a stereo main signal, a stereo subsignal, a pilot signal and a second audio program signal from said input demodulated signal;

a first detector for extracting a second frequency component including the stereo main signal from the first frequency component output by said second filter;

a de-emphasis/phase comparator for demodulating the stereo main signal from the second frequency component output by said first detector to produce a demodulated stereo main signal;

a second detector for extracting a third frequency component including the stereo subsignal from the first frequency component output by said second filter;



an amplitude demodulator controlled in response to an initial pilot signal output by a pilot discriminator for demodulating the stereo subsignal from the third frequency component output by said second detector to produce a demodulated stereo subsignal;

a first noise reduction decoder for removing noise from the demodulated stereo subsignal output by said amplitude demodulator;

a matrix circuit for receiving the demodulated stereo subsignal output by said de-emphasis/phase comparator and said first noise reduction decoder so as to generate left and right channel stereo signals;

a second audio program detector for extracting a fourth frequency component including a second audio program signal from the first frequency output by said second filter;

a frequency demodulator for demodulating said second audio program signal output by said second audio program detector to produce a multivoice signal; and

a second noise reduction decoder for removing noise from the multivoice signal output by said frequency demodulator.

5,337,197

METHOD AND SYSTEM FOR MAINTAINING DIRECTORY CONSISTENCY IN MAGNETO-OPTIC MEDIA

Lawrence S. Brown; Douglas W. Dewey, and Tharon Hall, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 9, 1993, Ser. No. 89,365
Int. Cl.[5] G11B *5/09*; H04N *5/76*
U.S. Cl. 360—48 **29 Claims**

1. A method executed by a programmed digital computer for making a data update to a recordable media device of the type which must be erased before the update is made, the method comprising the steps of:

reading a portion of the data to be updated from the recordable media device and storing the data portion in a memory medium;

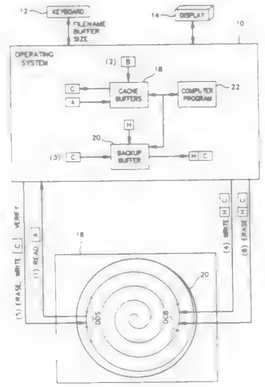
updating the data portion in the memory medium to produce an updated data portion;

writing backup information including the updated data portion with header information from the memory medium to a data consistency block on the recordable media device;

erasing the data portion to be updated from the recordable media device to provide erased designated data locations on the recordable media device;

writing the updated data portion from the memory medium to the erased designated data location;

verifying whether the updated data portion has been written in the erased designated data locations; and



erasing the backup information in the data consistency block if there is verification that the updated data portion has been written to the erased designated data locations; otherwise,

leaving the backup information in the data consistency block; then

upon subsequent processing of the recordable media device, indicating by the absence of the backup information in the data consistency block that the data portion has been updated, and indicating by the presence of the backup information in the data consistency block that the data portion has not been updated, and, if the data portion has not been updated, updating the data on the recordable media device with the backup information.

5,337,198

DIGITAL MAGNETIC WRITING AND READING APPARATUS

Nobumasa Nishiyama, Hachioji; Toshiaki Tsuyoshi, Kawasaki; Hajime Aoi, Tachikawa; Tetsuji Kameoka, Odawara; Masaya Tanaka, Odawara, and Kazuhisa Shiraishi, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 798,944, Nov. 27, 1991. This application Jul. 7, 1992, Ser. No. 909,997
Claims priority, application Japan, Nov. 30, 1990, 2-337076; Jul. 10, 1991, 3-169663
Int. Cl.[5] G11B *5/035*
U.S. Cl. 360—65 **15 Claims**

1. A magnetic write and read apparatus comprising a magnetic head for reading a signal from a magnetic written medium, a read circuit for reading binary data from a read signal provided by the magnetic head, and a servo circuit for positioning the magnetic head at a predetermined position relative to the magnetic written medium on the basis of the read signal from the magnetic head, said apparatus comprising an equalizer including:

means for slimming the waveform of the read signal, means

for eliminating a pseudo-peak on an advanced side of the read signal waveform, and means for eliminating a pseudo-peak on a delayed side of the read signal waveform;

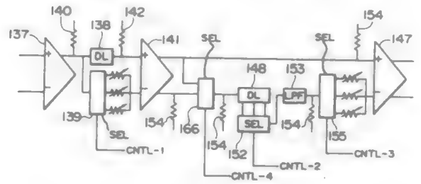
wherein said means for eliminating a pseudo-peak on a delayed side comprises:

means for separating the read signal;

means for forming an in-phase output and an opposite-phase output, which is opposite in phase from the in-phase output, from the separated rad signal;

a polarity selector for receiving the in-phase output and the opposite-phase output;

means for controlling said polarity selector and a polarity



of an output signal from said polarity selector based on the polarity of the pseudo-peak on the delayed side;

means for delaying the output signal of said polarity selector;

a tap selector for selecting a quantity of delay by said delaying means;

an attenuator selector for receiving an output from said tap selector;

means for selecting and controlling a quantity of attenuation of said attenuator selector; and

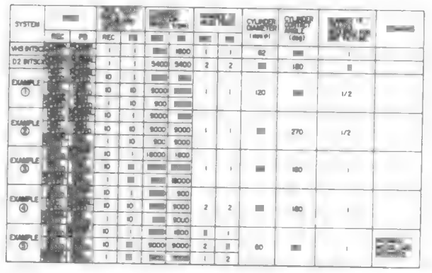
a differential amplifier for receiving at a negative input an output from said attenuator selector, and for receiving at a positive input the read signal.

5,337,199

DIGITAL TRANSMISSION SIGNAL PROCESSING SYSTEM AND RECORDING/REPRODUCING SYSTEM

Hideo Arai, Chigasaki; Hitoaki Owashi; Kyoichi Hosokawa, both of Yokohama; Keizo Nishimura, Yokosuka; Yoshizumi Watatani, Fujisawa, and Akira Shibata, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1991, Ser. No. 727,059
Claims priority, application Japan, Jul. 6, 1990, 2-177406; Jul. 20, 1990, 2-190655; Sep. 21, 1990, 2-250199
Int. Cl.[5] G11B *5/00*
U.S. Cl. 360—8 **3 Claims**



1. A digital signal recording/reproducing system in which plural kinds of digital signals transmitted in a time-division multiplex form on the same transmission path are recorded/reproduced onto/from a recording medium, comprising:

first selection means for selecting one or plural desired signals from a multiplexed input digital signal;

recording signal processing means for subjecting the input signal to a predetermined signal processing for recording at a predetermined processing clock in accordance with a transmission rate on the transmission path, the number of signals in the multiplexed input signal and the result of selection by said first selection means;

second selection means for selecting, in the case where plural kinds of signals are multiple-recorded on the recording medium by means of said first selection means and said recording signal processing means, one or plural desired signals from among the plural kinds of multiple-recorded signals upon reproduction;

control means for setting a driving speed of the recording medium to a desired speed in accordance with the transmission rate on the transmission path, the number of signals in the multiplexed input signal and the result of selection by said first selection means or the number of multiple-recorded signals; and

reproduction signal processing means for performing a signal processing for reproduction at a predetermined processing clock in accordance with the result of selection by said second selection means,

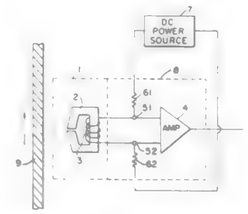
whereby recording is made with a predetermined signal processing clock and a predetermined recording medium driving speed being set so that a recording signal format on the recording medium becomes the same no matter what the multiplexed input signal and the selection of signals to be recorded may be, and reproduction is made with a predetermined signal processing clock and a predetermined recording medium driving speed being set upon reproduction in accordance with the number of signals to be reproduced which are selected by said second selection means and the number of multiple-recorded signals which are selected by said first selection means.

5,337,200

THIN FILM MAGNETIC HEAD ASSEMBLY AND METHOD OF OPERATION THEREOF IMMUNE FROM WIGGLES

Makoto Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 489,142, Mar. 5, 1990, abandoned. This application Oct. 14, 1992, Ser. No. 961,057
Claims priority, application Japan, Mar. 3, 1989, 1-52397
Int. Cl.[5] G11B *5/03*
U.S. Cl. 360—66 **4 Claims**



1. A thin film induction type magnetic head assembly comprising:

a thin film magnetic core having a gap;

a conductive coil would around said magnetic core and having a pair of terminal ends;

detecting means connected to said terminal ends for detecting, as a read signal, voltage induced in said conductive coil by change of a direction of magnetic field at said gap; and

means for applying a constant current to said terminals of said conductive coil during a read operation to produce a

VOL 1165 ISS 2 AG 9 1994 UMI

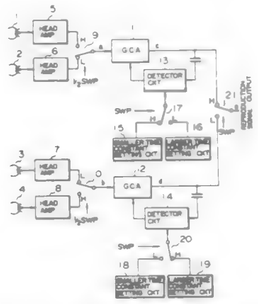
bias magnetic field at said gap and for maintaining the bias magnetic field at less than 20% of a coercive force of a magnetic medium from which a recorded magnetic field is to be read and so that magnetization of said thin film magnetic core is carried out mainly by rotational motion of magnetization.

5,337,201

INFORMATION SIGNAL OUTPUT APPARATUS WITH AMPLITUDE CONTROL HAVING SELECTED SPEED RESPONSE

Eiji Oyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,027
Claims priority, application Japan, Jul. 9, 1991, 3-168314
Int. Cl.[5] G11B *5/02*; H04N *9/79*; H03G *3/20, 3/10*
U.S. Cl. 360—68 12 Claims



1. An information signal output apparatus for outputting an information signal, comprising:

(A) amplitude control means for inputting an information signal intermittently and controlling the amplitude of said information signal to be a predetermined level; and

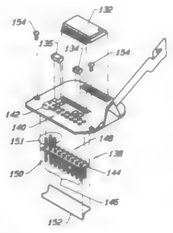
(B) response speed control means for controlling, in accordance with the status of said information signal with respect to the information signal inputting of said amplitude control means, the speed of response of said amplitude control means.

5,337,202

ACTUATOR ARM ASSEMBLY PRINTED CIRCUIT CABLE TO EXTERNAL PRINTED CIRCUIT BOARD INTERFACE APPARATUS

Iraj Jabbarai, and Brian L. Phillips, both of Santa Clara County, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 611,189, Nov. 9, 1990, abandoned. This application Apr. 2, 1993, Ser. No. 41,880
Int. Cl.[5] G11B *5/55, 21/08*; H01R *9/09, 13/52*
U.S. Cl. 360—97.01 4 Claims



1. In a disc drive having a casing separating a spindle motor assembly, at least one disc, and an actuator arm assembly including read/write heads from externally mounted control and signal processing circuits, apparatus for electrically interfacing said actuator arm assembly to said externally mounted control and signal processing circuits comprising:

a flat rigid member having a first side and a second side and having a flange extending from and essentially orthogonal to said first side;

a flexible printed circuit cable containing a plurality of circuit traces and having a first portion designed to accept surface mount integrated circuit components and a second portion extending from said first portion and having a first end and a second end, said first portion is bonded to said first side of said flat rigid member and said first end of said second portion is bonded to said flange whereby said flange directs said second portion toward said actuator arm assembly and said second end of said second portion is attached to said actuator arm, said surface mount integrated circuit components comprising resistors, capacitors and preamplifiers for preamplification of read/write signals generated by said read/write heads;

means for electrically connecting said plurality of circuit traces to said externally mounted control and signal processing circuits, said electrically connecting means comprising a patterned plurality of holes and bonding pads terminating each of said circuit traces, a multipin interfacing member and bonding means for transmitting signals passing from said circuit traces to said externally mounted control and signal processing circuits,

said holes integral to and bored through said first portion of said printed circuit cable and said flat rigid member in close proximity to said first end, said multipin interface member having a structural portion through which a plurality of conductive pins extend, one end of said conductive pins patterned to match and extend through said patterned plurality of holes until said structural portion abuts said second side of said flat rigid member and the other end of said conductive pins mate with said externally mounted control and signal processing circuits; and

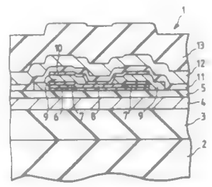
a gasketing means surrounding said electrically connecting means for sealing said flat rigid member to said casing.

5,337,203

MAGNETORESISTIVE MAGNETIC HEAD

Masahiro Kitada, Hamura; Hideo Tanabe, Higashimurayama; Noboru Shimizu, Tokorazawa; Naoki Koyama, Kokubunji, and Toshio Kobayashi, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 655,033, Feb. 14, 1991, which is a division of Ser. No. 310,922, Feb. 16, 1989, Pat. No. 5,010,433.
This application Apr. 27, 1992, Ser. No. 873,785
Claims priority, application Japan, Apr. 26, 1991, 3-096796
Int. Cl.[5] G11B *5/39*
U.S. Cl. 360—113 34 Claims



1. A magnetoresistive head having a two-layer film and a pair of spaced electrodes for supplying current to said two-layered film, said two-layered film comprising a magnetoresistive film exhibiting a magnetoresistive effect and a shunt film provided adjacent said magnetoresistive film at least at a magnetosensitive region between said spaced electrodes for applying a bias magnetic field, said shunt film comprising Nb and at least one element, as an additive element, selected from the group consisting of Ti, Cr, Mo, Zr, W, Pt, Re, V, Hf, Ta, Rh, Ni and Ru.

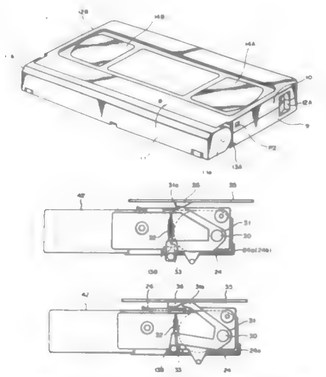
22. A thin film material used for a magnetoresistive head containing Nb as the main ingredient and at least one additive element selected from the group consisting of less than 30 at. % Ti, less than 6 at. % Cr, less than 9 at. % Mo, less than 12 at. % Zr, less than 6 at. % W, less than 12 at. % Pt, less than 17 at. % Re, less than 22 at. % V, less than 27 at. % Hf, less than 27 at. % Ta, less than 27 at. % Rh, less than 25 at. % Ni and less than 37 at. % Ru.

5,337,204

TAPE CASSETTE HAVING RECESSES FOR CASSETTE LOADING

Hiroshi Fujii, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 780,336, Oct. 22, 1991, abandoned.
This application Aug. 4, 1993, Ser. No. 101,672
Claims priority, application Japan, Nov. 8, 1990, 2-117299[U]
Int. Cl.[5] G11B *23/02*
U.S. Cl. 360—132 8 Claims



1. A tape cassette for use in a recording and reproducing apparatus, comprising:

a casing having an opening, a top surface, a bottom surface, and a side surface;

a pair of reels rotatably mounted in said casing with a tape wound around said reels and being withdrawable from said casing through said opening; and

a lid pivotally mounted on said casing by a pair of pivot members each respectively located at an end of said lid for covering said opening with said lid when the cassette is not is use;

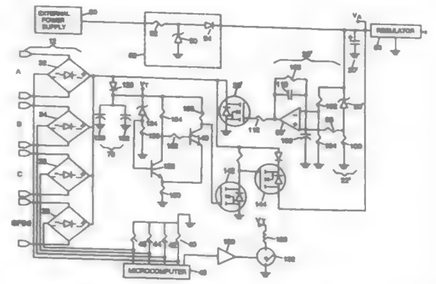
said casing having at least two holes located in said side surface; each of said holes being located near said bottom surface of said casing at a predetermined distance from said top surface, said predetermined distance being the same for all of said holes; each of said holes being entirely located in close proximity to said pivot members of said lid and being positioned a first length from a respective pivot member and a second length from the center of a reel such that said first length is a minimum length and said second length is a maximum length to avoid contact between a reel and a holding member of the recording and reproducing apparatus when the holding member is inserted into said hole and to avoid contact between the holding member and the tape when the tape is withdrawn from said cassette; said holes providing the sole medium for secure engagement of said cassette by the holding members.

5,337,205

DUAL VOLTAGE POWER SUPPLY

Andy A. Haun, and Jerry R. Baack, both of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.

Continuation-in-part of Ser. No. 558,130, Jul. 24, 1990, Pat. No. 5,189,587. This application Aug. 31, 1992, Ser. No. 937,919
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—56 20 Claims



1. A circuit arrangement, for regulating supply current in a first current path from a source to a first load and in a second current path from the source to a second load, comprising:

a capacitor, coupled to the first current path, for storing energy from the source, such that the source charges the capacitor to a first prescribed voltage level;

maintenance means, coupled to the second current path, for maintaining a second prescribed voltage level, which is less than the first prescribed voltage level, at the second load;

enabling means, responsive to the capacitor charging to the first prescribed voltage level, for enabling the supply current to flow from the source to the second load via the second current path; and

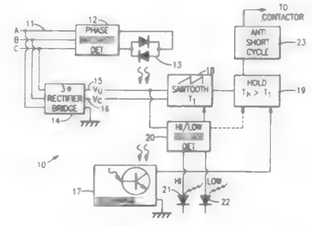
isolation means, coupled between the capacitor and the second load and also responsive to the capacitor charging to the first prescribed voltage level, for isolating the energy on the capacitor from the source.

5,337,206

THREE PHASE POWER MONITOR

Andrew S. Kadah, 5000 Henneberry Rd., Manlius, N.Y. 13104, and Andrew M. Nguyen, Syracuse, N.Y., assignors to Andrew S. Kadah, Manlius, N.Y.

Filed Oct. 15, 1991, Ser. No. 775,540
Int. Cl.[5] H02H *3/26, 3/48*
U.S. Cl. 361—85 20 Claims



1. Three-phase power monitor foe operating a line power device between a supply of three-phase electrical power and a three-phase load, comprising:

a three-phase integrity detector circuit having three inputs connected respectively to the three phases of the electrical power supply for detecting a loss, reversal, or dissymme-

VOL 1165 ISS 2 AG 9 1994 UMI

try as among the three phases and actuating a photoemitting device upon detection of a loss, reversal, or significant dissymmetry in any one said phase;

power supply means with inputs coupled to said supply of three phase power and an output providing a voltage level corresponding to the voltage level of said three phase electrical power;

a hold circuit having an input terminal and an output terminal and a first time constant circuit associated with said input terminal and having a first predetermined time period, said output terminal attaining a hold level when current is applied to said input, and reverting to a release level said first predetermined time period after cessation of said current to said input terminal;

an interrogator circuit coupled to said power supply output and to the input of said hold circuit means, the interrogator circuit being operative to apply periodic recharge current to the input of said hold circuit at a second period shorter than said first period, said power supply output being coupled to actuate and release said line power device;

a high/low voltage level detector coupled to the output of said power supply means and having an output coupled to said interrogator circuit for interrupting said periodic recharge current if said power supply means output level is above a predetermined high level or below a predetermined low level; and

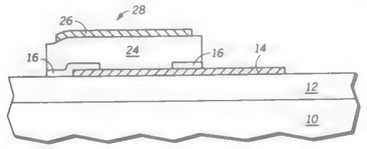
a photosensor-based discharge circuit optically coupled to said photoemitting device of said three-phase integrity detector circuit and electrically coupled to said hold circuit for discharging said first time constant circuit to immediately set said hold circuit to its release level when said photoemitting means is actuated strongly.

5,337,207

HIGH-PERMITTIVITY DIELECTRIC CAPACITOR FOR USE IN A SEMICONDUCTOR DEVICE AND PROCESS FOR MAKING THE SAME

Robert E. Jones; Papu D. Maniar, and C. Joseph Mogab, all of Austin, Tex., assignors to Motorola, Schaumburg, Ill.

Filed Dec. 21, 1992, Ser. No. 993,987
Int. Cl.[5] H01G *4//10*
U.S. Cl. 361—321.1 **20 Claims**



1. A process for fabricating a high-permittivity dielectric capacitor for use in a semiconductor device comprising:

providing a semiconductor substrate and an insulating layer, wherein the insulating layer lies over the semiconductor substrate;

forming a first electrode on the insulating layer;

forming a patterned refractory-metal oxide layer including an opening, wherein at least a portion of the refractory-metal oxide layer lies over a portion of the first electrode and all of the opening lies over a portion of the first electrode thereby leaving an exposed portion of the first electrode;

forming a patterned high-permittivity dielectric layer overlying the refractory-metal oxide and the exposed portion of the first electrode, wherein the patterned high-permittivity dielectric layer is separated from the insulating layer by at least the refractory-metal oxide in all regions away from the exposed portion of the first electrode; and

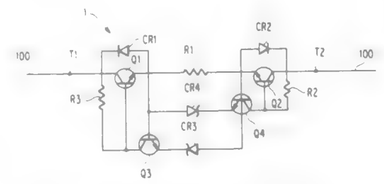
forming a second electrode overlying the high-permittivity dielectric layer.

5,337,208

IN-LINE AC CURRENT LIMITER

Steven E. Hosser, Hillsboro, Oreg., assignor to NEC America, Inc., Melville, N.Y.

Filed Dec. 18, 1991, Ser. No. 808,875
Int. Cl.[5] H02H *3/24*
U.S. Cl. 361—93 **16 Claims**



1. An AC current limiter circuit, comprising:

a sensing element;

a first series circuit defining a first path for flow of current in a first direction through said sensing element, said first circuit comprising:

a first terminal;

a first switch element having a collected coupled to said first terminal;

a first diode serially coupled to an emitter of said first switch element by said sensing element;

a second terminal serially coupled to said first diode;

a second circuit defining a second path for flow of current in a second direction through said sensing element, said second circuit comprising;

said second terminal;

a second switch element having a collector coupled to said second terminal;

a second diode serially coupled to an emitter of said second switch element by said sensing element and to said first terminal; and

first and second gain control networks allowing control of gain associated with said first and second switch elements;

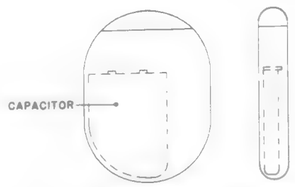
wherein said current flow in said first and said second paths is responsive to a change in a predetermined parameter of said sensing element.

5,337,209

HIGH ENERGY DENSITY LEAD MAGNESIUM NIOBATE-BASED DIELECTRIC CERAMIC AND PROCESS FOR THE PREPARATION THEREOF

Audrey E. Sutherland, Eldersburg, Md.; Keith Bridger, Washington, D.C.; Eric M. Fiore, Bel Air, Md.; Julie A. Christodoulou, Baltimore, Md.; Alex E. Bailey, Hampstead, and Allan S. Geib, Baltimore, both of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Sep. 10, 1992, Ser. No. 943,357
Int. Cl.[5] H01G *4/12;* **C04B** *35/46*
U.S. Cl. 361—321.5 **15 Claims**



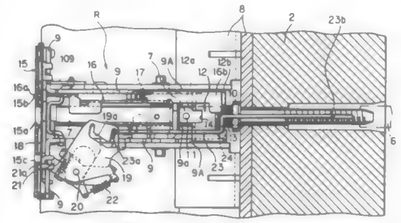
12. A capacitor comprising electrodes in contact with at least one layer of dielectric material, the dielectric material comprising from about 50 to about 85 mole percent stoichometric or non-stoichiometric $Pb(Mg_xNb_y)O_3$[3] and from about 15 to about 50 mole percent $SrTiO_3$, $BaTiO_3$ or combination thereof.

5,337,210

DRAWOUT TYPE SWITCH GEAR

Takayoshi Ishikawa, and Shinsaku Yamasaki, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1992, Ser. No. 945,259
Claims priority, application Japan, Sep. 19, 1991, 3-75276[U]; Sep. 19, 1991, 3-75312[U]; Sep. 19, 1991, 3-75313[U]; Sep. 19, 1991, 3-239055
Int. Cl.[5] H02B *11/00*
U.S. Cl. 361—608 **21 Claims**



1. In a drawout type switch gear including a base frame, a circuit breaker which is movably mounted on said base frame in a manner to be drawn out of or pushed into said base frame when said circuit breaker is transferred between a drawout position and a pushed-in position, a pair of breaker-side lead conductors provided on said circuit breaker and a pair of base frame-side lead conductors provided on said base frame, wherein said breaker-side lead conductors are arranged to connect to said base frame-side lead conductors in said pushed-in position through a pair of contact fingers provided on said base frame, an apparatus comprising:

a drawout/push-in unit which bears said circuit breaker thereon and includes:

a sleeve nut fixedly mounted on said base frame having a threaded hole in one end thereof;

a lead screw which has a male screw part rotatably supported by said drawout/push-in unit for mating with and in said threaded hole of said sleeve nut and for transferring said circuit breaker between said pushed-in position and said drawout position upon rotation of said lead screw;

a screw-lock member which is supported by and on said drawout/push-in unit and movable lengthwise along an axial direction of said lead screw, said screw-lock member stopping the rotation of said lead screw when said screw-lock member is urged by a screw lock spring in a direction towards a front panel of said drawout/push-in unit and permitting the free rotation of said lead screw when said urging is suppressed;

a lock plate supported by said circuit breaker for lengthwise movement and biased toward the front panel of the drawout/push-in unit by a lock plate spring, said lengthwise movement being suppressed by a manual pushing of a distal end of said lock plate in a direction inward with respect to said front panel, said suppression being maintained by engaging said distal end of said lock plate with an inner periphery of a slot provided in an indicator panel on said front panel, thereby to suppress the urged movement of said lead screw; and

a position indicator unit which includes:

an indicator plate slidably mounted on the front panel of said drawout/push-in unit said indicator plate being laterally moveable for indicating a relative position of said sleeve nut with respect to said lead screw;

a connecting rod slidably held by said drawout/push-in unit said connecting rod being displaceable lengthwise along an axial direction of said lead screw for sensing said relative position of said sleeve nut in response to lengthwise displacement of said connecting rod; and

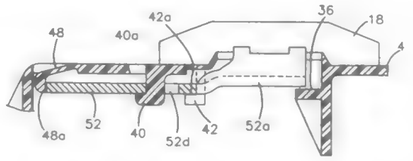
an indicator cam pivotally supported by the circuit breaker for converting said lengthwise displacement of said connecting rod into the lateral movement of said indicator plate by cam-rod engagement therebetween.

5,337,211

ELECTRICAL LOAD CENTER INTERIOR PANEL HAVING MOLDED INSULATING SUPPORT PANEL WITH SNAP-IN BUS BARS

Richard A. Reiner, Colgate, and David L. Vogel, Wauwatosa, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 14, 1993, Ser. No. 76,056
Int. Cl.[5] H02B *1/04*
U.S. Cl. 361—637 **13 Claims**



1. An electrical load center interior panel comprising: a molded insulating support panel having a substantially planar main body portion, said support panel comprising:

a front side;

a back side;

a row of spaced openings through said main body portion;

a plurality of projections extending rearward from said back side, each of said projections comprising a forward-facing shoulder;

a shelf within each of said spaced openings providing a forward-facing surface; and

a plurality of resilient latches extending rearward from said back side; and

a bus bar attached to said support panel at said back side, said bus bar comprising:

an elongated bar having

a plurality of longitudinally spaced holes therethrough and

a plurality of longitudinally spaced connectors extending transversely from one side of said bar;

said bus bar being attached to said support panel by aligning said holes with said projections and said connectors with respective ones of said openings, pressing said bar against said back side of said support panel to depress said latches into said main body portion, and sliding said bus bar laterally to an attached position whereat respective distal ends of said connectors engage said forward-facing surface of a respective said shelf and respective edges of said bus bar defining said holes engage said forward-facing shoulder of respective said projections, and said latches engage said bus bar, thereby blocking movement of said bus bar away from said attached position.

5,337,212

FLIP SCREEN FOR NOTEBOOK COMPUTERS

Richard A. Bartlett, Middletown, and Edward A. Coté, Califon, both of N.J., assignors to NCR Corporation, Dayton, Ohio

Division of Ser. No. 973,507, Nov. 9, 1992, Pat. No. 5,246,589. This application Oct. 28, 1993, Ser. No. 144,914
Int. Cl.[5] H05K *7/02;* **G06F** *1/16*
U.S. Cl. 361—681 **2 Claims**

1. A notebook computer comprising:

a base portion;

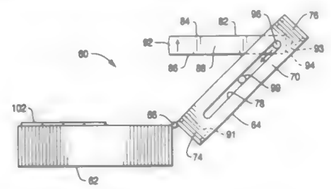
VOL 1165 ISS 2 AG 9 1994 UMI

a display portion hinged to the base portion including a frame and a display within the frame;

wherein the frame has top and bottom internal sides, and left and right internal sides containing left and right apertures;

wherein the display has left, right, back cover, and front pen input and display sides;

wherein the display further includes left and right pivot pins on the left and right sides of the display and within the left and right apertures for pivotally mounting the frame about a horizontal axis within the frame;



wherein the left and right apertures within the left and right internal sides are elongated in shape and extend substantially the entire length of the left and right internal sides, wherein the left and right pivot pins are located closer to either the bottom or top side of the display, and wherein the display pivots and slides about the pivot pins to place the display and pen input side in a first position facing upwards when the display portion is closed upon the base portion or a second position facing the base portion when the display portion is opened from the base portion.

5,337,213

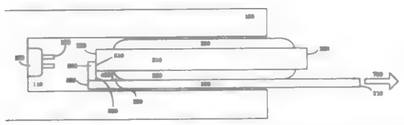
BULL NOSE EXTRACTION FEATURE FOR THIN FORM FACTOR COMPUTER CARD

Philip J. Agur, Caren Park, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 15, 1992, Ser. No. 990,896

Int. Cl.[5] H05K *7/10;* **G06F** *1/16;* **H01R** *13/62*

U.S. Cl. 361—684 **17 Claims**



1. A removable cartridge system for an electronic component, said component having a docking bay, said system comprising:

a removable cartridge, said docking bay having an aperture for receiving said cartridge;

an extraction tray, said tray having distal and proximal ends, said tray located at least partially within said docking bay and movable between a first position wherein said cartridge couples to said component and a second position wherein said cartridge can be removed through said docking bay aperture;

an ejection tab, said tab extending from said tray distal end;

first coupling means for coupling said cartridge to said component, said first coupling means coupled to said component and located a predetermined distance from said tray when said tray is in said first position;

said cartridge comprising:

(i) a frame having distal and proximal ends;

(ii) a lower center area upon which said cartridge rests when placed within said extraction tray, said distal end of said frame extending beyond said lower center area thereby forming a gap between said distal end of said frame, said lower center area, said ejection tab and said extraction tray such that said distal end of said frame does not lie upon said extraction tray when said cartridge is placed within said extraction tray;

(iii) second coupling means, said second coupling means located on said distal end of said frame, said first coupling means located within said bay such that said first and second coupling means together cooperate to couple said cartridge to said component when said frame distal end is inserted into said docking bay and said tray is in said first position; and

adapter means coupled to said frame, said adapter means being disposed within at least a portion of said gap when said cartridge is placed within said extraction tray, said adapter means further having a tab engagement edge substantially parallel to said tab when said cartridge is placed within said extraction tray, said tab having an adapter engagement portion such that said adapter engagement portion exerts a first force on said tab engagement edge of said adapter means when said tray moves from said first to said second position, said first force having sufficient magnitude and direction to uncouple said first and second coupling means, but said first force does not exert a first moment upon said tab sufficient to cause said tab to bend.

5,337,214

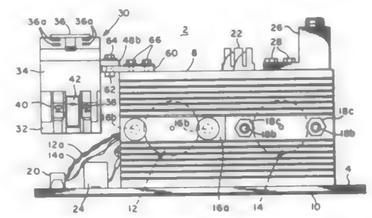
BYPASS CONTACTOR FOR SOLID STATE MOTOR STARTERS

Kurt L. Lindsey, New Berlin; Andrew R. Peret, Milwaukee; Jerome K. Hastings, Sussex, and Richard G. Smith, Caledonia, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 3, 1993, Ser. No. 55,590

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—709 **9 Claims**



1. In a solid state motor starter comprising at least one solid state power switching device clamped between a pair of heat sinks, said heat sinks being electrically in circuit with said solid state power switching device, and a discrete electromagnetically operated switching device adapted to be electrically connected to said heat sinks in parallel with said solid state power switching device, said discrete electromagnetically operated switching device comprising an insulating enclosure containing an electromagnet, an armature, and a contact carrier, said contact carrier being connected to said armature and said armature being biased away from said electromagnet, the improvement comprising:

a pair of stationary contacts mounted in said insulating enclosure, each stationary contact having a plurality of stationary contact elements mounted thereon, said stationary contacts comprising terminal portions extending externally of said insulating enclosures said terminal portions being sufficiently sturdy to support said switching device thereby;

a plurality of movable contacts resiliently connected to said contact carrier within said insulating enclosure in corresponding alignment with respective pairs of said stationary contact elements said movable contacts each having a pair of movable contact elements affixed thereon respectively engageable with corresponding said stationary contact elements when said armature is attracted to said electromagnet for electrically bridging said stationary contacts in plural parallel paths; and

means mechanically and electrically connecting said extending terminal portions directly to said heat sinks.

5,337,215

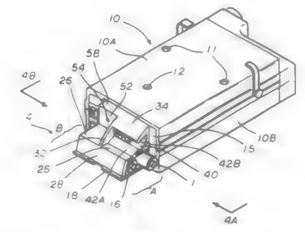
PIVOTING BATTERY COMPARTMENT AND DOOR

Richard A. Sunderland, St. Charles, Mo., and John A. Lane, Watertown, N.Y., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 911,830, Jul. 10, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 145,719

Int. Cl.[5] H05K *7/16;* **H01M** *2/10;* **H02B** *1/044*

U.S. Cl. 361—726 **21 Claims**



1. In a housing comprising a housing end wall, a housing opening in the housing end wall, and an elongated substantially sector-shaped battery compartment having a planar door and a planar wall each extending outwardly from the apex of said battery compartment, and including means, located along the apex of said sector-shaped battery compartment, for pivoting the battery compartment into and out of the housing through the housing opening in the housing end wall, said means for pivoting the battery compartment pivoting the battery compartment along the apex of the sector-shaped battery compartment, the battery compartment pivoting from an open position to a closed position, the battery compartment further including means for electrically connecting batteries contained in the battery compartment with any desired components held within the housing, said sector-shaped battery compartment has a curved outer surface positioned equidistant from the apex and which terminates a distance from the apex slightly less than the distance from said means for pivoting and the boundary between the housing opening and the housing end wall to provide a close fit between the battery compartment and the housing to prevent foreign objects from inadvertently entering the housing, said door closing said housing opening when said battery compartment is pivoted into said housing;

whereby the battery compartment positions batteries, provides electrical connection between the batteries and desired components and provides access to the batteries.

5,337,216

MULTICHIP SEMICONDUCTOR SMALL OUTLINE INTEGRATED CIRCUIT PACKAGE STRUCTURE

Chandler H. McIver, Tempe, Ariz., assignor to Square D Company, Palatine, Ill.

Continuation of Ser. No. 885,102, May 18, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,682

Int. Cl.[5] H05K *7/00*

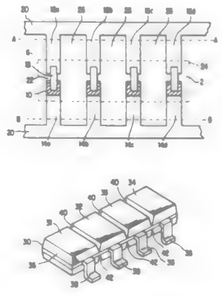
U.S. Cl. 361—728 **15 Claims**

1. A multichip small outline integrated circuit package enclosing a plurality of two terminal semiconductor devices comprising:

a) a plurality of semiconductor elements, each of said plurality of semiconductor elements for each of said plurality of two terminal semiconductor devices and having first and second electrodes;

b) a lead frame with multiple and parallel pairs of leads, each of said multiple pairs of leads for each of said plurality of semiconductor devices and including first and second leads axially aligned and having an inner portion and an outer portion and wherein said first electrodes of said plurality of semiconductor elements are bonded to said inner portions of said first leads and said second electrodes of said plurality of semiconductor elements are coupled to said inner portions of said second leads;

c) a rectangular package body having a top, a bottom, and four sides encapsulating said plurality of semiconductor elements and said inner portions of said first and second leads and wherein said outer portions of said first and second leads extend outwardly from said package body;



d) a first plurality of parallel grooves formed across the top of said package body;

e) a second plurality of parallel grooves formed across the bottom of said package body wherein said second plurality of parallel grooves are aligned with said first plurality of parallel grooves to form an area of division between each of said plurality of two terminal semiconductor devices; and

f) wherein said area of division provides a snap dart means of dividing said multichip small outline integrated circuit package into a plurality of smaller units of two terminal semiconductor devices without requiring the use of cutting or manufacturing tools by an end user.

5,337,217

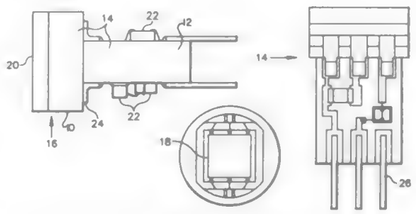
INTEGRATED CIRCUIT PACKAGE FOR AN IMAGE SENSOR

Terry Tarn, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1993, Ser. No. 23,024

Int. Cl.[5] H05K *1/11, 5/00*

U.S. Cl. 361—784 **8 Claims**



1. An integrated circuit package comprising:

VOL 1165 ISS 2 AG 9 1994 UMI

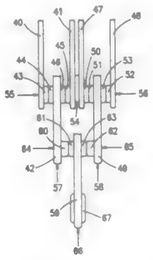
(a) first and second ceramic bodies being fused together to form a T-shaped unitary structure;
(b) a CCD image sensor mounted on the first ceramic body; and
(c) electrical circuitry mounted on the second ceramic body wherein the first ceramic body and the second ceramic body have an arrangement that accommodates the CCD image sensor having an ever increasing diminution in size and the electrical circuitry having a concomitant increase in size.

5,337,218

CIRCUIT CARD INTERCONNECTING STRUCTURE

Thomas M. Cipolla, Katonah, and Paul W. Cotena, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1992, Ser. No. 892,075
Int. Cl.[5] H01R *23/68*
U.S. Cl. 361—785 13 Claims



1. An electrical packaging structure comprising:
a first substrate having electrical contact locations in the vicinity of an edge thereof,
a second substrate having electrical contact locations in the vicinity of an edge thereof,
a third substrate having a first and a second side and with electrical contact locations on both said first and said second sides in the vicinity of a first edge thereof,
said contact locations on said first substrate being disposed against said contact locations on said first side of said third substrate,
said contact locations on said second substrate being disposed against said contact locations on said second side of said third substrate and,
a fourth substrate having a socket thereon into which a second edge of said third substrate is inserted.

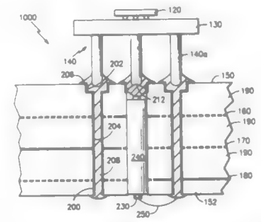
5,337,219

ELECTRONIC PACKAGE

Dennis C. Carr, Rome, Pa.; Edward P. McLeskey, Apalachin, and Frank H. Sarnacki, Johnson City, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1991, Ser. No. 719,425
Int. Cl.[5] H05K *1/11*
U.S. Cl. 361—794 14 Claims

1. An electronic package, comprising:
at least one semiconductor chip; and
a multi-layer substrate, said semiconductor chip overlying, and being electrically connected to, said multi-layer substrate which includes at least one electrically conductive signal plane, at least one electrically conductive power plane and at least one electrically conductive ground plane, separated by layers of electrically insulating material, said substrate also including at least a first hole extending through the thickness of said substrate and containing electrically conductive material, said first hole having a top and a bottom, said semiconductor chip being electrically connected to the electrically conductive material in said first hole, Characterized In That
said first hole contains a first cylinder which includes a first annulus of electrically insulating material encircling a first



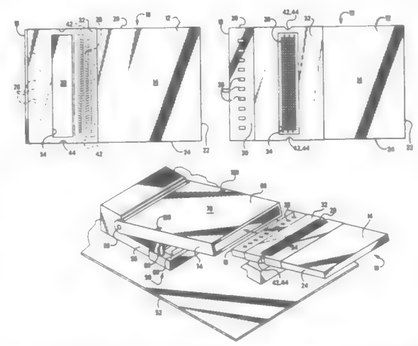
core of electrically conductive material, said first cylinder including a top which is positioned below said top of said first hole, said first core including first and second ends, said first end being electrically connected to said semiconductor chip.

5,337,220

ELECTRONIC CARD AND CONNECTOR ASSEMBLY FOR USE THEREWITH

Richard F. Granitz, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 10, 1993, Ser. No. 119,784
Int. Cl.[5] H05K *9/00*
U.S. Cl. 361—816 12 Claims



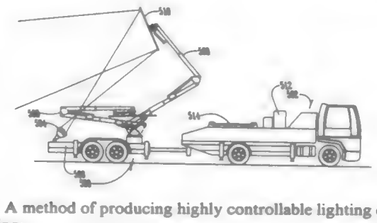
1. An electronic card (10) containing integrated circuitry, comprising:
a housing (12) containing said circuitry, said housing having first (14) and second (16) generally rectangular major surfaces and four (18, 20, 22, 24) generally rectangular minor edge surfaces joining said first and second major surfaces;
a plurality of contact pads (26, 28) electrically connected to said circuitry and exposed on said first major surface of said housing within a defined area having a surface area; and
a shield (32) movable mounted to said housing overlying said first major surface wherein said shield is movable between first and second positions, said shield being arranged so that when said shield is in said first position said defined area is covered by said shield and when said shield is in said second position said defined area is exposed.

5,337,221

MEANS AND METHOD FOR HIGHLY CONTROLLABLE LIGHTING

Myron K. Gordin, and Joe P. Crookham, both of Oskaloosa, Iowa, assignors to Musco Corporation, Oskaloosa, Iowa

Continuation-in-part of Ser. No. 820,486, Jan. 14, 1992. This application Mar. 20, 1992, Ser. No. 855,606
Int. Cl.[5] F21V *21/00*
U.S. Cl. 362—66 20 Claims



1. A method of producing highly controllable lighting comprising:
placing a means of generating light energy at a first location, the light generating means including a primary reflector means to generate a defined primary beam, the primary reflector means having perimeter dimensions of height and width and including a reflecting surface having a shape and reflective properties;
placing a secondary reflector means at a second location relative to the primary reflector means, the secondary reflector means having perimeter dimensions of height and width and including a reflecting surface having a shape and reflective properties;
directing the primary beam at least in part onto the secondary reflector means to select from and reconfigure the primary beam to produce a reflected secondary beam to a target space the secondary beam having a shape which is a function of the height, width, distance, alignment, reflecting surfaces and reflector shape of both the primary and secondary reflector means; and
positioning the light generating means and corresponding primary reflector means, and secondary reflector means on a moveable base means, and allowing relative movement between the light generating means and corresponding primary reflector means, and the secondary reflecting means both with respect to orientation relative to one another, and distance between one another.

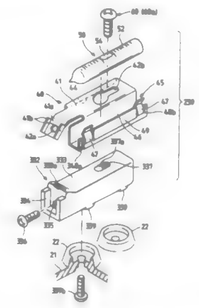
5,337,222

AIMING LEVEL DEVICE FOR MOTOR VEHICLE HEADLAMP

Katutada Shirai; Hideharu Mochizuki; Osamu Sato; Hironori Tsukamoto, and Hiroyuki Makita, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1993, Ser. No. 12,777
Claims priority, application Japan, Feb. 18, 1992, 4-006402[U]; Apr. 14, 1992, 4-094244; Jun. 19, 1992, 4-161082; Sep. 14, 1992, 4-244527
Int. Cl.[5] B60Q *1/06*
U.S. Cl. 362—66 17 Claims

1. An aiming device for a motor vehicle headlamp for measuring an amount of deviation of a light beam from said headlamp, comprising:
a body member attached to a reflector of a headlamp;
a bubble vial including a level gauge for indicating said amount of deviation of said light beam;
a supporting frame comprising an engaging portion for supporting said bubble vial and an end portion for coupling said supporting frame to said body member;
an adjusting screw having a stop portion rotatably engaged with said supporting frame and being threadedly engaged with a first threaded hole formed in said body member for adjusting an angular position of said supporting frame relative to said body member, said adjusting screw being located adjacent substantially a middle portion of said bubble vial; and
means for engaging said end portion of said supporting



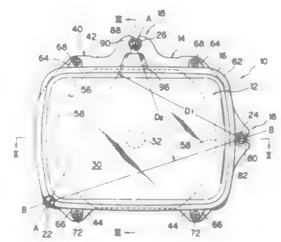
frame with said body member, sand engaging means comprising a second screw, said second screw passing through a second aperture formed in said supporting frame and being threadedly engaged with a second threaded hole formed in said body member.

5,337,223

AIMING MECHANISM FOR VEHICLE LAMPS

Yuji Fujino, Shimizu, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1993, Ser. No. 31,462
Claims priority, application Japan, Mar. 18, 1992, 4-091495
Int. Cl.[5] B60Q *1/06*
U.S. Cl. 362—66 4 Claims



1. An aimable vehicle lamp assembly comprising:
(a) an electric lamp unit having an optical axis;
(b) a mounting ring rigidly holding the lamp unit and adapted to be mounted to a vehicle so as to be capable of rotary motion in every direction within limits relative to the vehicle, the mounting ring being approximately rectangular in shape, when the lamp assembly is seen in a front view, including a pair of shorter sides and a pair of longer sides;
(c) spring means coupled to the mounting ring at a point adjacent one corner of the mounting ring for biasing the same toward the vehicle;
(d) a first aiming screw for coupling one shorter side, away from the one corner, of the mounting ring to the vehicle in order to aim the lamp unit relative to the vehicle in a first direction;
(e) a second aiming screw for coupling one longer side, away from the one corner, of the mounting ring to the vehicle in order to aim the lamp unit relative to the vehicle in a

VOL 1165 ISS 2 AG 9 1994 UMI

second direction which is substantially at right angles with the first direction;

(f) the spring means and the first and the second aiming screws being so arranged relative to one another that, as seen in a plane at right angles with the axis of the lamp unit, a distance between the first aiming screw and a line between the spring means and the second aiming screw is approximately equal to a distance between the second aiming screw and a line between the spring means and the first aiming screw;

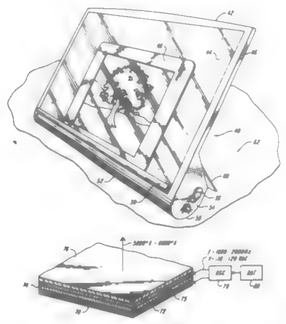
(g) whereby approximately equal forces are required for turning the first and the second aiming screws.

5,337,224

ELECTROLUMINESCENT TRANSPARENCY ILLUMINATOR

John B. A. Field, 85 4th Ave., New York City, N.Y. 10003, and Donald W. Stucke, Jr., 164 Pine St., Corning, N.Y. 14830

Filed Dec. 4, 1992, Ser. No. 985,900
Int. Cl.[5] F21V *9/16*
U.S. Cl. 362—84 **13 Claims**



1. Apparatus for illuminating transparencies for true color viewing thereof, comprising:

an electroluminescent panel producing white light in a color temperature range above 3,500° K., said panel adapted to emit light from a top surface thereof through a color transparency adjacent the top surface of said panel; and,

means for driving said electroluminescent panel with a constant frequency and voltage signal, said frequency being at 1000–2000 Hz to provide suitable stable natural white light for color transparency evaluation by driving said electroluminescent panel so as to maintain the light output thereof between 3,500 and 6,000° K., whereby said light is projected through said transparency for true color viewing thereof.

5,337,225

LIGHTING STRIP SYSTEM

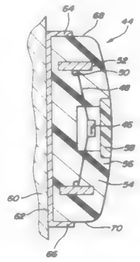
Marc A. Brookman, Dearborn, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Filed Jan. 6, 1993, Ser. No. 1,066
Int. Cl.[5] F21S *5/00*
U.S. Cl. 362—145 **20 Claims**

1. A lighting strip system, comprising:

at least one lighting strip section including at least one lighting means for providing illumination, said at least one lighting means including lead wires extending therefrom, said at least one lighting strip section further including means for carrying an electrical charge, said means for carrying an electrical charge extending the length of said lighting strip section and terminating proximate to the ends of said lighting strip section, said means for carrying an electrical charge being electrically connected to the lead wires, wherein the at least one lighting strip section is formed of a polymeric molding such that the at least one lighting means is positioned within a cavity extending along the length of the lighting strip section and the means for carrying an electrical charge is substantially encapsulated within the polymeric molding, said polymeric molding including apertures at an end of the at least one lighting strip section so as to expose the means for carrying an electrical charge; and

connector means for joining said at least one lighting strip section to another lighting strip section, said connector means including means for conveying an electrical charge



between the joined lighting strip sections, said means for conveying an electrical charge extending the length of said connector and being partially encapsulated within a polymeric molding such that the ends of said means for conveying an electrical charge project from said polymeric molding;

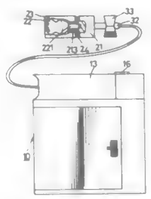
whereby upon aligning said at least one lighting strip section contiguously against said connector means such that the ends of said means for conveying an electrical charge extend into the apertures of said lighting strip section an electrical junction is formed thus allowing the lighting strip system to become illuminated upon the introduction of an electrical charge.

5,337,226

PORTABLE TORCH WITH AN EXTENSIBLE LIGHT BULB ASSEMBLY

Jam-Min Wang, 6F, No. 350-21, Se. 1, Chi-Lung Rd., Hsin-I Dist., Taipei City, and Cheng-Lan Shu, 5F, No. 18, Lane 66, Pai-Jen St., Hsin-Tien City, Taipei Hsien, both of Taiwan

Filed Aug. 24, 1993, Ser. No. 110,930
Int. Cl.[5] F21C *15/22*
U.S. Cl. 362—198 **5 Claims**



1. A portable torch with an extensible light bulb assembly, comprising:

a torch body including a first chamber receiving a battery unit, a second chamber receiving a rotatable reel and a third chamber receiving a light bulb assembly, said third chamber having an open end to permit passage of said light bulb assembly;

a cable having a first end connected electrically to said battery unit and a second end connected electrically to said light bulb assembly, said cable being wound around said rotatable reel, said rotatable reel rotating in a first direction when said light bulb assembly is drawn out from said open end of said third chamber so as to extend said light bulb assembly to a desired location;

means for biasing said rotatable reel to rotate in a second direction to draw said light bulb assembly back into said third chamber; and

means for retaining said rotatable reel at a desired position;

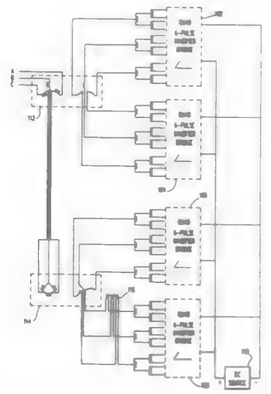
wherein said light bulb assembly includes a circumferential recess that is formed on an external surface thereof, said third chamber having an inner wall from which a resilient projection extends into said circumferential recess of said light bulb assembly so as to prevent said light bulb assembly form disengaging said third chamber, said third chamber further having two opposed notches that are formed along a periphery of said open end, a section of said light bulb assembly being exposed via said two opposed notches.

5,337,227

HARMONIC NEUTRALIZATION OF STATIC INVERTERS BY SUCCESSIVE STAGGER

Eric J. Stacey, Penn Hills Township, Allegheny County, and John Rosa, Penn Hills, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1992, Ser. No. 870,128
Int. Cl.[5] H02M *1/12*
U.S. Cl. 363—71 **10 Claims**



1. A quasi-harmonic neutralized inverter system comprising:

a plurality of center tapped interphase transformers each having first and second inputs for receiving staggered voltage waveforms, wherein a preselected stagger angle of said voltage waveforms reduces a predetermined harmonic component of an output voltage on an output terminal of one of the interphase transformers;

said interphase transformers being connected in a waffle tree configuration; and

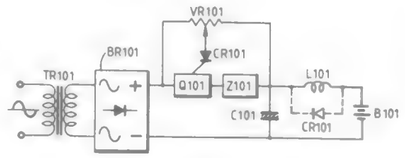
a plurality of inverters for producing voltage waveforms at phase angles necessary to provide the preselected stagger angles of the voltage waveforms at the first and second inputs of the interphase transformers in a first stage of said waffle tree configuration.

5,337,228

DIFFERENTIAL CHARGING CIRCUIT

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Apr. 3, 1992, Ser. No. 862,715
Int. Cl.[5] H02M *7/155*
U.S. Cl. 363—86 **17 Claims**



1. A differential charging circuit for applying charging current to a storage battery comprising:

a transformer for amplitude modulation of AC input power, said transformer having a pair of primary terminals and a pair of secondary terminals;

a bridge rectifier connected in parallel across said pair of transformer secondary terminals for converting the AC input power into pulsed DC;

an active switch device having an input connected to a positive output of said bride rectifier, an output, and a gate for selective switching of the pulsed DC;

a current impedance device connected at one end to the output of said active switch device;

a storage capacitor connected between another end of said current impedance device and the negative output of said bridge rectifier for storing energy and reducing ripple; and

a differential trigger circuit comprising a tapped resistance connected in parallel across the series-connected active switch and current impedance devices, and a diode connected between a tap lead of said tapped resistance and the gate of said active switch device for controlling switching of said pulsed DC through said active switch and current impedance devices in accordance with a potential developed across said tapped resistance;

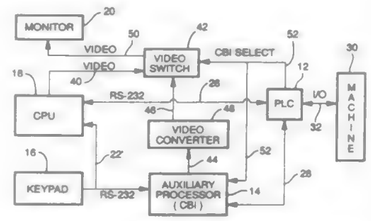
whereby said current impedance device delays switching of said active switch device and thereby frequency modulates a charging current output therefrom relative to said pulsed DC.

5,337,229

SHARED INTERFACE FOR MULTIPLE CONTROLLERS

Scott B. Holland, Shelby Township, Macomb County; Kenneth L. Fair, Lake Orion, and James P. Youells, Mt. Clemens, all of Mich., assignors to Balance Engineering Corporation, Troy, Mich.

Filed Jun. 2, 1992, Ser. No. 892,197
Int. Cl.[5] G06F *13/10, 15/20*
U.S. Cl. 364—131 **3 Claims**



1. A controller for a balancing machine comprising:

VOL 1165 ISS 2 AG 9 1994 UMI

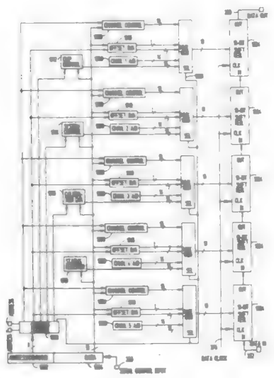
interface means formed of a keypad, a monitor, and a first processor;
said first processor being formed of a central processing unit for controlling the operation of the balancing machine and having a first video output for generating a TTL-formatted video signal which is compatible with said monitor;
a second processor being formed of a computerized balancing instrument for measuring unbalance, determining correction locations and amounts and having a second video output for generating an analog-formulated video signal which is uncompatible with said monitor;
said keypad being coupled via a first data link to said first and second processors;
a programmable logic controller coupled via a second data link to said first processor and coupled via a third data link to said second processor, said programmable logic controller being controlled by said first processor for generating a select signal in response to a dedicated command from said keypad;
said monitor having a monitor input;
video switch means including a switch output coupled to said monitor input and being responsive to said select signal for selectively coupling one of said first video output of said first processor and said second video output of said second processor to said switch output so as to effect control of a display on said monitor by said first or second processor;
an analog-to-TTL converter interconnected between said second video output of said second processor and said switch output of said video switch means for converting said analog-formatted video signal to a compatible form with said monitor; and
said first processor being controlled by said keypad and having direct access to said monitor when said select signal is at a first logic level and said second processor being controlled by said keypad and having direct access to said monitor when said select signal is at a second logic level.

5,337,230

SIGNAL PROCESSING CIRCUITS WITH DIGITAL PROGRAMMABILITY

Richard A. Baumgartner, Palo Alto, Calif., and Earl C. Herleikson, Yamhill, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1992, Ser. No. 876,841
Int. Cl.[5] G06F *15/42*; A61B *5/04*
U.S. Cl. 364—138 **20 Claims**



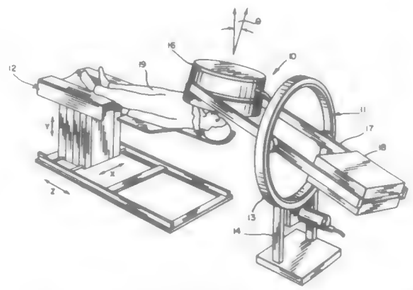
1. An integrated circuit comprising:
a plurality of analog signal processing channels, each said signal processing channel having a plurality of digitally controllable functions; and
digital control means for controlling said plurality of digitally controllable functions, said digital control means further comprising;
a digital input signal, said digital input signal further comprising command input bits and data input bits; and
command decoder means for decoding said command input bits into a plurality of register selection signals; and
a plurality of control register means for storing said data input bits, each said control register means having a plurality of control outputs, each said control output having a plurality of control bits;
wherein each said control register means is selected by one said register selection signal within said plurality of register selection signals; and
wherein a particular control register means stores said data input bits if selected by the corresponding register selection signal; and
wherein each said digitally controllable function is controlled by one particular control output within said plurality of control outputs of one particular control register within said plurality of control registers.

5,337,231

VIEW TO VIEW IMAGE CORRECTION FOR OBJECT MOTION WITH TRUNCATED DATA

Michael P. Nowak, and David J. Nowak, both of Greendale, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Mar. 31, 1992, Ser. No. 860,928
Int. Cl.[5] G06F *15/42*; G06K *9/48*
U.S. Cl. 364—413.24 **6 Claims**



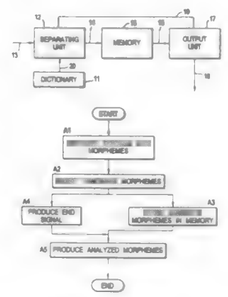
1. An apparatus for correcting patient motion occurring along an axis between views, in an imaging apparatus employing multiple views in constructing an image, the apparatus comprising:
a detector for collecting a first and second view of an object, the first and second views including brightness data having values in order rows along the axis, the brightness data truncated by the detector for rows beyond a row limit;
a means for establishing a last row number common to the first and second views, before the row limit and independent of the row limit;
a comparator for comparing the brightness of the data of each row of the first view with the brightness of the data of each corresponding row of the second view only for rows before the row limit to produce a difference sum indicating the similarity of values of said brightness data between the first and second views;
a shifter for shifting the brightness data in the corresponding row of the second view by a number of rows so that the difference sum indicates the greatest similarity in the correspondingly ordered values of said brightness data between the first and second rows; and
a view corrector repositioning the second view by the number of rows to correct patient motion in the second view.

5,337,232

MORPHEME ANALYSIS DEVICE

Shinsuke Sakai, and Takao Miyabe, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 487,044, Mar. 2, 1990, abandoned. This application Mar. 18, 1992, Ser. No. 853,601
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.08 **6 Claims**



1. In a machine translation system, a device for breaking a syntagm having a plurality of morphemes into analyzed morphemes, using predefined morpheme groups, said device comprising:
(a) a dictionary for storing a plurality of dictionary morphemes;
(b) a separating unit, said separating unit accessing said dictionary morphemes in said dictionary and receiving said syntagm, wherein said separating unit separates said syntagm into at least one separated morpheme and for each of said separated morphemes selects at least one candidate morpheme from said dictionary morphemes based on said separated morpheme;
(c) a memory accessed by said separating unit, said memory storing said candidate morphemes as memorized morphemes, wherein at least one of said memorized morphemes is stored for each of said Separated morphemes; and
(d) an output unit connected to said separating unit, said output unit accessing said memorized morphemes in said memory, wherein, for each of said separated morphemes, said output unit selects one of said memorized morphemes by determining for each separated morpheme one of said morpheme groups to which said separated morpheme belor.gs, said output unit outputting as one of said analyzed morphemes said selected memorized morpheme.

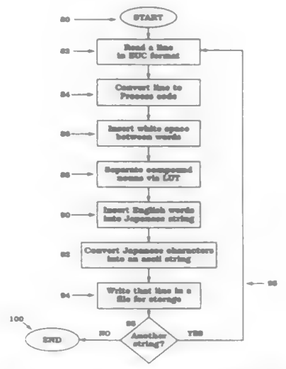
5,337,233

METHOD AND APPARATUS FOR MAPPING MULTIPLE-BYTE CHARACTERS TO UNIQUE STRINGS OF ASCII CHARACTERS FOR USE IN TEXT RETRIEVAL

David K. Hofert, Hudson, N.H., and Yutaka Yoshida, Tokyo, Japan, assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 13, 1992, Ser. No. 867,852
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.140 **13 Claims**

1. A method for preparing language text to be used by a text processing system, where said language comprises more than 256 characters, said method comprising the computer implemented steps of:
a) capturing an input stream of characters which represent said language;
b) separating said input stream of characters into strings of characters which represent words; said separation into words being accomplished by using rules of grammar of said language to determine where to insert word separators into said stream of characters to delimit groups of said characters which constitute words in said language, and



whereby no special characters in said input stream of characters is required to distinguish one word or character set from another;
c) mapping said character strings into unique sets of single byte ASCII characters; and
d) transferring said unique sets of single byte ASCII characters which represent words to said text processing system for further processing.

5,337,234

SELF-CONTAINED DOWNHOLE GAUGE SYSTEM

Terry O. Anderson; J. Mark Richardson; Jack C. Penn; Michael J. Lynch; Billy W. White; Gilbert H. Forehand; Richard L. Duncan; Charles F. VanBerg, Jr.; Stephen E. Tilghman; Ronald E. Dant, and Charles D. Donaghe, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 384,830, Jul. 21, 1989, Pat. No. 5,153,832, which is a division of Ser. No. 731,230, May 6, 1985, Pat. No. 4,866,607. This application May 5, 1992, Ser. No. 864,664
Int. Cl.[5] G06F *15/20*; G01V *9/00*
U.S. Cl. 364—422 **2 Claims**

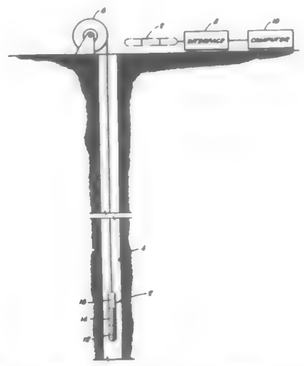
1. A self-contained downhole apparatus for being lowered into an oil or gas well to internally record samples of at least one environmental condition, said apparatus comprising:
three body sections linearly and releasably interconnected, wherein a first said body section is a selected one of a plurality of transducer housing sections, each of said transducer housing sections including:
at least one environmental condition-detecting transducer providing a transducer output signal having a distinctive format;
a respective transducer interface means for converting each said transducer output signal having a distinctive format into a respective transducer housing section output signal having a predetermined format which is the same for all said transducer housing sections, said predetermined format including a characteristic corresponding to the magnitude of the detected environmental condition; and
wherein said selected transducer housing section is mechanically and electrically connected to a second said body section of said apparatus so that said transducer housing section output signal of said selected transducer

VOL 1165 ISS 2 AG 9 1994 UMI

housing section is communicated into said second body section;

microcomputer-operated signal processing means, disposed in said second body section, for receiving said transducer housing section output signal from said selected, connected transducer housing section, for deriving from said transducer housing section output signal a digital signal, and for storing said digital signal within said apparatus;

power supply means, disposed in a third said body section mechanically and electrically connected to said second body section, for providing power to said transducer and said transducer interface means in said selected transducer



housing section and to said microcomputer-operated signal processing means in said second body section; and

wherein each said transducer interface means includes:

a respective transistor communicating an analog electrical signal as the respective transducer housing section output signal, wherein said transistor of said selected transducer housing section is connected to said microcomputer-operated signal processing means in response to selection of the respective said selected transducer housing section and connection thereof to said second body section; and

a respective signal conversion circuit connecting the respective said transducer and said transistor.

5,337,235

LOCOMOTION CONTROL SYSTEM FOR LEGGED MOBILED ROBOT

Hideo Takahashi, and Ryutaro Yoshino, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,451

Claims priority, application Japan, Mar. 12, 1992, 4-088111; Mar. 12, 1992, 4-088112

Int. Cl.[5] G05B *19/00*

U.S. Cl. 364—424.02 9 Claims

1. A system for controlling locomotion of a legged walking robot having a body and a plurality of legs each connected to the body, comprising:

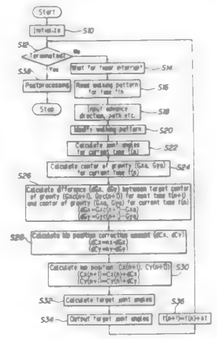
first means for preestablishing positional walking data in time series with respect to parameters at least including a n-th differential of the robot's center of gravity displacement;

second means for determining a difference between the n-th differentials of the robot's center of gravity displacement at time t and at time t+delta t defined in the preestablished walking data;

third means for determining a positional correction amount of the robot body at the time t+delta t in response to the determined difference;

fourth means for determining an attitude of the robot at the time t+delta t at least on the basis of the corrected position of the robot body;

fifth means for determining target angles of robot joints on the basis of the determined robot attitude; and



servo motor means for driving the robot joints in response to the determined target angles.

5,337,236

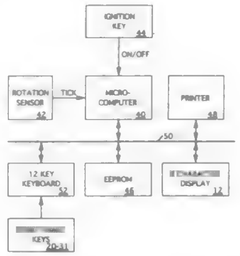
SYSTEM FOR CATEGORIZING AND RECORDING VEHICLE TRIP DISTANCE

Raymond C. Fogg, Hillsboro, and James J. Lushina, Aloha, both of Oreg., assignors to Taurean Electronics, Inc., Hillsboro, Oreg.

Filed May 21, 1990, Ser. No. 525,845

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—424.04 8 Claims



1. An apparatus for recording distance of a trip traveled by a vehicle with a user-selected code distinguishing the trip as a particular one of a plurality of trip types, the apparatus comprising:

a plurality of user operable keys;

memory means for storing a trip record and for storing a plurality of codes, each of said keys being associated with a separate one of said codes;

first means responsive to user input for altering at least one of said plurality of codes stored in said memory means in accordance with said user input; and

second means for responding to user operation of any one of said keys by reading from said memory means a particular one of said codes associated with the operated key, determining a distance traveled by said vehicle following user operation of said one key, and writing said trip record into said memory means, said trip record comprising data referencing said one code and said distance.

5,337,237

CONSTANT SPEED DRIVING DEVICE

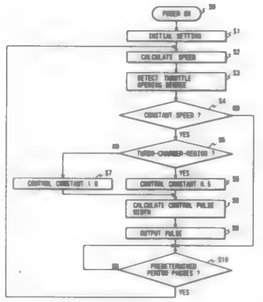
Kazuyori Katayama, and Yasuhiro Fujiwara, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1992, Ser. No. 881,657

Claims priority, application Japan, May 14, 1991, 3-107862

Int. Cl.[5] B60K *31/00*

U.S. Cl. 364—426.04 6 Claims



1. A constant speed driving device for controlling a throttle actuator of an engine having a pressure-charging system so that a vehicle speed is kept at a predetermined target constant value, said constant speed driving device comprising:

a speed sensor for generating a signal corresponding to an actual driving speed of said vehicle;

a throttle opening degree sensor for generating a signal corresponding to an opening degree of said throttle when said vehicle is driven at said detected speed;

control constant determining means for determining a control constant according to parameters corresponding to one of an effective pressure-charging operation and a non-effective pressure-charging operation of said pressure-charging system; and

control signal calculating means for generating and forwarding a control signal for an opening amount to said throttle actuator, calculated so as to equalize said actual speed to said target speed by using said determined control constant.

5,337,238

SYSTEM AND METHOD FOR ACTUATING VEHICLE SAFETY DEVICE USING DAMPED MEASURES

Tony Gioutsos, Brighton, and Michael A. Piskie, Bloomfield Hills, both of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Oct. 8, 1991, Ser. No. 773,676

Int. Cl.[5] B60R *21/02*

U.S. Cl. 364—424.05 31 Claims

1. A system for actuating a vehicle safety device in the event of a vehicle crash or sudden vehicle deceleration comprises:

means for generating sampled data representative of the instantaneous acceleration of said vehicle;

a RAM for storing consecutive values of said acceleration data;

means for calculating a low-variance jerk value from said stored data set;

means for calculating a high-variance jerk value from said stored data set;

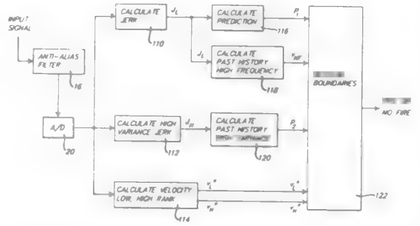
means for calculating at least one modified velocity value from said stored data set;

means for calculating a predicted acceleration value using said low-variance jerk value;

means for calculating a high-frequency velocity value using said low-variance jerk value;

means for calculating a high-variance velocity value using said high-variance jerk value; and

means responsive to said values for modified velocity, predicted acceleration, high-frequency velocity, and high-variance velocity for actuating said vehicle safety device when at least two of said values exceed threshold values therefor.



5,337,239

AUTOMATIC TRANSMISSION CONTROL SYSTEM

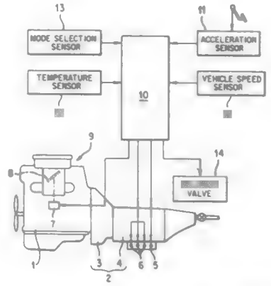
Tsunehisa Okuda, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 721,323, Jul. 1, 1991, abandoned. This application Sep. 17, 1993, Ser. No. 122,170

Claims priority, application Japan, Jun. 30, 1990, 2-173252

Int. Cl.[5] F16D *43/22;* G06F *15/50;* G06G *7/70*

U.S. Cl. 364—424.1 4 Claims



1. An engine control system for an engine equipped with an automatic transmission having hydraulically operated frictional coupling means for transmitting engine output, said automatic transmission being operative in an economy operation mode, wherein said automatic transmission is placed more frequently in higher speed gears, and in a power operation mode, wherein said automatic transmission is placed more frequently in lower speed gears, said engine control system comprising:

mode detection means for detecting when said automatic transmission is set in said economy operation mode;

pressure regulating means for regulating hydraulic pressure actuating said automatic transmission; and

control means for causing said pressure regulating means to make said hydraulic pressure lower when said mode detection means detects said automatic transmission is set in said economy operation mode than when said mode detection means detects said automatic transmission is set in said power operation mode.

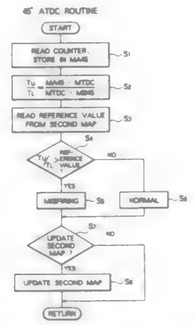
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,240

MISFIRING SENSING APPARATUS

Akihiro Nakagawa; Akira Demizu, both of Himeji, and Ryoji Nishiyama, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1991, Ser. No. 761,531
Claims priority, application Japan, Sep. 20, 1990, 2-252566; Dec. 26, 1990, 2-414000
Int. Cl.[5] G01M *15/00*
U.S. Cl. 364—431.01 23 Claims



1. A misfiring sensing apparatus for an engine equipped with a crankshaft and at least one cylinder having a piston connected to the crankshaft, comprising:

period sensing means for sensing a length of a first period equal to a length of time for the crankshaft of the engine to rotate between first and second angular positions and for sensing a length of a different second period equal to a length of time for the crankshaft to rotate between third and fourth angular positions; and

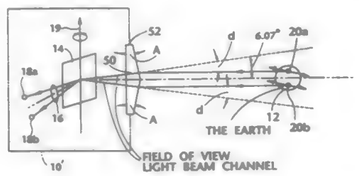
misfiring sensing means for sensing misfiring of the engine based on a ratio of the lengths of the first and second periods.

5,337,241

SPACECRAFT ATTITUDE SENSOR HAVING AN OPTICAL APPARATUS FOR INCREASING APPLICATIONS THEREOF

Fumiho Takahashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 22, 1992, Ser. No. 994,716
Claims priority, application Japan, Dec. 24, 1991, 3-356189
Int. Cl.[5] G01S *5/08, 1/44*
U.S. Cl. 364—434 6 Claims



1. A spacecraft attitude sensor which is mountable on a spacecraft and which determines roll/pitch angles of said spacecraft relative to a center of a disk of a celestial body, said spacecraft attitude sensor comprising:

two light ray detectors each of which is canted by a predetermined angle relative to the other of said detectors, each of said two light ray detectors defining a field of view light beam channel;

a scan mirror which is provided in front of said two light ray detectors to swing said field of view light beam channel between two predetermined angles; and

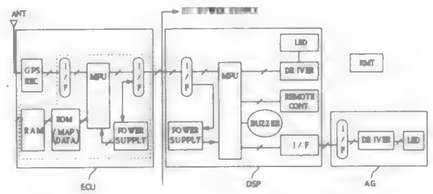
an optical means which is provided in front of said scan mirror, said optical means being effective to deviate said field of view light beam channel such that said scan mirror may scan said celestial body across limbs thereof by said field of view light beam channel, including at positions of said spacecraft relative to said celestial body at which said scan mirror is incapable of determining said roll/pitch angles.

5,337,242

POSITION INFORMATION PROCESSING SYSTEM FOR MOBILE

Tomohiro Yamamoto, Anjo, and Shigeru Iwade, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 16, 1991, Ser. No. 760,551
Claims priority, application Japan, Sep. 14, 1990, 2-245938
Int. Cl.[5] G08G *1/123*
U.S. Cl. 364—449 3 Claims



1. A position information processing system for use with an atlas having a plurality of pages for illustrating different districts of an area on said pages and adapted to be mounted on a mobile, the system comprising:

detecting means for detecting a current position of the mobile;

memory means divided into a plurality of segments for storing only the respective page numbers of said atlas in a sequence having a predetermined priority;

control means for searching said memory means and retrieving a selected page number instead of the associated map corresponding to the district including the current position of the mobile; and

display means for indicating the retrieved page number of the atlas.

5,337,243

VEHICLE ORIENTATION CALCULATING DEVICE

Akihito Shibata, and Hiroaki Tsuji, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 12, 1991, Ser. No. 790,444
Claims priority, application Japan, Nov. 13, 1990, 2-307420
Int. Cl.[5] G06G *7/78*
U.S. Cl. 364—449 10 Claims

1. A vehicle orientation calculating device comprising:

a) GPS (Global Positioning System) position calculating means for calculating GPS receiving positions in response to signals received from GPS satellites;

b) vehicle position calculating means for calculating a position of a vehicle, based on;

1) an angular velocity; and

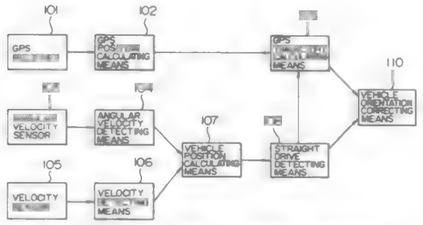
2) a velocity of the vehicle;

c) straight drive detecting means, responsive to said vehicle position calculating means, for detecting whether or not the vehicle has moved in a straight line;

d) GPS trajectory calculating means, responsive to said GPS position calculating means, for obtaining a resultant regression line based on GPS receiving positions in a straight drive trajectory of the vehicle, said trajectory calculating means including;

1) means for defining lines passing through the GPS receiving positions and normal to a tentative regression line;

2) means for calculating a sum of squares of line lengths from the respective GPS receiving positions to the tentative regression line; and



3) means for determining the resultant regression line to minimize the calculated sum; and

e) vehicle orientation correcting means, responsive to said GPS trajectory calculating means, for adding;

1) an original orientation of the vehicle; and

2) an orientation difference between;

i) the orientation of the vehicle driven in said straight drive trajectory; and

ii) the resultant regression line

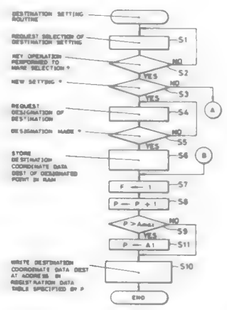
determined for said straight drive trajectory.

5,337,244

ON-BOARD NAVIGATION APPARATUS

Kenichi Nobe; Morio Araki, and Takeharu Arakawa, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 841,071
Claims priority, application Japan, Apr. 12, 1991, 3-79882
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 2 Claims



1. An on-board navigation apparatus for setting a destination and displaying navigational information from a present location to the destination on the basis of destination coordinate data representing the set destination and present location coordinate data representing the present location of a vehicle, the apparatus comprising:

a memory having a plurality of storage positions for storing the destination coordinate data;

reading means for reading out said destination coordinate data stored in said memory at a time of destination setting;

means for selecting one piece of destination coordinate data from the read destination coordinate data in accordance with an input instruction to thereby set a destination according to the selected one piece of destination coordinate data; and

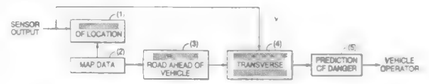
writing means for, every time a new destination is set by an operator, permanently writing new destination coordinate data representing the new destination at a storage position, said storage position being different from other storage positions where previously selected destination coordinate data is stored, so that said new destination coordinate data can be retrieved at a later time.

5,337,245

LOCATION DETECTING APPARATUS WITH OVERSPEED PREDICTING MEANS

Shin-ichi Matsuzaki, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 3, 1992, Ser. No. 970,075
Claims priority, application Japan, Nov. 18, 1991, 3-302176
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 1 Claim



1. A location detecting apparatus comprising:

a road map memory having road map data stored therein;

heading sensing means for sensing a heading of a vehicle;

velocity sensing means for sensing a velocity of said vehicle to obtain distance traveled by said vehicle;

location detecting means for integrating said distances and heading obtained every predetermined timing and for calculating an estimated location of said vehicle on the basis of the integrated distances and heading and for detecting a current location of said vehicle on a road on the basis of a degree of similarity between said estimated location and said road map data stored in said road map memory;

road searching means for searching a road that is ahead of said current location detected by said location detecting means from among road map data stored in said road map memory;

predicting means for reading configuration data of said road searched by said road searching means out of said road map memory, for calculating a radius of curvature of said searched road on the basis of said configuration data, and for calculating a predicted transverse acceleration to which said vehicle is exposed, on the basis of the calculated radius of curvature and said velocity sensed by said velocity sensing means; and

means for comparing said transverse acceleration calculated by said predicting means with a predetermined threshold value and for giving warning to a vehicle operator if said transverse acceleration is greater than said predetermined threshold value.

5,337,246

FLEXIBLE APPARATUS AND METHOD FOR APPLYING CUSTOMIZED RATING ADJUSTMENTS TO TRANSACTION CHARGES

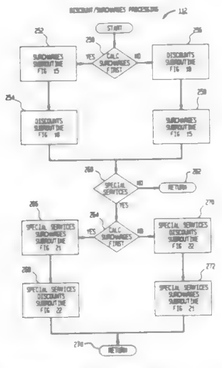
Terri A. Carroll, Milford, and Jacques E. Hasbani, Bethel, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed May 22, 1992, Ser. No. 887,616
Int. Cl.[5] G07B *17/00*
U.S. Cl. 364—464.02 25 Claims

1. A method for implementing custom discount rates for determining charges for a class of transactions, comprising the steps of:

VOL 1165 ISS 2 AG 9 1994 UMI

a) partitioning said class of transactions into cells in accordance with predetermined criteria;
b) defining a plurality of discounts or surcharges applicable to said transactions;
c) providing a user with an apparatus for computing said charges, said apparatus comprising:
c1) means for determining base rates for said transactions; and,
c2) means, responsive to user configuration data defining correspondences between said discounts or surcharges and selected cells, said configuration data being selected independently of said discounts or surcharges and said



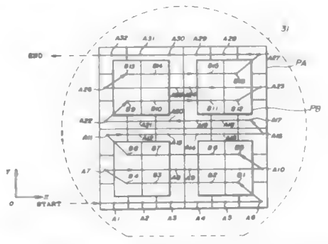
cells, for applying said discounts or surcharges which correspond to said selected cells to said base rates for particular transactions which satisfy said criteria for said selected cells;
d) updating said user configuration data for said apparatus with updated configuration data defining a selected custom discount rate to implement said selected discount rate; and,
e) calculating the final charge for said class of transactions by applying said plurality of discounts or surcharges determined by said apparatus for computing said charges in accordance with said user configuration data.

5,337,247

EXPOSURE DATA FORMING METHOD, PATTERN FORMING METHOD, PATTERN EXPOSURE METHOD AND PATTERN EXPOSURE APPARATUS

Shinichi Hamaguchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 31, 1991, Ser. No. 708,990
Claims priority, application Japan, Jun. 1, 1990, 2-145064
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—468 **15 Claims**



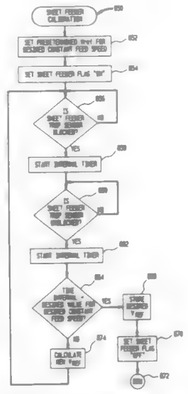
1. An exposure data organizing method for organizing exposure data defining a composite pattern to be exposed on a corresponding region of an object by an exposure beam in an exposure apparatus and wherein the composite pattern comprises at least one compressed, repeating exposure pattern and a non-compressed, non-repeating exposure pattern, each of the compressed repeating and non-compressed, non-repeating exposure patterns comprising plural, predefined unit deflection regions and each unit deflection region being defined as a region in which the exposure beam can be deflected by a maximum beam deflection amount and to which a corresponding portion of the exposure data relates, comprising the steps of:
(a) arranging each compressed, repeating exposure pattern relatively to the non-compressed and non-repeating exposure pattern in accordance with the composite pattern;
(b) assigning respective, individual identifying numbers to the respective unit deflection regions of the arranged, non-compressed and non-repeating, and compressed and repeating exposure patterns;
(c) assigning respective exposure order numbers to the unit deflection regions defining a sequential order of exposure of the respective unit deflection regions, the sequence being determined in accordance with minimizing the length of a path through which the exposure beam is deflected when proceeding from the exposure of one unit deflection region to the exposure of a next successive unit deflection region, for all of the unit deflection regions of all of the arranged exposure patterns; and
(d) processing the exposure data for the object by correlating the respective exposure data portions of the unit deflection regions, as identified by the respective, individual identifying numbers assigned thereto, in accordance with the respective exposure order numbers assigned to the unit deflection regions.

5,337,248

MAILING MACHINE INCLUDING SHEET FEEDING SPEED CALIBRATING MEANS

Alton B. Eckert, Jr., New Fairfield; Dennis M. Gallagher, Danbury; Thomas M. Pfeifer, Bridgeport, and Richard P. Schoonmaker, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 25, 1992, Ser. No. 841,911
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—468 **24 Claims**



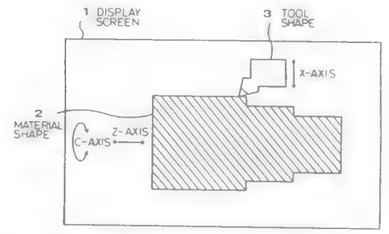
1. A mailing machine base including a sheet feeding apparatus, said sheet feeding apparatus comprising:
(a) means for feeding a sheet having a leading edge and a trailing edge in a path of travel, the sheet feeding means including a roller, the sheet feeding means including means for driving the roller at a desired sheet feeding speed corresponding to a desired reference voltage;
(b) means for controlling the sheet feeding means, the controlling means including a microprocessor connected to the roller driving means, the controlling means including means for sequentially sensing the leading and trailing edges of the sheet in the path of travel and providing corresponding successive signals to the microprocessor;
(c) the sheet having a predetermined length from the leading edge to the trailing edge thereof; and
(d) the microprocessor programmed for
1. providing a predetermined reference voltage corresponding to the desired sheet feeding speed,
2. counting a time interval in response to receiving the successive leading and trailing edge signals,
3. determining whether the counted time interval and the desired time interval are substantially equal, and
4. storing the predetermined reference voltage as the desired reference voltage if the counted and desired time intervals are substantially equal.

5,337,249

NUMERICAL CONTROL MACHINING ANIMATION WITH WORKPIECE AND TOOL MOVEMENT

Naoki Fujita; Teruyuki Matsumura, and Koichi Murata, all of Yamanashi, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP90/01644, § 371 Date Aug. 19, 1991, § 102(e) Date Aug. 19, 1991, PCT Pub. No. WO91/10179, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 14, 1990, Ser. No. 752,438
Claims priority, application Japan, Dec. 26, 1989, 1-337060
Int. Cl.[5] G06F *15/46;* **G05B** *19/18*
U.S. Cl. 364—474.22 **6 Claims**



1. A display method for a numerical control apparatus for simulating machining by an animated display, comprising the steps of:
(a) displaying a material shape and a tool shape on a display screen, based on control information obtained from the numerical control apparatus:
(b) arbitrarily specifying either of the material shape and the tool shape to be shifted on the display screen in a direction corresponding to a servo axis; and
(c) repeating step (a) to indicate movement in dependence upon said specifying in step (b).

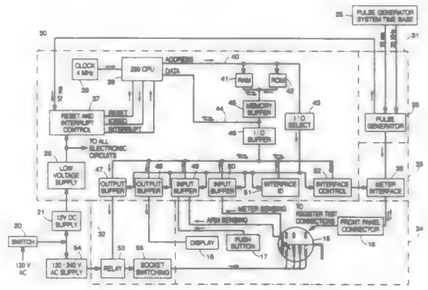
5,337,250

APPARATUS FOR TESTING A MICROPROCESSOR BASED REGISTER

Joseph F. Sidiski, 43 Parkway Dr., Syosset, N.Y. 11791

Filed Mar. 24, 1992, Ser. No. 856,538
Int. Cl.[5] G01R *17/00*
U.S. Cl. 364—481 **15 Claims**

1. Apparatus for testing a microprocessor-based register in an electric energy meter comprising in combination a power supply circuit, means controlled by a switch for selectively coupling said power supply circuit to a source of electric energy, a testing microprocessor, a pulse generator coupled to said testing microprocessor, a plural contact meter socket, means coupled to said testing microprocessor and to said socket for detecting the presence or absence of a meter inserted in said socket, means for coupling an input/output port of said register to said testing microprocessor, means coupled with said testing microprocessor and to said power supply circuit



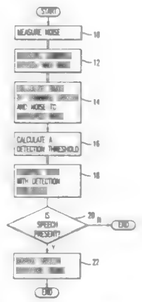
for supplying electric energy to said meter socket when a meter is present for energizing said register in said meter, and means for controlling said testing microprocessor for enabling pulses to be fed from said pulse generator to said register in a predetermined manner for testing the operation of said register.

5,337,251

METHOD OF DETECTING A USEFUL SIGNAL AFFECTED BY NOISE

Dominique Pastor, Eysines, France, assignor to Sextant Avionique, Meudon La Foret, France

PCT No. PCT/FR92/00504, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/22889, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 5, 1992, Ser. No. 972,445
Claims priority, application France, Jun. 14, 1991, 91 07323
Int. Cl.[5] G10L *3/00*
U.S. Cl. 364—484 **19 Claims**



1. A method for detecting if speech is present in an audio sample, comprising the steps of:
detecting noise and generating a noise signal;
detecting an audio sample which includes both speech and noise and generating an audio signal;
determining an energy of the noise signal;
determining an energy of the audio signal;
calculating a ratio of the energy of the audio signal to the energy of the noise signal;
calculating a detection threshold; and
comparing the calculated ratio with the calculated detection

VOL 1165 ISS 2 AG 9 1994 UMI

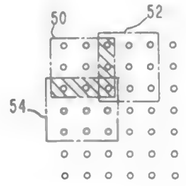
threshold and outputting a comparison result which indicates one of a presence and absence of speech in the audio sample.

5,337,252

DELTA-I NOISE MINIMIZATION

Quoc T. Lac, Hopewell Junction; Edward C. Lowry, Beacon, and Robert B. Madden, Poughquag, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1991, Ser. No. 767,758
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—488 3 Claims



1. A method for assigning signal and power conductor positions in a three-dimensional wiring maze, comprising the steps of:

initially assigning signal and power conductor locations in said maze based on a criteria of spacing like conductors from one another as far as possible while avoiding where possible assigning like conductors in adjacent positions; and

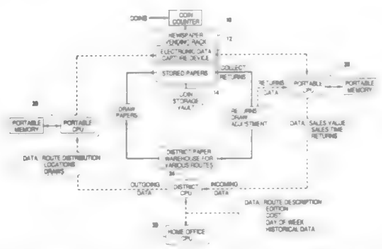
optimizing said initial assignment of signal and power conductor positions by iteratively changing assignments in a small subset of said initial assignments and testing each iteration in a subset for Delta-I noise to make a final subset assignment based on said testing of iteratively changed assignments, each of said series of small subsets having at least one row or column overlapping a row or column of a previous subset in which the conductor assignments have been finalized and in which the position assignments in said overlapping row or column are frozen during the iterative changing of assignments in subsequent subset.

5,337,253

VENDING MACHINE DATA PROCESSING SYSTEM

Janette Berkovsky, Yoakum, and Scott Baer, Shiner, both of Tex., assignors to Kaspar Wire Works, Inc., Shiner, Tex.

Continuation of Ser. No. 623,781, Dec. 7, 1990, abandoned. This application Sep. 24, 1993, Ser. No. 127,083
Int. Cl.[5] G06F *15/20, 15/24*
U.S. Cl. 364—479 8 Claims



1. A method for processing and displaying information received from, and transmitted to, a plurality of vending machines at different locations and controlling delivery of product into said vending machines, comprising the steps of:

(a) storing a sequential list of said locations of each of said vending machines in a portable data storage unit, said portable data storage unit having means for individually displaying each of said locations;

(b) storing a first quantity of product to be delivered to each of said vending machines in said portable data storage unit, said portable data storage unit having means for individually displaying said first quantity of product for each of said vending machines in conjunction with said location for said vending machine;

(c) displaying in sequence or at random each of said locations and said first quantities of product to be delivered to said vending machines on said portable data storage unit;

(d) accessing in sequence or at random each of said vending machines as said locations for said vending machines are displayed on said portable data storage unit for a delivery of product into said vending machines and a retrieval of information from said machines;

(e) at each of said vending machines, storing in said portable data storage unit a second quantity of said product dispensed as sales from said vending machine;

(f) at each of said vending machines, storing in said portable data storage unit a third quantity of said product remaining unsold in said vending machine;

(g) removing said third quantity of said product from said vending machine; and

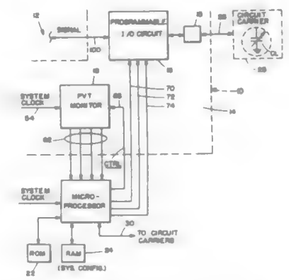
(h) delivering said first quantity of said product into said vending machine.

5,337,254

PROGRAMMABLE INTEGRATED CIRCUIT OUTPUT PAD

Derek L. Knee, Sunnyvale; Wang K. Li, San Jose, both of Calif., and Thomas O. Wheless, Jr., Eagle, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 16, 1991, Ser. No. 807,971
Int. Cl.[5] H03L *7/00*
U.S. Cl. 364—489 15 Claims



1. A system including an integrated circuit chip having output pads connected to a network whose electrical characteristics can vary, the system including means for adjusting output drive currents applied to a pad, said means comprising:

PVT monitor means for providing an output that is related to process, voltage and temperature parameter variations on said chip;

logic means for determining network configuration information that enables a network's capacitance characteristics to be determined, said logic means responsive to an output from said PVT monitor means and a determined network capacitance characteristic to provide control outputs indicative of a required output drive current; and

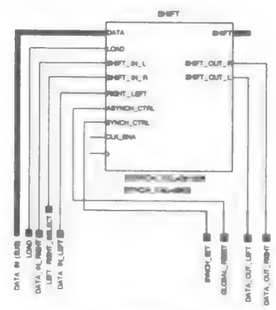
drive means, including alterable circuitry, responsive to said control outputs to modify said alterable circuitry to provide said required output drive current.

5,337,255

METHOD FOR IMPLEMENTING SET/RESET SYNCHRONOUSLY OR ASYNCHRONOUSLY IN A PROGRAMMABLE LOGIC DEVICE

Jorge P. Seidel, San Jose, and Arun K. Mandhania, Milpitas, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Oct. 30, 1991, Ser. No. 787,343
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 14 Claims



1. A set/reset function generator comprising:

a symbol library including at least one symbol representing a function which can be synchronously and asynchronously controlled, said symbol including at least one position for entering a set/reset parameter to further define said symbol;

means for selecting said at least one symbol from said symbol library;

means for allowing a user to enter said set/reset parameter at said at least one position to further define said symbol; and

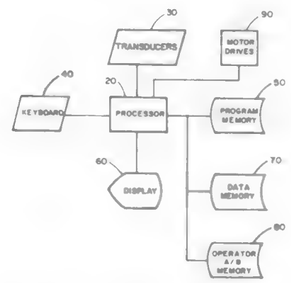
means for configuring a logic device to provide a set/reset function associated with said symbol in response to said symbol and said set/reset parameter.

5,337,256

WHEEL BALANCER WITH MULTIPLE OPERATOR INTERFACE

Charles L. Cunningham, Nashville, and Ronald W. Carter, Murfreesboro, both of Tenn., assignors to Service Station Products Company, Wilmington, Del.

Filed Sep. 28, 1992, Ser. No. 952,584
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—508 7 Claims



1. A microprocessor-controlled apparatus for determining an imbalance in a rotating tire and wheel assembly in a sequence of steps, said apparatus including means for rotating said assembly, and imbalance force transducer means, comprising:

a. keyboard means for selecting an active operator of said apparatus and for entering data specifically associated with said active operator;

b. active data storage means for storing said entered operator specific data for use by said processor when said associated operator is said active operator; operator data storage means for saving operator specific data, including said entered operator specific data, when said operator associated with said data is an inactive operator of said apparatus; and

d. processor means responsive to said active operator selection means for moving said operator specific data corresponding to said selected active operator from said operator data storage means to said active data storage means and for moving said data in said active data storage means associated with said inactive operator to said operator data storage means; and

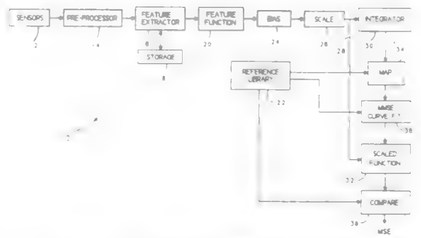
e. said processor means, said active data storage means, and said operator data storage means are adapted for temporarily interrupting said sequence of steps in response to said keyboard means whereby said sequence of steps may be resumed when said inactive operator becomes said active operator of said apparatus.

5,337,257

MOVING VEHICLE CLASSIFIER WITH NONLINEAR MAPPER

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation-in-part of Ser. No. 697,563, May 9, 1991, abandoned. This application May 17, 1993, Ser. No. 61,879
Int. Cl.[5] G01S *15/06*
U.S. Cl. 364—554 17 Claims



1. A method of classifying a target moving vehicle, the method comprising the steps of:

(a) storing, in a memory, a plurality of known functions representative of a plurality of known moving vehicles;

(b) sensing, with at least one sensor, a signature of the target vehicle;

(c) extracting at least one signal of interest from the signature of the target vehicle;

(d) generating a function for the extracted signals;

(e) adding a bias to the generated function, thereby producing a biased function;

(f) scaling the biased function so as to limit the integral thereof to a maximum value of unity, thereby producing a target first scaled function;

(g) integrating the target first scaled function, thereby producing a target integrated function;

(h) mapping the target integrated function to at least one of the known functions in the memory, thereby producing a mapping function;

(i) performing a minimum mean squared error linear fit on the mapping function, thereby producing a relative scaling factor;

(j) scaling the target first scaled function by multiplying it by the relative scaling factor, thereby producing a target second scaled function;

VOL 1165 ISS 2 AG 9 1994 UMI

(k) determining a measure of similarity between the target second scaled function and each of the known functions; and

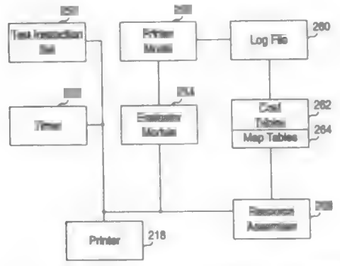
(l) indicating the known moving vehicles, the known functions of which produce a measure of similarity which exceeds a predetermined threshold.

5,337,258

COST METRICS

Stephen V. Deasis, Bothell, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jul. 10, 1992, Ser. No. 912,098
Int. Cl.[5] G06F *11/34*
U.S. Cl. 364—551.01 75 Claims



1. A system for sharing data processing responsibilies between a host computer and a printer, the system comprising:

a test instruction set containing at least one draw primitive to be executed by the printer;

a timer to measure a predetermined elapsed period of time;

an evaluator module to measure the number of times that said draw primitive is executed during said elapsed period and determine an execution time for said draw primitive;

a printer model to receive said execution time and create a model of the printer to determine cost information for rendering said draw primitive;

a log file to receive and store said cost information for said draw primitive; and

a resource assembler to receive said draw primitive and calculate a rendering cost for rendering said draw primitive in the printer by using said cost information from said log file, said resource assembler rendering said draw primitive if the printer cannot render said draw primitive in real-time, whereby the host computer and the printer share data processing responsibilities for rendering said draw primitive.

5,337,259

DIPOLE DETECTION AND LOCALIZATION PROCESSING

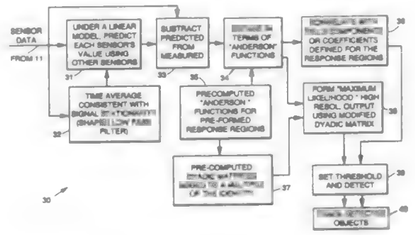
Ben R. Breed, Austin, Tex., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 1, 1993, Ser. No. 24,574
Int. Cl.[5] G01B *7/14*; G01C *21/00*
U.S. Cl. 364—559 3 Claims

1. A dipole detection and localization method for use with a dipole detection and localization system that provides for high resolution localization of dipoles, and wherein the dipole detection and localization system comprises an array of spatially distributed magnetic sensors that each provide output signals that are indicative of a magnetic field sensed thereby that corresponds to a magnetic dipole, processing means coupled to the array of magnetic sensors for generating a measured magnetic signature of the magnetic field produced by the presence of the magnetic dipole, and for providing correlated output signals indicative of the magnetic signature, and processing means for processing the correlated output signals to indicate a location and relative orientation of the magnetic dipole, said method comprising the steps of:

sensing a magnetic dipole using the array of spatially distributed magnetic sensors and providing output signals from each sensor that are indicative of the magnetic field sensed thereby;

processing output signals from the array of magnetic sensors to decompose the magnetic field sensed thereby into its magnetic field components to generate respective magnetic signatures produced by the magnetic field and the magnetic dipole that represent magnetic response functions of the dipole, and wherein the magnetic field components have a form of either a vector of magnetic field components or a vector of Anderson function expansion coefficients;



processing the magnetic signatures to produce a dyadic matrix;

adding a multiple of an identity matrix to the dyadic matrix to prevent singularity thereof and to provide a modified dyadic matrix; and

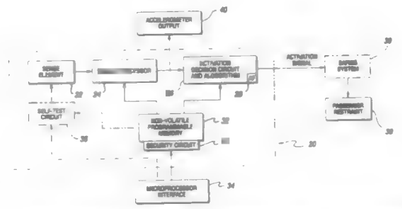
processing the magnetic signatures in accordance with a maximum likelihood beamforming process using the modified dyadic matrix to provide signals that are indicative of the location and relative orientation of the magnetic dipole.

5,337,260

METHOD FOR CALIBRATING A SINGLE POINT IMPACT SENSOR

Leland J. Spangler, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 12, 1993, Ser. No. 89,179
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—571.02 18 Claims



1. A method for calibrating an impact sensor that controls the activation of a passenger restraint mechanism in a vehicle, the method comprising the steps of:

providing, within the sensor, a sense element that is responsive to acceleration, means for generating an electrical signal having a value that is a function of the sense element response, and an activation decision circuit having a counter means for determining if the electrical signal is indicative of a passenger restraint activation worthy event;

applying an acceleration to the sense element between a rate of zero acceleration and a full scale acceleration;

incrementally adjusting the acceleration applied to the sense element;

programming the generating means to adjust the value of the electrical signal within a predetermined range for each incremental acceleration value; and

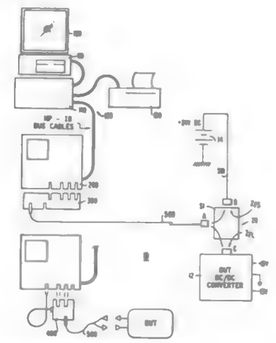
verifying the calibration of the impact sensor.

5,337,261

DESIGNING AND EVALUATING FILTERS FOR SUPPRESSING UNDESIRED SIGNALS

Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to Electronic Development, Inc., Grosse Pointe Park, Mich.

Filed Apr. 2, 1992, Ser. No. 862,522
Int. Cl.[5] H03H *17/00*
U.S. Cl. 364—572 143 Claims



19. Apparatus for characterizing the impedance at a selected location in a device having EMI in a first frequency range, the location being between a filter source and a filter load comprising:

a test lead for connecting the apparatus to one of the filter source and the filter load at the selected location;

a first circuit having an output for providing a signal on the test lead, the signal having a frequency selected from among a selected range of frequencies, the selected range of frequencies including the first frequency range;

a second circuit for controlling the first circuit to provide an output signal at each of a first plurality of frequencies in the selected frequency range, one frequency at a time;

means for determining an impedance vector across the output of the first circuit in response to each provided output signal; and

means for controlling the first and second circuits to obtain a first impedance vector array for the filter load and a second impedance vector array for the filter source.

5,337,262

APPARATUS FOR AND METHOD OF TESTING HYDRAULIC/PNEUMATIC APPARATUS USING COMPUTER CONTROLLED TEST EQUIPMENT

Jeffrey L. Luthi, Valencia, and Richard Tauber, Granada Hills, both of Calif., assignors to HR Textron Inc., Valencia, Calif.

Filed Dec. 3, 1991, Ser. No. 801,242
Int. Cl.[5] G05B *23/00*
U.S. Cl. 364—580 14 Claims

1. A method for automatically testing electrohydraulic/-pneumatic hardware comprising:

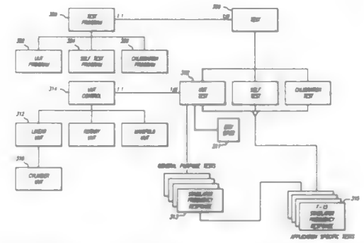
(A) providing an abstract base class defining a plurality of characteristic data and functions common to all of a plurality of predetermined units to be tested;

(B) providing at least one subclass defining a plurality of characteristic data and functions specific to a predetermined type of unit to be tested but not all of such units;

(C) defining specific characteristic data and functions unique to a specific unit of said type of unit;

(D) declaring said specific unit of said type of unit for testing (UUT);

(E) inheriting into said specific characteristic data and functions said plurality of characteristic data and functions from said abstract base class;



(F) inheriting into said specific characteristic data and functions said plurality of characteristic data and functions from said at least one subclass;

(G) activating a test program for said declared UUT;

(H) measuring the results of said test program;

(I) comparing said results of said test programs with said specific and inherited at least one subclass and abstract base class characteristic data and functions; and

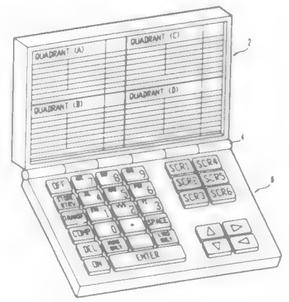
(J) reporting whether said UUT test results fall within said specific and inherited at least one subclass and abstract base class characteristic data and functions.

5,337,263

SIMPLIFIED CHECKBOOK BALANCING COMPUTER SYSTEM

John J. Patermaster, 4910 W. Chalk Point Rd., West River, Md. 20778

Filed Jun. 15, 1993, Ser. No. 76,835
Int. Cl.[5] G06F *13/00, 15/30*
U.S. Cl. 564—705.02 9 Claims



1. A computer for inputting, calculating and displaying information used to reconcile a checkbook with a bank statement, comprising:

a bus;

a keyboard, connected to the bus;

a display, connected to the bus, having four quadrants;

VOL 1165 ISS 2 AG 9 1994 UMI

first means for inputting into the display, a balance on the bank statement;

second means for inputting onto the display, a balance on the checkbook;

means for inputting onto a first quadrant of the display unpaid checks;

means for inputting onto a second quadrant of the display, outstanding deposits;

means for inputting onto a third quadrant of the display, bank charges not appearing in the checkbook;

means for inputting onto a fourth quadrant of the display, bank credits not appearing in the checkbook;

a first calculation means, connected to the bus, for calculating an actual bank balance by subtracting from the balance on the bank statement, the unpaid checks, and adding thereto, the outstanding deposits; and

second calculation means, connected to the bus, for calculating an actual checkbook balance by subtracting from the balance in the checkbook input, the bank charges and adding thereto, the bank credits;

wherein said first means for inputting onto the display, said second means for inputting onto the display, said means for inputting onto a first quadrant, said means for inputting onto a second quadrant, said means for inputting onto a third quadrant, and said means for inputting onto a fourth quadrant input only unpaid checks, outstanding deposits, bank charges not appearing in the checkbook, bank credits not appearing in the checkbook, a balance on the bank statement and a balance on the checkbook and are exclusive means for inputting transactions and dollar amounts which appear in said checkbook and said bank statement.

5,337,265

APPARATUS FOR EXECUTING ADD/SUB OPERATIONS BETWEEN IEEE STANDARD FLOATING-POINT NUMBERS

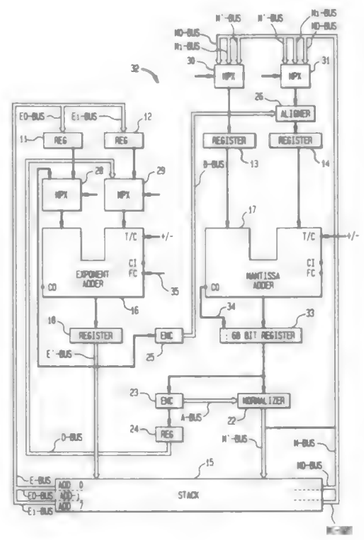
Bernard Desrosiers, Boissise le Roi; Didier Louis, Fontainebleau, and Andre Steimle, Evry, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1992, Ser. No. 981,031

Claims priority, application European Pat. Off., Dec. 20, 1991, 91480188.1

Int. Cl.[5] G06F *7/50*

U.S. Cl. 364—748 **7 Claims**



5,337,264

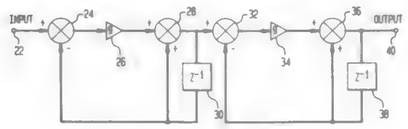
TIME REVERSAL GAUSSIAN APPROXIMATION FILTER

Raphael L. Levien, P.O. Box 31, McDowell, Va. 24458

Filed Jan. 1, 1992, Ser. No. 891,789

Int. Cl.[5] G06F *15/31*

U.S. Cl. 364—724.01 **25 Claims**



1. In a time reversal filter including an input terminal for receiving an input signal, a first filter coupled to said input terminal, a first time reversal memory coupled to said first filter, a second filter coupled to said first time reversal memory, a second time reversal memory coupled to said second filter and an output terminal coupled to said second time reversal memory, the improvement comprising:

wherein said first and second filters are infinite impulse response filters, and wherein said first and second filters are both a cascade of two exponential decay filters in series.

1. An apparatus for executing an addition/subtraction operation between a pair of floating-point operands, each comprising a sign, an exponent and a mantissa, said apparatus comprising:

exponent input register means for storing the respective exponents of each of the operands;

exponent adder means for generating a result by adding a 1 to the larger exponent stored in said exponent input register means;

exponent output register means for storing the exponent result, responsive to said exponent adder means;

mantissa input register means for storing the respective mantissas of each of the operands;

mantissa adder means for generating a result including a carry out bit by operating on the pair of mantissas stored in said mantissa input register means, responsive to said mantissa input register means;

mantissa output register means for storing the mantissa result, responsive to said mantissa adder means;

normalizing means attached to said mantissa output register means for normalizing the result stored in said mantissa output register means;

mantissa rounding means including said mantissa adder means for rounding said normalized result; and

exponent correction means responsive to the result of said mantissa rounding means for generating a corrected exponent.

5,337,266

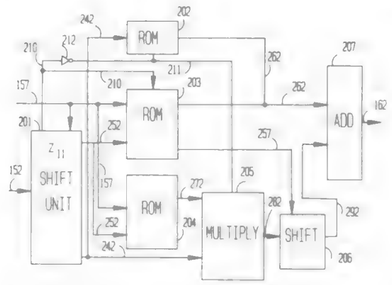
METHOD AND APPARATUS FOR FAST LOGARITHMIC ADDITION AND SUBTRACTION

Mark G. Arnold, 1400 Grand Ave., Laramie, Wyo. 82070

Continuation of Ser. No. 320,867, Mar. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 135,676, Dec. 21, 1987, abandoned. This application Apr. 10, 1990, Ser. No. 512,574

Int. Cl.[5] G06F *7/00, 15/00*

U.S. Cl. 364—748.5 **3 Claims**



1. In a computer system for computing the sums and differences of real numbers represented as logarithmic values, said system having a first subtractor means for computing the difference, z, of said logarithmic values, a means for computing $d_b(z)=\log_b|1-b^z|$ and $s_b(z)=\log_b(1+b^z)$, selection means for selecting one of said logarithmic values as a selected logarithm, and first adder means for producing the sum of said selected logarithm and said $d_b(z)$ value when a subtraction signal is asserted, and for producing the sum of said selected logarithm and said $s_b(z)$ value when said subtraction signal is not asserted, said means for computing comprising:

transformation means, coupled to said first subtractor means, operative for converting said z to a transformed z value and for converting said selected logarithm to a transformed selected logarithm when both said subtraction signal is asserted and said z is less than G, for passing said z as said transformed z value and for passing said selected logarithm as said transformed selected logarithm when said subtraction signal is not asserted or said z is greater than or equal to said G, for asserting a modified subtraction signal when both said subtraction signal is asserted and said z is greater or equal to said G, and for unasserting said modified subtraction signal when said subtraction signal is not asserted or when said z is less than said G;

normalization means, coupled to said transformation means, operative for producing a shifted z value when said modified subtraction signal is asserted by left shifting said transformed z value until the most significant bit is 1 or until a shift limit is reached, and for outputting the more significant part of said shifted z value excluding said most significant bit, the least significant part of said shifted z value, and a shift count proportional to the number of bit positions shifted when said modified subtraction signal is asserted, and for outputting the unmodified more significant bits of said transformed z value on the same bus as said shift count and said more significant part, and the unmodified least significant bits of said transformed z value on the same bus as said least significant part when said modified subtraction signal is not asserted;

first memory means, coupled to said normalization means and to said transformation means, operative for receiving said more significant part, said shift count and said modified subtraction signal, and for using said more significant part, said shift count, and said modified subtraction signal as an address, and in response, for outputting an intercept value;

second memory means, coupled to said normalization means and to said transformation means, operative for receiving said more significant part, said shift count and said modified subtraction signal, and for using said more significant part, said shift count, and said modified subtraction signal as an address, and in response, for outputting a slope value;

multiplication means, coupled to said normalization means and to said memory means, operative for receiving said least significant part and said slope value, and in response for outputting a product;

second adder means, coupled to said first memory means and to said multiplication means, operative for computing the sum of said intercept value and said product; and

said first adder means coupled to said second adder means and to said transformation means, operative for adding said transformed selected logarithm and said sum of said intercept value and said product, thereby adding said selected logarithm to said $s_b(z)$ value when said subtraction signal is not asserted, thereby adding said selected logarithm to said $d_b(z)$ value when said subtraction signal is asserted and said z is greater than or equal to said G, and thereby adding said transformed selected logarithm to the value of s_b of said transformed z when said subtraction signal is asserted and said z is less than said G.

5,337,267

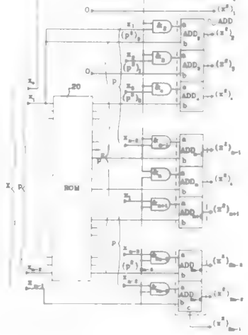
SQUARING CIRCUIT FOR BINARY NUMBERS

Osvaldo Colavin, Voreppe, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Nov. 2, 1992, Ser. No. 970,139

Int. Cl.[5] G06F *7/38, 15/32*

U.S. Cl. 364—753 **21 Claims**



1. A squaring circuit for raising to the second power a first binary number X of n bits, each bit having a weight assigned thereto, wherein the weights increase from 0 to n−1, the circuit comprising:

a circuit responsive to a second binary number P including bits of weight 1 to n−2 of the first number X, for generating the square P^2 of the second binary number, the circuit arrangement includes a table stored in a memory having at least one bit of the P^2;

an adder, coupled to the circuit, receiving at a first multi-bit input thereof, a number including bits of the square P^2 of the second binary number and a bit of weight n−1 of the first number X;

a first switching element, coupled between the memory and the adder, receiving the second number P and providing the second number P to n−2 lines of low weight of a second input of the adder if the bit of weight 0 of the first number X is equal to b 1;

a second switching element, coupled between the memory

VOL 1165 ISS 2 AG 9 1994 UMI

and the adder, receiving the second number P and providing P to n−2 high weight lines of the second input of the adder if the bit of weight n−1 of the first number X is equal to 1; and

a third switching element, coupled between the memory and the adder, providing a 1 to a remaining line of the second input of the adder if bits of weight 0 and n−1 of the first number X are both equal to 1, wherein l represents a first predetermined logic level;

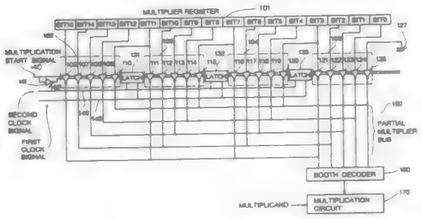
wherein the square X^2 of the first number X is provided by an output of the adder, and to the output of the adder are added at predetermined positions a bit 0 and the bit of weight 0 of the first number X.

5,337,268

PARTIAL MULTIPLIER SELECTOR FOR MULTIPLICATION CIRCUIT

Shingo Kojima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 3, 1992, Ser. No. 940,318
Claims priority, application Japan, Sep. 4, 1991, 3-223246
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—760 7 Claims



1. A partial multiplier selector comprising:

a storing means for storing n bits of multiplier data in which n is an integer,

m sets of selection means for dividing the n bit multiplier data stored in said storing means into m groups of subset data, each of said m groups having one or more bits of data from within said multiplier data, in which m<n, and for sequentially fetching said m groups of subset data using a selection signal, and

m-1 control means, each of said control means being connected between two of said m sets of selection means, each control means receiving said selection signal from one of said two selection means and outputting said selection signal to the other of said two selection means with a delay of one clock using a clock signal so that said m sets of selection means are operated sequentially for sequentially fetching said subset data.

5,337,269

CARRY SKIP ADDER WITH INDEPENDENT CARRY-IN AND CARRY SKIP PATHS

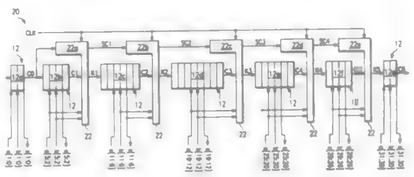
Steven C. McMahan, Richardson, and Lawrence H. Hudepohl, Plano, both of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Filed Mar. 5, 1993, Ser. No. 27,504
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—787 18 Claims

1. A carry-skip adder comprising:

(a) a plurality of adder blocks cascaded to form a ripple carry path, each adder block having inputs coupled to receive addend, augend, and carry-in bits, and having a plurality of outputs providing a summation of the addend and augend bits and a carry-out bit;

(b) a plurality of logic blocks cascaded together and respectively coupled across the plurality of cascaded adder blocks to form a carry-skip path, each logic block having a plurality of inputs coupled to receive from a respective adder block, a clock signal, the addend and augend bits, and the carry-out bit, and a carry-skip output bit from a preceding logic block; and



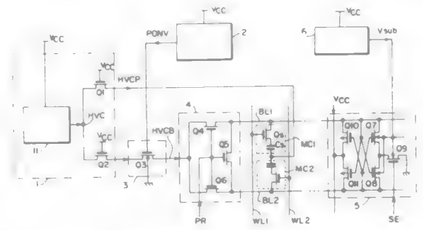
(c) during a first phase of the clock signal, each logic block providing a carry-skip output bit to a carry-skip input on a subsequent cascaded logic block and during a second phase of the clock signal, each logic block providing a carry-out output bit to the carry-in bit input on a subsequent adder block.

5,337,270

SEMICONDUCTOR DYNAMIC MEMORY

Koji Kawata, and Tadahiko Sugibayashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,162
Claims priority, application Japan, Aug. 26, 1991, 3-212546
Int. Cl.[5] G11C *11/24*
U.S. Cl. 365—149 11 Claims



1. A dynamic RAM having:

a memory cell array formed by arranging memory cells, each including a switching transistor and a capacitance element one of whose electrodes is connected to one each of the source and drain electrodes of this switching transistor, in rows and columns;

word lines connected to the gate electrodes of said switching transistors for selecting a memory cell for each of said rows;

bit lines connected to the other sources and drain electrodes of said switching transistors, for performing transfers of write-in/read-out data between said memory cells for each of said columns;

an intermediate potential generating circuit for generating an intermediate potential which is substantially equal to ½ of a source potential supplied from a power supply terminal, supplying it to the other electrodes of said cell capacitance elements and further supplying it to a precharging potential line;

a precharging circuit coupled between said bit lines and a circuit node for precharging said bit lines with a potential at said circuit node at a prescribed timing;

a sense amplifier, including a first transistor having a drain electrode connected to a first one of said bit lines, a gate electrode connected to a second one of said bit lines and a substrate receiving a prescribed potential, and a second transistor having a drain and a source electrode respectively connected to a source electrode of said first transistor and a ground potential point, a gate electrode receiving an activation control signal and a substrate receiving said prescribed potential, for amplifying variations of the potentials of said bit lines;

a power supply turn-on sensing circuit for generating a power-ON sensing signal which takes an inactive level in response to the source potential to said power terminal being turned on, holds said inactive level until the source potential reaches a predetermined level and changes to an active level after the source potential reaches said predetermined level; and

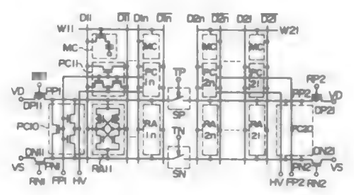
intermediate potential supply control means coupled between said precharging potential line and said circuit node for preventing said intermediate potential from being supplied to said circuit node when said power-ON sensing signal is at said inactive level and for allowing said precharging potential to be supplied to said circuit node when said power-ON sensing signal is at said active level.

5,337,271

SEMICONDUCTOR STORAGE DEVICE CAPABLE OF REDUCED CURRENT CONSUMPTION USING A CHARGE REUSE CIRCUIT

Takayuki Kawahara, Hachioji; Yoshiki Kawajiri, Akishima; Takesada Akiba, Tachikawa; Masashi Horiguchi, Kawasaki; Goro Kitsukawa, Tokyo, and Masakazu Aoki, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Device Engineering Co., Ltd., Mobara, both of Japan

Filed Nov. 12, 1992, Ser. No. 974,925
Claims priority, application Japan, Nov. 12, 1991, 3-295477
Int. Cl.[5] G11C *11/24*
U.S. Cl. 365—149 12 Claims



7. A semiconductor device comprising:

a first memory cell;

a first pair of data lines coupled to said first memory cell;

a first sense amplifier amplifying a signal read out onto said first pair of data lines from said first memory cell;

a second memory cell;

a second pair of data lines coupled to said second memory cell;

a second sense amplifier amplifying a signal read out onto said second pair of data lines from said second memory cell;

a first drive signal line for driving said first sense amplifier;

first switching means for coupling said first drive signal line with a first potential;

a second drive signal line for driving said second sense amplifier;

second switching means for coupling said second drive signal line with said first potential; and

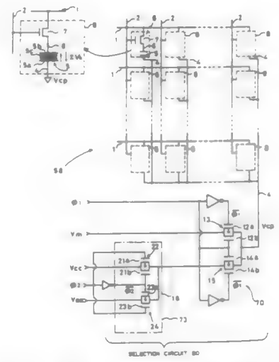
a charge reuse circuit comprising third switching means provided between said first and second signal drive lines for coupling said first and second signal drive lines to each other at a predetermined time so that charges stored in the first drive signal line will flow into said second signal drive line to permit re-use of the charge stored on the first drive signal line.

5,337,272

CIRCUIT FOR APPLYING SELECTED VOLTAGES TO DYNAMIC RANDOM ACCESS MEMORY

Makoto Suwa; Hiroshi Miyamoto, and Shigeru Mori, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 785,979, Oct. 31, 1991, abandoned, which is a division of Ser. No. 436,587, Nov. 15, 1989, Pat. No. 5,079,743. This application Mar. 17, 1993, Ser. No. 32,554
Claims priority, application Japan, Dec. 28, 1988, 63-332237
Int. Cl.[5] G11C *11/40, 11/407*
U.S. Cl. 365—149 18 Claims



1. A dynamic random access memory device comprising:

a plurality of memory cells each including capacitor means for holding data signals applied from an external source, said memory device having a test mode for aging said device and a write mode,

said capacitor means in said memory cell including a first electrode and a second electrode facing each other and separated by an insulator,

during the write mode, a signal voltage corresponding to data signals being applied across said two electrodes of said capacitor means for holding the data signals,

in the test mode, a test voltage higher than the signal voltage corresponding to said data signals being applied across said two electrodes of said capacitor means for checking the insulating properties of said insulator,

test voltage applying means connected to said memory cells for applying first and second test voltages of opposite polarity across said two electrodes of said capacitor means in each of said memory cells,

each of said first and second test voltages being larger in magnitude than the absolute value of the signal voltage applied across the two electrodes of said capacitor means in the write mode,

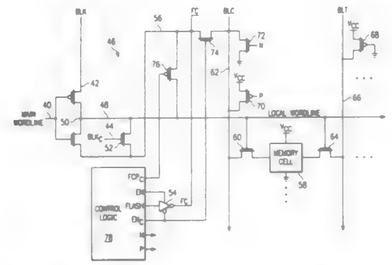
memory signal receiving means for receiving external selection signals for selecting one of said first and second test voltages applied to said capacitor means;

selection means connected to said test voltage applying means and responsive to said external selection signals, for switching between polarities of test voltage thereby selecting said first and second test voltages to be applied to said capacitor means in each of said memory cells by said test voltage applying means; and

latch means for storing said external selection signal from said memory signal receiving means and, in response, controlling said selection means to selectively apply one of said first and second test voltages to said capacitor means.

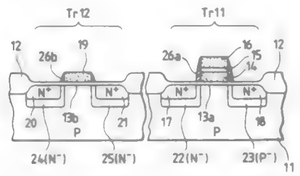
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,273
CHARGE SHARING FLASH CLEAR FOR MEMORY ARRAYS
David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Jul. 30, 1993, Ser. No. 100,084
Int. Cl.[5] G11C *7/00, 11/413*
U.S. Cl. 365—168 22 Claims



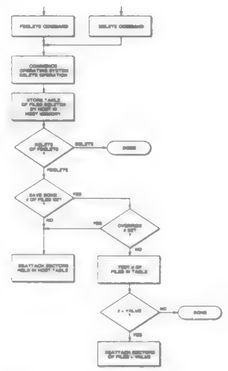
13. A static random access memory comprising:
a plurality of memory cells;
a plurality of wordlines for addressing the plurality of memory cells;
bit lines for transfer of data into and out of the memory cells after being addressed;
means for driving a bit line for each memory cell to a first voltage level;
means for connecting the bit lines to wordlines for sharing charge between the bit lines and the wordlines; and
means for disconnecting the bit lines from the wordlines and for driving the bit lines to a second voltage level and the wordlines to the first voltage level.

5,337,274
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING ADJACENT MEMORY CELLS AND PERIPHERAL TRANSISTORS SEPARATED BY FIELD OXIDE
Hiroshi Ohji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Jan. 14, 1993, Ser. No. 4,525
Claims priority, application Japan, Jan. 30, 1992, 4-042236
Int. Cl.[5] G11C *11/34, 11/40*
U.S. Cl. 365—185 1 Claim



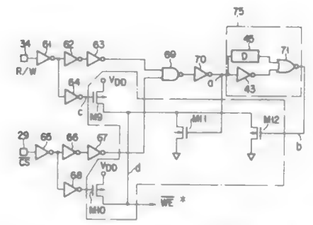
1. A nonvolatile semiconductor memory device comprising a semiconductor substrate of a first conductivity type, a memory cell transistor including a floating gate structure having a floating gate separated from the semiconductor substrate by a gate oxide film and including first source and drain diffusion layers formed in the semiconductor substrate on opposite sides of the floating gate structure and having a high impurity concentration of a second conductivity type, a second source diffusion layer in the semiconductor substrate adjacent to the first source diffusion layer having a low impurity concentration of the second conductivity type, and a second drain diffusion layer int he semiconductor substrate adjacent to the first drain diffusion layer and having a low impurity concentration of the first conductivity type, a peripheral transistor formed adjacent to the memory cell transistor having a gate electrode spaced from the semiconductor substrate by a gate oxide film, and first source and drain diffusion layers formed in the semiconductor substrate on opposite sides of the gate electrode, each having a high impurity concentration of the second conductivity type, and a second source diffusion layer and a second drain diffusion layer in the semiconductor substrate adjacent to the first source diffusion layer and the first drain diffusion layer, respectively, in the peripheral transistor, each having a low impurity concentration of the second conductivity type, and a field oxide film separating the diffusion layers of the memory cell transistor from those of the peripheral transistor.

5,337,275
METHOD FOR RELEASING SPACE IN FLASH EEPROM MEMORY ARRAY TO ALLOW THE STORAGE OF COMPRESSED DATA
Richard P. Garner, Cameron Park, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 969,759, Oct. 30, 1992, abandoned.
This application Nov. 1, 1993, Ser. No. 146,439
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—189.01 16 Claims



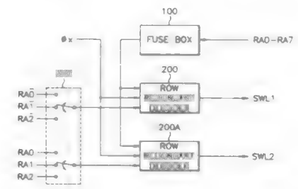
1. A process for releasing sectors of a flash EEPROM memory array in which data furnished by a host computer is stored in compressed form so that memory space used for the sectors may be used to store new data, the flash EEPROM memory array including a plurality of individually erasable blocks and storing sectors of data in such blocks with a header providing a logical sector number, an indication of validity of data stored, the process comprising the steps of:
storing a list of files and sectors which have been deleted by a host computer in a first table in host memory,
storing a value indicating an amount of free space remaining in the flash EEPROM memory array,
providing a first signal to the host computer when the value indicating the amount of free space falls below a first predetermined value to indicate that sectors listed in the first table should be released, and
providing a second signal when the value indicating the amount of free space falls below a second predetermined value.

5,337,276
READ/WRITE CONTROL DEVICE FOR RANDOM ACCESS MEMORY
Masataka Matsui, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan
Filed Oct. 30, 1992, Ser. No. 969,436
Claims priority, application Japan, Oct. 31, 1991, 3-286252
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.11 8 Claims



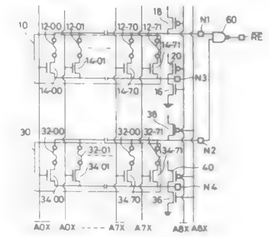
5. A read/write control circuit for a random access memory, comprising:
a first logic circuit for receiving a read/write signal for asynchronously determining a read/write state of a memory cell with a binary potential, said first logic circuit having a first threshold value which is close to a potential indicating a write state and serves to detect a change from the potential indicating the write state to a potential indicating a read state, and a second threshold value which is close to the potential indicating the read state and serves to detect a change from the potential indicating the read state to the potential indicating the write state; and
a second logic circuit for selecting the first threshold value in accordance with the read signal, and selecting the second threshold value in accordance with the write signal.

5,337,277
ROW REDUNDANCY CIRCUIT FOR A SEMICONDUCTOR MEMORY DEVICE
Hyun-Soon Jang, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Sep. 9, 1992, Ser. No. 942,450
Claims priority, application Rep. of Korea, Mar. 9, 1992, 1992-3841
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 13 Claims



8. A row redundancy circuit for repairing a defective memory cell of a memory cell array in a semiconductor memory device having row redundant decoder means, said row redundancy circuit comprising:
first means comprising a first plurality of fuse pairs connected to a first plurality of address bit pairs, said first means for storing, for output to said row redundant decoder means, address information of said defective memory cell; and
second means comprising a second plurality of fuse pairs respectively connected to a second plurality of address bit pairs, said first plurality of address bit pairs comprising said second plurality of address bit pairs, said second means for selecting, for output to said row redundant decoder means, one address bit pair of said second plurality of address bit pairs.

5,337,278
LOW-POWER DECODER FOR SELECTING REDUNDANT MEMORY CELLS
Shizuo Cho, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Feb. 17, 1993, Ser. No. 19,154
Claims priority, application Japan, Feb. 18, 1992, 4-030802
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—200 18 Claims



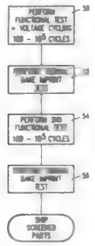
7. A fuse-programmable decoder powered by a first potential and a second potential, for receiving address signals designating memory cells in a selectable section of a memory device, comparing the address signals with stored information, and detecting whether the address signals match the stored information, comprising:
a first node that is coupled to said first potential when said section is not selected, and decoupled from said first potential when said section is selected;
a second node that is coupled to said first potential when said section is not selected, and coupled to said second potential when said section is selected; and
a fuse-programmable ROM coupled to receive said address signals, for storing address information, and coupling said first node to said second node when said address signals do not match said address information.

5,337,279
SCREENING PROCESSES FOR FERROELECTRIC MEMORY DEVICES
Anne K. Gregory; Michael P. Brassington, both of Sunnyvale; Shi-Qing Wang, Campbell, and Norman E. Abt, Burlingame, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Mar. 31, 1992, Ser. No. 861,212
Int. Cl.[5] G11C *7/00, 11/22*
U.S. Cl. 365—201 25 Claims

1. A method for screening a ferroelectric device comprising the steps of:
(a) poling the ferroelectric device;
(b) heating the ferroelectric device to an elevated temperature, said elevated temperature greater than room temperature and less than a Curie temperature of the ferroelectric device;
(c) maintaining said elevated temperature for a given duration;

VOL 1165 ISS 2 AG 9 1994 UMI

(d) cooling the ferroelectric device to a second temperature less than said elevated temperature; and



(e) repeating steps (b)–(d) inclusive, wherein steps (b)–(d) are performed at least a total of two times.

5,337,280

EEPROM CIRCUIT

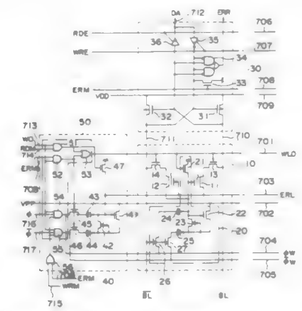
Kouji Tanagawa, and Kazuhiko Miyazaki, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 766,564

Claims priority, application Japan, Sep. 27, 1990, 2-258319; Sep. 27, 1990, 2-258320

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—218 **43 Claims**



1. An EEPROM circuit for storing data into a memory cell comprising:

a pair of complementary bit lines;

at least one high voltage supply line distinct from the bit line pair;

a memory cell having first and second semiconductor memory elements for storing data, each said element having a respective gate electrode and source electrode;

a first writing circuit for writing data into said first semiconductor memory element by providing high voltage thereto from the at least one high voltage supply line, the first writing circuit being connected to said gate electrode of the first semiconductor memory element and to said source electrode of the second semiconductor memory element, the first writing circuit being controlled in operation by either one of the bit line pair;

a second writing circuit for writing data into the second semiconductor memory element by providing high voltage thereto from the at least one high voltage supply line, the second writing circuit being connected to said gate electrode of the second semiconductor memory element and said source electrode of the first semiconductor memory element;

a reading circuit for reading data from the memory cell, the reading circuit reading data stored in the first and second semiconductor memory elements through the bit line pair, and recognizing the data stored in the memory cell in accordance with the respective data; and

a logic control circuit for controlling an operation of the memory cell, the logic control circuit providing the first and second writing circuits with a signal for controlling a supply of the high voltage.

5,337,281

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE IN WHICH DATA CAN BE ERASED ON A BLOCK BASIS AND METHOD OF ERASING DATA ON A BLOCK BASIS IN NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

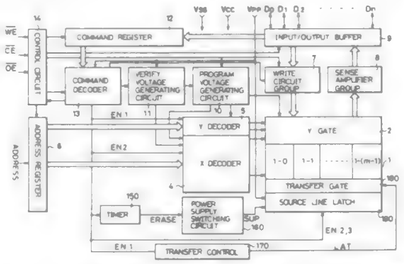
Kazuo Kobayashi, and Makoto Yamamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 948,566

Claims priority, application Japan, Nov. 7, 1991, 3-291301

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—218 **22 Claims**



1. A non-volatile semiconductor memory device, comprising:

a plurality of memory cell array blocks each including a plurality of memory cells in each of which data can be electrically written and erased, arranged in a plurality of columns, and a plurality of bit lines provided corresponding to said plurality of columns;

a plurality of source lines, each corresponding to a memory cell array block and coupled to the plurality of memory cells within a corresponding memory cell array block;

data bus means to which a potential according to externally applied write data is to be supplied;

a plurality of first connecting means provided corresponding to said plurality of memory cell array blocks each for electrically connecting said plurality of bit lines in a corresponding memory cell array block to said data bus means;

a plurality of high voltage generating means provided corresponding to said plurality of memory cell array blocks, and coupled to a corresponding source line and a bit line, each of said plurality of high voltage generating means generating a high voltage for collectively erasing stored data of said plurality of memory cells in a corresponding memory cell array block in response to a potential on the bit line connected by a second connecting means attaining said predetermined potential;

potential supply means responsive to an indication signal indicating a data erase mode for supplying a predetermined potential to said data bus means;

activation means for selectively activating any of said plurality of first connecting means in the data erase mode; and

said second connecting means electrically connecting each of said plurality of high voltage generating means to a predetermined one of said source lines in a corresponding memory cell array block in said data erase mode.

5,337,282

DYNAMIC RANDOM ACCESS MEMORY DEVICE WITH REFRESHING SYSTEM POWERED WITH EXTERNAL POWER SOURCE IN TRIMMING STAGE INSTEAD OF BUILT-IN STEP-DOWN CIRCUIT

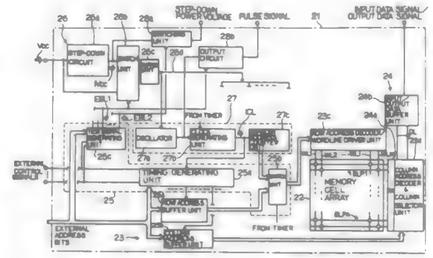
Hiroki Koike, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 23, 1993, Ser. No. 95,200

Claims priority, application Japan, Jul. 28, 1992, 4-222034

Int. Cl.[5] G11C *7/00, 11/40*

U.S. Cl. 365—222 **7 Claims**


STEP-DOWN POWER VOLTAGE
PULSE SIGNAL
21
INPUT DATA SIGNAL OUTPUT DATA SIGNAL
26
26a
26b
26c
26d
STEP-DOWN CIRCUIT
Vcc
Vcc
Vcc

VOL 1165 ISS 2 AG 9 1994 UMI

high voltage is performed independently of the step of continuously monitoring said high voltage whenever a word line of said memory device is driven;

generating second clock signals in response to discovering a drop in the high voltage in said intermittently monitoring step:

operating a second charge pump in response to said second clock signals and applying therefrom charge having the same polarity as said power supply voltage to said capacitive node;

at least one of said generating steps including generating a full cycle of clock signals for pumping charge from the corresponding charge pump and for precharging the corresponding charge pump after starting said generating step, regardless of monitoring a decrease in the high voltage.

5,337,285

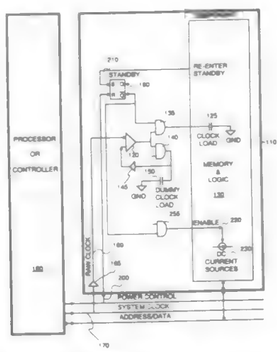
METHOD AND APPARATUS FOR POWER CONTROL IN DEVICES

Frederick A. Ware, Los Altos Hills; James A. Gasbarro, Mountain View; John B. Dillon, Palo Alto; Matthew M. Griffin, Mountain View; Richard M. Barth, and Mark A. Horowitz, both of Palo Alto, all of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Filed May 21, 1993, Ser. No. 65,804

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—227 **36 Claims**



1. A component comprising memory and logic which, when driven by a clock signal, consumes power, said component receiving an external clock signal, said component comprising circuitry to decrease the power consumption of the component when the component is not in use, said circuitry comprising:

a timing generator for receiving the external clock and generating an internal clock signal synchronized to the external clock;

at least one first logic gate means which receives as input a standby signal and the internal clock signal;

a feedback loop which receives the external clock signal, and drives a dummy clock load proportional to at least one clock load of the memory and logic of the component, said feedback loop coupled back to the timing generator to provide the internal clock signal feedback needed to operate the timing generator;

at least one standby latch receiving as input a first power control signal of a first state to reduce the power of at least a portion of the component, said latch upon receipt of the first power control signal generating the standby signal for input to the first logic gate means, such that the clock signal is not input to at least a portion of the memory and logic of the component, shutting down operation of at least a portion of the memory and logic and therefore the power consumed by the memory and logic, said standby latch upon receipt of a second power control signal, generating the standby signal of a second state which enables the internal clock signal to drive the memory and logic to operate;

wherein the operation of the timing generator is unaffected by the standby mode due to the feedback loop driving the dummy clock load, such that minimal latency is incurred switching in and out of standby mode.

5,337,286

SEMICONDUCTOR MEMORY DEVICE

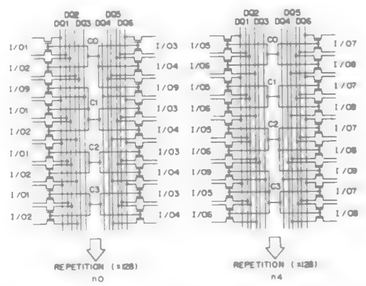
Osamu Ohto; Tomoyuki Hamano; Eiji Kozuka, and Naokazu Miyawaki, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 21, 1992, Ser. No. 993,854

Claims priority, application Japan, Dec. 26, 1991, 345508; Aug. 5, 1992, 209258

Int. Cl.[5] G11C *5/06*

U.S. Cl. 365—230.01 **8 Claims**



1. A semiconductor memory device adapted for storing, as a unit of memory information, multiple-bit data constituted by signal data and remainder data, the signal data consisting of bit data of 2^n bits and the remainder data consisting of bit data of C bits (where C is a natural number, $C<2^n$),

said semiconductor memory device comprising a plurality of circuit blocks including a memory cell group having a plurality of memory cells, and a row decoder and a column decoder adapted for allowing desired memory cells within the memory cell group to be selectively active,

said row decoder and said column decoder being adapted to become operative so that the bit data serving as the signal data is assigned to at least one circuit block by plural bits, and the bit data serving as the remainder data is assigned to any circuit block in which bit assignment has been made.

5,337,287

DUAL PORT SEMICONDUCTOR MEMORY DEVICE

Yasushi Nishikawa, Kawasaki, Japan, assignor to NEC Corporation, Tokyo, Japan

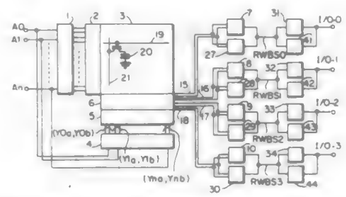
Filed Aug. 20, 1992, Ser. No. 932,571

Claims priority, application Japan, Aug. 20, 1991, 3-232296

Int. Cl.[5] G11L *8/00*

U.S. Cl. 365—230.05 **7 Claims**

1. A semiconductor memory device having a write-per-bit function in which a plurality of control data each indicative of one of a write permission and a write inhibition are supplied respectively to a plurality of data input/output terminals during a first period and a plurality of write data are thereafter supplied respectively to said plurality of data input/output terminals during a second period so that one or ones of said write data corresponding to said control data indicative of said write permission are written into a selected memory cell or cells, said memory device comprising a plurality of main-input buffer circuits each having a first input node connected to an associated one of said data input/output terminals and an output node, a plurality of data lines each connected to said output node of an associated one of said main-input buffer circuits, each of said main-input buffer circuits being activated during both of said first and second periods to transfer an associated one of said control data and an associated one of said write data to an associated one of said data lines, a plurality of sub-input buffer circuits each having a second input node connected to an associated one of said data lines and a pair of second output nodes, a plurality of pairs of bus lines, each pair connected to said pair of second output nodes of an associated one of said sub-input buffer circuits, and means for coupling said pairs of bus lines to selected memory cells, respectively, each of said



sub-input buffer circuits including first means coupled to said second input node and activated during said first period for temporarily holding an associated one of said control data and second means coupled to said pair of second output nodes and said first means and activated during said second period for driving an associated one of said bus lines in response to an associated one of said write data to thereby write said associated one of said write data into an associated one of said selected memory cells when the control data held in said first means indicates said write permission and for bringing said pair of second output nodes into a high impedance state to thereby inhibit said associated one of said write data from being written into said associated one of said selected memory cells when the control data held in said first means indicates said write inhibition.

5,337,288

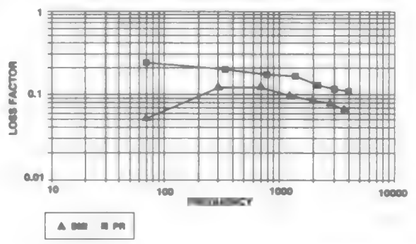
ACOUSTIC AND VIBRATION ATTENUATION COMPOSITE MATERIAL

Usman A. Sorathia, Arnold; Joseph W. Killian, Centreville, and Andrew W. Jarrett, Arnold, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1992, Ser. No. 954,805

Int. Cl.[5] H04K *3/00*

U.S. Cl. 367—1 **7 Claims**



1. An acoustic and vibration attenuation composite which comprises:

a viscoelastic layer having a first and second surface; and

a constraining layer comprising at least one ply of graphite fabric laid-up with curable phenolic resin bonded to one of said surfaces of said viscoelastic layer.

5,337,289

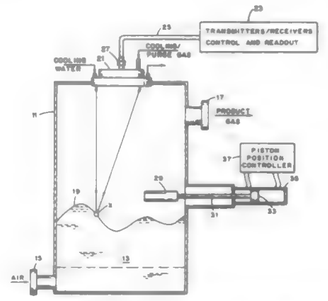
PHASED-ARRAY ULTRASONIC SURFACE CONTOUR MAPPING SYSTEM AND METHOD FOR SOLIDS HOPPERS AND THE LIKE

George E. Fasching, and Nelson S. Smith, Jr., both of Morgantown, W. Va., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jul. 16, 1993, Ser. No. 92,107

Int. Cl.[5] H04R *17/00*

U.S. Cl. 367—140 **12 Claims**



1. An ultrasonic surface contour mapping system comprising:

a material whose surface is to be mapped confined within a known boundary and whose surface is subdivided into preselected scanning areas identified as pixels;

a plurality of transmitter/receiver means for generating ultrasonic energy to be directed onto said surface in response to activation signals applied thereto and receiving echoes of said ultrasonic energy and generating receiver signals in response thereto, said plurality of transmitter/-receiver means being disposed in an ordered array within a single plane above said surface to be monitored;

a transmitter means for generating and applying separate ones of said activation signals to each of said plurality of transmitter/receiver means during a transmit period, said activation signals being in the form of modulated signal bursts having an ordered phased relationship relative to the distance of the respective ones of said transmitter/-receiver means from a selected pixel of said surface being monitored;

a receiver means responsive to said receiver signals during a receive period following said transmit period for separately receiving and storing said receiver signals from each of said transmitter/receiver means in accordance with said ordered phased relationship so that the signals can be combined in phase;

a signal processing means for combining said stored receiver signals to determine the range of said pixel being monitored based on a determination of the two-way sound wave travel time from said combined signal;

a clock signal generator means for generating a clock signal having a selected fixed frequency;

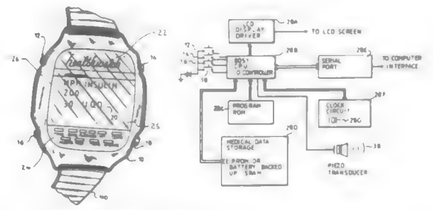
a controller means operable in response to said clock signal for controlling said transmitter and receiver means during said transmit and receive periods to continually scan each of said pixels of said surface so that a plurality of range signal values are generated consecutively corresponding to the range of each pixel of said surface being monitored from said plane of said transmitter/receiver means; and

a display means including an imaging processor means re-

VOL 1165 ISS 2 AG 9 1994 UMI

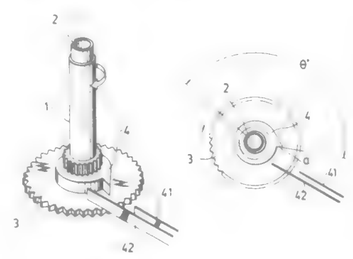
sponsive to said plurality of range signals for generating a real time display of said surface being monitored.

5,337,290
HEALTH WATCH
Phillip Ventimiglia, 40 Lakeview Dr., Cherry Hill, N.J. 08003, and Louis E. Sansone, 286 Woodward Rd., Brooklyn, Conn. 06234
Filed Feb. 3, 1992, Ser. No. 829,428
Int. Cl.[5] G04B *47/00*; G07F *11/00*
U.S. Cl. 368—10 1 Claim



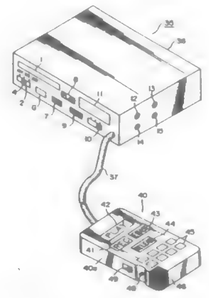
1. A Health-Watch comprising:
a. a watch case;
b. an alphanumeric screen disposed on said watch case, displays both conventional and health-related information on said alphanumeric display screen, a first level of data sets is displayed on said alphanumeric screen and a second level of data sets is transmitted to an external data terminal via a data interface, said first level of data comprises high priority medical information and said second level comprises lower priority, one of the first level of data sets comprises medications currently being taken, one of the first level of data sets comprises a list of chronic conditions, one of the first level of data sets comprises a list of vital signs, one of the first level of data sets comprises a list of allergies, one of the first level of data sets comprises personal information, one of the first level of data sets comprises the time, one of the first level of data sets comprises the date, one of the first level of data sets comprises alarm settings, one of the first level of data sets comprises chronograph information, said alphanumeric screen further comprises a region which displays headings for each of said first level of data sets such that when one data set is displayed, or about to be displayed, the heading corresponding to that data set is highlighted, said alphanumeric screen further comprises an indicator that displays one indication if the information on said screen is complete and displays another indication if said data continues thereby allowing a user to scroll to the next screen, said alphanumeric screen has three display regions, they are alphanumeric data, logo and the active mode, fi the Health-Watch is left in any medical display mode for more than some pre-determined period of time, the display automatically returns to the display of time,
c. electronic circuitry for timing, alarm, data storage, data retrieval, data interface, and data display, disposed within said watch case and contains an Application Integrated circuit including a central processing unit and an Input-/Output controller connected to said central processing unit, a display driver that takes data from said central processing unit and converts it into the electrical signals required by said alphanumeric display, a program read only memory ROM connected to said central processing unit, wherein said ROM contains the operating program for the Health-Watch, a non-volatile memory connected to said central processing unit wherein said non-volatile memory contains said data sets, a clock circuit connected to said CPU, and a serial port connected to said central processing unit such that data in serial format can be input or output from said port using only two conductors so that Health-Watch can be controlled or accessed by an accessory data terminal, one of the second level of data sets comprises family history, one of the second level of data sets comprises history of illnesses, one of the second level of data sets comprises immunization history, one of the second level of data sets comprises operations, one of the second level of data sets comprises results of tests,
d. a MODE button that allows a user to select the mode of data to be displayed and a LAP/CONTINUE button that allows a user to scroll between two display screens, the LAP function is used to time laps when the Health watch is used as a chronograph and the CONTINUE function is used to scroll the next screen if there is more data to display than will fit on a single screen;
e. a transducer that converts said electrical signals into sound for audible alarms; and
f. a computer interface, connected to the output of said serial port, a two conductor plug that can be inserted into said computer interface, a two conductor cable, and an adaptor on the end of said two conductor cable, such that said adaptor may be plugged into an accessory computer, said adaptor conforms to the RS-232 protocol.

5,337,291
EASY SETTING HOUR REPEATING DEVICE
Ghin-Yuan Huang, 2/F, No. 351, Hwa-Chen Road, Hsin-Chuang City, and Ting-Chen Chang, No. 4, Lane 255, Sec. 3, Yang-Hu Rd., Yang-Mei Town, Tou-Yuan, both of Taiwan
Filed Nov. 12, 1993, Ser. No. 151,014
Int. Cl.[5] G04B *19/00, 21/02*
U.S. Cl. 368—75 1 Claim



1. An easy setting hour repeating device for a clock mechanism comprising:
a) a transmission shaft;
b) a minute wheel located on and affixed to the transmission shaft;
c) a cam affixed to the transmission shaft and having a cam claw extending therefrom;
d) a minute hand positioning slot defined by the transmission shaft angularly displaced a predetermined angle from the cam claw;
e) a first contact;
f) a second, resilient contact normally out of contact with the first contact, the second contact located so as to be engaged and resiliently displaced by the cam claw as the transmission shaft rotates whereby the cam claw disengages from the second contact when the minute hand positioning slot is in a predetermined position, the resiliency of the second contact being such that it comes into contact with the first contact after disengagement from the cam claw.

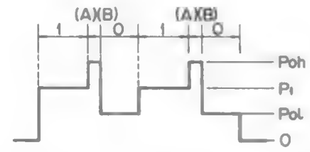
5,337,292
RECORDING/REPRODUCING APPARATUS WITH REMOTE CONTROLLER
Harumi Aoki, Iruma, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 567,073, Aug. 14, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 835,074
Claims priority, application Japan, Aug. 16, 1989, 1-211062
Int. Cl.[5] H04B *1/20*
U.S. Cl. 369—2 20 Claims



1. A recording/reproducing system comprising an externally controllable recording/reproducing apparatus capable of recording an inputted audio signal onto a recording medium, and a remote controller adapted for controlling said recording-/reproducing apparatus, said system comprising:
a remote controller comprising means capable of remotely controlling at least a recording operation of said recording/reproducing apparatus;
means, provided on said remote controller, for picking up sound waves and converting the sound waves into an audio signal adapted to be stored;
said recording/reproducing apparatus comprising:
manually actuatable power switch means for controlling a power supply for said recording/reproducing system;
first audio signal receiving means for receiving the audio signal produced by said picking up and converting means; and
second audio signal receiving means for receiving an audio signal other than the audio signal which is produced by said picking up and converting means;
said remote controller further comprising selection means for selecting one of said first and second audio signal receiving means; and
said recording/reproducing apparatus further comprising control means for electrically connecting the one of said first and second audio signal receiving means, which is selected by said selection means, to said apparatus.

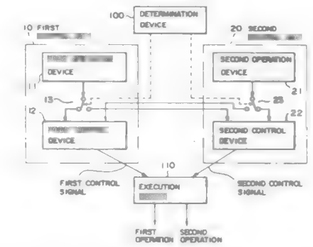
5,337,293
MAGNETO-OPTICAL RECORDING METHOD AND RECORDING MEDIUM FOR USE IN THE SAME
Toshiaki Tokita, Zama; Motoharu Tanaka, Mishima, and Atsuyuki Watada, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jan. 24, 1992, Ser. No. 825,015
Claims priority, application Japan, Jan. 24, 1991, 3-024109
Int. Cl.[5] G11B *11/12*
U.S. Cl. 369—13 1 Claim

1. A magneto-optical recording method capable of overwriting on a magneto-optical recording medium comprising a recording layer consisting of a single magnetic layer with magnetic anisotropy comprising the step of applying a laser beam with a light power level P_1 to said recording layer when a binary coded signal "1" is written therein under a fixed external magnetic field; and the steps of successively applying a laser beam with a light power level Poh and a laser beam with a light power level Pol to said recording layer when a



binary coded signal "0" is written therein under a fixed external magnetic field, wherein Pol, P_1 and Poh are in the relationship of $0<Pol<P_1<Poh$.

5,337,294
CONTROL SYSTEM FOR CONTROLLING PLURALITY OF OPERATIONS OF COMMON CATEGORY BY PLURALITY OF CONTROL UNITS
Takashi Ito, Tachikawa, Japan, assignor to TEAC Corporation, Japan
Filed Nov. 24, 1992, Ser. No. 980,903
Claims priority, application Japan, Dec. 2, 1991, 3-318153
Int. Cl.[5] H02J *9/00*
U.S. Cl. 369—24 11 Claims



1. A control system comprising:
execution means for executing a predetermined action either in a first predetermined manner or in a second predetermined manner; a first control unit comprising:
first operation means for an operator for performing an operation thereon, said performed operation causing said first operation means to provide a corresponding operation signal; and
first control means for, in response to the operation signal being provided by said first operation means, providing a corresponding control signal;
a second control unit comprising:
second operation means for an operator for performing an operation thereon, said performed operation causing said second operation means to provide a corresponding operation signal; and
second control means for either sending the operation signal provided by said second operation means to said first control unit or providing a control signal for controlling said execution means so as to make said execution means execute said predetermined action either in said first predetermined manner if said second control means receives the control signal provided by said first control means or in said second predetermined manner if said second control means receives the operation signal provided by said second operation means; and
determination means for determining which process of a first process and a second process is to be executed, said second control means providing the control signal corresponding to

VOL 1165 ISS 2 AG 9 1994 UMI

the operation signal provided by said second operation means to said execution means in said first process and the operation signal provided by said second operation means being further sent to said first control means in said second process; and wherein:

said first control means provides the corresponding control signal to said second control means if said first control means receives the operation signal provided by said first operation means; and also

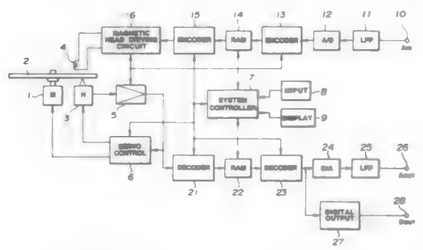
said first control means provides the corresponding control signal to said second control means if the first control means receives, via said second control means, the operation signal provided by said second operation means.

5,337,295

DIGITAL AUDIO SIGNAL REPRODUCING APPARATUS

Yasuaki Maeda, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed May 19, 1992, Ser. No. 886,035
Claims priority, application Japan, May 25, 1991, 3-149367
Int. Cl.[5] G11B *19/20, 27/10*
U.S. Cl. 369—32 **15 Claims**



1. A digital audio signal reproducing apparatus for reproducing digital audio signals continuously recorded on a recording medium, comprising:

reproducing means for sequentially reading recording data from said recording medium at a second transfer rate faster than a first transfer rate required of playback output data, said recording medium being rotationally driven at a constant velocity;

memory means in which the playback data read out by said reproducing means is sequentially written at said second transfer rate and from which the written playback data are continuously read out at said first transfer rate as said playback output data, the memory means being capable of storing a data volume;

playback controlling means for effecting writing control in said memory means so that said playback data of a second predetermined volume is written when the data volume stored in said memory means becomes lower than a first predetermined volume so that a volume of playback data in excess of said first predetermined volume is stored at all times in said memory means, said playback controlling means effecting playback position control so that said playback data sequentially written in said memory means by said writing control is continuously read from the recording track of said recording medium;

key inputting means; and

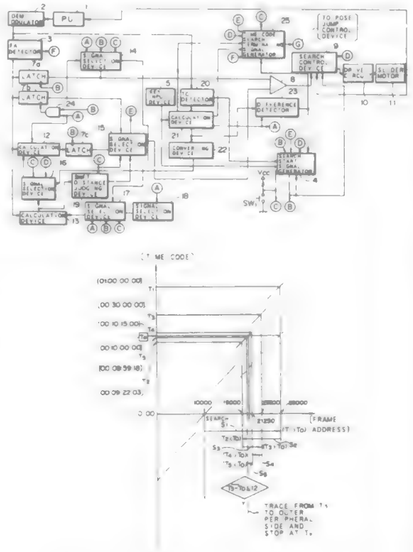
pause controlling means for re-initiating data readout from said memory means responsive to releasing of actuation of said key inputting means.

5,337,296

APPARATUS AND METHOD FOR SEARCHING A TARGET TIME CODE RECORDED ON DISKS

Hirotoshi Okubo, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 25, 1993, Ser. No. 67,632
Claims priority, application Japan, May 29, 1992, 4-139484
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—32 **6 Claims**



1. A device for searching a target time code recorded on a disk on which time codes and continuous frame addresses are recorded, said device comprising:

a pick up for reproducing information including a current time code and a current frame address corresponding to a current reproduction position of the pickup from said disk;

means for calculating a time code difference between a target time code and a current time code reproduced by said pickup;

means for setting a target frame address on the basis of the calculated time code difference and the current frame address reproduced by said pickup;

means for calculating shift information comprising a shift distance and a shift direction from the current reproduction position to the position of the target frame address on the basis of the target frame address and the current frame address;

means for shifting said pickup on the basis of the shift information;

means for storing the current frame address when said shifting means shifts said pickup in an outer peripheral direction of the disk; and

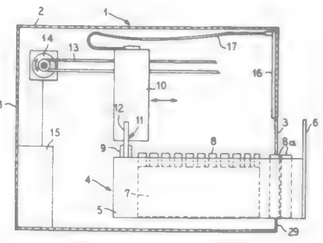
means for allowing the pickup to continuously reproducing information from the disk from the position of the current frame address stored in said storing means when the shift distance becomes within a predetermined distance value or when the time code difference becomes within a predetermined difference value until the current reproduction position reaches the reproduction position whose time code is near the target time code.

5,337,297

MAGAZINE DRAWER MANIPULATION SYSTEM FOR A DATA CARRIER LOADER

Halvor O. Kvifte, Haslum, and Guttorm Rudi, Fjellhamar, both of Norway, assignors to Tandberg Data Storage A/S, Oslo, Norway

Filed May 4, 1993, Ser. No. 56,756
Int. Cl.[5] G11B *15/68*
U.S. Cl. 369—36 **11 Claims**



7. A data carrier loader comprising:

a housing having a portion formed by a single seamless tube having a pair of upper guide rails and a pair of lower guide rails integrally formed as part of said tube, said glide rails extending in a longitudinal direction of said housing;

a drawer having at least one pair of roller assemblies disposed at opposite sides of said drawer and respectively engaging said lower glide rails so that said drawer is slidable into and out of said housing in said longitudinal direction, said drawer having a region adapted to removably hold a plurality of data carriers;

a data reader for interacting with data carried by said data carriers and having a pair of roller assemblies respectively engaging said upper glide rails so that said data reader is movable in said housing in said longitudinal direction above said drawer,

reader positioning drive means for moving said data reader along said upper rails over said drawer in said housing to a selected location above said drawer;

transfer means carried by said data reader for transferring a data carrier between said drawer and said data reader and for engaging said engagement assembly for, when engaged with said engagement assembly, sliding said drawer into and out of said housing using said reader positioning drive means by moving said drawer together with said data reader.

5,337,298

RAPID ACCESS OPTICAL SCANNER HAVING A LONG OPTICAL ELEMENT

Gerard E. van Rosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,326
Claims priority, application European Pat. Off., Jun. 19, 1992, 92201789.2
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.22 **26 Claims**

1. A device for optically scanning a surface, comprising

a radiation source for supplying a radiation beam,

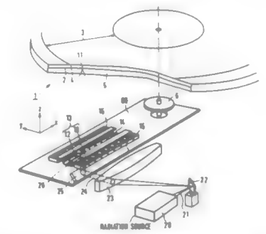
means for directing said beam along a first path,

an objective lens having an optical axis, mounted in an objective system for receiving said radiation beam from said first path and for focusing the radiation beam along a second path generally parallel to said axis on said surface, and

drive means for displacing the objective system over a given stroke crossing a multiplicity of scan-resolvable locations in a direction transverse to said axis,

wherein said means for directing includes an optical-strength element having a length in a length direction approximately equal to said stroke, disposed in said first path with said length direction transverse to a portion of said first path, and

a scanning device for scanning the radiation beam across said optical-strength element in a direction parallel to said



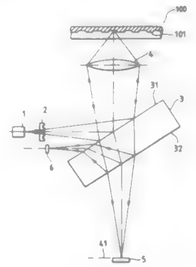
length direction, thereby displacing said portion of said first path over a distance approximately equal to said stroke, in a direction transverse to the direction of said portion while maintaining that portion of the radiation beam parallel to itself.

5,337,299

OPTICAL INFORMATION-REPRODUCING APPARATUS USING SEPARATELY LOCATED PHOTO DETECTOR ASSEMBLIES

Shinichi Takahashi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 2, 1992, Ser. No. 892,234
Claims priority, application Japan, Nov. 18, 1991, 3-301774
The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.
Int. Cl.[5] G11B *7/12*
U.S. Cl. 369—44.37 **3 Claims**



1. An optical information-reproducing apparatus comprising:

a light source for emitting light beams for reading data from a recording surface of a recording medium;

a diffraction grating for diffracting a light beam emitted from said light source, thereby to split said light beam into three light beams arranged in respective diffraction directions;

a plane-parallel plate means having two major sides, a first side and a second side, parallel to each other,

said plane-parallel plate means for:

(a) reflecting the three light beams on the outer surface of the first side toward the recording surface of the recording medium,

(b) receiving the signal light beams reflected from the recording surface of the recording medium,

VOL 1165 ISS 2 AG 9 1994 UMI

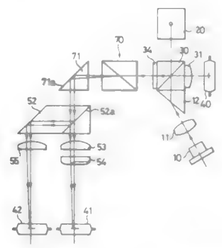
(c) allowing the received signal light beams to transmit therethrough,
(d) emitting the received signal light beams from the outer surface of said second side of said plane-parallel plate means,
(e) reflecting part of the signal light beams on the inner surface of the second side,
(f) allowing the reflected signal light beams to pass therethrough, and
(g) causing the reflected signal light beams to be emitted from the outer surface of the first side of said plane-parallel plate;
an objective lens for imaging the three signal light beams, which are reflected on the outer surface of the first side of said plane-parallel plate, on the recording surface of the recording medium;
first photo detecting means for detecting one of:
(a) the center light beam, and
(b) the side light beams of the three signal light beams emanating from the outer surface of the second side of said plane-parallel plate, thereby to detect the signal light; and
second photo detecting means for detecting the other of:
(a) the side light beams, and
(b) the central light beam of the three signal light beams emanating from the outer surface of the second side of said plane-parallel plate, thereby to detect the signal light.

5,337,300

SIGNAL SENSING DEVICE OF MAGNETO-OPTIC DISK DEVICE FOR DETECTING ERROR SIGNAL AND INFORMATION RECORD SIGNALS WITH COMMON PHOTO SENSOR

Suguru Takishima, and Toshiyuki Kase, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 9, 1992, Ser. No. 818,534
Claims priority, application Japan, Jan. 11, 1991, 3-069595; Oct. 30, 1991, 3-284703
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.41 **22 Claims**



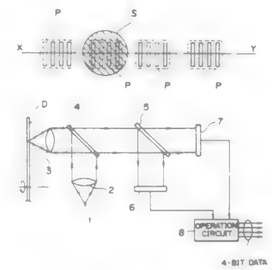
1. A signal sensing device for a magneto-optic disk device, comprising:
means for splitting a beam reflected from a magneto-optic disk, said splitting means comprising a first splitting function by which the reflected beam is split into a P-polarized-component, comprising a beam having only P-polarized light, and an S-polarized-component, comprising a beam having only S-polarized light, and a second splitting function by which each of said P-polarized-component and said S-polarized-component are split into a first optical path and a second optical path, respectively;
a first photo sensor comprising a beam receiving divided area and a beam receiving undivided area, said beam receiving divided area being arranged to receive one of the P-polarized-component and the S-polarized-component which is directed in said first optical path, to sense an error signal, and said beam receiving undivided area being arranged to receive the other of the P-polarized-component and the S-polarized-component which is directed in said first optical path; and
a second photo sensor comprising a beam receiving undivided area provided for receiving one the P-polarized-component and the S-polarized-component which is directed in said second optical path.

5,337,301

OPTICAL RECORDING MEDIUM, APPARATUS FOR REPRODUCING THE SAME AND METHOD OF RECORDING AND REPRODUCING THE SAME

Satoshi Sugiura, and Yuzo Yamakawa, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 991,748
Claims priority, application Japan, Jan. 17, 1992, 4-006887
Int. Cl.[5] G11B *7/007*
U.S. Cl. 369—110 **14 Claims**



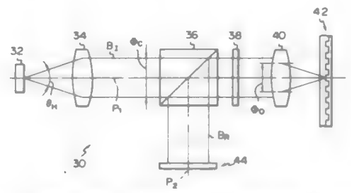
10. An apparatus for reproducing information recorded on an optical recording medium comprising: an information recording substrate; and pits formed on the information recording substrate, each of the pits corresponding to a recording information unit comprising a plurality of bits, and having one of predetermined patterns for respectively generating different optical characteristics by projecting a light spot onto the pits, said reproducing apparatus comprising:
light projecting means for projecting the light spot of a predetermined size onto the pits;
light receiving means, optically coupled to said light projecting means, for receiving one of a reflected light reflected by each of the pits and a passing-through light passing through each of the pits from the light spot and for generating an electric signal corresponding to the received light said light means comprising light separating means for separating the light from the light spot into an E-polarized light and an H-polarized light, E-polarized light receiving means, optically coupled to said light separating means, for receiving the E-polarized light and for generating a first electric signal corresponding to the E-polarized light, and H-polarized light receiving means, optically coupled to said light separating means, for receiving the H-polarized light and for generating a second electric signal corresponding to the H-polarized light.

5,337,302

OPTICAL DATA RECORDING/REPRODUCTION APPARATUS FOR USE WITH SEMICONDUCTOR LASERS AS A LIGHT SOURCE

Hiroshi Gotoh, Kawasaki; Masami Emoto, and Kiyoshi Yokomori, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 797,154, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 613,950, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 28,043, Mar. 20, 1987, abandoned, which is a continuation of Ser. No. 712,656, Mar. 18, 1985, abandoned. This application Jul. 13, 1993, Ser. No. 93,974
Claims priority, application Japan, Mar. 19, 1984, 59-51089
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—112 **3 Claims**



1. An optical data recording and reproducing apparatus comprising:
a semiconductor laser functioning as a light source;
a single condenser lens having a numerical aperture NAc of 0.2 or more for condensing a beam issuing from said semiconductor laser to provide a parallel beam;
a single objective lens for focusing the parallel beam incident thereto a small spot at a recording medium which has tracks thereon;
a single beam splitter interposed between said single objective lens and said single condenser lens for splitting the light reflected by the recording medium;
a quarter-wave plate located between said beam splitter and said single objective lens; and
means for detecting a track position associated with said small spot in response to light which is reflected by the recording medium placed in the beam provided by said beam splitter, there holding a relation:

$$f_c \cdot \sin(\theta_H/2)/f_o \cdot NA_o \geq 0.5$$

where f_c is a focal length of the condenser lens, θ_H is a half angle of light issuing from the semiconductor laser in a direction parallel to a junction plane of the semiconductor laser, and f_o and NA_o respectively are a focal length and a numerical aperture of the objective lens and wherein no optical elements save for said single condenser lens, said single objective lens said quarter-wave plate and said single beam splitter shape said beam.

5,337,303

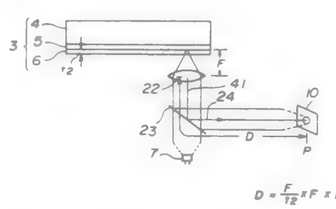
DISK STORAGE DEVICE HAVING LIGHT RECEIVING DEVICE LOCATED AT IMPROVED POSITION

Miyozo Maeda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 19, 1993, Ser. No. 19,837
Claims priority, application Japan, Feb. 27, 1992, 4-041595
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—112 **11 Claims**

1. A disk storage device comprising:
a light source emitting a light;
an objective lens for focusing the light on a surface of a recording film of a disk so that the light passes only through a protection film protecting the recording film;
detector means, optically coupled to said light source and the objective lens, for receiving the light reflected by the surface of the recording film and for reproducing information recorded on the recording film; and
driving means for rotating the disk,
said detector means being located at a position P away from a beam splitter to satisfy the following condition:

$$D \geq F \times A \times \alpha$$



$$D = \frac{F}{T2} \times F \times 1.5$$

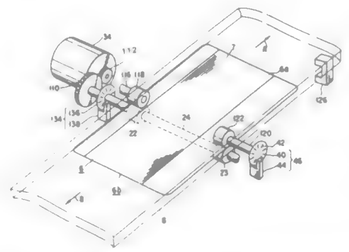
where D is the distance of the light path from the objective lens to the detector means, F is a focal length of the objective lens, A is equal to F/t2 where T2 is a thickness of the protection film, and α is a constant equal to or greater than 1.0.

5,337,304

OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS

Hiroshi Hashi, and Tsuyoshi Togawa, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,848
Claims priority, application Japan, Jun. 17, 1991, 3-170433; Jul. 10, 1991, 3-169777; Jul. 15, 1991, 3-173835
Int. Cl.[5] G11B *17/30, 23/00*
U.S. Cl. 369—215 **12 Claims**



1. An optical information recording/reproducing apparatus for recording/reproducing information on/from an optical card having a plurality of information tracks, said apparatus comprising:
a frame having a convey path for the optical card;
an optical head for recording/reproducing information on/-from the optical card, said optical head being movable in a direction perpendicular to information tracks on the optical card;
drive means for moving the optical card relative to the optical head;
movement amount detecting means for detecting the amount of movement of the optical card; and
driving amount detecting means, separate from said movement amount detecting means, for detecting a driving amount of the drive means, in order to detect an amount of slip of said drive means relative to the optical card.

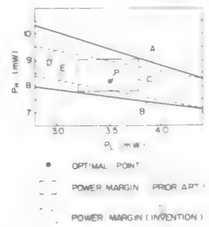
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,305

INFORMATION STORAGE SYSTEM

Kazuo Hashima; Yuji Kawano; Tatsuya Fukami; Kazuhiko Tsutsumi; Yoshiyuki Nakaki; Takashi Tokunaga, and Yoshio Fujii, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 16,030
Claims priority, application Japan, Mar. 17, 1992, 4-060254
Int. Cl.[5] G11B *7/085*
U.S. Cl. 369—116 **8 Claims**



1. An information storage system for recording and reproducing information by use of irradiating a light on an information medium capable of recording new information without erasing previously recorded information, the system comprising:

a drive circuit for executing overwriting of information on the medium by modulating the intensity of light irradiated on said information medium into binary values, wherein a more intense light for overwriting information having the value of P_H and a less intense light having the value of P_L, said drive circuit being responsive to a control signal, and

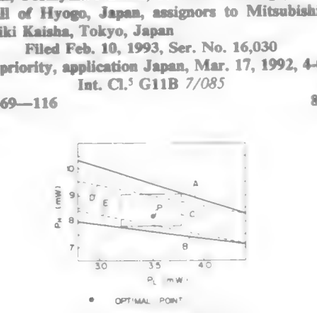
means for maintaining $P_H+\alpha P_L$ at a constant level, said means for maintaining monitoring the irradiated light and having means for providing the control signal so as to control the level of irradiated light; wherein α is a constant, the value of which depends on the conditions at the time of recording.

5,337,306

DIGITAL TANDEM CHANNEL UNIT INTERFACE FOR TELECOMMUNICATIONS NETWORK

Clifford L. Hall, Huntsville, Ala., assignor to Adtran Corporation, Huntsville, Ala.

Division of Ser. No. 752,777, Aug. 30, 1991. This application Jul. 17, 1992, Ser. No. 916,474
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—13 **10 Claims**



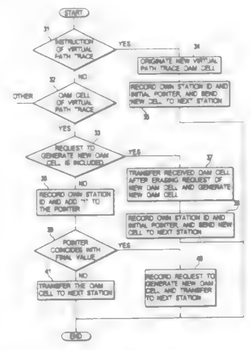
6. A telephone communications network comprising a digital communications link over which digitized communication signals, including information signals and telephone equipment operation control signals that have been encoded into digital format, are conveyed, a plurality of 1st through Nth intermediate communication units coupled in cascade in said digital communications link, a test site disposed at a location having access to said digital communication link and being operative to transmit therefrom an ith sequence of signals over said digital communication link, where $1 \leqq i \leqq N$, said ith sequence of signals being uniquely associated with a selected ith one of said plurality of 1st through Nth intermediate communication units, said ith sequence of signals containing a set of respectively different first, second and third signals as well as $(i-1)$ repetitions of the same pair of additional signals, said same pair of additional signals being formed of one of said first, second and third signals and a fourth signal, which is different from each of said first, second and third signals, said $(i-1)$ repetitions of the same pair of additional signals being uniquely associated with said selected ith one of said plurality of 1st through Nth intermediate communication units, said selected ith one of said plurality of 1st through Nth intermediate communication units being operative, in response to an ith sequence of signals uniquely associated with said selected ith intermediate communication unit, to provide a loopback path and returning therefrom, onto said interstation digital communications link, a prescribed test signal, so that, via said first location that provides access to said digital communications link, said test site may conduct a signal measurement with respect to said prescribed test signal returned from said selected ith one of said plurality of 1st through Nth intermediate communication units.

5,337,307

METHOD OF TRACING VIRTUAL PATH OPERATION INFORMATION AND APPARATUS APPLIED THERETO

Mutsumi Sato; Motoo Nishihara, both of Tokyo; Haruhiko Matsunaga, Yokosuka, and Hiromi Ueda, Yokohama, all of Japan, assignors to NEC Corporation and Nippon Telegraph & Telephone Corporation, both of Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 975,377
Claims priority, application Japan, Nov. 13, 1991, 3-297407
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **4 Claims**



1. A method of tracing virtual path operation information in an asynchronous transfer mode telecommunications network having a plurality of stations each of which, when instructed to trace a virtual path by an operation and maintenance control center, originates and sends a virtual path trace OAM cell bound for a destination station, and when receiving a virtual path trace OAM cell, records its own virtual path operation information in the received virtual path trace OAM cell and then transfers the virtual path trace OAM cell to a next station on the virtual path, such that the operation and maintenance control center can trace the virtual path by collecting the

virtual path trace OAM cell, said method comprising the steps of:

determining, in each of said stations except for the destination station whether a received virtual path trace OAM cell contains a request to generate an additional new virtual path trace OAM cell;

recording in each of the stations except the destination station, a request to generate an additional new virtual path trace OAM cell in said received virtual path trace OAM cell and transferring said received virtual path trace OAM cell to the next station when there remains no space to enter virtual path operation information for the next station in said received virtual path trace OAM cell;

determining, in each of said stations, whether there is space in said received virtual path trace OAM cell for recording virtual path operation information for a next station;

recording, in each of said stations, a request to generate an additional new virtual path trace OAM cell in said received virtual path trace OAM cell and transferring said received virtual path trace OAM cell to the next station when there is no space in said received virtual path trace OAM cell for recording virtual path operation information for the next station; and

generating, in each of said stations except the destination station, an additional new virtual path trace OAM cell after erasing the request to generate an additional new virtual path trace OAM cell when a request to generate an additional new virtual path trace OAM cell is present;

recording, in each of said stations except the destination station, a station's own virtual path operation information into the new virtual path trace OAM cell and transferring the newly generated virtual path trace OAM cell, following the received virtual path trace OAM cell, to the next station; and

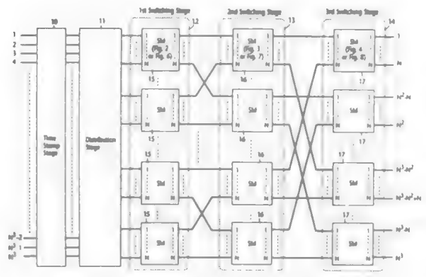
reporting, from a station listed as the destination station in said received virtual path trace OAM cell, the arrival of the virtual path trace OAM cell to the operation and maintenance control center when receiving the virtual path trace OAM cell.

5,337,308

LOW DELAY ATM SWITCHING SYSTEM USING IDLE CELLS STAMPED WITH REFERENCE TIME

Ruixue Fan, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,941
Claims priority, application Japan, Jan. 27, 1992, 4-011544
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—60 **2 Claims**



1. A multi-stage switching system having a plurality of input ports and a plurality of output ports, the system comprising:

a pre-switching stage connected to said input ports for receiving incoming cells therefrom, attaching a time stamp to each of said cells indicating the time of arrival of the cell at said input ports, and transferring the cell to one of a plurality of output terminals;

a first switching stage comprising a plurality of switching modules each having a plurality of input links connected to the output terminals of said pre-switching stage, and a plurality of output links, each of the switching modules of the first switching stage comprising;

a plurality of output buffers connected respectively to said output links of the switching module;

a self-routing switch for routing a cell from any of said input links of the switching module to any one of said output buffers according to a destination address contained in the cell; and

means for identifying an empty one of said output buffers, producing an idle cell having a time stamp indicating a current time, and supplying the idle cell to one of said output links corresponding to the identified output buffer,

a second switching stage comprising a plurality of switching modules each having a plurality of input links connected to respective output links of the first switching stage, and a plurality of output links; and

a third switching stage comprising a plurality of switching modules each having a plurality of input links connected to respective output links of the second switching stage, and a plurality of output links connected to the output ports of said switching system, each of the switching modules of said second and third switching stages comprising:

a plurality of input buffers connected respectively to the input links of the switching module for storing cells from a preceding stage;

a plurality of output buffers connected respectively to the output links of the switching module;

a self-routing switch for routing a cell from any of said input buffers to any of said output buffers according to a destination address contained in the cell; and

detector means connected to the input links of the switching module for sequentially detecting a cell having a minimum time stamp value and sequentially causing one of the input buffers to launch the detected cell into said self-routing switch,

each of the switching modules of the second switching stage further comprising means for identifying an empty one of the output buffers of the switching module, producing an idle cell having the minimum time stamp value detected by the detector means of the switching module, and supplying the idle cell to one of the output links of the switching module corresponding to the identified output buffer,

wherein each switching module of said second and third switching stages further comprises means for overwriting an idle cell in each of the input buffers of the switching module with an idle cell of later arrival.

5,337,309

PORT ARRIVAL IDENTIFICATION FOR COMPUTER NETWORK PACKETS

Robert L. Faulk, Jr., Roseville, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 693,845, May 1, 1991, Pat. No. 5,268,901. This application Jul. 9, 1993, Ser. No. 90,391
Int. Cl.[5] H04L *12/46, 12/44*
U.S. Cl. 370—60 **3 Claims**

1. Within a multiple port network device connected to a network, a method for detecting and recording by which port of the multiple port network device other network devices communicate with the multiple port network device, the method comprising the steps of:

(a) maintaining a table in a memory, the table in the memory having entries which identify by which port of the multiple port network device other network devices communicate with the multiple port network device;

(b) updating the table only when the multiple port network device does not handle a predetermined number of pack-

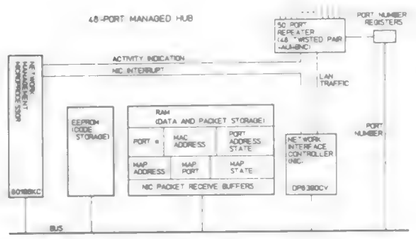
VOL 1165 ISS 2 AG 9 1994 UMI

ets without entering an idle state, the table being updated by the following substeps:

(b.1) monitoring packets received by the multiple port network device;

(b.2) when a packet is received by the multiple port network device, performing the following substeps:

(b.2.1) determining a port number over which port the multiple port network device received the packet,



(b.2.2) determining a source address of a network device from which the packet originated, and

(b.2.3) when the source address is not listed in the table, updating the table with an entry for the source address which includes the port number; and,

(c) when the multiple port network device handles a predetermined number of packets without entering an idle state, continuing to receive packets by the multiple port network device and suspending updating of the table.

5,337,310

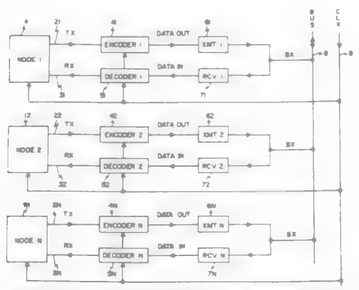
BACKPLANE COMMUNICATION SYSTEM AND METHOD

Sergey Selyutin, Arlington, Mass., assignor to Chipcom Corporation, Southborough, Mass.

Filed Dec. 10, 1992, Ser. No. 988,687

Int. Cl.[5] H04L *12/40*

U.S. Cl. 370—85.3 **21 Claims**



ARCHITECTURE BACKPLANE COMMUNICATION SYSTEM

1. A backplane communication system comprising:

a backplane bus;

a plurality of transmitter means for transmitting data packets onto said backplane bus, said backplane bus and each of said transmitter means cooperating to have a substantially simultaneous transmission from two transmission means combine to cause a collision code on said backplane bus, each of said transmission means also preceding a data packet transmission onto said backplane bus by transmitting said collision code on said backplane bus; and

receiver means for receiving said data packets from said backplane bus, said receiver means being in an idle state when there is no data packet on said backplane bus, said receiver means transitioning to a receive enable state after receiving said collision code from said backplane bus, said receiver means transitioning from said receive enable state to a collision state when said collision code is received in said receive enable state.

5,337,311

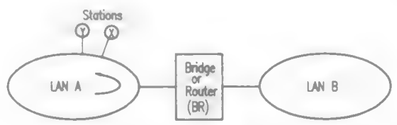
APPARATUS FOR CONNECTING TWO FIBER DISTRIBUTED DATA INTERFACE RINGS

Louis P. Herzberg, Monsey; Baiju V. Patel, Mt. Kisco; Antonio Ruiz, Yorktown Heights; Frank A. Schaffa, Ossining, and Marc H. Willebeek-LeMair, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1992, Ser. No. 997,796

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.14 **8 Claims**



1. In a communication network employing a timed token protocol, an apparatus for adjusting an asynchronous bandwidth made available to a surrogate station operating in both first and second rings of stations, comprising:

a surrogate counter having a prescribed value being a number of stations from said second ring represented on said first ring by said surrogate station, said surrogate counter being reset to said prescribed value when said surrogate station receives a token from said first ring and forwards the token without capturing it, said surrogate counter being decremented by one when said surrogate station forwards a token after capturing it, said surrogate counter being operatively coupled to said first and second rings of stations; and

a media access element (MAE) having an adjustable token rotation timer (ATRT), said adjustable token rotation timer being reset when said surrogate station detects a token, said adjustable token rotation timer being reset again when said surrogate station forwards a token, if said surrogate counter is greater than zero.

5,337,312

COMMUNICATIONS NETWORK AND METHOD OF REGULATING ACCESS TO THE BUSSES IN SAID NETWORK

Peter L. Heinzmann, Windlach; Johann R. Mueller, Langnau am Albis, and Mehdi M. Nassehi, Horgen, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1991, Ser. No. 722,461

Claims priority, application European Pat. Off., Mar. 15, 1991, 91810171.8

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.9 **10 Claims**

1. A communications network (1) comprising two unidirectional counterflowing transmission busses (4, 5), a plurality of stations (3) each connected to both busses and each station being identified by a label, and at least one headend unit (2) for generating time slots (6) on said busses (4,5),

in which network the headend unit (2) comprises:

means for regularly releasing request poll messages, each identified by a cycle number, and containing at least one reservation field (11; 15),

means for issuing slots (6) in numbered cycles said slots being provided for transmitting data,

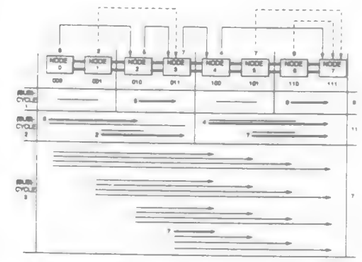
a global reservation (12) queue for storing access requests

from the stations, and which network each station (3) comprises

a local reservation queue (13) for storing a value indicative of a number of locally requested slots and a cycle number for which the slots are requested, and wherein

each station is provided with means for requesting slot access by amending information in said reservation field (11; 15) in a passing request poll message; characterized by

means (14) in each station for logically combining by means of a predetermined logical function, a source station label (FIG. 5) and a destination station label (FIG. 5), for data to be transmitted,



means for deriving a first control number from a source station identification label and destination station identification label combination, such first control number corresponding to a particular cycle number; and

means in each station for identifying whether a passing request poll message carries a cycle number corresponding to said first control number, and upon matching, for amending the reservation field of said request poll message to reflect the number of requested slots for data to be transmitted.

5,337,313

METHOD AND APPARATUS FOR PRESERVING PACKET SQUENCING IN A PACKET TRANSMISSION SYSTEM

Dale R. Buchholz, Palatine; William K. Doss, Lake In The Hills; Karen E. Robbins; Mark A. Yednak, both of Lake Zurich, and R. Lee Hamilton, Jr., Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 12, 1992, Ser. No. 975,360

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—94.1 **21 Claims**

1. A method, for in a packet transmission system, for preserving the sequential relationship of a data stream of data packets generated by a plurality of source devices and communicated between a first terminal and a second terminal over channels which introduce ordering errors, comprising the steps of:

at said first terminal;

identifying data packets from within the data stream as a function of source device identification information;

generating data packet sequence information for the identified data packets;

storing in first terminal memory, values corresponding to data packet sequence information, indexed as a function of source device identification; and

transmitting first terminal transmissions comprising data packets, source device identification information and packet sequence information to said second terminal having first terminal source device and data packet sequence information;

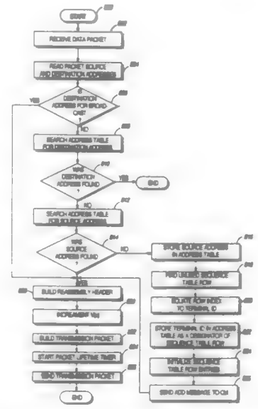
at said second terminal;

receiving said first terminal transmissions;

fetching from second terminal memory, first terminal data packet sequence information when addressed by first terminal source device identification information;

comparing fetched data packet sequence information with received data packet sequence information;

forwarding a received data packet for further processing



when the sequence information sequence numbers match; and

storing at least some of the received data packets in second terminal memory in an order determined by the sequence information when the sequence information sequence numbers do not match.

5,337,314

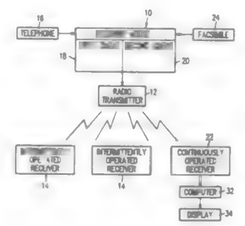
WIRELESS FACSIMILE COMPUTER SLATE

Don G. Hoff, Tiburon, Calif., and Lawrence H. Ragan, Richardson, Tex., assignors to Seiko Corp. and Seiko Epson Corp., both of Japan

Continuation of Ser. No. 515,810, Apr. 27, 1990, Pat. No. 5,166,932. This application Nov. 23, 1992, Ser. No. 979,743

Int. Cl.[5] H04G *7/02*

U.S. Cl. 370—94.1 **5 Claims**



1. A message transmission system that includes in combination,

radio transmission means for transmitting messages utilizing a time slot protocol, each message having as a part thereof first indicia designating the intended receiver of said message, and second indicia indicating a message type, said types including a first type message and a second type of message,

a plurality of intermittently operated radio paging receivers, each of which has an associated first indicia, and means for receiving messages transmitted by said transmission means which include the first indicia associated with said receiver, and an indicia indicating a first type of message,

a plurality of lap top computers, each particular one of said lap

VOL 1165 ISS 2 AUG 9 1994 UMI

top computers having an associated first indicia, and means for receiving messages transmitted by said transmission means which include the first indicia associated with said particular lap top computer and an indicia indicating a second type of message.

5,337,315

STUFFING PROCESS FOR REDUCING WAITING TIME JITTER AND DEVICE FOR EXECUTING THE PROCESS

Wolfgang Ehrlich, Allmersbach im Tal, Fed. Rep. of Germany, assignor to Ant Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

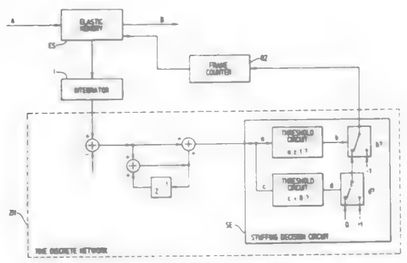
PCT No. PCT/DE91/00205, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO91/16774, PCT Pub. Date Oct. 31, 1991

PCT Filed Mar. 9, 1991, Ser. No. 940,886

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013317

Int. Cl.[5] H04J *3/06*

U.S. Cl. 370—102 5 Claims



1. In a stuffing process for reducing waiting time jitter, which process includes the steps of:

a. supplying a first digital signal (A) with a first bit rate to a synchronizer and writing the first digital signal into an elastic memory (ES) in the synchronizer with a first clock pulse (t_A) having a pulse rate which corresponds to the first bit rate of the first digital signal (A);

b. reading a second digital signal (B) at a second bit rate out of the elastic memory (ES) with a second clock pulse (t_B) having a pulse rate which corresponds to the second bit rate of the second digital signal (B), whereby the elastic memory (ES) will have a mean loading; and

c. in a frame counter (RZ), generating stuffing frames of the second digital signal (B), controlling reading out of the elastic memory, and performing stuffing as a function of a control parameter supplied to the frame counter, the improvement wherein said process further comprises:

d. determining the mean loading of the elastic memory (ES) at a rate of once per stuffing frame of the second digital signal (B);

e. producing an indication of a difference between the mean loading and a selected loading value for each stuffing frame of the second digital signal (B);

f. deriving a sum of the difference indicated during an existing stuffing frame and all previous stuffing frames for which said steps of determining and producing were performed;

g. deriving, from the difference indicated during an existing stuffing frame and the sum derived in step f, an estimated sum value for the next occurring stuffing frame on the assumption that stuffing will not be performed during the next occurring stuffing frame;

h. comparing the estimated sum value with at least one threshold value and determining, as a function of this comparison, a control parameter value which can control stuffing in a manner such that the sum derived in step f remains at least approximately constant; and

i. supplying the value determined in step h, as the control value, to the frame counter (RZ).

5,337,316

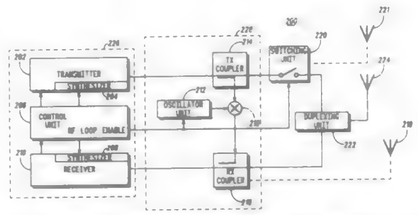
TRANSCEIVER SELF-DIAGNOSTIC TESTING APPARATUS AND METHOD

Kenneth P. Weiss, Palatine; Mario F. DeRango, Lake Zurich; Daniel R. Schroeder, Carol Stream; Leslie D. Mutz, Barrington; Brian W. Lacy, Addison, and Mark D. Chapman, Marengo, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1992, Ser. No. 829,802

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—20.5 12 Claims



1. Apparatus for transceiver self-diagnostic testing in a communication system, comprising at least:

transmitter-control unit-receiver means, comprising at least a transmitter, a control unit, and a receiver, wherein the transmitter is operably coupled to send at least a first signal having a carrier frequency and, where selected, a modulated data bit test pattern, to a switching means, the control unit is operably coupled to provide control signals to at least one of: the transmitter, the receiver, and a feedback means that provides at least a first feedback signal, and the receiver is operably coupled to receive the at least first feedback signal of the feedback means and to receive at least a first transmitted signal having a carrier frequency,

(A) wherein the switching means is operably coupled to the control unit and one of (A1)-(A2):

(A1) a duplexing means that is operably coupled to a single antenna, and

(A2) a first antenna, for controlling transmission of at least the first signal to the operably coupled antenna,

(B) where the duplexing means is selected, the duplexing means is operably coupled to the switching means, to the single antenna, and to the receiver, for permitting alternate transmission and reception by the antenna,

(C) the feedback means is operably coupled to the transmitter for providing a feedback signal that has a frequency that is substantially one of (C1)-(C2):

(C1) a difference between the first signal carrier frequency and a predetermined difference frequency between the first signal carrier frequency and the received signal carrier frequency, and

(C2) a predetermined loopback frequency common to the transmitter and the receiver,

(D) the control unit is operably coupled to the transmitter, to the receiver, to the feedback means, for, where at least one of the transmitter and the receiver further includes a synthesizer,

(D1) opening the switching means for a preselected test time period,

(D2) automatically programming the synthesizer(s) for providing an adjusted carrier frequency to at least one of the transmitter and the receiver for maintaining a predetermined difference frequency between the first signal carrier frequency and the received signal carrier frequency, and

(D3) where both the transmitter and the receiver each have a synthesizer, the synthesizers providing a predetermined loopback frequency to the transmitter and the receiver,

(D4) where the switching means is open (preventing transmission), setting the feedback means to provide a feedback signal that is one of (D4*a*–D4*b*):

(D4*a*) the difference between the first signal carrier frequency and a predetermined difference frequency between the first signal carrier frequency and the received signal carrier frequency, and

(D4*b*) the predetermined loopback frequency common to the transmitter and the receiver,

(D5) such that the control unit monitors one of (D5*a*–D5*b*):

(D5*a*) a difference between transmitted test information and received test information, and

(D5*b*) a magnitude of the feedback signal accepted by the receiver.

5,337,317

MINIMIZING THE PROGRAMMING TIME IN A SEMICONDUCTOR INTEGRATED MEMORY CIRCUIT HAVING AN ERROR CORRECTION FUNCTION

Katsura Takamisawa, and Yukihiro Nishiguchi, both of Kanagawa, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 771,001

Claims priority, application Japan, Oct. 1, 1990, 2-264407

Int. Cl.[5] H03M *13/00*; G06F *11/10*

U.S. Cl. 371—40.4 5 Claims

1. A semiconductor integrated memory circuit which has a correction function, comprising:

an address input means for supplying an address;

a programmable read only memory having a plurality of memory locations, each of which includes a set of data bit cells for storing data and a set of check bit cells for storing a set of check bits for correction of errors in the data stored in said set of data bit cells;

a check bit generating means receiving data to be programmed into a selected set of data bit cells in said programmable read only memory designated by an address supplied from said address input means, for generating a set of check bits on the basis of a set of data bits including said data to be programmed and writing said generated set of check bits to a set of check bit cells corresponding to said selected set of data bit cells, said check bit generating means being configured to be able to generate, when all bits of data to be programmed are the same as a data erased condition of said programmable read only memory, a set of check bits having the same value as said data erased condition; and

an error correction means for reading a set of data bits and a set of check bits from one set of data bit cells and one set of check bit cells in accordance with an address designated by said address input means, for correcting an error on the basis of said read-out set of data bit cells and said read-out set of check bit cells, if an error exists,

wherein when all bits of data to be programmed are the same as a data erased condition of said programmable read only memory, omitting the writing of that data and a corresponding check bit set into a set of data bit cells and a corresponding set of check bit cells of said programmable read only memory, which are address-designated by a given address.

5,337,318

MEMORY IC TESTING APPARATUS WITH REDUNDANCY CIRCUIT

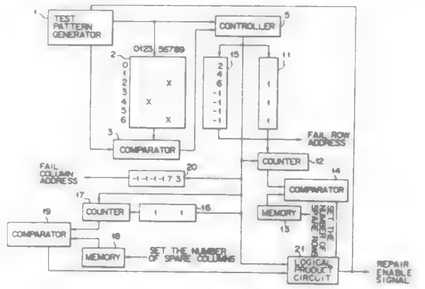
Hisao Tsukakoshi, Yokohama, and Hisatoshi Shirasaka, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 19, 1991, Ser. No. 762,107

Claims priority, application Japan, Sep. 20, 1990, 2-251548

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—5.5 14 Claims



1. A testing apparatus for testing a memory IC having a redundancy circuit, comprising:

first memory means having a memory area for row addresses of a target memory, for storing row addresses of defective bits of the target memory;

counter means for counting a number of defective-bit containing rows of the target memory;

second memory means for storing a number of rows of spare memory cells provided in the redundance circuit; and

first comparator means for comparing a count value of said counter means with a number of rows stored in said second memory means,

wherein when the count value of said counter means exceeds the number of rows of spare memory cells stored in said second memory means, a test is terminated because the target memory is judged as unrepairable, and when the count value does not exceed the number of rows of spare memory cells stored in said second memory means, memory cells in a defective-bit containing row in the target memory are replaced with memory cells in an associated row in the redundancy circuit based on the row addresses stored in said first memory means.

5,337,319

APPARATUS AND METHOD FOR RECONFIGURING AN IMAGE PROCESSING SYSTEM TO BYPASS HARDWARE

Shigehiro Furukawa; Kazuo Hayashi, and Hiroshi Takayanagi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 595,224

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—11.1 22 Claims

1. An image processing system for coupling to an image output terminal, the system comprising:

means for storing image data;

VOL 1165 ISS 2 AG 9 1994 UMI

image input means for generating an image signal;
means for compressing the image signal to generate a compressed image signal and to send the compressed image signal to the storing means;
first bypassing means, responsive to the image input means, for selectively bypassing the compressing means, the first by-passing means including means for selectively inhibiting the compressing means from sending the compressed

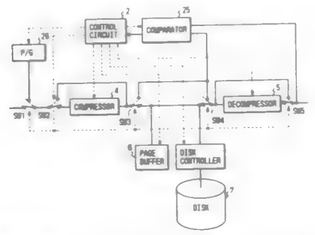
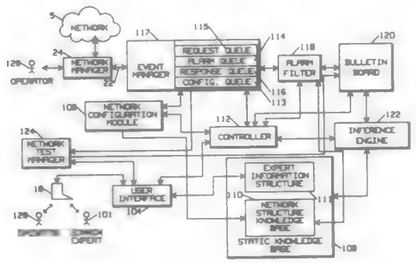


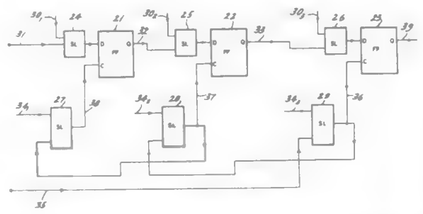
image signal to the storing means, and for sending the image signal to the storing means; and
means, responsive to the storing means, for processing image data and including
means for repeatedly reading an image stored in the storing means, and
means, coupled to the means for repeatedly reading, for transferring the image to the image output terminal.

5,337,320
SEMI-AUTOMATIC MODE OF NETWORK DESIGN
Ching Y. Kung, Fort Lauderdale, Fla., assignor to Racal-Datacom, Inc., Sunrise, Fla.
Division of Ser. No. 802,113, Dec. 4, 1991, which is a division of Ser. No. 447,485, Dec. 6, 1989, Pat. No. 5,159,685. This application Oct. 28, 1993, Ser. No. 141,371
Int. Cl.[5] G06F *11/00;* **G01R** *31/28*
U.S. Cl. 371—15.1 **3 Claims**



1. An expert network diagnostic system for diagnosing problems in a communication network in a semi-automatic mode, comprising in combination:
means for performing diagnostic tests on said network, said diagnostic tests including non-interruptive tests which do not significantly impact operation of said network and interruptive tests which require interfering with function a device in said network while said interruptive test is performed;
means for determining an appropriate one of said diagnostic tests to be performed to diagnose a problem with said network;
means for determining whether said appropriate test is an interruptive or non-interruptive test;
means for invoking said appropriate test if said appropriate test is non-interruptive; and
means for obtaining consent of an operator to perform said appropriate test if said appropriate test is interruptive.

5,337,321
SCAN PATH CIRCUIT WITH CLOCK SIGNAL FEEDBACK, FOR SKEW AVOIDANCE
Hideharu Ozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 8, 1991, Ser. No. 773,071
Claims priority, application Japan, Oct. 8, 1990, 2-270051
Int. Cl.[5] H04B *17/00*
U.S. Cl. 371—22.3 **3 Claims**

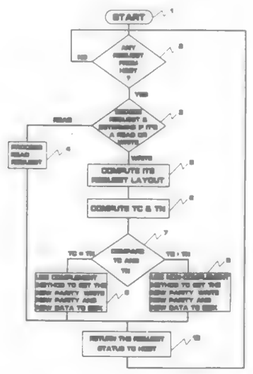


1. A scan path circuit for use in a function test of a semiconductor integrated logic circuit, the scan path circuit comprising:
N number of flip-flops connected in cascade to form a shift register, each of said flip-flops having a data input terminal and a clock terminal;
N number of selectors provided correspondingly to said N number of flip-flops each having an output terminal connected to the clock terminal of an associated one of said flip-flops, a first input terminal for transferring a clock signal supplied thereto to the clock terminal of said associated one of said flip-flops through the output terminal thereof during a normal operation, and a second input terminal for transferring a clock signal supplied thereto to the clock terminal of said associated one of said flip flops through the output terminal thereof during a scan path test, the second input terminals of the first to (N−1)th ones of said selectors being connected respectively to the output terminals of the second to Nth ones of said selectors, and the second terminal of said Nth one of said selectors being supplied with a clock signal for the scan path test.

5,337,322
METHOD OF PROCESSING STORED DATA CONTAINING PARITY DATA
Yun-Huei Wang, and Chung-Hua Wu, both of Taipei, Taiwan, assignors to Acer Incorporated, Taipei, Taiwan
Filed Mar. 2, 1992, Ser. No. 844,788
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—51.1 **10 Claims**

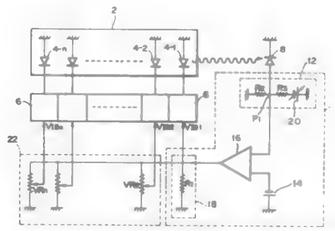
1. A method for using new data to calculate parity data, and for storing new data and the parity data into a data storage system, said data storage system comprising a plurality of data storage units each capable of storing data, said method comprising the steps of:
(a) determining the data storage units and the portions of each data storage unit where the data will be stored;
(b) determining the number of times the data units are accessed to calculate parity data for the new data, to store the new data, and to store the parity data using a complementary mode;
(c) determining the number of times the data units are accessed to calculate parity data for the new data, to store

the new data, and to store the parity data using a noncomplementary mode;
(d) comparing the number of times the data units are accessed in said complementary mode to the number of



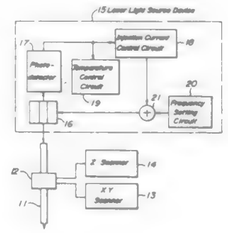
times the data units are accessed in said noncomplementary mode; and
(e) calculating the parity data with the mode that requires the fewest number of accesses.

5,337,323
INTEGRATED SEMICONDUCTOR LASER ARRAY APPARATUS
Hiroyuki Rokugawa, and Nobuhiro Fujimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 20, 1992, Ser. No. 916,369
Claims priority, application Japan, Jul. 24, 1991, 3-184790
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—31 **5 Claims**



1. An integrated semiconductor laser array apparatus comprising:
a semiconductor laser array constructed by integrating a plurality of semiconductor laser elements, said semiconductor laser array including a master semiconductor laser element selected from said plurality of semiconductor laser elements and at least one slave semiconductor laser element constituted of the rest of the semiconductor laser elements;
a plurality of drive means for driving their respective semiconductor laser elements with a drive current composed of a bias current and a modulation current pulse;
a photodetector for sensing at least a portion of the laser beam emitted from said master semiconductor laser element to produce a photocurrent corresponding to the received light intensity;
first driving current control means for controlling a driving current for said master semiconductor laser element such that said photocurrent becomes constant; and
second driving current control means for controlling a driving current for said slave semiconductor laser element by following the control of the driving current for said master semiconductor laser element, wherein said first driving current control means comprises a current-to-voltage converter for converting said photocurrent into a voltage signal, a reference power supply for generating a reference voltage, a comparator for comparing said voltage signal with said reference voltage to output a signal at a level corresponding to the difference between the voltages, and first bias current control means for controlling the bias current for said master semiconductor laser element such that the output level of said comparator becomes a predetermined level, and said second driving current control means comprises second bias current control means for controlling the bias current for said slave semiconductor laser element such that the ratio between the bias current for said master semiconductor laser element and the bias current for said slave semiconductor laser element becomes constant.

5,337,324
METHOD FOR CONTROLLING MOVEMENT OF NEUTRAL ATOM AND APPARATUS FOR CARRYING OUT THE SAME
Motoichi Ohtsu, Tokyo, and Hirokazu Hori, Yamanashi, both of Japan, assignors to Tokyo Institute of Technology, Meguro, Japan
Filed Feb. 25, 1993, Ser. No. 22,519
Claims priority, application Japan, Jun. 11, 1992, 4-152442
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—32 **18 Claims**



1. A method of controlling the movement of a single neutral atom or a small number of neutral atoms comprising the steps of:
making incident laser light having a frequency which is lower than a resonance frequency of an atom whose movement is to be controlled, by about 0.1 to 10 times a width of an atomic resonance spectrum line upon a proximal end of an optical fiber probe whose distal end is sharpened such that the laser light can not exit, but an evanescent light is generated;
trapping a single neutral atom or a small number of neutral atoms within an existing volume of the evanescent light by bringing the distal end of the optical fiber probe close to said neutral atom of atoms; and
controlling a movement of said trapped neutral atom or atoms by controlling the light frequency of said laser light.

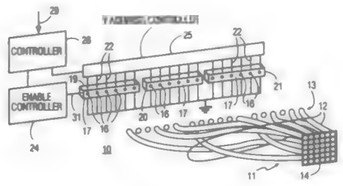
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,325

SEMICONDUCTOR, LIGHT-EMITTING DEVICES

Cherng-Jia Hwang, Watchung, N.J., assignor to Photon Imaging Corp, S. Plainfield, N.J.

Filed May 4, 1992, Ser. No. 878,198
Int. Cl.[5] H01S 3/04
U.S. Cl. 372—36 8 Claims



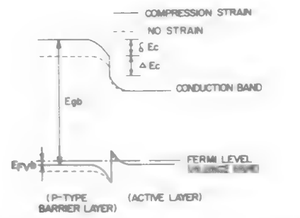
1. Apparatus comprising a plurality of linear semiconductor laser arrays and a fiber optic bundle having a linear first face and an area second face, said linear first face being divided into a plurality of sections each corresponding to a respective one of said linear laser arrays, said area face comprising a stack of said sections for forming a virtual stack of said laser arrays.

5,337,326

SEMICONDUCTOR LASER DEVICE WITH COMPRESSIVELY STRESSED BARRIER LAYER

Yasuo Kan; Kosei Takahashi, both of Nara; Masahiro Hosoda, Kashiba; Atsuo Tsunoda, Yamatokoriyama; Kentaro Tani, Tenri, and Masanori Watanabe, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1992, Ser. No. 953,458
Claims priority, application Japan, Dec. 20, 1991, 3-338806
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—45 7 Claims



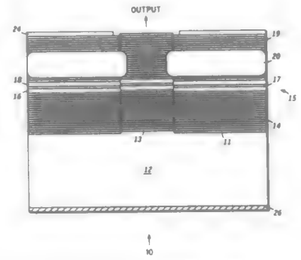
1. A semiconductor laser device comprising a substrate; a double hetero structure formed on an upper face of the substrate, the double hetero structure including an n-type cladding layer, an active layer, and a p-type cladding layer; and electrodes formed on a lower face of the substrate and on an upper face of the double hetero structure, wherein the double hetero structure further includes a p-type hetero-barrier layer formed between the p-type cladding layer and the active layer, the p-type hetero-barrier layer being in contact with the active layer, and the p-type hetero-barrier layer is strained by compression due to a lattice mismatch, and wherein all of the layers of the double hetero structure, except for the p-type hetero-barrier layer, lattice-match with the substrate.

5,337,327

VCSEL WITH LATERAL INDEX GUIDE

Donald E. Ackley, Lambertville, N.J., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 22, 1993, Ser. No. 20,959
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—45 6 Claims



1. A vertical cavity surface emitting laser having an operating wavelength at which light emission occurs, the laser comprising:

a supporting substrate having a surface lying in a first plane and a substantially centrally located offset area of the surface lying in a second plane parallel to the first plane and spaced therefrom;

a first mirror stack positioned on the surface of the substrate so as to overlie the offset area and a portion of the surface surrounding the offset area;

an active region including at least a layer positioned parallel and in overlying abutting engagement with the first mirror stack and substantially coextensive therewith;

a second mirror stack positioned parallel and in overlying abutting engagement with the active region and substantially coextensive therewith; and

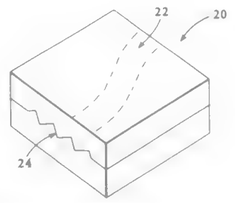
first portions of the active region and the first and second mirror stacks being offset from second surrounding portions of the active region and the first and second mirror stacks by the offset area in the surface of the substrate so as to define a lateral waveguide.

5,337,328

SEMICONDUCTOR LASER WITH BROAD-AREA INTRA-CAVITY ANGLED GRATING

Robert J. Lang, Pleasanton; Kenneth M. Dzurko, Santa Clara; Donald R. Scifres, San Jose, and David F. Welch, Menlo Park, all of Calif., assignors to SDL, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 880,681, May 8, 1992, Pat. No. 5,231,642. This application Jul. 27, 1993, Ser. No. 97,682
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—45 85 Claims



1. A coherent light generating structure comprising,

at least one active region for generating lightwaves,

excitation means for pumping at least a portion of said at least one active region,

first and second reflective means spaced apart from one another for defining a resonant cavity there-between, said pumped portion of said at least one active region disposed at least partially within said resonant cavity, and

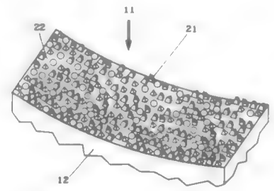
one and only one broad-area grating reflector disposed within at least a portion of said resonant cavity and oriented at an angle relative to said first and second reflective means for laterally diffracting at least a portion of a beam of said generated lightwaves, said orientation of said grating reflector such that least a specified wavelength of lightwaves generated by said active region and incident on said grating reflector from a direction perpendicular to said first and second reflective means is within a resonance bandwidth of said grating reflector for said lightwaves, said broad-area grating reflector providing lateral confinement of said lightwaves freely propagating within said resonant cavity.

5,337,329

FLUID LASER HAVING A ROUGHENED, CATALYTIC INNER SURFACE

Jack Foster, 856 Renetta Ct., Los Altos, Calif. 94022

Filed Jul. 7, 1992, Ser. No. 911,679
Int. Cl.[5] H03S 3/10
U.S. Cl. 372—61 11 Claims



1. A laser comprising:

a wall encircling a laser chamber;

means for producing an electrical discharge within said chamber;

a reflector structure adapted to reflect light in a path that produces lasing of a fluid within said laser chamber; and

a roughened, catalytic surface, that has been roughened by attachment of particles and then coated with a layer of catalytic material to increase an amount of area of this catalytic material that is in contact with said fluid to catalyze recombination of a portion of this fluid that has decomposed within said chamber.

5,337,330

PRE-IONIZER FOR A LASER

Donald G. Larson, San Diego, Calif., assignor to Cymer Laser Technologies, San Diego, Calif.

Filed Oct. 9, 1992, Ser. No. 958,922
Int. Cl.[5] H01S 3/097
U.S. Cl. 372—86 36 Claims

1. In combination for use in a laser,

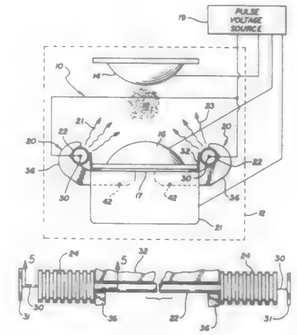
a tube constructed from a dielectric material having properties to support a capacitive corona discharge without dielectric breakdown,

means disposed within the tube to define a first capacitor plate,

means disposed outside of the tube in engagement with the tube for defining a second capacitor plate,

bushings disposed near the end of the tube and integral with the tube, and

means for introducing a voltage between the means defining the first and second capacitor plates to charge the capacitor and obtain a corona discharge from the corona discharge from the tube.

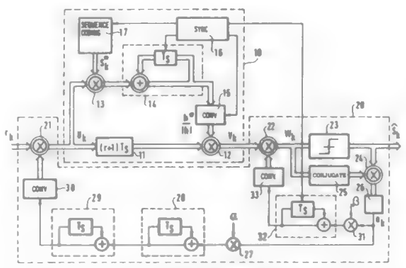


5,337,331

METHOD OF COHERENT DEMODULATION FOR PHASE SHIFT KEYING AND A DEVICE FOR IMPLEMENTING THE METHOD

Philippe Sadot, Paris; Bertrand Thebault, Asnieres; Marc Darmon, Paris, and Jacques Eudes, Mesnil le Roi, all of France, assignors to Alcatel Telspace, Nanterre Cedex, France

PCT No. PCT/FR92/00090, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO92/14326, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 31, 1992, Ser. No. 927,399
Claims priority, application France, Jan. 31, 1991, 91 01079
Int. Cl.[5] H03D 3/22; H04L 27/22
U.S. Cl. 375—83 6 Claims



1. A method of compensating for phase and frequency deviations for coherent demodulation of a phase-shaft keyed signal, said phase-shift keyed signal comprises a sequence of reference symbols arranged periodically with data symbols, said method comprising the steps of:

periodically performing first order estimation of phase deviation of said phase-shift keyed signal introduced by a transmission channel by correlating said reference symbols with expected symbols identical to said reference symbols;

performing first phase compensation of said phase-shift keyed signal based upon a result of said first estimation step;

performing a second estimation of phase deviation and performing estimation of frequency deviation of said phase-shift keyed signal, after said first phase compensation step,

VOL 1165 ISS 2 AG 9 1994 UMI

based upon said reference symbols and said data symbols; and

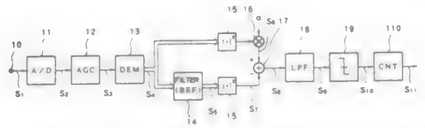
performing second phase compensation and frequency compensation of said phase-shift keyed signal via a phase-locked loop which compensates, for each symbol received, the phase and frequency deviations estimated in the second estimation step.

5,337,332

TRAINING DETECTION APPARATUS

Tatsuya Yaguchi, and Koichi Tanaka, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1992, Ser. No. 886,832
Claims priority, application Japan, May 27, 1991, 3-120773
Int. Cl.[5] H03D *1/00*; H04L *27/06, 7/00*
U.S. Cl. 375—94 44 Claims



14. A training detection apparatus for detecting a start point of a pseudo random sequence of a training sequence output from a transmission-side modem, comprising:

first calculation means for calculating a smoothed power of a received demodulated baseband signal;

second calculation means for calculating a power of a removal signal obtained by removing a frequency component ($\frac{1}{4}$) a baud rate frequency and a DC component from the baseband signal; and

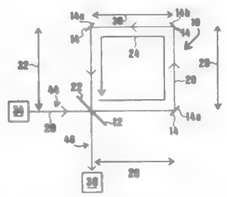
detection means for comparing the powers of the signals calculated by said second and first calculation means, and detecting the start point of the pseudo random sequence.

5,337,333

LASER BEAM PULSE FORMATTING METHOD

Thomas P. Daly; Edward I. Moses; Ralph W. Patterson, all of Livermore, and Richard H. Sawicki, Danville, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 10, 1992, Ser. No. 973,878
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—94 18 Claims



1. A delay loop for formatting a laser pulse, comprising:

at least one beam splitter having a partially reflective surface thereon with the partially reflective surface facing the interior of the delay loop; and

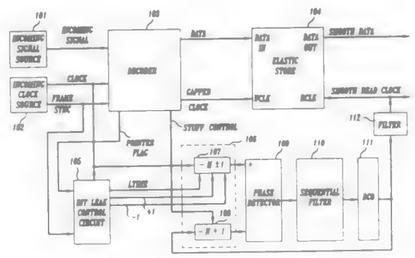
a plurality of mirrors arranged such that the laser pulse entering the delay loop through said beam splitter is directed through the delay loop and back to said beam splitter and further such that the laser pulse is repeatedly reflected back form the partially reflective surface of said beam splitter into the delay loop and recirculated through the delay loop back to said beam splitter with progressively smaller portions of the laser pulse being emitted form the delay loop each time the laser pulse strikes the partially reflective surface of said beam splitter.

5,337,334

SYNCHRONOUS DIGITAL SIGNAL TO ASYNCHRONOUS DIGITAL SIGNAL DESYNCHRONIZER

Nicholas J. Molloy, Haverhill, Mass., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 811,273, Dec. 20, 1991, Pat. No. 5,268,935. This application Aug. 9, 1993, Ser. No. 103,654
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[5] H04L *7/04*
U.S. Cl. 375—118 16 Claims



1. Apparatus for desynchronizing an incoming digital signal at an incoming digital clock rate to obtain an outgoing digital signal at an outgoing digital clock rate different from the incoming digital clock rate, the apparatus comprising:

a source of the incoming digital signal;

a source of the incoming clock signal;

means for obtaining a payload data signal from the incoming digital signal;

means for obtaining a gapped clock signal from the incoming clock signal;

means for detecting occurrences of pointer adjustments in the incoming digital signal and for generating a first control signal representative of such occurrences of pointer adjustments and their polarity;

means supplied with said first control signal and the incoming clock signal for determining a number and polarity of pointer adjustment bits being received and for generating leak control signals to control leaking a fewer number of bits than a net number of said received pointer adjustment bits, each received pointer adjustment bit having a predetermined bit interval;

first controllable means supplied with the incoming clock signal and being responsive to said leak control signals for generating an adjusted reference signal including said leaked bits, each of the bits to be leaked having a bit interval longer than the bit interval of the pointer adjustment bits;

means supplied with an outgoing clock signal for generating a phase control signal;

phase locked loop means responsive to said adjusted reference signal and to said phase control signal for generating said outgoing clock signal; and

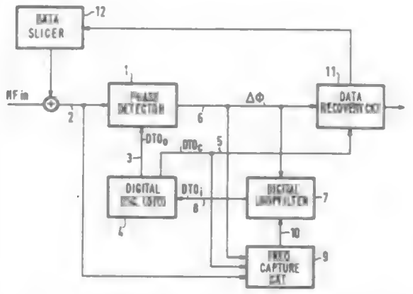
elastic store means having a data in input, a write clock input, a data out output and a read clock input for reading at said data out output the outgoing digital signal in response to said outgoing clock signal being supplied to said read clock input, said payload data signal being written into said data in input in response to said gapped clock signal being supplied to the write clock input.

5,337,335

PHASE LOCKED LOOP WITH FREQUENCY DEVIATION DETECTOR AND DECODER CIRCUIT COMPRISING SUCH A PHASE LOCKED LOOP

Henri Cloetens, Louvain, Belgium, and Robertus W. C. Groen, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 23, 1992, Ser. No. 979,951
Claims priority, application European Pat. Off., Nov. 25, 1991, 91203073.1
Int. Cl.[5] H03D *3/24*
U.S. Cl. 375—120 11 Claims



1. A phase lock loop for locking a local digital oscillator in said loop to a clock frequency determined by a received data signal consisting of pulses of variable lengths, the length of each pulse being an integral multiple of a basic length unit corresponding to said clock frequency; said phase lock loop comprising:

a phase detector having an oscillator input for receiving the digital oscillator signal and a data input for receiving the data signal, said phase detector producing at an output thereof a phase difference signal ($\Delta\phi$) indicative of a phase difference between the pulses in said oscillator signal and the pulses in said data signal;

a digital loopfilter for receiving said phase difference signal ($\Delta\phi$) and having an output coupled to a control input of said oscillator;

a frequency capture circuit having a first input coupled to said oscillator to receive said oscillator signal, a second input coupled to the output of said phase detector to receive said phase difference signal ($\Delta\phi$), and a third input coupled to the data input of said phase detector to receive said data signal; said frequency capture circuit detecting a difference in frequency between said data signal and said oscillator signal and to produce a frequency deviation signal at an output thereof, said output being coupled to a control input of said loopfilter to supply said frequency deviation signal thereto, said frequency deviation signal causing said loopfilter to produce at its output a frequency control signal for controlling the frequency of said oscillator; and

a pulse length detector circuit comprised in said frequency capture circuit for measuring the length of a pulse in said data signal and rounding it to the nearest integral number of periods of said oscillator signal, said pulse length detector circuit producing a pulse length signal (RL) indicative of the rounded length and a length deviation signal (ΔRL) indicative of deviation between said rounded length and the measured length;

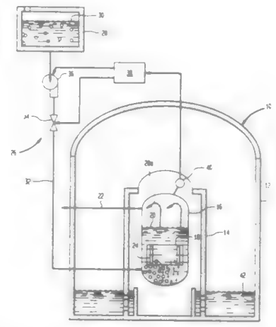
said frequency capture circuit deriving said frequency deviation signal on the basis of said rounded length signal (RL) and said length deviation signal (ΔRL).

5,337,336

METHOD AND APPARATUS TO DECREASE RADIOACTIVE IODINE RELEASE

Chien-Chang Lin, Fremont, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jan. 25, 1993, Ser. No. 8,442
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—309 9 Claims



5. A method of decreasing release of volatile radioactive iodine from a nuclear reactor pressure vessel containing a reactor core having a plurality of fuel rods submerged in reactor water, said method comprising the steps of:

storing a stable iodide liquid solution in a reservoir operatively joined to said pressure vessel, said stable iodide liquid solution comprising an iodide selected from the stable iodide group including sodium iodide (NaI) and potassium iodide (KI) and a stabilizer to inhibit oxidation of said stored iodide during storage;

monitoring said pressure vessel to detect an accident condition which might lead to rupture of said fuel rods resulting in the discharge into said reactor water of said volatile radioactive iodine from said fuel rods; and

injecting into said pressure vessel upon detection of said accident condition said stable iodide liquid solution to mix with said reactor water for decreasing vaporization from said reactor water of said volatile radioactive iodine dischargeable therein from said fuel rods,

wherein said stored iodide has a quantity selected relative to the quantity of said reactor water in said pressure vessel to effect a final concentration of total iodine from said stored iodide and reactor iodine contained in said reactor core of greater than about 10^{-5} Moles.

5,337,337

FUEL ASSEMBLY

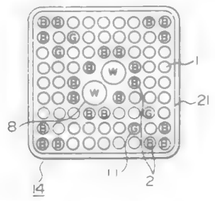
Motoo Aoyama, Mito; Ryoji Masumi, Hitachi; Yooko Ishibashi, Hitachiota, and Kunitoshi Kurihara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,263
Claims priority, application Japan, Mar. 29, 1991, 3-066006
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—435 6 Claims

4. A nuclear reactor core, comprising a plurality of fuel assemblies, at least one of the fuel assemblies including a plurality of first fuel rods containing a nuclear fuel material free from a burnable poison and a plurality of second fuel rods containing the nuclear fuel material and the burnable poison, the plurality of the second fuel rods comprising (A) a plurality of second fuel rods containing a first burnable poison, located at positions in an outermost row in a cross-section of the fuel assembly, and (B) a plurality of second fuel rods containing a second burnable poison having a larger thermal neutron absorption cross-sec-

VOL 1165 ISS 2 AG 9 1994 UMI

tion than a thermal neutron absorption cross-section of the first burnable poison, located at positions in an inner region of the



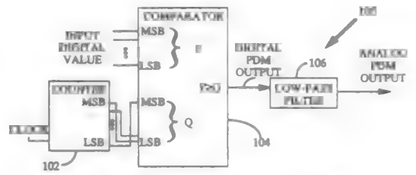
cross-section of the fuel assembly other than the outermost row.

5,337,338

PULSE DENSITY MODULATION CIRCUIT (PARALLEL TO SERIAL) COMPARING IN A NONSEQUENTIAL BIT ORDER

Todd Sutton; Sherman Gregory; Joan T. Waltman, and Katherine W. White, all of San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Feb. 1, 1993, Ser. No. 11,618
Int. Cl.[5] H03K *21/14*
U.S. Cl. 377—33 **16 Claims**



1. A pulse density modulation circuit comprising:

counter means for generating a series of incremental value count signals, each count signal having a most significant bit through a least significant bit; and

comparator means for receiving a reference signal having a most significant bit through least significant bit, comparing the reference signal with the series of count signals wherein the reference signal most significant bit through least significant bit is compared in a non-sequential bit order of the count signal most significant bit through least significant bit, and providing a single bit signal.

5,337,339

HIGH FREQUENCY PROGRAMMABLE DIVIDER

Timothy L. Hillstrom, Lake Stevens, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

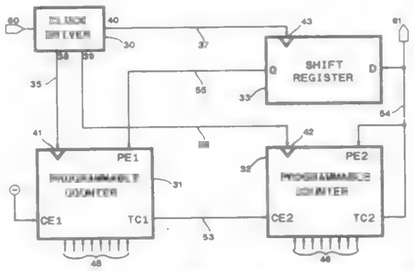
Filed Oct. 15, 1992, Ser. No. 963,303
Int. Cl.[5] H03K *23/66*
U.S. Cl. 377—52 **9 Claims**

1. A programmable frequency divider for dividing a high frequency clock signal by an externally supplied digital integer, comprising:

a clock driver having an input coupled to the clock signal and a plurality of outputs, each output being delayed by a predetermined time with respect to the clock signal;

a first programmable counter having a clock input coupled to an output of the clock driver, a program input coupled to a least significant portion of the external integer, a control input for regulating the program input, and a terminal count output;

a second programmable counter having a clock input coupled to an output of the clock driver, a program input coupled to a most significant portion of the external integer, a control input for regulating the program input, a count enable input coupled to the terminal count output of the first counter, and a terminal count output coupled to the control input of the second counter;



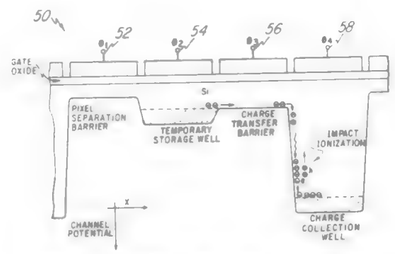
a delay circuit having an input coupled to the terminal count output of the second counter, and an output coupled to the control input of the first counter.

5,337,340

CHARGE MULTIPLYING DETECTOR (CMD) SUITABLE FOR SMALL PIXEL CCD IMAGE SENSORS

Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 728,427, Jul. 11, 1991, abandoned. This application Feb. 17, 1993, Ser. No. 19,995
Int. Cl.[5] G11C *19/28*; H01L *29/796*
U.S. Cl. 377—60 **27 Claims**



1. A method for automatic gain control in an image sensor array, comprising the steps of:

sensing an image in said array;

detecting a level of charge generated by said image in said array; and

adjusting a bias level applied to said array in response to said detected level, said bias level generating a proportional electric field in at least one of said array in order to cause impact ionization by charge careers moving in said field.

5,337,341

X-RAY RADIOGRAPHIC APPARATUS

Yasumitsu Shimizu, Takatsuki, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jan. 29, 1993, Ser. No. 11,253
Claims priority, application Japan, Jan. 31, 1992, 4-046192
Int. Cl.[5] H05G *1/64*
U.S. Cl. 378—98.2 **1 Claim**

1. An X-ray radiographic apparatus comprising:

a diagnostic table;

an X-ray emitter for emitting X-rays to said diagnostic table;

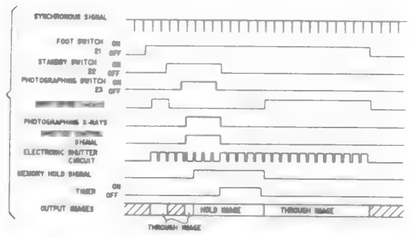
an X-ray high voltage unit for generating varied currents to switch a quantity of X-rays emitted from said X-ray emitter between a monitoring condition and a photographing condition;

a filming mechanism mounted in said diagnostic table for photographing X-ray images based on the X-rays emitted from said X-ray emitter;

an image intensifier attached to said diagnostic table for converting said X-ray images to visible light images;

a CCD camera unit for converting said visible light images to image signals, said CCD camera unit including an electronic shutter circuit for varying time for storing electric charges in a CCD image pickup device;

a monitor unit for receiving said image signals from said CCD camera unit to display said visible light images converted by said image intensifier;



control means for actuating said electronic shutter circuit to reduce the time for storing electric charges in said CCD image pickup device when said X-ray high voltage unit switches the quantity of X-rays emitted form said X-ray emitter to said photographic condition;

memory means for latching the image signal received from said CCD camera unit when in said photographing condition; and

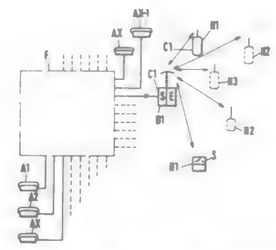
image holding means for causing the image signal latched by said memory means to be outputted to said monitor unit when said X-ray high voltage unit switches the quantity of X-rays emitted from said X-ray emitter to said monitoring condition and before the quantity of X-rays is diminished for said monitoring condition.

5,337,342

EMERGENCY CALL SYSTEM

Hans-Eckhard Kruger, Hildesheim; Harry Koch, Burgwedel, and Jurgen Hartmann, Wolfenbuttel, all of Fed. Rep. of Germany, assignors to Robert Bosch GMbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 944,437
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1991, 4130647
Int. Cl.[5] H04M *11/00, 11/04*
U.S. Cl. 379—40 **7 Claims**



1. An emergency call apparatus system including a portable emergency call device having an emergency call switch by actuation of which an automatic call code signal is transmitted and a corresponding stationary emergency call receiver equipped for receiving an emergency call signal from said portable device, recognizing said automatic call code signal as showing a need for calling a telephone number over a telephone network for alerting a preselected telephone party to the presence of the emergency call, characterized in that

said emergency call receiver is a receiver in a base station (B1) of a cordless telephone local system (C1), which base station (B1) is connected to a telephone network (F), and said base station (B1) is equipped with a plurality of speech communication channels for short-code access by radio transceivers to said base station and a special channel inaccessible to normal speech communication of users of the system and comprises:

means for recognizing an identifying code, which identifies both said base station and said portable emergency call device and which code forms part of said automatic call code signal, and for recognizing the presence of a remote emergency call request code which call request code also forms part of said automatic call code signal;

means in said emergency call receiver for control of a response to a call from said emergency call device, said response including activation of and entry into said special channel, said receiver control means including, in its control logic, an electronic memory (51) for storing a sequence of telephone numbers to be called in response to an automatic call code signal received by said emergency call receiver from said portable emergency call device, and for responding to said automatic call code signal by calling said stored numbers in sequence until an answering connection is established denoting at least an acknowledgement of receipt of the emergency call by a corresponding called party and

said portable emergency call device (N1) comprises, in addition to said emergency call switch and means responsive to said emergency call switch for transmitting an automatic call code signal:

means for generating, for said automatic call code signal, a code signal (IK) designating the identities of said base station (B1) and of said portable emergency call device and a code signal (SK) designating a radio-communicated emergency call which needs to obtain access to said special channel of said base station, and

control means (13) for producing, during a said automatic call code signal, a continual repetition of at least part of said identification code signal (IK) of said portable emergency call device (N1).

5,337,343

HEADSET BRIDGE FOR OPERATING MULTIPLE COMMUNICATION DEVICES

David R. Stickney, Lewistown, Ohio, assignor to United Telephone Company of Ohio, Mansfield, Ohio

Filed May 10, 1992, Ser. No. 877,526
Int. Cl.[5] H04M *11/04, 1/00, 3/00*
U.S. Cl. 379—45 **7 Claims**

1. A headset bridging apparatus for connecting a single headset to a telephone and a public safety answering point (PSAP) in order to communicate through the telephone and the PSAP, the headset bridging apparatus comprising:

(a) a first switching means for switching a group of connections alternatively between two other groups of connections wherein the first switching means is activated by a first control signal;

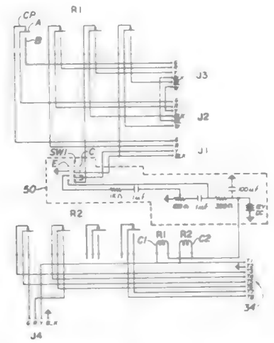
(b) a headset jack, a PSAP jack, and a telephone jack, wherein the jacks are telephone type jacks;

(c) first control wiring from the first switching means operable for exterior connection and operable to activate the first switching means when the first control signal is provided to the first control wiring;

(d) receive wiring from the first switching means to the

VOL 1165 ISS 2 AG 9 1994 UMI

headset jack, telephone jack, and PSAP jack operable to allow the first switching means, based on the first control signal, to switch a pair of receive wires from the headset alternatively between a pair of receive wires from the telephone and a pair of receive wires from the PSAP, when each pair of receive wires from the headset, telephone, and PSAP are connected to their respective jacks; and



(e) firs transmit wiring from the first switching means to the headset jack, telephone jack, and PSAP jack operable to allow the first switching means, based on the first control signal, to switch a pair of transmit wires from the headset alternatively between a pair of transmit wires from the telephone and a pair of transmit wires from the PSAP, when each pair of transmit wires from the headset, telephone, and PSAP are connected to their respective jacks.

5,337,344

TELECOMMUNICATION SYSTEM AND A METHOD FOR MATCHING THE NUMBERING SCHEMES OF TWO TELECOMMUNICATION SYSTEMS

Antero Alvesalo, Helsinki, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

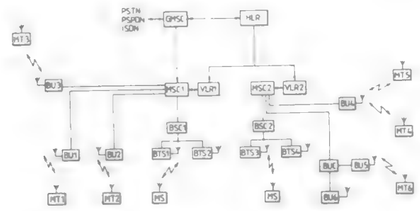
PCT No. PCT/FI92/00255, § 371 Date Jul. 13, 1993, § 102(e) Date Jul. 13, 1993, PCT Pub. No. WO93/07721, PCT Pub. Date Apr. 15, 1993

PCT Filed Sep. 24, 1992, Ser. No. 70,310

Claims priority, application Finland, Oct. 3, 1991, 914655

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—58 **9 Claims**



1. A method for matching the numbering scheme of a telecommunication system with the numbering scheme of another telecommunication system at an interface between the systems, the numbering scheme of the first telecommunication system comprising an X-bit binary subscriber/equipment specific identity code, and the numbering scheme of the second telecommunication system comprising a Y-decimal subscriber-/equipment specific identity code, characterized in that in the second telecommunication system the subscriber/equipment of the first telecommunication system is assigned a Y-decimal identity code obtained by converting the X-bit binary identity code of the subscriber/equipment into a decimal number comprising no more than Y−1 decimals, and by introducing one or more system identification decimals into the obtained decimal number at a predetermined position, the system identification decimal(s) indicating that the subscriber/equipment identity code belongs to the subscriber/equipment of the first telecommunication system.

5,337,345

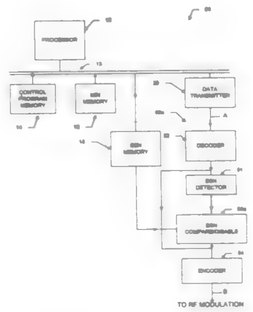
SYSTEM FOR SECURING MOBILE TELEPHONES FROM UNAUTHORIZED TRANSMISSION

Barrie Cassidy; David McNab, and James Rooney, all of Calgary, Canada, assignors to NovAtel Communications, Calgary, Canada

Filed Jul. 29, 1992, Ser. No. 921,557

Int. Cl.[5] H04M *11/00;* **H04Q** *7/00;* **H04B** *1/00, 1/34*

U.S. Cl. 379—58 **10 Claims**



1. A data transmitting system for use with a mobile telephone which is assigned an electronic serial number, the system including:

A. a processor for formatting a message for transmission, the processor including in the message an electronic serial number;

B. a data transmitter for transmitting the message;

C. an electronic serial number detector for determining the location of the electronic serial number in the message;

D. comparing means for comparing the electronic serial number in the message with the electronic serial number assigned to the telephone; and

E. means for disabling the data transmitting system if the comparing means determines that the electronic serial number in the message does not match the electronic serial number assigned to the telephone.

5,337,346

PORTABLE TELEPHONE APPARATUS INCLUDING ELECTRONIC NOTEBOOK FUNCTION

Takao Uchikura, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 951,455

Claims priority, application Japan, Sep. 26, 1991, 3-247282

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—58 **8 Claims**

1. A portable telephone apparatus having an electronic notebook function, comprising:

a body casing having an openable member pivotally journaled thereto, the openable member being pivotable between an open position and a closed position;

a radio-communication circuit unit and an electronic-notebook circuit unit, both held within said body casing;

mounted-in memory means, held within said body casing, for storing electronic-notebook data;

a display unit mounted on said body casing;

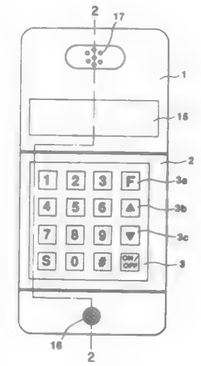
a plurality of telephone-operation keys provided on an outer surface of said openable member;

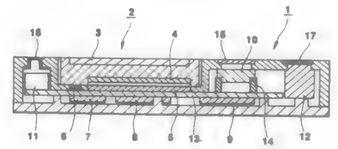
a plurality of electronic-notebook operation keys provided on an inner surface of said openable member and a surface of said body casing so as to be concealed by said openable member when said openable member is pivoted to the closed position, said electronic-notebook operation keys including search key means;

said search key means being provided on the outer surface of said openable member, for searching through said mounted-in memory means for desired electronic-notebook data stored therein;

first power-source means for supplying power to said radio-communication circuit unit;

second power-source means for supplying power to the telephone apparatus excluding said radio-communication circuit unit;





judging means for detecting whether said openable member is at the open position or the closed position;

switch-control means including:

first means for setting an operation mode of the telephone apparatus to a telephone mode and for causing said first power source means to supply power to said radio-communication circuit unit, when said judging means determines that said openable member is at the closed position, and

second means for setting the operation mode of the telephone apparatus to an electronic-notebook mode and for causing said first power source means to stop supplying power to said radio-communication means, when said judging means determines that said openable member is at the open position; and

display-control means for causing said display unit to display data in the telephone mode when said openable member is at the closed position, with said data being produced from the electronic-notebook data stored in said mounted-in memory means in response to operation of said search key means.

5,337,347

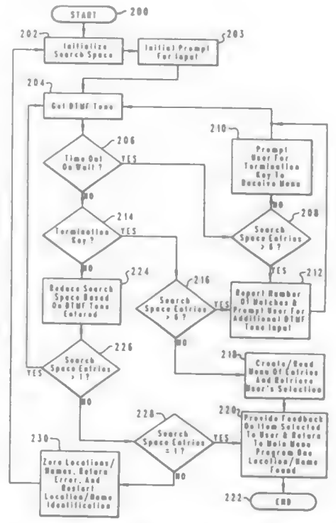
METHOD AND SYSTEM FOR PROGRESSIVE DATABASE SEARCH TERMINATION AND DYNAMIC INFORMATION PRESENTATION UTILIZING TELEPHONE KEYPAD INPUT

Richard H. Halstead-Nussloch, Roswell, and Mark D. Strickert, Marietta, both of Ga., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1992, Ser. No. 904,415

Int. Cl.[5] H04M *11/08*

U.S. Cl. 379—67 **20 Claims**



1. A method for searching a database utilizing a telephone device in communication with a data processing system, said data processing system having access to said database, said telephone device having transmitter components for transmitting dual-tone multifrequency signals, wherein said dual-tone multifrequency signals are generated by a user manipulating a keypad associated with said telephone device, said keypad having a plurality of individually depressible alpha-numeric keys to generate a query and to send commands to said data processing system, said method comprising:

(a) prompting said user to enter a query utilizing said plurality of individually depressible alpha-numeric keys on said keypad;

(b) searching said database to locate entries within said database corresponding to said query in response to receiving said query at said data processing system;

(c) prompting said user to enter additional data to modify said query;

(d) searching said database for entries corresponding to said query as modified by said additional data entered by said user, wherein a number of entries are located;

(e) repeating steps (c) through (d) until said number of entries is less than a predetermined number;

(f) in response to receiving an early termination command generated by said user, terminating steps (c) through (e); and

(g) in response to said number of entries being less than a predetermined number or receiving said early termination command, audibly presenting said entries to said user via said telephone device.

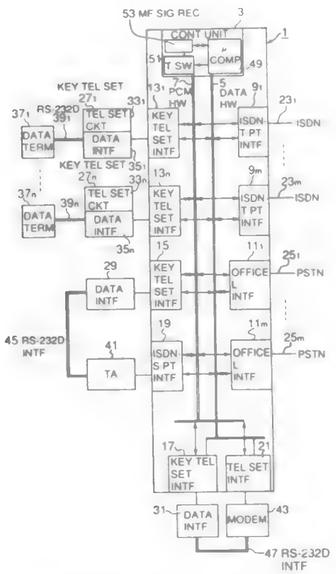
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,348

MODEM POOLING SYSTEM FOR COMMUNICATING BETWEEN A TELEPHONE AND A PLURALITY OF DATA TERMINALS

Yuichi Yamazaki, Hachioji; Hideyasu Mori; Hiroshi Mano, both of Hino; Norimitsu Ikehata, Sagamihara; Takashi Aoki, Akishima, and Yoshikazu Sano, Hino, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 19, 1991, Ser. No. 716,802
Claims priority, application Japan, Jun. 19, 1990, 2-160593
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—94 19 Claims



1. A modem pooling system in which a modem is pooled to enable communications between a telephone line and a plurality of data terminals respectively, comprising:

switching means for opening/closing a first communication channel between the telephone line and the modem and second communication channels between the plurality of data terminals and the modem;

terminal selecting means for selecting a data terminal from the plurality of data terminals in accordance with an extension telephone designation signal given by the telephone line in dial-in service when there is a call incoming from the telephone line;

exchange control means for closing one of the second communication channels between the selected data terminal and the modem by controlling said switching means when there is a call incoming from the telephone line, to establish a status equivalent to that where the selected data terminal is directly coupled to the modem; and

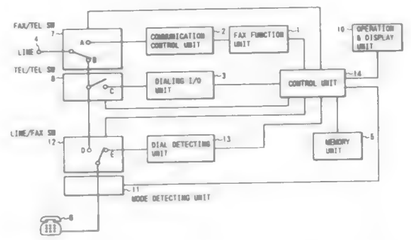
call control means for informing the modem of the call incoming from the telephone line to allow the modem to send a call signal to the selected data terminal, after one of the second communication channels between the selected data terminal and the modem has been closed when there is a call incoming from the telephone line.

5,337,349

IMAGE TELECOMMUNICATION APPARATUS

Ikuko Furohashi, Yokohama; Yoshihiro Miyake, Fujisawa, and Takao Yokoyama, Tokyo, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 896,777
Claims priority, application Japan, Nov. 18, 1991, 3-301569; Nov. 18, 1991, 3-301570
Int. Cl.[5] H04M *11/00, 1/00*
U.S. Cl. 379—100 5 Claims



1. An image telecommunication apparatus comprising:

an image telecommunication means performing an image telecommunication and an image processing;

a memory means for storing shortening telephone numbers;

a calling means for accessing to a line to carry out dialing operation;

a mode detecting means for detecting a shortening dial command mode inputted from a dialing signal fed from an external telephone associated with the apparatus;

a dialing number detecting means for detecting a dial number inputted from the dialing signal fed from the external telephone associated with the apparatus;

a first switch means for selectively outputting the dialing signal fed from the external telephone associated with the apparatus to one of said dial number detecting means or to the line;

a second switch means for selectively outputting either of the dialing signal fed from the calling means and the dialing signal fed from the external telephone associated with the apparatus to the line; a third switch means for selectively connecting either of the second switch means and the image telecommunication means to the line; and

a control means for effecting the dialing number detecting means to output the dial number to be inputted through said first switch means when the mode detecting means detects a shortening dial command mode, and reading out a telephone number corresponding to the dial number detected by the dialing number detecting means from said memory means so as to enable the calling means to carry out its dialing operation through said second and third switch means.

5,337,350

FACSIMILE APPARATUS WITH TELEPHONE SYSTEM

Tetsuya Kuwahara, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Nov. 4, 1991, Ser. No. 787,017
Claims priority, application Japan, Nov. 9, 1990, 2-304644; Dec. 11, 1990, 2-409962
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 1 Claim

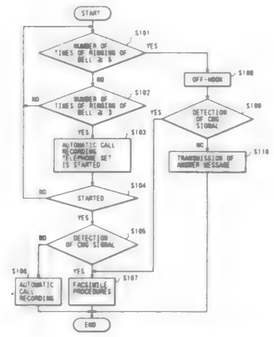
1. In a facsimile system having an automatic call recording mode and a facsimile reception mode, a facsimile receiving method comprising:

counting the number of ringing signals received by the system,

switching the system to the automatic call recording mode after the number of ringing signals received exceeds a first number,

determining whether the system has commenced automatic call recording,

continuing to count the number of ringing signals received by the system after determining that the system has not commenced automatic call recording, and



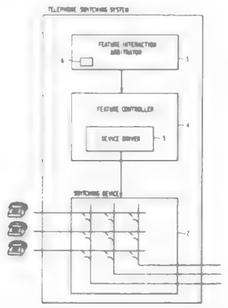
switching the system to the facsimile reception mode after the number of ringing signals received exceeds a second number, the system has not commenced automatic call recording and a CNG signal has been detected, the second number being greater than the first number.

5,337,351

FEATURE INTERACTION ARBITRATOR

Hisashi Manabe, Tokyo, Japan, and Hideo Yabe, Irving, Tex., assignors to NEC America, Inc., Melville, N.Y.

Filed Feb. 28, 1992, Ser. No. 843,366
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—201 20 Claims



13. A feature interaction arbitrator for managing feature interactions in a telephone switching system which is capable of implementing a plurality of features, each of which are defined by classes of feature elements, said arbitrator comprising:

a memory for storing a plurality of numerical values assigned to said feature elements for each of said plurality of features,

each said plurality of numerical values representing properties and characteristics of a respective one of said plurality of features;

identification means for identifying a potential interaction between first and second features based on a comparison of said numerical values assigned to said feature elements of said second feature with said numerical values assigned to said feature elements of said first feature; and

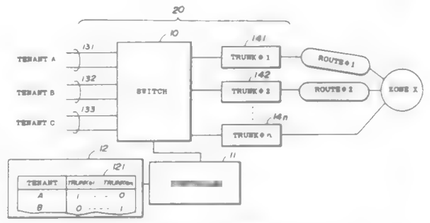
a controller, responsive to an output of said identification means, for controlling said switching system so as to avoid said potential interaction between said first and second features.

5,337,352

PRIVATE BRANCH EXCHANGE SYSTEM HAVING AN AUTOMATIC OPTIMAL ROUTE SELECTING MECHANISM

Takayasu Kobayashi, Tokyo, and Tsutomu Shimasue, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 27, 1991, Ser. No. 722,201
Claims priority, application Japan, Jun. 29, 1990, 2-173522
Int. Cl.[5] H04M *7/00, 3/42, 3/00*
U.S. Cl. 379—234 12 Claims



1. A private branch exchange system, located in a first zone and operative for connecting calls from the first zone to a remote zone, comprising:

a plurality of tenants, each tenant having a plurality of associated terminals, each terminal being selectively operable for placing a call;

a switch associated with the plurality of tenants, each associated terminal of each tenant being connected to the switch and each call placed by a calling terminal being coupled to and received by the switch;

a plurality of trunks connected to said switch, the switch coupling a received call to a selected trunk for transmission through the trunk;

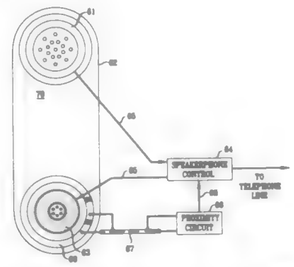
a plurality of routes which selectively receive calls transmitted through the plurality of trunks, each route coupling the call received thereby to the remote zone, each tenant establishing a priority order of selected routes, of the plurality of routes, for coupling calls from the associated terminals thereof to the remote zone;

memory means for storing, in a table, information indicating, for each tenant, the respective priority order of selected routes; and

control means, coupled to said switch and said memory means and responsive to a call received by the switch, for identifying the tenant with which the calling terminal is associated and for accessing the memory in accordance with the identified tenant to obtain the information stored in the table of the memory means indicating the respective priority order of selected routes for the tenant and, in responsive thereto, for selecting an optimal route for coupling of the call to the remote zone in accordance with determining and selecting the highest priority order available route, of the respective priority order of selected routes established for the identified tenant, and controlling the transmission of the call over the selected optimal route to the remote zone.

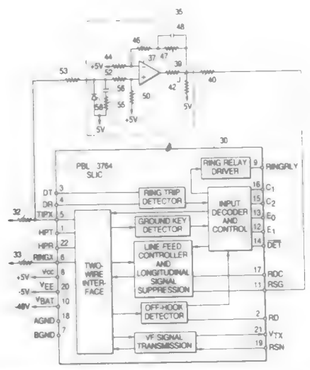
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,353
CAPACITIVE PROXIMITY SENSORS
Robert A. Boie, and Gabriel L. Miller, both of Westfield, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 1, 1992, Ser. No. 861,667
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—388 **8 Claims**



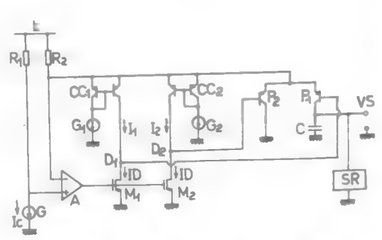
1. A capacitive controller the operation of a telephone handset in accordance with the distance from a portion of such handset to the head of a user, said handset including a transmitter and receiver, which comprises:
a sensing electrode,
an insulating layer,
a guard electrode spaced away from said sensing by electrode by said insulating layer and shaped to shield said sensing electrode, said sensing electrode, said insulating layer and said guard electrode being incorporated in said handset,
means for applying RF signals in unison to said sensing electrode and said guard electrode,
means for generating a control signal from changes in the current flowing through said sensing electrode resulting from proximity of handset to the user's head, and
means responsive to said control signal for controlling the operation of said handset.

5,337,354
TIP-RING VOLTAGE CORRECTION CIRCUIT
Winston M. Gadsby, Herndon, Va., assignor to Hubbell Incorporated, Orange, Conn.
Filed Jul. 30, 1992, Ser. No. 921,681
Int. Cl.[5] H04M *3/00*
U.S. Cl. 379—399 **5 Claims**



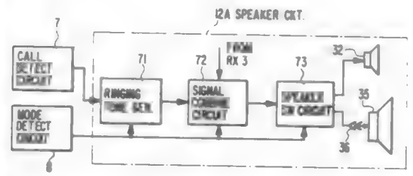
1. A telephone system correction circuit comprising:
a subscriber line interface circuit (SLIC) having a fixed on-hook tip-to-ring voltage over a system battery range when a saturation guard terminal is connected to a fixed voltage and having first and second output terminals for supplying a direct current voltage respectively to tip and ring wires of a telephone circuit;
a first differential operational amplifier having an output terminal and inverting and non-inverting input terminals;
resistive circuit means connecting the output of said operational amplifier to said saturation guard terminal of said SLIC;
first circuit means including a resistor for connecting at least one of said output terminals of said SLIC to an input terminal of said operational amplifier; and
second circuit means for connecting said resistive circuit means and a source of reference voltage to the other of said input terminals of said operational amplifier so that said operational amplifier provides to said SLIC saturation guard terminal a current signal for controlling the open-circuit voltage supplied to said tip and ring wires.

5,337,355
SUPPLY CIRCUIT DEVICE FOR A USER'S TELEPHONE CIRCUIT, HAVING A LOW VOLTAGE LOSS
Luciano Tomasini, Monza, and Rinaldo Castello, Arcore, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Milan, Italy
Filed Dec. 16, 1992, Ser. No. 991,564
Int. Cl.[5] H04M *19/00, 1/00*
U.S. Cl. 379—413 **20 Claims**



15. A circuit for providing a supply voltage from a telephone exchange having first and second supply wires to a user's telephone with a minimum voltage loss, the circuit comprising:
an operational amplifier having non-inverting and inverting input terminals coupled to the first supply wire through first and second resistances, respectively, and a differential output terminal producing an output voltage signal proportional to the difference between the voltage signals of said first and second input terminals;
a current generator coupled between said first resistance and the second supply wire to generate a current;
a first output transistor coupled to a capacitor and said second resistance and controlled by a first control current, said capacitor being coupled to the circuit output to produce a voltage for the user's telephone;
a second output transistor coupled to the second supply wire and said second resistance and controlled by a second control current;
first and second constant current generators coupled to said second resistance and producing first and second constant currents having an equal value;
a first control transistor, controlled by said output voltage signal and coupled said first constant current generator, said first control transistor conducting a first current from said first constant current generators to the second supply wire, the node coupling said first constant current generator to said first control transistor also producing said first control current; and
a second control transistor, controlled by said output voltage signal and coupled said second constant current generator, said second control transistor conducting a second control current from said second constant current generator to the second supply wire, the node coupling said second constant current generator to sad second control transistor also producing said second control current, said second current being greater than said first current, whereby said first output transistor is conducting and said second output transistor is cutoff if the voltage on the first supply wire is above a predetermined threshold, and said first output transistor is cutoff and said second output transistor is conducting if the voltage on the first supply wire is below said predetermined threshold.

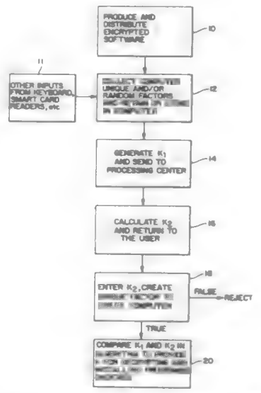
5,337,356
RINGING CIRCUIT FOR USE IN PORTABLE TELEPHONE SET
Nobuhisa Shinozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Division of Ser. No. 648,759, Jan. 31, 1991, Pat. No. 5,303,284. This application Feb. 23, 1993, Ser. No. 21,140
Claims priority, application Japan, Jan. 31, 1990, 2-21233
Int. Cl.[5] H04M *3/02*
U.S. Cl. 379—418 **3 Claims**



1. A telephone set comprising:
means for detecting a calling signal for said telephone set to produce a calling detection signal;
means for detecting whether said telephone set is in a portable mode or mobile mode and producing first and second mode signals when said telephone set is in said portable mode and said mobile mode, respectively;
generator means for generating a first ringing signal having a first frequency characteristic in response to said calling detection signal and to said first mode signal and generating a second ringing signal having a second frequency characteristic different from said first frequency characteristic in response to said calling detection signal and to said second mode signal; and
switch means for providing said first ringing signal to an internal loudspeaker having a frequency characteristic corresponding to said first frequency characteristic in response to said first mode signal and providing said second ringing signal to an external loudspeaker having a frequency characteristic corresponding to said second frequency characteristic in response to said second mode signal.

5,337,357
METHOD OF SOFTWARE DISTRIBUTION PROTECTION
Wayne W. Chou, Ridgefield; Joseph M. Kuinets; Lazzlo Elteto, both of Stamford, and Frederik Engel, Wilton, all of Conn., assignors to Software Security, Inc., Stamford, Conn.
Continuation-in-part of Ser. No. 79,093, Jun. 17, 1993, abandoned. This application Jul. 27, 1993, Ser. No. 97,705
Int. Cl.[5] H04L *9/00, 9/08*
U.S. Cl. 380—4 **6 Claims**

1. A method of protecting distributed encrypted software of a distributor from unauthorized use by a user in a user's computer comprising the steps of
generating data which describes a unique factor of the computer of the user,
entering said data along with a random factor into a file of the computer of the user,
generating a first key based on said data and said random factor,
transmitting the first key to a processing center which controls the user of the distributed program,
sending a second key from the processing center to the user which second key is related to said user's first key,
entering the second key in the user's computer for regenerating said file in the user's computer,



comparing said file in said user's computer with said regenerated file,
denying access to said encrypted software when said comparison fails to produce a match, and
combining said first and second key by means of an algorithm in said software when a match occurs for providing a decrypting key for decrypting the distributed software and
decrypting said encrypted software thereby gaining access to said encrypted software.

5,337,358
APPARATUS FOR RECORDING A TRANSACTION INCLUDING AUTHENTICATING AN IDENTIFICATION CARD
Barry H. Axelrod, Trumbull; John T. Balga, Jr., Stratford, and Edward P. Cornell, Newtown, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Nov. 20, 1992, Ser. No. 979,113
Int. Cl.[5] H04L *9/32, 9/30;* **G06F** *15/21*
U.S. Cl. 380—23 **15 Claims**

15. An apparatus for recording a transaction, said transaction including authenticating an identification card, said card having information in humanly recognizable form and pertaining to an object or other entity to be identified on a first portion of said identification card and a coded representation of an encrypted signal comprising an representation of said information on a second portion, said apparatus comprising:
a) control means for controlling the operation of said apparatus;
b) means for reading said coded representation of said signal from said card;
c) decoding means, responsive to said reading means, for decoding said representation of said signal to provide a decoded signal;
d) decrypting means for decrypting said decoded signal to provide a decrypted signal;

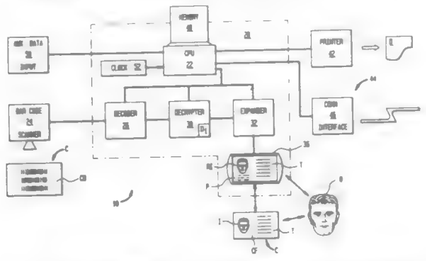
VOL 1165 ISS 2 AG 9 1994 UMI

e) display means, responsive to said decrypting means, for displaying said representation of said information, whereby

f) said card can be authenticated by comparison of said information on said first portion with said displayed representation of said information; and,

g) recording means, responsive to said control means for recording data; wherein,

h) said control means is responsive to said decrypting means to control said recording means to record at least a portion of said decrypted signal, and wherein;



i) said encrypted signal is encrypted using an encryption key, E_i, for a public key encryption system, and a decryption key D_i, corresponding to said key E_i, is encrypted with an encrypted key E_1 for said public key encryption system to form an encryption decryption key $E_1[D_i]$ and said encrypted key $E_i[D_i]$ is appended to said encrypted signal, and said decrypting means further comprises;

i1) means for decrypting said encrypted decryption key, $E_1[D_i]$ with a corresponding decryption key D_1, to recover said decryption key, D_i; and,

i2) means for decrypting said encrypted signal using said key, D_i.

5,337,359

Patent Not Issued For This Number

5,337,360

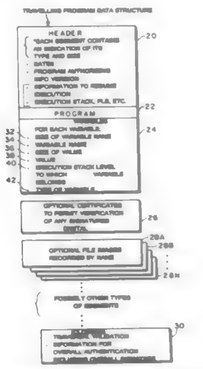
METHOD AND APPARATUS FOR CREATING, SUPPORTING, AND USING TRAVELLING PROGRAMS

Addison M. Fischer, 60 14th Ave. South, Naples, Fla. 33942

Continuation of Ser. No. 863,552, Apr. 6, 1992, abandoned. This application Jan. 5, 1994, Ser. No. 174,154

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—23 26 Claims



24. In a communications system having at least one digital computer and a plurality of destinations within said communications system at which users perform digital signatures, a method for handling digital signatures comprising the steps of:

providing a sequence of digital instructions to control the management of digital signatures, including instructions which:

determine digital values,

control creation of a digital signature value based on determined digital values, and

determine a next destination;

executing in at least one digital computer at least one of said instructions to determine a first digital value to be digitally signed;

executing in at least one digital computer at lest one of said instructions to control the creation of a digital signature value computed on said first digital value;

executing in at least one digital computer at least one of said instructions to determine a next destination;

transmitting to said next destination digital information including said sequence of digital instructions;

executing in at least one of said computers at least one of said instructions to determine a further next destination; and

transmitting to said further next destination, digital information including said digital signature value.

5,337,361

RECORD WITH ENCODED DATA

Yujiun P. Wang, Stony Brook; Jerome Swartz, Old Field, and Daniel R. McGlynn, Brooklyn, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation-in-part of Ser. No. 653,822, Feb. 11, 1991, Pat. No. 5,113,445, which is a continuation of Ser. No. 550,023, Jul. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 461,881, Jan. 5, 1990, which is a continuation-in-part of Ser. No. 851,493, Mar. 16, 1992. This application Jun. 1, 1992, Ser. No. 891,742

The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—51 28 Claims



1. A record comprising

an image portion containing a graphic image; and

an information portion including data encoded in a machine-readable format including at least two adjacent rows of codewords, each said codeword being represented by at least one pattern of marks.

5,337,362

METHOD AND APPARATUS FOR PLACING DATA ONTO PLAIN PAPER

Michael J. Gormish, Stanford; Mark Peairs, Menlo Park, and David G. Stork, Stanford, all of Calif., assignors to Ricoh Corporation, Menlo Park, Calif. and Ricoh Company Ltd., Tokyo, Japan

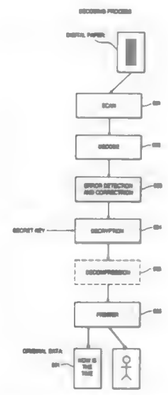
Filed Apr. 15, 1993, Ser. No. 48,376

Int. Cl.[5] G09C *5/00*

U.S. Cl. 380—54 37 Claims

1. A system for placing a data source on plain paper as digital data comprising:

formatting means for formatting the data source into a series of digital data values, wherein the series of digital data values are formatted into a plurality of contiguous rows and a plurality of contiguous columns of pixels in at least one data box, wherein each pixel represents at least one bit in the series of digital data values, and further wherein the data box includes a frame bordering the series of digital data values having alternating pixels along at least two



opposite sides for identifying the vertical separations between the plurality of rows of data and having pixels in corners in the frame to determine horizontal spacing between pixels within said at least one data box; and

printing means coupled to the formatting means for printing said at least one box onto at least one piece of plain paper having the plurality of rows and the plurality of columns, such that the data source is represented in digitized form on the plain paper.

5,337,363

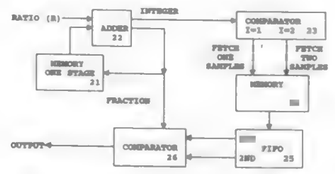
METHOD FOR GENERATING THREE DIMENSIONAL SOUND

David C. Platt, Mountain View, Calif., assignor to The 3DO Company, Redwood City, Calif.

Filed Nov. 2, 1992, Ser. No. 970,274

Int. Cl.[5] H04S *5/00*

U.S. Cl. 381—17 21 Claims



1. A method of generating sound that would be associated with an object moving respectively to the listener comprising the steps:

a) generating a ratio between the length of time that said object would generate such a sound and the length of time that the listener would hear said sound; and

b) generating a series of digital sound samples as a function of said ratio for the period of time that said listener would have heard said sound.

5,337,364

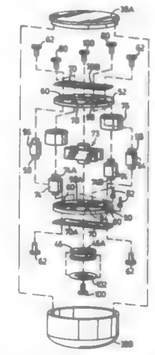
COMMUNICATION DEVICE FOR TRANSMITTING AUDIO INFORMATION TO A USER

Frank Fitch, Vista, Calif., assignor to Canadian Bionic Research Inc., Vancouver, Canada

Filed Nov. 28, 1990, Ser. No. 618,885

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—68.3 41 Claims



1. A communication device for transmitting audio information to a user comprising:

input means for receiving input audio signals;

processing means in communication with said input means and converting said input audio signals into transducer driving signals;

a transducer assembly to be worn by a user and being in communication with said processing means, said transducer assembly including a plunger member moveable axially to contact said user; drive means including an armature to which said plunger member is attached, said drive means moving said armature axially to cause said plunger member to contact said user in a vibrational pattern analogous to said input audio signals in response to said transducer driving signals; and biasing means at opposite axial ends of said armature for opposing the movement of said armature in response to said transducer driving signals and for returning said armature to a datum in the absence of said transducer driving signals.

5,337,365

APPARATUS FOR ACTIVELY REDUCING NOISE FOR INTERIOR OF ENCLOSED SPACE

Tsutomu Hamabe, Yokosuka; Akio Kinoshita, Fujisawa; Kazuhiro Doi, Yokohama; Kenichiro Marsoka, Yokosuka, and Noriharu Sato, Katsuta, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Hitachi, Ltd., Tokyo, both of Japan

Filed Aug. 27, 1992, Ser. No. 935,100

Claims priority, application Japan, Aug. 30, 1991, 3-220620

Int. Cl.[5] A61F *11/06*

U.S. Cl. 381—71 27 Claims

1. An apparatus for actively reducing noise for an interior of enclosed space, comprising:

a) control sound source means for generating a control sound, to interfere with the noise according to a drive signal input thereto, so as to reduce the noise propagated into the interior of enclosed space at an evaluating area in the interior of enclosed space at which a degree of a residual noise sound is evaluated;

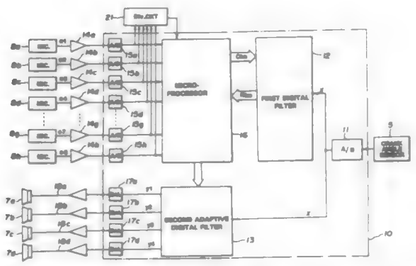
b) residual noise detecting means for detecting the residual noise sound at a predetermined area of the interior of the enclosed space after the noise interference is carried out

VOL 1165 ISS 2 AG 9 1994 UMI

by the control sound source means and outputting the detected residual noise sound as a residual noise signal;

c) reference signal detecting means for detecting a signal related to a noise source and processing the detected signal as a reference signal;

d) controlling means for outputting the drive signal to said control sound source means on the basis of the output residual noise signal of said residual noise detecting means, the reference signal of said reference signal detecting means, and the drive signal output from the controlling means itself to the control sound source so that a performance function is minimized, said performance function



being established thereby on the basis of the output residual noise signal of said residual noise detecting means and the drive signal output to said control sound source means;

e) changing means for directly changing a contributivity of the drive signal to the performance function, and further including divergence detecting means for predictively monitoring whether a divergence of control sound derived from said control sound source means occurs at the evaluating area and wherein said changing means changes the contributivity of the drive signal to the performance function according to a result of the monitoring by said divergence detecting means.

5,337,366

ACTIVE CONTROL APPARATUS USING ADAPTIVE DIGITAL FILTER

Masaki Eguchi, Kitakatsuragi; Jun Saitoh, Yao; Hiroyuki Iida, Fujiidera, and Kozo Hiyoshi, Amagasaki, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1993, Ser. No. 86,133

Claims priority, application Japan, Jul. 7, 1992, 4-178751; Nov. 25, 1992, 4-315325

Int. Cl.[5] G10K *11/16*

U.S. Cl. 381—71 **8 Claims**

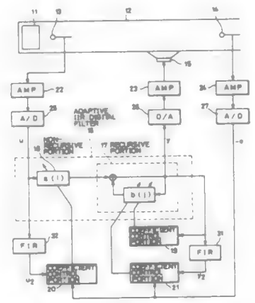
1. An active control apparatus for controlling an amount of a physical phenomenon at a desired value;

detection means for detecting said amount of physical phenomenon;

control signal output means responsive to a detection signal obtained by said detection means for outputting a control signal to control said amount of physical phenomenon at said desired value; and

error output means for outputting an error between the desired value of physical phenomenon and an actual amount of physical phenomenon,

said control signal output means including an adaptive digital filter formed of a non-recursive filter and a recursive filter, first coefficient control means for updating a filter coefficient of said adaptive digital filter so as to minimize the level of an output signal from said error output means, and second coefficient control means for controlling a



filter coefficient of said recursive filter so as to minimize the output signal level of said recursive filter.

5,337,367

RECORDING DEVICE AND VIDEO DEVICE USING THE SAME

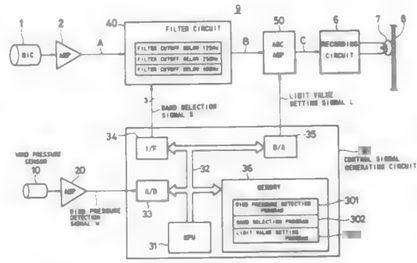
Hiroyuki Maeda, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 24, 1992, Ser. No. 981,063

Claims priority, application Japan, Nov. 26, 1991, 3-336291

Int. Cl.[5] H04B *15/00*

U.S. Cl. 381—94 **12 Claims**



1. A recording device which selectively reduces wind sound components in a sound signal picked up by a microphone and records the same, comprising;

a wind pressure sensor either formed integral with the microphone or disposed at the vicinity of the microphone and detecting the wind pressure acting thereon;

a recording circuit;

a filter circuit which cuts off low sound components corresponding to the wind sound components;

a selection circuit which sends out the sound signal collected by the microphone to said recording circuit via said filter circuit in response to a control signal and, when no control signal is received, sends out the sound signal to said recording circuit while bypassing said filter circuit;

a control circuit which generates the control signal when a signal from said wind pressure sensor exceeds a predetermined level;

an AGC circuit including an AGC amplifier disposed in front of said recording circuit and wherein said filter circuit is disposed in front of said AGC circuit; and

said control circuit setting a lower limit value of gain for said AGC amplifier in response to the wind pressure so as not to reduce the lower limit of the gain below a predetermined value.

5,337,368

FREQUENCY CONTROL SYSTEM IN AN AUDIO DEVICE

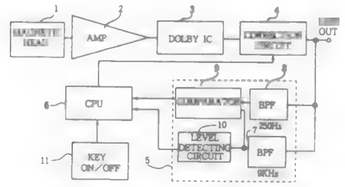
Susumu Kikuchi; Shiro Suzuki, and Satoru Kodaira, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 54,433

Claims priority, application Japan, Apr. 24, 1992, 4-131619; Apr. 1, 1993, 5-075554

Int. Cl.[5] H03G *5/00*

U.S. Cl. 381—103 **7 Claims**



1. A frequency control system in an audio system, comprising:

first deriving means for deriving a low frequency component from an audio signal obtained from the audio system;

second deriving means for deriving a high frequency component, the frequency of which is higher than that of the low frequency component, from the audio signal;

comparator means for comparing the level of the high frequency component with the level of the low frequency component, and for producing a deviation of the high frequency component from a 1/f fluctuation; and

correcting means for correcting the level of the audio signal to the 1/f fluctuation dependent on said deviation.

5,337,369

EQUIPMENT FOR FINGERPRINT PATTERN CLASSIFICATION

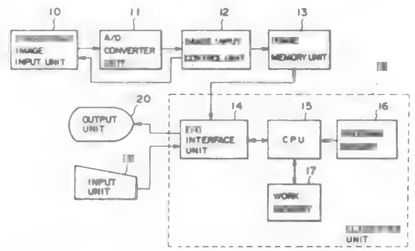
Tatsuo Shibuya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 118,209

Claims priority, application Japan, Sep. 9, 1992, 4-240241

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—5 **7 Claims**



1. An apparatus for fingerprint pattern classification, comprising:

means for converting a fingerprint image picture to a set of digital data and storing said set of digital data in an image memory unit such that each digital data corresponding to a point in said fingerprint image picture is stored at an address of said image memory unit corresponding to position coordinates of said point in the fingerprint image picture;

means for subdividing said set of digital data stored in said image memory unit into plural zones, estimating an average ridge direction in each zone, and quantizing said averaged ridge direction in each zone to produce a ridge direction pattern of a fingerprint image picture;

means for determining a core zone which satisfies a predetermined condition in said ridge direction pattern;

means for determining ridge line shape around the core zone of said ridge direction pattern;

means for determining ridge direction trend around the core zone of said ridge direction pattern;

means for classifying a ridge direction pattern in accordance with said ridge line shape and said ridge direction trend of said ridge direction pattern; and

means for rejecting classification of a ridge direction pattern which does not match to any one of predetermined types of classification; and

wherein said means for rejecting classification comprises means for estimating reliability of said ridge direction pattern and rejecting classification of a fingerprint pattern which does not produce a reliable ridge direction pattern,

a position of a zone in said ridge direction pattern is defined in x–y rectangular coordinates in which y direction is determined to be perpendicular to a joint of a finger from which said fingerprint image picture is obtained, and x increases from left to right by a unit for a zone while y increases from top to bottom by a unit for a zone,

said means for determining ridge line shape comprises means for detecting flection in y direction scanning for $(-x, +y)$ zones and for $(+x, +y)$ zones, said flection being defined as a change of ridge direction from a right-hand side ascending to a left-hand side ascending direction in $-x$ zones and as a change from a left-hand side ascending to a right-hand side ascending direction in $+x$ zones,

said means for determining ridge direction trend comprises means for classifying ridge direction trend of zones in a predetermined window into a horizontal, a vertical, a right-hand side ascending, and a left-hand side ascending direction trend, and

said means for classifying a ridge direction pattern comprises means for classifying a ridge direction pattern having the flection on both $-x$ and $+x$ zones to a pattern named whorl, a ridge direction pattern having the flection only in $-x$ zones with a left-hand side ascending ridge direction trend to a pattern named right loop, a ridge direction pattern having the flection only in $+x$ zones with a right-hand side ascending ridge direction trend to a pattern named left loop, a ridge direction pattern having no flection or having a vertical ridge direction trend to a pattern named tented arch, and a ridge direction pattern having a horizontal ridge direction trend to a pattern named plain arch.

5,337,370

CHARACTER RECOGNITION METHOD EMPLOYING NON-CHARACTER RECOGNIZER

Andrew Gilles, and Daniel Hepp, both of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Feb. 28, 1992, Ser. No. 843,408

Int. Cl.[5] G06K *9/62*

U.S. Cl. 382—14 **31 Claims**

1. A method for recognition of an unconstrained written digit image, consisting of stroke pixels and background pixels, as one of a set of candidate digits comprising the steps of:

forming a corresponding normalized image of predetermined pixel dimensions from the unconstrained written digit image;

forming at least one feature image of said predetermined pixel dimensions from said normalized image, each feature image including only pixels exhibiting a predetermined feature of said normalized image;

computing a set of at least one encoded value for said normalized image and for each of said at least one feature image;

VOL 1165 ISS 2 AG 9 1994 UMI

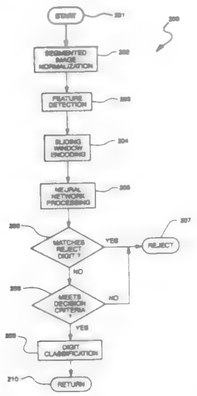
supplying said encoded values of each set to a neural network, said neural network having

a layer of input neurons, the number of input neurons equal to the number of said encoded values, each input neuron receiving a corresponding one of said encoded values,

at least one layer of hidden neurons, and

a layer of output neurons, the number of output neurons equal to one more than the number of digits in the set of candidate digits, said output neurons including a non-digit output neuron and an output neuron corresponding to each of said candidate digits,

each of said hidden neurons and each of said output neurons having predetermined synaptic weights,



each of said hidden neurons and each of said output neurons forming an output consisting of a sigmoidal function of a sum of the outputs of a prior layer of neurons multiplied by a corresponding synaptic weight;

rejecting recognition of the unconstrained written digit image as one of said candidate digits if said non-digit output neuron produces an output exceeding a predetermined non-digit rejection threshold; and

recognizing the unconstrained written digit image as one of said candidate digits only if a) said output neuron corresponding to said candidate digit produces an output exceeding a corresponding predetermined digit recognition threshold, and b) said non-digit output neuron does not produce an output exceeding said predetermined non-digit rejection threshold.

5,337,371

PATTERN CLASSIFICATION SYSTEM

Masaaki Sato; Motohiko Naka, both of Kawasaki; Takehiko Shida, Yokohama; Kunio Yoshida; Mie Saitoh, both of Kawasaki; Ikuo Akamine, Kusatsu; Makoto Shimizu, Kyoto; Katsuhiko Fujiwara, Kusatsu, and Akira Yokouchi, Shiga, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 925,674, Aug. 7, 1992, abandoned. This application Aug. 27, 1992, Ser. No. 935,099

Claims priority, application Japan, Aug. 9, 1991, 3-200864; Aug. 28, 1991, 3-216847; Aug. 5, 1992, 4-208708

Int. Cl.[5] G06K *9/62*

U.S. Cl. 382—14 **16 Claims**

1. A pattern classification system comprising:

a plurality of classification sections each including:

means for storing information of N coefficients W representing a reference pattern,

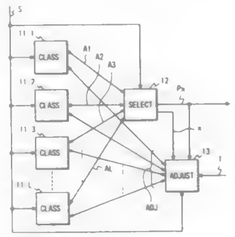
means for calculating an evaluation value V on the basis of N input signals S and the N coefficients W, the N input signals representing an input pattern, the evaluation value V representing a relation between the input pattern and the reference pattern,

means for storing information of a fixed threshold value R,

means for comparing the evaluation value V and the threshold value R and for outputting a first part of an estimation signal depending on a result of the comparing, the estimation signal first part including a category signal P which represents a category;

means for storing a counter signal C, representing a frequency in use of the classification section, and

means for outputting the stored counter signal as a second part of the estimation signal in response to the result of



the comparing the evaluation value V and threshold value R;

a selection section for selecting one of a plurality of categories represented by the category signals P outputted from the classification sections in response to the counter signals outputted from the classification sections and for outputting a signal Px representing the selected one of the categories: and

an adjustment section for adjusting parameters in the classification sections in response to the output signal Px of the selection section and a teacher signal T representing a target state of the output signal Px of the selection section, the parameters including the coefficients W.

5,337,372

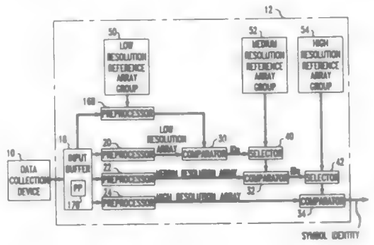
METHOD AND APPARATUS FOR SYMBOL RECOGNITION USING MULTIDIMENSIONAL PREPROCESSING AT MULTIPLE RESOLUTIONS

Yann A. LeCun, and Quen-Zong Wu, both of Lincroft, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 13, 1992, Ser. No. 959,895

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—27 **21 Claims**



1. An apparatus for recognizing symbols, comprising:

first preprocessor means responsive to an applied plurality of micro-segments which describes a symbol, for associating a micro-segment with a first plurality of cells of a first feature cellular array, where each of said cells has a first associated feature label, and

for assigning a cell value to a cell, using a micro-segment value that is related to how well a feature of said micro-segment associated with said cell corresponds to said cell's feature label;

means for selecting a subset of reference cellular arrays from a first plurality of reference cellular arrays based on a similarity between each of the subset reference cellular arrays and said first plurality of cells;

second preprocessor means for associating said micro-segment with a second plurality of cells of a second feature cellular array where each of said cells has a second associated feature label; and

comparator means for recognizing said symbol based on a similarity between said second plurality of cells and a reference cellular array in a second plurality of reference cellular arrays identified by said subset of reference cellular arrays.

5,337,373

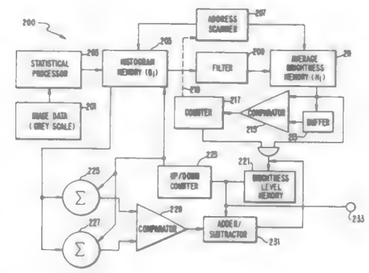
AUTOMATIC THRESHOLD GENERATION TECHNIQUE

Mircea P. Marandici, Poughkeepsie, N.Y., and Matthew J. Quinn, Seattle, Wash., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 783,453, Oct. 24, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 100,637

Int. Cl.[5] G06K *9/38*

U.S. Cl. 382—51 **12 Claims**



1. A method of optically imaging a sample and extraction of a feature of said sample from optical intensity data, including noise, in histogram form, produced by an optical inspection apparatus, said optical intensity data representing the number of times a signal level produced by said optical imaging and corresponding to a physical property of said sample at a spatially differentiated location thereon falls within each of a plurality of optical intensity quantization ranges, said feature extraction method including the steps of

a.) filtering said optical intensity data over a given number of said plurality of quantization ranges to provide filtered data,

b.) evaluating said filtered data to determine the number of extrema existing in said filtered data,

c.) increasing said given number and repeating steps a.) and b.),

d.) detecting and outputting a minimum value of said filtered data when a predetermined number of extrema are found in step b.),

e.) estimating a threshold value for discrimination between values of said sensed signal level in accordance with said minimum value of said filtered data,

f.) defining an estimate of said threshold value,

g.) discriminating at least one feature on said sample in accordance with said threshold value, and

h.) controlling relative positioning of said sample and apparatus for conducting processing of said sample in accordance with said at least one feature.

5,337,374

DISK DRIVE APPARATUS

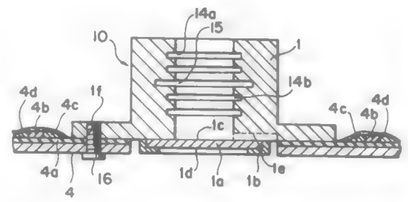
Kaoru Koaishikawa, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 23, 1992, Ser. No. 902,690

Claims priority, application Japan, Jul. 4, 1991, 3-164287

Int. Cl.[5] F16C *32/06*

U.S. Cl. 384—107 **6 Claims**



1. A bearing device for supporting a shaft through lubricating oil, comprising:

a) a bearing body having an inner surface on which are formed:

1) at least one first groove; and

2) further grooves, formed on both sides of the at least one first groove, and having a smaller depth than a depth of the at least one first groove; and

b) a thrust receiving portion, disposed at a bottom of the bearing body.

5,337,375

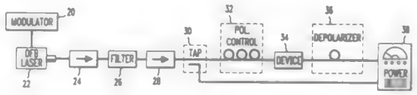
DEPOLARIZER USING UNPUMPED, DOPED OPTICAL FIBER AND METHOD USING SAME

Bruce M. Nyman, Freehold Township, Monmouth County, and Gregory M. Wolter, Oakhurst, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 31, 1992, Ser. No. 999,080

Int. Cl.[5] G02B *6/10;* **H01S** *3/30*

U.S. Cl. 385—11 **12 Claims**



1. A depolarizer comprising an unpumped doped optical fiber, the fiber having a prescribed length sufficient to absorb an applied polarized signal to produce, from the applied signal, unpolarized amplified spontaneous emission of longer wavelengths.

11. A method of depolarizing a polarized signal comprising the step of:

applying a polarized signal to an unpumped doped optical fiber, said fiber having a prescribed length sufficient to absorb the applied polarized signal to produce, from the applied signal, unpolarized amplified spontaneous emission of longer wavelengths.

5,337,376

CHEMICALLY SENSITIVE FIBER OPTIC CABLE

Robert G. Ravetti, Rancho Palos Verdes, and Thomas K. Dougherty, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 19, 1993, Ser. No. 49,461

Int. Cl.[5] G02B *5/14*

U.S. Cl. 385—12 **18 Claims**

1. A chemically sensitive sensor adapted for detecting

VOL 1165 ISS 2 AG 9 1994 UMI

changes in concentrations of ions, atoms, or molecules in an environment containing fluids to be monitored, comprising:

(a) a light source portion including a light source for generating light;

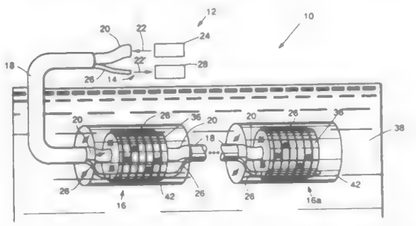
(b) a light detector portion including means for detecting light;

(c) at least one probe portion; and

(d) a fiber optic portion comprising two optical fibers, wherein a first optical fiber comprises a core-only fiber connected between said means for detecting light and said at least one probe portion and a second optical fiber comprises a core, a cladding layer, and a chemically sensitive coating and is connected between said light source and said at least one probe portion, and said chemically sensitive coating comprises a water permeable, indicator-containing polymer coating, formulated from a water permeable polymer vehicle, a mixture of monomeric and multifunctional polymerizable monomers selected to give a permeable, cross-linked coating that is stable to the environment, a chemically sensitive probe molecule that changes at least one of color and absorbance in response to a specific chemical agent, and a polymerization initiator, wherein each said probe portion comprises:

(1) a clad member surround a portion of said core-only fiber, said clad member having a higher index of refraction than that of said core-only fiber, said clad member supporting on its outer surface a plurality of windings of said second optical fiber; and

(2) a porous or permeable protective container surrounding said clad member for mechanically protecting said clad member while permitting said fluid to penetrate said clad member to chemically react with said coating on said second optical fiber.

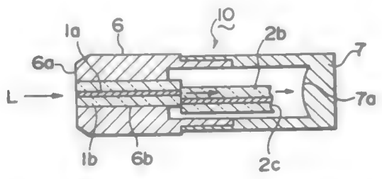


5,337,377

OPTICAL FIBER TERMINATION DEVICE

Kunio Yamada, and Shuichi Takashi, both of Matsudo, Japan, assignors to Seikoh Giken Co., Ltd., Matsudo, Japan

Filed Apr. 8, 1993, Ser. No. 44,044
Claims priority, application Japan, Dec. 15, 1992, 4-354538
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—15 10 Claims



1. An optical fiber termination device, comprising

a first optical fiber for receiving light from a light source, said first optical fiber having a first core extending along a first optical axis and a first clad surrounding said first core;

a second optical fiber for receiving light from said first optical fiber, said second optical fiber having a second core extending along a second optical axis offset from said first optical axis and a second clad surrounding said second core, an end portion of the first core of said first optical fiber being fused to an end portion of the second clad of said second optical fiber and an end portion of the second core of said second optical fiber being fused to an end portion of the first clad of said first optical fiber to form a fusion splice; and

a protective cover having a cavity therein surrounding said second optical fiber, said protective cover being made of light absorbing material for absorbing light emanating from said second optical fiber,

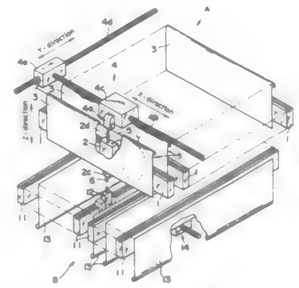
whereby light power returned to the light source and a temperature rise within said termination device are minimized.

5,337,378

OPTICAL FIBER SWITCH INCLUDING PARTITIONS FOR RESTRICTING SURPLUS FIBERS

Kazuhito Saito, Yokohama; Hideo Kobayashi, and Toshiaki Katagiri, both of Mito, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph and Telephone Corp., Tokyo, both of Japan

Filed Apr. 22, 1993, Ser. No. 50,773
Claims priority, application Japan, Apr. 23, 1992, 4-104605
Int. Cl.[5] G02B 6/26, 6/28
U.S. Cl. 385—16 20 Claims



1. An optical matrix switch comprising:

a first guide mechanism having plural guide portions arranged in parallel;

a first slider for holding an optical fiber, said first slider being freely slidably mounted along a guide portion of said first guide mechanism;

a first partition member for isolating a surplus-length portion of the optical fiber along the guide portion of said first guide mechanism, said optical fiber being connected to said first slider;

first drive means for moving said first slider along the guide portion of said first guide mechanism;

a second guide mechanism having plural guide portions arranged in parallel so as to be intersected to the guide portions of said first guide mechanism;

a second slider for holding an optical fiber, said second slider being freely slidably mounted along a guide portion of said second guide mechanism;

a second partition member for isolating a surplus-length portion of the optical fiber along the guide portion of said second guide mechanism, said optical fiber being connected to said second slider; and

second drive means for moving said second slider along the guide portion of said second guide mechanism;

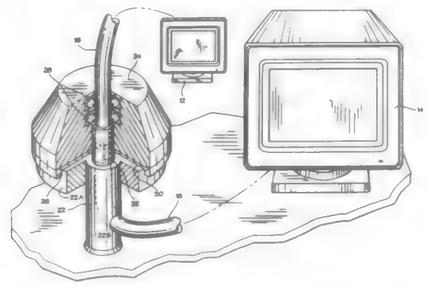
wherein each of said first and second partition members comprises a plate member having J-shaped section, said J-shaped section including a bent portion and a restriction portion for restricting the position of the surplus-length portion of the optical fiber.

5,337,379

FIBER OPTIC COUPLING ASSEMBLY

Jan B. Gieryng, Cary, N.C., assignor to Styrotech Corporation, Raleigh, N.C.

Filed Jul. 8, 1993, Ser. No. 88,798
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—26 7 Claims



1. An optical signal transmission device for use on an apparatus having a rotating portion and being controlled by signals sent and received from two data handling devices, the first data handling device positioned on a rotating portion of the apparatus and the second data handling device positioned on another portion of the apparatus independent of the rotating portion, said optical signal transmission device comprising:

(a) a first optical fiber element having a first end attached to the first rotating data handling device, said first element having an extending length and having concentric inner and outer portions, said inner portion capable of transmitting a first signal and said outer portion being capable of transmitting a second signal which is different and distinct;

(b) a second optical fiber element having a first end attached at to the second data handling device, said second element having an extending length and having concentric inner and outer portions that correspond to said inner and outer portions of said first element, said inner and outer portions of said second element being capable of transmitting said first and said second signals, respectively, said first and second fiber optic elements each having second ends, said second ends facing each other with said inner and outer portions thereof disposed opposite to one another and positioned co-axial with the rotation axis of the rotating portion of the apparatus so that there is a gap between said second ends;

(c) a first support device in which said second end of said first element is rotatably secured in its position and supported thereon; and

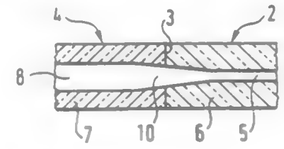
(d) a second support device in which said second end of said second element is secured in its position and supported thereon, whereby said first signal can be transferred between said first and said second data handling devices via said inner portion of said elements and whereby said second signal can be transferred between said first and said second data handling device via the outer portion of said elements.

5,337,380

METHOD OF LIMITING COUPLING LOSSES BETWEEN MONOMODE OPTICAL FIBERS USING A PIECE OF MULTIMODE OPTICAL FIBER

Philippe Darbon, and Emmanuel Grard, both of Saint Michel sur Orge, France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Sep. 15, 1992, Ser. No. 945,148
Claims priority, application France, Sep. 16, 1991, 91 11364
Int. Cl.[5] G02B 6/26; C03B 23/20
U.S. Cl. 385—28 5 Claims



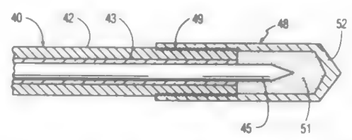
1. A method of limiting coupling losses between a monomode optical fiber, having a core and a cladding and having a mode diameter of W_o, and an optical system having a mode diameter W'_o that is different from W_O, said method comprising welding by heating a piece (4) of multimode fiber, also having a core and a cladding, onto an end of said monomode fiber (2); said piece (4) of multimode fiber having a length in the range 0.1 mm to 5 mm, the same cladding outside diameter as said monomode fiber (2), a mode diameter substantially equal to W'_o, and an index difference δn lying in the range 5×10^{-3} to 50×10^{-3}, such that the heating during welding causes the core of said monomode optical fiber to increase in size by longitudinal and radial interdiffusion of doping elements contained in said cores so as to form an adiabatic cone in the region (10) where said cores meet.

5,337,381

FIBER OPTIC CYLINDRICAL DIFFUSER

Dipak R. Biswas, Plainsboro, and Anpei Pan, North Plainfield, both of N.J., assignors to Fiberguide Industries, Stirling, N.J.

Filed Jan. 21, 1993, Ser. No. 7,112
Int. Cl.[5] G02B 23/26
U.S. Cl. 385—36 5 Claims



1. A cylindrical light diffuser, said diffuser comprising an optical fiber having first and second ends, said fiber comprising a core and including a cladding for reflecting internally in said core light introduced to said fiber at said first end, said fiber including an unclad portion exposing said core at said second end, said diffuser including a sleeve attached to said fiber at a clad portion thereof adjacent to said unclad portion, said sleeve extending beyond said second end, said second end having a conical shape and wherein said sleeve includes an end portion also having a conical shape.

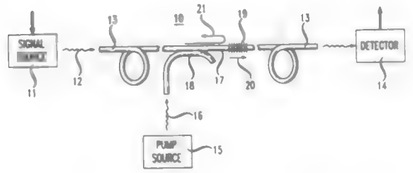
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,382

ARTICLE COMPRISING AN OPTICAL WAVEGUIDE WITH IN-LINE REFRACTIVE INDEX GRATING

Victor Mizrahi, Bedminster, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 890,975, May 29, 1992, Pat. No. 5,218,655. This application Apr. 22, 1993, Ser. No. 48,322
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] G02B 6/34
U.S. Cl. 385—37 5 Claims



1. An article comprising an optical waveguide that comprises a silica-containing core region that is at least partially surrounded by a cladding, said waveguide comprising a portion wherein said core region has a refractive index that varies in a longitudinal direction, the index varying such that said portion of the waveguide reflects radiation of a predetermined wavelength propagating longitudinally in the waveguide, said portion to be referred to as the grating, associated with the grating being a center wavelength, a reflection bandwidth and a peak reflectivity;

Characterized In That

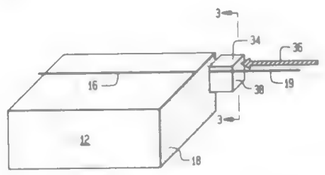
the grating has a reflection bandwidth of at least 2 nm and a peak reflectivity of at least 70%.

5,337,383

METHOD FOR INTERNAL LASER WELDING OF METALLIZED OPTICAL COMPONENTS FOR ATTACHMENT OF OPTICAL FIBERS

Mario E. DeAngelis, New Brunswick; Douglas Troast, Pompton Plains, and Patrick Calella, Newton, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1993, Ser. No. 149,448
Int. Cl.[5] G02B 6/30
U.S. Cl. 385—49 12 Claims



1. A method for internal laser welding of metallized optical components for the attachment of optical fibers which comprises the steps of:

milling a "V" groove in one face of a fiber carrier;

aligning an optical fiber in said "V" groove;

epoxying said optical fiber to fixedly hold said fiber in said "V" groove;

polishing an end face of an integrated optics chip;

infusing a titanium wave guide on a surface of an integrated optical chip;

polishing an end face of fiber carrier assembly;

masking said end face of said integrated optics chip,

depositing a first chromium layer on said end face of said integrated optics chip;

masking an end face of said fiber carrier assembly to avoid coating said optic fiber;

depositing a second chromium layer on said end face of said fiber carrier assembly;

depositing a first eutectic alloy on top of said first chromium layer of said integrated optics chip;

depositing a second eutectic alloy on top of said second chromium layer of said fiber carrier assembly;

positioning said end faces of said integrated optics chip and said fiber carrier assembly so they are in contact with each other and that said optical fiber and said wave guide are in optical alignment; and

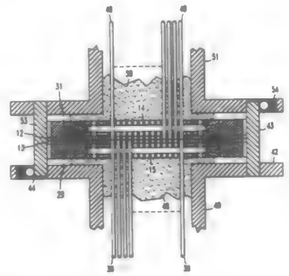
applying a pulsed laser focused beam output of a Neodymium doped Yittrium-Aluminum-Garnet laser through a back end of said optically aligned fiber carrier assembly to effect an internal laser weld between said metallized end of said integrated optics chip and said end face of said fiber carrier assembly.

5,337,384

OPTICAL FIBER CONNECTOR

Nagesh R. Basavanhally; Richard Borutta, both of Trenton, N.J., and Edward W. Jekkal, Yardley, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 6, 1993, Ser. No. 86,580
Int. Cl.[5] G02B 6/40, 6/38
U.S. Cl. 385—54 18 Claims



1. A method for connecting first and second optical fiber bundles, each bundle comprising a plurality of optical fibers, comprising the steps of:

making first and second securing plates to respectively contain therein substantially identical arrays of first apertures, each first aperture having a diameter sufficiently close to the diameter of an optical fiber to hold in place an end of such optical fiber inserted therein, each array extending in two dimensions;

aligning the first and second securing plates;

simultaneously contacting a first support member to the first securing plate and to a first alignment pin and bonding the first support member to the first securing plate;

thereafter, simultaneously contacting a second support member to the first alignment pin and to the second securing plate, and bonding the second support member to the second securing plate;

inserting each optical fiber of the first optical fiber bundle into a first aperture of the first securing plate and each optical fiber of the second optical fiber bundle into a first aperture of the second securing plate;

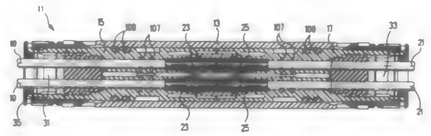
and simultaneously contacting the first and second support members to a first common alignment pin, thereby to align the first and second optical fiber bundles.

5,337,385

OPTICAL WAVEGUIDE TERMINATING DEVICE

Kurt P. Baderschneider, Dreieich; Friedrich J. A. Kourimsky, Bensheim, and Gheorghe Hotea, Griesheim, all of Fed. Rep. of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

PCT No. PCT/US92/01628, § 371 Date Nov. 16, 1992, § 102(e) Date Nov. 16, 1992, PCT Pub. No. WO92/15909, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 28, 1992, Ser. No. 945,978
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1991, 41065954; Dec. 12, 1991, 4141009
Int. Cl.[5] G02B 6/26, 6/38
U.S. Cl. 385—59 23 Claims



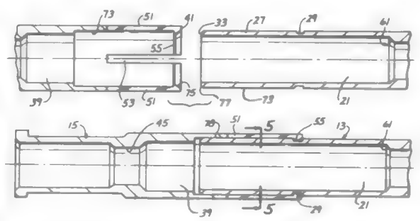
1. An optical waveguide connector (15, 17; 211) comprising a connector housing (27, 29; 221) for receipt of at least one optical waveguide (19, 21; 213) adapted to be coupled with another optical waveguide (21, 19; 213) or to an optoelectronic component (115, 117; 217, 219) and comprising at least one through-channel (63; 227) for an optical waveguide (19, 21,; 213), which extends in the longitudinal direction of the connector housing (15, 17; 211), characterized in that in the connector mating end portion of said through-channel (63; 227) there is disposed at least one terminating device having a sleeve-like terminating member (23, 25; 271) provided with a through opening (41; 227) having an optical waveguide section (47; 229) firmly disposed in one end thereof, said at least one terminating sleeve including an outer cylindrical surface and a tapered ramp surface, said ramp surface extending outwardly of said cylindrical surface, and an end portion of the optical waveguide (19,25; 213) to be terminated being insertable into the other end of said terminating sleeve substantially so as to reach the optical waveguide section (47; 229), the free end of the optical waveguide section (47; 229) remote from the optical waveguide (10, 21) to be terminated being provided with a plane surface.

5,337,386

SINGLE CHANNEL SNAP-LOCK FIBER OPTIC CONNECTOR

Gregory B. Noll, Riverside; Jack J. Maranto, Capistrano Beach, and Louis F. Kardos, Fountain Valley, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,842
Int. Cl.[5] G02B 6/38
U.S. Cl. 385—60 20 Claims



1. A fiber optic connector for interconnecting a fiber optic pin terminus and a fiber optic socket terminus, said fiber optic connector comprising:

a receptacle connector body have a passage extending therethrough sized and adapted to receive the fiber optic socket terminus;

a plug connector body having a passage extending therethrough sized and adapted to receive the fiber optic pin terminus;

an end portion of one of said bodies being receivable in the passage of an end portion of the other of said bodies to define an interconnected position which is adapted to optically couple the socket terminus and the pin terminus; and

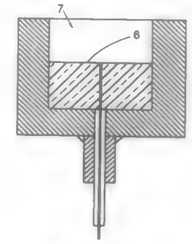
a lock on said bodies responsive to the bodies being in the interconnected position to lock the bodies in the interconnected position and said lock when locking the bodies in the interconnected position being responsive to a pulling force of at least a first magnitude to unlock and allow said bodies to separate.

5,337,387

METHOD FOR THE CONTINUOUS PROCESSING OF HERMETIC FIBER OPTIC COMPONENTS AND THE RESULTANT FIBER OPTIC-TO-METAL COMPONENTS

Daniel P. Kramer, Centerville, Ohio, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 27, 1993, Ser. No. 67,919
Int. Cl.[5] G02B 6/00
U.S. Cl. 385—76 16 Claims



1. A method for making hermetic fiber optic components comprising the steps of:

fixturing elements comprising a metal shell, a glass preform, and a metal-coated optical fiber into positions relative to each other such that said elements are oriented in positions they will occupy in a finished component;

heating said elements thus fixtured in a continuous heating process such that said glass preform is allowed to soften and flow thereby sealing said elements in the positions in which they were fixtured; and

cooling said elements.

5,337,388

MATRIX OF PLUGGABLE CONNECTORS FOR CONNECTING LARGE NUMBERS OF CLUSTERED ELECTRICAL AND/OR OPTICCAL CABLES TO A MODULE

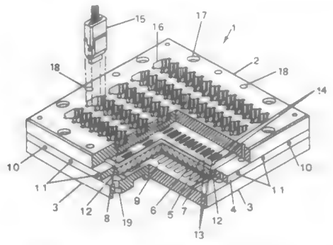
Lawrence Jacobowitz; Mario E. Ecker, both of Poughkeepsie, and Casimer M. DeCusatis, Lake Katrine, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1993, Ser. No. 101,118
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—76 18 Claims

1. A matrix of disconnectable connector receptacles, comprising:

VOL 1165 ISS 2 AUG 9 1994 UMI

a receptacle plate made of semiconductor material and formed with a multiplicity of receptacle slots,
each receptacle slot having a contour for receiving and aligning an end of a plug assembly for enabling a transmission of signals between the plug assembly and the module,
a substrate on which the receptacle plate forms a major surface,
a housing surrounding the substrate and formed with multi-



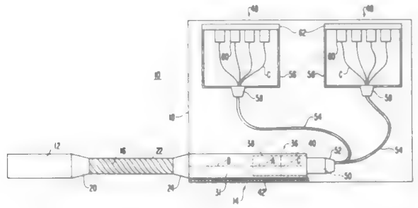
ple receptacle openings aligned with corresponding slots in the receptacle plate on the major surface of the substrate, a receptacle formed of each receptacle opening and a corresponding slot aligned together to receive and hold a plug assembly, and
a cluster of cables being connected to a plug assembly, and the ends of cables in the plug assembly communicating signals between the cables and the module via the slot when the plug assembly is engaged with the slot.

5,337,389

FOCAL PLANE ARRAY MOUNT FOR A FIBER OPTIC DETECTOR SYSTEM AND RELATED METHOD OF ASSEMBLY

Gregory P. Behrmann, Columbia; Dale Smith, Baltimore, and William Potter, W. Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 1, 1993, Ser. No. 69,811
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—77 **18 Claims**



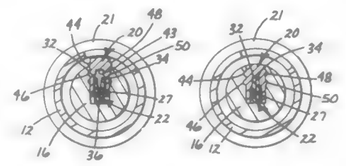
1. A mount for a fiber optic detector system, comprising:
a first bracket;
means for receiving a plurality of optical fibers; the plurality of optical fibers in an array, said means being connected to one surface of the first bracket with the plurality of optical fibers extending through a portion of the first bracket; and
a second bracket connected to an opposite surface of the first bracket with the plurality of optical fibers extending through a portion of the second bracket wherein said mount further comprises a pad connecting the first and second brackets.

5,337,390

ADHESIVELESS CONNECTOR FOR OPTICAL FIBERS

Gordon D. Henson, Lake Elmo, and Nicholas A. Lee, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 871,399, Apr. 21, 1992, abandoned.
This application Aug. 23, 1993, Ser. No. 109,900
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—81 **9 Claims**



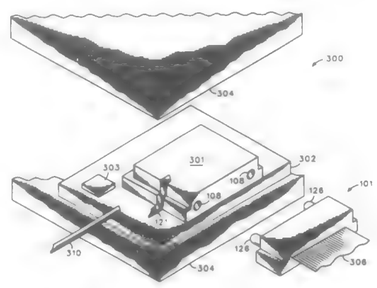
1. A fiber optic connector comprising:
a connector body;
a ferrule attached to said connector body, each of said connector body and said ferrule having a bore therethrough, said bores being in alignment;
a plug inserted in said connector body; and
a gripping means for receiving an optical fiber inserted in said bores with said gripping means in a disengaged state and holding said optical fiber in said bores with said gripping means in an engaged state, said gripping means being engageable by moving said plug in a direction transverse to said bores.

5,337,391

OPTOELECTRONIC SUB-MODULE AND METHOD OF MAKING SAME

Michael S. Lebby, Apache Junction, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1993, Ser. No. 56,276
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—88 **20 Claims**



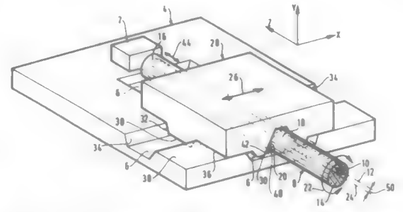
1. An optoelectronic sub-module comprising:
a unitary molded plastic element having a major surface and an edge surface;
electrical tracings disposed on the unitary molded plastic element;
a light transmitting device having a working portion, the light transmitting device joined to the molded plastic element, the working portion of the light transmitting device directed perpendicularly to the edge surface of the unitary molded plastic element, and the light transmitting device connected to at least one of the electrical tracings;
an angled reflective surface transecting the major surface and the edge surface of the unitary molded plastic element; and
a photodetector having a working portion, the photodetector positioned on the major surface with the working portion of the photodetector positioned over the angled surface, and with the photodetector connected to at least one of the electrical tracings.

5,337,392

METHOD OF COUPLING AN OPTICAL FIBER TO AN OPTICAL COMPONENT ON THE SAME SUBSTRATE

Daniel Mousseaux, Palaiseau; Gérard Gelly, La Norville, and Emmanuel Grard, Saint Michel sur Orge, all of France, assignors to Alcatel Cit, Paris, France

Filed Jul. 28, 1993, Ser. No. 102,992
Claims priority, application France, Jul. 29, 1992, 92 09392
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—90 **9 Claims**



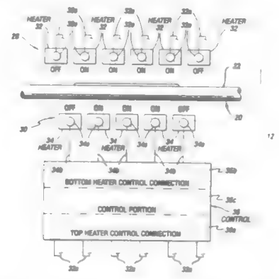
1. Method of coupling an optical fiber to an optical component on the same substrate using the eccentricity of the core of an optical fiber constituting a coupling fiber relative to a cylindrical manipulation surface of said coupling fiber wherein adjustment of the vertical position of said core is effected by rotation of said coupling fiber about the axis of said manipulation surface in combination with maintained application of said manipulation surface to a horizontal reference surface of said substrate which also carries the component to which said coupling fiber must be coupled and said manipulation surface is the outside surface of the optical cladding of said coupling fiber.

5,337,393

METHOD FOR HEATING A FLAT GLASS SHEET

Pauli T. Reunamaki, Perrysburg, assignor to Glasstech, Inc., Perrysburg, Ohio

Continuation of Ser. No. 942,376, Sep. 9, 1992, abandoned, which is a continuation of Ser. No. 621,027, Nov. 30, 1990, abandoned. This application Oct. 4, 1993, Ser. No. 131,432
Int. Cl.[5] C03B *29/04;* **F26B** *19/00*
U.S. Cl. 392—417 **5 Claims**



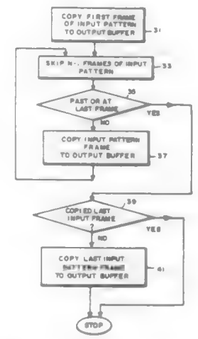
1. A method for heating a flat glass sheet, comprising:
conveying a flat glass sheet into a heating chamber of a housing on horizontal rolls of a roller conveyor along a horizontal plane of conveyance between top and bottom heating arrays each of which includes a plurality of heaters spaced laterally from each other with respect to the direction of conveyance with the top heating array having one more heater than the bottom heating array and with the bottom heating array having the heaters thereof located in a laterally staggered relationship with respect to the heaters of the top heating array such that each bottom heater is located laterally between a pair of top heaters; and
energizing the top and bottom heating arrays to heat each bottom heater only when the two top heaters on opposite lateral sides thereof are heated to thereby prevent excessive lateral edge heating of the conveyed glass sheet.

5,337,394

SPEECH RECOGNIZER

Vladimir Sejnoha, Cambridge, Mass., assignor to Kurzweil Applied Intelligence, Inc., Waltham, Mass.

Filed Jun. 9, 1992, Ser. No. 895,618
Int. Cl.[5] G10L *7/08*
U.S. Cl. 395—2.5 **10 Claims**



1. In a speech recognizer which operates to match an unknown speech segment comprising a fine sequence of frames with model segments represented by respective fine sequences of states, the respective fine sequences of the unknown segment an a model segment together defining a fine matrix; a method of determining a good alignment of the unknown segment with a model segment, said method comprising:
preparing respective coarse sequences representing said unknown speech segment and said model segment thereby to obtain a respective coarse matrix;
determining a best alignment of said coarse sequences thereby determining a coarse path through said coarse matrix;
overlaying said coarse path on said fine matrix and determining which fine matrix locations lie within a preselected metric of said coarse path thereby defining a corridor of possible paths through said fine matrix; and
calculating only transitions within said corridor, determining an alignment of said unknown segment with said model segment.

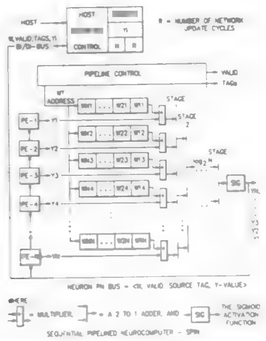
VOL 1165 ISS 2 AG 9 1994 UMI

5,337,395

SPIN: A SEQUENTIAL PIPELINE NEUROCOMPUTER

Stamatis Vassiliadis, Vestal; Gerald G. Pechanek, Endwell, and Jose G. Delgado-Frias, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 8, 1991, Ser. No. 681,842
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—27 39 Claims



1. A sequential pipelined neural computer apparatus comprising:

N Processing Elements (PEs), each including storage for a neuron value and for a PE tag, tag matching means for comparing a tag identifying a new neuron value with the PE tag, means for storing the new neuron value as the neuron value of the PE if the tag of the new neuron value matches the PE tag, and N-1 of the PEs having means for passing the new neuron value to a next one of the PEs if the tag identifying the new neuron value does not match the PE tag;

N weight storage units, each associated with a respective one of the PEs, and each storing a plurality of weight values;

N multipliers, each associated with a respective one of the weight storage units, and each for producing as an output the product of one of the weight values of said respective one of the weight storage units and the neuron value of said respective one of the PEs associated with said respective one of the weight storage units;

a summation tree for adding the outputs of the multipliers to produce a sum;

a neuron activation function generator, for receiving the sum and generating therefrom a new neuron value; and

means for communicating the generated neuron value from the generator to one of the PEs as the new neuron value.

5,337,396

CONDUCTIVE PLASTIC OPTICAL-ELECTRONIC INTERFACE MODULE

Bor U. Chen, Studio City; Mehrdad Ghorbanali, Los Angeles, and Jack B. Buck, Simi Valley, all of Calif., assignors to Optical Communication Products, Inc., Chatsworth, Calif.

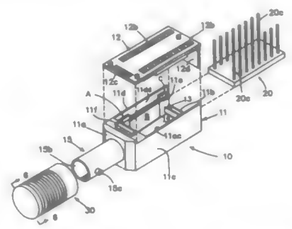
Filed Jan. 22, 1993, Ser. No. 7,980
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—92 3 Claims

1. A module for providing an interface between an optoelectronic element and an electronic system, said optoelectronic element having leads extending therefrom, and said module comprising

a housing having walls made of injection molded parts using a mixture of nonconductive plastic material and conductive fibers, whereby said conductive fibers mixed in said plastic material are encapsulated in nonconductive plastic material such that the surfaces of said walls of said housing are nonconductive, but said walls will absorb electro-magnetic radiation to provide EMI shielding of the interior of said housing,

a metal receptacle connected to said housing having one end for receiving an external fiber-optic connector ferrule and an opposite end for insertion of said optoelectronic element such that said leads of said optoelectronic element extend into said housing,

a rigid printed circuit board enclosed in said housing, said printed circuit board having at least one layer of nonconductive substrate and patterned conductors on both sides of said printed circuit board, electronic devices connected



to at least one of said pattern of conductors, and pins passing through and protruding from both sides of said printed circuit, said pins protruding from one side of said printed circuit board sufficiently for electrical connections to be made to said patterned conductors on one side and protruding from the other side of said printed circuit board sufficiently to extend out of said housing,

electrical connections between said pins and patterned conductors on said printed circuit board at points where connections are desired, and

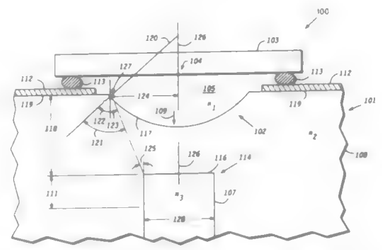
said printed circuit board having conductive pads for making connections of said optoelectronic element leads to said patterned conductors in said printed circuit.

5,337,397

OPTICAL COUPLING DEVICE AND METHOD FOR MAKING

Michael S. Lebby, Apache Junction; Christopher K. Y. Chun, Mesa; Shun-Meen Kuo, Chandler, and Davis H. Hartman, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 7, 1993, Ser. No. 72,373
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—93 15 Claims



1. A method for coupling a light emitting device to a core region of an optical waveguide comprising the steps of:

forming an optical waveguide having a core region with an end and a cladding region, the cladding region surrounding the end of the core region forming a surface, the surface of the cladding region forming a lens device, the end of the core region being positioned to provide a selected distance from the lens device to the end of the core region; and

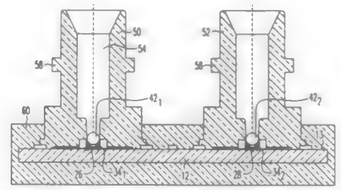
mounting a light emitting device having a working portion on the surface of the cladding region of the optical waveguide with the working portion of the light emitting device directed over the lens for collecting and focusing of light from the working portion to the end of the core region.

5,337,398

SINGLE IN-LINE OPTICAL PACKAGE

Albert M. Benzoni, Lower Macungie Township, Lehigh County, and Mindaugas F. Dautartas, Alburtis, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 30, 1992, Ser. No. 984,062
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—90 13 Claims



1. An optical package comprising

a silicon substrate defined as comprising a top major surface;

a plurality of metallized bond pad sites formed on said top major silicon surface;

at least one active optical device attached and electrically connected to said top major silicon surface;

electronic circuitry attached to said top major silicon surface for operating said at least one active optical device;

means for electrically connecting said electronic circuitry between the plurality of metallized bond pad sites and the at least one active optical device;

a plurality of alignment fiducials formed in said top major silicon surface at predetermined locations with respect to the location of said at least one active optical device;

optical receptacle means for providing coupling between an optical fiber and said at least one active optical device, said optical receptacle means including alignment fiducials which mate with said optical device alignment fiducials upon attachment and provide optical alignment between said at least one active optical device and said optical receptacle means; and

outer packaging formed so as to completely enclose said silicon substrate and a portion of said optical receptacle means.

5,337,399

WAVELENGTH CONVERSION ELEMENT

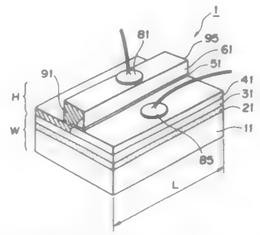
Hiroyuki Ota, and Kiyofumi Chikuma, both of Iruma, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,122
Claims priority, application Japan, Dec. 6, 1990, 2-400705
Int. Cl.[5] G02B *6/02;* H03F *7/00*
U.S. Cl. 385—122 9 Claims

1. A wavelength conversion element comprising:

a laser oscillation portion comprising an active layer waveguide formed of a material of III–V group in a periodic table; and

an output waveguide path portion comprising an output waveguide layer which is disposed adjacent to said active layer waveguide, and which is coupled with said active layer waveguide by an evanescent wave leaking from said active layer waveguide, and a buffer layer disposed between said active layer waveguide and said output waveguide layer, said buffer layer having a thickness suitable for propagation of the evanescent wave from said active layer waveguide to said output waveguide, wherein said active layer waveguide comprises a material of GaAs, said



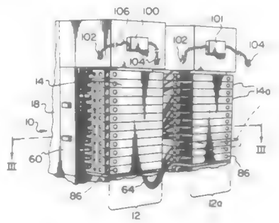
output waveguide layer comprises a material of ZnS or ZnSe, and said buffer layer comprises a material of SiO_2, GaAs or GaAlAs.

5,337,400

DISTRIBUTION FRAME AND OPTICAL CONNECTOR HOLDER COMBINATION

Joseph O. R. Morin, St. Hubert, and Joseph F. R. J. Richard, Laval, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 968,137, Oct. 29, 1992, Pat. No. 5,265,187. This application Aug. 19, 1993, Ser. No. 109,024
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—135 1 Claim



1. A distribution frame and optical connector holder combination comprising:

distribution frame means for receiving a plurality of connector holders;

a plurality of optical connector holders receivable within the frame means, the holders having mounting means for positioning a plurality of optical connectors which, when mounted, have first ends which, in different holders, are for selective optical interconnection by patch cords each extending from one of said connectors to another of said connectors and second ends for connection to optical fibers in the holders;

and signal transmission test means which, when each patch cord interconnects selected first ends of associated connectors and each of said patch cords is provided with a signal transmission member extending from end to end of the patch cord, is operational to locate both ends of a particular patch cord, the test means being disposable at one end of the particular patch cord to transmit a signal through the transmission member of the particular patch cord to provide an indication of the location of the other end of the particular patch cord.

VOL 1165 ISS 2 AG 9 1994 UMI

5,337,401

OPTICAL FUNCTIONING GLASS AND METHOD OF MANUFACTURING SAME, OPTICAL FIBER, WAVEGUIDE DEVICE, AND LASER DEVICE

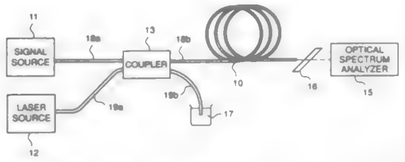
Masashi Onishi; Koji Nakazato; Yoshiki Chigusa; Minoru Watanabe, all of Yokohama, and Yoshiaki Miyajima, Mito, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

Filed Oct. 24, 1991, Ser. No. 779,495

Claims priority, application Japan, Oct. 24, 1990, 2-286452

Int. Cl.[5] G02B *6/00*; H01S *3/30*; C03C *25/02, 13/04*

U.S. Cl. 385—142 22 Claims



1. An optical fiber comprising: a core made of an optical functioning glass, said optical functioning glass being an oxide-based optical functioning glass containing Nd^{3+} as an active ion doped in a host glass, wherein the host glass contains at least one element from the group consisting of Rb and Cs.

21. A method of manufacturing an oxide-based optical functioning glass containing Nd^{3+} as an active ion doped in a host glass, comprising the steps of:

preparing a host glass by melting selected oxides, said oxides including at least SiO_2, Na_2O, and Cs_2O selected from the group consisting of SiO_2, Na_2O, Cs_2O, and Rb_2O; and

doping the resulting host glass with Nd^{3+}.

5,337,402

GRAPHIC DATA PROCESSING APPARATUS USING DISPLAYED GRAPHICS FOR APPLICATION PROGRAM SELECTION

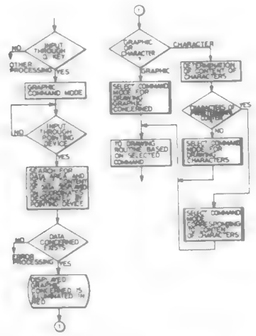
Keiji Kitagawa, Kawasaki, and Ikuo Tani, Ibaraki, both of Japan, assignors to Keiji Kitagawa, Kawasaki; Design Automation Inc., Nagaokakyo and Omron Corporation, Kyoto, all of Japan

Continuation-in-part of Ser. No. 443,832, Dec. 1, 1989, abandoned, which is a continuation of Ser. No. 60,910, Jun. 12, 1987, abandoned. This application Feb. 13, 1991, Ser. No. 654,182

Claims priority, application Japan, Jun. 12, 1986, 61-137727

Int. Cl.[5] G06F *5/62*

U.S. Cl. 395—133 3 Claims



1. A graphic data processing apparatus for drawing graphic forms on a display device by using a plurality of display elements previously drawn on the display device, comprising:

first storage means for storing a plurality of data records, each of the data records corresponding to a basic display element displayed on the display device, and each of the data records storing a first code for identifying the basic display element, and a second code for identifying a composite display element including the basic display element as a constituent element;

second storage means for storing a plurality of application programs, each of the plurality of application programs being used for drawing either said basic display element or said composite display element, and each of the plurality of application programs being identified by either said first code or said second code;

determining means for designating a basic display element of a portion of the display element displayed on the display device;

searching means for searching said first storage means for a data record corresponding to the basic display element designated by said designating means;

selecting means for selecting drawing of either a basic display element or a composite display element constituting the display element displayed on the display device;

program reading means for reading an application program for drawing the basic display element from said second storage means based on a first code of said data record searched for by said searching means in response to the selection of the basic display element by said selecting means, and for reading an application program for drawing a composite display element from said second storage means based on a second code of said data record searched for by said searching means in response to selection of the composite display element by said selecting means; and

means for storing the read application program for drawing on said display device either the basic display element or the composite display element, and

means for displaying a name of the program read by said program reading means near the basic display element designated by said designating means.

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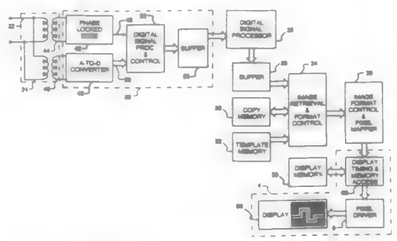
DIGITAL SIGNAL PROCESSING METHOD AND APPARATUS INCLUDING A GRAPHIC TEMPLATE DISPLAY

Edwin E. Klingman, 3000 Hwy. 84, San Gregorio, Calif. 94074

Filed Sep. 18, 1991, Ser. No. 761,664

Int. Cl.[5] G06F *15/74*

U.S. Cl. 395—140 15 Claims



1. Signal processing and display apparatus for monitoring repetitive signal pulses appearing in a stream of data, comprising:

signal acquisition means for detecting and digitizing said repetitive signal pulse to form digitized signal pulse data;

buffer means for temporarily storing said digitized signal pulse data;

template memory means for storing template data corresponding to a template in the form of a mask of one data state having a window area therein of a second data state, the borders of the window area defining acceptable tolerance limits for certain characteristics of said repetitive signal pulses;

display memory means;

image formatting said bit mapping means for retrieving said template data from said template memory means and for extracting said digitized signal pulse data from said buffer means, for bit mapping said template data and said digitized signal pulse data into a predetermined pixel array format, and for causing the bit mapped template data and bit mapped digitized signal pulse data to be stored in said display memory means; and

display means for reading out the bit mapped template data and bit mapped digitized signal pulse data stored in said display memory means and for displaying the bit mapped template data and the bit mapped digitized signal pulse data in overlapping alignment to indicate the relationship between said repetitive signal pulses and said template.

5,337,404

PROCESS AND SYSTEM FOR MAKING COMPUTER-AIDED DRAWINGS USING A CONTOUR INCLUSION TREE ASSOCIATED PLANAR MAP DATA STRUCTURE

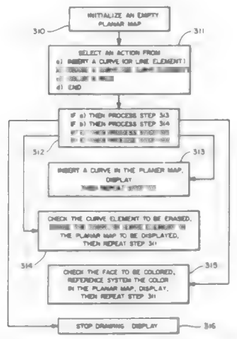
Patrick Baudelaire, L'Etang la Ville; Michel Gangnet, Germain en Laye; Jean-Claude Herve; Thierry Pudet, both of La Garenne-Colombes, and Jean-Manuel V. Thong, Courbevoie, all of France, assignors to Digital Equipment International Limited, Fribourg, Switzerland

Filed Apr. 20, 1990, Ser. No. 513,247

Claims priority, application France, Apr. 24, 1989, 89 05416

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—141 32 Claims



1. In a process for creating a drawing using a computer having a processor, memory, and a display coupled to said computer; a process comprising the steps of:

partitioning said memory into a plurality of predefined data fields for receiving and recording data for describing any drawing in the form of a planar map having a set of faces, whereby said partitioning forms a data structure in said memory for describing any drawing in the form of a planar map having a set of faces;

initializing said partitioned memory prior to creating a particular drawing by recording in said predefined data fields initial values representing an empty drawing so that said data structure and said planar map are initially empty of data describing said particular drawing prior to creating said particular drawing;

creating said particular drawing by performing insertion, erasure, and coloring operations; said insertion and erasure operations comprising inserting and/or erasuring said curves and/or elements of said curves into said particular drawing until obtaining said particular drawing as desired; said coloring operations comprising coloring one or more of said faces delimited by said contours produced by curve edges of said drawing;

generating parameters to describe said curves and/or elements of said curves of said particular drawing in the form of a planar map having a set of faces and recording said parameters into said predefined data fields in response to an insertion operation;

each said face being delimited by one or more contours produced by curve edges of said particular drawing, said planar map being associated with a contour inclusion tree;

suppressing elements of said parameters describing said particular drawing in response to an erasure operation;

whereby said data structure in memory describes said particular drawing in the form of a planar map having a set of faces delimited by one or more contours produced by curve edges at every stage of creation;

displaying said particular drawing on said display during any stage of its creation; and

performing update operations, including updating said data recorded in said data fields of said partitioned memory describing said particular drawing.

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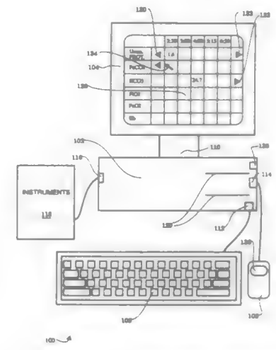
GUIDED DATA PRESENTATION

James M. Lindauer, San Francisco, and Richard D. Pering, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 2, 1990, Ser. No. 591,591

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—147 18 Claims



14. A system for data presentation comprising: storage means for storing data, said data including values of a dependent parameter expressed as a function of an independent parameter;

display means for displaying values of said dependent parameter corresponding to values of said independent parameter within a selected range of said independent parameter;

command input means for receiving commands for selecting said selected range;

criterion means for defining a criterion to evaluates values of said dependent parameter;

indicator means for providing a displayable indicator;

processor means for receiving commands and processing said data accordingly, said processor means being coupled to

said storage means for accessing said data,

VOL 1165 ISS 2 AG 9 1994 UMI

said command input means for receiving commands to select a first range of values of said independent parameter for display, said processor means accessing the values of said dependent parameter corresponding to the values of said independent parameter within said first range,

said display means for displaying the values of said dependent parameter corresponding to the values of said independent parameter within said first range,

said criterion means so that said criterion can be applied to values of said dependent parameter corresponding to values of said independent parameter within a first set of off-display values, said first set of off-display values and said first range of values being mutually exclusive, and

said indicator means so that said indicator is displayed only if said criterion is met by at least one value of said dependent parameter corresponding to a value of said independent parameter within said first set of off-display values.

5,337,406

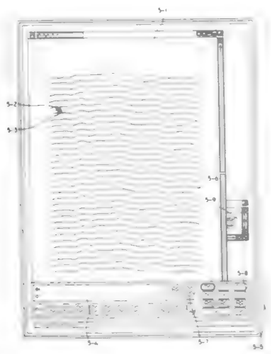
DOCUMENT PROCESSING APPARATUS FOR SIMULTANEOUSLY DISPLAYING GRAPHIC DATA, IMAGE DATA, AND CHARACTER DATA FOR A FRAME

Hiroshi Takakura, Yokohama, and Toshihiko Komatsu, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 745,964, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 269,681, Nov. 10, 1988, abandoned. This application Mar. 24, 1993, Ser. No. 38,044

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—148 **62 Claims**



1. A document processing apparatus comprising:

control means for controlling graphic data, image data, and character data for a frame formed on a sheet;

storage means for storing frame size data of the frame; and

means for selectively obtaining the frame size data stored in said storage means or one of the graphic data, image data and character data, alone or in combination, controlled by said control means when the graphic data, the image data or the character data exist in the frame.

5,337,407

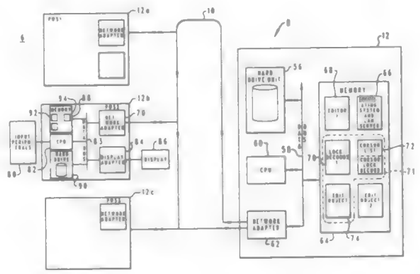
METHOD AND SYSTEM FOR IDENTIFYING USERS IN A COLLABORATIVE COMPUTER-BASED SYSTEM

Cary L. Bates, Rochester, and Jeffrey M. Ryan, Byron, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1991, Ser. No. 816,623

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—153 **20 Claims**



1. A method of operating a collaborative computer-based editing system having a plurality of display devices for the display of private views of a shared data object, the method comprising the steps performed by a computer of:

establishing, responsive to user selection a user associative region positionally independent of a cursor for the user within the shared data object;

defining a first visually distinguishing characteristic for the user associative region identifying the user;

defining responsive to user selection of an association type, a second visually distinguishing characteristic for the user associative region identifying the nature of the association; and

causing display, on at least a first display device, of a private view of the shared data object including part of the user associative region, wherein the user associative region is indicated by said first and second visually distinguishing characteristics.

5,337,408

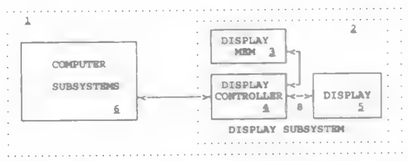
MULTI-LEVEL DISPLAY CONTROLLER

Henry T. Fung; Siu K. Tsang, both of San Jose, and Ralph A. Woodward, Mountain View, all of Calif., assignors to Vadem Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 744,710, Aug. 9, 1991. This application Dec. 30, 1991, Ser. No. 815,928

Int. Cl.[5] G06F *3/00*

U.S. Cl. 395—162 **38 Claims**



1. A display controller for controlling a display where the display provides an image as a pixel array displayed in sequential frames, where each pixel has a selectable data value in each frame, said display controller comprising,

frame means for establishing a number of sequential frames as a frame set,

data means for providing the data value of each of said pixels in the array to define the image,

pattern means for providing modulation patterns, said patterns including patterns each formed of sequences of different numbers of both 1's and 0's that are not phase related,

modulation means, operable over said number of sequential frames, for modulating the data values of pixels with said patterns whereby the intensity level of said pixels over said number of sequential frames is controlled as a function of the data value of the pixels and as a function of the patterns.

5,337,409

PARALLEL/SERIAL DATA CONVERSION SYSTEM

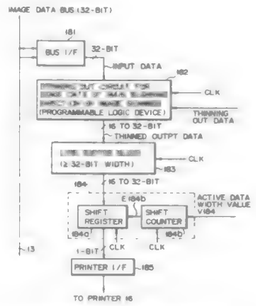
Yoshio Sakata, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1992, Ser. No. 860,319

Claims priority, application Japan, Jul. 31, 1991, 3-191877

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **8 Claims**



1. A data processing apparatus comprising:

means or scanning an object to provide N-bit image data, N being an integer larger than 1;

means for transferring the N-bit image data obtained by said scanning means;

means for thinning out N-M bits from N-bit parallel image data transferred from said transferring means so as to convert the N-bit parallel image data into thinned-out output data formed of M-bit active data and (N-M)-bit inactive data, M being an integer smaller than N;

storing means for simultaneously storing all the bits of the thinned-out output data from said thinning out means; and

means, responsive to the thinned-out output data stored in said storing means, for converting the M-bit active data of the thinned-out output data into 1-bit serial data, to thereby provide packed serial data, said converting means including:

generating means for generating a continuous M-bit sequential shift instruction when data designating a value of the integer M is received, where the integer M is based on the number of active data bits in the thinned-out output; and

shift register means for sequentially shifting continuous M bits of the thinned-out output data from said storing means based on the continuous M-bit sequential shift instruction generated by the generating means.

5,337,410

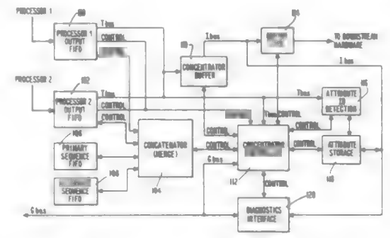
DATA STREAM CONCENTRATOR PROVIDING ATTRIBUTE DATA STORAGE AND GRAPHICS PIPELINE ACCESS

Peter C. Appel, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 494,716, Mar. 16, 1990, abandoned. This application May 11, 1993, Ser. No. 60,478

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—162 **43 Claims**



1. A device for providing direct user access to a pipelined data stream, comprising:

at least one data source for providing packets of data processing commands and associated data;

combining means for combining said packets of data processing commands and associated data in a predetermined order to form said pipelined data stream;

a user interface for outputting said pipelined data stream from said combining means to at least one data destination under direct user control, said at least one data destination includes a processing unit of a user, said user interface comprising control means for selectively extracting and inserting said packets of data processing commands and associated data directly from and into said pipelined data stream on command of the user; and

an attribute ID storage register for storing an attribute identification number indicative of attribute data in a command, said attribute data specifying a context in which subsequent data packets are to be processed, said attribute ID storage register stores a new attribute identification number when the new attribute identification number is not the same as a stored attribute identification number stored in the attribute ID storage register, said stored attribute identification number indicative of an attribute which is currently installed downstream in the pipelined data stream.

5,337,411

MULTI-PROCESSOR COMPUTER SYSTEM BUS ARCHITECTURE

Earnest R. Harrison, Jr., Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 260,146, Oct. 20, 1988, abandoned. This application May 20, 1991, Ser. No. 703,586

Int. Cl.[5] G06F *15/16*

U.S. Cl. 395—200 **5 Claims**

1. A bus structure for a multiprocessor computing system including first, second, third and fourth groups of processors, each group including at least one processor, first and second groups of memory units, each group including at least one memory unit and first and second groups of peripheral units, each group including at least one peripheral unit, said bus structure comprising:

a first bus, connected to the first and second groups of processors and the first group of memory units and peripheral units, for providing direct communication therebetween;

a second bus, connected to the first and fourth groups of processors and the second group of memory units and

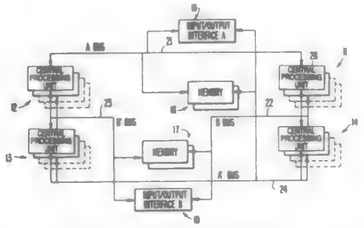
VOL 1165 ISS 2 AG 9 1994 UMI

peripheral units, for providing direct communication therebetween;

a third bus, connected to the second and third groups of processors and the second group of memory units and peripheral units, for providing direct communication therebetween;

a fourth bus, connected to the third and fourth groups of processors and the first group of memory units and peripheral units, for providing direct communication therebetween;

bus interface circuits connected between the processors and said first, second, third and fourth buses, each bus interface circuit including a high order bit circuit for driving



and receiving high order bits transmitted via two of said buses connected thereto, and a low order bit circuit for driving and receiving low order bits transmitted via two of said buses connected thereto; and

wherein said high and low order bit circuits in said bus interface circuits each includes a receiver circuit, connected to a corresponding processor and one of the two of said buses, for receiving bits on the one of the two of said buses, and a driver circuit, connected to the corresponding processor and the one of the two of said buses for transmitting bits on the one of the two of said buses, said driver circuit including substrate diodes, connected to said receiver circuit, for dampening excessive voltage received by said receiver circuit.

5,337,412

METHOD AND APPARATUS FOR SUBSTITUTING REAL AND VIRTUAL DEVICES INDEPENDENT FROM AN DATA PROCESSING SYSTEM APPLICATION PROGRAM

David C. Baker; Kathryn A. Bohrer; Greogory A. Flurry, all of Austin, Tex.; Peter Lucas, San Jose, Calif., and James R. Rhyne, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 225,630, Jul. 27, 1988, Pat. No. 5,109,510, which is a continuation of Ser. No. 820,451, Jan. 17, 1986, abandoned. This application Sep. 26, 1991, Ser. No. 765,849

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—275 **6 Claims**

5. A method of running concurrently a plurality of application programs on a processing system having an operating system, said method comprising:

creating, in the operating system a plurality of virtual terminals having a plurality of virtual output resources for running said application programs, including:

initializing, by a resource controller of the processing system, a sublayer of the operating system for creating a plurality of virtual terminals and for managing a plurality of input and output devices;

receiving, by the resource controller from the operating system, a request to open at least one of said virtual terminals;

activating, by a screen manager, one of said opened virtual terminals at a time; and

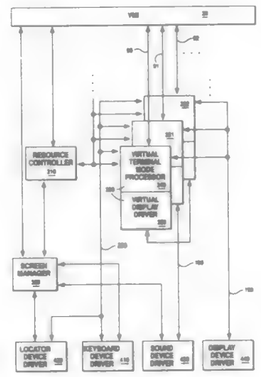
routing, by an input device driver in the operating system based on instructions from the screen manager, a plurality of input events from a real physical input device of the processing system to the active virtual terminal

implementing, by said screen manager in conjunction with at least one input device driver of the operating system, time sharing requirements to virtualize an input device;

implementing, by the screen manager in conjunction with at least one output device driver of the operating system, time sharing requirements to virtualize an output display device; and

allocating, by the screen manager, each one of a plurality of real physical devices of the processing system to each virtualized device of an active virtual terminal;

substituting at least one of said plurality of virtual resources for at least one real physical output device allowing at least one of the application programs to continue execu-



tion with said virtual output resource wherein said application program is unaware that said application program is running in an environment of said virtual terminals;

receiving output data from said at least one application program in an associated physical storage device;

resubstituting said at least one real physical output device for said at least one virtual resources, and providing said output data directly to said at least one real physical output device;

deallocating, by the screen manager, said each one of said real physical devices of the processing system from said each virtualized device of a previous said active virtual terminal; and

reallocating said each one of said real physical devices of the processing system to each of a different virtualized device of a newly active virtual terminal.

5,337,413

ENVIRONMENT MONITORING SYSTEM FOR STANDARD INTERFACE BUS COMPUTER SYSTEMS

Albert Lui, and William T. Fuller, both of San Jose, Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Feb. 6, 1992, Ser. No. 831,951

Int. Cl.[5] G06F *11/30*

U.S. Cl. 395—275 **36 Claims**

1. A system for monitoring the environment of at least one remote device attached to a host processor by means of an interface bus having a limited number of address ports, including:

(a) a host processor;

(b) a first interface bus, coupled to the host processor, and having a limited number of address ports;

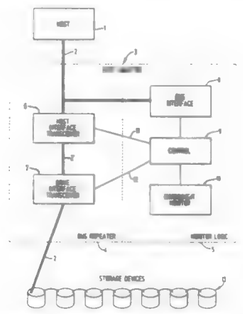
(c) at least one remote device;

(d) a second interface bus, coupled to at least one remote device;

(e) bus repeater means, coupled to the first and second interface buses, for communicating information between the first and second interface buses in a first mode of operation, and for blocking such communication in a second mode of operation;

(f) environment monitor means, for monitoring environment conditions relevant to at least one remote device;

(g) bus interface means, electrically coupled to the first interface bus and to the environment monitor means, for



communicating environment information with the host processor over the first interface bus in the second mode of operation, and for blocking such communication in the first mode of operation;

(h) control means, electrically coupled to the environment monitor means, the bus repeater means, and the bus interface means, for switching the system between the first mode and the second mode of operation;

wherein the environment monitor means does not use any of the limited number of address ports of the first interface bus when the system is in the first mode of operation.

5,337,414

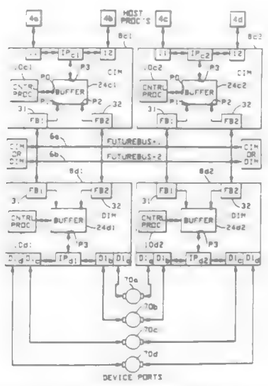
MASS DATA STORAGE AND RETRIEVAL SYSTEM

Seyed H. Hashemi, Mission Viejo, and Khorvash Sefidvash, Laguna Niguel, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 22, 1992, Ser. No. 949,280

Int. Cl.[5] G06F *13/16*

U.S. Cl. 395—275 **8 Claims**



1. A system for high speed storage/retrieval of massive amounts of data to/from a plurality of peripheral devices comprising:

(a) host computer means for addressing selected ones of said peripheral devices and commanding execution of storage or retrieval operations therewith, and including:

(a1) first connection means to a plurality of first controller interface means (CIM);

(b) said plurality of first controller interface means (CIM) for control and management of said host computer means commands and where each of said first controller interface means includes:

(b1) first control means for transferring data to/from a first multiported buffer memory means and said host computer means;

(b2) said first multiported buffer memory means having M input/output ports and temporarily storing data in transit between said host computer means and a second controller interface means;

(b3) first and second protocol means, under control of a first interface processor, for channeling blocks of data between said multiported buffer memory means and said host computer means;

(b4) said first interface processor providing for an equal share of access time to said first and second protocol means;

(b5) first and second bus interface state machines for connecting said first multiported buffer memory means respectively to first and second interface busses;

(c) said first and second interface busses providing communicating lines between each and every one of said plurality of first controller interface means and each and every one of a plurality of second controller (DIM) interface means;

(d) a plurality of said second controller interface means (DIM) for enabling the transfer of data between a plurality of peripheral devices and each of said first multiported buffer memory means, wherein each said second controller interface means includes:

(d1) first and second bus interface state machines for connecting a second multiported buffer memory means to said first and second interface busses;

(d2) second control processor means for transferring data between said second multiported buffer memory means and a local interface processor or said first and second bus interface state machines;

(d3) said local interface processor connecting a plurality of device protocol adapters which interface a plurality of peripheral devices, and including:

(d3a) means to select one or more peripheral devices for data transfer operations;

(d4) second multiported buffer memory means having M input/output ports and temporarily storing data in transit between said second buffer memory means and said one or more selected peripheral devices or between said second buffer memory means and said first buffer memory means;

(e) a plurality of peripheral devices for communication of data from said host computer means or to said host computer means.

5,337,415

PREDECODING INSTRUCTIONS FOR SUPERCALAR DEPENDENCY INDICATING SIMULTANEOUS EXECUTION FOR INCREASED OPERATING FREQUENCY

Eric R. DeLano; Craig A. Gleason, and Mark A. Forsyth, all of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 4, 1992, Ser. No. 984,770

Int. Cl.[5] G06F *9/30, 9/38*

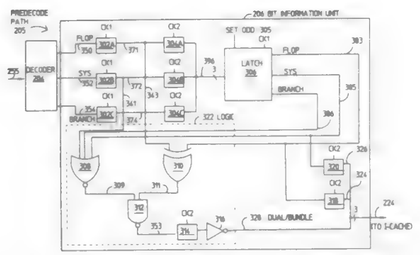
U.S. Cl. 395—375 **2 Claims**

1. A predecoder unit, which operates in a superscalar processor environment, for predecoding instructions for superscalar dependency information, said predecoder generates prede-

VOL 1165 ISS 2 AG 9 1994 UMI

code bits from said instructions when said instructions are copied into a cache memory unit from a memory unit for utilization by a superscalar processor, the predecoder unit comprising:

decoder means, coupled to the memory unit, for receiving encoded information from a first instruction and a second instruction, wherein said decoder means generates three bits in a first clock cycle indicative of whether said first instruction is a floating-point operation, a system operation, a branch operation or an integer operation, and generates three bits in a second clock cycle indicative of whether said second instruction is a floating-point operation, a system operation a branch operation or an integer operation;



a first set of latches, coupled to said decoder means for storing during said first clock cycle said three bits from said first instruction and for storing during said second clock cycle said three bits from said second instruction;

a second set of latches, coupled to said first set of latches, for storing during said second clock cycle said three bits from said first instruction;

logic means, coupled to said first and second set of latches, for generating an active bundle signal, wherein said active bundle signal indicates that said first and second instructions will be executed simultaneously when:

(a) said first and second instructions are integer instructions,

(b) said first instruction is a floating-point operation and said second instruction is an integer instruction, or

(c) said first instruction is floating point operation and said second instruction is a branch instruction.

5,337,416

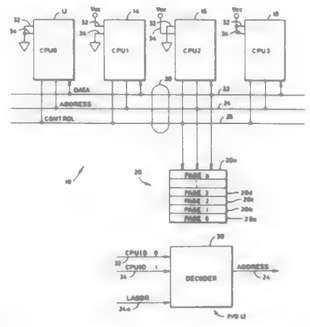
APPARATUS FOR MANAGING PAGE ZERO ACCESSES IN A MULTI-PROCESSOR DATA PROCESSING SYSTEM

Robert P. Ryan, Marlborough, Mass.; John B. Crowther, Nashua, and Robert A. MacDonald, Derry, both of N.H., assignors to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 534,392, Jun. 7, 1990, abandoned. This application Nov. 18, 1993, Ser. No. 154,675

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—400 **7 Claims**



1. Apparatus for use in a data processing system of the type that includes n data processing means where n is greater than one, each of the data processing means executing instructions including instructions that generate a first address for accessing a predetermined region of system memory, said apparatus comprising:

n connection means individual ones of which are provided for physically and electrically coupling one of said data processing means to a system bus and, through said system bus, to said system memory, each of said n connection means providing respective identification signals to said one of said data processing means that is coupled thereto for uniquely identifying said one of said data processing means from others of said n data processing means; and

means, in each of the data processing means, for modifying said first address to a second address, said modifying means having a first input for receiving said first address, a second input for receiving the respective identification signal, and an output for providing the second address therefrom, the second address having a value that is a function of the first and the second inputs wherein the identification signals comprise signal lines that originate from a backplane upon which said system bus is disposed, said signal lines expressing a binary number for uniquely identifying the data processing means that is coupled thereto.

DESIGN PATENTS

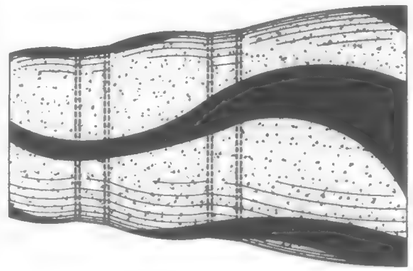
GRANTED AUG. 9, 1994

ERRATA

For CLASS	See PATENT NO.
009-422	D 349,553
007-301	D 349,556
*024-110	D 349,586
024-110	D 349,587

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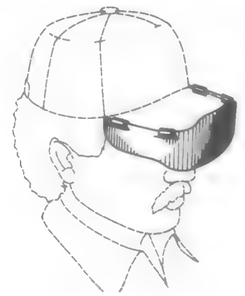
349,387
WRIST BAND
Mark D. Crabbe, 107 Chartwell La., Lafayette, La. 70503
Filed Oct. 30, 1992, Ser. No. 982
Term of patent 14 years
U.S. Cl. D2—610



349,388
DISPOSABLE SURGICAL PANTS PROTECTOR
Stewart E. Sloan, 6751 North 72nd St., Ste. 207, Omaha, Nebr. 68123
Filed Dec. 30, 1992, Ser. No. 3,159
Term of patent 14 years
U.S. Cl. D2—860



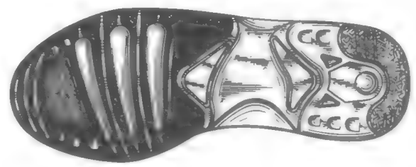
349,389
A VISOR ATTACHMENT FOR A CAP
William G. Phillips, 6022 Turquoise Dr., Rocklin, Calif. 95677
Filed Dec. 10, 1992, Ser. No. 2,370
Term of patent 14 years
U.S. Cl. D2—893



349,390
TENNIS SHOE SANDAL
J. Bart Buckner, 4707 Everhart Rd., #205, Corpus Christi, Tex. 78411
Filed Jun. 22, 1992, Ser. No. 901,907
Term of patent 14 years
U.S. Cl. D2—916

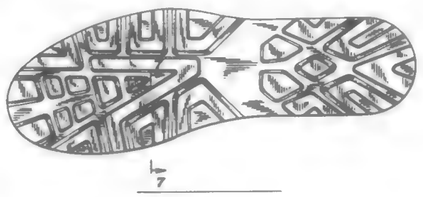


349,391
SHOE SOLE
Jean S. Yang, Torrance, Calif., assignor to L. A. Gear, Inc., Santa Monica, Calif.
Filed Mar. 4, 1993, Ser. No. 5,425
Term of patent 14 years
U.S. Cl. D2—951



VOL 1165 ISS 2 AG 9 1994 UMI

349,392
SHOE SOLE
Sherrie Noel, Los Angeles, Calif., assignor to Vans, Inc., Orange, Calif.
Filed Jun. 16, 1993, Ser. No. 9,630
Term of patent 14 years
U.S. Cl. D2—957



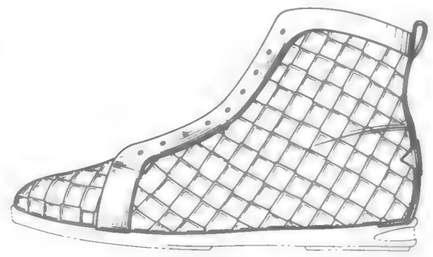
349,393
FLUID FILLED INSOLE
Eddie Mishan, West Deal, N.Y., assignor to E. Mishan & Sons, Inc., New York, N.Y.
Filed May 14, 1993, Ser. No. 8,326
Term of patent 14 years
U.S. Cl. D2—961



349,394
SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Sep. 14, 1993, Ser. No. 12,895
Term of patent 14 years
U.S. Cl. D2—969



349,395
SHOE UPPER
Michelle Kelchak, Manhattan Beach, Calif., assignor to L.A. Gear, Inc., Santa Monica, Calif.
Filed Mar. 4, 1993, Ser. No. 5,428
Term of patent 14 years
U.S. Cl. D2—970



349,396
SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Sep. 14, 1993, Ser. No. 12,972
Term of patent 14 years
U.S. Cl. D2—970



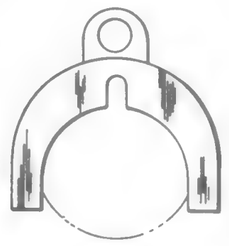
349,397
UMBRELLA STAND
Jeff Peng, Taipei, Taiwan, assignor to Midas-Lin Co., Ltd., Taiwan
Filed Sep. 2, 1992, Ser. No. 938,641
Term of patent 14 years
U.S. Cl. D3—10



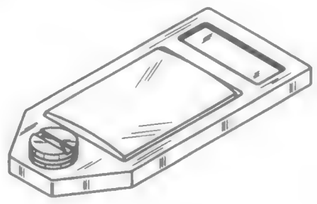
349,398
COMBINATION MONEY CLIP AND KEY HOLDER
James P. Ezzo, 3815 N. Bayou Hills Rd., Parker, Colo. 80134
Filed Jun. 24, 1992, Ser. No. 908,001
Term of patent 14 years
U.S. Cl. D3—208



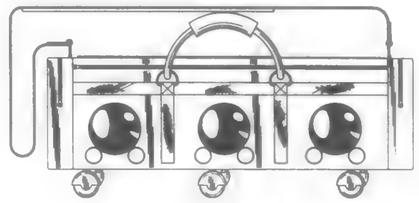
349,399
CHECK HOLDER FOR KEY CHAIN
Anthony M. Di Paolo, and John T. Hood, both of 18221 Edison Ave., Chesterfield, Mo. 63005
Filed Mar. 30, 1993, Ser. No. 6,479
Term of patent 14 years
U.S. Cl. D3—208



349,400
SINGLE KEY HOLDER
Wells S. Bearinger, St. Louis, Mo., assignor to Quick Point, Inc., Fenton, Mo.
Filed Aug. 12, 1993, Ser. No. 11,667
Term of patent 14 years
U.S. Cl. D3—208



349,401
BOWLING BALL BAG
Dennis J. Carrillo, 2818 Belt Line Rd., Apt. #167, Garland, Tex. 75044
Filed Apr. 14, 1992, Ser. No. 869,363
Term of patent 14 years
U.S. Cl. D3—221

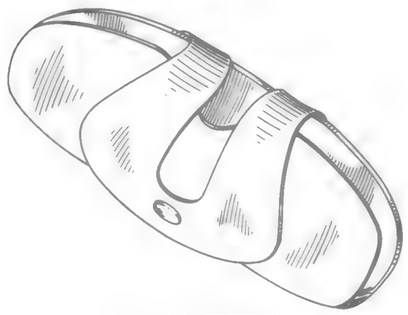


349,402
GOLF BAG CASE
Joseph F. Fiore, Lebanon, Pa., assignor to Doskocil Manufacturing Company, Incorporated, Arlington, Tex.
Filed May 13, 1993, Ser. No. 8,307
Term of patent 14 years
U.S. Cl. D3—255



VOL 1165 ISS 2 AG 9 1994 UMI

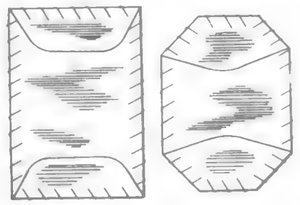
349,403
EYEWEAR CASE
Sergio Cereda, Varese, Italy, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed May 12, 1993, Ser. No. 8,285
Term of patent 14 years
U.S. Cl. D3—266



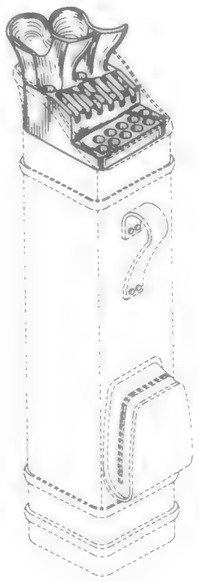
349,404
TRANSPARENT WATERTIGHT PLASTIC CARRYING BAG WITH END POCKETS, I.D. SLOT AND REMOVABLE STRAP
Douglas Poisson, P.O. Box 906, Latham, N.Y. 12110
Filed Jan. 21, 1992, Ser. No. 823,448
Term of patent 14 years
U.S. Cl. D3—276



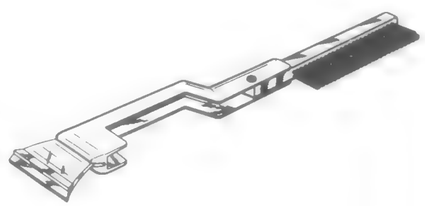
349,405
HOLDER FOR A PAGER
Dorothy Carroll, 855 Main Rd., Towaco, N.J. 07082
Filed Nov. 29, 1991, Ser. No. 799,637
Term of patent 14 years
U.S. Cl. D3—299



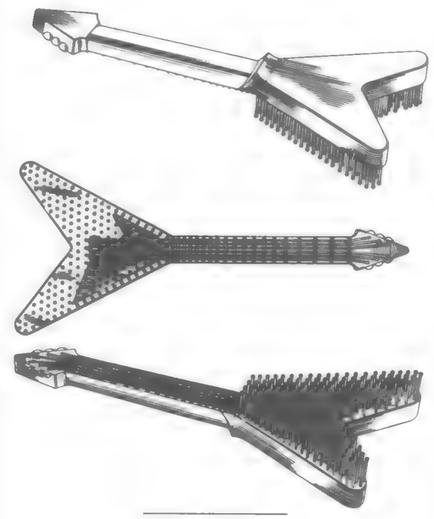
349,406
GOLF CLUB ORGANIZER
John Shumay, 29666 Rosemond Dr., Franklin, Mich. 48025
Filed Feb. 18, 1993, Ser. No. 4,995
Term of patent 14 years
U.S. Cl. D3—320



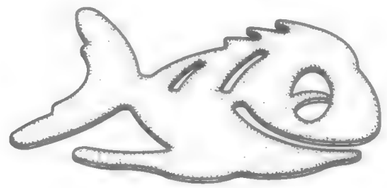
349,407
COMBINED SNOW BRUSH AND SCRAPER
Philip White, Markham, Canada, assignor to Fun Bunch Inc., Willowdale, Canada
Filed Sep. 14, 1992, Ser. No. 948,731
Claims priority, application Canada, Jun. 1, 1992, 01-06-92-7
Term of patent 14 years
U.S. Cl. D4—118



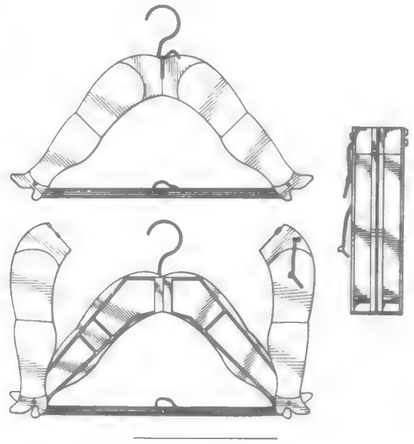
349,408
BRUSH
Scott A. Cameron, 8340 Rogue River Hwy., Grants Pass, Oreg. 97527
Filed Aug. 19, 1991, Ser. No. 746,599
Term of patent 14 years
U.S. Cl. D4—124



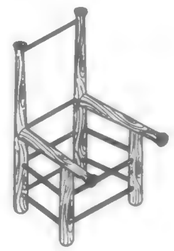
349,409
FISH APPLIQUE
D. Scott Miller, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 28, 1992, Ser. No. 3,078
Term of patent 14 years
U.S. Cl. D5—65



349,410
FOLDABLE GARMENT HANGER HAVING STORAGE SPACES
Manuel Morales-Rivera, Rio Piedras, P.R., assignor to Commonwealth of Puerto Rico, San Juan, P.R.
Filed May 5, 1992, Ser. No. 878,510
Term of patent 14 years
U.S. Cl. D6—316

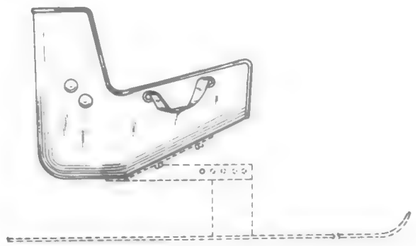


349,411
CHAIR FRAME
Chris Marriott, 4200 Bridgecrest Dr. KK-1, Phoenix City, Ala. 36867, and Stephen White, 2001 Country Club Rd., Columbus, Ga. 31906
Filed Sep. 3, 1992, Ser. No. 939,377
Term of patent 14 years
U.S. Cl. D6—358



VOL 1165 ISS 2 AG 9 1994 UMI

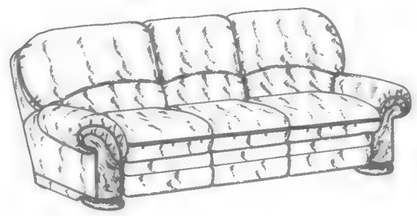
349,412
SPORT SEAT
Daniel J. Fallon, 65431 73rd St., Bend, Oreg. 97701
Filed Nov. 7, 1991, Ser. No. 789,472
Term of patent 14 years
U.S. Cl. D6—374



349,413
SIDE CHAIR
Philip Stone, Woodbury, and Craig Stout, Redding, both of Conn., assignors to Ethan Allen Inc., Danbury, Conn.
Filed May 1, 1992, Ser. No. 877,018
The portion of the term of this patent subsequent to Aug. 2, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—380



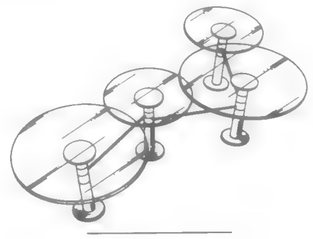
349,414
SOFA
Alan H. Friedman, Short Hills, N.J., assignor to Mohasco Upholstered Furniture Corporation, Fairfax, Va.
Filed Sep. 8, 1992, Ser. No. 940,800
Term of patent 14 years
U.S. Cl. D6—381



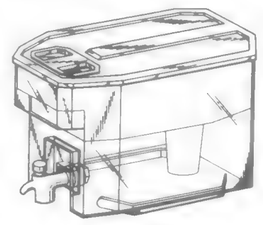
349,415
TABLE
Randy Peterson, Winona, Minn., assignor to Ashley Furniture Industries, Inc., Arcadia, Wis.
Division of Ser. No. 723,623, Jul. 1, 1991, Pat. No. Des. 341,278.
This application Nov. 12, 1993, Ser. No. 15,285
Term of patent 14 years
U.S. Cl. D6—480



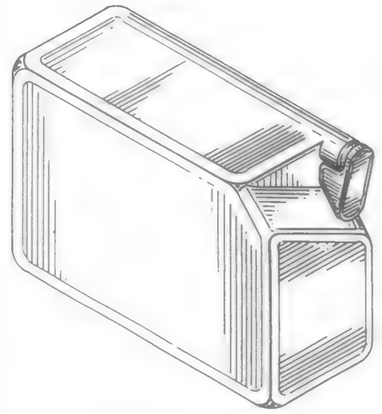
349,416
TABLE
Kotaro Shimogori, P.O. Box 387, Venice, Calif. 90294
Filed Feb. 25, 1993, Ser. No. 5,183
Term of patent 14 years
U.S. Cl. D6—482



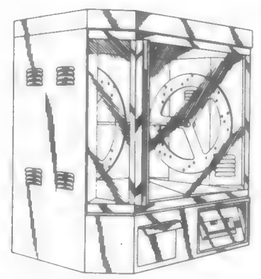
349,417
WATER COOLER
Richard D. Malmborg, San Ramon; Robert J. Hodan, San Francisco, and Jay L. Flom, Albany, all of Calif., assignors to The Clorox Company, Oakland, Calif.
Filed Oct. 27, 1992, Ser. No. 855
Term of patent 14 years
U.S. Cl. D7—306



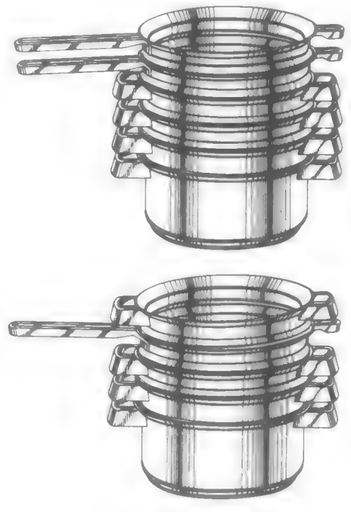
349,418
BEVERAGE CONTAINER
Andrew T. Kostanecki, Darien, and Robert H. Brainard, Danbury, both of Conn., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Oct. 20, 1992, Ser. No. 661
Term of patent 14 years
U.S. Cl. D7—312



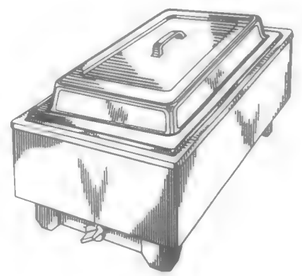
349,419
ROTISSERIE OVEN
Peter J. Koopman, Richmond, Ind., assignor to Henny Penny Corporation, Eaton, Ohio
Filed Nov. 9, 1992, Ser. No. 1,227
Term of patent 14 years
U.S. Cl. D7—338



349,420
SET OF COOKWARE
Makio Hasuike, Milan, Italy, assignor to WMF Wuerttembergische Metallwarenfabrik Aktiengesellschaft, Geislingen, Fed. Rep. of Germany
Filed Oct. 16, 1991, Ser. No. 778,692
Claims priority, application Hague, Apr. 19, 1991, DM/010659
Term of patent 14 years
U.S. Cl. D7—360

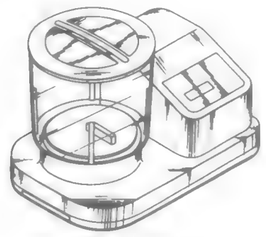


349,421
ELECTRIC FOOD WARMING VESSEL FOR RESTAURANTS AND CAFETERIAS
Eugine W. Goad, Dayton, Minn., assignor to Industrial Design & Engineering Associates Inc., Rogers, Minn.
Filed Jun. 19, 1992, Ser. No. 901,495
Term of patent 14 years
U.S. Cl. D7—366



VOL 1165 ISS 2 AG 9 1994 UMI

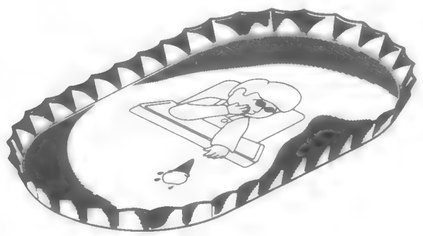
349,422
KNEADING MACHINE
Takuji Kaneko, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan
Filed Oct. 16, 1992, Ser. No. 502
Claims priority, application Japan, May 22, 1992, 4-14681
Term of patent 14 years
U.S. Cl. D7—376



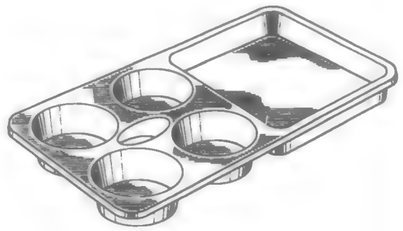
349,423
FOOD MIXER
Christian Burgel, Chaponost, France, assignor to Santos S.A., Vaulx en Velin, France
Filed Apr. 20, 1993, Ser. No. 7,365
Claims priority, application World Int. Prop. O., Oct. 22, 1992, DM/024.214
Term of patent 14 years
U.S. Cl. D7—378



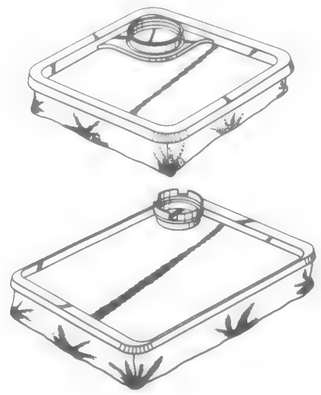
349,424
FOOD CATCHING DEVICE FOR CHILDREN
Rodney W. Schlegel, 1206 Yord Rd., Ste. L-2, Lutherville, Md. 21093
Filed Dec. 28, 1992, Ser. No. 3,106
Term of patent 14 years
U.S. Cl. D7—551



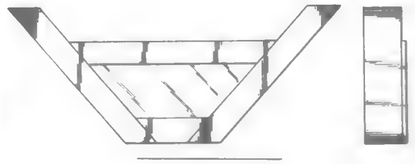
349,425
SNACK TRAY
H. Terrell Kays, 4321 N. 500 East, Danville, Ind. 46122, and Robert J. Forestal, 2714 Coldstream La., Indianapolis, Ind. 46220
Filed Nov. 5, 1992, Ser. No. 1,131
Term of patent 14 years
U.S. Cl. D7—553



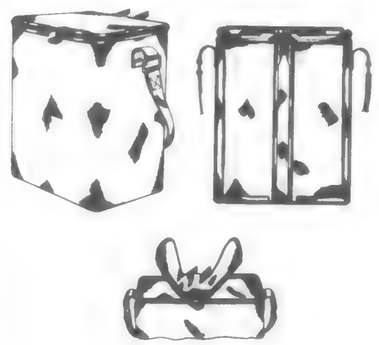
349,426
SNACK TRAY
Daniel A. Norris, Alabaster, Ala., assignor to Alabaster Industries, Inc., Alabaster, Ala.
Continuation-in-part of Ser. No. 5,163, Feb. 25, 1993. This application Apr. 16, 1993, Ser. No. 7,238
Term of patent 14 years
U.S. Cl. D7—553



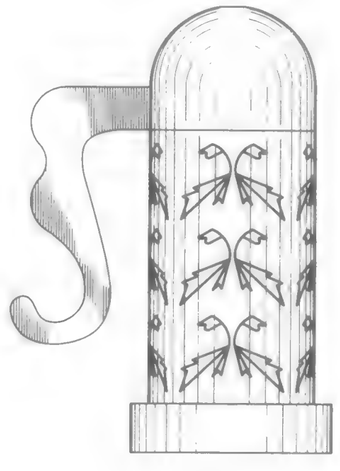
349,427
FILTER HOLDER
Jack Merwin, St. Augustine, Fla., assignor to Tudor Development Corporation, Rockville, Md.
Division of Ser. No. 868,780, Apr. 15, 1992, Pat. No. 8,343,339. This application Oct. 25, 1993, Ser. No. 14,480
Term of patent 14 years
U.S. Cl. D7—601



349,428
BEVERAGE CAN COOLER TOTE
Kenneth J. Krugman, 1155 Waukegan Rd., Suite 2000, Glenview, Ill. 60025
Filed Dec. 14, 1992, Ser. No. 2,517
Term of patent 14 years
U.S. Cl. D7—607



349,429
INSULATED CONTAINER HOLDER
Richard D. Morehead, Rte. 1 Box 1-A1, Washington, Okla. 73093
Filed Mar. 22, 1993, Ser. No. 6,153
Term of patent 14 years
U.S. Cl. D7—605

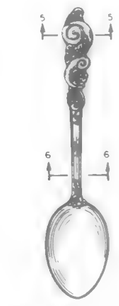


349,430
SPOON
Colin B. Richmond, Vernon Center, N.Y., assignor to Oneida, Ltd., Oneida, N.Y.
Filed Feb. 5, 1993, Ser. No. 4,450
Term of patent 14 years
U.S. Cl. D7—661



VOL 1165 ISS 2 AG 9 1994 UMI

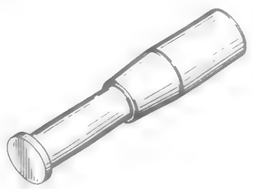
349,431
SPOON
Colin B. Richmond, Vernon Center, N.Y., assignor to Oneida, Ltd., Oneida, N.Y.
Filed Feb. 5, 1993, Ser. No. 4,463
Term of patent 14 years
U.S. Cl. D7—661



349,432
ILLUMINATED BATTERY-OPERATED PEPPERMILL
Marcus W. Kibbe, San Marcos, Calif., assignor to Dudley Kebow, Inc., Oceanside, Calif.
Filed Nov. 24, 1992, Ser. No. 1,823
Term of patent 14 years
U.S. Cl. D7—679



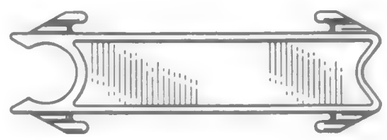
349,433
DICER
Bing Tran, 735 Cedar Valley, Catawba, S.C. 29704
Filed Dec. 1, 1992, Ser. No. 2,066
Term of patent 14 years
U.S. Cl. D7—693



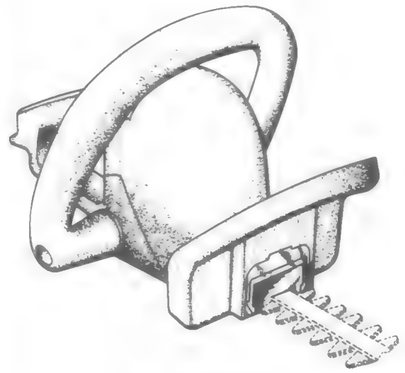
349,434
PLANT STAKE
Dave Archambeau, Town Highway 10, Kirby, Va. 05851
Filed Apr. 26, 1993, Ser. No. 7,503
Term of patent 14 years
U.S. Cl. D8—1



349,435
CLIP FOR SUPPORTING NEWLY PLANTED TREES
Richard B. Taylor, 15120 Zig Zag Rd., Albion, N.Y. 14411-9722
Filed May 17, 1993, Ser. No. 8,397
Term of patent 14 years
U.S. Cl. D8—1



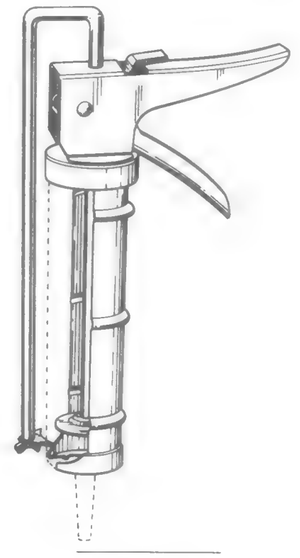
349,436
HEDGE TRIMMER HOUSING
John Griffin, Phoenix, Ariz., and Ronald F. Meland, Muncy, Pa., assignors to McCulloch Corporation, Tucson, Ariz.
Filed Feb. 23, 1993, Ser. No. 5,090
Term of patent 14 years
U.S. Cl. D8—8



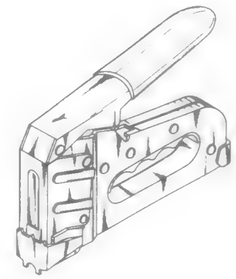
349,437
CARRIER FOR LARGE SHEETS OF MATERIAL
Robert Mock, and Joan Mock, both of 29601 Greenland, Livonia, Mich. 48154
Filed Jan. 27, 1993, Ser. No. 4,091
Term of patent 14 years
U.S. Cl. D8—14



349,438
DISPENSER WITH POINTER FOR EXTERNALLY MONITORING CARTRIDGE LEVEL
R. Larry Owens, 6480 Chupp Rd., No. C-8, Lithonia, Ga. 30058
Filed Aug. 11, 1993, Ser. No. 11,791
Term of patent 14 years
U.S. Cl. D8—14.1

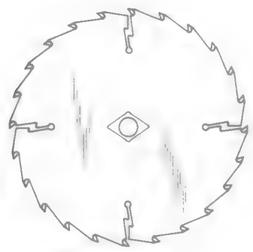


349,439
STAPLE GUN
Shu-Hui Chou, 4 Fl., No. 276, Sec. 1, Ta Tung Rd., Hsi Chih Chen, Taipei Hsien, Taiwan
Filed Nov. 24, 1992, Ser. No. 1,785
Term of patent 14 years
U.S. Cl. D8—49

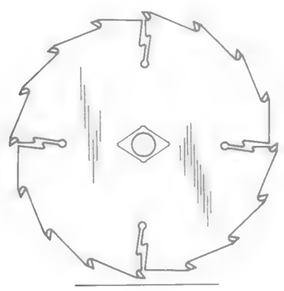


VOL 1165 ISS 2 AG 9 1994 UMI

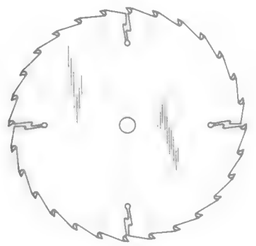
349,440
SAW BLADE
Jed G. Johnston, Leitchfield, Ky., assignor to Vermont American Corp., Louisville, Ky.
Filed Dec. 20, 1991, Ser. No. 810,912
Term of patent 14 years
U.S. Cl. D8—70



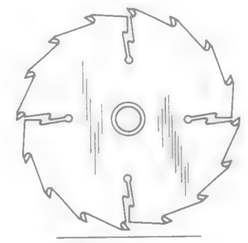
349,441
SAW BLADE
Jed G. Johnston, Leitchfield, Ky., assignor to Vermont American Corp., Louisville, Ky.
Filed Dec. 20, 1991, Ser. No. 810,913
Term of patent 14 years
U.S. Cl. D8—70



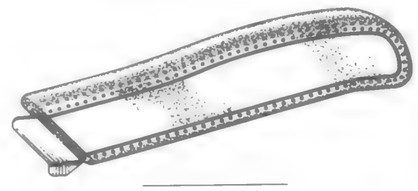
349,442
SAW BLADE
Jed G. Johnston, Leitchfield, Ky., assignor to Vermont American Corp., Louisville, Ky.
Filed Dec. 20, 1991, Ser. No. 812,355
Term of patent 14 years
U.S. Cl. D8—70



349,443
SAW BLADE
Jed G. Johnston, Leitchfield, Ky., assignor to Vermont American Corp., Louisville, Ky.
Filed Dec. 20, 1991, Ser. No. 812,361
Term of patent 14 years
U.S. Cl. D8—70



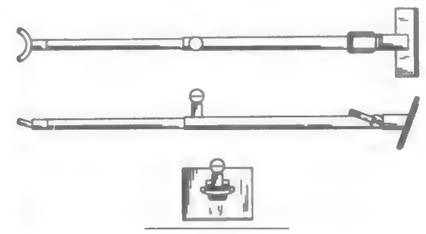
349,444
UTILITY KNIFE
Gregory G. Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.
Filed Mar. 8, 1993, Ser. No. 5,792
Term of patent 14 years
U.S. Cl. D8—98



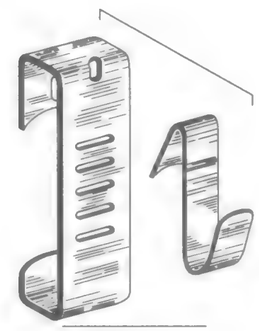
349,445
DOORKNOB COVER
Sun K. Addison, 2773 Old Barn Trail, Powder Springs, Ga. 30073
Filed May 18, 1992, Ser. No. 884,989
Term of patent 14 years
U.S. Cl. D8—322



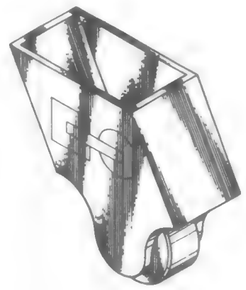
349,446
PORTABLE DOOR LOCK
Thomas H. Brunette, 6451 177th St. North, Hugo, Minn. 55038
Filed Jun. 7, 1993, Ser. No. 9,160
Term of patent 14 years
U.S. Cl. D8—331



349,447
ADJUSTABLE PICTURE HOOK UNIT
Boruch H. Daniller, 3906 Galacia Dr., Austin, Tex. 78759
Filed Dec. 28, 1992, Ser. No. 2,995
Term of patent 14 years
U.S. Cl. D8—367



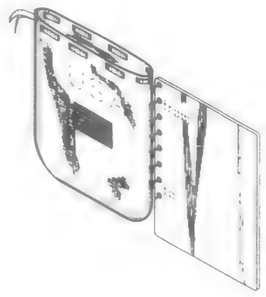
349,448
TABLE LEG CASTER
Victor J. Lepp, 57 Melody Trail, St. Catherines, Canada L2M 1C6
Filed Jan. 29, 1993, Ser. No. 4,190
Term of patent 14 years
U.S. Cl. D8—375



349,449
TUBE
Hans Linnér, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden
Filed Nov. 25, 1992, Ser. No. 1,956
Claims priority, application France, May 25, 1992, 92 3270
Term of patent 14 years
U.S. Cl. D9—302

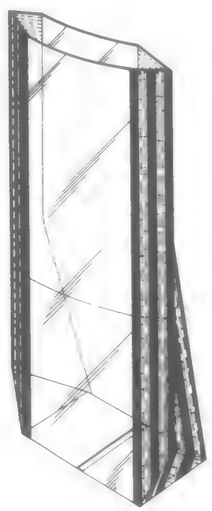


349,450
MAILING BAG
William B. Wales, III, Rte. 1 Box 286, Lawrenceville, Pa. 16929
Filed Jun. 3, 1991, Ser. No. 709,434
Term of patent 14 years
U.S. Cl. D9—305



VOL 1165 ISS 2 AG 9 1994 UMI

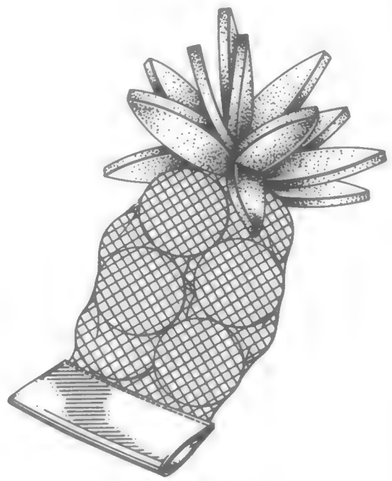
349,451
SACK
Andre Sagnard, Vienne, France, assignor to Primasacs, Societe Anonyme, Pont-Eveque, France
Filed Sep. 23, 1992, Ser. No. 949,113
Claims priority, application France, Mar. 23, 1992, 921,794
Term of patent 14 years
U.S. Cl. D9—305



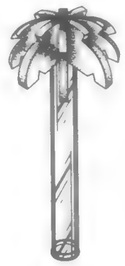
349,452
SIMULATIVE DISPENSING CONTAINER
Raymond Stimac, Kailua-Kona, Hi., assignor to Hula Family Products, Inc., Kailua-Kona, Hi.
Filed Apr. 19, 1991, Ser. No. 688,074
Term of patent 14 years
U.S. Cl. D9—316



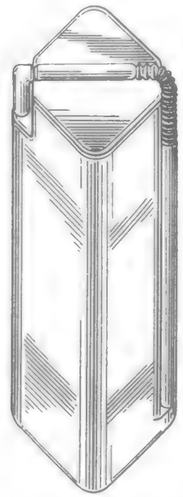
349,453
DISPLAY PACKAGE
Craig S. Shumway, and Amy Shumway, both of P.O. Box 149394, Orlando, Fla. 32814
Filed Jan. 7, 1993, Ser. No. 3,454
Term of patent 14 years
U.S. Cl. D9—329



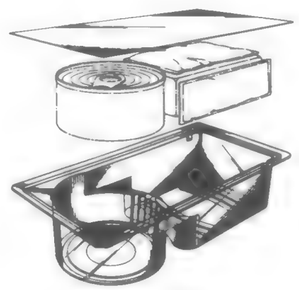
349,454
CONTAINER
Craig S. Shumway, and Amy Shumway, both of P.O. Box 149394, Orlando, Fla. 32814
Filed Jan. 7, 1993, Ser. No. 3,543
Term of patent 14 years
U.S. Cl. D9—335



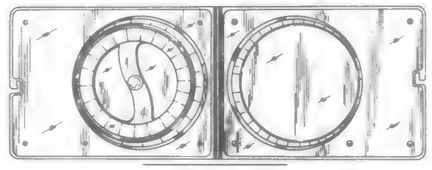
349,455
BEVERAGE CONTAINER
Andrew T. Kostanecki, Darien; Robert H. Brainard, Danbury, both of Conn., and Richard H. Kaufman, New Castle, N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Oct. 20, 1992, Ser. No. 663
Term of patent 14 years
U.S. Cl. D9—337



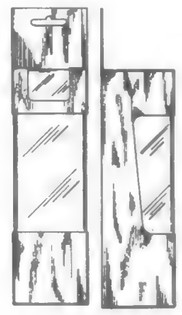
349,456
CONTAINER
Phillip S. Wilson, Bremen, Ga., assignor to King Packaging, Inc., Bremen, Ga.
Filed Nov. 3, 1992, Ser. No. 1,099
Term of patent 14 years
U.S. Cl. D9—347



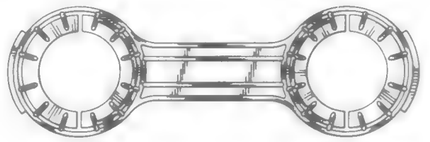
349,457
PACKAGE FOR A TOY
John R. Nottingham; John W. Spirk, Jr., both of Moreland Hills; Jeffrey M. Kalman, Cleveland Heights, and Patrick J. Coyne, Shaker heights, all of Ohio, assignors to Nottingham-Spirk Design Associates, Inc., Cleveland, Ohio
Filed Jan. 24, 1992, Ser. No. 827,922
Term of patent 14 years
U.S. Cl. D9—415



349,458
DISPLAY PACKAGE
Roberto Verdaguer, 8315 NW. 64th St. Bay #5, Miami, Fla. 33166
Filed May 14, 1993, Ser. No. 8,338
Term of patent 14 years
U.S. Cl. D9—415



349,459
CARRIER STRAP FOR MILK JUG CONTAINERS
James C. Borg, Eugene, Oreg., assignor to Oregon Precision Industries, Inc., Eugene, Oreg.
Filed Jul. 6, 1992, Ser. No. 914,691
Term of patent 14 years
U.S. Cl. D9—455



VOL 1165 ISS 2 AG 9 1994 UMI

349,460
WRIST WATCH
Elmar Kobe, Postfach 11 13, W-8944 Grönenbach, Fed. Rep. of Germany
Filed Aug. 12, 1992, Ser. No. 929,779
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1992, M9201509.3
Term of patent 14 years
U.S. Cl. D10—32



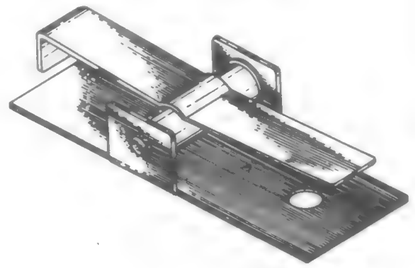
349,461
WRIST WATCH
Takashi Morishima, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,472
Claims priority, application Japan, Mar. 31, 1992, 4-9080
Term of patent 14 years
U.S. Cl. D10—38



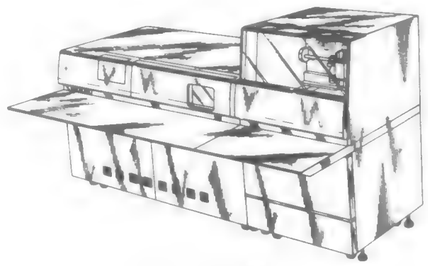
349,462
TAPE SQUARE WITH LEVEL
Dennis Douglas, 1615 Ora Dr., Napa, Calif. 94559
Filed Jan. 12, 1993, Ser. No. 3,548
Term of patent 14 years
U.S. Cl. D10—62



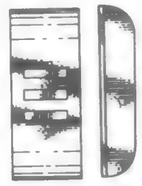
349,463
SHEET ROCK T-SQUARE HOLDER
Robert L. Beattie, 233 San Nicolas, Santa Barbara, Calif. 93109
Filed Mar. 24, 1993, Ser. No. 6,339
Term of patent 14 years
U.S. Cl. D10—74



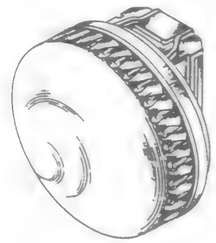
349,464
ULTRASONIC FLAW DETECTOR SYSTEM
Hiroaki Nakashima, Tokyo; Toshiyuki Utsuki, Tachikawa; Toshihiko Wada, Musashimurayama; Yukio Arima, Tsukuba, and Tohru Miyata, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
Filed Apr. 28, 1993, Ser. No. 7,634
Claims priority, application Japan, Oct. 28, 1992, 4-31525; Nov. 9, 1992, 4-32917
Term of patent 14 years
U.S. Cl. D10—75



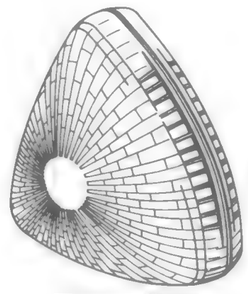
349,465
BURGLAR ALARM FOR DOORS
Steve Jacobs, P.O. Box 3052, Thomasville, Ga. 31799
Filed Aug. 30, 1993, Ser. No. 12,299
Term of patent 14 years
U.S. Cl. D10—106



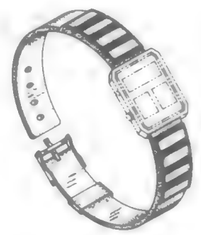
349,466
FLASHER
Jude H. C. Chang, No. 15, Wen Tien Street, Feng Shan City, Kaohsiung Hsien, Taiwan
Filed Jul. 13, 1993, Ser. No. 10,682
Term of patent 14 years
U.S. Cl. D10—114



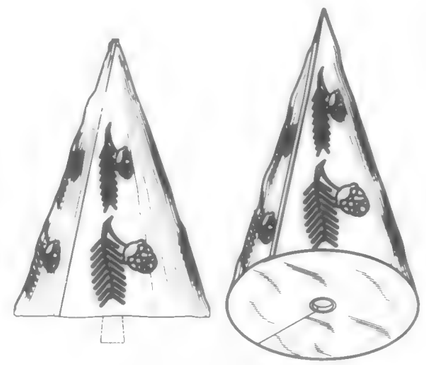
349,467
PORTABLE ELECTRONIC FLASHER
Samia A. Halaby, New York, N.Y., assignor to Visibility Systems Connecticut Limited Partnership, New Haven, Conn.
Filed Oct. 13, 1993, Ser. No. 14,133
Term of patent 14 years
U.S. Cl. D10—114



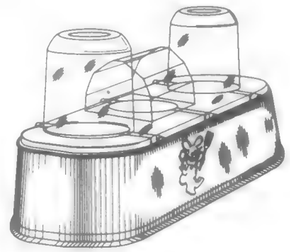
349,468
COMBINED WRIST WATCH BAND AND REMOTE WATCH CONTROLS
Richard D. Souren, 5 Rail Ct., Roseland, N.J. 07068
Filed Aug. 30, 1993, Ser. No. 12,321
Term of patent 14 years
U.S. Cl. D11—3



349,469
ADJUSTABLE CHRISTMAS TREE CARRIER
Mercer E. Mitchell, 10127 Laman La., Twinsburg, Ohio 44087
Filed Aug. 5, 1992, Ser. No. 924,669
Term of patent 14 years
U.S. Cl. D11—130



349,470
EASTER GREENHOUSE
John C. Pender, IV, Jamison, Pa.; Ronald S. Elowitz, Colonia, N.J.; Robert T. McBride, Jr., Cleveland, Tenn.; Gary J. Norman, Rumson, N.J., and Thomas R. Uhl, Jr., New Hope, Pa., assignors to Schering-Plough Healthcare Products, Inc., Memphis, Tenn.
Filed Dec. 23, 1992, Ser. No. 2,919
Term of patent 14 years
U.S. Cl. D11—143



VOL 1165 ISS 2 AG 9 1994 UMI

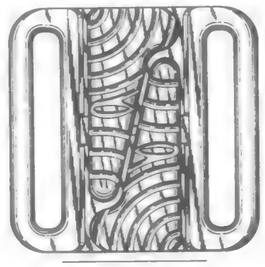
349,471
SUPPORT FOR STAR DECORATION
Leo V. Russo, 356 Ambleside Dr., Roselle, Ill. 60172
Filed Jul. 20, 1992, Ser. No. 914,699
Term of patent 14 years
U.S. Cl. D11—164



349,472
GROWING PLANT POLE
Gary Olswanger, 10862 Seneca Dr., Boise, Id. 83709
Filed Oct. 7, 1992, Ser. No. 220
Term of patent 14 years
U.S. Cl. D11—164

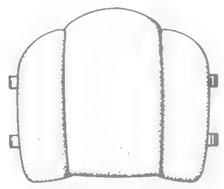


349,473
GARMENT CLOSURE
Gerhard Fildan, Rathausstr. 115, A-1010 Vienna, Austria
Filed Feb. 1, 1993, Ser. No. 4,311
Term of patent 14 years
U.S. Cl. D11—212



349,474
SOLID BACK INSERT FOR A WHEELCHAIR
Paul Mocur, 12985 Wayne Rd., Livonia, Mich. 48150
Continuation-in-part of Ser. No. 2,833, Dec. 21, 1992, Pat. No. Des. 342,857. This application May 24, 1993, Ser. No. 8,664
Term of patent 14 years
U.S. Cl. D12—133

349,475
WHEELCHAIN SOLID BACK INSERT HAVING LUMBAR SUPPORT PAD
Paul Mocur, 12985 Wayne Rd., Livonia, Mich. 48150
Continuation-in-part of Ser. No. 8,664, May 24, 1993, which is a continuation-in-part of Ser. No. 2,833, Dec. 21, 1992, Pat. No. D. 342,857. This application Dec. 13, 1993, Ser. No. 16,305
Term of patent 14 years
U.S. Cl. D12—133



349,476
TIRE
Laurie W. Killian, Cuyahoga Falls, Ohio, assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio
Filed Apr. 26, 1990, Ser. No. 515,156
Term of patent 14 years
U.S. Cl. D12—147



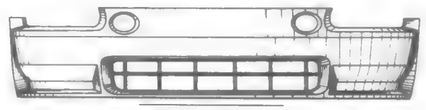
349,477
AUTOMOBILE TIRE
Kazunori Shinohara, and Yukio Yamakawa, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 25, 1993, Ser. No. 9,947
Claims priority, application Japan, Dec. 25, 1992, 4-37966
Term of patent 14 years
U.S. Cl. D12—147



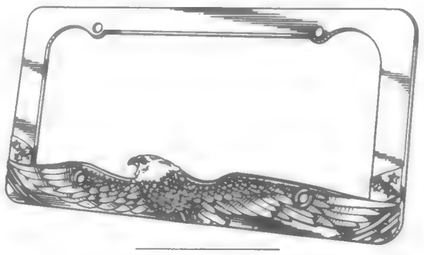
349,478
AUTOMOBILE TIRE
Yasuo Himuro, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 25, 1993, Ser. No. 9,889
Claims priority, application Japan, Dec. 25, 1992, 4-37965
Term of patent 14 years
U.S. Cl. D12—151



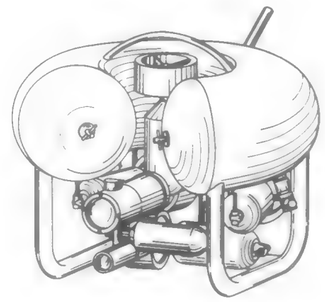
349,479
AUTOMOBILE FRONT BUMPER
Yoshikazu Kigoshi, Fujimi, and Kazushi Nakamura, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 24, 1992, Ser. No. 3,022
Term of patent 14 years
U.S. Cl. D12—169



349,480
LICENSE PLATE HOLDER
Carl W. Leu, Miami, Fla., assignor to Poli-Auto, Inc., Miami, Fla.
Filed May 11, 1993, Ser. No. 8,207
Term of patent 14 years
U.S. Cl. D12—193

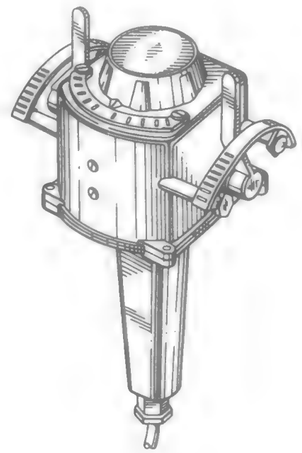


349,481
UNDERWATER REMOTELY OPERATED VEHICLE
Ben G. Allen, Cataumet, Mass., assignor to Benthos, Inc., North Falmouth, Mass.
Filed Feb. 22, 1993, Ser. No. 5,232
Term of patent 14 years
U.S. Cl. D12—308

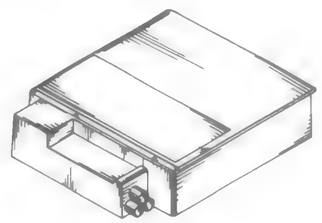


VOL 1165 ISS 2 AG 9 1994 UMI

349,482
PORTABLE MARINE CONTROL UNIT
Jacob Kobelt, 1654 Ocean Park Road, Surrey, British Columbia, Canada V4A 3L9
Filed Nov. 2, 1992, Ser. No. 1,002
Claims priority, application Canada, Oct. 14, 1992, 14-10-92-4
Term of patent 14 years
U.S. Cl. D12—317



349,483
BATTERY PACK FOR USE WITH A MEDICAL INSTRUMENT
Robert J. Weaver, Kirkland; John C. Daynes, Redmond; Dennis C. Brittingham, Seattle, and Rodney J. Merry, Woodinville, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.
Continuation-in-part of Ser. No. 640,072, Jan. 11, 1991, Pat. No. 5,224,870. This application Jan. 9, 1992, Ser. No. 820,948
Term of patent 14 years
U.S. Cl. D13—103

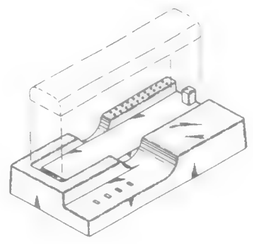


349,484
DOUBLE CAPACITY BATTERY FOR PORTABLE PERSONAL COMPUTER
Hiroyuki Kuzumoto, Tokyo; Masashi Odagiri; Motoharu Yamaguchi, both of Yamagata, and Akira Sakai, Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Apr. 8, 1993, Ser. No. 6,820
Claims priority, application Japan, Oct. 12, 1992, 4-29855
Term of patent 14 years
U.S. Cl. D13—103

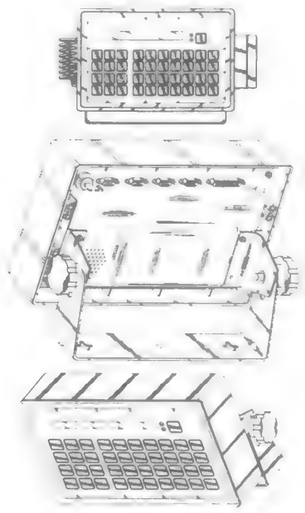


349,485
BATTERY CHARGER FOR A RECHARGEABLE RADIO BATTERY
Scott H. Richards, Plantation, and Craig F. Siddoway, Davie, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 7, 1993, Ser. No. 12,567
Term of patent 14 years
U.S. Cl. D13—107

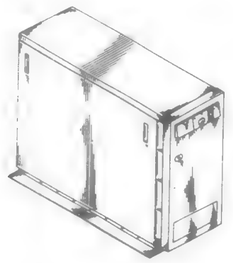
349,486
BATTERY CHARGER FOR AN ELONGATED BATTERY
George E. Sage, 22002 Redmond-Fall City Rd., Redmond, Wash. 98053
Filed Nov. 18, 1993, Ser. No. 15,495
Term of patent 14 years
U.S. Cl. D13—107



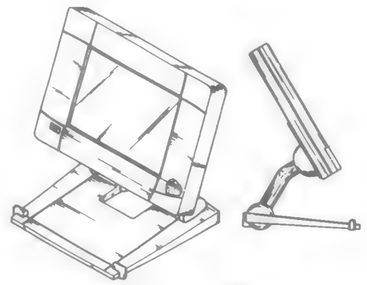
349,487
DATA COLLECTION TERMINAL
Neal W. Horner, Boca Raton, and Joseph E. Jasinski, Delray Beach, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Jan. 21, 1992, Ser. No. 823,643
Term of patent 14 years
U.S. Cl. D14—100



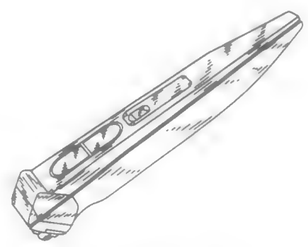
349,488
DISK STORAGE SUBSYSTEM FOR A DATA PROCESSING SYSTEM
Wayne L. Aderman, Zumbro Falls, and David W. Hill, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 11, 1992, Ser. No. 834,500
Term of patent 14 years
U.S. Cl. D14—109



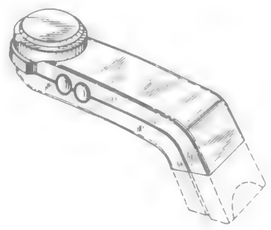
349,489
LCD MONITOR
Jing Y. Wang, 3F, No. 22, Industry East Road, 9, Hsinchu Science Park, Hsinchu, Taiwan
Filed Mar. 9, 1993, Ser. No. 5,689
Term of patent 14 years
U.S. Cl. D14—113



349,490
CURSOR CONTROLLING PEN
John B. Barrett, Paso Robles, Calif., assignor to Appoint, Paso Robles, Calif.
Filed Nov. 13, 1991, Ser. No. 794,174
Term of patent 14 years
U.S. Cl. D14—114

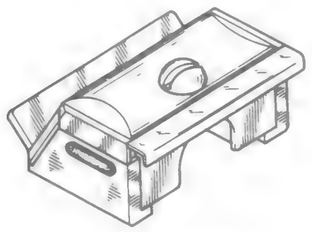


349,491
HANDHELD INPUT DEVICE FOR COMPUTERS
John M. Copper, and Alex Bally, both of Pittsburgh, Pa., assignors to MicroMed Systems, Inc., Pittsburgh, Pa.
Filed Apr. 6, 1992, Ser. No. 864,015
Term of patent 14 years
U.S. Cl. D14—114

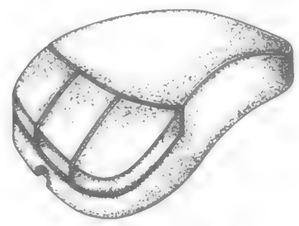


VOL 1165 ISS 2 AG 9 1994 UMI

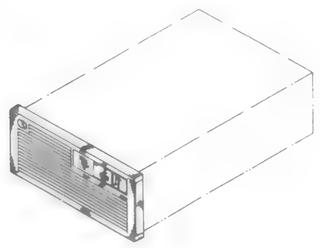
349,492
CLAMP FOR FASTENING A TRACKBALL TO A COMPUTER KEYBOARD
Shih-Yang Tso, 11th Fl., No. 116, Sec. 2, Nan King E. Rd., Taipei, Taiwan
Filed Jun. 4, 1992, Ser. No. 892,020
Term of patent 14 years
U.S. Cl. D14—114



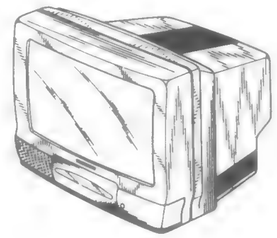
349,493
COMPUTER MOUSE
Lilian Cheng, Taipei, Taiwan, assignor to Ultima Electronics Corp., Taipei, Taiwan
Filed Aug. 3, 1992, Ser. No. 924,349
Term of patent 14 years
U.S. Cl. D14—114



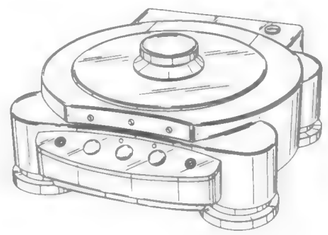
349,494
FRONT PANEL FOR A RACK MOUNTED DISK STORAGE SUBSYSTEM OF A DATA PROCESSING SYSTEM
Wayne L. Aderman, Zumbro Falls, and David W. Hill, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 23, 1992, Ser. No. 903,208
Term of patent 14 years
U.S. Cl. D14—115



349,495
TELEVISION RECEIVER
Wun S. Bak, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 26, 1993, Ser. No. 5,200
Claims priority, application Rep. of Korea, Sep. 17, 1992, 15601/1992
Term of patent 14 years
U.S. Cl. D14—126



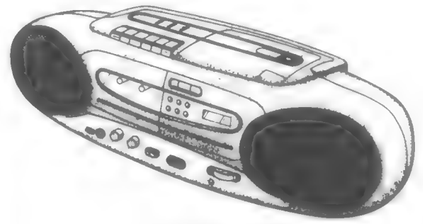
349,496
CD PLAYER
Mineo Sato, Kanagawa, Japan, assignor to Marantz-Japan Inc., Kanagawa, Japan
Filed Jul. 9, 1992, Ser. No. 911,304
Claims priority, application Japan, Jan. 21, 1992, 4-1249
Term of patent 14 years
U.S. Cl. D14—156



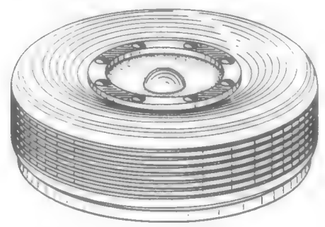
349,497
MINI-DISK DECK
Tetsuhisa Kawamoto, Misato, Japan, assignor to AIWA Co., Ltd., Tokyo, Japan
Filed Oct. 15, 1992, Ser. No. 474
Claims priority, application Japan, May 25, 1992, 4-15151
Term of patent 14 years
U.S. Cl. D14—156



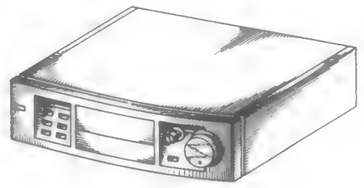
349,498
COMBINED DIGITAL AUDIO DISC PLAYER, RADIO TUNER AND TAPE PLAYER
Satoshi Fukutome, Hiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 25, 1992, Ser. No. 903,172
Claims priority, application Japan, Dec. 26, 1991, 3-39566
Term of patent 14 years
U.S. Cl. D14—168



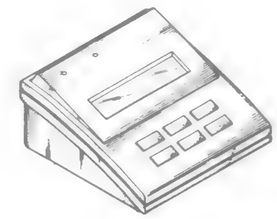
349,499
SUBWOOFER HOUSING
Benjamin P. Collins, 1198 Ashborough Terrace, SE., Marietta, Ga. 30067
Filed Dec. 7, 1992, Ser. No. 2,277
Term of patent 14 years
U.S. Cl. D14—216



349,500
DIGITAL-TO-ANALOG CONVERTER HOUSING
Michael A. Koulopoulos, Andover, Mass., assignor to Vimak Corporation, Woburn, Mass.
Filed May 30, 1991, Ser. No. 713,442
Term of patent 14 years
U.S. Cl. D14—217



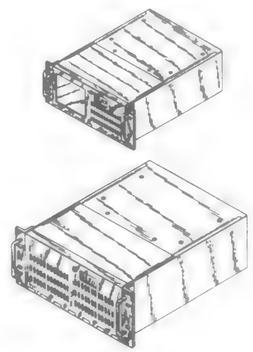
349,501
CALLING PARTY IDENTIFYING APPARATUS
Yuan-Neng Fan, Scottsdale, Ariz., assignor to Comrise Electronics Co., Ltd., Tainan Hsien, Taiwan
Filed May 11, 1993, Ser. No. 8,140
Term of patent 14 years
U.S. Cl. D14—240



349,502
CALLING PARTY IDENTIFYING APPARATUS
Yuan-Neng Fan, Scottsdale, Ariz., assignor to Comrise Electronics Co., Ltd., Tainan Hsien, Taiwan
Filed May 11, 1993, Ser. No. 8,155
Term of patent 14 years
U.S. Cl. D14—240

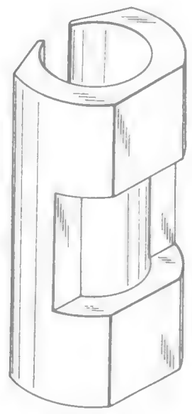


349,503
TELECOMMUNICATIONS SWITCH
Christopher E. Roy, Plymouth, Mass., assignor to Excel, Inc., Sagamore Beach, Mass.
Filed Feb. 23, 1993, Ser. No. 5,092
Term of patent 14 years
U.S. Cl. D14—241

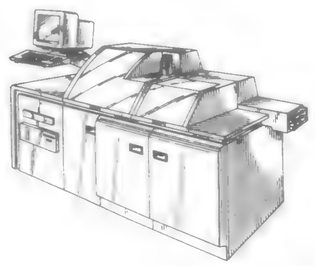


VOL 1165 ISS 2 AG 9 1994 UMI

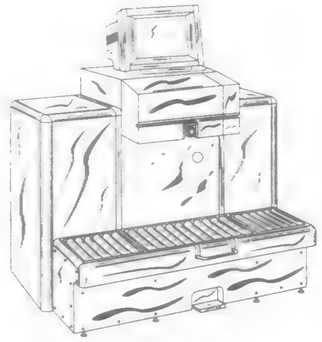
349,504
BAND-BLADE BENDER FOR A BAND-BLADE BENDING MACHINE
Suehiro Mizukawa, 4-25, Torikainishi 5-chome, Settsu-shi, Osaka 566; Naoki Ogawa, 4792-54, Najio, Shiozecho, Nishinomiya-shi, Hyogo 669-11, and Susumu Ohtani, 7-11, Takawashi 3-chome, Habikino-shi, Osaka 583, all of Japan
Filed Jul. 19, 1993, Ser. No. 10,789
Claims priority, application Japan, Jun. 14, 1993, 5-17811
Term of patent 14 years
U.S. Cl. D15—138



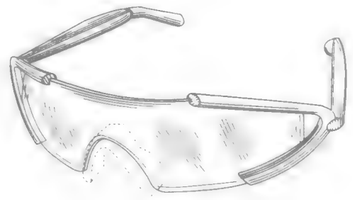
349,505
EMBOSSED CAR PACKAGE PRODUCTION SYSTEM
Jeffery L. Hill, Mundelein; Gregory S. Hill, Lake Zurich, both of Ill.; James W. Schreiber, Littleton, and James P. Knoll, Englewood, both of Colo., assignors to Dynetics Engineering Corporation, Lincolnshire, Ill.
Continuation-in-part of Ser. No. 19,865, Feb. 19, 1993. This application Mar. 24, 1993, Ser. No. 6,267
Term of patent 14 years
U.S. Cl. D15—145



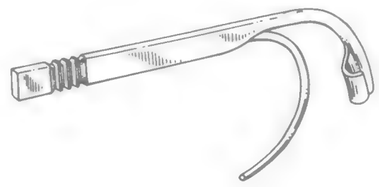
349,506
DISPENSING APPARATUS
James F. Caruso, Chicago; Kim D. Vollendorf, McHenry; Gregory W. Lantz, Wheaton, and Walter B. Herbst, Evanston, all of Ill., assignors to Fluid Management Limited Partnership, Wheeling, Ill.
Filed Mar. 23, 1993, Ser. No. 6,102
Term of patent 14 years
U.S. Cl. D15—199



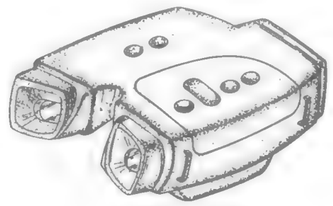
349,507
EYEGLASSES
Paulo Lanna, New York, N.Y.; Rob Bruce, Sacramento, and Martin Smith, Los Angeles, both of Calif., assignors to Sun Sport Optics, Inc., Merritt Island, Fla.
Filed Feb. 4, 1993, Ser. No. 4,420
Term of patent 14 years
U.S. Cl. D16—314



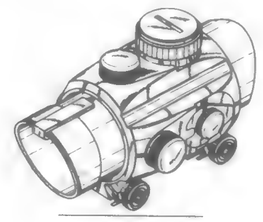
349,508
EYEWEAR TEMPLE
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Apr. 15, 1993, Ser. No. 7,226
Term of patent 14 years
U.S. Cl. D16—335



349,509
NIGHT VISION BINOCULARS
George M. Williams, Jr., Troutville, Va.; Gary L. Palmer, Bellevue, Wash., and John D. Popow, Roanoke, Va., assignors to ITT Corporation, New York, N.Y.
Filed Sep. 30, 1992, Ser. No. 954,241
Term of patent 14 years
U.S. Cl. D16—130



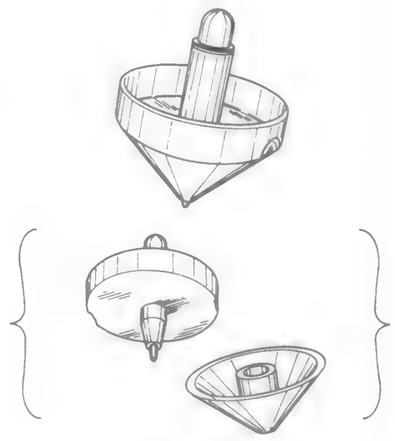
349,510
SIGHT SCOPE
Saburo Tomita, Fujimi, Japan, assignor to Asia Optical Co., Ltd., Tokyo, Japan
Filed Jan. 28, 1992, Ser. No. 873,291
Term of patent 14 years
U.S. Cl. D16—132



349,511
MULTI-FUNCTION ELECTRONIC CALCULATOR
Hiroshi Sakaguchi, Kyoto, and Shinsaku Hino, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 6, 1992, Ser. No. 1,198
Claims priority, application Japan, May 27, 1992, 4-15582
Term of patent 14 years
U.S. Cl. D18—7



349,512
COMBINED WRITING INSTRUMENT AND TOP
Yau K. J. Law, Unit B, 10th Floor, Wah Tai Industrial Building, 11 Sun on Street, Tuen Mun New Territories, Hong Kong
Filed Apr. 6, 1992, Ser. No. 864,444
Term of patent 14 years
U.S. Cl. D19—36

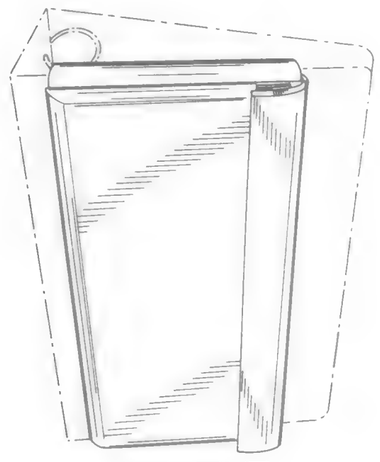


349,513
COMBINED WRITING INSTRUMENT AND CAP THEREFOR
Jean P. Vitrac, Paris, France, assignor to P.J. Merpathi Mahkota Sarana, Jarkata, Indonesia
Filed Oct. 27, 1992, Ser. No. 867
Claims priority, application United Kingdom, Apr. 27, 1992, 9072565
Term of patent 14 years
U.S. Cl. D19—51

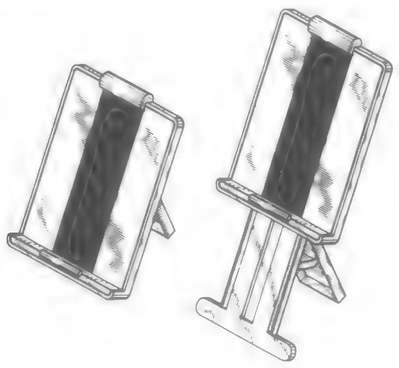


VOL 1165 ISS 2 AG 9 1994 UMI

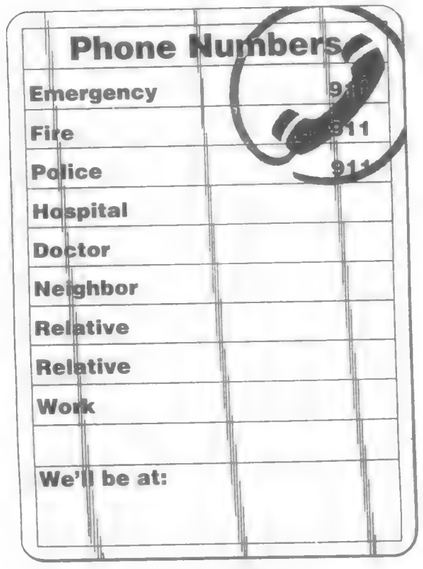
349,514
PENCIL CASE
Sandra L. Gotlund, 539 First St., Lemont, Ill. 60439
Filed Oct. 11, 1991, Ser. No. 775,077
Term of patent 14 years
U.S. Cl. D19—83



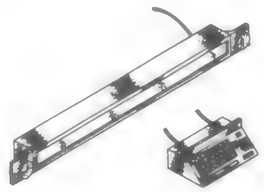
349,515
ADJUSTABLE COPYHOLDER
J. Kipton Pohlman, Los Angeles, and Donald Westland, Marina Del Rey, both of Calif., assignors to MicroComputer Accessories, Inc., Inglewood, Calif.
Filed Jun. 7, 1993, Ser. No. 9,118
Term of patent 14 years
U.S. Cl. D19—88



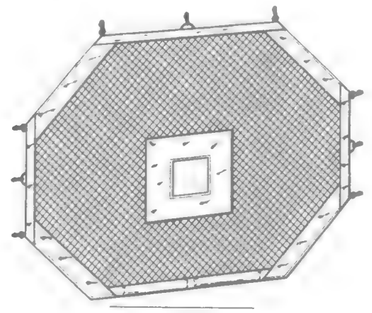
349,516
MAGNETICALLY-MOUNTABLE PHONE DATA BOARD
Roy M. Svee, Bloomington, Minn., assignor to J. B. Goodhouse, Inc., Minnetonka, Minn.
Filed Jun. 14, 1991, Ser. No. 715,147
Term of patent 14 years
U.S. Cl. D20—42



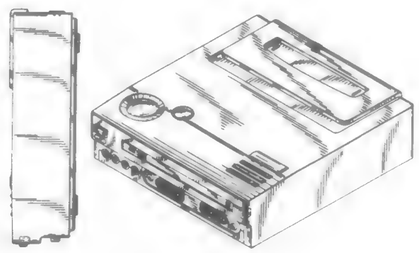
349,517
COMBINED CONTROL PANEL AND AUTOMOBILE MESSAGE DISPLAY SIGN
James T. Neff, 3213 Salida Wy, Cameron Park, Calif. 95682
Filed Sep. 2, 1993, Ser. No. 12,459
Term of patent 14 years
U.S. Cl. D20—42



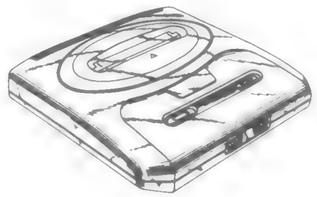
349,518
BACKSTOP
Roger Amram, North York, Canada, assignor to The Fun Bunch Inc., Willowdale, Ontario, Canada
Filed Aug. 17, 1993, Ser. No. 11,871
Term of patent 14 years
U.S. Cl. D21—5



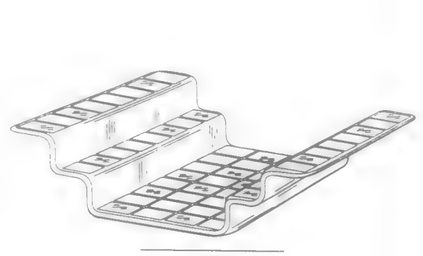
349,519
GAME MACHINE COMBINED WITH AN OPTICAL DISC PLAYER
Souichi Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 21, 1991, Ser. No. 779,593
Claims priority, application Japan, Jun. 11, 1991, 3-17272
Term of patent 14 years
U.S. Cl. D21—13



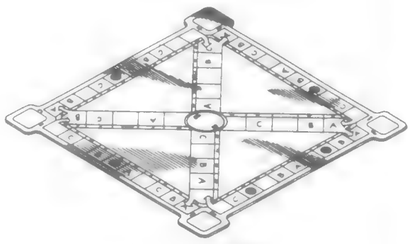
349,520
TV GAME MACHINE
Yoshiaki Iwakami, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 7,317
Term of patent 14 years
U.S. Cl. D21—13



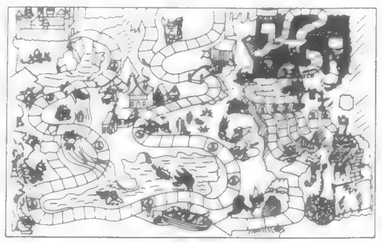
349,521
CHESS BOARD
Wright E. Harris, III, 2340 Cherry La., Florissant, Mo. 63033, and
Filed Feb. 11, 1993, Ser. No. 4,729
Term of patent 14 years
U.S. Cl. D21—23



349,522
GAME BOARD
David Lindley, and Paul Lindley, both of 1580 Kingston Rd #79, Pickering Ontario, Canada L1V 6MG
Filed May 14, 1992, Ser. No. 881,550
Term of patent 14 years
U.S. Cl. D21—33

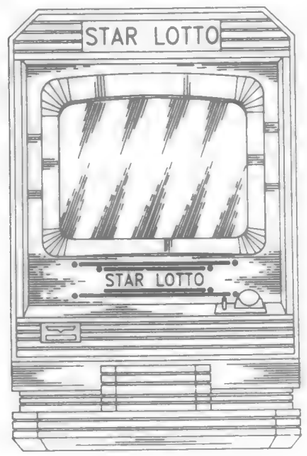


349,523
GAME BOARD
Larry A. Daniel, Rte. 6, Box 608-Z, Panama City Beach, Fla. 32413
Filed Oct. 5, 1992, Ser. No. 26
Term of patent 14 years
U.S. Cl. D21—35

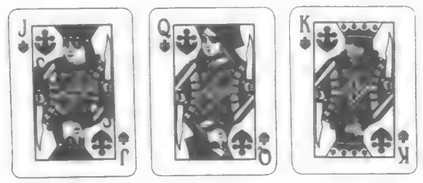


VOL 1165 ISS 2 AG 9 1994 UMI

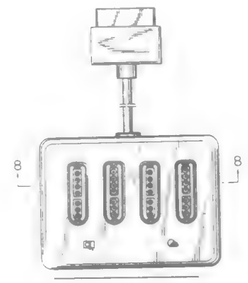
349,524
GAMING MACHINE
Dirk I. Brettschneider, Lübbecke, Fed. Rep. of Germany, assignor to adp Gauselmann GmbH, Lübbecke, Fed. Rep. of Germany
Filed Jun. 24, 1992, Ser. No. 903,662
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1992, M9201938.2
Term of patent 14 years
U.S. Cl. D21—38



349,525
SET OF PLAYING FACE CARDS
Ray Falkiner, and Lance Falkiner, both of Cambridge, Canada, assignors to Empire Trading Card Company, Cambridge, Canada
Filed Dec. 28, 1990, Ser. No. 635,458
Claims priority, application Canada, Jul. 3, 1990, 03/07/90-1
The portion of the term of this patent subsequent to Jun. 29, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—42



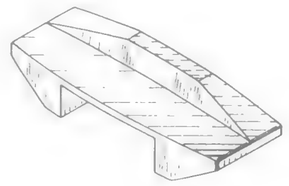
349,526
DISTRIBUTION UNIT FOR MULTIPLE CONTROLLERS FOR VIDEO GAMES
Yutaka Nakanishi, Tokyo, Japan, assignor to Yonezawa Corporation, Tokyo, Japan
Filed Apr. 9, 1993, Ser. No. 6,937
Claims priority, application Japan, Nov. 5, 1992, 4-32376
Term of patent 14 years
U.S. Cl. D21—48



349,527
CONTROLLER FOR TV GAME MACHINE
Toshinori Date, Yokohama, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 7,308
Claims priority, application Japan, Oct. 28, 1992, 4-31690
Term of patent 14 years
U.S. Cl. D21—48



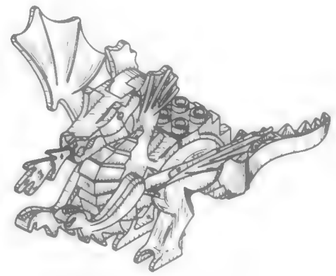
349,528
ELECTRIC SWITCH FOR A TOY TRAIN SET
Ede F. Ruszkai, Kobenhavn N, Denmark, assignor to Interlego, A. G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,913
Term of patent 14 years
U.S. Cl. D21—108



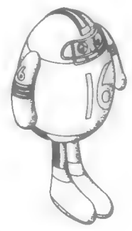
349,529
WHEEL FOR A TOY VEHICLE
Jens N. Knudsen, Billund, Denmark, assignor to Interlego, A. G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,822
Term of patent 14 years
U.S. Cl. D21—141



349,530
TOY DRAGON
Niels M. Pedersen, Arnus C, and Jens N. Knudsen, Billund, both of Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,796
Term of patent 14 years
U.S. Cl. D21—148



349,531
FOOTBALL COVER FIGURE
Robert R. McGregor, 4991 Branciforte Dr., Santa Cruz, Calif. 95065
Filed Aug. 3, 1992, Ser. No. 924,257
Term of patent 14 years
U.S. Cl. D21—155



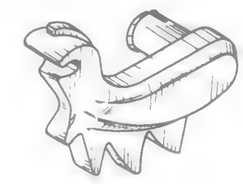
349,532
TOY BEAR
Verena Philippi, Furth im Wald, Fed. Rep. of Germany, assignor to Sigikid H. Scharrer & Koch GmbH, Mistelbach, Fed. Rep. of Germany
Filed Jul. 9, 1992, Ser. No. 910,978
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 9200947
Term of patent 14 years
U.S. Cl. D21—159



349,533
INDIAN PRINCESS DOLL WITH PAPOOSE DOLL
Lowell J. Carlson, Buffalo, Minn., assignor to Carlson's Workshop, Inc., Mobridge, S. Dak.
Filed May 17, 1993, Ser. No. 8,422
Term of patent 14 years
U.S. Cl. D21—182

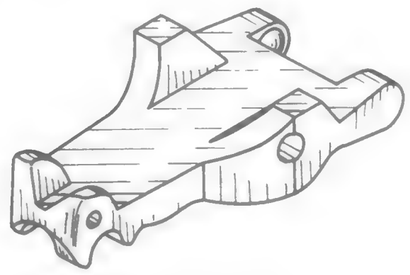


349,534
ARM FOR A TOY DRAGON
Niels M. Pedersen, Århus C, Denmark, assignor to Interlego, A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,798
Term of patent 14 years
U.S. Cl. D21—189

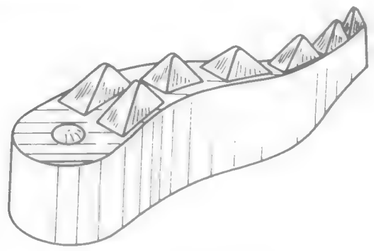


VOL 1165 ISS 2 AG 9 1994 UMI

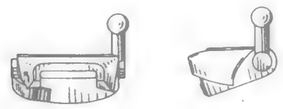
349,535
UPPER JAW FOR A TOY DRAGON
Niels M. Pedersen, Århus C, Denmark, assignor to Interlego, A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,813
Term of patent 14 years
U.S. Cl. D21—189



349,536
TAIL FOR A TOY DRAGON
Niels M. Pedersen, Århus C, Denmark, assignor to Interlego, A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,814
Term of patent 14 years
U.S. Cl. D21—189



349,537
VISOR FOR A TOY FIGURE
Stig Alexander M. Spangsberg, Vegle, and Carsten Røn, Esbjerg V, both of Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,820
Term of patent 14 years
U.S. Cl. D21—189



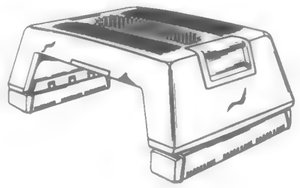
349,538
BODY FOR A TOY DRAGON
Niels M. Pedersen, Århus C, Denmark, assignor to Interlego, A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,900
Term of patent 14 years
U.S. Cl. D21—189



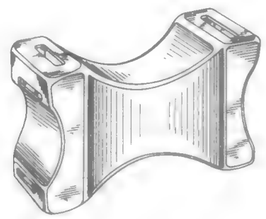
349,539
WING FOR A TOY DRAGON
Jens N. Knudsen, Billund, Denmark, assignor to Interlego, A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,909
Term of patent 14 years
U.S. Cl. D21—189



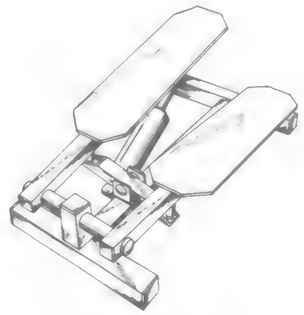
349,540
AQUATIC STEP EXERCISER
Peter H. Hand, Atlanta; William J. Saunders, Lithonia, and Eric Goldstein, Marietta, all of Ga., assignors to Aqua Step Corporation, Atlanta, Ga.
Continuation-in-part of Ser. No. 806,261, Feb. 3, 1992. This application May 15, 1992, Ser. No. 883,851
Term of patent 14 years
U.S. Cl. D21—191



349,541
HIP AND BACK EXERCISER
Lawrence E. Bertolucci, and Joan M. Bertolucci, both of Citrus Heights, Calif., assignors to Maven Labs, Inc., Citrus Heights, Calif.
Filed Dec. 17, 1992, Ser. No. 2,707
Term of patent 14 years
U.S. Cl. D21—191



349,542
STEPPING EXERCISER
Keith A. Russell, Rio Guadalquivir #1043 Sur Colonia "Los Nogales" Cd. Juarez, Chihuahua, Mexico 32350
Filed Jun. 9, 1992, Ser. No. 895,397
Term of patent 14 years
U.S. Cl. D21—194



349,543
STEPPED GOLF CLUB DRIVER HEAD
Alexandar S. MacDougall, 495 Valley Club Rd., Santa Barbara, Calif. 93108
Filed Nov. 3, 1992, Ser. No. 1,104
Term of patent 14 years
U.S. Cl. D21—214



349,544
NOVELTY GOLF PUTTER
Andrew B. Snyder, 4255 W. Humphrey St., Tampa, Fla. 33614
Filed Apr. 14, 1992, Ser. No. 869,153
Term of patent 14 years
U.S. Cl. D21—217



349,545
WEIGHTED TRIPOD STAND FOR SPORTS DEVICES
Iztok Cehovin, Cesta IX korpusa 100, and Vilko Fabijan, Provmajska 30, both of 65000 Nova Gorica, Slovenia
Filed Sep. 2, 1992, Ser. No. 983,650
Claims priority, application Yugoslavia, Mar. 3, 1992, 45/92
Term of patent 14 years
U.S. Cl. D21—221



VOL 1165 ISS 2 AG 9 1994 UMI

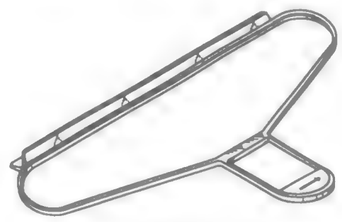
349,546
GOLF CLUB HANDLE
Alexander S. MacDougall, 495 Valley Club Rd., Santa Barbara, Calif. 93108
Filed Dec. 21, 1992, Ser. No. 2,763
Term of patent 14 years
U.S. Cl. D21—222



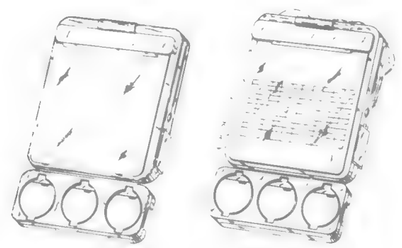
349,547
GOLF PUTTING TRAINING AID
Richard E. Whittaker, 302 S. Croton Ave., New Castle, Pa. 16103
Filed Jul. 17, 1992, Ser. No. 914,609
Term of patent 14 years
U.S. Cl. D21—234



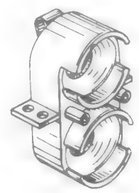
349,548
GOLF SWING ALIGNMENT AID
Walter E. Armstrong, Maitland, Fla., assignor to Wally Armstrong Golf, Inc., Paoli, Pa.
Continuation-in-part of Ser. No. 887,912, May 18, 1992, Pat. No. D. 347,673. This application Sep. 14, 1992, Ser. No. 948,768
The portion of the term of this patent subsequent to Jun. 7, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—234



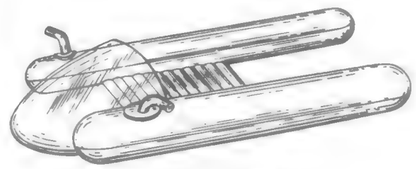
349,549
GOLF ACCESSORY CARRYING DEVICE
Christopher J. DeMichele, Washington Township, N.J., assignor to Centsible Designs, Inc., Westwood, N.J.
Filed Sep. 30, 1992, Ser. No. 954,933
Term of patent 14 years
U.S. Cl. D21—234



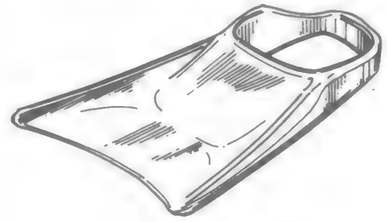
349,550
GOLF EQUIPMENT HOLDER
Richard A. Reeves, 7536 E. Coolidge, Scottsdale, Ariz. 85251
Filed Dec. 28, 1992, Ser. No. 3,026
Term of patent 14 years
U.S. Cl. D21—234



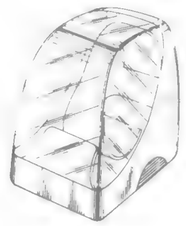
349,551
RECREATION FLOATATION DEVICE
Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Sep. 2, 1993, Ser. No. 12,512
Term of patent 14 years
U.S. Cl. D21—237



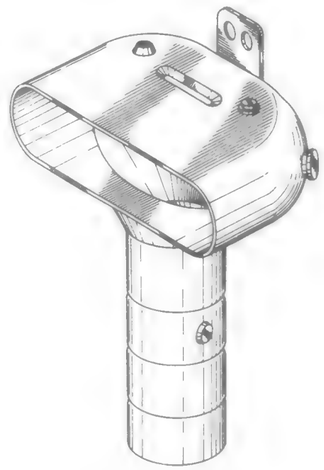
349,552
SWIM FIN
Terry Fleming, Miranda, Australia, assignor to Manta Surfing Products, Miranda, Australia
Filed Jan. 27, 1993, Ser. No. 4,045
Term of patent 14 years
U.S. Cl. D21—239



349,553
DISPLAY BOX
Ho C. Au, Golden Phoenix Court, Hong Kong, assignor to Nationalpak Limited, Tuen Mun, Hong Kong
Filed Mar. 17, 1993, Ser. No. 6,021
Term of patent 14 years
U.S. Cl. D9—422



349,554
INSECT TRAP
William Yates, 40 Farewell Crescent, Smithsville, Ontario, Canada L0R 2A0
Filed Jan. 12, 1993, Ser. No. 3,652
Term of patent 14 years
U.S. Cl. D22—119



349,555
FISHING POLE HOLDER
George Siket, Jr., and Donna Siket, both of 23378 Woodlander Way, Moreno Valley, Calif. 92388
Filed Feb. 3, 1992, Ser. No. 829,336
Term of patent 14 years
U.S. Cl. D22—147



VOL
1165
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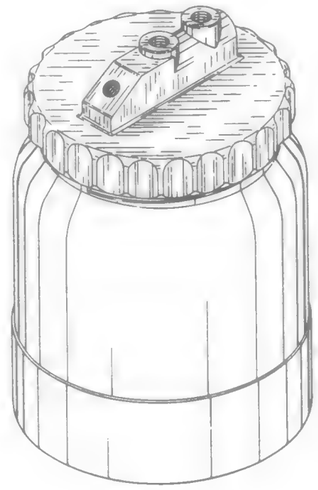
349,556
WATER FOUNTAIN
John A. Ferger, Winter Park, Fla., assignor to Herman Fields, Casselberry, Fla.
Filed Jan. 28, 1991, Ser. No. 646,342
Term of patent 14 years
U.S. Cl. D7—301



349,557
SHOWER HEAD
Hing-Wah Huen, Kowloon, Hong Kong, assignor to Fairform Mfg. Co., Ltd., Kowloon, Hong Kong
Filed Feb. 22, 1993, Ser. No. 5,224
Term of patent 14 years
U.S. Cl. D23—223



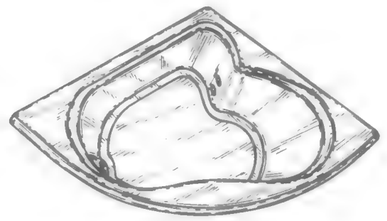
349,558
PAINT POT
Terry A. Albers, 22 Chicory Bend Ct., Sacramento, Calif. 95831
Filed May 29, 1992, Ser. No. 891,457
Term of patent 14 years
U.S. Cl. D23—225



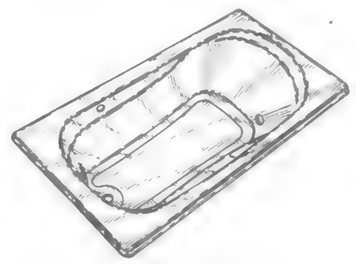
349,559
SPRAY GUN HANDLE COVER
John P. Vanderhoef, West Barnstable, Mass., and Roger D. Wheeler, Holland, Ohio, assignors to Ransburg Corporation, Indianapolis, Ind.
Filed Oct. 18, 1993, Ser. No. 14,326
Term of patent 14 years
U.S. Cl. D23—227



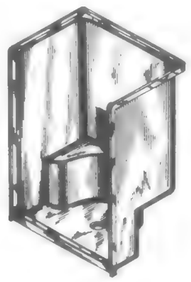
349,560
WHIRLPOOL BATHTUB
Kent A. Dowse, Coon Rapids, and Christopher A. Lacy, S. St. Paul, both of Minn., assignors to Pearl Baths, Inc., Minneapolis, Minn.
Filed Oct. 19, 1992, Ser. No. 596
Term of patent 14 years
U.S. Cl. D23—277



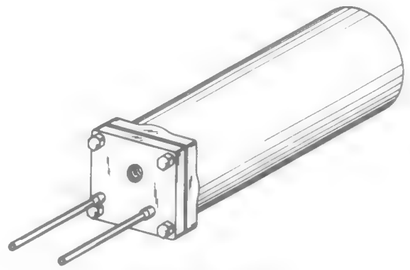
349,561
WHIRLPOOL BATHTUB
Kent A. Dowse, Coon Rapids, and Christopher A. Lacy, S. St. Paul, both of Minn., assignors to Pearl Baths, Inc., Minneapolis, Minn.
Filed Oct. 19, 1992, Ser. No. 600
Term of patent 14 years
U.S. Cl. D23—277



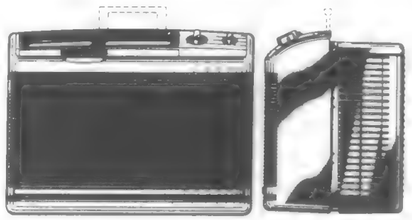
349,562
SHOWER STALL
Alan D. Bengtson, Shorewood, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jun. 30, 1993, Ser. No. 10,240
Term of patent 14 years
U.S. Cl. D23—283



349,563
STEAM SAMPLE COOLER
Richard R. Henszey, Oconomowoc, and Eugene R. Rommelfaenger, Neosho, both of Wis., assignors to Sentry Equipment Corp., Oconomowoc, Wis.
Filed Mar. 30, 1992, Ser. No. 860,358
Term of patent 14 years
U.S. Cl. D23—314

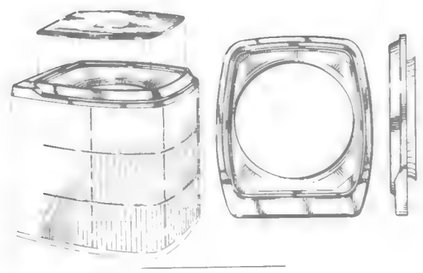


349,564
ROOM AIR CONDITIONER HOUSING COMPRISED OF THE FRONT, REAR, TOP AND SIDE PANELS
Stephen Stopyra, Syracuse; Gary D. Thompson, East Syracuse, both of N.Y., and Peter A. Kroko, Balboa Island, Calif., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Jul. 20, 1992, Ser. No. 915,577
Term of patent 14 years
U.S. Cl. D23—354

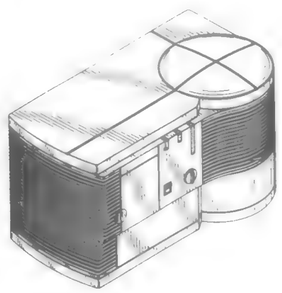


VOL 1165 ISS 2 AG 9 1994 UMI

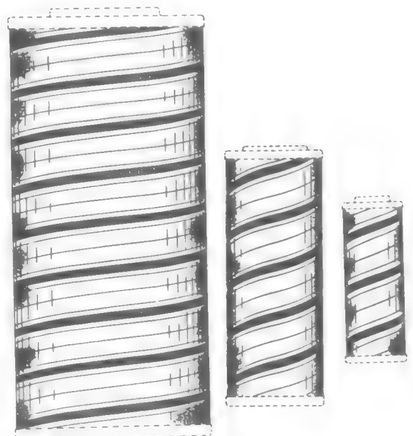
349,565
TOP COVER WITH DISCHARGE ORIFICE FOR THE OUTDOOR UNIT OF AN AIR CONDITIONING SPLIT SYSTEM
Larry D. Barns, Danville, and Frederick J. Keller, Jr., Indianapolis, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Feb. 18, 1993, Ser. No. 5,105
Term of patent 14 years
U.S. Cl. D23—354



349,566
AIR PURIFIER
Richard M. O'Grady, Southington, Conn., assignor to Duracraft Corporation, Whitinsville, Mass.
Filed Aug. 20, 1993, Ser. No. 12,025
Term of patent 14 years
U.S. Cl. D23—364



349,567
CYLINDRICAL FILTER ELEMENT
John D. Miller, Ithaca, and Kenneth M. Williamson, LaFayette, both of N.Y., assignors to Pall Corporation, East Hills, N.Y.
Filed Apr. 9, 1991, Ser. No. 682,452
Term of patent 14 years
U.S. Cl. D23—365



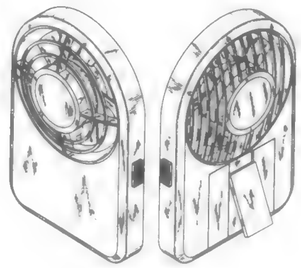
349,568
FLOWER AIR FRESHNER
John O. El-Assir, 1622 Brownstone, Apt. 324, Toledo, Ohio 43614
Filed Nov. 1, 1993, Ser. No. 14,752
Term of patent 14 years
U.S. Cl. D23—367



349,569
PALM TREE AIR FRESHENER
John O. El-Assir, 1622 Brownstone, Apt. 324, Toledo, Ohio 43614
Filed Nov. 5, 1993, Ser. No. 14,981
Term of patent 14 years
U.S. Cl. D23—367



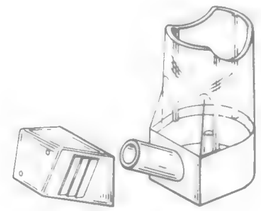
349,570
SMALL ELECTRIC FAN
Leroy F. Radtke, Jr., Lake Zurich, Ill., assignor to Circulair, Inc., Niles, Ill.
Filed Jul. 20, 1993, Ser. No. 10,826
Term of patent 14 years
U.S. Cl. D23—382



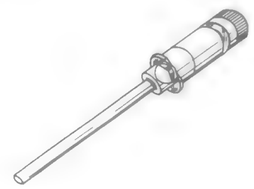
349,571
COMBINATION EAR PROTECTOR AND CHEERING AID
Thomas C. Merritt, 1619 Clarendon, Longview, Tex. 75601
Filed Oct. 19, 1990, Ser. No. 600,226
Term of patent 14 years
U.S. Cl. D24—106



349,572
AEROSOL INHALER
Indradat Jagnandan, West Orange, and Kim C. Dao, Wayne, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Dec. 10, 1992, Ser. No. 2,501
Term of patent 14 years
U.S. Cl. D24—110

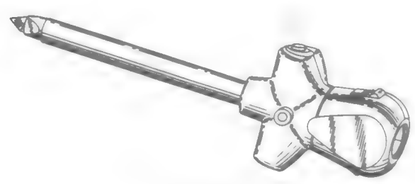


349,573
QUICK-LOCK HOLDER FOR LAPAROSCOPIC INSTRUMENT
John R. Bookwalter, Brattleboro, Vt., and David T. Adler, Manhasset, N.Y., assignors to Flexbar Machine Corp., Central Islip, N.Y.
Filed Aug. 17, 1992, Ser. No. 930,904
Term of patent 14 years
U.S. Cl. D24—128

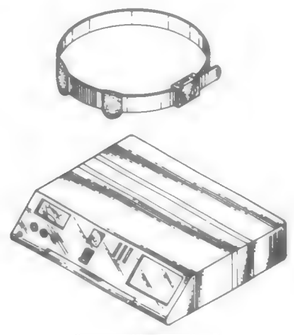


VOL 1165 ISS 2 AUG 9 1994 UMI

349,574
TROCAR
Gerald L. Metcalf, Burnsville, Minn.; Alan K. Plyley, Santa Barbara, and John M. Barker, Ventura, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 9, 1992, Ser. No. 350
Term of patent 14 years
U.S. Cl. D24—146



349,575
INFANT HEART RATE SENSOR
Michael Columbo, 549 High St., Dedham, Mass. 02026
Filed Apr. 24, 1992, Ser. No. 873,055
Term of patent 14 years
U.S. Cl. D24—167



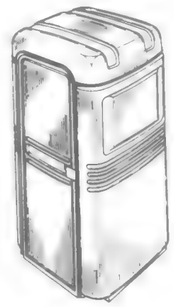
349,576
MASSAGER
Luc M. D. Heiligenstein, Chicago; Peter S. Langmar, Kenilworth, and Stephen B. Melamed, Chicago, all of Ill., assignors to Sunbeam Corporation, Fort Lauderdale, Fla.
Filed May 26, 1993, Ser. No. 8,797
Term of patent 14 years
U.S. Cl. D24—211



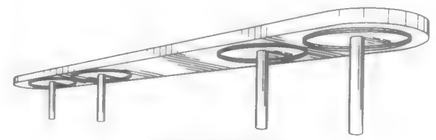
349,577
SAFETY SHIELD
Philip W. Sayles, 88 High St., Northampton, Mass. 01060
Filed Oct. 22, 1992, Ser. No. 685
Term of patent 14 years
U.S. Cl. D24—232



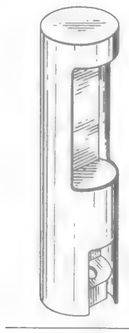
349,578
PORTABLE TOILET
Richard L. Tagg, Sandhutton, England, assignor to Portasilo Limited, Great Britain
Filed Oct. 21, 1992, Ser. No. 707
Term of patent 14 years
U.S. Cl. D25—16



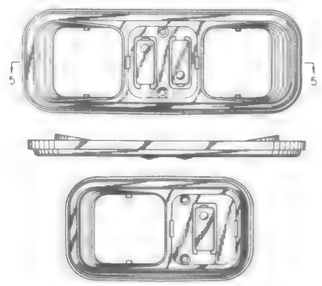
349,579
SERVICE STATION CANOPY
Alan E. Goldberg, New Caanan, Conn., assignor to Mobil Oil Corporation, Fairfax, Va.
Filed Jan. 10, 1992, Ser. No. 819,524
Term of patent 14 years
U.S. Cl. D25—56



349,580
UTILITY POLE
Merle J. Sieler, Arlington, Tex., and Nicholas J. Sieler, Wayne, Nebr., assignors to Utili-Pole, Incorporated, Wayne, Nebr.
Filed Nov. 23, 1992, Ser. No. 1,726
Term of patent 14 years
U.S. Cl. D25—126



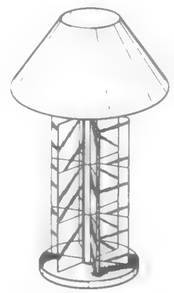
349,581
HOUSING FOR VEHICLE INTERIOR GIMBALLED LIGHT
Gregory W. Kapp, St. Joseph, Mich., assignor to Innovative Designs, Bristol, Ind.
Filed Jul. 13, 1992, Ser. No. 912,859
Term of patent 14 years
U.S. Cl. D26—28



349,582
TILTABLE DESK LAMP
Charles E. Bain, West Dundee, Ill., and Frank Friedman, Portland, Oreg., assignors to Reflector Hardware Corporation, Melrose Park, Ill.
Filed Apr. 3, 1992, Ser. No. 864,923
Term of patent 14 years
U.S. Cl. D26—61

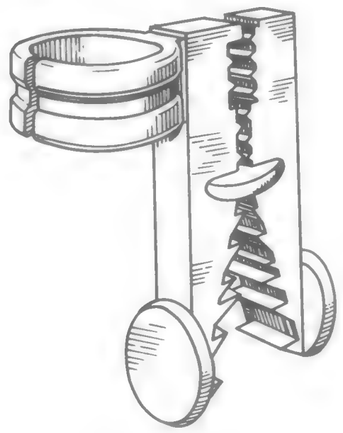


349,583
TABLE LAMP
Russell W. Watters, Pickering, Canada, assignor to Shandel Investments Ltd., Pickering
Filed Apr. 27, 1993, Ser. No. 7,581
Term of patent 14 years
U.S. Cl. D26—106

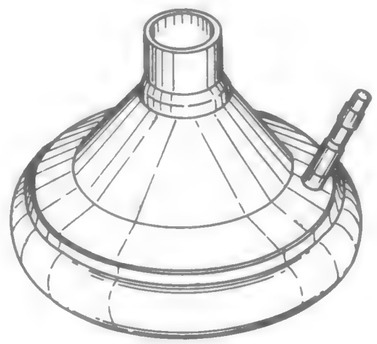


VOL 1165 ISS 2 AG 9 1994 UMI

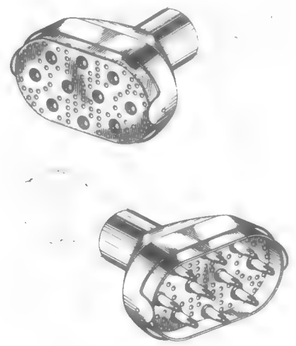
349,584
CHRISTMAS TREE BUBBLE LIGHT CLIP
Thomas H. Carlisle, 14124 Burbank Blvd. #104, Van Nuys, Calif. 91401
Filed Feb. 25, 1992, Ser. No. 840,982
Term of patent 14 years
U.S. Cl. D26—138



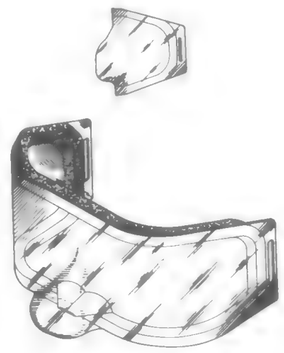
349,586
MASK
Patrick M. Handke, 416 Brunner Dr., Monroeville, Pa. 15146
Filed Feb. 7, 1990, Ser. No. 478,783
Term of patent 14 years
U.S. Cl. D24—110.4



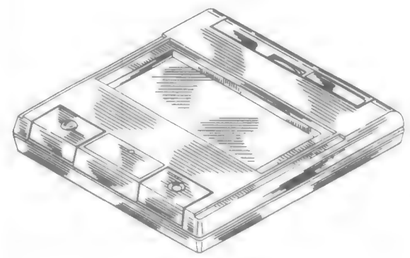
349,585
REVERSIBLE DIFFUSER FOR A HAIR DRYER
Leandro P. Rizzuto, Jr., Stamford, Conn., assignor to Conair Corporation, Stamford, Conn.
Filed Aug. 6, 1992, Ser. No. 925,481
Term of patent 14 years
U.S. Cl. D28—18



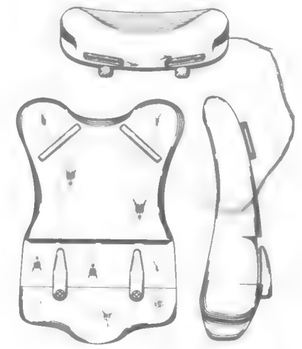
349,587
SCUBA MASK
Steven L. Woodward, 1250 Golden Cir. #507, Golden, Colo. 80401
Filed Mar. 5, 1992, Ser. No. 845,460
Term of patent 14 years
U.S. Cl. D24—110.2



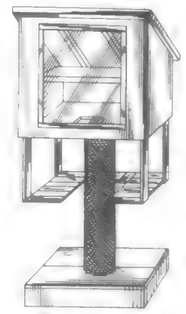
349,588
WELDING LENS ASSEMBLY
Paul L. Howard, Belmont, and Jochen P. Backs, San Francisco, both of Calif., assignors to OSD Envizion Company, Menlo Park, Calif.
Filed Oct. 6, 1992, Ser. No. 226
Term of patent 14 years
U.S. Cl. D29—110



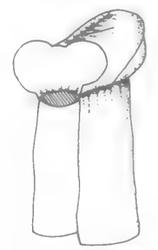
349,589
COMBINED BODY PROTECTOR AND RESTRAINT FOR USE IN VEHICLE
Richard York, 319 Massey St., Scottsville, Ky. 42164
Filed Mar. 26, 1992, Ser. No. 858,354
Term of patent 14 years
U.S. Cl. D29—100



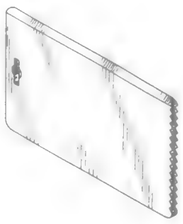
349,590
CAT HOUSE FOR CATS OR OTHER SMALL ANIMALS
Michael L. Berger, 4002 Blackpool Rd., Rockville, Md. 20853
Filed Feb. 26, 1992, Ser. No. 841,436
Term of patent 14 years
U.S. Cl. D30—108



349,591
AUSTRALIAN STOCK SADDLE COVER
Christine M. Bermel, and Gary A. Bermel, both of 5016 Jennings Rd., Mound, Minn. 55464
Filed Feb. 26, 1990, Ser. No. 484,647
Term of patent 14 years
U.S. Cl. D30—135



349,592
SCRAPER
Roger Stoll, Pella, Iowa, assignor to Enduro Corporation, Pella, Iowa
Filed Nov. 30, 1992, Ser. No. 2,018
Term of patent 14 years
U.S. Cl. D32—46

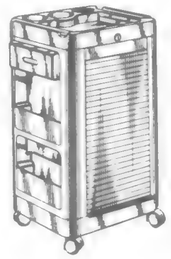


VOL 1165 ISS 2 AG 9 1994 UMI

349,593
LEAF NET
Connie M. Hensley, Rte. 1 Box 118D, Trezevant, Tenn. 38258
Filed Jul. 28, 1993, Ser. No. 11,176
Term of patent 14 years
U.S. Cl. D34—1



349,594
ROLLING CART WITH STORAGE CONTAINMENTS
Claudio Bonazza, Mission Viejo, Calif., assignor to Venice Trading Co., Costa Mesa, Calif.
Filed Oct. 5, 1992, Ser. No. 303
Term of patent 14 years
U.S. Cl. D34—20



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF AUGUST, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Ozawa, Kazuhisa; and Harada, Hiroaki, 5,336,096, Cl. 439-72.000.

A.W.A.X. Progettazione E Ricerca S.R.L.: *See*—
Cappi, Angelo; and Rimondi, Renato, 5,335,485, Cl. 53-570.000.

AB Mataki: *See*—
Runnevik, Lars, 5,335,536, Cl. 73-40.700.

Abate, Maurizio; Carnevale, Claudio; Nenzioni, Pietro; and Perotto, Aldo, to Weber S.r.l. Electronic injection fuel delivery control system. 5,335,643, Cl. 123-679.000.

ABB Air Preheater, Inc.: *See*—
Brophy, Mark E.; Rhodes, Robin B.; and Counterman, Wayne S., 5,336,471, Cl. 422-175.000.

ABB Power T & D Company Inc.: *See*—
Grimes, Frank H., 5,337,034, Cl. 336-92.000.

ABB Stal AB: *See*—
Nilsson, Karl-Johan, 5,335,630, Cl. 122-4.00D.

Abbott Laboratories: *See*—
Goldhardt, Donald J.; and Hirsch, William H., 5,336,203, Cl. 604.7-247.000.
Heiman, Daniel F., 5,336,622, Cl. 436-537.000.
Wynkoop, Richard D., 5,336,053, Cl. 417-53.000.

Abdenour, Thomas E.: *See*—
Kanare, Donald M.; Abdenour, Thomas E.; and Axelgaard, Jens, 5,336,255, Cl. 607-149.000.

Abe, Etsuo: *See*—
Saito, Hirohisa; Hoblyn, Jeremy P.; and Abe, Etsuo, 5,336,081, Cl. 431-4.000.

Abe, Kazuo: *See*—
Nagai, Masahiro; Abe, Kazuo; Nireki, Tadashi; Yamagishi, Hisanobu; and Miyake, Yasuhiko, 5,335,527, Cl. 72-262.000.

Abe, Koichi: *See*—
Okazaki, Iwao; Abe, Koichi; Minamizawa, Hidehito; and Fukuyama, Takeo, 5,336,079, Cl. 428-323.000.

Abe, Yoshio: *See*—
Matsumoto, Takeji; Oyamada, Noboru; Kiritani, Michinori; Fukunaga, Teruo; Abe, Yoshio; and Kondoh, Hiroshi, 5,335,601, Cl. 104-88.00R.

Abel Pumpen GmbH & Co. KG: *See*—
Zollner, Jorg-Peter; and Bussmann, Winfried, 5,336,052, Cl. 417-20.000.

Ablett, Adrian M.: *See*—
Roberts, Hubert S., Jr.; Ablett, Adrian M.; and Hauser, Ambrose A., 5,335,502, Cl. 60-752.000.

Abouzahr, Saad M.: *See*—
Rao, Nippani R.; Abouzahr, Saad M.; Spencer, Russ; and Falkowski, Denis E., 5,336,710, Cl. 524-494.000.

Abowitz, Gerald: *See*—
Hubble, Fred F., III; Weber, Michael E.; Abowitz, Gerald; Bov, Raphael F., Jr.; Swales, Michael G.; and Eakin, Paul W., 5,337,122, Cl. 355-208.000.

Abramsohn, Dennis A.: *See*—
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.

Abrevaya, Hayim: *See*—
Gajda, Gregory J.; Barger, Paul T.; and Abrevaya, Hayim, 5,336,831, Cl. 585-667.000.

Abt, Norman E.: *See*—
Gregory, Anne K.; Brassington, Michael P.; Wang, Shi-Qing; and Abt, Norman E., 5,337,279, Cl. 365-201.000.

Access Pharmaceuticals, Inc.: *See*—
Ranney, David F., 5,336,762, Cl. 534-16.000.

ACCO-Rexel Group Services Plc: *See*—
Harris, Edward M.; and Burlington, Michael, 5,335,838, Cl. 227-132.000.

Ace Medical Company: *See*—
Selman, Corey M., 5,336,224, Cl. 606-69.000.

Ace Trainer, Inc.: *See*—
Rupnik, Thomas J.; and Kite, Ron, 5,335,918, Cl. 273-186.200.

Acer Incorporated: *See*—
Wang, Yun-Huei; and Wu, Chung-Hua, 5,337,322, Cl. 371-51.100.

Acharya, Ramesh N., to TheraTech, Inc. Appetite control method. 5,336,486, Cl. 424-78.010.

Achiwa, Kazuo. 1,4-dihydropyridine 3,5 carboxyl compounds. 5,336,774, Cl. 546-322.000.

Achord, Betty J.; and Boyce, C. Bradford, to Laroche Chemicals, Inc. Method for preparing 1,1-dichloro-1-fluoroethane. 5,336,816, Cl. 570-168.000.

Ackerman, John F., to General Electric Company. Luminescent compositions and structures incorporating them. 5,336,449, Cl. 252-582.000.

Ackerman, John P.; and Johnson, Terry R., to United States of America, Energy. Process to remove rare earth from ifr electrolyte. 5,336,450, Cl. 423-21.100.

Ackley, Donald E., to Motorola, Inc. VCSEL with lateral index guide. 5,337,327, Cl. 372-45.000.

ACO Severin Ahlmann GmbH & Co. KG: *See*—
Baxter, Michael R.; and Bruce, James M., 5,335,624, Cl. 119-51.500.

Actodyne General, Inc.: *See*—
¿Lace, Donald A., Sr., 5,336,845, Cl. 84-726.000.

Actron Entwicklungs AG: *See*—
Kind, Burckart, 5,337,040, Cl. 340-572.000.

Adachi, Masahiro: *See*—
Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugane, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, 5,335,700, Cl. 139-435.100.

Adachi, Takashi: *See*—
Koga, Jinichiro; Adachi, Takashi; and Hidaka, Hidemasa, 5,336,766, Cl. 536-23.200.

Adair, Edwin L. Parallel channel fixation, repair and ligation suture device. 5,336,231, Cl. 606-148.000.

Adams, John R., to Chemical Research & Licensing Company. Oxygenate removal in MTBE process. 5,336,841, Cl. 585-834.000.

Adams, Paul E.; Lange, Richard M.; and Stoldt, Stephen H., to Lubrizol Corporation, The. Fuel composition containing an aromatic amide detergent. 5,336,278, Cl. 44-419.000.

Adams Theodore P.; and Kroll, Mark W., to Angeion Corporation. Storage interrogation apparatus for cardiac data. 5,336,245, Cl. 607-32.000.

Adaska, Jerry; and Robart, Don L. Drinking straw for runners. 5,335,851, Cl. 239-33.000.

Adtran Corporation: *See*—
Hall, Clifford L., 5,337,306, Cl. 370-13.000.

Advanced Ceramics Corporation: *See*—
Montgomery, Lionel C., 5,336,454, Cl. 264-63.000.

Advanced Magnetics Inc.: *See*—
Josephson, Lee; Groman, Ernest V.; Jung, Chu; and Lewis, Jerome M., 5,336,506, Cl. 424-488.000.

Advanced Surgical Intervention, Inc.: *See*—
Rosenbluth, Robert F.; Lenker, Jay A.; Greene, George R.; Brenneman, Rodney A.; and Maley, Patrick A., 5,336,208, Cl. 604-329.000.

Advanced Testing Technologies, Inc.: *See*—
Najle, Esteban G.; and Buckley, Robert M., 5,337,014, Cl. 324-613.000.

AE PLC: *See*—
Paine, Brian, 5,335,711, Cl. 164-66.100.

Aerojet-General Corporation: *See*—
Odom, Thomas B., 5,336,888, Cl. 250-495.100.

Aerospace Coating Systems, Inc.: *See*—
Giller, Russell S.; and Horrigan, James D., 5,336,453, Cl. 264-57.000.

Aerospatiale Societe Nationale Industrielle: *See*—
Krawczyk, Rodolphe; Cerutti-Maori, Guy; and Boulissiere, Luc, 5,337,189, Cl. 359-850.000.

Agano, Toshitaka, to Fuji Photo Film Co., Ltd. Method and apparatus for reproducing images including a multiple scanning operation. 5,337,076, Cl. 346-108.000.

Agency of Industrial Science and Technology: *See*—
Kintaichi, Yoshiaki; Hamada, Hideaki; Ito, Takehiko; Sasaki, Motoi; Tabata, Mitsunori; and Usui, Kazushi, 5,336,476, Cl. 423-239.100.

Agfa Gevaert Aktiengesellschaft: *See*—
Kirschke, Klaus; Lutze, Gerhard; Schmitz, Ernst; and Wolff, Erich, 5,336,780, Cl. 548-371.000.

AGFA-Gevaert, N.V.: *See*—
Tavernier, Serge; Op de Beeck, Werner; Van Wunsel, Danny; and Marksch, Paul, 5,336,580, Cl. 430-106.600.

Agrimont S.r.l.: *See*—
Camaggi, Giovanni; Chiarino, Dario; Fantucci, Mario; and Meazza, Giovanni, 5,336,664, Cl. 504-261.000.

Agur, Philip J., to Intel Corporation. Bull nose extraction feature for thin form factor computer card. 5,337,213, Cl. 361-684.000.

Ahlsten, James C. Moisture activated self-propelled fishing lure. 5,335,442, Cl. 43-42.370.

Ai, Minoru: *See*—
Kinouchi, Yohsuke; Ai, Minoru; Mizutani, Hiroshi; Okuno, Osamu; Yamauchi, Kiyotaka; Yamataka, Akira; and Suzuki, Hiroya, 5,337,033, Cl. 335-302.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Aichi Tokei Denki Co., Ltd.: *See—*
Ueki, Takashi; Sakai, Katsuhito; Kanda, Koichi; and Kamiya, Hideo, 5,335,553, Cl. 73-861.190.

Aimone, Paul R.: *See—*
Chin, Stephen; Parille, Donald R.; Aimone, Paul R.; McCormick, Robert L.; Johnson, Paul R.; and Kilinski, Bart M., 5,335,717, Cl. 164-519.000.

Air Products & Chemicals, Inc.: *See—*
Burgoyne, William F., Jr.; and Casey, Jeremiah P., 5,336,807, Cl. 564-153.000.
Quinn, Robert; Laciak, Daniel V.; Appleby, John B.; and Pez, Guido P., 5,336,298, Cl. 95-49.000.

Air-Shields, Inc.: *See—*
Miller, Kenneth G.; and Grosholz, James R., 5,336,156, Cl. 600-22.000.

Aisin AW Co., Ltd.: *See—*
Ito, Yasunobu; and Hatasa, Makoto, 5,335,565, Cl. 477-131.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Kogita, Hidekazu; Nishikawa, Masumi; and Okada, Shoji, 5,337,190, Cl. 359-877.000.
Matsuaka, Masanobu, 5,335,861, Cl. 239-533.700.
Yamamoto, Tomohiro; and Iwade, Shigeru, 5,337,242, Cl. 364-449.000.

Ajinomoto Co., Inc.: *See—*
Shiragami, Hiroshi; Koguchi, Yoshihito; and Izawa, Kunisuke, 5,336,770, Cl. 544-276.000.

Akamine, Ikuo: *See—*
Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and Yokouchi, Akira, 5,337,371, Cl. 382-14.000.

Akhtar, Masyood; Le, Kim C.; Pedigo, Jess; and Smith, Charles H., to Johnson Matthey Inc. Sealing glass compositions. 5,336,644, Cl. 501-15.000.

Akiba, Takesada: *See—*
Kawahara, Takayuki; Kawajiri, Yoshiki; Akiba, Takesada; Horiguchi, Mssashi; Kitsukawa, Goro; and Aoki, Masakazu, 5,337,271, Cl. 365-149.000.

Akimoto, Kengo; Shinmen, Yoshifumi; Yamada, Hideaki; Shimizu, Sakayu; and Sugano, Michihiro, to Suntory Limited. Inhibitor for delta5-desaturase. 5,336,496, Cl. 424-195.100.

Akimoto, Toshio; and Shibaoka, Kazuo, to Nippon Sheet Glass Co., Ltd. Method for bonding glass and metal. 5,336,287, Cl. 65-59.500.

Akiyama, Mihoko: *See—*
Shiokawa, Keiichi; Akiyama, Mihoko; Ide, Yoji; Hiyoshi, Yoshihiko; Sato, Masahiro; and Surizaki, Kumi, 5,336,548, Cl. 428-212.000.

Aktis Corporation: *See—*
Fair, Jim; and Mehlhaff, John, 5,336,641, Cl. 437-248.000.

Alaze, Norbert; Gruber, Juergen; and Wolff, Guenter, to Robert Bosch GmbH. Electromagnetically actuatable valve for a hydraulic brake system. 5,335,984, Cl. 303-119.200.

Albert, Guido: *See—*
Becher, Heinz-Manfred; Albert, Guido; and Curtze, Jurgen, 5,336,671, Cl. 514-96.000.

Albrecht, Harry A.; Keith, Dennis D.; Konzelmann, Frederick M.; Rossman, Pamela L.; and Weigele, Manfred, to Hoffmann-La Roche Inc. Antibacterial cephalosporin compounds. 5,336,768, Cl. 540-222.000.

Alcatel Alsthom Compagnie General D'Electricite: *See—*
Andrieu, Xavier, 5,336,568, Cl. 429-7.000.

Alcatel Business Systems: *See—*
Riousset, Denis; and Richiero, Jean-Louis, 5,337,165, Cl. 358-496.000.

Alcatel Cit: *See—*
Mousseaux, Daniel; Gelly, Gerard; and Grard, Emmanuel, 5,337,392, Cl. 385-90.000.

Alcatel N.V.: *See—*
Darbon, Philippe; and Grard, Emmanuel, 5,337,380, Cl. 385-28.000
Ohnsorge, Horst; Weygang, Adolf; and Heidemann, Rolf, 5,337,175, Cl. 359-125.000.

Alcatel Sel Aktiengesellschaft: *See—*
Kolzer, Peter; and Mundt, Rolf-Hans, 5,337,059, Cl. 342-360.000

Alcatel Telspace: *See—*
Sadot, Philippe; Thebault, Bertrand; Darmon, Marc; and Eudes, Jacques, 5,337,331, Cl. 375-83.000.

Alden Laboratories, Inc.: *See—*
Davis, W. Mark, 5,335,486, Cl. 53-452.000.

Aldous, Stephen C.; and Dake, Guy M., to Megahertz Corporation. Media connector interface for use with a PCMCIA-architecture communications card. 5,336,099, Cl. 439-131.000.

Aldridge, Clyde L.; and Riley, Kenneth L., to Exxon Research and Engineering Company. Method for the preparation of supported hydrogenation and hydrotreating catalysts. 5,336,654, Cl. 502-170.000.

Alessio, David S. Drive circuit for electroluminescent lamps. 5,336,978, Cl. 315-169.300.

Alexander, James C., to Serco Corporation, The. Vehicle restraint. 5,336,033, Cl. 414-401.000.

Alexander, Paul R., Jr.; Cain, Donald G.; Dougherty, Erika J.; and Thornburg, Theodore S., to Hoechst Celanese Corporation. High efficiency air filtration media. 5,336,286, Cl. 55-528.000.

Alfamacchine Di Raffoni Giuseppe: *See—*
Raffoni, Giuseppe, 5,336,038, Cl. 411-478.000.

Alfred Teves GmbH: *See—*
Volz, Peter; and Zaviska, Dalibor, 5,335,981, Cl. 303-113.300.

Algonquin Industries, Inc.: *See—*
Kasper, Kazmier J., 5,335,822, Cl. 221-259.000

All Stock Displays Inc.: *See—*
Hepp, James, 5,335,814, Cl. 220-509.000.

Allemann, Markus, to Scintilla AG. Battery-powered electrical hand-tool. 5,336,953, Cl. 310-50.000.

Allen-Bradley Company, Inc.: *See—*
Fooks, Elik I.; Delaney, Patrick J., III; and Johnson, Philip E., 5,336,882, Cl. 250-221.000.

Allen, Henry W. Remote controlled sludge removal apparatus. 5,335,395, Cl. 15-340.100

Allen, Timothy P.; and Cser, James B., to Synaptics, Incorporated One-transistor adaptable analog storage element and array. 5,336,936, Cl. 307-201.000.

Allen, Tracy M.: *See—*
Hutchison, Glenn E.; and Allen, Tracy M., 5,336,458, Cl. 264-220.000.

Allergan, Inc.: *See—*
Park, John Y.; Ripley, Paul S.; and Dziabo, Anthony J., 5,336,434, Cl. 252-187.210.

Allied-Signal Inc.: *See—*
Horner, Charles B., Jr., 5,335,582, Cl. 91-369.300.
Yates, Stephen F.; Harnish, Daniel F.; and Smith, Addison M., 5,336,377, Cl. 203-29.000.

AlliedSignal Inc.: *See—*
Michie, Terry K., 5,337,057, Cl. 342-176.000.
Samuels, George J., 5,336,732, Cl. 525-397.000.

Alling, Richard L., to Torrington Company, The. Roller bearing sigma cage. 5,335,416, Cl. 29-898.067.

Allington, Robert W., to Isco, Inc. Pulsed field gel electrophoresis of large DNA. 5,336,383, Cl. 204-182.800.

Allman, Gary L., to Crosspoint Solutions, Inc. Voltage regulator for field programmable gate arrays. 5,336,986, Cl. 323-268.000.

Alpers, Heinz-Jurgen: *See—*
Taurat, Siegfried; Steude, Heinrich; Deibele, Ludwig; and Alpers, Heinz-Jurgen, 5,336,376, Cl. 202-182.000.

Alps Electric Co., Ltd.: *See—*
Hasegawa, Kazuo, 5,336,874, Cl. 235-466.000.

Altavela, Robert P.: *See—*
Narang, Ram S.; Pond, Stephen F.; Altavela, Robert P.; Warner, Fredrick A.; and Harold, Robert A., 5,336,319, Cl. 118-211.000.

Aluma Shield Industries, Inc.: *See—*
Druzynski, Frank C., 5,335,451, Cl. 49-379.000.

Aluma, Zvi: *See—*
Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Aluma, Zvi, 5,336,979, Cl. 315-362.000.

Aluminum Company of America: *See—*
DeYoung, David H.; Apelian, Diran; and Mutharasan, Rajakkannu, 5,336,295, Cl. 75-407.000.
Misra, Chanakya; and Sucech, Steven W., 5,336,486, Cl. 423-580.100.
Mueller, Peter M.; and Schreiner, Robert J., 5,335,532, Cl. 72-450.000

Alusick, Michael P.: *See—*
Kling, Michael J., III; Alusick, Michael P.; Kercheck, Gary R.; Krueger, Jeff C.; Schmitz, Duane M.; and Visser, James L., 5,335,420, Cl. 33-288.000.

Alvarez, Gustavo O. Adjustable beam holder. 5,335,470, Cl. 52-699.000.

Alvesalo, Antero, to Nokia Telecommunications Oy. Telecommunication system and a method for matching the numbering schemes of two telecommunication systems. 5,337,344, Cl. 379-58.000

American Bank Note Holographics, Incorporated: *See—*
Colgate, Gilbert, Jr., 5,336,871, Cl. 235-380.000

American Cyanamid Company: *See—*
Daley, Michael J.; Furda, Gary J.; and Hayes, Phillip W., 5,336,488, Cl. 424-85.200.
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,336,789, Cl. 549-264.000.

American Home Products Corporation: *See—*
Mancilla, Edward; and Lagwinska, Elizabeth M., 5,336,620, Cl 436-18.000
Sabatucci, Joseph P., 5,336,687, Cl. 514-473.000.
Sarantakis, Dimitri; Bicksler, James J.; Ellingboe, John W.; and Nikaido, Madelene, 5,336,677, Cl. 514-256.000

American Maize Technology, Inc.: *See—*
Mauro, David; Kozlowski, Ronald; and Benko, Larry, 5,336,328, Cl. 127-33.000.

American Medical Systems, Inc.: *See—*
Tihon, Claude; Cook, Timothy C.; Burton, John H.; and Svejkovsky, Ronald, 5,335,669, Cl. 128-736.000.

Ammann, Hans H.; Kovacs, Richard F.; Micks, Henry B., Jr.; Potechin, Jamey N.; Simons, Everett F.; and Tetz, John G., to AT&T Bell Laboratories. Method and apparatus for aligning phototools for photoprocessing of printed circuit boards. 5,335,405, Cl. 29-407.000.

Amoco Corporation: *See—*
Finchum, John A.; and Sheehan, Timothy K., 5,335,787, Cl. 206-564.000.

Amphenol-Tuchel Electronics GmbH: *See—*
Raab, Eberhard; Reichardt, Manfred; and Schuder, Bernd, 5,336,877, Cl. 235-475.000.

An, Hoyoung: *See—*
Yeom, Hancheol; Lee, Hoseong; Jeong, Yucheol; An, Hoyoung; Choi, Juho; and Lee, Wonbo, 5,336,289, Cl. 65-334.000.

Anastase, Constantin; Nehren, William C.; Kissick, Russell C.; Campbell, Thomas C.; and Daily, Jay H., to White Consolidated Industries, Inc. Removable heat exchanger for industrial laundry machines. 5,335,523, Cl. 68-16.000.

Anayama, Chikashi; Tanahashi, Toshiyuki; and Kondo, Makoto, to Fujitsu Limited. Manufacturing method of semiconductor laser of patterned-substrate type. 5,336,635, Cl. 437-129.000.

Anchor Bay Packaging Corporation: *See—*
Taravella, Philip; Blair, Edward J.; Domanski, Ronald S.; and Shippell, Joseph C., 5,335,789, Cl. 206-518.000.

Anchor Pad International: *See—*
Busch, Paul F., 5,335,892, Cl. 248-551.000.

Andersen, Frank B. Gun hammer. 5,335,437, Cl. 42-70.080.

Anderson, Dallas W., to Premier Laser Systems, Inc. Method and apparatus for applying thermal energy to tissue using a clamp. 5,336,221, Cl. 606-27.000.

Anderson, Emmett B.: *See—*
Daoud, Adib G.; and Anderson, Emmett B., 5,336,174, Cl. 604-30.000.

Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., to Halliburton Company. Self-contained downhole gauge system. 5,337,234, Cl. 364-422.000.

Anderson, Thomas M., to Schwing America, Inc. Closed loop sludge flow control system. 5,336,055, Cl. 417-63.000.

Andersson, Roine, to Celleco Hedemora AB. Hydrocyclone assembly. 5,336,411, Cl. 210-512.100.

Andersson, Sven B., to Pharmacia AB. Smoking composition. 5,335,678, Cl. 131-359.000.

Ando, Hikaru: *See—*
Kuriyama, Yuuji; Sakaida, Shoji; Ando, Hikaru; Ando, Masao; Ichimaru, Kazumi; and Sakamoto, Kazutoshi, 5,335,939, Cl. 280-728.00B.

Ando, Hiromi; Matsunaga, Kunihiro; Sano, Kenji; and Suga, Satoru, to Tokico Ltd. Brake fluid pressure control apparatus. 5,335,982, Cl. 303-117.100.

Ando, Masao: *See—*
Kuriyama, Yuuji; Sakaida, Shoji; Ando, Hikaru; Ando, Masao; Ichimaru, Kazumi; and Sakamoto, Kazutoshi, 5,335,939, Cl. 280-728.00B.

Andoe, Graham C., to Cresco, Inc., SA. Environmentally safe epoxy adhesive-copper hull coating and method. 5,336,304, Cl. 106-18.320.

Andoh, Takeshi, to NEC Corporation. Static semiconductor memory device. 5,336,914, Cl. 257-368.000.

Andrevon, Herve: *See—*
Lacroix, Jacques; Andrevon, Herve; and Deville, Dominique, 5,335,931, Cl. 280-602.000.

Andrieu, Xavier, to Alcatel Alsthom Compagnie General D'Electricite. Device for optimizing the discharge of a least two electrochemical cells. 5,336,568, Cl. 429-7.000.

Andritz-Patentverwaltungs-Gesellschaft M.B.H.: *See—*
Geiger, Bertram; and Grabher, Rainer, 5,335,790, Cl. 209-518.000.

Andritz Sprout-Bauer, Inc.: *See—*
Kohler, Gregory R.; Lahner, William F., III; Munster, Heinrich F.; and Dahlqvist, Karl T. G., 5,335,865, Cl. 241-28.000.

Angeion Corporation: *See—*
Adams Theodore P.; and Kroll, Mark W., 5,336,245, Cl. 607-32.000.

Anim-Appiah, Kofi D.; Riad, Sedki M.; and Onishi, Shinzo, to Virginia Tech Intellectual Properties, Inc. Non-symmetrical inductive sensors having ferrite coil geometries with different top and base geometries. 5,336,997, Cl. 324-207.160.

Anro Engineering, Inc.: *See—*
Ross, Gerald F.; and Mara, Richard M., 5,337,054, Cl. 342-93.000.

Ant Nachrichtentechnik GmbH: *See—*
Ehrlich, Wolfgang, 5,337,315, Cl. 370-102.000.

Antelman, Marvin S., to N. Jonas & Co., Inc. Trivalent copper water treatment compositions. 5,336,416, Cl. 210-764.000.

Antelman, Marvin S., to Antelman Technologies, Ltd. Molecular crystal device for pharmaceuticals. 5,336,499, Cl. 424-405.000.

Antelman Technologies, Ltd.: *See—*
Antelman, Marvin S., 5,336,499, Cl. 424-405.000.

Anthony, Vivienne M.: *See—*
deFraine, Paul; Snell, Brian K.; Beautement, Kevin; Anthony, Vivienne M.; and Clough, John M., 5,336,682, Cl. 514-422.000

Antikow, Paul; and Pinaud, Francois, to Rhone Poulenc Fibres. Undrawn pre-oriented pet yarns with improved production efficiency. 5,336,709, Cl. 524-493.000.

Ao, Youji: *See—*
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl. 164-475.000.

Aoi, Hajime: *See—*
Nishiyama, Nobumasa; Tsuyoshi, Toshiaki; Aoi, Hajime; Kameoka, Tetsuji; Tanaka, Masaya; and Shiraishi, Kazuhisa, 5,337,198, Cl. 360-65.000.

Aoki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Recording-/reproducing apparatus with remote controller. 5,337,292, Cl. 369-2.000.

Aoki, Masakazu: *See—*
Kawahara, Takayuki; Kawajiri, Yoshiki; Akiba, Takesada; Horiguchi, Mssashi; Kitsukawa, Goro; and Aoki, Masakazu, 5,337,271, Cl. 365-149.000.

Aoki, Takashi: *See—*
Yamazaki, Yuichi; Mori, Hideyasu; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,337,348, Cl. 379-94.000.

Aoki, Takayuki: *See—*
Shiobara, Toshio; Futatsumori, Koji; Okuse, Satoshi; Aoki, Takayuki; Wakao, Miyuki; and Ino, Shigeki, 5,336,786, Cl. 549-215.000.

Aoki, Tomoyuki; Iino, Yasuo; Ono, Yoji; and Asai, Shinichiro, to Henkel Corporation. Acidic aluminum cleaner containing an oxidant and a nonionic surfactant stabilized by a glycol. 5,336,425, Cl 252-100.000.

Aoyama, Motoo; Masumi, Ryoji; Ishibashi, Yooko; and Kurihara, Kunitoshi, to Hitachi, Ltd. Fuel assembly. 5,337,337, Cl. 376-435.000.

Aoyama Seisakusho Co., Ltd.: *See—*
Kazino, Hiroshi, 5,335,826, Cl. 221-297.000.

Apco Power-Unit Corporation: *See—*
Mawer, Daniel W., 5,335,883, Cl. 242-602.100.

Apelian, Diran: *See—*
DeYoung, David H.; Apelian, Diran; and Mutharasan, Rajakkannu, 5,336,295, Cl. 75-407.000.

Appel, Peter C., to Hewlett-Packard Company. Data stream concentrator providing attribute data storage and graphics pipeline access. 5,337,410, Cl. 395-162.000.

Appleby, John B.: *See—*
Quinn, Robert; Laciak, Daniel V.; Appleby, John B.; and Pez, Guido P., 5,336,298, Cl. 95-49.000.

Applied Elastomerics, Inc.: *See—*
Chen, John Y., 5,336,708, Cl. 524-474.000.

Applied Magnetics Corporation: *See—*
Ganapathi, Srinivasan K.; Love, Robert B.; and Smith, Paul W., 5,336,550, Cl. 428-216.000.

Applied Materials, Inc.: *See—*
Morita, Katsumi, 5,336,363, Cl. 156-625.000
Strul, Bruno; de Geus, Richard; and Ebbing, Peter, 5,337,144, Cl. 356-357.000.

Applied Medical Resources Corporation: *See—*
Brustad, John R., 5,335,647, Cl. 128-4.000.

Aqua-Chem, Inc.: *See—*
Dunbar, William R., 5,335,628, Cl. 122-1.00R.

Arai, Hideo; Owashi, Hitoaki; Hosokawa, Kyoichi; Nishimura, Keizo; Watatani, Yoshizumi; and Shibata, Akira, to Hitachi, Ltd. Digital transmission signal processing system and recording/reproducing system. 5,337,199, Cl. 360-8.000.

Arai, Yoshinobu: *See—*
Imaki, Katsuhiro; Arai, Yoshinobu; and Okegawa, Tadao, 5,336,681, Cl. 514-347.000.

Arakawa, Takeharu: *See—*
Nobe, Kenichi; Araki, Morio; and Arakawa, Takeharu, 5,337,244, Cl. 364-449.000.

Araki, Morio: *See—*
Nobe, Kenichi; Araki, Morio; and Arakawa, Takeharu, 5,337,244, Cl. 364-449.000.

Araki, Yasushi: *See—*
Yanagisawa, Shuichi; Sakai, Tatsuro; Chuman, Takashi; Araki, Yasushi; and Matsui, Fumio, 5,336,584, Cl. 430-273.000.

ARCH Development Corporation: *See—*
Crewe, Albert V., 5,336,891, Cl. 250-396.00R.

Ariie, Keiko: *See—*
Takegawa, Ichiro; Kubo, Tsutomu; Ariie, Keiko; and Kobayashi, Tomoo, 5,336,582, Cl. 430-120.000.

Aristech Chemical Corporation: *See—*
Salek, Jeffrey S.; Pugach, Joseph; and Rubino, Mark R., 5,336,812, Cl. 568-721.000.

Arjawat, P. Singh. Head, neck, and shoulder exercise machine. 5,336,138, Cl. 482-10.000.

Armstrong, Alan G. M.: *See—*
McDougall, Ian L.; Armstrong, Alan G. M.; and Hawkes, Robert C., 5,337,001, Cl. 324-318.000.

Armstrong, William P. Solar powered relatively balanced pumping system. 5,336,061, Cl. 417-411.000.

Arnold, David: *See—*
Castonguay, Roger N.; Arnold, David; Morgan, Roger J.; Glabau, Frederic W.; Tucholski, Henry J.; and Reyes, Thomas T. B., 5,337,031, Cl. 335-201.000.
Folger, David; Arnold, David; and Lambert, Maureen, 5,337,044, Cl. 340-825.440.

Arnold, Mark G. Method and apparatus for fast logarithmic addition and subtraction. 5,337,266, Cl. 364-748.500.

Aronsen, Arthur N. Multi-compartment dispenser pouch and method of making. 5,335,478, Cl. 53-412.000.

Arsene-Henry, Patrice: *See—*
Pacou, Thierry; Arsene-Henry, Patrice; Pham, Tung N.; and Genuist, Yann, 5,336,627, Cl. 437-41.000.

Arthrex Medizinische Instrumente GmbH: *See—*
Metzler, Richard; Schmieding, Reinhold; and Schmid, Peter M., 5,336,240, Cl. 606-232.000.

Arthur Eugster AG Elektrohaushaltsgerate: *See—*
Mahlich, Gotthard, 5,335,588, Cl. 99-293.000.

Arvedi, Giovanni; Ludorff, Harald; Thurm, Hans G.; Parschat, Lothar; Pleschiutschnigg, Fritz-Peter; Paris, Hans-Joachim; and Steuten, Michael, to Mannesmann Aktiengesellschaft. Dummy bar for continuous casting installations. 5,335,714, Cl. 164-446.000.

Arvin Industries, Inc.: *See—*
Krider, James K.; Crawley, Wilbur H., III; and Wright, David E., 5,336,856, Cl. 181-206.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Asada, Satoshi: *See—*
Sekiya, Mutsuo; Asada, Satoshi; and Fukuhara, Katsuyuki, 5,336,068, Cl. 418-55.200.

Asaeda, Tooru: *See—*
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Yamamoto, Tooru; and Asaeda, Tooru, 5,337,083, Cl. 348-256.000.

Asahi Kasei Kogyo Kabushiki: *See—*
Takahashi, Genshо; and Sato, Reijiro, 5,336,585, Cl. 430-284.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kitamura, Atsushi, 5,336,538, Cl. 428-35.200.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Aoki, Harumi, 5,337,292, Cl. 369-2.000.
Ogawa, Yuzi, 5,337,109, Cl. 354-222.000.
Takishima, Suguru; and Kase, Toshiyuki, 5,337,300, Cl. 369-44.410.

Asahina, Yasutoshi: *See—*
Goda, Hisashi; Asahina, Yasutoshi; Hashimoto, Masayuki; and Oka, Naoki, 5,336,365, Cl. 156-643.000.

Asai, Shinichiro: *See—*
Aoki, Tomoyuki; Iino, Yasuo; Ono, Yoji; and Asai, Shinichiro, 5,336,425, Cl. 252-100.000.

Asakura, Norio: *See—*
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000.

Asakura, Tsutou: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, 5,337,078, Cl. 346-108.000.

Ashburn, Stanton P.: *See—*
Ozturk, Mehmet C.; Grider, Douglas T.; Sanganeria, Mahesh K.; Ashburn, Stanton P.; and Wortman, Jimmie J., 5,336,903, Cl. 257-19.000.

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Askeland, Atle: *See—*
Sola, Einar; Rottingen, Jan; Grimstad, Per; and Askeland, Atle, 5,336,792, Cl. 554-21.000.

Askestad, Sigmund, to Norsk Hydro a.s. Support and connection device for flexible riser. 5,336,020, Cl. 405-224.000.

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Devilbiss, John J.; Lugosi, Steve; and Ozarski, Robert G., 5,336,325, Cl. 118-719.000.

ASMO Co., Ltd.: *See—*
Iwase, Hideaki, 5,335,868, Cl. 242-7.05B

AstroPower, Inc.: *See—*
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., 5,336,335, Cl. 136-258.000.

AT&T Bell Laboratories: *See—*
Ammann, Hans H.; Kovacs, Richard F.; Micks, Henry B., Jr.; Potechin, Jamey N.; Simons, Everett F.; and Tetz, John G., 5,335,405, Cl. 29-407.000.
Basavanhally, Nagesh R.; Borutta, Richard; and Jekkal, Edward W., 5,337,384, Cl. 385-54.000.
Benzoni, Albert M.; and Dautartas, Mindaugas F., 5,337,398, Cl. 385-90.000.
Boie, Robert A.; and Miller, Gabriel L., 5,337,353, Cl. 379-388.000.
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Einbinder, Itamar B., 5,336,970, Cl. 313-631.000.
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Molloy, Nicholas J., 5,337,334, Cl. 375-118.000.
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Cornette, H. Mitchell; Salerni, John V.; and Schmuck, Phillip W., 5,335,727, Cl. 166-278.000.
Mouton, David E., 5,335,723, Cl. 166-173.000.

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Barske, Heiko, 5,336,932, Cl. 290-1.00R.

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Hofer, Bruce E., 5,336,989, Cl. 324-115.000.

Auer, Adam, to Peguform-Werke GmbH. Pressurized fluid assisted injection molding apparatus. 5,336,072, Cl. 425-130.000.

Auer, Raimund: *See—*
Maurer, Gerhard; Braig, Manfred; Auer, Raimund; Goebel, Christoph; Schwarz, Josef; and Voss, Thomas, 5,336,120, Cl. 440-84.000.

Augustine Medical, Inc.: *See—*
Augustine, Scott D., 5,336,250, Cl. 607-107.000.

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Augustine, Steve M.: *See—*
Smith, David W.; Hanes, Ronnie M.; Scheben, John A.; and Augustine, Steve M., 5,336,802, Cl. 560-245.000.

Austgen, David M., Jr.; and Southwick, Jeffrey G., to Shell Oil Company. Process for making submicron stable latexes of block copolymers. 5,336,712, Cl. 524-530.000.

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Automotive Systems Laboratory, Inc.: *See—*
Gioutsos, Tony; and Piskie, Michael A., 5,337,238, Cl. 364-424.050.

Auzerais, Francois M.: *See—*
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.

Awaya, Juichi: *See—*
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideako; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,336,688, Cl. 514-492.000.

Axelgaard, Jens: *See—*
Kanare, Donald M.; Abdenour, Thomas E.; and Axelgaard, Jens, 5,336,255, Cl. 607-149.000.

Axelrod, Barry H.; Balga, John T., Jr.; and Cornell, Edward P., to Pitney Bowes Inc. Apparatus for recording a transaction including authenticating an identification card. 5,337,358, Cl. 380-23.000.

Axis USA, Inc.: *See—*
Rossi, Alessandro, 5,336,865, Cl. 219-117.100.

Ayzenberg, Mark: *See—*
Griffen, Neil C.; and Ayzenberg. Mark, 5,336,994, Cl. 324-174.000.

Azeyanagi, Kazuyoshi: *See—*
Matsunaga, Noboru; Azeyanagi, Kazuyoshi; Sogaishi, Ichirou; Katakura, Takeo; Ueda, Yoshihisa; and Ohsawa, Takaaki, 5,336,465, Cl. 419-2.000.

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Baack, Jerry R.: *See—*
Haun, Andy A.; and Baack, Jerry R., 5,337,205, Cl. 361-56.000.

Baatz, Guenter A. Rubber vehicular impact barrier. 5,336,016, Cl. 404-6.000.

Babb, Steven J.; and Harmon, John L., to General Electric Company. Method and apparatus for preventing hazardous explosion of ammonium nitrate. 5,335,577, Cl. 86-21.000.

Babej, Jiri: *See—*
Muller, Rudolf R. M.; and Babej, Jiri, 5,335,411, Cl. 29-512.000.

Bach, Gary M.; and Crowe, Robert E., to Reynolds Consumer Products Inc. Reinforced cell material. 5,336,544, Cl. 428-117.000.

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Backhaus, Jurgen, to W. Schlafhorst AG & Co. Assembly for independently transporting yarn packages having path diverting capability. 5,335,776, Cl. 198-368.000.

Bacon, Dennis R.: *See—*
Michael, Daniel W.; and Bacon, Dennis R., 5,336,445, Cl. 252-548.000.

Bacon, Edward R.; Daum, Sol J.; Estep, Kimberly G.; Josef, Kurt A.; Douty, Brent D.; and Illig, Carl R., to Sterling Winthrop Inc. Compositions of iodophenyl esters and iodophenyl sulfonates in film-forming materials for visualization of the gastrointestinal tract. 5,336,484, Cl. 424-5.000.

Bactex, Inc.: *See—*
Brinton, Charles C., Jr.; and To, Sam C., 5,336,490, Cl. 424-242.100.

Bader, Bernard R. Method and apparatus for handling stacked products. 5,336,043, Cl. 414-796.000.

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Badr, Iskandar; and Chiswell, Edgar B., to Bic Corporation. Retractable writing instrument having replaceable cartridge. 5,336,006, Cl. 401-105.000.

Badyal, Rejeev, to Hewlett-Packard Corporation. High gain rail-to-rail CMOS amplifier. 5,337,008, Cl. 330-253.000.

Baer, Scott: *See—*
Berkovsky, Janette; and Baer, Scott, 5,337,253, Cl. 364-479.000.

Bagcraft Corporation of America: *See—*
Cortopassi, Jeffery J.; Marsik, Ronald; McDonald, Raymond E.; and Shymanski, Nicholas M., 5,335,996, Cl. 383-207.000.

Bagfilla Overseas Limited: *See—*
Davidson, Ian, 5,336,853, Cl. 177-146.000.

Bahary, William S.; and Hogan, Michael P., to Lever Brothers Company, Division of Conopco, Inc. Liquid detergent composition containing biodegradable structurant. 5,336,430, Cl. 252-174.170

Bailey, Alex E.: *See—*
Sutherland, Audrey E.; Bridger, Keith; Fiore, Eric M.; Christodoulou, Julie A.; Bailey, Alex E.; and Gelb, Allan S., 5,337,209, Cl. 361-321.500.

Bailly, Alain; Ramsteiner, Gerard; and Saurou, Michel. Attachment for a syringe for spraying mixtures of fluids. 5,336,202, Cl. 604-240.000.

Bain, Brian M.: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,336,789, Cl. 549-264.000.

Baird, Dayne E. Improved diaphragm. 5,335,584, Cl. 92-98.00R.

Baker, David C.; Bohrer, Kathryn A.; Flurry, Greogory A.; Lucas, Peter; and Rhyne, James R., to International Business Machines Corporation. Method and apparatus for substituting real and virtual devices independent from an data processing system application program. 5,337,412, Cl. 395-275.000.

Baker, Roger J.; Noel, Matthew P.; and McCullough, Brian C., to Moulded Fibre Technology, Inc. Molded pulp fiber interior package cushioning structures. 5,335,770, Cl. 206-433.000.

Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Merrifield, David L.; Molloy, James J.; Ward, Earl D., II; and Wilzbach, Bernard L., to Lexmark International, Inc. Reduced component toner cartridge. 5,337,032, Cl. 355-260.000.

Balaban, Alvin R.: *See—*
Harford, Jack R.; and Balaban, Alvin R., 5,337,091, Cl. 348-737.000.

Balance Engineering Corporation: *See—*
Holland, Scott B.; Fair, Kenneth L.; and Youells, James P., 5,337,229, Cl. 364-131.000.

Baldy, Andre ; Barrois, Gerard; Blanc, Henri; and Dominiak, Marcel, to Commissariat a l'Energie Atomique. Polishing machine having a taut microabrasive strip and an improved wafer support head. 5,335,453, Cl. 51-67.000.

Bales, Thomas O.; and Ryan, Dana W., to Symbiosis Corporation. Endoscopic suction-irrigation instrument having insertible probes with lateral ports. 5,336,172, Cl. 604-27.000.

Balga, John T., Jr.: *See—*
Axelrod, Barry H.; Balga, John T., Jr.; and Cornell, Edward P., 5,337,358, Cl. 380-23.000.

Balhadere, Aline; Bernard, Bruno; Moreau, Jacques A.; Mouricou, Isabelle; and Robin-Brosse, Christian, to Societe Europeenne de Propulsion. Method of manufacturing parts made of ceramic matric composite material. 5,336,522, Cl. 427-226.000.

Ballou, Mark D.: *See—*
Zimmer, Charles D.; Gutman, Edward J.; and Ballou, Mark D., 5,336,579, Cl. 430-106.000.

Balmashnov, Alexander A.; Golovanivsky, Konstantin S.; Omeljanovsky, Erzam M.; Pakhomov, Andrew V.; and Polyakov, Alexander Y., to Ruxam, Inc. Method and apparatus for the production of a dissociated atomic particle flow. 5,336,533, Cl. 427-562.000.

Balzers Aktiengesellschaft: *See—*
Karner, Johann; and Bergmann, Erich, 5,336,326, Cl. 118-723.0HC.

Bamber, Jeffrey V. Golf club shaft. 5,335,908, Cl. 273-80.00R.

Bammel, Michael: *See—*
Curten, Franz J.; and Bammel, Michael, 5,336,037, Cl. 414-429.000.

Ban, Cozy; Ohmori, Toshiaki; and Fukumoto, Takaaki, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for treating the surface of a semiconductor substrate. 5,336,356, Cl. 156-345.000.

Bandimere, John K., to Randall K. Inc. Animal restraint device and method of using same. 5,335,627, Cl. 119-856.000.

Bando Kagaku Kabushiki Kaisha: *See—*
Ohtani, Ken-ichi; Sakamoto, Osamu; Houzouji, Masahiko; and Yamamoto, Hiroshi, 5,336,461, Cl. 264-294.000

Bando, Shoichi: *See—*
Sumitomo, Miyuki; Takeoka, Ichiro; and Bando, Shoichi, 5,336,080, Cl. 428-407.000.

Baran, Bernardo: *See—*
Cotton, Manny; Sanchez, George; and Baran, Bernardo, 5,335,435, Cl. 40-395.000.

Barbier, Gerard Y. G.; Bardey, Xavier M. H.; and Desaulty, Michel A. A., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A. Combustion chamber with axially displaced fuel injectors. 5,335,491, Cl. 60-39.370.

Bardey, Xavier M. H.: *See—*
Barbier, Gerard Y. G.; Bardey, Xavier M. H.; and Desaulty, Michel A. A., 5,335,491, Cl. 60-39.370.

Baret, Guy, to Thomson Tubes Electroniques. Electrically insulating elements for plasma panels and method for producing such elements. 5,336,121, Cl. 445-25.000.

Barger, Paul T.: *See—*
Gajda, Gregory J.; Barger, Paul T.; and Abrevaya, Hayim, 5,336,831, Cl. 585-667.000.

Barlow, Alan R.: *See—*
Sharma, Sudhir K.; Riley, Michael F.; Nowotarski, Mark S.; and Barlow, Alan R., 5,336,085, Cl. 432-64.000.

Barna, Randall. Apparatus and method for forming a gait-simulated impression of a foot. 5,336,459, Cl. 264-223.000.

Barnett, Allen M.: *See—*
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., 5,336,335, Cl 136-258.000.

Barnum, Harlos L.: *See—*
Geringer, Kerry G.; Barnum, Harlos L.; and Jennings, Lon A., 5,335,750, Cl. 180-307.000.

Barr, Bryan M.: *See—*
Constanz, Brent R.; Fulmer, Mark T.; and Barr, Bryan M., 5,336,264, Cl. 623-16.000.

Barr, Dallas N.: *See—*
Nettleton, John E.; Barr, Dallas N.; and Redman, Brian C., 5,336,899, Cl. 250-561.000.

Barrett, Graham D.; Link, William J.; and Reich, Cary J., to Chiron IntraOptics, Inc. Corneal inlay lenses. 5,336,261, Cl. 623-5.000.

Barrett, Raymond L., Jr.; and Herold, Barry W., to Motorola, Inc. High efficiency class AB transconductance amplifier. 5,337,007, Cl 330-253.000

Barrios, Tito: *See—*
Eskildsen, Steven R.; Golwalkar, Suresh V.; and Barrios, Tito, 5,336,456, Cl. 264-157.000.

Barrois, Gerard: *See—*
Baldy, Andre ; Barrois, Gerard; Blanc, Henri; and Dominiak, Marcel, 5,335,453, Cl. 51-67.000.

Barske, Heiko, to Audi AG. Method for controlling a generator 5,336,932, Cl. 290-1.00R.

Bartels, Gunter: *See—*
Winterfeldt, Andreas; Bartels, Gunter; and Knieps, Reinhard, 5,336,818, Cl. 570-170.000.

Barth, Richard M.: *See—*
Ware, Frederick A.; Gasbarro, James A.; Dillon, John B.; Griffin, Matthew M.; Barth, Richard M.; and Horowitz, Mark A., 5,337,285, Cl. 365-227.000.

Barthelemy, Pierre; Paulus, Mireille; Buchwald, Hans; Hellmann, Joachim; and Raszkowski, Boleslaus, to Solvay (Societe Anonyme). Virtually constant boiling point compositions based on isoflurane. 5,336,429, Cl. 252-171.000.

Bartlett, Richard A.; and Cote, Edward A., to NCR Corporation. Flip screen for notebook computers. 5,337,212, Cl. 361-681.000.

Bartolo, Robert G.: *See—*
Coffindaffer, Timothy W.; Bartolo, Robert G.; and Belfiore, Kathleen A., 5,336,419, Cl. 252-8.600.

Barwin, David A.: *See—*
Hennessee, Robert P.; Barwin, David A.; Rudzewicz, Robert G.; and Rajala, Richard M., 5,335,514, Cl. 62-227.000.

Basavanhally, Nagesh R.; Borutta, Richard; and Jekkal, Edward W., to AT&T Bell Laboratories. Optical fiber connector. 5,337,384, Cl. 385-54.000.

BASF Aktiengesellschaft: *See—*
Becker, Rainer; Gramlich, Walter; Huellmann, Michael; and Scholz, Hans-Ulrich, 5,336,815, Cl. 568-857.000.
Mueller, Ulrich; Weiss, Ralf; Diehl, Klaus; Sandrock, Gerhard; and Sauvage, Lothar, 5,336,836, Cl. 585-824.000.
Niessner, Norbert; Fischer, Wolfgang; Guentherberg, Norbert; Ruppmich, Karl; and Seitz, Friedrich, 5,336,718, Cl. 525-67.000.
Siegel, Bernd; Patsch, Manfred; and Kessel, Knut, 5,336,800, Cl. 558-30.000.

BASF Corporation: *See—*
Rehfuss, John W., 5,336,566, Cl. 428-524.000.

BASF Lacke + Farben Ag: *See—*
Jung, Werner A.; Vorbeck, Udo; Schmitz, Arno; Heise, Wilhelm; and Gross, Lutz-Werner, 5,336,753, Cl. 528-335.000

BASF Lacke + Farben Aktiengesellschaft: *See—*
Kappes, Elisabeth; and Poth, Ulrich, 5,336,716, Cl. 525-23.000.

BASF Lacke+Farben Aktiengesellschaft: *See—*
Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,336,722, Cl. 525-113.000.

Basgil, Thomas M.: *See—*
Pituch, Thomas R.; and Basgil, Thomas M., 5,336,359, Cl. 156-568.000.

Basini, Luca; Marchionna, Mario; Rossini, Stephano; and Sanfilippo, Domenico, to Snamprogetti S.p.A. Catalytic system and process for producing synthesis gas by reforming light hydrocarbons with CO_2. 5,336,655, Cl. 502-252.000.

Bassick, John W.; and Dubois, Edward A., to David Clark Company Inc. Partial pressure cuff seal for utilization in a full pressure suit. 5,335,370, Cl. 2-214.000.

Bates, Cary L.; and Ryan, Jeffrey M., to International Business Machines Corporation. Method and system for identifying users in a collaborative computer-based system. 5,337,407, Cl. 395-153.000.

Batten, Jeffrey A.: *See—*
Casto, Mark R.; Batten, Jeffrey A.; and Mathieu, Raymond J., 5,335,586, Cl. 92-140.000.

Battery Technologies Inc.: *See—*
Tomantschger, Klaus; and Michalowski, Christopher, 5,336,571, Cl. 429-66.000.

Battey, Robert L.: *See—*
O'Connell, Patrick A.; Battey, Robert L.; Donigan, Maria S.; Tien, So V.; and Knights, John C., 5,337,080, Cl. 346-155.000.

Baubois, Michel: *See—*
Simon, Georges; and Baubois, Michel, 5,335,581, Cl. 89-156.000

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VOL 1165 ISS 2 AG 9 1994 UMI

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Baudier, Albert J. Golfer's stance gauge. 5,335,915, Cl. 273-187.00R.
Bauer, Charles L.; and Vanier, Noel R., to Eastman Kodak Company. Antistatic subbing layer for slipping layer in dye-donor element used in thermal dye transfer. 5,336,659, Cl. 503-227.000.
Bauer, Richard G.: *See*—
Sandstrom, Paul H.; Bauer, Richard G.; Burlett, Donald J.; and Sinsky, Mark S., 5,336,730, Cl. 525-332.600.
Baugh, Benton E., to Smith International, Inc. Retrievable whipstock. 5,335,737, Cl. 175-61.000.
Bauman, Robert C.: *See*—
Hancock, Robert L.; Pritz, Steven E.; Bauman, Robert C.; and Nowlan, Shawn J., 5,335,642, Cl. 123-634.000.
Baumgartner, Richard A.; and Herleikson, Earl C., to Hewlett-Packard Company. Signal processing circuits with digital programmability. 5,337,230, Cl. 364-138.000.
Baur, Helga, heir: *See*—
Baur, Rolf, deceased, 5,335,985, Cl. 312-9.310.
Baur, Rolf, deceased (by Baur, Helga, heir), to Grau GmbH & Co. Storage units for computer tape cassettes. 5,335,985, Cl. 312-9.310.
Bausch & Lomb Incorporated: *See*—
McGee, Joseph A.; and Valint, Paul L., Jr., 5,336,797, Cl. 556-419.000.
Baxter, Gregory R.; Tesone, Jeffrey; and Rivard, Glenn, to Optical Radiation Corporation. Double-sided circuit board exposure machine and method with optical registration and material variation compensation. 5,337,151, Cl. 356-401.000.
Baxter International Inc.: *See*—
Hardwick, R. Alan; Smith, Alan K.; Lake, William C.; and Chenoweth, Dennis E., 5,336,760, Cl. 530-413.000.
Quintero, Lillian J.; Cosgrove, Delos M.; and Nguyen-Thien-Nhon, Diana, 5,336,258, Cl. 623-2.000.
von der Decken, Claus, 5,336,201, Cl. 604-223.000.
Baxter, Michael J., to Lightworks International Inc. Device and process for use in coloring hair. 5,335,679, Cl. 132-270.000.
Baxter, Michael R.; and Bruce, James M., to ACO Severin Ahlmann GmbH & Co. KG. Feed and drink feeder. 5,335,624, Cl. 119-51.500.
Bayer Aktiengesellschaft: *See*—
Bohm, Stefan; and Marhold, Albrecht, 5,336,809, Cl. 568-354.000.
Schneider, Volker; Blum, Harald; Kubitza, Werner; and Probst, Joachim, 5,336,711, Cl. 524-507.000.
Taurat, Siegfried; Steude, Heinrich; Deibele, Ludwig; and Alpers, Heinz-Jurgen, 5,336,376, Cl. 202-182.000.
Bear Archery Inc.: *See*—
Simonds, Gary L.; and Gallops, Henry M., Jr., 5,335,645, Cl. 124-88.000.
Beasley, M. Wayne; Fletcher, Wade D.; and Wilfong, Harry B., Jr., to Sonoco Products Company. Self-opening polyethylene bag stack and process for producing same. 5,335,788, Cl. 206-554.000.
Beatty, Charles L., to Net/Tech International, Inc. Delivery system for an agriculturally active chemical. 5,335,449, Cl. 47-48.500.
Beautement, Kevin: *See*—
deFraine, Paul; Snell, Brian K.; Beautement, Kevin; Anthony, Vivienne M.; and Clough, John M., 5,336,682, Cl. 514-422.000.
Beaver, Richard N., deceased: *See*—
Tsou, Yu-Min; McMichael, James W.; and Beaver, Richard N., deceased, 5,336,384, Cl. 204-252.000.
Beaver, Wanda G., legal representative: *See*—
Tsou, Yu-Min; McMichael, James W.; and Beaver, Richard N., deceased, 5,336,384, Cl. 204-252.000.
Beccue, Steve: *See*—
Khoshnevisan, Mohsen; Schoenwald, Jeffrey S.; Rode, Jonathan P.; Smith, Raymond J. D.; Kolloff, Bruce G.; and Beccue, Steve, 5,336,884, Cl. 250-231.180.
Becher, Heinz-Manfred; Albert, Guido; and Curtze, Jurgen, to Shell Research Limited. Fungicidal compositions containing benzyl-tris-(aryl)phosphonium salts. 5,336,671, Cl. 514-96.000.
Bechthold, Hans-Christoph; Burchardt, Udo; Ernst, Rainer; and Vogeler, Karsten, to Dragerwerk Aktiengesellschaft. Chemical oxygen generator having a multi-component reaction-control member. 5,336,470, Cl. 422-120.000.
Beck, Erhard; and Sonnenschein, Georg, to ITT Corporation. Hydraulic regulator for a brake pressure control apparatus. 5,335,983, Cl. 303-119.200.
Beck, Harold K.: *See*—
Ringgenberg, Paul D.; and Beck, Harold K., 5,335,731, Cl. 166-336.000.
Beck, Hubert: *See*—
Knecht, Heinz; and Beck, Hubert, 5,335,757, Cl. 188-299.000.
Becker, Rainer; Gramlich, Walter; Huellmann, Michael; and Scholz, Hans-Ulrich, to BASF Aktiengesellschaft. Preparation of vinyl glycols. 5,336,815, Cl. 568-857.000.
Beckvermit, Jeffrey T.: *See*—
Murray, Christopher K.; Beckvermit, Jeffrey T.; and Ziebarth, Timothy D., 5,336,684, Cl. 514-449.000.
Bedingham, William, to Minnesota Mining and Manufacturing Company. Intravascular blood parameter sensing system. 5,335,658, Cl. 128-632.000.
Bee, Richard A. Thermally efficient integrated greenhouse system. 5,335,447, Cl. 47-17.000.
Beesley, Harry J.: *See*—
Idstein, Donald J.; Hoffman, John P.; and Beesley, Harry J., 5,335,896, Cl. 266-236.000.
Behr GmbH & Co.: *See*—
Khelifa, Noureddine; and Burk, Roland, 5,335,719, Cl. 165-42.000.
Behrmann, Gregory P.; Smith, Dale; and Potter, William, to United States of America, Army. Focal plane array mount for a fiber optic detector system and related method of assembly. 5,337,389, Cl. 385-77.000.
Beiersdorf Aktiengesellschaft: *See*—
Nass, Martina; and Sacker, Heidi, 5,336,695, Cl. 521-109.100.
Beisang, Arthur A.: *See*—
Ersek, Robert A.; Beisang, Arthur A.; and Beisang, Arthur A., III, 5,336,263, Cl. 623-11.000.
Beisang, Arthur A., III: *See*—
Ersek, Robert A.; Beisang, Arthur A.; and Beisang, Arthur A., III, 5,336,263, Cl. 623-11.000.
Beisswenger, Hans; Eschenburg, Jochim; and Loffler, Johannes, to Metallgesellschaft AG. Process for making cement using low-grade fuels. 5,336,317, Cl. 106-745.000.
Belanger, Inc.: *See*—
Belanger, Michael J., 5,335,710, Cl. 160-118.000.
Belanger, Michael J., to Belanger, Inc. Wind door assembly with edge stiffeners. 5,335,710, Cl. 160-118.000.
Belfiore, Kathleen A.: *See*—
Coffindaffer, Timothy W.; Bartolo, Robert G.; and Belfiore, Kathleen A., 5,336,419, Cl. 252-8.600.
Bell, Leonard; Madri, Joseph A.; Warren, Stephen L.; and Luthringer, Daniel J., to Yale University. Genetically engineered endothelial cells exhibiting enhanced migration and plasminogen activator activity. 5,336,615, Cl. 435-240.200.
Belland AG: *See*—
Pape, Richard F., 5,336,755, Cl. 528-486.000.
Bellussi, Giuseppe; Giusti, Aldo; and Zanibelli, Laura, to Eniricerche S.p.A.; and Snamprogetti S.p.A. Dehydroisomerisation catalyst and its use in the preparation of isobutene from N-butane. 5,336,830, Cl. 585-660.000.
Belvederi, Bruno: *See*—
Rizzoli, Salvatore; and Belvederi, Bruno, 5,335,766, Cl. 198-347.100.
Benazzi, Eric: *See*—
Joly, Jean-Francois; Marcilly, Christian; and Benazzi, Eric, 5,336,833, Cl. 585-731.000.
Benecke, Wolfgang: *See*—
Wagner, Bernhard; Benecke, Wolfgang; Riethmuller, Werner; and Schnakenberg, Uwe, 5,335,544, Cl. 73-517.00R.
Benignu, Edward, Jr. Tonneau/tent shelter. 5,335,960, Cl. 296-165.000.
Benko, Andrew T.; Swartzendruber, James A.; Bocksnick, John L.; and Clark, Gary, to Deere & Company. Hydraulic system for reel mower vehicles. 5,335,494, Cl. 60-428.000.
Benko, Larry: *See*—
Mauro, David; Kozlowski, Ronald; and Benko, Larry, 5,336,328, Cl. 127-33.000.
Benn, Frederick R.: *See*—
McAuliffe, Charles A.; and Benn, Frederick R., 5,336,819, Cl. 585-240.000.
Bennett, LaVon L. Dual action cocking mechanism for adjustable biopsy device. 5,335,672, Cl. 128-754.000.
Benoit, Marc; Demoute, Jean-Pierre; and Girodeau, Jean-Marc, to Roussel-Uclaf. 2,2-dimethyl-3-(but-1-en-3-ynyl)-cyclopropane carboxylates. 5,336,670, Cl. 514-63.000.
Benzoni, Albert M.; and Dautartas, Mindaugas F., to AT&T Bell Laboratories. Single in-line optical package. 5,337,398, Cl. 385-90.000.
Bergen, Gary R.: *See*—
Mirshafiee, David; and Bergen, Gary R., 5,335,950, Cl. 292-356.000.
Berget, Peter; Engler, Michael; Highlander, Sarah; and Weinstock, George, to Board of Regents, The University of Texas System. Methods and compositions for the treatment and diagnosis of shipping fever. 5,336,491, Cl. 424-190.100.
Bergman, Rolf S.: *See*—
Strok, Jack M.; Bergman, Rolf S.; and Ingold, John H., 5,336,968, Cl. 313-571.000.
Bergmann, Erich: *See*—
Karner, Johann; and Bergmann, Erich, 5,336,326, Cl. 118-723.0HC.
Bergner, Joao, to Robert Bosch GmbH. Oscillating grinder. 5,335,455, Cl. 51-170.0MT
Berkovsky, Janette; and Baer, Scott, to Kaspar Wire Works, Inc. Vending machine data processing system. 5,337,253, Cl. 364-479.000.
Berktold, Klaus; Gunther, Kurt; and Egloff, Anton, to Sulzer Rueti AG. Method of restarting a loom after stoppage. 5,335,698, Cl. 139-1.00E.
Berman, Karen F.: *See*—
de Costa, Brian R.; Iadarola, Michael J.; Rice, Kenner C.; Rothman, Richard B.; and Berman, Karen F., 5,336,483, Cl. 424-1.850.
Bernard, Bruno: *See*—
Balhadere, Aline; Bernard, Bruno; Moreau, Jacques A.; Mouricou, Isabelle; and Robin-Brosse, Christian, 5,336,522, Cl. 427-226.000.
Bernart, Frances: *See*—
Sedlack, Mark; and Bernart, Frances, 5,335,964, Cl. 297-256.130.
Bernier, Jacques, to Societe Nationale Elf Aquitaine. Plant for producing cold by solid/gas reaction, reactor comprising means of cooling. 5,335,519, Cl. 62-481.000.
Berry, Edward J.: *See*—
Karlyn, William M.; Pink, Frederick C.; Lamarre, William L.; and Berry, Edward J., 5,335,594, Cl. 101-35.000.
Berzofsky, Jay A.; Hosmalin, Anne; Clerici, Mario S.; Germain, Ronald N.; Shearer, Gene; Moss, Bernard; and Pendleton, Charles D., to

United States of America, Health and Human Services. Peptides stimulating cytotoxic T cells immune to HIV RT. 5,336,758, Cl. 530-326.000.
Besozzi, Arthur R.: *See*—
Thomas, Richard E.; and Besozzi, Arthur R., 5,336,993, Cl 324-158.100.
Bespak Plc: *See*—
Cater, Miro S., 5,335,830, Cl. 222-153.000.
Beth Israel Hospital Association, The: *See*—
Strom, Terry B., 5,336,489, Cl. 424-85.200.
Bethlehem Steel Corporation: *See*—
Idstein, Donald J.; Hoffman, John P.; and Beesley, Harry J., 5,335,896, Cl. 266-236.000.
Betz Laboratories, Inc.: *See*—
DiAngelo, Nancy A., 5,336,414, Cl. 210-698.000.
Betz, Michael A., to Sauer Inc. Electromagnetic clutch driven steerable axle. 5,335,746, Cl. 180-248.000.
Bewer, Terry: *See*—
Moss, Mary G.; Bewer, Terry; Cuzmar, Ruth M.; Hawley, Dan W.; and Flaim, Tony D., 5,336,925, Cl. 257-643.000.
Beyaert, Daniel; Meyns, Ignace; Sampers, Dirk; and Vandeweghe, Michel, to Picanol N.V., naamloze vennootschap. Height adjusting device for weaving device for machine harness elements. 5,335,699, Cl. 139-82.000.
Bhargava, Sanjai: *See*—
Lee, Lin-Nan; Rao, Ashok K.; and Bhargava, Sanjai, 5,337,085, Cl. 348-398.000.
Bic Corporation: *See*—
Badr, Iskandar; and Chiswell, Edgar B., 5,336,006, Cl. 401-105.000.
Bicksler, James J.: *See*—
Sarantakis, Dimitri; Bicksler, James J.; Ellingboe, John W.; and Nikaido, Madelene, 5,336,677, Cl. 514-256.000.
Biedermann Motech GmbH: *See*—
Lengyel, Gabor, 5,336,161, Cl. 602-26.000.
Biedscheid, May J.: *See*—
Richter, Francis L.; Pedersen, Daniel E.; Biedscheid, May J.; and Fredell, Dale L., 5,336,500, Cl. 424-405.000.
Bilco Tools, Inc.: *See*—
Penisson, Dennis J., 5,335,756, Cl. 188-67.000.
Bilei, Mario; Kirschner, Stefan; Ogawa, Takeo; and Noritou, Kazuaki, to Iveco Fiat S.p.A.; and Nissan Diesel Motor Co., Ltd. Engine comprising a continuous braking device, particularly for an industrial vehicle. 5,335,636, Cl. 123-321.000.
Bio Merieux: *See*—
Monget, Daniel, 5,336,600, Cl. 435-34.000.
Biomagnetic Technologies, Inc.: *See*—
Vanesky, Frank W.; Isaacson, Chris A.; and Christie, Bert M., 5,335,464, Cl. 52-173.100.
BioSeparations, Inc.: *See*—
Egen, Ned B.; Twitty, Garland E.; and Sammons, David W., 5,336,387, Cl. 204-301.000.
Biotronik Mess- und Therapiegerate GmbH & Co., Ingenieurburo Berlin: *See*—
Schaldach, Max, 5,336,243, Cl. 607-18.000.
Birdsong, Esau. Nail technician's ventilator. 5,336,128, Cl. 454-56.000.
Birtcher Medical Systems, Inc.: *See*—
Holmes, J. Stephen; and Lamartina, Timothy, 5,336,238, Cl. 606-208.000.
Bishop, Timothy E.: *See*—
Coady, Clive J.; Poklacki, Erwin S.; Zimmerman, John M.; Bishop, Timothy E.; and Derer, John L., 5,336,563, Cl. 428-375.000.
Biswas, Dipak R.; and Pan, Anpei, to Fiberguide Industries. Fiber optic cylindrical diffuser. 5,337,381, Cl. 385-36.000.
BJ Services Company: *See*—
Dawson, Jeffrey C.; and Wood, William R., 5,336,316, Cl. 106-724.000.
Bjorkman, Bengt A. S. Tanker vessel. 5,335,615, Cl. 114-74.00R.
Blackwell, Russell. Lure protection device. 5,335,441, Cl. 43-42.360.
Blair, Edward J.: *See*—
Taravella, Philip; Blair, Edward J.; Domanski, Ronald S.; and Shippell, Joseph C., 5,335,789, Cl. 206-518.000.
Blais, Edmund J.: *See*—
Helms, Jeffrey H.; Holubka, Joseph W.; and Blais, Edmund J., 5,337,184, Cl. 359-270.000.
Blake, David R.: *See*—
Good, Peter A.; Morris, Christopher J.; Claxson, Andrew W. D.; and Blake, David R., 5,336,248, Cl. 607-90.000.
Blake, Ralph S.: *See*—
Corallo, Cheryl F.; Sandor, Robert B.; and Blake, Ralph S., 5,336,464, Cl. 264-540.000.
Blanc, Henri: *See*—
Baldy, Andre ; Barrois, Gerard; Blanc, Henri; and Dominiak, Marcel, 5,335,453, Cl. 51-67.000.
Blanchard, Gilbert; and Ferre, Gilbert, to Rhone-Poulenc Chimie. Ammoxidation of saturated hydrocarbons. 5,336,804, Cl. 558-319.000.
Bleichert, Horst-Peter: *See*—
Busack, Hans-Jurgen; Kaross, Klaus; Lindner, Bernd; Gambert, Rudolf; and Bleichert, Horst-Peter, 5,336,390, Cl. 204-431.000.
Blewett, Jeffrey J.: *See*—
Green, David T.; Bolanos, Henry; Blewett, Jeffrey J.; Ratcliff, Keith; Viola, Frank J.; and Sherts, Charles R., 5,336,232, Cl. 606-151.000.
Blischke, Frank; Schneider, Erich; and Schnaibel, Eberhard, to Robert Bosch GmbH. Method and arrangement for determining the storage capacity of a catalytic converter. 5,335,538, Cl. 73-118.100.
Bliss, Ronald E.: *See*—
Murphy, Christopher J.; and Bliss, Ronald E., 5,335,777, Cl. 198-502.300.
Blomqvist, Kaj; Mustonen, Mika; Saarelainen, Asko; and Merilainen, Pekka, to Instrumentarium Corporation. Method and apparatus for delivering a stable gas mixture to a patient. 5,335,653, Cl. 128-204.180
Blonski, Robert P.: *See*—
Byrne, Christine J.; Blonski, Robert P.; and Welch, John J., 5,336,312, Cl. 106-479.000.
Bluenox Japan Kabushiki Kaisha: *See*—
Saito, Hirohisa; Hoblyn, Jeremy P.; and Abe, Etsuo, 5,336,081, Cl. 431-4.000.
Blum, Albert. Ground effect vehicle. 5,335,742, Cl. 180-117.000.
Blum, Harald: *See*—
Schneider, Volker; Blum, Harald; Kubitza, Werner; and Probst, Joachim, 5,336,711, Cl. 524-507.000.
Board of Regents, The University of Texas System: *See*—
Berget, Peter; Engler, Michael; Highlander, Sarah; and Weinstock, George, 5,336,491, Cl. 424-190.100.
Board of Supervisors of Louisiana State University and Agricultural and Mechanical College: *See*—
Southern, Lincoln L., Jr.; and Page, Timothy G., 5,336,672, Cl. 514-188.000.
BOC Group, Inc., The: *See*—
Lee, Ron C., 5,335,503, Cl. 62-50.100.
Bocksnick, John L.: *See*—
Benko, Andrew T.; Swartzendruber, James A.; Bocksnick, John L.; and Clark, Gary, 5,335,494, Cl. 60-428.000.
Bode, Karl-Heinz: *See*—
Ruthrof, Klaus; Jax, Peter; Bode, Karl-Heinz; and Gunther, Klaus, 5,335,535, Cl. 73-40.700.
Bodin, Marie-Josephe A., to Societe Sochata. Process for the electrophoretic deposition of metal powder for the recoating of a part by diffusion brazing, and electrophoresis bath for use therein. 5,336,382, Cl. 204-181.600.
Boehlke, Donald W.: *See*—
Proos, Gary K.; Sarver, Theodore M.; and Boehlke, Donald W., 5,335,935, Cl. 280-728.00B.
Boehringer Mannheim GmbH: *See*—
Brinkmann, Ulrich; Mattes, Ralf; and Buckel, Peter, 5,336,602, Cl. 435-69.100.
Boehringer Mannheim Italia S.p.A.: *See*—
Gandolfi, Carmelo A.; De Cillis, Giampiero; Long, Giorgio; and Gallico, Licia, 5,336,676, Cl. 514-222.500.
Boeing Company, The: *See*—
Opp, Fred W., 5,335,893, Cl. 248-635.000.
Boesten, Wilhelmus H. J.; and de Heij, Nicolaas A., to DSM N.V. Process for preparing an α-amino acid, the corresponding ester and amide. 5,336,805, Cl. 562-444.000.
Bogdanor, James M.: *See*—
Pryor, James N.; Bogdanor, James M.; and Welsh, William A., 5,336,794, Cl. 554-206.000.
Boge AG: *See*—
Knecht, Heinz; and Beck, Hubert, 5,335,757, Cl. 188-299.000.
Bogineni, Naidu C. R.: *See*—
Sridhar, Ramalingam; Kim, Seokjin; Shin, Yong-Chul; and Bogineni, Naidu C. R., 5,336,937, Cl. 307-201.000.
Bogorad, Lev: *See*—
Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Aluma, Zvi, 5,336,979, Cl. 315-362.000.
Bohm, Stefan; and Marhold, Albrecht, to Bayer Aktiengesellschaft. Process for preparing 1-fluorocyclopropyl methyl ketone. 5,336,809, Cl. 568-354.000.
Bohme, Reinhard D., to James River Paper Company, Inc. Heat sealable paper and method for its manufacture. 5,336,528, Cl. 427-361.000.
Bohning, Rainer, to Deutsche Aerospace Airbus GmbH. Aircraft wing having a super critical profile and a venting device for reducing compression shock. 5,335,885, Cl. 244-204.000.
Bohrer, Kathryn A.: *See*—
Baker, David C.; Bohrer, Kathryn A.; Flurry, Greogory A.; Lucas, Peter; and Rhyne, James R., 5,337,412, Cl. 395-275.000.
Boie, Robert A.; and Miller, Gabriel L., to AT&T Bell Laboratories. Capacitive proximity sensors. 5,337,353, Cl. 379-388.000.
Boitiaux, Jean-Paul; De Bonneville, Jean; Burzynski, Jean-Pierre; Leger, Gerard; Le Peltier, Fabienne; and Martino, Germain, to Institut Francais Du Petrole. Continuous process for the dehydrogenation of paraffinic to olefinic hydrocarbons. 5,336,829, Cl. 585-659.000.
Bolanos, Henry: *See*—
Green, David T.; Bolanos, Henry; Blewett, Jeffrey J.; Ratcliff, Keith; Viola, Frank J.; and Sherts, Charles R., 5,336,232, Cl 606-151.000.
Boller, Peter K., to Lily Cups Inc. Drinking vessel lid having a defined straw puncturable area. 5,335,812, Cl. 220-709.000.
Bollinger, L. David: *See*—
Zarowin, Charles B.; and Bollinger, L. David, 5,336,355, Cl 156-345.000.
Bonacci, Frank. Combination seat cushion and life vest particularly adapted to an aircraft chair. 5,335,882, Cl. 244-118.500.
Bonde, Randall W. Model airplane builders jig. 5,335,900, Cl. 269-51.000
Bondurant, Louis E. Non-alcohol fountain solutions. 5,336,302, Cl. 106-2.000.
Bonham, Edward L.: *See*—
Lorden, Paul R.; and Bonham, Edward L., 5,335,578, Cl. 86-45.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Bonnet, Georges; Commault, Yves; Roquencourt, Jacques; and Sehan, Alain, to Thomson-CSF. Slot hyperfrequency antenna with a structure of small thickness. 5,337,065, Cl. 343-767.000.

Bonwell, Don; and Veal, Wayne. Self adhesive dental floss dispenser. 5,335,798, Cl. 211-65.000.

Borchelt, Earl F.; and Parker, Thomas E., to Raytheon Company. SAW device and method of manufacturing. 5,337,026, Cl. 333-150.000.

Borden, Mary E. Decorative framing border or enclosure device. 5,335,433, Cl. 40-152.000.

Borg-Warner Automotive GmbH: *See*—
Leitz, Hermann, deceased, 5,335,761, Cl. 192-45.100.

Borghi, Enzo, to X-Trode S.r.l. Adaptor device for unipolar electrode catheters. 5,336,251, Cl. 607-116.000.

Borod, Murray. Hygienic spray bottle. 5,335,855, Cl. 239-152.000.

Borostyan, David M.: *See*—
Borostyan, Stephen; and Borostyan, David M., 5,337,121, Cl. 355-57.000.

Borostyan, Stephen; and Borostyan, David M., to Xerox Corporation. Variable magnification copying apparatus. 5,337,121, Cl. 355-57.000.

Borutta, Richard: *See*—
Basavanhally, Nagesh R.; Borutta, Richard; and Jekkal, Edward W., 5,337,384, Cl. 385-54.000.

Borzatta, Valerio; Scrima, Roberto; and Vignali, Graziano, to Ciba-Geigy Corporation. Piperidine-triazine compounds for use as stabilisers for organic materials. 5,336,706, Cl. 524-100.000.

Borzi, Enzo. Pelmet support structure which provides for longitudinal adjustment. 5,335,709, Cl. 160-39.000.

Bosman, Antonie J.; Vink, Teunis J.; van Dijk, Richard C.; and Huisman, Frederikus R. J., to U.S. Philips Corporation. Semiconductor device having an insulating substrate and Schottky diodes. 5,336,905, Cl. 257-54.000.

Boston Scientific Corporation: *See*—
Durgin, Russell F., Jr.; Rowland, Christopher A.; Sullivan, Roy H.; and Vergano, Michael G., 5,336,222, Cl. 606-50.000.

Boteler, William C., to Hubbell Incorporated. Male electrical plug assembly with increased electrical creepage distance between contacts. 5,336,116, Cl. 439-690.000.

Botsolas, Carol M.: *See*—
Botsolas, Chris J., 5,335,697, Cl. 138-149.000.

Botsolas, Chris J., to Botsolas, Carol M. Pipe insulation end cap. 5,335,697, Cl. 138-149.000.

Bouleau, Jean-Paul A.: *See*—
Guillot, Gerard L. H.; and Bouleau, Jean-Paul A., 5,337,037, Cl. 337-363.000.

Boulissiere, Luc: *See*—
Krawczyk, Rodolphe; Cerutti-Maori, Guy; and Boulissiere, Luc, 5,337,189, Cl. 359-850.000.

Bouzianne, Michel: *See*—
Mouterde, Renaud; and Bouzianne, Michel, 5,335,580, Cl. 89-47.000.

Bov, Raphael F., Jr.: *See*—
Hubble, Fred F., III; Weber, Michael E.; Abowitz, Gerald; Bov, Raphael F., Jr.; Swales, Michael G.; and Eakin, Paul W., 5,337,122, Cl. 355-208.000.

Bovone, Luigi. Method and apparatus for bevelling interior angles of sheets of colored or non-colored plain glass, plate glass or flattened glass, and the product obtained. 5,336,537, Cl. 428-34.000.

Bow, Clark F.: *See*—
Kaufman, Stephen B.; DiGianfilippo, Aleandro; Sager, Tamara L.; Bow, Clark F.; and DeVito, Ralph J., 5,335,816, Cl. 221-13.000

Bowe, Edwin A.; Klein, E. F., Jr.; and Boysen, Philip G., to Salter Laboratories. Method and apparatus for inhalation of treating gas and sampling of exhaled gas for quantitative analysis. 5,335,656, Cl. 128-207.180.

Bowen, Michael W.; Ghorashi, Hamid M.; and Yang, Hung H., to Du Pont de Nemours, E. I., and Company. Textile fibers of sulfonated poly(p-phenylene terephthalamide). 5,336,734, Cl. 525-420.000.

Bowler, Paul R.; Mackay, John; Lammers, Shawn D.; and Fulton, Robert H., to TTC Truck Tech Corp. Tire monitoring apparatus and method. 5,335,540, Cl. 73-146.500.

Bowman, Bruce R.; and Stasz, Peter, to Edentec. Medical monitor with input regulation. 5,335,666, Cl. 128-723.000.

Bowman, Kirk: *See*—
Rawlings, Richard T.; Bowman, Kirk; and Holton, Bradley R., 5,335,625, Cl. 119-74.000.

Boyce, C. Bradford: *See*—
Achord, Betty J.; and Boyce, C. Bradford, 5,336,816, Cl. 570-168.000.

Boyd, David W.; and Degi, Greg A., to Hewlett-Packard Company. Variable speed single pass color optical scanner. 5,336,878, Cl 250-208.100.

Boysen, Philip G.: *See*—
Bowe, Edwin A.; Klein, E. F., Jr.; and Boysen, Philip G., 5,335,656, Cl. 128-207.180.

BP Chemicals Limited: *See*—
Havas, Laszlo; Lalanne-Magne, Claudine; and Speakman, John G., 5,336,738, Cl. 526-82.000

Brach, Ulrich; and Thanisch, Klaus, to Creanova AG. Plastic closure for a container. 5,335,802, Cl. 215-235.000.

Bradley, Morgan J.: *See*—
Walburn, Douglas M.; Bradley, Morgan J.; Jones, John W.; Irlbeck, Robert D.; and Renn, Robert M., 5,336,095, Cl. 439-67.000

Braig, Manfred: *See*—
Maurer, Gerhard; Braig, Manfred; Auer, Raimund; Goebel, Christoph; Schwarz, Josef; and Voss, Thomas, 5,336,120, Cl 440-84.000

Brassington, Michael P.: *See*—
Gregory, Anne K.; Brassington, Michael P.; Wang, Shi-Qing; and Abt, Norman E., 5,337,279, Cl. 365-201.000.

Braum, William O.: *See*—
Chmielewski, Thomas; Molyneaux, David A.; and Braum, William O., 5,336,988, Cl. 324-76.190

Brede, Uwe: *See*—
Horr, Alfred; Reiss, Heinz; and Brede, Uwe, 5,335,600, Cl. 102-470.000.

Breed, Ben R., to Hughes Aircraft Company. Dipole detection and localization processing. 5,337,259, Cl. 364-559.000

Brenneman, Rodney A.: *See*—
Rosenbluth, Robert F.; Lenker, Jay A.; Greene, George R.; Brenneman, Rodney A.; and Maley, Patrick A., 5,336,208, Cl. 604-329.000.

Brennen, Kenneth R.; Williams, Terrell M.; and Gabler, Robert A., to Medtronic, Inc. Defibrillation lead employing electrodes fabricated from woven carbon fibers. 5,336,254, Cl. 607-129.000.

Brewer Science, Inc.: *See*—
Moss, Mary G.; Bewer, Terry; Cuzmar, Ruth M.; Hawley, Dan W.; and Flaim, Tony D., 5,336,925, Cl. 257-643.000

Bridger, Keith: *See*—
Sutherland, Audrey E.; Bridger, Keith; Fiore, Eric M.; Christodoulou, Julie A.; Bailey, Alex E.; and Gelb, Allan S., 5,337,209, Cl. 361-321.500.

Bridgestone Corp.: *See*—
Ogawa, Fumio; and Nihei, Norio, 5,337,137, Cl. 356-4.000.
Okufuji, Yukitaka, 5,335,415, Cl. 29-820.000.

Brinkmann, Ulrich; Mattes, Ralf; and Buckel, Peter, to Boehringer Mannheim GmbH. Expression enhancer and use thereof to increase the yield in the expression of recombinant genes. 5,336,602, Cl. 435-69.100.

Brinton, Charles C., Jr.; and To, Sam C., to Bactex, Inc. *Haemophilus influenzae* pilus vaccines. 5,336,490, Cl. 424-242.100.

Briscoe, Roderick E.: *See*—
Rom, Paul F.; Briscoe, Roderick E.; and Williams, Christopher R., 5,336,193, Cl. 604-171.000.

Bristol, Brent L.: *See*—
Tseng, Wu-Yang; Bristol, Brent L.; Hetico, Rolf R.; and Glynn, Christopher C., 5,335,920, Cl. 277-1.000.

British Petroleum Company p.l.c., The: *See*—
Brophy, John H.; and Wade, Steven R., 5,336,826, Cl. 585-500.000
Hall, Anthony H. P.; and Winstanley, Alistair W., 5,336,648, Cl. 502-61.000.

British Technology Group Ltd.: *See*—
Good, Peter A.; Morris, Christopher J.; Claxson, Andrew W. D.; and Blake, David R., 5,336,248, Cl. 607-90.000.
Mansfield, Peter; Guilfoyle, David N.; and Ordidge, Roger J., 5,336,999, Cl. 324-309.000.

Bronstein, Irena; Edwards, Brooks; and Voyta, John, to Tropix, Inc. Membrane for chemiluminescent blotting applications. 5,336,596, Cl. 435-6.000.

Brookman, Marc A., to Standard Products Company, The. Lighting strip system. 5,337,225, Cl. 362-145.000.

Brookman, Marc A.: *See*—
Gustafson, Thomas L.; and Brookman, Marc A., 5,336,345, Cl. 156-67.000.

Brooks, Dewey L. Device for generating random numbers of differing lengths. 5,335,912, Cl. 273-144.00B.

Brooks, Frank. Grip lock assembly. 5,335,521, Cl. 70-298.000.

Brophy, John H.; and Wade, Steven R., to British Petroleum Company p.l.c., The. Oxidation of methane over heterogeneous catalysts. 5,336,826, Cl. 585-500.000.

Brophy, Mark E.; Rhodes, Robin B.; and Counterman, Wayne S., to ABB Air Preheater, Inc. Support of ceramic catalyst. 5,336,471, Cl. 422-175.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Okimoto, Satoshi; Ohara, Kiyotaka; Seki, Takao; and Kato, Hifumi, 5,337,158, Cl. 358-426.000.

Broussard, Thomas R.: *See*—
Nadler, Kirk C.; Broussard, Thomas R.; and Pitre, Joseph K., 5,336,473, Cl. 422-193.000.

Brown, David J. Support mechanism for a bed. 5,335,385, Cl. 5-662.000.

Brown, David L.: *See*—
Scanlon, Christopher; and Brown, David L., 5,335,775, Cl. 206-63.300.

Brown, Jacob E.: *See*—
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., 5,336,335, Cl. 136-258.000.

Brown, Lawrence S.; Dewey, Douglas W.; and Hall, Tharon, to International Business Machines Corporation. Method and system for maintaining directory consistency in magneto-optic media. 5,337,197, Cl. 360-48.000.

Brown, Lawrence W. Toy fishing apparatus. 5,335,911, Cl. 273-140.000.

Brown, Robert K.: *See*—
Toepfer, Craig B.; and Brown, Robert K., 5,336,934, Cl. 307-10.100.

Brown, Ronald L.; and Schwartz, Gretchen, to Quality Biological, Inc. Soft agar assay and kit. 5,336,614, Cl. 435-240.200.

Brown, Thomas H.: *See*—
Richards, Kenneth E., Sr.; and Brown, Thomas H., 5,335,924, Cl 280-11.200.

Browne, John, to Mark IV Industries Limited. Electromagnetic shutter 5,337,077, Cl. 345-109.000.

Bru-Mel Corporation: *See*—
Ernster, Melvin J., 5,336,933, Cl. 290-55.000.

Bruce, James M.: *See*—
Baxter, Michael R.; and Bruce, James M., 5,335,624, Cl. 119-51.500.

Bruckner, Hans-Dieter; and Subrod, Ines, to Merck Patent Gesellschaft mit bschrankter Haftung. Process for the preparation of composite pigments. 5,336,310, Cl. 106-403.000.

Bruder, Herbert, to Siemens Aktiengesellschaft. Method for fast imaging in nuclear magnetic resonance tomography. 5,337,000, Cl. 324-309.000.

Brunetaud, Jean-Marc: *See*—
Buys, Bruno; Sozanski, Jean-Pierre; Mordon, Serge; Brunetaud, Jean-Marc; and Moschetto, Yves, 5,336,217, Cl. 606-9.000.

Brustad, John R., to Applied Medical Resources Corporation. Potted endoscope. 5,335,647, Cl. 128-4.000.

Bryan, Philip S.: *See*—
Smith, Kyle; Fisher, Barbara J.; Bryan, Philip S.; and Hoderlein, Paul M., 5,336,893, Cl. 250-483.100.

Bryant, Charles P.: *See*—
Pialet, Joseph W.; Lal, Kasturi; and Bryant, Charles P., 5,336,423, Cl. 252-76.000.

Bryant, Frank R.: *See*—
Chan, Tsiu C.; Bryant, Frank R.; and Jorgenson, Lisa K., 5,336,916, Cl. 257-377.000.

Bryant, James D., deceased; and by Bryant, Sylvia L., executrix. Swingable chair. 5,335,970, Cl. 297-344.220.

Bryant, Sylvia L., executrix: *See*—
Bryant, James D., deceased; and Bryant, Sylvia L., executrix, 5,335,970, Cl. 297-344.220.

Buchholz, Dale R.; Doss, William K.; Robbins, Karen E.; Yednak, Mark A.; and Hamilton, R. Lee, Jr., to Motorola, Inc. Method and apparatus for preserving packet squencing in a packet transmission system. 5,337,313, Cl. 370-94.100.

Buchwald, Hans: *See*—
Barthelemy, Pierre; Paulus, Mireille; Buchwald, Hans; Hellmann, Joachim; and Raszkowski, Boleslaus, 5,336,429, Cl. 252-171.000.

Buck, Jack B.: *See*—
Chen, Bor U.; Ghorbanali, Mehrdad; and Buck, Jack B., 5,337,396, Cl. 385-92.000

Buckel, Peter: *See*—
Brinkmann, Ulrich; Mattes, Ralf; and Buckel, Peter, 5,336,602, Cl. 435-69.100.

Buckley, Robert M.: *See*—
Najle, Esteban G.; and Buckley, Robert M., 5,337,014, Cl 324-613.000

Budd Company, The: *See*—
Hannum, Joseph R., 5,336,417, Cl. 210-803.000.

Buhl, Hans-Wilhelm: *See*—
Wunderlich, Klaus; Neubrand, Franz; Schmidt, Erwin; Buhl, Hans-Wilhelm; Wirbeleit, Friedrich; and Hanauer, Horst, 5,335,500, Cl. 60-609.000.

Bullock, Donald F.: *See*—
Atherton, Kenneth W.; Chevalier, Gerard; Galletero, Jokin; Bullock, Donald F.; Crittenden, Curtis W.; Elmore, David D.; and Germer, Warren R., 5,336,991, Cl. 324-142.000.

Bunczk, Charles J.; Burke, Peter A.; Camp, William R.; and Orehotsky, John L., to Kiwi Brands, Inc. Lavatory cleansing and sanitizing blocks containing a halogen release bleach and a silicone oil stabilizer 5,336,427, Cl. 252-104.000

Bundschuh, Robert L.: *See*—
Dunning, Walter B.; and Bundschuh, Robert L., 5,335,858, Cl. 239-333.000.

Bundy Corporation: *See*—
Crowdus, Robert A.; Knirk, Gary L.; and Silverson, John K., 5,335,529, Cl. 72-404.000.

Bunte, Reinhard; Gress, Wolfgang; Nagorny, Ulrich; and Gorzinski, Manfred, to Henkel Kommanditgesellschaft auf Aktien. Use of partial esters of oligoglycerols with fatty acids as pigment dispersants for water-based lacquer dispersions. 5,336,313, Cl. 106-504.000

Burchardt, Udo: *See*—
Bechthold, Hans-Christoph; Burchardt, Udo; Ernst, Rainer; and Vogeler, Karsten, 5,336,470, Cl. 422-120.000.

Burdick, Robert L.: *See*—
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Merrifield, David L.; Molloy, James J.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,337,032, Cl. 355-260.000.

Burdine, Clyde. Self-propelled trench box. 5,336,023, Cl. 405-283.000.

Burgess, Marvin A.: *See*—
Groux, Paul D.; and Burgess, Marvin A., 5,336,247, Cl. 607-72.000.

Burgoyne, William F., Jr.; and Casey, Jeremiah P., to Air Products & Chemicals, Inc. Crosslinking agents for coating and adhesive applications. 5,336,807, Cl. 564-153.000.

Burk, Roland: *See*—
Khelifa, Noureddine; and Burk, Roland, 5,335,719, Cl. 165-42.000.

Burke, Peter A.: *See*—
Bunczk, Charles J.; Burke, Peter A.; Camp, William R.; and Orehotsky, John L., 5,336,427, Cl. 252-104.000.

Burle Technologies, Inc.: *See*—
Tomasetti, Charles M.; Helvy, Fred A.; and Kaiser, Donald B., 5,336,967, Cl. 313-533.000.

Burlett, Donald J.: *See*—
Sandstrom, Paul H; Bauer, Richard G.; Burlett, Donald J.; and Sinsky, Mark S., 5,336,730, Cl. 525-332.600.

Burlington, Michael: *See*—
Harris, Edward M.; and Burlington, Michael, 5,335,838, Cl. 227-132.000.

Burmer, Christian, to Siemens Aktiengesellschaft. Method for contacting conductive structures in VLSI circuits. 5,336,636, Cl. 437-173.000.

Burnham, Warren R. Method of making ultra small diameter catheters and of reinforced tubular product. 5,335,410, Cl. 29-452.000.

Burns, James E.: *See*—
Dorricott, Martin R.; Gillard, Clive H.; Richards, John W.; Morita, Tsuneo; Galt, James J.; David, Morgan W. A.; Burns, James E.; and Varsani, Shima R., 5,337,154, Cl. 348-448.000.

Burton, John H.: *See*—
Tihon, Claude; Cook, Timothy C.; Burton, John H.; and Svejkovsky, Ronald, 5,335,669, Cl. 128-736.000.

Burzynski, Jean-Pierre: *See*—
Boitiaux, Jean-Paul; De Bonneville, Jean; Burzynski, Jean-Pierre; Leger, Gerard; Le Peltier, Fabienne; and Martino, Germain, 5,336,829, Cl. 585-659.000.

Busack, Hans-Jurgen; Kaross, Klaus; Lindner, Bernd; Gambert, Rudolf; and Bleichert, Horst-Peter, to Dragerwerk AG. Electrochemical gas sensor with disk-shaped electrodes, which are also electrical contact leads. 5,336,390, Cl. 204-431.000.

Busch, Lyndon J. Drape for use by anesthesia provider. 5,335,677, Cl. 128-852.000.

Busch, Paul F., to Anchor Pad International. Removable adhesively mounted retention plate. 5,335,892, Cl. 248-551.000.

Buse, Henry: *See*—
Focke, Heinz; and Buse, Henry, 5,336,040, Cl. 414-751.000.

Busse, Lawrence J.: *See*—
Oakley, Clyde G.; Busse, Lawrence J.; Dietz, Dennis R.; Shishilla, John E.; and Ranalletta, Joseph V., 5,335,663, Cl. 128-662.000.

Bussmann, Winfried: *See*—
Zollner, Jorg-Peter; and Bussmann, Winfried, 5,336,052, Cl. 417-20.000.

Butcher, Steven J.: *See*—
Hobby, James D.; and Butcher, Steven J., 5,336,883, Cl. 250-227.170.

Buys, Bruno; Sozanski, Jean-Pierre; Mordon, Serge; Brunetaud, Jean-Marc; and Moschetto, Yves, to Institut National de la Sante et de la Recherche Medicale (INSEPM). Process for treatment by irradiating an area of a body, and treatment apparatus usable in dermatology for the treatment of cutaneous angio dysplasias. 5,336,217, Cl. 606-9.000.

Byeon, Sang G.: *See*—
Chung, Ji H.; Wee, Jai K.; Lee, Doo H.; and Byeon, Sang G., 5,336,379, Cl. 204-129 300.

Byker, Harlan J., to Gentex Corporation. Electrochromic devices with bipyridinium salt solutions. 5,336,448, Cl. 252-583.000.

Byoung-Moo, Lee, to Samsung Electronics Co., Ltd. Regenerative heat pump. 5,335,506, Cl. 62-6.000.

Byrne, Christine J.; Blonski, Robert P.; and Welch, John J., to Ferro Corporation. Bismuth-containing colorants. 5,336,312, Cl 106-479.000.

C-Innovations, Inc.: *See*—
Cocks, Elijah E., 5,336,303, Cl. 106-14.050.

C-Power Companies, Inc.: *See*—
Maldanis, Algert J.; Courts, Robert I.; Dutkevitch, Dennis; and Mooney, David J., 5,335,818, Cl. 221-131.000.

Cahn, Robert W., to Rolls-Royce plc. Ni-Ti-Al alloys. 5,336,340, Cl. 148-409.000.

Caico, Vincenzo: *See*—
Carlomagno, Giovanni; Caico, Vincenzo; De Leonibus, Vittore; and Tereo, Edoardo, 5,336,288, Cl. 65-182.200.

Cain, Donald G.: *See*—
Alexander, Paul R., Jr.; Cain, Donald G.; Dougherty, Erika J.; and Thornburg, Theodore S., 5,336,286, Cl. 55-528.000.

Cain, John L.; and Lee, Chang-Ou, to VLSI Technology, Inc. New dry etch technique. 5,336,366, Cl. 156-643.000.

Cairns, Thomas M.; and Moroney, William N., to Ford Motor Company. Connector interface seal. 5,336,102, Cl. 439-272.000.

Calabrese, Frank A. Linear energy curtain. 5,335,626, Cl. 119-721.000

Calella, Patrick: *See*—
DeAngelis, Mario E.; Troast, Douglas; and Calella, Patrick, 5,337,383, Cl. 385-49.000.

Calgon Carbon Corporation: *See*—
McNamara, James D., 5,336,835, Cl. 585-820.000.

Calico Light Weapon Systems: *See*—
David, James C., 5,335,579, Cl. 89-34.000.

Camaggi, Giovanni; Chiarino, Dario; Fantucci, Mario; and Meazza, Giovanni, to Zambon Group S.p.A.; and Agrimont S.r.l. Compositions having herbicidal activity containing N-alkyl-amides as active ingredient. 5,336,664, Cl. 504-261.000.

Camarota, Rafael C.: *See*—
Popli, Sanjay; Pickett, Scott; Hawley, David; Moni, Shankar; and Camarota, Rafael C., 5,336,950, Cl. 307-465.000.

Camp, William R.: *See*—
Bunczk, Charles J.; Burke, Peter A.; Camp, William R.; and Orehotsky, John L., 5,336,427, Cl. 252-104.000.

Campbell, Chester D.; Harper, Sandra L.; Jain, Virender; Kenyon, Richard L.; Matthies, Alan; and Yabuki, Roy M., to Parker-Hannifin Corporation. Apparatus and method for detecting characteristics of a working fluid. 5,335,513, Cl. 62-228.300

VOL 1165 ISS 2 AG 9 1994 UMI

Campbell, Larry E., to Scientific Design Company, Inc. Catalyst for production of nitric acid by oxidation of ammonia. 5,336,656, Cl 502-329.000.

Campbell, Michael J. Collapsible support stand. 5,335,753, Cl 182-181.000.

Campbell, Thomas C.: *See*—
Anastase, Constantin; Nehren, William C.; Kissick, Russell C.; Campbell, Thomas C.; and Daily, Jay H., 5,335,523, Cl 68-16.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources: *See*—
Dubreuil, Alain, 5,336,389, Cl. 204-422.000.

Canadian Bionic Research Inc.: *See*—
Fitch, Frank, 5,337,364, Cl. 381-68.300.

Cancio, Leopoldo V.: *See*—
Wu, Pai-Chuan; Ryle, Thomas R.; and Cancio, Leopoldo V., 5,336,457, Cl. 264-171.000.

Cannondale Corporation: *See*—
Pong, Alex; and Pong, Skooks, 5,335,928, Cl. 280-259.000.

Canon Kabushiki Kaisha: *See*—
Kaihara, Shoji; and Haraguchi, Shousuke, 5,337,108, Cl. 354-218.000.
Mukaiya, Hitoshi, 5,337,115, Cl. 354-402.000.
Oyama, Eiji, 5,337,201, Cl. 360-68.000
Takakura, Hiroshi; and Komatsu, Toshihiko, 5,337,406, Cl. 395-148.000.
Watanabe, Norito, 5,336,983, Cl. 318-651.000.
Yaguchi, Tatsuya; and Tanaka, Koichi, 5,337,332, Cl. 375-94.000.

Cantone, Christine L.: *See*—
Ashton, Wallace T.; Cantone, Christine L.; Chang, Linda L., Maccoss, Malcolm; Chakravarty, Prasun K.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,336,778, Cl. 548-250.000.

Cantrell, Ralph A.: *See*—
Winstead, Charles D.; and Cantrell, Ralph A., 5,336,866, Cl 219-411.000.

Cantwell, John B.: *See*—
Humphries, Martyn; Nemcek, Jozef; Jaworzyn, Joseph F.; Cantwell, John B.; and Gerrard, John J., 5,336,728, Cl. 525-328.200.

Capek, Raymond G.; Greiner, Siegfried M.; and Tong, Hua S., to Zenith Electronics Corporation. CRT tension mask support structure. 5,336,964, Cl. 313-407.000.

Capon, Daniel J.; and Gregory, Timothy J., to Genentech, Inc. CD4 adheson variants. 5,336,603, Cl. 435-69.700.

Cappellino, Charles A.: *See*—
Ganzon, Nicolas W.; Cappellino, Charles A.; and Wilson, George, 5,336,048, Cl. 415-175.000.

Cappi, Angelo; and Rimondi, Renato, to A.W.A.X. Progettazione E Ricerca S.R.L. Flexible bag dispensing apparatus for use in supermarkets and the like. 5,335,485, Cl. 53-570.000.

Car Recycling Systems "CRS" B.V.: *See*—
Van Den Mosselaar, Franciscus L. M. T.; Termaten, Gerrit J.; and Reuser, Leonardus T. M., 5,335,406, Cl. 29-426.300.

Carbon Implants, Inc.: *See*—
Waits, C. Thomas; Stupka, Jonathan C.; Peters, T. Scott; and Schwartz, Alan S., 5,336,259, Cl. 623-2.000.

Cardiac Pacemakers, Inc.: *See*—
Dreher, Robert; Kelly, Dave; and Kraetz, Janis, 5,336,241, Cl. 607-5.000.

Carl Schmale GmbH & Co. KG: *See*—
Freermann, Johannes, 5,335,611, Cl. 112-153.000.

Carlomagno, Giovanni; Caico, Vincenzo; De Leonibus, Vittore; and Tereo, Edoardo, to Societa Italiana - SIV - S.p.A. Apparatus for the manufacture of sheets of glass having a complex shape. 5,336,288, Cl 65-182.200.

Carlsten, Bruce E.: *See*—
Sheffield, Richard L.; Carlsten, Bruce E.; and Young, Lloyd M., 5,336,972, Cl. 315-5.410.

Carmichael, Edward W.; and Legge, Robert B. Self-contained, clip-on engine operating time log. 5,337,003, Cl. 324-402.000.

Carnevale, Claudio: *See*—
Abate, Maurizio; Carnevale, Claudio; Nenzioni, Pietro; and Perotto, Aldo, 5,335,643, Cl. 123-679.000.

Caron, LaVerne A., to Eaton Corporati. Annular speed sensor with strain relief. 5,336,995, Cl. 324-174.000.

Carr, Dennis C.; McLeskey, Edward P.; and Sarnacki, Frank H., to International Business Machines Corporation. Electronic package. 5,337,219, Cl. 361-794.000.

Carroll, Terri A.; and Hasbani, Jacques E., to Pitney Bowes Inc. Flexible apparatus and method for applying customized rating adjustments to transaction charges. 5,337,246, Cl. 364-464.020.

Carter Day International, Inc.: *See*—
Hauch, David A., 5,335,792, Cl. 209-687.000.

Carter, Ronald W.: *See*—
Cunningham, Charles L.; and Carter, Ronald W., 5,337,256, Cl. 364-508.000.

Carus Corporation: *See*—
Richards, Bruce E.; Goodart, Tyrone G.; Vella, Philip A.; and Walton, John R., 5,336,431, Cl. 252-184.000.

Cascade Corporation: *See*—
House, Marshall K., 5,336,039, Cl. 414-621.000.

Caserta, Joseph N.; and Schlotthober, Nathan R., to ITT Corporation High light resolution control of an image intensifier tube. 5,336,881, Cl. 250-214.0VT.

Casey, Jeremiah P.: *See*—
Burgoyne, William F., Jr.; and Casey, Jeremiah P., 5,336,807, Cl. 564-153.000.

Casey, Jon A.; Divakaruni, Renuka S.; Natarajan, Govindarajan; Reddy, Srinivasa S. N.; and Sammet, Manfred, to International Business Machines Corporation. Ceramic via composition, multilayer ceramic circuit containing same, and process for using same. 5,336,444, Cl. 252-513.000.

Casio Computer Co., Ltd.: *See*—
Kinoshita, Satoshi; Nagashima, Sadao; and Yamada, Tooru, 5,335,664, Cl. 128-696.000.
Uchikura, Takao, 5,337,346, Cl. 379-58.000.

Casket Shells, Inc.: *See*—
Semon, Joseph R., 5,335,402, Cl. 27-2.000.

Caskey, Kenneth D.: *See*—
Venditto, James J.; and Caskey, Kenneth D., 5,335,724, Cl. 166-298.000.

Caspari, Richard B.; Roberts, Jeffrey G.; and Treace, James T. Knee joint prosthesis. 5,336,266, Cl. 623-20.000.

Cassidy, Barrie; McNab, David; and Rooney, James, to NovAtel Communications. System for securing mobile telephones from unauthorized transmission. 5,337,345, Cl. 379-58.000.

Castello, Rinaldo: *See*—
Tomasini, Luciano; and Castello, Rinaldo, 5,337,355, Cl. 379-413.000.

Castellucci, Nicholas T., to Northrop Corporation. Epoxy and amino trialkoxysilane reaction products. 5,336,748, Cl. 528-38.000.

Castillo, Leo S.; and Lo, Gordon G. Medical needle and needle sheath assembly. 5,336,199, Cl. 604-198.000.

Casto, Mark R.; Batten, Jeffrey A.; and Mathieu, Raymond J., to MAC Tools, Inc. Handle linkage. 5,335,586, Cl. 92-140.000.

Castonguay, Roger N.; Arnold, David; Morgan, Roger J.; Glabau, Frederic W.; Tucholski, Henry J.; and Reyes, Thomas T. B., to General Electric Company. Cost-efficient industrial-rated molded case breaker. 5,337,031, Cl. 335-201.000.

Cater, Miro S., to Bespak Plc. Pump dispenser for lotions and/or large doses of product. 5,335,830, Cl. 222-153.000.

Catoen, Bruce, to Husky Injection Molding Systems Ltd. Injection mold having a vented core. 5,336,078, Cl. 425-556.000.

Cavallini, Giorgio. Use of minoxidil for treating erectile impotence. 5,336,678, Cl. 514-275.000.

Caviar, Robert A., to Imperial Underground Sprinkler Co. Variable pressure regulating valve system. 5,335,688, Cl. 251-26.000.

Celleco Hedemora AB: *See*—
Andersson, Roine, 5,336,411, Cl. 210-512.100.

Center for Innovative Technology: *See*—
Fariss, Marc W., 5,336,485, Cl. 424-10.000.

Centrix, Inc.: *See*—
Discko, John J., Jr., 5,336,088, Cl. 433-90.000.

Century Products Company: *See*—
Sedlack, Mark; and Bernart, Frances, 5,335,964, Cl. 297-256.130.

Ceplina, Raymond E.: *See*—
Zaeske, Donald A.; Ceplina, Raymond E.; Weber, Rick V.; and Tweed, Gregory A., 5,335,480, Cl. 53-431.000.

Cerutti-Maori, Guy: *See*—
Krawczyk, Rodolphe; Cerutti-Maori, Guy; and Boulissiere, Luc, 5,337,189, Cl. 359-85[illegible]000.

Cesari, Verter: *See*—
Neri, Armando; Cesari, Verter; Roveri, Orlando; and Manservigi, Alberto, 5,335,951, Cl. 293-118.000.

Cha, Kichul; and Horch, Kenneth W., to University of Utah Research Foundation. Method and apparatus for determining body composition using bioelectrical impedance. 5,335,667, Cl. 128-734.000.

Chaenomeles, Inc.: *See*—
Willis, Tucker; and Cinquemani, James, Jr., 5,335,621, Cl. 116-173.000.

Chakravarty, Prasun K.: *See*—
Ashton, Wallace T.; Cantone, Christine L.; Chang, Linda L.; Maccoss, Malcolm; Chakravarty, Prasun K.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,336,778, Cl. 548-250.000.

Chalifoux, Paul R., to Wellesley Research Associates, Inc. Dental post construction. 5,336,092, Cl. 433-220.000.

Chan, Steven S.: *See*—
Saito, Yoshio; Lau, James C.; Chan, Steven S.; and Malmgren, Richard P., 5,336,992, Cl. 324-754.000.

Chan, Tsiu C.; Bryant, Frank R.; and Jorgenson, Lisa K., to SGS-Thomson Microelectronics, Inc. SRAM cell and structure with polycrystalline p-channel load devices. 5,336,916, Cl. 257-377.000.

Chaney, Raymond J., to Renishaw Transducer Systems, Limited. Two component straightness interferometer apparatus for measuring movements of parts of a machine. 5,337,145, Cl. 356-363.000.

Chang, Chung-Tai. Bed having a warming device. 5,335,381, Cl. 5-423.000.

Chang, Linda L.: *See*—
Ashton, Wallace T.; Cantone, Christine L.; Chang, Linda L.; Maccoss, Malcolm; Chakravarty, Prasun K.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,336,778, Cl. 548-250.000.

Chang, Pei K., to PepsiCo, Inc. Color-stable syrup and beverage compositions fortified with vitamin C, and methods of making such compositions. 5,336,510, Cl. 426-72.000.

Chang, Ting-Chen: *See*—
Huang, Ghin-Yuan; and Chang, Ting-Chen, 5,337,291, Cl. 368-75.000.

Chanteau, Pierre, to U.S. Philips Corporation. Connection device. 5,336,113, Cl. 439-581.000.

Chao, Chien C.: *See*—
Zarchy, Andrew S.; and Chao, Chien C., 5,336,834, Cl 585-737.000.

Chapman Lake Instruments, Inc.: *See*—
McDaniel, John M.; and Kiser, Michael W., 5,336,226, Cl 606-79.000

Chapman, Mark D.: *See*—
Weiss, Kenneth P.; DeRango, Mario F.; Schroeder, Daniel R.; Mutz, Leslie D.; Lacy, Brian W.; and Chapman, Mark D., 5,337,316, Cl. 371-20.500.

Charmilles Technologies SA: *See*—
Martin, Roland, 5,336,864, Cl. 219-69.180.

Charng, Cedric S. K., to China Wiper Special Rubber Co. Ltd. Dual-blade windshield-wiper assembly. 5,335,393, Cl. 15-250.410.

Chase, James: *See*—
Smith, Sidney T.; Chase, James; and Sonderman, Jeffrey R., 5,335,846, Cl. 229-120.320.

Chase, Peter D., to Louisiana Pacific Corporation. Tongue and groove board product. 5,335,473, Cl. 52-745.080.

Chater, Garry D.; and Wilson, George, to Rheem Australia Limited. Method of coating and testing a tank. 5,336,523, Cl. 427-231.000.

Chatterjee, Dilip K.: *See*—
Ghosh, Syamal K.; Chatterjee, Dilip K.; and Koziol, Dennis R., 5,336,282, Cl. 51-309.000.

Chaudhari, Sopan T.: *See*—
Choudhary, Vasant R.; Sansare, Subhash D.; and Chaudhari, Sopan T., 5,336,825, Cl. 585-500.000.

Checchi, Joseph C.: *See*—
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., 5,336,335, Cl 136-258.000.

Chee, Uriel H.: *See*—
Zenzen, Wendy J.; and Chee, Uriel H., 5,336,205, Cl. 604-280.000.

Chemical Lime Company: *See*—
McKennon, J. T.; Hains, Norman L.; and Hoffman, David C., 5,336,022, Cl. 405-263.000.

Chemical Research & Licensing Company: *See*—
Adams, John R., 5,336,841, Cl. 585-834.000.

Chen, Bor U.; Ghorbanali, Mehrdad; and Buck, Jack B., to Optical Communication Products, Inc. Conductive plastic optical-electronic interface module. 5,337,396, Cl. 385-92.000.

Chen, Chei-Jen: *See*—
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.

Chen, Chin-Yan, to Jong Ching Brushes Co., Ltd. Structure of foldable comb. 5,335,390, Cl. 15-185.000

Chen, Frank J.: *See*—
Cheradame, Herve M.; Lundberg, Robert D.; Chen, Frank J.; and Habimana, Jean de la Crois, 5,336,745, Cl. 526-347.100.

Chen, Fusen H. Anastomotic device. 5,336,233, Cl. 606-153.000

Chen, Jack, to Joong Chenn Industry Co., Ltd. Multipurpose gymnastic apparatus. 5,336,153, Cl. 482-137.000.

Chen, John Y., to Applied Elastomerics, Inc. Gelatinous elastomer articles. 5,336,708, Cl. 524-474.000.

Chen, Joseph. Oscillating mechanism for a crystal ball. 5,336,133, Cl. 472-6.000

Chen, Wen-Kuei. Trash can structure. 5,335,805, Cl. 220-400.000.

Cheng, Chan-Chi J.: *See*—
Josephson, Gregg R.; Shen, Ju; Darling, Roy D.; and Cheng, Chan-Chi J., 5,336,951, Cl. 307-465.000.

Cheng, Tzu-Keng. Infrared massager. 5,336,159, Cl. 601-15.000.

Chenoweth, Dennis E.: *See*—
Hardwick, R. Alan; Smith, Alan K.; Lake, William C.; and Chenoweth, Dennis E., 5,336,760, Cl. 530-413.000.

Cheradame, Herve M.; Lundberg, Robert D.; Chen, Frank J.; and Habimana, Jean de la Crois, to Exxon Chemical Patents Inc. Terminally-substituted polymeric compositions from cationically polymerizable monomers and initiators. 5,336,745, Cl. 526-347.100.

Cherenak, Thomas M.; Spanski, Jeffrey; and Zlomke, Steven, to Petersen Manufacturing Co., Inc. Tool display package. 5,335,772, Cl. 206-349.000.

Cherian, Abraham, to Xerox Corporation. Apparatus for creating simulated color photographic prints using xerography. 5,337,132, Cl. 355-278.000.

Chesebrough-Pond's USA Co., A Division of Conopco, Inc.: *See*—
Gentile, James L., 5,335,827, Cl. 222-137.000.

Chevalier, Gerard: *See*—
Atherton, Kenneth W.; Chevalier, Gerard; Galletero, Jokin; Bullock, Donald F.; Crittenden, Curtis W.; Elmore, David D.; and Germer, Warren R., 5,336,991, Cl. 324-142.000.

Chiang, Chou C. Automatic bathing apparatus. 5,335,378, Cl. 4-606.000.

Chiang, Shiaw-Tseh: *See*—
Tan, Chung-Sung; and Chiang, Shiaw-Tseh, 5,336,837, Cl. 585-828.000

Chiarino, Dario: *See*—
Camaggi, Giovanni; Chiarino, Dario; Fantucci, Mario; and Meazza, Giovanni, 5,336,664, Cl. 504-261.000.

Chiba, Noriyoshi: *See*—
Handa, Tsuneo; Chiba, Noriyoshi; and Kunugi, Masanao, 5,336,000, Cl. 400-197.000.

Chigusa, Yoshiki: *See*—
Onishi, Masashi; Nakazato, Koji; Chigusa, Yoshiki; Watanabe, Minoru; and Miyajima, Yoshiaki, 5,337,401, Cl. 385-142.000.

Chikawa, Yasunori; Honda, Yoshiaki; Mori, Katsunobu; Tajima, Naoyuki; Tsuda, Takaaki; and Maeda, Takamichi, to Sharp Kabushiki Kaisha. Method of making tape carrier semiconductor device. 5,336,650, Cl. 437-209.000.

Chikuma, Kiyofumi: *See*—
Ota, Hiroyuki; and Chikuma, Kiyofumi, 5,337,399, Cl. 385-122.000.

Chin, Albert K.; McIntyre, John; and Morse, Stephen A., to Devices for Vascular Intervention, Inc. Removal of tissue from within a body cavity. 5,336,237, Cl. 606-167.000.

Chin, Stephen; Parille, Donald R.; Aimone, Paul R.; McCormick, Robert L.; Johnson, Paul R.; and Kilinski, Bart M., to Howmet Corporation; and United Technologies Corporation. Oxidation resistant superalloy castings. 5,335,717, Cl. 164-519.000.

China Wiper Special Rubber Co. Ltd.: *See*—
Charng, Cedric S. K., 5,335,393, Cl. 15-250.410.

Chino, Shigeo; Kadowaki, Takashi; and Nishijima, Toyoki, to Konica Corporation. Silver halide photographic light-sensitive material. 5,336,592, Cl. 430-557.000.

Chipalkatti, Makarand H.; and Trickett, Elizabeth A. Pre-treatment for plating technique. 5,336,370, Cl. 156-668.000.

Chipcom Corporation: *See*—
Selyutin, Sergey, 5,337,310, Cl. 370-85.300.

Chiron IntraOptics, Inc.: *See*—
Barrett, Graham D.; Link, William J.; and Reich, Cary J., 5,336,261, Cl. 623-5.000.

Chisso Corporation: *See*—
Shibasaki, Masakatsu; and Sasai, Hiroaki, 5,336,653, Cl. 502-170.000.

Chiswell, Edgar B.: *See*—
Badr, Iskandar; and Chiswell, Edgar B., 5,336,006, Cl. 401-105.000

Chizen, Dwight. Storage rack for cassettes and compact discs. 5,335,795, Cl. 211-41.000.

Chmielewski, Thomas; Molyneaux, David A.; and Braum, William O., to Picker International, Inc. Scalar S-parameter test set for NMR instrumentation measurements. 5,336,988, Cl. 324-76.190.

Cho, Shizuo, to Oki Electric Industry Co., Ltd. Low-power decoder for selecting redundant memory cells. 5,337,278, Cl. 365-200.000

Choi, Juho: *See*—
Yeom, Hancheol; Lee, Hoseong; Jeong, Yucheol; An, Hoyoung; Choi, Juho; and Lee, Wonbo, 5,336,289, Cl. 65-334.000

Choi, Young K.: *See*—
Moon, Chi J.; Park, Sae C.; Kim, Myoung G.; Oh, Sea H.; Yim, Seong S.; Park, Nam J.; Choi, Young K.; and Sung, Moo J., 5,336,673, Cl. 514-202.000.

Choi, Youngwon: *See*—
Kotzin, Brian L.; Marrack, Philippa; Kappler, John; and Choi, Youngwon, 5,336,598, Cl. 435-7.240.

Cholhan, Hilary J. Cervical manipulator forceps. 5,336,228, Cl. 606-119.000.

Chon, James Y.: *See*—
Farb, Norman E.; and Chon, James Y., 5,335,999, Cl. 400-124.210.

Chou, Kuo B. Clip. 5,335,399, Cl. 24-67.700.

Chou, Wayne W.; Kulinets, Joseph M.; Elteto, Laszlo; and Engel, Frederik, to Software Security, Inc. Method of software distribution protection. 5,337,357, Cl. 380-4.000.

Choudhary, Vasant R.; Sansare, Subhash D.; and Chaudhari, Sopan T., to Council of Scientific & Industrial Research. Integrated two step process for conversion of methane to liquid hydrocarbons of gasoline range. 5,336,825, Cl. 585-500.000.

Christensen, Anna, to Wilderness Alert Safety Products Ltd. Multi-purpose wilderness splint. 5,336,160, Cl. 602-6.000.

Christenson, Ronald E.; and McNeilus, Brandon, to McNeilus Truck and Manufacturing, Inc. Automatic positive tailgate latching mechanism. 5,335,958, Cl. 296-56.000.

Christianson, Lee O., to Christianson Systems, Inc. Container and dispenser system for flowable solids. 5,335,820, Cl. 222-105.000.

Christianson Systems, Inc.: *See*—
Christianson, Lee O., 5,335,820, Cl. 222-105.000.

Christie, Bert M.: *See*—
Vanesky, Frank W.; Isaacson, Chris A.; and Christie, Bert M., 5,335,464, Cl. 52-173.100.

Christodoulou, Julie A.: *See*—
Sutherland, Audrey E.; Bridger, Keith; Fiore, Eric M.; Christodoulou, Julie A.; Bailey, Alex E.; and Gelb, Allan S., 5,337,209, Cl. 361-321.500.

Chrysler Corporation: *See*—
Davis, Stuart M.; and Soltis, Dennis A., 5,335,637, Cl. 123-478.000
Hennessee, Robert P.; Barwin, David A.; Rudzewicz, Robert G.; and Rajala, Richard M., 5,335,514, Cl. 62-227.000.
Hormel, Ronald F.; and Miesterfeld, Frederick O., 5,337,042, Cl 340-826.080.
Rao, Nippani R.; Abouzahr, Saad M.; Spencer, Russ; and Falkowski, Denis E., 5,336,710, Cl. 524-494.000

Chu, Milton W. Intraocular lens with haptics for scleral fixation and method for using it. 5,336,262, Cl. 623-6.000

Chua, Chong W.: *See*—
Seah, Khen H.; Heng, Yeow S.; and Chua, Chong W., 5,336,054, Cl. 417-2.000

Chuman, Takashi: *See*—
Yanagisawa, Shuichi; Sakai, Tatsuro; Chuman, Takashi; Araki, Yasushi; and Matsui, Fumio, 5,336,584, Cl. 430-273.000

VOL 1165 ISS 2 AG 9 1994 UMI

Chun, Christopher K. Y.: *See—*
Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hartman, Davis H., 5,337,397, Cl. 385-93.000.

Chung, Bryan C.; DiBello, Gerald N.; Pearce, Charles W.; and Yanders, Kevin P., to AT&T Bell Laboratories. Semiconductor wafer cleaning and rinsing techniques using re-ionized water and tank overflow. 5,336,371, Cl. 156-659.100.

Chung, Ji H.; Wee, Jai K.; Lee, Doo H.; and Byeon, Sang G., to Hyundai Electronics Industries Co., Ltd. Photoelectro-chemical etching method and apparatus of compound semiconductor. 5,336,379, Cl. 204-129.300.

Church & Dwight Co., Inc.: *See—*
Winston, Anthony E.; Yam, Benny S.; and Jones, Keith A., 5,336,281, Cl. 51-307.000.

Ciba-Geigy Corporation: *See—*
Borzatta, Valerio; Scrima, Roberto; and Vignali, Graziano, 5,336,706, Cl. 524-100.000.
Fory, Werner; and Schurter, Rolf, 5,336,773, Cl. 546-294.000.
Wenger, Jean; Winternitz, Paul; and Zeller, Martin, 5,336,663, Cl. 504-243.000.

Cinquemani, James, Jr.: *See—*
Willis, Tucker; and Cinquemani, James, Jr., 5,335,621, Cl. 116-173.000.

Cipolla, Thomas M.; and Coteus, Paul W., to International Business Machines Corporation. Circuit card interconnecting structure. 5,337,218, Cl. 361-785.000.

Cipullo, Michael J.; and Fulmer, John W., to General Electric Company. Process for low color bisphenol. 5,336,813, Cl. 568-724.000.

Cizek, Jaromir; and Galuszynski, Stanislaw, to Pathold Investments Company Limited. Anti-pucker presser foot. 5,335,612, Cl. 112-262.100.

Claar, Klaus-Peter: *See—*
Schrader, Jurgen; Guckel, Martin; and Claar, Klaus-Peter, 5,335,959, Cl. 296-108.000.

Clampitt, Roger: *See—*
Heidt, Thomas; Will, Henry; Rhodes, Greydon; Plasensia, Armand; and Clampitt, Roger, 5,336,467, Cl. 422-64.000.

Clapper, Millard. Apparatus and method for animal waste pick-up and disposal. 5,335,952, Cl. 294-1.400.

Clark, Gary: *See—*
Benko, Andrew T.; Swartzendruber, James A.; Bocksnick, John L.; and Clark, Gary, 5,335,494, Cl. 60-428.000.

Clark, Gregory A.: *See—*
Miyagawa, Kozo; and Clark, Gregory A., 5,335,781, Cl. 198-834.000.

Claxson, Andrew W. D.: *See—*
Good, Peter A.; Morris, Christopher J.; Claxson, Andrew W. D.; and Blake, David R., 5,336,248, Cl. 607-90.000.

Clement, Thomas P., to Mectra Labs, Inc. Tissue removal assembly with provision for an electro-cautery device. 5,335,671, Cl. 128-753.000.

Clements, Anthony H., to Lever Brothers Company, Division of Conopco, Inc. Process and composition for treating fabrics. 5,336,447, Cl. 252-554.000.

Clemson University: *See—*
Nordine, Paul C., 5,336,360, Cl. 117-75.000.

Clerici, Mario S.: *See—*
Berzofsky, Jay A.; Hosmalin, Anne; Clerici, Mario S.; Germain, Ronald N.; Shearer, Gene; Moss, Bernard; and Pendleton, Charles D., 5,336,758, Cl. 530-326.000.

Clintec Nutrition Company: *See—*
Smith, Sidney T.; Chase, James; and Sonderman, Jeffrey R., 5,335,846, Cl. 229-120.320.

Cloetens, Henri; and Groen, Robertus W. C., to U.S. Philips Corporation. Phase locked loop with frequency deviation detector and decoder circuit comprising such a phase locked loop. 5,337,335, Cl. 375-120.000.

Clopay Plastic Products Company, Inc.: *See—*
Wu, Pai-Chuan; Ryle, Thomas R.; and Cancio, Leopoldo V., 5,336,457, Cl. 264-171.000.

Clough, John M.: *See—*
deFraine, Paul; Snell, Brian K.; Beautement, Kevin; Anthony, Vivienne M.; and Clough, John M., 5,336,682, Cl. 514-422.000.

Clubbs, William R., to John Lysaght (Australia) Limited. Protective core. 5,335,872, Cl. 242-610.600.

Coady, Clive J.; Poklacki, Erwin S.; Zimmerman, John M.; Bishop, Timothy E.; and Derer, John L., to DSM Desotech, Inc. Primary coatings for optical glass fibers including polyether acrylates. 5,336,563, Cl. 428-375.000.

Coates, Clarence A.: *See—*
Krutak, James J.; Cushman, Michael R.; Parham, William W.; Coates, Clarence A.; Weaver, Max A.; and Patonay, Gabor, 5,336,714, Cl. 524-608.000.

Cobb, Gary S., to AT&T Bell Laboratories. Method of making a water blocked optical fiber cable. 5,335,408, Cl. 29-447.000.

Coble, Gary L. Insulated furnace door system. 5,335,897, Cl. 266-286.000.

Coburn, Michael D.: *See—*
Hiskey, Michael A.; and Coburn, Michael D., 5,336,784, Cl. 548-953.000.

Coca-Cola Company, The: *See—*
Iacobucci, Guillermo A., 5,336,601, Cl. 435-68.100.

Cocks, Elijah E., to C-Innovations, Inc. Electrochemically active paint for cathodic protection of engineering structures. 5,336,303, Cl. 106-14.050.

Cody, Charles A.; and Magauran, Edward D., to Rheox, Inc. Process for deinking wastepaper utilizing organoclays formed in situ. 5,336,372, Cl. 162-5.000.

Cody, Charles A.: *See—*
Hartman, Terrence L.; and Cody, Charles A., 5,336,733, Cl. 525-411.000

Coenen, Hubertus A. M.: *See—*
Luijks, Gerardus M. J. F.; and Coenen, Hubertus A. M., 5,336,974, Cl. 315-58.000.

Coffindaffer, Timothy W.; Bartolo, Robert G.; and Belfiore, Kathleen A., to Procter & Gamble Company, The. Silicone gel for ease of ironing and better looking garments after ironing. 5,336,419, Cl. 252-8.600.

Cohen, Bernard; and Jameson, Lee K., to Kimberly-Clark Corporation. Process for hydrosonically area embossing thin thermoplastic film materials. 5,336,452, Cl. 264-23.000.

Cohen, Donald M. System and method for implanting cardiac electrical leads. 5,336,252, Cl. 607-119.000.

Coherent, Inc.: *See—*
Dewey, David A., 5,336,216, Cl. 606-4.000.

Colavin, Osvaldo, to SGS-Thomson Microelectronics S.A. Squaring circuit for binary numbers. 5,337,267, Cl. 364-753.000.

Coleman, Christopher: *See—*
Livesey, Stephen A.; del Campo, Anthony A.; Nag, Abhijit; Nichols, Ken B.; and Coleman, Christopher, 5,336,616, Cl. 435-240.200.

Coleman Company, Inc., The: *See—*
Holub, Timothy M.; Schulte, Regis; and Deines, Robert, 5,335,954, Cl. 294-31.200.
Long, Norris R., 5,336,084, Cl. 431-354.000.

Coleman, Patrick L.: *See—*
Heilmann, Steven M.; Rasmussen, Jerald K.; Krepski, Larry R.; Milbrath, Dean S.; and Coleman, Patrick L., 5,336,742, Cl. 526-260.000.

Coleman, Philip D.: *See—*
Stewart, James R.; Klotz, James A.; Fulgenzi, Crescenzo F.; and Coleman, Philip D., 5,336,015, Cl. 403-296.000.

Colgate, Gilbert, Jr., to American Bank Note Holographics, Incorporated. Holographic enhancement of card security. 5,336,871, Cl. 235-380.000.

Colgate-Palmolive Company: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,335,389, Cl. 15-167.100.

Collen, Desire J.; Stassen, Jean-Marie; and Lijnen, Henri R., to Leuven Research & Development vcw; and Collen, Desire J. Use of staphylokinase for the preparation of a pharmaceutical composition for treating arterial thromboisi. 5,336,495, Cl. 424-94.640.

Coller, Barry S., to Research Foundation for the State University of N.Y. Fibrinogen blocking monoclonal antibody. 5,336,618, Cl. 435-240.270.

Collins, Ray L., to Rockwell International Corporation. Phase locked loop frequency modulator using fractional division. 5,337,024, Cl. 332-127.000.

Color Quest Inc.: *See—*
Hughes, Cleveland L.; Williams, Timothy N.; and Mandel, Paul M., 5,336,306, Cl. 106-19.00B.

Coltene/Whaledent, Inc.: *See—*
Simmen, Christian; and Lenchner, Nathaniel H., 5,336,086, Cl. 433-37.000

Comelz S.p.A.: *See—*
Zorzolo, Alessandro, 5,336,981, Cl. 318-551.000.

Commault, Yves: *See—*
Bonnet, Georges; Commault, Yves; Roquencourt, Jacques; and Sehan, Alain, 5,337,065, Cl. 343-767.000.

Commissariat a l'Energie Atomique: *See—*
Baldy, Andre ; Barrois, Gerard; Blanc, Henri; and Dominiak, Marcel, 5,335,453, Cl. 51-67.000.
Hartmann, Joel, 5,336,628, Cl. 437-43.000.
Jacquot, Bernard; and Delaunay, Marc, 5,336,961, Cl. 313-153.000.
Leroux, Thierry; and Py, Christophe, 5,336,973, Cl. 315-14.000.

Commonwealth Scientific and Industrial Research Organisation: *See—*
Windsor, Christopher R., 5,335,736, Cl. 175-57.000.

Compaq Computer Corp.: *See—*
McKenzie, Philip J., 5,336,985, Cl. 323-266.000.

Compliance Systems International, Inc.: *See—*
Schifftner, Kenneth C., 5,336,284, Cl. 55-241.000.

Compudata SA: *See—*
Martinez Taylor, Roberto E., 5,336,876, Cl. 235-475.000.

Comsat Corporation: *See—*
Lee, Lin-Nan; Rao, Ashok K.; and Bhargava, Sanjai, 5,337,085, Cl. 348-398.000

Congoleum Corporation: *See—*
Frisch, Rudolf, 5,336,693, Cl. 521-72.000.

Connor, Linda A.: *See—*
Strack, David C.; Connor, Linda A.; Gwaltney, Sharon W.; McCormack, Ann L.; Shawver, Susan E.; and Shultz, Jay S., 5,336,552, Cl. 428-224.000.

Conoco Inc.: *See—*
Keller, Alfred E., 5,336,832, Cl. 585-710.000.

Conoco Specialty Products Inc.: *See—*
O'Brien, Kevin J.; Thompson, Pete A.; and McCoy, Stephen T., 5,336,410, Cl. 210-512.100.

Constanz, Brent R.; Fulmer, Mark T.; and Barr, Bryan M., to Norian Corporation. Situ prepared calcium phosphate composition and method. 5,336,264, Cl. 623-16.000.

Container-Care International, Inc.: *See—*
Russell, Larry L.; and Mohar, Louis, 5,336,398, Cl. 210-143.000.

Cook, Timothy C.: *See—*
Tihon, Claude; Cook, Timothy C.; Burton, John H.; and Svejkovsky, Ronald, 5,335,669, Cl. 128-736.000.

Cooke, Francis W.; Marrero, Thomas R.; and Yasuda, Hirotsuga K., to Orthopaedic Research Institute. Bone cement having chemically joined reinforcing fillers. 5,336,699, Cl. 523-115.000.

Cooper, Alan D.: *See—*
Stoddard, David C. F.; Orr, Ladd M.; Cooper, Alan D.; and Jarmuz, Jeffrey J., 5,335,593, Cl. 108-165.000.

Cooper Industries, Inc.: *See—*
Turner, Edwin C.; and Gibbs, Charles E., 5,335,729, Cl. 166-380.000.

Corallo, Cheryl F.; Sandor, Robert B.; and Blake, Ralph S., to Hoechst Celanese Corporation. Extrusion blow molding of thermotropic liquid crystalline polymers. 5,336,464, Cl. 264-540.000.

Corbett, William J.; Lunde, Marvin C.; and Shaffer, Peter T. B., to Technical Ceramics Laboratories, Inc. Shaped bodies containing short inorganic fibers or whiskers and methods of forming such bodies. 5,335,712, Cl. 164-97.000.

Corbin Russwin, Inc.: *See—*
Norton, George H., II; Lenk, Damon J.; and Robida, James E., 5,335,948, Cl. 292-169.230.

Cordis Corporation: *See—*
Narayanan, Pallassana V.; Rowland, Stephen M.; and Stanley, Kimberly D., 5,336,518, Cl. 623-1.000.
Sierra, Rolando, 5,336,166, Cl. 604-9.000.

Cordoba, Michael V.; and Hardee, Kim C., to United Memories, Inc.; and Nippon Steel Semiconductor Corp. High voltage generator having a self-timed clock circuit and charge pump, and a method therefor. 5,337,284, Cl. 365-227.000.

Cornelis, Ronny M. P., to U.S. Philips Corporation. Television receiver including a teletext decoder with rotating page control. 5,337,155, Cl. 348-473.000.

Cornell, Edward P.: *See—*
Axelrod, Barry H.; Balga, John T., Jr.; and Cornell, Edward P., 5,337,358, Cl. 380-23.000.

Cornette, H. Mitchell; Salerni, John V.; and Schmuck, Phillip W., to Atlantic Richfield Company. Fluid loss control system for gravel pack assembly. 5,335,727, Cl. 166-278.000.

Cornic, Gil, to FRAMATOME. Preheating steam generator. 5,335,629, Cl. 122-32.000.

Cornils, Gerd; and Kunert, Heinz, to Saint Gobain Vitrage International. Process and device for the production of an article equipped with a profiled bead. 5,336,349, Cl. 156-107.000.

Corning Incorporated: *See—*
Rittler, Hermann L., 5,336,645, Cl. 501-84.000.
Wolcott, Christine C., 5,336,642, Cl. 501-3.000.

Cortopassi, Jeffery J.; Marsik, Ronald; McDonald, Raymond E.; and Shymanski, Nicholas M., to Bagcraft Corporation of America. Openable bag construction. 5,335,996, Cl. 383-207.000.

Cosgrove, Delos M.: *See—*
Quintero, Lillian J.; Cosgrove, Delos M.; and Nguyen-Thien-Nhon, Diana, 5,336,258, Cl. 623-2.000.

Cosmo Research Institute: *See—*
Kintaichi, Yoshiaki; Hamada, Hideaki; Ito, Takehiko; Sasaki, Motoi; Tabata, Mitsunori; and Usui, Kazushi, 5,336,476, Cl. 423-239.100.

Cote, Edward A.: *See—*
Bartlett, Richard A.; and Cote, Edward A., 5,337,212, Cl. 361-681.000.

Coteus, Paul W.: *See—*
Cipolla, Thomas M.; and Coteus, Paul W., 5,337,218, Cl. 361-785.000.

Cotham, Heman C., III. Method for wellhead control. 5,335,730, Cl. 166-374.000.

Cotton, David; Richards, Adelbert H., III; and Harris, James E., to Paper Draper, Inc. Apparatus for preparing wallpaper for application. 5,336,323, Cl. 118-428.000.

Cotton, Manny; Sanchez, George; and Baran, Bernardo. Media holder and display. 5,335,435, Cl. 40-395.000.

Coudron, Douglas L. Wall-mounted top support. 5,335,799, Cl. 211-65.000.

Council of Scientific & Industrial Research: *See—*
Choudhary, Vasant R.; Sansare, Subhash D.; and Chaudhari, Sopan T., 5,336,825, Cl. 585-500.000.

Counterman, Wayne S.: *See—*
Brophy, Mark E.; Rhodes, Robin B.; and Counterman, Wayne S., 5,336,471, Cl. 422-175.000.

Courts, Robert I.: *See—*
Maldanis, Algert J.; Courts, Robert I.; Dutkevitch, Dennis; and Mooney, David J., 5,335,818, Cl. 221-131.000.

Cox, Carla H. Reading instructions method for disabled readers. 5,336,093, Cl. 434-178.000.

Cox, Keith E.: *See—*
Wildi, Robert H.; Cox, Keith E.; and Hill, Jack A., 5,336,701, Cl. 523-411.000.

Crawford, John C.: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,335,389, Cl. 15-167.100.

Crawford, Wheeler C.: *See—*
Cuscurida, Michael; Marquis, Edward T.; and Crawford, Wheeler C., 5,336,315, Cl. 106-633.000

Crawley, Wilbur H., III: *See—*
Krider, James K.; Crawley, Wilbur H., III; and Wright, David E., 5,336,856, Cl. 181-206.000.

Creanova AG: *See—*
Brach, Ulrich; and Thanisch, Klaus, 5,335,802, Cl. 215-235.000.

Cremers, Thomas G.: *See—*
Waldherr, Michael P.; Johnston, Michael L.; Weinstein, James N.; and Cremers, Thomas G., 5,336,076, Cl. 425-294.000.

Cresco, Inc., SA.: *See—*
Andoe, Graham C., 5,336,304, Cl. 106-18.320.

Crewe, Albert V., to ARCH Development Corporation. Aberration free lens system for electron microscope. 5,336,891, Cl. 250-396.00R.

Crider, Grant W.; and Ellard, Anthony L., to Hired Hand Manufacturing, Inc. Differential pressure control apparatus for livestock houses. 5,336,131, Cl. 454-238.000.

Cristiani, Giancarlo, to Techint-Compagnia Tecnica Internazionale S.p.A. Rapid loading short-stroke extrusion press, and process. 5,335,528, Cl. 72-263.000.

Crittenden, Curtis W.: *See—*
Atherton, Kenneth W.; Chevalier, Gerard; Galletero, Jokin; Bullock, Donald F.; Crittenden, Curtis W.; Elmore, David D.; and Germer, Warren R., 5,336,991, Cl. 324-142.000.

Crookham, Joe P.: *See—*
Gordin, Myron K.; and Crookham, Joe P., 5,337,221, Cl. 362-66.000.

Cross, John H., to United Technologies Corporation. Fast switching polarization diverse radar antenna system. 5,337,058, Cl. 342-188.000.

Crosspoint Solutions, Inc.: *See—*
Allman, Gary L., 5,336,986, Cl. 323-268.000.

Croteau, Michael G.: *See—*
Peters, Rodney E.; and Croteau, Michael G., 5,336,900, Cl. 250-561.000.

Crowdus, Robert A.; Knirk, Gary L.; and Silverson, John K., to Bundy Corporation. Bending fixture and method of assembling the bending fixture. 5,335,529, Cl. 72-404.000.

Crowe, Robert E.: *See—*
Bach, Gary M.; and Crowe, Robert E., 5,336,544, Cl. 428-117.000.

Crowther, John B.: *See—*
Ryan, Robert P.; Crowther, John B.; and MacDonald, Robert A., 5,337,416, Cl. 395-400.000.

Crump, John C., III; Fischer, Eugene B.; Wilson, Robert C.; Winterson, Warren D.; Jaxmar, Leif E. B.; Norberg, Gustav M.; and Olsson, Lennart F., to Philip Morris Incorporated. Apparatus for treatment of solid material. 5,335,590, Cl. 99-479.000.

Cser, James B.: *See—*
Allen, Timothy P.; and Cser, James B., 5,336,936, Cl. 307-201.000.

Cuevas, Jess, to TRW Inc. Air bag inflator having flow control for slowing and filtering inflation gas. 5,335,940, Cl. 280-737.000.

Culross, Claude C.: *See—*
Pabst, Joanne K.; Winter, William E., Jr.; Vaughn, Stephen N.; Culross, Claude C.; and Reynolds, Steve D., 5,336,395, Cl. 208-403.000.

Cummins, Brad L.; Pick, William A.; Sorn, Ronald R.; and Stocker, Karl F., to Honeywell Inc. Switch with removable button frame. 5,336,861, Cl. 200-339.000.

Cummins Engine Company, Inc.: *See—*
Kolhouse, J. Steven, 5,336,047, Cl. 415-168.000.
Muntean, George L.; Wilson, Harry L.; and Gant, Gary L., 5,335,852, Cl. 239-89.000.

Cunningham, Barbara A.: *See—*
Cunningham, James W., Jr.; and Cunningham, Barbara A., 5,335,394, Cl. 15-302.000.

Cunningham, Charles L.; and Carter, Ronald W., to Service Station Products Company. Wheel balancer with multiple operator interface. 5,337,256, Cl. 364-508.000.

Cunningham, James W., Jr.; and Cunningham, Barbara A. Eyeglass cleaning apparatus. 5,335,394, Cl. 15-302.000.

Cuperus, Roelck A.: *See—*
van Eekelen, Christiaan A. G.; Mulleners, Leonardus J. S. M.; Van Der Laan, Johannes C.; Misset, Onno; Cuperus, Roelck A.; and Lensink, Johan H. A., 5,336,611, Cl. 435-221.000.

Curten, Franz J.; and Bammel, Michael, to Goldhofer Fahrzeugwerk GmbH & co. Tow vehicle for manuevering of vehicles. 5,336,037, Cl. 414-429.000.

Curtis, Jerry L.; Johnson, Kenneth A.; and House, Lester W., to Nord Kaolin Company. Cationic pigments. 5,336,311, Cl. 106-416.000.

Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., to Colgate-Palmolive Company. Plaque removing toothbrush. 5,335,389, Cl. 15-167.100.

Curtze, Jurgen: *See—*
Becher, Heinz-Manfred; Albert, Guido; and Curtze, Jurgen, 5,336,671, Cl. 514-96.000.

Cuscurida, Michael; Marquis, Edward T.; and Crawford, Wheeler C., to Texaco Chemical Company. Soil stabilization process. 5,336,315, Cl. 106-633.000.

Cushman, Michael R.: *See—*
Krutak, James J.; Cushman, Michael R.; Parham, William W.; Coates, Clarence A.; Weaver, Max A.; and Patonay, Gabor, 5,336,714, Cl. 524-608.000.

Cuzmar, Ruth M.: *See—*
Moss, Mary G.; Bewer, Terry; Cuzmar, Ruth M.; Hawley, Dan W.; and Flaim, Tony D., 5,336,925, Cl. 257-643.000.

Cyberonics, Inc.: *See—*
Terry, Reese S., Jr.; and Wernicke, Joachim F., 5,335,657, Cl. 607-45.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Cyclops Research & Development, Inc.: *See*—
Sheryll, Richard, 5,336,107, Cl. 439-369.000.
Cymer Laser Technologies: *See*—
Larson, Donald G., 5,337,330, Cl. 372-86.000.
Cypress Semiconductor Corporation: *See*—
Sywyk, Stefan P., 5,336,938, Cl. 307-265.000.
Cyrix Corporation: *See*—
Eitrheim, John K.; and Reis, Richard B., 5,336,939, Cl. 307-269.000.
McMahan, Steven C.; and Hudepohl, Lawrence H., 5,337,269, Cl. 364-787.000.
Czech, Zbigniew; and Seeger, Kurt, to Lohmann GmbH & Co. KG. Cross-linked hydrogels and their use as wound dressings. 5,336,501, Cl. 424-445.000.
D & M Plastics Corporation: *See*—
Motisi, Stephen A., 5,336,075, Cl. 425-190.000.
Dae Woong Pharmaceutical Co., Ltd.: *See*—
Moon, Chi J.; Park, Sae C.; Kim, Myoung G.; Oh, Sea H.; Yim, Seong S.; Park, Nam J.; Choi, Young K.; and Sung, Moo J., 5,336,673, Cl. 514-202.000.
Daffos, Thierry; and Valadon, Christian, to FRAMATOME. Steam generator equipped with an improved deflection and purging device. 5,335,631, Cl. 122-383.000.
Dahlqvist, Karl T. G.: *See*—
Kohler, Gregory R.; Lahner, William F., III; Munster, Heinrich F.; and Dahlqvist, Karl T. G., 5,335,865, Cl. 241-28.000.
Dahulich, Wayne, to Johnson Camping, Inc. Hold down channel assembly for tents, canopies or awnings. 5,335,685, Cl. 135-106.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,657, Cl. 503-227.000.
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,660, Cl. 503-227.000.
Dai Nippon Printing Co., Ltd.: *See*—
Ikemoto, Seiji; Taki, Katsuhiko; Matano, Takashi; Kawahata, Ichiro; Oguchi, Kiyoshi; Ito, Shigeki; and Miyauchi, Tatsuo, 5,336,530, Cl. 427-503.000.
Daicel Chemical Industries, Ltd.: *See*—
Matsuyama, Akinobu; and Kobayashi, Yoshinori, 5,336,619, Cl. 435-280.000.
Daidousanso Co., Ltd.: *See*—
Yoshino, Akira; Kiyama, Hiromi; and Mihoichi, Nobuhiko, 5,336,300, Cl. 95-96.000.
Daifuku, Koji; Kita, Hiroshi; and Kaneko, Yutaka, to Konica Corporation. Silver halide color photographic materials. 5,336,593, Cl. 430-558.000.
Daiichi Pharmaceutical Co., Ltd.: *See*—
Wakasugi, Junichiro, 5,336,503, Cl. 424-451.000.
Daily, Jay H.: *See*—
Anastase, Constantin; Nehren, William C.; Kissick, Russell C.; Campbell, Thomas C.; and Daily, Jay H., 5,335,523, Cl 68-16.000.
Dainippon Ink and Chemicals, Inc.: *See*—
Takahashi, Katsuji; Sath, Yuji; and Mizuno, Takehisa, 5,336,735, Cl. 525-423.000.
Daiwa Can Company: *See*—
Yoshimura, Takayuki; Kondo, Yoshiteru; Matsumura, Yoshimasa; and Inoue, Kiyoaki, 5,335,682, Cl. 134-72.000.
Daiwa Seiko, Inc.: *See*—
Sato, Kazuyasu; Maekawa, Takashi; Yamazaki, Mitsuru; and Oishi, Harumichi, 5,337,134, Cl. 355-319.000.
Dake, Guy M.: *See*—
Aldous, Stephen C.; and Dake, Guy M., 5,336,099, Cl. 439-131.000.
Dale, Brian D. Nozzle for abrasive cleaning or cutting. 5,335,459, Cl. 51-439.000.
Dalebout, William T.; and Ellis, Richard B., to Proform Fitness Products, Inc. Stepper with adjustable resistance mechanism. 5,336,142, Cl. 482-52.000
Daley, Michael J.; Furda, Gary J.; and Hayes, Phillip W., to American Cyanamid Company. Method of treating or preventing mastitis in animals with involuting mammary glands by administering recombinant cytokines. 5,336,488, Cl. 424-85.200.
Daly, Thomas P.; Moses, Edward I.; Patterson, Ralph W.; and Sawicki, Richard H., to United States of America, Energy. Laser beam pulse formatting method. 5,337,333, Cl. 372-94.000.
Dalzell, William J., Jr.; Wright, Robert J.; and Spence, Jarrett L., to United Technologies Corporation. Electrophoresis process for preparation of ceramic fibers. 5,336,381, Cl. 204-180.200.
Damion, Katsumi: *See*—
Nukada, Katsumi; Imai, Akira; Damion, Katsumi; and Iijima, Masakazu, 5,336,578, Cl. 430-78.000.
Dana Corporation: *See*—
Leone, Michael F., 5,335,760, Cl. 192-26.000.
Daneshvar, Yousef. Special wraps, dilators and foley catheters. 5,336,195, Cl. 604-179.000.
D'Angelo, Joseph P.; and Schur, Henry, to International Medical Associates, Inc. Selectable dosage transdermal delivery system. 5,336,213, Cl. 604-890.100.
Dangman, Kenneth H.: *See*—
Dresdner, Karl P., Jr.; Dangman, Kenneth H.; and Jazlowiecki, Edward A., 5,335,373, Cl. 2-161.700.
Dant, Ronald E.: *See*—
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.
Dantanarayana, Muditha, to Telectronics Pacing Systems, Inc. Lead connector assembly for medical device and method of assembly. 5,336,246, Cl. 607-37.000.
Daoud, Adib G.; and Anderson, Emmett B., to Ivac Corporation. Flow control valve. 5,336,174, Cl. 604-30.000.
Darbon, Philippe; and Grard, Emmanuel, to Alcatel N.V. Method of limiting coupling losses between monomode optical fibers using a piece of multimode optical fiber. 5,337,380, Cl. 385-28.000.
Dario, Lawrence J.: *See*—
Lynch, Richard A.; Kirk, William J.; and Dario, Lawrence J., 5,336,185, Cl. 604-110.000.
Darling, Roy D.: *See*—
Josephson, Gregg R.; Shen, Ju; Darling, Roy D.; and Cheng, Chan-Chi J., 5,336,951, Cl. 307-465.000
Darmon, Marc: *See*—
Sadot, Philippe; Thebault, Bertrand; Darmon, Marc; and Eudes, Jacques, 5,337,331, Cl. 375-83.000.
Darras, Robert L.; and Fan, Tau-chao. Surgical glove comprising carbon fiber whiskers. 5,336,555, Cl. 428-247.000.
Datron Systems, Inc.: *See*—
Verkerk, Neil H., 5,335,407, Cl. 29-426.300.
Daughtry, Earl A.; and Stone, Richard M., to Matsushita Communication Industrial Corporation of America. Differential radio frequency detector/comparator for power level control. 5,337,020, Cl. 330-279.000.
Daum, Sol J.: *See*—
Bacon, Edward R.; Daum, Sol J.; Estep, Kimberly G.; Josef, Kurt A.; Douty, Brent D.; and Illig, Carl R., 5,336,484, Cl. 424-5.000.
Dautartas, Mindaugas F.: *See*—
Benzoni, Albert M.; and Dautartas, Mindaugas F., 5,337,398, Cl. 385-90.000.
Dave, Yogesh: *See*—
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.
David Clark Company Inc.: *See*—
Bassick, John W.; and Dubois, Edward A., 5,335,370, Cl. 2-214.000.
David, James C., to Calico Light Weapon Systems. Indexing helical feed magazine. 5,335,579, Cl. 89-34.000.
David, Morgan W. A.: *See*—
Dorricott, Martin R.; Gillard, Clive H.; Richards, John W.; Morita, Tsuneo; Galt, James J.; David, Morgan W. A.; Burns, James E.; and Varsani, Shima R., 5,337,154, Cl. 348-448.000.
David Sarnoff Research Center, Inc.: *See*—
Sauer, Donald J., 5,336,879, Cl. 250-208.100.
Stewart, Roger G.; and Roach, William R., 5,337,068, Cl 345-88.000.
Davidson, Ian, to Bagfilla Overseas Limited. Weighing apparatus. 5,336,853, Cl. 177-146.000.
Davidson Textron Inc.: *See*—
Kelman, Josh, 5,336,455, Cl. 264-113.000.
Davis, Richard E.; and Greenhoe, William J., to DLP, Incorporated. Surgical needle assembly. 5,336,191, Cl. 604-165.000.
Davis, Scott B.: *See*—
Mischenko, Nicholas; and Davis, Scott B., 5,336,984, Cl. 320-2.000.
Davis, Stuart M.; and Soltis, Dennis A., to Chrysler Corporation. Energy adjust for a flexible fuel compensation system. 5,335,637, Cl. 123-478.000.
Davis, W. Mark, to Alden Laboratories, Inc. Apparatus and method for producing fluid-containing envelopes. 5,335,486, Cl. 53-452.000.
Davison, John R. N.: *See*—
Oberto, Jacques; and Davison, John R. N., 5,336,609, Cl. 435-206.000.
Dawson, Jeffrey C.; and Wood, William R., to BJ Services Company. Cementing composition and method using phosphonated polymers to improve cement slurry properties. 5,336,316, Cl. 106-724.000
Dax, Clifford D., to Rockwell International Corporation. Dynamically tunable notch filter. 5,337,056, Cl. 342-128.000.
Dax Manufacturers, Inc.: *See*—
Shultz, Julius; and Nicolay, Joseph, 5,335,434, Cl. 40-156.000.
De Puy, Inc.: *See*—
Serbousek, Jon; and DiNello, Alexandre, 5,336,265, Cl. 623-18.000.
DeAngelis, Mario E.; Troast, Douglas; and Calella, Patrick, to United States of America, Army. Method for internal laser welding of metallized optical components for attachment of optical fibers. 5,337,383, Cl. 385-49.000.
Deans, John R., to Vanson L.P. Removing polyvalent metals from aqueous waste streams with chitosan and halogenating agents. 5,336,415, Cl. 210-725.000.
Debe, Mark K., to Minnesota Mining and Manufacturing Company. Composite article comprising oriented microstructures. 5,336,558, Cl. 428-323.000.
De Bonneville, Jean: *See*—
Boitiaux, Jean-Paul; De Bonneville, Jean; Burzynski, Jean-Pierre; Leger, Gerard; Le Peltier, Fabienne; and Martino, Germain, 5,336,829, Cl. 585-659.000.
DeCicco, Thomas J.: *See*—
Gabrius, Algimantas J.; Roos, Scott L.; and DeCicco, Thomas J., 5,336,100, Cl. 439-115.000.
De Cillis, Giampiero: *See*—
Gandolfi, Carmelo A.; De Cillis, Giampiero; Long, Giorgio; and Gallico, Licia, 5,336,676, Cl. 514-222.500

de Costa, Brian R.; Iadarola, Michael J.; Rice, Kenner C.; Rothman, Richard B.; and Berman, Karen F., to United States of America, Health and Human Services. Radiolabeled n-substituted-6-iodo-3,14-dihydroxy-4, 5α-epoxymorphinans, intermediates for producing the same, and a process for the preparation and methods of detecting opioid receptors. 5,336,483, Cl. 424-1.850.
DeCusatis, Casimer M.: *See*—
Jacobowitz, Lawrence; Ecker, Mario E.; and DeCusatis, Casimer M., 5,337,388, Cl. 385-76.000.
Dedoes Industries, Inc.: *See*—
Dedoes, John, 5,335,806, Cl. 220-358.000.
Dedoes, John, to Dedoes Industries, Inc. Adapter ring for a paint can. 5,335,806, Cl. 220-358.000.
Deere & Company: *See*—
Benko, Andrew T.; Swartzendruber, James A.; Bocksnick, John L.; and Clark, Gary, 5,335,494, Cl. 60-428.000.
DeFeo, Paul: *See*—
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.
deFraine, Paul; Snell, Brian K.; Beautement, Kevin; Anthony, Vivienne M.; and Clough, John M., to Imperial Chemical Industries Public Limited Company. Heterocyclic compounds as fungicides. 5,336,682, Cl. 514-422.000.
De Francesco, Giovanni. Antiseptic and antifermentative sanitary towels particularly nappies and pants, for infants, women and incontinent adults. 5,336,212, Cl. 604-360.000.
Degenhardt, Ralf: *See*—
Rose, Harald; Degenhardt, Ralf; and Van der Mast, Karel D., 5,336,885, Cl. 250-305.000.
de Geus, Richard: *See*—
Strul, Bruno; de Geus, Richard; and Ebbing, Peter, 5,337,144, Cl. 356-357.000.
Degi, Greg A.: *See*—
Boyd, David W.; and Degi, Greg A., 5,336,878, Cl. 250-208.100.
DeGrace, Louis G., to Siemens Automotive L.P. Filter cartridge mounting for a top-feed fuel injector. 5,335,863, Cl. 239-575.000.
DeGraff, Richard R.; Van Opdorp, Peter J.; and Schulz, Russell C., to UOP. Alkylation process with reactor effluent heat recovery. 5,336,821, Cl. 585-402.000.
Degussa Aktiengesellschaft: *See*—
Diehl, Manfred; Koenig, Karl-Heinz; Krone, Eckhart; Loroesch, Juergen; Steiner, Norbert; Ullmann, Jochen; and Ziegler, Annette, 5,336,474, Cl. 423-29.000.
de Heij, Nicolaas A.: *See*—
Boesten, Wilhelmus H. J.; and de Heij, Nicolaas A., 5,336,805, Cl. 562-444.000.
Dehn, Gunther; Mollenhoff, Horst; and Wegelin, Rudiger, to Deutsche Babcock Energie- und Umwelttechnik AG. Furnace lance for atomizing a coal-water suspension. 5,335,608, Cl. 110-264.000.
Deibele, Ludwig: *See*—
Taurat, Siegfried; Steude, Heinrich; Deibele, Ludwig; and Alpers, Heinz-Jurgen, 5,336,376, Cl. 202-182.000.
Deines, Robert: *See*—
Holub, Timothy M.; Schulte, Regis; and Deines, Robert, 5,335,954, Cl. 294-31.200.
Deisenhofer, Manfred: *See*—
Weiss, Werner; and Deisenhofer, Manfred, 5,336,969, Cl. 313-580.000.
DeJager, Everett: *See*—
Hobson, David J.; and DeJager, Everett, 5,335,692, Cl. 137-614.170.
deJong, Michael. Rechargeable dust-off device and a method of using the device. 5,335,703, Cl. 141-20.000.
de Laforcade, Vincent, to L'Oreal. Device for activating a dispensing mechanism such as a pump or a valve. 5,335,832, Cl. 222-402.130.
Delaney, Patrick J., III: *See*—
Fooks, Elik I.; Delaney, Patrick J., III; and Johnson, Philip E., 5,336,882, Cl. 250-221.000.
DeLano, Eric R.; Gleason, Craig A.; and Forsyth, Mark A., to Hewlett-Packard Company. Predecoding instructions for supercalar dependency indicating simultaneous execution for increased operating frequency. 5,337,415, Cl. 395-375.000.
Delaunay, Marc: *See*—
Jacquot, Bernard; and Delaunay, Marc, 5,336,961, Cl. 313-153.000.
del Campo, Anthony A.: *See*—
Livesey, Stephen A.; del Campo, Anthony A.; Nag, Abhijit; Nichols, Ken B.; and Coleman, Christopher, 5,336,616, Cl. 435-240.200
Delco Electronics Corp.: *See*—
Zarabadi, Seyed R.; and Ismail, Mohammed, 5,337,021, Cl. 330-288.000.
De Leonibus, Vittore: *See*—
Carlomagno, Giovanni; Caico, Vincenzo; De Leonibus, Vittore; and Tereo, Edoardo, 5,336,288, Cl. 65-182.200.
Delgado-Frias, Jose G.: *See*—
Vassiliadis, Stamatis; Pechanek, Gerald G.; and Delgado-Frias, Jose G., 5,337,395, Cl. 395-27.000.
Delker, Charles L. Dummy apparatus for football practice. 5,335,906, Cl. 273-55.00A.
della Valle, Francesco; and Romeo, Aurelio, to Fidia, S.p.A. Esters of alginic acid. 5,336,668, Cl. 514-023.000.
della Valle, Francesco; and Romeo, Aurelio, to Fidia, S.p.A. Total or partial esters of hyaluronic acid. 5,336,767, Cl. 536-55.100.
DeMane, Catherine; and Schwarz, Robert, to Smith & Nephew Richards, Inc. Expandable nasal stent. 5,336,163, Cl. 602-46.000.
Demizu, Akira: *See*—
Nakagawa, Akihiro; Demizu, Akira; and Nishiyama, Ryoji, 5,337,240, Cl. 364-431.010.
DeMoore, Howard W.; and Person, Steven M., to DeMoore, Howard W. Coating apparatus for sheet-fed, offset rotary printing presses. 5,335,596, Cl. 101-350.000.
Demoute, Jean-Pierre: *See*—
Benoit, Marc; Demoute, Jean-Pierre; and Girodeau, Jean-Marc, 5,336,670, Cl. 514-63.000.
Denison, George F.: *See*—
Dent, Larry G.; and Denison, George F., 5,335,946, Cl. 285-243.000.
Dennis, Mahlon D.: *See*—
Waldenstrom, Mats G.; Fischer, Udo K. R.; Hillert, Lars H.; and Dennis, Mahlon D., 5,335,738, Cl. 175-420.200.
Dennis, Stephen V., to Microsoft Corporation. Cost metrics. 5,337,258, Cl. 364-551.010.
Dent, Larry G.; and Denison, George F., to Romac Industries Inc. Cooperating combination of a gland and a grip ring installed in restrained sealed bolted joints of fluid piping systems including both plastic pipe and metallic pipe. 5,335,946, Cl. 285-243.000.
DeRango, Mario F.: *See*—
Weiss, Kenneth P.; DeRango, Mario F.; Schroeder, Daniel R.; Mutz, Leslie D.; Lacy, Brian W.; and Chapman, Mark D., 5,337,316, Cl. 371-20.500.
Der Beek, Daniel V. Edible cone and apparatus and method for making same. 5,336,511, Cl. 426-138.000.
Derer, John L.: *See*—
Coady, Clive J.; Poklacki, Erwin S.; Zimmerman, John M.; Bishop, Timothy E.; and Derer, John L., 5,336,563, Cl. 428-375.000
Desaulty, Michel A. A.: *See*—
Barbier, Gerard Y. G.; Bardey, Xavier M. H.; and Desaulty, Michel A. A., 5,335,491, Cl. 60-39.370.
Design Automation Inc.: *See*—
Kitagawa, Keiji; and Tani, Ikuo, 5,337,402, Cl. 395-133.000.
Despointes, Simon H., to Embankment Investments Limited. Skinning apparatus. 5,336,125, Cl. 452-127.000.
Desrosiers, Bernard; Louis, Didier; and Steimle, Andre, to International Business Machines Corporation. Apparatus for executing add/sub operations between IEEE standard floating-point numbers. 5,337,265, Cl. 364-748.000.
DeTar, Marvin B.: *See*—
Forsberg, John W.; Jahnke, Richard W.; Lange, Richard M.; and DeTar, Marvin B., 5,336,439, Cl. 252-356.000.
Deutsche Aerospace Airbus GmbH: *See*—
Bohning, Rainer, 5,335,885, Cl. 244-204.000.
Klug, Heinz-Guenter, 5,335,880, Cl. 244-118.300.
Deutsche Airbus GmbH: *See*—
Muller, Hans-Jurgen; and Sprenger, Wilfried, 5,335,963, Cl. 297-244.000.
Deutsche Babcock Energie- und Umwelttechnik AG: *See*—
Dehn, Gunther; Mollenhoff, Horst; and Wegelin, Rudiger, 5,335,608, Cl. 110-264.000.
Devices for Vascular Intervention, Inc.: *See*—
Chin, Albert K.; McIntyre, John; and Morse, Stephen A., 5,336,237, Cl. 606-167.000.
Devilbiss, John J.; Lugosi, Steve; and Ozarski, Robert G., to ASM VT, Inc. Enhanced vertical thermal reactor system. 5,336,325, Cl. 118-719.000.
Deville, Dominique: *See*—
Lacroix, Jacques; Andrevon, Herve; and Deville, Dominique, 5,335,931, Cl. 280-602.000.
DeVito, Ralph J.: *See*—
Kaufman, Stephen B.; DiGianfilippo, Aleandro; Sager, Tamara L.; Bow, Clark F.; and DeVito, Ralph J., 5,335,816, Cl. 221-13.000.
DeVos, Richard: *See*—
Wollaber, Bruce A.; and DeVos, Richard, 5,335,721, Cl. 165-122.000.
Dewey, David A., to Coherent, Inc. Apparatus for delivering a defocused laser beam having a sharp-edged cross-section. 5,336,216, Cl. 606-4.000
Dewey, Douglas W.: *See*—
Brown, Lawrence S.; Dewey, Douglas W.; and Hall, Tharon, 5,337,197, Cl. 360-48.000.
DeYoung, David H.; Apelian, Diran; and Mutharasan, Rajakkannu, to Aluminum Company of America. Method for separation and removal of suspended liquid particles from molten metal and associated apparatus. 5,336,295, Cl. 75-407.000.
Dhong, Sang H.; Hwang, Wei; Terman, Lewis M.; and Wordeman, Matthew R., to International Business Machines Corporation. Folder Bitline DRAM having access transistors stacked above trench storage capacitors, each such transistor employing a planar semiconductor body which spans adjacent capacitors. 5,336,629, Cl. 437-52.000.
DiAngelo, Nancy A., to Betz Laboratories, Inc. Methods for inhibiting the deposition of proteinaceous materials on heat transfer surfaces. 5,336,414, Cl. 210-698.000.
DiBello, Gerald N.: *See*—
Chung, Bryan C.; DiBello, Gerald N.; Pearce, Charles W.; and Yanders, Kevin P., 5,336,371, Cl. 156-659.100.
Diehl, Klaus: *See*—
Mueller, Ulrich; Weiss, Ralf; Diehl, Klaus; Sandrock, Gerhard; and Sauvage, Lothar, 5,336,836, Cl. 585-824.000.
Diehl, Manfred; Koenig, Karl-Heinz; Krone, Eckhart; Loroesch, Juergen; Steiner, Norbert; Ullmann, Jochen; and Ziegler, Annette, to

VOL 1165 ISS 2 AG 9 1994 UMI

Degussa Aktiengesellschaft. Process for leaching of precious metals. 5,336,474, Cl. 423-29.000.

Diesel Kiki Co., Ltd.: *See—*
Tanaka, Noriyuki; Takishita, Takashi; Fukushima, Kiyoshi; Nagakura, Yasuyuki; Inoue, Kaoru; Nishijima, Tsuyoshi; and Inada, Haruhiro, 5,336,524, Cl. 427-240.000.

Dietz, Dennis R.: *See—*
Oakley, Clyde G.; Busse, Lawrence J.; Dietz, Dennis R.; Shishilla, John E.; and Ranalletta, Joseph V., 5,335,663, Cl. 128-662.000.

DiGianfilippo, Aleandro: *See—*
Kaufman, Stephen B.; DiGianfilippo, Aleandro; Sager, Tamara L.; Bow, Clark F.; and DeVito, Ralph J., 5,335,816, Cl. 221-13.000.

DiGirolamo, Martin V.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Merrifield, David L.; Molloy, James J.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,337,032, Cl. 355-260.000.

Digital Equipment International Limited: *See—*
Baudelaire, Patrick; Gangnet, Michel; Herve, Jean-Claude; Pudet, Thierry; and Thong, Jean-Manuel V., 5,337,404, Cl. 395-141.000.

Dijkmans, Eise C., to U.S. Philips Corporation. Amplifier having temperature compensated bias control. 5,337,012, Cl. 330-266.000.

Dillon, John B.: *See—*
Ware, Frederick A.; Gasbarro, James A.; Dillon, John B.; Griffin, Matthew M.; Barth, Richard M.; and Horowitz, Mark A., 5,337,285, Cl. 365-227.000.

DiNello, Alexandre: *See—*
Serbousek, Jon; and DiNello, Alexandre, 5,336,265, Cl. 623-18.000.

Dininno, Frank P.; Greenlee, Mark L.; Rano, Thomas A.; and Lee, Wendy, to Merck & Co., Inc. 2-phenanthridinyl carbaphenem antibacterial agent. 5,336,674, Cl. 514-210.000.

Discko, John J., Jr., to Centrix, Inc. Syringe and disposable capsule and method of forming capsule with cannula. 5,336,088, Cl. 433-90.000.

Divakaruni, Renuka S.: *See—*
Casey, Jon A.; Divakaruni, Renuka S.; Natarajan, Govindarajan; Reddy, Srinivasa S. N.; and Sammet, Manfred, 5,336,444, Cl. 252-513.000.

Divilie, Robert J.; and Divilio, L. Thomas. Attachment for removal of smoke in laparoscopic surgery. 5,336,169, Cl. 604-22.000.

Divilio, L. Thomas: *See—*
Divilie, Robert J.; and Divilio, L. Thomas, 5,336,169, Cl. 604-22.000.

DLP, Incorporated: *See—*
Davis, Richard E.; and Greenhoe, William J., 5,336,191, Cl. 604-165.000.
Rom, Paul F.; Briscoe, Roderick E.; and Williams, Christopher R., 5,336,193, Cl. 604-171.000.

do Espirito Santo, Antonio F., to Metagal Industria E Comercio Ltda. Motor vehicle rearview mirror apparatus mountable interchangeably on the right or left side of the motor vehicle. 5,337,188, Cl. 359-872.000.

Dobisz, Elizabeth A.; Marrian, Christie R. K.; Peckerar, Martin C.; and Rhee, Kee W., to United States of America, Navy. Method and system for electron beam lithography. 5,336,892, Cl. 250-492.200.

Dr. Ing. h.c.F. Porsche AG: *See—*
Muller, Robert, 5,335,747, Cl. 180-249.000.
Rispeter, Siegfried, 5,336,268, Cl. 623-23.000.
Seidel, Willi; and Petersmann, Joseph, 5,335,567, Cl. 475-120.000.

Dodge, Cleveland E., Jr. Hydrogen powered electricity generating planar member. 5,336,570, Cl. 429-31.000.

Doi, Kazuhiro: *See—*
Hamabe, Tsutomu; Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Sato, Noriharu, 5,337,365, Cl. 381-71.000.

Doi, Yasunori: *See—*
Uetani, Yasunori; Doi, Yasunori; Hashimoto, Kazuhiko; Osaki, Haruyoshi; and Hanawa, Ryotaro, 5,336,583, Cl. 430-191.000.

Dolan, Randall S. Door stop. 5,335,396, Cl. 16-82.000.

Dolson, Murray. Snow sled. 5,335,925, Cl. 280-16.000.

Domanski, Ronald S.: *See—*
Taravella, Philip; Blair, Edward J.; Domanski, Ronald S.; and Shippell, Joseph C., 5,335,789, Cl. 206-518.000.

Dominesey, Andrew E.: *See—*
Harris, Clark E.; Hulbert, Raymond D.; Dominesey, Andrew E.; Healey, Thomas C.; and Shaw, Joel R., 5,335,873, Cl. 242-348.000.

Dominiak, Marcel: *See—*
Baldy, Andre ; Barrois, Gerard; Blanc, Henri; and Dominiak, Marcel, 5,335,453, Cl. 51-67.000.

Donaghe, Charles D.: *See—*
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.

Donigan, Maria S.: *See—*
O'Connell, Patrick A.; Battey, Robert L.; Donigan, Maria S.; Tien, So V.; and Knights, John C., 5,337,080, Cl. 346-155.000.

Dono, Kenji: *See—*
Ozaki, Masahide; Yamazaki, Makoto; and Dono, Kenji, 5,335,404, Cl. 29-408.000.

Donoghue, Charles M.: *See—*
Kozah, Ghassan F.; and Donoghue, Charles M., 5,337,149, Cl. 356-376.000.

Dorricott, Martin R.; Gillard, Clive H.; Richards, John W.; Morita, Tsuneo; Galt, James J.; David, Morgan W. A.; Burns, James E.; and Varsani, Shima R., to Sony United Kingdom Limited. Format conversion of digital video signals, integration of digital video signals into photographic film material and the like, associated signal processing, and motion compensated interpolation of images. 5,337,154, Cl. 348-448.000.

Dosi, Mahendra K.: *See—*
Krishnamurti, Ramesh; Dosi, Mahendra K.; and Lin, Henry C., 5,336,808, Cl. 564-412.000.

Doss, William K.: *See—*
Buchholz, Dale R.; Doss, William K.; Robbins, Karen E.; Yednak, Mark A.; and Hamilton, R. Lee, Jr., 5,337,313, Cl. 370-94.100.

Dougherty, Erika J.: *See—*
Alexander, Paul R., Jr.; Cain, Donald G.; Dougherty, Erika J.; and Thornburg, Theodore S., 5,336,286, Cl. 55-528.000.

Dougherty, Thomas K.: *See—*
Ravetti, Robert G.; and Dougherty, Thomas K., 5,337,376, Cl. 385-12.000.

Douty, Brent D.: *See—*
Bacon, Edward R.; Daum, Sol J.; Estep, Kimberly G.; Josef, Kurt A.; Douty, Brent D.; and Illig, Carl R., 5,336,484, Cl. 424-5.000.

Dovan, Hoai T.: *See—*
Sandiford, Burton B.; Dovan, Hoai T.; and Hutchins, Richard D., 5,335,733, Cl. 166-300.000.

Dow Chemical Company, The: *See—*
Hucul, Dennis A., 5,336,822, Cl. 585-444.000.
Tsou, Yu-Min; McMichael, James W.; and Beaver, Richard N., deceased, 5,336,384, Cl. 204-252.000.
Tuinstra, Hendrik E.; and Myers, Harold D., 5,336,750, Cl. 528-196.000.

Dow Corning Corporation: *See—*
Haluska, Loren A.; and Michael, Keith W., 5,336,532, Cl. 427-515.000.

Dowe, David R., to Eastman Kodak Company. Electromagnetic actuator. 5,337,110, Cl. 354-230.000.

Drabczyk, Matthew P., to Engineered Data Products, Inc. Decorative panel construction for office furniture. 5,335,605, Cl. 100-153.000.

Dragerwerk AG: *See—*
Busack, Hans-Jurgen; Kaross, Klaus; Lindner, Bernd; Gambert, Rudolf; and Bleichert, Horst-Peter, 5,336,390, Cl. 204-431.000.

Dragerwerk Aktiengesellschaft: *See—*
Bechthold, Hans-Christoph; Burchardt, Udo; Ernst, Rainer; and Vogeler, Karsten, 5,336,470, Cl. 422-120.000.
Falb, Wolfgang; Gippert, Karl-Ludwig; Heim, Ulrich; Holscher, Uvo; Kiske, Siegfried; Kullik, Gotz; Loser, Ralf-Ernst; and Maurer, Christoph, 5,335,652, Cl. 128-203.140.

Draiswerke GmbH: *See—*
Stehr, Norbert; and Schmitt, Philipp, 5,335,867, Cl. 241-69.000.

Dransfield, Graham P.; and King, Denis J., to Tioxide Group Services Limited. Metallic oxides. 5,336,521, Cl. 427-220.000.

Dravo Lime Company: *See—*
Muzik, Charles J.; and Yoest, Kenneth L., 5,336,481, Cl. 423-640.000.

Dreher, Robert; Kelly, Dave; and Kraetz, Janis, to Cardiac Pacemakers, Inc. Method and apparatus for generating multiphasic defibrillation waveforms based on pulse width ratios. 5,336,241, Cl. 607-5.000.

Dresdner, Karl P., Jr.; Dangman, Kenneth H.; and Jazlowiecki, Edward A. Protective medical gloves and methods for their use. 5,335,373, Cl. 2-161.700.

Drexel University: *See—*
Siegler, Sorin, 5,335,674, Cl. 128-782.000.

Driscoll, John S.: *See—*
Marquez, Victor E.; Driscoll, John S.; Wysocki, Ronald J., Jr.; and Siddiqui, Maqbool A., 5,336,764, Cl. 536-4.100.

Dropkin, Herbert: *See—*
Lohrmann, Dieter R.; and Dropkin, Herbert, 5,337,052, Cl. 342-68.000.

Drug Delivery Systems Inc.: *See—*
Sibalis, Dan, 5,336,168, Cl. 604-20.000.

Druzynski, Frank C., to Aluma Shield Industries, Inc. Insulated smoke doors for cooler/freezer applications. 5,335,451, Cl. 49-379.000.

DSM Desotech, Inc.: *See—*
Coady, Clive J.; Poklacki, Erwin S.; Zimmerman, John M.; Bishop, Timothy E.; and Derer, John L., 5,336,563, Cl. 428-375.000.

DSM N.V.: *See—*
Boesten, Wilhelmus H. J.; and de Heij, Nicolaas A., 5,336,805, Cl. 562-444.000.
Van Geem, Paul C.; Xu, Xiaoding; and Scholten, Joseph J. F., 5,336,810, Cl. 568-435.000.

Du Pont Merck Pharmaceutical Company, The: *See—*
Edwards, David S.; Orvig, Christopher E. R.; and Poirier, Michael J., 5,336,482, Cl. 424-1.650.

DuBois, Donn A., to Shell Oil Company. Butadiene polymers having terminal silyl groups. 5,336,726, Cl. 525-272.000.

Dubois, Edward A.: *See—*
Bassick, John W.; and Dubois, Edward A., 5,335,370, Cl. 2-214.000.

Dubots, Dominique; and Faure, Pierre, to Pechiney Electrometallurgie. Abrasive and/or refractory products based on melted and solidified oxynitrides and process preparing the same. 5,336,280, Cl. 51-293.000.

Dubreuil, Alain, to Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources. Long lasting alkali and alkaline earth metal sensor. 5,336,389, Cl. 204-422.000.

Duffy, Paul E.; Hanson, John; Lugosi, Robert; Guptill, Spencer H.; and Kackowski, Matthew, to Torrington Company, The. Separable connecting device for steering column. 5,336,013, Cl. 403-2.000.

Dujardin-Montbard-Somenor Z. I. Lille Seclin: *See—*
Grillat, Alain, 5,335,387, Cl. 15-102.000.

Dummermuth, Paul, to Pamag AG. Treatment disk of apparatus for roughening or treating surfaces. 5,335,976, Cl. 299-39.000.

Dumoulin, Charles L., to General Electric Company. Magnetic resonance method of measuring kidney filtration rates. 5,335,660, Cl. 128-653.300.

Dunbar, William R., to Aqua-Chem, Inc. Integrated boiler/fuel cell system. 5,335,628, Cl. 122-1.00R.

Duncan, John A.: *See—*
Wiedner, Guenther; Duncan, John A.; and Patel, Suresh R., 5,335,372, Cl. 2-16.000.

Duncan, Richard L.: *See—*
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.

Dunning, Walter B.; and Bundschuh, Robert L. Pump sprayer having leak preventing seals and closures. 5,335,858, Cl. 239-333.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bowen, Michael W.; Ghorashi, Hamid M.; and Yang, Hung H., 5,336,734, Cl. 525-420.000.
Krespan, Carl G.; and Sievert, Allen C., 5,336,801, Cl. 560-227.000.
McDougall, Ian L.; Armstrong, Alan G. M.; and Hawkes, Robert C., 5,337,001, Cl. 324-318.000.
Yang, Zhen-Yu, 5,336,741, Cl. 526-247.000.

Durgin, Russell F., Jr.; Rowland, Christopher A.; Sullivan, Roy H.; and Vergano, Michael G., to Boston Scientific Corporation. Integrated catheter for diverse in situ tissue therapy. 5,336,222, Cl. 606-50.000.

Duriron Company, Inc., The: *See—*
Rusnak, Dennis M., 5,336,996, Cl. 324-207.200.

Durr, Charles A.; Manley, David B.; and McKee, Robert L., to M. W. Kellogg Company, The. Carbon dioxide recovery process. 5,335,504, Cl. 62-20.000.

Duryea, Duane. Automobile engine hose system with plurality of adaptor members. 5,335,943, Cl. 285-12.000.

Dussan V., Elizabeth B.: *See—*
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.

Dutkevitch, Dennis: *See—*
Maldanis, Algert J.; Courts, Robert I.; Dutkevitch, Dennis; and Mooney, David J., 5,335,818, Cl. 221-131.000.

Dwyer, Francis G.; and Valyocsik, Ernest W., to Mobil Oil Corp. Highly siliceous porous crystalline material. 5,336,478, Cl. 423-708.000

Dwyer, Roger F., to United States of America, Navy. Method and apparatus for classifying targets. 5,337,053, Cl. 342-90.000.

Dynamit Nobel AG: *See—*
Horr, Alfred; Reiss, Heinz; and Brede, Uwe, 5,335,600, Cl. 102-470.000.

Dynax Corporation: *See—*
Takakura, Norio; and Takahashi, Jin, 5,335,765, Cl. 192-107.00R.

Dziabo, Anthony J.: *See—*
Park, John Y.; Ripley, Paul S.; and Dziabo, Anthony J., 5,336,434, Cl. 252-187.210.

Dzurko, Kenneth M.: *See—*
Lang, Robert J.; Dzurko, Kenneth M.; Scifres, Donald R.; and Welch, David F., 5,337,328, Cl. 372-45.000.

E.M. Engineering F.T.S. B.V.: *See—*
van Staveren, Nicolaas A., 5,336,413, Cl. 210-650.000.

E Squared Inc.: *See—*
Rowley, C. Allen, 5,336,059, Cl. 417-348.000.

E-Z Trail, Inc.: *See—*
Kuhns, Abe B., 5,336,035, Cl. 414-501.000.

Eakin, Paul W.: *See—*
Hubble, Fred F., III; Weber, Michael E.; Abowitz, Gerald; Bov, Raphael F., Jr.; Swales, Michael G.; and Eakin, Paul W., 5,337,122, Cl. 355-208.000.

Eason, Neal P., to Simco/Ramic Corporation. Backlight sorting system and method. 5,335,791, Cl. 209-588.000.

East, Amanda H.; and Janse Van Rensburg, Richard W., to Elmjet Limited. Continuous ink jet printer. 5,337,071, Cl. 347-77.000.

Eastman Chemical Company: *See—*
Krutak, James J.; Cushman, Michael R.; Parham, William W.; Coates, Clarence A.; Weaver, Max A.; and Patonay, Gabor, 5,336,714, Cl. 524-608.000.

Eastman Kodak Company: *See—*
Bauer, Charles L.; and Vanier, Noel R., 5,336,659, Cl. 503-227.000.
Dowe, David R., 5,337,110, Cl. 354-230.000.
Fitzgerald, John J., 5,336,539, Cl. 428-36.800.
Gentzke, John D.; and Kerr, Roger S., 5,337,072, Cl. 346-76.00L.
Ghosh, Syamal K.; Chatterjee, Dilip K.; and Koziol, Dennis R., 5,336,282, Cl. 51-309.000.
Harris, Clark E.; Hulbert, Raymond D.; Dominesey, Andrew E.; Healey, Thomas C.; and Shaw, Joel R., 5,335,873, Cl. 242-348.000.
Hochreiter, Eric P.; Ehrne, Franklin D.; Morris, William I.; and Schwab, Frederick J., 5,337,120, Cl. 355-47.000.
Skye, David A.; and Twist, Peter J., 5,337,112, Cl. 359-298.000
Smith, Kyle; Fisher, Barbara J.; Bryan, Philip S.; and Hoderlein, Paul M., 5,336,893, Cl. 250-483.100.
Tarn, Terry, 5,337,217, Cl. 361-784.000.
Vaynshteyn, Mikhail, 5,337,105, Cl. 354-149.110.

Eaton Corporati: *See—*
Caron, LaVerne A., 5,336,995, Cl. 324-174.000.

Eaton Corporation: *See—*
Genise, Thomas A.; and Markyvech, Ronald K., 5,335,566, Cl. 477-124.000
Lindsey, Kurt L.; Peret, Andrew R.; Hastings, Jerome K.; and Smith, Richard G., 5,337,214, Cl. 361-709.000.
Pipes, George R., 5,336,032, Cl. 414-331.000.
Reiner, Richard A.; and Vogel, David L., 5,337,211, Cl. 361-637.000.
Wojtanek, Guy A.; Lopez, Jaime; and Grafer, G. Scott, 5,336,859, Cl. 200-315.000.

Ebashi, Iwao; Takigawa, Tetsuo; and Inoue, Masayasu, to Kuraray Co., Ltd. Long chain carboxylic acid imide ester. 5,336,782, Cl. 548-542.000.

Ebashi, Tadashi: *See—*
Sugitani, Toshiaki; Tsuyuki, Kenichiro; Miyata, Yukie; Ebashi, Tadashi; Okui, Hideaki; Nakajima, Yoshikazu; and Sawada, Kenzo, 5,336,617, Cl. 435-252.100.

Ebbing, Peter: *See—*
Strul, Bruno; de Geus, Richard; and Ebbing, Peter, 5,337,144, Cl. 356-357.000.

Ecker, Mario E.: *See—*
Jacobowitz, Lawrence; Ecker, Mario E.; and DeCusatis, Casimer M., 5,337,388, Cl. 385-76.000.

Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., to Pitney Bowes Inc. Mailing machine including sheet feeding speed calibrating means. 5,337,248, Cl. 364-468.000.

Ecoair Corporated: *See—*
Powell, James W., 5,335,507, Cl. 62-129.000.

Ecolab Inc.: *See—*
Richter, Francis L.; Pedersen, Daniel E.; Biedscheid, May J.; and Fredell, Dale L., 5,336,500, Cl. 424-405.000.

Edelman, Laura H.: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,335,389, Cl. 15-167.100.

Edentec: *See—*
Bowman, Bruce R.; and Stasz, Peter, 5,335,666, Cl. 128-723.000.

Edwards, Brooks: *See—*
Bronstein, Irena; Edwards, Brooks; and Voyta, John, 5,336,596, Cl. 435-6.000.

Edwards, David S.; Orvig, Christopher E. R.; and Poirier, Michael J., to Du Pont Merck Pharmaceutical Company, The. Technetium-99m complexes with N-substituted 3-hydroxy-4-pyridinones. 5,336,482, Cl. 424-1.650.

Edwards, Paul A., to Imperial Chemical Industries PLC. Thermal transfer printing receiver. 5,336,658, Cl. 503-227.000.

Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, to Dai Nippon Insatsu Kabushiki Kaisha. Process for heat transfer recording. 5,336,657, Cl. 503-227.000.

Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, to Dai Nippon Insatsu Kabushiki Kaisha. Heat transfer. 5,336,660, Cl. 503-227.000.

Egen, Ned B.; Twitty, Garland E.; and Sammons, David W., to BioSeparations, Inc. Electrical separator apparatus and method of counterflow gradient focusing. 5,336,387, Cl. 204-301.000.

Egli, Werner H.; and Tettemer, Clair R., to Honeywell Inc. Method and apparatus for distortion free measurements. 5,337,141, Cl. 356-350.000.

Egloff, Anton: *See—*
Berktold, Klaus; Gunther, Kurt; and Egloff, Anton, 5,335,698, Cl. 139-1.00E.

Eguchi, Masaki; Saitoh, Jun; Iida, Hiroyuki; and Hiyoshi, Kozo, to Sharp Kabushiki Kaisha. Active control apparatus using adaptive digital filter. 5,337,366, Cl. 381-71.000.

Eguchi, Takao: *See—*
Shitanda, Motoshi; Eguchi, Takao; and Miyoshi, Yuji, 5,336,935, Cl. 307-116.000.

Ehrlich, Wolfgang, to Ant Nachrichtentechnik GmbH. Stuffing process for reducing waiting time jitter and device for executing the process. 5,337,315, Cl. 370-102.000.

Ehrne, Franklin D.: *See—*
Hochreiter, Eric P.; Ehrne, Franklin D.; Morris, William I.; and Schwab, Frederick J., 5,337,120, Cl. 355-47.000.

Eian, Gilbert L., to Minnesota Mining and Manufacturing Company. Method for preparing poly(vinyl trifluoroacetate) and poly(vinyl trifluoroacetate/vinyl ester) in the absence of chlorofluorocarbon solvent. 5,336,740, Cl. 526-194.000.

Eicher, Johannes; Fazniewscy, Karl-Heinz; Rieland, Matthias; and Rudolph, Werner, to Solvay Fluor und Derivate GmbH. Method of preparing 1,1,1,2-tetrafluoroethane. 5,336,817, Cl. 570-168.000.

Einbinder, Itamar B., to AT&T Bell Laboratories. Gas tube protector. 5,336,970, Cl. 313-631.000.

Eisele, Timothy C.: *See—*
Kawatra, Surendra K.; and Eisele, Timothy C., 5,335,785, Cl. 209-170.000.

Eitrheim, John K.; and Reis, Richard B., to Cyrix Corporation. Stable internal clock generation for an integrated circuit. 5,336,939, Cl. 307-269.000.

Eka Nobel AB: *See—*
Lagnemo, Hans; Sparks, Robert E.; and Jacobs, Irwin C., 5,336,433, Cl. 252-186.230.

Elan Corporation, plc: *See—*
Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., 5,336,504, Cl. 424-462.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Elbertson, Michael D.: *See—*
Seitz, David M.; and Elbertson, Michael D., 5,335,854, Cl. 239-146.000.

Electronic Development, Inc.: *See—*
Rogers, Wesley A., 5,337,261, Cl. 364-572.000.

Elgh, Bengt: *See—*
Gillbrand, Per; Johansson, Hans; Johansson, Per; and Elgh, Bengt, 5,335,743, Cl. 180-178.000.

Eliash, Bruce M.: *See—*
Phan, Nguyet H.; Reddy, Vilambi N. R. K.; Ludwig, Frank A.; and Eliash, Bruce M., 5,336,380, Cl. 204-153.100.

Elizabeth Arden Co., Division of Conopco, Inc.: *See—*
Guerrero, Angel A.; and Vargas, Anthony, 5,336,497, Cl. 424-401.000

Elkay Manufacturing Company: *See—*
Stanford, Ralph F.; and Gatz, Stephen E., 5,336,406, Cl 210-235.000.

Ellard, Anthony L.: *See—*
Crider, Grant W.; and Ellard, Anthony L., 5,336,131, Cl. 454-238.000.

Ellers, Eric, to United States of America, Air Force. Universal infrared heat source controller. 5,336,894, Cl. 250-504.00R.

Ellingboe, John W.: *See—*
Sarantakis, Dimitri; Bicksler, James J.; Ellingboe, John W.; and Nikaido, Madelene, 5,336,677, Cl. 514-256.000.

Ellis, Richard B.: *See—*
Dalebout, William T.; and Ellis, Richard B., 5,336,142, Cl. 482-52.000.

Elmjet Limited: *See—*
East, Amanda H.; and Janse Van Rensburg, Richard W., 5,337,071, Cl. 347-77.000.

Elmore, David D.: *See—*
Atherton, Kenneth W.; Chevalier, Gerard; Galletero, Jokin; Bullock, Donald F.; Crittenden, Curtis W.; Elmore, David D.; and Germer, Warren R., 5,336,991, Cl. 324-142.000.

Elopak Systems A.G.: *See—*
Esper, Leo J., 5,335,862, Cl. 239-570.000.
Lisiecki, Robert E., 5,335,847, Cl. 229-244.000.

Elteto, Laszlo: *See—*
Chou, Wayne W.; Kulinets, Joseph M.; Elteto, Laszlo; and Engel, Frederik, 5,337,357, Cl. 380-4.000.

Elvebak, Dale D., to Enderes Tool Co., Inc. Screwdriver including a handle with an O-ring therein for retaining a removable bit and method of assembly therefor. 5,335,409, Cl. 29-451.000.

Embankment Investments Limited: *See—*
Despointes, Simon H., 5,336,125, Cl. 452-127.000.

Emcore Corporation: *See—*
Stall, Richard A.; Tompa, Gary S.; Gurary, Alexander; and Nelson, Craig R., 5,336,324, Cl. 118-719.000.

Emhart Inc.: *See—*
Mirshafiee, David; and Bergen, Gary R., 5,335,950, Cl. 292-356.000.
Solovieff, Paul G., 5,335,525, Cl. 70-370.000.

Emmber Foods, Inc.: *See—*
Zaeske, Donald A.; Ceplina, Raymond E.; Weber, Rick V.; and Tweed, Gregory A., 5,335,480, Cl. 53-431.000.

Emoto, Masami: *See—*
Gotoh, Hiroshi; Emoto, Masami; and Yokomori, Kiyoshi, 5,337,302, Cl. 369-112.000.

Enderes Tool Co., Inc.: *See—*
Elvebak, Dale D., 5,335,409, Cl. 29-451.000.

Endo, Hiroyuki; Hachiya, Satoshi; and Moriwaki, Fumio, to Idemitsu Kosan Co., Ltd. High polymer and ferroelectric liquid crystal composition utilizing same. 5,336,435, Cl. 252-299.610.

Endress + Hauser Inc.: *See—*
Kempf, David; and McCarthy, William P., 5,335,554, Cl. 73-861.730.

Endura Products, Inc.: *See—*
Procton, Brad I., 5,335,450, Cl. 49-368.000.

Energize International, Inc.: *See—*
Van Ballegooie, Paul, 5,336,151, Cl. 482-124.000.

Eng, Alice C.: *See—*
Nae, Hemi N.; Reichert, William W.; and Eng, Alice C., 5,336,647, Cl. 501-146.000.

Engel, Frederik: *See—*
Chou, Wayne W.; Kulinets, Joseph M.; Elteto, Laszlo; and Engel, Frederik, 5,337,357, Cl. 380-4.000.

Engineered Data Products, Inc.: *See—*
Drabczyk, Matthew P., 5,335,605, Cl. 100-153.000.

Engler, Michael: *See—*
Berget, Peter; Engler, Michael; Highlander, Sarah; and Weinstock, George, 5,336,491, Cl. 424-190.100.

Enricerche S.p.A.: *See—*
Bellussi, Giuseppe; Giusti, Aldo; and Zanibelli, Laura, 5,336,830, Cl. 585-660.000.

Enomoto, Masami: *See—*
Oshimi, Fumiaki; Kubota, Susumu; Enomoto, Masami; and Otsuki, Yutaka, 5,336,752, Cl. 528-205.000.

ENPLAS Corporation: *See—*
Ozawa, Kazuhisa; and Harada, Hiroaki, 5,336,096, Cl. 439-72.000.

Entenmann, William J.: *See—*
Murphy, Gregory B.; Lang, Kevin W.; Frake, Barry N.; and Entenmann, William J., 5,336,515, Cl. 426-573.000.

Environmental Research Institute of Michigan: *See—*
Gilles, Andrew; and Hepp, Daniel, 5,337,370, Cl. 382-14.000.

EP Technologies, Inc.: *See—*
Lundquist, Ingemar; and Thompson, Russell B., 5,336,182, Cl. 604-95.000.

Epitope, Inc.: *See—*
Goldstein, Andrew S.; Gavojdea, Stefan; and Zogg, David F., 5,335,673, Cl. 128-760.000.

Erbamont, Inc.: *See—*
Palepu, Nageswara R.; and Herzyk, Tomaz R., 5,336,669, Cl. 514-53.000.

Erlich, Fred: *See—*
Moss, Richard; and Erlich, Fred, 5,336,190, Cl. 604-153.000.

Ernst, James J.: *See—*
Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., 5,335,559, Cl. 73-866.000.

Ernst, Rainer: *See—*
Bechthold, Hans-Christoph; Burchardt, Udo; Ernst, Rainer; and Vogeler, Karsten, 5,336,470, Cl. 422-120.000.

Ernster, Melvin J., to Bru-Mel Corporation. Fluid-augmented free-vortex power generating apparatus. 5,336,933, Cl. 290-55.000.

Ersek, Robert A.; Beisang, Arthur A.; and Beisang, Arthur A., III, to Ersek, Robert A.; Beisang, Arthur A.; and Beisang, Arthur A., III Treatment of urological and gastric fluid reflux disorders by injection of mmicro particles. 5,336,263, Cl. 623-11.000.

Eschenburg, Jochim: *See—*
Beisswenger, Hans; Eschenburg, Jochim; and Loffler, Johannes, 5,336,317, Cl. 106-745.000.

Eskildsen, Steven R.; Golwalkar, Suresh V.; and Barrios, Tito, to Intel Corporation. Method of producing a scribelined layout structure for plastic encapsulated circuits. 5,336,456, Cl. 264-157.000.

Esmon, Charles T.; and Esmon, Naomi L., to Oklahoma Medical Research Foundation. Method for purification of the zymogen of protein C or the heavy chain thereof using monoclonal antibody HPC-4. 5,336,610, Cl. 435-212.000.

Esmon, Naomi L.: *See—*
Esmon, Charles T.; and Esmon, Naomi L., 5,336,610, Cl. 435-212.000.

Esper, Leo J., to Elopak Systems A.G. Discharge nozzle for a liquid filling assembly. 5,335,862, Cl. 239-570.000.

Espinoza, Therese A.: *See—*
Attard, Peter M.; and Espinoza, Therese A., 5,336,318, Cl. 106-780.000.

Estep, Kimberly G.: *See—*
Bacon, Edward R.; Daum, Sol J.; Estep, Kimberly G.; Josef, Kurt A.; Douty, Brent D.; and Illig, Carl R., 5,336,484, Cl. 424-5.000.

Ettelbrueck, Ruediger, to Maschinenfabrik Kaspar Walter GmbH & Co. KG. Method and device for automatically determining the dimensions of printing cylinders having a diameter counter. 5,336,898, Cl. 250-560.000.

Eudes, Jacques: *See—*
Sadot, Philippe; Thebault, Bertrand; Darmon, Marc; and Eudes, Jacques, 5,337,331, Cl. 375-83.000.

Eugster, Emil: *See—*
Ilek, Anton; Thurnherr, Hugo; and Eugster, Emil, 5,335,454, Cl. 51-165.750.

Evans, Stuart. Tool for stripping excess paint from a paint roller. 5,335,392, Cl. 15-236.030.

Eveready Battery Company, Inc.: *See—*
Pensabene, Saverio F.; and Royalty, Roy L., 5,336,276, Cl. 29-623.500

Exaire Co.: *See—*
Joyce, Roger L.; and Westby, Ron, 5,335,414, Cl. 29-726.000.

Exxon Chemical Patents Inc.: *See—*
Cheradame, Herve M.; Lundberg, Robert D.; Chen, Frank J.; and Habimana, Jean de la Crois, 5,336,745, Cl. 526-347.100.
Nadler, Kirk C.; Broussard, Thomas R.; and Pitre, Joseph K., 5,336,473, Cl. 422-193.000.

Exxon Research and Engineering Company: *See—*
Aldridge, Clyde L.; and Riley, Kenneth L., 5,336,654, Cl. 502-170.000.
Gorbaty, Martin L.; and Nahas, Nicholas C., 5,336,705, Cl. 524-68.000.
Pabst, Joanne K.; Winter, William E., Jr.; Vaughn, Stephen N.; Culross, Claude C.; and Reynolds, Steve D., 5,336,395, Cl. 208-403.000.
Poirier, Marc A.; and Falkiner, Robert J., 5,336,277, Cl. 44-343.000.

EZ Loader Boat Trailers, Inc.: *See—*
Hiller, James N., 5,335,934, Cl. 280-718.000.

Fagan, William H.: *See—*
Randall, John N.; Wooley, James R.; and Fagan, William H., 5,335,649, Cl. 601-24.000.

Fahey, William F.: *See—*
Shah, Sayed S.; Fahey, William F.; and Oude Alink, Bernardus A., 5,336,441, Cl. 252-390.000.

Fahrzeugtechnik Ebern GmbH: *See—*
Fischenich, Bernhard; Rudiger, Eckhart; and Sauer, Herbert, 5,335,585, Cl. 92-128.000

Faigle, Ernst M.; and Ziomek, Joseph F., to TRW Vehicle Safety Systems Inc. Separable connection for an air bag cover assembly. 5,335,936, Cl. 280-728.00A.

Fair, Jim; and Mehlhaff, John, to Aktis Corporation. Rapid thermal annealing using thermally conductive overcoat. 5,336,641, Cl. 437-248.000

Fair, Kenneth L.: *See—*
Holland, Scott B.; Fair, Kenneth L.; and Youells, James P., 5,337,229, Cl. 364-131.000.

Falb, Wolfgang; Gippert, Karl-Ludwig; Heim, Ulrich; Holscher, Uvo; Kiske, Siegfried; Kullik, Gotz; Loser, Ralf-Ernst; and Maurer, Christoph, to Dragerwerk Aktiengesellschaft. Gas ratio control device for anesthetic apparatus. 5,335,652, Cl. 128-203.140.

Falkiner, Robert J.: *See—*
Poirier, Marc A.; and Falkiner, Robert J., 5,336,277, Cl. 44-343.000.

Falkowski, Denis E.: *See—*
Rao, Nippani R.; Abouzahr, Saad M.; Spencer, Russ; and Falkowski, Denis E., 5,336,710, Cl. 524-494.000.

Family Health International: *See—*
Wheeler, Robert G., deceased; and Hawley, William D., 5,335,675, Cl. 128-842.000.

Fan, Ruixue, to NEC Corporation. Low delay ATM switching system using idle cells stamped with reference time. 5,337,308, Cl. 370-60.000.

Fan, Tau-chao: *See—*
Darras, Robert L.; and Fan, Tau-chao, 5,336,555, Cl. 428-247.000.

Fantucci, Mario: *See—*
Camaggi, Giovanni; Chiarino, Dario; Fantucci, Mario; and Meazza, Giovanni, 5,336,664, Cl. 504-261.000.

Fanuc, Ltd.: *See—*
Torii, Nobutoshi; Nihei, Ryo; and Wakio, Hiroshi, 5,337,148, Cl. 356-376.000.

Fanuc Ltd: *See—*
Fujita, Naoki; Matsumura, Teruyuki; and Murata, Koichi, 5,337,249, Cl. 364-474.220.

Farb, Norman E.; and Chon, James Y., to Printronix, Inc. Printer hammerspring. 5,335,999, Cl. 400-124.210.

Fariss, Marc W., to Center for Innovative Technology; and Virginia Commonwealth University. Method for protecting animals against tacrine induced cytotoxic injury using sterol compounds. 5,336,485, Cl. 424-10.000.

Farmland Industries, Inc.: *See—*
Ferguson, Clayton L., 5,335,422, Cl. 33-553.000.

Farnworth, Warren M.: *See—*
Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., 5,336,649, Cl. 437-209.000.

Fasching, George E.; and Smith, Nelson S., Jr., to United States of America, Energy. Phased-array ultrasonic surface contour mapping system and method for solids hoppers and the like. 5,337,289, Cl. 367-140.000.

Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., to BASF Lacke+Farben Aktiengesellschaft. Polymeric reaction products. 5,336,722, Cl. 525-113.000.

Faulk, Robert L., Jr., to Hewlett-Packard Company. Port arrival identification for computer network packets. 5,337,309, Cl. 370-60.000.

Faure, Pierre: *See—*
Dubots, Dominique; and Faure, Pierre, 5,336,280, Cl. 51-293.000.

Fazniewscy, Karl-Heinz: *See—*
Eicher, Johannes; Fazniewscy, Karl-Heinz; Rieland, Matthias; and Rudolph, Werner, 5,336,817, Cl. 570-168.000.

Fealey, William S., to Stanley-Bostitch, Inc. Spring actuated fastener driving tool. 5,335,839, Cl. 227-132.000.

Feenstra, Randall M.: *See—*
Lustig, Naftali E.; Feenstra, Randall M.; and Guthrie, William L., 5,337,015, Cl. 324-671.000.

Feikert, John H.: *See—*
Mayer, Steven T.; Feikert, John H.; Kaschmitter, James L.; and Pekala, Richard W., 5,336,274, Cl. 29-623.400.

Fenk, Josef; and Thomas, Volker, to Siemens Aktiengesellschaft. Integrated frequency synthesizer circuit for transmit-and-receiver operation. 5,337,005, Cl. 328-14.000.

Ferguson, Clayton L., to Farmland Industries, Inc. Tube variation measuring device. 5,335,422, Cl. 33-553.000.

Ferguson, Gregory A.; and Gallot, David, to Precision Handling Devices Inc. Storage cap with spring biased female threads. 5,336,011, Cl. 401-247.000.

Ferre, Gilbert: *See—*
Blanchard, Gilbert; and Ferre, Gilbert, 5,336,804, Cl. 558-319.000.

Ferro Corporation: *See—*
Byrne, Christine J.; Blonski, Robert P.; and Welch, John J., 5,336,312, Cl. 106-479.000.

Ferrum AG: *See—*
Ruetschi, Heinz; and Hediger, Hansrudolf, 5,335,474, Cl. 53-282.000.

Festo KG: *See—*
Stoll, Kurt, 5,335,587, Cl. 92-169.200.

Feuling Engineering, Inc.: *See—*
Feuling, James J., 5,335,640, Cl. 123-559.100.

Feuling, James J., to Feuling Engineering, Inc. Rotor to casing seals for roots type superchargers. 5,335,640, Cl. 123-559.100.

Fiberguide Industries: *See—*
Biswas, Dipak R.; and Pan, Anpei, 5,337,381, Cl. 385-36.000.

Fidia, S.p.A.: *See—*
della Valle, Francesco; and Romeo, Aurelio, 5,336,668, Cl. 514-023.000.
della Valle, Francesco; and Romeo, Aurelio, 5,336,767, Cl. 536-55.100.

Field, John B. A.; and Stucke, Donald W., Jr. Electroluminescent transparency illuminator. 5,337,224, Cl. 362-84.000.

Filterwerk Mann & Hummel GmbH: *See—*
Schnabel, Werner, 5,335,641, Cl. 123-574.000.

Fina Technology, Inc.: *See—*
Shamshoum, Edwar S.; and Ghosh, Ashim K., 5,336,824, Cl. 585-475.000.

Finance Techniques et Systemes: *See—*
Grasset, Michel, 5,337,046, Cl. 340-944.000.

Finchum, John A.; and Sheehan, Timothy K., to Amoco Corporation. Food and beverage tray. 5,335,787, Cl. 206-564.000.

Finkenauer, Robert: *See—*
Moeck, Gerhard; and Finkenauer, Robert, 5,336,005, Cl. 401-68.000.

Fiore, Eric M.: *See—*
Sutherland, Audrey E.; Bridger, Keith; Fiore, Eric M.; Christodoulou, Julie A.; Bailey, Alex E.; and Gelb, Allan S., 5,337,209, Cl. 361-321.500.

Fisch, Eberhard, to Philips Electronics North America Corporation. Apparatus for converting a digital video signal which corresponds to a first scan line format into a digital video signal which corresponds to a different scan. 5,337,089, Cl. 348-446.000.

Fischenich, Bernhard; Rudiger, Eckhart; and Sauer, Herbert, to Fahrzeugtechnik Ebern GmbH. Master cylinder. 5,335,585, Cl. 92-128.000.

Fischer, Addison M. Method and apparatus for creating, supporting, and using travelling programs. 5,337,360, Cl. 380-23.000.

Fischer, Eugene B.: *See—*
Crump, John C., III; Fischer, Eugene B.; Wilson, Robert C.; Winterson, Warren D.; Jaxmar, Leif E. B.; Norberg, Gustav M.; and Olsson, Lennart F., 5,335,590, Cl. 99-479.000.

Fischer, Martin, to Hewlett Packard Company. Detector circuit for detecting state changes of a binary signal. 5,336,944, Cl. 307-350.000.

Fischer, Thomas: *See—*
Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, 5,335,937, Cl. 280-728.00B.

Fischer, Udo K. R.: *See—*
Waldenstrom, Mats G.; Fischer, Udo K. R.; Hillert, Lars H.; and Dennis, Mahlon D., 5,335,738, Cl. 175-420.200.

Fischer, Wilfried: *See—*
Klokkers-Bethke, Karin; and Fischer, Wilfried, 5,335,769, Cl. 206-438.000.

Fischer, Wolfgang: *See—*
Niessner, Norbert; Fischer, Wolfgang; Guentherberg, Norbert; Ruppmich, Karl; and Seitz, Friedrich, 5,336,718, Cl. 525-67.000.

Fisher, Barbara J.: *See—*
Smith, Kyle; Fisher, Barbara J.; Bryan, Philip S.; and Hoderlein, Paul M., 5,336,893, Cl. 250-483.100.

Fisher, Donald J., to Xerox Corporation. Belt supporting member for a color image forming apparatus. 5,337,123, Cl. 355-212.000.

Fishman, Henry. Allergy testing method and apparatus. 5,335,670, Cl. 128-743.000.

Fiso, Joseph F.; and Lee, Tae S. Inflatable athletic shoe with detachable pump. 5,335,430, Cl. 36-88.000.

Fissmann, Hans-Joachim; and Weiss, Hans, to J. M. Voith GmbH. Winder for rewinding a web, especially a paper web. 5,335,871, Cl. 242-595.100.

Fitch, Frank, to Canadian Bionic Research Inc. Communication device for transmitting audio information to a user. 5,337,364, Cl. 381-68.300.

Fithian, Michael J.: *See—*
Namordi, Mooshi R.; Lang, Mark R.; and Fithian, Michael J., 5,337,027, Cl. 333-161.000.

Fitzgerald, John J., to Eastman Kodak Company. Fuser roll containing nickel oxide particles for fixing toner to a substrate. 5,336,539, Cl. 428-36.800.

Flaim, Tony D.: *See—*
Moss, Mary G.; Bewer, Terry; Cuzmar, Ruth M.; Hawley, Dan W.; and Flaim, Tony D., 5,336,925, Cl. 257-643.000.

Fleetwood Systems, Inc.: *See—*
Holloway, Peter W., 5,335,810, Cl. 221-10.000.

Fleming, Donald L.: *See—*
Huggins, Freddie L.; and Fleming, Donald L., 5,336,158, Cl. 601-14.000.

Fletcher, Wade D.: *See—*
Beasley, M. Wayne; Fletcher, Wade D.; and Wilfong, Harry B., Jr., 5,335,788, Cl. 206-554.000.

Fletton, Richard A.: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,336,789, Cl. 549-264.000

Florida State University: *See—*
Holton, Robert A., 5,336,785, Cl. 549-214.000.

Flory, Vera A. Canister. 5,335,804, Cl. 211-78.000.

Fluor Corporation: *See—*
Wallskog, Harvey A.; Landon, Frank L.; and Ruble, William R., 5,336,375, Cl. 202-96.000.

Fluoroware, Inc.: *See—*
McKenzie, Jeffrey J., 5,335,696, Cl. 137-883.000.

Flurry, Greogory A.: *See—*
Baker, David C.; Bohrer, Kathryn A.; Flurry, Greogory A.; Lucas, Peter; and Rhyne, James R., 5,337,412, Cl. 395-275.000.

FMC Corporation: *See—*
Nathan, Micha, 5,335,856, Cl. 239-164.000

Foa, Marco: *See—*
Gardano, Andrea; Sabarino, Giampiero; and Foa, Marco, 5,336,793, Cl. 554-138.000.

Focas Limited: *See—*
Hobby, James D.; and Butcher, Steven J., 5,336,883, Cl 250-227.170.

Focke & Co.: *See—*
Focke, Heinz; and Buse, Henry, 5,336,040, Cl. 414-751.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Focke & Co. (GmbH & Co.): *See—*
Focke, Heinz; and Stiller, Martin, 5,336,154, Cl. 493-352.000.
Focke, Heinz; and Buse, Henry, to Focke & Co. Process and apparatus for grasping lifting and moving stacks of blanks for cigarette packs. 5,336,040, Cl. 414-751.000.
Focke, Heinz; and Stiller, Martin, to Focke & Co. (GmbH & Co.). Apparatus for producing package made of cardboard. 5,336,154, Cl. 493-352.000.
Fogg, Raymond C.; and Lushina, James J., to Taurean Electronics, Inc. System for categorizing and recording vehicle trip distance. 5,337,236, Cl. 364-424.040.
Fohl, Artur, to TRW Repa GmbH. Vehicle deceleration sensor. 5,335,941, Cl. 280-206.000.
Folden, Thomas I., to Fresenius USA, Inc. Peritoneal dialysis tubing set and method of operation. 5,336,173, Cl. 604-29.000.
Folger, David; Arnold, David; and Lambert, Maureen, to Nomadic Systems, Inc. System for remote computer control using message broadcasting system. 5,337,044, Cl. 340-825.440.
Fong, Dodd W.; and Swiecinski, Frederick J., to Nalco Chemical Company. Acrylamide co-polymers with (2-acrylamido-2-hydroxyethyl) lower trialkyl ammonium salts. 5,336,729, Cl. 525-329.400.
Fong, Tung M.: *See—*
Strader, Catherine D.; and Fong, Tung M., 5,336,595, Cl. 435-6.000.
Fooks, Elik I.; Delaney, Patrick J., III; and Johnson, Philip E., to Allen-Bradley Company, Inc. System for determining operational stability of a photoelectric control unit having a margin variable gain module. 5,336,882, Cl. 250-221.000.
Foothills Medical Equipment, Inc.: *See—*
Settlemyer, Bernard W.; Johnson, William A.; and Johnson, Robert L., 5,335,426, Cl. 34-80.000
Forbe, Christopher B. Closet ring used in a repair flange assembly. 5,335,849, Cl. 285-12.000.
Ford, David A.: *See—*
Leyland, Steven P.; and Ford, David A., 5,336,294, Cl. 75-406.000.
Ford, David H.: *See—*
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., 5,336,335, Cl. 136-258.000.
Ford Motor Company: *See—*
Cairns, Thomas M.; and Moroney, William N., 5,336,102, Cl. 439-272.000.
Hancock, Robert L.; Pritz, Steven E.; Bauman, Robert C.; and Nowlan, Shawn J., 5,335,642, Cl. 123-634.000.
Helms, Jeffrey H.; Holubka, Joseph W.; and Blais, Edmund J., 5,337,184, Cl. 359-270.000.
Langer, Peter; Wojcik, Karl W.; and Snover, Todd A., 5,337,013, Cl. 324-537.000.
Meyer, John H.; and Gajewski, Kenneth J., 5,336,965, Cl. 313-498.000.
Smith, Calvin G., 5,335,718, Cl. 165-42.000.
Spangler, Leland J., 5,337,260, Cl. 364-571.020.
Sweppy, Michael S.; and Kerns, James M., 5,335,539, Cl. 73-118.100.
Toepfer, Craig B.; and Brown, Robert K., 5,336,934, Cl. 307-10.100.
Forehand, Gilbert H.: *See—*
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.
Forero, Miguel, to Pavco S.A. Polyolefine yarns with good performance for rugs and carpets and method of producing the same. 5,336,562, Cl. 428-373.000.
Forrester, James M., to General Electric Company. Blade containment system and method. 5,336,044, Cl. 415-9.000.
Forsberg, John W.; Jahnke, Richard W.; Lange, Richard M.; and DeTar, Marvin B., to Lubrizol Corporation, The. Salt compositions and concentrates for use in explosive emulsions. 5,336,439, Cl 252-356.000.
Forsyth, Mark A.: *See—*
DeLano, Eric R.; Gleason, Craig A.; and Forsyth, Mark A., 5,337,415, Cl. 395-375.000.
Fort, Wesley, to Nordson Corporation. Method and apparatus for dispensing multiple beads of viscous liquid. 5,335,825, Cl. 222-1.000.
Forte, Paulino, to UOP. Process for the separation of aromatic hydrocarbons with energy redistribution. 5,336,840, Cl. 585-833.000.
Fory, Werner; and Schurter, Rolf, to Ciba-Geigy Corporation. Certain-3-amino-2-pyridine-sulfonamide intermediates. 5,336,773, Cl. 546-294.000.
Foster, Clark B.: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,335,773, Cl. 206-221.000.
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,336,186, Cl. 604-110.000
Foster, Jack. Fluid laser having a roughened, catalytic inner surface. 5,337,329, Cl. 372-61.000.
Foster, L. Dale; and Reeder, Ryan A., to Hill-Rom Company, Inc. Hospital bed head extender and accessory therfor. 5,335,384, Cl. 5-622.000.
Foster, L. Dale; and Reeder, Ryan A., to Hill-Rom Company, Inc. Ventilator and care cart each capable of nesting within and docking with a hospital bed base. 5,335,651, Cl. 128-202.130.
Foster, Mark D., to Lexmark International, Inc. Insertable toner hopper sealing strip. 5,335,831, Cl. 222-325.000.
Foster, William C. Rotary forged curved side flange for five piece rims. 5,335,706, Cl. 152-410.000.
Fox, Douglas G.: *See—*
Salerno, Tomas A.; and Fox, Douglas G., 5,336,170, Cl. 604-24.000.
Frahm, Peter: *See—*
Richter, Wolfgang-Dieter; Hachmann, Ulrich; and Frahm, Peter, 5,335,602, Cl. 105-168.000.
Frake, Barry N.: *See—*
Murphy, Gregory B.; Lang, Kevin W.; Frake, Barry N.; and Entenmann, William J., 5,336,515, Cl. 426-573.000.
FRAMATOME: *See—*
Cornic, Gil, 5,335,629, Cl. 122-32.000.
Daffos, Thierry; and Valadon, Christian, 5,335,631, Cl. 122-383.000
Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See—*
Richter, Axel, 5,336,062, Cl. 417-413.00A.
Wagner, Bernhard; Benecke, Wolfgang; Riethmuller, Werner; and Schnakenberg, Uwe, 5,335,544, Cl. 73-517.00R.
Frazier, Donald L. Tie-bar tool for attaching fencing wire to a post with a tie-wire clip. 5,335,701, Cl. 140-57.000.
Fredell, Dale L.: *See—*
Richter, Francis L.; Pedersen, Daniel E.; Biedscheid, May J.; and Fredell, Dale L., 5,336,500, Cl. 424-405.000.
Fredericks, Thomas M., to Whelen Technologies, Inc. Traffic management system. 5,337,082, Cl. 342-69.000.
Freeman, Thomas R., III. System for underpinning a building. 5,336,021, Cl. 405-230.000.
Freermann, Johannes, to Carl Schmale GmbH & Co. KG. Edge guide for a textile web. 5,335,611, Cl. 112-153.000.
Freissmuth, Alfred; and Wieser, Eugen, to Freissmuth, Alfred. Desulfurizing agent for pig iron and cast iron, and process for desulfurization. 5,336,293, Cl. 75-303.000.
French, John S.; and Peters, Richard W., to Knowles Electronics, Inc. Pre-amplifier. 5,337,011, Cl. 330-258.000.
Fresenius AG: *See—*
Polaschegg, Hans-Dietrich; and Steinbach, Bernd, 5,336,194, Cl. 604-175.000.
Fresenius USA, Inc.: *See—*
Folden, Thomas I., 5,336,173, Cl. 604-29.000.
Fried, Herbert E., to Shell Oil Company. Process for the preparation of aldehydes. 5,336,811, Cl. 568-436.000.
Friedman, Lorri. Personal safety guard system for stray person or pet. 5,337,041, Cl. 340-573.000.
Frisch, Rudolf, to Congoleum Corporation. Embossing composition for preparing textured polymeric materials. 5,336,693, Cl. 521-72.000.
Frith, Walter. Device for handling and preparing game animals. 5,336,129, Cl. 452-187.000.
Fritz Hansen A/S: *See—*
Vogtherr, Burkhard, 5,335,966, Cl. 297-287.000.
Frommann, Klaus: *See—*
Hoppmann, Hans-Dieter; and Frommann, Klaus, 5,335,713, Cl. 164-441.000
Fruhwirth, Gerhard J.: *See—*
Leitner, Max; and Fruhwirth, Gerhard J., 5,335,764, Cl. 192-85.00C
Fuchs, Karl-Heinz; and Graf, Lothar, to Ing. Erich Pfeiffer GmbH & Co. KG. Dispenser for media. 5,335,823, Cl. 222-36.000.
Fuji Electric Co., Ltd.: *See—*
Kato, Kazuyuki, 5,335,549, Cl. 73-706.000.
Nakagami, Yoshitake, 5,336,847, Cl. 174-17.0LF.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Kadoi, Noriaki; and Takimoto, Fujio, 5,335,635, Cl. 123-295.000.
Fuji Photo Film Co., Ltd.: *See—*
Agano, Toshitaka, 5,337,076, Cl. 346-108.000.
Hashimoto, Hiroshi; Ushimaru, Akira; Masuyama, Kenichi; Tanaka, Yasuyuki; and Kobayashi, Hiroyuki, 5,336,561, Cl. 428-336.000.
Hioki, Takanori, 5,336,594, Cl. 430-577.000.
Imamura, Takashi, 5,336,873, Cl. 235-462.000.
Kagawa, Yasuhiro; and Takegawa, Yohko, 5,337,113, Cl. 354-298.000.
Kitajima, Masao, 5,336,599, Cl. 435-15.000
Mitsui, Akio, 5,336,590, Cl. 430-547.000.
Mogi, Fumio, 5,337,114, Cl. 354-324.000.
Mukunoki, Yasuo; Shinagawa, Yukio; Yamanouchi, Junichi; and Hashimoto, Kiyokazu, 5,336,589, Cl. 430-501.000.
Nakajima, Kenji; and Miyamoto, Kimiaki, 5,336,534, Cl. 427-600.000
Ozaki, Hiroyuki; and Yokokawa, Takuya, 5,336,761, Cl. 430-507.000
Tasaka, Hisashi; Obo, Hidefumi; Kubo, Takashi; and Kamata, Kazuo, 5,337,099, Cl. 354-76.000.
Tezuka, Sigeru; Kitajima, Masao; and Kita, Nobuyyki, 5,336,468, Cl. 422-100.000
Yamamoto, Mitsuru; and Ogawa, Akira, 5,336,591, Cl. 430-549.000.
Fuji Photo Optical Co., Ltd.: *See—*
Umetsu, Takao, 5,337,107, Cl. 354-173.100.
Fuji Xerox Co., Ltd.: *See—*
Furukawa, Shigehiro; Hayashi, Kazuo; and Takayanagi, Hiroshi, 5,337,319, Cl. 371-11.100.
Ikegami, Hiroaki, 5,337,166, Cl. 358-518.000.
Inaba, Yoshihiro; and Mikami, Takeshi, 5,336,581, Cl. 430-110.000.
Ito, Hisao; and Suzuki, Teiichi, 5,336,906, Cl. 257-72.000.
Nakamura, Toshifumi; Okabe, Gen; and Yamamoto, Susumu, 5,337,156, Cl. 358-404.000.

Nukada, Katsumi; Imai, Akira; Damion, Katsumi; and Iijima, Masakazu, 5,336,578, Cl. 430-78.000.
Ryuzaki, Takahiko, 5,335,904, Cl. 271-272.000.
Takegawa, Ichiro; Kubo, Tsutomu; Ariie, Keiko; and Kobayashi, Tomoo, 5,336,582, Cl. 430-120.000.
Fujii, Hiroshi, to Sony Corporation. Tape cassette having recesses for cassette loading. 5,337,204, Cl. 360-132.000.
Fujii, Tatsuya; Imai, Yukihiro; Sato, Yutaka; Fukui, Ryo; Sakamoto, Kazuo; Shiraishi, Naoto; and Yamada, Yoshiteru, to Ricoh Company, Ltd. Image data processing apparatus for locating pixel having maximum coincidence count in input image data. 5,337,168, Cl. 358-539.000.
Fujii, Tsutomu: *See—*
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl. 164-475.000.
Fujii, Yoshio: *See—*
Hashima, Kazuo; Kawano, Yuji; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Nakaki, Yoshiyuki; Tokunaga, Takashi; and Fujii, Yoshio, 5,337,305, Cl. 369-116.000.
Fujikura Ltd.: *See—*
Maejima, Masatsugu; Saruwatari, Koichi; Kurosaka, Akihito; Matsuo, Mamoru; Gunji, Hiroyoshi; and Muramatsu, Toshiki, 5,336,341, Cl. 148-415.000.
Fujikura, Tsuneo: *See—*
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsuneo; and Fujiwara, Takahiko, 5,337,090, Cl. 348-626.000.
Fujimori Kogyo Co. Ltd.: *See—*
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,337,174, Cl. 359-73.000.
Fujimoto, Nobuhiro: *See—*
Rokugawa, Hiroyuki; and Fujimoto, Nobuhiro, 5,337,323, Cl. 372-31.000.
Fujimoto, Toshiyuki: *See—*
Iwahashi, Hiroshi; Fujimoto, Toshiyuki; and Narita, Akira, 5,336,952, Cl. 307-571.000.
Fujimoto, Tsuyoshi, to Sumitomo Electric Industries, Ltd. Brake fluid pressure control device. 5,335,980, Cl. 303-113.200.
Fujimura, Takeo: *See—*
Haga, Akira; Nasuno, Hiroshi; and Fujimura, Takeo, 5,336,963, Cl. 313-402.000.
Fujinami, Yasushi, to Sony Corporation. Image signal coding and decoding apparatus with multiple-process motion compensation. 5,337,086, Cl. 348-402.000.
Fujino, Shinichi: *See—*
Hashimoto, Katsuhiko; Fukasaku, Yoshinori; Fujino, Shinichi; and Mirumachi, Mitsuaki, 5,336,046, Cl. 415-119.000.
Fujino, Yuji, to Koito Manufacturing Co., Ltd. Aiming mechanism for vehicle lamps. 5,337,223, Cl. 362-66.000.
Fujioka, Kazuo: *See—*
Kurita, Eiichi; Kurokawa, Haruki; and Fujioka, Kazuo, 5,336,421, Cl. 252-62.620.
Fujisaki, Koichiro: *See—*
Azuma, Toshiro; Yano, Kazuhiko; and Fujisaki, Koichiro, 5,335,496, Cl. 60-487.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; and Ishii, Yoshinori, 5,336,613, Cl. 435-228.000.
Fujita, Koichi: *See—*
Taguchi, Masahiro; Tominaga, Motonori; Matsuhashi, Toshiaki; and Fujita, Koichi, 5,335,749, Cl. 180-274.000.
Fujita, Naoki; Matsumura, Teruyuki; and Murata, Koichi, to Fanuc Ltd. Numerical control machining animation with workpiece and tool movement. 5,337,249, Cl. 364-474.220.
Fujita, Tatsuo: *See—*
Tomizawa, Takeshi; Fujita, Tatsuo; Ukai, Kunihiro; and Suzuki, Jiro, 5,335,425, Cl. 34-265.000.
Fujita, Yasuhiko; and Miyata, Haruyuki, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit device having analog circuit and digital circuit formed on one chip. 5,336,915, Cl. 257-369.000.
Fujitani, Sakae: *See—*
Suzuki, Yuzuru; Fujitani, Sakae; Inagaki, Masaaki; and Uchida, Hitoshi, 5,336,955, Cl. 310-90.000.
Fujitsu Isotec Limited: *See—*
Tanaka, Masayuki; Suzawa, Hiromichi; Kubota, Masayuki; Sekioka, Chiaki; Sato, Minako; and Uemura, Hisashi, 5,336,553, Cl. 428-229.000.
Fujitsu Limited: *See—*
Anayama, Chikashi; Tanahashi, Toshiyuki; and Kondo, Makoto, 5,336,635, Cl. 437-129.000.
Hamaguchi, Shinichi, 5,337,247, Cl. 364-468.000.
Kimura, Yasuhiro; and Takayama, Tomio, 5,336,987, Cl. 323-284.000.
Kobayashi, Takayasu; and Shimasue, Tsutomu, 5,337,352, Cl. 379-234.000.
Maeda, Miyozo, 5,337,303, Cl. 369-112.000.
Mimura, Takashi, 5,336,949, Cl. 307-448.000.
Nonomura, Tomohiro; and Kishimoto, Hiroshi, 5,335,901, Cl. 271-117.000.
Rokugawa, Hiroyuki; and Fujimoto, Nobuhiro, 5,337,323, Cl. 372-31.000
Sato, Kazuyasu; Maekawa, Takashi; Yamazaki, Mitsuru; and Oishi, Harumichi, 5,337,134, Cl. 355-319.000.
Tsuchiya, Takuma, 5,336,901, Cl. 257-6.000.
Fujiwara, Katsuhiko: *See—*
Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and Yokouchi, Akira, 5,337,371, Cl. 382-14.000.
Fujiwara, Shigeki: *See—*
Nakagawa, Teruo; and Fujiwara, Shigeki, 5,336,024, Cl. 408-1.00R.
Fujiwara, Takahiko: *See—*
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsuneo; and Fujiwara, Takahiko, 5,337,090, Cl. 348-626.000.
Fujiwara, Takayoshi; Okuda, Masayuki; and Honjo, Takashi, to Kabushiki Kaisha Toshiba. Fluid compressor having roller bearing. 5,336,070, Cl. 418-220.000.
Fujiwara, Yasuhiro: *See—*
Katayama, Kazuyori; and Fujiwara, Yasuhiro, 5,337,237, Cl. 364-426.040.
Fukami, Tatsuya: *See—*
Hashima, Kazuo; Kawano, Yuji; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Nakaki, Yoshiyuki; Tokunaga, Takashi; and Fujii, Yoshio, 5,337,305, Cl. 369-116.000.
Fukasaku, Yoshinori: *See—*
Hashimoto, Katsuhiko; Fukasaku, Yoshinori; Fujino, Shinichi; and Mirumachi, Mitsuaki, 5,336,046, Cl. 415-119.000.
Fukasawa, Hideki; Ota, Shuichi; and Okada, Hiroshi, to Sony Corporation. Magnetic recording and/or reproducing apparatus having tape guide cylinder of reduced diameter and increased tape wrap angle. 5,337,192, Cl. 360-10.300.
Fukino, Kunihiro; Takayama, Toru; Inadome, Kiyotaka; and Nakatsuji, Masahiro, to Nikon Corporation. Zoom lens system. 5,337,187, Cl. 359-699.000.
Fukuchi, Shunsei; Isohata, Kyouhei; Iwamoto, Makoto; Misono, Kenji; and Takanashi, Hiroshi, to Sharp Kabushiki Kaisha. Plastic liquid crystal display device. 5,336,535, Cl. 428-1.000.
Fukuda, Toshio; Hattori, Shinobu; and Nagamori, Shigenobu, to Nippon Densan Corporation. Micropump with liquid-absorptive polymer gel actuator. 5,336,057, Cl. 417-395.000.
Fukuhara, Katsuyuki: *See—*
Sekiya, Mutsuo; Asada, Satoshi; and Fukuhara, Katsuyuki, 5,336,068, Cl. 418-55.200.
Fukui, Kunisuke: *See—*
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 5,336,747, Cl. 526-348.600.
Fukui, Ryo: *See—*
Fujii, Tatsuya; Imai, Yukihiro; Sato, Yutaka; Fukui, Ryo; Sakamoto, Kazuo; Shiraishi, Naoto; and Yamada, Yoshiteru, 5,337,168, Cl. 358-539.000.
Fukumoto, Takaaki: *See—*
Ban, Cozy; Ohmori, Toshiaki; and Fukumoto, Takaaki, 5,336,356, Cl. 156-345.000.
Fukunaga, Teruo: *See—*
Matsumoto, Takeji; Oyamada, Noboru; Kiritani, Michinori; Fukunaga, Teruo; Abe, Yoshio; and Kondoh, Hiroshi, 5,335,601, Cl. 104-88.00R.
Fukushima, Kiyoshi: *See—*
Tanaka, Noriyuki; Takishita, Takashi; Fukushima, Kiyoshi; Nagakura, Yasuyuki; Inoue, Kaoru; Nishijima, Tsuyoshi; and Inada, Haruhiro, 5,336,524, Cl. 427-240.000.
Fukushima, Motoo; and Mori, Shigeru, to Shin-Etsu Chemical Company, Limited. Preparation of polysilane oligomers. 5,336,798, Cl. 556-430.000
Fukutome, Akihito: *See—*
Shibayama, Takao; Maekawa, Keiichiro; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, 5,335,537, Cl. 73-117.000.
Fukuyama, Takeo: *See—*
Okazaki, Iwao; Abe, Koichi; Minamizawa, Hidehito; and Fukuyama, Takeo, 5,336,079, Cl. 428-323.000.
Fukuzono, Isao: *See—*
Mitsui, Kenichi; and Fukuzono, Isao, 5,335,944, Cl. 285-156.000
Fulgenzi, Crescenzo F.: *See—*
Stewart, James R.; Klotz, James A.; Fulgenzi, Crescenzo F.; and Coleman, Philip D., 5,336,015, Cl. 403-296.000.
Fuller, William T.: *See—*
Lui, Albert; and Fuller, William T., 5,337,413, Cl. 395-275.000.
Fulmer, John W.: *See—*
Cipullo, Michael J.; and Fulmer, John W., 5,336,813, Cl 568-724.000.
Fulmer, Mark T.: *See—*
Constanz, Brent R.; Fulmer, Mark T.; and Barr, Bryan M., 5,336,264, Cl. 623-16.000
Fulton, Robert H.: *See—*
Bowler, Paul R.; Mackay, John; Lammers, Shawn D.; and Fulton, Robert H., 5,335,540, Cl. 73-146.500.
Fulton, Steven J.: *See—*
Spehrley, Charles W., Jr.; Hoisington, Paul A.; Fulton, Steven J.; Young, Lawrence R.; and Schaffer, Robert R., 5,337,079, Cl. 347-88.000.
Funada, Fumiaki: *See—*
Oikawa, Masahiro; Nemoto, Hiroyuki; Hamanaka, Kenjiro; Kishimoto, Takashi; Funada, Fumiaki; Hamada, Hiroshi; and Shibatani, Takashi, 5,337,186, Cl. 359-628.000.
Funai Electric Co., Ltd.: *See—*
Sawai, Kunio; Hayashi, Ryuji; Irie, Toshiaki; Kaneko, Shigeru; Tanaka, Shinya; and Shinmi, Tsukasa, 5,335,877, Cl. 242-334.600.
Funayama, Tomomi; Kobayashi, Tadahiko; Sakai, Isao; and Sahashi, Masashi, to Kabushiki Kaisha Toshiba. Magnetrostrictive materials and methods of making such materials. 5,336,337, Cl. 148-301.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Fung, Henry T.; Tsang, Siu K.; and Woodward, Ralph A., to Vadem Corporation. Multi-level display controller. 5,337,408, Cl. 395-162.000.

Furda, Gary J.: *See*—
Daley, Michael J.; Furda, Gary J.; and Hayes, Phillip W., 5,336,488, Cl. 424-85.200.

Furohashi, Ikuko; Miyake, Yoshihiro; and Yokoyama, Takao, to Matsushita Graphic Communication Systems, Inc. Image telecommunication apparatus. 5,337,349, Cl. 379-100.000.

Furuhata, Tomoyuki, to Seiko Epson Corporation. Semiconductor device. 5,336,911, Cl. 257-273.000.

Furukawa, Shigehiro; Hayashi, Kazuo; and Takayanagi, Hiroshi, to Fuji Xerox Co., Ltd. Apparatus and method for reconfiguring an image processing system to bypass hardware. 5,337,319, Cl. 371-11.100.

Furuta, Akihiko: *See*—
Watanabe, Toyofumi; Furuta, Akihiko; Ono, Tadashi; Yomura, Yoshinori; and Iwado, Shuichi, 5,336,567, Cl. 428-629.000.

Furuya, Masato: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, 5,337,078, Cl. 346-108.000.

Futami, Kazumitu: *See*—
Takagaki, Makoto; Karasawa, Tadashi; and Futami, Kazumitu, 5,335,929, Cl. 280-283.000.

Futatsumori, Koji: *See*—
Shiobara, Toshio; Futatsumori, Koji; Okuse, Satoshi; Aoki, Takayuki; Wakao, Miyuki; and Ino, Shigeki, 5,336,786, Cl. 549-215.000.

G.D S.p.A.: *See*—
Neri, Armando; Cesari, Verter; Roveri, Orlando; and Manservigi, Alberto, 5,335,951, Cl. 293-118.000.
Rizzoli, Salvatore; and Belvederi, Bruno, 5,335,766, Cl. 198-347.100.

G.I.R.: *See*—
Weynant nee Girones, Renee P., 5,335,994, Cl. 374-205.000

G. Siempelkamp GmbH & Co.: *See*—
Gerhardt, Klaus, 5,336,077, Cl. 425-371.000.

Gabler, Robert A.: *See*—
Brennen, Kenneth R.; Williams, Terrell M.; and Gabler, Robert A., 5,336,254, Cl. 607-129.000.

Gabrius, Algimantas J.; Roos, Scott L.; and DeCicco, Thomas J., to Juno Lighting, Inc. Connector for track. 5,336,100, Cl. 439-115.000.

Gadsby, Winston M., to Hubbell Incorporated. Tip-ring voltage correction circuit. 5,337,354, Cl. 379-399.000.

Gajda, Gregory J.; Barger, Paul T.; and Abrevaya, Hayim, to UOP Olefin isomerization process. 5,336,831, Cl. 585-667.000.

Gajewski, Kenneth J.: *See*—
Meyer, John H.; and Gajewski, Kenneth J., 5,336,965, Cl. 313-498.000.

Gallagher, Dennis M.: *See*—
Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,337,248, Cl. 364-468.000.

Galletero, Jokin: *See*—
Atherton, Kenneth W.; Chevalier, Gerard; Galletero, Jokin; Bullock, Donald F.; Crittenden, Curtis W.; Elmore, David D.; and Germer, Warren R., 5,336,991, Cl. 324-142.000.

Gallico, Licia: *See*—
Gandolfi, Carmelo A.; De Cillis, Giampiero; Long, Giorgio; and Gallico, Licia, 5,336,676, Cl. 514-222.500.

Gallops, Henry M., Jr.: *See*—
Simonds, Gary L.; and Gallops, Henry M., Jr., 5,335,645, Cl. 124-88.000.

Gallot, David: *See*—
Ferguson, Gregory A.; and Gallot, David, 5,336,011, Cl. 401-247.000.

Galt, James J.: *See*—
Dorricott, Martin R.; Gillard, Clive H.; Richards, John W.; Morita, Tsuneo; Galt, James J.; David, Morgan W. A.; Burns, James E.; and Varsani, Shima R., 5,337,154, Cl. 348-448.000.

Galuszynski, Stanislaw: *See*—
Cizek, Jaromir; and Galuszynski, Stanislaw, 5,335,612, Cl. 112-262.100.

Gambert, Rudolf: *See*—
Busack, Hans-Jurgen; Kaross, Klaus; Lindner, Bernd; Gambert, Rudolf; and Bleichert, Horst-Peter, 5,336,390, Cl. 204-431.000.

Ganapathi, Srinivasan K.; Love, Robert B.; and Smith, Paul W., to Applied Magnetics Corporation. Carbon overcoat for magnetic head sliders. 5,336,550, Cl. 428-216.000.

Gandolfi, Carmelo A.; De Cillis, Giampiero; Long, Giorgio; and Gallico, Licia, to Boehringer Mannheim Italia S.p.A. [3H,7H]thiazolo[3,4-a]pyridines with antiasthmatic and antiinflammatory actions on the respiratory tract. 5,336,676, Cl. 514-222.500.

Gangnet, Michel: *See*—
Baudelaire, Patrick; Gangnet, Michel; Herve, Jean-Claude; Pudet, Thierry; and Thong, Jean-Manuel V., 5,337,404, Cl. 395-141.000.

Gans, Eugene H.; and Suess, Hans R., to Medicis Pharmaceutical Corporation. Ointment base and method of use. 5,336,692, Cl. 514-772.000.

Gant, Gary L.: *See*—
Munteau, George L.; Wilson, Harry L.; and Gant, Gary L., 5,335,852, Cl. 239-89.000.

Ganz, Robert H., to Riverwood International Corporation. Can carrier. 5,335,774, Cl. 206-153.000.

Ganzon, Nicolas W.; Cappellino, Charles A.; and Wilson, George, to Goulds Pumps, Incorporated. Fluid directing device for seal chamber. 5,336,048, Cl. 415-175.000.

GAO Gesellschaft fur Automation und Organisation: *See*—
Kaule, Wittich, 5,335,572, Cl. 83-74.000.

Gardano, Andrea; Sabarino, Giampiero; and Foa, Marco, to Novamont S.p.A. Preparing carboxylic acids or esters by oxidative cleavage of unsaturated fatty acids or esters. 5,336,793, Cl. 554-138.000.

Garinger, Ned D.: *See*—
Sorrells, Peter H.; and Garinger, Ned D., 5,336,940, Cl. 307-269.000.

Garner-Gray, Peter F.; Martin, Alexander; Martin, John R.; and Webb, Maurice, to Lever Brothers Company, Division of Conopco, Inc. Perfume particles. 5,336,665, Cl. 512-4.000.

Garner, Richard P., to Intel Corporation. Method for releasing space in flash EEPROM memory array to allow the storage of compressed data. 5,337,275, Cl. 365-189.010.

Garrison, Eleanor, legal representative: *See*—
Garrison, Marvin C., deceased; and Garrison, Eleanor, legal representative, 5,335,526, Cl. 72-47.000.

Garrison, Marvin C., deceased; and by Garrison, Eleanor, legal representative. Method of manufacturing substrates for memory disks. 5,335,526, Cl. 72-47.000.

Garside, Ted L. Horizontal skinning and protection apparatus. 5,336,124, Cl. 452-125.000.

Garsin, Paul A.: *See*—
Siegel, Robert P.; Malachowski, Michael A.; Garsin, Paul A.; and Moser, Rabin, 5,337,133, Cl. 355-285.000.

Gasbarro, James A.: *See*—
Ware, Frederick A.; Gasbarro, James A.; Dillon, John B.; Griffin, Matthew M.; Barth, Richard M.; and Horowitz, Mark A., 5,337,285, Cl. 365-227.000.

Gastgeb, Raymond F.: *See*—
Park, Kyung-Tae; and Gastgeb, Raymond F., 5,336,959, Cl. 310-328.000.

Gatz, Stephen E.: *See*—
Stanford, Ralph F.; and Gatz, Stephen E., 5,336,406, Cl. 210-235.000.

Gaudreault, Rosemary: *See*—
Petchul, John; and Gaudreault, Rosemary, 5,336,432, Cl. 252-186.280.

Gavojdea, Stefan: *See*—
Goldstein, Andrew S.; Gavojdea, Stefan; and Zogg, David F., 5,335,673, Cl. 128-760.000.

Gavronsky, German; and Guarderas, Ramiro, to Sealed Air Corporation. Method and apparatus for producing foam cushions for packaging purposes. 5,335,483, Cl. 53-451.000.

Gaztech International Corporation: *See*—
Wong, Jacob Y., 5,335,534, Cl. 73-1.00G.

Gebr. Schmid GmbH & Co.: *See*—
Schmid, Christian, 5,335,681, Cl. 134-64.00R.

Geddes, John J.; and Singh, Donald R., to Honeywell, Inc. Varactor diode having a stepped capacitance-voltage profile. 5,336,923, Cl. 257-596.000.

Geers, Carl J.: *See*—
Hodge, David H.; and Geers, Carl J., 5,335,987, Cl. 312-323.000.

Geiger, Bertram; and Grabher, Rainer, to Andritz-Patentverwaltungs-Gesellschaft M.B.H. Method and device for separating pieces of wood. 5,335,790, Cl. 209-518.000.

Gelb, Allan S.: *See*—
Sutherland, Audrey E.; Bridger, Keith; Fiore, Eric M.; Christodoulou, Julie A.; Bailey, Alex E.; and Gelb, Allan S., 5,337,209, Cl. 361-321.500.

Gelly, Gerard: *See*—
Mousseaux, Daniel; Gelly, Gerard; and Grard, Emmanuel, 5,337,392, Cl. 385-90.000.

Genentech, Inc.: *See*—
Capon, Daniel J.; and Gregory, Timothy J., 5,336,603, Cl. 435-69.700.

General Electric CGR S.A.: *See*—
Leclerc, Vincent; Picard, Catherine; and Lavayssiere, Blandine, 5,336,880, Cl. 250-214.0VT.

General Electric Company: *See*—
Ackerman, John F., 5,336,449, Cl. 252-582.000.
Atherton, Kenneth W.; Chevalier, Gerard; Galletero, Jokin; Bullock, Donald F.; Crittenden, Curtis W.; Elmore, David D.; and Germer, Warren R., 5,336,991, Cl. 324-142.000.
Babb, Steven J.; and Harmon, John L., 5,335,577, Cl. 86-21.000.
Castonguay, Roger N.; Arnold, David; Morgan, Roger J.; Glabau, Frederic W.; Tucholski, Henry J.; and Reyes, Thomas T. B., 5,337,031, Cl. 335-201.000.
Cipullo, Michael J.; and Fulmer, John W., 5,336,813, Cl. 568-724.000.
Dumoulin, Charles L., 5,335,660, Cl. 128-653.300.
Forrester, James M., 5,336,044, Cl. 415-9.000.
Iacovangelo, Charles D.; Jerabek, Elihu C.; and Williams, Bradley E., 5,336,368, Cl. 156-656.000.
Johnson, Kenneth L.; Zlatic, Mark S.; Grammel, Leonard P., Jr.; and Manteiga, John A., 5,335,490, Cl. 60-261.000.
Lin, Chien-Chang, 5,337,336, Cl. 376-309.000.
Miller, Matthew S., 5,336,867, Cl. 219-400.000.
Namordi, Mooshi R.; Lang, Mark R.; and Fithian, Michael J., 5,337,027, Cl. 333-161.000.
Neugebauer, Constantine A., deceased; and Wojnarowski, Robert J., 5,336,928, Cl. 257-758.000.

Nowak, Michael P.; and Nowak, David J., 5,337,231, Cl. 364-413.240.
Raymond, Paul C., III, 5,336,751, Cl. 528-204.000.
Roberts, Hubert S., Jr.; Ablett, Adrian M.; and Hauser, Ambrose A., 5,335,502, Cl. 60-752.000.
Shafer, Sheldon J., 5,336,814, Cl. 568-753.000.
Singh, Raj M., 5,336,350, Cl. 156-155.000.
Strok, Jack M.; Bergman, Rolf S.; and Ingold, John H., 5,336,968, Cl. 313-571.000.
Taylor, Jack R., 5,335,501, Cl. 60-751.000.
Tseng, Wu-Yang; Bristol, Brent L.; Hetico, Rolf R.; and Glynn, Christopher C., 5,335,920, Cl. 277-1.000.
Wildi, Robert H.; Cox, Keith E.; and Hill, Jack A., 5,336,701, Cl. 523-411.000.

General Mills, Inc.: *See*—
Waldherr, Michael P.; Johnston, Michael L.; Weinstein, James N.; and Cremers, Thomas G., 5,336,076, Cl. 425-294.000.

General Signal Corporation: *See*—
Mitsch, Brian M., 5,336,850, Cl. 174-65.0SS.

Genero, Claude P.; and Genero, Gall A. Hand razor. 5,335,417, Cl 30-41.500.

Genero, Gall A.: *See*—
Genero, Claude P.; and Genero, Gall A., 5,335,417, Cl. 30-41.500.

Genise, Thomas A.; and Markyvech, Ronald K., to Eaton Corporation. Shift control method/system. 5,335,566, Cl. 477-124.000.

Gentex Corporation: *See*—
Byker, Harlan J., 5,336,448, Cl. 252-583.000.

Gentile, James L., to Chesebrough-Pond's USA Co., A Division of Conopco, Inc. Multi-cavity dispensing refill cartridge. 5,335,827, Cl. 222-137.000

Gentzke, John D.; and Kerr, Roger S., to Eastman Kodak Company. Laser diode with card-edge connector. 5,337,072, Cl. 346-76.00L.

Genuist, Yann: *See*—
Pacou, Thierry; Arsene-Henry, Patrice; Pham, Tung N.; and Genuist, Yann, 5,336,627, Cl. 437-41.000.

Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., to Elan Corporation, plc. Diltiazem formulations and methods of treatment. 5,336,504, Cl. 424-462.000.

Gera, Robert A., to Universal Furniture Industries, Inc. Sectional sofa. 5,335,962, Cl. 297-232.000.

Gerhardinger, Dieter: *See*—
Sejpka, Johann; Gerhardinger, Dieter; and Wimmer, Franz, 5,336,715, Cl. 524-765.000.

Gerhardt, Klaus, to G. Siempelkamp GmbH & Co. Roller for continuous belt press. 5,336,077, Cl. 425-371.000.

Geringer, Kerry G.; Barnum, Harlos L.; and Jennings, Lon A., to Sauer Inc. Dual mode transmission control. 5,335,750, Cl. 180-307.000.

Germain, Ronald N.: *See*—
Berzofsky, Jay A.; Hosmalin, Anne; Clerici, Mario S.; Germain, Ronald N.; Shearer, Gene; Moss, Bernard; and Pendleton, Charles D., 5,336,758, Cl. 530-326.000.

Germer, Warren R.: *See*—
Atherton, Kenneth W.; Chevalier, Gerard; Galletero, Jokin; Bullock, Donald F.; Crittenden, Curtis W.; Elmore, David D.; and Germer, Warren R., 5,336,991, Cl. 324-142.000.

Gerrard, John J.: *See*—
Humphries, Martyn; Nemcek, Jozef; Jaworzyn, Joseph F.; Cantwell, John B.; and Gerrard, John J., 5,336,728, Cl. 525-328.200.

Ghignoni, Jean-Francois, to Thomson-CSF. Method and equipment for adjusting a radar detection threshold. 5,337,055, Cl. 342-93.000.

Ghorashi, Hamid M.: *See*—
Bowen, Michael W.; Ghorashi, Hamid M.; and Yang, Hung H., 5,336,734, Cl. 525-420.000.

Ghorbanali, Mehrdad: *See*—
Chen, Bor U.; Ghorbanali, Mehrdad; and Buck, Jack B., 5,337,396, Cl. 385-92.000.

Ghosh, Ashim K.: *See*—
Shamshoum, Edwar S.; and Ghosh, Ashim K., 5,336,824, Cl. 585-475.000.

Ghosh, Syamal K.; Chatterjee, Dilip K.; and Koziol, Dennis R., to Eastman Kodak Company. Zirconia ceramics and a process of producing the same. 5,336,282, Cl. 51-309.000.

Giat Industries: *See*—
Gibert, Pierre, 5,335,891, Cl. 248-354.100.
Mouterde, Renaud; and Bouzianne, Michel, 5,335,580, Cl. 89-47.000
Simon, Georges; and Baubois, Michel, 5,335,581, Cl. 89-156.000.

Gibbs, Charles E.: *See*—
Turner, Edwin C.; and Gibbs, Charles E., 5,335,729, Cl. 166-380.000.

Gibert, Pierre, to Giat Industries. Stabilization strut forming a supporting leg for a transportable structure, such as an equipment shelter, for example. 5,335,891, Cl. 248-354.100.

Gibson, Ross. Self-levelling ladder. 5,335,754, Cl. 182-204.000

Gieryng, Jan B., to Styrotech Corporation. Fiber optic coupling assembly. 5,337,379, Cl. 385-26.000.

Giesler, Dennis C., to Parker-Hannifin Corporation. Push-to-connect coupler with interlocking three-way valve. 5,335,894, Cl. 251-149.900.

Gilad-Smolinsky, Zvi: *See*—
Rabinovitz, Talmon; Gilad-Smolinsky, Zvi; and Rutenberg, Mordechay, 5,335,741, Cl. 180-8.200.

Gilbert, Barry G.: *See*—
Scott, Blayney J.; Gilbert, Barry G.; and Gowan, George R., 5,335,734, Cl. 169-15.000.

Gilbert, John A.: *See*—
Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,336,722, Cl. 525-113.000.

Giles, Robert; and Walsgrove, Timothy C., to SmithKline & French Laboratories Limited. Process. 5,336,781, Cl. 548-486.000.

Gillard, Clive H.: *See*—
Dorricott, Martin R.; Gillard, Clive H.; Richards, John W.; Morita, Tsuneo; Galt, James J.; David, Morgan W. A.; Burns, James E.; and Varsani, Shima R., 5,337,154, Cl. 348-448.000.

Gillbrand, Per; Johansson, Hans; Johansson, Per; and Elgh, Bengt, to Saab Automobile Aktiebolag. Operation of servo devices for driving a motor vehicle - control, arrangement and method. 5,335,743, Cl. 180-178.000.

Giller, Russell S.; and Horrigan, James D., to Aerospace Coating Systems, Inc. Method for producing ceramic-based electronic components. 5,336,453, Cl. 264-57.000.

Gilles, Andrew; and Hepp, Daniel, to Environmental Research Institute of Michigan. Character recognition method employing non-character recognizer. 5,337,370, Cl. 382-14.000.

Gimpelson, Richard J. Surgical needle. 5,336,239, Cl. 606-223.000.

Gioutsos, Tony; and Piskie, Michael A., to Automotive Systems Laboratory, Inc. System and method for actuating vehicle safety device using damped measures. 5,337,238, Cl. 364-424.050.

Giovannoni, Richard T.: *See*—
Zuckerbrod, David; and Giovannoni, Richard T., 5,336,573, Cl. 429-252.000.

Gippert, Karl-Ludwig: *See*—
Falb, Wolfgang; Gippert, Karl-Ludwig; Heim, Ulrich; Holscher, Uvo; Kiske, Siegfried; Kullik, Gotz; Loser, Ralf-Ernst; and Maurer, Christoph, 5,335,652, Cl. 128-203.140.

Girodeau, Jean-Marc: *See*—
Benoit, Marc; Demoute, Jean-Pierre; and Girodeau, Jean-Marc, 5,336,670, Cl. 514-63.000.

Gist-brocades N.V.: *See*—
van Eekelen, Christiaan A. G.; Mulleners, Leonardus J. S. M.; Van Der Laan, Johannes C.; Misset, Onno; Cuperus, Roelck A.; and Lensink, Johan H. A., 5,336,611, Cl. 435-221.000

Giusti, Aldo: *See*—
Bellussi, Giuseppe; Giusti, Aldo; and Zanibelli, Laura, 5,336,830, Cl. 585-660.000.

Glabau, Frederic W.: *See*—
Castonguay, Roger N.; Arnold, David; Morgan, Roger J.; Glabau, Frederic W.; Tucholski, Henry J.; and Reyes, Thomas T. B., 5,337,031, Cl. 335-201.000.

Glasstech, Inc.: *See*—
Reunamaki, Pauli T., 5,337,393, Cl. 392-417.000.

Gleason, Craig A.: *See*—
DeLano, Eric R.; Gleason, Craig A.; and Forsyth, Mark A., 5,337,415, Cl. 395-375.000.

Glenn, Douglas J., to Sewing Center Supply Co., Inc. Textile fabric. 5,335,613, Cl. 112-412.000.

Global Win Technology Co., Ltd: *See*—
Wu, Shuenn-Jenq, 5,335,722, Cl. 165-122.000.

Glynn, Christopher C.: *See*—
Tseng, Wu-Yang; Bristol, Brent L.; Hetico, Rolf R.; and Glynn, Christopher C., 5,335,920, Cl. 277-1.000.

Goch, Waymon P.; and Sakich, John D., to Hubbell Incorporated. Electrical assembly with end collars for coupling ends of a weathershed housing to the end fittings. 5,336,852, Cl. 174-176.000.

Gochnour, Derek J.: *See*—
Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., 5,336,649, Cl. 437-209.000.

Goda, Hisashi; Asahina, Yasutoshi; Hashimoto, Masayuki; and Oka, Naoki, to Nippon Steel Semiconductor Corporation. Polysilicon etching method. 5,336,365, Cl. 156-643.000.

Goebel, Christoph: *See*—
Maurer, Gerhard; Braig, Manfred; Auer, Raimund; Goebel, Christoph; Schwarz, Josef; and Voss, Thomas, 5,336,120, Cl. 440-84.000.

Goebel, Dan M.; Poeschel, Robert L.; and Watkins, Ronnie M., to Hughes Aircraft Company. Crossed-field plasma switch with high current density axially corrogated cathode. 5,336,975, Cl. 315-111.410.

Goelz, Stefan: *See*—
Hsueh, Chi-Fu; Morris, Gregory J.; and Goelz, Stefan, 5,336,215, Cl. 606-4.000.

Gokcebay, Asil T., to Security People, Inc. Access control system with mechanical keys which store data. 5,337,043, Cl. 340-825.310.

Golan, Zeev. Car parking system. 5,336,031, Cl. 414-229.000

Golder, Thomas J. Restraint device. 5,335,957, Cl. 297-482.000.

Goldhardt, Donald J.; and Hirsch, William H., to Abbott Laboratories. Low profile gastrostomy device with dome. 5,336,203, Cl. 604.7-247.000.

Goldhofer Fahrzeugwerk GmbH & co.: *See*—
Curten, Franz J.; and Bammel, Michael, 5,336,037, Cl. 414-429.000

Goldstar Electron Co., Ltd.: *See*—
Yun, Kwang H.; Lee, Hee G.; Jang, Seong J.; and Jun, Young K., 5,336,630, Cl. 437-52.000.

Goldstein, Andrew S.; Gavojdea, Stefan; and Zogg, David F., to Epitope, Inc. Oral collection device and method for immunoassay. 5,335,673, Cl. 128-760.000.

Golicz, Roman M., to Roll Systems, Inc. Apparatus and method for automatically adjusting sheet feeding pressure. 5,335,899, Cl. 271-34.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Golovanivsky, Konstantin S.: *See—*
Balmashnov, Alexander A.; Golovanivsky, Konstantin S.; Omeljanovsky, Erzam M.; Pakhomov, Andrew V.; and Polyakov, Alexander Y., 5,336,533, Cl. 427-562.000.
Golwalkar, Suresh V.: *See—*
Eskildsen, Steven R.; Golwalkar, Suresh V.; and Barrios, Tito, 5,336,456, Cl. 264-157.000
Good, Peter A.; Morris, Christopher J.; Claxson, Andrew W. D.; and Blake, David R., to British Technology Group Ltd. Treatment and inhibition of retinopathy of prematurity. 5,336,248, Cl. 607-90.000.
Goodart, Tyrone G.: *See—*
Richards, Bruce E.; Goodart, Tyrone G.; Vella, Philip A.; and Walton, John R., 5,336,431, Cl. 252-184.000
Goode, Peter: *See—*
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.
Goodman, Robert M. Compositions and process for non-irritating dense foaming of bath water and peri-vaginal cleaning. 5,336,446, Cl. 252-554.000.
Goodyear Tire & Rubber Company, The: *See—*
Hsu, Wen-Liang; Halasa, Adel F.; and Matrana, Barry A., 5,336,739, Cl. 526-181.000.
Sandstrom, Paul H.; Bauer, Richard G.; Burlett, Donald J.; and Sinsky, Mark S., 5,336,730, Cl. 525-332.600.
Goor Associates, Inc.: *See—*
Goor, Dan, 5,335,745, Cl. 180-232.000.
Goor, Dan, to Goor Associates, Inc. Engine mounting system. 5,335,745, Cl. 180-232.000.
Gorbaty, Martin L.; and Nahas, Nicholas C., to Exxon Research and Engineering Company. Polymer-modified, oxidized asphalt compositions and methods of preparation. 5,336,705, Cl. 524-68.000.
Gordin, Myron K.; and Crookham, Joe P., to Musco Corporation. Means and method for highly controllable lighting. 5,337,221, Cl. 362-66.000.
Gordon, Pat L.; Meador, John T.; Keimel, John G.; and Mehra, Rahul, to Medtronic, Inc. Pacing and cardioversion lead systems with shared lead conductors. 5,336,253, Cl. 607-122.000.
Gordon, Trace O.: *See—*
Piaget, Gary D.; and Gordon, Trace O., 5,336,146, Cl. 482-54.000.
Gormish, Michael J.; Peairs, Mark; and Stork, David G., to Ricoh Corporation; and Ricoh Company Ltd. Method and apparatus for placing data onto plain paper. 5,337,362, Cl. 380-54.000.
Gorzinski, Manfred: *See—*
Bunte, Reinhard; Gress, Wolfgang; Nagorny, Ulrich; and Gorzinski, Manfred, 5,336,313, Cl. 106-504.000.
Goto, Akihiko, to NEC Corporation. Cutting and forming device for lead frame for the semiconductor device. 5,335,702, Cl. 140-105.000.
Goto, Naoyuki; and Yatsuda, Hisao, to Kabushiki Kaisha Ohara. Low expansion transparent crystallized glass-ceramic. 5,336,643, Cl. 501-4.000.
Gotoh, Hiroshi; Emoto, Masami; and Yokomori, Kiyoshi, to Ricoh Company, Ltd. Optical data recording/reproduction apparatus for use with semiconductor lasers as a light source. 5,337,302, Cl. 369-112.000.
Gotoh, Satoru: *See—*
Nagaoka, Kenji; and Gotoh, Satoru, 5,336,713, Cl. 524-540.000.
Gould Electronics Inc.: *See—*
Rossoll, Mary P.; Revilock, Alan J.; and Wong, Anthony S., 5,336,273, Cl. 29-623.200.
Goulds Pumps, Incorporated: *See—*
Ganzon, Nicolas W.; Cappellino, Charles A.; and Wilson, George, 5,336,048, Cl. 415-175.000.
Gowan, George R.: *See—*
Scott, Blayney J.; Gilbert, Barry G.; and Gowan, George R., 5,335,734, Cl. 169-15.000.
Grabher, Rainer: *See—*
Geiger, Bertram; and Grabher, Rainer, 5,335,790, Cl. 209-518.000.
Graco Inc.: *See—*
Lehrke, Kennth E.; and Werner, Neal A., 5,336,063, Cl. 417-415.000.
Graf, Friedrich: *See—*
Kammerl, August; and Graf, Friedrich, 5,335,568, Cl. 477-109.000.
Graf, Lothar: *See—*
Fuchs, Karl-Heinz; and Graf, Lothar, 5,335,823, Cl. 222-36.000
Grafer, G. Scott: *See—*
Wojtanek, Guy A.; Lopez, Jaime; and Grafer, G. Scott, 5,336,859, Cl. 200-315.000.
Graiver, Daniel; and Lomas, Arnold W., to Mizu Systems, Inc. Reinforced polyvinyl alcohol hydrogels containing uniformly dispersed crystalline fibrils and method for preparing same. 5,336,551, Cl. 428-220.000.
Grajewski, Franz: *See—*
Schottker, Reinhard; and Grajewski, Franz, 5,335,398, Cl. 24-528.000.
Gramlich, Walter: *See—*
Becker, Rainer; Gramlich, Walter; Huellmann, Michael; and Scholz, Hans-Ulrich, 5,336,815, Cl. 568-857.000.
Grammatica, Steven J.: *See—*
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.
Grammel, Leonard P., Jr.: *See—*
Johnson, Kenneth L.; Zlatic, Mark S.; Grammel, Leonard P., Jr.; and Manteiga, John A., 5,335,490, Cl. 60-261.000.
Grandek, Manfred; and Szucs, Ferdinand, to W. Schlafhorst AG & Co. Textile machine having a suction device with a separator chamber. 5,336,285, Cl. 55-324.000.
Grandjacques, Philippe, to Salomon S.A. Fabrication procedure for and structure of a ski with a curved end. 5,336,347, Cl. 156-221.000.
Granitz, Richard F., to Whitaker Corporation, The. Electronic card and connector assembly for use therewith. 5,337,220, Cl. 361-816.000.
Graphic Management Associates, Inc.: *See—*
Seidel, Randy R.; Kononov, Anthony; Honegger, Roger; and Silva, Robert M., 5,336,041, Cl. 414-788.000.
Grard, Emmanuel: *See—*
Darbon, Philippe; and Grard, Emmanuel, 5,337,380, Cl. 385-28.000.
Mousseaux, Daniel; Gelly, Gerard; and Grard, Emmanuel, 5,337,392, Cl. 385-90.000.
Grasset, Michel, to Finance Techniques et Systemes. System for communication between pedestrians and vehicles. 5,337,046, Cl. 340-944.000
Grau GmbH & Co.: *See—*
Baur, Rolf, deceased, 5,335,985, Cl. 312-9.310.
Graveland, Aris; Henderson, Matthijs H.; and Linders, Leonie J. M., to Unilever Patent Holdings B.V. Air classification of flour. 5,336,517, Cl. 426-622.000
Greelis, John P.; Quick, Richard L.; and Woker, Gary M., to Imagyn Medical, Inc. Inflator. 5,336,183, Cl. 607-97.000
Green, David T.; Bolanos, Henry; Blewett, Jeffrey J.; Ratcliff, Keith; Viola, Frank J.; and Sherts, Charles R., to United States Surgical Corporation. Approximating apparatus for surgical jaw structure and method of using the same. 5,336,232, Cl. 606-151.000.
Green, Robert, Jr. Wood head no hosel golf club. 5,335,909, Cl. 273-80.200.
Greene, George R.: *See—*
Rosenbluth, Robert F.; Lenker, Jay A.; Greene, George R.; Brenneman, Rodney A.; and Maley, Patrick A., 5,336,208, Cl. 604-329.000.
Greenhalgh, Samuel, to United States of America, Navy. Lift enhancement device. 5,335,886, Cl. 244-213.000.
Greenhoe, William J.: *See—*
Davis, Richard E.; and Greenhoe, William J., 5,336,191, Cl. 604-165.000.
Greenlee, Mark L.: *See—*
Dininno, Frank P.; Greenlee, Mark L.; Rano, Thomas A.; and Lee, Wendy, 5,336,674, Cl. 514-210.000.
Greenlee, William J.: *See—*
Ashton, Wallace T.; Cantone, Christine L.; Chang, Linda L.; Maccoss, Malcolm; Chakravarty, Prasun K.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,336,778, Cl. 548-250.000
Greenmaster Industrial Corp.: *See—*
Wang, Leao, 5,336,149, Cl. 482-100.000.
Gregory, Anne K.; Brassington, Michael P.; Wang, Shi-Qing; and Abt, Norman E., to National Semiconductor Corporation. Screening processes for ferroelectric memory devices. 5,337,279, Cl. 365-201.000
Gregory, Norman S., to Scientific Ecology Group, Inc. Security lock for enclosure. 5,335,807, Cl. 220-315.000.
Gregory, Sherman: *See—*
Sutton, Todd; Gregory, Sherman; Waltman, Joan T.; and White, Katherine W., 5,337,338, Cl. 377-33.000.
Gregory, Timothy J.: *See—*
Capon, Daniel J.; and Gregory, Timothy J., 5,336,603, Cl. 435-69.700
Greiner, Siegfried M.: *See—*
Capek, Raymond G.; Greiner, Siegfried M.; and Tong, Hua S., 5,336,964, Cl. 313-407.000.
Grenner, Gerd: *See—*
Primes, Kathleen J.; Sigler, Gerald F.; Grenner, Gerd; and Kapmeyer, Wolfgang, 5,336,621, Cl. 436-534.000.
Gresham, Jack W.: *See—*
Thompson, Terrence L.; and Gresham, Jack W., 5,335,499, Cl. 60-546.000.
Gress, Wolfgang: *See—*
Bunte, Reinhard; Gress, Wolfgang; Nagorny, Ulrich; and Gorzinski, Manfred, 5,336,313, Cl. 106-504.000.
Gretag Imaging AG: *See—*
Haller, Heinrich, 5,337,118, Cl. 355-27.000.
Grider, Douglas T.: *See—*
Ozturk, Mehmet C.; Grider, Douglas T.; Sanganeria, Mahesh K.; Ashburn, Stanton P.; and Wortman, Jimmie J., 5,336,903, Cl. 257-19.000.
Griffen, Neil C.; and Ayzenberg, Mark, to Lake Shore Cryotronics, Inc. Magneto-resistive tachometer assembly with reversible cover and related method. 5,336,994, Cl. 324-174.000.
Griffin, Matthew M.: *See—*
Ware, Frederick A.; Gasbarro, James A.; Dillon, John B.; Griffin, Matthew M.; Barth, Richard M.; and Horowitz, Mark A., 5,337,285, Cl. 365-227.000.
Grigsby, Shaw, Jr. Weight for fish lure. 5,335,443, Cl. 43-44.810.
Grillat, Alain, to Dujardin-Montbard-Somenor Z. I. Lille Seclin. Device for drying a rolled metal strip. 5,335,387, Cl. 15-102.000.
Grimes, Frank H., to ABB Power T & D Company Inc. Transformer mounting assembly. 5,337,034, Cl. 336-92.000.

Grimstad, Per: *See—*
Sola, Einar; Rottingen, Jan; Grimstad, Per; and Askeland, Atle, 5,336,792, Cl. 554-21.000.
Grinfas, Zvi; Weil, Georges; and Miller, Maurice, to System RM Ltd. Stylus for an erasable marker system. 5,335,942, Cl. 283-74.000.
Groen, Robertus W. C.: *See—*
Cloetens, Henri; and Groen, Robertus W. C., 5,337,335, Cl. 375-120.000.
Groman, Ernest V.: *See—*
Josephson, Lee; Groman, Ernest V.; Jung, Chu; and Lewis, Jerome M., 5,336,506, Cl. 424-488.000.
Grosholz, James R.: *See—*
Miller, Kenneth G.; and Grosholz, James R., 5,336,156, Cl. 600-22.000.
Gross, Lutz-Werner: *See—*
Jung, Werner A.; Vorbeck, Udo; Schmitz, Arno; Heise, Wilhelm; and Gross, Lutz-Werner, 5,336,753, Cl. 528-335.000.
Groux, Paul D.; and Burgess, Marvin A., to 314613 B.C. Ltd. Hair regrowth method and apparatus. 5,336,247, Cl. 607-72.000.
Gruber, Juergen: *See—*
Alaze, Norbert; Gruber, Juergen; and Wolff, Guenter, 5,335,984, Cl. 303-119.200.
Grumman Aerospace Corporation: *See—*
Moldavsky, Boris, 5,336,564, Cl. 428-418.000.
Gruneberg, Kirsten: *See—*
Scherowsky, Gunter; and Gruneberg, Kirsten, 5,336,436, Cl. 252-299.610.
Guarderas, Ramiro: *See—*
Gavronsky, German; and Guarderas, Ramiro, 5,335,483, Cl. 53-451.000.
Guberovic, Zeljko; Hohnjec, Marijan; Kuftinec, Josip; and Oklobzija, Milan, to Pfizer Inc. Method of producing tertiary amine-sulphur-trioxide-complexes. 5,336,775, Cl. 546-347.000.
Guckel, Martin: *See—*
Schrader, Jurgen; Guckel, Martin; and Claar, Klaus-Peter, 5,335,959, Cl. 296-108.000.
Guentherberg, Norbert: *See—*
Niessner, Norbert; Fischer, Wolfgang; Guentherberg, Norbert; Ruppmich, Karl; and Seitz, Friedrich, 5,336,718, Cl. 525-67.000.
Gueret, Jean-Louis, to L'Oreal. Mascara brush and method of manufacture. 5,335,465, Cl. 132-218.000.
Guerrero, Angel A.; and Vargas, Anthony, to Elizabeth Arden Co., Division of Conopco, Inc. Cosmetic composition. 5,336,497, Cl. 424-401.000
Guida, Joseph; and Odeh, Hani M., to Penn Ventilator Co. Inc. Ventilator fan device. 5,336,050, Cl. 416-186.00R.
Guilfoyle, David N.: *See—*
Mansfield, Peter; Guilfoyle, David N.; and Ordidge, Roger J., 5,336,999, Cl. 324-309.000.
Guillot, Gerard L. H.; and Bouleau, Jean-Paul A., to Moulinex (Societe Anonyme). Device for controlling at least two luminous condition indicating signals. 5,337,037, Cl. 337-363.000.
Guizot, Jean-Luc; King, Bradley; and Zarudiansky, Alain, to Schlumberger Industries S.A. Volume flow meter that measures transit time. 5,335,555, Cl. 73-861.950.
Gulavita, Nanda K.; Gunasekera, Sarath P.; Pomponi, Shirley A.; Longley, Ross E.; and McCarthy, Peter J., to Harbor Branch Oceanographic Institution, Inc. Antibacterial peptide and methods of use. 5,336,757, Cl. 530-317.000.
Gulick, Paul E., to In Focus Systems, Inc. Case for overhead projection display panel. 5,337,103, Cl. 353-119.000.
Gunasekera, Sarath P.: *See—*
Gulavita, Nanda K.; Gunasekera, Sarath P.; Pomponi, Shirley A.; Longley, Ross E.; and McCarthy, Peter J., 5,336,757, Cl 530-317.000.
Gunji, Hiroyoshi: *See—*
Maejima, Masatsugu; Saruwatari, Koichi; Kurosaka, Akihito; Matsuo, Mamoru; Gunji, Hiroyoshi; and Muramatsu, Toshiki, 5,336,341, Cl. 148-415.000.
Gunther, Klaus: *See—*
Ruthrof, Klaus; Jax, Peter; Bode, Karl-Heinz; and Gunther, Klaus, 5,335,535, Cl. 73-40.700.
Gunther, Kurt: *See—*
Berktold, Klaus; Gunther, Kurt; and Egloff, Anton, 5,335,698, Cl. 139-1.00E
Guptill, Spencer H.: *See—*
Duffy, Paul E.; Hanson, John; Lugosi, Robert; Guptill, Spencer H.; and Kackowski, Matthew, 5,336,013, Cl. 403-2.000.
Gurary, Alexander: *See—*
Stall, Richard A.; Tompa, Gary S.; Gurary, Alexander; and Nelson, Craig R., 5,336,324, Cl. 118-719.000.
Gurr, Robert H., to MCA Recreation Services, Inc. Animal prop using air bags. 5,335,436, Cl. 40-412.000.
Gustafson, Thomas L.; and Brookman, Marc A., to Standard Products Company, The. Process for manufacturing an elongated electroluminescent light strip. 5,336,345, Cl. 156-67.000.
Guthrie, William L.: *See—*
Lustig, Naftali E.; Feenstra, Randall M.; and Guthrie, William L., 5,337,015, Cl. 324-671.000.
Gutman, Edward J.: *See—*
Zimmer, Charles D.; Gutman, Edward J.; and Ballou, Mark D., 5,336,579, Cl. 430-106.000.
Gwaltney, Sharon W.: *See—*
Strack, David C.; Connor, Linda A.; Gwaltney, Sharon W.; McCormack, Ann L.; Shawver, Susan E.; and Shultz, Jay S., 5,336,552, Cl. 428-224.000.
Haatveit, John R., to Safeway Stores, Inc. Pasteurized to raw liquid processing system. 5,335,704, Cl. 141-95.000.
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., to Habley Medical Technology Corporation. Multi-pharmaceutical storage, mixing and dispensing vial. 5,335,773, Cl. 206-221.000.
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., to Habley Medical Technology Corporation. Safety syringe with displaceable barrel hub. 5,336,186, Cl. 604-110.000.
Habimana, Jean de la Crois: *See—*
Cheradame, Herve M.; Lundberg, Robert D.; Chen, Frank J.; and Habimana, Jean de la Crois, 5,336,745, Cl. 526-347.100.
Habley Medical Technology Corporation: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,335,773, Cl. 206-221.000.
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,336,186, Cl. 604-110.000.
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, to Nitto Denko Corporation. Composite reverse osmosis membrane and novel acid chloride. 5,336,409, Cl. 210-490.000.
Hachiya, Satoshi: *See—*
Endo, Hiroyuki; Hachiya, Satoshi; and Moriwaki, Fumio, 5,336,435, Cl. 252-299.610.
Hachmann, Ulrich: *See—*
Richter, Wolfgang-Dieter; Hachmann, Ulrich; and Frahm, Peter, 5,335,602, Cl. 105-168.000.
Hadewe B. V.: *See—*
Hidding, Gerhard, 5,336,034, Cl. 414-403.000.
Haehn, Peter-Clemens, to Linde Aktiengesellschaft. Absorption column with internal mixing chamber for absorption of acetylene. 5,336,838, Cl. 585-833.000.
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Hain, David A., to NCR Corporation. Sheet handling apparatus. 5,335,484, Cl. 53-582.000.
Hains, Norman L.: *See—*
McKennon, J. T.; Hains, Norman L.; and Hoffman, David C., 5,336,022, Cl. 405-263.000.
Hake, Kenneth A., to Kent Manufacturing Co., Inc. Cultivator shank assembly with cammed shank end receiver. 5,335,735, Cl 172-707.000.
Halasa, Adel F.: *See—*
Hsu, Wen-Liang; Halasa, Adel F.; and Matrana, Barry A., 5,336,739, Cl. 526-181.000.
Hale, Ralph. Penile clamp for impotence. 5,336,157, Cl. 600-41.000.
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Hall, Clifford L., to Adtran Corporation. Digital tandem channel unit interface for telecommunications network. 5,337,306, Cl. 370-13.000.
Hall, David C.: *See—*
Shrum, Ralph E.; and Hall, David C., 5,335,874, Cl. 242-118.400.
Hall, Larry W.: *See—*
Hopkins, Thomas M.; and Hall, Larry W., 5,335,889, Cl. 248-231.000.
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., to AstroPower, Inc. Columnar-grained polycrystalline solar cell and process of manufacture. 5,336,335, Cl. 136-258.000.
Hall Signs, Inc.: *See—*
Hopkins, Thomas M.; and Hall, Larry W., 5,335,889, Cl. 248-231.000.
Hall, Tharon: *See—*
Brown, Lawrence S.; Dewey, Douglas W.; and Hall, Tharon, 5,337,197, Cl. 360-48.000.
Haller, Heinrich, to Gretag Imaging AG. Photographic copying apparatus and process of operation. 5,337,118, Cl. 355-27.000.
Halliburton Company: *See—*
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.
Rodrigues, Klein A., 5,335,726, Cl. 166-295.000.
Venditto, James J.; and Caskey, Kenneth D., 5,335,724, Cl. 166-298.000.
Halstead-Nussloch, Richard H.; and Strickert, Mark D., to International Business Machines Corporation. Method and system for progressive database search termination and dynamic information presentation utilizing telephone keypad input. 5,337,347, Cl. 379-67.000.
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VOL 1165 ISS 2 AG 9 1994 UMI

Ltd. Apparatus for actively reducing noise for interior of enclosed space. 5,337,365, Cl. 381-71.000.

Hamada, Hideaki: *See—*
Kintaichi, Yoshiaki; Hamada, Hideaki; Ito, Takehiko; Sasaki, Motoi; Tabata, Mitsunori; and Usui, Kazushi, 5,336,476, Cl 423-239.100.

Hamada, Hiroshi: *See—*
Oikawa, Masahiro; Nemoto, Hiroyuki; Hamanaka, Kenjiro; Kishimoto, Takashi; Funada, Fumiaki; Hamada, Hiroshi; and Shibatani, Takashi, 5,337,186, Cl. 359-628.000

Hamaguchi, Shinichi, to Fujitsu Limited. Exposure data forming method, pattern forming method, pattern exposure method and pattern exposure apparatus. 5,337,247, Cl. 364-468.000.

Hamamatsu Photonics K.K.: *See—*
Kamiya, Kiyoshi; Uchiyama, Shigeru; Ohishi, Hideshi; Sugiyama, Norikazu; Mizuguchi, Yoshinori; and Hirano, Masahiko, 5,337,081, Cl. 348-61.000.
Nakatsugawa, Kiyoshi; Oguri, Kazuyoshi; Onda, Hiroyuki; and Watanabe, Hiroyuki, 5,336,966, Cl. 313-532.000
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000

Hamanaka, Kenjiro: *See—*
Oikawa, Masahiro; Nemoto, Hiroyuki; Hamanaka, Kenjiro; Kishimoto, Takashi; Funada, Fumiaki; Hamada, Hiroshi; and Shibatani, Takashi, 5,337,186, Cl. 359-628.000.

Hamano, Tomoyuki: *See—*
Ohto, Osamu; Hamano, Tomoyuki; Kozuka, Eiji; and Miyawaki, Naokazu, 5,337,286, Cl. 365-230.010.

Hamaoka, Takashi: *See—*
Koyama, Hideki; and Hamaoka, Takashi, 5,336,045, Cl. 415-55.100

Hamilton, R. Lee, Jr.: *See—*
Buchholz, Dale R.; Doss, William K.; Robbins, Karen E.; Yednak, Mark A.; and Hamilton, R. Lee, Jr., 5,337,313, Cl. 370-94.100.

Hamilton, R. Scott; Wardle, Robert B.; and Hinshaw, Jerald C., to Thiokol Corporation. Vinyl ethers as nonammonia producing bonding agents in composite propellant formulations. 5,336,343, Cl. 149-19.900.

Hanatani, Yasuyuki: *See—*
Miyamoto, Eiichi; Hanatani, Yasuyuki; Iwasaki, Hiroaki; Mizuta, Yasufumi; and Kawahara, Akihiko, 5,336,576, Cl. 430-58.000.

Hanauer, Horst: *See—*
Wunderlich, Klaus; Neubrand, Franz; Schmidt, Erwin; Buhl, Hans-Wilhelm; Wirbeleit, Friedrich; and Hanauer, Horst, 5,335,500, Cl. 60-609.000

Hanawa, Ryotaro: *See—*
Uetani, Yasunori; Doi, Yasunori; Hashimoto,. Kazuhiko; Osaki, Haruyoshi; and Hanawa, Ryotaro, 5,336,583, Cl. 430-191.000

Hanchar, Peter J.: *See—*
Tanzer, Raymond C.; and Hanchar, Peter J., 5,335,910, Cl. 273-121.00E.

Hancock, John P.; and McClelland, Ralph A., to K-Whit Tools, Inc Refrigerant recovery device. 5,335,512, Cl. 62-292.000.

Hancock, Robert L.; Pritz, Steven E.; Bauman, Robert C.; and Nowlan, Shawn J., to Ford Motor Company. Ignition coil. 5,335,642, Cl. 123-634.000.

Handa, Tsuneo; Chiba, Noriyoshi; and Kunugi, Masanao, to Seiko Epson Corporation. Thermal transfer type printer and method of rejuvenating an ink sheet employed in the printer. 5,336,000, Cl 400-197.000

Haner, Lambert. Brushless dynamo machine with novel armature construction. 5,336,956, Cl. 310-179.000

Hanes, Ronnie M.: *See—*
Smith, David W.; Hanes, Ronnie M.; Scheben, John A.; and Augustine, Steve M., 5,336,802, Cl. 560-245.000.

Hankook Metal Co., Ltd.: *See—*
Ro, Jong-Ho, 5,335,570, Cl. 82-48.000

Hanninen, Arvi K. Covered frame shelter and method of erection. 5,335,684, Cl. 135-102.000.

Hannum, Joseph R., to Budd Company, The. Bucket grit elevator system. 5,336,417, Cl. 210-803.000.

Hansen, Ross. Cleated outer sole. 5,335,429, Cl. 36-7.500.

Hanson, Gary L. Shoelace tightening and locking device. 5,335,401, Cl. 24-712.500.

Hanson, John: *See—*
Duffy, Paul E.; Hanson, John; Lugosi, Robert; Guptill, Spencer H.; and Kackowski, Matthew, 5,336,013, Cl. 403-2.000.

Hanzawa, Ryuuzou: *See—*
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl. 164-475.000.

Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, to Sumitomo Chemical Company, Limited. Mold for press molding and process for press molding of thermoplastic resin using the same. 5,336,463, Cl. 264-328.700.

Harada, Eriya: *See—*
Murakawa, Masatake; Minoura, Akira; Kurohara, Kazuaki; Imanishi, Ryozo; Yamashita, Nobuyuki; and Harada, Eriya, 5,335,487, Cl. 56-10.500.

Harada, Hiroaki: *See—*
Ozawa, Kazuhisa; and Harada, Hiroaki, 5,336,096, Cl. 439-72.000.

Harada, Hiroyuki; Tajima, Akio; Kogo, Takashi; Nagakawa, Tadashi; Oda, Hajima; Inoue, Haruo; and Hayakawa, Tsuyoshi, to Seikosha Co., Ltd. Dot printer. 5,336,004, Cl. 400-624.000.

Harada Kogyo Kabushiki Kaisha: *See—*
Harada, Takuji, 5,337,060, Cl. 343-700.0MS

Harada, Takuji, to Harada Kogyo Kabushiki Kaisha. Micro-strip antenna. 5,337,060, Cl. 343-700.0MS.

Haraguchi, Shousuke: *See—*
Kaihara, Shoji; and Haraguchi, Shousuke, 5,337,108, Cl. 354-218.000.

Harandi, Mohsen N.: *See—*
Owen, Hartley; and Harandi, Mohsen N., 5,336,820, Cl. 585-323.000

Harbor Branch Oceanographic Institution, Inc.: *See—*
Gulavita, Nanda K.; Gunasekera, Sarath P.; Pomponi, Shirley A.; Longley, Ross E.; and McCarthy, Peter J., 5,336,757, Cl 530-317.000

Hardee, Kim C.: *See—*
Cordoba, Michael V.; and Hardee, Kim C., 5,337,284, Cl 365-227.000

Hardwick, R. Alan; Smith, Alan K.; Lake, William C.; and Chenoweth, Dennis E., to Baxter International Inc. Method and useful apparatus for preparing pharmaceutical compositions. 5,336,760, Cl. 530-413.000.

Harford, Jack R.; and Balaban, Alvin R., to Samsung Electronics Co., Ltd. Video IF amplifier with auxiliary IF amplifier for intercarrier sound & AFT. 5,337,091, Cl. 348-737.000.

Hargreaves, James S. Methods and control systems for registering a datum position between two relatively movable components of a machine tool. 5,337,147, Cl. 356-375.000.

Harirchian, Bijan: *See—*
Au, Van; and Harirchian, Bijan, 5,336,765, Cl. 536-18.500

Harmon, Frank C., Jr.: *See—*
Zguris, George C.; and Harmon, Frank C., Jr., 5,336,275, Cl. 29-623.500.

Harmon, John L.: *See—*
Babb, Steven J.; and Harmon, John L., 5,335,577, Cl. 86-21.000.

Harnish, Daniel F.: *See—*
Yates, Stephen F.; Harnish, Daniel F.; and Smith, Addison M., 5,336,377, Cl. 203-29.000.

Harold, Robert A.: *See—*
Narang, Ram S.; Pond, Stephen F.; Altavela, Robert P.; Warner, Fredrick A.; and Harold, Robert A., 5,336,319, Cl. 118-211.000.

Harper, Sandra L.: *See—*
Campbell, Chester D.; Harper, Sandra L.; Jain, Virender; Kenyon, Richard L.; Matthies, Alan; and Yabuki, Roy M., 5,335,513, Cl. 62-228.300.

Harris, Clark E.; Hulbert, Raymond D.; Dominesey, Andrew E.; Healey, Thomas C.; and Shaw, Joel R., to Eastman Kodak Company Cassette for web material. 5,335,873, Cl. 242-348.000.

Harris Corporation: *See—*
Najle, Esteban G.; and Buckley, Robert M., 5,337,014, Cl 324-613.000.

Harris, Edward M.; and Burlington, Michael, to ACCO-Rexel Group Services Plc. Stapling machine. 5,335,838, Cl. 227-132.000.

Harris, James E.: *See—*
Cotton, David; Richards, Adelbert H., III; and Harris, James E., 5,336,323, Cl. 118-428.000.

Harrison, Earnest R., Jr., to Westinghouse Electric Corporation. Multiprocessor computer system bus architecture. 5,337,411, Cl. 395-200.000.

Hartman, Davis H.: *See—*
Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hartman, Davis H., 5,337,397, Cl. 385-93.000.

Hartman, Terrence L.; and Cody, Charles A., to Rheox, Inc. High performance polyurethane base resins. 5,336,733, Cl. 525-411.000.

Hartmann, Joel, to Commissariat a l'Energie Atomique. Method for fabricating semiconductor memory device. 5,336,628, Cl. 437-43.000.

Hartmann, Jurgen: *See—*
Kruger, Hans-Eckhard; Koch, Harry; and Hartmann, Jurgen, 5,337,342, Cl. 379-40.000.

Hartrum, Laude E.; and Smuda, Raymond J., to Metalworks, Inc. Interlock assembly. 5,335,986, Cl. 312-220.000

Haruta, Ryo: *See—*
Suzuki, Masayuki; Haruta, Ryo; Shinriki, Hiroshi; and Nakata, Masayuki, 5,336,638, Cl. 437-190.000.

Harvey, James. Impulse converter. 5,335,561, Cl. 74-84.00R.

Hasbani, Jacques E.: *See—*
Carroll, Terri A.; and Hasbani, Jacques E., 5,337,246, Cl. 364-464.020.

Hasbro, Inc.: *See—*
Kuna, Wayne A., 5,335,917, Cl. 273-445.000.

Hasegawa, Kazuo, to Alps Electric Co., Ltd. Bar code reader with error detection and decode control. 5,336,874, Cl. 235-466.000.

Haseyama, Ryuji; Takagi, Masatoshi; Hayashi, Kouzou; Sasagawa, Katsuyoshi; Kuroda, Kazuyuki; Kano, Taisaku; and Shikai, Kiyoshi, to Mitsui Toatsu Chemicals, Incorporated. Alicyclic diamines, alicyclic diisocyanates and polyisocyanato-isocyanurates and method for the preparation thereof. 5,336,749, Cl. 528-73.000.

Hashemi, Seyed H.; and Sefidvash, Khorvash, to Unisys Corporation. Mass data storage and retrieval system. 5,337,414, Cl. 395-275.000.

Hashi, Hiroshi; and Togawa, Tsuyoshi, to Olympus Optical Co., Ltd. Optical information recording/reproducing apparatus. 5,337,304, Cl. 369-215.000.

Hashima, Kazuo; Kawano, Yuji; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Nakaki, Yoshiyuki; Tokunaga, Takashi; and Fujii, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Information storage system. 5,337,305, Cl. 369-116.000.

Hashimoto, Hiromasa: *See—*
Matsuda, Akira; Shudo, Shigeki; Shimamoto, Noboru; Tanaka, Kohichi; Hashimoto, Hiromasa; and Suzuki, Fumio, 5,335,457, Cl. 51-284.00R.

Hashimoto, Hiroshi; Ushimaru, Akira; Masuyama, Kenichi; Tanaka, Yasuyuki; and Kobayashi, Hiroyuki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,336,561, Cl. 428-336.000.

Hashimoto, Katsuhiko; Fukasaku, Yoshinori; Fujino, Shinichi; and Mirumachi, Mitsuaki, to Hatachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Noise reduced centrifugal blower. 5,336,046, Cl. 415-119.000.

Hashimoto, Kazuhiko; Imamura, Yoshihiko; Yamamoto, Toshihide; and Noh, Yoshihisa, to Mazda Motor Corporation. Combustion chamber structure for an engine. 5,335,634, Cl. 123-188.140.

Hashimoto, Kazuhiko: *See—*
Uetani, Yasunori; Doi, Yasunori; Hashimoto, Kazuhiko; Osaki, Haruyoshi; and Hanawa, Ryotaro, 5,336,583, Cl. 430-191.000.

Hashimoto, Kenji: *See—*
Saeki, Shirou; Nakazato, Yukitaka; Hashimoto, Kenji; and Ikoma, Tadashi, 5,335,837, Cl. 226-110.000.
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,337,174, Cl. 359-73.000.

Hashimoto, Kiyokazu: *See—*
Mukunoki, Yasuo; Shinagawa, Yukio; Yamanouchi, Junichi; and Hashimoto, Kiyokazu, 5,336,589, Cl. 430-501.000.

Hashimoto, Masayuki: *See—*
Goda, Hisashi; Asahina, Yasutoshi; Hashimoto, Masayuki; and Oka, Naoki, 5,336,365, Cl. 156-643.000.

Hashimoto, Reiji: *See—*
Hori, Nobuo; Takano, Yoshinobu; Takahashi, Takashi; Nagano, Shigenori; and Hashimoto, Reiji, 5,337,169, Cl. 359-3.000.

Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, to Mita Industrial Co., Ltd. Image-forming machine with toner image transfer means. 5,337,128, Cl. 355-271.000.

Hastings, Jerome K.: *See—*
Lindsey, Kurt L.; Peret, Andrew R.; Hastings, Jerome K.; and Smith, Richard G., 5,337,214, Cl. 361-709.000.

Hata, Katsuya: *See—*
Kobayashi, Keiji; Kaneko, Akira; Hata, Katsuya; and Kobayashi, Yoshinori, 5,336,071, Cl. 425-66.000.

Hata, Syunroku: *See—*
Ozawa, Akira; Matsuyama, Taizo; Homma, Eiichi; Hata, Syunroku; Matsuo, Kenzaburo; and Nakatsuka, Kazushige, 5,336,025, Cl. 408-46.000.

Hatachi, Ltd.: *See—*
Hashimoto, Katsuhiko; Fukasaku, Yoshinori; Fujino, Shinichi; and Mirumachi, Mitsuaki, 5,336,046, Cl. 415-119.000.

Hatada, Kenzo: *See—*
Kawakita, Tetsuo; Yoshida, Takayuki; and Hatada, Kenzo, 5,336,547, Cl. 428-209.000.

Hatakeyama, Hideo: *See—*
Ohtani, Yasumi; Hatakeyama, Hideo; Kuriyama, Toru; Nakagome, Hideki; and Matsubara, Yoichi, 5,335,505, Cl. 62-6.000.

Hatasa, Makoto: *See—*
Ito, Yasunobu; and Hatasa, Makoto, 5,335,565, Cl. 477-131.000.

Hatate, Yasuo: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000.

Hattori, Shinobu: *See—*
Fukuda, Toshio; Hattori, Shinobu; and Nagamori, Shigenobu, 5,336,057, Cl. 417-395.000.

Hauch, David A., to Carter Day International, Inc. Grain separator. 5,335,792, Cl. 209-687.000.

Haun, Andy A.; and Baack, Jerry R., to Square D Company. Dual voltage power supply. 5,337,205, Cl. 361-56.000.

Hause, Vern: *See—*
Nagaraj, Benamanahalli K.; and Hause, Vern, 5,336,639, Cl. 437-217.000.

Hauser, Ambrose A.: *See—*
Roberts, Hubert S., Jr.; Ablett, Adrian M.; and Hauser, Ambrose A., 5,335,502, Cl. 60-752.000.

Hauser Chemical Research, Inc.: *See—*
Murray, Christopher K.; Beckvermit, Jeffrey T.; and Ziebarth, Timothy D., 5,336,684, Cl. 514-449.000

Havas, Laszlo; Lalanne-Magne, Claudine; and Speakman, John G., to BP Chemicals Limited. Kill-gas introduction to a fluidized bed reactor containing chromium oxide catalyst. 5,336,738, Cl. 526-82.000.

Hawkes, Robert C.: *See—*
McDougall, Ian L.; Armstrong, Alan G. M.; and Hawkes, Robert C., 5,337,001, Cl. 324-318.000.

Hawley, Dan W.: *See—*
Moss, Mary G.; Bewer, Terry; Cuzmar, Ruth M.; Hawley, Dan W.; and Flaim, Tony D., 5,336,925, Cl. 257-643.000.

Hawley, David: *See—*
Popli, Sanjay; Pickett, Scott; Hawley, David; Moni, Shankar; and Camarota, Rafael C., 5,336,950, Cl. 307-465.000

Hawley, William D.: *See—*
Wheeler, Robert G., deceased; and Hawley, William D., 5,335,675, Cl. 128-842.000.

Hayakawa, Tsuyoshi: *See—*
Harada, Hiroyuki; Tajima, Akio; Kogo, Takashi; Nagakawa, Tadashi; Oda, Hajima; Inoue, Haruo; and Hayakawa, Tsuyoshi, 5,336,004, Cl. 400-624.000.

Hayase, Shuzi: *See—*
Nakano, Yoshihiko; Hayase, Shuzi; Murai, Shinji; Mikogami, Yukihiro; and Yoshizumi, Akira, 5,336,736, Cl. 525-474.000.

Hayashi, Kaoru: *See—*
Kanemitsu, Toshihiro; Hayashi, Kaoru; and Matsui, Kazufumi, 5,335,997, Cl. 383-63.000.

Hayashi, Kazuo: *See—*
Furukawa, Shigehiro; Hayashi, Kazuo; and Takayanagi, Hiroshi, 5,337,319, Cl. 371-11.100.

Hayashi, Kouzou: *See—*
Haseyama, Ryuji; Takagi, Masatoshi; Hayashi, Kouzou; Sasagawa, Katsuyoshi; Kuroda, Kazuyuki; Kano, Taisaku; and Shikai, Kiyoshi, 336,749, Cl. 528-73.000.

Hayashi, Nobuaki. Pickup for guitar. 5,335,576, Cl. 84-727.000.

Hayashi, Ryuji: *See—*
Sawai, Kunio; Hayashi, Ryuji; Irie, Toshiaki; Kaneko, Shigeru; Tanaka, Shinya; and Shinmi, Tsukasa, 5,335,877, Cl. 242-334.600.

Hayashi, Shigeki: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000.

Hayashi, Yoshihiro, to NEC Corporation. Semiconductor structure and method for fabricating the same. 5,336,929, Cl. 257-772.000.

Hayden, Percy: *See—*
Jennings, James R.; and Hayden, Percy, 5,336,791, Cl. 549-538.000.

Hayes, Phillip W.: *See—*
Daley, Michael J.; Furda, Gary J.; and Hayes, Phillip W., 5,336,488, Cl. 424-85.200.

Hayes Wheels International, Inc.: *See—*
Wei, Daniel, 5,336,344, Cl. 148-549.000.

Hazenbroek, Jacobus E. Method and apparatus for centrally aligning and cutting the keel bone of a poultry carcass. 5,336,127, Cl. 452-160.000.

Healey, Thomas C.: *See—*
Harris, Clark E.; Hulbert, Raymond D.; Dominesey, Andrew E.; Healey, Thomas C.; and Shaw, Joel R., 5,335,873, Cl. 242-348.000.

HealthTech Services Corporation: *See—*
Kaufman, Stephen B.; DiGianfilippo, Aleandro; Sager, Tamara L.; Bow, Clark F.; and DeVito, Ralph J., 5,335,816, Cl. 221-13.000.

Heartland Industries, Inc.: *See—*
Park, Owen H., 5,335,462, Cl. 52-95.000.

Hediger, Hansrudolf: *See—*
Ruetschi, Heinz; and Hediger, Hansrudolf, 5,335,474, Cl. 53-282.000.

Hefley, Carl D. Variable compression internal combustion engine. 5,335,632, Cl. 123-48.00B.

Heidelberger Druckmaschinen AG: *See—*
Helmstadter, Karl-Heinz, 5,335,597, Cl. 101-485.000.

Heidemann, Rolf: *See—*
Ohnsorge, Horst; Weygang, Adolf; and Heidemann, Rolf, 5,337,175, Cl. 359-125.000.

Heidt, Thomas; Will, Henry; Rhodes, Greydon; Plasensia, Armand; and Clampitt, Roger, to VetTest S.A. Chemical analyzer. 5,336,467, Cl. 422-64.000.

Heilmann, Steven M.; Rasmussen, Jerald K.; Krepski, Larry R.; Milbrath, Dean S.; and Coleman, Patrick L., to Minnesota Mining and Manufacturing Company. Polymeric supports. 5,336,742, Cl. 526-260.000.

Heim, Ulrich: *See—*
Falb, Wolfgang; Gippert, Karl-Ludwig; Heim, Ulrich; Holscher, Uvo; Kiske, Siegfried; Kullik, Gotz; Loser, Ralf-Ernst; and Maurer, Christoph, 5,335,652, Cl. 128-203.140.

Heiman, Daniel F., to Abbott Laboratories. Tracers for use in flecainide fluorescence polarization immunoassay. 5,336,622, Cl. 436-537.000.

Heimann, Ulrich: *See—*
Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,336,722, Cl. 525-113.000.

Heimberg, Manfred: *See—*
Ondrus, Daniel J.; and Heimberg, Manfred, 5,336,731, Cl 525-370.000.

Heinze, Rolf: *See—*
Vogel, Andreas; Heinze, Rolf; and Wiesinger, Klaus-Dieter, 5,336,087, Cl. 433-69.000.

Heinzelman, Bert D.: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,335,389, Cl. 15-167.100.

Heinzmann, Peter L.; Mueller, Johann R.; and Nassehi, Mehdi M., to International Business Machines Corporation. Communications network and method of regulating access to the busses in said network. 5,337,312, Cl. 370-85.900.

Heise, Wilhelm: *See—*
Jung, Werner A.; Vorbeck, Udo; Schmitz, Arno; Heise, Wilhelm; and Gross, Lutz-Werner, 5,336,753, Cl. 528-335.000.

Heller, Jorge: *See—*
Ng, Steve Y. W.; and Heller, Jorge, 5,336,505, Cl. 424-486.000.

Hellmann, Joachim: *See—*
Barthelemy, Pierre; Paulus, Mireille; Buchwald, Hans; Hellmann, Joachim; and Raszkowski, Boleslaus, 5,336,429, Cl. 252-171.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Helms, Jeffrey H.; Holubka, Joseph W.; and Blais, Edmund J., to Ford Motor Company. Acrylic thermoplastic ionic conductor. 5,337,184, Cl. 359-270.000.

Helmstadter, Karl-Heinz, to Heidelberger Druckmaschinen AG. Method and device for starting and stopping a sheet turning operation and for format adjusting during sheet transport through a printing press. 5,335,597, Cl. 101-485.000.

Helvy, Fred A.: *See—*
Tomasetti, Charles M.; Helvy, Fred A.; and Kaiser, Donald B., 5,336,967, Cl. 313-533.000.

Helwig, James: *See—*
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.

Henderson, Matthijs H.: *See—*
Graveland, Aris; Henderson, Matthijs H.; and Linders, Leonie J. M., 5,336,517, Cl. 426-622.000.

Hendricks, Douglas W.: *See—*
Juskey, Frank J.; and Hendricks, Douglas W., 5,336,931, Cl. 257-787.000.

Heng, Yeow S.: *See—*
Seah, Khen H.; Heng, Yeow S.; and Chua, Chong W., 5,336,054, Cl. 417-2.000.

Henkel Corporation: *See—*
Aoki, Tomoyuki; Iino, Yasuo; Ono, Yoji; and Asai, Shinichiro, 5,336,425, Cl. 252-100.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Bunte, Reinhard; Gress, Wolfgang; Nagorny, Ulrich; and Gorzinski, Manfred, 5,336,313, Cl. 106-504.000.

Hennessee, Robert P.; Barwin, David A.; Rudzewicz, Robert G.; and Rajala, Richard M., to Chrysler Corporation. Vehicle air conditioner refrigeration, automatic variable set point evaporator system therefor. 5,335,514, Cl. 62-227.000.

Henseler, Wolfgang: *See—*
Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, 5,335,937, Cl. 280-728.00B.

Henson, Gordon D.; and Lee, Nicholas A., to Minnesota Mining and Manufacturing Company. Adhesiveless connector for optical fibers. 5,337,390, Cl. 385-81.000.

Hepp, Daniel: *See—*
Gilles, Andrew; and Hepp, Daniel, 5,337,370, Cl. 382-14.000.

Hepp, James, to All Stock Displays Inc. Stackable tray displaying soda bottles. 5,335,814, Cl. 220-509.000.

Herboldsheimer, John D. Female socket-based male plug locking device. 5,336,103, Cl. 439-346.000.

Herleikson, Earl C.: *See—*
Baumgartner, Richard A.; and Herleikson, Earl C., 5,337,230, Cl. 364-138.000.

Herman, Kenneth M., to Shoppers Food Warehouse Corp. Salad bar fan. 5,336,049, Cl. 416-146.00R.

Hermansen, Frank, to U.S. Divers Co., Inc. Diver's pivotal gauge boot. 5,335,543, Cl. 73-431.000.

Herold, Barry W.: *See—*
Barrett, Raymond L., Jr.; and Herold, Barry W., 5,337,007, Cl. 330-253.000.

Herve, Jean-Claude: *See—*
Baudelaire, Patrick; Gangnet, Michel; Herve, Jean-Claude; Pudet, Thierry; and Thong, Jean-Manuel V., 5,337,404, Cl. 395-141.000.

Herzberg, Louis P.; Patel, Baiju V.; Ruiz, Antonio; Schaffa, Frank A.; and Willebeek-LeMair, Marc H., to International Business Machines Corporation. Apparatus for connecting two fiber distributed data interface rings. 5,337,311, Cl. 370-85.140.

Herzog, Kenneth J. Conveyor post rail clamp. 5,335,782, Cl. 198-836.300.

Herzyk, Tomaz R.: *See—*
Palepu, Nageswara R.; and Herzyk, Tomaz R., 5,336,669, Cl. 514-53.000.

Hetico, Rolf R.: *See—*
Tseng, Wu-Yang; Bristol, Brent L.; Hetico, Rolf R.; and Glynn, Christopher C., 5,335,920, Cl. 277-1.000.

Hettinga, Siebolt. Process for making molded-in lamina hinge. 5,336,460, Cl. 264-251.000.

Hewing GmbH: *See—*
Homm, Karl G., 5,335,530, Cl. 72-402.000.

Hewlett-Packard: *See—*
Jones, Arlin R., 5,337,160, Cl. 358-447.000.

Hewlett-Packard Company: *See—*
Appel, Peter C., 5,337,410, Cl. 395-162.000.
Baumgartner, Richard A.; and Herleikson, Earl C., 5,337,230, Cl. 364-138.000.
Boyd, David W.; and Degi, Greg A., 5,336,878, Cl. 250-208.100.
DeLano, Eric R.; Gleason, Craig A.; and Forsyth, Mark A., 5,337,415, Cl. 395-375.000.
Faulk, Robert L., Jr., 5,337,309, Cl. 370-60.000.
Fischer, Martin, 5,336,944, Cl. 307-350.000.
Hillstrom, Timothy L., 5,337,339, Cl. 377-52.000.
Knee, Derek L.; Li, Wang K.; and Wheless, Thomas O., Jr., 5,337,254, Cl. 364-489.000
Lindauer, James M.; and Pering, Richard D., 5,337,405, Cl. 395-147.000.
Webb, Steven L.; and Youngers, Kevin J., 5,336,976, Cl. 315-134.000.

Hewlett-Packard Corporation: *See—*
Badyal, Rejeev, 5,337,008, Cl. 330-253.000.

Heymes, Rene ; and Lutz, Andrr , to Roussel UCLAF. Novel 3-acetoxymethyl-7-(iminoacetamido)-cephalosporanic acid. 5,336,776, Cl. 548-194.000.

Hidada, Osafumi; Ohe, Michisuke; Magoshi, Osam; Kato, Toshiyuki; and Sakai, Tomoki, to Teijin Limited. Plaster agent. 5,336,210, Cl. 604-307.000.

Hidaka, Hidemasa: *See—*
Koga, Jinichiro; Adachi, Takashi; and Hidaka, Hidemasa, 5,336,766, Cl. 536-23.200.

Hidding, Gerhard, to Hadewe B. V. Method and apparatus for unpacking contents from envelopes. 5,336,034, Cl. 414-403.000.

Hieftje, Gary M.; and Wu, Min, to Indiana University Foundation. Rotary spray chamber device for conditioning aerosols. 5,335,860, Cl. 239-469.000.

Higashitani, Masahiro: *See—*
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.

High, Kane M.: *See—*
Snider, Michael T.; High, Kane M.; Panol, Georg; Ultman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., 5,336,164, Cl. 604-4.000.

Highland Supply Corporation: *See—*
Weder, Donald E.; and Straeter, Joseph G., 5,335,475, Cl. 53-397.000.
Weder, Donald E., 5,335,476, Cl. 53-397.000.
Weder, Donald E., 5,335,477, Cl. 53-399.000.

Highlander, Sarah: *See—*
Berget, Peter; Engler, Michael; Highlander, Sarah; and Weinstock, George, 5,336,491, Cl. 424-190.100.

Hill, Jack A.: *See—*
Wildi, Robert H.; Cox, Keith E.; and Hill, Jack A., 5,336,701, Cl. 523-411.000.

Hill-Rom Company, Inc.: *See—*
Foster, L. Dale; and Reeder, Ryan A., 5,335,384, Cl. 5-622.000.
Foster, L. Dale; and Reeder, Ryan A., 5,335,651, Cl. 128-202.130.

Hillbish, Warren C.; and Smith, Steven G., to Whitaker Corporation, The. Stacked connector assembly. 5,336,109, Cl. 439-540.000.

Hiller, James N., to EZ Loader Boat Trailers, Inc. Spring hanger assembly for trailer frame. 5,335,934, Cl. 280-718.000.

Hillert, Lars H.: *See—*
Waldenstrom, Mats G.; Fischer, Udo K. R.; Hillert, Lars H.; and Dennis, Mahlon D., 5,335,738, Cl. 175-420.200.

Hillstrom, Timothy L., to Hewlett-Packard Company. High frequency programmable divider. 5,337,339, Cl. 377-52.000.

Hinshaw, Jerald C.: *See—*
Hamilton, R. Scott; Wardle, Robert B.; and Hinshaw, Jerald C., 5,336,343, Cl. 149-19.900.

Hioki, Takanori, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,336,594, Cl. 430-577.000.

Hirai, Yasuyuki: *See—*
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.

Hirano, Masahiko: *See—*
Kamiya, Kiyoshi; Uchiyama, Shigeru; Ohishi, Hideshi; Sugiyama, Norikazu; Mizuguchi, Yoshinori; and Hirano, Masahiko, 5,337,081, Cl. 348-61.000.

Hiraoka, Kazuo, to Sumitomo Heavy Industries, Ltd. Injection pressure limiting device for injection molding machine. 5,336,073, Cl. 425-145.000.

Hirata, Kazumasa: *See—*
Yamamoto, Toshio; Hirata, Kazumasa; Wakabayashi, Shigenori; and Katsuura, Akio, 5,336,779, Cl. 548-333.500.

Hirata, Tatsuya; Watanabe, Atsushi; and Tokitsu, Naoki, to Nippondenso Co., Ltd. Antenna system with a limitable communication area. 5,337,066, Cl. 343-841.000.

Hiratsuka, Seiichiro; and Toyomura, Yuuji, to Matsushita Electric Industrial Co., Ltd. Halftone image forming apparatus including density based dot enlargement. 5,337,167, Cl. 358-533.000.

Hired Hand Manufacturing, Inc.: *See—*
Crider, Grant W.; and Ellard, Anthony L., 5,336,131, Cl. 454-238.000.

Hirohata, Toru: *See—*
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000.

Hironaka, Yoshio; Tokailin, Hiroshi; Hosokawa, Chishio; and Kusumoto, Tadashi, to Idemitsu Kosan Co., Ltd. Organic electroluminescence device. 5,336,546, Cl. 428-209.000.

Hirose, Masahiko: *See—*
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,336,409, Cl. 210-490.000.

Hiroshi Shimizu: *See—*
Shimizu, Hiroshi; Yoshida, Tetsuo; and Mashiko, Chikara, 5,336,960, Cl. 310-369.000.

Hirsch, William H.: *See—*
Goldhardt, Donald J.; and Hirsch, William H., 5,336,203, Cl. 604.7-247.000.

Hiskey, Michael A.; and Coburn, Michael D., to University of California, The Regents of the. Synthesis of 1,3,3-trinitroazetidine. 5,336,784, Cl. 548-953.000.

Hitachi Automotive Engineering Co., Ltd.: *See—*
Hashimoto, Katsuhiko; Fukasaku, Yoshinori; Fujino, Shinichi; and Mirumachi, Mitsuaki, 5,336,046, Cl. 415-119.000.

Hitachi Cable, Ltd.: *See—*
Nagai, Masahiro; Abe, Kazuo; Nireki, Tadashi; Yamagishi, Hisanobu; and Miyake, Yasuhiko, 5,335,527, Cl. 72-262.000.

Hitachi Construction Machinery Co., Ltd.: *See—*
Nakajima, Kichio; Honma, Kazuo; Sumiya, Yukio; Yamaguchi, Takeshi; Inamitsu, Hiroshi; and Minamiyama, Eiji, 5,335,547, Cl. 73-622.000.
Sato, Hitoshi; and Kanno, Yukio, 5,335,495, Cl. 60-461.000.

Hitachi Device Engineering Co., Ltd.: *See—*
Kawahara, Takayuki; Kawajiri, Yoshiki; Akiba, Takesada; Horiguchi, Mssashi; Kitsukawa, Goro; and Aoki, Masakazu, 5,337,271, Cl. 365-149.000.

Hitachi, Ltd.: *See—*
Aoyama, Motoo; Masumi, Ryoji; Ishibashi, Yooko; and Kurihara, Kunitoshi, 5,337,337, Cl. 376-435.000.
Arai, Hideo; Owashi, Hitoaki; Hosokawa, Kyoichi; Nishimura, Keizo; Watatani, Yoshizumi; and Shibata, Akira, 5,337,199, Cl. 360-8.000.
Hamabe, Tsutomu; Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Sato, Noriharu, 5,337,365, Cl. 381-71.000.
Kawahara, Takayuki; Kawajiri, Yoshiki; Akiba, Takesada; Horiguchi, Mssashi; Kitsukawa, Goro; and Aoki, Masakazu, 5,337,271, Cl. 365-149.000.
Kitada, Masahiro; Tanabe, Hideo; Shimizu, Noboru; Koyama, Naoki; and Kobayashi, Toshio, 5,337,203, Cl. 360-113.000.
Kitaguchi, Hiroshi; and Izumi, Shigeru, 5,336,890, Cl. 250-370.060.
Kitajima, Masaaki; Hiyama, Ikuo; and Nagae, Yoshiharu, 5,337,070, Cl. 345-211.000.
Murakami, Kyoshiro; Yamashita, Tetsuji; Yoshikawa, Tomio; Yasuda, Hiromu; and Zushi, Shizuo, 5,335,708, Cl. 165-1.000.
Nishiyama, Nobumasa; Tsuyoshi, Toshiaki; Aoi, Hajime; Kameoka, Tetsuji; Tanaka, Masaya; and Shiraishi, Kazuhisa, 5,337,198, Cl. 360-65.000.
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsuneo; and Fujiwara, Takahiko, 5,337,090, Cl. 348-626.000
Suzuki, Masayuki; Haruta, Ryo; Shinriki, Hiroshi; and Nakata, Masayuki, 5,336,638, Cl. 437-190.000.

Hitachi Metals, Ltd.: *See—*
Kinouchi, Yohsuke; Ai, Minoru; Mizutani, Hiroshi; Okuno, Osamu; Yamauchi, Kiyotaka; Yamataka, Akira; and Suzuki, Hiroya, 5,337,033, Cl. 335-302.000.

Hiyama, Ikuo: *See—*
Kitajima, Masaaki; Hiyama, Ikuo; and Nagae, Yoshiharu, 5,337,070, Cl. 345-211.000.

Hiyoshi, Kozo: *See—*
Eguchi, Masaki; Saitoh, Jun; Iida, Hiroyuki; and Hiyoshi, Kozo, 5,337,366, Cl. 381-71.000.

Hiyoshi, Yoshihiko: *See—*
Shiokawa, Keiichi; Akiyama, Mihoko; Ide, Yoji; Hiyoshi, Yoshihiko; Sato, Masahiro; and Surizaki, Kumi, 5,336,548, Cl. 428-212.000

Hobby, James D.; and Butcher, Steven J., to Focas Limited. Optical fiber sensor for producing a variable transverse strain in a localized portion of the fiber. 5,336,883, Cl. 250-227.170.

Hoblyn, Jeremy P.: *See—*
Saito, Hirohisa; Hoblyn, Jeremy P.; and Abe, Etsuo, 5,336,081, Cl. 431-4.000

Hobrecht, Stephen W., to National Semiconductor Corporation. Reduced phase-jitter horizontal sweep control phase-lock-loop and method. 5,337,023, Cl. 331-20.000.

Hobson, David J.; and DeJager, Everett, to Xomox Corporation. Valve having rotatable cage. 5,335,692, Cl. 137-614.170.

Hochreiter, Eric P.; Ehrne, Franklin D.; Morris, William I.; and Schwab, Frederick J., to Eastman Kodak Company. Scanning apparatus gate drive system and method. 5,337,120, Cl. 355-47.000.

Hoderlein, Paul M.: *See—*
Smith, Kyle; Fisher, Barbara J.; Bryan, Philip S.; and Hoderlein, Paul M., 5,336,893, Cl. 250-483.100.

Hodge, David H.; and Geers, Carl J., to Metalworks, Inc. Cabinet with flipper door. 5,335,987, Cl. 312-323.000.

Hodges, Marvin P. Flexible controllable optical surface and method of making the same. 5,337,179, Cl. 359-443.000.

Hoechst Aktiengesellschaft: *See—*
Scherowsky, Gunter; and Gruneberg, Kirsten, 5,336,436, Cl. 252-299.610.
Wohlleben, Wolfgang; Muth, Gunter; Puhler, Alfred; and Rieb, Gunther J., 5,336,607, Cl. 435-172.300.

Hoechst Celanese Corporation: *See—*
Alexander, Paul R., Jr.; Cain, Donald G.; Dougherty, Erika J.; and Thornburg, Theodore S., 5,336,286, Cl. 55-528.000
Corallo, Cheryl F.; Sandor, Robert B.; and Blake, Ralph S., 5,336,464, Cl. 264-540.000.
Primes, Kathleen J.; Sigler, Gerald F.; Grenner, Gerd; and Kapmeyer, Wolfgang, 5,336,621, Cl. 436-534.000.

Hoenig, Clarence L., to United States of America, Energy. High density-high purity graphite prepared by hot isostatic pressing in refractory metal containers. 5,336,520, Cl. 427-154.000.

Hoerbiger Ventilwerke Aktiengesellschaft: *See—*
Stolle, Klaus, 5,335,926, Cl. 280-117.000.

Hofer, Bruce E., to Audio Presicion. AC mains test apparatus and method. 5,336,989, Cl. 324-115.000.

Hofert, David K.; and Yoshida, Yutaka, to Sun Microsystems, Inc. Method and apparatus for mapping multiple-byte characters to unique strings of ASCII characters for use in text retrieval. 5,337,233, Cl. 364-419.140.

Hoff, Don G.; and Ragan, Lawrence H., to Seiko Corp.; and Seiko Epson Corp. Wireless facsimile computer slate. 5,337,314, Cl. 370-94.100.

Hoffman, David C.: *See—*
McKennon, J. T.; Hains, Norman L.; and Hoffman, David C., 5,336,022, Cl. 405-263.000.

Hoffman, John P.: *See—*
Idstein, Donald J.; Hoffman, John P.; and Beesley, Harry J., 5,335,896, Cl. 266-236.000.

Hoffman, Oneal M. Sanitary dog kennel. 5,335,617, Cl. 119-17.000.

Hoffmann, Gerhard: *See—*
Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,336,722, Cl. 525-113.000.

Hoffmann-La Roche Inc.: *See—*
Albrecht, Harry A.; Keith, Dennis D.; Konzelmann, Frederick M.; Rossman, Pamela L.; and Weigele, Manfred, 5,336,768, Cl. 540-222.000.
Pauling, Horst; and Wehrli, Christof, 5,336,683, Cl. 514-443.000.

Hofstetter, Kenneth J., to United States of America, Energy. Composition and apparatus for detecting gamma radiation. 5,336,889, Cl. 250-361.00R.

Hogan, Larry E. Ski equipment carrying strap. 5,335,835, Cl. 224-257.000.

Hogan, Michael P.: *See—*
Bahary, William S.; and Hogan, Michael P., 5,336,430, Cl. 252-174.170.

Hogan, Patrick T.; and Turner, James J., to Nordson Corporation. Fast response film coater. 5,336,320, Cl. 118-300.000.

Hoge, David T.: *See—*
Ostwald, Timothy C.; and Hoge, David T., 5,336,030, Cl 414-277.000.

Hohnjec, Marijan: *See—*
Guberovic, Zeljko; Hohnjec, Marijan; Kuftinec, Josip; and Oklobzija, Milan, 5,336,775, Cl. 546-347.000.

Hoisington, Paul A.: *See—*
Spehrley, Charles W., Jr.; Hoisington, Paul A.; Fulton, Steven J.; Young, Lawrence R.; and Schaffer, Robert R., 5,337,079, Cl. 347-88.000.

Holl, Richard A. Methods and apparatus for the mixing and dispersion of flowable materials. 5,335,992, Cl. 366-348.000.

Holland, Scott B.; Fair, Kenneth L.; and Youells, James P., to Balance Engineering Corporation. Shared interface for multiple controllers. 5,337,229, Cl. 364-131.000.

Hollingsworth & Vose Company: *See—*
Zguris, George C.; and Harmon, Frank C., Jr., 5,336,275, Cl. 29-623.500.

Hollister Incorporated: *See—*
Metz, Michael, 5,336,211, Cl. 604-352.000.

Hollon, Blake D.: *See—*
Hollon, Edmund D.; and Hollon, Blake D., 5,336,019, Cl. 404-72.000.

Hollon, Edmund D.; and Hollon, Blake D. Uniform compaction of asphalt concrete. 5,336,019, Cl. 404-72.000.

Holloway, Peter W., to Fleetwood Systems, Inc. Air actuated flow control/load breaker/gas seal unit. 5,335,810, Cl. 221-10.000

Holmes, J. Stephen; and Lamartina, Timothy, to Birtcher Medical Systems, Inc. Surgical insturment capable of disassembly. 5,336,238, Cl. 606-208.000.

Holscher, Uvo: *See—*
Falb, Wolfgang; Gippert, Karl-Ludwig; Heim, Ulrich; Holscher, Uvo; Kiske, Siegfried; Kullik, Gotz; Loser, Ralf-Ernst; and Maurer, Christoph, 5,335,652, Cl. 128-203.140.

Holton, Bradley R.: *See—*
Rawlings, Richard T.; Bowman, Kirk; and Holton, Bradley R., 5,335,625, Cl. 119-74.000.

Holton, Robert A., to Florida State University. Method for preparation of taxol. 5,336,785, Cl. 549-214.000.

Holub, Timothy M.; Schulte, Regis; and Deines, Robert, to Coleman Company, Inc., The. Propane bottle carrier. 5,335,954, Cl. 294-31.200

Holubka, Joseph W.: *See—*
Helms, Jeffrey H.; Holubka, Joseph W.; and Blais, Edmund J., 5,337,184, Cl. 359-270.000.

Homm, Karl G., to Hewing GmbH. Pressing tool for pressing a cylindrical pressing member or a pressing member comprising a cylindrical portion onto a round profile, particularly a pipe conduit. 5,335,530, Cl. 72-402.000

Homma, Eiichi: *See—*
Ozawa, Akira; Matsuyama, Taizo; Homma, Eiichi; Hata, Syunroku; Matsuo, Kenzaburo; and Nakatsuka, Kazushige, 5,336,025, Cl. 408-46.000.

Homma, Michihide; Yoshihara, Atsuko; Wakabayashi, Hiroshi; and Isayama, Katsuhiko, to Kanegafuchi Chemical Industry Co., Ltd. Two pack type curable composition comprising epoxy resin and silicon-containing elastomeric polymer. 5,336,703, Cl. 523-435.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ozawa, Akira; Matsuyama, Taizo; Homma, Eiichi; Hata, Syunroku; Matsuo, Kenzaburo; and Nakatsuka, Kazushige, 5,336,025, Cl. 408-46.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Shibayama, Takao; Maekawa, Keiichiro; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, 5,335,537, Cl. 73-117.000.
Takahashi, Hideo; and Yoshino, Ryutaro, 5,337,235, Cl. 364-424.020.
Takasuka, Yoshitaka; Kimura, Yasuyuki; and Kato, Akira, 5,335,744, Cl. 180-197.000.

Honda, Yoshiaki: *See—*
Chikawa, Yasunori; Honda, Yoshiaki; Mori, Katsunobu; Tajima, Naoyuki; Tsuda, Takaaki; and Maeda, Takamichi, 5,336,650, Cl. 437-209.000.

Honegger, Roger: *See—*
Seidel, Randy R.; Kononov, Anthony; Honegger, Roger; and Silva, Robert M., 5,336,041, Cl. 414-788.000.

Honeywell Inc.: *See—*
Cummins, Brad L.; Pick, William A.; Sorn, Ronald R.; and Stocker, Karl F., 5,336,861, Cl. 200-339.000.
Egli, Werner H.; and Tettemer, Clair R., 5,337,141, Cl. 356-350.000.
Geddes, John J.; and Singh, Donald R., 5,336,923, Cl. 257-596.000.

Honigsbaum, Richard F. Apparatus for attacking rotating wing aircraft. 5,335,488, Cl. 57-223.000.

Honjo, Masahiro, to Matsushita Electric Industrial Co. Ltd. Method of correcting an image signal decoded in block units. 5,337,088, Cl. 348-420.000.

Honjo, Takashi: *See—*
Fujiwara, Takayoshi; Okuda, Masayuki; and Honjo, Takashi, 5,336,070, Cl. 418-220.000.

Honma, Kanehito: *See—*
Tani, Hiroji; and Honma, Kanehito, 5,336,301, Cl. 106-1.180.

Honma, Kazuo: *See—*
Nakajima, Kichio; Honma, Kazuo; Sumiya, Yukio; Yamaguchi, Takeshi; Inamitsu, Hiroshi; and Minamiyama, Eiji, 5,335,547, Cl. 73-622.000.

Hopkins, Thomas M.; and Hall, Larry W., to Hall Signs, Inc. Bracket mountable to an upright support for holding a sign. 5,335,889, Cl. 248-231.000.

Hoppmann, Hans-Dieter; and Frommann, Klaus, to Mannesmann Aktiengesellschaft. Installation for the manufacture of hot-rolled steel strip. 5,335,713, Cl. 164-441.000.

Horch, Kenneth W.: *See—*
Cha, Kichul; and Horch, Kenneth W., 5,335,667, Cl. 128-734.000.

Hori, Hirokazu: *See—*
Ohtsu, Motoichi; and Hori, Hirokazu, 5,337,324, Cl. 372-32.000.

Hori, Nobuo; Takano, Yoshinobu; Takahashi, Takashi; Nagano, Shigenori; and Hashimoto, Reiji, to Kabushiki Kaisha Topcon. Method for patterning an optical device for optical IC, and an optical device for optical IC fabricated by this method. 5,337,169, Cl. 359-3.000.

Horiba, Ltd.: *See—*
Hagiwara, Takashi; Kanzaki, Toyoki; and Kinoshita, Dainichiro, 5,337,140, Cl. 356-237.000.

Horiguchi, Mssashi: *See—*
Kawahara, Takayuki; Kawajiri, Yoshiki; Akiba, Takesada; Horiguchi, Mssashi; Kitsukawa, Goro; and Aoki, Masakazu, 5,337,271, Cl. 365-149.000.

Horiguchi, Toshio, to Olympus Optical Co., Ltd. Information recording/reproducing apparatus for use in an optical card. 5,336,872, Cl. 235-454.000.

Horisawa, Satoshi, to Taikisha Ltd. Paint mist removing apparatus. 5,336,283, Cl. 55-240.000.

Hormel, Ronald F.; and Miesterfeld, Frederick O., to Chrysler Corporation. Vehicle communications network transceiver, transmitter circuit therefor. 5,337,042, Cl. 340-826.080.

Horner, Charles B., Jr., to Allied-Signal Inc. Vacuum brake booster. 5,335,582, Cl. 91-369.300.

Horodysky, Andrew G.; Hsu, Shih-Ying; Jeng, Andrew; and Rudnick, Leslie R., to Mobil Oil Corporation. Antioxidants for functional fluids. 5,336,420, Cl. 252-34.000.

Horowitz, Mark A.: *See—*
Ware, Frederick A.; Gasbarro, James A.; Dillon, John B.; Griffin, Matthew M.; Barth, Richard M.; and Horowitz, Mark A., 5,337,285, Cl. 365-227.000.

Horr, Alfred; Reiss, Heinz; and Brede, Uwe, to Dynamit Nobel AG. Propellant charge igniter. 5,335,600, Cl. 102-470.000.

Horrall, Paul D.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Merrifield, David L.; Molloy, James J.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,337,032, Cl. 355-260.000.

Horrigan, James D.: *See—*
Giller, Russell S.; and Horrigan, James D., 5,336,453, Cl. 264-57.000.

Horton, Randolph. Castable harpoon apparatus. 5,335,439, Cl. 43-6.000.

Horvat, Ivan; Schweizer, Manfred; and Stoecklein, Thomas, to Schwan-Stabilo Schwanhaeusser GmbH & Co. Marker pencil. 5,336,307, Cl. 106-19.00B.

Hoshino, Kunio: *See—*
Idei, Gijun; Kinoshita, Takuji; and Hoshino, Kunio, 5,337,035, Cl. 337-28.000.

Hoshino, Yoshiki, to Roland Meinl Company. Conga stand. 5,335,575, Cl. 84-421.000.

Hosmalin, Anne: *See—*
Berzofsky, Jay A.; Hosmalin, Anne; Clerici, Mario S.; Germain, Ronald N.; Shearer, Gene; Moss, Bernard; and Pendleton, Charles D., 5,336,758, Cl. 530-326.000.

Hosoda, Masahiro: *See—*
Kan, Yasuo; Takahashi, Kosei; Hosoda, Masahiro; Tsunoda, Atsuo; Tani, Kentaro; and Watanabe, Masanori, 5,337,326, Cl. 372-45.000.

Hosokawa, Chishio: *See—*
Hironaka, Yoshio; Tokailin, Hiroshi; Hosokawa, Chishio; and Kusumoto, Tadashi, 5,336,546, Cl. 428-209.000.

Hosokawa, Kyoichi: *See—*
Arai, Hideo; Owashi, Hitoaki; Hosokawa, Kyoichi; Nishimura, Keizo; Watatani, Yoshizumi; and Shibata, Akira, 5,337,199, Cl. 360-8.000.

Hosoyama, Koichi: *See—*
Yoshida, Makoto; Takahashi, Nobuo; and Hosoyama, Koichi, 5,336,556, Cl. 428-288.000.

Hossner, Steven E., to NEC America, Inc. In-line AC current limiter. 5,337,208, Cl. 361-93.000.

Hotea, Gheorghe: *See—*
Baderschneider, Kurt P.; Kourimsky, Friedrich J. A.; and Hotea, Gheorghe, 5,337,385, Cl. 385-59.000.

House, Lester W.: *See—*
Curtis, Jerry L.; Johnson, Kenneth A.; and House, Lester W., 5,336,311, Cl. 106-416.000.

House, Marshall K., to Cascade Corporation. Lift truck parallel arm clamp for compatibly maximizing operator visibility and load-carrying capacity. 5,336,039, Cl. 414-621.000.

Houzouji, Masahiko: *See—*
Ohtani, Ken-ichi; Sakamoto, Osamu; Houzouji, Masahiko; and Yamamoto, Hiroshi, 5,336,461, Cl. 264-294.000.

Howerton, Donald R.: *See—*
Lynn, Shelby A.; and Howerton, Donald R., 5,335,988, Cl. 312-406.200.

Howmet Corporation: *See—*
Chin, Stephen; Parille, Donald R.; Aimone, Paul R.; McCormick, Robert L.; Johnson, Paul R.; and Kilinski, Bart M., 5,335,717, Cl. 164-519.000.

Hoya Corporation: *See—*
Kozawa, Tadahiko; Osakabe, Yasuhiro; and Suematu, Takashi, 5,335,648, Cl. 128-6.000.

HR Textron Inc.: *See—*
Luthi, Jeffrey L.; and Tauber, Richard, 5,337,262, Cl. 364-580.000.

Hsiang, Chen C. Dyeing machine. 5,335,516, Cl. 68-4.000.

Hsu, Shih-Ying: *See—*
Horodysky, Andrew G.; Hsu, Shih-Ying; Jeng, Andrew; and Rudnick, Leslie R., 5,336,420, Cl. 252-34.000.

Hsu, Wen-Liang; Halasa, Adel F.; and Matrana, Barry A., to Goodyear Tire & Rubber Company, The. Alkyl tetrahydrofurfuryl ethers as anionic polymerization modifier in the synthesis of rubbery polymer. 5,336,739, Cl. 526-181.000.

Hsueh, Chi-Fu; Morris, Gregory J.; and Goelz, Stefan, to Intelligent Surgical Lasers. Eye stabilizing mechanism for use in ophthalmic laser surgery. 5,336,215, Cl. 606-4.000.

Huang, Ghin-Yuan; and Chang, Ting-Chen. Easy setting hour repeating device. 5,337,291, Cl. 368-75.000.

Huang, Yin-jun. Inflatable cushion device. 5,335,382, Cl. 5-454.000.

Hubbell Incorporated: *See—*
Boteler, William C., 5,336,116, Cl. 439-690.000.
Gadsby, Winston M., 5,337,354, Cl. 379-399.000.
Goch, Waymon P.; and Sakich, John D., 5,336,852, Cl. 174-176.000.

Hubble, Fred F., III; Weber, Michael E.; Abowitz, Gerald; Bov, Raphael F., Jr.; Swales, Michael G.; and Eakin, Paul W., to Xerox Corporation. Method and apparatus for MICR printing quality control. 5,337,122, Cl. 355-208.000.

Hube, Randall R., to Xerox Corporation. Tab image extraction and placement. 5,337,161, Cl. 358-448.000.

Hucul, Dennis A., to Dow Chemical Company, The. Process for the production of styrene. 5,336,822, Cl. 585-444.000.

Hudepohl, Lawrence H.: *See—*
McMahan, Steven C.; and Hudepohl, Lawrence H., 5,337,269, Cl. 364-787.000.

Huei Bin Enterprise Corp.: *See—*
Wu, Shuenn-Jenq, 5,335,722, Cl. 165-122.000.

Huellmann, Michael: *See—*
Becker, Rainer; Gramlich, Walter; Huellmann, Michael; and Scholz, Hans-Ulrich, 5,336,815, Cl. 568-857.000.

Huemke, Klaus: *See—*
Faul, Dieter; Hoffmann, Gerhard; Huemke, Klaus; Heimann, Ulrich; and Gilbert, John A., 5,336,722, Cl. 525-113.000.

Huggins, Freddie L.; and Fleming, Donald L. Pneumatic vacuum vibrator apparatus. 5,336,158, Cl. 601-14.000

Hughes Aircraft Company: *See—*
Breed, Ben R., 5,337,259, Cl. 364-559.000.
Goebel, Dan M.; Poeschel, Robert L.; and Watkins, Ronnie M., 5,336,975, Cl. 315-111.410.
Mumola, Peter B., 5,337,150, Cl. 356-382.000.
Noll, Gregory B.; Maranto, Jack J.; and Kardos, Louis F., 5,337,386, Cl. 385-60.000.
Phan, Nguyet H.; Reddy, Vilambi N. R. K.; Ludwig, Frank A.; and Elash, Bruce M., 5,336,380, Cl. 204-153.100.
Ravetti, Robert G.; and Dougherty, Thomas K., 5,337,376, Cl. 385-12.000.
Walden, Robert H., 5,336,624, Cl. 437-29.000.
Yamagishi, Frederick G., 5,337,018, Cl. 324-693.000.
Zarowin, Charles B.; and Bollinger, L. David, 5,336,355, Cl. 156-345.000.

Hughes, Cleveland L.; Williams, Timothy N.; and Mandel, Paul M., to Color Quest Inc. Water soluble coloring compositions containing sparkle components. 5,336,306, Cl. 106-19.00B.

Hughes, Harry G., Jr.: *See—*
Terry, Mark; Hughes, Harry G., Jr.; and Williams, Edward D., 5,336,187, Cl. 604-110.000.

Hughes, Thomas S.; and Molina, Gustavo. System for remote purchase payment transactions and remote bill payments. 5,336,870, Cl. 235-379.000.

Huisman, Frederikus R. J.: *See—*
Bosman, Antonie J.; Vink, Teunis J.; van Dijk, Richard C.; and Huisman, Frederikus R. J., 5,336,905, Cl. 257-54.000.

Hulbert, Raymond D.: *See—*
Harris, Clark E.; Hulbert, Raymond D.; Dominesey, Andrew E.; Healey, Thomas C.; and Shaw, Joel R., 5,335,873, Cl. 242-348.000.

Humphries, Martyn; Nemcek, Jozef; Jaworzyn, Joseph F.; Cantwell, John B.; and Gerrard, John J., to Imperial Chemical Industries PLC. Oral hygiene compositions and polymers active therein. 5,336,728, Cl. 525-328.200.

Hunt, Ronald E.: *See—*
Whitehead, Verlon E.; and Hunt, Ronald E., 5,335,606, Cl. 108-181.000.

Hurley, Terence R.: *See—*
Wilkinson, James H.; and Hurley, Terence R., 5,337,194, Cl. 360-24.000.

Huron Tech Corp.: *See—*
Jackson, John R., 5,336,475, Cl. 423-55.000.

Hurwitt, Steven: *See—*
Marx, Daniel R.; and Hurwitt, Steven, 5,336,386, Cl. 204-298.120.

Huse, William D.; Sorge, Anthony M.; and Sylvester, Keith V., to Stratagene. Push column chromatography method. 5,336,412, Cl. 210-635.000.

Husky Injection Molding Systems Ltd.: *See—*
Catoen, Bruce, 5,336,078, Cl. 425-556.000.

Hutchins, Richard D.: *See—*
Sandiford, Burton B.; Dovan, Hoai T.; and Hutchins, Richard D., 5,335,733, Cl. 166-300.000.

Hutchison, Glenn E.; and Allen, Tracy M., to Universal Engraving, Inc. Process of manufacturing embossed signage for handicapped individuals. 5,336,458, Cl. 264-220.000.

Huth, Stefan: *See—*
Lais, Siegfried; Krautkramer, Gerd; Huth, Stefan; and Schneider, Stephen, 5,336,119, Cl. 440-6.000.

Hwang, Cherng-Jia, to Photon Imaging Corp. Semiconductor, light-emitting devices. 5,337,325, Cl. 372-36.000.

Hwang, Wei: *See—*
Dhong, Sang H.; Hwang, Wei; Terman, Lewis M.; and Wordeman, Matthew R., 5,336,629, Cl. 437-52.000.

Hylton, James O.; and Remenyik, Carl J., to Martin Marietta Energy Systems, Inc. Device for accurately measuring mass flow of gases. 5,335,552, Cl. 73-861.000.

Hynecek, Jaroslav, to Texas Instruments Incorporated. Charge multiplying detector (CMD) suitable for small pixel CCD image sensors. 5,337,340, Cl. 377-60.000.

Hyundai Electronics Industries Co., Ltd.: *See—*
Chung, Ji H.; Wee, Jai K.; Lee, Doo H.; and Byeon, Sang G., 5,336,379, Cl. 204-129.300.

Iacobucci, Guillermo A., to Coca-Cola Company, The. Enzymatic membrane method for the snythesis and separation of peptides. 5,336,601, Cl. 435-68.100.

Iacovangelo, Charles D.; Jerabek, Elihu C.; and Williams, Bradley E., to General Electric Company. Method for depositing conductive metal traces on diamond. 5,336,368, Cl. 156-656.000.

Iadarola, Michael J.: *See—*
de Costa, Brian R.; Iadarola, Michael J.; Rice, Kenner C.; Rothman, Richard B.; and Berman, Karen F., 5,336,483, Cl. 424-1.850.

Iba, Hideki; and Maeda, Chikatoshi, to Toyota Jidosha Kabushiki Kaisha. Heat resistant magnesium alloy. 5,336,466, Cl. 420-406.000.

Ichikawa, Rinjiro: *See—*
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,337,174, Cl. 359-73.000.

Ichimaru, Kazumi: *See—*
Kuriyama, Yuuji; Sakaida, Shoji; Ando, Hikaru; Ando, Masao; Ichimaru, Kazumi; and Sakamoto, Kazutoshi, 5,335,939, Cl 280-728.00B.

Ide, Yoji: *See—*
Shiokawa, Keiichi; Akiyama, Mihoko; Ide, Yoji; Hiyoshi, Yoshihiko; Sato, Masahiro; and Surizaki, Kumi, 5,336,548, Cl. 428-212.000.

Idei, Gijun; Kinoshita, Takuji; and Hoshino, Kunio, to Yazaki Corporation. Discharge tube. 5,337,035, Cl. 337-28.000.

Idemitsu Kosan Co., Ltd.: *See—*
Endo, Hiroyuki; Hachiya, Satoshi; and Moriwaki, Fumio, 5,336,435, Cl. 252-299.610.
Hironaka, Yoshio; Tokailin, Hiroshi; Hosokawa, Chishio; and Kusumoto, Tadashi, 5,336,546, Cl. 428-209.000.
Iino, Akira; Iwamoto, Ryuichiro; and Mitani, Tsuyoshi, 5,336,394, Cl. 208-216.00R
Kezuka, Hiroaki; and Okuda, Fumio, 5,336,803, Cl. 558-277.000.
Ohno, Takashi; and Tsubouchi, Toshiyuki, 5,336,827, Cl. 585-502.000
Takatsu, Kozo; Wakushima, Yasushi; Masunaga, Hiroharu; and Sawa, Masahiko, 5,336,393, Cl. 208-120.000.

Idemitsu Petrochemical Co., Ltd.: *See—*
Kanemitsu, Toshihiro; Hayashi, Kaoru; and Matsui, Kazufumi, 5,335,997, Cl. 383-63.000.

Idstein, Donald J.; Hoffman, John P.; and Beesley, Harry J., to Bethlehem Steel Corporation. Nozzle insert for a steelmaking ladle. 5,335,896, Cl. 266-236.000.

Igarashi, Ichiro; Sasaki, Hiroshi; Jitsumatsu, Tetsuji; Ota, Hiroyuki; Sato, Masanobu; and Nishimuta, Hirofumi, to Toagosei Chemical Industry Co., Ltd. Curable composition and process for producing shadow mask using the same. 5,336,574, Cl. 430-23.000.

Igwemezie, Jude O. Attenuating pad for concrete railway ties. 5,335,850, Cl. 238-283.000.

Ihara, Tuneo: *See—*
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000.

Iida, Hiroyuki: *See—*
Eguchi, Masaki; Saitoh, Jun; Iida, Hiroyuki; and Hiyoshi, Kozo, 5,337,366, Cl. 381-71.000.

Iida, Masahiro; and Takeuchi, Yoshihisa, to Murata Kikai Kabushiki Kaisha. Image data smoothing method. 5,337,159, Cl. 358-447.000.

Iijima, Masakazu: *See—*
Nukada, Katsumi; Imai, Akira; Damion, Katsumi; and Iijima, Masakazu, 5,336,578, Cl. 430-78.000.

Iino, Akira; Iwamoto, Ryuichiro; and Mitani, Tsuyoshi, to Idemitsu Kosan Co., Ltd.; and Petroleum Energy Center. Process for hydrodesulfurizing a sulfur-containing hydrocarbon. 5,336,394, Cl. 208-216.00R.

Iino, Yasuo: *See—*
Aoki, Tomoyuki; Iino, Yasuo; Ono, Yoji; and Asai, Shinichiro, 5,336,425, Cl. 252-100.000.

Ikebata, Hisashi: *See—*
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,336,409, Cl. 210-490.000.

Ikeda Bussan Co., Ltd.: *See—*
Kawakita, Tadashi, 5,336,137, Cl. 475-347.000.

Ikeda, Jiro: *See—*
Kato, Naoki; Konoshima, Eiji; Kinokiri, Kyoji; and Ikeda, Jiro, 5,336,029, Cl. 414-217.000.
Shimose, Yuichiro; and Ikeda, Jiro, 5,336,385, Cl. 204-298.030

Ikeda, Masaharu, to Matsushita Electric Industrial Co., Ltd. Comparator device having maximum (minimum) value determining and selecting means for selecting received signals. 5,336,945, Cl. 307-355.000.

Ikeda, Miyuki: *See—*
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsuneo; and Fujiwara, Takahiko, 5,337,090, Cl. 348-626.000.

Ikeda, Shinji; Ooi, Keiji; and Katoh, Ken, to Sumitomo Bakelite Company Limited. Phenolic resin molding materials. 5,336,723, Cl. 525-139.000.

Ikegami, Hiroaki, to Fuji Xerox Co., Ltd. Color signal transforming apparatus. 5,337,166, Cl. 358-518.000.

Ikehata, Norimitsu: *See—*
Yamazaki, Yuichi; Mori, Hideyasu; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,337,348, Cl. 379-94.000.

Ikemoto, Seiji; Taki, Katsuhiko; Matano, Takashi; Kawahata, Ichiro; Oguchi, Kiyoshi; Ito, Shigeki; and Miyauchi, Tatsuo, to Dai Nippon Printing Co., Ltd.; and Inctec, Inc., The. Process for producing decorative material. 5,336,530, Cl. 427-503.000.

Ikoma, Tadashi: *See—*
Saeki, Shirou; Nakazato, Yukitaka; Hashimoto, Kenji; and Ikoma, Tadashi, 5,335,837, Cl. 226-110.000.

Ilek, Anton; Thurnherr, Hugo; and Eugster, Emil, to L. Kellenberger & Co. AG. Procedure for the numerical control of a workpiece on a grinding machine. 5,335,454, Cl. 51-165.750.

Illig, Carl R.: *See—*
Bacon, Edward R.; Daum, Sol J.; Estep, Kimberly G.; Josef, Kurt A.; Douty, Brent D.; and Illig, Carl R., 5,336,484, Cl. 424-5.000

Imafuji, Kazuharu; and Terui, Nobuhiko, to Nikon Corporation. Camera-shake preventing device. 5,337,098, Cl. 354-70.000.

Imagyn Medical, Inc.: *See—*
Greelis, John P.; Quick, Richard L.; and Woker, Gary M., 5,336,183, Cl. 607-97.000.

Imai, Akira: *See—*
Nukada, Katsumi; Imai, Akira; Damion, Katsumi; and Iijima, Masakazu, 5,336,578, Cl. 430-78.000.

Imai, Yukihiro: *See—*
Fujii, Tatsuya; Imai, Yukihiro; Sato, Yutaka; Fukui, Ryo; Sakamoto, Kazuo; Shiraishi, Naoto; and Yamada, Yoshiteru, 5,337,168, Cl. 358-539.000.

Imaki, Katsuhiro; Arai, Yoshinobu; and Okegawa, Tadao, to Ono Pharmaceutical Co., Ltd. Derivatives of p-substituted phenyl ester of pivalic acid. 5,336,681, Cl. 514-347.000.

Imamura, Hironobu, to NEC Corporation. Method for manufacturing capacitor and bipolar transistor. 5,336,632, Cl. 437-60.000.

Imamura, Shuichiro: *See—*
Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugane, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, 5,335,700, Cl. 139-435.100.

Imamura, Takashi, to Fuji Photo Film Co., Ltd. Photographic film having frame number bar codes. 5,336,873, Cl. 235-462.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Imamura, Yoshihiko: *See*—
Hashimoto, Kazuhiko; Imamura, Yoshihiko; Yamamoto, Toshihide; and Noh, Yoshihisa, 5,335,634, Cl. 123-188.140

Imanishi, Ryozo: *See*—
Murakawa, Masatake; Minoura, Akira; Kurohara, Kazuaki; Imanishi, Ryozo; Yamashita, Nobuyuki; and Harada, Eriya, 5,335,487, Cl. 56-10.500.

Imaue, Yukihisa, to Sharp Kabushiki Kaisha. Image forming apparatus having biased transfer roller. 5,337,127, Cl. 355-271.000.

Imoto, Kazunobu: *See*—
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,657, Cl. 503-227.000.
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,660, Cl. 503-227.000

Imperial Chemical Industries PLC: *See*—
Edwards, Paul A., 5,336,658, Cl. 503-227.000.
Humphries, Martyn; Nemcek, Jozef; Jaworzyn, Joseph F.; Cantwell, John B.; and Gerrard, John J., 5,336,728, Cl. 525-328.200.
Jennings, James R.; and Hayden, Percy, 5,336,791, Cl. 549-538.000

Imperial Chemical Industries Public Limited Company: *See*—
deFraine, Paul; Snell, Brian K.; Beautement, Kevin; Anthony, Vivienne M.; and Clough, John M., 5,336,682, Cl. 514-422.000.

Imperial Underground Sprinkler Co.: *See*—
Caviar, Robert A., 5,335,688, Cl. 251-26.000.

In Focus Systems, Inc.: *See*—
Gulick, Paul E., 5,337,103, Cl. 353-119.000.

Ina Walzlager Schaeffler KG: *See*—
Muntnich, Leo; Soyka, Wilfried; and Steinberger, Wolfgang, 5,335,998, Cl. 384-622.000.

Inaba, Yoshihiro; and Mikami, Takeshi, to Fuji Xerox Co., Ltd. Microcapsule, microcapsule toner and process for preparation thereof. 5,336,581, Cl. 430-110.000.

Inada, Haruhiro: *See*—
Tanaka, Noriyuki; Takishita, Takashi; Fukushima, Kiyoshi; Nagakura, Yasuyuki; Inoue, Kaoru; Nishijima, Tsuyoshi; and Inada, Haruhiro, 5,336,524, Cl. 427-240.000.

Inada, Kenichi; Takeshita, Akihiko; and Masai, Tetsuji, to Murata Kikai Kabushiki Kaisha. Package readying and inspection apparatus 5,337,138, Cl. 356-36.000

Inadome, Kiyotaka: *See*—
Fukino, Kunihiro; Takayama, Toru; Inadome, Kiyotaka; and Nakatsuji, Masahiro, 5,337,187, Cl. 359-699.000.

Inagaki, Masaaki: *See*—
Suzuki, Yuzuru; Fujitani, Sakae; Inagaki, Masaaki; and Uchida, Hitoshi, 5,336,955, Cl. 310-90.000

Inamitsu, Hiroshi: *See*—
Nakajima, Kichio; Honma, Kazuo; Sumiya, Yukio; Yamaguchi, Takeshi; Inamitsu, Hiroshi; and Minamiyama, Eiji, 5,335,547, Cl 73-622.000.

INAX Corporation: *See*—
Yamamoto, Tatsuro; and Kashino, Yoshinao, 5,336,402, Cl. 210-194.000.

Inazawa, Shinji: *See*—
Sawada, Kazuo; Inazawa, Shinji; and Yamada, Kouichi, 5,336,851, Cl. 174-110.00A.

Inetec, Inc., The: *See*—
Ikemoto, Seiji; Taki, Katsuhiko; Matano, Takashi; Kawahata, Ichiro; Oguchi, Kiyoshi; Ito, Shigeki; and Miyauchi, Tatsuo, 5,336,530, Cl. 427-503.000.

Indiana University Foundation: *See*—
Hieftje, Gary M.; and Wu, Min, 5,335,860, Cl. 239-469.000

Indigo N.V.: *See*—
Sagiv, Oded; and Korol, Yevgeny, 5,337,131, Cl. 355-221.000.

Infiltrator Systems, Inc.: *See*—
Nichols, James M., 5,336,017, Cl. 405-46.000.

Ing. Erich Pfeiffer GmbH & Co. KG: *See*—
Fuchs, Karl-Heinz; and Graf, Lothar, 5,335,823, Cl. 222-36.000.

Ingersoll-Rand Company: *See*—
Sell, Leslie J., 5,335,895, Cl. 254-271.000.

Ingold, John H.: *See*—
Strok, Jack M.; Bergman, Rolf S.; and Ingold, John H., 5,336,968, Cl. 313-571.000.

Ingram, Stephen A.: *See*—
Watts, Kenneth J.; and Ingram, Stephen A., 5,336,998, Cl 324-235.000.

InjectiMed, Inc.: *See*—
Kuracina, Thomas C.; Ohnemus, Randall E.; and Smith, Craig W., 5,336,197, Cl. 604-192.000.
Streck, Donald A.; Kuracina, Thomas C.; and Ohnemus, Randall E., 5,336,200, Cl. 604-198.000.

Innova Development Corp.: *See*—
Silver, Jules; and Ziegler, Louis C., 5,336,198, Cl. 604-195.000.

Ino, Shigeki: *See*—
Shiobara, Toshio; Futatsumori, Koji; Okuse, Satoshi; Aoki, Takayuki; Wakao, Miyuki; and Ino, Shigeki, 5,336,786, Cl. 549-215.000.

Inoue, Haruo: *See*—
Harada, Hiroyuki; Tajima, Akio; Kogo, Takashi; Nagakawa, Tadashi; Oda, Hajima; Inoue, Haruo; and Hayakawa, Tsuyoshi, 5,336,004, Cl. 400-624.000.

Inoue, Kaoru: *See*—
Tanaka, Noriyuki; Takishita, Takashi; Fukushima, Kiyoshi; Nagakura, Yasuyuki; Inoue, Kaoru; Nishijima, Tsuyoshi; and Inada, Haruhiro, 5,336,524, Cl. 427-240.000.

Inoue, Kiyoaki: *See*—
Yoshimura, Takayuki; Kondo, Yoshiteru; Matsumura, Yoshimasa; and Inoue, Kiyoaki, 5,335,682, Cl. 134-72.000

Inoue, Masayasu: *See*—
Ebashi, Iwao; Takigawa, Tetsuo; and Inoue, Masayasu, 5,336,782, Cl. 548-542.000

Inpro Companies, Inc.: *See*—
Orlowski, David C., 5,335,921, Cl. 277-30.000

Institut Francais Du Petrole: *See*—
Boitiaux, Jean-Paul; De Bonneville, Jean; Burzynski, Jean-Pierre; Leger, Gerard; Le Peltier, Fabienne; and Martino, Germain, 5,336,829, Cl. 585-659.000
Joly, Jean-Francois; Marcilly, Christian; and Benazzi, Eric, 5,336,833, Cl. 585-731.000.

Institut National de la Sante et de la Recherche Medicale (INSEPM): *See*—
Buys, Bruno; Sozanski, Jean-Pierre; Mordon, Serge; Brunetaud, Jean-Marc; and Moschetto, Yves, 5,336,217, Cl. 606-9.000

Institute For Rehabilitation And Research, The: *See*—
Krouskop, Thomas A.; and Lusher, Ruth H., 5,335,975, Cl 297-452.630.

Instrumentarium Corporation: *See*—
Blomqvist, Kaj; Mustonen, Mika; Saarelainen, Asko; and Merilainen, Pekka, 5,335,653, Cl. 128-204.180.

Intel Corporation: *See*—
Agur, Philip J., 5,337,213, Cl. 361-684.000.
Eskildsen, Steven R.; Golwalkar, Suresh V.; and Barrios, Tito, 5,336,456, Cl. 264-157.000.
Garner, Richard P., 5,337,275, Cl. 365-189.010.

Intelligent Surgical Lasers: *See*—
Hsueh, Chi-Fu; Morris, Gregory J.; and Goelz, Stefan, 5,336,215, Cl. 606-4.000

Inter-City Products Corporation (USA): *See*—
Wollaber, Bruce A.; and DeVos, Richard, 5,335,721, Cl 165-122.000.

International Business Machines Corporation: *See*—
Atsumi, Masakazu; Matsumoto, Takeshi; and Yoshida, Toshihiko, 5,337,173, Cl. 359-54.000.
Baker, David C.; Bohrer, Kathryn A.; Flurry, Greogory A.; Lucas, Peter; and Rhyne, James R., 5,337,412, Cl. 395-275.000.
Bates, Cary L.; and Ryan, Jeffrey M., 5,337,407, Cl. 395-153.000.
Brown, Lawrence S.; Dewey, Douglas W.; and Hall, Tharon, 5,337,197, Cl. 360-48.000.
Carr, Dennis C.; McLeskey, Edward P.; and Sarnacki, Frank H., 5,337,219, Cl. 361-794.000.
Casey, Jon A.; Divakaruni, Renuka S.; Natarajan, Govindarajan; Reddy, Srinivasa S. N.; and Sammet, Manfred, 5,336,444, Cl. 252-513.000.
Cipolla, Thomas M.; and Coteus, Paul W., 5,337,218, Cl 361-785.000.
Desrosiers, Bernard; Louis, Didier; and Steimle, Andre, 5,337,265, Cl. 364-748.000.
Dhong, Sang H.; Hwang, Wei; Terman, Lewis M.; and Wordeman, Matthew R., 5,336,629, Cl. 437-52.000.
Halstead-Nussloch, Richard H.; and Strickert, Mark D., 5,337,347, Cl. 379-67.000.
Heinzmann, Peter L.; Mueller, Johann R.; and Nassehi, Mehdi M., 5,337,312, Cl. 370-85.900.
Herzberg, Louis P.; Patel, Baiju V.; Ruiz, Antonio; Schaffa, Frank A.; and Willebeek-LeMair, Marc H., 5,337,311, Cl. 370-85.140
Jacobowitz, Lawrence; Ecker, Mario E.; and DeCusatis, Casimer M., 5,337,388, Cl. 385-76.000.
Kung, Paul J.; and Sloman, David E., 5,337,178, Cl. 359-393.000.
Lac, Quoc T.; Lowry, Edward C.; and Madden, Robert B., 5,337,252, Cl. 364-488.000.
Lustig, Naftali E.; Feenstra, Randall M.; and Guthrie, William L., 5,337,015, Cl. 324-671.000.
Marandici, Mircea P.; and Quinn, Matthew J., 5,337,373, Cl. 382-51.000.
Nowak, Edward J., 5,336,637, Cl. 437-175.000
Vassiliadis, Stamatis; Pechanek, Gerald G.; and Delgado-Frias, Jose G., 5,337,395, Cl. 395-27.000.

International Laboratory Technology Corp.: *See*—
Staats, Victor, 5,336,305, Cl. 106-18.320

International Medical Associates, Inc.: *See*—
D'Angelo, Joseph P.; and Schur, Henry, 5,336,213, Cl. 604-890.100.

InterVentional Technologies, Inc.: *See*—
Vigil, Dennis; and Olson, Thomas E., 5,336,234, Cl. 606-159.000.

Inventive Services, Inc.: *See*—
Yelvington, Richard D., 5,336,862, Cl. 219-68.000.

Ipposhi, Takashi; and Nishimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor pressure sensor and method of fabricating the same. 5,336,918, Cl. 257-419.000.

Irie, Toshiaki: *See*—
Sawai, Kunio; Hayashi, Ryuji; Irie, Toshiaki; Kaneko, Shigeru; Tanaka, Shinya; and Shinmi, Tsukasa, 5,335,877, Cl. 242-334.600.

Irlbeck, Robert D.: *See*—
Walburn, Douglas M.; Bradley, Morgan J.; Jones, John W.; Irlbeck, Robert D.; and Renn, Robert M., 5,336,095, Cl. 439-67.000.

IRO AB: *See*—
Jacobsson, Kurt A. G., 5,335,878, Cl. 242-150.00R.

Isaacson, Chris A.: *See*—
Vanesky, Frank W.; Isaacson, Chris A.; and Christie, Bert M., 5,335,464, Cl. 52-173.100.

Isayama, Katsuhiko: *See*—
Homma, Michihide; Yoshihara, Atsuko; Wakabayashi, Hiroshi; and Isayama, Katsuhiko, 5,336,703, Cl. 523-435.000.

Isco, Inc.: *See*—
Allington, Robert W., 5,336,383, Cl. 204-182.800.

Ish, Arthur B., III, to Vectra Fitness, Inc. Machine for performing press exercises. 5,336,148, Cl. 482-98.000.

Ishibashi, Yooko: *See*—
Aoyama, Motoo; Masumi, Ryoji; Ishibashi, Yooko; and Kurihara, Kunitoshi, 5,337,337, Cl. 376-435.000.

Ishida, Hiroshi: *See*—
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000.

Ishida, Ichiro, to NEC Corporation. Superconducting circuit and method for driving the same. 5,336,941, Cl. 307-277.000.

Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugane, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, to Nissan Motor Co., Ltd. Weft picking system for a fluid jet loom including a roller type traction device. 5,335,700, Cl. 139-435.100.

Ishii, Akio: *See*—
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; and Shiozaki, Shizuo, 5,336,769, Cl. 544-273.000.

Ishii, Masao: *See*—
Okazawa, Tomoyuki; Tokumaru, Seiichi; Ohira, Hideo; Ishii, Masao; and Kano, Yoshiaki, 5,336,727, Cl. 525-327.800.

Ishii, Yoshinori: *See*—
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; and Ishii, Yoshinori, 5,336,613, Cl. 435-228.000.

Ishikawa, Isao: *See*—
Toida, Shoji; Ito, Seiichi; Ohta, Hidetoshi; and Ishikawa, Isao, 5,335,809, Cl. 220-425.000.

Ishikawa, Takayoshi; and Yamasaki, Shinsaku, to Mitsubishi Denki Kabushiki Kaisha. Drawout type switch gear. 5,337,210, Cl. 361-608.000.

Ishikawa, Toru, to NEC Corporation. Dynamic random access memory device. 5,337,283, Cl. 365-222.000.

Ishiwata, Yoshiro: *See*—
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideako; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,336,688, Cl. 514-492.000.

Ishizaka, Takafumi; Kikuchi, Yuji; and Koishi, Masumi, to Nara Machinery Co., Ltd. Method for increasing the proportion of a crystalline organic compound which remains uncrystallized in a composite particulate product and suppressing recrystallization. 5,336,271, Cl. 23-293.00R.

Ishizawa, Yoshio: *See*—
Tanaka, Takaho; Kamimura, Yutaka; Otani, Shigeki; and Ishizawa, Yoshio, 5,336,362, Cl. 117-42.000.

Ishler, J. Michael: *See*—
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.

Islas, John J. Pedaled propulsion system. 5,335,927, Cl. 280-255.000.

Ismail, Mohammed: *See*—
Zarabadi, Seyed R.; and Ismail, Mohammed, 5,337,021, Cl. 330-288.000.

Isohata, Kyouhei: *See*—
Fukuchi, Shunsei; Isohata, Kyouhei; Iwamoto, Makoto; Misono, Kenji; and Takanashi, Hiroshi, 5,336,535, Cl. 428-1.000.

Isolfeu AG: *See*—
Wirth, Anton, 5,336,542, Cl. 428-73.000.

ISP Investments Inc.: *See*—
Wolf, Philip F.; and Tseng, Susan Y., 5,336,697, Cl. 521-189.000.

Israel Aircraft Industries Ltd.: *See*—
Rabinovitz, Talmon; Gilad-Smolinsky, Zvi; and Rutenberg, Mordechay, 5,335,741, Cl. 180-8.200.

Isringhausen, Carl L. Steam trap. 5,335,686, Cl. 137-14.000.

Ito, Hisao; and Suzuki, Teiichi, to Fuji Xerox Co., Ltd. Image sensor and method of manufacture. 5,336,906, Cl. 257-72.000.

Ito, Hisao: *See*—
Kasugai, Masakuni; and Ito, Hisao, 5,336,101, Cl. 439-272.000.

Ito, Masayuki; and Makada, Takami, to Otari, Inc. Recording control apparatus for use with tape recorder. 5,337,195, Cl. 360-27.000.

Ito, Seiichi: *See*—
Toida, Shoji; Ito, Seiichi; Ohta, Hidetoshi; and Ishikawa, Isao, 5,335,809, Cl. 220-425.000.

Ito, Shigeki: *See*—
Ikemoto, Seiji; Taki, Katsuhiko; Matano, Takashi; Kawahata, Ichiro; Oguchi, Kiyoshi; Ito, Shigeki; and Miyauchi, Tatsuo, 5,336,530, Cl. 427-503.000.

Ito, Sukehide: *See*—
Morishita, Akira; Ota, Tsuyoshi; Suzuki, Tatsuya; Ito, Sukehide; and Ryuko, Yoshikazu, 5,335,705, Cl. 141-275.000.

Ito, Takashi, to TEAC Corporation. Control system for controlling plurality of operations of common category by plurality of control units. 5,337,294, Cl. 369-24.000.

Ito, Takehiko: *See*—
Kintaichi, Yoshiaki; Hamada, Hideaki; Ito, Takehiko; Sasaki, Motoi; Tabata, Mitsunori; and Usui, Kazushi, 5,336,476, Cl. 423-239.100.

Ito, Yasunobu; and Hatasa, Makoto, to Aisin AW Co., Ltd. Electronic control type automatic speed changer. 5,335,565, Cl. 477-131.000.

Ito, Yoshikazu: *See*—
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,657, Cl. 503-227.000.
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,660, Cl. 503-227.000.

Itoh, Kazuhiko, to Japan Aviation Electronics Industry Limited. Apparatus for measuring a diffraction pattern of electron beams having only elastic scattering electrons. 5,336,886, Cl. 250-305.000.

ITT Corporation: *See*—
Beck, Erhard; and Sonnenschein, Georg, 5,335,983, Cl. 303-119.200.
Caserta, Joseph N.; and Schlotthober, Nathan R., 5,336,881, Cl. 250-214.0VT.
Mosquera, Rene A., 5,336,110, Cl. 439-554.000.
Paulus, Eric J., 5,336,115, Cl. 439-620.000.

ITT Rayonier, Inc.: *See*—
Lovick, James M., 5,336,451, Cl. 261-116.000.

Ivac Corporation: *See*—
Daoud, Adib G.; and Anderson, Emmett B., 5,336,174, Cl. 604-30.000.

Iveco Fiat S.p.A.: *See*—
Bilei, Mario; Kirschner, Stefan; Ogawa, Takeo; and Noritou, Kazuaki, 5,335,636, Cl. 123-321.000.

Iwade, Shigeru: *See*—
Yamamoto, Tomohiro; and Iwade, Shigeru, 5,337,242, Cl. 364-449.000.

Iwado, Shuichi: *See*—
Watanabe, Toyofumi; Furuta, Akihiko; Ono, Tadashi; Yomura, Yoshinori; and Iwado, Shuichi, 5,336,567, Cl. 428-629.000.

Iwahashi, Hiroshi; Fujimoto, Toshiyuki; and Narita, Akira, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit protected from element breakdown by reducing the electric field between the gate and drain or source of a field effect transistor. 5,336,952, Cl. 307-571.000.

Iwamoto, Makoto: *See*—
Fukuchi, Shunsei; Isohata, Kyouhei; Iwamoto, Makoto; Misono, Kenji; and Takanashi, Hiroshi, 5,336,535, Cl. 428-1.000.

Iwamoto, Ryuichiro: *See*—
Iino, Akira; Iwamoto, Ryuichiro; and Mitani, Tsuyoshi, 5,336,394, Cl. 208-216.00R.

Iwasaki, Hiroaki: *See*—
Miyamoto, Eiichi; Hanatani, Yasuyuki; Iwasaki, Hiroaki; Mizuta, Yasufumi; and Kawahara, Akihiko, 5,336,576, Cl. 430-58.000.

Iwase, Hideaki, to ASMO Co., Ltd. Wire winding and connecting apparatus for armature and commutator. 5,335,868, Cl. 242-7.05B.

Iwashita, Hironobu: *See*—
Tobisawa, Seiichi; and Iwashita, Hironobu, 5,336,322, Cl. 118-410.000.

Izawa, Kunisuke: *See*—
Shiragami, Hiroshi; Koguchi, Yoshihito; and Izawa, Kunisuke, 5,336,770, Cl. 544-276.000.

Izumi, Shigeru: *See*—
Kitaguchi, Hiroshi; and Izumi, Shigeru, 5,336,890, Cl. 250-370.060.

J. M. Voith GmbH: *See*—
Fissmann, Hans-Joachim; and Weiss, Hans, 5,335,871, Cl. 242-595.100.

J. R. Simplot Company: *See*—
Pike, Gayle B., 5,335,571, Cl. 83-13.000.

Jabbarai, Iraj; and Phillips, Brian L., to Seagate Technology, Inc Actuator arm assembly printed circuit cable to external printed circuit board interface apparatus. 5,337,202, Cl. 360-97.010.

Jackson, John R., to Huron Tech Corp. Process for chromium removal using an inorganic sulfur compound. 5,336,475, Cl. 423-55.000.

Jacobowitz, Lawrence; Ecker, Mario E.; and DeCusatis, Casimer M., to International Business Machines Corporation. Matrix of pluggable connectors for connecting large numbers of clustered electrical and/or opticcal cables to a module. 5,337,388, Cl. 385-76.000.

Jacobs, Irwin C.: *See*—
Lagnemo, Hans; Sparks, Robert E.; and Jacobs, Irwin C., 5,336,433, Cl. 252-186.230.

Jacobsson, Kurt A. G., to IRO AB. Thread braking device. 5,335,878, Cl. 242-150.00R.

Jacquot, Bernard; and Delaunay, Marc, to Commissariat a l'Energie Atomique. Source of ions with electronic cyclotronic resonance. 5,336,961, Cl. 313-153.000.

Jahnke, Richard W.: *See*—
Forsberg, John W.; Jahnke, Richard W.; Lange, Richard M.; and DeTar, Marvin B., 5,336,439, Cl. 252-356.000.

Jain, Virender: *See*—
Campbell, Chester D.; Harper, Sandra L.; Jain, Virender; Kenyon, Richard L.; Matthies, Alan; and Yabuki, Roy M., 5,335,513, Cl. 62-228.300.

James River Paper Company, Inc.: *See*—
Bohme, Reinhard D., 5,336,528, Cl. 427-361.000.

Jameson, Lee K.: *See*—
Cohen, Bernard; and Jameson, Lee K., 5,336,452, Cl. 264-23.000.

Janeiro, Joe C. Treble hook protector. 5,335,444, Cl. 43-57.100.

Jang, Hyun-Soon, to SamSung Electronics Co., Ltd. Row redundancy circuit for a semiconductor memory device. 5,337,277, Cl 365-200.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Jang, Seong J.: *See*—
Yun, Kwang H.; Lee, Hee G.; Jang, Seong J.; and Jun, Young K., 5,336,630, Cl. 437-52.000.

Janome Sewing Machine Co., Ltd.: *See*—
Matsunaga, Noboru; Azeyanagi, Kazuyoshi; Sogaishi, Ichirou; Katakura, Takeo; Ueda, Yoshihisa; and Ohsawa, Takaaki, 5,336,465, Cl. 419-2.000.

Janse Van Rensburg, Richard W.: *See*—
East, Amanda H.; and Janse Van Rensburg, Richard W., 5,337,071, Cl. 347-77.000.

Japan Aviation Electronics Industry Limited: *See*—
Itoh, Kazuhiko, 5,336,886, Cl. 250-305.000.

Japan Energy Corporation: *See*—
Nishimura, Eiji; Kuroki, Masami; Kikutake, Naoyuki; and Shindou, Yuuichiro, 5,336,378, Cl. 204-64.00T.

Jarmuz, Jeffrey J.: *See*—
Stoddard, David C. F.; Orr, Ladd M.; Cooper, Alan D.; and Jarmuz, Jeffrey J., 5,335,593, Cl. 108-165.000.

Jarrett, Andrew W.: *See*—
Sorathia, Usman A.; Killian, Joseph W.; and Jarrett, Andrew W., 5,337,288, Cl. 367-1.000.

Jatco Corporation: *See*—
Katoh, Tatsuya, 5,335,763, Cl. 192-85.0AA.

Jaworzyn, Joseph F.: *See*—
Humphries, Martyn; Nemcek, Jozef; Jaworzyn, Joseph F.; Cantwell, John B.; and Gerrard, John J., 5,336,728, Cl. 525-328.200.

Jax, Peter: *See*—
Ruthrof, Klaus; Jax, Peter; Bode, Karl-Heinz; and Gunther, Klaus, 5,335,535, Cl. 73-40.700.

Jaxmar, Leif E. B.: *See*—
Crump, John C., III; Fischer, Eugene B.; Wilson, Robert C.; Winterson, Warren D.; Jaxmar, Leif E. B.; Norberg, Gustav M.; and Olsson, Lennart F., 5,335,590, Cl. 99-479.000.

Jazlowiecki, Edward A.: *See*—
Dresdner, Karl P., Jr.; Dangman, Kenneth H.; and Jazlowiecki, Edward A., 5,335,373, Cl. 2-161.700.

Jeffrey S. Winslow: *See*—
Winslow, Jeffrey S.; Pogue, Lonnie C.; and Roshon, Richard A., 5,336,152, Cl. 482-132.000.

Jekkal, Edward W.: *See*—
Basavanhally, Nagesh R.; Borutta, Richard; and Jekkal, Edward W., 5,337,384, Cl. 385-54.000.

Jen, Richard, to Sheenya Enterprises Co., Ltd. Stamp pad and the method for producing the same. 5,336,525, Cl. 427-256.000.

Jeng, Andrew: *See*—
Horodysky, Andrew G.; Hsu, Shih-Ying; Jeng, Andrew; and Rudnick, Leslie R., 5,336,420, Cl. 252-34.000.

Jenkins, Jerry Y. Continuous condenser backflush and cleaning systems and methods for use thereof. 5,336,331, Cl. 134-22.110.

Jennings, James R.; and Hayden, Percy, to Imperial Chemical Industries PLC. Production of ethylene oxide. 5,336,791, Cl. 549-538.000.

Jennings, Lon A.: *See*—
Geringer, Kerry G.; Barnum, Harlos L.; and Jennings, Lon A., 5,335,750, Cl. 180-307.000.

Jensen, Erik D., to Miner Enterprises, Inc. Method for making an elastomeric spring assembly. 5,335,403, Cl. 29-173.000.

Jensen, Hans C. Reclining chair. 5,335,972, Cl. 297-423.190.

Jeong, Yucheol: *See*—
Yeom, Hancheol; Lee, Hoseong; Jeong, Yucheol; An, Hoyoung; Choi, Juho; and Lee, Wonbo, 5,336,289, Cl. 65-334.000.

Jerabek, Elihu C.: *See*—
Iacovangelo, Charles D.; Jerabek, Elihu C.; and Williams, Bradley E., 5,336,368, Cl. 156-656.000.

Jermstad, David B. Semi-solid activated sludge bioremediation of hydrocarbon-affected soil. 5,336,290, Cl. 71-13.000.

Jervis B. Webb Company: *See*—
Murphy, Christopher J.; and Bliss, Ronald E., 5,335,777, Cl. 198-502.300.

Jiang, Wei X., to Selby Furniture Hardware Company, Inc. Folding table. 5,335,604, Cl. 100-119.000.

Jimbo, Takashi: *See*—
Kiyoura, Tadamitsu; Jimbo, Takashi; Kogure, Yasuo; and Kanaya, Kazuo, 5,336,440, Cl. 252-373.000.

Jimenez, Jean, to SGS-Thomson Microelectronics S.A. Buried avalanche diode having laterally adjacent semiconductor layers. 5,336,920, Cl. 257-481.000.

Jitsumatsu, Tetsuji: *See*—
Igarashi, Ichiro; Sasaki, Hiroshi; Jitsumatsu, Tetsuji; Ota, Hiroyuki; Sato, Masanobu; and Nishimuta, Hirofumi, 5,336,574, Cl. 430-23.000.

Johansson, Hans: *See*—
Gillbrand, Per; Johansson, Hans; Johansson, Per; and Elgh, Bengt, 5,335,743, Cl. 180-178.000.

Johansson, Per: *See*—
Gillbrand, Per; Johansson, Hans; Johansson, Per; and Elgh, Bengt, 5,335,743, Cl. 180-178.000.

John Lysaght (Australia) Limited: *See*—
Clubbs, William R., 5,335,872, Cl. 242-610.600.

Johnson Camping, Inc.: *See*—
Dahulich, Wayne, 5,335,685, Cl. 135-106.000.

Johnson, Charles E., to Kulp, Kajur, a part interest. Apparatus and method for clamping structural members during joinder. 5,335,898, Cl. 269-41.000.

Johnson, David A., to JohnsTech International Corporation. Apparatus for interconnecting electrical contacts. 5,336,094, Cl. 439-62.000.

Johnson, Kenneth A.: *See*—
Curtis, Jerry L.; Johnson, Kenneth A.; and House, Lester W., 5,336,311, Cl. 106-416.000.

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Johnson Matthey Inc.: *See*—
Akhtar, Masyood; Le, Kim C.; Pedigo, Jess; and Smith, Charles H., 5,336,644, Cl. 501-15.000.

Johnson, Paul R.: *See*—
Chin, Stephen; Parille, Donald R.; Aimone, Paul R.; McCormick, Robert L.; Johnson, Paul R.; and Kilinski, Bart M., 5,335,717, Cl. 164-519.000.

Johnson, Philip E.: *See*—
Fooks, Elik I.; Delaney, Patrick J., III; and Johnson, Philip E., 5,336,882, Cl. 250-221.000.

Johnson, Robert L.: *See*—
Settlemyer, Bernard W.; Johnson, William A.; and Johnson, Robert L., 5,335,426, Cl. 34-80.000.

Johnson, Samuel O., to Universal EPSCO, Inc. Method for cleansing a portable keg tap. 5,336,334, Cl. 134-22.120.

Johnson, Terry R.: *See*—
Ackerman, John P.; and Johnson, Terry R., 5,336,450, Cl. 423-21.100.

Johnson, Thomas H., to Weigh-Tronix, Inc. Electronic force sensing load cell. 5,336,854, Cl. 177-210.0FP.

Johnson, William A.: *See*—
Settlemyer, Bernard W.; Johnson, William A.; and Johnson, Robert L., 5,335,426, Cl. 34-80.000.

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Johnson, David A., 5,336,094, Cl. 439-62.000.

Johnston, Michael L.: *See*—
Waldherr, Michael P.; Johnston, Michael L.; Weinstein, James N.; and Cremers, Thomas G., 5,336,076, Cl. 425-294.000

Johnstown America Corporation: *See*—
Wirick, Cloyd; and Majcher, Joseph, 5,335,603, Cl. 105-406.100.

Joly, Jean-Francois; Marcilly, Christian; and Benazzi, Eric, to Institut Francais Du Petrole. Catalyst based on silica and sulphuric acid and its use for the alkylation of paraffins. 5,336,833, Cl. 585-731.000.

Jones, Arlin R., to Hewlett-Packard. Error diffusion processor and method for converting a grey scale pixel image to a binary value pixel image. 5,337,160, Cl. 358-447.000.

Jones, James F., Jr. Rules. 5,335,421, Cl. 33-494.000.

Jones, John W.: *See*—
Walburn, Douglas M.; Bradley, Morgan J.; Jones, John W.; Irlbeck, Robert D.; and Renn, Robert M., 5,336,095, Cl. 439-67.000.

Jones, Keith A.: *See*—
Winston, Anthony E.; Yam, Benny S.; and Jones, Keith A., 5,336,281, Cl. 51-307.000.

Jones, Malcolm G.; Kimsey, Ian M.; Morrison, Anthony; Wong, Jeanette Y.; and Van Heteren, Jan, to Van Den Bergh Foods Co., Division of Conopco, Inc. Whippable non-diary cream based on liquid oil. 5,336,514, Cl. 426-564.000.

Jones, Robert E.; Maniar, Papu D.; and Mogab, C. Joseph, to Motorola. High-permittivity dielectric capacitor for use in a semiconductor device and process for making the same. 5,337,207, Cl. 361-321.100.

Jong Ching Brushes Co., Ltd.: *See*—
Chen, Chin-Yan, 5,335,390, Cl. 15-185.000.

Joong Chenn Industry Co., Ltd.: *See*—
Chen, Jack, 5,336,153, Cl. 482-137.000.

Jordan, Mark, to Unitrode Corporation. Active negation emulator. 5,336,948, Cl. 307-443.000.

Jorgenson, Lisa K.: *See*—
Chan, Tsiu C.; Bryant, Frank R.; and Jorgenson, Lisa K., 5,336,916, Cl. 257-377.000.

Josef, Kurt A.: *See*—
Bacon, Edward R.; Daum, Sol J.; Estep, Kimberly G.; Josef, Kurt A.; Douty, Brent D.; and Illig, Carl R., 5,336,484, Cl. 424-5.000.

Josephson, Gregg R.; Shen, Ju; Darling, Roy D.; and Cheng, Chan-Chi J., to Lattice Semiconductor Corporation. Structure and method for multiplexing pins for in-system programming. 5,336,951, Cl. 307-465.000.

Josephson, Lee; Groman, Ernest V.; Jung, Chu; and Lewis, Jerome M., to Advanced Magnetics Inc. Targeting of therapeutic agents using polysaccharides. 5,336,506, Cl. 424-488.000.

Josselyn, Allan H., to Reinforced Earth Company, The. Storage tank in a precast, protective shell. 5,335,815, Cl. 220-445.000.

Joyce, Roger L.; and Westby, Ron, to Exaire Co. Heat transfer cell and manufacturing apparatus. 5,335,414, Cl. 29-726.000.

Joyu Incorporated: *See*—
Yamamoto, Matsuo; Nakata, Toshiaki; and Yabuuchi, Hideaki, 5,336,516, Cl. 426-615.000.

Jozat, Walter, to Koh-I-Noor Inc. Plotter pen with indicator circuit. 5,336,007, Cl. 401-151.000.

Ju, Shu-Ing: *See*—
Segaram, Para K.; and Ju, Shu-Ing, 5,336,946, Cl. 307-355.000.

Jun, Young K.: *See*—
Yun, Kwang H.; Lee, Hee G.; Jang, Seong J.; and Jun, Young K., 5,336,630, Cl. 437-52.000.

Jung, Chu: *See*—
Josephson, Lee; Groman, Ernest V.; Jung, Chu; and Lewis, Jerome M., 5,336,506, Cl. 424-488.000.

Jung, Werner A.; Vorbeck, Udo; Schmitz, Arno; Heise, Wilhelm; and Groes, Lutz-Werner, to BASF Lacke + Farben Ag. Polycondensation and/or addition product containing carboxyl groups and tertiary amino groups, coating agents based thereon, and the use thereof. 5,336,753, Cl. 528-335.000.

Juno Lighting, Inc.: *See*—
Gabrius, Algimantas J.; Roos, Scott L.; and DeCicco, Thomas J., 5,336,100, Cl. 439-115.000.

Juskey, Frank J.; and Hendricks, Douglas W., to Motorola, Inc. Anchoring method for flow formed integrated circuit covers. 5,336,931, Cl. 257-787.000.

Justiniano, Joseph G.: *See*—
Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Aluma, Zvi, 5,336,979, Cl. 315-362.000.

Jutamulia, Suganda; Niwa, Hideaki; and Toyoda, Shinji, to Kowa Company, Ltd. Liquid-crystal image director for single-lens-reflex camera. 5,337,106, Cl. 354-152.000.

K-Whit Tools, Inc.: *See*—
Hancock, John P.; and McClelland, Ralph A., 5,335,512, Cl. 62-292.000.

Kabelmetal electro GmbH: *See*—
Schottker, Reinhard; and Grajewski, Franz, 5,335,398, Cl. 24-528.000.

Kabushiki Kaisha Ariwa Seisakusho: *See*—
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,336,332, Cl. 134-22.100.

Kabushiki Kaisha Fine Rubber Kenkyuusho: *See*—
Kuramochi, Hiroshi, 5,336,442, Cl. 252-511.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Matsunaga, Hiroshi; and Kondo, Tetsusai, 5,335,574, Cl. 84-21.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Kashiwa, Masahiko; and Kurumaji, Masanobu, 5,336,074, Cl. 425-149.000.

Kabushiki Kaisha Nissei Giken: *See*—
Narao, Shinya, 5,335,866, Cl. 241-46.013.

Kabushiki Kaisha Ohara: *See*—
Goto, Naoyuki; and Yatsuda, Hisao, 5,336,643, Cl. 501-4.000.

Kabushiki Kaisha Powrex: *See*—
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,336,332, Cl. 134-22.100.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Koide, Teruhiko, 5,335,938, Cl. 280-728.00B.

Kabushiki Kaisha Topcon: *See*—
Hori, Nobuo; Takano, Yoshinobu; Takahashi, Takashi; Nagano, Shigenori; and Hashimoto, Reiji, 5,337,169, Cl. 359-3.000.
Katsuragi, Kenjiro; and Tanabe, Akira, 5,337,095, Cl. 351-208.000.

Kabushiki Kaisha Toshiba: *See*—
Fujita, Yasuhiko; and Miyata, Haruyuki, 5,336,915, Cl. 257-369.000.
Fujiwara, Takayoshi; Okuda, Masayuki; and Honjo, Takashi, 5,336,070, Cl. 418-220.000
Funayama, Tomomi; Kobayashi, Tadahiko; Sakai, Isao; and Sahashi, Masashi, 5,336,337, Cl. 148-301.000.
Iwahashi, Hiroshi; Fujimoto, Toshiyuki; and Narita, Akira, 5,336,952, Cl. 307-571.000.
Katoh, Riichi; and Tsuda, Kunio, 5,336,909, Cl. 257-197.000.
Kohyama, Yusuke, 5,336,917, Cl. 257-401.000.
Kotaki, Hiroaki, 5,337,152, Cl. 348-234.000.
Matsui, Masataka, 5,337,276, Cl. 365-189.110.
Nakanishi, Hidetoshi; and Usui, Yasunori, 5,336,907, Cl. 257-133.000.
Nakano, Yoshihiko; Hayase, Shuzi; Murai, Shinji; Mikogami, Yukihiro; and Yoshizumi, Akira, 5,336,736, Cl. 525-474.000.
Ohtani, Yasumi; Hatakeyama, Hideo; Kuriyama, Toru; Nakagome, Hideki; and Matsubara, Yoichi, 5,335,505, Cl. 62-6.000.
Ohto, Osamu; Hamano, Tomoyuki; Kozuka, Eiji; and Miyawaki, Naokazu, 5,337,286, Cl. 365-230.010.
Ohtsuki, Sumito, 5,336,912, Cl. 257-304.000.
Sakane, Sakio, 5,335,524, Cl. 68-12.040.
Sakata, Yoshio, 5,337,409, Cl. 395-162.000.
Shimoda, Kenji, 5,337,049, Cl. 341-50.000.
Shirasaka, Hisatoshi, 5,337,045, Cl. 340-825.520.
Tanaka, Hiroshi; and Kudou, Makoto, 5,336,587, Cl. 430-322.000
Tsukakoshi, Hisao; and Shirasaka, Hisatoshi, 5,337,318, Cl. 371-5.500.
Watanabe, Naofumi; and Nobuta, Yasuo, 5,336,897, Cl 250-551.000.
Yamazaki, Yuichi; Mori, Hideyasu; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,337,348, Cl. 379-94.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kimura, Kazuya; and Kayukawa, Hiroaki, 5,336,056, Cl 417-222.100.

Kackowski, Matthew: *See*—
Duffy, Paul E.; Hanson, John; Lugosi, Robert; Guptill, Spencer H.; and Kackowski, Matthew, 5,336,013, Cl. 403-2.000.

Kadah, Andrew S.; and Nguyen, Andrew M., to Kadah, Andrew S. Three phase power monitor. 5,337,206, Cl. 361-85.000.

Kado, Hiroyuki; and Tohda, Takao, to Matsushita Electric Industrial Co., Ltd. Method of making a cantilever stylus for an atomic force microscope. 5,336,369, Cl. 156-659.100.

Kadoi, Noriaki; and Takimoto, Fujio, to Fuji Jukogyo Kabushiki Kaisha. Combustion chamber for an internal combustion engine. 5,335,635, Cl. 123-295.000.

Kadowaki, Takashi: *See*—
Chino, Shigeo; Kadowaki, Takashi; and Nishijima, Toyoki, 5,336,592, Cl. 430-557.000.

Kagawa, Yasuhiro; and Takegawa, Yohko, to Fuji Photo Film Co., Ltd. Photosensitive material processing apparatus. 5,337,113, Cl. 354-298.000

Kahlert, Joachim; May, Klaus P.; and Noll, Joachim, to U.S. Philips Corporation. Multilayer printed circuit board, in particular, for high-frequency operation. 5,336,855, Cl. 174-250.000.

Kaigler, William J., to Robertshaw Controls Company. Pressure operated switch construction, parts therefor and methods of making the same. 5,336,858, Cl. 200-83.00R.

Kaihara, Nobuo: *See*—
Taniguchi, Masaaki; Nohara, Keitsugu; and Kaihara, Nobuo, 5,337,038, Cl. 338-22.00R.

Kaihara, Shoji; and Haraguchi, Shousuke, to Canon Kabushiki Kaisha. Camera. 5,337,108, Cl. 354-218.000.

Kaiju, Haruhisa; Yoshida, Hitoshi; Yukikawa, Junichi; and Yoshizaki, Akihisa, to Matsuo Sangyo Co., Ltd. Paint powder supply device. 5,335,828, Cl. 222-195.000.

Kaiser, Donald B.: *See*—
Tomasetti, Charles M.; Helvy, Fred A.; and Kaiser, Donald B., 5,336,967, Cl. 313-533.000.

Kajisono, Takekazu. Apparatus for purifying and activating water. 5,336,399, Cl. 210-169.000.

Kakiuchi, Takao; and Sato, Kazuo, to Matsushita Electronics Corporation. Non-volatile semiconductor memory device and a method for fabricating the same. 5,336,913, Cl. 257-321.000.

Kakizaki, Yukio: *See*—
Suzuki, Kazuaki; Kakizaki, Yukio; and Taniguchi, Tetsuo, 5,337,097, Cl. 353-101.000.

Kalberer, Rober C.; and Kreutzer, Kevin W. Adaptable aircraft airbag protection apparatus and method. 5,335,884, Cl. 244-121.000.

Kalchauer, Wilfried; and Pachaly, Bernd, to Wacker-Chemie GmbH. Process for the removal of hydrogen-containing silanes from methylchlorosilanes. 5,336,799, Cl. 556-466.000.

Kaldewei, Franz-Dieter. Whirlpool bathtub. 5,335,376, Cl. 4-541.600

Kalibjian, Ralph, to United States of America, Energy. Non-linear optical crystal vibration sensing device. 5,335,548, Cl. 73-655.000

Kamata, Kazuo: *See*—
Tasaka, Hisashi; Obo, Hidefumi; Kubo, Takashi; and Kamata, Kazuo, 5,337,099, Cl. 354-76.000.

Kameoka, Tetsuji: *See*—
Nishiyama, Nobumasa; Tsuyoshi, Toshiaki; Aoi, Hajime; Kameoka, Tetsuji; Tanaka, Masaya; and Shiraishi, Kazuhisa, 5,337,198, Cl. 360-65.000.

Kameyama, Eiji: *See*—
Takesue, Hiromichi; Kameyama, Eiji; Terada, Tsutomu; and Kawata, Junichi, 5,335,716, Cl. 164-483.000.

Kamienny, Fred: *See*—
Moss, Richard; and Erlich, Fred, 5,336,190, Cl. 604-153.000

Kamikado, Koji, to Kansai Paint Co., Ltd. Aqueous resin dispersions 5,336,702, Cl. 523-417.000

Kamimura, Yutaka: *See*—
Tanaka, Takaho; Kamimura, Yutaka; Otani, Shigeki; and Ishizawa, Yoshio, 5,336,362, Cl. 117-42.000.

Kamishima, Kunitaka: *See*—
Takahama, Shinobu; and Kamishima, Kunitaka, 5,336,364, Cl. 156-630.000

Kamiya, Hideo: *See*—
Ueki, Takashi; Sakai, Katsuhito; Kanda, Koichi; and Kamiya, Hideo, 5,335,553, Cl. 73-861.190.

Kamiya, Kiyoshi; Uchiyama, Shigeru; Ohishi, Hideshi; Sugiyama, Norikazu; Mizuguchi, Yoshinori; and Hirano, Masahiko, to Hamamatsu Photonics K.K. Triple view imaging apparatus. 5,337,081, Cl. 348-61.000

Kammerl, August; and Graf, Friedrich, to Siemens Aktiengesellschaft. Control for a motor vehicle drive having an automatic transmission. 5,335,568, Cl. 477-109.000.

Kamprath, David R.: *See*—
Malachowski, Michael A.; and Kamprath, David R., 5,337,135, Cl. 355-319.000

Kan, Yasuo; Takahashi, Kosei; Hosoda, Masahiro; Tsunoda, Atsuo; Tani, Kentaro; and Watanabe, Masanori, to Sharp Kabushiki Kaisha. Semiconductor laser device with compressively stressed barrier layer. 5,337,326, Cl. 372-45.000.

Kanare, Donald M.; Abdenour, Thomas E.; and Axelgaard, Jens. Electrical stimulation heat/cool pack. 5,336,255, Cl. 607-149.000.

Kanaya, Kazuo: *See*—
Kiyoura, Tadamitsu; Jimbo, Takashi; Kogure, Yasuo; and Kanaya, Kazuo, 5,336,440, Cl. 252-373.000.

Kanda, Koichi: *See*—
Ueki, Takashi; Sakai, Katsuhito; Kanda, Koichi; and Kamiya, Hideo, 5,335,553, Cl. 73-861.190.

Kanda, Masahiro: *See*—
Kato, Tetsuo; Kanda, Masahiro; Tsumiyama, Tatsuo; and Nakamoto, Satoru, 5,336,540, Cl. 428-36.920.

Kanegafuchi Chemical Industry Co., Ltd.: *See*—
Homma, Michihide; Yoshihara, Atsuko; Wakabayashi, Hiroshi; and Isayama, Katsuhiko, 5,336,703, Cl. 523-435.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Ohnishi, Michikazu; Ogoshi, Hiroshi; and Takikawa, Kazuoki, 5,335,551, Cl. 73-731.000.

Kaneko, Akira: *See*—
Kobayashi, Keiji; Kaneko, Akira; Hata, Katsuya; and Kobayashi, Yoshinori, 5,336,071, Cl. 425-66.000.

Kaneko, Hideo: *See*—
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu;

VOL 1165 ISS 2 AG 9 1994 UMI

Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl. 164-475.000.
Kaneko, Junya; and Yamamoto, Hitoshi, to SMC Corporation. Stopper mounting structure for use on rodless cylinder. 5,335,583, Cl. 92-13.500.
Kaneko, Shigeru: *See*—
Sawai, Kunio; Hayashi, Ryuji; Irie, Toshiaki; Kaneko, Shigeru; Tanaka, Shinya; and Shinmi, Tsukasa, 5,335,877, Cl. 242-334.600.
Kaneko, Toshihide; and Toide, Eiichi, to Mitsubishi Denki Kabushiki Kaisha. Projection television system including a plurality of display elements with corresponding optical axes incident to a screen at different points offset from the screen center. 5,337,093, Cl. 348-778.000.
Kaneko, Yutaka: *See*—
Daifuku, Koji; Kita, Hiroshi; and Kaneko, Yutaka, 5,336,593, Cl. 430-558.000.
Kanemitsu, Toshihiro; Hayashi, Kaoru; and Matsui, Kazufumi, to Idemitsu Petrochemical Co., Ltd. Bag and snap zipper made of different materials. 5,335,997, Cl. 383-63.000.
Kang, Suk-Joong L.; Shin, Yu S.; Whang, Nong M.; Yoon, Duk Y.; and Kim, Deug J., to Korea Advanced Institute of Science and Technology. Method of surface strengthening alumina-zirconia composites using MoO_2 as an accelerant for phase transformation of zirconia from tetragonal to monoclinic. 5,336,646, Cl. 501-105.000.
Kangawa, Kenji: *See*—
Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, 5,336,759, Cl. 530-326.000.
Kanno, Yukio: *See*—
Sato, Hitoshi; and Kanno, Yukio, 5,335,495, Cl. 60-461.000.
Kano, Taisaku: *See*—
Haseyama, Ryuji; Takagi, Masatoshi; Hayashi, Kouzou; Sasagawa, Katsuyoshi; Kuroda, Kazuyuki; Kano, Taisaku; and Shikai, Kiyoshi, 5,336,749, Cl. 528-73.000.
Kano, Yoshiaki: *See*—
Okazawa, Tomoyuki; Tokumaru, Seiichi; Ohira, Hideo; Ishii, Masao; and Kano, Yoshiaki, 5,336,727, Cl. 525-327.800.
Kansai Paint Co., Ltd.: *See*—
Kamikado, Koji, 5,336,702, Cl. 523-417.000.
Kanzaki Kokyukoki Mfg. Co. Ltd.: *See*—
Azuma, Toshiro; Yano, Kazuhiko; and Fujisaki, Koichiro, 5,335,496, Cl. 60-487.000.
Kanzaki, Toyoki: *See*—
Hagiwara, Takashi; Kanzaki, Toyoki; and Kinoshita, Dainichiro, 5,337,140, Cl. 356-237.000.
Kaplan, Aaron V.; Kermode, James R.; and Klein, Enrique J., to Localmed, Inc. Intravascular catheter with infusion array. 5,336,178, Cl. 604-53.000.
Kaplan, Roy I.; and Pardue, Jerry E., to Nalco Chemical Company. Offshore rig cleaner. 5,336,428, Cl. 252-162.000.
Kapmeyer, Wolfgang: *See*—
Primes, Kathleen J.; Sigler, Gerald F.; Grenner, Gerd; and Kapmeyer, Wolfgang, 5,336,621, Cl. 436-534.000.
Kappes, Elisabeth; and Poth, Ulrich, to BASF Lacke + Farben Aktiengesellschaft. Paints, and use of the paints for the finishing of automobile bodies. 5,336,716, Cl. 525-23.000.
Kappler, John: *See*—
Kotzin, Brian L.; Marrack, Philippa; Kappler, John; and Choi, Youngwon, 5,336,598, Cl. 435-7.240.
Karasawa, Tadashi: *See*—
Takagaki, Makoto; Karasawa, Tadashi; and Futami, Kazumitu, 5,335,929, Cl. 280-283.000.
Karbach, Bernhard; Prause, Reinhard; and Weber, Heinrich, to Krautkramer GmbH & Co. Ultrasonic testing of elongated, prismshaped sections with at least one plane outer surface extending along the longitudinal axis of the section. 5,335,546, Cl. 73-622.000.
Kardos, Louis F.: *See*—
Noll, Gregory B.; Maranto, Jack J.; and Kardos, Louis F., 5,337,386, Cl. 385-60.000.
Karlyn, William M.; Pink, Frederick C.; Lamarre, William L.; and Berry, Edward J. Multicolor printing system for the silk-screen printing of compact discs. 5,335,594, Cl. 101-35.000.
Karner, Johann; and Bergmann, Erich, to Balzers Aktiengesellschaft. Method of and apparatus for a direct voltage arc discharge enhanced reactive treatment of objects. 5,336,326, Cl. 118-723.0HC.
Kaross, Klaus: *See*—
Busack, Hans-Jurgen; Kaross, Klaus; Lindner, Bernd; Gambert, Rudolf; and Bleichert, Horst-Peter, 5,336,390, Cl. 204-431.000.
Kaschmitter, James L.: *See*—
Mayer, Steven T.; Feikert, John H.; Kaschmitter, James L.; and Pekala, Richard W., 5,336,274, Cl. 29-623.400.
Kase, Toshiyuki: *See*—
Takishima, Suguru; and Kase, Toshiyuki, 5,337,300, Cl. 369-44.410
Kashino, Yoshinao: *See*—
Yamamoto, Tatsuro; and Kashino, Yoshinao, 5,336,402, Cl. 210-194.000.
Kashiwa, Masahiko; and Kurumaji, Masanobu, to Kabushiki Kaisha Kobe Seiko Sho. Pressing speed controller for hydraulic press. 5,336,074, Cl. 425-149.000.
Kashiwa, Norio: *See*—
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 5,336,747, Cl. 526-348.600.
Kashiwagi, Nobuyoshi; and Sasaki, Masatomi, to Terumo Kabushiki Kaisha. Blood-compatible medical material. 5,336,698, Cl. 523-113.000.
Kaspar Wire Works, Inc.: *See*—
Berkovsky, Janette; and Baer, Scott, 5,337,253, Cl. 364-479.000.
Kasper, Kazmier J., to Algonquin Industries, Inc. Apparatus for dispensing tickets from a stack. 5,335,822, Cl. 221-259.000.
Kasugai, Masakuni; and Ito, Hisao, to Sumitomo Wiring Systems, Ltd. Connector assembly. 5,336,101, Cl. 439-272.000.
Katagiri, Toshiaki: *See*—
Saito, Kazuhito; Kobayashi, Hideo; and Katagiri, Toshiaki, 5,337,378, Cl. 385-16.000.
Katakura, Takeo: *See*—
Matsunaga, Noboru; Azeyanagi, Kazuyoshi; Sogaishi, Ichirou; Katakura, Takeo; Ueda, Yoshihisa; and Ohsawa, Takaaki, 5,336,465, Cl. 419-2.000.
Katayama, Hiroyuki: *See*—
Nakayama, Junichiro; Katayama, Hiroyuki; and Ohta, Kenji, 5,336,531, Cl. 427-510.000.
Katayama, Kazuyori; and Fujiwara, Yasuhiro, to Mitsubishi Denki Kabushiki Kaisha. Constant speed driving device. 5,337,237, Cl. 364-426.040
Katayama, Masatake; Sato, Makoto; Ohta, Yutaka; Sugita, Mitsuru; and Ohki, Konomu, to Shin-Etsu Handotui Co., Ltd. Dielectrically isolated substrate and a process for producing the same. 5,336,634, Cl. 437-63.000.
Katchka, Jay R., to Robertshaw Controls Company. Water heater, a burner unit therefor and methods of making the same. 5,335,646, Cl. 126-350.00R.
Kato, Akira: *See*—
Takasuka, Yoshitaka; Kimura, Yasuyuki; and Kato, Akira, 5,335,744, Cl. 180-197.000.
Kato, Hifumi: *See*—
Okimoto, Satoshi; Ohara, Kiyotaka; Seki, Takao; and Kato, Hifumi, 5,337,158, Cl. 358-426.000.
Kato, Kazuo: *See*—
Yamamoto, Katsuhiko; Kojima, Masamitsu; and Kato, Kazuo, 5,335,563, Cl. 74-512.000.
Kato, Kazuyuki, to Fuji Electric Co., Ltd. Semiconductor pressure sensor having double diaphragm structure. 5,335,549, Cl. 73-706.000.
Kato, Kenji: *See*—
Takaoka, Toshiaki; Tanaka, Katsuyoshi; and Kato, Kenji, 5,336,743, Cl. 526-292.400.
Kato, Naoki; Konoshima, Eiji; Kinokiri, Kyoji; and Ikeda, Jiro, to Sony Corp, Kabushiki Kaisha Shibaura Seisakusho. Loading apparatus having a suction-hold mechanism. 5,336,029, Cl. 414-217.000.
Kato, Shunji: *See*—
Yamanouchi, Kazuhiko; Mihota, Norihito; Kato, Shunji; Terada, Hiromu; and Ogata, Junichi, 5,336,957, Cl. 310-313.00D.
Kato, Tetsuo; Kanda, Masahiro; Tsumiyama, Tatsuo; and Nakamoto, Satoru, to Yazaki Corporation; and UBE Industries, Ltd. Connector. 5,336,540, Cl. 428-36.920.
Kato, Toshiyuki: *See*—
Hidada, Osafumi; Ohe, Michisuke; Magoshi, Osam; Kato, Toshiyuki; and Sakai, Tomoki, 5,336,210, Cl. 604-307.000.
Katoh, Ken: *See*—
Ikeda, Shinji; Ooi, Keiji; and Katoh, Ken, 5,336,723, Cl. 525-139.000.
Katoh, Riichi; and Tsuda, Kunio, to Kabushiki Kaisha Toshiba. Bipolar transistor with an improved collector structure. 5,336,909, Cl. 257-197.000.
Katoh, Tatsuya, to Jatco Corporation. Spring retainer for clutch piston. 5,335,763, Cl. 192-85.0AA.
Katsuragi, Kenjiro; and Tanabe, Akira, to Kabushiki Kaisha Topcon. Ophthalmological instrument. 5,337,095, Cl. 351-208.000.
Katsuura, Akio: *See*—
Yamamoto, Toshio; Hirata, Kazumasa; Wakabayashi, Shigenori; and Katsuura, Akio, 5,336,779, Cl. 548-333.500.
Katz, Joseph M. Lap-top computer operators protective device. 5,336,848, Cl. 174-35.00R.
Katz, Joseph M. Cellular telephone users protective device. 5,336,896, Cl. 250-515.100.
Kaufman, Stephen B.; DiGianfilippo, Aleandro; Sager, Tamara L.; Bow, Clark F.; and DeVito, Ralph J., to HealthTech Services Corporation. Interactive medication delivery system for medication prepackaged in blister packs. 5,335,816, Cl. 221-13.000.
Kaule, Wittich, to GAO Gesellschaft fur Automation und Organisation. Method and apparatus for processing sheets of material in register, in particular for making security threads. 5,335,572, Cl. 83-74.000.
Kawachi, Toshihiko: *See*—
Ota, Junzo; Mura, Hajime; and Kawachi, Toshihiko, 5,336,162, Cl. 602-41.000
Kawaguchi, Jun: *See*—
Muromachi, Takashi; Kawaguchi, Jun; and Nakai, Hidemi, 5,336,565, Cl. 428-432.000.
Kawaguchi, Katuhide; Sugino, Kouichiro; and Yanagisawa, Kazuyoshi, to Yokohama Rubber Co., Ltd., The. Apparatus for manufacturing bead assemblies for tires. 5,336,358, Cl. 156-422.000.
Kawahara, Akihiko: *See*—
Miyamoto, Eiichi; Hanatani, Yasuyuki; Iwasaki, Hiroaki; Mizuta, Yasufumi; and Kawahara, Akihiko, 5,336,576, Cl. 430-58 000.
Kawahara, Setsuko: *See*—
Yamagishi, Hiroaki; Nakano, Yasushi; Kawahara, Setsuko; and Koyama, Noboru, 5,336,559, Cl. 428-329.000.
Kawahara, Takayuki; Kawajiri, Yoshiki; Akiba, Takesada; Horiguchi, Mssashi; Kitsukawa, Goro; and Aoki, Masakazu, to Hitachi, Ltd.; and Hitachi Device Engineering Co., Ltd. Semiconductor storage device capable of reduced current consumption using a charge reuse circuit. 5,337,271, Cl. 365-149.000.

Kawahata, Ichiro: *See*—
Ikemoto, Seiji; Taki, Katsuhiko; Matano, Takashi; Kawahata, Ichiro; Oguchi, Kiyoshi; Ito, Shigeki; and Miyauchi, Tatsuo, 5,336,530, Cl. 427-503.000
Kawai, Hiroyuki: *See*—
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl. 164-475.000.
Kawajiri, Yoshiki: *See*—
Kawahara, Takayuki; Kawajiri, Yoshiki; Akiba, Takesada; Horiguchi, Mssashi; Kitsukawa, Goro; and Aoki, Masakazu, 5,337,271, Cl. 365-149.000.
Kawakami, Kiyotada: *See*—
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Yamamoto, Tooru; and Asaeda, Tooru, 5,337,083, Cl. 348-256.000.
Kawakami, Yasushi, to Mitsuba Electric Mfg. Co., Ltd. Working device for forcing armature shaft. 5,335,412, Cl. 29-564.100.
Kawakita, Tadashi, to Ikeda Bussan Co., Ltd. Seat reclining mechanism. 5,336,137, Cl. 475-347.000.
Kawakita, Tetsuo; Yoshida, Takayuki; and Hatada, Kenzo, to Matsushita Electric Industrial Co. Ltd. Electronic components mounting-/connecting package and its fabrication method. 5,336,547, Cl. 428-209.000
Kawamoto, Seiichi; Sato, Maki; Narabu, Tadakuni; and Miura, Hisanori, to Sony Corporation. Linear image sensor with varied electric charge storage time. 5,337,163, Cl. 358-482.000.
Kawamura, Keizou; and Kobayashi, Makoto, to TDK Corporation. High frequency conductive material and resonator and method for making. 5,336,519, Cl. 427-126.200.
Kawano, Yuji: *See*—
Hashima, Kazuo; Kawano, Yuji; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Nakaki, Yoshiyuki; Tokunaga, Takashi; and Fujii, Yoshio, 5,337,305, Cl. 369-116.000.
Kawanoe Zoki Co., Ltd.: *See*—
Yamaguchi, Chotaro; and Shirakawa, Katsuaki, 5,335,869, Cl. 242-526.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl. 164-475.000
Kawasaki Steel Corporation: *See*—
Sato, Nobuyoshi, 5,336,640, Cl. 437-240.000.
Kawata, Junichi: *See*—
Takesue, Hiromichi; Kameyama, Eiji; Terada, Tsutomu; and Kawata, Junichi, 5,335,716, Cl. 164-483.000.
Kawata, Koji; and Sugibayashi, Tadahiko, to NEC Corporation. Semiconductor dynamic memory. 5,337,270, Cl. 365-149.000.
Kawatra, Surendra K.; and Eisele, Timothy C., to Michigan Technological University, Board of Control of. Flotation column with adjustable supported baffles. 5,335,785, Cl. 209-170.000.
Kayukawa, Hiroaki: *See*—
Kimura, Kazuya; and Kayukawa, Hiroaki, 5,336,056, Cl. 417-222.100.
Kazino, Hiroshi, to Aoyama Seisakusho Co., Ltd. Apparatus for feeding nuts or the like. 5,335,826, Cl. 221-297.000.
Keana, John F. W.: *See*—
Weber, Eckard; and Keana, John F. W., 5,336,689, Cl. 514-634.000.
Kee, Kok-Hiong, to Sherwood Medical Company. Suction control valve. 5,335,655, Cl. 128-207.160.
Keiji Kitagawa: *See*—
Kitagawa, Keiji; and Tani, Ikuo, 5,337,402, Cl. 395-133.000.
Keimel, John G.: *See*—
Gordon, Pat L.; Meador, John T.; Keimel, John G.; and Mehra, Rahul, 5,336,253, Cl. 607-122.000.
Keiser, Dennis L. Apparatus having a movable load bearing surface. 5,336,145, Cl. 482-54.000.
Keith, Dennis D.: *See*—
Albrecht, Harry A.; Keith, Dennis D.; Konzelmann, Frederick M.; Rossman, Pamela L.; and Weigele, Manfred, 5,336,768, Cl. 540-222.000.
Keller, Alfred E., to Conoco Inc. Recovery of HF from hydrocarbon streams. 5,336,832, Cl. 585-710.000.
Keller, Raymond E., to Thomson Consumer Electronics, Inc. Cathode-ray tube having internal magnetic shield with strengthening ribs. 5,336,962, Cl. 313-402.000.
Keller, Wilhelm A. Manually operated dispensing appliance, in particular for a double dispensing cartridge for two-component substances. 5,336,014, Cl. 403-24.000.
Kelley, James O., to Sligh Furniture Co. Foldable chair. 5,335,971, Cl 297-378.120.
Kelly, Brendan P.; and Lowis, Royce, to U.S. Philips Corporation. Temperature sensing circuit. 5,336,943, Cl. 307-310.000.
Kelly, Dave: *See*—
Dreher, Robert; Kelly, Dave; and Kraetz, Janis, 5,336,241, Cl. 607-5.000.
Kelly, Shawn L. Optical spatial filter. 5,337,181, Cl. 359-574.000.
Kelman, Josh, to Davidson Textron Inc. Method of adding shredded structural reinforced injected molded plastic to a preform. 5,336,455, Cl. 264-113.000
Kemp, James H.: *See*—
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,335,389, Cl. 15-167.100.
Kempf, August J.: *See*—
Schwartz, Robert E.; Kempf, August J.; and Mathre, David J., 5,336,756, Cl. 530-317.000.
Kempf, David; and McCarthy, William P., to Endress + Hauser Inc. Impact flowmeter. 5,335,554, Cl. 73-861.730.
Kendall, Christopher L.: *See*—
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., 5,336,335, Cl 136-258.000
Kennametal Inc.: *See*—
Mogilnicki, Victor D., 5,335,556, Cl. 73-862.210.
Kent Manufacturing Co., Inc.: *See*—
Hake, Kenneth A., 5,335,735, Cl. 172-707.000
Kenyon, Richard L.: *See*—
Campbell, Chester D.; Harper, Sandra L.; Jain, Virender; Kenyon, Richard L.; Matthies, Alan; and Yabuki, Roy M., 5,335,513, Cl. 62-228.300.
KeraVision, Inc.: *See*—
Kilmer, Lauren G.; and Reynolds, Alvin E., 5,336,214, Cl. 606-1.000.
Kercheck, Gary R.: *See*—
Kling, Michael J., III; Alusick, Michael P.; Kercheck, Gary R.; Krueger, Jeff C.; Schmitz, Duane M.; and Visser, James L., 5,335,420, Cl. 33-288.000.
Kermode, James R.: *See*—
Kaplan, Aaron V.; Kermode, James R.; and Klein, Enrique J., 5,336,178, Cl. 604-53.000.
Kerns, James M.: *See*—
Sweppy, Michael S.; and Kerns, James M., 5,335,539, Cl. 73-118.100.
Kerr, Roger S.: *See*—
Gentzke, John D.; and Kerr, Roger S., 5,337,072, Cl. 346-76.00L.
Kessel, Knut: *See*—
Siegel, Bernd; Patsch, Manfred; and Kessel, Knut, 5,336,800, Cl. 558-30.000.
Keyvani, Daryoush. Amusement apparatus. 5,336,135, Cl. 472-137.000.
Kezuka, Hiroaki; and Okuda, Fumio, to Idemitsu Kosan Co., Ltd. Process for producing an organic carbonate. 5,336,803, Cl. 558-277.000.
Khayat, Joseph M., to Western Digital (Singapore) Pte, Ltd. High speed Schmitt trigger with process, temperature and power supply independence. 5,336,942, Cl. 307-290.000.
Khelifa, Noureddine; and Burk, Roland, to Behr GmbH & Co. Apparatus for heating and/or cooling a compartment. 5,335,719, Cl. 165-42.000.
Khoshnevisan, Mohsen; Schoenwald, Jeffrey S.; Rode, Jonathan P.; Smith, Raymond J. D.; Kolloff, Bruce G.; and Beccue, Steve, to Rockwell International Corporation. High resolution optical hybrid absolute incremental position encoder. 5,336,884, Cl. 250-231.180.
Khoury, Jihad; and Woods, Charles L., to United States of America, Air Force. Quadratic optical processor for reducing multiplicative noise and other uses. 5,337,170, Cl. 359-7.000.
Khoury, Jihad: *See*—
Woods, Charles L.; and Khoury, Jihad, 5,337,180, Cl. 359-568.000
Kiang, Webster W., to Quantum Chemical Corporation. Adhesive blends of ethylene-alkyl acrylate copolymers and modified propylene-ethylene copolymers. 5,336,721, Cl. 525-78.000.
Kihara, Yasuo: *See*—
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,336,409, Cl. 210-490.000.
Kikuchi, Susumu; Suzuki, Shiro; and Kodaira, Satoru, to Poineer Electronic Corporation. Frequency control system in an audio device. 5,337,368, Cl. 381-103.000.
Kikuchi, Yuji: *See*—
Ishizaka, Takafumi; Kikuchi, Yuji; and Koishi, Masumi, 5,336,271, Cl. 23-293.00R.
Kikutake, Naoyuki: *See*—
Nishimura, Eiji; Kuroki, Masami; Kikutake, Naoyuki; and Shindou, Yuuichiro, 5,336,378, Cl. 204-64.00T.
Kilinski, Bart M.: *See*—
Chin, Stephen; Parille, Donald R.; Aimone, Paul R.; McCormick, Robert L.; Johnson, Paul R.; and Kilinski, Bart M., 5,335,717, Cl. 164-519.000.
Killer, Viktor; and Maier, Willy, to Muller Martini Versand Systeme AG. Arrangement for the sorting of piece goods. 5,335,767, Cl. 198-365.000.
Killian, Joseph W.: *See*—
Sorathia, Usman A.; Killian, Joseph W.; and Jarrett, Andrew W., 5,337,288, Cl. 367-1.000.
Kilmer, Lauren G.; and Reynolds, Alvin E., to KeraVision, Inc. Corneal curvature adjusting ring. 5,336,214, Cl. 606-1.000.
Kim, Deug J.: *See*—
Kang, Suk-Joong L.; Shin, Yu S.; Whang, Nong M.; Yoon, Duk Y.; and Kim, Deug J., 5,336,646, Cl. 501-105.000.
Kim, Myoung G.: *See*—
Moon, Chi J.; Park, Sae C.; Kim, Myoung G.; Oh, Sea H.; Yim, Seong S.; Park, Nam J.; Choi, Young K.; and Sung, Moo J., 5,336,673, Cl. 514-202.000.
Kim, Sang-uk, to Samsung Electronics Co., Ltd. Stereo/multivoice recording and reproducing video tape recorder including a decoder developing a switch control signal. 5,337,196, Cl. 360-30.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Kim, Seokjin: *See*—
Sridhar, Ramalingam; Kim, Seokjin; Shin, Yong-Chul; and Bogineni, Naidu C. R., 5,336,937, Cl. 307-201.000.

Kimberly-Clark Corporation: *See*—
Cohen, Bernard; and Jameson, Lee K., 5,336,452, Cl. 264-23.000.
Morman, Michael T., 5,336,545, Cl. 428-152.000.
Nohr, Ronald S.; and MacDonald, John G., 5,336,707, Cl. 524-265.000.
Strack, David C.; Connor, Linda A.; Gwaltney, Sharon W.; McCormack, Ann L.; Shawver, Susan E.; and Shultz, Jay S., 5,336,552, Cl. 428-224.000.

Kimsey, Ian M.: *See*—
Jones, Malcolm G.; Kimsey, Ian M.; Morrison, Anthony; Wong, Jeanette Y.; and Van Heteren, Jan, 5,336,514, Cl. 426-564.000

Kimura, Hiroshi: *See*—
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000

Kimura, Kazuya; and Kayukawa, Hiroaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Variable capacity swash plate type refrigerant compressor having a double fulcrum hinge mechanism. 5,336,056, Cl. 417-222.100.

Kimura, Kenji; and Kiyoshi, Tsuji, to Olympus Optical Co., Ltd. Image pickup system comprising signal processing device which uses exclusive adaptor in probes different in image pickup system from each other. 5,335,662, Cl. 128-662.030

Kimura, Yasuhiro; and Takayama, Tomio, to Fujitsu Limited. Voltage stabilizing circuit of switching power supply circuit. 5,336,987, Cl. 323-284.000.

Kimura, Yasuyuki: *See*—
Takasuka, Yoshitaka; Kimura, Yasuyuki; and Kato, Akira, 5,335,744, Cl. 180-197.000.

Kind, Burckart, to Actron Entwicklungs AG. Detection apparatus for shoplifting-preventing labels. 5,337,040, Cl. 340-572.000.

Kindaichi, Takeshi: *See*—
Nonaka, Osamu; Kindaichi, Takeshi; and Mizokami, Kazunori, 5,337,116, Cl. 354-403.000.

Kinetic Robotics Inc.: *See*—
Winski, Ernest P.; and Savoldi, Thomas L., 5,336,042, Cl. 414-789.500.

King, Bradley: *See*—
Guizot, Jean-Luc; King, Bradley; and Zarudiansky, Alain, 5,335,555, Cl. 73-861.950.

King, Denis J.: *See*—
Dransfield, Graham P.; and King, Denis J., 5,336,521, Cl. 427-220.000.

Kinigakis, Panagiotis; McGovern, William A.; and McGovern, John J., to Kraft General Foods, Inc. Loading of containers in cartons. 5,335,482, Cl. 53-448.000.

Kinokiri, Kyoji: *See*—
Kato, Naoki; Konoshima, Eiji; Kinokiri, Kyoji; and Ikeda, Jiro, 5,336,029, Cl. 414-217.000.

Kinoshita, Akio: *See*—
Hamabe, Tsutomu; Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Sato, Noriharu, 5,337,365, Cl. 381-71.000.

Kinoshita, Dainichiro: *See*—
Hagiwara, Takashi; Kanzaki, Toyoki; and Kinoshita, Dainichiro, 5,337,140, Cl. 356-237.000.

Kinoshita, Satoshi; Nagashima, Sadao; and Yamada, Tooru, to Casio Computer Co., Ltd. Monitor system and biological signal transmitter therefor. 5,335,664, Cl. 128-696.000

Kinoshita, Takuji: *See*—
Idei, Gijun; Kinoshita, Takuji; and Hoshino, Kunio, 5,337,035, Cl. 337-28.000.

Kinouchi, Yohsuke; Ai, Minoru; Mizutani, Hiroshi; Okuno, Osamu; Yamauchi, Kiyotaka; Yamataka, Akira; and Suzuki, Hiroya, to Hitachi Metals, Ltd. Permanent magnet assembly for stably fixing denture. 5,337,033, Cl. 335-302.000.

Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., to Micron Technology, Inc. Removable adhesives for attachment of semiconductor dies. 5,336,649, Cl. 437-209.000

Kintaichi, Yoshiaki; Hamada, Hideaki; Ito, Takehiko; Sasaki, Motoi; Tabata, Mitsunori; and Usui, Kazushi, to Agency of Industrial Science and Technology; and Cosmo Research Institute. Process for removing nitrogen oxides in exhaust gases to nitrogen. 5,336,476, Cl. 423-239.100.

Kirby, Edward P.; and Peng, Man-ling, to Temple University of the Commonwealth System of Higher Education. Method for inhibiting the ahesion of platelet with alboaggregins: platelet agonists which bind to platelet membrane glycoprotein IB. 5,336,667, Cl. 514-12.000.

Kiritani, Michinori: *See*—
Matsumoto, Takeji; Oyamada, Noboru; Kiritani, Michinori; Fukunaga, Teruo; Abe, Yoshio; and Kondoh, Hiroshi, 5,335,601, Cl. 104-88.00R.

Kirk, William J.: *See*—
Lynch, Richard A.; Kirk, William J.; and Dario, Lawrence J., 5,336,185, Cl. 604-110.000

Kirol, Lance D.: *See*—
Rockenfeller, Uwe; and Kirol, Lance D., 5,335,510, Cl. 62-106.000.

Kirschke, Klaus; Lutze, Gerhard; Schmitz, Ernst; and Wolff, Erich, to Agfa Gevaert Aktiengesellschaft. 5-amino-1-hydroximoyl pyrazoles. 5,336,780, Cl. 548-371.000.

Kirschner, Stefan: *See*—
Bilei, Mario; Kirschner, Stefan; Ogawa, Takeo; and Noritou, Kazuaki, 5,335,636, Cl. 123-321.000

Kiser, Michael W.: *See*—
McDaniel, John M.; and Kiser, Michael W., 5,336,226, Cl 606-79.000.

Kishigami, Minoru: *See*—
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.

Kishimoto, Hiroshi: *See*—
Nonomura, Tomohiro; and Kishimoto, Hiroshi, 5,335,901, Cl. 271-117.000

Kishimoto, Takashi: *See*—
Oikawa, Masahiro; Nemoto, Hiroyuki; Hamanaka, Kenjiro; Kishimoto, Takashi; Funada, Fumiaki; Hamada, Hiroshi; and Shibatani, Takashi, 5,337,186, Cl. 359-628.000.

Kiske, Siegfried: *See*—
Falb, Wolfgang; Gippert, Karl-Ludwig; Heim, Ulrich; Holscher, Uvo; Kiske, Siegfried; Kullik, Gotz; Loser, Ralf-Ernst; and Maurer, Christoph, 5,335,652, Cl. 128-203.140.

Kissick, Russell C.: *See*—
Anastase, Constantin; Nehren, William C.; Kissick, Russell C.; Campbell, Thomas C.; and Daily, Jay H., 5,335,523, Cl. 68-16.000.

Kita, Hiroshi: *See*—
Daifuku, Koji; Kita, Hiroshi; and Kaneko, Yutaka, 5,336,593, Cl 430-558.000.

Kita, Hiroyuki: *See*—
Nobutoki, Kazuhiro; Ueda, Kyoji; and Kita, Hiroyuki, 5,337,029, Cl. 335-78.000

Kita, Nobuyyki: *See*—
Tezuka, Sigeru; Kitajima, Masao; and Kita, Nobuyyki, 5,336,468, Cl. 422-100.000

Kita, Tatsuya: *See*—
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,657, Cl. 503-227.000.
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,660, Cl. 503-227.000.

Kitada, Masahiro; Tanabe, Hideo; Shimizu, Noboru; Koyama, Naoki; and Kobayashi, Toshio, to Hitachi, Ltd. Magnetoresistive magnetic head. 5,337,203, Cl. 360-113.000.

Kitagawa, Keiji; and Tani, Ikuo, to Keiji Kitagawa; Design Automation Inc.; and Omron Corporation. Graphic data processing apparatus using displayed graphics for application program selection. 5,337,402, Cl. 395-133.000.

Kitagawa, Masatoshi: *See*—
Tamura, Akiyoshi; and Kitagawa, Masatoshi, 5,336,361, Cl. 437-42.000

Kitaguchi, Hiroshi; and Izumi, Shigeru, to Hitachi, Ltd. Semiconductor detection apparatus for detecting nuclear radiation. 5,336,890, Cl. 250-370.060.

Kitajima, Masaaki; Hiyama, Ikuo; and Nagae, Yoshiharu, to Hitachi, Ltd. Display and the method of driving the same. 5,337,070, Cl. 345-211.000

Kitajima, Masao, to Fuji Photo Film Co., Ltd. Method of measuring analyte using dry analytical element. 5,336,599, Cl. 435-15.000.

Kitajima, Masao: *See*—
Tezuka, Sigeru; Kitajima, Masao; and Kita, Nobuyyki, 5,336,468, Cl. 422-100.000.

Kitamura, Atsushi, to Asahi Kasei Kogyo Kabushiki Kaisha. Impact absorbing air bag and method for manufacturing same. 5,336,538, Cl 428-35.200.

Kitasato Institute, The: *See*—
Omura, Satoshi; Tanaka, Haruo; Shiomi, Kazuro; and Liu, Jing R., 5,336,783, Cl. 548-561.000.

Kite, Ron: *See*—
Rupnik, Thomas J.; and Kite, Ron, 5,335,918, Cl. 273-186.200.

Kitsukawa, Goro: *See*—
Kawahara, Takayuki; Kawajiri, Yoshiki; Akiba, Takesada; Horiguchi, Mssashi; Kitsukawa, Goro; and Aoki, Masakazu, 5,337,271, Cl. 365-149.000.

Kittlety, Leslie M.; and Oudeman, Paul J. Valve. 5,335,693, Cl. 137-625.260.

Kiwi Brands, Inc.: *See*—
Bunczk, Charles J.; Burke, Peter A.; Camp, William R.; and Orehotsky, John L., 5,336,427, Cl. 252-104.000.

Kiyama, Hiromi: *See*—
Yoshino, Akira; Kiyama, Hiromi; and Mihoichi, Nobuhiko, 5,336,300, Cl. 95-96.000.

Kiyoshi, Tsuji: *See*—
Kimura, Kenji; and Kiyoshi, Tsuji, 5,335,662, Cl. 128-662.030.

Kiyoura, Tadamitsu; Jimbo, Takashi; Kogure, Yasuo; and Kanaya, Kazuo, to Mitsui Toatsu Chemicals, Inc. Process for decomposition of methanol. 5,336,440, Cl. 252-373.000

Klaus, Regul, to Lloyd Werft Bremerhaven GmbH. Floorless, non-self-supporting ship cabin, constructed of prefabricated parts and process for manufacturing and erecting same including apparatus therefore. 5,335,614, Cl. 114-71.000

Klein, E. F., Jr.: *See*—
Bowe, Edwin A.; Klein, E. F., Jr.; and Boysen, Philip G., 5,335,656, Cl. 128-207.180.

Klein, Enrique J.: *See*—
Kaplan, Aaron V.; Kermode, James R.; and Klein, Enrique J., 5,336,178, Cl. 604-53.000.

Kling, Michael J., III; Alusick, Michael P.; Kercheck, Gary R.; Krueger, Jeff C.; Schmitz, Duane M.; and Visser, James L., to SPX Corporation. Wheel alignment system. 5,335,420, Cl. 33-288.000.

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Klotz, James A.: *See*—
Stewart, James R.; Klotz, James A.; Fulgenzi, Crescenzo F.; and Coleman, Philip D., 5,336,015, Cl. 403-296.000.

Klug, Heinz-Guenter, to Deutsche Aerospace Airbus GmbH. Cargo compartment door for an aircraft. 5,335,880, Cl. 244-118.300

Knapp, John F.; and Koehler, Richard F., to Xerox Corporation. Tandem trilevel process color printer. 5,337,136, Cl. 355-326.00R.

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Knieps, Reinhard: *See*—
Winterfeldt, Andreas; Bartels, Gunter; and Knieps, Reinhard, 5,336,818, Cl. 570-170.000.

Knight, David. Stretchable tear resistant porous elastomeric film elements and processes. 5,336,554, Cl. 428-230.000.

Knights, John C.: *See*—
O'Connell, Patrick A.; Battey, Robert L.; Donigan, Maria S.; Tien, So V.; and Knights, John C., 5,337,080, Cl. 346-155.000.

Knirk, Gary L.: *See*—
Crowdus, Robert A.; Knirk, Gary L.; and Silverson, John K., 5,335,529, Cl. 72-404.000.

Knowles Electronics, Inc.: *See*—
French, John S.; and Peters, Richard W., 5,337,011, Cl. 330-258.000.

Ko-Pack Corporation: *See*—
Kobayashi, Junichi, 5,336,541, Cl. 428-40.000.

Kobayashi, Hideo: *See*—
Saito, Kazuhito; Kobayashi, Hideo; and Katagiri, Toshiaki, 5,337,378, Cl. 385-16.000.

Kobayashi, Hiroyuki: *See*—
Hashimoto, Hiroshi; Ushimaru, Akira; Masuyama, Kenichi; Tanaka, Yasuyuki; and Kobayashi, Hiroyuki, 5,336,561, Cl. 428-336.000.

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Kobayashi, Makoto: *See*—
Kawamura, Keizou; and Kobayashi, Makoto, 5,336,519, Cl. 427-126.200.

Kobayashi, Tadahiko: *See*—
Funayama, Tomomi; Kobayashi, Tadahiko; Sakai, Isao; and Sahashi, Masashi, 5,336,337, Cl. 148-301.000

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Kobayashi, Tomoo: *See*—
Takegawa, Ichiro; Kubo, Tsutomu; Ariie, Keiko; and Kobayashi, Tomoo, 5,336,582, Cl. 430-120.000.

Kobayashi, Toshio: *See*—
Kitada, Masahiro; Tanabe, Hideo; Shimizu, Noboru; Koyama, Naoki; and Kobayashi, Toshio, 5,337,203, Cl. 360-113.000.

Kobayashi, Yoshinori: *See*—
Kobayashi, Keiji; Kaneko, Akira; Hata, Katsuya; and Kobayashi, Yoshinori, 5,336,071, Cl. 425-66.000.
Matsuyama, Akinobu; and Kobayashi, Yoshinori, 5,336,619, Cl. 435-280.000.

Koblanski, John N. Ultrasonic scanning apparatus. 5,335,661, Cl. 128-661.030.

Koch, Harry: *See*—
Kruger, Hans-Eckhard; Koch, Harry; and Hartmann, Jurgen, 5,337,342, Cl. 379-40.000.

Koch, Rudolf; and Mistlberger, Fritz, to Siemens Aktiengesellschaft. Error amplifier. 5,337,009, Cl. 330-253.000.

Kodaira, Satoru: *See*—
Kikuchi, Susumu; Suzuki, Shiro; and Kodaira, Satoru, 5,337,368, Cl. 381-103.000.

Koehler, Richard F.: *See*—
Knapp, John F.; and Koehler, Richard F., 5,337,136, Cl. 355-326.00R.

Koenig, Karl-Heinz: *See*—
Diehl, Manfred; Koenig, Karl-Heinz; Krone, Eckhart; Loroesch, Juergen; Steiner, Norbert; Ullmann, Jochen; and Ziegler, Annette, 5,336,474, Cl. 423-29.000.

Koga, Jinichiro; Adachi, Takashi; and Hidaka, Hidemasa, to Meiji Seika Kaisha, Ltd. Indoleacetic acid synthetase-encoding gene. 5,336,766, Cl. 536-23.200.

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Kogo, Takashi: *See*—
Harada, Hiroyuki; Tajima, Akio; Kogo, Takashi; Nagakawa, Tadashi; Oda, Hajima; Inoue, Haruo; and Hayakawa, Tsuyoshi, 5,336,004, Cl. 400-624.000.

Koguchi, Yoshihito: *See*—
Shiragami, Hiroshi; Koguchi, Yoshihito; and Izawa, Kunisuke, 5,336,770, Cl. 544-276.000.

Kogure, Yasuo: *See*—
Kiyoura, Tadamitsu; Jimbo, Takashi; Kogure, Yasuo; and Kanaya, Kazuo, 5,336,440, Cl. 252-373.000.

Koh-I-Noor Inc.: *See*—
Jozat, Walter, 5,336,007, Cl. 401-151.000.

Kohge, Shinichi: *See*—
Naitou, Yasuo; Wada, Shunichi; Tsutsumi, Kazumichi; and Kohge, Shinichi, 5,335,979, Cl. 303-100.000.

Kohler, Gregory R.; Lahner, William F., III; Munster, Heinrich F.; and Dahlqvist, Karl T. G., to Andritz Sprout-Bauer, Inc. Two-stage variable intensity refiner. 5,335,865, Cl. 241-28.000.

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Koike, Hiroki, to NEC Corporation. Dynamic random access memory device with refreshing system powered with external power source in trimming stage instead of built-in step-down circuit. 5,337,282, Cl. 365-222.000.

Koishi, Masumi: *See*—
Ishizaka, Takafumi; Kikuchi, Yuji; and Koishi, Masumi, 5,336,271, Cl. 23-293.00R.

Koito Manufacturing Co., Ltd.: *See*—
Fujino, Yuji, 5,337,223, Cl. 362-66.000.
Shirai, Katutada; Mochizuki, Hideharu; Sato, Osamu; Tsukamoto, Hironori; and Makita, Hiroyuki, 5,337,222, Cl. 362-66.000.

Kojima, Akio: *See*—
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideako; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,336,688, Cl. 514-492.000.

Kojima, Katsuhide: *See*—
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,336,409, Cl. 210-490.000.

Kojima, Masamitsu: *See*—
Yamamoto, Katsuhiko; Kojima, Masamitsu; and Kato, Kazuo, 5,335,563, Cl. 74-512.000.

Kojima, Shingo, to NEC Corporation. Partial multiplier selector for multiplication circuit. 5,337,268, Cl. 364-760.000.

Kojima, Shuichi: *See*—
Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugane, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, 5,335,700, Cl. 139-435.100.

Koksbang, Rene, to Valence Technology, Inc. Vanadium oxide cathode active material and method of making same. 5,336,572, Cl. 429-218.000

Kolenc, Terrence J., to Nupro Company. High pressure diaphragm valve. 5,335,691, Cl. 137-312.000.

Kolhouse, J. Steven, to Cummins Engine Company, Inc. Self-sealing water pump seal. 5,336,047, Cl. 415-168.000.

Kolloff, Bruce G.: *See*—
Khoshnevisan, Mohsen; Schoenwald, Jeffrey S.; Rode, Jonathan P.; Smith, Raymond J. D.; Kolloff, Bruce G.; and Beccue, Steve, 5,336,884, Cl. 250-231.180.

Kolzer, Peter; and Mundt, Rolf-Hans, to Alcatel Sel Aktiengesellschaft. Apparatus and method for determining the aperture illumination of a phased-array antenna. 5,337,059, Cl. 342-360.000.

Komatsu, Kiyoshi; Mori, Takehisa; and Takinami, Masao, to Terumo Kabushiki Kaisha. Contraction-extension mechanism type actuator. 5,335,498, Cl. 60-528.000

Komatsu, Toshihiko: *See*—
Takakura, Hiroshi; and Komatsu, Toshihiko, 5,337,406, Cl. 395-148.000.

Kondo, Makoto: *See*—
Anayama, Chikashi; Tanahashi, Toshiyuki; and Kondo, Makoto, 5,336,635, Cl. 437-129.000.

Kondo, Tetsusai: *See*—
Matsunaga, Hiroshi; and Kondo, Tetsusai, 5,335,574, Cl. 84-21.000

VOL 1165 ISS 2 AG 9 1994 UMI

Kondo, Yoshiteru: *See*—
Yoshimura, Takayuki; Kondo, Yoshiteru; Matsumura, Yoshimasa; and Inoue, Kiyoaki, 5,335,682, Cl. 134-72.000.

Kondoh, Hiroshi: *See*—
Matsumoto, Takeji; Oyamada, Noboru; Kiritani, Michinori; Fukunaga, Teruo; Abe, Yoshio; and Kondoh, Hiroshi, 5,335,601, Cl. 104-88.00R.

Konica Corporation: *See*—
Chino, Shigeo; Kadowaki, Takashi; and Nishijima, Toyoki, 5,336,592, Cl. 430-557.000.
Daifuku, Koji; Kita, Hiroshi; and Kaneko, Yutaka, 5,336,593, Cl. 430-558.000.
Satoh, Yasuaki, 5,337,130, Cl. 355-77.000.
Tobisawa, Seiichi; and Iwashita, Hironobu, 5,336,322, Cl. 118-410.000.
Ueda, Yutaka, 5,336,588, Cl. 430-465.000.
Yabe, Takashi; and Yamamoto, Hiroyuki, 5,337,164, Cl. 358-487.000.
Yamagishi, Hiroaki; Nakano, Yasushi; Kawahara, Setsuko; and Koyama, Noboru, 5,336,559, Cl. 428-329.000.
Yasufuku, Yoshitaka; and Shibazaki, Osamu, 5,335,876, Cl. 242-347.100.

Konishikawa, Kaoru, to Matsushita Electric Industrial Co., Ltd. Disk drive apparatus. 5,337,374, Cl. 384-107.000.

Kononov, Anthony: *See*—
Seidel, Randy R.; Kononov, Anthony; Honegger, Roger; and Silva, Robert M., 5,336,041, Cl. 414-788.000.

Konoshima, Eiji: *See*—
Kato, Naoki; Konoshima, Eiji; Kinokiri, Kyoji; and Ikeda, Jiro, 5,336,029, Cl. 414-217.000.

Konzelmann, Frederick M.: *See*—
Albrecht, Harry A.; Keith, Dennis D.; Konzelmann, Frederick M.; Rossman, Pamela L.; and Weigele, Manfred, 5,336,768, Cl. 540-222.000.

Korea Advanced Institute of Science and Technology: *See*—
Kang, Suk-Joong L.; Shin, Yu S.; Whang, Nong M.; Yoon, Duk Y.; and Kim, Deug J., 5,336,646, Cl. 501-105.000.

Korol, Yevgeny: *See*—
Sagiv, Oded; and Korol, Yevgeny, 5,337,131, Cl. 355-221.000.

Kosuge, Toshihiro: *See*—
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl. 164-475.000.

Kotaki, Hiroaki, to Kabushiki Kaisha Toshiba. Solid-state color imaging apparatus. 5,337,152, Cl. 348-234.000.

Kotnour, Thomas A.: *See*—
Rolando, Richard J.; Kotnour, Thomas A.; and Sax, James E., 5,336,717, Cl. 525-64.000.

Kotzin, Brian L.; Marrack, Philippa; Kappler, John; and Choi, Youngwon, to National Jewish Center for Immunology and Respiratory Medicine. Method for diagnosing a superantigen caused pathologial condition via assay of T-cells. 5,336,598, Cl. 435-7.240.

Kourimsky, Friedrich J. A.: *See*—
Baderschneider, Kurt P.; Kourimsky, Friedrich J. A.; and Hotea, Gheorghe, 5,337,385, Cl. 385-59.000.

Kovacs, Richard F.: *See*—
Ammann, Hans H.; Kovacs, Richard F.; Micks, Henry B., Jr.; Potechin, Jamey N.; Simons, Everett F.; and Tetz, John G., 5,335,405, Cl. 29-407.000.

Kowa Company, Ltd.: *See*—
Jutamulia, Suganda; Niwa, Hideaki; and Toyoda, Shinji, 5,337,106, Cl. 354-152.000.
Shirasawa, Yoshiaki, 5,337,139, Cl. 356-73.000.

Koyama, Hideki; and Hamaoka, Takashi, to Nippondenso Co., Ltd. Fuel pump. 5,336,045, Cl. 415-55.100.

Koyama, Naoki: *See*—
Kitada, Masahiro; Tanabe, Hideo; Shimizu, Noboru; Koyama, Naoki; and Kobayashi, Toshio, 5,337,203, Cl. 360-113.000.

Koyama, Noboru: *See*—
Yamagishi, Hiroaki; Nakano, Yasushi; Kawahara, Setsuko; and Koyama, Noboru, 5,336,559, Cl. 428-329.000.

Koyama, Yoshihisa: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, 5,337,078, Cl. 346-108.000.

Koyo Seiko Co., Ltd.: *See*—
Toda, Kazutoshi, 5,336,338, Cl. 148-319.000.

Kozah, Ghassan F.; and Donoghue, Charles M. Computerized three dimensional data acquisition apparatus and method. 5,337,149, Cl. 356-376.000.

Kozaki, Michio: *See*—
Niimura, Youichi; Kozaki, Michio; Yamagata, Hisashi; and Yukawa, Hideaki, 5,336,608, Cl. 435-189.000.

Kozawa, Tadahiko; Osakabe, Yasuhiro; and Suematu, Takashi, to Hoya Corporation. Entoptoscopic instrument for observing the interior of an eye. 5,335,648, Cl. 128-6.000.

Koziol, Dennis R.: *See*—
Ghosh, Syamal K.; Chatterjee, Dilip K.; and Koziol, Dennis R., 5,336,282, Cl. 51-309.000.

Kozlowski, Frank. Automatic return ladder for use on land conveyors. 5,335,752, Cl. 182-127.000.

Kozlowski, Ronald: *See*—
Mauro, David; Kozlowski, Ronald; and Benko, Larry, 5,336,328, Cl. 127-33.000.

Kozuka, Eiji: *See*—
Ohto, Osamu; Hamano, Tomoyuki; Kozuka, Eiji; and Miyawaki, Naokazu, 5,337,286, Cl. 365-230.010.

Kraetz, Janis: *See*—
Dreher, Robert; Kelly, Dave; and Kraetz, Janis, 5,336,241, Cl. 607-5.000.

Kraft General Foods, Inc.: *See*—
Kinigakis, Panagiotis; McGovern, William A.; and McGovern, John J., 5,335,482, Cl. 53-448.000.
Murphy, Gregory B.; Lang, Kevin W.; Frake, Barry N.; and Entenmann, William J., 5,336,515, Cl. 426-573.000.
Riemer, Jed A., 5,336,513, Cl. 426-548.000.

Kramer, Daniel P., to United States of America, Energy. Method for the continuous processing of hermetic fiber optic components and the resultant fiber optic-to-metal components. 5,337,387, Cl. 385-76.000.

Krantz, Kermit E., to Medi-Flex Hospital Products, Inc. Skin closure system. 5,336,219, Cl. 606-15.000.

Krauss-Maffei AG: *See*—
Wohlrab, Walter, 5,336,462, Cl. 264-328.100.

Krautkramer, Gerd: *See*—
Lais, Siegfried; Krautkramer, Gerd; Huth, Stefan; and Schneider, Stephen, 5,336,119, Cl. 440-6.000.

Krautkramer GmbH & Co.: *See*—
Karbach, Bernhard; Prause, Reinhard; and Weber, Heinrich, 5,335,546, Cl. 73-622.000.

Krawczyk, Rodolphe; Cerutti-Maori, Guy; and Boulissiere, Luc, to Aerospatiale Societe Nationale Industrielle. Scannig emitter-receiver optical device. 5,337,189, Cl. 359-850.000.

Krepski, Larry R.: *See*—
Heilmann, Steven M.; Rasmussen, Jerald K.; Krepski, Larry R.; Milbrath, Dean S.; and Coleman, Patrick L., 5,336,742, Cl. 526-260.000.

Krespan, Carl G.; and Sievert, Allen C., to Du Pont de Nemours, E. I., and Company. Processes for the preparation of 2,2,3,3-tetrafluoropropionate salts and derivatives thereof. 5,336,801, Cl. 560-227.000.

Kreutzer, Kevin W.: *See*—
Kalberer, Rober C.; and Kreutzer, Kevin W., 5,335,884, Cl. 244-121.000.

Krider, James K.; Crawley, Wilbur H., III; and Wright, David E., to Arvin Industries, Inc. Electronic muffler assembly with exhaust bypass. 5,336,856, Cl. 181-206.000.

Kriesel, Marshall S.; and Thompson, Thomas N., to Science Incorporated. Closed drug delivery system. 5,336,180, Cl. 604-82.000.

Kriesel, Marshall S., to Science Incorporated. Fluid delivery apparatus having a stored energy source. 5,336,188, Cl. 604-132.000.

Krishnamurti, Ramesh; Dosi, Mahendra K.; and Lin, Henry C., to Occidental Chemical Corporation. Process for the preparation of 3,5-diaminobenzotrifluoride. 5,336,808, Cl. 564-412.000.

Krivec, Bert, to Snap-on Tools Corporation. Pivotal hand tool with flexural pivot joint and method of assembling same. 5,335,418, Cl. 30-266.000.

Kroll, Mark W.: *See*—
Adams Theodore P.; and Kroll, Mark W., 5,336,245, Cl. 607-32.000.

Krone, Eckhart: *See*—
Diehl, Manfred; Koenig, Karl-Heinz; Krone, Eckhart; Loroesch, Juergen; Steiner, Norbert; Ullmann, Jochen; and Ziegler, Annette, 5,336,474, Cl. 423-29.000.

Krouskop, Thomas A.; and Lusher, Ruth H., to Institute For Rehabilitation And Research, The. Body support system. 5,335,975, Cl. 297-452.630.

Krueger, Jeff C.: *See*—
Kling, Michael J., III; Alusick, Michael P.; Kercheck, Gary R.; Krueger, Jeff C.; Schmitz, Duane M.; and Visser, James L., 5,335,420, Cl. 33-288.000.

Kruger, Hans-Eckhard; Koch, Harry; and Hartmann, Jurgen, to Robert Bosch GMbH. Emergency call system. 5,337,342, Cl. 379-40.000.

Krutak, James J.; Cushman, Michael R.; Parham, William W.; Coates, Clarence A.; Weaver, Max A.; and Patonay, Gabor, to Eastman Chemical Company. Water-dissipatable polyesters and amides containing near infrared fluorescent compounds copolymerized therein. 5,336,714, Cl. 524-608.000.

Kubein-Meesenburg, Dietmar; and Nagerl, Hans. Artificial joint. 5,336,267, Cl. 623-22.000.

Kubitza, Werner: *See*—
Schneider, Volker; Blum, Harald; Kubitza, Werner; and Probst, Joachim, 5,336,711, Cl. 524-507.000.

Kubo, Takashi: *See*—
Tasaka, Hisashi; Obo, Hidefumi; Kubo, Takashi; and Kamata, Kazuo, 5,337,099, Cl. 354-76.000.

Kubo, Tsutomu: *See*—
Takegawa, Ichiro; Kubo, Tsutomu; Ariie, Keiko; and Kobayashi, Tomoo, 5,336,582, Cl. 430-120.000.

Kubota Corporation: *See*—
Murakawa, Masatake; Minoura, Akira; Kurohara, Kazuaki; Imanishi, Ryozo; Yamashita, Nobuyuki; and Harada, Eriya, 5,335,487, Cl. 56-10.500.

Kubota, Hiroshi: *See*—
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000.

Kubota, Masayuki: *See*—
Tanaka, Masayuki; Suzawa, Hiromichi; Kubota, Masayuki; Sekioka, Chiaki; Sato, Minako; and Uemura, Hisashi, 5,336,553, Cl. 428-229.000.

Kubota, Susumu: *See*—
Oshimi, Fumiaki; Kubota, Susumu; Enomoto, Masami; and Otsuki, Yutaka, 5,336,752, Cl. 528-205.000.

Kuchuk, Fikri: *See*—
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.

Kuczynski, Robert A. Miniaturized thermal protector with precalibrated automatic resetting bimetallic assembly. 5,337,036, Cl. 337-343.000.

Kudou, Makoto: *See*—
Tanaka, Hiroshi; and Kudou, Makoto, 5,336,587, Cl. 430-322.000.

Kuepper, Theodore A. Moving light insect trap. 5,335,445, Cl. 43-114.000.

Kuftinec, Josip: *See*—
Guberovic, Zeljko; Hohnjec, Marijan; Kuftinec, Josip; and Oklobzija, Milan, 5,336,775, Cl. 546-347.000.

Kuhns, Abe B., to E-Z Trail, Inc. Hay bale basket. 5,336,035, Cl. 414-501.000.

Kulinets, Joseph M.: *See*—
Chou, Wayne W.; Kulinets, Joseph M.; Elteto, Laszlo; and Engel, Frederik, 5,337,357, Cl. 380-4.000.

Kullik, Gotz: *See*—
Falb, Wolfgang; Gippert, Karl-Ludwig; Heim, Ulrich; Holscher, Uvo; Kiske, Siegfried; Kullik, Gotz; Loser, Ralf-Ernst; and Maurer, Christoph, 5,335,652, Cl. 128-203.140.

Kulp, Kajur: *See*—
Johnson, Charles E., 5,335,898, Cl. 269-41.000.

Kumada, Hiroyoshi: *See*—
Yamamoto, Tadanobu; and Kumada, Hiroyoshi, 5,335,933, Cl. 280-675.000.

Kumagai, Satoru: *See*—
Toyoda, Shuji; and Kumagai, Satoru, 5,337,177, Cl. 359-384.000.

Kumar, M. Lalith. Method and apparatus for manipulating fluid. 5,336,869, Cl. 219-687.000.

Kumashiro, Hatsuyoshi: *See*—
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl 164-475.000.

Kuna, Wayne A., to Hasbro, Inc. Game apparatus and motorized bucket assembly therefore. 5,335,917, Cl. 273-445.000.

Kunert, Heinz: *See*—
Cornils, Gerd; and Kunert, Heinz, 5,336,349, Cl. 156-107.000.

Kung, Ching Y., to Racal-Datacom, Inc. Semi-automatic mode of network design. 5,337,320, Cl. 371-15.100.

Kung, Paul J.; and Sloman, David E., to International Business Machines Corporation. Titlable optical microscope stage. 5,337,178, Cl. 359-393.000.

Kunugi, Masanao: *See*—
Handa, Tsuneo; Chiba, Noriyoshi; and Kunugi, Masanao, 5,336,000, Cl. 400-197.000.

Kuo, Shun-Meen: *See*—
Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hartman, Davis H., 5,337,397, Cl. 385-93.000.

Kupiec, Daniel J. Column enclosing kit. 5,335,471, Cl. 52-727.000.

Kuracina, Thomas C.; Ohnemus, Randall E.; and Smith, Craig W., to InjectiMed, Inc. Hard cover for protected injection apparatus. 5,336,197, Cl. 604-192.000.

Kuracina, Thomas C.: *See*—
Streck, Donald A.; Kuracina, Thomas C.; and Ohnemus, Randall E., 5,336,200, Cl. 604-198.000.

Kuramochi, Hiroshi, to Kabushiki Kaisha Fine Rubber Kenkyuusho. Extension type conductive rubber and process for making and method for using same. 5,336,442, Cl. 252-511.000.

Kurando, Shigeo: *See*—
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.

Kurary Co., Ltd.: *See*—
Ebashi, Iwao; Takigawa, Tetsuo; and Inoue, Masayasu, 5,336,782, Cl. 548-542.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Nishimoto, Yoshiharu; Yamazaki, Kengo; and Sato, Takashi, 5,336,549, Cl. 428-213.000.

Kurihara, Kunitoshi: *See*—
Aoyama, Motoo; Masumi, Ryoji; Ishibashi, Yooko; and Kurihara, Kunitoshi, 5,337,337, Cl. 376-435.000.

Kurita, Eiichi; Kurokawa, Haruki; and Fujioka, Kazuo, to Toda Kogyo Corp. Spinel-type spherical, black iron oxide particles and process for the producing the same. 5,336,421, Cl. 252-62.620.

Kuriyama, Toru: *See*—
Ohtani, Yasumi; Hatakeyama, Hideo; Kuriyama, Toru; Nakagome, Hideki; and Matsubara, Yoichi, 5,335,505, Cl. 62-6.000.

Kuriyama, Yuuji; Sakaida, Shoji; Ando, Hikaru; Ando, Masao; Ichimaru, Kazumi; and Sakamoto, Kazutoshi, to Toyoda Gosei Co., Ltd. Air bag device. 5,335,939, Cl. 280-728.00B.

Kuroda, Kazuyuki: *See*—
Hasegawa, Ryuji; Takagi, Masatoshi; Hayashi, Kouzou; Sasagawa, Katsuyoshi; Kuroda, Kazuyuki; Kano, Taisaku; and Shikai, Kiyoshi, 5,336,749, Cl. 528-73.000.

Kurohara, Kazuaki: *See*—
Murakawa, Masatake; Minoura, Akira; Kurohara, Kazuaki; Imanishi, Ryozo; Yamashita, Nobuyuki; and Harada, Eriya, 5,335,487, Cl. 56-10.500.

Kuroishi Iron Works Co., Ltd.: *See*—
Yamamoto, Katsuhiko; Kojima, Masamitsu; and Kato, Kazuo, 5,335,563, Cl. 74-512.000.

Kurokawa, Haruki: *See*—
Kurita, Eiichi; Kurokawa, Haruki; and Fujioka, Kazuo, 5,336,421, Cl. 252-62.620.

Kuroki, Kenji, to Suzuki Motor Corporation. Console box for an automobile. 5,335,751, Cl. 180-336.000.

Kuroki, Masami: *See*—
Nishimura, Eiji; Kuroki, Masami; Kikutake, Naoyuki; and Shindou, Yuuichiro, 5,336,378, Cl. 204-64.00T.

Kurono, Masayasu: *See*—
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideako; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,336,688, Cl. 514-492.000.

Kurosaka, Akihito: *See*—
Maejima, Masatsugu; Saruwatari, Koichi; Kurosaka, Akihito; Matsuo, Mamoru; Gunji, Hiroyoshi; and Muramatsu, Toshiki, 5,336,341, Cl. 148-415.000.

Kuroyanagi, Tomihiko: *See*—
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000.

Kurumaji, Masanobu: *See*—
Kashiwa, Masahiko; and Kurumaji, Masanobu, 5,336,074, Cl. 425-149.000.

Kurzweil Applied Intelligence, Inc.: *See*—
Sejnoha, Vladimir, 5,337,394, Cl. 395-2.500.

Kusumoto, Tadashi: *See*—
Hironaka, Yoshio; Tokailin, Hiroshi; Hosokawa, Chishio; and Kusumoto, Tadashi, 5,336,546, Cl. 428-209.000.

Kusunoki, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Field effect element utilizing resonant-tunneling and a method of manufacturing the same. 5,336,904, Cl. 257-23.000.

Kutsukake, Masaki: *See*—
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,657, Cl. 503-227.000.
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,660, Cl. 503-227.000.

Kuwahara, Tetsuya, to Murata Kikai Kabushiki Kaisha. Facsimile apparatus with telephone system. 5,337,350, Cl. 379-100.000.

Kvifte, Halvor O.; and Rudi, Guttorm, to Tandberg Data Storage A/S. Magazine drawer manipulation system for a data carrier loader 5,337,297, Cl. 369-36.000.

Kwok, John C.: *See*—
Thompson, Ronald J.; Lunt, James; Lamont, John C.; and Kwok, John C., 5,336,719, Cl. 525-71.000.

Kyocera Elco Corporation: *See*—
Mizuguchi, Osamu; and Mori, Teruyuki, 5,336,117, Cl. 439-717.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; and Shiozaki, Shizuo, 5,336,769, Cl. 544-273.000.

Kyowa Limited: *See*—
Ota, Junzo; Mura, Hajime; and Kawachi, Toshihiko, 5,336,162, Cl. 602-41.000.

L. Kellenberger & Co. AG: *See*—
Ilek, Anton; Thurnherr, Hugo; and Eugster, Emil, 5,335,454, Cl. 51-165.750.

laBastide, Bernhardt R., Jr., to Navistar International Transportation Corp. Service brake inspection system. 5,335,978, Cl. 303-13.000

Labofina, S.A.: *See*—
Oberto, Jacques; and Davison, John R. N., 5,336,609, Cl 435-206.000.

Lac, Quoc T.; Lowry, Edward C.; and Madden, Robert B., to International Business Machines Corporation. Delta-I noise minimization. 5,337,252, Cl. 364-488.000.

Lace, Donald A., Sr., to Actodyne General, Inc. Pick-up assembly for a stringed musical instrument. 5,336,845, Cl. 84-726.000.

Laciak, Daniel V.: *See*—
Quinn, Robert; Laciak, Daniel V.; Appleby, John B.; and Pez, Guido P., 5,336,298, Cl. 95-49.000.

Lackner, John R.: *See*—
Meyer, Robert B.; Lackner, John R.; and Matuschek, Hans J., 5,335,740, Cl. 180-19.100.

LaClair, Larry C.: *See*—
Lewis, Donald J.; and LaClair, Larry C., 5,335,598, Cl 102-218.000.

Lacroix, Jacques; Andrevon, Herve; and Deville, Dominique, to Salomon S.A. Ski having an upper face of variable width. 5,335,931, Cl. 280-602.000.

Lacy, Brian W.: *See*—
Weiss, Kenneth P.; DeRango, Mario F.; Schroeder, Daniel R.; Mutz, Leslie D.; Lacy, Brian W.; and Chapman, Mark D., 5,337,316, Cl. 371-20.500.

Lagnemo, Hans; Sparks, Robert E.; and Jacobs, Irwin C., to Eka Nobel AB. Bleaching agent. 5,336,433, Cl. 252-186.230.

Lagwinska, Elizabeth M.: *See*—
Mancilla, Edward; and Lagwinska, Elizabeth M., 5,336,620, Cl 436-18.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Lahary, Pierre-Yves; and Roy, Serge, to Rhone-Poulenc Chimie. Preparation of amorphous/semicrystalline semi-aromatic (co)polyamides. 5,336,754, Cl. 528-349.000.

Lahner, William F., III: *See—*
Kohler, Gregory R.; Lahner, William F., III; Munster, Heinrich F.; and Dahlqvist, Karl T. G., 5,335,865, Cl. 241-28.000.

Lais, Siegfried; Krautkramer, Gerd; Huth, Stefan; and Schneider, Stephen, to Schottel-Werft Josef Becker GmbH & Co. KG. Drive unit for relatively small watercraft. 5,336,119, Cl. 440-6.000.

Lake Shore Cryotronics, Inc.: *See—*
Griffen, Neil C.; and Ayzenberg, Mark, 5,336,994, Cl. 324-174.000.

Lake, William C.: *See—*
Hardwick, R. Alan; Smith, Alan K.; Lake, William C.; and Chenoweth, Dennis E., 5,336,760, Cl. 530-413.000.

Lal, Kasturi: *See—*
Pialet, Joseph W.; Lal, Kasturi; and Bryant, Charles P., 5,336,423, Cl. 252-76.000.

Lalanne-Magne, Claudine: *See—*
Havas, Laszlo; Lalanne-Magne, Claudine; and Speakman, John G., 5,336,738, Cl. 526-82.000.

Lamarre, William L.: *See—*
Karlyn, William M.; Pink, Frederick C.; Lamarre, William L.; and Berry, Edward J., 5,335,594, Cl. 101-35.000.

Lamartina, Timothy: *See—*
Holmes, J. Stephen; and Lamartina, Timothy, 5,336,238, Cl. 606-208.000.

Lambert James R.: *See—*
Thrush, Roger L.; Tan, Richard C.; and Lambert James R., 5,336,111, Cl. 439-567.000.

Lambert, Maureen: *See—*
Folger, David; Arnold, David; and Lambert, Maureen, 5,337,044, Cl. 340-825.440.

Lamers, Paul H., to PPG Industries, Inc. Polymers for pigment flushing. 5,336,314, Cl. 106-506.000.

Lamers, Robert P., to Westinghouse Electric Corporation. Electric motor driven pump. 5,336,064, Cl. 417-423.300.

Lammers, Shawn D.: *See—*
Bowler, Paul R.; Mackay, John; Lammers, Shawn D.; and Fulton, Robert H., 5,335,540, Cl. 73-146.500.

Lamond, Donald R.: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,335,389, Cl. 15-167.100.

Lamont, John C.: *See—*
Thompson, Ronald J.; Lunt, James; Lamont, John C.; and Kwok, John C., 5,336,719, Cl. 525-71.000.

Landon, Frank L.: *See—*
Wallskog, Harvey A.; Landon, Frank L.; and Ruble, William R., 5,336,375, Cl. 202-96.000.

Lane, John A.: *See—*
Sunderland, Richard A.; and Lane, John A., 5,337,215, Cl. 361-726.000.

Lang, Kevin W.: *See—*
Murphy, Gregory B.; Lang, Kevin W.; Frake, Barry N.; and Entenmann, William J., 5,336,515, Cl. 426-573.000.

Lang, Mark R.: *See—*
Namordi, Mooshi R.; Lang, Mark R.; and Fithian, Michael J., 5,337,027, Cl. 333-161.000.

Lang, Robert J.; Dzurko, Kenneth M.; Scifres, Donald R.; and Welch, David F., to SDL, Inc. Semiconductor laser with broad-area intracavity angled grating. 5,337,328, Cl. 372-45.000.

Lange, Richard M.: *See—*
Adams, Paul E.; Lange, Richard M.; and Stoldt, Stephen H., 5,336,278, Cl. 44-419.000.
Forsberg, John W.; Jahnke, Richard W.; Lange, Richard M.; and DeTar, Marvin B., 5,336,439, Cl. 252-356.000.

Langenback, Glenn L.: *See—*
Langenback, John M.; and Langenback, Glenn L., 5,335,923, Cl. 280-79.110.

Langenback, John M.; and Langenback, Glenn L. Snow plow dolly. 5,335,923, Cl. 280-79.110.

Langenmayr, Eric J., to Rohm and Haas Company. Process for toxic agent removal. 5,336,329, Cl. 134-7.000.

Langer, Peter; Wojcik, Karl W.; and Snover, Todd A., to Ford Motor Company. Method and apparatus for monitoring the operation of electrical loads in an automotive vehicle. 5,337,013, Cl. 324-537.000.

Langohr, Donald R. Wide vertical joint seal. 5,335,466, Cl. 52-396.040.

Laparomed Corporation: *See—*
Noda, Wayne A., 5,336,229, Cl. 606-144.000.

Laroche Chemicals, Inc.: *See—*
Achord, Betty J.; and Boyce, C. Bradford, 5,336,816, Cl. 570-168.000.

LaRoi, John L., Jr.: *See—*
Laske, Louis L.; and LaRoi, John L., Jr., 5,336,123, Cl. 446-224.000.

Larson, David A.: *See—*
Morrell, Roger J.; Larson, David A.; and Ruzzi, Peter L., 5,335,977, Cl. 299-92.000.

Larson, Donald G., to Cymer Laser Technologies. Pre-ionizer for a laser. 5,337,330, Cl. 372-86.000.

Larson, Lynn D. Spring insert for cushioning insert. 5,335,380, Cl. 5-255.000.

Laser Engineering, Inc.: *See—*
Linhares, Stephen J., 5,336,218, Cl. 606-10.000.

Laske, Louis L.; and LaRoi, John L., Jr., to Vonco Products, Inc. Inflatable flexible pouch. 5,336,123, Cl. 446-224.000.

Lattice Semiconductor Corporation: *See—*
Josephson, Gregg R.; Shen, Ju; Darling, Roy D.; and Cheng, Chan-Chi J., 5,336,951, Cl. 307-465.000.

Lau, James C.: *See—*
Saito, Yoshio; Lau, James C.; Chan, Steven S.; and Malmgren, Richard P., 5,336,992, Cl. 324-754.000.

Lauri, Leone, to Prima, S.p.A. Expanded polymer product with high distortion temperature, high flame resistance and low smoke toxicity and opacity. 5,336,694, Cl. 521-92.000.

Lavayssiere, Blandine: *See—*
Leclerc, Vincent; Picard, Catherine; and Lavayssiere, Blandine, 5,336,880, Cl. 250-214.0VT.

Layher, Francis W.; and Sutter, Francis A., to Quantum Materials, Inc. Manually operable die attach apparatus. 5,336,357, Cl. 156-391.000.

Le, Kim C.: *See—*
Akhtar, Masyood; Le, Kim C.; Pedigo, Jess; and Smith, Charles H., 5,336,644, Cl. 501-15.000.

Leader, Matthew J.; and Van Sin, Kee, to PPG Industries, Inc. Analyte and pH measuring sensor assembly and method. 5,336,388, Cl. 204-406.000.

Lebby, Michael S., to Motorola, Inc. Optoelectronic sub-module and method of making same. 5,337,391, Cl. 385-88.000.

Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hartman, Davis H., to Motorola, Inc. Optical coupling device and method for making. 5,337,397, Cl. 385-93.000.

LeBlond, Claude. Hand grip exerciser. 5,336,140, Cl. 482-49.000.

Leclerc, Vincent; Picard, Catherine; and Lavayssiere, Blandine, to General Electric CGR S.A. Process for the correction of distortions in radiological images. 5,336,880, Cl. 250-214.0VT.

LeCun, Yann A.; and Wu, Quen-Zong, to AT&T Bell Laboratories. Method and apparatus for symbol recognition using multidimensional preprocessing at multiple resolutions. 5,337,372, Cl. 382-27.000.

Ledley, Robert S., to National Biomedical Research Foundation. Non-slip support shoe for a walking aid. 5,335,683, Cl. 135-84.000.

Lee, Chang-Ou: *See—*
Cain, John L.; and Lee, Chang-Ou, 5,336,366, Cl. 156-643.000.

Lee, Doo H.: *See—*
Chung, Ji H.; Wee, Jai K.; Lee, Doo H.; and Byeon, Sang G., 5,336,379, Cl. 204-129.300.

Lee, Hee G.: *See—*
Yun, Kwang H.; Lee, Hee G.; Jang, Seong J.; and Jun, Young K., 5,336,630, Cl. 437-52.000.

Lee, Hoseong: *See—*
Yeom, Hancheol; Lee, Hoseong; Jeong, Yucheol; An, Hoyoung; Choi, Juho; and Lee, Wonbo, 5,336,289, Cl. 65-334.000.

Lee, Hsing-Chung, to Motorola, Inc. CVD reactor with uniform layer depositing ability. 5,336,327, Cl. 118-730.000.

Lee, Jar W.: *See—*
Scheinbeim, Jerry I.; Newman, Brian N.; Lee, Jar W.; and Takase, Yoshihiko, 5,336,422, Cl. 252-62.900.

Lee, Lin-Nan; Rao, Ashok K.; and Bhargava, Sanjai, to Comsat Corporation. Coding technique for high definition television signals. 5,337,085, Cl. 348-398.000.

Lee, Miko. Flat lock. 5,335,520, Cl. 70-349.000.

Lee, Nicholas A.: *See—*
Henson, Gordon D.; and Lee, Nicholas A., 5,337,390, Cl 385-81.000.

Lee, Robert W. Easy opening pop-top can lid. 5,335,808, Cl. 220-269.000.

Lee, Ron C., to BOC Group, Inc., The. Cooling method and apparatus. 5,335,503, Cl. 62-50.100.

Lee Rowan Company: *See—*
Reedy, Michael H., 5,335,794, Cl. 211-13.000.

Lee, Shy-Fuy, to Sandoz Ltd. Heterocyclic diones as plant growth regulators. 5,336,662, Cl. 504-223.000.

Lee, Tae S.: *See—*
Fiso, Joseph F.; and Lee, Tae S., 5,335,430, Cl. 36-88.000.

Lee, Wendy: *See—*
Dininno, Frank P.; Greenlee, Mark L.; Rano, Thomas A.; and Lee, Wendy, 5,336,674, Cl. 514-210.000.

Lee, Wonbo: *See—*
Yeom, Hancheol; Lee, Hoseong; Jeong, Yucheol; An, Hoyoung; Choi, Juho; and Lee, Wonbo, 5,336,289, Cl. 65-334.000.

Lee, Yong H., to Samsung Electronics Co., Ltd. Method of manufacturing a MESFET with an epitaxial void. 5,336,626, Cl. 437-39.000.

Lee, Yong-Hak. Stopper sealing cap for injectable fluid bottle. 5,335,801, Cl. 215-249.000.

Lefevre, Herve ; and Martin, Philippe, to Photonectics. Optical fiber measuring device using phase difference. 5,337,142, Cl. 356-350.000.

Leger, Gerard: *See—*
Boitiaux, Jean-Paul; De Bonneville, Jean; Burzynski, Jean-Pierre; Leger, Gerard; Le Peltier, Fabienne; and Martino, Germain, 5,336,829, Cl. 585-659.000.

Legge, Robert B.: *See—*
Carmichael, Edward W.; and Legge, Robert B., 5,337,003, Cl. 324-402.000.

Lehning, Heinz, to Motorola, Inc. Discriminator device. 5,336,947, Cl. 307-360.000.

Lehrke, Kennth E.; and Werner, Neal A., to Graco Inc. Electric drive pump. 5,336,063, Cl. 417-415.000.

Lehureau, Jean-Claude, to Thomson-CSF. Liquid crystal matrix control employing doped semiconductor pixel electrode surrounded by undoped channel region. 5,337,172, Cl. 359-59.000.

Leichtling, Jonathan J.; and Taylor, Charles S., to Taylor, Charles S. Endoscopic suture tying method. 5,336,230, Cl. 606-148.000.

Leitner, Max; and Fruhwirth, Gerhard J., to Steyr-Daimler-Puch AG. Positively engaging clutch. 5,335,764, Cl. 192-85.00C

Leitz, Hermann, deceased (by Leitz, Sigrid, heiress), to Borg-Warner Automotive GmbH. Clamping member free-wheel with at least one plastic cage ring. 5,335,761, Cl. 192-45.100.

Leitz, Sigrid, heiress: *See—*
Leitz, Hermann, deceased, 5,335,761, Cl. 192-45.100.

Lemke, Kuno; Voegele, Guenther; and Stehle, Harro, to Robert Bosch GmbH. Method for sterilizing a packaging machine, and apparatus for performing the method. 5,335,479, Cl. 53-426.000

Lenchner, Nathaniel H.: *See—*
Simmen, Christian; and Lenchner, Nathaniel H., 5,336,086, Cl 433-37.000.

Lengyel, Gabor, to Biedermann Motech GmbH. Knee orthesis. 5,336,161, Cl. 602-26.000

Lenk, Damon J.: *See—*
Norton, George H., II; Lenk, Damon J.; and Robida, James E., 5,335,948, Cl. 292-169.230.

Lenker, Jay A.: *See—*
Rosenbluth, Robert F.; Lenker, Jay A.; Greene, George R.; Brenneman, Rodney A.; and Maley, Patrick A., 5,336,208, Cl 604-329.000

Lensink, Johan H. A.: *See—*
van Eekelen, Christiaan A. G.; Mulleners, Leonardus J. S. M.; Van Der Laan, Johannes C.; Misset, Onno; Cuperus, Roelck A.; and Lensink, Johan H. A., 5,336,611, Cl. 435-221.000.

Leone, Michael F., to Dana Corporation. Magnetic flux breaker for a solenoid in a wrap spring clutch. 5,335,760, Cl. 192-26.000.

Leopold Kostal GmbH & Co.: *See—*
Levers, Juergen, 5,336,980, Cl. 318-444.000.

Le Peltier, Fabienne: *See—*
Boitiaux, Jean-Paul; De Bonneville, Jean; Burzynski, Jean-Pierre; Leger, Gerard; Le Peltier, Fabienne; and Martino, Germain, 5,336,829, Cl. 585-659.000.

Leroux, Thierry; and Py, Christophe, to Commissariat a l'Energie Atomique. System making it possible to control the shape of a charged particle beam. 5,336,973, Cl. 315-14.000.

Lesins, Viesturs, to Occidental Chemical Corporation. Method of making oxydiphthalic anhydride. 5,336,788, Cl. 549-241.000.

Leszczynski, Nicholas, to Magnetrol International, Inc. Ultrasonic detector with frequency matching. 5,335,545, Cl. 73-602.000.

Leuven Research & Development vcw: *See—*
Collen, Desire J.; Stassen, Jean-Marie; and Lijnen, Henri R., 5,336,495, Cl. 424-94.640.

Lever Brothers Company, Division of Conopco, Inc.: *See—*
Au, Van; and Harirchian, Bijan, 5,336,765, Cl. 536-18.500
Bahary, William S.; and Hogan, Michael P., 5,336,430, Cl 252-174.170.
Clements, Anthony H., 5,336,447, Cl. 252-554.000.
Garner-Gray, Peter F.; Martin, Alexander; Martin, John R.; and Webb, Maurice, 5,336,665, Cl. 512-4.000.

Levers, Juergen, to Leopold Kostal GmbH & Co. Apparatus and method for controlling a windshield wiping system. 5,336,980, Cl. 318-444.000.

Levien, Raphael L. Time reversal gaussian approximation filter. 5,337,264, Cl. 364-724.010.

Leviton Manufacturing Co., Inc.: *See—*
Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Aluma, Zvi, 5,336,979, Cl. 315-362.000.

Lewis, Donald J.; and LaClair, Larry C., to Universal Propulsion Company, Inc. Timing and firing circuitry. 5,335,598, Cl. 102-218.000.

Lewis, James C. Educational apparatus with pump for use in bathtub. 5,336,122, Cl. 446-153.000.

Lewis, Jerome M.: *See—*
Josephson, Lee; Groman, Ernest V.; Jung, Chu; and Lewis, Jerome M., 5,336,506, Cl. 424-488.000.

Lexmark International, Inc.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Merrifield, David L.; Molloy, James J.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,337,032, Cl. 355-260.000.
Foster, Mark D., 5,335,831, Cl. 222-325.000.

Leyland, Steven P.; and Ford, David A., to Rolls-Royce plc. Removal of contaminants from molten metals. 5,336,294, Cl. 75-406.000.

Li, Ming-Chun. Emergency lighting device. 5,336,977, Cl. 315-159.000.

Li, Wang K.: *See—*
Knee, Derek L.; Li, Wang K.; and Wheless, Thomas O., Jr., 5,337,254, Cl. 364-489.000.

Liberty Mutual Insurance Co.: *See—*
Smits, Matthijs P., 5,336,269, Cl. 623-25.000.

Lichtenberg, Allan C. Maximum comfort keyboard. 5,336,001, Cl. 400-489.000.

Liebscherkunststofftechnik: *See—*
Metzler, Richard; Schmieding, Reinhold; and Schmid, Peter M., 5,336,240, Cl. 606-232.000.

LifeCell Corporation: *See—*
Livesey, Stephen A.; del Campo, Anthony A.; Nag, Abhijit; Nichols, Ken B.; and Coleman, Christopher, 5,336,616, Cl. 435-240.200.

Lightworks International Inc.: *See—*
Baxter, Michael J., 5,335,679, Cl. 132-270.000.

Lijnen, Henri R.: *See—*
Collen, Desire J.; Stassen, Jean-Marie; and Lijnen, Henri R., 5,336,495, Cl. 424-94.640.

Lily Cups Inc.: *See—*
Boller, Peter K., 5,335,812, Cl. 220-709.000.

Lim, Leon. Spherical engine. 5,336,067, Cl. 418-49.000.

Limburg, William W.: *See—*
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.

Lin, Chien-Chang, to General Electric Company. Method and apparatus to decrease radioactive iodine release. 5,337,336, Cl. 376-309.000

Lin, Henry C.: *See—*
Krishnamurti, Ramesh; Dosi, Mahendra K.; and Lin, Henry C., 5,336,808, Cl. 564-412.000.

Lin, Jia S. Microphone connector. 5,336,108, Cl. 439-462.000.

Lin, Shao-Chia. Method and apparatus for producing stereoscopic effects. 5,337,101, Cl. 354-113.000.

Lindauer, James M.; and Pering, Richard D., to Hewlett-Packard Company. Guided data presentation. 5,337,405, Cl. 395-147.000.

Linde Aktiengesellschaft: *See—*
Haehn, Peter-Clemens, 5,336,838, Cl. 585-833.000.
Haehn, Peter-Clemens, 5,336,839, Cl. 585-833.000.

Linders, Leonie J. M.: *See—*
Graveland, Aris; Henderson, Matthijs H.; and Linders, Leonie J M., 5,336,517, Cl. 426-622.000.

Lindgren, Claes: *See—*
Petersen, Flemming O.; Lindgren, Claes; Moller, Brent; and Vigenberg, Stig F., 5,335,461, Cl. 52-72.000.

Lindner, Bernd: *See—*
Busack, Hans-Jurgen; Kaross, Klaus; Lindner, Bernd; Gambert, Rudolf; and Bleichert, Horst-Peter, 5,336,390, Cl. 204-431.000.

Lindsey, Kurt L.; Peret, Andrew R.; Hastings, Jerome K.; and Smith, Richard G., to Eaton Corporation. Bypass contactor for solid state motor starters. 5,337,214, Cl. 361-709.000.

Linhares, Stephen J., to Laser Engineering, Inc. Surgical smoke evacuator synchronizing system. 5,336,218, Cl. 606-10.000

Link, William J.: *See—*
Barrett, Graham D.; Link, William J.; and Reich, Cary J., 5,336,261, Cl. 623-5.000.

Lisiecki, Robert E., to Elopak Systems A.G. Flat top container and blank for constructing same. 5,335,847, Cl. 229-244.000

Lisowsky, Richard, to Witco GmbH. Process for the preparation of transition metal complexes having monosubstituted cyclopentadienyl ligands. 5,336,795, Cl. 556-56.000.

Litton Systems, Inc.: *See—*
Mark, John G.; and Tarzartes, Daniel A., 5,337,143, Cl. 356-350.000.
Peters, Rodney E.; and Croteau, Michael G., 5,336,900, Cl 250-561.000.

Liu, Chung-ho. Magazine for rivet gun. 5,335,800, Cl. 221-279.000.

Liu, Jing R.: *See—*
Omura, Satoshi; Tanaka, Haruo; Shiomi, Kazuro; and Liu, Jing R., 5,336,783, Cl. 548-561.000.

Liu, Yuan-Hsin. Partitioned and foldable paper food container. 5,335,845, Cl. 229-120.180.

Livesey, Stephen A.; del Campo, Anthony A.; Nag, Abhijit; Nichols, Ken B.; and Coleman, Christopher, to LifeCell Corporation. Method for processing and preserving collagen-based tissues for transplantation. 5,336,616, Cl. 435-240.200.

Lloyd, Lawrence A., to Wright & Filippis, Inc. Continuous one-piece prosthesis. 5,336,270, Cl. 623-33.000.

Lloyd Werft Bremerhaven GmbH: *See—*
Klaus, Regul, 5,335,614, Cl. 114-71.000.

Lo, Gordon G.: *See—*
Castillo, Leo S.; and Lo, Gordon G., 5,336,199, Cl. 604-198.000

Localmed, Inc.: *See—*
Kaplan, Aaron V.; Kermode, James R.; and Klein, Enrique J., 5,336,178, Cl. 604-53.000.

Loffler, Johannes: *See—*
Beisswenger, Hans; Eschenburg, Jochim; and Loffler, Johannes, 5,336,317, Cl. 106-745.000.

Lohmann GmbH & Co. KG: *See—*
Czech, Zbigniew; and Seeger, Kurt, 5,336,501, Cl. 424-445.000.

Lohrmann, Dieter R.; and Dropkin, Herbert, to United States of America, Army. Random binary modulated sensor. 5,337,052, Cl. 342-68.000.

Lomas, Arnold W.: *See—*
Graiver, Daniel; and Lomas, Arnold W., 5,336,551, Cl. 428-220.000.

Lombardi, Albert: *See—*
Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Aluma, Zvi, 5,336,979, Cl. 315-362.000.

Lonati, Ettore: *See—*
Lonati, Francesco; Lonati, Ettore; Lonati, Fausto; and Lonati, Tiberio, 5,335,518, Cl. 66-108.00R.

Lonati, Fausto: *See—*
Lonati, Francesco; Lonati, Ettore; Lonati, Fausto; and Lonati, Tiberio, 5,335,518, Cl. 66-108.00R.

Lonati, Francesco; Lonati, Ettore; Lonati, Fausto; and Lonati, Tiberio, to Santoni S.r.l. Circular knitting machine for manufacturing socks, stockings and the like, with device for producing patterns with toweling stitches. 5,335,518, Cl. 66-108.00R.

Lonati, Tiberio: *See—*
Lonati, Francesco; Lonati, Ettore; Lonati, Fausto; and Lonati, Tiberio, 5,335,518, Cl. 66-108.00R.

VOL 1165 ISS 2 AG 9 1994 UMI

Long, Clay, to ProGroup, Inc. Golf club head. 5,335,914, Cl. 273-169.000.

Long, Giorgio: *See—*
Gandolfi, Carmelo A.; De Cillis, Giampiero; Long, Giorgio; and Gallico, Licia, 5,336,676, Cl. 514-222.500.

Long, Norris R., to Coleman Company, Inc., The. Liquid fuel camp-stove with electronic ignition. 5,336,084, Cl. 431-354.000.

Longley, Ross E.: *See—*
Gulavita, Nanda K.; Gunasekera, Sarath P.; Pomponi, Shirley A.; Longley, Ross E.; and McCarthy, Peter J., 5,336,757, Cl. 530-317.000.

Looi, Hon Y.; and Teo, Phuay E. Method of manufacturing a laminated panel. 5,336,354, Cl. 156-277.000

Lopez, Jaime: *See—*
Wojtanek, Guy A.; Lopez, Jaime; and Grafer, G. Scott, 5,336,859, Cl. 200-315.000.

Lorden, Paul R.; and Bonham, Edward L. Automatic shell feeding attachment for a reloading machine. 5,335,578, Cl. 86-45.000.

L'Oreal: *See—*
de Laforcade, Vincent, 5,335,832, Cl. 222-402.130.
Gueret, Jean-Louis, 5,335,465, Cl. 132-218.000.

Loroesch, Juergen: *See—*
Diehl, Manfred; Koenig, Karl-Heinz; Krone, Eckhart; Loroesch, Juergen; Steiner, Norbert; Ullmann, Jochen; and Ziegler, Annette, 5,336,474, Cl. 423-29.000.

Loser, Ralf-Ernst: *See—*
Falb, Wolfgang; Gippert, Karl-Ludwig; Heim, Ulrich; Holscher, Uvo; Kiske, Siegfried; Kullik, Gotz; Loser, Ralf-Ernst; and Maurer, Christoph, 5,335,652, Cl. 128-203.140.

Louis, Didier: *See—*
Desrosiers, Bernard; Louis, Didier; and Steimle, Andre, 5,337,265, Cl. 364-748.000.

Louisiana Pacific Corporation: *See—*
Chase, Peter D., 5,335,473, Cl. 52-745.080.

Love, Robert B.: *See—*
Ganapathi, Srinivasan K.; Love, Robert B.; and Smith, Paul W., 5,336,550, Cl. 428-216.000.

Lovick, James M., to ITT Rayonier, Inc. Desuperheater apparatus and method. 5,336,451, Cl. 261-116.000.

Lowis, Royce: *See—*
Kelly, Brendan P.; and Lowis, Royce, 5,336,943, Cl. 307-310.000.

Lowry, Edward C.: *See—*
Lac, Quoc T.; Lowry, Edward C.; and Madden, Robert B., 5,337,252, Cl. 364-488.000.

Lubrizol Corporation, The: *See—*
Adams, Paul E.; Lange, Richard M.; and Stoldt, Stephen H., 5,336,278, Cl. 44-419.000
Forsberg, John W.; Jahnke, Richard W.; Lange, Richard M.; and DeTar, Marvin B., 5,336,439, Cl. 252-356.000.
Pialet, Joseph W.; Lal, Kasturi; and Bryant, Charles P., 5,336,423, Cl. 252-76.000.

Lucas Industries, Inc.: *See—*
Mohler, David B., 5,337,030, Cl. 310-156.000.

Lucas, Leon T., to North Carolina State University. Method for enhancing turf quality of bent grass. 5,336,661, Cl. 504-126.000.

Lucas, Peter: *See—*
Baker, David C.; Bohrer, Kathryn A.; Flurry, Greogory A.; Lucas, Peter; and Rhyne, James R., 5,337,412, Cl. 395-275.000.

Ludorff, Harald: *See—*
Arvedi, Giovanni; Ludorff, Harald; Thurm, Hans G.; Parschat, Lothar; Pleschiutschnigg, Fritz-Peter; Paris, Hans-Joachim; and Steuten, Michael, 5,335,714, Cl. 164-446.000.

Ludwig, Frank A.: *See—*
Phan, Nguyet H.; Reddy, Vilambi N. R. K.; Ludwig, Frank A.; and Eliash, Bruce M., 5,336,380, Cl. 204-153.100.

Lugosi, Robert: *See—*
Duffy, Paul E.; Hanson, John; Lugosi, Robert; Guptill, Spencer H.; and Kackowski, Matthew, 5,336,013, Cl. 403-2.000

Lugosi, Steve: *See—*
Devilbiss, John J.; Lugosi, Steve; and Ozarski, Robert G., 5,336,325, Cl. 118-719.000.

Lui, Albert; and Fuller, William T., to Tandem Computers Incorporated. Environment monitoring system for standard interface bus computer systems. 5,337,413, Cl. 395-275.000.

Luijks, Gerardus M. J. F.; and Coenen, Hubertus A. M., to U.S. Philips Corporation. High-pressure discharge lamp. 5,336,974, Cl. 315-58.000.

Lundberg, Robert D.: *See—*
Cheradame, Herve M.; Lundberg, Robert D.; Chen, Frank J.; and Habimana, Jean de la Crois, 5,336,745, Cl. 526-347.100.

Lunde, Marvin C.: *See—*
Corbett, William J.; Lunde, Marvin C.; and Shaffer, Peter T. B., 5,335,712, Cl. 164-97.000.

Lundquist, Ingemar; and Thompson, Russell B., to EP Technologies, Inc. Catheter steering mechanism. 5,336,182, Cl. 604-95.000.

Lunt, James: *See—*
Thompson, Ronald J.; Lunt, James; Lamont, John C.; and Kwok, John C., 5,336,719, Cl. 525-71.000

Lupeiko, Vitold M., to Scientific Dimensions USA, Inc. Method of obtaining steel in a liquid bath and the device to carry it out. 5,336,296, Cl. 75-434.000.

Lusher, Ruth H.: *See—*
Krouskop, Thomas A.; and Lusher, Ruth H., 5,335,975, Cl. 297-452.630.

Lushina, James J.: *See—*
Fogg, Raymond C.; and Lushina, James J., 5,337,236, Cl. 364-424.040.

Lustig, Naftali E.; Feenstra, Randall M.; and Guthrie, William L., to International Business Machines Corporation. In-situ endpoint detection method and apparatus for chemical-mechanical polishing using low amplitude input voltage. 5,337,015, Cl. 324-671.000.

Luther, Walter C., Sr. Golf ball retriever and dispenser. 5,335,953, Cl. 294-19.200.

Luthi, Jeffrey L.; and Tauber, Richard, to HR Textron Inc. Apparatus for and method of testing hydraulic/pneumatic apparatus using computer controlled test equipment. 5,337,262, Cl. 364-580.000.

Luthringer, Daniel J.: *See—*
Bell, Leonard; Madri, Joseph A.; Warren, Stephen L.; and Luthringer, Daniel J., 5,336,615, Cl. 435-240.200.

Lutz, Andrr : *See—*
Heymes, Rene ; and Lutz, Andrr , 5,336,776, Cl. 548-194.000.

Lutze, Gerhard: *See—*
Kirschke, Klaus; Lutze, Gerhard; Schmitz, Ernst; and Wolff, Erich, 5,336,780, Cl. 548-371.000.

Lynch, Michael J.: *See—*
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl 364-422.000

Lynch, Richard A.; Kirk, William J.; and Dario, Lawrence J. Protection device for syringe needles. 5,336,185, Cl. 604-110.000.

Lynn, Joy. Fluid for permanent imprinting of textiles and other porous materials without treatment acceptors and long lasting conveyability in a substrate. 5,336,308, Cl. 106-19.00R.

Lynn, Shelby A.; and Howerton, Donald R., to Whirlpool Corporation. Foil access cover for refrigeration deck. 5,335,988, Cl. 312-406.200.

M. W. Kellogg Company, The: *See—*
Durr, Charles A.; Manley, David B.; and McKee, Robert L., 5,335,504, Cl. 62-20.000.

Mabuchi, Yoshiyuki: *See—*
Sugata, Akihiko; Tamura, Kenji; and Mabuchi, Yoshiyuki, 5,336,321, Cl. 118-315.000

MAC Tools, Inc.: *See—*
Casto, Mark R.; Batten, Jeffrey A.; and Mathieu, Raymond J., 5,335,586, Cl. 92-140.000.

Maccoss, Malcolm: *See—*
Ashton, Wallace T.; Cantone, Christine L.; Chang, Linda L.; Maccoss, Malcolm; Chakravarty, Prasun K.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,336,778, Cl. 548-250.000.

MacDonald, John G.: *See—*
Nohr, Ronald S.; and MacDonald, John G., 5,336,707, Cl. 524-265.000.

MacDonald, Robert A.: *See—*
Ryan, Robert P.; Crowther, John B.; and MacDonald, Robert A., 5,337,416, Cl. 395-400.000.

Mackay, John: *See—*
Bowler, Paul R.; Mackay, John; Lammers, Shawn D.; and Fulton, Robert H., 5,335,540, Cl. 73-146.500.

Macomber, Bennie D. Rotary Stirling cycle engine. 5,335,497, Cl. 60-519.000.

Madden, Robert B.: *See—*
Lac, Quoc T.; Lowry, Edward C.; and Madden, Robert B., 5,337,252, Cl. 364-488.000.

Madri, Joseph A.: *See—*
Bell, Leonard; Madri, Joseph A.; Warren, Stephen L.; and Luthringer, Daniel J., 5,336,615, Cl. 435-240.200

Madson, Lawrence E., Jr. Whirlpool bath with a tank with recessed sump. 5,335,375, Cl. 4-541.100.

Maeda, Chikatoshi: *See—*
Iba, Hideki; and Maeda, Chikatoshi, 5,336,466, Cl. 420-406.000.

Maeda, Hiroyuki, to Rohm Co., Ltd. Recording device and video device using the same. 5,337,367, Cl. 381-94.000

Maeda, Masatoshi: *See—*
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,336,409, Cl. 210-490.000.

Maeda, Miyozo, to Fujitsu Limited. Disk storage device having light receiving device located at improved position. 5,337,303, Cl. 369-112.000.

Maeda, Takamichi: *See—*
Chikawa, Yasunori; Honda, Yoshiaki; Mori, Katsunobu; Tajima, Naoyuki; Tsuda, Takashi; and Maeda, Takamichi, 5,336,650, Cl. 437-209.000.

Maeda, Yasuaki, to Sony Corporation. Digital audio signal reproducing apparatus. 5,337,295, Cl. 369-32.000.

Maejima, Masatsugu; Saruwatari, Koichi; Kurosaka, Akihito; Matsuo, Mamoru; Gunji, Hiroyoshi; and Muramatsu, Toshiki, to Fujikura Ltd.; and Sky Aluminium Co., Ltd. Infrared radiation element and process of producing the same. 5,336,341, Cl. 148-415.000.

Maekawa, Keiichiro: *See—*
Shibayama, Takao; Maekawa, Keiichiro; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, 5,335,537, Cl. 73-117.000.

Maekawa, Takashi: *See—*
Sato, Kazuyasu; Maekawa, Takashi; Yamazaki, Mitsuru; and Oishi, Harumichi, 5,337,134, Cl. 355-319.000.

Maenaka, Akihiro: *See—*
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Yamamoto, Tooru; and Asaeda, Tooru, 5,337,083, Cl. 348-256.000.

Maertens, Michael J.: *See—*
Tomell, Phillip A.; and Maertens, Michael J., 5,336,060, Cl. 417-410.00D

Maeshima, Masanobu: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000.

Magauran, Edward D.: *See—*
Cody, Charles A.; and Magauran, Edward D., 5,336,372, Cl 162-5.000.

Magnetrol International, Inc.: *See—*
Leszczynski, Nicholas, 5,335,545, Cl. 73-602.000.

Magoshi, Osam: *See—*
Hidada, Osafumi; Ohe, Michisuke; Magoshi, Osam; Kato, Toshiyuki; and Sakai, Tomoki, 5,336,210, Cl. 604-307.000

Mahawili, Imad. Portable body heating/cooling system and method of use. 5,336,249, Cl. 607-104.000.

Mahler, Edward. Instrument and method for comparing numeric indicia. 5,335,623, Cl. 116-323.000.

Mahlich, Gotthard, to Arthur Eugster AG Elektrohaushaltsgerate. Device for preparing milk froth for cappuccino. 5,335,588, Cl 99-293.000.

Maier, Martin: *See—*
Romann, Peter; Reiter, Ferdinand; and Maier, Martin, 5,335,864, Cl. 239-585.100.

Maier, Willy: *See—*
Killer, Viktor; and Maier, Willy, 5,335,767, Cl. 198-365.000.

Majcher, Joseph: *See—*
Wirick, Cloyd; and Majcher, Joseph, 5,335,603, Cl. 105-406.100

Makada, Takami: *See—*
Ito, Masayuki; and Makada, Takami, 5,337,195, Cl. 360-27.000

Makita, Hiroyuki: *See—*
Shirai, Katutada; Mochizuki, Hideharu; Sato, Osamu; Tsukamoto, Hironori; and Makita, Hiroyuki, 5,337,222, Cl. 362-66.000.

Malachowski, Michael A.; and Kamprath, David R., to Xerox Corporation. Higher productivity trayless duplex printer with variable path velocity. 5,337,135, Cl. 355-319.000.

Malachowski, Michael A.: *See—*
Siegel, Robert P.; Malachowski, Michael A.; Garsin, Paul A.; and Moser, Rabin, 5,337,133, Cl. 355-285.000.

Maldanis, Algert J.; Courts, Robert I.; Dutkevitch, Dennis; and Mooney, David J., to C-Power Companies, Inc. Cold drink vending mechanism. 5,335,818, Cl. 221-131.000.

Maley, Patrick A.: *See—*
Rosenbluth, Robert F.; Lenker, Jay A.; Greene, George R.; Brenneman, Rodney A.; and Maley, Patrick A., 5,336,208, Cl. 604-329.000.

Malhotra, Ripudaman; Tse, Doris S.; and McMillen, Donald F., to SRI International. Hydrocarbon processing using fullerene catalysts. 5,336,828, Cl. 585-654.000.

Malmgren, Richard P.: *See—*
Saito, Yoshio; Lau, James C.; Chan, Steven S.; and Malmgren, Richard P., 5,336,992, Cl. 324-754.000.

Mames, Robert N. Method for the treatment of retinal detachments 5,336,175, Cl. 604-49.000.

Mammino, Joseph: *See—*
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.

Man GHH Schienenverkehrstechnik GmbH: *See—*
Richter, Wolfgang-Dieter; Hachmann, Ulrich; and Frahm, Peter, 5,335,602, Cl. 105-168.000.

Man-Oil Limited: *See—*
McAuliffe, Charles A.; and Benn, Frederick R., 5,336,819, Cl 585-240.000.

Manabe, Hisashi; and Yabe, Hideo, to NEC America, Inc. Feature interaction arbitrator. 5,337,351, Cl. 379-201.000.

Mancilla, Edward; and Lagwinska, Elizabeth M., to American Home Products Corporation. Process for the production of an anticoagulant composition. 5,336,620, Cl. 436-18.000.

Mandel, Paul M.: *See—*
Hughes, Cleveland L.; Williams, Timothy N.; and Mandel, Paul M., 5,336,306, Cl. 106-19.00B

Mandhania, Arun K.: *See—*
Seidel, Jorge P.; and Mandhania, Arun K., 5,337,255, Cl. 364-489.000.

Mangueras Especializadas Agricolas, S.A. De C.V.: *See—*
Martinez, Rodolfo M.; and Martinez, Gabrial M., 5,335,448, Cl 47-47.000.

Maniar, Papu D.: *See—*
Jones, Robert E.; Maniar, Papu D.; and Mogab, C. Joseph, 5,337,207, Cl. 361-321.100.

Manley, David B.: *See—*
Durr, Charles A.; Manley, David B.; and McKee, Robert L., 5,335,504, Cl. 62-20.000.

Mann, Steven W.; and Todd, Jerald C., to Square D Company. Compression tool head assembly. 5,335,531, Cl. 72-416.000.

Mannesmann Aktiengesellschaft: *See—*
Arvedi, Giovanni; Ludorff, Harald; Thurm, Hans G.; Parschat, Lothar; Pleschiutschnigg, Fritz-Peter; Paris, Hans-Joachim; and Steuten, Michael, 5,335,714, Cl. 164-446.000.
Hoppmann, Hans-Dieter; and Frommann, Klaus, 5,335,713, Cl 164-441.000.

Mano, Hiroshi: *See—*
Yamazaki, Yuichi; Mori, Hideyasu; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,337,348, Cl 379-94.000.

Manolas, John A.: *See—*
Van Vlahakis, Eftichios; Manolas, John A.; and Marrese, Michael J., 5,336,424, Cl. 252-89.100.

Manservigi, Alberto: *See—*
Neri, Armando; Cesari, Verter; Roveri, Orlando; and Manservigi, Alberto, 5,335,951, Cl. 293-118.000.

Mansfield, Peter; Guilfoyle, David N.; and Ordidge, Roger J., to British Technology Group Limited. Echo planar imaging using 180 degrees pulses. 5,336,999, Cl. 324-309.000.

Manteiga, John A.: *See—*
Johnson, Kenneth L.; Zlatic, Mark S.; Grammel, Leonard P., Jr., and Manteiga, John A., 5,335,490, Cl. 60-261.000.

Mao, Guo D.: *See—*
Poznansky, Mark J.; and Mao, Guo D., 5,336,493, Cl. 424-94.200

Mara, Richard M.: *See—*
Ross, Gerald F.; and Mara, Richard M., 5,337,054, Cl. 342-93.000.

Marandici, Mircea P.; and Quinn, Matthew J., to International Business Machines Corporation. Automatic threshold generation technique 5,337,373, Cl. 382-51.000.

Maranto, Jack J.: *See—*
Noll, Gregory B.; Maranto, Jack J.; and Kardos, Louis F., 5,337,386, Cl. 385-60.000

Marbach, Gerard, to Sevylor International, SA. Submersible swimming pool cleaner. 5,336,403, Cl. 210-169.000.

Marchionna, Mario: *See—*
Basini, Luca; Marchionna, Mario; Rossini, Stephano; and Sanfilippo, Domenico, 5,336,655, Cl. 502-252.000.

Marcilly, Christian: *See—*
Joly, Jean-Francois; Marcilly, Christian; and Benazzi, Eric, 5,336,833, Cl. 585-731.000.

Marcus, Sanford M.; and Reading, Michael, to TA Instruments, Inc. Method and apparatus for thermal conductivity measurements. 5,335,993, Cl. 374-11.000.

Marcus, William Y. Integral penetrating surgical drain device 5,336,177, Cl. 604-51.000.

Marhold, Albrecht: *See—*
Bohm, Stefan; and Marhold, Albrecht, 5,336,809, Cl. 568-354.000

Marien, Bruce A.: *See—*
Ruggiero, Murray A.; Stegmeier, Renata C.; Marien, Bruce A.; and Wilbourn, Keith O., 5,336,787, Cl. 549-239.000.

Mark IV Industries Limited: *See—*
Browne, John, 5,337,077, Cl. 345-109.000.

Mark, John G.; and Tarzartes, Daniel A., to Litton Systems, Inc. Loop controller for multiplexed triaxial gyro. 5,337,143, Cl. 356-350.000

Marksch, Paul: *See—*
Tavernier, Serge; Op de Beeck, Werner; Van Wunsel, Danny; and Marksch, Paul, 5,336,580, Cl. 430-106.600.

Markyvech, Ronald K.: *See—*
Genise, Thomas A.; and Markyvech, Ronald K., 5,335,566, Cl. 477-124.000.

Marquez, Victor E.; Driscoll, John S.; Wysocki, Ronald J., Jr.; and Siddiqui, Maqbool A., to United States of America, Health and Human Services. 2'-fluorofuranosyl derivatives and novel method of preparing 2'-fluoropyrimidine and 2'-fluoropurine nucleosides 5,336,764, Cl. 536-4.100.

Marquis, Edward T.; Payton, Howard F.; and Meyer, Robert A., to Texaco Chemical Company. Molybdenum recovery. 5,336,790, Cl 549-529.000

Marquis, Edward T.: *See—*
Cuscurida, Michael; Marquis, Edward T.; and Crawford, Wheeler C., 5,336,315, Cl. 106-633.000.

Marrack, Philippa: *See—*
Kotzin, Brian L.; Marrack, Philippa; Kappler, John; and Choi, Youngwon, 5,336,598, Cl. 435-7.240.

Marrero, Thomas R.: *See—*
Cooke, Francis W.; Marrero, Thomas R.; and Yasuda, Hirotsuga K., 5,336,699, Cl. 523-115.000.

Marrese, Michael J.: *See—*
Van Vlahakis, Eftichios; Manolas, John A.; and Marrese, Michael J., 5,336,424, Cl. 252-89.100.

Marrian, Christie R. K.: *See—*
Dobisz, Elizabeth A.; Marrian, Christie R. K.; Peckerar, Martin C.; and Rhee, Kee W., 5,336,892, Cl. 250-492.200.

Marshall, Forrest A. Determining and marking apparatus and method for use in optometry and ophthalmology. 5,335,419, Cl. 33-28.000.

Marsik, Ronald: *See—*
Cortopassi, Jeffery J.; Marsik, Ronald; McDonald, Raymond E.; and Shymanski, Nicholas M., 5,335,996, Cl. 383-207.000.

Martin, Alexander: *See—*
Garner-Gray, Peter F.; Martin, Alexander; Martin, John R.; and Webb, Maurice, 5,336,665, Cl. 512-4.000.

Martin Automatic, Inc.: *See—*
Martin, John R., 5,335,870, Cl. 242-555.400

Martin, Herman H., to Wilshire Partners. Postmix beverage dispenser and a method for making a beverage dispenser. 5,335,819, Cl. 222-146.600.

VOL 1165 ISS 2 AG 9 1994 UMI

Martin, John R., to Martin Automatic, Inc. Flying paster. 5,335,870, Cl. 242-555.400.

Martin, John R.: *See—*
Garner-Gray, Peter F.; Martin, Alexander; Martin, John R.; and Webb, Maurice, 5,336,665, Cl. 512-4.000.

Martin Marietta Corporation: *See—*
Sutherland, Audrey E.; Bridger, Keith; Fiore, Eric M.; Christodoulou, Julie A.; Bailey, Alex E.; and Gelb, Allan S., 5,337,209, Cl. 361-321.500.

Martin Marietta Energy Systems, Inc.: *See—*
Hylton, James O.; and Remenyik, Carl J., 5,335,552, Cl. 73-861.000.

Martin, Michael J.; Roller, George J.; and Van Dongen, Richard, to Xerox Corporation. High capacity dual tray variable sheet size sheet feeder. 5,335,903, Cl. 271-157.000.

Martin, Philippe: *See—*
Lefevre, Herve ; and Martin, Philippe, 5,337,142, Cl. 356-350.000.

Martin, Robert G.: *See—*
Schmidlin, Fred W.; and Martin, Robert G., 5,337,124, Cl. 355-259.000.

Martin, Roland, to Charmilles Technologies SA. Pulses generator for electrodischarge machining. 5,336,864, Cl. 219-69.180.

Martinez, Gabrial M.: *See—*
Martinez, Rodolfo M.; and Martinez, Gabrial M., 5,335,448, Cl. 47-47.000.

Martinez, Rodolfo M.; and Martinez, Gabrial M., to Mangueras Especializadas Agricolas, S.A. De C.V. Agricultural support stakes. 5,335,448, Cl. 47-47.000.

Martinez Taylor, Roberto E., to Compudata SA. High-speed, gravity-fed document feeder for bar-code scanner. 5,336,876, Cl. 235-475.000.

Martino, Germain: *See—*
Boitiaux, Jean-Paul; De Bonneville, Jean; Burzynski, Jean-Pierre; Leger, Gerard; Le Peltier, Fabienne; and Martino, Germain, 5,336,829, Cl. 585-659.000.

Marty, Herbert, to Similasan Corporation. Preservative for pharmaceutical products. 5,336,508, Cl. 424-618.000

Maruyama, Youichi: *See—*
Michishita, Kenji; Ohnishi, Tomoyoshi; Maruyama, Youichi; and Takahashi, Shigemi, 5,336,112, Cl. 439-581.000.

Marx, Daniel R.; and Hurwitt, Steven, to Materials Research Corporation. Target for cathode sputtering. 5,336,386, Cl. 204-298.120.

Masai, Tetsuji: *See—*
Inada, Kenichi; Takeshita, Akihiko; and Masai, Tetsuji, 5,337,138, Cl. 356-36.000.

Maschinenfabrik Kaspar Walter GmbH & Co. KG: *See—*
Ettelbrueck, Ruediger, 5,336,898, Cl. 250-560.000.

Mase, Akira; and Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Electro-optical device. 5,337,171, Cl. 359-53.000.

Mashiko, Chikara: *See—*
Shimizu, Hiroshi; Yoshida, Tetsuo; and Mashiko, Chikara, 5,336,960, Cl. 310-369.000.

Masik, Jiri, to Polyclad Europe AB. Process for the production of a multilayer printed circuit board. 5,336,353, Cl. 156-273.700.

Massholder, Karl F.; and Werz, Wilfried, to Ultra Systems GmbH UV-Oxidation. Process and device for cleaning polluted solids. 5,336,842, Cl. 588-227.000.

Mastroianni, Cesare G.; and Mick, Timothy E. Multi-speed rear wheel drive transmission with reduced in-neutral gear rattle. 5,335,562, Cl. 74-329.000.

Masumi, Ryoji: *See—*
Aoyama, Motoo; Masumi, Ryoji; Ishibashi, Yooko; and Kurihara, Kunitoshi, 5,337,337, Cl. 376-435.000.

Masunaga, Hiroharu: *See—*
Takatsu, Kozo; Wakushima, Yasushi; Masunaga, Hiroharu; and Sawa, Masahiko, 5,336,393, Cl. 208-120.000.

Masuyama, Kenichi: *See—*
Hashimoto, Hiroshi; Ushimaru, Akira; Masuyama, Kenichi; Tanaka, Yasuyuki; and Kobayashi, Hiroyuki, 5,336,561, Cl. 428-336.000.

Masyada, Frank G.; and Williams, Edward L. C. Handicap bath chair. 5,335,377, Cl. 4-578.100.

Matano, Takashi: *See—*
Ikemoto, Seiji; Taki, Katsuhiko; Matano, Takashi; Kawahata, Ichiro; Oguchi, Kiyoshi; Ito, Shigeki; and Miyauchi, Tatsuo, 5,336,530, Cl. 427-503.000.

Materials Research Corporation: *See—*
Marx, Daniel R.; and Hurwitt, Steven, 5,336,386, Cl. 204-298.120.

Mathieu, Raymond J.: *See—*
Casto, Mark R.; Batten, Jeffrey A.; and Mathieu, Raymond J., 5,335,586, Cl. 92-140.000.

Mathre, David J.: *See—*
Schwartz, Robert E.; Kempf, August J.; and Mathre, David J., 5,336,756, Cl. 530-317.000.

Matrana, Barry A.: *See—*
Hsu, Wen-Liang; Halasa, Adel F.; and Matrana, Barry A., 5,336,739, Cl. 526-181.000.

Matsubara, Yoichi: *See—*
Ohtani, Yasumi; Hatakeyama, Hideo; Kuriyama, Toru; Nakagome, Hideki; and Matsubara, Yoichi, 5,335,505, Cl. 62-6.000.

Matsuda, Akira; Shudo, Shigeki; Shimamoto, Noboru; Tanaka, Kohichi; Hashimoto, Hiromasa; and Suzuki, Fumio, to Shin-Etsu Handotai Co., Ltd. Method of chucking semiconductor wafers. 5,335,457, Cl. 51-284.00R.

Matsuda, Shigeki, to Nippondenso Co., Ltd. Process for chemical treatment with phosphate. 5,336,336, Cl. 148-240.000.

Matsuhashi, Toshiaki: *See—*
Taguchi, Masahiro; Tominaga, Motonori; Matsuhashi, Toshiaki; and Fujita, Koichi, 5,335,749, Cl. 180-274.000.

Matsui, Fumio: *See—*
Yanagisawa, Shuichi; Sakai, Tatsuro; Chuman, Takashi; Araki, Yasushi; and Matsui, Fumio, 5,336,584, Cl. 430-273.000.

Matsui, Kazufumi: *See—*
Kanemitsu, Toshihiro; Hayashi, Kaoru; and Matsui, Kazufumi, 5,335,997, Cl. 383-63.000

Matsui, Masataka, to Kabushiki Kaisha Toshiba. Read/write control device for random access memory. 5,337,276, Cl. 365-189.110.

Matsumoto, Kenji: *See—*
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,336,409, Cl. 210-490.000.

Matsumoto, Masahito: *See—*
Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, 5,336,463, Cl. 264-328.700.

Matsumoto, Mikio: *See—*
Uchida, Masaaki; and Matsumoto, Mikio, 5,335,493, Cl. 60-274.000.

Matsumoto, Takeji; Oyamada, Noboru; Kiritani, Michinori; Fukunaga, Teruo; Abe, Yoshio; and Kondoh, Hiroshi, to Mitsubishi Heavy Industries, Ltd.; and Shimizu Construction Co., Ltd. Automatic article transport for building system with centralized routing control. 5,335,601, Cl. 104-88.00R.

Matsumoto, Takeshi: *See—*
Atsumi, Masakazu; Matsumoto, Takeshi; and Yoshida, Toshihiko, 5,337,173, Cl. 359-54.000.

Matsumoto, Yoshimichi: *See—*
Shibayama, Takao; Maekawa, Keiichiro; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, 5,335,537, Cl. 73-117.000.

Matsumura, Shogo: *See—*
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl. 164-475.000.

Matsumura, Teruyuki: *See—*
Fujita, Naoki; Matsumura, Teruyuki; and Murata, Koichi, 5,337,249, Cl. 364-474.220.

Matsumura, Yoshimasa: *See—*
Yoshimura, Takayuki; Kondo, Yoshiteru; Matsumura, Yoshimasa; and Inoue, Kiyoaki, 5,335,682, Cl. 134-72.000.

Matsunaga, Haruhiko: *See—*
Sato, Mutsumi; Nishihara, Motoo; Matsunaga, Haruhiko; and Ueda, Hiromi, 5,337,307, Cl. 370-60.000.

Matsunaga, Hiroshi; and Kondo, Tetsusai, to Kabushiki Kaisha Kawai Gakki Seisakusho. Self playing piano and an apparatus for automatic playing of a piano. 5,335,574, Cl. 84-21.000.

Matsunaga, Kunihiro: *See—*
Ando, Hiromi; Matsunaga, Kunihiro; Sano, Kenji; and Suga, Satoru, 5,335,982, Cl. 303-117.100.

Matsunaga, Noboru; Azeyanagi, Kazuyoshi; Sogaishi, Ichirou; Katakura, Takeo; Ueda, Yoshihisa; and Ohsawa, Takaaki, to Janome Sewing Machine Co., Ltd.; and Terumo Corporation. Method of making bone-implants. 5,336,465, Cl. 419-2.000.

Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, to Suntory Limited; and Matsuo, Hisayuki. Biologically active peptide derived from frog (frog CNP). 5,336,759, Cl. 530-326.000.

Matsuo, Kenzaburo: *See—*
Ozawa, Akira; Matsuyama, Taizo; Homma, Eiichi; Hata, Syunroku; Matsuo, Kenzaburo; and Nakatsuka, Kazushige, 5,336,025, Cl. 408-46.000.

Matsuo, Mamoru: *See—*
Maejima, Masatsugu; Saruwatari, Koichi; Kurosaka, Akihito; Matsuo, Mamoru; Gunji, Hiroyoshi; and Muramatsu, Toshiki, 5,336,341, Cl. 148-415.000.

Matsuo Sangyo Co., Ltd.: *See—*
Kaiju, Haruhisa; Yoshida, Hitoshi; Yukikawa, Junichi; and Yoshizaki, Akihisa, 5,335,828, Cl. 222-195.000.

Matsuo, Yasuhiro: *See—*
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.

Matsuoka, Katsunori: *See—*
Toyoda, Tetsuro; and Matsuoka, Katsunori, 5,336,472, Cl. 422-177.000

Matsushima, Hiroaki: *See—*
Tobiki, Hisao; and Matsushima, Hiroaki, 5,336,469, Cl. 422-100.000.

Matsushita Communication Industrial Corporation of America: *See—*
Daughtry, Earl A.; and Stone, Richard M., 5,337,020, Cl. 330-279.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hiratsuka, Seiichiro; and Toyomura, Yuuji, 5,337,167, Cl. 358-533.000.
Honjo, Masahiro, 5,337,088, Cl. 348-420.000.
Ikeda, Masaharu, 5,336,945, Cl. 307-355.000.
Kado, Hiroyuki; and Tohda, Takao, 5,336,369, Cl. 156-659.100.
Kawakita, Tetsuo; Yoshida, Takayuki; and Hatada, Kenzo, 5,336,547, Cl. 428-209.000.
Konishikawa, Kaoru, 5,337,374, Cl. 384-107.000.
Nomura, Toru, 5,336,367, Cl. 156-655.000.

Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and Yokouchi, Akira, 5,337,371, Cl. 382-14.000.
Shibata, Akihito; and Tsuji, Hiroaki, 5,337,243, Cl. 364-449.000.
Shitanda, Motoshi; Eguchi, Takao; and Miyoshi, Yuji, 5,336,935, Cl. 307-116.000.
Tamura, Akiyoshi; and Kitagawa, Masatoshi, 5,336,361, Cl. 437-42.000.
Tomizawa, Takeshi; Fujita, Tatsuo; Ukai, Kunihiro; and Suzuki, Jiro, 5,335,425, Cl. 34-265.000.
Watanabe, Masaru; and Nishiyama, Tousaku, 5,335,875, Cl 242-341.000.

Matsushita Electric Works, Ltd.: *See—*
Nakagawa, Teruo; and Fujiwara, Shigeki, 5,336,024, Cl. 408-1.00R.
Nobutoki, Kazuhiro; Ueda, Kyoji; and Kita, Hiroyuki, 5,337,029, Cl. 335-78.000.

Matsushita Electronics Corporation: *See—*
Kakiuchi, Takao; and Sato, Kazuo, 5,336,913, Cl. 257-321.000.

Matsushita Graphic Communication Systems, Inc.: *See—*
Furohashi, Ikuko; Miyake, Yoshihiro; and Yokoyama, Takao, 5,337,349, Cl. 379-100.000.

Matsuyama, Akinobu; and Kobayashi, Yoshinori, to Daicel Chemical Industries, Ltd. Process for producing optically active 1,3-butanediol 5,336,619, Cl. 435-280.000.

Matsuyama, Taizo: *See—*
Ozawa, Akira; Matsuyama, Taizo; Homma, Eiichi; Hata, Syunroku; Matsuo, Kenzaburo; and Nakatsuka, Kazushige, 5,336,025, Cl. 408-46.000.

Matsuyama, Tatsuo, to Ogura Clutch Co., Ltd. Rotary piston fluid pump. 5,336,069, Cl. 418-206.000.

Matsuzaki, Shin-ichi, to Sumitomo Electric Industries, Ltd. Location detecting apparatus with overspeed predicting means. 5,337,245, Cl. 364-449.000.

Mattes, Ralf: *See—*
Brinkmann, Ulrich; Mattes, Ralf; and Buckel, Peter, 5,336,602, Cl. 435-69.100.

Matthews, James A., to MicroUnity Systems Engineering, Inc. Bipolar junction exhibiting suppressed kirk effect. 5,336,926, Cl. 257-657.000.

Matthies, Alan: *See—*
Campbell, Chester D.; Harper, Sandra L.; Jain, Virender; Kenyon, Richard L.; Matthies, Alan; and Yabuki, Roy M., 5,335,513, Cl. 62-228.300.

Matubara, Shigeyoshi: *See—*
Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, 5,336,463, Cl. 264-328.700.

Matusaka, Masanobu, to Aisin Seiki Kabushiki Kaisha. Fuel injecting apparatus. 5,335,861, Cl. 239-533.700.

Matuschek, Hans J.: *See—*
Meyer, Robert B.; Lackner, John R.; and Matuschek, Hans J., 5,335,740, Cl. 180-19.100.

Matyas, Melanie E. Protective cover for an infusion device. 5,336,204, Cl. 604-263.000

Maudal, Inge. Tidal system and method for cleansing a harbor. 5,336,018, Cl. 405-52.000.

Maue, H. Winston, to United Technologies Automotive, Inc. Electrical test shunt having dual contact point mating terminals. 5,336,990, Cl. 324-126.000.

Maurer, Christoph: *See—*
Falb, Wolfgang; Gippert, Karl-Ludwig; Heim, Ulrich; Holscher, Uvo; Kiske, Siegfried; Kullik, Gotz; Loser, Ralf-Ernst; and Maurer, Christoph, 5,335,652, Cl. 128-203.140.

Maurer, Gerhard; Braig, Manfred; Auer, Raimund; Goebel, Christoph; Schwarz, Josef; and Voss, Thomas, to Zahnradfabrik Friedrichshafen AG. Control system for operating a ship's motive installation. 5,336,120, Cl. 440-84.000.

Mauro, David; Kozlowski, Ronald; and Benko, Larry, to American Maize Technology, Inc. White waxy starch dextrins for use in adhesives. 5,336,328, Cl. 127-33.000.

Maury, Horst; and Morgen, Helmut, to Stabilus GmbH. Telescopic positioning device. 5,335,949, Cl. 292-338.000.

Maw, Samuel H.: *See—*
Stuck, Robert M.; and Maw, Samuel H., 5,336,512, Cl. 426-523.000

Mawer, Daniel W., to Apco Power-Unit Corporation. Overhead door cable winding drum. 5,335,883, Cl. 242-602.100.

Maxon, Glenway W., III, to Maxon Industries, Inc. Concrete remix and transfer device. 5,335,990, Cl. 366-42.000.

Maxon Industries, Inc.: *See—*
Maxon, Glenway W., III, 5,335,990, Cl. 366-42.000.

May, Klaus P.: *See—*
Kahlert, Joachim; May, Klaus P.; and Noll, Joachim, 5,336,855, Cl 174-250.000.

Mayer, Dieter: *See—*
Stadelmann, Ludwig; and Mayer, Dieter, 5,335,522, Cl. 68-23.100.

Mayer, Steven T.; Feikert, John H.; Kaschmitter, James L.; and Pekala, Richard W., to University of California, Regents of the. Method for forming a cell separator for use in bipolar-stack energy storage devices. 5,336,274, Cl. 29-623.400.

Mazda Motor Corporation: *See—*
Hashimoto, Kazuhiko; Imamura, Yoshihiko; Yamamoto, Toshihide; and Noh, Yoshihisa, 5,335,634, Cl. 123-188.140.
Okuda, Tsunehisa, 5,337,239, Cl. 364-424.100.
Yamamoto, Tadanobu; and Kumada, Hiroyoshi, 5,335,933, Cl. 280-675.000.

MCA Recreation Services, Inc.: *See—*
Gurr, Robert H., 5,335,436, Cl. 40-412.000.

McAuliffe, Charles A.; and Benn, Frederick R., to Man-Oil Limited Liquefaction of cellulose. 5,336,819, Cl. 585-240.000.

McCarthy, Peter J.: *See—*
Gulavita, Nanda K.; Gunasekera, Sarath P.; Pomponi, Shirley A.; Longley, Ross E.; and McCarthy, Peter J., 5,336,757, Cl. 530-317.000.

McCarthy, William P.: *See—*
Kempf, David; and McCarthy, William P., 5,335,554, Cl 73-861.730.

McClelland, Ralph A.: *See—*
Hancock, John P.; and McClelland, Ralph A., 5,335,512, Cl 62-292.000.

McClure, David C., to SGS-Thomson Microelectronics, Inc. Charge sharing flash clear for memory arrays. 5,337,273, Cl. 365-168.000.

McCormack, Ann L.: *See—*
Strack, David C.; Connor, Linda A.; Gwaltney, Sharon W.; McCormack, Ann L.; Shawver, Susan E.; and Shultz, Jay S. 5,336,552, Cl. 428-224.000

McCormick, Robert L.: *See—*
Chin, Stephen; Parille, Donald R.; Aimone, Paul R.; McCormick, Robert L.; Johnson, Paul R.; and Kilinski, Bart M., 5,335,717, Cl 164-519.000.

McCoy, Stephen T.: *See—*
O'Brien, Kevin J.; Thompson, Pete A.; and McCoy, Stephen T., 5,336,410, Cl. 210-512.100.

McCullough, Brian C.: *See—*
Baker, Roger J.; Noel, Matthew P.; and McCullough, Brian C., 5,335,770, Cl. 206-433.000.

McDaniel, John M.; and Kiser, Michael W., to Chapman Lake Instruments, Inc. Bone face cutter. 5,336,226, Cl. 606-79.000.

McDonald, Raymond E.: *See—*
Cortopassi, Jeffery J.; Marsik, Ronald; McDonald, Raymond E.; and Shymanski, Nicholas M., 5,335,996, Cl. 383-207.000.

McDougall, Ian L.; Armstrong, Alan G. M.; and Hawkes, Robert C., to Oxford Medical Limited; and Du Pont de Nemours, E. I., and Company. Magnetic field generating assembly. 5,337,001, Cl. 324-318.000.

McElroy, Roderick O., to Terra Gaia Environmental Group Inc. Process for the treatment of electric arc furnace dust. 5,336,297, Cl 75-725.000.

McGee, Joseph A.; and Valint, Paul L., Jr., to Bausch & Lomb Incorporated. Siloxane macromonomers. 5,336,797, Cl. 556-419.000.

McGlynn, Daniel R.: *See—*
Wang, Ynjiun P.; Swartz, Jerome; and McGlynn, Daniel R., 5,337,361, Cl. 380-51.000.

McGovern, John J.: *See—*
Kinigakis, Panagiotis; McGovern, William A.; and McGovern, John J., 5,335,482, Cl. 53-448.000.

McGovern, William A.: *See—*
Kinigakis, Panagiotis; McGovern, William A.; and McGovern, John J., 5,335,482, Cl. 53-448.000.

McGrew, Gordon; and Synosky, Steven P., to Wm. Wrigley Jr. Company, The. Wax-free low calorie, high base chewing gum. 5,336,509, Cl. 426-3.000.

McIntyre, Jack W. Oil recovery combined with injection of produced water. 5,335,732, Cl. 166-313.000.

McIntyre, John: *See—*
Chin, Albert K.; McIntyre, John; and Morse, Stephen A., 5,336,237, Cl. 606-167.000.

McIver, Chandler H., to Square D Company. Multichip semiconductor small outline integrated circuit package structure. 5,337,216, Cl. 361-728.000.

McKee, Michael J.; and Pawlikowski, Joseph M., to Whitaker Corporation, The. Method of making a pin grid array and terminal for use therein. 5,336,118, Cl. 439-876.000

McKee, Robert L.: *See—*
Durr, Charles A.; Manley, David B.; and McKee, Robert L., 5,335,504, Cl. 62-20.000.

McKennon, J. T.; Hains, Norman L.; and Hoffman, David C., to Chemical Lime Company. Method for producing enhanced soil stabilization reactions between lime and clay soils due to the effect of silica addition. 5,336,022, Cl. 405-263.000.

McKenzie, Jeffrey J., to Fluoroware, Inc. Three-way weir style valve. 5,335,696, Cl. 137-883.000.

McKenzie, Philip J., to Compaq Computer Corp. Tapped inductor slave regulating circuit. 5,336,985, Cl. 323-266.000.

McKeown, Dennis. Refrigerant release prevention system. 5,335,511, Cl. 62-174.000.

McLaughlin, Michael F. Siding spacer and method. 5,335,423, Cl. 33-647.000.

McLeskey, Edward P.: *See—*
Carr, Dennis C.; McLeskey, Edward P.; and Sarnacki, Frank H., 5,337,219, Cl. 361-794.000.

McMahan, Steven C.; and Hudepohl, Lawrence H., to Cyrix Corporation. Carry skip adder with independent carry-in and carry skip paths. 5,337,269, Cl. 364-787.000.

McMichael, James W.: *See—*
Tsou, Yu-Min; McMichael, James W.; and Beaver, Richard N., deceased, 5,336,384, Cl. 204-252.000.

McMillan, Robert, to Scripps Research Institute, The. Cell surface antigen detection method. 5,336,597, Cl. 435-7.200.

McMillen, Donald F.: *See—*
Malhotra, Ripudaman; Tse, Doris S.; and McMillen, Donald F., 5,336,828, Cl. 585-654.000.

McNab, David: *See—*
Cassidy, Barrie; McNab, David; and Rooney, James, 5,337,345, Cl. 379-58.000.

VOL 1165 ISS 2 AG 9 1994 UMI

McNamara, James D., to Calgon Carbon Corporation. Product/-process/application for removal of mercury from liquid hydrocarbon. 5,336,835, Cl. 585-820.000.
McNeilab, Inc.: *See—*
Raffa, Robert B.; and Vaught, Jeffrey L., 5,336,691, Cl. 514-629.000.
McNeilus, Brandon: *See—*
Christenson, Ronald E.; and McNeilus, Brandon, 5,335,958, Cl. 296-56.000.
McNeilus Truck and Manufacturing, Inc.: *See—*
Christenson, Ronald E.; and McNeilus, Brandon, 5,335,958, Cl. 296-56.000.
McSweeney, Robert T., to Osram Sylvania Inc. Process for making apatitic phosphors. 5,336,437, Cl. 252-301.40P.
Mead Corporation, The: *See—*
Stoddard, David C. F.; Orr, Ladd M.; Cooper, Alan D.; and Jarmuz, Jeffrey J., 5,335,593, Cl. 108-165.000
Meador, John T.: *See—*
Gordon, Pat L.; Meador, John T.; Keimel, John G.; and Mehra, Rahul, 5,336,253, Cl. 607-122.000.
Meazza, Giovanni: *See—*
Camaggi, Giovanni; Chiarino, Dario; Fantucci, Mario; and Meazza, Giovanni, 5,336,664, Cl. 504-261.000
Mectra Labs, Inc.: *See—*
Clement, Thomas P., 5,335,671, Cl. 128-753.000.
Medi-Flex Hospital Products, Inc.: *See—*
Krantz, Kermit E., 5,336,219, Cl. 606-15.000.
Medical Scientific, Inc.: *See—*
Nardella, Paul C., 5,335,668, Cl. 128-734.000.
Medicis Pharmaceutical Corporation: *See—*
Gans, Eugene H.; and Suess, Hans R., 5,336,692, Cl. 514-772.000.
Medtronic, Inc.: *See—*
Brennen, Kenneth R.; Williams, Terrell M.; and Gabler, Robert A., 5,336,254, Cl. 607-129.000.
Gordon, Pat L.; Meador, John T.; Keimel, John G.; and Mehra, Rahul, 5,336,253, Cl. 607-122.000.
Weijand, Koen J., 5,336,244, Cl. 607-21.000.
Megahertz Corporation: *See—*
Aldous, Stephen C.; and Dake, Guy M., 5,336,099, Cl. 439-131.000.
Mehlhaff, John: *See—*
Fair, Jim; and Mehlhaff, John, 5,336,641, Cl. 437-248.000.
Mehra, Rahul: *See—*
Gordon, Pat L.; Meador, John T.; Keimel, John G.; and Mehra, Rahul, 5,336,253, Cl. 607-122.000.
Meier, Joseph F.; and Melamed, Nathan T., to Westinghouse Electric Corp. Three dimensional diffraction grating and crystal filter. 5,337,185, Cl. 359-321.000.
Meiji Seika Kaisha, Ltd.: *See—*
Koga, Jinichiro; Adachi, Takashi; and Hidaka, Hidemasa, 5,336,766, Cl. 536-23.200.
Melamed, Nathan T.: *See—*
Meier, Joseph F.; and Melamed, Nathan T., 5,337,185, Cl. 359-321.000.
Meltzer, Mark J.; and Tompkins, Tommas J., to O'Neill, Inc. Method for forming an adhesively bonded seam between resiliently compressible fabric sheets. 5,336,346, Cl. 156-73.400.
Mensing, James R.: *See—*
Myers, Thomas M.; and Mensing, James R., 5,336,066, Cl. 417-555.100.
Mercedes-Benz AG: *See—*
Schrader, Jurgen; Guckel, Martin; and Claar, Klaus-Peter, 5,335,959, Cl. 296-108.000.
Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, 5,335,937, Cl. 280-728.00B.
Wunderlich, Klaus; Neubrand, Franz; Schmidt, Erwin; Buhl, Hans-Wilhelm; Wirbeleit, Friedrich; and Hanauer, Horst, 5,335,500, Cl. 60-609.000.
Mercedes-Benzag: *See—*
Niemeier, Gerd; and Schneider, Frank, 5,336,407, Cl. 210-249.000.
Mercer, John E. Locator device for continuously locating a dipole magnetic field transmitter and its method of operation. 5,337,002, Cl. 324-326.000.
Merck & Co., Inc.: *See—*
Ashton, Wallace T.; Cantone, Christine L.; Chang, Linda L.; Maccoss, Malcolm; Chakravarty, Prasun K.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,336,778, Cl. 548-250.000.
Dininno, Frank P.; Greenlee, Mark L.; Rano, Thomas A.; and Lee, Wendy, 5,336,674, Cl. 514-210.000.
Schwartz, Robert E.; Kempf, August J.; and Mathre, David J., 5,336,756, Cl. 530-317.000.
Strader, Catherine D.; and Fong, Tung M., 5,336,595, Cl. 435-6.000.
Merck Patent Gesellschaft mit bschrankter Haftung: *See—*
Bruckner, Hans-Dieter; and Subrod, Ines, 5,336,310, Cl. 106-403.000.
Merck Patent Gesellschaft mit Beschrankter Haftung: *See—*
Noguchi, Tamio; and Yazawa, Masahiko, 5,336,309, Cl. 106-23.00C.
Merilainen, Pekka: *See—*
Blomqvist, Kaj; Mustonen, Mika; Saarelainen, Asko; and Merilainen, Pekka, 5,335,653, Cl. 128-204.180.
Merrifield, David L.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Merrifield, David L.; Molloy, James J.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,337,032, Cl. 355-260.000.
Metagal Industria E Comercio Ltda.: *See—*
do Espirito Santo, Antonio F., 5,337,188, Cl. 359-872.000.
Metal-Fab, Inc.: *See—*
Ray, Shaun, 5,336,130, Cl. 454-65.000.
Metallgesellschaft AG: *See—*
Beisswenger, Hans; Eschenburg, Jochim; and Loffler, Johannes, 5,336,317, Cl. 106-745.000.
Metalworks, Inc.: *See—*
Hartrum, Laude E.; and Smuda, Raymond J., 5,335,986, Cl. 312-220.000.
Hodge, David H.; and Geers, Carl J., 5,335,987, Cl. 312-323.000.
Metz, Michael, to Hollister Incorporated. External male catheter, applicator and method of use. 5,336,211, Cl. 604-352.000.
Metzler, Richard; Schmieding, Reinhold; and Schmid, Peter M., to Liebscherkunststofftechnik; and Arthrex Medizinische Instrumente GmbH. Bone-dowel assembly for anchoring a suture. 5,336,240, Cl. 606-232.000.
Meyer, John H.; and Gajewski, Kenneth J., to Ford Motor Company. Solar load reduction glazing unit with electroluminescent element 5,336,965, Cl. 313-498.000.
Meyer, Robert A.: *See—*
Marquis, Edward T.; Payton, Howard F.; and Meyer, Robert A., 5,336,790, Cl. 549-529.000.
Meyer, Robert B.; Lackner, John R.; and Matuschek, Hans J., to Scott Fetzer Company, The. Drive system. 5,335,740, Cl. 180-19.100.
Meyers, Theodore W., to Tuf-Tite, Inc. Flexible pipe connector 5,335,945, Cl. 285-236.000.
Meyers, Theodore W., to Tuf-Tite, Inc. Method for connecting a pipe connector to a hard plastic pipe. 5,336,351, Cl. 156-158.000.
Meyns, Ignace: *See—*
Beyaert, Daniel; Meyns, Ignace; Sampers, Dirk; and Vandeweghe, Michel, 5,335,699, Cl. 139-82.000.
Michael, Daniel W.; and Bacon, Dennis R., to Procter & Gamble Company, The. Liquid hard surface detergent compositions containing beta-aminoalkanols. 5,336,445, Cl. 252-548.000.
Michael, Keith W.: *See—*
Haluska, Loren A.; and Michael, Keith W., 5,336,532, Cl. 427-515.000.
Michalowski, Christopher: *See—*
Tomantschger, Klaus; and Michalowski, Christopher, 5,336,571, Cl. 429-66.000.
Michie, Terry K., to AlliedSignal Inc. Non-linear radar range scale display arrangement. 5,337,057, Cl. 342-176.000.
Michigan Technological University, Board of Control of: *See—*
Kawatra, Surendra K.; and Eisele, Timothy C., 5,335,785, Cl. 209-170.000.
Michishita, Kenji; Ohnishi, Tomoyoshi; Maruyama, Youichi; and Takahashi, Shigemi, to Murata Manufacturing Co., Ltd. Coaxial microstrip line transducer. 5,336,112, Cl. 439-581.000.
Michlin, Steven B. Copier and printer toner shipping, handling and sealing systems. 5,337,126, Cl. 355-260.000.
Mick, Timothy E.: *See—*
Mastroianni, Cesare G.; and Mick, Timothy E., 5,335,562, Cl. 74-329.000.
Micks, Henry B., Jr.: *See—*
Ammann, Hans H.; Kovacs, Richard F.; Micks, Henry B., Jr.; Potechin, Jamey N.; Simons, Everett F.; and Tetz, John G., 5,335,405, Cl. 29-407.000.
Micron Semiconductor, Inc.: *See—*
Roberts, Gregory N., 5,336,908, Cl. 257-173.000.
Micron Technology, Inc.: *See—*
Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., 5,336,649, Cl. 437-209.000.
Microsoft Corporation: *See—*
Dennis, Stephen V., 5,337,258, Cl. 364-551.010.
MicroUnity Systems Engineering, Inc.: *See—*
Matthews, James A., 5,336,926, Cl. 257-657.000.
Miesterfeld, Frederick O.: *See—*
Hormel, Ronald F.; and Miesterfeld, Frederick O., 5,337,042, Cl. 340-826.080.
Mihoichi, Nobuhiko: *See—*
Yoshino, Akira; Kiyama, Hiromi; and Mihoichi, Nobuhiko, 5,336,300, Cl. 95-96.000.
Mihota, Norihito: *See—*
Yamanouchi, Kazuhiko; Mihota, Norihito; Kato, Shunji; Terada, Hiromu; and Ogata, Junichi, 5,336,957, Cl. 310-313.00D.
Mikami, Takeshi: *See—*
Inaba, Yoshihiro; and Mikami, Takeshi, 5,336,581, Cl. 430-110.000.
Mikogami, Yukihiro: *See—*
Nakano, Yoshihiko; Hayase, Shuzi; Murai, Shinji; Mikogami, Yukihiro; and Yoshizumi, Akira, 5,336,736, Cl. 525-474.000.
Mikus, Marian: *See—*
Weinl, Gerold; and Mikus, Marian, 5,336,292, Cl. 75-230.000.
Milbrath, Dean S.: *See—*
Heilmann, Steven M.; Rasmussen, Jerald K.; Krepski, Larry R.; Milbrath, Dean S.; and Coleman, Patrick L., 5,336,742, Cl. 526-260.000.
Miller, Bruce W. Isotonic cervical exercise device. 5,336,139, Cl. 482-10.000.
Miller, Gabriel L.: *See—*
Boie, Robert A.; and Miller, Gabriel L., 5,337,353, Cl. 379-388.000.
Miller, Harry. Fail-safe load support system. 5,335,755, Cl. 187-8.770.

Miller, Kenneth G.; and Grosholz, James R., to Air-Shields, Inc. Infant incubator humidifier. 5,336,156, Cl. 600-22.000.
Miller, Matthew S., to General Electric Company. Convection oven tapered air heating chamber. 5,336,867, Cl. 219-400.000.
Miller, Maurice: *See—*
Grinfas, Zvi; Weil, Georges; and Miller, Maurice, 5,335,942, Cl. 283-74.000.
Milliken Research Corporation: *See—*
Winstead, Charles D.; and Cantrell, Ralph A., 5,336,866, Cl. 219-411.000.
Mimura, Takashi, to Fujitsu Limited. Logic circuit with enhancement type FET and Schottky gate. 5,336,949, Cl. 307-448.000.
Minamino, Naoto: *See—*
Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, 5,336,759, Cl. 530-326.000.
Minamiyama, Eiji: *See—*
Nakajima, Kichio; Honma, Kazuo; Sumiya, Yukio; Yamaguchi, Takeshi; Inamitsu, Hiroshi; and Minamiyama, Eiji, 5,335,547, Cl. 73-622.000.
Minamizawa, Hidehito: *See—*
Okazaki, Iwao; Abe, Koichi; Minamizawa, Hidehito; and Fukuyama, Takeo, 5,336,079, Cl. 428-323.000.
Mindler, Richard E., to W. R. Grace & Co.-Conn. Method for forming a vermiculite film. 5,336,348, Cl. 156-231.000.
Minebea Kabushiki-Kaisha (Minebea Co., Ltd.): *See—*
Suzuki, Yuzuru; Fujitani, Sakae; Inagaki, Masaaki; and Uchida, Hitoshi, 5,336,955, Cl. 310-90.000.
Miner Enterprises, Inc.: *See—*
Jensen, Erik D., 5,335,403, Cl. 29-173.000.
Mink, Robert I.; and Nowlin, Thomas E., to Mobil Oil Corporation. High activity polyethylene catalysts prepared with alkoxysilane reagents. 5,336,652, Cl. 502-125.000.
Minne, Andre: *See—*
Pieterse, Ian; Snyman, Nicolaas; and Minne, Andre, 5,335,739, Cl. 180-6.300.
Minnesota Mining and Manufacturing Company: *See—*
Bedingham, William, 5,335,658, Cl. 128-632.000.
Debe, Mark K., 5,336,558, Cl. 428-323.000.
Eian, Gilbert L., 5,336,740, Cl. 526-194.000.
Heilmann, Steven M.; Rasmussen, Jerald K.; Krepski, Larry R.; Milbrath, Dean S.; and Coleman, Patrick L., 5,336,742, Cl. 526-260.000.
Henson, Gordon D.; and Lee, Nicholas A., 5,337,390, Cl. 385-81.000.
Rolando, Richard J.; Kotnour, Thomas A.; and Sax, James E., 5,336,717, Cl. 525-64.000.
Tang, Yuan-Ming; and Stephan, Gregory H. C., 5,336,405, Cl. 210-232.000.
Minoura, Akira: *See—*
Murakawa, Masatake; Minoura, Akira; Kurohara, Kazuaki; Imanishi, Ryozo; Yamashita, Nobuyuki; and Harada, Eriya, 5,335,487, Cl. 56-10.500.
Minoura, Nobuo. Image display apparatus. 5,337,092, Cl. 348-776.000.
Mintel, Thomas E.: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,335,389, Cl. 15-167.100.
Miron, Paul: *See—*
Torrens, Beverly; and Miron, Paul, 5,335,887, Cl. 248-49.000.
Mirshafiee, David; and Bergen, Gary R., to Emhart Inc. Door lockset with spindle bearing. 5,335,950, Cl. 292-356.000.
Mirumachi, Mitsuaki: *See—*
Hashimoto, Katsuhiko; Fukasaku, Yoshinori; Fujino, Shinichi; and Mirumachi, Mitsuaki, 5,336,046, Cl. 415-119.000.
Misawa, Hidenobu; and Seike, Shoji, to NGK Insulators, Ltd. Power generating equipment. 5,336,569, Cl. 429-31.000.
Mischenko, Nicholas; and Davis, Scott B., to Motorola, Inc. Electronic device powering system. 5,336,984, Cl. 320-2.000.
Mishima, Hidetoshi, to Mitsubishi Denki Kabushiki Kaisha. Video signal encoding apparatus. 5,337,087, Cl. 348-405.000.
Mishima, Kyoichi, to Mitsuboshi Belting Ltd. Method of forming rib surfaces on a power transmission belt. 5,335,456, Cl. 51-281.00R.
Misono, Kenji: *See—*
Fukuchi, Shunsei; Isohata, Kyouhei; Iwamoto, Makoto; Misono, Kenji; and Takanasshi, Hiroshi, 5,336,535, Cl. 428-1.000.
Misra, Chanakya; and Sucech, Steven W., to Aluminum Company of America. Steam producing process. 5,336,480, Cl. 423-580.100.
Misset, Onno: *See—*
van Eekelen, Christiaan A. G.; Mulleners, Leonardus J. S. M.; Van Der Laan, Johannes C.; Misset, Onno; Cuperus, Roelck A.; and Lensink, Johan H. A., 5,336,611, Cl. 435-221.000.
Mistlberger, Fritz: *See—*
Koch, Rudolf; and Mistlberger, Fritz, 5,337,009, Cl. 330-253.000.
Mita Industrial Co., Ltd.: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000.
Miyamoto, Eiichi; Hanatani, Yasuyuki; Iwasaki, Hiroaki; Mizuta, Yasufumi; and Kawahara, Akihiko, 5,336,576, Cl. 430-58.000.
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.
Mitani, Tsuyoshi: *See—*
Iino, Akira; Iwamoto, Ryuichiro; and Mitani, Tsuyoshi, 5,336,394, Cl. 208-216.00R.
Mitsch, Brian M., to General Signal Corporation. Electrical power cord entry device. 5,336,850, Cl. 174-65.0SS.
Mitsuba Electric Mfg. Co., Ltd.: *See—*
Kawakami, Yasushi, 5,335,412, Cl. 29-564.100.
Mitsubishi Denki K.K.: *See—*
Shiroyama, Shigeru, 5,336,954, Cl. 310-88.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Ban, Cozy; Ohmori, Toshiaki; and Fukumoto, Takaaki, 5,336,356, Cl. 156-345.000.
Haga, Akira; Nasuno, Hiroshi; and Fujimura, Takeo, 5,336,963, Cl. 313-402.000.
Hashima, Kazuo; Kawano, Yuji; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Nakaki, Yoshiyuki; Tokunaga, Takashi; and Fujii, Yoshio, 5,337,305, Cl. 369-116.000.
Ipposhi, Takashi; and Nishimura, Tadashi, 5,336,918, Cl. 257-419.000.
Ishikawa, Takayoshi; and Yamasaki, Shinsaku, 5,337,210, Cl. 361-608.000.
Kaneko, Toshihide; and Toide, Eiichi, 5,337,093, Cl. 348-778.000.
Katayama, Kazuyori; and Fujiwara, Yasuhiro, 5,337,237, Cl. 364-426.040.
Kobayashi, Kazuo; and Yamamoto, Makoto, 5,337,281, Cl. 365-218.000.
Kusunoki, Shigeru, 5,336,904, Cl. 257-23.000.
Mishima, Hidetoshi, 5,337,087, Cl. 348-405.000.
Naitou, Yasuo; Wada, Shunichi; Tsutsumi, Kazumichi; and Kohge, Shinichi, 5,335,979, Cl. 303-100.000.
Nakagawa, Akihiro; Demizu, Akira; and Nishiyama, Ryoji, 5,337,240, Cl. 364-431.010.
Ogawa, Kenji, 5,337,017, Cl. 324-682.000.
Ogushi, Tetsurou; Murakami, Masaaki; Yabuchi, Kazuyoshi; and Yao, Akira, 5,335,720, Cl. 165-104.260.
Satou, Kimitoshi, 5,335,550, Cl. 73-727.000.
Sekiya, Mutsuo; Asada, Satoshi; and Fukuhara, Katsuyuki, 5,336,068, Cl. 418-55.200.
Suwa, Makoto; Miyamoto, Hiroshi; and Mori, Shigeru, 5,337,272, Cl. 365-149.000.
Takahama, Shinobu; and Kamishima, Kunitaka, 5,336,364, Cl. 156-630.000.
Takahira, Kenichi, 5,337,063, Cl. 343-741.000.
Tsutsumi, Yasutsugu; and Tanaka, Sueyoshi, 5,336,272, Cl. 29-25.010.
Yoshida, Kazuo, 5,336,857, Cl. 200-277.000.
Mitsubishi Heavy Industries, Ltd.: *See—*
Matsumoto, Takeji; Oyamada, Noboru; Kiritani, Michinori; Fukunaga, Teruo; Abe, Yoshio; and Kondoh, Hiroshi, 5,335,601, Cl. 104-88.00R.
Mitsubishi Petrochemical Co., Ltd.: *See—*
Niimura, Youichi; Kozaki, Michio; Yamagata, Hisashi; and Yukawa, Hideaki, 5,336,608, Cl. 435-189.000.
Mitsubishi Rayon Co., Ltd.: *See—*
Tone, Seiji; Nakata, Akira; and Yamamoto, Naoki, 5,336,725, Cl. 525-254.000.
Mitsuboshi Belting Ltd.: *See—*
Mishima, Kyoichi, 5,335,456, Cl. 51-281.00R.
Mitsui, Akio, to Fuji Photo Film Co., Ltd. Silver halide photographic photosensitive materials. 5,336,590, Cl. 430-547.000.
Mitsui, Kenichi; and Fukuzono, Isao, to Toyoda Gosei Co., Ltd. Hose coupling structure. 5,335,944, Cl. 285-156.000.
Mitsui Mining & Smelting Co., Ltd.: *See—*
Yamanouchi, Kazuhiko; Mihota, Norihito; Kato, Shunji; Terada, Hiromu; and Ogata, Junichi, 5,336,957, Cl. 310-313.00D.
Mitsui Petrochemical Industries, Ltd.: *See—*
Kobayashi, Keiji; Kaneko, Akira; Hata, Katsuya; and Kobayashi, Yoshinori, 5,336,071, Cl. 425-66.000.
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 5,336,747, Cl. 526-348.600.
Tsutsui, Toshiyuki; and Toyota, Akinori, 5,336,746, Cl. 526-348.600.
Mitsui Sugar Co., Ltd.: *See—*
Sugitani, Toshiaki; Tsuyuki, Kenichiro; Miyata, Yukie; Ebashi, Tadashi; Okui, Hideaki; Nakajima, Yoshikazu; and Sawada, Kenzo, 5,336,617, Cl. 435-252.100.
Mitsui Toatsu Chemicals, Incorporated: *See—*
Haseyama, Ryuji; Takagi, Masatoshi; Hayashi, Kouzou; Sasagawa, Katsuyoshi; Kuroda, Kazuyuki; Kano, Taisaku; and Shikai, Kiyoshi, 5,336,749, Cl. 528-73.000.
Kiyoura, Tadamitsu; Jimbo, Takashi; Kogure, Yasuo; and Kanaya, Kazuo, 5,336,440, Cl. 252-373.000.
Miura, Hisanori: *See—*
Kawamoto, Seiichi; Sato, Maki; Narabu, Tadakuni; and Miura, Hisanori, 5,337,163, Cl. 358-482.000.
Miyabe, Takao: *See—*
Sakai, Shinsuke; and Miyabe, Takao, 5,337,232, Cl. 364-419.080.
Miyagawa, Kozo; and Clark, Gregory A., to Tsubaki Conveyor of America, Inc. Compact drive unit for an overhead conveyor system. 5,335,781, Cl. 198-834.000.
Miyaji, Teruo: *See—*
Okuno, Toshifumi; and Miyaji, Teruo, 5,336,724, Cl. 525-143.000.
Miyajima, Yoshiaki: *See—*
Onishi, Masashi; Nakazato, Koji; Chigusa, Yoshiki; Watanabe, Minoru; and Miyajima, Yoshiaki, 5,337,401, Cl. 385-142.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Miyake, Yasuhiko: *See—*
Nagai, Masahiro; Abe, Kazuo; Nireki, Tadashi; Yamagishi, Hisanobu; and Miyake, Yasuhiko, 5,335,527, Cl. 72-262.000.

Miyake, Yoshihiro: *See—*
Furohashi, Ikuko; Miyake, Yoshihiro; and Yokoyama, Takao, 5,337,349, Cl. 379-100.000.

Miyamoto, Eiichi; Hanatani, Yasuyuki; Iwasaki, Hiroaki; Mizuta, Yasufumi; and Kawahara, Akihiko, to Mita Industrial Co., Ltd. Electrophotographic photosensitive member having a photosensitive layer comprising the azo compound. 5,336,576, Cl. 430-58.000.

Miyamoto, Hirofumi: *See—*
Yagi, Akira; and Miyamoto, Hirofumi, 5,336,887, Cl. 250-306.000.

Miyamoto, Hiroshi: *See—*
Suwa, Makoto; Miyamoto, Hiroshi; and Mori, Shigeru, 5,337,272, Cl. 365-149.000.

Miyamoto, Kimiaki: *See—*
Nakajima, Kenji; and Miyamoto, Kimiaki, 5,336,534, Cl. 427-600.000.

Miyamoto, Mamoru: *See—*
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,336,332, Cl. 134-22.100.

Miyata, Haruyuki: *See—*
Fujita, Yasuhiko; and Miyata, Haruyuki, 5,336,915, Cl. 257-369.000.

Miyata Industry Co., Ltd.: *See—*
Takagaki, Makoto; Karasawa, Tadashi; and Futami, Kazumitu, 5,335,929, Cl. 280-283.000.

Miyata, Keiji: *See—*
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,336,679, Cl. 514-300.000.

Miyata, Yukie: *See—*
Sugitani, Toshiaki; Tsuyuki, Kenichiro; Miyata, Yukie; Ebashi, Tadashi; Okui, Hideaki; Nakajima, Yoshikazu; and Sawada, Kenzo, 5,336,617, Cl. 435-252.100.

Miyauchi, Tatsuo: *See—*
Ikemoto, Seiji; Taki, Katsuhiko; Matano, Takashi; Kawahata, Ichiro; Oguchi, Kiyoshi; Ito, Shigeki; and Miyauchi, Tatsuo, 5,336,530, Cl. 427-503.000.

Miyawaki, Naokazu: *See—*
Ohto, Osamu; Hamano, Tomoyuki; Kozuka, Eiji; and Miyawaki, Naokazu, 5,337,286, Cl. 365-230.010.

Miyazaki, Kazuhiko: *See—*
Tanagawa, Kouji; and Miyazaki, Kazuhiko, 5,337,280, Cl. 365-218.000.

Miyazaki, Shinichi, to NEC Corporation. Output level control circuit for use in RF transmitter. 5,337,006, Cl. 330-130.000.

Miyazaki, Shinichi: *See—*
Sano, Haruyuki; Otani, Takao; Nishitani, Masayoshi; Takatsu, Mikio; Ueyoko, Kiyoshi; Yamamoto, Toshiaki; and Miyazaki, Shinichi, 5,335,707, Cl. 152-543.000.

Miyoshi, Yuji: *See—*
Shitanda, Motoshi; Eguchi, Takao; and Miyoshi, Yuji, 5,336,935, Cl. 307-116.000.

Mizokami, Kazunori: *See—*
Nonaka, Osamu; Kindaichi, Takeshi; and Mizokami, Kazunori, 5,337,116, Cl. 354-403.000.

Mizrahi, Victor, to AT&T Bell Laboratories. Article comprising an optical waveguide with in-line refractive index grating. 5,337,382, Cl. 385-37.000.

Mizu Systems, Inc.: *See—*
Graiver, Daniel; and Lomas, Arnold W., 5,336,551, Cl. 428-220.000.

Mizuguchi, Osamu; and Mori, Teruyuki, to Kyocera Elco Corporation. Split tpe card-edge connector. 5,336,117, Cl. 439-717.000.

Mizuguchi, Yoshinori: *See—*
Kamiya, Kiyoshi; Uchiyama, Shigeru; Ohishi, Hideshi; Sugiyama, Norikazu; Mizuguchi, Yoshinori; and Hirano, Masahiko, 5,337,081, Cl. 348-61.000.

Mizuno, Seinosuke; and Yamada, Yoshihiko, to Tomey Corporation. Eye observation apparatus. 5,337,094, Cl. 351-206.000.

Mizuno, Takehisa: *See—*
Takahashi, Katsuji; Sath, Yuji; and Mizuno, Takehisa, 5,336,735, Cl. 525-423.000.

Mizushima, Yoshihiko: *See—*
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000.

Mizuta, Yasufumi: *See—*
Miyamoto, Eiichi; Hanatani, Yasuyuki; Iwasaki, Hiroaki; Mizuta, Yasufumi; and Kawahara, Akihiko, 5,336,576, Cl. 430-58.000

Mizutani, Hiroshi: *See—*
Kinouchi, Yohsuke; Ai, Minoru; Mizutani, Hiroshi; Okuno, Osamu; Yamauchi, Kiyotaka; Yamataka, Akira; and Suzuki, Hiroya, 5,337,033, Cl. 335-302.000.

Mizzi, John V.: *See—*
Nakao, Naomi L.; Wilk, Peter J.; and Mizzi, John V., 5,336,181, Cl 604-83.000.

Mobil Oil Corp.: *See—*
Dwyer, Francis G.; and Valyocsik, Ernest W., 5,336,478, Cl. 423-708.000
Horodysky, Andrew G.; Hsu, Shih-Ying; Jeng, Andrew; and Rudnick, Leslie R., 5,336,420, Cl. 252-34.000.
Mink, Robert I.; and Nowlin, Thomas E., 5,336,652, Cl. 502-125.000.
Owen, Hartley; and Harandi, Mohsen N., 5,336,820, Cl. 585-323.000

Mochizuki, Hideharu: *See—*
Shirai, Katutada; Mochizuki, Hideharu; Sato, Osamu; Tsukamoto, Hironori; and Makita, Hiroyuki, 5,337,222, Cl. 362-66.000

Moeck, Gerhard; and Finkenauer, Robert, to Schwan-Stabilo Schwanhaeusser GmbH & Co. Applicator device. 5,336,005, Cl. 401-68.000

Moffatt, Frank S.; and Winstanley, David, to Zeneca Limited. Process for the preparation of isothiazolinones. 5,336,777, Cl. 548-209.000

Mogab, C. Joseph: *See—*
Jones, Robert E.; Maniar, Papu D.; and Mogab, C. Joseph, 5,337,207, Cl. 361-321.100.

Mogi, Fumio, to Fuji Photo Film Co., Ltd. Method and apparatus for adding water to photosensitive material processor. 5,337,114, Cl 354-324.000.

Mogilnicki, Victor D., to Kennametal Inc. Tigthening fixture with built-in torque readout device. 5,335,556, Cl. 73-862.210.

Mohar, Louis: *See—*
Russell, Larry L.; and Mohar, Louis, 5,336,398, Cl. 210-143.000.

Mohler, David B., to Lucas Industries, Inc. Permanent magnet brushless torque actuator. 5,337,030, Cl. 310-156.000.

Mokorarat, Dulyarat: *See—*
Stoffers, Mark A.; Mokorarat, Dulyarat; and Peceimer, Bradley T., 5,335,458, Cl. 51-317.000.

Moldavsky, Boris, to Grumman Aerospace Corporation. Miniature keeper bar. 5,336,564, Cl. 428-418.000.

Molina, Gustavo: *See—*
Hughes, Thomas S.; and Molina, Gustavo, 5,336,870, Cl. 235-379.000.

Mollenhoff, Horst: *See—*
Dehn, Gunther; Mollenhoff, Horst; and Wegelin, Rudiger, 5,335,608, Cl. 110-264.000.

Moller, Brent: *See—*
Petersen, Flemming O.; Lindgren, Claes; Moller, Brent; and Vigenberg, Stig F., 5,335,461, Cl. 52-72.000.

Molloy, James J.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Merrifield, David L.; Molloy, James J.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,337,032, Cl. 355-260.000.

Molloy, Nicholas J., to AT&T Bell Laboratories. Synchronous digital signal to asynchronous digital signal desynchronizer. 5,337,334, Cl. 375-118.000.

Moltgen, Bruno: *See—*
Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, 5,335,937, Cl. 280-728.00B.

Molyneaux, David A.: *See—*
Chmielewski, Thomas; Molyneaux, David A.; and Braum, William O., 5,336,988, Cl. 324-76.190.

Monget, Daniel, to Bio Merieux. Method and reagents for the detection of microorganisms. 5,336,600, Cl. 435-34.000.

Moni, Shankar: *See—*
Popli, Sanjay; Pickett, Scott; Hawley, David; Moni, Shankar; and Camarota, Rafael C., 5,336,950, Cl. 307-465.000.

Montgomery, Lionel C., to Advanced Ceramics Corporation. Ceramic composite and method. 5,336,454, Cl. 264-63.000.

Moon, Chi J.; Park, Sae C.; Kim, Myoung G.; Oh, Sea H.; Yim, Seong S.; Park, Nam J.; Choi, Young K.; and Sung, Moo J., to Dae Woong Pharmaceutical Co., Ltd. 3-substituted cephem compounds. 5,336,673, Cl. 514-202.000.

Mooney, David J.: *See—*
Maldanis, Algert J.; Courts, Robert I.; Dutkevitch, Dennis; and Mooney, David J., 5,335,818, Cl. 221-131.000.

Moore, Eric R.: *See—*
Sullivan, James B.; and Moore, Eric R., 5,336,167, Cl. 604-22.000.

Moore, Pamela K. Hair clip. 5,335,680, Cl. 132-276.000.

Morand, Michel, to Wyant & Company Limited. Perforated paper towel dispenser. 5,335,811, Cl. 221-45.000.

Mordon, Serge: *See—*
Buys, Bruno; Sozanski, Jean-Pierre; Mordon, Serge; Brunetaud, Jean-Marc; and Moschetto, Yves, 5,336,217, Cl. 606-9.000.

Moreau, Jacques A.: *See—*
Balhadere, Aline; Bernard, Bruno; Moreau, Jacques A.; Mouricou, Isabelle; and Robin-Brosse, Christian, 5,336,522, Cl. 427-226.000.

Morgan, Roger J.: *See—*
Castonguay, Roger N.; Arnold, David; Morgan, Roger J.; Glabau, Frederic W.; Tucholski, Henry J.; and Reyes, Thomas T. B., 5,337,031, Cl. 335-201.000

Morgen, Helmut: *See—*
Maury, Horst; and Morgen, Helmut, 5,335,949, Cl. 292-338.000.

Mori, Hideyasu: *See—*
Yamazaki, Yuichi; Mori, Hideyasu; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,337,348, Cl. 379-94.000.

Mori, Katsunobu: *See—*
Chikawa, Yasunori; Honda, Yoshiaki; Mori, Katsunobu; Tajima, Naoyuki; Tsuda, Takaaki; and Maeda, Takamichi, 5,336,650, Cl. 437-209.000.

Mori, Shigeru: *See—*
Fukushima, Motoo; and Mori, Shigeru, 5,336,798, Cl. 556-430.000.
Suwa, Makoto; Miyamoto, Hiroshi; and Mori, Shigeru, 5,337,272, Cl. 365-149.000.

Mori, Shingo: *See—*
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.

Mori, Takehisa: *See—*
Komatsu, Kiyoshi; Mori, Takehisa; and Takinami, Masao, 5,335,498, Cl. 60-528.000.

Mori, Teruyuki: *See—*
Mizuguchi, Osamu; and Mori, Teruyuki, 5,336,117, Cl. 439-717.000.

Mori, Yukio: *See—*
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Yamamoto, Tooru; and Asaeda, Tooru, 5,337,083, Cl. 348-256.000.

Morin, Joseph O. R.; and Richard, Joseph F. R. J., to Northern Telecom Limited. Distribution frame and optical connector holder combination. 5,337,400, Cl. 385-135.000.

Morishita, Akira; Ota, Tsuyoshi; Suzuki, Tatsuya; Ito, Sukehide; and Ryuko, Yoshikazu, to Toshiba Machine Co., Ltd. Apparatus for dispensing a sparkling or bubbling beverage. 5,335,705, Cl. 141-275.000.

Morita, Eitaroh: *See—*
Sakata, Ko; Morita, Eitaroh; and Takezono, Tetsuya, 5,336,605, Cl. 435-119.000.

Morita, Katsumi, to Applied Materials, Inc. Low temperature dry etch of copper. 5,336,363, Cl. 156-625.000.

Morita, Tsuneo: *See—*
Dorricott, Martin R.; Gillard, Clive H.; Richards, John W.; Morita, Tsuneo; Galt, James J.; David, Morgan W. A.; Burns, James E.; and Varsani, Shima R., 5,337,154, Cl. 348-448.000.

Moriwaki, Fumio: *See—*
Endo, Hiroyuki; Hachiya, Satoshi; and Moriwaki, Fumio, 5,336,435, Cl. 252-299.610.

Morman, Michael T., to Kimberly-Clark Corporation. Composite elastic necked-bonded material. 5,336,545, Cl. 428-152.000.

Moroney, William N.: *See—*
Cairns, Thomas M.; and Moroney, William N., 5,336,102, Cl. 439-272.000.

Morrell, Roger J.; Larson, David A.; and Ruzzi, Peter L., to United States of America, Interior. Double acting bit holder. 5,335,977, Cl. 299-92.000.

Morris, Christopher J.: *See—*
Good, Peter A.; Morris, Christopher J.; Claxson, Andrew W. D.; and Blake, David R., 5,336,248, Cl. 607-90.000.

Morris, Gregory J.: *See—*
Hsueh, Chi-Fu; Morris, Gregory J.; and Goelz, Stefan, 5,336,215, Cl. 606-4.000.

Morris, William I.: *See—*
Hochreiter, Eric P.; Ehrne, Franklin D.; Morris, William I.; and Schwab, Frederick J., 5,337,120, Cl. 355-47.000.

Morrison, Anthony: *See—*
Jones, Malcolm G.; Kimsey, Ian M.; Morrison, Anthony; Wong, Jeanette Y.; and Van Heteren, Jan, 5,336,514, Cl. 426-564.000.

Morse, Stephen A.: *See—*
Chin, Albert K.; McIntyre, John; and Morse, Stephen A., 5,336,237, Cl. 606-167.000.

Morton International, Inc.: *See—*
Munroe, David C., 5,336,479, Cl. 423-515.000.

Moschetto, Yves: *See—*
Buys, Bruno; Sozanski, Jean-Pierre; Mordon, Serge; Brunetaud, Jean-Marc; and Moschetto, Yves, 5,336,217, Cl. 606-9.000.

Moser, Rabin: *See—*
Siegel, Robert P.; Malachowski, Michael A.; Garsin, Paul A.; and Moser, Rabin, 5,337,133, Cl. 355-285.000.

Moses, Edward I.: *See—*
Daly, Thomas P.; Moses, Edward I.; Patterson, Ralph W.; and Sawicki, Richard H., 5,337,333, Cl. 372-94.000.

Mosquera, Rene A., to ITT Corporation. Peg held connector. 5,336,110, Cl. 439-554.000.

Moss, Bernard: *See—*
Berzofsky, Jay A.; Hosmalin, Anne; Clerici, Mario S.; Germain, Ronald N.; Shearer, Gene; Moss, Bernard; and Pendleton, Charles D., 5,336,758, Cl. 530-326.000.

Moss, Mary G.; Bewer, Terry; Cuzmar, Ruth M.; Hawley, Dan W.; and Flaim, Tony D., to Brewer Science, Inc. Positive working polyamic acid/imide photoresist compositions and their use as dielectrics. 5,336,925, Cl. 257-643.000.

Moss, Richard; and Erlich, Fred, to Erlich, Fred; Kamienny, Fred; and Moss, Richard. Medical cassette for ambulatory medical infusion pumps with access port for reservoir bags and method of resupplying bags in said cassette. 5,336,190, Cl. 604-153.000.

Mostafazadeh, Shahram, to National Semiconductor Corporation. Self-aligning single point bonding tool. 5,335,842, Cl. 228-179.100.

Motisi, Stephen A., to D & M Plastics Corporation. Apparatus for filling an injection mold. 5,336,075, Cl. 425-190.000.

Motorola: *See—*
Jones, Robert E.; Maniar, Papu D.; and Mogab, C. Joseph, 5,337,207, Cl. 361-321.100.

Motorola, Inc.: *See—*
Ackley, Donald E., 5,337,327, Cl. 372-45.000.
Barrett, Raymond L., Jr.; and Herold, Barry W., 5,337,007, Cl. 330-253.000.
Buchholz, Dale R.; Doss, William K.; Robbins, Karen E.; Yednak, Mark A.; and Hamilton, R. Lee, Jr., 5,337,313, Cl. 370-94.100.
Juskey, Frank J.; and Hendricks, Douglas W., 5,336,931, Cl. 257-787.000.
Lebby, Michael S., 5,337,391, Cl. 385-88.000.
Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hartman, Davis H., 5,337,397, Cl. 385-93.000.
Lee, Hsing-Chung, 5,336,327, Cl. 118-730.000.
Lehning, Heinz, 5,336,947, Cl. 307-360.000.
Mischenko, Nicholas; and Davis, Scott B., 5,336,984, Cl. 320-2.000.
Nagaraj, Benamanahalli K.; and Hause, Vern, 5,336,639, Cl. 437-217.000.
Sundaram, Lalgudi M. G.; and Tracht, Neil, 5,336,921, Cl. 257-531.000.
Weiss, Kenneth P.; DeRango, Mario F.; Schroeder, Daniel R.; Mutz, Leslie D.; Lacy, Brian W.; and Chapman, Mark D., 5,337,316, Cl. 371-20.500.

Moulded Fibre Technology, Inc.: *See—*
Baker, Roger J.; Noel, Matthew P.; and McCullough, Brian C., 5,335,770, Cl. 206-433.000.

Moulinex (Societe Anonyme): *See—*
Guillot, Gerard L. H.; and Bouleau, Jean-Paul A., 5,337,037, Cl. 337-363.000.

Mouricou, Isabelle: *See—*
Balhadere, Aline; Bernard, Bruno; Moreau, Jacques A.; Mouricou, Isabelle; and Robin-Brosse, Christian, 5,336,522, Cl. 427-226.000.

Mousseaux, Daniel; Gelly, Gerard; and Grard, Emmanuel, to Alcatel Cit. Method of coupling an optical fiber to an optical component on the same substrate. 5,337,392, Cl. 385-90.000.

Mouterde, Renaud; and Bouzianne, Michel, to Giat Industries. System for automatically loading ammunition into the chamber of a barrel of a gun. 5,335,580, Cl. 89-47.000.

Mouton, David E., to Atlantic Richfield Company. Combination scratcher-centralizer for wellbore casings. 5,335,723, Cl. 166-173.000.

Mueller, Johann R.: *See—*
Heinzmann, Peter L.; Mueller, Johann R.; and Nassehi, Mehdi M., 5,337,312, Cl. 370-85.900.

Mueller, King L.; and Mueller, Reno A. Lever resistance selection mechanism for strength training. 5,336,150, Cl. 482-112.000.

Mueller, Peter M.; and Schreiner, Robert J., to Aluminum Company of America. Body maker apparatus. 5,335,532, Cl. 72-450.000.

Mueller, Reno A.: *See—*
Mueller, King L.; and Mueller, Reno A., 5,336,150, Cl. 482-112.000.

Mueller, Ulrich; Weiss, Ralf; Diehl, Klaus; Sandrock, Gerhard; and Sauvage, Lothar, to BASF Aktiengesellschaft. Removal of acetaldehyde from hydrocarbons. 5,336,836, Cl. 585-824.000.

Mukai, Takeshi, to Suzuki Motor Corporation. Evaporated fuel controller. 5,335,638, Cl. 123-520.000.

Mukai, Takuo: *See—*
Otake, Masahiro; Takahashi, Toyofumi; Nishiumi, Satoshi; and Mukai, Takuo, 5,337,069, Cl. 345-123.000.

Mukaiya, Hitoshi, to Canon Kabushiki Kaisha. Focus detecting device. 5,337,115, Cl. 354-402.000.

Mukunoki, Yasuo; Shinagawa, Yukio; Yamanouchi, Junichi; and Hashimoto, Kiyokazu, to Fuji Photo Film Co., Ltd. Photographic material. 5,336,589, Cl. 430-501.000.

Mulleners, Leonardus J. S. M.: *See—*
van Eekelen, Christiaan A. G.; Mulleners, Leonardus J. S. M.; Van Der Laan, Johannes C.; Misset, Onno; Cuperus, Roelck A.; and Lensink, Johan H. A., 5,336,611, Cl. 435-221.000.

Muller, Hans-Jurgen; and Sprenger, Wilfried, to Deutsche Airbus GmbH. Attendant passenger seat row including assist space. 5,335,963, Cl. 297-244.000.

Muller, Manfred: *See—*
Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, 5,335,937, Cl. 280-728.00B.

Muller Martini Versand Systeme AG: *See—*
Killer, Viktor; and Maier, Willy, 5,335,767, Cl. 198-365.000.

Muller, Robert, to Dr. Ing. h.c.F. Porsche AG. All-wheel drive for a motor vehicle. 5,335,747, Cl. 180-249.000.

Muller, Rudolf R. M.; and Babej, Jiri, to Profil Verbindungstechnik GmbH & Co. KG. Method of attaching a fastening element to a panel. 5,335,411, Cl. 29-512.000.

Mulligan, Seamus: *See—*
Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., 5,336,504, Cl. 424-462.000.

Mulligan, William P.: *See—*
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., 5,336,335, Cl. 136-258.000.

Mumola, Peter B., to Hughes Aircraft Company. Apparatus and method for performing thin film layer thickness metrology using a correlation reflectometer. 5,337,150, Cl. 356-382.000.

Mundt, Rolf-Hans: *See—*
Kolzer, Peter; and Mundt, Rolf-Hans, 5,337,059, Cl. 342-360.000.

Munroe, David C., to Morton International, Inc. High yield sodium hydrosulfite generation. 5,336,479, Cl. 423-515.000.

Munster, Heinrich F.: *See—*
Kohler, Gregory R.; Lahner, William F., III; Munster, Heinrich F.; and Dahlqvist, Karl T. G., 5,335,865, Cl. 241-28.000.

Muntean, George L.; Wilson, Harry L.; and Gant, Gary L., to Cummins Engine Company, Inc. Lubrication oil controlled unit injector. 5,335,852, Cl. 239-89.000.

Muntnich, Leo; Soyka, Wilfried; and Steinberger, Wolfgang, to Ina Walzlager Schaeffler KG. Axial bearing unit. 5,335,998, Cl. 384-622.000.

Mura, Hajime: *See—*
Ota, Junzo; Mura, Hajime; and Kawachi, Toshihiko, 5,336,162, Cl. 602-41.000.

Murabayashi, Noboru; and Seki, Takahito, to Sony Corporation. Apparatus for selectively recording and/or reproducing a video signal

VOL 1165 ISS 2 AG 9 1994 UMI

with a PCM audio signal or with an FM audio signal. 5,337,193, Cl. 360-19.100.

Murai, Shinji: *See*—
Nakano, Yoshihiko; Hayase, Shuzi; Murai, Shinji; Mikogami, Yukihiro; and Yoshizumi, Akira, 5,336,736, Cl. 525-474.000.

Murakami, Harunori; and Ohara, Shohei, to Nippon Sheet Glass Co., Ltd. System for inspecting electrically conductive patterns such as antenna patterns on window glass. 5,337,004, Cl. 324-505.000.

Murakami, Kanji. Multisensation creation apparatus employing stereoscopic imagery. 5,336,132, Cl. 472-59.000.

Murakami, Kyoshiro; Yamashita, Tetsuji; Yoshikawa, Tomio; Yasuda, Hiromu; and Zushi, Shizuo, to Hitachi, Ltd. Cooling apparatus and temperature control method therefor. 5,335,708, Cl. 165-1.000.

Murakami, Masaaki: *See*—
Ogushi, Tetsurou; Murakami, Masaaki; Yabuchi, Kazuyoshi; and Yao, Akira, 5,335,720, Cl. 165-104.260.

Murakami, Norio, to Oki Electric Industry Co., Ltd. Charge coupled device of high sensitivity and high integration. 5,336,910, Cl. 257-239.000.

Murakawa, Masatake; Minoura, Akira; Kurohara, Kazuaki; Imanishi, Ryozo; Yamashita, Nobuyuki; and Harada, Eriya, to Kubota Corporation. Engine speed control apparatus for a working vehicle. 5,335,487, Cl. 56-10.500.

Muramatsu, Toshiki: *See*—
Maejima, Masatsugu; Saruwatari, Koichi; Kurosaka, Akihito; Matsuo, Mamoru; Gunji, Hiroyoshi; and Muramatsu, Toshiki, 5,336,341, Cl. 148-415.000.

Muranaka, Takeshi: *See*—
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 5,336,747, Cl. 526-348.600.

Muraoka, Kenichiro: *See*—
Hamabe, Tsutomu; Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Sato, Noriharu, 5,337,365, Cl. 381-71.000.

Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Yamamoto, Tooru; and Asaeda, Tooru, to Sanyo Electric Co., Ltd. Digital video camera suppressing low-saturation chrominance. 5,337,083, Cl. 348-256.000.

Murata Kikai Kabushiki Kaisha: *See*—
Iida, Masahiro; and Takeuchi, Yoshihisa, 5,337,159, Cl. 358-447.000.
Inada, Kenichi; Takeshita, Akihiko; and Masai, Tetsuji, 5,337,138, Cl. 356-36.000.
Kuwahara, Tetsuya, 5,337,350, Cl. 379-100.000.

Murata, Koichi: *See*—
Fujita, Naoki; Matsumura, Teruyuki; and Murata, Koichi, 5,337,249, Cl. 364-474.220.

Murata Manufacturing Co., Ltd.: *See*—
Michishita, Kenji; Ohnishi, Tomoyoshi; Maruyama, Youichi; and Takahashi, Shigemi, 5,336,112, Cl. 439-581.000.
Tani, Hiroji; and Honma, Kanehito, 5,336,301, Cl. 106-1.180.

Muromachi, Takashi; Kawaguchi, Jun; and Nakai, Hidemi, to Nippon Sheet Glass Co., Ltd. Automotive window glass. 5,336,565, Cl. 428-432.000.

Murphy, Christopher J.; and Bliss, Ronald E., to Jervis B. Webb Company. Method and apparatus for belt conveyor load tracking. 5,335,777, Cl. 198-502.300.

Murphy, Gregory B.; Lang, Kevin W.; Frake, Barry N.; and Entenmann, William J., to Kraft General Foods, Inc. Polysaccharide hydrocolloid-containing food products. 5,336,515, Cl. 426-573.000.

Murphy, Robert H., to R. H. Murphy Company, Inc. Spacer trays for stacking storage trays with integrated circuits. 5,335,771, Cl. 206-328.000.

Murphy, William: *See*—
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.

Murray, Christopher K.; Beckvermit, Jeffrey T.; and Ziebarth, Timothy D., to Hauser Chemical Research, Inc. Oxidation products of cephalomannine. 5,336,684, Cl. 514-449.000.

Murray, William M. Dental and orthopedic cement methods and preforms. 5,336,700, Cl. 523-116.000.

Murtiashaw, Charles W.; and Quallich, George J., to Pfizer Inc. Certain 3,4-dihydro-2H-pyrano[2,3-b]pyridines. 5,336,771, Cl. 546-116.000.

Musco Corporation: *See*—
Gordin, Myron K.; and Crookham, Joe P., 5,337,221, Cl. 362-66.000.

Musiol, Lothar, to Siemens Aktiengesellschaft. Integrated circuit arrangement. 5,337,019, Cl. 330-277.000.

Musto, Dominick J.: *See*—
Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., 5,335,559, Cl. 73-866.000.

Mustonen, Mika: *See*—
Blomqvist, Kaj; Mustonen, Mika; Saarelainen, Asko; and Merilainen, Pekka, 5,335,653, Cl. 128-204.180.

Muth, Gunter: *See*—
Wohlleben, Wolfgang; Muth, Gunter; Puhler, Alfred; and Rieb, Gunther J., 5,336,607, Cl. 435-172.300.

Mutharasan, Rajakkannu: *See*—
DeYoung, David H.; Apelian, Diran; and Mutharasan, Rajakkannu, 5,336,295, Cl. 75-407.000.

Muto, Itsuo: *See*—
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,336,332, Cl. 134-22.100.

Mutz, Leslie D.: *See*—
Weiss, Kenneth P.; DeRango, Mario F.; Schroeder, Daniel R.; Mutz, Leslie D.; Lacy, Brian W.; and Chapman, Mark D., 5,337,316, Cl. 371-20.500.

Muzik, Charles J.; and Yoest, Kenneth L., to Dravo Lime Company. Method of slaking lime. 5,336,481, Cl. 423-640.000.

Mycogen Corporation: *See*—
Payne, Jewel; and Sick, August J., 5,336,492, Cl. 424-93.200.

Myers, Harold D.: *See*—
Tuinstra, Hendrik E.; and Myers, Harold D., 5,336,750, Cl. 528-196.000.

Myers, Michael V. Aircraft external lighting apparatus, method and coding system for aircraft identification. 5,337,047, Cl. 340-945.000.

Myers, Raymond L., to Ray Myers Corporation. Manual paper management system. 5,335,797, Cl. 211-50.000.

Myers, Thomas M.; and Mensing, James R., to Myers, Thomas M. Balloon pump. 5,336,066, Cl. 417-555.100.

Myers, William D. Keratome. 5,336,235, Cl. 606-166.000.

N. Jonas & Co., Inc.: *See*—
Antelman, Marvin S., 5,336,416, Cl. 210-764.000.

Na, George C.; and Rajagopalan, Natarajan, to Sterling Winthrop Inc. Use of charged phospholipids to reduce nanoparticle aggregation. 5,336,507, Cl. 424-489.000.

Nadler, Kirk C.; Broussard, Thomas R.; and Pitre, Joseph K., to Exxon Chemical Patents Inc. Stripper-reactor for volatile cobalt recovery. 5,336,473, Cl. 422-193.000.

Nae, Hemi N.; Reichert, William W.; and Eng, Alice C., to Rheox, Inc. Organoclay compositions prepared with a mixture of two organic cations and their use in non-aqueous systems. 5,336,647, Cl. 501-146.000.

Nag, Abhijit: *See*—
Livesey, Stephen A.; del Campo, Anthony A.; Nag, Abhijit; Nichols, Ken B.; and Coleman, Christopher, 5,336,616, Cl. 435-240.200.

Nagae, Yoshiharu: *See*—
Kitajima, Masaaki; Hiyama, Ikuo; and Nagae, Yoshiharu, 5,337,070, Cl. 345-211.000.

Nagai, Masahiro; Abe, Kazuo; Nireki, Tadashi; Yamagishi, Hisanobu; and Miyake, Yasuhiko, to Hitachi Cable, Ltd. Method and apparatus for manufacturing a composite metal wire by using a two wheel type continuous extrusion apparatus. 5,335,527, Cl. 72-262.000.

Nagakawa, Tadashi: *See*—
Harada, Hiroyuki; Tajima, Akio; Kogo, Takashi; Nagakawa, Tadashi; Oda, Hajima; Inoue, Haruo; and Hayakawa, Tsuyoshi, 5,336,004, Cl. 400-624.000.

Nagakura, Yasuyuki: *See*—
Tanaka, Noriyuki; Takishita, Takashi; Fukushima, Kiyoshi; Nagakura, Yasuyuki; Inoue, Kaoru; Nishijima, Tsuyoshi; and Inada, Haruhiro, 5,336,524, Cl. 427-240.000.

Nagamine, Akira, to Whitaker Corporation, The. Connector. 5,336,104, Cl. 439-364.000.

Nagamori, Shigenobu: *See*—
Fukuda, Toshio; Hattori, Shinobu; and Nagamori, Shigenobu, 5,336,057, Cl. 417-395.000.

Nagano, Shigenori: *See*—
Hori, Nobuo; Takano, Yoshinobu; Takahashi, Takashi; Nagano, Shigenori; and Hashimoto, Reiji, 5,337,169, Cl. 359-3.000.

Nagaoka, Kenji; and Gotoh, Satoru, to Sumitomo Chemical Company, Limited. Resin composition. 5,336,713, Cl. 524-540.000.

Nagaraj, Benamanahalli K.; and Hause, Vern, to Motorola, Inc. Method for securing a semiconductor chip to a leadframe. 5,336,639, Cl. 437-217.000.

Nagashima, Kiyomichi; and Uchida, Hiroshi, to Tokyo Electric Co., Ltd. Label printer. 5,336,003, Cl. 400-708.000.

Nagashima, Sadao: *See*—
Kinoshita, Satoshi; Nagashima, Sadao; and Yamada, Tooru, 5,335,664, Cl. 128-696.000.

Nagerl, Hans: *See*—
Kubein-Meesenburg, Dietmar; and Nagerl, Hans, 5,336,267, Cl. 623-22.000.

Nagorny, Ulrich: *See*—
Bunte, Reinhard; Gress, Wolfgang; Nagorny, Ulrich; and Gorzinski, Manfred, 5,336,313, Cl. 106-504.000.

Nahas, Nicholas C.: *See*—
Gorbaty, Martin L.; and Nahas, Nicholas C., 5,336,705, Cl. 524-68.000.

Nai Neway, Inc.: *See*—
Pierce, William C., 5,335,695, Cl. 137-627.500.
Pierce, William C., 5,335,932, Cl. 280-788.000.

Naitou, Yasuo; Wada, Shunichi; Tsutsumi, Kazumichi; and Kohge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Control device for vehicle including anti-skid braking system and power steering control system. 5,335,979, Cl. 303-100.000.

Najle, Esteban G.; and Buckley, Robert M., to Harris Corporation; and Advanced Testing Technologies, Inc. Phase noise measurements utilizing a frequency down conversion/multiplier, direct spectrum measurement technique. 5,337,014, Cl. 324-613.000.

Naka, Motohiko: *See*—
Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and Yokouchi, Akira, 5,337,371, Cl. 382-14.000.

Nakagaki, Shintaro: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, 5,337,078, Cl. 346-108.000.

Nakagami, Yoshitake, to Fuji Electric Co., Ltd. Stationary induction apparatus containing uninflammable insulating liquid. 5,336,847, Cl. 174-17.0LF.

Nakagawa, Akihiro; Demizu, Akira; and Nishiyama, Ryoji, to Mitsubishi Denki Kabushiki Kaisha. Misfiring sensing apparatus. 5,337,240, Cl. 364-431.010.

Nakagawa, Teruo; and Fujiwara, Shigeki, to Matsushita Electric Works, Ltd. Precision drilling method. 5,336,024, Cl. 408-1.00R.

Nakagome, Hideki: *See*—
Ohtani, Yasumi; Hatakeyama, Hideo; Kuriyama, Toru; Nakagome, Hideki; and Matsubara, Yoichi, 5,335,505, Cl. 62-6.000.

Nakai, Hidemi: *See*—
Muromachi, Takashi; Kawaguchi, Jun; and Nakai, Hidemi, 5,336,565, Cl. 428-432.000.

Nakai, Kunio: *See*—
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.

Nakajima, Kenji; and Miyamoto, Kimiaki, to Fuji Photo Film Co., Ltd. Coating method employing ultrasonic waves. 5,336,534, Cl. 427-600.000.

Nakajima, Kichio; Honma, Kazuo; Sumiya, Yukio; Yamaguchi, Takeshi; Inamitsu, Hiroshi; and Minamiyama, Eiji, to Hitachi Construction Machinery Co., Ltd. Ultrasonic flaw detector. 5,335,547, Cl. 73-622.000.

Nakajima, Masahiro: *See*—
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideako; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,336,688, Cl. 514-492.000.

Nakajima, Yoshikazu: *See*—
Sugitani, Toshiaki; Tsuyuki, Kenichiro; Miyata, Yukie; Ebashi, Tadashi; Okui, Hideaki; Nakajima, Yoshikazu; and Sawada, Kenzo, 5,336,617, Cl. 435-252.100.

Nakaki, Yoshiyuki: *See*—
Hashima, Kazuo; Kawano, Yuji; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Nakaki, Yoshiyuki; Tokunaga, Takashi; and Fujii, Yoshio, 5,337,305, Cl. 369-116.000.

Nakamoto, Satoru: *See*—
Kato, Tetsuo; Kanda, Masahiro; Tsumiyama, Tatsuo; and Nakamoto, Satoru, 5,336,540, Cl. 428-36.920.

Nakamura, Kimitsugu: *See*—
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000.

Nakamura, Takahiro, to Sharp Kabushiki Kaisha. Automatic focusing device utilizing a trend of variation and degree of reliability of a focussing evaluation value signal to improve image focusing. 5,337,084, Cl. 348-345.000.

Nakamura, Toshifumi; Okabe, Gen; and Yamamoto, Susumu, to Fuji Xerox Co., Ltd. Image output device and facsimile management report output method. 5,337,156, Cl. 358-404.000.

Nakanishi, Hidetoshi; and Usui, Yasunori, to Kabushiki Kaisha Toshiba. MOS gate controlled thyristor having improved turn on/turn off characteristics. 5,336,907, Cl. 257-133.000.

Nakanishi, Tsugio: *See*—
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.

Nakano, Akihiko, to Sharp Kabushiki Kaisha. Impurity free reference grid for use charged partice beam spectroscopes. 5,336,895, Cl. 250-505.100.

Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, to Mita Industrial Co., Ltd. Toner feeding device. 5,337,125, Cl. 355-260.000.

Nakano, Yasushi: *See*—
Yamagishi, Hiroaki; Nakano, Yasushi; Kawahara, Setsuko; and Koyama, Noboru, 5,336,559, Cl. 428-329.000.

Nakano, Yoshihiko; Hayase, Shuzi; Murai, Shinji; Mikogami, Yukihiro; and Yoshizumi, Akira, to Kabushiki Kaisha Toshiba. Polysilane and polysilane composition. 5,336,736, Cl. 525-474.000.

Nakao, Naomi L.; Wilk, Peter J.; and Mizzi, John V. Anticlotting device and method for use with IV catheters. 5,336,181, Cl. 604-83.000.

Nakao, Naomi L.; and Wilk, Peter J., to Wilk & Nakao Medical Technology Incorporated. Surgical cauterization snare with polyp capturing web net. 5,336,227, Cl. 606-114.000.

Nakata, Akira: *See*—
Tone, Seiji; Nakata, Akira; and Yamamoto, Naoki, 5,336,725, Cl. 525-254.000.

Nakata, Masayuki: *See*—
Suzuki, Masayuki; Haruta, Ryo; Shinriki, Hiroshi; and Nakata, Masayuki, 5,336,638, Cl. 437-190.000.

Nakata, Shingo, to Sony Corporation. Copy guard processing detecting apparatus. 5,337,157, Cl. 358-335.000.

Nakata, Toshiaki: *See*—
Yamamoto, Matsuo; Nakata, Toshiaki; and Yabuuchi, Hideaki, 5,336,516, Cl. 426-615.000.

Nakatsugawa, Kiyoshi; Oguri, Kazuyoshi; Onda, Hiroyuki; and Watanabe, Hiroyuki, to Hamamatsu Photonics K.K. 4-Layer structure reflection type photocathode and photomultiplier using the same. 5,336,966, Cl. 313-532.000.

Nakatsuji, Masahiro: *See*—
Fukino, Kunihiro; Takayama, Toru; Inadome, Kiyotaka; and Nakatsuji, Masahiro, 5,337,187, Cl. 359-699.000.

Nakatsuji, Tadao: *See*—
Yoshimoto, Masafumi; Nakatsuji, Tadao; and Shimizu, Hiromitsu, 5,336,651, Cl. 502-74.000.

Nakatsuka, Kazushige: *See*—
Ozawa, Akira; Matsuyama, Taizo; Homma, Eiichi; Hata, Syunroku; Matsuo, Kenzaburo; and Nakatsuka, Kazushige, 5,336,025, Cl. 408-46.000.

Nakayama, Junichiro; Katayama, Hiroyuki; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Magneto-optical disk and manufacturing methods thereof. 5,336,531, Cl. 427-510.000.

Nakazato, Koji: *See*—
Onishi, Masashi; Nakazato, Koji; Chigusa, Yoshiki; Watanabe, Minoru; and Miyajima, Yoshiaki, 5,337,401, Cl. 385-142.000.

Nakazato, Yukitaka: *See*—
Saeki, Shirou; Nakazato, Yukitaka; Hashimoto, Kenji; and Ikoma, Tadashi, 5,335,837, Cl. 226-110.000.

Nakazono, Yoshiharu: *See*—
Shibayama, Takao; Maekawa, Keiichiro; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, 5,335,537, Cl. 73-117.000.

Nakazono, Yutaka: *See*—
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,336,409, Cl. 210-490.000.

Nakjima, Kenichi: *See*—
Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugane, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, 5,335,700, Cl. 139-435.100.

Nalco Chemical Company: *See*—
Fong, Dodd W.; and Swiecinski, Frederick J., 5,336,729, Cl. 525-329.400.
Kaplan, Roy I.; and Pardue, Jerry E., 5,336,428, Cl. 252-162.000.

Namisniak, Dianna; and Namisniak, Lee. Food inventory system. 5,335,509, Cl. 62-125.000.

Namisniak, Lee: *See*—
Namisniak, Dianna; and Namisniak, Lee, 5,335,509, Cl. 62-125.000.

Namordi, Mooshi R.; Lang, Mark R.; and Fithian, Michael J., to General Electric Company. Microwave HDI phase shifter. 5,337,027, Cl. 333-161.000.

Naomoto Industry Co., Ltd.: *See*—
Ohnishi, Yasuzo, 5,335,431, Cl. 38-1.00B.

Nara Machinery Co., Ltd.: *See*—
Ishizaka, Takafumi; Kikuchi, Yuji; and Koishi, Masumi, 5,336,271, Cl. 23-293.00R.

Narabu, Tadakuni: *See*—
Kawamoto, Seiichi; Sato, Maki; Narabu, Tadakuni; and Miura, Hisanori, 5,337,163, Cl. 358-482.000.

Narang, Ram S.; Pond, Stephen F.; Altavela, Robert P.; Warner, Fredrick A.; and Harold, Robert A., to Xerox Corporation. Apparatus for applying an adhesive layer to a substrate surface. 5,336,319, Cl 118-211.000.

Narao, Shinya, to Kabushiki Kaisha Nissei Giken. Waste disposer 5,335,866, Cl. 241-46.013.

Narayanan, Pallassana V.; Rowland, Stephen M.; and Stanley, Kimberly D., to Cordis Corporation. Treatment of metallic surfaces using radiofrequency plasma deposition and chemical attachment of bioactive agents. 5,336,518, Cl. 623-1.000.

Nardella, Paul C., to Medical Scientific, Inc. Diagnostic impedance measuring system for an insufflation needle. 5,335,668, Cl 128-734.000.

Narita, Akira: *See*—
Iwahashi, Hiroshi; Fujimoto, Toshiyuki; and Narita, Akira, 5,336,952, Cl. 307-571.000.

Nass, Martina; and Sacker, Heidi, to Beiersdorf Aktiengesellschaft. Hydrophilic foams and processes for their manufacture. 5,336,695, Cl 521-109.100.

Nassehi, Mehdi M.: *See*—
Heinzmann, Peter L.; Mueller, Johann R.; and Nassehi, Mehdi M., 5,337,312, Cl. 370-85.900.

Nasu, Nobuaki: *See*—
Yamaguchi, Tomoshige; and Nasu, Nobuaki, 5,335,969, Cl. 297-301.000.

Nasuno, Hiroshi: *See*—
Haga, Akira; Nasuno, Hiroshi; and Fujimura, Takeo, 5,336,963, Cl. 313-402.000.

Natarajan, Govindarajan: *See*—
Casey, Jon A.; Divakaruni, Renuka S.; Natarajan, Govindarajan; Reddy, Srinivasa S. N.; and Sammet, Manfred, 5,336,444, Cl. 252-513.000.

Nathan, Micha, to FMC Corporation. Air boom sprayer trailer hitch and suspension. 5,335,856, Cl. 239-164.000.

National Biomedical Research Foundation: *See*—
Ledley, Robert S., 5,335,683, Cl. 135-84.000.

National Institute for Research in Inorganic Materials: *See*—
Tanaka, Takaho; Kamimura, Yutaka; Otani, Shigeki; and Ishizawa, Yoshio, 5,336,362, Cl. 117-42.000.

National Jewish Center for Immunology and Respiratory Medicine: *See*—
Kotzin, Brian L.; Marrack, Philippa; Kappler, John; and Choi, Youngwon, 5,336,598, Cl. 435-7.240.

VOL 1165 ISS 2 AG 9 1994 UMI

National Semiconductor Corporation: *See—*
Gregory, Anne K.; Brassington, Michael P.; Wang, Shi-Qing; and Abt, Norman E., 5,337,279, Cl. 365-201.000.
Hobrecht, Stephen W., 5,337,023, Cl. 331-20.000.
Mostafazadeh, Shahram, 5,335,842, Cl. 228-179.100.
Polhemus, Gary D., 5,337,025, Cl. 333-28.00R.
Popli, Sanjay; Pickett, Scott; Hawley, David; Moni, Shankar; and Camarota, Rafael C., 5,336,950, Cl. 307-465.000.
Segaram, Para K.; and Ju, Shu-Ing, 5,336,946, Cl. 307-355.000.
Navistar International Transportation Corp.: *See—*
laBastide, Bernhardt R., Jr., 5,335,978, Cl. 303-13.000.
NCR Corporation: *See—*
Bartlett, Richard A.; and Cote, Edward A., 5,337,212, Cl. 361-681.000.
Hain, David A., 5,335,484, Cl. 53-582.000.
NEC America, Inc.: *See—*
Hossner, Steven E., 5,337,208, Cl. 361-93.000.
Manabe, Hisashi; and Yabe, Hideo, 5,337,351, Cl. 379-201.000.
NEC Corporation: *See—*
Andoh, Takeshi, 5,336,914, Cl. 257-368.000.
Fan, Ruixue, 5,337,308, Cl. 370-60.000.
Goto, Akihiko, 5,335,702, Cl. 140-105.000.
Hayashi, Yoshihiro, 5,336,929, Cl. 257-772.000.
Imamura, Hironobu, 5,336,632, Cl. 437-60.000.
Ishida, Ichiro, 5,336,941, Cl. 307-277.000.
Ishikawa, Toru, 5,337,283, Cl. 365-222.000.
Kawata, Koji; and Sugibayashi, Tadahiko, 5,337,270, Cl. 365-149.000.
Koike, Hiroki, 5,337,282, Cl. 365-222.000.
Kojima, Shingo, 5,337,268, Cl. 364-760.000.
Miyazaki, Shinichi, 5,337,006, Cl. 330-130.000.
Nishikawa, Yasushi, 5,337,287, Cl. 365-230.050.
Ono, Yuzo; and Shirakabe, Kazuhisa, 5,336,875, Cl. 235-467.000.
Ozaki, Hideharu, 5,337,321, Cl. 371-22.300.
Sakai, Shinsuke; and Miyabe, Takao, 5,337,232, Cl. 364-419.080.
Sakamoto, Mitsuru, 5,336,922, Cl. 257-534.000.
Sato, Mutsumi; Nishihara, Motoo; Matsunaga, Haruhiko; and Ueda, Hiromi, 5,337,307, Cl. 370-60.000.
Shibuya, Tatsuo, 5,337,369, Cl. 382-5.000.
Shinozaki, Nobuhisa, 5,337,356, Cl. 379-418.000.
Suetake, Kenji, 5,336,927, Cl. 257-670.000.
Sugawara, Mitsutoshi, 5,337,050, Cl. 341-100.000.
Takahashi, Fumiho, 5,337,241, Cl. 364-434.000.
Takamisawa, Katsura; and Nishiguchi, Yukihiro, 5,337,317, Cl. 371-40.400.
Toriyama, Keiji, 5,336,919, Cl. 257-435.000.
Tsunoda, Hideyuki; and Nishiyama, Toshirou, 5,337,073, Cl. 345-102.000.
Watanabe, Makoto, 5,337,200, Cl. 360-66.000.
Nedelec, Lucien; Nique, Francois; and Philibert, Daniel, to Roussel-Uclaf. 17 Methylene lactones of steroids. 5,336,686, Cl. 514-462.000.
Nee, Victor. Fingerless palm glove. 5,335,916, Cl. 273-346.000.
Neff, Charles. Article and a method for producing an article having a high friction surface. 5,336,279, Cl. 51-293.000.
Negi, Yasuharu: *See—*
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000.
Negrete, Steven E., to Spirol International Corporation. Vibratory feeder. 5,335,779, Cl. 198-756.000.
Nehren, William C.: *See—*
Anastase, Constantin; Nehren, William C.; Kissick, Russell C.; Campbell, Thomas C.; and Daily, Jay H., 5,335,523, Cl. 68-16.000.
Neiger, Benjamin: *See—*
Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Aluma, Zvi, 5,336,979, Cl. 315-362.000
Nelson, Craig R.: *See—*
Stall, Richard A.; Tompa, Gary S.; Gurary, Alexander; and Nelson, Craig R., 5,336,324, Cl. 118-719.000
Nelson, Paul A.; and Swift, William M., to University of Chicago. Thermal and chemical remediation of mixed waste. 5,335,609, Cl. 110-346.000.
Nemcek, Jozef: *See—*
Humphries, Martyn; Nemcek, Jozef; Jaworzyn, Joseph F.; Cantwell, John B.; and Gerrard, John J., 5,336,728, Cl. 525-328.200.
Nemoto, Hiroyuki: *See—*
Oikawa, Masahiro; Nemoto, Hiroyuki; Hamanaka, Kenjiro; Kishimoto, Takashi; Funada, Fumiaki; Hamada, Hiroshi; and Shibatani, Takashi, 5,337,186, Cl. 359-628.000.
Nenzioni, Pietro: *See—*
Abate, Maurizio; Carnevale, Claudio; Nenzioni, Pietro; and Perotto, Aldo, 5,335,643, Cl. 123-679.000.
Neri, Armando; Cesari, Verter; Roveri, Orlando; and Manservigi, Alberto, to G.D S.p.A. Shock-absorbing safety device for self-propelled trucks and the like. 5,335,951, Cl. 293-118.000.
Net/Tech International, Inc.: *See—*
Beatty, Charles L., 5,335,449, Cl. 47-48.500.
Nettleton, John E.; Barr, Dallas N.; and Redman, Brian C., to United States of America, Army. Adjustable near infrared rangefinder illuminator. 5,336,899, Cl. 250-561.000.
Neubrand, Franz: *See—*
Wunderlich, Klaus; Neubrand, Franz; Schmidt, Erwin; Buhl, Hans-Wilhelm; Wirbeleit, Friedrich; and Hanauer, Horst, 5,335,500, Cl. 60-609.000.
Neugebauer, Constantine A., deceased (by Neugebauer, Martha M., executrix); and Wojnarowski, Robert J., to General Electric Company. Hermetically sealed packaged electronic system. 5,336,928, Cl. 257-758.000.
Neugebauer, Martha M., executrix: *See—*
Neugebauer, Constantine A., deceased; and Wojnarowski, Robert J., 5,336,928, Cl. 257-758.000.
Nevyas-Wallace, Anita S. Surgical knife and method for performing radial keratotomy enhancement surgery. 5,336,236, Cl. 606-166.000.
New York University: *See—*
Rapoport, David M., 5,335,654, Cl. 128-204.230.
Neway, Tsehay; and Pilet, Charles. Immunostimulant drug based on polar glyopeptidolipids of mycobacterium chelonae. 5,336,666, Cl. 424-282.100.
Newell, Donald J. Bridge structure. 5,335,386, Cl. 14-74.500.
Newgarden, Joseph E., Jr. Robot table tennis net and server assembly. 5,335,905, Cl. 273-30.000.
Newman, Brian N.: *See—*
Scheinbeim, Jerry I.; Newman, Brian N.; Lee, Jar W.; and Takase, Yoshihiko, 5,336,422, Cl. 252-62.900.
Newstrom, Charles A.: *See—*
Wozniak, Sam; Tran, Hung B.; Newstrom, Charles A.; and Tulyathan, Pravit, 5,337,016, Cl. 324-632.000.
Newville, Duane H. Flow-through washing and scrubbing brush handle. 5,336,012, Cl. 401-289.000.
Ng, Steve Y. W.; and Heller, Jorge, to Pharmaceutical Delivery Systems. Bioerodible polymers useful for the controlled release of therapeutic agents. 5,336,505, Cl. 424-486.000.
NGK Insulators, Ltd.: *See—*
Misawa, Hidenobu; and Seike, Shoji, 5,336,569, Cl. 429-31.000.
Nguyen, Andrew M.: *See—*
Kadah, Andrew S.; and Nguyen, Andrew M., 5,337,206, Cl. 361-85.000.
Nguyen-Thien-Nhon, Diana: *See—*
Quintero, Lillian J.; Cosgrove, Delos M.; and Nguyen-Thien-Nhon, Diana, 5,336,258, Cl. 623-2.000.
Nichia Chemical Industries, Ltd.: *See—*
Sumitomo, Miyuki; Takeoka, Ichiro; and Bando, Shoichi, 5,336,080, Cl. 428-407.000.
Nichols, James M., to Infiltrator Systems, Inc. Leaching system conduit with interlocking end joint. 5,336,017, Cl. 405-46.000.
Nichols, Ken B.: *See—*
Livesey, Stephen A.; del Campo, Anthony A.; Nag, Abhijit; Nichols, Ken B.; and Coleman, Christopher, 5,336,616, Cl. 435-240.200.
Nicolay, Joseph: *See—*
Shultz, Julius; and Nicolay, Joseph, 5,335,434, Cl. 40-156.000.
Niemeier, Gerd; and Schneider, Frank, to Mercedes-Benzag. Fuel filter arrangement for an internal combustion engine. 5,336,407, Cl. 210-249.000.
Niessner, Norbert; Fischer, Wolfgang; Guentherberg, Norbert; Ruppmich, Karl; and Seitz, Friedrich, to BASF Aktiengesellschaft. Impact modifier and molding material containing it. 5,336,718, Cl. 525-67.000.
Nietupski, Ronald S. Smoking suppressant and method of application thereof. 5,336,680, Cl. 514-354.000.
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, to Hamamatsu Photonics K.K. Semiconductor photo-electron-emitting device. 5,336,902, Cl. 257-10.000.
Nihei, Norio: *See—*
Ogawa, Fumio; and Nihei, Norio, 5,337,137, Cl. 356-4.000.
Nihei, Ryo: *See—*
Torii, Nobutoshi; Nihei, Ryo; and Wakio, Hiroshi, 5,337,148, Cl. 356-376.000.
Nihon Medi-Physics Co., Ltd.: *See—*
Tobiki, Hisao; and Matsushima, Hiroaki, 5,336,469, Cl. 422-100.000.
Nihon Naishi Inc.: *See—*
Shigetoyo, Hiromi, 5,335,446, Cl. 43-125.000.
Nii, Tetsuro: *See—*
Sichanugrist, Porponth; and Nii, Tetsuro, 5,336,623, Cl. 437-4.000.
Niimura, Youichi; Kozaki, Michio; Yamagata, Hisashi; and Yukawa, Hideaki, to Mitsubishi Petrochemical Co., Ltd. Process for producing NADH oxidase. 5,336,608, Cl. 435-189.000.
Nikaido, Madelene: *See—*
Sarantakis, Dimitri; Bicksler, James J.; Ellingboe, John W.; and Nikaido, Madelene, 5,336,677, Cl. 514-256.000.
Nikon Corporation: *See—*
Fukino, Kunihiro; Takayama, Toru; Inadome, Kiyotaka; and Nakatsuji, Masahiro, 5,337,187, Cl. 359-699.000.
Imafuji, Kazuharu; and Terui, Nobuhiko, 5,337,098, Cl. 354-70.000.
Saya, Daisuke; and Suganuma, Ryoichi, 5,336,958, Cl. 310-316.000.
Toyoda, Shuji; and Kumagai, Satoru, 5,337,177, Cl. 359-384.000.
Nilsson, Karl-Johan, to ABB Stal AB. Method and device for controlling the power output during combustion in a fluidized bed. 5,335,630, Cl. 122-4.00D.
Ninomiya, Hideako: *See—*
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideako; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,336,688, Cl. 514-492.000.

Nintendo Co., Ltd.: *See—*
Otake, Masahiro; Takahashi, Toyofumi; Nishiumi, Satoshi; and Mukai, Takuo, 5,337,069, Cl. 345-123.000.
Nippon Densan Corporation: *See—*
Fukuda, Toshio; Hattori, Shinobu; and Nagamori, Shigenobu, 5,336,057, Cl. 417-395.000.
Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Toshio; Hirata, Kazumasa; Wakabayashi, Shigenori; and Katsuura, Akio, 5,336,779, Cl. 548-333.500.
Nippon Kogaku K.K.: *See—*
Suzuki, Kazuaki; Kakizaki, Yukio; and Taniguchi, Tetsuo, 5,337,097, Cl. 353-101.000.
Nippon Mining Co., Ltd.: *See—*
Tasaki, Hiroshi; and Nishimura, Eiji, 5,336,392, Cl. 427-433.000.
Nippon Oil Co., Ltd.: *See—*
Oshimi, Fumiaki; Kubota, Susumu; Enomoto, Masami; and Otsuki, Yutaka, 5,336,752, Cl. 528-205.000.
Sakata, Ko; Morita, Eitaroh; and Takezono, Tetsuya, 5,336,605, Cl 435-119.000.
Nippon Sanso Kabushiki Kaisha: *See—*
Toida, Shoji; Ito, Seiichi; Ohta, Hidetoshi; and Ishikawa, Isao, 5,335,809, Cl. 220-425.000.
Nippon Sheet Glass Co., Ltd.: *See—*
Akimoto, Toshio; and Shibaoka, Kazuo, 5,336,287, Cl. 65-59.500.
Murakami, Harunori; and Ohara, Shohei, 5,337,004, Cl 324-505.000.
Muromachi, Takashi; Kawaguchi, Jun; and Nakai, Hidemi, 5,336,565, Cl. 428-432.000.
Nippon Sheet Glass, Inc.: *See—*
Oikawa, Masahiro; Nemoto, Hiroyuki; Hamanaka, Kenjiro; Kishimoto, Takashi; Funada, Fumiaki; Hamada, Hiroshi; and Shibatani, Takashi, 5,337,186, Cl. 359-628.000.
Nippon Soken, Inc.: *See—*
Taguchi, Masahiro; Tominaga, Motonori; Matsuhashi, Toshiaki, and Fujita, Koichi, 5,335,749, Cl. 180-274.000.
Nippon Steel Corporation: *See—*
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, 5,335,715, Cl 164-475.000.
Takesue, Hiromichi; Kameyama, Eiji; Terada, Tsutomu; and Kawata, Junichi, 5,335,716, Cl. 164-483.000.
Yamamoto, Kohichi; Yoshida, Suguru; and Watanabe, Kazuo, 5,336,339, Cl. 148-320.000.
Nippon Steel Semiconductor Corp.: *See—*
Cordoba, Michael V.; and Hardee, Kim C., 5,337,284, Cl. 365-227.000.
Goda, Hisashi; Asahina, Yasutoshi; Hashimoto, Masayuki; and Oka, Naoki, 5,336,365, Cl. 156-643.000.
Nippon Telegraph and Telephone Corporation: *See—*
Onishi, Masashi; Nakazato, Koji; Chigusa, Yoshiki; Watanabe, Minoru; and Miyajima, Yoshiaki, 5,337,401, Cl. 385-142.000.
Saito, Kazuhito; Kobayashi, Hideo; and Katagiri, Toshiaki, 5,337,378, Cl. 385-16.000.
Sato, Mutsumi; Nishihara, Motoo; Matsunaga, Haruhiko; and Ueda, Hiromi, 5,337,307, Cl. 370-60.000.
Nippondenso Co., Ltd.: *See—*
Hirata, Tatsuya; Watanabe, Atsushi; and Tokitsu, Naoki, 5,337,066, Cl. 343-841.000.
Koyama, Hideki; and Hamaoka, Takashi, 5,336,045, Cl. 415-55.100.
Matsuda, Shigeki, 5,336,336, Cl. 148-240.000.
Taguchi, Masahiro; Tominaga, Motonori; Matsuhashi, Toshiaki; and Fujita, Koichi, 5,335,749, Cl. 180-274.000.
Nique, Francois: *See—*
Nedelec, Lucien; Nique, Francois; and Philibert, Daniel, 5,336,686, Cl. 514-462.000.
Nireki, Tadashi: *See—*
Nagai, Masahiro; Abe, Kazuo; Nireki, Tadashi; Yamagishi, Hisanobu; and Miyake, Yasuhiko, 5,335,527, Cl. 72-262.000.
Nishiguchi, Yukihiro: *See—*
Takamisawa, Katsura; and Nishiguchi, Yukihiro, 5,337,317, Cl. 371-40.400.
Nishihara, Motoo: *See—*
Sato, Mutsumi; Nishihara, Motoo; Matsunaga, Haruhiko; and Ueda, Hiromi, 5,337,307, Cl. 370-60.000.
Nishijima, Toyoki: *See—*
Chino, Shigeo; Kadowaki, Takashi; and Nishijima, Toyoki, 5,336,592, Cl. 430-557.000.
Nishijima, Tsuyoshi: *See—*
Tanaka, Noriyuki; Takishita, Takashi; Fukushima, Kiyoshi; Nagakura, Yasuyuki; Inoue, Kaoru; Nishijima, Tsuyoshi; and Inada, Haruhiro, 5,336,524, Cl. 427-240.000.
Nishikawa, Masumi: *See—*
Kogita, Hidekazu; Nishikawa, Masumi; and Okada, Shoji, 5,337,190, Cl. 359-877.000.
Nishikawa, Yasushi, to NEC Corporation. Dual port semiconductor memory device. 5,337,287, Cl. 365-230.050.
Nishimoto, Yoshiharu; Yamazaki, Kengo; and Sato, Takashi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Biaxially oriented laminated film. 5,336,549, Cl. 428-213.000.
Nishimura, Eiji; Kuroki, Masami; Kikutake, Naoyuki; and Shindou, Yuuichiro, to Japan Energy Corporation. Method and apparatus for producing a high-purity titanium. 5,336,378, Cl. 204-64.00T.
Nishimura, Eiji: *See—*
Tasaki, Hiroshi; and Nishimura, Eiji, 5,336,392, Cl. 427-433.000.
Nishimura, Keizo: *See—*
Arai, Hideo; Owashi, Hitoaki; Hosokawa, Kyoichi; Nishimura, Keizo; Watatani, Yoshizumi; and Shibata, Akira, 5,337,199, Cl 360-8.000.
Nishimura, Tadashi: *See—*
Ipposhi, Takashi; and Nishimura, Tadashi, 5,336,918, Cl 257-419.000.
Nishimura, Toshinori: *See—*
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.
Nishimura, Yoshiyuki: *See—*
Takamatsu, Akio; and Nishimura, Yoshiyuki, 5,336,557, Cl 428-300.000.
Nishimuta, Hirofumi: *See—*
Igarashi, Ichiro; Sasaki, Hiroshi; Jitsumatsu, Tetsuji; Ota, Hiroyuki; Sato, Masanobu; and Nishimuta, Hirofumi, 5,336,574, Cl 430-23.000.
Nishitani, Masayoshi: *See—*
Sano, Haruyuki; Otani, Takao; Nishitani, Masayoshi; Takatsu, Mikio; Ueyoko, Kiyoshi; Yamamoto, Toshiaki; and Miyazaki, Shinichi, 5,335,707, Cl. 152-543.000.
Nishiumi, Satoshi: *See—*
Otake, Masahiro; Takahashi, Toyofumi; Nishiumi, Satoshi; and Mukai, Takuo, 5,337,069, Cl. 345-123.000.
Nishiyama, Nobumasa; Tsuyoshi, Toshiaki; Aoi, Hajime; Kameoka, Tetsuji; Tanaka, Masaya; and Shiraishi, Kazuhisa, to Hitachi, Ltd. Digital magnetic writing and reading apparatus. 5,337,198, Cl 360-65.000.
Nishiyama, Ryoji: *See—*
Nakagawa, Akihiro; Demizu, Akira; and Nishiyama, Ryoji, 5,337,240, Cl. 364-431.010.
Nishiyama, Seiichi, to Sony Corporation. Wide-band amplifier apparatus. 5,337,010, Cl. 330-255.000.
Nishiyama, Toshirou: *See—*
Tsunoda, Hideyuki; and Nishiyama, Toshirou, 5,337,073, Cl. 345-102.000.
Nishiyama, Tousaku: *See—*
Watanabe, Masaru; and Nishiyama, Tousaku, 5,335,875, Cl 242-341.000.
Nissan Diesel Motor Co., Ltd.: *See—*
Bilei, Mario; Kirschner, Stefan; Ogawa, Takeo; and Noritou, Kazuaki, 5,335,636, Cl. 123-321.000.
Nissan Motor Co., Ltd.: *See—*
Hamabe, Tsutomu; Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Sato, Noriharu, 5,337,365, Cl. 381-71.000.
Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugane, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, 5,335,700, Cl. 139-435.100.
Uchida, Masaaki; and Matsumoto, Mikio, 5,335,493, Cl. 60-274.000.
Nisshinbo Industries, Inc.: *See—*
Ashida, Kaneyoshi, 5,336,696, Cl. 521-113.000.
Nitto Denko Corporation: *See—*
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,336,409, Cl 210-490.000.
Niwa, Hideaki: *See—*
Jutamulia, Suganda; Niwa, Hideaki; and Toyoda, Shinji, 5,337,106, Cl. 354-152.000.
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; and Ishii, Yoshinori, to Fujisawa Pharmaceutical Co., Ltd. Cephalosporin C acylase. 5,336,613, Cl. 435-228.000.
NKK Corporation: *See—*
Watanabe, Toyofumi; Furuta, Akihiko; Ono, Tadashi; Yomura, Yoshinori; and Iwado, Shuichi, 5,336,567, Cl. 428-629.000.
Nobe, Kenichi; Araki, Morio; and Arakawa, Takeharu, to Pioneer Electronic Corporation. On-board navigation apparatus. 5,337,244, Cl. 364-449.000.
Noble, David: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,336,789, Cl. 549-264.000.
Noble, Hazel M.: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,336,789, Cl. 549-264.000.
Nobuta, Yasuo: *See—*
Watanabe, Naofumi; and Nobuta, Yasuo, 5,336,897, Cl. 250-551.000.
Nobutoki, Kazuhiro; Ueda, Kyoji; and Kita, Hiroyuki, to Matsushita Electric Works, Ltd. Polarized relay. 5,337,029, Cl. 335-78.000.
Noda, Wayne A., to Laparomed Corporation. Dual ligating and dividing apparatus. 5,336,229, Cl. 606-144.000.
Noel, Matthew P.: *See—*
Baker, Roger J.; Noel, Matthew P.; and McCullough, Brian C., 5,335,770, Cl. 206-433.000.
NOF Corporation: *See—*
Takaoka, Toshiaki; Tanaka, Katsuyoshi; and Kato, Kenji, 5,336,743, Cl. 526-292.400.
Noggle, Kenneth G., to Valenite Inc. Adjustable boring bar. 5,336,026, Cl. 408-147.000.
Noguchi, Tamio; and Yazawa, Masahiko, to Merck Patent Gesellschaft mit Beschrankter Haftung. Flaky pigment. 5,336,309, Cl. 106-23.00C.

VOL 1165 ISS 2 AG 9 1994 UMI

Noh, Yoshihisa: *See—*
Hashimoto, Kazuhiko; Imamura, Yoshihiko; Yamamoto, Toshihide; and Noh, Yoshihisa, 5,335,634, Cl. 123-188.140.
Nohara, Keitsugu: *See—*
Taniguchi, Masaaki; Nohara, Keitsugu; and Kaihara, Nobuo, 5,337,038, Cl. 338-22.00R.
Nohr, Ronald S.; and MacDonald, John G., to Kimberly-Clark Corporation. Surface segregation through the use of a block copolymer. 5,336,707, Cl. 524-265.000.
Nokia Telecommunications Oy: *See—*
Alvesalo, Antero, 5,337,344, Cl. 379-58.000.
Noll, Gregory B.; Maranto, Jack J.; and Kardos, Louis F., to Hughes Aircraft Company. Single channel snap-lock fiber optic connector 5,337,386, Cl. 385-60.000.
Noll, Joachim: *See—*
Kahlert, Joachim; May, Klaus P.; and Noll, Joachim, 5,336,855, Cl 174-250.000.
Nomadic Systems, Inc.: *See—*
Folger, David; Arnold, David; and Lambert, Maureen, 5,337,044, Cl. 340-825.440.
Nomura, Toru, to Matsushita Electric Industrial Co. Ltd. Solid-state imaging device and method of manufacturing the same. 5,336,367, Cl. 156-655.000.
Nonaka, Osamu; Kindaichi, Takeshi; and Mizokami, Kazunori, to Olympus Optical Co., Ltd. Light projection type measurement apparatus effectively utilizing a post of a one-chip microcomputer. 5,337,116, Cl. 354-403.000.
Nonomura, Tomohiro; and Kishimoto, Hiroshi, to Fujitsu Limited. Paper feeder. 5,335,901, Cl. 271-117.000.
Norberg, Gustav M.: *See—*
Crump, John C., III; Fischer, Eugene B.; Wilson, Robert C.; Winterson, Warren D.; Jaxmar, Leif E. B.; Norberg, Gustav M.; and Olsson, Lennart F., 5,335,590, Cl. 99-479.000.
Norcia, Michael A., to Smith & Nephew United Inc. Method for removal of medical adhesive from skin. 5,336,207, Cl. 604-290.000.
Nord Kaolin Company: *See—*
Curtis, Jerry L.; Johnson, Kenneth A.; and House, Lester W., 5,336,311, Cl. 106-416.000.
Nordine, Paul C., to Clemson University. Laser assisted fiber growth. 5,336,360, Cl. 117-75.000.
Nordson Corporation: *See—*
Fort, Wesley, 5,335,825, Cl. 222-1.000.
Hogan, Patrick T.; and Turner, James J., 5,336,320, Cl. 118-300.000.
Norian Corporation: *See—*
Constanz, Brent R.; Fulmer, Mark T.; and Barr, Bryan M., 5,336,264, Cl. 623-16.000.
Noritou, Kazuaki: *See—*
Bilei, Mario; Kirschner, Stefan; Ogawa, Takeo; and Noritou, Kazuaki, 5,335,636, Cl. 123-321.000.
Noritsu Koki Co., Ltd.: *See—*
Tanibata, Tohru, 5,337,117, Cl. 355-19.000.
Tanibata, Tohru, 5,337,119, Cl. 355-40.000.
Norsk Hydro a.s.: *See—*
Askestad, Sigmund, 5,336,020, Cl. 405-224.000.
North Carolina State University: *See—*
Lucas, Leon T., 5,336,661, Cl. 504-126.000.
North Carolina State University at Raleigh: *See—*
Ozturk, Mehmet C.; Grider, Douglas T.; Sanganeria, Mahesh K.; Ashburn, Stanton P.; and Wortman, Jimmie J., 5,336,903, Cl. 257-19.000.
Northern Telecom Limited: *See—*
Morin, Joseph O. R.; and Richard, Joseph F. R. J., 5,337,400, Cl 385-135.000.
Northrop Corporation: *See—*
Castellucci, Nicholas T., 5,336,748, Cl. 528-38.000.
Norton, George H., II; Lenk, Damon J.; and Robida, James E., to Corbin Russwin, Inc. Cylindrical lockset. 5,335,948, Cl. 292-169.230
Novamont S.p.A.: *See—*
Gardano, Andrea; Sabarino, Giampiero; and Foa, Marco, 5,336,793, Cl. 554-138.000.
NovAtel Communications: *See—*
Cassidy, Barrie; McNab, David; and Rooney, James, 5,337,345, Cl. 379-58.000.
NOW Technologies, Inc.: *See—*
Osgar, Michael L., 5,335,821, Cl. 222-83.000.
Nowak, David J.: *See—*
Nowak, Michael P.; and Nowak, David J., 5,337,231, Cl. 364-413.240.
Nowak, Edward J., to International Business Machines Corporation Silicide interconnection with Schottky barrier diode isolation. 5,336,637, Cl. 437-175.000.
Nowak, Michael P.; and Nowak, David J., to General Electric Company. View to view image correction for object motion with truncated data. 5,337,231, Cl. 364-413.240.
Nowlan, Shawn J.: *See—*
Hancock, Robert L.; Pritz, Steven E.; Bauman, Robert C.; and Nowlan, Shawn J., 5,335,642, Cl. 123-634.000.
Nowlin, Thomas E.: *See—*
Mink, Robert I.; and Nowlin, Thomas E., 5,336,652, Cl. 502-125.000.
Nowotarski, Mark S.: *See—*
Sharma, Sudhir K.; Riley, Michael F.; Nowotarski, Mark S.; and Barlow, Alan R., 5,336,085, Cl. 432-64.000.
NSK Ltd.: *See—*
Yamashita, Kenkichi; and Oyanagi, Hideaki, 5,335,595, Cl. 101-158.000.
Nukada, Katsumi; Imai, Akira; Damion, Katsumi; and Iijima, Masakazu, to Fuji Xerox Co., Ltd. Phthalocyanine mixed crystal and electrophotographic photoreceptor containing the same. 5,336,578, Cl. 430-78.000.
Nukami, Tetsuya; and Suganuma, Tetsuya, to Toyota Jidosha Kabushiki Kaisha. Method of production of a metallic composite material incorporating metal carbide particles dispersed therein. 5,336,291, Cl. 75-10.180.
Nukui, Kazunori: *See—*
Saiki, Yukinori; and Nukui, Kazunori, 5,336,772, Cl. 546-286.000.
Nuovopignone - Industrie Meccaniche e Fonderia S.p.A.: *See—*
Vinciguerra, Costantino, 5,335,564, Cl. 74-567.000.
Nupro Company: *See—*
Kolenc, Terrence J., 5,335,691, Cl. 137-312.000.
Nyman, Bruce M.; and Wolter, Gregory M., to AT&T Bell Laboratories. Depolarizer using unpumped, doped optical fiber and method using same. 5,337,375, Cl. 385-11.000.
Oakley, Clyde G.; Busse, Lawrence J.; Dietz, Dennis R.; Shishilla, John E.; and Ranalletta, Joseph V., to Tetrad Corporation. Laparoscopic probes and probe sheaths useful in ultrasonic imaging applications 5,335,663, Cl. 128-662.000.
Oberman, Dave; and Teuber, Christopher L. Compact truss system. 5,335,467, Cl. 52-645.000.
Oberman, Dave; and Teuber, Christopher L. Compact truss system. 5,335,468, Cl. 52-645.000.
Oberto, Jacques; and Davison, John R. N., to Labofina, S.A. Transformed yeasts for producing lysozyme, plasmids used for this transformation, method of producing lysozyme. 5,336,609, Cl. 435-206.000.
Oberzan, August J. Collapsible cone structure. 5,336,536, Cl. 428-8.000.
Obo, Hidefumi: *See—*
Tasaka, Hisashi; Obo, Hidefumi; Kubo, Takashi; and Kamata, Kazuo, 5,337,099, Cl. 354-76.000.
O'Brian, Lynwood. Sliding cable massage table. 5,335,676, Cl 128-845.000.
O'Brien, Diana A.; and O'Brien, Leo J. Rotatable food tray for outdoor patio furniture. 5,335,803, Cl. 211-163.000.
O'Brien, Kevin J.; Thompson, Pete A.; and McCoy, Stephen T., to Conoco Specialty Products Inc. Three chamber vessel for hydrocyclone separator. 5,336,410, Cl. 210-512.100.
O'Brien, Leo J.: *See—*
O'Brien, Diana A.; and O'Brien, Leo J., 5,335,803, Cl. 211-163.000.
Occidental Chemical Corporation: *See—*
Krishnamurti, Ramesh; Dosi, Mahendra K.; and Lin, Henry C., 5,336,808, Cl. 564-412.000.
Lesins, Viesturs, 5,336,788, Cl. 549-241.000.
Qi, Jian S., 5,336,806, Cl. 562-494.000.
Ochab, Terry A.: *See—*
Williamson, Keith S.; and Ochab, Terry A., 5,336,036, Cl. 414-502.000.
O'Connell, Patrick A.; Battey, Robert L.; Donigan, Maria S.; Tien, So V.; and Knights, John C., to Xerox Corporation. Amorphous silicon electrographic writing head assembly with protective cover. 5,337,080, Cl. 346-155.000.
Oda, Hajima: *See—*
Harada, Hiroyuki; Tajima, Akio; Kogo, Takashi; Nagakawa, Tadashi; Oda, Hajima; Inoue, Haruo; and Hayakawa, Tsuyoshi, 5,336,004, Cl. 400-624.000.
Odashima, Satoshi, to Shin-Etsu Polymer Co., Ltd. Anisotropically electroconductive adhesive composition. 5,336,443, Cl. 252-511.000
Odeh, Hani M.: *See—*
Guida, Joseph; and Odeh, Hani M., 5,336,050, Cl. 416-186.00R.
Odom, Bennie. Hose storage and reel assembly and method. 5,335,687, Cl. 137-15.000.
Odom, Thomas B., to Aerojet-General Corporation. High resolution infrared scene simulator. 5,336,888, Cl. 250-495.100.
Ogasawara, Takashi: *See—*
Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugane, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, 5,335,700, Cl. 139-435.100.
Ogata, Junichi: *See—*
Yamanouchi, Kazuhiko; Mihota, Norihito; Kato, Shunji; Terada, Hiromu; and Ogata, Junichi, 5,336,957, Cl. 310-313.00D.
Ogawa, Akira: *See—*
Yamamoto, Mitsuru; and Ogawa, Akira, 5,336,591, Cl. 430-549.000.
Ogawa, Fumio; and Nihei, Norio, to Stanley Electric Co., Ltd.; and Bridgestone Corp. Height sensor and air spring device incorporating the same. 5,337,137, Cl. 356-4.000.
Ogawa, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for detecting alcohol content of liquid. 5,337,017, Cl. 324-682.000.
Ogawa, Takeo: *See—*
Bilei, Mario; Kirschner, Stefan; Ogawa, Takeo; and Noritou, Kazuaki, 5,335,636, Cl. 123-321.000.
Ogawa, Yuzi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom view finder. 5,337,109, Cl. 354-222.000.
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsuneo; and Fujiwara, Takahiko, to Hitachi, Ltd. Video output circuit with wide bandwidth and low power consumption for high resolution display. 5,337,090, Cl. 348-626.000.
Ogoshi, Hiroshi: *See—*
Ohnishi, Michikazu; Ogoshi, Hiroshi; and Takikawa, Kazuoki, 5,335,551, Cl. 73-731.000.

Oguchi, Kiyoshi: *See—*
Ikemoto, Seiji; Taki, Katsuhiko; Matano, Takashi; Kawahata, Ichiro; Oguchi, Kiyoshi; Ito, Shigeki; and Miyauchi, Tatsuo, 5,336,530, Cl. 427-503.000.
Ogura Clutch Co., Ltd.: *See—*
Matsuyama, Tatsuo, 5,336,069, Cl. 418-206.000.
Oguri, Kazuyoshi: *See—*
Nakatsugawa, Kiyoshi; Oguri, Kazuyoshi; Onda, Hiroyuki; and Watanabe, Hiroyuki, 5,336,966, Cl. 313-532.000.
Ogushi, Tetsurou; Murakami, Masaaki; Yabuchi, Kazuyoshi; and Yao, Akira, to Mitsubishi Denki Kabushiki Kaisha. Heat pipe. 5,335,720, Cl. 165-104.260.
Oh, Sea H.: *See—*
Moon, Chi J.; Park, Sae C.; Kim, Myoung G.; Oh, Sea H.; Yim, Seong S.; Park, Nam J.; Choi, Young K.; and Sung, Moo J., 5,336,673, Cl. 514-202.000.
Ohara, Kiyotaka: *See—*
Okimoto, Satoshi; Ohara, Kiyotaka; Seki, Takao; and Kato, Hifumi, 5,337,158, Cl. 358-426.000.
Ohara, Shohei: *See—*
Murakami, Harunori; and Ohara, Shohei, 5,337,004, Cl. 324-505.000.
Ohe, Michisuke: *See—*
Hidada, Osafumi; Ohe, Michisuke; Magoshi, Osam; Kato, Toshiyuki; and Sakai, Tomoki, 5,336,210, Cl. 604-307.000.
Ohguro, Haruo; Kosuge, Toshihiro; Hanzawa, Ryuuzou; Matsumura, Shogo; Kawai, Hiroyuki; Ao, Youji; Fujii, Tsutomu; Kaneko, Hideo; and Kumashiro, Hatsuyoshi, to Nippon Steel Corporation; and Kawasaki Jukogyo Kabushiki Kaisha. Method and apparatus for continuous casting. 5,335,715, Cl. 164-475.000.
Ohio State University: *See—*
Witiak, Donald T.; and Rotella, David P., 5,336,796, Cl. 556-137.000.
Ohira, Hideo: *See—*
Okazawa, Tomoyuki; Tokumaru, Seiichi; Ohira, Hideo; Ishii, Masao; and Kano, Yoshiaki, 5,336,727, Cl. 525-327.800.
Ohishi, Hideshi: *See—*
Kamiya, Kiyoshi; Uchiyama, Shigeru; Ohishi, Hideshi; Sugiyama, Norikazu; Mizuguchi, Yoshinori; and Hirano, Masahiko, 5,337,081, Cl. 348-61.000.
Ohji, Hiroshi, to Rohm Co., Ltd. Nonvolatile semiconductor memory device having adjacent memory cells and peripheral transistors separated by field oxide. 5,337,274, Cl. 365-185.000.
Ohki, Konomu: *See—*
Katayama, Masatake; Sato, Makoto; Ohta, Yutaka; Sugita, Mitsuru; and Ohki, Konomu, 5,336,634, Cl. 437-63.000.
Ohmeda Inc.: *See—*
Pologe, Jonas A., 5,335,659, Cl. 128-633.000.
Ohmega Electronics, Inc.: *See—*
Rice, James M., 5,336,391, Cl. 205-152.000.
Ohmori, Jun-ya: *See—*
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,336,679, Cl. 514-300.000.
Ohmori, Toshiaki: *See—*
Ban, Cozy; Ohmori, Toshiaki; and Fukumoto, Takaaki, 5,336,356, Cl. 156-345.000.
Ohnemus, Randall E.: *See—*
Kuracina, Thomas C.; Ohnemus, Randall E.; and Smith, Craig W., 5,336,197, Cl. 604-192.000.
Streck, Donald A.; Kuracina, Thomas C.; and Ohnemus, Randall E., 5,336,200, Cl. 604-198.000.
Ohnishi, Michikazu; Ogoshi, Hiroshi; and Takikawa, Kazuoki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Pillow type pressure detector. 5,335,551, Cl. 73-731.000.
Ohnishi, Tomoyoshi: *See—*
Michishita, Kenji; Ohnishi, Tomoyoshi; Maruyama, Youichi; and Takahashi, Shigemi, 5,336,112, Cl. 439-581.000.
Ohnishi, Yasuzo, to Naomoto Industry Co., Ltd. Pressing machine for unfolding seamed and folded margins in clothing. 5,335,431, Cl. 38-1.00B.
Ohno, Takashi; and Tsubouchi, Toshiyuki, to Idemitsu Kosan Co., Ltd. Process for producing an oligomer. 5,336,827, Cl. 585-502.000.
Ohnsorge, Horst; Weygang, Adolf; and Heidemann, Rolf, to Alcatel N.V. Optical communications system for the subscriber area with optical amplifiers. 5,337,175, Cl. 359-125.000.
Ohsawa, Takaaki: *See—*
Matsunaga, Noboru; Azeyanagi, Kazuyoshi; Sogaishi, Ichirou; Katakura, Takeo; Ueda, Yoshihisa; and Ohsawa, Takaaki, 5,336,465, Cl. 419-2.000.
Ohta, Hidetoshi: *See—*
Toida, Shoji; Ito, Seiichi; Ohta, Hidetoshi; and Ishikawa, Isao, 5,335,809, Cl. 220-425.000.
Ohta, Kenji: *See—*
Nakayama, Junichiro; Katayama, Hiroyuki; and Ohta, Kenji, 5,336,531, Cl. 427-510.000.
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, to Yamanouchi Pharmaceutical Co., Ltd. Tetrahydroimidazopyridine derivatives and salts thereof. 5,336,679, Cl. 514-300.000.
Ohta, Yutaka: *See—*
Katayama, Masatake; Sato, Makoto; Ohta, Yutaka; Sugita, Mitsuru; and Ohki, Konomu, 5,336,634, Cl. 437-63.000.
Ohtani, Ken-ichi; Sakamoto, Osamu; Houzouji, Masahiko; and Yamamoto, Hiroshi, to Bando Kagaku Kabushiki Kaisha. Method for vulcanizing endless rubber belts. 5,336,461, Cl. 264-294.000.
Ohtani, Yasumi; Hatakeyama, Hideo; Kuriyama, Toru; Nakagome, Hideki; and Matsubara, Yoichi, to Kabushiki Kaisha Toshiba. Pulse tube refrigerator. 5,335,505, Cl. 62-6.000.
Ohto, Osamu; Hamano, Tomoyuki; Kozuka, Eiji; and Miyawaki, Naokazu, to Kabushiki Kaisha Toshiba. Semiconductor memory device. 5,337,286, Cl. 365-230.010.
Ohtsu, Motoichi; and Hori, Hirokazu, to Tokyo Institute of Technology. Method for controlling movement of neutral atom and apparatus for carrying out the same. 5,337,324, Cl. 372-32.000.
Ohtsuki, Sumito, to Kabushiki Kaisha Toshiba. Buried plate type DRAM. 5,336,912, Cl. 257-304.000.
Oikawa, Masahiro; Nemoto, Hiroyuki; Hamanaka, Kenjiro; Kishimoto, Takashi; Funada, Fumiaki; Hamada, Hiroshi; and Shibatani, Takashi, to Nippon Sheet Glass, Inc.; and Sharp Kabushiki Kaisha. Transmissive image display device. 5,337,186, Cl. 359-628.000.
Oiles Corporation: *See—*
Yamamoto, Katsuhiko; Kojima, Masamitsu; and Kato, Kazuo, 5,335,563, Cl. 74-512.000.
Oishi, Harumichi: *See—*
Sato, Kazuyasu; Mackawa, Takashi; Yamazaki, Mitsuru; and Oishi, Harumichi, 5,337,134, Cl. 355-319.000.
Oka, Naoki: *See—*
Goda, Hisashi; Asahina, Yasutoshi; Hashimoto, Masayuki; and Oka, Naoki, 5,336,365, Cl. 156-643.000.
Oka, Osamu; and Yoshino, Katsumi, to Tomoegawa Paper Co., Ltd.; and Yoshino, Katsumi. Composite comprising paper and electro-conducting polymers and its production process. 5,336,374, Cl. 162-138.000.
Okabe, Gen: *See—*
Nakamura, Toshifumi; Okabe, Gen; and Yamamoto, Susumu, 5,337,156, Cl. 358-404.000.
Okada, Hiroshi: *See—*
Fukasawa, Hideki; Ota, Shuichi; and Okada, Hiroshi, 5,337,192, Cl. 360-10.300.
Okada, Shoji: *See—*
Kogita, Hidekazu; Nishikawa, Masumi; and Okada, Shoji, 5,337,190, Cl. 359-877.000.
Okamura Corporation: *See—*
Yamaguchi, Tomoshige; and Nasu, Nobuaki, 5,335,969, Cl. 297-301.000.
Okazaki, Iwao; Abe, Koichi; Minamizawa, Hidehito; and Fukuyama, Takeo, to Toray Industries, Inc. Biaxially oriented laminated film comprising particles in a specific ratio of particle density. 5,336,079, Cl. 428-323.000.
Okazawa, Tomoyuki; Tokumaru, Seiichi; Ohira, Hideo; Ishii, Masao; and Kano, Yoshiaki, to Tosoh Corporation. Maleic anhydride copolymer. 5,336,727, Cl. 525-327.800.
Okegawa, Tadao: *See—*
Imaki, Katsuhiro; Arai, Yoshinobu; and Okegawa, Tadao, 5,336,681, Cl. 514-347.000.
Oki Electric Industry Co., Ltd.: *See—*
Cho, Shizuo, 5,337,278, Cl. 365-200.000.
Murakami, Norio, 5,336,910, Cl. 257-239.000.
Tanagawa, Kouji; and Miyazaki, Kazuhiko, 5,337,280, Cl. 365-218.000.
Okimoto, Satoshi; Ohara, Kiyotaka; Seki, Takao; and Kato, Hifumi, to Brother Kogyo Kabushiki Kaisha. Facsimile data processing apparatus. 5,337,158, Cl. 358-426.000.
Oklahoma Medical Research Foundation: *See—*
Esmon, Charles T.; and Esmon, Naomi L., 5,336,610, Cl. 435-212.000.
Oklobzija, Milan: *See—*
Guberovic, Zeljko; Hohnjec, Marijan; Kuftinec, Josip; and Oklobzija, Milan, 5,336,775, Cl. 546-347.000.
Okubo, Hirotoshi, to Pioneer Electronic Corporation. Apparatus and method for searching a target time code recorded on disks. 5,337,296, Cl. 369-32.000.
Okuda, Fumio: *See—*
Kezuka, Hiroaki; and Okuda, Fumio, 5,336,803, Cl. 558-277.000.
Okuda, Masayuki: *See—*
Fujiwara, Takayoshi; Okuda, Masayuki; and Honjo, Takashi, 5,336,070, Cl. 418-220.000.
Okuda, Tsunehisa, to Mazda Motor Corporation. Automatic transmission control system. 5,337,239, Cl. 364-424.100.
Okufuji, Yukitaka, to Bridgestone Corporation. Apparatus for winding and pressure-fitting a small width strip to a rotating body. 5,335,415, Cl. 29-820.000.
Okui, Hideaki: *See—*
Sugitani, Toshiaki; Tsuyuki, Kenichiro; Miyata, Yukie; Ebashi, Tadashi; Okui, Hideaki; Nakajima, Yoshikazu; and Sawada, Kenzo, 5,336,617, Cl. 435-252.100.
Okumura, Osamu: *See—*
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,337,174, Cl. 359-73.000.
Okuno, Osamu: *See—*
Kinouchi, Yohsuke; Ai, Minoru; Mizutani, Hiroshi; Okuno, Osamu; Yamauchi, Kiyotaka; Yamataka, Akira; and Suzuki, Hiroya, 5,337,033, Cl. 335-302.000.
Okuno, Toshifumi; and Miyaji, Teruo, to Takeda Chemical Industries, Ltd. Phenolic resin molding compounds and the articles thereof. 5,336,724, Cl. 525-143.000.
Okuse, Satoshi: *See—*
Shiobara, Toshio; Futatsumori, Koji; Okuse, Satoshi; Aoki, Takayuki; Wakao, Miyuki; and Ino, Shigeki, 5,336,786, Cl 549-215.000

VOL 1165 ISS 2 AG 9 1994 UMI

Olin Corporation: *See—*
Ashok, Sankaranarayanan, 5,336,342, Cl. 148-432.000.
Ruggiero, Murray A.; Stegmeier, Renata C.; Marien, Bruce A.; and Wilbourn, Keith O., 5,336,787, Cl. 549-239.000.

Olson, Thomas E.: *See—*
Vigil, Dennis; and Olson, Thomas E., 5,336,234, Cl. 606-159.000.

Olsson, Lennart F.: *See—*
Crump, John C., III; Fischer, Eugene B.; Wilson, Robert C.; Winterson, Warren D.; Jaxmar, Leif E. B.; Norberg, Gustav M.; and Olsson, Lennart F., 5,335,590, Cl. 99-479.000.

Olympus Optical Co., Ltd.: *See—*
Hashi, Hiroshi; and Togawa, Tsuyoshi, 5,337,304, Cl. 369-215.000.
Horiguchi, Toshio, 5,336,872, Cl. 235-454.000.
Kimura, Kenji; and Kiyoshi, Tsuji, 5,335,662, Cl. 128-662.030.
Nonaka, Osamu; Kindaichi, Takeshi; and Mizokami, Kazunori, 5,337,116, Cl. 354-403.000.
Yagi, Akira; and Miyamoto, Hirofumi, 5,336,887, Cl. 250-306.000.

Omeljanovsky, Erzam M.: *See—*
Balmashnov, Alexander A.; Golovanivsky, Konstantin S.; Omeljanovsky, Erzam M.; Pakhomov, Andrew V.; and Polyakov, Alexander Y., 5,336,533, Cl. 427-562.000.

Omron Corporation: *See—*
Kitagawa, Keiji; and Tani, Ikuo, 5,337,402, Cl. 395-133.000.

Omura, Satoshi; Tanaka, Haruo; Shiomi, Kazuro; and Liu, Jing R., to Kitasato Institute, The. Calpain inhibitor cystamidin A and its production. 5,336,783, Cl. 548-561.000.

Onda, Hiroyuki: *See—*
Nakatsugawa, Kiyoshi; Oguri, Kazuyoshi; Onda, Hiroyuki; and Watanabe, Hiroyuki, 5,336,966, Cl. 313-532.000.

Ondrus, Daniel J.; and Heimberg, Manfred, to Quantum Chemical Corporation. Fractional melt flow rate polymer powders and process for their preparation. 5,336,731, Cl. 525-370.000.

O'Neill, Inc.: *See—*
Meltzer, Mark J.; and Tompkins, Tommas J., 5,336,346, Cl. 156-73.400.

Onishi, Kimimasa: *See—*
Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugane, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, 5,335,700, Cl. 139-435.100.

Onishi, Masashi; Nakazato, Koji; Chigusa, Yoshiki; Watanabe, Minoru; and Miyajima, Yoshiaki, to Sumitomo Electric Industries, Ltd.; and Nippon Telegraph and Telephone Corporation. Optical functioning glass and method of manufacturing same, optical fiber, waveguide device, and laser device. 5,337,401, Cl. 385-142.000.

Onishi, Shinzo: *See—*
Anim-Appiah, Kofi D.; Riad, Sedki M.; and Onishi, Shinzo, 5,336,997, Cl. 324-207.160.

Ono Pharmaceutical Co., Ltd.: *See—*
Imaki, Katsuhiro; Arai, Yoshinobu; and Okegawa, Tadao, 5,336,681, Cl. 514-347.000.

Ono, Tadashi: *See—*
Watanabe, Toyofumi; Furuta, Akihiko; Ono, Tadashi; Yomura, Yoshinori; and Iwado, Shuichi, 5,336,567, Cl. 428-629.000.

Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, to Orient Chemical Industries, Ltd. Trisazo dye and dye composition containing the same. 5,336,763, Cl. 534-680.000.

Ono, Yoji: *See—*
Aoki, Tomoyuki; Iino, Yasuo; Ono, Yoji; and Asai, Shinichiro, 5,336,425, Cl. 252-100.000.

Ono, Yuzo; and Shirakabe, Kazuhisa, to NEC Corporation. Method and arrangement of generating a non-diffractive beam at a location which is remote from optical element and application thereof. 5,336,875, Cl. 235-467.000.

Onoda Cement Co., Ltd.: *See—*
Saiki, Yukinori; and Nukui, Kazunori, 5,336,772, Cl. 546-286.000.

Ooi, Keiji: *See—*
Ikeda, Shinji; Ooi, Keiji; and Katoh, Ken, 5,336,723, Cl. 525-139.000.

Op de Beeck, Werner: *See—*
Tavernier, Serge; Op de Beeck, Werner; Van Wunsel, Danny; and Marksch, Paul, 5,336,580, Cl. 430-106.600.

Opp, Fred W., to Boeing Company, The. 360 degree adjustable vibration dampening and thermal isolating bracket. 5,335,893, Cl. 248-635.000.

Optical Communication Products, Inc.: *See—*
Chen, Bor U.; Ghorbanali, Mehrdad; and Buck, Jack B., 5,337,396, Cl. 385-92.000.

Optical Radiation Corporation: *See—*
Baxter, Gregory R.; Tesone, Jeffrey; and Rivard, Glenn, 5,337,151, Cl. 356-401.000.

Ordidge, Roger J.: *See—*
Mansfield, Peter; Guilfoyle, David N.; and Ordidge, Roger J., 5,336,999, Cl. 324-309.000.

Orehotsky, John L.: *See—*
Bunczk, Charles J.; Burke, Peter A.; Camp, William R.; and Orehotsky, John L., 5,336,427, Cl. 252-104.000.

Orient Chemical Industries, Ltd.: *See—*
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, 5,336,763, Cl. 534-680.000.

Orlowski, David C., to Inpro Companies, Inc. Bearing alignment device for pillow blocks. 5,335,921, Cl. 277-30.000.

Orr, Ladd M.: *See—*
Stoddard, David C. F.; Orr, Ladd M.; Cooper, Alan D.; and Jarmuz, Jeffrey J., 5,335,593, Cl. 108-165.000.

Orthopaedic Biosystems, Ltd.: *See—*
Zang, Kerry, 5,336,225, Cl. 606-73.000.

Orthopaedic Research Institute: *See—*
Cooke, Francis W.; Marrero, Thomas R.; and Yasuda, Hirotsuga K., 5,336,699, Cl. 523-115.000.

Orvig, Christopher E. R.: *See—*
Edwards, David S.; Orvig, Christopher E. R.; and Poirier, Michael J., 5,336,482, Cl. 424-1.650.

Osakabe, Yasuhiro: *See—*
Kozawa, Tadahiko; Osakabe, Yasuhiro; and Suematu, Takashi, 5,335,648, Cl. 128-6.000.

Osaki, Haruyoshi: *See—*
Uetani, Yasunori; Doi, Yasunori; Hashimoto, Kazuhiko; Osaki, Haruyoshi; and Hanawa, Ryotaro, 5,336,583, Cl. 430-191.000.

Osgar, Michael L., to NOW Technologies, Inc. Liquid chemical container and dispensing system. 5,335,821, Cl. 222-83.000.

Oshimi, Fumiaki; Kubota, Susumu; Enomoto, Masami; and Otsuki, Yutaka, to Nippon Oil Co., Ltd. Method for producing phenolic resin. 5,336,752, Cl. 528-205.000.

Osram Sylvania Inc.: *See—*
McSweeney, Robert T., 5,336,437, Cl. 252-301.40P.

Osten, Frederick F. Cord connectors. 5,336,106, Cl. 439-369.000.

Ostop, John A.: *See—*
Potyraj, Paul A.; Petrosky, Kenneth J.; and Ostop, John A., 5,336,631, Cl. 437-60.000.

Ostwald, Timothy C.; and Hoge, David T., to Storage Technology Corporation. Buffered access system for an automated computer media storage library. 5,336,030, Cl. 414-277.000.

Ota, Hiroyuki; and Chikuma, Kiyofumi, to Pioneer Electronic Corporation. Wavelength conversion element. 5,337,399, Cl. 385-122.000.

Ota, Hiroyuki: *See—*
Igarashi, Ichiro; Sasaki, Hiroshi; Jitsumatsu, Tetsuji; Ota, Hiroyuki; Sato, Masanobu; and Nishimuta, Hirofumi, 5,336,574, Cl. 430-23.000.

Ota, Junzo; Mura, Hajime; and Kawachi, Toshihiko, to Kyowa Limited. Medical bandage and method for using the same. 5,336,162, Cl. 602-41.000.

Ota, Shuichi: *See—*
Fukasawa, Hideki; Ota, Shuichi; and Okada, Hiroshi, 5,337,192, Cl. 360-10.300.

Ota, Tsuyoshi: *See—*
Morishita, Akira; Ota, Tsuyoshi; Suzuki, Tatsuya; Ito, Sukehide; and Ryuko, Yoshikazu, 5,335,705, Cl. 141-275.000.

Otake, Masahiro; Takahashi, Toyofumi; Nishiumi, Satoshi; and Mukai, Takuo, to Nintendo Co., Ltd.; and Ricoh Co., Ltd. Still picture display apparatus and external storage device used therein. 5,337,069, Cl. 345-123.000.

Otani, Shigeki: *See—*
Tanaka, Takaho; Kamimura, Yutaka; Otani, Shigeki; and Ishizawa, Yoshio, 5,336,362, Cl. 117-42.000.

Otani, Takao: *See—*
Sano, Haruyuki; Otani, Takao; Nishitani, Masayoshi; Takatsu, Mikio; Ueyoko, Kiyoshi; Yamamoto, Toshiaki; and Miyazaki, Shinichi, 5,335,707, Cl. 152-543.000.

Otari, Inc.: *See—*
Ito, Masayuki; and Makada, Takami, 5,337,195, Cl. 360-27.000.

Otsuki, Yutaka: *See—*
Oshimi, Fumiaki; Kubota, Susumu; Enomoto, Masami; and Otsuki, Yutaka, 5,336,752, Cl. 528-205.000.

Otto Junker GmbH: *See—*
Schluckebier, Dieter, 5,336,868, Cl. 219-675.000.

Oude Alink, Bernardus A.: *See—*
Shah, Sayed S.; Fahey, William F.; and Oude Alink, Bernardus A., 5,336,441, Cl. 252-390.000.

Oudeman, Paul J.: *See—*
Kittlety, Leslie M.; and Oudeman, Paul J., 5,335,693, Cl. 137-625.260.

Owashi, Hitoaki: *See—*
Arai, Hideo; Owashi, Hitoaki; Hosokawa, Kyoichi; Nishimura, Keizo; Watatani, Yoshizumi; and Shibata, Akira, 5,337,199, Cl. 360-8.000.

Owen, Hartley; and Harandi, Mohsen N., to Mobil Oil Corporation. Process for the alkylation of benzene-rich gasoline. 5,336,820, Cl. 585-323.000.

Oxford, Jerry J. Camera quick release. 5,337,100, Cl. 354-81.000.

Oxford Medical Limited: *See—*
McDougall, Ian L.; Armstrong, Alan G. M.; and Hawkes, Robert C., 5,337,001, Cl. 324-318.000

Oyama, Eiji, to Canon Kabushiki Kaisha. Information signal output apparatus with amplitude control having selected speed response. 5,337,201, Cl. 360-68.000

Oyamada, Noboru: *See—*
Matsumoto, Takeji; Oyamada, Noboru; Kiritani, Michinori; Fukunaga, Teruo; Abe, Yoshio; and Kondoh, Hiroshi, 5,335,601, Cl. 104-88.00R.

Oyanagi, Hideaki: *See—*
Yamashita, Kenkichi; and Oyanagi, Hideaki, 5,335,595, Cl. 101-158.000.

Ozaki, Hideharu, to NEC Corporation. Scan path circuit with clock signal feedback, for skew avoidance. 5,337,321, Cl. 371-22.300.

Ozaki, Hiroyuki; and Yokokawa, Takuya, to Fuji Photo Film Co., Ltd. Heat-developable diffusion transfer color photographic material. 5,336,761, Cl. 430-507.000

Ozaki, Masahide; Yamazaki, Makoto; and Dono, Kenji, to Yoshida Kogyo K.K. Method of forming space portions in slide fastener chain. 5,335,404, Cl. 29-408.000.

Ozarski, Robert G.: *See—*
Devilbiss, John J.; Lugosi, Steve; and Ozarski, Robert G., 5,336,325, Cl. 118-719.000.

Ozawa, Akira; Matsuyama, Taizo; Homma, Eiichi; Hata, Syunroku; Matsuo, Kenzaburo; and Nakatsuka, Kazushige, to Honda Giken Kogyo Kabushiki Kaisha. Multi-spindle machine tool. 5,336,025, Cl. 408-46.000.

Ozawa, Kazuhisa; and Harada, Hiroaki, to ENPLAS Corporation; and. IC socket and its contact pin. 5,336,096, Cl. 439-72.000.

Ozturk, Mehmet C.; Grider, Douglas T.; Sanganeria, Mahesh K.; Ashburn, Stanton P.; and Wortman, Jimmie J., to North Carolina State University at Raleigh. Selective deposition of doped silicon-germanium alloy on semiconductor substrate, and resulting structures. 5,336,903, Cl. 257-19.000.

Pabst, Joanne K.; Winter, William E., Jr.; Vaughn, Stephen N.; Culross, Claude C.; and Reynolds, Steve D., to Exxon Research and Engineering Company. Liquefaction of coal with aqueous carbon monoxide pretreatment. 5,336,395, Cl. 208-403.000.

Pachaly, Bernd: *See—*
Kalchauer, Wilfried; and Pachaly, Bernd, 5,336,799, Cl. 556-466.000.

Pacou, Thierry; Arsene-Henry, Patrice; Pham, Tung N.; and Genuist, Yann, to Thomson-CSF Semiconducteurs Specifiques; and Thomson-CSF Semiconducteurs Specifiques. Method for the manufacture of a transistor having differentiated access regions. 5,336,627, Cl. 437-41.000.

Paddock, Martin. Vehicle for carrying coiled rolls. 5,336,027, Cl. 410-49.000.

Page, Timothy G.: *See—*
Southern, Lincoln L., Jr.; and Page, Timothy G., 5,336,672, Cl. 514-188.000.

Pai, Damodar M.: *See—*
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.

Paine, Brian, to AE PLC. Process and apparatus for metal casting. 5,335,711, Cl. 164-66.100.

Pakhomov, Andrew V.: *See—*
Balmashnov, Alexander A.; Golovanivsky, Konstantin S.; Omeljanovsky, Erzam M.; Pakhomov, Andrew V.; and Polyakov, Alexander Y., 5,336,533, Cl. 427-562.000.

Palepu, Nageswara R.; and Herzyk, Tomaz R., to Erbamont, Inc. Cyclophosphamide monohydrate and lactose. 5,336,669, Cl. 514-53.000.

Palestrant, Aubrey M. Self-sealing valve device for angiographic catheters. 5,336,192, Cl. 604-167.000.

Pamag AG: *See—*
Dummermuth, Paul, 5,335,976, Cl. 299-39.000.

Pan, Anpei: *See—*
Biswas, Dipak R.; and Pan, Anpei, 5,337,381, Cl. 385-36.000.

Pan, Shaugun: *See—*
Qu, Zhimin; and Pan, Shaugun, 5,337,096, Cl. 353-7.000.

Panol, Georg: *See—*
Snider, Michael T.; High, Kane M.; Panol, Georg; Ultman, James, Richard, Russell B.; Stene, John K.; and Russell, Garfield B., 5,336,164, Cl. 604-4.000.

Panossian, Raffy. Puck or ball carrier. 5,335,956, Cl. 294-161.000.

Panoz, Donald E.: *See—*
Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., 5,336,504, Cl. 424-462.000.

Pantech, Inc.: *See—*
Qu, Zhimin; and Pan, Shaugun, 5,337,096, Cl. 353-7.000.

Pape, Richard F., to Belland AG. Process for the recovery of polymers dissolved in aqueous alkaline or acid media. 5,336,755, Cl. 528-486.000.

Paper Draper, Inc.: *See—*
Cotton, David; Richards, Adelbert H., III; and Harris, James E., 5,336,323, Cl. 118-428.000.

Pardue, Jerry E.: *See—*
Kaplan, Roy I.; and Pardue, Jerry E., 5,336,428, Cl. 252-162.000

Parham, William W.: *See—*
Krutak, James J.; Cushman, Michael R.; Parham, William W.; Coates, Clarence A.; Weaver, Max A.; and Patonay, Gabor, 5,336,714, Cl. 524-608.000.

Parille, Donald R.: *See—*
Chin, Stephen; Parille, Donald R.; Aimone, Paul R.; McCormick, Robert L.; Johnson, Paul R.; and Kilinski, Bart M., 5,335,717, Cl. 164-519.000.

Paris, Hans-Joachim: *See—*
Arvedi, Giovanni; Ludorff, Harald; Thurm, Hans G.; Parschat, Lothar; Pleschiutschnigg, Fritz-Peter; Paris, Hans-Joachim; and Steuten, Michael, 5,335,714, Cl. 164-446.000.

Park, John Y.; Ripley, Paul S.; and Dziabo, Anthony J., to Allergan, Inc. Methods, compositions and apparatus to disinfect lenses. 5,336,434, Cl. 252-187.210.

Park, Kyung-Tae; and Gastgeb, Raymond F., to Whitaker Corporation, The. Impact zone detection device. 5,336,959, Cl. 310-328.000.

Park, Nam J.: *See—*
Moon, Chi J.; Park, Sae C.; Kim, Myoung G.; Oh, Sea H.; Yim, Seong S.; Park, Nam J.; Choi, Young K.; and Sung, Moo J., 5,336,673, Cl. 514-202.000.

Park, Owen H., to Heartland Industries, Inc. Building structure. 5,335,462, Cl. 52-95.000.

Park, Sae C.: *See—*
Moon, Chi J.; Park, Sae C.; Kim, Myoung G.; Oh, Sea H.; Yim, Seong S.; Park, Nam J.; Choi, Young K.; and Sung, Moo J., 5,336,673, Cl. 514-202.000.

Parker-Hannifin Corporation: *See—*
Campbell, Chester D.; Harper, Sandra L.; Jain, Virender; Kenyon, Richard L.; Matthies, Alan; and Yabuki, Roy M., 5,335,513, Cl. 62-228.300.
Giesler, Dennis C., 5,335,894, Cl. 251-149.900.

Parker, Thomas E.: *See—*
Borchelt, Earl F.; and Parker, Thomas E., 5,337,026, Cl. 333-150.000.

Parschat, Lothar: *See—*
Arvedi, Giovanni; Ludorff, Harald; Thurm, Hans G.; Parschat, Lothar; Pleschiutschnigg, Fritz-Peter; Paris, Hans-Joachim; and Steuten, Michael, 5,335,714, Cl. 164-446.000.

Partio, Martti E. O. Device for removing liquid from inside a rotating cylinder or roll. 5,335,427, Cl. 34-119.000.

Pastor, Dominique, to Sextant Avionique. Method of detecting a useful signal affected by noise. 5,337,251, Cl. 364-484.000.

Patchett, Arthur A.: *See—*
Ashton, Wallace T.; Cantone, Christine L.; Chang, Linda L.; Maccoss, Malcolm; Chakravarty, Prasun K.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,336,778, Cl. 548-250.000.

Patel, Baiju V.: *See—*
Herzberg, Louis P.; Patel, Baiju V.; Ruiz, Antonio; Schaffa, Frank A.; and Willebeek-LeMair, Marc H., 5,337,311, Cl. 370-85.140.

Patel, Suresh R.: *See—*
Wiedner, Guenther; Duncan, John A.; and Patel, Suresh R., 5,335,372, Cl. 2-16.000.

Patent-Treuhand-Gesellschaft Fuer Elektrische Gluehlampen MBH: *See—*
Weiss, Werner; and Deisenhofer, Manfred, 5,336,969, Cl. 313-580.000.

Patermaster, John J. Simplified checkbook balancing computer system. 5,337,263, Cl. 564-705.020.

Pathold Investments Company Limited: *See—*
Cizek, Jaromir; and Galuszynski, Stanislaw, 5,335,612, Cl. 112-262.100.

Patonay, Gabor: *See—*
Krutak, James J.; Cushman, Michael R.; Parham, William W.; Coates, Clarence A.; Weaver, Max A.; and Patonay, Gabor, 5,336,714, Cl. 524-608.000.

Patrice, Andre M. Pool skimmer diverter assembly. 5,336,400, Cl. 210-169.000.

Patsch, Manfred: *See—*
Siegel, Bernd; Patsch, Manfred; and Kessel, Knut, 5,336,800, Cl. 558-30.000.

Patterson, Ralph W.: *See—*
Daly, Thomas P.; Moses, Edward I.; Patterson, Ralph W.; and Sawicki, Richard H., 5,337,333, Cl. 372-94.000.

Pauling, Horst; and Wehrli, Christof, to Hoffmann-La Roche Inc. Antioxidants. 5,336,683, Cl. 514-443.000.

Paulus, Eric J., to ITT Corporation. Surge suppression filter contact connector. 5,336,115, Cl. 439-620.000.

Paulus, Mireille: *See—*
Barthelemy, Pierre; Paulus, Mireille; Buchwald, Hans; Hellmann, Joachim; and Raszkowski, Boleslaus, 5,336,429, Cl. 252-171.000.

Pavco S.A.: *See—*
Forero, Miguel, 5,336,562, Cl. 428-373.000.

Pawlikowski, Joseph M.: *See—*
McKee, Michael J.; and Pawlikowski, Joseph M., 5,336,118, Cl. 439-876.000

Payne, Jewel; and Sick, August J., to Mycogen Corporation. *Bacillus thuringiensis* isolates denoted B.T. PS81F, active against lepidopteran pests. 5,336,492, Cl. 424-93.200.

Payton, Howard F.: *See—*
Marquis, Edward T.; Payton, Howard F.; and Meyer, Robert A., 5,336,790, Cl. 549-529.000.

Peairs, Mark: *See—*
Gormish, Michael J.; Peairs, Mark; and Stork, David G., 5,337,362, Cl. 380-54.000.

Pearce, Charles W.: *See—*
Chung, Bryan C.; DiBello, Gerald N.; Pearce, Charles W.; and Yanders, Kevin P., 5,336,371, Cl. 156-659.100.

Peceimer, Bradley T.: *See—*
Stoffers, Mark A.; Mokorarat, Dulyarat; and Peceimer, Bradley T., 5,335,458, Cl. 51-317.000.

Pechanek, Gerald G.: *See—*
Vassiliadis, Stamatis; Pechanek, Gerald G.; and Delgado-Frias, Jose G., 5,337,395, Cl. 395-27.000.

Pechiney Electrometallurgie: *See—*
Dubots, Dominique; and Faure, Pierre, 5,336,280, Cl. 51-293.000.

Peckerar, Martin C.: *See—*
Dobisz, Elizabeth A.; Marrian, Christie R. K.; Peckerar, Martin C.; and Rhee, Kee W., 5,336,892, Cl. 250-492.200.

Pedersen, Daniel E.: *See—*
Richter, Francis L.; Pedersen, Daniel E.; Biedscheid, May J.; and Fredell, Dale L., 5,336,500, Cl. 424-405.000

Pedigo, Jess: *See—*
Akhtar, Masyood; Le, Kim C.; Pedigo, Jess; and Smith, Charles H., 5,336,644, Cl. 501-15.000.

Peguform-Werke GmbH: *See—*
Auer, Adam, 5,336,072, Cl. 425-130.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Pekala, Richard W.: *See*—
Mayer, Steven T.; Feikert, John H.; Kaschmitter, James L.; and Pekala, Richard W., 5,336,274, Cl. 29-623.400

Pekka, Kolari; and Vesa, Kahonen. Method and system for setting the hydraulic pressure influencing a grab member. 5,335,955, Cl. 294-88.000.

Pellico, Michael A. Pet chewable products with enzymatic coating. 5,336,494, Cl. 424-94.400.

Pendleton, Charles D.: *See*—
Berzofsky, Jay A.; Hosmalin, Anne; Clerici, Mario S.; Germain, Ronald N.; Shearer, Gene; Moss, Bernard; and Pendleton, Charles D., 5,336,758, Cl. 530-326.000.

Peng, Man-ling: *See*—
Kirby, Edward P.; and Peng, Man-ling, 5,336,667, Cl. 514-12.000.

Penisson, Dennis J., to Bilco Tools, Inc. Slip-type gripping assembly. 5,335,756, Cl. 188-67.000.

Penn, Jack C.: *See*—
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.

Penn Ventilator Co. Inc.: *See*—
Guida, Joseph; and Odeh, Hani M., 5,336,050, Cl. 416-186.00R.

Pennsylvania Research Corporation, The: *See*—
Snider, Michael T.; High, Kane M.; Panol, Georg; Ultman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., 5,336,164, Cl. 604-4.000.

Pensabene, Saverio F.; and Royalty, Roy L., to Eveready Battery Company, Inc. Electrode having a conductive contact area and method of making the same. 5,336,276, Cl. 29-623.500.

Penwill, John C., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Improved head-up display pitch bar system for aircraft. 5,337,048, Cl. 340-975.000.

PepsiCo, Inc.: *See*—
Chang, Pei K., 5,336,510, Cl. 426-72.000.

Peret, Andrew R.: *See*—
Lindsey, Kurt L.; Peret, Andrew R.; Hastings, Jerome K.; and Smith, Richard G., 5,337,214, Cl. 361-709.000.

Pering, Richard D.: *See*—
Lindauer, James M.; and Pering, Richard D., 5,337,405, Cl. 395-147.000.

Perotto, Aldo: *See*—
Abate, Maurizio; Carnevale, Claudio; Nenzioni, Pietro; and Perotto, Aldo, 5,335,643, Cl. 123-679.000.

Person, Steven M.: *See*—
DeMoore, Howard W.; and Person, Steven M., 5,335,596, Cl. 101-350.000.

Pet, Robert J.: *See*—
Vermeulen, Adrianus J. A.; and Pet, Robert J., 5,336,971, Cl. 313-635.000.

Petchul, John; and Gaudreault, Rosemary, to Petchul, John. Composition for microemulsion gel having bleaching and antiseptic properties. 5,336,432, Cl. 252-186.280.

Peters, Joseph P. M.: *See*—
van Ballegooijen, Hendrik; Peters, Joseph P. M.; and Plum, Johannes T. A., 5,336,737, Cl. 526-70.000.

Peters, Richard W.: *See*—
French, John S.; and Peters, Richard W., 5,337,011, Cl. 330-258.000.

Peters, Rodney E.; and Croteau, Michael G., to Litton Systems, Inc. Single channel, dual wavelength laser rangefinder apparatus. 5,336,900, Cl. 250-561.000.

Peters, T. Scott: *See*—
Waits, C. Thomas; Stupka, Jonathan C.; Peters, T. Scott; and Schwartz, Alan S., 5,336,259, Cl. 623-2.000.

Petersen, Flemming O.; Lindgren, Claes; Moller, Brent; and Vigenberg, Stig F., to V. Kann Rasmussen Industri A/S. Balcony window with side railing for installation in an inclined roof. 5,335,461, Cl. 52-72.000.

Petersen Manufacturing Co., Inc.: *See*—
Cherenak, Thomas M.; Spanski, Jeffrey; and Zlomke, Steven, 5,335,772, Cl. 206-349.000.

Petersmann, Joseph: *See*—
Seidel, Willi; and Petersmann, Joseph, 5,335,567, Cl. 475-120.000.

Petkovic, Zivojin: *See*—
Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, 5,335,937, Cl. 280-728.00B.

Petoca Ltd.: *See*—
Takamatsu, Akio; and Nishimura, Yoshiyuki, 5,336,557, Cl. 428-300.000.

Petroleum Energy Center: *See*—
Iino, Akira; Iwamoto, Ryuichiro; and Mitani, Tsuyoshi, 5,336,394, Cl. 208-216.00R.

Petrolite Corporation: *See*—
Shah, Sayed S.; Fahey, William F.; and Oude Alink, Bernardus A., 5,336,441, Cl. 252-390.000.

Petrosky, Kenneth J.: *See*—
Potyraj, Paul A.; Petrosky, Kenneth J.; and Ostop, John A., 5,336,631, Cl. 437-60.000.

Pez, Guido P.: *See*—
Quinn, Robert; Laciak, Daniel V.; Appleby, John B.; and Pez, Guido P., 5,336,298, Cl. 95-49.000.

Pfeifer, Thomas M.: *See*—
Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,337,248, Cl. 364-468.000.

Pfizer Inc.: *See*—
Guberovic, Zeljko; Hohnjec, Marijan; Kuftinec, Josip; and Oklobzija, Milan, 5,336,775, Cl. 546-347.000.
Murtiashaw, Charles W.; and Quallich, George J., 5,336,771, Cl. 546-116.000.

Pham, Tung N.: *See*—
Pacou, Thierry; Arsene-Henry, Patrice; Pham, Tung N.; and Genuist, Yann, 5,336,627, Cl. 437-41.000.

Phan, Nguyet H.; Reddy, Vilambi N. R. K.; Ludwig, Frank A.; and Eliash, Bruce M., to Hughes Aircraft Company. Method of monitoring major constituents in plating baths. 5,336,380, Cl. 204-153.100.

Pharmaceutical Delivery Systems: *See*—
Ng, Steve Y. W.; and Heller, Jorge, 5,336,505, Cl. 424-486.000.

Pharmacia AB: *See*—
Andersson, Sven B., 5,335,678, Cl. 131-359.000.

Philibert, Daniel: *See*—
Nedelec, Lucien; Nique, Francois; and Philibert, Daniel, 5,336,686, Cl. 514-462.000.

Philip Morris Incorporated: *See*—
Crump, John C., III; Fischer, Eugene B.; Wilson, Robert C.; Winterson, Warren D.; Jaxmar, Leif E. B.; Norberg, Gustav M.; and Olsson, Lennart F., 5,335,590, Cl. 99-479.000.

Philips Electronics North America Corporation: *See*—
Fisch, Eberhard, 5,337,089, Cl. 348-446.000.

Phillips, Brian L.: *See*—
Jabbarai, Iraj; and Phillips, Brian L., 5,337,202, Cl. 360-97.010.

Phillips, Charles N. Concrete walls for buildings and method of forming. 5,335,472, Cl. 52-743.000.

Phillips Petroleum Company: *See*—
Spoo, Kevin J.; and Thompson, Roy G., 5,336,526, Cl. 427-372.200.

Photon Imaging Corp: *See*—
Hwang, Cherng-Jia, 5,337,325, Cl. 372-36.000.

Photonectics: *See*—
Lefevre, Herve ; and Martin, Philippe, 5,337,142, Cl. 356-350.000.

Photran Corporation: *See*—
Austin, R. Russel, 5,337,191, Cl. 359-885.000.

Piaget, Gary D.; and Gordon, Trace O. Treadmill with dual reciprocating treads. 5,336,146, Cl. 482-54.000.

Pialet, Joseph W.; Lal, Kasturi; and Bryant, Charles P., to Lubrizol Corporation, the. Polymeric salts as dispersed particles in electrorheological fluids. 5,336,423, Cl. 252-76.000.

Picanol N.V., naamloze vennootschap: *See*—
Beysert, Daniel; Meyns, Ignace; Sampers, Dirk; and Vandeweghe, Michel, 5,335,699, Cl. 139-82.000.

Picard, Catherine: *See*—
Leclerc, Vincent; Picard, Catherine; and Lavayssiere, Blandine, 5,336,880, Cl. 250-214.0VT.

Picard, Joseph A.; and Sliskovic, Drago R., to Warner-Lambert Company. Aminosulfonyl carbamates composition and method of use to treat hypercholesterolemia and atherosclerosis. 5,336,690, Cl. 514-605.000.

Pick, William A.: *See*—
Cummins, Brad L.; Pick, William A.; Sorn, Ronald R.; and Stocker, Karl F., 5,336,861, Cl. 200-339.000.

Picker International, Inc.: *See*—
Chmielewski, Thomas; Molyneaux, David A.; and Braum, William O., 5,336,988, Cl. 324-76.190.

Pickett, Scott: *See*—
Popli, Sanjay; Pickett, Scott; Hawley, David; Moni, Shankar; and Camarota, Rafael C., 5,336,950, Cl. 307-465.000.

Pierce, William C., to Nai Neway, Inc. Height control valve with adjustable spool. 5,335,695, Cl. 137-627.500.

Pierce, William C., to Nai Neway, Inc. Apparatus for mounting a trailing arm air suspension to a sliding frame. 5,335,932, Cl. 280-788.000.

Pieterse, Ian; Snyman, Nicolaas; and Minne, Andre. Agricultural vehicle. 5,335,739, Cl. 180-6.300.

Pike, Gayle B., to J. R. Simplot Company. Product length control system. 5,335,571, Cl. 83-13.000.

Pilet, Charles: *See*—
Neway, Tsehay; and Pilet, Charles, 5,336,666, Cl. 424-282.100.

Pinaud, Francois: *See*—
Antikow, Paul; and Pinaud, Francois, 5,336,709, Cl. 524-493.000.

Pink, Frederick C.: *See*—
Karlyn, William M.; Pink, Frederick C.; Lamarre, William L.; and Berry, Edward J., 5,335,594, Cl. 101-35.000.

Pioneer Electronic Corporation: *See*—
Nobe, Kenichi; Araki, Morio; and Arakawa, Takeharu, 5,337,244, Cl. 364-449.000.
Okubo, Hirotoshi, 5,337,296, Cl. 369-32.000.
Ota, Hiroyuki; and Chikuma, Kiyofumi, 5,337,399, Cl. 385-122.000.
Sugiura, Satoshi; and Yamakawa, Yuzo, 5,337,301, Cl. 369-110.000.
Takahashi, Shinichi, 5,337,299, Cl. 369-44.370.
Yamauchi, Keiichi; Shimizu, Toshihiko; and Sudo, Satomi, 5,336,844, Cl. 84-602.000.
Yanagisawa, Shuichi; Sakai, Tatsuro; Chuman, Takashi; Araki, Yasushi; and Matsui, Fumio, 5,336,584, Cl. 430-273.000.

Pipes, George R., to Eaton Corporation. Article handling system. 5,336,032, Cl. 414-331.000.

Piskie, Michael A.: *See*—
Gioutsos, Tony; and Piskie, Michael A., 5,337,238, Cl. 364-424.050.

Pitney Bowes Inc.: *See*—
Axelrod, Barry H.; Balga, John T., Jr.; and Cornell, Edward P., 5,337,358, Cl. 380-23.000.
Carroll, Terri A.; and Hasbani, Jacques E., 5,337,246, Cl. 364-464.020.
Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,337,248, Cl. 364-468.000.

Pitre, Joseph K.: *See*—
Nadler, Kirk C.; Broussard, Thomas R.; and Pitre, Joseph K., 5,336,473, Cl. 422-193.000.

Pituch, Thomas R.; and Basgil, Thomas M., to Sancoa International Co. System for applying literature to a wall of an object. 5,336,359, Cl. 156-568.000.

Plasensia, Armand: *See*—
Heidt, Thomas; Will, Henry; Rhodes, Greydon; Plasensia, Armand; and Clampitt, Roger, 5,336,467, Cl. 422-64.000.

Plastic Mold Technology Incorporated: *See*—
Proos, Gary K.; Sarver, Theodore M.; and Boehlke, Donald W., 5,335,935, Cl. 280-728.00B.

Platt, David C., to 3DO Company, The. Method for generating three dimensional sound. 5,337,363, Cl. 381-17.000.

Pleschiutschnigg, Fritz-Peter: *See*—
Arvedi, Giovanni; Ludorff, Harald; Thurm, Hans G.; Parschat, Lothar; Pleschiutschnigg, Fritz-Peter; Paris, Hans-Joachim; and Steuten, Michael, 5,335,714, Cl. 164-446.000.

Plum, Johannes T. A.: *See*—
van Ballegooijen, Hendrik; Peters, Joseph P. M.; and Plum, Johannes T. A., 5,336,737, Cl. 526-70.000.

Plumb, Richard: *See*—
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.

Poeschel, Robert L.: *See*—
Goebel, Dan M.; Poeschel, Robert L.; and Watkins, Ronnie M., 5,336,975, Cl. 315-111.410.

Pogue, Lonnie C.: *See*—
Winslow, Jeffrey S.; Pogue, Lonnie C.; and Roshon, Richard A., 5,336,152, Cl. 482-132.000.

Poineer Electronic Corporation: *See*—
Kikuchi, Susumu; Suzuki, Shiro; and Kodaira, Satoru, 5,337,368, Cl. 381-103.000.

Poirier, Marc A.; and Falkiner, Robert J., to Exxon Research & Engineering Co. Composition for reducing in-tank fuel pump copper commutator wear and method. 5,336,277, Cl. 44-343.000.

Poirier, Michael J.: *See*—
Edwards, David S.; Orvig, Christopher E. R.; and Poirier, Michael J., 5,336,482, Cl. 424-1.650.

Poklacki, Erwin S.: *See*—
Coady, Clive J.; Poklacki, Erwin S.; Zimmerman, John M.; Bishop, Timothy E.; and Derer, John L., 5,336,563, Cl. 428-375.000.

Polaschegg, Hans-Dietrich; and Steinbach, Bernd, to Fresenius AG. Implantable apparatus. 5,336,194, Cl. 604-175.000.

Polhemus, Gary D., to National Semiconductor Corporation. Adaptive equalization circuit for equalizing the frequency response of varying lengths of transmission line. 5,337,025, Cl. 333-28.00R.

Pollock, Eugene B. Feed intake cup. 5,335,619, Cl. 119-57.400.

Pologe, Jonas A., to Ohmeda Inc. Nasal septum probe for photoplethysmographic measurements. 5,335,659, Cl. 128-633.000.

Polston, Henry B.: *See*—
Sheppard, Sheron R.; and Polston, Henry B., 5,336,333, Cl. 134-22.110.

Polyakov, Alexander Y.: *See*—
Balmashnov, Alexander A.; Golovanivsky, Konstantin S.; Omeljanovsky, Erzam M.; Pakhomov, Andrew V.; and Polyakov, Alexander Y., 5,336,533, Cl. 427-562.000.

Polyclad Europe AB: *See*—
Masik, Jiri, 5,336,353, Cl. 156-273.700.

Polysar Limited: *See*—
Thompson, Ronald J.; Lunt, James; Lamont, John C.; and Kwok, John C., 5,336,719, Cl. 525-71.000.

Pomponi, Shirley A.: *See*—
Gulavita, Nanda K.; Gunasekera, Sarath P.; Pomponi, Shirley A.; Longley, Ross E.; and McCarthy, Peter J., 5,336,757, Cl. 530-317.000.

Pond, Stephen F.: *See*—
Narang, Ram S.; Pond, Stephen F.; Altavela, Robert P.; Warner, Fredrick A.; and Harold, Robert A., 5,336,319, Cl. 118-211.000.

Pong, Alex; and Pong, Skooks, to Cannondale Corporation. Bicycle bottom bracket/crank assembly. 5,335,928, Cl. 280-259.000.

Pong, Skooks: *See*—
Pong, Alex; and Pong, Skooks, 5,335,928, Cl. 280-259.000.

Popli, Sanjay; Pickett, Scott; Hawley, David; Moni, Shankar; and Camarota, Rafael C., to National Semiconductor Corporation. Configuration features in a configurable logic array. 5,336,950, Cl. 307-465.000

Port of Singapore Authority: *See*—
Seah, Khen H.; Heng, Yeow S.; and Chua, Chong W., 5,336,054, Cl. 417-2.000.

Porter, Neil: *See*—
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,336,789, Cl. 549-264.000.

Porzilli, Louis B. Multi-function wound protection bandage and medicant delivery system with simultaneous variable oxygenation. 5,336,209, Cl. 604-307.000.

Potechin, Jamey N.: *See*—
Ammann, Hans H.; Kovacs, Richard F.; Micks, Henry B., Jr.; Potechin, Jamey N.; Simons, Everett F.; and Tetz, John G., 5,335,405, Cl. 29-407.000.

Poth, Ulrich: *See*—
Kappes, Elisabeth; and Poth, Ulrich, 5,336,716, Cl. 525-23.000.

Potter, William: *See*—
Behrmann, Gregory P.; Smith, Dale; and Potter, William, 5,337,389, Cl. 385-77.000.

Potyraj, Paul A.; Petrosky, Kenneth J.; and Ostop, John A., to Westinghouse Electric Corporation. Method of making and trimming ballast resistors and barrier metal in microwave power transistors. 5,336,631, Cl. 437-60.000.

Powell, James W., to Ecoair Corporated. Control system for an air conditioning/refrigeration system. 5,335,507, Cl. 62-129.000.

Powers, Ernest G. Paper filter dispenser. 5,335,817, Cl. 221-43.000.

Pozar, Josef. Tea bag squeezer. 5,335,591, Cl. 100-116.000.

Poznansky, Mark J.; and Mao, Guo D. Superoxide dismutase-catalase conjugates. 5,336,493, Cl. 424-94.200.

PPG Industries, Inc.: *See*—
Lamers, Paul H., 5,336,314, Cl. 106-506.000.
Leader, Matthew J.; and Van Sin, Kee, 5,336,388, Cl. 204-406.000.

Prause, Reinhard: *See*—
Karbach, Bernhard; Prause, Reinhard; and Weber, Heinrich, 5,335,546, Cl. 73-622.000.

Praxair Technology, Inc.: *See*—
Sharma, Sudhir K.; Riley, Michael F.; Nowotarski, Mark S.; and Barlow, Alan R., 5,336,085, Cl. 432-64.000.

Precision Handling Devices Inc: *See*—
Ferguson, Gregory A.; and Gallot, David, 5,336,011, Cl. 401-247.000.

Precision Shooting Equipment, Inc.: *See*—
Smith, Allan F.; and Shepley, Paul E., Jr., 5,335,644, Cl. 124-23.100.

Precor Incorporated: *See*—
Rodden, Patrick T., 5,336,144, Cl. 482-54.000.

Preece Incorporated: *See*—
Remsburg, Ralph, 5,335,947, Cl. 285-316.000.

Premier Laser Systems, Inc.: *See*—
Anderson, Dallas W., 5,336,221, Cl. 606-27.000.

Premier Technology: *See*—
Tanzer, Raymond C.; and Hanchar, Peter J., 5,335,910, Cl. 273-121.00E.

Prima, S.p.A.: *See*—
Lauri, Leone, 5,336,694, Cl. 521-92.000.

Primary Delivery Systems, Inc.: *See*—
Weinstein, Jack, 5,335,824, Cl. 222-82.000.

Primes, Kathleen J.; Sigler, Gerald F.; Grenner, Gerd; and Kapmeyer, Wolfgang, to Hoechst Celanese Corporation. Divalent hapten derivatives. 5,336,621, Cl. 436-534.000.

Printronix, Inc.: *See*—
Farb, Norman E.; and Chon, James Y., 5,335,999, Cl. 400-124.210.

Pritchett, Robert L., to AT&T Bell Laboratories. Harmonic lock detector. 5,337,022, Cl. 331-1.00A.

Pritz, Steven E.: *See*—
Hancock, Robert L.; Pritz, Steven E.; Bauman, Robert C.; and Nowlan, Shawn J., 5,335,642, Cl. 123-634.000.

Probst, Joachim: *See*—
Schneider, Volker; Blum, Harald; Kubitza, Werner; and Probst, Joachim, 5,336,711, Cl. 524-507.000.

Prochaska, Hans J.; and Scotto, Kathleen W., to Sloan-Kettering Institute for Cancer Research. Use of flavonoids to treat multidrug resistant cancer cells. 5,336,685, Cl. 514-455.000.

Procter & Gamble Company, The: *See*—
Coffindaffer, Timothy W.; Bartolo, Robert G.; and Belfiore, Kathleen A., 5,336,419, Cl. 252-8.600.
Michael, Daniel W.; and Bacon, Dennis R., 5,336,445, Cl 252-548.000.

Procton, Brad I., to Endura Products, Inc. Astragal. 5,335,450, Cl 49-368.000.

Profil Verbindungstechnik GmbH & Co. KG: *See*—
Muller, Rudolf R. M.; and Babej, Jiri, 5,335,411, Cl. 29-512.000.

Proform Fitness Products, Inc.: *See*—
Dalebout, William T.; and Ellis, Richard B., 5,336,142, Cl 482-52.000.

ProGroup, Inc.: *See*—
Long, Clay, 5,335,914, Cl. 273-169.000.

Promident Manufacturing, Limited: *See*—
Sakurai, Masatoshi, 5,336,089, Cl. 433-126.000.

Proos, Gary K.; Sarver, Theodore M.; and Boehlke, Donald W., to Plastic Mold Technology Incorporated. Air bag cover/molded article with integral cover layer of leather. 5,335,935, Cl. 280-728.00B

Prosenbauer, Otto. Apparatus for obtaining nutritive substances by extracting bones and meat which optionally adheres thereon 5,336,126, Cl. 452-138.000.

Pryor, James N.; Bogdanor, James M.; and Welsh, William A., to W. R. Grace & Co.-Conn. Dual phase adsorption and treatment of glyceride oils. 5,336,794, Cl. 554-206.000.

Pryor, Jeffery W.: *See*—
Pryor, John W.; and Pryor, Jeffery W., 5,335,890, Cl. 248-343.000.

Pryor, John W.; and Pryor, Jeffery W., to Pryor Products, Inc. Ceiling track mounting apparatus. 5,335,890, Cl. 248-343.000.

Pryor Products, Inc.: *See*—
Pryor, John W.; and Pryor, Jeffery W., 5,335,890, Cl. 248-343.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Pudet, Thierry: *See—*
Baudelaire, Patrick; Gangnet, Michel; Herve, Jean-Claude; Pudet, Thierry; and Thong, Jean-Manuel V., 5,337,404, Cl. 395-141.000

Pugach, Joseph: *See—*
Salek, Jeffrey S.; Pugach, Joseph; and Rubino, Mark R., 5,336,812, Cl. 568-721.000.

Puhler, Alfred: *See—*
Wohlleben, Wolfgang; Muth, Gunter; Puhler, Alfred; and Rieb, Gunther J., 5,336,607, Cl. 435-172.300.

Py, Christophe: *See—*
Leroux, Thierry; and Py, Christophe, 5,336,973, Cl. 315-14.000.

Pye, Michael R.; and Williams, Stephen A., to Shaye Communications Limited. High performance antenna for hand-held and portable equipment. 5,337,061, Cl. 343-702.000.

Pyle, Norman R. Hair drying towel. 5,336,543, Cl. 428-78.000.

Qi, Hao. Double-vessel can. 5,335,813, Cl. 220-524.000.

Qi, Jian S., to Occidental Chemical Corporation. Purification of 2,4,5-trifluorobenzoic acid. 5,336,806, Cl. 562-494.000.

Qu, Zhimin; and Pan, Shaugun, to Pantech, Inc. Method for generating three-dimensional spatial images. 5,337,096, Cl. 353-7.000.

Quach, Tony K., to United States of America, Air Force. Backside support for thin wafers. 5,336,930, Cl. 257-774.000.

Qualcomm Incorporated: *See—*
Sutton, Todd; Gregory, Sherman; Waltman, Joan T.; and White, Katherine W., 5,337,338, Cl. 377-33.000.

Quality Biological, Inc.: *See—*
Brown, Ronald L.; and Schwartz, Gretchen, 5,336,614, Cl. 435-240.200.

Quallich, George J.: *See—*
Murtiashaw, Charles W.; and Quallich, George J., 5,336,771, Cl. 546-116.000.

Quantum Chemical Corporation: *See—*
Kiang, Webster W., 5,336,721, Cl. 525-78.000.
Ondrus, Daniel J.; and Heimberg, Manfred, 5,336,731, Cl. 525-370.000.
Smith, David W.; Hanes, Ronnie M.; Scheben, John A.; and Augustine, Steve M., 5,336,802, Cl. 560-245.000.

Quantum Materials, Inc.: *See—*
Layher, Francis W.; and Sutter, Francis A., 5,336,357, Cl. 156-391.000.

Quick, Richard L.: *See—*
Greelis, John P.; Quick, Richard L.; and Woker, Gary M., 5,336,183, Cl. 607-97.000.

Quinn, Matthew J.: *See—*
Marandici, Mircea P.; and Quinn, Matthew J., 5,337,373, Cl. 382-51.000.

Quinn, Robert; Laciak, Daniel V.; Appleby, John B.; and Pez, Guido P., to Air Products and Chemicals, Inc. Polyelectrolyte membranes for the separation of acid gases. 5,336,298, Cl. 95-49.000.

Quint, Johannes H. M. M., to U.S. Philips Corporation. Zener diode having a reference diode and a protective diode. 5,336,924, Cl. 257-603.000.

Quintero, Lillian J.; Cosgrove, Deios M.; and Nguyen-Thien-Nhon, Diana, to Baxter International Inc. Stentless heart valve and holder. 5,336,258, Cl. 623-2.000.

R. H. Murphy Company, Inc.: *See—*
Murphy, Robert H., 5,335,771, Cl. 206-328.000.

R. H. Rowley Co.: *See—*
Rowley, John H., 5,335,569, Cl. 81-125.000.

Raab, Eberhard; Reichardt, Manfred; and Schuder, Bernd, to Amphenol-Tuchel Electronics GmbH. Contacting device for standard chip card and SIM card. 5,336,877, Cl. 235-475.000.

Rabinovitz Talmon; Gilad-Smolinsky, Zvi; and Rutenberg, Mordechay, to [illegible] Aircraft Industries Ltd. Externally mounted track apparatus for a wheel chair. 5,335,741, Cl. 180-8.200.

Racal-Datacom, Inc.: *See—*
Kung, Ching Y., 5,337,320, Cl. 371-15.100.

Rader, James E.; and Smith, William L. Phase stable viscoelastic cleaning compositions. 5,336,426, Cl. 252-102.000.

Raffa, Robert B.; and Vaught, Jeffrey L., to McNeilab, Inc. Composition comprising a tramadol material and acetaminophen and its use. 5,336,691, Cl. 514-629.000.

Raffoni, Giuseppe, to Alfamacchine Di Raffoni Giuseppe. Laminar staple for angularly joining profiled strips. 5,336,038, Cl. 411-478.000.

Ragan, Lawrence H.: *See—*
Hoff, Don G.; and Ragan, Lawrence H., 5,337,314, Cl. 370-94.100.

Rahnenfuhrer, Eckhard: *See—*
Thiesen, Stefan; and Rahnenfuhrer, Eckhard, 5,335,599, Cl 102-431.000.

Rainer, Norman B. Process for insolubilizing absorbed metal ions. 5,336,704, Cl. 524-30.000.

Rajagopalan, Natarajan: *See—*
Na, George C.; and Rajagopalan, Natarajan, 5,336,507, Cl. 424-489.000.

Rajala, Richard M.: *See—*
Hennessee, Robert P.; Barwin, David A.; Rudzewicz, Robert G.; and Rajala, Richard M., 5,335,514, Cl. 62-227.000.

Rajewski, Robert K. Detonation arrestor with cooling section and quenching section. 5,336,083, Cl. 431-346.000.

Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., to Schlumberger Technology Corporation. Integrated permeability measurement and resistivity imaging tool. 5,335,542, Cl. 73-152.000.

Rambus, Inc.: *See—*
Ware, Frederick A.; Gasbarro, James A.; Dillon, John B.; Griffin, Matthew M.; Barth, Richard M.; and Horowitz, Mark A., 5,337,285, Cl. 365-227.000.

Ramsay, Michael V. J.: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,336,789, Cl. 549-264.000.

Ramsteiner, Gerard: *See—*
Bailly, Alain; Ramsteiner, Gerard; and Saurou, Michel, 5,336,202, Cl. 604-240.000.

Ranalletta, Joseph V.: *See—*
Oakley, Clyde G.; Busse, Lawrence J.; Dietz, Dennis R.; Shishilla, John E.; and Ranalletta, Joseph V., 5,335,663, Cl. 128-662.000.

Rancoule, Gilbert I., to Vesuvius Crucible Company. Zirconia graphite slide gate plates. 5,335,833, Cl. 222-600.000.

Rand, James A.: *See—*
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., 5,336,335, Cl. 136-258.000.

Randall, John N.; Wooley, James R.; and Fagan, William H. Stretching device. 5,335,649, Cl. 601-24.000.

Randall K. Inc.: *See—*
Bandimere, John K., 5,335,627, Cl. 119-856.000.

Ranney, David F., to Access Pharmaceuticals, Inc. Polychelating agents for image and spectral enhancement (and spectral shift). 5,336,762, Cl. 534-16.000.

Rano, Thomas A.: *See—*
Dininno, Frank P.; Greenlee, Mark L.; Rano, Thomas A.; and Lee, Wendy, 5,336,674, Cl. 514-210.000.

Ransburg Corporation: *See—*
Seitz, David M.; and Elbertson, Michael D., 5,335,854, Cl. 239-146.000.

Rao, Ashok K.: *See—*
Lee, Lin-Nan; Rao, Ashok K.; and Bhargava, Sanjai, 5,337,085, Cl 348-398.000.

Rao, Nippani R.; Abouzahr, Saad M.; Spencer, Russ; and Falkowski, Denis E., to Chrysler Corporation. Composition for molding of vehicle body panels. 5,336,710, Cl. 524-494.000.

Rapoport, David M., to New York University. Method and apparatus for continuous adjustment of positive airway pressure for treating obstructive sleep apnea. 5,335,654, Cl. 128-204.230.

Rasmussen, Jerald K.: *See—*
Heilmann, Steven M.; Rasmussen, Jerald K.; Krepski, Larry R.; Milbrath, Dean S.; and Coleman, Patrick L., 5,336,742, Cl. 526-260.000.

Raszkowski, Boleslaus: *See—*
Barthelemy, Pierre; Paulus, Mireille; Buchwald, Hans; Hellmann, Joachim; and Raszkowski, Boleslaus, 5,336,429, Cl. 252-171.000.

Ratcliff, Keith: *See—*
Green, David T.; Bolanos, Henry; Blewett, Jeffrey J.; Ratcliff, Keith; Viola, Frank J.; and Sherts, Charles R., 5,336,232, Cl 606-151.000.

Raue, Reimund, to Zahnradfabrik Friedrichshafen AG. Clutch with a synchronizing device. 5,335,762, Cl. 192-48.910.

Ravetti, Robert G.; and Dougherty, Thomas K., to Hughes Aircraft Company. Chemically sensitive fiber optic cable. 5,337,376, Cl 385-12.000.

Rawlings, Richard T.; Bowman, Kirk; and Holton, Bradley R. Portable programmable liquid feed dispensing device. 5,335,625, Cl 119-74.000.

Rawlins, P. J. Thomas. Fuel tank cleaning system and method of reducing contaminants in fuel. 5,336,418, Cl. 210-799.000.

Ray Myers Corporation: *See—*
Myers, Raymond L., 5,335,797, Cl. 211-50.000.

Ray, Shaun, to Metal-Fab, Inc. Adjustable exhauster arm assembly 5,336,130, Cl. 454-65.000.

Raymond, Paul C., III, to General Electric Company. Preparation of copolycarbonate from resorcinol. 5,336,751, Cl. 528-204.000.

Raytheon Company: *See—*
Borchelt, Earl F.; and Parker, Thomas E., 5,337,026, Cl 333-150.000.

Read-Rite Corporation: *See—*
Stoffers, Mark A.; Mokorarat, Dulyarat; and Peceimer, Bradley T., 5,335,458, Cl. 51-317.000.

Reading, Michael: *See—*
Marcus, Sanford M.; and Reading, Michael, 5,335,993, Cl 374-11.000

Reddy, Srinivasa S. N.: *See—*
Casey, Jon A.; Divakaruni, Renuka S.; Natarajan, Govindarajan; Reddy, Srinivasa S. N.; and Sammet, Manfred, 5,336,444, Cl. 252-513.000.

Reddy, Vilambi N. R. K.: *See—*
Phan, Nguyet H.; Reddy, Vilambi N. R. K.; Ludwig, Frank A.; and Eliash, Bruce M., 5,336,380, Cl. 204-153.100.

Redman, Brian C.: *See—*
Nettleton, John E.; Barr, Dallas N.; and Redman, Brian C., 5,336,899, Cl. 250-561.000.

Reeder, Ryan A.: *See—*
Foster, L. Dale; and Reeder, Ryan A., 5,335,384, Cl. 5-622.000.
Foster, L. Dale; and Reeder, Ryan A., 5,335,651, Cl. 128-202.130.

Reedy, Michael H., to Lee Rowan Company. Sports equipment support rack. 5,335,794, Cl. 211-13.000.

Refojo, Miguel F.; and Tolentino, Felipe I. Method of treating eye disorders with silicon/fluorosilicone copolymer oil. 5,336,487, Cl. 424-78.040.

Rehfuss, John W., to BASF Corporation. Tri-carbamate-functional crosslinking agents. 5,336,566, Cl. 428-524.000.

Rehus, Tommy L. Pull clamps for straightening automobile underframes and door hinge pillars, and their use. 5,335,533, Cl. 72-422.000.

Reich, Cary J.: *See—*
Barrett, Graham D.; Link, William J.; and Reich, Cary J., 5,336,261, Cl. 623-5.000.

Reichardt, Manfred: *See—*
Raab, Eberhard; Reichardt, Manfred; and Schuder, Bernd, 5,336,877, Cl. 235-475.000.

Reichert, William W.: *See—*
Nae, Hemi N.; Reichert, William W.; and Eng, Alice C., 5,336,647, Cl. 501-146.000.

Reihl, Peter: *See—*
Reinsch, Burkhard; and Reihl, Peter, 5,335,961, Cl. 296-213.000.

Reiner, Richard A.; and Vogel, David L., to Eaton Corporation. Electrical load center interior panel having molded insulating support panel with snap-in bus bars. 5,337,211, Cl. 361-637.000.

Reinforced Earth Company, The: *See—*
Josselyn, Allan H., 5,335,815, Cl. 220-445.000.

Reinhall, Per. Composition for vibration damping. 5,335,463, Cl. 52-167.00R.

Reinsch, Burkhard; and Reihl, Peter, to Webasto Karosseriessysteme GmbH. Vehicle roof with a series of plates. 5,335,961, Cl. 296-213.000.

Reis, Richard B.: *See—*
Eitrheim, John K.; and Reis, Richard B., 5,336,939, Cl. 307-269.000.

Reiss, Heinz: *See—*
Horr, Alfred; Reiss, Heinz; and Brede, Uwe, 5,335,600, Cl. 102-470.000.

Reiter, Ferdinand: *See—*
Romann, Peter; Reiter, Ferdinand; and Maier, Martin, 5,335,864, Cl. 239-585.100.

Reittu, Osmo, to Vaisala Oy. Fastening arrangement between the closing piece or valve piece of a sonde balloon and the neck of the sonde balloon. 5,335,689, Cl. 137-231.000.

Remenyik, Carl J.: *See—*
Hylton, James O.; and Remenyik, Carl J., 5,335,552, Cl. 73-861.000.

Remsburg, Ralph, to Preece Incorporated. Quick disconnect ball joint coupling. 5,335,947, Cl. 285-316.000.

Renfer, Dale S.: *See—*
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.

Renishaw Transducer Systems, Limited: *See—*
Chaney, Raymond J., 5,337,145, Cl. 356-363.000.

Renn, Robert M.: *See—*
Walburn, Douglas M.; Bradley, Morgan J.; Jones, John W.; Irlbeck, Robert D.; and Renn, Robert M., 5,336,095, Cl. 439-67.000.

Research Foundation for the State University of N.Y.: *See—*
Coller, Barry S., 5,336,618, Cl. 435-240.270.

Research Medical, Inc.: *See—*
Salerno, Tomas A.; and Fox, Douglas G., 5,336,170, Cl. 604-24.000.

Reunamaki, Pauli T., to Glasstech, Inc. Method for heating a flat glass sheet. 5,337,393, Cl. 392-417.000.

Reuser, Leonardus T. M.: *See—*
Van Den Mosselaar, Franciscus L. M. T.; Termaten, Gerrit J.; and Reuser, Leonardus T. M., 5,335,406, Cl. 29-426.300.

Revilock, Alan J.: *See—*
Rossoll, Mary P.; Revilock, Alan J.; and Wong, Anthony S., 5,336,273, Cl. 29-623.200.

Rexnord Corporation: *See—*
Schladweiler, Timothy J., 5,335,768, Cl. 198-853.000.

Reyes, Thomas T. B.: *See—*
Castonguay, Roger N.; Arnold, David; Morgan, Roger J.; Glabau, Frederic W.; Tucholski, Henry J.; and Reyes, Thomas T. B., 5,337,031, Cl. 335-201.000.

Reynolds, Alvin E.: *See—*
Kilmer, Lauren G.; and Reynolds, Alvin E., 5,336,214, Cl. 606-1.000.

Reynolds Consumer Products Inc.: *See—*
Bach, Gary M.; and Crowe, Robert E., 5,336,544, Cl. 428-117.000.

Reynolds, Steve D.: *See—*
Pabst, Joanne K.; Winter, William E., Jr.; Vaughn, Stephen N.; Culross, Claude C.; and Reynolds, Steve D., 5,336,395, Cl 208-403.000.

RHC/Spacemaster Corporation: *See—*
Williamson, Lawrence J., Jr.; Smith, Donald C.; and Snyder, Charles R., 5,336,097, Cl. 439-94.000.

Rhee, Kee W.: *See—*
Dobisz, Elizabeth A.; Marrian, Christie R. K.; Peckerar, Martin C.; and Rhee, Kee W., 5,336,892, Cl. 250-492.200.

Rheem Australia Limited: *See—*
Chater, Garry D.; and Wilson, George, 5,336,523, Cl. 427-231.000.

Rheinmetall GmbH: *See—*
Thiesen, Stefan; and Rahnenfuhrer, Eckhard, 5,335,599, Cl. 102-431.000.

Rheox, Inc.: *See—*
Cody, Charles A.; and Magauran, Edward D., 5,336,372, Cl. 162-5.000.

Hartman, Terrence L.; and Cody, Charles A., 5,336,733, Cl. 525-411.000.
Nae, Hemi N.; Reichert, William W.; and Eng, Alice C., 5,336,647, Cl. 501-146.000.

Rhodes, Greydon: *See—*
Heidt, Thomas; Will, Henry; Rhodes, Greydon; Plasensia, Armand; and Clampitt, Roger, 5,336,467, Cl. 422-64.000.

Rhodes, Robin B.: *See—*
Brophy, Mark E.; Rhodes, Robin B.; and Counterman, Wayne S., 5,336,471, Cl. 422-175.000.

Rhone-Poulenc Chimie: *See—*
Blanchard, Gilbert; and Ferre, Gilbert, 5,336,804, Cl. 558-319.000.
Lahary, Pierre-Yves; and Roy, Serge, 5,336,754, Cl. 528-349.000.

Rhone Poulenc Fibres: *See—*
Antikow, Paul; and Pinaud, Francois, 5,336,709, Cl. 524-493.000.

Rhyne, James R.: *See—*
Baker, David C.; Bohrer, Kathryn A.; Flurry, Greogory A.; Lucas, Peter; and Rhyne, James R., 5,337,412, Cl. 395-275.000.

Riad, Sedki M.: *See—*
Anim-Appiah, Kofi D.; Riad, Sedki M.; and Onishi, Shinzo, 5,336,997, Cl. 324-207.160.

Rice, James M., to Ohmega Electronics, Inc. Method for producing a circuit board material employing an improved electroplating bath. 5,336,391, Cl. 205-152.000.

Rice, Kenner C.: *See—*
de Costa, Brian R.; Iadarola, Michael J.; Rice, Kenner C.; Rothman, Richard B.; and Berman, Karen F., 5,336,483, Cl. 424-1.850.

Richard, Joseph F. R. J.: *See—*
Morin, Joseph O. R.; and Richard, Joseph F. R. J., 5,337,400, Cl. 385-135.000.

Richard, Russell B.: *See—*
Snider, Michael T.; High, Kane M.; Panol, Georg; Ultman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., 5,336,164, Cl. 604-4.000.

Richards, Adelbert H., III: *See—*
Cotton, David; Richards, Adelbert H., III; and Harris, James E., 5,336,323, Cl. 118-428.000.

Richards, Bruce E.; Goodart, Tyrone G.; Vella, Philip A.; and Walton, John R., to Carus Corporation. Composition and method for sulfide control. 5,336,431, Cl. 252-184.000.

Richards, John W.: *See—*
Dorricott, Martin R.; Gillard, Clive H.; Richards, John W.; Morita, Tsuneo; Galt, James J.; David, Morgan W. A.; Burns, James E.; and Varsani, Shima R., 5,337,154, Cl. 348-448.000.

Richards, Kenneth E., Sr.; and Brown, Thomas H. Retractable break pad mechanism for in-line skates. 5,335,924, Cl. 280-11.200.

Richards, Susanna E.; Wills, William L.; Wetzel, Donna; and Rosado, Anibal, to Rohm and Haas Company. Impact resistant polymers. 5,336,720, Cl. 525-78.000.

Richardson, J. Mark: *See—*
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.

Richiero, Jean-Louis: *See—*
Riousset, Denis; and Richiero, Jean-Louis, 5,337,165, Cl. 358-496.000.

Richter, Axel, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Microminiaturized pump. 5,336,062, Cl. 417-413.00A.

Richter, Francis L.; Pedersen, Daniel E.; Biedscheid, May J.; and Fredell, Dale L., to Ecolab Inc. Sanitizing composition comprising a blend of aromatic and polyunsaturated carboxylic acid. 5,336,500, Cl. 424-405.000.

Richter, Wolfgang-Dieter; Hachmann, Ulrich; and Frahm, Peter, to Man GHH Schienenverkehrstechnik GmbH. Bogies for rail vehicles. 5,335,602, Cl. 105-168.000.

Ricoh Company, Ltd.: *See—*
Fujii, Tatsuya; Imai, Yukihiro; Sato, Yutaka; Fukui, Ryo; Sakamoto, Kazuo; Shiraishi, Naoto; and Yamada, Yoshiteru, 5,337,168, Cl. 358-539.000.
Gormish, Michael J.; Peairs, Mark; and Stork, David G., 5,337,362, Cl. 380-54.000.
Gotoh, Hiroshi; Emoto, Masami; and Yokomori, Kiyoshi, 5,337,302, Cl. 369-112.000.
Otake, Masahiro; Takahashi, Toyofumi; Nishiumi, Satoshi; and Mukai, Takuo, 5,337,069, Cl. 345-123.000.
Saeki, Shirou; Nakazato, Yukitaka; Hashimoto, Kenji; and Ikoma, Tadashi, 5,335,837, Cl. 226-110.000.
Sakano, Yukio, 5,337,162, Cl. 358-458.000.
Shiokawa, Keiichi; Akiyama, Mihoko; Ide, Yoji; Hiyoshi, Yoshihiko; Sato, Masahiro; and Surizaki, Kumi, 5,336,548, Cl. 428-212.000.
Suzuki, Nobutaka, 5,335,902, Cl. 271-121.000.
Takahashi, Tomoko; and Shoji, Hisashi, 5,337,075, Cl. 346-107.00R.
Tokita, Toshiaki; Tanaka, Motoharu; and Watada, Atsuyuki, 5,337,293, Cl. 369-13.000.
Tomita, Kan, 5,337,182, Cl. 359-217.000.

Ricoh Corporation: *See—*
Gormish, Michael J.; Peairs, Mark; and Stork, David G., 5,337,362, Cl. 380-54.000

Rieb, Gunther J.: *See—*
Wohlleben, Wolfgang; Muth, Gunter; Puhler, Alfred; and Rieb, Gunther J., 5,336,607, Cl. 435-172.300.

VOL 1165 ISS 2 AG 9 1994 UMI

Riedel-de Haen Aktiengesellschaft: *See—*
Winterfeldt, Andreas; Bartels, Gunter; and Kniepa, Reinhard, 5,336,818, Cl. 570-170.000.

Riehl, Fred, to RobertShaw Controls Company. Jet burner construction and heating apparatus utilizing the jet burner construction. 5,336,082, Cl. 431-286.000.

Rieland, Matthias: *See—*
Eicher, Johannes; Fazniewscy, Karl-Heinz; Rieland, Matthias; and Rudolph, Werner, 5,336,817, Cl. 570-168.000.

Riesner, Jed A., to Kraft General Foods, Inc. Bitterness inhibitors. 5,336,513, Cl. 426-548.000.

Riethmuller, Werner: *See—*
Wagner, Bernhard; Benecke, Wolfgang; Riethmuller, Werner; and Schnakenberg, Uwe, 5,335,544, Cl. 73-517.00R.

Riley, Kenneth L.: *See—*
Aldridge, Clyde L.; and Riley, Kenneth L., 5,336,654, Cl. 502-170.000

Riley, Michael F.: *See—*
Sharma, Sudhir K.; Riley, Michael F.; Nowotarski, Mark S.; and Barlow, Alan R., 5,336,085, Cl. 432-64.000.

Rimondi, Renato: *See—*
Cappi, Angelo; and Rimondi, Renato, 5,335,485, Cl. 53-570.000.

Ringgenberg, Paul D.; and Beck, Harold K. Formation testing apparatus and method. 5,335,731, Cl. 166-336.000.

Riousset, Denis; and Richiero, Jean-Louis, to Alcatel Business Systems. Architecture for a telephone facsimile terminal. 5,337,165, Cl. 358-496.000.

Ripley, Paul S.: *See—*
Park, John Y.; Ripley, Paul S.; and Dziabo, Anthony J., 5,336,434, Cl. 252-187.210.

Rispeter, Siegfried, to Dr. Ing. h.c.F. Porsche AG. Adjustable hip joint endoprosthesis. 5,336,268, Cl. 623-23.000.

Rittler, Hermann L., to Corning Incorporated. Soluble, cellulated mold and foamable mixture. 5,336,645, Cl. 501-84.000.

Rivard, Glenn: *See—*
Baxter, Gregory R.; Tesone, Jeffrey; and Rivard, Glenn, 5,337,151, Cl. 356-401.000.

Rivera, Lester: *See—*
Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Aluma, Zvi, 5,336,979, Cl. 315-362.000.

Riverwood International Corporation: *See—*
Ganz, Robert H., 5,335,774, Cl. 206-153.000.

Rizzoli, Salvatore; and Belvederi, Bruno, to G.D Societa' Per Azioni. Device for feeding filters to a filter assembly machine. 5,335,766, Cl. 198-347.100.

Ro, Jong-Ho, to Hankook Metal Co., Ltd. Automatic pipe cutting device. 5,335,570, Cl. 82-48.000.

Roach, William R.: *See—*
Stewart, Roger G.; and Roach, William R., 5,337,068, Cl. 345-88.000.

Robart, Don L.: *See—*
Adaska, Jerry; and Robart, Don L., 5,335,851, Cl. 239-33.000.

Robbins, Karen E.: *See—*
Buchholz, Dale R.; Doss, William K.; Robbins, Karen E.; Yednak, Mark A.; and Hamilton, R. Lee, Jr., 5,337,313, Cl. 370-94.100.

Robert Bosch GmbH: *See—*
Alaze, Norbert; Gruber, Juergen; and Wolff, Guenter, 5,335,984, Cl. 303-119.200.
Bergner, Joao, 5,335,455, Cl. 51-170.0MT.
Blischke, Frank; Schneider, Erich; and Schnaibel, Eberhard, 5,335,538, Cl. 73-118.100.
Kruger, Hans-Eckhard; Koch, Harry; and Hartmann, Jurgen, 5,337,342, Cl. 379-40.000.
Lemke, Kuno; Voegele, Guenther; and Stehle, Harro, 5,335,479, Cl. 53-426.000.
Romann, Peter; Reiter, Ferdinand; and Maier, Martin, 5,335,864, Cl. 239-585.100.

Roberto, Ronald N. Method and apparatus for separation and recycling plastics. 5,335,786, Cl. 209-3.000.

Roberts, Gregory N., to Micron Semiconductor, Inc. Input EDS protection circuit. 5,336,908, Cl. 257-173.000.

Roberts, Hubert S., Jr.; Ablett, Adrian M.; and Hauser, Ambrose A., to General Electric Company. Arched combustor. 5,335,502, Cl. 60-752.000.

Roberts, Jeffrey G.: *See—*
Caspari, Richard B.; Roberts, Jeffrey G.; and Treace, James T., 5,336,266, Cl. 623-20.000.

Robertshaw Controls Company: *See—*
Kaigler, William J., 5,336,858, Cl. 200-83.00R.
Katchka, Jay R., 5,335,646, Cl. 126-350.00R.
Riehl, Fred, 5,336,082, Cl. 431-286.000.

Robertson, Jeffrey C. Responsive light lock for a film packet holder. 5,337,111, Cl. 354-277.000.

Robida, James E.: *See—*
Norton, George H., II; Lenk, Damon J.; and Robida, James E., 5,335,948, Cl. 292-169.230.

Robin-Brosse, Christian: *See—*
Balhadere, Aline; Bernard, Bruno; Moreau, Jacques A.; Mouricou, Isabelle; and Robin-Brosse, Christian, 5,336,522, Cl. 427-226.000.

Rockenfeller, Uwe; and Kirol, Lance D., to Rocky Research. Continuous constant pressure process for staging solid-vapor compounds. 5,335,510, Cl. 62-106.000.

Rockenfeller, Uwe; and Sarkisian, Paul, to Rocky Research. Triple effect absorption cycle apparatus. 5,335,515, Cl. 62-476.000.

Rockwell International Corporation: *See—*
Collins, Ray L., 5,337,024, Cl. 332-127.000.
Dax, Clifford D., 5,337,056, Cl. 342-128.000.
Khoshnevisan, Mohsen; Schoenwald, Jeffrey S.; Rode, Jonathan P.; Smith, Raymond J. D.; Kolloff, Bruce G.; and Beccue, Steve, 5,336,884, Cl. 250-231.180.
White, Stanley A., 5,337,257, Cl. 364-554.000.
Wozniak, Sam; Tran, Hung B.; Newstrom, Charles A.; and Tulyathan, Pravit, 5,337,016, Cl. 324-632.000.

Rocky Research: *See—*
Rockenfeller, Uwe; and Kirol, Lance D., 5,335,510, Cl. 62-106.000.
Rockenfeller, Uwe; and Sarkisian, Paul, 5,335,515, Cl. 62-476.000.

Rodden, Patrick T., to Precor Incorporated. Treadmill with elastomeric-spring mounted deck. 5,336,144, Cl. 482-54.000.

Rode, Jonathan P.: *See—*
Khoshnevisan, Mohsen; Schoenwald, Jeffrey S.; Rode, Jonathan P.; Smith, Raymond J. D.; Kolloff, Bruce G.; and Beccue, Steve, 5,336,884, Cl. 250-231.180.

Rodeffer, Charles E.: *See—*
Sherwood, William J.; and Rodeffer, Charles E., 5,337,062, Cl. 343-711.000.

Rodrigues, Klein A., to Halliburton Company. Water control. 5,335,726, Cl. 166-295.000.

Rogers, Charles L. Telescoping spinal fixator. 5,336,223, Cl. 606-61.000.

Rogers, George M. Apparatus for trimming a deformable substrate. 5,335,573, Cl. 83-870.000.

Rogers, Wesley A., to Electronic Development, Inc. Designing and evaluating filters for suppressing undesired signals. 5,337,261, Cl. 364-572.000.

Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., to Symtron Systems, Inc. Fire fighting trainer and apparatus. 5,335,559, Cl. 73-866.000.

Rohm Co., Ltd.: *See—*
Maeda, Hiroyuki, 5,337,367, Cl. 381-94.000.
Ohji, Hiroshi, 5,337,274, Cl. 365-185.000.
Tsuruta, Masataka, 5,336,633, Cl. 437-62.000.

Rohm and Haas Company: *See—*
Langenmayr, Eric J., 5,336,329, Cl. 134-7.000.
Richards, Susanna E.; Wills, William L.; Wetzel, Donna; and Rosado, Anibal, 5,336,720, Cl. 525-78.000.
Swift, Graham; and Yocom, Kathryn M., 5,336,744, Cl. 526-318.200.

Rokugawa, Hiroyuki; and Fujimoto, Nobuhiro, to Fujitsu Limited. Integrated semiconductor laser array apparatus. 5,337,323, Cl. 372-31.000.

Roland Meinl Company: *See—*
Hoshino, Yoshiki, 5,335,575, Cl. 84-421.000.

Rolando, Richard J.; Kotnour, Thomas A.; and Sax, James E., to Minnesota Mining and Manufacturing Company. Graft copolymers containing fluoroaliphatic groups. 5,336,717, Cl. 525-64.000.

Roll Systems, Inc.: *See—*
Golicz, Roman M., 5,335,899, Cl. 271-34.000.

Roller, George J.: *See—*
Martin, Michael J.; Roller, George J.; and Van Dongen, Richard, 5,335,903, Cl. 271-157.000.

Rolls-Royce plc: *See—*
Cahn, Robert W., 5,336,340, Cl. 148-409.000.
Leyland, Steven P.; and Ford, David A., 5,336,294, Cl. 75-406.000.

Rom, Paul F.; Briscoe, Roderick E.; and Williams, Christopher R., to DLP, Inc. Apparatus for sanitary removal of indwelling tubes. 5,336,193, Cl. 604-171.000.

Romac Industries Inc.: *See—*
Dent, Larry G.; and Denison, George F., 5,335,946, Cl. 285-243.000.

Romann, Peter; Reiter, Ferdinand; and Maier, Martin, to Robert Bosch GmbH. Fuel-injection valve. 5,335,864, Cl. 239-585.100.

Romeo, Aurelio: *See—*
della Valle, Francesco; and Romeo, Aurelio, 5,336,668, Cl. 514-023.000.
della Valle, Francesco; and Romeo, Aurelio, 5,336,767, Cl. 536-55.100.

Rooney, James: *See—*
Cassidy, Barrie; McNab, David; and Rooney, James, 5,337,345, Cl. 379-58.000.

Roos, Scott L.: *See—*
Gabrius, Algimantas J.; Roos, Scott L.; and DeCicco, Thomas J., 5,336,100, Cl. 439-115.000.

Roquencourt, Jacques: *See—*
Bonnet, Georges; Commault, Yves; Roquencourt, Jacques; and Sehan, Alain, 5,337,065, Cl. 343-767.000.

Rosa, John: *See—*
Stacey, Eric J.; and Rosa, John, 5,337,227, Cl. 363-71.000.

Rosado, Anibal: *See—*
Richards, Susanna E.; Wills, William L.; Wetzel, Donna; and Rosado, Anibal, 5,336,720, Cl. 525-78.000.

Rose, Harald; Degenhardt, Ralf; and Van der Mast, Karel D., to U.S. Philips Corporation. Electron beam apparatus. 5,336,885, Cl. 250-305.000.

Rosenblatt, David, to Yeda Research and Development Co. Ltd. Distributed resonant cavity light beam modulator. 5,337,183, Cl. 359-248.000.

Rosenbluth, Robert F.; Lenker, Jay A.; Greene, George R.; Brenneman, Rodney A.; and Maley, Patrick A., to Advanced Surgical Intervention, Inc. Urinary incontinence pad. 5,336,208, Cl. 604-329.000.

Roshon, Richard A.: *See—*
Winslow, Jeffrey S.; Pogue, Lonnie C.; and Roshon, Richard A., 5,336,152, Cl. 482-132.000.

Rosa, Gerald F.; and Mara, Richard M., to Anro Engineering, Inc. Coherent processing tunnel diode ultra wideband receiver. 5,337,054, Cl. 342-93.000.

Rossi, Alessandro, to Axis USA, Inc. Method and apparatus for fusing. 5,336,865, Cl. 219-117.100.

Rossi, David: *See—*
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.

Rossini, Stephano: *See—*
Basini, Luca; Marchionna, Mario; Rossini, Stephano; and Sanfilippo, Domenico, 5,336,655, Cl. 502-252.000.

Rossman, Pamela L.: *See—*
Albrecht, Harry A.; Keith, Dennis D.; Konzelmann, Frederick M.; Rossman, Pamela L.; and Weigele, Manfred, 5,336,768, Cl. 540-222.000.

Rossoll, Mary P.; Revilock, Alan J.; and Wong, Anthony S., to Gould Electronics Inc. Laser sealed solid electrolyte cell housed within a ceramic frame and the method for producing it. 5,336,273, Cl. 29-623.200

Rotecno AG: *See—*
Wiedner, Guenther; Duncan, John A.; and Patel, Suresh R., 5,335,372, Cl. 2-16.000.

Rotella, David P.: *See—*
Witiak, Donald T.; and Rotella, David P., 5,336,796, Cl. 556-137.000.

Rothman, Richard B.: *See—*
de Costa, Brian R.; Iadarola, Michael J.; Rice, Kenner C.; Rothman, Richard B.; and Berman, Karen F., 5,336,483, Cl. 424-1.850.

Rottger, Rolf, to Theodor Hymmen, Firma. Device for applying pressure to the surface of advancing work. 5,335,592, Cl. 100-151.000.

Rottingen, Jan: *See—*
Sola, Einar; Rottingen, Jan; Grimstad, Per; and Askeland, Atle, 5,336,792, Cl. 554-21.000.

Roussel-Uclaf: *See—*
Benoit, Marc; Demoute, Jean-Pierre; and Girodeau, Jean-Marc, 5,336,670, Cl. 514-63.000.
Heymes, Rene ; and Lutz, Andrr , 5,336,776, Cl. 548-194.000.
Nedelec, Lucien; Nique, Francois; and Philibert, Daniel, 5,336,686, Cl. 514-462.000.

Roveri, Orlando: *See—*
Neri, Armando; Cesari, Verter; Roveri, Orlando; and Manservigi, Alberto, 5,335,951, Cl. 293-118.000.

Rowland, Christopher A.: *See—*
Durgin, Russell F., Jr.; Rowland, Christopher A.; Sullivan, Roy H.; and Vergano, Michael G., 5,336,222, Cl. 606-50.000.

Rowland, Stephen M.: *See—*
Narayanan, Pallassana V.; Rowland, Stephen M.; and Stanley, Kimberly D., 5,336,518, Cl. 623-1.000.

Rowley, C. Allen, to E Squared Inc. Rotary heat driven compressor. 5,336,059, Cl. 417-348.000.

Rowley, John H., to R. H. Rowley Co. Eye screw driving device. 5,335,569, Cl. 81-125.000.

Roy, Serge: *See—*
Lahary, Pierre-Yves; and Roy, Serge, 5,336,754, Cl. 528-349.000

Royalty, Roy L.: *See—*
Pensabene, Saverio F.; and Royalty, Roy L., 5,336,276, Cl. 29-623.500

Rubino, Mark R.: *See—*
Salek, Jeffrey S.; Pugach, Joseph; and Rubino, Mark R., 5,336,812, Cl. 568-721.000.

Ruble, William R.: *See—*
Wallskog, Harvey A.; Landon, Frank L.; and Ruble, William R., 5,336,375, Cl. 202-96.000.

Rudi, Guttorm: *See—*
Kvifte, Halvor O.; and Rudi, Guttorm, 5,337,297, Cl. 369-36.000.

Rudiger, Eckhart: *See—*
Fischenich, Bernhard; Rudiger, Eckhart; and Sauer, Herbert, 5,335,585, Cl. 92-128.000.

Rudnick, Leslie R.: *See—*
Horodysky, Andrew G.; Hsu, Shih-Ying; Jeng, Andrew; and Rudnick, Leslie R., 5,336,420, Cl. 252-34.000.

Rudolph, Werner: *See—*
Eicher, Johannes; Fazniewscy, Karl-Heinz; Rieland, Matthias; and Rudolph, Werner, 5,336,817, Cl. 570-168.000.

Rudzewicz, Robert G.: *See—*
Hennessee, Robert P.; Barwin, David A.; Rudzewicz, Robert G.; and Rajala, Richard M., 5,335,514, Cl. 62-227.000.

Ruetschi, Heinz; and Hediger, Hansrudolf, to Ferrum AG. Apparatus for supplying containers to a sealing device. 5,335,474, Cl. 53-282.000.

Ruffins, Todd R.: *See—*
Hall, Robert B.; Barnett, Allen M.; Brown, Jacob E.; Checchi, Joseph C.; Ford, David H.; Kendall, Christopher L.; Mulligan, William P.; Rand, James A.; and Ruffins, Todd R., 5,336,335, Cl. 136-258.000.

Ruggiero, Murray A.; Stegmeier, Renata C.; Marien, Bruce A.; and Wilbourn, Keith O., to Olin Corporation. Process of making selected poly(dianhydrides) compounds. 5,336,787, Cl. 549-239.000.

Ruiz, Antonio: *See—*
Herzberg, Louis P.; Patel, Baiju V.; Ruiz, Antonio; Schaffa, Frank A.; and Willebeek-LeMair, Marc H., 5,337,311, Cl. 370-85.140.

Runnevik, Lars, to AB Mataki. Leak detection in roofs. 5,335,536, Cl 73-40.700.

Rupnik, Thomas J.; and Kite, Ron, to Ace Trainer, Inc. Golf club swing training device. 5,335,918, Cl. 273-186.200.

Ruppmich, Karl: *See—*
Niessner, Norbert; Fischer, Wolfgang; Guentherberg, Norbert; Ruppmich, Karl; and Seitz, Friedrich, 5,336,718, Cl. 525-67.000.

Rusnak, Dennis M., to Duriron Company, Inc., The. Hall effect monitoring of wear of bearing supporting a rotor within a stationary housing. 5,336,996, Cl. 324-207.200

Russell, Garfield B.: *See—*
Snider, Michael T.; High, Kane M.; Panol, Georg; Ultman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., 5,336,164, Cl. 604-4.000.

Russell, Larry L.; and Mohar, Louis, to Container-Care International, Inc. Water treatment device. 5,336,398, Cl. 210-143.000.

Russo, Malcolm G. One-handed alphanumeric keyboard and method. 5,336,002, Cl. 400-489.000.

Rustogi, Kedar N.: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,335,389, Cl. 15-167.100

Rutenberg, Mordechay: *See—*
Rabinovitz, Talmon; Gilad-Smolinsky, Zvi; and Rutenberg, Mordechay, 5,335,741, Cl. 180-8.200.

Rutgers, The State University of New Jersey: *See—*
Scheinbeim, Jerry I.; Newman, Brian N.; Lee, Jar W.; and Takase, Yoshihiko, 5,336,422, Cl. 252-62.900.

Rutgerswerke Aktiengesellschaft: *See—*
Schafer, Hans J., 5,336,529, Cl. 427-487.000.

Ruthrof, Klaus; Jax, Peter; Bode, Karl-Heinz; and Gunther, Klaus, to Siemens Aktiengesellschaft. Monitorable device and method for monitoring a device for sealing off a body. 5,335,535, Cl. 73-40.700.

Ruxam, Inc.: *See—*
Balmashnov, Alexander A.; Golovanivsky, Konstantin S.; Omeljanovsky, Erzam M.; Pakhomov, Andrew V.; and Polyakov, Alexander Y., 5,336,533, Cl. 427-562.000.

Ruzzi, Peter L.: *See—*
Morrell, Roger J.; Larson, David A.; and Ruzzi, Peter L., 5,335,977, Cl. 299-92.000.

Ryan, Dana W.; Slater, Charles R.; Solar, Matthew S.; and Turkel, David, to Symbiosis Corporation. Tubing for endoscopic electrosurgical suction-irrigation instrument. 5,336,220, Cl. 604-22.000.

Ryan, Dana W.: *See—*
Bales, Thomas O.; and Ryan, Dana W., 5,336,172, Cl. 604-27.000.

Ryan, Jeffrey M.: *See—*
Bates, Cary L.; and Ryan, Jeffrey M., 5,337,407, Cl. 395-153.000.

Ryan, Richard M. Line organizer. 5,336,179, Cl. 604-80.000.

Ryan, Robert P.; Crowther, John B.; and MacDonald, Robert A., to Wang Laboratories, Inc. Apparatus for managing page zero accesses in a multi-processor data processing system. 5,337,416, Cl. 395-400.000.

Ryle, Thomas R.: *See—*
Wu, Pai-Chuan; Ryle, Thomas R.; and Cancio, Leopoldo V., 5,336,457, Cl. 264-171.000.

Ryuko, Yoshikazu: *See—*
Morishita, Akira; Ota, Tsuyoshi; Suzuki, Tatsuya; Ito, Sukehide; and Ryuko, Yoshikazu, 5,335,705, Cl. 141-275.000

Ryuzaki, Takahiko, to Fuji Xerox Co., Ltd. Sheet transport roller device. 5,335,904, Cl. 271-272.000.

Saab Automobile Aktiebolag: *See—*
Gillbrand, Per; Johansson, Hans; Johansson, Per; and Elgh, Bengt, 5,335,743, Cl. 180-178.000.

Saarelainen, Asko: *See—*
Blomqvist, Kaj; Mustonen, Mika; Saarelainen, Asko; and Merilainen, Pekka, 5,335,653, Cl. 128-204.180.

Sabarino, Giampiero: *See—*
Gardano, Andrea; Sabarino, Giampiero; and Foa, Marco, 5,336,793, Cl. 554-138.000.

Sabatucci, Joseph P., to American Home Products Corporation. Inhibition of bone loss by 4-aryloxy-5-hydroxy-2(5H)-furanones. 5,336,687, Cl. 514-473.000.

Sachs, Isaac. Cable clamp having loop-forming wedge. 5,336,846, Cl. 174-40.0CC.

Sacker, Heidi: *See—*
Nass, Martina; and Sacker, Heidi, 5,336,695, Cl. 521-109.100

Sadot, Philippe; Thebault, Bertrand; Darmon, Marc; and Eudes, Jacques, to Alcatel Telspace. Method of coherent demodulation for phase shift keying and a device for implementing the method. 5,337,331, Cl. 375-83.000.

Saeki, Shirou; Nakazato, Yukitaka; Hashimoto, Kenji; and Ikoma, Tadashi, to Ricoh Company, Ltd. Automatic document feeder responsive to paper jam. 5,335,837, Cl. 226-110.000.

Safeway Stores, Inc.: *See—*
Haatveit, John R., 5,335,704, Cl. 141-95.000

Sager, Tamara L.: *See—*
Kaufman, Stephen B.; DiGianfilippo, Aleandro; Sager, Tamara L.; Bow, Clark F.; and DeVito, Ralph J., 5,335,816, Cl. 221-13.000

Sagiv, Oded; and Korol, Yevgeny, to Indigo N.V. Charging apparatus operative to charge a surface. 5,337,131, Cl. 355-221.000.

Sahashi, Masashi: *See—*
Funayama, Tomomi; Kobayashi, Tadahiko; Sakai, Isao; and Sahashi, Masashi, 5,336,337, Cl. 148-301.000.

Saiki, Yukinori; and Nukui, Kazunori, to Onoda Cement Co., Ltd. Method for preparing N-fluoropyridinium salt. 5,336,772, Cl. 546-286.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Saint Gobain Vitrage International: *See—*
Cornils, Gerd; and Kunert, Heinz, 5,336,349, Cl. 156-107.000

Saito, Hirohisa; Hoblyn, Jeremy P.; and Abe, Etsuo, to **Bluenox Japan Kabushiki Kaisha.** Device and method for removing nitrogen oxides. 5,336,081, Cl. 431-4.000.

Saito, Kazuhito; Kobayashi, Hideo; and **Katagiri,** Toshiaki, to **Sumitomo Electric Industries, Ltd.;** and **Nippon Telegraph and Telephone Corp.** Optical fiber switch including partitions for restricting surplus fibers. 5,337,378, Cl. 385-16.000.

Saito, Yoshimasa: *See—*
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; and Ishii, Yoshinori, 5,336,613, Cl. 435-228.000.

Saito, Yoshio; Lau, James C.; Chan, Steven S.; and Malmgren, Richard P., to **TRW Inc.** On-wafer integrated circuit electrical testing. 5,336,992, Cl. 324-754.000.

Saitoh, Jun: *See—*
Eguchi, Masaki; Saitoh, Jun; Iida, Hiroyuki; and Hiyoshi, Kozo, 5,337,366, Cl. 381-71.000.

Saitoh, Mie: *See—*
Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and Yokouchi, Akira, 5,337,371, Cl. 382-14.000.

Sakai Chemical Industry Co., Ltd.: *See—*
Yoshimoto, Masafumi; Nakatsuji, Tadao; and Shimizu, Hiromitsu, 5,336,651, Cl. 502-74.000.

Sakai, Hitoshi: *See—*
Yamamoto, Hiroshi; and Sakai, Hitoshi, 5,335,413, Cl. 29-593.000.

Sakai, Isao: *See—*
Funayama, Tomomi; Kobayashi, Tadahiko; Sakai, Isao; and Sahashi, Masashi, 5,336,337, Cl. 148-301.000.

Sakai, Katsuhito: *See—*
Ueki, Takashi; Sakai, Katsuhito; Kanda, Koichi; and Kamiya, Hideo, 5,335,553, Cl. 73-861.190.

Sakai, Shinsuke; and Miyabe, Takao, to **NEC Corporation.** Morpheme analysis device. 5,337,232, Cl. 364-419.080.

Sakai, Tatsuro: *See—*
Yanagisawa, Shuichi; Sakai, Tatsuro; Chuman, Takashi; Araki, Yasushi; and Matsui, Fumio, 5,336,584, Cl. 430-273.000.

Sakai, Tomoki: *See—*
Hidada, Osafumi; Ohe, Michisuke; Magoshi, Osam; Kato, Toshiyuki; and Sakai, Tomoki, 5,336,210, Cl. 604-307.000.

Sakaida, Shoji: *See—*
Kuriyama, Yuuji; Sakaida, Shoji; Ando, Hikaru; Ando, Masao; Ichimaru, Kazumi; and Sakamoto, Kazutoshi, 5,335,939, Cl. 280-728.00B.

Sakamoto, Kazuo: *See—*
Fujii, Tatsuya; Imai, Yukihiro; Sato, Yutaka; Fukui, Ryo; Sakamoto, Kazuo; Shiraishi, Naoto; and Yamada, Yoshiteru, 5,337,168, Cl. 358-539.000.

Sakamoto, Kazutoshi: *See—*
Kuriyama, Yuuji; Sakaida, Shoji; Ando, Hikaru; Ando, Masao; Ichimaru, Kazumi; and Sakamoto, Kazutoshi, 5,335,939, Cl. 280-728.00B.

Sakamoto, Mitsuru, to **NEC Corporation.** Device comprising lower and upper silicon layers as capacitor electrodes and method of manufacturing such devices. 5,336,922, Cl. 257-534.000.

Sakamoto, Osamu: *See—*
Ohtani, Ken-ichi; Sakamoto, Osamu; Houzouji, Masahiko; and Yamamoto, Hiroshi, 5,336,461, Cl. 264-294.000.

Sakane, Sakio, to **Kabushiki Kaisha Toshiba.** Drum type washing machine. 5,335,524, Cl. 68-12.040.

Sakano, Yukio, to **Ricoh Company, Ltd.** Image processing apparatus for preventing occurrence of moire in output image. 5,337,162, Cl. 358-458.000.

Sakata, Ko; Morita, Eitaroh; and Takezono, Tetsuya, to **Nippon Oil Company, Ltd.** Production of podophyllotoxins using podophyllum. 5,336,605, Cl. 435-119.000.

Sakata, Yoshio, to **Kabushiki Kaisha Toshiba.** Parallel/serial data conversion system. 5,337,409, Cl. 395-162.000.

Sakich, John D.: *See—*
Goch, Waymon P.; and Sakich, John D., 5,336,852, Cl. 174-176.000.

Sako, Masahiro: *See—*
Nakano, Kuniaki; Nakai, Kunio; Sako, Masahiro; Kurando, Shigeo; Kishigami, Minoru; Higashitani, Masahiro; Matsuo, Yasuhiro; Nishimura, Toshinori; Nakanishi, Tsugio; Hirai, Yasuyuki; and Mori, Shingo, 5,337,125, Cl. 355-260.000.

Sakurai, Masatoshi, to **Promident Manufacturing, Limited.** Dental handpiece. 5,336,089, Cl. 433-126.000.

Salecker, Roy W., to **Spartan Tool Div. of Pettibone Corp.** Cutter assembly for conduit cleaner. 5,335,388, Cl. 15-104.120.

Salek, Jeffrey S.; Pugach, Joseph; and Rubino, Mark R., to **Aristech Chemical Corporation.** Method of making 1,1-bis-(4-hydroxyphenyl)-3,3,5-trimethylcyclohexane. 5,336,812, Cl. 568-721.000.

Salerni, John V.: *See—*
Cornette, H. Mitchell; Salerni, John V.; and Schmuck, Phillip W., 5,335,727, Cl. 166-278.000.

Salerno, Tomas A.; and Fox, Douglas G., to **Research Medical, Inc.** Surgical site visualization wand. 5,336,170, Cl. 604-24.000.

Sales, Buenaventura Z. Drawstring puller and fastener for shoelaces. 5,335,400, Cl. 24-712.500.

Salomon S.A.: *See—*
Grandjacques, Philippe, 5,336,347, Cl. 156-221.000.
Lacroix, Jacques; Andrevon, Herve; and Deville, Dominique, 5,335,931, Cl. 280-602.000.

Salter Laboratories: *See—*
Bowe, Edwin A.; Klein, E. F., Jr.; and Boysen, Philip G., 5,335,656, Cl. 128-207.180.

Sammet, Manfred: *See—*
Casey, Jon A.; Divakaruni, Renuka S.; Natarajan, Govindarajan; Reddy, Srinivasa S. N.; and Sammet, Manfred, 5,336,444, Cl. 252-513.000.

Sammons, David W.: *See—*
Egen, Ned B.; Twitty, Garland E.; and Sammons, David W., 5,336,387, Cl. 204-301.000.

Sampers, Dirk: *See—*
Beyaert, Daniel; Meyns, Ignace; Sampers, Dirk; and Vandeweghe, Michel, 5,335,699, Cl. 139-82.000.

Samsung Corning Co., Ltd.: *See—*
Yeom, Hancheol; Lee, Hoseong; Jeong, Yucheol; An, Hoyoung; Choi, Juho; and Lee, Wonbo, 5,336,289, Cl. 65-334.000.

Samsung Electronics Co., Ltd.: *See—*
Byoung-Moo, Lee, 5,335,506, Cl. 62-6.000.
Harford, Jack R.; and Balaban, Alvin R., 5,337,091, Cl. 348-737.000.
Jang, Hyun-Soon, 5,337,277, Cl. 365-200.000.
Kim, Sang-uk, 5,337,196, Cl. 360-30.000.
Lee, Yong H., 5,336,626, Cl. 437-39.000.

Samsung Semiconductor Corporation: *See—*
Tong, Paul C. F., 5,336,625, Cl. 437-31.000.

Samuels, George J., to **AlliedSignal Inc.** Process for forming polyamide/poly(phenylene ether) blends. 5,336,732, Cl. 525-397.000.

Sanchez, George: *See—*
Cotton, Manny; Sanchez, George; and Baran, Bernardo, 5,335,435, Cl. 40-395.000.

Sancoa International Co.: *See—*
Pituch, Thomas R.; and Basgil, Thomas M., 5,336,359, Cl. 156-568.000.

Sanden Corporation: *See—*
Yokoyama, Hiroyuki, 5,336,058, Cl. 417-299.000.

Sandiford, Burton B.; Dovan, Hoai T.; and Hutchins, Richard D., to **Union Oil Company of California.** Method for delaying gelation of a gelable polymer composition injected into a subterranean formation. 5,335,733, Cl. 166-300.000.

Sandor, Robert B.: *See—*
Corallo, Cheryl F.; Sandor, Robert B.; and Blake, Ralph S., 5,336,464, Cl. 264-540.000.

Sandoz Ltd.: *See—*
Lee, Shy-Fuy, 5,336,662, Cl. 504-223.000.

Sandrock, Gerhard: *See—*
Mueller, Ulrich; Weiss, Ralf; Diehl, Klaus; Sandrock, Gerhard; and Sauvage, Lothar, 5,336,836, Cl. 585-824.000.

Sandstrom, Paul H.; Bauer, Richard G.; Burlett, Donald J.; and Sinsky, Mark S., to **Goodyear Tire & Rubber Company, The.** Tire with silica reinforced tread. 5,336,730, Cl. 525-332.600.

Sandvik AB: *See—*
Waldenstrom, Mats G.; Fischer, Udo K. R.; Hillert, Lars H.; and Dennis, Mahlon D., 5,335,738, Cl. 175-420.200.
Weinl, Gerold; and Mikus, Marian, 5,336,292, Cl. 75-230.000.

Sanfilippo, Domenico: *See—*
Basini, Luca; Marchionna, Mario; Rossini, Stephano; and Sanfilippo, Domenico, 5,336,655, Cl. 502-252.000.

Sanford, B. Kenneth; and Sanford, Penelope E. Greeting card holder 5,335,796, Cl. 211-45.000.

Sanford, Penelope E.: *See—*
Sanford, B. Kenneth; and Sanford, Penelope E., 5,335,796, Cl. 211-45.000.

Sanganeria, Mahesh K.: *See—*
Ozturk, Mehmet C.; Grider, Douglas T.; Sanganeria, Mahesh K.; Ashburn, Stanton P.; and Wortman, Jimmie J., 5,336,903, Cl. 257-19.000.

Sano, Haruyuki; Otani, Takao; Nishitani, Masayoshi; Takatsu, Mikio; Ueyoko, Kiyoshi; Yamamoto, Toshiaki; and Miyazaki, Shinichi, to **Sumitomo Rubber Industries, Ltd.** High speed heavy duty cross ply tire. 5,335,707, Cl. 152-543.000.

Sano, Kenji: *See—*
Ando, Hiromi; Matsunaga, Kunihiro; Sano, Kenji; and Suga, Satoru, 5,335,982, Cl. 303-117.100.

Sano, Yoshikazu: *See—*
Yamazaki, Yuichi; Mori, Hideyasu; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,337,348, Cl. 379-94.000.

Sansare, Subhash D.: *See—*
Choudhary, Vasant R.; Sansare, Subhash D.; and Chaudhari, Sopan T., 5,336,825, Cl. 585-500.000.

Sansone, Louis E.: *See—*
Ventimiglia, Phillip; and Sansone, Louis E., 5,337,290, Cl. 368-10.000.

Santoni S.r.l.: *See—*
Lonati, Francesco; Lonati, Ettore; Lonati, Fausto; and Lonati, Tiberio, 5,335,518, Cl. 66-108.00R.

Sanwa Kagaku Kenkyusho Co., Ltd.: *See—*
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideako; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,336,688, Cl. 514-492.000.

Sanyo Electric Co., Ltd: *See—*
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Yamamoto, Tooru; and Aseda, Tooru, 5,337,083, Cl. 348-256.000.

Sarantakis, Dimitri; Bicksler, James J.; Ellingboe, John W.; and Nikaido, Madelene, to **American Home Products Corporation.** Substituted aminopyrimidines as antihypertensives. 5,336,677, Cl. 514-256.000.

Sarkisian, Paul: *See—*
Rockenfeller, Uwe; and Sarkisian, Paul, 5,335,515, Cl. 62-476.000

Sarnacki, Frank H.: *See—*
Carr, Dennis C.; McLeskey, Edward P.; and Sarnacki, Frank H., 5,337,219, Cl. 361-794.000.

Saruwatari, Koichi: *See—*
Maejima, Masatsugu; Saruwatari, Koichi; Kurosaka, Akihito; Matsuo, Mamoru; Gunji, Hiroyoshi; and Muramatsu, Toshiki, 5,336,341, Cl. 148-415.000.

Sarver, Theodore M.: *See—*
Proos, Gary K.; Sarver, Theodore M.; and Boehlke, Donald W., 5,335,935, Cl. 280-728.00B.

Sasagawa, Katsuyoshi: *See—*
Haseyama, Ryuji; Takagi, Masatoshi; Hayashi, Kouzou; Sasagawa, Katsuyoshi; Kuroda, Kazuyuki; Kano, Taisaku; and Shikai, Kiyoshi, 5,336,749, Cl. 528-73.000.

Sasai, Hiroaki: *See—*
Shibasaki, Masakatsu; and Sasai, Hiroaki, 5,336,653, Cl. 502-170.000.

Sasaki, Hiroshi: *See—*
Igarashi, Ichiro; Sasaki, Hiroshi; Jitsumatsu, Tetsuji; Ota, Hiroyuki; Sato, Masanobu; and Nishimuta, Hirofumi, 5,336,574, Cl. 430-23.000.

Sasaki, Hitoshi: *See—*
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; and Ishii, Yoshinori, 5,336,613, Cl. 435-228.000.

Sasaki, Masatomi: *See—*
Kashiwagi, Nobuyoshi; and Sasaki, Masatomi, 5,336,698, Cl. 523-113.000.

Sasaki, Motoi: *See—*
Kintaichi, Yoshiaki; Hamada, Hideaki; Ito, Takehiko; Sasaki, Motoi; Tabata, Mitsunori; and Usui, Kazushi, 5,336,476, Cl. 423-239.100.

Sath, Yuji: *See—*
Takahashi, Katsuji; Sath, Yuji; and Mizuno, Takehisa, 5,336,735, Cl. 525-423.000.

Sato, Hitoshi; and Kanno, Yukio, to **Hitachi Construction Machinery Co., Ltd.** Brake valve. 5,335,495, Cl. 60-461.000.

Sato, Kazuo: *See—*
Kakiuchi, Takao; and Sato, Kazuo, 5,336,913, Cl. 257-321.000.

Sato, Kazuyasu; Maekawa, Takashi; Yamazaki, Mitsuru; and **Oishi, Harumichi,** to **Fujitsu Limited;** and **Daiwa Seiko, Inc.** Sheet inverting unit and an imaging forming apparatus employing the same. 5,337,134, Cl. 355-319.000.

Sato, Maki: *See—*
Kawamoto, Seiichi; Sato, Maki; Narabu, Tadakuni; and Miura, Hisanori, 5,337,163, Cl. 358-482.000.

Sato, Makoto: *See—*
Katayama, Masatake; Sato, Makoto; Ohta, Yutaka; Sugita, Mitsuru; and Ohki, Konomu, 5,336,634, Cl. 437-63.000.

Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and **Yokouchi, Akira,** to **Matsushita Electric Industrial Co., Ltd.** Pattern classification system. 5,337,371, Cl. 382-14.000.

Sato, Masahiro: *See—*
Shiokawa, Keiichi; Akiyama, Mihoko; Ide, Yoji; Hiyoshi, Yoshihiko; Sato, Masahiro; and Surizaki, Kumi, 5,336,548, Cl. 428-212.000.

Sato, Masanobu: *See—*
Igarashi, Ichiro; Sasaki, Hiroshi; Jitsumatsu, Tetsuji; Ota, Hiroyuki; Sato, Masanobu; and Nishimuta, Hirofumi, 5,336,574, Cl. 430-23.000.

Sato, Minako: *See—*
Tanaka, Masayuki; Suzawa, Hiromichi; Kubota, Masayuki; Sekioka, Chiaki; Sato, Minako; and Uemura, Hisashi, 5,336,553, Cl. 428-229.000.

Sato, Mutsumi; Nishihara, Motoo; Matsunaga, Haruhiko; and **Ueda, Hiromi,** to **NEC Corporation;** and **Nippon Telegraph & Telephone Corporation.** Method of tracing virtual path operation information and apparatus applied thereto. 5,337,307, Cl. 370-60.000.

Sato, Nobuyoshi, to **Kawasaki Steel Corporation.** Method of manufacturing a semiconductor device having an insulating layer composed of a BPSG film and a plasma-CVD silicon nitride film. 5,336,640, Cl 437-240.000.

Sato, Noriharu: *See—*
Hamabe, Tsutomu; Kinoshita, Akio; Doi, Kazuhiro; Muraoka, Kenichiro; and Sato, Noriharu, 5,337,365, Cl. 381-71.000.

Sato, Osamu: *See—*
Shirai, Katutada; Mochizuki, Hideharu; Sato, Osamu; Tsukamoto, Hironori; and Makita, Hiroyuki, 5,337,222, Cl. 362-66.000.

Sato, Reijiro: *See—*
Takahashi, Gensho; and Sato, Reijiro, 5,336,585, Cl. 430-284.000.

Sato, Takashi: *See—*
Nishimoto, Yoshiharu; Yamazaki, Kengo; and Sato, Takashi, 5,336,549, Cl. 428-213.000.

Sato, Yutaka: *See—*
Fujii, Tatsuya; Imai, Yukihiro; Sato, Yutaka; Fukui, Ryo; Sakamoto, Kazuo; Shiraishi, Naoto; and Yamada, Yoshiteru, 5,337,168, Cl. 358-539.000.

Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and **Miyamoto, Mamoru,** to **Kabushiki Kaisha Powrex;** and **Kabushiki Kaisha Ariwa Seisakusho.** Washing apparatus and method for fluidized bed pelletizing and drying machine. 5,336,332, Cl. 134-22.100

Satoh, Yasuaki, to **Konica Corporation.** Exposure control method for photographic printing. 5,337,130, Cl. 355-77.000.

Satou, Kimitoshi, to **Mitsubishi Denki Kabushiki Kaisha.** Semiconductor pressure sensor including multiple silicon substrates bonded together and method of producing the same. 5,335,550, Cl. 73-727.000.

Sauer, Donald J., to **David Sarnoff Research Center, Inc.** Pixel array having image forming pixel elements integral with peripheral circuit elements. 5,336,879, Cl. 250-208.100.

Sauer, Herbert: *See—*
Fischenich, Bernhard; Rudiger, Eckhart; and Sauer, Herbert, 5,335,585, Cl. 92-128.000.

Sauer Inc.: *See—*
Betz, Michael A., 5,335,746, Cl. 180-248.000.
Geringer, Kerry G.; Barnum, Harlos L.; and Jennings, Lon A., 5,335,750, Cl. 180-307.000.

Saurou, Michel: *See—*
Bailly, Alain; Ramsteiner, Gerard; and Saurou, Michel, 5,336,202, Cl. 604-240.000.

Sauvage, Lothar: *See—*
Mueller, Ulrich; Weiss, Ralf; Diehl, Klaus; Sandrock, Gerhard; and Sauvage, Lothar, 5,336,836, Cl. 585-824.000

Savell, Gary L. Multi-loading electrostatic air filter and method of filtration. 5,336,299, Cl. 95-70.000.

Savoldi, Thomas L.: *See—*
Winski, Ernest P.; and Savoldi, Thomas L., 5,336,042, Cl. 414-789.500.

Sawa, Masahiko: *See—*
Takatsu, Kozo; Wakushima, Yasushi; Masunaga, Hiroharu; and Sawa, Masahiko, 5,336,393, Cl. 208-120.000.

Sawada, Kazuo; Inazawa, Shinji; and **Yamada, Kouichi,** to **Sumitomo Electric Industries, Ltd.** Insulated electrical conductor wire having a high operating temperature. 5,336,851, Cl. 174-110.00A.

Sawada, Kenzo: *See—*
Sugitani, Toshiaki; Tsuyuki, Kenichiro; Miyata, Yukie; Ebashi, Tadashi; Okui, Hideaki; Nakajima, Yoshikazu; and Sawada, Kenzo, 5,336,617, Cl. 435-252.100.

Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideako; Ishiwata, Yoshiro; and **Nakajima, Masahiro,** to **Sanwa Kagaku Kenkyusho Co., Ltd.** Composition containing organogermanium compound and immunity adjusting agents comprising the compositions. 5,336,688, Cl. 514-492.000.

Sawai, Kunio; Hayashi, Ryuji; Irie, Toshiaki; Kaneko, Shigeru; Tanaka, Shinya; and **Shinmi, Tsukasa,** to **Funai Electric Co., Ltd.** Device for exchanging a tape drive mode. 5,335,877, Cl. 242-334.600.

Sawatari, Yoshihiro: *See—*
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, 5,336,763, Cl. 534-680.000.

Sawicki, Richard H.: *See—*
Daly, Thomas P.; Moses, Edward I.; Patterson, Ralph W.; and Sawicki, Richard H., 5,337,333, Cl. 372-94.000.

Sax, James E.: *See—*
Rolando, Richard J.; Kotnour, Thomas A.; and Sax, James E., 5,336,717, Cl. 525-64.000.

Say, James L. Indicator cap. 5,335,622, Cl. 116-227.000.

Saya, Daisuke; and **Suganuma, Ryoichi,** to **Nikon Corporation.** Ultrasonic motor unit. 5,336,958, Cl. 310-316.000.

Scanlon, Christopher; and **Brown, David L.,** to **United States Surgical Corporation.** Suture display rack and procedure kit. 5,335,775, Cl. 206-63.300.

Scattolino, Thomas F.; Stern, Howard J.; Trumball, John G.; and **Wolkowicz, Richard I.,** to **Scott Paper Company.** Method for making a strong, bulky, absorbent paper sheet using restrained can drying. 5,336,373, Cl. 162-116.000.

Schafer, Hans J., to **Rutgerswerke Aktiengesellschaft.** Method for coating circuitboards. 5,336,529, Cl. 427-487.000.

Schaffa, Frank A.: *See—*
Herzberg, Louis P.; Patel, Baiju V.; Ruiz, Antonio; Schaffa, Frank A.; and Willebeek-LeMair, Marc H., 5,337,311, Cl. 370-85.140.

Schaffer, Robert R.: *See—*
Spehrley, Charles W., Jr.; Hoisington, Paul A.; Fulton, Steven J.; Young, Lawrence R.; and Schaffer, Robert R., 5,337,079, Cl. 347-88.000.

Schaldach, Max, to **Biotronik Mess- und Therapiegerate GmbH & Co., Ingenieurburo Berlin.** Physiologically controlled pacemaker and pacemaker control system with detection of the spatial position of the patient. 5,336,243, Cl. 607-18.000.

Scharfe, Merlin E.: *See—*
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.

Scheben, John A.: *See—*
Smith, David W.; Hanes, Ronnie M.; Scheben, John A.; and Augustine, Steve M., 5,336,802, Cl. 560-245.000.

Scheinbeim, Jerry I.; Newman, Brian N.; Lee, Jar W.; and **Takase, Yoshihiko,** to **Rutgers, The State University of New Jersey.** Polarized products and processes. 5,336,422, Cl. 252-62.900.

Scherowsky, Gunter; and **Gruneberg, Kirsten,** to **Hoechst Aktiengesellschaft.** Optically active oxirane derivatives, and their use as dopes in liquid-crystal mixtures. 5,336,436, Cl. 252-299.610.

Schifftner, Kenneth C., to **Compliance Systems International, Inc.** Multiple throat, narrow gap venturi scrubber and method of using same. 5,336,284, Cl. 55-241.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Schilling, Peter; and Schreuders, Hans G., to Westvaco Corporation. Rapid and medium setting high float bituminous emulsions from difficult asphalts. 5,336,438, Cl. 252-311.500.
Schladweiler, Timothy J., to Rexnord Corporation. Conveyor chain assembly. 5,335,768, Cl. 198-853.000.
Schlotthober, Nathan R.: *See*—
Caserta, Joseph N.; and Schlotthober, Nathan R., 5,336,881, Cl. 250-214.0VT.
Schluckebier, Dieter, to Otto Junker GmbH. Device for inductively heating flat metal materials. 5,336,868, Cl. 219-675.000.
Schlumberger Industries S.A.: *See*—
Guizot, Jean-Luc; King, Bradley; and Zarudiansky, Alain, 5,335,555, Cl. 73-861.950.
Schlumberger Technology Corporation: *See*—
Ramakrishnan, T. S.; Rossi, David; Dave, Yogesh; Murphy, William; Plumb, Richard; Goode, Peter; Kuchuk, Fikri; Helwig, James; Auzerais, Francois M.; and Dussan V., Elizabeth B., 5,335,542, Cl. 73-152.000.
Schmid, Christian, to Gebr. Schmid GmbH & Co. Apparatus for the treatment of board-like articles, particularly printed circuit boards. 5,335,681, Cl. 134-64.00R.
Schmid, Peter M.: *See*—
Metzler, Richard; Schmieding, Reinhold; and Schmid, Peter M., 5,336,240, Cl. 606-232.000.
Schmidlin, Fred W.; and Martin, Robert G., to Xerox Corporation. Low bead impulse donor loading. 5,337,124, Cl. 355-259.000.
Schmidt, Erwin: *See*—
Wunderlich, Klaus; Neubrand, Franz; Schmidt, Erwin; Buhl, Hans-Wilhelm; Wirbeleit, Friedrich; and Hanauer, Horst, 5,335,500, Cl. 60-609.000.
Schmieding, Reinhold: *See*—
Metzler, Richard; Schmieding, Reinhold; and Schmid, Peter M., 5,336,240, Cl. 606-232.000.
Schmitt, Philipp: *See*—
Stehr, Norbert; and Schmitt, Philipp, 5,335,867, Cl. 241-69.000.
Schmitz, Arno: *See*—
Jung, Werner A.; Vorbeck, Udo; Schmitz, Arno; Heise, Wilhelm; and Gross, Lutz-Werner, 5,336,753, Cl. 528-335.000.
Schmitz, Duane M.: *See*—
Kling, Michael J., III; Alusick, Michael P.; Kercheck, Gary R.; Krueger, Jeff C.; Schmitz, Duane M.; and Visser, James L., 5,335,420, Cl. 33-288.000.
Schmitz, Ernst: *See*—
Kirschke, Klaus; Lutze, Gerhard; Schmitz, Ernst; and Wolff, Erich, 5,336,780, Cl. 548-371.000.
Schmuck, Phillip W.: *See*—
Cornette, H. Mitchell; Salerni, John V.; and Schmuck, Phillip W., 5,335,727, Cl. 166-278.000.
Schnabel, Werner, to Filterwerk Mann & Hummel GmbH. Oil filler for an internal combustion engine. 5,335,641, Cl. 123-574.000.
Schnaibel, Eberhard: *See*—
Blischke, Frank; Schneider, Erich; and Schnaibel, Eberhard, 5,335,538, Cl. 73-118.100.
Schnakenberg, Uwe: *See*—
Wagner, Bernhard; Benecke, Wolfgang; Riethmuller, Werner; and Schnakenberg, Uwe, 5,335,544, Cl. 73-517.00R.
Schneider, Erich: *See*—
Blischke, Frank; Schneider, Erich; and Schnaibel, Eberhard, 5,335,538, Cl. 73-118.100.
Schneider, Frank: *See*—
Niemeier, Gerd; and Schneider, Frank, 5,336,407, Cl. 210-249.000.
Schneider, Stephen: *See*—
Lais, Siegfried; Krautkramer, Gerd; Huth, Stefan; and Schneider, Stephen, 5,336,119, Cl. 440-6.000.
Schneider, Volker; Blum, Harald; Kubitza, Werner; and Probst, Joachim, to Bayer Aktiengesellschaft. Binder composition and its use for the production of coating or sealing compositions. 5,336,711, Cl. 524-507.000.
Schoenwald, Jeffrey S.: *See*—
Khoshnevisan, Mohsen; Schoenwald, Jeffrey S.; Rode, Jonathan P.; Smith, Raymond J. D.; Kolloff, Bruce G.; and Beccue, Steve, 5,336,884, Cl. 250-231.180.
Scholten, Joseph J. F.: *See*—
Van Geem, Paul C.; Xu, Xiaoding; and Scholten, Joseph J. F., 5,336,810, Cl. 568-435.000.
Scholz, Hans-Ulrich: *See*—
Becker, Rainer; Gramlich, Walter; Huellmann, Michael; and Scholz, Hans-Ulrich, 5,336,815, Cl. 568-857.000.
Schoonmaker, Richard P.: *See*—
Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,337,248, Cl. 364-468.000.
Schottel-Werft Josef Becker GmbH & Co. KG: *See*—
Lais, Siegfried; Krautkramer, Gerd; Huth, Stefan; and Schneider, Stephen, 5,336,119, Cl. 440-6.000.
Schottker, Reinhard; and Grajewski, Franz, to Kabelmetal electro GmbH. Device for sealing the end of a heat-shrunk sleeve. 5,335,398, Cl. 24-528.000.
Schrader, Jurgen; Guckel, Martin; and Claar, Klaus-Peter, to Mercedes-Benz AG. Link element of variable effective supporting length for the spring drive of a pivoting component. 5,335,959, Cl. 296-108.000.
Schreiber, Lewelyn R. Newspaper delivery box signalling apparatus. 5,335,848, Cl. 232-34.000.
Schreiner, Robert J.: *See*—
Mueller, Peter M.; and Schreiner, Robert J., 5,335,532, Cl. 72-450.000.
Schreiner, Stephan: *See*—
Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, 5,335,937, Cl. 280-728.00B.
Schreuders, Hans G.: *See*—
Schilling, Peter; and Schreuders, Hans G., 5,336,438, Cl. 252-311.500.
Schroeder, Daniel R.: *See*—
Weiss, Kenneth P.; DeRango, Mario F.; Schroeder, Daniel R.; Mutz, Leslie D.; Lacy, Brian W.; and Chapman, Mark D., 5,337,316, Cl. 371-20.500.
Schuder, Bernd: *See*—
Raab, Eberhard; Reichardt, Manfred; and Schuder, Bernd, 5,336,877, Cl. 235-475.000.
Schulte, Regis: *See*—
Holub, Timothy M.; Schulte, Regis; and Deines, Robert, 5,335,954, Cl. 294-31.200.
Schulz, Russell C.: *See*—
DeGraff, Richard R.; Van Opdorp, Peter J.; and Schulz, Russell C., 5,336,821, Cl. 585-402.000.
Schumacher, Rolf: *See*—
Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, 5,335,937, Cl. 280-728.00B.
Schur, Henry: *See*—
D'Angelo, Joseph P.; and Schur, Henry, 5,336,213, Cl. 604-890.100
Schurter, Rolf: *See*—
Fory, Werner; and Schurter, Rolf, 5,336,773, Cl. 546-294.000.
Schwab, Frederick J.: *See*—
Hochreiter, Eric P.; Ehrne, Franklin D.; Morris, William I.; and Schwab, Frederick J., 5,337,120, Cl. 355-47.000.
Schwaebische Huettenwerke GmbH: *See*—
Zirkel, Herbert, 5,335,492, Cl. 60-298.000.
Schwan-Stabilo Schwanhaeusser GmbH & Co.: *See*—
Horvat, Ivan; Schweizer, Manfred; and Stoecklein, Thomas, 5,336,307, Cl. 106-19.00B.
Moeck, Gerhard; and Finkenauer, Robert, 5,336,005, Cl. 401-68.000.
Schwartz, Alan S.: *See*—
Waits, C. Thomas; Stupka, Jonathan C.; Peters, T. Scott; and Schwartz, Alan S., 5,336,259, Cl. 623-2.000.
Schwartz, Gretchen: *See*—
Brown, Ronald L.; and Schwartz, Gretchen, 5,336,614, Cl. 435-240.200.
Schwartz Pharma AG: *See*—
Klokkers-Bethke, Karin; and Fischer, Wilfried, 5,335,769, Cl. 206-438.000.
Schwartz, Robert E.; Kempf, August J.; and Mathre, David J., to Merck & Co., Inc. Process for crystalline cyclic lipopeptides. 5,336,756, Cl. 530-317.000.
Schwarz, Josef: *See*—
Maurer, Gerhard; Braig, Manfred; Auer, Raimund; Goebel, Christoph; Schwarz, Josef; and Voss, Thomas, 5,336,120, Cl. 440-84.000
Schwarz, Robert: *See*—
DeMane, Catherine; and Schwarz, Robert, 5,336,163, Cl. 602-46.000.
Schweizer, Manfred: *See*—
Horvat, Ivan; Schweizer, Manfred; and Stoecklein, Thomas, 5,336,307, Cl. 106-19.00B
Schwind, Wilma M. Removably attachable flat sheet-skirting combination. 5,335,383, Cl. 5-493.000.
Schwing America, Inc.: *See*—
Anderson, Thomas M., 5,336,055, Cl. 417-63.000.
Science Incorporated: *See*—
Kriesel, Marshall S.; and Thompson, Thomas N., 5,336,180, Cl. 604-82.000.
Kriesel, Marshall S., 5,336,188, Cl. 604-132.000.
Scientific Design Company, Inc.: *See*—
Campbell, Larry E., 5,336,656, Cl. 502-329.000.
Scientific Dimensions USA, Inc.: *See*—
Lupeiko, Vitold M., 5,336,296, Cl. 75-434.000.
Scientific Ecology Group, Inc.: *See*—
Gregory, Norman S., 5,335,807, Cl. 220-315.000.
Scifres, Donald R.: *See*—
Lang, Robert J.; Dzurko, Kenneth M.; Scifres, Donald R.; and Welch, David F., 5,337,328, Cl. 372-45.000.
Scintilla AG: *See*—
Allemann, Markus, 5,336,953, Cl. 310-50.000.
Scott, Blayney J.; Gilbert, Barry G.; and Gowan, George R., to Scott Plastics Ltd. Reciprocating additive mixing pump apparatus and method. 5,335,734, Cl. 169-15.000.
Scott Fetzer Company, The: *See*—
Meyer, Robert B.; Lackner, John R.; and Matuschek, Hans J., 5,335,740, Cl. 180-19.100.
Scott Paper Company: *See*—
Scattolino, Thomas F.; Stern, Howard J.; Trumball, John G.; and Wolkowicz, Richard I., 5,336,373, Cl. 162-116.000.
Scott Plastics Ltd.: *See*—
Scott, Blayney J.; Gilbert, Barry G.; and Gowan, George R., 5,335,734, Cl. 169-15.000.
Scotto, Kathleen W.: *See*—
Prochaska, Hans J.; and Scotto, Kathleen W., 5,336,685, Cl. 514-455.000.

Scrima, Roberto: *See*—
Borzatta, Valerio; Scrima, Roberto; and Vignali, Graziano, 5,336,706, Cl. 524-100.000.
Scripps Research Institute, The: *See*—
McMillan, Robert, 5,336,597, Cl. 435-7.200.
SDL, Inc.: *See*—
Lang, Robert J.; Dzurko, Kenneth M.; Scifres, Donald R.; and Welch, David F., 5,337,328, Cl. 372-45.000.
SDR Metro Inc.: *See*—
Simon, Arvin B., 5,337,039, Cl. 340-562.000.
Seagate Technology, Inc.: *See*—
Jabbarai, Iraj; and Phillips, Brian L., 5,337,202, Cl. 360-97.010.
Seah, Khen H.; Heng, Yeow S.; and Chua, Chong W., to Port of Singapore Authority. Automatic water shut-off dispensers. 5,336,054, Cl. 417-2.000.
Sealed Air Corporation: *See*—
Gavronsky, German; and Guarderas, Ramiro, 5,335,483, Cl. 53-451.000.
Sealfon, Andrew I. Combination IV pump and disposable syringe. 5,336,189, Cl. 604-135.000.
Security People, Inc.: *See*—
Gokcebay, Asil T., 5,337,043, Cl. 340-825.310.
Sedlack, Mark; and Bernart, Frances, to Century Products Company. Automobile infant restraint seat. 5,335,964, Cl. 297-256.130.
Seeger, Kurt: *See*—
Czech, Zbigniew; and Seeger, Kurt, 5,336,501, Cl. 424-445.000.
Seegull, William R.: *See*—
Yerves, Kenneth A., Jr.; and Seegull, William R., 5,335,589, Cl. 99-295.000.
Sefidvash, Khorvash: *See*—
Hashemi, Seyed H.; and Sefidvash, Khorvash, 5,337,414, Cl. 395-275.000.
Segaram, Para K.; and Ju, Shu-Ing, to National Semiconductor Corporation. Differential output stage with reduced idle current. 5,336,946, Cl. 307-355.000.
Sehan, Alain: *See*—
Bonnet, Georges; Commault, Yves; Roquencourt, Jacques; and Sehan, Alain, 5,337,065, Cl. 343-767.000.
Seidel, Jorge P.; and Mandhania, Arun K., to Xilinx, Inc. Method for implementing set/reset synchronously or asynchronously in a programmable logic device. 5,337,255, Cl. 364-489.000.
Seidel, Peter: *See*—
Zell, Karl; and Seidel, Peter, 5,336,098, Cl. 439-108.000.
Seidel, Randy R.; Kononov, Anthony; Honegger, Roger; and Silva, Robert M., to Graphic Management Associates, Inc. Storage and retrieval device and method for imbricated planar articles. 5,336,041, Cl. 414-788.000.
Seidel, Willi; and Petersmann, Joseph, to Dr. Ing. h.c.F Porsche AG. Process for controlling the actuating pressure in a control element of an electrohydraulically controlled motor vehicle transmission. 5,335,567, Cl. 475-120.000.
Seike, Shoji: *See*—
Misawa, Hidenobu; and Seike, Shoji, 5,336,569, Cl. 429-31.000.
Seiko Corp.: *See*—
Hoff, Don G.; and Ragan, Lawrence H., 5,337,314, Cl. 370-94.100
Seiko Epson Corporation: *See*—
Furuhata, Tomoyuki, 5,336,911, Cl. 257-273.000.
Handa, Tsuneo; Chiba, Noriyoshi; and Kunugi, Masanao, 5,336,000, Cl. 400-197.000.
Hoff, Don G.; and Ragan, Lawrence H., 5,337,314, Cl. 370-94.100.
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,337,174, Cl. 359-73.000.
Seikoh Giken Co., Ltd.: *See*—
Yamada, Kunio; and Takashi, Shuichi, 5,337,377, Cl. 385-15.000.
Seikosha Co., Ltd.: *See*—
Harada, Hiroyuki; Tajima, Akio; Kogo, Takashi; Nagakawa, Tadashi; Oda, Hajima; Inoue, Haruo; and Hayakawa, Tsuyoshi, 5,336,004, Cl. 400-624.000.
Seitz, David M.; and Elbertson, Michael D., to Ransburg Corporation. Electrically insulated pressure feed paint reservoir. 5,335,854, Cl. 239-146.000.
Seitz, Friedrich: *See*—
Niessner, Norbert; Fischer, Wolfgang; Guentherberg, Norbert; Ruppmich, Karl; and Seitz, Friedrich, 5,336,718, Cl. 525-67.000.
Sejnoha, Vladimir, to Kurzweil Applied Intelligence, Inc. Speech recognizer. 5,337,394, Cl. 395-2.500.
Sejpka, Johann; Gerhardinger, Dieter; and Wimmer, Franz, to Wacker-Chemie. Organopolysiloxane composition. 5,336,715, Cl. 524-765.000.
Seki, Takahito: *See*—
Murabayashi, Noboru; and Seki, Takahito, 5,337,193, Cl. 360-19.100.
Seki, Takao: *See*—
Okimoto, Satoshi; Ohara, Kiyotaka; Seki, Takao; and Kato, Hifumi, 5,337,158, Cl. 358-426.000.
Sekioka, Chiaki: *See*—
Tanaka, Masayuki; Suzawa, Hiromichi; Kubota, Masayuki; Sekioka, Chiaki; Sato, Minako; and Uemura, Hisashi, 5,336,553, Cl. 428-229.000.
Sekiya, Mutsuo; Asada, Satoshi; and Fukuhara, Katsuyuki, to Mitsubishi Denki Kabushiki Kaisha. Scroll-type fluid machine having the eccentric shaft inserted into the moving scroll. 5,336,068, Cl. 418-55.200.
Selby Furniture Hardware Company, Inc.: *See*—
Jiang, Wei X., 5,335,604, Cl. 100-119.000.
Sell, Leslie J., to Ingersoll-Rand Company. Sensing rope guide for a hoist drum. 5,335,895, Cl. 254-271.000.
Selman, Corey M., to Ace Medical Company. Bone fixation plate. 5,336,224, Cl. 606-69.000.
Selyutin, Sergey, to Chipcom Corporation. Backplane communication system and method. 5,337,310, Cl. 370-85.300.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Mase, Akira; and Yamazaki, Shunpei, 5,337,171, Cl. 359-53.000.
Semon, Joseph R., to Casket Shells, Inc. Burial casket stationery hardware bar securement. 5,335,402, Cl. 27-2.000.
Sena, Elissa P.: *See*—
Zarling, David A.; and Sena, Elissa P., 5,336,606, Cl. 435-172.300.
Serbousek, Jon; and DiNello, Alexandre, to De Puy, Inc. Reduced stiffness femoral hip implant. 5,336,265, Cl. 623-18.000.
Serco Corporation, The: *See*—
Alexander, James C., 5,336,033, Cl. 414-401.000.
Service Station Products Company: *See*—
Cunningham, Charles L.; and Carter, Ronald W., 5,337,256, Cl. 364-508.000.
Servo Corporation of America: *See*—
Villar, Luis F., 5,335,995, Cl. 374-208.000.
Sessini, Lorenza. Cushion for anatomical support, especially for the lumbar and cervical regions, to fit onto seat backs. 5,335,965, Cl. 297-284.400.
Settlemyer, Bernard W.; Johnson, William A.; and Johnson, Robert L., to Foothills Medical Equipment, Inc. Method and apparatus for thermal regeneration of molecular sieve material used in oxygen concentrators. 5,335,426, Cl. 34-80.000.
Sevylor International, SA: *See*—
Marbach, Gerard, 5,336,403, Cl. 210-169.000.
Sewing Center Supply Co., Inc.: *See*—
Glenn, Douglas J., 5,335,613, Cl. 112-412.000.
Sextant Avionique: *See*—
Pastor, Dominique, 5,337,251, Cl. 364-484.000.
Seymour Housewares Corporation: *See*—
Simpson, Danny, 5,335,432, Cl. 38-106.000.
SGS-Thomson Microelectronics, Inc.: *See*—
Chan, Tsiu C.; Bryant, Frank R.; and Jorgenson, Lisa K., 5,336,916, Cl. 257-377.000.
McClure, David C., 5,337,273, Cl. 365-168.000.
SGS-Thomson Microelectronics S.r.l.: *See*—
Tomasini, Luciano; and Castello, Rinaldo, 5,337,355, Cl. 379-413.000.
SGS-Thomson Microelectronics S.A.: *See*—
Colavin, Osvaldo, 5,337,267, Cl. 364-753.000.
Jimenez, Jean, 5,336,920, Cl. 257-481.000.
Shafer, Sheldon J., to General Electric Company. Method for recovering bis hydroxy aromatic organic values and bis aryl carbonate values from scrap aromatic polycarbonate. 5,336,814, Cl. 568-753.000.
Shaffer, Peter T. B.: *See*—
Corbett, William J.; Lunde, Marvin C.; and Shaffer, Peter T. B., 5,335,712, Cl. 164-97.000.
Shaffer, Thomas H.; and Wolfson, Marla R., to Temple University - Of The Commonwealth System of Higher Education. Process control for liquid ventilation and related procedures. 5,335,650, Cl. 128-200.240.
Shah, Sayed S.; Fahey, William F.; and Oude Alink, Bernardus A., to Petrolite Corporation. Corrosion inhibition in highly acidic environments by use of pyridine salts in combination with certain cationic surfactants. 5,336,441, Cl. 252-390.000.
Shamshoum, Edwar S.; and Ghosh, Ashim K., to Fina Technology, Inc. Mordenite catalysts in toluene synthesis. 5,336,824, Cl. 585-475.000.
Sharma, Sudhir K.; Riley, Michael F.; Nowotarski, Mark S.; and Barlow, Alan R., to Praxair Technology, Inc. Multi-layer fluid curtains for furnace openings. 5,336,085, Cl. 432-64.000.
Sharp Kabushiki Kaisha: *See*—
Chikawa, Yasunori; Honda, Yoshiaki; Mori, Katsunobu; Tajima, Naoyuki; Tsuda, Takaaki; and Maeda, Takamichi, 5,336,650, Cl. 437-209.000.
Eguchi, Masaki; Saitoh, Jun; Iida, Hiroyuki; and Hiyoshi, Kozo, 5,337,366, Cl. 381-71.000.
Fukuchi, Shunsei; Isohata, Kyouhei; Iwamoto, Makoto; Misono, Kenji; and Takanashi, Hiroshi, 5,336,535, Cl. 428-1.000.
Imaue, Yukihisa, 5,337,127, Cl. 355-271.000.
Kan, Yasuo; Takahashi, Kosei; Hosoda, Masahiro; Tsunoda, Atsuo; Tani, Kentaro; and Watanabe, Masanori, 5,337,326, Cl. 372-45.000.
Nakamura, Takahiro, 5,337,084, Cl. 348-345.000.
Nakano, Akihiko, 5,336,895, Cl. 250-505.100.
Nakayama, Junichiro; Katayama, Hiroyuki; and Ohta, Kenji, 5,336,531, Cl. 427-510.000.
Oikawa, Masahiro; Nemoto, Hiroyuki; Hamanaka, Kenjiro; Kishimoto, Takashi; Funada, Fumiaki; Hamada, Hiroshi; and Shibatani, Takashi, 5,337,186, Cl. 359-628.000.
Sharpe, Brian A. J., to Westland Aerospace Limited. Portable apparatus for measurement and display of internal pressure of tires. 5,335,541, Cl. 73-146.500.
Shaw, Joel R.: *See*—
Harris, Clark E.; Hulbert, Raymond D.; Dominesey, Andrew E.; Healey, Thomas C.; and Shaw, Joel R., 5,335,873, Cl 242-348.000.
Shawver, Susan E.: *See*—
Strack, David C.; Connor, Linda A.; Gwaltney, Sharon W.; McCormack, Ann L.; Shawver, Susan E.; and Shultz, Jay S., 5,336,552, Cl. 428-224.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Shaye Communications Limited: *See—*
Pye, Michael R.; and Williams, Stephen A., 5,337,061, Cl. 343-702.000.

Shearer, Gene: *See—*
Berzofsky, Jay A.; Hosmalin, Anne; Clerici, Mario S.; Germain, Ronald N.; Shearer, Gene; Moss, Bernard; and Pendleton, Charles D., 5,336,758, Cl. 530-326.000.

Sheehan, Timothy K.: *See—*
Finchum, John A.; and Sheehan, Timothy K., 5,335,787, Cl. 206-564.000.

Sheenya Enterprises Co., Ltd.: *See—*
Jen, Richard, 5,336,525, Cl. 427-256.000.

Sheffield, Richard L.; Carlsten, Bruce E.; and Young, Lloyd M., to United States of America, Energy. High brightness electron accelerator. 5,336,972, Cl. 315-5.410.

Shell Oil Company: *See—*
Austgen, David M., Jr.; and Southwick, Jeffrey G., 5,336,712, Cl. 524-530.000.
DuBois, Donn A., 5,336,726, Cl. 525-272.000.
Fried, Herbert E., 5,336,811, Cl. 568-436.000.
van Ballegooijen, Hendrik; Peters, Joseph P. M.; and Plum, Johannes T. A., 5,336,737, Cl. 526-70.000.
Wyant, Reece E., 5,335,725, Cl. 166-292.000.

Shell Research Limited: *See—*
Becher, Heinz-Manfred; Albert, Guido; and Curtze, Jurgen, 5,336,671, Cl. 514-96.000.

Shen, Ju: *See—*
Josephson, Gregg R.; Shen, Ju; Darling, Roy D.; and Cheng, Chan-Chi J., 5,336,951, Cl. 307-465.000.

Shepley, Paul E., Jr.: *See—*
Smith, Allan F.; and Shepley, Paul E., Jr., 5,335,644, Cl. 124-23.100.

Sheppard, Sheron R.; and Polston, Henry B. Method for cleaning waste collection systems. 5,336,333, Cl. 134-22.110.

Sheridan, Helen J.: *See—*
Sheridan, Peter A. J.; and Sheridan, Helen J., 5,335,968, Cl 297-250.100.

Sheridan, Peter A. J.; and Sheridan, Helen J. Child's booster seat. 5,335,968, Cl. 297-250.100.

Sherts, Charles R.: *See—*
Green, David T.; Bolanos, Henry; Blewett, Jeffrey J.; Ratcliff, Keith; Viola, Frank J.; and Sherts, Charles R., 5,336,232, Cl. 606-151.000.

Sherwood Medical Company: *See—*
Kee, Kok-Hiong, 5,335,655, Cl. 128-207.160.
Sunderland, Richard A.; and Lane, John A., 5,337,215, Cl. 361-726.000.

Sherwood, William J.; and Rodeffer, Charles E., to Winegard Company. Deployable satellite antenna for use on vehicles. 5,337,062, Cl. 343-711.000.

Sheryll, Richard, to Cyclops Research & Development, Inc. Plug retention device. 5,336,107, Cl. 439-369.000.

Shetley, Michael C. Waste oil management system. 5,336,396, Cl. 210-90.000.

Shibaoka, Kazuo: *See—*
Akimoto, Toshio; and Shibaoka, Kazuo, 5,336,287, Cl. 65-59.500.

Shibasaki, Masakatsu; and Sasai, Hiroaki, to Chisso Corporation. Catalyst for asymmetric synthesis. 5,336,653, Cl. 502-170.000.

Shibata, Akihito; and Tsuji, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Vehicle orientation calculating device. 5,337,243, Cl. 364-449.000.

Shibata, Akira: *See—*
Arai, Hideo; Owashi, Hitoaki; Hosokawa, Kyoichi; Nishimura, Keizo; Watatani, Yoshizumi; and Shibata, Akira, 5,337,199, Cl. 360-8.000.

Shibatani, Takashi: *See—*
Oikawa, Masahiro; Nemoto, Hiroyuki; Hamanaka, Kenjiro; Kishimoto, Takashi; Funada, Fumiaki; Hamada, Hiroshi; and Shibatani, Takashi, 5,337,186, Cl. 359-628.000.
Shibayama, Takao; Maekawa, Keiichiro; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, to Honda Giken Kogyo Kabushiki Kaisha. Method of inspecting limited slip differential for vehicle. 5,335,537, Cl. 73-117.000.

Shibazaki, Osamu: *See—*
Yasufuku, Yoshitaka; and Shibazaki, Osamu, 5,335,876, Cl. 242-347.100.

Shibuya, Tatsuo, to NEC Corporation. Equipment for fingerprint pattern classification. 5,337,369, Cl. 382-5.000.

Shichman, Daniel, to United States Surgical Corporation. Trocar penetration depth indicator and guide tube positioning device. 5,336,206, Cl. 604-283.000.

Shida, Takehiko: *See—*
Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and Yokouchi, Akira, 5,337,371, Cl. 382-14.000.

Shigetoyo, Hiromi, to Nihon Naishi Inc. Room insecticide dispenser. 5,335,446, Cl. 43-125.000.

Shikai, Kiyoshi: *See—*
Haseyama, Ryuji; Takagi, Masatoshi; Hayashi, Kouzou; Sasagawa, Katsuyoshi; Kuroda, Kazuyuki; Kano, Taisaku; and Shikai, Kiyoshi, 5,336,749, Cl. 528-73.000.

Shimada, Junichi: *See—*
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; and Shiozaki, Shizuo, 5,336,769, Cl. 544-273.000.

Shimadzu Corporation: *See—*
Shimizu, Yasumitsu, 5,337,341, Cl. 378-98.200.

Shimamoto, Noboru: *See—*
Matsuda, Akira; Shudo, Shigeki; Shimamoto, Noboru; Tanaka, Kohichi; Hashimoto, Hiromasa; and Suzuki, Fumio, 5,335,457, Cl. 51-284.00R.

Shimasue, Tsutomu: *See—*
Kobayashi, Takayasu; and Shimasue, Tsutomu, 5,337,352, Cl. 379-234.000.

Shimizu Construction Co., Ltd.: *See—*
Matsumoto, Takeji; Oyamada, Noboru; Kiritani, Michinori; Fukunaga, Teruo; Abe, Yoshio; and Kondoh, Hiroshi, 5,335,601, Cl. 104-88.00R.

Shimizu, Hiromitsu: *See—*
Yoshimoto, Masafumi; Nakatsuji, Tadao; and Shimizu, Hiromitsu, 5,336,651, Cl. 502-74.000.

Shimizu, Hiroshi; Yoshida, Tetsuo; and Mashiko, Chikara, to Tokin Corporation; and Hiroshi Shimizu. Gyroscope using circular rod type piezoelectric vibrator. 5,336,960, Cl. 310-369.000.

Shimizu, Makoto: *See—*
Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and Yokouchi, Akira, 5,337,371, Cl. 382-14.000.

Shimizu, Mitsuru: *See—*
Hachisuka, Hisao; Kojima, Katsuhide; Nakazono, Yutaka; Shimizu, Mitsuru; Hirose, Masahiko; Kihara, Yasuo; Maeda, Masatoshi; Ikebata, Hisashi; and Matsumoto, Kenji, 5,336,409, Cl. 210-490.000.

Shimizu, Noboru: *See—*
Kitada, Masahiro; Tanabe, Hideo; Shimizu, Noboru; Koyama, Naoki; and Kobayashi, Toshio, 5,337,203, Cl. 360-113.000.

Shimizu, Sakayu: *See—*
Akimoto, Kengo; Shinmen, Yoshifumi; Yamada, Hideaki; Shimizu, Sakayu; and Sugano, Michihiro, 5,336,496, Cl. 424-195.100.

Shimizu, Toshihiko: *See—*
Yamauchi, Keiichi; Shimizu, Toshihiko; and Sudo, Satomi, 5,336,844, Cl. 84-602.000.

Shimizu, Yasumitsu, to Shimadzu Corporation. X-ray radiographic apparatus. 5,337,341, Cl. 378-98.200.

Shimoda, Kenji, to Kabushiki Kaisha Toshiba. Efficient coding signal processor. 5,337,049, Cl. 341-50.000.

Shimose, Yuichiro; and Ikeda, Jiro, to Tokuda Seisakusho Co, Ltd.; and Sony Corporation. Sputtering apparatus. 5,336,385, Cl. 204-298.030.

Shin-Etsu Chemical Company, Limited: *See—*
Fukushima, Motoo; and Mori, Shigeru, 5,336,798, Cl. 556-430.000.
Shiobara, Toshio; Futatsumori, Koji; Okuse, Satoshi; Aoki, Takayuki; Wakao, Miyuki; and Ino, Shigeki, 5,336,786, Cl. 549-215.000

Shin-Etsu Handotai Co., Ltd.: *See—*
Matsuda, Akira; Shudo, Shigeki; Shimamoto, Noboru; Tanaka, Kohichi; Hashimoto, Hiromasa; and Suzuki, Fumio, 5,335,457, Cl. 51-284.00R.

Shin-Etsu Handotui Co., Ltd.: *See—*
Katayama, Masatake; Sato, Makoto; Ohta, Yutaka; Sugita, Mitsuru; and Ohki, Konomu, 5,336,634, Cl. 437-63.000.

Shin-Etsu Polymer Co., Ltd.: *See—*
Odashima, Satoshi, 5,336,443, Cl. 252-511.000.

Shin, Yong-Chul: *See—*
Sridhar, Ramalingam; Kim, Seokjin; Shin, Yong-Chul; and Bogineni, Naidu C. R., 5,336,937, Cl. 307-201.000.

Shin, Yu S.: *See—*
Kang, Suk-Joong L.; Shin, Yu S.; Whang, Nong M.; Yoon, Duk Y.; and Kim, Deug J., 5,336,646, Cl. 501-105.000.

Shinagawa, Yukio: *See—*
Mukunoki, Yasuo; Shinagawa, Yukio; Yamanouchi, Junichi; and Hashimoto, Kiyokazu, 5,336,589, Cl. 430-501.000.

Shindo, Akio: *See—*
Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugaife, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, 5,335,700, Cl. 139-435.100.

Shindou, Yuuichiro: *See—*
Nishimura, Eiji; Kuroki, Masami; Kikutake, Naoyuki; and Shindou, Yuuichiro, 5,336,378, Cl. 204-64.00T.

Shinmen, Yoshifumi: *See—*
Akimoto, Kengo; Shinmen, Yoshifumi; Yamada, Hideaki; Shimizu, Sakayu; and Sugano, Michihiro, 5,336,496, Cl. 424-195.100.

Shinmi, Tsukasa: *See—*
Sawai, Kunio; Hayashi, Ryuji; Irie, Toshiaki; Kaneko, Shigeru; Tanaka, Shinya; and Shinmi, Tsukasa, 5,335,877, Cl. 242-334.600.

Shinozaki, Nobuhisa, to NEC Corporation. Ringing circuit for use in portable telephone set. 5,337,356, Cl. 379-418.000.

Shinriki, Hiroshi: *See—*
Suzuki, Masayuki; Haruta, Ryo; Shinriki, Hiroshi; and Nakata, Masayuki, 5,336,638, Cl. 437-190.000.

Shiobara, Toshio; Futatsumori, Koji; Okuse, Satoshi; Aoki, Takayuki; Wakao, Miyuki; and Ino, Shigeki, to Shin-Etsu Chemical Company, Limited. Organic silicon compounds. 5,336,786, Cl. 549-215.000.

Shiokawa, Keiichi; Akiyama, Mihoko; Ide, Yoji; Hiyoshi, Yoshihiko; Sato, Masahiro; and Surizaki, Kumi, to Ricoh Company, Ltd. Multiple-use thermal image transfer recording medium. 5,336,548, Cl. 428-212.000.

Shiomi, Kazuro: *See—*
Omura, Satoshi; Tanaka, Haruo; Shiomi, Kazuro; and Liu, Jing R., 5,336,783, Cl. 548-561.000.

Shiomitsu, Kuniyoshi. Pen point structure and fountain pen equipped with the same. 5,336,010, Cl. 401-199.000.

Shiozaki, Shizuo: *See—*
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; and Shiozaki, Shizuo, 5,336,769, Cl. 544-273.000.

Shippell, Joseph C.: *See—*
Taravella, Philip; Blair, Edward J.; Domanski, Ronald S.; and Shippell, Joseph C., 5,335,789, Cl. 206-518.000.

Shiragami, Hiroshi; Koguchi, Yoshihito; and Izawa, Kunisuke, to Ajinomoto Co., Inc. Transglycosilation process for producing acyclic nucleosides. 5,336,770, Cl. 544-276.000.

Shirai, Katutada; Mochizuki, Hideharu; Sato, Osamu; Tsukamoto, Hironori; and Makita, Hiroyuki, to Koito Manufacturing Co., Ltd. Aiming level device for motor vehicle headlamp. 5,337,222, Cl. 362-66.000.

Shiraishi, Kazuhisa: *See—*
Nishiyama, Nobumasa; Tsuyoshi, Toshiaki; Aoi, Hajime; Kameoka, Tetsuji; Tanaka, Masaya; and Shiraishi, Kazuhisa, 5,337,198, Cl. 360-65.000.

Shiraishi, Naoto: *See—*
Fujii, Tatsuya; Imai, Yukihiro; Sato, Yutaka; Fukui, Ryo; Sakamoto, Kazuo; Shiraishi, Naoto; and Yamada, Yoshiteru, 5,337,168, Cl. 358-539.000.

Shirakabe, Kazuhisa: *See—*
Ono, Yuzo; and Shirakabe, Kazuhisa, 5,336,875, Cl. 235-467.000.

Shirakawa, Katsuaki: *See—*
Yamaguchi, Chotaro; and Shirakawa, Katsuaki, 5,335,869, Cl. 242-526.000.

Shirasaka, Hisatoshi, to Kabushiki Kaisha Toshiba. Pattern generator. 5,337,045, Cl. 340-825.520.

Shirasaka, Hisatoshi: *See—*
Tsukakoshi, Hisao; and Shirasaka, Hisatoshi, 5,337,318, Cl. 371-5.500.

Shirasawa, Yoshiaki, to Kowa Company Ltd. Multichannel optical measuring system. 5,337,139, Cl. 356-73.000.

Shiroyama, Shigeru, to Mitsubishi Denki K.K. Drain unit of starter. 5,336,954, Cl. 310-88.000.

Shishilla, John E.: *See—*
Oakley, Clyde G.; Busse, Lawrence J.; Dietz, Dennis R.; Shishilla, John E.; and Ranalletta, Joseph V., 5,335,663, Cl. 128-662.000.

Shitanda, Motoshi; Eguchi, Takao; and Miyoshi, Yuji, to Matsushita Electric Industrial Co., Ltd. Electronic parts mounting apparatus. 5,336,935, Cl. 307-116.000.

Shoher, Itzhak; and Whiteman, Aharon E. Moldable dental material and method. 5,336,091, Cl. 433-215.000.

Shoji, Hisashi: *See—*
Takahashi, Tomoko; and Shoji, Hisashi, 5,337,075, Cl. 346-107.00R.

Shoppers Food Warehouse Corp.: *See—*
Herman, Kenneth M., 5,336,049, Cl. 416-146.00R.

Showa Aircraft Industry Co., Ltd.: *See—*
Toyoda, Tetsuro; and Matsuoka, Katsunori, 5,336,472, Cl. 422-177.000.

Showa Shell Sekiyu K.K.: *See—*
Sichanugrist, Porponth; and Nii, Tetsuro, 5,336,623, Cl. 437-4.000.

Shrum, Ralph E.; and Hall, David C., to Siecor Corporation. Connectorized optical fiber cable reel. 5,335,874, Cl. 242-118.400.

Shu, Cheng-Lan: *See—*
Wang, Jam-Min; and Shu, Cheng-Lan, 5,337,226, Cl. 362-198.000.

Shudo, Shigeki: *See—*
Matsuda, Akira; Shudo, Shigeki; Shimamoto, Noboru; Tanaka, Kohichi; Hashimoto, Hiromasa; and Suzuki, Fumio, 5,335,457, Cl. 51-284.00R.

Shultz, Jay S.: *See—*
Strack, David C.; Connor, Linda A.; Gwaltney, Sharon W.; McCormack, Ann L.; Shawver, Susan E.; and Shultz, Jay S., 5,336,552, Cl. 428-224.000.

Shultz, Julius; and Nicolay, Joseph, to Dax Manufacturers, Inc. Picture frame. 5,335,434, Cl. 40-156.000.

Shumway, Amy: *See—*
Shumway, Craig S.; and Shumway, Amy, 5,336,330, Cl. 134-8.000.

Shumway, Craig S.; and Shumway, Amy. Method for cleaning an interior cavity of dishware. 5,336,330, Cl. 134-8.000.

Shymanski, Nicholas M.: *See—*
Cortopassi, Jeffery J.; Marsik, Ronald; McDonald, Raymond E.; and Shymanski, Nicholas M., 5,335,996, Cl. 383-207.000.

Sibalis, Dan, to Drug Delivery Systems Inc. Pulsating transdermal drug delivery system. 5,336,168, Cl. 604-20.000.

Sichanugrist, Porponth; and Nii, Tetsuro, to Showa Shell Sekiyu K.K. Process for producing integrated solar cell. 5,336,623, Cl. 437-4.000.

Sick, August J.: *See—*
Payne, Jewel; and Sick, August J., 5,336,492, Cl. 424-93.200.

Siddiqui, Maqbool A.: *See—*
Marquez, Victor E.; Driscoll, John S.; Wysocki, Ronald J., Jr.; and Siddiqui, Maqbool A., 5,336,764, Cl. 536-4.100.

Sidiski, Joseph F. Apparatus for testing a microprocessor based register. 5,337,250, Cl. 364-481.000.

Siecor Corporation: *See—*
Shrum, Ralph E.; and Hall, David C., 5,335,874, Cl. 242-118.400.

Sieftes, Donald. Heat exchanger having close packed spheres. 5,335,639, Cl. 123-545.000.

Siegel, Bernd; Patsch, Manfred; and Kessel, Knut, to BASF Aktiengesellschaft. Mixed oxamides. 5,336,800, Cl. 558-30.000.

Siegel, Robert P.; Malachowski, Michael A.; Garsin, Paul A.; and Moser, Rabin, to Xerox Corporation. System to extend fuser roll life. 5,337,133, Cl. 355-285.000.

Siegler, Sorin, to Drexel University. Apparatus and method for determining load-displacement and flexibility characteristics of a joint. 5,335,674, Cl. 128-782.000.

Siemens Aktiengesellschaft: *See—*
Bruder, Herbert, 5,337,000, Cl. 324-309.000.
Burmer, Christian, 5,336,636, Cl. 437-173.000.
Fenk, Josef; and Thomas, Volker, 5,337,005, Cl. 328-14.000.
Kammerl, August; and Graf, Friedrich, 5,335,568, Cl. 477-109.000.
Koch, Rudolf; and Mistlberger, Fritz, 5,337,009, Cl. 330-253.000.
Musiol, Lothar, 5,337,019, Cl. 330-277.000.
Ruthrof, Klaus; Jax, Peter; Bode, Karl-Heinz; and Gunther, Klaus, 5,335,535, Cl. 73-40.700.
Zell, Karl; and Seidel, Peter, 5,336,098, Cl. 439-108.000.

Siemens Automotive L.P.: *See—*
DeGrace, Louis G., 5,335,863, Cl. 239-575.000.

Siemens Pacesetter, Inc.: *See—*
Zadeh, Ali E., 5,336,242, Cl. 607-11.000.

Sierra, Rolando, to Cordis Corporation. Three stage implantable valve. 5,336,166, Cl. 604-9.000.

Sievert, Allen C.: *See—*
Krespan, Carl G.; and Sievert, Allen C., 5,336,801, Cl. 560-227.000.

Sigler, Gerald F.: *See—*
Primes, Kathleen J.; Sigler, Gerald F.; Grenner, Gerd; and Kapmeyer, Wolfgang, 5,336,621, Cl. 436-534.000.

Silva, Robert M.: *See—*
Seidel, Randy R.; Kononov, Anthony; Honegger, Roger; and Silva, Robert M., 5,336,041, Cl. 414-788.000

Silver, Jules; and Ziegler, Louis C., to Innova Development Corp. Hypodermic syringe with needle retraction feature. 5,336,198, Cl. 604-195.000.

Silverson, John K.: *See—*
Crowdus, Robert A.; Knirk, Gary L.; and Silverson, John K., 5,335,529, Cl. 72-404.000.

Simco/Ramic Corporation: *See—*
Eason, Neal P., 5,335,791, Cl. 209-588.000.

Similasan Corporation: *See—*
Marty, Herbert, 5,336,508, Cl. 424-618.000.

Simmen, Christian; and Lenchner, Nathaniel H., to Coltene/Whaledent, Inc. Dental impression tray. 5,336,086, Cl. 433-37.000.

Simon, Arvin B., to SDR Metro Inc. Proximity detection system with digital frequency variation detection means. 5,337,039, Cl. 340-562.000.

Simon, Georges; and Baubois, Michel, to Giat Industries. System for loading a round, such as a telescoped round, into a pivoting chamber of a gun. 5,335,581, Cl. 89-156.000.

Simonds, Gary L.; and Gallops, Henry M., Jr., to Bear Archery Inc. Bow handle. 5,335,645, Cl. 124-88.000.

Simons, Everett F.: *See—*
Ammann, Hans H.; Kovacs, Richard F.; Micks, Henry B., Jr.; Potechin, Jamey N.; Simons, Everett F.; and Tetz, John G., 5,335,405, Cl. 29-407.000.

Simpson, Danny, to Seymour Housewares Corporation. Ironing board with leg locking member and hanger attachment. 5,335,432, Cl. 38-106.000.

Simpson Strong-Tie Company, Inc.: *See—*
Stuart, Todd W., 5,335,469, Cl. 52-655.100.

Singh, Donald R.: *See—*
Geddes, John J.; and Singh, Donald R., 5,336,923, Cl. 257-596.000.

Singh, Raj M., to General Electric Company. Process for making composite containing fibrous material. 5,336,350, Cl. 156-155.000.

Sinn, Hans-Jurgen F., to United States Surgical Corporation. Retainer for a combined surgical needle-suture device. 5,335,783, Cl. 206-63.300.

Sinsky, Mark S.: *See—*
Sandstrom, Paul H.; Bauer, Richard G.; Burlett, Donald J.; and Sinsky, Mark S., 5,336,730, Cl. 525-332.600.

Sizetec, Inc.: *See—*
Tsutumis, Masataka, 5,336,408, Cl. 210-384.000.

Sky Aluminium Co., Ltd.: *See—*
Maejima, Masatsugu; Saruwatari, Koichi; Kurosaka, Akihito; Matsuo, Mamoru; Gunji, Hiroyoshi; and Muramatsu, Toshiki, 5,336,341, Cl. 148-415.000.

Skye, David A.; and Twist, Peter J., to Eastman Kodak Company. Automatic processing devices for processing photographic materials. 5,337,112, Cl. 359-298.000.

Slater, Charles R.: *See—*
Ryan, Dana W.; Slater, Charles R.; Solar, Matthew S.; and Turkel, David, 5,336,220, Cl. 604-22.000.

Sligh Furniture Co.: *See—*
Kelley, James O., 5,335,971, Cl. 297-378.120.

Sliskovic, Drago R.: *See—*
Picard, Joseph A.; and Sliskovic, Drago R., 5,336,690, Cl. 514-605.000.

Sloan-Kettering Institute for Cancer Research: *See—*
Prochaska, Hans J.; and Scotto, Kathleen W., 5,336,685, Cl. 514-455.000.

Sloan Valve Company: *See—*
Whiteside, John F., 5,335,694, Cl. 137-625.370.

Slocum, Richard T., to WangDat, Inc. Pushbutton actuator. 5,336,860, Cl. 200-332.100.

Sloman, David E.: *See—*
Kung, Paul J.; and Sloman, David E., 5,337,178, Cl. 359-393.000.

Small, David C., to United States of America, Navy. Protective fairing for underwater sensor line array. 5,335,620, Cl. 114-243.000.

SMC Corporation: *See—*
Kaneko, Junya; and Yamamoto, Hitoshi, 5,335,583, Cl. 92-13.500.

Smedley, William H.: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,335,773, Cl. 206-221.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,336,186, Cl. 604-110.000.

Smith, Addison M.: *See*—
Yates, Stephen F.; Harnish, Daniel F.; and Smith, Addison M., 5,336,377, Cl. 203-29.000.

Smith, Alan K.: *See*—
Hardwick, R. Alan; Smith, Alan K.; Lake, William C.; and Chenoweth, Dennis E., 5,336,760, Cl. 530-413.000.

Smith, Allan F.; and Shepley, Paul E., Jr., to Precision Shooting Equipment, Inc. Extruded handle for archery bow. 5,335,644, Cl. 124-23.100.

Smith, Calvin G., to Ford Motor Company. Space-efficient air conditioning/heating module. 5,335,718, Cl. 165-42.000.

Smith, Charles H.: *See*—
Akhtar, Masyood; Le, Kim C.; Pedigo, Jess; and Smith, Charles H., 5,336,644, Cl. 501-15.000.

Smith, Craig W.: *See*—
Kuracina, Thomas C.; Ohnemus, Randall E.; and Smith, Craig W., 5,336,197, Cl. 604-192.000.

Smith, Dale: *See*—
Behrmann, Gregory P.; Smith, Dale; and Potter, William, 5,337,389, Cl. 385-77.000.

Smith, David W.; Hanes, Ronnie M.; Scheben, John A.; and Augustine, Steve M., to Quantum Chemical Corporation. Pretreatment of palladium-gold catalysts useful in vinyl acetate synthesis. 5,336,802, Cl. 560-245.000.

Smith, Donald C.: *See*—
Williamson, Lawrence J., Jr.; Smith, Donald C.; and Snyder, Charles R., 5,336,097, Cl. 439-94.000.

Smith International, Inc.: *See*—
Baugh, Benton E., 5,335,737, Cl. 175-61.000.

Smith, Joseph H., Jr. Tilt to clean gutter system. 5,335,460, Cl. 52-11.000.

Smith, Kyle; Fisher, Barbara J.; Bryan, Philip S.; and Hoderlein, Paul M., to Eastman Kodak Company. Hafnium stannate phosphor composition and X-ray intensifying screen. 5,336,893, Cl. 250-483.100.

Smith, Neil D.; and Yate, Martin. Apparatus and method for redirecting camera flash light so as to avoid red-eye. 5,337,104, Cl. 354-149.110.

Smith, Nelson S., Jr.: *See*—
Fasching, George E.; and Smith, Nelson S., Jr., 5,337,289, Cl. 367-140.000.

Smith & Nephew Richards, Inc.: *See*—
DeMane, Catherine; and Schwarz, Robert, 5,336,163, Cl. 602-46.000.

Smith & Nephew United Inc.: *See*—
Norcia, Michael A., 5,336,207, Cl. 604-290.000.

Smith, Paul W.: *See*—
Ganapathi, Srinivasan K.; Love, Robert B.; and Smith, Paul W., 5,336,550, Cl. 428-216.000.

Smith, Raymond J. D.: *See*—
Khoshnevisan, Mohsen; Schoenwald, Jeffrey S.; Rode, Jonathan P.; Smith, Raymond J. D.; Kolloff, Bruce G.; and Beccue, Steve, 5,336,884, Cl. 250-231.180.

Smith, Richard G.: *See*—
Lindsey, Kurt L.; Peret, Andrew R.; Hastings, Jerome K.; and Smith, Richard G., 5,337,214, Cl. 361-709.000.

Smith, Sidney T.; Chase, James; and Sonderman, Jeffrey R., to Clintec Nutrition Company. Crushable shipper. 5,335,846, Cl. 229-120.320.

Smith, Steven G.: *See*—
Hillbish, Warren C.; and Smith, Steven G., 5,336,109, Cl. 439-540.000.

Smith, William L.: *See*—
Rader, James E.; and Smith, William L., 5,336,426, Cl. 252-102.000.

SmithKline & French Laboratories Limited: *See*—
Giles, Robert; and Walsgrove, Timothy C., 5,336,781, Cl. 548-486.000.

Smits, Matthijs P., to Liberty Mutual Insurance Co. Method and apparatus for switching degrees of freedom in a prosthetic limb. 5,336,269, Cl. 623-25.000.

Smuda, Raymond J.: *See*—
Hartrum, Laude E.; and Smuda, Raymond J., 5,335,986, Cl. 312-220.000.

Snamprogetti S.p.A.: *See*—
Basini, Luca; Marchionna, Mario; Rossini, Stephano; and Sanfilippo, Domenico, 5,336,655, Cl. 502-252.000.
Bellussi, Giuseppe; Giusti, Aldo; and Zanibelli, Laura, 5,336,830, Cl. 585-660.000.

Snap-on Tools Corporation: *See*—
Krivec, Bert, 5,335,418, Cl. 30-266.000.

Snell, Brian K.: *See*—
deFraine, Paul; Snell, Brian K.; Beautement, Kevin; Anthony, Vivienne M.; and Clough, John M., 5,336,682, Cl. 514-422.000.

Snider, Max H. Method and apparatus for alleviating back pain. 5,336,498, Cl. 424-402.000.

Snider, Michael T.; High, Kane M.; Panol, Georg; Ultman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., to Pennsylvania Research Corporation, The. Intravascular membrane lung apparatus. 5,336,164, Cl. 604-4.000.

Snorrason, Ernir. Method of treating mania in humans. 5,336,675, Cl. 514-215.000.

Snover, Todd A.: *See*—
Langer, Peter; Wojcik, Karl W.; and Snover, Todd A., 5,337,013, Cl. 324-537.000.

Snyder, Charles R.: *See*—
Williamson, Lawrence J., Jr.; Smith, Donald C.; and Snyder, Charles R., 5,336,097, Cl. 439-94.000.

Snyman, Nicolaas: *See*—
Pieterse, Ian; Snyman, Nicolaas; and Minne, Andre, 5,335,739, Cl. 180-6.300.

Societa Italiana - SIV - S.p.A.: *See*—
Carlomagno, Giovanni; Casco, Vincenzo; De Leonibus, Vittore; and Tereo, Edoardo, 5,336,288, Cl. 65-182.200.

Societe Europeenne de Propulsion: *See*—
Balhadere, Aline; Bernard, Bruno; Moreau, Jacques A.; Mouricou, Isabelle; and Robin-Brosse, Christian, 5,336,522, Cl. 427-226.000.

Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A.: *See*—
Barbier, Gerard Y. G.; Bardey, Xavier M. H.; and Desaulty, Michel A. A., 5,335,491, Cl. 60-39.370.

Societe Nationale Elf Aquitaine: *See*—
Bernier, Jacques, 5,335,519, Cl. 62-481.000.

Societe Sochata: *See*—
Bodin, Marie-Josephe A., 5,336,382, Cl. 204-181.600.

Sodick Co., Ltd.: *See*—
Terui, Koji, 5,336,863, Cl. 219-69.140.

Software Security, Inc.: *See*—
Chou, Wayne W.; Kulinets, Joseph M.; Elteto, Laszlo; and Engel, Frederik, 5,337,357, Cl. 380-4.000.

Sogaishi, Ichirou: *See*—
Matsunaga, Noboru; Azeyanagi, Kazuyoshi; Sogaishi, Ichirou; Katakura, Takeo; Ueda, Yoshihisa; and Ohsawa, Takaaki, 5,336,465, Cl. 419-2.000.

Sola, Einar; Rottingen, Jan; Grimstad, Per; and Askeland, Atle. Process for enrichment of fat with regard to polyunsaturated fatty acids and phospholipids, and application of such enriched fat. 5,336,792, Cl. 554-21.000.

Solar, Matthew S.: *See*—
Ryan, Dana W.; Slater, Charles R.; Solar, Matthew S.; and Turkel, David, 5,336,220, Cl. 604-22.000.

Solovieff, Paul G., to Emhart Inc. Universal adaptor for deadbolt. 5,335,525, Cl. 70-370.000.

Soltis, Dennis A.: *See*—
Davis, Stuart M.; and Soltis, Dennis A., 5,335,637, Cl. 123-478.000.

Solvay Fluor und Derivate GmbH: *See*—
Eicher, Johannes; Fazniewscy, Karl-Heinz; Rieland, Matthias; and Rudolph, Werner, 5,336,817, Cl. 570-168.000.

Solvay (Societe Anonyme): *See*—
Barthelemy, Pierre; Paulus, Mireille; Buchwald, Hans; Hellmann, Joachim; and Raszkowski, Boleslaus, 5,336,429, Cl. 252-171.000.

Somfy: *See*—
Thierry, Jacqui, 5,336,136, Cl. 475-337.000.

Sonderman, Jeffrey R.: *See*—
Smith, Sidney T.; Chase, James; and Sonderman, Jeffrey R., 5,335,846, Cl. 229-120.320.

Sonnenschein, Georg: *See*—
Beck, Erhard; and Sonnenschein, Georg, 5,335,983, Cl. 303-119.200.

Sonoco Products Company: *See*—
Beasley, M. Wayne; Fletcher, Wade D.; and Wilfong, Harry B., Jr., 5,335,788, Cl. 206-554.000.
Williamson, Keith S.; and Ochab, Terry A., 5,336,036, Cl. 414-502.000.

Sony Corp, Kabushiki Kaisha Shibaura Seisakusho: *See*—
Kato, Naoki; Konoshima, Eiji; Kinokiri, Kyoji; and Ikeda, Jiro, 5,336,029, Cl. 414-217.000.

Sony Corporation: *See*—
Fujii, Hiroshi, 5,337,204, Cl. 360-132.000.
Fujinami, Yasushi, 5,337,086, Cl. 348-402.000.
Fukasawa, Hideki; Ota, Shuichi; and Okada, Hiroshi, 5,337,192, Cl. 360-10.300.
Kawamoto, Seiichi; Sato, Maki; Narabu, Tadakuni; and Miura, Hisanori, 5,337,163, Cl. 358-482.000.
Maeda, Yasuaki, 5,337,295, Cl. 369-32.000.
Murabayashi, Noboru; and Seki, Takahito, 5,337,193, Cl. 360-19.100.
Nakata, Shingo, 5,337,157, Cl. 358-335.000.
Nishiyama, Seiichi, 5,337,010, Cl. 330-255.000.
Shimose, Yuichiro; and Ikeda, Jiro, 5,336,385, Cl. 204-298.030.
Takayama, Jun, 5,337,153, Cl. 348-441.000.

Sony United Kingdom Limited: *See*—
Dorricott, Martin R.; Gillard, Clive H.; Richards, John W.; Morita, Tsuneo; Galt, James J.; David, Morgan W. A.; Burns, James E.; and Varsani, Shima R., 5,337,154, Cl. 348-448.000.
Wilkinson, James H.; and Hurley, Terence R., 5,337,194, Cl. 360-24.000.

Soong, Tsai C. Movable end cap for the handle of a sports rocket. 5,335,919, Cl. 273-735.000.

Sorathia, Usman A.; Killian, Joseph W.; and Jarrett, Andrew W., to United States of America, Navy. Acoustic and vibration attenuation composite material. 5,337,288, Cl. 367-1.000.

Sorge, Anthony M.: *See*—
Huse, William D.; Sorge, Anthony M.; and Sylvester, Keith V., 5,336,412, Cl. 210-635.000.

Sorn, Ronald R.: *See*—
Cummins, Brad L.; Pick, William A.; Sorn, Ronald R.; and Stocker, Karl F., 5,336,861, Cl. 200-339.000.

Sorrells, Peter H.; and Garinger, Ned D., to VLSI Technology, Inc. Delay-compensated output pad for an integrated circuit and method therefor. 5,336,940, Cl. 307-269.000.

Southern, Lincoln L., Jr.; and Page, Timothy G., to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College. Increasing egg production in poultry. 5,336,672, Cl. 514-188.000.

Southwick, Jeffrey G.: *See*—
Austgen, David M., Jr.; and Southwick, Jeffrey G., 5,336,712, Cl. 524-530.000.

Sovann, Nancy. Knockdown dispenser kit. 5,335,829, Cl. 222-183.000.

Soyka, Wilfried: *See*—
Muntnich, Leo; Soyka, Wilfried; and Steinberger, Wolfgang, 5,335,998, Cl. 384-622.000.

Sozanski, Jean-Pierre: *See*—
Buys, Bruno; Sozanski, Jean-Pierre; Mordon, Serge; Brunetaud, Jean-Marc; and Moschetto, Yves, 5,336,217, Cl. 606-9.000.

Spangler, David. Gauge for measuring radial distances on a cylindrical surface. 5,335,424, Cl. 33-834.000.

Spangler, Leland J., to Ford Motor Company. Method for calibrating a single point impact sensor. 5,337,260, Cl. 364-571.020.

Spanski, Jeffrey: *See*—
Cherenak, Thomas M.; Spanski, Jeffrey; and Zlomke, Steven, 5,335,772, Cl. 206-349.000.

Sparks, Robert E.: *See*—
Lagnemo, Hans; Sparks, Robert E.; and Jacobs, Irwin C., 5,336,433, Cl. 252-186.230.

Spartan Tool Div. of Pettibone Corp.: *See*—
Salecker, Roy W., 5,335,388, Cl. 15-104.120.

Speakman, John G.: *See*—
Havas, Laszlo; Lalanne-Magne, Claudine; and Speakman, John G., 5,336,738, Cl. 526-82.000.

Spector, Donald. Variable weight playball. 5,335,907, Cl. 273-58.00H.

Spectra, Inc.: *See*—
Spehrley, Charles W., Jr.; Hoisington, Paul A.; Fulton, Steven J.; Young, Lawrence R.; and Schaffer, Robert R., 5,337,079, Cl. 347-88.000.

Spehrley, Charles W., Jr.; Hoisington, Paul A.; Fulton, Steven J.; Young, Lawrence R.; and Schaffer, Robert R., to Spectra, Inc. Post-processing of colored hot melt ink images. 5,337,079, Cl. 347-88.000.

Spence, Jarrett L.; and Wright, Robert J., to United Technologies Corporation. Gas turbine elements bearing alumina-silica coating to inhibit coking. 5,336,560, Cl. 428-336.000.

Spence, Jarrett L.: *See*—
Dalzell, William J., Jr.; Wright, Robert J.; and Spence, Jarrett L., 5,336,381, Cl. 204-180.200.

Spencer, Russ: *See*—
Rao, Nippani R.; Abouzahr, Saad M.; Spencer, Russ; and Falkowski, Denis E., 5,336,710, Cl. 524-494.000.

Spessard, Gerald W. Baseball infielder's mask. 5,335,371, Cl. 2-9.000

Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., to Xerox Corporation. Single layer photoreceptor. 5,336,577, Cl. 430-59.000.

Spirol International Corporation: *See*—
Negrete, Steven E., 5,335,779, Cl. 198-756.000.

Spoo, Kevin J.; and Thompson, Roy G., to Phillips Petroleum Company. Primary processing of laminated thermoplastic sheets. 5,336,526, Cl. 427-372.200.

Sprenger, Wilfried: *See*—
Muller, Hans-Jurgen; and Sprenger, Wilfried, 5,335,963, Cl. 297-244.000.

Sprinkler Sentry, Inc.: *See*—
Hagon, James W., 5,335,857, Cl. 239-204.000.

SPX Corporation: *See*—
Kling, Michael J., III; Alusick, Michael P.; Kercheck, Gary R.; Krueger, Jeff C.; Schmitz, Duane M.; and Visser, James L., 5,335,420, Cl. 33-288.000.

Square D Company: *See*—
Haun, Andy A.; and Basck, Jerry R., 5,337,205, Cl. 361-56.000.
Mann, Steven W.; and Todd, Jerald C., 5,335,531, Cl. 72-416.000.
McIver, Chandler H., 5,337,216, Cl. 361-728.000.

SRI International: *See*—
Malhotra, Ripudaman; Tse, Doris S.; and McMillen, Donald F., 5,336,828, Cl. 585-654.000.
Zarling, David A.; and Sena, Elissa P., 5,336,606, Cl. 435-172.300.

Sridhar, Ramalingam; Kim, Seokjin; Shin, Yong-Chul; and Bogineni, Naidu C. R., to State University of New York. Programmable analog synapse and neural networks incorporating same. 5,336,937, Cl. 307-201.000.

Staats, Victor, to International Laboratory Technology Corp. Flexible material having barrier properties. 5,336,305, Cl. 106-18.320.

Stabilus GmbH: *See*—
Maury, Horst; and Morgen, Helmut, 5,335,949, Cl. 292-338.000.

Stacey, Eric J.; and Rosa, John, to Westinghouse Electric Corporation. Harmonic neutralization of static inverters by successive stagger. 5,337,227, Cl. 363-71.000.

Stadelmann, Ludwig; and Mayer, Dieter, to Suspa Compart Aktiengesellschaft. Washing machine. 5,335,522, Cl. 68-23.100.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Two-apron drafting unit for spinning machines. 5,335,397, Cl. 19-255.000.

Stahlecker, Hans: *See*—
Stahlecker, Fritz, 5,335,397, Cl. 19-255.000.

Stall, Richard A.; Tompa, Gary S.; Gurary, Alexander; and Nelson, Craig R., to Emcore Corporation. Apparatus for depositing a coating on a substrate. 5,336,324, Cl. 118-719.000.

Standard Products Company, The: *See*—
Brookman, Marc A., 5,337,225, Cl. 362-145.000.

Gustafson, Thomas L.; and Brookman, Marc A., 5,336,345, Cl. 156-67.000.

Stanford, Ralph F.; and Gatz, Stephen E., to Elkay Manufacturing Company. Replaceable filter cartridge and head assembly with safety shut-off valve. 5,336,406, Cl. 210-235.000.

Stanley-Bostitch, Inc.: *See*—
Fealey, William S., 5,335,839, Cl. 227-132.000.

Stanley Electric Co., Ltd.: *See*—
Ogawa, Fumio; and Nihei, Norio, 5,337,137, Cl. 356-4.000.

Stanley, Kimberly D.: *See*—
Narayanan, Pallassana V.; Rowland, Stephen M.; and Stanley, Kimberly D., 5,336,518, Cl. 623-1.000.

Stassen, Jean-Marie: *See*—
Collen, Desire J.; Stassen, Jean-Marie; and Lijnen, Henri R., 5,336,495, Cl. 424-94.640.

Stasz, Peter: *See*—
Bowman, Bruce R.; and Stasz, Peter, 5,335,666, Cl. 128-723.000.

State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University and the University of Oregon: *See*—
Weber, Eckard; and Keana, John F. W., 5,336,689, Cl. 514-634.000.

State University of New York: *See*—
Sridhar, Ramalingam; Kim, Seokjin; Shin, Yong-Chul; and Bogineni, Naidu C. R., 5,336,937, Cl. 307-201.000.

Stegmeier, Renata C.: *See*—
Ruggiero, Murray A.; Stegmeier, Renata C.; Marien, Bruce A.; and Wilbourn, Keith O., 5,336,787, Cl. 549-239.000.

Stehle, Harro: *See*—
Lemke, Kuno; Voegele, Guenther; and Stehle, Harro, 5,335,479, Cl. 53-426.000.

Stehr, Norbert; and Schmitt, Philipp, to Draiswerke GmbH. Agitator mill. 5,335,867, Cl. 241-69.000.

Steimle, Andre: *See*—
Desrosiers, Bernard; Louis, Didier; and Steimle, Andre, 5,337,265, Cl. 364-748.000.

Steinbach, Bernd: *See*—
Polaschegg, Hans-Dietrich; and Steinbach, Bernd, 5,336,194, Cl. 604-175.000.

Steinberger, Wolfgang: *See*—
Muntnich, Leo; Soyka, Wilfried; and Steinberger, Wolfgang, 5,335,998, Cl. 384-622.000.

Steiner, Norbert: *See*—
Diehl, Manfred; Koenig, Karl-Heinz; Krone, Eckhart; Loroesch, Juergen; Steiner, Norbert; Ullmann, Jochen; and Ziegler, Annette, 5,336,474, Cl. 423-29.000.

Stene, John K.: *See*—
Snider, Michael T.; High, Kane M.; Panol, Georg; Ultman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., 5,336,164, Cl. 604-4.000.

Stephan, Gregory H. C.: *See*—
Tang, Yuan-Ming; and Stephan, Gregory H. C., 5,336,405, Cl. 210-232.000.

Sterling Winthrop Inc.: *See*—
Bacon, Edward R.; Daum, Sol J.; Estep, Kimberly G.; Josef, Kurt A.; Douty, Brent D.; and Illig, Carl R., 5,336,484, Cl. 424-5.000
Na, George C.; and Rajagopalan, Natarajan, 5,336,507, Cl. 424-489.000.

Stern, Howard J.: *See*—
Scattolino, Thomas F.; Stern, Howard J.; Trumball, John G.; and Wolkowicz, Richard I., 5,336,373, Cl. 162-116.000.

Steude, Heinrich: *See*—
Taurat, Siegfried; Steude, Heinrich; Deibele, Ludwig; and Alpers, Heinz-Jurgen, 5,336,376, Cl. 202-182.000.

Steuten, Michael: *See*—
Arvedi, Giovanni; Ludorff, Harald; Thurm, Hans G.; Parschat, Lothar; Pleschiutschnigg, Fritz-Peter; Paris, Hans-Joachim; and Steuten, Michael, 5,335,714, Cl. 164-446.000.

Stewart, James R.; Klotz, James A.; Fulgenzi, Crescenzo F.; and Coleman, Philip D., to Ucar Carbon Technology Corporation. Self centering electrode joint. 5,336,015, Cl. 403-296.000.

Stewart, Roger G.; and Roach, William R., to David Sarnoff Research Center, Inc. Field-sequential display system utilizing a backlit LCD pixel array and method for forming an image. 5,337,068, Cl. 345-88.000.

Steyr-Daimler-Puch AG: *See*—
Leitner, Max; and Fruhwirth, Gerhard J., 5,335,764, Cl. 192-85.00C.

Stickney, David R., to United Telephone Company of Ohio. Headset bridge for operating multiple communication devices. 5,337,343, Cl. 379-45.000.

Stiller, Martin: *See*—
Focke, Heinz; and Stiller, Martin, 5,336,154, Cl. 493-352.000.

Stocker, Karl F.: *See*—
Cummins, Brad L.; Pick, William A.; Sorn, Ronald R.; and Stocker, Karl F., 5,336,861, Cl. 200-339.000.

Stoddard, David C. F.; Orr, Ladd M.; Cooper, Alan D.; and Jarmuz, Jeffrey J., to Mead Corporation, The. Display stand. 5,335,593, Cl. 108-165.000.

Stoecklein, Thomas: *See*—
Horvat, Ivan; Schweizer, Manfred; and Stoecklein, Thomas, 5,336,307, Cl. 106-19.00B.

Stoffers, Mark A.; Mokorarat, Dulyarat; and Peceimer, Bradley T., to Read-Rite Corporation. Processing of magnetic head flexures with slider elements. 5,335,458, Cl. 51-317.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Stoldt, Stephen H.: *See*—
Adams, Paul E.; Lange, Richard M.; and Stoldt, Stephen H., 5,336,278, Cl. 44-419.000.
Stoll, Kurt, to Festo KG. Housing for a drive cylinder. 5,335,587, Cl. 92-169.200.
Stolle, Klaus, to Hoerbiger Ventilwerke Aktiengesellschaft. Hydraulic actuating apparatus for opening and closing a vehicle cover with auxiliary manual hydraulic pump. 5,335,926, Cl. 280-117.000.
Stone, Richard M.: *See*—
Daughtry, Earl A.; and Stone, Richard M., 5,337,020, Cl. 330-279.000.
Stopgap Enterprises: *See*—
Zarola, J. Anthony, 5,335,618, Cl. 119-19.000.
Storage Technology Corporation: *See*—
Ostwald, Timothy C.; and Hoge, David T., 5,336,030, Cl. 414-277.000.
Stork, David G.: *See*—
Gormish, Michael J.; Peairs, Mark; and Stork, David G., 5,337,362, Cl. 380-54.000.
Strack, David C.; Connor, Linda A.; Gwaltney, Sharon W.; McCormack, Ann L.; Shawver, Susan E.; and Shultz, Jay S., to Kimberly-Clark Corporation. Nonwoven fabric made with multicomponent polymeric strands including a blend of polyolefin and ethylene alkyl acrylate copolymer. 5,336,552, Cl. 428-224.000.
Strader, Catherine D.; and Fong, Tung M., to Merck & Co., Inc. Method of using human neurokinin-1 receptor short form. 5,336,595, Cl. 435-6.000.
Straeter, Joseph G.: *See*—
Weder, Donald E.; and Straeter, Joseph G., 5,335,475, Cl. 53-397.000.
Strahan, Ronald L. Method and apparatus for disposing of water at gas wells. 5,335,728, Cl. 166-267.000.
Stratagene: *See*—
Huse, William D.; Sorge, Anthony M.; and Sylvester, Keith V., 5,336,412, Cl. 210-635.000.
Streck, Donald A.; Kuracina, Thomas C.; and Ohnemus, Randall E., to InjectiMed, Inc. Retractable sleeve-protection for injection apparatus employing carpules. 5,336,200, Cl. 604-198.000.
Strickert, Mark D.: *See*—
Halstead-Nussloch, Richard H.; and Strickert, Mark D., 5,337,347, Cl. 379-67.000.
Strok, Jack M.; Bergman, Rolf S.; and Ingold, John H., to General Electric Company. DC operated sodium vapor lamp. 5,336,968, Cl. 313-571.000.
Strom, Terry B., to Beth Israel Hospital Association, The. Treatment of allograft rejection with IL-2 receptor-specific cytotoxins. 5,336,489, Cl. 424-85.200.
Strul, Bruno; de Geus, Richard; and Ebbing, Peter, to Applied Materials, Inc. Etch rate monitor using collimated light and method of using same. 5,337,144, Cl. 356-357.000.
Stuart, Todd W., to Simpson Strong-Tie Company, Inc. Rafter to plate connection. 5,335,469, Cl. 52-655.100.
Stuck, Robert M.; and Maw, Samuel H. Method of preparing and handling poultry for consumption. 5,336,512, Cl. 426-523.000.
Stucke, Donald W., Jr.: *See*—
Field, John B. A.; and Stucke, Donald W., Jr., 5,337,224, Cl. 362-84.000.
Studebaker, Charles E. Method for folding paper sheets. 5,336,155, Cl. 493-405.000.
Stupka, Jonathan C.: *See*—
Waits, C. Thomas; Stupka, Jonathan C.; Peters, T. Scott; and Schwartz, Alan S., 5,336,259, Cl. 623-2.000.
Styrotech Corporation: *See*—
Gieryng, Jan B., 5,337,379, Cl. 385-26.000.
Subrod, Ines: *See*—
Bruckner, Hans-Dieter; and Subrod, Ines, 5,336,310, Cl. 106-403.000.
Sucech, Steven W.: *See*—
Misra, Chanakya; and Sucech, Steven W., 5,336,480, Cl. 423-580.100.
Sudo, Satomi: *See*—
Yamauchi, Keiichi; Shimizu, Toshihiko; and Sudo, Satomi, 5,336,844, Cl. 84-602.000.
Suedzucker AG Mannheim/Ochsenfurt: *See*—
Sugitani, Toshiaki; Tsuyuki, Kenichiro; Miyata, Yukie; Ebashi, Tadashi; Okui, Hideaki; Nakajima, Yoshikazu; and Sawada, Kenzo, 5,336,617, Cl. 435-252.100.
Suematu, Takashi: *See*—
Kozawa, Tadahiko; Osakabe, Yasuhiro; and Suematu, Takashi, 5,335,648, Cl. 128-6.000.
Suess, Hans R.: *See*—
Gans, Eugene H.; and Suess, Hans R., 5,336,692, Cl. 514-772.000.
Suetake, Kenji, to NEC Corporation. Lead frame having electrically insulating tapes adhered to the inner leads. 5,336,927, Cl. 257-670.000.
Suga, Satoru: *See*—
Ando, Hiromi; Matsunaga, Kunihiro; Sano, Kenji; and Suga, Satoru, 5,335,982, Cl. 303-117.100.
Sugano, Michihiro: *See*—
Akimoto, Kengo; Shinmen, Yoshifumi; Yamada, Hideaki; Shimizu, Sakayu; and Sugano, Michihiro, 5,336,496, Cl. 424-195.100
Suganuma, Ryoichi: *See*—
Saya, Daisuke; and Suganuma, Ryoichi, 5,336,958, Cl. 310-316.000.
Suganuma, Tetsuya: *See*—
Nukami, Tetsuya; and Suganuma, Tetsuya, 5,336,291, Cl. 75-10.180.
Sugarbaker, Paul H. Abdomino-pelvic lavage apparatus and method. 5,336,171, Cl. 604-24.000.
Sugata, Akihiko; Tamura, Kenji; and Mabuchi, Yoshiyuki, to Toyota Jidosha Kabushiki Kaisha. Paint apparatus having two robots. 5,336,321, Cl. 118-315.000.
Sugawara, Mitsutoshi, to NEC Corporation. Serial-to-parallel converter circuit. 5,337,050, Cl. 341-100.000.
Sugibayashi, Tadahiko: *See*—
Kawata, Koji; and Sugibayashi, Tadahiko, 5,337,270, Cl. 365-149.000.
Sugino, Kouichiro: *See*—
Kawaguchi, Katuhide; Sugino, Kouichiro; and Yanagisawa, Kazuyoshi, 5,336,358, Cl. 156-422.000.
Sugita, Mitsuru: *See*—
Katayama, Masatake; Sato, Makoto; Ohta, Yutaka; Sugita, Mitsuru; and Ohki, Konomu, 5,336,634, Cl. 437-63.000.
Sugitani, Toshiaki; Tsuyuki, Kenichiro; Miyata, Yukie; Ebashi, Tadashi; Okui, Hideaki; Nakajima, Yoshikazu; and Sawada, Kenzo, to Mitsui Sugar Co., Ltd.; and Suedzucker AG Mannheim/Ochsenfurt. Process for preparing trehalulose and isomaltulose. 5,336,617, Cl. 435-252.100
Sugiura, Satoshi; and Yamakawa, Yuzo, to Pioneer Electronic Corporation. Optical recording medium, apparatus for reproducing the same and method of recording and reproducing the same. 5,337,301, Cl. 369-110.000.
Sugiyama, Norikazu: *See*—
Kamiya, Kiyoshi; Uchiyama, Shigeru; Ohishi, Hideshi; Sugiyama, Norikazu; Mizuguchi, Yoshinori; and Hirano, Masahiko, 5,337,081, Cl. 348-61.000.
Sukoneck, Barry: *See*—
Wilson, Richard S., Jr.; Sukoneck, Barry; and Wenzer, Kenneth C., 5,336,090, Cl. 433-172.000.
Sullivan, James B.; and Moore, Eric R., to Theratek International, Inc. Controller for intravascular catheter system. 5,336,167, Cl. 604-22.000.
Sullivan, Roy H.: *See*—
Durgin, Russell F., Jr.; Rowland, Christopher A.; Sullivan, Roy H.; and Vergano, Michael G., 5,336,222, Cl. 606-50.000.
Sulzer Rueti AG: *See*—
Berktold, Klaus; Gunther, Kurt; and Egloff, Anton, 5,335,698, Cl. 139-1.00E.
Sumitomo Bakelite Company Limited: *See*—
Ikeda, Shinji; Ooi, Keiji; and Katoh, Ken, 5,336,723, Cl. 525-139.000.
Sumitomo Chemical Company, Limited: *See*—
Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, 5,336,463, Cl. 264-328.700.
Nagaoka, Kenji; and Gotoh, Satoru, 5,336,713, Cl. 524-540.000.
Uetani, Yasunori; Doi, Yasunori; Hashimoto, Kazuhiko; Osaki, Haruyoshi; and Hanawa, Ryotaro, 5,336,583, Cl. 430-191.000.
Sumitomo Electric Industries, Ltd.: *See*—
Fujimoto, Tsuyoshi, 5,335,980, Cl. 303-113.200.
Matsuzaki, Shin-ichi, 5,337,245, Cl. 364-449.000
Onishi, Masashi; Nakazato, Koji; Chigusa, Yoshiki; Watanabe, Minoru; and Miyajima, Yoshiaki, 5,337,401, Cl. 385-142.000.
Saito, Kazuhito; Kobayashi, Hideo; and Katagiri, Toshiaki, 5,337,378, Cl. 385-16.000.
Sawada, Kazuo; Inazawa, Shinji; and Yamada, Kouichi, 5,336,851, Cl. 174-110.00A.
Sumitomo Heavy Industries, Ltd.: *See*—
Hiraoka, Kazuo, 5,336,073, Cl. 425-145.000.
Sumitomo, Miyuki; Takeoka, Ichiro; and Bando, Shoichi, to Nichia Chemical Industries, Ltd. Cathode-ray tube phosphor. 5,336,080, Cl. 428-407.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Sano, Haruyuki; Otani, Takao; Nishitani, Masayoshi; Takatsu, Mikio; Ueyoko, Kiyoshi; Yamamoto, Toshiaki; and Miyazaki, Shinichi, 5,335,707, Cl. 152-543.000.
Sumitomo Wiring Systems, Ltd.: *See*—
Kasugai, Masakuni; and Ito, Hisao, 5,336,101, Cl. 439-272.000.
Sumiya, Yukio: *See*—
Nakajima, Kichio; Honma, Kazuo; Sumiya, Yukio; Yamaguchi, Takeshi; Inamitsu, Hiroshi; and Minamiyama, Eiji, 5,335,547, Cl. 73-622.000.
Sun Microsystems, Inc.: *See*—
Hofert, David K.; and Yoshida, Yutaka, 5,337,233, Cl. 364-419.140.
Sund, William. Soldering process an apparatus. 5,335,843, Cl. 228-180.100.
Sundaram, Lalgudi M. G.; and Tracht, Neil, to Motorola, Inc. Vertical trench inductor. 5,336,921, Cl. 257-531.000.
Sunderland, Richard A.; and Lane, John A., to Sherwood Medical Company. Pivoting battery compartment and door. 5,337,215, Cl. 361-726.000.
Sundstrand Corporation: *See*—
White, Curtis B., 5,337,028, Cl. 333-181.000.
Sung, Moo J.: *See*—
Moon, Chi J.; Park, Sae C.; Kim, Myoung G.; Oh, Sea H.; Yim, Seong S.; Park, Nam J.; Choi, Young K.; and Sung, Moo J., 5,336,673, Cl. 514-202.000.
Suntory Limited: *See*—
Akimoto, Kengo; Shinmen, Yoshifumi; Yamada, Hideaki; Shimizu, Sakayu; and Sugano, Michihiro, 5,336,496, Cl. 424-195.100.
Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, 5,336,759, Cl. 530-326.000.
Surizaki, Kumi: *See*—
Shiokawa, Keiichi; Akiyama, Mihoko; Ide, Yoji; Hiyoshi, Yoshihiko; Sato, Masahiro; and Surizaki, Kumi, 5,336,548, Cl. 428-212.000.

Suspa Compart Aktiengesellschaft: *See*—
Stadelmann, Ludwig; and Mayer, Dieter, 5,335,522, Cl. 68-23.100.
Sutherland, Audrey E.; Bridger, Keith; Fiore, Eric M.; Christodoulou, Julie A.; Bailey, Alex E.; and Gelb, Allan S., to Martin Marietta Corporation. High energy density lead magnesium niobate-based dielectric ceramic and process for the preparation thereof. 5,337,209, Cl. 361-321.500.
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., to American Cyanamid Company. Macrolide compounds. 5,336,789, Cl. 549-264.000.
Sutter, Francis A.: *See*—
Layher, Francis W.; and Sutter, Francis A., 5,336,357, Cl. 156-391.000.
Sutton, Todd; Gregory, Sherman; Waltman, Joan T.; and White, Katherine W., to Qualcomm Incorporated. Pulse density modulation circuit (parallel to serial) comparing in a nonsequential bit order. 5,337,338, Cl. 377-33.000.
Suwa, Makoto; Miyamoto, Hiroshi; and Mori, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Circuit for applying selected voltages to dynamic random access memory. 5,337,272, Cl. 365-149.000.
Suzawa, Hiromichi: *See*—
Tanaka, Masayuki; Suzawa, Hiromichi; Kubota, Masayuki; Sekioka, Chiaki; Sato, Minako; and Uemura, Hisashi, 5,336,553, Cl. 428-229.000.
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; and Shiozaki, Shizuo, to Kyowa Hakko Kogyo Co., Ltd. Xanthine derivatives. 5,336,769, Cl. 544-273.000.
Suzuki, Fumio: *See*—
Matsuda, Akira; Shudo, Shigeki; Shimamoto, Noboru; Tanaka, Kohichi; Hashimoto, Hiromasa; and Suzuki, Fumio, 5,335,457, Cl. 51-284.00R.
Suzuki, Hiroya: *See*—
Kinouchi, Yohsuke; Ai, Minoru; Mizutani, Hiroshi; Okuno, Osamu; Yamauchi, Kiyotaka; Yamataka, Akira; and Suzuki, Hiroya, 5,337,033, Cl. 335-302.000.
Suzuki, Jiro: *See*—
Tomizawa, Takeshi; Fujita, Tatsuo; Ukai, Kunihiro; and Suzuki, Jiro, 5,335,425, Cl. 34-265.000.
Suzuki, Kazuaki; Kakizaki, Yukio; and Taniguchi, Tetsuo, to Nippon Kogaku K.K. Projection optical apparatus. 5,337,097, Cl. 353-101.000.
Suzuki, Masayuki; Haruta, Ryo; Shinriki, Hiroshi; and Nakata, Masayuki, to Hitachi, Ltd. Process for manufacturing semiconductor devices. 5,336,638, Cl. 437-190.000.
Suzuki Motor Corporation: *See*—
Kuroki, Kenji, 5,335,751, Cl. 180-336.000.
Mukai, Takeshi, 5,335,638, Cl. 123-520.000.
Suzuki, Nobutaka, to Ricoh Company, Ltd. Sheet feeding device for an image forming apparatus. 5,335,902, Cl. 271-121.000.
Suzuki, Seigo, to Terumo Kabushiki Kaisha. Method of measuring blood pressure, and automatic sphygmomanometer for implementing said method. 5,335,665, Cl. 128-680.000.
Suzuki, Shiro: *See*—
Kikuchi, Susumu; Suzuki, Shiro; and Kodaira, Satoru, 5,337,368, Cl. 381-103.000.
Suzuki, Takeshi: *See*—
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,336,679, Cl. 514-300.000.
Suzuki, Tatsuya: *See*—
Morishita, Akira; Ota, Tsuyoshi; Suzuki, Tatsuya; Ito, Sukehide; and Ryuko, Yoshikazu, 5,335,705, Cl. 141-275.000
Suzuki, Teiichi: *See*—
Ito, Hisao; and Suzuki, Teiichi, 5,336,906, Cl. 257-72.000.
Suzuki, Tomoko: *See*—
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000.
Suzuki, Yuzuru; Fujitani, Sakae; Inagaki, Masaaki; and Uchida, Hitoshi, to Minebea Kabushiki-Kaisha (Minebea Co., Ltd.). Outer - rotor type spindle motor. 5,336,955, Cl. 310-90.000.
Svejkovsky, Ronald: *See*—
Tihon, Claude; Cook, Timothy C.; Burton, John H.; and Svejkovsky, Ronald, 5,335,669, Cl. 128-736.000.
Swales, Michael G.: *See*—
Hubble, Fred F., III; Weber, Michael E.; Abowitz, Gerald; Bov, Raphael F., Jr.; Swales, Michael G.; and Eakin, Paul W., 5,337,122, Cl. 355-208.000.
Swartz, Jerome: *See*—
Wang, Ynjiun P.; Swartz, Jerome; and McGlynn, Daniel R., 5,337,361, Cl. 380-51.000.
Swartzendruber, James A.: *See*—
Benko, Andrew T.; Swartzendruber, James A.; Bocksnick, John L.; and Clark, Gary, 5,335,494, Cl. 60-428.000.
Sweeney, Edward C., III. Exercise machine. 5,336,147, Cl. 482-57.000
Sweppy, Michael S.; and Kerns, James M., to Ford Motor Company. Onboard detection of oxygen sensor switch rate for determining air/fuel ratio control system failure. 5,335,539, Cl. 73-118.100.
Swiecinski, Frederick J.: *See*—
Fong, Dodd W.; and Swiecinski, Frederick J., 5,336,729, Cl 525-329.400.
Swift, Graham; and Yocom, Kathryn M., to Rohm and Haas Company. Process for polymerization of itaconic acid. 5,336,744, Cl. 526-318.200.
Swift, William M.: *See*—
Nelson, Paul A.; and Swift, William M., 5,335,609, Cl. 110-346.000.
Sylvester, Keith V.: *See*—
Huse, William D.; Sorge, Anthony M.; and Sylvester, Keith V., 5,336,412, Cl. 210-635.000.
Symbiosis Corporation: *See*—
Bales, Thomas O.; and Ryan, Dana W., 5,336,172, Cl. 604-27.000.
Ryan, Dana W.; Slater, Charles R.; Solar, Matthew S.; and Turkel, David, 5,336,220, Cl. 604-22.000.
Symbol Technologies, Inc.: *See*—
Wang, Ynjiun P.; Swartz, Jerome; and McGlynn, Daniel R., 5,337,361, Cl. 380-51.000.
Symtron Systems, Inc.: *See*—
Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., 5,335,559, Cl. 73-866.000.
Synaptics, Incorporated: *See*—
Allen, Timothy P.; and Cser, James B., 5,336,936, Cl. 307-201.000.
Synosky, Steven P.: *See*—
McGrew, Gordon; and Synosky, Steven P., 5,336,509, Cl. 426-3.000.
Sypula, Donald S.: *See*—
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.
System RM Ltd.: *See*—
Grinfas, Zvi; Weil, Georges; and Miller, Maurice, 5,335,942, Cl. 283-74.000.
Sywyk, Stefan P., to Cypress Semiconductor Corporation. Apparatus for generating an asynchronous status flag with defined minimum pulse. 5,336,938, Cl. 307-265.000.
Szucs, Ferdinand: *See*—
Grandek, Manfred; and Szucs, Ferdinand, 5,336,285, Cl. 55-324.000.
TA Instruments, Inc.: *See*—
Marcus, Sanford M.; and Reading, Michael, 5,335,993, Cl. 374-11.000.
Tabata, Mitsunori: *See*—
Kintaichi, Yoshiaki; Hamada, Hideaki; Ito, Takehiko; Sasaki, Motoi; Tabata, Mitsunori; and Usui, Kazushi, 5,336,476, Cl. 423-239.100.
TACHI-S Co., Ltd.: *See*—
Tokura, Hisaya, 5,336,352, Cl. 156-214.000.
Taga, Genji: *See*—
Koga, Yoshiaki; and Taga, Genji, 5,336,477, Cl. 423-328.100.
Taguchi, Masahiro; Tominaga, Motonori; Matsuhashi, Toshiaki; and Fujita, Koichi, to Nippondenso Co., Ltd.; Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Crash sensor. 5,335,749, Cl. 180-274.000.
Taikisha Ltd.: *See*—
Horisawa, Satoshi, 5,336,283, Cl. 55-240.000.
Taiwan Styrene Monomer Corporation: *See*—
Tan, Chung-Sung; and Chiang, Shiaw-Tseh, 5,336,837, Cl. 585-828.000.
Tajima, Akio: *See*—
Harada, Hiroyuki; Tajima, Akio; Kogo, Takashi; Nagakawa, Tadashi; Oda, Hajima; Inoue, Haruo; and Hayakawa, Tsuyoshi, 5,336,004, Cl. 400-624.000.
Tajima, Naoyuki: *See*—
Chikawa, Yasunori; Honda, Yoshiaki; Mori, Katsunobu; Tajima, Naoyuki; Tsuda, Takaaki; and Maeda, Takamichi, 5,336,650, Cl 437-209.000.
Takagaki, Makoto; Karasawa, Tadashi; and Futami, Kazumitu, to Miyata Industry Co., Ltd. Bicycle frame. 5,335,929, Cl. 280-283.000.
Takagi, Masatoshi: *See*—
Haseyama, Ryuji; Takagi, Masatoshi; Hayashi, Kouzou; Sasagawa, Katsuyoshi; Kuroda, Kazuyuki; Kano, Taisaku; and Shikai, Kiyoshi, 5,336,749, Cl. 528-73.000.
Takahama, Shinobu; and Kamishima, Kunitaka, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing insulation substrate for semiconductor device and metal pattern plate used therefor. 5,336,364, Cl. 156-630.000.
Takahashi, Fumiho, to NEC Corporation. Spacecraft attitude sensor having an optical apparatus for increasing applications thereof. 5,337,241, Cl. 364-434.000.
Takahashi, Gensho; and Sato, Reijiro, to Asahi Kasei Kogyo Kabushiki. Photosensitive resin composition for use in forming a relief structure. 5,336,585, Cl. 430-284.000.
Takahashi, Hideo; and Yoshino, Ryutaro, to Honda Giken Kogyo Kabushiki Kaisha. Locomotion control system for legged mobiled robot. 5,337,235, Cl. 364-424.020.
Takahashi, Jin: *See*—
Takakura, Norio; and Takahashi, Jin, 5,335,765, Cl. 192-107.00R.
Takahashi, Katsuji; Sath, Yuji; and Mizuno, Takehisa, to Dainippon Ink and Chemicals, Inc. Flame-retardant thermoplastic resin composition, flame retardant, and process for preparing the flame retardant. 5,336,735, Cl. 525-423.000.
Takahashi, Kosei: *See*—
Kan, Yasuo; Takahashi, Kosei; Hosoda, Masahiro; Tsunoda, Atsuo; Tani, Kentaro; and Watanabe, Masanori, 5,337,326, Cl. 372-45.000.
Takahashi, Nobuo: *See*—
Yoshida, Makoto; Takahashi, Nobuo; and Hosoyama, Koichi, 5,336,556, Cl. 428-288.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Takahashi, Sakae; and Umehara, Minoru, to Toshiba Machine Co., Ltd. Method of covering substrate surface with sintered layer and powdery raw material used for the method. 5,336,527, Cl. 427-357.000.

Takahashi, Shigemi: *See—*
Michishita, Kenji; Ohnishi, Tomoyoshi; Maruyama, Youichi; and Takahashi, Shigemi, 5,336,112, Cl. 439-581.000.

Takahashi, Shinichi, to Pioneer Electronic Corporation. Optical information-reproducing apparatus using separately located photo detector assemblies. 5,337,299, Cl. 369-44.370.

Takahashi, Takashi: *See—*
Hori, Nobuo; Takano, Yoshinobu; Takahashi, Takashi; Nagano, Shigenori; and Hashimoto, Reiji, 5,337,169, Cl. 359-3.000.

Takahashi, Tomoko; and Shoji, Hisashi, to Ricoh Company, Ltd. Image forming apparatus capable of readily changing the pixel density of an image. 5,337,075, Cl. 346-107.00R.

Takahashi, Toyofumi: *See—*
Otake, Masahiro; Takahashi, Toyofumi; Nishiumi, Satoshi; and Mukai, Takuo, 5,337,069, Cl. 345-123.000.

Takahira, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Antenna circuit for non-contact IC card and method of manufacturing the same. 5,337,063, Cl. 343-741.000.

Takakura, Hiroshi; and Komatsu, Toshihiko, to Canon Kabushiki Kaisha. Document processing apparatus for simultaneously displaying graphic data, image data, and character data for a frame. 5,337,406, Cl. 395-148.000.

Takakura, Norio; and Takahashi, Jin, to Dynax Corporation. Wet-type friction member with grooves shaped for improved oil film removing effect. 5,335,765, Cl. 192-107.00R.

Takamatsu, Akio; and Nishimura, Yoshiyuki, to Petoca Ltd. Carbon fiber felting material and process for producing the same. 5,336,557, Cl. 428-300.000.

Takamisawa, Katsura; and Nishiguchi, Yukihiro, to NEC Corporation. Minimizing the programming time in a semiconductor integrated memory circuit having an error correction function. 5,337,317, Cl. 371-40.400.

Takanashi, Hiroshi: *See—*
Fukuchi, Shunsei; Isohata, Kyouhei; Iwamoto, Makoto; Misono, Kenji; and Takanashi, Hiroshi, 5,336,535, Cl. 428-1.000.

Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, to Victor Company of Japan, Ltd. Apparatus and method for recording information carried by electro-magnetic radiation beam. 5,337,078, Cl. 346-108.000.

Takano, Yoshinobu: *See—*
Hori, Nobuo; Takano, Yoshinobu; Takahashi, Takashi; Nagano, Shigenori; and Hashimoto, Reiji, 5,337,169, Cl. 359-3.000.

Taksoka, Toshiaki; Tanaka, Katsuyoshi; and Kato, Kenji, to NOF Corporation. Cast resin for optical use. 5,336,743, Cl. 526-292.400.

Takase, Yoshihiko: *See—*
Scheinbeim, Jerry I.; Newman, Brian N.; Lee, Jar W.; and Takase, Yoshihiko, 5,336,422, Cl. 252-62.900.

Takashi, Shuichi: *See—*
Yamada, Kunio; and Takashi, Shuichi, 5,337,377, Cl. 385-15.000.

Takasuka, Yoshitaka; Kimura, Yasuyuki; and Kato, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Knock control system for automobile internal combustion engine. 5,335,744, Cl. 180-197.000.

Takatsu, Kozo; Wakushima, Yasushi; Masunaga, Hiroharu; and Sawa, Masahiko, to Idemitsu Kosan Co., Ltd. Process for catalytically converting organic compounds. 5,336,393, Cl. 208-120.000.

Takatsu, Mikio: *See—*
Sano, Haruyuki; Otani, Takao; Nishitani, Masayoshi; Takatsu, Mikio; Ueyoko, Kiyoshi; Yamamoto, Toshiaki; and Miyazaki, Shinichi, 5,335,707, Cl. 152-543.000.

Takayama, Jun, to Sony Corporation. Image transforming device for changing frame frequencies of a video image. 5,337,153, Cl. 348-441.000.

Takayama, Tomio: *See—*
Kimura, Yasuhiro; and Takayama, Tomio, 5,336,987, Cl. 323-284.000.

Takayama, Toru: *See—*
Fukino, Kunihiro; Takayama, Toru; Inadome, Kiyotaka; and Nakatsuji, Masahiro, 5,337,187, Cl. 359-699.000.

Takayanagi, Hiroshi: *See—*
Furukawa, Shigehiro; Hayashi, Kazuo; and Takayanagi, Hiroshi, 5,337,319, Cl. 371-11.100.

Takeda Chemical Industries, Ltd.: *See—*
Okuno, Toshifumi; and Miyaji, Teruo, 5,336,724, Cl. 525-143.000.

Takeda, Shigeki: *See—*
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,336,332, Cl. 134-22.100.

Takegawa, Ichiro; Kubo, Tsutomu; Ariie, Keiko; and Kobayashi, Tomoo, to Fuji Xerox Co., Ltd. Electrophotographic image formation comprising an arylamine in a charge transport layer and an encapsulated toner. 5,336,582, Cl. 430-120.000.

Takegawa, Yohko: *See—*
Kagawa, Yasuhiro; and Takegawa, Yohko, 5,337,113, Cl. 354-298.000.

Takeoka, Ichiro: *See—*
Sumitomo, Miyuki; Takeoka, Ichiro; and Bando, Shoichi, 5,336,080, Cl. 428-407.000.

Takeshita, Akihiko: *See—*
Inada, Kenichi; Takeshita, Akihiko; and Masai, Tetsuji, 5,337,138, Cl. 356-36.000.

Takesue, Hiromichi; Kameyama, Eiji; Terada, Tsutomu; and Kawata, Junichi, to Nippon Steel Corporation. Method for starting continuous casting in continuous slab casting and method for setting a dummy bar prior to the start of casting of continuous slab casting. 5,335,716, Cl. 164-483.000.

Takeuchi, Yoshihisa: *See—*
Iida, Masahiro; and Takeuchi, Yoshihisa, 5,337,159, Cl. 358-447.000.

Takezono, Tetsuya: *See—*
Sakata, Ko; Morita, Eitaroh; and Takezono, Tetsuya, 5,336,605, Cl. 435-119.000.

Taki, Katsuhiko: *See—*
Ikemoto, Seiji; Taki, Katsuhiko; Matano, Takashi; Kawahata, Ichiro; Oguchi, Kiyoshi; Ito, Shigeki; and Miyauchi, Tatsuo, 5,336,530, Cl. 427-503.000.

Takigawa, Tetsuo: *See—*
Ebashi, Iwao; Takigawa, Tetsuo; and Inoue, Masayasu, 5,336,782, Cl. 548-542.000.

Takikawa, Kazuoki: *See—*
Ohnishi, Michikazu; Ogoshi, Hiroshi; and Takikawa, Kazuoki, 5,335,551, Cl. 73-731.000.

Takimoto, Fujio: *See—*
Kadoi, Noriaki; and Takimoto, Fujio, 5,335,635, Cl. 123-295.000.

Takinami, Masao: *See—*
Komatsu, Kiyoshi; Mori, Takehisa; and Takinami, Masao, 5,335,498, Cl. 60-528.000.

Takishima, Suguru; and Kase, Toshiyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Signal sensing device of magneto-optic disk device for detecting error signal and information record signals with common photo sensor. 5,337,300, Cl. 369-44.410.

Takishita, Takashi: *See—*
Tanaka, Noriyuki; Takishita, Takashi; Fukushima, Kiyoshi; Nagakura, Yasuyuki; Inoue, Kaoru; Nishijima, Tsuyoshi; and Inada, Haruhiro, 5,336,524, Cl. 427-240.000.

Takuma, Masao: *See—*
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Yamamoto, Tooru; and Asaeda, Tooru, 5,337,083, Cl. 348-256.000.

Tamari, Yehuda. Inline non-invasive pressure monitoring system for pumps. 5,336,051, Cl. 417-19.000.

Tamura, Akiyoshi; and Kitagawa, Masatoshi, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing an MIS-type semiconductor device. 5,336,361, Cl. 437-42.000.

Tamura, Kenji: *See—*
Sugata, Akihiko; Tamura, Kenji; and Mabuchi, Yoshiyuki, 5,336,321, Cl. 118-315.000.

Tan, Chung-Sung; and Chiang, Shiaw-Tseh, to Taiwan Styrene Monomer Corporation. Separation of diethylbenzene isomers on silicalite in the presence of high pressure carbon dioxide and propane. 5,336,837, Cl. 585-828.000.

Tan, Richard C.: *See—*
Thrush, Roger L.; Tan, Richard C.; and Lambert James R., 5,336,111, Cl. 439-567.000.

Tanabe, Akira: *See—*
Katsuragi, Kenjiro; and Tanabe, Akira, 5,337,095, Cl. 351-208.000.

Tanabe, Hideo: *See—*
Kitada, Masahiro; Tanabe, Hideo; Shimizu, Noboru; Koyama, Naoki; and Kobayashi, Toshio, 5,337,203, Cl. 360-113.000.

Tanagawa, Kouji; and Miyazaki, Kazuhiko, to Oki Electric Industry Co., Ltd. EEPROM circuit. 5,337,280, Cl. 365-218.000.

Tanahashi, Toshiyuki: *See—*
Anayama, Chikashi; Tanahashi, Toshiyuki; and Kondo, Makoto, 5,336,635, Cl. 437-129.000.

Tanaka Giken Co., Ltd.: *See—*
Tanaka, Shigehiro, 5,335,989, Cl. 366-25.000.

Tanaka, Haruo: *See—*
Omura, Satoshi; Tanaka, Haruo; Shiomi, Kazuro; and Liu, Jing R., 5,336,783, Cl. 548-561.000.

Tanaka, Hiroshi; and Kudou, Makoto, to Kabushiki Kaisha Toshiba. Method of manufacturing main plates for exposure printing. 5,336,587, Cl. 430-322.000

Tanaka, Katsuyoshi: *See—*
Takaoka, Toshiaki; Tanaka, Katsuyoshi; and Kato, Kenji, 5,336,743, Cl. 526-292.400.

Tanaka, Kohichi: *See—*
Matsuda, Akira; Shudo, Shigeki; Shimamoto, Noboru; Tanaka, Kohichi; Hashimoto, Hiromasa; and Suzuki, Fumio, 5,335,457, Cl. 51-284.00R.

Tanaka, Koichi: *See—*
Yaguchi, Tatsuya; and Tanaka, Koichi, 5,337,332, Cl. 375-94.000.

Tanaka, Masaya: *See—*
Nishiyama, Nobumasa; Tsuyoshi, Toshiaki; Aoi, Hajime; Kameoka, Tetsuji; Tanaka, Masaya; and Shiraishi, Kazuhisa, 5,337,198, Cl. 360-65.000.

Tanaka, Masayuki; Suzawa, Hiromichi; Kubota, Masayuki; Sekioka, Chiaki; Sato, Minako; and Uemura, Hisashi, to Fujitsu Isotec Limited. Ink ribbon for printer and ink therefor. 5,336,553, Cl. 428-229.000.

Tanaka, Motoharu: *See—*
Tokita, Toshiaki; Tanaka, Motoharu; and Watada, Atsuyuki, 5,337,293, Cl. 369-13.000.

Tanaka, Noriyuki; Takishita, Takashi; Fukushima, Kiyoshi; Nagakura, Yasuyuki; Inoue, Kaoru; Nishijima, Tsuyoshi; and Inada, Haruhiro, to Diesel Kiki Co., Ltd. Evaporator. 5,336,524, Cl. 427-240.000.

Tanaka, Shigehiro, to Tanaka Giken Co., Ltd. Asphalt recycling apparatus. 5,335,989, Cl. 366-25.000.

Tanaka, Shinya: *See—*
Sawai, Kunio; Hayashi, Ryuji; Irie, Toshiaki; Kaneko, Shigeru; Tanaka, Shinya; and Shinmi, Tsukasa, 5,335,877, Cl. 242-334.600.

Tanaka, Sueyoshi: *See—*
Tsutsumi, Yasutsugu; and Tanaka, Sueyoshi, 5,336,272, Cl 29-25.010.

Tanaka, Takaho; Kamimura, Yutaka; Otani, Shigeki; and Ishizawa, Yoshio, to National Institute for Research in Inorganic Materials. Method for preparing yttrium 66 boride crystal for soft x-ray monochromator. 5,336,362, Cl. 117-42.000.

Tanaka, Yasuyuki: *See—*
Hashimoto, Hiroshi; Ushimaru, Akira; Masuyama, Kenichi; Tanaka, Yasuyuki; and Kobayashi, Hiroyuki, 5,336,561, Cl. 428-336.000.

Tandberg Data Storage A/S: *See—*
Kvifte, Halvor O.; and Rudi, Guttorm, 5,337,297, Cl. 369-36.000

Tandem Computers Incorporated: *See—*
Lui, Albert; and Fuller, William T., 5,337,413, Cl. 395-275.000.

Tang, Yuan-Ming; and Stephan, Gregory H. C., to Minnesota Mining and Manufacturing Company. Filter cartridge end cap assembly 5,336,405, Cl. 210-232.000.

Tani, Hiroji; and Honma, Kanehito, to Murata Manufacturing Co., Ltd. Conductive copper paste. 5,336,301, Cl. 106-1.180.

Tani, Ikuo: *See—*
Kitagawa, Keiji; and Tani, Ikuo, 5,337,402, Cl. 395-133.000.

Tani, Kentaro: *See—*
Kan, Yasuo; Takahashi, Kosei; Hosoda, Masahiro; Tsunoda, Atsuo; Tani, Kentaro; and Watanabe, Masanori, 5,337,326, Cl. 372-45.000

Tanibata, Tohru, to Noritsu Koki Co., Ltd. Image combining printer. 5,337,117, Cl. 355-19.000.

Tanibata, Tohru, to Noritsu Koki Co., Ltd. Image combining printer. 5,337,119, Cl. 355-40.000.

Taniguchi, Masaaki; Nohara, Keitsugu; and Kaihara, Nobuo, to TDK Corporation. PTC thermistor. 5,337,038, Cl. 338-22.00R.

Taniguchi, Susumu: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000.

Taniguchi, Tetsuo: *See—*
Suzuki, Kazuaki; Kakizaki, Yukio; and Taniguchi, Tetsuo, 5,337,097, Cl. 353-101.000.

Tanzer, Raymond C.; and Hanchar, Peter J., to Premier Technology. Pinball machine having a conveyor belt ball lift. 5,335,910, Cl. 273-121.00E.

Taravella, Philip; Blair, Edward J.; Domanski, Ronald S.; and Shippell, Joseph C., to Anchor Bay Packaging Corporation. Edge molding for nesting stackable shipping containers. 5,335,789, Cl. 206-518.000.

Target Therapeutics, Inc.: *See—*
Zenzen, Wendy J.; and Chee, Uriel H., 5,336,205, Cl. 604-280.000.

Tarn, Terry, to Eastman Kodak Company. Integrated circuit package for an image sensor. 5,337,217, Cl. 361-784.000.

Tarzartes, Daniel A.: *See—*
Mark, John G.; and Tarzartes, Daniel A., 5,337,143, Cl. 356-350.000.

Tasaka, Hisashi; Obo, Hidefumi; Kubo, Takashi; and Kamata, Kazuo, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film unit with flash device and battery-insulating wrapper. 5,337,099, Cl 354-76.000.

Tasaki, Hiroshi; and Nishimura, Eiji, to Nippon Mining Co., Ltd. Method for preparation of a Zn-Ni electroplating or hot-dip galvanizing bath using a Zn-Ni alloy, and method for producing a Zn-Ni alloy. 5,336,392, Cl. 427-433.000.

Tauber, Richard: *See—*
Luthi, Jeffrey L.; and Tauber, Richard, 5,337,262, Cl. 364-580.000.

Taurat, Siegfried; Steude, Heinrich; Deibele, Ludwig; and Alpers, Heinz-Jurgen, to Bayer Aktiengesellschaft. Distillation column with vaporous sidestream removal. 5,336,376, Cl. 202-182.000.

Taurean Electronics, Inc.: *See—*
Fogg, Raymond C.; and Lushina, James J., 5,337,236, Cl. 364-424.040.

Tavernier, Serge; Op de Beeck, Werner; Van Wunsel, Danny; and Marksch, Paul, to AGFA-Gevaert, N.V. Carrier composition for electrophotography. 5,336,580, Cl. 430-106.600.

Taylor, Alva R. Hurricane panel apparatus. 5,335,452, Cl. 49-463.000.

Taylor, Charles S.: *See—*
Leichtling, Jonathan J.; and Taylor, Charles S., 5,336,230, Cl 606-148.000.

Taylor, Jack R., to General Electric Company. Flow spreading diffuser. 5,335,501, Cl. 60-751.000.

TDK Corporation: *See—*
Kawamura, Keizou; and Kobayashi, Makoto, 5,336,519, Cl 427-126.200.
Taniguchi, Masaaki; Nohara, Keitsugu; and Kaihara, Nobuo, 5,337,038, Cl. 338-22.00R.

TEAC Corporation: *See—*
Ito, Takashi, 5,337,294, Cl. 369-24.000.

Techint-Compagnia Tecnica Internazionale S.p.A.: *See—*
Cristiani, Giancarlo, 5,335,528, Cl. 72-263.000.

Technical Ceramics Laboratories, Inc.: *See—*
Corbett, William J.; Lunde, Marvin C.; and Shaffer, Peter T. B., 5,335,712, Cl. 164-97.000.

Technical Services & Marketing, Inc.: *See—*
Klink, Douglas D., 5,335,974, Cl. 303-7.000.

Tecumseh Products Company: *See—*
Tomell, Phillip A.; and Maertens, Michael J., 5,336,060, Cl. 417-410.00D.
Wisner, Ronald R., 5,336,105, Cl. 439-367.000.

Teijin Limited: *See—*
Hidada, Osafumi; Ohe, Michisuke; Magoshi, Osam; Kato, Toshiyuki; and Sakai, Tomoki, 5,336,210, Cl. 604-307.000.
Yoshida, Makoto; Takahashi, Nobuo; and Hosoyama, Koichi, 5,336,556, Cl. 428-288.000.

Teijin Seiki Co., Ltd.: *See—*
Togawa, Masayuki; and Toyama, Kiyoshi, 5,336,586, Cl 430-316.000.

Teirstein, Paul S. Rapid exchange catheter. 5,336,184, Cl. 604-102.000.

Telectronics Pacing Systems, Inc.: *See—*
Dantanarayana, Muditha, 5,336,246, Cl. 607-37.000.

Telescope Casual Furniture Co.: *See—*
Vanderminden, Robert D., Sr., 5,335,967, Cl. 297-35.000

Temple University of the Commonwealth System of Higher Education: *See—*
Kirby, Edward P.; and Peng, Man-ling, 5,336,667, Cl. 514-12.000.
Shaffer, Thomas H.; and Wolfson, Marla R., 5,335,650, Cl 128-200.240.

Teo, Phuay E.: *See—*
Looi, Hon Y.; and Teo, Phuay E., 5,336,354, Cl. 156-277.000

Terada, Hiromu: *See—*
Yamanouchi, Kazuhiko; Mihota, Norihito; Kato, Shunji; Terada, Hiromu; and Ogata, Junichi, 5,336,957, Cl. 310-313.00D.

Terada, Tsutomu: *See—*
Takesue, Hiromichi; Kameyama, Eiji; Terada, Tsutomu; and Kawata, Junichi, 5,335,716, Cl. 164-483.000.

Tereo, Edoardo: *See—*
Carlomagno, Giovanni; Caico, Vincenzo; De Leonibus, Vittore; and Tereo, Edoardo, 5,336,288, Cl. 65-182.200.

Terman, Lewis M.: *See—*
Dhong, Sang H.; Hwang, Wei; Terman, Lewis M.; and Wordeman, Matthew R., 5,336,629, Cl. 437-52.000.

Termaten, Gerrit J.: *See—*
Van Den Mosselaar, Franciscus L. M. T.; Termaten, Gerrit J.; and Reuser, Leonardus T. M., 5,335,406, Cl. 29-426.300.

Terra Gaia Environmental Group Inc.: *See—*
McElroy, Roderick O., 5,336,297, Cl. 75-725.000.

Terrill, David E. Deer flagging apparatus. 5,335,438, Cl. 43-1.000.

Terry, Mark; Hughes, Harry G., Jr.; and Williams, Edward D. Automatic cover disposable syringe. 5,336,187, Cl. 604-110.000.

Terry, Reese S., Jr.; and Wernicke, Joachim F., to Cyberonics, Inc. Therapeutic treatment of sleep disorder by nerve stimulation 5,335,657, Cl. 607-45.000

Terui, Koji, to Sodick Co., Ltd. Method of, and an apparatus for, electrical-discharge machining. 5,336,863, Cl. 219-69.140

Terui, Nobuhiko: *See—*
Imafuji, Kazuharu; and Terui, Nobuhiko, 5,337,098, Cl. 354-70.000.

Terumo Corporation: *See—*
Matsunaga, Noboru; Azeyanagi, Kazuyoshi; Sogaishi, Ichirou; Katakura, Takeo; Ueda, Yoshihisa; and Ohsawa, Takaaki, 5,336,465, Cl. 419-2.000.

Terumo Kabushiki Kaisha: *See—*
Kashiwagi, Nobuyoshi; and Sasaki, Masatomi, 5,336,698, Cl. 523-113.000.
Komatsu, Kiyoshi; Mori, Takehisa; and Takinami, Masao, 5,335,498, Cl. 60-528.000.
Suzuki, Seigo, 5,335,665, Cl. 128-680.000.

Tesone, Jeffrey: *See—*
Baxter, Gregory R.; Tesone, Jeffrey; and Rivard, Glenn, 5,337,151, Cl. 356-401.000

Tetrad Corporation: *See—*
Oakley, Clyde G.; Busse, Lawrence J.; Dietz, Dennis R.; Shishilla, John E.; and Ranalletta, Joseph V., 5,335,663, Cl. 128-662.000.

Tettemer, Clair R.: *See—*
Egli, Werner H.; and Tettemer, Clair R., 5,337,141, Cl. 356-350.000

Tetz, John G.: *See—*
Ammann, Hans H.; Kovacs, Richard F.; Micks, Henry B., Jr.; Potechin, Jamey N.; Simons, Everett F.; and Tetz, John G., 5,335,405, Cl. 29-407.000.

Teuber, Christopher L.: *See—*
Oberman, Dave; and Teuber, Christopher L., 5,335,467, Cl. 52-645.000.
Oberman, Dave; and Teuber, Christopher L., 5,335,468, Cl. 52-645.000.

Texaco Chemical Company: *See—*
Cuscurida, Michael; Marquis, Edward T.; and Crawford, Wheeler C., 5,336,315, Cl. 106-633.000.
Marquis, Edward T.; Payton, Howard F.; and Meyer, Robert A., 5,336,790, Cl. 549-529.000.

Texas Instruments Incorporated: *See—*
Hynecek, Jaroslav, 5,337,340, Cl. 377-60.000.

Tezuka, Sigeru; Kitajima, Masao; and Kita, Nobuyyki, to Fuji Photo Film Co., Ltd. Pipette tip. 5,336,468, Cl. 422-100.000.

Thanisch, Klaus: *See—*
Brach, Ulrich; and Thanisch, Klaus, 5,335,802, Cl. 215-235.000.

Thayer, Edward B., to United Technologies Corporation. Gas turbine vectoring exhaust nozzle. 5,335,489, Cl. 60-230.000.

Thayer, Susan S.; and Wert, Timothy D. Low-volume irrigation emitter with changeable patterns. 5,335,859, Cl. 239-390.000

Thebault, Bertrand: *See—*
Sadot, Philippe; Thebault, Bertrand; Darmon, Marc; and Eudes, Jacques, 5,337,331, Cl. 375-83.000.

Theodor Hymmen, Firma: *See—*
Rottger, Rolf, 5,335,592, Cl. 100-151.000.

TheraTech, Inc.: *See—*
Acharya, Ramesh N., 5,336,486, Cl. 424-78.010.

VOL 1165 ISS 2 AG 9 1994 UMI

Theratek International, Inc.: *See*—
Sullivan, James B.; and Moore, Eric R., 5,336,167, Cl. 604-22.000.
Thien, James L. Internal combustion engine valve actuator apparatus. 5,335,633, Cl. 123-90.120.
Thierry, Jacqui, to Somfy. Planetary reduction gear for tubular motor. 5,336,136, Cl. 475-337.000.
Thiesen, Stefan; and Rahnenfuhrer, Eckhard, to Rheinmetall GmbH Ammunition unit. 5,335,599, Cl. 102-431.000.
Thiokol Corporation: *See*—
Hamilton, R. Scott; Wardle, Robert B.; and Hinshaw, Jerald C., 5,336,343, Cl. 149-19.900.
Thomas, Richard E.; and Besozzi, Arthur R. Assembly for testing rectifiers and regulators of automotive alternators. 5,336,993, Cl. 324-158.100.
Thomas, Volker: *See*—
Fenk, Josef; and Thomas, Volker, 5,337,005, Cl. 328-14.000
Thompson, Pete A.: *See*—
O'Brien, Kevin J.; Thompson, Pete A.; and McCoy, Stephen T., 5,336,410, Cl. 210-512.100.
Thompson, Ronald J.; Lunt, James; Lamont, John C.; and Kwok, John C., to Polysar Limited. Transparent toughened plastics. 5,336,719, Cl. 525-71.000.
Thompson, Roy G.: *See*—
Spoo, Kevin J.; and Thompson, Roy G., 5,336,526, Cl. 427-372.200.
Thompson, Russell B.: *See*—
Lundquist, Ingemar; and Thompson, Russell B., 5,336,182, Cl. 604-95.000.
Thompson, Terrence L.; and Gresham, Jack W., to Viking Engineering & Development, Incorporated. Multiple hydraulic actuators with series/parallel operation. 5,335,499, Cl. 60-546.000.
Thompson, Thomas N.: *See*—
Kriesel, Marshall S.; and Thompson, Thomas N., 5,336,180, Cl. 604-82.000.
Thomsen, Terry H. Forearm support cradle. 5,335,888, Cl. 248-118.500.
Thomson Consumer Electronics, Inc.: *See*—
Keller, Raymond E., 5,336,962, Cl. 313-402.000.
Thomson-CSF: *See*—
Bonnet, Georges; Commault, Yves; Roquencourt, Jacques; and Sehan, Alain, 5,337,065, Cl. 343-767.000.
Ghignoni, Jean-Francois, 5,337,055, Cl. 342-93.000.
Lehureau, Jean-Claude, 5,337,172, Cl. 359-59.000.
Thomson-CSF Semiconducteurs Specifiques: *See*—
Pacou, Thierry; Arsene-Henry, Patrice; Pham, Tung N.; and Geniust, Yann, 5,336,627, Cl. 437-41.000.
Pacou, Thierry; Arsene-Henry, Patrice; Pham, Tung N.; and Geniust, Yann, 5,336,627, Cl. 437-41.000.
Thomson Tubes Electroniques: *See*—
Baret, Guy, 5,336,121, Cl. 445-25.000.
Thong, Jean-Manuel V.: *See*—
Baudelaire, Patrick; Gangnet, Michel; Herve, Jean-Claude; Pudet, Thierry; and Thong, Jean-Manuel V., 5,337,404, Cl. 395-141.000.
Thornburg, Theodore S.: *See*—
Alexander, Paul R., Jr.; Cain, Donald G.; Dougherty, Erika J.; and Thornburg, Theodore S., 5,336,286, Cl. 55-528.000.
Thorneburg, George L.: *See*—
Throneburg, James L.; and Thorneburg, George L., 5,335,517, Cl. 66-185.000.
Thornton, Robert L., to Xerox Corporation. Opto-electronic line printer having a high density, independently addressable, surface emitting semiconductoor laser/light emitting doide array. 5,337,074, Cl. 346-107.00R.
Throneburg, James L.; and Thorneburg, George L., to Throneburg, James L. Anatomical isotonic sock and method of knitting the same. 5,335,517, Cl. 66-185.000.
Thrush, Roger L.; Tan, Richard C.; and Lambert James R., to Whitaker Corporation, The. Boardlock for an electrical connector. 5,336,111, Cl. 439-567.000.
Thurm, Hans G.: *See*—
Arvedi, Giovanni; Ludorff, Harald; Thurm, Hans G.; Parschat, Lothar; Pleschiutschnigg, Fritz-Peter; Paris, Hans-Joachim; and Steuten, Michael, 5,335,714, Cl. 164-446.000.
Thurnherr, Hugo: *See*—
Ilek, Anton; Thurnherr, Hugo; and Eugster, Emil, 5,335,454, Cl. 51-165.750.
Tieken, James B. Manually operated refrigerant recovery device. 5,336,065, Cl. 417-437.000.
Tiemeijer, Lukas F., to U. S. Philips Corporation. Optical amplifier with improved linearity. 5,337,176, Cl. 359-344.000.
Tien, So V.: *See*—
O'Connell, Patrick A.; Battey, Robert L.; Donigan, Maria S.; Tien, So V.; and Knights, John C., 5,337,080, Cl. 346-155.000.
Tiesler, Robin F. Boat rudder control system. 5,335,616, Cl. 114-172.000.
Tighe, Peter. Construction site hauling system. 5,335,930, Cl. 280-477.000.
Tihon, Claude; Cook, Timothy C.; Burton, John H.; and Svejkovsky, Ronald, to American Medical Systems, Inc. Rectal probe with temperature sensor. 5,335,669, Cl. 128-736.000.
Tiley, Edward P.: *See*—
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,336,789, Cl. 549-264.000.
Tilghman, Stephen E.: *See*—
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.
Tioxide Group Services Limited: *See*—
Dransfield, Graham P.; and King, Denis J., 5,336,521, Cl. 427-220.000.
Tippmann, Edward J. Refrigeration system. 5,335,508, Cl. 62-129.000.
To, Sam C.: *See*—
Brinton, Charles C., Jr.; and To, Sam C., 5,336,490, Cl. 424-242.100.
Toagosei Chemical Industry Co., Ltd.: *See*—
Igarashi, Ichiro; Sasaki, Hiroshi; Jitsumatsu, Tetsuji; Ota, Hiroyuki; Sato, Masanobu; and Nishimuta, Hirofumi, 5,336,574, Cl. 430-23.000.
Tobiki, Hisao; and Matsushima, Hiroaki, to Nihon Medi-Physics Co., Ltd. Reagent feeder. 5,336,469, Cl. 422-100.000.
Tobisawa, Seiichi; and Iwashita, Hironobu, to Konica Corporation. Coating apparatus. 5,336,322, Cl. 118-410.000.
Toda, Kazutoshi, to Koyo Seiko Co., Ltd. Bearing components and process for producing same. 5,336,338, Cl. 148-319.000.
Toda Kogyo Corp.: *See*—
Kurita, Eiichi; Kurokawa, Haruki; and Fujioka, Kazuo, 5,336,421, Cl. 252-62.620.
Todd, Jerald C.: *See*—
Mann, Steven W.; and Todd, Jerald C., 5,335,531, Cl. 72-416.000.
Toepfer, Craig B.; and Brown, Robert K., to Ford Motor Company. Electrical connection and interlock circuit system for vehicle electric drive. 5,336,934, Cl. 307-10.100.
Togawa, Masayuki; and Toyama, Kiyoshi, to Teijin Seiki Co., Ltd. Magnetic medium and method of manufacturing the same. 5,336,586, Cl. 430-316.000.
Togawa, Tsuyoshi: *See*—
Hashi, Hiroshi; and Togawa, Tsuyoshi, 5,337,304, Cl. 369-215.000.
Tohda, Takao: *See*—
Kado, Hiroyuki; and Tohda, Takao, 5,336,369, Cl. 156-659.100.
Tohoku Gakuin University: *See*—
Haga, Akira; Nasuno, Hiroshi; and Fujimura, Takeo, 5,336,963, Cl. 313-402.000.
Toida, Shoji; Ito, Seiichi; Ohta, Hidetoshi; and Ishikawa, Isao, to Nippon Sanso Kabushiki Kaisha. Heat insulating container. 5,335,809, Cl. 220-425.000.
Toide, Eiichi: *See*—
Kaneko, Toshihide; and Toide, Eiichi, 5,337,093, Cl. 348-778.000.
Tokailin, Hiroshi: *See*—
Hironaka, Yoshio; Tokailin, Hiroshi; Hosokawa, Chishio; and Kusumoto, Tadashi, 5,336,546, Cl. 428-209.000.
Tokico Ltd.: *See*—
Ando, Hiromi; Matsunaga, Kunihiro; Sano, Kenji; and Suga, Satoru, 5,335,982, Cl. 303-117.100.
Tokin Corporation: *See*—
Shimizu, Hiroshi; Yoshida, Tetsuo; and Mashiko, Chikara, 5,336,960, Cl. 310-369.000.
Tokita, Toshiaki; Tanaka, Motoharu; and Watada, Atsuyuki, to Ricoh Company, Ltd. Magneto-optical recording method and recording medium for use in the same. 5,337,293, Cl. 369-13.000.
Tokitsu, Naoki: *See*—
Hirata, Tatsuya; Watanabe, Atsushi; and Tokitsu, Naoki, 5,337,066, Cl. 343-841.000.
Tokuda Seisakusho Co, Ltd.: *See*—
Shimose, Yuichiro; and Ikeda, Jiro, 5,336,385, Cl. 204-298.030.
Tokumaru, Seiichi: *See*—
Okazawa, Tomoyuki; Tokumaru, Seiichi; Ohira, Hideo; Ishii, Masao; and Kano, Yoshiaki, 5,336,727, Cl. 525-327.800.
Tokunaga, Takashi: *See*—
Hashima, Kazuo; Kawano, Yuji; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Nakaki, Yoshiyuki; Tokunaga, Takashi; and Fujii, Yoshio, 5,337,305, Cl. 369-116.000.
Tokura, Hisaya, to TACHI-S Co., Ltd. Method for forming a trim cover assembly for automotive seat. 5,336,352, Cl. 156-214.600.
Tokuyama Soda Kabushiki Kaisha: *See*—
Koga, Yoshiaki; and Taga, Genji, 5,336,477, Cl. 423-328.100.
Tokyo Electric Co., Ltd.: *See*—
Nagashima, Kiyomichi; and Uchida, Hiroshi, 5,336,003, Cl. 400-708.000.
Tokyo Gas Co. Ltd.: *See*—
Ueki, Takashi; Sakai, Katsuhito; Kanda, Koichi; and Kamiya, Hideo, 5,335,553, Cl. 73-861.190.
Tokyo Institute of Technology: *See*—
Ohtsu, Motoichi; and Hori, Hirokazu, 5,337,324, Cl. 372-32.000.
Tolentino, Felipe I.: *See*—
Refojo, Miguel F.; and Tolentino, Felipe I., 5,336,487, Cl. 424-78.040.
Tomantschger, Klaus; and Michalowski, Christopher, to Battery Technologies Inc. Manganese dioxide cathode for a rechargeable alkaline cell, and cell containing the same. 5,336,571, Cl. 429-66.000.
Tomasetti, Charles M.; Helvy, Fred A.; and Kaiser, Donald B., to Burle Technologies, Inc. Structure for a multiple section photomultiplier tube. 5,336,967, Cl. 313-533.000.
Tomasini, Luciano; and Castello, Rinaldo, to SGS-Thomson Microelectronics S.r.l. Supply circuit device for a user's telephone circuit, having a low voltage loss. 5,337,355, Cl. 379-413.000.
Tomell, Phillip A.; and Maertens, Michael J., to Tecumseh Products Company. Integrally formed counterweight for rotor end ring. 5,336,060, Cl. 417-410.00D.
Tomey Corporation: *See*—
Mizuno, Seinosuke; and Yamada, Yoshihiko, 5,337,094, Cl. 351-206.000.

Tominaga, Motonori: *See*—
Taguchi, Masahiro; Tominaga, Motonori; Matsuhashi, Toshiaki; and Fujita, Koichi, 5,335,749, Cl. 180-274.000.
Tomita, Kan, to Ricoh Company, Ltd. Optical Scanner. 5,337,182, Cl. 359-217.000.
Tomizawa, Takeshi; Fujita, Tatsuo; Ukai, Kunihiro; and Suzuki, Jiro, to Matsushita Electric Industrial Co., Ltd. Dry-processing apparatus for heating and drying objects to be processed. 5,335,425, Cl. 34-265.000.
Tomoegawa Paper Co., Ltd.: *See*—
Oka, Osamu; and Yoshino, Katsumi, 5,336,374, Cl. 162-138.000.
Tompa, Gary S.: *See*—
Stall, Richard A.; Tompa, Gary S.; Gurary, Alexander; and Nelson, Craig R., 5,336,324, Cl. 118-719.000.
Tompkins, Tommas J.: *See*—
Meltzer, Mark J.; and Tompkins, Tommas J., 5,336,346, Cl. 156-73.400.
Tone, Seiji; Nakata, Akira; and Yamamoto, Naoki, to Mitsubishi Rayon Co., Ltd. Method for preparing graft copolymer. 5,336,725, Cl. 525-254.000.
Tong, Hua S.: *See*—
Capek, Raymond G.; Greiner, Siegfried M.; and Tong, Hua S., 5,336,964, Cl. 313-407.000.
Tong, Hua-Sou, to Zenith Electronics Corporation. Method of producing CRT screens using meniscus coating. 5,336,575, Cl. 430-25.000.
Tong, Paul C. F., to Samsung Semiconductor Corporation. BiCMOS process with low base recombination current bipolar transistors. 5,336,625, Cl. 437-31.000.
Toray Industries, Inc.: *See*—
Okazaki, Iwao; Abe, Koichi; Minamizawa, Hidehito; and Fukuyama, Takeo, 5,336,079, Cl. 428-323.000.
Torii, Nobutoshi; Nihei, Ryo; and Wakio, Hiroshi, to Fanuc, Ltd. Apparatus for monitoring a guard window of an arc sensor. 5,337,148, Cl. 356-376.000.
Toriyama, Keiji, to NEC Corporation. Solid-state image pickup device with high melting point metal shield. 5,336,919, Cl. 257-435.000.
Torrens, Beverly; and Miron, Paul. Pipe support bridge. 5,335,887, Cl. 248-49.000.
Torrington Company, The: *See*—
Alling, Richard L., 5,335,416, Cl. 29-898.067.
Duffy, Paul E.; Hanson, John; Lugosi, Robert; Guptill, Spencer H.; and Kackowski, Matthew, 5,336,013, Cl. 403-2.000.
Toshiba Machine Co., Ltd.: *See*—
Morishita, Akira; Ota, Tsuyoshi; Suzuki, Tatsuya; Ito, Sukehide; and Ryuko, Yoshikazu, 5,335,705, Cl. 141-275.000.
Takahashi, Sakae; and Umehara, Minoru, 5,336,527, Cl. 427-357.000.
Tosoh Corporation: *See*—
Okazawa, Tomoyuki; Tokumaru, Seiichi; Ohira, Hideo; Ishii, Masao; and Kano, Yoshiaki, 5,336,727, Cl. 525-327.800.
Toyama, Kiyoshi: *See*—
Togawa, Masayuki; and Toyama, Kiyoshi, 5,336,586, Cl. 430-316.000.
Toyoda Gosei Co., Ltd.: *See*—
Kuriyama, Yuuji; Sakaida, Shoji; Ando, Hikaru; Ando, Masao; Ichimaru, Kazumi; and Sakamoto, Kazutoshi, 5,335,939, Cl. 280-728.00B.
Mitsui, Kenichi; and Fukuzono, Isao, 5,335,944, Cl. 285-156.000.
Toyoda, Shinji: *See*—
Jutamulia, Suganda; Niwa, Hideaki; and Toyoda, Shinji, 5,337,106, Cl. 354-152.000.
Toyoda, Shuji; and Kumagai, Satoru, to Nikon Corporation. Microscope. 5,337,177, Cl. 359-384.000.
Toyoda, Tetsuro; and Matsuoka, Katsunori, to Showa Aircraft Industry Co., Ltd. Honeycomb structure for purifying exhaust gas and method of manufacturing same. 5,336,472, Cl. 422-177.000.
Toyomura, Yuuji: *See*—
Hiratsuka, Seiichiro; and Toyomura, Yuuji, 5,337,167, Cl. 358-533.000.
Toyota, Akinori: *See*—
Tsutsui, Toshiyuki; and Toyota, Akinori, 5,336,746, Cl. 526-348.600.
Toyota Jidosha Kabushiki Kaisha: *See*—
Iba, Hideki; and Maeda, Chikatoshi, 5,336,466, Cl. 420-406.000.
Nukami, Tetsuya; and Suganuma, Tetsuya, 5,336,291, Cl. 75-10.180.
Sugata, Akihiko; Tamura, Kenji; and Mabuchi, Yoshiyuki, 5,336,321, Cl. 118-315.000.
Taguchi, Masahiro; Tominaga, Motonori; Matsuhashi, Toshiaki; and Fujita, Koichi, 5,335,749, Cl. 180-274.000.
Tracht, Neil: *See*—
Sundaram, Lalgudi M. G.; and Tracht, Neil, 5,336,921, Cl. 257-531.000.
Tran, Hung B.: *See*—
Wozniak, Sam; Tran, Hung B.; Newstrom, Charles A.; and Tulyathan, Pravit, 5,337,016, Cl. 324-632.000.
Transcoject Gesellschaft fur medizinische Gerate mbH & Co. KG: *See*—
Vogel, Andreas; Heinze, Rolf; and Wiesinger, Klaus-Dieter, 5,336,087, Cl. 433-69.000.
Treace, James T.: *See*—
Caspari, Richard B.; Roberts, Jeffrey G.; and Treace, James T., 5,336,266, Cl. 623-20.000.
Trickett, Elizabeth A.: *See*—
Chipalkatti, Makarand H.; and Trickett, Elizabeth A., 5,336,370, Cl. 156-668.000
Troast, Douglas: *See*—
DeAngelis, Mario E.; Troast, Douglas; and Calella, Patrick, 5,337,383, Cl. 385-49.000.
Tropix, Inc.: *See*—
Bronstein, Irena; Edwards, Brooks; and Voyta, John, 5,336,596, Cl. 435-6.000.
Trumball, John G.: *See*—
Scattolino, Thomas F.; Stern, Howard J.; Trumball, John G.; and Wolkowicz, Richard I., 5,336,373, Cl. 162-116.000.
TRW Inc.: *See*—
Cuevas, Jess, 5,335,940, Cl. 280-737.000.
Saito, Yoshio; Lau, James C.; Chan, Steven S.; and Malmgren, Richard P., 5,336,992, Cl. 324-754.000.
TRW Repa GmbH: *See*—
Fohl, Artur, 5,335,941, Cl. 280-206.000.
TRW Vehicle Safety Systems Inc.: *See*—
Faigle, Ernst M.; and Ziomek, Joseph F., 5,335,936, Cl. 280-728.00A.
Tsang, Siu K.: *See*—
Fung, Henry T.; Tsang, Siu K.; and Woodward, Ralph A., 5,337,408, Cl. 395-162.000.
Tse, Doris S.: *See*—
Malhotra, Ripudaman; Tse, Doris S.; and McMillen, Donald F., 5,336,828, Cl. 585-654.000.
Tseng, Susan Y.: *See*—
Wolf, Philip F.; and Tseng, Susan Y., 5,336,697, Cl. 521-189.000.
Tseng, Wu-Yang; Bristol, Brent L.; Hetico, Rolf R.; and Glynn, Christopher C., to General Electric Company. Brush seal. 5,335,920, Cl. 277-1.000.
Tsou, Yu-Min; McMichael, James W.; and Beaver, Richard N., deceased (by Beaver, Wanda G., legal representative), to Dow Chemical Company, The. Membrane-electrode structure for electrochemical cells. 5,336,384, Cl. 204-252.000.
Tsubaki Conveyor of America, Inc.: *See*—
Miyagawa, Kozo; and Clark, Gregory A., 5,335,781, Cl. 198-834.000.
Tsubouchi, Toshiyuki: *See*—
Ohno, Takashi; and Tsubouchi, Toshiyuki, 5,336,827, Cl. 585-502.000.
Tsuchiya, Takuma, to Fujitsu Limited. Composite semiconductor structure for reducing scattering of carriers by optical phonons and a semiconductor device that uses such a composite semiconductor structure. 5,336,901, Cl. 257-6.000.
Tsuda, Kunio: *See*—
Katoh, Riichi; and Tsuda, Kunio, 5,336,909, Cl. 257-197.000.
Tsuda, Takaaki: *See*—
Chikawa, Yasunori; Honda, Yoshiaki; Mori, Katsunobu; Tajima, Naoyuki; Tsuda, Takaaki; and Maeda, Takamichi, 5,336,650, Cl. 437-209.000
Tsugane, Hiroshi: *See*—
Ishido, Takao; Shindo, Akio; Kojima, Shuichi; Imamura, Shuichiro; Onishi, Kimimasa; Tsugane, Hiroshi; Ogasawara, Takashi; Nakjima, Kenichi; and Adachi, Masahiro, 5,335,700, Cl. 139-435.100.
Tsui, David C., to United States of America, Air Force. Approximate zero crossings for frequency determination. 5,337,051, Cl. 342-13.000.
Tsuji, Hiroaki: *See*—
Shibata, Akihito; and Tsuji, Hiroaki, 5,337,243, Cl. 364-449.000.
Tsukakoshi, Hisao; and Shirasaka, Hisatoshi, to Kabushiki Kaisha Toshiba. Memory IC testing apparatus with redundancy circuit. 5,337,318, Cl. 371-5.500.
Tsukamoto, Hironori: *See*—
Shirai, Katutada; Mochizuki, Hideharu; Sato, Osamu; Tsukamoto, Hironori; and Makita, Hiroyuki, 5,337,222, Cl. 362-66.000.
Tsumiyama, Tatsuo: *See*—
Kato, Tetsuo; Kanda, Masahiro; Tsumiyama, Tatsuo; and Nakamoto, Satoru, 5,336,540, Cl. 428-36.920.
Tsunoda, Atsuo: *See*—
Kan, Yasuo; Takahashi, Kosei; Hosoda, Masahiro; Tsunoda, Atsuo; Tani, Kentaro; and Watanabe, Masanori, 5,337,326, Cl. 372-45.000.
Tsunoda, Hideyuki; and Nishiyama, Toshirou, to NEC Corporation. Portable radio equipment with a display back-lighting function. 5,337,073, Cl. 345-102.000.
Tsuruta, Masataka, to Rohm Co., Ltd. Method of growing single crystal silicon on insulator. 5,336,633, Cl. 437-62.000.
Tsutsui, Toshiyuki; and Toyota, Akinori, to Mitsui Petrochemical Industries, Ltd. Propylene random copolymers and processes for preparing same. 5,336,746, Cl. 526-348.600.
Tsutsumi, Kazuhiko: *See*—
Hashima, Kazuo; Kawano, Yuji; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Nakaki, Yoshiyuki; Tokunaga, Takashi; and Fujii, Yoshio, 5,337,305, Cl. 369-116.000.
Tsutsumi, Kazumichi: *See*—
Naitou, Yasuo; Wada, Shunichi; Tsutsumi, Kazumichi; and Kohge, Shinichi, 5,335,979, Cl. 303-100.000.
Tsutsumi, Yasutsugu; and Tanaka, Sueyoshi, to Mitsubishi Denki Kabushiki Kaisha. Method for molding a semiconductor package on a continuous leadframe. 5,336,272, Cl. 29-25.010.
Tsutumis, Masataka, to Sizetec, Inc. Apparatus for separating particles from a fluid stream. 5,336,408, Cl. 210-384.000.
Tsuyoshi, Toshiaki: *See*—
Nishiyama, Nobumasa; Tsuyoshi, Toshiaki; Aoi, Hajime; Kameoka, Tetsuji; Tanaka, Masaya; and Shiraishi, Kazuhisa, 5,337,198, Cl. 360-65.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Tsuyuki, Kenichiro: *See—*
Sugitani, Toshiaki; Tsuyuki, Kenichiro; Miyata, Yukie; Ebashi, Tadashi; Okui, Hideaki; Nakajima, Yoshikazu; and Sawada, Kenzo, 5,336,617, Cl. 435-252.100.

TTC Truck Tech Corp.: *See—*
Bowler, Paul R.; Mackay, John; Lammers, Shawn D.; and Fulton, Robert H., 5,335,540, Cl. 73-146.500

Tu, Chih - Yao. Water filtration and aeration system for aquariums. 5,336,401, Cl. 210-169.000.

Tucholski, Henry J.: *See—*
Castonguay, Roger N.; Arnold, David; Morgan, Roger J.; Glabau, Frederic W.; Tucholski, Henry J.; and Reyes, Thomas T. B., 5,337,031, Cl. 335-201.000.

Tuf-Tite, Inc.: *See—*
Meyers, Theodore W., 5,335,945, Cl. 285-236.000.
Meyers, Theodore W., 5,336,351, Cl. 156-158.000.

Tuinstra, Hendrik E.; and Myers, Harold D., to Dow Chemical Company, The. Process for the preparation of polycarbonates. 5,336,750, Cl. 528-196.000.

Tulyathan, Pravit: *See—*
Wozniak, Sam; Tran, Hung B.; Newstrom, Charles A.; and Tulyathan, Pravit, 5,337,016, Cl. 324-632.000.

Turkel, David: *See—*
Ryan, Dana W.; Slater, Charles R.; Solar, Matthew S.; and Turkel, David, 5,336,220, Cl. 604-22.000.

Turner, Edwin C.; and Gibbs, Charles E., to Cooper Industries, Inc. Tubular connection, method for making same, and tool therefor. 5,335,729, Cl. 166-380.000.

Turner, James J.: *See—*
Hogan, Patrick T.; and Turner, James J., 5,336,320, Cl. 118-300.000

Twardowski, Zbylut J. Artificial kidney for frequent (daily) Hemodialysis. 5,336,165, Cl. 604-5.000.

Tweed, Gregory A.: *See—*
Zaeske, Donald A.; Ceplina, Raymond E.; Weber, Rick V.; and Tweed, Gregory A., 5,335,480, Cl. 53-431.000.

Twist, Peter J.: *See—*
Skye, David A.; and Twist, Peter J., 5,337,112, Cl. 359-298.000.

Twitty, Garland E.: *See—*
Egen, Ned B.; Twitty, Garland E.; and Sammons, David W., 5,336,387, Cl. 204-301.000.

Tyler and Kerouac Manufacturing and Development: *See—*
Tyler, Terry, 5,335,784, Cl. 209-260.000.

Tyler, Terry, to Tyler and Kerouac Manufacturing and Development. Dump platform materials screener. 5,335,784, Cl. 209-260.000.

UAB Research Foundation: *See—*
Urry, Dan W., 5,336,256, Cl. 623-1.000.

UBE Industries, Ltd.: *See—*
Kato, Tetsuo; Kanda, Masahiro; Tsumiyama, Tatsuo; and Nakamoto, Satoru, 5,336,540, Cl. 428-36.920.

Ucar Carbon Technology Corporation: *See—*
Stewart, James R.; Klotz, James A.; Fulgenzi, Crescenzo F.; and Coleman, Philip D., 5,336,015, Cl. 403-296.000.

Uchida, Hiroshi: *See—*
Nagashima, Kiyomichi; and Uchida, Hiroshi, 5,336,003, Cl. 400-708.000.

Uchida, Hitoshi: *See—*
Suzuki, Yuzuru; Fujitani, Sakae; Inagaki, Masaaki; and Uchida, Hitoshi, 5,336,955, Cl. 310-90.000.

Uchida, Masaaki; and Matsumoto, Mikio, to Nissan Motor Co., Ltd. Dual sensor type air fuel ratio control system for internal combustion engine. 5,335,493, Cl. 60-274.000.

Uchikura, Takao, to Casio Computer Co., Ltd. Portable telephone apparatus including electronic notebook function. 5,337,346, Cl. 379-58.000.

Uchiyama, Shigeru: *See—*
Kamiya, Kiyoshi; Uchiyama, Shigeru; Ohishi, Hideshi; Sugiyama, Norikazu; Mizuguchi, Yoshinori; and Hirano, Masahiko, 5,337,081, Cl. 348-61.000.

Uchiyama, Yuji: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, 5,337,078, Cl. 346-108.000.

Ueda, Hiromi: *See—*
Sato, Mutsumi; Nishihara, Motoo; Matsunaga, Haruhiko; and Ueda, Hiromi, 5,337,307, Cl. 370-60.000.

Ueda, Kyoji: *See—*
Nobutoki, Kazuhiro; Ueda, Kyoji; and Kita, Hiroyuki, 5,337,029, Cl. 335-78.000.

Ueda, Yoshihisa: *See—*
Matsunaga, Noboru; Azeyanagi, Kazuyoshi; Sogaishi, Ichirou; Katakura, Takeo; Ueda, Yoshihisa; and Ohsawa, Takaaki, 5,336,465, Cl. 419-2.000.

Ueda, Yutaka, to Konica Corporation. Solid photographic color developing composition for silver halide color photographic light-sensitive material. 5,336,588, Cl. 430-465.000.

Ueki, Takashi; Sakai, Katsuhito; Kanda, Koichi; and Kamiya, Hideo, to Tokyo Gas Co. Ltd.; and Aichi Tokei Denki Co., Ltd. Fluidic gas meter provided with a printed wiring board. 5,335,553, Cl. 73-861.190.

Uemura, Hisashi: *See—*
Tanaka, Masayuki; Suzawa, Hiromichi; Kubota, Masayuki; Sekioka, Chiaki; Sato, Minako; and Uemura, Hisashi, 5,336,553, Cl. 428-229.000.

Uetani, Yasunori; Doi, Yasunori; Hashimoto, Kazuhiko; Osaki, Haruyoshi; and Hanawa, Ryotaro, to Sumitomo Chemical Company, Limited. Positive quinonediazide resist composition utilizing mixed solvent of ethyl lactate and 2-heptanone. 5,336,583, Cl. 430-191.000.

Ueyoko, Kiyoshi: *See—*
Sano, Haruyuki; Otani, Takao; Nishitani, Masayoshi; Takatsu, Mikio; Ueyoko, Kiyoshi; Yamamoto, Toshiaki; and Miyazaki, Shinichi, 5,335,707, Cl. 152-543.000.

Ukai, Kunihiro: *See—*
Tomizawa, Takeshi; Fujita, Tatsuo; Ukai, Kunihiro; and Suzuki, Jiro, 5,335,425, Cl. 34-265.000.

Ullmann, Jochen: *See—*
Diehl, Manfred; Koenig, Karl-Heinz; Krone, Eckhart; Loroesch, Juergen; Steiner, Norbert; Ullmann, Jochen; and Ziegler, Annette, 5,336,474, Cl. 423-29.000.

Ultman, James: *See—*
Snider, Michael T.; High, Kane M.; Panol, Georg; Ultman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., 5,336,164, Cl. 604-4.000.

Ultra Systems GmbH UV-Oxidation: *See—*
Massholder, Karl F.; and Werz, Wilfried, 5,336,842, Cl. 588-227.000.

Umehara, Minoru: *See—*
Takahashi, Sakae; and Umehara, Minoru, 5,336,527, Cl. 427-357.000.

Umetsu, Takao, to Fuji Photo Optical Co., Ltd. Preparatory winding type camera. 5,337,107, Cl. 354-173.100.

Unate, Miyuki. Chuck. 5,335,922, Cl. 279-9.100.

Unilever Patent Holdings B.V.: *See—*
Graveland, Aris; Henderson, Matthijs H.; and Linders, Leonie J. M., 5,336,517, Cl. 426-622.000.

Union Oil Company of California: *See—*
Sandiford, Burton B.; Dovan, Hoai T.; and Hutchins, Richard D., 5,335,733, Cl. 166-300.000.

Unisys Corporation: *See—*
Hashemi, Seyed H.; and Sefidvash, Khorvash, 5,337,414, Cl. 395-275.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Penwill, John C., 5,337,048, Cl. 340-975.000.

United Memories, Inc.: *See—*
Cordoba, Michael V.; and Hardee, Kim C., 5,337,284, Cl. 365-227.000.

U.S. Divers Co., Inc.: *See—*
Hermansen, Frank, 5,335,543, Cl. 73-431.000.

United States Gypsum Company: *See—*
Attard, Peter M.; and Espinoza, Therese A., 5,336,318, Cl. 106-780.000.

United States of America
Air Force: *See—*
Ellers, Eric, 5,336,894, Cl. 250-504.00R.
Khoury, Jihad; and Woods, Charles L., 5,337,170, Cl. 359-7.000.
Quach, Tony K., 5,336,930, Cl. 257-774.000.
Tsui, David C., 5,337,051, Cl. 342-13.000.
Woods, Charles L.; and Khoury, Jihad, 5,337,180, Cl 359-568.000.

Army: *See—*
Behrmann, Gregory P.; Smith, Dale; and Potter, William, 5,337,389, Cl. 385-77.000.
DeAngelis, Mario E.; Troast, Douglas; and Calella, Patrick, 5,337,383, Cl. 385-49.000.
Lohrmann, Dieter R.; and Dropkin, Herbert, 5,337,052, Cl. 342-68.000.
Nettleton, John E.; Barr, Dallas N.; and Redman, Brian C., 5,336,899, Cl. 250-561.000.

Energy: *See—*
Ackerman, John P.; and Johnson, Terry R., 5,336,450, Cl. 423-21.100.
Daly, Thomas P.; Moses, Edward I.; Patterson, Ralph W.; and Sawicki, Richard H., 5,337,333, Cl. 372-94.000.
Fasching, George E.; and Smith, Nelson S., Jr., 5,337,289, Cl. 367-140.000.
Hoenig, Clarence L., 5,336,520, Cl. 427-154.000.
Hofstetter, Kenneth J., 5,336,889, Cl. 250-361.00R.
Kalibjian, Ralph, 5,335,548, Cl. 73-655.000.
Kramer, Daniel P., 5,337,387, Cl. 385-76.000.
Sheffield, Richard L.; Carlsten, Bruce E.; and Young, Lloyd M., 5,336,972, Cl. 315-5.410.

Health and Human Services: *See—*
Berzofsky, Jay A.; Hosmalin, Anne; Clerici, Mario S.; Germain, Ronald N.; Shearer, Gene; Moss, Bernard; and Pendleton, Charles D., 5,336,758, Cl. 530-326.000.
de Costa, Brian R.; Iadarola, Michael J.; Rice, Kenner C.; Rothman, Richard B.; and Berman, Karen F., 5,336,483, Cl. 424-1.850.
Marquez, Victor E.; Driscoll, John S.; Wysocki, Ronald J., Jr.; and Siddiqui, Maqbool A., 5,336,764, Cl. 536-4.100.

Interior: *See—*
Morrell, Roger J.; Larson, David A.; and Ruzzi, Peter L., 5,335,977, Cl. 299-92.000.

National Aeronautics and Space Administration: *See—*
Backes, Paul G., 5,336,982, Cl. 318-568.220.
Zaguli, Ronald J., 5,335,881, Cl. 244-158.00R.

Navy: *See—*
Dobisz, Elizabeth A.; Marrian, Christie R. K.; Peckerar, Martin C.; and Rhee, Kee W., 5,336,892, Cl. 250-492.200.
Dwyer, Roger F., 5,337,053, Cl. 342-90.000.

Greenhalgh, Samuel, 5,335,886, Cl. 244-213.000.
Small, David C., 5,335,620, Cl. 114-243.000.
Sorathia, Usman A.; Killian, Joseph W.; and Jarrett, Andrew W., 5,337,288, Cl. 367-1.000.

U.S. Philips Corporation: *See—*
Bosman, Antonie J.; Vink, Teunis J.; van Dijk, Richard C.; and Huisman, Frederikus R. J., 5,336,905, Cl. 257-54.000.
Chanteau, Pierre, 5,336,113, Cl. 439-581.000.
Cloetens, Henri; and Groen, Robertus W. C., 5,337,335, Cl. 375-120.000.
Cornelis, Ronny M. P., 5,337,155, Cl. 348-473.000.
Dijkmans, Eise C., 5,337,012, Cl. 330-266.000.
Kahlert, Joachim; May, Klaus P.; and Noll, Joachim, 5,336,855, Cl. 174-250.000.
Kelly, Brendan P.; and Lowis, Royce, 5,336,943, Cl. 307-310.000.
Luijks, Gerardus M. J. F.; and Coenen, Hubertus A. M., 5,336,974, Cl. 315-58.000.
Quint, Johannes H. M. M., 5,336,924, Cl. 257-603.000.
Rose, Harald; Degenhardt, Ralf; and Van der Mast, Karel D., 5,336,885, Cl. 250-305.000.
Tiemeijer, Lukas F., 5,337,176, Cl. 359-344.000.
van Rosmalen, Gerard E., 5,337,298, Cl. 369-44.220.
Vermeulen, Adrianus J. A.; and Pet, Robert J., 5,336,971, Cl. 313-635.000.

United States Pipe and Foundry Company: *See—*
Watts, Kenneth J.; and Ingram, Stephen A., 5,336,998, Cl. 324-235.000.

United States Surgical Corporation: *See—*
Green, David T.; Bolanos, Henry; Blewett, Jeffrey J.; Ratcliff, Keith; Viola, Frank J.; and Sherts, Charles R., 5,336,232, Cl. 606-151.000.
Scanlon, Christopher; and Brown, David L., 5,335,775, Cl. 206-63.300.
Shichman, Daniel, 5,336,206, Cl. 604-283.000.
Sinn, Hans-Jurgen F., 5,335,783, Cl. 206-63.300.

United Technologies Automotive, Inc.: *See—*
Maue, H. Winston, 5,336,990, Cl. 324-126.000.

United Technologies Corporation: *See—*
Chin, Stephen; Parille, Donald R.; Aimone, Paul R.; McCormick, Robert L.; Johnson, Paul R.; and Kilinski, Bart M., 5,335,717, Cl. 164-519.000.
Cross, John H., 5,337,058, Cl. 342-188.000.
Dalzell, William J., Jr.; Wright, Robert J.; and Spence, Jarrett L., 5,336,381, Cl. 204-180.200.
Spence, Jarrett L.; and Wright, Robert J., 5,336,560, Cl. 428-336.000.
Thayer, Edward B., 5,335,489, Cl. 60-230.000.

United Telephone Company of Ohio: *See—*
Stickney, David R., 5,337,343, Cl. 379-45.000.

Unitrode Corporation: *See—*
Jordan, Mark, 5,336,948, Cl. 307-443.000.

Universal Engraving, Inc.: *See—*
Hutchison, Glenn E.; and Allen, Tracy M., 5,336,458, Cl. 264-220.000.

Universal EPSCO, Inc.: *See—*
Johnson, Samuel O., 5,336,334, Cl. 134-22.120.

Universal Furniture Industries, Inc.: *See—*
Gera, Robert A., 5,335,962, Cl. 297-232.000.

Universal Propulsion Company, Inc.: *See—*
Lewis, Donald J.; and LaClair, Larry C., 5,335,598, Cl. 102-218.000.

University of California, The Regents of the: *See—*
Hiskey, Michael A.; and Coburn, Michael D., 5,336,784, Cl. 548-953.000.
Mayer, Steven T.; Feikert, John H.; Kaschmitter, James L.; and Pekala, Richard W., 5,336,274, Cl. 29-623.400.

University of Chicago: *See—*
Nelson, Paul A.; and Swift, William M., 5,335,609, Cl. 110-346.000.

University of New Orleans: *See—*
Azzam, Rasheed M. A., 5,337,146, Cl. 356-367.000.

University of Utah Research Foundation: *See—*
Cha, Kichul; and Horch, Kenneth W., 5,335,667, Cl. 128-734.000.

UOP: *See—*
DeGraff, Richard R.; Van Opdorp, Peter J.; and Schulz, Russell C., 5,336,821, Cl. 585-402.000.
Forte, Paulino, 5,336,840, Cl. 585-833.000.
Gajda, Gregory J.; Barger, Paul T.; and Abrevaya, Hayim, 5,336,831, Cl. 585-667.000.
Zarchy, Andrew S.; and Chao, Chien C., 5,336,834, Cl. 585-737.000.

Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, to Mercedes-Benz AG. Cover for vehicle occupant impact protection device. 5,335,937, Cl. 280-728.00B.

Urry, Dan W., to UAB Research Foundation. Elastomeric polypeptides as vascular prosthetic materials. 5,336,256, Cl. 623-1.000.

Ushimaru, Akira: *See—*
Hashimoto, Hiroshi; Ushimaru, Akira; Masuyama, Kenichi; Tanaka, Yasuyuki; and Kobayashi, Hiroyuki, 5,336,561, Cl. 428-336.000.

Usui, Kazushi: *See—*
Kintaichi, Yoshiaki; Hamada, Hideaki; Ito, Takehiko; Sasaki, Motoi; Tabata, Mitsunori; and Usui, Kazushi, 5,336,476, Cl. 423-239.100.

USUI Kokusai Sangyo Kaisha Ltd.: *See—*
Yamanashi, Hiroshi, 5,335,841, Cl. 228-149.000.

Usui, Nobuhiro: *See—*
Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, 5,336,463, Cl. 264-328.700.

Usui, Yasunori: *See—*
Nakanishi, Hidetoshi; and Usui, Yasunori, 5,336,907, Cl. 257-133.000.

V. Kann Rasmussen Industri A/S: *See—*
Petersen, Flemming O.; Lindgren, Claes; Moller, Brent; and Vigenberg, Stig F., 5,335,461, Cl. 52-72.000.

Vadem Corporation: *See—*
Fung, Henry T.; Tsang, Siu K.; and Woodward, Ralph A., 5,337,408, Cl. 395-162.000.

Vaisala Oy: *See—*
Reittu, Osmo, 5,335,689, Cl. 137-231.000.

Valadon, Christian: *See—*
Daffos, Thierry; and Valadon, Christian, 5,335,631, Cl. 122-383.000.

Valence Technology, Inc.: *See—*
Koksbang, Rene, 5,336,572, Cl. 429-218.000.

Valenite Inc.: *See—*
Noggle, Kenneth G., 5,336,026, Cl. 408-147.000.

Valint, Paul L., Jr.: *See—*
McGee, Joseph A.; and Valint, Paul L., Jr., 5,336,797, Cl. 556-419.000.

Valyocsik, Ernest W.: *See—*
Dwyer, Francis G.; and Valyocsik, Ernest W., 5,336,478, Cl. 423-708.000.

Van Den Bergh Foods Co., Division of Conopco, Inc.: *See—*
Jones, Malcolm G.; Kimsey, Ian M.; Morrison, Anthony; Wong, Jeanette Y.; and Van Heteren, Jan, 5,336,514, Cl. 426-564.000

Van Ballegooie, Paul, to Energize International, Inc. Body exercise device. 5,336,151, Cl. 482-124.000.

van Ballegooijen, Hendrik; Peters, Joseph P. M.; and Plum, Johannes T. A., to Shell Oil Company. Process for the preparation of random copolymers of conjugated dienes and vinyl aromatic compounds. 5,336,737, Cl. 526-70.000.

VanBerg, Charles F., Jr.: *See—*
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.

Van Den Mosselaar, Franciscus L. M. T.; Termaten, Gerrit J.; and Reuser, Leonardus T. M., to Car Recycling Systems "CRS" B.V. Method and device for dismantling automobiles. 5,335,406, Cl. 29-426.300.

Van Der Laan, Johannes C.: *See—*
van Eekelen, Christiaan A. G.; Mulleners, Leonardus J. S. M.; Van Der Laan, Johannes C.; Misset, Onno; Cuperus, Roelck A.; and Lensink, Johan H. A., 5,336,611, Cl. 435-221.000.

Van der Mast, Karel D.: *See—*
Rose, Harald; Degenhardt, Ralf; and Van der Mast, Karel D., 5,336,885, Cl. 250-305.000.

Vanderminden, Robert D., Sr., to Telescope Casual Furniture Co. Collapsible chair. 5,335,967, Cl. 297-35.000.

Vandeweghe, Michel: *See—*
Beyaert, Daniel; Meyns, Ignace; Sampers, Dirk; and Vandeweghe, Michel, 5,335,699, Cl. 139-82.000.

van Dijk, Richard C.: *See—*
Bosman, Antonie J.; Vink, Teunis J.; van Dijk, Richard C.; and Huisman, Frederikus R. J., 5,336,905, Cl. 257-54.000.

Van Dongen, Richard: *See—*
Martin, Michael J.; Roller, George J.; and Van Dongen, Richard, 5,335,903, Cl. 271-157.000.

van Eekelen, Christiaan A. G.; Mulleners, Leonardus J. S. M.; Van Der Laan, Johannes C.; Misset, Onno; Cuperus, Roelck A.; and Lensink, Johan H. A., to Gist-brocades N.V. PB92 serine protease muteins and their use in detergents. 5,336,611, Cl. 435-221.000.

Vanesky, Frank W.; Isaacson, Chris A.; and Christie, Bert M., to Biomagnetic Technologies, Inc. Magnetically shielded room with sliding door. 5,335,464, Cl. 52-173.100.

Van Geem, Paul C.; Xu, Xiaoding; and Scholten, Joseph J. F., to DSM N.V. Hydrogenation of benzoic acid and catalyst suitable therefor. 5,336,810, Cl. 568-435.000.

Van Heteren, Jan: *See—*
Jones, Malcolm G.; Kimsey, Ian M.; Morrison, Anthony; Wong, Jeanette Y.; and Van Heteren, Jan, 5,336,514, Cl. 426-564.000.

Vanier, Noel R.: *See—*
Bauer, Charles L.; and Vanier, Noel R., 5,336,659, Cl. 503-227.000.

Van Opdorp, Peter J.: *See—*
DeGraff, Richard R.; Van Opdorp, Peter J.; and Schulz, Russell C., 5,336,821, Cl. 585-402.000.

van Rosmalen, Gerard E., to U.S. Philips Corporation. Rapid access optical scanner having a long optical element. 5,337,298, Cl. 369-44.220.

Van Sin, Kee: *See—*
Leader, Matthew J.; and Van Sin, Kee, 5,336,388, Cl. 204-406.000.

Vanson L.P.: *See—*
Deans, John R., 5,336,415, Cl. 210-725.000.

van Staveren, Nicolaas A., to E.M. Engineering F.T.S. B.V. Process and apparatus for the purification of water. 5,336,413, Cl. 210-650.000.

Van Vlahakis, Eftichios; Manolas, John A.; and Marrese, Michael J. Improved urinal block composition. 5,336,424, Cl. 252-89.100.

VOL 1165 ISS 2 AG 9 1994 UMI

Van Wunsel, Danny: *See*—
Tavernier, Serge; Op de Beeck, Werner; Van Wunsel, Danny; and Marksch, Paul, 5,336,580, Cl. 430-106.600.

Vargas, Anthony: *See*—
Guerrero, Angel A.; and Vargas, Anthony, 5,336,497, Cl. 424-401.000.

Varsani, Shima R.: *See*—
Dorricott, Martin R.; Gillard, Clive H.; Richards, John W.; Morita, Tsuneo; Galt, James J.; David, Morgan W. A.; Burns, James E.; and Varsani, Shima R., 5,337,154, Cl. 348-448.000.

Vassiliadis, Stamatis; Pechanek, Gerald G.; and Delgado-Frias, Jose G., to International Business Machines Corporation. SPIN: a sequential pipeline neurocomputer. 5,337,395, Cl. 395-27.000.

Vaughn, Stephen N.: *See*—
Pabst, Joanne K.; Winter, William E., Jr.; Vaughn, Stephen N.; Culross, Claude C.; and Reynolds, Steve D., 5,336,395, Cl. 208-403.000.

Vaught, Jeffrey L.: *See*—
Raffa, Robert B.; and Vaught, Jeffrey L., 5,336,691, Cl. 514-629.000.

Vaynshteyn, Mikhail, to Eastman Kodak Company. Compact camera with automatically extending flip-up flash unit. 5,337,105, Cl. 354-149.110.

Veal, Wayne: *See*—
Bonwell, Don; and Veal, Wayne, 5,335,798, Cl. 211-65.000.

Vectra Fitness, Inc.: *See*—
Ish, Arthur B., III, 5,336,148, Cl. 482-98.000.

Vella, Philip A.: *See*—
Richards, Bruce E.; Goodart, Tyrone G.; Vella, Philip A.; and Walton, John R., 5,336,431, Cl. 252-184.000.

Venditto, James J.; and Caskey, Kenneth D., to Halliburton Company. Directionally oriented slotting method. 5,335,724, Cl. 166-298.000.

Ventimiglia, Phillip; and Sansone, Louis E. Health watch. 5,337,290, Cl. 368-10.000.

Vergano, Michael G.: *See*—
Durgin, Russell F., Jr.; Rowland, Christopher A.; Sullivan, Roy H.; and Vergano, Michael G., 5,336,222, Cl. 606-50.000.

Verina, Ernest A. Inflatable child-carrying seat. 5,335,834, Cl. 224-159.000.

Verkerk, Neil H., to Datron Systems, Inc. Method and apparatus for removing antenna bearings. 5,335,407, Cl. 29-426.300.

Vermeulen, Adrianus J. A.; and Pet, Robert J., to U.S. Philips Corporation. Electrodeless low-pressure sodium vapor discharge lamp having a discharge vessel of improved construction. 5,336,971, Cl. 313-635.000.

Vesa, Kahonen: *See*—
Pekka, Kolari; and Vesa, Kahonen, 5,335,955, Cl. 294-88.000.

Vesuvius Crucible Company: *See*—
Rancoule, Gilbert I., 5,335,833, Cl. 222-600.000.

VetTest S.A.: *See*—
Heidt, Thomas; Will, Henry; Rhodes, Greydon; Plasensia, Armand; and Clampitt, Roger, 5,336,467, Cl. 422-64.000.

Victor Company of Japan, Ltd.: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, 5,337,078, Cl. 346-108.000.

Vigenberg, Stig F.: *See*—
Petersen, Flemming O.; Lindgren, Claes; Moller, Brent; and Vigenberg, Stig F., 5,335,461, Cl. 52-72.000.

Vigil, Dennis; and Olson, Thomas E., to InterVenticnal Technologies, Inc. Method and apparatus for dilatation of a stenotic vessel. 5,336,234, Cl. 606-159.000.

Vignali, Graziano: *See*—
Borzatta, Valerio; Scrima, Roberto; and Vignali, Graziano, 5,336,706, Cl. 524-100.000.

Viking Engineering & Development, Incorporated: *See*—
Thompson, Terrence L.; and Gresham, Jack W., 5,335,499, Cl. 60-546.000.

Villar, Luis F., to Servo Corporation of America. Resilient support for a railroad wheel heat sensor. 5,335,995, Cl. 374-208.000.

Vinciguerra, Costantino, to Nuovopignone - Industrie Meccaniche e Fonderia S.p.A. Cam for revolving dobby. 5,335,564, Cl. 74-567.000.

Vink, Teunis J.: *See*—
Bosman, Antonie J.; Vink, Teunis J.; van Dijk, Richard C.; and Huisman, Frederikus R. J., 5,336,905, Cl. 257-54.000.

Viola, Frank J.: *See*—
Green, David T.; Bolanos, Henry; Blewett, Jeffrey J.; Ratcliff, Keith; Viola, Frank J.; and Sherts, Charles R., 5,336,232, Cl. 606-151.000.

Virginia Commonwealth University: *See*—
Fariss, Marc W., 5,336,485, Cl. 424-10.000.

Virginia Tech Intellectual Properties, Inc.: *See*—
Anim-Appiah, Kofi D.; Riad, Sedki M.; and Onishi, Shinzo, 5,336,997, Cl. 324-207.160.

Visser, James L.: *See*—
Kling, Michael J., III; Alusick, Michael P.; Kercheck, Gary R.; Krueger, Jeff C.; Schmitz, Duane M.; and Visser, James L., 5,335,420, Cl. 33-288.000.

Vittone, Larry W. Exercise machine for simulating perambulatory movement. 5,336,141, Cl. 482-51.000.

VLSI Technology, Inc.: *See*—
Cain, John L.; and Lee, Chang-Ou, 5,336,366, Cl. 156-643.000.
Sorrells, Peter H.; and Garinger, Ned D., 5,336,940, Cl. 307-269.000.

Voegele, Guenther: *See*—
Lemke, Kuno; Voegele, Guenther; and Stehle, Harro, 5,335,479, Cl. 53-426.000.

Vogel, Andreas; Heinze, Rolf; and Wiesinger, Klaus-Dieter, to Transcoject Gesellschaft fur medizinische Gerate mbH & Co. KG. Device for intraoral determination of the two-dimensional mandibular movement and of the jaw closing force. 5,336,087, Cl. 433-69.000.

Vogel, David L.: *See*—
Reiner, Richard A.; and Vogel, David L., 5,337,211, Cl. 361-637.000.

Vogeler, Karsten: *See*—
Bechthold, Hans-Christoph; Burchardt, Udo; Ernst, Rainer; and Vogeler, Karsten, 5,336,470, Cl. 422-120.000.

Vogtherr, Burkhard, to Fritz Hansen A/S. Frame for a cantilever chair. 5,335,966, Cl. 297-287.000.

Volz, Peter; and Zaviska, Dalibor, to Alfred Teves GmbH. Brake system with anti-lock control and traction slip control. 5,335,981, Cl. 303-113.300.

Vonco Products, Inc.: *See*—
Laske, Louis L.; and LaRoi, John L., Jr., 5,336,123, Cl. 446-224.000.

von der Decken, Claus, to Baxter International Inc. Syringe driving apparatus. 5,336,201, Cl. 604-223.000.

Vorbeck, Udo: *See*—
Jung, Werner A.; Vorbeck, Udo; Schmitz, Arno; Heise, Wilhelm; and Gross, Lutz-Werner, 5,336,753, Cl. 528-335.000.

Voss, Thomas: *See*—
Maurer, Gerhard; Braig, Manfred; Auer, Raimund; Goebel, Christoph; Schwarz, Josef; and Voss, Thomas, 5,336,120, Cl. 440-84.000.

Voyta, John: *See*—
Bronstein, Irena; Edwards, Brooks; and Voyta, John, 5,336,596, Cl. 435-6.000.

VSI Corporation: *See*—
Yamamoto, Albert K., 5,336,028, Cl. 411-107.000.

W. R. Grace & Co.-Conn.: *See*—
Mindler, Richard E., 5,336,348, Cl. 156-231.000.
Pryor, James N.; Bogdanor, James M.; and Welsh, William A., 5,336,794, Cl. 554-206.000.
Zuckerbrod, David; and Giovannoni, Richard T., 5,336,573, Cl. 429-252.000.

W. Schlafhorst AG & Co.: *See*—
Backhaus, Jurgen, 5,335,776, Cl. 198-368.000.
Grandek, Manfred; and Szucs, Ferdinand, 5,336,285, Cl. 55-324.000.

Wacker-Chemie: *See*—
Sejpka, Johann; Gerhardinger, Dieter; and Wimmer, Franz, 5,336,715, Cl. 524-765.000.

Wacker-Chemie GmbH: *See*—
Kalchauer, Wilfried; and Pachaly, Bernd, 5,336,799, Cl. 556-466.000.

Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, to Seiko Epson Corporation; and Fujimori Kogyo Co. Ltd. Optical compensator and liquid crystal display. 5,337,174, Cl. 359-73.000.

Wada, Shinji: *See*—
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,337,174, Cl. 359-73.000.

Wada, Shunichi: *See*—
Naitou, Yasuo; Wada, Shunichi; Tsutsumi, Kazumichi; and Kohge, Shinichi, 5,335,979, Cl. 303-100.000.

Waddell, Troy R. Overhead car carrier attachments. 5,335,836, Cl. 224-329.000.

Wade, Steven R.: *See*—
Brophy, John H.; and Wade, Steven R., 5,336,826, Cl. 585-500.000.

Wagner, Bernhard; Benecke, Wolfgang; Riethmuller, Werner; and Schnakenberg, Uwe, to Fraunhofer Geseilschaft zur Forderung der angewandten Forschung e.V. Apparatus for measuring mechanical forces and force actions. 5,335,544, Cl. 73-517.00R.

Waits, C. Thomas; Stupka, Jonathan C.; Peters, T. Scott; and Schwartz, Alan S., to Carbon Implants, Inc. Assembly of heart valve by installing occluder in annular value body. 5,336,259, Cl. 623-2.000.

Wakabayashi, Hiroshi: *See*—
Homma, Michihide; Yoshihara, Atsuko; Wakabayashi, Hiroshi; and Isayama, Katsuhiko, 5,336,703, Cl. 523-435.000.

Wakabayashi, Shigenori: *See*—
Yamamoto, Toshio; Hirata, Kazumasa; Wakabayashi, Shigenori; and Katsuura, Akio, 5,336,779, Cl. 548-333.500.

Wakao, Miyuki: *See*—
Shiobara, Toshio; Futatsumori, Koji; Okuse, Satoshi; Aoki, Takayuki; Wakao, Miyuki; and Ino, Shigeki, 5,336,786, Cl. 549-215.000.

Wakasugi, Junichiro, to Daiichi Pharmaceutical Co., Ltd. Anti-peptic ulcer agent. 5,336,503, Cl. 424-451.000.

Wakio, Hiroshi: *See*—
Torii, Nobutoshi; Nihei, Ryo; and Wakio, Hiroshi, 5,337,148, Cl. 356-376.000.

Wakushima, Yasushi: *See*—
Takatsu, Kozo; Wakushima, Yasushi; Masunaga, Hiroharu; and Sawa, Masahiko, 5,336,393, Cl. 208-120.000.

Walburn, Douglas M.; Bradley, Morgan J.; Jones, John W.; Irlbeck, Robert D.; and Renn, Robert M., to Whitaker Corporation, The. Flex circuit interface for co-planar PCBs. 5,336,095, Cl. 439-67.000.

Walden, Robert H., to Hughes Aircraft Company. Method for disguising a microelectronic integrated digital logic. 5,336,624, Cl. 437-29.000.

Waldenstrom, Mats G.; Fischer, Udo K. R.; Hillert, Lars H.; and Dennis, Mahlon D., to Sandvik AB. Tools for percussive and rotary crushing rock drilling provided with a diamond layer. 5,335,738, Cl. 175-420.200.

Waldherr, Michael P.; Johnston, Michael L.; Weinstein, James N.; and Cremers, Thomas G., to General Mills, Inc. Nip gap setting apparatus for use in a dough passing device. 5,336,076, Cl. 425-294.000.

Waldo, David L. Toilet bowl flushing attachment. 5,335,379, Cl. 4-661.000.

Wallskog, Harvey A.; Landon, Frank L.; and Ruble, William R., to Fluor Corporation. Delayed coker drumhead handling apparatus. 5,336,375, Cl. 202-96.000.

Walsgrove, Timothy C.: *See*—
Giles, Robert; and Walsgrove, Timothy C., 5,336,781, Cl. 548-455.000.

Walsh, Thomas F.: *See*—
Ashton, Wallace T.; Cantone, Christine L.; Chang, Linda L.; Maccoss, Malcolm; Chakravarty, Prasun K.; Greenlee, William J.; Patchett, Arthur A.; and Walsh, Thomas F., 5,336,778, Cl. 548-250.000.

Waltman, Joan T.: *See*—
Sutton, Todd; Gregory, Sherman; Waltman, Joan T.; and White, Katherine W., 5,337,338, Cl. 377-33.000.

Walton, John R.: *See*—
Richards, Bruce E.; Goodart, Tyrone G.; Vella, Philip A.; and Walton, John R., 5,336,431, Cl. 252-184.000.

Wang, Jam-Min; and Shu, Cheng-Lan. Portable torch with an extensible light bulb assembly. 5,337,226, Cl. 362-198.000.

Wang Laboratories, Inc.: *See*—
Ryan, Robert P.; Crowther, John B.; and MacDonald, Robert A., 5,337,416, Cl. 395-400.000.

Wang, Leao, to Greenmaster Industrial Corp. Abdominal and hip exercising apparatus. 5,336,149, Cl. 482-100.000.

Wang, Ming Y. Copper blade securing structure of tail female receptacles. 5,336,114, Cl. 439-598.000.

Wang, Shi-Qing: *See*—
Gregory, Anne K.; Brassington, Michael P.; Wang, Shi-Qing; and Abt, Norman E., 5,337,279, Cl. 365-201.000.

Wang, Shunn-Gone. Roll up and drying device to be incorporated in a rust cleaning machine. 5,335,428, Cl. 34-625.000.

Wang, Tian-Wang. Table-top grinder power transmission mechanism. 5,335,560, Cl. 74-22.00R.

Wang, Ynjiun P.; Swartz, Jerome; and McGlynn, Daniel R., to Symbol Technologies, Inc. Record with encoded data. 5,337,361, Cl. 380-51.000.

Wang, Yun-Huei; and Wu, Chung-Hua, to Acer Incorporated. Method of processing stored data containing parity data. 5,337,322, Cl. 371-51.100.

WangDat, Inc.: *See*—
Slocum, Richard T., 5,336,860, Cl. 200-332.100.

Ward, Earl D., II: *See*—
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Merrifield, David L.; Molloy, James J.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,337,032, Cl. 355-260.000.

Ward, Glen N. Apparatus and method for automatic packaging of pipette tips. 5,335,481, Cl. 53-446.000.

Ward, John B.: *See*—
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,336,789, Cl. 549-264.000.

Wardle, Robert B.: *See*—
Hamilton, R. Scott; Wardle, Robert B.; and Hinshaw, Jerald C., 5,336,343, Cl. 149-19.900.

Ware, Frederick A.; Gasbarro, James A.; Dillon, John B.; Griffin, Matthew M.; Barth, Richard M.; and Horowitz, Mark A., to Rambus, Inc. Method and apparatus for power control in devices. 5,337,285, Cl. 365-227.000.

Warner, Fredrick A.: *See*—
Narang, Ram S.; Pond, Stephen F.; Altavela, Robert P.; Warner, Fredrick A.; and Harold, Robert A., 5,336,319, Cl. 118-211.000.

Warner-Lambert Company: *See*—
Picard, Joseph A.; and Sliskovic, Drago R., 5,336,690, Cl. 514-605.000.

Warren, Stephen L.: *See*—
Bell, Leonard; Madri, Joseph A.; Warren, Stephen L.; and Luthringer, Daniel J., 5,336,615, Cl. 435-240.200.

Watada, Atsuyuki: *See*—
Tokita, Toshiaki; Tanaka, Motoharu; and Watada, Atsuyuki, 5,337,293, Cl. 369-13.000.

Watanabe, Atsushi: *See*—
Hirata, Tatsuya; Watanabe, Atsushi; and Tokitsu, Naoki, 5,337,066, Cl. 343-841.000.

Watanabe, Hiroyuki: *See*—
Nakatsugawa, Kiyoshi; Oguri, Kazuyoshi; Onda, Hiroyuki; and Watanabe, Hiroyuki, 5,336,966, Cl. 313-532.000.

Watanabe, Kazuo: *See*—
Yamamoto, Kohichi; Yoshida, Suguru; and Watanabe, Kazuo, 5,336,339, Cl. 148-320.000.

Watanabe, Makoto, to NEC Corporation. Thin film magnetic head assembly and method of operation thereof immune from wiggles. 5,337,200, Cl. 360-66.000.

Watanabe, Masanori: *See*—
Kan, Yasuo; Takahashi, Kosei; Hosoda, Masahiro; Tsunoda, Atsuo; Tani, Kentaro; and Watanabe, Masanori, 5,337,326, Cl. 372-45.000.

Watanabe, Masaru; and Nishiyama, Tousaku, to Matsushita Electric Industrial Co., Ltd. Tape cassette structure. 5,335,875, Cl. 242-341.000.

Watanabe, Minoru: *See*—
Onishi, Masashi; Nakazato, Koji; Chigusa, Yoshiki; Watanabe, Minoru; and Miyajima, Yoshiaki, 5,337,401, Cl. 385-142.000.

Watanabe, Naofumi; and Nobuta, Yasuo, to Kabushiki Kaisha Toshiba. Optical data transmission apparatus for transmitting a signal between a rotatable portion and fixed portion of an X-ray CT scanner. 5,336,897, Cl. 250-551.000.

Watanabe, Norito, to Canon Kabushiki Kaisha. Accelerometer and angular accelerometer. 5,336,983, Cl. 318-651.000.

Watanabe, Toyofumi; Furuta, Akihiko; Ono, Tadashi; Yomura, Yoshinori; and Iwado, Shuichi, to NKK Corporation. Nickel alloy electroplate.' cold-rolled steel sheet excellent in press-formability and phosphating-reatability. 5,336,567, Cl. 428-629.000.

Watatani, Yoshizumi: *See*—
Arai, Hideo; Owashi, Hitoaki; Hosokawa, Kyoichi; Nishimura, Keizo; Watatani, Yoshizumi; and Shibata, Akira, 5,337,199, Cl. 360-8.000.

Watkins, Ronnie M.: *See*—
Goebel, Dan M.; Poeschel, Robert L.; and Watkins, Ronnie M., 5,336,975, Cl. 315-111.410.

Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Aluma, Zvi, to Leviton Manufacturing Co., Inc. Microprocessor based touch dimmer system to control the brightness of one or more electric lamps using single or multi-key devices. 5,336,979, Cl. 315-362.000.

Watson, Thomas H. Multi-direction package movement device. 5,335,780, Cl. 198-787.000.

Watts, Kenneth J.; and Ingram, Stephen A., to United States Pipe and Foundry Company. Sensor for detecting faults in a magnetized ferrous object using hall effect elements. 5,336,998, Cl. 324-235.000.

Weaver, Max A.: *See*—
Krutak, James J.; Cushman, Michael R.; Parham, William W.; Coates, Clarence A.; Weaver, Max A.; and Patonay, Gabor, 5,336,714, Cl. 524-608.000.

Webasto Karosseriessysteme GmbH: *See*—
Reinsch, Burkhard; and Reihl, Peter, 5,335,961, Cl. 296-213.000.

Webb, Maurice: *See*—
Garner-Gray, Peter F.; Martin, Alexander; Martin, John R.; and Webb, Maurice, 5,336,665, Cl. 512-4.000.

Webb, Steven L.; and Youngers, Kevin J., to Hewlett-Packard Company. Illumination warm-up control in a document scanner. 5,336,976, Cl. 315-134.000.

Weber, David W. Suspension for coulter wheel assembly. 5,335,610, Cl. 111-136.000.

Weber, Eckard; and Keana, John F. W., to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University and the University of Oregon. Tri- and tetra-substituted guanidines and their use as excitatory amino acid antagonists. 5,336,689, Cl. 514-634.000.

Weber, Heinrich: *See*—
Karbach, Bernhard; Prause, Reinhard; and Weber, Heinrich, 5,335,546, Cl. 73-622.000.

Weber, Michael E.: *See*—
Hubble, Fred F., III; Weber, Michael E.; Abowitz, Gerald; Bov, Raphael F., Jr.; Swales, Michael G.; and Eakin, Paul W., 5,337,122, Cl. 355-208.000.

Weber, Rick V.: *See*—
Zaeske, Donald A.; Ceplina, Raymond E.; Weber, Rick V.; and Tweed, Gregory A., 5,335,480, Cl. 53-431.000.

Weber S.r.l.: *See*—
Abate, Maurizio; Carnevale, Claudio; Nenzioni, Pietro; and Perotto, Aldo, 5,335,643, Cl. 123-679.000.

Weder, Donald E.; and Straeter, Joseph G., to Highland Supply Corporation. Method for wrapping a floral grouping with water holding and releasing material. 5,335,475, Cl. 53-397.000.

Weder, Donald E., to Highland Supply Corporation. Sheets and sheet rolls of wrapping material having information selectable by choice blocks. 5,335,476, Cl. 53-397.000

Weder, Donald E., to Highland Supply Corporation. Method of wrapping a floral grouping. 5,335,477, Cl. 53-399.000.

Wee, Jai K.: *See*—
Chung, Ji H.; Wee, Jai K.; Lee, Doo H.; and Byeon, Sang G., 5,336,379, Cl. 204-129.300.

Wegelin, Rudiger: *See*—
Dehn, Gunther; Mollenhoff, Horst; and Wegelin, Rudiger, 5,335,608, Cl. 110-264.000.

Wehrli, Christof: *See*—
Pauling, Horst; and Wehrli, Christof, 5,336,683, Cl. 514-443.000.

Wei, Daniel, to Hayes Wheels International, Inc. Method for producing a cast aluminum vehicle wheel. 5,336,344, Cl. 148-549.000.

Weigele, Manfred: *See*—
Albrecht, Harry A.; Keith, Dennis D.; Konzelmann, Frederick M.; Rossman, Pamela L.; and Weigele, Manfred, 5,336,768, Cl. 540-222.000.

Weigh-Tronix, Inc.: *See*—
Johnson, Thomas H., 5,336,854, Cl. 177-210.0FP.

Weijand, Koen J., to Medtronic, Inc. Temperature sensor based capture detection for a pacer. 5,336,244, Cl. 607-21.000.

Weil, Georges: *See*—
Grinfas, Zvi; Weil, Georges; and Miller, Maurice, 5,335,942, Cl. 283-74.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Weinl, Gerold; and Mikus, Marian, to Sandvik AB. Titanium-based carbonitride alloy with wear resistant surface layer. 5,336,292, Cl. 75-230.000.
Weinstein, Jack, to Primary Delivery Systems, Inc. Spray device with ampoule opening mechanism. 5,335,824, Cl. 222-82.000.
Weinstein, James N.: *See—*
Waldherr, Michael P.; Johnston, Michael L.; Weinstein, James N.; and Cremers, Thomas G., 5,336,076, Cl. 425-294.000.
Weinstock, George: *See—*
Berget, Peter; Engler, Michael; Highlander, Sarah; and Weinstock, George, 5,336,491, Cl. 424-190.100.
Weiss, Hans: *See—*
Fissmann, Hans-Joachim; and Weiss, Hans, 5,335,871, Cl. 242-595.100.
Weiss, Kenneth P.; DeRango, Mario F.; Schroeder, Daniel R.; Mutz, Leslie D.; Lacy, Brian W.; and Chapman, Mark D., to Motorola, Inc. Transceiver self-diagnostic testing apparatus and method. 5,337,316, Cl. 371-20.500.
Weiss, Ralf: *See—*
Mueller, Ulrich; Weiss, Ralf; Diehl, Klaus; Sandrock, Gerhard; and Sauvage, Lothar, 5,336,836, Cl. 585-824.000.
Weiss, Werner; and Deisenhofer, Manfred, to Patent-Treuhand-Gesellschaft Fuer Elektrische Gluehlampen MBH. Highly thermally loaded electric lamp with reduced UV light emission, and method of its manufacture. 5,336,969, Cl. 313-580.000.
Welch, David F.: *See—*
Lang, Robert J.; Dzurko, Kenneth M.; Scifres, Donald R.; and Welch, David F., 5,337,328, Cl. 372-45.000.
Welch, John J.: *See—*
Byrne, Christine J.; Blonski, Robert P.; and Welch, John J., 5,336,312, Cl. 106-479.000.
Wellesley Research Associates, Inc.: *See—*
Chalifoux, Paul R., 5,336,092, Cl. 433-220.000.
Welsh, William A.: *See—*
Pryor, James N.; Bogdanor, James M.; and Welsh, William A., 5,336,794, Cl. 554-206.000.
Wenger, Jean; Winternitz, Paul; and Zeller, Martin, to Ciba-Geigy Corporation. 3-aryluracil derivatives and their use for weed control. 5,336,663, Cl. 504-243.000.
Wenzer, Kenneth C.: *See—*
Wilson, Richard S., Jr.; Sukoneck, Barry; and Wenzer, Kenneth C., 5,336,090, Cl. 433-172.000.
Werner, Neal A.: *See—*
Lehrke, Kennth E.; and Werner, Neal A., 5,336,063, Cl. 417-415.000
Werner & Pfleiderer GmbH: *See—*
Wobbe, Hans, 5,335,991, Cl. 366-79.000.
Wernicke, Joachim F.: *See—*
Terry, Reese S., Jr.; and Wernicke, Joachim F., 5,335,657, Cl. 607-45.000
Wert, Timothy D.: *See—*
Thayer, Susan S.; and Wert, Timothy D., 5,335,859, Cl. 239-390.000.
Werz, Wilfried: *See—*
Massholder, Karl F.; and Werz, Wilfried, 5,336,842, Cl. 588-227.000.
Westby, Ron: *See—*
Joyce, Roger L.; and Westby, Ron, 5,335,414, Cl. 29-726.000.
Western Digital (Singapore) Pte, Ltd.: *See—*
Khayat, Joseph M., 5,336,942, Cl. 307-290.000.
Westinghouse Electric Corporation: *See—*
Harrison, Earnest R., Jr., 5,337,411, Cl. 395-200.000.
Lamers, Robert P., 5,336,064, Cl. 417-423.300.
Meier, Joseph F.; and Melamed, Nathan T., 5,337,185, Cl. 359-321.000.
Potyraj, Paul A.; Petrosky, Kenneth J.; and Ostop, John A., 5,336,631, Cl. 437-60.000.
Stacey, Eric J.; and Rosa, John, 5,337,227, Cl. 363-71.000.
Westland Aerospace Limited: *See—*
Sharpe, Brian A. J., 5,335,541, Cl. 73-146.500.
Westvaco Corporation: *See—*
Schilling, Peter; and Schreuders, Hans G., 5,336,438, Cl. 252-311.500.
Wetzel, Donna: *See—*
Richards, Susanna E.; Wills, William L.; Wetzel, Donna; and Rosado, Anibal, 5,336,720, Cl. 525-78.000.
Weygang, Adolf: *See—*
Ohnsorge, Horst; Weygang, Adolf; and Heidemann, Rolf, 5,337,175, Cl. 359-125.000.
Weynant nee Girones, Renee P., to G.I.R. Temperature monitoring device containing at least one element of an alloy which memorizes its shape. 5,335,994, Cl. 374-205.000.
Whang, Nong M.: *See—*
Kang, Suk-Joong L.; Shin, Yu S.; Whang, Nong M.; Yoon, Duk Y.; and Kim, Deug J., 5,336,646, Cl. 501-105.000.
Wheeler, Helen J., legal representative: *See—*
Wheeler, Robert G., deceased; and Hawley, William D., 5,335,675, Cl. 128-842.000.
Wheeler, Robert G., deceased (by Wheeler, Helen J., legal representative); and Hawley, William D., to Family Health International. Stress-softened elastomeric films, articles, and method and apparatus for making such films and articles. 5,335,675, Cl. 128-842.000.
Whelen Technologies, Inc.: *See—*
Fredericks, Thomas M., 5,337,082, Cl. 342-69.000.
Wheless, Thomas O., Jr.: *See—*
Knee, Derek L.; Li, Wang K.; and Wheless, Thomas O., Jr., 5,337,254, Cl. 364-489.000.
Whirlpool Corporation: *See—*
Lynn, Shelby A.; and Howerton, Donald R., 5,335,988, Cl. 312-406.200.
Whitaker Corporation, The: *See—*
Baderschneider, Kurt P.; Kourimsky, Friedrich J. A.; and Hotea, Gheorghe, 5,337,385, Cl. 385-59.000
Granitz, Richard F., 5,337,220, Cl. 361-816.000.
Hillbish, Warren C.; and Smith, Steven G., 5,336,109, Cl. 439-540.000.
McKee, Michael J.; and Pawlikowski, Joseph M., 5,336,118, Cl. 439-876.000.
Nagamine, Akira, 5,336,104, Cl. 439-364.000.
Park, Kyung-Tae; and Gastgeb, Raymond F., 5,336,959, Cl. 310-328.000.
Thrush, Roger L.; Tan, Richard C.; and Lambert James R., 5,336,111, Cl. 439-567.000.
Walburn, Douglas M.; Bradley, Morgan J.; Jones, John W.; Irlbeck, Robert D.; and Renn, Robert M., 5,336,095, Cl. 439-67.000.
White, Billy W.: *See—*
Anderson, Terry O.; Richardson, J. Mark; Penn, Jack C.; Lynch, Michael J.; White, Billy W.; Forehand, Gilbert H.; Duncan, Richard L.; VanBerg, Charles F., Jr.; Tilghman, Stephen E.; Dant, Ronald E.; and Donaghe, Charles D., 5,337,234, Cl. 364-422.000.
White Consolidated Industries, Inc.: *See—*
Anastase, Constantin; Nehren, William C.; Kissick, Russell C.; Campbell, Thomas C.; and Daily, Jay H., 5,335,523, Cl. 68-16.000.
White, Curtis B., to Sundstrand Corporation. Multilayered distributed filter. 5,337,028, Cl. 333-181.000.
White, Katherine W.: *See—*
Sutton, Todd; Gregory, Sherman; Waltman, Joan T.; and White, Katherine W., 5,337,338, Cl. 377-33.000.
White, Robert W. D. Golf club. 5,335,913, Cl. 273-164.100.
White, Stanley A., to Rockwell International Corporation. Moving vehicle classifier with nonlinear mapper. 5,337,257, Cl. 364-554.000.
Whitehead, Verlon E.; and Hunt, Ronald E. Interlocking shelving unit. 5,335,606, Cl. 108-181.000.
Whiteman, Aharon E.: *See—*
Shoher, Itzhak; and Whiteman, Aharon E., 5,336,091, Cl. 433-215.000.
Whiteside, John F., to Sloan Valve Company. Flush valve flow control refill ring. 5,335,694, Cl. 137-625.370.
Whitney, Charles A., to Wiremold Company, The. Raceway assembly for power and communications conductors. 5,336,849, Cl. 174-48.000.
Wiedner, Guenther; Duncan, John A.; and Patel, Suresh R., to Rotecno AG. Article of clothing, in particular for the medical or chemical field. 5,335,372, Cl. 2-16.000.
Wieser, Eugen: *See—*
Freissmuth, Alfred; and Wieser, Eugen, 5,336,293, Cl. 75-303.000.
Wiesinger, Klaus-Dieter: *See—*
Vogel, Andreas; Heinze, Rolf; and Wiesinger, Klaus-Dieter, 5,336,087, Cl. 433-69.000.
Wilbourn, Keith O.: *See—*
Ruggiero, Murray A.; Stegmeier, Renata C.; Marien, Bruce A.; and Wilbourn, Keith O., 5,336,787, Cl. 549-239.000.
Wilcox, Ernest J. Rubber tire combuster. 5,335,607, Cl. 110-233.000.
Wilderness Alert Safety Products Ltd.: *See—*
Christensen, Anna, 5,336,160, Cl. 602-6.000.
Wildi, Robert H.; Cox, Keith E.; and Hill, Jack A., to General Electric Company. Process improvement for improved color reduced gloss thermoplastic compositions. 5,336,701, Cl. 523-411.000.
Wilfong, Harry B., Jr.: *See—*
Beasley, M. Wayne; Fletcher, Wade D.; and Wilfong, Harry B., Jr., 5,335,788, Cl. 206-554.000.
Wilk, Marilyn M.; and Wilk, Peter J. Plunger assembly and associated method. 5,335,374, Cl. 4-255.110.
Wilk & Nakao Medical Technology Incorporated: *See—*
Nakao, Naomi L.; and Wilk, Peter J., 5,336,227, Cl. 606-114.000.
Wilk, Peter J.: *See—*
Nakao, Naomi L.; Wilk, Peter J.; and Mizzi, John V., 5,336,181, Cl. 604-83.000.
Nakao, Naomi L.; and Wilk, Peter J., 5,336,227, Cl. 606-114.000.
Wilk, Marilyn M.; and Wilk, Peter J., 5,335,374, Cl. 4-255.110.
Wilkens, Arthur L., to Wilkens Manufacturing, Inc. Reciprocating floor conveyor floor slat and seal. 5,335,778, Cl. 198-750.000.
Wilkens Manufacturing, Inc.: *See—*
Wilkens, Arthur L., 5,335,778, Cl. 198-750.000.
Wilkinson, James H.; and Hurley, Terence R., to Sony United Kingdom Limited. Method apparatus and method for reproducing a frequency separated video signal stored on a recording medium. 5,337,194, Cl. 360-24.000.
Will, Henry: *See—*
Heidt, Thomas; Will, Henry; Rhodes, Greydon; Plasensia, Armand; and Clampitt, Roger, 5,336,467, Cl. 422-64.000.
Willebeek-LeMair, Marc H.: *See—*
Herzberg, Louis P.; Patel, Baiju V.; Ruiz, Antonio; Schaffa, Frank A.; and Willebeek-LeMair, Marc H., 5,337,311, Cl. 370-85.140.
Wm. Wrigley Jr. Company, The: *See—*
McGrew, Gordon; and Synosky, Steven P., 5,336,509, Cl. 426-3.000.

Williams, Bradley E.: *See—*
Iacovangelo, Charles D.; Jerabek, Elihu C.; and Williams, Bradley E., 5,336,368, Cl. 156-656.000.
Williams, Christopher R.: *See—*
Rom, Paul F.; Briscoe, Roderick E.; and Williams, Christopher R., 5,336,193, Cl. 604-171.000.
Williams, Edward D.: *See—*
Terry, Mark; Hughes, Harry G., Jr.; and Williams, Edward D., 5,336,187, Cl. 604-110.000.
Williams, Edward L. C.: *See—*
Masyada, Frank G.; and Williams, Edward L. C., 5,335,377, Cl. 4-578.100.
Williams, Roosevelt. Fishing rod holder system. 5,335,440, Cl. 43-21.200.
Williams, Stephen A.: *See—*
Pye, Michael R.; and Williams, Stephen A., 5,337,061, Cl. 343-702.000.
Williams, Terrell M.: *See—*
Brennen, Kenneth R.; Williams, Terrell M.; and Gabler, Robert A., 5,336,254, Cl. 607-129.000.
Williams, Timothy N.: *See—*
Hughes, Cleveland L.; Williams, Timothy N.; and Mandel, Paul M., 5,336,306, Cl. 106-19.00B.
Williamson, Keith S.; and Ochab, Terry A., to Sonoco Products Company. Portable compactor system for agricultural films. 5,336,036, Cl. 414-502.000.
Williamson, Lawrence J., Jr.; Smith, Donald C.; and Snyder, Charles R., to RHC/Spacemaster Corporation. Modular power distribution system. 5,336,097, Cl. 439-94.000.
Williamson, Steven: *See—*
Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., 5,335,559, Cl. 73-866.000.
Willis, Tucker; and Cinquemani, James, Jr., to Chaenomeles, Inc. Flag support system. 5,335,621, Cl. 116-173.000.
Wills, William L.: *See—*
Richards, Susanna E.; Wills, William L.; Wetzel, Donna; and Rosado, Anibal, 5,336,720, Cl. 525-78.000.
Wilshire Partners: *See—*
Martin, Herman H., 5,335,819, Cl. 222-146.600.
Wilson, George: *See—*
Chater, Garry D.; and Wilson, George, 5,336,523, Cl. 427-231.000.
Ganzon, Nicolas W.; Cappellino, Charles A.; and Wilson, George, 5,336,048, Cl. 415-175.000.
Wilson, Harry L.: *See—*
Muntean, George L.; Wilson, Harry L.; and Gant, Gary L., 5,335,852, Cl. 239-89.000.
Wilson, Richard H. Anti-theft apparatus. 5,335,748, Cl. 180-270.000.
Wilson, Richard S., Jr.; Sukoneck, Barry; and Wenzer, Kenneth C. Transmucosal healing cap and lockwasher for dental implants. 5,336,090, Cl. 433-172.000.
Wilson, Robert C.: *See—*
Crump, John C., III; Fischer, Eugene B.; Wilson, Robert C.; Winterson, Warren D.; Jaxmar, Leif E. B.; Norberg, Gustav M.; and Olsson, Lennart F., 5,335,590, Cl. 99-479.000.
Wilzbach, Bernard L.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Merrifield, David L.; Molloy, James J.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,337,032, Cl. 355-260.000.
Wimmer, Franz: *See—*
Sejpka, Johann; Gerhardinger, Dieter; and Wimmer, Franz, 5,336,715, Cl. 524-765.000.
Windsor, Christopher R., to Commonwealth Scientific and Industrial Research Organisation. Rock bolt system and method of rock bolting. 5,335,736, Cl. 175-57.000.
Winegard Company: *See—*
Sherwood, William J.; and Rodeffer, Charles E., 5,337,062, Cl. 343-711.000.
Winnek, Douglas A. Instant printer for volumetric imaging of data from magnetic resonance imaging apparatus. 5,337,102, Cl. 354-115.000.
Winski, Ernest P.; and Savoldi, Thomas L., to Kinetic Robotics Inc. Palletizer with cap forming. 5,336,042, Cl. 414-789.500.
Winslow, Jeffrey S.; Pogue, Lonnie C.; and Roshon, Richard A., to Jeffrey S. Winslow. Exercise apparatus and method of using same. 5,336,152, Cl. 482-132.000.
Winstanley, Alistair W.: *See—*
Hall, Anthony H. P.; and Winstanley, Alistair W., 5,336,648, Cl. 502-81.000.
Winstanley, David: *See—*
Moffatt, Frank S.; and Winstanley, David, 5,336,777, Cl. 548-209.000.
Winstead, Charles D.; and Cantrell, Ralph A., to Milliken Research Corporation. Fabric sample treatment apparatus. 5,336,866, Cl. 219-411.000.
Winston, Anthony E.; Yam, Benny S.; and Jones, Keith A., to Church & Dwight Co., Inc. Blast media containing surfactant-clathrate compound. 5,336,281, Cl. 51-307.000.
Winter, William E., Jr.: *See—*
Pabst, Joanne K.; Winter, William E., Jr.; Vaughn, Stephen N.; Culross, Claude C.; and Reynolds, Steve D., 5,336,395, Cl. 208-493.000.
Winterfeldt, Andreas; Bartels, Gunter; and Knieps, Reinhard, to Riedel-de Haen Aktiengesellschaft. Process for the preparation of substantially fluorinated alkyl bromides. 5,336,818, Cl. 570-170.000.
Winternitz, Paul: *See—*
Wenger, Jean; Winternitz, Paul; and Zeller, Martin, 5,336,663, Cl. 504-243.000.
Winterson, Warren D.: *See—*
Crump, John C., III; Fischer, Eugene B.; Wilson, Robert C.; Winterson, Warren D.; Jaxmar, Leif E. B.; Norberg, Gustav M.; and Olsson, Lennart F., 5,335,590, Cl. 99-479.000.
Wirbeleit, Friedrich: *See—*
Wunderlich, Klaus; Neubrand, Franz; Schmidt, Erwin; Buhl, Hans-Wilhelm; Wirbeleit, Friedrich; and Hanauer, Horst, 5,335,500, Cl. 60-609.000.
Wiremold Company, The: *See—*
Whitney, Charles A., 5,336,849, Cl. 174-48.000.
Wirick, Cloyd; and Majcher, Joseph, to Johnstown America Corporation. Top chord to inside connection for gondola car. 5,335,603, Cl. 105-406.100.
Wirth, Anton, to Isolfeu AG. Insulation of thermal machines. 5,336,542, Cl. 428-73.000.
Wirz, Pedro. Compact long-lasting sprayer, pump and agitator combination. 5,335,853, Cl. 239-142.000.
Wisner, Ronald R., to Tecumseh Products Company. External terminal shield. 5,336,105, Cl. 439-367.000.
Witco GmbH: *See—*
Lisowsky, Richard, 5,336,795, Cl. 556-56.000.
Witiak, Donald T.; and Rotella, David P., to Ohio State University. Diastereomeric mono- and di-substituted diamino cyclohexane compounds and the method of preparation thereof. 5,336,796, Cl. 556-137.000.
Witkovsky, Thomas: *See—*
Uphues, Hans-Wilhelm; Petkovic, Zivojin; Henseler, Wolfgang; Muller, Manfred; Schreiner, Stephan; Witkovsky, Thomas; Fischer, Thomas; Schumacher, Rolf; and Moltgen, Bruno, 5,335,937, Cl. 280-728.00B.
Wobbe, Hans, to Werner & Pfleiderer GmbH. Plastic melt extruder having an adjustable throttling gap of non-uniform width. 5,335,991, Cl. 366-79.000.
Wohlleben, Wolfgang; Muth, Gunter; Puhler, Alfred; and Rieb, Gunther J., to Hoechst Aktiengesellschaft. Regulated gene expression in streptomycetes. 5,336,607, Cl. 435-172.300.
Wohlrab, Walter, to Krauss-Maffei AG. Mold-closing apparatus for injection-molding machine. 5,336,462, Cl. 264-328.100.
Wojcik, Karl W.: *See—*
Langer, Peter; Wojcik, Karl W.; and Snover, Todd A., 5,337,013, Cl. 324-537.000.
Wojnarowski, Robert J.: *See—*
Neugebauer, Constantine A., deceased; and Wojnarowski, Robert J., 5,336,928, Cl. 257-758.000.
Wojtanek, Guy A.; Lopez, Jaime; and Grafer, G. Scott, to Eaton Corporation. Illuminated switch. 5,336,859, Cl. 200-315.000.
Woker, Gary M.: *See—*
Greelis, John P.; Quick, Richard L.; and Woker, Gary M., 5,336,183, Cl. 607-97.000.
Wolcott, Christine C., to Corning Incorporated. Canasite-apatite glass-ceramics. 5,336,642, Cl. 501-3.000.
Wolf, Philip F.; and Tseng, Susan Y., to ISP Investments Inc. Molded cellular crosslinked vinyl lactam polymer gel and method of preparation. 5,336,697, Cl. 521-189.000.
Wolff, Erich: *See—*
Kirschke, Klaus; Lutze, Gerhard; Schmitz, Ernst; and Wolff, Erich, 5,336,780, Cl. 548-371.000.
Wolff, Guenter: *See—*
Alaze, Norbert; Gruber, Juergen; and Wolff, Guenter, 5,335,984, Cl. 303-119.200.
Wolfson, Marla R.: *See—*
Shaffer, Thomas H.; and Wolfson, Marla R., 5,335,650, Cl. 128-200.240.
Wolkowicz, Richard I.: *See—*
Scattolino, Thomas F.; Stern, Howard J.; Trumball, John G.; and Wolkowicz, Richard I., 5,336,373, Cl. 162-116.000.
Wollaber, Bruce A.; and DeVos, Richard, to Inter-City Products Corporation (USA). Air conditioner modular unit with dual cross flow blowers. 5,335,721, Cl. 165-122.000.
Wolter, Gregory M.: *See—*
Nyman, Bruce M.; and Wolter, Gregory M., 5,337,375, Cl. 385-11.000.
Wong, Anthony S.: *See—*
Rossoll, Mary P.; Revilock, Alan J.; and Wong, Anthony S., 5,336,273, Cl. 29-623.200.
Wong, Jacob Y., to Gaztech International Corporation. Functional testing method for toxic gas sensors. 5,335,534, Cl. 73-1.00G.
Wong, Jeanette Y.: *See—*
Jones, Malcolm G.; Kimsey, Ian M.; Morrison, Anthony; Wong, Jeanette Y.; and Van Heteren, Jan, 5,336,514, Cl. 426-564.000.
Wood, Alan G.: *See—*
Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., 5,336,649, Cl. 437-209.000.
Wood, William R.: *See—*
Dawson, Jeffrey C.; and Wood, William R., 5,336,316, Cl. 106-724.000.
Woods, Charles L.; and Khoury, Jihad, to United States of America, Air Force. Optical signal dependent noise reduction by variable spatial thresholding of the fourier transform. 5,337,180, Cl. 359-568.000.
Woods, Charles L.: *See—*
Khoury, Jihad; and Woods, Charles L., 5,337,170, Cl. 359-7.000.
Woodward, Ralph A.: *See—*
Fung, Henry T.; Tsang, Siu K.; and Woodward, Ralph A., 5,337,408, Cl. 395-162.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Wooley, James R.: *See—*
Randall, John N.; Wooley, James R.; and Fagan, William H., 5,335,649, Cl. 601-24.000.

Wordeman, Matthew R.: *See—*
Dhong, Sang H.; Hwang, Wei; Terman, Lewis M.; and Wordeman, Matthew R., 5,336,629, Cl. 437-52.000.

Worth, E. Wayne. Water and fertilizer dispensing apparatus. 5,335,690, Cl. 137-268.000.

Wortman, Jimmie J.: *See—*
Ozturk, Mehmet C.; Grider, Douglas T.; Sanganeria, Mahesh K.; Ashburn, Stanton P.; and Wortman, Jimmie J., 5,336,903, Cl. 257-19.000.

Wozniak, Sam; Tran, Hung B.; Newstrom, Charles A.; and Tulyathan, Pravit, to Rockwell International Corporation. Method and apparatus for traveling wave attenuation measurement. 5,337,016, Cl. 324-632.000.

Wright, David E.: *See—*
Krider, James K.; Crawley, Wilbur H., III; and Wright, David E., 5,336,856, Cl. 181-206.000

Wright & Filippis, Inc.: *See—*
Lloyd, Lawrence A., 5,336,270, Cl. 623-33.000.

Wright, Robert J.: *See—*
Dalzell, William J., Jr.; Wright, Robert J.; and Spence, Jarrett L., 5,336,381, Cl. 204-180.200.
Spence, Jarrett L.; and Wright, Robert J., 5,336,560, Cl. 428-336.000.

Wu, Chung-Hua: *See—*
Wang, Yun-Huei; and Wu, Chung-Hua, 5,337,322, Cl. 371-51.100.

Wu, Hong-Chi. Mechanism of a stepping device. 5,336,143, Cl. 482-52.000.

Wu, Min: *See—*
Hieftje, Gary M.; and Wu, Min, 5,335,860, Cl. 239-469.000.

Wu, Pai-Chuan; Ryle, Thomas R.; and Cancio, Leopoldo V., to Clopay Plastic Products Company, Inc. Method of making a compostable polymeric composite sheet. 5,336,457, Cl. 264-171.000.

Wu, Quen-Zong: *See—*
LeCun, Yann A.; and Wu, Quen-Zong, 5,337,372, Cl. 382-27.000.

Wu, Shuenn-Jenq, to Global Win Technology Co., Ltd; and Huei Bin Enterprise Corp. Cooling assembly for an integrated circuit. 5,335,722, Cl. 165-122.000.

Wunderlich, Klaus; Neubrand, Franz; Schmidt, Erwin; Buhl, Hans-Wilhelm; Wirbeleit, Friedrich; and Hanauer, Horst, to Mercedes-Benz AG. Internal combustion engine with combined pressure charging. 5,335,500, Cl. 60-609.000.

Wyant & Company Limited: *See—*
Morand, Michel, 5,335,811, Cl. 221-45.000.

Wyant, Reece E., to Shell Oil Company. Wellbore cementing method. 5,335,725, Cl. 166-292.000.

Wynkoop, Richard D., to Abbott Laboratories. Method of testing for leakage in a solution pumping system. 5,336,053, Cl. 417-53.000.

Wysocki, Ronald J., Jr.: *See—*
Marquez, Victor E.; Driscoll, John S.; Wysocki, Ronald J., Jr.; and Siddiqui, Maqbool A., 5,336,764, Cl. 536-4.100.

X-Trode S.r.l.: *See—*
Borghi, Enzo, 5,336,251, Cl. 607-116.000.

Xerox Corporation: *See—*
Badesha, Santokh S., 5,337,129, Cl. 355-275.000.
Borostyan, Stephen; and Borostyan, David M., 5,337,121, Cl. 355-57.000.
Cherian, Abraham, 5,337,132, Cl. 355-278.000.
Fisher, Donald J., 5,337,123, Cl. 355-212.000.
Hubble, Fred F., III; Weber, Michael E.; Abowitz, Gerald; Bov, Raphael F., Jr.; Swales, Michael G.; and Eakin, Paul W., 5,337,122, Cl. 355-208.000.
Hube, Randall R., 5,337,161, Cl. 358-448.000.
Knapp, John F.; and Koehler, Richard F., 5,337,136, Cl. 355-326.00R.
Malachowski, Michael A.; and Kamprath, David R., 5,337,135, Cl 355-319.000.
Martin, Michael J.; Roller, George J.; and Van Dongen, Richard, 5,335,903, Cl. 271-157.000.
Narang, Ram S.; Pond, Stephen F.; Altavela, Robert P.; Warner, Fredrick A.; and Harold, Robert A., 5,336,319, Cl. 118-211.000.
O'Connell, Patrick A.; Battey, Robert L.; Donigan, Maria S.; Tien, So V.; and Knights, John C., 5,337,080, Cl. 346-155.000.
Schmidlin, Fred W.; and Martin, Robert G., 5,337,124, Cl. 355-259.000.
Siegel, Robert P.; Malachowski, Michael A.; Garsin, Paul A.; and Moser, Rabin, 5,337,133, Cl. 355-285.000.
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.
Thornton, Robert L., 5,337,074, Cl. 346-107.00R.
Zimmer, Charles D.; Gutman, Edward J.; and Ballou, Mark D., 5,336,579, Cl. 430-106.000.

Xilinx, Inc.: *See—*
Seidel, Jorge P.; and Mandhania, Arun K., 5,337,255, Cl. 364-489.000.

Xomox Corporation: *See—*
Hobson, David J.; and DeJager, Everett, 5,335,692, Cl 137-614.170.

Xu, Xiaoding: *See—*
Van Geem, Paul C.; Xu, Xiaoding; and Scholten, Joseph J. F., 5,336,810, Cl. 568-435.000.

Yabe, Hideo: *See—*
Manabe, Hisashi; and Yabe, Hideo, 5,337,351, Cl. 379-201.000.

Yabe, Takashi; and Yamamoto, Hiroyuki, to Konica Corporation. Negative film image reading device. 5,337,164, Cl. 358-487.000

Yabuchi, Kazuyoshi: *See—*
Ogushi, Tetsurou; Murakami, Masaaki; Yabuchi, Kazuyoshi; and Yao, Akira, 5,335,720, Cl. 165-104.260.

Yabuki, Roy M.: *See—*
Campbell, Chester D.; Harper, Sandra L.; Jain, Virender; Kenyon, Richard L.; Matthies, Alan; and Yabuki, Roy M., 5,335,513, Cl. 62-228.300.

Yabuuchi, Hideaki: *See—*
Yamamoto, Matsuo; Nakata, Toshiaki; and Yabuuchi, Hideaki, 5,336,516, Cl. 426-615.000.

Yagi, Akira; and Miyamoto, Hirofumi, to Olympus Optical Co., Ltd. Scanning probe microscope. 5,336,887, Cl. 250-306.000.

Yaguchi, Tatsuya; and Tanaka, Koichi, to Canon Kabushiki Kaisha. Training detection apparatus. 5,337,332, Cl. 375-94.000.

Yagyu, Tatsuya: *See—*
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, 5,336,763, Cl. 534-680.000.

Yale University: *See—*
Bell, Leonard; Madri, Joseph A.; Warren, Stephen L.; and Luthringer, Daniel J., 5,336,615, Cl. 435-240.200

Yam, Benny S.: *See—*
Winston, Anthony E.; Yam, Benny S.; and Jones, Keith A., 5,336,281, Cl. 51-307.000

Yamada, Hideaki: *See—*
Akimoto, Kengo; Shinmen, Yoshifumi; Yamada, Hideaki; Shimizu, Sakayu; and Sugano, Michihiro, 5,336,496, Cl. 424-195.100.

Yamada, Kouichi: *See—*
Sawada, Kazuo; Inazawa, Shinji; and Yamada, Kouichi, 5,336,851, Cl. 174-110.00A.

Yamada, Kunio; and Takashi, Shuichi, to Seikoh Giken Co., Ltd. Optical fiber termination device. 5,337,377, Cl. 385-15.000.

Yamada, Masami: *See—*
Nigaki, Minoru; Ihara, Tuneo; Hirohata, Toru; Suzuki, Tomoko; Nakamura, Kimitsugu; Asakura, Norio; Yamada, Masami; Negi, Yasuharu; Kuroyanagi, Tomihiko; and Mizushima, Yoshihiko, 5,336,902, Cl. 257-10.000.

Yamada, Takashi: *See—*
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,337,174, Cl. 359-73.000

Yamada, Takeo: *See—*
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsuneo; and Fujiwara, Takahiko, 5,337,090, Cl. 348-626.000.

Yamada, Tooru: *See—*
Kinoshita, Satoshi; Nagashima, Sadao; and Yamada, Tooru, 5,335,664, Cl. 128-696.000.

Yamada, Yoshihiko: *See—*
Mizuno, Seinosuke; and Yamada, Yoshihiko, 5,337,094, Cl. 351-206.000.

Yamada, Yoshiteru: *See—*
Fujii, Tatsuya; Imai, Yukihiro; Sato, Yutaka; Fukui, Ryo; Sakamoto, Kazuo; Shiraishi, Naoto; and Yamada, Yoshiteru, 5,337,168, Cl. 358-539.000.

Yamagata, Hisashi: *See—*
Niimura, Youichi; Kozaki, Michio; Yamagata, Hisashi; and Yukawa, Hideaki, 5,336,608, Cl. 435-189.000

Yamagishi, Frederick G., to Hughes Aircraft Company. Electronic sensor for determining alcohol content of fuels. 5,337,018, Cl. 324-693.000

Yamagishi, Hiroaki; Nakano, Yasushi; Kawahara, Setsuko; and Koyama, Noboru, to Konica Corporation. Magnetic recording medium. 5,336,559, Cl. 428-329.000.

Yamagishi, Hisanobu: *See—*
Nagai, Masahiro; Abe, Kazuo; Nireki, Tadashi; Yamagishi, Hisanobu; and Miyake, Yasuhiko, 5,335,527, Cl. 72-262.000.

Yamaguchi, Chotaro; and Shirakawa, Katsuaki, to Kawanoe Zoki Co., Ltd. Cut-web tail edge holding means for web winding apparatus. 5,335,869, Cl. 242-526.000.

Yamaguchi, Masahisa: *See—*
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,657, Cl. 503-227.000.
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,336,660, Cl. 503-227.000.

Yamaguchi, Takeshi: *See—*
Nakajima, Kichio; Honma, Kazuo; Sumiya, Yukio; Yamaguchi, Takeshi; Inamitsu, Hiroshi; and Minamiyama, Eiji, 5,335,547, Cl. 73-622.000.

Yamaguchi, Tomoshige; and Nasu, Nobuaki, to Okamura Corporation. Chair. 5,335,969, Cl. 297-301.000.

Yamakawa, Yuzo: *See—*
Sugiura, Satoshi; and Yamakawa, Yuzo, 5,337,301, Cl. 369-110.000.

Yamamoto, Albert K., to VSI Corporation. Captive screw assembly. 5,336,028, Cl. 411-107.000.

Yamamoto, Hiroshi; and Sakai, Hitoshi, to Yazaki Corporation. Connector terminal inspection device and inspection method. 5,335,413, Cl. 29-593.000.

Yamamoto, Hiroshi: *See—*
Ohtani, Ken-ichi; Sakamoto, Osamu; Houzouji, Masahiko; and Yamamoto, Hiroshi, 5,336,461, Cl. 264-294.000.

Yamamoto, Hiroyuki: *See—*
Yabe, Takashi; and Yamamoto, Hiroyuki, 5,337,164, Cl. 358-487.000

Yamamoto, Hitoshi: *See—*
Kaneko, Junya; and Yamamoto, Hitoshi, 5,335,583, Cl. 92-13.500.

Yamamoto, Katsuhiko; Kojima, Masamitsu; and Kato, Kazuo, to Kuroishi Iron Works Co., Ltd.; and Oiles Corporation. Foot-operated parking brakes for cars and one-way dampers for use therein. 5,335,563, Cl. 74-512.000.

Yamamoto, Kohichi; Yoshida, Suguru; and Watanabe, Kazuo, to Nippon Steel Corporation. Refractory shape steel material containing oxide and process for proucing rolled shape steel of said material. 5,336,339, Cl. 148-320.000.

Yamamoto, Makoto: *See—*
Kobayashi, Kazuo; and Yamamoto, Makoto, 5,337,281, Cl. 365-218.000.

Yamamoto, Matsuo; Nakata, Toshiaki; and Yabuuchi, Hideaki, to Joyu Incorporated. Kimchi-like food and method for producing the same. 5,336,516, Cl. 426-615.000.

Yamamoto, Mitsuru; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,336,591, Cl. 430-549.000.

Yamamoto, Naoki: *See—*
Tone, Seiji; Nakata, Akira; and Yamamoto, Naoki, 5,336,725, Cl. 525-254.000.

Yamamoto, Susumu: *See—*
Nakamura, Toshifumi; Okabe, Gen; and Yamamoto, Susumu, 5,337,156, Cl. 358-404.000.

Yamamoto, Tadanobu; and Kumada, Hiroyoshi, to Mazda Motor Corporation. Suspension system of a vehicle. 5,335,933, Cl. 280-675.000.

Yamamoto, Tatsuro; and Kashino, Yoshinao, to INAX Corporation. Sewage treatment apparatus. 5,336,402, Cl. 210-194.000.

Yamamoto, Tomohiro; and Iwade, Shigeru, to Aisin Seiki Kabushiki Kaisha. Position information processing system for mobile. 5,337,242, Cl. 364-449.000.

Yamamoto, Tooru: *See—*
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Yamamoto, Tooru; and Aseda, Tooru, 5,337,083, Cl. 348-256.000.

Yamamoto, Toshiaki: *See—*
Sano, Haruyuki; Otani, Takao; Nishitani, Masayoshi; Takatsu, Mikio; Ueyoko, Kiyoshi; Yamamoto, Toshiaki; and Miyazaki, Shinichi, 5,335,707, Cl. 152-543.000.

Yamamoto, Toshihide: *See—*
Hashimoto, Kazuhiko; Imamura, Yoshihiko; Yamamoto, Toshihide; and Noh, Yoshihisa, 5,335,634, Cl. 123-188.140.

Yamamoto, Toshio; Hirata, Kazumasa; Wakabayashi, Shigenori; and Katsuura, Akio, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Method of producing formylimidazoles. 5,336,779, Cl. 548-333.500.

Yamanashi, Hiroshi, to USUI Kokusai Sangyo Kaisha Ltd. Method of manufacturing welded pipe with excellent corrosion-resistant inner surface. 5,335,841, Cl. 228-149.000.

Yamanouchi, Junichi: *See—*
Mukunoki, Yasuo; Shinagawa, Yukio; Yamanouchi, Junichi; and Hashimoto, Kiyokazu, 5,336,589, Cl. 430-501.000.

Yamanouchi, Kazuhiko; Mihota, Norihito; Kato, Shunji; Terada, Hiromu; and Ogata, Junichi, to Mitsui Mining & Smelting Co., Ltd.; and Yamanouchi, Kazuhiko. Surface acoustic wave convolver. 5,336,957, Cl. 310-313.00D.

Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,336,679, Cl. 514-300.000.

Yamasaki, Shinsaku: *See—*
Ishikawa, Takayoshi; and Yamasaki, Shinsaku, 5,337,210, Cl. 361-608.000.

Yamashita, Kenkichi; and Oyanagi, Hideaki, to NSK Ltd. Roller offset printing apparatus. 5,335,595, Cl. 101-158.000.

Yamashita, Nobuyuki: *See—*
Murakawa, Masatake; Minoura, Akira; Kurohara, Kazuaki; Imanishi, Ryozo; Yamashita, Nobuyuki; and Harada, Eriya, 5,335,487, Cl. 56-10.500.

Yamashita, Tetsuji: *See—*
Murakami, Kyoshiro; Yamashita, Tetsuji; Yoshikawa, Tomio; Yasuda, Hiromu; and Zushi, Shizuo, 5,335,708, Cl. 165-1.000.

Yamataka, Akira: *See—*
Kinouchi, Yohsuke; Ai, Minoru; Mizutani, Hiroshi; Okuno, Osamu; Yamauchi, Kiyotaka; Yamataka, Akira; and Suzuki, Hiroya, 5,337,033, Cl. 335-302.000.

Yamauchi, Keiichi; Shimizu, Toshihiko; and Sudo, Satomi, to Pioneer Electronic Corporation. Information storage medium and apparatus for reproducing information therefrom. 5,336,844, Cl. 84-602.000.

Yamauchi, Kiyotaka: *See—*
Kinouchi, Yohsuke; Ai, Minoru; Mizutani, Hiroshi; Okuno, Osamu; Yamauchi, Kiyotaka; Yamataka, Akira; and Suzuki, Hiroya, 5,337,033, Cl. 335-302.000.

Yamazaki, Kengo: *See—*
Nishimoto, Yoshiharu; Yamazaki, Kengo; and Sato, Takashi, 5,336,549, Cl. 428-213.000.

Yamazaki, Makoto: *See—*
Ozaki, Masahide; Yamazaki, Makoto; and Dono, Kenji, 5,335,404, Cl. 29-408.000.

Yamazaki, Mitsuru: *See—*
Sato, Kazuyasu; Maekawa, Takashi; Yamazaki, Mitsuru; and Oishi, Harumichi, 5,337,134, Cl. 355-319.000.

Yamazaki, Shunpei: *See—*
Mase, Akira; and Yamazaki, Shunpei, 5,337,171, Cl. 359-53.000.

Yamazaki, Yuichi; Mori, Hideyasu; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, to Kabushiki Kaisha Toshiba. Modem pooling system for communicating between a telephone and a plurality of data terminals. 5,337,348, Cl. 379-94.000.

Yanagisawa, Isao: *See—*
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,336,679, Cl. 514-300.000.

Yanagisawa, Kazuyoshi: *See—*
Kawaguchi, Katuhide; Sugino, Kouichiro; and Yanagisawa, Kazuyoshi, 5,336,358, Cl. 156-422.000.

Yanagisawa, Shuichi; Sakai, Tatsuro; Chuman, Takashi; Araki, Yasushi; and Matsui, Fumio, to Pioneer Electronic Corporation. Optical recording medium. 5,336,584, Cl. 430-273.000.

Yanders, Kevin P.: *See—*
Chung, Bryan C.; DiBello, Gerald N.; Pearce, Charles W.; and Yanders, Kevin P., 5,336,371, Cl. 156-659.100.

Yang, Hung H.: *See—*
Bowen, Michael W.; Ghorashi, Hamid M.; and Yang, Hung H., 5,336,734, Cl. 525-420.000.

Yang, Tai-Her. Differential charging circuit. 5,337,228, Cl. 363-86.000.

Yang, Zhen-Yu, to Du Pont de Nemours, E. I., and Company. Fluorinated polymer and monomers. 5,336,741, Cl. 526-247.000.

Yano, Kazuhiko: *See—*
Azuma, Toshiro; Yano, Kazuhiko; and Fujisaki, Koichiro, 5,335,496, Cl. 60-487.000.

Yanus, John F.: *See—*
Spiewak, John W.; Yanus, John F.; Pai, Damodar M.; Mammino, Joseph; Abramsohn, Dennis A.; Limburg, William W.; Renfer, Dale S.; Chen, Chei-Jen; DeFeo, Paul; Grammatica, Steven J.; Ishler, J. Michael; Scharfe, Merlin E.; and Sypula, Donald S., 5,336,577, Cl. 430-59.000.

Yao, Akira: *See—*
Ogushi, Tetsurou; Murakami, Masaaki; Yabuchi, Kazuyoshi; and Yao, Akira, 5,335,720, Cl. 165-104.260.

Yasuda, Hiromu: *See—*
Murakami, Kyoshiro; Yamashita, Tetsuji; Yoshikawa, Tomio; Yasuda, Hiromu; and Zushi, Shizuo, 5,335,708, Cl. 165-1.000.

Yasuda, Hirotsuga K.: *See—*
Cooke, Francis W.; Marrero, Thomas R.; and Yasuda, Hirotsuga K., 5,336,699, Cl. 523-115.000.

Yasuda, Koichi: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000.

Yasufuku, Yoshitaka; and Shibazaki, Osamu, to Konica Corporation. Tape cassette lid-locking device. 5,335,876, Cl. 242-347.100.

Yate, Martin: *See—*
Smith, Neil D.; and Yate, Martin, 5,337,104, Cl. 354-149.110.

Yates, Stephen F.; Harnish, Daniel F.; and Smith, Addison M., to Allied-Signal Inc. Process for removing 2-chloro-1,1-difluoroethylene from 1,1,1,2-tetrafluoroethane and co-producing 2-chloro-1,1,1,2-tetrafluoroethane. 5,336,377, Cl. 203-29.000.

Yatsuda, Hisao: *See—*
Goto, Naoyuki; and Yatsuda, Hisao, 5,336,643, Cl. 501-4.000.

Yazaki Corporation: *See—*
Idei, Gijun; Kinoshita, Takuji; and Hoshino, Kunio, 5,337,035, Cl. 337-28.000.
Kato, Tetsuo; Kanda, Masahiro; Tsumiyama, Tatsuo; and Nakamoto, Satoru, 5,336,540, Cl. 428-36.920.
Yamamoto, Hiroshi; and Sakai, Hitoshi, 5,335,413, Cl. 29-593.000.

Yazawa, Masahiko: *See—*
Noguchi, Tamio; and Yazawa, Masahiko, 5,336,309, Cl. 106-23.00C.

Yeda Research and Development Co. Ltd.: *See—*
Rosenblatt, David, 5,337,183, Cl. 359-248.000.

Yednak, Mark A.: *See—*
Buchholz, Dale R.; Doss, William K.; Robbins, Karen E.; Yednak, Mark A.; and Hamilton, R. Lee, Jr., 5,337,313, Cl. 370-94.100.

Yeh, Tsang-Chieh. Extendible handle assembly for wheeled luggage. 5,335,759, Cl. 190-115.000.

Yelvington, Richard D., to Inventive Services, Inc. Apparatus for destroying syringe-type needles by electrical current. 5,336,862, Cl. 219-68.000.

Yeom, Hancheol; Lee, Hoseong; Jeong, Yucheol; An, Hoyoung; Choi, Juho; and Lee, Wonbo, to Samsung Corning Co., Ltd. Apparatus for shearing a gob. 5,336,289, Cl. 65-334.000.

Yerves, Kenneth A., Jr.; and Seegull, William R. Multiple beverage dispenser. 5,335,589, Cl. 99-295.000.

Yim, Seong S.: *See—*
Moon, Chi J.; Park, Sae C.; Kim, Myoung G.; Oh, Sea H.; Yim, Seong S.; Park, Nam J.; Choi, Young K.; and Sung, Moo J., 5,336,673, Cl. 514-202.000.

Yocom, Kathryn M.: *See—*
Swift, Graham; and Yocom, Kathryn M., 5,336,744, Cl. 526-318.200.

Yoest, Kenneth L.: *See—*
Muzik, Charles J.; and Yoest, Kenneth L., 5,336,481, Cl. 423-640.000.

Yokohama Rubber Co., Ltd., The: *See—*
Kawaguchi, Katuhide; Sugino, Kouichiro; and Yanagisawa, Kazuyoshi, 5,336,358, Cl. 156-422.000.

Yokokawa, Takuya: *See—*
Ozaki, Hiroyuki; and Yokokawa, Takuya, 5,336,761, Cl. 430-507.000.

Yokomori, Kiyoshi: *See—*
Gotoh, Hiroshi; Emoto, Masami; and Yokomori, Kiyoshi, 5,337,302, Cl. 369-112.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Yokouchi, Akira: *See*—
Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and Yokouchi, Akira, 5,337,371, Cl. 382-14.000.
Yokoyama, Hiroyuki, to Sanden Corporation. Scroll-type compressor with variable displacement mechanism. 5,336,058, Cl. 417-299.000.
Yokoyama, Takao: *See*—
Furohashi, Ikuko; Miyake, Yoshihiro; and Yokoyama, Takao, 5,337,349, Cl. 379-100.000.
Yomura, Yoshinori: *See*—
Watanabe, Toyofumi; Furuta, Akihiko; Ono, Tadashi; Yomura, Yoshinori; and Iwado, Shuichi, 5,336,567, Cl. 428-629.000.
Yonezawa, Masaki: *See*—
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, 5,336,763, Cl. 534-680.000.
Yoon, Duk Y.: *See*—
Kang, Suk-Joong L.; Shin, Yu S.; Whang, Nong M.; Yoon, Duk Y.; and Kim, Deug J., 5,336,646, Cl. 501-105.000.
Yoon, InBae. Automatic retractable safety penetrating instrument. 5,336,176, Cl. 604-51.000.
Yoshida, Hitoshi: *See*—
Kaiju, Haruhisa; Yoshida, Hitoshi; Yukikawa, Junichi; and Yoshizaki, Akihisa, 5,335,828, Cl. 222-195.000.
Yoshida, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Roller contact device. 5,336,857, Cl. 200-277.000.
Yoshida Kogyo K.K.: *See*—
Ozaki, Masahide; Yamazaki, Makoto; and Dono, Kenji, 5,335,404, Cl. 29-408.000.
Yoshida, Kunio: *See*—
Sato, Masaaki; Naka, Motohiko; Shida, Takehiko; Yoshida, Kunio; Saitoh, Mie; Akamine, Ikuo; Shimizu, Makoto; Fujiwara, Katsuhiko; and Yokouchi, Akira, 5,337,371, Cl. 382-14.000.
Yoshida, Makoto; Takahashi, Nobuo; and Hosoyama, Koichi, to Teijin Limited. Heat resistant nonwoven fabric and process for producing same. 5,336,556, Cl. 428-288.000.
Yoshida, Suguru: *See*—
Yamamoto, Kohichi; Yoshida, Suguru; and Watanabe, Kazuo, 5,336,339, Cl. 148-320.000.
Yoshida, Takayuki: *See*—
Kawakita, Tetsuo; Yoshida, Takayuki; and Hatada, Kenzo, 5,336,547, Cl. 428-209.000.
Yoshida, Tetsuo: *See*—
Shimizu, Hiroshi; Yoshida, Tetsuo; and Mashiko, Chikara, 5,336,960, Cl. 310-369.000.
Yoshida, Toshihiko: *See*—
Atsumi, Masakazu; Matsumoto, Takeshi; and Yoshida, Toshihiko, 5,337,173, Cl. 359-54.000.
Yoshida, Yutaka: *See*—
Hofert, David K.; and Yoshida, Yutaka, 5,337,233, Cl. 364-419.140.
Yoshihara, Atsuko: *See*—
Homma, Michihide; Yoshihara, Atsuko; Wakabayashi, Hiroshi; and Isayama, Katsuhiko, 5,336,703, Cl. 523-435.000.
Yoshikawa, Tomio: *See*—
Murakami, Kyoshiro; Yamashita, Tetsuji; Yoshikawa, Tomio; Yasuda, Hiromu; and Zushi, Shizuo, 5,335,708, Cl. 165-1.000.
Yoshimoto, Masafumi; Nakatsuji, Tadao; and Shimizu, Hiromitsu, to Sakai Chemical Industry Co., Ltd. Catalysts and methods for denitrization. 5,336,651, Cl. 502-74.000.
Yoshimura, Osamu: *See*—
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,337,128, Cl. 355-271.000.
Yoshimura, Takayuki; Kondo, Yoshiteru; Matsumura, Yoshimasa; and Inoue, Kiyoaki, to Daiwa Can Company. Apparatus for di can surface treatment. 5,335,682, Cl. 134-72.000.
Yoshino, Akira; Kiyama, Hiromi; and Mihoichi, Nobuhiko, to Daidousanso Co., Ltd. Method and apparatus for separating mixed gas. 5,336,300, Cl. 95-96.000.
Yoshino, Katsumi: *See*—
Oka, Osamu; and Yoshino, Katsumi, 5,336,374, Cl. 162-138.000.
Yoshino, Ryutaro: *See*—
Takahashi, Hideo; and Yoshino, Ryutaro, 5,337,235, Cl. 364-424.020.
Yoshizaki, Akihisa: *See*—
Kaiju, Haruhisa; Yoshida, Hitoshi; Yukikawa, Junichi; and Yoshizaki, Akihisa, 5,335,828, Cl. 222-195.000.
Yoshizumi, Akira: *See*—
Nakano, Yoshihiko; Hayase, Shuzi; Murai, Shinji; Mikogami, Yukihiro; and Yoshizumi, Akira, 5,336,736, Cl. 525-474.000.
Youells, James P.: *See*—
Holland, Scott B.; Fair, Kenneth L.; and Youells, James P., 5,337,229, Cl. 364-131.000.
Young, Jean. Ink guide for a ballpoint pen. 5,336,009, Cl. 401-209.000.
Young, Lawrence R.: *See*—
Spehrley, Charles W., Jr.; Hoisington, Paul A.; Fulton, Steven J.; Young, Lawrence R.; and Schaffer, Robert R., 5,337,079, Cl. 347-88.000.
Young, Lloyd M.: *See*—
Sheffield, Richard L.; Carlsten, Bruce E.; and Young, Lloyd M., 5,336,972, Cl. 315-5.410.
Young, Thomas R. Fruit and produce container. 5,335,844, Cl. 229-23.00R.
Youngers, Kevin J.: *See*—
Webb, Steven L.; and Youngers, Kevin J., 5,336,976, Cl. 315-134.000.
Yukawa, Hideaki: *See*—
Niimura, Youichi; Kozaki, Michio; Yamagata, Hisashi; and Yukawa, Hideaki, 5,336,608, Cl. 435-189.000.
Yukikawa, Junichi: *See*—
Kaiju, Haruhisa; Yoshida, Hitoshi; Yukikawa, Junichi; and Yoshizaki, Akihisa, 5,335,828, Cl. 222-195.000.
Yun, Kwang H.; Lee, Hee G.; Jang, Seong J.; and Jun, Young K., to Goldstar Electron Co., Ltd. Method of making semiconductor memory device. 5,336,630, Cl. 437-52.000.
Zadeh, Ali E., to Siemens Pacesetter, Inc. Band-pass filter for use in a sense amplifier of an implantable cardiac pacer. 5,336,242, Cl. 607-11.000.
Zaeske, Donald A.; Ceplina, Raymond E.; Weber, Rick V.; and Tweed, Gregory A., to Emmber Foods, Inc. Methods of and apparatus for packaging a product. 5,335,480, Cl. 53-431.000.
Zaguli, Ronald J., to United States of America, National Aeronautics and Space Administration. Attachment device. 5,335,881, Cl. 244-158.00R.
Zahnradfabrik Friedrichshafen AG: *See*—
Maurer, Gerhard; Braig, Manfred; Auer, Raimund; Goebel, Christoph; Schwarz, Josef; and Voss, Thomas, 5,336,120, Cl. 440-84.000.
Raue, Reimund, 5,335,762, Cl. 192-48.910.
Zalesky, Dean R. Anti-theft vehicle brake supervising device. 5,335,758, Cl. 188-353.000.
Zambon Group S.p.A.: *See*—
Camaggi, Giovanni; Chiarino, Dario; Fantucci, Mario; and Meazza, Giovanni, 5,336,664, Cl. 504-261.000.
Zang, Kerry, to Orthopaedic Biosystems, Ltd., a part interest. Bone fastening device. 5,336,225, Cl. 606-73.000.
Zanibelli, Laura: *See*—
Bellussi, Giuseppe; Giusti, Aldo; and Zanibelli, Laura, 5,336,830, Cl. 585-660.000.
Zarabadi, Seyed R.; and Ismail, Mohammed, to Delco Electronics Corp. High density integrated circuit with high output impedance. 5,337,021, Cl. 330-288.000.
Zarchy, Andrew S.; and Chao, Chien C., to UOP. Hydrocarbon conversion with additive loss prevention. 5,336,834, Cl. 585-737.000.
Zarling, David A.; and Sena, Elissa P., to SRI International. Homologous sequence targeting in eukaryotic cells. 5,336,606, Cl. 435-172.300.
Zarola, J. Anthony, to Stopgap Enterprises. Collapsible animal enclosure. 5,335,618, Cl. 119-19.000.
Zarowin, Charles B.; and Bollinger, L. David, to Hughes Aircraft Company. Methods and apparatus for confinement of a plasma etch region for precision shaping of surfaces of substances and films. 5,336,355, Cl. 156-345.000.
Zarudiansky, Alain: *See*—
Guizot, Jean-Luc; King, Bradley; and Zarudiansky, Alain, 5,335,555, Cl. 73-861.950.
Zaviska, Dalibor: *See*—
Volz, Peter; and Zaviska, Dalibor, 5,335,981, Cl. 303-113.300.
Zell, Karl; and Seidel, Peter, to Siemens Aktiengesellschaft. Device for the electrical connection of shieldings of multi-pole plugs to the grounded potential layer of a printed circuit board. 5,336,098, Cl. 439-108.000.
Zeller, Martin: *See*—
Wenger, Jean; Winternitz, Paul; and Zeller, Martin, 5,336,663, Cl. 504-243.000.
Zeneca Limited: *See*—
Moffatt, Frank S.; and Winstanley, David, 5,336,777, Cl. 548-209.000.
Zenith Electronics Corporation: *See*—
Capek, Raymond G.; Greiner, Siegfried M.; and Tong, Hua S., 5,336,964, Cl. 313-407.000.
Tong, Hua-Sou, 5,336,575, Cl. 430-25.000.
Zenzen, Wendy J.; and Chee, Uriel H., to Target Therapeutics, Inc. Flow directed catheter. 5,336,205, Cl. 604-280.000.
Zguris, George C.; and Harmon, Frank C., Jr., to Hollingsworth & Vose Company. Method for assembling battery cells containing pre-compressed glass fiber separators. 5,336,275, Cl. 29-623.500.
Ziebarth, Timothy D.: *See*—
Murray, Christopher K.; Beckvermit, Jeffrey T.; and Ziebarth, Timothy D., 5,336,684, Cl. 514-449.000.
Ziegler, Annette: *See*—
Diehl, Manfred; Koenig, Karl-Heinz; Krone, Eckhart; Loroesch, Juergen; Steiner, Norbert; Ullmann, Jochen; and Ziegler, Annette, 5,336,474, Cl. 423-29.000.
Ziegler, Louis C.: *See*—
Silver, Jules; and Ziegler, Louis C., 5,336,198, Cl. 604-195.000.
Zimmer, Charles D.; Gutman, Edward J.; and Ballou, Mark D., to Xerox Corporation. Color developer compositions containing bare carrier cores and coated carrier cores. 5,336,579, Cl. 430-106.000.
Zimmer, John. Process for compacting normally occurring radioactive material (NORM) in sealed tubular members. 5,336,843, Cl. 588-249.000.
Zimmerman, John M.: *See*—
Coady, Clive J.; Poklacki, Erwin S.; Zimmerman, John M.; Bishop, Timothy E.; and Derer, John L., 5,336,563, Cl. 428-375.000.
Ziomek, Joseph F.: *See*—
Faigle, Ernst M.; and Ziomek, Joseph F., 5,335,936, Cl. 280-728.00A.
Zirkel, Herbert, to Schwaebische Huettenwerke GmbH. Exhaust gas filter and/or a catalytic converter. 5,335,492, Cl. 60-298.000.

Zlatic, Mark S.: *See*—
Johnson, Kenneth L.; Zlatic, Mark S.; Grammel, Leonard P., Jr.; and Manteiga, John A., 5,335,490, Cl. 60-261.000.
Zlomke, Steven: *See*—
Cherenak, Thomas M.; Spanski, Jeffrey; and Zlomke, Steven, 5,335,772, Cl. 206-349.000.
Zogg, David F.: *See*—
Goldstein, Andrew S.; Gavojdea, Stefan; and Zogg, David F., 5,335,673, Cl. 128-760.000.
Zollner, Jorg-Peter; and Bussmann, Winfried, to Abel Pumpen GmbH & Co. KG. Viscous material pump. 5,336,052, Cl. 417-20.000.
Zorzolo, Alessandro, to Comelz S.p.A. Control unit for an electric drive motor of industrial processing machinery. 5,336,981, Cl. 318-551.000.
Zuckerbrod, David; and Giovannoni, Richard T., to W. R. Grace & Co.-Conn. Battery separator. 5,336,573, Cl. 429-252.000.
Zushi, Shizuo: *See*—
Murakami, Kyoshiro; Yamashita, Tetsuji; Yoshikawa, Tomio; Yasuda, Hiromu; and Zushi, Shizuo, 5,335,708, Cl. 165-1.000.
3DO Company, The: *See*—
Platt, David C., 5,337,363, Cl. 381-17.000.
314613 B.C. Ltd.: *See*—
Groux, Paul D.; and Burgess, Marvin A., 5,336,247, Cl. 607-72.000.
776 Danforth Ter. Touch sensitive input control device. 5,335,557, Cl. 73-862.043.

VOL 1165 ISS 2 AG 9 1994 UMI

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF AUGUST, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Becher, Frank, to LTS Lohmann Therapi-Systeme GmbH & Co. KG. Transdermal therapeutic system. Re. 34,692, Cl. 424-448.000.

Bilco Tools, Inc.: *See—*
Coyle, William E., Jr.; and Pennison, Dennis J., Re. 34,686, Cl 73-761.000.

Carrington, Andrew N., to Thorn EMI, plc. Display device having a reservoir and a vacuum channel for filling the display region with the liquid crystal material. Re. 34,690, Cl. 354-80.000.

Coyle, William E., Jr.; and Pennison, Dennis J., to Bilco Tools, Inc. Method, system and device for determining quality of assembly of tool parts. Re. 34,686, Cl. 73-761.000.

Laitram Corporation, The: *See—*
Lapeyre, James M., Re. 34,688, Cl. 198-834.000.

Lapeyre, James M., to Laitram Corporation, The. Link chain belt. Re. 34,688, Cl. 198-834.000.

LTS Lohmann Therapi-Systeme GmbH & Co. KG: *See—*
Becher, Frank, Re. 34,692, Cl. 424-448.000.

Molex Incorporated: *See—*
Plocek, Edward J.; Weiss, Stephen Z.; and Pike-Biegunski, Maciej, Re. 34,693, Cl. 439-15.000.

Pennison, Dennis J.: *See—*
Coyle, William E., Jr.; and Pennison, Dennis J., Re. 34,686, Cl. 73-761.000.

Pike-Biegunski, Maciej: *See—*
Plocek, Edward J.; Weiss, Stephen Z.; and Pike-Biegunski, Maciej, Re. 34,693, Cl. 439-15.000.

Pioneer Electronic Corporation: *See—*
Wakasa, Toshiya, Re. 34,689, Cl. 348-383.000.

Plocek, Edward J.; Weiss, Stephen Z.; and Pike-Biegunski, Maciej, to Molex Incorporated. Electrical connector assembly for vehicular steering wheel. Re. 34,693, Cl. 439-15.000.

Spencer, R. Wilson. Constant volume sampling system. Re. 34,687, Cl. 73-863.710.

Thorn EMI, plc: *See—*
Carrington, Andrew N., Re. 34,690, Cl. 354-80.000.

Wakasa, Toshiya, to Pioneer Electronic Corporation. Multiple projection television receiver. Re. 34,689, Cl. 348-383.000.

Weiss, Stephen Z.: *See—*
Plocek, Edward J.; Weiss, Stephen Z.; and Pike-Biegunski, Maciej, Re. 34,693, Cl. 439-15.000.

White, John M. Fluid charged roadway barrier. Re. 34,691, Cl. 404-6.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

A.S. Leasing, Inc.: *See—*
Allen, R. Daniel; and Fink, Howard F., B1 4,564,164, Cl. 248-118.000.

Allen, R. Daniel; and Fink, Howard F., to A.S. Leasing, Inc. Adjustable support system. B1 4,564,164, 8-9-94, Cl. 248-118.000.

Bacus, James W., to Cell Analysis Systems, Inc. Method of and apparatus for image analyses of biological specimens. B1 4,741,043, 8-9-94, Cl. 382-6.000.

Becker, Joseph J.; Luborsky, Fred E.; Jacobs, Israel S.; and McCary, Richard O., to General Electric Company. Treatment of amorphous magnetic alloys to produce a wide range of magnetic properties. B1 4,262,233, 8-9-94, Cl. 315-248.000.

Brzozowski, Jan. Method for the mounting of gems and resulting product. B1 4,566,294, 8-9-94, Cl. 63-15.000.

Cell Analysis Systems, Inc.: *See—*
Bacus, James W., B1 4,741,043, Cl. 382-6.000.

Dalebout, William T.; Measom, S. Ty; and Watterson, Scott R., to Weslo, Inc. Adjustable incline system for exercise equipment. B1 4,913,396, 8-9-94, Cl. 248-649.000.

Fink, Howard F.: *See—*
Allen, R. Daniel; and Fink, Howard F., B1 4,564,164, Cl. 248-118.000.

General Electric Company: *See—*
Becker, Joseph J.; Luborsky, Fred E.; Jacobs, Israel S.; and McCary, Richard O., B1 4,262,233, Cl. 315-248.000.

Jacobs, Israel S.: *See—*
Becker, Joseph J.; Luborsky, Fred E.; Jacobs, Israel S.; and McCary, Richard O., B1 4,262,233, Cl. 315-248.000.

Luborsky, Fred E.: *See—*
Becker, Joseph J.; Luborsky, Fred E.; Jacobs, Israel S.; and McCary, Richard O., B1 4,262,233, Cl. 315-248.000.

McCary, Richard O.: *See—*
Becker, Joseph J.; Luborsky, Fred E.; Jacobs, Israel S.; and McCary, Richard O., B1 4,262,233, Cl. 315-248.000.

Measom, S. Ty: *See—*
Dalebout, William T.; Measom, S. Ty; and Watterson, Scott R., B1 4,913,396, Cl. 248-649.000.

Watterson, Scott R.: *See—*
Dalebout, William T.; Measom, S. Ty; and Watterson, Scott R., B1 4,913,396, Cl. 248-649.000.

Weslo, Inc.: *See—*
Dalebout, William T.; Measom, S. Ty; and Watterson, Scott R., B1 4,913,396, Cl. 248-649.000.

LIST OF DESIGN PATENTEES

: *See—*
Harris, Wright E., III; and , 349,521, Cl. D21-23.000.

Addison, Sun K. Doorknob cover. 349,445, 8-9-94, Cl. D8-322.000.

Aderman, Wayne L.; and Hill, David W., to International Business Machines Corporation. Disk storage subsystem for a data processing system. 349,488, 8-9-94, Cl. D14-109.000.

Aderman, Wayne L.; and Hill, David W., to International Business Machines Corporation. Front panel for a rack mounted disk storage subsystem of a data processing system. 349,494, 8-9-94, Cl. D14-115.000.

Adler, David T.: *See—*
Bookwalter, John R.; and Adler, David T., 349,573, Cl. D24-128.000.

adp Gauselmann GmbH: *See—*
Brettschneider, Dirk I., 349,524, Cl. D21-38.000.

AIWA Co., Ltd.: *See—*
Kawamoto, Tetsuhisa, 349,497, Cl. D14-156.000.

Alabaster Industries, Inc.: *See—*
Norris, Daniel A., 349,426, Cl. D7-553.000.

Albers, Terry A. Paint pot. 349,558, 8-9-94, Cl. D23-225.000.

Allen, Ben G., to Benthos, Inc. Underwater remotely operated vehicle. 349,481, 8-9-94, Cl. D12-308.000.

Amram, Roger, to Fun Bunch Inc., The. Backstop. 349,518, 8-9-94, Cl. D21-5.000.

Appoint: *See—*
Barrett, John B., 349,490, Cl. D14-114.000.

Aqua-Leisure Industries, Inc.: *See—*
Wolfe, Henry, 349,551, Cl. D21-237.000.

Aqua Step Corporation: *See—*
Hand, Peter H.; Saunders, William J.; and Goldstein, Eric, 349,540, Cl. D21-191.000.

Archambeau, Dave. Plant stake. 349,434, 8-9-94, Cl. D8-1.000.

Arima, Yukio: *See—*
Nakashima, Hiroaki; Utsuki, Toshiyuki; Wada, Toshihiko; Arima, Yukio; and Miyata, Tohru, 349,464, Cl. D10-75.000.

Armstrong, Walter E., to Wally Armstrong Golf, Inc. Golf swing alignment aid. 349,548, 8-9-94, Cl. D21-234.000.

Ashley Furniture Indusries, Inc.: *See—*
Peterson, Randy, 349,415, Cl. D6-480.000.

Asia Optical Co., Ltd.: *See—*
Tomita, Saburo, 349,510, Cl. D16-132.000.

Au, Ho C., to Nationalpak Limited. Display box. 349,553, 8-9-94, Cl. D9-422.000.

Backs, Jochen P.: *See—*
Howard, Paul L.; and Backs, Jochen P., 349,588, Cl. D29-110.000.

Bain, Charles E.; and Friedman, Frank, to Reflector Hardware Corporation. Tiltable desk lamp. 349,582, 8-9-94, Cl. D26-61.000.

Bak, Wun S., to Goldstar Co., Ltd. Television receiver. 349,495, 8-9-94, Cl. D14-126.000.

Bally, Alex: *See—*
Copper, John M.; and Bally, Alex, 349,491, Cl. D14-114.000.

Barker, John M.: *See—*
Metcalf, Gerald L.; Plyley, Alan K.; and Barker, John M., 349,574, Cl. D24-146.000.

Barrett, John B., to Appoint. Cursor controlling pen. 349,490, 8-9-94, Cl. D14-114.000.

Bausch & Lomb Incorporated: *See—*
Cereda, Sergio, 349,403, Cl. D3-266.000.
Conway, Simon M., 349,508, Cl. D16-335.000.

Bearinger, Wells S., to Quick Point, Inc. Single key holder. 349,400, 8-9-94, Cl. D3-208.000.

Beattie, Robert L. Sheet rock t-square holder. 349,463, 8-9-94, Cl. D10-74.000.

Bengtson, Alan D., to Kohler Co. Shower stall. 349,562, 8-9-94, Cl. D23-283.000.

Benthos, Inc.: *See—*
Allen, Ben G., 349,481, Cl. D12-308.000.

Berger, Michael L. Cat house for cats or other small animals. 349,590, 8-9-94, Cl. D30-108.000.

Bermel, Christine M.; and Bermel, Gary A. Australian stock saddle cover. 349,591, 8-9-94, Cl. D30-135.000.

Bermel, Gary A.: *See—*
Bermel, Christine M.; and Bermel, Gary A., 349,591, Cl. D30-135.000.

Bertolucci, Joan M.: *See—*
Bertolucci, Lawrence E.; and Bertolucci, Joan M., 349,541, Cl. D21-191.000.

Bertolucci, Lawrence E.; and Bertolucci, Joan M., to Maven Labs, Inc. Hip and back exerciser. 349,541, 8-9-94, Cl. D21-191.000.

Bonazza, Claudio, to Venice Trading Co. Rolling cart with storage containments. 349,594, 8-9-94, Cl. D34-20.000.

Bookwalter, John R.; and Adler, David T., to Flexbar Machine Corp. Quick-lock holder for laparoscopic instrument. 349,573, 8-9-94, Cl. D24-128.000.

Borg, James C., to Oregon Precision Industries, Inc. Carrier strap for milk jug containers. 349,459, 8-9-94, Cl. D9-455.000.

Brainard, Robert H.: *See—*
Kostanecki, Andrew T.; and Brainard, Robert H., 349,418, Cl. D7-312.000.
Kostanecki, Andrew T.; Brainard, Robert H.; and Kaufman, Richard H., 349,455, Cl. D9-337.000.

Brettschneider, Dirk I., to adp Gauselmann GmbH. Gaming machine. 349,524, 8-9-94, Cl. D21-38.000.

Bridgestone Corporation: *See—*
Himuro, Yasuo, 349,478, Cl. D12-151.000.
Shinohara, Kazunori; and Yamakawa, Yukio, 349,477, Cl. D12-147.000.

Brittingham, Dennis C.: *See—*
Weaver, Robert J.; Daynes, John C.; Brittingham, Dennis C.; and Merry, Rodney J., 349,483, Cl. D13-103.000.

Bruce, Rob: *See—*
Lanna, Paulo; Bruce, Rob; and Smith, Martin, 349,507, Cl. D16-314.000.

Brunette, Thomas H. Portable door lock. 349,446, 8-9-94, Cl. D8-331.000.

Buckner, J. Bart. Tennis shoe sandal. 349,390, 8-9-94, Cl. D2-916.000.

Burgel, Christian, to Santos S.A. Food mixer. 349,423, 8-9-94, Cl. D7-378.000.

Burns, Larry D.; and Keller, Frederick J., Jr., to Carrier Corporation. Top cover with discharge orifice for the outdoor unit of an air conditioning split system. 349,565, 8-9-94, Cl. D23-354.000.

Cameron, Scott A. Brush. 349,408, 8-9-94, Cl. D4-124.000.

Carlisle, Thomas H. Christmas tree bubble light clip. 349,584, 8-9-94, Cl. D26-138.000.

Carlson, Lowell J., to Carlson's Workshop, Inc. Indian princess doll with papoose doll. 349,533, 8-9-94, Cl. D21-182.000.

Carlson's Workshop, Inc.: *See—*
Carlson, Lowell J., 349,533, Cl. D21-182.000.

Carrier Corporation: *See—*
Burns, Larry D.; and Keller, Frederick J., Jr., 349,565, Cl. D23-354.000.
Stopyra, Stephen; Thompson, Gary D.; and Kroko, Peter A., 349,564, Cl. D23-354.000.

Carrillo, Dennis J. Bowling ball bag. 349,401, 8-9-94, Cl. D3-221.000.

Carroll, Dorothy. Holder for a pager. 349,405, 8-9-94, Cl. D3-299.000.

Caruso, James F.; Vollendorf, Kim D.; Lantz, Gregory W.; and Herbst, Walter B., to Fluid Management Limited Partnership. Dispensing apparatus. 349,506, 8-9-94, Cl. D15-199.000.

Casio Computer Co., Ltd.: *See—*
Morishima, Takashi, 349,461, Cl. D10-38.000.

Cehovin, Iztok; and Fabijan, Vilko. Weighted tripod stand for sports devices. 349,545, 8-9-94, Cl. D21-221.000.

Centsible Designs, Inc.: *See—*
DeMichele, Christopher J., 349,549, Cl. D21-234.000.

Cereda, Sergio, to Bausch & Lomb Incorporated. Eyewear case. 349,403, 8-9-94, Cl. D3-266.000.

Chang, Jude H. C. Flasher. 349,466, 8-9-94, Cl. D10-114.000.

Cheng, Lilian, to Ultima Electronics Corp. Computer mouse. 349,493, 8-9-94, Cl. D14-114.000.

Chou, Shu-Hui. Staple gun. 349,439, 8-9-94, Cl. D8-49.000.

Circulair, Inc.: *See—*
Radtke, Leroy F., Jr., 349,570, Cl. D23-382.000.

Clorox Company, The: *See—*
Malmborg, Richard D.; Hodan, Robert J.; and Flom, Jay L., 349,417, Cl. D7-306.000.

Collins, Benjamin P. Subwoofer housing. 349,499, 8-9-94, Cl. D14-216.000.

Columbo, Michael. Infant heart rate sensor. 349,575, 8-9-94, Cl. D24-167.000.

Commonwealth of Puerto Rico: *See—*
Morales-Rivera, Manuel, 349,410, Cl. D6-316.000.

Comrise Electronics Co., Ltd.: *See—*
Fan, Yuan-Neng, 349,501, Cl. D14-240.000.
Fan, Yuan-Neng, 349,502, Cl. D14-240.000.

Conair Corporation: *See—*
Rizzuto, Leandro P., Jr., 349,585, Cl. D28-18.000.

Conway, Simon M., to Bausch & Lomb Incorporated. Eyewear temple. 349,508, 8-9-94, Cl. D16-335.000.

Copper, John M.; and Bally, Alex, to MicroMed Systems, Inc. Hand-held input device for computers. 349,491, 8-9-94, Cl. D14-114.000.

Coyne, Patrick J.: *See—*
Nottingham, John R.; Spirk, John W., Jr.; Kalman, Jeffrey M.; and Coyne, Patrick J., 349,457, Cl. D9-415.000.

Crabbe, Mark D. Wrist band. 349,387, 8-9-94, Cl. D2-610.000.

Daniel, Larry A. Game board. 349,523, 8-9-94, Cl. D21-35.000.

Daniller, Boruch H. Adjustable picture hook unit. 349,447, 8-9-94, Cl. D8-367.000.

Dao, Kim C.: *See—*
Jagnandan, Indradat; and Dao, Kim C., 349,572, Cl. D24-110.000.

Date, Toshinori, to Sega Enterprises, Ltd. Controller for TV game machine. 349,527, 8-9-94, Cl. D21-48.000.

Daynes, John C.: *See—*
Weaver, Robert J.; Daynes, John C.; Brittingham, Dennis C.; and Merry, Rodney J., 349,483, Cl. D13-103.000.

DeMichele, Christopher J., to Centsible Designs, Inc. Golf accessory carrying device. 349,549, 8-9-94, Cl. D21-234.000.

Di Paolo, Anthony M.; and Hood, John T. Check holder for key chain. 349,399, 8-9-94, Cl. D3-208.000.

Doskocil Manufacturing Company, Incorporated: *See—*
Fiore, Joseph F., 349,402, Cl. D3-255.000.

Douglas, Dennis. Tape square with level. 349,462, 8-9-94, Cl. D10-62.000.

Dowse, Kent A.; and Lacy, Christopher A., to Pearl Baths, Inc. Whirlpool bathtub. 349,560, 8-9-94, Cl. D23-277.000.

Dowse, Kent A.; and Lacy, Christopher A., to Pearl Baths, Inc. Whirlpool bathtub. 349,561, 8-9-94, Cl. D23-277.000.

Dudley Kebow, Inc.: *See—*
Kibbe, Marcus W., 349,432, Cl. D7-679.000.

Duracraft Corporation: *See—*
O'Grady, Richard M., 349,566, Cl. D23-364.000.

Dynetics Engineering Corporation: *See—*
Hill, Jeffery L.; Hill, Gregory S.; Schreiber, James W.; and Knoll, James P., 349,505, Cl. D15-145.000.

E. Mishan & Sons, Inc.: *See—*
Mishan, Eddie, 349,393, Cl. D2-961.000.

El-Assir, John O. Flower air freshner. 349,568, 8-9-94, Cl. D23-367.000.

El-Assir, John O. Palm tree air freshener. 349,569, 8-9-94, Cl. D23-367.000.

Elowitz, Ronald S.: *See—*
Pender, John C., IV; Elowitz, Ronald S.; McBride, Robert T., Jr.; Norman, Gary J.; and Uhl, Thomas R., Jr., 349,470, Cl. D11-143.000.

Empire Trading Card Company: *See—*
Falkiner, Ray; and Falkiner, Lance, 349,525, Cl. D21-42.000.

Enduro Corporation: *See—*
Stoll, Roger, 349,592, Cl. D32-46.000.

Ethan Allen Inc.: *See—*
Stone, Philip; and Stout, Craig, 349,413, Cl. D6-380.000.

Excel, Inc.: *See—*
Roy, Christopher E., 349,503, Cl. D14-241.000.

Ezzo, James P. Combination money clip and key holder. 349,398, 8-9-94, Cl. D3-208.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Fabijan, Vilko: *See—*
Cehovin, Iztok; and Fabijan, Vilko, 349,545, Cl. D21-221.000.

Fairform Mfg. Co., Ltd.: *See—*
Huen, Hing-Wah, 349,557, Cl. D23-223.000.

Falkiner, Lance: *See—*
Falkiner, Ray; and Falkiner, Lance, 349,525, Cl. D21-42.000.

Falkiner, Ray; and Falkiner, Lance, to Empire Trading Card Company. Set of playing face cards. 349,525, 8-9-94, Cl. D21-42.000.

Fallon, Daniel J. Sport seat. 349,412, 8-9-94, Cl. D6-374.000.

Fan, Yuan-Neng, to Comrise Electronics Co., Ltd. Calling party identifying apparatus. 349,501, 8-9-94, Cl. D14-240.000.

Fan, Yuan-Neng, to Comrise Electronics Co., Ltd. Calling party identifying apparatus. 349,502, 8-9-94, Cl. D14-240.000.

Ferger, John A., to Fields, Herman. Water fountain. 349,556, 8-9-94, Cl. D7-301.000.

Fields, Herman: *See—*
Ferger, John A., 349,556, Cl. D7-301.000.

Fildan, Gerhard. Garment closure. 349,473, 8-9-94, Cl. D11-212.000.

Fiore, Joseph F., to Doskocil Manufacturing Company, Incorporated. Golf bag case. 349,402, 8-9-94, Cl. D3-255.000.

Fleming, Terry, to Manta Surfing Products. Swim fin. 349,552, 8-9-94, Cl. D21-239.000.

Flexbar Machine Corp.: *See—*
Bookwalter, John R.; and Adler, David T., 349,573, Cl. D24-128.000.

Flom, Jay L.: *See—*
Malmborg, Richard D.; Hodan, Robert J.; and Flom, Jay L., 349,417, Cl. D7-306.000.

Fluid Management Limited Partnership: *See—*
Caruso, James F.; Vollendorf, Kim D.; Lantz, Gregory W.; and Herbst, Walter B., 349,506, Cl. D15-199.000.

Forestal, Robert J.: *See—*
Kays, H. Terrell; and Forestal, Robert J., 349,425, Cl. D7-553.000.

Friedman, Alan H., to Mohasco Upholstered Furniture Corporation. Sofa. 349,414, 8-9-94, Cl. D6-381.000.

Friedman, Frank: *See—*
Bain, Charles E.; and Friedman, Frank, 349,582, Cl. D26-61.000.

Fukutome, Satoshi, to Sharp Kabushiki Kaisha. Combined digital audio disc player, radio tuner and tape player. 349,498, 8-9-94, Cl. D14-168.000.

Fun Bunch Inc., The: *See—*
Amram, Roger, 349,518, Cl. D21-5.000.
White, Philip, 349,407, Cl. D4-118.000.

Funai Electric Co., Ltd.: *See—*
Kaneko, Takuji, 349,422, Cl. D7-376.000.

Goad, Eugine W., to Industrial Design & Engineering Associates Inc. Electric food warming vessel for restaurants and cafeterias. 349,421, 8-9-94, Cl. D7-366.000.

Goldberg, Alan E., to Mobil Oil Corporation. Service station canopy. 349,579, 8-9-94, Cl. D25-56.000

Goldstar Co., Ltd.: *See—*
Bak, Wun S., 349,495, Cl. D14-126.000.

Goldstein, Eric: *See—*
Hand, Peter H.; Saunders, William J.; and Goldstein, Eric, 349,540, Cl. D21-191.000

Gotlund, Sandra L. Pencil case. 349,514, 8-9-94, Cl. D19-83.000.

Griffin, John; and Meland, Ronald F., to McCulloch Corporation. Hedge trimmer housing. 349,436, 8-9-94, Cl. D8-8.000.

Halaby, Samia A., to Visibility Systems Connecticut Limited Partnership. Portable electronic flasher. 349,467, 8-9-94, Cl. D10-114.000.

Hand, Peter H.; Saunders, William J.; and Goldstein, Eric, to Aqua Step Corporation. Aquatic step exerciser. 349,540, 8-9-94, Cl. D21-191.000.

Handke, Patrick M. Mask. 349,586, 8-9-94, Cl. D24-110.400.

Harris, Wright E., III; and . Chess board. 349,521, 8-9-94, Cl. D21-23.000.

Hasuike, Makio, to WMF Wuerttembergische Metallwarenfabrik Aktiengesellschaft. Set of cookware. 349,420, 8-9-94, Cl. D7-360.000.

Hatfield, Tinker L., to Nike, Inc. Shoe upper. 349,394, 8-9-94, Cl. D2-969.000.

Hatfield, Tinker L., to Nike, Inc. Shoe upper. 349,396, 8-9-94, Cl D2-970.000.

Heiligenstein, Luc M. D.; Langmar, Peter S.; and Melamed, Stephen B., to Sunbeam Corporation. Massager. 349,576, 8-9-94, Cl. D24-211.000.

Henny Penny Corporation: *See—*
Koopman, Peter J., 349,419, Cl. D7-338.000.

Hensley, Connie M. Leaf net. 349,593, 8-9-94, Cl. D34-1.000.

Henszey, Richard R.; and Rommelfaenger, Eugene R., to Sentry Equipment Corp. Steam sample cooler. 349,563, 8-9-94, Cl. D23-314.000.

Herbst, Walter B.: *See—*
Caruso, James F.; Vollendorf, Kim D.; Lantz, Gregory W.; and Herbst, Walter B., 349,506, Cl. D15-199.000.

Hill, David W.: *See—*
Aderman, Wayne L.; and Hill, David W., 349,488, Cl. D14-109.000.
Aderman, Wayne L.; and Hill, David W., 349,494, Cl. D14-115.000.

Hill, Gregory S.: *See—*
Hill, Jeffery L.; Hill, Gregory S.; Schreiber, James W.; and Knoll, James P., 349,505, Cl. D15-145.000.

Hill, Jeffery L.; Hill, Gregory S.; Schreiber, James W.; and Knoll, James P., to Dynetics Engineering Corporation. Embossed car package production system. 349,505, 8-9-94, Cl. D15-145.000.

Himuro, Yasuo, to Bridgestone Corporation. Automobile tire. 349,478, 8-9-94, Cl. D12-151.000.

Hino, Shinsaku: *See—*
Sakaguchi, Hiroshi; and Hino, Shinsaku, 349,511, Cl. D18-7.000.

Hitachi Construction Machinery Co., Ltd.: *See—*
Nakashima, Hiroaki; Utsuki, Toshiyuki; Wada, Toshihiko; Arima, Yukio; and Miyata, Tohru, 349,464, Cl. D10-75.000.

Hodan, Robert J.: *See—*
Malmborg, Richard D.; Hodan, Robert J.; and Flom, Jay L., 349,417, Cl. D7-306.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kigoshi, Yoshikazu; and Nakamura, Kazushi, 349,479, Cl. D12-169.000.

Hood, John T.: *See—*
Di Paolo, Anthony M.; and Hood, John T., 349,399, Cl. D3-208.000.

Horner, Neal W.; and Jasinski, Joseph E., to International Business Machines Corp. Data collection terminal. 349,487, 8-9-94, Cl. D14-100.000.

Howard, Paul L.; and Backs, Jochen P., to OSD Envizion Company. Welding lens assembly. 349,588, 8-9-94, Cl. D29-110.000

Huen, Hing-Wah, to Fairform Mfg. Co., Ltd. Shower head. 349,557, 8-9-94, Cl. D23-223.000.

Hula Family Products, Inc.: *See—*
Stimac, Raymond, 349,452, Cl. D9-316.000.

Industrial Design & Engineering Associates Inc.: *See—*
Goad, Eugine W., 349,421, Cl. D7-366.000.

Innovative Designs: *See—*
Kapp, Gregory W., 349,581, Cl. D26-28.000.

Interlego, A. G.: *See—*
Knudsen, Jens N., 349,529, Cl. D21-141.000.
Ruszkai, Ede F., 349,528, Cl. D21-108.000.

Interlego, A.G.: *See—*
Knudsen, Jens N., 349,539, Cl. D21-189.000.
Pedersen, Niels M.; and Knudsen, Jens N., 349,530, Cl. D21-148.000.
Pedersen, Niels M., 349,534, Cl. D21-189.000.
Pedersen, Niels M., 349,535, Cl. D21-189.000.
Pedersen, Niels M., 349,536, Cl. D21-189.000.
Pedersen, Niels M., 349,538, Cl. D21-189.000
Spangsberg, Stig Alexander M.; and Ron, Carsten, 349,537, Cl. D21-189.000

International Business Machines Corporation: *See—*
Aderman, Wayne L.; and Hill, David W., 349,488, Cl. D14-109.000.
Aderman, Wayne L.; and Hill, David W., 349,494, Cl. D14-115.000.
Horner, Neal W.; and Jasinski, Joseph E., 349,487, Cl. D14-100.000.

ITT Corporation: *See—*
Williams, George M., Jr.; Palmer, Gary L.; and Popow, John D., 349,509, Cl. D16-130.000.

Iwakami, Yoshiaki, to Sega Enterprises, Ltd. TV game machine. 349,520, 8-9-94, Cl. D21-13.000.

J. B. Goodhouse, Inc.: *See—*
Svec, Roy M., 349,516, Cl. D20-42.000.

Jacobs, Steve. Burglar alarm for doors. 349,465, 8-9-94, Cl. D10-106.000.

Jagnandan, Indradat; and Dao, Kim C., to Schering Corporation. Aerosol inhaler. 349,572, 8-9-94, Cl. D24-110.000.

Jasinski, Joseph E.: *See—*
Horner, Neal W.; and Jasinski, Joseph E., 349,487, Cl. D14-100.000.

Johnston, Jed G., to Vermont American Corp. Saw blade. 349,440, 8-9-94, Cl. D8-70.000.

Johnston, Jed G., to Vermont American Corp. Saw Blade. 349,441, 8-9-94, Cl. D8-70.000.

Johnston, Jed G., to Vermont American Corp. Saw blade. 349,442, 8-9-94, Cl. D8-70.000.

Johnston, Jed G., to Vermont American Corp. Saw blade. 349,443, 8-9-94, Cl. D8-70.000.

Kalman, Jeffrey M.: *See—*
Nottingham, John R.; Spirk, John W., Jr.; Kalman, Jeffrey M.; and Coyne, Patrick J., 349,457, Cl. D9-415.000.

Kaneko, Takuji, to Funai Electric Co., Ltd. Kneading machine. 349,422, 8-9-94, Cl. D7-376.000.

Kapp, Gregory W., to Innovative Designs. Housing for vehicle interior gimballed light. 349,581, 8-9-94, Cl. D26-28.000.

Kaufman, Richard H.: *See—*
Kostanecki, Andrew T.; Brainard, Robert H.; and Kaufman, Richard H., 349,455, Cl. D9-337.000.

Kawamoto, Tetsuhisa, to AIWA Co., Ltd. Mini-disk deck. 349,497, 8-9-94, Cl. D14-156.000.

Kays, H. Terrell; and Forestal, Robert J. Snack tray. 349,425, 8-9-94, Cl. D7-553.000.

Kelchak, Michelle, to L.A. Gear, Inc. Shoe upper. 349,395, 8-9-94, Cl. D2-970.000.

Keller, Frederick J., Jr.: *See—*
Burns, Larry D.; and Keller, Frederick J., Jr., 349,565, Cl. D23-354.000.

Kibbe, Marcus W., to Dudley Kebow, Inc. Illuminated battery-operated peppermill. 349,432, 8-9-94, Cl. D7-679.000.

Kigoshi, Yoshikazu; and Nakamura, Kazushi, to Honda Giken Kogyo Kabushiki Kaisha. Automobile front bumper. 349,479, 8-9-94, Cl. D12-169.000.

Killian, Laurie W., to Uniroyal Goodrich Tire Company, The. Tire. 349,476, 8-9-94, Cl. D12-147.000.

King Packaging, Inc.: *See—*
Wilson, Phillip S., 349,456, Cl. D9-347.000.

Knoll, James P.: *See—*
Hill, Jeffery L.; Hill, Gregory S.; Schreiber, James W.; and Knoll, James P., 349,505, Cl. D15-145.000.

Knudsen, Jens N., to Interlego, A. G. Wheel for a toy vehicle. 349,529, 8-9-94, Cl. D21-141.000.

Knudsen, Jens N., to Interlego, A.G. Wing for a toy dragon. 349,539, 8-9-94, Cl. D21-189.000.

Knudsen, Jens N.: *See—*
Pedersen, Niels M.; and Knudsen, Jens N., 349,530, Cl. D21-148.000.

Kobelt, Jacob. Portable marine control unit. 349,482, 8-9-94, Cl. D12-317.000.

Kobs, Elmar. Wrist watch. 349,460, 8-9-94, Cl. D10-32.000.

Kohler Co.: *See—*
Bengtson, Alan D., 349,562, Cl. D23-283.000.

Koopman, Peter J., to Henny Penny Corporation. Rotisserie oven. 349,419, 8-9-94, Cl. D7-338.000.

Kostanecki, Andrew T.; and Brainard, Robert H., to Kraft General Foods, Inc. Beverage container. 349,418, 8-9-94, Cl. D7-312.000.

Kostanecki, Andrew T.; Brainard, Robert H.; and Kaufman, Richard H., to Kraft General Foods, Inc. Beverage container. 349,455, 8-9-94, Cl. D9-337.000.

Koulopoulos, Michael A., to Vimak Corporation. Digital-to-analog converter housing. 349,500, 8-9-94, Cl. D14-217.000.

Kraft General Foods, Inc.: *See—*
Kostanecki, Andrew T.; and Brainard, Robert H., 349,418, Cl. D7-312.000.
Kostanecki, Andrew T.; Brainard, Robert H.; and Kaufman, Richard H., 349,455, Cl. D9-337.000.

Kroko, Peter A.: *See—*
Stopyra, Stephen; Thompson, Gary D.; and Kroko, Peter A., 349,564, Cl. D23-354.000.

Krugman, Kenneth J. Beverage can cooler tote. 349,428, 8-9-94, Cl. D7-607.000.

Kuzumoto, Hiroyuki; Odagiri, Masashi; Yamaguchi, Motoharu; and Sakai, Akira, to NEC Corporation. Double capacity battery for portable personal computer. 349,484, 8-9-94, Cl. D13-103.000.

L.A. Gear, Inc.: *See—*
Kelchak, Michelle, 349,395, Cl. D2-970.000.
Yang, Jean S., 349,391, Cl. D2-951.000.

Lacy, Christopher A.: *See—*
Dowse, Kent A.; and Lacy, Christopher A., 349,560, Cl. D23-277.000.
Dowse, Kent A.; and Lacy, Christopher A., 349,561, Cl. D23-277.000.

Langmar, Peter S.: *See—*
Heiligenstein, Luc M. D.; Langmar, Peter S.; and Melamed, Stephen B., 349,576, Cl. D24-211.000.

Lanna, Paulo; Bruce, Rob; and Smith, Martin, to Sun Sport Optics, Inc. Eyeglasses. 349,507, 8-9-94, Cl. D16-314.000.

Lantz, Gregory W.: *See—*
Caruso, James F.; Vollendorf, Kim D.; Lantz, Gregory W.; and Herbst, Walter B., 349,506, Cl. D15-199.000.

Law, Yau K. J. Combined writing instrument and top. 349,512, 8-9-94, Cl. D19-36.000.

Lepp, Victor J. Table leg caster. 349,448, 8-9-94, Cl. D8-375.000.

Leu, Carl W., to Poli-Auto, Inc. License plate holder. 349,480, 8-9-94, Cl. D12-193.000.

Lindley, David; and Lindley, Paul. Game board. 349,522, 8-9-94, Cl. D21-33.000.

Lindley, Paul: *See—*
Lindley, David; and Lindley, Paul, 349,522, Cl. D21-33.000.

Linner, Hans, to Norden Pac Development AB. Tube. 349,449, 8-9-94, Cl. D9-302.000.

MacDougall, Alexandar S. Stepped golf club driver head. 349,543, 8-9-94, Cl. D21-214.000.

MacDougall, Alexander S. Golf club handle. 349,546, 8-9-94, Cl. D21-222.000.

Malmborg, Richard D.; Hodan, Robert J.; and Flom, Jay L., to Clorox Company, The. Water cooler. 349,417, 8-9-94, Cl. D7-306.000.

Manta Surfing Products: *See—*
Fleming, Terry, 349,552, Cl. D21-239.000.

Marantz-Japan Inc.: *See—*
Sato, Mineo, 349,496, Cl. D14-156.000.

Marriott, Chris; and White, Stephen. Chair frame. 349,411, 8-9-94, Cl. D6-358.000.

Maven Labs, Inc.: *See—*
Bertolucci, Lawrence E.; and Bertolucci, Joan M., 349,541, Cl. D21-191.000.

McBride, Robert T., Jr.: *See—*
Pender, John C., IV; Elowitz, Ronald S.; McBride, Robert T., Jr.; Norman, Gary J.; and Uhl, Thomas R., Jr., 349,470, Cl. D11-143.000.

McCulloch Corporation: *See—*
Griffin, John; and Meland, Ronald F., 349,436, Cl. D8-8.000.

McGregor, Robert R. Football cover figure. 349,531, 8-9-94, Cl. D21-155.000.

Melamed, Stephen B.: *See—*
Heiligenstein, Luc M. D.; Langmar, Peter S.; and Melamed, Stephen B., 349,576, Cl. D24-211.000.

Meland, Ronald F.: *See—*
Griffin, John; and Meland, Ronald F., 349,436, Cl. D8-8.000.

Merritt, Thomas C. Combination ear protector and cheering aid. 349,571, 8-9-94, Cl. D24-106.000.

Merry, Rodney J.: *See—*
Weaver, Robert J.; Daynes, John C.; Brittingham, Dennis C.; and Merry, Rodney J., 349,483, Cl. D13-103.000.

Merwin, Jack, to Tudor Development Corporation. Filter holder. 349,427, 8-9-94, Cl. D7-601.000.

Metcalf, Gerald L.; Plyley, Alan K.; and Barker, John M., to Minnesota Mining and Manufacturing Company. Trocar. 349,574, 8-9-94, Cl. D24-146.000.

MicroComputer Accessories, Inc.: *See—*
Pohlman, J. Kipton; and Westland, Donald, 349,515, Cl. D19-21.000.

MicroMed Systems, Inc.: *See—*
Copper, John M.; and Bally, Alex, 349,491, Cl. D14-114.000.

Midas-Lin Co., Ltd.: *See—*
Peng, Jeff, 349,397, Cl. D3-10.000.

Miller, D. Scott, to Rubbermaid Incorporated. Fish applique. 349,409, 8-9-94, Cl. D5-65.000.

Miller, John D.; and Williamson, Kenneth M., to Pall Corporation. Cylindrical filter element. 349,567, 8-9-94, Cl. D23-365.000.

Minnesota Mining and Manufacturing Company: *See—*
Metcalf, Gerald L.; Plyley, Alan K.; and Barker, John M., 349,574, Cl. D24-146.000.

Mishan, Eddie, to E. Mishan & Sons, Inc. Fluid filled insole. 349,393, 8-9-94, Cl. D2-961.000.

Mitchell, Mercer E. Adjustable Christmas tree carrier. 349,469, 8-9-94, Cl. D11-130.000.

Miyata, Tohru: *See—*
Nakashima, Hiroaki; Utsuki, Toshiyuki; Wada, Toshihiko; Arima, Yukio; and Miyata, Tohru, 349,464, Cl. D10-75.000.

Mizukawa, Suehiro; Ogawa, Naoki; and Ohtani, Susumu. Band-blade bender for a band-blade bending machine. 349,504, 8-9-94, Cl. D15-138.000.

Mobil Oil Corporation: *See—*
Goldberg, Alan E., 349,579, Cl. D25-56.000.

Mock, Joan: *See—*
Mock, Robert; and Mock, Joan, 349,437, Cl. D8-14.000.

Mock, Robert; and Mock, Joan. Carrier for large sheets of material. 349,437, 8-9-94, Cl. D8-14.000.

Mocur, Paul. Solid back insert for a wheelchair. 349,474, 8-9-94, Cl. D12-133.000.

Mocur, Paul. Wheelchain solid back insert having lumbar support pad. 349,475, 8-9-94, Cl. D12-133.000.

Mohasco Upholstered Furniture Corporation: *See—*
Friedman, Alan H., 349,414, Cl. D6-381.000.

Morales-Rivera, Manuel, to Commonwealth of Puerto Rico. Foldable garment hanger having storage spaces. 349,410, 8-9-94, Cl. D6-316.000.

Morehead, Richard D. Insulated container holder. 349,429, 8-9-94, Cl. D7-605.000.

Morishima, Takashi, to Casio Computer Co., Ltd. Wrist watch. 349,461, 8-9-94, Cl. D10-38.000.

Motorola, Inc.: *See—*
Richards, Scott H.; and Siddoway, Craig F., 349,485, Cl. D13-107.000.

Nakamura, Kazushi: *See—*
Kigoshi, Yoshikazu; and Nakamura, Kazushi, 349,479, Cl. D12-169.000.

Nakanishi, Yutaka, to Yonezawa Corporation. Distribution unit for multiple controllers for video games. 349,526, 8-9-94, Cl. D21-48.000.

Nakashima, Hiroaki; Utsuki, Toshiyuki; Wada, Toshihiko; Arima, Yukio; and Miyata, Tohru, to Hitachi Construction Machinery Co., Ltd. Ultrasonic flaw detector system. 349,464, 8-9-94, Cl. D10-75.000.

Nationalpak Limited: *See—*
Au, Ho C., 349,553, Cl. D9-422.000.

NEC Corporation: *See—*
Kuzumoto, Hiroyuki; Odagiri, Masashi; Yamaguchi, Motoharu; and Sakai, Akira, 349,484, Cl. D13-103.000.

Neff, James T. Combined control panel and automobile message display sign. 349,517, 8-9-94, Cl. D20-42.000.

Nike, Inc.: *See—*
Hatfield, Tinker L., 349,394, Cl. D2-969.000.
Hatfield, Tinker L., 349,396, Cl. D2-970.000.

Noel, Sherrie, to Vans, Inc. Shoe sole. 349,392, 8-9-94, Cl. D2-957.000.

Norden Pac Development AB: *See—*
Linner, Hans, 349,449, Cl. D9-302.000.

Norman, Gary J.: *See—*
Pender, John C., IV; Elowitz, Ronald S.; McBride, Robert T., Jr.; Norman, Gary J.; and Uhl, Thomas R., Jr., 349,470, Cl. D11-143.000.

Norris, Daniel A., to Alabaster Industries, Inc. Snack tray. 349,426, 8-9-94, Cl. D7-553.000.

Nottingham, John R.; Spirk, John W., Jr.; Kalman, Jeffrey M.; and Coyne, Patrick J., to Nottingham-Spirk Design Associates, Inc. Package for a toy. 349,457, 8-9-94, Cl. D9-415.000.

Nottingham-Spirk Design Associates, Inc.: *See—*
Nottingham, John R.; Spirk, John W., Jr.; Kalman, Jeffrey M.; and Coyne, Patrick J., 349,457, Cl. D9-415.000.

Odagiri, Masashi: *See—*
Kuzumoto, Hiroyuki; Odagiri, Masashi; Yamaguchi, Motoharu; and Sakai, Akira, 349,484, Cl. D13-103.000.

Ogawa, Naoki: *See—*
Mizukawa, Suehiro; Ogawa, Naoki; and Ohtani, Susumu, 349,504, Cl. D15-138.000.

O'Grady, Richard M., to Duracraft Corporation. Air purifier. 349,566, 8-9-94, Cl. D23-364.000.

Ohtani, Susumu: *See—*
Mizukawa, Suehiro; Ogawa, Naoki; and Ohtani, Susumu, 349,504, Cl. D15-138.000.

Olswanger, Gary. Growing plant pole. 349,472, 8-9-94, Cl. D11-164.000.

VOL 1165 ISS 2 AG 9 1994 UMI

Oneida, Ltd.: *See—*
Richmond, Colin B., 349,430, Cl. D7-661.000.
Richmond, Colin B., 349,431, Cl. D7-661.000.

Oregon Precision Industries, Inc.: *See—*
Borg, James C., 349,459, Cl. D9-455.000.

OSD Envizion Company: *See—*
Howard, Paul L.; and Backs, Jochen P., 349,588, Cl. D29-110.000

Owens, R. Larry. Dispenser with pointer for externally monitoring cartridge level. 349,438, 8-9-94, Cl. D8-14.100.

P.J. Merpathi Mahkota Sarana: *See—*
Vitrac, Jean P., 349,513, Cl. D19-51.000.

Pacific Handy Cutter, Inc.: *See—*
Schmidt, Gregory G., 349,444, Cl. D8-98.000.

Pall Corporation: *See—*
Miller, John D.; and Williamson, Kenneth M., 349,567, Cl. D23-365.000.

Palmer, Gary L.: *See—*
Williams, George M., Jr.; Palmer, Gary L.; and Popow, John D., 349,509, Cl. D16-130.000.

Pearl Baths, Inc.: *See—*
Dowse, Kent A.; and Lacy, Christopher A., 349,560, Cl. D23-277.000.
Dowse, Kent A.; and Lacy, Christopher A., 349,561, Cl. D23-277.000.

Pedersen, Niels M.; and Knudsen, Jens N., to Interlego, A.G. Toy dragon. 349,530, 8-9-94, Cl. D21-148.000.

Pedersen, Niels M., to Interlego, A.G. Arm for a toy dragon. 349,534, 8-9-94, Cl. D21-189.000.

Pedersen, Niels M., to Interlego, A.G. Upper jaw for a toy dragon. 349,535, 8-9-94, Cl. D21-189.000.

Pedersen, Niels M., to Interlego, A.G. Tail for a toy dragon. 349,536, 8-9-94, Cl. D21-189.000.

Pedersen, Niels M., to Interlego, A.G. Body for a toy dragon. 349,538, 8-9-94, Cl. D21-189.000.

Pender, John C., IV; Elowitz, Ronald S.; McBride, Robert T., Jr.; Norman, Gary J.; and Uhl, Thomas R., Jr., to Schering-Plough Healthcare Products, Inc. Easter greenhouse. 349,470, 8-9-94, Cl. D11-143.000.

Peng, Jeff, to Midas-Lin Co., Ltd. Umbrella stand. 349,397, 8-9-94, Cl. D3-10.000.

Peterson, Randy, to Ashley Furniture Indusries, Inc. Table. 349,415, 8-9-94, Cl. D6-480.000.

Philippi, Verena, to Sigikid H. Scharrer & Koch GmbH. Toy bear. 349,532, 8-9-94, Cl. D21-159.000.

Phillips, William G. A visor attachment for a cap. 349,389, 8-9-94, Cl. D2-893.000.

Physio-Control Corporation: *See—*
Weaver, Robert J.; Daynes, John C.; Brittingham, Dennis C.; and Merry, Rodney J., 349,483, Cl. D13-103.000.

Plyley, Alan K.: *See—*
Metcalf, Gerald L.; Plyley, Alan K.; and Barker, John M., 349,574, Cl. D24-146.000.

Pohlman, J. Kipton; and Westland, Donald, to MicroComputer Accessories, Inc. Adjustable copyholder. 349,515, 8-9-94, Cl. D19-88.000.

Poisson, Douglas. Transparent watertight plastic carrying bag with end pockets, I.D. slot and removable strap. 349,404, 8-9-94, Cl. D3-276.000.

Poli-Auto, Inc.: *See—*
Leu, Carl W., 349,480, Cl. D12-193.000.

Popow, John D.: *See—*
Williams, George M., Jr.; Palmer, Gary L.; and Popow, John D., 349,509, Cl. D16-130.000.

Portasilo Limited: *See—*
Tagg, Richard L., 349,578, Cl. D25-16.000.

Primasacs, Societe Anonyme: *See—*
Sagnard, Andre, 349,451, Cl. D9-305.000.

Quick Point, Inc.: *See—*
Bearinger, Wells S., 349,400, Cl. D3-208.000.

Radtke, Leroy F., Jr., to Circulair, Inc. Small electric fan. 349,570, 8-9-94, Cl. D23-382.000.

Ransburg Corporation: *See—*
Vanderhoef, John P.; and Wheeler, Roger D., 349,559, Cl. D23-227.000.

Reeves, Richard A. Golf equipment holder. 349,550, 8-9-94, Cl. D21-234.000.

Reflector Hardware Corporation: *See—*
Bain, Charles E.; and Friedman, Frank, 349,582, Cl. D26-61.000.

Richards, Scott H.; and Siddoway, Craig F., to Motorola, Inc. Battery charger for a rechargeable radio battery. 349,485, 8-9-94, Cl. D13-107.000.

Richmond, Colin B., to Oneida, Ltd. Spoon. 349,430, 8-9-94, Cl. D7-661.000.

Richmond, Colin B., to Oneida, Ltd. Spoon. 349,431, 8-9-94, Cl. D7-661.000.

Rizzuto, Leandro P., Jr., to Conair Corporation. Reversible diffuser for a hair dryer. 349,585, 8-9-94, Cl. D28-18.000.

Rommelfaenger, Eugene R.: *See—*
Henszey, Richard R.; and Rommelfaenger, Eugene R., 349,563, Cl. D23-314.000.

Ron, Carsten: *See—*
Spangsberg, Stig Alexander M.; and Ron, Carsten, 349,537, Cl. D21-189.000.

Roy, Christopher E., to Excel, Inc. Telecommunications switch. 349,503, 8-9-94, Cl. D14-241.000.

Rubbermaid Incorporated: *See—*
Miller, D. Scott, 349,409, Cl. D5-65.000.

Russell, Keith A. Stepping exerciser. 349,542, 8-9-94, Cl. D21-194.000.

Russo, Leo V. Support for star decoration. 349,471, 8-9-94, Cl. D11-164.000.

Ruszkai, Ede F., to Interlego, A. G. Electric switch for a toy train set. 349,528, 8-9-94, Cl. D21-108.000.

Sage, George E. Battery Charger for an elongated battery. 349,486, 8-9-94, Cl. D13-107.000.

Sagnard, Andre, to Primasacs, Societe Anonyme. Sack. 349,451, 8-9-94, Cl. D9-305.000.

Sakaguchi, Hiroshi; and Hino, Shinsaku, to Sharp Kabushiki Kaisha. Multi-function electronic calculator. 349,511, 8-9-94, Cl. D18-7.000.

Sakai, Akira: *See—*
Kuzumoto, Hiroyuki; Odagiri, Masashi; Yamaguchi, Motoharu; and Sakai, Akira, 349,484, Cl. D13-103.000.

Santos S.A.: *See—*
Burgel, Christian, 349,423, Cl. D7-378.000.

Sato, Mineo, to Marantz-Japan Inc. CD player. 349,496, 8-9-94, Cl. D14-156.000.

Saunders, William J.: *See—*
Hand, Peter H.; Saunders, William J.; and Goldstein, Eric, 349,540, Cl. D21-191.000.

Sayles, Philip W. Safety shield. 349,577, 8-9-94, Cl. D24-232.000.

Schering Corporation: *See—*
Jagnandan, Indradat; and Dao, Kim C., 349,572, Cl. D24-110.000.

Schering-Plough Healthcare Products, Inc.: *See—*
Pender, John C., IV; Elowitz, Ronald S.; McBride, Robert T., Jr.; Norman, Gary J.; and Uhl, Thomas R., Jr., 349,470, Cl. D11-143.000.

Schlegel, Rodney W. Food catching device for children. 349,424, 8-9-94, Cl. D7-551.000.

Schmidt, Gregory G., to Pacific Handy Cutter, Inc. Utility knife. 349,444, 8-9-94, Cl. D8-98.000.

Schreiber, James W.: *See—*
Hill, Jeffery L.; Hill, Gregory S.; Schreiber, James W.; and Knoll, James P., 349,505, Cl. D15-145.000.

Sega Enterprises, Ltd.: *See—*
Date, Toshinori, 349,527, Cl. D21-48.000.
Iwakami, Yoshiaki, 349,520, Cl. D21-13.000.

Sentry Equipment Corp.: *See—*
Henszey, Richard R.; and Rommelfaenger, Eugene R., 349,563, Cl. D23-314.000.

Shandel Investments Ltd.: *See—*
Watters, Russell W., 349,583, Cl. D26-106.000.

Sharp Kabushiki Kaisha: *See—*
Fukutome, Satoshi, 349,498, Cl. D14-168.000.
Sakaguchi, Hiroshi; and Hino, Shinsaku, 349,511, Cl. D18-7.000.

Shimogori, Kotaro. Table. 349,416, 8-9-94, Cl. D6-482.000.

Shinohara, Kazunori; and Yamakawa, Yukio, to Bridgestone Corporation. Automobile tire. 349,477, 8-9-94, Cl. D12-147.000.

Shumay, John. Golf club organizer. 349,406, 8-9-94, Cl. D3-320.000.

Shumway, Amy: *See—*
Shumway, Craig S.; and Shumway, Amy, 349,453, Cl. D9-329.000.
Shumway, Craig S.; and Shumway, Amy, 349,454, Cl. D9-335.000.

Shumway, Craig S.; and Shumway, Amy. Display package. 349,453, 8-9-94, Cl. D9-329.000.

Shumway, Craig S.; and Shumway, Amy. Container. 349,454, 8-9-94, Cl. D9-335.000.

Siddoway, Craig F.: *See—*
Richards, Scott H.; and Siddoway, Craig F., 349,485, Cl. D13-107.000.

Sieler, Merle J.; and Sieler, Nicholas J., to Utili-Pole, Incorporated. Utility pole. 349,580, 8-9-94, Cl. D25-126.000.

Sieler, Nicholas J.: *See—*
Sieler, Merle J.; and Sieler, Nicholas J., 349,580, Cl. D25-126.000.

Sigikid H. Scharrer & Koch GmbH: *See—*
Philippi, Verena, 349,532, Cl. D21-159.000.

Siket, Donna: *See—*
Siket, George, Jr.; and Siket, Donna, 349,555, Cl. D22-147.000.

Siket, George, Jr.; and Siket, Donna. Fishing pole holder. 349,555, 8-9-94, Cl. D22-147.000.

Sloan, Stewart E. Disposable surgical pants protector. 349,388, 8-9-94, Cl. D2-860.000.

Smith, Martin: *See—*
Lanna, Paulo; Bruce, Rob; and Smith, Martin, 349,507, Cl. D16-314.000.

Snyder, Andrew B. Novelty golf putter. 349,544, 8-9-94, Cl. D21-217.000.

Sony Corporation: *See—*
Tanaka, Souichi, 349,519, Cl. D21-13.000.

Souren, Richard D. Combined wrist watch band and remote watch controls. 349,468, 8-9-94, Cl. D11-3.000.

Spangsberg, Stig Alexander M.; and Ron, Carsten, to Interlego, A.G. Visor for a toy figure. 349,537, 8-9-94, Cl. D21-189.000.

Spirk, John W., Jr.: *See—*
Nottingham, John R.; Spirk, John W., Jr.; Kalman, Jeffrey M.; and Coyne, Patrick J., 349,457, Cl. D9-415.000.

Stimac, Raymond, to Hula Family Products, Inc. Simulative dispensing container. 349,452, 8-9-94, Cl. D9-316.000.

Stoll, Roger, to Enduro Corporation. Scraper. 349,592, 8-9-94, Cl. D32-46.000.

Stone, Philip; and Stout, Craig, to Ethan Allen Inc. Side chair. 349,413, 8-9-94, Cl. D6-380.000.

Stopyra, Stephen; Thompson, Gary D.; and Kroko, Peter A., to Carrier Corporation. Room air conditioner housing comprised of the front, rear, top and side panels. 349,564, 8-9-94, Cl. D23-354.000.

Stout, Craig: *See—*
Stone, Philip; and Stout, Craig, 349,413, Cl. D6-380.000.

Sun Sport Optics, Inc.: *See—*
Lanna, Paulo; Bruce, Rob; and Smith, Martin, 349,507, Cl. D16-314.000.

Sunbeam Corporation: *See—*
Heiligenstein, Luc M. D.; Langmar, Peter S.; and Melamed, Stephen B., 349,576, Cl. D24-211.000.

Svee, Roy M., to J. B. Goodhouse, Inc. Magnetically-mountable phone data board. 349,516, 8-9-94, Cl. D20-42.000.

Tagg, Richard L., to Portasilo Limited. Portable toilet. 349,578, 8-9-94, Cl. D25-16.000.

Tanaka, Souichi, to Sony Corporation. Game machine combined with an optical disc player. 349,519, 8-9-94, Cl. D21-13.000.

Taylor, Richard B. Clip for supporting newly planted trees. 349,435, 8-9-94, Cl. D8-1.000.

Thompson, Gary D.: *See—*
Stopyra, Stephen; Thompson, Gary D.; and Kroko, Peter A., 349,564, Cl. D23-354.000.

Tomita, Saburo, to Asia Optical Co., Ltd. Sight scope. 349,510, 8-9-94, Cl. D16-132.000.

Tran, Bing. Dicer. 349,433, 8-9-94, Cl. D7-693.000.

Tso, Shih-Yang. Clamp for fastening a trackball to a computer keyboard. 349,492, 8-9-94, Cl. D14-114.000.

Tudor Development Corporation: *See—*
Merwin, Jack, 349,427, Cl. D7-601.000.

Uhl, Thomas R., Jr.: *See—*
Pender, John C., IV; Elowitz, Ronald S.; McBride, Robert T., Jr.; Norman, Gary J.; and Uhl, Thomas R., Jr., 349,470, Cl. D11-143.000.

Ultima Electronics Corp.: *See—*
Cheng, Lilian, 349,493, Cl. D14-114.000.

Uniroyal Goodrich Tire Company, The: *See—*
Killian, Laurie W., 349,476, Cl. D12-147.000.

Utili-Pole, Incorporated: *See—*
Sieler, Merle J.; and Sieler, Nicholas J., 349,580, Cl. D25-126.000.

Utsuki, Toshiyuki: *See—*
Nakashima, Hiroaki; Utsuki, Toshiyuki; Wada, Toshihiko; Arima, Yukio; and Miyata, Tohru, 349,464, Cl. D10-75.000.

Vanderhoef, John P.; and Wheeler, Roger D., to Ransburg Corporation. Spray gun handle cover. 349,559, 8-9-94, Cl. D23-227.000.

Vans, Inc.: *See—*
Noel, Sherrie, 349,392, Cl. D2-957.000.

Venice Trading Co.: *See—*
Bonazza, Claudio, 349,594, Cl. D34-20.000.

Verdaguer, Roberto. Display package. 349,458, 8-9-94, Cl. D9-415.000.

Vermont American Corp.: *See—*
Johnston, Jed G., 349,440, Cl. D8-70.000.
Johnston, Jed G., 349,441, Cl. D8-70.000.
Johnston, Jed G., 349,442, Cl. D8-70.000.
Johnston, Jed G., 349,443, Cl. D8-70.000.

Vimak Corporation: *See—*
Koulopoulos, Michael A., 349,500, Cl. D14-217.000.

Visibility Systems Connecticut Limited Partnership: *See—*
Halaby, Samia A., 349,467, Cl. D10-114.000.

Vitrac, Jean P., to P.J. Merpathi Mahkota Sarana. Combined writing instrument and cap therefor. 349,513, 8-9-94, Cl. D19-51.000.

Vollendorf, Kim D.: *See—*
Caruso, James F.; Vollendorf, Kim D.; Lantz, Gregory W.; and Herbst, Walter B., 349,506, Cl. D15-199.000.

Wada, Toshihiko: *See—*
Nakashima, Hiroaki; Utsuki, Toshiyuki; Wada, Toshihiko; Arima, Yukio; and Miyata, Tohru, 349,464, Cl. D10-75.000.

Wales, William B., III. Mailing bag. 349,450, 8-9-94, Cl. D9-305.000.

Wally Armstrong Golf, Inc.: *See—*
Armstrong, Walter E., 349,548, Cl. D21-234.000.

Wang, Jing Y. LCD monitor. 349,489, 8-9-94, Cl. D14-113.000.

Watters, Russell W., to Shandel Investments Ltd. Table lamp. 349,583, 8-9-94, Cl. D26-106.000.

Weaver, Robert J.; Daynes, John C.; Brittingham, Dennis C.; and Merry, Rodney J., to Physio-Control Corporation. Battery pack for use with a medical instrument. 349,483, 8-9-94, Cl. D13-103.000.

Westland, Donald: *See—*
Pohlman, J. Kipton; and Westland, Donald, 349,515, Cl. D19-88.000.

Wheeler, Roger D.: *See—*
Vanderhoef, John P.; and Wheeler, Roger D., 349,559, Cl. D23-227.000.

White, Philip, to Fun Bunch Inc. Combined snow brush and scraper. 349,407, 8-9-94, Cl. D4-118.000.

White, Stephen: *See—*
Marriott, Chris; and White, Stephen, 349,411, Cl. D6-358.000.

Whittaker, Richard E. Golf putting training aid. 349,547, 8-9-94, Cl. D21-234.000.

Williams, George M., Jr.; Palmer, Gary L.; and Popow, John D., to ITT Corporation. Night vision binoculars. 349,509, 8-9-94, Cl. D16-130.000.

Williamson, Kenneth M.: *See—*
Miller, John D.; and Williamson, Kenneth M., 349,567, Cl. D23-365.000.

Wilson, Phillip S., to King Packaging, Inc. Container. 349,456, 8-9-94, Cl. D9-347.000.

WMF Wuerttembergische Metallwarenfabrik Aktiengesellschaft: *See—*
Hasuike, Makio, 349,420, Cl. D7-360.000.

Wolfe, Henry, to Aqua-Leisure Industries, Inc. Recreation floatation device. 349,551, 8-9-94, Cl. D21-237.000.

Woodward, Steven L. Scuba mask. 349,587, 8-9-94, Cl. D24-110.200.

Yamaguchi, Motoharu: *See—*
Kuzumoto, Hiroyuki; Odagiri, Masashi; Yamaguchi, Motoharu; and Sakai, Akira, 349,484, Cl. D13-103.000.

Yamakawa, Yukio: *See—*
Shinohara, Kazunori; and Yamakawa, Yukio, 349,477, Cl. D12-147.000.

Yang, Jean S., to L. A. Gear, Inc. Shoe sole. 349,391, 8-9-94, Cl. D2-951.000.

Yates, William. Insect trap. 349,554, 8-9-94, Cl. D22-119.000.

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Nakanishi, Yutaka, 349,526, Cl. D21-48.000.

York, Richard. Combined body protector and restraint for use in vehicle. 349,589, 8-9-94, Cl. D29-100.000.

VOL 1165 ISS 2 AG 9 1994 UMI

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Bear Creek Gardens, Inc.: *See*—
Olesen, Mogens N.; and Olesen, Pernille, 8,856, Cl. 8.200.
Bloom, Adrian J. R., to Blooms of Bressingham Ltd. Heuchera variety cv. Absi. 8,858, 8-9-94, Cl. 68.100.
Blooms of Bressingham Ltd.: *See*—
Bloom, Adrian J. R., 8,858, Cl. 68.100.
Florfis AG: *See*—
Schumann, Ingeborg, 8,860, Cl. 87.120.
Mak, Johan A., to Mak, Johan A. Lily plant Lilium 'Egypt'. 8,859, 8-9-94, Cl. 87.400.
Olesen, Mogens N.; and Olesen, Pernille, to Bear Creek Gardens, Inc. Miniature rose plant named 'Poulvert'. 8,856, 8-9-94, Cl. 8.200.
Olesen, Pernille: *See*—
Olesen, Mogens N.; and Olesen, Pernille, 8,856, Cl. 8.200.
Schumann, Ingeborg, to Florfis AG. Geranium plant named Fistiffy. 8,860, 8-9-94, Cl. 87.120.
Terra Nigra B.V.: *See*—
Vander Meer, Peter J. A., 8,857, Cl. 12.000.
Vander Meer, Peter J. A., to Terra Nigra B.V. Rose plant named Selargon. 8,857, 8-9-94, Cl. 12.000.

CLASSIFICATION OF PATENTS

ISSUED AUGUST 9, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
[illegible] 5,335,371
16 5,335,372
161.7 5,335,373
214 5,335,370

CLASS 4
255.11 5,335,374
541.1 5,335,375
541.6 5,335,376
578.1 5,335,377
[illegible] 5,335,378
[illegible] 5,335,379

CLASS 5
255 5,335,380
423 5,335,381
454 5,335,382
493 5,335,383
622 5,335,384
[illegible] 5,335,385

CLASS 14
74.5 5,335,386

CLASS 15
102 5,335,387
104.12 5,335,388
167.1 5,335,389
185 5,335,390
236.03 5,335,392
250.41 5,335,393
302 5,335,394
340.1 5,335,395

CLASS [illegible]
[illegible] 5,335,396

CLASS 19
255 5,335,397

CLASS 23
293 R 5,336,271

CLASS [illegible]
67.7 5,335,399
528 5,335,398
712.5 5,335,400
5,335,401

CLASS [illegible]
2 5,335,402

CLASS 29
25.01 5,336,272
173 5,335,403
[illegible] 5,335,405
[illegible] 5,335,404
426.3 5,335,406
5,335,407
447 5,335,408
451 5,335,409
452 5,335,410
512 5,335,411
564.1 5,335,412
593 5,335,413
623.2 5,336,273
623.4 5,336,274
623.5 5,336,275
5,336,276
726 5,335,414
820 5,335,415
[illegible].067 5,335,416

CLASS [illegible]
41.5 5,335,417
266 5,335,418

CLASS 33
[illegible] 5,335,419
[illegible] 5,335,420
494 5,335,421
553 5,335,422
647 5,335,423
834 5,335,424

CLASS 34
80 5,335,426
119 5,335,427
265 5,335,425
625 5,335,428

CLASS 36
7.5 5,335,429
88 5,335,430

CLASS 38
1 B 5,335,431
106 5,335,432

CLASS 40
152 5,335,433
156 5,335,434
395 5,335,435
412 5,335,436

CLASS 42
70.08 5,335,437

CLASS [illegible]
1 5,335,438
6 5,335,439
21.2 5,335,440
42.36 5,335,441
42.37 5,335,442
44.81 5,335,443
57.1 5,335,444
114 5,335,445
125 5,335,446

CLASS [illegible]
343 5,336,277
419 5,336,278

CLASS 47
17 5,335,447
47 5,335,448
48.5 5,335,449

CLASS [illegible]
368 5,335,450
379 5,335,451
463 5,335,452

CLASS [illegible]
67 5,335,453
165.75 5,335,454
170 MT 5,335,455
281 R 5,335,456
284 R 5,335,457
293 5,336,279
5,336,280
307 5,336,281
309 5,336,282
317 5,335,458
439 5,335,459

CLASS 52
11 5,335,460
72 5,335,461
95 5,335,462
167 R 5,335,463
173.1 5,335,464
[illegible].04 5,335,466
645 5,335,467
5,335,468
655.1 5,335,469
[illegible] 5,335,470
727 5,335,471
743 5,335,472
745.08 5,335,473

CLASS [illegible]
282 5,335,474
397 5,335,475
5,335,476
399 5,335,477
412 5,335,478
426 5,335,479
431 5,335,480
[illegible] 5,335,481
[illegible] 5,335,482
451 5,335,483
452 5,335,486
[illegible] 5,335,485
[illegible] 5,335,484

CLASS [illegible]
[illegible] 5,336,283
241 5,336,284
324 5,336,285
528 5,336,286

CLASS [illegible]
10.5 5,335,487

CLASS [illegible]
223 5,335,488

CLASS [illegible]
39.37 5,335,491
230 5,335,489
261 5,335,490
274 5,335,493
[illegible] 5,335,492
428 5,335,494
[illegible] 5,335,495
[illegible] 5,335,496
519 5,335,497
[illegible] 5,335,498
[illegible] 5,335,499
[illegible] 5,335,500
751 5,335,501
752 5,335,502

CLASS 63
6 5,335,505
5,335,506
20 5,335,504
50.1 5,335,503
[illegible] 5,335,510
125 5,335,509
129 5,335,507
5,335,508
174 5,335,511
227 5,335,514
228.3 5,335,513
292 5,335,512
476 5,335,515
[illegible] 5,335,519

CLASS 63
15 B1 4,566,294

CLASS [illegible]
59.5 5,336,287
182.2 5,336,288
334 5,336,289

CLASS [illegible]
108 R 5,335,518
185 5,335,517

CLASS [illegible]
4 5,335,516
12.04 5,335,524
16 5,335,523
23.1 5,335,522

CLASS 70
298 5,335,521
349 5,335,520
370 5,335,525

CLASS 71
13 5,336,290

CLASS 72
47 5,335,526
262 5,335,527
263 5,335,528
402 5,335,530
404 5,335,529
416 5,335,531
422 5,335,533
450 5,335,532

CLASS [illegible]
1 G 5,335,534
40.7 5,335,535
5,335,536
117 5,335,537
118.1 5,335,538
5,335,539
146.5 5,335,540
5,335,541
152 5,335,542
431 5,335,543
517 R 5,335,544
602 5,335,545
[illegible] 5,335,546
5,335,547
[illegible] 5,335,548
[illegible] 5,335,549
727 5,335,550
731 5,335,551
761 Re.34,686
861 5,335,552
861.19 5,335,553
861.73 5,335,554
861.95 5,335,555
[illegible].043 5,335,557
862.21 5,335,556
863.71 Re.34,687
866 5,335,559

CLASS 74
22 R 5,335,560
84 R 5,335,561
329 5,335,562
512 5,335,563
567 5,335,564

CLASS 75
10.18 5,336,291
230 5,336,292
303 5,336,293
406 5,336,294
407 5,336,295
434 5,336,296
725 5,336,297

CLASS [illegible]
125 5,335,569

CLASS [illegible]
[illegible] 5,335,570

CLASS [illegible]
13 5,335,571
74 5,335,572
870 5,335,573

CLASS [illegible]
21 5,335,574
421 5,335,575
602 5,336,844
726 5,336,845
727 5,335,576

CLASS [illegible]
21 5,335,577
45 5,335,578

CLASS [illegible]
34 5,335,579
47 5,335,580
156 5,335,581

CLASS 91
369.3 5,335,582

CLASS 92
13.5 5,335,583
98 R 5,335,584
128 5,335,585
[illegible] 5,335,586
169.2 5,335,587

CLASS [illegible]
49 5,336,298
70 5,336,299
[illegible] 5,336,300

CLASS [illegible]
293 5,335,588
295 5,335,589
479 5,335,590

CLASS [illegible]
116 5,335,591
119 5,335,604
151 5,335,592
153 5,335,605

CLASS [illegible]
35 5,335,594
158 5,335,595
350 5,335,596
485 5,335,597

CLASS [illegible]
218 5,335,598
431 5,335,599
470 5,335,600

CLASS [illegible]
88 R 5,335,601

CLASS [illegible]
168 5,335,602
406.1 5,335,603

CLASS [illegible]
1.18 5,336,301
2 5,336,302
14.05 5,336,303
18.32 5,336,304
19 B 5,336,305
5,336,306
5,336,307
19 R 5,336,308
23 C 5,336,309
[illegible] 5,336,310
416 5,336,311
479 5,336,312
[illegible] 5,336,313
[illegible] 5,336,314
633 5,336,315
724 5,336,316
745 5,336,317
[illegible] 5,336,318

CLASS [illegible]
165 5,335,593
181 5,335,606

CLASS [illegible]
233 5,335,607
[illegible] 5,335,608
346 5,335,609

CLASS 111
136 5,335,610

CLASS [illegible]
153 5,335,611
262.1 5,335,612
412 5,335,613

CLASS 114
71 5,335,614
74 R 5,335,615
172 5,335,616
243 5,335,620

CLASS 116
173 5,335,621
227 5,335,622
323 5,335,623

CLASS 117
42 5,336,362
75 5,336,360

CLASS [illegible]
211 5,336,319
[illegible] 5,336,320
315 5,336,321
410 5,336,322
428 5,336,323
719 5,336,324
5,336,325
723 HC 5,336,326
730 5,336,327

CLASS 119
17 5,335,617
19 5,335,618
51.5 5,335,624
57.4 5,335,619
74 5,335,625
721 5,335,626
[illegible] 5,335,627

CLASS [illegible]
1 R 5,335,628
4 D 5,335,630
32 5,335,629
383 5,335,631

CLASS [illegible]
[illegible] 5,335,632
90.12 5,335,633
188.14 5,335,634
295 5,335,635
321 5,335,636
[illegible] 5,335,637
[illegible] 5,335,638
[illegible] 5,335,639
559.1 5,335,640
574 5,335,641
[illegible] 5,335,642
679 5,335,643

CLASS [illegible]
23.1 5,335,644
88 5,335,645

CLASS [illegible]
350 R 5,335,646

CLASS 127
33 5,336,328

CLASS [illegible]
[illegible] 5,335,647
[illegible] 5,335,648
200.24 5,335,650
202.13 5,335,651
203.14 5,335,652
204.18 5,335,653
204.23 5,335,654
207.16 5,335,655
207.18 5,335,656
632 5,335,658
633 5,335,659
653.3 5,335,660
661.03 5,335,661
[illegible] 5,335,663
662.03 5,335,662
[illegible] 5,335,665
[illegible] 5,335,664
723 5,335,666
734 5,335,667
5,335,668
736 5,335,669
743 5,335,670
753 5,335,671
754 5,335,672
760 5,335,673
782 5,335,674
[illegible] 5,335,675
845 5,335,676
852 5,335,677

CLASS 131
359 5,335,678

CLASS 132
218 5,335,465
270 5,335,679
276 5,335,680

CLASS [illegible]
7 5,336,329
8 5,336,330
22.1 5,336,332
22.11 5,336,331
5,336,333
22.12 5,336,334
64 R 5,335,681
72 5,335,682

CLASS [illegible]
[illegible] 5,335,683
[illegible] 5,335,684
106 5,335,685

CLASS [illegible]
258 5,336,335

CLASS 137
14 5,335,686
15 5,335,687
231 5,335,689
[illegible] 5,335,690
312 5,335,691
614.17 5,335,692
625.26 5,335,693
625.37 5,335,694
627.5 5,335,695
[illegible] 5,335,696

CLASS 138
149 5,335,697

CLASS 139
1 E 5,335,698
82 5,335,699
435.1 5,335,700

CLASS [illegible]
57 5,335,701
105 5,335,702

CLASS 141
20 5,335,703
95 5,335,704
275 5,335,705

CLASS [illegible]
240 5,336,336
301 5,336,337
319 5,336,338

VOL 1165 ISS 2 AG 9 1994 UMI

320 5,336,339
409 5,336,340
415 5,336,341
432 5,336,342
549 5,336,344

CLASS 149

19.9 5,336,343

CLASS 153

410 5,335,706
543 5,335,707

CLASS 156

67 5,336,345
73.4 5,336,346
107 5,336,349
[illegible] 5,336,350
[illegible] 5,336,351
214 5,336,352
221 5,336,347
231 5,336,348
273.7 5,336,353
277 5,336,354
345 5,336,355
5,336,356
391 5,336,357
422 5,336,358
[illegible] 5,336,359
625 5,336,363
630 5,336,364
641 5,336,365
5,336,366
655 5,336,367
[illegible] 5,336,368
659.1 5,336,369
5,336,371
661 5,336,370

CLASS 160

39 5,335,709
118 5,335,710

CLASS 162

5 5,336,372
116 5,336,373
138 5,336,374

CLASS 164

66.1 5,335,711
97 5,335,712
441 5,335,713
[illegible] 5,335,714
475 5,335,715
481 5,335,716
519 5,335,717

CLASS 165

1 5,335,708
42 5,335,718
5,335,719
104.26 5,335,720
122 5,335,721
5,335,722

CLASS 168

173 5,335,723
267 5,335,728
278 5,335,727
291 5,335,725
295 5,335,726
298 5,335,724
[illegible] 5,335,733
313 5,335,732
336 5,335,731
374 5,335,730
381 5,335,729

CLASS 169

15 5,335,734

CLASS 172

707 5,335,735

CLASS 174

17 LF 5,336,847
35 R 5,336,848
40 CC 5,336,846
[illegible] 5,336,849
65 SS 5,336,850
110 A 5,336,851
176 5,336,852
[illegible] 5,336,855

CLASS 175

57 5,335,736
61 5,335,737
420.2 5,335,738

CLASS 177

146 5,336,853
210 FP 5,336,854

CLASS 180

6.3 5,335,739
8.2 5,335,741
19.1 5,335,740
117 5,335,742
178 5,335,743
197 5,335,744
232 5,335,745
248 5,335,746
249 5,335,747
270 5,335,748
274 5,335,749
307 5,335,750
336 5,335,751

CLASS 181

206 5,336,856

CLASS 182

127 5,335,752
181 5,335,753
204 5,335,754

CLASS 187

8.77 5,335,755

CLASS 188

67 5,335,756
299 5,335,757
353 5,335,758

CLASS 190

115 5,335,759

CLASS 192

26 5,335,760
45.1 5,335,761
48.91 5,335,762
85 AA 5,335,763
85 C 5,335,764
107 R 5,335,765

CLASS 196

347.1 5,335,766
365 5,335,767
[illegible] 5,335,776
502.3 5,335,777
750 5,335,778
756 5,335,779
787 5,335,780
834 Re.34,688
5,335,781
836.3 5,335,782
851 5,335,768

CLASS 200

83 R 5,336,858
277 5,336,857
315 5,336,859
332.1 5,336,860
339 5,336,861

CLASS 203

96 5,336,375
182 5,336,376

CLASS 204

29 5,336,377

CLASS 204

64 T 5,336,378
129.3 5,336,379
153.1 5,336,380
180.2 5,336,381
181.6 5,336,382
182.8 5,336,383
252 5,336,384
298.03 5,336,385
298.12 5,336,386
301 5,336,387
406 5,336,388
422 5,336,389
431 5,336,390

CLASS 205

152 5,336,391

CLASS 206

63.3 5,335,775
5,335,783
153 5,335,774
221 5,335,773
328 5,335,771
349 5,335,772
433 5,335,770
438 5,335,769
518 5,335,789
554 5,335,788
564 5,335,787

CLASS 209

120 5,336,393
216 R 5,336,394
403 5,336,395

CLASS 209

3 5,335,786
170 5,335,785
260 5,335,784
518 5,335,790
588 5,335,791
687 5,335,792

CLASS 210

90 5,336,396
143 5,336,398
169 5,336,399
5,336,400
5,336,401
5,336,403
194 5,336,402
232 5,336,405
235 5,336,406
249 5,336,407
384 5,336,408
490 5,336,409
512.1 5,336,410
5,336,411
635 5,336,412
650 5,336,413
698 5,336,414
725 5,336,415
764 5,336,416
799 5,336,418
803 5,336,417

CLASS 211

13 5,335,794
41 5,335,795
45 5,335,796
50 5,335,797
65 5,335,798
5,335,799
78 5,335,804
163 5,335,803

CLASS 213

235 5,335,802
249 5,335,801

CLASS 219

68 5,336,862
69.14 5,336,863
69.18 5,336,864
117.1 5,336,865
400 5,336,867
411 5,336,866
675 5,336,868
687 5,336,869

CLASS 220

269 5,335,808
315 5,335,807
358 5,335,806
[illegible] 5,335,805
425 5,335,809
445 5,335,815
[illegible] 5,335,814
524 5,335,813
709 5,335,812

CLASS 221

10 5,335,810
13 5,335,816
43 5,335,817
45 5,335,811
131 5,335,818
259 5,335,822
279 5,335,800
297 5,335,826

CLASS 222

1 5,335,825
36 5,335,823
[illegible] 5,335,824
83 5,335,821
[illegible] 5,335,820
137 5,335,827
146.6 5,335,819
153 5,335,830
183 5,335,829
195 5,335,828
325 5,335,831
402.13 5,335,832
600 5,335,833

CLASS 234

159 5,335,834
257 5,335,835
329 5,335,836

CLASS 236

110 5,335,837

CLASS 237

132 5,335,838
5,335,839

CLASS 238

149 5,335,841
179.1 5,335,842
180.1 5,335,843

CLASS 239

23 R 5,335,844
120.18 5,335,845
120.32 5,335,846
244 5,335,847

CLASS 242

34 5,335,848
171 5,336,429
174.17 5,336,430
184 5,336,431
186.23 5,336,433
[illegible] 5,336,432
187.21 5,336,434
299.61 5,336,435
5,336,436
301.4 P 5,336,437
311.5 5,336,438
356 5,336,439
373 5,336,440
390 5,336,441
511 5,336,442
5,336,443
[illegible] 5,336,444
513 5,336,445
548 5,336,446
554 5,336,447
[illegible] 5,336,449
583 5,336,448

CLASS 254

271 5,335,895

CLASS 257

6 5,336,901
10 5,336,902
19 5,336,903
23 5,336,904
[illegible] 5,336,905
72 5,336,906
133 5,336,907
173 5,336,908
197 5,336,909
239 5,336,910
273 5,336,911
[illegible] 5,336,912
321 5,336,913
[illegible] 5,336,914
369 5,336,915
377 5,336,916
401 5,336,917
419 5,336,918
435 5,336,919
[illegible] 5,336,920
531 5,336,921
534 5,336,922
596 5,336,923
603 5,336,924
643 5,336,925
657 5,336,926
670 5,336,927
758 5,336,928
772 5,336,929
774 5,336,930
787 5,336,931

CLASS 261

116 5,336,451

CLASS 264

23 5,336,452
57 5,336,453
63 5,336,454
113 5,336,455
157 5,336,456
171 5,336,457
220 5,336,458
223 5,336,459
251 5,336,460
[illegible] 5,336,461
328.1 5,336,462
328.7 5,336,463
340 5,336,464

CLASS 264

236 5,335,896
286 5,335,897

CLASS 269

41 5,335,898
51 5,335,900

CLASS 271

34 5,335,899
117 5,335,901
121 5,335,902
157 5,335,903
272 5,335,904

CLASS 273

[illegible] 5,335,905
55 A 5,335,906
58 H 5,335,907
[illegible] 5,335,908
[illegible] 5,335,909
121 E 5,335,910
140 5,335,911
144 B 5,335,912
164.1 5,335,913
180 5,335,914
186.2 5,335,918
187 R 5,335,915
346 5,335,916
445 5,335,917
735 5,335,919

CLASS 277

1 5,335,920
[illegible] 5,335,921

CLASS 279

9.1 5,335,922

CLASS 280

11.2 5,335,924
16 5,335,925
79.11 5,335,923
117 5,335,926
[illegible] 5,335,941
255 5,335,927
259 5,335,928
283 5,335,929
477 5,335,930
602 5,335,931
675 5,335,933
718 5,335,934
728 A 5,335,936
728 B 5,335,935
5,335,937
5,335,938
5,335,939
737 5,335,940
788 5,335,932

CLASS 283

74 5,335,942

CLASS 285

12 5,335,849
5,335,943
156 5,335,944
236 5,335,945
243 5,335,946
316 5,335,947

CLASS 290

1 R 5,336,932
55 5,336,933

CLASS 292

169.23 5,335,948
338 5,335,949
356 5,335,950

CLASS 293

118 5,335,951

CLASS 294

1.4 5,335,952
19.2 5,335,953
31.2 5,335,954
[illegible] 5,335,955
161 5,335,956

CLASS 296

56 5,335,958
[illegible] 5,335,959
165 5,335,960
213 5,335,961

CLASS 297

35 5,335,967
232 5,335,962
244 5,335,963
250.1 5,335,968
256.13 5,335,964
284.4 5,335,965
287 5,335,966
301 5,335,969
344.22 5,335,970
378.12 5,335,971
423.19 5,335,972
452.63 5,335,975
[illegible] 5,335,957

CLASS 299

39 5,335,976
92 5,335,977

CLASS 303

7 5,335,974
13 5,335,978
100 5,335,979
113.2 5,335,980
113.3 5,335,981
117.1 5,335,982
119.2 5,335,983
5,335,984

CLASS 307

10.1 5,336,934
116 5,336,935
[illegible] 5,336,936
5,336,937
265 5,336,938
269 5,336,939
5,336,940
277 5,336,941
290 5,336,942
310 5,336,943
[illegible] 5,336,944
355 5,336,945
5,336,946

360 5,336,947
443 5,336,948
448 5,336,949
465 5,336,950
5,336,951
571 5,336,952

CLASS 310

50 5,336,953
88 5,336,954
90 5,336,955
156 5,337,030
179 5,336,956
313 D 5,336,957
316 5,336,958
328 5,336,959
369 5,336,960

CLASS 312

9.31 5,335,985
220 5,335,986
323 5,335,987
406.2 5,335,988

CLASS 313

153 5,336,961
402 5,336,962
5,336,963
407 5,336,964
498 5,336,965
532 5,336,966
533 5,336,967
571 5,336,968
580 5,336,969
631 5,336,970
635 5,336,971

CLASS 315

5.41 5,336,972
14 5,336,973
58 5,336,974
111.41 5,336,975
134 5,336,976
159 5,336,977
169.3 5,336,978
248 B1 4,262,233
362 5,336,979

CLASS 318

444 5,336,980
551 5,336,981
568.22 5,336,982
651 5,336,983

CLASS 320

2 5,336,984

CLASS 323

266 5,336,985
268 5,336,986
284 5,336,987

CLASS 324

76.19 5,336,988
115 5,336,989
126 5,336,990
142 5,336,991
158.1 5,336,993
174 5,336,994
5,336,995
207.16 5,336,997
207.2 5,336,996
235 5,336,998
309 5,336,999
5,337,000
318 5,337,001
326 5,337,002
402 5,337,003
505 5,337,004
537 5,337,013
613 5,337,014
632 5,337,016
671 5,337,015
682 5,337,017
693 5,337,018
754 5,336,992

CLASS 328

14 5,337,005

CLASS 330

130 5,337,006
253 5,337,007
5,337,008
5,337,009
255 5,337,010
258 5,337,011
266 5,337,012
277 5,337,019
279 5,337,020
288 5,337,021

CLASS 331

1 A 5,337,022
20 5,337,023

CLASS 331

127 5,337,024

CLASS 333

28 R 5,337,025
150 5,337,026
161 5,337,027
181 5,337,028

CLASS 335

78 5,337,029
201 5,337,031
302 5,337,033

CLASS 336

92 5,337,034

CLASS 337

28 5,337,035
343 5,337,036
363 5,337,037

CLASS 338

22 R 5,337,038

CLASS 340

562 5,337,039
572 5,337,040
573 5,337,041
825.31 5,337,043
825.44 5,337,044
825.52 5,337,045
826.08 5,337,042
944 5,337,046
945 5,337,047
975 5,337,048

CLASS 341

50 5,337,049
100 5,337,050

CLASS 342

13 5,337,051
68 5,337,052
69 5,337,082
90 5,337,053
93 5,337,054
5,337,055
128 5,337,056
176 5,337,057
188 5,337,058
360 5,337,059

CLASS 343

700 MS 5,337,060
702 5,337,061
711 5,337,062
741 5,337,063
767 5,337,065
841 5,337,066

CLASS 345

88 5,337,068
102 5,337,073
109 5,337,077
123 5,337,069
211 5,337,070

CLASS 346

76 L 5,337,072
107 R 5,337,074
5,337,075
108 5,337,076
5,337,078
155 5,337,080

CLASS 347

77 5,337,071
88 5,337,079

CLASS 348

61 5,337,081
234 5,337,152
256 5,337,083
345 5,337,084
383 Re.34,689
398 5,337,085
402 5,337,086
405 5,337,087
420 5,337,088
441 5,337,153
446 5,337,089
448 5,337,154
473 5,337,155
626 5,337,090
737 5,337,091
776 5,337,092
778 5,337,093

CLASS 351

206 5,337,094
208 5,337,095

CLASS 353

7 5,337,096
101 5,337,097
119 5,337,103

CLASS 354

70 5,337,098
76 5,337,099
Re.34,690
81 5,337,100
113 5,337,101
115 5,337,102
149.11 5,337,104
5,337,105
152 5,337,106
173.1 5,337,107
218 5,337,108
222 5,337,109
230 5,337,110
277 5,337,111
298 5,337,113
324 5,337,114
402 5,337,115
403 5,337,116

CLASS 355

19 5,337,117
27 5,337,118
40 5,337,119
47 5,337,120
57 5,337,121
77 5,337,130
208 5,337,122
212 5,337,123
221 5,337,131
259 5,337,124
[illegible] 5,337,032
5,337,125
5,337,126
271 5,337,127
5,337,128
275 5,337,129
278 5,337,132
285 5,337,133
319 5,337,134
5,337,135
326 R 5,337,136

CLASS 356

[illegible] 5,337,137
36 5,337,138
73 5,337,139
237 5,337,140
350 5,337,141
5,337,142
5,337,143
357 5,337,144
363 5,337,145
367 5,337,146
375 5,337,147
376 5,337,148
5,337,149
382 5,337,150
401 5,337,151

CLASS 358

335 5,337,157
[illegible] 5,337,156
426 5,337,158
447 5,337,159
5,337,160
448 5,337,161
458 5,337,162
[illegible] 5,337,163
[illegible] 5,337,164
[illegible] 5,337,165
518 5,337,166
533 5,337,167
539 5,337,168

CLASS 359

3 5,337,169
7 5,337,170
53 5,337,171
[illegible] 5,337,173
[illegible] 5,337,172
73 5,337,174
125 5,337,175
217 5,337,182
[illegible] 5,337,183
270 5,337,184
298 5,337,112
321 5,337,185
344 5,337,176
384 5,337,177
393 5,337,178
443 5,337,179
[illegible] 5,337,180
574 5,337,181
[illegible] 5,337,186
[illegible] 5,337,187
[illegible] 5,337,189
872 5,337,188
877 5,337,190
885 5,337,191

CLASS 360

8 5,337,199
10.3 5,337,192
19.1 5,337,193
24 5,337,194
27 5,337,195
30 5,337,196
[illegible] 5,337,197
65 5,337,198
66 5,337,200
[illegible] 5,337,201
97.01 5,337,202
113 5,337,203
132 5,337,204

CLASS 361

56 5,337,205
85 5,337,206
93 5,337,208
321.1 5,337,207
321.5 5,337,209
608 5,337,210
637 5,337,211
681 5,337,212
[illegible] 5,337,213
709 5,337,214
726 5,337,215
728 5,337,216
784 5,337,217
785 5,337,218
794 5,337,219
816 5,337,220

CLASS 362

66 5,337,221
5,337,222
5,337,223
[illegible] 5,337,224
145 5,337,225
198 5,337,226

CLASS 363

71 5,337,227
86 5,337,228

CLASS 364

131 5,337,229
138 5,337,230
413.24 5,337,231
419.08 5,337,232
419.140 5,337,233
422 5,337,234
424.02 5,337,235
424.04 5,337,236
424.05 5,337,238
424.1 5,337,239
426.04 5,337,237
431.01 5,337,240
434 5,337,241
449 5,337,242
5,337,243
5,337,244
5,337,245
464.02 5,337,246
468 5,337,247
5,337,248
474.22 5,337,249
479 5,337,253
481 5,337,250
[illegible] 5,337,251
[illegible] 5,337,252
[illegible] 5,337,254
5,337,255
[illegible] 5,337,256
551.01 5,337,258
554 5,337,257
559 5,337,259
571.02 5,337,260
572 5,337,261
[illegible] 5,337,262
724.01 5,337,264
748 5,337,265
748.5 5,337,266
753 5,337,267
760 5,337,268
787 5,337,269

CLASS 365

149 5,337,270
5,337,271
5,337,272
[illegible] 5,337,273
185 5,337,274
189.01 5,337,275
189.11 5,337,276
200 5,337,277
5,337,278
201 5,337,279
218 5,337,280
5,337,281
222 5,337,282
5,337,283
227 5,337,284
5,337,285
230.01 5,337,286
230.05 5,337,287

CLASS 366

25 5,335,989
42 5,335,990
79 5,335,991
348 5,335,992

CLASS 367

1 5,337,288
140 5,337,289

CLASS 368

10 5,337,290
75 5,337,291

CLASS 369

2 5,337,292
13 5,337,293
24 5,337,294
32 5,337,295
5,337,296
36 5,337,297
44.22 5,337,298
44.37 5,337,299
44.41 5,337,300
110 5,337,301
112 5,337,302
5,337,303
116 5,337,305
215 5,337,304

CLASS 370

13 5,337,306
60 5,337,307
5,337,308
5,337,309
85.14 5,337,311
85.3 5,337,310
85.9 5,337,312
94.1 5,337,313
5,337,314
102 5,337,315

CLASS 371

5.5 5,337,318
11.1 5,337,319
15.1 5,337,320
20.5 5,337,316
22.3 5,337,321
40.4 5,337,317
51.1 5,337,322

CLASS 372

31 5,337,323
32 5,337,324
36 5,337,325
45 5,337,326
5,337,327
5,337,328
61 5,337,329
86 5,337,330
94 5,337,333

CLASS 374

11 5,335,993
205 5,335,994
208 5,335,995

CLASS 378

83 5,337,331
94 5,337,332
118 5,337,334
120 5,337,335

CLASS 376

309 5,337,336
435 5,337,337

CLASS 377

33 5,337,338
52 5,337,339
60 5,337,340

CLASS 378

98.2 5,337,341

CLASS 379

40 5,337,342
45 5,337,343
58 5,337,344
5,337,345
5,337,346
67 5,337,347
94 5,337,348
100 5,337,349
5,337,350
201 5,337,351
234 5,337,352
388 5,337,353
399 5,337,354
413 5,337,355
418 5,337,356

CLASS 380

4 5,337,357
23 5,337,358
5,337,360
51 5,337,361
54 5,337,362

CLASS 381

17 5,337,363
68.3 5,337,364
71 5,337,365
5,337,366
94 5,337,367
103 5,337,368

CLASS 382

I 5,337,369
6 B1 4,741,043
14 5,337,370
5,337,371
27 5,337,372
51 5,337,373

CLASS 383

63 5,335,997
207 5,335,996

CLASS 384

107 5,337,374
622 5,335,998

CLASS 385

11 5,337,375
12 5,337,376
15 5,337,377
16 5,337,378
26 5,337,379
[illegible] 5,337,380
36 5,337,381
37 5,337,382
49 5,337,383
54 5,337,384
59 5,337,385
60 5,337,386
76 5,337,387
5,337,388
77 5,337,389
81 5,337,390
[illegible] 5,337,391
[illegible] 5,337,392
5,337,398
92 5,337,396
93 5,337,397
122 5,337,399
135 5,337,400
142 5,337,401

CLASS 391

417 5,337,393

CLASS 395

2.5 5,337,394
27 5,337,395
133 5,337,402
[illegible] 5,337,403
141 5,337,404
147 5,337,405
[illegible] 5,337,406
153 5,337,407
162 5,337,408
5,337,409
5,337,410
[illegible] 5,337,411
275 5,337,412
5,337,413
5,337,414
375 5,337,415
400 5,337,416

CLASS 4.7

247 5,336,203

CLASS 606

124.21 5,335,999
197 5,336,000
[illegible] 5,336,001
5,336,002
624 5,336,004
701 5,336,003

CLASS 601

[illegible] 5,336,005
105 5,336,006
151 5,336,007
[illegible] 5,336,010
[illegible] 5,336,009
247 5,336,011
[illegible] 5,336,012

CLASS 403

[illegible] 5,336,013
24 5,336,014
[illegible] 5,336,015

CLASS 406

Re.34,691
5,336,016
72 5,336,019

CLASS 405

[illegible] 5,336,017
52 5,336,018
224 5,336,020
230 5,336,021
263 5,336,022
[illegible] 5,336,023

CLASS 408

1 R 5,336,024
46 5,336,025
147 5,336,026

VOL 1165 ISS 2 AG 9 1994 UMI

CLASS 410

49 5,336,027

CLASS 411

107 5,336,028
478 5,336,038

CLASS 414

217 5,336,029
277 5,336,030
331 5,336,032
5,336,033
403 5,336,034
429 5,336,037
501 5,336,035
502 5,336,036
5,336,039
751 5,336,040
5,336,041
789.5 5,336,042
5,336,043

CLASS 415

9 5,336,044
55.10 5,336,045
119 5,336,046
168 5,336,047
175 5,336,048

CLASS 416

146 R 5,336,049
186 R 5,336,050

CLASS 417

5,336,054
5,336,051
5,336,052
53 5,336,053
5,336,055
222.1 5,336,056
5,336,058
5,336,059
395 5,336,057
410 D 5,336,060
411 5,336,061
413 A 5,336,062
415 5,336,063
423.3 5,336,064
437 5,336,065
555.1 5,336,066

CLASS 418

49 5,336,067
55.2 5,336,068
206 5,336,069
5,336,070

CLASS 419

2 5,336,465

CLASS 420

406 5,336,466

CLASS 422

64 5,336,467
100 5,336,468
5,336,469
120 5,336,470
175 5,336,471
177 5,336,472
193 5,336,473

CLASS 423

21.1 5,336,450
29 5,336,474
55 5,336,475
239.1 5,336,476
328.1 5,336,477
515 5,336,479
580.1 5,336,480
640 5,336,481
708 5,336,478

CLASS 424

1.65 5,336,482
1.85 5,336,483
5,336,484
5,336,485
78.01 5,336,486
78.04 5,336,487
5,336,488
5,336,489
93.2 5,336,492
94.2 5,336,493
94.4 5,336,494
94.64 5,336,495
190.1 5,336,491
195.1 5,336,496
242.1 5,336,490
282.1 5,336,666
401 5,336,497
5,336,498
400 5,336,499
5,336,500
443 5,336,501
448 Re.34,692

451 5,336,503
5,336,504
5,336,505
5,336,506
5,336,507
611 5,336,508

CLASS 428

66 5,336,071
130 5,336,072
145 5,336,073
149 5,336,074
190 5,336,075
294 5,336,076
371 5,336,077
556 5,336,078

CLASS 426

3 5,336,509
72 5,336,510
138 5,336,511
523 5,336,512
548 5,336,513
564 5,336,514
573 5,336,515
615 5,336,516
622 5,336,517

CLASS 427

126.2 5,336,519
154 5,336,520
5,336,521
5,336,522
231 5,336,523
5,336,524
5,336,525
357 5,336,527
361 5,336,528
372.2 5,336,526
433 5,336,392
5,336,529
5,336,530
510 5,336,531
515 5,336,532
562 5,336,533
5,336,534

CLASS 430

1 5,336,535
5,336,536
34 5,336,537
35.2 5,336,538
36.8 5,336,539
36.92 5,336,540
5,336,541
73 5,336,542
78 5,336,543
117 5,336,544
152 5,336,545
5,336,546
5,336,547
212 5,336,548
213 5,336,549
216 5,336,550
5,336,551
224 5,336,552
229 5,336,553
5,336,554
247 5,336,555
5,336,556
300 5,336,557
323 5,336,079
5,336,558
329 5,336,559
336 5,336,560
5,336,561
373 5,336,562
375 5,336,563
5,336,080
5,336,564
432 5,336,565
5,336,566
629 5,336,567

CLASS 435

7 5,336,568
31 5,336,569
5,336,570
5,336,571
218 5,336,572
252 5,336,573

CLASS 436

23 5,336,574
5,336,575
58 5,336,576
5,336,577
5,336,578
5,336,579
5,336,580
110 5,336,581
273 5,336,582
191 5,336,583
5,336,584
5,336,585
316 5,336,586
322 5,336,587

443 5,336,588
501 5,336,589
5,336,761
547 5,336,590
549 5,336,591
557 5,336,592
558 5,336,593
577 5,336,594

CLASS 431

4 5,336,081
286 5,336,082
346 5,336,083
354 5,336,084

CLASS 432

64 5,336,085

CLASS 433

37 5,336,086
69 5,336,087
90 5,336,088
126 5,336,089
172 5,336,090
215 5,336,091
220 5,336,092

CLASS 434

178 5,336,093

CLASS 435

6 5,336,595
5,336,596
7.2 5,336,597
7.24 5,336,598
15 5,336,599
34 5,336,600
68.1 5,336,601
69.1 5,336,602
69.7 5,336,603
119 5,336,605
172.3 5,336,606
5,336,607
5,336,608
5,336,609
212 5,336,610
221 5,336,611
228 5,336,613
240.2 5,336,614
5,336,615
5,336,616
240.27 5,336,618
252.1 5,336,617
280 5,336,619

CLASS 436

18 5,336,620
534 5,336,621
537 5,336,622

CLASS 437

5,336,623
5,336,624
31 5,336,625
5,336,626
41 5,336,627
42 5,336,361
43 5,336,628
52 5,336,629
5,336,630
60 5,336,631
5,336,632
5,336,633
63 5,336,634
129 5,336,635
173 5,336,636
175 5,336,637
190 5,336,638
5,336,649
5,336,650
217 5,336,639
240 5,336,640
5,336,641

CLASS 439

15 Re.34,693
62 5,336,094
67 5,336,095
72 5,336,096
5,336,097
108 5,336,098
115 5,336,100
131 5,336,099
272 5,336,101
5,336,102
5,336,103
5,336,104
367 5,336,105
5,336,106
5,336,107
462 5,336,108
5,336,109
554 5,336,110
567 5,336,111
5,336,112
5,336,113
598 5,336,114
620 5,336,115

690 5,336,116
717 5,336,117
5,336,118

CLASS 440

6 5,336,119
84 5,336,120

CLASS 441

25 5,336,121

CLASS 446

5,336,122
5,336,123

CLASS 451

125 5,336,124
127 5,336,125
138 5,336,126
160 5,336,127
187 5,336,129

CLASS 454

56 5,336,128
65 5,336,130
238 5,336,131

CLASS 472

6 5,336,133
59 5,336,132
137 5,336,135

CLASS 475

120 5,335,567
337 5,336,136
347 5,336,137

CLASS 477

109 5,335,568
124 5,335,566
131 5,335,565

CLASS 482

10 5,336,138
5,336,139
5,336,140
5,336,141
52 5,336,142
5,336,143
5,336,144
5,336,145
5,336,146
57 5,336,147
5,336,148
100 5,336,149
112 5,336,150
124 5,336,151
132 5,336,152
137 5,336,153

CLASS 493

5,336,154
5,336,155

CLASS 501

3 5,336,642
5,336,643
15 5,336,644
5,336,645
5,336,646
5,336,647

CLASS 502

61 5,336,648
74 5,336,651
125 5,336,652
170 5,336,653
5,336,654
252 5,336,655
329 5,336,656

CLASS 503

227 5,336,657
5,336,658
5,336,659
5,336,660

CLASS 504

126 5,336,661
223 5,336,662
243 5,336,663
261 5,336,664

CLASS 512

5,336,665

CLASS 514

12 5,336,667
53 5,336,669
5,336,670
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023 5,336,668
188 5,336,672
202 5,336,673
210 5,336,674
215 5,336,675
222.5 5,336,676
256 5,336,677

275 5,336,678
5,336,679
347 5,336,681
354 5,336,680
422 5,336,682
443 5,336,683
5,336,684
455 5,336,685
5,336,686
473 5,336,687
5,336,688
5,336,690
5,336,691
634 5,336,689
772 5,336,692

CLASS 521

72 5,336,693
92 5,336,694
109.1 5,336,695
113 5,336,696
189 5,336,697

CLASS 523

113 5,336,698
115 5,336,699
116 5,336,700
411 5,336,701
417 5,336,702
435 5,336,703

CLASS 524

5,336,704
5,336,705
100 5,336,706
265 5,336,707
474 5,336,708
493 5,336,709
5,336,710
5,336,711
5,336,712
5,336,713
5,336,714
765 5,336,715

CLASS 525

23 5,336,716
64 5,336,717
67 5,336,718
71 5,336,719
78 5,336,720
5,336,721
5,336,722
113 5,336,723
139 5,336,724
143 5,336,725
254 5,336,726
272 5,336,727
327.8 5,336,728
328.2 5,336,729
329.4 5,336,730
332.6 5,336,731
370 5,336,732
397 5,336,733
411 5,336,734
420 5,336,735
423 5,336,736

CLASS 526

70 5,336,737
82 5,336,738
181 5,336,739
194 5,336,740
247 5,336,741
260 5,336,742
292.4 5,336,743
318.2 5,336,744
347.1 5,336,745
348.6 5,336,746
5,336,747

CLASS 528

38 5,336,748
73 5,336,749
196 5,336,750
5,336,751
205 5,336,752
335 5,336,753
349 5,336,754
5,336,755

CLASS 530

317 5,336,756
5,336,757
326 5,336,758
5,336,759
413 5,336,760

CLASS 534

16 5,336,762
680 5,336,763

CLASS 536

4.1 5,336,764
18.5 5,336,765
23.2 5,336,766
55.1 5,336,767

CLASS 540

222 5,336,768

CLASS 544

273 5,336,769
276 5,336,770

CLASS 546

116 5,336,771
286 5,336,772
5,336,773
322 5,336,774
347 5,336,775

CLASS 548

194 5,336,776
5,336,777
250 5,336,778
333.5 5,336,779
371 5,336,780
5,336,781
542 5,336,782
5,336,783
953 5,336,784

CLASS 549

214 5,336,785
215 5,336,786
239 5,336,787
241 5,336,788
5,336,789
529 5,336,790
538 5,336,791

CLASS 554

21 5,336,792
138 5,336,793
5,336,794

CLASS 556

56 5,336,795
137 5,336,796
419 5,336,797
430 5,336,798
466 5,336,799

CLASS 558

5,336,800
277 5,336,803
319 5,336,804

CLASS 560

227 5,336,801
245 5,336,802

CLASS 562

444 5,336,805
5,336,806

CLASS 564

153 5,336,807
412 5,336,808
705.02 5,337,263

CLASS 568

354 5,336,809
435 5,336,810
436 5,336,811
721 5,336,812
724 5,336,813
753 5,336,814
857 5,336,815

CLASS 570

168 5,336,816
5,336,817
170 5,336,818

CLASS 585

5,336,819
323 5,336,820
5,336,821
5,336,822
475 5,336,824
500 5,336,825
5,336,826
502 5,336,827
5,336,828
5,336,829
5,336,830
667 5,336,831
710 5,336,832
731 5,336,833
737 5,336,834
5,336,835
5,336,836
828 5,336,837
833 5,336,838
5,336,839
5,336,840
834 5,336,841

CLASS 588

227 5,336,842
249 5,336,843

CLASS 600

22 5,336,156
41 5,336,157

CLASS 601

14 5,336,158
15 5,336,159
24 5,335,649

CLASS 602

5,336,160
26 5,336,161
41 5,336,162
5,336,163

CLASS 604

5,336,164
5 5,336,165
9 5,336,166
20 5,336,168
22 5,336,167
24 5,336,169
5,336,220
5,336,170
5,336,171
27 5,336,172
29 5,336,173
30 5,336,174
49 5,336,175
51 5,336,176
5,336,177
53 5,336,178
80 5,336,179
82 5,336,180
83 5,336,181
95 5,336,182
102 5,336,184
110 5,336,185
5,336,186
5,336,187
132 5,336,188
135 5,336,189
153 5,336,190
165 5,336,191
167 5,336,192
171 5,336,193
175 5,336,194
179 5,336,195
192 5,336,197
195 5,336,198
5,336,199
5,336,200
223 5,336,201
240 5,336,202
263 5,336,204
5,336,205
283 5,336,206
290 5,336,207
307 5,336,209
5,336,210
329 5,336,208
352 5,336,211
360 5,336,212
890.1 5,336,213

CLASS 606

1 5,336,214
4 5,336,215
5,336,216
9 5,336,217
10 5,336,218
15 5,336,219
27 5,336,221
50 5,336,222
61 5,336,223
69 5,336,224
73 5,336,225
79 5,336,226
114 5,336,227
119 5,336,228
144 5,336,229
148 5,336,230
5,336,231
151 5,336,232
153 5,336,233
159 5,336,234
160 5,336,235
5,336,236
167 5,336,237
5,336,238
223 5,336,239
232 5,336,240

CLASS 607

1 5,336,241
11 5,336,242
5,336,243
21 5,336,244
32 5,336,245
37 5,336,246
45 5,335,657
72 5,336,247
90 5,336,248
97 5,336,183
104 5,336,249
107 5,336,250
116 5,336,251
119 5,336,252
122 5,336,253
129 5,336,254
149 5,336,255

CLASS 623

1 5,336,256
5,336,518
2 5,336,258
5,336,259
5 5,336,261
5,336,262
11 5,336,263
16 5,336,264
5,336,265
5,336,266
22 5,336,267
23 5,336,268
25 5,336,269
33 5,336,270

CLASSIFICATION OF DESIGNS

D2— 610 349,387
349,388
893 349,389
916 349,390
951 349,391
957 349,392
961 349,393
969 349,394
970 349,395
349,396
D3— 10 349,397
208 349,398
349,399
349,400
221 349,401
255 349,402
266 349,403
276 349,404
299 349,405
320 349,406
D4— 118 349,407
124 349,408
D5— 65 349,409
D6— 316 349,410
358 349,411
374 349,412
380 349,413
381 349,414
349,415
487 349,416
D7— 301 349,556
306 349,417
312 349,418
338 349,419
360 349,420
366 349,421
376 349,422
378 349,423
551 349,424
553 349,425
349,426
601 349,427
605 349,429
349,428
349,430
349,431
679 349,432
693 349,433
D8— 1 349,434
349,435
8 349,436
14 349,437
14.1 349,438
49 349,439
70 349,440
349,441
349,442
349,443
98 349,444
322 349,445
331 349,446
367 349,447
375 349,448
D9— 302 349,449
305 349,450
349,451
316 349,452
329 349,453
335 349,454
337 349,455
347 349,456
415 349,457
349,458
422 349,553
455 349,459
D10— 32 349,460
38 349,461
62 349,462
74 349,463
75 349,464
106 349,465
114 349,466
349,467
D11— 3 349,468
130 349,469
143 349,470
164 349,471
349,472
212 349,473
D12— 133 349,474
349,475
147 349,476
151 349,478
169 349,479
193 349,480
D13— 103 349,483
107 349,485
D14— 100 349,487
109 349,488
113 349,489
114 349,490
349,491
349,492
349,493
115 349,494
126 349,496
156 349,496
168 349,498
216 349,499
217 349,500
240 349,501
349,502
241 349,503
D15— 138 349,504
145 349,505
199 349,506
D16— 130 349,509
132 349,510
314 349,507
335 349,508
D18— 7 349,511
D19— 36 349,512
51 349,513
83 349,514
88 349,515
D20— 42 349,516
349,517
D21— 5 349,518
13 349,519
D22— 119 349,554
147 349,555
D23— 223 349,557
225 349,558
227 349,559
277 349,560
42 349,525
48 349,526
349,527
108 349,528
141 349,529
349,530
155 349,531
159 349,532
182 349,533
189 349,534
349,535
D24— 106 349,571
349,536
349,537
349,538
349,539
191 349,540
349,541
194 349,542
214 349,543
217 349,544
D25— 16 349,578
221 349,545
222 349,546
234 349,547
D26— 28 349,581
349,548
349,549
349,550
237 349,551
D28— 349,585
239 349,552
D29— 100 349,589
110 349,588
D30— 108 349,590
D23— 223 349,557
135 349,591
225 349,558
D32— 46 349,592
227 349,559
D34— 1 349,593
277 349,560
20 349,594
349,561
283 349,562
314 349,563
354 349,564
349,565
364 349,566
365 349,567
367 349,568
349,569
382 349,570
D24— 106 349,571
110 349,572
110.2 349,587
110.4 349,586
128 349,573
146 349,574
167 349,575
211 349,576
232 349,577
D25— 16 349,578
56 349,579
126 349,580
D26— 28 349,581
61 349,582
106 349,583
138 349,584
D28— 349,585
D29— 100 349,589
110 349,588
D30— 108 349,590
135 349,591
D32— 46 349,592
D34— 1 349,593
20 349,594

CLASSIFICATION OF PLANTS

P— 8.2 8,856
12 8,857
68.1 8,858
87.12 8,860
87.4 8,859

VOL
1165
ISS
2
AG
9
1994
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 5,335,441 5,335,531 5,336,129 5,336,131 5,336,256 5,336,299 5,336,323 5,336,998 5,337,306
04 : 5,335,598 5,335,644 5,335,755 5,335,940 5,336,059 5,336,115 5,336,151 5,336,192 5,336,225 5,336,357 5,336,387 5,336,639 5,336,921 5,336,940 5,337,197 5,337,216 5,337,391 5,337,397
06 : 5,335,400 5,335,407 5,335,435 5,335,436 5,335,442 5,335,445 5,335,458 5,335,464 5,335,467 5,335,468 5,335,469 5,335,478 5,335,481 5,335,497 5,335,509 5,335,513 5,335,525 5,335,533 5,335,534 5,335,543 5,335,548 5,335,557 5,335,579 5,335,618 5,335,627 5,335,632
5,335,640 5,335,646 5,335,647 5,335,676 5,335,704 5,335,733 5,335,748 5,335,773 5,335,780 5,335,808 5,335,842 5,335,844 5,335,855 5,335,858 5,335,890 5,335,892 5,335,909 5,335,918 5,335,947 5,335,950 5,335,960 5,335,992 5,335,999 5,336,018 5,336,028 5,336,110 5,336,124 5,336,135 5,336,145 5,336,152 5,336,156 5,336,173 5,336,174 5,336,178 5,336,179 5,336,182 5,336,183 5,336,184 5,336,186 5,336,197 5,336,204 5,336,205 5,336,208 5,336,215 5,336,216 5,336,224 5,336,229 5,336,230 5,336,234 5,336,237 5,336,242 5,336,247 5,336,252
5,336,255 5,336,258 5,336,262 5,336,264 5,336,274 5,336,284 5,336,290 5,336,306 5,336,308 5,336,325 5,336,327 5,336,346 5,336,375 5,336,380 5,336,388 5,336,391 5,336,398 5,336,412 5,336,424 5,336,426 5,336,434 5,336,456 5,336,492 5,336,494 5,336,505 5,336,520 5,336,550 5,336,555 5,336,564 5,336,572 5,336,597 5,336,603 5,336,606 5,336,621 5,336,624 5,336,625 5,336,641 5,336,644 5,336,662 5,336,689 5,336,708 5,336,748 5,336,760 5,336,828 5,336,845 5,336,860 5,336,870 5,336,884 5,336,888 5,336,926 5,336,933 5,336,936 5,336,938
5,336,942 5,336,946 5,336,950 5,336,975 5,336,982 5,336,986 5,336,992 5,337,003 5,337,016 5,337,018 5,337,023 5,337,043 5,337,044 5,337,056 5,337,074 5,337,080 5,337,102 5,337,106 5,337,143 5,337,144 5,337,151 5,337,179 5,337,191 5,337,202 5,337,213 5,337,230 5,337,254 5,337,255 5,337,257 5,337,262 5,337,275 5,337,279 5,337,285 5,337,309 5,337,314 5,337,328 5,337,329 5,337,330 5,337,333 5,337,336 5,337,338 5,337,362 5,337,363 5,337,364 5,337,376 5,337,386 5,337,396 5,337,403 5,337,405 5,337,408 5,337,413 5,337,414
08 : 5,335,426
5,335,486 5,335,526 5,335,532 5,335,591 5,335,605 5,335,622 5,335,659 5,335,663 5,335,679 5,335,745 5,335,753 5,335,758 5,335,884 5,336,030 5,336,103 5,336,231 5,336,598 5,336,684 5,336,878 5,336,976 5,337,284 5,337,410 5,337,415
09 : 5,335,416 5,335,483 5,335,507 5,335,542 5,335,717 5,335,775 5,335,779 5,335,783 5,335,827 5,335,830 5,335,888 5,335,899 5,335,948 5,336,006 5,336,013 5,336,017 5,336,088 5,336,116 5,336,140 5,336,206 5,336,232 5,336,233 5,336,342 5,336,355 5,336,453 5,336,497 5,336,554 5,336,615 5,336,692 5,336,771
10 : 5,335,993 5,336,335 5,336,741 5,336,801
11 : 5,335,670 5,336,171
12 : 5,335,377 5,335,394 5,335,443 5,335,449 5,335,451 5,335,452 5,335,460 5,335,470 5,335,489 5,335,521 5,335,610 5,335,645 5,335,697 5,335,803 5,335,834 5,335,859 5,335,912 5,335,953 5,336,002 5,336,012 5,336,139 5,336,172 5,336,198 5,336,207 5,336,213 5,336,220 5,336,276 5,336,304 5,336,305 5,336,330 5,336,381 5,336,396 5,336,451 5,336,518
5,336,787 5,336,849 5,336,978 5,336,979 5,337,031 5,337,053 5,337,058 5,337,082 5,337,150 5,337,246 5,337,248 5,337,357 5,337,358

VOL 1165 ISS 2 AG 9 1994 UMI

5,336,560	5,335,916	5,336,506	5,336,740	5,335,943	5,335,501
5,336,757	5,335,978	5,336,596	5,336,742	5,335,952	5,335,502
5,336,785	5,335,988	5,336,882	5,336,854	5,335,967	5,335,586
5,336,862	5,336,047	5,337,026	5,336,923	5,335,995	5,335,691
5,336,900	5,336,065	5,337,170	5,337,141	5,336,048	5,335,692
5,336,931	5,336,097	5,337,180	5,337,390	5,336,051	5,335,740
5,337,007	5,336,226	5,337,310	5,337,407	5,336,085	5,335,804
5,337,014	5,336,265	5,337,334	28 : 5,335,511	5,336,107	5,335,851
5,337,054	5,336,751	5,337,394	5,335,620	5,336,168	5,335,883
5,337,320	5,336,813	5,337,416	29 : 5,335,447	5,336,181	5,335,906
5,337,360	5,336,856	26 : 5,335,466	5,335,655	5,336,189	5,335,908
13 : 5,335,408	5,337,021	5,335,514	5,335,974	5,336,227	5,335,920
5,335,419	19 : 5,335,607	5,335,529	5,336,021	5,336,228	5,335,964
5,335,593	5,335,746	5,335,539	5,336,165	5,336,282	5,336,044
5,335,712	5,335,750	5,335,566	5,336,239	5,336,319	5,336,155
5,335,787	5,335,900	5,335,637	5,336,360	5,336,350	5,336,199
5,335,817	5,336,406	5,335,639	5,336,441	5,336,368	5,336,203
5,335,825	5,336,460	5,335,642	5,336,925	5,336,430	5,336,273
5,335,914	5,337,024	5,335,695	5,337,215	5,336,444	5,336,278
5,336,128	5,337,062	5,335,710	31 : 5,335,380	5,336,446	5,336,312
5,336,238	5,337,096	5,335,718	5,335,772	5,336,471	5,336,320
5,336,311	5,337,205	5,335,777	5,336,150	5,336,484	5,336,408
5,336,334	5,337,221	5,335,785	5,336,383	5,336,510	5,336,419
5,336,452	20 : 5,335,422	5,335,789	32 : 5,335,510	5,336,511	5,336,423
5,336,543	5,335,424	5,335,798	5,335,515	5,336,513	5,336,439
5,336,545	5,335,688	5,335,806	33 : 5,335,379	5,336,515	5,336,445
5,336,552	5,335,735	5,335,847	5,335,771	5,336,539	5,336,454
5,336,601	5,335,778	5,335,854	5,335,930	5,336,577	5,336,457
5,336,707	5,335,954	5,335,862	5,336,147	5,336,579	5,336,730
5,337,020	5,336,084	5,335,932	5,336,275	5,336,618	5,336,731
5,337,034	5,336,130	5,335,935	5,336,455	5,336,629	5,336,739
5,337,100	5,336,157	5,335,936	5,336,948	5,336,642	5,336,796
5,337,347	5,336,219	5,335,971	5,337,233	5,336,645	5,336,802
15 : 5,336,200	5,336,458	5,335,986	34 : 5,335,389	5,336,679	5,336,850
16 : 5,335,571	5,336,536	5,335,987	5,335,405	5,336,683	5,336,852
5,335,625	5,336,699	5,336,026	5,335,482	5,336,721	5,336,930
5,336,649	5,336,970	5,336,060	5,335,488	5,336,765	5,336,956
5,336,908	5,337,047	5,336,093	5,335,503	5,336,784	5,336,964
5,337,160	5,337,057	5,336,102	5,335,559	5,336,797	5,336,988
17 : Re.34,693	21 : 5,335,831	5,336,105	5,335,752	5,336,806	5,336,994
5,335,188	5,336,867	5,336,175	5,335,760	5,336,808	5,336,996
5,335,403	5,337,032	5,336,190	5,335,774	5,336,814	5,337,030
5,335,475	22 : Re.34,626	5,336,191	5,335,824	5,336,834	5,337,039
5,335,476	Re.34,688	5,336,193	5,335,907	5,336,840	5,337,051
5,335,477	5,335,395	5,336,195	5,336,050	5,336,868	5,337,343
5,335,609	5,335,756	5,336,235	5,336,086	5,336,871	5,337,387
5,335,619	5,335,915	5,336,249	5,336,209	5,336,891	5,337,393
5,335,694	5,336,331	5,336,270	5,336,281	5,336,896	4,564,164
5,335,706	5,336,418	5,336,279	5,336,324	5,336,928	40 : 5,335,438
5,335,794	5,336,473	5,336,344	5,336,359	5,336,937	5,335,726
5,335,816	5,336,654	5,336,345	5,336,371	5,337,015	5,335,728
5,335,819	5,336,672	5,336,432	5,336,372	5,337,027	5,336,214
5,335,846	5,336,816	5,336,448	5,336,386	5,337,041	5,336,526
5,335,870	5,336,843	5,336,532	5,336,420	5,337,072	5,336,610
5,335,910	5,337,146	5,336,551	5,336,422	5,337,089	5,336,832
5,335,917	23 : 5,335,473	5,336,566	5,336,467	5,337,104	5,337,234
5,335,921	5,335,770	5,336,690	5,336,595	5,337,105	41 : 5,335,673
5,335,945	5,335,924	5,336,696	5,336,647	5,337,110	5,335,791
5,335,962	5,336,991	5,336,710	5,336,652	5,337,111	5,335,911
5,335,996	5,337,025	5,336,750	5,336,674	5,337,120	5,336,039
5,336,081	24 : 5,335,371	5,336,822	5,336,687	5,337,121	5,336,122
5,336,035	5,335,578	5,336,934	5,336,697	5,337,122	5,336,459
5,336,053	5,335,683	5,336,965	5,336,705	5,337,123	5,336,951
5,336,075	5,335,829	5,336,990	5,336,732	5,337,124	5,336,989
5,336,100	5,336,049	5,336,995	5,336,733	5,337,129	5,337,008
5,336,123	5,336,138	5,337,013	5,336,756	5,337,132	5,337,103
5,336,211	5,336,169	5,337,042	5,336,768	5,337,133	5,337,208
5,336,318	5,336,176	5,337,126	5,336,778	5,337,135	5,337,236
5,336,328	5,336,177	5,337,181	5,336,879	5,337,136	42 : 5,335,375
5,336,351	5,336,483	5,337,184	5,336,993	5,337,161	5,335,402
5,336,377	5,336,573	5,337,225	5,337,036	5,337,178	5,335,584
5,336,431	5,336,614	5,337,229	5,337,068	5,337,206	5,335,603
5,336,450	5,336,631	5,337,238	5,337,091	5,337,217	5,335,616
5,336,486	5,336,758	5,337,260	5,337,212	5,337,218	5,335,626
5,336,509	5,336,764	5,337,261	5,337,290	5,337,224	5,335,650
5,336,563	5,336,794	5,337,370	5,337,325	5,337,250	5,335,674
5,336,575	5,336,820	27 : 5,335,396	5,337,327	5,337,252	5,335,833
5,336,622	5,336,892	5,335,409	5,337,353	5,337,311	5,335,848
5,336,680	5,337,052	5,335,414	5,337,372	5,337,361	5,335,865
5,336,729	5,337,085	5,335,499	5,337,375	5,337,373	5,335,896
5,336,821	5,337,209	5,335,658	5,337,381	5,337,388	5,335,897
5,336,831	5,337,263	5,335,666	5,337,382	5,337,395	5,336,041
5,336,850	5,337,288	5,335,669	5,337,383	4,262,233	5,336,064
5,336,861	5,337,389	5,335,696	5,337,384	4,566,294	5,336,081
5,336,891	5,337,411	5,335,792	35 : 5,335,701	37 : 5,335,450	5,336,090
5,336,904	25 : 5,335,370	5,335,799	5,335,807	5,335,517	5,336,095
5,336,984	5,335,385	5,335,820	5,336,784	5,335,556	5,336,109
5,337,011	5,335,423	5,335,821	5,336,972	5,335,562	5,336,118
5,337,028	5,335,471	5,335,894	36 : 5,335,373	5,335,569	5,336,164
5,337,313	5,335,594	5,335,958	5,335,374	5,335,577	5,336,167
5,337,316	5,335,667	5,335,977	5,335,410	5,335,613	5,336,187
4,741,043	5,335,668	5,336,055	5,335,434	5,335,874	5,336,236
18 : 5,335,384	5,335,786	5,336,063	5,335,545	5,335,891	5,336,295
5,335,421	5,335,822	5,336,076	5,335,589	5,335,957	5,336,298
5,335,432	5,335,923	5,336,094	5,335,623	5,336,111	5,336,314
5,335,462	5,336,011	5,336,106	5,335,654	5,336,286	5,336,329
5,335,508	5,336,092	5,336,180	5,335,660	5,336,303	5,336,348
5,335,512	5,336,218	5,336,188	5,335,685	5,336,464	5,336,373
5,335,554	5,336,222	5,336,241	5,335,782	5,336,475	5,336,414
5,335,582	5,336,269	5,336,245	5,335,797	5,336,661	5,336,417
5,335,651	5,336,370	5,336,250	5,335,814	5,336,903	5,336,427
5,335,671	5,336,437	5,336,254	5,335,873	5,337,379	5,336,478
5,335,852	5,336,479	5,336,405	5,335,882	39 : 5,335,383	5,336,480
5,335,860	5,336,482	5,336,500	5,335,903	5,335,433	5,336,481
5,335,889	5,336,487	5,336,558	5,335,919	5,335,440	5,336,488
5,335,896	5,336,489	5,336,717	5,335,927	5,335,490	5,336,490

5,336,491	5,335,849	5,335,680	5,336,428	5,336,637	5,336,043
5,336,507	5,336,036	5,335,687	5,336,712	5,337,079	5,336,144
5,336,528	5,336,438	5,335,724	5,336,726	51 : Re.34,691	5,336,148
5,336,667	5,336,512	5,335,725	5,336,762	5,335,439	5,336,415
5,336,669	5,336,866	5,335,727	5,336,790	5,335,561	5,337,002
5,336,677	5,336,889	5,335,729	5,336,811	5,335,590	5,337,258
5,336,691	47 : 5,335,386	5,335,731	5,336,824	5,335,686	5,337,339
5,336,693	5,335,552	5,335,732	5,336,841	5,335,815	54 : 5,336,701
5,336,700	5,335,721	5,335,737	5,336,916	5,335,863	5,337,289
5,336,720	5,335,781	5,335,818	5,336,939	5,336,223	55 : 5,335,401
5,336,744	5,335,796	5,335,835	5,336,985	5,336,266	5,335,418
5,336,807	5,335,905	5,335,836	5,337,149	5,336,302	5,335,420
5,336,812	5,336,015	5,335,881	5,337,207	5,336,485	5,335,480
5,336,835	5,336,141	5,335,970	5,337,253	5,336,704	5,335,494
5,336,858	5,336,158	5,335,975	5,337,259	5,336,734	5,335,573
5,336,869	5,336,163	5,336,022	5,337,269	5,336,881	5,335,628
5,336,959	5,336,656	5,336,061	5,337,273	5,336,899	5,335,690
5,336,962	5,336,714	5,336,066	5,337,340	5,337,264	5,335,768
5,336,967	5,337,256	5,336,221	5,337,412	5,337,354	5,335,990
5,337,022	48 : Re.34,687	5,336,253	49 : 5,335,672	53 : 5,335,430	5,336,042
5,337,185	5,335,472	5,336,259	5,335,857	5,335,463	5,336,544
5,337,219	5,335,504	5,336,263	5,336,032	5,335,633	5,336,620
5,337,220	5,335,523	5,336,315	5,336,099	5,335,675	5,336,997
5,337,227	5,335,596	5,336,316	5,336,142	5,335,893	5,337,211
5,337,398	5,335,606	5,336,333	5,336,146	5,335,895	5,337,214
44 : 5,335,839	5,335,621	5,336,366	5,336,343	5,335,928	5,337,231
5,336,185	5,335,649	5,336,384	4,913,396	5,335,934	56 : 5,336,019
45 : 5,335,617	5,335,657	5,336,395	50 : 5,335,784	5,335,946	5,336,449
5,335,656	5,335,677	5,336,410	5,336,570	5,336,023	5,337,266
5,335,788					

DESIGN PATENTS

01 : 349,411	349,558	349,445	24 : 349,424	349,400	41 : 349,394
349,426	349,584	349,456	349,590	349,521	349,396
04 : 349,436	349,588	349,465	25 : 349,481	31 : 349,388	349,408
349,501	349,594	349,499	349,500	34 : 349,405	349,412
349,502	08 : 349,398	349,540	349,503	349,414	349,459
349,550	349,587	15 : 349,452	349,559	349,468	42 : 349,402
06 : 349,389	09 : 349,413	16 : 349,472	349,575	349,549	349,540
349,391	349,418	17 : 349,478	349,577	349,572	349,470
349,392	349,455	349,471	26 : 349,406	36 : 349,393	349,491
349,395	349,566	349,505	349,437	349,404	349,547
349,416	349,579	349,506	349,474	349,430	349,586
349,417	349,585	349,514	349,475	349,431	43 : 349,410
349,432	12 : 349,427	349,570	349,581	349,435	45 : 349,433
349,444	349,453	349,576	27 : 349,415	349,467	47 : 349,593
349,447	349,454	349,582	349,421	349,507	48 : 349,390
349,462	349,458	18 : 349,419	349,446	349,508	349,401
349,463	349,480	349,425	349,488	349,564	349,571
349,490	349,485	349,565	349,494	349,567	349,580
349,515	349,487	349,589	349,516	39 : 349,409	50 : 349,573
349,517	349,523	19 : 349,592	349,533	349,457	51 : 349,434
349,531	349,544	21 : 349,440	349,560	349,469	349,509
349,541	349,548	349,441	349,561	349,476	53 : 349,483
349,543	349,551	349,442	349,574	349,568	349,486
349,546	349,556	349,443	349,591	349,569	55 : 349,562
349,555	13 : 349,438	22 : 349,387	29 : 349,399	40 : 349,429	349,563

PLANT PATENTS

8,857	41 : 8,859				

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VOL
1165

ISS
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AG
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VOL
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1165

ISS
2

AG
9

1994

UMI

VOL
1165

ISS
3

AG
16

1994

UMI

Vol. 1165 Number 3

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VOL
1165
ISS
3
AG
16
1994
UMI

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August 16, 1994 Volume 1165 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1165 OG 59
Notice of Maintenance Fees Payable	1165 OG 59
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee	1165 OG 60
Reissue Applications Filed	1165 OG 66
Requests for Reexaminations Filed	1165 OG 67
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1165 OG 67
Erratum	1165 OG 69
Registration To Practice	1165 OG 69
Erratum	1165 OG 69
Patent Certificates of Correction	1165 OG 69
Summary of Final Decisions Issued by the Trademark Trial and Appeal Board	1165 OG 71
Special Boxes for Mail	1165 OG 74
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1165 OG 75
Patent Examining Corps	1165 OG 77
Condition of Trademark Applications	1165 OG 78
Reexaminations	1471
Reissue Patents Granted (34,692)	1473
Plant Patents Granted (8,861)	1475
Patents Granted	
General and Mechanical (5,337,417)	1477
Chemical (5,338,318)	1791
Electrical (5,338,891)	1955
Design Patents Granted (349,595)	2159
Index of Patentees	PI 1
Indices of Reissue, Reexaminations, Design and Plant Patents	PI 88
Classification of	
Patents (Including Reissues and Reexaminations)	PI 95
Designs and Plants Applications	PI 99
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 101
Designs and Plant Applications	PI 103
Change of Address Form	PI 105
Subscription Order Form	PI 107

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VOL
1165
ISS
3
AG
16
1994
UMI

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
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For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 13, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,038,407 through 5,040,242
Reissue Patents based on the above identified patents.

VOL
1165
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3
AG
16
1994
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Attention is drawn to the patents which were issued on August 11, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,685,151 through 4,686,709
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 9, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,397,043 through 4,398,304
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 8, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,988	07/201,495	07/18/89
(4,592,627)	(06/593003)	(06/03/86)
Re. 33,549	07/004,173	03/05/91
(4,593,124)	(06/649,711)	(06/03/86)
Re. 34,232	07/780,030	04/27/93
(4,930,452)	(07/396,102)	(06/05/90)
4,333,199	06/259,258	06/08/82
4,333,237	06/222,526	06/08/82
4,333,251	06/227,849	06/08/82
4,333,304	06/247,963	06/08/82
4,333,380	06/230,019	06/08/82
4,333,397	06/218,298	06/08/82
4,333,508	06/268,874	06/08/82
4,333,513	06/240,641	06/08/82
4,333,524	06/232,807	06/08/82
4,333,572	06/216,560	06/08/82
4,333,601	06/227,086	06/08/82
4,333,605	06/255,177	06/08/82
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Patent Number	Serial Number	Issue Date
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VOL
1165
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1994
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Patent Number	Serial Number	Issue Date
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Patent Number	Serial Number	Issue Date
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VOL
1165
ISS
3
AG
16
1994
UMI

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VOL 1165 ISS 3 AG 16 1994 UMI

Patent Number	Serial Number	Issue Date
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4,932,036	07/318,583	06/05/90
4,932,041	07/215,742	06/05/90
4,932,068	07/307,779	06/05/90
4,932,069	07/388,409	06/05/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,402,770, Re. S.N. 07/978,853, Nov. 19, 1992, Cl. 148/31.57, HAND MAGNETIC MATERIALS OF A TRANSITION METAL AND A LANTHANIDE, Norman C. Koon, Owner of Record: *United States of America As Represented By The Secretary of The Navy, Washington, D.C.*, Attorney or Agent: Thomas E. Mc Donnell, Ex. Gp.: 1101

4,480,079, Re. S.N. 08/196,912, Dec. 15, 1993, Cl. 526/152, COPOLYMERIZATION OF UNSATURATED URETHANE HORMONES, Michael L. Orton, et. al., Owner of Record: *Cook Composites And Polymers Co., Port Washington, Wis.*, Attorney or Agent: Jim L. DeCesare, Ex. Gp.:1502

4,563,059, Re. S.N. 08/266,871, July 5, 1994, Cl. 359/76, SURFACE STABILIZED FERROELECTRIC LIQUID CRYSTAL DEVICES, Noel A. Clark, et. al., Owner of Record: *Inventors*, Attorney or Agent: Michelle N. Lester, Ex. Gp.: 2515

4,730,565, Re. S.N. 08/258,089, June 10, 1994, Cl. 112/67, STOPPING DEVICE FOR AN EYELET BUTTON HOLING MACHINE, Tetsuo Iizuka, Owner of Record: *Tokyo Juki Industrial Co., Ltd., Tokyo, Japan*, Attorney or Agent: Christopher E. Chalsen, Ex. Gp.: 2407

4,813,767, Re. S.N. 08/266,891, July 5, 1994, Cl. 359/43, SURFACE STABILIZED FERROELECTRIC CRYSTAL DEVICES, Noel A. Clark, et. al., Owner of Record: *Inventors*, Attorney or Agent: Michelle N. Lester, Ex. Gp.: 2515

4,840,463, Re. S.N. 08/266,873, July 5, 1994, Cl. 359/63, SURFACE STABILIZED FERROELECTRIC LIQUID CRYSTAL DEVICES, Noel A. Clark, et. al., Owner of Record: *Inventors*, Attorney or Agent: Michelle N. Lester, Ex. Gp.: 2515

4,843,063, Re. S.N. 08/257,472, June 9, 1994, Cl. 514, POLYPEPTIDE CARTILAGE-INDUCING FACTORS FOUND IN BONE, Saeid Seyedin, et. al., Owner of Record: *Celtrix Laboratories, Inc., Palo Alto, Calif.*, Attorney or Agent: Thomas E. Ciotti, Ex. Gp.: 1503

4,849,432, Re. S.N. 08/254,202, June 6, 1994, Cl. 514/341, NOVEL HETEROCYCLIC COMPOUNDS, Kozo Shiokawa, et. al., Owner of Record: *Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan*, Attorney or Agent: Leonard Horn, Ex. Gp.: 1205

4,925,673, Re. S.N. 08/252,979, June 2, 1994, Cl. 424, DELIVERY SYSTEMS FOR PHARMACOLOGICAL AGENTS ENCAPSULATED WITH PROTEINOIDS, Solomon Steiner, et. al., Owner of Record: *Emisphere Technologies Inc., Mt. Kisco, N.Y.*, Attorney or Agent: Joseph R. Robinson, Ex. Gp.: 1502

4,943,464, Re. S.N. 08/252,063, June 1, 1994, Cl. 428, ELECTRONIC COMPONENT SUPPORT FOR MEMORY CARD AND PRODUCT OBTAINED THEREBY, Jean P. Gloton, et. al., Owner of Record: *SGS-Thomson Microelectronics S.A., Gentilly, France*, Attorney or Agent: Robert Groover, Ex. Gp.: 1513

4,958,916, Re. S.N. 08/266,861, July 5, 1994, Cl. 359/72, SURFACE STABILIZED FERROELECTRIC LIQUID CRYSTAL DEVICES, Noel A. Clark, et. al., Owner of Record: *Inventors*, Attorney or Agent: Michelle N. Lester, Ex. Gp.: 2515

4,972,872, Re. S.N. 08/216,810, Mar. 23, 1994, Cl. 487.5, RELIEF VALVE, Kevin F. Hunt, Owner of Record: *Inventors*, Attorney or Agent: Tim Headley, Ex. Gp.: 3407

4,972,872, Re. S.N. 08/166,138, Dec. 14, 1993, Cl. 487.5, RELIEF VALVE, Kevin F. Hunt, Owner of Record: *Inventors*, Attorney or Agent: Tim Headley, Ex. Gp.: 3407

5,032,305, Re. S.N. 08/257,362, June 9, 1994, Cl. 252/67, LUBRICANT FOR REFRIGERANT, Tamiji Kamakura, et. al., Owner of Record: *Asahi Denka Kogyo K.K., Tokyo, Japan*, Attorney or Agent: Terryence F. Chapman, Ex. Gp.: 1105

5,062,228, Re. S.N. 08/135,451, Oct. 12, 1993, Cl. 37/117.5, COMPACTOR AND BLADE ATTACHMENT FOR A LOADER, Thomas G. Artzberger, Owner of Record: *M-B-W Inc., Slinger, Wisc.*, Attorney or Agent: Glenn O. Starke, Ex. Gp.: 3501

5,081,786, Re. S.N. 08/184,881, Jan. 21, 1994, Cl. 43/44.89, FISHING LURE ARTICLE, Jerry Cobb, Owner of Record: *Inventor*, Attorney or Agent: Seth M. Nehrbass, Ex. Gp.: 3205

5,083,855, Re. S.N. 08/266,872, July 5, 1994, Cl. 359/76, SURFACE STABILIZED FERROELECTRIC CRYSTAL DEVICES, Noel A. Clark, et. al., Owner of Record: *Inventors*, Attorney or Agent: Michelle N. Lester, Ex. Gp.: 2515

5,121,407, Re. S.N. 08/257,840, June 9, 1994, Cl. 375/1, SPREAD SPECTRUM COMMUNICATIONS SYSTEM, Andrzej Partyka, et. al., Owner of Record: *Pittway Corporation, Syosset, N.Y.*, Attorney or Agent: William B. Kempler, Ex. Gp.: 2202

5,122,209, Re. S.N. 08/261,224, June 16, 1994, Cl. 156/54, TEMPERATURE COMPENSATED WIRE-CONDUCTING TUBE AND METHOD OF MANUFACTURE, Boyd B. Moore, et. al., Owner of Record: *Shell Oil Company, Houston, Tex.*, Attorney or Agent: Jan K. Simpson, Ex. Gp.: 2103

5,122,985, Re. S.N. 08/259,941, June 15, 1994, Cl. 365/185, CIRCUIT AND METHOD FOR ERASING EEPROM MEMORY ARRAYS TO PREVENT OVER-ERASED CELLS, Giovanni Santin, Owner of Record: *Texas Instruments Incorporated, Dallas, Tex.*, Attorney or Agent: Dennis W. Braswell, Ex. Gp.: 2511

5,147,042, Re. S.N. 08/260,573, June 16, 1994, Cl. 206/456, HOLDER FOR MEDICAL SPECIMEN SLIDE, Abner Levy, Owner of Record: *Inventor*, Attorney or Agent: Natan Epstein, Ex. Gp.: 2404

5,159,456, Re. S.N. 08/240,980, May 11, 1994, Cl. 358/225, PHOTO-TO-PHOTO TRANSDUCER AND METHOD OF OPERATION USING A PHOTO-MODULATION MEMBER AFFECTED BY A CHANGE DISTRIBUTION IN A PHOTOCONDUCTIVE MEMBER AND A VOLTAGE APPLIED ACROSS ELECTRODES, Itsuo Takanashi, et. al., Owner of Record: *Victor Company of Japan, Ltd., Yokohama-Shi, Japan*, Attorney or Agent: Eugene Lieberstein, Ex. Gp.: 2108

5,168,872, Re. S.N. 08/242,289, May 13, 1994, Cl. 248/560, BOOM, PARTICULARLY A SPREADING BOOM FOR SUSPENSION OF AN OUTER FRAME OF AN AGRICULTURAL TOOL, SUCH AS AN AGRICULTURAL VEHICLE,

Knud Rasmussen, et. al., Owner of Record: *Hardi Inc., Davenport, Iowa*, Attorney or Agent: James J. Hill, Ex. Gp.: 3505

5,174,324, Re. S.N. 08/257,940, June 10, 1994, Cl. 137, CERAMIC VALVE, Jimmie D. Chrysler, Owner of Record: *AmeriKam, Wyoming, Mich.*, Attorney or Agent: Joel E. Bair, Ex. Gp.: 3407

5,184,718, Re. S.N. 08/258,445, June 10, 1994, Cl. 206/63.5, DISPOSABLE DENTURE CONTAINER, Harry Albert, Owner of Record: *Inventor*, Attorney or Agent: Alvin Isaacs, Esq., Ex. Gp.: 2404

5,227,905, Re. S.N. 08/266,862, July 5, 1994, Cl. 359/100, SURFACE STABILIZED FERROELECTRIC LIQUID CRYSTAL DEVICES, Noel A. Clark, et. al., Owner of Record: *Inventors*, Attorney or Agent: Michelle N. Lester, Ex. Gp.: 2515

5,234,406, Re. S.N. 08/257,103, June 8, 1994, Cl. 604/51, AQUEOUS ELECTRONIC CIRCUIT ASSEMBLY CLEANER AND METHOD, Anthony E. Winston, et. al., Owner of Record: *The Regents of the University of California, Oakland, Calif.*, Attorney or Agent: Stuart D. Frenkel, Ex. Gp.: 3306

5,234,505, Re. S.N. 08/255,979, June 8, 1994, Cl. 134/40, STABILIZATION OF SILICATE SOLUTIONS, Anthony E. Winston, et. al., Owner of Record: *Church & Dwight Co., Inc., Princeton, N.J.*, Attorney or Agent: Stuart D. Frenkel, Ex. Gp.: 1106

5,264,047, Re. S.N. 08/257,664, June 8, 1994, Cl. 134/42, LOW FORMING EFFECTIVE HYDROTROPE, Anthony E. Winston, et. al., Owner of Record: *Church & Dwight Co., Inc., Princeton, N.J.*, Attorney or Agent: Stuart D. Frenkel, Ex. Gp.: 1101

5,274,179, Re. S.N. 08/252,873, June 2, 1994, Cl. 560/184, FLUORINATED PHOTOINITIATORS AND THEIR APPLICATION IN UV CURING OF FLUORINATED MONOMERS, Chengjiu Wu, Owner of Record: *Allied-Signal Inc., Morristown, N.J.*, Attorney or Agent: Michele G. Mangini, Ex. Gp.:1204

5,280,780, Re. S.N. 08/259,186, June 13, 1994, Cl. 128/203.14, EXHAUST GAS PURIFYING DEVICE FOR AN OUTBOARD MOTOR, Masafumi Sougawa, et. al., Owner of Record: *Sanshin Kogyo Kabushiki Kaisha d/b/a Sanshin Industries Co., Ltd., Hamamatsu-Shu, Japan*, Attorney or Agent: Ernest A. Beutler, Ex. Gp.: 3307

5,311,721, Re. S.N. 08/257,825, June 6, 1994, Cl. 53/118, WIRE WINDING AND TYING MACHINE WITH MAGNETIZED HANKING HEAD, Miguel C. Urchaga, Owner of Record: *Hanscom-Madex, A.I.E., Huescha, Spain*, Attorney or Agent: Herbert B. Barlow, Jr., Ex. Gp.: 3201

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,389,872, Reexam. No. 90/003,364, Mar. 21, 1994, Cl. 072/388, TUBE BENDER CONSTRUCTION, Leonard J. Kowal, Owner of Record: *The Pullman Corp., Highland Heights, Ohio*, Attorney or Agent: Wood, Phillips, Mason, Rectenwald & Van Santen, Chicago, Ill., Ex. Gp.: 3201, Requester: The Ridge Tool Co., Elyria, Ohio

4,773,920, Reexam. No. 90/003,371, Mar. 28, 1994, Cl. 051/295, COATED ABRASIVE SUITABLE FOR USE AS A LAPPING MATERIAL, Jonathan N. Chasman, et. al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.*, Attorney or Agent: David L. Weinstein, 3M Office of Patent Counsel, St. Paul, Minn., Ex. Gp.: 1108, Requester: Owner

5,060,509, Reexam. No. 90/003,355, Mar. 10, 1994, Cl. 073/40.5R, SECONDARY CONTAINMENT SYSTEM USING FLEXIBLE PIPING, Michael C. Webb, Owner of Record: *Total Containment, Inc., Exton, Pa.*, Attorney or Agent: George A. Arkwright, Schlesinger, Arkwright & Garvey, Arlington, Va., Ex. Gp.: 2605, Requester: Environ Products, Inc., Lionville, Pa.

5,077,099, Reexam. No. 90/003,373, Mar. 28, 1994, Cl. 427/601, ELECTROLESS COPPER PLATING PROCESS AND APPARATUS, Peter E. Kukanskis, et. al., Owner of Record: *Mac Dermid, Inc., Waterbury, Conn.*, Attorney or Agent: James R. Cartiglia, St. Onge, Steward, Johnson & Reens, Stamford, Conn., Ex. Gp.: 1112, Requester: Owner

5,081,681, Reexam. No. 90/003,455, May 20, 1994, Cl. 381/051, METHOD AND APPARATUS FOR PHASE SYNTHESIS FOR SPEECH PROCESSING, John C. Hardwick, et. al., Owner of Record: *Digital Voice Systems, Inc., Burlington, Mass.*, Attorney or Agent: G. Roger Lee, Fish & Richardson, Boston, Mass., Ex. Gp.: 2308, Requester: Digital Voice Systems, Inc., Burlington, Mass.

5,176,537, Reexam. No. 90/003,356, Mar. 11, 1994, Cl. 439/795, METAL TERMINAL RETAINING CONSTRUCTION, Masakuni Samejima, et. al., Owner of Record: *Yazaki Corp., Tokyo, Japan*, Attorney or Agent: Darryl Mexic, Shugrue, Mion, Zinn, Mac Peak & Seas, Washington, D.C., Ex. Gp.: 3202, Requester: Owner

5,262,555, Reexam. No. 90/003,370, Mar. 25, 1994, Cl. 556/440, METHOD FOR THE PREPARATION OF ACRYLOXY GROUP-CONTAINING OR METHACRYLOXY GROUP-CONTAINING ORGANOSILICON COMPOUNDS, Tadashi Okawa, et. al., Owner of Record: *Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan*, Attorney or Agent: Sharon K. Severance, Midland, Mich., Ex. Gp.: 1204, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JUNE 20, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
93,410	71/067,701	09/16/1913
93,418	71/068,968	09/16/1913
93,448	71/070,901	09/16/1913
93,495	71/070,269	09/16/1913
288,568	71/316,742	01/03/1931
306,179	71/337,343	09/12/1933
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306,207	71/337,029	09/12/1933
306,209	71/337,024	09/12/1933
306,213	71/334,442	09/12/1933
306,232	71/338,266	09/12/1933
306,234	71/338,259	09/12/1933
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579,973	71/628,872	09/15/1953
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968,169	72/424,643	09/11/1973
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968,179	72/428,059	09/11/1973
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968,223	72/432,338	09/11/1973
968,224	72/432,340	09/11/1973
968,228	72/433,228	09/11/1973
968,233	72/434,175	09/11/1973
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968,241	72/435,311	09/11/1973
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968,257	72/430,756	09/11/1973
968,258	72/433,643	09/11/1973
968,262	72/434,039	09/11/1973
968,264	72/396,602	09/11/1973
968,267	72/412,513	09/11/1973
968,270	72/442,910	09/11/1973
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968,290	72/436,550	09/11/1973
968,294	72/439,238	09/11/1973
968,296	72/440,204	09/11/1973
968,301	72/443,472	09/11/1973
968,302	72/443,686	09/11/1973
968,306	72/445,403	09/11/1973

Erratum

Gary F. Lyons (Reg. No. 25,352) and Anthony N. Magistrale (Reg. No. 35,595) were listed in the *Official Gazette* dated August 9, 1994 as being removed from the register. Their names were published in error. We regret any inconvenience the publication may have caused.

July 28, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Erratum

"All reference to Patent No. 5,326,343 to Eric N. Rudie et. al., of Minnesota for 'DEVICE FOR ASYMMETRICAL THERMAL THERAPY WITH HELICAL DIPOLE MICROWAVE ANTENNA' appearing in the *Official Gazette* of July 5, 1994 should be deleted since no patent was granted."

Registration To Practice

The following person successfully passed the registration examination that was held Oct. 13, 1993. Final approval for registration is subjected to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before September 16, 1994.

Schwenker, Carl F., 1927 Corral Dr., Houston, Tex. 77090

July 19, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

The following list contains the names of persons who successfully passed the registration examination that was held Apr. 13, 1994. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before September 16, 1994.

McLean, Daniel R., III, 311 Thornbrook, DeKalb, Ill. 60115

Sun, Hans I., 2734 Lexington Ave., N., Roseville, Minn. 55113

July 20, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Erratum

In the notice of Certificate of Correction appearing at 1150 O.G. 29, delete Patent No. 4,997,788, the number was erroneouslymentionedandshouldbedeleted.

Certificate of Correction Issued August 16, 1994

B1 4,217,462	5,180,919	5,227,832	5,255,258
Re. 34,312	5,187,132	5,228,116	5,255,325
Re. 34,469	5,187,162	5,229,585	5,255,362
D. 338,483	5,187,211	5,230,371	5,256,353
D. 339,371	5,187,294	5,230,427	5,256,817
D. 341,987	5,187,561	5,230,755	5,257,931
D. 345,141	5,187,915	5,231,045	5,258,252
D. 346,080	5,189,102	5,231,057	5,258,675
4,623,369	5,190,921	5,231,577	5,259,176
4,882,645	5,190,942	5,232,033	5,259,766
4,923,061	5,191,570	5,232,331	5,260,164
4,940,760	5,192,218	5,232,557	5,260,869
4,951,379	5,195,594	5,233,635	5,261,088
4,951,653	5,196,420	5,234,683	5,261,851
4,963,186	5,196,425	5,234,791	5,261,935
4,963,197	5,196,592	5,234,937	5,262,825
4,969,719	5,197,101	5,235,528	5,263,409
4,970,529	5,198,927	5,235,546	5,263,670
4,971,522	5,200,385	5,235,625	5,263,836
4,976,335	5,200,420	5,236,869	5,264,478
4,984,678	5,200,482	5,237,976	5,264,619
4,995,457	5,201,000	5,238,004	5,264,644
4,997,798	5,201,549	5,238,130	5,264,790
5,001,202	5,202,833	5,238,662	5,264,894
5,008,550	5,203,952	5,239,530	5,264,954
5,009,613	5,204,121	5,239,986	5,265,536
5,021,965	5,204,930	5,241,304	5,265,733
5,026,413	5,205,109	5,241,656	5,265,740
5,034,018	5,206,910	5,243,128	5,265,769
5,034,768	5,208,235	5,243,249	5,266,134
5,042,739	5,208,240	5,243,406	5,266,188
5,071,840	5,208,388	5,244,307	5,266,395
5,092,260	5,208,470	5,244,794	5,266,466
5,092,777	5,209,732	5,245,169	5,266,492
5,099,769	5,210,691	5,245,439	5,266,774
5,100,899	5,211,585	5,246,665	5,266,885
5,104,867	5,213,003	5,246,951	5,267,005
5,109,020	5,214,544	5,247,037	5,267,011
5,109,255	5,214,600	5,247,131	5,267,055
5,110,975	5,214,901	5,247,155	5,267,385
5,121,155	5,214,981	5,247,456	5,267,403
5,122,115	5,217,870	5,247,498	5,267,480
5,122,983	5,217,955	5,247,642	5,268,729
5,123,537	5,218,330	5,247,750	5,268,937
5,126,029	5,218,697	5,248,492	5,269,400
5,128,257	5,220,031	5,248,574	5,269,447
5,133,492	5,220,147	5,248,584	5,269,547
5,135,936	5,220,155	5,249,022	5,269,684
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5,148,183	5,222,407	5,249,118	5,269,773
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5,164,758	5,223,072	5,252,481	5,270,851
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5,172,104	5,225,201	5,253,048	5,271,063
5,173,624	5,225,899	5,253,265	5,271,072
5,174,775	5,226,074	5,253,298	5,271,372
5,175,387	5,226,421	5,253,325	5,271,430
5,177,365	5,226,822	5,254,270	5,271,724
5,178,250	5,227,005	5,254,740	5,272,254
5,180,372	5,227,164	5,255,077	5,272,426

VOL
1165
ISS
3
AG
16
1994
UMI

5,272,922	5,281,113	5,287,291	5,293,340	5,298,230	5,302,279	5,307,570	5,312,973
5,273,837	5,281,591	5,287,339	5,293,703	5,298,349	5,302,299	5,307,678	5,312,991
5,274,159	5,282,509	5,287,550	5,293,936	5,298,403	5,302,377	5,307,898	5,313,058
5,274,399	5,283,085	5,287,558	5,294,401	5,298,547	5,302,378	5,307,952	5,313,193
5,274,402	5,283,330	5,288,054	5,294,734	5,298,592	5,303,062	5,308,113	5,313,264
5,274,475	5,283,509	5,288,440	5,295,009	5,298,790	5,303,196	5,308,483	5,313,294
5,274,900	5,283,616	5,288,483	5,295,050	5,299,055	5,303,364	5,308,487	5,313,298
5,275,065	5,283,730	5,288,618	5,295,086	5,299,488	5,303,497	5,308,768	5,313,589
5,275,100	5,283,841	5,288,754	5,295,103	5,299,529	5,303,508	5,308,806	5,314,168
5,275,178	5,284,043	5,289,045	5,295,423	5,299,675	5,303,547	5,309,515	5,314,258
5,275,694	5,284,162	5,289,290	5,295,954	5,299,818	5,303,580	5,309,714	5,314,375
5,275,784	5,284,188	5,289,681	5,296,068	5,299,856	5,303,637	5,309,753	5,314,379
5,276,051	5,284,213	5,289,905	5,296,074	5,300,007	5,303,815	5,309,862	5,315,287
5,276,335	5,284,296	5,290,110	5,296,240	5,300,052	5,303,924	5,310,061	5,315,339
5,276,353	5,284,562	5,290,649	5,296,274	5,300,062	5,304,092	5,310,105	5,315,458
5,276,483	5,284,615	5,290,790	5,296,324	5,300,123	5,304,609	5,310,150	5,315,584
5,277,038	5,284,985	5,291,099	5,296,335	5,300,202	5,304,871	5,310,295	5,315,634
5,277,262	5,285,081	5,291,124	5,296,368	5,300,319	5,304,916	5,310,453	5,315,697
5,277,369	5,285,232	5,291,303	5,296,451	5,300,365	5,305,554	5,310,716	5,315,718
5,277,581	5,285,300	5,291,335	5,296,468	5,300,457	5,305,615	5,310,997	5,315,809
5,277,775	5,285,449	5,291,465	5,296,542	5,300,702	5,305,733	5,311,086	5,316,024
5,277,848	5,285,565	5,291,728	5,296,557	5,300,781	5,305,863	5,311,292	5,316,186
5,278,152	5,285,773	5,291,744	5,296,585	5,300,889	5,306,418	5,311,379	5,316,272
5,278,521	5,285,842	5,292,063	5,296,961	5,301,054	5,306,446	5,311,983	5,316,322
5,278,683	5,286,046	5,292,085	5,297,006	5,301,237	5,306,902	5,312,150	5,316,363
5,278,923	5,286,140	5,292,505	5,297,080	5,301,247	5,307,021	5,312,192	5,316,384
5,279,158	5,286,265	5,292,590	5,297,603	5,301,484	5,307,074	5,312,339	5,316,648
5,279,738	5,286,315	5,292,596	5,297,627	5,301,541	5,307,124	5,312,397	5,316,750
5,279,982	5,286,444	5,292,778	5,297,654	5,301,843	5,307,210	5,312,447	5,316,753
5,280,076	5,286,508	5,292,780	5,297,818	5,302,044	5,307,263	5,312,506	5,317,334
5,280,504	5,286,613	5,292,870	5,297,843	5,302,063	5,307,367	5,312,593	5,317,471
5,280,924	5,286,659	5,293,066	5,297,976	5,302,109	5,307,454	5,312,786	5,317,595
5,280,978	5,286,742	5,293,199	5,298,000	5,302,122	5,307,500	5,312,870	5,318,665
5,280,991	5,286,856	5,293,315	5,298,093				

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
June 27-July 1, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Applicant's/ Respondent's Mark and Goods/Services	Opposer's/ Petitioner's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-27	EX	74/149,172	R.D. Werner, Co., Inc.	2(e)(2)	Refusal Affirmed	"AMERICAN LADDER" [metal ladders]			No
6-27	EX	74/248,306	Trump's Castle Associates	2(d)	Refusal Affirmed	"KING OF CLUBS" [hotel restaurant services]		(design of playing card with king and queen of clubs) [restaurant services]	No
6-28	EX	74/175,146	Fenix Restaurant Inc.	2(d)	Refusal Reversed	"ROSA MEXICANO" [restaurant services]		"LA ROSA MEXICAN RESTAURANT", "LA ROSA MEXICAN RESTAURANT" (and design) [restaurant services]	No
6-28	EX	74/234,360	C.J. Vitner Company, Inc.	2(d)	Refusal Affirmed	"SIZZLIN" (and design) [potato chips]		"SIZZLIN' SNAX" [crackers]	No
6-28	EX	74/239,858	The George G. Glenner Alzheimer's Family Center, Inc.	Sec. 6 disclaimer requirement	Requirement Affirmed in Class 42; Reversed in Class 41	"THE GEORGE G. GLENNER ALZHEIMER'S FAMILY CENTER" [training of health care professionals in the area of organic brain disorders by conducting classes, etc., in Cl. 41; operation of day care facilities and counseling etc., in Cl. 42]			No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

VOL 1165 ISS 3 AG 16 1994 UMI

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-28	EX	74/250,821	Gerber Cheese Co., Inc.	2(e)(1)	Refusal Affirmed		"FONDUE AU CHOCOLAT" [semi-sweet chocolate dessert in solid [illegible]]		No
6-28	OPP	84,759	Automobile Club De L'Quest De La France v. Design Studios of New York, Inc.	2(d)	Opposition Sustained	"LES 24 HEURES DU MANS" [jackets, scarves, and hats]; "LE MANS" (and design) [organizing and conducting automobile races]	"LEMANS KIDS" [children's, boys' and young men's outerwear, namely, jackets and coats, pants, slacks, etc.]		No
6-29	EX	74/094,1[illegible]	Extracool Industries, Inc.	2(e)(1)	Refusal Reversed		"THE EXTRACOOLER" [air conditioning units]		No
6-29	EX	74/246,278	Better Compensation, Inc.	2(e)(1)	Refusal Affirmed		"BETTER BENEFITS" [insurance brokerage]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-30	EX	74/118,478	W.R. Grace & Co. Conn.	2(e)(1)	Refusal Affirmed		"CONCRETE-READY" [sealed disintegratable paper bag containing one or more admixtures for modifying the properties of concrete]		No
6-30	OPP	82,446	Petersen Manufacturing Co., Inc. v. Charles Amash Imports, Inc.	2(d)	Opposition Sustained	"VISE-GRIP" [wrenches, workholding clamps, etc.]	"GRIP" [wrenches, sockets wrenches, torque wrenches, clamps, etc.]		No
6-16**	[illegible]X	74/213,737	Smith and Mehaffey	2(d)	Refusal Affirmed		"ROAD KILL CATERING" [T-shirts, sweatshirts, and aprons]	"ROAD KILL CLUB OF AMERICA" (and design) [T-shirts, sweatshirts, and pullovers]	Yes

**Inadvertently omitted from summary for week of June 13-June 17

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

VOL
1165
ISS
3
AG
16
1994
UMI

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VOL
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16
1994
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CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	08/23/93
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SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	11/01/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	08/30/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/04/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/05/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/11/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	07/20/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	07/25/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/02/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	12/30/92
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	10/27/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	08/02/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	07/12/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	08/19/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	02/26/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/22/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during July 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,032,989 to 4,038,696 inclusive
Plant Patents.....4,069 to 4,085

VOL 1165 ISS 3 AG 16 1994 UMI

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/16/94	05/23/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/08/94	01/21/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	03/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/02/94	03/09/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	05/02/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/07/94	04/19/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/22/94	04/28/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/94	04/01/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/14/94	05/16/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	03/16/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/10/94	04/20/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/23/94	03/03/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/01/94	—0—
Renewals (All Classes)	03/24/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

AUGUST 16, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,964,710 (2356th)
DISPOSABLE RIGID ENDOSCOPE
Dennis C. Leiner, Jaffrey, N.H., assignor to Monadnock Optics, Inc., Huntington Valley, Pa.
Reexamination Request No. 90/003,203, Sep. 23, 1993.
Reexamination Certificate for Patent No. 4,964,710, issued Oct. 23, 1990, Ser. No. 385,388, Jul. 27, 1989.
Int. Cl.[5] G02B *7/02, 23/00*
U.S. Cl. 359—434



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **4** are determined to be patentable as amended.

Claims **2, 3, 5, 6** and **7**, dependent on an amended claim, are determined to be patentable.

New claims **8–18** are added and determined to be patentable.

1. An endoscope for viewing an object, said [apparatus] *endoscope* including a relay lens assembly, said assembly including:

a plurality of axially aligned polymeric curved surface spaced lenses; and

a plurality of axially aligned plano glass cylinders with polished end faces positioned intermediate said spaced lenses *and not intermediate curved surface glass lenses.*

B1 5,037,384 (2357th)
METHOD AND APPARATUS FOR THE TREATMENT OF COMPLICATED RETINAL DETACHMENTS
Stanley Chang, Scarsdale, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Reexamination Request No. 90/002,481, Oct. 17, 1991.
Reexamination Certificate for Patent No. 5,037,384, issued Aug. 6, 1991, Ser. No. 405,615, Sep. 11, 1989.
Continuation of Ser. No. 142,614, Jan. 12, 1988, abandoned
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—28



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **4–7** having been finally determined to be unpatentable, are cancelled.

Claims **1** and **8–10** are determined to be patentable as amended.

Claims **2–3**, dependent on an amended claim, are determined to be patentable.

New claims **11–13** are added and determined to be patentable.

8. In a surgical procedure for the surgical repair of retinal detachment [require] *which* requires the manipulation of the retina by the surgeon, the improvement of which comprises removing at least a portion of the vitreous from the chamber of the eye [and], infusing over the optic disk an amount of liquid perfluorocarbon sufficient to provide for intraoperative hydrokinetic manipulation of the retina by the surgeon, *and removing the liquid perfluorocarbon from the vitreous chamber of the eye concurrently with the introduction of silicone oil into the eye chamber as a long term vitreous replacement.*.

B1 5,043,736(2358)

Patent Not Issued For This Number

VOL
1165
ISS
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AG
16
1994
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REISSUES

AUGUST 16, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,694

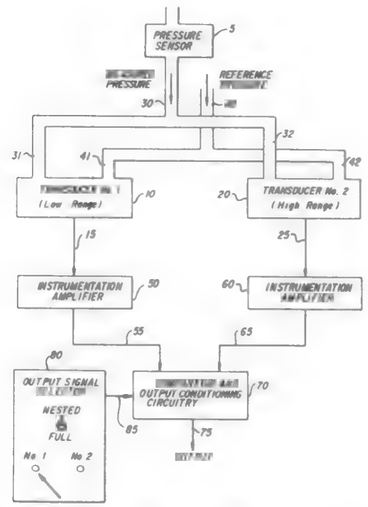
AUTOMATIC TRANSDUCER SELECTION SYSTEM FOR PRESSURE MEASUREMENT

Leonard M. Weinstein, Newport News, Va., assignor to Dynamic Engineering, Inc., Newport News, Va.

Original No. 5,024,100, dated Jun. 18, 1991, Ser. No. 532,697, Jun. 4, 1990. Application for reissue May 14, 1993, Ser. No. 60,979

Int. Cl.[5] G01L *9/04, 9/10, 9/12*

U.S. Cl. 73—756 **6 Claims**



1. A fluid pressure measurement system comprising:

at least two pressure transducers having successively broader effective pressure sensing ranges, each of the pressure transducers being capable of being subjected to an overpressure equal to a maximum pressure of the sensing ranges without an adverse effect therein;

means for connecting the transducers in parallel to the fluid pressure being measured and to a reference fluid pressure; and

comparator circuit means for receiving an *amplified analog* output signal from each of the transducers [, said circuit];

said circuit means functioning to automatically select one of the transducer *amplified analog* output signals which most closely approaches full-range output signal of [a] *its* corresponding [transducer, said circuit means also functioning to generate an output signal from the selected transducer output signal.] *transducer and to generate conditioned analog output signal from the automatically selected transducer output signal;*

said circuit means further functioning to generate selectively either said conditioned analog output signal or an unconditioned amplified analog output signal corresponding to a manually selected transducer output signal, said correspnding output signal including identification of the manually selected transducer.

Re. 34,695

TORSIONALLY STABILIZED GUIDE WIRE WITH OUTER JACKET

Craig E. Mar, Fremont; Lambert J. Dietrich, Danville, and David W. Morrison, San Jose, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Original No. 4,721,117, dated Jan. 26, 1988, Ser. No. 856,492, Apr. 25, 1986. Continuation of Ser. No. 471,226, Jan. 26, 1990, abandoned. Application for reissue Oct. 29, 1992, Ser. No. 968,236

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—772 **17 Claims**



17. In a guide wire for use in the vascular system: an elongated shaft having a relatively flexible distal end portion, a helical coil extending over the distal end portion of the shaft and a substantial portion of the shaft proximal to the relatively flexible distal end portion, said helical coil being affixed to the shaft at its ends and at a point between its ends and a plastic jacket heat shrunk about the shaft proximally of the helical coil and having a thickness corresponding to the thickness of the wire which forms the coil and an outer diameter substantially equal to the outer diameter of the coil.

Re. 34,696

SEMICONDUCTOR DEVICE HOUSING WITH ELECTRODES IN PRESS CONTACT WITH THE OPPOSITE SIDES OF CHIP

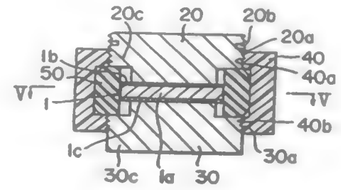
Mituo Ohdate, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki, Tokyo, Japan

Original No. 4,829,364, dated May 9, 1989, Ser. No. 933,389, Nov. 21, 1986. Continuation of Ser. No. 764,847, Sep. 24, 1991, abandoned. Application for reissue Dec. 8, 1992, Ser. No. 987,558

Claims priority, application Japan, Nov. 29, 1985, 60-270387; Nov. 29, 1985, 60-270388

Int. Cl.[5] H01L *23/28, 23/02*

U.S. Cl. 257—689 **25 Claims**



1. A semiconductor device comprising

a semiconductor element,

a pair of electrodes provided on the opposite sides of the semiconductor element, and

a cylindrical member provided to surround the semiconductor element and to be in engagement with the pair of electrodes,

each of the electrodes having a thread portion on its outer periphery, and

VOL 1165 ISS 3 AG 16 1994 UMI

a resilient annular member surrounding the semiconductor element,

wherein the cylindrical member [having] *has* a thread portion on its inner peripheral surface screwed onto each of the thread portions of the electrodes, thereby to provide a hermetic seal for the semiconductor element,

wherein the resilient annular member is compressed between the electrodes.

Re. 34,697

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shun Takada; Kaoru Onodera, and Takashi Kadowaki, all of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Original No. 4,537,857, dated Aug. 27, 1985, Ser. No. 556,129, Nov. 29, 1983. Continuation of Ser. No. 326,782, Mar. 21, 1989, abandoned. Application for reissue May 29, 1990, Ser. No. 528,327

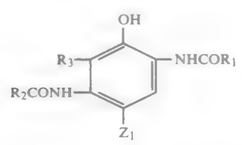
Claims priority, application Japan, Nov. 30, 1982, 57-210219

Int. Cl.[5] G03C *7/26*

U.S. Cl. 430—549 **20 Claims**

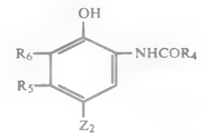
1. A silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer containing in combination at least one of those cyan couplers having the following Formula [I] and at least one of those cyan couplers having the following Formula [II]:

Formula I

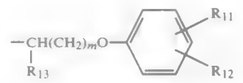


wherein R_1 is an aryl radical, a cycloalkyl radical or a heterocyclic radical; R_2 is an alkyl radical, a phenyl radical, or $R_8—X\text{-}R_9—_n$ wherein R_8 represents an alkyl or aryl radical, R_9 represents an alkylene radical, n represents an integer of 0 to 5, and X represents a divalent radical selected from the group consisting of —O—, —CO—, —COO—, —OCO—, $—SO_2N\text{-}R'—$, $—NR'SO_2NR''—$, —S—, —SO— and $—SO_2—$, wherein R′ and R″ represent an alkyl radical; R_3 is a hydrogen atom, a halogen atom, an alkyl radical or an alkoxy radical; and Z_1 is a hydrogen atom, a halogen atom, or a radical that can be split off by the reaction of said coupler with the oxidized product of an aromatic primary amine-type color developing agent,

Formula II



wherein R_4 is an alkyl radical or



wherein R_{11} and R_{12} may be either the same or different from each other and each is a hydrogen atom, an alkyl radical or an alkoxy radical, provided that the sum of the carbon atoms or R_{11} and R_{12} is from 8 to 16, R_{13} is a hydrogen atom or an alkyl radical, and m is an integer of 0 to 2; R_5 is an alkyl radical; R_6 is a hydrogen atom, a halogen atom, or an alkyl radical; and Z_2 is a hydrogen atom, a halogen atom, or a radical that can be split off by the reaction of said coupler with the oxidized product of an aromatic primary amine-type color developing agent, *wherein said silver halide emulsion layer does not contain an aromatic primary amine-type color developing agent or a precursor thereof.*

Re. 34,698

METHOD OF PRODUCING SALINOMYCIN ANTIBIOTICS

Yukio Miyazaki, Ageo; Akira Shibata, Zama; Tateo Yahagi, Kawagoe; Masayuki Hara; Kaoru Hara, both of Tokyo; Singo Yoneda, Kuki; Hiroko Kasahara, Matsudo, and Yuko Nakamura, Tokyo, all of Japan, assignors to Kaken Chemical Company, Limited, Tokyo, Japan

Original No. 4,212,942, dated Jul. 15, 1980, Ser. No. 911,231, May 31, 1978. Application for reissue Jan. 29, 1993, Ser. No. 10,786

Claims priority, application Japan, May 31, 1977, 52-62802; Jun. 1, 1977, 52-63215

Int. Cl.[5] C12P *17/18;* **C12N** *1/38, 1/20*

U.S. Cl. 435—119 **4 Claims**

1. A method of producing salinomycins, which comprises culturing a salinomycins-producing Streptomyces microorganism in a medium containing *12-25%* fatty acid or its precursor and ammonia or an ammonium salt and recovering the salinomycins from the culture.

PLANT PATENTS

GRANTED AUGUST 16, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,861

HYBRID TEA ROSE PLANT NAMED 'STARQUELI'

Ludwig Starkl, Vienna, Austria, assignor to Bear Creek Gardens, Inc., Medford, Mich.

Filed Jul. 6, 1993, Ser. No. 88,841

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—16 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, a sport of the variety AROyqueli characterized particularly as to novelty by its distinct and uniform flower color difference from its parent.

8,862

FLORIBUNDA ROSE PLANT NAMED 'OLYTEL'

Huibert W. Olij, De Kwakel, Netherlands, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 10, 1993, Ser. No. 74,759

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of Floribunda rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive long-lasting bicolored double blossoms which are light Cardinal Pink suffused with Turk Red on the upper side and light Cream Yellow more or less suffused with light Cardinal Pink on the under side,
(b) forms bronze green adult wood,
(c) forms vigorous vegetation,
(d) exhibits a bushy growth habit,
(e) is particularly well suited for forcing and cut flower production in a greenhouse, and
(f) is not particularly affected by cryptogamic diseases;

substantially as herein show and described.

8,863

PINEAPPLE PLANT NAMED 'CO-2'

Calvin H. Oda, Honolulu, Hi., and David D. F. Williams, Fort Collins, Colo., assignors to Del Monte Fresh Produce N.A., Inc., Coral Gables, Fla.

Filed Aug. 23, 1993, Ser. No. 110,808

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—33.1 **1 Claim**

1. The new and distinct variety of Pinapple Plant substantially was shown and described herein.

8,864

MELROSE PLUM TREE

Leonard M. Kamada, Orange Cove, and Ignacio Sanchez, Dinuba, both of Calif., assignors to David K. Kamada, Reedley, Calif., a part interest

Filed Nov. 4, 1993, Ser. No. 148,678

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—38.1 **1 Claim**

1. A new and distinct variety of plum tree substantially as illustrated and described which is somewhat remotely similar to the "Black Beaut" plum tree, in that it produces fruit which are mature for commercial harvesting and shipment approximately June 1 to June 5 in the San Joaquin Valley of central California, or approximately simultaneously with the fruit of the "Black Beaut" plum tree, but which are distinguished therefrom in that, among other characteristics, the fruit has a more uniformly dark purple skin coloration and a more balanced flavor while having a greater regularity of bearing.

8,865

CHRYSANTHEMUM NAMED BRONZE REAGAN

Martinus Van Der Jagt, CJ Langeraar, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Continuation of Ser. No. 780,238, Oct. 22, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 92,941

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.3 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Bronze Reagan, as described and illustrated.

8,866

POINSETTIA PLANT '586'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Dec. 7, 1993, Ser. No. 163,167

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.4 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its unusual bract formation and presentation, dark green foliage, and self-branching characteristics.

VOL
1165

ISS
3

AG
16

1994

UMI

PATENTS

GRANTED AUG. 16, 1994

ERRATA

For CLASS	See PATENT NO.
036-007	5,337,491
036-028	5,337,492
036-054	5,337,493
036-061	5,337,494
037-453	5,337,495
060-752	5,337,583
074-551	5,337,609
477-048	5,337,628
477-052	5,337,629
477-131	5,337,630
108-115	5,337,657
601-033	5,337,737
600-008	5,337,741
251-129	5,337,790
164-004	5,337,799
164-072	5,337,800
164-098	5,337,801
165-022	5,337,802
164-098	5,337,803
164-287	5,337,804
164-369	5,337,805
165-047	5,337,806
165-146	5,337,807
166-191	5,337,808
166-208	5,337,809
477-175	5,337,866
477-074	5,337,868
226-108	5,337,944
227-109	5,337,945
227-110	5,337,946
236-010	5,337,952
279-128	5,338,045
403-321	5,338,133
414-346	5,338,140
441-059	5,338,235
454-049	5,338,248
454-126	5,338,249

VOL 1165 ISS 3 AG 16 1994 UMI

ERRATA—CONTINUED

117-044	5,338,388
117-089	5,338,389
204-406	5,338,435
588-016	5,338,493
505-470	5,338,507
426-427	5,338,575
429-190	5,338,596
437-070	5,338,750
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426-005	5,338,809
514-364	5,338,855
505-193	5,338,943
364-419	5,338,976
307-086	5,338,994
340-932	5,339,000
505-211	5,339,062
347-005	5,339,098
385-024	5,339,157
348-757	5,339,158
348-071	5,339,159
348-571	5,339,160
348-312	5,339,161
348-298	5,339,162
348-229	5,339,163
395-700	5,339,238
331-016	5,339,278
346-134	5,339,280
376-107	5,339,336
359-352	5,339,441

PATENTS

GRANTED AUGUST 16, 1994

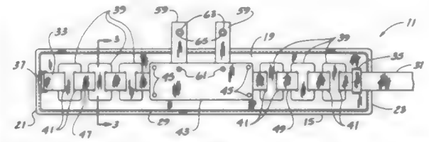
GENERAL AND MECHANICAL

5,337,417

RIB PROTECTOR

Dennis K. Whiteside, St. Charles; Donald R. Walker, and Norma L. Denney, both of Ava, all of Mo., assignors to Figgie International Inc., Willoughby, Ohio

Filed Aug. 25, 1993, Ser. No. 111,987
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **22 Claims**



1. A rib protector for protecting a person's torso while playing athletic events, such as football, the rib protector comprising:

an elongate pad having an inner surface and an outer surface opposite the inner surface;

a flexible belt attached to the outer surface of the pad for securing the pad around the person's torso in a position in which the inner surface of the pad is adjacent the torso; and

a plurality of substantially rigid plates adapted to be removably attached to the belt for covering portions of the outer surface of the pad, the plates being constructed for receiving the impact of blows delivered to the rib protector and distributing the impact force to the pad,

said plates being separate from one another and individually removable from the belt whereby a person using the rib protector may attach a selected number of plates to the belt.

5,337,418

PROTECTOR AND ARTICLE OF SPORTSWEAR USING THE SAME

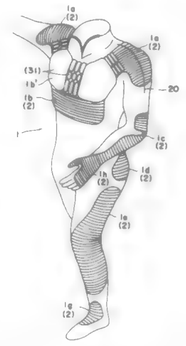
Koji Kato, Tokyo, and Reiji Oshima, Ichikawa, both of Japan, assignors to K & K Inc., Tokyo, Japan

Continuation of Ser. No. 744,670, Aug. 9, 1991, abandoned, which is a continuation of Ser. No. 376,115, Jul. 6, 1989, abandoned. This application May 19, 1993, Ser. No. 64,338
Claims priority, application Japan, Jul. 8, 1988, 63-170085; Jul. 8, 1988, 63-170086
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **.2 Claims**

1. A sports protector comprising:

(a) a cushioning pad for buffering external impact, the cushioning pad having one face being adapted to be mounted over a garment; and

(b) a plurality of protecting rigid ribs extending substantially parallel to each other and substantially perpendicular to a main bending plane of part of a body of a wearer for providing ease in movement of the body part, wherein the movement of the body part mainly occurs along the main bending plane, the rigid ribs being of sufficient rigidity to permit substantial deformation of the pad, in use as a sports protector, only by bending at the main bending plane, said rigid ribs being mounted on the other face of the cushioning pad for protecting the cushioning pad from being damaged by the external impact, wherein the cushioning pad has a corrugated shape, having parallel top portions and bottom portions, and further comprises a cushioning lining which has a plurality of parallel closed tubes, adjacent tubes being attached to each other for defining air cushion chambers therein, the cushioning lining being attached to the bottom portions of the cushioning pad for cushioning the external impact applied to the cushioning pad, the rigid ribs being mounted on respective top portions of the cushioning pad, the cushioning lining being sealingly attached to the cushioning pad to define additional air cushion chambers for buffering the external impact applied to the cushioning pad.

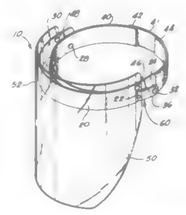


5,337,419

FACE PROTECTOR

John P. Russell, Gardendale, Ala., assignor to Infection Control Products, Inc., Gardendale, Ala.

Continuation-in-part of Ser. No. 933,522, Aug. 24, 1992, and a continuation-in-part of Ser. No. 933,510, Aug. 24, 1992. This application Sep. 24, 1992, Ser. No. 950,821
Int. Cl.[5] A42B *3/22*
U.S. Cl. 2—9 **19 Claims**



1. A face protector for shielding the face of the wearer while permitting observation and pivoting of the shield toward and away from the face comprising:

(a) an elongated flexible band sized and adapted to be fitted about the head;

(b) a first elongated flexible stiffening member attached therealong to a corresponding confronting portion of said band;

(c) a second elongated stiffening member having a length greater than said first stiffening member and pivotally attached to said first stiffening member at corresponding end portions of said stiffening members, whereby said stiffening members are spaced apart when said band is fitted about said head as aforestated;

(d) a transparent face shield connected along the top portion thereof to said second stiffening member, whereby pivotal movement of said second stiffening member relative to

VOL 1165 ISS 3 AG 16 1994 UMI

said first member permits movement of said shield toward and away from the face; and,

(e) means for limiting the pivoting movement of said second stiffening member relative to said first stiffening member and said shield toward the face comprising:

i. a void provided in at least one end portion of said second stiffening member; and,

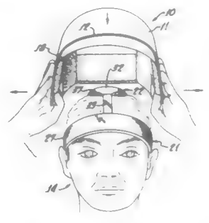
ii. means for fastening said one end portion of said second stiffening member between the corresponding end portion of said first stiffening member and said band.

5,337,420

METHOD AND APPARATUS FOR MOUNTING AND LOCATING A HELMET COMFORTABLY ON THE HEAD OF A PERSON, AND COMBINATION RESULTING THEREFROM

Elbert M. Haysom, 1527 San Carlos, Orange, Calif. 92665, and Keith N. Groves, 1779 E. 4500 South, Salt Lake City, Utah 84124

Filed Nov. 3, 1992, Ser. No. 970,618
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—410 18 Claims



4. A method of improving the fit and comfort of a protective helmet on the head of a person, which comprises:

(a) providing a fit and comfort band constructed and sized to fit resiliently around the head of a person with sufficient tightness to be a close fit on such head, but without sufficient tightness to create discomfort;

(b) mounting said band around such head, so that said band extends across the forehead, and across the back of such head at the upper end of the neck,

said mounting step being performed without any helmet being present at such head,

(c) mounting a crown pad above such head at the top-center thereof, and anchoring said pad to said fit and comfort band,

(d) providing a protective helmet for such head, said helmet having interior padding or lining that at the interior thereof is sized to fit such head but with sufficient clearance that said band will fit between such head and said padding or lining when said band is mounted around such head, and

(e) mounting said helmet on such head in such manner that said padding or lining fits around said band adjacent thereto,

said mounting of said helmet being effected as a separate step subsequently to said step of mounting said band.

5,337,421

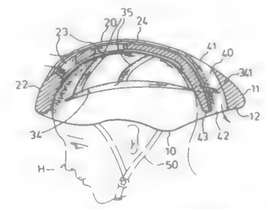
AIR VENTILATION HELMET

Yen-Ming Jeng, 48 Feng-Lian Street, Hsin-Feng Hsian, Hsin-chu Hsien, Taiwan

Filed Mar. 8, 1993, Ser. No. 27,379
Int. Cl.[5] A42B *3/00;* A42C *5/04*
U.S. Cl. 2—425 7 Claims

1. A helmet comprising:

a helmet body defining a recessed interior for receiving therein the head of a cyclist and having a front edge, a tail portion opposite said front edge, and a top surface between said front edge and said tail portion, said tail portion having an underside formed rearmost from said front edge and formed therein with an elongated air passage extending therethrough rearwardly and downwardly from said top surface away from said front edge, said air passage having a first opening formed on said top surface of said helmet body and a second opening formed on said under-



side of said tail portion; said air passage allowing an air flow through said helmet body and said recessed interior and creating a negative pressure zone under said tail portion which provides a suction to exhaust air inside said recessed interior, and

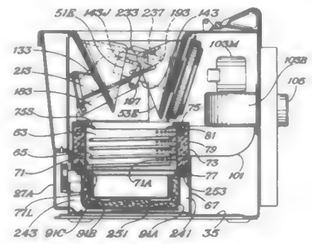
fastening means mounted on said helmet body for securing said helmet on the head of the cyclist.

5,337,422

INCINERATOR TOILET WITH APPARATUS FOR CONTROLLING LID AND SPLIT BOWL

Ernest B. Blankenship, Dallas, Tex., assignor to Research Products/Blankenship Corporation, Dallas, Tex.

Filed Sep. 14, 1992, Ser. No. 944,680
Int. Cl.[5] A47K *11/02*
U.S. Cl. 4—111.5 9 Claims



1. An incinerator toilet comprising:

housing structure,

an incinerator chamber located in said housing structure and having a central opening with an open upper end,

a seat formed around said open upper end of said chamber,

heating means located in said central opening of said chamber,

a lid for engaging said seat for closing said upper end of said chamber and for opening said upper end of said chamber,

a bowl located above said open upper end of said chamber and comprising first and second bowl sections each of which have side edges,

means for pivotally coupling said first and second bowl sections to said housing structure to allow said first and second bowl section to move to closed positions with their side edges next to each other for holding a liner and to open positions with their side edges located away from each other for releasing the liner into said central opening of said chamber,

means for initially raising said lid from said seat and then moving said lid laterally of said upper end of said chamber to open said upper end of said chamber and to allow said first and second bowl sections to move to said open position for releasing the liner into said central opening of said chamber,

guide means secured to said first bowl section for movement therewith,

said guide means having a length sufficient to be located next to said second bowl section and beyond its side edges when said first and second bowl sections are located in said closed or open positions, and

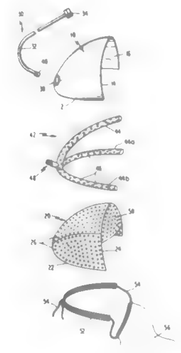
engaging means secured to said second bowl section for engaging and moving on said guide means when said first and second bowl sections move to said closed and open positions.

5,337,423

HAIR RINSING APPARATUS

Bobbie L. Young, 6306 Willow Springs, Arlington, Tex. 76017

Filed Jun. 19, 1992, Ser. No. 901,171
Int. Cl.[5] A45D *19/00*
U.S. Cl. 4—518 15 Claims



1. Apparatus for rinsing hair, comprising:

(a) a liquid impervious outer shell member for partially covering a user's head having a first perimeter rim for securement about the front hairline of the user and a second perimeter rim which extends around the rear portion of the user's head defining a rear opening, wherein the rear portion of the user's head is left uncovered when the apparatus is positioned thereon so that hair may extend therethrough;

(b) a liquid pervious inner shell member positioned within said outer shell member having a third perimeter rim which extends substantially adjacent to said first perimeter rim, and a fourth perimeter rim which substantially corresponds and is secured to said second perimeter rim, a fluid chamber being defined between said inner and said outer shell members; said inner shell member including an inner shell rear portion which extends beyond said second perimeter rim of said outer shell member and covers the upper rear portion of the user's head, whereby said inner shell member covers more of the rear portion of the user's head than said outer shell member, and the lower rear portion of the user's head is left uncovered so that hair may extend therethrough; and

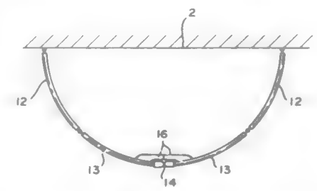
(c) means for delivering hair rinsing liquid to said fluid chamber, said inner shell member being operable to convey the liquid from said fluid chamber to the user's hair, whereby when the user's head is in a tilted back position over a fluid basin or the like, fluid flows through the hair of the user, out said rear opening and into the fluid basin.

5,337,424

SHOWER ENCLOSURE

Ludger Strack, Huerth-Efferen; Konrad Bergmann, Wittlich, and Klaus Laeller, Meckenheim, all of Fed. Rep. of Germany, assignors to Ideal-Standard GmbH, Bonn, Fed. Rep. of Germany

Division of Ser. No. 573,001, Oct. 29, 1990, Pat. No. 5,274,857.
This application Oct. 23, 1992, Ser. No. 965,433
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843510; Dec. 23, 1988, 3843512
Int. Cl.[5] A47K *3/02*
U.S. Cl. 4—557 5 Claims



1. A shower partition of the type which is attached to a wall and which can be swiveled as well as swung open and closed, said shower partition, when opened forming an enclosed shower stall in conjunction with the wall to which it is attached; wherein said shower partition comprises a pair of separate subunits, each of which includes a plurality of segments which are hinged with one another; wherein a first end of each subunit is attached to the wall in spaced apart relationship with respect to the first end of the other subunit; wherein opposite, second ends of the subunits abut one another, when opened, to form the shower stall; and wherein locking elements are attached on the longitudinal edges of the outer segments which engage with one another when the subunits are opened to form the shower stall; wherein each of said subunits comprise at least an inner segment and an outer segment, each inner segment being mounted to the wall, and the outer segments tightly fitting against one another at free longitudinal edges thereof when the subunits are opened to form the shower stall; wherein, when the subunits are opened to form the shower stall, the inner segments are swingable only in a direction toward a rest position in which the subunits are closed against the wall; wherein, when the subunits are opened to form the shower stall, the inner segments are able to fold outward to the rest position and the outer segments are able to fold inward into the rest position and are blocked from folding further outward; and wherein the locking elements are disengageable from one another only by inwardly directing folding of the outer segments.

5,337,425

SHOWER CURTAIN

Jane Hill, 332 Gaynor La., Port Charlotte, Fla. 33953

Filed Feb. 3, 1992, Ser. No. 829,439
Int. Cl.[5] A47K *3/14*
U.S. Cl. 4—610 1 Claim

1. An improved shower curtain for a shower enclosure of the type having a bathtub, a back wall and a side wall, said improved shower curtain comprising:

a) a first track bent in a U-shaped configuration, attachable to a back ledge, a free side ledge and a front ledge of the bathtub, said first track has a channel that is solely vertically C-shaped in cross section;

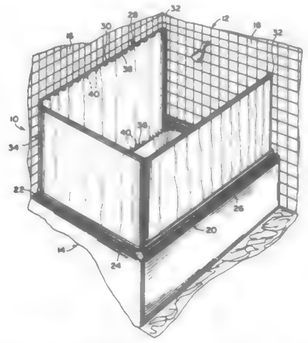
b) a second track bent in a U-shaped configuration, spaced above said first track and attachable along one portion to the back wall, while its distal ends are attachable to the

VOL 1165 ISS 3 AG 16 1994 UMI

side wall, said second track has a channel that is solely vertically C-shaped in cross-section;

c) an elongated sheet of flexible waterproof material sized to fit between and about said first track and said second track;

d) a first means for detachably securing a lower marginal edge of said sheet to said first track, said first detachably securing means includes a plurality of spaced apart first fibrous fastener elements attached along the lower marginal edge of said sheet, a plurality of slide members that ride entirely within said solely vertical C-shaped channel of said first track, and a plurality of second fibrous fastener elements, each affixed to each of said slide members, so



that said first fibrous fastener elements can detachably interlock with said second fibrous fastener elements; and

e) a second means for detachably securing an upper marginal edge of said sheet to said second track, said second detachably securing means includes a plurality of spaced apart first fibrous fastener elements attached along the upper marginal edge of said sheet, a plurality of slide members that ride entirely within said solely vertical C-shaped channel of said second track, and a plurality of second fibrous fastener elements, each affixed to each of said slide members, so that said first fibrous fastener elements can detachably interlock with said second fibrous fastener elements, so that said sheet will be sealed thereto, to retain water within the shower enclosure.

5,337,426

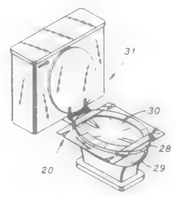
DISPOSABLE SAMPLE COLLECTION DEVICE

Richard S. Matusewicz, San Jose, and Josefina T. Baker, Cupertino, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 919,637, Jul. 24, 1992, abandoned, and a continuation-in-part of Ser. No. 616,491, Nov. 21, 1990, abandoned. This application Jul. 6, 1993, Ser. No. 88,491

Int. Cl.[5] **A47K** *11/00*

U.S. Cl. 4—661 **10 Claims**



1. A fecal specimen collection device for use on a conventional toilet seat which is pivotally attached on a toilet bowl, the seat having an upper and lower surface bounded by opposite user support sides each having an outer peripheral edge and having an opening extending through said surfaces for passage of waste matter, the device including a sheet of flexible non-rigid material having first and second opposite edges and third and fourth opposite edges, the sheet including not more than a single lengthwise portion running from the first edge to the second edge, the lengthwise portion being free of openings and cuts, and straps on either side of the lengthwise portion defined by slits in the sheet, the slits separating the lengthwise portion from the straps and being generally parallel to and proximate the third and fourth opposite edges of the sheet, the slits having a length such that the outer peripheral edges of the seat can pass through said slits thus positioning one strap across the upper surface of the seat near the pivotal attachment and the other strap across the upper surface at a front of the seat with the single lengthwise portion of the sheet disposed with at least a portion thereof below the lower surface and extending across said opening so as to retain fecal matter deposited thereon by a user, the sheet being of such a thickness and consistency such that the straps may be easily torn subsequent to deposition of said fecal matter whereby the device can be lowered into the toilet bowl for disposal.

5,337,427

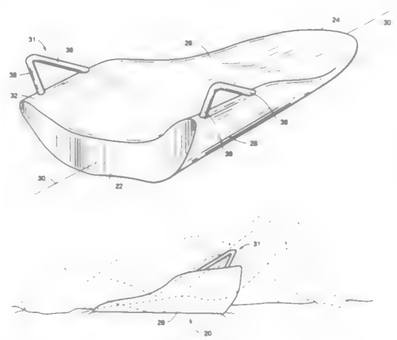
BIRTHING BOARD

Anthony M. Pagano, 11911 Kingbird Ct., Penn Valley, Calif. 95946; David H. Tuman, 5001 Miners Ranch Rd., Oroville, Calif. 95966, and Margaret E. Pagano, 11911 Kingbird Ct., Penn Valley, Calif. 95946

Filed Aug. 18, 1992, Ser. No. 931,674

Int. Cl.[5] **A61G** *7/065, 7/07, 15/00*

U.S. Cl. 5—602 **15 Claims**



1. A birthing board comprising

a body of substantially rigid material having a top surface, a bottom surface, a front end adapted to support the hips and lower back of a woman, and a back end adapted to be positioned behind the shoulder area of a woman;

wherein the front end of the body has a thickness which is greater than that at the back end, so that the top surface at the front end is elevated with respect to the back end, and so that the top surface is generally inclined along a central axis which runs from the front end to the back end;

wherein the top surface has a generally concave shape in a dimension transverse to the central axis, and is further shaped to provide lumbar support along the central axis; and

wherein the bottom surface has a continuous convex shape, so that cross sections of the body, taken transversely to the central axis, have a bottom curvature of convex shape, and a top curvature of concave shape.

5,337,428

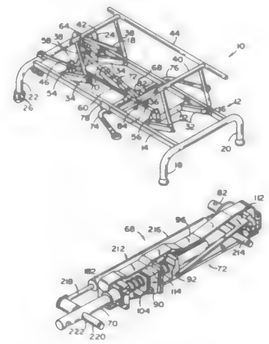
ADJUSTABLE BED WITH MECHANICAL JACK

Bernard J. Krauska, Stevens Point; Randy Wisniewski, Plover, and Warren J. Peterson, Stevens Point, all of Wis., assignors to Joerns Healthcare Inc., Stevens Point, Wis.

Filed Oct. 15, 1992, Ser. No. 961,427

Int. Cl.[5] **A61C** *7/00*

U.S. Cl. 5—611 **58 Claims**



39. An adjustable bed, comprising:

a base frame;

a mattress frame;

linkage means operatively connected to said frames for mounting the mattress frame on said base frame; and

a mechanical jack connected to said base frame and said linkage means for raising and lowering said mattress frame with respect to said base frame, said jack comprising:

an enclosure defining a ram aperture;

a ram extending through said ram aperture;

a bearing support disposed within said enclosure for supporting said ram for extension from and retraction into said enclosure;

a drive plate;

a hold plate, said plates defining plate apertures through which said ram extends; and

drive means within said enclosure for canting said drive plate into locking engagement with said ram and shifting said drive plate to extend said ram from said enclosure with said hold plate preventing return movement of said ram and for canting said hold plate out of engagement with said ram to release the ram and permit the mattress frame to be lowered, said drive means including a single shaft which is rotated in a first direction to extend said ram and in a second direction to release said ram, a drive bar supported within said housing for reciprocating movement, a release bar supported within said housing for reciprocating movement, and actuation means on said actuator shaft for shifting said drive bar and moving said drive plate when the shaft is rotated in the first direction and for shifting said release bar into engagement with the hold plate when said shaft is rotated in the second direction.

5,337,429

HEAD SUPPORT FOR BED-RIDDEN PATIENTS

Marilyn Tucker, 29255 S. Lakeshore Dr., Agoura, Calif. 91301

Filed Aug. 9, 1993, Ser. No. 104,776

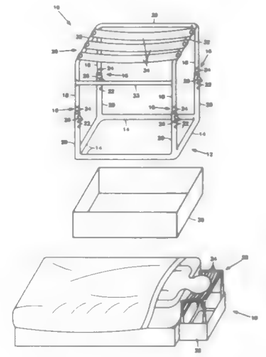
Int. Cl.[5] **A45D** *19/04;* **A47C** *20/02*

U.S. Cl. 5—643 **8 Claims**

1. A device for supporting the head of a bed-ridden patient off an end of a bed during shampooing and cutting of the patient's hair, the device comprising:

a) a frame with an open top having a height such that the top of the frame is approximately at a same height as a top of a mattress of a hospital-type bed;

b) a plurality of straps traversing the open top of the frame for supporting the head of the bed-ridden patient off the



end of the bed during shampooing and cutting of the patient's hair; and,

c) a watertight collection tub disposed over a lower portion of the frame having sufficient size to hold fluid residue from shampooing of the patient's hair.

5,337,430

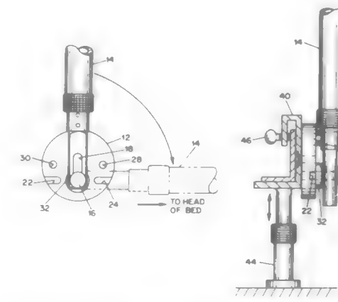
DEVICE FOR ASSISTING A PERSON TO TRANSFER INTO AND FROM A BED

Allen P. Schlein, 107 Curtis Ter., Fairfield, Conn. 06432

Filed Apr. 28, 1993, Ser. No. 54,404

Int. Cl.[5] **A47C** *21/00;* **A61G** *7/00*

U.S. Cl. 5—662 **9 Claims**



1. A support device adapted to be anchored to a bed side rail for providing support to assist a person to get into or out of bed, said support device comprising:

a flat, circular disk,

a pivot pin anchored at one end to said disk and projecting from a first surface thereof,

means for detachably securing said disk to a side rail of a bed frame such that said pivot pin extends horizontally,

an elongate handle having first and second ends pivotally connected at said first end to said pivot pin for rotation relative to said disk in a plane parallel to said first surface, and

detent means including at least two slots formed in and arranged along the periphery of said first surface of said disk and a protrusion projecting from said handle at a

VOL 1165 ISS 3 AG 16 1994 UMI

location to be engageable with said slots for selectively positioning said handle either with vertical orientation in which it can be grasped by and provide support for a person getting into or out of bed or with substantially horizontal orientation alongside said bed side rail out of the way.

5,337,431

APPARATUS FOR AND METHOD OF DETERMINING QUALITY OF CLOTHES TO BE WASHED

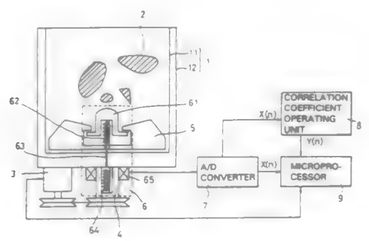
Jung H. Kim, Seoul; Hyung S. Kim, Kyungki; Byeong H. Lee, Kyungki; Young H. Roh, Kyungki, and Hae Y. Chung, Seoul, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Rep. of Korea

Filed Sep. 23, 1993, Ser. No. 126,034

Claims priority, application Rep. of Korea, Jun. 19, 1993, 11228/1993

Int. Cl.[5] D06F *33/02*

U.S. Cl. 8—159 4 Claims



1. An apparatus for determining the quality of clothes to be washed in a washer, comprising:

clothes quality sensing means for sensing the quality of said clothes from the magnitude of an impact generated by the clothes and generating a clothes quality signal;

correlation coefficient operating means for analyzing said clothes quality signal outputted from said clothes quality sensing means and outputting a correlation coefficient for determining whether the clothes quality signal is a meaningful signal or a noise; and

a microprocessor for controlling a rotation speed of said washer according to the clothes quality signal, when the clothes quality signal currently inputted is determined to be said meaningful signal, from said correlation coefficient.

4. A method of determining the quality of clothes to be washed in a washer, comprising the steps of:

(a) supplying a water into a washing tub of said washer and then sensing the quality of said clothes while agitating the clothes for a predetermined time by driving a motor, to generate a clothes quality signal;

(b) receiving said clothes quality signal outputted at said step (a) and operating a correlation coefficient of the clothes quality signal, to determine whether the clothes quality signal is a meaningful signal or a noise; and

(c) controlling a rotation force of said motor according to the clothes quality signal when the clothes quality signal has been determined to be the meaningful signal by use of the correlation coefficient outputted at said step (b).

5,337,432

METHOD OF SHAPING AND A SERIES OF SHAPING IMPLEMENTS FOR SLALOM BOOTS

Markku Pirhonen, Mäntykatu 12, SF-40630 Jyväskylä , Finland

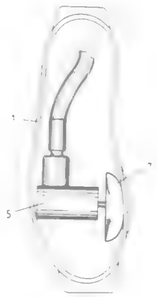
PCT No. PCT/FI90/00259, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO91/06230, PCT Pub. Date May 16, 1991

PCT Filed Oct. 30, 1990, Ser. No. 854,997

Claims priority, application Finland, Oct. 31, 1989, 895154

Int. Cl.[5] A43D *5/00*

U.S. Cl. 12—115.2 6 Claims



1. A method of shaping slalom boots, consisting of a hard plastic outer shell and an inner boot made of flexible material, to conform with individual protrusions of a user's foot and comprising the steps of:

forming a pattern depicting the sole of the user's foot from an inflexible material;

placing the pattern inside the boot;

locally heating a point corresponding to a protrusion in the pattern from outside the boot by hot-air blowing; and

pressing the heated point from inside the boot using a wooden shaping head to stretch the plastic material to conform to the protrusion in the pattern.

5,337,433

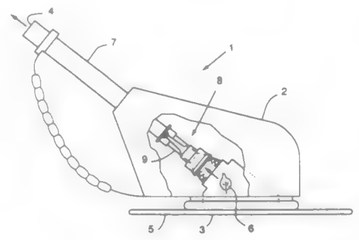
POOL CLEANER

Robert F. Gould, San Francisco, and Merritt A. Robinson, San Anselmo, both of Calif., assignors to Jandy Industries, Novato, Calif.

Filed Feb. 18, 1993, Ser. No. 18,980

Int. Cl.[5] E04H *3/20*

U.S. Cl. 15—1.7 29 Claims



1. A swimming pool cleaner comprising a cleaning head having a passage extending therethrough from an inlet, which in use engages the surface to be cleaned, to an outlet for connection to a flexible suction hose having a flow system comprising a valve within the passage at the upstream end of a rigid-walled inertial chamber forming a section of the passage, the valve having:

a. a mouth comprising at least one lip, said lip being movable independently of the walls of said chamber downstream thereof in response to water flow therethrough from an open position of the mouth permitting flow into said section to a closed position of the mouth to shut off flow into said section and

b. biasing means with low creep characteristics, for urging the lip to the open position, said biasing means imparting an opening force to the lip

i. throughout the range of movement of the lip between open and close under dynamic flow conditions at the design flow rate that is substantially less than the closing force created by the water flow through the valve mouth urging the lip movement towards closure and substantially greater than the closing force imparted by flow through the mouth during lip travel from full closure to the open position and

ii. over an initial closure-initiating region beginning from the fully open position an opening force on the lip that is substantially less than the closing force on the lip created by the water flow through the valve mouth under steady flow conditions at the design flow rate.

5,337,434

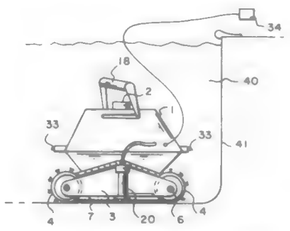
DIRECTIONAL CONTROL MEANS FOR ROBOTIC SWIMMING POOL CLEANERS

Giora Erlich, North Caldwell, N.J., assignor to Aqua Products, Inc., Cedar Grove, N.J.

Filed Apr. 12, 1993, Ser. No. 45,897

Int. Cl.[5] E04H *3/20*

U.S. Cl. 15—1.7 5 Claims



1. Directional control means for an automatic swimming pool cleaner of the type having a housing, with front and rear ends and two sides, a pair of motor driven cylindrical brushes rotatably mounted on the front and rear ends of the housing respectively for propelling the cleaner along the bottom surface of a swimming pool, said control means comprising a projectable leg mounted on one side of the housing between the front and rear ends; and means to reciprocably operate the leg for projected movement into contact with the bottom surface of the swimming pool to partially lift one side of the cleaner from said surface as it is propelled therealong causing the cleaner to pivot around the projected leg to change direction.

5,337,435

AUTOMATIC TOOTHBRUSH

Janet H. Krasner, and Paul R. Krasner, both of 285 Maugers Mill Rd., Pottstown, Pa. 19464

Filed Sep. 18, 1992, Ser. No. 946,656

Int. Cl.[5] A61C *17/16*; A46B *13/02*

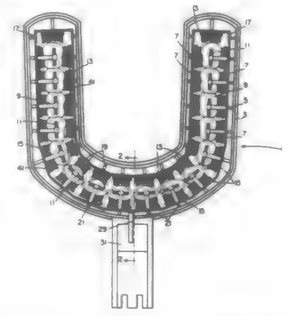
U.S. Cl. 15—23 20 Claims

1. An automatic toothbrush for brushing teeth of a user, each of the user's teeth having first and second side surfaces, the toothbrush comprising:

a) a housing,

b) a first set of brushes attached to the housing, the brushes of the first set being arranged in a first arc, each brush of the first set being positioned to contact the first side surface of one of the user's teeth, all of the brushes of the first set being rotatable, each brush of the first set having an axis of rotation which is generally perpendicular to said first side surface, the brushes of the first set being connected to each other by a first set of gear means, such that rotation of one of the brushes of the first set causes rotation of all of the brushes of the first set,

c) a second set of brushes attached to the housing, the brushes of the second set being arranged in a second arc generally parallel to the first arc, each brush of the second set being positioned to contact the second side surface of one of the user's teeth, all of the brushes of the second set being rotatable, each brush of the second set having an



axis of rotation which is generally perpendicular to said second side surface, the brushes of the second set being connected to each other by as second set of gear means, such that rotation of one of the brushes of the second set causes rotation of all of the brushes of the second set, at least one member of the first set of gear means being engaged with a member of the set of second gear means, wherein the brushes of the first and second sets are positioned such that a given tooth is contacted on its first side surface by a brush of the first set and on its second side surface by a brush of the second set, and

d) means for imparting rotation to a member of the first set of gear means.

5,337,436

BRUSHLESS TOOTH CLEANING DEVICE

Ulrich P. Saxer, Wirzenweid 55, Ch-8053 Zürich, and Carlo A. Buzzi, Stauffacherstrasse 98, CH-8004 Zürich, both of Switzerland

PCT No. PCT/CH91/00186, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO92/03947, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 2, 1991, Ser. No. 854,679

Claims priority, application Switzerland, Sep. 3, 1990, 2868/90-6

Int. Cl.[5] A47L *25/00*

U.S. Cl. 15—104.94 8 Claims

1. A tooth-cleaning apparatus comprising:

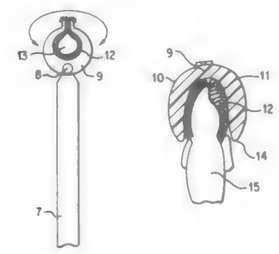
a cleaning head attached to a holder, said holder facilitating movement and manipulation of the cleaning head along a user's teeth to mechanically clean said teeth;

said cleaning head being free of bristles and having an opening defining a recess formed therein for receiving a first tooth having a chewing surface and two side surface, said recess permitting the cleaning head to be positioned over said first tooth so as to substantially completely surround the three tooth surfaces;

said cleaning head formed of a flexible material to permit the recess of the cleaning head to e positioned over said first tooth and moved to a second tooth having a larger size

VOL 1165 ISS 3 AG 16 1994 UMI

than the first tooth so as to substantially completely cover three surfaces of the second tooth; and



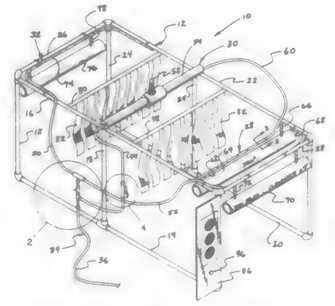
said recess having a flock material extending from and substantially covering all surfaces of said recess for mechanically cleaning said teeth without damaging the surfaces of said teeth or the gums of the user.

5,337,437

PORTABLE WASHING APPARATUS

Pierre M. Hingle, 215 Good News Ave., Belle Chasse, La. 70037

Filed Sep. 3, 1993, Ser. No. 115,593
Int. Cl.[5] B60S *3/04*
U.S. Cl. 15—104.92 3 Claims



1. A portable washing apparatus comprising:

a support structure having a front end and a rear end;

a first rinsing assembly comprising a first rinsing spray means for dispensing a first rinsing liquid as a mist over an object, said first rinsing assembly being attached to said support structure proximate said front end thereof and fluidly connected to a water supply;

a soap dispensing assembly comprising a soap dispensing spray means for dispensing a soap liquid as a mist over said object, said soap dispensing assembly being attached to said support structure proximate said first rinsing assembly and fluidly connected to said water supply;

at least one towel rack having a plurality of downwardly extending, flexible towel strips attached thereto, said towel rack being secured to said support structure proximate said soap dispensing assembly; and,

a second rinsing assembly comprising a second rinsing spray means for dispensing a second rinsing liquid as a mist over said object, said second rinsing assembly being attached to said support structure proximate said rear end thereof and fluidly connected to said water supply,

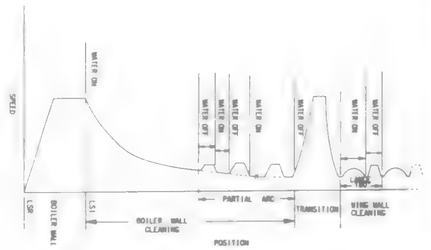
wherein at least one of said spray means is provided with a spray buffer means for converting said liquid into a liquid curtain, said spray buffer means comprising a cylindrical tube member positioned below said at least one of said spray means such that said liquid impacts and flows around said cylindrical tube.

5,337,438

METHOD AND APPARATUS FOR CONSTANT PROGRESSION OF A CLEANING JET ACROSS HEATED SURFACES

Clinton A. Brown, Baltimore; William E. Hellyer, Lancaster; John T. Huston, Lancaster, and Anthony W. Dickman, Reynoldsburg, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed May 2, 1992, Ser. No. 877,987
Int. Cl.[5] F22B *37/52*
U.S. Cl. 15—318.1 13 Claims



1. An apparatus for cleaning heated surfaces in a combustion device such as a boiler or furnace comprising:

a carriage assembly including a lance tube, said lance tube having a nozzle at one end and further being coupled to a source providing a blowing medium to be discharged from said nozzle in a jet directed to impinge against said heated surfaces and clean said heated surfaces;

drive train means for providing rotational and translation movement of said lance tube, said drive train means including motor means for causing said rotational and translational movement of said lance tube; and

control means coupled to said motor means for varying the rate of said rotational movement of said lance tube, said control means including means for monitoring said rotational and translational positions of said lance tube said control means further including a memory device having a schedule of lance tube rates of rotation stored therein corresponding to various positions of said lance tube and said nozzle, said schedule being derived as a function of both the rotational and longitudinal positions of said nozzle and the distance of travel of said jet from said nozzle to said heated surfaces, said control means varying said rate of rotation of said lance tube based upon said schedule.

5,337,439

HEADLAMP CLEANING UNIT FOR THE FRONT AREA OF A MOTOR VEHICLE

Wolfram Frey, Althengstett, and Hans Trube, Herrenberg, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Nov. 27, 1991, Ser. No. 798,087
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1990, 4037707
Int. Cl.[5] B60S *1/18, 1/34, 1/06*
U.S. Cl. 15—250.002 4 Claims

1. Headlamp cleaning apparatus for a front area of an elongated motor vehicle comprising:

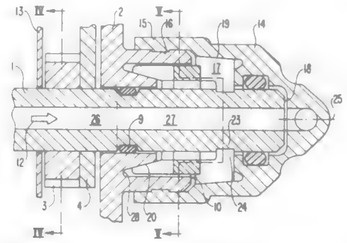
a headlamp wiper assembly for cleaning a headlamp;

a driven shaft on which said headlamp wiper assembly is nonrotatably mounted;

a housing having an opening in which said shaft is mounted, with a longitudinal axis of said shaft running approximately parallel to a longitudinal axis of said vehicle and with an end face of said shaft projecting from said housing toward a front end of said vehicle; and

locking apparatus for axially fixing said shaft to prevent axial displacement thereof relative to said housing, and

for releasing said shaft upon application to the shaft of an axial load which exceeds a predetermined magnitude, to



permit axial displacement of the shaft in a direction of said axial load;

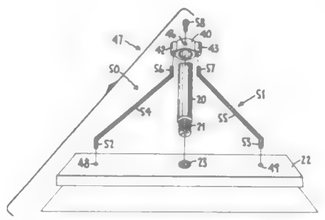
wherein said locking apparatus comprises a cap coupled on a rear end relative to the direction of the load, of the shaft projecting out of the housing, which cap is held on said housing by means of catch lugs which engage with a corresponding catch groove on a rear opening of the housing.

5,337,440

TOOL HEAD BRACE

Peter S. Vosbikian, Moorestown, N.J., and Haig Vartanian, Cheltenham, Pa., assignors to Quickie Manufacturing Corporation, Cinnaminson, N.J.

Filed Jan. 11, 1993, Ser. No. 2,927
Int. Cl.[5] A46B *15/00*
U.S. Cl. 15—143.1 10 Claims



1. A brace attached to a tool having an elongated handle and a working head extending laterally at an end of the handle, said brace comprising:

a slidable collar, said collar adapted for sliding along the elongated handle, said collar having two opposing channels;

fixing means fixing said collar in place on said handle;

a buttress structure comprising two rods, each rod having a handle end, a head end, and a leg section between said handle end and said head end, each of said handle ends being angularly offset from its respective leg section and inserted within a respective one of said opposing channels of said collar, and each of said head ends including a prong; and

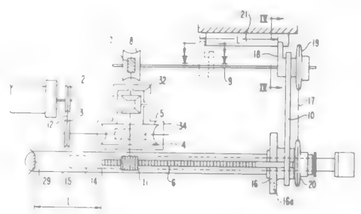
two prong holders on the tool head disposed on opposite sides from a point on the tool head, each of said prongs being inserted within a respective prong holder, the fixing means and buttress thereby bracing the working head to the handle, said rods being prevented from moving in an axial direction relative to the handle by said collar and said tool head.

5,337,441

EXTRACTION/INSERTION TYPE SOOT BLOWING APPARATUS

Masaaki Miyamoto; Yoshinori Yuzaki, and Kunihisa Fujihara, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 15,801
Int. Cl.[5] A47L *5/38, 15/00*
U.S. Cl. 15—318.1 4 Claims



1. An extraction/insertion type soot blowing apparatus, comprising:

a support structure;

a lance tube mounted to said support structure, having a longitudinal axis, and being axially movable relative to said support structure to move forwardly from a start position to a predetermined position and to move rearwardly from said predetermined position to said start position;

a discharge nozzle mounted at one end of said lance tube, said discharge nozzle being directed in a direction substantially perpendicular to said longitudinal axis of said lance tube;

a rack disposed in parallel with said lance;

a pinion operable engaged with said rack;

a support plate fixedly secured to said rack and mounted to said lance tube such that said lance tube is rotatable relative to said support plate and axially fixed relative to said support plate;

an elongated shaft rotatably and axially movable supported by said support plate and disposed in parallel with said lance tube;

a differential gear device having an input shaft, a first output shaft connected to said pinion, and a second output shaft connected to said elongated shaft;

a rotary drive source operably connected to said input shaft of said differential gear device;

transmission means for transmitting rotation of said elongated shaft to said lance tube;

restraining means for restraining rotation of said elongated shaft when said lance tube is in an axial position rearwardly of said predetermined position;

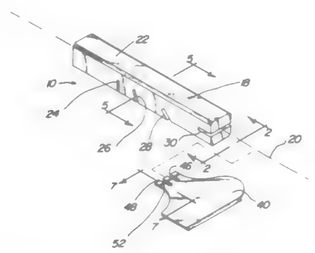
prevention means for preventing said lance tube from advancing axially beyond said predetermined position;

feeding means for feeding a discharge medium into said lance tube when said lance tube is present at said predetermined position; and

wherein said restraining means comprises a guide mounted to said support structure in parallel with said lance tube, and a moving plate axially slidably and substantially nonrotatably supported by said elongated shaft, said moving plate having a slot formed therein which is engageable with said guide.

VOL 1165 ISS 3 AG 16 1994 UMI

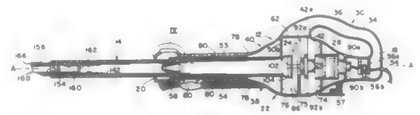
5,337,442
SCRAPER APPARATUS
Gordon D. Stewart, 210 Vintoa Box 232, Henning, Ill. 61848
Filed Nov. 27, 1992, Ser. No. 982,608
Int. Cl.[5] A47L *13/02*
U.S. Cl. 15—236.01 3 Claims



1. A hand-held scraper apparatus for scraping a surface at a plurality of scraping angles, the apparatus including a blade support that has a longitudinal axis and a latitudinal axis, the apparatus to be used by an operator for scraping a surface with a scraping motion parallel to the longitudinal axis of the blade support, the apparatus, comprising:
a rigid handle;
a rigid blade support connected to said handle;
first, second, and third blade-receiving slots located in said blade support and arranged at predetermined increments along a line parallel to the blade support longitudinal axis, each of said first, second and third blade-receiving slots being oriented at a different respective predetermined slant angle between zero and ninety degrees with respect to the blade support longitudinal axis; and
a blade for insertion into a respective blade-receiving slot, whereby said blade forms a respective scraping angle with a surface to be scraped that is supplementary to said respective predetermined slant angle that said respective blade-receiving slot forms with respect to the blade support longitudinal axis.
wherein said handle has a longitudinal axis which is parallel to the blade support longitudinal axis, wherein said handle and said blade support are a one-piece structure having a first continuous blade receiving surface extending parallel to said longitudinal axis and a second continuous blade receiving surface orthogonally oriented to said first surface and said longitudinal axis, said first, second, and third blade receiving slots being disposed in said first surface, said apparatus further comprising a fourth blade receiving slot, said fourth blade receiving slot being disposed in said second continuous surface, said second continuous surface being located at the extremity of said one-piece handle and blade support opposite to said handle with respect to said longitudinal axis.

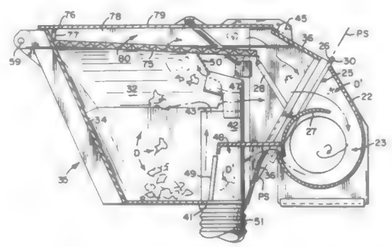
5,337,443
VACUUM CLEANER
Gary L. Steinberg, Jenison; Giovanni Pino, Grand Rapids; Kenneth E. Gibbs, Wyoming; Richard L. Norwood, Rockford, and Gary L. Smith, Belding, all of Mich., assignors to Bissell Inc., Grand Rapids, Mich.
Filed Jul. 21, 1992, Ser. No. 917,820
Int. Cl.[5] A47L *5/24*
U.S. Cl. 15—344 36 Claims

1. A vacuum cleaner, comprising:
a housing having a first and second ends;
a tubular dirt cup slidably disposed within said first end of said housing and adapted to move telescopically between a first position within said housing and a second position extending from said housing; and



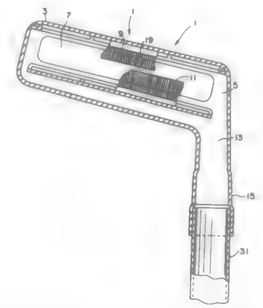
a fan assembly disposed within said housing for creating a vacuum in said tubular dirt cup.

5,337,444
SURFACE SWEEPING MACHINE WITH OVER-THE-CAB HOPPER DUMPING
Gary B. Young, Waco; Albert L. Hanel, Eddy, and Kenneth R. Veselka, Axtell, all of Tex., assignors to Tymco, Inc., Waco, Tex.
Division of Ser. No. 769,419, Oct. 1, 1991, Pat. No. 5,173,989, which is a division of Ser. No. 188,521, Apr. 29, 1988, Pat. No. 5,072,485. This application Oct. 7, 1992, Ser. No. 957,880
Int. Cl.[5] E01H *1/08*
U.S. Cl. 15—352 7 Claims



1. A hopper particularly adapted to receive air-entrained material comprising a receptacle having an inlet and a first outlet through which air-entrained material is adapted to enter said hopper and exit said hopper respectively, a centrifugal separator housing having an inlet in fluid communication with said first outlet, said centrifugal separator housing including means for centrifugally separating material from air-entrained material, said hopper having a second outlet through which material accumulated in said hopper can be dumped, a door normally closing said second outlet; a screen interiorly of, spaced from and carried by said door; said screen and door defining an air flow chamber through which air can flow during movement of the air between said receptacle inlet and first outlet whereby material can accumulate within said chamber and/or adhere to the underside of said screen, means for defining an opening into said chamber by way of which accumulated and/or adhered material can be removed from said chamber and/or screen, and means for creating a flow of air along a path through said screen and into said centrifugal separator housing.

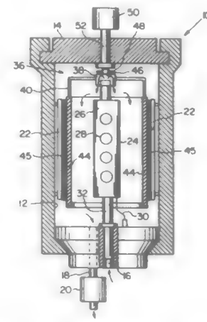
5,337,445
VACUUM FAN DUSTER
Gregory Harris, Nashville, Tenn.; Roy V. Nicholson, Hickory, N.C.; Stephen R. Burns, Duluth, Ga., and Robert W. Lackey, Hickory, N.C., assignors to Robert W. Lackey Corporation, Hickory, N.C.
Continuation of Ser. No. 864,625, Apr. 7, 1992, Pat. No. 5,235,722. This application May 27, 1993, Ser. No. 68,429
Int. Cl.[5] A47L *9/06*
U.S. Cl. 15—394 3 Claims



1. A vacuum assisted ceiling fan cleaner comprising:
a molded housing defining an air chamber and having an attachment means for connecting said housing to a vacuum source so as to produce a negative air flow;
said molded housing having upper and lower halves, said upper and lower halves supporting upper and lower cleaning surfaces, respectively, and said upper and lower halves being fixed to each other; and
said upper and lower cleaning surfaces of said housing defining a gap of a fixed thickness therebetween for the insertion of the ceiling fan blade, an end of said attaching means is mounted with respect to said gap so as to cause substantially equal amounts of negative air flow to contact a top and a bottom of a ceiling fan blade.

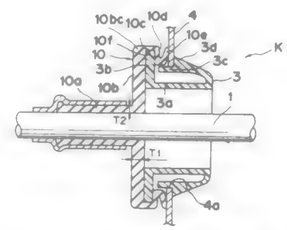
5,337,446
APPARATUS FOR APPLYING ULTRASONIC ENERGY IN PRECISION CLEANING
Charles W. Smith, Fairview, Pa., and Thomas B. Stanford, Jr., San Pedro, Calif., assignors to Autoclave Engineers, Inc., Erie, Pa. and Hughes Aircraft Company, Los Angeles, Calif.
Filed Oct. 27, 1992, Ser. No. 967,261
Int. Cl.[5] B08B *11/02*
U.S. Cl. 15—21.1 20 Claims

1. An apparatus for applying ultrasonic energy to a workpiece, comprising:
a pressure vessel having a cylindrical wall, a bottom wall and a cover enclosing an elongate workspace, a longitudinal axis of the vessel passing through the workspace;
a cleaning fluid comprising liquified carbon dioxide within the workpiece such that the workpiece is submerged therein;
a sonic plate located in said pressure vessel and disposed in said cleaning fluid, said plate having a plurality of sonic transducers thereon;



said transducers spaced in the direction of a longitudinal axis of the pressure vessel and positioned to emit sonic waves in said cleaning fluid.

5,337,447
GROMMET
Toshiharu Tanaka, and Syunji Kitoh, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Dec. 3, 1992, Ser. No. 985,035
Claims priority, application Japan, Dec. 3, 1991, 3-99532[U]
Int. Cl.[5] B65D *55/00;* H01B *17/26*
U.S. Cl. 16—2 5 Claims



1. A grommet which includes a grommet body made of an elastic material and a clamp, the grommet body having a cylindrical portion for closely receiving an outer periphery of a wire bundle, a flange provided at one end of the cylindrical portion, an annular groove formed on an inner face of an outer peripheral portion of the flange and a seal lip projecting from a distal end of the annular groove such that a seal lip clamping portion of the clamp is fitted into the annular groove, the grommet body comprising:
an outer peripheral wall which extends axially from an outer peripheral edge of the flange;
a wall portion which is bent radially inwardly from a distal end of the outer peripheral wall such that the annular groove is defined by the flange, the outer peripheral wall and the wall portion, the seal lip projecting from a distal end of the wall portion; and
means for maintaining the seal lip in a state in which the seal lip is turned up over the flange so as to be inside out, said maintaining means comprising the flange and the outer peripheral wall, the flange having a large thickness, while the outer peripheral wall has a thickness smaller than that of the flange.

VOL 1165 ISS 3 AG 16 1994 UMI

5,337,448

METHOD OF SWINGING A PIVOTED DOOR TO A SELECTED POSITION AND CAM AND FOLLOWER MECHANISM FOR USE IN THE METHOD

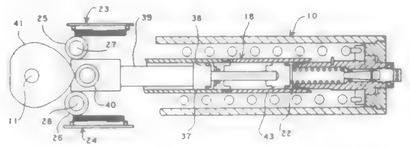
Peter E. Brown, Bridgnorth, United Kingdom, assignor to Jebron Limited, West Midlands, United Kingdom

Filed Nov. 19, 1992, Ser. No. 979,823

Claims priority, application United Kingdom, Nov. 28, 1991, 9125322

Int. Cl.[5] E05F *3/10, 3/22, 1/08*

U.S. Cl. 16—53 19 Claims



4. A cam and follower mechanism mounted in a housing, wherein the cam is mounted for turning relative to the housing about a cam axis which is fixed relative to the housing, guide means is provided for guiding the follower for reciprocation relative to the housing towards and away from the cam axis, wherein the guide means comprises an elongated member having first and second end portions at respective opposite ends of the member and having the follower at said first end portion, there are further provided guide elements which cooperate with said first end portion of said member for guiding said first end portion for reciprocation relative to the housing and a further guide part for restraining movement of said second end portion of said member relative to the housing except movement towards and away from the cam and wherein said guide elements are adjustable relative to the housing in an adjustment direction transverse to the direction of reciprocation of the follower and transverse to the cam axis.

19. A method of swinging a pivoted door to a selected position comprising the steps of fixing a housing with respect of a stationary structure, relative to which structure the door swings, connecting with the door a cam which is mounted in the housing for turning relative thereto about a cam axis, urging the cam towards a datum orientation relative to the housing by means of a spring-loaded follower acting on the cam, guiding the follower between a pair of guide elements and the step of adjusting the guide elements together relative to the housing, thereby adjusting the datum orientation of the cam relative to the housing by adjusting the position of the follower.

5,337,449

HANDGRIP FOR LINK CHAIN

David Lutzke, 18 Maple View Ct., Madison, Wis. 53719

Continuation-in-part of Ser. No. 838,318, Feb. 20, 1992, Pat. No. 5,216,780. This application Mar. 16, 1993, Ser. No. 33,093

Int. Cl.[5] A47B *95/02*

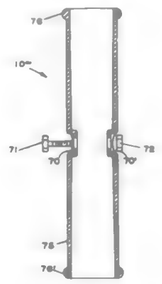
U.S. Cl. 16—111 R 1 Claim

1. A hand grip for link chain comprising

a) an elongated sleeve configured with diametrically opposed recesses disposed oppositely facing substantially at mid-length of the sleeve wherein each said recess is provided with an opening in the bottom thereof, said opening being disposed axially transverse to the axis of said sleeve, and further wherein the wall-thickness of said sleeve tapers in dimension substantially from the endmost extremities of said sleeve which thickness is minimum to mid-length of said sleeve where thickness is maximum,

b) a threaded fastener disposed to extend through said openings in the bottom of each said recess,

c) a threaded nut for said threaded fastener, whereby said sleeve when having a chain threaded therethrough is



secured to said chain by passing said threaded fastener through a chain link and attaching said nut.

5,337,450

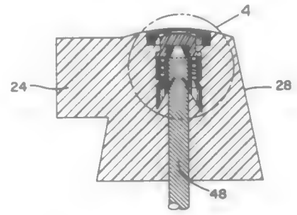
EASILY REMOVABLE FAUCET HANDLE

Paul E. Martin, 35 Milk St., Methuen, Mass. 01844

Filed Nov. 27, 1992, Ser. No. 982,637

Int. Cl.[5] A47B *95/02;* A47J *45/10;* E05B *1/00, 7/00*

U.S. Cl. 16—114 R 2 Claims



1. A new and improved faucet handle adapted to be easily installed on and removed from the stem of a flow control valve having at least one engagement notch comprised of:

a handle main body, said handle main body defining a central recess having first and second annular shoulders disposed therein in an axially spaced relation, said stem adapted to be axially received within said recess with said annular shoulders surrounding said stem;

a push button disposed in said recess, said push button having an annular flange engageable with said first annular shoulder in a first position thereof;

at least one stem engaging means attached to said push button;

resilient means disposed in said recess between said first and second annular shoulders for holding said stem engaging means of said push button in temporary engagement with said at least one engagement notch of said stem;

wherein said resilient means comprises a spiral spring coaxially positioned about said stem within said recess, said spring having a pair of opposed ends, one of said opposed ends engaging said annular flange of said push button and the other of said opposed ends engaging said second annular shoulder said handle main body central recess extending beyond said at least one engagement notch in said stem to form a ramp aligned with said at least one engagement notch, and

said at least one stem engaging means extending toward said ramp in said recess, said at least one stem engaging means having a distal end portion for engaging said ramp and said engagement notch in response to a resilient force applied by said spiral spring along the axis of said stem whereby movement of said push button along the axis of said stem to a second position is adapted to compress said spiral spring and cause sliding movement of said distal end portion of said at least one engaging means along said ramp into said recess to thereby release said distal end portion from said engagement notch and permit said push button, said main handle body, said spiral spring and said at least one stem engaging means to be axially removed from said stem.

5,337,451

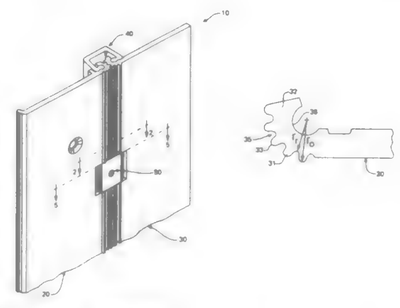
GEAR HINGE

Philip A. Goossens, Memphis, Tenn., assignor to Pemko Manufacturing Company, Ventura, Calif.

Filed Aug. 4, 1992, Ser. No. 925,374

Int. Cl.[5] E05D *7/00*

U.S. Cl. 16—354 19 Claims



19. A hinge, comprising:

first and second hinge members, each hinge member including an anodic coating and a gear portion, each gear portion having a base and a plurality of teeth extending from the base and defining a root diameter and an outsider diameter, each of the teeth having a free end defining a rounded shape, the outside diameter of the gear portion and the root diameter of the gear portion defining a ratio of 1.2;

a clamp having first and second bearing portions for rotatably carrying the first and second hinge members; and

a thrust bearing for supporting the first and second hinge members, the thrust bearing defining first and second channels for receiving the first and second bearing portions, respectively, of the clamp, the first and second channels defining respective inside diameters, first and second longitudinal end portions and a center portion such that the inside diameter of the thrust bearing channel at the center portion is approximately equal to the inside diameter of the thrust bearing channel at at least one of the first and second end portions, and the thrust bearing having a hardness of 94 on the Rockwell "M" scale, and

wherein each bearing portion of the clamp defines a diameter such that the inside diameter of the thrust bearing channels and the diameter of the bearing portions of the clamp define a ratio of 1.045.

5,337,452

SEALED HINGE ARRANGEMENT

George LeBlanc, Palm Beach Gardens, and Gwyn Gallagher, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 11, 1993, Ser. No. 75,703

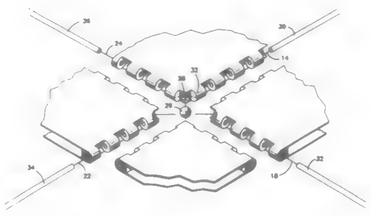
Int. Cl.[5] E05D *3/10, 7/00*

U.S. Cl. 16—367 3 Claims

1. A hinge arrangement for a substantially gas tight wall, formed of a plurality of panels capable of bending around any one of a plurality of intersecting hinge axes, comprising:

a plurality of substantially gas tight hinges joining said plurality of panels, each hinge having an axis around which adjacent panels rotate;

at least two hinge axes intersecting at a multiple axes point;



a spherical ball located at said multiple axes point;

a ball receiving socket in the corner of each panel contiguous with said spherical ball; and

said panels joined at said hinges with said spherical ball entrapped in sealing contact with said ball receiving sockets.

5,337,453

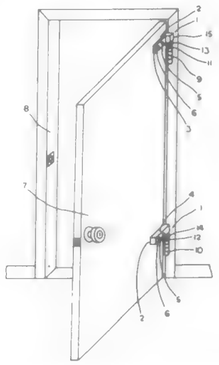
BUTT HINGE PIN LOCK

Walter R. Bargesser, 8808 N. 20th St., Tampa, Fla. 33604

Filed Jan. 19, 1993, Ser. No. 8,900

Int. Cl.[5] F05D *5/12*

U.S. Cl. 16—380 1 Claim



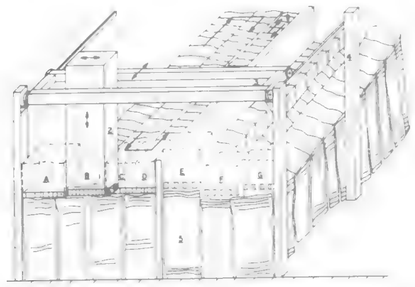
1. A butt hinge pin lock securing a butt hinge pin in place on a door, comprising:

a flat piece of material, said flat piece of material having means affixing it to a door having a butt type hinge installed thereon, said affixing means including mounting holes extending through said flat piece of material and means extending through said mounting holes and door affixing said flat piece of material in a horizontal position on said door,

said flat piece of material having at one end thereof a thicker portion extending substantially 90 degrees from said flat piece of material and positioned directly above a said head of said hinge pin, said thicker portion extending over the head of said hinge pin and thereby preventing said hinge pin from being removed from said butt hinge.

VOL 1165 ISS 3 AG 16 1994 UMI

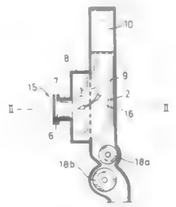
5,337,454
MILLING MACHINE ON PATHS
Hubert A. Hergeth, Königsmühlenweg 1, D-5100 Aachen, Fed. Rep. of Germany
Filed Jul. 16, 1991, Ser. No. 730,500
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1990, 4022679
Int. Cl.[5] D01G *13/00*
U.S. Cl. 19—80 R 10 Claims



9. A method for continuously reducing material pressed into bales arranged on their ends in a plurality of approximately parallel rows by means of a reducing element, comprising
moving said reducing element on top of said bales along a first path which is approximately parallel to said rows,
when said reducing element reaches an end of said first path, moving said reducing element in a direction which is transverse to said first path,
moving said reducing element on top of said bales along a second path which is closely adjoining to said first path and which is approximately parallel to said first path but opposite in direction thereto,
continuously removing material from said bales by means of said reducing element as it moves along said first and second paths, and
continuously repeating said moving and removing steps.

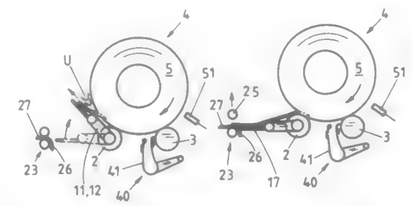
5,337,455
DEVICE AND METHOD FOR PNEUMATICALLY FEEDING A FEEDING CHUTE
Akira Pinto, Duesseldorf-Wittlaer; Guenter Lucassen, Haltern; Ulrich Schmidt-Doepper, Luedinghausen; Ulrich Hartmann, Duelmen, and Winfried Heuermann, Gescher, all of Fed. Rep. of Germany, assignors to Hergeth Hollingsworth GmbH, Duelmen, Fed. Rep. of Germany
PCT No. PCT/EP90/00234, § 371 Date Aug. 29, 1991, § 102(e) Date Aug. 29, 1991, PCT Pub. No. WO90/09471, PCT Pub. Date Aug. 23, 1990
PCT Filed Feb. 14, 1990, Ser. No. 30,434
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1989, 3904853; Feb. 17, 1989, 3904878
Int. Cl.[5] D01G *23/02*
U.S. Cl. 19—105 18 Claims

1. A device for pneumatically feeding fiber flocks, to a feeding chute, wherein, via a transport channel, the fiber material is conveyed by means of a flow of transport air comprising:
an air-collecting chamber, an air-permeable vertical intermediate wall separating said air-collecting chamber from said feeding chute and from said transport channel, said air-collecting chamber having a closable blow-off opening for discharging the flow of transport air, and means constantly opening and closing the blow-off opening during the feeding operation creating a pulsing action of the flow



of transport air in the feeding chutes whereby a more nearly uniform distribution of fiber flocks is achieved.

5,337,456
METHOD AND APPARATUS FOR OPENING A WADDING LAP
Heinz Clement, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Oct. 17, 1991, Ser. No. 777,797
Claims priority, application Switzerland, Oct. 22, 1990, 03368/90
Int. Cl.[5] D01G *19/08*; B65H *20/10*
U.S. Cl. 19—115 R 21 Claims

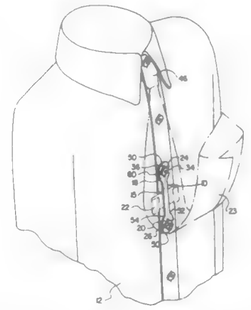


1. In a method for detaching a leading end of wadding from a rolled-up wadding lap, the improvement comprising the steps of
producing a current of air over the width of the wadding lap and in a direction substantially tangential of the wadding lap,
spacing said current of air from the wadding lap to generate an air stream in an unrolling direction of the wadding lap, and
detaching the leading end of a wadding from the wadding lap under the force of the air steam.

5,337,457
NECKWEAR ANCHORING DEVICE
Kennith Chennault, 215 Dickinson, Lewisville, Tex. 75067
Filed Mar. 8, 1993, Ser. No. 27,456
Int. Cl.[5] A44B *6/00*
U.S. Cl. 24—49 R 11 Claims

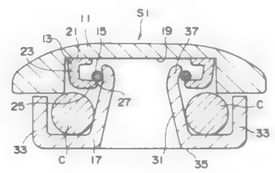
1. A device for loosely anchoring the extended portions of neckwear on a garment of a person where the garment has a plurality of spaced buttons attached by button threads, the device comprising:
an elongated and substantially vertical base member having a first end portion and an oppositely disposed second end portion, having a width adapted to be loosely received by a tie loop on the extended portion of neckwear, wherein the first end portion is disposed above the second end portion;
a first attachment member disposed on the first end of the base member, the first attachment member forming a vertically disposed first retaining slot and a horizontally

disposed first access slot, the first access slot disposed between the first retaining slot an edge of the attachment member, whereby button threads of a first button on the garment are slidably engaged by the first retaining slot through the access slot as the first attachment member is positioned behind the first button;
a second attachment member disposed on the second end of the base member, the second attachment member forming



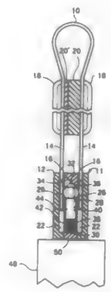
a vertically disposed second retaining slot and a horizontally disposed second access slot, the second access slot disposed between the second retaining slot an edge of the attachment member, whereby button threads of a second button on the garment are slidingly engaged by the second retaining slot through the access slot as the second attachment member is positioned behind the second button; and
the base member and the first and second attachment members are integrally formed of a resilient plastic material.

5,337,458
CORD STOPPER
Masaaki Fukutomi, Nabari, and Hirokazu Watanabe, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed Jul. 20, 1993, Ser. No. 94,333
Claims priority, application Japan, Jul. 21, 1992, 4-051102[U]
Int. Cl.[5] A44B *17/00*; F16G *11/00*
U.S. Cl. 24—115 H 5 Claims



1. A cord stopper for releasably fastening a cord thereto, the cord stopper comprising a front body, a housing attached to a rear side of the front body, the housing having a through hole and a seat formed around the through hole, an annular spring resting on the seat, the annular spring being slightly less in diameter than the through hole so that the inner peripheral part of the annular spring appears beyond the periphery of the through hole, and means for joining the cord to the annular spring, thus holding the cord against the front body, the means for joining having a truncated-conical body and a means for holding the truncated-conical body for supporting the cord therein.

5,337,459
MAGNETICALLY RELEASABLE CLAMP
Dennis L. Hogan, St. Petersburg, Fla., assignor to Security Tag Systems, Inc., Deerfield Beach, Fla.
Filed Mar. 16, 1993, Ser. No. 32,145
Int. Cl.[5] F16G *11/00*
U.S. Cl. 24—136 A 16 Claims



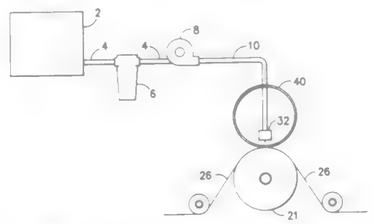
1. A clamp, comprising
a U-shaped member having a pair of legs, with at least one said leg having a cavity in the side of said leg facing the other said leg; and
a clutch for receiving the legs of the U-shaped member and for restraining said at least one said leg, wherein the clutch includes
a housing defining a pair of longitudinal channels for respectively receiving the legs of the U-shaped member and a chamber between the channels, with said chamber being open to at least one said channel;
a ball disposed for movement within the chamber;
a spring disposed at one end of the chamber for biasing the ball toward the other end of the chamber; and
guide means disposed at the other end of the chamber for guiding the ball toward said at least one said channel when the ball is biased toward the other end of the chamber; and
wherein, when the legs of the U-shaped member are inserted into said channels so that the cavity in said at least one said leg is adjacent the ball while the spring is biasing the ball toward the other end of the chamber, the guide means guide the ball into the cavity and into contact with a portion of said at least one said leg adjacent the cavity to thereby restrain the U-shaped member in the housing.

5,337,460
METHOD AND APPARATUS TO CREATE AN IMPROVED MOIRÉ FABRIC
Joe B. Cockfield, Belton; Sabrina B. Fadial, Spartanburg, and Francis W. Marco, Pauline, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.
Filed Jan. 21, 1993, Ser. No. 6,455
Int. Cl.[5] C08G *79/02*
U.S. Cl. 28—167 44 Claims

1. A process of creating a moiré pattern on woven fabric comprising the steps of:
(a) placing a first piece of said woven fabric against a support member;
(b) directing at least one stream of fluid at the surface of said first piece of said woven fabric to provide lateral yarn displacement;
(c) delivering said stream at a peak dynamic pressure in excess of about 300 p.s.i.g. and less than 4,000 p.s.i.g.;
(d) selectively interrupting and re-establishing contact between said stream and said surface in accordance with pattern information in order to pattern said first piece of woven fabric;

VOL 1165 ISS 3 AG 16 1994 UMI

(e) combining said patterned first piece of woven fabric with a second piece of said woven fabric in overlapping relationship; and

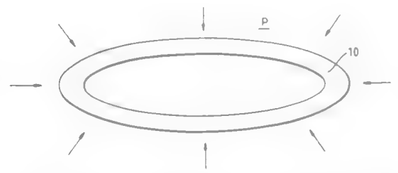


(f) applying pressure in the range of between 300 to 10,000 pounds per linear inch to said combination of said first piece of patterned woven fabric and said second piece of woven fabric.

5,337,461
LOADING OF FLEXTENSIONAL TRANSDUCER SHELLS

Steven J. Falcus, Dorset, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB91/00683, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO91/17539, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 30, 1991, Ser. No. 956,011
Claims priority, application United Kingdom, May 9, 1990, 9010372.2
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 **5 Claims**



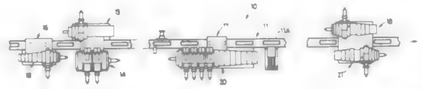
1. A method of assembling one or more piezo-electric drive stacks along the major axis of the elliptical flexural shell of a flextensional transducer, said method including the steps of:
applying pressure uniformly over the entire outer surface of the elliptical shell so as to extend the major axis of the shell;
inserting and locating the stack(s) within the shell during said pressure applying step; and
removing the pressure.

5,337,462
LINK SYSTEM

Lennard D. Hedman, Roscoe, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Continuation of Ser. No. 913,564, Jul. 14, 1992, abandoned. This application Sep. 22, 1993, Ser. No. 125,295
Int. Cl.[5] B23Q *15/22*; B23B *15/00*
U.S. Cl. 29—33 P **10 Claims**

1. A method of manufacturing a machine system having a plurality of machines for making a plurality of successive cuts in a part, said method comprising:
linking together those machines having cutting operations with tolerances affected by one another and doing a square root sum of the squares of the individual tolerances to obtain a total tolerance for these linked machines;
assigning a portion of the total tolerance to the respective linked machines;
developing a statistical aim and range tolerance for the respective linked machines using a process capability ratio,
allocating the statistical aim and range tolerances developed for a machine among the fixture, cutting tool deflection, system deflection including workpiece and machine frame deflections to provide in-process tolerances therefor;
providing a finite analysis of the stiffness of the fixture, workpiece and machine frame deflections;

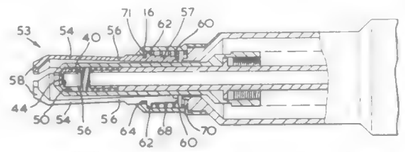


calculating the stiffness for the fixture and machine frame using the in-process deflection tolerance and cutting force to determine the necessary stiffness needed for the fixture and the machine frame;
comparing the finite analysis stiffness to the calculated necessary stiffness;
building a machine frame with sufficient necessary stiffness to make parts within this in-process deflection tolerance;
recording the in-process tolerances and measurements for future reference; and
placing target reference datum surfaces on the fixture and machine and setting fixture locator surfaces and elements of the machine to these recorded in-process tolerances.

5,337,463
RIVET SETTING TOOL

Andreas Rössler, Fernwald; Hans-Dieter Waltenberg, and Norbert Tessarsch, both of Giessen-Klein-Linden, all of Fed. Rep. of Germany, assignors to Emhart Inc., Newark, Del.

Filed Aug. 26, 1993, Ser. No. 112,831
Claims priority, application United Kingdom, Aug. 29, 1992, 9218463.9
Int. Cl.[5] B21J *15/34*
U.S. Cl. 29—243.521 **8 Claims**

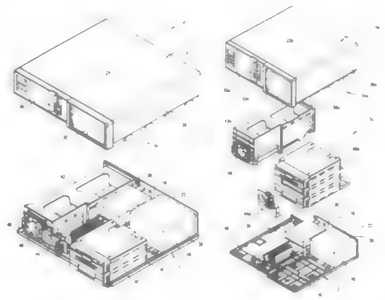


1. A riveting tool for use in setting blind rivets which comprise a tubular rivet having a head and a mandrel which passes through the tubular rivet and comprises a setting head, which engages an end face of the rivet, and a pulling head which is pulled to move the mandrel relative to the rivet to set it,
the tool comprising
a nose piece,
a pulling assembly mounted in the nosepiece and arranged to grip the pulling head of a mandrel and movable relative to the nosepiece to pull the mandrel to set the rivet,
an abutment assembly mounted on the nosepiece and arranged to engage the head of the rivet during its setting and comprising a plurality of abutment members extending generally axially of the nosepiece around the pulling assembly and movable between an open position, in which the pulling head of the mandrel may be passed through the abutment assembly to be engaged by the pulling assembly, and a closed position in which the abutment members provide an abutment to engage the rivet head,
wherein the abutment members are mounted for generally axial movement relative to the nosepiece against spring pressure and comprise cam means which on such axial movement cause the abutment members to move from their open to their closed positions and the pulling assembly comprising a collet assembly comprising collet members having latches adapted to engage behind the head of a mandrel,
whereby, when a blind rivet is presented axially to the tool, the head of the rivet engages the abutment members, and on the rivet being pushed into the tool so that the pulling head of the mandrel is engaged by the latches of the collet members, the abutment members are moved axially relative to the nosepiece to move from their open to their close positions, and close firmly about the mandrel.

5,337,464
METHOD OF CONVERTIBLY UPGRADING A PERSONAL COMPUTER

Karl M. Steffes, Austin, Tex., assignor to Dell U.S.A., L.P., Austin, Tex.

Filed Nov. 20, 1992, Ser. No. 979,731
Int. Cl.[5] B21K *21/16*; B23P *6/00*; G06F *1/00*
U.S. Cl. 29—401.1 **15 Claims**

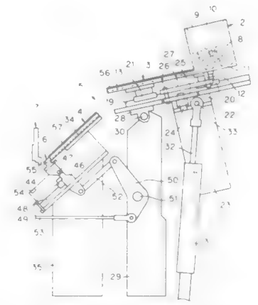


1. A method of increasing the drive installation capacity of an existing personal computer having:
an existing bottom housing portion having a base wall with a back wall projecting upwardly from a rear edge portion thereof,
existing operating components, including an existing drive bay structure, disposed atop the base wall,
the existing drive bay structure being adapted to operatively receive a first maximum number of disk drives, and
an existing top housing portion comprising an upper side wall having opposite side walls depending from opposite side edge portions thereof, and a front end wall depending from a front end edge portion thereof and extending between the opposite side walls,
the existing top housing portion being removably connected to the existing bottom housing portion and cooperating therewith to substantially enclose the existing operating components, the upper side wall of the existing top housing portion closely overlying the top of the existing drive bay structure, said method comprising the steps of:
removing the existing top housing portion from the existing bottom housing portion to expose the existing operating components;
removing the existing drive bay structure;
replacing the removed existing drive bay structure with a vertically enlarged replacement drive bay structure adapted to operatively receive a second maximum number of disk drives, said second maximum number of disk drives being larger than said first maximum number of disk drives; and
operatively connecting a replacement top housing portion to the existing bottom housing portion in place of the removed existing top housing portion, the connected replacement top housing portion cooperating with the existing bottom housing portion to substantially enclose the existing and replacement operating components; said replacement top housing portion being vertically enlarged to accommodate the vertically enlarged replacement drive bay structure,
whereby, in the resulting upgraded computer, the existing bottom housing portion and at least a substantial number of the existing operating components are reused.

5,337,465
CHIP PART HANDLING APPARATUS

Kuniaki Tamaki, and Shigenori Kobayashi, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 15, 1992, Ser. No. 945,136
Claims priority, application Japan, Sep. 18, 1991, 3-237742
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—740 **13 Claims**



1. A chip part handling apparatus for aligning a plurality of chip parts along a prescribed direction and for discharging the plurality of chip parts, said apparatus comprising:
a chip box for containing said plurality of chip parts randomly;
an aligning portion including a first aligning portion and a second aligning portion, said second aligning portion being separate from and removably positioned downstream of said first aligning portion, said first and second aligning portions having a plurality of parallel downwardly sloped grooves, said grooves of said first aligning portion communicating with said chip box, each of said downwardly sloped grooves having a cross-section enabling serial alignment of said plurality of said chip parts, as well as an inclination angle enabling downward sliding of said plurality of chip parts;
a first stopper positioned between said first and second aligning portions, said first stopper selectively closing downwstream ends of said grooves of said first aligning portion for selectively preventing said chip parts transferring from said first aligning portion to said second aligning portion;
a separable portion having a plurality of receiving cavities aligned with downwstream ends of said downwardly sloped grooves of said second aligning portion, respectively, each of said receiving cavities receiving said plurality of chip parts being downwardly slid in each of said downwardly sloped grooves; and
a discharge portion for discharging said plurality of chip parts receiving in said receiving cavities.

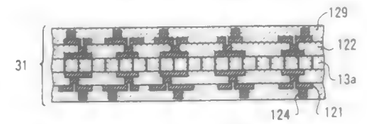
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,466

METHOD OF MAKING A MULTILAYER PRINTED WIRING BOARD

Hisashi Ishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 778,242, Oct. 17, 1991. This application Jan. 6, 1993, Ser. No. 1,726
Claims priority, application Japan, Oct. 17, 1990, 2-278110
Int. Cl.[5] H05K 3/36
U.S. Cl. 29—830 9 Claims



1. A manufacturing method for a multilayer printed wiring board comprising the steps of:

forming a first multilayer interconnection by selectively laminating a first metal wiring layer, a first insulation layer, a second metal wiring layer electrically connected with said first metal wiring layer, and a second insulation layer, on both sides of a ceramic substrate having through holes at predetermined positions so as to provide a multilayer interconnection electrically connecting the layers via said through holes;

forming a second multilayer interconnection by selectively laminating a third metal wiring layer, a third insulation layer, a fourth metal wiring layer electrically connected with said third metal wiring layer, and a fourth insulation layer, on one side of a base substrate; and

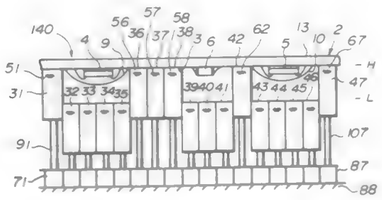
placing together and integrating said first multilayer interconnection formed on said ceramic substrate and said second multilayer interconnection formed on said base substrate under application of pressure and heat.

5,337,467

METHOD OF PRODUCING WIRE-BONDED SUBSTRATE ASSEMBLY

Seiji Kogure, and Mamoru Nishiro, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 22, 1991, Ser. No. 797,128
Claims priority, application Japan, Nov. 28, 1990, 2-328428
Int. Cl.[5] H05K 3/34
U.S. Cl. 29—840 9 Claims



1. A method of producing a substrate assembly, comprising the steps of:

(a) preparing a semi-completed substrate assembly by providing a substrate having a first surface and a second surface which is opposite to the first surface, and fixedly mounting a plurality of elements on the first surface of the substrate;

(b) providing movable blocks and supporting the first surface of the substrate by said blocks under control means controlling movement of said blocks so that said blocks support said first surface at positions avoiding positions of the elements mounted on the first surface; and

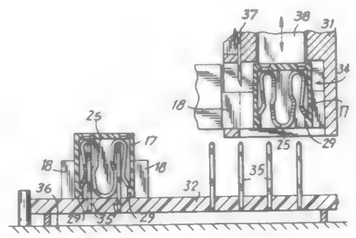
(c) carrying out a process on the second surface of the substrate to complete a substrate assembly.

5,337,468

CONTINUOUS MOLDED ELECTRONIC COMPONENT ASSEMBLY

Irwin Zahn, New York, N.Y., assignor to Autosplice, Inc., San Diego, Calif.

Continuation of Ser. No. 841,872, Feb. 26, 1992, Pat. No. 5,148,596. This application Sep. 22, 1992, Ser. No. 949,384
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] H05K 3/30
U.S. Cl. 29—842 2 Claims



1. A method for mechanizing the manufacture and assembly of component parts comprising the steps:

(a) forming by a continuous molding process an elongated strip of individual plastic component parts interconnected by severable plastic regions,

(b) winding onto a reel the continuous strip formed by step (a),

(c) providing an insertion machine having a table for supporting a printed circuit board having holes or pins for receiving said plastic component parts and an insertion head for inserting said component parts,

(d) thereafter mounting the reel of step (b) on the insertion machine and feeding the continuous strip from the reel to the insertion head,

(e) after mounting of the reel in step (d), controlling the insertion machine to proved the leading component part of the strip to the insertion head while positioning the table so that a printed circuit board on the table is located under the insertion head in a position to receive at a selected location the component part,

(f) thereafter operating the insertion machine to cut-off along the severable region the leading component part from the strip and then substantially simultaneously to insert the cut-off part into or onto the printed circuit board at the selected location,

(g) repeating steps (e) and (f) to sever and to insert the next leading component part on the strip into or onto a second selected location or on another printed circuit board.

5,337,469

METHOD OF REPAIRING POLES

Enoch Richey, Germantown, Tenn., assignor to Memphis Light, Gas and Water Division, Memphis, Tenn.

Filed Jun. 15, 1993, Ser. No. 76,677
Int. Cl.[5] B23P 7/00; E04C 3/34
U.S. Cl. 29—402.12 9 Claims

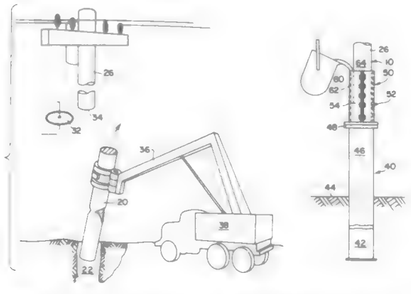
1. A method for repairing in situ a utility pole which has been damaged by accident or decay resulting in a damaged area at a location proximate a lower end of the utility pole, the method comprising the steps of:

severing the utility pole at a location above the damaged area to divide the utility pole into an upper section having a bottom with an outer surface of a selected diameter and lower section of a height sufficient to include the damaged area in the lower section;

extracting the lower section of the utility pole from the ground to provide an empty hole;

inserting into the hole a stanchion having a platform, the stanchion having a height substantially similar to the height of the removed lower portion of the utility pole and having a laterally open, split socket comprised of a first shell fixed to the stanchion and a second shell initially detachable from the stanchion, the split socket extending upwardly from the platform;

sliding the upper section of the utility pole laterally into the open, split socket and resting the bottom of the upper section on the platform;



closing the open, split socket by attaching the second shell to the first shell, thereby converting the split socket into a tube surrounding a bottom portion of the upper section of the utility pole, the tube having an inner surface of a diameter larger than the diameter at the outer surface of the upper portion of a utility pole so as to provide a space between the outer surface of the upper portion of the utility pole and the inner surface of the tube, and

filling the space with a liquid material which sets as a solid material bonding to both the outer surface of the upper portion of the utility pole and the inner surface of the split socket forming the tube.

5,337,470

METHOD AND APPARATUS FOR REMOVING A NOZZLE INSERT FROM A STEELMAKING LADLE

John P. Hoffman, Coopersburg; Alvin M. Nestler, Hellertown, both of Pa.; Edward T. Witek, Hobart, and Donald J. Idstein, Valparaiso, both of Ind., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 25,543, Mar. 3, 1993. This application Apr. 26, 1993, Ser. No. 53,924
Int. Cl.[5] B23P 19/00
U.S. Cl. 29—426.5 21 Claims

21. A method for removing a nozzle insert from a discharge bore of a steelmaking vessel, the steps comprising;

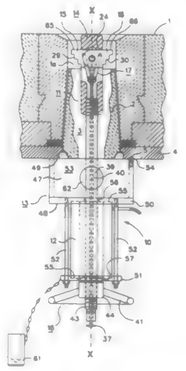
a) disengaging and removing a nozzle insert lock from said discharge bore,

b) aligning a nozzle extraction tool, having a gripper assembly, with said discharge bore,

c) inserting said gripper assembly, having a friction engaging means, into a cavity within said nozzle insert positioned within said discharge bore.

d) engaging said friction engaging means with surfaces of said nozzle insert,

e) applying a force to cause said gripper assembly to pivot about a longitudinal X—X axis extending through said discharge bore and seat said friction engaging means against said surfaces of said nozzle insert, said force causing said nozzle gripper assembly to withdraw from said



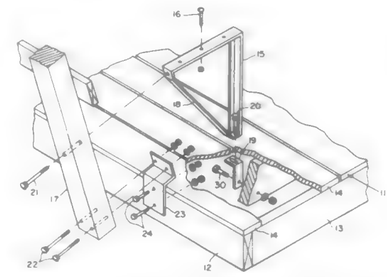
discharge bore and remove said nozzle insert from said discharge bore.

5,337,471

METHOD OF CONSTRUCTING A SEAT FOR A WOODEN DECK

Francis X. Graney, 50 Vale St., Tewksbury, Mass. 01876

Filed May 21, 1993, Ser. No. 64,204
Int. Cl.[5] B23P 11/00
U.S. Cl. 29—432 1 Claim



1. A method of constructing a seat for a wooden deck, said deck comprising

a plurality of stringers including outer stringers which form the perimeter of the deck and cross stringers which form the interior frame of the deck, said plurality of stringers together forming the understructure of the deck; and

a plurality of planks which together form the floor surface of the deck;

said method comprising:

affixing a plurality of metal anchor brackets to a preselected cross stringer a preselected distance apart, said preselected cross stringer being spaced a preselected distance in from a respective outer stringer;

bolting a plurality of metal side brackets to said respective outer stringer said preselected distance apart, such that said side brackets are aligned with said anchor brackets;

bolting a riser to each side bracket;

providing a plurality of right triangle-shaped metal braces for attachment to said anchor brackets and said risers;

attaching each brace to a respective anchor bracket and a

VOL 1165 ISS 3 AG 16 1994 UMI

respective riser, such that a first side of each brace is parallel to said planks, a second side of each brace is perpendicular to said planks, and the hypotenuse side of each brace extends between said respective anchor bracket and said respective riser;

attaching deck boards to said first side of each brace to form the seat portion of said seat;

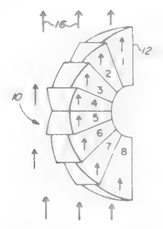
nailing planks along said risers to form the back portion of said seat and a barrier beneath said seat.

5,337,472

METHOD OF MAKING CYLINDRICAL AND SPHERICAL PERMANENT MAGNET STRUCTURES

Herbert A. Leupold, Eatontown, and George F. McLane, Pt. Pleasant Beach, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 26, 1993, Ser. No. 67,771
Int. Cl.[5] H01F *41/02*
U.S. Cl. 29—607 **12 Claims**



1. A method of making a permanent magnet structure having a central working space of high magnetic field comprising the steps of:

forming a magnet structure of a predetermined size and shape;

dividing the magnet structure into portions by radially slicing the portions of the magnet structure outwardly from a central axis;

magnetizing the portions in a magnetic field having a direction parallel to a desired resultant magnetic field in the working space of the permanent magnet structure;

rotating bounded sections of the portions about the central axis from their original position in the magnet structure; and

combining the portions into the permanent magnet structure.

5,337,473

INVENTORY ASSEMBLY WORK STATION TABLE

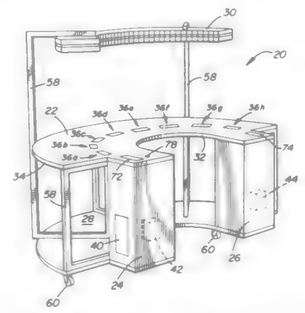
Stephen G. Weinstein, 10795 Miguelito Rd., San Jose, Calif. 95127

Filed May 3, 1993, Ser. No. 56,657
Int. Cl.[5] B23P *21/00*; B65B *57/10, 57/18*
U.S. Cl. 29—720 **23 Claims**

1. A work station table for facilitating selection of a plurality of inventory articles during a selection cycle for integration into a group, comprising:

sensing means in the work station table for detecting selection into the group of each inventory article of the plurality of inventory articles; and

monitoring means in said work station table responsive to said sensor means for indicating selection of less than all of



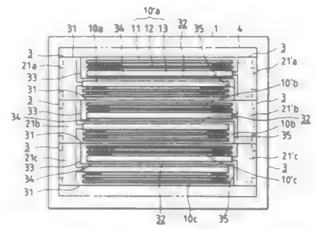
the plurality of inventory articles into the group upon completion of the selection cycle.

5,337,474

PROCESS FOR FABRICATING ELECTRONIC DEVICES AND IMAGE SENSOR

Koichi Oka, and Hirokazu Ichikawa, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 29, 1992, Ser. No. 889,994
Claims priority, application Japan, May 31, 1991, 3-156147
Int. Cl.[5] H05K *3/02*
U.S. Cl. 29—846 **12 Claims**



1. A process for fabricating at least first and second electronic products from an intermediate product having a major surface, comprising the steps of:

a first step of providing first and second function components both elongated parallel to an axis in the major surface of the intermediate product;

a second step of providing a first input/output device for the first functional component and a second input/output device for the second functional component; and

a third step of cutting the intermediate product into the two electronic products along a line that includes a first line portion in a direction intercepting the axis and lying between the first input/output device and the second functional component, a second line portion that proceeds generally parallel to the axis, and includes a third line portion in a direction intercepting the axis between the second input/output device and the first functional component, the second line portion separating the first and third line portions.

5,337,475

PROCESS FOR PRODUCING CERAMIC CIRCUIT STRUCTURES HAVING CONDUCTIVE VIAS

Farid Y. Aoude, Wappingers; Emanuel I. Cooper, Riverdale; Peter R. Duncombe, Peekskill; Shaji Farooq, Hopewell Junction; Edward A. Giess, Purdys Station, all of N.Y.; Young-Ho Kim, Seoul, Rep. of Korea; Sarah H. Knickerbocker, Hopewell Junction, N.Y.; Friedel Muller-Landau, Putnam Valley, N.Y.; Mark O. Neisser, Wappingers Falls, N.Y.; Jae M. Park, Somers, N.Y.; Robert R. Shaw, Poughkeepsie, N.Y.; Robert A. Rita, Wappingers Falls, N.Y.; Thomas M. Shaw, Peekskill, N.Y.; Rao Vallabhaneni, Wappingers Falls, N.Y.; Jon A. Van Hise, Brookfield, Conn.; George F. Walker, New York, N.Y.; Jungihl Kim, Seoul, Rep. of Korea, and James M. Brownlow, deceased, late of Norwich, Vt. by Mary Brownlow Huessy, legal representative , assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 672,272, Mar. 20, 1991, Pat. No. 5,283,104. This application Dec. 17, 1992, Ser. No. 992,091
Int. Cl.[5] H01K *3/10*
U.S. Cl. 29—852 **16 Claims**

1. A process for producing a ceramic circuit structure comprising the steps of:

(a) forming at least one self-supporting layer of dielectric glass-ceramic composition having a low sintering temperature, below 1000° C.;

(b) forming at least one via in at least one of said layers;

(c) filing said via with a via-fill composition comprising a mixture of a major amount by volume of contacting spheres of a glass-ceramic material similar in composition to the glass-ceramic composition of said self-supporting layer, said spheres having a substantially uniform average diameter which is less than about 10% of the diameter of said via, said spheres having a diameter which is between about 0.5 μm and 6 μm, and a minor amount by volume of particles of a low-resistive metal which have a maximum size less than about ½ the diameter of said glass-ceramic spheres and which fill the spaces between said contacting spheres and which have a melting temperature above the sintering temperature of said glass-ceramic composition; and

(d) heating the structure resulting after step (c) to a temperature above the glass transition temperature of the glass-ceramic composition of said at least one layer and of said spheres but below about 1000° C., to cosinter said glass-ceramic spheres, said metal particles and said at least one glass-ceramic layer to form a ceramic circuit structure in which each via is filled with a conductive via body comprising a major amount by volume of said glass-ceramic composition which is integrated with and hermetically sealed to said at least one glass-ceramic layer and comprises a continuous skeletal network of said sintered metal particles contained with a glass-ceramic matrix formed from said glass-ceramic spheres, each said via body providing a conductive path.

5,337,476

METHOD OF MAKING A CAMSHAFT

Louis V. Orsini, Jr., Kensington, Conn., assignor to The Torrington Company, Torrington, Conn.

Continuation-in-part of Ser. No. 912,432, Jul. 13, 1992, Pat. No. 5,280,675. This application Jan. 12, 1994, Ser. No. 180,247
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—888.1 **7 Claims**

5. A method of making a camshaft comprising the steps of:

providing a hollow tube;

providing a retractable mandrel, the retractable mandrel having a first portion and a second portion adjacent the first portion, the diameter of the first portion being larger than the diameter of the second portion;

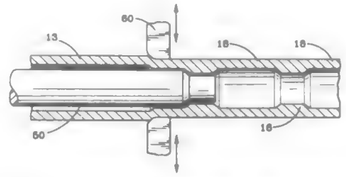
inserting the retractable mandrel into the hollow tube;

mechanically reducing a first section of the hollow tube, the first portion of the retractable mandrel being positioned under the section of the hollow tube being reduced;

positioning the second portion of the retractable mandrel under a second section of the hollow tube;

mechanically reducing the second section of the hollow tube, the second portion of the retractable mandrel being positioned under the section of the hollow tube being reduced;

repeating the steps of mechanically reducing a first section of the hollow tube, the first portion of the retractable mandrel being positioned under the section of the hollow tube being reduced; positioning the second portion of the retractable mandrel under a second section of the hollow



tube; and mechanically reducing the second section of the hollow tube, the second portion of the retractable mandrel being positioned under the section of the hollow tube being reduced, thereby forming a plurality of first sections and second sections, the inner diameter of a first section being larger than the inner diameter of a second section, the second sections forming reduced diameter zones;

providing a plurality of cam elements, each cam element including an axial opening;

inserting the hollow tube into the cam elements, each cam element being positioned about a reduced diameter zone;

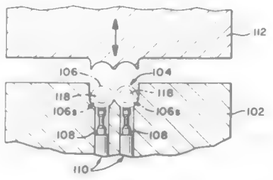
expanding the reduced diameter zones of the hollow tube into mechanical interference engagement with the cam elements.

5,337,477

METHODS AND APPARATUS FOR FORMING TUBULAR RISERS AND MANIFOLDS INCLUDING TUBULAR RISERS

John P. Waggoner, Decatur, Ind., assignor to Amcast Industrial Corporation, Dayton, Ohio

Filed Jul. 21, 1993, Ser. No. 95,099
Int. Cl.[5] B21D *53/02*
U.S. Cl. 29—890.052 **14 Claims**



1. A method for making a manifold having at least one primary tubular member and at least one tubular riser extending laterally therefrom, said method comprising the steps of:

inserting corresponding first mandrel means into said at least one primary tubular member for supporting said at least one primary tubular member;

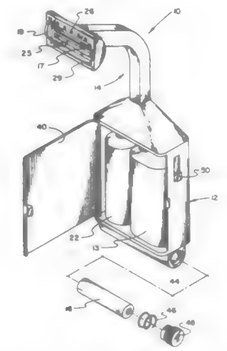
positioning at least one primary tubular member with said first mandrel means therein into a die defining a cavity having a primary channel for receiving said at least one primary tubular member and at least one riser channel extending laterally from said primary channel;

positioning a core in said at least one riser channel;

VOL 1165 ISS 3 AG 16 1994 UMI

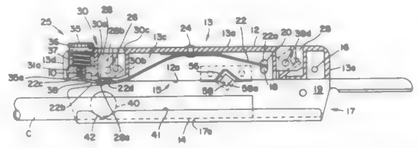
forcing a first punch into said cavity to forge a portion of said primary tubular member into said at least one riser channel and around said core to thereby form at least one tubular riser;
removing said first punch from said cavity;
removing said manifold from said cavity; and
removing said first mandrel means from said at least one primary tubular member.

5,337,478
AUTOMATIC SHAVING APPARATUS
Zaki Cohen, 6110 E. Fifth St., Apt. 115, Tucson, Ariz. 85711, and Eli Deckel, 7322 E. Calle Los Arboles, Tucson, Ariz. 85715
Filed May 3, 1993, Ser. No. 55,277
Int. Cl.[5] B26B *19/48, 19/30, 21/40*
U.S. Cl. 30—41.5 2 Claims



1. A new and improved automatic shaving apparatus, comprising:
handle assembly means which includes pressurized foam dispensing assembly means, pressurized lotion dispensing assembly means, and electric valve control assembly means, said handle assembly means for serving as a handle during shaving and for housing said pressurized foam dispensing assembly means, said pressurized lotion dispensing assembly means, and said electric valve control assembly means, said pressurized foam dispensing assembly means for storing and dispensing shaving foam, said pressurized lotion dispensing assembly means for storing and dispensing lotion, and said electric valve control assembly means for controlling release of shaving foam from said pressurized foam dispensing assembly means and release of lotion from said pressurized lotion dispensing assembly, wherein said electric valve control assembly means include an electrically powered solenoid assembly,
electric power source means for powering said electric valve control assembly means,
switch assembly means, placed in circuit between said electric power source means and said electric valve control assembly means, for controlling electric power to said electric valve control assembly means, wherein said switch assembly means is actuated by placement of said shaving head assembly means against the surface being shaved, and
shaving head assembly means, connected to said handle assembly means, for retaining a razor blade assembly, said shaving head assembly means including foam conduit means for conveying foam from said pressurized foam dispensing assembly means to near by said razor blade assembly for deposition of foam on a surface being shaved, said shaving head assembly means including lotion conduit means for conveying lotion from said pressurized lotion dispensing assembly means to near by said razor blade assembly for deposition of lotion on the surface being shaved, said shaving head assembly means including a dispensing slot for releasing foam from said foam conduit means to the surface being shaved, said shaving head assembly means include a plurality of lotion-dispensing apertures for releasing lotion from said lotion conduit means to the surface being shaved, and said shaving head assembly means including a foam-spreading plate for smoothing foam dispensed from said foam conduit means into a even layer on the surface being shaved.

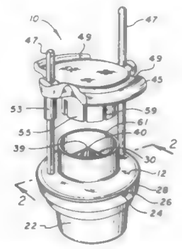
5,337,479
CABLE AND WIRE STRIPPER
Lucien C. Ducret, Old Greenwich, Conn., assignor to Seatek Co., Inc., Stamford, Conn.
Filed Jun. 7, 1993, Ser. No. 72,850
Int. Cl.[5] H02G *1/12*
U.S. Cl. 30—90.6 17 Claims



1. A cable and wire stripper comprising first and second elongate handle members affixed to each other for limited pivotal movement, the second handle member having an elongate U shaped channel for sideways reception of a jacket covered cable, the first handle member having a cutting blade projecting into the channel for stripping the jacket of a cable positioned in the channel, means for urging the first and second handle members to a normally open position for receiving a cable in the channel, a blade guide affixed to the first handle member and extending over the blade, an opening in the blade guide through which the cutting blade extends into the cable receiving channel, means for moving the blade guide to determine the length of blade tip projecting beyond the guide into the channel, the blade guide being supported by the first handle member for minimum flexion at the blade location so that the guide engages a cable jacket surface while maintaining a precise depth of cut of the blade into the jacket for slitting the jacket without harm to interior cable components.

3. A cable and wire stripper for cutting a cable jacket having an undulating surface contour comprising first and second handle members, the first handle member being an elongate shell defined by a top panel, depending front and rear side and left and right end walls, and having an open underside providing access into a cavity within the shell, the second handle member having an elongate bottom portion defining a cable receiving channel, the elongate bottom portion being integral with an upstanding side wall, the first and second handle members being affixed to each other at the rear side wall and the upstanding side wall respectively for pivotal movement about an axis located at one end of the stripper, a motion limiting pin affixed to the upstanding side wall of the second handle member and extending through arcuate slots in the front and rear side walls of the first handle member for restricting pivotal movement of the handle members to a fixed range, a cutting blade fitted into the cavity at the other end of the first handle member opposite the pivot axis and projecting into the channel for stripping the jacket of a cable positioned in the channel, an elongate spring member located in the cavity and affixed to the top panel of the first handle member, the spring member having one end engaging the motion limiting pin for urging the first and second handle members to a normally open position for receiving a cable in the channel, the spring member having a curved section extending over the blade and having another end terminating at the other end of the first handle member, a slot in the spring member through which the cutting blade extends into the cable receiving channel, means for moving the other end of the spring member for selecting the length of blade tip projecting beyond the guide into the channel, the said curved section of the spring member having minimum flexion at the blade location so that the spring member engages and follows the undulating surface contour of a cable jacket while maintaining a precise depth of cut of the blade into the jacket for slitting the jacket without harm to interior cable components.

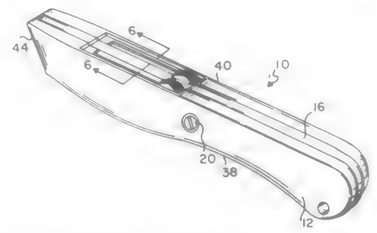
5,337,480
SUBDIVIDING DEVICE
Ralph Codikow, 9021 Exposition Blvd., Los Angeles, Calif. 90034
Filed May 7, 1993, Ser. No. 58,944
Int. Cl.[5] A47J *17/00*
U.S. Cl. 30—114 15 Claims



1. A device for subdividing a workpiece into segments comprising:
(a) a blade support structure having an opening, said opening having a circumferential surface;
(b) a plurality of blades, each blade comprising a proximal end and a distal end, a leading edge and a fall-off edge, said fall-off edge being located at said distal end, the junction of said leading and fall-off edges forming an attacking point at said distal end, said fall-off edge extending from said attacking point downwardly and circumferentially from an axis extending from said attacking point and perpendicular to a horizontal plane of said opening, wherein said leading edge and fall-off edge are sharpened, each blade anchored at said proximal end to said circumferential surface of said opening, said attacking points defining a channel between said attacking points and for positioning said workpiece; and
(c) means for urging the workpiece into contact with said attacking points for subdividing said workpiece into segments said means for urging mounted upon said blade support structure.

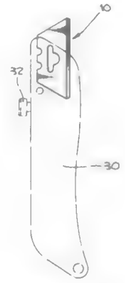
5,337,481
DUAL BLADE UTILITY KNIFE
Michael G. Mears, 1409 35th St. West, Bradenton, Fla. 34205
Filed Mar. 29, 1993, Ser. No. 37,977
Int. Cl.[5] B26B *1/08*
U.S. Cl. 30—162 10 Claims

1. A utility knife comprising, in combination:
a handle having a first handle portion and a second handle portion and coupling means to releasably join together the handle portions so as to be readily grasped by an operator during use, a central plane extending longitudinally through the handle and defining on opposite sides thereof a first blade-receiving chamber in the first handle portion for receiving a first blade holder and a second blade-receiving chamber in the second handle portion for receiving a second blade holder; and
a first blade holder located in the first handle portion for supporting a first blade and a second blade holder located in the second handle portion for supporting a second blade, the blade holders being independently reciprocable in planes parallel with the central plane but on opposite sides thereof, each blade holder having an individual



actuator extending to exterior of the handle whereby an operator may move either blade holder or both between a retracted inoperative orientation with an associated blade totally within the handle and an extended operative orientation with an associated blade partially exterior of the handle.

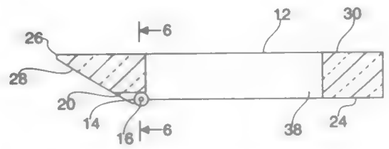
5,337,482
SAFETY BLADE FOR UTILITY KNIFE
G. Gerry Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.
Continuation of Ser. No. 926,597, Aug. 6, 1992, Pat. No.
Int. Cl.[5] B26B *9/02*
U.S. Cl. 30—162 5 Claims



3. A utility knife, comprising;
a safety blade having a cutting edge and a pair of side edges, each of which is oriented at less than a right angle to said cutting edge, and which converge toward a blunt rear edge, said blade having a uniform thickness and a tapered portion adjacent to said cutting edge which reaches a minimum thickness at said cutting edge, said blade further having a substantially planar safety edge joining each of said side edges with said cutting edge, each of said safety edges intersecting with said cutting edge and an adjacent side edge at obtuse angles and providing a substantially blunt surface; and
a handle configured to receive said safety blade, wherein one of said side edges and at least a portion of said cutting edge are exposed during use and a safety corner is provided at the intersection of each of said safety edges and an adjacent side edge, the safety corners thus provided being the laterally outermost portions of said blade.

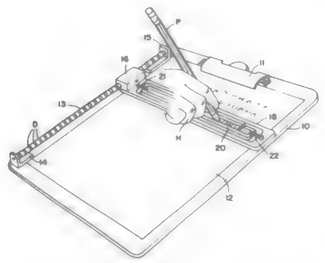
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,483
GLASS CUTTER
Michael Jacobs, 97 Falmouth Ave., Elmwood Park, N.J. 07407
Filed Apr. 29, 1993, Ser. No. 54,724
Int. Cl.[5] R26B *3/00*
U.S. Cl. 30—164.95 13 Claims



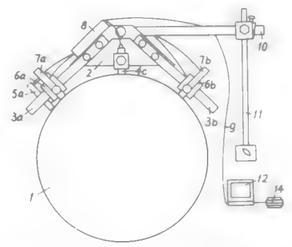
1. A method for cutting glass comprising the steps of:
utilizing a glass cutter having a planar body, a window extending through the body and a cutter blade mounted to a lower surface of the body;
gripping the glass cutter on the upper surface at forward and rearward edges thereof;
tilting the glass cutter forward to contact the cutter blade with glass;
applying downward pressure to the glass cutter;
viewing through the window a line on a glass along which a glass is to be cut by the glass cutter; and
drawing the glass cutter along a line to be cut to score the glass.

5,337,484
SCRIPTWRITING GUIDANCE DEVICE
Hugh L. Cardon, 300 Riverside Dr., New York, N.Y. 10025
Filed Aug. 10, 1993, Ser. No. 103,984
Int. Cl.[5] B43L *13/02*
U.S. Cl. 33—41.2 10 Claims



1. A scriptwriting guidance device to assist a visually or otherwise impaired individual in writing along a straight, horizontal path across a writing surface with a writing implement and to complete the formation of letters and other characters without interference from the device, said device comprising:
A. a backboard on which is placeable a paper sheet to be written on by the individual;
B. a shaft mounted for rotation on a side margin of the backboard;
C. a slide slidable along the shaft; and
D. a guide element cantilevered from the slide and extending across the backboard, said element being formed by a frame having a rectangular window defining a plurality of sides and ends and having predetermined side and end dimensions, said element being adapted to overly the paper sheet, and a rectangular template having smaller side and end dimensions than those of the window and being spring-supported within the window so that said template effectively floats therein and is free to move towards said sides and said ends within the window, said template having a rectangular slot therein defining a straight, horizontal path across the paper sheet whereby the individual writing with said implement within the slot displaces the template with the implement to complete the formation of letters and other characters.

5,337,485
ROUNDNESS ERROR AND CROWN ELECTRONIC MEASURING SYSTEM
An Y. Chien, 169 Dwight St. Apt. A, New Haven, Conn. 06511
Continuation-in-part of Ser. No. 826,607, Jan. 28, 1992, abandoned. This application Sep. 21, 1992, Ser. No. 969,651
Int. Cl.[5] G01B *5/20*
U.S. Cl. 33—550 9 Claims

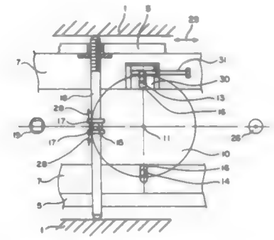


1. A roundness error and crown electronic measuring system for measuring roundness error, concentricity, crown, shape, taper, sag, and vibration in two directions of objects particularly rolls used in flat rolled product mills, comprising:
a. a frame connected with two straight rulers composing an angle;
b. two sliding verniers with each adjusted to one ruler;
c. three electronic dimensional gauges, with two gauges held respectively one by each vernier, and the third one adjusted to the channel of the frame; every said gauge having its own axis directed at the center of the object to comply with the operating principals; any pair of said axes not composing an angle of 180 degrees;
d. two adjustable fitting plates, one on each of said verniers to help adjust the position of the said gauges on the verniers on the object, to be removed at the beginning of gauging;
e. two encoders one on each of said verniers with one measuring the rotation of the object, and the other one measuring the distance along the length of the object;
f. an interface board, electronically connecting said gauges and said encoders to a microcomputer with means for converting analog signals from said gauges to digital output;
g. a power supply connected to said microcomputer.

5,337,486
MECHANISM FOR ADJUSTING THE SKEW ANGLE OF INCLINATION OF A PRINTING PLATE ON ITS PLATE CYLINDER
Heinz Brechtel, Beindersheim, Fed. Rep. of Germany, assignor to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany
PCT No. PCT/EP91/02518, § 371 Date Aug. 27, 1992, § 102(e) Date Aug. 27, 1992, PCT Pub. No. WO92/12012, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 28, 1991, Ser. No. 923,921
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1991, 4100408
Int. Cl.[5] B41B *11/00*
U.S. Cl. 33—617 5 Claims

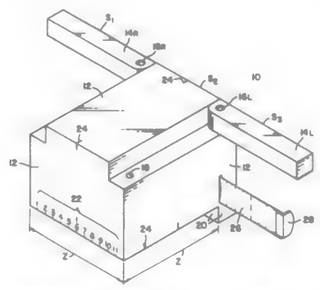
1. A mechanism for adjusting the skew angle of inclination of a printing plate mounted on the periphery of a rotatable

plate cylinder in a printing press for the purpose of register connection, wherein the plate cylinder has an axis-parallel gap in the periphery thereof, said printing plate has leading and trailing edges with respect to the direction of printing rotation of the plate cylinder, and a pair of substantially axis-parallel clamping bars disposed in the gap for movement substantially tangentially with respect to the plate cylinder periphery for releasably clamping the leading and trailing edges of the printing plate to tension the plate on the periphery of the plate cylinder, said inclination-adjusting mechanism comprising, in combination,
a base plate disposed in said gap and means for supporting said clamping bars for axial and tangential movement thereon,



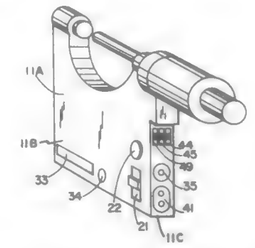
means for radially raising and lowering at least one axial end of said base plate in said gap for loosening and tightening the printing plate on the periphery of the plate cylinder,
an articulated linkage including separate lever arms pivotally mounted substantially centrally on said base plate and operatively connected to said clamping bars for moving said clamping bars substantially axially with respect to said base plate and substantially oppositely with respect to one another for adjusting the skew angle of inclination of the printing plate on the periphery of the plate cylinder,
and means including a common lever arm for pivoting said separate lever arms of said articulated linkage while the printing plate is loosened on the periphery of the plate cylinder for adjusting the skew angle of inclination of the plate thereon.

5,337,487
LAYOUT TOOL
Albert R. Mangino, Sr., R. D.#1, Rte. 9, Mechanicville, N.Y. 12118
Filed Mar. 26, 1993, Ser. No. 37,346
Int. Cl.[5] G01B *3/10*; B43L *7/10*
U.S. Cl. 33—760 12 Claims



1. A combination layout tool which includes a builder's T-square having an integral extensible-retractable tape and which comprises:
a hexahedronic case for housing a conventional, flexible measuring tape that extends thereoutof and retracts thereinto, said case defined by six faces: a front, a rear, a top, a bottom, a left and a right, said case further defined by a rear face extension that depends downwardly from and is conterminous with an edge common to the rear and bottom faces, said case further comprising two generally hexahedronic arms in pivotal disposition within and forming edge portions of said case and specifically disposed each at an intersection of the top face with the right and with the left faces, said two arms pivotally swingable toward the rear face on rearwardly mounted shafts and securable at 90° outward pivot positions to cooperatively form, with an edge common to said top and said rear faces, a continuous straight edge.

5,337,488
MEASURING INSTRUMENT AND METHOD
Jerome H. Lemelson, 868 Tyner Way, Incline Village, Nev. 89450
Continuation of Ser. No. 549,553, Jul. 9, 1990, abandoned, which is a continuation of Ser. No. 279,307, Dec. 1, 1988, abandoned, which is a continuation of Ser. No. 591,672, Mar. 20, 1984, abandoned, which is a continuation-in-part of Ser. No. 275,630, Jun. 22, 1981, Pat. No. 4,437,241, which is a continuation-in-part of Ser. No. 68,609, Aug. 22, 1979, abandoned. This application Dec. 17, 1992, Ser. No. 991,509
Int. Cl.[5] G01B *7/02*
U.S. Cl. 33—784 20 Claims



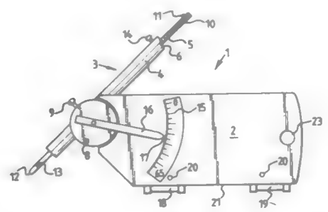
1. A method for performing and indicating a measurement of a physical variable, comprising the steps of:
measuring the physical variable and generating a first signal relating thereto;
storing said first signal wherein said first signal is stored with an identification code relating to the particular measurement performed:
retrieving said first signal in response to an inputting of said identification code;
comparing a previously stored second signal with said first signal and generating a third signal relating to the comparison; and,
outputting an audible indication of said third signal.

5,337,489
INSTRUMENT
Mahir M. Mustafa, 316 Reigate Road, Bromley, Kent, United Kingdom BR1 5JN
Continuation of Ser. No. 891,057, Jun. 1, 1992, abandoned. This application Mar. 10, 1993, Ser. No. 34,203
Claims priority, application United Kingdom, Jun. 5, 1991, 9112037
Int. Cl.[5] G01B *5/00*
U.S. Cl. 33—832 5 Claims

1. An instrument for measuring a parameter of a surface feature of a member, comprising:
(i) a body adapted to be secured to the surface of a member during measurement;

VOL 1165 ISS 3 AG 16 1994 UMI

(ii) a probe assembly carried on the body by a carrier which permits angular and linear displacement of the probe assembly with respect to the body, the probe assembly including inner and outer telescopically slidable parts the outer of which carries a datum for determining relative movement of the parts and the inner of which carries a graduated scale readable in conjunction with the datum; and



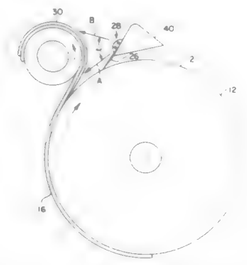
(iii) means adapted to allow linear movement of the probe assembly relative to the body at a particular angular displacement of the probe assembly relative to the body, said means including a locking device for securing the carrier and the probe assembly at the particular angular displacement.

5,337,490

SINGLE TIER DRYER THREADING NOZZLE FOR PAPER MACHINES

Edward R. Griffin, Quinnesec; Wesley R. Urban, Iron Mountain, and Arlen J. Hintsala, Republic, all of Mich., assignors to Champion International Corporation, Stamford, Conn.

Filed Jun. 21, 1993, Ser. No. 78,821
Int. Cl.[5] F26B *5/04*
U.S. Cl. 34—117 11 Claims



1. A dual air threading nozzle apparatus for urging a paper web away from the doctor blade disposed adjacent a dryer roll and in close conformance to the felt on a vacuum transfer roll of a single tier dryer section comprising:

a housing secured to said single tier section adjacent said doctor blade;

first air nozzle means disposed in said housing and operative to emit a first plane of air from said housing in a direction to urge the paper web away from the doctor blade; and

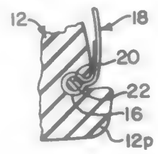
second air nozzle means disposed in said housing and operative to emit a second plane of air from said housing in a direction to urge said paper web toward and in close conformance to the felt on said vacuum transfer roll.

5,337,491

SHOE COVERING MEMBERS

Lawrence L. Mascotte, 9106 SE. 82nd, Portland, Oreg. 97266

Filed May 20, 1993, Ser. No. 63,725
Int. Cl.[5] A43B *3/16*
U.S. Cl. 36—7.1 R 6 Claims



1. A shoe and a shoe-covering member therefor, comprising:

a shoe having a sole section and an upper section, said sole section having a sealing member extending entirely along a side surface thereof;

a covering member of a water-impermeable material having a shape conforming to the upper section of said shoe and being positionable thereover;

a matable sealing member extending entirely along a bottom end of said covering member and being matably and sealingly engageable with said sealing member of said sole section of said shoe to prevent water from passing through the mated sealing members to the upper section of the shoe;

a projection extending outwardly and entirely along said side surface of said sole section adjacent said sealing member for protecting the matable engagement between the sealing member and the matable sealing member; and

means on said covering member for snugly maintaining the covering member in engagement with the upper section of the shoe.

5,337,492

SHOE BOTTOM, IN PARTICULAR FOR SPORTS SHOES

Wolf Anderié, Aurachtal/Falkendorf, Fed. Rep. of Germany, and Edgar Stüssi, Mutschellen, Switzerland, assignors to adidas AG, Herzogenaurach, Fed. Rep. of Germany

Filed May 6, 1993, Ser. No. 50,391
Int. Cl.[5] A43B *13/18*
U.S. Cl. 36—28 29 Claims



1. A shoe bottom for a sport shoe, said shoe having a longitudinal direction, comprising:

a plurality of individual carrier elements of flexurally resilient material which are directed transversely with respect to the longitudinal direction of the shoe and which are arranged one behind the other in the longitudinal direction of the shoe;

a cover plate portion which covers the carrier elements on a foot side of said shoe and which is connected thereto;

an outsole which covers the carrier elements on an outward side of said shoe and which is connected thereto; and

wherein each of the carrier elements is formed by a closed box profile portion with an upper web portion which extends transversely with respect to the longitudinal direction of the shoe, a lower web portion which is parallel to the upper web portion, two lateral support walls which connect the ends of the web portions together, and bracing means which support the upper web portion relative to the lower web portion; and

wherein the lateral support walls are inwardly curved, each of said support walls including an apex; and

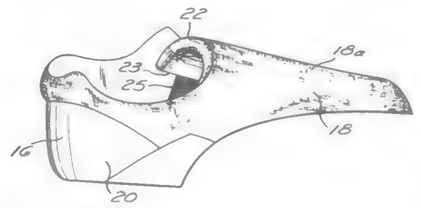
further comprising a support strut portion disposed between the apex of each of the support walls and the upper web portion.

5,337,493

SHOE WITH A TONGUE EXTENDING FROM A LINER

David I. Hill, Taichung Hsien, Taiwan, assignor to K-Swiss Inc., Chatsworth, Calif.

Continuation-in-part of Ser. No. 712,926, Jun. 7, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 907,775
Int. Cl.[5] A43B *23/26*
U.S. Cl. 36—54 16 Claims



1. A shoe comprising:

an outer shell portion having an exterior surface and an interior surface, said outer shell portion having a vamp section, a quarter section with a lacing area, and a counter section;

a sole attached to a lower portion of said outer shell portion; and

a tongue portion which comprises an extension of a liner which at least partially lines the interior surface of said outer shell portion, said tongue portion having a leading edge which is overlapped by a portion of the vamp section, a trailing edge which lies nearer to the counter section, and medial and lateral side regions, wherein said tongue portion is continuous with and extends from said liner only at a rearward portion of one of its medial and lateral side regions;

said shoe tongue being rigidly affixed to the outer shell portion at one of the medial and lateral sides of the outer shell portions, and thereby being cantilevered to underlie the lacing area.

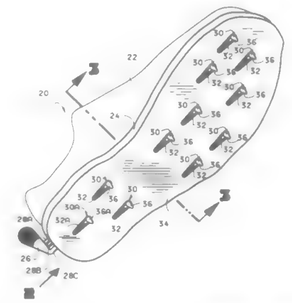
5,337,494

SHOE WITH RETRACTABLE CLEATS

Thomas H. Ricker, 464 Hill Rd., Wernersville, Pa. 19565

Filed Apr. 28, 1993, Ser. No. 54,128
Int. Cl.[5] A43C *15/14*; A43B *13/24*
U.S. Cl. 36—61 11 Claims

1. A shoe comprising sole means serving to act as the surface of said shoe upon which the wearer treads and having a plurality of apertures, a plurality of ground engaging members, and common control means, said sole means having a longitudinal axis with said plurality of apertures being located on said sole means, each of said apertures being elongated and longitudinally directed, said plural ground engaging members being located within respective ones of said apertures and pivotally mounted for movement in a first longitudinal direction to an extended position, whereupon said ground engaging members project out of said apertures to engage the ground, and for movement in a second and opposite longitudinal direction to a retracted position, whereupon said ground engaging members are located to fill at least a substantial portion of said openings from the ingress of foreign matter therein, said common control means being operative to move said plural ground engaging members in unison to either said first or second position and comprising upper and lower plates located within said sole means, lever means mounted in the heel portion of said sole means and coupled to said plates for moving said plates along said longitudinal axis, said upper plate including a pair of



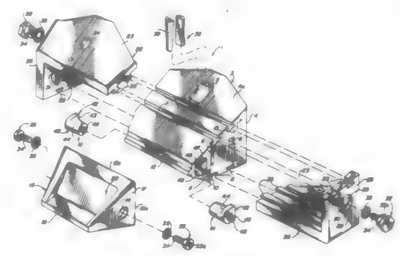
channels for each of said ground engaging members, said channels being operable to expel and lock or to retract and lock said ground engaging members, said lower plate being positioned to alternately provide respective cavities into which said retracted ground engaging members are locked, said lower plate serving as means for blocking each cavity vacated by as associated extended ground engaging member.

5,337,495

TOOTH ASSEMBLY FOR EXCAVATING APPARATUS

Sherlock K. Pippins, 306 Rebecca Cir., Longview, Tex. 75601

Filed Apr. 30, 1993, Ser. No. 54,154
Int. Cl.[5] E02F *9/28*
U.S. Cl. 37—453 20 Claims

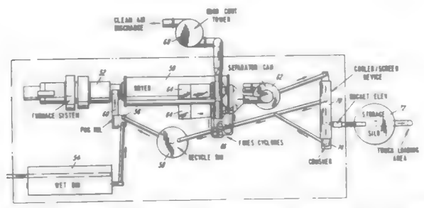


17. A tooth assembly for mounting on the tooth horn of a digging implement in an excavating apparatus, comprising a wedge-shaped adapter having top and bottom faces and adapted for mounting on the tooth horn; a pair of insert cavities provided in opposite sides of said adapter, each of said insert cavities having a cavity shoulder defined in a cavity body curvature; a pair of inserts removably located in said insert cavities, respectively, each of said inserts having an insert shoulder for engaging said cavity shoulder, an insert body curvature for engaging said cavity body curvature and an internally-threaded insert aperture; a tooth point shaped for removably mounting on said adapter and a pair of bolt openings provided in opposite sides of said tooth point; and a pair of tooth point bolts for extension through said bolt openings and threadably engaging said insert aperture, respectively, and bolting said tooth point to said adapter, whereby said tooth

VOL 1165 ISS 3 AG 16 1994 UMI

point may be removed from said adapter responsive to removal of said tooth point bolts.

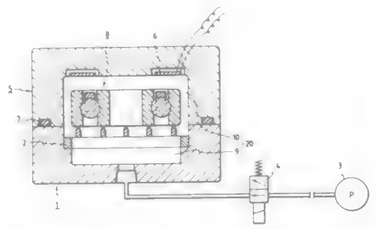
5,337,496
SLUDGE TREATMENT PROCESS
John D. Glorioso, Clearwater, Fla., assignor to Enviro-Gro Technologies, Baltimore, Md.
Continuation of Ser. No. 549,029, Jul. 6, 1990, abandoned, which is a continuation of Ser. No. 353,711, May 18, 1989, Pat. No. 4,956,926, which is a division of Ser. No. 232,640, Aug. 18, 1988, Pat. No. 4,829,678, which is a continuation of Ser. No. 924,630, Oct. 20, 1986, Pat. No. 4,761,893. This application May 14, 1992, Ser. No. 883,792
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—378 **19 Claims**



1. A process for drying mechanically dewatered sewage sludge to produce pellets of a predetermined small and uniform size comprising the steps of:
mixing said sludge with recycled, previously dried sludge particles and pellets;
providing a thermal drier heated by a stream of hot combustion gases passing therethrough;
flash drying said mixture in said thermal drier to form in said drier pellets and particles thereof by initially subjecting said mixture to a stream of hot combustion gases and subsequently by passing said mixture through said drier concurrently with said hot gas stream;
conveying the dried pellets and particles and drier off gas from said drier to a low velocity gas/solids separator and separating and collecting the pellets and a substantial portion of the particles;
clarifying the collected pellets and particles, and separating and collecting the pellets of a predetermined size, the undersize pellets and particles, and the oversize pellets;
mechanically crushing the oversize pellets and collecting the crushed pellets and undersize pellets and particles; and
recycling the collected undersize pellets and particles and crushed pellets by mixing said recycled materials with said incoming sludge to the drier.

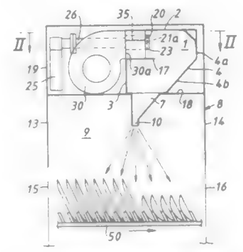
5,337,497
METHOD AND APPARATUS FOR DRYING BEARING
Chuichi Sato; Akira Kikuchi; Hiroshi Saito, and Shinichi Takaira, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Aug. 31, 1992, Ser. No. 937,381
Claims priority, application Japan, Jun. 29, 1992, 4-171147
Int. Cl.[5] F26B *5/04*
U.S. Cl. 34—412 **26 Claims**

1. A method for drying objects comprising the steps of:
sealing, in a hermetic container, each of the objects successively conveyed on a production line after being rinsed with an aqueous solvent;
reducing the pressure in said hermetic container in such a manner that the boiling point of the aqueous solvent after reducing the pressure becomes lower than the boiling point of the aqueous solvent at the atmospheric pressure; and



heat-drying said objects in said hermetic container after said reducing step.

5,337,498
DRYING APPARATUS WITH AIR DIRECTION ARRANGEMENT
Colin Smith, Epsom, United Kingdom, assignor to British Gas plc, England
Filed May 11, 1992, Ser. No. 880,661
Claims priority, application United Kingdom, May 10, 1991, 9110137.8
Int. Cl.[5] F26B *3/00*
U.S. Cl. 34—487 **13 Claims**

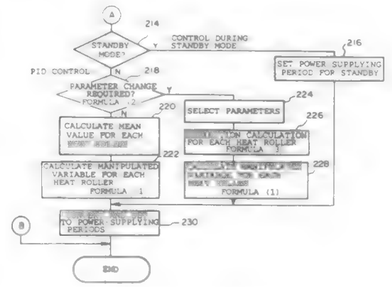


1. Apparatus for drying objects, comprising a chamber, a fully re-mixed gas-fired burner for firing into chamber, at least one air delivering means located upstream of the burner for delivering air into the chamber, means for directing air from the at least one air delivering means to mix with hot gaseous combustion products productd by the burner, and a region for receiving objects to be dried, the chamber having a downwardly directed outlet means for directing a mixture of the combustion products and air downwardly into the region, the burner comprising a casing and the apparatus further comprising additional air directing means for directing air from the at least one air delivering means over at least one outer surface of the casing.

5,337,499
DRIER APPARATUS FOR DRYING SHEETS OF PHOTOSENSITIVE MATERIAL
Masakazu Isozaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 2, 1992, Ser. No. 984,487
Claims priority, application Japan, Dec. 2, 1991, 3-318083; Apr. 20, 1992, 4-099883
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—549 **20 Claims**

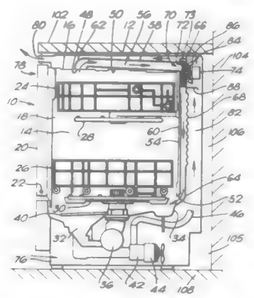
1. A drier apparatus for drying sheets of photosensitive material processed with processing solutions while the photosensitive material is being transported, comprising:

a roller driven to rotate for transporting the photosensitive material along a transport passage and for drying the photosensitive material by heating the photosensitive material;
heating means for heating the surface of said roller;
temperature detecting means for detecting a surface temperature of said roller; and



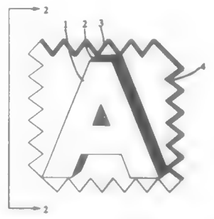
control means for controlling said heating means such that a range of fluctuation of the surface temperature of said roller falls within a predetermined range of values by selecting an appropriate characteristic for drying the photosensitive material, on the basis of a change with time of the surface temperature of said roller detected by said temperature detecting means.

5,337,500
UTENSIL DRYING APPARATUS
Tomoki Enokizono, Seto, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 2, 1993, Ser. No. 12,959
Claims priority, application Japan, Feb. 5, 1992, 4-019863
Int. Cl.[5] F26B *21/06*
U.S. Cl. 34—77 **11 Claims**



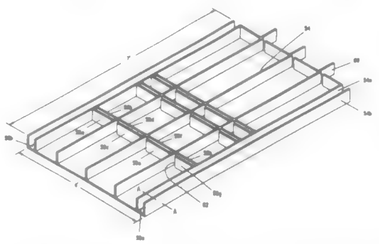
1. A utensil dryer having a front surface, comprising:
a) a chamber, having a first inlet and a first outlet, for containing utensils;
b) first passage means, provided outside of the chamber, for connecting the first inlet and the first outlet;
c) heating means, mounted in the chamber, for heating air in the chamber to promote drying of the utensils;
d) first fan means for exhausting the heated air from the chamber through the first outlet and for returning the exhausted air to the first inlet through the first passage means;
e) a second inlet provided on the front surface and a second outlet provided on the front surface;
f) second passage means, provided outside of the chamber, for connecting the second inlet and the second outlet;
g) second fan means for sucking outside air through the second inlet and for exhausting the outside air to the second outlet through the second passage means;
h) heat transferring means, provided between the first passage means and the second passage means, for transferring heat between the heated air from the chamber and the outside air in the second passage means.

5,337,501
INTERLOCKING MEANS FOR MAGNETIC ALPHANUMERIC CHARACTERS
Charles U. Amanze, 14816 Dacosta St., Detroit, Mich. 48223
Filed Jul. 6, 1992, Ser. No. 909,582
Int. Cl.[5] G09F *7/04*
U.S. Cl. 40—621 **1 Claim**



1. A magnetic alphanumeric character comprising:
a magnetic faced member having an alphanumeric shape being adhered to a thin transparent backing material;
said thin transparent backing material having edges with a plurality of grooves in each of said edges for interlocking with an edge of another magnetic alphanumeric character at one of a plurality of positions along one of said edges of said transparent backing material.

5,337,502
PARTITIONED SIGN PANEL FOR BILLBOARDS
Robert L. Hopkins, 10019 Boedecker, Dallas, Tex. 75230
Filed Nov. 30, 1992, Ser. No. 982,780
Int. Cl.[5] G09F *15/00*
U.S. Cl. 40—624 **9 Claims**



1. A partitioned sign panel for use in constructing sign faces for billboards, the sign panel comprising:
a) a generally rectangular plate like body, having a front side suitable for display of graphics, and a back side;
b) a first pair of said raised ribs, connected to the back side of said body, at approximately three feet from a first end of said body;
c) a second pair of said raised ribs, connected to the back side of said body, at approximately three feet, six inches from said first end of said body; and

VOL 1165 ISS 3 AG 16 1994 UMI

d) a third pair of said raised ribs, connected to the back side of said body at approximately five feet from said one end of said body;

e) wherein the position of each pair of said raised ribs provides separation lines as guides for separating said body into a plurality of separate pieces at fixed distances from said first end of said body a plurality of raised ribs, affixed to said back side of said body, for providing structural support to said body; and for providing separation lines as guides for separating said body into a plurality of separate pieces;

f) means for connecting said body to an additional, but identical body, end on end, to form a section; and

g) means for connecting said body to an additional, but identical body, side by side:

h) whereby said means for connecting said body to an additional, but identical body, end on end, and said means for connecting said body to an additional, but identical body, side by side, allow a plurality of said bodies to be connected to form a sign face for billboards.

5,337,503

MANUALLY LOCKABLE SEAL

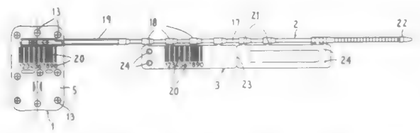
André Goby, Kappelen, France, assignor to Stoba AG, Horn, Switzerland

Filed Dec. 30, 1992, Ser. No. 998,433

Claims priority, application Switzerland, Jan. 10, 1992, 00 069/92-2

Int. Cl.[5] G09F *3/14*

U.S. Cl. 40—665 **8 Claims**



1. A manually lockable seal which includes a flexible band made out of metal, a closed seal member through which a channel extends, and a holder disposed in this channel with locking members for nonreleasably holding a first end of said flexible band after it has been introduced into said channel, a second end of said band being nonreleasably fastened on or in the seal member, wherein the flexible band has a code carrier detachably connected to it, with both the seal member and also the code carrier being provided with a unique code which is identical for both, and the code carrier being fastened in such an area of the band that the flexible band can be inserted into the seal member only after removal of the code carrier, wherein the flexible band has a portion formed by a repeatedly wound flexible metal wire, said metal wire having windings which form catch members along an entire length of said portion of the band, and wherein the holder disposed in the channel includes two parts which in turn have two spring tongues extending from oppositely lying sides into the channel, said spring tongues being said locking members and permitting the band to pass through during closing of the seal, but engaging the band in a clawlike manner during an attempt to again pull the band back.

5,337,504

GUN TUBE

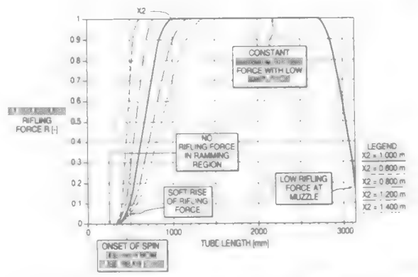
Herbert Krumm, Kaarst, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Ratingen, Fed. Rep. of Germany

Filed Jan. 7, 1993, Ser. No. 1,717

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1992, 4200171

Int. Cl.[5] F41A *21/18*

U.S. Cl. 42—78 **3 Claims**



1. A gun tube having a spin curve with a variable spin angle and a rifling force R(x) over the path of the projectile (x) within the gun tube that becomes effective when a projectile is fired, as well as a given caliber d, projectile mass m_G, moment of mass inertia J about the longitudinal axis of the projectile, gas pressure force P(x) on the projectile bottom, and projectile velocity v(x), the improvement wherein the rifling force R(x) is determined according to

$$R(x)=R_{max}R_n(x),$$

where R_{max} is the maximum value for the rifling force, which is a function of a predetermined final spin angle β_E, and $R_n(x)$ is a predetermined, standardized rifling force curve having a defined onset of spinning, a defined initial spin angle and a defined spin profile, with the development of the spin on the caliber diameter being determined from the following differential equation:

$$y'' = \frac{d^2 R_{max} R_n(x)}{4Jv^2(x)} - \frac{P(x)}{m_G v^2(x)} y'$$

and from R_{max} for a given final spin angle β_E;

wherein the precise solution for y(x) for the given final spin angle β_E is determined from the solution of the differential equation for a predetermined value of R_{max} by way of varying R_{max} and by extrapolation or interpolation.

5,337,505

TOOL KIT FOR CLEANING FIREARMS

Donald E. Brown, and David L. Brown, both of P.O. Box 1661, Waterbury, Conn. 06721

Filed Mar. 1, 1993, Ser. No. 24,366

Int. Cl.[5] F41A *29/02*

U.S. Cl. 42—95 **11 Claims**

1. A tool kit for cleaning firearms comprising:

an elongate support member having a pair of opposed ends;

first securing means on one of said ends of said support member, wherein said first securing means includes a first threaded bore extending into said support member from an end face at said one end thereof, and a second threaded bore extending into said support member from a side surface thereof adjacent said end face;

second securing means on an opposed end of said support member, wherein said second securing means includes a third threaded bore extending into said support member from an opposed end face at said opposed end thereof, said first, second, and third threaded bores being structurally identical;

first cleaning means;

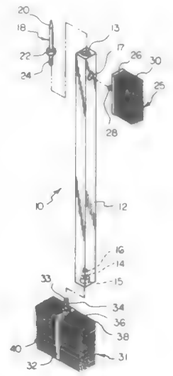
first attachment means on said first cleaning means and engageable with said first and second securing means for selectively and detachably mounting said first cleaning means on either of said opposed ends of said support member;

second cleaning means;

second attachment means on said second cleaning means and engageable with said first and second securing means for selectively and detachably mounting said second cleaning means on either of said opposed ends of said support member;

third cleaning means;

third attachment means on said third cleaning means and egageable with said first and second securing means for selectively and detachably mounting said third cleaning means on either of said opposed ends of said support member;



fourth cleaning means;

fourth attachment means on said fourth cleaning means and engageable with said first and second securing means for selectively and detachably mounting said fourth cleaning means on either of said opposed ends of said support member;

fifth cleaning means; and

fifth attachment means on said fifth cleaning means and engageable with said first and second securing means for selectively and detachably mounting said fifth cleaning means on either of said opposed ends of said support member, wherein said first, second, third, fourth, and fifth attachment means each comprise a respective first, second, third, fourth, and fifth threaded mounting pin secured to their respective first, second, third, fourth, and fifth cleaning means, said threaded mounting pins being structurally identical.

5,337,506

SUB-BASE FOR TOP-MOUNTED GUNSIGHT

David A. Klotz, 364 Nichols Ave., Syracuse, N.Y. 13206

Filed Aug. 29, 1991, Ser. No. 751,546

Int. Cl.[5] F41G *1/387*

U.S. Cl. 42—101 **5 Claims**

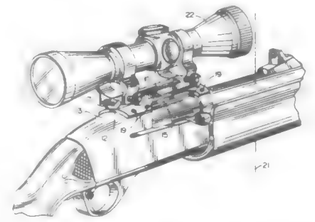
1. A method for mounting a telescopic gunsight on a semi-automatic shotgun including a receiver, which comprises:

attaching said gunsight to a base/sub-base element by means of dual rings having clamping means with attached clamp actuating means, said clamping means being clamped to said base;

forming said sub-base having a shape substantially conforming to said receiver;

attaching said base to said sub-base to form said base/sub-base element;

rigidly and permanently fastening said sub-base to a first and a second side of said receiver;



said step of fastening including bringing said sub-base substantially into contact with said receiver; and

said step of fastening further including affixing a plurality of fasteners at an angle to a vertical axis of said shotgun.

5,337,507

HANDLE FOR FISHING ROD

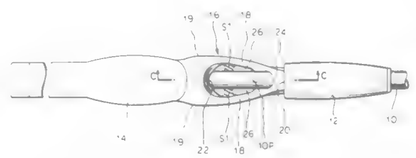
Mitsuyoshi Oyama, and Tomoyoshi Tsurufuji, both of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 74,620

Claims priority, application Japan, Jun. 20, 1992, 4-049097[U]

Int. Cl.[5] A01K *87/00*

U.S. Cl. 43—23 **10 Claims**



1. A handle for a fishing rod, which is mounted on a tubular body of said rod and extends in a longitudinal direction of said tubular body, said handle comprising:

a hand-held portion including:

first and second end portions spaced apart from each other in said longitudinal direction and both fixed to said tubular body; and

at least one bridge connecting said first and second end portions and expanding radially outward relative to said first end portion with respect to said tubular body, wherein an entire circumference of said tubular body between said first and second portions is exposed.

5,337,508

FISHING LURE AND METHOD

C. Boyd Pfeiffer, 14303 Robcaste Rd., Phoenix, Md. 21131

Filed Jul. 12, 1993, Ser. No. 89,348

Int. Cl.[5] A01K *85/00*

U.S. Cl. 43—42.03 **19 Claims**

5. The method of creating sounds audible to fish with a fishing lure having a body with a central longitudinal axis, comprising the steps of:

A. attaching a fish lure motion producing vane to said body in such a manner that said vane will oscillate back and forth across said longitudinal axis into contact with some part of said lure within said slot with sufficient force to produce sounds audible to fish when said lure is in motion by:

VOL 1165 ISS 3 AG 16 1994 UMI

1. creating a slot of predetermined height in said body adjacent one end of said body;
2. providing one end of said motion producing vane with a thickness that is less than said height of said slot;
3. inserting said one end of said vane into said slot;
4. extending another end of said vane beyond said slot ahead of said body;
5. attaching said vane to said body within said slot so as to cause said vane to oscillate into sound producing



contact with said part of said lure within said slot when said lure moves through water; and

6. controlling the degree of oscillating movement of said vane by varying the relative size and shape of said slot and the size and shape of said one end of said vane;

B. connecting said lure to a fishing line; and

C. moving said lure through water so as to cause said vane to oscillate into sound producing contact with said part of said lure.

5,337,509

NO-SWALLOW DEVICE FOR FISH HOOKS AND THE LIKE

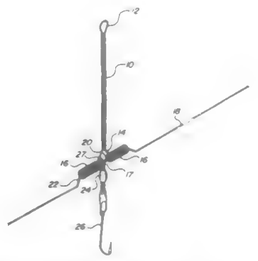
Billy E. Harold, 4960 Fletcher, Wayne, Mich. 48184

Continuation-in-part of Ser. No. 864,403, Apr. 6, 1992, Pat. No. 5,301,453. This application Oct. 29, 1992, Ser. No. 968,616

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.[5] A01K *85/00*

U.S. Cl. 43—42.74 **30 Claims**



1. A harness for removably supporting one or more fishing lures or hooks in modular fashion and in such a way so as to prevent fish from swallowing the hook or lure too far, comprising:

a vertical support for connection to a fishing line at a first upper end thereof;

two spaced coaxial supports extending laterally from a lower end of the vertical support; and

connector bar means removably connected between the coaxial supports, the connector bar means axially connected to and removable from the coaxial supports.

5,337,510

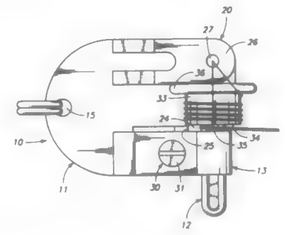
FISHING LINE RELEASE

Sam V. McCue, 805 Holly, Coulee Dam, Wash. 99116

Filed Aug. 26, 1993, Ser. No. 112,561

Int. Cl.[5] A01K *91/00*

U.S. Cl. 43—43.12 **18 Claims**



1. A fishing line release, comprising:

a body;

a clip on the body;

an elongated arm, extending along an arm axis and including first and second arm ends;

a hinge mounting the elongated arm to the body at the first arm end for pivotal movement about a hinge axis between a fishing line holding position wherein the second arm end is releasably held by the clip, and a fishing line release position wherein the second arm end is released from and pivoted clear of the clip;

wherein the hinge includes a first hinge member on the body;

wherein the hinge also includes second hinge member adjacent the first arm end, mounting the arm to the first hinge member for pivotal movement about the hinge axis;

the body further including an edge surface extending between the clip and the hinge;

wherein the arm includes stepped fishing line receiving surfaces thereon between the first and second arm ends, said fishing line receiving surfaces including an enlarged fishing line receiving surface and a reduced fishing line receiving surface;

a substantially transverse interface surface on the arm between and directly connecting the enlarged and reduced fishing line receiving surfaces, said enlarged fishing line receiving surface adjacent said first arm end, said reduced fishing line receiving surface adjacent said second arm end;

wherein the enlarged fishing line receiving surface includes a section thereon for abutment with the edge surface of the body when the arm is in the fishing line holding position whereby a fishing line may be yieldably clamped between the enlarged fishing line receiving surface and the edge surface when the arm is in the fishing line holding position.

5,337,511

CARRIER FOR FISHING LURES

Millard G. Ashbaugh, 415 Walnut, St. Clair, Mo. 63077

Filed Feb. 15, 1994, Ser. No. 196,505

Int. Cl.[5] A01K *97/06*

U.S. Cl. 43—57.1 **5 Claims**

1. A carrier for fishing lures, said lures each having a hook with a hook shank and a hook tip, said carrier comprising:

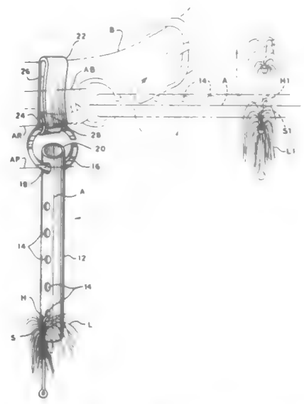
a cylindrical tube having a major axis and an upper end and including at least one row of hook retaining holes aligned respectively along at least one side wall thereof, and two diametrically opposite ring passages adjacent said upper end of said tube and defining a ring passage axis therethrough, with at least one of said ring passages being aligned with said at least one row of hook retaining holes:

a belt strap comprising a flexible length of material and

having a fixed lower loop and an openable and reclosable upper loop, with said lower loop and said upper loop respectively defining a ring loop axis and a belt loop axis, and said upper loop being securable about a belt;

a planar ring extending through said lower loop of said belt strap and further extending through said ring passages of said tube, thereby connecting said tube to said belt strap by means of said ring, and;

said ring passage axis through said tube, said ring loop axis, and said belt loop axis being substantially parallel to one another when said tube is suspended from said ring with said major axis of said tube disposed substantially vertically to define a lure securing position, with a lure externally secured to said carrier by means of the hook tip of the lure being retained within one of said hook retaining



holes and having the hook shank disposed adjacent said side wall of said tube and substantially parallel to said major axis of said tube, whereby;

said tube is raised from said lure securing position to a substantially horizontal position and further twisted about said major axis of said tube to position said row of hook retaining holes facing substantially upward, and a lure is replaceably removed from said carrier by allowing the shank of the hook to gravitationally rotate downward to be disposed substantially perpendicular to said major axis of said tube so that as the hook shank of the lure rotates toward said side wall of said tube as said tube is twisted about said major axis, the hook tip of the lure is rotated from within said hook retaining hole to allow the replaceable removal of the lure from said carrier.

5,337,512

MOUSE TRAP

Leo M. Krenzler, 1142 Industry Dr., Seattle, Wash. 98188

Filed Mar. 29, 1993, Ser. No. 39,934

Int. Cl.[5] A01M *23/26*

U.S. Cl. 43—82 **5 Claims**

1. A rodent trap, comprising:

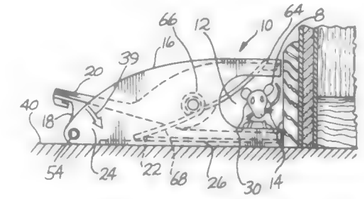
a frame having sidewalls configured to define a bottom boundary, a top boundary, and a side boundary such that when said frame is positioned adjacent a vertical surface, a passageway is defined by and between the vertical surface and the bottom boundary, top boundary and side boundary of the sidewalls with said top boundary and said bottom boundary of said sidewall extending substantially to said vertical surface;

a pedal pivotally mounted on said frame, said pedal including a latching portion and presenting a landing in said passageway, said pedal being pivotally movable between a set position and a tripped position relative to said frame;

a hammer pivotally mounted on said frame, said hammer including a striker portion and a latching portion, said striker portion being positioned to be movable toward said landing;

a spring biasing said striker portion toward said landing;

said hammer latching portion and said pedal latching portion being configured for positioning said striker portion away from said landing when said pedal is in a set position and



said striker being released for movement toward said landing when said pedal is in said tripped position;

wherein in use, said trap is set by positioning said latching portion and said pedal latching portion such that said landing is in a set position and said striker portion is positioned away from said landing, and said trap is tripped by a rodent stepping on said landing in said passageway and pivoting said landing into said tripped position, said striker portion then being pivoted toward said landing and into contact with the rodent.

5,337,513

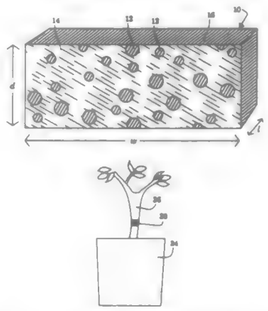
SNAIL AND SLUG DETERRENT BARRIER

Larry Harvey, Palos Verdes Estates; William Sheaffer, Santa Ana; Robert Staniec, Playa del Rey, and Malcolm McLean, Los Angeles, all of Calif., assignors to Harvey Universal, Inc., Torrance, Calif.

Filed Aug. 14, 1992, Ser. No. 930,748

Int. Cl.[5] A01M *1/00*

U.S. Cl. 43—124 **5 Claims**



1. A method for forming a barrier material for excluding terrestrial gastropods, said method comprising

(a) depositing a liquid suspension comprising from about 10 to

about 75 weight percent polymeric material, from about 5 to about 80 weight percent particulate copper, and from about 10

to about 55 weight percent liquid carrier, on a supporting surface; and

(b) allowing the liquid carrier to evaporate; wherein evaporation of the liquid carrier produces a material having

VOL 1165 ISS 3 AG 16 1994 UMI

from about 5 to about 95 weight percent polymeric material and from about 95 to about 5 weight percent particulate copper dispersed throughout said polymeric material.

5,337,514

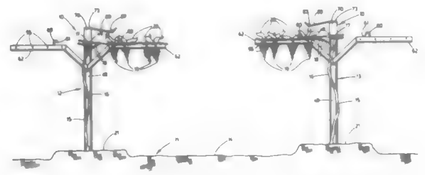
METHOD AND APPARATUS FOR PLANT CULTURE

Kazuo Hiyama, 8184 E. Adams Ave.; Howard K. Hiyama, 8140 E. Adams Ave., and Dean H. Hiyama, 431 E. Curtis Ave., all of Fowler, Calif. 93625

Division of Ser. No. 442,733, Nov. 29, 1989, Pat. No. 5,144,768. This application Jan. 1, 1992, Ser. No. 890,848

Int. Cl.[5] A01G *17/06*

U.S. Cl. 47—44 9 Claims



1. An apparatus for plant culture wherein the plants grow elongated flexible portions each growing season, the apparatus comprising a frame adapted to be disposed adjacent to said plants and including an elongated trellis structure composed of a plurality of upright members mounted in the earth in upstanding relation, a plurality of cross members mounted on at least some of the upright members individual extending laterally thereof whereby said cross members define a pair of support portions projecting laterally of and on opposite sides of said upright members, a plurality of trellis wires interconnecting the cross members on common sides of the upright members within their respective support portions and a central member extending along the trellis structure substantially midway between said support portions; means for moving said flexible portions of the plants into positions overlaying said support portions of the frame extending laterally of the plants, said moving means including a capturing member mounted on the frame above the cross members for movement between a retracted position, spaced from the support position to which said flexible portions of the plants are to be moved on a side of the frame oppositely laterally disposed relative to said support portion, and a capturing position above and adjacent to said support portion whereby the capturing member can be moved from the retracted position to the capturing position to move said flexible portions of the plants into positions overlaying said support portion; securing members mounted on the cross members on opposite sides of the upright members fox selectively releasably retaining the capturing member in the capturing position above and adjacent to both support portions whereby the flexible potions of the plants can selectively be moved by the capturing member to positions overlaying the support portions of the frame; and a pivot member engageable with said central member, having one end portion engageable with said capturing member and an opposite handle portion adapted to be grasped to pivot the pivot member substantially about the central member to move the capturing member between said retracted and capturing positions.

5,337,515

HYDROPONIC GARDENING METHOD AND APPARATUS

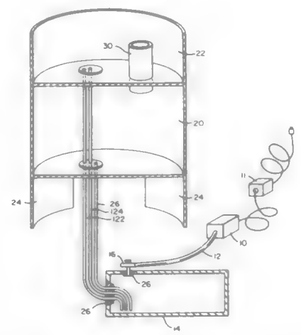
Kevin J. Robins, P.O. Box 7577, Arlington, Va. 22207

Filed Nov. 5, 1991, Ser. No. 787,818

Int. Cl.[5] A01G *31/00*

U.S. Cl. 47—62 5 Claims

1. A hydroponic cultivation apparatus comprising:
a pumping tank;
a plant container;
conduit means;
first means connecting said pumping tank and said conduit means for conveying fluid from a bottom area of said pumping tank to a bottom area of said plant container;
an overflow tank arranged with respect to the plant container to catch overflow from the plant container;
second means connecting said overflow tank and said pumping tank for conveying fluid between said overflow tank and said pumping tank;
means for pressurizing said pumping tank to force liquid



therefrom into said plant container until said plant container overflows and said pumping tank is substantially empty of liquid;
means for depressurizing said pumping tank to allow fluid in said plant container and said overflow tank to return to said pumping tank;
wherein said pressurizing means is an air pump and said depressurizing means is a relief valve; and
wherein the fluid carrying capacity from said pumping tank to said plant container of said first means is significantly greater than the fluid carrying capacity from said pumping tank to said overflow tank of said second means.

5,337,516

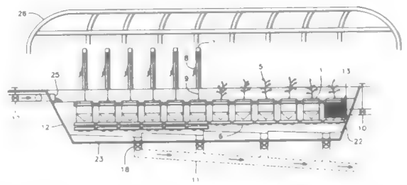
TREATMENT OF POLLUTED WATER USING WETLAND PLANTS IN A FLOATING HABITAT

John L. Hondulas, Rte. 4, Box 505, Gatlinburg, Tenn. 37738

Filed May 8, 1991, Ser. No. 697,593

Int. Cl.[5] A01G *31/02*

U.S. Cl. 47—65 16 Claims



1. An apparatus for treating waste water comprising, in combination:
a waste water basin having a basin bottom, basin walls extending upwardly from said basin bottom and a substantially open basin top defined by upper edges of said basin walls, said waste water basin having at least one inlet provided therein for introducing waste water to be treated into said waste water basin and having at least one outlet provided therein through which treated waste water leaves said waste water basin; and
means for treating waste water in said waste water basin, said waste water treating means comprising:
a plurality of container means disposed along the surface of waste water in said waste water basin, each of said container means containing at least one wetland plant and a life sustaining amount of a particulate solid media for said wetland plant, said container means comprising a material having holes therethrough such that said container means retains said particulate solid media therein and allows a root system of said wetland plant to grow outwardly therethrough and into the waste water;
means associated with said container means for enabling the wetland plants in said container means to float on the surface of the waste water in said waste water basin, with the root system of said wetland plants oriented substantially downwardly toward said basin bottom; and
adjustable means for controlling the downward growth of the root systems of said wetland plants, said adjustable growth controlling means being located between said container means and the basin bottom.

5,337,517

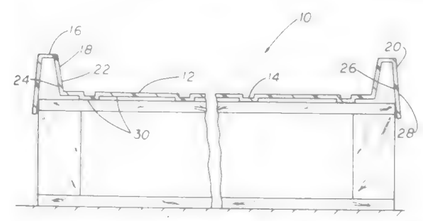
TRANSFERABLE GROWING TRAY APPARATUS

Bradley C. Karthauser, and Paul D. Lindsay, both of Cedarburg, Wis., assignors to Envigro, Inc., Menomonee Falls, Wis.

Filed Oct. 30, 1992, Ser. No. 968,826

Int. Cl.[5] A01G *9/04*

U.S. Cl. 47—71 1 Claim



1. An apparatus in combination with a support for retaining and transferring plant containers, said apparatus comprising:
a bottom portion disposed on an upper surface of said support and being constructed from an anti-static material, for container placement, including means for movement of fluid about or through said apparatus, said bottom portion having opposed upper and lower surfaces;
a plurality of side walls constructed from an anti-static material; and
means connected to said side walls for removably engaging said support, said means consisting essentially of side walls, each said side wall having an inwardly downward tapered internal section and an outwardly downward tapered external section, said side wall external sections extending significantly downward beyond the lower surface of said bottom portion and engaging a correspondingly shaped periphery of said support.

5,337,518

Patent Not Issued For This Number

5,337,519

VEHICLE WINDOW REGULATING DEVICE

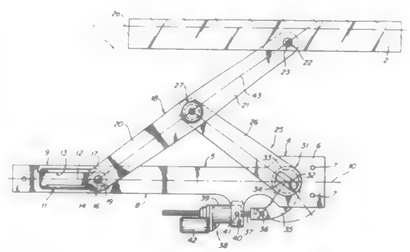
Giuseppe Bergesio, Bra, Italy, assignor to Roltra Morse S.p.A., Rivoli, Israel

Filed Apr. 12, 1993, Ser. No. 46,087

Claims priority, application Italy, Apr. 17, 1992, TO92 A 000349

Int. Cl.[5] E05F *11/44*

U.S. Cl. 49—351 9 Claims



1. A vehicle window regulating device comprising:
a slideway extending along a first axis and designed to fit integrally with a door;
a bracket rigidly coupled to the slideway;
slide means slidably coupled to the slideway for traveling along said first axis;
a transmission arm;
first connecting means for connecting a first end of the transmission arm to a curved window mounted to slide, relative to the door, along an arcuate path substantially perpendicular to a substantially straight generating line of the window;
second connecting means interposed between a second end of the transmission arm and said slide means;
actuating means having an actuating arm rotatably connected to the bracket rotating relative to the slideway about a second axis; and
third connecting means for rotatably connecting said actuating arm to an intermediate position on the transmission arm, wherein said first axis is skew in relation to said generating line.

5,337,520

SAFETY DEVICE FOR OVERHEAD DOORS

Aramando B. Uribe, 11744 Hatteras St., North Hollywood, Calif. 91607

Filed Apr. 20, 1992, Ser. No. 871,276

Int. Cl.[5] E05F *15/00*

U.S. Cl. 49—197 14 Claims

1. For use with a garage having a floor, a garage door opening and a frame-enclosed overhead door system bordering the garage door opening, said door system being defined by jambs, a first vertical track having a first end and a second end, a second vertical track parallel to said first vertical track and having a first end and a second end, wherein said first and second vertical tracks are located on opposite sides of said door opening extending up along the jambs, and wherein the second ends of said first and second vertical tracks are disposed adjacent to said floor, a first horizontal track and a second horizontal track parallel to said first horizontal track, each said horizontal track intersecting and being located adjacent and perpendicular to a respective one of the first end of said first and second vertical tracks and extending back into said garage above the door opening, a garage door having a pair of parallel side edges, a pair of spaced apart rollers mounted on each side edge of said door for riding within said tracks permitting movement of said door between a vertically extending position closing said opening and a fully open position above and back

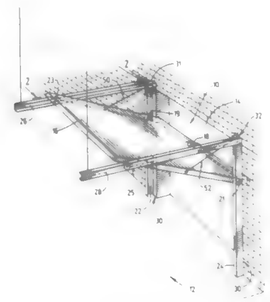
VOL 1165 ISS 3 AG 16 1994 UMI

from said opening substantially parallel to the floor of said garage, said door being movable between said positions, each said side edge having a midpoint equispaced from said pair of rollers at that side edge, and said rollers in said tracks guiding said door as said door moves between its open and closed positions, a safety device for immediately stopping and preventing the door from falling and closing if the rollers fail, said safety device comprising:

a first support means having a first end pivotally secured to a first side edge of said door substantially at the midpoint between the rollers mounted on said first side edge;

said first support means having a second end pivotally secured to a portion of the inside of the garage adjacent to said intersection of said first horizontal track and said first vertical track;

a second support means having a first end pivotally secured to a second side edge of said door substantially at the



midpoint between the rollers mounted on said second side edge;

said second support means having a second end pivotally secured to a portion of the inside of the garage adjacent to said intersection of said second horizontal track and said second vertical track;

said first and second support means having a tensile strength sufficient to support the entire weight of said door;

each of said first and second support means comprising a first and second bar, respectively, each said bar having first and a second ends defining the first and second ends of the respective support means; and

said first end of said first and second bars each being secured to a plate having a slot, said plates being securely mounted, opposite each other, to the side edges of said door substantially at each said midpoint on each said side edge of the door.

5,337,521

VALVE GRINDER

Derrick Heyl, Rollingstone, and David M. Terpstra, Winona, both of Minn., assignors to Hein-Werner Corporation, Waukesha, Wis.

Filed Oct. 27, 1992, Ser. No. 967,228
Int. Cl.[5] B24B *15/04*
U.S. Cl. 51—105 VG **10 Claims**

1. A valve grinder apparatus mounted on a surface including a grinding wheel for grinding a valve having a stem with a valve head having an annular seating face on one end of the stem and a distal end opposite the valve head, said stem further having a length of smooth surface between said valve head and said distal end, said valve grinder apparatus comprising:

a means for driving the grinding wheel at selected speeds, said means mounted to said surface,

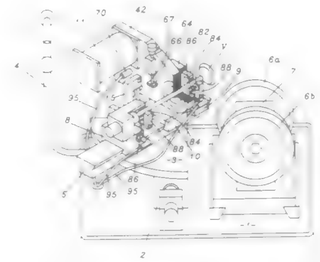
a valve stem support stand including an indexed bed plate a spaced distance from said means for driving the grinding wheel, said valve stem support stand comprising

a support structure slidably mounted on the indexed bed plate between a pair of V-blocks independently, slidably mounted on the indexed bed plate a distance apart from each other to support and cradle the valve stem along the smooth valve stem surface, each V-block further having a valve bearing mounted on a valve bearing support and said valve bearing support mounted on a rod with said rod connected to a means for moving the valve bearing into contact with the valve stem and biasing said valve stem against the V-block, and an end stop member slidably mounted on one of said V-blocks,

a drive mechanism plate having a through bore, pivotally attached to the support structure,

a chuck assembly for gripping the valve stem, said chuck assembly comprising:

a first rotating bearing mounted on a collet spool in the drive mechanism plate co-axially with the through bore and having a drive pulley attached to said collet spool, and a positive clamping collet inserted into said through bore and maintained in said through bore by a collet cover circumscribed by a second rotating bearing, which bearing has an annular pressure ring, said collet further adapted to positively clamp the valve stem



when pressure is applied to the annular pressure ring thereby compressing said collet into engagement with said valve stem,

a collet fork having two opposing, faced tines, which fork is pivotally attached to the drive mechanism plate by a pivot attachment and having a pressure dog mounted on each face of opposing tines which are adapted to engage the second rotating bearing and apply pressure to said pressure ring when the collet fork is tilted about the pivot attachment,

a means for tilting the collet fork toward the drive mechanism plate thereby pushing the pressure dogs against the pressure ring and toward the first rotating bearing and compressing the positive clamping collet,

a means for restraining the drive mechanism plate mounted on said drive mechanism plate and attached to the support structure,

a drive motor mounted on the drive mechanism plate and in engagement with the drive pulley on the collet spool, and

a means for indexing the valve stem support stand a spaced distance from the grinding wheel and mounted on said surface.

5,337,522

GRINDSTONE SHIELD AND WORKTABLE OF GRINDING MACHINE

Mu-Yen Chien, 45 Szu-Wei Street, Taichung, Taiwan

Filed Nov. 17, 1992, Ser. No. 977,619
Int. Cl.[5] B24B *41/06*
U.S. Cl. 51—240 A **1 Claim**

1. A grinding machine comprising:

(a) a motor capable of driving synchronously two grindstones fastened thereto;

(b) a grindstone shield disposed over each of said two grindstones and fastened to a housing of said motor and further provided with an upper threaded hole and a lower threaded hole which are located at each of two opposite lower ends of said grindstone shield; and

(c) a worktable having a bridging portion provided with a through hole corresponding in location to said upper threaded hole of said grindstone shield, said worktable further having an angle adjusting plate which has a profile corresponding to a quarter of a disk and is located under said bridging portion, with said angle adjusting plate having an arcuate slot and a bevel scale disposed on an outer edge thereof, said arcuate slot corresponding in location to said lower threaded hole of said grindstone shield;

wherein said grinding machine is characterized in that said grindstone shield is provided at the lower end thereof

with a vertical threaded hole and with a dust receiving portion located outside the lower end of said grindstone and further with a connecting tube located at the lower end of the rear side of said grindstone shield, and that said vertical threaded hole of said grindstone shield receives therein a threaded locating element of a hollow construction containing a locating ball and a biasing means for urging said locating ball to emerge partially beyond an upper end of said locating element, said locating element having a nut threaded on a lower end thereof, and further that said angle adjusting plate of said worktable is provided with a plurality of concave retaining surfaces located at the outer edge thereof in a manner that said concave retaining surfaces correspond in location to a plurality of predetermined angles, with each of said concave retaining surfaces so dimensioned as to receive therein said locating ball of said locating element.

5,337,523

UTILITY TOOL

David C. Walsh, 200 Custom Pl., Bogart, Ga. 30622

Filed Dec. 2, 1992, Ser. No. 983,435
Int. Cl.[5] B24D *15/04*
U.S. Cl. 51—370 **21 Claims**

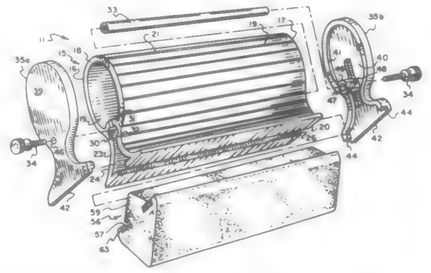
1. Hand-held apparatus for supporting a surface treating element in operative relation to a workpiece, comprising:

a holder defining a surface having an opening for receiving an insert;

an insert having a profiled surface of predetermined size, and further having an attachment member configured to fit in the opening in snug engagement with the holder so that the insert is removably attached to the holder with no relative movement therebetween that might otherwise interfere with a sanding operation;

the insert having a back surface configured for close confronting relation with the surface of the holder when the insert is attached to the holder;

a pair of ridges extending outwardly from the back surface of the insert to engage and extend around opposite sides of the confronting holder surface so as to resist lateral movement of the insert relative to the holder during a sanding operation; and



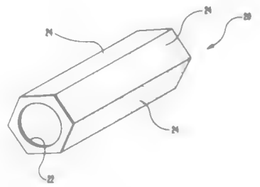
means associated with the holder and selectively operative to enlarge the opening sufficiently to loosen the snug fit with the insert, whereby the attachment member can easily be removed from or installed in the opening.

5,337,524

METHODS AND APPARATUS FOR REMOVING SCRATCHES FROM PLASTIC SURFACES

William C. Norville, Park City, Utah, assignor to Clearfix Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 962,887, Oct. 19, 1992. This application Dec. 17, 1992, Ser. No. 993,729
Int. Cl.[5] B24D *15/04*
U.S. Cl. 51—391 **13 Claims**



1. A pad system for use in removing scratches from plastic surfaces comprising,

pad means for use in applying a suitable polishing composition to the surface of a plastic surface, said pad means being formed in a generally tubular shape from an open cell material which is resilient but provides mechanical opposition to compression during use;

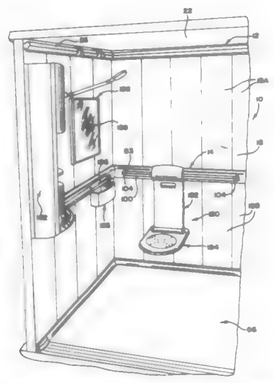
said tubular shaped pad means including a bore running axially from one end of said pad means through at least a portion of the length of said pad means;

said bore having a diameter approximately the same diameter as the diameter of a finger of a user so a user may insert a finger into the bore in order to removably secure the pad means to a user's finger; and

the circumferential surface of said generally tubular pad means being formed of a plurality of substantially flat faces, each of said faces being individually capable of receiving polishing composition and used in removing scratches or other imperfections from plastic surfaces.

VOL 1165 ISS 3 AUG 16 1994 UMI

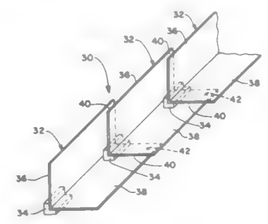
5,337,525
RAIL SYSTEM
Gianfranco Zaccai, Boston; Arthur S. Rousmaniere, Andover; Timothy C. Dearborn, Wellesley; Lyan Noble, Lexington, and Thomas J. Misage, Somerville, all of Mass., assignors to Herman Miller, Inc., Zeeland, Mich.
Division of Ser. No. 848,426, Mar. 6, 1992. This application Jan. 7, 1993, Ser. No. 1,449
Int. Cl.[5] G04B *2/00*
U.S. Cl. 52—35 34 Claims



1. A rail system for supporting a plurality of upper and lower modular wall panels adjacent a plurality of spaced apart studs to define a wall, the rail system comprising:
a plurality of spaced apart studs;
an upper rail mounted horizontally to the studs adjacent a ceiling, said upper rail adapted to receive and retain an upper portion of the upper wall panels;
a lower rail mounted horizontally to said studs adjacent an abutting surface such as a floor, bathtub, or shower pan, the lower rail adapted to receive and retain a lower portion of the lower all panels;
a middle rail mounted horizontally to said studs between the lower and upper rails, the middle rail adapted to receive and retain said upper and lower panels;
an elongated bar spaced apart from said middle rail and mounted longitudinally thereto, whereby said bar can be mounted in a desired position along a wall regardless of the location of the studs, a person can grab the bar for support, and various accessories can be removably attached thereto; and
a plurality of attachment devices coupled to the bar and middle rail for mounting said bar to said middle rail.

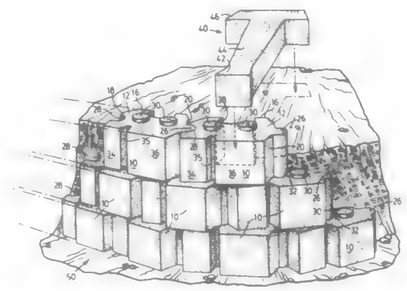
5,337,526
STEP FLASHING STRIP
Lewis C. Hartman, 4867 Granger Rd., Akron, Ohio 44333
Filed Oct. 1, 1992, Ser. No. 955,290
Int. Cl.[5] E04D *1/36*
U.S. Cl. 52—58 17 Claims

1. A step flashing strip comprising a plurality of flashing segments and a plurality of spacers, each of said flashing segments having a pair of intersecting planar legs, the planar legs of each of said flashing segments partially overlapping the legs of an adjacent flashing segment, said partially overlapping legs of adjacent flashing segments, defining a pair of overlapping areas having opposing surfaces, each of said spacers residing between at least a portion of at least one of said pair of overlapping areas defined by said opposing surfaces of said adjacent flashing segments, each of said spacers being fused or joined by an adhesive to both of said opposing surfaces throughout substantially all of said portion of said overlapping area at which said spacer resides, each spacer providing a gap for



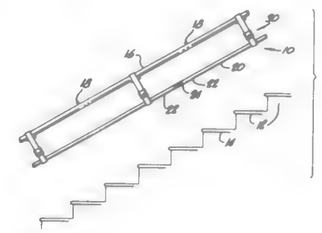
insertion of a shingle into at least one of said pair of overlapping areas of adjacent flashing segments.

5,337,527
BUILDING BLOCK
Jack Wagenaar, Pole Line Road, R.R. #5, Thunder Bay, Ontario, Canada P7C 5M9
Filed Feb. 9, 1993, Ser. No. 15,101
Int. Cl.[5] E02D *5/00*; E04C *1/00*
U.S. Cl. 52—169.2 9 Claims



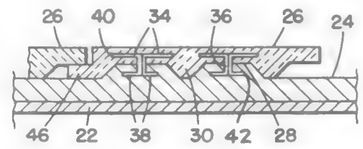
1. A drywall construction comprising vertically superposed rows of laterally adjacent building blocks, each block comprising a body having front and rear faces, opposite end faces and top and bottom faces, one end face having a laterally projecting vertically extending rib with an arcuate outer surface, the other end face having an arcuate recess to receive the rib of a laterally adjacent like vertically extending block in a manner permitting limited relative swivelling movement of two blocks about a vertical axis, one of the top and bottom faces having at least one projection, the other of the top and bottom faces having a laterally extending groove to receive the at least one projection of a vertically adjacent like block in a manner to permit relative lateral adjustment of vertically adjacent blocks and prevent relative forward or rearward movement thereof, and the at least one projection being further from one of the front and rear faces than the groove to cause vertically adjacent blocks to be staggered in an upward and rearward sense, each pair of laterally adjacent blocks being connected by engagement of the vertically extending rib of one block in the vertically extending arcuate recess in the adjacent block in a manner permitting limited relative swivelling movement of the two blocks about a vertical axis, and vertically adjacent blocks being connected by engagement of the at least one projection in one block in the laterally extending groove in a vertically adjacent block in a manner to permit relative lateral adjustment of the blocks and prevent relative forward or rear movement thereof, and the at least one projection of each block being further from one of the front and rear faces than the groove to cause vertically adjacent blocks to be staggered in an upward and rearward sense.

5,337,528
CHILD ASSIST RAIL AND SUPPORT SYSTEM
Frank Jaworski, 1426 Deerpath La., La Grange Park, Ill. 60525; Sabrina Jansen, 2908 Alma Ave., Manhattan Beach, Calif. 90266, and Wayne Jaworski, 5606 Riverview Dr., Lisle, Ill. 60532
Filed Dec. 2, 1992, Ser. No. 984,912
Int. Cl.[5] E04F *11/00*
U.S. Cl. 52—182 10 Claims



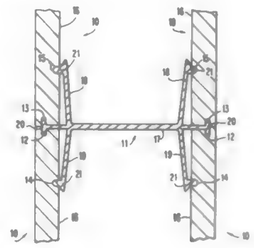
1. A child assist rail and support system adapted for use with an existing handrail at a stairway, the handrail positioned a set distance from a wall within the stairway, the child assist rail and support system comprising:
a plurality of rigid suspension elements,
flexible strap means adapted to suspend said rigid suspension elements below the handrail, said flexible strap means further adapted to position a first end of said rigid suspension elements proximate to a lower surface of the handrail, said flexible strap means adapted to be disposed along a surface of the handrail,
an auxiliary rail positioned at a second end of said rigid suspension elements, said flexible strap means operative to maintain said auxiliary rail in a position proximate to said second end of said rigid suspension elements, said flexible strap means disposed along a surface of said auxiliary rail,
locking means operative with said flexible strap means and said rigid suspension elements to maintain said auxiliary rail in a substantially stationery position with respect to the handrail.

5,337,529
ROOF TILE MOUNTING SYSTEM
Gregory D. Lutin, 9270 Vedra Pointe La., Boca Raton, Fla. 33496, and Peter R. Hill, 730 NW. 91st Terr., Plantation, Fla. 33324
Filed Jul. 23, 1993, Ser. No. 96,668
Int. Cl.[5] E04D *1/34*
U.S. Cl. 52—389 20 Claims



1. A roof tile mounting system comprising:
a ceramic slab;
anchoring means for securing said ceramic slab to a contiguous layer of bonding material which is initially liquid and subsequently solidifies, said anchoring means including:
substantially planar first flange means embedded within said ceramic slab;
web means integral with said first flange means and extending transversely away from said first flange means and beyond said ceramic slab; and
substantially planar second flange means integral with said web means at a location distant from said first flange means;
said first and second flange means being generally symmetrical relative to a longitudinal axis of said web means.

5,337,530
BUILDING WALL CONSTRUCTION
Douglas M. Beames, 12 Frost Street, Mt. Gravatt, Queensland, 4122, Australia
Continuation of Ser. No. 867,898, Apr. 13, 1992, abandoned. This application Nov. 8, 1992, Ser. No. 149,010
Int. Cl.[5] E04B *2/30*
U.S. Cl. 52—426 1 Claim



1. A fastening and positioning member for use in combination with a hollow wall comprised of a first wall panel formed from building blocks arranged in overlapping superposed courses, and a second wall panel formed from building blocks arranged in overlapping superposed courses, said first and second wall panels extending substantially parallel to each other in spaced relation, said building blocks each having grooves extending longitudinally of an upper edge surface thereof and longitudinally of a lower edge surface thereof in a position registering with corresponding grooves in a next adjacent said building block, and at least one channel extending longitudinally between side edges of each said block at a position intermediate said upper and lower edge surfaces thereof on a side face of said block to be mutually presented to a corresponding side face of a said block in an opposite one of said first and second panels, said fastening positioning member comprising:
an axially elongate member providing a first body member terminating at opposite longitudinal edges thereof in oppositely extending hook members receivable within a said groove of a selected one of said building blocks; and,
second body members integral with said first body member and extending at an angle to said first body member, said second body members respectively terminating at a free edge thereof in a hook member receivable in a said channel in a said side face of an associated said block;
said first body member providing for proper spacing of said first and second panels relative to each other, and said second body members being operative to prevent movement of associated said building blocks relative to each other, and transmit compressive stresses in said second body member into a compressive stress in said first body member.

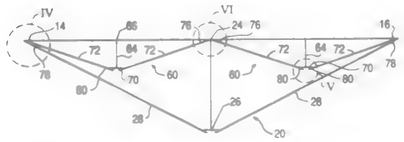
VOL 1165 ISS 3 AUG 16 1994 UMI

5,337,531

ADJUSTABLE CAMBER TRUSS

Sidney L. Thompson, Trussville, and Claude D. Wilkerson, Birmingham, both of Ala., assignors to Thompson Fabricating Company, Inc., Birmingham, Ala.

Filed Oct. 15, 1992, Ser. No. 959,923
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—640 8 Claims



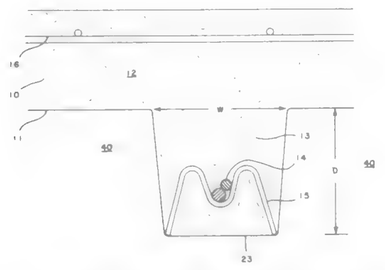
1. An adjustable camber truss comprising:
an upper chord member having opposed ends and being disposed to receive a load acting in one direction;
a major support structure fixed to and subtending substantially the entire length of the upper chord member, the major support structure comprising:
a major king post fixed to the upper chord member at a major post position proximate the midpoint between the opposed ends and extending therefrom in the one direction to a distal end; and
a pair of major tension members, each major tension member having a first end fixed to the upper chord member proximate a respective one of the opposed ends thereof and an axially opposed second end; and
a coupling between the second end of each major tension member and the distal end of the major king post, each coupling being selectively adjustable to axially move the king post and thereby selectively adjust the camber of the upper chord member.

5,337,532

CONCRETE FLOOR SYSTEM

Robert C. Reid, 38-40 Albany Street, Crows Nest, New South Wales, 2065, Australia

Continuation of Ser. No. 774,574, Oct. 10, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 113,960
Claims priority, application Australia, Oct. 11, 1990, PK2754
Int. Cl.[5] E04C *5/16*
U.S. Cl. 52—687 8 Claims



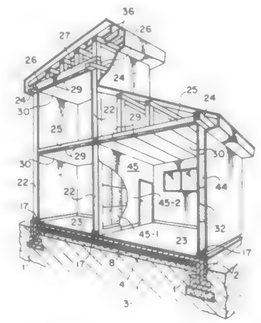
1. A concrete floor system comprising bar chairs, at least two or more reinforcements and undulating sheet metal formwork, for forming a concrete slab having one or more concrete ribs, the sheet metal formwork including at least one trough comprising respective sides and a base having a base width and formed from undulations in the sheet metal formwork, said bar chairs including seating means for locating and supporting the reinforcements wherein:
(a) the bar chairs have a generally "M" shaped configuration and have a width slightly less than the base width for allowing location of said bar chairs in the trough, such that the bar chairs are able to be freely located within said trough by being dropped thereinto, the width of the bar chairs being sufficient to allow such location and to accurately locate the bar chairs within said trough;
(b) the seating means of each bar chair forms a seat cavity of such width and depth accommodating two or more reinforcements to be freely dropped, placed and maintained entirely within the width and depth of said seat cavity; and
(c) the seating means of said bar chairs, the width of the bar chairs and the depth and width of each trough being so formed and dimensioned, such that on said bar chairs being located within said trough, and on said reinforcements being so located and maintained within said seating means, the bar chairs and reinforcements are contained and maintained entirely within the depth of each trough.

5,337,533

PROCESS FOR CONSTRUCTING A WOODEN BUILDING

Yusuke Kajita, Hokkaido, Japan, assignor to Kajita Construction Company, Hokkaido, Japan

Filed Jul. 17, 1992, Ser. No. 915,420
Claims priority, application Japan, Oct. 31, 1991, 3-286514; Oct. 31, 1991, 3-286515
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—741.1 4 Claims



1. A process for constructing a wooden building comprising the steps of:
constructing a form having first and second inner wall surfaces;
determining a depth at which to provide a first heat insulation means;
applying said first heat insulation means to said first inner wall surface of said form;
pouring concrete into a space between said first heat insulation means and said second inner wall surface, said first heat insulation means and said concrete integrally forming a continuous footing;
providing a ballast floor;
providing a second heat insulation means on top of said ballast floor;
providing a slab floor on top of said second insulation means;
anchoring a sill to said continuous footing through a moisture proof packing;
providing a living floor directly on said slab floor without a ventilation space under said living floor;
erecting columns of said sill;

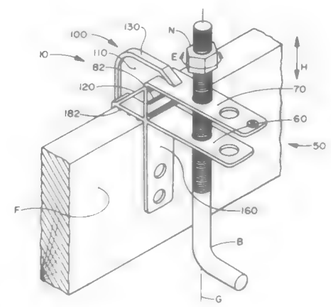
mounting cross-beam elements and partition cap elements on said columns;
sealing interior surfaces of ceiling rafters and interior wall surfaces with a moisture proof sheet;
providing a roof truss on top of said cross beam and partition cap elements, said roof truss comprising struts, purlin, roof-rafters, battens, fascial boards, cant strips and roofing; and
erecting exterior and interior walls between said columns, said walls having respective heat insulation pads therein.

5,337,534

REVERSIBLE FOUNDATION BOLT HOLDER

Gerald Nasca, 8322 Chester Dr., Sacramento, Calif. 95830

Filed Oct. 28, 1992, Ser. No. 967,981
Int. Cl.[5] E04B *1/00;* E04G *21/00*
U.S. Cl. 52—745.21 21 Claims



1. A reversible foundation bolt holder comprising in combination:
a first grasping means including a means to releasably grasp a form supporting cementitious material, and
a second grasping means connected to said first grasping means and including a means to releasably grasp a foundation bolt in an orientation desired to anchor the foundation bolt within the cementitious material;
wherein said first grasping means and said second grasping means are separated by an axis of symmetry such that said first grasping means and said second grasping means appear as mirror images of each other from a front view thereof; and
wherein said first grasping means includes means to releasably grasp a foundation bolt, said foundation bolt grasping means of said first grasping means distinct from said foundation bolt grasping means of said second grasping means, and said second grasping means includes means to grasp the form;
whereby said foundation bolt holder is reversible through pivoting about said axis of symmetry.

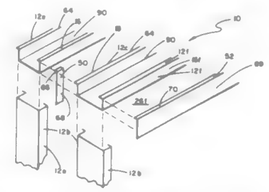
5,337,535

PANEL SYSTEM AND METHOD FOR BUILDING CONSTRUCTION

James H. Maupin, P.O. Box 651, Franklin, Ky. 42135

Filed May 20, 1992, Ser. No. 886,749
Int. Cl.[5] E04G *21/14;* E04B *2/72*
U.S. Cl. 52—748 7 Claims

1. A method of constructing a building having a perimeter, a foundation, subflooring, front, left, rear, and right walls, a first corner joining said front wall and said left wall, a second corner joining said left wall to said rear wall, a third corner joining said rear wall to said right wall, and a fourth corner joining said front wall to said right wall, said method comprising the steps of:
a. attaching to said perimeter of said building a first base channel along said front wall, a second base channel along said left wall, a third base channel along said rear wall, and a fourth base channel along said right wall;
b. attaching a first panel section to said second base channel along said left wall proximate to said first corner;
c. attaching a second panel section to said first base channel along said front wall proximate to said first corner such that said second panel abuts said first panel;
d. attaching a third panel section to said first panel section away from said first corner using tongue and groove connection wherein said groove comprises a first bend in



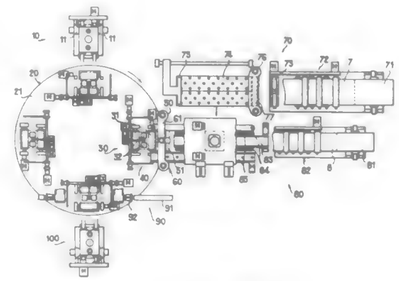
said metal sheets at a right angle outwardly and away from said outer flange and a second bend toward said inner flange in direction of said spine leaving a gap between inner facing metal surfaces and said tongue comprises a tongue bend in said metal sheets toward said outer flange at right angles; and
e. attaching a fourth panel section to said second panel section away from said first corner using tongue and groove connection wherein said groove comprises a first bend in said metal sheets at a right angle outwardly and away from said outer flange and a second bend toward said inner flange in direction of said spine leaving a gap between inner facing metal surfaces and said tongue comprises a tongue bend in said metal sheets toward said outer flange at right angles.

5,337,536

PACKAGING APPARATUS

Hisashi Takahashi; Shigehisa Shimizu; Takayuki Fujiwara; Satoshi Mino, and Tatsuo Sugii, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1992, Ser. No. 962,844
Claims priority, application Japan, Oct. 18, 1991, 3-270862
Int. Cl.[5] B65B *11/04, 61/18*
U.S. Cl. 53—135.3 6 Claims



1. A packaging apparatus, comprising:
a forming means for forming a pair of first packaging materials for wrapping side portions of a rolled article wound around a core,

VOL 1165 ISS 3 AG 16 1994 UMI

an adhering means for adhering the pair of first packaging materials to side edge portions, respectively, of a second packaging material, the second packaging material wrapping a circumferential portion of the rolled article,

a splicing means for splicing a trailing end of the second packaging material to a leading end of the rolled article, and

a gusseting means for gusseting the first packaging materials along sides of the rolled article,

wherein the forming means comprises a means for slitting a web of the first packaging material into the pair of first packaging materials, a feeding means for feeding the pair of first packaging materials and a cutting means for cutting the pair of first packaging materials,

and the adhering means comprises a transferring means for transferring the pair of first packaging materials to a position wherein a side edge of a first one of the pair of first packaging materials overlaps a first side edge of the second packaging material and a side edge of a second one of the pair of first packaging material overlaps a second side edge of the second packaging material, and a heat-sealing means for heat-sealing the overlapping edges of the first and second packaging materials.

5,337,537

GRANULABLE CONTAINER MEANS AND METHOD

John J. Soughan, 33 E. Orange St., Chagrin Falls, Ohio 44022

Filed Dec. 28, 1992, Ser. No. 997,502

Int. Cl.[5] B65B *3/02, 5/02*

U.S. Cl. 53—452 **1 Claim**



1. A method of packaging liquid in glass bottles comprising the steps of forming bottles of molten glass, then cooling said glass while internally stressing it, as by tempering, to a condition wherein, when cooled and then later impacted or crushed, it crumbles into blunt granules of glass, filling the bottles with the liquid to be packaged, capping the bottles, employing the bottles to store the liquid, opening the bottles and emptying the liquid therefrom, and then granulating the bottles by impacting or crushing to provide compact waste suitable for recycling or substantially non-contaminating landfill or dumping at sea.

5,337,538

GABLE-TOP CARTON BLANK FOR DIVERSE PACKAGING MACHINES AND METHODS OF MAKING AND USING THE BLANK

Tommy B. G. Ljungström, Buffalo Grove, Ill., assignor to Tetra Laval Holdings & Finance S.A., Switzerland

Filed Aug. 12, 1993, Ser. No. 106,361

Int. Cl.[5] B65B *43/10, 7/18;* **B65D** *5/42*

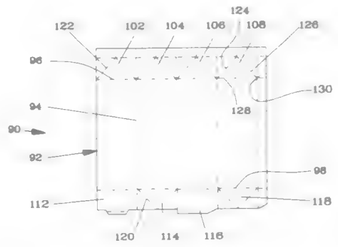
U.S. Cl. 53—456 **10 Claims**

1. A carton blank for forming a gable top carton comprising the following:

a laminated blank body having a top and a bottom;

a plurality of bottom creases formed in the bottom of the blank body to define bottom flaps that are adapted to be folded and sealed to form a substantially rectangular bottom surface of a finished gable top carton having a bottom seal substantially bisecting the bottom surface of the finished carton; and

a plurality of top creases formed in the top of the blank body, the top creases defining top flaps that are adapted to be folded and sealed into a gable top of the finished gable top carton, with the gable top having an upstanding longitudinal top fin; whereby the top creases are arranged on the



blank body to enable the carton blank to be folded and sealed such that the top fin of the finished gable top carton may be alternatively parallel with or transverse to the bottom seal of the finished gable top carton.

5,337,539

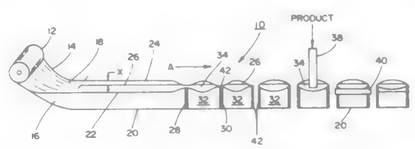
METHOD OF PRODUCING FLEXIBLE SUSPENDIBLE POUCHES AND POUCH PRODUCED THEREFROM

Lewis Barton, New York, N.Y., assignor to Drake & DiPello, Inc., New York, N.Y.

Filed Aug. 25, 1992, Ser. No. 935,155

Int. Cl.[5] B65B *43/04, 61/14*

U.S. Cl. 53—413 **36 Claims**



1. A method of producing a series of flexible pouches each having a sealed product-containing pocket for the containment of a product and including an integral collar-shaped portion located externally of said pocket to enable suspending said pouch from a support cooperating with said collar-shaped portion; said method comprising the steps of:

(a) advancing a web of a flexible sealable packaging material having a generally V-shaped cross-sectional configuration consisting of first and second sidewalls forming a closed edge and opposite free edges;

(b) forming a continuous slit in one said sidewall for the formation of said integral collar-shaped portion constituted from the material of said one said sidewall extending in parallel with and offset from the free edge of said sidewall towards the closed edge of said web so as to sever a portion of said sidewall;

(c) forming continuous seals extending transversely of the direction of advance of said web at the closed edge and free edges thereof, said seals extending across the width of said sidewalls from said closed edge to said free edges to an extent so as to cause the portion of said one sidewall severed by said continuous slit to be reattached to the other said sidewall at the junctures of said severed portion with said transverse seals and to form said collar-shaped portion, said transversely extending seals and said closed edge between said sidewalls conjointly forming pockets of specified dimension in said web, each said pocket having an opening facing the free edges of said sidewalls intermediate adjacent of said transversely extending seals;

(d) introducing a product into each said pocket through said opening;

(e) and forming a longitudinal seal joining said sidewalls proximate said slit for sealing said opening so as to seal said pocket about the product and concurrently forming said collar-shaped portion from said sidewall having said slit formed therein.

5,337,540

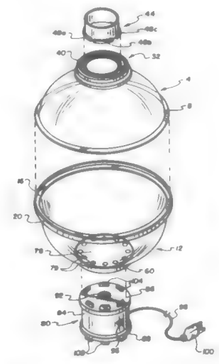
COMPACT BALLOON INFLATER AND LOADER APPARATUS AND METHOD

William G. Carroll, Salt Lake City, Utah, assignor to Maxim Inc., Salt Lake City, Utah

Filed Jul. 18, 1991, Ser. No. 732,155

Int. Cl.[5] B65B *43/36, 39/02*

U.S. Cl. 53—459 **10 Claims**



1. Apparatus for inflating balloons to enable insertion thereinto of objects, comprising

a loading ring insertable in the orifice of a balloon for maintaining the orifice in an expanded condition to allow insertion therethrough of an object into the interior of the balloon when inflated,

a balloon inflating housing for accommodating an inflated balloon, said housing including

upper and lower hemispherical sections which may be sealingly fitted together to allow inflation of a balloon therewithin, and then separated to allow removal of the inflated balloon,

an annular opening located in the upper section, through which a balloon orifice may extend,

a support ring disposed in the annular opening for receiving the loading ring so that a balloon in whose orifice the loading ring is inserted extends downwardly into the housing, and

one or more openings in the lower sections through which air may be evacuated from the housing to cause inflation of the balloon,

pump means coupleable to the lower section of the housing and operable to pump air from the interior of the housing to thereby inflate a balloon disposed therein, and

wherein said loading ring comprises a short hollow solid wall cylinder having a radially extending lip formed on a lower end thereof, over which a balloon orifice may be placed, said lip including a plurality of gaps spaced apart about the circumference thereof.

5,337,541

METHOD FOR THE AUTOMATIC SUPPLY OF BAGS AND BAG HANGING APPARATUS

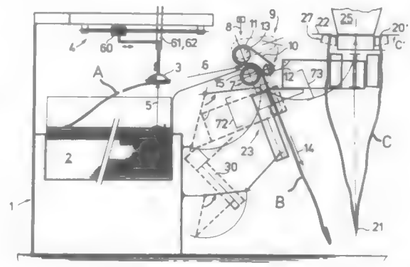
Bruno Gmuer, St. Gallen, Switzerland, assignor to Buehler AG, Uzwil, Switzerland

Filed Sep. 15, 1992, Ser. No. 927,514

Claims priority, application Switzerland, Jan. 26, 1991, 00231/91

Int. Cl.[5] B65B *43/30*

U.S. Cl. 53—459 **20 Claims**



1. In a method for the automatic preparation of bags for packing bulk material by means of positive guidance of the bags from a stack of bags having a closed end and an openable end for bag filling, opening of the bag filling opening, and hanging of the open end of the bag at a bag filling sleeve, whereby a plurality of bags are stacked and removed individually from a removable location, swiveled, opened and hung, the improvement comprising the steps of:

grasping the bags at their closed end from the stack, bringing the bags into an upright position along at least an approximately right angle by a deflecting feed unit, and bringing the bags to a bag filling sleeve by a bag opening device.

5,337,542

SHRINK-WRAPPING METHOD AND APPARATUS

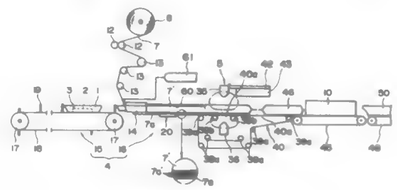
Shozo Omori, Tokyo, Japan, assignor to Omori Machinery Co., Ltd., Saitama, Japan

Continuation of Ser. No. 858,954, Mar. 27, 1992, Pat. No. 5,237,800. This application Feb. 12, 1993, Ser. No. 19,804

Claims priority, application Japan, Mar. 29, 1991, 3-89320; Sep. 30, 1991, 3-86655[U]

Int. Cl.[5] B65B *9/06, 49/10*

U.S. Cl. 53—550 **3 Claims**



1. A wrapping apparatus comprising:

means for continuously supplying a wrapping film made of a material having excellent thermal bonding properties;

means for shaping said film into a tubular form;

means for feeding into said tubular film individual items to be wrapped;

center seal means, provided in a path of conveyance of said tubular film, for sealing overlapping marginal portions of said tubular film extending lengthwise thereof; and

end seal means, disposed downstream of said center seal

VOL 1165 ISS 3 AG 16 1994 UMI

means, for sealing and cutting said tubular film transversely thereof at predetermined intervals;

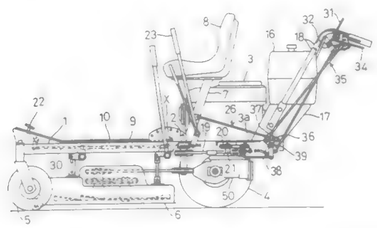
wherein said end seal means includes a pair of upper and lower sealers conducting a box type movement, at least one of said upper and lower sealers has first urging means for generating an urging force relatively weakly pressing end faces of said upper and lower sealers into contact with each other with the film gripped therebetween when said upper and lower sealers are closest to each other, and second urging means for applying between said end faces of said upper and lower sealers an urging force larger than that by said first urging means when said end faces are pressed against each other by said first urging means.

5,337,543

LAWN MOWER FOR USE BOTH AS RIDING AND WALKING OPERATOR TYPE

Junichi Kitamura; Hirofumi Sadakane, and Yoshio Tomiyama, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Apr. 27, 1992, Ser. No. 874,647
Claims priority, application Japan, Oct. 4, 1991, 3-257322
Int. Cl.[5] A01D *34/00*
U.S. Cl. 56—10.8 **17 Claims**



1. A lawn mower for use both as walking operator type and riding type, comprising:

a chassis frame;

an engine mounted on a rearward position of said chassis frame;

at least one front wheel;

a driven rear wheel means, said rear wheel means including a right rear wheel and a left rear wheel;

a transmission means for transmitting drive from said engine to said rear wheel means, said transmission means including change speed means for changing speed of said rear wheel means, said change speed means including a right transmission and a left transmission for independently driving said right and left rear wheels, respectively;

a grass cutting unit suspended from said chassis frame;

a driver's seat disposed above said chassis frame; and

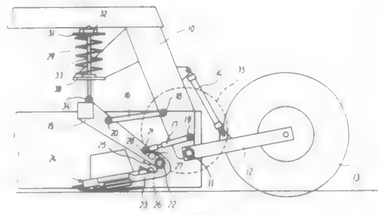
a control means operable from a position rearwardly of said chassis frame when the lawn mower is used as walking operator type, and from said driver's seat when the lawn mower is used as riding type, for controlling at least said change speed means, said control means including a front control unit operable from said driver's seat, said front control unit including a control pedal on said chassis frame coupled to both said right and left transmissions configured to shift said right and left transmissions from neutral to a driving position, and right and left shift levers disposed on opposite sides of a centerline of said chassis frame coupled to said right and left transmissions, respectively, wherein each said right and left transmission is individually shiftable from said driving speed to a different driving speed by said shift level to which it is coupled.

5,337,544

MOWER CONDITIONER

Georg Lauritsen, Kerteminde, Denmark, assignor to Maskinfabriken Taarup A/S, Kerteminde, Denmark

PCT No. PCT/DK91/00029, § 371 Date Sep. 1, 1992, § 102(e) Date Sep. 1, 1992, PCT Pub. No. WO91/11099, PCT Pub. Date Aug. 8, 1991
PCT Filed Feb. 1, 1991, Ser. No. 916,997
Claims priority, application Denmark, Feb. 1, 1990, 0267/90
Int. Cl.[5] A01D *34/66*
U.S. Cl. 56—15.7 **2 Claims**



1. A mowing machine comprising:

a cutter beam

a frame,

a yoke adjustable in height, mounted on said frame and carrying said cutter beam,

said yoke being at least partly and resiliently supported with respect to said frame by a spring,

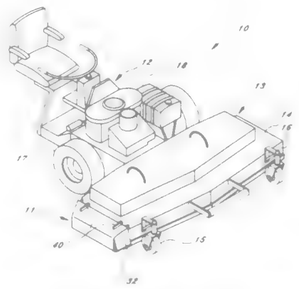
ends of said cutter beam being hinged to said yoke so as to be freely swingable about a horizontal axis with respect to said yoke, said horizontal axis being positioned adjacent a rearward edge of said cutter beam.

5,337,545

MULCH PLATE

Walt R. Butler, 18901 SW. 63rd St., Ft. Lauderdale, Fla. 33332

Filed Apr. 15, 1993, Ser. No. 47,802
Int. Cl.[5] A01D *34/00*
U.S. Cl. 56—320.2 **11 Claims**



1. A mulch plate for use with a rotary lawnmower having rotating blades for cutting and a chute outlet for the expulsion of mower clippings, said mulch plate comprising:

a plate oriented over said chute outlet for preventing mower clippings from exiting said chute outlet;

means for partially enclosing said chute outlet, said means for partially enclosing projecting inward from said plate toward said mower for inducing an air vortex and for preventing mower clippings from escaping the plate and the mower;

means for pivotally mounting said mulch plate to said mower so as to allow mulch plate to be oriented over said chute outlet for mulching or for lifting said mulch plate away from said chute outlet for moving in confined spaces; and

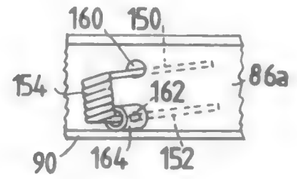
means for controlling air circulation under the mower defined by said means for partially enclosing so that clippings prevented from escaping the plate are drawn back into the rotating blades for recutting by said air circulation.

5,337,546

HAY RAKING AND TEDDING APPARATUS

Nicolaas L. Sieling, Rotacon Farm, Waring Road, RD 1, Taupiri, New Zealand

PCT No. PCT/AU91/00231, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/18497, PCT Pub. Date Dec. 12, 1991
PCT Filed May 29, 1991, Ser. No. 949,519
Claims priority, application New Zealand, May 29, 1990, 233856; Nov. 13, 1990, 236071
Int. Cl.[5] A01D *78/10*
U.S. Cl. 51—365 **9 Claims**



1. A rotor assembly for a hay making apparatus, including a rotor having a body of a resiliently deformable elastomeric material, arranged to be coupled to drive means for rotating the rotor about a rotational axis, and a plurality of tynes spaced about the periphery of the body, wherein each tyne comprises:

a first portion and a second portion, said first portion including at least one leg which projects through a passage in the body, said passage having transverse dimensions such that the leg is capable of sliding within the passage until the second portion of each tyne bears against the body, said second portion of each tyne being joined to the first portion and having a mass which is such that each tyne is held in an operational position solely by virtue of contact between the tyne and the body where the first portion passes through the passage and by virtue centrifugal force arising from rotation of the rotor which causes the second portion to be held against the body, each tyne being pivotable relative to the body such that the centrifugal force acts to orient the leg of each tyne at a predetermined angle with respect to a radial direction of the rotor.

5,337,547

CABLE SPLICING VISE APPARATUS

Ronald V. Bernard, 3760 Hwy. 101 North #L, Florence, Oreg. 97439

Filed Oct. 13, 1989, Ser. No. 421,537
Int. Cl.[5] D07B *7/18;* **B65H** *69/06*
U.S. Cl. 57—22 **4 Claims**

1. A cable splicing vise stand configured to receive a cable, assist in untwisting a length of the cable, and hold the cable in untwisted condition during the splicing of the cable, the stand comprising:

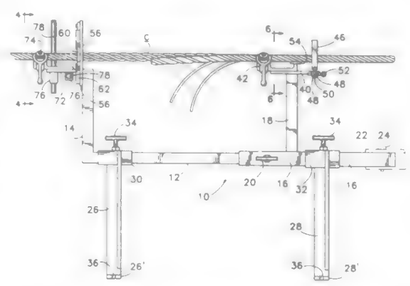
a) an elongated base frame;

b) a first cable-engaging clamp assembly on the base frame;

c) a second cable-engaging clamp assembly on the base frame;

d) said first and second cable engaging clamp assemblies disposed a spaced distance from each other and configured to securely and positively grip a cable at two spaced apart points which define between them a cable-splicing length of a cable;

e) clamp supporting means mounted rotatably on the frame and supporting one of said cable-engaging clamp assemblies to rotate the clamp assembly in a direction opposite the windings of a cable being gripped by the assemblies to untwist a cable and thereby loosen the windings of the individual strands of the cable between the clamp assemblies; and



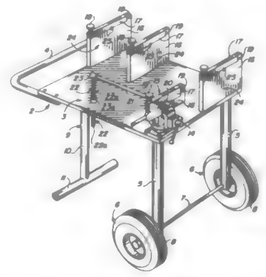
f) a ratchet assembly comprising a ratchet wheel and pawl releasably interengaging said rotatable clamp supporting means and base frame for releasably securing said rotatable clamp supporting means in any one of a plurality of positions of rotation relative to the base frame, the ratchet assembly configured to releasably secure the clamp assembly against reverse rotation resulting from the inherent tension of the cable being held in untwisted condition by the clamp assemblies.

5,337,548

METHOD AND APPARATUS FOR SPLICING ROPE

Phillip R. Kelly, Rte. 3, Box 105C, Jonesboro, La. 71251

Filed Mar. 11, 1992, Ser. No. 849,571
Int. Cl.[5] B23P *19/02;* **D01H** *17/00*
U.S. Cl. 57—23 **6 Claims**



1. A splicing apparatus for supporting a pair of rope segments to be sliced, comprising a frame; a plurality of rope clamps carried by said frame in spaced relationship with respect to each other; a dowel support carried by said frame; a dowel removably carried by said dowel support; a resilient sleeve inserted on said dowel and a cylindrical transfer tube sized for fitting over said dowel to said resilient sleeve, whereby said resilient sleeve is rolled from said dowel onto said transfer tube, said transfer tube is clamped in an outside one of said rope clamps, one of the rope segments is extended through said transfer tube, wherein the rope segments are spliced, said resilient sleeve is rolled from said transfer tube

VOL 1165 ISS 3 AG 16 1994 UMI

over the splice and said transfer tube is removed from the spliced rope segments.

5,337,549

STEEL CORD FOR REINFORCEMENT OF RUBBER PRODUCTS

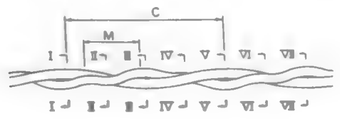
Yoshirou Kobayashi, Yashiro; Koichi Hinoura, and Akihiro Nagamoto, both of Ono, all of Japan, assignors to Tokusen Kogyo Company Limited, Ono, Japan

Continuation of Ser. No. 863,596, Apr. 3, 1992, abandoned, which is a division of Ser. No. 630,325, Dec. 19, 1990, abandoned. This application Jul. 20, 1993, Ser. No. 93,905

Claims priority, application Japan, Dec. 20, 1989, 1-331983; Jun. 13, 1990, 2-152851

Int. Cl.[5] **D02G** *3/36;* **D07B** *1/06*

U.S. Cl. 57—236 **8 Claims**





1. A steel cord for reinforcement of rubber products, comprising:

a twisted cord formed of only two material wires twisted together at a primary twist pitch of 9.0 to 16.0 mm;

where each of said two material wires has a diameter A of 0.25 to 0.40 mm and a carbon content of 0.75 to 0.88 wt %; and

wherein, in said twisted cord, one of said two material wires has substantially no preformed spiral shape and the other of said two material wires is preformed with a secondary substantially spiral shape at a secondary pitch which is substantially smaller than said primary twist pitch.

5,337,550

METHOD AND DEVICE FOR STOPPING A SPOOL ON AN OPEN-END SPINNING MACHINE

Walter Mayer, Ingolstadt; Sebastian Brandl, Böhmfeld, and Josef Neumeyer, Ingolstadt, all of Fed. Rep. of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,265

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131179

Int. Cl.[5] **D01H** *13/26, 9/10*

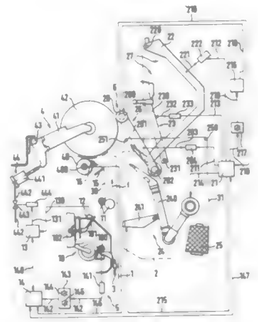
U.S. Cl. 57—263 **27 Claims**

1. A method of stopping a spool driven by contact with a continuously rotating spool drive roller, comprising the following steps:

a) lifting said spool off said drive roller to move said spool out of driving contact with said drive roller;

b) bringing the peripheral surface of said spool into contact with a braking roll as said spool is still rotating;

c) applying a braking force to said braking roll to stop said braking roll and said spool; and



d) driving said braking roll at a peripheral speed which is substantially the same as that of said spool prior to applying the braking force to said braking roll.

5,337,551

TEXTILE MACHINE TUBE TRANSPORT ASSEMBLY WITH FULL PACKAGE AND EMPTY TUBE CAPABILITY

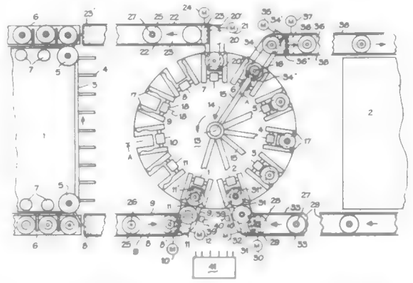
Hans Grecksch, Monchen-Gladbach; Thomas Heidtmann, Krefeld, and Norbert Bohnen, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Monchen-Gladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 538,830, Jun. 15, 1990, abandoned. This application Nov. 4, 1991, Ser. No. 787,232

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1989, 3919525; Nov. 2, 1990, 4034824

Int. Cl.[5] **D01H** *9/10, 9/00*

U.S. Cl. 57—281 **33 Claims**



1. In a textile machine system in which tubes having textile strand material wound thereon are transported from a textile spinning machine to a textile winding machine and empty tubes are returned from the textile winding machine to the textile spinning machine, a tube transport assembly, comprising:

a plurality of first tube support members for individually supporting tubes thereon for transport therewith during travel of the first tube support members on the textile winding machine;

a plurality of second tube support members for individually supporting tubes thereon for transport therewith during travel of the second tube support members on the textile spinning machine;

a first transport means for transporting the plurality of first tube support members along a first endless transport path associated with the textile winding machine, the first endless transport path including a tube transfer portion;

a second transport means for transporting the plurality of second tube support members along a second endless transport path on the textile spinning machine, the second endless transport path including a tube transfer portion; and

tube transfer means for transferring tubes between those first tube support members and second tube support members being transported along the first and second tube transfer portions, said first and second tube transfer portions are at least partially coextensive.

5,337,552

OPEN-END SPINNING MACHINE FRAME STRUCTURE

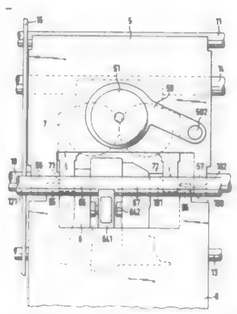
Edmund Schuller; Rupert Karl, both of Ingolstadt; Anton Stanglmair, Elsendorf, and Gottfried Schneider, Ingolstadt, all of Fed. Rep. of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

Filed Jun. 29, 1992, Ser. No. 906,314

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121437

Int. Cl.[5] **D01H** *4/08*

U.S. Cl. 57—406 **33 Claims**



1. An open end spinning machine having a plurality of spinning stations disposed adjacent each other along at least one side of the spinning machine; said spinning machine comprising:

a plurality of longitudinal structural elements running lengthwise along each side of said spinning machine, said longitudinal structural elements being separate and discrete when viewed at a cross section taken at the center of each spinning station;

a plurality of discrete assemblies for each said spinning station, whereby at least one said assembly comprises a spinning element, at least another said assembly comprises at least part of a drive unit for said spinning element, and at least a third said assembly comprises an opener unit; and

whereby each said assembly of each said spinning station directly contacts and is removably attached to one common said longitudinal structural element and at least one other said longitudinal structural elements.

5,337,553

ENDOTHERMIC FLUID BASED THERMAL MANAGEMENT METHOD

Kevin P. Barr, Torrance, Calif., assignor to AlliedSignal Inc., Morris Township, morris County, N.J.

Division of Ser. No. 992,951, Dec. 17, 1992. This application Jul. 22, 1993, Ser. No. 96,631

Int. Cl.[5] **F02C** *3/20*

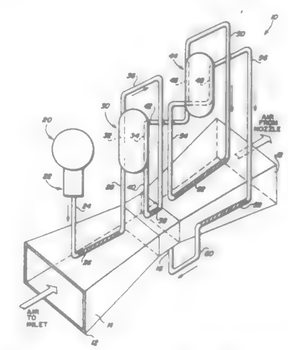
U.S. Cl. 60—39.02 **3 Claims**

1. A method in which a single flow of an endothermic fluid is used as to fuel and cool a propulsion engine mounted on an aircraft operable at high Mach numbers, said aircraft having a stored source of said fluid in a liquid state; comprising the steps of:

a) pressurizing said fluid;

b) heating said fluid to a temperature at which an endothermic reaction can occur, by flowing it past a first portion of said engine requiring cooling;

c) partially reforming said fluid by exposing it to a catalyst and heat;



d) reheating said partially reformed fluid by flowing it past a second portion of said engine requiring cooling;

e) cooling said reheated fluid by using it to provide said heat for step (c);

f) reheating said fluid by flowing it past a third portion of said engine requiring cooling; and

g) delivering said fluid to the engine's combustor for ignition therein.

5,337,554

METHOD FOR REDUCING THE PRESSURE OF A GAS FROM A PRIMARY NETWORK

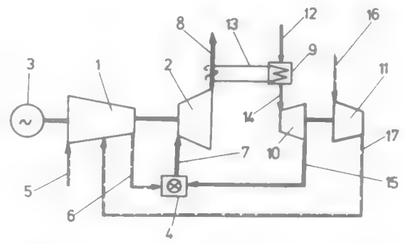
Pieter F. M. Bertels, HP Rhoon, Netherlands, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Nov. 19, 1991, Ser. No. 794,511

Claims priority, application Switzerland, Dec. 3, 1990, 3807/90

Int. Cl.[5] **F02C** *6/00*

U.S. Cl. 60—39.181 **4 Claims**



1. An apparatus for recuperating pressure potential energy in expanding a fuel gas from a high pressure transportation system, the apparatus comprising:

a gas turbine group having;

a compressor;

a gas turbine downstream of the compressor;

a generator driven by the gas turbine; and,

a combustion chamber between the compressor and the gas turbine;

VOL 1165 ISS 3 AG 16 1994 UMI

a gas expansion system having;
conduit means for receiving fuel gas from a high pressure transportation system and conducting the gas to said combustion chamber;
a heat exchanger in said conduit means in which the gas is heated by exhaust gases from the turbine;
an expander in said conduit means downstream of the heat exchanger, for expanding the gas from the heat exchanger;
a second compressor driven by the expander; and,
means for supplying compressed air from the second compressor to the first-mentioned compressor.

5,337,555

FAILURE DETECTION SYSTEM FOR AIR-FUEL RATIO CONTROL SYSTEM

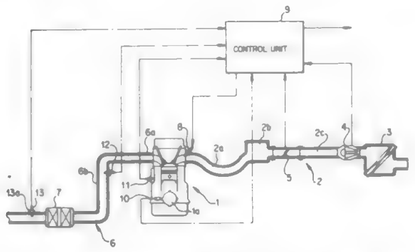
Shoji Tokuda, Nagoya; Takao Matsunaga, Hiroshima; Kazuhiro Shinmoto, Hiroshima; Koichi Terada, Hiroshima, and Yoshimi Yamamoto, Higashihiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 14, 1992, Ser. No. 988,274

Claims priority, application Japan, Dec. 13, 1991, 3-330421; Dec. 13, 1991, 3-330429

Int. Cl.[5] F02D *41/14*

U.S. Cl. 60—276 **12 Claims**



1. A failure detection system for an air-to-fuel ratio control system having primary exhaust gas monitoring means, positioned upstream of a catalytic converter in an engine exhaust line, for monitoring an emission content of exhaust gas discharged from an engine based on which the air-to-fuel ratio control system feedback controls an air-to-fuel ratio of an air-fuel mixture so as to maintain a desired air-to-fuel ratio of the air-fuel mixture, said failure detection system comprising:
secondary exhaust gas monitoring means, positioned downstream of the catalytic converter in the engine exhaust line, for monitoring an emission content of exhaust gas passed through said catalytic converter;
intake-air monitoring means for monitoring an amount of intake air introduced into the engine; and
failure judging means for Judging functional failure of said primary exhaust gas monitoring means on the basis of emission contents detected by said primary and secondary exhaust gas monitoring means only when said intake-air monitoring means detects a predetermined threshold amount of intake air.

5,337,556

DETECTING DEVICE AND METHOD FOR ENGINE CATALYST DETERIORATION

Masaaki Aihara, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

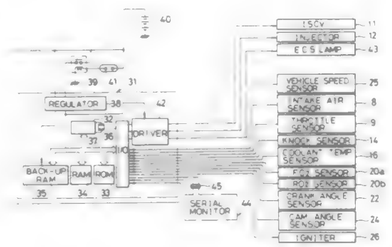
Filed Feb. 18, 1993, Ser. No. 19,310

Claims priority, application Japan, Mar. 30, 1992, 4-074214

Int. Cl.[5] F01N *3/00*

U.S. Cl. 60—276 **2 Claims**

1. A device for detecting deterioration of a catalyst mounted on an engine having, a first air-fuel ratio sensor inserted at a front portion of said catalyst in an exhaust pipe for detecting a first air-fuel ratio before exhaust gases enter said catalyst, a second air-fuel ratio sensor inserted at a rear portion of said catalyst in said exhaust pipe for detecting a second air-fuel ratio after said exhaust gases pass through said catalyst, and various sensors for detecting an engine operating condition and for generating an engine operating condition signal, an improvement of the device which comprises:
first setting means responsive to said engine operating condition signal for deciding a first upper and a lower slice level of said first air-fuel ratio sensor in accordance with each engine operating condition and for producing a first number signal of being cut by an output of said first air-fuel ratio sensor;



second setting means responsive to said engine operating condition signal for deciding a second upper and a lower slice level of said second air-fuel ratio sensor in accordance with each engine operating condition and for producing a second number signal of being cut by said output of said second air-fuel ratio sensor; and
judging means responsive to said first and second number signals for precisely deciding a deterioration of said catalyst by calculating a ratio between both signals so as to avoid a misjudgment of said deterioration and to eliminate an amplitude output disturbance form said second air-fuel ratio sensor due to a fluctuation of said engine operating condition.

5,337,557

AIR-FUEL RATIO CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

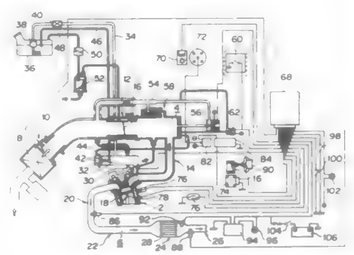
Katsuhiko Toyoda, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan

Filed Feb. 23, 1993, Ser. No. 21,332

Claims priority, application Japan, Feb. 29, 1992, 4-078900; Feb. 29, 1992, 4-078901; Feb. 29, 1992, 4-078906; Feb. 29, 1992, 4-078907

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—276 **4 Claims**



4. In an air-fuel ratio control device for an internal combustion engine comprising a first exhaust sensor disposed at an exhaust passage of an internal combustion engine on an upstream side of a catalytic member which is disposed at an intermediate part of said exhaust passage, and a second exhaust sensor disposed at said exhaust passage on a downstream side of said catalytic member, the air-fuel ratio being first feedback controlled in a steady driving mode of said internal combustion engine in accordance with a first detection signal from said first exhaust sensor, the air-fuel ratio being open controlled in a mode other than said steady driving mode of said internal combustion engine, the air-fuel ratio being second feedback controlled in accordance with a second detection signal from said second exhaust sensor when conditions for effecting said second feedback control are met, said second feedback control being learned to calculate a learned value, the air-fuel ratio being open controlled when the condition is other than the conditions for effecting said second feedback control, said air-fuel ratio control device for an internal combustion engine being characterized by further comprising control means for stopping said second feedback control according to said second detection signal of said second exhaust sensor even if said conditions for effecting said second feedback control are met when the air-fuel ratio is open controlled in accordance with said first detection signal from said first exhaust sensor, and for correcting said first feedback controlling state based on the learned value of said second feedback control during a period from the start of said first feedback control in accordance with said first detection signal from said first exhaust sensor until the start of said second feedback control in accordance with said second detection signal from said second exhaust sensor.

5,337,558

ENGINE EXHAUST PURIFICATION SYSTEM

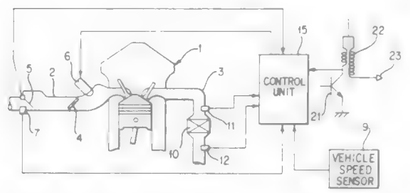
Kazunari Komatsu, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 16, 1993, Ser. No. 32,058

Claims priority, application Japan, Mar. 16, 1992, 4-058251

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—276 **7 Claims**



1. An engine exhaust purification system, for an internal combustion engine, having an engine exhaust purifying catalyst in an exhaust line, said engine exhaust purification system comprising:
an upstream oxygen sensor disposed in the exhaust line upstream from the engine exhaust purifying catalyst;
a downstream oxygen sensor disposed in the exhaust line downstream from the engine exhaust purifying catalyst; and
judging means for detecting an output ratio of an output from said upstream oxygen sensor to an output from said downstream oxygen sensor, for judging a deterioration of said catalyst based on said output ratio, for detecting a deterioration of each of said upstream and downstream oxygen sensors based on said outputs, respectively, and for correcting said output ratio when detecting a deterioration at least one of said upstream and downstream oxygen sensors.

5,337,559

SUPERCHARGED MULTI-CYLINDER INTERNAL-COMBUSTION ENGINE INTERIOR EXHAUST PIPE

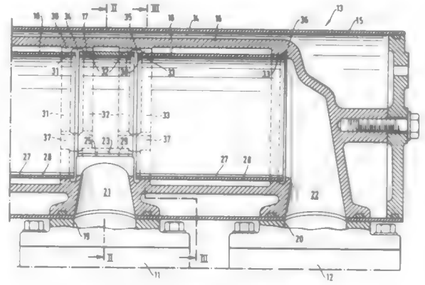
Herbert Deutschmann, Friedrichshafen, Fed. Rep. of Germany, assignor to MTU Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Mar. 5, 1993, Ser. No. 26,739

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 4207048

Int. Cl.[5] F01N *7/10*

U.S. Cl. 60—321 **13 Claims**



1. An exhaust pipe for a supercharged multi-cylinder internal-combustion engine comprising an interior pipe carrying hot exhaust gases, and a housing which surrounds the interior pipe at a distance therefrom, has an approximately cylindrical intermediate wall and a cylindrical shell which is supported on the intermediate wall, and the interior pipe being divided into individual sections in a longitudinal direction, each section of the interior pipe being configured approximately cylindrically from a rectangular sheet metal blank, and the intermediate wall having exhaust gas inlet openings, wherein the intermediate wall is provided with webs extending radially inwardly, each section of the interior pipe supported on an interior contour of assigned webs, one of the sections of the interior pipe respectively has a C-shaped cross-section and is arranged with an opening sector opposite a respective one of the exhaust gas inlet openings, and the other of the sections of the interior pipe is adjacent to the respective one of the exhaust gas inlet opening have an approximately circular cross-section.

5,337,560

SHOCK ABSORBER AND A HERMETICALLY SEALED SCROLL GAS EXPANDER FOR A VEHICULAR GAS COMPRESSION AND EXPANSION POWER SYSTEM

Fawzy T. Abdelmalek, 12807 Willowyck Dr., St. Louis, Mo. 63146

Filed Apr. 2, 1992, Ser. No. 862,502

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—370 **2 Claims**

1. A shock absorber apparatus, in combination with an electric motor driver vehicle, which vehicle contains a pressurized working gas fluid within a closed circuit to drive a hermetically sealed gas expander-electric generator, which generator provides direct electric current to a battery, said shock absorber apparatus being a high pressure gas shock absorber-compressor for dampening vertical movements of said vehicle's suspension while pressurizing the working gas fluid and comprising:
an inner cylinder assembly mounted inside a hermetically sealed enclosure to form an annular intake space;
a piston rod assembly having one end connected to the motor driven vehicle frame, and the other end connected to a movable compression-dampening piston assembly disposed inside said inner cylinder; said compression-

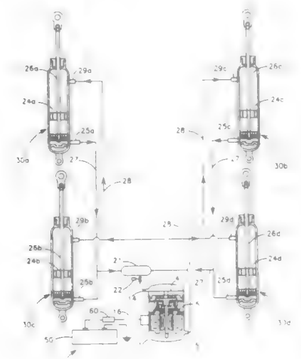
VOL 1165 ISS 3 AG 16 1994 UMI

dampening piston assembly and said inner cylinder forming a damping chamber space and a compression chamber space; and

multi-stage flow control check valves fitted in the said dampening piston to produce variable damping effect, and to allow one way flow from the said dampening chamber space to said compression space; and

a check valve fitted in an inlet port to said hermetically sealed enclosure to allow one way flow of the said gas fluid returning from the gas expander-electric generator to the said annular intake space;

a passage way to allow flow of the said gas fluid from the said annular intake space to the said inner cylinder dampening cheer space upon downwardly movement of the said piston rod assembly; and



a check valve fitted in the said compression piston assembly to allow one way flow of the said gas fluid from the said dampening chamber space to the said compression chamber space upon an upwardly movement of the said piston rod assembly, and to prevent a reverse flow upon change in the direction of the piston movement upwardly; and

a check valve fitted on an outlet of the said inner cylinder to allow a one way flow of the said pressurized gas fluid from the said compression chamber to the gas expander-electric generator; and

a retaining means secured to the shock absorber to support a suspension coil spring which restores the said vehicle's frame to its normal rest position.

5,337,561

ULTRA HIGH PRESSURE MULTIPLE INTENSIFIER SYSTEM

Chidambaram Raghavan; Kraig T. Kostohris, both of Kent, and Adrain C. O. Hawes, Seattle, all of Wash., assignors to Flow International Corporation, Kent, Wash.

Filed Nov. 17, 1992, Ser. No. 977,659

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—421 **10 Claims**

1. In a multiple high pressure fluid intensifier system which comprises:

a. first and second intensifier units, each comprising a piston assembly that in turn comprises a main piston and two high-pressure pistons, each piston assembly being mounted for reciprocating motion to cause the two high-pressure pistons to alternately deliver high pressure output fluid through output means of the intensifier unit;

b. first and second pump means operatively connected to said first and second intensifier units, respectively, to deliver pumping fluid to said first and second intensifier units, respectively;

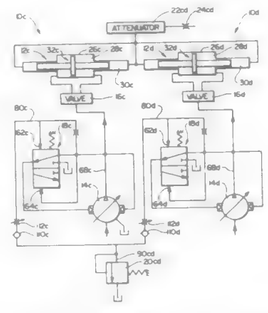
c. first and second control valve means to control the flow of pumping fluid to the first and second intensifier units, respectively, to cause said piston assemblies of the first and second intensifier units to reciprocate;

d. first and second compensator means operatively connected to said first and second pump means, respectively, each of said compensator means being responsive to a reference pressure and also responsive to pressure of its related pump means, to cause its related pump means to increase or decrease volumetric flow from its pump means in response to a difference between said reference pressure and said pump pressure;

e. attenuator output means adapted to receive pressurized fluid from said first and second intensifier units in a manner to provide a fluid back pressure to said intensifier units;

f. pressure reference means to provide said reference pressure for said first and second attenuator means;

g. said intensifier system being characterized in that the



piston assemblies of said first and second intensifier units experience a back pressure from said attenuator output means that is reacted back to said first and second pumps, and the piston assemblies experience a drop in pressure in transitioning from an end of one stroke and into a start of another stroke;

the improvement comprising means operatively connected to said pressure reference means and to said first and second compensator means to maintain pressure reference inputs to said first and second compensator means at an adequately high level relative to operating pressures of said first and second pump means in a manner that said first and second compensator means responds to pressure differentials between said reference pressure inputs and pump pressures of said first and second pump means, to cause the first and second pump means to operate at higher volumetric flow rates during periods of the piston assemblies of the first and second intensifier units reaching an end of stroke position and entering into a subsequent stroke.

5,337,562

STIRLING ENGINE

Hans Kleinwächter, Lörrach; Jürgen Kleinwächter, Kandern, and Eckhart Weber, Nürnberg, all of Fed. Rep. of Germany, assignors to Bomin Solar GmbH & Co. KG, Lorrach, Fed. Rep. of Germany

PCT No. PCT/DE91/00340, § 371 Date Feb. 3, 1992, § 102(e) Date Feb. 3, 1992, PCT Pub. No. WO91/17352, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 25, 1991, Ser. No. 784,418

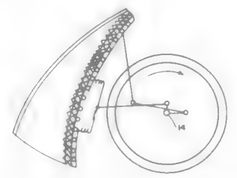
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 4013602

Int. Cl.[5] F02G *1/04*

U.S. Cl. 60—519 **7 Claims**

1. A stirling engine having a housing chamber divided by a reciprocating gas-permeable regenerator plate into two part

chambers, of which one can be heated and the second has cooling, the second part chamber communicating with a working cylinder which acts on a working shaft via a first drive device and on the regenerator plate via a second drive device, wherein the housing chamber (**1**) is of wedge-shaped design and the regenerator plate (**4**) is mounted pivotably about a



pivoting axis (**5**) in the tip of the housing chamber, characterized in that the regenerator plate (**4**) and the two boundary walls (**2, 3**) of the housing chamber (**1**), which are located opposite the former, are designed in the shape of cylinder segments, the curvatures of the boundary walls (**2, 3**) and of the regenerator plate (**4**) being mutually matched.

5,337,563

STIRLING ENGINE WITH HEAT EXCHANGER

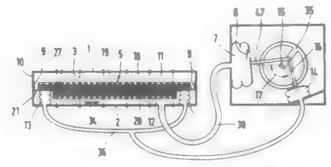
Eckhart Weber, Am Laufer Schlagturm 6, D-8500 Nürnberg 1, Fed. Rep. of Germany

Filed May 6, 1993, Ser. No. 58,603

Claims priority, application Fed. Rep. of Germany, May 21, 1992, 4216839

Int. Cl.[5] F02G *1/043, 1/057*

U.S. Cl. 60—520 **21 Claims**



1. A Stirling engine with a heat exchanger, designed for low-temperature to medium-temperature operation, that is to say for a small compression ratio and a large displaced volume, in which a displacer plate is movable to and fro between two mutually parallel housing plates of a housing and is free of sliding friction along the periphery with respect to the end faces of the housing, the displacer plate separating two working-gas part-volumes, the expansion chamber and the compression chamber, from one another, with which for the purpose of heat exchange, cooling means and heating means are associated, the two working-gas part-volumes being connected to one another by way of a regenerator, and the to-and-fro movement of the displacer plate being timed to a working piston with phase offset, characterized in that the two housing plates (**1**), (**2**) are held spaced from one another by distributed struts (**3**), (**4**), the struts (**3**), (**4**), being arranged perpendicular to the displacer plate (**5**) and passing there-through, and in that the displacer plate (**5**) is guided with respect to the housing end faces (**10**) along its end edges by linear roller diaphragms (**9**).

5,337,564

FORCE OR PRESSURE AUGMENTING DEVICE

Asbjorn Bakke, Kongsberg, and Tore Pedersen, Hvittingfoss, both of Norway, assignors to Kongsberg Automotive A/S, Kongsberg, Norway

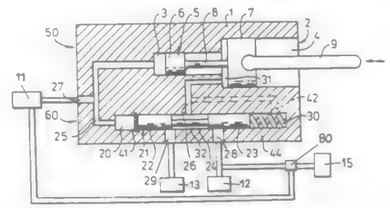
PCT No. PCT/NO91/00068, § 371 Date Oct. 28, 1992, § 102(e) Date Oct. 28, 1992, PCT Pub. No. WO91/17372, PCT Pub. Date Nov. 14, 1991

PCT Filed May 8, 1991, Ser. No. 940,905

Claims priority, application Norway, May 9, 1990, 90 2057

Int. Cl.[5] B60T *13/20;* **F16D** *31/02*

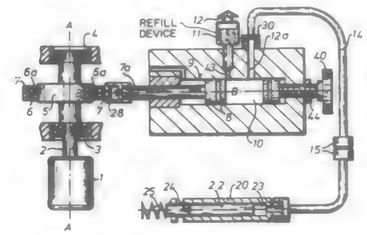
U.S. Cl. 60—555 **13 Claims**



1. A device for augmenting the pressure between a master cylinder and a working unit to be operated by the master cylinder, said device comprising a working cylinder unit comprising a cylinder housing having an internal main bore having a longitudinal axis and a piston axially moveable in said bore, said piston having first and second sections spaced axially apart and connected to each other by a stem section of smaller cross-sectional area than the cross-sectional area of the first and second sections of said piston, said first and second sections defining between them with said main bore and the stem section a working cylinder space, the second section of said piston being connected to the working unit to be operated, a control valve unit for the working cylinder unit comprising a valve housing having a valve bore having a longitudinal axis with a valve body axially slidable in the valve bore, a supply channel communicating with said valve bore for supplying pressurized fluid from a source thereof to said valve bore and a return channel for exhausting pressurized fluid from said valve bore, said valve body comprising first and second sections spaced axially apart in said valve bore and connected to each other by a stem section of smaller cross-sectional area than the cross-sectional area of said first and second sections of said valve body, said first and second sections defining between them with said valve bore and said valve body stem section, a valve bore space, a connection channel for fluid communication of said working cylinder space of said working cylinder unit with said valve bore space of said control valve unit, said valve body in an at rest position being biased against a stop shoulder by a return means and in a position in said valve bore that permits said valve bore space to communicate, via said connection channel, said working cylinder space with said return channel, said working cylinder unit and said control valve unit being adapted for fluid connection with the master cylinder so that pressurized fluid from the master cylinder when open will simultaneously exert a force on the first section of the piston of the working cylinder unit and the first section of the valve body of the control valve unit to axially slide said piston in said cylinder main bore and to axially slide said valve body in said valve bore away from said stop shoulder against the force of said return means and into a working position in said valve bore that permits said valve bore space to communicate, via said connection channel, said working cylinder space with said supply channel, whereby pressurized fluid from said source will now be applied to said second section of the piston to augment the force exerted on the first section of the piston by the master cylinder.

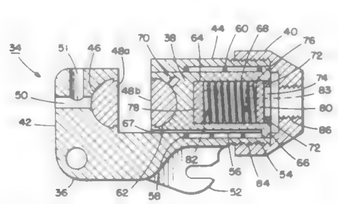
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,565
DEVICE FOR DRIVING A TOOL MOVABLE TO AND FRO IN AXIAL DIRECTION
Hans-Werner Meixner, Wettenberg, Fed. Rep. of Germany, assignor to Pi-Patent Gesellschaft mit beschraenkter Haftung (GmbH), Wettenberg, Fed. Rep. of Germany
Filed Dec. 29, 1992, Ser. No. 997,917
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1990, 4020776
Int. Cl.[5] B60T *7/02;* **F15B** *7/08*
U.S. Cl. 60—594 **35 Claims**



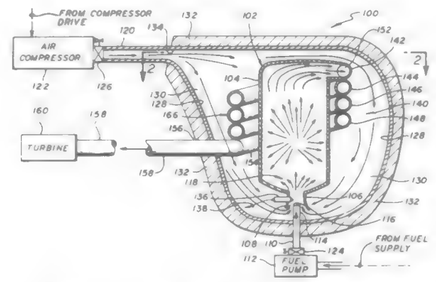
1. A device for driving a tool to and fro in an axial direction, wherein a piston which is moveable to and fro, and which displaces or draws in a fluid medium which actuates a working-cylinder piston (**22**) in a working cylinder (**20**), is provided in a master cylinder, wherein the piston (**8**) of the master cylinder (**9**) is linked with minimum friction to an eccentric disc (**5**) so that the eccentric disc moves the piston (**8**) forward and back, the master cylinder (**9**) is separated spatially from the working cylinder (**20**) to prevent any weight transmission, the master cylinder (**9**) and the working cylinder (**20**) are connected with each other by a flexible hose (**29**) or pipeline,
the working-cylinder piston (**22**) of the working cylinder (**20**) is under the influence of at least one counterpressure spring (**26**), external air pressure contributes towards supporting a return of the working-cylinder piston (**22**), and wherein a ball bearing (**6**) whose internal ring (**6a**) rotates with the eccentric disc (**5**) and whose external ring (**7**) is unrotatable but flexibly coupled in a manner permitting linear motion to and fro with the piston (**8**) of the master cylinder (**9**) is provided on an external diameter of the eccentric disc (**5**).

5,337,566
POWDER ACTUATED COMPRESSION TOOL
Joseph A. Lomastro, Pawtucket, R.I., and Urs F. Nager, Hudson, N.H., assignors to Burndy Corporation, Norwalk, Conn.
Filed Mar. 18, 1993, Ser. No. 33,003
Int. Cl.[5] G06F *15/46*
U.S. Cl. 60—632 **19 Claims**



1. A tool for connecting an electrical connector to a conductor, the tool comprising:
a drive mechanism comprising a first frame, a first ram movably mounted to the first frame, and means for moving the first ram relative to the first frame; and
a compression head connected to the first frame, the compression head comprising a second frame and a second ram movably mounted to the second frame, the second frame being adjustably connected to the first frame with an end of the first ram extending into the second frame and contacting an end of the second ram.

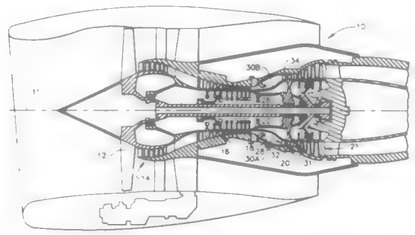
5,337,567
LIQUID FUEL POWER PLANT AND METHOD
Ronald E. Loving, Simi Valley, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Nov. 5, 1992, Ser. No. 972,191
Int. Cl.[5] F02C *1/00*
U.S. Cl. 60—722 **9 Claims**



1. A liquid fuel power plant comprising:
a central combustion chamber having an ignition region for receiving combustible liquid fuel and an oxidizer, and having means for igniting said fuel in said ignition region, the combustible fuel being ignited in said ignition region to produce hot pressurized gases in said combustion chamber;
means for delivering said combustible liquid fuel to said ignition region;
means for delivering said oxidizer to said ignition region;
a tubular helical chamber having a first end and a second end, said tubular helical chamber being coupled at the first end to the combustion chamber to receive said hot pressurized gases from said combustion chamber, the central combustion chamber being disposed in the center of helix formed by the tubular helical chamber, said tubular helical chamber providing to a reaction region for further combustion of said hot pressurized gases received from said combustion chamber, said further combusted hot pressurized gases being exhausted at the second end of said tubular helical chamber.

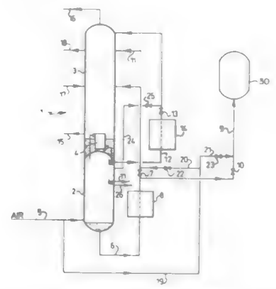
5,337,568
MICRO-GROOVED HEAT TRANSFER WALL
Ching-Pang Lee, Cincinnati, Ohio; Steven G. Goebel, Clifton Park, and Nesim Abuaf, Schenectady, both of N.Y., assignors to General Electric Company, Cincinnati, Ohio
Filed Apr. 5, 1993, Ser. No. 43,167
Int. Cl.[5] F23R *3/16*
U.S. Cl. 60—755 **7 Claims**

1. An airfoil for use in a gas turbine engine having a hot gas flow, said airfoil comprising:
an airfoil wall including a leading edge of said airfoil;
means for altering a boundary layer thickness proximate said leading edge of said air foil and for enhancing the structural integrity of said airfoil, said means for altering and enhancing comprising:
a portion of said wall which is devoid of film cooling apertures, said portion comprising at least a part of said leading edge and said portion having a hot surface operable for exposure to the hot gas flow; and
a plurality of longitudinally extending grooves etched in said portion along said hot surface in a first direction substantially parallel to a predetermined flowpath direction of the hot gas flow along said hot surface;
wherein said grooves are sized so as to increase the boundary layer thickness proximate said leading edge, and



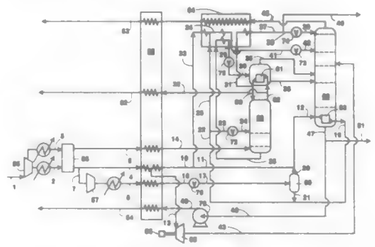
thereby reduce heat transfer from the hot gas flow to said airfoil having a wall portion which is devoid of said grooves, said grooves improving the structural integrity of said airfoil relative to an otherwise similar airfoil having a wall portion including film cooling holes proximate the leading edge.

5,337,569
PROCESS AND INSTALLATION FOR THE TRANSFER OF LIQUID
Bernard Darredeau, Sartrouville, France, assignor to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France
Filed Mar. 15, 1993, Ser. No. 31,490
Claims priority, application France, Mar. 24, 1992, 92 03500
Int. Cl.[5] F25J *3/04*
U.S. Cl. 62—22 **12 Claims**



1. Process for transferring a liquid from a first distillation column, operating at a first pressure, to equipment operating at a pressure lower than the first pressure, comprising: withdrawing liquid from said first column, via a rising conduit provided with an expansion valve, injecting into the rising conduit, downstream of the expansion valve, bubbles of a lift gas at a pressure greater than the pressure created by a column of liquid between the point of injection of the gas and the point of introduction of the liquid into said equipment, and transferring said liquid with said injected bubbles of lift gas into said equipment.

5,337,570
CRYOGENIC RECTIFICATION SYSTEM FOR PRODUCING LOWER PURITY OXYGEN
Neil M. Prosser, East Amherst, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.
Filed Jul. 22, 1993, Ser. No. 94,869
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—25 **10 Claims**



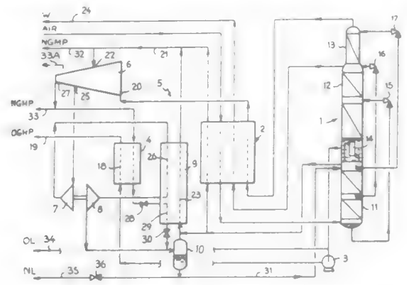
1. A cryogenic rectification method for producing lower purity oxygen comprising:
(A) providing a cryogenic rectification plant comprising a first column with a top condenser and a second column with a bottom reboiler, said first column operating at a pressure which exceeds that of the second column;
(B) providing a first feed air stream at a pressure within the range of from 39 to 100 psia and passing said feed air stream through said bottom reboiler;
(C) passing feed air from the bottom reboiler into at least one of said first and second columns;
(D) providing a second feed air stream at a pressure less than that of the first feed air stream and passing said second feed air stream into the first column;
(E) withdrawing lower purity oxygen from the second column and warming said withdrawn lower purity oxygen by indirect heat exchange with said first feed air stream and with said second feed air stream;
(F) recovering resulting warmed lower purity oxygen as product; and
(G) producing nitrogen-enriched vapor and oxygen-enriched liquid in the first column, condensing nitrogen-enriched vapor by indirect heat exchange with oxygen-enriched liquid in the top condenser, employing condensed nitrogen-enriched fluid as reflux in at least one of the first and second columns, and passing resulting oxygen-enriched vapor from the top condenser into the second column without passing said resulting oxygen-enriched vapor through a pressure reduction step.

5,337,571
PROCESS AND INSTALLATION FOR THE PRODUCTION OF OXYGEN GAS UNDER HIGH PRESSURE BY AIR DISTILLATION
Marc Ducrocq, Saint Maur, France, and Shinji Tomita, Akashi, Japan, assignors to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Filed Sep. 17, 1992, Ser. No. 946,759
Claims priority, application France, Sep. 18, 1991, 91 11479
Int. Cl.[5] F25J *3/00*
U.S. Cl. 62—39 **11 Claims**

1. A process for the production of high-pressure oxygen gas by distilling air in an air distillation column, wherein nitrogen withdrawn from the column is compressed and heated to an oxygen heating pressure by a cycle compressor, said process comprising the steps of withdrawing oxygen in liquid form from the distillation apparatus, pumping the withdrawn oxy-

VOL 1165 ISS 3 AG 16 1994 UMI

gen to a high production pressure, and heating the oxygen at said high production pressure in a single heat transfer stage by



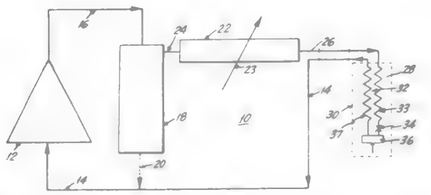
heat exchange only with said nitrogen compressed to said oxygen heating pressure by said cycle compressor.

5,337,572

CRYOGENIC REFRIGERATOR WITH SINGLE STAGE COMPRESSOR

Ralph C. Longsworth, Allentown, Pa., assignor to APD Cryogenics, Inc., Allentown, Pa.

Filed May 4, 1993, Ser. No. 57,708
Int. Cl.[5] F25B *9/02*
U.S. Cl. 62—51.2 **16 Claims**



1. A closed cycle refrigerating system of the type having a heat exchanger with a throttling orifice for providing cooling temperatures below 150 degrees K and above 65 degrees K in a normal ambient environment comprising,

a refrigerant comprising a mixture of at least one cryogenic gas having a normal boiling temperature below 130 degrees K and at least two other gases having normal boiling temperatures below 300 degrees K different from each other and from said one gas,

a single stage oil-lubricated compressor operative in said normal ambient environment for compressing said refrigerant, said compressor having a volumetric efficiency of at least 50% when producing a pressure ratio of at least 5 to 1 in said refrigerant,

means for separating oil from said compressed refrigerant and for delivering said separated oil back to said compressor, and

means for cooling said compressed refrigerant and for circulating said cooled refrigerant through said heat exchanger and throttling orifice and back to said compressor.

5,337,573

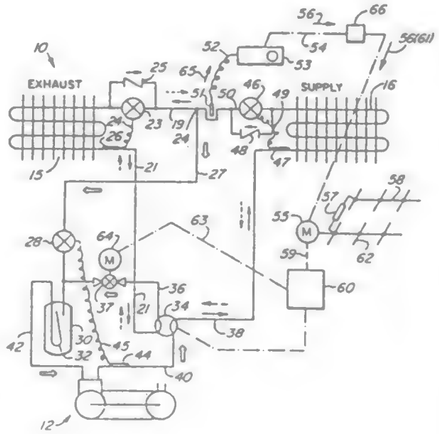
Patent Not Issued For This Number

5,337,574

HEATING AND COOLING SYSTEM FOR A BUILDING

Brian G. Dick, Parksville, Canada, assignor to Alberni Thermodynamics Ltd., Qualicum Beach, Canada

Continuation-in-part of Ser. No. 555,029, Jul. 20, 1990, abandoned. This application Jun. 9, 1992, Ser. No. 895,635
Int. Cl.[5] F25D *17/00*
U.S. Cl. 62—89 **36 Claims**



1. A method of treating air comprising the steps of:

(a) generating main and bypass streams of air, and initially maintaining the two streams of air separate from each other,

(b) directing the main stream of air through a supply heat exchanger of a vapour compression machine to change temperature of the main stream of air,

(c) generating a first control signal representing a difference between an actual first reference temperature and a pre-determined first reference temperature,

(d) controlling ratio of flow of the main and bypass streams of air in response to the first control signal so that if the first control signal reflects an actual first reference temperature below the pre-determined first reference temperature, the main flow is decreased if heating the main flow, or increased if cooling the main flow; and if the first signal reflects an actual first reference temperature above the pre-determined first reference temperature, the main flow is increased if heating the main flow, or decreased if cooling the main flow,

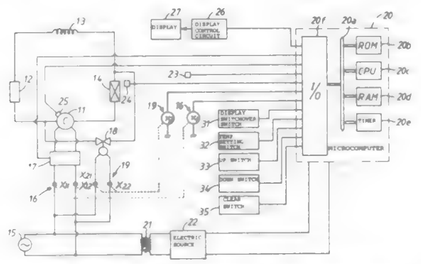
(e) mixing the main stream of air after passing through the heat exchanger with the bypass stream of air, if any air were passed through the bypass flow control means, prior to delivering the mixture of air streams as required to a space.

5,337,575

DISPLAY APPARATUS FOR DISPLAYING ABNORMALITIES IN LOW TEMPERATURE CABINETS

Michiharu Ishihara, Shimane, Japan, assignor to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Aug. 17, 1992, Ser. No. 930,626
Claims priority, application Japan, Aug. 16, 1991, 3-231208; Aug. 19, 1991, 3-231002
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—126 **5 Claims**



1. A display apparatus for displaying plural abnormalities in a low temperature storage cabinet having a temperature sensor for detecting an internal temperature of said storage cabinet, a cooling apparatus for cooling the interior of said storage cabinet, control means for controlling operation of said cooling apparatus to maintain the internal temperature in a predetermined range between upper and lower temperature limits, and display means for displaying the internal temperature of said storage cabinet in the form of letters, said display apparatus comprising:

detection means for detecting plural abnormalities in said storage cabinet;

means for forming abnormal data indicative of the respective natures of the detected abnormalities; and

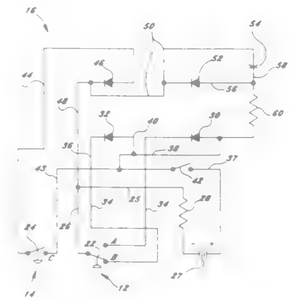
display control means for applying the abnormal data to said display means at each lapse of a predetermined time such that said display means is operated to alternately display the internal temperature of said storage cabinet and the respective natures of the detected abnormalities in the form of letters.

5,337,576

REFRIGERANT AND H.V.A.C. DUCTING LEAK DETECTOR

Donald Dorfman, Royal Palm Beach, and Frank Poma, Delray Beach, both of Fla., assignors to Rite Charge Corporation, West Palm Beach, Fla.

Filed Dec. 28, 1992, Ser. No. 997,316
Int. Cl.[5] G08B *19/00*
U.S. Cl. 62—127 **15 Claims**



1. An apparatus for detecting a loss of refrigerant in a refrigeration/heat pump system having a low pressure refrigerant line, comprising:

a pressure switch fluidly communicating with said low pressure refrigerant line, responsive to pressure changes therein;

an electrical signaling circuit having an enabling power supply, operatively associated with said pressure switch, said signaling circuit comprising a main momentary switch;

first means for indicating when said refrigerant in said low pressure line is within a predetermined range, said first means for indicating electrically associated with said signaling circuit;

second means for indicating when said refrigerant in said low pressure line is beyond a predetermined range, said second means for indicating electrically associated with said signaling circuit;

said main momentary switch operatively associated with said power supply to energize either said first means for indicating or said second means for indicating; and

means for housing said signaling circuit, and said first and second indicating means, said housing having means for mounting thereof on a support surface, whereby said housing may be mounted on said support surface so that said apparatus may easily convey to an operator upon actuation of said main switch, the status of said refrigerant pressure within said low pressure line by selectively enabling either said first or second indicating means.

5,337,577

METHOD AND APPARATUS FOR LATENT HEAT EXTRACTION

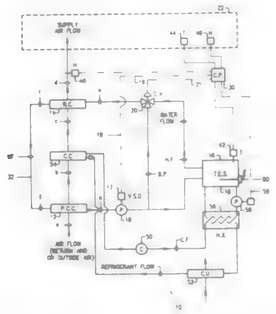
Kenneth L. Eiermann, 1049 Manchester Cir., Winter Park, Fla. 32792

Continuation of Ser. No. 791,120, Nov. 12, 1991, Pat. No. 5,181,552. This application Jan. 25, 1993, Ser. No. 8,192
Int. Cl.[5] F25B *29/00*
U.S. Cl. 62—173 **63 Claims**

1. In an air conditioning system including a cooling coil using a cooling coil fluid to generate a conditioned supply air flow into an air conditioned space downstream of the cooling coil by absorbing thermal energy from a return air flow passing through the cooling coil, the improvement comprising:

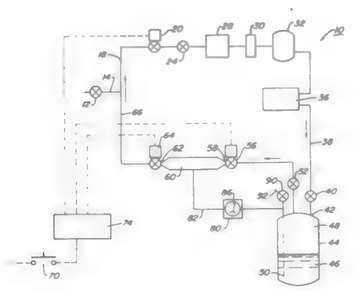
VOL 1165 ISS 3 AG 16 1994 UMI

first means for introducing thermal energy from the return air flow to a working fluid;
means in said supply air flow for exchanging thermal energy between the working fluid and the supply air flow;
second means for introducing thermal energy into said working fluid from an auxiliary source;
means for directing the working fluid through a series arrangement of said first thermal energy introducing means,



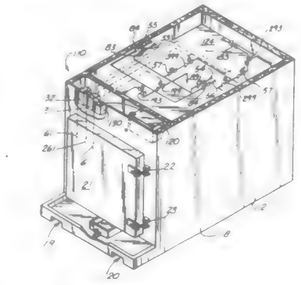
said thermal energy exchanging means and said second thermal energy introducing means;
means for motivating a first flow of the working fluid through said directing means; and,
control means for sensing moisture in said supply air flow and maintaining said sensed moisture within a predetermined moisture set point range by regulating said first flow of the working fluid.

5,337,578
TRAPPED AIR MONITOR FOR A REFRIGERANT RECOVERY UNIT
Fred L. Ptacek, Joshua; George R. Outlaw, Arlington, and Charles R. Smith, Grapevine, all of Tex., assignors to Wynn's Climate Systems, Inc., Fort Worth, Tex.
Filed Feb. 19, 1993, Ser. No. 19,786
Int. Cl.[5] F25B *43/04*
U.S. Cl. 62—195 **5 Claims**



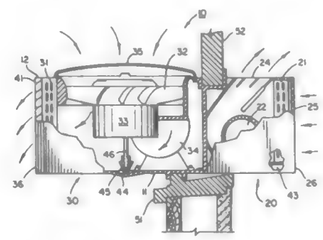
1. In a container for collecting liquid refrigerant having a saturated vapor pressure, the container having an inlet port for receiving the liquid refrigerant, an outlet port for drawing the liquid refrigerant from the container and exhaust means for venting off non-condensable vapor that is collected with the liquid refrigerant, a monitor for determining the amount of non-condensable vapor that is collected in the container with the liquid refrigerant, the monitor comprising:
sampling means connected to the outlet port of the container for collecting a sample of the liquid refrigerant from the container, the sampling means comprising a reservoir having an inlet means for allowing the liquid refrigerant to flow into the reservoir from the container and an outlet means for allowing the liquid refrigerant to flow out of the reservoir, a first valve means movable between open and shut conditions and disposed between the outlet port of the container and the inlet means of the reservoir, and a second valve means movable between open and shut conditions for restricting flow from the outlet means of the reservoir; and
pressure gage means for determining a pressure differential between the vapor pressure of the sample in the reservoir and the pressure of the non-condensable vapor in the container.

5,337,579
PORTABLE SELF-CONTAINED COOLER/FREEZER APPARATUS FOR USE ON AIRPLANES, COMMON CARRIER TYPE UNREFRIGERATED TRUCK LINES, AND THE LIKE
Louis P. Sala, III, and Cynthia S. Wilbrandt, both of Houma, La., assignors to The Pallet Reefer Company, Houma, La.
Continuation-in-part of Ser. No. 602,856, Oct. 23, 1990, Pat. No. 5,125,237, which is a continuation-in-part of Ser. No. 493,298, Mar. 14, 1990, Pat. No. 4,991,402, which is a continuation of Ser. No. 343,025, Apr. 24, 1989, abandoned, which is a continuation of Ser. No. 119,702, Nov. 12, 1987, Pat. No. 4,825,666. This application Jun. 29, 1992, Ser. No. 905,791
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] B60H *1/32*
U.S. Cl. 62—239 **37 Claims**



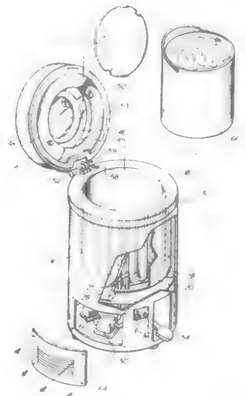
1. A shipping container for shipping frozen and/or refrigerated cargo in an unrefrigerated cargo area of a substantially larger transport vehicle comprising:
a) a container having an interior area with a volume to be loaded with the frozen and/or refrigerated cargo with an access opening that can be opened/closed;
b) one or more refrigerant tanks mounted in the container for containing a cryogenic liquified refrigerant under pressure to be utilized for cooling the container interior;
c) discharge piping means for piping liquified refrigerant from the tanks;
d) valve means communicating with the discharge piping for valving the flow of liquified refrigerant that is discharged from the tank;
e) temperature responsive controller means for opening the valve means to dispense liquified refrigerant from the tanks in order to maintain a desired preselected preset refrigerated or frozen temperature range within the container interior;
f) wherein the liquified refrigerant converts to a gaseous phase downstream of the valve means; and
g) an undercarriage portion at the lower end of the container that includes moving means for transporting the container quickly to and from the cargo area of an unrefrigerated vehicle having a substantially larger volume than the container volume.

5,337,580
ROOM AIR CONDITIONER
Guoquan Zhao; Yehia M. Amr, both of Manlius; Peter R. Bushnell, Cazenovia; Alan S. Drucker, Dewitt, and Eric J. Nash, Manlius, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 23, 1992, Ser. No. 993,880
Int. Cl.[5] F25B *47/00*
U.S. Cl. 62—262 **2 Claims**



1. An improved room air conditioner (**10**), said air conditioner having
an enclosure having a base (**11**) and a top (**12**),
an inside section (**20**) in said enclosure,
an outside section (**30**) in said enclosure,
an inside refrigerant-to-air heat exchanger (**21**) in said inside section,
an outside refrigerant-to-air heat exchanger (**31**) in said outside section,
a fan (**32**), directly driven by a fan motor (**33**), both fan and motor being in said outside section,
an outside air inlet (**35**) into said outside section and
an air discharge to outside (**41**) from said outside section,
in which the improvement comprises:
said fan being of the axial flow type and having an axis of rotation that is substantially perpendicular to said enclosure base;
said outside air inlet being located in said enclosure top;
said air discharge to outside being located in a side of said enclosure;
an air flow path through said outside section so that air enters said outside section through outside air inlet and then flows through said fan, then flows through said outside refrigerant-to-air heat exchanger then exits said outside section through said air discharge to outside;
discharge louvers arranged in said air flow path at said air discharge to outside so that air exiting said air discharge to outside is directed away from said outside air inlet;
a condensate collector (**44**) in said outside section; and
slinger means (**45**) extending into said condensate collector and driven by said motor.

5,337,581
REFRIGERATED WASTE CONTAINER WITH GERMICIDAL LAMP
Gene Lott, 896 Chestnut Lake Dr., Marietta, Ga. 30068
Continuation-in-part of Ser. No. 722,917, Jun. 28, 1991, Pat. No. 5,181,393, which is a continuation-in-part of Ser. No. 490,302, Mar. 8, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 912,254
The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.
Int. Cl.[5] F25D *23/00*
U.S. Cl. 62—264 **19 Claims**



1. A waste storage device for retarding bacterial growth by irradiating waste material in a low humidity, cool environment comprising:
a container means having a cover means with a seal means disposed between said container means and said cover means, said cover means including a recess formed therein,
refrigeration means operatively associated with said container means for refrigerating said container means and the contents thereof and lowering the humidity in said container means, and
radiation producing means disposed within said recess in said cover means for irradiating the contents therein when said cover means is in a closed position.

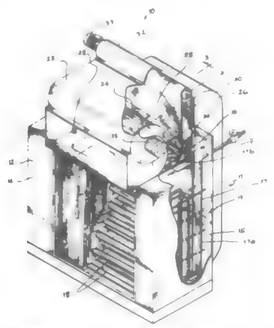
5,337,582
SPLIT-TYPE AIR-CONDITIONING APPARATUS
Villamor B. Santos, 2000 Battery Park Rd., Chesapeake, Va. 23323
Filed Jul. 29, 1993, Ser. No. 98,826
Int. Cl.[5] F28D *5/00*
U.S. Cl. 62—311 **4 Claims**

1. A split-type air-conditioning apparatus including a refrigerant control, and a evaporator connected to conventional refrigeration system such as a compressor, condenser, and a drier strainer, said comprising in combination:
an insulated water reservoir having at least three water chambers,
the refrigerant control before the evaporator coil,
said bare evaporator coil disposed in the three water chambers,
a plurality of by-pass cooler tubes connected two of said three water chambers to provide transfer of water from one chamber to the other,
an agitating means provided in one of said water chamber to facilitate circulation of water in said reservoir,
a blower means mounted on top of said reservoir,

VOL 1165 ISS 3 AG 16 1994 UMI

an air duct disposed at the rear portion of said reservoir to transfer the air present at the area of the by-pass cooler tubes of the blower means, and

an endless net mesh rotatably disposed in between said



blower means and air duct, said endless net mesh having the lower portion thereof communication with the water inside one of said water chambers and allow water therefrom to be carried away by the cool air and contain moisture therefore.

5,337,583

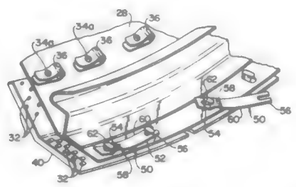
REPLACEABLE CLIP

Charles Giles, Palm Beach Gardens; Keith Belsom, Stuart, and Warren Schuler, Palm Beach Garden, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 24, 1992, Ser. No. 933,742

Int. Cl.[5] F16B *21/18*

U.S. Cl. 60—752 **7 Claims**



1. In combination, a combustor for a gas turbine engine including a liner comprising a cylindrical shell having an outer and inner surface, axial and circumferentially spaced segmented panels in contiguous relationship with said inner surface, said panels including at least two adjacent axially spaced lugs having shoulder means formed thereon extending beyond the outer surface of said cylindrical shell through a pair of complementary holes formed in said cylindrical shell, means for securing said segmented panels to said cylindrical shell, said means comprising a flexible elongated member having a slot formed adjacent one end and a bifurcation formed adjacent the opposing end thereof, said flexible elongated member having an upper surface and a lower surface and being bowed having its apex facing in the direction so said cylindrical shell and disposed substantially at the mid-section between said one end and said opposing end of said flexible elongated member, said slot fitting over one of said lugs and the bifurcation fitting over the other of said lugs and both being in frictional engagement with said shoulder means to load said flexible elongated member so that said lower surface at said apex engages said cylindrical shell to exert an upward force on said panel to preload said panel relative to said cylindrical shell.

5,337,584

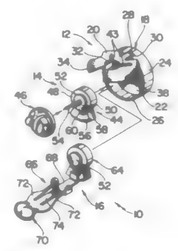
INSERT FOR CONVERTING A BUTTON COVER FOR USE AS ANOTHER TYPE OF JEWELRY ARTICLE

Anthony E. Angeli, 182 Butler Ave., Providence, R.I. 02906

Filed Nov. 5, 1992, Ser. No. 971,935

Int. Cl.[5] A44C *13/00*

U.S. Cl. 63—1.1 **13 Claims**



1. A convertible jewelry article comprising:

a button cover comprising a cover portion having a recessed opening in a back side thereof for receiving a button therein,

a back plate operable to cover said recessed opening in said button cover, said back plate having an opening therein for receiving button attachment means, said opening comprising a circular central aperture and an outwardly diverging slot extending radially therefrom, and

means for releasably maintaining said back plate in closed relation over said recessed opening; and

an insert comprising an insert body having opposite first and second sides and a thickness substantially equal to a depth of said recessed opening in said ornament, said insert body further having a raised surface on said first side comprising a centrally located disk portion and an outwardly tapering stem portion extending radially therefrom, and

means on said first side for converting said button cover for use as another type of jewelry article,

said insert body being received in said recessed opening in said cover portion so that said first side is adjacent said back plate and so that said raised disk and stem portions are received in interfitting engagement with said circular central aperture and said outwardly tapering slot in said back plate when said back plate is received in closed relation over said recessed opening, said means for converting said button cover extending outwardly through said back plate.

5,337,585

METHOD FOR PRODUCING AN OPTICAL FIBER

Frédéric Sandoz, Cortaillod, and Hervé Berthou, Saint-Aubin, both of Switzerland, assignors to Cabloptic S.A., Switzerland

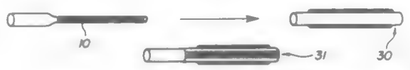
PCT No. PCT/CH92/00108, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993, PCT Pub. No. WO92/21629, PCT Pub. Date Dec. 10, 1992

PCT Filed Jun. 4, 1992, Ser. No. 971,753

Claims priority, application France, Jun. 5, 1991, 91 06908

Int. Cl.[5] C03B *37/023*

U.S. Cl. 65—391 **6 Claims**



1. A method for producing an optical fiber having a superficial layer of vitrified silica containing titanium dioxide, said method comprising the steps of:

forming an inner member (**10**) made at least partially of synthetic silica;

employing an outer tube (**20**) of silica, and coating an exterior surface of said outer tube (**20**) with a deposit of vitrified silicon oxide containing titanium dioxide thereby to form an exterior coated outer sleeve (**30**);

assembling said inner member within said outer sleeve thereby to form a composite preform; and

heating and stretching said composite preform to form said optical fiber.

5,337,586

OXIDATION INTENSIFIER FOR CONTINUOUS WARP-CHAIN INDIGO DYEING MACHINES

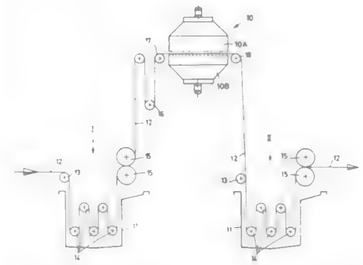
Francesco Ronchi, Sovico, Italy, assignor to Master S.A.S. Di Ronchi Francesco & C., Macherio, Italy

Filed Sep. 18, 1992, Ser. No. 946,580

Claims priority, application Italy, Sep. 19, 1991, MI91 A 002450

Int. Cl.[5] D06B *3/04*

U.S. Cl. 68—5 D **18 Claims**



1. An oxidation intensifier apparatus for continuous warp-chain indigo dyeing machines having at least two spaced dyeing and squeezing units for dyeing a plurality of adjacent spaced parallel warp threads passing in a traveling path through said at least two spaced dyeing and squeezing units, said apparatus comprising:

a first oxidation intensifier unit mounted on one side of said traveling path;

a second oxidation intensifier unit mounted on the opposite side of said traveling path from said first oxidation intensifier unit;

each oxidation intensifier unit being disposed between said at least two spaced dyeing and squeezing units and comprising:

a diffuser having a diffuser inlet and a diffuser outlet, said diffuser outlet being in spaced relationship to said traveling path of said warp threads and having a width extending the entire width of said warp threads transverse to the direction of travel of said warp threads in said traveling path and a length extending longitudinally in the direction of travel of said traveling path of said warp threads for a predetermined distance,

at least one fan means having an inlet side and an outlet side, said outlet side being disposed adjacent to said diffuser inlet; and

said diffuser outlets of said first and second oxidation intensifier units being spaced substantially equidistantly from said warp threads on opposite sides of said traveling path of said warp threads, so that operation of said at least one fan means of each intensifier unit draws air through said fan input side and expels air through said output side and through said diffuser inlet into and through said diffuser for uniform distribution of said air onto opposite of sides of warp threads moving in said traveling path.

5,337,587

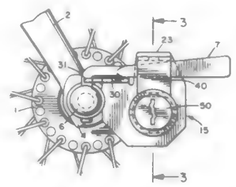
LOCKING APPARATUS AND GRIPLESS NUT FOR SECURING QUICK RELEASE MECHANISMS

James Davidson, 6 White Oak Ct., Menlo Park, Calif. 94025

Filed Jul. 27, 1992, Ser. No. 919,225

Int. Cl.[5] B62K *25/00*

U.S. Cl. 70—233 **18 Claims**



1. A lock assembly for securing lever arm-operated quick release mechanisms, said lock assembly comprising:

a substantially flat platform having a centerpoint, first and second opposing sides, top and bottom opposing edges, upper and lower opposing surfaces, said surfaces having slots therethrough;

said first side of said platform having a portion thereof defining a pair of tangs corresponding in inner diameter to the outer diameter of a bicycle axle or seat post;

said platform further having a stop extending perpendicularly from the upper surface on said first side of said platform;

said surfaces on second side of said platform extending upwardly from said centerpoint to a length therefrom longer than the width of the lever arm of said quick release mechanism;

an attachment for said platform, said attachment consisting of a bridge and lock housing and means for joining said attachment to the slots in said platform so said attachment abuts the platform and extends therefrom in a substantially perpendicular plane thereto,

said lock housing having a hollow inner diameter, joined sidewalls and opposing ends, said ends being open to define a passageway through said inner diameter, wherein the center of said inner diameter corresponds to a slot through the center point of said platform;

said bridge extending from said lock housing to substantially meet the top edge of the second side of said platform when the attachment is joined thereto to define a space closed on four sides through which the lever arm will extend when the pair of tangs are seated around the bicycle axle or seat post;

a lock substantially conforming in outer diameter to the inner diameter of said lock housing and having a locking bit corresponding in position to the slot through said centerpoint of said platform to secure the attachment to the platform.

5,337,588

ELECTRONIC LOCK AND KEY SYSTEM

Kn S. Chhatwal, West Melbourne, Fla., assignor to Intellikey Corporation, Melbourne, Fla.

Filed Oct. 11, 1990, Ser. No. 596,210

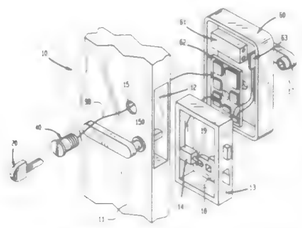
Int. Cl.[5] E05B *49/02*

U.S. Cl. 70—278 **36 Claims**

1. A key for use with an electronic lock system comprising a body having a handle at one end and a blade constituting a first electrical contact at the other end, said handle containing an electronic circuit package electrically connected with said first electrical contact, said blade containing a single second electrical contact extending along a portion of said blade and being electrically insulated from said blade, said single second electrical contact being electrically connected with said electronic circuit package and being configured so as to mechani-

VOL 1165 ISS 3 AG 16 1994 UMI

cally polarize said key such that said key may be inserted into a keyway of a lock in only a single orientation, a light emitting device and a light receiving device arranged adjacent to said



blade and being operatively connected with said electronic circuit package, and a housing surrounding said electronic circuit package and at least a portion of said handle in a moisture-proof manner.

5,337,589

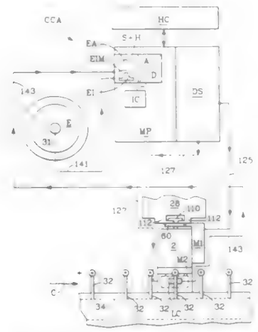
METHOD OF AND APPARATUS FOR CONTROLLING THE CRIMP HEIGHT OF CRIMPED ELECTRICAL CONNECTIONS

Karl-Heinz Gloe, Reichelsheim; Michael Gerst, Worms, and Helmuth Kreuzer, Munster, all of Fed. Rep. of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 876,826, Apr. 29, 1992, Pat. No. 5,275,032. This application Oct. 1, 1993, Ser. No. 131,271

Int. Cl.[5] B21J *13/02*

U.S. Cl. 72—11 **13 Claims**



1. A method of controlling the crimp height of crimped connections each produced by the application of a compressive crimping force to a crimping barrel of an electrical terminal, the method comprising the step of coarsely adjusting the shut height of crimping tooling for crimping said crimping barrels to electrical leads therein under said compressive force by the adjustment of a member having projections of different heights for determining respective vertical positions of an upper die set of said crimping tooling, to bring the shut height to a theoretical value corresponding to an optimum crimp height for the crimped connections; the method comprising the further steps of, measuring the actual height of a crimped connection previously produced by means of said tooling under said compressive force, comparing said actual crimp height with said optimum crimp height by means of a comparator and automatically finely adjusting the vertical position of an anvil of the crimping tooling in accordance with such comparison to bring the shut height thereof to said theoretical value; and wherein for carrying out said measuring step said crimped connection is transported to a support for said crimped connection, a plunger is actuated to engage the crimped connection on the support, a signal is produced which is indicative of the position of said plunger with respect to said support and said signal is fed to said comparator.

5,337,590

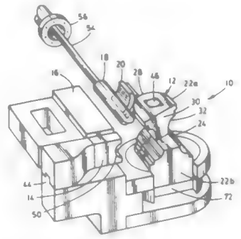
METHOD AND APPARATUS FOR BENDING TUBES USING SPLIT BEND DIE

Eugene H. Schuchert, 1814 Hafor Dr., Iowa City, Iowa 52246; David M. Christensen, R.R. 2, Bethel, Vt. 05032, and Samuel B. McGuire, 915 N. El Paso, Fountain, Colo. 80817

Filed Dec. 27, 1993, Ser. No. 173,336

Int. Cl.[5] B21D *7/04*

U.S. Cl. 72—157 **24 Claims**



1. A method of bending a tube comprising the steps of:
seating said tube tangentially in a tube groove of a bend die with a first portion of the tube extending forward from the bend die;
clamping said tube to said bend die with a clamp die;
moving said tube tangentially toward said bend die with a pressure die while rotating said bend die and said clamp die to form a bend in said tube wherein said first portion extends rearwardly from said bend die substantially parallel with a second portion of said tube on the opposite side of said bend die;
splitting upper and lower sections of said bend die along a shaft;
rotating said upper and lower bend die sections in unison through a predetermined angle to position a substantially straight end of said upper bend die substantially parallel with said first portion of said tube;
providing relative motion between said tube and said split bend die to position said second portion of said tube adjacent said shaft;
rotating said tube about said second portion to raise said first portion above said upper bend die section;
closing said bend die sections back together and rotating said bend die back to its initial angular orientation; and
moving said tube relative to said bend die to position said tube for a subsequent bend.

5,337,591

MACHINE AND METHOD OF MAKING DUCT COUPLING

William H. Fordee, Townville, S.C., and Henry M. Keating, St. Clair Shore, Mich., assignors to Keating Koupling, Inc., Six Mile, S.C.

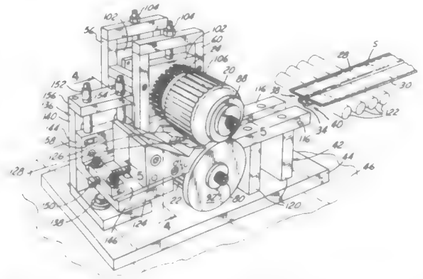
Filed Jul. 2, 1992, Ser. No. 907,872

Int. Cl.[5] B21D *7/08*

U.S. Cl. 72—168 **10 Claims**

1. A machine for coiling a sheet metal strip having a pair of lateral flanges joined by a channel shaped rib with the rib and flanges defining therebetween oppositely opening lateral grooves, and wherein the rib has a top surface and is on the outside of the coil, comprising, in combination:
a pair of cooperating fluting rolls coupled together for con-

joint rotation and between which the strip is fed to flute the flanges of the strip;
one roll of said pair being circumferentially grooved to receive the channel shaped rib of the strip;
a coiling shoe having strip coiling surfaces including a pair of laterally spaced apart ramps positioned closely adjacent the fluting rolls with such pair of ramps receiving therebetween and substantially embracing the rib of a strip emerging from between the rolls and bearing against the lateral flanges;



said coiling surfaces including a third ramp disposed between said pair and positioned to bear against the top surface of the rib;
said shoe being so positioned in relation to the fluting rolls that said coiling surfaces deflect a strip emerging from between the rolls into a curved shape having the rib on the outside of the curve;
a pair of ears disposed adjacent said ramps and received in said oppositely opening grooves of the strip and shaped to substantially fill each groove and prevent collapse thereof during coiling of the strip; and
means coupled to the fluting rolls for driving them.

5,337,592

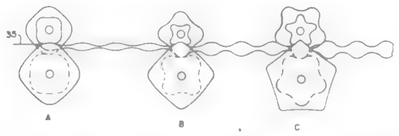
NON-STRETCH BENDING OF SHEET MATERIAL TO FORM CYCLICALLY VARIABLE CROSS-SECTION MEMBERS

Wallace S. Paulson, 771 Avocado Ave., Corona del Mar, Calif. 92625

Filed Aug. 20, 1992, Ser. No. 933,360

Int. Cl.[5] B21D *13/00, 37/20*

U.S. Cl. 72—177 **20 Claims**



1. A forming machine for concurrent longitudinal and transverse, non-stretch sheet bending to form cyclically variable cross section members from flat sheet material, comprising, in combination:
a housing;
a plurality of sets of rollers carried in said housing in a serial array, each of said sets of rollers being dimensioned and shaped so as to have mating non-axisymmetric surfaces to incrementally non-stretch bend said sheet material passing between each of said sets of rollers a predetermined amount, simultaneously in both longitudinal and transverse predetermined directions, depending on the shape of the product to be formed and the ductility, strength and stiffness of the flat sheet material passing between each of said sets of rollers; and
driving means for each of said sets of rollers to drive each of said sets of non-axisymmetric rollers at a predetermined, roller configuration-dependent rotational speed, said plurality of roller sets being spaced so that the mating non-axisymmetric surfaces of the downstream roller set engage corresponding zones of the non-stretched and bent sheet material made by the mating non-axisymmetric surfaces of the upstream roller set.

5,337,593

EXTRUSION DIE AND AN EXTRUSION METHOD USING SAME

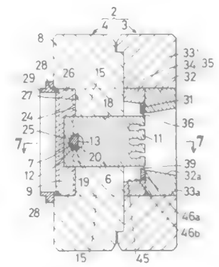
Sadahide Yano, Osaka, Japan, assignor to Yugen Kaisha Yano Engineering, Osaka, Japan

Filed Apr. 5, 1993, Ser. No. 42,723

Claims priority, application Japan, Apr. 17, 1992, 4-97950; Jul. 6, 1992, 4-178083

Int. Cl.[5] B21C *25/02*

U.S. Cl. 72—269 **12 Claims**



1. An extrusion die comprising:
a bearing tip having such a forming hole as determining the outer periphery of an extruded article;
wherein the bearing tip is made of a thin flat plate having a thickness substantially corresponding to the bearing axial length of the central hole;
a supporting mold for holding the bearing tip in place, wherein the tip and the mold are separable from one another; and
wherein the extrusion die for forming an outer periphery of an extruded article is combined with a male die for forming an inner periphery of the article;
wherein the male die comprises: a core having at its inner end at least one projected portion of such a shape as defining the inner periphery; the core further having at least one pierced opening through, or engraved recess on, a body of the core; at least one stopping member disposed through the opening or in the recess of the core such that at least one side end of the stopping member protrudes sideways from the side surface of the body; a male mold having a core-holding aperture which is formed through the male die so as to extend from an outer extremity to an inner extremity thereof; and at least one shoulder formed on an inner wall surface of the core-holding aperture so as to face the male dies' outer extremity disposed upstream of the extruded flow, wherein the core is inserted in the core-holding aperture such that the at least one side end of the stopping member is borne by the at least one shoulder so as to retain the core in the male mold.

VOL 1165 ISS 3 AUG 16 1994 UMI

5,337,594

ARRANGEMENT AT PRESS LINE

Rolf Pettersson, Sölvesborg; Per-Åke Lidén, Ingenjörsgatan, and John-Erik Liljengren, Fläderb/e,uml/a/ rsvägen, all of Sweden, assignors to AB Volvo, Sweden

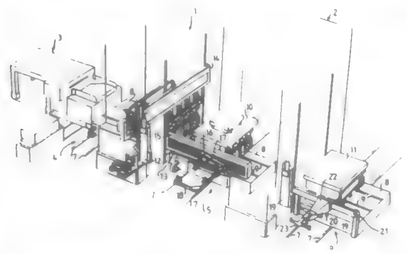
PCT No. PCT/SE90/00470, § 371 Date Jan. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO91/00784, PCT Pub. Date Jan. 24, 1991

PCT Filed Jun. 29, 1990, Ser. No. 809,491

Claims priority, application Sweden, Jul. 12, 1989, 8902521-7

Int. Cl.[5] B21J *13/08*

U.S. Cl. 72—446 19 Claims



1. An arrangement in a press line for producing vehicle body parts, comprising:

at least two presses disposed in spaced sequence along a material feed direction for stepwise processing of a workpiece;

tracks extending between adjacent presses transverse to the material feed direction;

a carriage associated with each press, each carriage being drivable on said tracks at least between a first position and a second position, each carriage having relative to the tracks direction a first and a second end portion;

transfer means for transferring a workpiece from one press to the next in the press line, said transfer device being arranged on the second end portion of the carriage for operation when the carriage is in the second position, wherein the second end portion has cantilever means for supporting the transfer means away from the second end portion in the track direction to provide a free space below the transfer means; and,

tool change means for transferring a tool to a press for use and from a press after use, said tool change means being disposed on the first end portion of the carriage for operation when the carriage is in the first position.

5,337,595

SUBSONIC VENTURI PROPORTIONAL AND ISOKINETIC SAMPLING METHODS AND APPARATUS

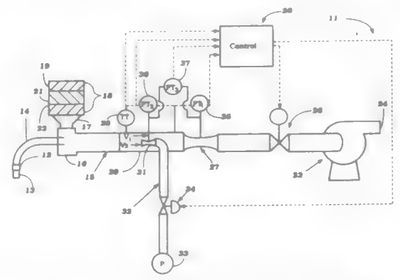
Gary W. Lewis, Fountain Valley, Calif., assignor to Horiba Instruments, Incorporated, Irvine, Calif.

Filed Mar. 18, 1992, Ser. No. 853,506

Int. Cl.[5] G01N *1/22*

U.S. Cl. 73—23.31 9 Claims

8. A method for sampling the emission content of exhaust from an exhaust source comprising the steps of establishing a flow of exhaust in a flow confining path, measuring the flow rate of the exhaust using a first subsonic venturi restriction, extracting and measuring the flow rate of an extracted sample of the exhaust using a second subsonic venturi restriction, and controlling the flow rate of the exhaust through said first subsonic venturi restriction and the flow rate of the extracted



sample through said second subsonic venturi restriction to obtain proportional sampling.

5,337,596

APPARATUS FOR MEASURING PERMEABILITY OF A ROCK SAMPLE

Christian Halvorsen, Jr., Forus, Norway, and Andrew R. Hurst, Virginia Beach, England, assignors to Den Norske Stats Oljeselskap A.S, Stavanger, Norway

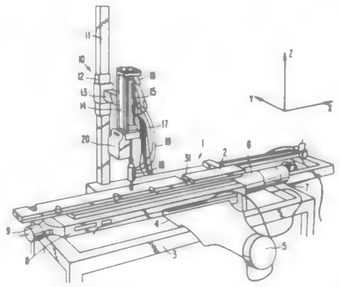
PCT No. PCT/NO91/00049, § 371 Date Oct. 30, 1992, § 102(e) Date Oct. 30, 1992, PCT Pub. No. WO91/15749, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 26, 1991, Ser. No. 941,438

Claims priority, application Norway, Apr. 3, 1990, 901499

Int. Cl.[5] G01N *15/08*

U.S. Cl. 73—38 7 Claims



1. An apparatus for measuring permeability in rock samples comprising, a measuring table for strapping down a rock sample, a nozzle that can be pressed against the rock sample at a set force, a gas source connected to the nozzle, devices for measuring mass flow through the nozzle and pressure in the nozzle, the apparatus comprising: a rack equipped with a pneumatic cylinder to which the nozzle is attached, the rack and the measuring table being movable in relation to each other along X and Y axes via motors and a computer that controls:

a) the motors, and thereby the movements of the nozzle and the measuring table relative to each other so that the rock sample is covered by a predetermined measuring point pattern,

b) a mass flow meter that controls and measures the gas flow to the nozzle, and

c) a selector valve for compressed air that controls the pneumatic cylinder, and thereby a vertical movement of the nozzle.

5,337,597

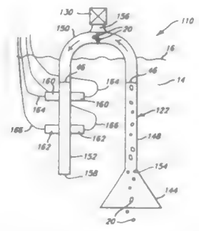
BUBBLE EMISSION VOLUME QUANTIFIER

Don A. Peake, Mt. Clemens, and Brian M. Weymouth, Marysville, both of Mich., assignors to Expertek, Detroit, Mich.

Continuation-in-part of Ser. No. 718,546, Jun. 20, 1991, Pat. No. 5,237,856. This application Feb. 24, 1992, Ser. No. 840,097

Int. Cl.[5] G01M *3/10*

U.S. Cl. 73—45.5 16 Claims



1. An apparatus for detecting a leak from an object, comprising:

a bubble collecting device for collecting bubbles emitted from an object;

a bubble detecting assembly adjacent at a predetermined angle to said bubble collecting device for detecting a predetermined volume of bubbles collected to indicate a leak;

timer means;

bubble sensing means for detecting the passage of a bubble into said bubble collecting device;

switch means for starting said timer upon the detection of the passage of a bubble into said bubble collecting device; and

means for signalling a test failure upon detecting said predetermined volume of bubbles before said timer reaches a predetermined time.

5,337,598

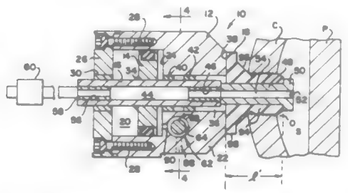
LEAK TEST PORT PLUG

Dennis Rab, Hillpoint, Wis., assignor to Bimba Manufacturing Company, Monee, Ill.

Filed Jan. 17, 1992, Ser. No. 822,622

Int. Cl.[5] G01M *3/08*

U.S. Cl. 73—49.8 40 Claims



1. A fluid operated port plug for sealingly closing a port against leakage comprising:

a cylinder casing having opposite ends and a chamber therein between said ends;

a piston in said chamber;

a piston rod on said piston and having an end extending through at least one end of said cylinder casing;

a resilient member on said end of said piston rod, said resilient member having a first resilient portion and a second resilient portion between said cylinder casing and said first resilient portion, and adjacent to said first portion, said second resilient portion extending outwardly from said first resilient portion; and

means for introducing a pressurized fluid to said chamber to move said piston and piston rod and compress said resilient member between said end of said piston rod and said one end of said cylinder casing, and to cause said first resilient portion to expand in the port and said second resilient portion to move into the port, whereby the port is sealed against leakage.

5,337,599

APPARATUS AND METHOD FOR DETERMINING THE THERMAL STABILITY OF FLUIDS

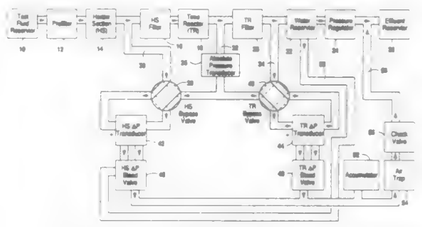
Alf Hundere; George R. Wilson, III; Thomas Dowda; James Dowda, and David Anderson, all of San Antonio, Tex., assignors to Alcor, Inc., San Antonio, Tex.

Continuation of Ser. No. 711,120, Jun. 4, 1991, Pat. No. 5,101,658, which is a continuation of Ser. No. 618,117, Nov. 26, 1990, abandoned, which is a continuation of Ser. No. 511,646, Apr. 20, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 863,856

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.[5] G01N *33/22*

U.S. Cl. 73—61.62 16 Claims



3. An apparatus for testing thermal oxidation stability of a fluid such as a hydrocarbon fuel, comprising:

a non-circuitous fluid flow conduit system with an input and an output, said conduit system capable of conducting and containing said fluid;

means for inserting an amount of said fluid into said conduit system at said input of said conduit system;

means for creating and maintaining an incremental flow of said fluid through said conduit system, said incremental flow being maintained at a regulated pressure and being from said input towards said output of said conduit system;

means for controllably heating said fluid in at least one location within said conduit system, said heating means having a surface in contact with said fluid upon which may be deposited suspended solids formed by said heating of said fluid;

means for increasing a total residence time of said fluid within said conduit system at a location between said heating means and said output of said conduit system;

filter means in at least one location within said conduit system between said heating means and said output of said conduit system for trapping said suspended solids formed by said heating of said fluid;

pressure differential measuring means located in conjunction with said filter means for determining a differential pressure across said filter means, said differential pressure being indicative of a degree of said suspended solids deposited on said filter means; and

said filter means and said surface of said heating means being so situated within said conduit system as to be monitored for a build up of said suspended solids thereon, said build up of said suspended solids being indicative of said thermal oxidative stability of said fluid,

wherein said means for creating and maintaining an incremental flow of said fluid through said conduit system, said means for controllably heating said fluid, and said pressure

VOL 1165 ISS 3 AG 16 1994 UMI

differential measuring means, are all automatically controlled and monitored by a microprocessor based control and data acquisition system.

5,337,600

FLAT BELT TYPE DRIVE CHASSIS DYNAMOMETER WITH COMPACT CONSTRUCTION

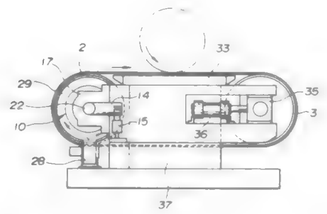
Kimihiko Kaneko, Tokyo; Masami Takahashi, and Akira Nakajima, both of Kanagawa, all of Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Continuation of Ser. No. 648,850, Jan. 31, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 44,075

Claims priority, application Japan, Feb. 6, 1990, 2-10924[U]

Int. Cl.[5] G01L *3/02*

U.S. Cl. 73—117 **4 Claims**



1. An apparatus for testing performance of an automotive vehicle, comprising:

front positioned and rear positioned hollow rollers arranged in a spaced apart relationship to each other for the vehicle to match with a mutual dimension of the rollers;

at least one endless belt wound over said front positioned and rear positioned rollers for forming a surface on which at least one vehicular tire wheel is mounted; and

a dynamometer disposed within an inner space of at least one roller, wherein said dynamometer includes a rotor core attached around a wall of the roller so that power derived from the vehicular tire wheel is transmitted to the roller and rotor core, said dynamometer further including a stator core attached around a stator axle of the dynamometer, said stator axle being arranged radially inside of the rotor; a torque arm extended from the stator axle which receives a reaction from the stator core; and a load cell for measuring the reaction via the torque arm, both said rotor core and said stator core carrying out electrical generation when receiving the power of the vehicular tire wheel, wherein said roller is associated with a tension adjusting means for shifting said one roller toward or away from the other roller in order to adjust tension on the belt, said tension adjusting means comprising an edge sensor located above an edge of said roller so constructed as to detect a behavior of the belt on an outer periphery of the roller, a sliding bearing permitting shifting of said one roller and an actuator for driving said one roller for shifting.

5,337,601

METHOD AND APPARATUS FOR MEASURING PRESSURE IN A SEALED WELL USING A DIFFERENTIAL TRANSDUCER

William L. Becker, and William J. Kuestner, both of Laramie, Wyo., assignors to In-Situ, Inc., Laramie, Wyo.

Filed Jan. 19, 1993, Ser. No. 5,623

Int. Cl.[5] E21B *47/00;* **G01N** *15/08*

U.S. Cl. 73—155 **12 Claims**

1. A pressure sensing system for use with a sealed well containing a liquid comprising:

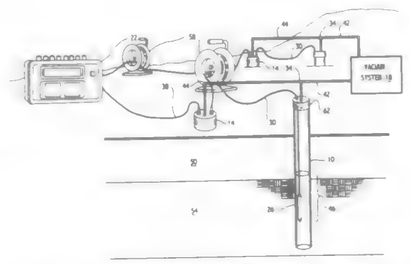
means for providing a first desired pressure in the sealed well having the liquid;

means for supplying said first desired pressure to differential transducer means, said means for supplying including:

a walled structure which encloses a cavity;

at least three openings in said walled structure;

wherein a first of said three openings receives first cable means which has first electrical conductors;



a second of said three openings receives a second cable means which contains both second electrical conductors and a channel through which gas is able to flow; and

a third of said three openings receives tubing means through which gas is able to flow;

wherein said differential transducer means determines the difference between a first sensed pressure and said first desired pressure.

5,337,602

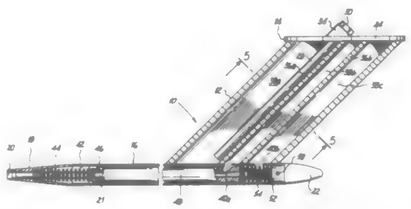
PITOT STATIC TUBE HAVING ACCESSIBLE HEATING ELEMENT

Michael E. Gibson, 6 Tall Pines La., Nesconset, N.Y. 11767

Filed Aug. 24, 1992, Ser. No. 934,727

Int. Cl.[5] G01C *21/00*

U.S. Cl. 73—182 **21 Claims**



1. A repairable pitot static tube including a mounting assembly for removably mounting to an aircraft, comprising:

a body portion having at least one internal chamber for communicating with an instrument panel in said aircraft through said mounting assembly;

a first heater in said body portion removably mounted in said at least one chamber of said body portion;

a barrel portion depending from said body portion and having a central passageway;

a tip member removably secured to a first end of said barrel portion and having a central passageway in axial alignment with said central passageway of said barrel portion, said tip member having an open end to allow passage of air through said central passageway;

an end cap member removably secured to a second end of said barrel portion for closing off said central passageway; and

a second heater positioned in said central passageway of said barrel portion, said second heater including a hollow core forming a channel in fluid communication with said at least one chamber of said body portion and said open end of said tip member;

wherein said second heater is removably accessible from either of said first and second ends of barrel portion upon removal of either of said tip member and said end cap member.

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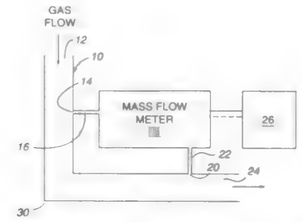
ELBOW MASS FLOW METER

Andrew R. McFarland, College Station, Tex.; John C. Rodgers, Santa Fe, N. Mex.; Carlos A. Ortiz, Bryan, Tex., and David C. Nelson, Santa Fe, N. Mex., assignors to The Regents of the University of California Office of Technology Transfer, Alameda, Calif.

Filed Jan. 15, 1993, Ser. No. 3,982

Int. Cl.[5] G01F *5/00*

U.S. Cl. 73—202 **4 Claims**



1. An apparatus for measuring mass flow in gases which comprises in combination:

an elbow in which turbulent flow of the gas to be investigated is established, said elbow including a first straight leg and a second straight leg, the first straight leg being located upstream from the second straight leg, and having a first sampling port therein and the second straight leg having a second sampling port therein; and

a shunt-type mass flow sensor having an input port and an output port, the input port being attached to the first sampling port and being adapted to receive a portion of the turbulent flow from said elbow, and the output port thereof being attached to the second sampling port such that after flowing through said mass flow sensor, the portion of the turbulent flow entering said flow sensor is returned to said elbow.

5,337,604

APPARATUS FOR MEASURING SAP FLOW

Cornelius H. M. Van Bavel, Rte. 1, Box 923-9, Center Point, Tex. 78010, and Michael G. Van Bavel, 1903 Woodvale Rd., Missouri City, Tex. 77489

Continuation-in-part of Ser. No. 741,293, Aug. 6, 1991, Pat. No. 5,269,183. This application Nov. 1, 1993, Ser. No. 146,877

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.22 **18 Claims**

1. In a system for measuring sap flow in a stem region of a plant, under diverse environments, a portable flow sensor comprising:

a rigid clam-shell housing comprising a first portion and a second portion, said first and second portions obtained by completely cutting said housing along its longitudinal axis;

said first portion and said second portion of said housing pivotally interconnected at a corresponding longitudinal edge to form a joinder thereof;

said joinder of said first portion and said second portion of said housing disposed abuttably of said stem region and configured to be adjustably and concentrically received by said stem region, without invading any surface thereof;

a first flexible substrate fixedly attached to said first portion of said housing and disposed annularly and abuttably inside of said first portion and including a first temperature sensing means imbedded thereon;

a second flexible substrate fixedly attached to said second portion of said housing and disposed annularly and abuttably inside of said second portion;

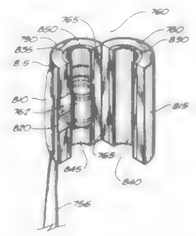
a collar member configured to be sealably disposed circumferentially of said housing, for securing said housing to said stem region for preventing invasion by water and for shielding from radiation;

said first temperature sensing means generating a first signal responsive to radial temperature difference between interior and exterior surface layers of said first substrate, for measuring ambient heat loss;

a heater means disposed annularly of said interior surface of said first substrate and fixedly attached thereto;

a sensing cable interconnected with said heater means for generating a second signal responsive to power input thereto;

a first differential temperature sensing pair, comprising a second temperature sensing means and a third temperature sensing means, disposed immediately above said heater means and having said second temperature sensing means disposed a first distance above said third temperature sensing means;



a second differential temperature sensing pair, comprising a fourth temperature sensing means and a fifth temperature sensing means, disposed immediately below said heater means and having a fourth temperature sensing means disposed a second distance above said fifth temperature sensing means;

said second temperature sensing means interconnected with said fourth temperature sensing means to generate a third signal responsive to temperature gradient of said sap flow in said stem region and responsive to axial heat loss by conduction through said stem region;

said third temperature sensing means interconnected with said fifth temperature sensing means to generate a fourth signal also responsive to said temperature gradient of said sap flow in said stem region and responsive to axial heat loss by conduction through said stem region; and

a means for transmitting said four signals to datalogger means, for determining said sap flow.

5,337,605

ENCLOSURE FOR HUMIDITY SENSING ELEMENT

Bruce R. Schultz, West Allis; Kirk P. Henderson, Oconomowoc, and Arthur Barootian, Racine, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 22, 1993, Ser. No. 7,864

Int. Cl.[5] G01N *33/18;* **B65D** *85/00*

U.S. Cl. 73—335.02 **15 Claims**

1. A humidity sensor assembly comprising:

a film humidity sensing element having first and second electrodes each having a contact portion, said humidity sensing element having a peripheral edge;

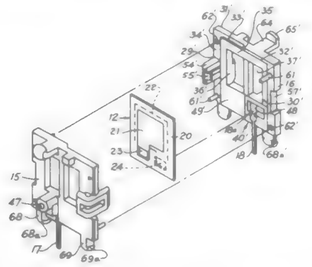
an enclosure including first and second mating enclosure members assembled together with said humidity sensing element contained between said enclosure members; said

VOL 1165 ISS 3 AG 16 1994 UMI

first and second enclosure members having opposing inner surface portions which are spaced apart to define an inner compartment, said opposing inner surface portions of said first and second enclosure members defining first and second lead mounting surfaces located within said enclosure;

first and second electrical leads each having a mounting portion located within said enclosure and secured to a different one of said lead mounting surfaces;

said humidity sensing element being contained within said compartment with said peripheral edge engaged by said opposing inner surface portions of said enclosure members



and with said contact portions of said first and second electrodes located adjacent to said mounting portions of said first and second electrical leads;

and electrically conductive means for connecting said first and second electrical leads, respectively, to said contact portions of said first and second electrodes in said compartment,

the spacing between said opposing inner surface portions of said enclosure members corresponding substantially to the thickness of said humidity sensing element at least at said peripheral edge, whereby said humidity sensing element is secured in said enclosure by said mating enclosure members and independently of the lead connections.

5,337,606

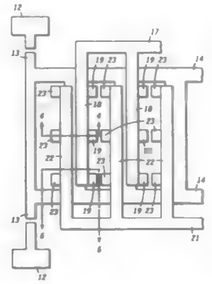
LATERALLY SENSITIVE ACCELEROMETER AND METHOD FOR MAKING

Paul T. Bennett, Phoenix; Ronald J. Gutteridge, Paradise Valley; Daniel N. Koury, Jr., Tempe; David F. Mietus, Phoenix, and Ljubisa Ristic, Paradise Valley, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 10, 1992, Ser. No. 926,616

Int. Cl.[5] G01P *15/08*; H01G *7/00*

U.S. Cl. 73—517 R **18 Claims**



1. A laterally sensitive accelerometer comprising: a substrate;

a first anchor attached to the substrate, a tether coupled to the anchor and having a portion free to move in a lateral direction over the substrate in response to acceleration, a tie-bar coupled to the movable portion of the tether, and at least one movable capacitor plate coupled to the tie bar;

a first fixed capacitor plate laterally overlapping the at least one movable capacitor and vertically spaced from the at least one movable capacitor plate; and

a second anchor attached to the substrate; and a first vertical support coupling the first fixed capacitor plate to the second anchor, wherein the first vertical support is laterally spaced from the at least one movable capacitor plate to allow the at least one movable capacitor plate to move in a lateral direction under the first fixed capacitor plate.

5,337,607

MONOLITHIC FLOW TUBE WITH IMPROVED DIELECTRIC PROPERTIES FOR USE WITH A MAGNETIC FLOWMETER

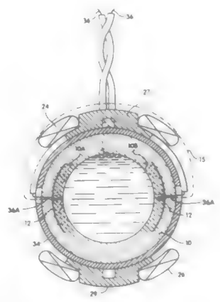
Christopher R. Brown, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Division of Ser. No. 738,595, Jul. 31, 1991, Pat. No. 5,289,725.

This application Oct. 12, 1993, Ser. No. 134,980

Int. Cl.[5] G01F *1/58*

U.S. Cl. 73—861.12 **17 Claims**



1. A flowtube comprising:

a tubular inner conduit adapted to pass a fluid therethrough, the inner conduit comprising a dielectric material;

a conductive material mechanically deposited as a viscous paste in a predetermined electrode pattern onto the exterior surface of the inner conduit at selected areas;

an outer layer of ceramic material adjacent the exterior surface of the inner conduit and the electrode pattern; and

said tubular inner conduit, said conductive material, and said outer ceramic layer sintered together to form a monolithic flowtube body.

5,337,608

DRIVE ROLLER TORQUE REFERENCE CARTRIDGE

Daniel Egan, St. Paul; Jerry Alexander, St. Paul Park; James T. McKinney, Stillwater, and John F. Runyon, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St Paul, Minn.

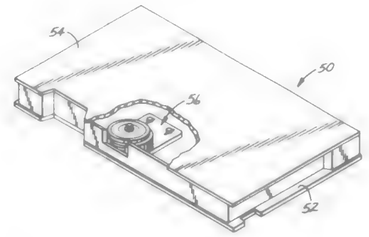
Filed Dec. 18, 1992, Ser. No. 993,101

Int. Cl.[5] G01L *25/00*

U.S. Cl. 73—865.6 **14 Claims**

1. A reference cartridge for establishing a pre-determined drive force, the reference cartridge including an outer casing mounted over a base plate, a drive roller mounted for rotation about a pivot pin secured to the base plate, and a magnetic hysteresis brake assembly for controllably resisting rotation of the drive roller, thereby imparting a controlled torque on the drive roller, wherein the magnetic hysteresis brake assembly fits within the outer casings, whereby the cartridge is configured for insertion into a standard cartridge drive.

14. A reference cartridge for establishing a pre-determined drive force, including a drive roller mounted about a pivot pin secured to a base plate, a magnetic hysteresis brake assembly for controllably resisting rotation of the drive roller, thereby imparting a controlled torque on the drive roller, the magnetic hysteresis brake including a cylindrical permanent magnet within the drive roller coaxial with the axis of rotation of the drive roller and a remanently magnetizable cylindrical sleeve



fixed to the base plate, the sleeve comprised of a plurality of rings of the same diameter as the sleeve, the rings being coaxial with the sleeve, wherein the rings are stacked on top of each other, wherein the sleeve is coaxial with the axis of rotation of the drive roller, wherein the diameter of the sleeve is slightly greater than the diameter of the magnet, and wherein the magnet is positioned within the sleeve, whereby the cylindrical magnet can be rotated within the sleeve while the sleeve remains fixed to the base plate.

5,337,609

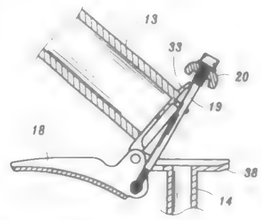
HANDLEBAR STRUCTURE FOR A COLLAPSIBLE BICYCLE

Su-Yuan Hsu, Ra. A. 3rd Fl., No. 112, Chung Shan N. Road, Taipei, Taiwan

Filed Jun. 7, 1993, Ser. No. 72,045

Int. Cl.[5] B62K *21/16*

U.S. Cl. 74—551.3 **2 Claims**



1. A locking mechanism for the handlebar structure of a collapsible bicycle of the type including an upper tube having a flange at its lower end and a lower tube having a flange at its upper end, the mechanism comprising:

a) a pressing lever;

b) means connecting the pressing lever to the flanges of the upper and lower tubes for permitting the tubes to pivot relative to each other and the pressing lever to pivot relative to the flanges about a common pivot axis;

c) a U-shaped member for detachably clamping the flanges together and provided with a bolt hole therethrough;

d) a first bolt having front and rear ends, the first bolt extending through the bolt hole of the U-shaped member, the front end being coupled to the U-shaped member and the rear end being coupled to the pressing lever, with the common pivot axis defining a pivot point and the coupling point of the front end with the pressing lever defining a fulcrum; and

e) whereby when the upper and lower tubes are mounted in an upright position with the flanges together, the pressing lever may be pivoted upwardly towards the upper tube and cause the first bolt to draw the U-shaped member into clamping engagement with the flanges and maintain the tubes in the upright position, and release of the U-shaped member may be realized by pivoting the pressing lever downwardly towards the lower tube.

5,337,610

METHOD OF DETERMINING LOAD IN ANISOTROPIC NON-CRYSTALLINE MATERIALS USING ENERGY FLUX DEVIATION

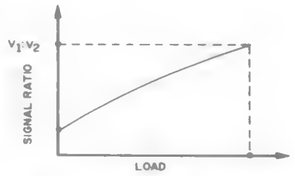
William H. Prosser, Newport News, Va.; Ronald D. Kriz, Blacksburg, both of Va., and Dale W. Fitting, Golden, Colo., assignors to The United States of America as represented by the Administrator of the natinal Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 797,507, Nov. 22, 1991, Pat. No. 5,209,123.

This application Feb. 22, 1993, Ser. No. 27,092

Int. Cl.[5] G01N *29/20*

U.S. Cl. 73—599 **1 Claim**



1. A method of determining an applied load of a particular anisotropic sample material comprising the steps of:

applying an ultrasonic wave to a surface of a particular anisotropic sample material in an initial direction;

measuring the intensity of the ultrasonic wave via an array of at least two receiving points located on an opposite surface of the particular anisotropic sample material;

determining a ratio between the measured intensities of two adjacent receiving points, the ratio being indicative of an angle of flux deviation from the initial direction caused by the applied load; and

comparing this determined ratio to a plurality of ratios of a similarly tested, similar anisotropic reference material tested under a plurality of known load conditions, wherein the load applied to the particular anisotropic sample material is determined by correlating said ratios to previously determined ratios due to known loads in said reference material.

5,337,611

METHOD OF SIMULATING ULTRASONIC INSPECTION OF FLAWS

Marvin F. Fleming, Los Altos; Samuel Hersh, Danville, and Soung-Nan Liu, Fremont, all of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Dec. 2, 1992, Ser. No. 986,153

Int. Cl.[5] G01N *29/00*

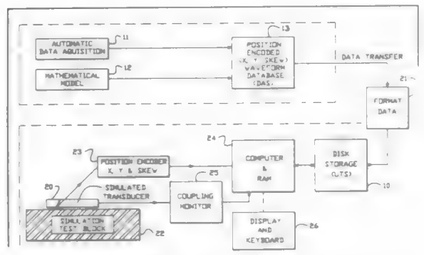
U.S. Cl. 73—622 **7 Claims**

1. A method of simulating in real-time the ultrasonic inspection of flaws in electric utility generating station components such as piping where each flaw is represented by a position sensitive ultrasonic signal waveform having X, Y and skew angle components relative to an ultrasonic transducer, with skew angle being angular rotation of the transducer about a Z axis orthogonal to the X and Y axes, and where the user moves a position encoder over a simulation test block, the position

VOL 1165 ISS 3 AG 16 1994 UMI

encoder simulating the movement of an ultrasonic transducer over a real or test piece with flaws, the encoder providing the X, Y and skew position components related to a specific waveform, said method comprising the following steps:

storing on a plurality of rotational multi-disk data storage media said X Y and skew angle related waveform data, each skew angle being located on a respective side of one



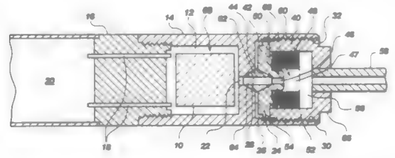
disk of said rotational storage media, with the X axis location relating to the tracks of the disk and the Y axis location relating to the sectors of the disk;

sensing the movement of said position encoder head and reading encoded X, Y, and skew data and reading waveforms associated with such specific X, Y and skew data from said rotational memory and displaying to said user.

5,337,612
APPARATUS FOR PRESSURE TRANSDUCER ISOLATION

Paul S. Evans, Salt Lake City, Utah, assignor to Quartzdyne, Inc., Salt Lake City, Utah

Filed Jun. 8, 1992, Ser. No. 894,832
Int. Cl.[5] G01L *7/06*
U.S. Cl. 73—706 **19 Claims**



1. An apparatus for isolating the sensing element of a pressure transducer from a hostile fluid environment, comprising:

a pressure housing defining a first chamber enclosing said sensing element and having a first aperture through the wall thereof;

a bellows capsule including a second chamber defined by the interior of a bellows sealed to a base having a second aperture therethrough and a shell disposed over said bellows and sealingly secured to said base;

sealing means between said first chamber and said second chamber for sealed communication from said hostile fluid environment between said first aperture and said second aperture; and

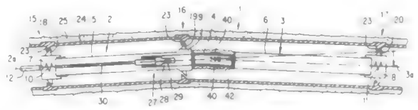
an isolation liquid completely filling said first and second chambers;

said shell and said base defining an environmental fluid chamber surrounding said bellows for subjecting the exterior thereof to said environmental fluid in isolation from said isolation liquid.

5,337,613
MEASURING INSTRUMENT FOR DETERMINING DISPLACEMENTS IN SOIL, ROCK, FOUNDATION SOIL OR CONSTRUCTION MATERIALS

Kalman Kovari, Stettbachstrasse 6, 8702 Zollikon, Switzerland

Filed Aug. 31, 1992, Ser. No. 937,378
Claims priority, application Switzerland, Aug. 29, 1991, 02538/91
Int. Cl.[5] G01B *5/00*
U.S. Cl. 73—784 **6 Claims**



1. A measuring instrument for determining displacements in a material, which comprises:

first and second hinge-coupled elongate, substantially rigid measuring elements for being positioned in the material; and

a measuring device for determining changes of position of the first and second measuring elements relative to each other, brought about by pivoting of the first measuring element relative to the second measuring element, wherein the measuring device includes a flexible element interconnecting the first and second measuring elements and a mechanism for determining the curvature or bending of the flexible element, which occurs by pivoting of the first measuring element relative to the second measuring element, as a measure of relative displacement in the material by the first and second measuring elements relative to each other, wherein the mechanism for determining the curvature or bending of the flexible element comprises a wire strain gage, fitted on at least one side of the flexible element, and a convertor for converting elongations of the flexible element into at least one of proportional electric current and voltage signals and wherein the flexible element has a substantially mirror-symmetrical cross section and a wire strain gage disposed on both an outer and inner body surface of said flexible element.

5,337,614
FIXTURE FOR TESTING MOUNTING INTEGRITY OF HEAT SINKS ON SEMICONDUCTOR PACKAGES, AND METHOD OF TESTING

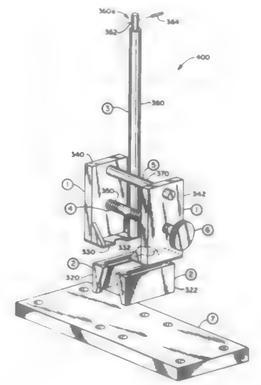
Xin H. Jiang, Newark, and Scott Kirkman, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Aug. 20, 1992, Ser. No. 935,692
Int. Cl.[5] G01N *3/10*
U.S. Cl. 73—827 **11 Claims**

7. Fixture for testing the mounting integrity of a heat sink adhered to a semiconductor package, comprising:

two braces, each having a flat surface for resting atop a top surface of a semiconductor package body;

two flat, plate-like jaws, each having a semicircular cutout extending from an inner edge thereof, for fitting underneath a fin of a heat sink adhered to the top surface of the semiconductor package body; and

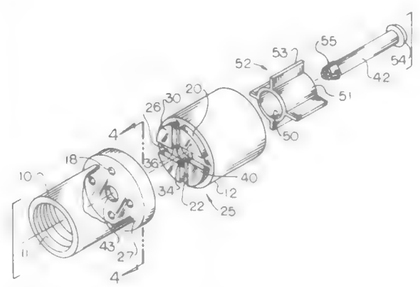


means for moving the jaws away from braces via a force that is measured for testing the mounting integrity of the heat sink to the package.

5,337,615
FLOW METER

Jack Goss, 1717 Winfield Rd. South, Clearwater, Fla. 34616

Filed Oct. 15, 1993, Ser. No. 136,465
Int. Cl.[5] G01F *1/06*
U.S. Cl. 73—861.33 **16 Claims**



1. In a volume or rate of flow measurement apparatus having a housing wherein a swirl imparted to a fluid by a jet rotates a rotor about a shaft, said rotor having an axial lumen therethrough, said shaft disposed in said lumen, said shaft having an upstream end and a downstream end, an improvement comprising

a cylindrical volute chamber formed in said housing, a diameter of said volute chamber smaller than an outer diameter of said rotor, said jet having an outlet in a wall of said volute chamber,

a cylindrical rotor chamber formed in said housing, said rotor chamber coaxial with said volute chamber, said rotor chamber downstream of said volute chamber, and

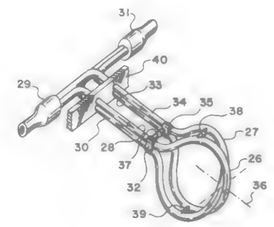
a thrust reverser downstream of said rotor, said thrust reverser coaxial with said rotor chamber, said thrust reverser supported by said shaft,

wherein said first end of said shaft is attached to said housing and said second end of said shaft is not attached to said housing.

5,337,616
MASS FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 643,420, Jan. 22, 1991, Ser. No. 648,121, Jan. 30, 1991, Pat. No. 5,184,518, and Ser. No. 693,929, Apr. 29, 1991, Pat. No. 5,241,865, which is a continuation-in-part of Ser. No. 617,492, Nov. 21, 1990, abandoned. This application Feb. 8, 1993, Ser. No. 14,802
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.38 **20 Claims**



1. An apparatus for measuring mass flow rate of media comprising in combination:

a) a first conduit with two opposite extremities secured to a supporting structure including two end sections respectively extending from the two secured opposite extremities of the first conduit and a curved midsection connecting the two end sections of the first conduit to one another;

b) a second conduit with two opposite extremities secured to a supporting structure including two end sections respectively extending from the two secured opposite extremities of the second conduit and a curved midsection connecting the two end sections of the second conduit to one another, wherein a first plane defined by the center line of the curved midsection of the first conduit and a second plane defined by the center line of the curved midsection of the second conduit intersects one another, and a first of the two end sections of the first conduit and a first of the two end sections of the second conduit are disposed adjacent to one another and tied together by a first mechanical coupling means and the second of the two end sections of the first conduit and the second of the two end sections of the second conduit are disposed adjacent to one another and tied together by a second mechanical coupling means;

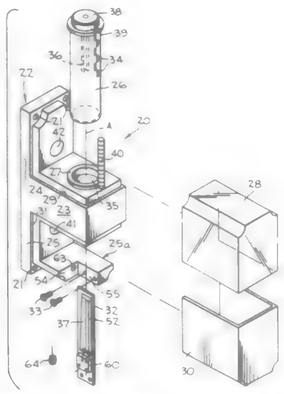
c) means for exerting a vibratory force to the combination of the first end sections of the first and second conduits tied together by the first mechanical coupling means and to the combination of the second end sections of the first and second conduits tied together by the second mechanical coupling means in an action-reaction relationship therebetween, wherein the vibratory force generates a relative flexural vibration between a first half of the combination of the first and second conduits tied together by the first mechanical coupling means and a second half of the combination of the first and second conduits tied together by the second mechanical coupling means; and

d) means for detecting a difference between the relative flexural vibration between a first half of the curved midsection of the first conduit adjacent to the first end section of the first conduit and a second half of the curved midsection of the second conduit adjacent to the second end section of the second conduit, and the relative flexural vibration between a second half Of the curved midsection of the first conduit adjacent to the second end section of the first conduit and a first half of the curved midsection of the second conduit adjacent to the first end section of the second conduit, as a measure of mass flow rate of

VOL 1165 ISS 3 AG 16 1994 UMI

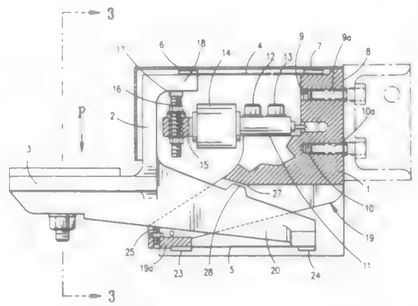
media moving through at least one of the first and second conduits.

5,337,617
GAS FLOW METER
John Dimeff, 5346 Greenside Dr., San Jose, Calif. 95127
Filed Apr. 8, 1993, Ser. No. 44,021
Int. Cl.[5] G01F *1/24*
U.S. Cl. 73—861.54 **16 Claims**



1. A gas flow meter comprising a base, a pair of telescoping coaxial cylinders having a common vertical axis, one of said cylinders being axially movable with respect to the other cylinder and said other cylinder being fixed with respect to said base, said movable cylinder having a cap at its upper end, means for mounting the cylinders in close sliding engagement so that gas flow may not pass therebetween, said base being arranged to support the movable cylinder in its lowermost position, means for directing gas to the inner of the cylinders, one of the cylinders having a vertically extending opening in it side wall to allow an increasing flow of gas to pass therethrough as the movable cylinder is lifted by the differential pressure of the gas flow through the meter, means defining an outlet for directing gas flow out of the meter when it has passed through said opening, a variable sensor element having a fixed portion thereof mounted to said base, said sensor element including a moveable member connected to the cap of said movable cylinder and extending downwardly therefrom along the vertical axis of and within the cylinder, said movable member of the sensor element being arranged to move axially along said fixed portion of the sensor element, electrical circuitry connected to said sensor element to produce an output signal directly proportional to the amount of lift of the movable cylinder and the gas flow through the meter, an indicator element mounted to the top of the movable cylinder, and a linear scale fixed with respect to the base and extending upwardly from the indicator element when the indicator element is in its lowermost position and directly adjacent to the indicator element and parallel to the cylinder axis to provide a visual indication of gas flow through the meter.

5,337,618
LOAD SENSING ASSEMBLY
Vincenzo Porcari, and Gianluigi Riva, both of Milan, Italy, assignors to Ramsey Technology, Inc., Minneapolis, Minn.
Filed Apr. 12, 1991, Ser. No. 684,615
Claims priority, application Italy, Apr. 20, 1990, 20090-A/90
Int. Cl.[5] G01L *1/04*
U.S. Cl. 73—862.634 **9 Claims**



1. A load sensing assembly adapted to measure the normal force component of loads which act with normal, as well as longitudinal and transverse directional force components relative to the load sensing assembly by resolving such force components solely into a normal force component representative of the load, said load sensing assembly comprising:

A) a first support member having a generally inclined leg portion extending in a first direction, with said first support member fixedly mounted against movement and thereby constituting a fixed support member;

B) a second support member moveably mounted with respect to the first support member and constituting a moveable support member having a generally inclined leg portion extending from a position above the lower end of the fixed support member downward past the fixed support member in a second direction generally opposite to said first direction, and a load support portion on said leg portion for supporting the load to be measured;

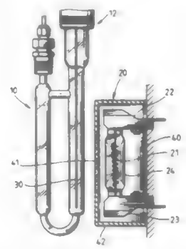
C) a third member for interconnecting the fixed and moveable support members toward first ends thereof, said third member being formed of a suitable elastically deformable material and being positioned relative to the fixed and moveable support members for transmitting and carrying only tensile force and no other types of force;

D) a fourth member interconnects the fixed and moveable support members toward second ends thereof opposite to the first ends, said fourth member being formed of elastically deformable material and being positioned relative to the fixed and moveable support members for transmitting and carrying only tensile force and no other types of forces;

E) the fixed and moveable support members, and the third and fourth members together defining a quadrilateral load cell support structure for supporting the load to be measured, and flexing under the load thereby transmitting only normal force component applied by the load to the load cell structure and no other forces; and

F) a load cell associated with the moveable support member and moveable therewith under the normal force component applied by the load to produce a signal representative of the magnitude of said normal force component.

5,337,619
RADIANT ENERGY SAMPLE HEATING AND TEMPERATURE CONTROL
Bruce J. Hodgins, College Station, and Robert L. Roth, Bryan, both of Tex., assignors to O.I. Corporation, College Station, Tex.
Filed Mar. 6, 1992, Ser. No. 847,379
Int. Cl.[5] G05D *23/00;* **G01N** *25/14, 30/12, 30/54*
U.S. Cl. 73—863.11 **12 Claims**



1. A system for heating a water sample comprising:

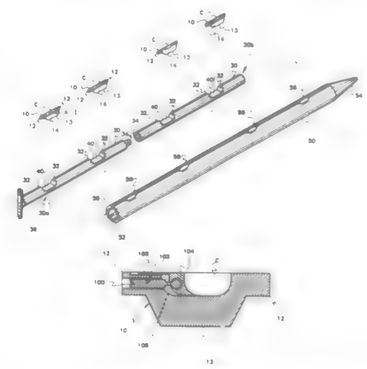
a. a sparge vessel at least five centimeters deep for holding the water sample in a column;

b. a radiant energy heat source spaced from the sparge vessel;

c. thermocouple means functionally connected between the water sample in the column and the radiant energy heat source; and

d. switch means for turning off the radiant energy heat source when the water sample reaches a desired temperature between 50 degrees C. and 85 degrees C.

5,337,520
SAMPLING TOOL
Sanyasi R. Kalidini, 8303 Hana Rd., Edison, N.J. 08817
Filed Jun. 2, 1993, Ser. No. 70,281
Int. Cl.[5] G01N *1/12*
U.S. Cl. 73—864.64 **9 Claims**



1. A sampling device for obtaining precise volumetric samples from a powder blend comprising:

a plurality of sampling dies, each said die including means for defining a cavity therein, each cavity having a predetermined volume, wherein at least one cavity includes adjustment means to vary the volume of said cavity;

a plurality of mutually engageable die receiving means for snugly receiving at least one of said sampling dies and for holding said dies in a fixed relationship, said die receiving means further including a manipulable die displacement means; and

a sample access means having an inner wall and an outer sample access area, said access means dimensioned and configured to receive said die receiving means such that said receiving means can be manipulated by said displacement means into a first and a second position, said access means including a travel stop for retaining said die receiving means in a predetermined relationship relative to said access means, there further being wall means to retain said sampling dies, such that in said first position said inner wall retains and encloses said cavity so that no communication exists between said cavities and said outer sample access area, and means to define a plurality of apertures such that said apertures are not in alignment with said sampling dies, and that in said second position, said inner wall retains said sampling dies so there is communication between said cavities and said outer sample access area through said apertures; whereby

said die receiving means and said dies are held in said predetermined relationship within said sample access means, and after insertion of said device in a powder blend for sampling, said displacement means is manipulated to bring said cavities from said first enclosed position into in said second open position such that a sample of a specific predetermined volume enters each of said cavities, and thereafter, said displacement means are further manipulated to bring said cavities into said first enclosed configuration, for removal from the sample and testing of the obtained, predetermined volumes of samples.

6. A sampling device for obtaining precise volumetric samples from a powder blend comprising:

a plurality of sampling dies, each said die including means for defining a cavity therein, each cavity having a predetermined volume;

a plurality of mutually engageable die receiving means for snugly receiving at least one of said sampling dies said dies in a fixed relationship, wherein said plurality of die receiving means comprise a plurality of generally cylindrical members having cutout portions therein, said cutout portions correspondingly configured with said dies such that said dies are received and secured therein, said die receiving means further including a manipulable die displacement means; and

a sample access means having an inner wall and an outer sample access area, said access means dimensioned and configured to receive said die receiving means such that said receiving means can be manipulated by said displacement means into a first and a second position, said access means including a travel stop for retaining said die receiving means in a predetermined relationship relative to said access means, there further being wall means to retain said sampling dies, such that in said first position said inner wall retains and encloses said cavity so that no communication exists between said cavities and said outer sample access area, and means to define a plurality of apertures such that said apertures are not in alignment with said sampling dies, and that in said second position, said inner wall retains said sampling dies so there is communication between said cavities and said outer sample access area through said apertures; whereby

said die receiving means and said dies are held in said predetermined relationship within said sample access means, and after insertion of said device into a powder blend for sampling, said displacement means is manipulated to bring said cavities from said first enclosed position into said second open position such that a sample of a specific, predetermined volume enters each of said cavities, and thereafter, said displacement means are further manipulated to bring said cavities into said first enclosed configuration, for removal from the sample and testing of the obtained, predetermined volumes of samples.

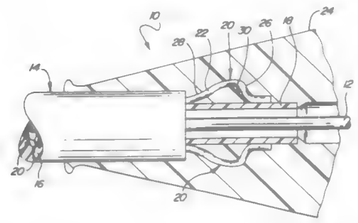
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,621

CABLE END FITTING RETAINER AND METHOD FOR MAKING SAME

David T. Spease, Van Wert, Ohio, assignor to Teleflex Incorporated, Limerick, Pa.

Filed Nov. 18, 1993, Ser. No. 154,288
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—502.4 6 Claims



1. A motion transmitting remote control cable assembly (10) for transmitting motion in a curved path comprising:
a flexible motion transmitting core element (12);
a conduit (14) slideably supporting said core element (12), said conduit including:
a jacket (16) extending between first and second ends defining an inner bore and an outer surface;
a liner (18) lining said inner bore, said liner including a projecting end projecting beyond at least one of said ends of said jacket (16);
at least one wire (20) extending axially through said conduit (14) outside said liner (18), said wire including a projecting end projecting together with said liner beyond said one end of said jacket (16);
said projecting end of said wire (20) including a diverging portion (22) diverging away from said liner (18);
an end fitting (24) disposed over said projecting end of said wire (20), said projecting end of said liner (18) and said jacket (16);
characterized by said projecting end of said wire (20) including a converging portion (26) extending from said diverging portion (22) back toward said liner (18), said converging portion (26) and said diverging portion (22) together defining an arch-shaped radial protrusion (22,26) protruding from said liner whereby said projecting end of said wire (20) resists axial movement of said conduit (14) with respect to said end fitting (24).

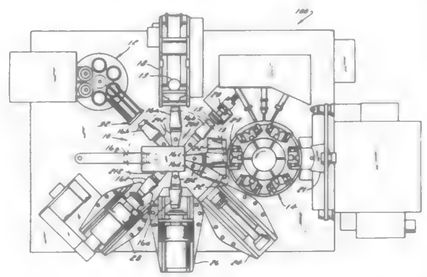
5,337,622

MULTI-MANDREL PROGRAMMABLE TURRET APPARATUS AND METHOD OF EFFECTING TIME MODULATION THEREOF

Daryl R. Konzal, Colgate, Wis., assignor to Paper Machinery Corporation, Milwaukee, Wis.

Continuation of Ser. No. 255,972, Oct. 11, 1988, abandoned.
This application Jun. 13, 1991, Ser. No. 714,972
Int. Cl.[5] B23B *29/24*
U.S. Cl. 74—813 R 38 Claims

1. An indexing assembly including a turret, at least one mandrel in operative association therewith, means for rotating said turret about an axis of rotation at a continuous angular velocity, and means for imparting programmed, intermittent periods of angular acceleration, angular deceleration, and



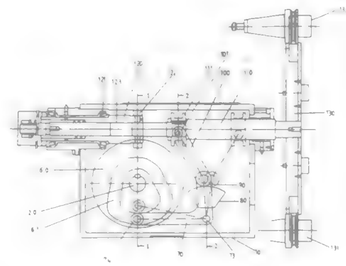
absolute dwell to said mandrel with respect to a fixed point in space proximate said assembly.

5,337,623

AUTOMATIC TOOL SWITCHING MECHANISM

Kuo-Jao Huang; Chung-Ming Lee; Chi-An Li, and Yeong-Kuang Liu, all of Hsinchu Hsien, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 15, 1993, Ser. No. 121,766
Int. Cl.[5] B23B *29/24;* F16H *25/08, 53/00*
U.S. Cl. 74—813 R 4 Claims



1. An automatic tool change mechanism comprising:
a case;
a cam shaft mounted on said case by means of a bearing with one end of said cam shaft being connected with a power source by means of a sprocket and a chain;
a slotted cam with a cam-profile groove provided thereon and fastened by means of a key with said cam shaft;
an L-shaped rod provided at one end thereof with a driven roller fastened thereto and dimensioned to fit into and move along a course of cam-profile groove of said slotted cam, said L-shaped rod being supported on a shaft by means of a bearing;
a sector gear mounted securely on said case;
a planetary gear engaging said sector gear and having a shaft fastened with said L-shaped rod; an output pitman having one end that is fastened with said planetary gear;
a tool change shaft provided at an appropriate position thereof with a shift ring fastened thereto by means of a key;
a roller gear cam fastened with said cam shaft and provided thereon with a plurality of spiral ribs;
a turret normal to said cam shaft and having a plurality of driven rollers which are arranged equidistantly and in a radial pattern and which can cooperate with said spiral ribs of said roller gear cam, said turret being fastened with said tool change shaft by means of a spline; and

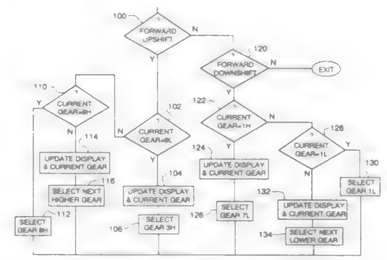
a tool switching arm fastened centrally with said tool change shaft such that said tool change arm is normal to said tool change shaft, said tool change area being provided at both ends thereof with a tool;
wherein said tool switching shaft is caused to make a rotation by a reverse rotation of said cam shaft which in turn drives said roller gear cam to rotate so as to cause said spiral ribs of said roller gear cam to cooperate with said driven rollers of said turret; wherein said L-shaped rod is caused to swing at a precise angle by means of said driven roller which is driven to move along said course of said cam-profile groove of said slotted cam actuated to turn by said cam shaft; and wherein said planetary gear is actuated to turn by said L-shaped rod so as to cause said output pitman to swing at a great angle, thereby causing said tool change shaft to engage in a linear motion of a long stroke.

5,337,624

POWERSHIFT TRANSMISSION WITH OVERLAPPING RANGES OF RATIOS

Garth H. Bulgrien, Ephrata, and Charles A. Hansen, Lancaster, both of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Dec. 8, 1992, Ser. No. 987,184
Int. Cl.[5] B60K *41/08*
U.S. Cl. 74—335 12 Claims



1. A powershift transmission having a rotatable input shaft, a rotatable output shaft, a plurality of clutch sections each including a plurality of clutches and gears, said clutches being energizable to selectively contact said input shaft in driving relationship with said output shaft at one of a plurality of gear ratios, said plurality of clutches of one of said clutch sections including first and second clutches which, when energized, limit the gear ratio to a lower or a higher range, respectively, said transmission being characterized in that said lower and higher ranges of ratios overlap with the two lowest gear ratios in said higher range being substantially equal to the two highest gear ratios of said lower range.

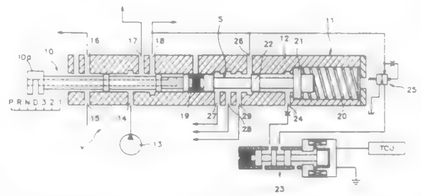
5,337,625

SHIFT VALVE OF A HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Jaedeog Jang, Seoul, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 11, 1992, Ser. No. 989,523
Claims priority, application Rep. of Korea, Dec. 30, 1991, 91-25202
Int. Cl.[5] B60K *20/00;* F16H *61/12*
U.S. Cl. 74—335 7 Claims

1. A shift valve of a hydraulic control system for an automatic transmission system, said shift valve comprising:
a shift control valve;
a manual valve linearly arranged with said shift control valve;
a housing substantially surrounding said shift control valve and said manual valve;
a shift lever connected to an end of said manual valve and exterior to said housing;
a valve spool provided in connection with said shift control valve, said valve spool being movably disposed in the housing against said shift lever;
a plurality of ports formed within said housing at a manual valve side thereof for supplying or being supplied with a hydraulic pressure in response to a range of movement of said shift lever;
three ports formed within said housing at a valve spool side thereof to e selectively opened and closed by movement of said valve spool; and
a single port formed within said housing at the valve spool side thereof;
a linear solenoid valve for supplying a detected-pressure to said single port;



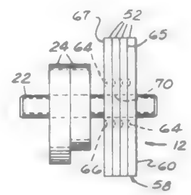
a transmission control unit TCU for sending a signal to said linear solenoid valve, said signal corresponding to the detected pressure;
a first spring elastically disposed between said manual valve and said valve spool; and
a second spring elastically disposed between said valve spool and an inner end of said housing and having a larger modulus of elasticity than that of said first spring;
said valve spool being moved by the detected-pressure through said single port to selectively close or open said three ports, thereby enabling an automatic transmission at a "D" range, and being moved by being pushed by the shift lever which is manually shifted from a "D" position to a "1" position when said transmission control unit TCU is out of order, such that said plurality of ports are selectively closed or opened thereby enabling a manual transmission.

5,337,626

LAMINATED GEAR AND METHOD OF FORMING A LAMINATED GEAR

Robert G. Everts, Chandler, and Harry G. Rickard, Phoenix, both of Ariz., assignors to Ryobi Outdoor Products, Inc., Chandler, Ariz.

Filed Feb. 23, 1993, Ser. No. 21,495
Int. Cl.[5] F16H *55/12*
U.S. Cl. 74—445 4 Claims



1. A laminated gear for installation upon a central shaft, the laminated gear comprising:
a plurality of laminates abutting each other in a stacked relationship, each laminate having:

VOL 1165 ISS 3 AG 16 1994 UMI

a first planar side, a second planar side, and a circumferential edge,

a projection on the first side of the laminate extending above the plane defined by the first side,

a corresponding recess on the second side of the laminate depressed below the plane defined by the second side,

a plurality of teeth formed in the circumferential edge of the laminate, each tooth having a relatively smooth burnished face region for cooperation with a mating gear, the burnished face being formed by progressive stamping so as to be perpendicular to the planar sides of the laminate, and

a central hole therethrough; wherein the laminates are rotationally and axially held relative to each other in the stacked relationship by frictional nesting of the projections and corresponding recesses, aligning the central holes in the laminates to form a bore adapted to be sufficiently press fit onto the central shaft to maintain the laminated gear rotationally and axially secured thereto; and

a cap laminate having:

a first planar side, a second planar side, and a circumferential edge,

a throughhole extending between the first and second sides,

a plurality of teeth formed in the circumferential edge of the laminate, each tooth having a relatively smooth burnished face region for cooperation with a mating gear, the burnished face being formed by progressive stamping so as to be perpendicular to the planar sides of the cap laminate, and

a central hole therethrough; wherein the cap laminate is rotationally and axially held relative to the first planar side of an uppermost laminate of the plurality of laminates by frictional nesting of the cap laminate throughhole with the corresponding projection of the uppermost laminate.

5,337,627

BALL SCREW

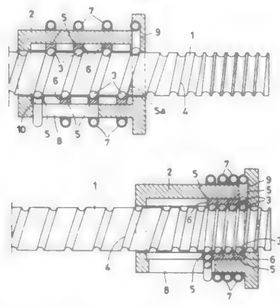
Nobuyuki Nakamura, Sakakimachi, Japan, assignor to Nissei Plastic Industrial Co., Ltd., Japan

Filed Dec. 28, 1992, Ser. No. 997,494

Claims priority, application Japan, Dec. 27, 1991, 3-359255; Mar. 18, 1992, 4-091483

Int. Cl.[5] **F16H** *25/22*

U.S. Cl. 74—459 **12 Claims**



1. A ball screw comprising:

screw shaft means having thereon a series of alternate threads and grooves which change in pitch over the length of the shaft means;

a multiplicity of balls received in the grooves on the screw shaft means; nut means surrounding the balls in the grooves, and through which the screw shaft means is screwed;

flexible ball receiver means provided within the nut for allowing the locations of the balls along the nut to move axially along the nut and to move along with the receiver means depending on a change in the pitch of the threads on the screw shaft means which are then surrounded by the nut means; and

return guide means provided outside the nut means and having a portion extending through the nut means for returning the balls therethrough to the grooves on the screw shaft means.

5,337,628

ELECTRONICALLY CONTROLLED CONTINUOUSLY VARIABLE TRANSMISSION

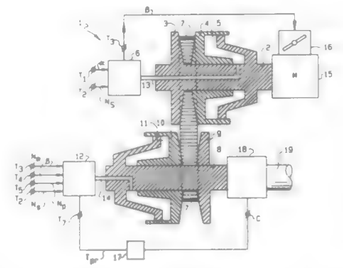
Emery F. M. Hendriks, Heeze; Wilhelmus W. C. M. Roovers, Prinsenbeek, and Bastiaan A. d'Herripon, Tilburg, all of Netherlands, assignors to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Mar. 28, 1991, Ser. No. 676,623

Claims priority, application Netherlands, Apr. 12, 1990, 9000860

Int. Cl.[5] **F16H** *61/00*

U.S. Cl. 477—48 **27 Claims**



1. In a continuously variable transmission for transmitting the power of an internal combustion engine having a throttle valve and an accelerator pedal, the transmission having a primary pulley including a shiftable primary disk and a first moving means for shifting the primary disk, a secondary pulley including a shiftable secondary disk and a second moving means for shifting the secondary disk, and a belt engaged with both pulleys, the improvement comprising:

first selection means for operating said transmission in a first performance mode, said first selection means being adapted to operate said first moving means to obtain a primary pulley radius associated with a desired primary shaft rpm value in accordance with said first performance mode;

first fluid pressure control means comprising a first chamber, a first valve body axially movable within said first chamber, a first fluid passageway communicating with said first chamber for permitting introduction of fluid thereinto from a fluid source, another first fluid passageway communicating with said first chamber for permitting fluid therein to exit therefrom, and a first coil having a first movable core which is connected to said first valve body, wherein the position of said first valve body is changed by applying current to the coil to control the pressure level of fluid in said another first passageway to control said first moving means; and

first standby means operatively connected between said another first passageway and said first moving means for controlling the fluid pressure in said another first passageway in the event of a power failure to retain pressure with only a gradual pressure loss.

5,337,629

CONTINUOUSLY VARIABLE TRANSMISSION WITH CORRECTED DIFFERENTIAL PRESSURE IN A LOW SPEED MODE

Yasuo Kita, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

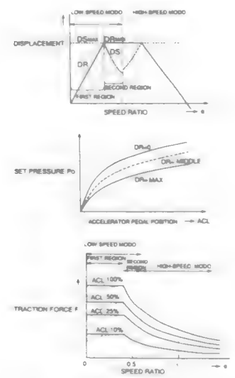
PCT No. PCT/JP91/01624, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO92/09833, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 27, 1991, Ser. No. 915,825

Claims priority, application Japan, Nov. 30, 1990, 2-338924; Nov. 30, 1990, 2-338925

Int. Cl.[5] **F16H** *47/04, 61/42*

U.S. Cl. 477—52 **19 Claims**



1. A continuously variable transmission for use in a vehicle comprising a variable speed hydraulic transmitting system formed between a pair of hydraulic pump/motors at least one of which at an input side is of a variable displacement type and so constructed that with a displacement of said input hydraulic pump/motor acting as a pump being kept zero, a speed ratio of an output speed to an input speed can be rendered nearly zero; said transmission being characterized by the provision of: displacement changing means for changing displacement of said hydraulic pump/motors; detecting means for detecting an effective differential pressure in said hydraulic transmitting system: accelerator pedal position detecting means; and displacement controlling means for performing negative feedback control on said displacement changing means so that said effective differential pressure detected by said effective differential pressure detecting means is kept at a set pressure generally proportional to an accelerator pedal position detected by said accelerator pedal position detecting means with initial movement of said pedal to accelerate said vehicle.

5,337,630

VEHICLE AUTOMATIC TRANSMISSION CONTROL SYSTEM

Ichiro Sakai; Shinichi Sakaguchi, and Takashi Haga, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 940,621

Claims priority, application Japan, Sep. 12, 1991, 3-260953

Int. Cl.[5] **F16H** *61/02*

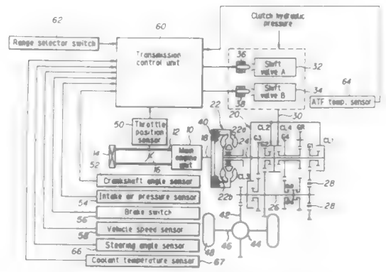
U.S. Cl. 477—131 **6 Claims**

1. A system for controlling a gear ratio of a multi-step geared or continuously variable automatic transmission of a vehicle, including:

first means for determining parameters at least indicative of an engine load and a vehicle speed;

second means for establishing a membership function of a fuzzy set for each of the parameters determined by said first means of fuzzy production rules each defining respective gear ratio shifting conclusions;

third means for carrying out a fuzzy reasoning based on the fuzzy production rules to determine said respective gear ratio shifting conclusions and to determine a gear ratio to be shifted to; and



actuator means for driving a gear ratio shift control mechanism in response to the determined gear ratio;

wherein the improvement comprises:

said first means further determines parameters each indicative of a temperature of the transmission and an engine coolant temperature.

5,337,631

METHOD OF PRODUCING TOOLS AND DIES

Alfred R. E. Singer, Swansea, Wales; Joseph McGeough, Edinburgh, Scotland, and Allen D. Roche, Aberdare, Wales, assignors to British Technology Group Limited, London, England

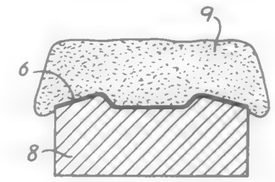
PCT No. PCT/GB91/01288, § 371 Date Mar. 31, 1993, § 102(e) Date Mar. 31, 1993, PCT Pub. No. WO92/02657, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 30, 1991, Ser. No. 965,283

Claims priority, application United Kingdom, Aug. 2, 1990, 9016985

Int. Cl.[5] **B21K** *5/20;* **C23C** *4/08, 4/18*

U.S. Cl. 76—107.1 **12 Claims**



1. A method of producing a tool or die from a pattern, comprising making an electroform from the pattern and filling the electroform to make the tool or die, characterised in that the electroform is filled by spraying, onto it, molten atomised metal which is hot worked or densified while it is being deposited.

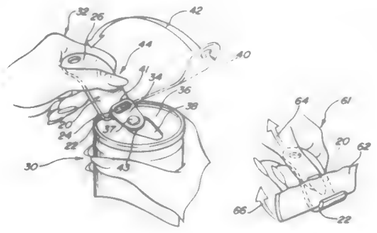
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,632

COMBINATION BEVERAGE CONTAINER AND DOOR OPENER

Donald L. Thomas, St. Clair Shores, Mich., and Jane Ryan, New Lebanon, N.Y., assignors to Nailco, Inc., Livonia, Mich.

Filed Jun. 28, 1993, Ser. No. 83,917
Int. Cl.[5] B67B *7/40*; B25F *1/00*; B25B *9/00*
U.S. Cl. 81—3.55 **9 Claims**



1. An opener comprising:

a handle portion for grasping said opener, and having an essentially flat rectangular face with a length, width and thickness, said flat rectangular face being longer than it is wide and wider than it is thick, and a curved tail end of a sufficient length and curvature to enable a user of said opener to open an item with a single continuous arcuate motion of said opener, said curved tail end extending from one end of said handle; and

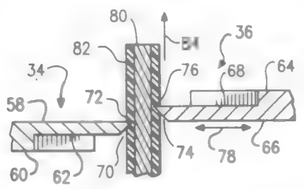
a hook extending from a second end of said handle, an edge of said hook being defined at the end of said hook, remote from said handle, whereby said hook edge may be positioned under an item to be opened and said opener may be pulled in said single continuous arcuate motion generally away from the item.

5,337,633

ARRANGEMENT AND METHOD OF USE OF COOPERATIVE BLADES FOR SEVERING COATING LAYERS ON FILAMENTARY MEMBERS

Thomas S. Carpenter, and David D. Hand, both of Cazenovia, N.Y., assignors to Carpenter Manufacturing Co., Inc., Manlius, N.Y.

Filed Sep. 1, 1993, Ser. No. 115,875
Int. Cl.[5] H02G *1/12*; H01R *43/28*
U.S. Cl. 81—9.51 **36 Claims**



1. In apparatus for severing a layer of material covering a filamentary member and moving a severed portion of said material axially upon said filamentary member by means of a pair of blades arranged in overlapping relation and having respective cutting edges relatively moveable in a linear direction perpendicular to the axis of said filamentary member positioned between said edges, each of said edges being formed at the juncture of a forwardly and a rearwardly disposed, planar surface of each of said blades adjacent cutting edges, the improvement wherein:

said forwardly disposed surface of each of said blades is in a plane at the same angle to said axis, and said cutting edges are disposed in planes perpendicular to said axis which are longitudinally spaced along said axis.

5,337,634

LATERALLY ADJUSTABLE SOCKET WITH MEANS FOR PROVIDING VISIBLE INDICATION OF SOCKET OPERATING POSITION

Thomas Carnesi, 1410 Brett Pl., #140, San Pedro, Calif. 90732

Continuation of Ser. No. 843,981, Apr. 30, 1992, abandoned.
This application Mar. 30, 1993, Ser. No. 40,350
Int. Cl.[5] B25B *13/18*
U.S. Cl. 81—128 **12 Claims**



1. An adjustable socket having a longitudinal axis comprising:

a plurality of jaw members movably positioned within slots formed in a first member; each fixed position of the jaw members corresponding to a selected socket size opening;

a second member having an opening therein for receiving said first member, said second member having a plurality of vertically extending members which engage an adjacent one of said jaw members; said second member having a follower arm member associated therewith;

a third member having a plurality of indicia formed thereon corresponding to the size of the adjusted socket opening; said third member having a plurality of openings adjacent said indicia markings; and

a fourth member for receiving said third member, the inner surface of said fourth member having a spiral groove into which the follower arm of said second member travels, said fourth member having an opening to allow a user to view selected ones of said indicia as the opening of said socket is adjusted.

5,337,635

SCREWDRIVING APPARATUS FOR USE IN DRIVING SCREWS JOINED TOGETHER IN A STRIP

G. Lyle Habermehl, 7528 Hickory Hills Ct., Whites Creek, Tenn. 37189

Filed Feb. 17, 1993, Ser. No. 18,897
Int. Cl.[5] B25B *23/06*
U.S. Cl. 81—434 **15 Claims**

1. A screwdriver assembly to drive screws collated together in a strip spaced in parallel relation from each other, the screwdriver comprising:

body means,

guide tube means removably fixedly secured to the body means, the guide tube means adapted to receive first correspondingly sized screws having a head with a first diameter,

the guide tube means having a cylindrical guideway therethrough of an inner diameter marginally greater than the first diameter,

the guide tube means having a substantially cylindrical sidewall about the guideway bordering on the guideway,

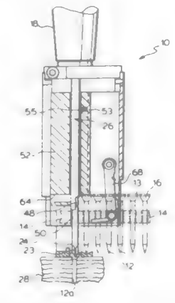
elongate driver shaft means having at a forward end bit means and including a cylindrical locating section, the shaft means complimentarily sized to the guide tube means by having a diameter of the cylindrical locating section approximately equal the first diameter,

the shaft means co-axially disposed within the guideway for relative rotation therein and for axial reciprocal sliding relative to the guideway,

the sidewall having a rear shaft guiding portion and a forward screw locating portion,

in the rear portion, the sidewall encircling the locating section of the shaft means 360° to coaxially locate the shaft means within the guideway,

in the forward portion, the sidewall opening radially into a screw access opening having a radial extent of not less than about 180°,



the forward Portion of the sidewall having an engagement section, wherein the sidewall extends about 180° about the shaft means and sufficiently engages the head of the screw to coaxially locate the head of the screw within the guideway,

screw feed means to successively, incrementally advance screws collated in a strip spaced in parallel relation from each other through the screw access opening radially into the guideway wherein the sidewall engages the head of the correspondingly sized screw to axially locate the head of the screw coaxially within the guideway in axial alignment with the bit means,

the shaft means reciprocally movable axially throughout the length of the guideway to engage the screw and drive it axially from the guideway into a work-piece,

the complimentarily sized guide tube means and shaft means being removable for replacement with other complimentarily sized guide tube means and shaft means adapted for engaging and driving in the same manner correspondingly sized screws of a second diameter different than the first diameter.

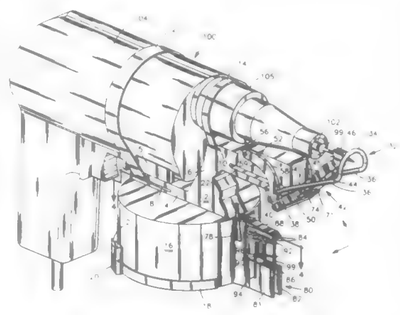
5,337,636

AUTOMATIC SCREW FEEDER

Reeford P. Shea, 1021 Goldenrod Ave., Corona del Mar, Calif. 92625

Filed Apr. 13, 1993, Ser. No. 47,645
Int. Cl.[5] B25B *23/06*
U.S. Cl. 81—435 **21 Claims**

1. Apparatus coupled to a power tool to automatically feed fasteners to said tool for installation, said apparatus comprising means by which to store a supply of fasteners and a swing arm assembly rotating between a feeding position at which to remove a fastener from said supply means to an installing position at which the fastener is installed by said tool, said swing arm assembly having means by which to grasp and retain the fastener removed from said supply means and at least one swing arm to carry said fastener grasping and retaining means, said swing arm having first and second cam surfaces located at respective first and opposite sides thereof, said apparatus further comprising cam actuating means to engage said first cam surface at the first side of said swing arm to cause said swing arm assembly to rotate from said feeding position to said installing position or to engage said second cam surface at the opposite side of said swing arm to cause said swing arm assembly to rotate from said installing position to said feeding position.

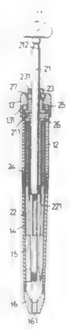


5,337,637

SCREWDRIVER WITH REPLACEABLE DRIVER BITS

Chen L. Bih-Lien, No. 14, Alley 86, Lane 412, Chen-Hsing Road, Taichung, Taiwan

Filed Jul. 14, 1993, Ser. No. 91,353
Int. Cl.[5] B25B *23/00*; B25G *1/08*
U.S. Cl. 81—439 **15 Claims**



1. A screwdriver with replaceable driver bits comprising:

a hollow cylinder having a plurality of guiding slots therein;

a plurality of connecting pieces having respective ends connected to respective driver bits and being slidably received in said guiding slots;

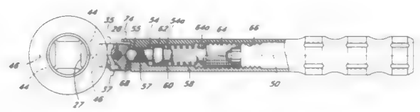
a hollow guiding cylinder having a plurality of sliding slots therein and having one end connected to said hollow cylinder with said sliding slots in the guiding cylinder. corresponding to said guiding slots in said hollow cylinder for receiving said driver bits;

a positioning head connected to said hollow guiding cylinder at the other end thereof, said positioning head having

VOL 1165 ISS 3 AG 16 1994 UMI

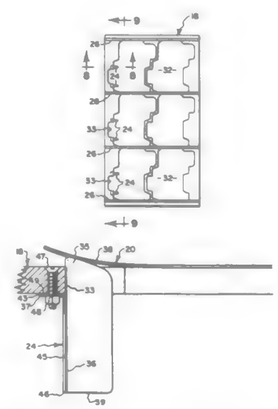
an exit end with a hole thereon for travel of a selected driver bit therethrough;
a hollow sealing cover connected to the other end of said hollow cylinder;
an actuating rod slidably mounted within said sealing cover, and a peg provided at the center of said actuating rod; and
an engaging piece movably engaged externally on said sealing cover;
whereby pressing said actuating rod downwardly causes said peg to contact a selected said connecting piece causing the driver bit corresponding to the selected connected piece to travel through the hole in said positioning head and protrude out of said positioning head.

5,337,638
TORQUE CONTROL RATCHET WRENCH
Ronald G. Coss, Newport Beach, and Donald J. Hogan, Carlsbad, both of Calif., assignors to Micro Motors, Inc., Santa Ana, Calif.
Filed Feb. 11, 1993, Ser. No. 16,765
Int. Cl.[5] B25B *23/159*
U.S. Cl. 81—483 **18 Claims**



1. A torque-limiting, one-way tool for installing dental implants, or the like, comprising:
a wrench head for rotating a tool, nut, screw or other element in one direction;
a stub arm rigidly attached to and extending generally radially outwardly from said head;
a tubular handle pivotally connected to said arm;
a connection on a radially outer end of said arm and a radially inner end of said handle to hold said handle generally radially aligned in driving relation with said arm, said connection being constructed to allow said handle to pivot on said arm around a pivotal axis from the radially aligned position to a pivoted position upon application of a predetermined torque on said handle in said one direction, said connection including an indent on said arm radially outer end, and a ball positioned in an end face of the radially inner end of said handle, with a spring in said handle urging said ball into engagement with said indent, said ball being adapted to move out of engagement with said indent when said handle pivots with respect to said arm;
said arm and said handle having portions that interfere to limit pivoting of said handle in said one direction after the handle has pivoted through a substantial angle sufficient to clearly tell the operator of the tool that the handle has so pivoted, and said arm and said handle having interfering portions that prevent any pivoting of the handle with respect to said arm in the opposite direction; and
said arm includes a surface adjacent said indent in said one direction, said surface being oriented so that a line of force by said spring through said ball against said surface produces a moment for holding said handle in said pivoted position.

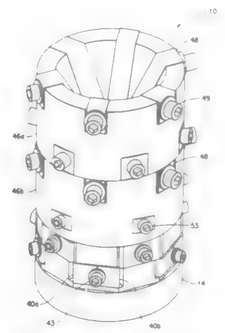
5,337,639
OUTFEED LIFTER RAMP FOR BLANKING BOXES AND OTHER DIE-CUT PAPER PRODUCTS
Richard E. Morrison, Amherst, N.Y., assignor to Die-X Tooling Systems, Amherst, N.Y.
Filed Jun. 16, 1992, Ser. No. 899,427
Int. Cl.[5] B26D *7/18*
U.S. Cl. 83—111 **1 Claim**



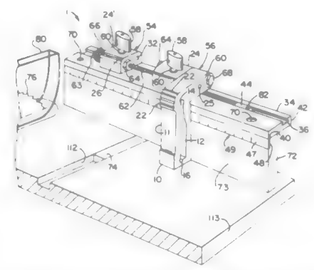
1. In a box blanking device having male and female die portions for separating sheets of die-cut blanks of preselected size and shape, the improved female die portion comprising:
a die surface having a planar top, a bottom, a leading edge, and a plurality of side edges;
a plurality of blanking holes interposed through said die surface, said blanking holes conforming to said size and shape of said die cut blanks;
runners interposed on the top of said die surface adapted to laterally support said sheets atop said die planar top surface;
a plurality of lift ramps interposed adjacent to said leading edge of said die, said lift ramps adapted to medially support said sheets and guide said sheets over said leading edge of said die surface and wherein each of said lift ramps is an arcuate member mounted on said die bottom surface and extends above said die top surface;
wherein said female die is adapted so that said sheets can be removed from said female die without impeding said blanking operation.

5,337,640
CUTTER BLADE ASSEMBLY
Frank W. Arnoth, Glen Mills, Pa., and William C. Hoffman, Jr., Wilmington, Del., assignors to Freeshworld, Inc., Cinnaminson, N.J.
Filed Dec. 31, 1992, Ser. No. 999,704
Int. Cl.[5] B26D *1/02*
U.S. Cl. 83—444 **19 Claims**

18. A cutter blade assembly for cutting a product into a plurality of finished end products, comprising:
(a) an elongated blade holder having a longitudinal passage and a plurality of mounting slots formed therein;
(b) a first blade group including a plurality of first blades radially disposed about the blade holder and mounted in the mounting slots; and
(c) a second blade group including a plurality of second blades radially disposed about the blade holder and mounted in the mounting slots, each second blade being angularly displaced from a corresponding first blade, the mounting slots being common to both the first and the second blades, wherein the product has a generally cylindrical shape and the first blades cut a plurality of radially spaced portions from the periphery of the product to form a first group of finished end products and a central portion comprising a plurality of splines as the product is advanced through the longitudinal passage and the second blades subsequently cut the splines from the central portion to form a second group of finished end products as the product is further advanced through the longitudinal passage, leaving a prism-shaped central portion.

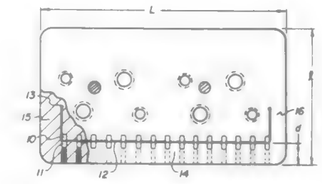


5,337,641
WOODWORKING MACHINERY JIG AND FIXTURE SYSTEM
Mark A. Duginske, 1010 First Ave. North, Wausau, Wis. 54401
Filed Sep. 14, 1992, Ser. No. 944,867
Int. Cl.[5] B27B *25/00*; B27L *7/06*; B26D *7/01*
U.S. Cl. 83—468 **19 Claims**



4. A woodworking machinery jig and fixture system, comprising:
a section of track, said track having a longitudinal guide for releasably mounting accessories to said track, said accessories being slideable longitudinally along said guide;
means for fixedly mounting said section of track to an edge of a woodworking support which is separate from said section and supports said workpiece adjacent to a woodworking tool;
a base;
adjustable means for mounting said base to said track, said means mounting said base to said track so that said base is slideable longitudinally relative to said guide and securable by said means at multiple alternative positions along said track;
a flip stop for guiding a workpiece placed against the woodworking support to position said workpiece relative to said woodworking tool;
means for pivotally mounting said flip stop to said base so that said flip stop is pivotable about a longitudinal axis between a work position in which said flip stop is in a position to engage a workpiece and a standby position in which said flip stop is out of position to engage a workpiece;
a microadjuster having an adjustment screw, said adjustment screw being longitudinally captured by said microadjuster and rotatable relative to said microadjuster;
means for adjustably securing said microadjuster to said track, said means mounting said microadjuster to said track so that said microadjuster is slideable longitudinally relative to said guide and securable by said means at multiple alternative positions along said track; and
wherein said base has a hole therein threaded to receive said adjustment screw in threaded engagement so as to move said base and microadjuster longitudinally relative to one another by turning said adjustment screw.

5,337,642
PUNCH BLOCK SUPPORT ARM AND PROCESS FOR MOUNTING PUNCHES ON SUCH A BLOCK
Michael Long, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
PCT No. PCT/FR91/00245, § 371 Date Oct. 2, 1992, § 102(e) Date Oct. 2, 1992, PCT Pub. No. WO91/15343, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 28, 1991, Ser. No. 930,664
Claims priority, application France, Apr. 2, 1990, 90 04484
Int. Cl.[5] B26F *1/02*
U.S. Cl. 83—687 **8 Claims**



1. A punch apparatus comprising:
a block having a thickness, a first edge and second and third opposed edges transverse to the first edge;
a plurality of punch-receiving recesses extended through the thickness along and transverse to an alignment axis and adjacent to the first edge;
a plurality of punches positioned in the recesses;
a narrow slot extended through the thickness and also extended through each recess, the slot having opposite end portions extended transverse to the alignment axis and extended away from the first edge of the block adjacent to the opposed second and third edges, whereby a longitudinal bar is defined between the slot and the first edge and respective transversal bars, joined to the block and the longitudinal bar, are defined between the opposite end portions of the narrow slot and the second and third edges; and
a plurality of screws, each threaded through the longitudinal bar for engaging one of the punches, the screws thus constituting means, effective upon tightening of the screws into engagement with the punches, not only for securing the punches against movement through the recesses transverse to the alignment axis, but also for distorting the longitudinal bar away from the punches and at the same time distorting the transversal bars toward the punches to secure the punches against movement along the alignment axis.

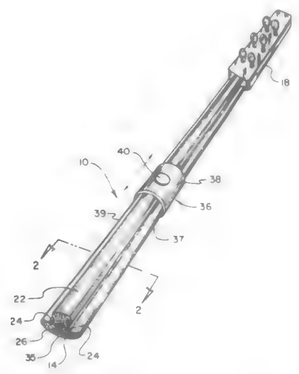
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,643

GUITAR NECK APPARATUS

Charles E. Cantrell, P.O. Box 174, Salem, S.C. 29676

Filed Jun. 28, 1993, Ser. No. 82,386
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—293 13 Claims



1. A new and improved guitar neck apparatus for a guitar having a body portion, a neck portion attached to the body portion, and a string-tension-adjusting portion attached to the neck portion distal to the body portion, said apparatus comprising:

a plurality of convexly curved fret portions,

a convexly curved first guitar neck portion underlying and supporting said convexly curved fret portions, said convexly curved first guitar neck portion extending between the guitar body portion and the string-tension-adjusting portion, said convexly curved first guitar neck portion including a concavely shaped underside portion, and

a tongue portion extending radially from said concavely shaped underside portion, said tongue portion dividing said concavely shaped underside portion into two concavely shaped groove portions suitable for receipt of one or more fingers of a guitar player,

further including:

a reinforcement member located in said apparatus and wherein said reinforcement member is located in said tongue portion of said apparatus.

5,337,644

STRINGED MUSICAL INSTRUMENT WITH MULTI-LAMINATE FRETBOARD

Lawrence R. Fishman, West Medford, Mass., and Kenneth Parker, Seymour, Conn., assignors to Korg/Fishpark Associates, Woburn, Mass.

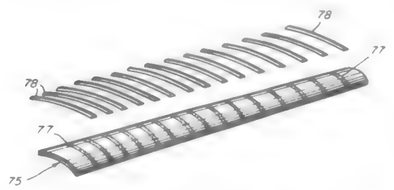
Division of Ser. No. 352,154, May 15, 1989, Pat. No. 5,125,312.
This application Apr. 3, 1992, Ser. No. 862,975
Int. Cl.[5] G10D *3/06, 1/08*
U.S. Cl. 84—314 R 18 Claims

1. A method of constructing a fret board of a stringed musical instrument comprising the steps of:

providing a laminate of a carbon fiber layer and a fiberglass layer,

forming the laminate into a laminate board to form a fret board surface,

providing a plurality of separate hard metal frets, each having a generally flat bottom surface,



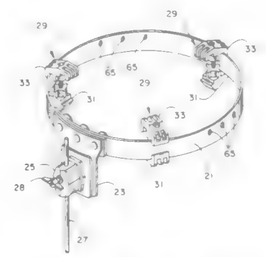
positioning the frets on the fret board surface so that the bottom of each fret is against the fret board surface, and adhesively securing the frets to the laminate board.

5,337,645

MUSICAL DRUM MOUNT WITH CIRCUMFERENTIALLY ADJUSTABLE INSULATING SUPPORTS

Walter S. Johnston, Brooklyn Center, Minn., assignor to Purecussion, Inc., St. Louis Park, Minn.

Filed Oct. 30, 1992, Ser. No. 969,341
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—421 31 Claims



1. A musical drum supporting apparatus for suspending a mounted tom from a supporting structure, comprising:

(a) a relatively rigid but flexible annular band defining a central opening for receiving a drum with an outer circumference therewithin, said band having means for mounting the same to the supporting structure;

(b) a plurality of drum support members carried by said band in readily movable and adjustable relation along the circumference thereof; and

(c) said drum support members being selectively spacable about the circumference of said band for selective engagement of said drum at any of an infinite number of selectable support locations about said circumference thereof, each of said support members having a drum bearing surface which extends radially inwardly from said band so as to disconnectedly engage said drum received therewithin in non-clamping supporting relation.

5,337,646

DEVICE AND SYSTEM FOR SUPPORTING DRUMS AND OTHER PERCUSSION MUSICAL INSTRUMENTS

Irving G. Austin, 24992 Nellie Gail, Laguna Hills, Calif. 92653

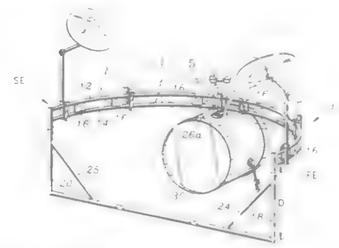
Filed Jan. 15, 1993, Ser. No. 5,888
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—421 14 Claims

1. A percussion instrument support device to be used in combination with and partially supported by a base drum, said device comprising:

first and second rail members fixed in parallel relation to one another in a horizontal plane having generally coterminous first and second ends;

a first vertical support member attached to and extending downwardly from the first ends of said rail members and a second vertical support member attached to and extending downwardly from the second ends of said rail members, said first and second vertical support members defining bottom ends and being adapted to partially support said first and second rail members a fixed distance above an underlying support surface;

a mounting fixture disposed on said first and second rail members, said mounting fixture being releasably attach-



able to the base drum and adapted to support the first and second rail members above the base drum when attached thereto such that the mounting fixture and the base drum, in combination with said first and second vertical support members, will hold said first and second rail members in said horizontal plane at said fixed distance above the underlying support surface; and

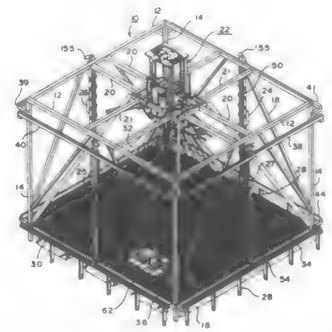
a basal cross men%her having first and second ends, the first end of said basal cross member being attached to the bottom end of said first vertical support member and said second end of said basal cross member being attached to the bottom end of said second vertical support member.

5,337,647

3 DIMENSIONAL BRAIDING APPARATUS

Robert M. Roberts, Elkton, Md., and William A. Douglas, West Grove, Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 13, 1992, Ser. No. 850,861
Int. Cl.[5] D04C *3/34*
U.S. Cl. 87—31 19 Claims



1. Apparatus for braiding of a three dimensional form comprising:

an upper frame;

a lower frame;

a braiding head supported on said upper frame;

a plurality of tracks forming track rows slidably supported on said lower frame, said tracks having transverse slots forming transverse columns across said tracks;

a plurality of carrier members mounted in the slots in said track members for movement therewith and moveable along said transverse columns;

fiber holding means mounted on said carriers;

a supply of fiber mounted on each of said fiber holding means, each of said fibers being attached to said braiding head;

means for moving said tracks in accordance with a predetermined braiding schedule, said means comprising a first plurality of actuators mounted along one side of said lower frame, each of said actuators being attached to one of said tracks for moving said track across the frame and a second plurality of actuators mounted on another side of said lower frame, each of said second plurality of actuators being aligned with one of said transverse columns for moving said carriers along the transverse slots;

means for limiting the travel of said first plurality of actuators to defined steps of at least two different lengths;

means for limiting the travel of said second plurality of actuators to defined steps of at least two different lengths;

means for moving said carrier members along said transverse columns in accordance with a predetermined braiding schedule whereby movement of said tracks and said carrier members generates a braided form at the braiding head;

means for compacting the braided form at the braiding head;

a plurality of stop members;

actuator means selectively actuable to interfere with the movement of the first plurality of actuators after movement of predetermined defined steps;

means for selectively blocking the movement of said carriers along said transverse columns at selected predetermined points in said column defining predetermined steps for said carriers;

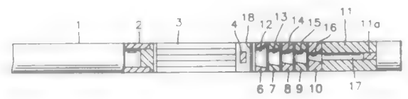
means for moving some of said first plurality of actuators one half of a defined step whereby the tracks connected to said actuators block the transverse columns at the intersection with said track said means comprising a dual actuator having first and second moveable portions, said first portion having a working stroke the length of the predetermined steps and the second portion having a working stroke of a length equal to one half of one defined step.

5,337,648

COUNTERMASS FOR RECOILLESS WEAPONS

Anders N. Brage, Sollentuna, Sweden, assignor to Forsvarets Forskningsanstalt, Sundbyberg, Sweden

PCT No. PCT/SE91/00065, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/11673, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 29, 1991, Ser. No. 916,104
Claims priority, application Sweden, Jan. 29, 1990, 9000303-9
Int. Cl.[5] F41A *1/10*
U.S. Cl. 89—1.704 7 Claims



1. A countermass for a recoilless weapon of the type for launching a projectile with a projectile propelling charge through a barrel which is open at both ends, the countermass intended to be positioned behind the projectile propelling charge and which is also intended to depart with propellant gases that exit rearwardly from the weapon when the projectile is propelled forwards, the countermass comprising:

a plurality of mutually sequentially arranged, separate coun-

VOL 1165 ISS 3 AG 16 1994 UMI

termass bodies extending between a forward end and a rearward end of the countermass, each of said countermass bodies having at least one gas throughflow passage, and the throughflow passage of each countermass body having a gas inlet area, the gas inlet area being widest for the countermass body located at the forward end of the countermass and the gas inlet area of the countermass bodies being gradually narrower from body to body towards the rearward end of the countermass.

5,337,649

DEVICE FOR CONTROLLING AMMUNITION UNITS DISCHARGED IN SALVOS BY CHARGES COMPOSABLE FROM PART CHARGES

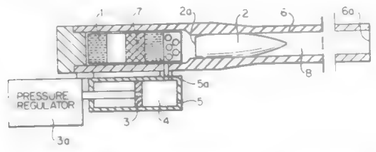
Arne Franzén, Karlskoga; Larseric Larsson, Degerfors; Neile Nilsson, Karlskoga, and Lars-Berno Fredriksson, Kinnahult, all of Sweden, assignors to Bofors AB, Karlskoga, Sweden

Filed Sep. 16, 1992, Ser. No. 945,328

Claims priority, application Sweden, Sep. 16, 1991, 9102672-4

Int. Cl.[5] F41A *1/06*

U.S. Cl. 89—14.05 **8 Claims**



1. A device for controlling discharge of ammunition units from the barrel of a gun in sequence with muzzle velocities within a large velocity range, to enable simultaneous activation of the ammunition units on a target area, said device comprising:

a plurality of part charges having different predetermined compositions including sizes, types, powder varieties, powder dimensions, said plurality of part charges being combinable into plurality of selected combinations defining total charges;

controlling means for receiving information regarding the firing parameters and parameters influencing muzzle velocity including a powder temperature of the part charges and pressure in the gun barrel and for calculating relevant velocities from said large range of velocities which allow for plurality of sequentially fired ammunition units to simultaneously arrive at said target area; and

selecting means responsive to said controlling means for selecting from said plurality of part charges, based on said calculated velocities, corresponding combinations of part charges to define said total charges for respective ammunition units which allow to achieve said calculated velocities with high accuracy and wherein the number of combinations combinable from said plurality of part charges is in a range of between 25 and 55 such that said muzzle velocities can be accurately controlled at small intervals in a range between 10 and 55 m/s.

5,337,650

BOOSTER FOR BRAKE OR CLUTCH

Shintaro Uyama, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 80,932

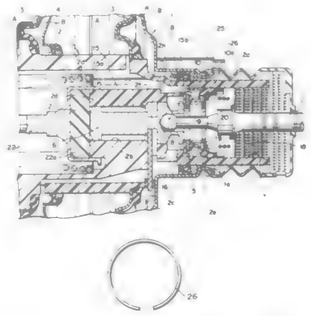
Claims priority, application Japan, Jul. 10, 1992, 4-207124

Int. Cl.[5] F15B *9/10*

U.S. Cl. 91—376 R **4 Claims**

1. A booster comprising a substantially tubular valve body, an annular, first step on the internal peripheral surface of the valve body with its end face facing rearward, an annular, second step on the internal periphery of the valve body at a position rearward of the first step, with an end face of the second step facing rearward, an annular valve seat on the inner periphery of the end face of the first step, a constant pressure passage within the valve body and having a rear end which opens into the internal peripheral surface of the valve body at a location radially outward of the valve seat, and a substantially hollow cylindrical valve element having a front end which defines a seat adapted to be seated upon the valve seat and having a rear end which is mounted on the second step;

characterized as having a notch disposed in the internal peripheral surface of the valve body at a location rearward of the constant pressure passage, said notch extending from the rear end of the constant pressure passage to the end face of the second step and having a depth which is equal to the height of the second step, a ring-shaped member disposed in abutment against the end face of the second step, and said rear end of said valve element disposed in abutment against the ring-shaped member from the rear side thereof and having an increased thickness relative to the front end thereof, said ring-shaped member and said rear end of said valve element being secured in place against the second step by a substantially hollow cylindrical retainer.



5,337,651

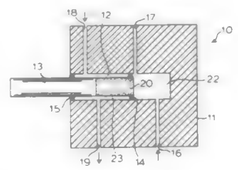
APPARATUS AND METHOD FOR PROTECTION OF PUMPS USED FOR DELIVERY OF AIR- OR MOISTURE-SENSITIVE LIQUIDS

Robin A. Gardiner, and Peter S. Kirlin, both of Bethel, Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 807,807, Dec. 13, 1991, Pat. No. 5,204,314, which is a continuation of Ser. No. 549,389, Jul. 6, 1990, abandoned. This application Mar. 18, 1993, Ser. No. 32,984

Int. Cl.[5] F01B *31/00*

U.S. Cl. 92—87 **6 Claims**



1. A pump subassembly useful for pumping of liquids latently susceptible to formation of particulates abradingly detrimental to pump active surfaces, and/or capable of inducing corrosion of such surfaces, said pump subassembly comprising:

a unitary pump block of rectangular parallelpiped shape with exterior flat faces and with an elongate constant diameter cylindrical interior pumping cavity therein having a central longitudinal axis;

an elongate cylindrical piston positioned in the pumping cavity for reciprocatable movement therein;

seal means for the piston, consisting essentially of:

a first seal for liquid sealing, mounted in the pumping cavity and circumscribingly arranged about the piston (i) to effect sealing between the piston and the pumping cavity during reciprocating movement of the piston in the cavity, and (ii) to bound an inner liquid pumping volume of the pumping cavity; and

a second seal for fluid sealing, mounted in the pumping cavity and circumscribingly arranged about the piston to effect sealing between the piston and the pumping cavity during reciprocating movement of the piston in the cavity, the second seal for fluid sealing being in longitudinally spaced-apart relationship to the first seal for liquid sealing to define an intraseal volume of the pumping cavity therebetween;

an inlet liquid passage extending linearly from a face of the unitary pump block to the inner liquid pumping volume for introduction of feed liquid thereto;

an outlet liquid passage extending linearly from a face of the unitary pump block to the inner liquid pumping volume for discharging of pressurized liquid therefrom;

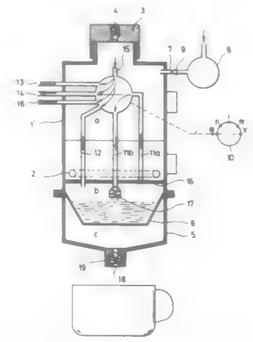
a fluid inlet passage extending linearly from a face of the unitary pump block to the intraseal volume of the pumping cavity for introduction of a purge gas or liquid thereto; and

a fluid outlet passage extending linearly from a face of the unitary pump block to the intraseal volume of the pumping cavity for discharging of purge gas or liquid therefrom;

wherein each of said passages extends linearly through the unitary pump block perpendicular to the central longitudinal axis of the cylindrical interior pumping cavity of the unitary pump block; and

means for reciprocating the elongate cylindrical piston in the pumping cavity so that a portion of the piston during reciprocating movement thereof is translated between the liquid pumping volume of the pumping cavity and the intraseal volume of the pumping cavity.

line and a second shut-off valve positioned upstream of the outlet of said filter chamber, said first shut-off valve opening at a first pressure that is lower than a second pressure at which the second shut-off valve opens.



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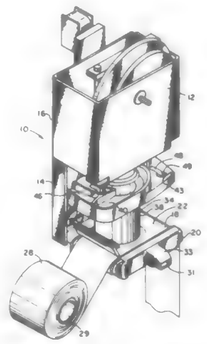
COFFEE BREWING APPARATUS

Timothy M. Sellers, Broomall, Pa., assignor to Gross-Given Manufacturing Co., St. Paul, Minn.

Filed Jul. 23, 1992, Ser. No. 918,173

Int. Cl.[5] A47J *31/00*

U.S. Cl. 99—289 R **11 Claims**



1. An apparatus for brewing a coffee beverage from coffee grounds and hot water comprising:

a housing;

a base member within the housing, the base member including a generally horizontal porous surface;

a brewing cylinder within the housing, the brewing cylinder having an inner surface, an outer surface, a generally open top and a generally open bottom, the brewing cylinder being located above and generally axially aligned with the porous surface of the base member, the brewing cylinder being movable from a first position in which the bottom of the brewing cylinder is sealing engaged with the base member and surrounds at least a portion of the porous surface and a second position in which the brewing cylinder is separated from the base member;

a mixing channel having a first end communicating with the interior of the brewing cylinder, the mixing channel for receiving a predetermined portion of coffee grounds and a predetermined quantity of hot water for initially mixing

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5,337,652

ESPRESSO MACHINE

Daniel Fischer, and Arthur Eugster, both of Romanshorn, Switzerland, assignors to Arthur Eugster Ag, Romanshorn, Switzerland

Filed Jul. 17, 1992, Ser. No. 915,438

Claims priority, application European Pat. Off., Jul. 19, 1991, 91112197.8

Int. Cl.[5] A47J *31/32*

U.S. Cl. 99—282 **20 Claims**

1. An espresso machine comprising a boiler and an electrical heating means connected to said boiler, a filter chamber which is connected to said boiler via a hot water line and which comprises an outlet and is divided via an inserted screen into two chamber regions, a thermostat switch which is responsive to the temperature within said boiler and connected in series with said heating means to limit the temperature within said boiler to a predetermined upper value, an air pump coupled to said boiler, a first shut-off valve positioned in said hot water

VOL 1165 ISS 3 AG 16 1994 UMI

together the coffee grounds and the hot water and for inserting the mixed coffee grounds and hot water into the brewing cylinder generally horizontally and generally tangentially to the inner surface of the brewing chamber so the coffee grounds and the hot water move around the inner surface of the brewing chamber while moving downwardly for stirring the coffee grounds and water to brew the coffee beverage; and

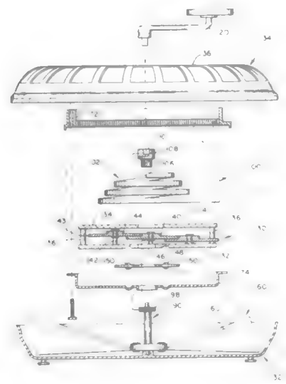
a piston sized to tightly engage the inner surface of the brewing cylinder, the piston being movable from a first position generally axially aligned with and above the brewing cylinder and a second position within the brewing cylinder whereby movement of the piston from the first position toward the second position results in the piston engaging the inner surface of the brewing cylinder and pressurizing the interior of the brewing cylinder to force the coffee beverage through the porous surface of the base member for separation of the coffee beverage from the coffee grounds.

5,337,654

PORTABLE OVEN AIR CIRCULATOR

Daniel M. Broberg, Edina; Glenn Campbell, Sr., Plymouth, and Paul Varley, Dundas, all of Minn., assignors to Northland Aluminum Products, Inc., Minneapolis, Minn.

Filed Apr. 29, 1992, Ser. No. 875,994
Int. Cl.[5] A47J *36/38*
U.S. Cl. 99—447 **8 Claims**



1. A heat resistant compact portable air circulator for use in a cooking oven to increase the rate and uniformity of cooking and baking which comprises:

a. an outer housing having a base and a cover, both including a plurality of openings through which air can pass,

b. an inner housing within said outer housing and secured thereto, said inner housing having an aperture therethrough,

c. a fan blade located within the outer housing and outside the inner housing, said fan blade designed to draw air in through the openings in the cover of the outer housing, around the outside of the inner housing, and expel the air through the openings in the base of the outer housing,

d. a spring motor within said inner housing, said spring motor having output means connected to a power transmission so that the spring motor and power transmission cooperate to cause the fan blade to rotate at a rate faster than the output means of the spring motor, and

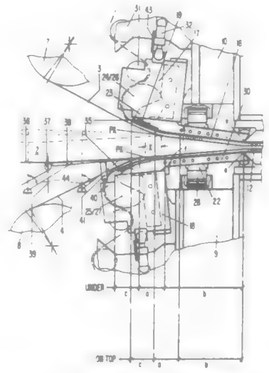
e. means for energizing the spring motor.

5,337,655

CONTINUOUSLY WORKING PRESS HAVING ENTRY SYSTEMS FOR APPLYING A VARIABLE PRESSURE PRIOR TO A MATERIAL BEING PRESSED

Friedrich B. Bielfeldt, Eppingen, Fed. Rep. of Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany

Continuation of Ser. No. 775,420, Oct. 15, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 40,076
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1990, 4032700
Int. Cl.[5] B30B *15/34, 5/04*
U.S. Cl. 100—93 P **2 Claims**



1. A continuously working press for manufacturing pressed materials, said press comprising:

(A) a press ram;

(B) a press table spaced apart from said press ram with an adjustable press gap being formed therebetween;

(C) drive drums and return drums;

(D) first and second flexible, endless steel belts which are guided around said press table and said press ram, respectively, via said drive drums and said return drums, said first and second belts transmitting an applied pressure to a material to be pressed and pulling said material to be pressed though said press;

(E) a plurality of roller bars which are supported on said press table and said press ram and which guide said first and second belts through said press;

(F) a transfer plate which transfers said material to be pressed into said press from a transfer area;

(G) a feed belt which is located in said transfer area and which has a transfer nose, said transfer nose delivering said material to be pressed onto said transfer plate;

(H) first and second heating plates which are pivotally mounted on said press table and said press ram, respectively;

(I) first and second entry devices provided on said first and second heating plates, respectively, and facing each other to form an entry gap therebetween adjacent said press gap, one of said first and second entry devices including a spring plate which exerts an elastic clamping pressure on said roller bars; and

(J) an elastic pressure-keeping plate which covers said one entry device and one of said heating plates, said pressure-keeping plate being located between said spring plate and said roller bars;

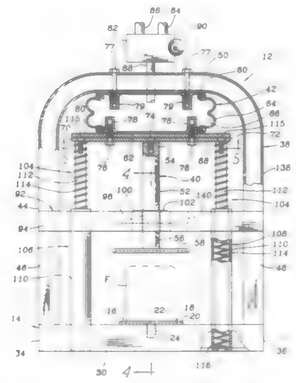
wherein said spring plate exerts an elastic clamping pressure from 0 to 3 bars as said roller bars travel through said entry gap.

5,337,656

OIL FILTER CRUSHING APPARATUS HAVING AIR BAG ACTUATOR

Harold E. Hollnagel, Milwaukee, Wis., assignor to KCS Industries Inc., Milwaukee, Wis.

Filed May 6, 1993, Ser. No. 57,580
Int. Cl.[5] B30B *9/32, 9/04*
U.S. Cl. 100—98 R **31 Claims**



1. An apparatus for crushing used oil filters to reclaim residual oil therefrom before disposing of the filters, said apparatus comprising:

a rigid crushing frame (**12, 212**) having a base (**14, 314**) for supporting an oil filter (F) on end;

a ram device (**40, 336**) having a rod (**52, 338**) slidably supported by said frame (**12, 312**) for longitudinal movement toward and away from said base (**14, 314**) and a crushing head (**58, 340**) secured to a lower end of said rod above said base (**14, 314**) for engaging and crushing the oil filter (F);

self-contained air spring actuating means (**42, 344**) having a rigid upper end retaining portion (**62, 352**) secured to said frame (**12, 312**), a rigid lower end retaining portion (**62, 354**) secured to said ram device (**40, 336**), and an intermediate elastic flex member (**64, 350**) extending between and interconnecting said retaining portions and defining an enclosed expandable chamber therein for selectively receiving a pressurized actuating fluid therein causing said actuating means (**42, 344**) to expand and react between said frame (**12, 312**) and said ram (**40, 336**) and thereby displacing said crushing head (**58, 340**) from a raised unactuated position forcibly toward said base (**14, 314**) to a lowered actuated position to crush the filter (F) interposed between said crushing head (**58, 340**) and said base (**14, 314**), said ram device (**40, 336**) including a pressing plate (**68, 342**) secured to an upper end of said ram rod (**52, 338**) and to said lower end retaining portion (**62, 354**) of said actuating means (**42, 344**), and including return means reacting between said ram device (**40, 336**) and said frame (**12, 312**) in opposition to said actuating means (**42, 344**) for constantly urging said ram (**40, 336**) toward said raised unactuated position, said return means comprising a pair of telescopic guides (**106, 108**; **32, 374**) disposed on opposite sides of said ram rod (**52, 338**) and each including a plunger rod (**112, 378**) secured to one of said pressing plate (**68, 342**) and said base (**14, 314**), a guide sleeve (**110, 376**) secured to the other of said pressing plate (**68, 342**) and said base (**14, 314**) and slidably receiving said plunger rod (**112, 378**), and a compressing spring (**114, 380**) carried about said plunger rod (**112, 378**).

5,337,657

COMPUTER TRAINING AND SUPPORT TABLE SYSTEM

Niels Diffrient, Ridgefield, Conn., assignor to Howe Furniture Corporation, Trumbull, Conn.

Filed Jun. 1, 1992, Ser. No. 891,724
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—115 **12 Claims**



1. A table foldable between a storage configuration and a working configuration comprising:

a beam having first and second ends, normally horizontal when said table is in its working configuration;

first and second substantially identical leg members, each having a pedestal portion normally vertical when said table is in its working configuration, and a pair of spaced, parallel support arms extending horizontally from opposite ends of said pedestal portion;

means for pivotally securing each of said leg members to a different one of the first and second ends of said beam whereby said support arms are substantially aligned with said beam when the table is in its storage configuration and substantially perpendicular to said beam when the table is in its working configuration, the lowermost support arm of each leg member then functioning as a table leg; and

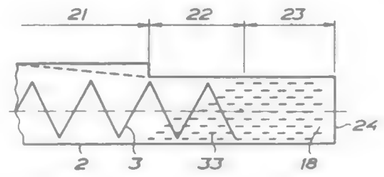
a table top hingedly secured along the top of said beam for rotation between a folded position alongside said support arms when the table is in its storage configuration and a working position resting upon the uppermost support arm of each leg member when the table is in its working configuration.

5,337,658

CONVEYING AND COMPACTING APPARATUS HAVING A SHAFTLESS SPIRAL IN A CASING WITH DRAINAGE OPENINGS

Richard L. Bruke, Vintrie, Sweden, assignor to Spirac Engineering AB, Malmo, Sweden

Continuation of Ser. No. 880,486, May 6, 1992, abandoned, which is a continuation of Ser. No. 550,143, Jul. 9, 1990, abandoned, which is a division of Ser. No. 236,643, Sep. 28, 1988, abandoned, which is a continuation of Ser. No. 829,142, Dec. 9, 1985, abandoned. This application Jun. 1, 1993, Ser. No. 69,460
Claims priority, application Sweden, Apr. 19, 1984, 8402202
Int. Cl.[5] B30B *9/26*
U.S. Cl. 100—127 **20 Claims**



1. An apparatus for conveying and compacting material comprising an elongated casing having an open end, a shaftless spiral disposed in said casing, said shaftless spiral comprising a continuous blade wound spirally at a determined pitch and

VOL 1165 ISS 3 AUG 16 1994 UMI

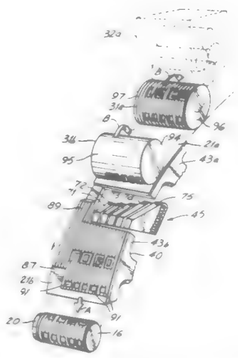
forming a free central annular passage longitudinally along the length of the spiral, supply means in said casing for feeding the material thereinto, drive means for rotating said shaftless spiral in said casing to cause said spiral to advance said material through said casing, said casing having an outlet at said open end towards which the material is advanced by said spiral, said spiral having a terminal free end, beyond which said casing includes an end section, and counterpressure means formed at least in part by said end section for opposing advance of said material in said end section to form a compaction zone in said end section in which said material is compacted, said central passage in said shaftless spiral providing communication at said terminal free end of said spiral between the material in said end section and the material in the shaftless spiral and providing a precompaction zone for the material in an end region of the shaftless spiral, said shaftless spiral having a substantially uniform outer diameter in said precompaction zone, said casing having a substantially uniform diameter in said precompaction and said compaction zones, and means including drainage openings distributed in said casing inclusive of said end region of said spiral for removal of liquid from the material in said precompaction zone during passage of the material in said casing.

5,337,659

APPARATUS AND METHOD UTILIZING CONTINUOUS MOTION OFFSET AND DIRECT PRINTING TECHNIQUES FOR DECORATING CYLINDRICAL CONTAINERS

Edward J. Whelan, Hasbrouck Heights, N.J., assignor to Sequa Corporation, New York, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,365
Int. Cl.[5] B41F *17/22*
U.S. Cl. 101—40 **13 Claims**



1. Continuous motion apparatus for decorating cylindrical containers, said apparatus including:

a continuously rotating mandrel carrier having a plurality of rotatable container carrying mandrels positioned along its periphery;

a continuously rotating blanket wheel having its periphery adjacent the periphery of the mandrel carrier;

a plurality of blanket segments having outer arcuate surfaces on said blanket wheel disposed along the periphery thereof, and mounted so that during rotation of said blanket wheel all of said blanket segments remain fixed relative to each other;

a plurality of printing cylinders adjacent the periphery of the blanket wheel;

inking means for applying ink to each of said printing cylinders which in turn apply picture segments to each of said blanket segments on said outer arcuate surfaces to form a complete main image on each of said arcuate surfaces for transfer to an outer cylindrical surface of a container mounted on one of said mandrels, which container is in rolling engagement with said blanket segment as it passes through a printing zone;

an individual direct printing unit associated with an individual one of each of said blanket segments;

each of said direct printing units including a printing means that prints an auxiliary image directly on said cylindrical surfaces as the containers while still on said mandrels pass through the printing zone;

additional inking means for applying ink to the printing means of said direct printing units;

said printing means also including a closed loop flexible belt means having a plurality of printing plate segments disposed in tandem along the length thereof, guide means for directing said flexible belt means along a closed loop path, said guide means including a rotatable drive roll and an anvil disposed behind an individual plate segment to support the individual plate segment in a printing position while the individual plate segment is applying the auxiliary image to the container, and means for operating said drive roll continuously at uniform rotational speed about its own axis during each revolution of said blanket wheel to move said belt means with respect to said anvil by an incremental distance during each revolution of said blanket wheel, said incremental distance being such that a plate segment which is supported by said anvil and has applied an auxiliary image to said outer cylindrical surface of the container continues to move along said closed loop path with respect to said anvil and is replaced in said printing position by the next upstream plate segment;

means for coordinating rotation of said mandrel carrier with rotation of said blanket wheel in a manner such that while said main image is being applied to the outer cylindrical surface, said outer cylindrical surface and said blanket segment are traveling essentially at the same linear speed; and

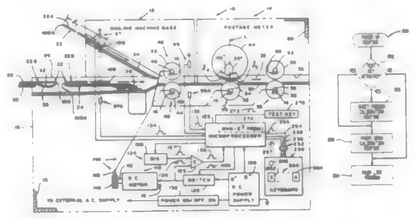
means for coordinating movement of said belt means along said closed loop path with rotation of said mandrels about their respective axes in a manner such that while said auxiliary image is being applied to said outer cylindrical surface, the outer cylindrical surface and said plate segment are traveling at different linear speeds.

5,337,660

MAILING MACHINE INCLUDING PRINTING SPEED CALIBRATING MEANS

Alton B. Eckert, Jr., New Fairfield; Dennis M. Gallagher, Danbury; Thomas M. Pfeifer, Bridgeport, and Richard P. Schoonmaker, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 25, 1992, Ser. No. 841,315
Int. Cl.[5] B41L *47/46*
U.S. Cl. 101—91 **20 Claims**



1. A mailing machine comprising:

(a) a base and a postage meter mounted on the base, the postage meter including a rotary postage indicia printing drum, the base including means for driving the drum at a desired constant indicia printing speed corresponding to a desired reference voltage;

(b) the base including means for controlling the postage printing drum, the controlling means including a microprocessor connected to the drum driving means, the controlling means including means for sequentially sensing a commencement and a completion of constant printing speed of the drum and providing corresponding successive signals to the microprocessor;

(c) the microprocessor programmed for

1. providing a predetermined reference voltage corresponding to the desired drum printing speed,
2. counting a time interval in response to receiving the successive constant speed commencement and completion signals,
3. determining whether the counted time interval and the desired time interval are substantially equal, and
4. storing the predetermined reference voltage as the desired reference voltage if the counted and desired time intervals are substantially equal, and

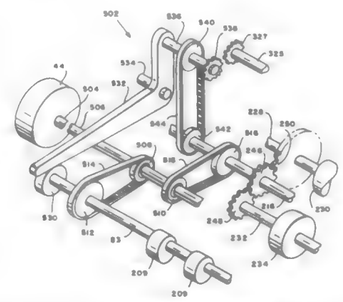
(d) further comprising a switching means connected to the microprocessor, said switching means including a manually operable test key normally inaccessible to an operator and normally accessible to a manufacturer of the base, the switching means including a print key normally accessible to the operator of the base, and the microprocessor being programmed for bypassing a sheet feeding mode of operation thereof when both the test key and print key are operated.

5,337,661

THERMAL POSTAGE METER DRIVE SYSTEM

Stephen F. Goldberg, Dayton, Ohio, assignor to Pitney Bowes Inc., Stamford, Conn.

Filed May 3, 1993, Ser. No. 55,588
Int. Cl.[5] B41L *47/46;* **B41J** *23/34*
U.S. Cl. 101—91 **5 Claims**



1. An improved drive system in combination with a thermal printing postage meter having a base supporting a registration wall and a deck, a platen roller, an ejection roller,

a micro controller,

a thermal tape cassette detachably mounted to said registration and having a take-up spool and first gear means attached to the take-up spool of said thermal tape cassette,

first position means for causing said platen roller to assume a print position or a non-print positions and for causing said ejection roller to assume an engaged or disengaged position,

motor means in bus communication with and responsive to said micro controller, wherein said improvement comprises:

said motor means including a motor having an output shaft, said motor means being under the control of said micro controller;

linkage means in communication with said motor, said take-up spool, said first position means for sequentially

(a) causing said first position mean to position said platen roller in said print position, position said ejection roller in said disengaged position and communicating with said take-up spool when said motor is rotated in a first direction by said micro controller;

(b) rotatively driving said platen and rotatively driving said take-up spool when said rotation of said motor is now driven in a reverse direction by said micro controller;

(c) causing said first position means to position said platen roller in said non-print position, position said ejection roller in said engaged position and terminating communication with said take-up spool when said motor is now rotated again is first direction by said micro controller; and,

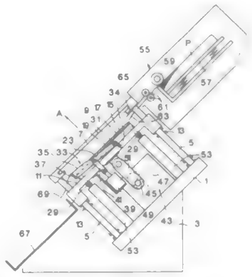
(d) rotatively driving said ejection rollers when said rotation of said motor is now again driven in said reverse direction by said micro controller.

5,337,662

PRESSURE PRINTING DEVICE

Takanori Hasegawa, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,806
Claims priority, application Japan, Jun. 3, 1992, 4-142306
Int. Cl.[5] B05C *17/06;* **B41F** *1/28*
U.S. Cl. 101—126 **9 Claims**



1. A pressure printing device, comprising;

printing paper supporting table having a printing paper supporting surface which is angled with respect to a horizontal plane so as to allow feeding of printing paper along said printing paper supporting surface under the gravitational force and provided with an adhesive property for retaining printing paper thereon;

peeling means for separating printing paper adhered to said printing paper supporting surface from said printing paper supporting surface;

gate means for preventing a downward movement of printing paper along said printing paper supporting surface by being placed on a lower edge of said angled printing paper supporting surface, and selectively projecting above said printing paper supporting surface;

master plate supporting means placed above said printing paper supporting surface in an opposing relationship for supporting a planar master plate; and

pressure means for pressing said printing paper supporting surface of said printing paper supporting table against said master plate supported by said master plate supporting means.

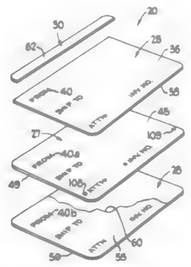
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,663

COMBINATION STENCIL AND LABEL APPARATUS AND METHOD FOR FORMING AND ATTACHING SAME

John J. McKillip, 25 W. 153 Ridgeland, Naperville, Ill. 60350

Filed Jun. 23, 1992, Ser. No. 902,870
Int. Cl.[5] B41L *13/02*; B41N *1/24*
U.S. Cl. 101—127.1 9 Claims



1. A combination stencil and label assembly for use in association with business forms, packaging and other surfaces, such as shipping containers, wherein the stencil of the assembly is capable of accepting the impressing of indicia which is simultaneously transferred to an underlying surface, and, wherein the stencil can be removed, in a facilitated manner, from the underlying surface, so as to enable reproduction of the impressed indicia on said other surfaces, such as shipping containers, in cooperation with a stencil applicator, said combination stencil and label assembly comprising:

label means for operable attachment to said business forms and other surfaces, as desired,

said label means having a top surface, a bottom surface, and an outer periphery;

adhesive means covering substantially all of said bottom surface of said label means,

a planar ply of stencil material having a first upper side, a second lower side, and an outer periphery, said second lower side being in juxtaposed alignment with said top surface of said label means,

said stencil material having a substantially planar layer of carbon integrated into the second lower side of said stencil material to enable said simultaneous imprinting of said indicia to said top surface of said label means;

attachment means for releasably attaching at least a portion of said stencil material to at least a portion of said top surface of said label means,

said stencil material being detachable from said label means through operable release of said attachment means so as to enable independent use of both said stencil material and said label means in cooperation with said packaging and said other surfaces;

liner means operably and releasably attached to said bottom surface of said label means by said adhesive means, said liner means providing a removable protective cover to said adhesive means on said bottom surface of said label means,

said liner means having an upper surface, a lower surface, and a peripheral edge; and

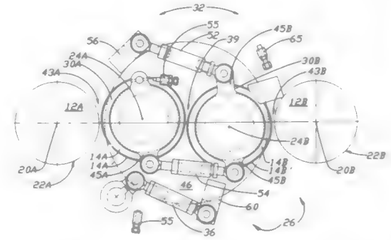
said adhesive means facilitating securement of said label means to at least a substantial portion of said upper surface of said liner means, while further facilitating independent securement of said label means to said other surfaces so that said simultaneous imprinting of said indicia to said top surface of said label means will be visually and operably observable upon said independent use of said label means with said packaging and said other surfaces.

5,337,664

PRINTING PRESS WITH BLANKET CYLINDER THROW OFF APPARATUS AND METHOD

William G. Hannon, Westchester, Ill., assignor to Rockwell International Corporation, El Segundo

Filed Apr. 8, 1993, Ser. No. 45,543
Int. Cl.[5] B41F *7/02*
U.S. Cl. 101—218 21 Claims



19. A method of operating an offset printing press having blanket cylinders mounted to a circular frame, each blanket cylinder having a rotary axis, comprising the steps of:

moving the circular frame to an operating position in which the rotary axes of the blanket cylinders are in substantial lateral alignment with rotary axes of a pair of plate cylinders;

printing on a web passing between the blanket cylinders while the circular frame is in the operating position;

rotating the circular frame to a throw off position in which the rotary axes of the blanket cylinders are laterally misaligned with the rotary axes of the plate cylinders to create throw off gaps that enable changing printing blankets carried by the blanket cylinders

replacing the printing blankets with other printing blankets;

returning the circular frame to the operating position; and

after the circular frame is returned to the operating, operating the press to print on the web with other printing blankets carried by the blanket cylinders.

5,337,665

MAILING MACHINE INCLUDING POSTAGE METER HAVING ROTARY POSTAGE PRINTING DRUM PROVIDED WITH AN ENVELOPE DEFLECTOR

Arnold Fassman, Westport; Stephen J. Rigo, and Alfred Spath, both of Stamford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 2, 1993, Ser. No. 85,366
Int. Cl.[5] B41F *13/24*
U.S. Cl. 101—235 7 Claims

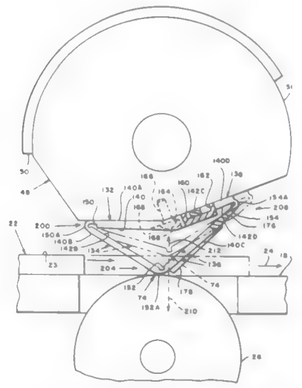
1. A mailing machine comprising:

(a) a base including a deck;

(b) a postage meter removably mounted on the base, the postage meter including a rotary postage printing drum overhanging the deck;

(c) the base including means for feeding an envelope in a downstream path of travel to the drum, the base including means for selectively driving the drum for printing postage on an envelope fed thereto;

(d) envelope deflecting means including an elongate substantially rectangularly-shaped member having a predetermined length, the member including a substantially horizontally-extending first portion of the length thereof fixedly attached to the drum, the member including a second portion of the length thereof inclined downwardly from the first portion, the member including a third portion of the length thereof inclined upwardly from the second portion, the member including a fourth portion of the length thereof extending substantially horizontally from the third portion and disposed between and in sliding engagement with the drum and the first portion, and the second and third portions cooperatively defining a lower marginal peak edge overhanging the deck and extending transversely of the path of travel for urging an envelope fed beneath the drum into sliding engagement with the deck.

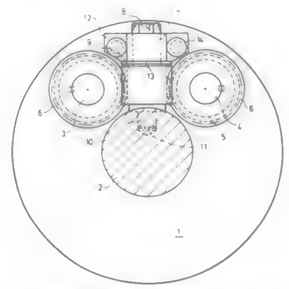


5,337,666

DEVICE FOR FASTENING AND CHANGING THE POSITION OF A CYLINDER DRESSING

Willi Becker, Bammental, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jul. 8, 1993, Ser. No. 89,012
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1992, 4222332
Int. Cl.[5] B41F *1/28*
U.S. Cl. 101—415.1 11 Claims



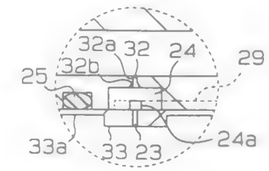
1. Device for fastening and changing the position of a cylinder dressing on a printing-unit cylinder formed with an axially parallel gap in a rotary printing press, comprising, within the gap, tensioning spindles connectible with respective leading and trailing edges of a cylinder dressing disposed on the outer cylindrical surface of the printing-unit cylinder for applying tension to the cylinder dressing, said tensioning spindles being formed with toothing, a shaft formed with toothing meshing with said toothing on the respective tensioning spindles, means operatively connected to at least one of said tensioning spindles for adjusting the position of the cylinder dressing on the printing-unit cylinder, an actuating drive mounted on an end face of the printing-unit cylinder and operatively connected with said tensioning spindles for moving said spindles so that the cylinder dressing is both subjected to tension in circumferential direction of the printing-unit cylinder simultaneously at the leading and trailing edges thereof and also adjustable in position on the printing-unit cylinder in a defined manner by said adjusting means.

5,337,667

INK WASHING DEVICE FOR A PRINTING MACHINE

Shoji Kinoshita; Hideo Nanbu, both of Gifu, and Katsumasa Tanaka, Seki, all of Japan, assignors to Sakurai Graphic Systems Corporation, Tokyo, Japan

Filed Apr. 6, 1993, Ser. No. 43,270
Claims priority, application Japan, Dec. 28, 1992, 4-349464
Int. Cl.[5] B41F *35/00*
U.S. Cl. 101—424 12 Claims



1. An ink washing device for use in a printing machine to wash a plurality of ink rollers, the device comprising:

spraying means for spraying a washing fluid onto at least one of the ink rollers, said spraying means including a plurality of nozzles and fluid supply conduit means for supplying the washing fluid to said nozzles, the fluid supply conduit means including a passage having an outwardly expanding tapered outlet;

air supply conduit means for supplying compressed air to said nozzles; and

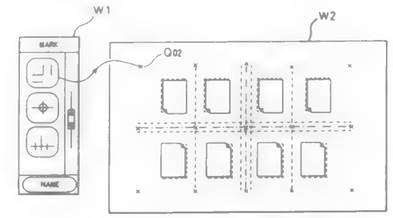
a swirl chamber communicating with said fluid supply conduit means and with said air supply conduit means, said swirl chamber mixing the compressed air and the washing fluid prior to their expulsion through the spraying means with the outlet of said passage opening into said swirl chamber.

5,337,668

METHOD OF AND APPARATUS FOR PRODUCING REGISTER MARK PATTERN

Kazuyuki Matsuoka, and Yasuhisa Fujimoto, both of Kamikyo, Japan, assignors to Dainippon Screen Mtg. Co., Ltd., Kyoto, Japan

Filed Nov. 12, 1993, Ser. No. 151,247
Claims priority, application Japan, Nov. 19, 1992, 4-335580
Int. Cl.[5] B41F *1/34*
U.S. Cl. 101—481 15 Claims



1. A method of producing a register mark pattern which is an arrangement of a plurality of register marks on a printing sheet area with the aid of a computer, comprising the steps of:

VOL 1165 ISS 3 AG 16 1994 UMI

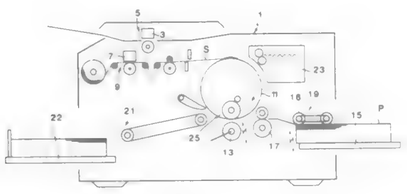
(a) preparing register mark configuration data representing a plurality of register mark configurations;
(b) specifying the number of columns M and the number of rows N indicating an M×N array of pages to be laid out on said printing sheet area;
(c) determining a plurality of register mark candidate positions on said printing sheet area according to said numbers M and N;
(d) displaying a page layout pattern and a register mark selection window on a display device, said page layout pattern including page symbols arranged in said M×N array and said plurality of register mark candidate positions laid out on said printing sheet area, said register mark selection window including representations of said plurality of register mark configurations;
(e) selecting one of said plurality of register mark configurations displayed in said register mark selection window for at least part of said plurality of register mark candidate positions;
(f) determining a rotation angle for each of the selected register mark configurations according to rotation angle data prepared in advance for said respective plurality of register mark configurations and according to a positional category of the register mark candidate position to which the selected register mark configuration is assigned, said rotation angle data indicating a rotation angle with respect to each positional category of the register mark candidate positions; and
(g) producing register pattern data representing said selected register mark configurations disposed at said at least part of said plurality of register mark candidate positions on said printing sheet area, said selected register mark configurations being rotated by the respective rotation angles.

5,337,669

CARD PRINTING METHOD, ORIGINAL POSITIONING HOLDER, AND CARD PRINTING PAPER

Hirokazu Kanai, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed May 12, 1993, Ser. No. 59,671
Claims priority, application Japan, May 18, 1992, 4-124827[U]; Aug. 25, 1992, 4-059787
Int. Cl.[5] B41F *9/00*
U.S. Cl. 101—485 **4 Claims**



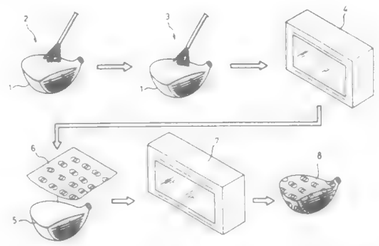
1. A card printing method, comprising the steps of:
positioning and setting up a card-like original on an original positioning holder carrying an original set up position designating mark for designating a region for setting up said card-like original and a reference registration mark which is located outside said original set up region designated by said original set up position designating mark at a prescribed positional relationship thereto, according to said original set up position designating mark;
making a printing master plate from said card-like original along with said original positioning holder by duplication, said printing master plate including a master plate image part corresponding to said card-like original and a master plate mark part corresponding to said registration mark;
printing at least said registration mark on a test print sheet carrying a reference registration mark printed thereon and fed to a printing unit, by using said printing master plate;
detecting a misregistration from relative positions of said registration mark printed on said test print sheet with said printing master plate and said reference registration mark;
feeding a base sheet carrying a card-like printing sheet in a removable manner on a position corresponding to said original set up region designated by said original set up position designating mark to said printing unit with said misregistration resolved by adjusting an automatic paper feeding position; and
printing an image of said card-like original with said master plate image part on a prescribed location of said card-like printing sheet by using said master plate image part of said printing master plate.

5,337,670

PROCESS FOR THE TRANSFER PRINTING OF A GULF CLUB HEAD

Chung Ming Huang, P.O. Box 82-144, Taipei, Taiwan

Filed Jan. 6, 1994, Ser. No. 178,423
Int. Cl.[5] B41F *23/04;* **A63B** *53/04*
U.S. Cl. 101—487 **1 Claim**



1. A process for the transfer printing of a golf club head comprising steps of:
forming a golf club;
polishing the golf club head 1 with sand blast which consists of particles of sand, powdered quartz, chilled iron globules, emery, or other hard granular material blown by a jet of compressed air;
spraying paint on the golf club head thereby forming a layer of paint on the surface thereof;
placing the golf club head into a furnace for baking for fixing the paint thereon;
cooling the golf club head thus forming a semi-product;
covering the golf club head with a piece of mold paper having an ink pattern thereon; and
disposing the golf club head in a steam furnace at 260 degrees centigrade for 10 minutes hence causing the ink pattern on the mold paper to be printed on the paint of the golf club head consequently producing a golf club head with desired patterns thereon.

5,337,671

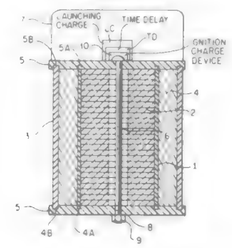
ARRANGEMENT IN A SMOKE SHELL

Kjell O. Varmo, Raufoss, Norway, assignor to Raufoss AS, Norway

PCT No. PCT/NO92/00006, § 371 Date Jun. 9, 1992, § 102(e) Date Jun. 9, 1992, PCT Pub. No. WO92/13251, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 16, 1992, Ser. No. 854,606
Claims priority, application Norway, Jan. 21, 1991, 910228
Int. Cl.[5] F42B *12/48*
U.S. Cl. 102—334 **17 Claims**

1. Arrangement in a smoke shell which generates smoke in both the visible and/or IR band and/or millimeter band, wherein the arrangement comprises a first inner container

housing pyrotechnical instantaneous smoke elements associated with an ignition charge, as well as a second outer container arranged substantially radially in relation to the first container and being without an ignition charge, and housing means for providing screening in the IR and/or millimeter



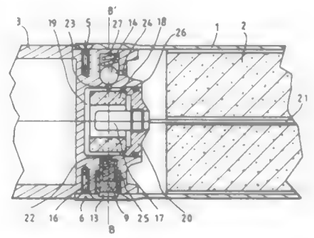
band, such that the reaction of the pyrotechnical instantaneous smoke elements upon ignition of the smoke shell provides a large enough pressure for also bursting the outer container for thereby disseminating the instantaneous smoke elements over a smoke screening area together with the means for providing screening in the IR and/or millimeter band.

5,337,672

LOCKING DEVICE FOR A CASING CONTAINING PYROTECHNIC MATERIALS

Bruno Boissiere, Olivet, and Michel Bossus, Chevilly, both of France, assignors to Thomson-Brandt Armements, Saint Aubin, France

Filed Nov. 10, 1992, Ser. No. 974,259
Claims priority, application France, Nov. 29, 1991, 91 14818
Int. Cl.[5] F42B *39/20, 39/14*
U.S. Cl. 102—481 **9 Claims**



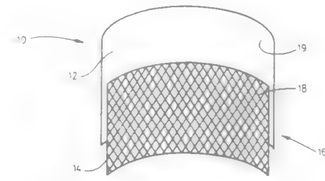
1. Locking device for a casing containing pyrotechnic materials and ignition means which can be activated to ignite said pyrotechnic materials, the ignition means comprising at least one charge contained in a chamber the combustion of which increases the pressure inside this chamber, the casing having an opening closed by a plug, comprising at least:
one sealing component, loaded by a spring so as to block a passage of gas between the chamber and the pyrotechnic materials, and locking means permanently deformed under the action of an initial pressure so as to ensure that the plug is firmly attached to the casing, the combustion of the charge in the chamber creating an increase in pressure so that in a first phase the locking means are deformed when the pressure exceeds the given initial pressure and, in a second phase, the sealing component liberates the passage of hot gas between the chamber and the pyrotechnic materials when the pressure of the chamber becomes higher than a second given pressure, this pressure exerting on the sealing component a force that is greater than and opposed to the force of the spring, the pyrotechnic materials then being ignited by the hot gas.

5,337,673

CONTROLLED FRAGMENTATION WARHEAD CASE

Robert A. Koontz, and Kenneth R. Hayes, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 17, 1993, Ser. No. 169,442
Int. Cl.[5] F42B *12/24*
U.S. Cl. 102—491 **6 Claims**



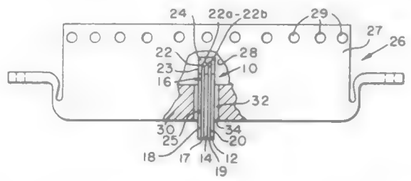
1. A controlled fragmentation warhead case comprising:
a cylindrical metal case; and
a cylindrical case liner made of expanded metal, the case liner being embedded in an interior surface of the metal case such that a controlled fragmentation grid is formed on the interior surface of the controlled fragmentation warhead case.

5,337,674

PRINTED CIRCUIT BRIDGE FOR AN AIR BAG INFLATOR

Bradley D. Harris, Farmington, and Virginia E. Chandler, Ogden, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation of Ser. No. 942,882, Sep. 11, 1992, abandoned. This application Sep. 17, 1993, Ser. No. 123,575
Int. Cl.[5] C06D *5/00;* **F42B** *3/12;* **F42C** *19/12*
U.S. Cl. 102—530 **17 Claims**



1. A printed circuit bridge initiator for an air bag inflator comprising,
an elongated thin film electrically nonconducting plastic substrate, said substrate having a thickness, a width and a length, and
a printed circuit bridge formed on said substrate comprising spaced electrically conducting strips extending for substantially the full length of the substrate, said strips being adapted for the connection thereto at one end thereof of a source of direct electrical current and having a bridge connected therebetween at the other end thereof, said bridge being printed on said substrate,
wherein said substrate is formed of a polyamide,
wherein said spaced electrically conducting strips are formed of metal,
wherein tuning of said initiator, that is adjustment of the relationship between the magnitude of the direct electrical current flow through said initiator and the duration of

VOL 1165 ISS 3 AG 16 1994 UMI

such current flow required to activate said initiator, is effected by adjustment of the width and/or thickness of said substrate and the shape of said bridge,

wherein the thickness of said substrate on which said printed circuit bridge .is printed is in the range of 0.002 to 0.02 inches, the width of said substrate is about 0.110 inches, and the length of said substrate is about one inch, and

wherein said bridge has the shape of two generally equilateral squares that are positioned in contiguous relation with a corner portion of one square touching a corner portion of the other square, thereby forming a necked down or narrowed portion between them.

6. An inflator for an air bag comprising a housing having a base component with a slot formed therein into the interior of said inflator, said slot having a wall, and including,

a printed circuit bridge initiator for said inflator, a portion at least of said initiator being located in the interior of said inflator through said slot and comprising,

an elongated thin film electrically nonconducting plastic substrate, said substrate having a thickness, a width and a length, and

a printed circuit bridge formed on said substrate comprising spaced electrically conducting strips extending for substantially the full length of the substrate, said strips being adapted for the connection thereto at a first end thereof of a source of direct electrical current and having a bridge connected therebetween at a second end thereof, said bridge being printed on said substrate and forming part of the portion of said printed circuit bridge that is located in the interior of said inflator through said slot,

wherein tuning of said initiator, that is, adjustment of the relationship between the magnitude of the direct electrical current flow through the initiator and the duration of such current flow required to activate said initiator, is effected by adjustment of the width and/or thickness of said substrate and the shape of said bridge,

wherein said substrate is formed of a polyamide,

wherein the thickness of said substrate is in the range of 0.002 to 0.02 inches, the width of said substrate is about 0.110 inch, and the length of said substrate is about one inch,

wherein said bridge has the shape of two generally equilateral squares that are positioned in contiguous relation with a corner portion of one square touching a corner portion of the other square, thereby providing a necked down or narrowed portion between them, and

wherein said spaced electrically conducting strips are formed of metal.

5,337,675

TRAIN FOR REPLACING A RAILROAD TRACK HAVING RETRACTABLE DRIVE MECHANISMS FOR TRAVELING ON THE CROSS-TIES WITHOUT RAILS

Tibor Aubermann, Saint-Legier, Switzerland, assignor to Matisa Materiel Industriel S.A., Crissier, Switzerland

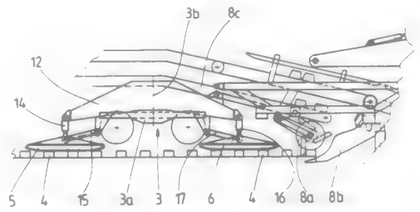
Filed Sep. 18, 1992, Ser. No. 947,154

Claims priority, application Switzerland, Oct. 30, 1991, 3169/91-3

Int. Cl.[5] **E01B** *27/00*

U.S. Cl. 104—2 **11 Claims**

1. A train for replacing a railroad track having a plane and axis comprising a first car resting on a bogey running on the track to be replaced, and a second bogey having an axis of articulation and moving with the aid of auxiliary means above a old cross-ties without rails, said train comprising at least work units for removing the old cross-ties and laying new cross-ties, wherein said auxiliary means is comprised of at least two retractable translation devices that are securely attached to an independent chassis articulated to the car by the same axis of articulation as the second bogey and arranged so as to be able to move on the cross-ties without rails, said devices being disposed on either side of the second bogey in the longitudinal direction of the track and articulated to the car about axes



parallel to the axis of articulation of the second bogey to the car.

5,337,676

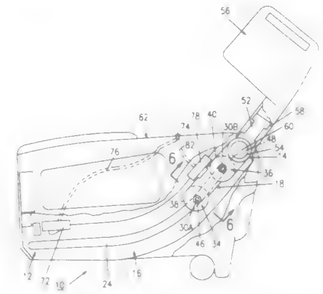
TRACK DEVICE FOR MOUNTING AN ENTERTAINMENT MODULE IN CHAIRS SLOTTED

Munir J. Ahad, Newhall, Calif., assignor to Nelson Hoffman, Inc., Pacoima, Calif.

Filed Mar. 26, 1993, Ser. No. 37,232

Int. Cl.[5] **B61F** *13/00;* **A47C** *7/72*

U.S. Cl. 104—139 **21 Claims**



1. A device for moving an object between a first location and a second location, comprising:

(a) a tracking having a height, a length, a first planar surface and a second planar surface, the track defining a slot of substantially uniform width extending between the first and second locations; and

(b) a truck slidably attached to the track comprising:

(I) a load-bearing plate having a first end and a second end and being disposed proximate to and in parallel with the first surface of the track;

(II) a backing plate having a first end and a second end and being disposed proximate to and in parallel with the second surface of the track;

(III) a first pin disposed serially through (1) the first end of the load-bearing plate, (2) the slot in the track and (3) the first end of the backing plate, to connect the load bearing plate to the backing plate, the first pin being threadably attached to the load-bearing plate such that the load-bearing plate and the track are disposed spaced apart;

(IV) a first jam nut threadably attached to the first pin; and

(V) a first bushing having an outside diameter slightly smaller than the width of the slot and disposed around the first pin within the slot;

whereby the threaded attachment of the first pin to the load-bearing plate allows the distance between the load-bearing plate and the track to be adjusted by torquing the first pin; and whereby the distance between the first pin and the track is preserved by the prevention of the rotation of the first pin by the jam nut.

5,337,677

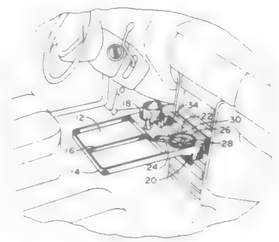
VEHICLE SNACK TRAY

Sherman L. Peeno, 42 Creekwood Sq., Cincinnati, Ohio 45246

Filed Mar. 29, 1993, Ser. No. 38,022

Int. Cl.[5] **A47B** *37/00*

U.S. Cl. 108—45 **6 Claims**



1. A vehicle snack tray comprising:

a) a tray surface, having a perimeter rim extending above said tray surface to contain slidable items placed on said tray surface;

b) at least one opening in said tray surface adapted to receive a beverage container;

c) a platform adapted to fit beneath said at least one tray opening, said platform having a beverage container support position;

d) a plurality of beamspring members adapted to fit into said tray opening, said beamspring members extending inward so that they will bend upon contact with a beverage container placed loosely in said tray opening, thereby stabilizing the beverage container from horizontal motion;

e) a tray mounting surface substantially perpendicular to said tray surface; and

f) a bracket having a substantially upright dovetail-shaped surface, said surface adapted for slidable engagement with said tray mounting surface, said bracket having means for removable attachment to a vehicle dashboard so that said tray surface is cantilevered from the vehicle dashboard in a substantially horizontal plane with resistance to horizontal motion in any direction.

5,337,678

ADJUSTABLE DESK FRAME

John E. Grout, Castlecrag, Australia, assignor to Ergonomic Equipment Pty. Ltd., New South Wales, Australia

Filed Jan. 7, 1993, Ser. No. 27,233

Int. Cl.[5] **A47B** *9/00*

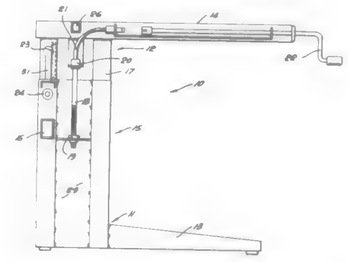
U.S. Cl. 108—147 **8 Claims**

1. A frame to support a work surface so that the work surface is adjustable height, said frame comprising:

a base to rest upon a floor and including a pair of vertical members in which are transversely spaced, generally parallel and co-extensive;

a sub-frame supported on the base for adjustable vertical movement relative thereto and to support the work surface, said sub-frame including a pair of vertical members guidably supported by the base vertical members, the sub-frame vertical members being transversely spaced, generally parallel and co-extensive and arranged with respect to the vertical members of the base so that each vertical member of the base is engaged with a respective one of the vertical members of the sub-frame to form a respective pair of vertical members; and

drive means operable by a user to move the vertical members of the sub-frame thereby to adjust the height of the work surface while maintaining said work surface in a desired orientation, said drive means including a vertical first shaft extending between the base and sub-frame in proximity to an associated pair of vertical members for rotation about a longitudinal axis of said first shaft, thrust means supporting said shaft on said sub-frame, a nut mounted on said base so as to be fixed thereto and threadably engaged by said shaft, whereby rotation of said shaft



causes longitudinal movement of said shaft and movement between the vertical members of said associated pair of vertical members, a rack gear mounted on each of the vertical members of said sub-frame, a horizontal second shaft extending between the vertical members of said base and rotatably mounted therein, and a pair of gears fixed to said second shaft, each gear being engaged with an associated one of said rack gears so that the vertical members of said sub-frame move in unison.

5,337,679

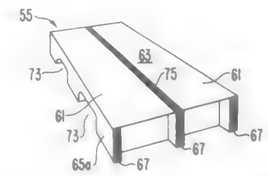
PALLET CONSTRUCTED OF SHEET MATERIAL

Stephen E. Moorman, Bowling Green, Ohio, assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Oct. 7, 1991, Ser. No. 772,661

Int. Cl.[5] **B65D** *19/00*

U.S. Cl. 108—51.3 **38 Claims**



1. A pallet formed of sheet material for storing and transporting material thereon, comprising:

a platform providing a substantially planar support surface upon which materials may be placed; and

a plurality of intersecting runners attached to said platform on an underside thereof for supporting the platform in an elevated position and providing load-bearing strength, said platform extending between said intersecting runners to provide said planar support surface;

wherein:

each of said intersecting runners is formed from a plurality of adjacent panels of said sheet material, each panel having a plurality of edges and planar surfaces, said planar surfaces lying substantially perpendicular to the support surface and being secured together in face-to-face relation; and

at least a portion of said platform and at least one of said panels of said intersecting runners are integrally formed of a single common piece of said sheet material.

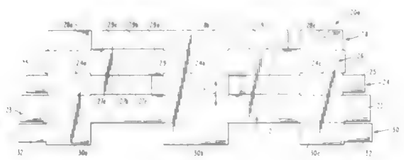
VOL 1165 ISS 3 AUG 16 1994 UMI

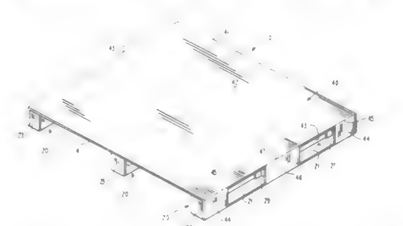
5,337,680

FIBERBOARD PALLET

Robert E. Johnston, Lake Zurich, Ill., and Richard P. Wade, Anchorage, Ky., assignors to Weyerhaeuser Company, Tacoma, Wash.

Division of Ser. No. 818,070, Jan. 8, 1992, Pat. No. 5,272,989.
This application Sep. 15, 1993, Ser. No. 121,612
Int. Cl.[5] B65D *19/00*; B31B *1/26*
U.S. Cl. 108—51.3 2 Claims





1. A method of constructing a fiberboard pallet leg, comprising:

providing a fiberboard leg blank comprising five panels connected by fold lines to each other in series;

folding the five panels at the fold lines into an initially open-ended quadrilateral shape having an open passage therethrough, one panel at one end of the series lapping another panel at an opposite end of the series;

providing a pair of outer end flaps, connected at fold lines to opposite outer ends of one of said five panels, and a pair of inner end flaps connected at fold lines to opposite outer ends of another one of said five panels;

folding the inner end flaps over respective ends of said open-ended quadrilateral shape, and said outer end flaps over said inner end flaps to close outer ends of the passage;

fixing said outer end flaps to said inner end flaps at respective ends of the passage;

two of said panels comprising side panels each having at least one side opening therethrough, said side openings being aligned in the quadrilateral shape, at least one of the side panels including a passage closing flap separated from the side opening of the side panel by score lines and connected to the side panel by at least one fold line; and

folding the passage closing flap into a position for closing the passage of the quadrilateral shape, adjacent the aligned side openings.

5,337,681

RECYCLABLE PLASTIC PALLET

David A. Schrage, 62452 Schoenherr, Washington Township, Macomb County, Mich. 48094

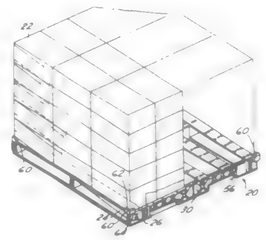
Continuation-in-part of Ser. No. 919,595, Jul. 24, 1992. This application Sep. 8, 1992, Ser. No. 941,511
Int. Cl.[5] B65D *19/12*
U.S. Cl. 108—56.1 17 Claims

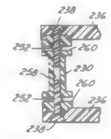
1. A pallet upon which objects may be stacked, the pallet comprising:

longitudinally spaced and laterally extending elongated front and back rails, the rails having vertically spaced top and bottom surfaces and at least one of the rails having a vertically extending opening formed therein;

laterally spaced and longitudinally extending elongate slats, at least one of the slats having an aperture formed therein; and

a retainer cooperatively held in the opening of the rail and in the aperture of the slat, the retainer including a body





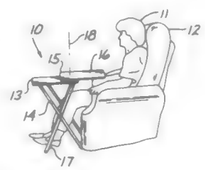
having at least one rib extending transverse to the opening in the rail, the opening having at least one shoulder formed therein extending traverse to the opening and the body and rib being oversized relative to the shoulder such that the rib is cooperatively received in a snap-fit manner within the shoulder to prevent the retainer from being withdrawn from the opening.

5,337,682

TV SNACK TABLE

Russell B. Wiseman, 4650 Dulin Rd., #231, Fallbrook, Calif. 92028

Continuation-in-part of Ser. No. 826,144, Jan. 27, 1992, abandoned. This application Sep. 28, 1992, Ser. No. 952,565
Int. Cl.[5] A47B *57/00*
U.S. Cl. 108—94 11 Claims



1. A snack table, comprising:

a lower top;

means in the form of a set of legs connected to the lower top for supporting the lower top above a horizontal support surface;

means in the form of an upper top disposed above the lower top for providing a table top surface;

said upper top including oppositely disposed left and right edges and oppositely disposed proximal and distal edges;

means in the form of a rotatable mounting component connected to the upper and lower tops for rotatably mounting the upper top on the lower top in order to enable a user to rotate the upper top relative to the lower top about a generally vertical axis of rotation that is off center so that

rotating the upper top 180-degrees moves the upper top from an overlying position in which the upper top overlies the lower top to an extended position in which the upper top extends horizontally beyond the lower top, the mounting component being rigidly connected to the upper and lower tops in order to prevent linear movement of the upper top relative to the lower top while still enabling rotational movement about the axis of rotation;

said mounting component is configured so that the rotational axis is located generally midway between the left and right edges and closer to the proximal edge than the distal edges;

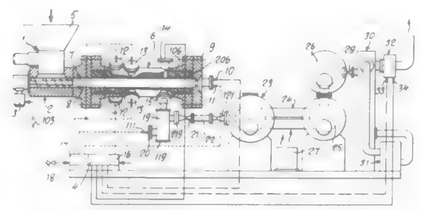
means in the form of a horizontally extending member connected to two legs in the set of legs for providing a stabilizing structure upon which the user's feet can bear for table stabilizing purposes.

5,337,683

PROCESS AND PLANT FOR THE DISPOSAL OF WASTE

Paolo Amadesi; Fabio Cappelli, both of Bologna, and Sergio Pazzaglia, S. Lazzaro di Savena, all of Italy, assignors to ITEA S.r.l., Italy

Filed Sep. 29, 1992, Ser. No. 953,119
Claims priority, application Italy, Oct. 8, 1991, BO91 A 000356
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 15 Claims



1. A process for the disposal of waste, comprising the steps of:

depositing the waste in a pressurized furnace;

injecting a comburent consisting of air enriched by oxygen into said furnace to achieve a predetermined temperature and pressure for causing sublimation and complete molecular cracking of the waste;

subjecting the gases or vapors resulting from the sublimation to a rapid adiabatic or semi-adiabatic expansion within at least one of a suitable volume or a suitable mechanical system to cause a first strong cooling of said gases or vapors; and

cooling said gases in a conventional heat-dissipating system.

5,337,684

MATERIAL DECONTAMINATION APPARATUS AND METHOD

Burg W. Summers, 8434 Burwood Park Dr., Spring, Tex. 77379

Filed Oct. 27, 1992, Ser. No. 967,156
Int. Cl.[5] F23G *5/12*
U.S. Cl. 110—346 28 Claims

1. A system for removing vaporizable contaminants from flowable material, the system comprising:

a treatment vessel,

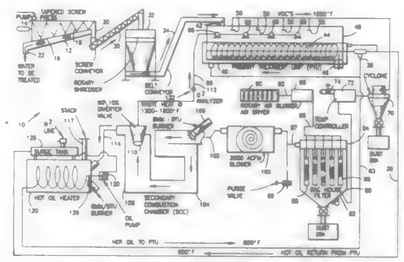
material introduction means for introducing material into the vessel,

direct heating means for flowing a direct heating fluid into the treatment vessel for directly contacting and heating the material,

indirect heating means for heating the material in the vessel, the indirect heating means having flow passages for circulating a hot fluid therethrough to indirectly heat the material,

exhaust means communicating with the vessel through which vaporized contaminants from the material flow from the vessel,

secondary heating means outside the vessel for heating vaporized contaminants exhausted from the vessel, and



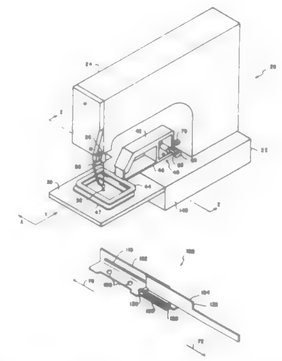
heat recovery means for recovering recovered heat from heated exhausted vaporized contaminants and for supplying a portion of the recovered heat directly to the direct heating means to directly heat the material in the vessel and for supplying a portion of the recovered heat to the indirect heating means to aid in indirectly heating the material.

5,337,685

EXPANSION KIT FOR PROGRAMMABLE SEWING MACHINE

Paul Badillo, Littleton, Colo., assignor to Ralph's Industrial Sewing Machine Company, Denver, Colo.

Filed Jun. 29, 1993, Ser. No. 85,280
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.15 23 Claims



1. A sewing machine for stitching a pattern on a stitchable material, comprising:

a clamp assembly for engaging the stitchable material;

means for moving said clamp assembly along an axis in both first and second directions, said first direction being opposite said second direction;

first and second limit switches mounted on said sewing machine for limiting a range of movement of said clamp assembly in said first and second directions, respectively;

a tripping assembly interconnected and movable with said clamp assembly and comprising first and second tripping

VOL 1165 ISS 3 AG 16 1994 UMI

members movable relative to each other for tripping said first and second limit switches, respectively, wherein a tripping portion of said second tripping member is extendable beyond a tripping portion of said first tripping member in said first direction; and

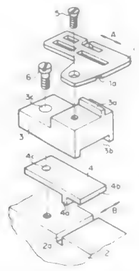
a moving assembly for moving said second tripping member relative to said first tripping member to thereby prevent said second tripping member from tripping said first limit switch as said clamp assembly and said tripping assembly move in said first direction.

5,337,686

NEEDLE PLATE APPARATUS FOR SEWING MACHINE

Yoshinobu Nagata, Chofu, Japan, assignor to Juki Corporation, Chofu, Japan

Filed Jun. 18, 1993, Ser. No. 79,343
Claims priority, application Japan, Jun. 19, 1992, 4-042501[U]
Int. Cl.[5] D05B *75/00, 1/20*
U.S. Cl. 112—260 **6 Claims**



1. In an overlock sewing machine having a needle plate, a needle which is movable in an upward and downward direction so as to penetrate into a predetermined position of the needle plate, the overlock sewing machine comprising:

a first support member supported under said needle plate on a frame of said sewing machine, said first support member including first means for horizontally moving in a first direction;

a second support member on which said needle plate is directly mounted, said second support member being under said needle plate and mounted on the upper surface of said first support member, said second support member including second means for moving in a second direction perpendicular to said first direction; and

a locking member for fastening said first and second support members to said machine frame in a position obtained by moving said first and second support members in said first and second directions.

5,337,687

PROCESS FOR BRINGING TOGETHER, ALIGNING, AND CO-PROCESSING FLACCID WORKPIECE LAYERS

Philipp Moll, Königsberger Strasse 74, 5100 Aachen, Fed. Rep. of Germany

PCT No. PCT/EP90/01589, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO91/04365, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 18, 1990, Ser. No. 838,785
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1989, 3931673
Int. Cl.[5] D05B *21/00;* **B65H** *7/02*
U.S. Cl. 112—262.3 **9 Claims**

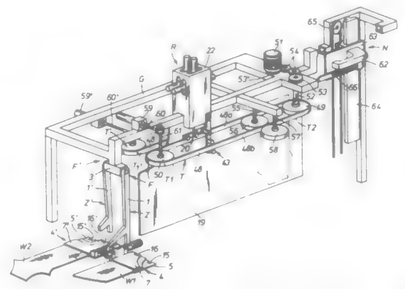
1. A process for bringing together and co-processing substantially horizontal first and second workpieces, the process comprising the steps of:

moving the first and second workpieces from a horizontal starting position to a vertical orientation at a scanning and aligning station by a conveying means;

said scanning and aligning station grasping the first and second workpieces from said conveying means;

scanning and aligning the first and second workpieces with each other at said scanning and aligning station;

providing a transport means for transporting said aligned first and second workpieces to a processing site, said transport means having a first section and a second section;



moving said first section to a non-carrying position when said conveying means is moving the first and second workpieces to said scanning and aligning station, and when said scanning and aligning station is scanning and aligning the first and second workpieces, in order to allow operation of said conveying means and said scanning and aligning station;

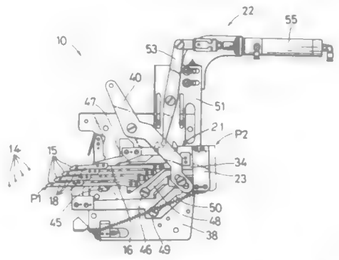
moving said first section to a carrying position after said scanning and aligning, to cause said first section to grasp the aligned first and second workpieces for said transporting to said processing site.

5,337,688

LOOPER THREAD HOLDING APPARATUS FOR A SEWING MACHINE AND METHOD OF HOLDING A LOOPER THREAD

Katsumi Arima, Higashiosaka, Japan, assignor to Union Special Japan Ltd., Osaka, Japan

Filed Jun. 15, 1993, Ser. No. 76,623
Int. Cl.[5] D05B *65/00*
U.S. Cl. 112—298 **3 Claims**



1. A looper thread holding apparatus for a sewing machine, comprising:

a thread cutting mechanism including a cutting edge;

a thread holding mechanism including a holding member;

thread hooking mechanism having a thread hooking member for hooking a looper thread having a predetermined tension and a first surface for cooperating with said thread cutting mechanism and a second surface for cooperating with said thread holding mechanism, the thread hooking member being disposed in proximity to the moving path of a vertically reciprocating needle, a moving member operatively connected to said thread hooking member for retracting the thread hooking member, after the looper thread has been hooked, to a predetermined first refuge position to draw the looper thread toward the first refuge position, said first refuge position being remote from the moving path of the vertically reciprocating needle;

said thread cutting mechanism functioning to cut the looper thread as it is drawn toward the first refuge position by the thread hooking mechanism, by the cooperation of said first surface of the thread hooking member and said cutting edge which is disposed in proximity of the first surface;

said thread holding mechanism being located in the vicinity of said cut portion of the looper thread and functioning to hold said cut portion by the cooperation of said second surface of the thread hooking member and said holding member which is resiliently pressed against said second surface; and

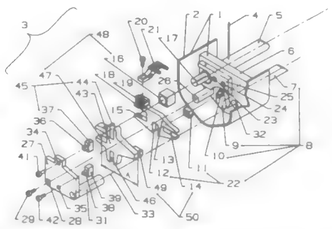
a movement member for, immediately after a sewing operation is started, retracting said thread hooking mechanism to a second refuge position separated from the first refuge position, to release said cut portion of the looper thread held by the holding mechanism.

5,337,689

FEED DOG MECHANISM FOR SEWING MACHINE

Benno V. Tilders, Waiblingen, Fed. Rep. of Germany, assignor to Union Special GmbH, Fed. Rep. of Germany

Filed Jun. 8, 1993, Ser. No. 74,118
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1992, 4220008
Int. Cl.[5] D05B *27/08*
U.S. Cl. 112—323 **19 Claims**



1. A sewing machine having a workpiece feed device which performs a lift and feed movement, comprising:

at least one feed dog;

a rotatable main shaft having a lift eccentric;

at least one feed drive;

at least one feed dog carrier drivingly connected to said main shaft and said feed drive, said lift eccentric providing said feed dog carrier with lift movement and said feed drive providing said feed dog carrier with feed movement; and

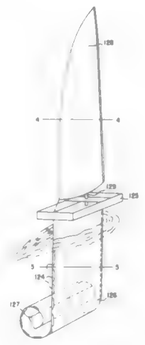
an auxiliary carrier located next to said feed dog carrier and drivingly connected to said main shaft to provide lift movement, said auxiliary carrier being guided by a vertical guide that confines said auxiliary carrier to vertical movement and extends substantially perpendicular to the feed direction, and having a lift that receives a limited component of movement from said main shaft to transmit only lift movement to said feed dog carrier.

5,337,690

VERTICAL SAIL BOAT

Roger G. F. Moisdon, 4875 SW. 28th Ave., Fort Lauderdale, Fla. 33312

Filed Jul. 16, 1993, Ser. No. 93,050
Int. Cl.[5] B63B *1/12*
U.S. Cl. 114—39.1 **13 Claims**



1. A vertical watercraft for stable transport in rough seas, comprising:

a. a normally above-waves sail;

b. a normally vertically-disposed, elongate hull, normally substantially submarine in operation; and

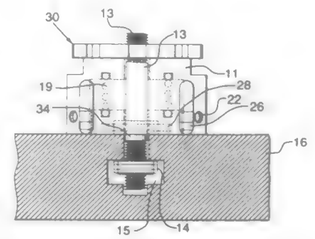
c. adjustable ballast means disposed within said hull to maintain said sail above water and to regulate trim, attitude and bottom clearance of said hull under different loads and operating conditions.

5,337,691

MAST TRACK CLUTCH ASSEMBLY FOR SAILBOARDS

D. Thomas Borcherdt, Box 39D, R.R. #1, Tusket, Nova Scotia B0W 3M0, Canada, assignor to D. Thomas Borcherdt, Yarmouth, Canada

Filed Aug. 18, 1993, Ser. No. 107,570
Int. Cl.[5] B63B *35/72*
U.S. Cl. 114—39.2 **7 Claims**



1. A mast track clutch assembly for attaching a mast to a sailboard having an internal longitudinally-extending slotted track, the assembly comprising:

(a) a stud member having one end adapted to extend into the slotted track, the other end of the stud member being adapted to receive the mast;

(b) a fastener adjustably positionable on the stud member;

(c) a housing slidably fitted on the stud member and positioned between the sailboard and the fastener;

(d) a plate biased away from the housing to press against the surface of the sailboard to prevent movement of the mast track clutch assembly relative to the sailboard; and,

VOL 1165 ISS 3 AG 16 1994 UMI

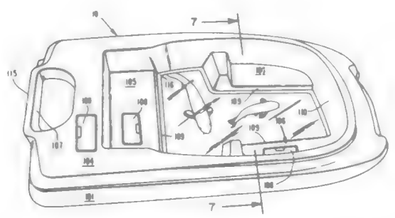
(e) a pedal pivotally mounted to the housing, the pedal having a first end extending outside of the housing and having a second end connected to the plate such that pressing the first end of the pedal acts against the bias to move the plate relative to the housing; whereby the longitudinal position of the mast relative to the sailboard may be adjusted while the pedal is pressed.

5,337,692

TRANSPARENT BOTTOM BOAT

Thomas C. Troiani, 614 Knob Hill Ave., Redondo Beach, Calif. 90277

Continuation-in-part of Ser. No. 998,068, Dec. 23, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,257
Int. Cl.[5] B63B *5/24*
U.S. Cl. 114—61 16 Claims



1. A boat with a viewing plane which may contact the water comprising, in combination:

a unitarily fabricated, transparent hull having a substantially flat viewing plane, a plurality of sponsons adjacent said viewing plane, the inside panel of said sponsons being formed at a preselected angle from vertical to said viewing plane and an outboard upper peripheral edge a preselected distance above said viewing plane and the surface of said water;

a unitarily fabricated deck having an outboard lower peripheral edge congruent with and mounted on said upper peripheral edge and an aperture edge congruent with the inside surface of said hull forming a border for a preselected portion of said viewing plane.

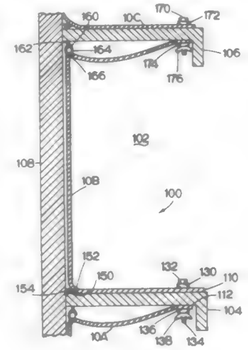
5,337,693

INTERNAL LINERS FOR OIL TANKERS OR BARGES TO MINIMIZE OIL SPILLS

Philip E. Ross, 5175 Lodato Ct., Concord, Calif. 94521; Leonard T. Stanton, 931 Taylor Ave., Alameda, Calif. 94501, and Timothy H. Layne, 51 Cityview Way, San Francisco, Calif. 94131

Filed Sep. 21, 1992, Ser. No. 947,796
Int. Cl.[5] B63B *43/10*
U.S. Cl. 114—69 8 Claims

1. A backup containment structure in a floating tank vessel having a cargo tank adjacent to an outer hull, wherein the cargo tank contains longitudinal stiffener members which are affixed to and which project inwardly from an internal surface of the outer hull, comprising a flexible liner segment installed in a stiffener bay between longitudinal stiffener members, wherein the liner segment is directly coupled in a watertight manner to said longitudinal stiffener members to provide a watertight region between the liner segment and the outer hull wherein the liner segment can be pushed a substantial distance into the cargo tank without breach of the liner segment if the outer hull is breached, and wherein the liner segment is directly coupled to at least one longitudinal stiffener member by means of a detachable watertight attachment device which allows at least one edge of the liner segment to be temporarily detached from said stiffener member to allow periodic visual



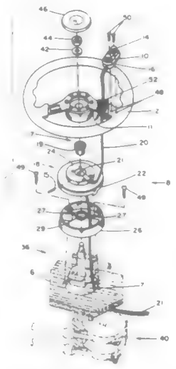
inspection of the interior surface of the outer hull in a region covered by the liner segment.

5,337,694

TRIM APPARATUS FOR OUTBOARD MOTOR

Charles D. Nix, 1578 Slaughter Rd., Madison, Ala. 35758; Johnny P. Baker, 782 Burwell Rd., Harvest, Ala. 35749, and William F. Huntley, 206 Wellington Rd., Athens, Ala. 35611

Continuation of Ser. No. 840,550, Feb. 25, 1992, abandoned. This application Mar. 16, 1993, Ser. No. 32,440
Int. Cl.[5] H01R *39/00*
U.S. Cl. 114—144 R 3 Claims



1. In a steerable vehicle having a dashboard and steering means including a rotatable shaft extending through said dashboard, said rotatable shaft having a steering wheel secured thereto; propulsion means for propelling said vehicle; and actuation means operable to affect the operation of said vehicle; a kit disposed for mounting in said vehicle for energization of said actuation means, said kit comprising:

switch means mountable on said steering wheel for movement therewith;

a cable reel assembly including a rotary section and a stationary section each having a chamber therein; said rotary section having a top and an outer surface; said stationary section being rigidly mounted to said dashboard, said rotary section being secured to said rotatable shaft for rotational movement therewith and having an opening extending between said outer surface and said chamber, said opening defining a radially disposed cable passageway for directing said cable into said chamber of said rotary section in a path which is substantially normal to said rotational shaft;

wiring harness means having first and second end portions and an intermediate coiled portion, said first end portion being connected to said actuation means operable to affect the operation of said vehicle, said intermediate coiled portion being disposed for expansion or contraction in said stationary section of said cable reel assembly responsive to rotation of said rotatable shaft, said wiring harness means having a portion adjacent said intermediate portion positioned in and extending through said opening and into the interior of said rotary section;

a base adapted for attachment to said dashboard and disposed for supporting said stationary section of said cable reel assembly; and

clamp means for securing said wiring harness means adjacent its said intermediate coiled portion to said rotary section of said cable reel assembly;

said stationary section of said cable reel assembly including a hollow chamber and said intermediate coiled portion of said wiring harness means being wrapped into a plurality of convolutions within said hollow chamber, whereby said convolutions expand when said steering wheel is rotated in a first direction and contract when said steering wheel is rotated in a second direction.

5,337,695

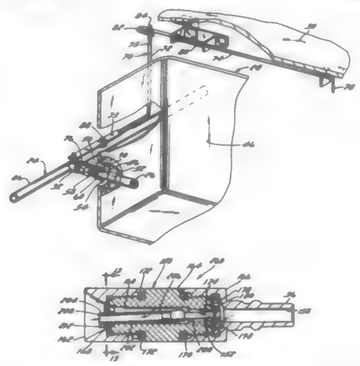
Patent Not Issued For This Number

5,337,696

ANIMAL WATERING SYSTEM AND WATERING VALVE USABLE THEREWITH

William E. Edstrom, Waterford; Edward T. Froehlich, Greenfield, and George J. Grkavac, Milwaukee, all of Wis., assignors to Edstrom Industries, Inc., Waterford, Wis.

Filed May 10, 1993, Ser. No. 75,223
Int. Cl.[5] A01K *1/00*
U.S. Cl. 119—18 20 Claims



1. An animal watering valve comprising:

A. a housing having a longitudinal bore formed therein and having an inlet and an outlet;

B. a valve element located in said bore;

C. a valve stem located in said bore and extending from said valve element toward said outlet, said valve stem being laterally deflectable with respect to said housing to open said valve element; and

D. an elastomeric shield located in said housing and having

(1) a first portion immovably held in place between said valve element and said outlet, and

(2) a second portion which resiliently deforms upon lateral deflection of said valve stem and which has an opening receiving said valve stem, said shield-non-sealingly engaging said valve stem at least when said valve stem is deflected.

14. An animal watering system comprising:

A. a support;

B. a source of water;

C. a cage mounted on said support;

D. an animal watering valve fastened to said cage and having an outlet positioned in said cage; and

E. a valve coupling including

(1) a first fitting attached to said valve and projecting from said cage;

(2) a second fitting attached to said source of water and connectable to said first fitting, one of said first and second fittings comprising a male fitting, and the other of said first and second fittings comprising a female fitting, said female fitting having a slidable collar which locks said male fitting to said female fitting, and

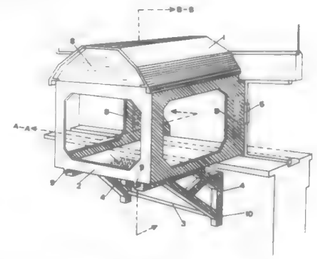
(3) a decoupler which, when actuated, retracts said collar to unlock said male fitting from said female fitting.

5,337,697

FELINE WINDOW PERCH

William M. Trimarchi, and Sharon M. Trimarchi, both of 688 E. Pike, Indiana, Pa. 15701

Filed Aug. 31, 1993, Ser. No. 115,121
Int. Cl.[5] A01K *1/03*
U.S. Cl. 119—19 1 Claim



1. An enclosed feline window perch for placement in a window of a dwelling comprising:

a perch body having a front, rear, and two sides; said perch body further including a bottom and a front wall and two side walls extending upwardly from the bottom so as to enclose the front and sides of said perch body, respectively; the rear of said perch body being open for allowing entrance and egress from said perch body; each side wall including an upper body extension projecting upwardly therefrom for engaging with a sash of the window and a lower body extension projecting downwardly therefrom for engaging with a sill of the window, thereby attaching the perch within the window, said upper and lower body extensions being located adjacent the rear of said perch body; each wall further including a large opening therein and a clear panel covering said opening and secured by tabs affixed to said wall; said bottom including a pair of slotted bracket supports extending downwardly from an underside thereof; each side wall and said bottom having a plurality of smaller vent openings therein for the circulation of fresh air through the window perch;

a roof attached to an upper end of said walls and overlying said perch body; said roof having a plurality of vent openings therein; and

a support bracket assembly attached to the bottom of The perch body; said bracket assembly including a pair of brackets each having a groove in an upper end thereof

VOL 1165 ISS 3 AG 16 1994 UMI

which engages a respective one of said slotted bracket supports on said perch body, and a bracing rod extending between said brackets;

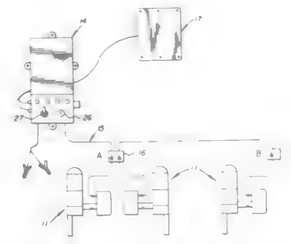
whereby, when said perch is placed in the window, it extends outwardly of the dwelling, the upper body extensions engage the sash of the window, the lower body extensions engage the sill of the window, and the brackets firmly abut against the exterior of the dwelling below the window.

5,337,698

FISH FEEDING SYSTEM

Ronald L. Widmyer, Charles Town, W. Va., assignor to Federal Hill Farm, Inc., Charles Town, W. Va.

Filed Mar. 11, 1993, Ser. No. 29,600
Int. Cl.[5] A01K *61/02*
U.S. Cl. 119—51.04 21 Claims



13. An automatic fish feeding system comprising:

feeding means for feeding a school of fish;

said feeding means including

means for mounting said feeding means adjacent a tank,

means for holding a supply of food, and

means for discharging food from said holding means into said tank;

means for controlling said feeding means including

means for continuously supplying a first voltage to said feeding means, and

means for intermittently supplying a second voltage to said feeding means;

means for said feeding means for selecting between said first voltage and said second voltage;

and means for said feeding means for independently connecting said discharging means to said selecting means.

5,337,699

HAY FEEDER FOR LIVESTOCK

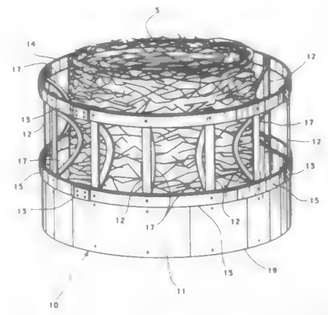
Karen Dyson, P.O. Box 124, North Manchester, Ind. 46962

Filed Nov. 1, 1993, Ser. No. 144,346
Int. Cl.[5] A01K *1/10*
U.S. Cl. 119—60 15 Claims

1. A resiliently flexible hay feeder comprising:

a cylindrical frame having a peripheral edge, an upper portion and a lower portion, said upper portion including a plurality of openings large enough for the head and neck of an animal to pass through, said lower portion being a cylindrical skirt relatively impervious to hay;

said cylindrical frame having a cross sectional shape and being sufficiently flexible that said cross sectional shape can be significantly distorted by the application of a force, but said cylindrical frame resiliently resuming said cross sectional shape when the force is removed; and



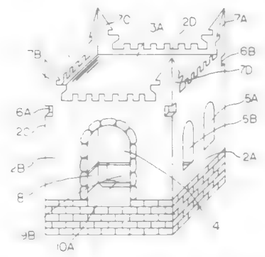
means, attached to said cylindrical frame, for maintaining a hay bale positioned within said cylindrical frame a fixed distance away from said peripheral edge.

5,337,700

FOLDABLE, DISPOSABLE KITTY LITTER CONTAINER

Bobbie L. Toft, 23 Wilwall St., Ft. Waltonbeach, Fla. 32547

Filed Nov. 18, 1993, Ser. No. 154,082
Int. Cl.[5] A01K *67/00*
U.S. Cl. 119—168 1 Claim



1. A foldable, disposable kitty litter container, comprising four distinct, and separate parts:

a semi permanent, foldable, substantially square outside enclosure, said enclosure, when unfolded, having a front section with entry means, a rear section, a right side section with window means, and a left side section with window means, an open top, and an open bottom, thereby creating said enclosure, said enclosure also having four corners, said enclosure having scratching posts located at the top of each said four corners, said enclosure having four indentations cut through its horizontal surface, but said indentations only creased through its vertical surface, one said indentation at each said corner, and said indentations being located a distance downward from said open top, said indentations being puffball inwardly, and foldable inwardly into said enclosure, and said indentations thereby forming a top support system at each said corner, a separate substantially square two piece top section, said two piece top sectior. being two flat pieces of material, formed to fit snugly inside said open top of said enclosure, and said two piece top section being supported at each said corner by said pushed inwardly indentations, and, one said top piece being lain on top of the other said top piece, said two piece top sections adding strength, and stability to said enclosure, a foldable, and disposable bottom litter tray, said bottom litter tray being, substantially square when folded, said bottom litter tray being of an outside dimension to fit snugly into said open bottom of said enclosure, when said bottom litter tray being in the folded position,

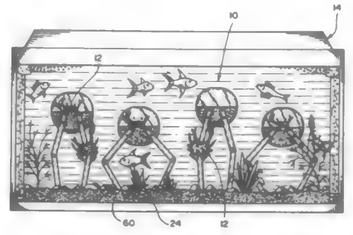
said bottom litter tray having folding means, and, locking means, said folding means being a unique pattern of pre-formed creases in said material, and at least four pre-cut slots in said material, said pre-formed creases thereby forming said bottom litter tray, when in the folded position, said locking means of said bottom tray being four unique pre-formed tabs, said pre-formed tabs being inserted into four said pre-cut slots, said tabs and said slots thereby locking said bottom litter tray in the folded position.

5,337,701

CRAB CASTLE FOR AN AQUARIUM AND COMBINATION THEREWITH

Steven A. Syers, 7900 Birchdale Ave., Elmwood Park, Ill. 60635

Filed Oct. 23, 1992, Ser. No. 965,158
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—251 36 Claims



23. In combination, an aquarium, and a habitat for maintenance of a miniature crab within the aquarium, the habitat comprising a capsule of a hemispherical shape, the capsule including a top shell, the shell being transparent and defining a chamber having a configuration capable of entrapping an air bubble therebeneath in the water, a narrow semicylindrical platform being in matched engagement with said top shell in a manner to rest above a bottom edge of said top shell, a planar base, a plurality of legs adapted to engage said base and said platform and means connected between the legs and said platform to prevent the capsule from floating to a water surface when submerged in water and in a manner to maintain the platform at a desired position above the base, said narrow platform having ballast for securing the habitat against movement by air when entrapped in the top shell.

5,337,702

FIELD DOG TRAINING DEVICE AND METHOD

Robert J. Gribble, 26442-164 SE., Kent, Wash. 98042

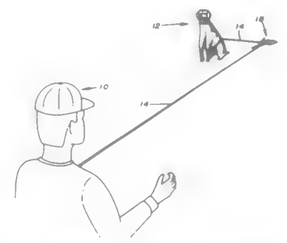
Filed Feb. 25, 1993, Ser. No. 23,326
Int. Cl.[5] A01K *15/00*
U.S. Cl. 119—786 15 Claims

1. A dog training device, comprising:

a. a rigid, elongated bar member, said bar member having a first end, a second end, a top surface, a bottom surface, and a longitudinal axis;

b. A ground engaging means attached to said bar member near said second end, said ground engaging means capable of selectively attaching said device to the ground;

c. A rope engaging means capable of engaging a transversing, forward moving rope disposed over said top surface of said bar member, said rope engaging means being attached at a fixed position on said bar member so that when said rope engages said rope engaging means the upward force is exerted thereon is approximately equal to the downward force exerted by said ground engaging means



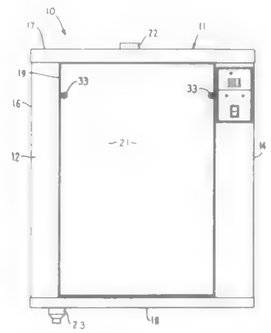
on said ground thereby preventing movement of said device.

5,337,703

STEAM GENERATOR

Ronald D. Schlesch, Stuart, Fla., and Rex B. Cheskaty, Kalamazoo, Mich., assignors to Trouvay & Cauvin, Asnieres, France and Armstrong International, Inc., Three Rivers, Mich.

Filed Jul. 14, 1993, Ser. No. 91,345
Int. Cl.[5] F22B *37/18, 37/48*
U.S. Cl. 122—379 9 Claims



1. A method for reducing the amount of minerals deposited on a surface of a steam generator, which surface contacts water containing compounds that will form said mineral deposits during steam generation, the method comprising the steps of: during steam generation, continuously contacting the water in the steam generator with a non-woven, porous mat made of fibers of fiber-forming synthetic resin effective to cause said minerals to deposit on said mat in preference to said surface.

5,337,704

ENGINE COOLING SYSTEM WITH THERMOSTAT COOLANT FLOW CONTROL BETWEEN HEAD AND BLOCK

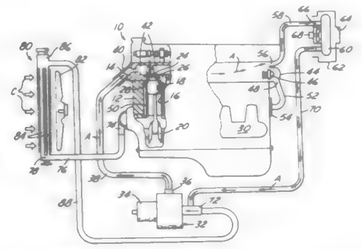
David B. Roth, Bloomfield, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 29, 1993, Ser. No. 128,181
Int. Cl.[5] F01P *7/14*
U.S. Cl. 123—41.1 2 Claims

1. An improved cooling system for an internal combustion engine having an engine block with a liquid coolant flow passage therein, a cylinder head secured to said engine block and with a liquid coolant flow passage therein separate from said engine block flow passage, a pump with an inlet and an

VOL 1165 ISS 3 AG 16 1994 UMI

outlet for producing coolant flow, coolant passage means connecting said pump inlet to said cylinder head flow passage so that coolant is first passed through said cylinder head flow passage, a radiator with an inlet and outlet, a heat exchanger for warming a passenger compartment, return passage means connecting said heat exchanger to said pump, normally closed thermostatic means operatively associated with said cylinder head flow passage to block coolant flow from said cylinder head flow passage into said engine block flow passage during an engine warm-up mode of operation whereby coolant flows



from the cylinder head flow passage soley to said heat exchanger and then back to said pump, passage means connecting said engine block flow passage to said radiator inlet and return passage means connecting said radiator outlet to said inlet of said pump, said thermostatic means opening in response to an increased coolant temperature to permit coolant to flow from said cylinder head flow passage to said engine block flow passage whereby coolant flows first through said cylinder head flow passage and then through either said engine block flow passage and said radiator or through said heat exchanger.

5,337,705

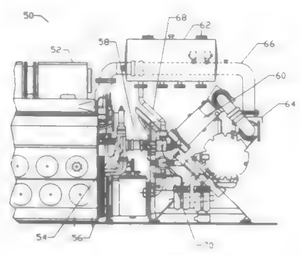
HIGH PERFORMANCE COOLANT SYSTEM WITH MANIFOLD FOR LARGE DIESEL ENGINES

Christopher K. Lane, 13624 E. Nelson Ave., City of Industry, Calif. 91746

Filed Jul. 6, 1993, Ser. No. 87,604

Int. Cl.[5] F01P *11/08*

U.S. Cl. 123—41.33 **13 Claims**



1. In a large diesel engine system including a lubrication oil cooler through which is circulated coolant and which comprises a plurality of cooler outlet ports, one or more engine coolant pumps having one or more suction inlet ports for receiving coolant from said oil cooler, a coolant manifold assembly comprising:

a manifold body;

a coolant outlet port defined in said manifold body for each coolant pump suction inlet port, wherein each manifold outlet port is for connection to a corresponding pump suction inlet port;

a plurality of coolant inlet ports defined in said manifold body, wherein the number of coolant inlet ports is greater than the number of coolant outlet ports;

said manifold body comprising means for distributing coolant flow from said inlet ports to said one or more outlet ports,

wherein said cooler manifold provides improved coolant circulation through said oil cooler.

5,337,706

HIGH-PERFORMANCE INTERNAL-COMBUSTION ENGINE, PARTICULARLY OF THE FOUR-STROKE TYPE

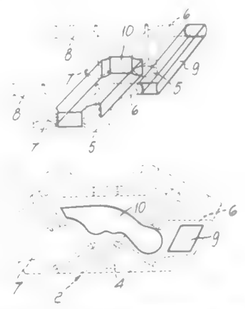
Ruben E. De Blasis, Calle 509 nr. 1425 - esquina 9 bis, 1901 Ringuelet, Ciudad de la Plata (Prov. of Buenos Aires), Argentina

Filed Nov. 5, 1993, Ser. No. 148,700

Claims priority, application Italy, Nov. 16, 1992, MI92 A 002613

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—52.3 **4 Claims**



1. High-performance internal-combustion engine, particularly of the four-stroke type, comprising an engine block inside which combustion chambers are formed, each one of said chambers slidingly accommodating a piston and being connected to at least one inlet duct for air-fuel mixture and to at least one discharge duct for the burnt gases produced by combustion, said ducts being connected to the respective combustion chamber through valve means, the engine further comprising a converting-compensating assembly comprising at least one communication passage mutually connecting and allowing the mixture to transfer between at least two inlet ducts and at least one thermal contact chamber into which the mixture may flow, said one thermal contact chamber being connected to at least one of said inlet ducts proximate to their outlet leading into the associated combustion chamber, said thermal contact chamber being formed at the engine head and being in thermal contact with the associated combustion chamber.

5,337,707

INTERNAL COMBUSTION ENGINE

David W. Blundell, Attleborough, and Neil D. Wilson, Norwich, both of United Kingdom, assignors to Group Lotus PLC, Norwich, United Kingdom

Filed Oct. 27, 1992, Ser. No. 941,422

Claims priority, application United Kingdom, Apr. 27, 1990, 9009561

Int. Cl.[5] F02B *75/02*

U.S. Cl. 123—65 PE **31 Claims**

1. An internal combustion engine comprising a cylinder;

at least one piston reciprocable within the cylinder;

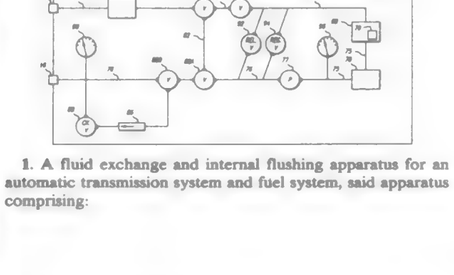
an exhaust passage;

an exhaust port allowing communication of the cylinder with the exhaust passage the exhaust port being opened and closed by the piston when the piston reciprocates in the cylinder;

movable shutter means for varying the effective area of the exhaust port, the movable shutter means varying the effective area cyclically in a timed relationship with reciprocal motion of the piston within the cylinder;

sensor means for measuring one or more operating characteristics of the engine and for generating signals corresponding thereto, and a control unit which processes the signals generated by the sensor means and controls motion of the shutter means in accordance with the signals generated by the sensor means, wherein:

the shutter means comprises a shutter and a transmission mechanism for oscillating the shutter between a first position in which the exhaust port has a first effective area and a second position in which the exhaust port has a second smaller effective area;



the shutter is in or close to the first position thereof when the piston passes the shutter whilst moving from the top dead centre position thereof towards the bottom dead centre position thereof;

the shutter is in or close to the second position thereof when the piston passes the shutter on moving from the bottom dead centre position thereof towards the top dead centre position thereof; and

the control unit varies the first position of the shutter with changes in sensed operating characteristics to advance or retard the opening of the exhaust passage.

5,337,708

APPARATUS AND METHOD FOR AUTOMATIC TRANSMISSION SYSTEM FLUID EXCHANGE AND INTERNAL SYSTEM FLUSHING

We-Yu Chen, 3708 Avalon Blvd., Los Angeles, Calif. 90011

Filed Jun. 15, 1993, Ser. No. 76,996

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 A **12 Claims**

1. A fluid exchange and internal flushing apparatus for an automatic transmission system and fuel system, said apparatus comprising:

a storage tank for holding fluid to treat said systems;

a transfer conduit connected to a pump for circulating said fluid in said systems;

a supply conduit leading from said pump to an outlet port, said outlet port adapted to be connected to a conduit which leads to said systems;

a return conduit connected to said storage tank and to an inlet port, said return conduit adapted to be connected to a conduit leading from said system;

filter apparatus located in at least one of said transfer and return conduits;

a bypass conduit connected between a first valve located in said supply conduit and a second valve located in said return conduit;

said first valve selectively directing flow to said outlet port from one of said bypass conduit and said pump, and

said second valve for selectively directing flow from said return port to one of said bypass conduit and said storage tank.

5,337,709

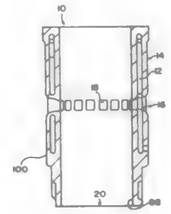
ONE PIECE CYLINDER LINER INCLUDING A DRAFTLESS WATER JACKET

Richard J. Clark; Richard K. Clark, both of Gilman, and Dennis E. Clark, Onarga, all of Ill., assignors to Clark Industries, Inc., Gilman, Ill.

Filed Mar. 11, 1993, Ser. No. 29,625

Int. Cl.[5] F02R *75/02*

U.S. Cl. 123—65 VC **4 Claims**



1. A unitary, one piece cylinder liner of predetermined length incorporating a water jacket therein, the liner being vertically cast and comprising:

vertical and concentric substantially straight inner and outer cylindrical walls:

planar upper and lower surfaces having a ring configuration and joining the walls to one another

the outer cylindrical wall being spaced from the inner wall to create an open area between the walls, with the outer wall and open area therewithin defining the water jacket for the liner;

the water jacket having an inlet thereto in a bottom area of the outer cylindrical wall;

a radial circle of air ports approximately centered along the length of said liner and extending through a full thickness of the liner, said air ports being separated from one another and from the interior open area by walls which are radial to a center axis of the liner;

the areas between the air ports being hollow to create a complete continuous water path extending the length of the liner, the water path being substantially free of drafts therein and the cylindrical walls being of substantially uniform thickness along the length of the water path.

VOL 1165 ISS 3 AG 16 1994 UMI

5,337,710

INJECTION ARRANGEMENT FOR A TWO-STROKE ENGINE

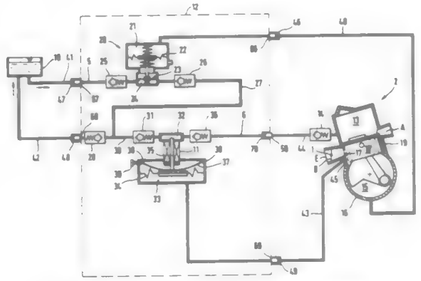
Roland Adam, Besigheim, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed May 14, 1993, Ser. No. 61,048

Claims priority, application Fed. Rep. of Germany, May 16, 1992, 9206687[U]

Int. Cl.[5] F02B *63/02;* F02M *69/02, 35/10;* F02D *9/10*

U.S. Cl. 123—73 C 3 Claims



1. The combination of a fuel-injection arrangement and a two-stroke engine of a portable handheld work apparatus, the combination comprising:

a fuel tank for supplying fuel for the engine;

said engine having a crankcase wherein a crankcase pressure is developed during operation of the engine;

a fuel-feed pump having a suction line connected to said fuel tank and having a pressure line;

said crankcase being operatively connected to said fuel-feed pump for driving said pump to pump fuel from said tank through said suction line;

a fuel-injection pump having a suction end connected to said pressure line and a pressure end for supplying fuel for injection into said engine;

said fuel-feed pump and said fuel-injection pump being mounted in a common injection-pump block separate from said engine;

said engine having an intake channel through which combustion air is drawn into said engine;

said intake channel being configured so as to open directly into said engine;

a throttle flap pivotally mounted in said intake channel so as to be completely separate from said common injection-pump block;

an injection line connected to said pressure end of said fuel-injection pump for conducting said fuel for injection into said engine to mix with said combustion air to form an ignitable fuel/air mixture; and,

control means for controlling the application of said crankcase pressure to said fuel-injection pump for driving said fuel-injection pump.

5,337,711

CAMSHAFT PHASE CHANGE DEVICE

Keith Hampton, Ann Arbor, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 924,766, Nov. 18, 1992, Pat. No. 5,235,941, which is a division of Ser. No. 840,234, Feb. 24, 1992, Pat. No. 5,172,658. This application Aug. 5, 1993, Ser. No. 102,684

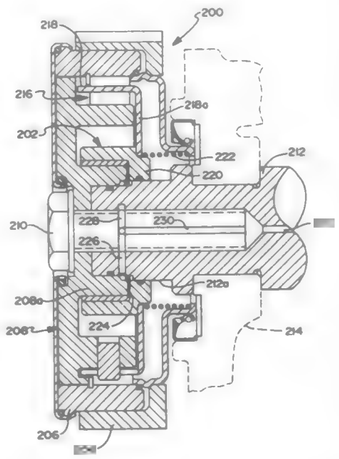
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[5] H01L *1/34*

U.S. Cl. 123—90.17 14 Claims

1. A device including first and second members disposed for rotation about an axis and an assembly for coupling the members and selectively advancing and retarding rotation of the members relative to each other during rotation of the members in one direction by a torque having positive and negative torque pulses with respect to an average value of the torque; characterized by:

the assembly comprising an advance and a retard one-way clutch means including race surface means having a radially inwardly facing cylindrical surface concentric to the axis and common to both of the clutch means and disposed for rotation with one of the members, a plurality of first and a plurality of second ramp surfaces disposed for rotation with the other member and spaced radially inward from the race surface means, a first roller interposed for wedging engagement between each first ramp surface and the race surface means and operative when in said engagement to prevent said retarding rotation in response to the positive torque pulses, a second roller interposed for wedging engagement between each second ramp surface and the race surface means and operative when in said engagement to prevent said advancing rotation in response to the negative torque pulses, spider means moveable in first and second circumferentially opposite direc-



tions relative to the first and second ramp surfaces for respectively moving the first and second rollers out of engagement in response to movement of the spider means in axially opposite directions between first and second positions;

the spider means including a cylindrical wall disposed about an outer cylindrical surface of the second member and a radially inwardly extending portion, the spider cylindrical wall including a plurality of openings each having circumferentially spaced contact surfaces embracing each roller for effecting the movement of the first and second rollers in response to movement of the spider means in the first and second directions; and

a fluid pressure actuator including an annular piston positioned concentric to the axis and disposed for contact and axial movement with the radially inwardly extending portion of the spider means, the piston for moving the spider means from the first axial position to the second axial position in response to pressurized fluid acting against an axial end surface thereof, spring means for biasing the spider means toward the first axial position and the piston to a corresponding position.

5,337,712

VALVE GEAR FOR AT LEAST TWO SIMULTANEOUSLY OPERATED VALVES

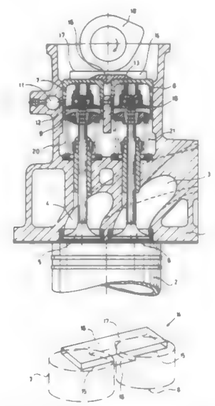
Dieter Reitz, Muhltal, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 11, 1993, Ser. No. 76,177

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1992, 4226760

Int. Cl.[5] F01L *1/26*

U.S. Cl. 123—90.22 1 Claim



1. Valve gear for a group of at least two simultaneously operated overhead valves for a cylinder of an internal combustion engine, wherein each valve (**5**, **6**) of the simultaneously operated valve group is associated with its own cup tappet (**7**, **8**; **7'**, **8'**) and its own valve spring (**20**, **21**) and a common crossbar (**14**) rests on bases of these cup tappets (**7**, **8**; **7' 8'**), the crossbar (**14**) having a surface (**17**) facing away from the cup tappets (**7**, **8**; **7' 8'**) on which a cam (**18**, **18'**) of a camshaft (**19**) acts between the valve axes, wherein flat contact surfaces (**15**) of the crossbar (**14**) rest on flat bases of the cup tappets (**7**, **8**; **7'**, **8'**) and a contour (**16**) extending beyond the plane of the surfaces (**15**) extends between the outer circumferences of the cup tappets (**7**, **8**; **7'**, **8'**), and wherein the crossbar is not otherwise secured to the cup tappets.

5,337,713

FEEDBACK CONTROLLED ENGINE STARTING SYSTEM

Floyd D. Mills, Valois, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 22, 1993, Ser. No. 20,935

Int. Cl.[5] F02N *7/00*

U.S. Cl. 123—179.3 3 Claims

1. A starter control system for an engine starter comprising:

means for sensing engine RPM;

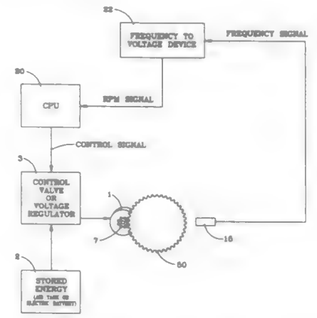
means for determining engine off condition RPM;

means for determining a minimum cranking RPM;

means for determining a maximum cranking RPM;

means for determining an engine running RPM;

control means for establishing a desired engine cranking and starting sequence in response to the condition sensed sequenced response of the above listed means;



said means for sensing engine RPM further comprises a proximity sensor registering engine RPM in pulses; and said pulses are converted to a voltage proportional to RPM.

5,337,714

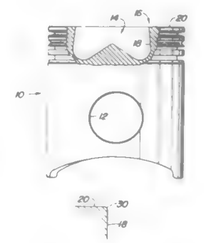
ENGINE PISTON WITH A DUAL COMBUSTION BOWL LIP RADIUS

Lawrence P. Tracy, Hudson, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 3, 1993, Ser. No. 116,189

Int. Cl.[5] F02F *3/26*

U.S. Cl. 123—279 6 Claims



1. A piston having a piston body having a crown, a combustion bowl formed therein, a lip which serves as the transition between the combustion bowl and the crown, and a pin bore formed therein beneath the combustion bowl, characterized in that the lip has different radii at different pre-determined locations around the circumference of the combustion bowl, with the radius of said lip larger in the sections thereof above at least the central part of said pin bore than in other sections of said lip.

5,337,715

ENGINE DECELERATION INTAKE AIR FLOW REDUCTION AND FUEL SHUT-OFF CONTROL

Frank Gonzales, Jr., Westland, and Timothy J. Mortimer, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 13, 1992, Ser. No. 976,011

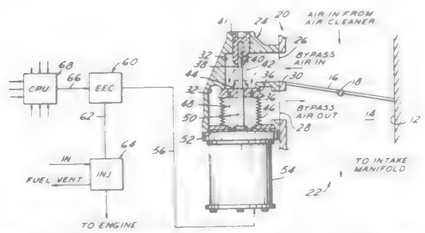
Int. Cl.[5] F02D *33/00;* F02M *23/00*

U.S. Cl. 123—325 5 Claims

1. A deceleration control for an automotive type engine having an air throttle body with an air induction passage therethrough and a throttle valve mounted in the passage and variably movable between positions opening and closing the pas-

VOL 1165 ISS 3 AUG 16 1994 UMI

sage, including an air bypass passage connecting portions of the induction passage around the throttle valve for bypassing therethrough a portion of the total flow of air mass inducted into the induction passage, the throttle valve closed position defining a total air mass flow rate to the engine together with the air bypass flow rate establishing a set engine idle speed upon delivery of fuel to the engine for combination with the air mass flow, bypass valve means variably movable in the bypass passage to positions variably opening and closing the bypass passage to control the air mass flow rate therethrough, and means responsive to predetermined engine deceleration operating conditions upon movement of the throttle valve to the closed throttle position for momentarily moving the bypass valve means to an alternate position decreasing the rate of bypass air flow to an engine operating level lower than is



required for normal engine idle operation, to decrease engine load and combustion torque for a smooth decelerating operation, the means responsive to engine deceleration also shutting off fuel delivery to the engine immediately subsequent to the attainment by the bypass valve of the lower air flow rate and thereafter returning the bypass valve means to the position establishing the set idle speed air flow rate prior to reestablishment of the fuel flow, with said means responsive to predetermined engine deceleration operating conditions moving the bypass valve to said alternate position in the event that the engine rpm is above a predetermined level, but with said means responsive to predetermined engine deceleration moving the bypass valve in a normal dashpot manner to decrease the air mass flow rate in response to movement of the throttle valve in response to the closed throttle valve position when the engine rpm is below a predetermined value.

5,337,716

CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Wataru Fukui, and Toshio Ohsawa, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,673

Claims priority, application Japan, Feb. 4, 1992, 4-019145; Dec. 24, 1992, 4-344486

Int. Cl.[5] F02P *5/14*

U.S. Cl. 123—425 **5 Claims**

1. An engine control apparatus comprising:

an angular position detector for generating a reference position signal representative of a predetermined crank angle of each cylinder of an internal combustion engine in synchronism with the rotation thereof;

sensor means for detecting one of several engine operating parameters;

ion current detecting means for detecting an ion current in at least one of said engine cylinders;

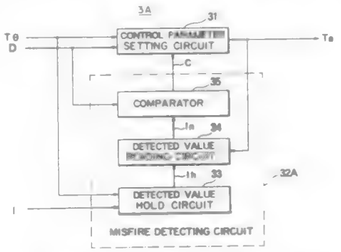
misfire detecting means for generating a misfire detection signal indicative of occurrence of misfiring in said at least one engine cylinder in accordance with a detected value of said ion current; and

engine control parameter setting means for setting a control parameter for said engine on the basis of said reference position signal and said one of several engine operating parameters and correcting said control parameter in accordance with said misfire detection signal;

said misfire detecting means comprising:

detected value hold means for holding said detected value of said ion current;

detected value reading means for reading said detected



value, held in said hold means, immediately before starting electrical energization of an ignition coil for said at least one engine cylinder; and

comparison means for comparing said detected value read by said reading means with a reference value to generate said misfire detection signal if said detected value is less than said reference value.

5,337,717

TIMING CONTROL FOR AN ENGINE HAVING A CAPACITOR DISCHARGE IGNITION SYSTEM

Horst Scheel, Peoria, and Thomas T. Stevenson, Dunlap, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/03774, § 371 Date May 31, 1991, § 102(e) Date May 31, 1991, PCT Pub. No. WO90/06517, PCT Pub. Date Jun. 14, 1990

PCT Filed May 31, 1991, Ser. No. 956,769

Int. Cl.[5] F02P *5/15*

U.S. Cl. 123—426 **19 Claims**

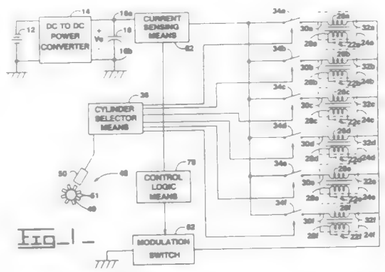


Fig. 1

1. A method of controlling ignition in an engine having an ignition system, a cylinder sensor means, and a plurality of engine cylinders, each cylinder including a piston disposed therein and being movable to a top dead center (TDC) position within the cylinder, the cylinder sensor means producing a first signal representing the positions of the pistons within the respective cylinders and having a frequency responsive to engine speed, the ignition system including individual transformers for each cylinder, the transformer having respective primary coils which are energized to produce sparking across associated spark plug gaps, and wherein ignition is effected in response to a cylinder select signal, comprising the steps of:

producing a reference timing signal representing the time between a first and second reference points (T_1, T_2) of the first signal, the second reference point (T_2) indicating the time at which a respective piston is at the TDC position;

producing a desired timing signal representing the time between a third reference point (T_3) of the first signal and the second reference point (T_2) the third reference point (T_3) occurring prior to the second reference point (T_2) and indicating the time at which ignition desirably occurs;

sensing a delay between production of the cylinder select signal and the time required for the current flowing through a respective primary coil to reach a preselected current threshold which is normally sufficient to cause a spark to arc an associated spark gap and responsively producing a timing error signal;

processing the timing error signal to produce a timing offset signal;

producing a control delay signal responsive to the reference timing signal less the timing offset signal and a desired timing signal;

delivering the cylinder select at a time, as represented by the control delay signal, subsequent to the first reference point (T_1) on the first signal, thereby compensating for the timing error introduced by the time required for transformer energization; and

repeating the foregoing steps for each engine cylinder.

5,337,718

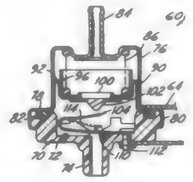
ELECTRONIC FUEL INJECTION SYSTEM WITH HEAT-PRESSURE RESPONSE

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Continuation-in-part of Ser. No. 37,031, Mar. 23, 1993, Pat. No. 5,265,644, which is a continuation-in-part of Ser. No. 892,252, Jun. 2, 1992, Pat. No. 5,220,941, and a continuation-in-part of Ser. No. 949,974, Sep. 27, 1992, said Ser. No. 160,611, Continuation-in-part of Ser. No. 151,992. This application Nov. 30, 1993, Ser. No. 160,611

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—464 **6 Claims**



1. A fuel delivery system for an internal combustion engine that includes a fuel supply, an electric motor pump for feeding fuel under pressure from the supply to the engine, and means for applying electrical power to the pump comprising:

pressure sensitive switch means operatively coupled to the pump and having a first contact movably responsive to fuel pressure and a second contact opposed to said first contact, and means responsive to said pressure sensitive switch means for applying electrical power to said pump,

characterized in that one of said first and second contacts includes means responsive to fuel temperature for altering operating characteristics of said switch means, and thereby altering fuel pressure characteristics of said system as a function of fuel temperature.

5,337,719

ENGINE CONTROL SYSTEM AND METHOD

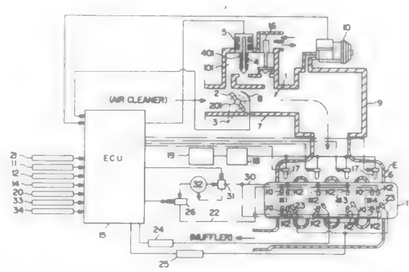
Kazuhide Togai, Takatsuki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,491

Claims priority, application Japan, Feb. 28, 1992, 4-044005

Int. Cl.[5] F02M *51/00*

U.S. Cl. 123—478 **30 Claims**



1. A system for controlling an internal combustion engine, comprising:

engine revolution speed detecting means for detecting an engine revolution speed of an engine and producing an output data signal thereof;

intake air temperature detecting means for detecting an intake air temperature of air to be introduced into an intake manifold and producing an output data signal thereof;

cylinder operating condition determining means for determining cylinder operating data of said engine and producing an output data signal for each of a plurality of cylinders of said engine;

intake air pressure detecting means for detecting an intake air pressure of air to be introduced into said intake manifold and producing an output data signal thereof;

intake air ratio compensation value calculating means for calculating, on the basis of said cylinder operating data of each of said cylinders, an intake air ratio compensation value derived from said air pressure output data signal and said engine revolution speed output data signal; and

intake air quantity calculating means for calculating a quantity of intake air to be introduced into each of said cylinders on the basis of said intake air ratio compensation value.

5,337,720

ENGINE CONTROL METHOD

Nobuaki Murakami, and Takashi Kawabe, both of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushi Kaisha, Tokyo, Japan

PCT No. PCT/JP92/00961, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO93/03268, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 29, 1992, Ser. No. 30,237

Claims priority, application Japan, Jul. 30, 1991, 3-190092

Int. Cl.[5] F02D *43/00, 41/10, 17/02*

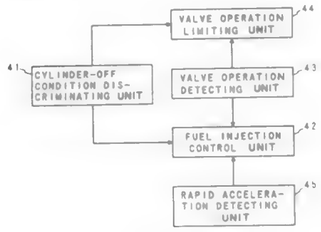
U.S. Cl. 123—481 **3 Claims**

1. In an engine control method in which valve operation in a valve drive mechanism associated with at least one specific cylinder is limited to permit a reduction in the number of operating cylinders, and fuel injection is controlled depending on the operating conditions of said valve drive mechanism, while an engine is being operated in a specific operation region, the engine control method comprising the steps of:

previously injecting fuel into said specific cylinder, then restoring the valve operation in the valve drive mechanism associated with said specific cylinder, and effecting normal combustion in said specific cylinder on restoring

VOL 1165 ISS 3 AG 16 1994 UMI

the valve operation, during the change of the operating state of the engine from a cylinder-off state to a cylinder-on state when the engine is in a rapid-acceleration operation region; and



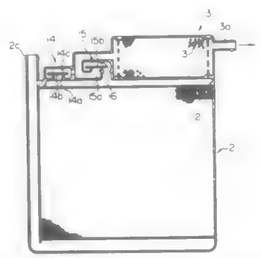
restoring the valve operation in the valve drive mechanism associated with said specific cylinder and then starting fuel injection into said specific cylinder, during the change of the engine operating state from said cylinder-off state to said cylinder-on state when the engine is in a normal operation region.

5,337,721

FUEL VAPOR PROCESSING APPARATUS

Kazusato Kasuya, Kariya, and Mitsuo Sugiura, Hekinan, both of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Jul. 30, 1993, Ser. No. 99,572
Claims priority, application Japan, Aug. 25, 1992, 4-225500
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—519 **9 Claims**



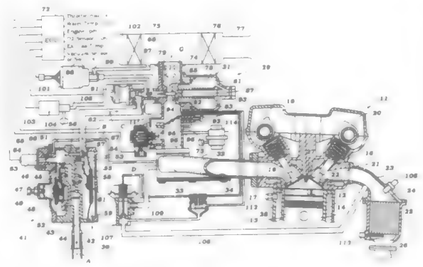
1. A fuel vapor processing apparatus of an internal combustion engine for a vehicle, comprising a main canister, a sub-canister connected to the main canister in series and disposed between the atmosphere and the main canister, a first one-way valve through which the fluid flows from said main canister to said sub-canister, and a second one-way valve through which the fluid flows from said sub-canister to said main canister, said first and second one-way valves being provided in parallel between said main canister and said sub-canister.

5,337,722

FUEL CONTROL AND FEED SYSTEM FOR GAS FUELED ENGINE

Noriyuki Kurihara; Yoshikatsu Iida, and Hiromatsu Matsumoto, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 869,374, Apr. 16, 1992, U.S. Pat. No. 5,251,602, and a continuation-in-part of Ser. No. 869,373, Apr. 16, 1992, abandoned.
Int. Cl.[5] F02B *43/00, 13/00;* **F02M** *21/04*
U.S. Cl. 123—527 **177 Claims**



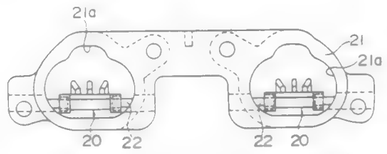
1. A charge forming and induction system for an internal combustion engine having a combustion chamber, an induction system for supplying a charge to said combustion chamber, said induction system comprising a charge forming device having an induction passage communicating at one end with atmospheric air and at another end with said combustion chamber, a throttle valve in said induction passage, means for automatically controlling the position of said throttle valve to maintain a substantially constant pressure in the induction passage in the area of the throttle valve during the running of said engine, a main fuel discharge circuit discharging into said induction passage contiguous to said throttle valve and including a fuel control valve for controlling the amount of fuel supplied from said main fuel discharge circuit, means for controlling the condition of said fuel control valve in response to the position of said throttle valve, an idle discharge circuit for supplying fuel to said engine downstream of said main fuel discharge circuit, a source of gaseous fuel under pressure as a liquid, means for supplying fuel from said source to said fuel discharge circuits, and means for controlling the fuel/air mixture supplied to at least one of the fuel discharge circuits by selectively adding air to the fuel supplied thereto upstream of said fuel control valve.

5,337,723

FUEL SUPPLY CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

Takahisa Yamashita, Suntoh, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 9, 1993, Ser. No. 105,194
Claims priority, application Japan, Sep. 4, 1992, 4-263180[U]
Int. Cl.[5] F02M *31/12*
U.S. Cl. 123—549 **8 Claims**



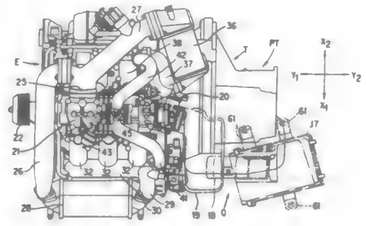
1. A fuel supply control device for internal combustion engines having a combustion chamber, a cylinder having an inlet valve in an inlet port in communication with the combustion chamber, an air intake pipe in communication with the inlet port for providing a flow path of air to the inlet port and a fuel injector adapted to inject fuel into the flow of air with a selected spray pattern comprising a rotably mounted intake control valve mounted intermediate the intake pipe and the inlet port, said intake control value including a generally flat plate and at least one central and two outer spaced elongated fins provided on one surface thereof, the one central fin extending in the direction of the flow path and the two outer fins extending at an angle to the direction of the flow path generally in conformance with the spray pattern of the injector, an electric heater mounted in the intake control valve and a control circuit to control the angular position of the intake control valve and the state of energization of the electric heater, the injector being positioned to direct its spray toward the inlet valve and the intake control valve being rotable to variable positions between a raised position intercepting the spray from the injector and reducing the effective cross sectional area of the flow path and a lowered position effectively out of the spray and increasing the effective cross sectional area of the flow path.

5,337,724

INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH A SUPERCHARGER

Yukio Arakawa, Higashihiroshima; Toshimichi Akagi; Kouichi Hatamura, both of Hiroshima, and Makoto Kishida, Higashihiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 30, 1992, Ser. No. 953,696
Claims priority, application Japan, Sep. 30, 1991, 3-252565; Sep. 30, 1991, 3-252579; Sep. 30, 1991, 3-252580
Int. Cl.[5] F02B *33/00*
U.S. Cl. 123—563 **19 Claims**



1. An intake system for use with a power train provided in a front section of a vehicle body of a vehicle and including an internal combustion engine and a transmission aligned with the engine in a transverse direction relative to the vehicle body, the engine and the transmission being arranged so as to place axes of their respective output shafts directed in the transverse direction of the vehicle body, said engine having a plurality of cylinder groups, cylinders in each of said cylinder groups being arranged in a row and not being fired one after another, said intake system comprising:

mechanical supercharger means, supported by said power train, for feeding air to the cylinders;

branch intake passage means, branching off downstream from said mechanical supercharger means, for feeding the air to each group of cylinders; and

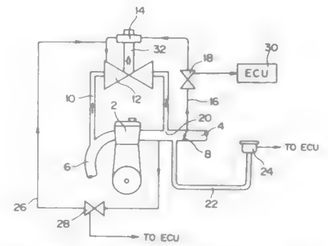
inter-cooler means, disposed in each said branch intake passage means, for cooling air fed to the cylinders, one of said inter-cooler means being located in front of the engine in a longitudinal direction relative to the vehicle body and another of said inter-cooler means being located above the transmission.

5,337,725

SELF-DIAGNOSTIC APPARATUS FOR EXHAUST GAS RECIRCULATING APPARATUS

Masaki Narita, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan

Filed Sep. 20, 1993, Ser. No. 124,341
Claims priority, application Japan, Jan. 30, 1993, 5-034595
Int. Cl.[5] F02M *25/07*
U.S. Cl. 123—571 **6 Claims**



1. In an exhaust gas recirculating apparatus for a vehicle, including a throttle value located in line with an intake path for an engine; a circulating path for communicating the intake path downstream from the throttle value to a discharge path whereby exhaust gas in the discharge path is circulated to the intake path; an EGR value disposed in line with the circulating path; an exhaust pressure-type modulator communicating with the EGR value; a first negative pressure path communicating the modulator to the intake path near the throttle value; a first three-way switching valve disposed in line with the first negative pressure path for closing the EGR value; an intake path pressure sensor communicating with the intake path through a pressure path; and a self-diagnostic apparatus, the improvement wherein the self-diagnostic apparatus comprises:

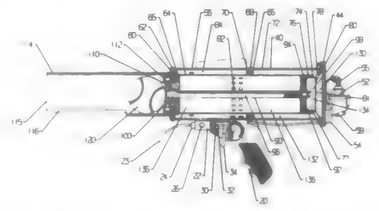
a second negative pressure path for directly connecting the intake path to the EGR value for bypassing the modulator, a second switching valve disposed in line with said second negative pressure path, and a control means for controlling said second three-way switching valve to fully open and close the EGR value only when the vehicle is decelerating so that variations of an intake pipe pressure caused by the opening and closing action of the EGR valve are detected by the intake pipe pressure sensor in order to determine a deteriorating condition of the exhaust gas recirculating apparatus in accordance with said detected variations of intake pipe pressure.

5,337,726

HAND HELD PNEUMATIC POWERED BALL THROWER

Michael J. Wood, 22 Columbus, Irvine, Calif. 92720

Filed Oct. 8, 1992, Ser. No. 958,227
Int. Cl.[5] F41B *11/00, 11/32*
U.S. Cl. 124—61 **9 Claims**



1. A pneumatic ball thrower comprising:

a first plenum adapted to receiver and store pressurized as;

VOL 1165 ISS 3 AG 16 1994 UMI

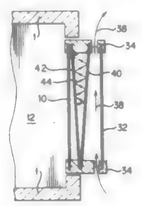
a shuttle comprising a piston and connecting shuttle rod adapted to be driven by the pressurized gas in said first plenum and to drive a ball to a predetermined velocity;
a tube having a wall and first and second opposing ends adapted to slidably receive the piston in a gas tight relationship to guide the piston when driven pneumatically from the first end towards the second end of said tube, said tube having at least one gas release vent in its wall located towards said second end so that when the piston is driven toward the second end of said tube and past the gas release vent, the pressurized gas in said first plenum exhausts through gas release vent to the atmosphere;
a second plenum situated at the first end of said tube to receive the pressurized gas form said first plenum, the piston forming one wall of said second plenum the second plenum expanding when said piston is driven by pressurized gas admitted into the second plenum from the first plenum;
a first valve for releasing pressurized gas from the first plenum into the second plenum in less than 0.01 seconds; and
a ball guide having open opposing first and second ends, the first end of said ball guide secured to the second end of said tube, said piston adapted to drive said shuttle rod within said ball guide to drive a ball along and out of said ball guide at a predetermined velocity.

5,337,727

WINDOW FOR A DEVICE WITH ELEVATED INNER CHAMBER TEMPERATURE

Manfred Borens, Stadecken-Elsheim; Dietrich Busch, Simmern; Roland Leroux, Stadecken-Elsheim; Regina Scheidler, Mainz, and Karsten Bonzelius, Mainz-Mombach, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,630
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209622
Int. Cl.[5] F23M *7/00*
U.S. Cl. 126—200 15 Claims



9. A window for an oven having an interior chamber, the window comprising three substantially flat surface panes of a transparent and temperature resistant material, the three panes being spaced from one another and held in position by a common frame, said three panes including an inner pane, an outer pane and a center pane, the center pane being at an acute angle with said inner and outer panes.

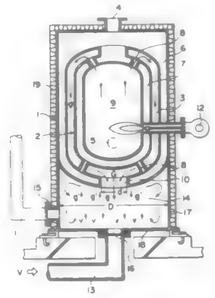
5,337,728

LIQUID HEATING APPARATUS

Noboru Maruyama, 2-26-14 Shirasagi, Nakano-ku, Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 42,612
Claims priority, application Japan, Apr. 27, 1992, 4-107642
Int. Cl.[5] F24H *1/00*
U.S. Cl. 126—344 9 Claims

1. A liquid heating apparatus comprising:
an external drum;
an internal drum arranged at a spaced distance from and inside the external drum;
wherein the space between the external drum and the internal drum defines a combustion gas descending chamber;
an outer water chamber having a hot water outlet port and a water supply port in the upper and lower sections thereof respectively, said outer water chamber disposed outside the combustion gas descending chamber,
an inner water chamber communicating with communicating tubes in the upper and lower sections thereof to the outer water chamber, said inner water chamber disposed inside said combustion gas descending chamber,



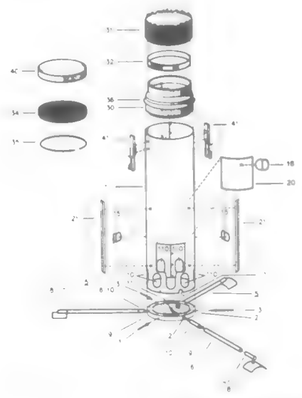
a combustion chamber communicating to the aforesaid combustion gas descending chamber in the upper section thereof, said combustion chamber disposed inside the internal drum,
an exhaust port disposed under the combustion gas descending chamber;
a smoke collecting chamber having a larger cross-sectional area than that of said exhaust port under the exhaust port; and
a smoke exhaust port disposed below the smoke collecting chamber.

5,337,729

PORTABLE HEATER FOR VEHICLE ENGINES

Ronald Oman, P.O. Box 671281, Chugiak, Ak. 99567

Filed Nov. 18, 1992, Ser. No. 978,431
Int. Cl.[5] F24H *1/00*
U.S. Cl. 126—350 A 12 Claims



1. A portable heater for airplanes and other vehicles, comprising:

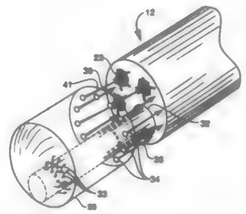
a) a housing being substantially cylindrical and having an outer wall, an open interior, a top and a bottom;
b) a plurality of legs, extendably attached to said housing;
c) access means within said housing wall to permit access into said open interior of said housing;
d) a burner unit having heating means, said burner unit being removably, and completely, placed within said housing through said access means for use;
e) control means to control said heating means; and
f) duct means removably attached to said housing to direct heat produced by said heating means to a desired location.

5,337,730

ENDOSCOPE CLEANSING CATHETER AND METHOD OF USE

Michael D. Maguire, St. Albans, Vt., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 18, 1992, Ser. No. 900,404
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 7 Claims



1. A combination endoscope and cleansing catheter for cleaning the lens of the endoscope, comprising;
(a) an endoscope having a lens end;
(b) a hollow catheter shaft having an end;
(c) an inflatable balloon attached at the end of the catheter shaft, wherein the balloon has a skin;
(d) one or more openings through the skin of the balloon positioned so that, when the balloon is inflated with a fluid delivered through the inside of the catheter shaft, the fluid is directed under pressure only in a direction backward along the catheter shaft; and wherein the rest of the skin of the balloon is free of openings.

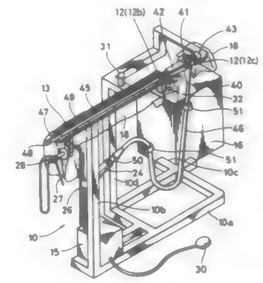
5,337,731

ENDOSCOPE STAND

Nagashige Takahashi, and Hiromichi Shibuya, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1992, Ser. No. 926,701
Claims priority, application Japan, Aug. 20, 1991, 3-293967
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 13 Claims

1. An endoscope stand for supporting an endoscope having a control part, and wherein a proximal end portion of a light guide cable having a light guide connector being attached to a distal end thereof, and a proximal end portion of a flexible insert tube being connected to each other, said flexible insert tube having a length, said endoscope stand comprising:
a control part supporting member for supporting said control part of said endoscope substantially horizontally;
an insert tube supporting member which is disposed substantially horizontally to place said flexible insert tube of said endoscope thereon, said insert tube supporting member having means for supporting said flexible insert tube at spaced points over substantially the length thereof;
cover sheets which are impermeable to water, said cover sheets being removably placed on said control part supporting member and said insert tube supporting member, respectively when said control part supporting member supports said control part and said insert tube supporting member supports said flexible insert tube, said insert tube supporting member including a member for securing said cover sheets; and



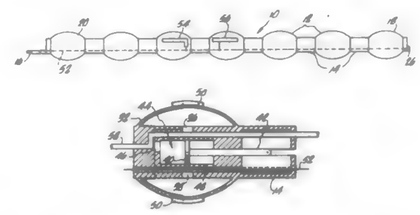
a light guide connector supporting member for supporting said light guide connector so that said light guide cable will not touch any of the surroundings.

5,337,732

ROBOTIC ENDOSCOPY

Warren S. Grundfest, Los Angeles; Joel W. Burdick, IV, and Andrew B. Slatkin, both of Pasadena, all of Calif., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.

Filed Sep. 16, 1992, Ser. No. 945,806
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 18 Claims



1. An endoscopic robot comprising:
a plurality of segments, including a lead segment and an end segment;
a plurality of pivoting joints each positioned in between and connecting adjacent segments;
at least one actuator link extending through substantially through each pivoting joint and connecting to an adjacent segment;
means for advancing and retracting the actuator links, to move the links together and apart for locomotion of the robot;
an inflatable balloon supported around substantially each segment; and
means for selectively inflating and deflating the balloons.

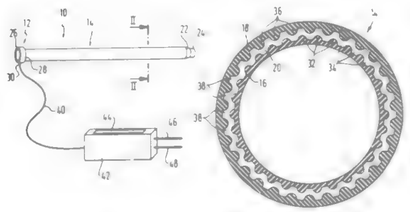
VOL 1165 ISS 3 AUG 16 1994 UMI

5,337,733

TUBULAR INSERTING DEVICE WITH VARIABLE RIGIDITY

Peter Bauerfeind, and Herbert Bauerfeind, both of Pettenkoferstrasse 4, 8264 Waldkraiburg, Fed. Rep. of Germany

PCT No. PCT/EP90/01532, § 371 Date Apr. 22, 1992, § 102(e) Date Apr. 22, 1992, PCT Pub. No. WO91/05507, PCT Pub. Date May 2, 1991
PCT Filed Sep. 11, 1990, Ser. No. 849,027
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1989, 3935256
Int. Cl.[5] A61B *1/00*; A61M *25/01*
U.S. Cl. 128—4 10 Claims



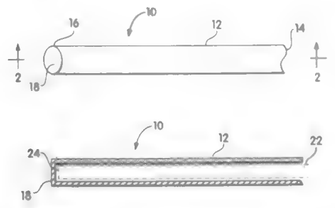
1. An inserting device (10) tubular fiberoptic instruments comprising
a flexible insertion part (14) adapted to be pushed into an object to be examined, including
an inner wall (16) being formed by a hose that is radially expandable,
an outer wall (18) being formed by a flexible hose that is not radially expandable,
said inner wall (16) and outer wall (18) defining at least one sealed intermediate space (20) into which fluid can be introduced, and
support elements (32, 36) contained within said intermediate space (20) and being fixedly arranged on the outside of the inner wall (16) and on the inside of the outer wall (18) to mutually cooperate for adding rigidity to the inserting device when the pressure in the intermediate space (20) is below ambient pressure.

5,337,734

DISPOSABLE SHEATH WITH OPTICALLY TRANSPARENT WINDOW FORMED CONTINUOUSLY INTEGRAL THEREWITH

Mark A. Saab, Lowell, Mass., assignor to Advanced Polymers, Incorporated, Salem, N.H.

Filed Oct. 29, 1992, Ser. No. 968,538
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 66 Claims



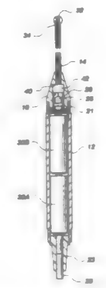
63. An elongated, tubular sleeve for covering an optical medical instrument used for internal body applications, said sleeve comprising at a distal end thereof a thin, substantially inelastic, optically transparent window formed continuously integral with the side wall of said sleeve such that said window and said sleeve flow substantially smoothly and continuously into one another along every interface without any discontinuous seam or edge by the process of: heating an optically transparent film of a polymeric material to a malleable temperature; inserting into said heated film a mandrel having at least one shaped surface near its distal end, said surface being shaped so as to conform with the geometry of the optical portion of said medical instrument, causing the film to stretch and form a closed-end sleeve around and conforming to said mandrel, said window being formed adjacent said shaped surface of said mandrel; and removing the mandrel.

5,337,735

FIBER-LIGHTED STYLET

Albert Salerno, 13007 E. Park Ave., Santa Fe Springs, Calif. 90670

Filed Dec. 28, 1992, Ser. No. 998,396
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—11 12 Claims



1. An instrument for illuminating a local area comprising:
a handle having proximal and distal ends, the handle's distal end having a light source associated therewith;
a fiber optic cable having first and second ends, said fiber optic cable being flexible and further being removably attached at its first end to the handle's distal end and extending away from the light source and said distal and proximal ends;
a malleable casing partially encasing said fiber optic cable, said malleable casing open on both ends to allow light to pass from said light source through said encased fiber optic cable to illuminate a local area adjacent the second end of the fiber optic cable; and
a concave cowl in threaded attachment with the handle's distal end for detachably connecting the first end of said fiber optic cable to the distal end of the handle, wherein said light source is positioned within a cylindrical protective portion enclosed by said concave cowl.

5,337,736

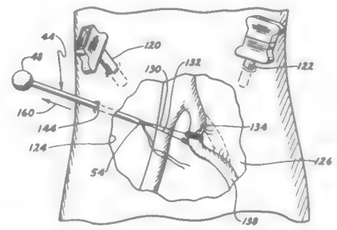
METHOD OF USING A LAPAROSCOPIC RETRACTOR

Pratap K. Reddy, 5610 Hyland Greens Dr., Bloomington, Minn. 55437

Filed Sep. 30, 1992, Ser. No. 953,940
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—20 13 Claims

1. A method for applying intracorporeal traction on an internal body member in a body cavity having a laparoscopic trocar inserted thereinto proximate the body member, comprising:
puncturing the body cavity wall with a sharp instrument to form a needle hole;
inserting a first end of an acuminate instrument through the needle hole into the body cavity;
inserting a sling through the trocar into the body cavity;

placing said sling about the body member within the body cavity;
extending the acuminate instrument to grasp the sling; and



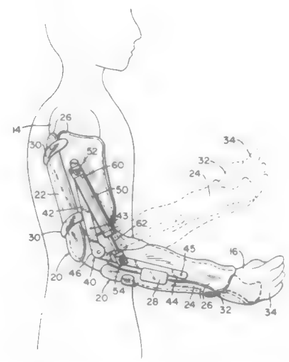
drawing the sling with said acuminate instrument to retract the body member toward said needle hole.

5,337,737

DYNAMIC ORTHOSIS WITH PROPORTIONAL RESISTANCE

Stuart A. Rubin, Bronx, N.Y., and Vasantha L. Murthy, Northvale, N.J., assignors to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Continuation of Ser. No. 819,760. This application May 27, 1993, Ser. No. 68,593
Int. Cl.[5] A61H *1/02*
U.S. Cl. 601—33 13 Claims



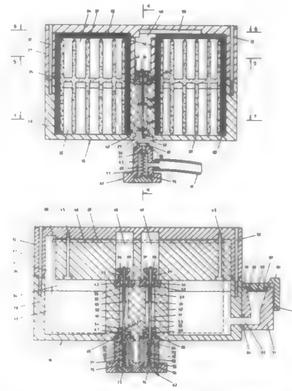
1. A method of treating a patient suffering from dysmetria by dampening rapid dysmetric relative movement between proximal and distal body portions across a major point of the patient, comprising the steps of:
(A) providing a dynamic orthosis incorporating proportional resistance across a major point connecting proximal and distal body portions of the patient suffering from dysmetria, comprising:
(i) a pair of orthotic coupling means, including a first coupling means for grasping a body portion proximal to the major joint for movement therewith and a second coupling means for grasping a body portion distal to the major joint for movement therewith;
(ii) connecting means operatively connecting the first and second coupling means and permitting the first and second coupling means to pivot freely relative to one another about the pivotal axis of the major joint; and
(iii) resistance means operatively connecting the first and second coupling means for creating a bidirectional velocity proportional resistance in both tension and compression modes to relative pivotal movement of the first and second coupling means;
(B) grasping the proximal and distal body portions of the patient with the first and second coupling means, respectively; and
(C) attempting slow intentional movement involving the joint;
whereby rapid dysmetric relative movement of the proximal and distal body portions is dampened by the orthosis and the attempted slow intentional movement emerges.

5,337,738

FLUID VAPORIZING APPARATUS

Erkki Heinonen, Helsinki, Finland, assignor to Instrumentarium Corporation, Finland

Filed Dec. 17, 1991, Ser. No. 809,053
Claims priority, application Finland, Dec. 18, 1990, 906254
Int. Cl.[5] A61M *17/00*
U.S. Cl. 128—203.12 27 Claims



1. Fluid vaporizing apparatus (18) for developing vapor and supplying same to a conduit for delivery to a patient in course of his/her respiration, said apparatus comprising:
a container formed of a bottom part (28) and a top part (27), said container being positionable, in use, in a normal operating orientation in which said bottom part is beneath said top part, said container having an internal chamber of predetermined size, said internal chamber having a central portion located centrally in said internal chamber, said internal chamber being divided into a first chamber portion (33) and a second chamber portion (34), said first chamber portion forming a liquid chamber portion when said apparatus is in the normal operating orientation and being fillable with a liquid to be vaporized to a predetermined level below the central portion of said internal chamber, said second chamber portion forming a gas chamber portion above said first chamber portion when said apparatus is in the normal operating orientation to receive vapor, the liquid in said first chamber portion presenting a liquid surface within said chamber which is exposed to said second chamber portion when said apparatus is in the normal operating orientation;
at least one port means (39) by which the apparatus may be coupled to the conduit, said port means having valve means with an opening discharging vapor from said second chamber portion to the conduit and a shut off element blocking and unblocking said opening, said valve means being positioned in the central portion of said internal chamber, the predetermined size of said internal chamber being such that said valve means is above the exposed

VOL 1165 ISS 3 AG 16 1994 UMI

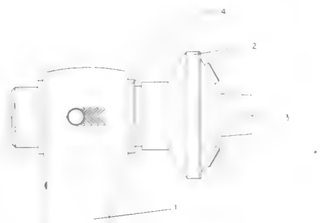
liquid surface in said internal chamber when said apparatus is inclined from the normal operating orientation; and gas flow directing means for dividing said second chamber portion into first and second, adjacent, interconnected sections and for forming a plurality of generally parallel vapor flow paths that are horizontally spaced from each other when said apparatus is in the normal operating orientation.

5,337,739

DISPOSABLE BACTERIA FILTER

Arlin D. Lehman, Louisville, Colo., assignor to Polmonary Data Service Instrumentation, Inc., Louisville, Colo.

Filed Aug. 14, 1992, Ser. No. 929,817
Int. Cl.[5] A62B *7/10;* **A61B** *5/08*
U.S. Cl. 128—205.27 **15 Claims**



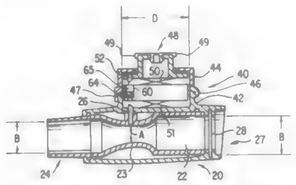
1. A respiratory filter comprising:
a housing;
a removable mouthpiece;
a means for a leakproof coupling between said housing and said removable mouthpiece;
means for filtration mounted between said housing and said removable mouthpiece; and
said means for filtration further comprising an airflow resistance of 0.9 cm H_2O/liter/second or less at 12 liters per second flow.

5,337,740

INHALATION DEVICES

John C. Armstrong, Milton, and Richard C. J. Palson, Medfield, both of Mass., assignors to New England Pharmaceuticals, Inc., South Easton, Mass.

Filed Aug. 1, 1991, Ser. No. 738,924
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—203.12 **15 Claims**



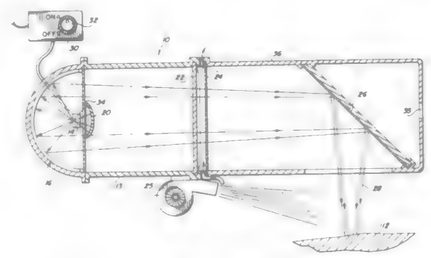
1. A device for the oral or nasal inhalation of finely divided materials in combination with a sealed container of finely divided materials, the device comprising:
(i) a body member having a longitudinal axis and an air passageway along said longitudinal axis, a first end of said air passageway for insertion into the mouth of a user and a second end for intake of air responsive to inhalation of a user and a venturi located between said first and second ends;
(ii) at least one cylindrically shaped sealed container of finely divided material, wherein the cylindrically shaped container has a removable seal at both ends thereof;
(iii) a holder connected to the body member at said venturi for receiving at least one of said sealed containers of finely divided material; said holder having a longitudinal axis substantially perpendicular to the longitudinal axis of said body member and having an internal diameter sized to receive said sealed container; and said holder being configured to position the sealed ends of the container substantially perpendicular to the longitudinal axis of said body member;
(iv) a first single piercer for piercing the sealed container of finely divided materials at the sealed end thereof disposed adjacent the body member, the piercer being movable towards said sealed end, extending from the body member and into the holder, and having a passageway having an inner opening only slightly smaller than the inner diameter of said container to minimize any residue of finely divided material in said container;
(v) a second signal piercer movable towards the container of finely divided materials for piercing the second removable seal, the second piercer extending into the interior of the holder and having an air passageway therethrough, open to the interior of the holder and to the atmosphere;
(vi) engaging means to which the first and second piercers are responsive for causing the piercers to move towards and pierce the sealed container of finely divided materials; and
(vii) means including the passageway within the first and second piercers and said air passageway intersecting the passageway within the piercers at said venturi to dispense the finely divided material from the container responsive to inhalation by a user.

5,337,741

PHOTO RADIATION TREATMENT APPARATUS AND METHOD

Donald A. Diamond, 5416 Harbor Rd., Bradenton, Fla. 34209-1832

Filed Jun. 21, 1991, Ser. No. 718,615
Int. Cl.[5] A61N *5/06*
U.S. Cl. 600—8 **4 Claims**



1. A method of treating rheumatoid and psoriatic arthritic inflammation on the body of a subject, the method comprising the steps of:
providing a radiation source having an output wavelength bandwidth between 640 nanometers and 800 nanometers; and
irradiation said output at the epidermis of the subject to transilluminate the arthritic joint with an incident power in the range of 40 to 200 milliwatts per square centimeter for a time sufficient to provide an effective treatment.

5,337,742

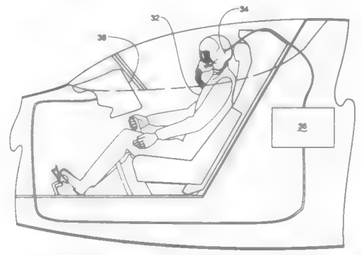
Patent Not Issued For This Number

5,337,743

FATIGUE INDICATOR BASED ON ARTERIAL OXYGEN

Daniel W. Repperger, and Lloyd D. Tripp, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Wright-Patterson Air Force Base, Ohio

Filed Jun. 17, 1993, Ser. No. 77,799
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **9 Claims**



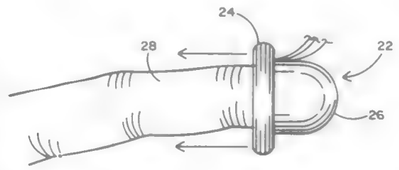
1. An indicator system for showing a person undergoing brain oxygen-depleting environmental stressors the time remaining before a performance-limiting event occurs, comprising:
(a) means for repeatedly measuring percentage blood oxygen saturation levels:
(b) computer means for repeatedly extrapolating from successive measurements of said percentage blood oxygen saturation levels the time remaining before a preselected level of percentage blood oxygen saturation is reached; and,
(c) means for displaying to the person the computed time remaining before the preselected level of percentage blood oxygen saturation is reached, wherein the displaying means is an aircraft instrument panel display including a label stating that the time displayed is the time remaining before performance-ending fatigue occurs.

5,337,744

LOW NOISE FINGER COT PROBE

Brendan Branigan, Westlake Village, Calif., assignor to Masimo Corporation, Laguna Hills, Calif.

Filed Jul. 14, 1993, Ser. No. 91,873
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—633 **21 Claims**



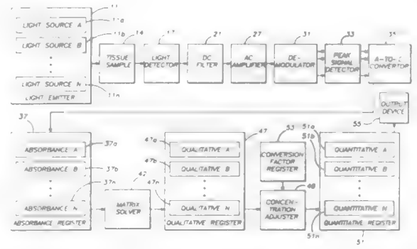
1. A sensor for analyzing human tissue, said sensor having a body and comprising:
a first end of said body at which to receive some of the tissue to be analyzed;
a flexible opposite end of said body rolled up upon itself in a direction towards and spaced a first distance from said first end, said opposite end moved in a direction away from said first end to unroll said opposite end so as to surround said tissue, the unrolled end being spaced a substantially greater distance from said first end than the first distance between said rolled end and said first end;
electromagnetic energy source means carried by said first end to emit electromagnetic energy towards the tissue to be analyzed; and
electromagnetic energy detector means carried by said first end and arranged relative to said source means to receive the electromagnetic energy emitted by said source means, the magnitude of the electromagnetic energy received by said detector means providing information regarding said tissue.

5,337,745

DEVICE AND METHOD FOR IN VIVO QUALITATIVE OR QUANTATIVE MEASUREMENT OF BLOOD CHROMOPHORE CONCENTRATION USING BLOOD PULSE SPECTROPHOTOMETRY

David A. Benaron, 454 Birch St., Redwood City, Calif. 94062-1031

Continuation of Ser. No. 849,152. This application Nov. 12, 1993, Ser. No. 152,913
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **20 Claims**



1. A spectrophotometer for noninvasively determining the concentration of a first optically absorptive substance within the blood of a patient, comprising:
means for emitting first and second wavelengths of light into a selected tissue of said patient;
means for detecting a first intensity of portions of said first wavelength of light passing through said selected tissue and a second intensity of said second wavelength passing through said selected tissue, said first and second intensities each being related to interaction of said first and second wavelengths of light with a plurality of substances within the blood of said patient, said plurality of substances including said first absorptive substance;
means for measuring a first pulsatile feature of said first detected intensity and a second pulsatile feature of said second detected intensity, said first and second pulsatile features each being related to changes over time in the volume of the blood within said selected tissue; and
means for estimating concentration of said first substance within the blood of said patient based on said first and second measured pulsatile features.

VOL 1165 ISS 3 AG 16 1994 UMI

5,337,746

"IN-VIVO" OXYGEN TENSION MEASUREMENT

Howard L. Young, 56 Cheriton Drive, Thornhill, Cardiff CF4 9DF, and Richard H. Lowndes, 12 Landsdowne Road, Newport, Gwent NP9 3FZ, both of Great Britain

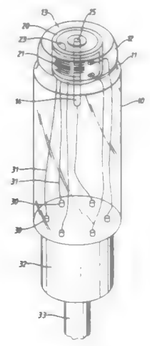
PCT No. PCT/GB89/00908, § 371 Date Mar. 21, 1991, § 102(e) Date Mar. 21, 1991, PCT Pub. No. WO90/01292, PCT Pub. Date Feb. 22, 1990

PCT Filed Aug. 9, 1989, Ser. No. 651,236

Claims priority, application United Kingdom, Aug. 11, 1988, [illegible]

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—635 4 Claims



1. Apparatus for detecting the condition of internal tissues in-vivo, including an operating head comprising:

a sensor being capable of being sterilised,

means for connecting the head to a remote electrical detecting/measuring/recording/display device, and a portable control unit, designed for sterilisation, and having electrical connections to the head and to the remote device,

the sensor comprising an electrode assembly designed to be introduced into the body, and having at least one exposed electrode for connection to a detecting or measuring circuit, and means warming the electrode in use, by means of an electrical heater in proximity to and embedded in a synthetic plastic body of the electrode assembly, and a temperature sensing device acting as an automatic temperature control, characterised in that the body of plastic material is cured during manufacture of the sensor by connecting said heater to an alternative control circuit designed to raise the temperature of the heater well above routine warming temperature so as to "cure" the body of plastic material.

5,337,747

IMPLANTABLE DEVICE FOR ESTIMATING GLUCOSE LEVELS

Frédéric Neftel, 1, Rue des Escouffes, Paris, France 75004

Continuation of Ser. No. 687,916. This application Jan. 7, 1993, Ser. No. 1,433

Claims priority, application France, Oct. 6, 1989, 8913069

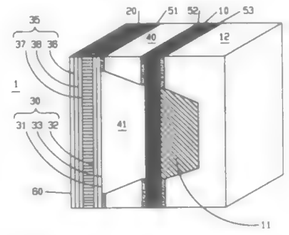
Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—635 15 Claims

1. An implantable device for estimating the glucose level by measuring the osmotic pressure due to glucose, characterized in that it comprises:

a first measuring chamber insulated from the surrounding medium by a first glucose-hemipermeable membrane, said first chamber cooperating with a first pressure sensor, which in turn is connected to an electronic system for transmitting information pertaining to the value of a measured pressure,

a second measuring chamber insulated from the surrounding medium by a second membrane permeable to glucose and non-permeable to molecules larger than glucose, this second chamber cooperating with a second pressure sensor, which in turn is connected to an electronic system for transmitting information pertaining to the value of the measured pressure, and



means associated with said first and second pressure sensors for providing through the difference between the measured pressures, an accurate estimation of the osmotic pressure due solely to glucose and, consequently, of the glucose level.

5,337,748

BIOSIGNAL ELECTRODE

Eric T. McAdams, Ormsdale, 52 Cabe Road, Whitehead, County Antrim BT38 9PZ; James A. McLaughlin, 9 Hampton Gardens, Hamilton Court Village, Belfast TB7 30F, and John McC. Anderson, 19 Torngrange, Hollywood, County Down BT18 0NG, all of Northern Ireland

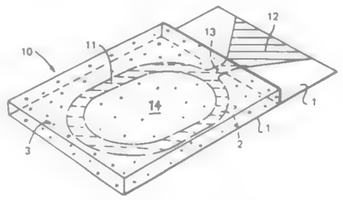
PCT No. PCT/GB90/01565, § 371 Date Mar. 10, 1992, § 102(e) Date Mar. 10, 1992, PCT Pub. No. WO91/05509, PCT Pub. Date May 2, 1991

PCT Filed Oct. 11, 1990, Ser. No. 838,219

Claims priority, application United Kingdom, Oct. 11, 1989, 8922836.5

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—640 21 Claims



1. A biosignal electrode, comprising: a flexible substrate having an obverse side and a reverse side, an electrically conductive layer printed on the obverse side and comprising an ink having electrically conductive particles or a mixture of particles therein, the electrically conductive layer in plan view defining a first, sensor end, a second, connecting end, and an interconnecting portion, and means for encouraging a current to flow to peripheral edges of the sensor end, said encouraging means comprising the sensor end in plan view resembling a hollow figure, and the substrate at or near the sensor end being continuous and imperforate.

5,337,749

MAGNETIC RESONANCE VASCULAR IMAGING

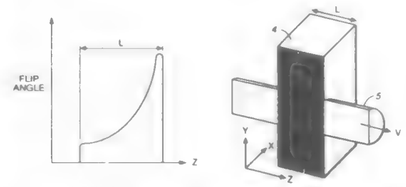
Koji Shimizu, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Nov. 30, 1992, Ser. No. 983,325

Claims priority, application Japan, Nov. 30, 1991, 3-342004

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.3 6 Claims



1. In a magnetic resonance imaging method including the steps of defining a slab-like region including a liquid flowing in a specified direction and exciting said liquid inside said region, the improvement wherein said liquid inside said region is excited according to a sequence such that the flip angle changes according to the position of said liquid along said direction.

5,337,750

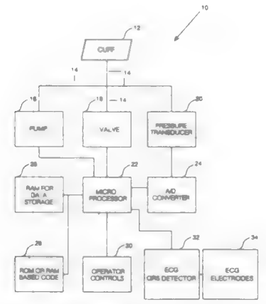
AUTOMATIC BLOOD PRESSURE MONITOR EMPLOYING ARTIFACT REJECTION METHOD AND APPARATUS

Richard A. Walloch, Aloha, Oreg., assignor to SpaceLabs Medical, Inc., Redmond, Wash.

Filed Jul. 30, 1992, Ser. No. 922,201

Int. Cl.[5] A61B *05/00*

U.S. Cl. 128—680 22 Claims



1. In a method for using a blood pressure monitor of the type having a blood pressure cuff: an air pump in fluid communication with said cuff to direct pressurized air into said cuff, an air valve in fluid communication with said cuff to selectively vent said cuff to atmosphere, a pressure transducer in fluid communication with said cuff generating an output including a pressure signal indicative of a steady state fluid pressure in said cuff corresponding to an occlusive pressure exerted by said cuff on an artery and a transient fluid pressure in said cuff indicative of an amplitude of an oscillometric waveform, a processor in electrical communication with said air pump and said air valve for selectively energizing said air pump or valve to pressurize or depressurize said cuff respectively comprising:

(a) setting the steady state fluid pressure in said cuff to an initial value:

(b) sampling the output of said transducer over a plurality of heartbeats to generate samples of said oscillometric waveform;

(c) prior to identifying the existence of an oscillometric pulse during any period of time, summing the samples of said transducer output taken after one heartbeat with the samples of said transducer output taken at corresponding times after a plurality of other heartbeats to obtain composite samples of said oscillometric waveform over a plurality of heartbeats, said composite samples corresponding to an average oscillometric waveform:

(d) storing said composite samples:

(e) altering the steady state fluid pressure in said cuff;

(f) repeating steps (b)–(e) a plurality of times; and

(g) analyzing said average oscillometric waveforms to determine blood pressure.

5,337,751

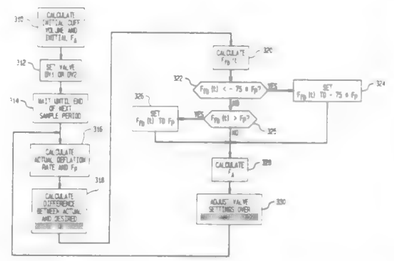
AIR FLOW CONTROL APPARATUS AND METHOD FOR AN AUTOMATIC BLOOD PRESSURE GAUGE

Scott W. Newell, Ipswich, Mass., and James Chickering, Newton, N.H., assignors to Siemens Medical Electronics, Inc., Danvers, Mass.

Filed Sep. 30, 1991, Ser. No. 768,126

Int. Cl.[5] A61B *5/103, 5/117*

U.S. Cl. 128—682 21 Claims



1. Apparatus suitable for use in an automatic blood pressure gauge having a cuff which contains a pressurizing fluid, comprising:

pressure measuring means, coupled to the cuff, for measuring an instantaneous pressure level of the pressurizing fluid in the cuff at a plurality of instants corresponding to starting points of a respective plurality of time periods to produce a pressure signal;

valve means, coupled to the cuff and having an aperture which may be changed in response to an applied control signal, for venting the pressurizing fluid from the cuff at a flow rate determined by said control signal; and

flow control means, communicating with said pressure measuring means so as to be responsive to the pressure signal, for generating successive predictive values for the control signal applied to the valve means at respective ones of the instants corresponding to the starting points of the plurality of time periods, to produce a reduction in the instantaneous pressure level of the pressurizing fluid in the cuff during a time interval which includes the plurality of time periods, and at a rate which approximates a predetermined desired rate of pressure reduction;

and wherein said flow control means includes a table of possible predictive values for the control signal, each value in said table being associated with a respective value of the pressure signal; and

means for indexing the table of possible predictive values using the pressure signal to obtain a next predictive value of the control signal to be used during a corresponding next one of the plurality of time periods.

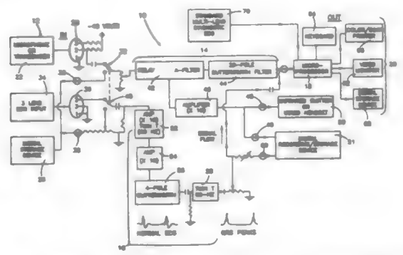
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,752

SYSTEM FOR SIMULTANEOUSLY PRODUCING AND SYNCHRONIZING SPECTRAL PATTERNS OF HEART SOUNDS AND AN ECG SIGNAL

William Reeves, New Haven, Conn., assignor to MCG International, Inc., Branford, Conn.

Filed May 21, 1992, Ser. No. 886,627
Int. Cl.[5] A61B 5/04
U.S. Cl. 128—700 30 Claims



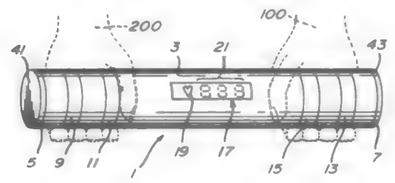
1. A system for detecting a condition of a subject's heart, said system comprising:
means for providing an input acoustic blood flow signal;
means for providing an input signal representative of electrical activity in said subject's heart;
means for converting said acoustic blood flow signal into a signal representing a spectral pattern of heart sounds; and
means for synchronizing said spectral pattern signal with said signal representative of electrical activity,
whereby said spectral pattern signal synchronized with said signal representative of electrical activity is used to detect, assess, grade and diagnose the condition of said heart.

5,337,753

HEART RATE MONITOR

Gregory Lekhtman, Montreal, Canada, assignor to Biosig Instruments Inc., Montreal, Canada

Filed Jun. 9, 1992, Ser. No. 895,936
Int. Cl.[5] A61B 5/04
U.S. Cl. 128—706 16 Claims



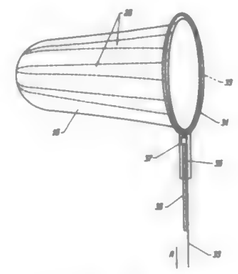
1. A heart rate monitor for use by a user in association with exercise apparatus and/or exercise procedures, comprising;
an elongate member;
electronic circuitry including a difference amplifier having a first input terminal of a first polarity and a second input terminal of a second polarity opposite to said first polarity;
said elongate member comprising a first half and a second half;
a first live electrode and a first common electrode mounted on said first half in spaced relationship with each other;
a second live electrode and a second common electrode mounted on said second half in spaced relationship with each other;
said first and second common electrodes being connected to each other and to a point of common potential;
said first live electrode being connected to said first terminal of said difference amplifier and said second live electrode being connected to said second terminal of said difference amplifier;
a display device disposed on said elongate member;
wherein, said elongate member is held by said user with one hand of the user on said first half contacting said first live electrode and said first common electrode, and with the other hand of the user on said second half contacting said second live electrode and said second common electrode;
whereby, a first electromyogram signal will be detected between said first live electrode and said first common electrode, and a second electromyogram signal, of substantially equal magnitude and phase to said first electromyogram signal will be detected between said second live electrode and said second common electrode;
so that, when said first electromyogram signal is applied to said first terminal and said second electromyogram signal is applied to said second terminal, the first and second electromyogram signals will be subtracted from each other to produce a substantially zero electromyogram signal at the output of said difference amplifier;
and whereby a first electrocardiograph signal will be detected between said first live electrode and said first common electrode and a second electrocardiograph signal, of substantially equal magnitude but of opposite phase to said first electrocardiograph signal will be detected between said second live electrode and said second common electrode;
so that, when said first electrocardiograph signal is applied to said first terminal and said second electrocardiograph signal is applied to said second terminal, the first and second electrocardiograph signals will be added to each other to produce a non-zero electrocardiograph signal at the output of said difference amplifier;
means for measuring time intervals between heart pulses on detected electrocardiograph signal;
means for calculating the heart rate of said user using said measure time intervals;
said means for calculating being connected to said display device;
whereby, the heart rate of said user is displayed on said display device.

5,337,754

INFLATABLE ISOLATION BAG

Malcolm D. Heaven, Newark; Stephen J. Shapiro, Encino, and Robert L. Hess, Portola Valley, all of Calif., assignors to Advanced Surgical, Inc., Princeton, N.J.

Division of Ser. No. 797,727. This application Sep. 1, 1993, Ser. No. 115,042
Int. Cl.[5] A61B 10/00
U.S. Cl. 128—749 4 Claims



1. A medical device usable within a body cavity comprising:
an isolation bag having an openable end, the bag comprising an inflatable and collapsible member, the member having a first configuration when in a collapsed state and a second configuration when in an expanded state, the member being introducible into a body cavity by passing the member through a tube while the member is in the collapsed state, and the member being expandable from the first configuration to the second configuration when the member is inserted into the cavity beyond an end of the tube;
fluid actuating means for expanding the member from the first to the second configuration, the fluid actuating means comprising a conduit supported by the member such that when pressurized gas or liquid is supplied to the conduit the member is expanded into the second configuration; and
means for closing the openable end of the bag.

5,337,755

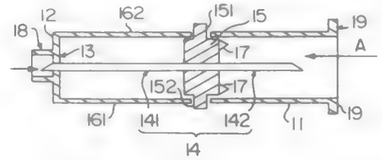
Patent Not Issued For This Number

5,337,756

BLOOD SAMPLING DEVICE WITH A VACUUM TUBE

Georges A. E. Barbier; Patrick R. P. P. Marquis, both of Caen, and Yvon Binet, 7, rue Charles Longuet, Bieville, all of France, assignors to Sylvain Thuaudet; George Albert Eugene Barbier; Patrick Roger P. P. Marquis and Yvon Binet, all of France

Filed Jan. 21, 1993, Ser. No. 7,320
Claims priority, application France, Jan. 22, 1992, 92 00680
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—763 6 Claims



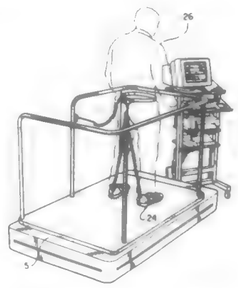
1. A blood sampling device comprising a sleeve provided with a two-ended needle of which the first end is intended for injecting the patient and the second end is intended to perforate a plug of a vacuum tube placed in the sleeve and which, when the first end of the needle has been placed in the vein in order to take a blood sample, is connected onto the second end of the needle so as to create suction for taking a blood sample, wherein the sleeve comprises:
a) a base with an outlet and guide aperture at one end of a tubular section for guiding and protecting the first end of the needle;
a guiding and locking groove with two locking positions consisting of a longitudinal section having a length substantially equal to the distance which the needle must travel in order to pass from its retracted position into its operating position, the groove terminating at each end in a locking extension which is transverse relative to the axis of the tubular section and which corresponds to each of the two locking positions;
b) the needle being provided with a guiding and locking disc placed in the sleeve and comprising at least one tab received in the groove and accessible from the exterior of the sleeve such that the needle can be passed manually from its locked retracted position into a locked operating position such that the needle is outside the sleeve;
c) the guiding and locking disc comprising a fastening means on its rear face, onto which the plug of the vacuum tube connects.

5,337,757

DEVICE FOR INDUCING AND REGISTERING IMBALANCE

Sanjeev Jain, Columbia; John E. Vermette, Baltimore, both of Md.; Richard Weber, Middlesex, N.J.; Robert J. Doub, Baltimore, Md.; Gad Alon, Rockville, Md., and Alan G. Day, III, Timonium, Md., assignors to Baltimore Therapeutic Equipment Co., Hanover, Md.

Continuation of Ser. No. 658,334. This application Feb. 18, 1993, Ser. No. 19,643
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] A61B 5/103
U.S. Cl. 128—779 4 Claims



1. A device for registering and evaluating the response of a human subject to induced imbalance comprising a horizontal platform means for accommodating said human subject; said platform means being adapted for controlled linear displacement in a horizontal plane to cause said induced imbalance and comprising a horizontal surface mounted on linear bearings which engage rails and connected to a motor through means for translating rotation of the motor into linear motion to cause said displacement at a controlled speed and acceleration and for controlled duration and distance; means for detecting said imbalance and the response of said subject thereto and for producing signals which characterize said imbalance and response; means for transmitting said signals to evaluation, display and recording means for registering and evaluating said imbalance and response thereto by said subject.

5,337,758

SPINE MOTION ANALYZER AND METHOD

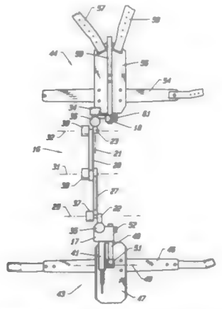
Robert R. Moore, Hayward; Steve R. Lamb, Pleasanton; Larry W. Lamoreux, Lafayette, and Michael H. McTeigue, Mountain View, all of Calif., assignors to Orthopedic Systems, Inc., Hayward, Calif.

Filed Jan. 11, 1991, Ser. No. 640,490
Int. Cl.[5] A61B 5/11
U.S. Cl. 128—781 10 Claims

1. In a system for analyzing spinal motion of a subject: a linkage having a plurality of arms movable relative to each other in accordance with spinal motion of the subject, at least one potentiometer having an input shaft connected to one of the linkage arms and an electrical resistance which varies in accordance with the position of the shaft, an analog-to-digital converter connected electrically to the potentiometer for providing digital data corresponding to the position of the potentiometer shaft, means for storing a calibration factor corresponding to data produced by the analog-to-digital converter when a calibration voltage is applied to the potentiometer, means for applying a reference voltage to the potentiometer to produce spinal motion data from the analog-to-digital converter corresponding to the spinal motion of the subject, and means for

VOL 1165 ISS 3 AG 16 1994 UMI

combining the calibration factor with the spinal motion data to provide a spinal motion signal which is substantially independent of differences between the calibration voltage and the reference voltage.

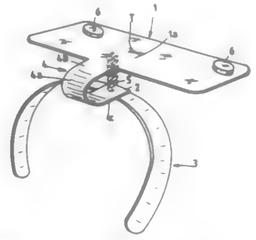


5,337,759

APPARATUS FOR INDICATING CORRECT BACK POSTURE

Randi Henden Trånos, Nordahl Griegs veg 3B, N-7800 Namsos, Norway

PCT No. PCT/NO91/00146, § 371 Date May 13, 1993, § 102(e) Date May 13, 1993, PCT Pub. No. WO92/09333, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 20, 1991, Ser. No. 50,498
Claims priority, application Norway, Nov. 22, 1990, 905052
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—782 **7 Claims**



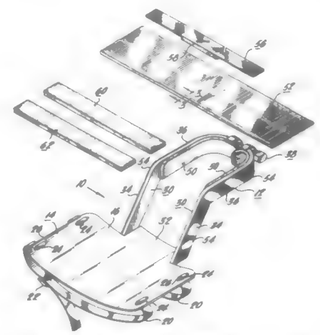
1. An apparatus to be attached to a head of a person to indicate correct or faulty back posture during execution of various activities in an upright or sitting position, comprising:
attachment means for attaching said apparatus to a top portion of said head;
an elongate balance member;
a base section connected to said attachment means;
a flexible, U-shaped band having a first and a second leg, said first leg being attached to a midsection of said balance member, said second leg being attached to said base section;
said flexible, U-shaped band extending transversely of a longitudinal direction of said balance member, mean center of gravity of said balance member being situated at a distance from a midsection of said flexible, U-shaped band, said legs of said flexible, U-shaped band facing rearward relative to the person's head during use of said apparatus; and
whereby, in case of head positions and consequent back positions that deviate from correct back posture, said balance member will tip in a direction of inclination of the head.

5,337,760

HEAD HOLDER FOR BRAIN TOMOGRAPHY

Thomas K. Nichols, 365 Amity Rd., Andover, N.J. 07821

Filed Nov. 25, 1992, Ser. No. 982,098
Int. Cl.[5] A61G *15/00;* **A47C** *20/02*
U.S. Cl. 128—845 **14 Claims**



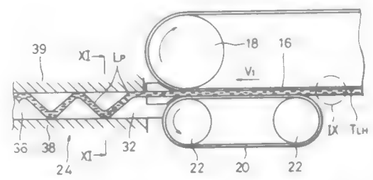
1. A head support assembly for immobilizing the head of a patient during brain tomography comprising; a mounting panel adapted for demountable attachment to a patient support table, a head frame assembly extending from said mounting panel, said head frame assembly comprising a pair of upstanding head frame elements, each said head frame element being fixedly secured at a first end thereof to said mounting panel, said head frame elements each including a substantially horizontal head clamping portion extending in elevated relation to said mounting panel, said head clamping portions being disposed in spaced substantially parallel relation to receive the patient's head therebetween, adjustment means connecting the second ends of said head frame elements for adjusting the spacing of said head frame element head clamping portions, and an adjustable head support sling extending in a looped disposition between said spaced head clamping portions.

5,337,761

SYSTEM AND A METHOD FOR MANUFACTURING CIGARETTES

Yutaka Okumoto, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Dec. 30, 1993, Ser. No. 175,575
Claims priority, application Japan, Mar. 29, 1993, 5-070280
Int. Cl.[5] A24C *5/18*
U.S. Cl. 131—84.1 **16 Claims**



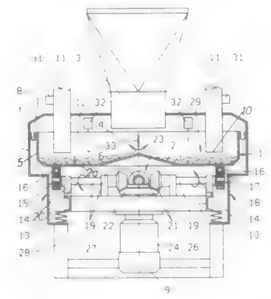
1. A cigarette manufacturing system comprising:
a cut tobacco supply section including first supply means having a first suction surface travelling in one direction having means for attracting cut tobacco in a layer to the first suction surface and delivering the attracted cut tobacco layer continuously as the first suction surface travels, folding means for folding the cut tobacco layer from the first supply means into layer portions and piling the layer portions on one another in the direction of delivery of the cut tobacco layer to form a cut tobacco train, and second supply means having a second suction surface traveling in the one direction having means for attracting the cut tobacco train from the folding means to the second suction surface and delivering the attracted cut tobacco train continuously as the second suction surface travels;
wrapping means for forming a continuous cigarette rod in a manner such that the cut tobacco train from the second suction surface is received on a paper web traveling in the one direction and is wrapped in the paper web; and
cutting means for cutting the formed cigarette rod into individual cigarettes.

5,337,762

APPARATUS FOR STORING AND DISTRIBUTING COMMINUTED TOBACCO

Karsten Jedamski, Moorrege, Fed. Rep. of Germany, assignor to Korber AG, Hamburg, Fed. Rep. of Germany

Filed Apr. 28, 1993, Ser. No. 54,527
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1992, 4214463
Int. Cl.[5] A24C *5/39*
U.S. Cl. 131—108 **13 Claims**



1. Apparatus for supplying comminuted tobacco to a plurality of consuming machines, comprising a reservoir having a central vertical axis, a substantially circular peripheral wall and a bottom wall with a substantially centrally disposed raised conical portion; means for simultaneously imposing up-and-down movements and oscillatory horizontal back-and-forth movements on said reservoir for converting at least a major part of tobacco in said reservoir into a fluidized bed, comprising at least three eccentrics having at least substantially identical eccentricities, being adjacent said peripheral wall, supporting said reservoir and being equidistant about said axis, said eccentrics being rotatable in vertical planes and said converting means further comprising means for rotating said eccentrics; and means for pneumatically conveying comminuted tobacco from the fluidized bed to the consuming machines, said conveying means having inlets adjacent a portion of said bottom wall surrounding said raised conical portion.

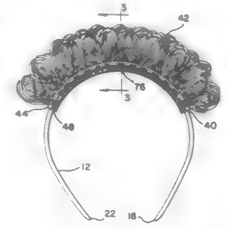
5,337,763

MULTI-USE HAIR PIECE

Judy Haber, 2942 W. 60th Dr., Merrillville, Ind. 46410; Sharon Haber, 610 Franciscan Dr., and Greta S. Lambert, 1031 E. Summit, both of Crown Point, Ind. 46307

Filed Jan. 28, 1992, Ser. No. 827,160
Int. Cl.[5] A41G *5/00*
U.S. Cl. 132—54 **13 Claims**

1. A multi-use hair piece kit for use on the head of a person, the kit comprising:
a support means to be worn across the head of a wearer from near one ear to near the other ear;
a hair piece for covering a portion of the head of the wearer, the hair piece including,
a flexible base;
hair strands attached to and extending outwardly from one side of the base; and
means for removably attaching the hair piece to the support means, said means permitting the flexible base of the hair piece to conform to the shape of the support means.



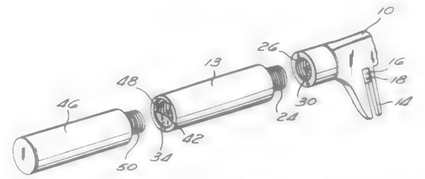
wherein the flexible base of the hair piece has an elongated substantially oval shape with a major axis and a minor axis and wherein the means for removably attaching the hair piece to the support means comprises an elongate strip of the loop side of a hook and loop fastening material sewn to the hair piece base to define a sleeve along the major longitudinal axis of the base.

5,337,764

FLUID DISPENSING COMB

William D. McKay, 528 Kelso St., Flint, Mich. 48506

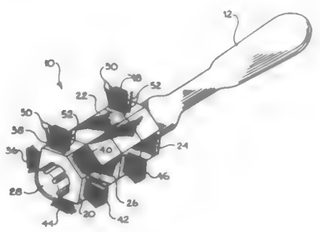
Continuation-in-part of Ser. No. 917,854. This application Aug. 25, 1992, Ser. No. 936,036
Int. Cl.[5] A45D *24/22*
U.S. Cl. 132—116 **5 Claims**



1. A fluid dispensing comb for applying fluid to a user's hair, said fluid dispensing comb comprising:
(a) a body having a plurality of teeth formed thereon;
(b) first and second fluid reservoirs removably attachable to said body such that fluid communication is provided from said reservoirs to said teeth, said first reservoir having a first seal formed thereon and said second reservoir having a second seal formed thereon;
(c) a first seal breaking means disposed upon said body;
(d) a second seal breaking means disposed upon said first reservoir;
(e) wherein said first reservoir is screwably attachable to said body such that attaching said first reservoir to said body causes said first seal breaking means to break the first seal on said first reservoir to provide fluid communication from said first reservoir to said teeth; and
(f) wherein said second reservoir s screwably attachable to said first reservoir such that attaching said second reservoir to said first reservoir causes said second seal breaking means to break the second seal on said second reservoir to provide fluid communication from said second reservoir to said teeth.

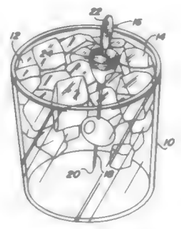
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,765
MODULAR BRUSH FOR USER-SELECTED HAIR STREAKING
Hilda C. Wong, 14701 Saltamontes Way, Los Altos Hills, Calif. [redacted]
Filed Feb. 4, 1993, Ser. No. 13,304
Int. Cl.[5] A45D *24/16*
U.S. Cl. 132—120 10 Claims



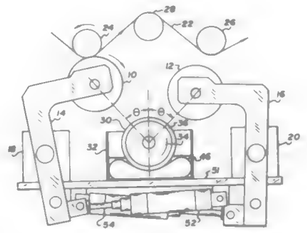
1. A Modular brush for applying hair coloring in a user-selected pattern comprising,
a brush body, said brush body having a length and a width,
a plurality of polygonal bristle modules, each bristle module having a plurality of generally planar sides, at least some of said bristle modules having a pattern of closely packed bristles on each of a plurality of said planar sides, each of said patterns having a width perpendicular to said length of said brush body, adjacent patterns of bristles on adjacent planar sides of a bristle module having a widthwise spacing therebetween said bristles within each pattern of bristles having coterminous outer ends, and
means for selectively arranging said plurality of bristle modules on said brush body to form a desired bristle configuration, whereby said patterns of bristles and widthwise spacings may be employed to form patterns of hair coloring.

5,337,766
FLOATABLE TOOTHPICK ASSEMBLY
Terry Lane, 1925 Brickell Ave., Apt. D810, Miami, Fla. 33129
Filed Sep. 7, 1993, Ser. No. 116,577
Int. Cl.[5] A45D *8/18*
U.S. Cl. 132—329 10 Claims



1. A toothpick assembly comprising an elongate length segment having a first lower end zone with a pointed tip, a first upper opposite end zone and a main length of generally cylindrical cross-section between the end zone,
a buoyant float means with a) an upper surface, b) a lower end, and c) a side surface extending between the upper surface and the lower end, said float means being disposed on said main length adjacent said first upper opposite end zone, and said float means being sufficiently buoyant to float in a beverage with the first upper opposite end zone extending above a top level of the beverage when a garnish is piercingly captivated adjacent the first lower end zone, and
said first upper opposite end zone being structured and disposed to provide an accessible finger gripping surface for use in lifting the assembly and the garnish thereon from a floating disposition in the beverage.

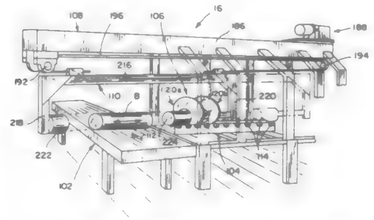
5,337,767
APPARATUS AND METHOD FOR CLEANING THE SURFACE OF A WEB
Gerard W. Ernst, Rochester, and Gregory P. Guyette, Macedon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 18, 1992, Ser. No. 993,346
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—104.1 10 Claims



8. An apparatus for cleaning a particle transfer roller, comprising:
a rotatable renewal roller having a cleaning surface for contacting and cleaning the particle transfer roller;
means for moving the particle transfer roller between a cleaning position in contact with the web and a renewal position disengaged from the web and in contact with the renewal roller;
means for providing wiping contact between the particle transfer roller and the renewal roller to effect cleaning of the particle transfer roller, said means comprising means for moving the particle transfer roller between a cleaning position in contact with the web and a renewal position disengaged from the web and in contact with the renewal roller; means for rotating the particle transfer roller while in contact with the renewal roller; and means for locking the renewal roller against rotation during the wiping contact with the particle transfer roller; and,
means for wetting and cleaning the cleaning surface of the renewal roller.

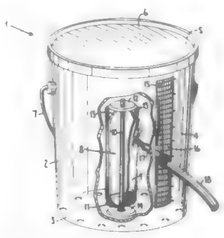
5,337,768
EXTRUSION BILLET TAPER QUENCH UNIT
Charles B. Gentry, Belmont, and James T. Visser, Ada, both of Mich., assignors to Granco Clark, Inc., Grand Rapids, Mich.
Filed Mar. 15, 1993, Ser. No. 31,528
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—122 R 5 Claims

1. An improved extrusion billet quenching system including a billet support, a vertically oriented water ring assembly, and drive means for moving a supported billet and said water ring assembly relative one another in a horizontal direction, said improvement comprising said driving means comprising:
a carriage;
drive means for driving the carriage back and forth in a horizontal direction between two extreme positions; and
first and second pusher heads cantilevered from said beam toward one another and aligned with said water ring assembly, each of said pusher heads being positioned so



that one extends through said water ring assembly when said carriage is in one of the extreme positions.

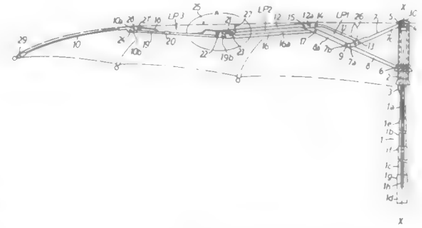
5,337,769
PAINT ROLLER COVER CLEANING DEVICE
Michael E. Howe, 390 East St., Bloomsburg, Pa. 17815
Filed Jul. 23, 1993, Ser. No. 97,081
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—138 3 Claims



1. A paint roller cover cleaning device comprising a drum having a perforated base, a cylindrical sidewall and an open top fitted with a removable lid, a support member for fictionally engaging a paint roller cover, said support member having a central shaft rotatably secured to the center of the base of said drum by a metal support collar and bearing, said cylindrical sidewall having a vertical slot opening therein adapted for the insertion and vertical movement of a hand held nozzle and hose attached to a source of solvent under pressure, said vertical slot opening extending substantially from the base of said drum to a height at least equal to the top of said roller cover when mounted on said support member and said slot opening provided with a flexible flap attached to only one edge thereof.

5,337,770
COLLAPSIBLE UMBRELLA
Max S. Wang, Taichung Hsien, Taiwan, assignor to Kortenbach Verwaltungs-Und Beteiligungsgesellschaft mbH and Company, Fed. Rep. of Germany
Filed Aug. 27, 1993, Ser. No. 112,528
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1993, 4303527
Int. Cl.[5] A45B *19/00*
U.S. Cl. 135—25.3 4 Claims

1. A collapsible umbrella comprising, in combination: an elongated sectional umbrella stick (**1**) having an upper crown (**4**) and a longitudinal axis (X);
said stick comprising at least four telescopic sections (**1***a*, **1***b*, **1***c*, **1***d*), collapsible one into the other along said longitudinal axis;
an uppermost of said stick sections having manually-operable, slide-arresting means (**3**);
a manually-displaceable slide (**2**) on said stick for controlling operation of said umbrella from a compacted stored condition to an erected condition when support on said slide-arresting means;
a plurality of canopy rod systems disposed in stellar relation about said stick axis and operatively connected to said crown and said slide for relative pivotal movement with respect to said crown and slide in response to reciprocation of said slide along the longitudinal axis of said stick; and
a canopy cover (**25**) mounted on said canopy rod systems and said crown for folding said unfolding with said canopy rod systems as said slide is manipulated,
each of said canopy rod systems including a central canopy rod (**7**) pivotally connected (**5**) to said crown (**4**) and having a U-shaped cross section opening away from the longitudinal axis of said stick, when the umbrella is collapsed, a main strut (**8**) pivotally connected (**6**) at an inner end to said slide and having a U-shaped cross section opening away from said axis when the umbrella is collapsed,
said central canopy rod having a bifurcated outer end portion (**7***a*) overlapping an intermediate portion of said main strut and pivotally connected (**9**) at said intermediate portion,
said canopy rod systems further comprising a series of at least three link parallelograms (**LP1**, **LP2**, **LP3**) and a



peripheral canopy rod (**10**) successively disposed outwardly from said stick axis when the collapsible umbrella is erected and compactly foldable upon each other and said central canopy rod and said main strut (FIG. **1**) when the umbrella is closed,
the first of said link parallelograms (**LP1**), nearest said umbrella stick, comprising a first long link (**11**) terminally pivoted (**13**) at an inner end within the said central canopy rod (**7**) adjacent said bifurcated portion (**7***a*) and defining a first short link (**7***a*) of said first of said link parallelograms,
said first long link having a U-shaped cross section having a width less than, the width of said canopy rod whereby the first long link (**11**) is received therein (**7**) when the umbrella is collapsed,
said first link parallelogram (LP1) including a second long link (**8***a*), parallel to said first long link (**11**) and extending from the pivotal connection (**9**) of the bifurcated portion (**7***a*) to the terminal end (**15**) of said main strut,
the second link parallelogram (**LP2**) comprising a first, upper long link (**12**) having a U-shaped cross section opening toward said stick axis, when the umbrella is closed, and pivotally receiving the terminal end (**15**) of main strut (**8**) therein and defining a second short link (**12***a*) of said first link parallelogram, said second link parallelogram including a lower, long link (**16**) having a relatively thin cross section (FIGS. **1**, **5** and **6**) for substantial receipt in said main strut (**8**) when the umbrella is collapsed,

VOL 1165 ISS 3 AG 16 1994 UMI

said lower long link (16) of said second link parallelogram (LP2) being terminally pivoted (17) at its upper end within an intermediate portion of said main strut (8) and defining thereabove a first short link of said second link parallelogram,

the third link parallelogram (LP3) comprising an upper, long link (18) terminally pivoted (21) at an inner end within an intermediate portion of the first, upper long link (12) of said second link parallelogram (LP2) and defining thereon an inner, first short link of said third link parallelogram,

said third link parallelogram (LP3) having a second, lower long link (19) having a U-shaped cross section opening toward said stick axis when the umbrella is collapsed, and being intermediately pivoted (22) on the outer end of the upper, first long link (12) of said second link parallelogram and defining thereon an inner short link of said third link parallelogram,

said peripheral canopy rod being intermediately pivoted (24) to the outer end of the lower long link (19) of said third link parallelogram and terminally pivoted at its inner end (21') to the outer end of an upper long link (18) of the third link parallelogram and defining between the pivotal connections (24, 21') an outer short link (28) of said third link parallelogram,

the upper long link (18) of the third link parallelogram being substantially disposed within the lower long link (19) of said third link parallelogram and being pivotally connected at an inner end (21) to an intermediate portion of the upper long link and defining the inner, short link of the third link parallelogram, whereby the upper long link (18) is substantially compressed between the upper long link of the second link parallelogram and the lower long link of said third link parallelogram when the umbrella canopy rod systems are simultaneously operated through manipulation of said slide below the slide-arresting means (3) and the rod systems are caused to fold, with the canopy, in an accordion-like manner (FIG. 2) subject to alternating fold-forces (K1, K2, K3, K4) for forming alternate folds along the umbrella stick,

the improvement characterized in that:

the upper long link (11) of the first link parallelogram is pivotal substantially into the central canopy rod (7) when disposed parallel thereto, the upper long link (12) of the second link parallelogram is wider than the main strut (8) and the relatively thin lower long link (16) of the second link parallelogram, said lower long link (16) being pivotal substantially into the main strut (8) and the upper long link (12) of the second link parallelogram, said lower, thin long link (16) of the second link parallelogram having a lower recess portion (16*a*) alignable with and receiving therein the pivotal connection (9) of the bifurcated end portion (7*a*) of the central canopy rod (7) when the umbrella is closed, the lower long link (19) inner bifurcated (19*a*) of the third link parallelogram having a transverse guide slot (19*d*) reciprocatingly receiving the outer pivotal connection (23) of the lower long link (16) of the second link parallelogram for permitting relative reciprocation of the pivotal connection (23) with respect to the upper long link (12) of the second link parallelogram during opening of the umbrella whereby the opened umbrella is substantially stabilized and compacted when closed.

5,337,771

UMBRELLA WITH AN IMPROVED HANDLE

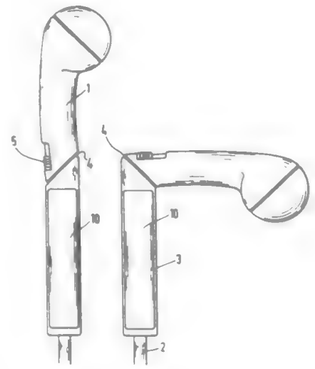
Rüdiger Berges, and Ulrich Berges, both of Germering, Fed. Rep. of Germany, assignors to Rudiger Berges GmbH, Germering, Fed. Rep. of Germany

Filed Aug. 5, 1993, Ser. No. 102,636

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1992, 9210999[]

Int. Cl.[5] A45B *19/00*

U.S. Cl. 135—25.4 9 Claims



1. An umbrella of the type having an elongated stock attached to a handle, said umbrella having a central axis, said handle comprising:

a first part having one end portion for receiving said shaft and a second end portion truncated at an angle with respect to the central axis of the umbrella, said first part comprising two molded plastic halves, said halves being separated longitudinally and assembled to form said first part, each said half having a generally cylindrical recess having a retaining groove which runs on both sides of the recess;

for each said halve, a shell having a circular arc length of less than approximately 180 degrees and terminating in side edges, said sides edges each having a snap projection which mates with the retaining groove to permit the shell to be attached to its respective half;

a second part having an end that is truncated at an angle with respect to said central axis, said truncated end portion of said second part being disposed in face to face relation with said truncated end of said first part;

a pivot mechanism disposed between said truncated ends of said first and second parts, said pivot mechanism permitting the second portion to pivot from a first position substantially parallel to said stock to a second position substantially perpendicular to said stock;

a locking mechanism for securing said second part in the first or second position, said locking mechanism comprising a pair of openings in one of said truncated ends, said openings receiving a locking pin, said locking pin being spring biased to a position where it is inserted within one of the holes to lock the first part into position with respect to the second part, said locking pin being moveable against said bias to a position wherein it is withdrawn from said openings to permit said first second part to pivot with respect to said first part, said bias forcing said pin against the truncated end of the opposite part during the pivoting motion, and then finally into one of said openings to lock the two parts in fixed relation, thereby permitting single finger operation of said locking mechanism.

5,337,772

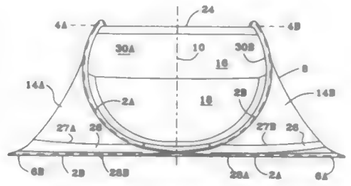
SELF-UNFOLDING SHELTER

Elie E. Habchi, 474 Murray Dr., El Cajon, Calif. 92020

Filed Apr. 12, 1993, Ser. No. 46,081

Int. Cl.[5] E04H *15/40*

U.S. Cl. 135—104 12 Claims



1. A shelter comprising:

(a) means for framing a volume comprising:

(i) a first closed, elongated loop of wire having a memory urging the first loop to lie in a flat plane, the first loop having one longitudinal end portion partially curled back squarely toward an opposite end portion, the curled end portion being a first arch for providing vertical support, the opposite end portion being a first, generally U-shaped footing member,

(ii) a second closed, elongated loop of wire having a memory urging the second loop to lie in a flat plane, the second loop having one longitudinal end portion partially curled back squarely toward an opposite end portion, the curled end portion being a second arch for providing vertical support, the opposite end portion being a second, generally U-shaped footing member, the first loop extending through the second loop, the first and second footing members being opposingly disposed in relation to each other to provide generally planar footing for the shelter, and the first and second arches being opposingly aligned and suitably spaced apart,

(iii) means for fixing the first and second loops in their respective curled forms, and

(iv) means for fixing the loops in relation to each other, and

(b) means, supported by said means for framing, for enveloping at least a portion of said volume.

5,337,773

VACUUM-OPERATED DRAINING SYSTEMS

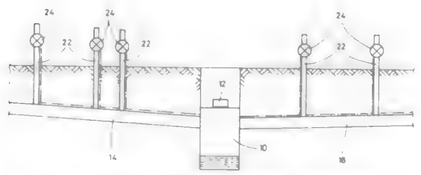
Harald Michael, Gosslers Park 9, 2000 Hamburg 55, Fed. Rep. of Germany

Filed May 18, 1993, Ser. No. 62,559

Claims priority, application Fed. Rep. of Germany, May 20, 1992, 4216628

Int. Cl.[5] F16K *11/20;* E03B *7/02*

U.S. Cl. 137—1 10 Claims



1. A vacuum-operated draining system comprising: a vacuum source for creating a vaccum,

at least one manifold connected to the vacuum source,

a plurality of connecting conduits connected to the manifold at intervals, and

a suction valve for each connecting conduit, the suction valves being independently actuatable for closing an associated connecting conduit,

characterized in that the manifold is continuously and without interruption inclined downwardly between the connecting conduits and the vacuum source and is so dimensioned that a part of the inner cross-section thereof at peak loads remains clear to conduct the vacuum through the manifold directly to the connecting conduits without interruption.

5,337,774

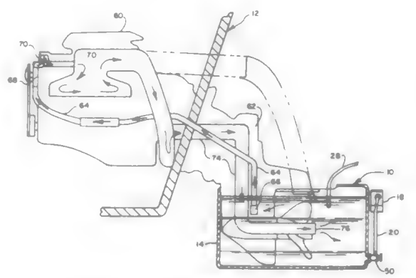
MARINE ENGINE MAINTENANCE

Gary P. Boyd, Columbus, Ohio, assignor to The Smart Corporation, Columbus, Ohio

Filed Jul. 1, 1993, Ser. No. 84,150

Int. Cl.[5] F16K *49/00*

U.S. Cl. 137—1 6 Claims



1. In a method of winterizing a watercraft marine engine having outdrive coolant inlet and coolant discharge openings by providing antifreeze solution coolant to engine internal coolant passageways, the steps of:

inserting the marine engine outdrive coolant inlet and discharge openings into an antifreeze solution contained in a recovery tank unit;

starting and operating the watercraft marine engine;

withdrawing antifreeze solution into said watercraft marine engine coolant inlet opening from said recovery tank unit and flowing water coolant from said watercraft marine engine coolant discharge opening into said recovery tank unit for mixing with said antifreeze solution;

continuously transferring the mixed antifreeze solution and water coolant to a storage tank unit and simultaneously transferring less-diluted antifreeze solution from the storage tank unit to the recovery tank unit at substantially equal flow rates until all transferred fluid is of homogeneous concentration;

stopping the operation of the watercraft marine engine and stopping the transferring of fluid to and from the storage tank unit; and

withdrawing the watercraft marine engine outdrive coolant inlet and outdrive coolant discharge openings from insertion within said recovery tank unit.

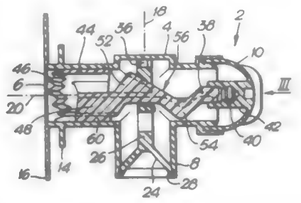
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,775

DISPENSING TAPS

Charles A. Lane, Kingston Upon Thames; Ian D. Woodward, Carshalton Beeches, and Derek L. Tyrrell, Rochford, all of Great Britain, assignors to Waddington & Duval Limited, United Kingdom

Filed Dec. 18, 1992, Ser. No. 992,802
Claims priority, application United Kingdom, Jan. 30, 1992, 9201993.4
Int. Cl.[5] F16K *17/40*; B67B *7/48*
U.S. Cl. 137—68.1 10 Claims



1. A tap comprising

a body having an inlet and an outlet, the axes of said inlet and outlet being transverse relative one to the other,

a piercer unit carried within said body adjacent said inlet,

a shaft to which said piercer unit is connected at one end, the other end of said shaft being manually engageable directly so as to move said shaft in one direction along said inlet axis in order to activate said piercer unit, and

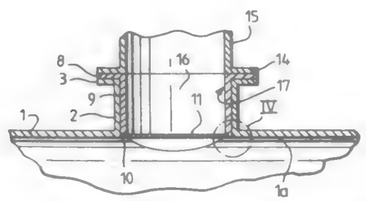
an outlet sealing means comprising a valve element connected to a valve stem for sealing an outlet passageway, said valve stem being operable in one direction along said outlet axis to open said tap, said valve stem and said shaft being operatively connected for relative movement with respect to one another such that axial movement of said shaft towards said inlet in response to a manual force acting directly on said other end of said shaft along said inlet axis causes said valve stem to move transversely to said shaft in order to open said outlet as said valve stem moves along said outlet passageway.

5,337,776

PIPELINE

Michael R. Perry, 32 Woodland Road, Kenilworth, Warwickshire CV8 2FL, and Katharine A. Wykes, 50 Ettington Close, Wellesbourne, Warwickshire CV35 9RJ, both of England

Filed May 24, 1993, Ser. No. 66,532
Int. Cl.[5] F16K *17/16*
U.S. Cl. 137—68.1 11 Claims



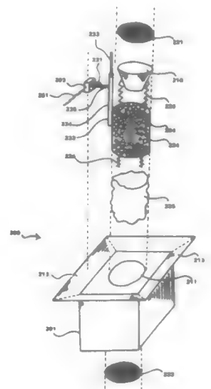
1. In a method of transporting a congealable solution of cellulose in an aqueous tertiary amine oxide, through a pipeline, the improvement which comprises maintaining said solution at a temperature in excess of 80° C. and incorporating in said pipeline an over pressure device, the device comprising a surface displaceable under the action of pressure to form a vent for the pipeline, the surface being mounted in the pipeline so that part at least of the surface is washed by the solution passing through the pipeline.

5,337,777

AUTOMATIC SPRINKLER CONTROL OVERRIDE APPARATUS

David C. H. Shaw, and Judy Z. Z. Shaw, both of 3312 E. Mandeville Pl., Orange, Calif. 92667

Continuation-in-part of Ser. No. 958,199. This application May 3, 1993, Ser. No. 55,993
Int. Cl.[5] F16K *17/36*
U.S. Cl. 137—78.2 27 Claims



1. An automatic sprinkler control apparatus for controlling the flow of electric current to a timer regulated automatic sprinkler system; wherein, the apparatus comprises:

a receptacle member defining a fluid reservoir; wherein, the receptacle member includes at least an opening facing generally upward to collect rain water or water sprinkled from the said sprinkler system;

float means disposed within a float housing portion of the said fluid reservoir; wherein, the float means can be floated to different levels with associated different magnitudes of floating force in response to the level of collected water within the fluid reservoir;

screen means to prevent dirt, debris or other objects from entering the fluid reservoir; wherein, the screen means can allow water to flow into or overflow out of the reservoir; and, the screen means can further allow water vapor to readily pass through the screen means such that water collected in the reservoir can escape gradually through evaporation; wherein, the screen means include a plurality of screens in a multi-stage screening arrangement, each stage of screening including at least one screen; wherein, the multi-stage screening includes at least a first stage screening to prevent dirt, debris or other objects from entering the float housing portion of the reservoir, said second stage screening encircling the float means to define the said float housing portion of the reservoir; and

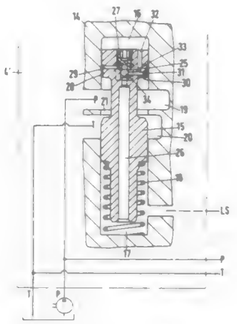
switch means operatively connected to the said sprinkler system; wherein, the switch means is functionally operated by the float means in a way such that the switch means can be turned on or turned off by the float means in response to the floated levels or the magnitudes of the floating force of the float means, said floated levels and magnitudes of the floating force being dependent on the levels of collected water within the reservoir.

5,337,778

PRESSURE CONTROL VALVE

Svend E. Thomsen, Nordborg; Thorkild Christensen, Sonderborg, both of Denmark, and Siegfried Zenker, Kirchseeon, Fed. Rep. of Germany, assignors to Danfoss A/S, Nordborg, Denmark

Filed Mar. 30, 1993, Ser. No. 40,141
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1992, 4211817
Int. Cl.[5] F15B *13/08*; F16K *17/02*
U.S. Cl. 137—117 11 Claims



1. A pressure control valve, comprising,

a housing defining central bore means,

a slide valve slidably disposed in said bore means and defining with said housing a pressure chamber at one end thereof and a load sensing chamber at the other end thereof,

said housing having an extrnal load sensing connection for said load sensing chamber,

said housing having pump and tank chambers defined by said slide valve and respective associated external pump and tank connections,

spring means biasing said slide valve in the direction of said pressure chamber,

said slide valve being moveable in the direction of said pressure chamber to control a flow path between said pump and tank chambers with the movement of said slide valve in the direction of said pressure chamber being effective to further restrict flow between said pump and tank chambers,

fluid passage means in said slide vavle providing fluid communication (1) between said pressure chamber and said pump chamber and (2) between said presure chamber and said load sensing chamber, and

change-over valve means in said fluid passage means effective to provide fluid communication between said pressure and load sensing chambers when the pressure in said load sensing chamber is higher than the pressure in said pressure chamber.

5,337,779

AUTOMATIC DRAIN DEVICE

Hiroshi Fukuhara, Yokohama, Japan, assignor to Kabushiki Kaisha Fukuhara Seisakusho, Yokohama, Japan

Filed Nov. 19, 1990, Ser. No. 615,571
Claims priority, application Japan, May 23, 1990, 2-54184[U]
Int. Cl.[5] F16K *31/02*; F16T *1/00*
U.S. Cl. 137—187 8 Claims

1. An automatic drain device for automatically draining accumulated liquid from an air tank, comprising:

a liquid collection cell;

means for permitting said liquid to drain into said liquid collection cell;

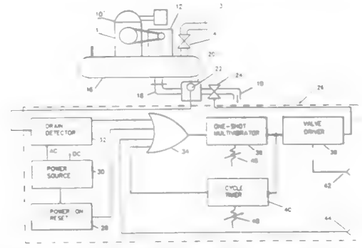
a sensor in said liquid collection cell;

an externally controllable drain valve;

said drain valve being effective, when energized, to drain said liquid collection cell;

said sensor including means for producing a predetermined change in an electrical property of said sensor when said sensor is contacted by said liquid;

means for sensing said change in an electrical property, and for producing an output signal in response thereto;



energizing means, responsive to said output signal, for energizing and drain valve for a first predetermined timer period commencing immediately upon said sensor being contacted by said liquid; and

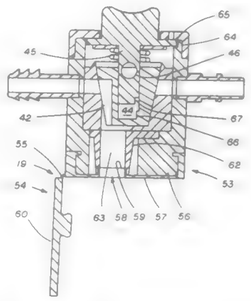
cycle timer means, responsive to the non-occurrence of said output signal for at least a second predetermined time period, to energize said drain valve for said first predetermined time period.

5,337,780

SUCTION CONTROL VALVE

Kok-Hiong Kee, St. Louis, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Oct. 19, 1992, Ser. No. 962,757
Int. Cl.[5] F16K *27/08*
U.S. Cl. 137—381 4 Claims



1. A suction control valve comprising:

a valve body having a suction source access port, a primary suction device access port, and a fluid flow passage for allowing fluid flow passage between said suction source access port and said primary suction device access port,

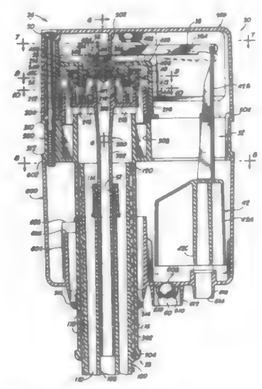
an ancillary suction device access port in fluid flow connection with said fluid flow passage, and

an actuator positioned at least partially within said valve body for movement relative thereto between at least a first position in which said primary suction device access port and said ancillary suction device access port are closed against fluid flow therethrough, a second position in which said primary suction device access port is open to fluid flow therethrough and said ancillary suction device

VOL 1165 ISS 3 AG 16 1994 UMI

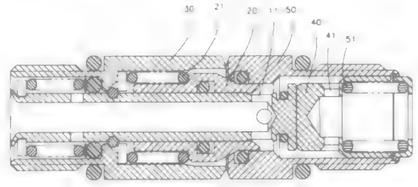
access port is closed to fluid flow therethrough, and a third position in which said primary suction device access port is closed against fluid flow therethrough and said ancillary suction device access port is open to fluid flow therethrough.

5,337,781
FLOAT OPERATED FILL VALVE
Dwight N. Johnson, 6327 Chorlito Dr., Carlsbad, Calif. 92008
Continuation of Ser. No. 909,386. This application Jul. 8, 1993, Ser. No. 88,817
Int. Cl.[5] F16K *31/34, 33/00*
U.S. Cl. 137—434 4 Claims



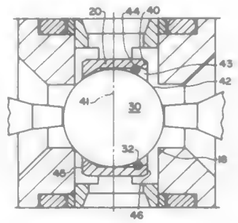
1. A fill valve for maintaining a predetermined level of liquid in a tank and comprising:
housing means defining an inlet for receiving pressurized liquid and an outlet for discharging liquid into the tank;
said housing means containing valve means for controlling the flow of liquid from said inlet to said outlet;
means for sensing the level of liquid in the tank;
a control lever pivotally movable in response to said level sensing means for operating said valve means to permit flow when the sensed liquid level is below the predetermined level;
said fill valve being characterized by:
said lever having a U-shaped cross section with a bight and a pair of legs;
said housing means including first and second aligned housing members;
said first and second housing members each including an elongated pivot flange extending toward the other housing member;
said pivot flanges being parallel and aligned with one another to define a gap therebetween at a pivot axis location;
said bight portion of said lever being captured in said gap between said flanges with sufficient clearance for pivotal movement;
said level including a pair of spaced apart openings at the pivot axis location; and
a pair of spaced apart projections disposed on one of said pivot flanges, said projections being received in said openings to maintain the position of said lever between said pivot flanges.

5,337,782
HYDRAULIC COUPLING
Wayne Wilcox, Waterford, Pa., assignor to Snap-Tite, Inc., Union City, Pa.
Filed Jan. 11, 1993, Ser. No. 2,624
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—614.03 4 Claims



1. A coupler half comprising
a coupler body,
a pintle having a first position with resect to said coupler body, said pintle having a relief port not communicating with the outside when said pintle is in its said first position, but said pintle being axially extendable against a relief spring to a second position in which said relief port communicates with the outside, and said pintle having a pintle port, and
a sleeve covering said pintle port, said sleeve being retractable with respect to said pintle against a sleeve spring to a retracted position in which said pintle port is uncovered.
2. An improved no-spill coupling comprising the coupler half of claim 1 and a nipple half, said nipple half comprising
a nipple body, and
a nipple valve having a nipple port covered by said nipple body, said nipple valve being retractable with respect to said nipple body against a nipple spring to a retracted position in which said nipple port is uncovered;
and said coupler half and nipple half having wall means coacting to retract said sleeve and said nipple valve to their said retracted positions when said coupler is connected.

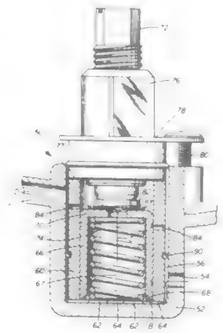
5,337,783
POPPET VALVE
Horst Rott, Karlstadt-Mühlbach, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Fed. Rep. of Germany
Filed Aug. 24, 1993, Ser. No. 110,953
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1992, 4228059
Int. Cl.[5] F16K *11/086*
U.S. Cl. 137—625.27 1 Claim



1. A poppet valve comprising a ball supported within an axial bushing (20), the ball being adapted to be urged onto the valve seat by an operating element and to be lifted off the valve seat by the force of a spring, wherein pressure is applied to the ball surface within the valve seat, wherein the end (40) of the bushing (20) facing the valve seat (18) protrudes in tangential direction beyond the periphery or equator of the ball towards

said valve seat and defines together with the ball surface (42) a space (43) for fluid flow inversion and wherein a spreader ring or snap ring (32) for mounting the bushing to the ball is disposed in a circumferential groove (44) in the interior of the end (40) of the bushing (20) protruding towards the valve seat beyond the periphery or equator (41) of the ball (30) and the opposite end of the bushing is provided with an inwardly extending portion or flange (45) for supporting the ball.

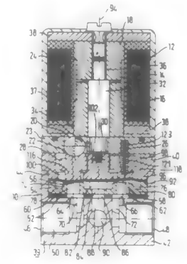
5,337,784
FLOW CONTROL VALVE
Eddie C. Grubb, Lexington, Ky., assignor to E-Z Dispensers, Inc., Lexington, Ky.
Filed Oct. 26, 1992, Ser. No. 968,033
Int. Cl.[5] F16K *3/24, 3/32*
U.S. Cl. 137—625.38 4 Claims



1. A precision flow control valve for accurately metering small amounts of fluid, comprising:
a housing including a cavity, a fluid inlet and a fluid outlet;
a cylindrical valve body received in said cavity and including a stepped arrangement of flow apertures radially arrayed about said valve body, each said flow aperture being circumferentially spaced from an adjacent flow apertures by at least a 45° arc and axially spaced from an adjacent flow aperture so as to be a different distance from an end of said valve body and each flow aperture having a diameter of between 1/20–1/40 of an inch;
a cylindrical regulating element concentrically received in said valve body, said regulating element including first and second open ends so as to form a flow passage;
means for manually adjusting the position of said regulating element relative to said valve body so as to expose one or more of said flow apertures for the passage of fluid, said adjusting means engaging said regulating element at said first end; and
means for biasing said regulating element into engagement with said adjusting means, said biasing means engaging said regulating element at said second end.

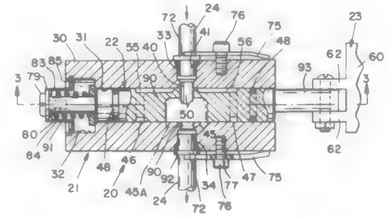
5,337,785
VALVE
Joachim C. Römer, Strasslach, Fed. Rep. of Germany, assignor to AVS Ing. J.C. Roemer GmbH, Strasslach, Fed. Rep. of Germany
Filed Jul. 7, 1993, Ser. No. 88,479
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1992, 4222594
Int. Cl.[5] F16K *11/10, 7/07, 7/12, 31/06*
U.S. Cl. 137—625.65 22 Claims

1. A valve, comprising a valve housing, a valve member which is tiltably arranged in the housing about a tilt axis and which serves to close or free valve openings arranged on opposite sides of the tilt axis in a flow passage leading from an inlet to an outlet, with the pressures which prevail in operation at the valve openings exerting tilting moments on the valve member, and further comprising means arranged on both sides of the tilt axis which exert compensating tilting moments on



the valve member, with the said tilting moments and compensation tilting moments at least substantially cancelling one another in all positions of the valve member, and also comprising an actuating device which controls the valve member and causes the valve member to execute a tilting movement, wherein both the valve openings and also the compensation means lie at least substantially in one plane.

5,337,786
SLIDE ACTUATION VALVE
Robert Rush, Amherst, and Paul Fortlage, Medina, both of Ohio, assignors to MTD Products Inc., Cleveland, Ohio
Continuation of Ser. No. 742,228, is a continuation of Ser. No. 549,975, Jul. 9, 1990, abandoned. This application Aug. 31, 1992, Ser. No. 938,569
Int. Cl.[5] F15B *13/04*
U.S. Cl. 137—625.68 25 Claims



1. In a valve having a body section with pressure, return, and two bi-directional fluid openings and a valve slide having actuation grooves, the valve slide selectively interconnecting the openings upon the axial actuation thereof, the valve used with a reservoir, the improvement of the fluid openings in the body section of the valve being straight through holes for cooperation with the actuation grooves to valve the fluid, there being a single return opening in the body section of the valve emptying to the reservoir, means for the selective actuation of the valve slide to interconnect one of the bi-directional openings to one of the pressure and return openings and to interconnect the other of the bi-directional openings to the other of the pressure and return openings, and one of the actuation grooves including a central passage being aligned with and extending on either side of the return opening directly opening thereto in one given operative position of the valve.

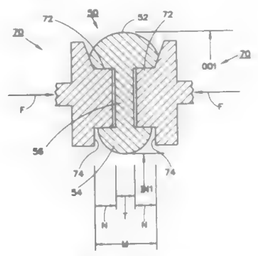
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,787

CIRCUMFERENTIAL SEALING APPARATUS

Stephen J. Fiondella, New Haven, Conn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 15, 1993, Ser. No. 77,474
Int. Cl.[5] F15B *13/043;* F16K *11/07*
U.S. Cl. 137—625.69 9 Claims



1. A stationary sealing device, comprising:

a plurality of generally rigid cages; and

a plurality of compressible seals disposed in alternating axial positions with said cages, each of said plurality seals being generally annular with an inside diameter and an outside diameter, each of said plurality of seals having a cross section which comprises a radially outer portion, a radially inner portion and a connector portion disposed radially between and attached to said radially inner and outer portions, said inner portion being generally semicircular, said outer portion being generally semicircular in cross section, said inner and outer portions and said connector portion being shaped to define a first annular groove in a first axial surface of each of said plurality of seals and a second annular groove in a second axial surface of each of said plurality of seals, each of said first and second grooves being shaped to receive an annular protrusion extending axially from each of said plurality of cages, said annular protrusion being disposed between a radially outer axial face and a radially inner face of said plurality of cages, said connector portion and said annular protrusion being sized to provide axial clearance between said radially inner portion and said radially inner axial face of each of said cages radially inward from said annular protrusion, said radially outer portion and said radially outer axial face of each of said plurality of cages being sized to compress said radially outer portion between said radially outer axial faces of adjacent ones of said plurality of cages.

5,337,788

PNEUMATIC VALVE WITH SLOW START AND QUICK EXHAUST

John Nelson, Durham, N.H., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 22, 1993, Ser. No. 141,854
Int. Cl.[5] F16K *31/122*
U.S. Cl. 137—627.5 19 Claims

1. A slow start and quick exhaust pneumatic valve comprising

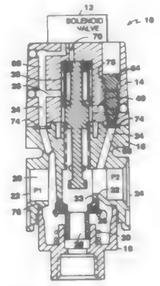
a housing structure defining a supply inlet, a system outlet and a main flow passage between said supply inlet and said system outlet,

a main valve movably mounted in said housing structure for movement between a closed position in which said main flow passage is blocked and an open position in which said main flow passage is unblocked,

said main valve being urged to said open position by increased pressure on downstream surfaces of said main valve,

said housing structure defining a by-pass flow passage from a location on said main flow passage upstream of said main valve to a location on said main flow passage downstream of said main valve,

a control valve controlling flow through said by-pass flow passage,



an adjustable restriction in said by-pass flow passage, and

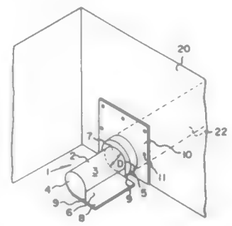
an exhaust valve member that opens or closes an exhaust opening to said main flow passage.

5,337,789

VORTEX VALVES

Roger J. Cook, Berkeley, United Kingdom, assignor to Hydro International Limited, United Kingdom

PCT No. PCT/GB91/01889, § 371 Date Apr. 28, 1993, § 102(e) Date Apr. 28, 1993, PCT Pub. No. WO92/08059, PCT Pub. Date May 14, 1992
PCT Filed Oct. 29, 1991, Ser. No. 50,026
Claims priority, application United Kingdom, Oct. 29, 1990, 9023471
Int. Cl.[5] F15C *1/16*
U.S. Cl. 137—812 16 Claims



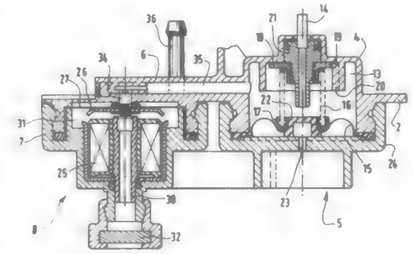
1. A vortex valve comprising a housing having a cylindrical side wall and opposite ends to define a cylindrical vortex chamber which has a length l between said ends, said side wall of the housing having a primary, tangential inlet through which liquid may enter the vortex chamber in a manner to promote swirl within the vortex chamber and an outlet of diameter D at one axial end of the vortex chamber, wherein said outlet represents at least 50% of the area of the end of the vortex chamber in which it is situated and length l of said vortex chamber is at least one and a half times the diameter D of the outlet.

5,337,790

ASSEMBLY FOR CONTROLLING AN EXHAUST GAS RECIRCULATION VALVE FOR AN INTERNAL COMBUSTION ENGINE

Pierre Heritier-Best, Orbeil; Isabelle Brault, Clermont-Ferrand, and Bernard Judelle, Issoire, all of France, assignors to Sagem Allumage, Paris, France

Filed Sep. 13, 1993, Ser. No. 119,533
Claims priority, application France, Sep. 15, 1992, 92 10974
Int. Cl.[5] F02M *25/07;* F16K *51/00*
U.S. Cl. 251—129.21 18 Claims



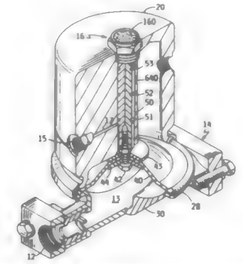
1. An assembly for controlling an exhaust gas recirculation valve for an internal combustion engine, including a vacuum regulator (**5**) with an inlet adapted for connection to a vacuum source, and an outlet, and a solenoid valve (**8**) with an inlet connected to said outlet of said vacuum regulator and an outlet (**36**) adapted for connection to a control inlet of the recirculation valve for furnishing a vacuum to said control inlet as a function of an electrical control signal of said solenoid valve; the invention comprising a unitary member forming a body (**4**) of said vacuum regulator and a closure cap (**6**) of said solenoid valve, said solenoid valve including a valve body closed by said cap, and a conduit (**34, 35**) formed in said member communicating the interior of said body of said vacuum regulator with the interior of said body of said solenoid valve.

5,337,791

DYNAMIC SURGE SUPPRESSOR FOR FLUID FLOW LINES

Steven P. Plager, Burnsville, and Daniel J. Kvinge, Shoreview, both of Minn., assignors to Graco Inc., Golden Valley, Minn.

Continuation of Ser. No. 965,808, Oct. 23, 1992, abandoned.
This application Jan. 21, 1994, Ser. No. 184,356
Int. Cl.[5] F16L *55/04*
U.S. Cl. 138—30 6 Claims



1. An apparatus for smoothing pressure fluctuations from a liquid delivery pump, comprising:

a) a housing having a liquid inlet connectable to said liquid delivery pump, and having a liquid outlet; said housing having a central axis and having a plurality of internal air chambers arranged about said central axis;

b) an internal diaphragm chamber in said housing; said diaphragm chamber having a first section in flow communication with said liquid inlet and said liquid outlet, and a second section in flow communication with said plurality of internal air chambers;

c) a diaphragm membrane separating said first diaphragm chamber section from said second diaphragm chamber section, and having an attachment point aligned along said central axis;

d) a valve bore in said housing aligned along said central axis; said valve bore running substantially parallel to said plurality of internal air chambers, a first end of said valve bore opening into said diaphragm chamber second section and a second end of said valve bore opening external to said housing;

e) a first passage in said housing running between the housing exterior and said valve bore proximate said first end, and a second passage in said housing running between one of said plurality of internal air chambers and said valve bore proximate said second end;

f) a valve member in said valve bore slidably positionable between a first position wherein only said first passage is covered, and a second position wherein only said second passage is covered, and an intermediate position wherein both said first and second passages are covered; and

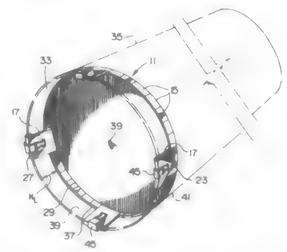
g) means for connecting said valve member to said diaphragm membrane attachment point.

5,337,792

PROTECTIVE COVER FOR PIPE END

Lorne F. Tempel, Regina, Canada, assignor to IPSCO Enterprises Inc., Wilmington, Del.

Filed Jan. 21, 1993, Ser. No. 7,082
Int. Cl.[5] B65D *59/06*
U.S. Cl. 138—96 R 28 Claims



1. A pre-cut blank of relatively stiff sheet material for making a weather protector for insertion by a predetermined distance into the end of a pipe having a predetermined inner diameter, comprising a generally circular inner portion whose diameter is selected to match the inner diameter of the pipe, and an array of spaced tabs integral with the inner circular portion and extending radially outward therefrom, the tabs including a set of circumferentially spaced long tabs and, interposed between each long tab and its neighbouring long tab, a series of closely circumferentially spaced short tabs, the short tabs adjacent the long tabs being spaced from the long tabs by narrow radial gaps, and the short tabs being spaced from one another by narrow radial gaps, said long tabs having a length corresponding to said predetermined insertion distance.

VOL 1165 ISS 3 AG 16 1994 UMI

5,337,793

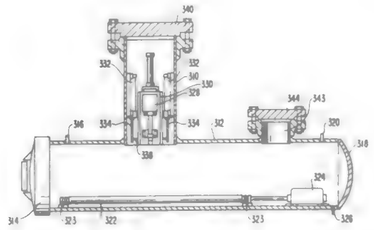
CYLINDER RUPTURE VESSEL

Jeffrey W. Gold, Altanta, Ga., and Dan A. Nickens, Orlando, Fla., assignors to Earth Resources Corporation, Ocoee, Fla.

Continuation of Ser. No. 873,481, Feb. 20, 1992, Pat. No. 5,186,219, which is a continuation of Ser. No. 489,234, Mar. 6, 1990, abandoned, which is a continuation of Ser. No. 57,083, Jun. 3, 1987, Pat. No. 4,944,333, which is a continuation-in-part of Ser. No. 669,537, Nov. 8, 1984, Pat. No. 4,690,180. This application Feb. 1, 1993, Ser. No. 11,865

Int. Cl.[5] B65B *31/00;* B67B *7/24*

U.S. Cl. 141—1 10 Claims



1. A method for releasing the contents of a cylinder in a cylinder rupture vessel, wherein said cylinder rupture vessel comprises a sealable chamber, said method comprising the steps of:

inserting a cylinder into said chamber;

sealing said chamber;

purging air located within said chamber;

introducing an inert gas into said chamber; and

rupturing at least a portion of said cylinder;

wherein said step of rupturing said cylinder comprises drilling a hole in at least a portion of said cylinder.

5,337,794

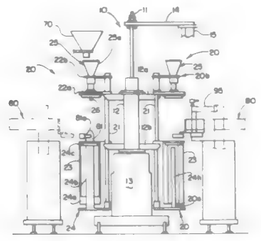
POWDER FILLING APPARATUS AND A METHOD FOR FILLING A CONTAINER WITH POWDER

Shigeru Nishiyama, and Yasuhiro Hayashi, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 18, 1993, Ser. No. 20,329

Int. Cl.[5] B65B *3/14*

U.S. Cl. 141—144 11 Claims



10. A powder filling apparatus, comprising:

a rotary filling device for filling a container with powder, including a plurality of work units arranged to move around along the same circumference, wherein a container is carried into each of said work units during the movement of the work units, both the inside and the outside of the container are equally evacuate, and powder is dropped into the container while the pressure outside the container is raised;

a carrying-in device for carrying a container into each of said work units moving around successively;

a powder dispenser for dispensing and supplying a predetermined amount of powder to each of said work units moving around successively; and

a carrying-out device for carrying the container filled with powder from each of the work units successively during the moving around to said work units,

wherein each of said work units includes:

a hopper for storing a predetermined amount of powder required for filling the container dispensed and supplied thereto;

a nozzle portion having a bottom opening, said nozzle portion being connected to the bottom end of said hopper for allowing the powder stored in said hopper to drop through said bottom opening;

a valve element vertically movable relative to said nozzle portion, said valve element fitting into said bottom opening of said nozzle portion to close said opening when lifted, and to release said opening when lowered; and

a valve drive shaft with said valve element attached to the bottom end thereof, said valve drive shaft extending through the axial centers of said hopper and said nozzle portion slidably in the vertical direction; and

wherein said valve element includes:

a buffer portion forming an upper part of said valve element having a truncated-cone shape tapered upward to that powder dropping from said nozzle portion collides against the outer circumference of said buffer portion; and

a guide portion forming a lower part of said valve element having a truncated-cone shape tapered downward so that said powder inlet of the container can be guided through the outer circumference of said guide portion.

5,337,795

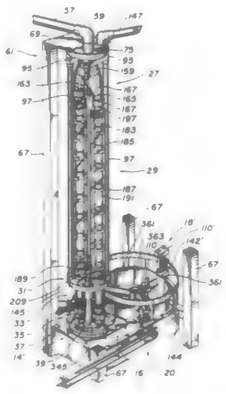
APPARATUS FOR INTRODUCING FILLER MATERIAL INTO CONTAINERS

Stavros Mihail, Seattle, and Marvin J. Berg, Tacoma, both of Wash., assignors to Promation Incorporated, Seattle, Wash.

Division of Ser. No. 890,560, May 28, 1992. This application Jun. 29, 1993, Ser. No. 84,712

Int. Cl.[5] B65B *3/34*

U.S. Cl. 141—144 4 Claims



1. A delivery subsystem for introducing elongate filler material into a moving stream of fluid carrier, the subsystem comprising:

a hopper for accumulating the filler material;

a feed tank for selectively introducing the filler material into the moving stream of fluid carrier, the feed tank including

a flexible rotor that meters the filler material as single elements into the moving stream of fluid carrier; and

an air lock between the hopper and the feed tank.

5,337,796

ARTICLE TRANSPORTATION PROCESSING SYSTEM

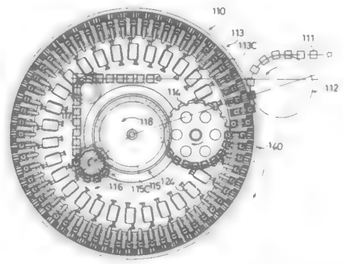
Toshiyuki Ohmori; Shigemi Hatanaka, both of Chiba; Yasuhiro Honma, Saitama; Hiroaki Kobayashi; Eiichi Saito, both of Chiba, and Ichiro Hamano, Ishikawa, all of Japan, assignors to Kao Corporation, Tokyo and Shibuya Kogyo Co., Ltd., Ishikawa, both of Japan

Filed Sep. 30, 1992, Ser. No. 954,901

Claims priority, application Japan, Sep. 30, 1991, 3-276476; Sep. 30, 1991, 3-276479; Sep. 30, 1991, 3-276480; May 15, 1992, 4-148509

Int. Cl.[5] B65B *43/42;* B67C *3/00*

U.S. Cl. 141—168 2 Claims



1. A filling apparatus comprising:

a filling process path for filling a container during transportation of said container therethrough; and

a second process path for providing another process to said container during transportation of said container therethrough,

said filling process path and said a second process path being formed essentially into annular configurations and being arranged in the positional relationship such that one is positioned inside of the other,

a means for magnetically holding said container in said filling process path and said second process path, wherein said container is transferred between both paths by said means for magnetically holding, and

a plurality of filling process means for filling said container transported along said filling path, and a plurality of another process means for providing another process to the container transported along said second process path.

5,337,797

HYDROCARBON DISPENSER NOZZLE

Sylvain Janssen, Neuilly s/Seine; Jacques Fournier, Bretigny S/Orge, and Claude Larmurier, Paris, all of France, assignors to Schlumberger Industries, Montrouge, France

Filed Oct. 31, 1991, Ser. No. 786,097

Claims priority, application France, Nov. 2, 1990, 90 13622

Int. Cl.[5] B65B *57/14*

U.S. Cl. 141—206 8 Claims

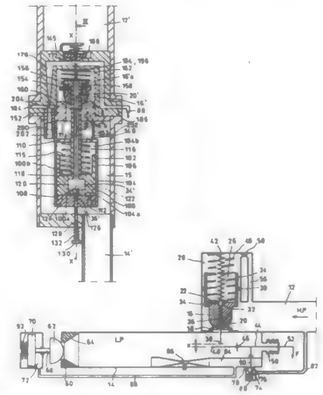
1. A hydrocarbon dispenser nozzle, comprising:

a main valve for interrupting the flow of hydrocarbon between an upstream portion of the nozzle and a downstream portion thereof,

a pilot valve having a passage of small cross-section;

first means including an external control member acting on said pilot valve for controlling the opening and closing of said main valve in response to, respectively, opening and closing of said pilot valve; and

an end valve mounted at an open end of said nozzle, and second means responsive to the opening of said pilot valve to cause said end valve to open before said main valve is opened, and responsive to closing of said pilot valve to



cause said end valve to close after said main valve has closed.

5,337,798

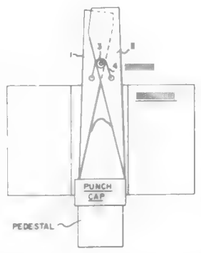
FRICTION MATERIAL DISTRIBUTOR FUNNEL

Robert L. Martin, N. Charleston, S.C., assignor to Leinweber Systems, Inc., North Charleston, S.C.

Filed Apr. 6, 1993, Ser. No. 43,342

Int. Cl.[5] B67C *11/00*

U.S. Cl. 141—331 6 Claims



1. A distributor funnel for receiving friction material and for dispensing the friction material to a mold for forming a friction product, consisting essentially of:

first and second half bodies;

each of said first and second half bodies being substantially U-shaped as seen in a longitudinal direction and having a substantially flat base portion and two mutually parallel lateral portions extending substantially perpendicularly away from said base portion;

said lateral portions being substantially triangular as seen in a lateral view;

pivot means for pivotally connecting said first and second half bodies such that said first and second half bodies are pivotable relative to one another about said pivot means;

spring biasing means for biasing said first and second half bodies in a closed position in which said first and second half bodies form a closed funnel cone having a closed bottom, closed sides, and an open top.

VOL 1165 ISS 3 AG 16 1994 UMI

5,337,799

METHOD FOR THE PRODUCTION OF COMPACTED GRAPHITE CAST IRON

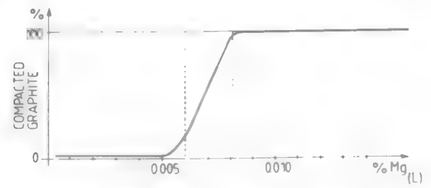
Stig L. Bäckerud, Bloomfield Hill, Minn., assignor to Sintercast AB, Stockholm, Sweden

PCT No. PCT/SE91/00685, § 371 Date Apr. 15, 1993, § 102(e) Date Apr. 15, 1993, PCT Pub. No. WO92/06809, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 11, 1991, Ser. No. 39,412

Int. Cl.[5] B22D *2/00;* **C21C** *1/10;* **G01N** *25/04*

U.S. Cl. 164—4.1 **6 Claims**



1. A method for producing compacted graphite cast iron castings, comprising:

(a) providing a melt of molten iron;

(b) adding to said melt a magnesium-containing modifying and nucleating agent in an amount which is nominally sufficient to cause said melt upon solidification to produce compacted graphite cast iron;

(c) extracting a sample from the melt to which said agent has been added, into a sample vessel having an internal surface layer in contact with said sample which is capable of reacting with magnesium contained in said sample so as to decrease concentration of dissolved magnesium in said sample adjacent said internal surface layer by a predetermined percent by weight of said sample, said predetermined percent being substantially the same percent by which dissolved magnesium will fade and become effectively unavailable to cause production of compacted graphite cast iron structure in castings to be made by pouring quantities of the melt into a succession of molds over a given period of time;

(d) sensing temperature of said sample at a first site located centrally of said sample and at a second site adjacent said internal surface as the sample solidifies, and, from analyzing resulting temperature versus time profiles from said sites determining whether said sample has solidified into a given percentage of compacted graphite cast iron structure at both of said sites; and

(e) upon determining from practicing step (d) that the sample, at said second site thereof, has solidified to provide a percentage of compacted graphite, which is less than said given percentage,

(i) adding an additional quantity of said agent to said melt, and then

(ii) pouring said melt and permitting the poured melt to solidify into a succession of iron castings of which more than 90 percent have at least said given percentage of compacted graphite cast iron structure.

5,337,800

REACTIVE COATING

Arnold J. Cook, 801 James Way, Mt. Pleasant, Pa. 15666

Filed Sep. 9, 1992, Ser. No. 943,405

Int. Cl.[5] B22D *19/14;* **B22C** *3/00*

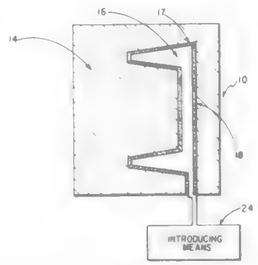
U.S. Cl. 164—72 **30 Claims**

1. A system for casting a melted material comprising:

a mold having a mold cavity within which the melted material is formed;

a coating disposed about the mold cavity which chemically reacts with the melted material such that the melted material is prevented from chemically reacting with the mold, said coating comprised of plate shaped particles having a length of ½–5 microns;

a mechanism for introducing the melted material into the mold such that the melted material infiltrates through the coating to the mold and chemically reacts with the coating to prevent the melted material from chemically reacting with the mold, said introducing mechanism in fluidic communication with the mold; and



a mechanism for heating the mold to a temperature above the melting temperature of the melted material while the melted material is introduced into the mold by the introducing mechanism.

5,337,801

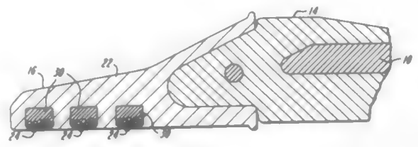
WEAR-RESISTANT STEEL CASTINGS

James P. Materkowski, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 449,094, Dec. 8, 1989, Pat. No. 5,066,546, which is a continuation-in-part of Ser. No. 327,667, Mar. 23, 1989, abandoned. This application May 1, 1991, Ser. No. 694,326

Int. Cl.[5] B22D *19/14*

U.S. Cl. 164—98 **4 Claims**



1. A method of forming a tough, wear resistant composite body comprising the steps of:

(a) positioning a plurality of carbide particles selected from the group consisting of tungsten carbide, titanium carbide, tantalum carbide, niobium carbide, zirconium carbide, vanadium carbide, hafnium carbide, molybdenum carbide, chromium carbide, boron carbide, silicon carbide, their mixtures, solid solutions, and cemented composites with a first mold;

(b) separately melting a first steel matrix material and casting said first steel matrix into the mold, wherein said carbide material is embedded in and bonded to said first casted steel matrix to form a wear resistant body;

(c) positioning said wear resistant body within a second mold; and

(d) separately melting a second steel matrix and casting said second steel matrix into said second mold, wherein said wear resistant body is embedded in and bonded to said second steel matrix.

5,337,802

VEHICLE AIR CONDITIONER HAVING DRIVER AND PASSENGER UNITS WHICH OPERATE INDEPENDENTLY OF ONE ANOTHER

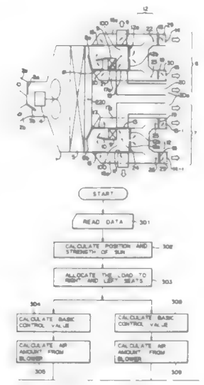
Yuuichi Kajino, Nagoya; Koichi Ban, Tokai; Yuuji Honda, Kariya, and Hikaru Sugi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 6, 1992, Ser. No. 924,883

Claims priority, application Japan, Aug. 9, 1991, 3-200451

Int. Cl.[5] F25B *29/00;* **B60H** *3/00*

U.S. Cl. 165—22 **3 Claims**



1. An air-conditioning apparatus for a vehicle comprising:

blower means for generating a flow of air;

evaporator means for cooling the flow of air;

first unit means for controlling a temperature at a location adjacent to a driver seat;

second unit means for controlling a temperature at a location adjacent to an assistant driver seat, said first and second unit means independently controlling a cooling effect of the driver seat and assistant driver seat, respectively;

said first unit means comprising:

first heating means, arranged downstream from the evaporator means, for controlling a temperature of the flow of air,

first duct means arranged downstream from the first heating means for receiving the flow of air therefrom, the first duct means having a first outlet opened to a cabin of the vehicle at a first location near a side of the driver seat adjacent to a first lateral side of the vehicle, and

second duct means arranged downstream from the first heating means for receiving the flow of air therefrom, the second duct means having a second outlet opened to the cabin at a second location near a side of the driver seat adjacent to a center of the cabin;

said second unit means comprising:

second heating means, arranged downstream from the evaporator means, for controlling a temperature of the flow of air,

third duct means arranged downstream from the second heating means for receiving the flow of air therefrom, the third duct means having a third outlet opened to the cabin at a third location near a side of the assistant driver seat adjacent to a second lateral side of the vehicle, and

fourth duct means arranged downstream from the second heating means for receiving the flow of air therefrom, the fourth duct means having a fourth outlet opened to the cabin at a fourth location near a side of the assistant driver seat adjacent to the center of the cabin;

sensor means for detecting solar radiation on the vehicle to provide signals indicative of a position of the sun with respect to the vehicle;

means for allocating an amount of air between the first and second unit means in accordance with the detected position of the sun with respect to the direction of the movement of the vehicle;

first control means for controlling a difference in cooling effect between the first and second outlets using the allocated amount of air to the first unit means so that a temperature difference felt by a passenger in the driver seat is cancelled irrespective of the position of the sun with respect to the vehicle; and

second control means for controlling a difference in cooling effect between the third and fourth outlets using the allocated amount of air to the second unit means so that a temperature difference felt by a passenger in the assistant driver seat is cancelled irrespective of the position of the sun with respect to the vehicle.

5,337,803

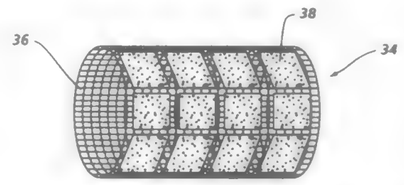
METHOD OF CENTRIFUGALLY CASTING REINFORCED COMPOSITE ARTICLES

Amarnath P. Divecha, Falls Church; Subhash D. Karmarkar, Great Falls; William A. Ferrando, Arlington, all of Va., and Scott M. Hoover, Burtonsville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 704,563, May 17, 1991. This application May 25, 1993, Ser. No. 67,505

Int. Cl.[5] B22D *13/04, 19/02*

U.S. Cl. 164—98 **6 Claims**



1. In a process of forming a composite article made of metal having metallic mesh to which ceramic tiles are wired as a nonwoven reinforcement therein, including the steps of: positioning the reinforcement within a mold of a centrifugal casting device; gravitationally introducing the metal in a molten state along an inflow path into the mold to encapsulate the reinforcement; maintaining the mold during said introduction of the metal under an internal temperature enhancing bonding between the reinforcement and the metal; and rotating the mold, during said introduction of the metal, about an axis parallel to said inflow path.

5,337,804

ADJUSTABLE MOLD POSITIONER

Robert P. Berger, Encino, and Steven Benson, Simi Valley, both of Calif., assignors to Belle De St. Claire, Chatsworth, Calif.

Filed May 6, 1993, Ser. No. 59,047

Int. Cl.[5] B22C *9/04;* **B22D** *13/06, 13/10*

U.S. Cl. 164—287 **14 Claims**

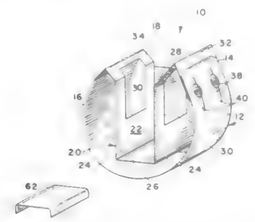
1. An investment mold positioner for positioning a noncylindrical investment mold having a center button for receiving molten metal, in a casting machine adapted to receive a cylindrical investment mold, the casting machine including a casting crucible having a discharge center for discharging molten metal into the center button of an investment mold in the casting machine, the positioner comprising:

a resilient band having opposite first and second ends, and

VOL 1165 ISS 3 AG 16 1994 UMI

bet into a partial cylinder having an opening bounded by the opposite ends;

a non-cylindrical mold receiving member having a recess adapted to receive a non-cylindrical investment mold, the mold receiving member being connected to the first and second ends of the resilient band with the recess communicating with the opening in the partial cylinder, the mold receiving member being attached to the resilient band such that the center button of a non-cylindrical mold



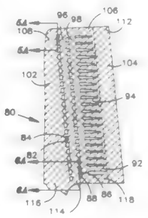
received in the recess is aligned with the discharge center of the casting crucible when the resilient band is in the casting machine and adjustment means connected between at least one of the first and second ends of the band, and the mold receiving member, for adjusting a diameter of the partial cylinder and thus a relative position between the center button of a mold in the mold receiving member and the center discharge of a casting machine containing the partial cylinder.

5,337,805

AIRFOIL CORE TRAILING EDGE REGION

Dennis J. Green, Amston, Conn.; Edward R. Szela, Chicopee, Mass.; George J. Yamarik, Vernon, and David R. Martin, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 24, 1992, Ser. No. 981,951
Int. Cl.[5] B22C *9/10*
U.S. Cl. 164—369 **11 Claims**



1. A core for forming an airfoil casting thereabout in a casting process, the core having a trailing edge portion which comprises;

A. a frame which includes a pair of chordwisely extending passage forming elements having a first end and a second end which are spaced spanwisely one from the other leaving an opening therebetween;

a pair of spanwisely extending elements, one at each end of the chordwisely extending elements which are attached thereto and which are spaced chordwisely one from the other to bound the opening, one of which is a passage forming element;

B. a pair of spanwisely extending passage forming elements spaced chordwisely one from the other having a first array of hole-forming elements and a second array of hole-forming elements extending therefrom in the chordwise direction, the hole-forming elements having an avenge spanwise cross-sectional area which is smaller than the smallest spanwise cross-sectional area of the passage-forming elements of the frame;

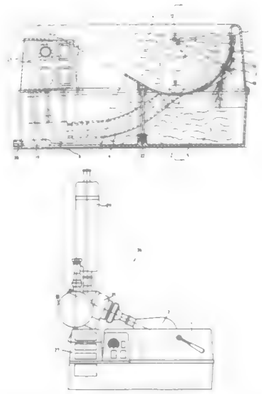
wherein the frame acts to positively support both ends of the spanwisely extending passage elements having the hole-forming elements attached thereto during handling of the core and during the casting process.

5,337,806

METHOD AND DEVICE FOR HEATING OR COOLING A REACTION FLASK

Josef Trunner, Mönchaltorf, Switzerland, assignor to Buchi Laboratoriums-Technik AG, Flawil, Switzerland

Continuation of Ser. No. 422,596, Oct. 17, 1989, abandoned. This application Jun. 18, 1992, Ser. No. 900,426
Claims priority, application Switzerland, Oct. 28, 1988, 3925/88-7
Int. Cl.[5] B01L *9/00;* **F28F** *13/00;* **F28D** *1/00*
U.S. Cl. 165—47 **10 Claims**



1. A rotary evaporator including a support for supporting and rotating a reaction flask containing a substance to be evaporated, and a heating bath beside the support, said heating bath comprising

a basin for containing a thermally conditioned liquid, said basin having an open upper side,

a supply reservoir for the thermally conditioned liquid, said reservoir being arranged under the basin in such a way that the basin serves as a lid covering the supply reservoir,

a feed pipe for delivering the thermally conditioned liquid from the supply reservoir to the basin, said feed pipe being connected with an inlet opening at the bottom of the basin,

a liquid outlet on the basin, in the form of an overflow through which the thermally conditioned liquid can return to the supply reservoir from the basin,

means in the supply reservoir for thermally conditioning said liquid, and

an immersion pump connect to said feed pipe for continuously delivering the thermally conditioned liquid from the supply reservoir into the basin, said pump allowing the basin to empty back through the pump when the pump is deactivated,

wherein the supply reservoir has a volume sufficient to receive the entire contents of the basin when the pump is deactivated, and the fill of thermally conditioned liquid being such that the bath is emptied when the immersion pump is interrupted,

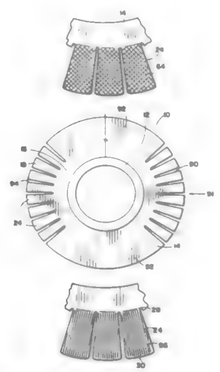
whereby the support holds the reaction flask in a fixed position at least partially within the basin and immersed in the thermally conditioned liquid when the pump is activated.

5,337,807

FLOW DEPENDENT FINNED TUBE

Jerry E. Ryan, Tulsa, Okla., assignor to Fintube Limited Partnership, Tulsa, Okla.

Continuation-in-part of Ser. No. 927,015, Aug. 10, 1992, Pat. No. 5,240,070. This application Mar. 19, 1993, Ser. No. 34,471
Int. Cl.[5] F28F *13/02*
U.S. Cl. 165—146 **7 Claims**



1. An enhanced finned tube comprising:

a fin having a base portion and an opposite tip portion, the base portion being provided with a proximal edge and an opposite distal area, the proximal edge being attached helically to a tube so the fin extends outwardly from the tube, the distal area being attached to the tip portion, wherein the fin has at least three zones, each said zone being configured to enhance heat transfer for the fluid flow condition encountered at that zone when the finned tube is in use in a heat exchange process, wherein the zones comprise an upstream zone which encounters fluid flowing toward the finned tube, a sidestream zone which encounters fluid flowing past the finned tube, and a downstream zone which encounters fluid flowing away from the finned tube, and wherein the tip portion of the upstream zone is serrated into segments provided with indentations to increase the surface area of the segments.

3. An enhanced finned tube according to claim 1 wherein the tip portion of the sidestream zone is plain spiral fin material.

5,337,808

TECHNIQUE AND APPARATUS FOR SELECTIVE MULTI-ZONE VERTICAL AND/OR HORIZONTAL COMPLETIONS

Stephen A. Graham, Bellaire, Tex., assignor to Natural Reserves Group, Inc., Houston, Tex.

Filed Nov. 20, 1992, Ser. No. 979,651
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—191 **19 Claims**

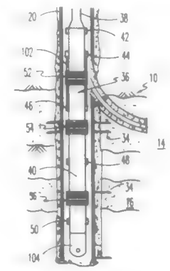
1. A hydrocarbon producing well comprising

a vertical well penetrating first and second hydrocarbon bearing formations;

a deviated well bore entering into the vertical well through an opening and having a generally horizontal well bore section extending into a first of the formations;

means establishing communication between the vertical well and a second of the formations; and

a production liner assembly in the vertical well comprising a conduit having an upper end, upper and lower external packers straddling the opening and isolating the upper formation, a first openable flow control device between the packers selectively allowing and preventing flow from the upper formation into the conduit and a second openable flow control device below the lower packer selec-



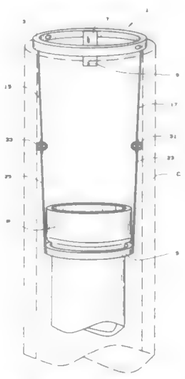
tively allowing and preventing flow from the lower formation into the conduit.

5,337,809

WELL CASING LINER SUSPENSION HANGER

Jeff Messenger, Rte. 1 Box 174 A-7, Republic, Mo. 65738

Filed Jan. 14, 1993, Ser. No. 4,283
Int. Cl.[5] E21B *53/04*
U.S. Cl. 166—208 **11 Claims**



1. A pipe suspension hanger, comprising:

a first annular member, said annular member disposed to attach to the upper portion of a well case;

a second annular member, said second annular member being the appropriate diameter so as to seat liner pipe therein and fit within the well casing; and

two or more suspension strips, said suspension strips being attachable to said first annular member and attachable to said second annular member by appropriate means thereby allowing said second annular member with said well seated liner pipe therein, to suspend downwardly inside said well casing from said first annular member thereby relining said casing.

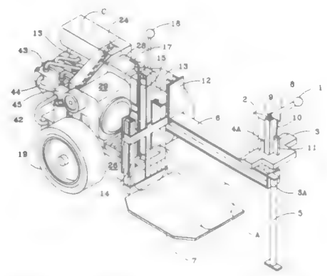
VOL 1165 ISS 3 AUG 16 1994 UMI

5,337,810

MODIFIED WOOD SPLITTER

Edward B. McCormack, P.O. Box 30, West Rutland, Vt. 05777

Filed Jan. 28, 1994, Ser. No. 187,864
Int. Cl.[5] **B27L** *7/00*
U.S. Cl. 144—193 A **9 Claims**



1. A modified woodsplitter comprising:

a. a generator mounting plate permanently affixed to a log pushing piston housing unit which said housing unit is permanently affixed to a mounting block and which said mounting block is permanently affixed to a log splitting track permanently mounted on a base held by two equivalent support structures, one of said support structures on each side of said base;

b. a swivel plate for receipt of said generator attached to said mounting plate on one side by way of a first pin and bolt assembly unit;

c. a vertically inclined wedge anteriorally triangular in shape affixed to the anteriormost portion of said log splitting track;

d. a first lever attached to the top side of said vertically inclined wedge by way of a second pin and bolt assembly unit;

e. a tie rod permanently attached to the back side of said first lever;

f. a pivot block permanently attached to said tie rod;

g. a horizontally inclined wedge anteriorally triangular in shape, the top side of which said horizontally inclined wedge is permanently attached to the bottom side of said pivot block and which said horizontally inclined wedge abuts the lateral and posterior sides of said vertically inclined wedge but not the said anteriormost triangular shaped portion of said vertically inclined wedge;

h. a first blade guide with length less than the length of said vertically inclined wedge, the medial side of which said first blade guide is permanently affixed to one of the two lateral sides of said vertically inclined wedge with the lateral side of said first blade guide in apposition to one of two medial sides of said horizontally inclined wedge;

i. a second blade guide with length less than the length of said vertically inclined wedge, the medial side of which said second blade guide is permanently affixed to the other of the said two lateral sides of said vertically inclined wedge with the lateral side of said second blade guide in apposition to the other of said two medial sides of said horizontally inclined wedge;

j. a front face of said first blade guide that is throughout the length of said first blade guide inclined at an angle less than 90 degrees from said first blade guide's said lateral side and not parallel to said first blade guide's posterior face which said posterior face is perpendicular to said first blade guide's said lateral side and said medial side;

k. a front face of said second blade guide that is throughout the length of said second blade guide inclined at an angle less than 90 degrees from said second blade guide's said lateral side and not parallel to said second blade guide's posterior face which said posterior face is perpendicular to said second blade guide's said lateral side and said medial side;

l. a log pushing piston housed within said log pushing piston housing unit the head of which said log pushing piston extends out from the anterior face of said log pushing piston housing unit;

m. a log pushing plate permanently attached to said head of said log pushing piston and permanently attached to said log splitting track;

n. a first rod containing a plurality of holes permanently mounted to said log splitting track by way of a movable sleeve permanently mounted to said track which said first rod is likewise permanently mounted to the base of said log pushing plate;

o. a pivotable stop plate permanently mounted by way of a third pin and bolt assembly unit to a first orthogonally shaped mounting unit which said first orthogonally shaped mounting unit is permanently mounted to said track;

p. a pivotable second lever permanently connected to said pivotable stop plate by way of said third pin and bolt assembly and permanently mounted by way of said third pin and bolt assembly unit to a second orthogonally shaped mounting unit which said second orthogonally shaped mounting unit is permanently mounted to said track;

q. a stretchable, compressible spring permanently connected to said pivotable second lever which said spring is also anchored to said log pushing piston housing unit;

r. a second rod permanently connected to said pivotable second lever and permanently connected to valvular means for actuating the flow of hydraulic fluid under pressure from within an hydraulic fluid and hydraulic valvular housing unit to and from said log pushing piston housing unit by way of a first pair of hydraulic fluid lines;

s. a log lifting elevator plate the long axis of which is perpendicular to the long axes of each of two parallel support arm permanently connected to said elevator plate;

t. an orthogonally shaped sleeve unit permanently mounted to said base held by said two support structures adjacent said log splitting track;

u. an elevator piston housing unit connected by hydraulic fluid lines to said hydraulic fluid and hydraulic valvular housing unit which said elevator piston housing unit is permanently mounted to said orthogonally shaped sleeve unit and said base held by said two equivalent support structures;

v. an elevator piston housed within said elevator piston housing unit the head of which said elevator piston extends out of and up from the top of said elevator piston housing unit;

w. an orthogonally shaped piston head receiving plate permanently mounted to said elevator plate, the long axis of which said receiving plate is parallel to the long axes of said two parallel support arms;

x. a rotatable third lever permanently mounted to said elevator piston housing unit by way of a plurality of equivalent mounting blocks each containing a hole for receipt of said third lower and each permanently mounted to said elevator piston housing unit;

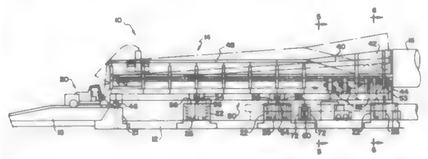
y. a third rod permanently connected to said rotatable third lever and permanently connected to said valvular means for actuating the flow of hydraulic fluid under pressure from within said hydraulic fluid and hydraulic valvular housing unit to and from said elevator piston housing unit by way of a second pair of hydraulic fluid lines.

5,337,811

DEBARKER INFEED CONVEYOR

Oscar T. Fulghum, Jr., and Arthur E. Freyre, both of Wadley, Ga., assignors to Fulghum Industries, Inc., Wadley, Ga.

Filed Aug. 6, 1992, Ser. No. 925,275
Int. Cl.[5] **B27L** *1/00*; **B65G** *47/34*
U.S. Cl. 144—208 B **43 Claims**



1. Apparatus for conveying tree-length logs to a debarking drum comprising:

a foundation assembly disposed along a length and width of a ground surface;

a conveyor system mounted to said foundation assembly so as to extend along at least a portion of the length and across at least a portion of the width of said foundation assembly, said conveyor system having an inlet end and an outlet end and being operatively coupled to said foundation assembly so that a height of at least one of said ends can be selectively varied with respect to said foundation assembly and at least temporarily fixed at one of a plurality of heights;

at least one cylinder means operatively coupled to each lateral side of said conveyor system for selectively lifting and lowering said at least one end of said conveyor system relative to said foundation assembly; and

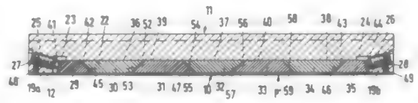
a guide unit provided adjacent each said cylinder means for limiting lateral displacement of said conveyor system relative to said foundation assembly at the locus of said cylinder means.

5,337,812

BLADE HEAD FOR CUTTING BLADES

Gerhard Schmitt, Grossrinderfeld, Fed. Rep. of Germany, assignor to Michael Weinig Aktiengesellschaft, Tauberbischofscheim, Fed. Rep. of Germany

Filed May 19, 1993, Ser. No. 65,347
Int. Cl.[5] **B26D** *1/12*; **B27G** *13/04*
U.S. Cl. 144—230 **11 Claims**



1. A blade head for cutting and planing blades, comprising:

a blade holder having a plurality of receiving means for receiving a cutting and planing blade, said receiving means distributed over a circumference of said blade holder;

a plurality of pressurizing elements positioned in each said receiving means for holding the cutting and planing blade in said receiving means;

at least one adjusting member positioned in each said receiving means for forcing said pressurizing elements against one another such that said pressurizing elements exert a clamping pressure on the cutting and planing blade;

said pressurizing elements having a substantially cylindrical shape with wedge-shaped end faces and with a circumferential surface having at least one planar clamping surface, with adjacent ones of said pressurizing elements abutting one another with said end faces; and

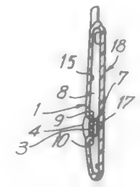
said blade holder having clamping counter surfaces cooperating with said planar clamping surfaces of said pressurizing elements.

5,337,813

HOLDER FOR A THIN-WALLED CARD, ESPECIALLY A BANK CARD, CREDIT CARD, IDENTITY CARD OR THE LIKE

Gerhard Ritter, Haller Str. 21, 7100 Heilbronn, Fed. Rep. of Germany

Filed Nov. 3, 1992, Ser. No. 970,092
Claims priority, application European Pat. Off., Jul. 31, 1992, 92113044.9
Int. Cl.[5] **A45C** *11/18*
U.S. Cl. 150—147 **8 Claims**



1. Card holder, having longer peripheral edges and shorter peripheral edges and comprising two side panels (1) connected with each other so as to form a compartment (8) for holding a card and also a compartment mouth (16) at one of the shorter peripheral edges through which said card is inserted in and removed from said compartment (8), one of said side panels (1) being provided with an opening (2) having opposing lateral edges (5,6) extending in a direction (19) toward the compartment mouth (16), and a resilient strip (7) engagable with said card for removing said card from said compartment (8) when said card is held in said compartment (8) without applying pressure against the side panels (1), said resilient strip (7) being operable from outside said compartment (8) without providing access to said card through said side panels (1) and said resilient strip (7) extending in said compartment (8) in the direction toward the compartment mouth (16) and said resilient strip (7) having a rear end comparatively remote from the compartment mouth (16), a catch (17 protruding into said compartment at said rear end for engaging said card so that said card can be moved together with said resilient strip and an operating element (4) protruding through said opening (2), said operating element (4) having means for holding said resilient strip (7) in said opening (2) and providing means for moving said resilient strip (7) through a plurality of positions in said compartment (8) so that said operating element (4) overlaps the opposing lateral edges (5,6) of the opening (2) and covers said opening (2) in all of said positions of said resilient strip (7) in said compartment;

wherein, when not inserted in the opening and in the compartment, the resilient strip (7) bends so that a side of the resilient strip from which the catch (17) protrudes is convex and, when inserted in the opening and compartment, the resilient strip (7) presses against an inner wall (15) of the side panel (1) due to elastic tension so that the operating element (4) overlaps the opposing lateral edges of the opening (2) and resilient strip (7) closes the opening (2).

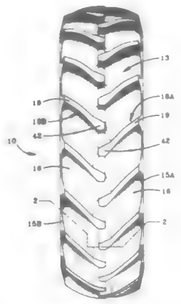
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,814

AGRICULTURAL TIRE COMPRISING LUGS OF DEFINED HEIGHT AND INCLINATION

Mark L. Bonko, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 21, 1992, Ser. No. 823,414
Int. Cl.[5] B60C *11/08*
U.S. Cl. 152—209 B 9 Claims



1. An improved pneumatic drive tire for agricultural use under wet or moist soil conditions requiring a tire with high flotation and deep tread characteristics, the tire having a carcass, the carcass including a pair of sidewalls having axially outermost surfaces defining the maximum section width of the tire the maximum section width being 24.5 inches (62.2cm) or less, a tread including a contoured inner tread surface having a pair of lateral edges, an equatorial plane parallel to and equidistant form the lateral edges, two rows of circumferentially spaced tread lugs radially extending outwardly from the inner tread surface to respective road contacting surfaces of the lugs, each row of circumferentially spaced tread lugs extending circumferentially and axially inwardly from a different one of the lateral edges at an average angle of inclination not more than 45° as measured from the equatorial plane, the first row of lugs extending from a first lateral edge, the second row of lugs extending from the second lateral edge, the lugs of the second row being similar to the lugs of the first row but opposite in hand, wherein the improvement comprises:

the tread having a net-to-gross ratio in the range of 15 to 25%;

the lugs having a leading edge and a trailing edge extending between axially inner and outer lug ends, and a lug head at the inner end, the leading edge being of a curvature extending circumferentially and axially toward the equatorial plane of the tire to the lug head, the lug head extending axially inwardly from the leading edge at an axial location at least 45% of the tread width and extending beyond the equatorial plane of the tire, the trailing edge being substantially parallel to the leading edge for a distance of not less than 60% of the length of the lug and spaced a perpendicular distance W form the leading edge, the lug head being enlarged as compared to other lug portions and extending axially inwardly from the leading edge and angularly extending relative to the axis of rotation of the tire from the trailing edge to the axially inner end, the inner end being located beyond the equatorial plane by at least 5% of the tread width, the lug head having a maximum width less than 2.0 times the perpendicular spaced distance between the leading and trailing edges of the lug; and

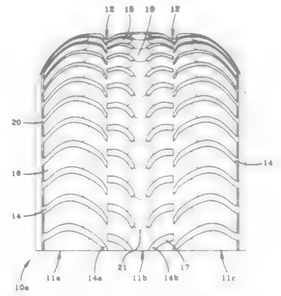
the lugs having a radial height extending from the road contacting surface to the inner tread surface of greater than 150% of the Rubber Manufacturers Association standard R1 lug height and in the range of 75% to 95% of the Rubber Manufacturers Association Standard R2 lug height, the lugs having bracing extending from the inner tread surface to the road contacting surface, the bracing tangentially blending with the inner tread surface without overlapping the bracing of adjacent lugs or substantially changing the contour of the inner tread surface axially across the equatorial plane of the tire.

5,337,815

PNEUMATIC TIRE HAVING IMPROVED WET TRACTION

Maurice Graas, Reichlange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 5, 1992, Ser. No. 955,954
Int. Cl.[5] B60C *11/04*
U.S. Cl. 152—209 R 6 Claims



1. A pneumatic tire for use on paved surfaces comprising a pair of annular beads, carcass plies wrapped around said annular beads, a tread disposed over said carcass plies in a crown area of said tire, and sidewalls disposed between said tread and said beads wherein said tread is directional and has a footprint net-to-gross ratio of 50% to 70% and two annular aqua channels each having a width of about 10% to 20% of total tread-width based on the footprint of the tire and a depth of 78% to 100% of total tread depth, and wherein shoulder lateral grooves between an aqua channel and a shoulder are disposed having a first end in a leading part of the tread pattern nearer the aqua channel than a shoulder and a second end in a part of the tread pattern nearer a shoulder than an aqua channel, and wherein center lateral groves between aqua channels have a first portion in the leading part of the tread pattern closer to a center of the tire than to an aqua channel and a second portion in the part of the tread pattern closer to an aqua channel than to the center of the tire, and wherein the center of said tire comprises a rib and said aqua channels have an extended U-shape wherein one wall of the aqua channel has a steeper incline than the opposite side of the aqua channel.

5,337,816

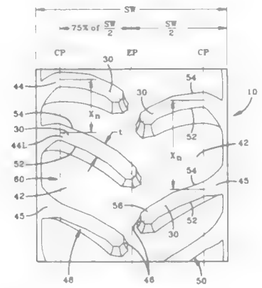
PNEUMATIC AGRICULTURAL TIRE

Mark L. Bonko, Uniontown, and Loran C. Lopp, Jr., Wadsworth, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 20, 1992, Ser. No. 984,194
Int. Cl.[5] B60C *11/03*
U.S. Cl. 152—209 R 14 Claims

1. A pneumatic agricultural tire having a maximum section width, an equatorial plane and a nominal rim diameter of 24.0 inches (61 cm.) or greater, the tire comprising a casing having a carcass reinforced with rubber-coated cord and a rubber tread disposed radially outwardly of the carcass, the tread including an inner tread and tread lugs of a depth less than a standard R1 depth and the tread having a net-to-gross ratio of less than 30%, the tread being characterized by;

at least 36 lugs extending radially outwardly from the inner tread, the lugs being in two sets, the first set of lugs being spaced circumferentially about the tread and extending generally axially inwardly a distance of 25% to 60% of the section width from an axially outer end to an axially inner end, less than a majority of the lugs extending across the equatorial plane of the tire, each lug having a leading and a trailing edge extending from the axially outer end to the axially inner end, the second set of lugs being similar to, but opposite in hand from the first set of lugs; and



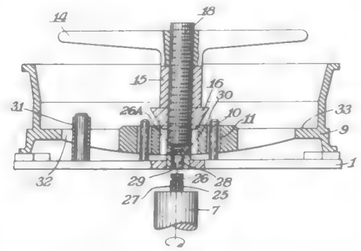
wherein each lug has a centerline located midway between the leading and the trailing edge of the lug, the circumferential spacing χ_n between each centerline of circumferentially adjacent lugs being measured at a circumferential plane parallel to and located 75% of the distance SW/2 from the equatorial plane to a plane tangent to the casing at the maximum section width, the distance χ_n differing by at least 10% of the section width from the spacing distance χ_n of each circumferentially adjacent lug spacing.

5,337,817

ROTATABLE TIRE MOUNTING DISK AND PROCESS

Horst Steinbeck, Gross-Zimmers, and Johann Feith, Roedermark, both of Fed. Rep. of Germany, assignors to Schenck Auto-Service Gerate GmbH, Fed. Rep. of Germany

Filed Sep. 9, 1992, Ser. No. 942,742
Claims priority, application European Pat. Off., Sep. 27, 1991, 91116532.2
Int. Cl.[5] B60C *25/07*
U.S. Cl. 157—21 8 Claims



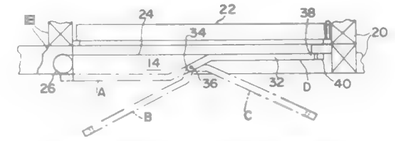
1. A tire mounting device having a removable rotatable mounting disk with holders for securing vehicle rims for mounting or removing tires, and a rotatable pin connected to and extending from the tire mounting device supporting the rotatable mounting disk, at least one groove on the circumference of the pin, a central borehole in the mounting disk with at least one internal groove, a spring pin positioned between and in engagement with the grooves for releasably holding the mounting disk and rotatable pin together, and the holders on the mounting disk including rods connected to and extending from the mounting disk parallel to each other, one rod coaxial to the central borehole and at least one other rod for engaging the vehicle rim.

5,337,818

ROLLAWAY EXTENDABLE PLANAR FABRIC CLOSURE

George L. Coad, Lafayette, Calif., assignor to Richard A. Lang, Lafayette, Calif.

Filed Jun. 28, 1993, Ser. No. 82,463
Int. Cl.[5] E04F *10/06*
U.S. Cl. 160—66 8 Claims



1. An extendable planar fabric closure comprising:

a) a roller, a pair of supports, said roller being rotatably supported at the ends thereof on said supports, said roller having a rotational extended position and a rotational retracted position, said roller including means for rotationally biasing said roller to said rotational retracted position on said supports,

b) a drawbar having ends and at least a portion thereof parallel to said roller,

c) a sheet of fabric having edges,

d) said fabric being fixed to said roller at one edge and fixed at another edge to said drawbar, said fabric being rollable onto said roller in a retracted position and being unrollable from said roller to an extended position establishing an extended plane of said fabric, said fabric being drawn taught between said roller and said drawbar by said means for rotationally biasing said roller,

e) at least one bar link having a movable end and a fixed end, said fixed end of said bar link being pivoted on an axis, and said movable end of said bar link being fixed to said drawbar,

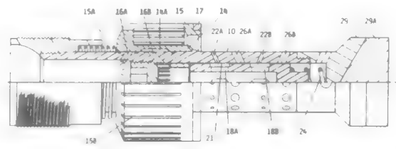
f) said axis of said pivoted end of said bar link being offset to said extended plane of said fabric when said fabric is in said extended position from said roller, said offset of said axis of said bar link being selected to both maintain said fabric in said extended position under said biasing of said roller.

5,337,819

WASHING TOOL

Roger Tailby, Algard, Norway, assignor to Den norske stats oljeselskap a.s, Stavanger, Norway

Filed Jun. 17, 1993, Ser. No. 77,547
Claims priority, application Norway, Jun. 29, 1992, 922557
Int. Cl.[5] E21B *37/08*
U.S. Cl. 166—222 9 Claims



1. A washing tool for removing internal deposits in pipes, tubes, and tubing parts and components in boreholes and wells for oil or gas production, wherein the washing tool is adapted to be run down at the end of hollow tubing such as coiled tubing and to be operated by fluid pressure of a washing fluid supplied through said hollow tubing, the washing tool com-

VOL 1165 ISS 3 AG 16 1994 UMI

prising: a main body having a generally hollow cylindrical shape and being provided with substantially radial holes for discharging the washing fluid therethrough, and a valve member which is axially movable within the main body under pressure actuation against a first spring for opening one or more of the substantially radial discharge holes in the main body, characterized in that

said substantially radial discharge holes are in the form of respective small and large nozzle openings located along a lower portion of said main body, the small and large nozzle openings allowing jets of washing fluid to pass therethrough;

an external valve member at an upper portion of said main body is arranged for axial movement in relation to the main body against the action of a second spring tending to urge said external valve member in a direction downwards to a position whereby the external valve member blocks said washing fluid being supplied from said hollow tubing from entering said lower portion;

an actuation sleeve is associated with said external valve member and is provided with outer parts having maximum lateral dimensions determined in relation to the dimensions of said tubing parts or said components, from which deposits are to be removed, so that said actuation sleeve will move said external valve member axially upwards in relation to said main body with a resulting admission of said washing fluid from above, into said lower portion when said actuation sleeve is pressed against a deposit to be removed, and;

said valve member is adapted to be moved axially by said fluid pressure between an upper position in which a first washing fluid flow is allowed to flow through said small nozzle openings with the simultaneous formation of a pressure difference axially across said valve member which is high enough for overcoming the force of said spring, and a lower position in which a second washing fluid flow which is substantially larger than said first washing fluid flow is allowed to flow through said large nozzle openings with a simultaneous strong reduction of said pressure difference so that said valve member is pressed by said first spring back to the upper position, and wherein said valve member alternately continues in reciprocating movement between the upper and lower positions as long as said washing fluid is supplied through said hollow tubing.

5,337,820

INJECTION OF SCALE INHIBITORS FOR SUBTERRANEAN MICROBIAL PROCESSES

Gary E. Jenneman, and J. Bennett Clark, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 22, 1992, Ser. No. 994,870
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—246 **11 Claims**

1. A process for sustaining microbial activity in subterranean formations which comprises introducing as a microbial nutrient, a compound suitable for inhibiting scale formation in aqueous environments and selected from the group consisting of organic phosphates and organic phosphonates.

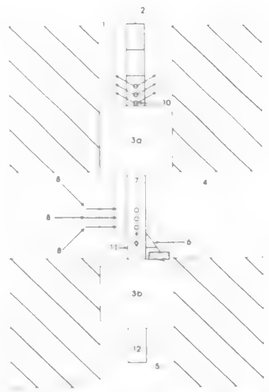
4. In a process for sustaining microbial activity in subterranean formations comprising the steps of injecting a substantially carbon-nutrient-free first nutrient solution comprising a phosphorus nutrient source into said subterranean formation and thereafter, injecting a substantially phosphorus-nutrient-free second nutrient solution comprising a carbon nutrient source into said subterranean formation, the improvement which comprises using as said phosphorus nutrient source a compound suitable for inhibiting scale formation in aqueous environments and selected from the group consisting of organic phosphates and organic phosphonates.

5,337,821

METHOD AND APPARATUS FOR THE DETERMINATION OF FORMATION FLUID FLOW RATES AND RESERVOIR DELIVERABILITY

Gregg L. Peterson, Calgary, Canada, assignor to Aqrit Industries Ltd., Calgary, Canada

Filed Feb. 5, 1993, Ser. No. 14,132
Claims priority, application Canada, Jan. 17, 1991, 2034444
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—250 **12 Claims**



1. A method for obtaining the formation skin damage corrected reservoir deliverability and/or absolute open flow potential of a subterranean formation, comprising the steps of:

(a) lowering a tool conveyed by a wireline cable into a well bore to a preselected depth;

(b) inflating a pair of rubber packers to isolate an interval of said formation from the well bore fluids;

(c) pumping formation fluids at a measurably controlled pumping rate from said isolated interval and discharge to said well bore;

(d) measuring the formation fluid pressure by pressure measurement means;

(e) increasing or decreasing the said pumping rate and measuring the corresponding said formation fluid pressure;

(f) transmitting said formation fluid pressure and pumping rate to the surface via the said wireline cable;

(g) deflating said rubber packers allowing said tool to be positioned at another depth in the said well bore;

(h) repeating steps (b) through (g) until all the desired formations in the said well bore have been examined; and

(i) retrieving said wireline and tool to the surface.

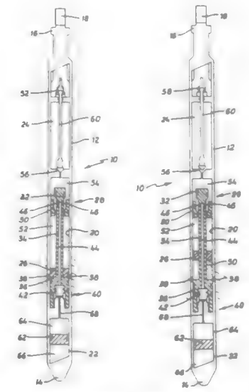
5,337,822

WELL FLUID SAMPLING TOOL

Keith J. Massie, 39 Beechgrove Terrace; Jonathan W. Brown, 20 Richmond Terrace, and James A. McGilvray, 50 Rosemount Place, all of Aberdeen, United Kingdom

PCT No. PCT/GB91/00224, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO91/12411, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 14, 1991, Ser. No. 920,380
Claims priority, application United Kingdom, Feb. 15, 1990, 9003467
Int. Cl.[5] E21B *49/08*
U.S. Cl. 166—264 **9 Claims**

1. A well fluid sampling tool, said tool comprising a first cylinder, said first cylinder containing a first floating piston and a limit valve disposed at mutually different locations along the longitudinal axis of said first cylinder, said first floating piston being slidingly sealed to said first cylinder, said limit valve being movable by contact with said first floating piston between an open condition and a closed condition, said first floating piston and said limit valve dividing said first cylinder into a sample chamber having a variable internal volume, a dashpot chamber, and a pressurisation chamber intermediate said sample chamber and said dashpot chamber, adjacent ends of said sample chamber and said pressurisation chamber being defined by said first floating piston, adjacent ends of said pressurisation chamber and said dashpot chamber being defined by said limit valve, said first floating piston being bi-directionally movable along said first cylinder under the influence of the difference between fluid pressure in said sample chamber and fluid pressure in said pressurisation chamber, said sample chamber having a well fluid inlet port at an end of said sample chamber remote from said pressurisation chamber for admission of a sample of well fluid to said sample chamber, a well fluid sample inlet valve controllably movable selectively to open or close said inlet port, a second cylinder containing a second floating piston slidingly sealed thereto and dividing said second cylinder into a pressure transmitting chamber and a pressurisation reservoir for containing an elastic pressurisation source, a pressurisation control valve linking said second pressure transmitting chamber in said cylinder to said pressurisation chamber in said first cylinder, said limit valve, said inlet



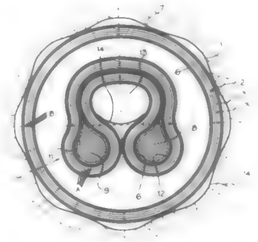
valve, and said pressurisation control valve being mutually linked for conjoint cascade operation, a regulator valve for controllably discharging fluid from said dashpot chamber, and regulator valve control means for actuating said regulator valve substantially at a predetermined time, whereby in operation of said tool wherein said tool is primed for well fluid sampling operation by said regulator valve being closed, said limit valve being opened to link said dashpot chamber and said pressurisation chamber, said inlet valve being opened, said pressurisation control valve being closed, said first floating piston being located in said first cylinder to be adjacent said well fluid inlet port to initialise the sample chamber volume at a minimum, said pressure transmitting chamber and said initially linked dashpot and pressurisation chambers each being substantially filled with a substantially incompressible hydraulic fluid, and said pressurisation reservoir being charged with an elastic pressurisation source having an initial pressure at least equal to the pressure of well fluid to be sampled, then when said tool is lowered down a well to a location where well fluid is to be sampled and upon said regulator valve control means opening said regulator valve controllably to discharge said hydraulic fluid from said dashpot chamber, the inherent pressure of reservoir fluid in said well causes well fluid to enter said sample chamber through said inlet port and so displace said first floating piston to accommodate incoming well fluid by enlarging the internal volume of said sample chamber at a rate controlled by the discharge of said hydraulic fluid from said pressurisation chamber through said limit valve, said dashpot chamber and said regulator valve, until said first floating piston reduces the internal volume of said pressurisation chamber to a minimum and contacts said limit valve to close said limit valve, then close said inlet valve and complete the intake of well fluid to said sample chamber, complete discharge of hydraulic fluid from said dashpot chamber and open said pressurisation control valve such that said elastic pressurisation source is now coupled through said second floating piston and the hydraulic fluid in said pressure transmitting and pressurisation chambers to apply pressurisation to said first floating piston in a manner tending to counteract thermal shrinkage of the sampled well fluid during cooling thereof by corresponding reduction of the internal volume of said sample chamber arising from pressurisation-induced movement of said first floating piston, to maintain said sampled well fluid in single-phase form.

5,337,823

PREFORM, APPARATUS, AND METHODS FOR CASING AND/OR LINING A CYLINDRICAL VOLUME

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PCT No. PCT/FR91/00407, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/18180, PCT Pub. Date Nov. 28, 1991
PCT Filed May 21, 1991, Ser. No. 946,423
Claims priority, application France, May 18, 1990, 90 06269; Oct. 22, 1990, 90 13053; Jan. 21, 1991, 91 00628
Int. Cl.[5] E21B *7/00*
U.S. Cl. 166—277 **34 Claims**



1. A tubular preform that is radially deformable between a longitudinally folded state and a substantially cylindrical unfolded state to form a length of rigid tube in situ, wherein the preform comprises a flexible and watertight inner envelope whose peripheral extent is equal to the internal extent of the length of tube, and, formed on the outside of said inner envelope, reinforcement made of a structure comprising a plurality of fibers or strips impregnated with a settable resin, including fibers oriented mainly in the peripheral direction of the preform, each of these fibers or strips extending over more than one turn and co-operating with adjacent fibers or strips by making contact therewith such that adjacent fibers or strips can slide over one another while the preform is in any state other than its unfolded state where, under internal pressure, the fibers or strips are locked together by the friction between them due to a capstan effect.

VOL 1165 ISS 3 AG 16 1994 UMI

5,337,824

COAL SLAG UNIVERSAL FLUID

Kenneth M. Cowan, Sugar Land, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 28, 1993, Ser. No. 84,659
Int. Cl.[5] C09K 7/02; E21B 21/00, 33/138, 33/14
U.S. Cl. 166—293 35 Claims

14. A method for drilling and cementing, comprising:
drilling a wellbore with a drill string comprising a drill pipe utilizing a drilling fluid comprising water, drill solids and coal slag;
circulating said drilling fluid down said drill pipe and up an annulus between said drill pipe and walls of said borehole, thus laying down a filter cake on said walls of said borehole during said drilling and producing a used drilling fluid;
withdrawing said drill string and inserting a pipe, thus creating an annulus between said pipe and said walls of said borehole;
incorporating an activator system into said used drilling fluid to produce a cementitious slurry; and
displacing said cementitious slurry into at least a portion of said annulus between said pipe and said walls of said borehole.

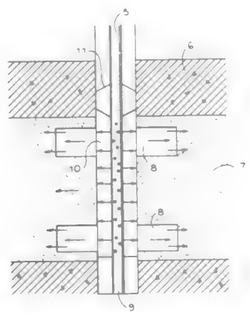
26. A drilling fluid composition comprising water, drill solids and 1 to 100 lbs/bbl of said composition of coal slag.

5,337,825

METHOD OF OIL WELL PRODUCTIVITY INCREASE

Leon M. Marmorstein, San Francisco, Calif.; Ignaty M. Petukhov, Sankt-Petersburg, U.S.S.R.; Vladimir S. Sidorov, Leningrad Oblast, U.S.S.R.; Piotr A. Aleksandrov, Sankt-Petersburg, U.S.S.R., and Valentin T. Grebennikov, Moscow, U.S.S.R., assignors to UMA Ltd., St. Petersburg, Russian Federation

Filed Jun. 7, 1993, Ser. No. 72,454
Claims priority, application U.S.S.R., Sep. 9, 1992, 5067255
Int. Cl.[5] E21B 43/27, 43/26, 43/22, 43/114
U.S. Cl. 166—307 17 Claims



1. A method of increasing oil well productivity, comprising the steps of
activating a seam-treating liquid with activating compounds to prevent swelling and peptization of aluminous particles in a zone near a well by forming lines between particles; and
cyclically treating a zone near a well with the seam-treating liquid activated with the activating components, said liquid being a low alkaline solution while said activating components are K^+ which is a reactant causing a phase transition of third order in aluminous minerals of the group 2: 1 and polyvalent cations.

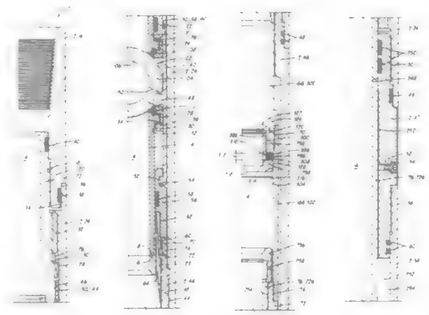
10. A method of increasing oil well productivity, comprising the steps of forming in a zone near a well a pair of vertical slots located substantially opposite to one another and substantially parallel to a well bore, said forming including forming said slots so that they are located symmetrically relative to the well and diametrically opposite to one another.

5,337,826

TESTER VALVE

Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Houston, Tex.

Division of Ser. No. 821,516, Jan. 14, 1992, Pat. No. 5,228,516.
This application Mar. 3, 1993, Ser. No. 25,793
Int. Cl.[5] E21B 34/06
U.S. Cl. 166—319 6 Claims



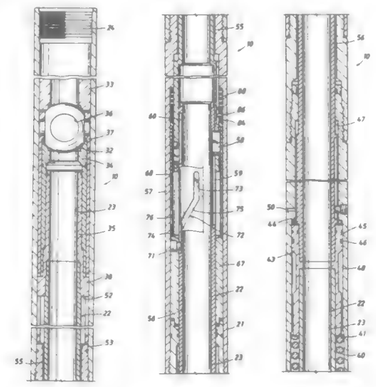
1. A downhole tool apparatus, comprising:
a tool housing;
an operating assembly disposed in said housing;
a mandrel longitudinally movable in said housing to engage and operate said operating assembly; and
a shock absorber means for absorbing an impact between said mandrel and said operating assembly, said shock absorber means including:
an inner sleeve having a cylindrical outer surface;
an outer sleeve, slidable relative to said inner sleeve, and having a cylindrical inner surface concentrically disposed about and radially spaced from said cylindrical outer surface of said inner sleeve to define an annular chamber therebetween;
said inner and outer sleeves having first and second longitudinally facing shoulders, respectively, facing toward each other to define opposite longitudinal ends of said annular chamber, said chamber having a constant radial thickness defined by the radial spacing between said cylindrical inner surface and said cylindrical outer surface, and said chamber having a variable length defined by a longitudinal distance between said first and second shoulders;
an elastomeric shock absorber ring disposed in said chamber and having a volume less than a volume of said chamber when said longitudinal distance between said first and second shoulders is such that said elastomeric shock absorber ring initially contacts both said first and second shoulders; and
said inner and outer sleeves having sufficient possible travel relative to each other such that a closing motion between said first and second sleeves is limited when said volume of said chamber is equal to said volume of said elastomeric shock absorber ring so that said elastomeric shock absorber ring completely fills said chamber thus resiliently terminating said closing motion and absorbing said impact.

5,337,827

PRESSURE-CONTROLLED WELL TESTER ADAPTED TO BE SELECTIVELY RETAINED IN A PREDETERMINED OPERATING POSITION

Joe C. Hromas, and Dinesh R. Patel, both of Sugar Land, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 263,573, Oct. 27, 1988, abandoned.
This application Oct. 9, 1991, Ser. No. 808,249
Int. Cl.[5] E21B 34/10
U.S. Cl. 166—321 28 Claims



1. A well tool for positioning in a well bore to control the flow of fluids between the well bore and a pipe string and comprising:
a tool body having an axial passage and arranged for coupling in a pipe string;
valve means including a valve member movable between open and closed operating positions for controlling communication through said axial passage;
valve-actuating means operable for moving said valve member to one of its said operating positions in response to increases of the well bore pressure to at least a predetermined pressure level and operable for moving said valve member to the other of its said operating positions in response to decreases of the well bore pressure below said predetermined pressure level, said valve-actuating means including an actuating mandrel movable between spaced longitudinal positions in said tool body for shifting said valve member to its said operating positions; and
coupling means arranged for selectively uncoupling said valve means from said valve-actuating means only after a predetermined number of alternate increases and decreases of the well bore pressure in relation to said predetermined pressure level, said coupling means being arranged to uncouple said actuating mandrel from said valve means only when said actuating mandrel is between its said spaced positions.

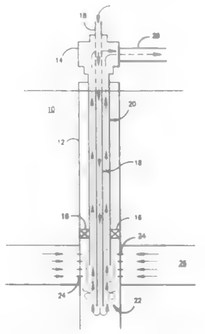
5,337,828

USE OF CARBON DIOXIDE FOR GAS-LIFTING HEAVY OIL

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 18, 1992, Ser. No. 992,664
Int. Cl.[5] E21B 43/12
U.S. Cl. 166—372 17 Claims

1. A method for removing a heavy or viscous hydrocarbonaceous fluid from a formation comprising:
a) flowing oil from a productive interval of a formation into a well; and
b) injecting gaseous carbon dioxide into said well near said productive interval for a time sufficient for the carbon dioxide and hydrocarbonaceous fluid to mix thereby decreasing the fluid's viscosity and facilitating gas lift of a fluid of reduced viscosity to the surface.

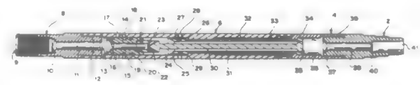


5,337,829

HYDRAULIC RELEASE TOOL

William T. Taylor, 1412 Cottage Dr., Houma, La. 70360

Continuation of Ser. No. 809,729, Dec. 17, 1991, Pat. No. 5,219,027. This application Mar. 31, 1993, Ser. No. 41,547
Int. Cl.[5] E21B 23/00
U.S. Cl. 166—377 11 Claims



11. A hydraulic release tool for use in a well bore in any given situation where a tool string, has met with an impasse, comprising:
(a) a mandril adapted to fit on the work string;
(b) a release means releasably secured to the lower end of the mandril for releasing the tool string from the work string, including a securing means mounted adjacent to the mandril for securing the release means to the mandril until it is desired to release the work string from the tool string and wherein upon separation, the securing means mounted adjacent to the mandril is activated, thus releasing the tool string in the bore hole; and
(c) a circulating means for enabling circulation of fluid through the tool during operation of the tool and while the tool string is suspended by the release means.

5,337,830

FIRE FIGHTING FOAM GENERATION SYSTEM

Christopher J. Bowman, Coromandel Valley, Australia, assignor to Allen William Rogers, Australia

PCT No. PCT/AU91/00099, § 371 Date Oct. 28, 1992, § 102(e) Date Oct. 28, 1992, PCT Pub. No. WO91/14477, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 19, 1991, Ser. No. 923,971
Claims priority, application Australia, Mar. 19, 1990, PJ9123
Int. Cl.[5] A62C 5/02
U.S. Cl. 169—14 1 Claim

1. A fire-fighting foam-generation system installed within an air conditioning duct, the system comprising:
a motor mounted in the duct and having drive shafts extend-

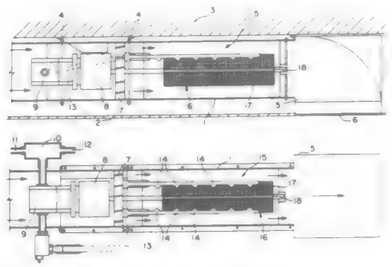
VOL 1165 ISS 3 AG 16 1994 UMI

ing out of opposite ends thereof, the shafts extending longitudinally within the duct;

an axial fan mounted on one of the shafts to generate a flow of pressurized air within the duct, flowing in a direction extending from upstream to downstream, the shaft on which the axial fan is mounted being downstream of the motor;

a pump mounted on the other of the shafts, upstream of the motor;

a mixing valve to mix water from a water supply line with a foam-forming chemical from a foam-forming chemical supply line;



spray nozzles downstream of the motor;

pipes, interconnecting the pump with the mixing valve and the spray nozzles, permitting the pump to pump the mixture of water and foam-forming chemical from the mixing valve to the spray nozzles, the spray nozzles generating a foam;

a plurality of grid panels downstream of the axial fan, mounted to turn with the shaft that is downstream of the motor, the nozzles being directed onto the grid panels to spray foam onto the grid panels to enhance the generation of foam within the duct in cooperation with the flow of pressurized air.

5,337,831

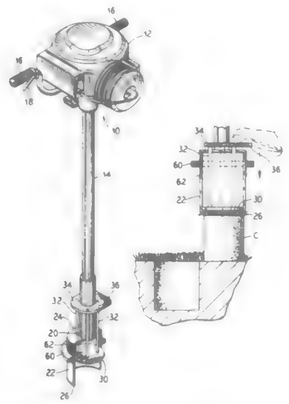
POWER-DRIVEN GOLF CUP CUTTER

Timothy J. Chopp, 3412 Westwood Farms Dr., Louisville, Ky. 40220

Filed Dec. 14, 1992, Ser. No. 990,014

Int. Cl.[5] E21B *12/06;* **A01B** *45/00*

U.S. Cl. 172—22 **7 Claims**



1. A power-driven golf cup cutter for removing a solid cylinder of dirt from an area of ground to form said cup comprising:

power means having a rotatable drive shaft extending therefrom and handles for manually grasping and holding said engine,

a hollow cylinder attached to said drive shaft for rotation therewith with a first open end having a single-plane sharpened edge engageable with the ground and an opposite closed and substantially solid end,

an outer peripheral surface of the lower end of said drive shaft being continuous and smooth. and

an axially slidable first plate member carried on a plurality of rods extending through apertures formed in said closed and substantially solid end, said first plate member being positioned within said hollow cylinder to engage a top end of said solid cylinder of dirt, said rods being connected to a second plate member carried on and axially slidable relative to said lower end of said drive shaft above said hollow cylinder and extending radially of said lower end of said drive shaft, said second plate member to be selectively moved by a user solely axially relative to said hollow cylinder and said solid cylinder of dirt to cause said first plate member to be moved to expel said solid cylinder of dirt from within said hollow cylinder.

5,337,832

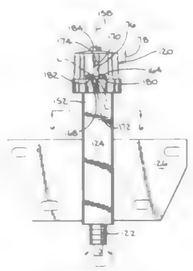
REPOSITIONING MECHANISM FOR AN AGRICULTURAL IMPLEMENT

James H. Bassett, Dawn Equipment Co., 1210 E. State St., Sycamore, Ill. 60178

Filed Aug. 6, 1992, Ser. No. 926,713

Int. Cl.[5] A01B *63/00;* **G05G** *5/06*

U.S. Cl. 172—504 **18 Claims**



1. A repositioning mechanism for an agricultural implement, said repositioning mechanism comprising:

an adjusting rod having a length;

a receptacle for the adjusting rod;

cooperating means on the adjusting rod and receptacle for relatively moving the adjusting rod and receptacle lengthwise of the adjusting rod as an incident of the adjusting rod being rotated about its length;

means on the receptacle for mounting an agricultural implement so that the agricultural implement moves with the receptacle;

an operating handle; and

means for attaching the operating handle to the adjusting rod to facilitate rotation of the adjusting rod about its length by manipulation of the operating handle,

said attaching means comprising a pin on one of the operating handle and adjusting rod and a slot on the other of the operating handle and adjusting rod for receiving the pin with the operating handle and adjusting rod in an operative position,

said pin being movable within the slot to allow the operating handle to be rotated relative to the adjusting rod within a limited range,

said attaching means including cooperating means on the pin, operating handle and adjusting rod for preventing separation of the operating handle and adjusting rod one from the other other than by repositioning the pin relative to the one of the operating handle and adjusting rod to which it attaches and removing the pin from the slot.

5,337,833

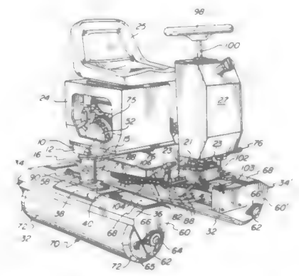
MACHINE FOR SMOOTHING GROUND SURFACES

Salvatore J. Rizzo, 1051 Pleasant St., Southington, Conn. 06489

Filed Nov. 30, 1992, Ser. No. 983,034

Int. Cl.[5] E01C *19/26*

U.S. Cl. 172—520 **5 Claims**



1. A machine for smoothing ground surfaces without undue compaction, comprising:

a chassis;

smoothing means consisting of two rollers, both of said rollers being of cylindrical form and at least about eight inches in diameter;

mounting means for mounting said rollers in laterally spaced positions on said chassis, substantially symmetric with respect to an axis of symmetry centrally located on said chassis and extending parallel to the longitudinal axes of said rollers, said rollers being mounted for rotation about their longitudinal axes in generally horizontal, normal orientations, and for pivotal articulation about normally vertical axes, said mounting means also enabling oscillation of one of said rollers about a normally horizontal axis generally perpendicular to said longitudinal and vertical axes thereof;

a driver's seat so mounted on top of said chassis as to afford a seated driver a substantially unobstructed view along the entire length of both of said rollers;

drive means on said chassis, comprising an hydrostatic system, operatively connected for effecting simultaneously driven rotation of both of said rollers, at selectively variable speeds, said hydrostatic system including a reservoir for hydraulic fluid mounted on top of said chassis; and

steering means on said chassis operatively connected for effecting simultaneous pivoting of both of said rollers in opposite directions about said vertical axes, said driver's seat, steering wheel, and reservoir being disposed substantially on said axis of symmetry for optimal weight distribution and driver's visibility.

5,337,834

DISK EXCAVATING AND GRADING ATTACHMENT

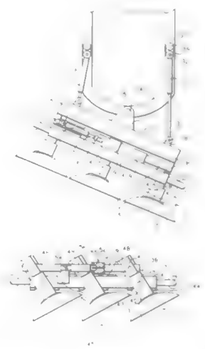
David E. Tapphorn, 270 S. Franklin, Colby, Kans. 67701

Filed Jul. 17, 1992, Ser. No. 914,460

Int. Cl.[5] A01B *59/048, 7/00*

U.S. Cl. 172—810 **10 Claims**

1. A disk excavating and grading attachment for attaching to an earth moving machine or tractor, comprising a plurality of disk units mounted at closely spaced lateral positions to permit earth materials including snow to be excavated, pushed, and graded laterally when said earth moving machine or tractor is moved forward, wherein each disk unit includes a forwardly facing concave disk blade connected to a disk socket plate; each said disk mounting plate is connected by a longitudinal extension assembly to a disk unit mounting beam and wherein



each of the longitudinal extension assemblies allows for independent longitudinal extension or retraction of their respective disk unit.

5,337,835

DRILL AND/OR IMPACT HAMMER

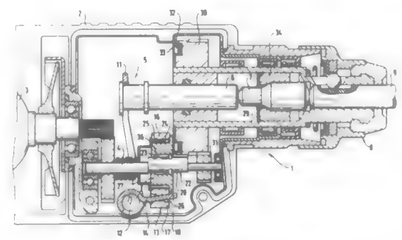
Ulrich Bohne, Kohlberg; Wilfried Kabatnik, Leinf-Echterd; Manfred Bleicher, Leinfelden-Echterdingen; Joachim Hecht, Magstadt, and Justus Lamprecht, Dusslingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 25, 1993, Ser. No. 83,682

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1992, 4231986

Int. Cl.[5] B25D *11/10*

U.S. Cl. 173—13 **10 Claims**



1. An impact hammer, comprising a housing; a motor accommoted in said housing; an impacting mechanism accommodated in said housing and having a driver and a striker which is displaced by said driver in an axial direction and periodically strikes a shaft of a tool, said driver being tiltable; a driving element driving said driver into a reciprocating motion; and a shaft which has a rotational axis and rotates said driving element, said driving element having two interengaging eccentric parts including a first eccentric part which is connected with said shaft for joint rotation with said shaft and a second eccentric part which is axially displaceable relative to said shaft, said eccentric parts having ring surfaces which are in contact with one another, said ring surfaces having a common axis which is radially offset relative to said rotational axis of said shaft, said second eccentric part having an outer peripheral surface having an axis which is radially offset relative to said common axis

VOL 1165 ISS 3 AG 16 1994 UMI

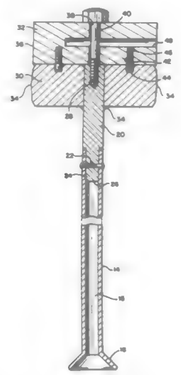
of said ring surfaces, said axis of said outer peripheral surface of said second eccentric part determining a resulting eccentricity of said driving element relative to said shaft, which eccentricity acts on said driver, said second eccentric part being displaceable relative to said first eccentric part so as to adjust said resulting eccentricity.

5,337,836

GROUND ROD INSTALLATION TOOL

Tunney E. Williams, 126 Tanglewood Dr., Lynchburg, Va. 24502

Division of Ser. No. 984,494, Dec. 2, 1992, Pat. No. 5,248,002.
This application Jan. 18, 1993, Ser. No. 77,937
Int. Cl.[5] B25D *1/00*; E02D *7/04*
U.S. Cl. 173—90 10 Claims



1. A tool for installing a rod into the ground comprising:
a handle having a bore opening at one end of the handle for receiving the rod;
a hammer head secured to said handle adjacent an opposite end of said handle;
a weight carried by said tool adjacent said opposite end of said handle and said hammer head such that, upon disposition of the tool over an end of the rod and reception of the end of the rod within said handle bore, the tool may be raised and lowered along the rod to hammer the rod in the ground; and
means for removably mounting said weight on said tool whereby, upon removal of the weight, the tool may be swung as a sledge hammer to further drive the rod into the ground, said weight having a bore opening through a face of said weight for receiving the rod and closed at an opposite end of the bore whereby, upon removal of the weight from the tool and placement on the rod with the rod received in the bore of said weight, the weight can be impacted by the hammer head when the tool is used as sledge hammer.

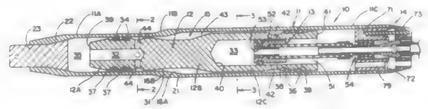
5,337,837

DUAL-DIAMETER PNEUMATIC GROUND PIERCING TOOL

Steven W. Wentworth, Brookfield; Robert F. Crane, Summit; Jon A. Haas, and Payce Reynolds, both of Oconomowoc, all of Wis., assignors to Earth Tool Corporation, Oconomowoc, Wis.

Filed Jun. 17, 1993, Ser. No. 79,095
Int. Cl.[5] E21B *4/14*
U.S. Cl. 175—19 16 Claims

1. A pneumatic ground piercing tool, comprising:
an elongated hollow body having a front nose and a rear opening;
a striker disposed for reciprocation within an internal chamber of the body to impart impacts thereto for driving the body through the ground, the striker having a rearwardly opening recess and a rear radial passage through a wall enclosing the recess, a front portion having a front bearing thereon for sliding contact with a first inner surface of the body and passages permitting flow of pressure fluid to a front, variable-volume pressure chamber ahead of the striker, and a rear portion having a rear bearing thereon rearwardly of the radial passage for sliding contact with a second inner surface the body;
a stepped air inlet conduit which cooperates with the striker within the internal chamber of the body to reciprocate the striker and impart blows to a front end wall of the internal chamber under the action of a pressure fluid fed into the rear recess in the striker, followed by reverse movement



of the striker when the rear radial passage moves past a front edge of the step of the stepped air inlet conduit, and exhaust of compressed air when the rear radial passage moves past a rear edge of the step of the stepped air inlet conduit; and
a tail assembly mounted in the rear opening of the body that secures the striker and air inlet conduit in the body;
wherein the tubular body has a front section and a rear section having a greater inner diameter and greater outer diameter than the front section, the rear portion of the striker has a greater outer diameter than the front portion thereof, the front bearing remains in sliding contact with the first inner surface in the front section of the body during tool operation, and the rear bearing remains in sliding contact with the second inner surface in the rear section of the body during tool operation.

5,337,838

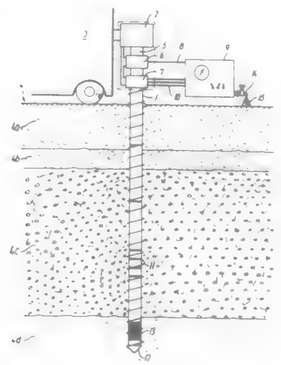
METHOD AND AN APPARATUS FOR TAKING AND ANALYZING LEVEL DETERMINED SAMPLES OF PORE GAS/LIQUID FROM A SUBTERRANEAN FORMATION

Kurt I. Sorensen, Blegindvej 102, DK-8362 Horning, Denmark

PCT No. PCT/DK91/00277, § 371 Date Mar. 23, 1992, § 102(e) Date Mar. 23, 1992, PCT Pub. No. WO92/05338, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 18, 1991, Ser. No. 988,952
Claims priority, application Denmark, Sep. 19, 1990, 2252/90
Int. Cl.[5] E21B *49/08*
U.S. Cl. 175—59 15 Claims

1. In a method of taking an analyzing level determined pore gas or liquid samples from a subterranean formation, wherein the method comprises drilling a borehole in said formation, passing samples at a desired depth into a cavity in a drill string used for the drilling, and analyzing the samples, the improvement comprising
a) dry drilling the borehole by means of a hollow earth bit comprising an inlet opening or openings so as to cause a sample to be analyzed to enter a first cavity section of a bit near a tip thereof and to pass into a sample chamber in the bit which communicates with said first cavity section, said first cavity section comprising a part of said cavity and being sealed from a remainder of said cavity, said inlet opening or openings being substantially radially opposite the sample chamber said sample chamber, comprising probes for measuring the sample in situ in the sample chamber;
b) analyzing the sample in situ in the sample chamber in a first analyzing using said probes;

c) pumping the sample to a ground surface and analyzing the sample in a second analysis; and



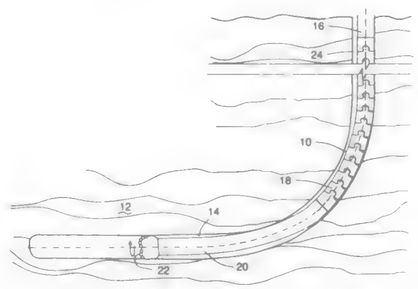
d) comparing the first and second analyses and correcting any deviations in the second analysis.

5,337,839

EXTENDING THE LATERAL PORTION OF A SHORT-RADIUS WELLBORE

Tommy M. Warren, Coweta, and Warren J. Winters, Tulsa, both of Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Aug. 7, 1992, Ser. No. 926,983
Int. Cl.[5] E21B *7/08*
U.S. Cl. 175—62 10 Claims



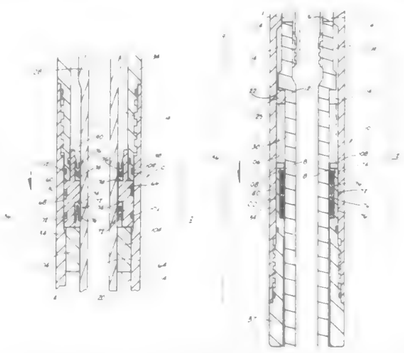
1. In a short-radius curved wellbore having at least one curved portion connected to at least one lateral portion, a method of extending the lateral portion of the wellbore, comprising the steps of:
(a) passing a conventional API drill pipe through a curved portion of a short-radius wellbore in a subterranean formation at a generally uniform insertion rate of V ft/minute, said curved portion having a predetermined radius of curvature of R ft, said drill pipe having a predetermined fatigue life of L cycles; and
(b) simultaneously rotating said conventional drill pipe in a single direction at a rate of W revolutions/minute to distribute deforming forces substantially uniformly around the circumference of said drill pipe at each location along the lenght of the drill pipe disposed within said curved portion, wherein the product of R and W is less than about two percent the product of L and V.

5,337,840

IMPROVED MUD MOTOR SYSTEM INCORPORATING FLUID BEARINGS

Roger Chancey, Humble, Tex., and Robert J. Champagne, Jr., Lafayette, La., assignors to International Drilling Systems, Inc., Lafayette, La.

Filed Jan. 6, 1993, Ser. No. 989
Int. Cl.[5] E21B *4/02*; F16J *15/32*
U.S. Cl. 175—107 26 Claims



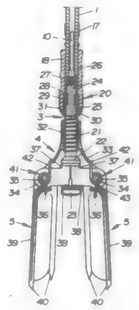
20. An improved mud motor system, of the type where there is included an upper stator portion housing a rotatable rotor which rotates as fluid is forced down through the rotor, a drive shaft rotatably connected to the rotor at its upper end; at least upper and lower output shafts rotatably connected to the drive shaft, and a drill bit connected to the lower output shaft, the improvement comprising fluid bearing means formed by fluid contained in an upper sealing means so that when force is placed on the drill bit during drilling, the fluid within the upper sealing means is compressed within the fluid means and defines a fluid bearing surface upon which a output shaft seats to prevent metal to metal contact between the output shaft and a metal member within the mud system.

5,337,841

HAMMER TYPE SOIL EXCAVATING MACHINE

Toshio Mukai, 2-20-94 Azukimoti, Hamamatsu, 433, Japan

Filed Mar. 8, 1993, Ser. No. 27,523
Claims priority, application Japan, Mar. 10, 1992, 4-101539; Mar. 5, 1993, 5-045412
Int. Cl.[5] E21B *1/00*
U.S. Cl. 175—293 8 Claims



1. A hammer type soil excavating machine comprising: a

VOL 1165 ISS 3 AG 16 1994 UMI

handle portion having outer and inner portions, hammer means connected to the outer portion of said handle portion to provide a hammer operation with bumping power toward the inner portion of the handle portion, and operating portion attached to the inner portion of said handle portion, a holding section attached to and actuated by the operating portion, and a pair of excavators pivotally attached to said holding section, said excavators receiving the bumping power from the hammer means through the handle portion and the operating portion and opening and closing operations from the handle portion through said operating portion so that soil is cut and removed by the excavators to form a hole easily.

5,337,842

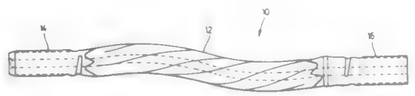
DRILL STEEL

Stanley D. Robinson, R.R. #1 Tower Drive, North Bay, Ontario P1B 8G2, Canada

Continuation-in-part of Ser. No. 617,833, Nov. 26, 1990. This application Jul. 13, 1992, Ser. No. 912,419

Int. Cl.[5] **E21B** *17/00*

U.S. Cl. 175—323 **14 Claims**



1. A drill steel for use in percussive drilling, said drill steel comprising:

an elongate body for transmitting energy between a drill rig and a drill bit and having two ends, each of said ends having a separate untwisted end coupling means, said elongate body having a means for reducing transmitted vibration comprising a twisted portion between said separate untwisted end coupling means, said twisted portion having a twist with a helical pitch of between one half turn over the length of the drill steel and two turns per foot, said twisted portion transmitting less vibration than an untwisted drill steel of corresponding size under the same conditions.

5,337,843

HOLE OPENER FOR THE TOP HOLE SECTION OF OIL/GAS WELLS

Tor Torgrimsen, Stavanger; Kjell-Egil Stangeland, Kleppe, and Arnold Furre, Sandnes, all of Norway, assignors to Kvernaland Klepp AS, Kvernaland, Norway

Filed Feb. 17, 1993, Ser. No. 18,556

Claims priority, application Norway, Feb. 17, 1992, 920611

Int. Cl.[5] **E21B** *10/24, 10/28*

U.S. Cl. 175—334 **7 Claims**

1. A hole opener used in conjunction with drilling in at least one of boulder and rubble stone formations, the hole opener comprising:

first, second and third sets of cutters;

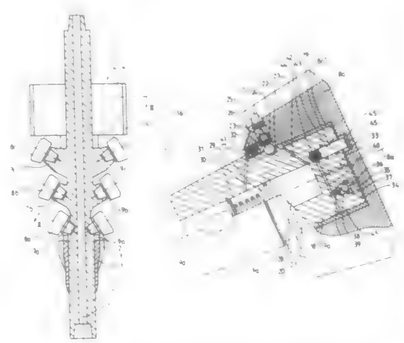
a tubular carrier body;

first means for fixing the first set of cutters to the tubular carrier body so that the first set of cutters is positioned in a common first lateral plane with respect to a longitudinal axis of the tubular carrier body;

second means for fixing the second set of cutters to the tubular carrier body so that the second set of cutters is located in a second lateral plane with respect to the longitudinal axis of the tubular carrier body; and

third means for fixing the third set of cutters to the tubular carrier body so that the third set of cutters is located in a third lateral plane with respect to the longitudinal axis of the tubular carrier body;

wherein the first means combined with each of the cutters of the first set of cutters extends a first radial distance from the longitudinal axis, the second means combined with each of the cutters of the second set of cutters extends a second radial distance from the longitudinal axis, the third means combined with each of the cutters of the third set of cutters extends a third radial distance from the longitudinal axis, the first radial distance is less than the second radial distance, and the second radial distance is less than the third radial distance;



wherein the first, second and third sets of cutters are respectively sequentially located along the longitudinal axis with the first set of cutters being closest to a lower end of the hole opener and the third set of cutters being closest to an upper end of the hole opener;

wherein relative to an imaginary plane perpendicular to the longitudinal axis the second and third means are angularly displaced from the first means 60° and 120°, respectively.

5,337,844

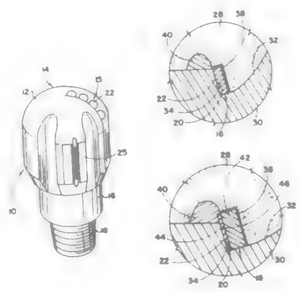
DRILL BIT HAVING DIAMOND FILM CUTTING ELEMENTS

Gordon A. Tibbitts, Salt Lake City, Utah, assignor to Baker Hughes, Incorporated, Houston, Tex.

Filed Jul. 16, 1992, Ser. No. 915,463

Int. Cl.[5] **B23P** *5/00;* **C23C** *16/26;* **E21B** *10/46*

U.S. Cl. 175—434 **13 Claims**



1. A drill bit for earth boring comprising:

a body member formed by infiltration in a mold;

a cutting element comprising a layer of diamond formed by vapor deposition sufficiently thick to serve as a drill bit cutting element, said cutting element being mounted on said body member by infiltrating a portion of said body to hold said cutting member during formation of said body member; and

a layer of bonding material disposed between said diamond layer and the portion of said body holding said cutting member, said bonding material being in intimate contact with said diamond layer and said body and bonding the same together.

5,337,845

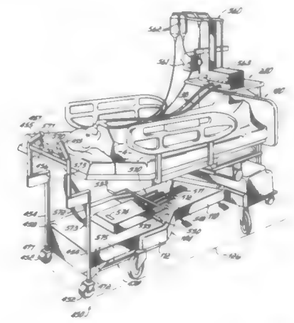
VENTILATOR, CARE CART AND MOTORIZED TRANSPORT EACH CAPABLE OF NESTING WITHIN AND DOCKING WITH A HOSPITAL BED BASE

L. Dale Foster, and Ryan A. Reeder, both of Brookville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Continuation-in-part of Ser. No. 912,826, Jul. 13, 1992, which is a continuation-in-part of Ser. No. 874,586, Apr. 24, 1992, which is a continuation-in-part of Ser. No. 524,038, May 16, 1990, Pat. No. 5,117,521. This application Jan. 21, 1993, Ser. No. 7,122

Int. Cl.[5] **B62M** *27/02*

U.S. Cl. 180—11 **45 Claims**



1. Apparatus for powered transport of a hospital bed, the bed having a generally Y-shaped base with casters thereon, one end of which has a pair of spaced arms, comprising:

a base with casters thereon, said apparatus base being adapted to nest within the spaced arms of the Y-shaped hospital bed base and to dock thereto;

a drive wheel rotatably mounted on said apparatus base;

means mounted on said apparatus base for powering said drive wheel;

means mounted on said apparatus for controlling said drive wheel; and

handle means connected to and extending upwardly from said apparatus base for steering said apparatus.

5,337,846

DISASTER RELIEF ROBOT AND OPERATION CONTROLLER THEREFOR

Koji Ogaki, Yokohama; Tomoo Matsuda, Fujisawa; Kimihiko Takagi, Yamato, and Takuya Sakamoto, Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP91/01061, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/02398, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 8, 1991, Ser. No. 983,583

Claims priority, application Japan, Aug. 8, 1990, 2-210922; Oct. 19, 1990, 2-280947; May 27, 1991, 3-121296

Int. Cl.[5] **B62D** *55/065*

U.S. Cl. 180—8.2 **22 Claims**

1. A robot vehicle comprising:

a robot body having a front end portion and a rear end portion, each of said front end portion and said rear end portion having a left side and a right side;

a pair of front crawlers;

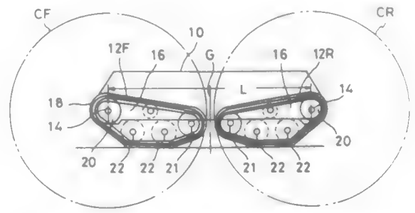
a pair of rear crawlers;

a pair of front pivot shafts;

a pair of rear pivot shafts;

each of said front crawlers and each of said rear crawlers having a track frame and a track wherein the track frame has a drive end and a distal end, with the drive end of each front crawler being pivotally mounted by a respective one of the front pivot shafts to a respective of the left and right sides of said front end portion of said robot body such that the distal end of the track frame of the respective front crawler can be pivoted in a circle about the respective one of front pivot shafts to provide a maximum pivoting locus of the respective front crawler, with the drive end of each rear crawler being pivotally mounted by a respective one of the rear pivot shafts to a respective one of the left and right sides of said rear end portion of said robot body such that the distal end of the track frame of the respective rear crawler can be pivoted in a circle about the respective one of the rear pivot shafts to provide a maximum pivoting locus of the respective rear crawler;

the drive end of each of said front crawlers and said rear crawlers having a drive sprocket for driving the track of the respective crawler;



drive means for driving each drive sprocket independently of the other drive sprockets;

the distance between the front pivot shaft of the front crawler and the rear pivot shaft of the rear crawler on each respective side of said robot body being greater than a sum of a radius of the maximum pivoting locus of the respective front crawler and a radius of the maximum pivoting locus of the respective rear crawler so that the maximum pivoting locus of the front crawler located on the right side does not overlap the maximum pivoting locus of the rear crawler located on the right side, and the maximum pivoting locus the front crawler located on the left side does not overlap the maximum pivoting locus of the rear crawler located on the left side;

said robot body having a gravitational center which located at a position between (*a*) the maximum pivoting loci of the front crawlers and (*b*) the maximum pivoting loci of the rear crawlers so that the ground contact positions of the front crawlers and the ground contact positions of the rear crawlers are always. outside of the gravitational center of said robot body.

5,337,847

FOUR-WAY LEVELLING MECHANISM FOR OFF-ROAD VEHICLE

Randy J. Woods, and Reggald E. Isley, both of Grande Prairie, Canada, assignors to Risley Fluidic Power Ltd., Alberta, Canada

Filed Jan. 15, 1993, Ser. No. 4,950

Int. Cl.[5] **B62D** *55/00, 33/067*

U.S. Cl. 180—9.52 **19 Claims**

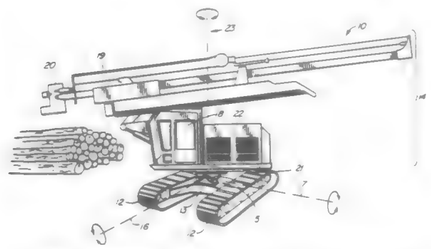
1. A tilt mechanism for pivotally mounting the superstructure of a vehicle to a chassis, said tilt mechanism comprising:

a. a first pivot pin defining a first pivot axis, said first pivot pin passing through an aperture in a first member connected to said chassis and through an aperture in a second member coupled to said superstructure;

VOL 1165 ISS 3 AG 16 1994 UMI

b. a spherical bearing having a center of rotation lying on said first pivot axis;

c. first connecting means rigidly fixing a first half of said spherical bearing with respect to said first member; and,



d. second connecting means rigidly fixing a second half of said spherical bearing to said second member;

wherein said second member is pivotable relative to said first member about said pivot axis.

5,337,848

HYBRID DRIVE FOR A MOTOR VEHICLE

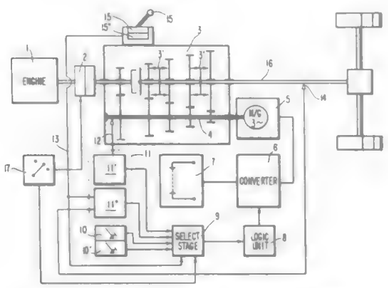
Christian Bader, Böblingen, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Dec. 22, 1992, Ser. No. 993,595

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1992, 4202083

Int. Cl.[5] B60K *6/02*

U.S. Cl. 180—65.2 10 Claims



1. A hybrid drive for a motor vehicle, comprising:

an internal combustion engine connected via a clutch and a gearbox to a drive shaft, said gearbox including a layshaft drivingly connected to the driveshaft,

a three-phase machine with electrical power supply thereto via a three-phase converter,

and a continuous mechanical connection between a rotor of the three-phase machine and the layshaft providing a common axis for both the rotor and the layshaft,

whereby power flow between the three-phase machine and said layshaft is solely determined by electrical control of the three-phase machine via the three-phase converter.

5,337,849

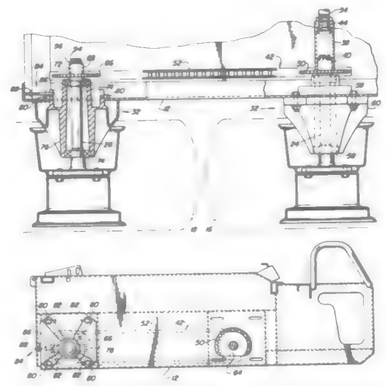
AXLE MOUNTING MECHANISM

Jimmy N. Eavenson, Sr., Juneau; Robert N. Behrens, Beaver Dam, both of Wis.; Henry Friesen, Niagara Falls, and Nicholas Hamm, Vineland, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Aug. 17, 1992, Ser. No. 931,247

Int. Cl.[5] B62D *61/10*

U.S. Cl. 180—24.12 15 Claims



1. A vehicle axle mechanism, said vehicle having a frame, said mechanism comprising:

a power output shaft driven by a power source carried by the vehicle,

an attachment means having first and second openings, said first opening being adapted to receive the output shaft, said first opening and output shaft having mating shapes which prevent the attachment means from rotating relative to the output shaft,

an axle means received by the second opening in the attachment means, said second opening and axle means having mating shapes which prevent the attachment means from rotating relative to the output shaft, a ground engaging wheel being coupled for rotation with the axle means,

an axle housing means for rotatably supporting the axle means, said axle housing means being generally rigidly and releasably fixed to the frame of the vehicle, a portion of the axle housing being positioned within an opening in the frame, said portion of the axle housing and opening in the frame having generally mating shapes which locate the axle in alignment with the output shaft whenever the housing is positioned within the opening, and

wherein said attachment means further comprises:

a coupler which is operatively receives output shaft, said first opening being formed in the coupler,

a sleeve which operatively receives the axle means, said second opening being formed in the sleeve,

said coupler and sleeve being slidably coupled together and having mating shapes formed therein for preventing relative rotation between the coupler and sleeve.

5,337,850

REAR WHEEL STEERING CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

Hiroshi Mouri, and Masayuki Watanabe, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 4, 1992, Ser. No. 941,224

Claims priority, application Japan, Sep. 4, 1991, 3-224295

Int. Cl.[5] B62D *6/00*

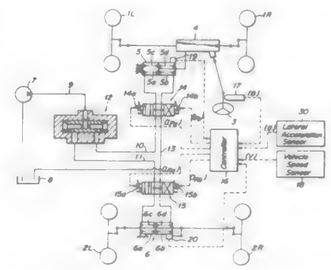
U.S. Cl. 180—140 16 Claims

1. A rear wheel steering control system for automotive vehicles including front wheels, rear wheels, and a steering wheel which can be manually operated to steer the front wheels, said control system comprising:

means for steering the rear wheels in accordance with a steering wheel operation angle, and with a same-phase angle as the front wheels for a relatively small steering wheel operation angle, and with an opposite-phase angle to the front wheels for a relatively large steering wheel operation angle, said control system having a predetermined steering wheel operation angle range in which the steering angle of the rear wheels changes between a maximum same-phase steering angle and a maximum opposite-phase steering angle;

delayed response characteristic setting means operative in said predetermined steering wheel operation angle range, for setting a delayed response characteristic of the rear wheel steering, which is delayed with reference to a manual steering wheel operation:

means for steering the rear wheels with a same-phase angle



as the front wheels for a relatively small steering wheel operation angle Within said predetermined steering wheel operation angle range;

means for steering-back an angle of the rear wheels within said predetermined steering wheel operation angle range, toward an opposite phase direction with reference to the front wheels:

detecting means for detecting a cornering state of the vehicle and generating an actual cornering state signal which is indicative of an actual cornering state of the vehicle;

delayed cornering state signal generating means connected to said detecting means and responsive to said actual cornering state signal, for generating a delayed cornering state signal which is delayed with reference to said actual cornering state signal; and

rear wheel steer-back angle limiting means connected to said delay means and responsive to said delayed cornering state signal for limiting the steering-back angle of the rear wheels in accordance with said delayed cornering state signal.

5,337,851

STEERING MECHANISM FOR ROAD CUTTER

Helmut Hellwig, Bad Oeynhausen, Fed. Rep. of Germany, assignor to AGB - Werke GmbH, Hameln, Fed. Rep. of Germany

Filed Feb. 17, 1993, Ser. No. 18,695

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1992, 4205878

Int. Cl.[5] B62D *5/00*

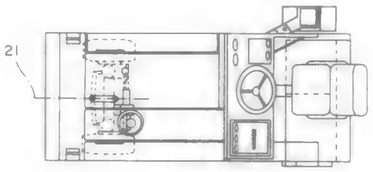
U.S. Cl. 180—162 20 Claims

1. An improved steering mechanism for a machine having guide wheels and a chassis, the chassis defining a longitudinal axis, the guide wheels being offset to opposite sides of said axis, the guide wheels defining axes about which the guide wheels rotate, the longitudinal axis and the wheel axes defining a steering angle, said improved steering mechanism comprising:

steering knuckle means for pivotally coupling respective of the guide wheels to the chassis whereby the steering angle between the guide wheel axes and a vertical plane which includes said longitudinal axis may be varied;

fluidic actuator means connected between the chassis and one of said knuckle means for imparting movement to a component of said one knuckle means which is affixed to an associated guide wheel whereby said steering angle of said guide wheel may be adjusted;

a lever, said lever being connected to the chassis so as to be pivotal about said longitudinal axis, said lever having a free end which is movable toward one or the other of said knuckle means during pivotal movement of said lever;



a first connecting rod extending between said free end of said lever and a first of said steering knuckle means; and

a second connecting rod extending between said free end of said lever and a second of said steering knuckle means, said second connecting rod being provided with a bent end portion whereby said second connecting rod is cranked in the direction of said lever, movements of said one knuckle means produced by said actuator means being transmitted to the other of said knuckle means via said first and second connecting rods.

5,337,852

COUPLING FOR INTERCONNECTING HOOD WITH A VEHICLE COMPONENT AND FOR DISCONNECTING A VEHICLE ELECTRIC CIRCUIT DURING A COLLISION

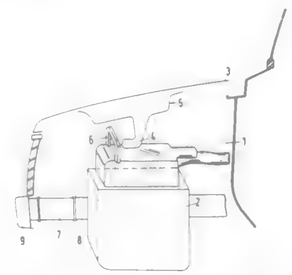
Michael Kastner, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagen AG, Wolfsburg

Filed Jan. 15, 1993, Ser. No. 5,894

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1992, 4204964

Int. Cl.[5] B62D *25/12*

U.S. Cl. 180—274 4 Claims



1. An end compartment for a motor vehicle for holding components of operating equipment for the vehicle and associated with one or more deformation elements to convert kinetic energy into work of deformation in the event of a collision comprising a hood covering at least a portion of the compartment including at least one hood region that will move upwardly as a result of hood deformation and a coupling arrangement between the hood portion and at least one of the components in the compartment arranged to engage and raise the component during a collision.

VOL 1165 ISS 3 AG 16 1994 UMI

5,337,853

DIFFERENTIAL-BRAKE GROUP FOR VEHICLE DRIVING AXLES

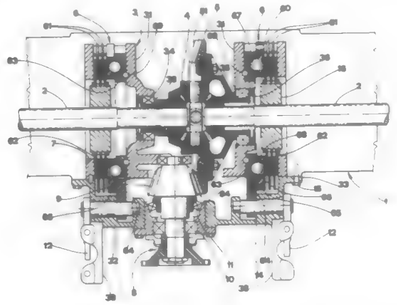
Giorgio Magni, Modena, Italy, assignor to OMCI S.p.A. Officine Metalmeccaniche Costruzioni Industriali, Modena, Italy

Filed Dec. 29, 1992, Ser. No. 997,097

Claims priority, application Italy, Jan. 14, 1992, MO92 A 00004

Int. Cl.[5] F16D *55/36*

U.S. Cl. 180—370 7 Claims



1. A differential-brake group for vehicle driving axles, the axle having a left and right wheel associated therewith, the differential-brake group comprising: a frame (3) equipped with two opposite support walls (31), between which a box (5) of a differential (4) is comprised and rotatably supported with relative rotational freedom, the differential (4) is predisposed for transmission of drive to two half-shafts (2) located parallel to a rotation axis of the said box (5) with respect to the said frame (3), each of the two half-shafts being associated with one of the left and right wheel, respectively; both opposite walls (31) with support function being directly associated at their external sides to at least two braking devices (6) singly equipped with means for coupling to respective half-shafts (2) as well as relative control mechanisms; the said braking devices (6) being solidly connected, together with the frame (3), to form a single block, the single block being predisposed and conformed to be mountable or dismountable on the said axle (1) through a single central aperture (7) made in the axis itself, the central aperture providing access to each of said braking devices, by simple introduction or extraction, according to a transversal direction to the said half-shafts (2); and means to permit a correct centering and solid connection of the said single block to the said axle (1).

5,337,854

JIB ASSEMBLY

Bernd A. Brandt, Scarborough, Canada, assignor to Ontario Hydro, Toronto, Canada

Filed Mar. 19, 1992, Ser. No. 854,347

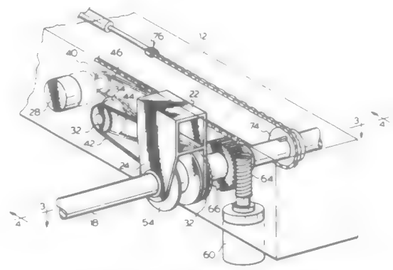
Int. Cl.[5] B66F *11/04*

U.S. Cl. 182—2 9 Claims

1. An improved jib assembly for use with an articulated boom carried by an aerial device, said boom carrying a workperson carrier on a freely rotatable shaft extending through the boom, the jib assembly comprising:

a jib, a jib sleeve mounted on said shaft for rotation about said shaft, said jib being carried slidably and lockably in said jib sleeve, a chain speed reducer, a motor for driving said chain speed reducer and a connector for connecting said chain speed reducer to said jib sleeve and for rotating said jib sleeve to provide a continuous range of rotation of said jib in a vertical plane as said sleeve is rotated by said motor through said chain speed reducer and connector;

said chain speed reducer further comprising at least one chain and one pair of sprocket wheels, one of said sprocket wheels being a rotation output sprocket wheel



coaxial with said shaft, attached to a wall of said jib sleeve, freely rotatable in relation to said shaft, and connected to said connector.

5,337,855

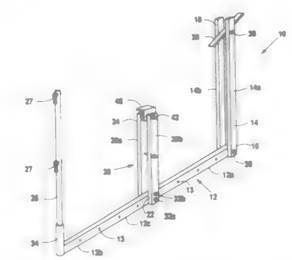
PORTABLE SUSPENSION DEVICE AND SYSTEM FOR SCAFFOLDING

Jonathan P. File, P.O. Box 1824, Kamuela, Hi. 96743

Filed May 11, 1993, Ser. No. 62,912

Int. Cl.[5] E04G *3/10*

U.S. Cl. 182—150 19 Claims



1. A device for supporting a worker on scaffolding and attachable to a support member of a structure, the device comprising:

a base member with a first end, a second end and a body;

a compression strut with a first and a second end; said compression strut mountable to said base member.

a tension strut with a first end and a second end, said tension strut mountable to said base member;

a first bracket for attaching to said compression strut at the second end thereof and capable of securing said compression strut to a structure wherein said first bracket is articulably attached to a point on said compression strut so that said compression strut extends beyond said attachment point;

a second bracket for attaching to said tension strut to the structure;

means for attaching said compression strut to said base member; and

means for attaching said tension strut to said base member, said means for attaching capable of attaching said tension strut to said base member in either an axis parallel to said base member or perpendicular to said base member;

wherein said compression strut and said tension strut are attached to said base member and the structure with said device then capable of carrying the weight of a worker.

5,337,856

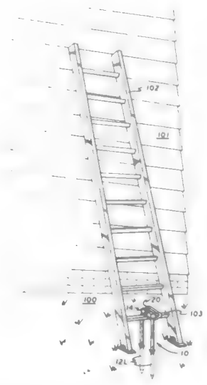
LADDER ANCHORING PINS

James J. Fillers, 13805 Delaney Rd., Dale City, Va. 22193

Filed Jul. 14, 1993, Ser. No. 91,124

Int. Cl.[5] E06C *5/36*

U.S. Cl. 182—107 5 Claims



1. A ladder anchoring pin for securing a ladder having a bottommost horizontal rung to the ground by said bottommost horizontal rung, as the ladder engages both the ground and a supporting surface, said ladder anchoring pin comprising:

a single, U-shaped member for simultaneously engaging the ground and the bottommost horizontal rung of said ladder, said U-shaped member comprising three distinct sections, a first rung engaging section, a second ground engaging section, and a third ground engaging section; said U-shaped member being defined by the three sections wherein said first section is normal to said second and said third sections;

an impact member having at least an upper surface and lower surface, said lower surface being permanently attached to said first section of said U-shaped member by a weld, and said upper surface being a flat, planar surface for receiving impacts that force said ladder anchoring pin over the bottommost horizontal rung of the ladder and into the ground there below; and,

a handle, pivotally attached to said ladder anchoring pin, and extending across the length of said first section, for removing said ladder anchoring pin from engagement with the ground and the ladder.

5,337,857

LADDER ADAPTABLE PLATFORM

Taylor E. Spalt, and Gregory P. Spalt, both of 188 Tilden Rd., Scituate, Mass. 02066

Filed Jul. 27, 1993, Ser. No. 97,684

Int. Cl.[5] E06C *7/16*

U.S. Cl. 182—122 8 Claims

1. A ladder adaptable platform assembly for use on an extension ladder, the extension ladder having a pair of parallel side rails and spaced rungs, to provide a stepping surface in alignment with a rung of the extension ladder, said ladder adaptable platform comprising:

a platform surface arrangable onto the backside of a rung, pivotably supported between a pair of side frame, said side frame members slidably engageable with the side rails of a ladder thereattached;

an arrangement of a pair of support axles extending from a first to a second one of said side frame members, said platform surface being journalled about one of said support axles with the other of said support axles acting as an abutment for said platform;

a biasing arrangement disposed between said platform surface and said support axles or said side frame to permit



said platform surface to pivot about one of said support axles with a pre-desired force, said biasing arrangement arranged to centralize said platform surface on the middle of said support axle arrangement.

5,337,858

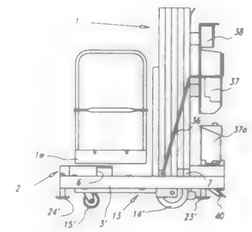
SAFETY SYSTEM FOR MULTI-STAGE LIFTS

Willi B. Neubauer, Seattle; Paul K. Smith, and Philip J. Harvey, both of Kirkland, Wash., assignors to Genie Industries, Redmond, Wash.

Filed Jan. 19, 1993, Ser. No. 5,832

Int. Cl.[5] B66B *9/20*

U.S. Cl. 182—148 20 Claims



1. A lift comprising;

a base frame assembly having support elements for ground engagement;

a lifting device mast mounted on said base frame;

a carriage assembly including a rigid carriage frame on which transport wheels are mounted, said carriage assembly being mounted on said base frame assembly for movement from an inactive position in which said support elements are in ground engagement supporting the weight of said base frame assembly and lifting device, to an active position in which said weight is entirely supported on said transport wheels;

and carriage assembly operating means for selectively moving said carriage assembly from inactive position to active position.

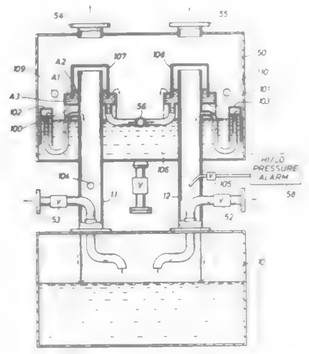
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,859

PROCESS GAS COMPRESSOR TRAIN FUGITIVE EMISSIONS RECOVERY SYSTEM

Ralph H. Ingram, and William L. Green, both of Destrehan, La., assignors to Shell Oil Company, Houston, Tex.

Filed May 5, 1993, Ser. No. 57,362
Int. Cl.[5] F01M 3/00
U.S. Cl. 184—6.21 16 Claims



1. A system for capturing fugitive emissions from rotating machinery comprising:

a machine adapted to rotate within a housing on an axial shaft, said shaft having seal means for sealing said shaft from said housing and having a bearing within a bearing housing, said bearing being mounted on said shaft for enabling rotation of said axial shaft about its axis;

means for supplying lubricating oil to said seal means;

means for supplying lubricating oil to said bearing;

means for draining said lubricating oils from said seal means and said bearing housing;

a reservoir for receiving said drained lubricating oils;

a vacuum sealer located above said reservoir and connected thereto by tubular riser means, said riser means extending into said vacuum sealer;

liquid seal means located within said vacuum sealer situated atop and enclosing the opening of said riser means, said liquid seal means comprising a seal pan filled with lubricating oil for sealingly surrounding said riser means, and a partition cap inverted over the opening of said riser means and opening into said seal pan into the oil therein for a fixed distance above the bottom of said pan and below the top of said pan;

means for creating a negative pressure within said riser means, within said bearing housing means and within said reservoir for withdrawing contaminants therefrom; and

furnace means for receiving and destroying said contaminants.

5,337,860

RAILROAD WHEEL FLANGE LUBRICATOR MOUNTING

Robert J. Burke, Rte. 4, Box 255B, Ellensburg, Wash. 98926, and Paul J. Weber, 4401 Webster, Yakima, Wash. 98908

Filed Apr. 7, 1993, Ser. No. 44,583
Int. Cl.[5] B61K 3/00
U.S. Cl. 184—3.2 1 Claim

1. A railroad wheel flange lubricator mounting comprising:

a locomotive truck having at least one axle with flanged railroad wheels, and with axle ends contained within journal boxes;

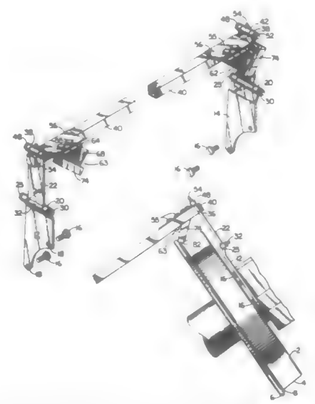
two solid lubricator sticks, each within a lubricator stick applicator, said applicators having springs urging the lubricator stick against the flange of each of the wheels;

a floating arm parallel to the axle, with one of said applicators attached to the floating arm near each end thereof, means for attaching the lubrication stick applicator to the floating arm comprising:

an attachment plate welded to an uppermost side of the floating arm, said plate being wider than the floating arm, thus forming an overhang;

said attachment plate overhang having a slot therein;

a triangular bracket formed of three plates, said bracket bolted to the attachment plate with the apex of the bracket lowermost;



an outboard plate of the triangular bracket being pointed toward the flange of a wheel, and having holes therein for bolting to the lubrication stick applicator; and a height plate for shimming purposes inserted between the attachment plate overhang and the triangular bracket; two bearing brackets, with one attached to each journal box and extending upward therefrom; and

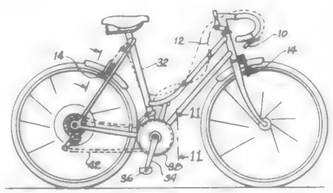
a means to accommodate lateral motion between the axle-wheel assembly and the journal boxes, while keeping the lubricator stick in contact with the wheel flanges, said means comprising two hinge plates, each having a first end and a second end, and each rotatably attached at the first end to the upper end of one of the bearing brackets, and each rotatably attached at the second end to opposite ends of the floating arm.

5,337,861

BACK PEDAL BRAKE FOR DERAILLEUR BICYCLE

Anthony Romano, 6941 Jackson Dr., San Diego, Calif. 92119

Continuation-in-part of Ser. No. 33,511, Feb. 16, 1993, abandoned. This application Jun. 21, 1993, Ser. No. 78,345
Int. Cl.[5] B62L 1/06, 5/00
U.S. Cl. 188—24.17 7 Claims



1. For a bicycle having:

(i) a frame defining a pedal crank mount;

(ii) a front wheel and a rear wheel journalled in said frame;

(iii) a pedal crank assembly having a crank shaft journalled in said pedal crank mount;

(iv) a front sprocket mounted on said pedal crank assembly;

(v) a rear sprocket mounted on said rear wheel and being operatively connected to said front sprocket by means of a chain such that pedal crank rotation in one rotational direction moves the bicycle forward and said one rotational direction is defined as the clockwise direction;

(vi) a cable-operable caliper brake for at least one of said wheels actuated by pulling on a cable connected to said caliper brake,

a pedal brake actuator comprising:

(a) a foot brake cable for engaging said caliper brake;

(b) a direction-sensitive actuator operatively engaged between said pedal crank assembly and said cable to pull said cable when said crank is rotated counter-clockwise and to freewheel when said crank rotates clockwise;

(c) a sprocket release mechanism operative between said front sprocket and said pedal crank assembly to disengage said front sprocket from said pedal crank when said crank is rotated in the counter-clockwise direction; and,

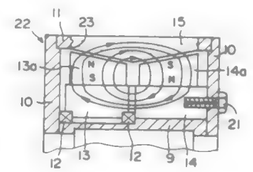
(d) said sprocket release mechanism comprising a clutch assembly, and said front sprocket being freewheelingly engaged on said crank shaft, and said clutch assembly defining a one-way drive interface between said shaft and said front sprocket such that clockwise pedalling drives said front sprocket through said clutch, and counter-clockwise pedalling permits freewheeling of said front sprocket relative to said clutch assembly.

5,337,862

EDDY-CURRENT BRAKE WITH MAGNETS SHAPED TO CONTAIN MAGNETIC FIELD

Tohru Kuwahara, Kawasaki, Japan, assignor to Isuzu Motors, Ltd., Tokyo, Japan

Continuation of Ser. No. 716,845, Jun. 17, 1991, abandoned. This application May 24, 1993, Ser. No. 44,322
Claims priority, application Japan, Jun. 20, 1990, 2-162196
Int. Cl.[5] B60L 7/28; H02K 49/04
U.S. Cl. 188—158 11 Claims



1. A vehicle braking system comprising:

a brake drum having an inner surface;

an annular substantially non-magnetic, fixed frame disposed within said brake drum and defining an annular chamber, said frame comprising an annular outer wall disposed adjacent to said inner surface and defining a plurality of circumferentially spaced apart slots, and said ferromagnetic members are retained within said slots;

first and second substantially parallel, transversely aligned support rings disposed in said annular chamber;

a plurality of first permanent magnets mounted on said first support ring and circumferentially spaced apart at a given pitch, the polarities of said first permanent magnets facing said inner surface alternating circumferentially;

a plurality of second permanent magnets mounted on said second support ring and circumferentially spaced apart at said given pitch, the polarities of said second permanent magnets facing said inner surface alternating circumferentially;

adjustment means for producing relative rotational movement between said first and second support rings so as to establish a braking condition in which each of said first permanent magnets with a given polarity facing said inner surface is transversely aligned with a different one of said second permanent magnets having a polarity facing said inner surface opposite to said given polarity and an alternate non-braking condition in which each of said permanent magnets with a given polarity facing said inner surface is transversely aligned with a different one of said second permanent magnets having said given polarity facing said inner surface; and

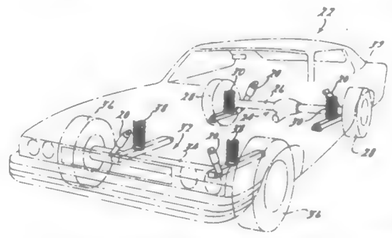
a plurality of ferromagnetic members circumferentially spaced apart at said given pitch in alignment with said second permanent magnets and disposed between said inner surface and said first and second permanent magnets, each pair of said transversely aligned pairs of said first and second permanent magnets in said non-braking condition forming with one of said ferromagnetic members a magnetic path, and each of said ferromagnetic members having a length portion of non-uniform thickness extending in said magnetic path formed thereby with said pair of magnets; and wherein said first and second permanent magnets have outer surfaces arranged to define with said ferromagnetic members a substantially uniform gap when circumferentially aligned therewith, each of said ferromagnetic members has an irregular inner surface formed by a cylindrically shaped portion intersecting a conically shaped portion, and said first and second permanent magnets have irregular outer surfaces conforming to said irregular inner surfaces.

5,337,863

METHOD AND APPARATUS FOR ABSORBING MECHANICAL SHOCK

Magnus B. Lizell, New York, N.Y., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Continuation of Ser. No. 938,837, Aug. 31, 1992, Pat. No. 5,217,095, which is a continuation of Ser. No. 720,261, Jun. 24, 1991, Pat. No. 5,143,186, which is a continuation of Ser. No. 478,236, Feb. 9, 1990, Pat. No. 5,025,899, which is a continuation of Ser. No. 154,343, Jan. 13, 1988, Pat. No. 4,923,038. This application Jun. 7, 1993, Ser. No. 73,336
Claims priority, application Canada, Jun. 5, 1986, 510950
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] F16F 9/46; B60G 11/26
U.S. Cl. 188—299 19 Claims



1. A direct acting hydraulic shock absorber for an automobile having a body comprising:

a pressure cylinder forming a working chamber having first and second portions operable to store damping fluid;

first valve means for controlling a first flow of damping fluid between said first and second portions of said working chamber during compression of said shock absorber, said first valve means being operable to generate firm damping

VOL 1165 ISS 3 AUG 16 1994 UMI

during compression when disposed at a first position and generate soft damping when disposed at a second position;

a pressure chamber in fluid communication with said first portion of said working chamber and said first valve means;

second valve means for controlling a second flow of damping fluid between said first and second portions of said working chamber during rebound of said shock absorber, said second valve means being operable to generate firm damping during rebound when disposed at a third position and soft damping during rebound when disposed at a fourth position; and

electrical controllable flow means for regulating a third flow of damping fluid between said pressure chamber and said second portion of said working chamber, said electrical controllable flow means being operable to independently control said first valve means with respect to said second valve means.

5,337,864

SUSPENSION SYSTEM WITH IMPROVED RESONANCE DAMPING AND A METHOD FOR REGULATING THE SUSPENSION SYSTEM

Sverker Sjöström, Grödinge, Sweden, assignor to Saab-Scanig Aktiebolag, Sweden

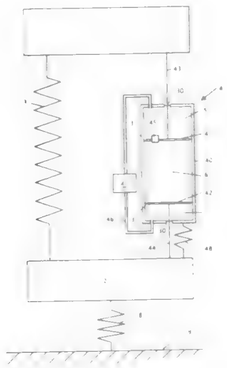
PCT No. PCT/SE91/00527, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO92/02382, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 9, 1991, Ser. No. 983,598

Claims priority, application Sweden, Aug. 10, 1990, 9002615

Int. Cl.[5] B60G *17/08;* **F16F** *9/50*

U.S. Cl. 188—378 **39 Claims**



1. A suspension system which is disposed between a first sprung mass and a second unsprung mass for reducing transfer of disturbing impulses from the second unsprung mass to the first sprung mass, the suspension system comprising:

first spring means for resiliently interconnecting the first and second masses in a force transmitting relationship;

a damping cylinder having a casing connected in parallel with the first spring means between the first and second masses;

second spring means for resiliently interconnecting the casing of the damping cylinder with the second unsprung mass;

the cylinder including first and second pistons having respective piston rods for connecting the first and second pistons to the first and second masses, respectively, the first and second pistons dividing the damping cylinder into first, second and third chambers, each of which accommodates damping fluid; and

flow actuating means for controlling replenishment and evacuation of damping fluid in each of the first, second and third chambers.

5,337,865

VISCOELASTIC SUBSTANCE AND OBJECTIVE LENS DRIVING APPARATUS WITH THE SAME

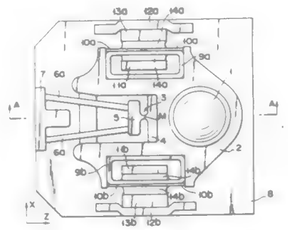
Akihiro Kasahara, Kawasaki; Akira Yamada; Takashi Yoshizawa, both of Yokohama; Katsutoshi Wada, Kawasaki, and Hideo Yamasaki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 442,578, Nov. 29, 1989, Pat. No. 5,206,762. This application Jan. 7, 1993, Ser. No. 1,648

Claims priority, application Japan, Dec. 1, 1988, 63-302203

Int. Cl.[5] F16F *7/08*

U.S. Cl. 188—378 **4 Claims**



1. A method using a viscoelastic substance including a viscoelastic material and magnetic particles dispersed therein, said method comprising the steps of:

arranging the viscoelastic substance between objects which are relatively displaced, while the viscoelastic substance is low in its viscosity;

after arranging, making the viscoelastic substance gel with a desired viscosity; and

applying a magnetic field to the viscoelastic substance made gel so as to absorb vibration of the objects.

5,337,866

DEVICE FOR MONITORING A FRICTION CLUTCH

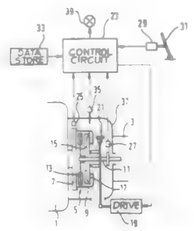
Winfried Stürmer, Euerbach, and Hans-Jürgen Drexl, Schonungen-Mainberg, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 27, 1991, Ser. No. 815,272

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1991, 4100091

Int. Cl.[5] B60K *41/02*

U.S. Cl. 477—175 **17 Claims**



1. A device for the monitoring of a friction clutch, particularly an automatized friction clutch of a motor vehicle, comprising

a) torque detection means for detecting data which represent at least approximatively the instantaneous torque developing at the clutch (**5**);

b) rotational speed sensors (**25, 27**) which supply data corresponding to the instantaneous input rotational speed of the clutch (**5**) and to the instantaneous output rotational speed of the clutch (**5**);

c) a temperature sensor (**35**) which detects the temperature of a component (**37**) of the clutch (**5**);

d) computer means (**23**) which, depending on the data of said torque detection means and of said rotational speed sensors (**25, 27**), compute successively with a predetermined time period data which represent at least approximately the instantaneous frictional performance of the clutch (**5**), and which adds up the frictional performance data for the determination of several frictional work mean values over several time intervals of different durations, wherein said computer means (**23**) compares the frictional work mean values each being determined in an individual one of said time intervals with the predetermined limit values associated with said time intervals and, in the event of the individual limit values being exceeded, produces exceed-indicating signals,

wherein a plurality of limit values is associated with each of said frictional work mean values, the magnitude of said limit values being a function of the clutch temperature, and wherein said computer means (**23**) produces said exceed-indicating signals depending on the clutch temperature detected and on the limit values predetermined for the detected clutch temperature.

5,337,867

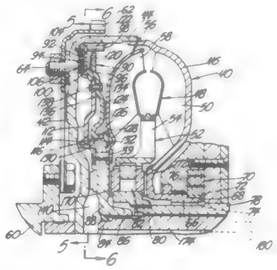
TORQUE CONVERTER HAVING A CONTINUOUS SLIP BYPASS CLUTCH WITH MULTIPLE FRICTION PLATES

Malcolm E. Kirkwood, Pollyanna, Mich., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jan. 13, 1993, Ser. No. 3,891

Int. Cl.[5] F16D *33/00*

U.S. Cl. 192—3.29 **1 Claim**



1. In a torque converter having a front cover and an interconnected pump casing having a pump impeller connected thereto and a turbine runner with an outer casing drivingly connected to an output hub and a clutch actuating piston rotatably mounted on said hub, the improvement comprising:

a continuously operative slip clutch assembly for coupling said front cover to said output hub for reducing the slip therebetween;

said slip clutch assembly including a splined ring on an inside diameter of the front cover and a first friction plate connected to said splined ring against rotation relative thereto; and a second friction plate and an inner plate radially aligned with said second friction plate for connecting said second friction plate to said hub for rotation therewith;

said piston operatively connected to said inner plate and responsive to operation of said torque converter to apply a pressure on said first and second friction plates whereby said front cover is connected to said hub through said second friction plate through a continuous slipping connection for increasing the efficiency of said torque converter and for partially damping engine disturbances inputed to said front cover;

said first friction plate having a friction liner on only one side thereof wherein this liner is adapted to be engaged with said second friction plate; said second friction plate having a friction liner on only one side thereof wherein this liner is adapted to be engaged with said front cover; said piston having a friction liner thereon adapted to be engaged with said first friction plate.

5,337,868

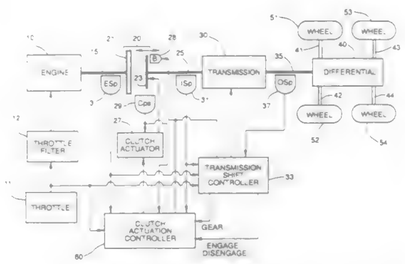
TOUCH POINT IDENTIFICATION FOR AUTOMATIC CLUTCH CONTROLLER

Chia H. Liu, Northville, and James M. Slicker, Union Lake, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 815,501, Jan. 2, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 126,107

Int. Cl.[5] B60K *41/02, 41/28*

U.S. Cl. 477—74 **26 Claims**



1. In a combination including a source of motive power having a predetermined idle speed, a source of motive power having a predetermined idle speed, a friction clutch for controllably transferring torque from the source of motive power to a clutch output shaft, a multi-speed transmission having an input shaft connected to the clutch output shaft and including a neutral position, at least one inertially-loaded traction wheel connected to the output shaft of the multi-speed transmission, and an automatic clutch controller for control of a degree of clutch engagement, a touch point determinator comprising:

a reference speed generator for generating a reference speed signal that corresponds to a predetermined fraction of idle speed of the source of motive power;

a transmission input speed sensor connected to the output shaft of the friction clutch for generating a transmission input speed signal corresponding to a rotational speed of the output shaft of the friction clutch;

an inertial brake selectively engagable for applying a predetermined braking torque to the output shaft of the friction clutch;

a clutch actuator connected to the friction clutch for controlling actuation of the friction clutch between disengaged and fully engaged according to a clutch engagement signal; and

a controller connected to said reference speed generator, said transmission input speed sensor, said inertial brake, said clutch actuator and said clutch engagement sensor including

an inertial brake engager for engaging said inertial brake during touch point determination when the source of motive power is idling and the multi-speed transmission is in neutral,

a first algebraic summer connected to said reference speed generator and said transmission input speed sensor generating a first algebraic sum signal corresponding to the difference between (1) said reference speed signal and (2) said transmission input speed signal,

VOL 1165 ISS 3 AG 16 1994 UMI

a compensator connected to said first algebraic summer for generating said clutch engagement signal for supplying to said clutch actuator for actuating the friction clutch to a degree to minimize said first algebraic sum signal, and

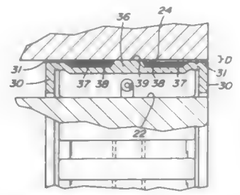
a decision logic unit connected to said reference speed generator, said transmission input speed sensor and said clutch engagement sensor for setting a clutch touch point signal equal to a measure of clutch engagement if said transmission input speed signal is within a predetermined amount of said reference speed signal when said inertial break is engaged and the multi-speed transmission is in the neutral position.

5,337,869

SPRAG RETAINER WITH ROTATIONAL RESTRAINT

Thaddeus F. Zlotek, Center Line, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 15, 1992, Ser. No. 991,021
Int. Cl.[5] F16D *41/07*
U.S. Cl. 192—45.1 **15 Claims**



6. A sprag retainer comprising:

a pair of generally cylindrical axial ends each centered about a common axis, and spaced along said axis, each said axial end extending radially inwardly towards said axis; and

a plurality of cross members extending axially and connecting said axial ends, at least some of said cross members having a central portion with an outer peripheral surface extending radially outwardly from said axis to a first radius, at least one of said axial ends having an outer peripheral surface extending radially outwardly from said axis to a second radius which is less than said first radius, and said cross members having arches on each axial side of said central portions, said arches connecting said central portions and said axial ends, said arches having outer peripheral surfaces spaced from said axis by a third radius which is less than said second radius;

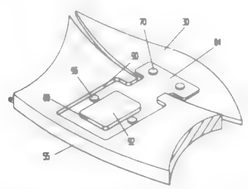
whereby said outer peripheral surface of said central portion is adapted to contact an outer race, and said outer peripheral surfaces of said axial ends are adapted to be spaced from said outer race.

5,337,870

CLUTCH DESIGN AND MANUFACTURE

Bill J. Hays, 15114 Adams St., Midway City, Calif. 92655

Filed Mar. 22, 1993, Ser. No. 35,281
Int. Cl.[5] F16D *13/64*
U.S. Cl. 192—70.14 **17 Claims**



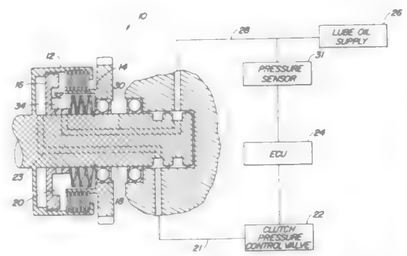
1. In an automotive clutch wherein a clutch disc having an outer periphery and opposite faces is carried on a drive shaft and supports an annular frictional surfaced member between a pressure ring and a flywheel, and including means to apply a compressive clamp load to clamp said disc between said ring and flywheel; the improvement thereof which comprises a friction ring shaped as a singlepiece annular ring having frictional surfaces surrounding said clutch disc and formed entirely of frictional material consisting of organic composite, non-metallic frictional material or metallic frictional material and supported thereon by support means secured about the periphery of said clutch disc, with said ring being of greater thickness than said disc and extending axially beyond the opposite faces of said disc to provide said frictional surfaces for engagement between said pressure plate and flywheel, and including resilient engagement means carried on the surface of said annular ring comprising at least one button of abrasion resistant frictional material received in a recess in a frictional surface of said ring and including resilient means biasing said button above said frictional surface of said annular ring.

5,337,871

CALIBRATION METHOD FOR TRANSMISSION CONTROL CLUTCHES

Michael D. Testerman, Dearing, Kans., assignor to Deere & Company, Moline, Ill.

Filed Oct. 18, 1993, Ser. No. 136,863
Int. Cl.[5] F16D *25/061*
U.S. Cl. 192—85 R **3 Claims**



1. In a powershift transmission having a pressure operated clutch pack for shifting the transmission, the clutch pack comprising a pair of clutch elements mounted on a shaft, one of the clutch elements being axially movable over the shaft into and out of engagement with the other clutch element, a piston axially movable over the shaft to move the one clutch element in response to a clutch control pressure, a lube system having a source of lubricating oil, a lube passage extending through the shaft for communicating lube oil to the clutch pack and a lube orifice in the piston, the lube orifice and the lube passage cooperating to prevent communication of lube oil to the clutch pack when the clutch elements are disengaged and to open communication of lube oil to the clutch pack when the clutch elements are engaged, a method of determining a parameter associated with initial engagement of the clutch elements comprising:

gradually modifying the parameter to gradually move the one clutch element into engagement with the other clutch element;

periodically sensing pressure in the lube oil passage and comparing the lube oil pressure to a reference pressure value; and

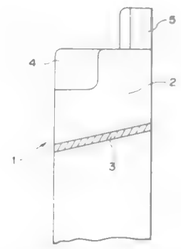
storing the parameter as a calibration value when the sensed lube oil pressure is equal to the reference pressure value.

5,337,872

SYNCHRONIZER RING

Osamu Kawamura, Tochigi, and Shigeo Murata, Sagamihara, both of Japan, assignors to Nippon Piston Ring Co., Ltd. and Nissan Motor Co., Ltd., Japan

Filed Jun. 19, 1992, Ser. No. 901,174
Claims priority, application Japan, Jun. 21, 1991, 3-150500
Int. Cl.[5] F16D *23/02, 69/02*
U.S. Cl. 192—107 M **10 Claims**



1. A synchronizer ring for synchronous sliding with and separating from an object member, comprising:

a ring body having a sliding surface for slidable contact with the object member; and

a flame-coated film formed on the sliding surface, said flame-coated film comprising a copper alloy having a Zn equivalent of 40 to 65 and a hardness (Hv) of 170 to 280.

9. A synchronizer ring for synchronous sliding with and separating from an object member, comprising:

a ring body having a sliding surface for a slidable contract with the object member; and

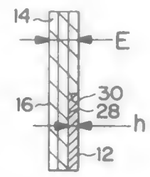
a flame-coated film formed on the sliding surface, said flame-coated film comprising a copper alloy having a Zn equivalent of 40 to 65 and 5 and 30 weight % ceramic material.

5,337,873

FRICTION LINER FOR A CLUTCH FRICTION PLATE HAVING A PLURALITY OF FRICTION LINERS, ESPECIALLY FOR A MOTOR VEHICLE

Jacques Thirion de Briel, Levallois-Perret, France, assignor to Valeo, Paris, France

Filed Mar. 24, 1992, Ser. No. 856,566
Claims priority, application France, Mar. 26, 1991, 91 03643
Int. Cl.[5] F16D *65/00, 13/64*
U.S. Cl. 192—107 R **3 Claims**



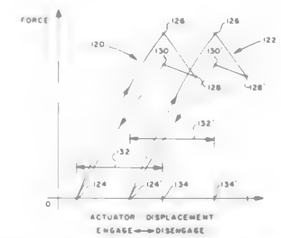
1. A friction liner for a clutch friction plate, comprising a metallic support plate and a pad of friction material overlaid on the support plate, the pad defining a working surface for contact with a pressure plate of a clutch and the support plate having a facing surface in contact with the pad, wherein said facing surface is smaller than said working surface and said working surface extends radially inside a radially innermost portion of said facing surface, and wherein the pad has a fixing surface in contact with said facing surface of the support plate, said fixing surface defining at least one rebate the depth of which is substantially equal to the thickness of the support plate, with the profile of the rebate corresponding substantially to a corresponding portion of the perimeter of the support plate enclosed therein, whereby the thickness of the friction liner is substantially constant.

5,337,874

METHOD/SYSTEM FOR DETERMINING CLUTCH TOUCH POINT

Jerry M. Oltean, Windsor, Canada, and William J. Mack, Clarkston, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 19, 1993, Ser. No. 35,124
Int. Cl.[5] F16D *13/75*
U.S. Cl. 192—111 A **14 Claims**



1. A method for determining an updated monitored control parameter value (134') indicative of an incipient engagement condition of a controlled vehicular master clutch (14), said method comprising;

at each occurrence of a predetermined event, performing a clutch calibration operation for determining initial values of said control parameter at clutch full engagement (124) and at clutch incipient engagement (134) and of the difference therebetween (132);

thereafter, determining said updated control parameter value (134') corresponding to incipient clutch engagement by (i) sensing a current value (124') of said control parameter at clutch full engagement and (ii) determining said updated control parameter value corresponding to incipient clutch engagement as a function of said current value (124') and said difference (132).

10. A control system for controlling a vehicular master friction clutch (14) as a function of a current clutch actuator (61) condition corresponding to clutch incipient engagement, said control system including sensors for providing input signals indicative of the condition of the actuator (61) and of the clutch (14), and means (30) for processing the signals according to predetermined logic rules and for issuing command output signals to at least said actuator, said actuator having a monitored variable parameter associated therewith which is determinative of the condition of said clutch, said system characterized by;

means for, at each occurrence of a predetermined event, performing a clutch calibration operation for determining on the basis of sensed inputs, initial values of said parameter indicative of actuator condition (i) at initial clutch fully engaged condition (124) and (ii) at initial clutch incipient engaged condition (134);

means for determining and memorizing the value (132) of the difference between said initial values; and for thereafter, (i) determining on the basis of currently sensed inputs the current value (124') of said parameter indicative of current clutch fully engaged condition, (ii) determining an updated value of said parameter (134') indicative of current clutch incipient engagement conditions as a function of said value (124') indicative of current clutch fully engaged condition and said difference (132) between initial values, and (iii) utilizing said updated value of said parameter indicative of current incipient engaged conditions to issue command outputs to said actuators.

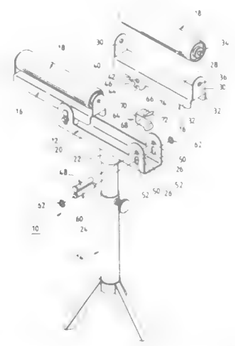
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,875

ROLLER TYPE MATERIAL RACK

Adolfo Lee, No. 1, Lane 96, Pin-Der Rd., Pei Tun Area, Taichung, Taiwan

Filed Apr. 9, 1993, Ser. No. 44,471
Int. Cl.[5] B65G *13/00*
U.S. Cl. 193—35 R 5 Claims



1. A roller type material rack comprising a base frame, two receiving mounts fastened respectively and symmetrically to said base frame, and two rollers pivoted respectively to said receiving mounts; wherein said receiving mounts are fastened to said base frame such that said receiving mounts can be turned for a predetermined angle and then located at said angle.

wherein said base frame has a frame body having a U shape in cross section and having a locating lug located at each of both ends of the longitudinal axis of said frame body; wherein said receiving mounts have a rectangular plate, two holding pieces extending vertically and respectively from both ends of the longitudinal axis of said rectangular plate, and two wings extending vertically and respectively from both ends of the short axis of said rectangular plate in a direction opposite to said holding pieces, with each of said wings having a semicircular lug provided with a plurality of notches corresponding to a plurality of angles, said semicircular lug being pivoted to said locating lug of each of said receiving mounts; and wherein said base frame further comprises a locating pin fastened to said locating lug such that said locating pin can be located at an upper position and that said locating pin can be moved away from said upper position, with said locating pin being inserted into one of said notches at such time when said locating pin is located at said upper position.

5,337,876

COUNTER-TOP VENDING MACHINE

Jeffrey S. McGee, San Diego; Joseph E. Fesi, Hopatcong, N.J., and John F. Murphy, San Diego, all of Calif., assignors to American District Enterprises, Inc., Parsippany, N.J.

Filed Apr. 30, 1993, Ser. No. 55,721
Int. Cl.[5] G07F *11/52*
U.S. Cl. 194—236 9 Claims

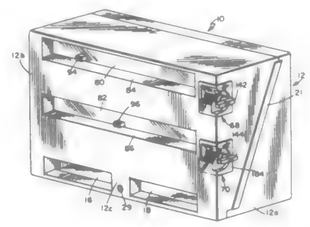
1. A vending machine, comprising:

a housing having a hollow interior and a manual retrieval opening;

a tray supported by the housing inside the interior thereof, the tray having a plurality of storage bins, each bin being dimensioned for receiving a plurality of items to be dispensed and having means for ejecting a single unit of the item therefrom including a helical coil and a first drive coupling connected to an end of the coil for rotating the coil about a horizontal axis;

manually operable coin means mounted to an exterior of the housing for receiving a predetermined number and size of coins to thereby permit a single actuation thereof through a predefined range of motion;

manually operable selector means mounted to the exterior of the housing for designating the item to be dispensed when moved into engagement with the ejecting means of a preselected one of the plurality of storage bins; and



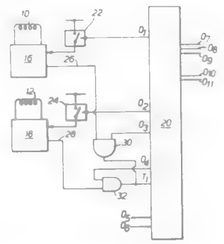
drive means coupled between the coin means and the selector means for enabling the predefined range of motion imparted by a single actuation of the coin means to actuate the ejecting means of the preselected one of the storage bins to thereby cause a single unit of the item stored therein to be dispensed to the manual retrieval opening of the housing.

5,337,877

COIN VALIDATORS

Timothy P. Waite, Escher Surrey, and Richard D. Allan, Reading Berkshire, both of United Kingdom, assignors to Mars, Inc., McLean, Va.

Continuation-in-part of Ser. No. 828,809, Feb. 27, 1992, abandoned. This application Jul. 31, 1992, Ser. No. 923,860
Claims priority, application United Kingdom, Jul. 28, 1989, 8917258.9
Int. Cl.[5] G07D *5/08*
U.S. Cl. 194—317 16 Claims



16. Coin validator apparatus comprising:

means for defining a path for conveying a coin travelling in edge first orientation, said path being sufficiently wide to permit the coin to adopt different positions in a direction transverse to the direction of the path;

first and second inductors positioned on respective sides of the path, the first and second inductors being operable to sense changes in the electromagnetic field caused by the passage of the coin between the inductors and to supply respective first and second inductor output values indicative of said changes;

store means for storing a plurality of different linear weighting data values;

scaling means for receiving the first and second inductor output values and for generating therefrom a plurality of linearly weighted sum values corresponding to the sum of the first inductor output value multiplied by a first stored weighting value and the second inductor output value multiplied by a second stored weighting value; and

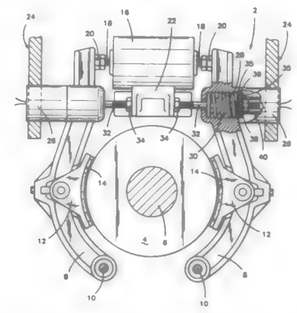
windowing means for testing each of said linearly weighted sum values against the respective acceptance window.

5,337,878

ASSEMBLY AND METHOD FOR ADJUSTING BRAKE FORCE FOR PASSENGER CONVEYOR EMERGENCY BRAKE

Martin Mehlert, Nienstaedt, and Hans E. Engel, Apelern, both of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 28, 1993, Ser. No. 174,115
Int. Cl.[5] B65G *43/00*
U.S. Cl. 198—323 7 Claims



1. An emergency brake assembly for use in a passenger conveyor system having a main drive electric motor for supplying motive power to the conveyor system, said brake assembly comprising:

a) disc/drum means keyed to a main power shaft which is rotated by said drive motor;

b) brake arm/shoe assemblies associated with said disc/drum means and movable between braking positions wherein said power shaft is disabled from supplying motive power to the conveyor system, and non-braking positions wherein said power shaft is able to supply motive power to the conveyor system;

c) spring means operable to apply a spring force to said brake arm/shoe assemblies to bias the latter toward said braking positions;

d) retention means operable to hold said brake arm/shoe assemblies in said non-braking positions;

e) a controller for selectively operating said brake assembly;

f) force adjusting means operably connected to said spring means, said force adjusting mass being operable to act on said spring means to selectively increase and decrease said spring force, said force adjusting means being connected to and regulated by said controller;

g) current sensor means for sensing current required by said main drive motor to operate the conveyor system at any particular time, said current sensor means being connected to said controller and operable to transmit conveyor passenger load signals to said controller which are derived from ongoing drive motor current requirements; and

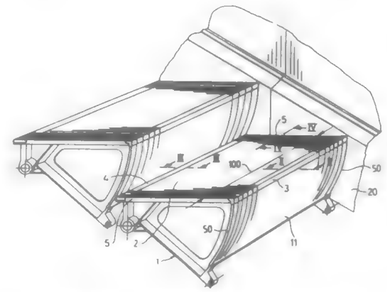
h) said controller being operable to manipulate said force adjusting means in response to changes in said passenger load signals during passenger conveying operation of the conveyor system.

5,337,879

TREAD ELEMENT FOR MOVING PAVEMENT OR ESCALATOR

Moritz Fischer, Engelberg, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Continuation of Ser. No. 876,895, Apr. 29, 1992, abandoned, which is a continuation of Ser. No. 759,935, Sep. 16, 1991, abandoned, which is a continuation of Ser. No. 240,084, Sep. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 767,604, Aug. 20, 1985, abandoned. This application Dec. 22, 1992, Ser. No. 995,322
Claims priority, application Switzerland, Aug. 21, 1984, 3995/84
Int. Cl.[5] B66B *23/12*
U.S. Cl. 198—333 25 Claims



1. In combination, a movable tread element having a tread plate with an upper passenger support surface and a nosing comprising:

a) an outer longitudinal edge portion having a hook at a lower most end for engaging below an outside edge of such tread plate;

b) inner securing portions interlocking with and securing the nosing to the tread plate near an inner longitudinal edge of the nosing;

c) additional securing means between said inner longitudinal edge and outer longitudinal edge portion of the nosing and passing through such tread plate to secure the nosing against movement; and

d) said nosing defining an element edge portion having an upper support surface aligned with and forming an extension of said passenger support surface to provide an extension thereof.

5,337,880

ARTICLE STORAGE CAROUSEL WITH AUTOMATIC CONVEYOR LOADING AND UNLOADING

Bruce A. Claycomb, Ortianville, and Keith G. Opperthauser, Linden, both of Mich., assignors to Automated Systems, Inc., Auburn Hills, Mich.

Filed Jul. 23, 1993, Ser. No. 97,371
Int. Cl.[5] B65G *1/00*
U.S. Cl. 198—347.3 17 Claims

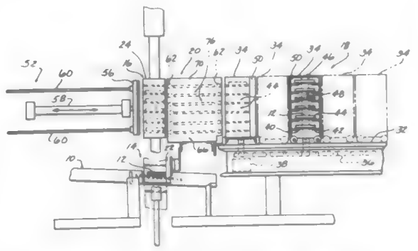
1. An article storage carousel with automatic conveyor loading and unloading comprising:

conveyor means for transporting articles along a fixed path between an upstream location and downstream location;

vertical carriage means for accumulating a plurality of arti-

VOL 1165 ISS 3 AG 16 1994 UMI

cles for subsequent transfer to a temporary storage location; and



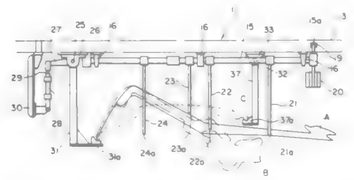
storage carousel means for receiving said plurality of articles and for storing said articles temporarily subsequent to discharge of said articles to said conveyor means.

5,337,881

OVERHEAD WORK SUSPENSION CONVEYOR

Takuya Kakida, Kurashiki; Noriyuki Inoue, Okayama; Shoichi Okada, Kurashiki; Yoshiki Nakamura, Kurashiki; Wakaharu Ikeda, Kurashiki; Akira Mikami, Kurashiki; Akiyoshi Kimura, Kurashiki; Masayuki Aihara, Kurashiki; Hisashi Fujiwara, Tamano, and Yuji Watanabe, Okayama, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Dec. 21, 1992, Ser. No. 993,781
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—409 . **9 Claims**



1. An overhead work suspension conveyor, comprising:

a traverser main body disposed for reciprocation between a lower position and a higher position;

plural spindles turnably supported relative to the traverser main body;

plural work support members fixed at upper ends thereof on the spindles and having work supports at lower ends thereof, said work supports being turnable respective to turning of the corresponding spindles to support a piece of work at an outer periphery thereof, wherein the plural work support members are hangar arms having different lengths; and

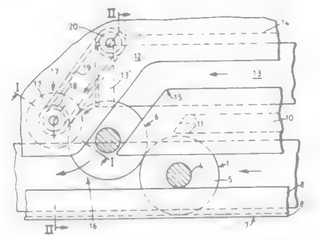
spindle drive means arranged on the traverser main body and adapted to selectively turn the spindle depending on the kind of the work piece.

5,337,882

TRANSPORT SYSTEM FOR MUTUALLY INDEPENDENT CADDIES

Helmut Kohlen, Erkelenz; Helmuth Hensen, and Karl-Heinz Floh, both of Mönchengladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,689
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206406
Int. Cl.[5] B65G *47/12*
U.S. Cl. 198—452 **6 Claims**



1. A transport system for mutually independent caddies carrying bobbins or bobbin tubes and having base plates, comprising:

one transport path,

another transport path entering said one transport at a converging point,

moving surfaces for carrying the caddies along said transport paths by frictional engagement, with the caddies standing on the base plates,

at least one additional contact surface disposed at said converging point, for touching a caddy passing through said converging point and imposing an additional motion component upon the caddy; and

transport channels carrying the caddies along said transport paths, one of said transport channels being widened and having an outwardly decreasing height upstream of said converging point, for pressing a caddy being deflected outwardly due to another caddy simultaneously arriving at said converging point from the other of said transport channels, more strongly against said moving surface and reinforcing a driving force in a peripheral region of said moving surface.

5,337,883

RAIL FOR CONVEYOR FOR TRANSPORTING GOODS HANGING ON HANGERS

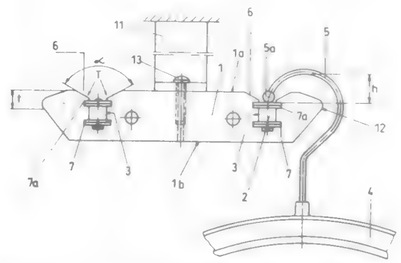
Walter Kuhlmann, Lage, Fed. Rep. of Germany, assignor to Dürkopp Adler AG, Fed. Rep. of Germany

Filed Mar. 2, 1993, Ser. No. 25,166
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1992, 4207238
Int. Cl.[5] B65G *17/32*
U.S. Cl. 198—465.4 **5 Claims**

1. A rail for a conveyor for transporting goods hanging on hangers, the conveyor comprising pulling means which travels in the rail with the tips of the hanger hooks supported on the pulling means, the rail comprising:

a channel formed in the rail, the pulling means being a roller chain, the roller chain having a cross-sectional shape matching that of the channel and thereby being guided directly by inwardly facing surfaces of the channel;

the channel being recessed with respect to an upward-facing surface of the rail which faces the hanger hooks, the channel opening upward toward the exterior of the rail to form a generally V-shaped or conically opening groove;



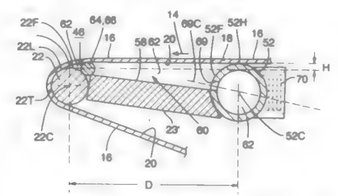
the rail having a cross-section which is at least approximately trapezoidal and thereby is broader toward a top of the trapezoid than at the bottom thereof.

5,337,884

LUBRICATION SYSTEM FOR A CONVEYOR BELT

Philip L. Hoffman, Medford, and Richard J. Signorello, Grants Pass, both of Oreg., assignors to Simco/Ramic Corporation, Medford, Oreg.

Filed Aug. 9, 1993, Ser. No. 105,313
Int. Cl.[5] B65G *45/02*
U.S. Cl. 198—500 **19 Claims**



1. An inspection system operable to determine characteristics of articles in motion through an inspection region according to automated analysis of optical characteristics of the articles and to treat in a treatment region selected ones of the articles determined to have predetermined optical characteristics, comprising:

a turning element disposed adjacent the treatment region and having first and second ends, a turning surface, a free surface, and a top;

a conveyor belt operable to cause the articles to move through the treatment region, the belt having an outer surface for supporting the articles and an inner surface in contact with the turning surface, the contact beginning along a contact line;

a plurality of barriers defining, with the free surface, a reservoir to contain a lubricant and that extends the width of the turning element, the barriers having respective tops at least a first distance above the top of the turning element; and

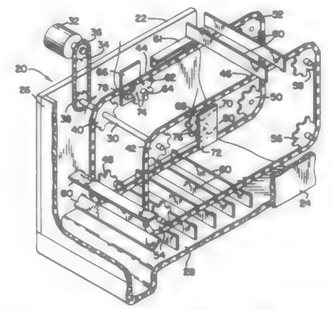
means for supplying a lubricant to the reservoir in sufficient quantity to fill the reservoir to above the top of the turning element, and to replace lubricant entrained between the inner surface and the turning surface during operation of the system, so that the contact line is and remains submerged in the lubricant, whereby the inner surface and the turning surface are in contact with the lubricant along the contact line.

5,337,885

ALIGNMENT MONITOR AND METHOD

Robert L. Mills, Chalfont; John C. Lodholz, Doylestown, both of Pa.; Rangasami Sarat-Chandra, Pleasanton, Calif.; Franklin P. Orlando, Morgan Hill, Calif., and Donald J. Christian, Fremont, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 31, 1993, Ser. No. 41,437
Int. Cl.[5] B65G *43/00*
U.S. Cl. 198—502.4 **5 Claims**



1. A travel monitor for a rectangular sludge conveyor having a plurality of scrapers attached to and driven by a pair of chains, each of which is formed in a closed loop having an upper run; said monitor comprising:

a pair of detector sprockets independently engaging and driven by said chains;

means for creating a series of pulses in response to the rotation of each of said pair of sprockets;

means for detecting the phase difference between said series of pulses; and

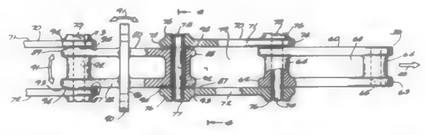
means for energizing a first misalignment alarm when said phase difference exceeds a predetermined amount.

5,337,886

CHAIN WITH SELF ALIGNING FLIGHT SUPPORT LINKS

Roy C. Anderson, Shorewood, and James W. Leege, Greendale, both of Wis., assignors to Rexnord Corporation, Milwaukee, Wis.

Filed Jun. 4, 1993, Ser. No. 72,479
Int. Cl.[5] B65G *19/00*
U.S. Cl. 198—728 **9 Claims**



1. A chain and flight conveyor apparatus comprising:

a pair of spaced parallel chains each including a plurality of block links, each block link having spaced apart ends each of which has a bore therethrough of a first diameter; a plurality of connecting links, each connecting link having spaced apart ends each of which has a bore therethrough; at least one flight attachment link in each chain, each flight attachment link having a flight attachment support and longitudinally spaced leading and trailing ends each of which has a bore therethrough; and a plurality of pivot pins mounted in said bores in said block links, connecting links, and flight attachment links and articulatively joining connecting links with block links and flight attachment

VOL 1165 ISS 3 AG 16 1994 UMI

links to form said chain, said flight attachment links being pivotally connected between adjacent connecting links of said chain, said bores through each of said leading and trailing ends each having a second diameter sufficiently larger than the pivot pin on which it is mounted to allow said flight attachment link to cant relative to said straight line of travel for self alignment of said flight attachment link in response to force thereon, said bore through said leading end of said flight attachment link being separate from said bore through said trailing end of said flight attachment link, said second diameter being greater than said first diameter, and said spaced parallel chains being indexed to place said flight attachment links in one of said chains in laterally opposed relation to said flight attachment links in the other of said chains; and

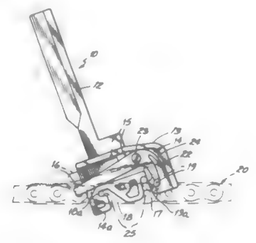
a flight member connected to extend transversely between said transversely opposed flight attachment links of said spaced parallel chains.

5,337,887

QUICK-DISCONNECT LUG FOR A CARTONING MACHINE

Joseph D. Greenwell; Robert M. Kalany, both of Florence, and John M. Paselsky, Ft. Mitchell, all of Ky., assignors to R. A. Jones & Co. Inc., Covington, Ky.

Filed Feb. 19, 1993, Ser. No. 20,200
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—803 **14 Claims**



1. A quick-disconnect lug for positioning cartons on a chain conveyor of a cartoning machine, said lug comprising:

a base means for attaching said lug to said chain conveyor on said cartoning machine;

recess means in said base for receiving studs extending from said chain conveyor means;

spring-biased latch means attached to said base means for locking at least one of said studs in a recess means;

said latch means being independent from said recess means and,

canon engaging lug members extending from said base means for carrying said cartons through said cartoning machine.

5,337,888

CONTACT LENS CASE

Robert J. Morrison, Morrison Associates, Green and Division Sts., Harrisburg, Pa. 17105

Filed Sep. 1, 1993, Ser. No. 114,155
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—5.1 **7 Claims**

1. A package for a contact lens comprising

a cup-shaped bottom portion having a transparent bottom wall,

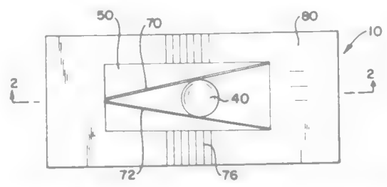
a transparent cover secured to said cup-shaped bottom portion,

a protective storage solution in said cup-shaped bottom portion,

a contact lens in said solution,

wall means in said package for providing a measurement of the diameter of said lens and of the diameters of a plurality of different contact lenses while in said package, and

marking on said package in operative relation with said wall means to provide a dimensional indication of the diameter of a lens inside said package.



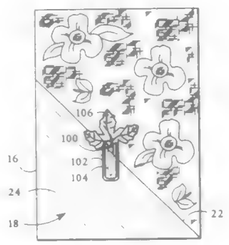
said lens inside said package being inspectable through said cover and through said transparent bottom wall to determine its characteristics and general condition.

5,337,889

DUAL POCKET DISPLAY FOLDER FOR SHEET MATERIAL

Michael L. F. Chan, 1407 Arch St., Berkeley, Calif. 94708

Filed Jul. 14, 1993, Ser. No. 92,253
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—215 **13 Claims**



1. A display package comprising:

a sheet material item;

a substantially rigid panel having opposed major surfaces and a peripheral edge for reinforcing the sheet-material item;

a rectangular folder having at least one pocket for reception of the sheet-material item and reinforcing panel, said pocket having a front outside surface and a substantially upward facing opening with a diagonally oriented front edge, the area bounded by said pocket being substantially smaller than the surface area of said reinforcing panel,

whereby a diagonally bordered portion of said sheet-material is displayed by said package,

wherein said sheet-material has a patterned surface and said folder has a uniformly colored surface,

said display package further comprising a decorative object affixed to the front outside surface of said pocket,

wherein said decorative object and said front pocket surface are connected with a ribbon material,

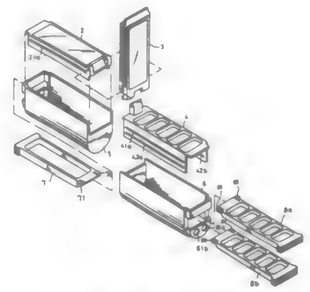
wherein said decorative object is removably attached.

5,337,890

CYLINDRICAL VANITY CASE

Chin-Chun Lai, No. 21, Pu Ting Rd., Shinchu Shiang, Taiwan

Filed Aug. 18, 1993, Ser. No. 108,343
Int. Cl.[5] B65D *69/00;* **A45D** *33/20, 42/00*
U.S. Cl. 206—235 **1 Claim**



1. A cylindrical vanity case comprising:

a left inner frame having a receiving slot located in a top portion thereof and having two opposing side walls, each wall being provided with a slide groove;

a mirror frame having a first side provided with a mirror slot and a second side provided with a receiving slot;

a right inner frame having a receiving slot located in a top portion thereof and having two opposing side walls, each wall being provided with a slide groove;

said mirror frame being disposed between said left inner frame and said right inner frame such that said left inner frame, said mirror frame, and said right inner frame are pivotally attached to a common axis of rotation by means of coaxial holes located on a bottom end of each of said left inner frame, said mirror frame, and said right inner frame;

a left case body with an insertion slot located at a top portion thereof, said left case body being fastened to said left inner frame;

a right case body fastened to said right inner frame and provided with a pair of insertion slots;

a tool drawer slidable with tabs on an inner end thereof, said tabs fitting into said slide grooves of said left inner frame, thereby making the tool drawer slidable into and out of said left case body along said slide grooves of said left inner frame;

a plurality of powder drawers each with tabs on an inner end thereof, said tabs fitting into said slide grooves of said right inner frame, thereby making the powder drawers slidable into and out of said right case body along said slide grooves of said right inner frame; and

a case cover shielding said left case body, said right case body and said mirror frame.

5,337,891

WATER AND DIRT PROTECTIVE, CAMCORDER, SHOOTING CASE

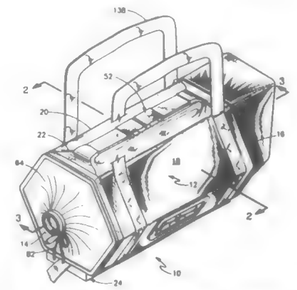
John B. Toth, 6012 Yarrow St. #B15, Arvada, Colo. 80004

Continuation-in-part of Ser. No. 783,168, Jan. 14, 1992, abandoned. This application Dec. 16, 1972, Ser. No. 991,312
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—316.2 **20 Claims**

1. A case for receiving a camcorder and for allowing outdoor shooting while substantially minimizing damage from adverse environmental elements comprising:

a. an enclosure, the enclosure comprising an outer structure for substantially encapsulating the camcorder to effect minimizing damage from adverse environmental elements and from harmful shock and impact from external objects; said outer structure comprising a water and snow resistant, a dirt and dust protective, and a shock and impact protective material to said effect the minimization of damage; said enclosure allowing camcorder shooting with the camcorder reposed within said enclosure;

b. said enclosure including interconnected folding end frames and tension members for allowing said enclosures to be adjustable from a collapsed, flexible, folded arrangement to an erect and substantially tensioned, semi-rigid arrangement to effect minimizing an enclosed camcorder from said damage;



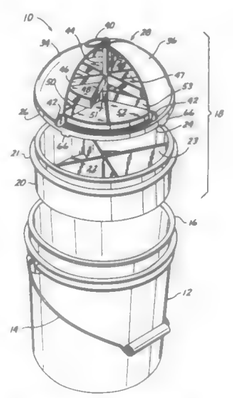
c. said enclosure having a mounting means interconnected with said end frames, tension members and outer structure so as to allow said outer structure to be suitable for use with a plurality of different camcorders having different physical sizes, formats and positioning of camcorder controls.

5,337,892

TACKLE BOX AND ASSEMBLY

Eugene J. Zaffina, 3663 Rawhide St., Las Vegas, Nev. 89120

Filed Mar. 1, 1993, Ser. No. 24,615
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—315.11 **6 Claims**



1. A tackle box adapted for mounting in a portable container having a generally horizontal opening when said container is in an upright position, comprising in combination:

a. an axle and a mounting means comprising a generally circular rim connected to said axle

b. an upper tray assembly comprising a first upper circular tray defining a complete circular periphery rotatably mounted on said axle, and a generally circular second

VOL 1165 ISS 3 AG 16 1994 UMI

upper tray having at least one compartment therein rotatably mounted on said axle above said first upper circular tray and having a significant part thereof deleted to expose at least portions of said first tray upper to vertical access through said second tray, for receiving implements and for moving said implements to an accessible position; and,

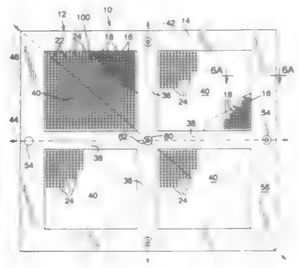
c. covering means connected to said upper tray means and said mounting means, for selectively covering said upper tray assembly, comprising a generally semispherical lid means for opening and closing said covering means comprising a first half of a generally semispherical shell rotatably mounted to said axle and a second half of a generally semispherical shell connected to said axle and positioned to receive said first half of the generally semispherical shell when said second shell is rotated about said axle to expose portions of said first and said second upper trays to accessible positions.

5,337,893

HIGH CAPACITY CARRIER PLATE

Robert B. Nami, San Diego; Edward A. Hamrick, Escondido; Jakob Herrmann, Carlsbad, and Angelo M. Mitchell, San Marcos, all of Calif., assignors to Electro Scientific Industries, Inc., Portland, Oreg.

Filed Jul. 22, 1992, Ser. No. 918,423
Int. Cl.[5] B65D *73/02*
U.S. Cl. 206—329 **30 Claims**



1. A carrier plate comprising:

a generally rigid, planar framework including a perimeter portion, an interior portion, and a structural rib dividing the interior portion into at least two discrete component receiving portions, each of the discrete component receiving portions having multiple component passageways; and

a layer of resilient material arranged generally parallel to the component receiving portions of the framework, the resilient material having multiple component apertures that are collinear with respect to passageways of the component receiving portions to receive components and resiliently hold them.

5,337,894

MULTI-VESSEL RECEPTACLE FOR LAPAROSCOPIC INSTRUMENTS

Troy D. Ivey, 1825 N. Harrison Rd., East Lansing, Mich. 48823

Filed Apr. 30, 1993, Ser. No. 54,254
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—370 **14 Claims**

1. A sterilizable multi-vessel receptacle for removably receiving laparoscopic instruments comprising a removable internal vessel assembly and an exterior enclosure completely surrounding said internal vessel assembly to maintain internal sterility;

said internal vessel assembly comprising a plurality of hollow vessels adapted to each receive a laparoscopic instrument and retaining means for retaining said plurality of hollow vessels together as a unit for use thereof in an operating room during surgical procedures;

each of said hollow vessels having an open top end and a closed bottom end, and

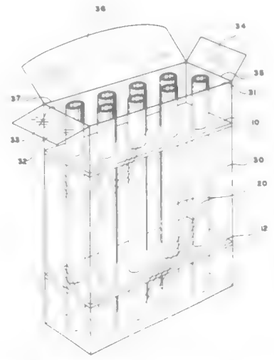
said retaining means comprising a pair of spaced, planar surfaces adapted to rigidly retain each of said vessels in a substantially upright position;

said enclosure having sides, a bottom region, and a removably covered top access;

said internal vessel assembly contained in said enclosure such that said open top ends of each of said hollow vessels are accessible through said top access when uncovered;

said plurality of hollow vessels contactable with said bottom region of said enclosure such that said internal vessel assembly is restable on said bottom region of said enclosure through said plurality of hollow vessels.

9. A multi-vessel receptacle for laparoscopic instruments comprising an internal vessel assembly and an enclosure;



said internal vessel assembly comprising a plurality of hollow vessels and retaining means for retaining said plurality of hollow vessels;

each of said hollow vessels having an open top end and a bottom end, and

said retaining means adapted to rigidly retain each of said vessels in a substantially upright position;

said enclosure having a bottom region and a top access;

said internal vessel assembly contained in said enclosure such that said open top ends of each of said hollow vessels are accessible through said top access;

said plurality of hollow vessels contactable with said bottom region of said enclosure such that said internal vessel assembly is restable on said bottom region of said enclosure through said plurality of hollow vessels,

further comprising attachment means for attaching the multi-vessel receptacle to an external point;

said attachment means being located on said enclosure, and said attachment means being a clip.

5,337,895

PROTECTIVE END CAP FOR PAPER ROLLED ON A TUBE

Roman Mitelman, Memphis, Tenn., and Gary B. Smith, Olive Branch, Miss., assignors to Cleo, Inc., Memphis, Tenn.

Filed Dec. 3, 1992, Ser. No. 985,614
Int. Cl.[5] B65D *85/671*
U.S. Cl. 206—416 **36 Claims**

1. An end cap for insertion into the end of a tube of rolled sheet material to protect and contain the edges of the sheet material comprising:

a central panel having a plurality of substantially straight outer sides;

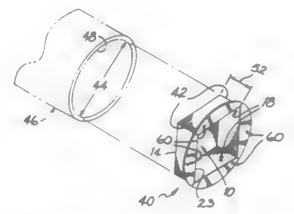
a plurality of intermediate panels, each having an inner side hingedly attached to an outer side of the central panel and each intermediate panel folded along its inner side to extend substantially perpendicular to the central panel, the intermediate panels each having an outer side substantially parallel to the inner side thereof and having opposing free sides, the intermediate panels collectively forming a tubular section with the free sides of adjacent intermediate panels confronting each other to define longitudinal edges of the tubular section;

a plurality of outer panels each having an inner side and a free outer side, each outer panel hingedly attached along its inner side to an outer side of an intermediate panel, and being folded outwardly along its inner side such that the entire outer panel extends substantially perpendicular to its associated intermediate panel and parallel to the central panel in a plane spaced from the central panel;

whereby when the central and folded intermediate panels forming the tubular section are inserted into the end of a tube, the longitudinal edges of the tubular section are coincident with the inner wall of the tube to frictionally secure the end cap therein and reinforce the ends of the tube, and the outwardly folded outer panels are disposed adjacent the tube end to contain and protect the exposed edges of sheet material rolled on the tube.

23. A flat blank to be folded into an end cap for insertion into the end of a tube of rolled sheet material to protect and confine the edges of the sheet material comprising:

a central panel with a plurality of substantially straight outer sides;



a plurality of intermediate panels having opposing free sides, each intermediate panel having an outer side and an inner side substantially parallel the outer side, wherein the inner side is hingedly attached to an outer side of the central panel so as to be folded therealong essentially perpendicular to the central panel to collectively form a tubular section with longitudinal edges formed by confronting free sides of adjacent intermediate panels; and

a plurality of outer panels each having an inner side and an outer side, each outer panel hingedly attached along its inner side to an outer side of an intermediate panel, so as to be folded substantially perpendicular to the intermediate panel and substantially parallel to the central panel;

the outer panels each contain opposing marginal sections, the marginal sections of adjacent outer panels confronting each other when the outer panels are folded substantially parallel to the central panel so that the outer panels collectively form a continuous annular lip around the periphery of the end cap to completely contain and protect the exposed edges of the rolled sheet material.

29. A method of protecting and containing the edges of a roll of sheet material rolled onto a tube with opposing ends and an inner wall comprising the steps of:

a) providing a blank comprising a central panel with two face surfaces and a plurality of substantially straight outer sides, a plurality of intermediate panels each with opposing free sides, an inner side and an outer side, each intermediate panel having an inner side hingedly attached to an outer side of the central panel, and a plurality of outer panels each having an inner side and an outer side, each outer panel hingedly attached along its inner side to an outer side of an intermediate panel;

b) folding each intermediate panel at its inner side towards one face surface of the central panel so that the intermediate panels extend substantially perpendicular to the central panel;

c) aligning adjacent intermediate panels with each other so that the free sides of adjacent intermediate panels confront each other to collectively form a tubular section having longitudinal edges at the corners of the central panel;

d) inserting the tubular section into an end of the tube so that the longitudinal edges frictionally engage the inner wall of the tube to protect the edges of the roll of sheet material and to reinforce the end of the tube;

e) folding each outer panel at its inner side in a direction outwardly from the central panel so that each outer panel extends substantially perpendicular to its associated intermediate panel and parallel to the central panel; and

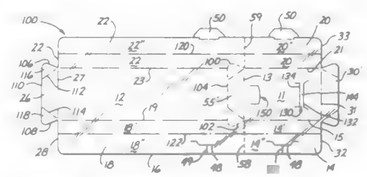
f) positioning the outer panels to collectively form an annular lip around the tube end to contain and further protect the exposed edges of sheet material rolled on the tube.

5,337,896

SPECIMEN PACKAGE

Abner Levy, 325 N. Oakhurst Dr., P4, Beverly Hills, Calif. 90210

Continuation-in-part of Ser. No. 706,890, May 29, 1991, Pat. No. 5,176,257, which is a continuation-in-part of Ser. No. 552,332, Jul. 13, 1990, Pat. No. 5,050,735. This application Dec. 2, 1992, Ser. No. 984,903
Int. Cl.[5] B65D *85/48*
U.S. Cl. 206—456 **25 Claims**



1. A specimen package for containment of a medical specimen slide, said package comprising:

a sheet of package material having a base portion, panel means joined to said base portion, and latching means for holding said panel means in a packaged condition;

slide retaining means in said base portion, said retaining means comprising two cuts, said cuts each having a central portion intermediate opposite end portions of the cut, said central portions of said cuts being spaced apart to define a retaining band integral with said base portion, said end portions of one of said cuts being oriented away from said end portions of the other of said cuts to define two tabs having free ends extending towards each other and separated by said retaining band, said tabs yielding to admit a medical specimen slide on said base portion under said retaining band.

9. A specimen package assembly for containment of a specimen strip, said package assembly comprising:

a sheet of package material having a base portion, a plurality of side panels and end panels joined to said base portion, and latching means for holding all said panels in packaged condition; and

retaining means on said sheet for holding a specimen strip to said base portion;

each end panel having two side edges extending from said base portion to a free edge of said end panel, two corner portions each corner portion being defined by a respective fold line diagonal to both said side edges and said free edge and a central portion defined between said corner portions and between said free edge and a first fold line

VOL 1165 ISS 3 AG 16 1994 UMI

joining said end panel to said base portion, each corner portion being foldable along its diagonal fold line for placing the length of said side edges against second fold lines joining said side panels to said base portion such that said corner portions are supported by said side panels against spreading apart and flattening onto said base and said center portion and side panels are supported away from contacted with a specimen strip held to said base portion in said packaged condition.

5,337,897

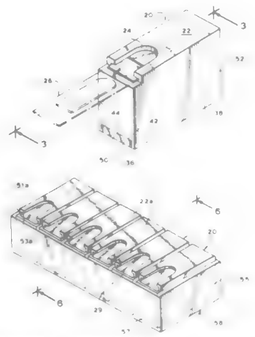
SAMPLER CARTRIDGE DISPLAY CASE AND UNIT SAMPLER

Gerald Yablans, #4 Sycamore Dr., Port Washington, N.Y. 11050

Continuation of Ser. No. 555,521, May 21, 1990, abandoned. This application Feb. 25, 1993, Ser. No. 24,842

Int. Cl.[5] A45D *40/00*

U.S. Cl. 206—581 **6 Claims**



1. In combination, a substantially enclosed receptacle forming a dispenser, a plurality of discrete stacked samplers within said dispenser, said stacked samplers each having forward and rearward ends and being slidably removable one by one from said dispenser, the ends of each of said samplers being unconnected to the ends of adjacent samplers in the stack said dispenser having an opening overlying said forward ends only of said samplers stacked therein, each said sampler comprising a flat elongated base with a top and bottom surface, a depression formed in the top surface of said base, a cover slip overlying and extending beyond said depression, said cover slip being releasably secured to said top surface of said base around said depression in sealing relationship to enclose said depression, said base being formed with a roughened surface area on said top surface at said forward end thereof, said roughened surface underlying said opening in said dispenser and comprising means for frictional engagement to supply purchase to slide said sampler from said dispenser.

5,337,898

METHOD FOR PROCESSING VEGETABLE, FRUIT AND GARDEN WASTE

Bertus V. M. Hamelers, Heelsum, and Johan A. Woelders, Twello, both of Netherlands, assignors to N.V. Vuilafvoer Maatschappij Vam, Amsterdam, Netherlands

Filed Apr. 23, 1993, Ser. No. 51,240

Claims priority, application Netherlands, Apr. 24, 1992, 9200751

Int. Cl.[5] B03B *7/00*; **C05F** *11/08*

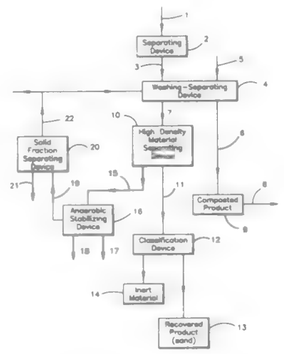
U.S. Cl. 209—10 **3 Claims**

1. A method for processing vegetable, fruit and garden waste, referred to as VFG-waste, comprising:

delivering VFG-waste into a washing-separating device which divides the waste, with the aid of water, into a coarse organic fraction and a finer residual fraction;

compositing the coarse organic fraction;

separating an inert fraction from said finer residual fraction;



classifying said inert fraction into a first, inert material fraction and a second, product fraction; and

subjecting said finer residual fraction to an anaerobic stabilization.

5,337,899

HYDROCYCLONE PLANT

Roine Andersson, Järfälla, and Lars-Göran Rundqvist, Tumba, both of Sweden, assignors to Celleco-Hedemora AB, Stockholm, Sweden

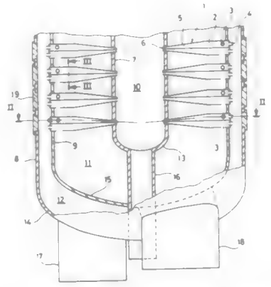
PCT No. PCT/SE91/00803, § 371 Date May 5, 1993, § 102(e) Date May 5, 1993, PCT Pub. No. WO92/09371, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 26, 1991, Ser. No. 50,188

Claims priority, application Sweden, Nov. 26, 1990, 9003746-6

Int. Cl.[5] B04C *5/28*

U.S. Cl. 209—728 **4 Claims**



1. A hydrocyclone plant for separating a liquid mixture into a heavy fraction and a light fraction, said plant comprising:

a multiplicity of elongated hydrocyclones arranged in groups of at least two hydrocyclones, each group of hydrocyclones being made in a single piece, each hydrocyclone having an elongated separation chamber with two opposite ends, at least one inlet for a liquid mixture to be separated, a light fraction outlet at one end of the separation chamber for a light fraction and a heavy fraction outlet at the other end of the separation chamber for a heavy fraction, and

walls defining a cylindrical heavy fraction space communication with the heavy fraction outlets, an annular inlet space extending concentrically around said heavy fraction space and communicating directly with the inlets of the hydrocyclones, and an annular light fraction space extending concentrically around said annular inlet space and communicating with the light fraction outlets, each hydrocyclone extending substantially radially in said annular inlet space,

said groups of hydrocyclones being distributed around the circumference of the cylindrical heavy fraction space and being spaced from one another in said annular inlet space to allow said liquid mixture to flow between adjacent groups of hydrocyclones.

5,337,900

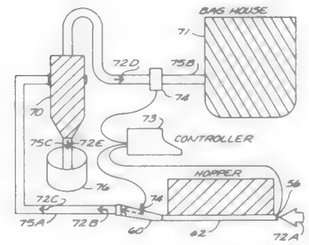
FLOOR RECOVERY HOPPER AND SYSTEM THEREWITH

Kenneth E. Abbott, and Patrick J. Lyons, both of Tucson, Ariz., assignors to Stripping Technologies, Inc., Tucson, Ariz.

Filed Mar. 30, 1993, Ser. No. 39,878

Int. Cl.[5] B07B *1/28*

U.S. Cl. 209—257 **25 Claims**



1. A floor recovery hopper comprising:

a) a housing member having a first, second, third, and fourth walls extending vertical to a horizontal base plate, said first wall being shorter than the second, third, and fourth walls, said second and fourth walls having orifices in close proximity to said base plate, a top portion of said housing member being open;

b) a channeling member having a series of ridges and valleys, said channeling member interposed within said housing member such that said ridges run from said second wall to the fourth wall and wherein said valleys are above the orifices in said second and fourth walls, said valleys having a series of drop orifices;

c) a screen member extending over the entirety of a top opening; and,

d) a ramp member extending from a plane in line with said base plate to the top of said first wall.

5,337,901

PROCESS FOR SCREENING GRANULES

Dean A. Skaer, Little Rock, Ark., assignor to Minnesota Mining and Manufacturing Company, St Paul, Minn.

Filed Feb. 14, 1992, Ser. No. 836,068

Int. Cl.[5] B07B *1/28, 13/00*

U.S. Cl. 209—315 **5 Claims**

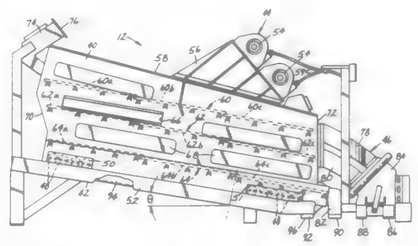
1. A process of sorting roofing grade granules having a bulk density of between 60 and 120 lbs./ft.^{3} and which will pass through a screen having an opening size of about 0.065 inch from a feed-stream of dry mineral particulate matter and substantially removing fine particulate matter smaller than about 0.0164 inch from the roofing grade granules, comprising the steps of:

providing a plurality of screen decks, each having at least a generally planar portion and a plurality of openings through the generally planar portion, the plurality of screen decks including a first screen deck that defines an upper limit of the roofing grade granules, and a second screen deck and a means for imparting vibratory motion having at least a component of such movement in a direction perpendicular to the plane of said screen deck to the screen deck;

setting the generally planar portion of the second screen deck at an angle, as measured from horizontal, at less than 15 degrees;

vibrating the plurality of screen decks while maintaining the generally planar portion of the second screen deck at the set angle;

supplying a feed-stream of mineral particulate matter to the vibration screening action machine;



traversing the mineral particulate matter across at least the plurality of openings of the generally planar portion of the first vibrating screen deck so that mineral particulate matter smaller than the upper limit of the roofing granule grade passes through the first screen deck to the second screen deck and transverses at least the plurality of openings of the second screen deck, thereby substantially removing the fine mineral particulate matter from the roofing grade granules by such fine mineral particulate matter falling thought the openings of the second screen deck; and

collecting the roofing grade granules from an upper surface of the second screen deck.

5,337,902

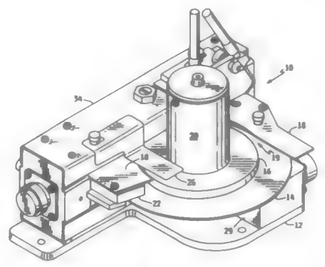
TABLET SENSOR

Mark D. Evans, West St. Paul, Minn., and Roger C. Oestreich, River Falls, Wis., assignors to Modern Controls, Inc., Minneapolis, Minn.

Filed Aug. 13, 1993, Ser. No. 106,413

Int. Cl.[5] B07C *5/02*

U.S. Cl. 209—539 **20 Claims**



1. An apparatus for sorting tablets by capacitance measurements, comprising:

VOL 1165 ISS 3 AUG 16 1994 UMI

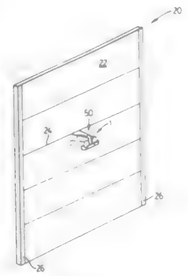
a) a rotatable disk having means for rotating at a controllable rate in a substantially horizontal plane;
b) a first conductive plate placed a predetermined distance above said disk, and a second conductive plate placed a predetermined distance below said disk, and means for measuring a capacitance value between said plates, whereby a measured capacitance value with a tablet conveyed between said plates is representative of the weight of said tablet;
c) a first guide assembly placed proximate the periphery of said disk and bridging an arcuate span between said first and second conductive plates, said first guide assembly having an arcuate inner edge formed along a first radius of curvature, said inner arcuate edge forming a guide path at least partially about said disk;
d) a second guide assembly placed on the top surface of said disk and rotatable therewith, said second guide assembly having an outer edge formed along a second radius of curvature smaller than said first radius of curvature, thereby forming a guide channel between said first and second guide assemblies;
e) a resilient planar clamping member affixed to said first guide assembly and extending over said guide channel a predetermined height above said guide channel; and
f) means for receiving a sequential stream of tablets into said guide channel, whereby the width of each of said tablets is slightly larger than the difference between said first and second radii of curvature, and the height of each of said tablets is larger than said predetermined height.

5,337,903

DISPLAY SYSTEM

Brian Wolcovitch, 189 Brooke Ave., Toronto Ontario, Canada M5M 2K7 , and Frank Fumagalli, 277 Chelwood Dr., Thornhill, Canada L4J 7R6

Filed Jul. 20, 1992, Ser. No. 915,228
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 **15 Claims**



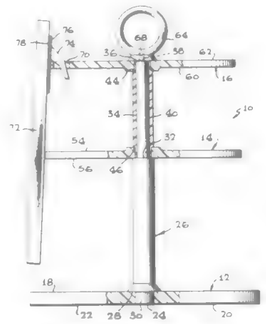
1. A display system comprising:
(i) a plurality of elongate arms, each of the arms comprising:
(a) a flange at one end;
(b) a holder at the other end for receiving, supporting and retaining an eyeglass frame; and
(c) a longitudinal intermediate portion between the flange and the holder;
(ii) a display panel comprising:
(a) a generally upright front face; and
(b) a plurality of slots in the panel accessible from said front face, each slot extending at least partly across the front face of said panel for receiving and holding the flanges of at least two of the arms in a compression fit, thereby removably retaining and supporting each holder in a spaced relationship from said front face;
(iii) the flange having a lateral width to provide a clear, pre-set, lateral spacing between the intermediate portions of two adjacent arms in a given slot; and
(iv) said holder comprising:
(a) a U-shaped channel opened upwardly for receiving the eyeglass frame therein;
(b) a support for the eyeglass frame extending between the intermediate portion of the arm and the U-shaped channel to allow the top of said frame in said channel to recline toward the front face of the display panel; and
(c) a raised portion intermediate the ends of the channel to prevent the frame from sliding along the channel;
wherein each arm is inserted and removed from the slots independently of the other arms by pushing or pulling the flange into and away from the slot, and wherein each arm is slideable laterally in the slot when fully inserted therein and while maintaining the compression fit.

5,337,904

STORAGE AND DISPLAY RACK

Lewis B. Goldberg, 20768 Skouras Dr., Canoga Park, Calif. 91306

Filed May 17, 1993, Ser. No. 61,747
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 **18 Claims**



7. A storage and display rack comprising:
a base plate, said base plate being configured to support said storage and display rack on a supporting surface;
an upright post mounted on said base plate;
a spreader mounted on said post, intermediate the ends thereof;
a holder mounted on said post, said holder being spaced from said spreader and being positioned adjacent the top of said post, said spreader being at least as large as said holder, said spreader and said holder each having an external edge surface and said external edge surface of said spreader being of substantially the same configuration as said external edge surface of said holder; and
inter-engaging structure on said holder and an inter-engaging device for attachment to a remote control device so that the remote control device can hang detachably pendant from said holder and being retained in a divergent position from a naturally pendant position so that a remote control device can be detachably stored and displayed on said rack.

5,337,905

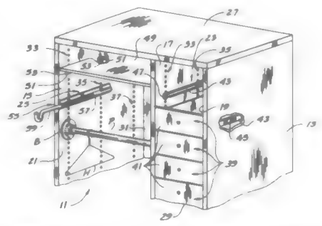
HANGER ASSEMBLY AND SYSTEM FOR ASSEMBLING A MODULAR CLOSET ORGANIZER IN A CLOSET

Arnold E. Gast, 2033 Concourse Dr., St. Louis, Mo. 63146

Filed Apr. 29, 1993, Ser. No. 54,614
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—87 **11 Claims**

1. A modular closet organizer kit of the type retrofitted into an existing closet for efficient use of the space in the closet, the closet organizer kit comprising:

at least two vertical partitions each having at least two sets of holes therein, adjacent holes in each set of holes having the same predetermined vertical spacing from each other, and the sets being horizontally spaced at a predetermined distance;
a plurality of screw fasteners adapted to be received in the holes in the vertical partitions;
at least one shelf adapted to extend generally horizontally between the vertical partitions, each shelf having a width greater than the horizontal spacing between the sets of holes in the vertical partitions;
shelf mounts each having an opening therein for receiving one of said fasteners therethrough and into one of the holes in a respective vertical partition, the shelf mount as secured to the vertical partition by the fastener being arranged for engaging the shelf to support the shelf on the vertical partition;
an extensible and retractable hanger assembly for hanging articles such as a garment bag therefrom, the hanger assembly comprising:
a hanger rod having a longitudinal axis, a hook formed at one end thereof and a boss projecting outwardly from the rod at a location longitudinally spaced from the hook, the boss lying in a plane including the longitudinal axis of the hanger rod which is generally perpendicular to the plane of the hook such that when the hook lies in a substantially vertical plane and opens upwardly for hanging articles thereon, the boss lies in a generally horizontal plane; and



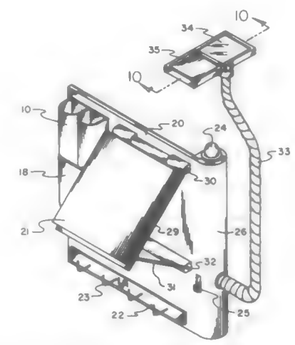
a mounting sleeve having a rod channel including a bottom, an open slot opposite the bottom and extending the length of the channel and an open mouth generally at one longitudinal end of the rod channel, a guide channel being formed in the bottom of the rod channel, the guide channel being smaller than the rod channel;
the rod channel being adapted to slidably receive the rod with the hook disposed outwardly of the mouth of the rod channel such that the rod may be selectively extended from and retracted into the rod channel through the mouth thereof, the guide channel being adapted to slidably receive the boss and having a stop formed therein engageable with the boss to prevent withdrawal of the hanger rod from the mounting sleeve through the open mouth thereof, the boss being engageable with sides of the guide channel for holding the hanger rod from rotation about its longitudinal axis in the rod channel such that the hook is held in a position in which it opens upwardly for receiving and hanging the article;
flanges extending continuously along the longitudinal edges of the slot of the rod channel the entire length of the rod channel, the flanges being constructed for face to face engagement with the vertical face of the wall, each flange having at least two openings therein having a horizontal spacing equal to the horizontal spacing between the sets of holes in each vertical partition, corresponding openings of the flanges being generally vertically aligned and having a vertical spacing equal to a multiple of the vertical spacing between adjacent holes in the vertical partition whereby the openings in the flanges are adapted to be aligned with holes in the vertical partition and to receive fasteners therethrough for mounting the mounting sleeve on the vertical partition;
such that a closet organizer may be constructed in a closet without having to form holes to connect the shelves and hanger assembly to the vertical partitions.

5,337,906

WALL SECRETARY

Neil N. Digiulio, 1307 W. Church St., Elmira, N.Y. 14905

Filed Apr. 21, 1993, Ser. No. 49,368
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—88 **8 Claims**



3. A new and improved wall secretary device which comprises: a pair of rigid, open-top, closed bottom, vertical receptacles affixed together in parallel and having a flat surface forming one common wall for said pair of receptacles; a permanent pressure-sensitive adhesive coating of the back of said flat surface remote from said receptacles; and a peelable, non-stock liner covering such adhesive coating,
wherein said flat surface of said receptacle is secured to a second larger flat surface; a memo pad secured to said second flat surface in close proximity to said receptacles; and a flat strip secured to said second flat surface below said receptacles, said flat strip having mounted thereon a plurality of object-holding hooks.

5,337,907

HOLDER FOR BEVERAGE CONTAINERS AND RELATED ARTICLES

Charles R. McKenzie, and Harry C. Ingle, both of Stockbridge, Ga., assignors to Sport Supply Group Inc., Farmers Branch, Tex.

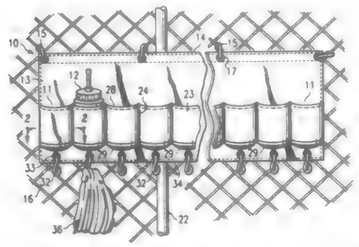
Continuation of Ser. No. 893,726, Jun. 5, 1992, abandoned. This application Dec. 7, 1993, Ser. No. 163,598
Int. Cl.[5] A47F *5/08*
U.S. Cl. 211—88 **9 Claims**

1. Apparatus for holding a plurality of personal beverage containers and a corresponding plurality of other personal articles in predetermined juxtaposition with the beverage containers, comprising:
a substantially flat support panel having a longitudinal dimension, the support panel being of a flexible sheet material that conforms to an irregular structure against which the support panel is placed in use and that allows stowing the apparatus in a relatively compact shape when not in use;
a plural number of receptacles on a surface of the support panel, each receptacle being configured to hold a single beverage container and being contiguous to another such

VOL 1165 ISS 3 AG 16 1994 UMI

receptacle along the longitudinal dimension of the support panel;

each receptacle having an open top to receive the beverage container and an interior member to support the beverage container so that a top portion of the beverage container extends above the open top of the receptacle, the bottoms of the receptacles otherwise being open so that spilled beverages can drain through the open bottoms of the receptacles;



a corresponding number of hooks carried by the support panel beneath the bottoms of the receptacles, each hook being located in predetermined juxtaposition adjacent a corresponding receptacle so that each hook can support another personal article in said predetermined juxtaposition to the corresponding receptacle; and

means disposed adjacent an upper portion of the flat panel for removably supporting the apparatus in use in an upright attitude along the structure.

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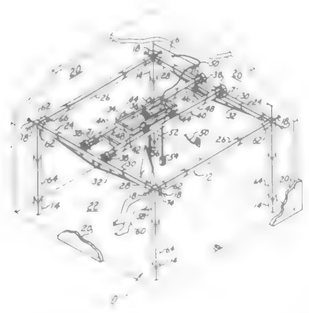
PATIENT HOIST

John R. Beck, Jr., 16371 Holly Dr., Fontana, Calif. 92335

Filed Jul. 15, 1993, Ser. No. 92,710

Int. Cl.[5] A61G *7/10*

U.S. Cl. 212—189 **12 Claims**



1. A patient hoist apparatus for use in a room having a floor and four rectangularly disposed walls at opposite sides of the floor, the apparatus comprising:

(a) a horizontally disposed frame;

(b) a plurality of leg members for supporting the frame elevated about the floor;

(c) a lift unit supported by the frame for lifting the patient; and

(d) a plurality of lateral support members horizontally projecting from opposite sides of a frame for preventing horizontal movement of the frame in a direction perpendicular to the walls, the lateral support members having substantially flat surfaces and being adjustably spaced for simultaneously contacting each of the four walls along the flat surfaces of the lateral support members without being fastened or mounted to the walls for holding the frame in a fixed horizontal position.

5,337,909

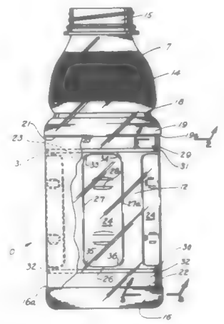
HOT FILL PLASTIC CONTAINER HAVING A RADIAL REINFORCEMENT RIB

Dwayne Vailliencourt, Manchester, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Feb. 12, 1993, Ser. No. 16,635

Int. Cl.[5] B65D *1/02, 1/42, 23/08*

U.S. Cl. 215—1 C **12 Claims**



1. A thin-walled container formed from a heat set plastic material and adapted to be filled with a liquid at a temperature elevated above room temperature and then sealed, said container comprising: an upper portion which includes a sealable closure and an upper walled portion, a lower portion including a base closing the bottom of the container, and a sidewall portion which is generally tubular in shape and being formed integrally with and extending between said upper walled portion and said lower portion, said sidewall portion including a plurality of elongated vertically oriented vacuum panels which are adapted to flex inwardly upon a lowering of internal pressure during cooling of said liquid, each of said vacuum panels having an upper edge, a lower edge, and a panel portion intermediate said upper and lower edges, said upper edges of said vacuum panels being spaced apart from said upper walled portion defining an upper label mounting area above said vacuum panels, and said lower edges of said vacuum panels being spaced apart from said lower portion defining a lower label mounting area below said vacuum panels, and reinforcement means including at least one annular reinforcement rib located in one of said label mounting areas, said reinforcement rib being directed radially inward and extending continuously around the circumference of said sidewall portion and merging with the edges of said panels which are located adjacent to said one label mounting area, said reinforcement rib supporting said vacuum panels along at least one of their edges to hold said supported edges fixed while permitting said panel portions intermediate said edges of said panels to flex inwardly upon a lowering of internal pressure during cooling of said liquid and resisting deformation of said vacuum panels subsequent to inward flexing of said vacuum panels after filling and sealing of the container.

5,337,910

FOOD PROCESSING CONTAINER

Augusto A. Picozza, Orlando, Fla., and Takeshi Fukuda, Osaka, Japan, assignors to Dart Industries Inc., Deerfield, Ill.

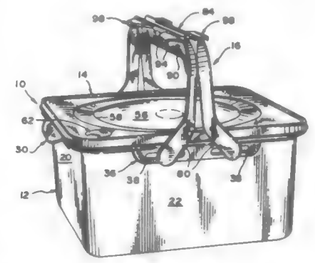
Filed Dec. 1, 1992, Ser. No. 983,932

Int. Cl.[5] B65D *25/28, 81/20*

U.S. Cl. 220—203 **15 Claims**

1. A food processing container comprising an upwardly

opening receptacle and a cover removably mounted in overlying and sealing relation to said receptacle; said receptacle including peripheral wall means with peripheral upper rim means defining an open top to said receptacle, and a closed bottom; said cover including peripheral seal means coextensive and engageable with said receptacle rim means for sealing said cover to said receptacle, said cover including an indicator portion formed therein and movable in response to a pressure increase within said receptacle when sealed by said cover; and retainer means mounted to said receptacle and movable relative thereto between a first position engaging and clamping said cover against said receptacle and a second position released from said cover to allow removal of said cover from said receptacle, said retainer means including a pair of spaced retainer bars overlying opposed peripheral portions of said cover, each bar mounting at least one depending locking clip, said receptacle wall means having locking lugs thereon one aligned with each of said clips, and means mounting each retainer bar for movement between said first position wherein said clip thereon is engaged with the associated lug to preclude upward movement of said cover relative to said receptacle, and said second position wherein said clip thereon is offset from the associated lug to allow upward movement of said cover relative to said receptacle.



5,337,911

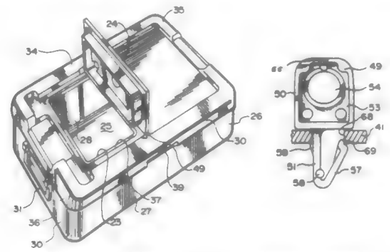
CONTAINER WITH MAIN LID AND AUXILIARY LID HINGEDLY MOUNTED ON THE MAIN-LID

Timothy M. Holub, Cheney, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Sep. 18, 1992, Ser. No. 946,565

Int. Cl.[5] B65D *51/18;* **E05D** *5/00*

U.S. Cl. 220—254 **8 Claims**



1. A container comprising an open-topped container body and a main lid for closing the open top of the container body, the main lid being provided with an auxiliary opening and a pair of hinge openings adjacent the auxiliary opening, a pair of hinges extending through the hinge openings in the main lid, each of the hinges including an attaching portion and a journal portion, the attaching portion of each hinge extending through one of the hinge openings and being releasably secured therein, the attaching portion of each hinge being generally V-shaped and including a first leg which is attached to the journal portion and a second leg which is flexibly and resiliently attached to the first leg whereby the second leg can flex toward the first leg when the attaching portion is inserted through a hinge opening in the main lid and resiliently move away from the first leg after the second leg passes through the hinge opening to secure the attaching portion within the hinge opening, and an auxiliary lid for closing the auxiliary opening in the main lid, the auxiliary lid including a pair of hinge pins which are rotatably supported by the journal portions of the hinges.

5,337,912

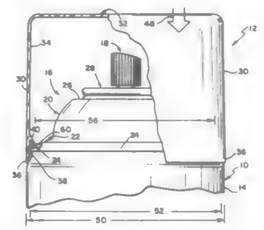
STURDY AEROSOL CAN LID

David J. Jochem, Evansville, Ind., assignor to Berry Plastics Corporation, Evansville, Ind.

Filed Nov. 30, 1992, Ser. No. 983,808

Int. Cl.[5] B65D *41/18*

U.S. Cl. 220—306 **29 Claims**



1. A lid for mounting on a can having a body with an outer wall and a top closure member, the body being formed to include a top opening, and the top closure member covering the top opening and having an annular lip for connecting the top closure member to a top of the outer wall of the body and lying around the top opening in the body, the lid comprising

a shell having an outer peripheral wall formed to include chamber means for containing the closure member once the shell is mounted on the body of the can,

first engaging means for engaging an underside portion of the annular lip adjacent a top of the outer body wall to retain the shell in a mounted position on the body so that the closure member is contained in the chamber means, the first engaging means being appended to the outer peripheral wall of the shell and arranged to lie inside the chamber means, and

second engaging means for engaging an upper side portion of the annular lip adjacent the outer body wall to distribute an external load applied to the shell to the closure member and body without dismounting the shell from the body, the second engaging means being appended to the outer peripheral wall of the shell and extending around a majority of the circumference of the shell, spaced from the first engaging means, and arranged to lie inside the chamber means in spaced-apart relation to the first engaging means, the second engaging means having a downwardly opening, hook-shaped flange opening toward the first engaging means and engaging the annular lip.

5,337,913

LUNCH BOX WITH UTENSIL POCKET

Takeshi Fukuda, Osaka, Japan, assignor to Dart Industries Inc., Deerfield, Ill.

Filed Mar. 26, 1993, Ser. No. 37,631

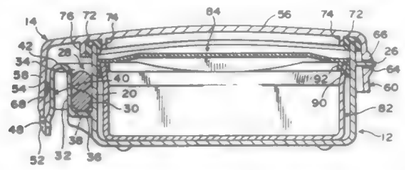
Int. Cl.[5] B65D *45/16*

U.S. Cl. 220—326 **8 Claims**

1. A lunch box comprising a tray and a lid, said tray including opposed front and rear tray walls, said lid including opposed front and rear lid walls, said lid being removably re-

VOL 1165 ISS 3 AG 16 1994 UMI

ceived in a closed position over said tray with said lid front and rear walls generally paralleling said tray front and rear walls outwardly thereof respectively, hinge means on said tray and lid rear walls for engaging and defining a hinge between said tray and lid rear walls, and latch means for releasably engaging said tray and lid, said latch means including a tray latch component and a lid latch component, said lid latch component comprising a pair of lid detents on said lid front wall, said tray latch component comprising a panel joined to said tray front wall in spaced relation thereto between said tray and lid front walls, and a pair of tray detents on said panel engaged with said lid detents for retaining said lid on said tray, said panel being selectively manually flexible away from said lid front wall for disengagement of said tray detents from said lid detents for release of said lid, said panel including a pair of spaced panel portions flexibly movable inward relative to said lid front wall, said pair of tray detents comprising a detent on each panel portion extending forwardly toward said lid front wall, said pair of lid detents comprising spaced detents one aligned and engageable with each tray detent, each tray detent disengaging



from the corresponding lid detent upon rearward flexing of the corresponding panel portion for release of said latch means, said hinge means comprising at least one elongate slot defined through said lid rear wall, and an elongate tab integrally projecting from said tray rear wall and slidably received within and through said slot for selective disengagement therefrom upon rearward movement of said lid relative to said tray, an upwardly opening pocket defined on said tray forward of said tray front wall and longitudinally therealong, said panel being in forwardly spaced relation to said pocket, said pocket being defined by a pocket wall generally parallel to said tray front wall and said panel, and a bottom wall between said pocket wall and said tray front wall, said panel and said pocket wall including integrally joined upper edge portions, said panel portions depending freely from said joined upper edge portions for selective manual inward movement thereabout relative to said lid front wall, said panel and pocket wall, centrally therealong, each include an upwardly opening recess therein allowing direct access therethrough to said pocket and the pocket contents for removal.

5,337,914

LINED CONTAINER

Jan W. Mulder, Auckland, New Zealand, assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 5, 1992, Ser. No. 971,802

Claims priority, application New Zealand, Nov. 19, 1991, 240945

Int. Cl.[5] B65D *25/00*

U.S. Cl. 220—403 **5 Claims**

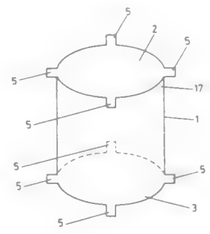
1. A lined container, comprising:

(a) a container;

(b) a liner supported from said container comprising:

(1) a hollow cylindrical portion; and

(2) a top and a bottom end member; wherein each said end member comprises a disc, each said end member having at the least portion of periphery thereof arranged to be engageable with and in use retained by a rolled edge or equivalent mechanical joint on a container, the construction and arrangement being such that the container can be assembled with the liner within the cylindrical portion thereof and with at least portions of periphery of the liner overlapping the edges of the cylindrical portion and the container having each of said top and bottom members joined to the cylindrical portion by said rolled edge or its mechanical equivalent, the rolled edge being such that the at least portions of the periphery of each said end member are rolled into the joint in a manner such that no material tearing of the liner occurs as a result of the rolling operation, but the liner



is retained by the engagement-of the at least parts of the periphery of said liner in the rolled edge joints and wherein said periphery portions of said end members comprise spaced apart tabs or flaps; and

(c) a means for engaging said liner to said container when said liner is located within the container, wherein said engagement means comprises at least one outwardly extending tab located at at least one end of the liner.

5,337,915

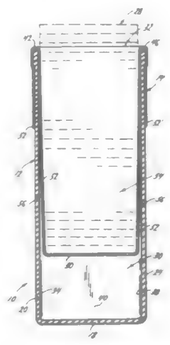
APPARATUS FOR STORING AND PRESERVING FOOD PRODUCTS AND FOR SELECTIVELY DISPENSING THE FOOD PRODUCTS FROM THE APPARATUS

Charles E. Hall, Jr., 709 Utz La., Hazelwood, Mo. 63042

Filed Oct. 18, 1991, Ser. No. 779,025

Int. Cl.[5] B65D *90/04*

U.S. Cl. 220—404 **19 Claims**



1. An apparatus for storing and preserving food products and for selectively dispensing the food products from the apparatus, the apparatus comprising:

a container having a bottom wall and at least one sidewall connected to the bottom wall and extending substantially perpendicularly from the bottom wall, the sidewall having an inner surface extending around an interior of the container and the sidewall having an outer surface extending around an exterior of the container, and the sidewall having a top edge extending around an opening of the container, the opening providing access to the container interior;

a flexible bag suspended in the container interior, the bag having at least one sidewall surrounding an interior of the bag and a bottom connected to the bag sidewall, the bag sidewall having a top edge extending around an opening of the bag, the bag opening providing access to the bag interior, the bag sidewall top edge being stretched over the container sidewall top edge and around the container outer surface to suspend the bag bottom in the container interior; and

the container sidewall inner surface having a circumference of a first measure and the bag sidewall having a circumference of a second measure, the second measure being less than the first measure thereby enabling the bag sidewall to be spaced from the container sidewall inner surface with the bag suspended in the container interior and the bag interior filled with a food product.

5,337,916

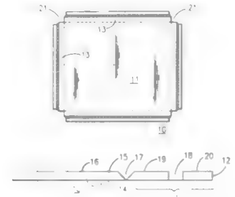
DADOED AND V-GROOVED BOX

Harry A. Voss, Canandaigua, N.Y., assignor to Rock City Box Company, Utica, N.Y.

Filed Oct. 4, 1993, Ser. No. 130,782

Int. Cl.[5] B65D *5/20, 5/56*

U.S. Cl. 220—418 **6 Claims**



1. Method of forming a box from a blank of sheet material having an outer liner, an inner liner, and a filler sandwiched between said liners, said blank having at least one straight edge and said sheet material having a predetermined thickness; the method comprising the steps of

forming a dado groove parallel to said edge by removing a strip of said inner liner and said filler, leaving said outer liner, said dado groove having a width substantially twice the thickness of said sheet material;

forming a V-groove parallel to said dado groove on a side away from said edge by removing a strip of said inner liner and a portion of said filler, leaving said outer liner to extend continuously to said edge;

said edge and said dado groove defining an inner wall portion therebetween and said dado groove and said V-groove defining an outer wall portion therebetween;

folding said blank at said V-groove so that said outer wall portion extends upwards therefrom; and

folding said blank at said dado groove to form a substantially 180 degree fold with said inner liner on said outer wall portion positioned against the inner lining on said inner wall portion so that the inner and outer wall portions create a double thickness wall, and with said outer liner extending continuously over an outer side, a top edge and an inner side of said double thickness wall.

5,337,917

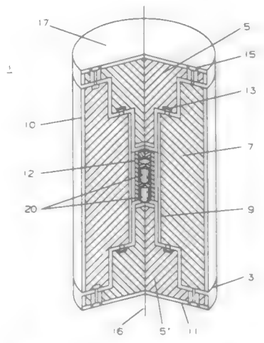
CRASH RESISTANT CONTAINER

Jim D. Pierce, Albuquerque, N. Mex., assignor to Sandia Corporation, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 779,662, Oct. 21, 1991, abandoned. This application Mar. 2, 1993, Ser. No. 25,306

Int. Cl.[5] B65D *90/04*

U.S. Cl. 220—468 **12 Claims**



1. A crash resistant container comprising:

an inner wall surrounding and restraining a load,

an intermediate crushable region surrounding the inner wall comprising at least 200 layers of a deformable metallic material containing voids wherein the energy of a crash is absorbed by plastic flow of the metallic material into the voids, and at least one layer of a non-combustible insulating material wherein there are at least ten layers of the metallic material for each layer of the non-combustible insulating material,

an outer wall surrounding the intermediate region.

5,337,918

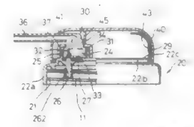
WATER BOTTLE WITH A HIDDEN SUCTION STRAW

Ching-Chen Wang, No. 8, Hsin Ai Rd., An Ping Industrial Dist., Tainan, Taiwan

Filed Sep. 21, 1993, Ser. No. 124,804

Int. Cl.[5] A47G *19/22;* **B65D** *51/18*

U.S. Cl. 220—708 **1 Claim**



1. A water bottle comprising:

a container with an upper open end;

a cap comprising a skirt portion for releasably engaging with the upper open end of the container, a neck portion, and a circular head plate which has a diameter greater than that of the neck portion thereby defining an annular groove

VOL 1165 ISS 3 AG 16 1994 UMI

around the neck portion, the head plate having an outer side and an inner side and at least one cut edge, an arcuate stop projecting from the outer side of the head plate, a second neck being formed on the outer side of the head plate, first and second holes being formed in the head plate in an area defined by the second neck and communicating with an inner space defined by the container;

a suction head member including a collar which is rotatably received in the second neck and a substantially L-shaped suction straw which has a lower end securely engaged with the collar, the collar including an opening and a recess in an underside thereof, a second cap being mounted around the second neck for restraining the collar in the second neck and having an opening through which the suction straw passes; and

a cover including a plurality of protrusions on an inner surface thereof for engaging with the annular groove around the neck portion of the cap, a second opening being formed in the cover and a tongue extending downwardly from the inner surface of the cover, two spaced stop pieces being formed in the inner surface of the cover, the cover being rotatable between first and second positions;

wherein when the cover is in the first position, the arcuate stop blocks the second opening in the cover to hide the suction straw and one of the stop pieces contacts with the arcuate stop to prevent rotation of the cover in one direction, while the first opening in the collar does not align with the first hole and the recess in the collar does not align with the second hole, when the cover is rotated along a direction opposite to the first mentioned direction to the second position, the tongue contacts and thus actuates the suction straw to rotate such that a distal suction end of the suction straw extends beyond the second opening in the cover until the other stop piece is stopped by the arcuate stop at the second position where the first opening in the collar aligns with the first hole and the recess in the collar aligns with the second hole.

5,337,919

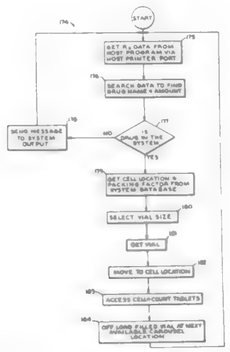
AUTOMATIC DISPENSING SYSTEM FOR PRESCRIPTIONS AND THE LIKE

Gregory L. Spaulding; Pamela M. Spaulding, both of Manhattan, Kans., and Kenneth M. Bueche, Friendswood, Tex., assignors to Dispensing Technologies, Inc., Manhattan, Kans.

Filed Feb. 11, 1993, Ser. No. 16,812

Int. Cl.[5] **G07F** *11/00*

U.S. Cl. 221—2 **34 Claims**



1. An automatic prescription dosage unit dispenser system for use with pharmacy host computer means having a printer port normally transferring prescription data, including dosage unit quantity data, to a prescription label printer, said system comprising:

(a) dosage unit dispenser means controllable to dispense a selected quantity of prescription dosage units;

(b) dispenser interface means coupled to said printer port and intercepting said dosage unit quantity data therefrom; and

(c) dispenser control means coupling said interface means to said dispenser means and controlling said dispenser means to dispense said selected quantity of dosage units as derived from said dosage unit quantity data.

5,337,920

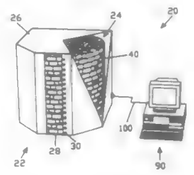
ROTATABLE PLATTER STORAGE AND RETRIEVAL SYSTEM

Mark K. Clausen, Box 232, Poy Sippi, Wis. 54967

Filed Apr. 21, 1993, Ser. No. 52,060

Int. Cl.[5] **G07F** *11/00*

U.S. Cl. 221—5 **19 Claims**



1. A storage and retrieval unit comprising:

(a) A plurality of support members, each said support member having a generally circular perimeter, said plurality of support members comprising at least one main support member and a plurality of nested support members, said nested support members being of a plurality of sizes and being smaller than said main support member, each said nested support member being rotatably mounted on a larger said support member such that the perimeter of said nested support member is adjacent to the perimeter of the support member on which it is mounted and where at least several of said nested support members are smaller than a larger nested support member and are co-mounted on said larger nested support member in such a way that all are approximately circumscribed by the perimeter of said larger nested support member on which they are mounted;

(b) a multiplicity of storage means for storing articles, said storage means supported by said support members, said storage means being positioned so that a part of each said storage means is adjacent to the perimeter of the support member by which said storage means is supported;

(c) a main support member support means for supporting said main support members, each said main support member being rotatably mounted on said main support member support means;

(d) at least one serving position at which articles are stored or retrieved, said serving position located adjacent to the perimeter of said main support members.

5,337,921

DETACHABLE RECEPTACLE AND FITTED POUCHES FOR REFILLABLE SPRAYER DEVICES

Daniel C. Wilson, Midland, Mich., and Kenneth E. Klaber, Reynoldsburg, Ohio, assignors to Dowbrands Inc., Indianapolis, Ind.

Filed May 17, 1993, Ser. No. 62,887

Int. Cl.[5] **B67D** *5/00*

U.S. Cl. 222—105 **11 Claims**

1. A sprayer apparatus for liquid products comprising a pouch for containing the liquid, said pouch having secured to an open upper extremity thereof a neck in open communication with the interior of said pouch, a generally upright rigid holder for said pouch, said holder comprising a receptacle of a shape generally similar to that of said pouch and having an opening in its bottom or side that remains open sufficient to permit said pouch to be inserted therethrough, said receptacle including a peripheral flange defining an orifice through which the neck of



said pouch can pass, means on said neck to limit the passage of said neck through said orifice, and a sprayer device including a cap removably securable to of said neck protruding through said orifice, both said cap and said neck means defining diameters greater than the inside diameter of said orifice whereby when said cap is secured on said neck, said cap and said neck means secure the neck and its pouch to said receptacle.

5,337,922

APPARATUS FOR DISPENSING LIQUID FROM AN INVERTED CONTAINER

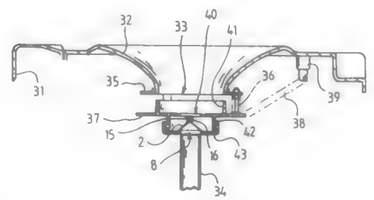
Paul Salkeld, Redditch; Andrew Gibbs, Leamington Spa, and Robert Tansley, Stratford-upon-Avon, all of England, assignors to EBAC Limited, United Kingdom

Filed Jul. 26, 1993, Ser. No. 96,228

Claims priority, application United Kingdom, Jul. 17, 1992, 9215275.0

Int. Cl.[5] **B67D** *5/56*

U.S. Cl. 222—129 **6 Claims**



1. Liquid dispensing apparatus for dispensing liquid from an inverted container having a neck through which the liquid is discharged, the apparatus comprising:

a housing provided with a mounting arrangement for receiving and supporting the inverted container thereon, said mounting arrangement defining an opening for receiving the bottle neck;

a dischargeable liquid reservoir mounted within said housing;

a feed tube arranged to project upwardly to a level adjacent said opening for being received in the neck of the inverted container, to conduct liquid therefrom to said reservoir, said feed tube having an upper end portion containing a liquid inlet aperture; and

cover means mounted in association with said opening for movement between a first position in which said upper end portion of said feed tube is exposed for reception in the neck of the container, and a second position in which said upper end portion of said feed tube is isolated from said opening of said mounting arrangement by said cover means, whereby said feed tube is protected automatically against contamination when the container is removed from said mounting arrangement.

5,337,923

FLEXIBLE, INWARDLY FOLDABLE CONTAINER FOR A LIQUID OR A PASTE TO BE DISPENSED WITHOUT INGRESS OF AIR, AND A METHOD OF MANUFACTURE

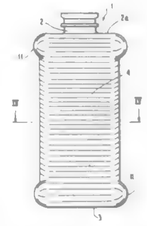
Pierre Lugez, Sainte-Colombe-La-Commanderie; Claude Jouillat, Montigny-Sur-Avre, and Michel Brunet, Sainte-Colombe-La-Commanderie, all of France, assignors to Valois (société anonyme), Le Neubourg, France

Filed Jun. 26, 1991, Ser. No. 720,994

Claims priority, application France, Jun. 27, 1990, 90 08088

Int. Cl.[5] **B65D** *35/56;* **B67D** *5/00*

U.S. Cl. 222—183 **9 Claims**



1. A device for containing a liquid or a paste for dispensing without ingress of air, the device comprising: a flexible container containing the substance to be dispensed, and a container carrier, said container being inserted inside the carrier, and said container being made of a flexible plastic material and being constituted by a peripheral side wall extending between a bottom and a top having a bottleneck opening out therethrough, wherein said carrier is made of a rigid material and is provided with at least two facing longitudinal ribs, said ribs engaging said peripheral side wall of said container for constraining the side wall, the bottom, and the top of the container to fold in a concertina-like fashion.

5,337,924

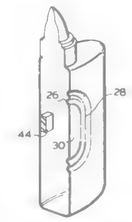
INTEGRAL PUMP BOTTLE

Robert G. Dickie, Newmarket, Canada, assignor to Conros Corporation, Scarborough, Canada

Filed Mar. 8, 1993, Ser. No. 28,076

Int. Cl.[5] **B65D** *83/00*

U.S. Cl. 222—212 **3 Claims**



1. A bottle for storing and dispensing viscous liquids, said bottle blow molded from an olefin material and comprising a bottom, sides, a substantially planar pump face having a substantially uniform wall thickness, a closable top and a stop means, said face having a pump means integrally molded

VOL 1165 ISS 3 AG 16 1994 UMI

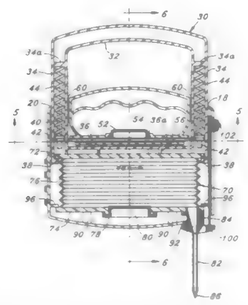
therein, said pump means comprising at least one endless ridge defining a valley surrounding a planar pad, said valley having a wall thickness of between 30% and 60% of said wall thickness of said face for facilitating reciprocal movement of said pad between a first position substantially co-planar with said pump face and a second position adjacent said stop means, whereby movement of the pad to the stop means is capable of urging metered amounts of viscous liquids out of the bottle.

5,337,925

INJECTION DEVICE FOR INJECTING A FLUID INTO FOOD

Daniel A. Ferrara, Jr., Bantam, Conn., assignor to ISPG, Inc., New Milford, Conn.

Filed Jul. 26, 1993, Ser. No. 96,454
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—214 **16 Claims**



1. An injection device for injecting a fluid into food comprising:

a. a fluid container having parallel upper and lower walls and a collapsible wall inbetween, the container having a projecting tubular injection stem thereon operatively connected to the inside of the container;

b. a housing comprising an enclosure having an interior cavity, a stem opening and an operable door which, when open, receives the container within the cavity, the container resting on the bottom of the housing with the injection stem extending out through the stem opening, the top wall of the housing being formed with upwardly facing spaced apertures and a lateral squeeze bar at the upper end of the housing; and

c. a compression element comprising a pressure plate disposed against the upper wall of the container, a palm rest above the squeeze bar having legs extending downward through the spaced apertures in the housing respectively and connected to the pressure plate

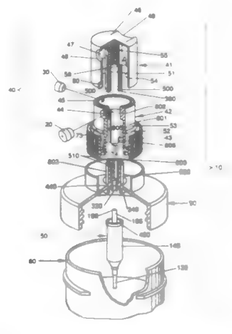
whereby when the squeeze bar and palm rest are squeezed together by the grip of a single hand, the container is at least partly collapsed to apply pressure to drive fluid out the injection stem.

5,337,926

SPRAY PUMP PACKAGE EMPLOYING MULTIPLE ORIFICES FOR DISPENSING LIQUID IN DIFFERENT SPRAY PATTERNS WITH AUTOMATICALLY ADJUSTED OPTIMIZED PUMP STROKE FOR EACH PATTERN

James L. Drobish, Wyoming, Ohio; Daniel Biard, Kobe, Japan, and Joyce R. Merritt, Yellow Springs, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 832,529, Feb. 7, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 96,636
Int. Cl.[5] B65D *88/54*
U.S. Cl. 222—309 **24 Claims**



1. A spray pump package having a liquid pump that can be operated by a manual stroke and which will dispense a different maximum predetermined volume of liquid through each of at least two different spray orifices that exhibit different spray patterns and which can be manually selected by the user of the package, said package comprising:

(a) a container for housing said liquid;

(b) a liquid pump including an actuator secured to said container;

(c) at least two distinct spray orifices secured to said container so that either spray orifice can be placed in fluid communication with said liquid pump;

(d) spray orifice selector means movably secured to said container to enable the user to manually place said liquid pump in fluid communication with either of said spray orifices; and

(e) means for automatically changing the maximum stroke available to said liquid pump whenever the user employs said spray orifice selector means to redirect fluid communication of said liquid pump from one of said spray orifices to an other of said spray orifices.

5,337,927

PUSH-BUTTON ACTUATING MEMBER FOR A LIQUID DISPENSER

Vincent de Laforcade, Clamart, France, assignor to L'Oreal, Paris, France

Filed Jun. 15, 1993, Ser. No. 76,791
Claims priority, application France, Jun. 16, 1992, 92 07259
Int. Cl.[5] G01F *11/02*
U.S. Cl. 222—321 **17 Claims**

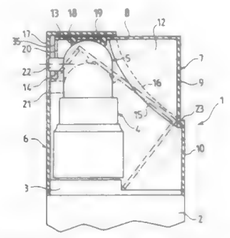
1. Dispenser for a liquid product, comprising:

a container;

a dispensing member provided at an upper part of the container and carrying a push-button movable along a first axis, between a first, rest position and a second, depressed position, and including a nozzle for dispensing the product,

wherein movement of the push-button from the first position to the second position actuates the dispensing member; and

a cap covering the push button and the dispensing member, the cap being provided with an actuating member in the form of a lever connected to the cap by a hinge, the lever being movable between a first, rest position and a second, depressed position, and the lever being provided with pressing means for acting on an upper outer surface of the push-button,



wherein the hinge between the lever and the cap is situated approximately half-way between the first and second positions of the push-button,

wherein the upper outer surface of the push-button is a convex surface, and

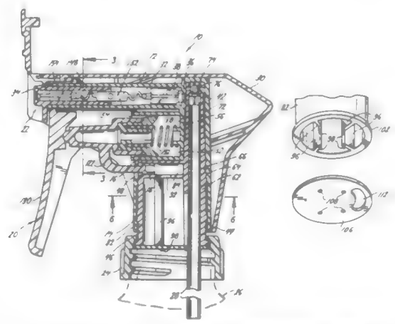
wherein the pressing means defines a bearing surface for receiving the upper outer surface of the push-button.

5,337,928

SEALING GASKET FOR A TRIGGER SPRAYER

Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

Division of Ser. No. 848,706, Mar. 9, 1992. This application Jun. 15, 1993, Ser. No. 78,138
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—383 **14 Claims**



1. In a trigger sprayer apparatus for dispensing liquid from a container connected to the apparatus, an improvement comprising:

a gasket secured between the sprayer apparatus and the container providing a fluid tight connection between the sprayer apparatus and the container, the gasket having a first hole therethrough, means provided on the sprayer apparatus and extending into the first hole for securing the gasket to the sprayer apparatus,

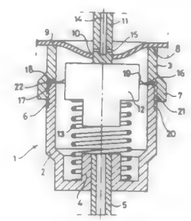
a tube extends between the sprayer apparatus and the container and a second hole is provided through the gasket, the tube extending through second hole.

5,337,929

MIXING CHAMBER FOR MIXING A GASEOUS AND A LIQUID COMPONENT

Edgar I. M. van der Heijden, Breda, Netherlands, assignor to Airspray International B.V., Beverwijk, Netherlands

PCT No. PCT/NL90/00097, § 371 Date Feb. 7, 1992, § 102(e) Date Feb. 7, 1992, PCT Pub. No. WO91/01259, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 17, 1990, Ser. No. 828,953
Claims priority, application Netherlands, Jul. 20, 1989, [illegible]
Int. Cl.[5] B65D *83/58*
U.S. Cl. 222—402.18 **10 Claims**



1. Mixing chamber for mixing a gaseous and a liquid component, said mixing chamber being provided with separate inlet connections for pressurized components for the mixture which is to be formed, and an outlet connection for discharging the formed mixture to a space which is at lower pressure, said mixing chamber comprising a lower part and an upper part, said upper and lower parts having adjacent surfaces which meet at an inner side wall of said mixing chamber, said upper and lower parts enclosing a pressure body located in the upper region of the mixing chamber and a spring located in the lower region of the mixing chamber which biases the pressure body upwardly, said pressure body and the inner wall of the upper region of the mixing chamber forming an annular space around the pressure body, said lower part having a liquid inlet for passage of a pressurized liquid component into said mixing chamber, at least one of the adjacent surfaces of said upper and lower parts being provided with grooves which define, together with the surface of the other part, narrow channels substantially perpendicular to the longitudinal axis of the mixing chamber and having a transverse dimension equal to or less than 1 mm, said narrow channels opening into said annular space around the pressure body at the upper region of the mixing chamber and providing an inlet for passage of a pressurized gaseous component into said mixing chamber.

5,337,930

AUTOMATIC WATERING AND FEEDING MECHANISM FOR POTTED PLANTS

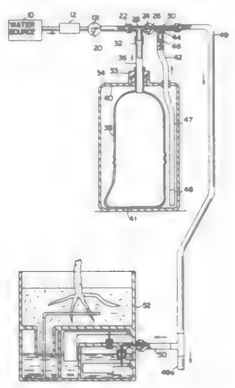
Jim Fah, 6 Tidcombe Crescent, Dowcaster East, Vic. 3109, Australia, and Mike Lee, 43 Yerriw St., Balwyn, Australia Vic. 3103

Filed Sep. 18, 1992, Ser. No. 946,668
Int. Cl.[5] A01G *25/00*
U.S. Cl. 222—630 **7 Claims**

1. A mechanism for supplying a fertilizer solution to a multiple number of growing plants; said mechanism comprising a container; an expansible chamber means subdividing said container into a water space and a liquid fertilizer space, said spaces being isolated from each other; liquid fertilizer occupying said fertilizer space; a pressurized passage system that includes a water passage having a constriction (26) therein, a first branch line (32) leading from a point in said water passage upstream from said constriction into said water space, whereby said expansible chamber means is pressurized to exert a pumping force on the fertilizer in the fertilizer space, a second branch line (42) leading from said fertilizer space to a point in

VOL
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said water passage downstream from said constriction, whereby liquid fertilizer is pumped out of the container for mixture with the water flowing through said water passage;



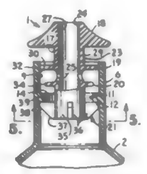
and a check valve in said second branch line for preventing flow of water from the water passage through said second branch line into the fertilizer space.

5,337,931

DISPENSER VALVE

Donald M. Kitterman, 3805 N. Park Dr., Kansas City, Mo. 64116

Filed May 3, 1993, Ser. No. 57,351
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—525 5 Claims



1. A dispensing valve in combination with a wide mouth container comprising:

(a) a container having an elongate neck surrounding a mouth; said neck having an interior surface that has a portion that is generally uniform in radial cross-section except for at least one radially inward projecting ring;

(b) said valve comprising:

1) a tubular body having an inner wall surrounding an elongate passageway and an outer wall having a cross-section substantially smaller than the cross-section of the interior of said neck; said inner and outer walls connected by an inlet port that is flow connected with said passageway; said elongate passageway terminating in an upper dispensing port;

2) a first annular fin circumferentially positioned about and extending radially outward from said tubular body outer wall; said first annular fin having a radially outer surface sealably engaging said neck interior surface;

3) a second annular fin circumferentially positioned about and extending radially outward from said tubular body and positioned such that said inlet port is located between said first and second annular fins; said second annular fin having a sealing surface that is positioned to sealingly engage said neck ring when said valve is in a closed configuration thereof; said second annular fin being of substantially less diameter than said neck interior surface such that when said valve is moved to an open configuration thereof, material may flow from said container around said second annular fin, through said inlet port, through said passageway and out said dispensing port; and

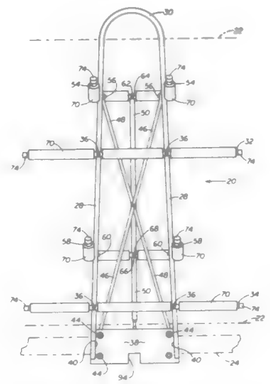
4) said inlet port passing radially through said tube from the inner wall to the outer wall thereof; said inlet port being located between said first and second fins such that when said valve is in the open configuration thereof, material may flow from said container between said first and second fins and then directly through said port to the passageway of said tube.

5,337,932

MULTILEVEL BICYCLE RACK FOR MOTOR VEHICLES

Gary L. Griewahn, 1268 E. First St., Adrian, Mich. 49221

Filed Jun. 12, 1992, Ser. No. 897,696
Int. Cl.[5] B60R *9/00, 11/00*
U.S. Cl. 224—42.03 B 11 Claims



1. A multilevel portable bicycle and cargo rack comprising at least one vertical support member having a top and a lower end and having means at the lower end thereof for attachment to a vehicle,

a lower pair of load carrying arms spaced vertically above the lower end of the vertical support member and attached to the vertical support member,

an upper pair of load carrying arms spaced vertically above the lower pair of load carrying arms and attached to the vertical support member, both the upper and lower pairs of load carrying arms extending aft relative to the rear of the vehicle,

a vertical center post spaced forwardly of the vertical support member and having means at a lower end of the vertical center post for attachment to a vehicle,

forward extensions of each pair of load carrying arms, said forward extensions being fastened to the vertical center post,

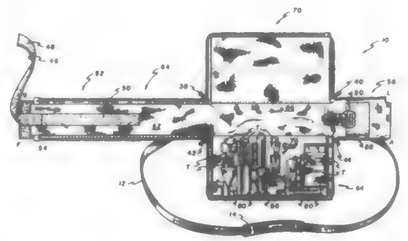
and diagonal transverse bracing extending from attachment to the vertical support member near the top thereof to a lower attachment with the means for center post attachment to a vehicle, said lower attachment spaced forwardly from the vertical support member attachment means to a vehicle.

5,337,933

CONVERTIBLE ARTICLE CARRIER

Raul Nunez, Calle 4, #120, Villamar Isla Verda, P.R. 00979

Filed Jan. 11, 1993, Ser. No. 2,899
Int. Cl.[5] A45C *9/00*
U.S. Cl. 224—151 13 Claims



1. An article carrier of flexible material which may be selectively convertible to a multipurpose tote bag and an article carrying apron having a therapeutic belt for encircling a torso of a user, said article carrier comprising:

a substantially flat piece of flexible material having a cross-like configuration and attachment means, whereby said cross-like piece of flexible material and attachment means may be so arranged as to alternatively form a multipurpose tote bag and a user encircling apron;

said cross-like piece of flexible material having an elongate, rectangular sheet of material that forms a narrow bottom panel of said tote bag, said bottom panel being integrally formed with a front rectangular panel, a rear rectangular panel, a first side panel, a second side panel and a rectangular lid panel, whereby said front rectangular panel, said rear rectangular panel, said first side panel, said second side panel and said rectangular lid panel are all closeable to close said tote bag;

said first and second side panels each extending in opposing directions horizontally and vertically suitable distances from said bottom panel to form opposed sides of said tote bag;

said rectangular lid panel being formed integrally with said rear rectangular panel;

said front rectangular panel and said rear rectangular panel extending in opposing directions from said bottom panel so as to form a first integral corner located at a junction of said front rectangular panel with said first side panel and said bottom panel, a second integral corner located at a junction of said front rectangular panel with said second side panel and said bottom panel, a third integral corner located at a junction of said rear rectangular panel with said first side panel and said bottom panel, and a fourth integral corner located at a junction of said rear rectangular panel with said second side panel and said bottom panel;

said rectangular lid panel having two longitudinal edges;

said rectangular lid panel including a stiff padded panel;

said front rectangular panel and said first side panel together having a first slidable fastener with an associated pull tab;

said first slidable fastener starting from said first integral corner extending vertically away from said bottom panel and continuing along a first longitudinal edge of said first side panel and a first longitudinal edge of said front rectangular panel, whereby when said pull tab of said first slidable fastener is pulled along the length of said first slidable fastener, said first longitudinal edge of said first side panel is detachably attached to said first longitudinal edge of said front rectangular panel when said article carrier is formed as a tote bag;

said second side panel and said front rectangular panel together having a second slidable fastener with an associated pull tab;

said second slidable fastener starting from said second integral corner extending vertically away from said bottom panel and continuing along a first longitudinal edge of said second side panel and a second longitudinal edge of said front rectangular panel, whereby when said pull tab of said second slidable fastener is pulled along the length of said second slidable fastener, said first longitudinal edge of said second side panel is detachably attached to said second longitudinal edge of said front rectangular panel when said article carrier is formed as a tote bag;

said rectangular lid panel, said first side panel and said rear rectangular panel together having a third slidable fastener with an associated pull tab;

said third slidable fastener starting from said third integral corner extending vertically away from said bottom panel and continuing along a first longitudinal edge of said rear rectangular panel, a first one of said two longitudinal edges of said rectangular lid panel, a second longitudinal edge of said first side panel and an upper longitudinal edge of said first side panel, whereby when said pull tab of said third slidable fastener is pulled along the length of said third slidable fastener, said first longitudinal edge of said rear rectangular panel is detachably attached to said second longitudinal edge of said first side panel and said first one of said two longitudinal edges of said rectangular lid panel is detachably attached to said upper longitudinal edge of said first side panel when said article carrier is formed as a tote bag;

said second side panel, said rectangular lid panel and said rear rectangular panel together having a fourth slidable fastener with an associated pull tab; and

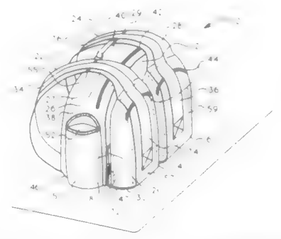
said fourth slidable fastener starting from said fourth integral corner extending vertically away from said bottom panel and continuing along a second longitudinal edge of said second side panel, a second one of said two longitudinal edges of said rectangular lid panel, an upper longitudinal edge of said second side panel and a second longitudinal edge of said rear rectangular panel, whereby when said pull tab of said fourth slidable fastener is pulled along the length of said fourth slidable fastener, said second longitudinal edge of said second side panel is detachably attached to said second longitudinal edge of said rear rectangular panel and said second one of said two longitudinal edges of said rectangular lid panel is detachably attached to said upper longitudinal edge of said second side panel when said article carrier is formed as a tote bag.

5,337,934

FLIPOVER CARRYING DEVICE

Karen T. Johnson, Dallas, Tex.; Lori T. Adams, Fremont, Calif.; April D. Montgomery, and John W. Montgomery, both of Duncanville, Tex., assignors to Inventus, Inc., Dallas, Tex.

Filed Jun. 18, 1992, Ser. No. 900,615
Int. Cl.[5] A45F *4/02*
U.S. Cl. 224—153 21 Claims



1. A backpack to be worn by a person having a front and a back for carrying possessions comprising:

VOL 1165 ISS 3 AG 16 1994 UMI

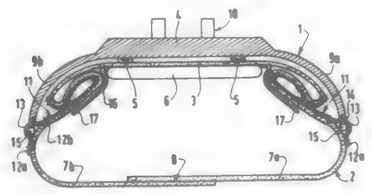
(a) a back support panel adapted to be positioned adjacent the person's back when the backpack is worn;
(b) a pouch attached to the panel having a first supported position adjacent the person's back;
(c) a motion inhibitor attached to the back support panel at a position on the back support panel and the pouch for inhibiting motion of the pouch in the first supported position, wherein the motion inhibitor comprises:
(i) a patch of hook-and-loop material attached to the back support panel; and
(ii) a mating patch of hook-and-loop material attached to the pouch such that the mating patches of hook-and-loop material are aligned for releasable fastening when the pouch is in the first supported position;
(d) means attached to the pouch, accessible by the person without removing the backpack being worn, for non-detachably moving the pouch to a second supported position adjacent the person's front while the back support panel remains adjacent the person's back; and
(e) first opening formed in the pouch for allowing access into the pouch from the second supported position.

5,337,935

BELT STRUCTURE, PARTICULARLY FOR ACCESSORIES

Bernard Chambonnet, Vence, France, assignor to La Spirotechnique Industrielle et Commerciale, Carros, France

Filed Aug. 2, 1993, Ser. No. 100,325
Claims priority, application France, Aug. 21, 1992, 92 10179
Int. Cl.[5] A45F *3/00*
U.S. Cl. 224—224 **10 Claims**



1. A belt structure comprising a first strap (2) having a central portion (3) and at least one free portion (7*a*, 7*b*) extending from the central portion (3) and having a free end provided with releasable fastening means (8) to fasten the belt structure around a wearer, the free portion including adjusting means (13, 14) for adjusting the effective length of the free portion, the central portion (3) of the first strap (2) being secured to a central portion (4) of a structural member (1) having at least one wing (9*a*, 9*b*) extending in the direction of the free portion, and further comprising at least two first successive securement elements (13) fixed on a surface of the free portion of the first strap and adapted to coact with a second securement element (14) secured to the wing to modify the effective length of the free portion.

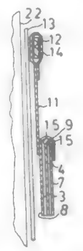
5,337,936

CONCEALED BELT-MOUNTED VALUABLES HOLDER

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Filed Jun. 1, 1993, Ser. No. 69,746
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—253 **14 Claims**

1. A holder for valuables for mounting on a belt of a user's trousers comprising:
a back panel;
at least one intermediate panel;
a front panel secured at three edges thereof to said back panel and said at least one intermediate panel to form a thin flat container body having a width and a height and at least two compartments open at an upper edge for access thereto;
a closure flap connected to said back panel arranged for removably fastening to said front panel and thereby closing said compartments;
two elongate, narrow strips of material, each said strip having a first end secured to said back panel at an upper portion thereof and a second end terminating in a loop, said loop arranged for passing a trouser belt therethrough,



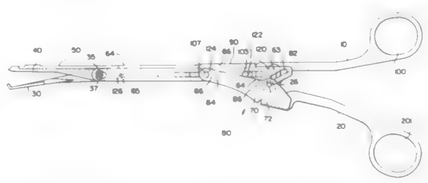
said strips being spaced apart from one another on said back panel by a spacing distance at least equal to the height of said container body, each said strip having a distance between said loop and said back panel greater than said height of said container body to thereby permit facile movement of said container body between a concealed position underneath a wearer's trousers and an accessible position outside said trousers while said loops are engaged by a belt on said trousers without bending said container body.

5,337,937

SURGICAL STAPLING APPARATUS

Stanley H. Remiszewski, Greenwich, and David T. Green, Westport, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 781,696, Oct. 18, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 52,223
Int. Cl.[5] A61B *17/068*
U.S. Cl. 227—182 **35 Claims**



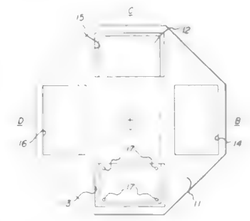
1. A surgical stapling apparatus comprising:
first and second handles;
an anvil jaw pivotally connected to said first handle for movement from an open position to a closed position to clamp body tissue;
staple advancing means for advancing an individual staple into contact with said anvil jaw for deformation of the staple legs;
means responsive to movement of said first handle for closing the anvil jaw and for driving the staple advancing means in a three phase movement of said first handle wherein in a first movement of said first handle said anvil jaw pivots to a closed position, in a second subsequent movement of said first handle comprising a dwell period in which said anvil jaw remains stationary and said staple advancing means is not yet actuated, and in a third movement of said first handle said staple advancing means is driven to advance a staple through the tissue and into contact with said anvil jaw; and
means for tactilely indicating to a user the termination of said first movement, said indicating means including means for providing said dwell period comprising said second subsequent movement of said first handle.

5,337,938

WORKPIECE HANDLING SYSTEM

Graham P. Gilbert, Plymouth, Great Britain, assignor to Autotech Robotics Limited, Plymouth, Great Britain

Filed Aug. 13, 1992, Ser. No. 928,738
Claims priority, application United Kingdom, Aug. 17, 1991, 9117804.6
Int. Cl.[5] B23K *37/04*
U.S. Cl. 228—102 **9 Claims**



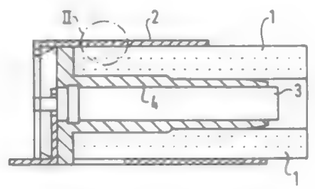
1. Workpiece handling apparatus comprising a workpiece table which is rotatable between indexed stations in one rotational direction and a coaxially-mounted support for work-performing apparatus which is rotatable in both rotational directions.

5,337,939

METHOD FOR SOLDERING A CERAMIC BODY OF AN ELECTRICAL COMPONENT INTO A METAL HOUSING

Christian Block, Graz, Austria, assignor to Siemens Matsushita Components GmbH & Co KG, Munich, Fed. Rep. of Germany

Filed Sep. 1, 1993, Ser. No. 115,933
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1992, 4229163
Int. Cl.[5] B23K *1/00, 101/36*
U.S. Cl. 228—124.1 **6 Claims**



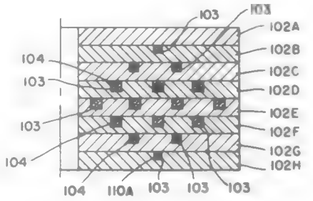
1. A method for soldering a ceramic body of an electric component into a metal housing, which comprises:
applying a tin layer over a ceramic body of an electric component provided with an electrically conductive layer, and
applying a high-melting-point lead-tin passivation layer to a surface of a housing to be soldered to the ceramic body.

5,337,940

COMPOSITE PREFORM AND METHOD OF MANUFACTURING FIBER REINFORCED COMPOSITE

Harlan L. Woods, 12 Chapman Rd., Wakefield, Mass. 01880; Richard C. Lewis, 3 Haines Ter., Merrimack, N.H. 03054; Peter Nagy, 106 Pope Rd., Acton, Mass. 01720, and Stephen A. Kraus, 909B Ridgefield Cir., Clinton, Mass. 01510

Continuation-in-part of Ser. No. 625,479, Dec. 11, 1990, abandoned. This application Sep. 11, 1992, Ser. No. 943,736
Int. Cl.[5] B23K *20/02*
U.S. Cl. 228—190 **22 Claims**



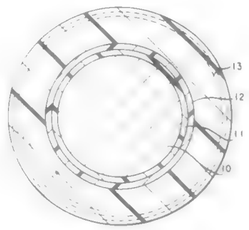
1. A method of manufacturing a preform for a composite article comprising the steps of:
a) forming grooves in a plurality of sheets of foil;
b) disposing reinforcing fiber in at least a portion of the grooves in at least a portion of the sheet to leave a portion of the grooves which do not contain reinforcing fiber;
c) disposing material compatible with the foil sheets near the portion of the grooves which do not contain reinforcing fiber; and
d) stacking the plurality of sheets of foil.

5,337,941

MAGNET WIRE HAVING A HIGH HEAT RESISTANCE AND A METHOD OF REMOVING INSULATING FILM COVERING MAGNET WIRE

Atsushi Higashiura; Fumikazu Sano, both of Hiratsuka; Yoshitaka Tokimori, Anjo, and Yoshitaka Natsume, Kariya, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Nippondenso Co., Ltd., Kariya, both of Japan

Filed Mar. 31, 1993, Ser. No. 40,652
Int. Cl.[5] B23K *1/00*
U.S. Cl. 228—205 **5 Claims**



1. A method of applying a soldering treatment to a magnet wire having a high heat resistance, comprising the steps of:
preparing a magnet wire having a high heat resistance, comprising a conductor and an inner layer formed by baking a first resin coating covering the outer surface of the conductor, said inner layer having a heat resistance specified in IEC Pub. 172, which is not lower than 130° C. and is lower than 200° C., and an outer layer formed by baking a second resin coating covering the outer surface of said inner layer, said outer layer having a heat resistance specified in IEC Pub. 172, which is not lower than 200° C., the

VOL 1165 ISS 3 AG 16 1994 UMI

thickness of said inner layer falling within a range of between 0.3 μm and 5 μm and being not larger than ½ of the sum of the thicknesses of the outer and inner layers;

irradiating the insulating covering of said magnet wire having a high heat resistance with a laser beam so as to remove said outer layer and said inner layer and to expose a part of the conductor; and

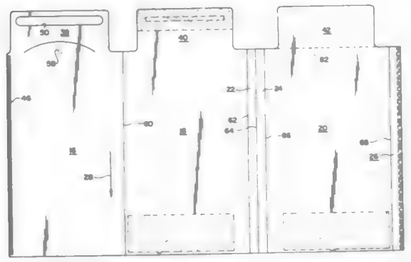
bringing an exposed portion of the conductor into contact with a molten solder so as to to achieve a soldering between said exposed part and a material to be bonded to said exposed part.

5,337,942

FILM-PROCESSING ENVELOPE

E. Leslie McClelland, Lancaster, Ohio, assignor to Cyril-Scott Company, Lancaster, Ohio

Filed Jun. 23, 1993, Ser. No. 80,124
Int. Cl.[5] B65D *27/08*
U.S. Cl. 229—72 14 Claims



1. An envelope, comprising:

a parametrically complete, flattened, convolute strip of flexible sheet material having two axially opposite ends, said strip being sufficiently overlapped parametrically thereof as to comprise three layers throughout most of the width thereof, including a front main panel, a rear main panel, and a compartment-dividing intermediate panel sandwiched between said front and rear main panels and dividing internal space within said envelope into a main compartment and an adjunct compartment;

said front and rear main panels being integrally connected along respective adjoining longitudinal margins thereof and having respective opposite longitudinal margins;

one of said main panels and said intermediate panel being integrally connected along one longitudinal margin of said intermediate panel and a respective said opposite longitudinal margin of said one main panel; said intermediate panel having an opposite longitudinal margin;

an integral tabular longitudinal extension from one of said main panels at one end of said strip being foldable over said end into overlapping relation with a respective portion of the other of said main panels to thereby provide at least part of a closure flap for closing said one end of said strip, and therefore, respective one ends of said compartments of said envelope;

cooperative means on said closure flap and said other main panel for maintaining said closure flap in closing relation to said one end;

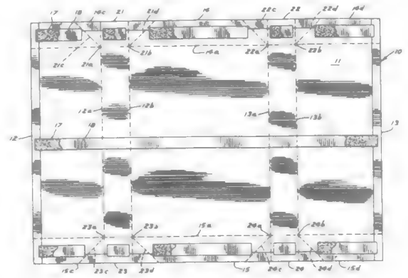
means closing the other end of said strip and therefore respective other ends said compartments of said envelope, this means comprising a first transversally extending glue line securing a marginal region of said front main panel, at a site which is adjacent said other end of said strip to a confronting marginal region of said intermediate panel near said other end of said strip and a second transversally extending glue line securing a marginal region of said rear main panel, at a site which is adjacent said other end of said strip, to a confronting marginal region of said intermediate panel near said other end of said strip, and thereby providing a three-layer lamination of said sheet material extending widthwise of said envelope adjacent said other end.

5,337,943

GIFT WRAP AND METHOD

Ronald D. Hendren, Minnetonka, Minn., assignor to Universal Technologies, Inc., Minnetonka, Minn.

Continuation of Ser. No. 926,554, Aug. 6, 1992, which is a continuation of Ser. No. 667,632, Mar. 11, 1992. This application Jun. 14, 1993, Ser. No. 76,175
Int. Cl.[5] B65D *65/14*
U.S. Cl. 229—87.19 8 Claims



1. A wrap for wrapping a carton comprising:

a. a generally rectangular, four cornered sheet of wrapping material having a perimeter defined by a pair of outer edges, said pair of outer edges including a first outer edge generally spaced parallel from a second outer edge, and a pair of end edges, said pair of end edges including a first end edge generally spaced parallel from a second end edge, wherein said outer edges intersect said end edges to form said four corners of said generally rectangular sheet;

b. a first adhesive means, said first adhesive means attached to said sheet proximate said first outer edge over the length thereof to form a generally linear first adhesive strip generally parallel to said first outer edge;

c. a second adhesive means, said second adhesive means attached to said sheet proximate said second outer edge over the length thereof to form a generally linear second adhesive strip generally parallel to said second outer edge; and,

d. a third adhesive means, said third adhesive means attached to said sheet intermediate between and generally parallel to said first and said second adhesive means over the length of said outer edges to form a generally linear third adhesive strip.

5,337,944

PAPER WEB GUIDE DEVICE HAVING ALTERNATING DRIVING AND BRAKING GUIDE ROLLERS

Noriyuki Shiba, Tokyo, Japan, assignor to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Continuation of Ser. No. 619,955, Nov. 30, 1990, abandoned. This application Feb. 19, 1993, Ser. No. 38,030
Claims priority, application Japan, Dec. 4, 1989, 1-314576
Int. Cl.[5] B41F *13/02*
U.S. Cl. 226—108 9 Claims

1. A paper web guide device comprising:

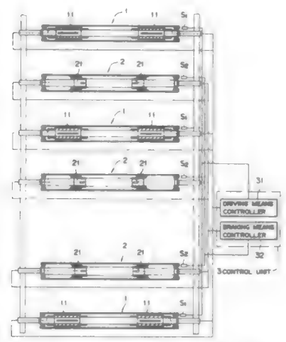
(A) a plurality of driving guide rollers arranged in series;

(B) a plurality of driving devices, each of which is connected to one of said driving guide rollers;

(C) a plurality of braking guide rollers, each of which is disposed between successive ones of said driving guide rollers; and

(D) a plurality of braking devices, each of which is connected to one of said braking guide rollers;

wherein said driving devices drive said driving guide rollers and said braking devices apply a braking force to said braking guide rollers such that during a cleaning mode, when a paper web is travelling over the driving



guide rollers and the braking drive rollers, the driving guide rollers are driven at a different speed from a speed of the braking guide rollers which prevents a continuous tension from being applied along the paper web;

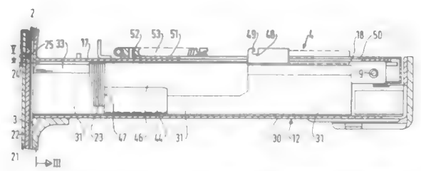
wherein during a normal mode printing operation, said braking guide rollers and said driving guide rollers are only driven by the paper web.

5,337,945

DEVICE FOR DRIVING-IN STITCHES

Siegfried Fehrle; Wilfried Kabatnik, both of Leinfelden-Echterdingen; Manfred Buck, Nürtingen; Klaus Dietz, Filderstadt; Martin Hoelzel; Klaus Kleyer, both of Stuttgart; Wolfgang Schmid, Filderstadt, and Karl Wanner, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 819,095, Jan. 9, 1992, abandoned. This application Nov. 13, 1992, Ser. No. 976,173
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 4109362
Int. Cl.[5] B25C *7/00*
U.S. Cl. 227—109 15 Claims



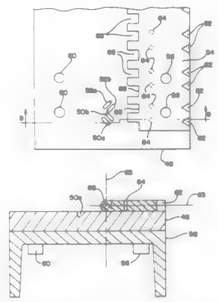
1. A device for driving-in stitches, comprising a magazine for receiving stitches of different widths and having a casing for accommodating stitches; a slider insertable in the casing and having a guiding rail for guiding stitches, and a shooting passage with an opening; an end plate mounted on said casing and a stripping plate mounted on said slider, said end plate and said striping plate limiting said opening of said shooting passage, said stripping plate being formed as an angular piece with a first leg which limits said shooting passage and a second leg extending substantially perpendicularly to the first leg and abutting against the slider, said guiding rail being fixedly connected with said slider so that sad magazine is opened when said slider together with said guiding rail is withdrawn from said shooting passage, said guiding rail being hollow, said stripping plate having a tongue which extends in an interior of said guiding rail.

5,337,946

SYSTEM FOR AFFIXING A DEVICE TO A WORKPIECE

Thomas W. Richardson, and Mary Jane Richardson, both of 934 Cleveland Rd., Hinsdale, Ill. 60521

Filed Sep. 9, 1992, Ser. No. 942,584
Int. Cl.[5] B23P *11/00*
U.S. Cl. 227—110 13 Claims



1. A system for affixing a device to a workpiece; the system comprising:

a dynamic fastening means for imparting motion to a fastener with respect to said workpiece; said dynamic fastening means containing said fastener and urging said fastener along a path for dispensing said fastener, said fastener when dispensed piercingly encountering said workpiece and fixedly engaging said device with said workpiece;

a static means for effecting clasping engagement of said workpiece and said device by said fastener; said static fastening means including deflecting means, said deflecting means, upon engagement with said fastener, orienting said fastener to a clasping configuration for establishment said clasping engagement; and

a positioning means for establishing desired relative positions of said workpiece, said dynamic fastening means and said fastener, said device, and said deflecting means for said clasping engagement; said positioning means including a plurality of pins and a plurality of pin-positioning structures; said plurality of pins including a first set pin and a second pin; said plurality of pin-positioning structures including a first pin-positioning structure for engaging said first pin and a second pin-positioning structure for engaging said second pin; said fastener being placed in alignment with said device and said deflecting means for engaging said deflecting means when said first and second pins engage said first and second pin-positioning structures respectively to cause said deflecting means, upon engagement with said fastener, to orient said fastener to said clasping configuration for establishing said clasping engagement.

5,337,947

REVERSIBLE TRIANGULAR BOX WITH ADVERTISING AND SAFETY SIGNS ON ALTERNATE FACES

Ezra D. Eskandry, 1925 Brickell Ave., D901, Miami, Fla. 33129

Filed Dec. 18, 1992, Ser. No. 993,298
Int. Cl.[5] B65D *5/20, 5/46*
U.S. Cl. 229—115 14 Claims

1. A reversible triangular box with advertising and safety signs on alternate facing sides thereof comprising:

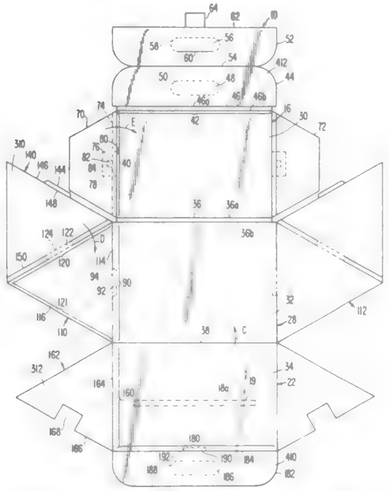
a generally rectangular sheet divided into a first, an interme-

VOL 1165 ISS 3 AUG 16 1994 UMI

diate second, and a third rectangular sections by two major folds, each rectangular section having a respective front and back face and each rectangular section having advertising indicia on one of the front and back face thereof, and each rectangular section having safety sign indicia on the other of the front and back face thereof, each rectangular section having respective side edge regions normal to said major folds and said first and third rectangular sections each having top edge regions opposite said major folds;

two triangular side sections extending from said side edge regions of said intermediate second rectangular section and linked thereto via respective side folds, each said triangular side section having a respective triangular front and back face, each triangular side section having further advertising indicia on one of the triangular front and back face thereof and further safety sign indicia on the other of the triangular front and back face thereof, each triangular side section having a respective triangular edge region;

a pair of complementary side locking tabs and side locking slot combinations, one tab and slot combination defined on



opposing side edge regions of said first rectangular section and corresponding triangular edge regions of respective triangular side sections, corresponding triangular edge regions being adjacent opposing side edge regions of said first rectangular section, such that when said corresponding triangular edge regions abut said side edge regions of said first rectangular section, said side locking tabs are inserted into said side locking slots thereby removably linking said triangular side sections to said first rectangular section;

a first and a second handle panel, said first handle panel extending from said top edge region of said first rectangular section, said second handle panel extending from said top edge region of said third rectangular section; and

means for retaining said first and second handle panels together in abutment;

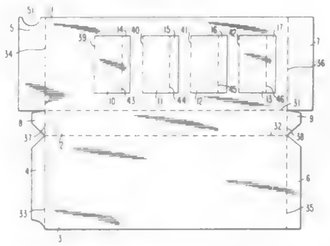
whereby said triangular box always simultaneously displays advertising indicia on at least two exposed faces thereof and safety sign indicia on at least two further exposed faces thereof even though said back faces are exposed or said front faces are exposed.

5,337,948

HALF-CARTON STRUCTURE AND METHOD OF FORMING SAME

Reginald W. Newsome, Richmond; James A. DeBlasio, Midlothian; Robert E. Talley, Chester; John M. Adams, Mechanicsville; Christopher N. Chance; Donald H. Evers, both of Richmond; William C. Harris, Midlothian, and Michael A. Kirby, Trevilians, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 17, 1993, Ser. No. 79,101
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.15 **7 Claims**



1. A container structure comprising:

a front wall having a plurality of cut-out sections foldably and vertically attached thereto, each of said cut-out sections having a flap tab foldably and vertically attached to the cut-out section;

a back wall parallel to and substantially the same size as the front wall; and

a bottom wall perpendicular to and attached to both the front wall and the back wall and having a width substantially equal to the width of the cut-out sections; wherein:

the cut-out sections are folded such that they are perpendicular to the front wall and extend towards the back wall; and

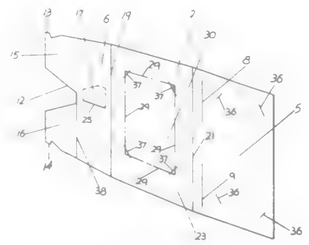
the flap tabs are folded such that they are parallel to and resting against the back wall.

5,337,949

PHOTO OR ART EASEL AND SELF-MAILER

Wayne C. Seeley, 233 Coventry at Waterford, York, Pa. 17402

Filed May 10, 1993, Ser. No. 58,176
Int. Cl.[5] A47G *1/06;* **G09F** *1/12;* **B65D** *27/04, 27/22*
U.S. Cl. 229—92.8 **5 Claims**



1. An art easel and self-mailing assembly comprising in combination,

a. a central four-sided panel having at least a pair of opposite sub-panels of similar width connected respectively and foldably to two opposite edges of said central panel, said sub-panels respectively comprising

b. a first sub-panel connected to one edge of said central panel and adapted to be folded onto one surface of said central panel,

c. a second sub-panel foldably-connected to the opposite edge of said central panel,

d. said central panel having a smaller panel section thereof outlined by connected lines of serrations adapted to permit said smaller panel section to be removed from said central panel to form an opening adapted to permit a photo or art object when positions on said first panel to be exposed therethrough,

e. said second sub-panel having a bifurcation extending inward from the outermost edge thereof opposite the folded edge thereof to provide a pair of locking tabs rendered readily flexible by said bifurcation, and

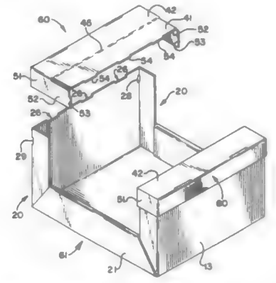
f. said first sub-panel having a pair of slits complementary in location to receive the ends of said locking ears on said second sub-panel when said second sub-panel is folded flat onto said first sub-panel and thereby form a framed art object or photo.

5,337,950

STACKABLE CONTAINER

Robert K. Bower, Cleveland, Tenn., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 14, 1993, Ser. No. 45,775
Int. Cl.[5] B65D *5/44*
U.S. Cl. 229—164 **6 Claims**



1. A stackable container for packaging dry goods comprising a primary body portion having a generally rectangular cross sectional shape formed from a unitary blank of paperboard, said primary body portion having a pair of full height end walls and a pair of said walls, said side walls each including abbreviated sections of full height connected to said end walls and intermediate sections of partial height between said abbreviated sections, a pair of independent tray arms formed from separate blanks of paperboard, one assembled on each of the full height end walls and the full height sections of each side wall, said tray arms each comprising a first elongated rear wall which overlaps the full height end wall, a pair of end caps which overlap the full height sections of each side wall, and a top wall located between said rear wall and the end caps to provide flat surfaces on which subsequent containers may be stacked.

5,337,951

STURDY SANDWICH CARTON

Harry I. Roccaforte, Chicago, Ill., assignor to Waldorf Corporation, St. Paul, Minn.

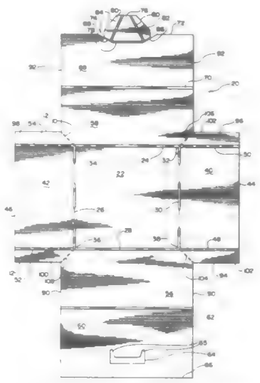
Filed Aug. 5, 1992, Ser. No. 925,608
Int. Cl.[5] B65D *5/24*
U.S. Cl. 229—186 **13 Claims**

1. A generally polygonal carton comprising:

a polygonal bottom wall having at least a pair of adjacent edges and a corner between said pair of adjacent edges;

a side wall foldably attached to each of said adjacent edges, said side walls arranged in two sets of opposed side walls, each side wall having side edges and an upper edge extending between said side edges;

corner means foldably connected to the carton generally between adjacent side walls at each corner of the bottom wall for substantially closing the corners of the carton and comprising web panels, each being foldably connected to the side edges of the side walls of one of said two sets of opposed side walls and to the side walls of the other set of



opposed side walls along a fold line extending outwardly at an angle from each corner of the bottom wall;

top closure means for closing the top of said carton comprising an underlying top closure panel foldably connected along the upper edge of one of said opposed side walls and an overlying top closure panel foldably connected along the upper edge of the opposite side wall; and

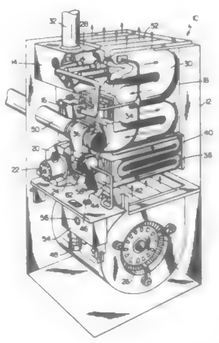
locking means for releasably locking the top closure means.

5,337,952

ADAPTIVE MICROPROCESSOR CONTROL SYSTEM AND METHOD FOR PROVIDING MULTIPLE HEATING MODES IN TWINNED FURNACES

Kevin D. Thompson, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 28, 1993, Ser. No. 98,230
Int. Cl.[5] F24D *5/00*
U.S. Cl. 236—10 **7 Claims**



1. In a heating system containing twinned furnaces capable of independently operating at multiple levels, a method for

VOL 1165 ISS 3 AG 16 1994 UMI

providing multiple heating modes to satisfy a required heating load during a given cycle, there being some total number of heating modes, wherein each heating mode may be activated for a time interval whose length is a function of furnace activity during a most recent previous cycle, comprising the steps of:

determining an existence of a heating load to be satisfied;

operating both furnaces independently at levels appropriate to a first heating mode for a first time interval that does not exceed a first predetermined limit;

for each subsequent heating mode up to a number of one less than the total number of heating modes, operating both furnaces independently at levels appropriate to said subsequent heating mode for a subsequent time interval that does not exceed a subsequent predetermined limit; and

operating both furnaces independently at levels appropriate to a final heating mode for a final time interval until the heating load is satisfied;

calculating a thermal load requirement as a function of all of said time intervals; and

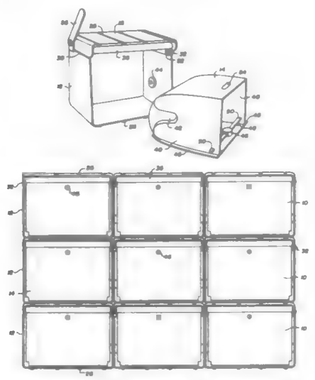
predetermining all of said predetermined time intervals for a next cycle from the calculated thermal load requirement.

5,337,953

PLASTIC MAILBOX

Wilfried Haest, 1821 Peters Road, North Vancouver, B.C., Canada V7J 1Y7

Filed Jan. 10, 1993, Ser. No. 5,718
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—17 **12 Claims**



1. A plastic mailbox comprising in combination

an exterior casing, substantially oblong in shape, having a top, a base, two end walls and a rear wall, the casing having a substantially rectangular shaped open front, connection means on the top, on the base and on the end walls for connection to an adjacent mailbox·

an inner container fitting within the exterior casing, the inner container pivotable about internal protrusions from the end walls of the casing, and removable from the casing, and

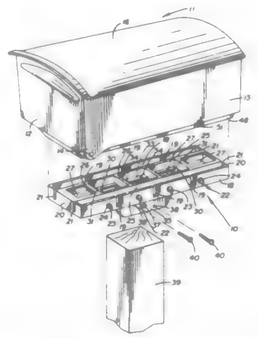
locking means to retain the inner container in an upright position within the exterior casing.

5,337,954

MAILBOX MOUNTING BRACKET

Albert T. Kobilarcik, Wooster, and William T. Stephens, Norton, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed Jul. 27, 1992, Ser. No. 920,041
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—38 **16 Claims**



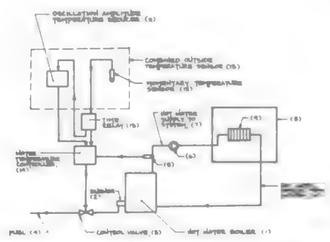
1. In combination, a mailbox and a bracket for mounting the mailbox to a stanchion; the bracket having opposed side walls, opposed end walls, a bottom surface, means depending from said bottom surface to enable the bracket to be attached to the stanchion, and lug means on at least one of said walls to engage the mailbox; the mailbox having a bottom surface, and outer flanges spaced from each other and depending from said bottom surface to engage said lug means, inner flanges depending from said bottom surface and spaced from each other and from said outer flanges, and a plurality of spaced plate members extending between said inner flanges and said outer flanges.

5,337,955

COMBINED BOILER WATER TEMPERATURE CONTROL

Alexander L. Burd, 489 Bader St., Green Bay, Wis. 54302

Continuation-in-part of Ser. No. 852,993, Mar. 16, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 31,350
Int. Cl.[5] F24D *3/00*
U.S. Cl. 236—91 F **6 Claims**



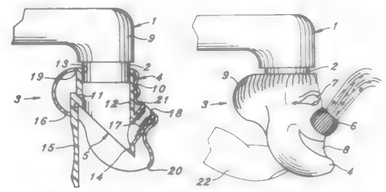
1. The heat control of hot water boiler for space heating system having supply and return hot water line and space heating units and a pump to circulate hot water through the building hot water line and space heating units and serving one or more buildings with or without room temperature control thermostats, said heat control having a water temperature sensor for determining the boiler supply hot water temperature and an outside air temperature sensor for determining a momentary outside air temperature to represent building steady state heat mode when building heat losses follow to said momentary outside air temperature, said heat control having the outside air temperature converter connected in series to outside air temperature sensor to represent building unsteady state heat mode when building heat losses do not follow to said momentary outside air temperature, said heat control having a time relay responsible for switching control from a momentary outside air temperature sensor to the outside air temperature converter, said heat control having a water temperature controller responsive to the difference existing between a set boiler supply hot water temperature and the outside air temperature, said heat control having a control valve to change a fuel delivery rate to the boiler's burner, said boiler hot water supply temperature changes inversely to outside air temperature, measured by said momentary outside air temperature sensor of steady state heat mode and/or measured by said momentary outside air temperature sensor and then converted by said outside air temperature converter of unsteady state heat mode, so a higher boiler hot water supply temperature is maintained at lower outside air temperature, said hot water boiler supply temperature change is achieved by changing a boiler's burner fuel delivery rate through a said control valve proportionally to a difference existing between a set hot water boiler supply temperature and outside air temperature.

5,337,956

COMBINATION TOY AND FAUCET FOUNTAIN

William C. Crutcher, P.O. Box 276, Middlebury, Conn. 06762

Filed Feb. 10, 1993, Ser. No. 15,822
Int. Cl.[5] B05B *17/08;* **E03B** *9/20*
U.S. Cl. 239—27 **14 Claims**



1. Combination character toy and faucet fountain comprising:

a faucet fountain core including a tubular body with a front wall portion and a rear wall portion, said tubular body having an inlet end adapted to fractionally fit over a faucet and having an outlet end, a closure member attached to said rear wall portion adjacent said outlet end and of sufficient size to cover said outlet end, and a fountain conduit extending upwardly and outwardly from a hole defined in said front wall portion near said outlet end of said annular body to a terminating spout end, said closure member being arranged to be moved to cover said outlet end to direct water from said faucet through said spout end, and

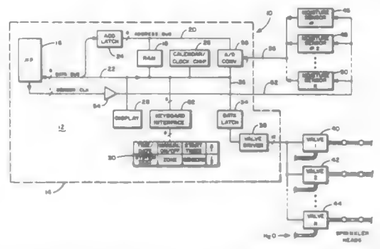
a jacket enclosing said tubular body and said fountain conduit, said jacket defining a first opening surrounding said inlet end, a second opening surrounding said outlet end and spaced therefrom to accomodate movement of said closure member while also permitting water to flow therethrough and a third opening surrounding and engaging said spout end, said jacket having a molded exterior surface depicting at least one fanciful object, said third opening being located in said fanciful object, whereby movement of said closure member directs water through said spout end and through said third opening so that water appears to come from said object as well as being available for drinking.

5,337,957

MICROPROCESSOR-BASED IRRIGATION SYSTEM WITH MOISTURE SENSORS IN MULTIPLE ZONES

Troy C. Olson, 7505 N. Shore Clr., Forest Lake, Minn. 55025

Filed Jul. 1, 1993, Ser. No. 84,621
Int. Cl.[5] B05B *12/12;* **A01G** *25/16*
U.S. Cl. 239—63 **12 Claims**



1. An irrigation system for an area to be watered, the area being divided into a plurality of the discrete zones of possible different soil conditions, each zone including at least one water dispensing device and a solenoid valve having an "on" state and "off" state for controlling the flow of water to said at least one dispensing device for that zone, comprising:

(a) a moisture sensor for each of said zones, said moisture sensors penetrating into the soil and producing an electrical signal proportional to the level of moisture in the soil proximate said moisture sensor;

(b) a microprocessor-based controller coupled in controlling relationship to said solenoid valves in each of said plurality of zones, said microprocessor-based controller periodically transmitting an inquiry signal to said moisture sensors and said moisture sensors responding by transmitting said electrical signal to said microprocessor-based controller;

(c) means in said microprocessor-based controller for selectively actuating said solenoid valves in said plurality of zones to said "on" state at predetermined times during a weekly period unless the moisture sensor for a given zone indicates a predetermined sufficient level of moisture for that zone; and

(d) an operator's panel including an alpha/numeric display and a plurality of push-button keys for facilitating programming of said microprocessor-based controller, certain of said push-button keys operative to present plural menu screens, said menu screens including at least one of keys operative to enter new parameter values into said menus screens, said menu screens including at least one of a start-time screen, a time-date screen, a zone screen, a soil sensor screen and a system test screen, said zone screen displaying the selection of a zone number, a water day, a water time and a start time.

5,337,958

SCREW-IN TYPE SPRAY NOZZLE AND METHOD OF ASSEMBLY

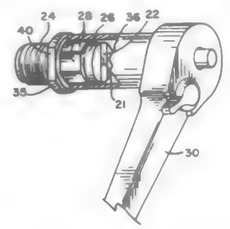
Timothy H. Hennessy, Aurora, and Patrick M. Maney, Batavia, both of Ill., assignors to Spraying Systems Co., Wheaton, Ill.

Filed Jun. 2, 1993, Ser. No. 71,073
Int. Cl.[5] B05B *1/04, 15/06*
U.S. Cl. 239—71 **8 Claims**

1. A spray nozzle for mounting in a threaded discharge end of a liquid supply line by use of a wrench having spaced apart gripping elements comprising an elongated nozzle body having a flow passage communicating between upstream and downstream ends thereof for receiving liquid from the supply line on which the nozzle is mounted, means defining a discharge orifice having an elongated configuration with a long axis oriented transversely across an end of said nozzle body at

VOL 1165 ISS 3 AG 16 1994 UMI

a downstream end of said flow passage, said body having a threaded upstream end portion for threaded engagement with said supply line and a downstream end portion for engagement by the gripping elements of said wrench, said nozzle body having an integrally formed, radially extending, locating and support flange intermediate its upstream and downstream end portions for supporting the nozzle body on said wrench with the downstream end portion thereof in operative relation to the wrench gripping elements and with the threaded upstream end



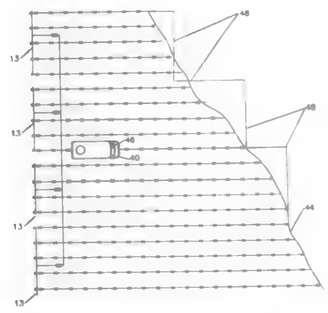
portion extending outwardly of the wrench for positioning into engagement with the threaded discharge end of said supply line by use of said wrench, and said radial locating and support flange being formed with flats oriented in predetermined parallel relation to the long axis of said elongated discharge orifice for permitting mounting of said nozzle in engaged relation with said supply line by use of said wrench with said discharge orifice in predetermined orientation with respect to the supply line without reference to the discharge orifice.

5,337,959

SPRAY CONTROL SYSTEM FOR MULTIPLE SEGMENT BOOM SPRAYERS

Ron Boyd, 3717 Brangus Rd., Georgetown, Tex. 78628

Filed Nov. 10, 1993, Ser. No. 149,763
Int. Cl.[5] B05B *1/20*
U.S. Cl. 239—163 **5 Claims**



1. An Improved Spray Control System for Multiple Segment Boom Sprayer comprising:

a) a self propelled vehicle;

b) a spray solution tank mounted on said vehicle;

c) a multiple segment spray boom mounted on said vehicle with each of said multiple segments mounted in the same plane;

d) a pump, a flow meter, and a flow control valve; said pump taking suction from said solution tank and pumping through said control valve and said flowmeter to said multiple segment spray boom;

e) a plurality of flow lines, each of said flow lines having a first quick opening valve, one of said flow lines leading to each of said multiple segments of said multiple segment spray boom;

f) a recycle line, said recycle line having a plurality of discharge lines connected thereto, each of said discharge lines having a second quick opening valve connected between said flowmeter and said control valve; each one of said second quick opening valves in said discharge lines being automatically controlled to open when an associated one of said first quick opening valves to each of said segments is closed;

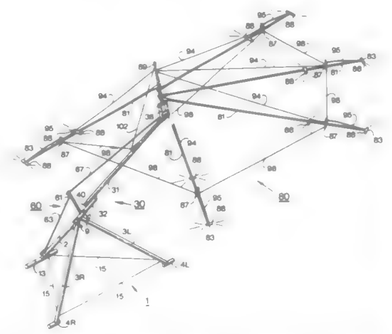
g) a manually adjustable calibrated valve in each of said discharge lines flow through said manually adjustable valves returning to said spray solution tank.

5,337,960

PORTABLE SUPPORT APPARATUS FOR EVAPORATIVE COOLING

William G. Allen, 1575 Sunny Dunes Rd., Palm Springs, Calif. 92262

Filed Aug. 19, 1992, Ser. No. 932,223
Int. Cl.[5] B05B *15/06*
U.S. Cl. 239—280.5 **6 Claims**



1. A lightweight, portable support apparatus for pressurized water conveyance and mist spraying nozzles for overhead evaporative cooling purposes, said apparatus comprising,

(a) a single rear elongated leg extending outwardly and rearwardly along a longitudinal center line axis of said apparatus, two front elongated legs of equal length being oppositely attached to an upper end-portion of said rear elongated leg, such that each of said front elongated legs extends forwardly and laterally outward from said longitudinal center line axis of the apparatus in a substantially oblique direction, substantially horizontal support ties interconnecting a lower end-portion of all three legs for positioning and support;

(b) a boom attached to the upper end-portion of said rear elongated leg and extending forwardly and upwardly in substantial alignment with the longitudinal axis of the rear leg, said boom having conduit means for conveying water under pressure;

(c) a truss post affixed at substantially right angles to a top side of the upper end-portion of the rear leg, a lower truss member interconnecting the lower end-portion of the rear leg and an outer end-portion of said truss post, an upper truss member interconnecting said outer end-portion of the truss post and an outer end-portion of the boom;

(d) at least one substantially upright pivot post attached to the outer end-portion of the boom, a plurality of branch arms, pivot means for pivotally attaching an inner end-portion of each of said branch arms to a lower portion of said at least one pivot post, said branch arms extending radially outward from said pivot means, the branch arms having conduit means for conveying water under pressure, at least one mist spraying nozzle attached to each branch arm, a plurality of support guys, each one of said support guys having pivot means for pivotally attaching to an upper portion of said at least one pivot post, at least one of said plurality of support guys extending radially outwardly and downwardly from said upper portion of said at least one pivot post and attaching to at least one of said branch arms, each support guy having adjustable means for lengthwise adjustment, at least one flexible support stay interconnecting each branch arm and the boom for radial positioning and support, said flexible support stay having two ends and each end having quick-release means for easy removal from the boom, a flexible water conduit interconnecting said conduit means of the boom and said conduit means of each branch arm, said flexible water conduit having a quick-disconnect coupling, a filtering means for filtering water between said quick-disconnect coupling and said at least one mist spraying nozzle, a support tie interconnecting the upper portion of said at least one pivot post and a lower and substantially central point of the apparatus; and

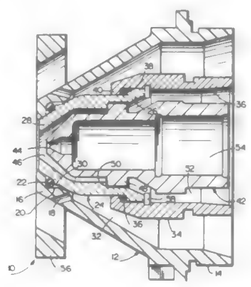
(e) a counter-balance means for counter-balancing the forward weight of the apparatus being provided at the lower end-portion of the rear leg.

5,337,961

CERAMIC TIP AND COMPLIANT ATTACHMENT INTERFACE FOR A GAS TURBINE FUEL NOZZLE

Eric J. Brambani, and Jonathan Munshi, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 7, 1992, Ser. No. 986,602
Int. Cl.[5] B05B *7/06*
U.S. Cl. 239—397.5 **11 Claims**



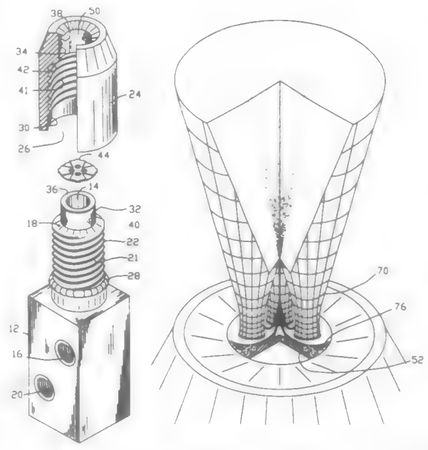
1. In a fuel injection nozzle for a gas turbine wherein a nozzle tip assembly includes radially inner and outer components defining an atomizing air passage, the improvement comprising constructing said radially outer component of ceramic material, and wherein said nozzle tip assembly includes a metallic radially outermost component which in cooperation with said radially outer ceramic component defines a gas fuel passage, and further wherein said radially outer ceramic component is isolated from said metallic radially outermost component by at least one compliant metallic spring seal.

5,337,962

PNEUMATIC ATOMIZER HAVING IMPROVED FLOW PATHS FOR ACCOMPLISHING THE ATOMIZATION OF LIQUIDS

Elisha W. Erb, 94 Harvard St., Leominster, Mass. 01453, and Darrel R. Resch, 711 Sugar Bay Way, Unit 209, Lake Mary, Fla. 32746

Filed Mar. 24, 1993, Ser. No. 36,341
Int. Cl.[5] B05B *7/08*
U.S. Cl. 239—424.5 **14 Claims**



1. An atomizer device capable of reducing a flowable liquid to an ultrafine dispersion of liquid particles in a propellant gas, comprising:

a generally smooth exposed surface having a central portion as well as an outer, peripheral portion surrounding said central portion,

at least one orifice means disposed in said surface in a partially surrounding relationship to said central portion,

at least one gap in said at least one orifice means, forming at least one passway on and above said surface, said at least one passway extending radially inward from said outer portion to said central portion,

means supplying a propellant gas to the underside of said surface, to cause such propellant gas to pass at considerable speed through said at least one orifice means, thus forming at least one gas jet, the propellant gas flowing through said at least one orifice means creating an area of low pressure at said central portion of said surface which draws a flow of ambient gas through said at least one passway,

means supplying a liquid to said outer portion of said exposed surface at a location radially in line with said at least one passway and near the outer end thereof, such liquid being swept across said surface and through said at least one passway toward said area of low pressure as a consequence of the ambient gas flowing through said at least one passway toward said area of low pressure, the liquid reaching said central portion being entrained into said at least one gas jet, such entrained liquid breaking into very fine droplets int he propellant gas.

VOL 1165 ISS 3 AG 16 1994 UMI

5,337,963

SPRAYING DEVICE

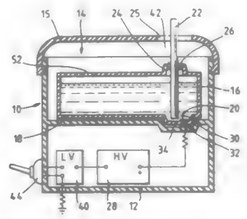
Timothy J. Noakes, Clwyd, Wales, assignor to Imperial Chemical Industries PLC, England

Filed Nov. 5, 1991, Ser. No. 788,152

Claims priority, application United Kingdom, Nov. 12, 1990, 9024549; May 20, 1991, 9110885

Int. Cl.[5] B05B *5/16*

U.S. Cl. 239—690 24 Claims



3. A cartridge for storage of liquid suitable for electrostatic spraying, the cartridge comprising a bottom wall formed with a recess, a capillary structure extending into the interior of the cartridge with one end of the capillary structure received in said recess so as to feed liquid by capillary action from the recess to a spraying outlet at the tip of the capillary structure, and means for providing an electrically conductive path to allow application of an electrostatic charge directly to a portion of liquid accommodated within the recess.

5,337,964

METHOD AND PLANT FOR RECOVERING SECONDARY RAW MATERIALS FROM GARBAGE

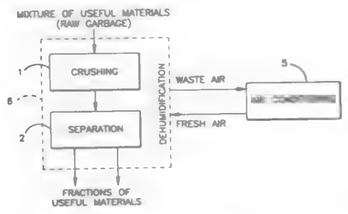
Thomas Buehlmann, Schaches, Switzerland, assignor to Ikotek Informatik, Kommunikation und Fertigungstechnik AG, Furstentum, Liechtenstein

Filed Apr. 1, 1993, Ser. No. 41,836

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1992, 4241754

Int. Cl.[5] B02C *23/18*

U.S. Cl. 241—17 13 Claims



1. A method of recovering secondary raw materials for garbage consisting of a non-uniform mixture of useful materials gone out of use, said method comprising the steps of:

(1) crushing the solid components of said non-uniform mixture;

(2) separating the obtained crushed mixture into fractions wherein each of said fractions is of uniform composition; and

(3) subjecting said fractions to a dehumidification process wherein (i) said dehumidification process extends continuously throughout all steps of said recovering method, (ii) all steps of said recovering method are effected in an isolated atmosphere which is separated from the surrounding atmosphere, by circulating the air effecting said dehumidification process, and (iii) the temperature of said isolated atmosphere is at highest 100° C. at the end of the last step of said recovering method.

5,337,965

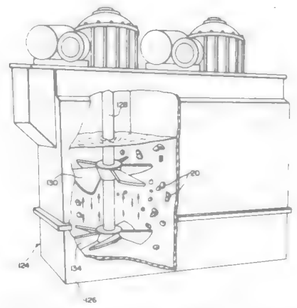
METHOD AND APPARATUS FOR RECYCLING ASPHALT BASED ROOFING MATERIAL

Domenico Chiovitti, Boucherville, Canada, assignor to Finoll Recycling Ltd., Ontario, Canada

Filed Oct. 9, 1992, Ser. No. 958,801

Int. Cl.[5] B03B *1/00;* B03D *1/02;* B02C *19/12, 23/36*

U.S. Cl. 241—19 15 Claims



1. A method for recovering asphalt and aggregate from roofing materials wherein said roofing materials are asphalt shingles or built up roofing and said roofing materials comprise multiple asphalt bodies each having a surface with aggregate coated thereon and adhered to the asphalt of said asphalt bodies comprising:

introducing plural said asphalt bodies into a disengagement zone containing a liquid to form a slurry therein

disengaging the aggregate from the asphalt bodies in said disengagement zone substantially without heating said asphalt bodies, and without significant reduction in the size of the aggregate, said disengaging consisting essentially of causing said bodies to mutually impact each other;

separating and recovering said disengaged asphalt bodies substantially free of disengaged aggregate; and

recovering disengaged aggregate of substantially unreduced size.

5,337,966

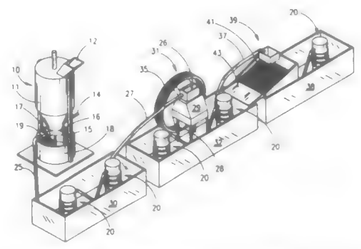
METHOD AND APPARATUS FOR THE REDUCTION AND CLASSIFICATION OF SOLIDS PARTICLES

Gordon G. Francis, Sunset, and Richard W. Hebert, Iota, both of La., assignors to Fluid Mills, Inc., Lafayette, La.

Filed Apr. 13, 1993, Ser. No. 46,644

Int. Cl.[5] B02C *23/38*

U.S. Cl. 241—46.06 20 Claims



1. A system for reducing the size of solids particles suspended in a viscous liquid and for classifying said suspended solids particles by size comprising:

(a) a receiving tank for receiving a quantity of said solids particles for size reduction and classification along with a quantity of said viscous liquid,

(b) means for mixing said viscous liquid together with said solids particles to form a slurry of suspended solids particles,

(c) a plurality of fluid mills for pumping said slurry and for reducing the size of said slurry suspended solids particles, said fluid mills having a slurry inlet, a plurality of rotating perforated disks in combination with a plurality of stationary blades, at least one impeller and a slurry outlet;

(d) an initial reducing tank having at least one of said fluid mills;

(e) a first conduit for transpoqting said slurry from said receiving tank to said initial reducing tank;

(f) an intermediate reducing tank, said intermediate reducing tank having grinding means for receiving said slurry from said initial reducing tank, screening means for removal of solids particles in excess of a predetermined size from said slurry, means for delivering said excessively sized solids particles to said grinding means, and at least one of said fluid mills;

(g) a second conduit for transporting said slurry from said initial reducing tank to said intermediate reducing tank;

(h) a holding tank, said holding tank having additional screening means for removing solids particles in excess of a predetermined size from said slurry, means for returning said excessively size solids particles to said intermediate reducing tank, and at least one of said fluid mills; and

(i) a third conduit for transporting said slurry from said intermediate reducing tank to said holding tank screening means.

5,337,967

TEXTILE YARN PROCESSING APPARATUS

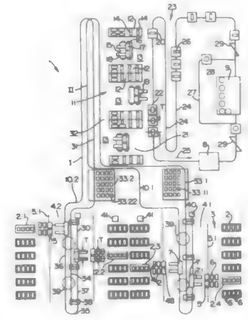
Udo Teich, Sprockhövel, and Ludger A. Deters, Remscheid, both of Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Oct. 19, 1992, Ser. No. 962,884

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134453

Int. Cl.[5] B65H *67/06*

U.S. Cl. 242—35.5 A 13 Claims



1. A textile yarn processing apparatus for the continuous production of synthetic filament yarns comprising

package winding means comprising a plurality of yarn winding machines arranged in parallel rows to define a service aisle therebetween, with each of said winding machines having at least one winding spindle positioned at a predetermined first elevation and which is adapted to have at least one yarn package wound thereon,

doffer means adapted to move along said service aisle of said winding machines for receiving full packages from said winding spindles at said first elevation and lifting the same to a predetermined second elevation,

transport carriage means movable along a path of travel which includes said service aisle and including at least one transport mandrel positioned at said second elevation, and such that said transport mandrel is adapted to receive full packages from said doffer means at said second elevation,

an independent service carriage configured for movement along said service aisle and having at least one carriage mandrel mounted at said first elevation and so as to be adapted to receive full packages from each of said winding spindles at said first elevation, and

elevator means including a lifting mandrel mounted for vertical movement between said first and second elevations, and with said elevator means being located at a fixed location adjacent said path of travel of said transport carriage means, such that said service carriage may be used to transport full packages from said winding spindles of said winding machines to said lifting mandrel at said first elevation and the full packages may then be lifted to said second elevation and transferred to said transport mandrel of said transport carriage means.

5,337,968

APPARATUS FOR ROLLING UP WEB MATERIAL

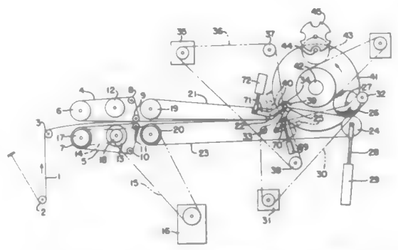
Rene F. De Bin, St. Gillis Waas, and Emiel Lambrecht, Gijzegem-Aalst, both of Belgium, assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 679,452, Apr. 2, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,502

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1990, 4010894

Int. Cl.[5] B65H *19/26, 19/30*

U.S. Cl. 242—521 6 Claims



1. In combination with an apparatus for rolling up web material, particularly bags consisting of plastic films and connected together in strip form, which comprises a disk rotatably mounted on a stationary frame, means for feeding the web material toward the disk, and means for transversely severing the web material before it reaches the disk; wherein the disk comprises a plurality of mandrels rotatably mounted thereto, each mandrel being indexable to each of a take-up position, a waiting position and a removal position through selective rotation of the disk, thereby defining the mandrels as a take-up mandrel, a waiting mandrel and a winding mandrel, respectively, when the mandrels are indexed to each of the three positions; and wherein the web material is rolled up upon the take-up mandrel until a maximum thickness of web material has accumulated on the mandrel, whereupon the web material is severed by the severing means and the web material is fed to the waiting mandrel and rolled up upon the waiting mandrel until a minimum thickness of web material has accumulated on the waiting mandrel, whereupon the disk rotates to transfer the winding mandrel to the waiting position, the waiting mandrel to the take-up position, and the take-up mandrel to the removal

VOL 1165 ISS 3 AG 16 1994 UMI

position for removal of the rolled up web material, the improvement comprising:

a vacuum tube connected through a support wall to the frame adjacent the waiting position of the waiting mandrel, the vacuum tube being axially movable toward and away from the waiting mandrel;

vacuum pump means connected to the vacuum tube for creating a vacuum in the vacuum tube;

the mandrels each comprising a longitudinal bore extending from an open end thereof and a plurality of radial nozzles communicating with the longitudinal bore;

wherein the vacuum tube is selectively movable into contact with the open end of the waiting mandrel so that the vacuum is communicated through the nozzles to thereby draw the web material around the waiting mandrel.

5,337,969

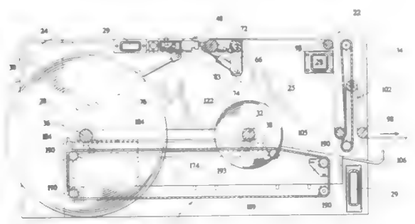
FLYING PASTER

John R. Martin, Rockford, Ill., assignor to Martin Automatic, Inc., Rockford, Ill.

Continuation of Ser. No. 935,859, Aug. 26, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 136,609

Int. Cl.[5] **B65H** *19/18*

U.S. Cl. 242—553 **15 Claims**



13. An improved method for preparing a new roll of web material for a flying splice where the web material includes a leading end that has sides and a leading edge, the improved method comprising the steps of:

applying a first, two-sided, high-tack, low-tack adhesive strip selectively to one of the leading end of the new roll and to the peripheral surface of the new roll, one wrap back from the leading edge of the leading end of the new roll, so that the first adhesive strip is adjacent to the leading edge, when the leading end of the new roll is wrapped about the new roll, so that the low-tack adhesive is in surface-to-surface contact with the leading end, so that the high-tack adhesive is in surface-to-surface contact with the peripheral surface of the body of the new roll, one wrap back from the leading end, and so that the first adhesive strip holds the leading end against the body of the new roll; and

applying a second, two-sided transfer adhesive strip to the outer peripheral surface of the leading end of the new roll so that the second adhesive strip extends substantially from side to side across the width of the leading end, and so that the second adhesive strip is close to but is non-overlapping with the leading edge of the leading end of the new roll.

5,337,970

PRELOADER FOR A WEBBING RETRACTOR

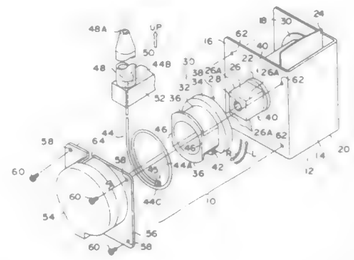
Keisuke Imai; Toshimasa Yamamoto; Akio Numazawa; Hitoshi Iwata, and Yasutaka Watanabe, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Aug. 6, 1991, Ser. No. 740,944

Claims priority, application Japan, Aug. 8, 1990, 2-209491

Int. Cl.[5] **B60R** *22/46*

U.S. Cl. 242—374 **12 Claims**



1. A preloader for use in a webbing retractor for retracting an occupant-restraining webbing forcibly onto a takeup shaft at the time of a sudden deceleration of a vehicle, comprising:

a member to be engaged which rotates integrally with said takeup shaft;

an engaging member disposed around said member to be engaged and having a substantially smooth and deformable inner surface in spaced-apart relation therewith, and including a deformable portion; and

actuating means connected to said engaging member and wound around said engaging member, said actuating means being adapted to be tightly wound around said engaging member at the time of the sudden deceleration of the vehicle so as to cause said engaging member to undergo deformation, thereby allowing said smooth inner surface of said engaging member to engage with said member to be engaged so that said member to be engaged bites into said smooth and deformable inner surface to rotate said member to be engaged together with said engaging member, so as to rotate said takeup shaft in a taking-up direction.

5,337,971

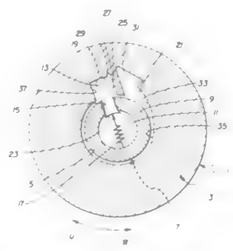
TORQUE TRANSMISSION CLUTCH FOR FILM SPOOL

John J. Niedospial, Jr., Princeton Junction, N.J., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1993, Ser. No. 40,952

Int. Cl.[5] **G03B** *17/26*

U.S. Cl. 242—348 **5 Claims**



1. A film spool comprising a spool core provided with a coaxial opening adapted to receive a rotational driver rotatable

alternatively in film winding and unwinding directions to similarly rotate said spool core, is characterized in that:

said spool core includes first torque transmission means which projects into said opening to be located in the path of the rotational driver, when the driver is rotated inside said opening in the film unwinding direction, for enabling the driver to transmit torque to rotate said spool core in the film unwinding direction responsive to the driver applying an unwinding turning force to said first torque transmission means, and which is capable of being deformed out of the path of the driver, when the unwinding turning force the driver applies to said first torque transmission means exceeds a predetermined maximum force greater than required to rotate said spool core in the film unwinding direction, for allowing the driver to freely rotate inside said opening in the film unwinding direction substantially without transmitting torque to the spool core; and

said spool core includes second torque transmission means which projects into said opening to be located in the path of the rotational driver, when the driver is rotated inside said opening in the film winding direction, for enabling the driver to transmit torque to rotate said spool core in the winding direction responsive to the driver applying a winding turning force to said second torque transmission means which is greater than the predetermined maximum force.

5,337,972

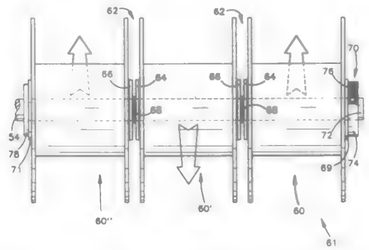
APPARATUS FOR MANUFACTURING PLY STOCK

Anand W. Bhagwat, Akron; Kenneth J. Palmer, Wadsworth, and Amit Prakash, Hudson, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 8, 1993, Ser. No. 29,341

Int. Cl.[5] **B65H** *59/04*

U.S. Cl. 242—129.8 **9 Claims**



1. An apparatus for feeding wire during the manufacture of reinforced ply or belt stock, including:

a spindle secured at an inner end to a reel support structure, said spindle having a collar located near said inner end;

a plurality of reels having said wire wound thereabout, said reels being rotatably mounted on said spindle;

a first friction disk mounted on said spindle and abutted against said collar;

a first of said plurality of reels abutted against said first friction disk;

friction means mounted on said spindle and disposed between each of said plurality of reels located adjacent to each other for applying an axial braking force to each of said plurality of reels;

spring biasing means disposed between each of said adjacent reels for pressing said friction means against said adjacent reels;

a second friction disk mounted on said spindle and abutted against a second of said plurality of reels located adjacent an outer free end of said spindle; and

retaining means at said free end of said spindle abutting against said second friction disk for securing said plurality of reels on said spindle and compressing said spring biased means whereby said axial braking force is applied independently to each of said plurality of reels with a uniform tension.

5,337,973

MAGNETIC TAPE CASSETTE

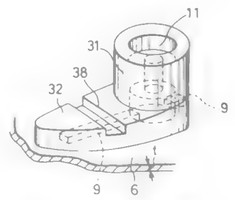
Akira Matsumoto; Kiyoo Morita, and Takuji Daihisa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 10, 1992, Ser. No. 974,223

Claims priority, application Japan, Nov. 13, 1991, 3-101047[U]

Int. Cl.[5] **G03B** *1/04*

U.S. Cl. 242—347 **3 Claims**



1. A magnetic tape cassette comprising:

a cassette case including upper and lower cassette halves, a guide groove being formed on a lower face of said lower cassette half, said guide groove being disposed at a center of said lower face, as measured laterally, and extending longitudinally along said lower face;

a pair of tape winding members rotatably supported within said cassette case;

a magnetic tape wound around said members; and

a tongue-shaped projection disposed on an inner surface of said lower cassette half overlying and covering said guide groove to support said guide groove, and including a recessed portion to provide a reduced thickness portion of said projection.

5,337,974

WING PIVOT STRUCTURE

William E. Rumberger, Newtown Square, Pa., and Wayne S. Steffier, Huntington Beach, Calif., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 15, 1992, Ser. No. 868,508

Int. Cl.[5] **B64C** *3/56*

U.S. Cl. 244—49 **17 Claims**

1. In an aircraft having a wing and a fuselage with a longitudinal axis, said wing being rotatable on a wing pivot device between a flight position with the wing span approximately orthogonal to the fuselage longitudinal axis and a stowed position with the wing span approximately parallel to the longitudinal axis of the fuselage, said wing pivot device comprising:

a pivot ring attached to said fuselage for rotation on said fuselage about a vertical axis;

at least one forward wing attachment member formed on the upper edge of said ring for attaching the leading portion of said wing to said ring;

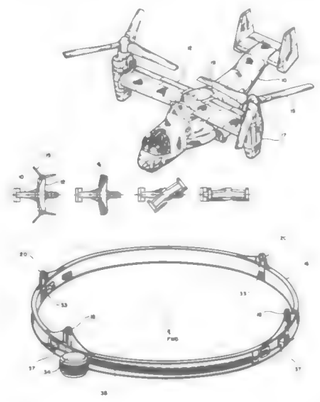
at least one aft wing attachment member formed on the upper edge of said ring for attaching the trailing portion of said wing to said ring;

at least one forward primary fuselage attachment member formed on the lower edge of said ring for attaching the forward portion of said ring to the fuselage;

at least one aft primary fuselage attachment member formed on the lower edge of said ring for attaching the aft portion of said ring to the fuselage;

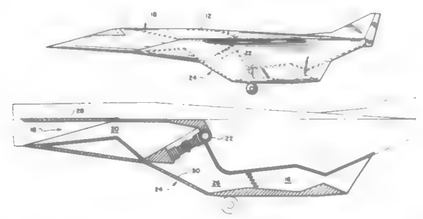
VOL 1165 ISS 3 AG 16 1994 UMI

wing attachment assemblies connected to each of said wing attachment members for attaching said ring to said wing;
primary fuselage attachment assemblies fixed to said fuselage and connected in sliding engagement
with the lower edge of said ring, said primary attachment assemblies allowing said ring to rotate about a vertical axis of said fuselage;



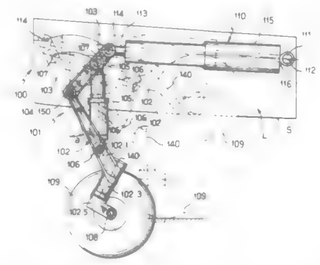
removable locking means connected to said primary fuselage attachment assemblies for selectively locking said wing to the fuselage at the primary fuselage attachment members in the flight position; and
means for rotating said ring about a vertical axis.

5,337,975
BREATHING SYSTEM FOR HYPERSONIC AIRCRAFT
Manfred K. A. Peinemann, Westlake Village, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Feb. 28, 1992, Ser. No. 843,343
Int. Cl.[5] B64D *33/02*
U.S. Cl. 244—53 B **1 Claim**



1. In an aircraft having a body and an integrated turbo-ramjet engine system for hypersonic flight, said aircraft further having an air breathing system associated with said body and said engine system, which comprises:
an upper aircraft body surface inlet communicating in downstream flow orientation with an upper flow channel, an air compressor and a combustion chamber; and
a lower aircraft body surface inlet communicating in a downstream flow orientation with a lower air flow channel and then directly with said combustion chamber bypassing said air compressor and wherein said upper and said lower aircraft body surface inlets are functionally associated so that air is selectively injected into said combustion chamber through said upper inlet during subsonic flight, said lower inlet during supersonic flight or both simultaneously during transition.

5,337,976
RAISABLE LANDING GEAR FOR HEAVIER-THAN-AIR AIRCRAFT, IN PARTICULAR FOR HELICOPTERS
Michel Derrien, Versailles, France, assignor to Messier-Bugatti, Velizy Villacoublay, France
Filed Mar. 26, 1993, Ser. No. 37,417
Claims priority, application France, Mar. 31, 1992, 92 03877
Int. Cl.[5] B64C *25/14, 25/58*
U.S. Cl. 244—102 A **10 Claims**

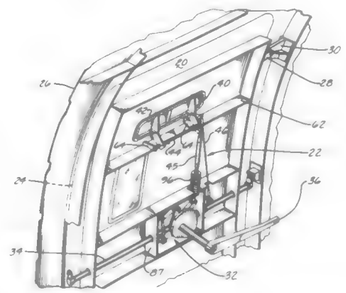


1. Raisable landing gear for a heavier-than-air aircraft, the landing gear including a landing gear leg pivotally mounted to the structure of an aircraft about a pivot axis that is essentially perpendicular to the longitudinal midplane of said aircraft and fitted with at least one wheel stub axle, and also with an associated driving actuator for lowering and raising said leg, wherein the landing gear leg is implemented in the form of two elements one of which is hinged to the structure of the aircraft about an axis which constitutes said pivot axis of the leg, the said two elements being hinged to each other about an axis parallel to the pivot axis of said leg and being connected together by means of a shock absorber; one of said elements is a bottom element implemented in the form of a rocker whose free end is fitted with at least one wheel stub axle, and; the other one of said elements is a top element implemented in the form of a panel whose free end is hinged to the driving actuator, and wherein said driving actuator is a shock-absorbing actuator having a force threshold which applies a predetermined torque tending to maintain the leg in the position that it occupies during landing, while allowing said leg to be raised against controlled forces in the event of a crash landing.

5,337,977
VENT-LATCH INTERLOCK ASSEMBLY FOR AN AIRCRAFT DOOR
Michael A. Fleming, Bellevue, and Michael C. Sturm, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jan. 29, 1993, Ser. No. 11,307
Int. Cl.[5] B64C *1/14*
U.S. Cl. 244—129.5 **32 Claims**

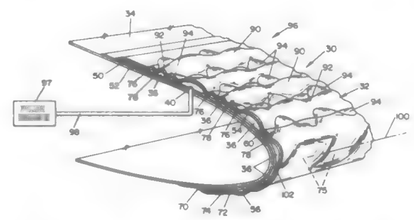
1. A vent-latch interlock assembly for attachment to an aircraft door having a selectively actuatable latch assembly for opening and closing the aircraft door, said vent-latch interlock assembly comprising:
a pressure vent door attached to the aircraft door, said pressure vent door being positioned adjacent an opening formed in the aircraft door and being adjustably secured to the aircraft door to move between a closed position seated in the aircraft door opening and a fully open position spaced from the aircraft door opening;
biasing means connected between the aircraft door and said pressure vent door for urging said pressure vent door toward said fully open position;

a drive linkage connected between the latch assembly and said pressure vent door, for selectively maintaining said pressure vent door in said closed position, said drive linkage being movable between a first position for maintaining said pressure vent door in said closed position when the aircraft door is closed and a second position for allowing said pressure vent door to move toward said fully open position when the latch assembly is actuated to open the aircraft door; and



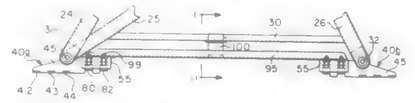
an interlock assembly connected between the latch assembly and said pressure vent door for controlling the actuation of the latch assembly in response to said position of said pressure vent door, said interlock assembly having a first position abutting the latch assembly for preventing actuation of the latch assembly to open the aircraft door when said pressure vent door is in said closed position and a second position spaced from the latch assembly for allowing actuation of the latch assembly when said pressure vent door is in said open position.

5,337,978
LEADING EDGE PNEUMATIC DEICER ASSEMBLY
Alan J. Fahrner, Canton, and Norbert A. Weisend, Jr., Cuyahoga Falls, both of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio
Filed Oct. 29, 1992, Ser. No. 968,118
Int. Cl.[5] B64D *15/00*
U.S. Cl. 244—134 A **32 Claims**



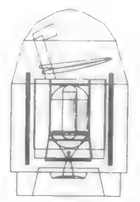
1. A pneumatic deicing apparatus for attachment across the leading edge of an airfoil, said apparatus comprising:
a bottom ply of a first fabric;
a top ply of a stretchable second fabric;
said top and bottom plies being stitched with a zig-zag stitch line which is traverse to the leading edge of the airfoil and which periodically crosses over the leading edge, wherein pressurized fluid is provided between said bottom and top ply to thereby inflate said top ply around said stitch line.

5,337,979
TRACK FITTING FOR AIRCRAFT SEATS
Randy J. Bales, Nocona; Klay E. Gilbert, and Steven R. Bell, both of Lindsay, all of Tex., assignors to Weber Aircraft, Inc., Gainesville, Tex.
Continuation-in-part of Ser. No. 809,405, Dec. 18, 1991, Pat. No. D. 333,420. This application Feb. 3, 1992, Ser. No. 829,961
Int. Cl.[5] B64D *11/06*
U.S. Cl. 244—118.1 **17 Claims**



1. A plurality of track fittings for removably securing a seat to a generally channel-shaped track having an elongated groove formed between a pair of flanges, each of the flanges having spaced aligned generally crescent-shaped openings positioned to form a series of spaced receptacles having flange segments extending between the receptacles, each of said track fittings comprising: a body member having a narrow finger portion which has a width less than the width of the groove formed in the track and an enlarged boss portion; a plurality of spaced track lugs projecting laterally from said narrow finger portion, said enlarged boss portion having a recess formed therein, said recess extending through said narrow finger portion to form a pair of shoulders adjacent opposite sides of said recess; plunger means in said recess, said plunger means and said track lugs having a width greater than the width of the groove formed in the track, said plunger means having surfaces positioned between said shoulders such that said shoulders limit movement of said plunger means; an elongated actuating member having opposite ends; and means securing an end of said actuating member to said plunger means movably secured to said spaced body members, said actuating member being adapted to simultaneously move plungers in each of said body members between a first position wherein the lower end of said plunger means is positioned adjacent the lower edge of said narrow finger portion of the body and an elevated position wherein the lower end of the plunger means is retracted from the spaced receptacles formed in the track.

5,337,980
SPACECRAFT-TO-LAUNCH-VEHICLE TRANSITION
Peter K. Homer, Newtown, Pa.; Robert V. Parenti, Roebling, N.J.; Joel DeStefano, Westampton, N.J.; Wensen Chen, Long Valley, N.J.; Eric Talley, Allentown, N.J., and John E. Close, East Windsor, N.J., assignors to General Electric Co., East Windsor
Filed Sep. 21, 1992, Ser. No. 948,218
Int. Cl.[5] B64G *1/00*
U.S. Cl. 244—158 R **20 Claims**



14. A combination of a spacecraft and a launch vehicle, comprising:
a circular support ring on said launch vehicle, said support

VOL 1165 ISS 3 AUG 16 1994 UMI

ring lying in a plane orthogonal to a longitudinal axis of said launch vehicle;

a spacecraft including first and second mutually parallel structural panels, spaced apart by third and fourth mutually parallel, spaced-apart structural panels to form four sides of a rectangular enclosure defining a spacecraft axis equidistant from said first and second panels, and from said third and fourth panels, said rectangular enclosure defining first and second ends at different transverse locations along said spacecraft axis, said first, second, third and fourth panels, at said first end of said spacecraft, together defining a substantially planar, rectangular figure;

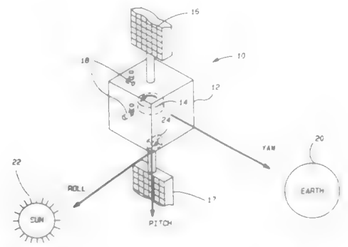
a support transition in the shape of a ring defining an axis parallel with said axis of said spacecraft, said transition including a circular end affixed to said circular support ring of said launch vehicle and a rectangular end affixed to said first, second, third and fourth panels at said first end of said spacecraft, with said axes of said launch vehicle, spacecraft and transition mutually parallel, said rectangular end having rounded corners, said support transition making a smooth transition between said rectangular and circular ends, and having a circumference, at any plane transverse to said axis of said transition, which equals that at any other such transverse plane.

5,337,981

METHOD AND APPARATUS FOR COMPENSATING FOR SOLAR TORQUE TRANSIENTS ON A SATELLITE DURING A SOLAR ECLIPSE

Douglas J. Bender, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 27, 1991, Ser. No. 800,775
Int. Cl.[5] B64G *1/24*
U.S. Cl. 244—164 **14 Claims**



1. An apparatus for compensating for disturbances on an orbiting satellite, said apparatus being associated with said satellite, said apparatus comprising:

actuation means for actuating the satellite in predetermined satellite axes in response to particular satellite attitude compensation control signals;

control means for providing the compensation control signals to the actuation means in the predetermined axes, said control means receiving satellite attitude measurement signals from a sensor; and

an eclipse transient compensation device, said eclipse transient compensation device providing an eclipse signal to the control means indicating the satellite is being eclipsed from the sun, said control means removing signals being applied to the actuation means from the control means for compensating for solar pressure on the satellite; and

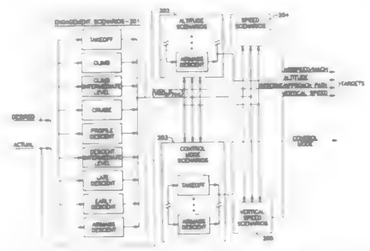
wherein the eclipse transient compensation device includes current measuring means to measure the current flow in a particular circuit associated with the satellite, said circuit carrying current indicative of whether a satellite battery is discharging.

5,337,982

APPARATUS AND METHOD FOR CONTROLLING THE VERTICAL PROFILE OF AN AIRCRAFT

Lance Sherry, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 10, 1991, Ser. No. 774,776
Int. Cl.[5] G05D *1/10;* **G06G** *7/70;* **B64C** *13/18*
U.S. Cl. 244—186 **10 Claims**



1. In an aircraft having a Flight Management System, the Flight Management System including a plurality of inputs for controlling the lateral position of the aircraft to a desired lateral position along a desired flightplan, the Flight Management System further including an apparatus for controlling the aircraft along a vertical profile of the desired flightplan, said apparatus comprising:

a) means for providing information denoting actual vertical position of said aircraft;

b) means for generating information specifying a desired vertical position of said aircraft along the vertical profile of the predetermined desired flightplan;

c) logic means, operatively connected to said means for providing and to said means for generating, for processing said actual vertical position and said desired vertical position in accordance with predefined decision construct control laws to determine a value for each of a predetermined number of real-time target signals, wherein the decision construct control laws includes a plurality of sets of scenarios, and wherein each set of scenario includes a predetermined number of procedures associated with said scenarios, the predetermined number of procedures including:

a) takeoff scenario,
b) climb scenario,
c) climb intermediate scenario,
d) cruise scenario,
e) profile decent scenario,
f) descent intermediate level scenario,
g) late descent scenario,
h) early descent scenario, and
i) airmass descent scenario; and

d) control means, operatively connected to said logic means to receive said predetermined number of real-time target signals, for controlling at least one control element of said aircraft, the control elements causing the aircraft to move in the vertical plane, such that the apparatus coordinates the control of said control elements, thereby controlling the vertical profile of the flight-plan.

5,337,983

IN-TOTO CONNECTOR

John W. Mailey, Grand Blanc, Mich., assignor to MCAM Industries, Inc., Flint, Mich.

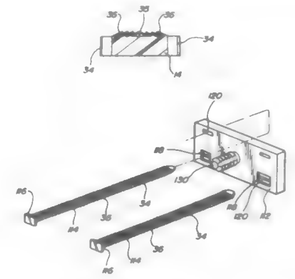
Filed Sep. 15, 1992, Ser. No. 945,016
Int. Cl.[5] B25G *3/00;* **F16L** *3/00*
U.S. Cl. 248—74.3 **12 Claims**

1. A cable tie comprising:

a housing having at least one through aperture;

a strap having a first end and a second end, said first end of said strap mating with said housing;

means for retaining said strap in said aperture of said housing when said second end of said strap is inserted into said aperture, said retaining means integral with and disposed



along substantially the entire length of said strap between said first and second ends; and

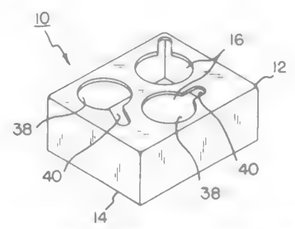
means for cushioning a device encircled by said strap, said cushioning means integral with and extending longitudinally along substantially the entire length of said strap between said first and second ends.

5,337,984

THERMAL HOLDERS FOR CUPS FOR USE IN VEHICLES

Deborah J. Houck, 811 Thompson St., Boyne City, Mich. 49712

Filed Dec. 6, 1993, Ser. No. 162,236
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—146 **7 Claims**



1. A thermal holder for cups of hot liquid for use in vehicles comprising, in combination:

a generally rectangular holder for cups formed of four vertically extending sidewalls and a horizontally extending top wall integrally formed therewith;

a rectangular base having a peripheral extent corresponding to that of the bottom side walls;

releasable coupling means joining the base to the bottom of the holder;

a pad formed of a closed cell elastomeric foam secured to the upper surface of the base within the space formed between the side walls, top wall and base;

a plurality of large apertures formed through the top wall, each large aperture having a circular segment for receiving a large cup and an outwardly directed radial segment for receiving the handle of a cup received within the circular segment;

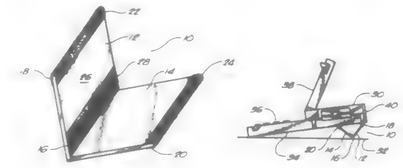
a plastic annular adapter adapted to be received and supported by the circular segments, for receiving a smaller cup, the adapter having an annular flange at its upper extent for contacting and being supported by the upper surface of the top wall.

5,337,985

SUPPORT DEVICE FOR A LAPTOP COMPUTER

Alan P. Hale, 12315 Steeple La., Houston, Tex. 77039

Filed Mar. 5, 1993, Ser. No. 28,938
Int. Cl.[5] A45D *19/04*
U.S. Cl. 248—174 **14 Claims**



1. A support device for a laptop computer comprising:

a first panel;

a second panel connected to the first panel and angularly offset by approximately ninety degrees therefrom, said first panel having an end opposite the connection with said second panel, said second panel having an end opposite the connection with said first panel;

a first fastening means wrapped around and affixed to said end of said first panel, said first fastening means for removable attachment to a surface of the laptop computer; and

a second fastening means wrapped around and affixed to said end of said second panel, said second fastening means for removable attachment to said surface of the laptop computer;

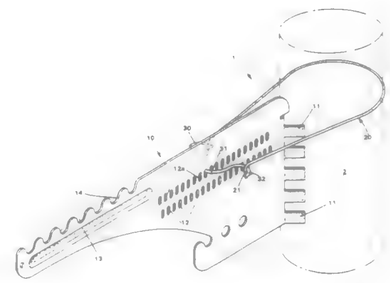
wherein the computer is supported at a convenient angle for usage.

5,337,986

POST MOUNTED HANGER

Dan H. Vollink, Whitehall, Mich., assignor to Dec-Kor, Inc., Whitehall, Mich.

Filed Aug. 25, 1993, Ser. No. 111,973
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—218.4 **18 Claims**



1. A hanger assembly for supporting hanging plants, lamps, and the like from a post comprising:

a rigid support bracket having a post-engaging base and at least one aperture in said bracket for receiving an attachment bar;

a stiff, integral post-engaging band having a "U"-shaped post-engaging base portion and integrally formed hooks projecting from each end of said "U"-shaped post-engaging base portion; and

an attachment bar extending through said aperture in said bracket, said hooks at each end of said post-engaging band hooking over said attachment bar on either side of said support bracket whereby said post-engaging base of said bracket is held in abutting engagement with the post.

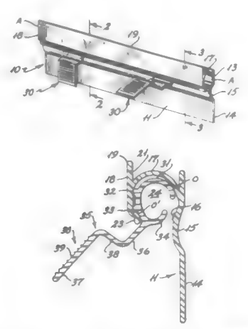
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,987

ARTICLE STORAGE ORGANIZER

Kim R. Sawatsky, 13014 Dixie Rd., Brampton, Ontario, Canada L6T 3S1

Filed Apr. 23, 1993, Ser. No. 51,393
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—231.8 15 Claims



1. An article support and organizer comprising:

an elongated mounting track having a base, an intermediate arcuate portion extending from said base and a front portion, each of said base, intermediate and front portions having inner and outer surfaces, an elongated open channel defined by said inner surfaces, at least one clip having a head portion slidably and pivotably disposed within said channel, a lever means extending from said head portion and outwardly of said channel, said head portion of said clip being pivotable between first and second positions with respect to said channel, said head portion having an outer arcuate cam surface which is not symmetrical with respect to said inner surfaces defining said channel so that said cam surface is frictionally engageable with two spaced and generally opposite points of said inner surfaces when said head portion is in either of said first or second positions, whereby when said head portion of said clip is in said first position, an article may be selectively inserted between said clip and said inner surface of said track and when said head portion is in said second position, said head portion binds the article against said inner surface of said track to thereby retain the article therebetween.

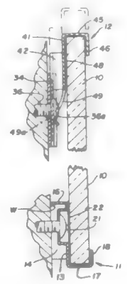
5,337,988

MIRROR MOUNTING BRACKET

Thomas D. Kurtz, 510 Island View Road, Rock Falls, Ill. 61071

Filed Dec. 2, 1992, Ser. No. 984,515
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—477 4 Claims

1. A bracket for mounting a panel on a supporting surface comprising, a stationary bracket member including generally rectangular first body portion and in-turned flange portions along opposite side edges of the first body portion providing relatively parallel inwardly opening guide grooves at one side of the first body portion, the first body portion having two rows of corrugations with each row adjacent and parallel to a respective one of the in-turned flange portions, the first body portion having screw receiving opening means therethrough intermediate the two rows of corrugations for receiving a mounting screw, a movable bracket member including a generally rectangular second body portion and lateral flange portions extending laterally to a rear side of the second body portion along opposite side edges thereof and out-turned flange portions along rear edges of the lateral flange portions, said out-turned flange portions being disposed in a plane generally parallel to and spaced from a rear side of said second body portion and guidably received in the guide grooves whereby the movable bracket member is slidable relative to the stationary bracket member along the guide grooves with the first and second body portions in spaced parallel relation, the movable bracket member having a panel engaging hook integral with one end of the second body portion for engaging a panel at a front side of the second body portion, the movable bracket



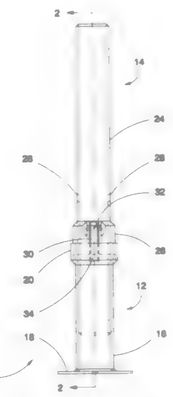
member having two resilient fingers integral with a second end of the second body portion, the resilient fingers being inclined toward the plane in which said out-turned flange portions are disposed and terminating in nose portions arranged to engage respective ones of the rows of corrugations, the resilient fingers being spaced apart to by-pass the screw receiving opening means in the first body portion.

5,337,989

TWO-PIECE SELF-LOCKING POLE STAND ASSEMBLY

Phillip C. Apple, R.D. 1, Box 65, Mt. Pleasant Mills, Pa. 17853

Filed Mar. 2, 1993, Ser. No. 844,198
Int. Cl.[5] E02D *5/74*
U.S. Cl. 248—519 2 Claims



1. A cylindrical two-piece pole stand assembly that automatically locks together upon insertion of a pole comprising:

a permanently set in-ground sleeve comprised of a length of tubing with a top end and a bottom end;

a flat welded to the bottom end of said sleeve, the center of said flat being drilled out to allow for drainage;

a sleeve collar welded to the top end of said sleeve, said sleeve collar including a top edge and an inner surface with a cylindrical groove therein;

a tubular insert comprised of a length of tubing with an outside surface with a diameter that allows for a sliding fit into the sleeve;

an insert collar welded to the insert tubing on its outside surface which, upon assembly of said sleeve and insert acts as a stop between the sleeve and insert by entering the sleeve collar and resting on its top edge;

two diametrically opposed holes drilled through the insert tubing above the insert collar for fastening said pole to the pole stand;

said insert collar further comprising two slots in its outer surface, each said slot further including a pin extending across said slot and a pivot arm pivotally mounted to said pin;

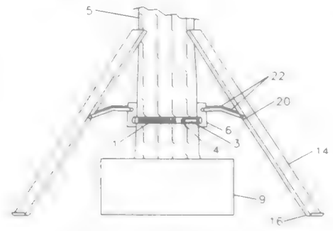
said pivot arms further comprising outwardly extending heels of thickness slightly less than that of the sleeve collar groove, whereby upon assembly of said sleeve and insert the heels may slide into said groove for automatically locking the tubular insert to the sleeve base when the tubular insert is lowered into the sleeve base and said pole inserted into the assembly.

5,337,990

DUAL PURPOSE ADJUSTABLE TREE STAND UNIT

Curtis W. Brown, 2600 Gracy Farms, Austin, Tex. 76787

Filed Aug. 10, 1992, Ser. No. 926,274
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—526 4 Claims



1. An adjustable tree stand unit comprising:

a) a flat strap and a manually adjustable fastening means to form and hold said flat strap in a circular configuration and fasten said flat strap in said circular configuration around a trunk of a tree;

b) a minimum of three pairs of rods, a minimum of three legs, and a minimum of three U shaped mounting means with said U shaped mounting means slidably attached to said flat strap in said circulator configuration and acting to rotatably hold a beginning end of each of said minimum of three pairs of rods, with terminal ends of each of said three pairs of rods rotatably fastened to an approximate midpoint of each of said minimum of three legs.

5,337,991

LOW RESONANT FREQUENCY VIBRATION ISOLATION SYSTEM

Russell D. Young, 852 Riverside Dr., Pasadena, Md. 21122

Filed Feb. 11, 1992, Ser. No. 834,898
Int. Cl.[5] F16M *11/00*
U.S. Cl. 245—636 22 Claims

1. A low resonant frequency support system for effectively decoupling a support member from its environment, comprising:

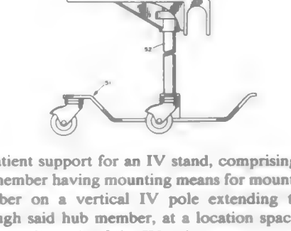
a tank containing a quantity of liquid of a given density;

at least one buoyant vessel completely immersed in said liquid;

a support member for receiving and supporting a load; and

at least one weight-bearing member of minimal cross-sectional area extending substantially vertically from said buoyant vessel out of said liquid and fixed to said support member, so that said vessel supports said support member;

wherein the total mass of said vessel, said support member,



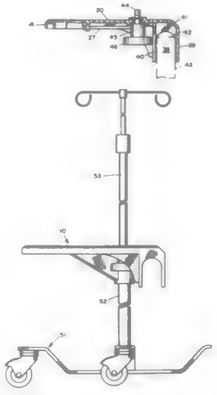
said weight-bearing member and said load is selected with respect to the density of said liquid such that said total mass is solely supported with essentially neutral buoyancy by said liquid.

5,337,992

SUPPORT DEVICE FOR AMBULATORY PATIENT

John W. Pryor, Oceanside, and Jeffery W. Pryor, Vista, both of Calif., assignors to Pryor Products, Inc., Oceanside, Calif.

Filed Feb. 8, 1993, Ser. No. 14,859
Int. Cl.[5] A47E *29/00*
U.S. Cl. 248—125 17 Claims



1. A patient support for an IV stand, comprising:

a hub member having mounting means for mounting the hub member on a vertical IV pole extending transversely through said hub member, at a location spaced between the opposite ends of the IV pole;

an elongate, arcuate hand grip member secured to the hub member and radially spaced from the mounting means at a first, radial spacing; and

a supporting device on the hub member for releasably supporting the hub member on the head or foot board of a hospital bed or gurney.

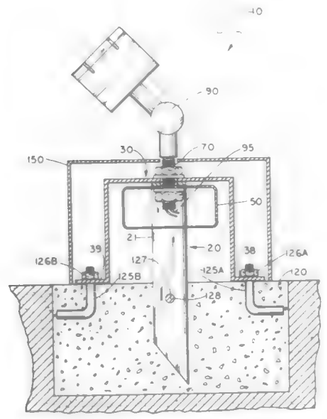
VOL 1165 ISS 3 AG 16 1994 UMI

5,337,993

STAKE-BASED SUPPORT SYSTEM FOR USE IN THE LANDSCAPING INDUSTRY

Michael J. Hersman, 10909A SW. 113th Pl., Miami, Fla. 33176

Filed Apr. 15, 1992, Ser. No. 869,550
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—156 6 Claims



1. A stake-based elevated support system for a landscaping device, comprising:

a connecting source for said landscaping device wherein said connecting source comprises an upper connection section for attachment to said landscaping device and a lower housing enclosing a driving source for said landscaping device;

a substantially U-shaped spiked section comprising a pair of elongated legs linked to each other by a first connecting strip attached to a top end of each of said elongated legs such that said elongated legs are substantially parallel to one another, said elongated legs having a pointed spike at a bottom end opposite said top end for securing said spiked section into a substructure;

a footed section comprising a pair of substantially L-shaped legs linked to each other by a second connecting strip attached to a top end of each of said L-shaped legs, each L-shaped leg comprising a leg portion and a foot portion attached such that said foot portion extends outwardly from said leg portion in a substantially perpendicular direction, said footed section further securing said spiked section in an elevated position to provide an open area above said substructure for housing said lower housing of said connecting source for said landscaping device; and

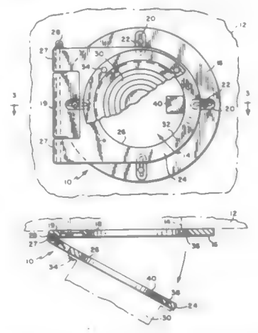
a pipe inserted through a hole in each of said connecting strips, attaching said spiked section to said footed section in a crossed relation with said elongated legs of said spiked section and said L-shaped legs of said footed section extending downward, whereby said pipe defines a passageway through said connecting strips for passage of said upper connection section of said connecting source for said landscaping device, said pipe further comprising a threaded portion at a top end of said pipe for receiving and securing said landscaping device, whereby said landscaping device is threaded into said top end of said pipe, and whereby said upper connection section of said connecting source for said landscaping device extends downward through said passageway into said open area above said substructure.

5,337,994

APPARATUS FOR MOUNTING A PORTABLE VENTILATION FAN TO AN ACCESS PORT

Edward W. Vipond, Gardner, and Mark S. Chumsae, Shrewsbury, both of Mass., assignors to Tuthill Corporation, Millbury, Mass.

Filed May 24, 1993, Ser. No. 66,997
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—289.1 10 Claims



1. An apparatus for mounting a portable ventilation fan at an access port in the wall of an enclosure, comprising:

a base plate having a first opening extending therethrough;

first connecting means for detachably mounting said base plate to said port with said first opening in alignment therewith;

a swing plate having a second opening extending therethrough;

second connecting means for connecting said swing plate to said base plate for pivotal movement between a closed position overlying and generally parallel to said base plate with said second opening in alignment with said first opening, and an open position disposed angularly with respect to said base plate;

third connecting means for detachably connecting said fan to said swing plate at a position aligned with said second opening, whereupon when said swing plate is in said closed position, said fan is operable to promote a flow of air through said access port via said first and second openings; and

closure means for yieldably retaining said swing plate in said closed position, said closure means being operative to resist fan reactionary forces tending to pivotally dislodge said swing plate from said closed position, while permitting said swing plate to be readily pivoted to said open position by personnel seeking to enter or exit said enclosure via said access port.

5,337,995

POWER SEAT FRAME ASSEMBLY

Munetaka Satoh, Kariya; Sadao Ito, Anjyo, and Hiroshi Nawa, Kariya, all of Japan, assignors to Aisen Seiki Kabushiki Kaisha, Japan

Filed Mar. 30, 1993, Ser. No. 48,450
Claims priority, application Japan, Mar. 31, 1992, 4-076971
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—429 4 Claims

1. A power seat frame assembly comprising:

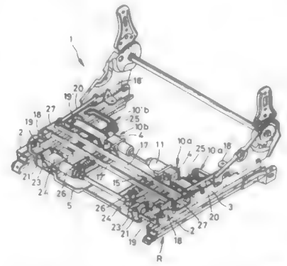
a lower rail for attachment to a vehicle floor;

an upper rail supporting a passenger seat and slidably attached to said lower rail for a linear movement of the upper rail along said lower rail;

a bracket secured to one of said rails and having opposed walls, each including an open upper recess; and

a screw rod and nut assembly pre-assembled as a unit for a linear movement and/or vertical movement of the passenger seat;

said screw rod and nut assembly including a screw rod for rotation, a nut engaged with said screw rod and secured to the other of said rails, a gear box operably connected to a



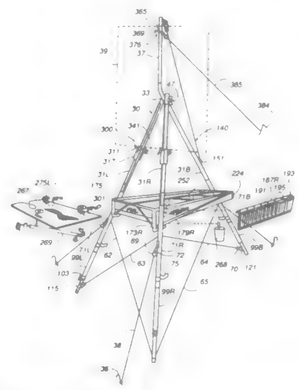
motor and said screw rod, said gear box of said screw rod and nut assembly being arranged between said opposed walls of said bracket, and said screw rod being received in said recess, said opposed walls and the recesses being substantially perpendicular to an axis of said screw rod and a respective front and rear surface of said walls facing corresponding surfaces of said gear box.

5,337,996

PORTABLE EASEL SYSTEM

Milton Kalish, 5001 Garvin St., Richmond, Calif. 94805

Filed Jan. 14, 1993, Ser. No. 4,251
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—460 31 Claims



1. A portable easel system:

a plurality of at least three legs, said plurality being joined at the top end and being capable of being spread at the bottom end, each of said legs being formed of a plurality of interconnecting segments;

a rigid bracing member suspendable between each adjacent pair of legs for holding said legs in a fixed open position, said member being positioned approximately midway on said legs;

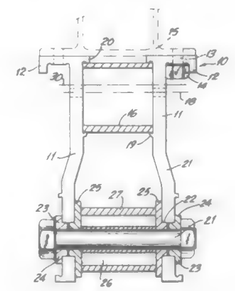
a plurality of flexible non-resilient crossbraces coupled between the approximate bottom end of each of said legs and the approximate junction between each adjacent leg and said rigid bracing member.

5,337,997

EXTRUDED ALUMINUM SPRING HANGER

Philip K. Hockney, Smithfield, Australia, assignor to Hockney Pty Ltd., Australia

Filed Dec. 11, 1992, Ser. No. 988,980
Claims priority, application Australia, Dec. 16, 1991, PL0033
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—596 4 Claims



1. A motor lorry spring hanger assembly comprising:

a pair of extruded aluminium cheek plates, each plate having a top flange through which fasteners pass to secure the plates to a main frame of the lorry, said plates being adapted to be secured so as to be generally parallel, coextensive and vertically oriented, each plate further having a spring bolt aperture, which apertures are horizontally aligned transverse of the plates;

spacer means between the plates aiding to maintain said relationship;

bushing means extending between the plates and having a spring bolt passage longitudinally aligned with said apertures; and

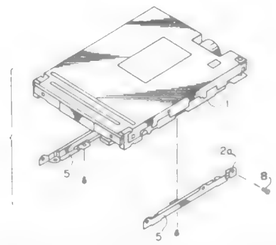
a spring bolt passing through said apertures and passage for securing a spring to the spring hanger.

5,337,998

DEVICE FOR ATTACHING MAGNETIC DISK UNIT

Takahiro Nemoto, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 21, 1992, Ser. No. 886,284
Claims priority, application Japan, May 27, 1991, 3-121199
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—634 4 Claims



1. A device for attaching a magnetic disk unit, comprising:

a first plate to be secured to the magnetic disk unit;

a second plate to be secured to a system side of an electronic device; and

an elongated sheetlike elastic member which has first and second opposed surfaces which each have a substantially rectangular shape and (b) is interposed between said first and second metal plates and integrally bonded by heat

VOL 1165 ISS 3 AG 16 1994 UMI

with said first and second plates, said sheet like elastic member having a loss factor ranging from 0.7 to 1; and

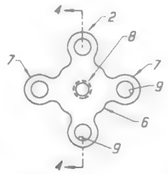
wherein said first and second plates are formed of metal, and one of said first and second plates is provided with an electrically conductive member which maintains contact between said first and second plates.

5,337,999

SECURITY RETAINING MEMBER

Donald W. Kelley, Fremont, Calif., assignor to Qualtec Data Products, Inc., Fremont, Calif.

Filed Dec. 2, 1992, Ser. No. 985,009
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—551 **15 Claims**



1. A security retaining member comprising:

a core having a central planar portion and a plurality of planar petal-like portions extending outwardly from and in the plane of the central portion; and

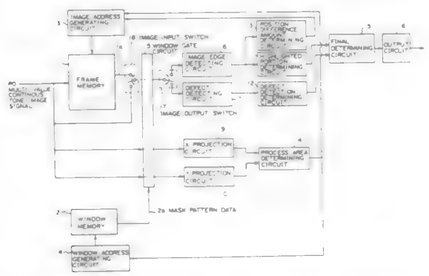
a material in which the core is embedded, said core including means for attaching said security retaining member to an article to be secured and said material including a material which can be adhesively attached to a surface.

5,338,000

CYLINDRICAL CONTAINER INNER SURFACE TESTER BASED ON AN IMAGE PROCESSING TECHNOLOGY

Kouichi Toyama, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 914,332, Jul. 15, 1992, Pat. No. 5,233,199. This application Nov. 2, 1992, Ser. No. 970,280
Claims priority, application Japan, Nov. 1, 1991, 3-286934
Int. Cl.[5] G01N *9/04*
U.S. Cl. 250—223 B **5 Claims**



1. A cylindrical container inner surface tester for illuminating from above an opening of a test container located at a predetermined position with its opening set levelly, for capturing said opening through a TV camera, and for detecting black and white spots on the inner surface if said cylindrical container by analyzing using defect detecting means an image obtained by said TV camera, said tester comprising:

a frame memory for storing as image data a multi-value contained tone image signal A/D-converted from a continuous tone image signal obtained by scanning said captured image, and

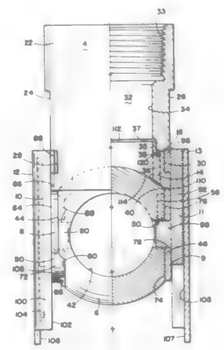
an area detecting unit for generating a binary image signal by binary-converting using a predetermined threshold (THG) a multi-value continuous tone image signal read by horizontally or vertically scanning the frame memory and for determining as a test area the area between the first rise point and the last fall point oft an image signal depending on the shading of each image obtained by said capturing process from the start to the end of the scanning operation.

5,338,001

VALVE APPARATUS

Craig W. Godfrey, Richardson; Timothy J. Noack, Dumas, and Kenneth L. Schwendemann, Lewisville, all of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Nov. 17, 1992, Ser. No. 977,384
Int. Cl.[5] F16K *5/20*
U.S. Cl. 251—58 **31 Claims**



1. A valve assembly comprising:

a valve seat having a first end, a second end, and a passageway extending through said valve seat from said first end to said second end;

a ball valve rotatably positionable adjacent said second end of said passageway for selectively sealing said passageway;

at least one control arm connectable between said valve seat and said ball valve, the connection between said control arm and said ball valve defining an axis of rotation for said ball valve;

a sealing means, reciprocatingly positionable in said passageway adjacent said second end of said valve seat, for preventing fluid flow between said second end of said valve seat and the exterior of said ball valve; and

urging means, positionable in said passageway, for urging said sealing means against said ball valve,

wherein the exterior portion of said ball valve adjacent said second end of said valve seat will sealingly contact said second end of said valve seat when (a) said ball valve is positioned adjacent said second end of said valve seat, (b) said ball valve is placed in closed position for sealing said passageway, and (c) a fluid pressure exceeding the fluid pressure in said passageway is exerted on the exterior portion of said ball valve opposite said second end of said valve seat

wherein the exterior portion of said ball valve adjacent said second end of said valve seat will move out of contact with said second end of said valve seat when (a) said ball valve is positioned adjacent said second end of said valve seat, (b) said ball valve is placed in closed position for sealing said passageway, and (c) the fluid pressure in said passageway exceeds the fluid pressure exerted on the exterior portion of said ball valve opposite said second end of said valve seat, and

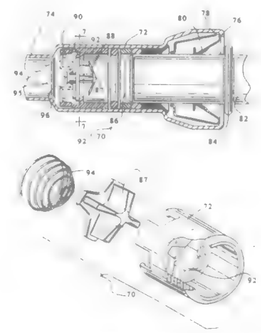
wherein said urging means continually urges said sealing means against said ball valve such that said sealing means sealingly contacts said ball valve when the fluid pressure in said passageway exceeds the fluid pressure exerted on the exterior portion of said ball valve opposite said second end of said valve seat and said sealing means sealingly contacts said ball valve when the fluid pressure in said passageway is less than the fluid pressure exerted on the exterior portion of said ball valve opposite said second end of said valve seat.

5,338,002

FLUID CONDUIT QUICK CONNECTORS WITH ANTI-SPILL VALVES

James McNaughton, Rochester, and Donald C. Walker, Pontiac, both of Mich., assignors to Bundy Corporation, Mt. Clemens, Mich.

Filed Oct. 15, 1993, Ser. No. 136,702
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.6 **14 Claims**



1. A fluid connection comprising:

a housing extending between a first and second end, a central axis of said housing being defined extending from said first end inwardly toward said second end;

a valve selectively movable within said valve housing from a first position where a valve surface on said valve is seated against a valve seat in said housing and blocks flow between said first and second ends of said housing, a spring biasing said valve toward said first position, and said valve being movable inwardly of said housing against the force of said spring to a position where it is not seated and the first and second ends are fluidly connected;

a tube selectively received within said housing, said tube having an inner end which is in a position when fully connected within said housing where it contacts a contact surface of said valve and moves said valve axially inwardly from said first position such that said first and second ends of said housing are fluidly connected; and

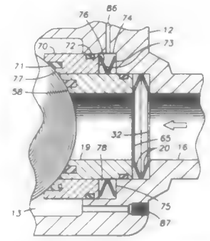
said valve surface and said valve seat having similar cross-sectional shapes which include a plurality of circumferentially-spaced portions and said valve surface being formed of a greater area than said valve seat.

5,338,003

DUAL SEAL BALL VALVE

John Beson, 10938 Leaning Ash, Houston, Tex. 77079

Continuation-in-part of Ser. No. 798,448, Nov. 26, 1991, Pat. No. 5,320,327, which is a continuation of Ser. No. 685,219, Apr. 12, 1991, abandoned, and a continuation-in-part of Ser. No. 758,018, Sep. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 504,512, Apr. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 493,045, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 343,474, Apr. 26, 1989, abandoned, which is a continuation of Ser. No. 189,574, May 3, 1988, abandoned, which is a continuation of Ser. No. 49,231, May 13, 1987, abandoned, which is a continuation of Ser. No. 659,614, Oct. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 551,589, Nov. 14, 1983, Pat. No. 4,566,671. This application May 28, 1992, Ser. No. 889,792
Int. Cl.[5] F16K *5/06, 5/20*
U.S. Cl. 251—172 **15 Claims**



1. A ball valve having an upstream side and a downstream side, subject to upstream fluid pressure, from fluid passing through the valve from upstream to downstream, comprising:

a. a valve body having a valve chamber therein and a pair of flow passages aligned at opposite sides of the valve chamber, each of said flow passages having an inner end facing the valve chamber and additionally having a recess around the inner end of each of the aligned flow passages;

b. a generally spherically stopper member having an imperforate section and a section having a flow passage therethrough, the stopper member being mounted for rotation within the valve body, between a stopper position in which the valve is open and the flow passage of the stopper member aligns with the valve chamber flow passages and a stopper position in which the valve is closed and the imperforate section aligns with the valve chamber flow passages;

c. a valve seat in each of the recesses around the inner end of the flow passages, each of the valve seats comprising a ring shaped seat, having an inside portion aligned with one of the flow passages and an outside portion and a sealing surface facing the stopper member rand located between the inside portion and the outside portion, between which the stopper member rotates between the open and closed position such that the stopper forms a primary, bubble tight seal in response to upstream pressure with one of the ring shaped seats when the stopper is in the valve closed position, whereby the primary seal acts to seal the fluid under pressure from upstream fluid pressure from flowing past the primary seal when the primary seal is first formed;

d. a secondary ring shaped seat member having an endface adjacent the stopper slidably mounted around the outside portion of the ring shaped seat forming the primary seal with the stopper, the secondary ring shaped seat member having an interior facing recess facing the valve chamber therearound at the endface of the secondary ring shaped seat member adjacent the stopper;

e. an elastomeric seal member disposed in the inner recess of the secondary ring shaped seat member;

VOL 1165 ISS 3 AG 16 1994 UMI

f. a spring member having selected spring value to provide initial contact of the elastomeric seal member against the stopper;

g. responsive means responsive only to differential pressure caused by the upstream fluid pressure after the sealing surface of the ring shaped seat is in contact with the stopper member and if there is occurrence of leakage of the primary seal for providing sealing engagement force of said elastomeric seal member against said stopper to form a bubble tight, secondary seal; and

h. the responsive means includes means to provide engagement force commensurate with the upstream line pressure, whereby the secondary seal acts to maintain a sealing engagement with the stopper if the primary seal leak.

5,338,004

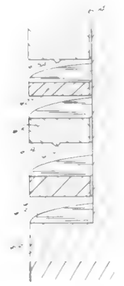
VALVE SEAL APPARATUS

John S. Heil, P.O. Box 1361, Pascagoula, Miss. 39567

Continuation-in-part of Ser. No. 769,056, Sep. 30, 1991, Pat. No. 5,170,991, which is a continuation-in-part of Ser. No. 552,250, Jul. 16, 1990, Pat. No. 5,052,658. This application Dec. 11, 1992, Ser. No. 989,171

Int. Cl.[5] F16K *41/00*

U.S. Cl. 251—214 **10 Claims**



1. In a valve sealing apparatus, of the type comprising a valve housing, a valving member disposed within said valve housing, for controlling fluid flow therein, a valve bonnet having a continuous bore therethrough, said bonnet further comprising an enlarged radial portion extending into the bore of the bonnet, a valve shaft having an enlarged shoulder portion also extending into the bore in the valve bonnet, and a sealing material positioned in the bore of the valve bonnet around the valve shaft for sealing off fluid through the bore when the fluid flow acts against said enlarged shoulder portion, the improvement comprising:

a) a first compressible wafer positionable on the enlarged shoulder portion of the valve shaft in the bore around the valve shaft;

b) a second noncompressible wafer positionable on the first wafer;

c) a third compressible wafer positionable on the second wafer;

d) means extending from the second wafer for pressing into a face of the first wafer and means extending from the radial portion of the valve bonnet for pressing into the face of the third wafer for imparting a force between the three wafers and the valve shaft shoulder portion and the radial portion of the valve bonnet, to seal against horizontal fluid flow between the valve body and the wall of the valve shaft; and

e) means associated with the valve bore for maintaining force on the three wafers in order to maintain the seal.

5,338,005

SEALING RING FOR MULTI-WAY VALVES

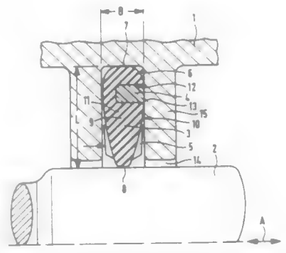
Kurt Stoll, Esslingen, Fed. Rep. of Germany, assignor to Festo KG, Esslingen, Fed. Rep. of Germany

Filed Aug. 24, 1993, Ser. No. 111,218

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1992, 4228438

Int. Cl.[5] F16K *31/44*

U.S. Cl. 251—214 **15 Claims**



1. A sealing ring for a multi-way valve, the multi-way valve having a valve housing and a valve spool axially movably received in the valve housing, the sealing ring in a mounted condition thereof being arranged in a holding recess of the valve housing and surrounding the valve spool, the sealing ring comprising an annular sealing body of an elastic material, said sealing body having a radially outwardly directed annular outer sealing portion for sealing engagement with an inner surface of the holding recess and having a radially inwardly directed annular inner sealing portion for sealing engagement with the valve spool, a supporting and stiffening ring being at least partly embedded in the sealing body and being of a material which is harder than the material of the sealing body, wherein a portion of the sealing body which is arranged radially inwardly of the supporting and stiffening ring and which comprises the inner sealing portion is arranged with axial clearance in the holding recess in the mounted condition of the sealing ring and is axially pivotable with regard to the outer sealing portion of the sealing body in said holding recess, and wherein a plurality of ridges are provided on lateral surfaces of the axially pivotable portion of the sealing body for limiting the pivoting movement of the said portion by coacting with lateral surfaces of the holding recess.

5,338,006

GATE VALVE WITH IMPROVED SEAL UNIT

Andrew J. McCutcheon, Camas, Wash.; Jeffrey M. Bowman, Portland, Oreg., and David L. Gambetta, Vancouver, Wash., assignors to Technaflow, Inc., Vancouver, Wash.

Filed Sep. 16, 1993, Ser. No. 123,421

Int. Cl.[5] F16K *3/00*

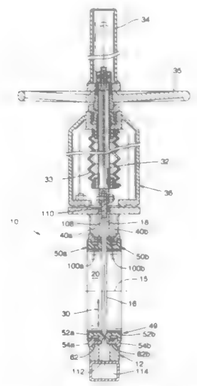
U.S. Cl. 251—327 **24 Claims**

1. A gate valve having a main body structure with first and second sides to which respective first and second conduits are attachable and an opening that defines a passageway along an axis between the conduits, comprising:

a gate that is positionable to occlude the passageway and that extends from the main body structure in a direction that is transverse to the first and second conduits, the gate having opposing sides that each have a peripheral margin;

moving means coupled to the gate for moving it along the axis to selectively occlude the passageway; and

first and second annular seal members attachable to the main body structure within the passageway on opposite sides of the gate to engage its peripheral margins, the first and second seal members including first and second rigid mounting hubs to which respective first and second annular elastomer sleeves are attached, each elastomer sleeve having a continuous lip section and plural angularly spaced cavities, the lip sections of the first and second sleeves engaging the peripheral margins of the gate when it occludes the passageway and engaging each other otherwise, the first and second mounting hubs including axially outward radial flanges that extend along the respective first and second sides of the main body structure,



whereby the plural cavities facilitate displacement of the elastomer sleeves when they engage the gate and the axially outward radial flanges of the mounting hubs function to prevent overcompression of the elastomer sleeves by attachment of the first and second conduits to the main body structure.

5,338,007

IMPROVEMENTS IN FENCING

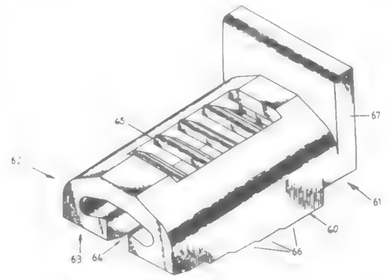
Thomas R. Hinton, 113 Newcastle Rd., Hamilton, New Zealand

Continuation of Ser. No. 768,050, Sep. 30, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 90,471

Claims priority, application New Zealand, Oct. 3, 1990, 235544

Int. Cl.[5] E04H *17/00*

U.S. Cl. 256—48 **13 Claims**



1. A fence construction for supporting at least one fence wire, comprising:

a batten including a body having a stem with at least one stiffening rib extending from a face of said stem, said rib having a head spaced from said stem face, said rib having at least one fence wire accommodating slot leading to a wire backing area on said stem face, said wire backing area extending substantially across said stem face and being aligned with said wire when positioned within said slot; and

a clip including a body having a removed portion, complementary to said stiffening rib head, forming a keyed relationship when said clip is attached to said rib, said clip body including segments between said head and said backing area and each having a rear surface facing said wire backing area and positioned so that when said clip is mounted on said batten over said wire in said slot, said wire is clamped between said clip segments and said area and prevented from transverse movement relative to said batten and said clip, said clip having one or more protrusions intruding into said removed portion which bear against, and exert a pressure on, said rib to which said clip is attached.

5,338,008

SOLDER REFLOW FURNACE

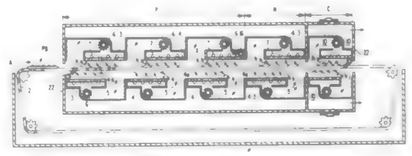
Tetsuya Okuno, Shoka, and Takashi Nauchi, Tokyo, both of Japan, assignors to Senju Metal Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 791,108, Nov. 13, 1991, abandoned. This application May 17, 1993, Ser. No. 62,160

Claims priority, application Japan, Nov. 15, 1990, 2-118910[U]

Int. Cl.[5] F27B *9/36*

U.S. Cl. 266—105 **5 Claims**



1. A non-shuttered inert gas solder reflow furnace comprising:

a conveyor for carrying printed circuit boards;

a preheating zone, a main heating zone, and a cooling zone disposed along the conveyor; and

a first cooling device disposed in the cooling zone and comprising a pair of a first and a second gas circulating means for circulating a cooling gas within the cooling zone while suppressing the inflow of air from outside of the furnace, said pair of gas circulating means each comprising a cooling gas blowing port and a gas drawing port, such that the cooling gas blowing port of each of the first and second gas circulating means is disposed opposite the gas drawing port of the other of the pair of gas circulating means, and a pair of a first and a second heat exchanging means respectively in thermal contact with an outside cooling gas between the gas drawing port and the cooling gas blowing port for each of the pair of the first and second cooling gas circulating means.

5,338,009

TUNDISH FOR MOLTEN ALLOY CONTAINING DENSE, UNDISSOLVED ALLOYING INGREDIENT

Howard M. Pielet, Munster; William J. Kreevich, St. John; Masood A. Tindyala, Griffith, and John R. Knoepke, Munster, all of Ind., assignors to Inland Steel Company, Chicago, Ill.

Continuation of Ser. No. 997,244, Dec. 28, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,556

Int. Cl.[5] B22D *37/00*

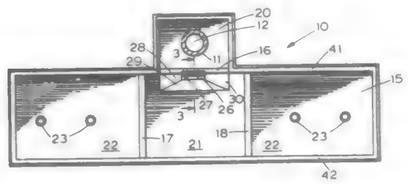
U.S. Cl. 266—229 **34 Claims**

1. A tundish for use in the continuous casting of a molten alloy containing a molten alloying ingredient having a density greater than that of the molten alloy as a whole, said tundish comprising:

a metal outer shell and an interior refractory lining;

VOL 1165 ISS 3 AG 16 1994 UMI

a tundish bottom having an outlet opening;
means for receiving a stream of said molten alloy within said tundish at an entry location spaced upstream from said outlet opening;
means, located between said entry location and said outlet opening, for accumulating the molten alloying ingredient which is undissolved in said molten alloy;
means defining at least one passageway extending between (a) the top of the refractory lining on the tundish bottom and (b) that part of the metal shell underlying said refractory lining;
said refractory lining having a part thereof which abuts a passageway;
said passageway being positioned at a location where said undissolved, molten alloying ingredient accumulates;



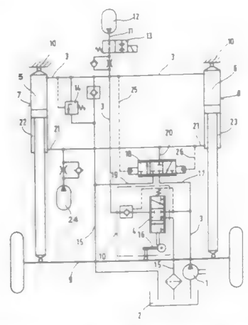
said passageway being permeable to said undissolved, molten alloying ingredient but impermeable to said molten alloy;
means for maintaining said passageway at a temperature which prevents undissolved, molten alloying ingredient, which descends along the passageway, from cooling to a temperature at which the undissolved alloying ingredient blocks the passageway against further passage by said undissolved alloying ingredient;
and drain means in said outer shell, below said passageway, for withdrawing, through said shell, molten, undissolved alloying ingredient which has permeated through the passageway to said shell.

5,338,010

HYDROPNEUMATIC VEHICLE SUSPENSION

Josef Haupt, Tettnang, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

PCT No. PCT/EP91/01175, § 371 Date Dec. 22, 1992, § 102(e) Date Dec. 22, 1992, PCT Pub. No. WO92/00203, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 24, 1991, Ser. No. 960,444
Int. Cl.[5] B60G *17/00*; F16F *5/00*
U.S. Cl. 267—64.16 **5 Claims**



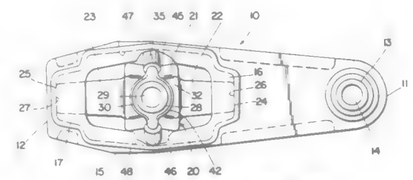
1. A hydropneumatic vehicle suspension comprising actuators (7, 8) being mounted between suspended and unsuspended components (9, 10), a level control valve (4) which, depending on the level control valve position relative to said suspended and unsuspended components (9, 10), connecting said actuators (7, 8), in a first shift position, with a pressure line (3) and connecting said actuators (7, 8), in a second shift position, with a drain line (15) and, in a third shift position, blocking said connections, at least two of said actuators (7, 8) being double-acting hydraulic cylinders having a head space (5, 6) being connected with a first reservoir (12) and a cylinder space (22, 23), on a piston-rod side of said hydraulic cylinders, being in constant and direct communication with a second reservoir (24), and a second control valve (18), depending on the pressure in said first reservoir (12), one of connecting said second reservoir (24) with said pressure line (3) and separating said second reservoir (24) from said pressure line (3),
wherein said second control valve (18) functions as a piston manometer in which a given pressure ratio (C) between the pressures of said first and said second reservoirs (12, 24) is constantly controlled, depending on the load of said actuators (7, 8), and said second control valve (18) is a directional valve which has connections (17, 19, 20) leading to said pressure and drain lines (3, 15) and said cylinder spaces (22, 23) and an operating position of said second control valve 18 is controlled by control lines (25, 26) pressurizable by fluid pressure in said first and second reservoirs (12, 24).

5,338,011

FORCE DAMPENING TORQUE STRUT FOR AN AUTOMOBILE ENGINE

Richard D. Hein, Wabash, Ind., assignor to GenCorp Inc., Fairlawn, Ohio

Filed Mar. 9, 1993, Ser. No. 28,513
Int. Cl.[5] F16M *7/00*
U.S. Cl. 267—140.12 **13 Claims**



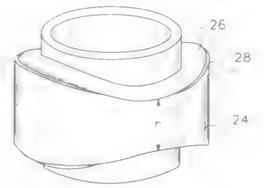
11. A torque strut for an engine, comprising:
(a) a hollow rigid housing having a longitudinal axis and a pair of oppositely disposed, axially aligned, similar cavities which are concentrically disposed about the longitudinal axis of the housing, the cavities having a pair of oppositely spaced, solid ends;
(b) an energy absorbing device mounted within the housing of the torque strut, the device having (i) a generally block-shaped center piece, and (ii) a pair of oppositely disposed, axially aligned, identically shaped, resilient elastomeric shock absorbers which are integral with and extend from the center piece into the cavities and engage the oppositely spaced ends thereof, the shock absorbers being separate from the housing and ends of the cavities and not attached thereto; and
(c) means carried by the energy absorbing device for maintaining the device in a desired position within the housing of the torque strut, as the device moves axially within the housing.

5,338,012

VEHICLE SUSPENSION

Gordon S. Kranick, Snohomish, Wash., assignor to Paccar Inc., Bellevue, Wash.

Division of Ser. No. 678,017, Apr. 1, 1991, Pat. No. 5,186,485.
This application Apr. 22, 1992, Ser. No. 871,943
Int. Cl.[5] F16M *7/00*
U.S. Cl. 267—140.5 **18 Claims**



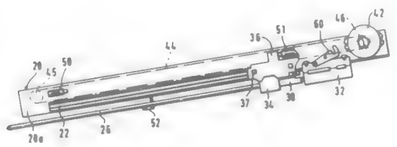
1. An elastomeric bushing for an axle suspension on a wheeled vehicle, comprising:
a rigid inner member adapted to be connected to a frame of the vehicle:
a rigid outer member circumscribing the inner member and adapted to be connected to an elongated body, the inner and outer members extending in the vertical direction;
control means disposed between the inner and outer members for controlling conical rotational movement of the elongated body with respect to the frame such that conical rotational movement of the elongated body with respect to the frame about a radial fore and aft axis through the bushing is stiffer than conical rotational movement of the elongated body with respect to the frame about a radial transverse axis of the bushing; and
a slide means disposed within the inner member, the slide means allowing the inner member to slide vertically with respect to the frame.

5,338,013

MACHINE FOR PIERCING A TAPHOLE FOR A SHAFT FURNACE

Emile Lonardi, Bascharage; Jean Metz, Luxembourg; Pierre Mailliet, Luxembourg-Howald; Guy Thillen, Diekirch; Radmir Andonov, Mamer, and Philippe Malivoir, Thionville, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jan. 22, 1993, Ser. No. 8,128
Claims priority, application Luxembourg, Jan. 24, 1992, 88 058
Int. Cl.[5] C21C *5/48*
U.S. Cl. 266—271 **12 Claims**



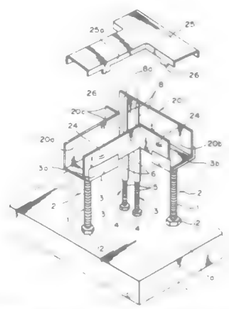
1. A machine for piercing a taphole of a shaft furnace according to a method in which, after having plugged the taphole with taphole clay, a metal rod is driven into this clay, before it has fully hardened, and it is extracted, at the desired time, with a view to opening the taphole, the machine comprising:
a mounting having a front end and rear end;
a front support installed on the mounting so as to support the rod at the front of the mounting:
a rear support which can move on the mounting;
coupling means on said rear support for coupling said rear support to a rear end of the rod, said rear support being freely displaceable along the mounting with the rear end of the rod;
a first clamp mounted in a sliding manner on the mounting so as to be displaceable on said mounting between its front end and its rear end, said rod passing axially through said first clamp, and said first clamp including first gripping means for gripping the rod at any place between said front support and said rear support and transmitting an axial pushing force to the rod, in order to drive the latter into the clay;
second coupling means for being coupled to the rod so as to transmit an axial pulling force to the rod, in order to extract the latter out of the clay, said second coupling means being displaceable as a unit with said first clamp during the extraction of the rod out of the clay;
a rotary motor installed at the rear end of the mounting;
at least one endless chain which is installed axially in the mounting between its front end and its rear end and which can be driven by said rotary motor;
attaching means for attaching the clamp to the endless chain in such a way that it can be driven by the chain between the front end and the rear end of the mounting and vice versa;
first detection means for detecting said clamp at a position (B) located near the front end of the mounting;
second detection means for detecting said clamp at a position (A) located at a distance L from said position (B) in the direction of the rear end of the mounting, said distance L being less than the length of the rod;
first control means for controlling the rotary motor, said first control means being responsive to said first and second detection means so as to generate a repeated movement of the clamp between said position (A) and said position (B) for driving the rod into the clay; and
second control means for controlling the rotary motor, said second control means being capable of generating a pull back movement of said first clamp towards the rear end of the mounting beyond said position (A).

5,338,014

JIG FOR ASSEMBLING WIRE HARNESS

Tsutomu Kitamura, Kanazawa, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Aug. 13, 1993, Ser. No. 105,943
Claims priority, application Japan, Sep. 11, 1992, 4-063713[U]
Int. Cl.[5] B23Q *1/04*
U.S. Cl. 269—47 **7 Claims**



1. A jig combination for assembling a wire harness comprising a wiring guide rod and protector-fixing jig being disposed on a wiring base, said protector-fixing jig supporting a protector case, said wiring guide rod being inserted into the protector case from an opening formed in the protector case, said protector case being removably held by the protector-fixing jig, the wiring guide rod being elastically supported to project an

VOL 1165 ISS 3 AG 16 1994 UMI

upper end portion of the wiring guide rod from an upper surface of the protector case, said wiring guide rod being moved downward to locate the upper end of the wiring guide rod below an upper surface of the protector case when the wiring guide rod is pressed downward by a protector cover in installing the protector cover on the protector case in which electric wires of the wiring harness have been assembled.

5,338,015

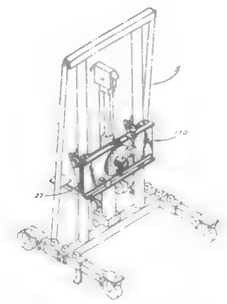
LIFTING DEVICE INCLUDING A MULTIPLE-AXIS MOTION MODULE

Reinald D. Liegel; James Ballard; James C. Graham, all of Waukesha; Craig A. Wisner, Wauwatosa, and Jeffrey V. Russell, Oconomowoc, all of Wis., assignors to Hein-Werner Corporation, Waukesha, Wis.

Division of Ser. No. 985,195, Dec. 3, 1992, Pat. No. 5,269,501. This application Sep. 28, 1993, Ser. No. 128,474

Int. Cl.[5] B23Q *1/10*

U.S. Cl. 269—71 **4 Claims**



1. A vehicle transportation system for moving, positioning, and manipulating vehicles and vehicle parts, said system comprising:

a lifting device including a tool support plate; and

a multiple axis motion module, said motion module comprising:

a base plate having a front and back planar surface and an upper portion and a lower portion,

a mounting member attached to the upper portion of the base plate for mounting the base plate to the tool support plate,

a tang attached to the lower portion of the base plate for limiting rotation of the base plate,

a rotating plate pivotally mounted on the front surface of the base plate and having a tool mounting collar with said rotating plate further having a support roller mounted adjacent to an edge of the rotating plate with said roller contacting the front planar surface of the base plate,

a control block pivotally mounted on the rotating plate proximate the edge of said plate with said control block having a threaded through bore,

a first control rod having a length of screw thread, said rod being mounted on the base plate and being threadedly engaged with the threaded through bore of the control block, and

a second control rod having a length of screw thread, threadedly mounted on the base plate and in contact with the tool support plate.

5,338,016

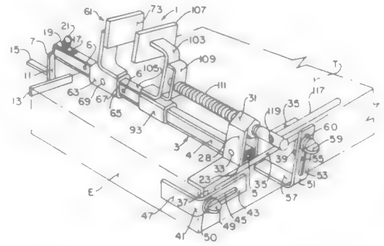
PORTABLE TAILGATE-MOUNTED VISE

James J. Howard, 3629 Lakeview Dr., House Springs, Mo. 63051

Filed Feb. 10, 1994, Ser. No. 194,314

Int. Cl.[5] B23Q *3/02*

U.S. Cl. 269—97 **6 Claims**



1. A portable vise for mounting on a tail gate of a pickup truck comprising:

an elongated hollow beam:

a slide slidably positioned within a first end of said beam;

a depending brace on an exposed end of said slide;

a transverse mounting brace attached to a second end of said beam;

at least one bracket attached to said transverse mounting brace for securement of said vise to the tailgate;

a threaded nut means extending upwardly proximate said second end of said beam and its brace;

a fixed jaw on one of said beam and slide;

a movable jaw on said beam opposite said fixed jaw; and

an elongated adjusting screw threadily engaging said nut means, said screw engaging said movable jaw, said adjustable screw when adjusted providing for shifting of said movable jaw into an engaging or disengaging position.

5,338,017

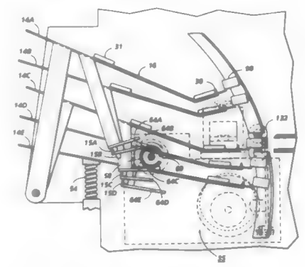
SORTING AND FINISHING APPARATUS

Denis J. Stemmle, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1992, Ser. No. 996,424

Int. Cl.[5] B42B *2/00*

U.S. Cl. 270—53 **16 Claims**



1. An apparatus for sorting sheets, comprising:

a plurality of movable bins shiftable relative to one another with each of said plurality of bins including means for movably supporting the sheets in said bin, said supporting means aligning the sheets in said bin in a sheet aligning position;

means for advancing sheets onto said supporting means, said supporting means being movable in a direction substantially transverse to the direction of advancement of the sheets; and

means for attaching the sheets of one of said plurality of bins to one another at a sheet attaching position, said supporting means moving the sheets of said one of said plurality of bins from the sheet aligning position to the sheet attaching position enabling said attaching means to attach the sheets to one another.

5,338,018

AUTOMATIC DOCUMENT FEEDER

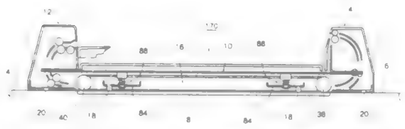
Tsuyoshi Nagao; Masayuki Kakuta; Yasuhiko Kida; Yoshiyuki Takeda, and Takeshi Yoshida, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 1, 1993, Ser. No. 69,575

Claims priority, application Japan, Jun. 2, 1992, 4-141783

Int. Cl.[5] B65H *3/00, 29/00*

U.S. Cl. 271—3 **9 Claims**



1. An automatic document feeder comprising a support frame that is so supported via a hinge means as to be pivoted between a closed position and an open position with respect to a platen glass provided on a housing, a paper feeding unit that is firmly supported at one end of said support frame, a paper discharging unit that is firmly supported at the other end of said support frame, and a conveying unit that is supported between said units of said support frame via a floating support means, said conveying unit being provided with a spacer means that comes in contact with said platen glass at the closed position, the improvement wherein at least one of said paper feeding unit and said paper discharging unit is provided with a spacer means at a lower portion thereof on the side opposite to said hinge means, said spacer means coming in contact with said housing at the closed position.

5,338,019

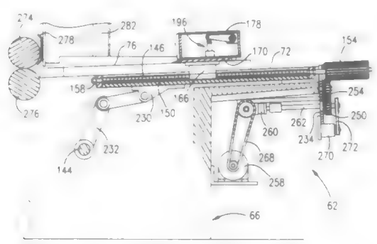
RECIPROCATING SHEET FEEDER APPARATUS FOR BOX BLANK FABRICATION EQUIPMENT HAVING AN ADJUSTABLE PUSHER ELEMENT

Alan M Hill, Topeka, and William R. Meeks, Lawrence, both of Kans., assignors to Lawrence Paper Company, Lawrence, Kans.

Division of Ser. No. 924,625, Aug. 3, 1992, Pat. No. 5,246,222, which is a division of Ser. No. 835,534, Feb. 14, 1992, Pat. No. 5,181,899. This application Dec. 18, 1992, Ser. No. 992,554

Int. Cl.[5] B65H *3/36*

U.S. Cl. 271—139 **4 Claims**



1. Apparatus for feeding successive sheets from a stack thereof into the input end of a blank-forming device in timed relationship with the operating components of the device, and for rapid changeover and makeready of the feeding apparatus in order to handle sheets of varying dimensions, said feeding apparatus comprising:

a shiftable pusher element; and

means mounting said pusher element proximal to said input end of said device for selective reciprocal movement thereof between a retracted position and a forwardmost feeding position, and for adjusting the locations of said positions of the pusher element,

said pusher element being operable during movement thereof between said retracted and forwardmost positions to engage the lowermost sheet of said stack and push the engaged sheet into the input end of said device,

said mounting means including

an elongated, threaded, axially rotatable, fore and aft extending screw;

an elongated gear operably coupled and in axial alignment with said screw;

means operably coupled with said screw for selective fore and aft translatory movement thereof;

means operably coupling said pusher element and screw for maintaining the position of the pusher element on the screw during said fore and aft translatory movement of the screw, and for effecting relative movement of the pusher element on the screw during axial rotation of the screw; and

drive means operably coupled with said screw for selective axial rotation thereof, said drive means including a drive gear having an outer surface operably engaging said elongated gear for selective rotation thereof and said screw, said elongated gear being slidable relative to said drive gear during said fore and aft translatory movement of said screw, said drive gear having a thickness substantially less than the length of said elongated gear whereby the elongated and driving gears remain in operative engagement during said fore and aft translatory movement of said screw.

5,338,020

DEVICE FOR ALIGNING A SHEET PILE

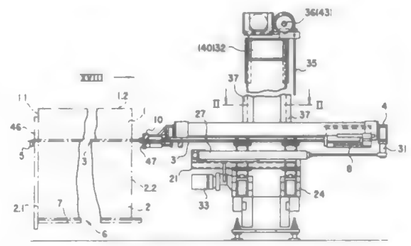
Bruno Eltner, Heidelberg, and Erich M. Zahn, Eppelheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 940,198

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1991, 4129136

Int. Cl.[5] B65H *1/30*

U.S. Cl. 271—158 **1 Claim**



1. A sheet feeder for feeding a sheet processing machine comprising: a non-stop feeding device for continuously feeding sheets in a sheet-feeding direction to the sheet processing machine wherein said non-stop feeding device is operative for combining a residual sheet pile with a main sheet pile into an aggregate sheet pile, the sheet feeder including a front step engaging a first lateral face of the residual sheet pile and of the main sheet pile, said first lateral face facing the sheet process-

VOL 1165 ISS 3 AG 16 1994 UMI

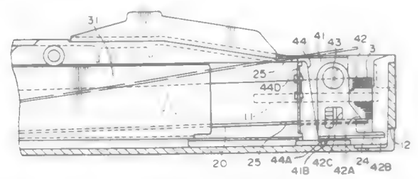
ing machine; the non-stop feeding device including a vertically adjustable displacement device which is horizontally displaceable into and against said sheet feeding direction, said displacement device including a frame horizontally displaceable into and against said sheet feeding direction and a plurality of lattice bars disposed in direction parallel with the sheet feeding direction, and being horizontally movable with respect to said frame into and against said sheet feeding direction, said lattice bars bearing the residual sheet pile in a first combining phase; the non-stop feeding device further including a vertically adjustable horizontally disposed stop rail adapted to engage a second lateral face of the residual sheet pile and the main sheet pile in a region adjacent to said lattice bars in a second combining phase of combining the residual sheet pile with the main sheet pile, and wherein said second lateral face faces away from said front stop; said non-stop feeding device further comprising an aligning bar disposed at least within the range of the height of the aggregate sheet pile; said non-stop feeding device further including height selecting means coupled to said aligning bar for selectively adjusting the height thereof, said aligning bar being adapted to align selected parts of said aggregate sheet pile at said front stop, said stop rail being part of said frame and serving as said aligning bar.

5,338,021

PAPER FEEDING MECHANISM

Masami Shirai, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,213
Claims priority, application Japan, Feb. 27, 1992, 4-018415[U]
Int. Cl.[5] B63H *1/12*
U.S. Cl. 271—160 **16 Claims**



9. A sheet cassette for accommodating cut sheets therein and being detachably coupled to an apparatus to which the cut sheets are to be fed, comprising:

a cassette housing having a periphery and an opening at a front end portion;

supporting means, provided in said cassette housing, for supporting cut sheets thereon and being movable in a predetermined direction transverse to a feeding direction of the cut sheets;

biasing means for biasing said supporting means in the predetermined direction;

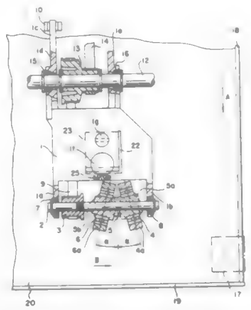
restraining means provided entirely within said periphery of said cassette housing and being able to be contacted through said opening for releasing said supporting means, said restraining means preventing movement of said supporting means in the predetermined direction while said cassette housing is being inserted into said apparatus and allowing movement of said supporting means when said cassette housing has been completely inserted into said apparatus and is coupled to said apparatus.

5,338,022

DEVICE FOR STACKING AND ALIGNING INDIVIDUALLY SUPPLIED SHEETS

Helmut Funk, Remshalden; Franz Allmendinger, Eichwald, and Markus Weber, Esslingen, all of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 2, 1993, Ser. No. 86,813
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1992, 4229425
Int. Cl.[5] B65H *29/22, 31/36*
U.S. Cl. 271—184 **8 Claims**



1. Device for aligning sheets individually supplied to a collecting tray in which they are collected one on top of the other in a stack, in particular, copy sheets which are supplied from a copier and whose collecting tray has a depositing surface and a lateral limiting wall arranged in parallel with the sheet-entrance direction as well as an abutment associated with the front end side of the sheets, a drivable wheel assembly being mounted for rotary motion about a driven shaft at the free end of a pivotable arm and resting on the incoming sheet for aligning said sheet both with the lateral limiting wall and the front abutment, wherein said drivable wheel assembly includes

at least two wheels (**4**, **6**) of identical diameters are mounted on said driven shaft (**2**) for independent rotary movement and eccentrically offset from the axis of rotation (**2***a*) of said driven shaft (**2**) by an equal amount (**26** and **27**, respectively);

the axes of rotation (**30**, **31**) of said wheels (**4**, **6**) are uniformly spaced about the axis of rotation (**2***a*) of said driven shaft (**2**) on a radius corresponding to the amount (**26** and **27**, respectively) of the eccentricity;

each of said wheels (**4**, **6**) is mounted at an acute angle (**a**) relative to a plane extending perpendicularly to the axis of rotation (**2***a*) of said driven shaft (**2**) such that adjacent wheels (**4**, **6**) each are arranged in a V-shaped position to each other; and

the eccentricities (**26**, **27**) and the angular position (**a**) of said wheels (**4**, **6**) are related such that the contact surface (**4***b* and **6***b*, respectively) of each wheel (**4** and **6**, respectively) resting on a sheet to be aligned carries out a movement directed transversely to the sheet-entrance direction (A) and towards the lateral limiting wall (**18**).

5,338,023

REMOVABLE PORTABLE BASKETBALL NET

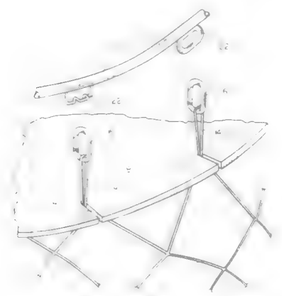
Daryl R. Stovall, Omaha, Nebr., assignor to Creighton University Office of Technology Licensing, Omaha, Nebr.

Filed Jun. 4, 1993, Ser. No. 72,793
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—15 R **3 Claims**

1. An apparatus for removably securing a basketball net to a basketball basket ring, comprising:

(a) an attachment clip secured to each attachment loop of a basketball net for securing said net to a conventional basketball basket ring; and

(b) an installation disk having substantially the same diameter as a conventional basketball basket ring for spreading



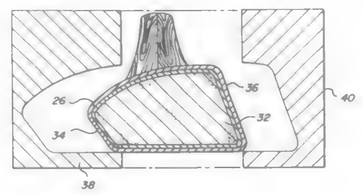
said attachment clips to the diameter of said basket ring such that said clips secured to the perimeter of said installation disk may be removably secured about the perimeter of said basketball basket ring such that said net hangs from said ring substantially similar to a conventional net.

5,338,024

GOLF CLUB

Charles S. Baum, Traverse City, Mich., assignor to The Baum Research & Development Co., Inc., Traverse City, Mich.

Continuation-in-part of Ser. No. 760,102, Sep. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 518,782, May 4, 1990, Pat. No. 5,114,144. This application Jul. 23, 1992, Ser. No. 919,174
Int. Cl.[5] A63R *53/04*
U.S. Cl. 273—78 **6 Claims**



1. The method of forming a wood-type golf club head comprising:

forming a core;

placing a flexible resin reinforced fibrous sock over the core;

impregnating the flexible resin reinforced fibrous sock with synthetic resin;

covering at least part of the resin impregnated sock with wood veneer;

impregnating the wood veneer with synthetic resin; and

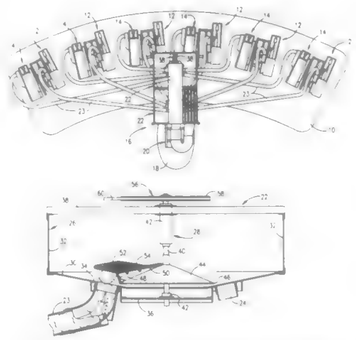
curing the resin so as to bond the wood veneer over the resin reinforced fibrous sock and to the core.

5,338,025

BALL COLLECTION AND DISTRIBUTION APPARATUS FOR MULTIPLE BASEBALL PITCHING UNITS

Paul S. Giovagnoli, Kansas City, Mo., assignor to Master Pitching Machine, Inc., Kansas City, Mo.

Filed Jan. 24, 1994, Ser. No. 185,568
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 D **11 Claims**



1. An apparatus for use in collecting and distributing balls, the apparatus comprising:

a collection box having a floor and a plurality of outlet openings formed in the floor;

a feeding means for feeding balls of a predetermined diameter to the collection box; and

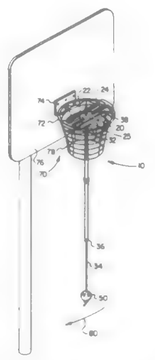
an agitation means for agitating the balls in the box, the agitation means including a flap positioned above the floor by a distance less than about the diameter of the balls, and a support means for supporting the flap in a generally horizontal orientation and for moving the flap along a path extending directly over the openings, the flap being flexible vertically relative to the balls so that the balls roll beneath the flap as it moves over them.

5,338,026

SWING TRAINING UNIT

Lane Kregel, 1903 Wisteria, Denton, Tex. 76205

Filed May 19, 1993, Ser. No. 64,414
Int. Cl.[5] A63B *69/00, 69/36, 69/38*
U.S. Cl. 273—26 E **22 Claims**



1. A sport swing training apparatus for use in conjunction

VOL 1165 ISS 3 AG 16 1994 UMI

with a basketball hoop, disposed above a ground region, said apparatus comprising:

a mounting plate having an outer lip and an inner lip disposed at each end of said mounting plate and adapted for releasably securing said basketball hoop therebetween;

a ball;

a support means secured to said mounting plate and said ball; and

a rigid member secured to said support means between said mounting plate and said ball.

5,338,027

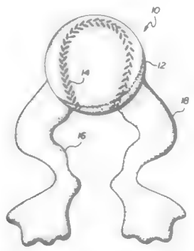
TOSSING AND CATCHING PLAY OBJECT

Jeffrey Rehkemper, 1636 N. Wells, Ste. 2006, Chicago, Ill. 60614; Mike Burroughs, 8196 Timberhill, Cordova, Tenn. 38018; Steven Rehkemper, 679 N. Milwaukee Ave., Chicago, Ill. 60622, and Kimberlee Osborne, 8253 Red Creek, Cordova, Tenn. 38108

Filed Jun. 3, 1992, Ser. No. 893,313

Int. Cl.[5] A63B *43/02, 43/00*

U.S. Cl. 273—58 K **11 Claims**



1. A unitary play object comprising:

a circular resilient element adapted to be tossed through the air and caught;

appendage means formed of the same material as said circular resilient element and attached at one end to a circumferential surface of said circular resilient element;

said appendage means defining a flat aerodynamic surface extending outwardly normal to said circumferential surface of said circular resilient element in the form of a fanciful shape;

whereby said circular resilient element having said appendage means has varying aerodynamic forces from a circular resilient element without said appendage means when tossed through the air to thereby have an unpredictably varying flight path through the air.

5,338,028

RACKET STRINGING APPARATUS

Lan-Chung Sung, Taichung Hsien, Taiwan, assignor to Right Way Co., Taichung Hsien, Taiwan

Filed Dec. 28, 1993, Ser. No. 174,503

Int. Cl.[5] A63B *51/14*

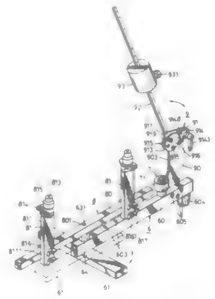
U.S. Cl. 273—73 A **5 Claims**

1. A racket stringing apparatus comprising:

a frame unit;

a racket retaining device disposed on said frame unit and adapted to retain a racket on said frame unit; and

a string tautening device including a vertical reference plate unit mounted rotatably on said frame unit, a vertical movable plate unit having a portion mounted movably on said frame unit, and a groove unit which is formed between upper ends of said reference plate unit and said movable plate unit and which is adapted to receive a string in said groove unit, said groove unit having a non-clamping section and a clamping section, said non-clamping section having a fixed width, said movable plate unit being capable of being actuated manually to clamp tightly the string between said reference plate unit and said movable plate unit at the clamping section of said groove unit, said string tautening device further including a limit member fixed on said frame unit and having a first limit peripheral surface and a second limit peripheral surface, a swing lever having a pivotal end portion mounted rotatably on said frame unit and an actuator end portion located above the pivotal end portion, and a counterweight mounted movably on said swing lever, the pivotal end portion of said swing lever abutting against the first limit peripheral surface of said



limit member so as to prevent said swing lever from turning toward said racket retaining device and to permit said swing lever to turn away from said racket retaining device until said swing lever abuts against the second limit peripheral surface of said limit member, the actuator end portion of said swing lever being at a level above that of a bottom surface of said frame unit when said swing lever abuts against the second limit peripheral surface of said limit member, the string being tensioned to a predetermined force when said swing lever is in a horizontal position.

5,338,029

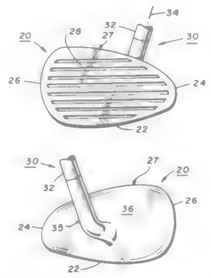
GOLF CLUB OF THE IRON TYPE

Peter A. Falzone, 1101 Willowood Clr., Gulf Breeze, Fla. 32561

Filed Jun. 15, 1993, Ser. No. 76,774

Int. Cl.[5] A63B *53/02*

U.S. Cl. 273—80.2 **3 Claims**



1. A golf club of the iron type designed to prevent shanking of a golf ball, said club comprising:

(a) an iron type club head having an upper edge, a sole, a heel and a toe, said club head having a rear face and a forward striking face, each of said rear and said forward faces extending from said heel to said toe, said striking face lying in a first plane forming an obtuse angle with a horizontal plane, said club head having a center of mass spaced from said sole;

(b) an elongated shaft having an axis extending from an upper end thereof downwardly and outwardly to a lower end thereof; and

(c) mounting means for mounting said lower end of said shaft on said rear face at a location between said heel and said toe and below said upper edge and above said sole with said axis lying in a vertical plane forming an obtuse angle with said first plane, said mounting means comprising a member spaced from and to the rear of said upper edge, said member extending from said lower end of said shaft downwardly and forwardly to said location.

5,338,030

Patent Not Issued For This Number

5,338,031

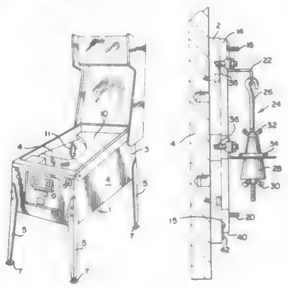
COMBINATION TILT SWITCH AND PLAYFIELD INCLINE INDICATOR

James A. Patla, Sr., Rolling Meadows, and James X. Glass, Roselle, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Filed Jul. 19, 1993, Ser. No. 93,578

Int. Cl.[5] A63F *7/36*

U.S. Cl. 273—118 R **12 Claims**



1. A pinball game comprising:

a cabinet supporting an inclined playfield; and

a combination incline indicator and adjustable tilt switch apparatus including means for detecting undesirable tilting of the playfield during game play and for developing a signal in response thereto, and means for indicating that the game is at a desired angle of incline, said means for indicating being operatively connected to said means for detecting whereby said means for detecting indicates whether the game is at the desired angle of incline.

5,338,032

DART GAME "OUTS" INDICATING DEVICE

William C. Latham, 56611 Colerain Pike, Martins Ferry, Ohio 43935

Filed Feb. 25, 1993, Ser. No. 22,503

Int. Cl.[5] F41J *5/04*

U.S. Cl. 273—148 R **14 Claims**

1. A device for indicating the "outs" used by a dartboard player to achieve a zero score in any of the double-out "01" dartboard games comprises in combination:

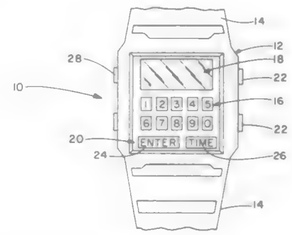
a housing;

a numerical keypad within the housing;

a display means within the housing;

a microprocessor within the housing having a memory store containing a lookup table of "outs" that may be used for each one of a plurality of dartboard scores; and

a power source and means electrically interconnecting the keypad, display means, and the microprocessor enabling a particular dartboard score entry to interrogate the memory and said microprocessor provides a selection of "outs" for that score entry to the display means.



5,338,033

DIDACTIC PUZZLE GAME

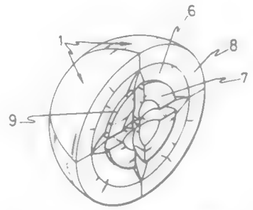
Guillermo Nunez Serrano, Almonaster la Real, Spain, assignor to SIMCO, S.A., Sevilla, Spain, a part interest

Filed Oct. 14, 1992, Ser. No. 961,174

Claims priority, application Spain, Oct. 14, 1991, 9102264

Int. Cl.[5] A63F *9/08*

U.S. Cl. 273—153 S **2 Claims**



1. An improvement in a didactic spherical puzzle having eight blocks interconnected together to permit rotatation of any four of them with respect to the other four along each of three orthogonal axes passing through a center of the puzzle, said puzzle also having an inner part defined by an inner sphere from which six radially extended arms depart in the direction of said orthogonal axes, said improvement comprising;

an enlarged head formed at a radially outward end of each of said arms, each of said heads having a truncated cone shape with a flat base of each of said truncated cone shaped heads being directed toward the center of said sphere;

each of said blocks comprising;

an outer spherical surface;

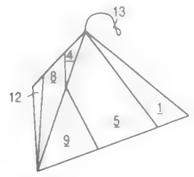
an inner spherical surface, opposite to said first surface, and having a diameter corresponding to said inner sphere;

three sides joining said first and second spherical surfaces, each of said sides having a groove to allow the movement of said heads and their corresponding arms between two confronting faces of said blocks, said heads moving within said grooves, said grooves each having a flat surface adjacent said flat bases;

wherein one of said blocks has bosses in the respective grooves to restrict the movement of said arms.

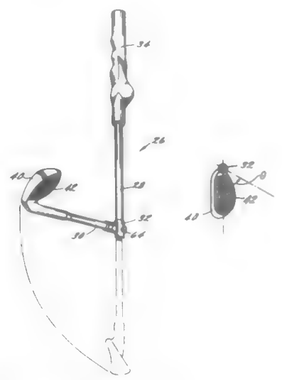
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,034
THREE-DIMENSIONAL PUZZLE
Sabine Asch, Heilbronner Strasse 100, 7120 Bietigheim-Bissingen, Fed. Rep. of Germany
Filed Feb. 19, 1993, Ser. No. 977,421
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1990, 9012334[U]
Int. Cl.[5] A63F *9/08*
U.S. Cl. 273—155 **6 Claims**



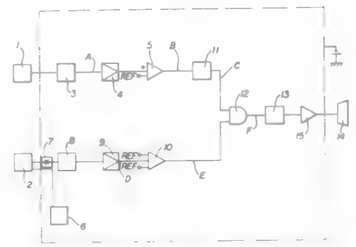
1. A three-dimensional puzzle comprising:
a plurality of puzzle bodies which form a regular tetrahedron when in a predetermined assembled condition,
each of said puzzle elements being shaped as irregular pyramids whose apexes meet at one point in an interior part of the tetrahedron when in the assembled condition and whose bases form surfaces of the tetrahedron when in the assembled condition,
and permanent connection devices for connecting the puzzle elements with one another to form a chain of puzzle elements, said permanent connection devices serving to connect respective edges of associated pyramid bases with said edges abutting directly while accommodating folding of said elements with respect to one another about an axis along connected edges thereof.

5,338,035
PRACTICE GOLF CLUB
Keith S. Lyford, 9097 E. Meadowhills, Scottsdale, Ariz. 85260
Filed Nov. 26, 1991, Ser. No. 800,451
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **7 Claims**



1. A practice golf club comprising:
an upper shaft having a first predetermined length;
a lower shaft having a second predetermined length, said second predetermined length being shorter than said first predetermined length;
a grip secured about one end of said upper shaft;
a club head secured at one end of said lower shaft, said club head having a club face;
a first hinge member having first and second ends, said first end of said first hinge member being connected to one end of said lower shaft; and
a second hinge member having first and second ends, said first end of said second hinge member being connected to one end of said upper shaft, said second end of said second hinge member being pivotably connected to said second end of said first hinge member to allow said lower shaft to pivot in a selected direction relative to said upper shaft, said selected direction being generally rearwardly and upwardly from a reference plane which corresponds to a plane in which said club face would lie with a 0° loft, and at a selected angle of approximately 45° relative to said reference plane.

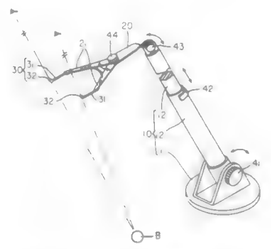
5,338,036
GOLF EXERCISING AID DEVICE
Hiromasa Takeuchi; Toshihiko Iwatani, and Takumi Yamaguchi, all of Osaka, Japan, assignors to Universal System Control, Inc., Osaka, Japan
Filed Jun. 9, 1993, Ser. No. 52,448
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.2 **9 Claims**



1. A golf exercising aid device comprising sound pickup means for an impacting sound caused by the impact of a club head against a golf ball, first means which compares, with a threshold value, a waveform within a predetermined frequency band out of the signals provided by the sound pickup means and outputs the result after a predetermined delay time, a motion sensor which converts the motion of a golf player's head relative to the earth's magnetic field into an electrical signal, and second means which rectifies and then differentiates the output signal of the motion sensor, and which compares the differentiated output with a threshold value, whereby with said motion sensor attached to a portion of the golf player's head, judgment output is provided when the timings of the outputs from said two means agree.

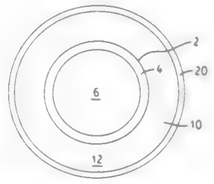
5,338,037
GOLF TRAINING APPARATUS
Hirohide Toyohara, 19-3, 3-chome, Chigusa, Takarazuka-shi, 665, Japan
Filed May 10, 1993, Ser. No. 58,233
Claims priority, application Japan, May 27, 1992, 4-162295
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.6 **17 Claims**

1. A golf training apparatus for training a golf player to be skilled in the proper action of a swing at a golf ball on a ground surface, the apparatus comprising:
a sight fixing means including at least one of: (a) a pair of spaced apart lighting spots; and (b) a lighting arrow having a spaced apart initial and terminal ends; and
a mechanism for maintaining said spots or ends spaced apart a predetermined distance in a horizontal plane at a predetermined height between the ground surface and the golfer's eye level which permits the user to sight on a golf ball on said surface with said pair of lighting spots or said ends



of said lighting arrow while standing in a proper golf ball address position and at the top of a proper backswing.

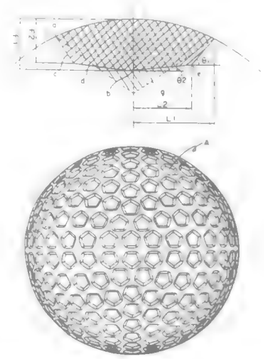
5,338,038
GOLF BALL
Lauro C. Cadorniga, Piedmont, S.C., assignor to Dunlop Slazenger Corporation, Greenville, S.C.
Filed Apr. 28, 1993, Ser. No. 54,415
Int. Cl.[5] A63B *37/08, 37/12, 37/06*
U.S. Cl. 273—216 **27 Claims**



1. A golf ball comprising:
a center portion including
an elastomeric envelope normally of substantially spherical configuration, of Shore A durometer hardness of 40–50, and of a wall thickness of 0.085–0.095 inch, and
a paste filling fully occupying said envelope, said paste filling having a viscosity of at least 100,000 centipoise,
a thread wound portion including
an elastomeric thread wound upon said envelope, said thread having an elongation of 1238% (±150%), a tensile strength of 3,056 (±500) p.s.i., and a cross-sectional rectangular configuration of a size of 0.0625 (±0.002)×0.012–0.018 inch,
a cover portion of a thermoplastic material having
a density of 1.00–1.04 g/cm^3, a flexural modulus of 5,000–10,000 p.s.i., and a Shore D durometer hardness of 42–52, and a plurality of dimples therein, said dimples occupying 70–80% of the surface area of said ball, and said dimples having a total volume of 415–445 mm^3,
said ball having
a diameter of 1.680–1.688 inches, a weight of 44.5–45.93 g, and a density of 1.090–1.113 g/cm^3.

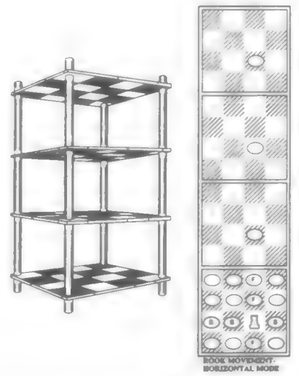
5,338,039
GOLF BALL
Kengo Oka, Kobe, and Shinji Ohshima, Akashi, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Oct. 8, 1992, Ser. No. 958,164
Claims priority, application Japan, Oct. 8, 1991, 3-260355
Int. Cl.[5] A63B *37/14*
U.S. Cl. 273—232 **5 Claims**

1. A golf ball having a plurality of dimples on a surface thereof characterized in that more than 40% of all dimples are polygonal in shape and have a double slope in section having a straight first slope and a straight second slope continued radially inwardly from the first slope, and the gradient of the first



slope of said double slope disposed in the vicinity of a dimple edge is greater than that of the second slope disposed in the vicinity of the bottom thereof.

5,338,040
THREE-DIMENSIONAL CHESS
Gerald Cutler, 3558 Agate Dr., #5, Santa Clara, Calif. 95051
Filed Oct. 14, 1993, Ser. No. 136,683
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—241 **18 Claims**



1. A method of playing three-dimensional chess, comprising the steps of:
(a) providing a three-dimensional chessboard having a plurality of levels, each of said levels being divided into a grid of squares, each of said squares being colored with one of two different colors, said two different colors alternating between adjacent squares in each of said levels, said three-dimensional chessboard defined as having a top level, a bottom level, a left side, a right side, a front, and a back, said three-dimensional chessboard further defined as having a plurality of horizontal planes which coincide with said a plurality of levels, a plurality of side planes which are parallel with the sides of said three-dimensional chessboard, and a plurality of frontal planes which are parallel with the front of said three-dimensional chessboard,

VOL 1165 ISS 3 AG 16 1994 UMI

(b) providing two sets of chess pieces arranged on said chessboard, each of said sets of chess pieces comprising at least a king, a queen, a rook, a bishop, a knight, and a pawn,

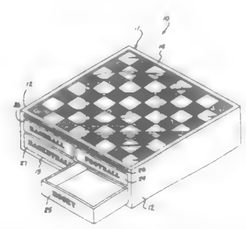
(c) defining the movement of said rook as having three modes, a horizontal mode, a frontal mode, and a side mode; allowing said rook to move in one direction in any of the three orthogonal lines, top to bottom, side to side, or front to back, which intersect at the square occupied by said rook when said rook is in any of said three modes; allowing said rook to move sequentially in two orthogonal directions, including a move toward the right or left, and a move toward the front or back, when said rook is in said horizontal mode; allowing said rook to move sequentially in two orthogonal directions, including a move toward the right or left, and a move toward the top or bottom, when said rook is in said frontal mode; and allowing said rook to move sequentially in two orthogonal directions, including a move toward the front or back, and a move toward the top or bottom, when said rook is in said side mode.

5,338,041

SPORTS CHESS GAME APPARATUS

David R. Jones, 4 Downing Cr., Bloomington, Ill. 61704; Garry L. Winterland, 204 Florence, Bloomington, Ill. 61701, and David A. Cripe, 1324 Kenneth, Bloomington, Ill. 61704

Filed Sep. 13, 1993, Ser. No. 120,054
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—260 **3 Claims**



1. A sports chess game apparatus, comprising,

a housing having spaced side walls, a rear wall, a front wall, and a top wall, with a chess board pattern positioned within the top wall,

and

at least a first group of player tokens and a second group of player tokens, with the first group of player tokens of a first sporting event designation, and the second group of player tokens of a second sporting event designation,

and

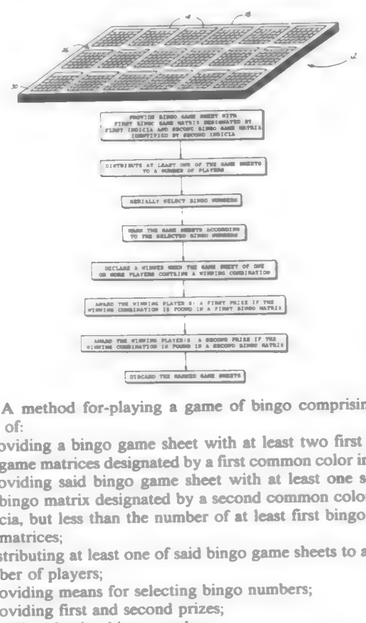
a first flexible polymeric web positioned for frictional adherence complementarily over the chess board pattern, having a first sporting event field representation imprinted thereon, with the first web of a transparent construction, and a second flexible polymeric web of a transparent construction having a second sporting event field representation imparted thereon, with the second web arranged for complementary mounting over the chess board pattern.

5,338,042

METHOD OF PLAYING MULTIPLE BINGO GAME APPARATUS

Thomas W. Greer, Muskegon, Mich., assignor to The Reliable Corporation of America, Muskegon, Mich.

Division of Ser. No. 788,039, Nov. 5, 1991, Pat. No. 5,160,146. This application Aug. 28, 1992, Ser. No. 938,856
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—269 **16 Claims**



1. A method for-playing a game of bingo comprising the steps of:

providing a bingo game sheet with at least two first bingo game matrices designated by a first common color indicia;

providing said bingo game sheet with at least one second bingo matrix designated by a second common color indicia, but less than the number of at least first bingo game matrices;

distributing at least one of said bingo game sheets to a number of players;

providing means for selecting bingo numbers;

providing first and second prizes;

serially selecting bingo numbers;

declaring one or more winners when one or more players have marked a predetermined configuration on a bingo game matrix on the game sheet according to the selected bingo numbers; and

awarding the winning players the first prize when the predetermined configuration is created on one of said at least two first bingo game matrices or awarding the second prize when the predetermined configuration is created on one of said at least one second bingo game matrix.

5,338,043

CRYPTOGRAPHIC GUESSING GAME

Peter H. Rehm, 14245 Les Palms Cir. #2, Tampa, Fla. 33613-4014

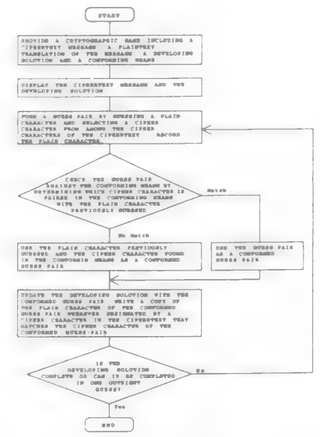
Continuation of Ser. No. 553,189, Jul. 13, 1990, abandoned, which is a division of Ser. No. 381,147, Jul. 13, 1989. This application Apr. 21, 1992, Ser. No. 873,872
Int. Cl.[5] A63F *9/06*
U.S. Cl. 273—272 **4 Claims**

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 64 Pages)

1. A method of playing a cryptographic guessing game by a puzzle solver, said method comprising the steps of:

(a) providing a cryptographic game including a ciphertext message and a plaintext translation of said ciphertext message and a developing solution and a conforming means, the ciphertext message including a plurality of alphanumeric and/or symbolic cipher characters arranged

in at least one row and the plaintext translation including a plurality of alphabetic plain characters and said conforming means including first and second listings of characters, pairing means for establishing a plurality of pairing relationships that uniquely pair each character of said first listing with a character of said second listing, selection means in at least one of said listings of characters for enabling the puzzle solver to easily select one of the characters and thereby select one of the pairing relationships, and selectivity means for enabling the puzzle solver to perceive the pairing relationship of a selected character without inadvertently perceiving a nonselected pairing relationship, said first listing including copies of the alphabetic plain characters of the plaintext translation of the message and said second listing including copies of the cipher characters of the ciphertext message, and the developing solution including a plurality of positions arranged in at least one row in one-to-one correspondence with the plurality of cipher characters, each of said cipher characters representing a corresponding one of the alphabetic plain characters of the plaintext translation of the message consistent with said pairing relationship, and each



position of said positions capable of having written thereon a copy of the alphabetic plain character that is paired with said position's corresponding cipher character;

(b) displaying the ciphertext message and displaying the developing solution in view of the puzzle solver but keeping the plaintext translation of the message hidden from view of the puzzle solver;

(c) guessing a plain character;

(d) recording said plain character guessed in step (c);

(e) selecting a cipher character from among the cipher characters of said ciphertext message;

(f) determining which cipher character of said list of cipher characters is paired with the plain character guessed in step (c);

(g) writing a copy of the plain character recorded in step (d) on each position of the developing solution that corresponds with a cipher character of said ciphertext message that is a copy of the cipher character found in step (g); and

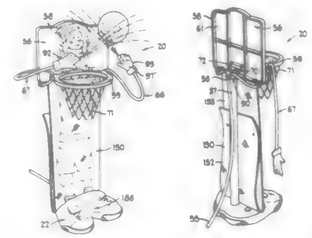
(h) repeating steps (c), (d), (e), (f) and (g) until the developing solution is complete or an attempt is made to solve all remaining unsolved positions of the developing solution in an outright guess.

5,338,044

WATER TOY

Richard B. Mazursky, Glenview; David M. Waskin, Chicago, both of Ill., and Steven N. Taylor, Torrance, Calif., assignors to Vtech Industries, Inc., Wheeling, Ill.

Filed Apr. 30, 1992, Ser. No. 876,194
Int. Cl.[5] A63B *63/00*
U.S. Cl. 273—402 **21 Claims**



1. A water toy for use in association with an external water supply and a water pipe, such as a garden hose, said water toy comprising:

means for providing a base for said water toy, said base means having an exterior surface;

means for directing water flow from the external water supply, and, in turn, from the water pipe, to an outlet location,

said water flow directing means having a first end operatively attachable to the water pipe, and one or more second ends distally spaced from said first end;

means for spacing said water flow directing means from said exterior surface of said base means;

one or more flexible members each having an inner wall, a transverse cross-sectional dimension, a first end region operatively attached to said one or more second ends of said water flow directing means and a second end region opposite and distal to said first end region, wherein said second end region allows discharge of water supplied from the external water supply,

the external water supply supplying water to said water toy, and, in turn, said one or more flexible members, at a sufficient pressure so as to impart random movement of said one or more flexible members as the result of forces applied to said inner wall of said one or more flexible members from the water; and

means for providing a target, said target means being operatively attached to a portion of at least one of said spacing means and said one or more flexible members so as to prompt physical interaction between a user of the water toy and the water toy itself;

means for obstructing a projectile directed at said target means,

said obstructing means being operatively attached to said second end region of at least one of said one or more flexible members,

said obstructing means having a dimension substantially larger than the transverse cross-sectional dimension of a corresponding one of said one or more flexible members.

5,338,045

DEVICE FOR APPLICATION OF MECHANICAL AND MAGNETIC FORCES TO A FIXTURE

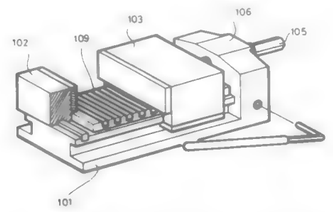
Tai-Her Yang, 5-1 Taipin St., Si-Hu Town Dzan-Hwa, Taiwan

Filed Oct. 16, 1992, Ser. No. 962,122
Int. Cl.[5] B23B *31/00*
U.S. Cl. 279—128 **10 Claims**

1. A device for holding a workpiece, the device comprising a body having attached thereto a first jaw means and an opposed movable jaw means in a first plane, wherein the work-

VOL 1165 ISS 3 AUG 16 1994 UMI

piece may be mechanically clamped between said jaw means, a magnetic unit movably mounted on the body in a second plane substantially perpendicular to the first plane, wherein the



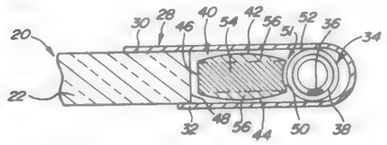
workpiece may be held magnetically by a variable force and further, control means wherein, as desired, the workpiece may be held mechanically, magnetically or combined mechanically/magnetically subject to the control means.

5,338,046

COMPOSITE POWDERED METAL RETAINING RING

Harry G. Willis, Jr., Coal City, and Mark M. Shuster, Lisle, both of Ill., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 18, 1992, Ser. No. 992,678
Int. Cl.[5] F16J *15/06*
U.S. Cl. 277—180 **13 Claims**



1. A cylinder head gasket comprising:
an annular primary seal; and
an annular secondary seal, said secondary seal positioned radially outwardly of and defining a radial axis, said secondary seal abutting said primary axis and including a radially elongate cross-section extending along said axis with two opposed outer convex surfaces each spaced away from said axis, said cross-section further comprising two annular faces centered on said axis, said faces defining radial extremities of said secondary seal, wherein said secondary seal is formed from a composite powdered metal having multiple density material zones of varying strength.

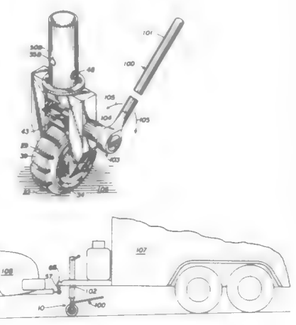
5,338,047

TRAILER ALIGNMENT DEVICE

Glenn E. Knisley, 8596 Oak View La., Fair Oaks, Calif. 95628

Filed Jul. 22, 1992, Ser. No. 916,605
Int. Cl.[5] B60S *11/00*
U.S. Cl. 280—3 **15 Claims**

1. A device to facilitate the alignment of a trailer with a tow vehicle for engagement of the trailer hitch ball of the tow vehicle to the socket of the tongue of the trailer, which device comprises in combination:
a. a housing having an inverted U-shaped body, having a left side member, a right side member and a top member, said left and right side members having aligned axle receiving bores therein;
b. a wheel, comprising a wheel mounting means having a central throughbore for the receipt of an axle, and a tire disposed on said wheel mounting means, said tire having a series of spaced inward extending slots around the periphery of the tread;
c. an axle disposed between said body's left and right members and having said wheel mounting means disposed thereon;
d. a manually rotatable paddle wheel unit, having a series of outwardly extending paddles, rotatably mounted between the left and right members of said body, one of said paddles being engageable with one of the tire's slots at a given point in time in a gear-like manner;
e. actuating means for rotating said paddle wheel unit extending through one of said body members, and connected to said paddle wheel unit; and



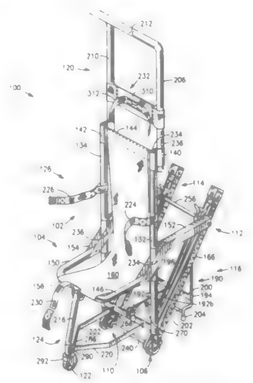
f. a tubular receiver having a pair of linearly aligned bores therein for receipt of an orientation shaft mounted upon said top member, said tubular receiver adapted to receive a trailer tongue jack support tube,
whereby upon rotation of the actuating means to rotate the paddle wheel unit a series of paddles engages a series of slots in said wheel causing said wheel to move in the direction it has been oriented.

5,338,048

COLLAPSIBLE WHEELCHAIR

Henry Medina, 4 Sleepy La., Melville, N.Y. 11747

Filed May 10, 1993, Ser. No. 59,705
Int. Cl.[5] B62B *5/02*
U.S. Cl. 280—5.22 **23 Claims**



1. A carriage for carrying a person in a seated position down stairs under the control of an operator, the carriage comprising:

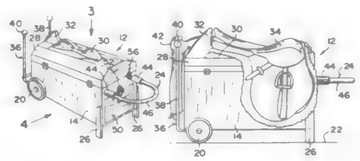
a main frame;
a seating assembly pivotally connected to the main frame for pivotal movement between open and closed positions;
a pair of wheel means rotatably mounted on the main frame to support the carriage for movement over a surface; and
a rail assembly to support the carriage for movement down a series of steps, and pivotally connected to the main frame for pivotal movement between open and closed positions, the rail assembly including
i) a rail member pivotally connected to the main frame,
ii) a back roller rotatably mounted on the rail member adjacent a back end thereof,
iii) an endless belt mounted on one of the wheel means and on the back rollers for movement around an endless path between said one of the wheel means and the back rollers, and to support the carriage for movement down the series of steps, and
iv) a multitude of additional support rollers rotatably mounted on the rail member, between the wheel means and the back roller, to guide and support the endless belt as it moves around said endless path.

5,338,049

SADDLE AND EQUIPMENT CART

Christine B. Goring, 74 Manor Rd., Huntington, N.Y. 11743

Filed Nov. 2, 1993, Ser. No. 144,405
Int. Cl.[5] B62B *1//16*
U.S. Cl. 280—47.19 **4 Claims**



1. A saddle and equipment cart which comprises:
a) a main cabinet body having an open top with a storage compartment for storing various equestrian articles therein;
b) a pair of spaced apart ground wheels pivotally attached to a lower back end of said main cabinet body for supporting said cart above the ground;
c) a handle attached to an upper front end of said main cabinet body for manual operation of said cart;
d) a pair of spaced apart support legs attached to a lower front end of said main cabinet body in a downward position, to cooperate with said ground wheels in supporting said cart on the ground;
e) a lid hinged to one side at the open top of said main cabinet body;
f) a saddle bearer on said lid, having a dorsal fin to receive and hold an equestrian saddle thereon; and
g) a boot valet being a pair of L-shaped rods mounted to the back end of said main cabinet body, with each said rod having a knob to retain each of a pair of riding boots in an inverted position thereon.

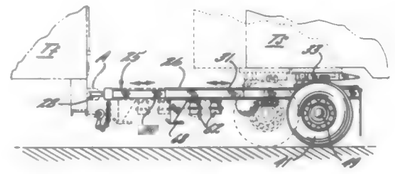
5,338,050

CONVERTER DOLLY FOR PERMITTING BACKING UP OF TANDEM TRAILERS

Darrell Haire, and Andrew R. Haire, both of Thomasville, N.C., assignors to A.M. Haire Truck Bodies, Inc., Thomasville, N.C.

Filed May 21, 1992, Ser. No. 887,346
Int. Cl.[5] B62D *53/04*
U.S. Cl. 280—476.1 **24 Claims**

1. A converter dolly comprising a telescoping hitch tongue for connecting a first wheeled vehicle and a second wheeled vehicle in tandem comprising a tongue portion having a longitudinally extending outer shaft and a longitudinally extending inner shaft slidably mounted within said outer shaft, said tongue portion further having a first end portion and a second end portion opposite said first end portion wherein the distance between said first end portion and said second end portion is adjustable by longitudinally moving said inner shaft within said outer shaft; a first hitch means connected to said first end portion for pivotally connecting said tongue portion to a first wheeled vehicle; a second hitch means connected to said second end portion for pivotally connecting said tongue portion to a second wheeled vehicle; and a length locking means connected to said tongue portion for preventing longitudinal movement of said inner shaft within said outer shaft when said length locking means is engaged, said length locking means including a length locking pin housing connected to said outer



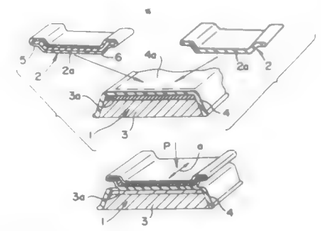
shaft, a length locking pin positioned in said housing and moveable therein from a retracted to an extended position, and length locking motor means operatively connected to said housing and cooperating with said length locking pin to move said length locking pin between a retracted position for permitting movement of said inner shaft within said outer shaft and an extended position in engagement with said inner shaft for preventing movement of said inner shaft within said outer shaft, said length locking motor means further includes a spring means operatively connected to said length locking pin for maintaining said length locking pin in said extended position when no power is being applied to said length locking motor means; wherein said converter dolly comprising said hitch tongue is a free-standing structure and is removable from said vehicles and may be used with other wheeled vehicles.

5,338,051

SLIDING APPARATUS, SUCH AS A SKI, AND AN ELEMENT ATTACHED THERETO

Pierre Szafranski, Pringy, and Jean-Mary Cazailloa, Annecy, both of France, assignors to Salomon S.A., Annecy Cedex, France

Division of Ser. No. 669,585, Mar. 14, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 7,650
Claims priority, application France, Mar. 26, 1990, 90 03824
Int. Cl.[5] A63C *5/04, 11/26*
U.S. Cl. 280—607 **18 Claims**



1. An assembly comprising:
a ski, said ski having an internal structure and an attachment zone, in combination with an attachable element, said

VOL 1165 ISS 3 AUG 16 1994 UMI

attachable element being foreign to said internal structure of said ski and having an attachment zone, said attachable element being adapted to be assembled to said ski by connection of said attachment zone of said ski to said attachment zone of said attachable element, said attachment zone of said ski being a longitudinally extending portion of an upper surface of said ski subject to flexional stresses during use of said ski and said attachable element comprising means for transferring flexional stresses to and receiving flexional stresses from said attachment zone of said ski;

said ski, at least in said attachment zone thereof, having a first quantity of thermofusible material and said attachable element, at least in said attachment zone thereof, having a second quantity of thermofusible material, said thermofusible material of said first quantity being compatible with said thermofusible material of said second quantity for forming a thermofusible weld and for thereby forming a direct connection between said ski and said attachable element.

5,338,052

SAFETY SKI BINDING RELEASE AND RESET MECHANISM

Henry Freisinger, and Heinz Wittmann, both of Vienna, Austria, assignors to HTM Sport - und Freizeitgeraete Aktiengesellschaft, Schwechat, Austria

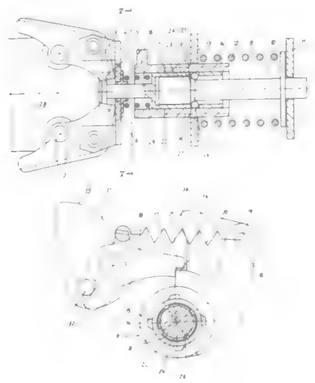
PCT No. PCT/EP92/01917, § 371 Date Apr. 23, 1993, § 102(e) Date Apr. 23, 1993, PCT Pub. No. WO93/03804, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 21, 1992, Ser. No. 50,150

Claims priority, application Austria, Aug. 23, 1991, 1665/91

Int. Cl.[5] A63C *9/08*

U.S. Cl. 280—612 **8 Claims**



1. A safety ski binding release and reset mechanism, comprising: a housing, a releasable jaw mechanism mounted on said housing and having at least one sole holding member movable between a ski boot holding position and a ski boot releasing position and for releasably engaging a ski boot when in said ski boot holding position, a first spring provided on said housing, said sole holding member being retained in said ski boot holding position by a two-part holding device, a first part of said two-part holding device being movable against an urging of said first spring which determines a holding force for holding the ski boot in said ski boot holding position, a second part of said two-part holding device engaging said at least one sole holding member, said first and second parts being releasably connected with one another at least in a direction of an action of a force of said first spring by a rotatable coupling mechanism rotated to a first position, said rotatable coupling mechanism including a reversible electric motor for effecting a rotation of said rotatable coupling mechanism between said first position and a second position, and a release of the connection between said first and second parts i response to a movement of said rotatable coupling mechanism to said second position caused by a movement of an output member of said electric motor to a third position, said rotatable coupling mechanism including an initially tensioned second spring for initially urging said rotatable coupling mechanism to said first position to prevent said rotatable coupling mechanism from shifting involuntarily toward said second position to cause said first and second parts to become uncoupled, said output member of said electric motor, when in said third position thereof, causing said first spring to be rendered ineffective thereby reducing a force required to move said at least one sole holding member to said ski boot releasing position.

5,338,053

CROSS-COUNTRY OR TOURING SKI BINDING FOR CROSS-COUNTRY SKI BOOTS

Bernt-Otto Hauglin, Royken, Norway, assignor to Rottefella A/S, Norway

Filed Jan. 15, 1993, Ser. No. 4,983

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1992, 9200453[U]

Int. Cl.[5] A63C *9/086*

U.S. Cl. 280—615 **12 Claims**



1. A cross-country and touring ski binding for cross-country ski boots having a sole with a front end (**16**) with at least one sole integrated pivot member (**18**) extending crosswise to the longitudinal extension of the boot and approximately parallel to the sole surface adapted to be inserted in engagement with elements of the binding (**10**), said binding comprising a binding housing (**14**) of plastic material having a low wear resistant characteristic and having a pivot support unit for establishing a pivot-type connection with said pivot member (**18**), said pivot support unit includes a retaining hook (**26**) engaging the rearward side of said pivot member (**18**) and constituting a hinge joint therewith, said hook being movably mounted to said housing for movement between a closing position and releasing position, a resiliency deformable element (**80**) located for engaging the front end of the sole and resiliently urging the boot (**12**) from a raised position to a position approximately parallel to the ski, said binding housing having an open-topped recess (**56**) extending transversely to the longitudinal extension of the ski, said pivot support unit including a supporting bearing unit (**60–68**) formed of high wear resistant material secured within said recess to releasably receive said pivot member, said supporting bearing unit includes a U-shaped element (**60**) including first and second upright side plates (**58**) being spaced from each other crosswise to the ski, each of said side plates including an L-shaped cut-out portion (**62**) and a confining element (**68**) aligned with said cutout portions (**62**) and operable to secure said pivot member (**18**).

5,338,054

CART FOR HAND BAGGAGE

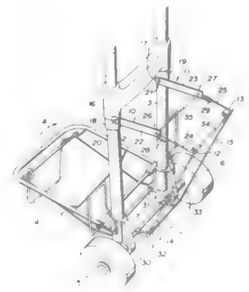
Hisato Imai, Shinjuku, and Sadayori Mori, Toride, both of Japan, assignors to Totex Corporation, Saitama, Japan

Filed Feb. 3, 1993, Ser. No. 13,083

Claims priority, application Japan, Feb. 6, 1992, 4-056213; Dec. 16, 1992, 4-354393

Int. Cl.[5] B62B *1/04*

U.S. Cl. 280—655 **6 Claims**



1. A cart for baggage comprising:

a baggage receiving frame;

first and second main handle arms having upper portions, the baggage receiving frame being connected to the first and second main handle arms on a first side of the main handle arms;

an axle connected to the first and second main handle arms on a second side of the main handle arms opposite from the first side;

first and second wheels mounted on the axle;

lateral supporting frames projecting from the upper portions of said first and second main handle arms in a direction away from the first side of the main handle arms, a projected length of each of the lateral supporting frames being longer than a distance between the axle and an imaginary line connecting outer peripheries of the wheels on the second side of the main handle arms, the lateral supporting frames having first end portions connected to the main handle arms and second end portions opposite from the first end portions; and

obliquely supporting frames extending from the second end portions of the lateral supporting frames toward the axle, said obliquely supporting frames being rotatably connected to a stationary member on the cart, said obliquely supporting frames having lower portions located near the imaginary line, wherein the first end portions of said lateral supporting frames are rotatably connected to the first and second main handle arms and the second end portions of said lateral supporting frames are rotatably connected to the obliquely supporting frames such that the lateral supporting frames are movable between a first position where said obliquely supporting frames are located near the first and second main handle arms and a second position where the obliquely supporting frames are separated from the first and second main handle arms.

5,338,055

INDEPENDENT WHEEL SUSPENSION

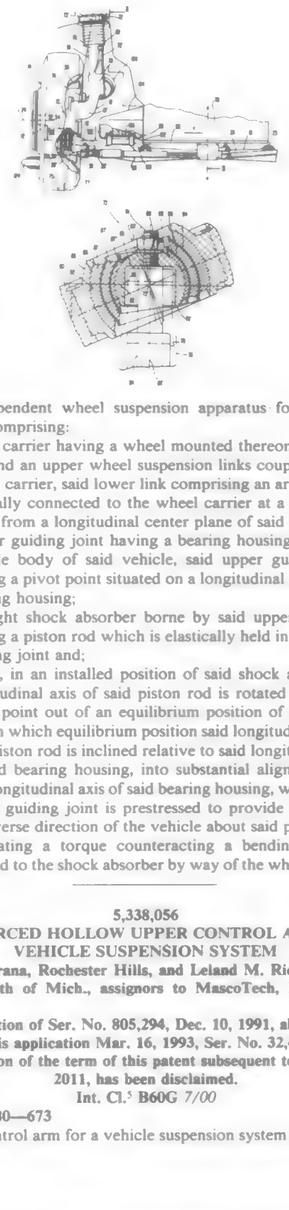
Uwe Mauz, Esslingen, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Jan. 8, 1992, Ser. No. 817,820

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1991, 4100296

Int. Cl.[5] B60G *11/00*

U.S. Cl. 280—668 **20 Claims**



1. Independent wheel suspension apparatus for a motor vehicle, comprising:

a wheel carrier having a wheel mounted thereon;

lower and an upper wheel suspension links coupled to said wheel carrier, said lower link comprising an arm which is pivotally connected to the wheel carrier at a lateral distance from a longitudinal center plane of said wheel;

an upper guiding joint having a bearing housing fixed to a vehicle body of said vehicle, said upper guiding joint having a pivot point situated on a longitudinal axis of said bearing housing;

an upright shock absorber borne by said upper link, and having a piston rod which is elastically held in said upper guiding joint and;

wherein, in an installed position of said shock absorber, a longitudinal axis of said piston rod is rotated about said pivot point out of an equilibrium position of said piston rod, in which equilibrium position said longitudinal axis of said piston rod is inclined relative to said longitudinal axis of said bearing housing, into substantial alignment with said longitudinal axis of said bearing housing, whereby the upper guiding joint is prestressed to provide a bias in a transverse direction of the vehicle about said pivot point, generating a torque counteracting a bending moment applied to the shock absorber by way of the wheel carrier.

5,338,056

REINFORCED HOLLOW UPPER CONTROL ARM FOR VEHICLE SUSPENSION SYSTEM

John J. Vrana, Rochester Hills, and Leland M. Richart, Redford, both of Mich., assignors to MascoTech, Inc., Novi, **Mich.**

Continuation of Ser. No. 805,294, Dec. 10, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 32,459

The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.

Int. Cl.[5] B60G *7/00*

U.S. Cl. 280—673 **6 Claims**

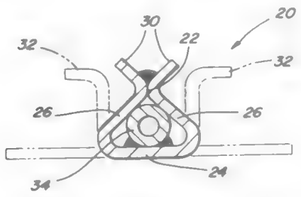
1. A control arm for a vehicle suspension system adapted to

VOL 1165 ISS 3 AG 16 1994 UMI

be connected to a ball joint assembly and a pivot bar assembly, said control arm comprising:

an integral body having a substantially U-shaped configuration, said integral body including a bottom wall and side walls extending upwardly from said bottom wall and means for receiving the ball joint assembly at an apex of said body mounted to said bottom wall at the apex of said U-shaped body, said body having means for receiving the pivot bar assembly at the remote ends of said body;

said integral body having modulus sections along a substantial part of the length of each arm extending from said



apex of said body, said apex having a U-shaped cross-sectional configuration and said modulus sections having a hollow, substantially triangular cross-sectional configuration with an upper seam along an apex of said triangular modulus sections formed by joining opposing edges of said side walls extending from said bottom wall; and

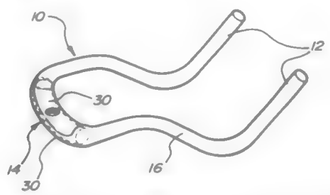
a reinforcement member positioned within at least a portion of said hollow modulus sections, said reinforcement member being mounted within said modulus sections at high load stress coordinates of said control arm for increased structural strength.

5,338,057

UPPER CONTROL ARM FOR VEHICLE SUSPENSION

D. C. Dickerson, Hamburg, and Robert G. Delbeke, Livonia, both of Mich., assignors to Mascotech, Inc., Taylor, Mich.

Filed Nov. 12, 1992, Ser. No. 975,312
Int. Cl.[5] B60G *3/00*
U.S. Cl. 280—675 8 Claims



1. A control arm for a vehicle suspension system adapted to be connected to a ball joint assembly and a pivot bar assembly, said control arm comprising:

a tubular, substantially U-shaped body with a bight and a pair of remote arms extending from said bight, remote ends of said arms having means for connecting said control arm to the pivot bar assembly;

a solid insert positioned within said tubular body at said bight to reinforce an intermediate section of said tubular body, said solid insert conforming to the cross-sectional configuration of said bight filling said tubular body at said bight; and

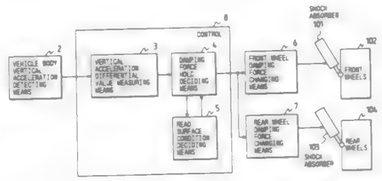
means for connecting said control arm to a ball joint assembly of the vehicle suspension system, said connecting means mounted at said bight of said control arm extending through said tubular body and said solid insert such that the connection between said connecting means and said control arm is reinforced by said solid insert.

5,338,058

DAMPING FORCE CONTROL SYSTEM FOR VEHICLE SUSPENSION

Shigeki Ohtagaki, and Kazunori Miura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 948,634
Claims priority, application Japan, Sep. 25, 1991, 3-245440
Int. Cl.[5] B60G *17/015*
U.S. Cl. 280—707 6 Claims



1. A suspension control system for controlling suspension damping of a motor vehicle when said vehicle experiences shock due to protrusions in a road, comprising:

vertical accelerating detecting means for detecting a vertical acceleration of a vehicle body when said body is subjected to said shock;

damping force changing means for switching suspension damping forces for front and rear wheel soft said vehicle body at least in three steps;

vertical acceleration differential value measuring means for measuring a differential value of an output signal of said vertical acceleration detecting means; and

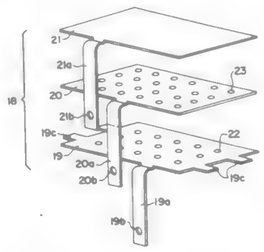
damping force hold determining means for changing damping forces for at least the rear wheels to a soft level and maintaining said damping forces at said soft level for a period of time while at least the rear wheels are riding over the protrusions in the road when an output signal of the vertical acceleration differential value measuring means exceeds a predetermined value and when the damping force of the rear wheel is at a level higher than said soft level.

5,338,059

AIR BAG COVER INCLUDING HORN SWITCH

Michio Inoue; Tadashi Yamamoto, and Hiroshi Ogawa, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Mar. 30, 1993, Ser. No. 40,358
Claims priority, application Japan, Apr. 13, 1992, 4-023248
Int. Cl.[5] B62D *1/04;* B60R *21/20*
U.S. Cl. 280—728 B 7 Claims



1. A pad assembly for an air bag device which is disposed on a steering wheel, said pad assembly comprising:

an upper wall and a side wall extending downwardly from a peripheral edge of said upper wall,

a covering layer made of a synthetic resin;

a rigid insert embedded in said side wall; and

a pressure sensitive switch having metal sheets which have a shape-retaining property, said metal sheets cooperating to function as a horn switch, said pressure sensitive switch being disposed on a rear surface of the upper wall with an end portion of said pressure sensitive switch being retained by said rigid insert,

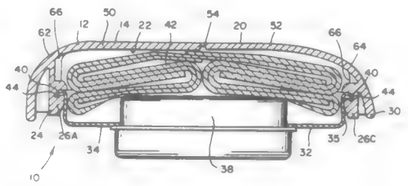
said metal sheets being vertically stacked, a lower sheet of said stacked metal sheets having a plurality claw pieces formed so as to extend from right and left edges thereof in a horizontal direction, said claw pieces being retained to an upper portion of a mounting piece extending downwardly from an inner periphery of said insert.

5,338,060

ENERGY DISSIPATION FEATURES IN AIR BAG CLOSURES

Quin Soderquist, South Weber, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Jun. 18, 1993, Ser. No. 79,486
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B 13 Claims



1. A one piece closure element for an air bag deployment opening of an inflatable restraint system adapted to be integrated into a vehicle with the system including an inflator device and a housing for accommodating a collapsed inflatable air bag wherein the closure element comprises:

a mounting portion securable to the housing and a face portion having therein tear ways adapted to tear under the influence of inflating of the air bag to define at least one air bag release door and a hinge section adapted to join said door with said mounting portion after the formation of said door, wherein said hinge section includes at least one integral reinforcement attachment rib externally formed to said hinge section, adapted to prevent undesired closure tearing, further joining said door with said mounting portion when the air bag is inflated.

5,338,061

AIR BAG HAVING DOUBLE-WALL CONSTRUCTION

Steven R. Nelson, Grove City, and Gregory Swideraki, Dublin, both of Ohio, assignors to Daicel Chemical Industries, Ltd., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 865,311
Int. Cl.[5] B60R *21/24*
U.S. Cl. 280—729 7 Claims

1. An air bag for use in connection with a gas generator comprising:

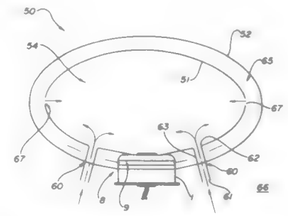
a first air bag attached to a gas generator, the first air bag forming an air storage chamber;

a second air bag disposed about the first air bag and coacting with said gas generator to form a gas storage chamber substantially enveloping the first air bag;

an air intake path connecting the first and second air bags, the air intake path extending from the second air bag through the first air bag for communicating the air storage chamber with the exterior of the second air bag;

at least one aperture in the first air bag for communicating the gas storage chamber with the air storage chamber

wherein, gas generated by the gas generator is introduced into the gas storage chamber to inflate the second air bag



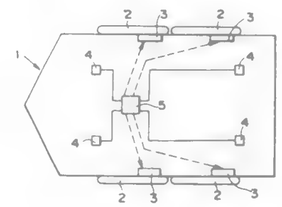
which pulls the first air bag into an inflated position causing ambient air to be pulled from the exterior of the second air bag through the air intake path and into the air storage chamber.

5,338,062

SIDE COLLISION SENSOR SYSTEM FOR SIDE AIRBAG APPARATUS

Toru Kiuchi, Mishima; Kenji Ogata, Susono; Masakazu Chiba, Aichi; Toshiaki Matsuhashi, Gamagori; Masahiro Taguchi, Aichi, and Motonori Tominaga, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota; Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, all of Japan

Filed Sep. 10, 1992, Ser. No. 942,822
Claims priority, application Japan, Sep. 11, 1991, 3-259639
Int. Cl.[5] B60R *21/32*
U.S. Cl. 280—735 18 Claims



1. A side collision sensor system for a side airbag apparatus for inflating an airbag between a side door or inner side wall and a passenger of a vehicle when a transverse collision is detected comprising:

a side collision sensor arranged on the side of a vehicle body for outputting a first ON signal only when said side collision sensor receives an external force of a predetermined or higher strength to inflate said airbag;

acceleration detecting means attached to an arbitrary portion of said vehicle body for outputting a second ON signal only when an acceleration of a predetermined or higher level is applied sideways to the vehicle body to inflate said airbag; and

a control unit for inflating said airbag when the control unit receives at least either one of the ON signals of said side collision sensor and said acceleration detecting means.

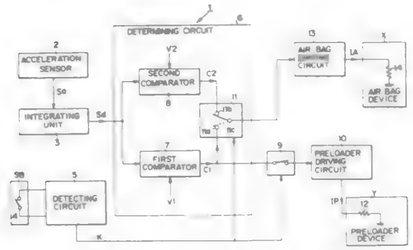
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,063

VEHICLE SAFETY DEVICE CONTROL APPARATUS

Kunihiro Takeuchi; Hideyuki Kaneko, and Hideki Ishizuka, all of Higashimatsuyama, Japan, assignors to Airbag Systems Company, Ltd., Gumma, Japan

Filed Mar. 4, 1993, Ser. No. 26,419
Claims priority, application Japan, Mar. 6, 1992, 4-082913
Int. Cl.[5] B60R *21/32, 22/46*
U.S. Cl. 280—735 7 Claims



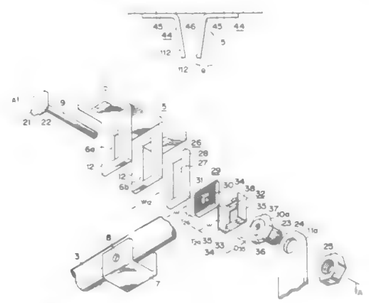
1. A vehicle safety device control apparatus comprising means for activating a preloader safety device at a first timing when a vehicle collision is detected, means for activating an air bag safety device at a second timing following said first timing, detecting means for detecting whether or not a seatbelt is buckled, and signal output means that, when a vehicle collision is detected and the detecting means detects that the seatbelt is not buckled, outputs a timing signal for activating the air bag safety device at a timing earlier than said second timing.

5,338,064

TILTING TYPE STEERING APPARATUS

Kiyoshi Sadakata, Gunma, and Katsumi Saito, Maebashi, both of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Nov. 19, 1993, Ser. No. 154,539
Claims priority, application Japan, Nov. 25, 1992, 4-086581[U]; Feb. 19, 1993, 5-011001[U]
Int. Cl.[5] B62D *1/18*
U.S. Cl. 280—775 4 Claims



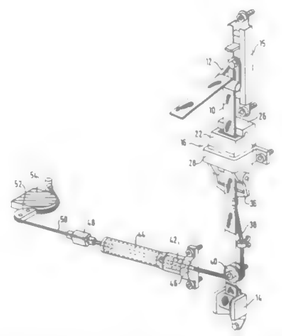
1. A tilting type steering column apparatus comprising:
a steering column through which a steering shaft for fixing a steering wheel at a rear end thereof is rotatably inserted;
a horizontal shaft for pivotally supporting a front end of said steering column;
an elevation bracket fixed to a mid-portion of said steering column;
a hole formed in said elevation bracket;
a fixed bracket fixed to a car body to sandwich said elevation bracket by a pair of plates;
a vertically extending slot formed at a position in a portion of each of said plates which aligns to said hole;
a rod member having a large diameter portion incapable of passing through said slot at a base end thereof and extending through said slot and said hole;
a pressing member having a shape incapable of passing through said slot and axially displaceably engaged with a portion projecting from an outer surface of said plate at an end of said rod member;
a manipulation member for axially displacing said pressing member relative to said rod member;
a fixed gear fixed to that portion on an outer surface of one of said plates having the outer surface thereof faced to said pressing plate which surrounds said slot;
a fixed meshing gear having repeating vertical projections formed on an outer surface of said fixed gear;
a lock member having an elevation meshing gear for meshing with said fixed gear on an inner surface thereof and a hole at a center thereof through which said rod member extends and held between said pressing member and said fixed gear; and
a spring arranged in contact to said lock member and having an elasticity in a direction to separate an inner surface of said lock member from an outer surface of said fixed gear;
upper ends of said pair of plates being fixed ends fixed to the car body and lower ends thereof being free ends;
a spacing between said free ends when said fixed bracket is fixed to the car body being smaller than a spacing between said fixed ends and a spacing between the inner surfaces of said pair of plates in the free state being slightly smaller than a width of said elevation bracket.

5,338,065

BELT TIGHTENER FOR VEHICLE SAFETY BELT SYSTEMS

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Nov. 3, 1992, Ser. No. 970,570
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136623
Int. Cl.[5] B60R *22/46*
U.S. Cl. 280—806 4 Claims



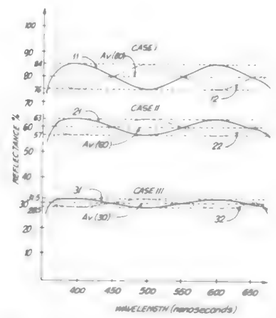
1. A belt tightener for vehicle safety belt systems comprising:
a belt retractor;
a deflection fitting;
a safety belt which has a webbing section running freely between said belt retractor and said deflection fitting;
belt gripping means having a pair of clamping elements which lie spaced apart opposite each other, said webbing section extending freely between said clamping elements;
spring means biasing said clamping elements to an engagement position in contact with said webbing section;
holding means which hold said clamping elements in a rest position spaced from said webbing section; and
a belt tightener drive connected to said gripping means by a tension transmitting element;
said holding means having a portion cooperating with said belt tightener drive and said tension transmitting element for releasing said clamping elements upon an occurrence of a tensile force exerted by said belt tightener drive and transmitted to said gripping means through said tension transmitting element;
said clamping elements are wedge-shaped and each have a rear face inclined to said webbing section, said gripping means comprising a reaction member extending around said clamping elements and having an inner wall, each of said rear faces bearing on said inner wall and said tension transmitting element being connected to said reaction member;
said spring means act on said clamping elements in a direction parallel to a direction in which said webbing section extends between said clamping elements, said gripping means comprising a supporting member provided with an abutment, said reaction member being supported by said supporting member and said spring means urging said clamping elements against said abutment.

5,338,066

METHOD AND SECURITY SUBSTRATE FOR PROTECTING AGAINST DUPLICATION WITH A COLOR COPIER

Arshavir Gundjian, Montreal, Canada, assignor to Nocopi International Ltd., Wayne, Pa.

Filed Apr. 1, 1992, Ser. No. 861,712
Int. Cl.[5] B42D *15/00;* B32B *3/00*
U.S. Cl. 283—67 2 Claims



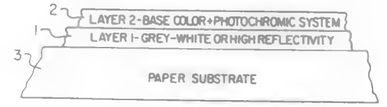
1. A security substrate for protecting against duplication with a color copier; comprising:
a main surface;
a background color on the main surface having an average reflectance value; and
a contrast color on the background color having a spectral characteristic which modulates the average reflectance value by no moret han 5% and has an average reflectance equal to the average reflectance value, wherein the contrast color is composed of a printing medium including one from the group consisting of a color former leuco dye and an activating phenolic resin.

5,338,067

SWITCHON-SWITCHOFF, MULTISTATE, INTERACTIVE, ANTIPHOTOCOPYING ANTIFRAUD AND ANTIFAXING SYSTEM

Arshevir Gundjian, Montreal, Canada, assignor to Nocopi International Ltd., Montreal, Canada

PCT No. PCT/CA91/00101, § 371 Date Oct. 1, 1992, § 102(e) Date Oct. 1, 1992, PCT Pub. No. WO91/15805, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 28, 1991, Ser. No. 941,031
Claims priority, application United Kingdom, Apr. 2, 1990, 9007387
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—67 10 Claims



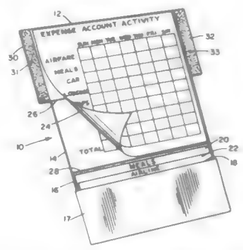
1. A method of preventing reproduction of printed matter on a substrate by photocopying and telefaxing wherein an intense amount of light is used, comprising the steps of:
providing a substrate with at least one surface;
applying a photochromic dye to the at least one surface, wherein the dye changes color in response to exposure to light with a response time which is a function of the amount of light absorbed by the dye in a given time period;
illuminating the at least one surface with an intense amount of light; and
applying an optical element to at least one of the dye and the at least one surface to decrease the response time of the dye and accelerate the change in color of the dye, wherein the optical element increases the proportion of the intense amount of light which is absorbed by the dye.

5,338,068

BUSINESS FORM/RECEIPT RECORDING SYSTEM

Gary Arbach, and Leonard Bradshaw, both of 14489 Crestwood Ave., Poway, Calif. 92064

Filed Nov. 26, 1993, Ser. No. 157,534
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—116 24 Claims



1. An integral business form for recording business information, saving receipts and submitting the business information and receipts to a given location, said form comprising:
a rectangular sheet having inner and outer surfaces, an upper edge, a lower edge, two side edges, an upper panel, two center panels, and a lower panel with each panel separated from the other panels by a fold line;
a first adhesive disposed on each of said two side edges within said lower panel;
a second adhesive disposed on each of said two side edges within said upper panel;

VOL 1165 ISS 3 AG 16 1994 UMI

a printed table extending across said inner surface of at least said upper panel and the adjacent center panel for entering business information;

a printed address of said given location on said outer surface of one of said upper panel and said two center panels;

wherein a pocket for storing said receipts is formed by folding along a lower fold line between lower panel and the adjacent center panel and sealing the lower and the adjacent center panels together along said two side edges with said first adhesive and an envelope for submitting said business information and receipts is formed by folding along a center fold line between said two center panels and an upper fold line between said upper panel and the adjacent center panel and sealing said envelope with said second adhesive.

5,338,069

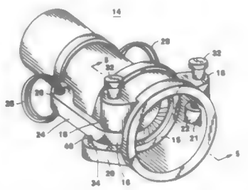
POSITIVELY-LOCKING, QUICK-RELEASE COUPLING

Daniel F. McCarthy, Beechhurst, N.Y., assignor to Scully Signal Company, Wilmington, Mass.

Filed Apr. 28, 1993, Ser. No. 54,441

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—38 **15 Claims**



1. A locking mechanism for releasably securing a locking arm in a locked position relative to a first housing having detent securing means, which locking arm connects to the first housing by a pivoting connection and rotates about a pivot line adjacent the first housing such that, in the locked position, the locking arm secures the first housing to a second housing, the locking mechanism comprising:

a detent member having an end portion which extends in a direction parallel to the pivot line, and an actuating portion which is movably secured to the first housing by the detent securing means, a center line of the actuating portion being substantially colinear with the pivot line and lying within said pivoting connection;

a spring for urging the detent member towards the locking arm so that the end portion traps the arm between the first housing and the detent member; and

means for manually compressing the spring to cause the detent member end portion to move away from the arm to release the arm so that the arm is allowed to swing outward away from the first housing.

5,338,070

DIAMETER-REDUCING MEMBER JOINT DEVICE

Hiroshi Horikawa; Yoshikazu Tsuzuki; Hisashi Mogi, and Kazuo Matsubara, all of Yokohama, Japan, assignors to Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,351

Int. Cl.[5] F16L *55/17*

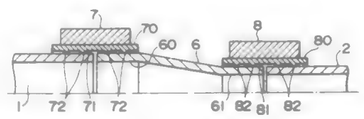
U.S. Cl. 285—177 **3 Claims**

1. A diameter reducing member joint device comprising:

a diameter-reducing pipe joint having at one end a short cylindrical and large-diameter connection portion with the same outer diameter as that of a first member to be connected, and also having at the other end a short cylindrical and small-diameter connection portion connected with a second member to be connected and having an outer-diameter smaller than that of said first member to be connected;

a large-diameter liner, into which both said first member to be connected and said large-diameter connection portion are inserted;

a heat-shrinkable member made of a shape memory alloy and pressing said large-diameter liner against said first member to be connected and said large-diameter connection portion from an external direction due to its shape recovery force; and



said small-diameter connection having such an inner diameter that the end portion of said second member to be connected is capable of being inserted thereinto, and said small-diameter connection portion being provided with a heat-shrinkable member made of a shape memory alloy pressing said small-diameter connection portion against said second member to be connected from an external direction due to its shape recovery force.

5,338,071

PIPE COUPLING

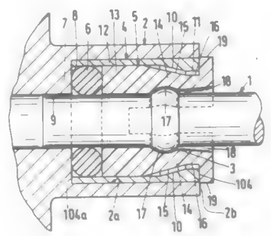
Ralf Hohmann, Bruchköbel; Bernd Kleinhens, Gelnhausen; Olaf Kohlhaus, Bad Langensalza; Stephan Mann, Bieber, and Ralf Spors, Bruchköbel, all of Fed. Rep. of Germany, assignors to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Oct. 19, 1992, Ser. No. 962,779

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1991, 4139124

Int. Cl.[5] F16L *21/08*

U.S. Cl. 285—233 **18 Claims**



1. A coupling for releasably engaging an elongated component having a circumferentially extending external protuberance, comprising an array of arms arranged to surround the component and having sockets for the protuberance; and a sleeve surrounding said arms, said arms and said sleeve being movable relative to each other axially of said sleeve between a first operable axial position and second operable axial position that is spaced form sad first position and said arms being movable radially of said sleeve only in said first position to permit introduction of the protuberance into and extraction of the protuberance form said sockets, said sleeve has an internal surface and said arms have external surfaces confronting said internal surface, said external surfaces being spaced apart from said internal surface by a first distance in said first position to permit radially outward movements of said arms relative to said sleeve such as are necessary to introduce the protuberance into or to extract the protuberance form said sockets, said external surfaces being spaced apart from said internal surface by a lesser second distance in said second position to prevent radially outward movements of said arms relative to said sleeve such as are necessary to introduce the protuberance into or to extract the protuberance form said sockets, said sleeve has first and second axial ends and said surfaces are nearer to said first than to said second axial end, said arms having portions extending from said sleeve beyond said first axial end.

5,338,072

GASTIGHT CONNECTION BETWEEN TUBES OF SMALL DIAMETER

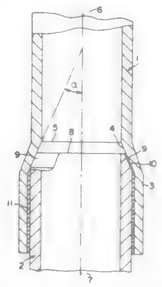
Dieter Bitter, Finnentrop; Eberhard Bornkessel, Sundern, and Horst Schnabel, Neuenrade, all of Fed. Rep. of Germany, assignors to Krupp VDM GmbH, Werdohl, Fed. Rep. of Germany

Filed May 19, 1992, Ser. No. 885,478

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1991, 4119759; Feb. 6, 1992, 4203329

Int. Cl.[5] F16L *13/02*

U.S. Cl. 285—286 **7 Claims**



1. A gas tight connection for tubes of small diameter, comprising

a first tube made from a first metallic material, said first tube comprising a cylindrical portion having a first inside diameter, a cylindrical opened-out portion axially spaced from said cylindrical portion having said first inside diameter and having a second inside diameter which is larger than said first inside diameter, and a transition portion merging said cylindrical portion and said opened-out portion, said transition portion including an internal cone extending to said first and second diameter portions,

a second tube made from a second metallic material, which has a lower melting point than said first tube, said second tube comprising a cylindrical portion and an end zone which includes an annular face which corresponds to and bears against said inner cone, and

a boundary layer between said annular face and said inner cone, and between said cylindrical portion of said second tube and said opened out-portion of said first tube, said boundary layer being formed from said second metallic material which has been melted in situ and resolidified to form said gas tight connection,

said annular face being formed to correspond with said internal cone by inserting said end zone of said second tube into said opened-out portion of said first tube until said end zone abuts against said inner cone, heating said opened-out portion and said inner cone until a portion of said second tube in said opened-out portion partially melts, and advancing said second tube in an axial direction relative to said first tube.

5,338,073

SLENDER PIPE CONNECTING CONNECTOR

Katsushi Washizu, Numazu, and Yuuji Miyauchi, Shizuoka, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Ltd., Japan

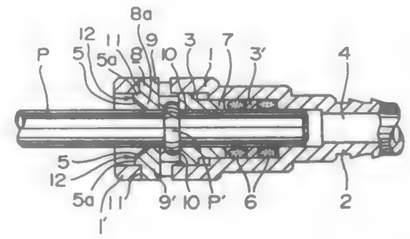
Filed Aug. 12, 1992, Ser. No. 929,769

Claims priority, application Japan, Aug. 20, 1991, 3-232240

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] F16L *37/00*

U.S. Cl. 285—319 **6 Claims**



1. A connector for a pipe having a front end and a bulging wall spaced from the front end, the bulging wall having a front side facing the front end of the pipe and an opposed rear side, said connector comprising:

a connector body having opposed front and rear ends, a connecting wall extending rearwardly from the front end of the connector body and defining a communication hole extending therethrough, an intermediate wall extending rearwardly from the connecting wall and defining a radially reduced chamber extending rearwardly from the communication hole and a radially enlarged chamber extending rearwardly from the radially reduced chamber, the intermediate wall including a plurality of notched apertures extending outwardly from the radially enlarged chamber, and a retaining wall extending from the intermediate wall to the rear end of the connector body, the retaining wall having an inner circumferential surface and a forwardly facing retaining surface adjacent the notched apertures;

a seal ring member disposed in the radially reduced chamber for sealing engagement with the pipe; and

a retainer having opposed front and rear ends, the front end of the retainer defining an annular wall disposed adjacent the seal ring member and dimensioned to engage portions of the pipe forward of the bulging wall, a plurality of resiliently deflectable arms projecting rearwardly from said annular wall, block-shaped pawl walls on portions of the respective arms remote from said annular wall, said pawl walls being dimensioned for deflection into the respective notched apertures, each said pawl wall including a front engagement face for engaging the rear side of said bulging wall, each said pawl wall further including an outer circumferential surface having a notch at the rear end of the retainer, said notch including a rearwardly facing surface engaging the forwardly facing retaining surface of the retaining wall of the connector body at one said notched aperture and having an outwardly facing surface engaging the inner circumferential surface of the retaining wall of the connector body for preventing radially outward deflection of said pawl walls and said arms after insertion of said pipe into said connector.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,074

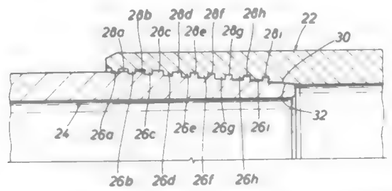
THREADED PIPE CONNECTION

H. Paul Barringer, Humble; Gary E. Kirsch, Tomball; Keith C. Mott, and Lawrence Y. Tung, both of Houston, all of Tex., assignors to The Hydril Company, Houston, Tex.

Continuation of Ser. No. 596,754, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 317,905, Mar. 2, 1989, abandoned. This application Oct. 8, 1993, Ser. No. 133,783

Int. Cl.[5] F16L *25/00*

U.S. Cl. 285—334 2 Claims



1. A threaded pipe connection comprising a box having full form, tapered, internal, generally dovetail-shaped threads and a pin having tapered, external, generally dovetail-shaped, full form threads having flanks, roots, and crests that mate with the threads on the box when the connection is made up, a portion of said threads on the box and pin having roots and crests that move into engagement when the connection is made up hand-tight and exert radial forces on the box and pin creating compressive hoop stress in the pin and tensile hoop stress in the box when the connection is made up, said threads further having flanks that move into engagement when the connection is made up, and a conical sealing surface on the pin between the threads and the end of the pin and a conical sealing surface on the box to engage the conical sealing surface on the pin and form a metal-to-metal seal when the connection is made up, the improvement comprising a potion of the threads adjacent the conical sealing surface on at least one of the box and pin being full form threads over the entire length of the portion, said portion having a taper that diverges from the taper of the threads of the other of the box and pin so the roots and crests of these full form threads do not engage the roots and crests of the threads of the other of the box and pin so as to eliminate any forces between this portion and the other of the box and pin urging the sealing surfaces apart while allowing the flanks of the divergent threads to engage the flanks of the other of the box and pin to urge the sealing surfaces into sealing engagement and to remain in load bearing engagement.

5,338,075

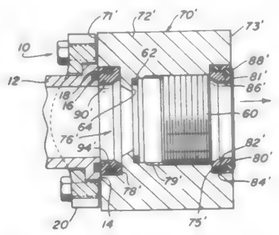
COMBINATION FLUID FLOW PORTS

David E. Albrecht, 1383 Gramary Rd., Blue Bell, Pa. 19422

Filed Jun. 3, 1993, Ser. No. 73,926

Int. Cl.[5] F16L *23/00*

U.S. Cl. 285—368 11 Claims



1. For use in a fluid flow connection of the type having a male half including a flanged head having a sealing face provided with an O-ring received in a groove therein and a flange clamp for securing the flanged head in sealing contact with the mating face of a port to which said male half is connected, the improvement wherein

said port comprises

a body providng a mating face,

a hole in said port body extending inwardly from said mating face of said port body,

said hole having an end hole portion formed at the outermost end thereof adjacent said mating face of said port body and being threaded in the portion thereof extending inwardly from said end hole portion, and

an annular ring constructed and arranged to fit closely within said end hole portion and to provide a face aligned with and extending radially inwardly from said mating face of said port body,

the inner diameter of said ring being less than the inner diameter of the groove receiving the O-ring of the cooperating flanged head of the fluid flow connection whereby said O-ring is held captive by a mating face of said port in the connected position of said male half and said port.

5,338,076

ACTUATOR DEVICE

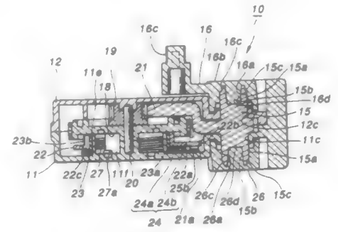
Masaki Tanaka, Yokohama, Japan, assignor to Jidosha Denki Kogyo Kabushiki Kaisha, Yokohama, Japan

Filed Mar. 16, 1993, Ser. No. 31,943

Claims priority, application Japan, Mar. 17, 1992, 4-014173[U]

Int. Cl.[5] E05B *3/00*

U.S. Cl. 292—336.3 3 Claims



1. An actuator device comprising:

a casing to be secured to a door, said casing having an inside space and a side opening on one side thereof;

a cover element for closing the side opening of the casing;

a reversible motor accommodated within the inside space of the casing;

a motion conversion means for converting a rotary output motion of the motor into a rocking motion, said motion conversion means having an input shaft connected to the motor, and an output shaft;

a swing arm connected to the output shaft of the motion conversion means so that the rotary output motion of the motor causes the swing arm to undergo a rocking motion, said swing arm being adapted to be connected to an element to be actuated by the actuator device and associated with the door;

said casing having a common mount with which the casing can be secured to a selected one of a right-handed door and a left-handed door;

said output shaft of the motion conversion means having opposite end regions which extend through, and protrude outwardly from said casing and said cover element, respectively, said swing arm being connected to a selected one of the opposite end regions of said output shaft of the motion conversion means; and

a cap element for covering another one of the opposite end regions of the output shaft of the conversion means, which is free from said swing arm.

5,338,077

FASTENING OF A STRIP TO A REARWARDLY ACCESSIBLE CARRIER PART

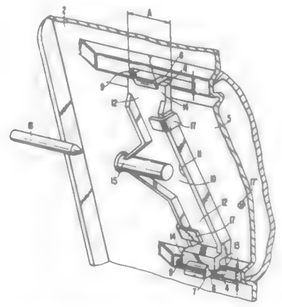
Fritz Häberle, Sindelfingen; Horst Kleiner, Stuttgart, and Josef Oravetz, Sindelfingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jun. 9, 1993, Ser. No. 74,294

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1992, 4219944

Int. Cl.[5] B60R *19/02*

U.S. Cl. 293—120 5 Claims



1. A fastening arrangement of a strip to a rearwardly accessible carrier part, comprising:

long holes in the carrier part; and

at least one pair of holding tongues which are arranged opposite one another on longitudinal edges of the strip, each holding tongue being insertable through an associated one of the long holes so as to extend beyond a rear side of the carrier part, the holding tongues having free ends with sides facing one another and hooks, said hooks having clamping faces extending approximately parallel to the rear side of the carrier part;

wherein the long holes have a longitudinal extension in a longitudinal direction of the strip that is longer than a corresponding width of the holding tongues;

wherein an overall distance between a pair of mutually opposite holding tongues corresponds to a distance between outer edges of two of the associated long holes; and

wherein a clearance width of the long holes as measured transversely to the longitudinal extension, is larger than or equal to a corresponding largest outer dimension of the individual holding tongues including the hook;

and further comprising at least one double-winged rotary bolt arranged on the rear side of the carrier part and assigned to the pair of holding tongues, the rotary bolt being pivotable about an axis of rotation perpendicular to the rear side and arranged between a respective mutually opposite pair of long holes, the rotary bolt having wings that are pivotable inwards with end regions between the rear side of the carrier part and the clamping faces of the hooks on the holding tongues so as to bear tautly against the clamping faces.

5,338,078

LAWN AND GARDEN TOOL FOR THE REMOVAL OF GROUND PLUGS

Charles Basek, Oakville, Canada, assignor to Lawn Claw International Inc., Christ Church, Barbados

Filed Jun. 11, 1993, Ser. No. 74,603

Int. Cl.[5] A01B *1/24*

U.S. Cl. 294—50.5 22 Claims

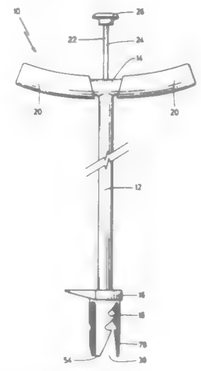
1. A manual agricultural tool for removal of plugs from the earth, comprising:

a shaft having a central axis;

a handle at a top end of the shaft for manipulation of the tool; and

a plurality of spaced apart blades rigidly secured at a lower end of the shaft by a support member extending between the blades, the blades depending downwardly of the support member and being spaced radially outwardly of the axis so as to be generally centered about the axis; and wherein

the blades are generally parallel to the axis and each blade has an inner concave surface which surfaces together with the support member define a downwardly open receiving



channel such that the blades may be axially inserted into the ground; and

at least one blade has a tooth, a portion of which tooth spirals radially inwardly toward the axis to enhance compactment of soil received in the channel as the tool is rotated in a first direction about the axis, the tooth including a ledge having a face oriented upwardly so as to come into abutting contact with a radially outward portion of the plug of earth as the tool is withdrawn from the ground to facilitate holding of the plug within the channel during the withdrawal of the tool from the ground.

5,338,079

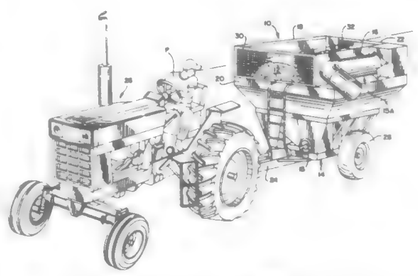
VEHICLE WITH PERFORATED PANELS

Dan A. Kuhns, Arthur, Ill., assignor to E-Z Trail, Inc., Arthur, Ill.

Continuation of Ser. No. 934,019, Aug. 21, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 149,720

Int. Cl.[5] B60P *3/22*

U.S. Cl. 296—15 15 Claims



1. A towable wheeled vehicle for transporting a loose cargo having a bottom, a pair of substantially impervious spaced side

VOL 1165 ISS 3 AG 16 1994 UMI

walls, and substantially impervious front and rear walls extending upwardly from the bottom of the vehicle over a major portion of the height of the vehicle for containing the cargo, and a towing hitch adjacent the front wall for hitching the vehicle to a personnel operated towing vehicle, said towable vehicle comprising:

a pair of perforated panels, one each on said impervious front and rear walls respectively, said perforated panels having perforations of a size and shape to contain said loose cargo, both of said perforated panels being positioned adjacent the top of said impervious front and rear walls to permit visibility through and to the rear of the towable vehicle by the person operating the towing vehicle when the towable vehicle is being towed or positioned, the width of said perforated panels being substantially greater than their height and their height being substantially less than the distance between the bottom of the towable vehicle and the top of said impervious front and rear walls to permit observation by the person operating the towing vehicle through said perforated panels of any traffic or obstruction to the rear of the towable vehicle as it is being towed or positioned, and

at least one of said side walls extending upwardly to adjacent the top of said perforated panels and a substantial portion of said at least one of said side walls is substantially imperforate from top to bottom.

5,338,080

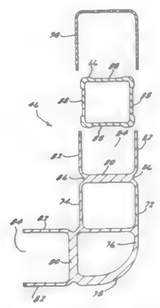
SPACE FRAME CONSTRUCTION

Adam M. Janotik, Grosse Ile, and Lawrence P. Kazyak, Novi, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 875,470, Apr. 29, 1992, abandoned. This application Apr. 22, 1993, Ser. No. 52,215

Int. Cl.[5] B62D *27/00*

U.S. Cl. 296—29 **10 Claims**



1. A space frame for an automotive vehicle comprising:

at least one longitudinally extending structural member;

at least one rocker including a plurality of generally rectangular-shaped elongated cells and generally U-shaped channels on at least two of said elongated cells, said channels being orientated at an angle of substantially ninety degrees relative to each other, said structural member being disposed in one of said channels; and

means for securing said structural member to said rocker.

5,338,081

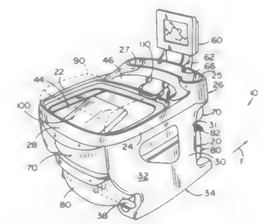
REMOVABLE FLOOR-MOUNTED CONSOLE

Nathan W. Young, and Russell P. Shafer, Jr., both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Jul. 29, 1993, Ser. No. 99,178

Int. Cl.[5] B60R *7/04*

U.S. Cl. 296—37.14 **21 Claims**



1. A removable floor-mounted console and vehicle seat attachment structure comprising:

a seat attachment structure for mounting to the floor of a vehicle for the removable attachment of a vehicle seat thereto;

a frame having an upper segment defining at least one storage receptacle and downwardly depending legs terminating in a base; and

said base including means for removably attaching said frame to said vehicle mounted seat attachment structure when a correspondingly located vehicle seat has been removed therefrom.

5,338,082

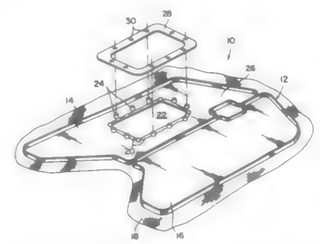
APPARATUS FOR SECURING FABRIC TO A VISOR

Douglas C. Miller, Hersey, Mich., assignor to Plasta Fiber Industries Corp., Marlette, Mich.

Filed Apr. 15, 1992, Ser. No. 869,462

Int. Cl.[5] B60J *3/00*

U.S. Cl. 296—97.1 **6 Claims**



1. An attachment mechanism for securing a covering to an outer surface of a visor so that said covering is prevented from working loose, the visor having a molded shell including upper and lower halves positionable together and an aperture in the upper shell half between inner and outer surfaces thereof adapted to reveal a mirror disposed within the visor when the upper and lower shell halves thereof are positioned together, the attachment mechanism comprising:

a plurality of stakes extending from the inner surface of the upper shell half;

a bezel shaped to conform to the inner surface of the upper shell half and to surround the aperture, said bezel defining therein a plurality of openings each to receive therethrough one of said plurality of stakes, said plurality of stakes being deformable to secure said bezel to the inner surface of the upper shell half,

the covering surrounding the outer surface of the shell and including a free edge portion extending from the outer surface through the aperture to the inner surface of the upper shell half, the free edge portion defining therein a plurality of slits extending toward the aperture, each of the plurality of slits receiving therethrough one of the plurality of stakes to maintain the free edge portion in position in preparation of the placement of said bezel against the inner surface of the upper shell half.

5,338,083

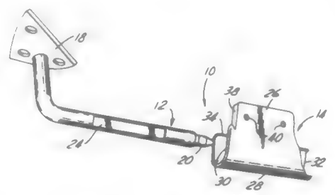
VISOR DETENT SPRING CLIP

Robert M. Gute, Corunna, Mich., assignor to Plasta Fiber Industries Corp., Marlette, Mich.

Filed Jan. 26, 1993, Ser. No. 9,548

Int. Cl.[5] B60J *3/02*

U.S. Cl. 296—97.9 **9 Claims**



1. An arrangement for attaching a visor to a vehicle in storage and use positions, the arrangment comprising:

a pivot shaft having a mounting end adapted to be mounted to the vehicle and having a free end, the pivot shaft having a curved surface with a flat portion oriented along a longitudinal axis of the pivot shaft for a predetermined distance between the mounting end and the free end of the pivot shaft; and

a spring clip on said pivot shaft adapted for enabling cooperation between the visor and the pivot shaft for pivotally positioning the visor in the storage and use positions, the spring clip having a narrow portion cooperating with the flat portion of the pivot shaft to provide a detent adapted for positioning the visor in a storage position, the spring clip having a wide portion located opposite the narrow portion and spanning the flat surface for the predetermined distance whereby the ensure free pivotal movement of the spring clip about the pivot shaft for positioning the visor in the use positions except when the narrow portion of the clip is cooperating with the flat surface to provide a detent at the storage position, and the wide portion having a curved free end interfacing approximately 90 degrees of the curved surface of the pivot shaft ensuring proper vertical alignment of the pivot shaft within the spring clip.

5,338,084

COVER SYSTEM FOR FLATBED TRAILERS AND KIT THEREFOR

James R. Wardell, Strasburg, Ohio, assignor to Roll-A-Cover Inc., Strasburg, Ohio

Filed Dec. 16, 1992, Ser. No. 991,117

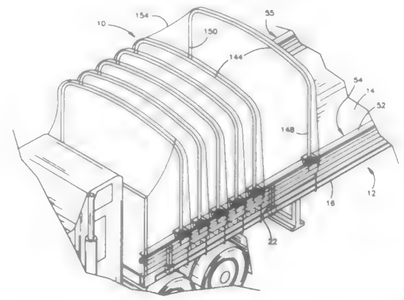
Int. Cl.[5] B62D *25/06*

U.S. Cl. 296—105 **22 Claims**

1. A collapsible cover kit adapted in use to be removably mounted to a plurality of spaced stake sockets secured between longitudinally extending rub rails and opposite sides of a flatbed vehicle, said kit comprising:

a plurality of stakes having a lower end adapted in use to be securely disposed in said stake sockets and an upper end adapted in use to project upward from said flatbed vehicle;

a plurality of longitudinal rails adapted in use to fit together in end to end registering relationship, thereby to form two lengths of spaced guide tracks that project above and extend along the sides of said flatbed vehicle, each of said rails being adapted in use to be attached to said upper end of one of said stake members for longitudinal sliding movement of said rail with respect to said stake without vertical disengagement of said rail from said stake;



a plurality of inverted bow-shaped members having free ends adapted in use to be removably secured to said guide tracks; and

a plurality of carrier means adapted in use to slidingly connect each free end of said bow-shaped members to an associated guide track.

5,338,085

FOLDING TOP FOR MOTOR VEHICLES

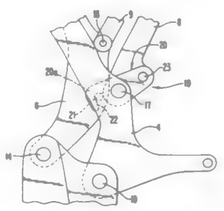
Martin Guckel, Wiernsheim; Jürgen Schrader, Weil im Schönbuch, and Bernd Wilms, Holzgerlingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed May 21, 1993, Ser. No. 64,641

Claims priority, application Fed. Rep. of Germany, May 28, 1992, 4217636

Int. Cl.[5] B60J *7/12*

U.S. Cl. 296—121 **10 Claims**



1. Folding top arrangement for a convertible vehicle comprising:

a top storage box for storing a folding top in a top down condition, said top storage box having an upwardly open top aperture,

a top frame for supporting a flexible foldable top cover in an in-use top up condition,

said top frame including main connecting rods at each vehicle side pivotable about a respective main axis, lateral top supports at each vehicle side pivotal about a respective top support axis spaced from the respective main axis, and a rear hoop having a rear hoop lateral leg at each vehicle side,

top frame connecting structure accommodating folding movement of the top frame from the top up condition to the top down condition with movement of the rear hoop lateral legs backward relative to the main axis to project

VOL 1165 ISS 3 AG 16 1994 UMI

into a rearward widened area of the top box behind the top box aperture, and

a locking device for preventing folding back movement of the lateral top supports when the rear hoop is in an upright position and for permitting folding back movement of the lateral top supports in response to an advance rearward pivot movement of the rear hoop about a predetermined angle such that subsequent folding back of the top supports is accompanied by contact-free dipping of the rear top through the top box aperture,

wherein the locking device includes a pivot member mounted on the top support which is engageable behind a retaining component and is coupled to a lateral leg of the rear hoop, said pivot member being mounted on the associated lateral top support coaxially with the rear hoop.

5,338,086

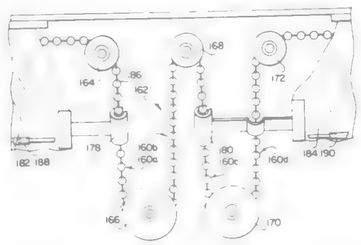
AUTOMOBILE WINDOW SHADE SYSTEM

Adolf Tyutinman, 2983 Cambridge Dr., San Jose, Calif. 95125

Division of Ser. No. 933,392, Aug. 21, 1992, Pat. No. 5,316,363. This application Nov. 12, 1993, Ser. No. 151,152

Int. Cl.[5] B60J *1/20*

U.S. Cl. 296—138 **14 Claims**



7. A window shade system for an automobile having a body with a plurality of windows, each of said windows having a lower side, an upper side, and a periphery defining the shape of each of said windows, said system comprising:

at least one flexible element which is guided along said periphery of each of said windows and is composed; at least on a portion of its length, of a plurality of expanded portions;

a plurality of guide elements for guiding said at least one flexible element along said periphery of each of said windows;

a plurality of shading elements attached to said at least one flexible element so that said plurality of shading elements can be moved together with said at least one flexible element with respect to said windows between a window shading position and a window unshading position;

moving means on said at least one flexible element for moving said plurality of shading elements;

said moving means comprising at least one yoke connected to at least one of said plurality of shading elements;

said at least one yoke having a resiliently expandable means for developing a compression force and embracing at least one of said plurality of expanded portions so that when an axial force is applied to said at least one flexible element, said at least one yoke can be dragged by said at least one flexible element.

5,338,087

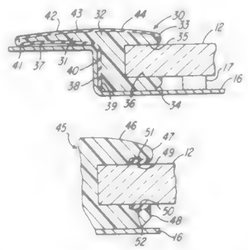
ANTI-SQUEAK MOLDING

Michael G. Gross, Tipp City, and Jack D. Young, Huber Heights, both of Ohio, assignors to Creative Extruded Products, Inc., Tipp City, Ohio

Continuation-in-part of Ser. No. 36,213, Mar. 24, 1993, abandoned. This application Jun. 21, 1993, Ser. No. 78,466

Int. Cl.[5] B60J *10/02*

U.S. Cl. 296—146.15 **13 Claims**



1. In an automobile having a body panel and an adjacent fixed window having a space therebetween, an elastomeric molding comprising a principal member between said body panel and an edge of said window, said molding including an outer portion for concealing said space and having a first segment, said principal member having a second segment extending therefrom and cooperating with said first segment to retain said window edge, said principal member and said outer portion having surfaces contacting said body panel; the improvement wherein said principal member is composed of a first elastomeric material, said molding further comprising a layer of melt-processible rubber extending along said body panel-contacting surfaces of said principal member and said outer portion, said layer eliminating undesirable squeaking noises between said layer and said body panel, at least one of said segments including a flexible member contacting a surface of said window edge to enhance the retention thereof and to eliminate undesirable squeaking noises between said segment and said window edge, wherein said flexible member is squeezed between said segment and said surface of said window edge.

5,338,088

REAR AIR DEFLECTOR SHIELD FOR CARGO-STYLE DOOR VEHICLE

John M. Stanesic, Johnston, Iowa, assignor to DFM Corporation, Urbandale, Iowa

Continuation-in-part of Ser. No. 912,325, Jul. 13, 1992, Pat. No. 5,249,836, which is a continuation-in-part of Ser. No. 744,230, Aug. 13, 1991, abandoned. This application Aug. 6, 1993, Ser. No. 103,187

Int. Cl.[5] B60J *1/20*

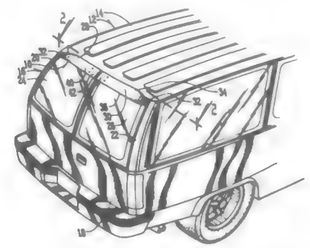
U.S. Cl. 296—180.1 **6 Claims**

1. A two part rear air deflector for vehicles such as automobiles, vans and trucks having a roof and rear cargo doors and a rear window and a window frame extending around the window for each of said cargo doors, said two part deflector comprising:

a pair of elongated shield portions each having opposite inner and outer ends, opposite upper and lower edges and opposite forward and rearward surfaces;

the shield portions each having a reverse curve profile adjacent each outer end such that the forward surface of the shield portion adjacent each outer end is substantially parallel to the window frame so as to provide mating engagement between the forward surface of the shield portion adjacent to the outer ends and the window frame;

a fastening stanchion associated with each inner end of each shield portion for attachment of each inner end to each of said cargo doors adjacent the inner ends; and



fastening means extending through the shield portions and to the window frame for securing the outer ends of the shield portions to the vehicle.

5,338,089

WINDSCREEN FOR A CONVERTIBLE AUTOMOBILE

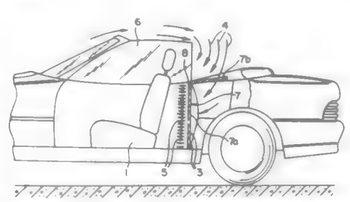
Hans Götz, Böblingen, and Karl-Heinz Baumann, Bondorf, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Continuation of Ser. No. 270,692, Nov. 14, 1988, Pat. No. 5,219,201. This application Mar. 11, 1993, Ser. No. 29,638

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1987, 3738501; Oct. 26, 1988, 3836375

Int. Cl.[5] B60J *9/04*

U.S. Cl. 296—180.5 **1 Claim**



1. An air-permeable windscreen for an automobile arranged transversely to a longitudinal direction of the automobile and rearwardly of a solid windshield located at a forward end of a passenger space of the automobile, said air-permeable windscreen having at least a portion thereof projecting above an upper edge of rearwardmost seats in the passenger space so as to be impinged by air flow moving over the solid windshield and rearwardly of the air-permeable windscreen and then forwardly toward the air-permeable windscreen, wherein the air-permeable windscreen comprises a stretched, elastically deformable net clamped in a surrounding frame and having an elasticity sufficient to cause elastic deformation of the net from the air flow impinging the air-permeable windscreen from the rear to the front of the automobile in the longitudinal direction during forward driving of the automobile and thereby decelerate the air in a uniform manner over an entire width of the passenger space, said net having a resistance coefficient range defined as a quotient of a function of the difference in air pressure across the net and air density times air velocity squared such that the resistant coefficient drops in value in the range as a function of increasing mass flow of air from the rear to the front of the automobile, and said portion of the windscreen being hinged relative to a remaining portion of the windscreen about an axis transverse to the longitudinal direction of the automobile so as to be movable to a horizontal position.

5,338,090

LEG STRUCTURE OF SEAT FOR ABSORBING IMPACT ENERGY

Leslie J. Simpson, Chesham Bois, and Brian S. Bayliss, Jobec, both of England, assignors to Koito Industries, Ltd., Kanagawa, Japan

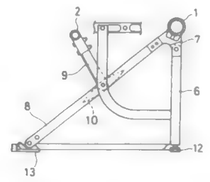
PCT No. PCT/JP92/00576, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/19464, PCT Pub. Date Nov. 12, 1992

PCT Filed May 1, 1992, Ser. No. 955,728

Claims priority, application Japan, May 9, 1991, 3-135528

Int. Cl.[5] B60N *2/42*

U.S. Cl. 297—216.2 **5 Claims**



1. A striking energy absorbing seat leg structure for a seat in which a seat bottom and a seat back are mounted on a base frame mounted bridgewise between front and rear beams, comprising: a generally vertically extending front leg having an upper end connected to said front beam and a lower end connected to a floor side rail, a continuous tubular diagonal member having an upper end connected to said front beam and a lower end connected to said floor side rail rearward of said rear beam, a rear leg having an upper end connected to said rear beam, and a guide member received within said diagonal member at a position intermediate said upper and lower ends of said diagonal member, a lower end of said rear leg being connected to said guide member, wherein, when a striking load is applied in a forward direction of said seat, said base frame pivots about said front leg so as to raise said rear beam, pulling said rear leg upwardly and thereby flexing and deforming said diagonal member in an upward direction to absorb striking energy, while said front leg undergoes a torsional action to absorb a shock force, and when a striking load is applied in a rearward direction of said seat, said base frame pivots about said front leg so as to lower said rear beam, pushing said rear leg downwardly and thereby flexing and deforming said diagonal member in a downward direction to absorb striking energy, while said front leg undergoes a torsional action to absorb a shock force.

5,338,091

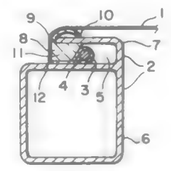
WELT LOCK FURNITURE CONSTRUCTION

Elmo E. Miller, 8201 16th St., Apt. 1126, Silver Spring, Md. 20910

Filed Nov. 7, 1991, Ser. No. 788,945

Int. Cl.[5] A47C *27/00*

U.S. Cl. 297—218 **12 Claims**



1. Slung furniture comprising:

a frame;

webbing that supports the weight of a person;

VOL 1165 ISS 3 AG 16 1994 UMI

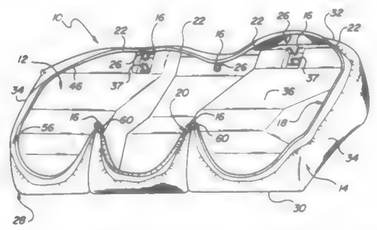
a hem in said webbing;
a welting in said hem;
a channel having an opening in said frame within which said hem and said welting are laid, which channel is oriented so that one edge is at least partially covered by said webbing when said slung furniture is used;
a flexible, removable, locking strip inserted into said channel between said webbing and the side of said channel that is adjacent to said edge, and between said welting and the opening of said channel;
wherein a gap between said locking strip and the channel wall opposite said edge is too narrow for said welting to be pulled through it even though said welting and said locking strip are from a person being supported by said webbing, and wherein said tension keeps said locking strip in place, so as to block removal of said and said hem from said channel and wherein said webbing can be removed from the frame when said locking strip is selectively removed from said channel.

5,338,092

DRAWSTRING SEAT COVER

Ronald A. Wiltsey, Sterling Heights, and Eugene S. Dudash, Commerce Township, Oakland County, both of Mich., assignors to Lear Seating Corporation, Southfield, Mich.

Filed Mar. 19, 1993, Ser. No. 33,831
Int. Cl.[5] A47C *31/02*
U.S. Cl. 297—228.11 **11 Claims**



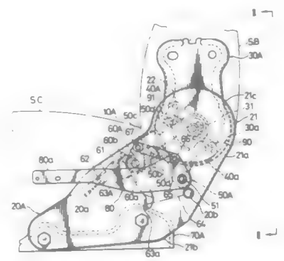
1. A seat cover assembly (10) for providing an easily attached and securely fastened seat cover for a seat, said seat cover assembly (10) including:
a seat (12);
said seat (12) including a top surface, a bottom surface (36), and an outer periphery (28);
said outer periphery (28) including a front peripheral edge (30), a rear peripheral edge (32) directly opposing said front peripheral edge (30), and two opposing side peripheral edges (34);
a seat envelope (14) disposed about said seat (12);
a drawstring sheath (18) attached to said seat envelope (14);
a flexible drawstring (20) including first and second ends and an intermediate portion slidably disposed within said drawstring sheath (18) and extending continuously through the entirety of said sheath (18);
said drawstring sheath (18) comprising a plurality of sheath sections (22) each including a first and second end;
a plurality of spaced openings (24) disposed along said sheath (18), with each said opening (24) disposed between a first end of one said section (22) and a second end of the next adjacent of said sections (22) of said sheath (18);
said intermediate portion (62) of said drawstring (20) extending outwardly from each of said spaced openings (24) in said sheath (18);
a plurality of attachment projections (16) each disposed at spaced locations on said bottom surface (36) of said seat (12) and adjacent one of said peripheral edges (30,32,34) thereof, with each said attachment projection (16) disposed adjacent one of said openings (24) in said sheath (18); and
characterized by said attachment projections (16) each including a free distal end extending away from said adjacent peripheral edge (32) and toward an opposing peripheral edge (30) of said seat (12) for directly engaging and securely retaining said intermediate portion (62) of said drawstring (20) to prevent sliding and wrinkling of said seat envelope (14) with respect to said seat (12).

5,338,093

SEAT RECLINING APPARATUS

Isao Ikegaya, and Kunihisa Sugimoto, both of Kosai, Japan, assignors to Fujikiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,610
Claims priority, application Japan, Mar. 29, 1991, 3-020123[U]; Mar. 29, 1991, 3-020131[U]; Mar. 29, 1991, 3-020132[U]
Int. Cl.[5] B60N *2/20*
U.S. Cl. 297—367 **3 Claims**



1. A seat reclining apparatus for adjusting an inclining angle of a seat back to a seat cushion, comprising:
a base plate secured to the seat cushion;
an arm disposed on a seat back side of said base plate, secured to the seat back, pivotably supported by said base plate;
an upper tooth secured to said arm;
a lower tooth disposed so as to produce a gap between said base plate and said lower tooth, pivotably supported by said base plate, engaging said upper tooth;
an operating structure pivotably supported by said base plate, operating said lower tooth to engage and disengage said lower tooth and said tooth; and an upper rail constituting a seat slide structure, secured to said base plate, disposed in the gap between said lower tooth and said base plate;
wherein a lower outward form of said lower tooth is formed along an outward form of said upper rail.

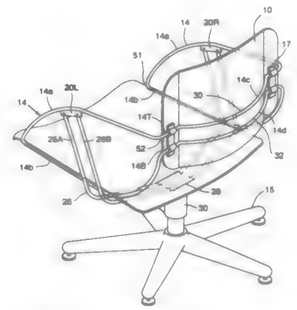
5,338,094

FLEXIBLE RECLINING CHAIR

Charles O. Perry, 20 Shorehaven Rd., Norwalk, Conn. 06855

Continuation-in-part of Ser. No. 793,357, Jan. 9, 1992, which is a continuation-in-part of Ser. No. 757,734, Sep. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 506,716, Apr. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 381,151, May 2, 1989, Pat. No. 5,009,466, which is a continuation-in-part of Ser. No. 185,707, Apr. 25, 1988, abandoned. This application Sep. 14, 1993, Ser. No. 121,185
Int. Cl.[5] A47C *1/00*
U.S. Cl. 297—411.4 **3 Claims**

1. A flexible frame for a chair having a seat back and a seat bottom, comprising;
a seat frame forming a substantially continuous loop symmetrically about the chair beginning from an upper bearing portion then forwardly along arm portions then downwardly then rearwardly along lateral side portions to a lower bearing portion, said seat back being pivotally attached to the seat frame at both the upper bearing portion and the lower bearing portion, said seat bottom being attached to the seat frame between the lateral side portions; and



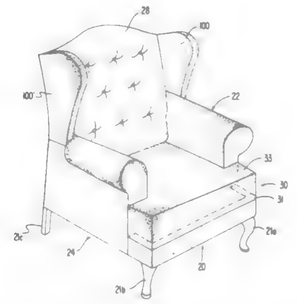
a support frame comprising a pair of parallel support members formed generally into a u-shape and connected to each other at a bottom of the u-shape, each of the support members being pivotally attached at each end thereof to the seat frame at respective arm portions.

5,338,095

UPHOLSTERED SEATING SYSTEM

Glenn M. Laughlin, High Point, N.C.; Jeffrey A. Frank, Arlington, Va., and Bruce Hirschhaut, High Point, N.C., assignors to JBG Original Designs Incorporated, High Point, N.C.

Continuation-in-part of Ser. No. 720,369, Jun. 25, 1991, Pat. No. 5,263,764. This application Mar. 5, 1992, Ser. No. 846,022
Int. Cl.[5] A47C *7/00*
U.S. Cl. 297—440.1 **19 Claims**



1. An upholstered seating system for mounting on a substantially horizontal surface, said seating system being quickly and easily assembled and disassembled, comprising
first and second spaced apart substantially vertical arm members, each of said arm members having an inner surface, a front portion and a rear portion, each of said arm members further including a side support member secured to the rear portion of the inner surface of an arm member, said side support member having an opening therein;
a front member having first and second ends;
a back member including first and second vertical side members, each of said first and second vertical side members having an insertion element for insertion into the vertically extending opening in the side support member of a corresponding arm member;
a seat member resting on said side support members without means attaching said seat member thereto;
first attaching means for removably attaching said front member to said first and second arm members, said first attaching means serving solely for securing said first and second arm members to said front member without supporting said seat member; and
second attaching means for removably attaching said back member to said first and second arm members, whereby said seating system is self supporting, said second attaching means serving solely for attaching said arm and back members to each other without supporting said seat member.

5,338,096

LOCKING DEVICE FOR A FRONT SEAT OF A DOUBLE STROLLER

Mien-Cheng Huang, Tainan Hsien, Taiwan, assignor to Taiwan Charwell Enterprise, Co., Ltd., Tainan Hsien, Taiwan

Filed Oct. 19, 1993, Ser. No. 137,933
Int. Cl.[5] B62B *9/10*
U.S. Cl. 297—243 **1 Claim**

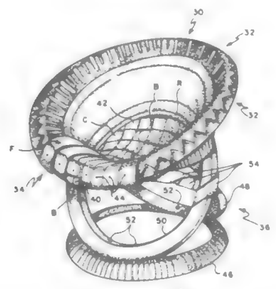


1. A locking device for a front seat of a double stroller comprising:
a pair of longitudinally oriented seat locating rods, said pair of seat locating rods extending between a front portion and a rear portion of a main frame of said double stroller in fixed parallel relationship;
said seat locating rods being tubular in structure;
each of said pair of seat locating rods having attached thereto a front seat locating block, a front seat sustaining block, and a front seat hook plate;
said hook plates, being pivotally attached to said pair of seat locating rods, such that said hook plates swivel in a plane adjacent parallel to said seat locating rods;
said front seat locating blocks, sustaining blocks, and hook plates arranged fore and aft on said pair of seat locating rods to receive a front seat support frame in either a forward facing or rear facing orientation;
said front seat support frame having mounted therein four engaging posts arranged in a manner that each of said engaging posts is received by one of said two front seat locating blocks and one of said two front seat hook plates when said front seat support frame is in either of said front facing or said rear facing orientation; and, said four engaging posts spaced apart each from the other and extending from said front seat support frame for engaging and locking said front seat support frame to said pair of locating rods in either of the said forward facing or rear facing orientations;
said locating blocks being substantially H-shaped, having a semi-circular upper surface to receive said front seat support frame and having notches formed therein to receive said engaging posts;
each of said hook plates having a notch to engage one of said engaging posts and a flat bent projection for manually moving said hook plates;
said sustaining blocks being substantially H-shaped, and

VOL 1165 ISS 3 AG 16 1994 UMI

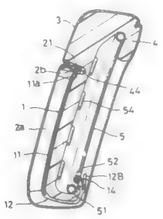
having a semi-circular recessed upper surface; to receive said front seat support frame.

5,338,097
FURNITURE CONSTRUCTION
Marz Y. Tan, 2076 20 La. Apt. 2f, Brooklyn, N.Y. 11214
Filed Jun. 21, 1993, Ser. No. 79,285
Int. Cl.[5] A47C *1/12*
U.S. Cl. 297—445 8 Claims



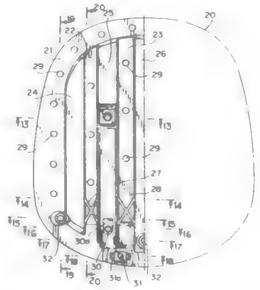
1. An article of furniture constructed from tire casings, each tire casing having a tread, sidewalls, beads, and inner plies, said article of furniture comprising:
a support including a backrest, an armrest and a seat; and
a pedestal connected to said support to form a chair, said support and said pedestal being constructed from the tire casings.

5,338,098
SEAT BACK OF AN AUTOMOTIVE SEAT
Yutaka Ohnishi, Ohme, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan
Filed Apr. 23, 1993, Ser. No. 51,366
Int. Cl.[5] A47C *31/02*
U.S. Cl. 297—452.6 8 Claims



1. In a seat back of an automotive seat including a foam cushion member having a seat back frame embedded therein and having formed, at the frontal surface thereof, a pair of lateral protrudent bolster portions and a central portion defined therebetween, a trim cover assembly of a bag-like type which is affixed over said foam cushion member and has a frontal cover section for covering both said central and two lateral bolster portions of said cushion member, an anchoring member fixed on a reverse side of said frontal cover section along a height of said trim cover assembly, said anchoring member having a through opening formed at a lower end and extending along a longitudinal direction thereof, and an anchor securing means for pulling and securing said anchoring member to said cushion member,
said anchoring securing means comprising:
a rigid rectilinear wire member having a length generally equal to an entire length of said anchoring member, said rigid rectilinear wire member being provided at one end thereof with a first hook-like engagement means; and
an elastic, expandable strap member connected to another end of said rectilinear wire member, said strap member being provided with a second hook-like engagement means;
wherein when said rigid rectilinear wire member is inserted through said through-opening of said anchoring member, said first hook-like engagement means of the wire member projects from one end of said anchoring member while said another end engages said strap member wherein the projecting first hook-like engagement means of said wire member is engaged securely with a securing part of said cushion member, while said second hook-like engagement means of said strap member is securely engaged with another securing part of said cushion member, with said strap member being elastically expanded, whereby a pulling force is applied uniformly on said anchoring member along said height of the seat back and thus said trim cover assembly is firmly anchored to said cushion member, forming the seat back.

5,338,099
SHELL STRUCTURE FOR USE WITH A CHAIR HAVING SYNCHRONOUSLY MOVING SEAT AND SEAT BACK
Yuji Ishi; Toru Nagao, both of Osaka, and Harumatsu Sato, Tokyo, all of Japan, assignors to Itoki Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 813,788, Dec. 27, 1991, Pat. No. 5,314,240. This application Aug. 9, 1993, Ser. No. 103,382
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.33 12 Claims

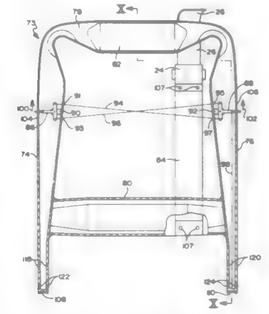


1. A shell structure for a backrest of a chair comprising:
a main structure having a jagged horizontal cross-sectional shape with a plurality of projections and grooves therebetween that extend parallel to a longitudinal direction of said main structure said grooves being shallower in a lower portion of said main structure than in an upper portion of said main structure.

5,338,100
HIGH STRENGTH AUTOMOTIVE SEAT FRAME AND METHOD
Richard W. A. Rees, Rochester, Mich., assignor to ITT Corporation, New York, N.Y.
Filed Feb. 24, 1992, Ser. No. 840,774
Int. Cl.[5] A47C *7/00*
U.S. Cl. 297—452.1 23 Claims

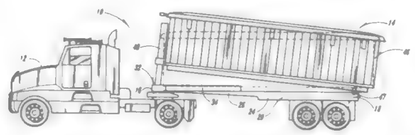
1. A seat back frame adapted for mounting to a seat cushion frame for a motor vehicle seat assembly, said seat back frame comprising:
tubular inboard and outboard vertical leg members; and
a tubular horizontal base member integrally interconnecting

upper portions of said leg members in a generally inverted U-shape configuration, said leg members extending downwardly from said base member and terminating in open end portions adapted for interconnection with said seat



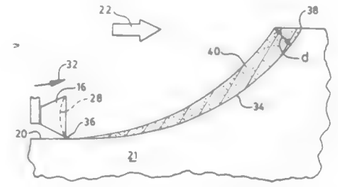
cushion frame, said base member and upper portions of said leg members having a characteristic minimum wall thickness and lower portions of said leg members having a characteristic maximum wall thickness which tapers upwardly therealong to said minimum wall thickness.

5,338,101
MULTIPURPOSE FIFTH WHEEL STEP FRAME SEMI TRACTOR TRAILER
Merlynn Colip, 610 Woods Dr., Norton, Kans. 67654
Filed Oct. 19, 1992, Ser. No. 963,082
Int. Cl.[5] B60P *1/04*
U.S. Cl. 298—17 R 8 Claims



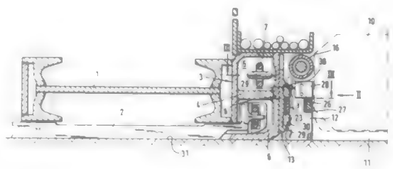
1. A semi-tractor and fifth wheel trailer comprising, said semi-tractor having a fifth wheel plate, said fifth wheel trailer having front and rear ends and having a
trailer frame comprising a pair of elongated straight and continuous opposite side frame members extending from said rear end to adjacent said front end thereof,
a step frame including front and rear ends and opposite side frame portions, said step frame being fixedly connected to the front end of said trailer and positioned above said pair of elongated side frame members, with said side frame portions having outside vertical longitudinal surfaces in substantially common vertical planes with inside vertical longitudinal surfaces on said opposite side frame members, a king pin mounted on the forward end of said step frame in engagement with said fifth wheel plate,
a box on said trailer frame having a planar floor, front and rear ends and elongated spaced apart box frame members extending downwardly from said planar floor and extending from the front end of the box to the rear end of the box, said box frame members being positioned in nesting overlapping relationship with said step frame side frame portions and in direct parallel supporting engagement with said trailer side frame members by said box frame members being in common vertical longitudinal planes with said side frame members along their substantial length, and
said box being pivotally connected at its rear end to said rear end of said trailer frame and lift means being provided for raising and lowering the front end of said box relative to said trailer frame.

5,338,102
METHOD OF MINING
Kevin C. Lent, Rogers, Minn., and Brad L. Holsapple, Metamora, Ill., assignors to Caterpillar Paving Products Inc., Minneapolis, Minn.
Filed Jun. 28, 1993, Ser. No. 82,703
Int. Cl.[5] E21C *27/30*
U.S. Cl. 299—10 4 Claims



1. A method of mining a mineral material, comprising:
rotating a plurality of cutting tools having a concave facial surface about a longitudinal axis, said axis being disposed substantially parallel with a surface of said material;
sequentially impacting said surface of the material with said cutting tools;
moving said cutting tools along a predetermined path through said material, said path beginning at said surface of said material and continuing to a preselected depth below said surface and returning to said surface;
cleaving segments of said material during the moving of said cutting tool through the material, a portion of said segments having at least one generally curvilinear surface; and
removing said segments.

5,338,103
CONTROL ARRANGEMENT FOR ADJUSTING THE POSITION OF A MINERAL WINNING MACHINE IN A MINERAL MINING INSTALLATION
Christoph Rassmann, Lunen, Fed. Rep. of Germany, assignor to Westfalia Becorit Industrietechnik GmbH, Fed. Rep. of Germany
Filed Jan. 15, 1993, Ser. No. 5,882
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1992, 4200897
Int. Cl.[5] E21C *27/34, 35/12*
U.S. Cl. 299—32 18 Claims



1. In or for a mineral mining installation comprising a conveyor, a winning machine guided for movement along the conveyor and roof supports connected to the conveyor with a boom-type guide linkages; an improved control arrangement for adjusting the operating position of the machine, said control arrangement at least including a guide member, means connected to the conveyor for guiding the guide member for raising and lowering motion, means for displacing the guide

VOL 1165 ISS 3 AG 16 1994 UMI

member relative to the guide means comprising an hydraulic piston and cylinder unit and a pivotally mounted cranked lever connected between the unit and the guide member and means coupling the guide member to a headpiece of one of the guide linkages so that displacement of the guide member is transmitted to the headpiece in a manner to cause the conveyor to adopt various angular positions.

5,338,104

AUXILIARY CUTTER FOR A MINING MACHINE HAVING COAXIAL CUTTER DRUMS

Colin Bewick, Worksop, Great Britain, assignor to Anderson Group Limited, Glasgow, United Kingdom

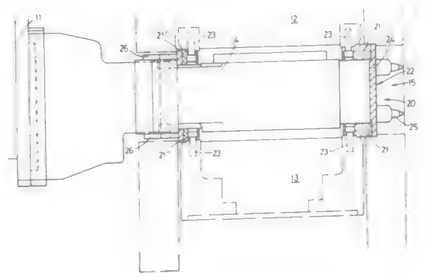
PCT No. PCT/GB92/00149, § 371 Date Jun. 16, 1993, § 102(e) Date Jun. 16, 1993, PCT Pub. No. WO92/14035, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 27, 1992, Ser. No. 74,876

Claims priority, application United Kingdom, Feb. 6, 1991, 9102571.8

Int. Cl.[5] E21C *25/10*

U.S. Cl. 299—85 **3 Claims**



1. A mining machine having a forward rotating cutter head mounted on a boom, said cutter head comprising at least two cutter drums in co-axial end to end formation and spaced apart by an arm of the boom, wherein an auxiliary cutter device is located in the space between the drums and adapted for intermittent engagement of the coal face when the cutter drums are cutting and includes a pick carrying arcuate member to which an oscillatory motion is applied on rotation of the cutter drums, the auxiliary cutter device being a cutter ring having an eccentric rotor fixedly attached to at least one drum and a stator mounted on the rotor for oscillatory motion when the rotor is rotated, said stator engaging the boom to restrain rotation with the rotor.

5,338,105

Patent Not Issued For This Number

5,338,106

PROCESS FOR BRAKING A VEHICLE

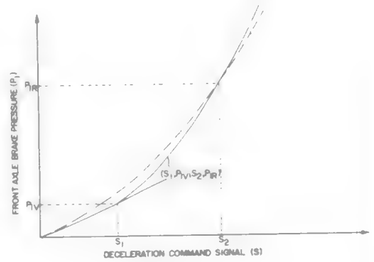
Johann Rothen, Sarstedt; Bernd Zobirei, Ronnenberg, and Manfred Schult, Garbsen, all of Fed. Rep. of Germany, assignors to WABCO Standard GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 17, 1992, Ser. No. 991,984

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142670

Int. Cl.[5] B60T *8/18*

U.S. Cl. 303—9.69 **16 Claims**



1. A process for braking a vehicle having a front axle group including at least one pressure-actuated front axle brake, and a rear axle group including at least one pressure-actuated rear axle brake, comprising

producing a deceleration command signal (S) indicative of a desired deceleration for said vehicle,

when the deceleration command signal (S) is less than or equal to a predetermined switch-over deceleration command signal (S_1), applying a front axle brake pressure (p_1) to the front axle brake and a rear axle brake pressure (p_2) to the rear axle brake which brake pressures correspond to wear-optimized curves for the front and rear axle groups, and

when the deceleration command signal (S) is greater than the switch-over deceleration command signal (S_1),

a) setting the front axle brake pressure (p_1) in accordance with a parabola (S_1, p_{1V}; S_2, p_{1R}) which

aa) passes through a point (S_1, p_{1V}) which is defined by the switch-over deceleration command signal (S_1) and a wear-optimized front axle brake pressure (P_{1V}) assigned to it,

ab) passes through a second point (S_2, p_{1R}) which is defined by a predetermined second deceleration command signal (S_2) and a front axle brake pressure (p_{1R}) assigned to same, wherein the second deceleration command signal (S_2) corresponds to 70% to 100% of a usable value range of the deceleration command signal (S), and wherein the second point (S_2, p_{1R}) is located on a curve of the front axle brake pressure (p_1) for equal adhesion utilization on the front axle group and on the rear axle group, and

ac) the slope of the parabola (S_1, p_{1V}; S_2, p_{1R}) at the point (S_1, p_{1V}) defined in aa) is equal to the slope of the curve of the front axle brake pressure (p_1) for equal adhesion utilization on the front axle group and on the rear axle group at a point corresponding to the switch-over deceleration command signal (S_1), and

b) setting the rear axle pressure (p_2) in accordance with a second parabola (S_1, p_{2V}; S_2, p_{2R}; S_3) which

ba) passes through a point (S_1, p_{2V}) defined by the switch-over deceleration command signal (S_1) and a wear-optimized rear axle brake pressure (p_{2V}) assigned to it,

bb) passes through a second point (S_2, p_{2R}) which is defined by the second deceleration command signal (S_2) and by a rear axle brake pressure (p_{2R}) assigned to same, wherein the second point (S_2, p_{2R}) is located on a curve of the rear axle brake pressure (p_{2R}) for equal adhesion utilization on the front axle group and on the rear axle group, and

bc) has an apex at a predetermined deceleration command signal (S_3).

5,338,107

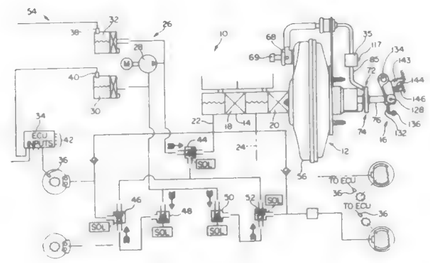
CONTROL VALVE ACTUATOR

Louis P. Rossigno, Granger, and Wayne A. Hewitt, LaPorte, both of Ind., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Nov. 3, 1993, Ser. No. 146,892

Int. Cl.[5] B60T *8/32, 13/57*

U.S. Cl. 303—113.3 **5 Claims**



1. In a brake system having a vacuum booster with a control valve responsive to movement of an input assembly, said input assembly selectively receiving an input signal from a controller and a pedal arrangement for developing an operational pressure differential between a control fluid and a source of vacuum fluid across a movable wall to create an output force for pressurizing fluid in a master cylinder to supply pressurized fluid to brakes associated with wheels of a vehicle, said controller developing an input signal from differences in the rotational spin of said wheels to selectively supply pressurized fluid to absorb a portion of an operational torque applied to drive said wheels and thereby synchronize the rotational spin of said wheels, said input assembly being characterized by a housing formed by securing a front plate to a flange on a rear plate, said front plate having a first axial opening therein and a first port, said rear plate having a second axial opening therein and a second port, a diaphragm having a first bead and a second bead, said first bead being located between said first plate and said flange, an input rod having a cylindrical body with a shoulder located between a first end connected to said control valve and a second end connected to said pedal arrangement, said cylindrical body being slidably located in said first and second axial openings of said first and second plates, a sleeve surrounding said input rod with a first flange that engages said shoulder and a second flange connected to a said second bead on said diaphragm; seal means connected to said front plate and engaging said sleeve seals a traction control chamber defined by said front plate, diaphragm and sleeve from the surrounding environment, said rear plate being fixed to said input rod and spring means having a first end fixed to said movable wall and a second end engaging said first flange on said sleeve, said spring means acting on said input rod by way of said first flange on said sleeve and shoulder to urge said control valve toward a poppet valve such that vacuum is communicated to an operational chamber adjacent said movable wall, said input rod being responsive to a manual input applied to said pedal arrangement by moving said control valve away from said poppet valve after overcoming said spring means to allow control fluid to create said operational pressure differential across said movable wall and develop an output force to effect a brake application, said spring means on termination of the manual input moving said input rod to return the control valve to a position to again allow vacuum to dissipate the operational pressure differential across the movable wall, said input signal to said controller allowing vacuum to be communicated to said traction control chamber to create a first traction control pressure differential across said diaphragm, said first traction control pressure differential acting on the second flange to move the first flange away from said shoulder by compressing said spring means and allow a pressure differential produced by environmental air and vacuum to act on and move said control valve away from said poppet valve to permit environmental air to thereafter create said operational pressure differential and develop said output force for pressurizing fluid in said master cylinder which is selectively supplied to the wheels to synchronize rotation thereof.

5,338,108

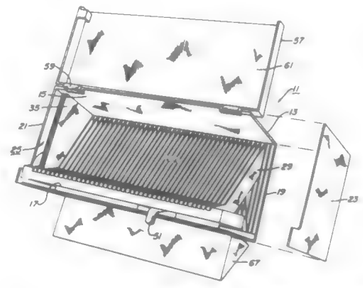
DISK STORAGE DEVICE

Ronald. E. Hunt, 211 Buck Bend Dr., Georgetown, Tex. 78628, and Verlon E. Whitehead, 8815 Mesa Dr., Austin, Tex. 78759

Filed Jan. 5, 1993, Ser. No. 473

Int. Cl.[5] A47B *81/06*; A47F *1/04*

U.S. Cl. 312—9.17 **5 Claims**



1. A disk storage device adapted to be rested upon a support surface, comprising:

a storage body having a top wall, a bottom wall, a rear wall

VOL 1165 ISS 3 AG 16 1994 UMI

and opposing side walls which together define an initially open interior, the storage body walls, when assembled, defining an opening into interior thereof;

a plurality of dividers located within the open interior of the storage body and extending generally perpendicular to the bottom wall thereof, the dividers being spaced apart a preselected distance within the open interior to thereby define a plurality of generally vertically oriented slots for receiving disks to be stored by the device;

a spring comb having a plurality of leaf spring teeth, each leaf spring tooth being associated with a selected slot within the open interior of the storage body for normally urging a disk outwardly from a storage position, principally within the open interior, to an extended, retrieval position, each leaf spring tooth being movable from a relaxed position to a tensed position as a disk is inserted into a selected slot;

a retaining lip integrally formed on the storage body for engaging a corner portion of a disk located within a slot as the disk is moved to the storage position and the leaf spring tooth is moved to the tensed position;

release means for disengaging the corner portion of the disk from the retaining lip and allowing the leaf spring tooth to urge the disk outwardly from the storage position to the extended, retrieval position; and

a base means formed as a part of the storage body for orienting the storage body at an angle greater than zero with respect to the associated support surface, whereby the opening into the interior thereof more directly faces a user of the device.

5. A method of storing a plurality of disks, the method comprising the steps of:

providing a storage body having a top wall, a bottom wall, a rear wall and opposing side walls which together define an initially open interior;

locating a plurality of dividers within the open interior of the storage body which extend generally perpendicular to the bottom wall thereof, the dividers being spaced apart a preselected distance within the open interior to thereby define a plurality of slots for receiving disks to be stored;

providing biasing means within at least selected ones of the slots for normally urging a disk outwardly from a storage position, principally within the open interior, to an extended, retrieval position, the biasing means being movable from a relaxed position to a tensed position as a disk is inserted into the slot;

forming a retaining lip on the storage body;

inserting a disk into a selected slot and moving the disk in the direction of the biasing means until a portion of the disk engages the retaining lip and the biasing means is moved to the tensed position;

providing release means for disengaging the disk from the retaining lip;

actuating the release means, thereby allowing the biasing means to urge the disk outwardly from the storage position to the extended, retrieval position;

wherein each slot in the storage body is formed between an associated set of dividers, each divider having a foot region which is connected by angled track sidewalls to the rear wall of the storage body; and

wherein, when a disk is started in a respective foot region of a slot and pushed in the direction of the rear wall, that the angled track sidewalls assist in straightening the disk to the vertical position as the disk moves from the retrieval position to the storage position.

5,338,109

HAND GUN SAFETY STORAGE CABINET

Raymond Haines, 634 Fairview La., Forked River, N.J. 08731

Filed Jan. 15, 1993, Ser. No. 5,216

Int. Cl.[5] **E05C** *7/06;* **E05B** *65/52*

U.S. Cl. 312—222 **7 Claims**

1. A hand gun safety storage cabinet, comprising,

a container, the container having a top wall spaced from a floor, a first side wall spaced from a second side wall, and a rear wall, with a front wall continuous perimeter flange spaced from the rear wall having a front wall opening directed through the perimeter flange, and

a hinge plate mounted to the perimeter flange adjacent the first side wall, and

a door plate, the door plate having a door plate first end secured to the hinge plate permitting pivoting of the door plate relative to the front wall opening, and the door plate having a door plate second end, the door plate having a door plate first side and a door plate second side spaced from the door plate first side, the door plate first side and the door plate second side extending between the door plate first end and the door plate second end, with the door plate arranged to overlie the perimeter flange in a first position in adjacency therewith, with the door plate arranged for pivoting to a second position about the hinge

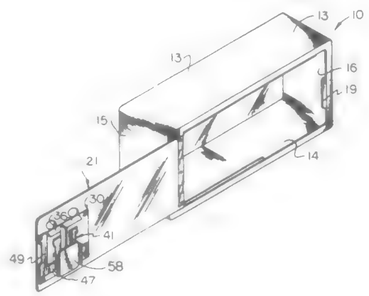


plate to space the door plate relative to the perimeter flange, and

a plurality of access apertures directed through the door plate adjacent the door plate first side, and

a door plate slot adjacent to the door plate second side oriented between the door plate second side and the access apertures, with the door plate slot spaced from the access apertures, and

the door plate having an exterior surface and an interior surface, with the interior surface in a facing relationship with the container rear wall when the door plate is in the first position, and the door plate interior surface having a latch means secured to the interior surface for cooperation with the access apertures and positioned between the access apertures and the door plate second side for selective latching and delatching of the door plate relative to the perimeter flange.

5,338,110

CIRCUIT, HAVING MULTIPLE SERIES RESONANT PATHS, FOR LIGHTING A BLINKING FLUORESCENT LAMP WITHOUT ADVERSELY AFFECTING LAMP LIFE

Jae H. Byun, Kyungki, Rep. of Korea, assignor to Seon Woong Koh, Seoul, Rep. of Korea

Filed Apr. 21, 1993, Ser. No. 50,892

Claims priority, application Rep. of Korea, Apr. 22, 1992, 92 6760

Int. Cl.[5] **H05B** *39/00*

U.S. Cl. 315—94 **3 Claims**

1. A circuit for lighting a fluorescent lamp with DC power which is supplied to opposite ends of the fluorescent lamp by means of control switches, said DC power having been converted from incoming AC power, said circuit comprising:

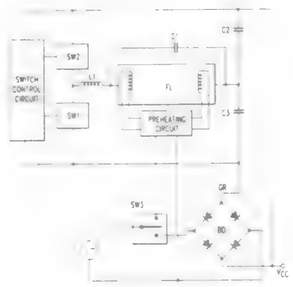
a first resonance circuit including a first capacitor Cl having two electrodes connected to the opposite ends of the fluorescent lamp, a resonance inductor L1, a second capacitor C2, a first switch SW1, and the DC power source which are connected in series;

a second resonance circuit including said first capacitor Cl, said resonance inductor L1, a third capacitor C3, a second switch SW2, and the DC power source which are connected in series;

a switch control circuit for closing said first switch SW1 and the second switch SW2 in an alternating manner; and

wherein said first and second resonance circuits are placed in a resonance state until the fluorescent lamp starts lighting and the resonance state is eliminated once the fluorescent lamp starts lighting; and

said circuit further comprises:



a pre-heating circuit for pre-heating filaments in the fluorescent lamp;

a rectifier for converting AC power to the DC power, and

a third switch SW3 for alternately connecting the incoming AC power either to said rectifier or to said pre-heating circuit, such that the incoming AC power is supplied to said pre-heating circuit, so as to activate said pre-heating circuit, until the fluorescent lamp starts lighting and the AC power is removed from the pre-heating circuit, so as to de-activate the pre-heating circuit, when the fluorescent lamp starts lighting.

5,338,111

KITCHEN APPLIANCE, SUCH AS A MIXER PROVIDED WITH A SAFETY RETRACTABLE DETENT

Jean-Pierre A. L. Trocherie, Saint Pierre des Nids; Marc G. P. Marriere, Ambrieres les Vallees, and Joel Deschamps, Magny le Desert, all of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France

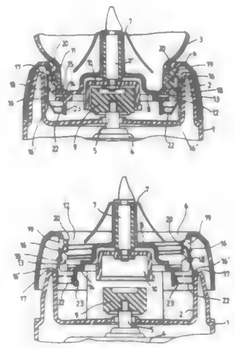
Filed Apr. 2, 1993, Ser. No. 41,993

Claims priority, application France, Apr. 30, 1992, 92 05363

Int. Cl.[5] **B01F** *13/04;* **B02C** *18/12*

U.S. Cl. 366—205 **5 Claims**

1. A kitchen appliance, comprising a housing having an upper portion constituting an annular seat in the form of a basin adapted to receive a removable bowl, said housing enclosing a motor having an output shaft projecting from said seat, said removable bowl having a removable bottom constituted by a base having a shape complementary to said seat, a rotatable tool mounted on a shaft traversing said base, said shaft adapted to couple with said output shaft of said motor, at least one retractable detent pivotally mounted about an axle on a lateral wall of said base and comprising on one side of said axle a portion forming a finger and on the other side of said axle a portion forming an abutment, said detent being movable between a retracted position in which said finger is actuated by the bowl and said base is seated on the seat when the bowl is correctly secured on the base so as to permit the coupling of the tool with the output shaft of said motor, and a projecting position in which said abutment is automatically engaged with an upper region of the seat when the bowl is not present or is incorrectly secured on the base so as to prevent the coupling of the tool with the output shaft of said motor, screw threaded securement means for securing the bowl on the base, said securement means including a helical rib provided in said bowl and a helical groove having a shape complementary to said rib



and provided in said lateral wall of said base, said finger of the detent extending along at least a portion of said groove of the base.

5,338,112

PROCESS AND APPARATUS FOR TWO STAGE TREATMENT OF PLASTIC MATERIALS

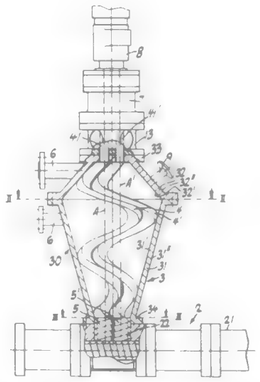
Hellmut Boden, Illingen; Eberhard Uhland, Bietigheim, and Hans Wobbe, Malmsheim, all of Fed. Rep. of Germany, assignors to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 5, 1992, Ser. No. 878,555

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1991, 4118530

Int. Cl.[5] **B01F** *7/24*

U.S. Cl. 366—75 **19 Claims**



1. A process for treating plastic materials comprising:

premixing and heating a starting material in a primary stage in a vertically disposed, double conical container having a region of maximum cross-section from which the cross-section of the container diminishes in opposite axial directions in upper and lower truncated conical portions towards respective upper and lower ends of the container, advancing the material in said container towards a second

VOL 1165 ISS 3 AG 16 1994 UMI

stage constituted by a double shaft screw extruder disposed at the lower end of the container, the advancing of the material being effected by rotating a pair of spirals in said container which scrape against one another and against an inside wall surface of the upper and lower truncated conical portions of the double conical container; and

delivering the material from the lower end of the double conical container directly and without intermediate dead spaces, into the extruder using replaceable feed elements detachably connected to said spirals for rotation therewith, said feed elements penetrating into an aperture in a housing of said extruder.

7. Apparatus for treating a plastic material comprising:

a first stage, including:

a double conical container having opposite ends;

two helical members rotatably supported in said container and shaped to scrape against one another and against an inner surface of the container as said helical members rotate;

drive means for driving said helical members in rotation in the same direction about respect axes of rotation;

means for supplying a plastic material into said container for treatment therein and transport by said helical members in a direction towards an outlet at one of the ends of the container;

a second stage, including;

an extruder comprising a housing and a transport means in a bore provided in said housing, said housing having an aperture, said container being mounted vertically on said housing at said aperture in sealing relation to deliver plastic material from said outlet at one end of the container directly into said housing; and

replaceable feed elements detachably connected to said helical members for rotation therewith about said axes of rotation, said feed elements penetrating into said housing through said aperture and having free ends facing said transport means with little clearance therebetween, said double conical container comprising two truncated conical portions connected mouth to mouth at larger diameter ends thereof to provide a region of maximum diameter for said container which diminishes in diameter towards upper and lower ends of the container, said region of maximum diameter being located closer to said upper end of said container.

5,338,113

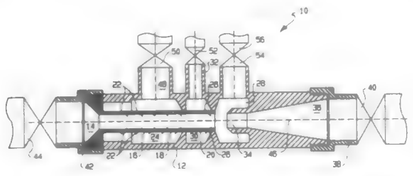
METHOD AND DEVICE FOR PRESSURE JUMPS IN TWO-PHASE MIXTURES

Vladimir Fissenko, Moscow, U.S.S.R., assignor to Transsonic Uberschall-Anlagen GmbH, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 755,050, Sep. 5, 1991, Pat. No. 5,205,648. This application Jun. 8, 1992, Ser. No. 895,290

Int. Cl.[5] B01F *15/02, 5/02*

U.S. Cl. 366—177 **27 Claims**



1. Device for increasing pressure in a multi-component fluid mixture comprising;

a. nozzle having a mixing section and a control section;

b. means for supplying at least a first fluid component to said mixing section of said nozzle;

c. means for supplying at least a second fluid component to said mixing section of said nozzle such that it mixes with said first fluid component to form a fluid mixture flowing with subsonic velocity;

d. means for supplying a predetermined amount of a third fluid component to said control section of said nozzle so as to intermix with said fluid mixture;

e. expansion means coupled in fluid communication with said nozzle for accelerating said intermixed fluid mixture; and

f. outlet means coupled in fluid communication with said expansion means for increasing the pressure of said intermixed fluid.

5,338,114

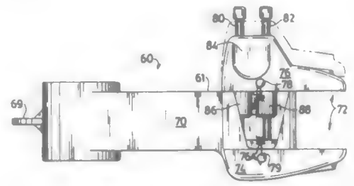
MIXING ARM ASSEMBLY FOR AUTOMATIC CAPSULE MIXING DEVICE

Charles E. Steele, Canton, Mich., assignor to Kerr Manufacturing Company, Romulus, Mich.

Continuation of Ser. No. 691,496, Mar. 25, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 37,726

Int. Cl.[5] B01F *11/00*

U.S. Cl. 366—216 **6 Claims**



1. A mixing arm assembly for mixing the contents of a capsule comprising:

(a) an elongated support arm having a first end and second end;

(b) connection means at the first end of said arm for connection to agitation means;

(c) a fixed jaw on the second end of the arm;

(d) a pair of substantially parallel stationary rods attached to the arm between the first and second ends;

(e) a movable jaw directly opposed to and facing said fixed jaw slidably mounted on said rods for movement between an open and a closed position; and

(f) brake means for fixing the movable jaw relative to the rods.

5,338,115

MIXING DEVICE FOR MATERIALS WITH LARGE DENSITY DIFFERENCES

David W. Gregg, Moraga, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 11, 1992, Ser. No. 989,305

Int. Cl.[5] B01F *5/12*

U.S. Cl. 366—263 **9 Claims**

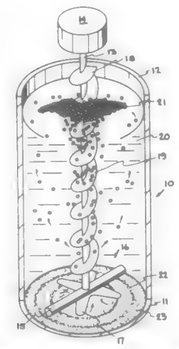
1. A mixing device for materials with large density differences, comprising:

a container having a closed bottom and open top, and within which materials are to be mixed:

an auger extending into said container;

a tube pump connected at one side thereof to said auger and located within said container;

a propeller secured to a side opposite to said one side of said tube pump, and includes a plurality of outwardly extending blades and is provided with a central opening therein aligned with an opening in said opposite side of said pump; and



means for rotating said auger, said propeller and said tube pump.

5,338,116

GUIDE MEANS FOR A SUBMERSIBLE MIXER AND THE LIKE

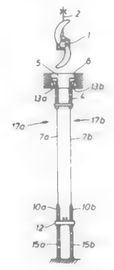
Helmut Spörl, Naila, Fed. Rep. of Germany, assignor to E+M Maschinenbau GmbH, Hof/Saale, Fed. Rep. of Germany

Filed Jul. 15, 1992, Ser. No. 914,183

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1991, 4123664

Int. Cl.[5] B01F *7/06*

U.S. Cl. 366—286 **16 Claims**



16. A submersible mixer having a guiding device for guiding the submersible mixer in a receptacle having an aperture, the device comprising:

at least two guide members substantially parallel to each other, the guide members including cable sections having upper and lower ends, the upper ends being fixed to the receptacle;

at least two supporting members mounted to a bottom surface of the receptacle, the supporting members receiving the lower ends of the cable sections;

a guide slide having at least two vertical tubular posts slidably coupled to the cable sections, the tubular posts having taper-extended lower ends;

wherein the supporting members are conically tapered for receiving and smooth placement of the tubular posts on the supporting members;

at least two connecting elements secured to the guide slide and adapted to be alternatively attached to the receptacle and to the submersible mixer for alternatively fixing the guide slide to the receptacle and permitting the guide slide including the submersible mixer to move along the cable sections; and

a frame coupled to the submersible mixer, the frame including first and second substantially channel-shaped sections extending parallel to the tubular posts, the sections being adapted to shift on the tubular posts when the submersible mixer is lowered onto the guide slide to mount the submersible mixer to the guide slide.

5,338,117

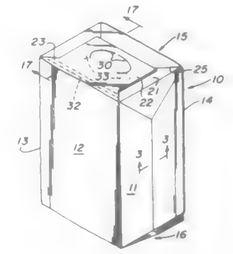
BAG AND METHOD OF MAKING THE SAME

Arthur E. Kucksdorf; Jeffrey D. Muhs, and Scott D. Hammer, all of Ames, Iowa, assignors to American Packaging Corporation, Philadelphia, Pa.

Filed Jan. 27, 1993, Ser. No. 9,653

Int. Cl.[5] B65D *33/08, 33/36*

U.S. Cl. 383—9 **10 Claims**



1. In a bag of the gussetted flat-ended type having a generally rectangular flat first end formed by a diamond fold having at its ends a first fold portion and a triangular fold portion, said fold portions being folded along parallel spaced apart fold lines forming side edges of the bag end, the portion of the diamond fold between said fold lines providing a rectangular central portion, said fold portions overlap one another in a folded condition thereof, the improvement comprising:

means for adhesively securing the first fold portion to said central portion at spaced apart adhesive areas on said central portion,

said triangular fold portion being folded over underneath said first fold portion and having an apex portion located opposite the respective fold line of the triangular portion,

said first fold portion having a rectangular tab opposite the respective fold line of the first fold portion in contact with said adhesive areas to secure said rectangular tab to said central portion of the bag end and overlie said apex portion of said triangular fold portion,

said apex portion of said triangular fold portion being releasably held between said tab and said central portion in the folded condition of the first end and being slidably removable from said held position for use in dispensing contents of a packaged bag.

5,338,118

PLASTIC BAGS AND HANDLE CONSTRUCTION FOR PLASTIC BAGS

Robert B. DeMatteis, 800 E. Washington, Colton, Calif. 92324

Filed Jan. 14, 1993, Ser. No. 4,743

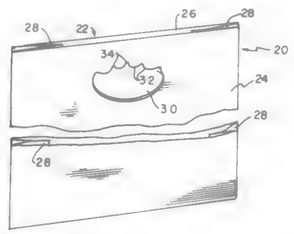
Int. Cl.[5] B65D *33/08*

U.S. Cl. 383—10 **7 Claims**

1. A plastic bag including opposing apertures serving as handles for the bag, said apertures each having means for cushioning the fingers when grasped, said cushioning means comprising a contour of said apertures which includes a plurality of peaks and valleys arranged so that two of said peaks space apart at least three of said valleys, said peaks being means configured to compress and fold under manual force applied

VOL 1165 ISS 3 AUG 16 1994 UMI

by fingers when said handles are grasped while the bag carries a load that exerts a force oppositely directed to that of said manual force, said peaks which are compressed and folded



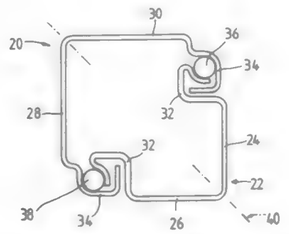
cushioning the fingers with respect to a stress line that forms adjacent each of the handles due to the force applied by the load said stress line defining a curve along which said inner valley lies between said two outer valleys.

5,338,119

LONGITUDINAL GUIDE FOR LONGITUDINAL ADJUSTMENT DEVICES FOR VEHICLE SEATS

Heinz Bauer; Burckhard Becker, and Ernst-Reinhard Frohnhaus, all of Solingen, Del., assignors to Firma C. Rob. Hammerstein GmbH, Fed. Rep. of Germany

Filed Jun. 29, 1993, Ser. No. 84,797
Int. Cl.[5] B60N *2/06;* **F16C** *29/04*
U.S. Cl. 384—47 **29 Claims**



1. Longitudinal guide for longitudinal adjustment devices for vehicle seats with two elongated tracks (20, 22) that slide relative to each other and

between which guiding means are arranged, of which there are at least two, and of which at least one is constructed using roller bodies,

with one track that embraces the other,

with the tracks interconnected such that they will not separate, and

with the tracks positioned in an adjoined, preloaded manner, characterized by the fact that the tracks (20, 22) are manufacture of a sheet steel containing at least 0.35% carbon content and that the tracks (20, 22) are heat treated after they are completed.

5,338,120

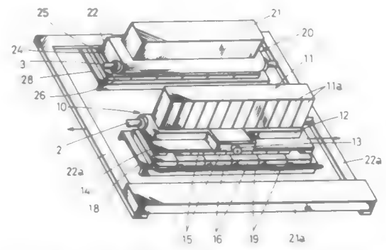
Patent Not Issued For This Number

5,338,121

SHUTTLE APPARATUS FOR PRINTER

Atsuhisa Kobayashi, Hyogo; Haruhiko Tokunaga, and Hitoshi Moriyama, both of Kanagawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 7, 1993, Ser. No. 88,270
Claims priority, application Japan, Jul. 24, 1992, 4-198301; Jul. 24, 1992, 4-198302
Int. Cl.[5] B41J *19/00*
U.S. Cl. 400—322 **34 Claims**



1. A shuttle apparatus for a printer having a print shuttle provided with a print head and movable along guide means, said shuttle apparatus comprising:

a row of first permanent magnets attached to said print shuttle;

a row of first electromagnetic coils secured to a stationary member so as to face said first permanent magnets across a gap, said first electromagnetic coils constituting in combination with said first permanent magnets a linear motor for driving said print shuttle to reciprocate along said guide means;

a balance shuttle which moves in linked relation to said print shuttle in parallel but reverse in direction to said print shuttle;

a row of second permanent magnets attached to said balance shuttle; and

a row of second electromagnetic coils secured to a stationary member so as to face said second permanent magnets across a gap to constitute in combination with said second permanent magnets a second linear motor for driving said balance shuttle.

5,338,122

CONTINUOUS-FEED PAPER, METHOD OF FORMING SINGLE SHEETS FROM CONTINUOUS FEED PAPER,AND METHOD OF FORMING CONTINUOUS FEED PAPER

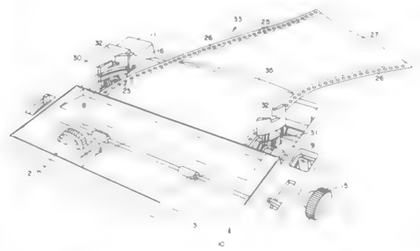
James R. Eudy, 4316 Whitetail La., Charlotte, N.C. 28107

Continuation-in-part of Ser. No. 826,820, Jan. 28, 1992, Pat. No. 5,190,386. This application Sep. 21, 1992, Ser. No. 947,751
Int. Cl.[5] B41J *15/00*
U.S. Cl. 400—613.2 **7 Claims**

1. A method of inputting continuous-feed paper into, and outputting separate paper sheets from, a continuous-feed sprocket-driven printer, comprising the steps of:

(a) providing a length of continuous-feed paper including a multiplicity of adjacent paper sheets aligned end-to-end for being fed into a printer, each of said paper sheets being defined from adjacent paper sheets by a single cut through the paper, said cut extending transversely from one side edge of the paper sheet to the other side edge of the paper sheet;

(b) providing first and second transversely non-perforated continuous paper edge strips formed on opposite side edges of the paper sheets and extending continuously along the length of the continuous-feed paper for connecting together adjacent paper sheets and for carrying the paper sheets therebetween, said first and second edge strips having sprocket holes therein for permitting the edge strips and the paper sheets carried by said edge strips to be continuously fed through a sprocket-driven printer, said first and second paper edge strips and said paper sheets being separable along the length of the continuous-feed paper between said first paper edge strip and one side edge of said paper sheet and along the length of continuous-feed paper between said second paper edge strip and the other side edge of said paper sheet;



(c) feeding said continuous-feed paper through a continuous-feed, sprocket-driven printer; and

(d) detaching the first and second edge strips from said paper sheets as said paper sheets exit the printer, thereby forming separate paper sheets;

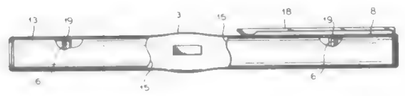
whereby, upon separation of the first and second paper edge strips from the paper sheets, the paper sheets are completely separated from each other.

5,338,123

DOUBLE-ENDED PEN

Udo Obersteller, Langenhagen, and Wilhelm Schlink, Hanover, both of Fed. Rep. of Germany, assignors to Pelikan GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 13, 1993, Ser. No. 120,896
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1992, 4230432
Int. Cl.[5] B43K *27/00, 9/00*
U.S. Cl. 401—34 **4 Claims**



1. A double-ended pen comprising:

a pair of elongated liquid-holding reservoirs each having

a rear end, both rear ends being substantially identical,

a front end having a liquid-applying tip,

an intermediate portion between the ends and having at the rear end a predetermined relatively small outside diameter, and

a snap-type retaining formation;

an intermediate coupling sleeve centered on an axis and having a pair of axially oppositely open seats each receiving a respective one of the rear ends and provided with means for retaining the respective rear ends securely therein against axial displacement relative to the coupling sleeve, the sleeve having a pair of axially opposite ends having axially oppositely directed end surfaces each having at least one portion extending at an acute angle to a plane perpendicular to the axis, the ends being of a diameter greater than the outside diameter of the intermediate portions and projecting radially therepast when the respective rear ends are fitted in the seats; and

a pair of respective caps each adapted to fit over a respective one of the reservoirs and each having

a rear end substantially of the same diameter as the respective rear end of the sleeve and having an end surface with a surface portion complementary to the one portion of the respective sleeve end surface and engageable flush and complementarily therewith in a mounted position of the cap on the respective reservoir,

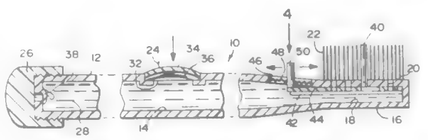
an internal snap-type retaining formation complementary to and engaged with the snap-type retaining formation of the respective reservoir in the mounted position of the cap, whereby when one of the caps is twisted relative to the sleeve the two surface portions cam the one cap axially off the respective reservoir.

5,338,124

WATER SQUIRT TOOTHBRUSH

Zorroz W. Spicer, 675 Lincoln Ave. #2R, Brooklyn, N.Y. 11208, and George Spector, 233 Broadway Rm. 702, New York, N.Y. 10279

Filed Jun. 17, 1993, Ser. No. 78,058
Int. Cl.[5] A46B *1/02*
U.S. Cl. 401—280 **2 Claims**



1. A water squirt toothbrush which comprises:

a) a handle having a longitudinally extending fluid chamber;

b) a head attached to a first end of said handle having a longitudinally extending fluid channel connected to said fluid chamber and a plurality of lateral fluid passageways extending inwardly and from one face and terminating in said fluid channel;

c) a plurality of bristles extending outwardly from the one face of said head;

d) means in cooperation with said fluid chamber of said handle and said fluid channel in said head, for squirting water through said lateral fluid passageways past said bristles to rinse off teeth being brushed by said bristles; further including a removable cap threaded onto a second end of said handle, so that water can be introduced within the fluid chamber in said handle when needed; wherein said water squirting means includes:

e) said handle having an aperture in one side thereof;

f) a flexible membrane retained to and covering said aperture in said handle;

g) a spring retained in said aperture under said flexible membrane, so that a hand of a person gripping said handle can press said flexible membrane to squirt water from said fluid chamber into said fluid channel and through said lateral fluid passageways; further including a one-way flap valve mounted at the second end of said handle, so that when the water is introduced within the fluid chamber in said handle it will not leak out therefrom; further including:

h) a flexible jet tube connected to one of said lateral fluid passageways and extending outwardly through said bristles;

i) a longitudinal track formed within said longitudinal channel in said head below said lateral fluid passageways;

j) a three position perforated slide member mounted to ride in said longitudinal track;

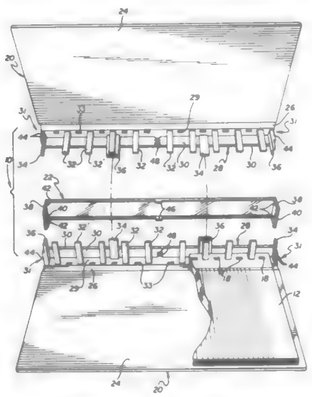
k) said handle having a slot in the one side adjacent said bristles on said head;

l) an accordion plate carried in said slot to seal said slot from leaking water; and

VOL 1165 ISS 3 AG 16 1994 UMI

m) a knob extending through said handle affixed to one end of said slide member, so that when said slide member is in it first position water is squirted through said lateral fluid passageways, when in its second position water is squirted through said lateral fluid passageways and said flexible jet tube and when in its third position water is squirted only through said flexible jet tube for a concentrated jet spray.

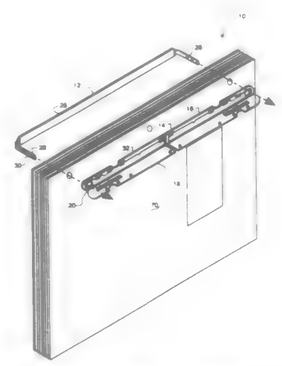
5,338,125
MODULAR BOOK BINDER
Earl K. Forsse, and Janis R. Forsse, both of 34341 Amber Lantern St., Dana Point, Calif. 92629-3011
Filed Jun. 24, 1993, Ser. No. 82,288
Int. Cl.[5] B42F *13/32*
U.S. Cl. 402—46 **23 Claims**



1. A modular binder for receiving and retaining a sheaf of papers having a plurality of perforations formed along one side edge thereof, said modular binder comprising:
a pair of cover modules each including a cover leaf and a spine segment interconnected by a hinge;
said spine segments each including a plurality of retainer pins for reception through the perforations in the paper sheaf, and alignment means for aligned interfitting assembly of the spine segments in face-to-face relation with said retainer pins received through the sheaf perforations to retain the sheaf between the assembled cover modules; and
a spine lock clip for interconnecting said spine segments to bind the paper sheaf between the cover modules, said spine lock clip and said spine segments having interengageable ribs and slots for interconnecting said spine segments at a selected one of a plurality of different spacings between said spine segments in accordance with the thickness of the paper sheaf.

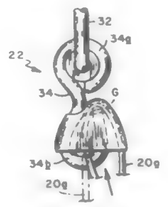
5,338,126
HINGE BINDER DEVICE
Howard Mullin, 86 Kilroy Way, Atherton, Calif. 94025, and Boyd T. Beasley, 45879 County Rd. 665, Paw Paw, Mich. 49079
Filed Feb. 26, 1993, Ser. No. 24,163
Int. Cl.[5] B42F *3/00*
U.S. Cl. 402—64 **9 Claims**

1. A hinge binder device for retaining paper and the like goods, comprising:
anchoring means for retaining the goods, the anchoring means including:
a back portion,
page support means, the page support means having first friction means;
a locking member for releasably locking the anchoring means, the locking member including:
a support member,
a wing member,
hinge means for pivotally connecting the support and wing members, the hinge means being made from ductile material and being ductile, and



means for releasably locking the support and wing members;
the anchoring means being adapted for compatible fit between the wing and support members; and
the wing member having second friction means adapted for compatible mating contact with the page support means for encouraging a releasable locking fit between the anchoring means and the locking member,
whereby the goods retained by the anchoring means may be retained, added to or subtracted from as desired.

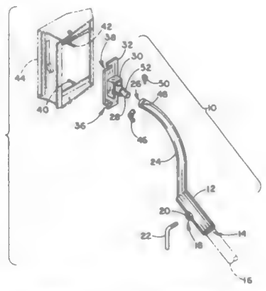
5,338,127
PLAY GYM BEARING COVER
Joel C. Cunard, Bedford, Pa., assignor to Hedstrom Corporation, Bedford, Pa.
Filed Feb. 3, 1993, Ser. No. 13,060
Int. Cl.[5] B65D *65/02*
U.S. Cl. 403—79 **6 Claims**



1. A bearing fitting for pivotally attaching a swing device to the crossbar of a children's play gym or swing set, said fitting comprising
means defining an axle for mounting to the crossbar;
hook means including a shank, a closed loop at one end of the shank encircling said axle and an open loop defining a hook at the opposite end of the shank for engaging through an eye on the device, and
a flexible, resilient, deformable cover, said cover having a pair of closely spaced-apart side walls, a top wall connecting said side walls, a hole in the top wall and a relatively large bottom opening into the space between said walls, said cover being dimensioned for engagement on the hook means so that the cover snugly surrounds the open loop of the hook means with the hook means shank extending out through said hole in the cover top wall.

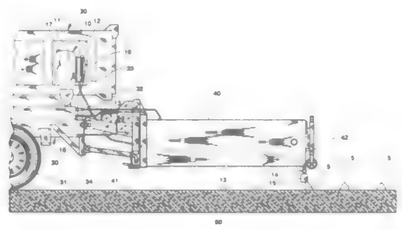
5. For a bearing fitting including hook means having a shank and an open loop, a flexible, resilient, deformable cover, said cover of PVC plastisol having a pair of closely spaced-apart side walls, a top wall connecting said side walls, a hole in the top wall and a relatively large bottom opening into the space between said walls, said cover being dimensioned for engagement on the hook means so that the cover can surround the open loop of the hook means with the hook means shank extending out through said hole in the cover top wall.

5,338,128
DRYWALL JOINT FINISHING TOOL
Angel Blanco, 9008 Meadow Foam Ct., Elk Grove, Calif. 95758
Filed Sep. 3, 1992, Ser. No. 940,045
Int. Cl.[5] B05C *17/10*; B25G *1/10*
U.S. Cl. 403—206 **10 Claims**



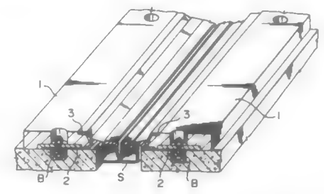
1. A drywall finishing tool, comprising:
(a) a plate, said plate including means for coupling to a drywall skim box;
(b) a shank, said shank including means for coupling to a support member;
(c) a curved arm, said arm pivotally coupled to said plate at a first end, said arm extending from said shank at a second end, said arm being angularly offset from said shank at said second end.

5,338,129
TRAFFIC DELINEATION FOAM SYSTEM AND METHOD
Alan D. Oden, Rte. 2, Box 346A, Morgantown, Ind. 46160
Filed Oct. 13, 1992, Ser. No. 959,074
Int. Cl.[5] E01F *9/04*
U.S. Cl. 404—9 **4 Claims**



1. A method of alerting third parties to a traffic hazard, desired traffic pattern or parking location, comprising the steps of:
(a) selecting a dissoluble marker which will dissipate and substantially disappear over a predetermined and relatively short period of time;
(b) determining one or more marker locations effective for depositing dissoluble markers to alert third parties to a traffic hazard, a desired traffic pattern or parking location; and subsequently
(c) depositing said dissoluble markers in the determined marker locations to alert third parties to a traffic hazard, a desired traffic pattern or parking location.

5,338,130
EXTRUDED THERMOPLASTIC ELASTOMER EXPANSION JOINT
Konrad Baerveldt, 5 Rosea Court, Thornhill, Ontario, Canada L3T 2V3
Division of Ser. No. 689,337, Apr. 22, 1991, Pat. No. 5,213,441.
This application Apr. 5, 1993, Ser. No. 42,993
Claims priority, application Canada, Apr. 24, 1990, 2015289
Int. Cl.[5] E01C *5/18, 11/02*
U.S. Cl. 404—33 **3 Claims**



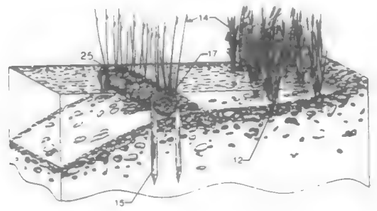
1. A method of manufacturing an expansion joint retainer for use in fastening an elastomeric seal or strip seal to a structural slab, said retainer having a main body made from a first material, said main body having a thickness selected to permit implacement of said retainer on the edge of a said slab whereby the upper surface of said main body is substantially coplanar with or beneath the upper traffic bearing surface of said slab; said retainer including a retaining element adjacent the lower surface of the said main body, said retaining element being made of a second material serving to provide said retainer with sufficient rigidity to be bolted to said slab, said method being characterized in that said second material is a thermoplastic elastomer and in that said first and second materials are coextruded to provide a retainer of any desired length having a main body integral with a retaining element.

5,338,131
ARRANGEMENT FOR SHORELINE CONSTRUCTION, MAINTENANCE, AND PROTECTION, AND METHODS FOR MAKING AND USING THE SAME
Lothar Bestmann, Pinneberger, Strasse 203, D-2000 Wedel/-Holst., Fed. Rep. of Germany
Continuation-in-part of Ser. No. 886,693, May 21, 1992, abandoned. This application Apr. 6, 1993, Ser. No. 43,272
Int. Cl.[5] E02B *3/04*
U.S. Cl. 405—24 **28 Claims**

1. A method of preparing an arrangement for construction, maintenance and protection of a shoreline having a variable level of water which method comprises:
a) layering a substrate and emergent aquatic plants onto thick layers of biodegradable non-woven felt;
b) covering the layers of non-woven felt, substrate and emergent aquatic plants with a non-woven geotextile;
c) surrounding the layers of non-woven felt, substrate, emergent aquatic plants, and stabilizing the non-woven geotextile to retain its shape;

VOL 1165 ISS 3 AG 16 1994 UMI

d) cultivating said emergent aquatic plants for at least one full vegetation period; and



e) stabilizing the non-woven geotextile by reinforcement elements thereby forming a protective shoreline vegetative covering.

5,338,132

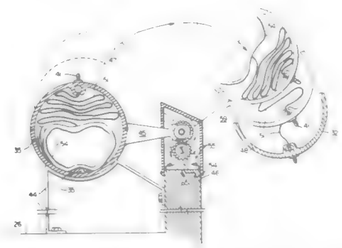
OIL SPILL CONTAINMENT SYSTEM

Donald H. Lahar, 97 White Rock Hill Rd., and Scott B. Lahar, 24 Branch, Londonderry Turnpike East, both of Bow, N.H. 03301

Continuation-in-part of Ser. No. 711,141, Jun. 6, 1991, which is a continuation-in-part of Ser. No. 505,836, Apr. 6, 1990, abandoned. This application Jan. 23, 1992, Ser. No. 824,348

Int. Cl.[5] E02B *15/06*

U.S. Cl. 405—69 **40 Claims**



1. In an oil spill containment system which includes an inflatable collar and depending apron having an upper and lower edge carried by a vessel for entraining an oil spill originating therefrom, wherein the inflatable collar and depending apron when deployed form a continuous circular oil containment apparatus surrounding the vessel, means for inflating the collar once deployed to maintain the upper edge of the depending apron at the surface of the oil spill in a vertical orientation extending downward from the collar, the collar and apron being constructed of a plurality of interconnected segments of uniform length, means for weighting down and anchoring the lower edge of the apron to maintain the positioning of the collar and apron once inflated and deployed in the water, means for removing the entrained oil spill from the surface of the surrounding water, and means for storing the oil retrieved, the improvement which comprises:

means for storing the oil containment apparatus on board the vessel, said storing means being inboard the vessel's gunnel, and, comprising a cylindrical structure formed into two longitudinally mating and sealable halves, the half closest to the deck being secured to support members that are rotatably affixed to the gunnel and the other half being attached to the oil spill containment apparatus;

means for controllably rotatably raising the oil containment apparatus from said storing means and moving the apparatus into position on the outboard side of the gunnel in preparation for deployment while imparting momentum thereto;

means for functionally lengthening and increasing the oil containment apparatus, said lengthening means increases the peripheral dimension of the apparatus as it is raised from the deck and moved out over the outboard side of the gunnel;

means for predeterminally controlling the inflation of the plurality of interconnected segments, during the full deployment cycle, from the onboard stored position to floating in the oil spill; and

means for anchoring the plurality of interconnected segments, said anchoring means being flexibly attached to the lower edge of the aprons of each interconnected segment and keeping each of the aprons in a vertical orientation extending from the surface of the oil spill downward throughout its length.

5,338,133

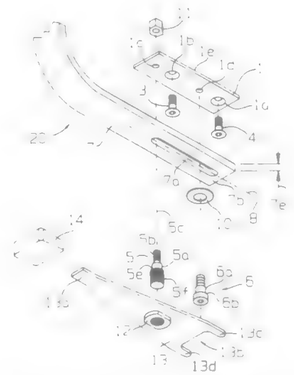
LEVER CLAMP MECHANISM

Lino E. Tornero, 809 Quailmeadow La., Colfax, N.C. 27235

Filed Mar. 5, 1993, Ser. No. 26,602

Int. Cl.[5] A47C *7/00*

U.S. Cl. 403—321 **14 Claims**



1. A clamp mechanism comprising: a structural member, said structural member defining an elongated slot, a fixed component, a first shoulder bolt, said shoulder bolt comprising a pair of threaded ends, one of said ends comprising standard threads and the other of said ends comprising fast advance threads, said first shoulder bolt extending through said elongated slot of said structural member and attached to said fixed component, a rotatable lever arm, said lever arm threadly attached to said first shoulder bolt by said fast advance threads whereby rotation of said lever arm in a first direction tightens said structural member against said fixed component and rotation of said lever arm in the opposite direction loosens said structural member allowing said structural member to slide along said fixed component.

5,338,134

GEAR FINISHING HOB

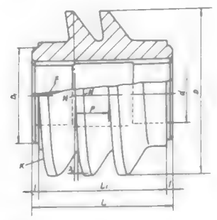
Fuhua Peng, Chuangchun, China, assignor to Jilin University of Technology, Jilin Province, China

Filed Jun. 25, 1993, Ser. No. 82,924

Claims priority, application China, Jun. 27, 1992, 92-1-05109.3

Int. Cl.[5] B23F *21/16*

U.S. Cl. 407—26 **13 Claims**



1. A finishing gear hob, whose shape is worm-like, wherein: on the working side of the mentioned finishing hob there are cutting edges K, in the form of a continuous equally-rising spaced cylindrical helix, and wherein edges K are formed by the intersection of the rake faces A, forming the top surfaces of the worm, and flanks B, forming the working sides of the worm; the number of cutting edges K being equal to the thread number i of the worm, where i is a positive integer, the normal pitch P_n of the working side of the worm being equal to the normal base pitch t_b of the machined gear $\pi m_n \cos\alpha_n$, where m_n is the normal module of the machined gear; and α_n is the normal pressure angle at a reference circle of the machined gear, and wherein the lead angle λ of the helix cutting edges is given by the formula $\sin\lambda = (im_n\cos\alpha_n)/2R$ where R is the radius of the cylindrical helix cutting edge K and the helix lead P of the helix cutting edge $P = (i\pi m_n\cos\alpha_n)/\cos\lambda$; and

wherein the profile in the normal section of the flank B, which is a spiral surface, is a straight line inclined at angle λ to the working side and extends outward in the direction of the radius.

5,338,135

DRILL AND LOCK SCREW EMPLOYED FOR FASTENING THE SAME

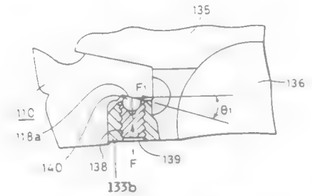
Kazuo Noguchi; Yoshikatsu Mori; Nagatoshi Kunimori, and Hideo Mori, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1992, Ser. No. 865,966

Claims priority, application Japan, Apr. 11, 1991, 3-079057; Apr. 11, 1991, 3-079058; Apr. 11, 1991, 3-079059; Apr. 11, 1991, 3-079060; Oct. 15, 1991, 3-083382[U]; Nov. 8, 1991, 3-091721[U]

Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—233 **23 Claims**



1. A throw-away tipped drill, comprising a shank to be mounted on a cutting machine and an insert being separably mechanically connected to said shank for cutting a workpiece, said insert comprising a received portion to be mounted in said shank, said shank comprising a holding portion including a threaded through bore for receiving and holding said received portion of said insert, said throw-away tipped drill further comprising an engaging device received in said shank for engaging said insert and said shank for preventing separation of said insert from said shank, wherein said engaging device comprises a ball-type pressing member and an engaging member having a male screw to be screwed into said threaded through bore, said male screw having a washer groove on its forward end, said ball-type pressing member being rotatably received in said washer groove for pressing against said insert.

5,338,136

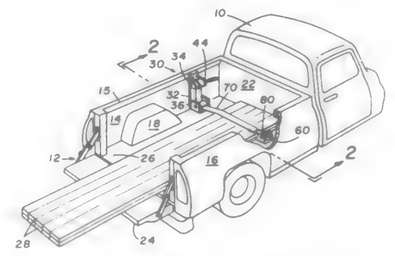
CARGO RESTRAINT APPARATUS

Robert L. Hetchler, 291 County Rd. 99, Moulton, Ala. 35650-5285

Filed Jul. 2, 1993, Ser. No. 85,094

Int. Cl.[5] B60P *7/06*

U.S. Cl. 410—100 **8 Claims**



1. A cargo restraint apparatus for a pick-up truck having a cargo bed including a pair of parallel side walls, each having an upper portion and a lower portion, a floor, and a forward wall, said cargo restraint apparatus comprising:

a rigid support member having an upper end and a lower end;

a winch mounted to said upper end of said rigid support member;

means for securing said upper end of said rigid support member to said upper portion of one of said side walls;

a pulley assembly mounted to said lower end of said rigid support member;

means for securing said pulley assembly to said floor of said cargo bed adjacent said one of said side walls;

a strap anchor assembly;

means for securing said strap anchor assembly adjacent the lower portion of the other of said side walls of said cargo bed; and

a strap having a first end secured to said winch, an intermediate portion in engagement with said pulley assembly and cargo being carried in said cargo bed, and a second end secured to said strap anchor assembly.

5,338,137

ADJUSTABLE DECKING SYSTEM FOR USE IN SUPPORTING FREIGHT IN A COMPARTMENT

Richard H. Jensen, 2761 W. 225th St., Torrance, Calif. 90505

Filed Feb. 28, 1992, Ser. No. 843,177

Int. Cl.[5] B61D *45/00*

U.S. Cl. 410—146 **4 Claims**

1. An adjustable decking system for use in supporting freight in a compartment having opposing walls comprising:

a pair of similar tracks vertically mounted on said opposing walls in directly opposing relationship to each other,

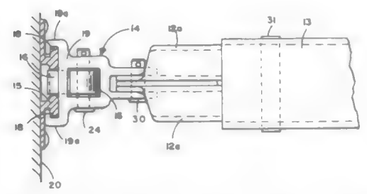
said tracks having a plurality of spaced openings formed therein running along the longitudinal extent thereof,

VOL 1165 ISS 3 AG 16 1994 UMI

said tracks further having T-shaped runners extending therealong,

a beam assembly formed by a pair of channel units and a beam member in which the channel units are telescopically supported for slidable longitudinal motion relative thereto,

one of the ends of each of said channel units protruding from each of the opposite ends of said beam member respectively, and



a latching assembly attached to each of the protruding ends of said channel units, said latching assemblies each including a spring actuated pivotally supported latching member and C-shaped members slidably engaging said T-shaped runners in mating relationship therewith,

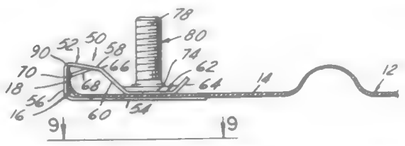
said beam assembly being selectively adjustable in height along said opposing tracks by slidably positioning the latching assemblies along said tracks to bring the latching members thereof into engagement with a selected pair of opposing track openings.

5,338,138

STUD MOUNTING CLIP FOR PANEL

Carol P. Pavur, Warren, and Martin W. Schnurr, Grosse Pointe City, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 10, 1993, Ser. No. 58,843
Int. Cl.[5] F16B *37/02, 39/00;* **B25G** *3/00*
U.S. Cl. 411—107 **4 Claims**



1. In combination with a vehicle panel having an upstanding flanged edge, a stud mounting clip adapted for securing a projection stud on the panel along a predetermined path coextensive the flanged edge, said stud mounting clip comprising:

a resilient generally U-shaped clip formed from sheet metal having an elongate, generally bifurcated configuration defining an upper contoured leg and a lower planar leg, said legs having inner ends thereof joined by a bight wall, said upper leg having a first proximate angled portion, a second intermediate sloped portion, a third platform means, and a fourth upwardly canted distal portion;

said first angled portion separated from said lower leg providing a space therewith and angled downwardly from said bight wall defining an acute angle therewith, said second sloped portion sloped downwardly from a transverse bend juncture with said first proximate portion defining an obtuse included angle therewith, said third platform means resiliently biased into contact with said lower leg, a projection stud mounted on said platform means a stem projecting vertically upwardly therefrom, said fourth portion being upwardly bent from said second leg so as to define a lead-in converging cleft therewith;

said first sloped proximate portion having a flexible retainer tongue lanced therefrom, said tongue having one end integral with said transverse juncture and angled downwardly from the horizontal into said space, said tongue having its free end positioned a predetermined dimension from said bight wall interior surface defining a gap therewith;

said clip fastener mounted on said panel by being tipped and slid over said panel flange with said flange entering said lead-in cleft, said clip being rotated whereby said flange enters said space such that its free edge is juxtaposed said first transverse bend juncture and said lower leg is in flatwise engagement with an undersurface of said panel and said prong portion foot sections in flatwise contact with said panel upper surface;

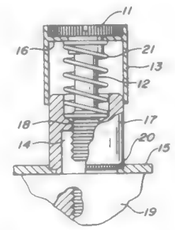
whereby upon said clip being slid radially inwardly on said panel said retainer tongue contacting said panel flange causing said tongue to be flexed upwardly enabling said clip bight wall interior surface to contact the panel flange releasing said tongue returning it to its normal state with its free end juxtaposed an interior surface portion of said flange, said clip being captured on said panel flange for co-extensive travel therewith adjustably positioning said stud in a predetermined manner relative to said panel flange.

5,338,139

SHROUDED CAPTIVE SCREW

Kenneth A. Swanstrom, Doylestown, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.

Filed Oct. 20, 1993, Ser. No. 138,090
Int. Cl.[5] F16B *21/18, 39/00*
U.S. Cl. 411—353 **7 Claims**



1. A captive panel fastener, comprising:

a screw having a head, a shank of reduced diameter, and a threaded end portion of greater diameter than said shank;

a barrel with an internal bore surrounding said screw, the bore including an area of reduced internal diameter greater than the diameter of said shank but less than said threaded end portion of said screw, said reduced diameter located about said shank;

a cylindrical shroud encompassing the periphery of said screw head and said barrel, said shroud being freely rotatable except when the screw is fully depressed axially, said shroud including an internal flange which is yieldably held between the top of a spring and the underside of said screw head, said spring acting between the top side of said barrel and the underside of said internal flange.

5,338,140

BOLL BUGGY

Royce L. Ekdahl, and C. Minuard Jordan, both of Lubbock, Tex., assignors to Scott Manufacturing, Inc., Lubbock, Tex.

Filed Apr. 5, 1993, Ser. No. 42,862
Int. Cl.[5] B65G *67/04*
U.S. Cl. 414—346 **9 Claims**

1. A seed cotton boll buggy comprising:

a) a base frame with

i. a front and a rear,

ii. ground engaging wheels, and

iii. a hitch on the front of the frame,

b) two guide columns on the frame, one at the front and one at the rear,

c) a basket on the frame having

i. a front,

ii. a back,

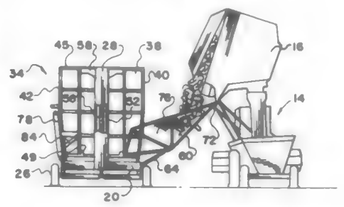
iii. a load side,

iv. a discharge side,

v. a bottom, and

vi. a height,

d) a load door on the load side of the basket,



e) door hinges interconnecting the load door and the basket near the bottom to swing the door,

f) compress means interconnecting the load door and basket for swinging the load door,

g) a discharge panel on the discharge side of the basket,

h) the panel having a basket edge and a distal edge,

j) moving means on the bottom of the basket and the discharge panel for moving seed cotton from the load side to the discharge side of the basket and from the basket edge to the distal edge of the panel, and

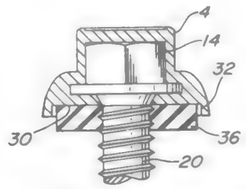
k) elevation means interconnecting the columns and the basket for elevating the basket.

5,338,141

CORROSION RESISTANT CAP FOR FASTENER

Tommy R. Hulsey, Wyomissing, Pa., assignor to Construction Fasteners, Inc., Wyomissing, Pa.

Filed Jul. 27, 1993, Ser. No. 97,525
Int. Cl.[5] F16B *19/00, 33/00*
U.S. Cl. 411—375 **11 Claims**



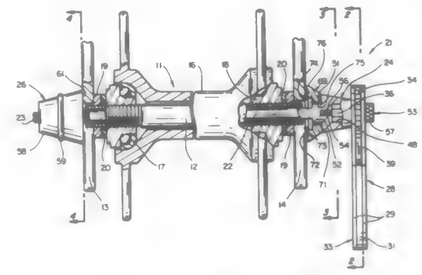
1. A fastening system comprising a fastener having a threaded shank with a longitudinal axis, a metallic corrosion-resistant cap and an elastomeric washer positioned on said threaded shank, said fastener comprising a first head, a radially extending flange beneath said head, and a threaded shank connected to and extending below said flange, and said cap comprising a second head having a cavity for receiving said first head and said flange, a swageable inner skirt and a perimeter outer skirt, said perimeter outer skirt having a flat bottom surface which lies in a plane which is perpendicular to the plane of the longitudinal axis of said threaded shank, and having a circular inside surface at a fixed radial distance from said longitudinal axis of said threaded shank so that a plane tangential to said inner surface is parallel to the plane of said longitudinal axis.

5,338,142

ROTATING QUICK RELEASE MECHANISM FOR SECURING PARTS TO BICYCLES

Michael Gonzales, 2342 Hilo Ct., Mountain View, Calif. 94040

Filed Jul. 7, 1992, Ser. No. 909,650
Int. Cl.[5] F16B *23/00, 35/06;* **F16C** *13/00*
U.S. Cl. 411—402 **16 Claims**



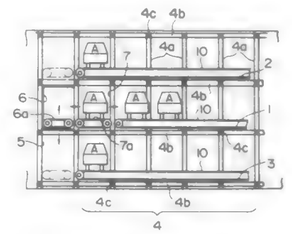
1. In a quick release mechanism for securing a part to the frame of a bicycle: an axially elongated skewer element adapted to be mounted to the frame, a fastening element, means mounting the fastening element on the skewer element in such manner that the part is secured to the frame upon relative rotation of the skewer and fastening elements in a first direction and is released upon relative rotation of the skewer and fastening elements in a second direction, and ratchet means attached to one of the elements for turning that element to selectively effect relative rotation of the two elements in the first and second directions.

5,338,143

CAR STORAGE APPARATUS FOR CAR CARRIER

Yoshitaka Matsuda; Koichi Kondo; Shuhei Kuribayashi; Akiko Noda; Takuya Nakashima; Ryutaro Saito; Kae Tsuji; Hideo Mori, and Yoshinori Mori, all of Kobe, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Seiryo Engineering Co., Ltd., Hygo, both of Japan

Filed Jul. 17, 1992, Ser. No. 913,954
Claims priority, application Japan, Jul. 22, 1991, 3-064853[U]; Jul. 24, 1991, 3-065579[U]; Oct. 14, 1991, 3-293712; Oct. 17, 1991, 3-093241[U]; Oct. 22, 1991, 3-302370; Oct. 29, 1991, 3-309765
Int. Cl.[5] B63B *27/00*
U.S. Cl. 414—142.1 **7 Claims**



1. A car storage apparatus in an automative car carrier ship, said carrier having a plurality of car storage decks, comprising:

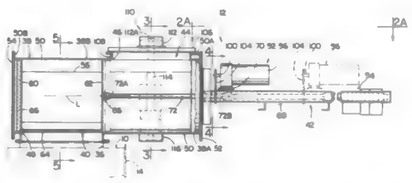
a car loading port installed at the ship side on one of the decks;

a loading/unloading berth extending from and permitting movement of a car from said loading port into the ship;

VOL 1165 ISS 3 AG 16 1994 UMI

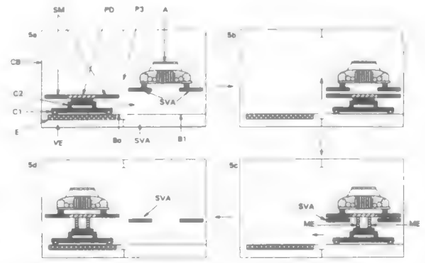
elevator shafts extending vertically through said car storage decks;
a lifter disposed in each elevator shaft for movement between said car storage decks with a car being mounted thereon; and
conveyor means installed on said loading/unloading berth, lifters, and car storage decks, for transferring a car between said berth, said lifters and said car storage decks.

5,338,144
APPARATUS AND METHOD FOR TRANSFERRING BATCHED MATERIALS
Roger D. Eshleman, 506 Clayton Ave., Waynesboro, Pa. 17268
Filed Mar. 5, 1993, Ser. No. 26,719
Int. Cl.[5] B65G *25/08*
U.S. Cl. 414—152 **32 Claims**



1. A batched material transferring apparatus, comprising:
(a) an elongated drum having an elongated tubular wall and a pair of end walls attached to respective opposite ends of said tubular wall and defining an elongated interior chamber therein, said drum also having an inlet opening and an outlet opening formed in said tubular wall of said drum adjacent to one another and adjacent to respective ones of said end walls of said drum, said outlet opening being formed through a bottom portion of said tubular wall of said drum, said inlet opening being formed through a portion of said tubular wall of said drum displaced axially and upwardly along said tubular wall of said drum from said bottom portion thereof;
(b) a bucket disposed in said drum and being movable relative to said drum; and
(c) means connected to said bucket through one of said end walls of said drum for driving said bucket to undergo movement solely within said interior chamber along a first path relative to said drum between a loading position and a dumping position in said interior chamber in which said bucket is respectively aligned with said inlet opening and said outlet opening in said tubular wall of said drum, said driving means also for driving said bucket to undergo movement solely within said interior chamber along a second path relative to said drum and relative to said first path between a receiving orientation and a discharging orientation such that at said loading position and receiving orientation said bucket is adapted to communicate with said inlet opening in said tubular wall of said drum for receiving a batch of material into said bucket whereas at said dumping position and discharging orientation said bucket is adapted to communicate with said outlet opening in said tubular wall of said drum for discharging the batch of materials from said bucket.

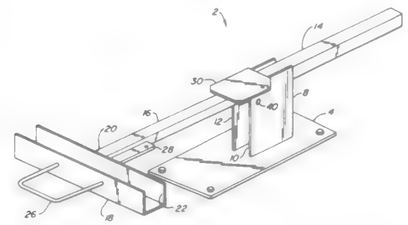
5,338,145
MOTOR VEHICLE AUTOMATIC PARKING SYSTEM, AND RELATED IMPROVED SILOS STRUCTURE
Fausto Beretta, Via Pongiana, 1, CH-6949 - Comano, Switzerland
Continuation of Ser. No. 767,068, Sep. 27, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 100,341
Int. Cl.[5] E04H *6/12*
U.S. Cl. 414—254 **5 Claims**



1. An automated parking system for parking motor vehicles in a silo, including cells, carports, corridors, and ramps, the motor vehicles being carried using lifting and translating means including at least one elevator and at least two trolleys, the system comprising:
a plurality of parking cell floors including parking cells for parking the motor vehicles;
a plurality of loading and unloading cabins, each of said cabins including an elevator compartment and a car compartment, said elevator and car compartments being arranged side-by-side in each of said cabins;
elevator means movable between the elevator compartment and the parking cell floors;
means for placing a motor vehicle at a loading floor with access to the loading and unloading cabins and the elevator compartment;
means for placing a motor vehicle inside the car compartment of one of the cabins;
trolley means movable within the cabin between the elevator and car compartments for placing the motor vehicle located in the car compartment of the cabin on the elevator means located in the elevator compartment; and
means for moving the trolley means with a motor vehicle thereupon from one of the cabins into one of the parking cells.

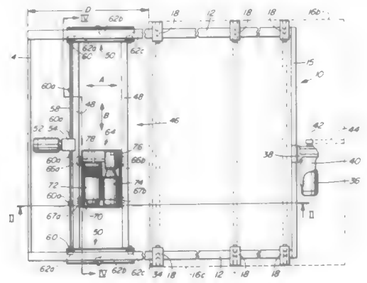
5,338,146
DOLLY CARRIER
Gary L. Hindt, 1849 Andrews Dr., Concord, Calif. 94521
Filed Feb. 25, 1993, Ser. No. 23,017
Int. Cl.[5] B60R *9/00*
U.S. Cl. 414—462 **3 Claims**

1. A wrecker body for a truck, the wrecker body comprising:
a generally flat truck bed having an outer perimeter, the truck bed defining an area over the truck bed extending perpendicularly to the truck bed;
a sill positioned along the outer perimeter of the truck bed and extending perpendicularly to the generally flat truck bed, the sill having a cut-out portion; and
a dolly carrier comprising:
a body coupled to the truck bed adjacent to the cut-out portion;
a guide member pivotally coupled to the body;
a support arm slidably coupled to the guide member, the support arm having a dolly support member rigidly attached to a support end, the support arm being slidable relative to the guide member between a storage position, wherein the dolly support member is in the area over the truck bed, and a removal position, wherein the dolly support member is in an area outside the area over the truck bed and the support arm passes through the cut-out portion of the sill; and



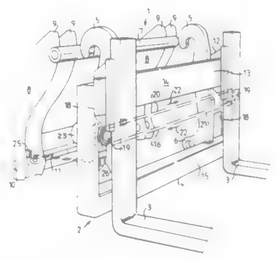
a means for locking the support arm in the storage position, the locking means including a first lock plate attached to the dolly support member, the first lock plate having a first hole, and a second lock plate attached to the body, the second lock plate having a second hole, whereby the support arm is locked in the storage position by aligning the first and second holes and positioning a lock through the first and second holes.

5,338,147
HOIST APPARATUS FOR CARGO COMPARTMENT
Jerzy W. Kucharczyk, 20438 - 91A Avenue, Langley, British Columbia, Canada V1M 1B4 , and Jan Skrzypczak, Surrey, Canada, assignors to Jerzy W. Kucharczyk, Langley, Canada
Filed Oct. 6, 1992, Ser. No. 956,997
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—542 **8 Claims**



2. A hoist apparatus for use in a cargo compartment, said hoist apparatus comprising:
a first frame;
said first frame having a pair of opposite side members extending in a first horizontal direction;
said side members having upper and lower flanges;
first roller means supporting said first frame beneath the roof of the cargo compartment so as to allow displacement of said first frame in the first horizontal direction between a first, retracted position, in which said first frame is accommodated entirely within the cargo compartment, and a second, extended position, in which said first frame protrudes from the cargo compartment;
said first roller means comprising support rollers in rolling contact with the undersides of said upper flanges of said side members;
a second frame extending horizontally between said opposite side members of said first frame;
second roller means supporting said second frame on said first frame for movement along said side members;
said second roller means comprising support rollers in rolling contact with the tops of said lower flanges;
said second frame having a pair of opposite side members extending transversely of said first horizontal direction;
a hoist carriage mounted on said second frame;
a major portion of the height of said second frame and of said hoist carriage being located above the underside of said first frame;
third roller means for supporting said hoist carriage on said second frame for movement along said side members of said second frame;
a hoist mounted on said hoist carriage;
a first drive device for displacing said first frame to and fro in said first direction between the retracted and extended positions; and
a hoist carriage drive device for displacing said hoist carriage and therewith said hoist to and fro along said side members of said second frame.

5,338,148
LATERALLY MOVABLE FORK ARRANGEMENT ATTACHED TO A WORKING MACHINE
Ahrne Rönnblom, Skelleftea, Sweden, assignor to Stalteknik I Skelleftea AB, Skelleftea, Sweden
PCT No. PCT/SE90/00725, § 371 Date May 12, 1992, § 102(e) Date May 12, 1992, PCT Pub. No. WO91/07345, PCT Pub. Date May 30, 1991
PCT Filed Nov. 8, 1990, Ser. No. 856,917
Claims priority, application Sweden, Nov. 21, 1989, 8903904
Int. Cl.[5] B66F *9/14*
U.S. Cl. 414—667 **6 Claims**



1. Apparatus, comprising:
a working machine having an implement attaching means;
a transversely extending fork frame structure removably supported on said working machine via said implement attaching means;
two lifting forks movably supported on said fork frame structure beside one another for movement transversely of said working machine;
a movement transmission device comprising an endless flexible element extending transversely of said working machine and entrained at transversely opposite ends of said device about respective rotatable members, so as to have an upper run and a lower run, said rotatable members being mounted to said fork frame structure;
a reversibly operable electric motor-powered drive effectively connected to said movement transmission device, and operable for reversely running said endless flexible element;
a first connector selectively connecting one of said lifting fork to one of said runs of said endless flexible element for movement therewith transversely of said working machine and a second connector selectively connecting the

VOL 1165 ISS 3 AG 16 1994 UMI

other of said lifting forks to the other of said runs of said endless flexible element for movement therewith transversely of said working machine, so that operation of said electric motor-powered drive in one direction moves said lifting forks effectively closer to one another and operation of said electric motor-powered drive in an opposite direction moves said lifting forks effectively further from one another;

a source of electrical power provided on said working machine;

an electric power cable arranged for effectively connecting said source of electric power with reversibly operable electric motor-powered drive when said fork frame structure is supported on said working machine via said implement attaching means;

said electric power cable having incorporated therein a two-part electrical connector including a first part mounted to said implement attaching means and a second part mounted to said fork frame structure, so as to establish an electrical connection therebetween as a consequence of said fork frame structure becoming supported on said implement attaching means and so as to break electrical connection therebetween as a consequence of said fork frame structure becoming removed from support on said implement attaching means; and

a remotely controlled locking means mounted to said one of said lifting forks for selectively operating said first connector to selectively fix a portion of either of said runs to said one of said lifting forks for effectively permitting transverse movement of said lifting forks relative to one another in a first locked position thereof where said forks are connected to opposite runs, and for permitting transverse movement of said lifting forks together with one another in a second locked position thereof where said forks are connected to the same run.

5,338,149

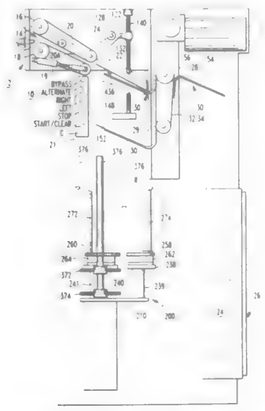
SIGNATURE STACKER

Raymond Wiseman, Littleton, Colo., assignor to IDAB Incorporated, Hialeah, Fla.

Continuation of Ser. No. 410,013, Sep. 19, 1989, abandoned, which is a continuation of Ser. No. 303,056, Jan. 27, 1989, abandoned, which is a continuation of Ser. No. 595,239, Apr. 2, 1984, abandoned. This application Dec. 31, 1990, Ser. No. 634,809

Int. Cl.[5] B65G *57/03*

U.S. Cl. 414—792.7 **18 Claims**



1. Stacker apparatus comprising a plurality of buckets;

means for moving the buckets through a stacking region between a home position and a drop position;

means for delivering a stream of overlapping signatures to said buckets as they move through a stacking region;

latch means for releasably latching a bucket in the home position;

means for counting signatures delivered to said stacking region;

first sensing means for generating signals representing the movement of a bucket from the home position towards the drop position;

means for accumulating said signals when said latching means is released;

means for periodically examining the accumulating means;

first staging means activated by said examining means and responsive to said counting means and said sensing means for either halting said moving means when said accumulating means reaches a first predetermined value and said counting means has not reached a first predetermined count, or for generating a control signal to operate said moving means when said accumulating means reaches said first predetermined value and said counting means has reached said first predetermined count.

5,338,150

APPARATUS FOR HANDLING ARTICLES, SUCH AS CARTONS

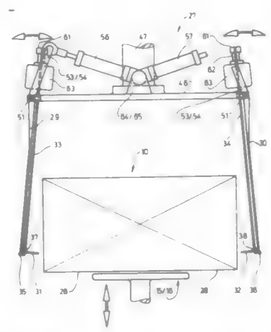
Heinz Focke, Verden, and Johannes Holloch, Langwedel, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Oct. 21, 1991, Ser. No. 779,877

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1990, 4033587

Int. Cl.[5] B60N *2/02*

U.S. Cl. 414—799 **11 Claims**



1. In an apparatus for receiving, conveying and depositing cuboid articles, and comprising a liftable, lowerable and transversely movable gripper (27) having at least two vertical carrying arms (29, 30) for grasping at least one article (10), said vertical carrying arms (29, 30), during transport of an article (10), extending on opposite sides of the article, the improvement comprising:

a support plate (46) on the gripper and having two oppositely situated edges on which said carrying arms (29, 30) are pivotably mounted;

at least two first pressure medium cylinders (56, 57) for pivoting said carrying arms (29, 30) from a vertical position to an inclined position;

at least two carrying legs (31, 32) pivotably attached to the carrying arms (29, 30);

at least two vertically extending actuating means (33, 34), attached to said support plate (46), for moving said carrying legs (31, 32) between a carrying position, in which said carrying legs are horizontally directed, and a release position in which said carrying legs are essentially vertically directed; and

at least two second pressure medium cylinders (63), attached between said support plate and said actuating means at a position above said support plate, for moving said actuating means (33, 34) up and down so that said carrying legs (31, 32) move between the carrying position and the release position;

wherein the carrying legs (31, 32) are one-armed levers, and wherein said actuating means (33, 34) are connected to said carrying legs (31, 32) in an articulated manner at a point spaced from said carrying arms (29, 30) at a side confronting the article (10), and in such a way that said carrying legs (31, 32) are held in said carrying position by tensile forces in said actuating means (33, 34).

5,338,151

UNIT FOR DELIVERING FUEL FROM THE FUEL TANK TO THE INTERNAL COMBUSTION ENGINE OF A MOTOR VEHICLE

Ulrich Kemmner, Stuttgart; Kurt Frank, Schorndorf-Haubersbronn, and Michael Niederkofler, Remseck, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

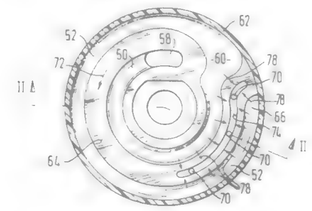
PCT No. PCT/DE91/00449, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO92/00449, PCT Pub. Date Jan. 9, 1992

PCT Filed May 27, 1991, Ser. No. 956,894

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1990, 4020520

Int. Cl.[5] F01D *1/12*; F04B *17/00*

U.S. Cl. 415—55.1 **9 Claims**



1. A unit for delivering fuel from a fuel tank to an internal combustion engine of a motor vehicle, comprising a flow pump having a plurality of walls forming a pump chamber and including two end walls in at least one of which end walls a delivery duct is formed, said at least one end wall having a bore hole which connects said pump chamber with a low pressure region, said pump further having an impeller which rotates in said pump chamber about an axis of rotation; means forming a suction opening which opens into said pump chamber and from which said delivery duct extends, and a pressure opening leading out of said pump chamber, said one end wall having a sealing surface which defines inner and outer limits of said delivery duct in a radial direction with respect to said axis of rotation of said impeller, said bore hole being located in said sealing surface, said sealing surface having a trough-like groove proceeding from said bore hole and having one groove part extending in a rotation direction and another part extending opposite to the rotation direction of said impeller.

5,338,152

ARRANGEMENT FOR SEALING STRUCTURAL MEMBERS USING A V-SHAPED INSERT, PARTICULARLY IN THE CASE OF TURBO-ENGINES

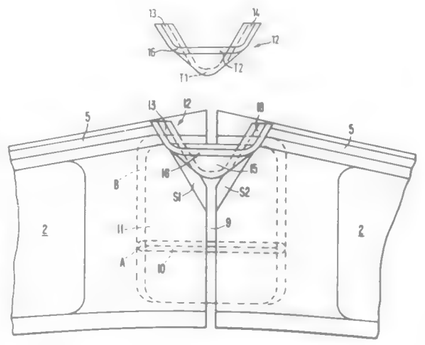
Manfred Feldmann, Puchheim, Fed. Rep. of Germany, assignor to MTU Motoren- Und Turbinen-Union Muenchen GmbH, Fed. Rep. of Germany

Filed May 6, 1993, Ser. No. 57,773

Claims priority, application Fed. Rep. of Germany, May 11, 1992, 4215440

Int. Cl.[5] F01D *11/00*

U.S. Cl. 415—139 **10 Claims**



1. An arrangement for sealing structural members between flow channels being supplied by fluids of different pressures, comprising:

a first structural member divided along a first plane into segments that are movable relative to one another, the first structural member being movable in a second plane that is angularly offset with respect to the first plane;

a second structural member having a groove, wherein projections of the segments sealingly engage in the groove;

expansion gaps arranged between abutting edges of the segments;

sealing plates sealing-off the expansion gaps longitudinally and transversely with respect to a course of the gaps;

a V-shaped insert, each for sealing-off one of the expansion gaps between one plate arranged transversely with respect to the course of the gap and an opposite transverse surface of the groove acting as a sealing surface for one end face of said insert;

the V-shaped insert having two legs following said V-shape and projecting freely towards a base of said groove,

wherein the insert is uniformly expanded via the two legs towards the opposingly facing sealing surface of the groove;

wherein the insert is disposed via the expansion of the V-shaped legs in a sealing manner on corresponding oblique abutting surfaces of two segments at one expansion gap;

wherein the V-shaped insert covers the expansion gap with a base wall between the two legs sloping in the direction of its sealing end face on the opposite transverse surface of the groove;

wherein the V-shaped insert is actuated by a partial pressure of said fluids, the fluid pressure acting before the insert in the groove is greater than the fluid pressure acting behind the insert at the expansion gap.

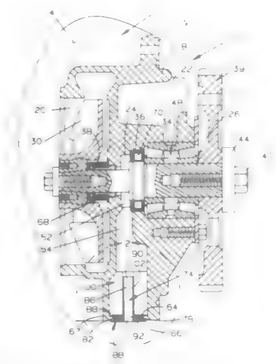
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,153

NON-DRIP FLUID CIRCULATING PUMP

Victor E. Swanson, Peoria; Joel D. Feucht, Morton, and Stephen G. Shoup, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 30, 1993, Ser. No. 86,272
Int. Cl.[5] F04D 29/00
U.S. Cl. 415—168.2 9 Claims



1. A fluid circulating pump, comprising:
a housing having a fluid chamber and a cavity;
a shaft rotatably mounted within the housing and extending through the cavity and terminating in the fluid chamber; an impeller mounted to the shaft for rotation therewith
a seal assembly in surrounding relation to the shaft to substantially isolate the fluid chamber from the cavity;
the cavity having an open end communicating with the atmosphere; and
plug means substantially disposed within the cavity for restricting fluid from escaping into the atmosphere, the plug means being in sealing engagement with the housing at the open end.

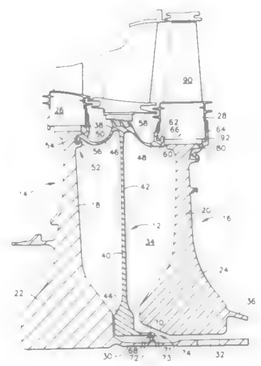
5,338,154

TURBINE DISK INTERSTAGE SEAL AXIAL RETAINING RING

Robert J. Meade, West Chester; Richard W. Albrecht, Fairfield, and Robert H. Weisgerber, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 17, 1993, Ser. No. 32,214
Int. Cl.[5] F01D 5/06, 11/00
U.S. Cl. 415—173.7 4 Claims

1. In a turbine engine of a type having a turbine section including first and second stage disks, an interstage seal located between said disks, said seal including a web portion having an aft arm extending from said web and having a peripheral rim adjacent said second stage disk, an interstage seal aft arm axial retention system comprising:
a peripheral groove located in said peripheral rim;
a plurality of tabs located on said second stage disk extending radially inwardly adjacent said peripheral rim;
means located in said groove for forming a bayonet connection with said second stage disk tabs, wherein said bayonet connection means includes a split retaining ring having two ends and a plurality of radially outwardly extending tabs; and



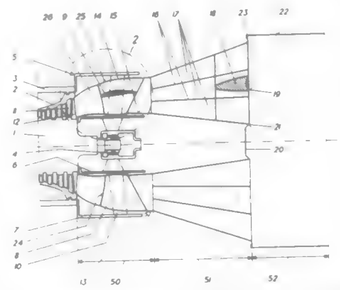
means for preventing circumferential rotation of said axial retention system, wherein said circumferential prevention means is a turbine blade.

5,338,155

MULTI-ZONE DIFFUSER FOR TURBOMACHINE

Franz Kreitmeier, Baden, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Jul. 29, 1993, Ser. No. 98,814
Claims priority, application European Pat. Off., Aug. 3, 1992, 92113180.1
Int. Cl.[5] F01D 7/00
U.S. Cl. 415—211.2 18 Claims



1. In a multi-zone diffuser for an axial-flow turbomachine,
in which the kink angles of the diffuser inlet both at a hub and at a cylinder of the turbomachine are fixed exclusively for the purpose of evening out the total pressure profile over the duct height at the outlet from the last rotor blade row,
in which means, in the form of streamlined struts, are provided within the deceleration zone of the diffuser for the removal of swirl from the swirling flow,
and in which flow guide rings subdivide the diffuser in multi-duct fashion, the improvement wherein a first diffusion zone extends from the outlet plane of the last rotor blade row to a plane at the outlet from the streamlined struts and is configured as one duct in which downstream of the kink angles an equivalent opening angle of the meridian contours at least in the region of the struts decreases in the flow direction, to avoid flow separation so that a type of bell-shaped diffuser is formed;

and wherein a second diffusion zone is fashioned in the form of multi-duct diffuser part, flow guide rings being arranged downstream of the streamlined struts.

5,338,156

CEILING FAN BLADE

Kuo-Neng Chien, 4Fl., No. 27, Lane 160, Hsin Sheng S. Rd., Sec. 1, Taipei, Taiwan

Filed Mar. 16, 1993, Ser. No. 31,948
Int. Cl.[5] F04D 29/38
U.S. Cl. 416—132 A 14 Claims



1. A blade for a ceiling fan comprising:
a blade frame and a blade plate;
said blade frame comprising a male member and a female member engaged therewith, said frame including a free end and a fixed end, said fixed end being attached to a bracket of the ceiling fan and having a greater longitudinal width than the free end of the frame to facilitate secure attachment to the ceiling fan bracket; and wherein
said blade plate has a shape corresponding to that of the frame and the blade plate is smaller than the frame; and
the blade includes blade plate locating means disposed on the frame to facilitate assembly of said blade frame and said blade plate, and wherein the blade further includes fixing means disposed on said male member and said female member to provide a means of attaching said male member to said female member.

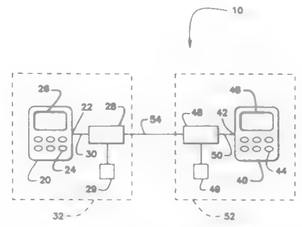
5,338,157

SYSTEMS AND METHODS FOR COMMUNICATING WITH AMBULATORY MEDICAL DEVICES SUCH AS DRUG DELIVERY DEVICES

Michael L. Blomquist, Coon Rapids, Minn., assignor to Pharmacia Deltec, Inc., St. Paul, Minn.

Filed Sep. 9, 1992, Ser. No. 942,288
Int. Cl.[5] F04B 41/06
U.S. Cl. 417—2 36 Claims

1. A pump to pump communication system comprising:
(a) first and second pumps, each of the first and second pumps including:
(i) means for pumping fluid;
(ii) control means for controlling operation of the means for pumping fluid;
(iii) operator input means for making an operator input of information to the control means; and
(iv) display means for displaying information from the control means;
(b) a first modem electrically interconnectable with the control means of the first pump;
(c) a second modem electrically interconnectable with the control means of the second pump, the first and second modems permitting remote communication between the control means of the first pump and the control means of the second pump over a communications medium;
(d) first communication means for sending an input signal from the control means of the first pump over the first and second modems to the control means of the second pump indicative of an operator's input at the operator input means of the first pump;



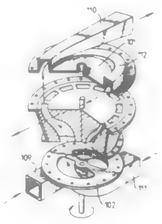
(e) second communication means for sending a display signal from the control means of the second pump over the first and second modems to the control means of the first pump indicative of a display signal means of the second pump;
(f) a cable for electrically interconnecting the second modem to the second pump; and
(g) a sensor means associated with the second pump for sensing when the cable is electrically interconnected to the second pump and for sending a signal to the control means of the second pump indicative of the presence of the cable.

5,338,158

PRESSURE EXCHANGER HAVING AXIALLY INCLINED ROTOR DUCTS

Leif J. Hauge, Ovre Bakklandet 5, N-7013 Trondheim, Norway

PCT No. PCT/NO90/00162, § 371 Date Jun. 29, 1992, § 102(e) Date Jun. 29, 1992, PCT Pub. No. WO91/06781, PCT Pub. Date May 16, 1991
PCT Filed Oct. 30, 1990, Ser. No. 854,678
Claims priority, application Norway, Nov. 3, 1989, 89 4392
Int. Cl.[5] F04F 11/02
U.S. Cl. 417—64 8 Claims



1. A pressure exchanger for transferring pressure energy from one fluid to another comprising a housing having opposite ends, an inlet duct at a first of said ends of the housing for a first fluid, an outlet duct at said first end for a second fluid, an outlet duct at the second of said ends of the housing for said first fluid, an inlet duct at said second end for said second fluid, a rotor in said housing supported for rotation about a longitudinal axis of rotation, said rotor having a plurality of rotor ducts arranged around said axis of rotation, said rotor ducts extend-

VOL 1165 ISS 3 AG 16 1994 UMI

ing from one end of the rotor to the other end of the rotor and having openings at said ends which alternately connect the inlet ducts and the outlet ducts of the first and second fluids respectively, during rotation of the rotor, the inlet and outlet ducts of each fluid respectively being in communication with said openings over an angle of substantially 180°, said openings of said rotor ducts at said first end of the housing being substantially equally spaced radially from said axis of rotation at a distance which is substantially greater than radial spacing of the openings of said rotor ducts at said second end of the housing so that said first fluid flows through said rotor ducts from said first end towards said second end to drive the rotor as a turbine whereas the second fluid flows through said rotor ducts from said second end to said first end and said rotor acts as an impeller, said inlet duct for the first fluid comprising a nozzle, said outlet duct for the second fluid comprising a diffuser.

5,338,159

CO-ROTATIONAL SCROLL COMPRESSOR SUPERCHARGER DEVICE

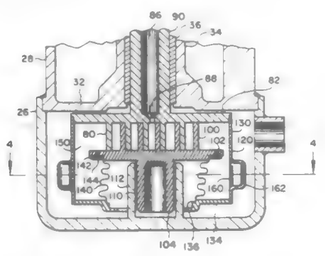
Delmar R. Riffe, Cullman, Ala.; Peter A. Kotlarek, Onalaska, Wis., and Robert E. Utter, Whitehouse, Tex., assignors to American Standard Inc., New York, N.Y.

Continuation of Ser. No. 796,746, Nov. 25, 1991, Pat. No. 5,199,280. This application Jan. 19, 1993, Ser. No. 6,167

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[5] F01C *11/04*

U.S. Cl. 417—203 **16 Claims**



1. Scroll gas compression apparatus having a suction pressure portion comprised of:

a first scroll member having a first scroll end plate from which a first scroll wrap extends;

a second scroll member having a second scroll end plate from which a second scroll wrap extends; and

means for increasing the pressure of said gas with respect to the pressure at which said gas enters said suction pressure portion, said means for increasing the pressure of said gas substantially enclosing said first scroll wrap and said second scroll wrap so as to define a generally enclosed and substantially discrete intermediate space within said suction pressure portion of said compression apparatus, said means for increasing the pressure of said gas defining an aperture for permitting said gas to flow into said intermediate space.

5,338,160

INDIVIDUAL CONTROLLABLE CYLINDER-PLUNGER ASSEMBLIES OF A RADIAL PISTON PUMP

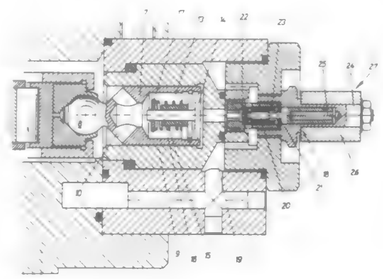
Jörg Thurner, Vienna, Austria, assignor to Gesellschaft für ökologische Ökomobil Technologie für Fahrzeuge GmbH, Austria

Continuation of Ser. No. 838,299, Mar. 23, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 53,182

Claims priority, application Austria, Sep. 18, 1989, A2175/89

Int. Cl.[5] F04B *1/04, 21/02*

U.S. Cl. 417—273 **8 Claims**



1. A radial piston pump of the type having a plurality of radially arranged cylinder-plunger assemblies, each of which comprising:

a cylinder;

a plunger movable in said cylinder;

actuating means operatively connected to said plunger for controlling movement of said plunger;

a suction valve communicating with said cylinder for admitting fluid from a suction manifold into said cylinder during suction stroke of said plunger; and

a pressure valve communicating with said cylinder for delivering fluid from said cylinder into a discharge manifold via a first fluid passageway during the pressure stroke of said plunger, said pressure valve accommodating a separately actuatable control valve for selectively opening a second fluid passageway between said cylinder and the discharge manifold.

5,338,161

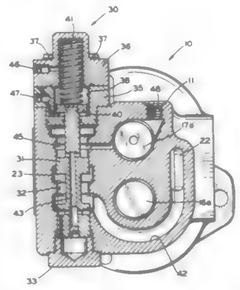
GEAR PUMP HAVING INTERNAL BYPASS VALVE

James M. Eley, Corinth, Miss., assignor to Dana Corporation, Toledo, Ohio

Filed Jun. 19, 1991, Ser. No. 717,395

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—307 **5 Claims**



1. A pump for selectively generating a flow of fluid from a reservoir to a hydraulically actuated device comprising:

a housing;

an inlet port formed in said housing, said inlet port adapted to communicate with the reservoir;

an outlet port formed in said housing, said outlet port adapted to communicate with the device;

a pumping chamber defined within said housing, said pumping chamber communicating with said inlet port and said outlet port;

pumping means disposed in said pumping chamber for drawing fluid through said inlet port from the reservoir and to generate a flow of fluid from said outlet port to the device; and

bypass valve means disposed within said housing and operable in a bypass mode to provide communication between said inlet port and said outlet port, whereby the flow of fluid to the device is prevented to prevent the operation thereof, and operable in an active mode to prevent communication between said outlet port and said inlet port, whereby the flow of fluid to the device is permitted to permit the operation thereof;

said bypass valve means including a drain port formed in said housing adapted to communicate with the reservoir, a spool disposed in a chamber formed in said housing, said spool being movable between bypass and active positions so as to operate said bypass valve means in said bypass and active modes, and an internal passageway formed in said spool, said internal passageway permitting communication between said chamber and said drain port when said spool is in said bypass position and preventing communication between said chamber and said drain port when said spool is in said active position.

5,338,162

HIGH-PRESSURE CLEANER WITH AIR-COOLED MOTOR

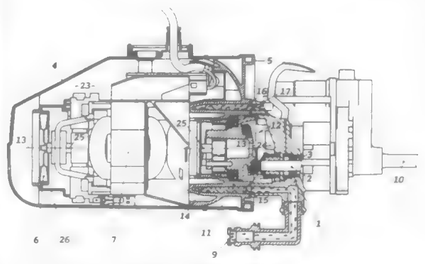
Karsten Krarup, Hobro, Denmark, assignor to K.E.W. Industri A/S, Denmark

Continuation of Ser. No. 973,748, Nov. 9, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 170,670

Claims priority, application European Pat. Off., Dec. 7, 1991, 91121016.9

Int. Cl.[5] F04B *17/00, 35/00*

U.S. Cl. 417—367 **8 Claims**



1. A high-pressure cleaner comprising:

a) a pump for pumping cleaning liquid, the pump including a drive mechanism,

b) an air-cooled motor for driving the drive mechanism of the pump,

c) an air cooler adapted to be cooled by said cleaning liquid when the cleaning liquid flows through the air cooler to said pump, and

d) air-circulating means for circulating air between said motor and said air cooler in an enclosure containing the motor and the air cooler, the improvement comprising a liquid-flow part of said air cooler through which said cleaning liquid flows in intimate thermal contact with or integral with a separate housing within said enclosure, containing the drive mechanism of said pump.

5,338,163

ELECTROHYDRAULIC DEVICE, PARTICULARLY ELECTRICAL FUEL PUMP FOR MOTOR VEHICLE

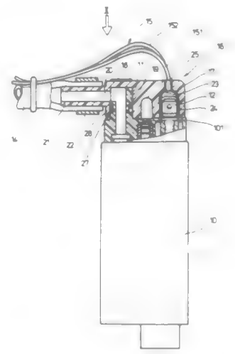
Kurt Frank, Schorndorf-Haubersbronn; Johann Attenni, Pfoerring; Albert Schmidt, Ingolstadt, and Max Weigl, Altmannstein, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 987,114

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1991, 4140961

Int. Cl.[5] F04B *35/04*

U.S. Cl. 417—410 R **14 Claims**



1. An electrohydraulic device, comprising a housing; a hydraulic connecting pipe for hydraulic medium and at least one electrical connecting plug for current supply projecting out of said housing; a hydraulic conduit and a current cable extending to said housing; and a plug head, said hydraulic conduit and said current cable being connected with said plug head, said plug head being releasably mounted on said housing and fitted over said hydraulic connecting pipe and said at least one electrical connecting plug so as to establish at the same time hydraulic connection between said hydraulic conduit and said connecting pipe and electrical connection between said current cable and said at least one electrical connecting plug, said plug head having a fitting sleeve which surrounds said connecting pipe and is formed of one piece with said plug head, said plug head being also provided with at least one cable shoe for said current cable.

5,338,164

POSITIVE DISPLACEMENT MICROPUMP

Robert F. Sutton, Newbury Park; Ramin Tabibzadeh, Los Angeles, and Ko-Wei Lang, West Hills, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed May 28, 1993, Ser. No. 68,049

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—413 A **7 Claims**

1. A pump comprising,

a plurality of chambers each having a top disc diaphragm, a bottom disc diaphragm and a side wall,

an inlet and an outlet for fluid flow to and from each chamber, passing through the side wall,

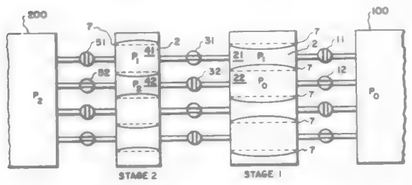
a valve attached to the inlet and a valve connected to the outlet to control the direction of fluid flow,

the plurality of chambers stacked such that the disc top diaphragm of one chamber is also the bottom disc diaphragm of the adjacent chamber,

VOL 1165 ISS 3 AUG 16 1994 UMI

each disc diaphragm having an electrodeformable material for deforming the disc diaphragm and changing the volume of the chamber when activated,

a means of activating the electrodeformable material so that



the top and bottom disc diaphragms in each chamber move toward each other or away from each other simultaneously,

the outlet of one chamber is connected to the inlet of another chamber for increasing the pressure of the fluid in stages.

5,338,165

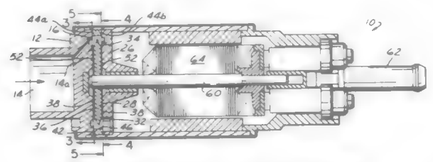
AUTOMOTIVE FUEL PUMP WITH MODULAR PUMP HOUSING

Henry W. Brockner, Ann Arbor; Robert J. Mohan, Canton Township, Wayne County, and Richard Lassen, Pontiac, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 25, 1991, Ser. No. 797,571

Int. Cl.[5] F04B *35/04*

U.S. Cl. 417—423.1 **7 Claims**



1. A modular automotive fuel pump, comprising:

a lower housing having a first end with a central, annular, planar sealing surface, an outer mounting annulus which is coplanar with the central sealing surface, and a second end with a fuel inlet;

an upper housing having a first end with a central, annular, planar sealing surface, an outer mounting annulus which is coplanar with the central sealing surface, and second end with a fuel outlet;

a motor having a shaft extending therefrom;

a rotary pumping element, mounted on said motor shaft between said lower and upper housings, comprising a bladed, two-sided disk having a circular, planar sealing surface extending radially outwardly from the center on each side of said disk, with said circular sealing surfaces of the rotary pumping element being parallel to each other and parallel to said annular sealing surfaces of the lower and upper housings; and

a combination clearance land and flow guide comprising an annular ring positioned between said lower and upper housings and having a separate annular face in contact with the mounting annulus on the first end of each housing, so as to establish axial clearance spaces between the sealing surfaces of the disk and the corresponding sealing surfaces of the lower and upper housings, with said combination land and guide having a radially inward surface defining a circumferential wall about said pumping element, and with the axial thickness of said combination land and guide being only slightly greater than the axial thickness of said disk, such that the sealing surfaces of the disk and the corresponding sealing surfaces of the lower and upper housings will cooperate to control the flow of fuel through the axial clearance spaces.

5,338,166

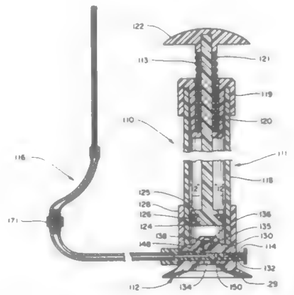
EVACUATION PUMP SYSTEM FOR BOTH RIGID AND FLEXIBLE CONTAINERS

Glen R. Schultz, Yorkville, Ill., assignor to Pioneering Concepts Incorporated, Yorkville, Ill.

Filed Feb. 16, 1993, Ser. No. 18,201

Int. Cl.[5] F04B *39/10;* **B65B** *31/04*

U.S. Cl. 417—442 **10 Claims**



1. An evacuation system for both lidded rigid containers and sealable flexible containers, comprising: housing means, a reciprocating piston pump having a reciprocating piston in a pumping chamber in the housing means movable in a suction stroke and a discharge stroke, said pump including a check valve that closes during the suction stroke of the piston and opens during the return stroke, said pump having an actuator for the piston at one end and a sealable lid engaging vacuum cup at the other end, a first inlet port to the pumping chamber in the housing means communicating with the interior of the cup for evacuating rigid containers, a second inlet port to the pumping chamber in the housing means adapted to receive a flexible tube for evacuating flexible containers, and a valve member mounted in the pump movable to a first position connecting the first inlet port with the pumping chamber and blocking flow relative to the second inlet port and a second position communicating the second inlet port with the pumping chamber and blocking flow relative to the first inlet port, said valve member being slidably positioned in the housing means between said first and second positions thereof both within the housing means, said valve member covering the second inlet port in the first position, and covering the first inlet port in its second position, said valve member being nonremovable from the housing means during normal operation of the evacuation system.

5,338,167

DRY-RUNNING VACUUM PUMP

Hanns-Peter Berges, Köln, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

PCT No. PCT/EP92/00210, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO92/14059, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 31, 1992, Ser. No. 66,079

Claims priority, application European Pat. Off., Feb. 1, 1991, 91101332.4

Int. Cl.[5] F01C *19/00*

U.S. Cl. 418—104 **7 Claims**

1. Dry-running vacuum pump comprising:

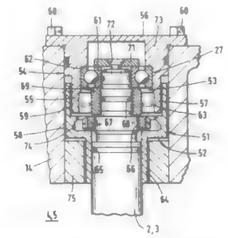
at least one vertically disposed rotatable shaft;

an upper bearing plate;

a lubricated roller bearing;

an open-top pot-like component fastened on the shaft, the lubricated roller bearing being situated in the open-top pot-like component, and the lubricated roller bearing mounting the shaft in the upper bearing plate;

a housing;



an open-bottom pot-like component having an inside and being affixed to the housing and associated with the open-top pot-like component and having a wall reaching into the open-top pot-like component; and

the roller bearing having a housing-mounted bearing ring held on the inside of the open-bottom pot-like component.

5,338,168

OIL PUMP MADE OF ALUMINUM ALLOYS

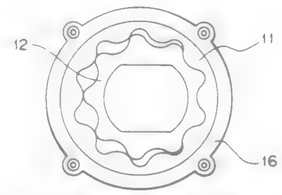
Katsuyoshi Kondoh, and Yoshinobu Takeda, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 29, 1993, Ser. No. 82,930

Claims priority, application Japan, Jun. 29, 1992, 4-170904; Jun. 30, 1992, 4-172610

Int. Cl.[5] F04C *2/10, 29/00*

U.S. Cl. 418—179 **7 Claims**



1. An oil pump of aluminum alloys, comprising a casing and at least one rotor housed therein, said casing being produced by powder metallurgy with a rapidly solidified aluminum alloy consisting essentially, by weight, of 5 to 25% of Si, 1 to 5% of Cu, 0.2 to 1.5% of Mg, 0.2 to 1% of Mn, and the balance of Al and inevitable impurities, said rotor being produced by powder metallurgy with a rapidly solidified aluminum alloy comprising, by weight, of 5 to 25% of Si, up to 15% of at least one alloy element selected from the group consisting of 3 to 10% of Fe, 3 to 10% of Ni and 1 to 8% of Cr, and the balance of Al and inevitable impurities, the sum of the Si content of said rapidly solidified aluminum alloy for casing and that of aluminum alloy for rotor being equal to or more than 15%.

5,338,169

APPARATUS FOR MAKING PREFORMS

Daniel T. Buckley, Shrewsbury, Vt., assignor to The C. A. Lawton Company, Shrewsbury, Vt.

Division of Ser. No. 609,420, Nov. 5, 1990, Pat. No. 5,192,387. This application Nov. 13, 1992, Ser. No. 976,394

Int. Cl.[5] B29C *43/34, 43/56, 43/58*

U.S. Cl. 425—82.1 **20 Claims**

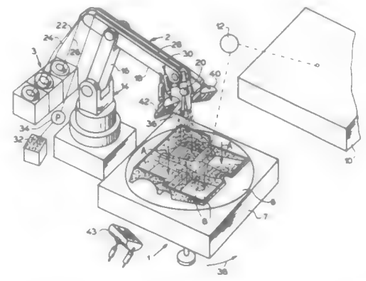
1. Apparatus for making a rigid three-dimensional preform, comprising:

a separable mold including separable first and second mold parts, each of said mold parts including a profiled inner surface complementary to the like inner surface the other mold part, said complementary inner surfaces together replicating the desired three-dimensional shape of the preform including any inside and outside corners of the preform, said inner surface of said first mold part being perforate to support a flow of air therethrough, and said mold parts comprising material at least at said inner surfaces which is transmissive with respect to a predetermined electromagnetic radiation;

a plenum providing a flow of air and mounting said first mold part;

a reinforcement material supply for providing fibers as reinforcement material and discharge means for discharging the fibers onto said first mold part to be held thereat by the air flow through said first mold part;

a binder source for supplying binder which is curable in response to said predetermined electromagnetic radiation;



spray means connected to said binder source for spraying and at least partially coating the fibers with the binder;

mat forming means mounting said discharge means and said spray means and movable to cause complete coverage of said inner surface of said first mold part with binder-coated fibers to form a mat of predetermined thickness;

mold operating means connected to at least said second mold part for moving said second mold part to close said separable mold and press said mat of binder-coated fibers to form the desired three-dimensional shape of the preform including deforming any fibers which bridge inner and outer corners into conforming shape;

an energy source of said predetermined electromagnetic energy coupled to said mold and operated to apply said predetermined electromagnetic energy to said mat causing the binder to cure, harden and bind the fibers of said mat into a rigid three-dimensional preform.

5,338,170

DEVICE FOR CHARGING FILLINGS

Shigeru Hashimoto; Kiyoshi Hasegawa, and Yasunori Tashiro, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Filed Jul. 19, 1993, Ser. No. 93,278

Claims priority, application Japan, Jul. 22, 1992, 4-216536

Int. Cl.[5] D21C *3/00, 3/06, 9/04*

U.S. Cl. 425—92 **7 Claims**

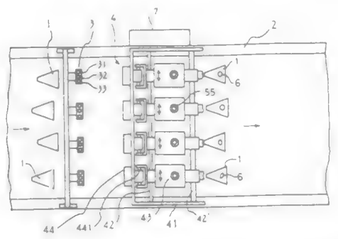
1. A device for charging a filling material with respect to pieces of dough which are transferred on a transfer conveyor, comprising:

a detecting device mounted on the transfer conveyor, the detecting device being adapted to detect transverse shifts of the pieces of dough on the transfer conveyor and generate signals representative of amounts of the shifts;

a filling-charging mechanism disposed downstream of the detecting device, the filling-charging mechanism having

VOL 1165 ISS 3 AG 16 1994 UMI

discharging nozzles mounted movably in the transverse direction;
and a control unit for receiving from the detecting device



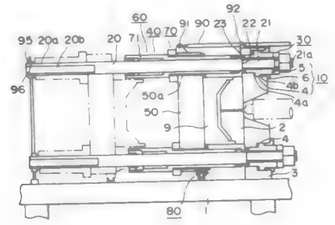
the signals representative of the amounts of the shifts and controlling the discharging nozzles to move transversely amounts equal to the respective amounts of the shifts to be aligned with the pieces of dough.

5,338,171

DIE-CLAMPING APPARATUS WITH ALIGNING DEVICE

Kohji Hayakawa, Komatsu, and Yosuke Sasaki, Zama, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 952,359
Int. Cl.[5] B29C *45/64, 45/80*
U.S. Cl. 425—138 **36 Claims**



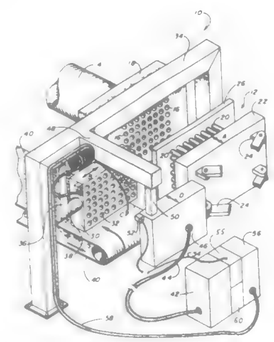
1. Molding apparatus comprising:
a stationary die plate for holding a stationary die,
a movable die plate for holding a movable die,
an opening/closing hydraulic cylinder for moving said movable die plate forwardly/rearwardly with respect to said stationary die plate to thereby open/close the dies,
a die-clamping hydraulic cylinder comprising a hollow piston slidably positioned in a hydraulic chamber in said stationary die plate, wherein said hollow piston is a double rod piston having a hollow hole extending coaxially therethrough,
a tie bar for calming said movable die and said stationary die by the die-clamping force generated by said die-clamping hydraulic cylinder, said tie bar extending through said hollow piston, and
an alignment mechanism associated with said tie bar so as to join said movable die and said stationary die via said tie bar in such a manner that alignment of the movable die held on said movable die plate and the stationary die held on said stationary die plate can be performed, said alignment mechanism comprising a flexible first alignment device connecting a portion of said tie bar to the end of said hollow piston remote from said movable die plate regardless of the position of said movable die plate, wherein said portion of said tie bar has a threaded portion, and wherein said flexible first alignment device comprises a threaded element which is threadedly engaged with said threaded portion of said tie bar, and at least one conical spring positioned about said tie bar between said threaded element and said end of said hollow piston.

5,338,172

PULSED GAS PARISON COOLING APPARATUS

James T. Williamson, Kettering, and Michael J. Jerbic, Beavercreek, both of Ohio, assignors to Rapid Cool Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 765,128, Sep. 25, 1991, Pat. No. 5,232,641, which is a division of Ser. No. 646,071, Jan. 25, 1991, Pat. No. 5,114,327. This application Jul. 21, 1993, Ser. No. 95,664
Int. Cl.[5] B29C *45/72*
U.S. Cl. 425—143 **12 Claims**



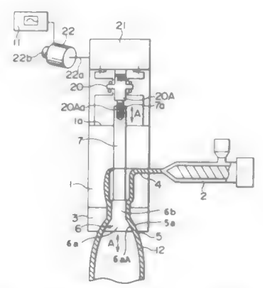
1. Apparatus for use with an injection molding machine having a core unit and a cavity unit for rapidly cooling a set of molded workpieces, the apparatus comprising:
receiver means for receiving said molded workpieces upon ejection from said molding machine;
transporter means coupled to the receiver means for transporting the receiver means relative to said molding machine between a first position within said injection molding machine and a second position adjacent to said injection molding machine;
a source of cooling fluid and directing means for directing the cooling fluid toward a surface of each workpiece in the receiver means;
moving means coupled to the directing means for moving the directing means relative to the receiver means between an engaged position where the directing means and receiver means are engaged with each other and a disengaged position where the directing means and receiver means are spaced from each other by a minimum selected distance;
vacuum means coupled to the receiver means for withdrawing cooling fluid from the receiver means subsequent to contact between the workpieces and the cooling fluid, and
program control means coupled to the source of cooling fluid for causing a selected discontinuous flow of cooling fluid to the directing means when the directing means is engaged with the receiver means at the engaged position.

5,338,173

PARISON CONTROLLER OF BLOW MOLDING APPARATUS

Takaaki Kato; Kiyomi Suzuki; Shigeharu Hagiwara, and Hiroaki Takanashi, all of Yokohama, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,533
Int. Cl.[5] B29C *47/22*
U.S. Cl. 425—150 **6 Claims**



1. A parison controller for a blow molding apparatus for varying the uniform thickness of a tubular parison extruded from an injection orifice of a die mounted on a cross head of said apparatus, said controller providing controlled reversible vertical displacement movement of a core within said ejection orifice, said controller comprising a rod attached to and projecting upwardly from said core; a rod guide receiving said upwardly projecting core rod for guided vertical movement; a thrust bearing above said rod guide and having a rotatable thrust bearing rod extending vertically therethrough, said thrust bearing rod having an upper end an a lower end; a vertically adjustable screw thread connection between said lower end of said thrust bearing rod and said upwardly projecting core rod to provide adjustable vertical movement of said core rod responsive to adjustment rotation of said thrust bearing rod; a reduction gear connected to said upper end of said thrust bearing rod for imparting said adjustment rotation thereto; and a servo motor having reversible rotation and connected in driving relation to said reduction gear for providing said adjustment rotation thereof; said motor having means for detecting its said reversible rotation, and a motor control unit responsive to said motor rotation detecting means for adjustably driving said motor in either direction to provide said controlled reversible vertical displacement movement of said core.

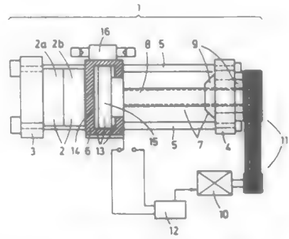
5,338,174

DISPLACEMENT AND/OR ACTUATING FORCE DRIVE DEVICE FOR AN INJECTION MOLDING MACHINE

Manfred Miese, Ettlingen, and Johann Holzschuh, Meinerzhagen, both of Fed. Rep. of Germany, assignors to Battenfeld GmbH, Meinerzhagen, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 867,165
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1991, 4111594
Int. Cl.[5] B29C *45/80*
U.S. Cl. 425—150 **5 Claims**

1. A drive device for an injection molding machine for actuating a closing unit of said injection molding machine, said drive device comprising:
a hydraulic stroke unit comprising a short stroke piston-cylinder unit;
a mechanical stroke spindle system arranged in tandem with said hydraulic stroke unit;
an electromotor for driving said stroke spindle system;
a yoke displaceable along a straight line by said spindle stroke system and acted upon by said hydraulic stroke unit which is located inside said yoke;
a position regulator for controlling operation of said electromotor in accordance with a position of said yoke along said straight line; and



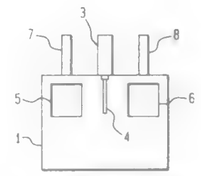
a servo valve of a pressure regulation circuit for controlling said hydraulic stroke unit in accordance with a closing pressure between halves of the injection mold.

5,338,175

EXTRUSION BLOW MOLDING APPARATUS FOR MAKING HOLLOW PLASTIC ARTICLES

Rainer Fischer, Poststrasse 39, 3530 Warburg 2, Fed. Rep. of Germany

Filed Mar. 16, 1993, Ser. No. 33,249
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208921
Int. Cl.[5] B29C *49/04*
U.S. Cl. 425—185 **1 Claim**



1. An extrusion blow molding apparatus for making hollow plastic articles; comprising:
a machine frame having one end face;
an extruder horizontally received in said machine frame and having a nozzle head for vertically extruding a parison at the end face of said machine frame; and
a pair of split blow molds arranged at the end face of said machine frame bilaterally underneath said nozzle head, each of said blow molds including a closing unit, a drive unit for horizontally moving one said blow mold underneath said nozzle head for seizing an extruded parison, and a blow mandrel secured to said machine frame above one said blow mold,
said extruder together with its drive and supply lines and at least one of said blow mandrels being secured to said machine frame with means for allowing a positional exchange therebetween so that said extruder occupies a previous position of one said blow mandrel while one said blow mandrel occupies a previous position of said extruder.

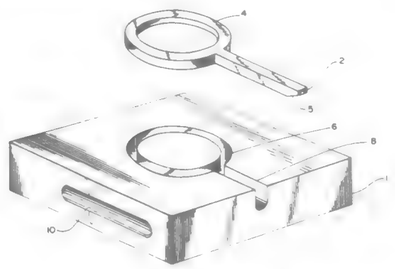
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,176

PIE CRUST LIFTER

Michael A. Semeraro, P.O. Box 1814 Butterfield Station, Utica, N.Y. 13503

Filed Jun. 8, 1993, Ser. No. 73,046
Int. Cl.[5] A21C *3/02, 9/00*
U.S. Cl. 425—374 4 Claims



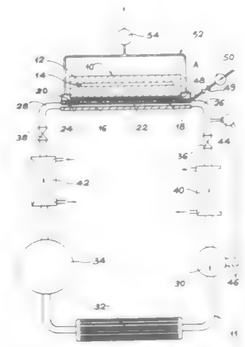
1. A two part pie crust rolling and lifting apparatus comprising: a first part rolling board, said board having a top surface and a bottom surface and side edges, said board having a circular shaped channel within said top surface and a straight channel in connection with said circular channel, said straight channel in connection with one of said edges and a second part lifting member comprising a circular shaped portion and a straight handle in connection with said circular portion wherein said lifting member is of size adapted to fit in said channels so that said lifting member is used to transport dough after it has been rolled on said rolling board.

5,338,177

HOT COMPACTING DEVICE FOR THE PRODUCTION OF PARTS REQUIRING SIMULTANEOUS PRESSURE AND TEMPERATURE RISES

Roger Le Touche, Ecquevilly, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Apr. 16, 1993, Ser. No. 49,025
Claims priority, application France, Apr. 22, 1992, 92 04946
Int. Cl.[5] B28B *21/00*
U.S. Cl. 425—384 11 Claims



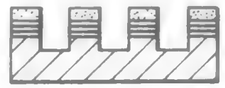
1. A hot compacting device for production of a part requiring simultaneous pressure and temperature rises, and comprising a heating mold for receiving a blank of the part to be produced, and compacting means for pressing the blank against the heating mold by means of a compacting bag, wherein the compacting means comprises an anti-convection zone for containing a pressurizing fluid in the vapor state, interposed between the compacting bag and a semi-permeable wall which is impermeable to the fluid in the liquid state but permeable to the fluid in the vapor state, and a supply zone for receiving said fluid in the liquid state located on a side of the semi-permeable wall located opposite to said anti-convection zone.

5,338,178

EMBOSSING METAL HOLD

Keizo Kato, Hachioji; Shinkichi Horigome, Tachikawa; Ryo Suzuki, Hachioji, and Masaru Ito, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 800,455
Claims priority, application Japan, Nov. 30, 1990, 2-337075
Int. Cl.[5] B29C *59/00*; B29D *17/00*
U.S. Cl. 425—385 9 Claims



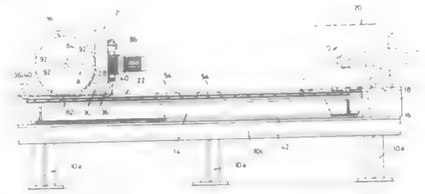
1. An embossing metal mold for use in manufacture of optical disk substrates, said metal mold comprising a Ni conductive layer and a Ni electric-plating layer in contact with said conductive layer, wherein the thickness of portions of at least said conductive layer is changed by etching to produce concaves and convexes corresponding to information on a surface of said embossing metal mold.

5,338,179

MOLD FILLING APPARATUS

Toncelli Luca, Viale Asiago 34, 36061 Bassano del Grappa Vicenza, Italy

Filed May 18, 1992, Ser. No. 884,951
Claims priority, application Italy, May 31, 1991, TV91A00061
Int. Cl.[5] B28B *13/02*
U.S. Cl. 425—447 11 Claims



1. Apparatus for filling of a mold with a mixture of stony material to produce a slab of stony material, comprising:
- a fixed frame (**10***a*, **10***b*, **10***c*) supporting a mold (**42**) to be filled with a mixture of stony material;
- a shiftable movable frame (**38**), shiftable on said fixed frame above said mold in a direction from one end of said mold to the other end of said mold and supporting mixture supplying means (**20**) for supplying the mixture to the mold (**42**);
- said mixture supplying means comprising a collecting room (**72**) for the mixture above the mold (**42**), with rejecting means (**92**, **96**) for ejecting the mixture from the room (**72**), said rejecting means rotating in said collecting room and oscillating with said collecting room relative to said fixed frame; and
- a series of metal rods (**54**) linked with and above said mold (**42**) and below said collecting room (**72**) substantially extending transversely to the direction of movement of said shiftable movable frame (**38**) to prevent material accumulation towards the ends of the mold and to render the filling uniform.

5,338,180

APPARATUS FOR THE PRODUCTION OF BRICKS AND THE LIKE

Alexander Maule, 675 Inverary Road, Burlington, Ontario, Canada L7L 2L8

Filed Sep. 4, 1991, Ser. No. 754,852
Claims priority, application Canada, Sep. 6, 1990, 2024735
Int. Cl.[5] B29C *47/12*
U.S. Cl. 425—466 13 Claims

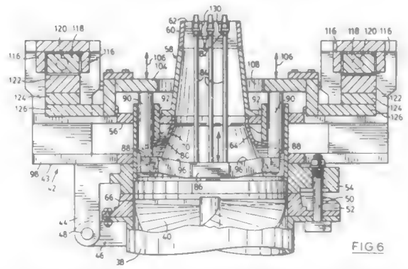


FIG.6

1. Apparatus for use in the production of bricks and the like and for use in combination with an extruder conveyor having an outlet for clay material from which green preforms of the bricks and the like are to be made, the apparatus comprising:
- a nozzle member having a nozzle inlet and a nozzle outlet, the nozzle member being connectable to an extruder conveyor outlet for the extrusion through the nozzle outlet of a continuous strip of clay which subsequently is divided into individual green preforms;
- a core opening die member mounted in the nozzle member for longitudinal movement therein, the member being adapted to produce when in a second position at or adjacent to the nozzle outlet a core hole of corresponding size and when in a first position upstream of the second position to produce a core hole of corresponding size, which may be zero; and
- motor means connected to the core opening die member for producing longitudinal movement thereof between the first and second positions at which its produces the core holes of the respective different sizes,
- said motor means comprising a cross-head member through which the nozzle member protrudes, bearing means mounting the cross-head member for longitudinal movement parallel to the direct of movement of the clay, connecting means connecting the cross-head member to the core opening die member, and a motor operable to effect said longitudinal movement of the cross-head member.

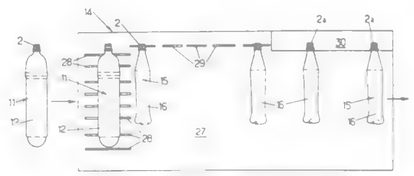
5,338,181

EQUIPMENT FOR THE MANUFACTURE OF POLYETHYLENE TEREPHTHALATE CONTAINERS

Gerard Denis, Turretot, and Paul La Barre, Sainte Adresse, both of France, assignors to Sidel, Le Havre, France

Division of Ser. No. 868,734, Apr. 15, 1992, Pat. No. 5,277,574, which is a division of Ser. No. 654,701, Feb. 13, 1991, Pat. No. 5,229,042. This application Sep. 16, 1993, Ser. No. 121,904
Claims priority, application France, Feb. 13, 1990, 90 01688
Int. Cl.[5] B29C *49/64*
U.S. Cl. 425—526 8 Claims

1. Equipment for manufacturing a PET container capable of withstanding, without appreciable deformation, relatively severe thermal conditions encountered during processing by filling with a hot liquid or pasteurization of the contents of the container, comprising:
- (a) a first mold with means to shape the body of an intermediate container from the body of an amorphous PET preform, wherein the first mold has a molding cavity whose dimensions are larger than the dimensions of the final container to be obtained by about 20% with respect to height and from 0 to about 30% transversely, and comprising means for cooling the walls of the cavity to a temperature of about 5° to about 40° C.;
- (b) a treatment station comprising a first heating device with means to first heat only the body of the intermediate container to a temperature of about 160° to about 240° C.



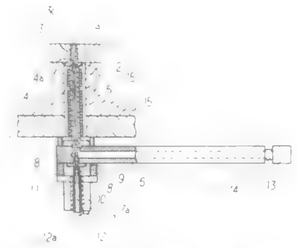
to rapidly shrink the body of the intermediate container and then to heat the neck while the contracted intermediate container body continues to be heated to effect crystallization of the neck section and increase the crystallinity of the contracted intermediate container body, and means to slowly cool the neck section while the heating of the contracted intermediate container body continues; and
- (c) a second mold with means to shape the body of the final container from the heated body of the intermediate container, wherein the second mold has a molding cavity with dimensions that match the body of the final container and being fitted with means enabling the walls of the cavity to be kept at a predetermined temperature.

5,338,182

PRESSURE MOLDING APPARATUS FOR MOLTEN RESIN

Toshihiro Hosokawa; Kiyoshi Nakahara; Ryuichi Ishitsubo, and Toshiyuki Okuda, all of Osaka, Japan, assignors to Hosokawa Seisakusho Co., Ltd., Osaka, Japan

Continuation of Ser. No. 536,869, Jun. 12, 1990, abandoned. This application Mar. 24, 1992, Ser. No. 858,421
Claims priority, application Japan, Jun. 13, 1989, 1-69155[U]; Jun. 13, 1989, 1-69157[U]
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—562 3 Claims



1. A pressure molding apparatus for introducing molten resin into a molding unit that has an upper mold and a lower mold for pressing and molding the molten resin comprising:
- a manifold pipe;
- a gate pipe having a tapered end hole connected to said

VOL 1165 ISS 3 AG 16 1994 UMI

manifold pipe at an end opposite said tapered end hole and located under the molding unit;

a gate spool coupled to a through hole in the molding unit, said gate spool having a gate spool aperture and a tapered hole having a tapered diameter connected to the gate aperture, the tapered hole being formed narrow at a gate aperture end and wide at a mold cavity end so as to prevent the gate aperture from being blocked by resin, and

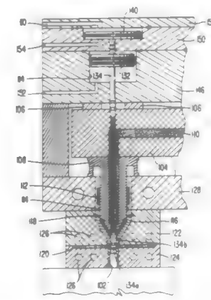
a gate pin inserted in said gate pipe to close the gate aperture by contact of the gate pin with the gate aperture.

5,338,183

MOLDING DEVICE HAVING A RING-GATING AND HOLE FORMING VALVE GATE PIN

Edward A. Gordon, Dothan, Ala., assignor to Sony Electronics Inc., N.J.

Filed Feb. 25, 1993, Ser. No. 22,563
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—564 **14 Claims**



1. A molding device comprising,

means defining a cavity in which a part can be molded;

a reciprocal pin;

a land formed at a location proximate an end of said pin, said land being so shaped and sized so that when said pin assumes a first predetermined position, said land cooperates with said cavity in a manner wherein said land acts as a molding pin and forms an aperture in a part which is formed by injecting a flow of molten material into said cavity;

channel means formed on said pin, said channel means allowing a flow of said molten material to enter said cavity when said pin assumes a second predetermined position; and

servo means operatively connected with said pin for selectively moving said pin between said first and second predetermined positions said servo means comprising:

a first piston which is connected to said pin, said first piston being disposed in a first bore;

a second piston which is disposed in a second bore, said second bore communicating with said first bore, said second piston having a piston rod which projects into said first bore so as to be engageable with the top of said first piston; and

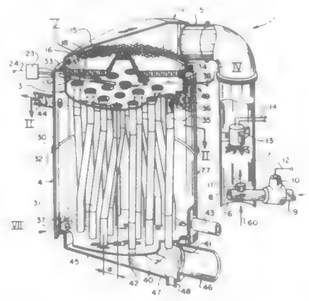
port means for enabling fluid pressure to be selectively supplied into said first and second bores.

5,338,184

GAS BURNER SYSTEM, GAS BURNER AND A METHOD FOR COMBUSTION CONTROL

Peter B. Dalhuisen, Ugchelen, Netherlands, assignor to P. B. Dalhuisen Gasresearch Apeldoorn B.V., Ugchelen, Netherlands

PCT No. PCT/NL91/00232, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO92/08930, PCT Pub. Date May 29, 1992
PCT Filed Nov. 19, 1991, Ser. No. 64,021
Claims priority, application Netherlands, Nov. 19, 1990, 9002522
Int. Cl.[5] F23H *5/00*
U.S. Cl. 431—12 **12 Claims**



1. A gas burner system with at least one gas burner comprising:

i)

i) a mixing chamber for supplied fuel gas and air;

ii) a closed combustion chamber located under the mixing chamber and separated therefrom by a ceramic burner plate;

iii) a jacket surrounding the combustion chamber and heatable by radiation with an inlet and an outlet for liquid for heating, which jacket is provided with standing fire tubes connecting onto the combustion chamber;

iv) an outlet for combustion gases; and

v) combustion control means situated in the combustion chamber in the vicinity of the burner plate which is connected to a control system.

5,338,185

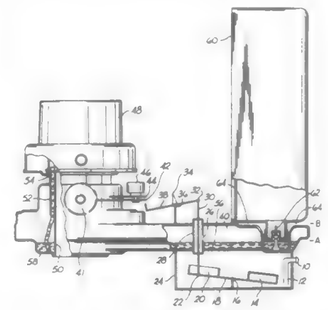
SAFETY DEVICE FOR PREVENTING UNCONTROLLED FLAREUP IN WICK-FED LIQUID FUEL BURNERS

Richard W. Henderson, Quinby, S.C., and George R. Lightsey, Starkville, Miss., assignors to Southeastern Research Laboratories, Inc., Quinby, S.C.

Filed Oct. 4, 1993, Ser. No. 130,920
Int. Cl.[5] F23H *5/00*
U.S. Cl. 431—33 **20 Claims**

1. An apparatus for preventing flare-up in a liquid fuel burner of the type comprising a liquid fuel removable tank, a fuel chamber, and a combustion chamber having a wick, where said fuel chamber carries liquid fuel from said removable tank to said wick of said combustion chamber, comprising:

excess fuel containment means for receiving or holding fuel from said fuel chamber if the amount of fuel in said fuel chamber exceeds a predetermined level; and



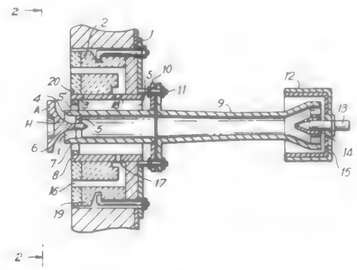
automatic flame extinguishing means for extinguishing the flame on said wick in response to said fuel in said fuel chamber exceeding said predetermined level.

5,338,186

RADIATION BURNER

Nikolai Sulzhik, Ul.Artema 70, kv.29; Pavel N. Timoshchenko, Pr.50 Let Oktiabria 9, kv339, and Vitaly V. Trotsenko, Ul.-Bratislavskaya 36, kv124, all of Kiev,

Filed Dec. 4, 1992, Ser. No. 985,854
Int. Cl.[5] F23L *9/00*
U.S. Cl. 431—115 **8 Claims**



1. A radiation burner, comprising

a burner stone having an axis and a front surface over which a flame is distributed and which is heated by the flame so as to radiate heat, said burner stone being ring-shaped;

an outlet pipe arranged radially inwardly of said burner stone and forming a first annular space between said burner stone and said outlet pipe and a second cylindrical space inside said outlet pipe, each of said spaces having an axially rear inlet and an axially front outlet;

means for supplying a fuel-gas mixture into said rear inlet of said cylindrical space so that said mixture exits said front outlet of said cylindrical space and is ignited to produce said flame and at the same time secondary air is sucked through said rear inlet of said annular space so as to pass through the latter and exit through said front outlet of said annular space toward said flame; and

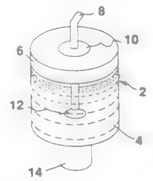
passage means extending from said front surface axially back into said burner stone and through said burner stone and opening into said annular space at a location between said real inlet and said front outlet of said annular space so that combustion products are sucked from an area of said front surface by said secondary air into said annular space and exit said annular space through said front outlet of said annular space together with said secondary air.

5,338,187

CANDLE AND METHOD OF MAKING SAME

Shimon Elharar, 4 Yehudit Street, Entrance B, 94344 Jerusalem, Israel

Filed Sep. 24, 1993, Ser. No. 126,159
Claims priority, application Israel, Oct. 8, 1992, 103385; Jan. 8, 1993, 104344
Int. Cl.[5] F23D *3/16*
U.S. Cl. 431—288 **20 Claims**



1. A candle, comprising:

a container closed at its bottom and open at its top;

a first combustible material within the container, which material is liquid at room temperature;

a second combustible material, which is solid at room temperature, overlying the first combustible material and closing the open top of the container;

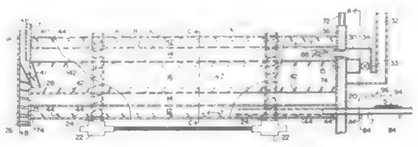
and a wick immersed in said first combustible material and projecting outwardly through said second combustible material.

5,338,188

RADIANT HEAT ROTARY VOLATILIZER

Gene H. Yocum, Rockville, Md., assignor to Cedarapids, Inc., Cedar Rapids, Iowa

Continuation of Ser. No. 670,753, Mar. 15, 1991, which is a division of Ser. No. 495,415, Mar. 19, 1990, abandoned. This application Oct. 15, 1992, Ser. No. 961,318
Int. Cl.[5] F27B *7/02*; B09B *3/00*
U.S. Cl. 432—114 **7 Claims**



1. In apparatus for heating materials to a prescribed temperature, the apparatus including a cylindrical drum and a heating zone within the cylindrical drum within which the materials are subjected to heating, means for traversing the materials through the heating zone of the drum, material traverse control means comprising:

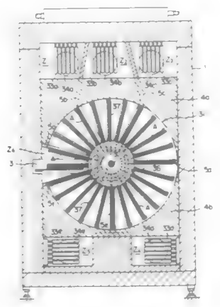
conveyor means for introducing such materials to be heated into the heating zone of said apparatus; and

means for determining the time that the material is subjected to heating

including means for shuttling the conveyor means with respect to the heating zone of said apparatus, thereby changing the region of the heating zone of said apparatus into which the material is introduced.

VOL 1165 ISS 3 AG 16 1994 UMI

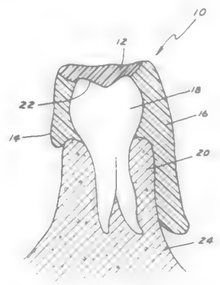
5,338,189
HEAT TREAT FURNACE
Yoshitaka Hata; Tetsuya Kuga; Hidekazu Kurihara, and Toshihiko Kogame, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Feb. 10, 1993, Ser. No. 16,666
Claims priority, application Japan, Feb. 10, 1992, 4-057498
Int. Cl.[5] F27B *7/00*
U.S. Cl. 432—124 12 Claims



1. A heat treat furnace for heat treating plate type workpieces, said heat treat furnace comprising:
a furnace body;
a rotator rotatably mounted in said furnace body;
a plurality of holding means provided at regular angles along the direction of rotation of said rotator for holding said workpieces;
drive means for intermittently rotating and stopping said rotator at a pitch interval corresponding to an angle between each adjacent pair of said holding means;
heating means provided in said furnace body for heating said workpieces held by said holding means;
an inlet portion and an outlet portion provided in said furnace body facing at least one stopping position of each of said holdings means;
introduction means for inserting said workpieces into said holding means through said inlet portion; and
discharge means for discharging said workpieces being held by said holding means from said furnace body through said outlet portion.

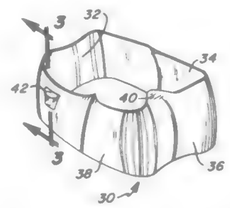
5,338,190
DENTAL APPLIANCE
John S. Tregillis, Coon Rapids, Minn., assignor to Sentage Corporation, Minneapolis, Minn.
Filed Apr. 22, 1993, Ser. No. 50,808
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—6 3 Claims

1. A dental appliance comprising:
a. a heat-cured methyl methacrylate for covering an occlusal surface of the teeth; and,



b. a heat-cured ethyl acrylate chemically bonded to said methyl methacrylate for covering at least one side surface of the teeth.

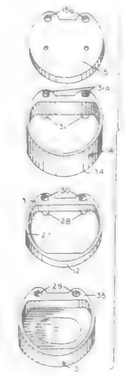
5,338,191
ORTHODONTIC BAND WITH ANTITIP REST AND DRIVING NOTCH
Warren Hamula, 1539 S. Eighth St., Colorado Springs, Colo. 80906
Filed Sep. 23, 1993, Ser. No. 125,155
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—23 16 Claims



1. An improvement in an annular orthodontic band for encircling the crown of a molar or bicuspid tooth, having buccal, distal, lingual and mesial sides and occlusal and gingival edges, the improvement comprising:
an antitip rest extending inwardly from a location along said occlusal edge a distance which is sufficient for said rest to be engageable with the occlusal surface of the tooth to prevent said mesial side of said band from sliding past the mesial ridge of the tooth.

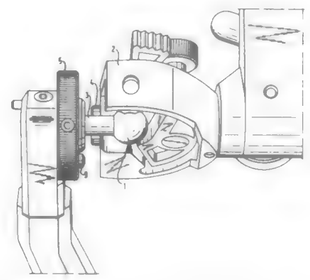
5,338,192
DENTAL FLASK EXPANDER AND METHOD OF USE
Joseph C. Weber, 6039 Ashway Ct., Indianapolis, Ind. 46224
Filed Apr. 14, 1993, Ser. No. 48,418
Int. Cl.[5] A61C *19/00*
U.S. Cl. 433—34 8 Claims

1. A flask expander for a three-part flask having a base, a body and a lid which together define a contoured molding chamber in which a wax model is placed for investment molding of a prosthesis by the lost wax process, said expander comprising:
an annular member having a central opening conforming to a generally transverse section of the contoured molding chamber, said annular member being adapted to be disposed between two of the parts of the dental flask for increasing the height of the molding chamber to accommodate an overly tall wax model, said annular member having a inner surface which provides a smooth transition between the two parts between which the expander is disposed so that no ridges or irregularities are formed in the stone model, said expander having a vertical height less than the height of either the base or the body of the flask, and greater than the vertical height of the lid;



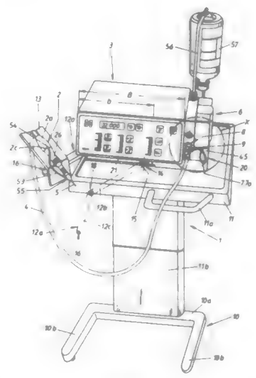
pin members protruding from the annular member adapted to fit in complementary pin receiving openings of the first adjacent part of the three-part flask; and pin receiving openings of the opposite side of the annular member adapted to receive pin members of a second adjacent part of the three-part flask, whereby a four-part flask having a molding chamber of increased height equal to the height of the expander is defined.

5,338,193
LOCKING DEVICE FOR AN ARTICULATOR
Heinz Mack, Taxisstr. 41, D-8000 München 19, Fed. Rep. of Germany
Filed Mar. 15, 1993, Ser. No. 31,483
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1992, 4211301
Int. Cl.[5] A61C *11/00*
U.S. Cl. 433—57 4 Claims



1. A locking device for use in combination with an articulator, said articulator comprising a horizontally aligned ball neck, a ball on an end thereof and a ball housing being rested on the ball, said locking device providing a secure hinged connection between the ball and the ball housing, said locking device comprising:
an axially movable and lockable ring arranged on the ball neck;
a circular groove arranged on the ring on a side of the ring facing the ball; and
a semi-circular ledge arranged on a side of the ball housing facing the ring, said ledge resiliently fitting into said circular groove when said locking device is in a locked condition.

5,338,194
MEDICAL TREATMENT DEVICE AND METHOD FOR CLEANING A FLEXIBLE TUBE LINE
Ernst Strohmaier, Bad Schussenried, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach/Riss, Fed. Rep. of Germany
Filed Nov. 25, 1992, Ser. No. 981,508
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1992, 4138672
Int. Cl.[5] A61C *1/10*
U.S. Cl. 433—82 12 Claims



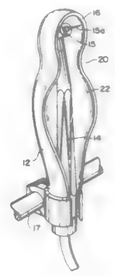
1. In a method for the cleaning of a supply line conveying a treatment fluid to a treatment instrument including a handpiece connected to a control unit through said supply line; and a media source for supplying said fluid and for reusing said fluid from said treatment fluid supply line; the improvement comprising:
a) conveying a liquid rinsing agent through said supply line upon selective completion of a treatment at predetermined time intervals; and
b) conveying a gaseous medium through said supply line subsequent to discharge of said liquid rinsing agent therefrom so as to scavenge residual rinsing agent from said supply line.

5,338,195
DENTAL HANDPIECE SHROUD TO PROTECT AGAINST PERCUTANEOUS INJURY
Michael L. Flannagan, 1388 W. 31st St., Jasper, Ind. 47546
Continuation of Ser. No. 826,447, Jan. 27, 1992, abandoned. This application Feb. 24, 1993, Ser. No. 21,761
Int. Cl.[5] A61C *1/16*; A61G *15/00*
U.S. Cl. 433—116 9 Claims

1. A protective shroud for a removable dental handpiece containing a bur and to protect against contact with said bur, comprising an elongated body having an open face extending substantially the length of said elongated body, a first end portion, a middle portion and a second end portion, wherein said first end portion is of sufficient depth from a leading open edge to the rear of said first end portion and further comprises

VOL 1165 ISS 3 AG 16 1994 UMI

means for receiving, fully encasing and retaining the portion of the handpiece containing said bur so that said bur does not



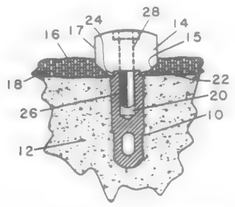
protrude beyond said leading edge of said first end portion of said protective shroud.

5,338,196

DENTAL LABORATORY COMPONENTS AND PROCEDURES FOR ANATOMICAL RESTORATION ON ARTIFICIAL ROOT FIXTURES

Keith D. Beaty, West Palm Beach, and Curtis E. Jansen, North Palm Beach, both of Fla., assignors to Implant Innovations, Inc., West Palm Beach, Fla.

Filed Apr. 8, 1993, Ser. No. 43,928
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—172 **19 Claims**



1. A method of preparing an anatomically correct dental restoration for installation on a natural or artificial root comprising the steps of preparing in the gingiva overlying said root an opening to the gingival aspect of said root said opening having at the gingival surface substantially the full cross-sectional size and non-round shape of a natural tooth emerging through said gingiva from said root, making a model of said gingiva replicating substantially identically said opening and said gingival aspect of sad root, forming on said model an artificial tooth substantially replicating in said opening the emergence shape and contours of said natural tooth, and installing said artificial tooth on said root.

5,338,197

DENTAL IMPLANT HAVING CUTTING MEANS

Norman H. K. Kwan, 209 Indian Valley Trail, Mississauga, Ontario, Canada L5G 2K5

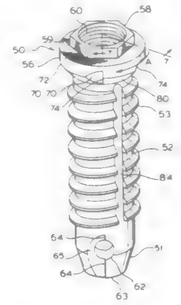
Filed Apr. 21, 1993, Ser. No. 51,054
Claims priority, application Canada, Apr. 13, 1993, 2093900
Int. Cl.[5] A61F *5/04*
U.S. Cl. 433—174 **13 Claims**

1. An oral implant for supporting an artificial tooth structure or dental prosthesis, comprising:

a substantially cylindrical body portion of diameter Dx having raised threads over a lower portion thereof and adapted to be rotatably inserted into a bone of a patient in the vicinity of the occlusal plane;

a top portion of maximum diameter Dz abutting said body portion where diameter Dz is greater than diameter Dx, adapted to support said artificial tooth structure or dental prosthesis;

said top portion having circumferentially-disposed cutting means located about a periphery thereof; and



said cutting means adapted, when the said implant is rotatably inserted in the bone:

(i) to allow countersinking of the top portion within the patient's bone; and

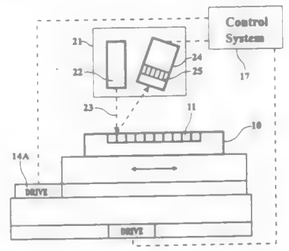
(ii) to shave off fragments of bone and retain such bone fragments in close proximity with said implant to assist bone growth around said implant and prevent removal of the implant from the bone.

5,338,198

DENTAL MODELING SIMULATOR

Chuang-Jy Wu, and Christopher L. B. Lavelle, both of Winnipeg, Canada, assignors to DACIM Laboratory Inc., Winnipeg, Canada

Filed Nov. 22, 1993, Ser. No. 155,134
Int. Cl.[5] A61C *11/00*
U.S. Cl. 433—213 **15 Claims**



1. A method of generating for manipulation a three-dimensional model, suitable for display and dimensional calculaton of teeth and dental arch of a patient comprising taking a molded impression of the teeth, placing the impression on a support table defining an X-Y plane, directing a beam of laser light onto the impression at a point of impact, relatively translating the beam of light and the impression in the X-Y plane so as to scan the impression with the beam to provide a plurality of points of impact each having a predetermined location in the X-Y plane, determining the distances of the points of impact of the beam with the impression in the Z direction by detecting a pattern of light reflected from the point, and generating the digital image by correlating the locations and the distances.

5,338,199

AERIAL TOW TARGET

Hartmut Euer; Wilfried Baues, both of Penzberg, and Joachim Wernicke, Berlin, all of Fed. Rep. of Germany, assignors to Ingenieurburo fur Elektro-Mechanische Technologien Dipl-Ing Hartmut Euer, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 976,962
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1991, 4138726
Int. Cl.[5] G09B *19/00;* **F41J** *9/08*
U.S. Cl. 434—14 **5 Claims**



1. In a high speed, reduced drag, aerial tow bag target of textile material having a longitudinal axis, a front end defining an air entrance orifice, and a rear and defining an air exit, the improvement comprising:

said rear end having a reducingly tapering contour along said longitudinal axis from front to rear and a rear end wall;

said air exit being formed by a plurality of axially directed holes formed in the rear third of said tapering contour within the wall of the tow bag and symmetrically arranged about said longitudinal axis; and

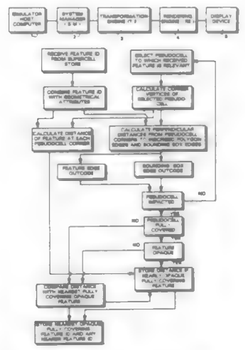
the area of said air exit being less than the area of said air entrance orifice.

5,338,200

METHOD AND APPARATUS FOR GENERATING AN ELLIPTICAL IMAGE

Graham J. Olive, Burgess Hill, United Kingdom, assignor to Rediffusion Simulation Limited, Sussex, United Kingdom

PCT No. PCT/GB91/00589, § 371 Date Sep. 15, 1992, § 102(e) Date Sep. 15, 1992, PCT Pub. No. WO91/16700, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 15, 1991, Ser. No. 934,483
Claims priority, application United Kingdom, Apr. 24, 1990, 9009127.3
Int. Cl.[5] G09B *9/08, 19/16*
U.S. Cl. 434—43 **8 Claims**



1. A method for generating data representative of an image of a world space model to be displayed on a screen, the model being defined by a plurality of features including at least one feature having an elliptical boundary, and the image being intended to present a view of the model from a predetermined eyepoint in world space wherein said method comprises the steps of:

a. storing attribute data describing said at least one feature, the attribute data including two axes and an origin describing the major and minor axes of the elliptical boundary of said feature in world space coordinates, and a magnitude a and b representing the length of said major and minor axes;

b. transforming said attribute data from world space coordinates to eyepoint space coordinates;

c. determining the positions of a plurality of sampling points in screen space;

d. determining the position for each said sampling point of a point of intersection between a line drawn from the eyepoint through the sampling point and a plane defined by said two axes;

e. calculating the coordinates of each said point of intersection of the plane in a coordinate system defined by said two axes and said origin and calculating said coordinates in eyepoint space;

f. identifying each sampling point for which the respective coordinates lie within the elliptical boundary by calculating a vector offset for each said point of intersection of the plane from the origin, calculating components u, v of the calculated vector offset along the major and minor axes for each said point of intersection of the plane by using the vector dot products of the offset vector with each of the major and minor axes such that each point of intersection is considered to lie within the elliptical boundary if $(u/a)^2+(v/b)^2<=1$; and

g. generating for each identified sampling point a sampling point output including attributes of said at least one feature.

8. An image generator for generating data representative of an image of a world space model to be displayed on a screen, the model being defined by a plurality of features including at least one feature having an elliptical boundary, and the image being intended to present a view of the model from a predetermined eyepoint in world space, wherein the image generator comprises:

a. means for storing attribute data describing said at least one feature, the attribute data including two axes and an origin which describe the major and minor axes of the elliptical boundary of said feature in world space coordinates, and a magnitude a and b representing the length of said major and minor axes;

b. means for retrieving said attribute data from said storage means and transforming said attribute data from world space coordinates to eyepoint space coordinates;

c. means for determining the positions of a plurality of sampling points in screen space;

d. means for determining the position for each said sampling point of a point of intersection between a line drawn from the eyepoint through the sampling point and a plane defined by said two axes;

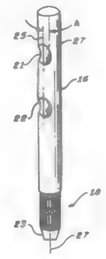
e. means for calculating the coordinates of each said point of intersection of said plane in a coordinate system defined by said two axes and said origin and calculating said coordinates in eyepoint space;

f. means for identifying each sampling point for which the respective coordinates lie within the elliptical boundary by calculating a vector offset for each said point of intersection of the plane from the origin, calculating components u, v of the calculated vector offset along the major and minor axes for each said point of intersection of the plane by using the vector dot products of the offset vector with each of the major and minor axes such that each point of intersection is considered to lie within the elliptical boundary if $(u/a)^2+(v/b)^2<=1$; and

g. means for generating for each identified sampling point a sampling point output including attributes of said at least one feature.

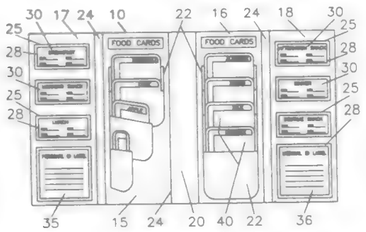
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,201
METHOD FOR TEACHING READING USING HAND-HELD READING GUIDE
Shirley S. Levine, 243 Weaver St., Apt. 9B, Greenwich, Conn. 06831-4345
Filed Mar. 29, 1993, Ser. No. 38,252
Int. Cl.[5] G09B *17/00*
U.S. Cl. 434—178 **2 Claims**



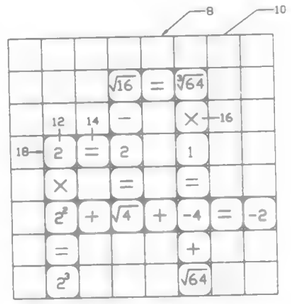
1. A method for teaching reading utilizing a reading guide having a handle with at least one groove between first and second ends and a letter director extending from said second end to a director end comprising the steps of:
having a student place a page of reading material directly in front of said student;
instructing said student to position both arms about said reading material, said student positioning a first hand at top of said page and a second hand holding said reading guide;
informing said student to place thumb of said second hand in one of said at least one groove with the fingernail of said thumb facing said student; and
telling said student to place said director end above the first letter of each word of said reading material.

5,338,202
DAILY DIET MANAGEMENT PLANNER AND METHOD
Michelle R. Saari, RR4 Box 152 A, Minot, N. Dak. 58701
Filed May 13, 1993, Ser. No. 60,521
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—127 **5 Claims**



1. A daily diet management planner comprising:
a foldable carrying case having at least one main cover and at least one wine cover foldable relative to said main cover, each of said covers having an inside wall with a plurality of pockets in spaced relationship thereupon, each wing cover further having meal card holders attached to and corresponding to said pockets thereupon;
a plurality of meal cards dimensioned to fit into said meal card holders and removably inserted in said holders; and.
a plurality of food cards having two sides and dimensioned to fit into said pockets of said covers, each said food card identifying one specific food, said food cards insertable and storable in said pockets of each said main cover and insertable in said pockets corresponding to meal types, each said food cards being color coded on at least one side hereof to identify a specific food exchange, each of said food cards further providing information as to serving size and preparation of said food and providing a picture of either an approximate size or visual size of said food for a user to conveniently and effectively measure an amount of said food allowed for a particular meal.

5,338,203
EDUCATIONAL AID FOR MATHEMATICS
William N. Rheams, 410 Hesper Ave., Metairie, La. 70005
Filed Apr. 1, 1993, Ser. No. 41,837
Int. Cl.[5] G09B *1/00, 19/00, 19/02*
U.S. Cl. 434—208 **1 Claim**



1. A teaching aid for mathematics comprising:
a. a baseboard with a plurality of intersecting rows of spaces each space being common to one vertical and one horizontal row,
b. a plurality of tiles being the same size as the spaces on the baseboard,
c. The tiles of one set bearing numerical designation including the following:
whole numbers,
negative numbers,
fractions,
decimals,
squares of numbers,
cubes of numbers,
higher powers of certain numbers,
square roots of numbers,
cube roots of numbers,
the variables x,y,z,
the imaginary number i,
d. the tiles of the second set bearing function designation including,
+ plus,
− minus,
× multiplication,
÷ division,
/ the fraction bar,
e. the tiles of the third set bear the equals sign =,
f. a wet of instructions for playing a game whereby, said tile are placed n said baseboard to form linear equations that intersect at right angles sharing one of said tiles in common.

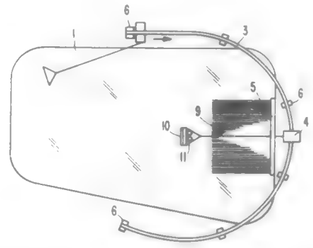
5,338,204
METHOD AND APPARATUS FOR BICYCLE RIDING INSTRUCTION
John Herndon, 710 Cricketwood La., Charlotte, N.C. 28215
Filed Jun. 22, 1993, Ser. No. 80,756
Int. Cl.[5] A63B *69/00;* **B62H** *7/00*
U.S. Cl. 434—247 **15 Claims**



1. An apparatus for bicycle riding instruction, said apparatus being mountable to a conventional bicycle frame and operable by a non-rider to guide and control the actions of the bicycle, said bicycle having a seat for rider support and being manually driven by a conventional rotary, pedal driven gear and chain drive centrally mounted to said frame, the pedals being rotatable through a vertically oriented circular plane having a forwardmost extent of pedal travel and a rewardmost extent of pedal travel with respect to the frame, said apparatus comprising:
an auxiliary wheel support assembly mounted to the bicycle frame adjacent the rear wheel of the bicycle, rearwardly of the rearwardmost extent of pedal travel, and having at least two wheels mounted thereto, said support assembly having an arrangement for selectively controlled movement between a first, lowered position at which said auxiliary wheels are closely adjacent the ground for helping to maintain the bicycle in an upright disposition and a second, raised position at which said wheels are spaced from the ground sufficiently to have no effect in keeping the bicycle in an upright disposition; and
a control arrangement connected to said support assembly and said bicycle frame, said control arrangement projecting from said bicycle frame beyond the generally horizontal plane of the bicycle seat for operational access by a non-rider when said bicycle is in motion and being operable to selectively move said auxiliary wheel support assembly between said first and second positions and to control the actions of the bicycle.

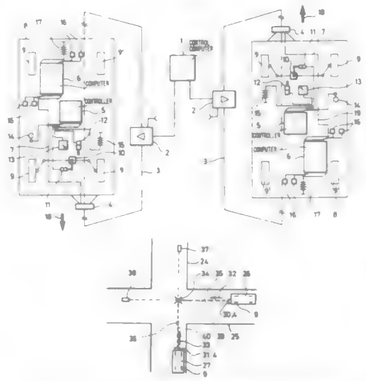
5,338,205
POOL FOR PRACTICING AND ENJOYING WATER-SKIING
Hideo Kusano, 3-11-19, Kamo, Kawanishi-shi, Hyogo-ken, Japan 666
Filed Jun. 15, 1993, Ser. No. 76,853
Int. Cl.[5] A63B *69/18;* **B63B** *1/00;* **A63D** *15/12*
U.S. Cl. 434—253 **4 Claims**

1. A pool for practicing and enjoying water-skiing, comprising:
a pool body to accommodate a body of water in which water-skiing is to be simulated;
a pumping plant which pumps water, and a port open to the interior of the pool body at an upper portion of the pool body, said pumping plant being connected to the port so as to supply water as a stream into the pool through said port, the stream flowing horizontally adjacent the surface of a body of water when the pool body is filled with water to a level above the location at which the port opens to the interior of the pool body;
a track supported above the pool body and extending along the periphery of the pool body including at a location above and adjacent to said port;



an automatic traveling member engaging said track and guided thereby, said automatic traveling member including a main body and a controllable motor so coupled to said main body as to drive the main body along said track; and
a tow rope having one end attached to said automatic traveling member and a free end including a handle.

5,338,206
APPARATUS AND METHOD FOR TESTING EFFECTS OF A MOTOR VEHICLE ACCIDENT
Peter Hupfer, Munich, Fed. Rep. of Germany, assignor to Technischer Uberwachungsverein Bayern e.V., Munich, Fed. Rep. of Germany
Continuation of Ser. No. 661,155, Feb. 27, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 26,623
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1990, 4006433
Int. Cl.[5] G09B *19/14*
U.S. Cl. 434—305 **26 Claims**



1. A method for simulating an accident involving a motor vehicle, comprising:
providing a location corresponding to an approach to and scene of the simulated accident;
generating signals in a control computer corresponding to estimated motion parameters of a motor vehicle approaching the scene of the simulated accident;
mounting to a motor vehicle selected for the simulation, a

VOL 1165 ISS 3 AG 16 1994 UMI

controller responsive to the received signals from said control computer, for operating a steering mechanism, a braking mechanism, and a speed control mechanism of the selected vehicle;

sensing actual motion parameters of the selected vehicle by a plurality of sensors wherein the actual motion parameters including speed, braking condition, and direction of the selected vehicle are sensed during simulation of the accident;

generating signals corresponding to the sensed actual motion parameters for determining the actual operating parameters of the selected vehicle while approaching the scene of the accident being simulated;

guiding the selected vehicle along a pre-selected path corresponding to the approach to the scene of the accident being simulated in response to signals received by the controller; and

operating the controller in response to the signals corresponding to the estimated motion parameters generated by the control computer and the generated signals corresponding to the sensed actual motion parameters of the selected vehicle for varying the operation of the steering mechanism, the braking mechanism and the speed control mechanism of the guided selected vehicle at predetermined locations along the pre-selected path.

16. An apparatus for simulating an accident involving a motor vehicle at a location corresponding to an approach to and scene of the accident being simulated, comprising:

a selected motor vehicle having a steering mechanism, a speed control mechanism, and a braking mechanism;

a control computer for generating signals corresponding to estimated motion parameters of the motor vehicle at the approach to the simulated accident;

a plurality of sensors mounted to said selected vehicle for sensing the actual motion parameters thereof including speed, direction, and braking of said selected vehicle during operation of said selected vehicle approaching the accident being simulated;

means for guiding the selected vehicle along a pre-selected path corresponding to the approach to and the scene of the accident being simulated; and

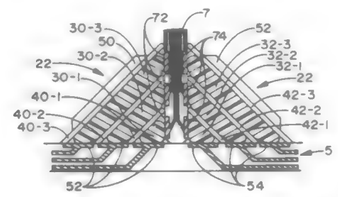
a vehicle mounted controller responsive to the guiding means and to the signals generated by the control computer and to the signals corresponding to actual sensed motion parameters from said plurality of sensors for operating the steering mechanism, the speed control mechanism and the braking mechanism of said selected vehicle during guidance of the selected vehicle along the pre-selected path.

5,338,207

MULTI-ROW RIGHT ANGLE CONNECTORS

Daniel C. Lineberry, Lexington, and Warren A. Bates, Winston-Salem, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 9, 1993, Ser. No. 75,088
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—62 **10 Claims**



1. An electrical connector for mating the card edge of a first circuit board to a planar surface of a second printed circuit board, said electrical connector comprising:

at least two compressible electrical contacts of increasing width, said compressible electrical contacts each further including an elongated elastomeric core wrapped by a flexible circuit having a plurality of conductive traces thereon to form a row of contacts;

a plurality of insulating plates each adjacent to a corresponding one of said compressible electrical contacts for shielding thereof; and

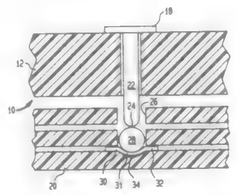
a plurality of end caps anchored to said planar surface of the second circuit board for mounting said compressible electrical contacts in stacked layers separated by said insulating plates, each compressible contact bridging said first and second circuit boards with one side held in compression against said second circuit board to bias the flexible circuit thereagainst, said stacked compressible electrical contacts cumulatively establishing multiple rows of electrical contact with said second printed circuit board, and another side of said compressible electrical contacts being held in array for slidable insertion of said first printed circuit board to thereby establish a corresponding number of rows of electrical contact therewith via said conductive traces on said flexible circuits.

5,338,208

HIGH DENSITY ELECTRONIC CONNECTOR AND METHOD OF ASSEMBLY

Arthur Bross, and Thomas J. Walsh, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1992, Ser. No. 830,874
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 **6 Claims**



1. A high density electronic connector assembly comprising:

a first thin flat insulating portion having a plurality of closely spaced contact members projecting beneath same;

a second thin flat insulating portion defining a like plurality of closely spaced socket holes in an upper face thereof, the socket holes having closely spaced parallel axes;

a plurality of thin printed circuit metal lands positioned at the bottom of each hole in the second thin flat insulating portion, each of the lands being a spring member with an initial position and being able to flex downward from the initial position when a downward force is applied to it and to return to the initial position when the force is removed, each land extending over a small area beneath a respective hole and having a periphery, the land being supported on its periphery and having a center part which is unsupported and adapted to flex and to apply an upward counter force greater than about 10 grams along the axis of a respective hole; and

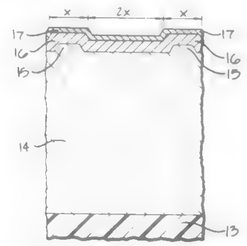
a plurality of metal balls in respective ones of the socket holes and bearing down against and deflecting the lands for establishing stable electrical contact between respective lands and the contact members of the first insulating portion when the first and second portions are held together under sufficient force.

5,338,209

ELECTRICAL INTERFACE WITH MICROWIPE ACTION

Charles P. Brooks, Winston-Salem; Donald J. Leahy; Mark M. Fowler, both of Kernersville, and Jackie K. Everidge, Jr., Winston-Salem, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 13, 1993, Ser. No. 61,989
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 **12 Claims**



1. In a circuit interface, wherein a flexible electrical connector comprises a compressible elastomeric core provided with a plurality of closely-pitched circuit traces carried thereon, wherein the circuit traces comprise a layer of copper foil having a first plating layer thereon and further having an outer gold plating layer on the said plating layer, and wherein the circuit traces engage at least one circuit element on an electrical member, the circuit element on the electrical member comprising a tin or tin alloy susceptible to oxidation, such that the oxidation on the tin or tin alloy on the circuit element interferes with good electrical conductivity with the gold-plated copper foil,

the improvement comprising in combination therewith the provision of a roughened profile having uniformly spaced protrusions on the copper foil prior to application of said first plating layer and gold plating layer, whereby said plating layers are sufficiently thin so as to retain the roughened profile, thereby providing a microwiping action which bites through the oxidation formed on the tin or tin alloy to assure good electrical conductivity for the circuit interface.

5,338,210

MEDIA CONNECTOR INTERFACE FOR USE WITH A PCMCIA-ARCHITECTURE COMMUNICATIONS CARD

D. Scott Beckham, Park City; Greg A. Putnam, West Jordan; Lorraine Bolt, Orem; Stephen C. Aldous, Salt Lake City; Guy M. Dake, Sandy, and James B. Henrie, Logan, all of Utah, assignors to Megahertz Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 974,253, Nov. 10, 1992, abandoned, which is a division of Ser. No. 866,670, Apr. 8, 1992, Pat. No. 5,183,404. This application Mar. 31, 1993, Ser. No. 40,656
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—131 **24 Claims**

1. A PCMCIA communications card for use in interfacing between a media connector and a downsized computer, the communications card comprising:

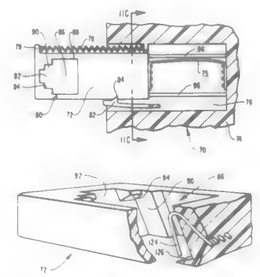
a) an upper planar surface;

b) a lower planar surface, the lower planar surface being substantially parallel to the upper planar surface;

c) a retractable access portion capable of being retracted into and extended out from between the upper planar surface and the lower planar surface of the communications card;

d) a channel formed in the retractable access portion, the channel having a bottom and sides being so sized and configured so as to be capable of accepting a portion of the media connector; and

e) contact wires fixed into the bottom of the channel, the contact wires being in electrical communication with the



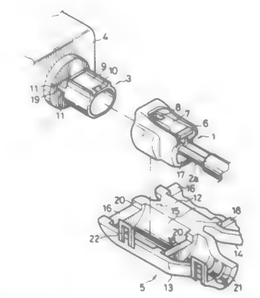
communications card and being capable of being placed in electrical communication with the media connector.

5,338,211

CONNECTOR COVER STRUCTURE

Shinji Kodama, Shizuoka, and Tsutomu Igarashi, Kosai, both of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 971,610
Claims priority, application Japan, Nov. 21, 1991, 3-092426[U]; Feb. 25, 1992, 4-008283[U]
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—135 **4 Claims**



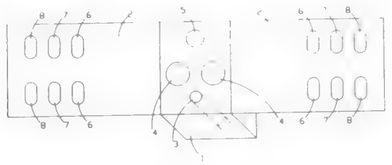
1. A connector cover structure for protecting a male electrical connector member and a female electrical connector member which are to be fit together

the cover structure comprising:

a cover made of a synthetic resin, having a substantially cylindrical shade, and being divided into two half portions through a thin hinge which extends in a longitudinal direction of said cover, said cover having an inner wall surface, a first abutting wall on the inner wall surface which engages a rear end portion of the male electrical connector member and a second abutting wall which makes engagement with an engagement means provided at a base of the female electrical connector member, the cover capable of closing around said male and female electrical connector members only when said rear end portion of the male electrical connector member and engagement means of the female electrical connector member establish a predetermined orientation with respect to the first abutting wall and the second abutting wall, respectively, indicative of a complete connection between the male and female electrical connector members.

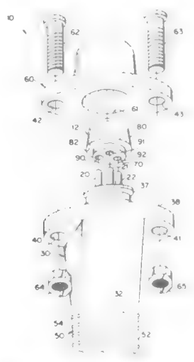
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,212
POWER CORD LOCK
Peter J. Kerrigan, 11709 Newbridge Ct., Reston, Va. 22091
Filed Aug. 20, 1993, Ser. No. 109,243
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—134 **2 Claims**



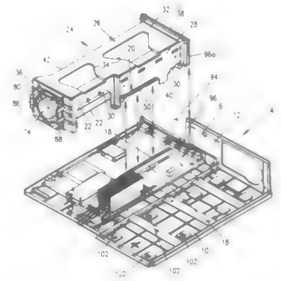
1. A power cord lock which precludes a plug of a power cord of electrical and electronic units from being plugged into an electrical outlet, said lock comprising a center block with holes into which the plug can be inserted; and flexible straps, which each have sets of pairs of holes and are attached to either side of the center block, and which cooperate with a padlock to secure the plug in the center block or to secure the power cord lock to the cord when not securing the plug, wherein the center block holes are positioned and sized to accommodate known standard two-prong and three-prong plug configurations, said center block holes having a height to preclude said prongs from protruding out of the opposite side of the center block, said prongs being insertable into either of two opposite sides of the center block.

5,338,213
SUBMERSIBLE PUMP POTHEAD TEST PLUG
Frederick J. Oko, Seymour, Conn., assignor to Hubbell Incorporated, Orange, Conn.
Filed Feb. 1, 1993, Ser. No. 11,800
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—148 **17 Claims**



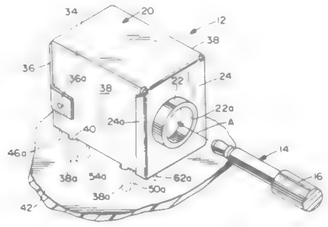
1. A plug for insulating electrical contacts of a male connector having a neck extending from an end face of the connector, comprising:
- a resilient connector engaging portion of electrical insulating material for snugly coupling and sealing said plug within the neck of the connector;
- a resilient head portion of electrical insulating material extending from said connector engaging portion; and
- laterally spaced bores extending axially through said connector engaging portion and partially through said head portion but terminating therein, said bores for snugly coupling and sealing electrical contacts therein to prevent flashover between the contacts and the connector.

5,338,214
EXPANSION CARD/RISER CARD MODULE FOR DESKTOP COMPUTERS
Karl M. Steffes, 7302 Kapok La., Austin, Tex. 78759; Joseph B. Crosby, 4030 Westlake Dr., Austin, Tex. 78746; Jerry D. Gandre, 7408 Curly Leaf Cove, Austin, Tex. 78750, and Dan E. Swindler, 2404 Messick Loop W., Round Rock, Tex. 78681
Filed Oct. 27, 1992, Ser. No. 967,903
Int. Cl.[5] H05K *1/14*
U.S. Cl. 439—160 **24 Claims**



3. An expansion card/riser card module removably connectable to a motherboard of a computer, the motherboard having an electrical connection socket on one side thereof, said expansion card/riser card module comprising:
- a module housing having a top wall, a front side wall depending from said top wall, first and second opposite end walls depending from said top wall and extending generally perpendicularly to said front side wall, an open rear side, and a bottom side;
- a riser card having a connection edge portion removably insertable into the motherboard socket to operably couple said riser card to the motherboard, and an electrical connection socket portion positioned on a side thereof, said riser card being removably supported on said module housing front side wall, for movement therewith, in a manner permitting said riser card connection edge portion to be inserted into the motherboard socket by moving said module housing, bottom side first, toward the socket side of the motherboard; and
- at least one generally rectangular expansion card disposed within said module housing for movement therewith and being insertable into and removable from the interior of said module housing through said open rear side thereof, each expansion card being generally transverse to said front side wall of said module housing and having opposite first and second side edge portions respectively and removably supported on said first and second opposite end walls of said module housing, and a third side edge portion disposed between said opposite first and second edge portions and being removably plugged into and supported by said riser card electrical connection socket portion,
- whereby said riser and expansion card portions of said module may be simultaneously connected to or disconnected from the motherboard by moving said module housing toward and away from the socket side of said motherboard, and each of said expansion cards is supported along three of its four side edges within said module housing.

5,338,215
JACK ASSEMBLY INCLUDING A CONTACT SWITCHING SYSTEM
Shiuan E. Lee; Yuen P. Wong, both of Singapore, Singapore, and David L. Brunker, Naperville, Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Mar. 19, 1993, Ser. No. 33,929
Int. Cl.[5] H01R *13/703*
U.S. Cl. 439—188 **14 Claims**



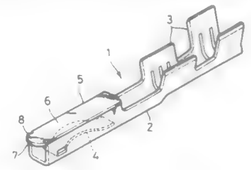
1. A jack assembly which includes a contact switching system for receiving a coaxial plug, comprising:
- an insulative housing having a terminal-receiving chamber and an aperture communicating with the chamber for insertion therethrough of the coaxial plug, the housing including a terminal pivot support means in the chamber;
- a fixed terminal mounted on the housing and including a tail portion for soldering to a circuit board, a fixed rounded contact portion located in the chamber and a connecting portion extending between said tail portion and said fixed rounded contact portion, a substantial length of said connecting portion being securely located within a slot in a sidewall of said housing; and
- a movable terminal mounted on the housing and including a cantilevered spring contact arm projecting from said terminal pivot support means for pivoting thereabout, the spring contact arm including a first contact portion for contacting the rounded contact portion of the fixed terminal and a second contact portion for contacting the coaxial plug when inserted into the chamber, the spring contact arm being resiliently preloaded to act as the sole means to bias the first contact portion against the rounded contact portion of the fixed terminal, and the spring arm being configured so that the first contact portion slides along and wipes over the rounded contact portion when the coaxial plug is inserted into the chamber and in contact with the second contact portion, wherein said cantilevered spring contact arm has a pair of relatively angled legs defining a dog-leg configuration, an end of one of the legs defining said second contact portion, an end of the other leg being pivotable about said terminal pivot support means, and said first contact portion being located between the end of the first section and a point where the sections converge.

5,338,216

Patent Not Issued For This Number

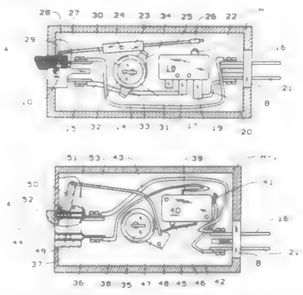
5,338,217
CONNECTOR TERMINAL
Hitoshi Saitoh; Takayoshi Endo; Sakai Yagi; Kimihiro Abe, and Seiji Koumatsu, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Jan. 22, 1993, Ser. No. 7,743
Claims priority, application Japan, Jan. 22, 1992, 4-001737[U]
Int. Cl.[5] H01R *11/28*
U.S. Cl. 439—246 **11 Claims**

1. A connector terminal comprising
- a wire connecting part; and
- an electric contact part integrally connected to said wire connecting part and comprising:
- a hollow rectangular body having a first pair of opposing walls and a second pair of opposing walls, said first pair of walls terminating at a forward end of said rectangular body and
- only a single guide protrusion extending forwardly from said forward end of said rectangular body and being integrally found with at least one of said walls;



wherein said guide protrusion has a substantially forward-facing guide surface having outer side edges, said guide surface continually decreasing in width from said outer side edges to an intermediate point of said guide surface.

5,338,218
ELECTRICAL APPLIANCE CURRENT SUPPLY CONTROL APPARATUS
Norman C. Haas, 2733 Puuhonua St., Honolulu, Hi. 96822
Filed Mar. 16, 1993, Ser. No. 31,842
Int. Cl.[5] H01R *13/44, 13/713*
U.S. Cl. 439—346 **4 Claims**

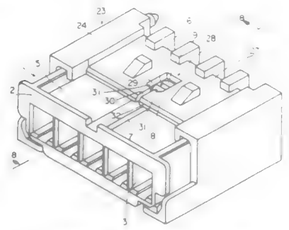


1. Electrical appliance current supply control apparatus for use with an appliance having a current supply cord with standard electrical current receiving plug prongs having standard sized apertures in the plug prongs, said control apparatus comprising:
- a) a housing:
- b) an electrical receptacle in said housing formed with prong slots to receive said appliance cord mounted plug formed with standard prongs;
- c) an electrical current input fixture in said housing to mate with a current source;
- d) controllable means in said housing adapted to be moved selectively to lock and unlock said appliance electrical supply cord standard prongs in said electrical receptacle in said housing;
- e) electrical current carrying connections between said current receiving prongs and said prong slots for said appliance electrical supply prongs, said current carrying connections including an on/off switch; and
- f) key operated control means in said housing operative to selectively lock said appliance electrical supply cord prongs to said housing concurrently with operation of said on/off switch to said current off position or to unlock said

VOL 1165 ISS 3 AG 16 1994 UMI

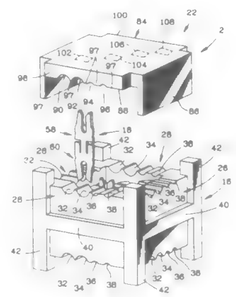
appliance electrical supply cord prongs concurrently with operation of said switch to current on position.

5,338,219
ELECTRIC CONNECTOR
Haruo Hiramoto; Tomoaki Ito, and Katsutoshi Tojo, all of Machida, Japan, assignors to Molex Incorporated, Lisle, Ill.
Filed Jul. 6, 1993, Ser. No. 87,936
Claims priority, application Japan, Jul. 23, 1992, 4-057339[U]
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—350 4 Claims



1. An electric connector assembly including:
a first connector having a housing with terminals mounted therein;
a second connector having a housing, mateable with said first connector, with terminals mounted therein for mating engagement with the terminals of the first connector,
latch means formed on the first connector housing and interengaging latch means formed on said second connector housing, both the latch means and interengaging latch means cooperating with each other to selectively latch said connectors together in a mating relationship,
the improvement comprising:
said second connector housing being chosen from a plurality of different housings distinguished from one another in that each respective interengaging latch means of one different housing is different from the interengaging latch means of another different housing, each of said second connector interengaging latch means of said different housings cooperating with the latch means of the first connector housing;
said first connector housing being female and said second connector housing being male with walls of the male connector housing adapted to extend within walls of the female connector housing;
said female connector housing having latch means in the form of both an aperture formed in one of the walls and at least one locking projection formed on one of the walls and said male connector being chosen from two different housings distinguishable from one another in that one housing has interengaging latch means in the form of a latching projection with front and rear slopes adapted to be removably held in said female connector housing aperture and that the other housing has a longitudinal pivoting arm adapted to lock onto the female connector housing locking projection;
a slot being cut into the wall of the female housing through an edge of the aperture to increase the flexibility of the aperture to allow it to more easily flex when in contact with the latch projection; and
said aperture being located between a multiple of locking projections.

5,338,220
ELECTRICAL CONNECTOR HOUSING ASSEMBLY AND AN ELECTRICAL TERMINAL THEREFOR
Lucas Soes, Rosmalen, and Franciscus G. Vugts, Vught, both of Netherlands, assignors to The Whitaker Corporation, Wilmington, Del.
Filed May 11, 1993, Ser. No. 60,941
Claims priority, application United Kingdom, May 19, 1992, 9210619; Jun. 15, 1992, 9212653; Jul. 20, 1992, 9215364
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—403 13 Claims

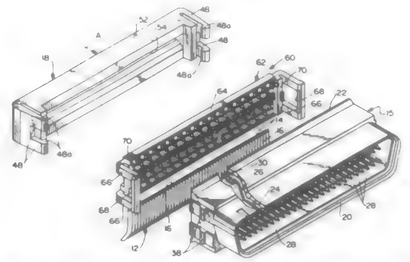


1. An electrical connector housing assembly comprising an insulating housing and first and second insulating covers for mating with the housing, the housing having a plurality of through cavities each for accommodating an electrical terminal with wire receiving portions thereof projecting from opposite surfaces of the housing, each cover having a corresponding plurality of notches each for receiving the wire receiving portion of the respective terminal and being bounded by wire stuffer surfaces for stuffing wires into said wire receiving portions, each cover being matable with the housing to stuff wires into the wire receiving portions on a respective one of said opposite surfaces of the housing when the terminals are accommodated in said cavities; characterized in that at least one of the covers is matable with the housing in a first angular orientation with respect thereto to stuff wires extending in a first direction, into said wire receiving portions on said respective surface of the housing, and in a second angular orientation with respect to the housing to stuff wires extending in a second direction, into said wire receiving portions on said respective surface of the housing, the notches of said at least one cover being so distributed thereon as to be aligned with respective ones of said cavities in each of said angular orientations of said at least one cover, said first and second angular orientations being non-parallel.

5,338,221
ELECTRICAL CONNECTOR FOR HIGH DENSITY RIBBON CABLE
David C. Bowen, Downers Grove, and Jerry A. Long, Elgin, both of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Jun. 9, 1993, Ser. No. 74,177
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—405 5 Claims

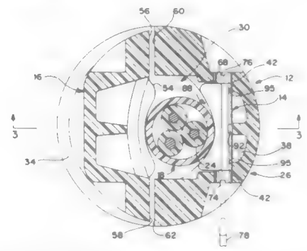
1. In an electrical connector for insulation displacing termination of ribbon cable having conductors on predetermined close centerline spacing, including a dielectric housing having a mating face, an opposed cable-receiving face and a plurality of terminal-receiving passages extending between the faces, a plurality of terminals received in the passages, each terminal including a mating portion toward said mating face and a slotted U-shaped insulation displacement portion toward the cable-receiving face, the insulation displacement portions of the terminals being arranged staggered in at leas two rows, and

a dielectric cover for forcing the conductors into the U-shaped insulation displacement portions and embracing the cable between the cover and the cable-receiving face of the housing, the cover including surface means including a plurality of closely spaced: side-by-side troughs for registering with the conductors of said ribbon cable for engaging the cable and holes in the surface means for receiving the U-shaped insulation displacement portions of the terminals, wherein at least some of the troughs intersect said holes in the cover,
wherein the improvement comprises:



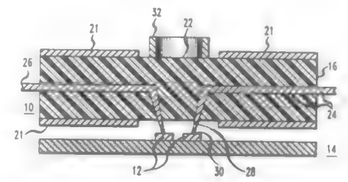
recess means in the surface means of the cover in areas adjacent the holes which receive the insulation displacement portions of the terminals,
whereby the conductors on opposite sides of any given conductor being terminated can float into said areas as a respective insulation displacement portion is forced into termination with the given conductor, and
wherein at least some of the troughs extend into recess means only slightly beyond one edge of the respective hole which the respective trough intersects.

5,338,222
CLAMPING ASSEMBLY FOR ELECTRICAL CABLES
William C. Boteler, Bridgeport, Conn., assignor to Hubbell Incorporated, Orange, Conn.
Filed Feb. 1, 1993, Ser. No. 11,802
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—469 40 Claims



1. An electrical cable clamp comprising:
a main body having an axial passage for receiving the electrical cable; and
first clamping means, for applying clamping forces to the electrical cable, said first clamping means cooperating with said axial passage and being coupled to said main body;
said first clamping means being pivotally mounted in said main body and being pivotal about an axis perpendicular and chordal to said axial passage from a first position to accommodate a first electrical cable to a second position to accommodate a second electrical cable having a cross-sectional dimension less than said first electrical cable;
said first clamping means including a first electrical cable engaging jaw element extending transversely from said axis, and a second electrical cable engaging jaw element extending transversely from said axis at an angular position angularly spaced from said first jaw element;
said first and second cable engaging jaw elements extending tangentially from said axis.

5,338,223
HYBRID WAFER PROBE
Livio R. Melatti, Nazareth, Pa., and Victor J. Velasco, Princeton, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 753,484, Sep. 3, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 959,517
Int. Cl.[5] H01R *11/18*
U.S. Cl. 439—482 6 Claims



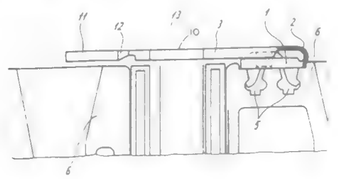
1. A hybrid wafer probe for scratching a surface of a separate one of a plurality of metallized areas on a substrate so as to make an electrical connection therewith, comprising:
a rigid one-piece insulative member having major surfaces for overlying a portion of a substrate to be probed;
a ground plane on at least one of the major surfaces of the member; and
a plurality of metallic wires, each having a body portion completely embedded within the insulative member so that the body portion of each wire is shielded by the ground plane, each wire having a first end which extends from the body portion and is insulated from ground plane so as to protrude beyond the member for connection to a testing machine, and each wire having a second end protruding from the body portion opposite the first end, the second end provided with a sharp tip which protrudes through the member in a region spaced from the ground plane so as to depend below the member for scratching the surface of, to make an electrical connection with, a metallized area on the substrate being probed.

5,338,224
LABELLING DEVICE FOR ELECTRICAL TERMINAL BLOCKS
Uwe Blanke, Detmold; Hans J. Kern, Lemgo; Friedrich Schmidt, Lage; Thomas Hanke, Paderborn; Peter E. Murray, Detmold; Michael Schnatwinkel, Herford, and Manfred Wilmes, Detmold, all of Fed. Rep. of Germany, assignors to Weidmuller Interface GmbH & Co., Fed. Rep. of Germany
Filed Dec. 28, 1992, Ser. No. 997,215
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1992, 4201217
Int. Cl.[5] H01R *9/00*
U.S. Cl. 439—491 11 Claims

1. A labelling device for an electrical terminal block, comprising
(a) a base portion (1) including a plurality of prongs adapted for connection with an insulated body of the terminal block;
(b) a hinge portion (2) integrally connected with said base portion;
(c) a tag portion (3) integrally connected with said hinge portion for movement between open and closed positions via said hinge portion;

VOL 1165 ISS 3 AG 16 1994 UMI

(d) means (7, 8) on said base and tag portions, respectively, for retaining said tag portion in said closed position, whereby when a label is placed on said tag portion and said tag portion is arranged in its closed position, said tag portion displays the label adjacent a narrow top portion of the terminal block;



e) wherein said base portion includes a lug (9) extending from a surface of said base portion opposite said prongs and containing an aperture (7); and

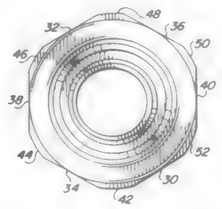
f) wherein said tag portion includes a latch pin (8) projecting from a first recess (10), said pin engaging said aperture and said lug engaging said recess to retain said tag portion in the closed position.

5,338,225

HEXAGONAL CRIMP CONNECTOR

Ingolf G. Jacobsen, and Arvin L. Langham, both of Phoenix, Ariz., assignors to Cabel-Con, Inc., Phoenix, Ariz.

Filed May 27, 1993, Ser. No. 68,435
Int. Cl.[5] H01R *17/04*
U.S. Cl. 439—585 24 Claims



1. A connector for crimped attachment to a coaxial cable having a central conductor disposed within a dielectric sleeve, a braided sheath surrounding the sleeve and a jacket encircling the braided sheath, said connector comprising in combination:

a) a hollow body for penetrable insertion intermediate the sleeve and the braided sheath to locate the conductor and sleeve within said body;

b) a ferrule attached to and extending from said body for enveloping the coaxial cable;

c) said body and said ferrule defining in combination a cylindrical slot for receiving the braided sheath and the jacket; and

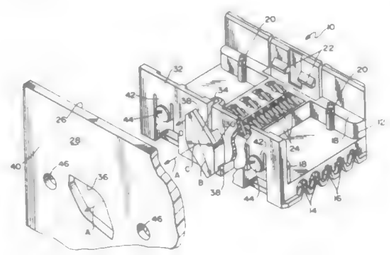
d) at least one annular ridge encircling said ferrule, each of said ridges having a modified hexagonal perimeter defining three pairs of opposed planar surfaces and arcuate surfaces interconnecting adjacent ones of said planar surfaces prior to crimped attachment of said connector to the coaxial cable.

5,338,226

PANEL MOUNTING SYSTEM FOR ELECTRICAL CONNECTORS

James R. Bryce, Fairport, N.Y.; Rodger W. Burke, Lisle, and Paul A. Reisdorf, LaGrange, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed May 14, 1993, Ser. No. 62,519
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—571 3 Claims



1. A system for mounting an electrical connector to one side of a panel, comprising:

a connector including a housing having a mounting face with a mounting boss projecting therefrom, the mounting boss including an enlarged head portion;

a panel including an aperture shaped for receiving the enlarged head portion therethrough such that the boss is rotatable in the aperture from a first insertion position and a second mounted position of the housing whereat the enlarged head portion overlaps the opposite side of the panel; and

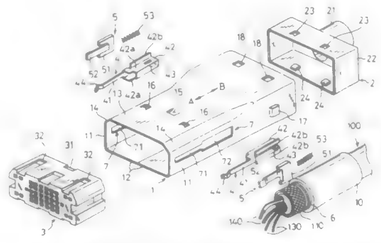
wedge means on the underside of the enlarged head portion of the boss for engaging the opposite side of the panel and drawing the housing against the one side of the panel in response to said rotation of the housing from the first position to the second position, said wedge means comprising a tapered rib having a maximum thickness nearer the boss and a minimum thickness nearer the periphery of the enlarged head portion to define a gap between the panel and the underside of the enlarged head portion that is narrower near the boss than near the periphery of the enlarged head portion.

5,338,227

PLUG-TYPE MULTIPOLAR ELECTRICAL CONNECTOR

Masahiko Nakamura, Yao, Japan, assignor to Hosiden Corporation, Yao, Japan

Filed Feb. 25, 1993, Ser. No. 22,318
Claims priority, application Japan, Mar. 25, 1992, 4-015664[U]
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—607 6 Claims



1. A plug-type multipolar electrical connector having a body

made of an insulating material in which a plurality of projecting terminal pins are assembled,

said plurality of terminal pins comprising:

a terminal pin group for thin conductors in which a plurality of terminal pins are disposed at the center of said body with the horizontal pitch between each adjacent terminal pin being fine;

a terminal pin group for thick conductors in which a plurality of terminal pins are disposed at a lateral side of said terminal pin group for thin conductors with the horizontal pitch between each adjacent terminal pin being greater than the horizontal pitch between adjacent terminal pins of the terminal group for said thin conductors;

a first shield cover made of a metallic plate and so disposed as to surround the body, the terminal pin group for thin conductors and the terminal pin group for thick conductors;

a ring body fittingly placed on a composite cable in which a braided shell shield surrounds core wires comprising thin conductors and core wires comprising thick conductors; and

a second shield cover having, in a unitary structure,

an attaching neck portion fittingly placed on said ring body attached to said composite cable, a portion of said braided shell shield folded back on the outer surface of said ring body being held by and between said attaching neck portion and said ring body, and

a fitting case portion extending from said attaching neck portion and fitted to said first shield cover, wherein:

said first shield cover has a rear end portion said rear end portion being fitted to the fitting case portion of the second shield cover;

said second shield cover having a rearward direction and engagement pawls which are cut and inwardly turned and which are opened in the rearward direction, said engagement pawls being engaged with corresponding engagement holes formed in said first shield cover; and

said first shield cover has engagement pawls opened in the rearward direction, said engagement pawls being engaged with the front end edge of the fitting case portion,

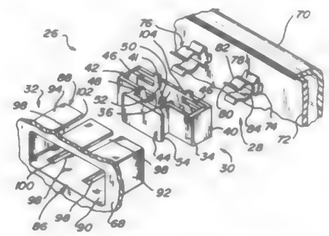
whereby said first shield cover is connected to said second shield cover.

5,338,228

FUSE HOLDER

Austin J. Wright, Jr., Aurora, and Joseph P. Pecukonis, Englewood, both of Colo., assignors to Amprobe Instrument, Lynbrook, N.Y.

Filed Oct. 12, 1993, Ser. No. 135,027
Int. Cl.[5] H01R *13/68*
U.S. Cl. 439—621 15 Claims



1. A fuse holder for removably retaining and electrically connecting a fuse in a housing of an electrical device, said fuse having electrical contacts, the housing having fuse clips for electrically and mechanically connecting to the fuse electrical contacts, said fuse holder comprising:

a fuse drawer having an interior volume, a top opening into the interior volume, and a support within the interior volume for receiving the fuse;

a guide attached to said housing and receiving said fuse drawer for slidable movement between a closed position in which the interior volume is positioned interiorly within said housing and an open position in which the interior volume is positioned substantially exteriorly of the said housing;

said fuse drawer defining openings positioned to allow said fuse clips to extend into said interior volume and engage said electrical contacts of a fuse positioned within the interior volume when said fuse drawer is in the closed position; and

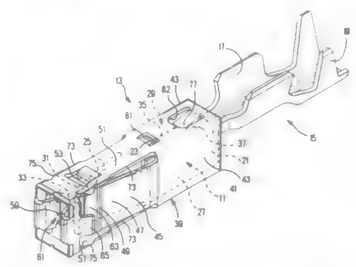
said fuse drawer moving the electrical contacts of a fuse positioned within the interior volume to a position in which said fuse clips disengage from said electrical contacts when the fuse drawer is moved to the open position.

5,338,229

ELECTRICAL CONTACT

Bernhard Egenolf, Dreieich-Sprendlingen, Fed. Rep. of Germany, assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 888,236, May 22, 1992, abandoned. This application Oct. 26, 1993, Ser. No. 145,042
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1991, 9106776; United Kingdom, Mar. 31, 1992, 9206962.4
Int. Cl.[5] H01R *13/18*
U.S. Cl. 439—839 12 Claims



1. An electrical contact adapted for plugging connection, comprising at least one pair of contact spring arms for pluggably receiving a tab contact, the contact having arranged on its outside an outer back-up spring including at least one pair of outer back-up spring arms cooperating with the contact spring arms, characterized in that the outer back-up spring can be slid onto the outside of the contact from a mating-side end of the contact spring arms and is adapted to be snapped onto said contact, said contact further comprising a contact body having a longitudinal end on a mating side and a longitudinal end on a wire terminating side, a wire terminating portion extending from the wire terminating side longitudinal end thereof, the spring arms extending from the mating side longitudinal end thereof;

the contact body being provided on the mating side longitudinal end with at least one mating side transverse edge extending transversely of the mating direction, said contact body further including one wire terminating side transverse edge extending transversely of the mating direction;

said outer back-up spring having, in the portions of the outer back-up spring which are located adjacent the transverse edges of the contact body after said outer back-up spring has been slid onto the contact, at least one mating side locking projection and at least one wire terminating side locking projection, respectively, which project inwardly so as to reach the mating side transverse edge and the wire

VOL 1165 ISS 3 AG 16 1994 UMI

terminating side transverse edge of the contact body, respectively;

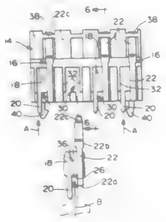
and wherein the wire terminating side locking projection is provided with a resiliently deflectable ramp slope such that, upon sliding of the outer back-up spring onto the contact, it can slide beyond the sidewall of the contact body belonging to the transverse edges and, when reaching the transverse edge on the wire terminating side, the locking projection can resile into a locking position cooperating with the wire terminating side transverse edge so that the locking projection on the mating side forms a stop for the transverse edge on the mating side, and wherein the contact has at least one tab extending inwardly therefrom to form the locking edge, the back-up spring including a complimentary tab abutting the locking edge, the back-up spring tab, when in the locked position, being substantially parallel to the contact tab.

5,338,230

ELECTRICAL CONNECTOR ASSEMBLY

Brian Bryce, Corbally, and Mathew Wilhite, Dooravoyle, both of Ireland, assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 29, 1993, Ser. No. 84,396
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—629 **10 Claims**



1. In an electrical connector assembly for connecting a mating connector to a printed circuit board, the assembly including a dielectric housing having a plurality of terminal-receiving cavities extending into the housing from a surface of the housing and a plurality of terminals insertable into the cavities, each terminal including a base section insertable into a respective cavity in a base insertion direction defined as a direction from said housing surface into said housing for securing the terminal in the cavity, contact means for contacting the printed circuit board and spring arm means for electrically engaging a conductor of the mating connector, the contact means and the spring arm means extending from the base section, wherein the improvement comprises said contact means and said spring arm means both projecting from the base section in a direction opposite said base insertion direction and being offset on opposite sides of a line passing through a midpoint of the base section in said base insertion direction to allow access to the base section between the contact means and the spring arm means for an insertion tool to force the terminal into its respective terminal-receiving cavity.

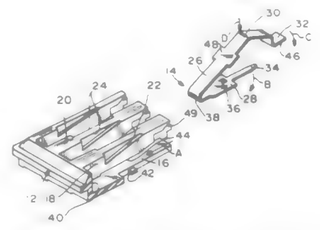
5,338,231

ELECTRICAL CONNECTOR WITH CONTACT ANTI-OVERSTRESS MEANS

Mathew Wilhite, Limerick, Ireland, assignor to Molex Incorporated, Lisle, Ill.

Filed Aug. 3, 1993, Ser. No. 25,685
Claims priority, application Ireland, May 8, 1992, 921480
Int. Cl.[5] H01R *17/00*
U.S. Cl. 439—660 **3 Claims**

1. In an electrical connector which includes a dielectric housing having a contact-receiving cavity with a slot communicating the cavity with a mating surface of the housing, and a generally U-shaped contact received in the cavity with a cantilevered spring contact arm disposed in the slot with a fixed end and a flexible end and having a contacting portion projecting beyond the mating surface for engagement with a complementary contact of a mating connector, whereby the spring contact arm flexure in the slot upon engagement of the contacting portion by the complementary contact, the improvement comprising anti-overstress means between the contact and the



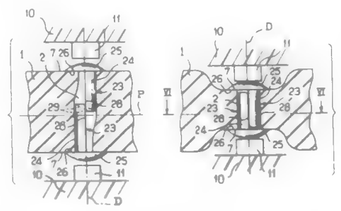
housing including at least one projection extending outwardly of the spring contact arms, said contact having a spring contact arm being defined by one leg of the U-shape and the other leg defining a contact based fixed in the cavity in the housing, said contacting portion being defined by a bent crest portion intermediate the ends of the arm, and stop surface means on the housing for abutment by the projection after a given amount of flexing of the spring contact arm.

5,338,232

ELECTRICAL INTERCONNECTION DEVICE

Raymond Bernier, 29 Avenue Foch, 94300 Vincennes, France

Filed Nov. 27, 1992, Ser. No. 982,517
Claims priority, application France, Nov. 29, 1991, 91 14820
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—733 **14 Claims**



1. An electrical interconnection device comprising:

a body of insulating elastic material through which extends at least one duct, said duct having two opposing ends;

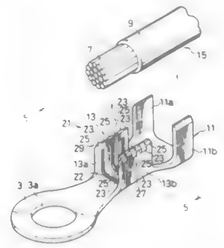
a pair of conducting elements inserted into said opposing ends of said duct, each of said conducting elements including a rod provided with a contact surface at one end and a head at an opposing end, and a shoulder located between said contact surface and said head of said rod, said shoulder of each of said conducting elements bearing against said elastic body at a location adjacent to said duct to prevent full insertion of said conducting elements into said duct and to allow said head of each of said conducting elements to be situated outside of said duct, said conducting elements being under an axial pressure pressing the same against said elastic body so that said shoulder of each of said conducting elements elastically deforms said elastic body and a continuous electrical contact is made between said contact surface of each of said conducting elements.

5,338,233

STRUCTURE FOR ELECTRICALLY CONNECTING A TERMINAL AND A WIRE

Mitsuo Endo, and Nobuyuki Asakura, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Apr. 6, 1993, Ser. No. 42,792
Claims priority, application Japan, Apr. 8, 1992, 4-021586[U]
Int. Cl.[5] H01R *4/24, 4/26*
U.S. Cl. 439—877 **8 Claims**



1. A structure for electrically connecting a terminal and a wire, comprising:

a wire having a conductor member and an insulation member covering said conductor member; and

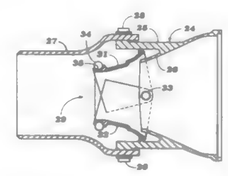
a terminal having a wire connecting portion, said wire connecting portion having a conductor crimp portion for crimping said conductor member and an insulation crimp portion for crimping said insulation member together with said conductor member, said conductor crimp portion including a main body and a pair of crimp pieces extending from said main body, said crimp pieces having acute distal ends and a protrusion formed on an outer surface of one crimp piece adapted to engage with a groove formed on an outer surface of the other crimp piece when said crimp pieces are crimped together and imbedded into said conductor member.

5,338,234

WATER INJECTION PROPULSION DEVICE

Masayoshi Nanami, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 28, 1993, Ser. No. 69,973
Claims priority, application Japan, Jun. 17, 1992, 4-181517
Int. Cl.[5] B63H *16/08*
U.S. Cl. 440—38 **28 Claims**



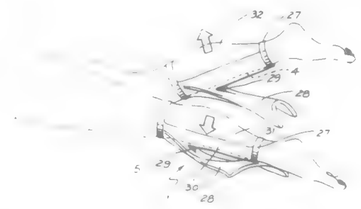
1. A jet propulsion unit for a watercraft comprised of a water inlet opening through which water may be drawn from a body of water, an impeller for pumping water through said water inlet opening, and a discharge nozzle opening for discharging water pumped by said impeller for generating a driving thrust, means for changing the effective area of one of said openings for varying the thrust of said jet propulsion unit, means for sensing the acceleration of said jet propulsion unit, and means for varying the effective area of said opening in response to the sensed rate of acceleration.

5,338,235

SWIMMING AID

Trevor M. Lee, 10 Robert Street, Willoughby, NSW 2068, Australia

PCT No. PCT/AU91/00447, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO92/05840, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 30, 1991, Ser. No. 30,021
Claims priority, application Australia, Sep. 28, 1990, PK2567
Int. Cl.[5] A63B *31/12*
U.S. Cl. 441—59 **39 Claims**



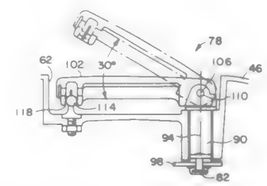
1. A swimming aid comprising a flexible fin member; and an underlying attachment means connected adjacent one end of said fin member and adapted for attachment to a portion of the anatomy of a user, whereby, in use said fin member extends free from said attachment means longitudinally along substantially one face of said portion of the anatomy of the user and has edges which extend outwardly on both sides of the said fin member, away from the center line of the said face, such that during a power stroke of the user, the relevant water flow is over the surface of said fin member, which adopts an extended position, but during a return stroke said fin member flexes into a substantially collapsed position away from the said portion of the anatomy of the user to reduce drag by said fin member.

5,338,236

LATCH MECHANISM FOR OUTBOARD MOTOR COWL ASSEMBLY

William D. Dunham, Waukegan; Jerry A. Hladilek, Kenosha; Steven R. McNeill; John A. Pierman, both of Waukegan, all of Ill.; Charles T. Rogan, Kenosha, Wis., and Robert L. Turk, Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 29, 1993, Ser. No. 55,982
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—77 **19 Claims**



1. An outboard motor comprising a propulsion unit including a propeller shaft and a power head drivingly connected to said propeller shaft, and a cowling surrounding said power head, said cowling comprising a first cover member including an outer surface having therein a recess, a second cover member mating with said first member, and a selectively engageable latch mechanism for securing said second member to said first member, said latch mechanism including a latch handle which is supported by said first member, which is movable between a flush position wherein said latch handle is in said recess and is flush with the remainder of said outer surface and a non-flush position wherein said latch handle extends from said recess,

VOL 1165 ISS 3 AG 16 1994 UMI

which, when in said non-flush position, is pivotally movable about a horizontal axis to engage and disengage said latch mechanism, and which is movable in another direction between said flush position and said non-flush position.

5,338,237

CONNECTOR FOR ATTACHMENT OF A LEASH OR THE LIKE

Robert B. Nealy, P.O. Box 3154, San Clemente, Calif. 92672

Filed Dec. 16, 1993, Ser. No. 168,455
Int. Cl.[5] A63C *15/06*
U.S. Cl. 441—74 9 Claims



1. In a connector for attaching a leash to a body board having an upper and a lower surface and a passage extending through said board and opening on said upper and lower surfaces, said connector comprising a male coupler and a female coupler, said couplers including an elongated body and an enlarged disk shaped head at one end thereof, said female coupler further including an axially extending bore in said body opening at one end for receiving at least a portion of said body of male coupler for securing said couplers together, the enlarged disk shaped heads of said male and said female couplers defining an essentially planer outer and inner face, said body of said male coupler and said female coupler being inserted through opposite openings of said passage and received therein with said body of said male coupler secured in said bore of said female coupler to clamp said board between said inner surfaces of the male and female coupler heads thereby to secure said connector to said board:

the improvement comprising a leash cord passage extending through said head of one of said couplers to open at the outer and inner faces thereof, said passage being located along a radius of said head between its periphery and said body of said coupler, a radially extending slit from said leash cord passage to the periphery of said head, the area of said head adjacent said slit being resilient to allow said slit to be opened for the insertion of said leash cord and to be returned to the normally closed position, said leash being looped around said coupler body and extending upwardly through said leash cord passage thereby attaching said leash to said board when said device is secured in said board.

5,338,238

COMPRESSION MOLDED WATER SKI AND METHOD OF MAKING THE SAME

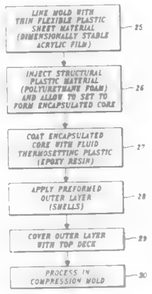
Donald B. Gillis, Lake Stevens, Wash., assignor to Connelly Skis, Inc., Lynnwood, Wash.

Filed Aug. 14, 1992, Ser. No. 931,211
Int. Cl.[5] B63B *35/81*
U.S. Cl. 441—68 15 Claims

1. The method of making a water skimming device which comprises sequentially performing the steps of:

(a) lining a mold having a cavity of approximately the desired finished shape of the water skimming device with two layers of thin flexible plastic sheet material of a thickness many times less than the thickness of the mold cavity, the mold cavity having a top portion, a bottom portion and opposite side portions and the two layers of flexible plastic sheet material being of a size sufficient to line all of such portions of the cavity;

(b) injecting structural plastic material into the mold between and in contact with the layers of plastic sheet material so as to fill the mold cavity with the structural plastic material inside the flexible plastic sheet material and to



conform the flexible plastic sheet material to the shape of the mold cavity;

(c) allowing the structural plastic material to set in the mold so as to form a core of the structural plastic material encapsulated in the sheet material and of a shape complemental to the mold cavity; and

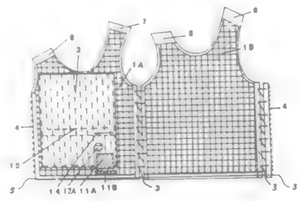
(d) bonding an outer surface layer to the encapsulated core.

5,338,239

AUTOMATIC INFLATABLE PFD

Earl G. Cleaveland, 1475 Flamingo Dr. 167 Engle, Englewood, Fla. 34224

Filed Mar. 29, 1993, Ser. No. 38,224
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—106 4 Claims



1. An inflatable personal floatation device comprising:

a vest that is wearable alone, over or inconspicuously under or between layers of clothing, said vest having a forward and rearward panel of a porous material,

a float compartment formed on a forward one of said panels of said vest to define an area adjacent to the front central portion of the torso of a wearer,

a single, inflatable float disposed in said compartment, said float being of airtight material and folded in its deflated condition to occupy only a portion of said area of said compartment to reduce the surface area of said airtight float adjacent to the torso of the wearer,

at least one wall of said compartment being of a stretchable material to allow the float to fully expand upon inflation,

a nut sealed to said float and having screw receiving threads communicating with the interior of said float, and

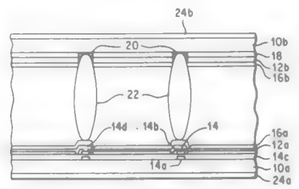
means for inflating said float including a valve having a screw portion receivable in said nut.

5,338,240

METHOD OF MAKING A LIQUID CRYSTAL DISPLAY

Jin Young Kim, Daegu, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 15, 1992, Ser. No. 913,417
Claims priority, application Rep. of Korea, Jul. 15, 1991, 12025
Int. Cl.[5] G02F *1/1339*; H04N *9/30*
U.S. Cl. 445—24 2 Claims



1. A method of making a light-influencing liquid crystal display, comprising the steps of:

preparing a first substrate and a second substrate;

forming a first plurality of pixel electrodes on said first substrate;

forming a plurality of thin film transistors on said first substrate;

forming a color filter layer on said second substrate;

forming a second plurality of pixel electrodes on said color filter layer;

forming a plurality of black stripes and spacers on said second substrate in a predetermined pattern by forming a plurality of mixtures of said black stripes and spacers in grooves said second pixel electrodes on said second substrate and patterning said formed mixtures by utilizing a mask and a photolithography process;

securing said substrates together with said first plurality of electrodes facing said second plurality of electrodes and with said spacers between said substrates; and

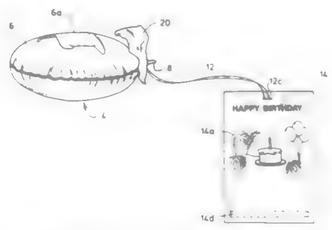
applying a light-influencing display material between said substrates.

5,338,241

PACKAGED BALLOON AND GREETING CARD

Mark J. Van Dyke, Mundelein, Ill., and Ernst R. Reiter, Temse, Belgium, assignors to CTI Industries Corporation, Barrington, Ill.

Continuation-in-part of Ser. No. 908,287, Jul. 2, 1992, abandoned. This application May 6, 1993, Ser. No. 59,054
Int. Cl.[5] A63H *33/04, 33/16, 3/06*
U.S. Cl. 446—75 17 Claims



1. A packaged balloon and greeting card comprising:

a balloon having an uninflated body and a filler neck extending from said body, said balloon being constructed of a material capable of retaining lighter-than-air media and having a sufficient volume such that when said balloon is filled with said lighter-than-air media and in an inflated condition, said balloon is positively buoyant;

a greeting card proximal said balloon;

a first image displayed on said balloon body and a second image displayed on a face of said greeting card, said first image substantially matching said second image;

a tether line having a first end attached to said filler neck and a second distal end attached to said card, said greeting card having a weight exceeding said positive buoyancy of said balloon when said balloon is in said fixed condition; and

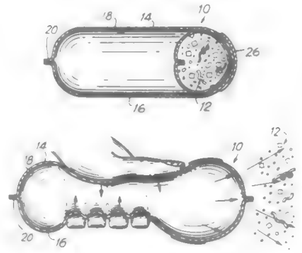
a packaging envelope receiving said uninflated balloon body, said tether line, and said card.

5,338,242

DEVICE FOR SCATTERING A MULTITUDE OF OBJECTS AND METHOD OF MAKING SAME

Peter S. C. Cheng, 99 Glencairn Street, Toronto, Ontario, Canada M4R 1M7

Filed Oct. 19, 1993, Ser. No. 138,747
Int. Cl.[5] A63H *3/06, 29/00, 33/30*
U.S. Cl. 446—220 11 Claims



1. A device for scattering confetti, comprising:

(a) an inflatable, flexible envelope including a pair of sheets having walls bounding an interior, and a gas inlet for admitting a pressurized gas into the interior, said walls having inverted portions extending into the interior and bounding a pocket having an open end;

(b) a multitude of objects constituting the confetti contained in the pocket; and

(c) break-away means including a closure extending across the open end, for frangibly closing the pocket, and for rupturing upon compression of the envelope with a predetermined force sufficient to cause the gas to reverse the inverted portions, tear the closure, and expel the confetti in an explosive manner with an accompanying popping sound.

5,338,243

THREE-DIMENSIONAL NON-LATEX BALLOON

Garry Kieves, Minneapolis, Minn., assignor to Anagram International, Inc., Minneapolis, Minn.

Continuation of Ser. No. 887,683, May 22, 1992, abandoned. This application Dec. 3, 1993, Ser. No. 161,972
Int. Cl.[5] A63H *3/06*; G09F *21/06*
U.S. Cl. 446—220 3 Claims

1. A non-latex balloon product having an inflated state comprising, in combination:

a substantially inelastic background sheet, substantially impermeable to a lighter-than-air gas, having an interior side and an exterior side with a coating providing a solid background and a printed background depiction on said interior side;

a substantially inelastic, substantially clear foreground sheet,

VOL 1165 ISS 3 AG 16 1994 UMI

substantially impermeable to a lighter-than-air gas and heat-sealed to said interior side of said background sheet to provide a balloon body and a balloon stem, said substantially inelastic, substantially clear foreground sheet displaying a printed foreground depiction having a complementary relationship with said background depiction to provide a three-dimensional animated image; and

a self-sealing valve sealed within said balloon stem;

said background sheet having a substantially concave shape in said inflated state to substantially enhance said three-dimensional animated image.



5,338,244

HOOP TOY

Thomas N. Huang, Taoyuan, Taiwan, assignor to Full-Zone Corporation, Taoyuan, Taiwan

Filed Jun. 15, 1993, Ser. No. 76,992

Int. Cl.[5] A63H *33/02*

U.S. Cl. 446—242 **4 Claims**



1. A hoop toy comprising a plurality of arcuate tubular members, each of said arcuate tubular members having a first end and a second end opposite to said first end, said first end of one of said arcuate tubular members being connected to said second end of an adjacent one of said arcuate tubular members so as to form a hoop; and an elastic cord passing through said arcuate tubular members in order to tie the latter together wherein each of said first end of said arcuate tubular members has a constricted insert portion extending longitudinally therefrom, said constricted insert portion having a tubular wall which is formed with a longitudinally split resilient plate portion that has a protrusion projecting radially therefrom, said tubular wall further having a chord-like member which extends across said tubular wall adjacent to said longitudinally split resilient plate in order to prevent said elastic cord from being entangled with said longitudinally split resilient plate portion, said second end of each of said arcuate tubular members being formed with a hole, when said constricted insert portion on said first end of one of said arcuate tubular members is inserted into said second end of an adjacent one of said arcuate tubular members, said protrusion on said longitudinally split resilient plate portion engaging said hole on said second end.

5,338,245

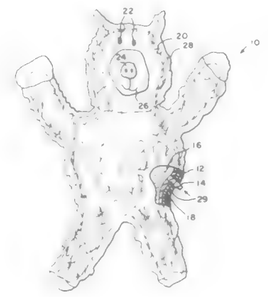
GIANT GUMMY BEAR

Stefan D. Murza, 3157 Reese Dr., Portsmouth, Va. 23703, and George Spector, 233 Broadway, Rm. 702, New York, N.Y. 10279

Filed Aug. 20, 1993, Ser. No. 109,437

Int. Cl.[5] A63H *3/52, 3/00, 3/36*

U.S. Cl. 446—267 **1 Claim**



1. A flexible toy bear which comprises:

a) a pre-molded stretchable bladder in the shape of a bear;

b) a check valve in said bladder for filling said bladder;

c) a gelatin solution inserted through said check valve and into said bladder;

d) a nylon cloth skin place about said bladder; and

e) a face of a bear having eyes, nose and mouth placed upon said nylon cloth skin at a head area, so as to simulate a bear candy; wherein said nose portion of said face is plastic and has a nostril aperture therethrough with said check valve behind said nostil aperture so that a pump nozzle can be inserted through said nose aperture and said check valve to allow said gelatin solution to be inserted into said bladder.

5,338,246

SUSPENSION SYSTEMS OF VEHICLE TOYS

Shohei Suto, Tokyo, Japan, assignor to Taiyo Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 44,375

Claims priority, application Japan, Jun. 1, 1992, 4-163391

Int. Cl.[5] A63H *17/26, 17/36*

U.S. Cl. 446—466 **18 Claims**

1. A steerable vehicle toy, comprising:

a body having a wall portion;

a guide hole in said wall portion;

a steerable wheel mounted on an axle;

an upright member on which said axle is fixedly mounted;

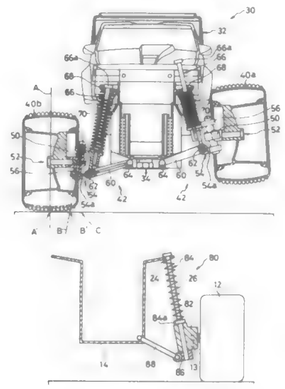
an upright holder disposed below said guide and rotatably supporting said upright member to permit rotation of said upright member during a steering operation;

an upwardly extending rod having a lower portion fixedly mounted to said upright holder;

said rod having an upper portion movably guided in said guide hole;

a spring acting upon said upright holder to bias said upright holder downwardly away form said guide; and

a single swing arm having two ends, one end being pivotally connected to said body, and the other end being pivotally connected to said upright holder;



said wheel being guided by said rod and said single swing arm for upward movement with substantially no inclination.

5,338,247

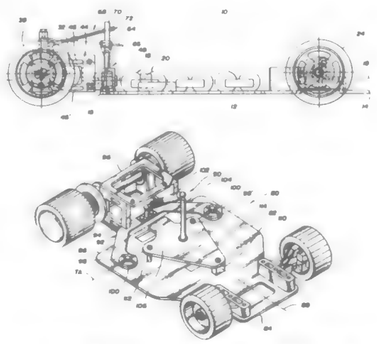
BATTERY POWERED MODEL CAR

Jeffrey A. Miles, 14730 Harrison, Livonia, Mich. 48154

Filed Oct. 30, 1992, Ser. No. 968,999

Int. Cl.[5] A63H *17/26;* **B60G** *15/00*

U.S. Cl. 446—456 **20 Claims**



1. A remote controlled battery powered on-road scale model car of the type having a straight rear axle and a non independent rear suspension, said model car comprising:

a chassis having a front and rear end with a longitudinal axis extending therebetween and means for mounting a row of batteries centrally along said longitudinal axis;

a pair of remotely steerable front wheels pivotably affixed to the chassis front end;

a pair of rear wheels interconnected by having a straight rear axle;

a motor pod supporting the rear axle and mounting means for attaching an electric motor; and

a rear suspension elastically attaching the motor pod to the chassis rear end to permit limited vertical bounce movement and limited torsional roll movement about the longitudinal axis, said rear suspension spaced sufficiently from the chassis to provide clearance for a row of batteries oriented along the longitudinal axis thereby minimizing the mass moment of inertia of the model car measured about the longitudinal axis, and said rear suspension comprising a pivot means for connecting motor pod to the chassis enabling limited free relative movement therebetween about a transverse pivot axis, a roll limiting spring comprising a component separate from the chassis and cooperating with the motor pod and the chassis providing elastic resistance to relative torsional movement about the chassis longitudinal axis, and a telescopic strut assembly having a forward end pivotally affixed to the chassis and a rearward end pivotally affixed to the motor pod, said strut having a spring which is elastically compressed in response to an upward pivotal movement of the motor pod about the transverse pivot axis.

5,338,248

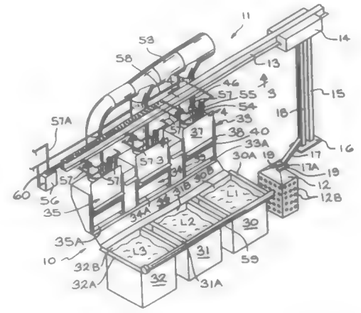
VENTILATION APPARATUS FOR REMOVING VAPORS

Charles J. Sumrack, Owosso, Mich., assignor to Midwest Air Products Co., Inc., Owosso, Mich.

Filed Jan. 25, 1993, Ser. No. 8,540

Int. Cl.[5] B08B *15/02*

U.S. Cl. 454—49 **43 Claims**



1. An apparatus to be mounted adjacent to a tank means for removing vapors from the tank means which comprises:

(a) ventilation hood means to be mounted adjacent to the tank means for removing the vapors and exhausting the vapors from the tank means and having at least one opening into the hood means adjacent the tank means, the one opening having a moveable cover means wherein in use periodically the cover means on the one opening is adapted to open to remove vapors from the tank; and

(b) a control means which opens the cover means to remove the vapors.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,249

METHOD AND APPARATUS FOR FRESH-AIR CONTROL IN THE MID-LEVEL AREA OF A MOTOR VEHICLE

Reinhard Hildebrand, Redwitz, and Michael Schramm, Neustadt, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, München, Fed. Rep. of Germany

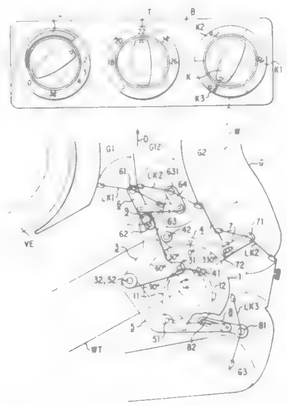
PCT No. PCT/DE90/00258, § 371 Date Sep. 27, 1991, § 102(e) Date Sep. 27, 1991, PCT Pub. No. WO90/11903, PCT Pub. Date Oct. 18, 1990

Continuation of Ser. No. 768,673, Sep. 27, 1991, abandoned. This PCT application Mar. 30, 1990, Ser. No. 177,748

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1989, 3910489

Int. Cl.[5] B60H *1/12*

U.S. Cl. 454—126 **31 Claims**



1. A method for controlling fresh-air in a mid-level area of an instrument panel of a motor vehicle with a heating and air-conditioning system that is controlled by a thermostat on a water side and a central control unit having an air-distribution control formed as a control knob that has a FLOOR LEVEL setting, a DEFROSTER setting, and a MID-LEVEL setting therebetween, said method comprising the steps of:

actuating, with the control knob, a first air flap disposed in a fresh-air duct;

supplying fresh air to at least one fresh-air nozzle in the mid-level area when said first air flap is open;

controlling, with the control knob, a supplementary air flap disposed in a warm-air supplementary duct, via the first air flap that is directly coupled to the supplementary air flap;

supplying the fresh-air nozzle with air by the supplementary air flap when said supplementary air flap is open:

positioning the control knob such that in the MID-LEVEL setting the first air flap is in an open position for fresh-air admission to said fresh air nozzle and the supplementary air flap is in a closed position relative to a heater core;

positioning the control knob such that in a setting between the MID-LEVEL and DEFROSTER or between MID-LEVEL and FLOOR LEVEL settings the first air flap is in the open position for fresh-air admission and the supplementary air flap is in the open position relative to the heater core; and

positioning the control knob such that in a the DEFROSTER setting or the FLOOR LEVEL setting the first air flap is in the closed position for fresh-air admission and the supplementary air flap is in the closed position relative to the heater core.

5,338,250

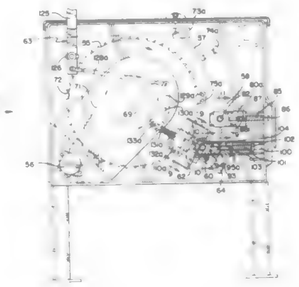
PLATE DEBONER

Wilson H. Swilley, Persia, and Michael D. Wohlhutter, Harlan, both of Iowa, assignors to Bond Equipment Corp., Logan, Iowa

Filed Oct. 15, 1992, Ser. No. 961,421

Int. Cl.[5] A22B *5/16*

U.S. Cl. 452—136 **31 Claims**



1. A plate deboner for processing a rib plate by separating the lean portion from the rib portion, said plate deboner comprising

a frame;

a drum rotatably mounted on said frame about a substantially horizontal axis, said drum having spikes thereon for gripping said rib portion of said rib plate;

a large roller rotatably mounted on said frame on an axis extending substantially parallel to said axis of said drum, said large roller having a knurled surface for gripping said grip plate and coacting with said drum to drive the rib plate therebetween, said large roller being biased toward said drum;

a guide plate mounted on said frame, said guide plate extending above said large roller and coacting with said drum to guide said rib plate along said drum to said large roller;

a small roller rotatably mounted no said frame on an axis extending substantially parallel to the axis of said drum and said knurled roller, said small roller having spikes thereon for gripping said lean portion of said plate and coacting with the drum to drive the rib plate therebetween, said small roller being biased toward said drum and disposed below said knurled roller;

a cutting blade mounted substantially horizontally on said frame below the axis of said drum and between said drum and said small roller and being biased toward said drum for separating the lean portion from the rib portion; and

a driving means for rotating said drum, said large roller, and said small roller, and for reciprocating said cutting blade along its axis.

5,338,251

WIND DIRECTION CONTROLLING APPARATUS

Tohru Matsumoto, Sanda, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,704

Claims priority, application Japan, Oct. 23, 1991, 3-275468

Int. Cl.[5] B60H *1/34*; F24F *13/15*

U.S. Cl. 454—153 **11 Claims**

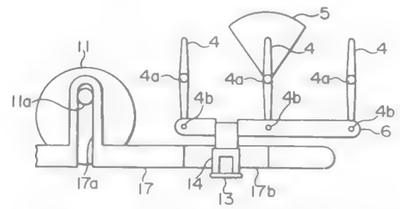
1. A wind direction controlling apparatus comprising:

a case mounted on an air discharge port;

a plurality of fins disposed in said case for deflecting wind from the air discharge port; a joint to which said fins are linked and pivotally joined; a rod coupled to said joint via a friction clutch section;

drive means, connected to said rod, for reciprocating said rod, wherein

said rod engages with said friction clutch section within a



range greater than the width of said friction clutch section, said rod within said range being formed with a reduced thickness and continuous curvatures from both ends of said range to a point within said range.

5,338,252

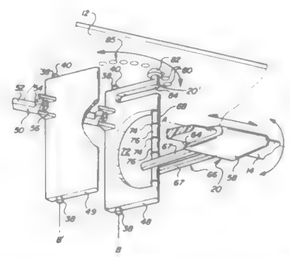
AIR OUTLET LOUVER ASSEMBLY

Geoffrey H. Bowler, Port Perry, and Bruce H. B. Chow, Scarborough, both of Canada, assignors to Manchester Plastics, Ltd., Scarborough, Canada

Filed May 6, 1993, Ser. No. 58,451

Int. Cl.[5] B60H *1/34*

U.S. Cl. 454—155 **27 Claims**



1. An air outlet louver assembly (**10**) for providing incremental and accurate adjustment of the direction and volume of airflow therefrom, said assembly (**10**) comprising:

a housing (**12**);

a primary control vane (**14**);

a secondary control vane (**48**);

said primary control vane (**14**) being mounted within said housing (**12**) for pivotal movement independent of said secondary control vane (**48**) about a first axis (A) for controlling the direction and flow of air out of said housing (**12**);

said secondary control vane (**48**) being mounted within said housing (**12**) for pivotal movement independent of said primary control vane (**14**) about a second axis (B) offset from said first axis (A);

a ratchet surface (**68**) disposed on said secondary control vane (**48**); and

characterized by ratchet pawl means (**20**) disposed on said primary control vane (**14**) for moving together with said primary control vane (**14**) in coupled rotation about said first axis (**A**) to frictionally engage said ratchet surface (**68**) and for maintaining said engagement with said ratchet surface (**68**) during the independent movement of said secondary control vane (**48**) with respect to said primary control vane (**14**) to intermittently resist movement of said primary control vane (**14**) and establish a plurality of spaced rest locations for said primary control vane (**14**).

5,338,253

FILTER FOR AN AIR-CONDITIONING OR HEATING SYSTEM FOR A MOTOR VEHICLE

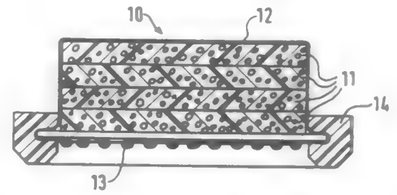
Herbert Damsohn, Aichwald, and Walter Wolf, Oppenweiler, both of Fed. Rep. of Germany, assignors to Behr GmbH & Co., Fed. Rep. of Germany

Filed Dec. 5, 1991, Ser. No. 802,490

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1990, 4040104

Int. Cl.[5] B60H *3/06*

U.S. Cl. 454—158 **10 Claims**



1. A filter for an air-conditioning or heating system for a motor vehicle, comprising:

a filter body made of a material arranged in several layers with open pores which are coated with a granular adsorption agent; and

an air-permeable textile flat shaped structure formed of yarns covering only outer surfaces of the filter body at least on its air outlet side,

wherein the distances between the yarns of the textile structure are smaller than the outer dimensions of the grains of the granular adsorption agent.

5,338,254

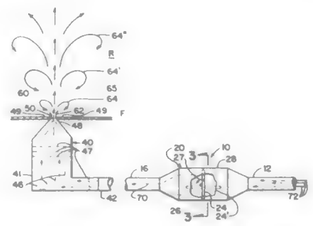
INCREASING JET ENTRAINMENT, MIXING AND SPREADING

Robert B. Farrington, Wheatridge, Colo., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Dec. 22, 1992, Ser. No. 995,146

Int. Cl.[5] F24F *7/007*

U.S. Cl. 454—284 **18 Claims**



1. A method for increasing the spreading, entrainment and mixing of an air flow that is expelled from a plenum into an enclosure with ambient air in the enclosure, including the step of imparting periodic pressure pulsations to the air in the plenum so that the frequency of the pulsations match a natural characteristic frequency of a turbulence in the air flow as the air flow is expelled into the ambient air in the enclosure.

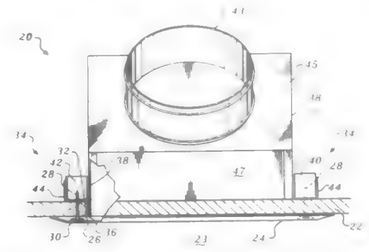
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,255

AIR DUCT FITTING MOUNTING SHOULDER

Kenneth S. Akehurst, Castro Valley, Calif., assignor to Noll Manufacturing Co., Richmond, Calif.

Filed Jan. 22, 1993, Ser. No. 7,605
Int. Cl.[5] F24F *13/06*
U.S. Cl. 454—292 **4 Claims**



1. An apparatus for securing a terminal end of an air vent assembly to a wall member, the air vent assembly including an inner portion adapted to be located at least partially behind the wall member, and a separate terminal end being disposed at least partially in front of the wall member, said apparatus comprising:

a separate generally planar plate attached to the inner portion of the assembly, the plate including

an attachment section that affixes the plate to the inner portion of the assembly;

a floor section attached to the attachment section along one side and being foldable along a first fold line defined by a first set of two opposing slots extending inwardly from opposite edges of the plate, the first fold line being substantially parallel to the plane of the wall member, the floor section being adapted to be secured to the terminal end of the air vent assembly when the floor section is folded to lie in a plane approximately parallel to the wall member;

a side section attached to the floor section on a side opposite the attachment section, the side section being defined by a second set of parallel slots, the side section being adapted to be folded along a second fold line oriented substantially parallel to the first fold line and being located adjacent the inner termini of the second set of slots, to lie in a plane approximately perpendicular to the wall member; and

two opposing stiffening sections located on opposite edges of the floor section and being separated from the attachment section by the first set of parallel slots, the stiffening sections being adapted to be folded along a third fold line to lie in a plane approximately perpendicular to the wall member and to provide support to the floor section to prevent the floor section from excessive deflection away from a folded position in which the floor section is approximately perpendicular to the wall member.

5,338,256

VENTILATOR

Anthony Toana, 122 Phoenix Street, North Sunshine, Victoria 3020, Australia

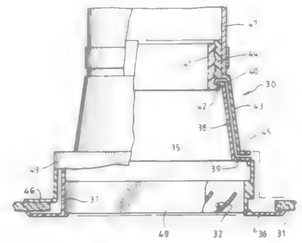
Filed Dec. 29, 1992, Ser. No. 997,099
Claims priority, application Australia, Dec. 31, 1991, PL 0230
Int. Cl.[5] F24F *13/06*
U.S. Cl. 454—310 **8 Claims**

1. A ventilator, for a hole in one of a ceiling, a wall, or a floor, comprising:

an outlet member defining a longitudinal axis with an opening extending completely through said outlet member along said longitudinal axis, said outlet member having a radially outwardly extending peripheral flange, adjacent a first end of said outlet member, for bearing against an external peripheral surface of a said hole;

a ventilation tube connector defining a longitudinal axis with an opening extending completely through said ventilation tube connector, said ventilation tube connector having a radially outwardly extending peripheral flange, adjacent a first end of said ventilation tube connector, for bearing against an internal peripheral surface of a said hole; said ventilation tube connector being sized for releasably receiving a portion of said outlet member within said ventilation tube connector's opening;

said outlet member and said ventilation tube connector each having a second end supporting one portion of a mating screw thread means, and said outlet member and said ventilation tube connector being releasably connectable



with one another by said mating screw thread means and, when said mating screw thread means is threadingly engaged, said flanges clamping a periphery of a said hole therebetween for securing said ventilator in place; and

said outlet member containing a releasable deflector vane member for at least partially obstructing said opening in said outlet member and channeling a fluid, at least a portion of said releasable deflector vane member is at least partially removable from said opening to provide unobstructed access to said screw thread means whereby, once said releasable deflector vane member is at least partially removed, said opening in said outlet member is completely unobstructed so that said screw thread means may be directly adjusted by insertion of one of a hand or a tool through said opening in said outlet member.

5,338,257

COMBINE SIEVE DISTRIBUTOR APPARATUS

Mark R. Underwood, Burr Oak, Kans., assignor to Probe Adventures, Inc., Burr Oak, Kans.

Continuation-in-part of Ser. No. 890,716, May 29, 1992, Pat. No. 5,282,771. This application Jan. 6, 1993, Ser. No. 1,087
Int. Cl.[5] A01F *12/32*
U.S. Cl. 460—8 **30 Claims**

1. An apparatus for distributing grain onto a sieve of a combine:

a rotatable drive wheel;

a guide member spaced from the drive wheel;

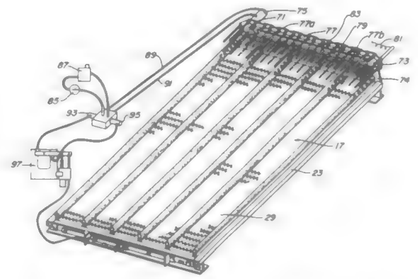
a flexible linkage member extending around the wheel and the guide member in an elongated loop, defining an upper run and a lower run;

a plurality of fingers mounted to and extending from the linkage member;

mounting means for mounting the drive wheel and guide member to the combine adjacent a forward portion of the sieve with the linkage member extending transverse to the sieve and the fingers on at least one of the runs positioned above a forward portion of the sieve for contact by grain and chaff falling onto the sieve;

drive means for rotating the drive wheel to cause the linkage member to travel around the drive wheel and guide member and the fingers to move laterally across the forward portion of the sieve; and

level means for sensing leaning of the combine and controlling the drive means in response thereto to rotate the drive



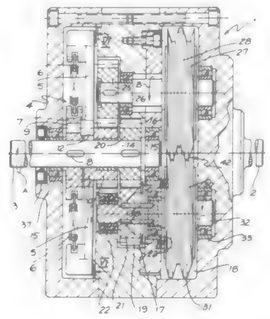
wheel when the combine leans to a selected degree, for reducing build-up of chaff on a low side of the sieve.

5,338,258

DRIVE TRANSMISSION COUPLINGS

Malcolm V. Wade, Meadowbank, Australia, assignor to IVG Australia Pty. Ltd., Lidcombe, Australia

Filed Oct. 4, 1991, Ser. No. 771,421
Claims priority, application Australia, Oct. 11, 1990, PK2745
Int. Cl.[5] F16D *3/10*
U.S. Cl. 464—6 **8 Claims**



1. A coupling comprising:

a casing defining a chamber filled with hydraulic liquid,

at least first and second axially parallel rollers inside said chamber, at least one helical tooth formed on said first roller and at least one helical tooth formed on said second roller, said helical teeth being of the same hand and meshing with one another in a meshing zone extending between said rollers, and the radius of the helical tooth of the first roller being in a predetermined ratio to the radius of the helical tooth of the second roller, and said teeth having flank surface means for preventing efficient transmission of drive between said rollers, said flank surface means comprising flank surfaces so shaped and positioned as to be incapable of efficient transmission of drive between the rollers,

an input drive member having an axis of rotation and connected to revolve the first and second rollers each in the same direction at a speed ratio that is the reciprocal of said predetermined ratio to translate their teeth along the meshing zone in the same direction and at the same speed,

bearing means mounting said rollers in said casing so that at least one of said rollers is arranged eccentrically with respect to the axis of said input drive member and is held against rotation relative to the casing about said axis, whereby friction between the teeth of said rollers produces a rotational torque on said casing when said input drive member is rotated,

output drive means coupled to the casing for deriving an output from rotation of said casing,

adjustable means operable to alter the phase of rotation of the first roller with respect to the input drive member, and

resiliently yieldable biasing means enabling the second roller to yield stiffly in an angular direction in response to force applied to it by a change of phase of rotation of the first roller,

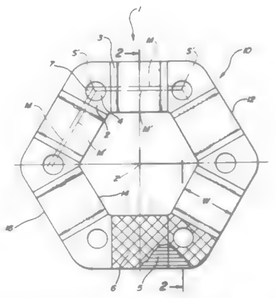
whereby engagement of the coupling occurs in a first stage in which the flank surfaces of the teeth are held apart by pockets of hydraulic liquid under pressure created in the pockets by relatively oppositely directed movements of the flank surfaces traveling across the meshing zone and a second stage in which reduction on relative speeds of the flank surfaces due to action of the resiliently yieldable means collapses the pressure in the pockets and enables the flank surfaces to rub on one another with progressively increasing friction to complete engagement of the coupling when relative movement between the rollers ceases.

5,338,259

COMPOSITE SHAFT COUPLING ELEMENT HAVING REINFORCED EYES

Wolfgang Löbel, Frankfurt am Main, Fed. Rep. of Germany, assignor to Löhr & Bromkamp GmbH, Offenbach am Main

Filed Oct. 22, 1991, Ser. No. 780,796
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1990, 4033596
Int. Cl.[5] F16D *3/78*
U.S. Cl. 464—93 **13 Claims**



1. A resilient shaft coupling element permitting axial and angular offset of the shafts comprising a polygonal ring made of fiber composite material, the ring having attachment holes for alternatively securing two axially adjoining shaft connectors, the polygonal ring having a substantially planar configuration and consisting of a plurality of thin straight webs connected together with a plurality of reinforced eyes, each straight web having a longitudinal central axis which is perpendicular to a line drawn from the center of the polygonal ring to the center of each straight web, the center of each of the attachment holes in the reinforced eyes being at the intersection of longitudinal lines of adjoining straight webs within the reinforced eye wherein the longitudinal lines are parallel to the longitudinal central axis of the straight webs and radially offset inwardly towards the center of the polygonal ring.

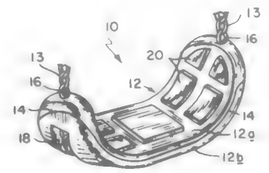
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,260

CHILDREN'S SWING

Stephen W. Smith, Bedford, Pa., assignor to Hedstrom Corporation, Bedford, Pa.

Filed Dec. 21, 1992, Ser. No. 994,276
Int. Cl.[5] A63G 9/00
U.S. Cl. 472—118 6 Claims



1. A swing comprising

a rigid hollow upwardly curved seat, having opposed mating upper and lower shells with peripheral skirts, seam means connecting opposing edges of the skirts, and a planar seating portion and side portions at the opposite ends of the seating portion which extend generally perpendicular to the plane of the seating portion and define the opposite ends of the seat,

means defining a longitudinal channel in the underside of the seating portion, said channel defining means including a channel floor in the lower shell and means for securing the top of said channel floor to the upper shell;

means defining passages extending from the opposite ends of the channel through the side portions of the seat to the opposite ends of the seat;

a relatively long chain of links extending into the passage at one end of the seat, along said channel and out the passage at the other end of the seat, and

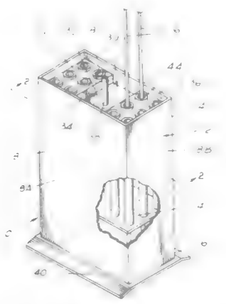
means for fixing the position of the seat along the chain so that when the opposite ends of the chain are suspended from an overhead support, the seating portion of said seat is generally horizontal when the swing is at rest, said fixing means including generally laterally extending goffers formed in said channel floor which interfere with the chain links in said channel, at least some of said goffers being secured to said upper shell.

5,338,261

POOL CUE STAND AND CHALK HOLDER

David E. Stegman, Brookshire, Tex., assignor to Replay Amusements, Inc., Houston, Tex.

Filed Jan. 7, 1993, Ser. No. 1,153
Int. Cl.[5] A63D 15/10
U.S. Cl. 473—1 13 Claims



1. A storage apparatus for use with pool cues and cone chalk, the pool cues comprising a slender rod having a tip at one end and tapering to a thicker base portion at a second end, the storage apparatus comprising:

a housing having vertical side walls an upper end and a lower end;

a substantially horizontal upper member within said housing intermediate said ends attached to said housing, said upper having a plurality of openings extending therethrough;

a substantially horizontal lower member within said housing, spaced from said upper member and intermediate said ends attached to said housing below said upper member, said lower member having a plurality of openings extending therethrough corresponding to said plurality of openings in said upper member and which are substantially vertically positioned below said plurality of openings in said upper member; and

a substantially vertically extending rod attached to said upper member for attaching a cone chalk,

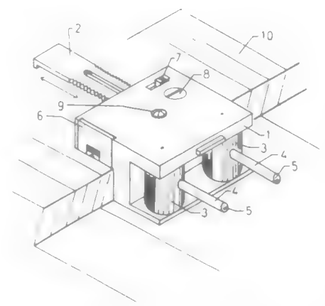
said openings in said upper and lower members are sized to receive the base portion of the pool cue therethrough.

5,338,262

CUE BALL ANGLE DETERMINATOR

Lloyd M. Hayes, Rte. 1, Box 134, Proctorville, Ohio 45669

Filed Jul. 26, 1993, Ser. No. 96,266
Int. Cl.[5] A63D 15/08
U.S. Cl. 473—2 8 Claims



1. A cue ball bank shot angle determinator comprising:

a housing having front and back walls, left and right walls, and substantially planar top and bottom walls; said front wall having defined therein a substantially U-shaped recess, a and said rear wall having defined therein a substantially L-shaped recess, whereby one leg of said L-shaped recess is adapted to engage the top surface of a pool table rail and the other leg of the L-shaped recess is adapted to engage the inner surface of the pool table rail;

a pair of hollow cylinder members; said cylinder members having a longitudinal axis and being mounted in said U-shaped recess for rotation about said longitudinal axis, said cylinder members further being spaced apart a predetermined distance;

an adjustment means, said adjustment means being movably mounted in said housing and between said cylinder members;

means on said adjustment means for engaging means on each of said cylinder members to cause simultaneous rotation of said cylinder members in opposite directions when said adjustment means is moved;

light emitting means in each of said cylinder members and means on each of said cylinder members and in communication with the interior thereof for directing emitted light in a predetermined direction and a predetermined distance above a pool table playing surface;

means for energizing said light emitting means and means connecting said means for energizing to said light emitting means; and

means on said housing for producing a mark on a pool table rail.

5,338,263

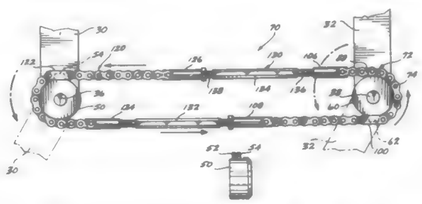
Patent Not Issued For This Number

5,338,264

COMPLIANT SHEAVE

Dale Kempf, Clovis, Calif., assignor to Lift-U, Division of Hogan Mfg., Inc., Escalon, Calif.

Continuation-in-part of Ser. No. 629,117, Dec. 17, 1990, Pat. No. 5,224,722. This application Jul. 31, 1992, Ser. No. 922,844
Int. Cl.[5] F16H 7/00
U.S. Cl. 474—168 11 Claims



1. A sheave for use with a load carrying member having links including parallel leaves arranged such that an outer edge of each leaf is positioned adjacent the sheave during use, the sheave comprising:

a core; and

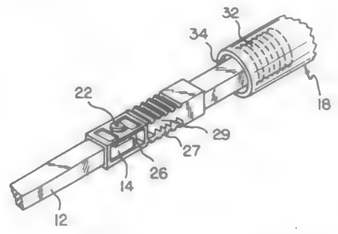
an outer part surrounding the perimeter of the core, the outer part adapted to carry the load carrying member and being compliant in at least the areas of the outer part that contact the load carrying member such that when a link having at least one inwardly protruding leaf contacts the outer part, the protruding leaf deforms the outer part and every leaf in the link contacts the outer part.

5,338,265

EMERGENCY DRIVE BELT APPARATUS

Mark R. Kilgar, 148 Olive Ave., Oshawa, Ontario, Canada L1H 1P1

Filed Feb. 12, 1993, Ser. No. 16,996
Int. Cl.[5] F16G 7/00
U.S. Cl. 474—256 7 Claims



1. A new and improved emergency drive belt apparatus, comprising:

a flexible belt member which includes a first end and a second end,

a first connector assembly attached to said first end of said belt member, wherein said first connector assembly includes a first longitudinally projecting portion which includes a plurality of first teeth which project toward a imaginary medial plane that bisects said flexible belt member in a longitudinal direction;

a second connector assembly attached to said second end of said belt member, wherein said second connector assembly includes a second longitudinally projecting portion which includes a plurality of second teeth which project toward the imaginary medial plane that bisects said flexible belt member in a longitudinal direction, said second teeth being complementary to said first teeth, wherein said respective first connector assembly and said first teeth and said respective second connector assembly and said second teeth are capable of selectively being either connected together or unconnected from each other; and

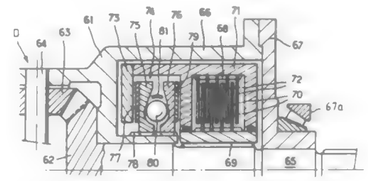
a locking member, located on said belt member, capable of being positioned over said first connector assembly and said second connector assembly when said connector assemblies are connected together, said locking member serving to lock said first teeth of said first connector assembly and said second teeth of said second connector assembly together, thereby serving to lock said first end and second end together to form said belt member into a continuous loop.

5,338,266

DIFFERENTIAL TRANSMISSION DEVICE AND VISCOUS COUPLER, ESPECIALLY FOR A MOTOR VEHICLE

Pierre Guimbretiere, Neauphle le Chateau, France, assignor to Glaenzer Spicer, Poissy, France

Filed Apr. 23, 1992, Ser. No. 872,517
Claims priority, application France, Apr. 26, 1991, 91 05201
Int. Cl.[5] F16H 1/44
U.S. Cl. 475—89 14 Claims



1. A transmission device for a vehicle comprising:

a differential mechanism having an input member and a first and second output member; and

means for controlling the difference in speed between two of said input and said first and second output members, said control means including:

a viscous-fluid coupling device having an inner element and an outer element defining between them a sealed enclosure containing viscous fluid, each of said inner and outer elements being connected to rotate, respectively, with one of two series of discs, the discs of the two series being alternated and immersed, at least partially, in the viscous fluid;

a friction clutch associated with and disposed adjacent to said viscous fluid coupling device, said friction clutch having at least one movable member which is permanently connected to rotate with one of said two input and output members, the differential speed of which is controlled, said movable member being actuated to engage with or to be released from one of said inner and outer elements of said viscous fluid coupling device, such that when engaged, said friction clutch transmitting a torque between said one of said two input and output members and said adjacent element of said viscous fluid coupling; and

centrifugal means for actuating said movable member, said actuating means being integrated into said clutch and responsive to the speed of rotation of said one of said two

VOL 1165 ISS 3 AG 16 1994 UMI

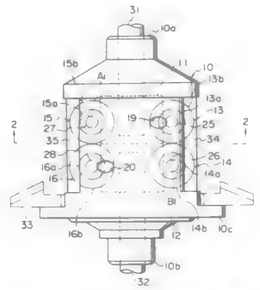
input and output members, the differential speed of which is controlled.

5,338,267

WORM DIFFERENTIAL GEAR MECHANISM

Satoshi Takahashi, and Isao Ishikawa, both of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,107
Claims priority, application Japan, Jun. 20, 1991, 3-055252[U]
Int. Cl.[5] F16H *1/30*
U.S. Cl. 475—227 **10 Claims**



1. A worm differential gear mechanism comprising;

a differential case for retaining rotatably axle shafts at first and second ends thereof, said differential case being driven rotationally from outside via a gear which is provided on an outer circumference of the second end thereof;

a pair of worm gears provided in said differential case, each worm gear connected to said axle shafts, respectively, and said worm gears being arranged coaxially and being independently rotatable;

a plurality of element ears, each of said element gears having a worm wheel and at least one spur gear, each of said at least one spur gear being non-rotatably mounted on a respective end of the worm wheel, said element gears being arranged in at least one pair such that the worm wheel of one element gear of the at least one pair meshes with one worm gear, while the worm wheel of the other element gear of the at least one pair meshes with the other worm gear, and each of the at least one spur gear of one element gear of the at least one pair meshes with a corresponding at least one spur gear of the other element gear of the at least one pair, each of said at least one pair of element gears being arranged tangentially to the periphery of its respective worm gear and being rotatably mounted in an opening formed in the differential case and each of said element gears having a first and second end;

a plurality of journal pin insertion ports formed at respective ends of the element gears of said at least one pair, the insertion port of one element gear of each of said at least one pair being located at the first end of said one element gear and of each of said at least one pair, the insertion port of the other element gear of each of said at least one pair being located at the second end of said other element gear and of each of said at least one pair, the first end of the one element gear being opposite to the second end of the other element gear and the second end of the one element gear and the first end of the other element gear being without insertion ports; and

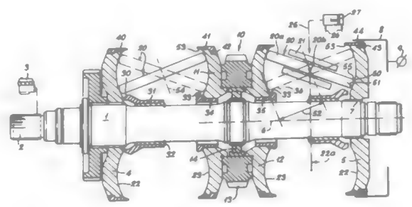
a plurality of journal pins, inserted from said journal pin insertion ports, for retaining each of element gears rotatably to said differential case.

5,338,268

TOROIDALRACE ROLLING-TRACTION TYPE TRANSMISSION

Christopher J. Greenwood, Preston, England, assignor to Torotrak (Development) Limited, England

Filed Jun. 10, 1993, Ser. No. 50,434
Claims priority, application United Kingdom, Nov. 16, 1990, [illegible]
Int. Cl.[5] F16H *15/08*
U.S. Cl. 476—10 **11 Claims**



1. A variator for a continuously-variable-ratio transmission of the toroidal-race rolling-traction type, said variator comprising:

a plurality of rollers (20);

input discs (4, 5) and output discs (11, 12) each having an inner and an outer edge and each forming part-toroidal races (22, 23), each of said plurality of rollers spaning a toroidal clearance between its respective input and output discs diametrically, and a center (20*b*) of each of said plurality of rollers being capable of limited movement back and forth, during use, along a center circle (22*a*) of the toroidal clearance;

wherein stop means (40, 41, 30, 33) are mounted adjacent both the inner and outer edges of the part-toroidal races (22, 23) of both said input and said output discs between which said plurality of rollers are positioned in order to prevent each of said plurality of rollers from running off one of the inner and outer edges.

5,338,269

Patent Not Issued For This Number

5,338,270

Patent Not Issued For This Number

5,338,271

EXERCISER DEVICE FOR SIMULATING MOUNTAIN CLIMBING AND RUNNING

Leao Wang, Taichung Hsien, Taiwan, assignor to Greenmaster Industrial Corporation, Taichung Hsien, Taiwan

Filed Aug. 17, 1993, Ser. No. 107,174
Int. Cl.[5] A63B *69/18, 21/00*
U.S. Cl. 482—52 **5 Claims**

1. An exerciser for simulating climbing and running comprising:

a) a main body;

b) a supporting stem carried by the main body and including an interior space, a top portion provided with a first slot therein and a bottom portion provided with a second slot therein;

c) a positioning plate mounted to the top portion of the supporting stem;

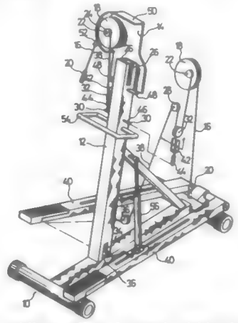
d) a rotating pulley at each of two opposite sides of the positioning plate;

e) a driving rope around each rotating pulley, with each driving rope including a handle at an end thereof;

f) an auxiliary pulley coaxially mounted with each rotating pulley, each auxiliary pulley being of smaller diameter than each rotating pulley;

g) a pair of positioning pulleys located at the first slot of the supporting stem;

h) a pair of horizontal struts extending outwardly from the supporting stem and a moving pulley connected to each horizontal strut;



i) a pair of guiding pulleys located within the second slot;

j) a pair of guiding ropes, each guiding rope having a first end secured to an auxiliary pulley and extending firstly around a moving pulley and secondly around a positioning pulley, the guiding ropes crossing within the interior space of the support stem, each guiding rope extending around a guiding pulley and outwardly of the supporting stem; and

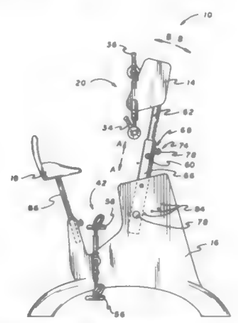
k) a pair of treadles movably secured to the main body and each guiding rope including a second end secured to a treadle so that when a user moves the treadles, the rotating pulleys rotate correspondingly when the user pulls the handles.

5,338,272

EXERCISE MACHINE

Edward C. Sweeney, III, 100 Kendall Rd., Keene, N.H. 03431

Filed Dec. 3, 1993, Ser. No. 160,823
Int. Cl.[5] A63B *21/00*; G05G *1/14*
U.S. Cl. 482—57 **18 Claims**



1. An exercise apparatus comprising:

a body having an upper portion and a lower portion joined to said upper portion;

a first crank mechanism rotatably attached to said upper portion, said first crank mechanism having a first rotatable main shaft defining a first horizontal axis of rotation and a first pair of moment arms each attached to opposite ends of said first rotatable main shaft, said first pair of moment arms having a first pair of throws, each one of said first pair of throws being attached to one of said first pair of moment arms; and

a second crank mechanism rotatably attached to said lower portion, said second crank having a second rotatable main shaft defining a second horizontal axis of rotation and a second pair of moment arms attached to opposite ends of said second rotatable main shaft, said second pair of moment arms having a second pair of throws, each one of said second pair of throws being attached to one of said second pair of moment arms;

said second horizontal axis of rotation being located vertically below said seat;

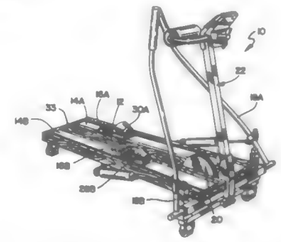
at least one of said first and second crank mechanisms having means for adjusting the length of a said respective rotatable main shaft for providing axial adjustment.

5,338,273

QUICK CHANGE MECHANISM FOR SYNCHRONOUS/ASYNCHRONOUS EXERCISE MACHINE

Jeffrey D. Metcalf, Albion, and Daniel F. Brashear, Olney, both of Ill., assignors to Roadmaster Corporation, Olney, Ill.

Filed Jan. 27, 1993, Ser. No. 9,717
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—70 **7 Claims**



1. A method for changing a synchronous/asynchronous exercise machine between a synchronous mode and an asynchronous mode, the method comprising the steps of:

a) providing a synchronous/asynchronous exercise machine comprising a first movable element and a second movable element for accepting force, a first drive belt operatively connected to the first movable element such that the first drive belt and the first movable element move conjointly, and a second drive belt operatively connected to the second movable element such that the second drive belt and the second movable element move conjointly; and

b) releasably operatively coupling the first movable element to the second movable element by releasably operatively clamping the first drive belt to the second drive belt such that, as the first movable element moves in a first direction, the second movable element moves in a second direction opposite to the first direction.

5,338,274

LEG EXERCISE MACHINES

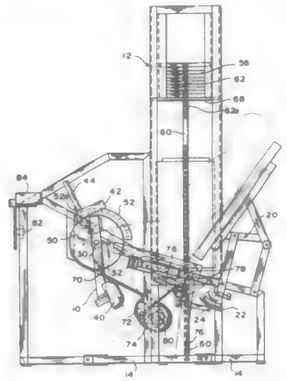
Arthur A. Jones, 1155 NE. 77th St., Ocala, Fla. 32670

Continuation-in-part of Ser. No. 909,658, Jul. 3, 1992, Pat. No. 5,256,125. This application Jul. 29, 1992, Ser. No. 921,112
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—100 **11 Claims**

1. A machine for exercising leg muscles including in combination, a movement arm rotatable about a generally horizontal axis, a seat for receiving a user with the legs engageable with the movement arm to move the movement arm in one direction about said axis, a weight stack including a resistance weight and a vertical stack pin connectable to the resistance weight, a sprocket connected to the movement arm to rotate therewith, connecting means including a chain or cable between the sprocket and a lower portion of the stack pin to raise the stack pin when the movement arm is rotated in one direction about

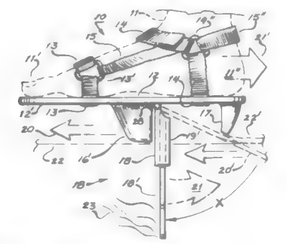
VOL 1165 ISS 3 AG 16 1994 UMI

said axis, and wherein the chain or cable is connected to a lower portion of the stack pin, and wherein there is further included a cam spaced from the sprocket and being connected to said cable or chain, and wherein said chain or cable extends



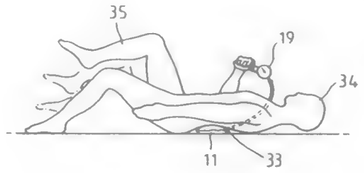
about said cam and downwardly to the lower portion of the stack pin where it is attached to the sack pin.

5,338,275
HYDRO-THERAPEUTIC REHAB-FOOTGEAR
Paul W. Chek, 8308 (#1-E) Regency Rd., San Diego, Calif. 92122
Filed Jan. 12, 1993, Ser. No. 3,442
Int. Cl.[5] A63B *21/008*
U.S. Cl. 482—111 **9 Claims**



1. An aquatic footgear comprising:
a platform-sole adapted to be supported beneath a wearer's foot having a top surface, a bottom surface, a front end portion, a back end portion, and a longitudinal axis, said platform-sole further comprising retentive means having straps adapted to extend over the upper portion of the foot and thereby securing said platform-sole to the foot;
a hydro-paddle member with two ends connected at one of said ends to the bottom surface of said platform-sole transverse to the longitudinal axis, said hydro-paddle member swingable between a first position of high drag wherein said hydro-paddle member is positioned substantially perpendicular to said bottom surface of said platform-sole and a second position of low drag wherein said hydro-paddle member is positioned at an acute angle with respect to the bottom surface of the platform sole and said other end of said hydro-paddle member is positioned below the back end of said platform-sole;
a first stopper device extending from the platform-sole adjacent the connected end of the hydro-paddle member for preventing the hydro-paddle member from swinging forward beyond the first position; and
a second stopper device extending from the platform-sole proximal to the back end portion thereof for preventing the hydro-paddle member from swinging aftward beyond a predetermined maximum position.

5,338,276
EXERCISE MONITORING DEVICE
Gwendolen A. Jull, 51 Barkala Street, and Carolyn A. Richardson, 31 Bruckner Street, both of The Gap, Queensland, 4061, Australia
Division of Ser. No. 783,299, Oct. 28, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 29,737
Claims priority, application Australia, Jun. 19, 1991, PK6744
Int. Cl.[5] A63B *21/008*
U.S. Cl. 482—113 **12 Claims**

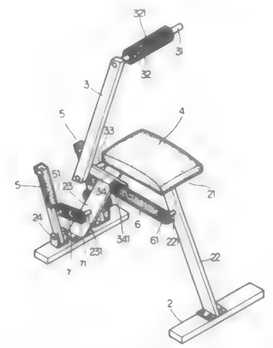


1. A process of self monitoring of physiotherapy or physical therapy exercise which involves muscular movement including stretching of muscles, the process including the steps of:
(a) supporting a pressure pad having a plurality of substantially separate compartment, the compartments being at least partially inflated while in use, the pressure pad being positioned between a body part of a patient requiring such exercise ad a support surface, the pressure pad being connected by an air line to a pressure biofeedback means for permitting monitoring of pressure biofeedback by the patient;
(b) inflating the pressure pad until the pressure pad moulds to the body pat and exerts a monitoring pressure on the body part;
(c) determining and monitoring any deviation in pressure once a constant pressure has been obtained, the determination and monitoring being performed by the patient while the patient performs the exercise; and
(d) deflating the pressure pad after the patient completes the exercise.

5,338,277
BODY BUILDING APPARATUS WITH A NECK MASSAGER
Li H. Yang, No. 11, Alley 1, Lane 78, Changhua, Taiwan
Filed May 11, 1993, Ser. No. 62,811
Int. Cl.[5] A63B *21/055*
U.S. Cl. 482—130 **2 Claims**

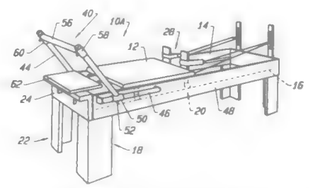
1. A body building apparatus comprising a base frame having a seat supported between a front stand and a back stand at the top; two pedals, each having a bottom end pivotally connected to a pivot holder on a base of said back stand and a middle part thereof connected to said back stand by an elastic link; a rocker arm having a top end connected with a handle at a right angle thereto, and a bottom end connected with a mounting rod at a right angle thereto, said handle being covered with a cylindrical member, said cylindrical member having raised portions formed over the outside surfacer thereof for

massaging said mounting rod being revolvably connected to said back stand; and a connecting rod having one end fixed to



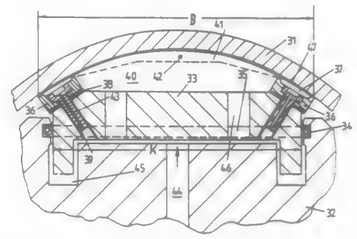
said rocker arm at a right angle thereto and an opposite end connected to said front stand by an elastic member.

5,338,278
EXERCISE APPARATUS
Ken Endelman, 7500 14th Ave., Suite 23, Sacramento, Calif. 95820
Continuation-in-part of Ser. No. 940,495, Sep. 4, 1992. This application Sep. 9, 1992, Ser. No. 942,650
Int. Cl.[5] A63B *21/04*
U.S. Cl. 482—142 **4 Claims**



1. An exercise apparatus utilizing, in combination, a platform slidable on a frame against a resistance force, the improvement comprising:
a. a headrest connected to the slidable platform;
b. means for adjusting said headrest horizontally and vertically relative to the platform, including a bracket having first and second members angularly connected to one another, each of said first and second members including first and second slots, respectively, said first member further including a first fastener capable of releasably holding said first member to the platform along said first slot and a pin extending from said platform, said another slot, said first member further including at least another slot having a plurality of rests capable of engaging said pin along said another slot, said second member further including a second fastener capable of releasably holding said second member to said headrest along said second slot.

5,338,279
HYDROSTATICALLY SUPPORTED SAG-COMPENSATION ROLL, IN PARTICULAR FOR PAPER MANUFACTURING MACHINES
Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Fed. Rep. of Germany
PCT No. PCT/EP92/01562, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO93/01351, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 10, 1992, Ser. No. 30,150
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1991, 4123115
Int. Cl.[5] B30B *3/04*
U.S. Cl. 492—7 **20 Claims**



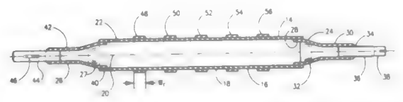
1. A sag-compensation roll, particularly for paper manufacturing machines, including:
a) a rotatable roll shell (1), and a stationary yoke (2) disposed inside of said roll shell (1) and extending therethrough;
b) said roll shell (1) having a rotational axis, an inside diameter, and an inner surface, at least one oblong pressure shoe (87, 33; 53–57) disposed between the roll shell (1) and the yoke (2), said pressure shoe having an outer contour which matches the inner surface of the roll shell, said shoe extending parallel to the rotational axis, said shoe being tiltable about its longitudinal axis and being movable radially with respect to the yoke;
c) said pressure shoe including hydrostatic pressure pockets (11, 11) in its said outer contour for transmission of a pressing force from the roll shell (1) to the yoke (2);
d) a pressure space (6; 45; 62) located between the pressure shoe and the yoke, said pressure space having an active width (K) measured between sidewalls of the pressure space (6; 45; 62) in a direction transverse to the length of the pressure shoe, said active width being at least 0.2 times the inside diameter of the roll shell (1);
e) the pressure shoe (8; 33; 53–57) having a total width (B) that is at most 1.3 times the active width (K) of the pressure space;
f) the pressure shoe (8; 33, 53–57) having a lower side facing the yoke (2), said lower side being hydraulically supported; and
g) the pressure pockets (11, 12) being delimited by longitudinal ridges (9, 10) that have a width (a, b) equal to at most 1/20 of the active width (K) of the pressure space (6; 45; 62).

5,338,280
ANNEALING AND TUNNEL FURNACE ROLLS
Jorge A. Morando, 34210 James J. Pompo Dr., Fraser, Mich. 48026
Filed Mar. 24, 1993, Ser. No. 36,328
Int. Cl.[5] B23P *15/00*
U.S. Cl. 492—36 **2 Claims**

1. A roll for transferring a flat, heated strip of a first steel alloy from an annealing furnace, comprising:
an elongated tubular body having a longitudinal axis;
shaft means attached to opposite ends of the body for supporting the body for rotation about the axis;

VOL 1165 ISS 3 AG 16 1994 UMI

structure integrally disposed on said body forming a discontinuous surface for contacting and supporting the flat heated strip on the tubular body as the tubular body is being rotated, said structure being formed of a second steel alloy selected so as to be relatively insoluble with respect to the first steel alloy of the heated strip; and



the area of contact between the steel strip and the structure on the roll being chosen according to the formula L/P, in which L is the load of the strip on said structure and P is the penetration hardness of the strip material at the furnace operating temperature.

5,338,281

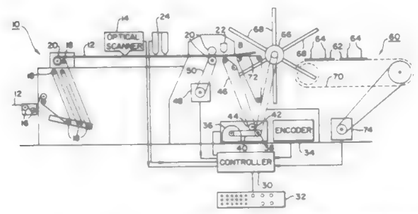
WICKET SERVO METHOD AND DEVICE IN A BAG MAKING MACHINE

Peter Terranova, Howard Beach, N.Y., assignor to Ro-An Industries Corporation, Middle Village, N.Y.

Filed Mar. 18, 1993, Ser. No. 32,971

Int. Cl.[5] **B31B** *23/16, 23/64, 23/98*

U.S. Cl. 493—28 **19 Claims**



1. A method for stacking plastic bags in a plastic bag making machine, comprising the steps of

drawing a tubular plastic web through a pair of draw rolls,

forming individual bags by cutting and sealing the plastic web via a cutting and sealing blade,

providing bag stacking mechanism with a plurality of pin stack elements connected for movement on an endless belt-type conveyor such that a first one of said pin stack elements is in a position to receive the bags being placed on said bag stacking mechanism,

carrying the bags to said first pin stack element on said bag stacking mechanism,

coupling said conveyor to a first servo-motor,

indexing the number of bags on said first pin stack element,

connecting said draw rolls to a second servo-motor and controlling the operation of said draw rolls via said second servo-motor,

providing a servo-controller for monitoring the number of bags indexed on said first pin stack element and for sending a signal to said first and second servo-motors when the number of bag indexed on said first pin stack element reaches a predetermined number, said servo-controller being connected to said first servo-motor and said second servo-motor,

moving said conveyor by means of said first servo-motor upon said servo-controller sending to said first servo-motor said signal such that said first pin stack element is moved and a second one of said pin stack elements on said conveyor is brought into its place, and

coordinating the operation of said draw rolls via said second servo-motor with the movement of said conveyor via said first servo-motor by means of said servo-controller.

5,338,282

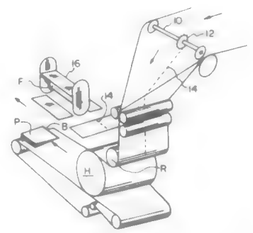
AUTOMATIC TRIMMING MACHINE

Rock A. Ferrone, 1885 Main St., Pittsburgh, Pa. 15215

Filed Mar. 23, 1993, Ser. No. 35,462

Int. Cl.[5] **B41F** *13/56;* **B65H** *35/02, 35/04, 45/28*

U.S. Cl. 493—342 **14 Claims**



1. A trimming system for a web press comprising:

a paper perforation means for perforating a web of paper along a folding line;

a means for cutting said web of paper into individual paper sheets;

a paper folding means for folding the paper sheets along the folding line forming a backbone along a first side of the folded paper; and

a preliminary trimming unit for trimming the folded paper, said preliminary trimming unit including:

a first knife means positioned on a second side of the folded paper for cutting the folded paper to a specified size,

a second knife means positioned on the first side of the folded paper for cutting the backbone from the folded paper,

a vacuum means positioned above said second knife means for removing the severed backbone,

a third knife means positioned for cutting a top edge of the folded paper,

a fourth means positioned for cutting a bottom edge of the folded paper, and

a finish trimming unit receiving the preliminarily trimmer paper from said preliminary trimming unit and adapted to cut the preliminarily trimmed paper into distinct products.

5,338,283

CENTRIFUGE ROTOR IDENTIFICATION SYSTEM

John A. Fleming, Newtown, and Edward A. Kakos, Norwalk, both of Conn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 9, 1992, Ser. No. 958,996

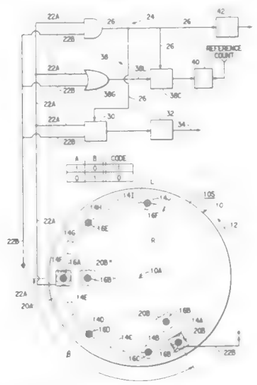
Int. Cl.[5] **B04B** *15/00*

U.S. Cl. 494—10 **34 Claims**

1. A rotor identification system operable to identify each of a plurality of centrifuge rotors as the same is rotated about an axis of rotation, each rotor having at least two synchronizing detectable elements and up to a number N identifying detectable elements thereon, the synchronizing detectable elements being arranged in a predetermined relationship with respect to each other and with the axis of rotation, the system comprising:

a first and a second detector, the detectors also being arranged in the same predetermined relationship with respect to each other and with the axis of rotation, each detector being operative to generate a signal upon the passage of a detectable element in proximity thereto; and

means responsive to the substantially simultaneous generation of a signal from both of the first and second detectors produced by the substantially simultaneous passage of



each of the synchronizing detectable elements in proximity to a respective detector for generating a synchronizing signal.

5,338,284

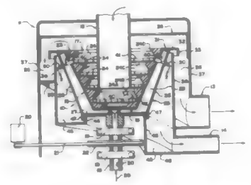
CENTRIFUGAL SEPARATOR WITH SUBSTANTIALLY CONTINUOUS DISCHARGE OF FINES

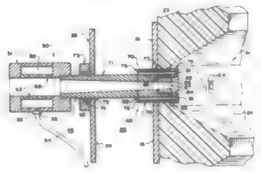
Benjamin Knelson, 20321-86th Avenue, R.R. #11, Langley, British Columbia, Canada V3A 6Y3

Filed Jul. 30, 1992, Ser. No. 922,338

Int. Cl.[5] **B04B** *11/00*

U.S. Cl. 494—28 **19 Claims**





1. An apparatus for separating intermixed materials of different specific gravity comprising a centrifugal bowl having a base and a peripheral wall surrounding an axis passing through the base and generally upstanding from the base to an open mouth, means mounting the bowl for rotation about the axis, means for feeding the materials into the bowl so that during rotation of the bowl the materials flow over the peripheral wall for discharge from the open mouth, first guide means for collecting the discharged materials, a plurality of inwardly projecting rings carried on the peripheral wall and extending therefrom generally towards the axis over which the materials pass so that heavier material collects between the inwardly projecting rings and lighter material passes thereover to the mouth for discharge therefrom, the plurality of rings surrounding the axis at axially spaced positions along the peripheral wall and providing between each ring and the next adjacent ring an annular recess into which the heavier material collects, each annular recess having associated therewith a plurality of angularly spaced discharge openings each extending through the peripheral wall substantially radially outwardly therefrom, each discharge opening extending over only a small part of the angular extent of the respective annular recess so as to leave a major part of the angular extent of the respective annular recess free from said discharge openings and each discharge opening being at a position aligned with the respective annular recess to allow said heavier material in the annular recess to escape therefrom through the plurality of discharge openings, second guide means for collecting said heavier material from the plurality of discharge openings, and fluidizing means for fluidizing said heavier material in the annular recesses to cause said heavier material in the annular recess to move circumferentially relative to the peripheral wall of the bowl to the discharge openings to escape from the annular recess to said second guide means.

5,338,285

ROTARY DISCHARGED TYPE CENTRIFUGAL SEPARATOR HAVING A PANTOGRAPH LINK-TYPE SCRAPER

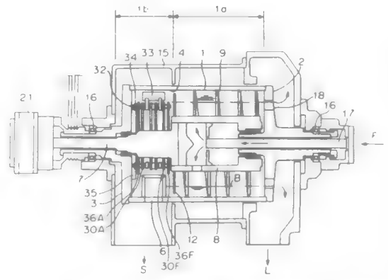
Kazuki Omori, Kawasaki, Japan, assignor to Mitsubishi Kakoki Kaisha Ltd., Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,439

Claims priority, application Japan, Aug. 28, 1992, 4-253949

Int. Cl.[5] **B04B** *11/08*

U.S. Cl. 494—55 **6 Claims**



1. A rotary discharge type centrifugal separator, comprising:

a revolving cylindrical bowl having a central axis, said cylindrical bowl being rotatable around said central axis, said cylindrical bowl comprising a separating zone defined by a portion of the cylindrical bowl which extends from a first end of the cylindrical bowl to a position of the cylindrical bowl near a second end of the cylindrical bowl, and a scraping section substantially defined by a remaining portion of the cylindrical bowl, said cylindrical bowl further comprising said plates positioned at said first and second ends of the cylindrical bowl to close said first and second ends of the cylindrical bowl, and a hollowed screw conveyor shaft which coaxially extends in the revolving cylindrical bowl and is rotatable therein at a small differential speed, said hollowed screw conveyor shaft comprising a helical blade on an outer surface of the screw conveyor shaft in an area corresponding to said separating zone, wherein an outer edge of said helical blade faces an inner surface of the revolving cylindrical bowl, and feed slurry is fed through a hollowed portion of the hollowed screw conveyor shaft to said separating zone of the revolving cylindrical bowl so that clarified liquid is taken out from an end portion of the separating zone;

scraping means rotatably positioned in said scraping section for discharging sludge through a discharge port in the

VOL 1165 ISS 3 AG 16 1994 UMI

scraping section, said scraping means being outwardly urged in a radial direction by a centrifugal force, said scraping means comprising a rhomboid pantograph link type scraper device comprising four link bars having the same length, said four link bars being pivotally connected to each other at pivot portions in a rhomboidal shape, said scraper device being mounted on the screw conveyor shaft in the scraping section in a coaxial manner, and a rectangular scraping plate outwardly extends from the scraper device from a position near each of the pivot portions; and

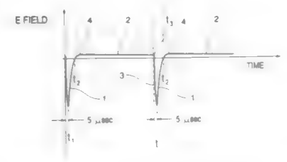
drive control means attached to one of said end plates of the revolving cylindrical bowl for controlling symmetrical expansion and contraction movements of said rhomboid pantograph link type scraper device in a diametrical direction of the revolving cylindrical bowl during revolution so that a top of the scraping plates substantially define a closed curve during said revolution, wherein a small air gap is defined between said top of the scraping plates and a guide surface in the inner surface of the revolving cylindrical bowl.

5,338,286

ELECTROMAGNETIC BIORESPONSE BY SELECTIVE SPECTRAL SUPPRESSION IN PULSED FIELD STIMULATION

Joan Abbott, New York, N.Y.; Richard Cangialosi, Branchville, and Brian A. Pethica, Upper Montclair, both of N.J., assignors to Electro-Biology, Inc., Parsippany, N.J.

Filed Dec. 8, 1992, Ser. No. 987,461
Int. Cl.[5] A61N *1/00*
U.S. Cl. 600—14 **18 Claims**



1. A noninvasive apparatus for treating living tissue and cells by means of a pulsed electromagnetic field, comprising:

means for generating a drive signal including a series of pulses having high-frequency components associated with abrupt changes in value; and

means responsive to said drive signal for generating a pulsed field effective to produce a therapeutic bioresponse when coupled to an afflicted body part to be treated, said pulsed field generating means including signal shaping means for selectively reducing signal components of said drive signal at frequencies above 50 kHz.

5,338,287

ELECTROMAGNETIC INDUCTION HEARING AID DEVICE

Gale W. Miller, 2328 Auburn Ave., Suite 3, Cincinnati, Ohio 45219; Eugene A. Janning, Jr., 4480 Lake Forrest Dr., #308, Cincinnati, Ohio 45242, and John L. Janning, 332 Vindale Dr., Dayton, Ohio 45440

Filed Dec. 23, 1991, Ser. No. 812,404
Int. Cl.[5] H04R *25/00*
U.S. Cl. 600—25 **6 Claims**

1. An electromagnetic induction type hearing aid comprising: electromagnetic transmitting means having an input means for receiving a radiated acoustical signal and an output means for radiating an alternating electromagnetic signal whose frequency components are determined by said input signal; and, a wireless magnetostrictive vibrator of bimorph design and of biocompatible material and adapted to be surgically implanted on one of the bones of ossicular chain in a spatial operative relationship to said output means without the need for mechanical anchoring and without any components passing through



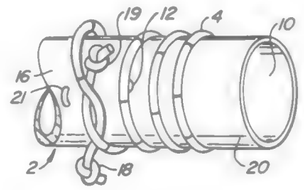
the boundary of the middle ear of a user, and being further adapted to be responsive to said electromagnetic signal radiated from said output means to vibrate said ossicular chain in response to said radiated electromagnetic signal to stimulate said inner ear to create the perception of sound to the user.

5,338,288

NONINVASIVE MALE POTENCY DEVICE

Eugene Finkle, 48900 N. Hwy. 101/P.O. Box 309, Laytonville, Calif. 95454

Filed Aug. 20, 1992, Ser. No. 933,025
Int. Cl.[5] A61F *5/41*
U.S. Cl. 600—41 **4 Claims**



1. An improved device to produce or maintain a male erection-like state with a vacuum-generating apparatus, said improved device comprising:

a cylinder coupled to the vacuum-generating apparatus at one end and adapted to receive a male sex organ at another end to initiate an engorgement of the male sex organ;

an elongated constrictor positioned on an exterior surface of the cylinder, said elongated constrictor

formed from an elastomeric material having a generally linear configuration when not in use,

dimensioned to provide a plurality of turns around the cylinder,

slidable from the cylinder to the base of the male sex organ, and

adapted to constrictively contact a base of the male sex organ to maintain engorgement therein,

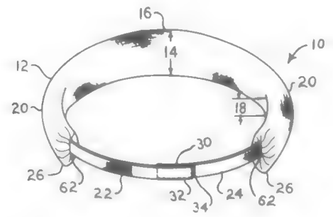
wherein said constrictor includes a bulge positioned to assist with retention of the constrictor when the constrictor is in contact with the male sex organ.

5,338,289

SPINAL SUPPORT FOR RECLINING PERSONS

John T. Cooker, 220 S. Nashville Ave., Tucson, Ariz. 85747

Filed Mar. 29, 1993, Ser. No. 38,487
Int. Cl.[5] A61F *5/02*
U.S. Cl. 602—19 **14 Claims**



1. A spinal support for spinal alignment use by a person reclining upon a surface, said spinal support comprising:

a padded support portion having a median portion and left and right side portions continually formed with sufficient thickness to prevent sagging of the supported area of the person's body,

said padded support portion including at least one support pad disposed therein, said at least one support pad being removable from said padded portion;

a belt portion comprising first and second mating ends extending respectively from said left and right side portions of said padded support portion; and

said belt portion and said support portion forming a toroid when said first and second ends of said belt portion are joined together, with said support portion comprising the majority of said toroid, whereby,

said spinal support is secured around the waist of a person by means of said first and second mating ends of said belt portion with said median portion of said padded support portion adjacent the lumbar area of the person and said left and right side portions of said padded portion respectively adjacent the left and right sides of the waist area of the person, thereby providing additional support between the lumbar area and the left and right sides of the waist area of the person and the surface to prevent sagging while the person is reclining on the surface for spinal alignment.

5,338,290

ELASTIC VARIABLE TENSION DEVICE FOR THE TREATING OF PAIN

George M. Aboud, 3939 E. Glenrosa, Phoenix, Ariz. 85018

Filed Jul. 21, 1993, Ser. No. 96,593
Int. Cl.[5] A61F *13/00*
U.S. Cl. 602—75 **15 Claims**

1. An elastic variable tension medical device comprising:

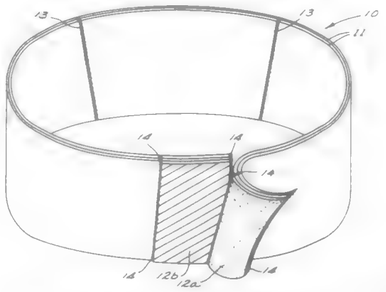
a) an elastic band stack having at least two elastic bands stacked one atop another and forming a stack of elastic bands, said stack of elastic bands having a first end and a second end and having a first side and a second side, said at least two elastic bands being attached to one another at said first end and at said second end;

b) a hook and loop fastener having,

1) a hook portion attached to said first end of said elastic band stack and on said first side of said elastic band stack, and,

2) a loop portion attached to said second end of said elastic band stack and on said second side of said elastic band stack; and,

c) at least one reinforcing rib, said at least one reinforcing rib attached to said stack of elastic bands between said first end and said second end and extending across the width of said stack of elastic bands, and wherein each of said at least one reinforcing ribs is a series of stitches connecting said at least two elastic bands.

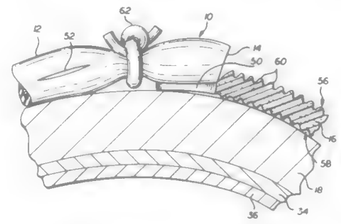


5,338,291

GLAUCOMA SHUNT AND METHOD FOR DRAINING AQUEOUS HUMOR

Lori C. Speckman, Ventura, and David A. Watson, Goleta, both of Calif., assignors to Pudenz-Schulte Medical Research Corporation, Goleta, Calif.

Filed Feb. 3, 1993, Ser. No. 12,995
Int. Cl.[5] A61F *2/14;* **A61M** *5/00*
U.S. Cl. 604—9 **20 Claims**



1. An implantable shunt device useful in treating glaucoma, comprising:

an episcleral plate having first and second surfaces, wherein at least one of the first and second surfaces includes texture means over substantially the entire surface thereof, for preventing excess fibrosis of a fibrous capsule forming around the episcleral plate;

a catheter having a first end adapted for insertion into the anterior chamber of the eye, and a second end mounted adjacent to the episcleral plate; and

a valve in a wall of the catheter, between the first end and the second end of the catheter to shunt fluid within the catheter to a location exterior of the catheter.

VOL 1165 ISS 3 AG 16 1994 UMI

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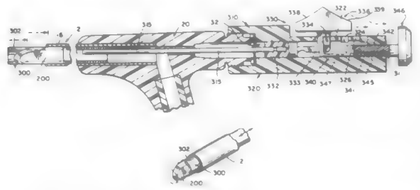
DISPOSABLE LAVAGE WITH INSTRUMENT SHIELD

Thomas P. Clement, and David P. Weber, both of Bloomington, Ind., assignors to Mectra Labs, Inc., Bloomfield, Ind.

Division of Ser. No. 948,342, Sep. 21, 1992, which is a continuation of Ser. No. 580,945, Sep. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 432,084, Nov. 6, 1989, Pat. No. 5,019,054. This application Dec. 7, 1992, Ser. No. 986,272

Int. Cl.[5] A61B *17/20, 17/32*

U.S. Cl. 604—22 36 Claims



1. A surgical device comprising

a first cannula formed to define a first interior channel, wherein said first cannula has first and second ends,

a surgical knife positioned to protrude from the first end of the first cannula,

means for shielding the surgical knife, and

means for extending the shielding means from the first interior channel of the first cannula to shield the surgical knife and for retracting the shielding means into the first interior channel to expose the surgical knife.

5,338,293

SET OF TUBES FOR PERITONEAL DIALYSIS

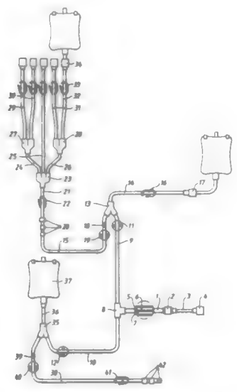
Jan-Bertil Jeppsson, Lomma, and Ingvar Losell, Staffanstorp, both of Sweden, assignors to Gambro AB, Sweden

Continuation of Ser. No. 815,178, Dec. 31, 1991, abandoned. This application May 14, 1993, Ser. No. 62,326

Claims priority, application Sweden, Feb. 18, 1991, 9100471-3

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—29 13 Claims



1. An apparatus including a tube set for use in connection with peritoneal dialysis of a patient having a peritoneal catheter with a single lumen, said apparatus comprising dialysis solution supply means for supplying fresh dialysis solution to the patient, supply tube means connected to said dialysis solution supply means for providing a flow path for said fresh dialysis solution, a unitary tubular member having a first end and a second end, said unitary tubular member containing a plurality of lumens including a first lumen and a second lumen and partition means separating said first lumen from said second lumen, both said first and second lumens and said partition means extending along substantially the entire length of said unitary tubular member, said first lumen at said first end of said unitary tubular member being connected to said supply tube means to provide a further flow path for the fresh dialysis solution to be supplied to the patient, second end connecting means connected to said second end of said unitary tubular member, said second end connecting means including a first end, a second end, and common chamber means for fluid connection with both said first and second lumens, said first end of said second end connecting means adapted for connection with said second end of said unitary tubular member, and said second end of said second end connecting means including a single lumen adapted to be connected to said peritoneal catheter of the patient, first discharge tube means connected to said second lumen at said first end of said unitary tubular member for transporting spent dialysis solution away from the patient, spent control bag means connected to said first discharge tube means for controlling the amount of spent dialysis solution discharged from the patient, and second discharge tube means connected to said spent control bag means for transporting the spent dialysis solution to a discharge location, whereby said unitary tubular member can both supply said fresh dialysis solution to the patient and discharge the spent dialysis solution from the patient and heat can be simultaneously transferred therebetween substantially along said entire length of said unitary tubular member.

5,338,294

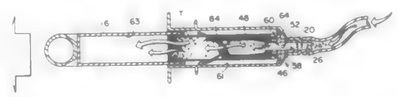
UROLOGICAL EVACUATOR

Joseph W. Blake, III, Norwalk, Conn., assignor to Jack Kaufman, Merrick, N.Y., a part interest

Filed Jun. 19, 1992, Ser. No. 900,677

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—38 12 Claims



1. A syringe for irrigating a body cavity with a sterile fluid and evacuating fluid and entrained tissue from the cavity comprising a barrel having first and second openings at opposite ends thereof, a hollow plunger having first and seconds ends wherein said first end is slidably telescoped into the barrel through said first opening for drawing fluid into and expelling fluid from the barrel through said second opening, means for controlling the order of flow into and out of the barrel through said second opening, the controlling means positioned within said barrel adjacent to and in communication with said second opening, said controlling means defining an inlet path and an outlet path, an inlet valve positioned in the inlet path providing for influx of fluid into the barrel and preventing reverse flow through the inlet path, receiving and separating means within the barrel for receiving the influx through the inlet valve and for separating and collecting tissue entrained in the fluid, an outlet valve positioned in the outlet path providing for efflux of fluid from the barrel and for preventing the reverse flow through the outlet path, and the hollow plunger having an opening in said first end for receiving said receiving and separating means and for providing additional fluid volume within the syringe when the plunger is depressed into the barrel.

5,338,295

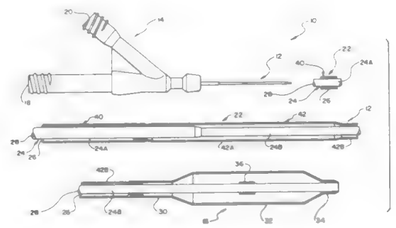
DILATATION CATHETER WITH POLYIMIDE-ENCASED STAINLESS STEEL BRAID PROXIMAL SHAFT

Richard G. Cornelius, Golden Valley; Michelle Arney, Minneapolis, and James R. Pray, New Hope, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 776,559, Oct. 15, 1991, Pat. No. 5,217,434. This application Apr. 9, 1992, Ser. No. 867,164

Int. Cl.[5] A61M *29/00; 25/00, 29/02*

U.S. Cl. 604—96 26 Claims



1. A dilatation catheter comprising:

an inflatable balloon; and

an outer tubular shaft having a proximal outer tube section and a distal outer tube section, the proximal outer tube section comprising a polyimide material and a tubular braid having a stainless steel member, the proximal outer tube having an irregular outer surface formed by the polyimide material comformingly encasing the tubular braid of the stainless steel member, the distal outer tube section formed of a polymeric material and having a proximal end connected to a distal end of the proximal outer tube section, and a distal end connected to a proximal end of the balloon.

5,338,296

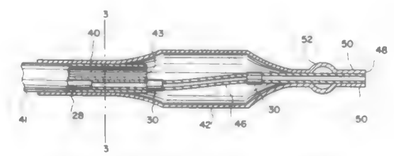
CATHETER AND SHEATH ASSEMBLY

David A. Dalessandro, Scotch Plains; George G. Sanderson, Clark, and John S. Kula, Budd Lake, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 6, 1993, Ser. No. 896

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 7 Claims



1. An assembly comprising a sheath for containing a catheter and a catheter contained therein, the distal portion of said catheter to be delivered to a situs in a body passageway, said assembly comprising:

a sheath comprising an elongated polymeric tube having open proximal and distal ends for containing the catheter therein;

the diameter of said sheath at its distal portion being smaller than the diameter of said sheath at its proximal portion;

the hardness of the polymer employed for said distal portion being less than the hardness of said polymer at its proximal portion;

and the wall thickness of the sheath at its distal portion being less than the wall thickness of the sheath at its proximal portion; whereby said sheath is more flexible at its distal portion then its proximal portion;

said catheter having a proximal and a distal end and being adapted to be contained within the sheath and comprising:

an elongated tube having a lumen therethrough and an outer surface;

said outer surface comprising a toroidal enlargement near the distal end of said catheter, said toroidal enlargement presenting in the longitudinal cross section of the catheter a smooth curve;

whereby, when said catheter is contained in said sheath, the distal end of said sheath, in its extreme distal position with respect to the catheter, bears against the proximal portion of said enlargement and is precluded from further distal relocation with respect to the catheter.

5,338,297

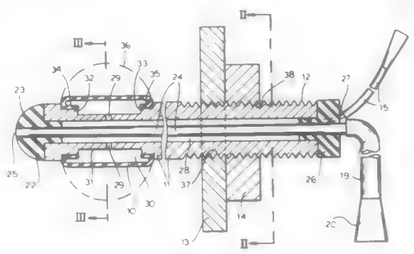
CERVICAL CANAL BALLOON CATHETER

Walter Kocur, Yonkers, and Basil Kocur, Buffalo, both of N.Y., assignors to Kocur Medical Associates, Yonkers, N.Y.

Filed Mar. 19, 1993, Ser. No. 34,675

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 5 Claims



1. A device for sealing the cervical canal and infusing a solution therein which comprises:

an outer tube having an inner end receivable in a cervical canal and an outer end remote from said inner end, said outer tube being formed with an external screwthread over a region thereof proximal to said outer end;

an expandable balloon mounted on said inner end of said outer tube;

an inner tube extending through said outer tube and adapted to communicate it to said inner end with the uterus;

a ring threaded onto said external screwthread and adapted to be screwed therealong up against the external cervical os;

a locking nut threaded on said outer screwthread and engageable with said ring for locking same against unscrewing;

means at said outer end for expanding said balloon to engage a wall of said internal cervical os;

means at said outer end for infusing a solution into said inner tube for delivery to the uterus,

said outer tube being stainless steel tube formed at said inner end with a reduced-diameter portion defining a chamber within said balloon and at least one passage communicating with said chamber, said inner and outer tubes defining a channel for delivering a balloon-expanding fluid to said chamber,

said outer tube being formed with a pair of bosses on opposite sides of said reduced-diameter portion and sealingly receiving collars of said balloon, and plugs in said inner and outer ends of said outer tube traversed by said inner tube and supporting same in said outer tube.

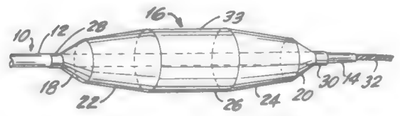
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,298

DOUBLE-TAPERED BALLOON

Jon T. McIntyre, Lowell, Mass., assignor to C.R. Bard, Inc., Murray Hill, N.J.

Filed Jun. 4, 1993, Ser. No. 71,481
Int. Cl.[5] A61M 29/00
U.S. Cl. 604—96 7 Claims



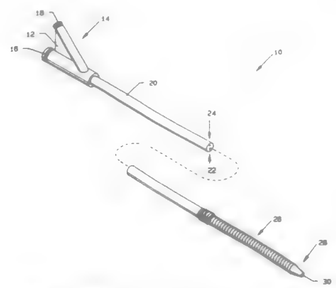
1. A balloon dilatation catheter, comprising:
a catheter shaft having a distal end and a proximal end;
an inflatable balloon secured to said distal end of said catheter shaft;
said balloon including a cylindrical section having a first end;
a first tapered section gradually tapering from a first end adjacent said first end of said cylindrical section to a second end;
a second tapered section adjacent said first tapered section, wherein said second tapered section tapers from a primary end adjacent said second end to a secondary end; and
wherein said first tapered section has a first taper angle with respect to the catheter shaft and said second tapered section has a second taper angle with respect to the catheter shaft, and said first taper angle is smaller than said second taper angle; and
wherein the length of said first tapered section is at least 33% of the length of said cylindrical section.

5,338,299

BALLOON CATHETER

Edward A. Barlow, Bloomington, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Continuation-in-part of Ser. No. 871,722, Apr. 21, 1992, Pat. No. 5,171,297, which is a continuation of Ser. No. 324,913, Mar. 17, 1989, Pat. No. 5,112,304. This application Sep. 29, 1992, Ser. No. 953,481
Int. Cl.[5] A61M 29/00
U.S. Cl. 604—96 19 Claims



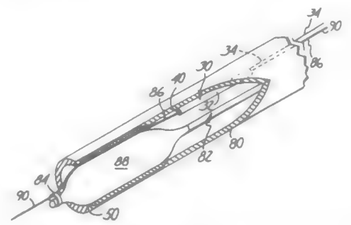
1. A balloon catheter having physical characteristics and size suitable for use in a medical procedure comprising:
a. a catheter tube having a guidewire passage and an inflation/deflation passage;
b. a hub, affixed to the proximal end of said catheter tube, including a guidewire entry port connected to said guidewire passage and an inflation/deflation port connected to said inflation/deflation passage and including in order a stop cylinder and a shock absorber in a hub chamber of said hub;
c. an elastomeric tube, having a nominal diameter approximating said catheter tube, affixed to a distal end of said catheter tube in communication with said guidewire passage to facilitate passage of a guidewire therethrough;
d. an annular balloon fixedly formed at the distal end thereof and having a port in communication with said inflation/-deflation passage of said catheter tube;
e. a helical spring, coaxially positioned with respect to said elastomeric tube within the annulus of said balloon, affixed between said elastomeric tube and said catheter tube and adapted to be compressed by longitudinal shortening of said elastomeric tube induced by radial expansion of said balloon; and,
f. said spring having a longitudinal force resisting compression for holding said elastomeric tube at a predetermined length to maintain said annular balloon in a smooth tubular shape about said elastomeric tube when said balloon is in the deflated condition.

5,338,300

PERFORMANCE ENHANCEMENT ADAPTOR FOR INTRAVASCULAR BALLOON CATHETER

James E. Cox, Plymouth, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 932,219, Aug. 19, 1992, Pat. No. 5,257,974. This application Jul. 28, 1993, Ser. No. 98,581
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.
Int. Cl.[5] A61M 29/00
U.S. Cl. 604—96 1 Claim



1. A method for modifying a performance of a balloon catheter, when the balloon is inflated within a blood vessel, comprising the steps of:
inserting the balloon catheter into the blood vessel;
inserting within the blood vessel a member having a proximal end, a distal end, and a lumen extending from the distal end to the proximal end and an elongated member attached to the member for positioning the member in contact with a surface of the balloon;
applying force to the elongated member to located the member within the blood vessel adjacent to the balloon; and
inflating the balloon so as to provide a force to the wall of the blood vessel and a surface of the member, the force securing the hollow member against the balloon so as to effect the performance not capable by the balloon alone.

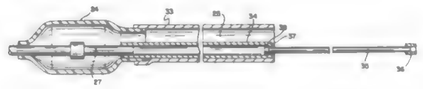
5,338,301

EXTENDABLE BALLOON-ON-A- WIRE CATHETER, SYSTEM AND TREATMENT PROCEDURE

Juan-Carlos Diaz, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Aug. 26, 1993, Ser. No. 112,684
Int. Cl.[5] A61M 29/00; A61B 6/00
U.S. Cl. 604—96 23 Claims

1. An extendable balloon-on-a-wire catheter, comprising:
a fixed wire percutaneous transluminal angioplasty balloon dilation catheter assembly which is a balloon-on-a-wire assembly having an elongated body with a proximal end portion and with a balloon member at a distal portion thereof, said elongated body being a wire-like member having an inside wall defining a lumen, said elongated body having an outer diameter substantially the same as that of a catheter guidewire;
an extension assembly longitudinally positioned within said lumen of the elongated body of the balloon-on-a-wire assembly, a longitudinally extending portion of said lumen of the elongated body defining an elongated passageway, said elongated passageway communicating pressurized



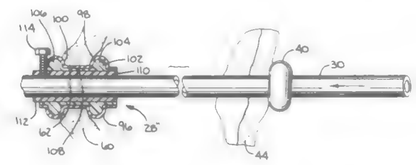
fluid between said balloon member and said proximal end portion of the balloon-on-a-wire assembly; and
said extension assembly includes a hypodermic tube secured within said balloon-on-a-wire assembly, said hypodermic tube having a proximal end and a distal end, said elongated passageway being between an exterior elongated surface of the hypodermic tube and said lumen of the elongated surface of the balloon-on-a-wire assembly, said extension assembly further including an exchange core wire slidably positioned within and extendable out of said hypodermic tube in the proximal direction, and said exchange core wire being prevented from extending out of said hypodermic tube in the distal direction.

5,338,302

VAGINAL STABILIZER CANNULA

Harrith M. Hasson, 2551 N. Clark, 8th Floor, Chicago, Ill. 60614

Filed May 3, 1993, Ser. No. 56,713
Int. Cl.[5] A61M 25/01, 25/10
U.S. Cl. 604—105 24 Claims



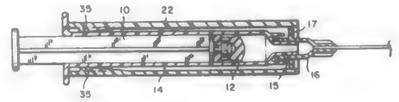
1. A cannula comprising:
a sleeve having a body with proximal and distal ends and defining a through passageway communicating between the proximal and distal body ends.
said proximal and distal body ends being open to allow a surgical instrument to be directed into the proximal body end through the body passageway and out the distal body end;
first means on the body defining a first shoulder facing in a first direction to abut a tissue wall through which the body extends; and
second means on the body defining a second shoulder facing in the first direction to abut a tissue wall through which the body extends,
said first and second means being spaced from each other to permit said first and second shoulders to abut spaced tissue walls through which the body extends.

5,338,303

SAFETY SYRINGES

Richard J. King, Jupiter, Fla., and John R. Gordon, Santa Monica, Calif., assignors to Design and Engineering Associates, Jupiter, Fla.

Filed Sep. 8, 1992, Ser. No. 940,928
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—110 8 Claims



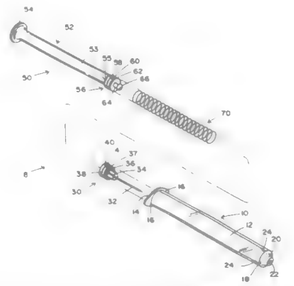
1. In a disposable shielded safety syringe comprising a syringe barrel, a slidable plunger assembly therein, and a needle assembly at one end thereof, with a safety shield surrounding at least a portion of the periphery of the syringe barrel; the improvement comprising:
opposing locking means, one at the rearward segment of the safety shield and another on the needle assembly, wherein the locking means on the needle assembly comprises an annular rigid collar member connected to and projecting outwardly from the needle hub, whereby interaction between the opposing locking means causes the extended safety shield to engage and lock the needle assembly; and
wherein the locking means on the safety shield comprise a plurality of locking stations extending into the inner surface of the sleeve.

5,338,304

NEEDLE PROTECTED SYRINGE

Robert D. Adams, Hainesport, N.J., assignor to Adventec, Inc., Camden, N.J.

Continuation of Ser. No. 898,796, Jun. 15, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 121,049
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—110 18 Claims



1. A syringe (10) having a one piece hollow body (12) that is open at a first end (14) and is substantially closed at the other end (18) except for an aperture (22) through which an injection means (32) passes and a plunger (50), which has a geometrically configured portion (66), that moves in the hollow body (12) toward the substantially closed end (18), the syringe (10) is characterized by:
a needle assembly (30) that is positioned in the hollow body (12) adjacent to the substantially closed end (18) and in sealing engagement with the hollow body, the assembly has a body portion (34, 36, 38, 40) unified with the injection means (32), the body portion has an injection means side and a plunger side with a central passage that extends between the sides and forms a communication path (47) between the hollow body (12) and the injection means

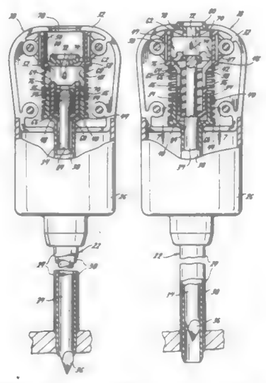
VOL 1165 ISS 3 AG 16 1994 UMI

(32), the plunger side of the body portion has a geometrically configured cavity (46) that mates with the geometrically configured portion (66) of the plunger (50) and locks the plunger and the needle assembly together as a single unit.

5,338,305
TROCAR

Alan K. Plyley, Santa Barbara; John M. Barker, Ventura; Claude Vidal, Santa Barbara, and Russell J. Redmond, Goleta, all of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 657,105, Feb. 15, 1991, Pat. No. 5,152,754. This application Jun. 25, 1992, Ser. No. 904,393
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 **17 Claims**



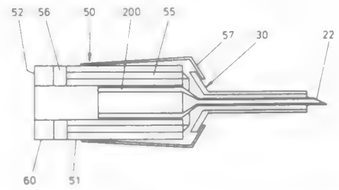
1. In combination, a cannula having a lumen, and
a trocar for placement in the lumen of the cannula to facilitate inserting the cannula through the wall of a body cavity, the trocar comprising:
a handle, an obturator with a point for piercing the wall of the body cavity, and a sleeve mounted concentrically around the obturator, the obturator retracting proximally relative to the handle generally simultaneously as the sleeve advances distally relative to the handle after the trocar point has penetrated through the wall of the body cavity.

5,338,306
CATHETER INTRODUCING DEVICE

Kadiyali M. Srivatsa, 125 Russell Court, Russell Square, London, WC1, England

PCT No. PCT/GB91/00777, § 371 Date Nov. 16, 1992, § 102(e) Date Nov. 16, 1992, PCT Pub. No. WO91/17786, PCT Pub. Date Nov. 28, 1991
PCT Filed May 16, 1991, Ser. No. 949,515
Claims priority, application United Kingdom, May 16, 1990, 9011095
Int. Cl.[5] A61M *25/01*
U.S. Cl. 604—165 **11 Claims**

1. A catheter introducing device, comprising:
holding means for holding a needle and a cannula with said needle being inserted through said cannula and having its tip projecting forwardly from said cannula;
biassing means acting on said cannula for biassing said cannula forwardly relative to said holding means and said needle; and,
locking means normally engaged with said cannula for restraining said cannula against the bias of said biassing means, said locking means being releasable for allowing

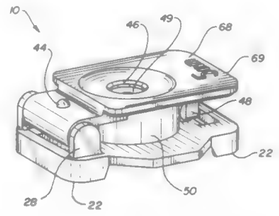


said biassing means to move said cannula forwardly over the tip of said needle.

5,338,307
ADAPTOR CAP FOR TROCAR ASSEMBLY

Randy R. Stephens, Fairfield; Renato Roxas, Mason, and Gregory C. Groenke, Loveland, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Filed Mar. 9, 1993, Ser. No. 28,453
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **11 Claims**



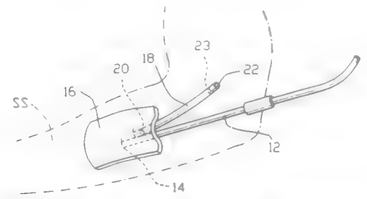
1. In a trocar, containing a cannula handle, and a cannula extending therefrom, said cannula having a internal cylindrical opening and said cannula handle having an opening at a proximal end, the opening in the cannula handle being generally the same size as the opening in the cannula, an adaptor cap assembly comprising:
a base having a cylindrical opening generally the same size as the opening of said cannula and said cannula handle; and
an outer gasket assembly hingedly attached to said base, said outer gasket having a cylindrical opening generally smaller than the cylindrical opening of said base, said outer gasket assembly capable of being matedly seated within the cylindrical opening of said base.

5,338,308
METHOD AND APPARATUS FOR INHIBITING CATHETER SEPSIS

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Filed Jun. 30, 1993, Ser. No. 85,748
Int. Cl.[5] A61M *25/02*
U.S. Cl. 604—180 **21 Claims**

1. An assembly for inhibiting catheter sepsis, comprising:
an intravenous catheter insertable through a skin surface at an insertion point;
a patch attachable to the skin surface about the insertion point so as to cover a region of said skin surface and a segment of said catheter at said skin surface; and
an ancillary tube having a distal end portion disposed substantially between said patch and said skin surface upon an application of said patch to said skin surface, said ancillary tube having an outlet port in said distal end portion, said outlet port being located beneath said patch and proximately to said skin surface upon application of said patch to said skin surface, said ancillary tube having an inlet port

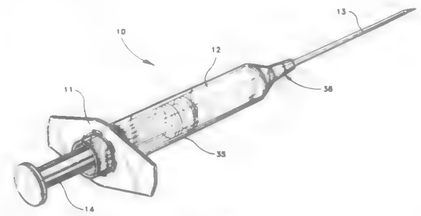


spaced in a proximal direction from said outlet port so that said inlet port is accessible via a needle upon application of said patch to said skin surface.

5,338,309
SYRINGE HAVING TWO COMPONENT BARREL

Claude Imbert, La Tronche, France, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 21, 1992, Ser. No. 918,720
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—187 **8 Claims**

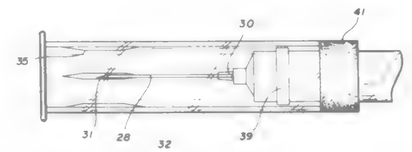


1. A syringe assembly comprising:
a hollow cylindrically shaped barrel having an internal side defining a bore, an external side, a distal end and a proximal end, said proximal end being open to accept a plunger assembly slidably within said bore, said external side having a first portion at said proximal end, a second portion adjacent to said first portion and a third portion adjacent to said second portion, said second portion including a circumferential groove defining a diameter which is smaller than a diameter defined by said first portion and a diameter defined by said third portion, said barrel having a tip at said distal end having a passageway therethrough in fluid communication with said bore;
a finger flange having an opening, said opening having a diameter defined by a plurality of inwardly facing cantilevers having recesses therebetween; and
said flange being held by said barrel so that said cantilevers are at least partially positioned in said circumferential groove, said flange opening diameter being smaller than said diameter of said first and third portions of said barrel, said cantilevers having a thickness greater than a width of said circumferential groove so that when said cantilevers are positioned in said groove a width interference exists.

5,338,310
NEEDLE DEVICE HAVING SAFETY INDICATION FEATURES

Raymond D. Lewandowski, New Providence, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Feb. 6, 1992, Ser. No. 832,103
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **16 Claims**

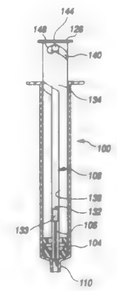


1. A safety needle device comprising:
a barrel having an inside surface defining a chamber, an open proximal end, a distal end having a needle cannula attached thereto, said needle cannula having a lumen therethrough in fluid communication with said chamber, said needle cannula projecting distally outwardly from said distal end of said barrel and terminating in a distal tip;
a needle guard mounted on said barrel for movement relative to said barrel from a retracted position in which said needle guard does not materially obstruct access to said distal tip of said needle cannula and an extended position in which said needle guard obstructs access to said distal tip;
means for releasably retaining said needle guard in said retracted position;
means for locking said needle guard in said extended position;
safety indicator means on said distal end of said barrel for visually indicating that said needle guard is not locked in said extended position; and
obscurement means on said needle guard for changing the appearance or obscuring said safety indicator means when said needle guard is in said locked extended position, said obscurement means including a colored segment including a substantially opaque portion positioned to cover said safety indicator means when said needle guard is locked in the extended position.

5,338,311
HYPODERMIC NEEDLE ASSEMBLY

Sakharam D. Mahurkar, 6171 N. Sheridan Rd., #1112, Chicago, Ill. 60660

Filed Aug. 23, 1993, Ser. No. 111,372
Int. Cl.[5] A61M *5/32, 5/00*
U.S. Cl. 604—195 **53 Claims**



1. A needle-syringe assembly operable in a normal mode and convertible to a retraction mode, comprising:

VOL 1165 ISS 3 AG 16 1994 UMI

an elongated, generally cylindrical barrel forming a hollow nozzle located at the distal end of said barrel and opening into the interior of said barrel;

a plunger slidably mounted in said barrel and forming a longitudinal cavity extending between the distal end and the proximal end of said plunger;

a needle holder carrying a hollow needle on the distal end thereof, said needle holder being slidably mounted in said longitudinal cavity of said plunger, said needle holder detachably engaging said barrel with the distal portion of said needle holder disposed within said nozzle of said barrel during the normal mode;

means for maintaining the assembly in the selected mode; and

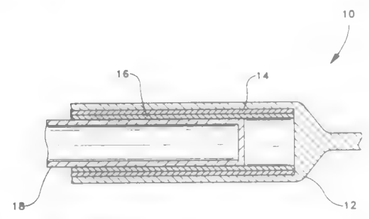
rotary retraction means for disengaging said needle holder from said barrel to switch the assembly from the normal mode to the retraction mode and for retracting said needle holder into said longitudinal cavity of said plunger such that said needle is concealed within the assembly.

5,338,312

ARTICLE HAVING MULTI-LAYERED LUBRICANT AND METHOD THEREFOR

David B. Montgomery, Cary, N.C., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Oct. 2, 1992, Ser. No. 955,963
Int. Cl.[5] A61M *5/315*
U.S. Cl. 604—230 **10 Claims**



1. An article comprising:

a) a first component having a surface coated with a film of a crosslinked first lubricant;

b) a film of a second lubricant on said crosslinked lubricant; and

c) a second component slidably engaged with said first component at an interface between the surfaces whereby said second component is in contact with said second lubricant, said first lubricant remaining substantially immobilized on said first component when said second component is slidably advanced over said second lubricant.

5,338,313

ADJUSTABLE VALVE HAVING A RADIALLY COMPRESSIBLE SEALING BODY

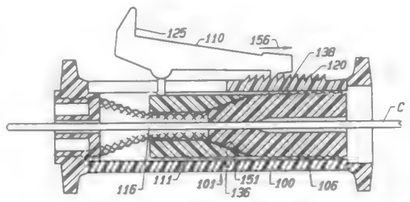
Kenneth H. Mollenauer, Santa Clara; George D. Hermann, Los Gatos; Thomas A. Howell, Palo Alto, and Michelle Y. Monfort, Los Gatos, all of Calif., assignors to Thomas J. Fogarty, M.D., Portola Valley, Calif.

Filed Dec. 17, 1992, Ser. No. 992,145
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—249 **28 Claims**

1. A surgical valve, comprising:

a sealing body having a smooth axial passage extending therethrough, the axial passage defining an axis, the sealing body having an axial position on the axis;

a toroidal body, axially aligned with the sealing body, and having an axial position on the axis, the sealing body and the toroidal body including mating surface means having a substantially circular cross section whereby changing the axial position of one of the sealing body and the toroidal body relative to the other creates a circumferentially uniform radial force to compress the axial passage of the sealing body; and



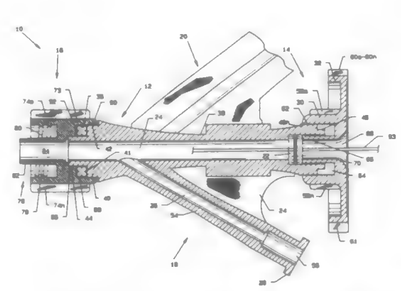
a position changing means for selectively changing the axial position of one of the sealing body and the toroidal body relative to the other.

5,338,314

ROTATING Y-CONNECTOR

William P. Ryan, Plymouth, Minn., assignor to B. Braun Medical, Inc., Bethlehem, Pa.

Continuation-in-part of Ser. No. 688,176, Apr. 22, 1991, Pat. No. 5,205,831. This application Apr. 16, 1992, Ser. No. 869,340
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—284 **4 Claims**



1. In combination, a Y-connector and a compression gasket, comprising:

a. a Y-connector including a space between an inner rim of a longitudinal lumen and a base of a knurled knob, and means for rotating said Y-connector; and,

b. a compression gasket in said space and including a geometrically configured cylinder including a top edge, a bottom edge and an inner bore which collapses upon itself when said gasket is in a compressed state and an hour glass configured outer circumference.

5,338,315

COLOSTOMY PROTECTION DEVICE

Freddie R. Baker, 2104 Rose Cliff Dr., Nashville, Tenn. 37206

Filed Apr. 28, 1992, Ser. No. 831,472
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—395 **10 Claims**

1. A device for an ostomy bag connection to a person's body at a stoma, said device comprising:

(a) a guard worn on said person's body below said stoma, said guard having a first side component having spaced apart end portions, a front surface, a back surface, a top edge, and a bottom edge, wherein said front surface of said first component faces away from said person's body, and said back surface is adjacent said person's body

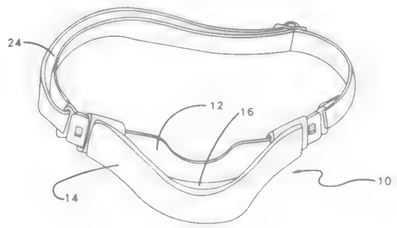
a second side component, opposite said first side component, and having spaced apart end portions, a front surface, and a back surface, wherein said front surface of said second component faces away from said person's body and said back surface of said second side component faces toward said front surface of said first side component,

attachment means, between said first side component and said second side component, for removable attaching said back surface of said second side component at said spaced apart end portions of said second side component, to at least a portion of said front surface of said first side component at aid spaced apart ends of said first side component, enabling said second side component to be removable attached to said first side component,

a vertical opening extending between said first side component and second side component sufficiently large to permit said bag to hand therethrough, and

(b) securing means, attached to said spaced apart ends of said first side component, for detachably securing said guard on said person's body, and

said top edge of said first side component has a cutaway portion in association with said top edge thereof enabling said ostomy bag to easily overlie said top edge at said cutaway portion.



5,338,316

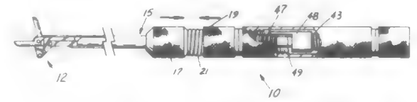
Patent Not Issued For This Number

5,338,317

ROTATIONAL SURGICAL INSTRUMENT HANDLE

Harrith M. Hasson, Chicago, Ill.; Edward D. Pingleton, and Paul G. Thomson, both of Fillmore, both of Ind., assignors to Vance Products Incorporated and Cook Urological Incorporated, Spencer, Ind.

Filed May 3, 1991, Ser. No. 695,297
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—206 **18 Claims**



1. A rotational surgical instrument handle comprising:

a cylindrical casing having a removable distal end cap, a removable proximal end cap, and a longitudinal passageway extending therebetween;

an elongated member having a distal end, a proximal end positioned within said passageway of said casing, a proximal portion positioned through said removable distal end cap and longitudinally slidable between first and second positions with respect to said casing, and a longitudinal passageway extending between said distal and proximal ends thereof;

an actuation link positioned and slidable within said longitudinal passageway of said elongated member and having a distal end and a proximal end extending beyond said proximal end of said elongated member and fixedly connected longitudinally to said removable proximal end cap; and

an actuating mechanism positioned distally from said removable distal end cap of said casing and connected about said proximal portion of said elongated member for actuating said elongated member between said first and second positions.

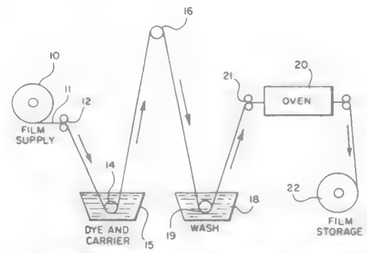
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,318

METHOD FOR DYEING POLYETHYLENE TEREPHTHALATE FILMS

Emilio A. Mercado, Roswell, Ga., assignor to Acquired Technolgy, Inc., Alpharetta, Ga.

Continuation-in-part of Ser. No. 767,501, Sep. 30, 1991, Pat. No. 5,162,046. This application Sep. 28, 1992, Ser. No. 952,368
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] D06P *3/52;* **C09B** *67/00*
U.S. Cl. 8—512 **10 Claims**



1. The method for dyeing polyethylene terephthalate film comprising the steps of heating said film to a first temperature within the range of the glass transition temperature of said film, contacting said film with dye selected from the group consisting of solvent dyes, disperse dyes, and mixtures thereof, said dye being dissolved, dispersed, in a colloidal suspension, or both dissolved and dispersed in a carrier while maintaining said film at said temperature within the range of the glass transition temperature of said film, removing dye and carrier from the surface of said film, and subsequently raising said film to a second temperature at least as high as the flash point of the carrier to remove the carrier absorbed in said film, said carrier consisting of any ester of glycerol.

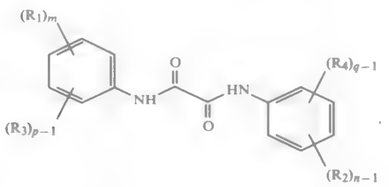
5,338,319

PROCESS FOR THE PHOTOCHEMICAL AND THERMAL STABILIZATION OF POLYAMIDE FIBRE MATERIAL WITH A COPPER COMPLEX HAVING FIBRE-AFFINITY AND AN OXALIC ACID DIARYLAMIDE

Jürgen Kaschig, Freiburg, Fed. Rep. of Germany, and Gerhard Reinert, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 20, 1992, Ser. No. 870,650
Claims priority, application Switzerland, Apr. 26, 1991, 1252/91-2
Int. Cl.[5] D06M *11/38;* **C09B** *67/00*
U.S. Cl. 8—586 **20 Claims**

1. A process for the photochemical and thermal stabilisation of polyamide fibre material, which comprises treating said fibre material with a composition comprising a water-soluble oxalic acid diamide having fibre-affinity of general formula



(1)

wherein

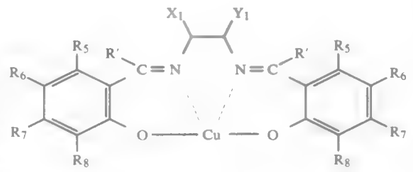
R_1 and R_2 are each independently of the other hydrogen, unsubstituted C_1–C_{18}alkoxy or C_1–C_{18}alkoxy which is substituted by halogen, hydroxy, C_1–C_5alkoxy, carboxyl groups, carbamyl groups or C_1–C_{12}alkoxycarbonyl groups, or is C_3–C_5alkenyloxy, unsubstituted benzyloxy or benzyloxy which is substituted by halogen or C_1–C_5alkyl, aliphatic acyloxy containing up to 18 carbon atoms, unsubstituted benzoyloxy or benzoyloxy which is substituted by halogen or C_1–C_4alkyl, or is a radical of formula —A—SO_3M,

A is a direct bond or a divalent radical of formula —O—Q—, and

Q is unsubstituted or hydroxy-substituted C_1–C_6alkylene, M is hydrogen or alkali metal,

R_3 and R_4 are each independently of the other hydrogen, halogen, C_1–C_{12}alkyl, haloalkyl, phenyl or phenyl-C_1–C_5alkyl, or two radicals R_3 and/or R_4 in ortho-position each together form a fused 6-membered aromatic carbon ring, and wherein m and n are 1 or 2 and p and q are 1, 2 or 3, and with the proviso that the compound of formula (1) contains at least one sulfo group,

and a copper complex of formula



(2)

wherein

R′ is hydrogen or C_1–C_5alkyl,

R_5, R_6, R_7 and R_8 are each hydrogen, halogen, hydroxy, hydroxyalkyl, C_1–C_5alkyl, C_1–C_5alkoxy, alkoxyalkoxy, alkoxyalkoxyalkoxy, carboxymethoxy, alkylamino, dialkylamino, —SO_2NH_2, —SO_2NHR, sulfo or —$SO_2N(R)_2$,

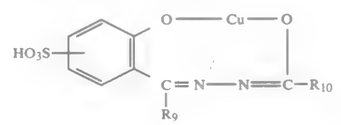
R is C_1–C_5alkyl or C_1–C_5alkoxyalkyl or

R_5 and R_6 or R_6 and R_7 or R_7 and R_8, together with the linking carbon atoms, are a radical of the benzene series,

X_1 and Y_1 are each hydrogen, C_1–C_5alkyl or an aromatic radical, or

X_1 and Y_1, together with the linking carbon atoms, form a cycloaliphatic radical of 5–7 carbon atoms,

or a copper complex of formula

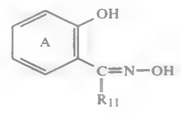


(3)

wherein

R_9 and R_{10} are each independently of the other an unsubstituted or substituted C_1–C_5alkyl or aryl radical,

or a copper complex of phenols of formula



(4)

wherein

R_{11} is hydrogen, hydroxy, alkyl or cycloalkyl, and the ring A may carry further substituents.

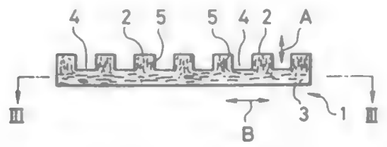
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,320

FLAT PLATE-LIKE RIBBED POROUS CARBON MATERIAL AND MANUFACTURING METHOD THEREFOR

Hiroyuki Fukuda; Masayuki Funabashi, and Hikonori Abe, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 674,335, Apr. 17, 1991, Pat. No. 5,236,687.
This application Apr. 21, 1993, Ser. No. 49,312
Claims priority, application Japan, Oct. 17, 1989, 1-269680
Int. Cl.[5] H01M *4/88*
U.S. Cl. 29—623.1 4 Claims



1. A method of manufacturing a ribbed porous carbon material, comprising the steps of:

extruding a starting material for molding containing carbonaceous fibers and a binder in a flat plate-like shape state;

forming a rib portion to an extruded molded product along a direction perpendicular to a direction of extrusion by means of rolling and subsequently calcining the rib portion and the extruded molded product.

5,338,321

GASOLINE-BLENDED METHANOL FUEL FOR INTERNAL COMBUSTION ENGINES

Kiyohiro Tachiki, Kanagawa, Japan, assignor to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,768
Claims priority, application Japan, Jan. 31, 1992, 4-040516
Int. Cl.[5] C10L *1/02, 1/04*
U.S. Cl. 44—451 3 Claims

1. A fuel for Otto cycle internal combustion engines, which comprises,

a blend of a gasoline (A) and methanol (B) in a ratio of 10:90 to 30:70 by volume, based on the total amount of (A) and (B),

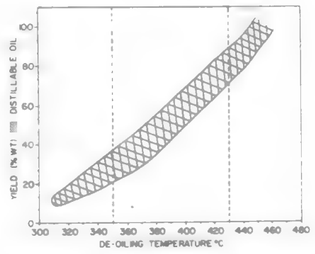
wherein said gasoline (A) is obtained by the steps of, (i) hydrotreating heavy naphtha, (ii) catalytically reforming the hydrotreated heavy naphtha to obtain a catalytically reformed gasoline, (iii) distilling the reformed gasoline to divide said reformed gasoline into three fractions (1), (2) and (3) which fractions contain hydrocarbons having a carbon number of 5 and less, from 6 to 8, and 9 and more, respectively, and (iv) mixing the two fractions of (1) and (3) either in a ratio which is the same as that in which the two fractions were obtained by the distillation or in a ratio of 30:70 to 90:10 based on the total volume amount of (1) and (3).

5,338,322

PROCESS FOR CONVERTING HEAVY OIL DEPOSITED ON COAL TO DISTILLABLE OIL IN A LOW SEVERITY PROCESS

Teresa Ignasiak, 417 Heffernan Drive, Edmonton, Alberta, Canada T6R 1W4 ; Otto Strausz, 13119 Grand View Drive, Edmonton, Alberta, Canada T6H 4K7 ; Boleslaw Ignasiak, 417 heffernan Drive, Edmonton, Alberta, Canada T6R 1W4 ; Jerzy Janiak, 17820 - 76 Ave., Edmonton, Alberta, Canada T5T 2G1 ; Wanda Pawlak, 3046 - 11465 - 41 Avenue, Edmonton, Alberta, Canada T6J 0T9 ; Kazimierz Szymocha, 3125 - 109 Street, Edmonton, Alberta, Canada T5J 4N6 , and Ali A. Turak, all of Edmonton, Canada

Continuation of Ser. No. 738,210, Jul. 31, 1991, abandoned. This application Jan. 27, 1993, Ser. No. 9,534
Claims priority, application Canada, Aug. 3, 1990, 2022721-4
Int. Cl.[5] C10L *5/00*
U.S. Cl. 44—620 13 Claims



1. A method for recovering oil from coal fines agglomerated and/or blended with a bridging liquid comprising heavy oil, comprising the steps of:

(a) heating said agglomerated and/or blended coal fines to temperatures over 350° C. up to 450° C. in an inert atmosphere to catalytically convert and provide a hydrogen source for the conversion of about 43% to about 90% of said heavy oil to lighter, distillable oils; and

(b) condensing and collecting said lighter oils whereby the undesirable, heaviest asphaltenic fraction of the heavy oil remains in said agllomerated and/or blended coal fines.

5,338,323

BLAST MEDIA CONTAINING MGO

Benny S. Yam, Holmdel, and Anthony E. Winston, East Brunswick, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 6,648, Jan. 21, 1993, Pat. No. 5,308,403.
This application Feb. 3, 1994, Ser. No. 193,754
Int. Cl.[5] C09C *1/68*
U.S. Cl. 51—307 18 Claims

1. A blast media for stripping coatings or other contaminants from a solid surface comprising water soluble abrasive particles and magnesium oxide in an amount effective to reduce blast media residues on said solid surface.

5,338,324

FILTER AIR CLEANER

Bernard Chiu, Wellesley, Mass.; Stephen Gatchell, Warwick, R.I., and Jui-Shang Wang, Taipei, Taiwan, assignors to Duracraft Corp., Whitinsville, Mass.

Filed Aug. 23, 1993, Ser. No. 110,544
Int. Cl.[5] B01D *46/02*
U.S. Cl. 55—385.2 20 Claims

1. A portable air cleaner comprising:

a circular base;

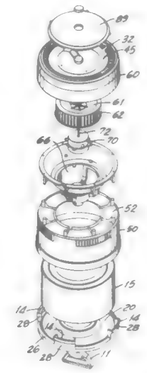
a cylindrical filter element mounted on said base;

a cylindrical cover encasing said cylindrical filter element, said cylindrical cover having a top portion defining an air exhaust opening therein and a side wall, said cylindrical cover and said circular base defining a peripheral portion having an air inlet opening perpendicular to said air exhaust opening;

a centrifugal fan disposed within said cylindrical cover and rotatable about an axis perpendicular to said circular base;

drive means disposed in said cylindrical cover for driving said centrifugal fan so that said centrifugal fan draws air into said air inlet opening, through said cylindrical filter element, into said centrifugal fan and disperses said air radially outward from said centrifugal fan; and

an air deflector disposed in said cylindrical cover for redirecting said air dispersed radially outward from said centrifugal fan to a direction axial to said centrifugal fan and through said exhaust opening.

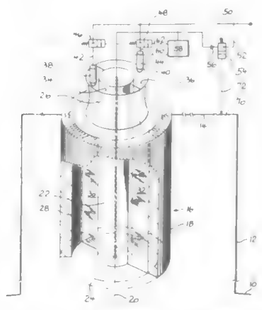


5,338,325

FILTER CARTRIDGE

Karl-Heinz Stanelle, Rosenstrasse 4, D-7129 Guglingen 2, Fed. Rep. of Germany

PCT No. PCT/EP89/00940, § 371 Date Feb. 4, 1991, § 102(e) Date Feb. 4, 1991, PCT Pub. No. WO90/01364, PCT Pub. Date Feb. 22, 1990
PCT Filed Aug. 9, 1989, Ser. No. 651,340
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1988, 8810295[U]
Int. Cl.[5] B01D *46/04*
U.S. Cl. 55—213 5 Claims



1. Filter cartridge for cleaning the dedusting filter of a silo by means of at least one air nozzle into which air is blown intermittently and which is disposed above a filter cartridge, provided with a filter jacket, in the filter, wherein

at least one blanking body is provided in the interior of the filter cartridge;

at least one interspace is provided between the blanking body and the filter jacket;

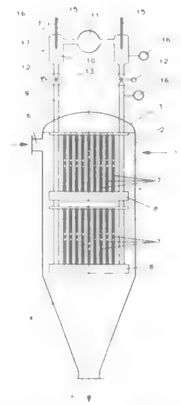
the blanking body is closed on all sides or its opening is so positioned in the filter cartridge with respect to the air nozzle that no air can be blown into it through the air nozzle, characterized in that the blanking body is in the form of a compressed air reservoir adapted to be connected via an airpipe to a compressed air supply means.

5,338,326

DEVICE FOR MONITORING FILTER COMPONENTS

Werner Jelich, Bochum; Heiko Rehwinkel, Bottrop; Friedrich Klauke, Ratingen; Dieter König, Hattingen, and Udo Kalthoff, Mülheim/Ruhr, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Energie- und Umwelttechnik AG, Oberhausen, Fed. Rep. of Germany

Filed Jul. 2, 1993, Ser. No. 87,575
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1992, 4226144
Int. Cl.[5] B01D *46/04*
U.S. Cl. 55—213 7 Claims



1. An arrangement for monitoring hollow filter components which filter hot and dusty gases, comprising: a housing; collectors for conveying away filtered gas; supply lines connecting said collectors with said components inside said housing, said components communicating with said collectors through said supply lines; each group of components being supplied by a supply line having a lance injecting a fluid for sweeping the components clean; transducer means downstream of said filter components for detecting pressure of filtered gas in said supply line each group of filter components being individually monitorable by said transducer means, said pressure transducer means measuring selectively static pressure or total pressure of the filtered gas, a variation in filtered gas flow through said filter components producing a variation in total pressure of the filtered gas in a respective flow cross-section so that an increase in total pressure of the filtered gas behind a group of filter components designates that said group of filter components have become defective; a reduction in total pressure of the filtered gas behind a group of filter components designating that said group of filter components are clogged, pressure of the filtered gas for each group being measured individually.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,327

METHOD OF FLAME ABRASION OF GLASS PREFORM

Yuichi Ohga; Toshio Danzuka; Masahide Saito; Kouji Amemiya, and Hiroshi Yokota, all of Yokohama, Japan, assignors to Sumitomo Electrc Industries, Ltd., Osaka, Japan

Filed Jul. 24, 1992, Ser. No. 918,036

Claims priority, application Japan, Jul. 26, 1991, 3-187597; Oct. 31, 1991, 3-286349

Int. Cl.[5] C03B *37/025*

U.S. Cl. 65—414 10 Claims



1. A method of flame abrasion of a glass preform for an optical fiber, which process comprises:

vertically suspending and rotating the glass preform;

flame abrasing the glass preform which is vertically suspended and rotated with an oxyhydrogen flame from a first burner and a second flame from a second auxiliary burner located below the first burner; and

relatively moving at least one of the glass preform and the oxyhydrogen and second flames.

5,338,328

APPARATUS OF MANUFACTURING HERMETIC COATING OPTICAL FIBER

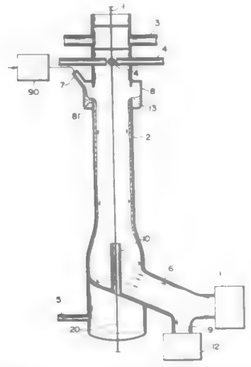
Haruhiko Aikawa; Yoichi Ishiguro, and Toshio Danzuka, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 897,753, Jun. 12, 1992. This application Nov. 9, 1993, Ser. No. 149,654

Claims priority, application Japan, Jun. 12, 1991, 3-139903; Sep. 4, 1992, 4-88641

Int. Cl.[5] C03B *37/023*

U.S. Cl. 65—530 19 Claims



1. An apparatus for manufacturing a hermetically coated optical fiber comprising:

a reactor;

a reactant gas introducing means connected to the reactor for introducing a reactant gas into said reactor; and

liquid flowing means connected to said reactor for flowing a liquid along an inner wall of said reactor,

whereby material derived from the reactant gas is hermetically coated on an optical fiber passing through said reactor by chemical reaction.

5,338,329

PROCESS AND DEVICE FOR OBTAINING MINERAL FIBERS

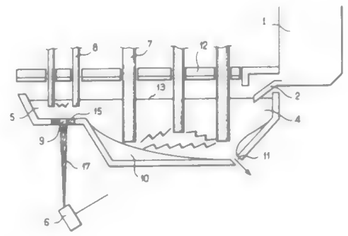
Jean-Yves Aube, Clermont, and Emmanuel Giry, Liancourt, both of France, assignors to Isover Saint-Gobain, Courbevoie, France

Filed Jan. 17, 1992, Ser. No. 822,199

Claims priority, application France, Jan. 18, 1991, 91 00547; Jan. 18, 1991, 91 00548

Int. Cl.[5] C03B *37/04*

U.S. Cl. 65—521 16 Claims



1. Device for obtaining mineral fibers, comprising:

a melting chamber;

a reservoir having a tapping aperture at one end thereof and containing a melted mineral material, said reservoir being melting chamber and for delivering a stream of the molten material to a fiber drawing device via the tapping aperture;

heating means in said reservoir;

means for tilting the reservoir about a horizontal axis adjacent an end of said reservoir opposite said one end so as to control a rate of flow of the molten material from the tapping aperture without substantially changing a level of the molten material in the reservoir; and

a fiber drawing device positioned to receive a stream of molten mineral material from said tapping aperture.

5,338,330

MULTIPHASE COMPOSITE PARTICLE CONTAINING A DISTRIBUTION OF NONMETALLIC COMPOUND PARTICLES

Richard S. Polizzotti, Milford; Larry E. McCandlish, Highland Park, both of N.J., and Edwin L. Kugler, Morgantown, W. Va., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

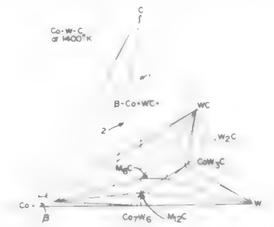
Continuation-in-part of Ser. No. 377,653, Jul. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 53,267, May 22, 1987, Pat. No. 4,851,041. This application Jul. 24, 1991, Ser. No. 735,212

The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.

Int. Cl.[5] B22F *1/00*

U.S. Cl. 75—228 10 Claims

1. A multiphase composite particle adapted for the formation of a particle charge for compacting to form a multiphase composite article, said multiphase composite particle comprising: a metal matrix having therein a volume fraction greater than about 0.15 of substantially uniform and homogeneous



hard phase distribution of nonmetallic compound particles no larger than about 0.1 micron.

5,338,331

LOW-PERMEABILITY HIGH-STRENGTH TARGET MATERIAL FOR THE FORMATION OF THIN MAGNETOOPTICAL RECORDING FILMS

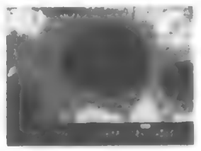
Kenichi Hijikata; Shozo Komiyama, and Hitoshi Maruyama, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jun. 2, 1992, Ser. No. 892,361

Claims priority, application Japan, Jun. 12, 1991, 3-167793

Int. Cl.[5] B22F *9/00*

U.S. Cl. 75—246 17 Claims



1. A high-strength target material of low permeability for forming a thin magnetooptical recording film that has a structure comprising:

(a) 20–75% of a complex phase in which at least one crystallized iron-group metal is dispersed finely and uniformly in a dendritic, acicular or block form in a proportion of 5–40%, of the total complex phase, in a matrix of an intermetallic compound of at least one first rare earth metal and said at least one iron-group metal;

(b) 15–40% of a rare earth metal phase of at least one second rare earth metal; and

(c) the remainder being an intermetallic compound phase which is a reaction phase of said complex phase and said rare earth metal phase,

all percentages being by area,

wherein the first and second rare earth metals are the same or different.

5,338,332

CURRENT SENSOR USING CURRENT TRANSFORMER WITH SINTERED PRIMARY

Paul Baran, Atherton, and Ronald S. Palmer, Sunnyvale, both of Calif., assignors to Metricom, Inc., Los Gatos

Continuation of Ser. No. 698,508, May 10, 1991, Pat. No. 5,223,790. This application Jun. 15, 1992, Ser. No. 898,983

Int. Cl.[5] C22C *5/00*; B22F *5/00*

U.S. Cl. 75—247 11 Claims

6. A sintered conductive mass having a low temperature coefficient of resistivity (TCR), the mass formed according to a process comprising the steps of: combining powdered copper, manganese and nickel in a ratio to form a mixture;

compressing the mixture under a force into a shape; and

heating the mixture to a temperature to form a sintered mass in said shape, said shape comprising a bridge for a current transformer, the bridge having a block portion and a loop portion, the block portion having a pair of opposing faces for connecting to current carrying conductors, and the loop portion being disposed outside of a region between the faces, wherein the loop portion has a central axis disposed parallel to the faces of the block portion and perpendicular to an axis drawn between and perpendicular to the faces of the block portion.

5,338,333

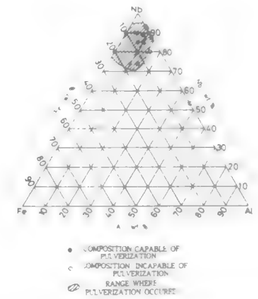
PRODUCTION OF POWDERY INTERMETALLIC COMPOUND HAVING VERY FINE PARTICLE SIZE

Masahiro Uda; Yoshikazu Morita, and Katsuhisa Oosaki, all of Chiba, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 941,278

Int. Cl.[5] B22F *9/00*

U.S. Cl. 75—352 2 Claims



1. A method of producing an intermetallic compound powder having a fine particle size comprising the steps of:

in an arc furnace, arc-melting at least one element selected from Nb, La, Nd, Zr and Ta together with at least one element selected from Ge, Sn, Fe, Ni, Ga, Al and Si under a non-oxidizing Ar gas atmosphere under conditions sufficient to form an intermetallic compound bulk material having a surface which is substantially free from oxide films,

exchanging said Ar gas atmosphere for a non-oxidizing atmosphere comprising hydrogen,

holding said intermetallic compound bulk material in said arc furnace under said atmosphere comprising hydrogen for a time and under conditions sufficient to cause said intermetallic compound bulk material to absorb sufficient hydrogen to cause at least a portion of said intermetallic compound bulk to become pulverized, and then

dehydrating the resulting pulverized intermetallic compound by heating in a vacuum.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,334

PROCESS FOR PREPARING SUBMICRON/NANOSIZE CERAMIC POWDERS FROM PRECURSORS INCORPORATED WITHIN A POLYMERIC FOAM

Yong S. Zhen, Downers Grove, and Kenneth Hrdina, Glenview, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 821,228, Jan. 16, 1992, Pat. No. 5,240,493. This application Apr. 20, 1993, Ser. No. 49,081
Int. Cl.[5] C04B *38/02*
U.S. Cl. 75—362 13 Claims

1. A process for producing at least one of ceramic powders and metal powders comprising:

mixing an aqueous solution comprising at least one metal cation salt with an organic binder and a surfactant producing a metal salt/organic binder/surfactant mixture, said organic binder decomposing at a temperature below the melting temperature of said organic binder;

generating gas bubbles within said metal salt/organic binder/surfactant mixture, thus forming a wet foam structure;

drying said wet foam structure, thus forming a polymeric foam comprising homogeneously incorporated metal cations;

calcining said polymeric foam at a calcination temperature and a time required for complete removal of all organics and formation of a crystal phase, producing at least one of an oxide powder and a metal powder; and

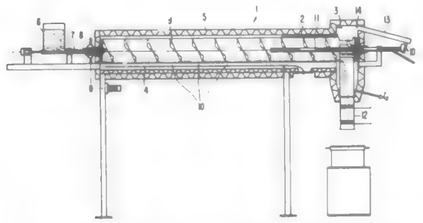
recovering said powder.

5,338,335

METHOD FOR TREATMENT OF OIL CONTAMINATED FILINGS OF MAGNESIUM AND MAGNESIUM ALLOYS

Surendra K. Saxena, Trondheim, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

Filed Jun. 29, 1992, Ser. No. 905,533
Claims priority, application Norway, Jun. 28, 1991, 912548
Int. Cl.[5] C22B *1/00;* F27B *15/00*
U.S. Cl. 75—403 17 Claims



1. A method for removing volatile material from volatile material-contaminated chips of reactive or inflammable metals, said method comprising;

introducing said contaminated chips into a closed system and maintaining said chips continuously in motion within said system;

maintaining substantially a normal air atmosphere within said system without the addition thereto of external reducing gas; and

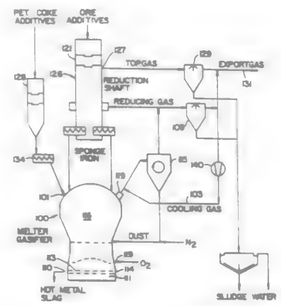
indirectly heating said chips within said system to a temperature close to or above the boiling point of said volatile material but lower than 430° C., thereby causing evaporation of said volatile material such that said chips are left substantially free of said volatile material, and thereby causing coating of said chips with a thin layer of carbonaceous material resulting from said evaporation and thus protecting said chips from contact with air.

5,338,336

METHOD OF PROCESSING ELECTRIC ARC FURNACE DUST AND PROVIDING FUEL FOR AN IRON MAKING PROCESS

Richard B. Greenwalt, Danville, Calif., assignor to Bechtel Group, Inc., San Francisco, Calif.

Filed Jun. 30, 1993, Ser. No. 84,853
Int. Cl.[5] C21B *13/14*
U.S. Cl. 75—445 21 Claims



1. A method for processing environmentally undesirable materials including petroleum coke and the sulfur and hearty metals contained therein and waste dust from an electric arc furnace and the zinc, cadmium, lead and iron oxides contained therein and of providing fuel and a charging material for a process of making molten iron or steel preproducts and reduction gas in a melter gasifier which method comprises providing a melter gasifier having an upper fuel charging end, a reduction gas discharging end, a lower molten metal and slag collection end, and means providing an entry for charging material into said melter gasifier; providing a reduction furnace operably connected to said entry for charging materials into said melter gasifier; introducing petroleum coke into said melter gasifier at said upper fuel charging end; blowing oxygen-containing gas into the petroleum coke to form at least a first fluidized bed of coke particles from said petroleum coke; introducing metallized arc furnace waste dust material from said reduction furnace into said melter gasifier through said entry means, reacting petroleum coke, oxygen and metallized waste dust material to combust the major portion of the petroleum coke to produce reduction gas and molten iron from iron oxides in said waste dust material, said molten iron containing heavy metals freed from combustion of the petroleum coke and a slag containing sulfur freed from combustion of the petroleum coke; and removing said reduction gas from said melter gasifier and introducing said reduction gas into said reduction furnace to metallize electric arc furnace dust in said reduction furnace and to produce a top off gas containing metal vapors of non-ferrous metals contained in said electric arc furnace dust.

5,338,337

BENEFICIATION PROCESS

Norman W. Johnson, and John P. Andreatidis, both of Mount Isa, Australia, assignors to Mount Isa Mines Limited, Australia

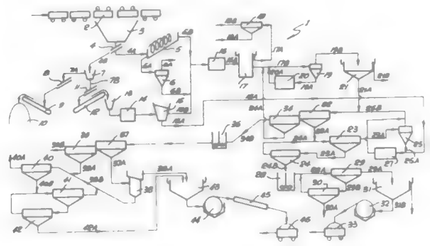
Filed Oct. 22, 1992, Ser. No. 965,064
Claims priority, application Australia, Oct. 25, 1991, PK 9152
Int. Cl.[5] B02C *23/14*
U.S. Cl. 75—654 20 Claims

1. A process for concentrating an ore contained in a gangue comprising the steps of:

(1) grinding the ore to produce a first product comprising ground ore and ground gangue,

(2) separating the first product into a fraction having particles of a selected size range and a remainder,

(3) separating at least a part of the remainder into a ground ore fraction and a ground gangue fraction,



(4) combining the particles of selected size range from step (2) with the ground ore fraction of step (3), and

(5) autogenously grinding the combination of step (4).

5,338,338

METHOD FOR RECOVERING GOLD AND OTHER PRECIOUS METALS FROM CARBONACEOUS ORES

William J. Kohr, San Mateo, Calif., assignor to Geobiotics, Inc., Hayward, Calif.

Filed Sep. 22, 1992, Ser. No. 950,576
Int. Cl.[5] C22B *3/00*
U.S. Cl. 75—711 19 Claims

1. A process for recovering a precious metal from carbonaceous ore comprising:

a. leaching the ore with a lixiviant; to thereby cause the production of precious metal-lixiviant complexes and the dissolution of the precious metal from the ore; and

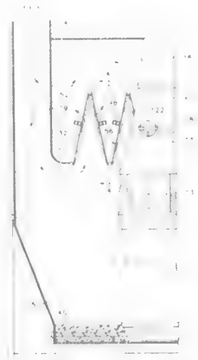
b. preg-robbingly concentrating said precious metal-lixiviant complexes in solution onto the native carbonaceous component of the ore for subsequent recovery.

5,338,339

APPARATUS AND METHOD FOR REMOVING RESINATED WOOD PARTICLES FROM AN AIR STREAM

John L. Westphal, Tualatin, Oreg., assignor to Louisiana-Pacific Corporation, Hayden Lake, Id.

Filed Apr. 13, 1992, Ser. No. 867,593
Int. Cl.[5] B01D *46/04*
U.S. Cl. 95—282 24 Claims



13. A method for removing ligno-cellulosic particles and fibers from an air stream comprising the steps of:

providing a filter assembly comprising means defining an air stream inlet for receiving an air stream containing ligno-cellulosic particles and fibers, means for directing said air stream in a generall/ upward direction, and a filter assembly disposed in said path for removing said particles and fibers from said upwardly flowing air stream;

said filter assembly comprising a non-horizontal, foraminous filter element having openings therethrough which are sized to allow said air stream to pass therethrough while retaining a first portion of said particles and fibers on said filter element;

introducing an air stream containing ligno-cellulosic particles and fibers into said air inlet and passing said air stream through said filter element;

forming a foraminous filtering layer comprising a first and second portion of said particles and fibers on said filter element;

removing said second portion of said particles and fibers from said foraminous filtering layer;

retaining said first portion of particles and fibers on said filter element, thereby forming a foraminous filtering layer of said particles and fibers having a minimum porosity sufficient to allow said air stream to pass therethrough; and

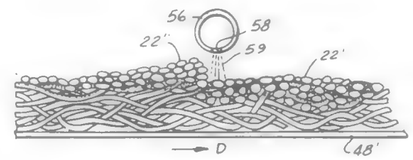
discharging a filtered air stream from said filter system.

5,338,340

FILTER AND METHOD OF MAKING SAME

James W. Kasmark, Jr., Mt. Clemens, and Joseph B. Brown, deceased, late of Clinton Township, Macomb County, both of Mich. by Mary Louise Brown, Administratix , assignors to D-Mark, Inc., Chesterfield, Mich.

Continuation-in-part of Ser. No. 857,785, Mar. 26, 1992, abandoned, which is a division of Ser. No. 485,895, Feb. 10, 1990, Pat. No. 5,124,177. This application Jun. 30, 1993, Ser. No. 86,187
Int. Cl.[5] B01D *53/04*
U.S. Cl. 96—135 23 Claims



1. An odor and grease or oil removing filter comprising:

a light colored, air-permeable, porous substrate for entrapping oil or grease aerosols and having opposed faces;

a layer of particulate activated carbon distributed throughout one face of the substrate and extending into the substrate but essentially invisible from the opposite face and adhesively secured to the substrate, whereby one face of the substrate is a black color and the other face is a light color to exhibit accumulating oil or grease aerosols.

5,338,341

SEPARATOR FOR REMOVING GASES FROM WATER

Angelo L. Mazzei, Bakersfield, and Steven D. Ford, Clovis, both of Calif., assignors to Claude Laval Corporation, Fresno, Calif.

Filed Jun. 4, 1993, Ser. No. 72,781
Int. Cl.[5] B01D *45/12*
U.S. Cl. 96—208 8 Claims

1. A separator for removing gases from a flowing water stream comprising:

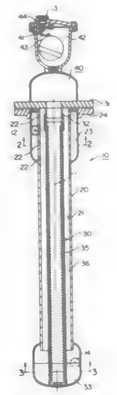
a vortex tube having a central axis, an axially extending cylindrical wall, and a plurality of injector ports passing tangentially through said wall;

VOL 1165 ISS 3 AG 16 1994 UMI

water supply means communicating with said injector ports, said water supply means delivering water from which gases are to be removed;

a collection chamber connected to said vortex tube, spaced from and below the level of said injector ports;

a separator tube having an internal cylindrical wall, an external cylindrical wall, and a plurality of separator perforations extending between said walls, the diameter of the



external cylindrical wall of the separator tube being smaller than the internal diameter of the vortex tube so as to leave an annularly shaped axially extending vortex region between them, vortex region extending from the perforations to the collection chamber;

a separation chamber connected to said separator tube above the injector ports; and

a gas relief valve controlling exit of gases from said separation chamber.

5,338,342

STABILIZED ELECTROLESS NICKEL PLATING BATHS

Glen O. Mallory, Jr., c/o Electroless Technologies Corp. 3860 Cloverdale, Los Angeles, Calif. 90008

Filed May 21, 1993, Ser. No. 65,870

Int. Cl.[5] C23C *18/36*

U.S. Cl. 106—1.22 **20 Claims**

1. A process for stabilizing electroless nickel plating baths employing a hypophosphite reducing agent and conducted under electroless nickel plating conditions which comprises adding lithium hydroxide to said bath to form dilithium phosphite therein from the reaction of said hydroxide and the phosphite anion produced in the electroless reaction, subjecting the bath to insolubility conditions to form insoluble dilithium phosphite and thereafter removing the phosphite anion from the bath in the insoluble dilithium phosphite.

5,338,343

CATALYTIC ELECTROLESS GOLD PLATING BATHS

Harry H. Kroll, E. Greenwich, and Jean Chevalier, Cranston, both of R.I., assignors to Technic Incorporated, Cranston, R.I.

Filed Jul. 23, 1993, Ser. No. 96,558

Int. Cl.[5] C23C *18/44*

U.S. Cl. 106—1.23 **12 Claims**

1. An electroless gold plating composition capable of depositing gold on a gold substrate comprising about 0.001 to 0.05 molar of a water soluble gold (I) thiolate, about 0.01 to 0.1 molar of a water soluble cyanide salt, about 0.1 to 1.0 molar of an alkali metal hydroxide, about 0.0001 to 0.01 molar of a water soluble aromatic nitro compound, and about 0.01 to 0.4 molar of a reducing agent selected from the group consisting of the alkali metal borohydrides and dimethylamine borane, the resulting composition having a pH range from 12 to 14.

5,338,344

DECREASING ALCOHOL CONTENT OF FOUNTAIN SOLUTIONS FOR PLANOGRAPHIC PRINTING

Louis E. Bondurant, P.O. Box 2074, Middleburg, Va. 22117

Continuation-in-part of Ser. No. 846,567, Mar. 5, 1992, Pat. No. 5,268,025. This application Mar. 9, 1993, Ser. No. 28,419

Int. Cl.[5] C09K *3/18*

U.S. Cl. 106—2 **18 Claims**

1. A stock fountain solution for use in planographic printing, comprising:

a buffer, a humectant, an emulsifying and coupling agent, and an alcohol and an amine in combination, wherein

the amine in such combination is present in an effective amount so as to enable a substantial decrease in percentage of alcohol content.

5,338,345

WATER-BASED WATER REPELLENT COATING COMPOSITIONS

Victoria D. Scarborough, Memphis, Tenn.; David A. Czekai, Honeoye Falls, N.Y., and Jeffery E. G. Powell, Blountville, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 59,082, May 5, 1993, abandoned. This application Feb. 3, 1994, Ser. No. 191,240

Int. Cl.[5] C09D *5/20*

U.S. Cl. 106—2 **17 Claims**

1. A coating composition comprising an emulsion having water as a continuous phase and, as a discontinuous phase, droplets of a nonvolatile organic water repellent component, the emulsion containing an emulsion stabilizing amount of a hydrophobically modified polyacrylic acid polymer wherein the viscosity of the emulsion is less than about 100 Cps and the particle size of the droplets is less than about 50 microns.

5,338,346

SOFT COATING COMPOSITIONS FOR METALS

Lionel B. Luttinger, Andover; Rosanna P. Rudy, East Hanover, both of N.J., and Paul J. Holtzapfel, Iron, Ohio, assignors to Ashland Oil, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 902,168, Jun. 22, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 81,438

Int. Cl.[5] C09D *5/08*

U.S. Cl. 106—14.29 **16 Claims**

1. A soft skin coating composition comprising:

(a) an overbased alkaline earth sulfonate salt wherein said salt is present in an amount of about 5 to 80 percent by weight, based upon the weight of the coating composition;

(b) a salt of an alkyl substituted naphthalene sulfonate in an amount effective to improve the corrosion resistance of metal coated with the soft skin coating composition;

(c) a drying oil wherein said drying oil is present in an amount of about 1 to 25 percent by weight, based upon the weight of the coating composition;

(d) a metal drier in an amount effective to dry said drying oil; and

(e) a 200 to 900 weight hydrocarbon oil diluent wherein said hydrocarbon diluent is present in an amount of about 10 to 90 percent by weight, based upon the weight of the coating composition.

5,338,347

CORROSION INHIBITION COMPOSITION

Eric L. Rohr; Leonard S. Cech, both of Wickliffe, and Barry M. Saltzman, Solon, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Sep. 11, 1992, Ser. No. 943,941

Int. Cl.[5] C09D *5/08*

U.S. Cl. 106—14.44 **40 Claims**

1. A corrosion inhibitor composition comprising:

(a) at least one neutral or overbased salt of an organic acid selected from the group consisting of phosphorus acids, thiophosphorus acids, sulfur acids, thiocarboxylic acids, and phenols, and

(b) at least one metal-containing corrosion inhibitor compound other than a neutral or overbased salt of an organic acid;

wherein the amount of the salt of (a) is sufficient to provide improved corrosion inhibition properties compared with those obtained by use of component (b) alone.

5,338,348

ZINC POWDER-RICH COATING COMPOSITION

Ronald R. Savin, 11001 Muirfield Dr., Rancho Mirage, Calif. 92270

Filed Sep. 22, 1993, Ser. No. 125,430

Int. Cl.[5] C09D *5/10;* **C08K** *3/08*

U.S. Cl. 106—14.44 **6 Claims**

1. A coating composition for use in protecting metallic substrates from corrosion, comprising in weight percent, based on the total weight of the composition:

from about 7% to 35% of a film-forming substance selected from the group consisting of: (i) alkyl silicate in substantially anhydrous alkyl alcohol as a solvent, (ii) powder and non-powder epoxy resins, (iii) vinyl chloride resins copolymerized with isocyanates, (iv) polyurethane resins, (v) polyester resins, (vi) polymers of acrylic, methacrylic esters and waterborne urethane, (vii) emulsion polymers prepared by the polymerization of monomers selected from the group consisting of acrylic, methacrylic, vinyl or styrenic monomers and mixtures thereof, and mixtures of the above seven classes of substances;

from about 35% to 55% of zinc powder;

from about 5% to 25% of zinc flakes;

from about 0.2% to 5% of at least one amorphous silica; and

up to about 30% particulate ferrophosphate.

5,338,349

FIRE RESISTANT AND HIGH TEMPERATURE INSULATING COMPOSITION

Randolph C. Farrar, Cape Girardeau, Mo., assignor to Fire-Comp, Inc., Cape Girardeau, Mo.

Continuation-in-part of Ser. No. 936,112, Aug. 27, 1992, abandoned. This application May 24, 1993, Ser. No. 66,471

Int. Cl.[5] C09K *21/02*

U.S. Cl. 106—18.12 **36 Claims**

1. A fire and heat resistant composition comprising:

a carbonate material in an amount from about 20% to about 80% by weight;

aluminosilicate in an amount from about 0.5% to about 15% by weight;

talc in an amount from about 0.5% to about 10% by weight;

cellulose in an amount from about 1% to about 30% by weight;

a binder in an amount from about 1% to about 45% by weight;

a gelling agent in an amount from about 1% to about 25% by weight.

5,338,350

INK COMPOSITION FOR FORMING THIN FILM

Katsuto Tanaka, Matsusaka; Kensuke Makita, Ichishi, and Yasuo Moriguchi, Matsusaka, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jul. 6, 1993, Ser. No. 85,786

Claims priority, application Japan, Jul. 6, 1992, 4-178629

Int. Cl.[5] C09D *11/00*

U.S. Cl. 106—19 D **7 Claims**

1. An ink composition for forming a thin metal film, comprising:

one selected from the group consisting of a halogen-containing metal alkoxide, a mixture of said halogen-containing metal alkoxide and another metal alkoxide, and a mixture of said halogen-containing metal alkoxide and a metal oxide sol;

nitrocellulose and

at least one selected from the group consisting of ethylcarbitol and butylcarbitol.

5,338,351

INK COMPOSITION AND METHOD OF MAKING, USING AND RECOVERING SUCH COMPOSITION

Thomas J. Pennaz, Brooklyn Park, Minn., assignor to Deluxe Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 946,762, Sep. 17, 1992, abandoned. This application Jul. 14, 1993, Ser. No. 92,392

Int. Cl.[5] C09D *11/08, H/10*

U.S. Cl. 106—20 R **38 Claims**

1. A substantially water insoluble ink composition comprised of a resin component wherein said resin component includes a solubility controlling component comprising a water reducible resin whose water solubility is pH dependent and is present in an amount sufficient to cause said ink composition to be water insoluble at an acidic pH and water washable at an alkaline pH having sufficient basic strength to convert said water reducible resin to a water washable form.

5,338,352

PROCESS FOR THE EMULSIFICATION OF POLYDIMETHYL SILOXANE OILS, ORGANOMODIFIED SILOXANE OILS AND ORGANIC OIL USING NON-IONIC SURFACTANTS

William C. Breneman, Sistersville; William C. Crane, Friendly, both of W. Va.; Michael J. Walsh, Marietta, and Eric A. Warren, Coolville, both of Ohio, assignors to OSi Specialties, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 801,517, Dec. 2, 1991, Pat. No. 5,234,495. This application May 10, 1993, Ser. No. 59,819

Int. Cl.[5] C09D *7/12*

U.S. Cl. 106—285 **13 Claims**

1. A process for preparing an oil-in-water emulsion comprising:

(1) mixing and heating

(i) mineral oil,

(ii) a water soluble organomodified polysiloxane emulsifier,

(iii) water, and

(iv) an alkaline metal salt, above the cloud point of the emulsifier to form a mixture; and

(2) cooling the resulting mixture below the cloud point of the emulsifier.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,353

METHOD FOR PRODUCTION OF POWDER OF FINE INORGANIC PARTICLES

Hiroyoshi Uchino, Takatsuki, and Tadahiro Yoneda, Ibaraki, both of Japan, assignors to Nippon Shokubai Kagaku Kogyo, Osaka, Japan

Continuation of Ser. No. 824,889, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 506,151, Apr. 9, 1990, abandoned. This application Oct. 20, 1992, Ser. No. 963,521

Claims priority, application Japan, Apr. 7, 1989, 1-87067; May 25, 1989, 1-130204; Mar. 5, 1990, 2-51668

Int. Cl.[5] **C09C** *1/04*

U.S. Cl. 106—426 **22 Claims**

1. A method for the production of powder of fine metal oxide particles excellent in dispersibility in various solvents comprising

hydrolyzing and condensing a hydrolyzable and condensable organic metal compound in an organic solvent in the presence of water to form an aqueous slurry X of fine particles of a metal oxide,

preparing a slurry Y comprising said fine particles of a metal oxide and aqueous solvent from said hydrolyzed slurry X; an organic compound (D) capable of reacting with the surfaces of said fine particles and possessing at least one hydroxyl group in the molecular unit, the amount of said organic compound being not less than 0.01 part by weight based on 1 part by weight of said fine particles; and at least one organic constituent selected from the group consisting of (A) methanol, said methanol being present in an amount not less than 1.0 part by weight based on 1 part by weight of the water present in said aqueous solvent and (B) an organic compound capable of forming a binary azeotropic mixture with water, said azeotropic mixture having a concentration of water (Cw) not less than 4.0% by weight, and solubility of water (Sw) to said compound being an amount of not less than 1.0% by weight at 20° C., the amount of said organic compound being not less than 60% of the amount calculated to form a binary azeotropic mixture with water present in said aqueous solvent, and

converting said prepared slurry into powder having an average diameter of 0.1 to 30 μm, a coefficient of particle diameter variation in the range of 2 to 30% and having said compound (D) bound to the surface of said fine particles.

5,338,354

COMPOSITE PIGMENTARY MATERIAL

Iain A. Melville, Cleveland, England, and Robert P. Rauch, deceased, late of Cleveland, England by Micheline M. E. Rauch, Patrick A. Rauch and Stephen E. Rauch, administrators , assignors to Tioxide Group Services Limited, London, England

Filed Jun. 23, 1993, Ser. No. 80,007

Claims priority, application United Kingdom, Jun. 24, 1992, 9213454.3

Int. Cl.[5] **C09C** *1/36*

U.S. Cl. 106—442 **20 Claims**

1. A process for preparing a composite pigment comprising the steps of:

a) neutralizing sulfuric acid generated during a process for preparing titanium dioxide by the addition of a calcium compound, thereby precipitating particulate gypsum at a pH below 1.5,

b) forming an aqueous dispersion of said particulate gypsum, milling said dispersion to reduce the particulate gypsum to an average particle size of less than 10 microns,

c) mixing the milled gypsum with pigmentary titanium dioxide to form an aqueous dispersion of mixed particles of titanium dioxide and gypsum, and

d) coating the mixed particles with an oxide or hydrous oxide of a metal or silicon.

5,338,355

METHOD OF PREPARING GOETHITE

Berndt-Ullrich Köhler, Krefeld, Fed. Rep. of Germany, and Haruki Kurokawa, Hiroshima, Japan, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed Dec. 14, 1993, Ser. No. 165,921

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1992, 4243760

Int. Cl.[5] **C09C** *1/22*

U.S. Cl. 106—457 **16 Claims**

1. A method of preparing Si-containing goethite (α-FeOOH) by the precipitation of Fe(II) salts with an excess of base and subsequent oxidation in the presence of a silicate solution, wherein at least part of the silicate solution is added during the oxidation.

5,338,356

CALCIUM PHOSPHATE GRANULAR CEMENT AND METHOD FOR PRODUCING SAME

Masahiro Hirano, Saitama, and Hiroyasu Takeuchi, Hanno, both of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,203

Claims priority, application Japan, Oct. 29, 1991, 3-283212; Oct. 29, 1991, 3-283213; Oct. 29, 1991, 3-283214

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[5] **C04B** *12/02*

U.S. Cl. 106—690 **9 Claims**

1. A calcium phosphate granular cement comprising mixed powders obtained by mixing α-type calcium tertiary phosphate with a calcium phosphate compound selected from the group consisting of calcium primary phosphate, calcium secondary phosphate and mixtures thereof at a Ca/P molar ratio of 1.35 to 1.49, a minimum diameter of each cement granule being 0.1 to 1.0 mm.

5,338,357

FIBRE REINFORCED SHAPED SOLID ARTICLES

Yosuke Takai, Harima Kenkyujo, Japan; Josef Studinka, Zürich, Switzerland, and Benoît de Lhoneux, Namur, Belgium, assignors to Polyfibre S.A., Nyon

Filed Aug. 3, 1992, Ser. No. 923,596

Claims priority, application Japan, Oct. 1, 1991, 3-282268

Int. Cl.[5] **C04B** *16/06*

U.S. Cl. 106—724 **16 Claims**

1. Shaped solid article manufactured with a hydraulically setting composition comprising water, hydraulic binders, reinforcing fibres and fillers ranging from a finite amount up to 50 wt % with respect to the total dry mix, characterized in that the reinforcing fibres comprise from 0.1–5 wt % with respect to the total dry mix of highly crystalline polypropylene fibres processing a fibre breakage strength of over 490 N/mm^2, having $Q<5$ and $97<HI<100$, and $94<IPF<100$, Q being the ratio of weight-average molecular weight to number-average molecular weight, HI being the boiling n-heptane insoluble content in wt % with respect to the total polymer and IPF being the isotactic pentad fraction in mol %.

5,338,358

APPARATUS FOR DYEING TISSUES

Yoshitada Mizusawa, Nagano, and Matsumi Toya, Koushoku, both of Japan, assignors to Kabushiki Kaisha Tiyoda Seisakusho, Nagano and Sakura Finetechnical Co., Ltd., Tokyo, both of Japan

Filed Sep. 17, 1992, Ser. No. 947,512

Claims priority, application Japan, Apr. 6, 1992, 4-112340

Int. Cl.[5] **B05C** *3/00*

U.S. Cl. 118—401 **11 Claims**

1. Apparatus for dyeing tissues comprising:

a base; and

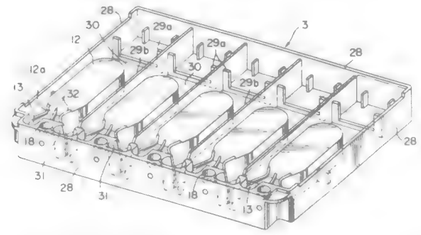
a dyeing tray provided on the base for supporting thereon slides each having a piece of tissue attached to an undersurface thereof, said dyeing tray comprising;

a plateau having a flat top surface;

drip surface means for receiving a liquid thereon, said drip surface means being located adjacent to an end of said top surface and being lower than the top surface, said top surface having a declining region which is adjacent to the drip surface means and which gradually declines toward the drip surface means;

liquid discharge port means opening at said end of the top surface of the plateau and adapted to be connected to a suction source for discharging the liquid used on said plateau through the liquid discharge port;

a first bank provided on said top surface of the plateau and extending along said declining region of the top surface so



as to form a partition between said declining region and said liquid discharge port means so as to prevent the liquid supplied on the drip surface means from flowing directly to said liquid discharge port means;

two second banks provided along two side edges of the plateau in regions adjacent to said first bank such that said declining region is located between said first bank and one of said second banks and said liquid discharge port means is disposed between said first bank and the other of said second banks; and

support means for supporting a slide above said plateau in such an attitude as to define a capillary gap between the top surface of the plateau and the undersurface of the slide, said support means being configured to position the slide so that the slide covers said plateau and said declining region but does not cover said drip surface means.

5,338,359

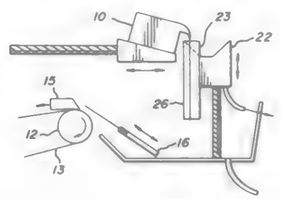
HOPPER PREPARATION PAN WITH EDGE WALLS

James E. Conroy; William D. Devine, and Kenneth J. Ruschak, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1993, Ser. No. 147,352

Int. Cl.[5] **B05C** *11/00*

U.S. Cl. 118—412 **11 Claims**



1. An apparatus for preparing a coating hopper having one or more metering slots between one or more hopper elements, the hopper elements forming a slide surface terminating at a lip wherein coating liquids issuing through the metering slots form one or more layers flowing down the slide surface which form a free-falling curtain at the lip having transversely spaced edges and edge guides spaced a distance apart for stabilizing each edge of the curtain, the apparatus comprising:

a preparation pan positionable beneath the hopper lip said preparation pan having a surface for intercepting the free-falling curtain;

edge walls extending from said preparation pan, said edge walls spaced apart from the edge guides when said preparation pan is positioned beneath the hopper lip, said edge walls having an outer surface facing each edge guide; and

flushing means for issuing a lubricating solution along the outer surface of the edge walls wherein the free-falling curtain not intercepted by said preparation pan is stabilized at each edge by said edge walls such that splattering is minimized.

5,338,360

DEVICE FOR CIRCULATING AND APPLYING A VISCOUS MATERIAL IN PATCHES ON A SUBSTRATE

Kenth A. S. Nilsson, Åkersberga, Sweden, assignor to Qenico AB, Akersberga, Sweden

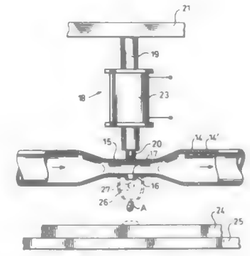
PCT No. PCT/SE91/00155, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO91/12921, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 27, 1991, Ser. No. 956,872

Claims priority, application Sweden, Mar. 2, 1990, 90 00749-3

Int. Cl.[5] **B05B** *1/08;* **B05C** *5/00*

U.S. Cl. 118—602 **10 Claims**



1. A device for use in applying a viscous liquid material in discrete small quantities to selected points on a substrate, said device comprising:

a source of said material,

an outlet connected to said source by a conveying conduit, the conveying conduit being formed as a closed loop,

feeding means, contained in the closed loop, for feeding the material in a circulating flow therethrough and past the outlet, said outlet including a discharge opening provided in a wall of the conveying conduit, and

means for intermittently and transiently increasing internal pressure in the conveying conduit within a zone thereof located near the discharge opening to intermittently forcedly discharge the material in successive small quantities through the outlet and apply each such quantity to a selected point on said substrate, which is placed in front of said outlet and movably supported in relation thereto.

5,338,361

MULTIPLE COAT MEASUREMENT AND CONTROL APPARATUS AND METHOD

Leonard M. Anderson, San Jose, and John J. Howarth, Scotts Valley, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Filed Nov. 4, 1991, Ser. No. 787,071

Int. Cl.[5] **B05C** *11/00*

U.S. Cl. 118—689 **24 Claims**

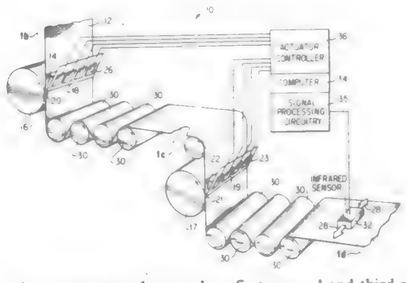
1. A coating sensor for sensing the amount of at least one

VOL 1165 ISS 3 AG 16 1994 UMI

layer of coating material on a substrate, wherein the at least one layer of coating material includes at least two components, the sensor comprising:

a radiation source disposed to direct a beam of radiation into the coated substrate; and

a radiation receiver disposed to detect at least a portion of the beam emerging from the coated substrate, the receiver being configured to detect the amount of radiation in first, second and third separate wavelength bands of the radiation spectrum and to produce first, second and third signals therefrom, respectively, indicating the amount of detected radiation in the first, second and third bands, wherein the first band is selected for radiation which is sensitive to the amount of a first component, the second band is selected for radiation which is sensitive to the amount of a second component and the third band is selected for radiation which is sensitive to the amount of the substrate.

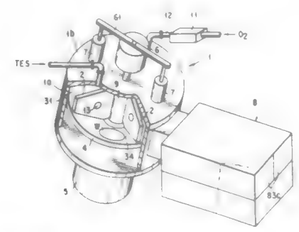


5,338,362

APPARATUS FOR PROCESSING SEMICONDUCTOR WAFER COMPRISING CONTINUOUSLY ROTATING WAFER TABLE AND PLURAL CHAMBER COMPARTMENTS

Issei Imahashi, Yamanashi, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 111,891
Claims priority, application Japan, Aug. 29, 1992, 4-253960
Int. Cl.[5] C23C *16/00, 16/46, 16/50*
U.S. Cl. 118—719 18 Claims



1. An apparatus for processing a semiconductor wafer, comprising:

a process chamber;

a table arranged in said process chamber;

a supporting portion formed on said table, for supporting a wafer which has a main surface to be processed;

a mechanism for continuously rotating said table, said table being rotated about an axis which is positioned outside said wafer on said supporting portion and a circulation route of said wafer being defined by rotation of said table;

a partition for dividing said process chamber into a plurality of compartments arranged along said circulation route with a clearance being defined between said table and an opposing portion of said partition, said compartments including a first process room and a second process room;

an exhaust for evacuating a space including said first and second process rooms in said process chamber;

a first supply for supplying a first gas to said first process room; and

a second supply for supplying, to said second process room, active species of a second gas which is different from said first gas, said second supply having an exciting mechanism for making said second gas into plasma, said exciting mechanism being provided remote from said second process room so as to prevent ions in the plasma from being supplied to said second process room,

wherein said wafer passes through said first and second process rooms by continuous rotation of said table, and said first gas and said active species of said second gases are supplied alternately to said wafer to form on said wafer a reaction product, as a film, produced by chemical reaction of said first gas and said active species of said second gas wherein said table is provided with a plurality of supporting portions for individually supporting a plurality of wafers so as to process said wafers simultaneously; and

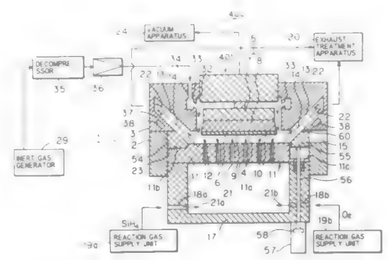
wherein said supporting portions each have a recess for supporting one of said wafers, and are formed such that said wafers are inclined inwardly.

5,338,363

CHEMICAL VAPOR DEPOSITION METHOD, AND CHEMICAL VAPOR DEPOSITION TREATMENT SYSTEM AND CHEMICAL VAPOR DEPOSITION APPARATUS THEREFOR

Yoshinobu Kawata, and Toshihiko Minami, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,971
Claims priority, application Japan, Dec. 13, 1991, 3-330328
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—725 21 Claims



1. A chemical vapor deposition treatment system for forming a film having a prescribed composition on a major surface of a substrate to be treated, said chemical vapor deposition treatment system comprising:

(a) substrate support means for supporting said substrate while heating the same;

(b) a reaction housing receiving said substrate and said substrate support means, said reaction housing defining a reaction space facing said major surface, and being provided with an exhaust passage communicating with said reaction space;

(c) reaction gas introduction means facing said major surface of said substrate and having a reaction gas introduction hole being opened toward said major surface of said substrate;

(d) inert gas introduction means being provided around said

reaction gas introduction means and having an inert gas injection hole being opened toward said exhaust passage;

(e) reaction gas supply means being coupled to said reaction gas introduction hole for supplying a reaction gas into said reaction space from said reaction gas introduction hole;

(f) inert gas supply means being coupled to said inert gas introduction means for injecting an inert gas toward said exhaust passage through said inert gas injection hole; and

(g) exhaust means being coupled to said exhaust passage for discharging an exhaust gas resulting from said reaction gas and said inert gas through said exhaust passage, wherein:

said inert gas injection hole is opened toward said exhaust passage in a boundary between said reaction space and said exhaust passage; and

said reaction housing comprises:

(b-1) a tapered wall surface having a circle enclosing a periphery of said reaction space as a lower edge and gradually spreading from said gas introduction hole along a direction away from said major surface, and said exhaust passage is provided along said tapered wall surface.

13. A chemical vapor deposition treatment system for forming a film having a prescribed composition on a major surface of a substrate to be treated, said chemical vapor deposition treatment system comprising:

(a) substrate support means for supporting said substrate while heating the same;

(b) a reaction housing receiving said substrate and said substrate support means, said reaction housing defining a reaction space facing said major surface, and being provided with an exhaust passage communicating with said reaction space;

(c) reaction gas introduction means facing said major surface of said substrate and having a reaction gas introduction hole being opened toward said major surface of said substrate;

(d) rectification means being provided in said reaction housing and having a wall surface for converting a flow of an exhaust gas resulting from said reaction gas from said reaction space to said exhaust passage to a laminar flow;

(e) reaction gas supply means being coupled to said reaction gas introduction hole for supplying a reaction gas into said reaction space from said reaction gas introduction hole, and

(f) exhaust means being coupled to said exhaust passage for discharging said exhaust gas through said exhaust passage.

5,338,364

PROCESS AND APPARATUS FOR PRODUCING DIAMOND FILM

Kazuaki Kurihara; Kenichi Sasaki, and Motonobu Kawarada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

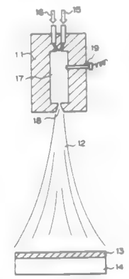
Division of Ser. No. 806,246, Dec. 13, 1991, Pat. No. 5,217,700. This application Dec. 21, 1992, Ser. No. 994,287
Claims priority, application Japan, Dec. 15, 1990, 2-402541; Mar. 18, 1991, 3-052467
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—729 4 Claims

1. An apparatus for producing a diamond film, comprising:

a torch comprising a supply inlet for a fuel gas containing a combustible carbon compound gas, a supply inlet for oxygen gas, a combustion chamber in which said supplied fuel gas is burnt by said supplied oxygen gas to thereby form a combustion gas, and a nozzle for ejecting said combustion gas to thereby form a gas flame jet;

a mechanism for holding a substrate to which said gas flame jet is applied to thereby form a diamond film thereon;

a mechanism for causing a relative movement of said torch and said substrate; and



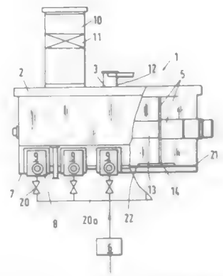
a gas supply system for supplying said fuel gas and said oxygen gas to said torch through said respective supply inlets.

5,338,365

APPARATUS FOR CONDITIONING CONFECTIONERS' SUGAR AND THE LIKE

Georg Stapp, Dreieichenhain, and Paul G. Dellmann, Darmstadt, both of Fed. Rep. of Germany, assignors to Dietrich Reimelt KG, Rodermark/Urberach, Fed. Rep. of Germany

Continuation of Ser. No. 890,628, May 28, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 149,017
Claims priority, application Fed. Rep. of Germany, May 30, 1991, 9106640
Int. Cl.[5] B01J *3/00*
U.S. Cl. 127—2 17 Claims



1. Apparatus for conditioning flowable bulk material, comprising a vessel having at least one inlet for unconditioned flowable bulk material and at least one outlet for conditioned flowable bulk material; means for agitating the material in the vessel between said at least one inlet and said at least one outlet; means for admitting into the vessel a gaseous conditioning fluid to contact said flowable bulk material and to regulate a moisture content of said flowable bulk material within said vessel; and means for imparting to the fluid a predetermined temperature and a predetermined moisture content prior to admission into said vessel.

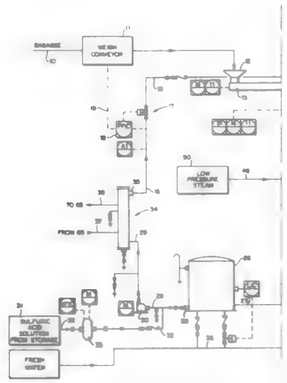
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,366

ACID PRE-HYDROLYSIS REACTOR SYSTEM

Todd S. Grace; Mark D. Barrett; Vic L. Bilodeau; Gary L. McCarty; Brian F. Greenwood; J. Robert Prough, and Louis O. Torregrossa, all of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Jan. 4, 1993, Ser. No. 997,711
Int. Cl.[5] C13D *1/14;* **D21B** *1/12*
U.S. Cl. 127—37 **29 Claims**



1. A single stage method of acid pre-hydrolysis of biomass, effecting hydrolysis of hemicellulose to five carbon sugars, comprising the steps of automatically, continuously and sequentially:

(a) mixing biomass containing hemicellulose with a mineral acid solution of sufficient concentration to eventually hydrolyze the hemicellulose therein, and to form a slurry having a consistency that insures proper wetting of the biomass with mineral acid;

(b) dewatering the slurry so as to minimize the amount of steam required to heat the biomass to reaction temperature and to maintain a desired sugar solution concentration after pre-hydrolysis;

(c) heating the dewatered slurry to reaction temperature, at superatmospheric pressure by direct contact with steam; and

(d) retaining the biomass in the dewatered slurry at reaction temperature and pressure conditions for a time sufficient to hydrolyze the hemicellulose of the biomass, but so that hydrolysis of cellulose does not occur, so that primarily five carbon sugars are produced.

5,338,367

PICKLING PROCESS IN AN ACID BATH OF METALLIC PRODUCTS CONTAINING TITANIUM OR AT LEAST ONE CHEMICAL ELEMENT OF THE TITANIUM FAMILY

Dominique Henriet, Chambourcy; Didier Paul, Gueugnon, and Laurent Prost, Ugine, all of France, assignors to Ugine, Aciers de Chatillon et Gueugnon, Puteaux, France

Continuation of Ser. No. 655,433, Mar. 19, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 987,259
Claims priority, application France, Jul. 26, 1989, 89 10093
Int. Cl.[5] C23G *1/02*
U.S. Cl. 134—3 **13 Claims**

1. A process for pickling a metal product of a metal selected from the group consisting of titanium, vanadium, zirconium, niobium, tantalum, uranium, or an alloy thereof in an acid bath having an oxidation-reduction potential, said metal product having a passivation potential and said acid bath being selected from the group consisting of hydrofluoric acid, sulfuric acid., hydrochloric acid, phosphoric acid, formic acid and mixtures thereof, comprising:

ionizing said metal to a higher valency and forming at least one peroxygenated derivative of said metal;

measuring said oxidation-reduction potential of said acid bath; and

introducing an oxidizing agent selected from the group consisting of urea peroxide, ozone, oxygen, a per-acid and a per-salt of the following formula:



wherein M is said metal, to said acid bath in an amount which maintains said oxidation-reduction potential of said acid bath at a level lower than said passivation potential of said metal product.

5,338,368

METHOD FOR REMOVING OIL OR ASPHALT FROM INORGANIC PARTICLES HAVING PIGMENT IN AN OUTER LAYER THEREOF

Robert B. Fletcher, Peterborough, Canada; Wilson S. Bigham, Woodbury, Minn., and Phyllis F. Albert, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 22, 1993, Ser. No. 125,333
Int. Cl.[5] C23G *5/02;* **B08B** *7/00, 3/04*
U.S. Cl. 134—40 **13 Claims**

1. A method for deoiling oil residues from surfaces of inorganic particles each having pigment in an outer layer thereon, comprising:

(a) providing a structure having a wall portion which defines a receptacle, said wall portion including an upper wall portion which includes a first opening for introducing inorganic particles into said receptacle, a lower wall portion having a second opening therethrough for discharging liquids from said receptacle, said structure including a porous support member having a pore size which permits the passage of liquid but not said inorganic particles located in said receptacle between said first opening and said second opening to define a particle holding chamber;

(b) introducing an amount of said inorganic particles, without compacting, into said particle holding chamber of said receptacle at said first opening, whereby said inorganic particles are supported on said porous support member;

(c) introducing a deoiling solution comprising a mixture of monocyclic terpene and aliphatic petroleum distillates into said first opening in an amount and manner effective to flow downward through interstices between said inorganic particles to contact and wet substantially all said surfaces of said inorganic particles, whereby said deoiling solution removes said oil residues from said surfaces of said inorganic particles and flows out of said second opening;

(d) then, introducing water into said first opening to rinse said deoiled inorganic particles; and

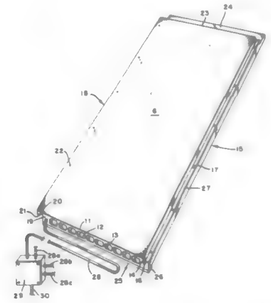
(e) drying said rinsed inorganic particles at a temperature and for a duration effective to volatize substantially all residual deoiling solution and water from said surfaces of said inorganic particles.

5,338,369

ROOF-INTEGRATABLE PHOTOVOLATIC MODULES

Lyle K. Rawlings, 66 Snydertown Rd., Hopewell, N.J. 08525

Filed Feb. 16, 1993, Ser. No. 17,520
Int. Cl.[5] H01L *31/052, 31/18, 31/048*
U.S. Cl. 136—246 **17 Claims**



1. A modular photovoltaic panel comprising in combination:

(a) a substrate comprising a composite of a first upper planar surface joined with a parallel lower surface secured in a substantially uniform spaced relationship relative to said upper surface by a plurality of spaced connecting members that define air flow passages between said upper and lower planar surfaces;

(b) a plurality of photovoltaic cells electrically interconnected and encapsulated in a transparent resinous polymer composition and secured on the surface of said upper panel;

(c) a first linear side edge portion having a substantially uniform cross section and a complementary second side edge portion on the opposite edge of said substrate, said first and second side edge portions having a thickness substantially equal to that of the composite of the joined upper and lower planar surfaces;

(d) said first side edge portion being provided with a mating edge devised to mate, in a substantially water impermeable seal, with the opposite complementary mating edge of a like contiguous module;

(e) means to secure on a roof at the side edge portions of said modules, and in a water impermeable seal, a pair of said substrates; and

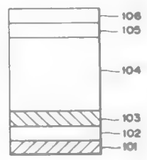
(f) an electrical wiring connected to the plurality of the photovoltaic cells in said module and for receiving and transmitting electrical output from said cells.

5,338,370

PHOTOVOLTAIC DEVICE

Tatsuyuki Aoike, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,478
Claims priority, application Japan, May 7, 1991, 3-130242
Int. Cl.[5] H01L *31/075*
U.S. Cl. 136—258 **12 Claims**



1. A photovoltaic device produced by the process which comprises forming, in sequence, on a transparent conductive layer of at least one of In_2O_3, ITO, ZnO, CdO, $CdSnO_4$, TiO_2, and Ti_2N_3;

(a) a non-monocrystalline layer of a first conductivity type containing Si atoms and at least one metallic element constituting said transparent conductive layer to enhance and maintain photoelectric conversion efficiency;

(b) a non-monocrystalline layer of an i-type and containing Si atoms; and

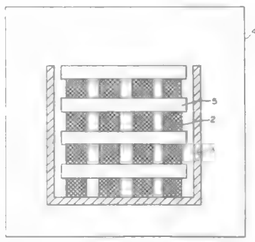
(c) a non-monocrystalline layer of a second conductivity type different from the first conductivity type and containing Si atoms.

5,338,371

RARE EARTH PERMANENT MAGNET POWDER, METHOD FOR PRODUCING SAME AND BONDED MAGNET

Ryoji Nakayama; Takuo Takeshita, and Tamotsu Ogawa, all of Omiya, Japan, assignors to Mitsubishi Metal Corporation, Tokyo, Japan

Division of Ser. No. 560,594, Jul. 31, 1990, Pat. No. 5,228,930. This application Nov. 19, 1992, Ser. No. 978,911
Claims priority, application Japan, Jul. 31, 1989, 1-198836; Jul. 31, 1989, 1-198837; Oct. 31, 1989, 1-284293; May 11, 1990, 2-122651; Jul. 12, 1990, 2-184779; Jul. 13, 1990, 2-185951
Int. Cl.[5] H01F *1/02*
U.S. Cl. 148—101 **10 Claims**



1. A method for producing a rare earth iron-boron permanent magnet powder comprising the steps of:

(a) plasma-melting and casting a rare earth alloy material which contains 8 to 30 atomic percent of at least one rare earth elements, 3 to 15 atomic percent of B, and the balance Fe and unavoidable impurities; which may optionally include

0.01 to 40 atomic percent Co;

0.01 to 5.0 atomic percent of at least one element selected from the group consisting of Ga, Al, Si and V; or

0.01 to 3.0 atomic percent of at least one element selected from the group consisting of Zr and Hf;

(b) adding a regenerative material to the alloy material prepared in step (a) to provide a mixture;

(c) subsequently elevating the temperature of said alloy material and said regenerative material in a hydrogen atmosphere and holding the same in said atmosphere at a temperature of 750° C. to 950° C. whereby a hydrogenation mixture is produced;

(d) subsequently dehydrogenating said hydrogenated mixture by exposing said mixture to a temperature of 750° C. to 950° C. in a vacuum, wherein the temperature drop caused by the dehydrogenation of the alloy material is prevented by the regenerative material; and

(e) subsequently cooling and crushing said alloy.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,372

ANISOTROPIC RARE-EARTH PERMANENT MAGNETS AND METHOD FOR MAKING SAME, AND METAL MOLD FOR MOLDING ANISOTROPIC PERMANENT MAGNETS

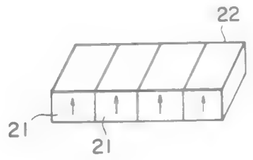
Kazunori Tabaru, Saitama, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Division of Ser. No. 713,431, Jun. 10, 1991, abandoned, which is a division of Ser. No. 394,573, Aug. 16, 1989, Pat. No. 5,049,053. This application Dec. 3, 1992, Ser. No. 984,702

Claims priority, application Japan, Aug. 18, 1988, 63-205214; Feb. 17, 1989, 1-38093

Int. Cl.[5] H01F *1/02*

U.S. Cl. 148—103 **3 Claims**



1. A method of manufacturing anisotropic rare-earth permanent magnets wherein said manufacturing method includes a process of molding powders of permanent magnet materials containing rare-earth elements by means of a metal mold disposed in a magnetic field into an anisotropic block by exerting a molding pressure of more than 0.6 t/cm^2, a process of aggregating and arranging a plurality of said blocks into an aggregate having a shape and sealing said aggregate in a bag impermeable to a hydrostatic medium, and a process of cold hydrostatic pressing said aggregate of blocks sealed in said bag in the absence of magnetic field by applying a pressure exceeding said molding pressure.

5,338,373

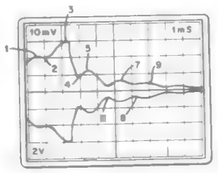
METHOD OF ENCODING AND DECODING A GLASSY ALLOY STRIP TO BE USED AS AN IDENTIFICATION MARKER

Robert M. VonHoene, 146 Galloping Hill Rd., Basking Ridge, N.J. 07920, and Ryusuke Hasegawa, 29 Hill St., Morristown, N.J. 07960

Continuation of Ser. No. 747,767, Aug. 20, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 44,094

Int. Cl.[5] C21D *9/52;* **H04B** *1/59;* **G08B** *13/26*

U.S. Cl. 148—121 **15 Claims**



1. A process for altering at least one mechanical resonant characteristic of a mechanically resonating marker comprising a glassy metal alloy strip having a physical length, comprising the step of:

modifying at least one surface of said glassy metal alloy strip so as to produce an effective length which is different from the physical length thereof wherein said modification is accomplished by directing a laser beam onto the surface of said alloy strip to cause said modification wherein said laser is operated at a fluence level between about 0.07 J/cm^2 and about 0.3 J/cm^2.

5,338,374

METHOD OF MAKING COPPER-TITANIUM NITRIDE ALLOY

Harris L. Marcus; Zwy Eliezer, both of Austin, Tex., and Morris E. Fine, Wilmette, Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 26, 1993, Ser. No. 104,952

Int. Cl.[5] B22F *9/04;* **C23C** *8/24*

U.S. Cl. 148—237 **9 Claims**



1. A process for making a copper-titanium nitride alloy comprising the steps of:

a. mechanically alloying a copper and titanium mixture to form a fine CuTi alloy powder mixture,

b. externally nitriding said alloy powder mixture to form a TiN coating on said alloy powder mixture, and

c. mechanically alloying said coated alloy powder mixture to break down the TiN surface layer thereby obtaining a very fine uniform distribution of TiN in a Cu-Ti alloy.

5,338,375

USE OF IRON SALTS AS CORROSION INHIBITORS IN TITANIUM VESSELS

Abraham Benderly, Houston, and Audrey Bravo, Richardson, both of Tex., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 18, 1993, Ser. No. 139,248

Int. Cl.[5] C23C *22/00*

U.S. Cl. 148—252 **12 Claims**

1. A method for inhibiting corrosion of a metal, the metal forming an oxide surface when in contact with an aqueous mixture of sulfuric acid and hydrocyanic acid, comprising admixing with the aqueous sulfuric acid and hydrocyanic acid mixture in contact with the metal a corrosion inhibiting amount of an iron salt.

5,338,376

IRON-NICKEL BASED HIGH PERMEABILITY AMORPHOUS ALLOY

Goudong Liu; Chuanli Zhang; Hongliang Ma; Shizhen Xu; Jingbei Li; Xuecai Li, and Lidong Ding, all of Beijing, China, assignors to Central Iron and Steel Research Institute, Beijing, China

Filed Jun. 3, 1993, Ser. No. 70,525

Claims priority, application China, Jun. 5, 1992, 92 1 04143.8

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—304 **7 Claims**

1. An Fe-Ni based high permeability amorphous alloy consisting of, atomic percent, Ni 30–45%, Cr 0.5–1.2%, Si 5–14%, B 5–15%, P 1.0–3.0%, the balance Fe and inevitable impurities.

5,338,377

BALL-AND-ROLLER BEARING

Nobuaki Mitamura, and Shigeru Okita, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

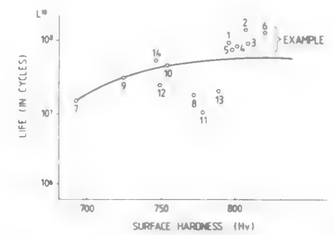
Filed Sep. 18, 1992, Ser. No. 946,638

Claims priority, application Japan, Sep. 19, 1991, 3-239386

Int. Cl.[5] F16C *33/62;* **C22C** *38/22, 38/24*

U.S. Cl. 148—318 **4 Claims**

1. A ball-and-roller bearing comprising races and rolling elements, at least one of said races and rolling elements being made of an alloy steel that contains 0.2 to 1.0 wt % of carbon and at least 1 wt % but not more than 18 wt % in total of one or more elements selected from among chromium, molybdenum and vanadium, at least one of said races and rolling elements having been subjected to carbonitriding and hardening



heat treatment, such that the area ratio of carbonitrides present in the treated surface layer per unit area is in the range of 10%–17%, a maximum grain size of carbonitrides present in said surface layer being no more than 3 μm, the content of retained austenite (γ_R) in said surface layer being 25 to 45 vol %, and said surface layer having a surface hardness of at least 750 Hv.

5,338,378

DENTAL GOLD ALLOY WITH AGE-HARDENABILITY AT INTRAORAL TEMPERATURE

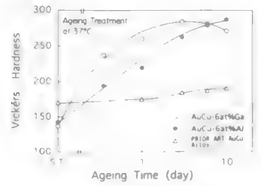
Michio Ohta; Shigeki Matsuya, Fukuoka; Takanobu Shiraishi, Kaga, and Masaharu Nakagawa, Fukuoka, all of Japan, assignors to Kyushu University, Fukuoka, Japan

Filed Apr. 23, 1993, Ser. No. 51,299

Claims priority, application Japan, Sep. 29, 1992, 4-260075

Int. Cl.[5] C22C *5/02*

U.S. Cl. 148—405 **4 Claims**



1. A dental gold alloy which is soft enough for adjustment of a patient's occlusal condition, which is age-hardenable with passage of time at temperatures encountered within a patient's oral cavity, and which has a single phase structure which imparts improved corrosion resistance, the dental gold alloy consisting essentially of:

82–67% by weight of gold;

18–33% by weight of copper; and

2–at % of an age-hardening accelerator which is at least one metal selected from the group consisting of gallium, and zinc,

wherein the dental gold alloy has been subjected to a solution treatment by heating at 650–700° C. and quenching into water.

5,338,379

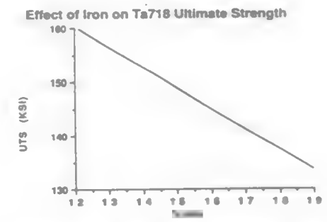
TANTALUM-CONTAINING SUPERALLOYS

Thomas J. Kelly, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 658,417, Feb. 19, 1991, Pat. No. 5,207,846, which is a continuation-in-part of Ser. No. 335,353, Apr. 10, 1989, abandoned. This application Dec. 17, 1992, Ser. No. 992,340

Int. Cl.[5] C22C *19/05*

U.S. Cl. 148—410 **1 Claim**



1. A weldable, cast nickel base superalloy which consists essentially of, in weight percent, about 13.34% iron, about 18.15% chromium, about 3.09% molybdenum, about 9.11% tantalum, about 1.03% titanium, about 1.0% aluminum, about 0.0035% boron, about 0.1% carbon, and the balance essentially nickel, the superalloy being characterized by a microstructure having a uniform distribution of gamma prime and gamma double prime precipitates, the gamma prime and gamma double prime precipitates having been formed with a gamma matrix by first heating the cast alloy to a temperature of bout 2000° F. for about 1 hour, heating the alloy at a temperature of about 2050° F. for about 3 to about 5 hours, then cooling the alloy to a temperature of about 1925° F. and holding it at about 1925° F. for about 4 hours, cooling to a first aging temperature of about 1600° F. and aging for about 2 hours and optionally cooling to a second aging temperature of about 1350° F. and aging for about 8 hours.

5,338,380

HIGH STRENGTH LOW CARBON STEEL WIRE RODS AND METHOD OF PRODUCING THEM

Toshiaki Yutori, Hyogo; Masaaki Katsumata, Nishi; Takehiko Kato, Kita, and Yasuhiro Hosogi, Hyogo, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Division of Ser. No. 629,035, Dec. 19, 1990, Pat. No. 5,141,570, which is a continuation of Ser. No. 235,797, Aug. 23, 1988, abandoned, which is a continuation of Ser. No. 895,869, Aug. 12, 1986, abandoned. This application May 27, 1992, Ser. No. 888,865

Claims priority, application Japan, Aug. 29, 1985, 60-191024; Aug. 29, 1985, 60-191026; Nov. 6, 1985, 60-249559; Nov. 6, 1985, 60-249560

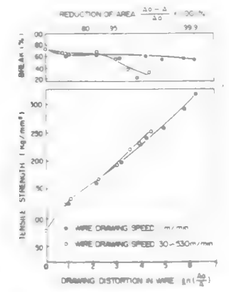
Int. Cl.[5] C21D *8/06*

U.S. Cl. 148—532 **6 Claims**

1. A method of producing ultra-fine steel wires by applying continuous cold drawing, at a reduction of area greater than 90%, to a wire rod having a composite structure in which an acicular low temperature transformation phase comprising a martensite, bainite and/or a mixed structure thereof, which comprises: by weight percent, 0.02–0.30% carbon, less than 2.5% Si, less than 2.5% Mn and the balance iron and the inevitable impurities, said wire having a ferrite phase containing retained austenite uniformly dispersed at a volume ratio of from 10 to 70% throughout the ferrite phase, and wherein the weight of (C+N) in solution in the ferrite phase is less than 40 ppm, wherein the volume ratio of the low temperature transformation phase is set to within the range of from 10 to 95% and wherein the wire rod, after reheating of the wire rod to

VOL 1165 ISS 3 AG 16 1994 UMI

about 800° C., is cooled, such that within the temperature range of from 550° to 200° C., the rate of cooling is less than 40°



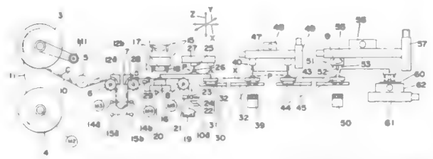
C./sec, and before drawing or during drawing, plating said wire rod with brass.

5,338,381

APPARATUS AND METHOD FOR BONDING OUTER LEADS

Wataru Hidese, Ohikushino, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan, 03

Continuation of Ser. No. 723,620, Jul. 1, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,316
Claims priority, application Japan, Jul. 6, 1990, 2-180031
Int. Cl.[5] B65G *25/00;* **B32B** *31/00*
U.S. Cl. 156—64 **5 Claims**



1. A method of bonding an outer lead of device, comprising the steps of:

(a) providing a film in which at least one semiconductor is included;

(b) separating at least one lead of the film so as to produce a device;

(c) transferring the device to a pick up position defined with respect to a bonding means;

(d) detecting positional deviations of the device, with a first degree of precision, relative to a position of a fusion means during transfer of the device;

(e) moving said bonding means relative to the device in accordance with the detected positional deviations, and picking up the device;

(f) detecting positional deviations of the lead, with a greater degree of precision, relative to a position of an electrode of a circuit board during pick up of the device;

(g) moving the device relative to the electrode of the circuit board so as to correct any positional deviation, and placing the device on the circuit board; and

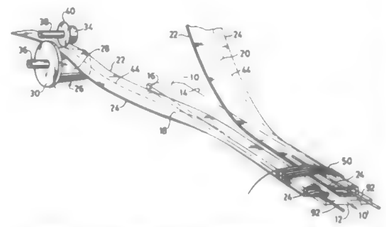
(h) fusion-bonding the lead to the electrode.

5,338,382

FABRICATION OF PILE WEATHERSTRIPPING HAVING FINS

Larry E. Johnson, Victor, and Peter Galens, Clifton Springs, both of N.Y., assignors to Ultrafab Inc., Farmington, N.Y.

Filed Aug. 10, 1992, Ser. No. 927,577
Int. Cl.[5] E06B *7/22;* **D04H** *11/00*
U.S. Cl. 156—72 **24 Claims**



1. A method of making pile weatherstripping having a backing strip and at least one fin between adjacent rows of pile on the backing strip of a desired height with respect to the pile which method comprises the steps of feeding a web having longitudinal edges onto a side of a traveling band which also has longitudinal edges; controllably aligning said web with one of said longitudinal edges of said web parallel to and at a first fixed and predetermined distance from one of said longitudinal edges of said band according to the desired height of said fin in said pile weatherstripping, and with the other of said longitudinal edges of said web overhanging said one of said longitudinal edges of said band by engaging said web and said band and indexing said web with respect of said band thereby establishing said height of said fin; wrapping said other of said longitudinal edges of said web around said one of said longitudinal edges of said band; winding yarn around said web and said band; attaching backing strips to said yarn and web where they wrap around said one of said longitudinal edges of said band and where said yarn wraps around the other of said longitudinal edges of said band; and slitting said yarn without cutting said web at a second fixed and predetermined distance from one of said longitudinal edges of said band, thereby providing a pair of weatherstrips with said yarn forming said rows of pile, at least one of said weatherstrips having a fin formed by said web, the height of said fin and the height of said pile being controlled in precise predetermined relationship.

16. Apparatus for making pile weatherstripping having a backing strip and at least one fin between adjacent rows of pile on the backing strip of a desired height with respect to the pile using a traveling band, which apparatus comprises means for feeding a web having longitudinal edges onto a side of said traveling band which also has longitudinal edges; means for controllably aligning said web with one of said longitudinal edges of said web parallel to and at a first fixed and predetermined distance from one of said longitudinal edges of said band according to the desired height of said fin in said pile weatherstripping, said controllably aligning means comprising means for engaging said web and said band and indexing said web with respect of said band thereby establishing said height of said fin; means for wrapping the other of said longitudinal edges of said web around said one of said longitudinal edges of said band; means for winding yarn around said web and said band; means for attaching backing strips to said yarn and web where they wrap around said one of said longitudinal edges of said band and where said yarn wraps around the other of said longitudinal edges of said band; and means for slitting said yarn without cutting said web at a second fixed and predetermined distance from one of said longitudinal edges of said band, thereby providing a pair of weatherstrips with said yarn forming said rows of pile, at least one of said weatherstrip have a fin formed by said web, the height of said fin and the height of said pile being in precise, controllably predetermined relationship.

5,338,383

TANK INSULATION METHOD WITH CRYOGENIC EXPOSURE

John Polackowyj, Fair Oaks, Calif., assignor to Aerojet General Corporation, Rancho Cordova, Calif.

Filed May 6, 1992, Ser. No. 879,783
Int. Cl.[5] B29C *65/00*
U.S. Cl. 156—80 **9 Claims**

1. A method for insulating a tank for exposure to cryogenic and elevated temperature comprising:

positioning a ceramic fiber fabric adjacent a surface of the tank;

impregnating said fabric with a silicone elastomer to provide a composite material;

vulcanizing said silicone elastomer; and

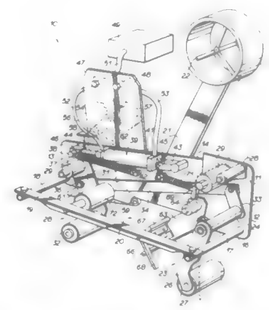
cooling said tank and composite material to a cryogenic temperature by introducing pressurized cryogenic fluid.

5,338,384

METHOD AND APPARATUS FOR APPLYING SEALING TAPE TO CASES MOVING ON A CONVEYOR

Donald G. Reichert, Tarpon Springs, Fla., assignor to ABC Packaging Machine Corporation, Tarpon Springs, Fla.

Filed May 26, 1993, Ser. No. 67,743
Int. Cl.[5] B31F *1/00*
U.S. Cl. 156—212 **18 Claims**



1. A taping apparatus for applying tape to cartons having front and rear faces and a top surface and moving relative to said apparatus comprising:

a support frame;

a first tape roller rotatably mounted on a first support arm pivotally mounted to said frame;

a second tape roller rotatably mounted on a second support arm pivotally mounted to said frame;

said support arms being movable between an extended position and a retracted position;

biasing means for forming said support arms toward their extended position;

dispensing means for dispensing tape to said first roller;

said first roller being adapted to apply tape to the front face and the top surface of the carton and maintain pressure thereon and said second roller being adapted to maintain pressure on the tape against the top surface and to apply tape to the rear face of the carton and maintain pressure thereon; and

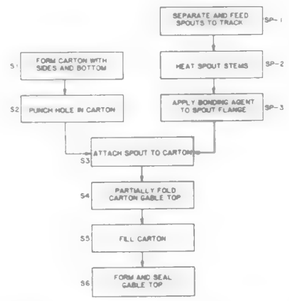
pressure means for augmenting the force of said biasing means after said second roller contacts the top surface of the carton having tape applied thereto by said first roller and for maintaining increased pressure on the tape on the rear face thereof.

5,338,385

METHOD AND APPARATUS FOR ATTACHING A SPOUT TO A CARTON

Robert S. Abrams, Albany, N.Y., and Joseph H. Miller, Farmington, Conn., assignors to Capitol Spouts, Inc., Albany, N.Y.

Filed Sep. 30, 1992, Ser. No. 953,698
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—252 **16 Claims**



1. A method for attaching a spout to a planar portion of an article, comprising the steps of:

positioning the spout at a bonding agent applicator;

applying a bonding agent to the spout;

moving the bonding agent prepared spout to a spout attaching station;

moving the article to the spout attaching station of an article conveyor line;

positioning an edge portion of the planar portion at a predetermined position relative to a spout attaching means at the station;

positioning the bonding agent prepared spout at the spout attaching station at a predetermined position relative to the spout attaching means; and,

attaching the bonding agent prepared spout to the planar portion at a pre-formed hole therein.

5,338,386

METHOD FOR BONDING FABRIC TO SEAT CUSHION TRENCHES

Jeffrey J. Frelich, Redford; Ronald L. Miotto, Wayne, and Ronald A. Wiltsey, Sterling Heights, all of Mich., assignors to Lear Seating Corporation, Southfield, Mich.

Division of Ser. No. 916,181, Jul. 17, 1992, Pat. No. 5,232,543. This application Apr. 20, 1993, Ser. No. 48,920
Int. Cl.[5] B32B *31/04, 31/20;* **C09J** *5/06*
U.S. Cl. 156—290 **2 Claims**

1. A method for bonding portions of a fabric bag **(12)** to a seat cushion assembly **(14)** with an adhesive layer located between the seat cushion assembly **(14)** and the fabric bag **(12)** using a plurality of holes **(32)** spaced equidistantly along a plurality of tubes **(30)** which are rotatable between open and closed positions with respect to a base **(16)** so the fabric bag **(12)** may be manipulated to remove any wrinkles in the fabric bag **(12)** prior to bonding, the method comprising the steps of:

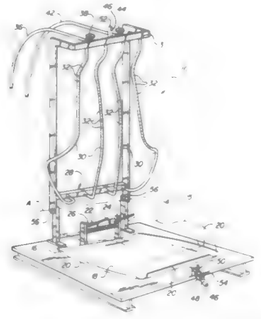
placing the seat cushion assembly **(14)** inside the fabric bag **(12)**;

aligning the seat cushion assembly **(14)** and the fabric bag **(12)** on the base **(16)**;

rotating the plurality of tubes **(30)** from the open position to the closed position over the fabric bag **(12)** and seat cushion assembly **(14)** such that portions of the fabric bag **(12)** located between each of the plurality of tubes **(30)** may be manually adjusted while the plurality of tubes **(30)** is in the closed position;

VOL 1165 ISS 3 AG 16 1994 UMI

transmitting steam through the plurality of tubes (**30**) in the closed position and out the plurality of holes (**32**) on to the portions of the fabric bag (**12**) to be bonded to melt the portions of the adhesive layer thereunder;



removing the steam and water from the fabric bag (**12**) and the seat cushion assembly (**14**); and

rotating the plurality of tubes (**30**) to the open position.

5,338,387

MODULAR APPARATUS FOR PREPARING ARTICLES TO BE MAILED

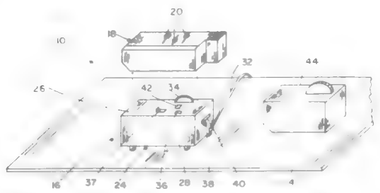
Marvin H. Noll, 634 Lake Shore Dr., Parsippany, N.J. 07054

Continuation-in-part of Ser. No. 60,741, May 12, 1993. This application Dec. 9, 1993, Ser. No. 165,016

The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.

Int. Cl.[5] **B43M** *3/00*

U.S. Cl. 156—441.5 **16 Claims**



1. A modular apparatus for preparing sheets of material to be mailed, said apparatus comprising:

a postage meter base having a motor, feed means operatively connected to said motor for sequentially feeding the sheets of material relative to said base and a driver operatively connected to the motor and projecting from said postage meter base;

a postage meter head removably engageable with the postage meter base, said postage meter head including adjustable printing means driven by said driver of said base for sequentially printing indicia on the sheets of material driven by the postage meter base; and

at least one applicator head removably engageable with the postage meter base upon removal of the postage meter head therefrom, said applicator head being engageable with the driver of the postage meter base for selectively applying adhesive backed applications to the sheets of material driven by the postage meter base, said applicator head comprising means for storing a strip of adhesive backed applications, means for selectively advancing said strip such that a leading application in said strip is in a position to be engaged by one said sheet driven by the postage meter base, and means for bursting said strip at a location for severing said leading application from said strip and enabling said application to be adhesively attached to said sheet of material driven by the postage meter base.

5,338,388

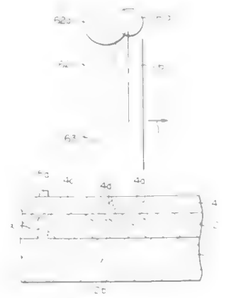
METHOD OF FORMING SINGLE-CRYSTAL SEMICONDUCTOR FILMS

Kazuyuki Sugahara, and Takashi Ipposhi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1992, Ser. No. 877,811

Int. Cl.[5] **C30B** *23/02*

U.S. Cl. 117—44 **8 Claims**



1. A method of forming single-crystal semiconductor films, in which a single-crystal semiconductor film having crystal axes transferred from a single-crystal semiconductor substrate are formed on an insulator layer via a seed hole which goes through the insulator layer which is formed on the single-crystal semiconductor substrate, said method comprising the steps of:

forming a non-single-crystal semiconductor substrate connected to a single-crystal semiconductor substrate via a seed hole formed in said insulator layer positioned below the non-single-crystal semiconductor film;

irradiating a compound beam comprising a first energy beam having a power density which is capable of melting a non-single-crystal semiconductor film and a second energy beam having a power density which is not capable of melting the non-single-crystal semiconductor film but is capable of softening said insulator layer; and

epitaxially growing the single-crystal semiconductor film in such a way that the non-single-crystal semiconductor film is melted and then solidified again by scanning the surface of the non-single-crystal semiconductor film with the compound beam, starting from the seed hole, in such a manner that the first energy beam is irradiated first and the second energy beam is irradiated second.

5,338,389

METHOD OF EPITAXIALLY GROWING COMPOUND CRYSTAL AND DOPING METHOD THEREIN

Jun-ichi Nishizawa, and Toru Kurabayashi, both of Miyagi, Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan

Continuation of Ser. No. 860,253, Mar. 31, 1992, abandoned, which is a continuation of Ser. No. 642,965, Jan. 18, 1991, abandoned. This application Apr. 21, 1993, Ser. No. 49,661

Claims priority, application Japan, Jan. 19, 1990, 2-8399

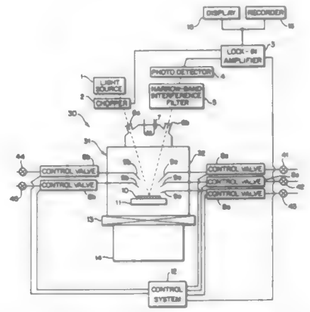
Int. Cl.[5] **C30B** *25/02*

U.S. Cl. 117—89 **22 Claims**

1. A method of epitaxially growing a Group III-V compound crystal by a gas introduction cycle, wherein the step forming a maximum thickness of one monolayer thickness of said compound crystal is repeated, said method comprising the steps of:

introducing onto a substrate crystal heated under vacuum, for a time until the monolayer is formed, a first crystal component gas of a Group III-V compound;

stopping supply of said first crystal component gas to thereby evacuate said first crystal component gas except



for first crystal component gas adsorbed on a growing surface;

introducing a reaction gas which chemically reacts with molecules formed from said first crystal component gas adsorbed on said surface;

evacuating said reaction gas;

introducing said second crystal component gas of a Group III-V compound; and

evacuating said second crystal component gas.

5,338,390

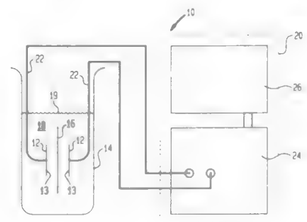
CONTACTLESS REAL-TIME IN-SITU MONITORING OF A CHEMICAL ETCHING PROCESS

Steven G. Barbee, Dover Plains; Tony F. Heinz, Chappaqua; Leping Li, New Paltz, and Eugene H. Ratzlaff, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,413

Int. Cl.[5] **G01N** *27/46;* **C25F** *3/02*

U.S. Cl. 156—627 **14 Claims**



1. A contactless method for real-time in-situ monitoring of a chemical etching process during etching of at least one wafer in a wet chemical etchant bath, said method comprising the steps of:

a) providing two conductive electrodes in the wet chemical bath, the two electrodes being proximate to but not in contact with the at lest one wafer and further wherein each of the electrodes is positioned on an opposite side of the at least one wafer; and

b) monitoring an impedance between the two electrodes, wherein a prescribed change in the impedance is indicative of a prescribed condition of the etching process.

5,338,391

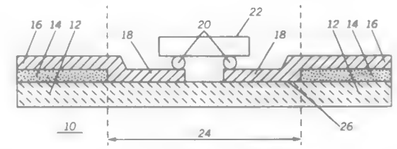
METHOD OF MAKING A SUBSTRATE HAVING SELECTIVELY RELEASING CONDUCTIVE RUNNERS

Anthony B. Suppelsa, Coral Springs; William B. Mullen, III, Boca Raton, and Glenn F. Urbish, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 12, 1993, Ser. No. 134,447

Int. Cl.[5] **B44C** *1/22;* **C23F** *1/00*

U.S. Cl. 156—630 **21 Claims**



1. A process for manufacturing substrates with selectively releasing metallization, comprising the steps of:

a) depositing an adhesion layer of a first metal to portions of the surface of a substrate where strong adhesion is desired, thereby leaving the remaining portions of the substrate surface uncovered; and

b) coveting the first metal layer and the uncovered portions of the substrate surface with a second metal layer, forming a selectively releasing zone defined by an area where the second metal layer adheres directly to the substrate, the adhesion of the second metal layer to the substrate being less than the adhesion of the second metal layer to the first metal layer and also being less than the adhesion of the first metal layer to the substrate.

5,338,392

METHOD FOR MANUFACTURING A LAMINATED PLATE USED IN A SEMICONDUCTOR DEVICE

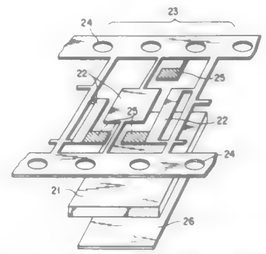
Kouji Araki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 7, 1993, Ser. No. 132,866

Claims priority, application Japan, Oct. 8, 1992, 4-270174

Int. Cl.[5] **B44C** *1/22;* **C23F** *1/00*

U.S. Cl. 156—634 **4 Claims**



1. A method for manufacturing a laminated plate used in a semiconductor device, comprising:

a step of processing a conductive member to form a frame and a wiring pattern supported by the frame integrally with each other;

a step of bonding the wiring pattern to a major surface of a base member by high-temperature heating, using the frame as a guide, thereby to form a laminated layer; and

a step of removing the frame from the laminated layer to form a desirable laminated plate.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,393

METHOD FOR THE LOCAL REMOVAL OF UV-TRANSPARENT INSULATION LAYERS ON A SEMICONDUCTOR SUBSTRATE

Christian Burmer, Rohrdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

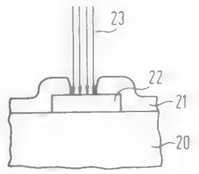
Filed Mar. 17, 1992, Ser. No. 852,952

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 4109535

The portion of the term of this patent subsequent to Aug. 9, 2011, has been disclaimed.

Int. Cl.[5] H01L *21/441, 21/306, 21/268*

U.S. Cl. 156—643 9 Claims



1. A method for local removal of a UV-transparent insulating layer on a semiconductor substrate in a vacuum chamber by use of laser light, comprising the steps of:

admitting a gas mixture into the vacuum chamber, said gas mixture comprising a carrier gas and a gaseous, layer-forming compound; and

irradiating a surface of the insulating layer with the laser light to first deposit a layer only on irradiated regions, said layer resulting in increased absorption of the laser light and heating which then causes removal of the deposited layer and at least a portion of the insulating layer at the irradiated regions only until a surface of the insulating layer is again exposed, at which time the layering and removal process repeats itself, if all of the insulating layer has not yet been removed.

5,338,394

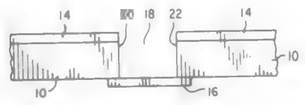
METHOD FOR ETCHING INDIUM BASED III-V COMPOUND SEMICONDUCTORS

Mohammed A. Fathimulla, Ellicott City, and Thomas C. Loughran, Columbia, both of Md., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed May 1, 1992, Ser. No. 877,456

Int. Cl.[5] H01L *21/306*

U.S. Cl. 156—643 14 Claims



1. A method for etching Indium based III-V compound semiconductors, comprising the steps of:

(a) placing a mask on the Indium based III-V compound semiconductor;

(b) placing the Indium based III-V compound semiconductor and said mask in a chamber having a pressure between approximately 1 mTorr and approximately 100 mTorr;

(c) introducing a first gas selected from the group consisting of $SiCl_4$, BCl_3, and HBr into said chamber;

(d) introducing a second gas selected from the group consisting of CH_4 and H_2 into said chamber;

(e) maintaining the Indium based III-V compound semiconductor at a temperature of less than approximately 150° C.; and

(f) exposing said semiconductor to a gas plasma comprising said first gas and said second gas;

whereby said gas plasma etches said semiconductor at a rate of between about 0.5 μm/min to about 1.0 μm/min.

5,338,395

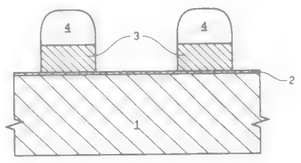
METHOD FOR ENHANCING ETCH UNIFORMITY USEFUL IN ETCHING SUBMICRON NITRIDE FEATURES

David J. Keller, Boise, and Debra K. Gould, Nampa, both of Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Mar. 10, 1993, Ser. No. 29,262

Int. Cl.[5] H01L *21/306*

U.S. Cl. 156—643 19 Claims



8. An etch process having a substantial physical component comprising the following steps of:

exposing a semiconductor substrate to ionized Cl_2, said substrate having at least one layer of nitride disposed thereon, said ionized Cl_2 etching sidewalls in said nitride layer, said sidewalls being substantially normal to said substrate;

exposing said semiconductor substrate to an ionized hydrogen halide.

5,338,396

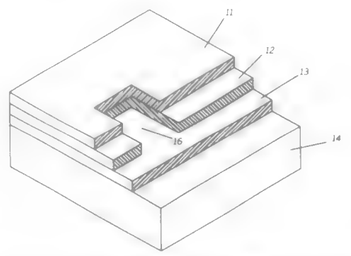
METHOD OF FABRICATING IN-MOLD GRAPHICS

Julio A. Abdala, Miami, and Jill C. Olkoski, Fort Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 1, 1993, Ser. No. 143,727

Int. Cl.[5] B44C *1/22*

U.S. Cl. 156—655 19 Claims



1. A method for fabricating an in-mold graphics surface, the method comprising the steps of:

a) molding at least one layer of an etchable material on a contrasting surface; and

b) etching the at least one layer in a pattern to expose the contrasting surface to produce the in-mold graphics surface.

5,338,397

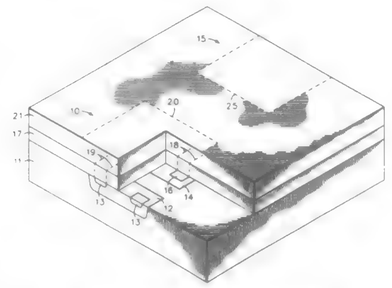
METHOD OF FORMING A SEMICONDUCTOR DEVICE

Paul W. Sanders, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 1, 1993, Ser. No. 130,482

Int. Cl.[5] H01L *21/306;* B44C *1/22;* C23F *1/00*

U.S. Cl. 156—659.1 19 Claims



1. A method of forming a semiconductor device comprising:

applying a layer of photoresist to a semiconductor substrate;

protecting a first portion of the photoresist while exposing a second portion of the photoresist by using a first mask;

exposing a third portion of the photoresist prior to developing the photoresist by using a second mask wherein the third portion of the photoresist includes part of the first portion of the photoresist; and

developing the photoresist to form a photoresist mask.

5,338,398

TUNGSTEN SILICIDE ETCH PROCESS SELECTIVE TO PHOTORESIST AND OXIDE

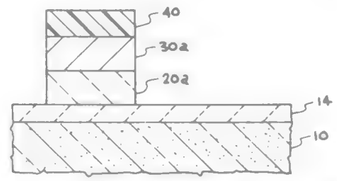
Chester A. Szwejkowski, Santa Cruz; Robert Lum, Hayward, both of Calif., and Thierry Fried, Grenoble, France, assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 677,018, Mar. 28, 1991, abandoned.

This application Dec. 23, 1992, Ser. No. 996,379

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—655 23 Claims



1. A plasma etching process for etching both tungsten silicide and polysilicon layers on a semiconductor wafer using chlorine gas and an oxygen-bearing etchant gas, in a ratio of from 90 to 94 volume % chlorine and from 6 to 10 volume % oxygen-bearing gas, characterized by a high selectivity to both photoresist and silicon oxide which comprises;

a) mounting on a wafer support platform in a vacuum etching chamber a semiconductor wafer having an oxide portion formed thereon, polysilicon over said oxide, tungsten silicide over said polysilicon, and a photoresist mask over said tungsten silicide;

b) flowing into said chamber;

i) from 50 to 100 volume % of an etchant gas mixture consisting essentially of chlorine gas and an oxygen-bearing gas in a volume ratio of from 90 to 94 volume % chlorine and from 6 to 10 volume % oxygen-bearing gas; and

ii) from 0 to 50 volume % of one or more inert carrier gases;

c) igniting a plasma in said vacuum etching chamber, between said cathode wafer support and the grounded walls of said vacuum chamber while said etchant gas mixture is flowing through said chamber to etch both said tungsten silicide and said polysilicon through said photoresist mask down to said underlying oxide portion on said wafer.

5,338,399

DRY ETCHING METHOD

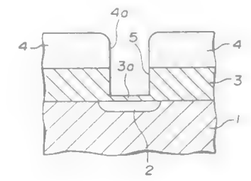
Toshiharu Yanagida, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 12, 1992, Ser. No. 834,395

Claims priority, application Japan, Feb. 12, 1991, 3-040966

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—662 14 Claims



1. A dry etching method comprising etching a layer of a silicon compound formed on a substrate using an etching gas plasma containing a saturated fluorocarbon compound having a cyclic portion in at least a portion of a molecular structure thereof, said substrate being controlled to a temperature of not higher than 50° C. during etching, wherein said etching gas also contrives a straight chain unsaturated fluorocarbon compound.

5,338,400

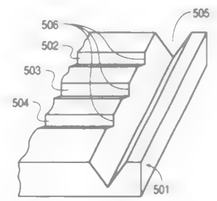
MICROMACHINING PROCESS FOR MAKING PERFECT EXTERIOR CORNER IN AN ETCHABLE SUBSTRATE

John H. Jerman, Palo Alto, Calif., assignor to IC Sensors, Inc., Milpitas, Calif.

Filed Feb. 25, 1993, Ser. No. 23,188

Int. Cl.[5] H01L *21/306;* B44C *1/22;* C03C *15/00*

U.S. Cl. 156—647 13 Claims



1. A process for forming a three-dimensional structure having at least one exterior corner in an etchable substrate comprising:

partitioning said structure into a first feature and a second feature, such that the exterior corners are formed by an intersection of the two features;

etching said first feature;

forming an etch mask on the surface and on the substrate of the etched first feature;

VOL 1165 ISS 3 AG 16 1994 UMI

opening a window in the etch mask on the substrate to define said second feature; and

etching said second feature, thereby obtaining said exterior corner.

5,338,401

OXYGEN DETACKIFICATION IN SECONDARY FIBER RECOVERY

Ronald C. Naddeo, Kempton; Konstantinos Hristofas, Allentown, and Vincent L. Magnotta, Wescosville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 703,549, May 21, 1991, Pat. No. 5,213,661. This application Mar. 3, 1993, Ser. No. 25,491

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] D21C *5/02, 9/147*

U.S. Cl. 162—6 **12 Claims**

1. A method for treating a secondary pulp comprising cellulosic fibers and tacky contaminants, wherein said pulp is prepared from waste paper material, said method comprising contacting said pulp with an aqueous liquid in the presence of oxygen gas at conditions of temperature, oxygen partial pressure, and contact time sufficient to decrease the tackiness of said tacky contaminants, thereby reducing operating and product quality problems caused by said tacky contaminants during further processing of said cellulosic fibers to yield a recycled paper product.

5,338,402

PROCESS FOR PREPARING A BLEACHED CHEMITHERMOMECHANICAL PULP

Michel Devic, Sainte-Foy-Les-Lyon, and Robert Angelier, Echirolles, both of France, assignors to Societe Atochem, France

Continuation of Ser. No. 734,041, Jul. 18, 1991, abandoned, which is a continuation of Ser. No. 195,192, May 18, 1988, abandoned. This application Oct. 6, 1992, Ser. No. 957,636

Claims priority, application France, May 25, 1987, 87 07552

Int. Cl.[5] D21C *3/14, 9/16;* **D21B** *1/16*

U.S. Cl. 162—24 **10 Claims**

1. A process for preparing a bleached chemithermomechanical pulp comprising (a) subjecting a lignocellulosic substance from which said pulp is to be formed to a grinding or mechanical refining and to a cooking before, during, or after said grinding or mechanical refining by the simultaneous action of sodium sulfite, sodium bisulfite, or a mixture of sodium sulfite and sodium bisulfite and sodium borohydride as a reducing agent at an initial pH of between 8 and 12.5 and at a temperature of about 100° C. or above under saturated steam pressure to obtain a chemithermomechanical pulp having a yield, pulp weight in dry state with respect to the weight of the starting lignocellulosic substance in dry state, or greater than 85% and (b) then bleaching said lignocellulosic substance pulp by the use of hydrogen peroxide in an alkaline medium.

5,338,403

HYDROLYSIS OF RESIN IN PULP WITH AN ENZYME AND A HYDROSULFITE

Lars S. Pedersen, Lyngby, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK91/00315, § 371 Date Mar. 3, 1993, § 102(e) Date Mar. 3, 1993, PCT Pub. No. WO92/07138, PCT Pub. Date Apr. 30, 1992

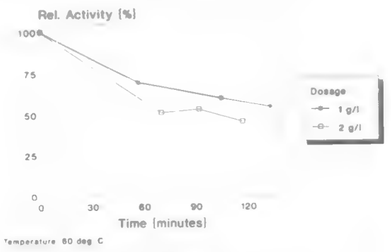
PCT Filed Oct. 17, 1991, Ser. No. 983,521

Claims priority, application Denmark, Oct. 17, 1990, 2499/90

Int. Cl.[5] D21C *9/10*

U.S. Cl. 162—72 **13 Claims**

1. A process for hydrolysis of resin in pulp during bleaching of the pulp, comprising enzymatically hydrolyzing the resin with an enzyme selected from the group consisting of lipase and esterase simultaneously with the bleaching of the pulp with a hydrosulfite, wherein the enzyme and the hydrosulfite



agent are present during the bleaching in amounts effective to hydrolyze resin in the pulp and bleach the pulp.

5,338,404

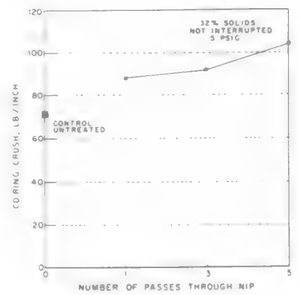
METHOD OF FORMING A LIGNIN REINFORCED CELLULOSIC PRODUCT

Paul C. Lucas, Chester, N.Y.; Ronald J. Messenger, Matamoras, Pa.; Elizabeth A. Macklem-Nathan, Monroe; and Lawrence C. Nykwest, Goshen, both of N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Mar. 11, 1992, Ser. No. 849,475

Int. Cl.[5] D21H *11/00*

U.S. Cl. 162—163 **15 Claims**



1. A method for increasing the crush strength of a linerboard formed of cellulosic fibers, comprising treating the linerboard by coating at least one surface of the linerboard with a liquid dispersion containing lignin, and calendering the coated linerboard by subjecting the coated linerboard to at least one pass through a calender nip at a pressure of about 100 pli to about 1,000 pli and a temperature of about 300° F. to about 400° F. to substantially increase the crush strength of the coated-calendered linerboard over that of an untreated linerboard.

5,338,405

PRODUCTION OF FIBER PULP BY IMPREGNATING THE LIGNOCELLULOSIC MATERIAL WITH AN AQUEOUS ALCOHOLIC SO_2 SOLUTION PRIOR TO DEFIBRATION

Rudolf Patt, Reinbek, and Georg Rachor, Grossostheim, both of Fed. Rep. of Germany, assignors to Stora Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/01622, § 371 Date May 18, 1992, § 102(e) Date May 18, 1992, PCT Pub. No. WO91/05102, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 25, 1990, Ser. No. 842,365

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1989, 3932347

Int. Cl.[5] D21B *1/16*

U.S. Cl. 162—25 **14 Claims**

1. In a process for the manufacture of chemimechanical or chemithermo-mechanical wood pulps from raw materials containing lignocellulose, for the manufacture of paper, pasteboard or liner board by mechanical comminution, sorting and homogenization of the raw materials containing lignocellulose, impregnation with a cooking liquor, cooking of the raw materials, defibration in one or more defibrating apparatus connected in series or parallel, and sorting of the fiber material produced, the improvement which comprises

a) combining the raw materials containing lignocellulose with an aqueous acid cooking liquor with a pH of 1.0 to 2.0 containing:

aa) 10 to 70 volume % of aliphatic alcohols miscible with water,

ab) 1.0 to 100 g/l of sulfur dioxide,

b) starting the lignin sulfonation reaction by heating the mixture of a) to a temperature between 50° and 170° C.

c) maintaining the end temperature for a period of 1 to 300 minutes;

d) driving out and recovering the alcohol and the unconsumed sulfur dioxide, and

e) shredding the lignocellulosic raw material into fibers of a preselected degree of fineness by means of a preselected specific grinding operation in the range from 1,200 to 1900 kwh/t of fiber and wherein the pulp yield is in the range of 92 to 96%.

5,338,406

DRY STRENGTH ADDITIVE FOR PAPER

Douglas C. Smith, Landenberg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 730,187, Jul. 12, 1991, abandoned, which is a continuation of Ser. No. 252,333, Oct. 3, 1988, abandoned. This application Sep. 10, 1992, Ser. No. 943,106

Int. Cl.[5] D21H *17/07, 17/20*

U.S. Cl. 162—168.2 **23 Claims**

1. A papermaking process consisting essentially of the steps of:

(1) forming an aqueous suspension consisting essentially unbleached pulp fibers, water and dissolved in the water from about 0.1 to about 5%, based on the dry weight of the pulp, of anionic polymers normally present in unbleached pulp selected from the group consisting of solubilized lignins and hemicelluloses, said anionic polymers having a charge density of less than 5 meq/g; and from about 0.1 to about 5%, based on the dry weight of the pulp, of polymer consisting essentially of at least one water-soluble, linear, high molecular weight, low charge density quaternary ammonium cationic polymer, having a reduced specific viscosity greater than 2 dl/g and a charge density of 0.2 to 4 meq/g, in an amount such that a polyelectrolyte complex will form with said anionic polymer and the cationic polymer; and

(2) sheeting and drying the fibers of the pulp to form the desired cellulosic web having improved dry strength.

5,338,407

ENHANCEMENT OF PAPER DRY STRENGTH BY ANIONIC AND CATIONIC GUAR COMBINATION

Sunil P. Dasgupta, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 23, 1991, Ser. No. 812,534

Int. Cl.[5] D21H *17/32*

U.S. Cl. 162—168.3 **7 Claims**

1. A process for making paper to enhance the dry strength of the paper produced without reducing its softness, that comprises adding to an aqueous bleached pulp furnish, together or separately, an anionic carboxymethyl guar or an anionic carboxymethyl hydroxyethyl guar and a cationic polymer selected from the group consisting of a cationic acrylamide copolymer and a cationic guar, the total amount of the anionic material and the cationic material being from 0.05 to 5% based on the dry weight of the pulp and the ratio of the anionic material to the cationic material being from 1/20 to 10/1, and forming paper from the aqueous furnish.

5,338,408

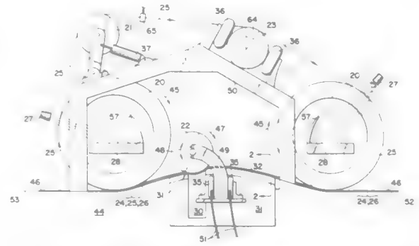
PAPER FORMING UNIT WITH TWO DANDY ROLLS

Edmund N. Marx, Jr., St. Marys, Ga., assignor to Gilman Paper Company, St. Marys

Filed Feb. 9, 1993, Ser. No. 15,525

Int. Cl.[5] D21F *1/00*

U.S. Cl. 162—301 **19 Claims**



1. In a Fourdrinier paper-making system including a generally horizontal moving main fabric supporting a web of paper fibers with water being removed from the web solely from underneath the main fabric, the improvement which comprises a surface finishing unit including two spaced dandy rolls, an adjustable stretch roll and a pocket roll driving a secondary fabric which is located above said main fabric, said dandy rolls structured and arranged for pressing said secondary fabric down from above against said web on said main fabric, said pocket roll being smaller than and located between said dandy rolls, a two-chambered suction box having low, high, and low vacuum sections, structured and arranged to be successively applied to said web from below said main fabric and under said pocket roll.

5,338,409

APPARATUS FOR DISTILLING LIQUIDS IN A VACUUM

Jacob Heierli, Grub, Switzerland, assignor to MLS Mikrowellen-Labor-Systeme GmbH, Leutkirch, Fed. Rep. of Germany

PCT No. PCT/EP91/02255, § 371 Date Jul. 23, 1992, § 102(e) Date Jul. 23, 1992, PCT Pub. No. WO92/09351, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 28, 1991, Ser. No. 910,027

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1990, 4038273

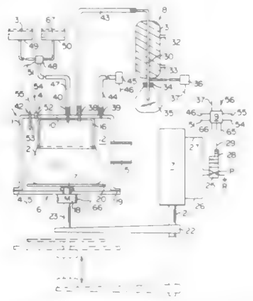
Int. Cl.[5] B01D *3/10, 3/42*

U.S. Cl. 202—205 **8 Claims**

1. Apparatus for distilling liquids in a vacuum, said apparatus comprising,

VOL 1165 ISS 3 AG 16 1994 UMI

a distilling receptacle for a liquid to be distilled,
a vacuum pump connected to said receptacle,
a heating means for heating the receptacle for causing the liquid to evaporate,
a condenser connected to the receptacle for condensing the vapor,
at least one collecting vessel connected to the condenser, for the condensate,
said heating means including at least one vacuum-tight and microwave-reflecting receiving chamber for the receptacle and a microwave generator connected to the receiving chamber for generating microwaves and coupling them into the receiving chamber,
an access opening in the underside of said receiving chamber and a door means movable substantially vertically by means of a drive means between an open and a closed position, for closing the access opening and for holding the receptacle, and
means for sealing at least one of the receiving chamber and the door means to close the access opening in a vacuum-tight manner,
at least one support plate for the receptacle,
means for rotating said support plate in its plane, including a motor, and
a control and regulating unit for controlling or regulating at least one of said drive means, said microwave generator, said motor, said vacuum pump, a compressed air pump, a valve and a loading and unloading device.



2. Apparatus for distilling liquids in a vacuum, said apparatus comprising,
at least one distilling receptacle for a liquid to be distilled,
a vacuum pump connected to said receptacle,
a heating means for heating the receptacle for causing the liquid to evaporate,
a condenser connected to the receptacle for condensing the vapor,
at least one collecting vessel connected to the condenser, for the condensate,
said heating means including a vacuum-tight and microwave-reflecting receiving chamber for the receptacle and a microwave generator connected to the receiving chamber for generating microwaves and coupling them into the receiving chamber,
an access opening in the underside of said receiving chamber means and a door means movable substantially vertically by means of a drive means between an open and a closed position, for closing the access opening and for holding the receptacle,
means for sealing at least one of the receiving chamber and the door means for closing the access opening in a vacuum-tight manner,
means for rotating said door means in its plane, including a motor, and
a control and regulating unit for controlling or regulating at least one of said drive means, said microwave generator, said motor, said vacuum pump, a compressed air pump, a valve and a loading and unloading device.

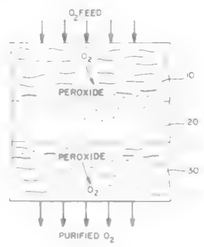
5,338,410
SEPARATION OF 2-BUTANOL FROM T-AMYL ALCOHOL BY AZEOTROPIC DISTILLATION
Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.
Filed Jan. 18, 1994, Ser. No. 181,792
Int. Cl.[5] B01D *3/36;* **C07C** *29/84*
U.S. Cl. 203—57 **1 Claim**

1. A method for recovering 2-butanol from a mixture of 2-butanol and t-amyl alcohol which comprises distilling a mixture of 2-butanol and t-amyl alcohol in the presence of an azeotrope forming agent, recovering the 2-butanol and the azeotrope forming agent as overhead product and obtaining the t-amyl alcohol as bottoms product, wherein said azeotrope forming agent consists of one material selected from the group consisting of acetonitrile, tetrahydrofuran, isopropyl acetate, n-propyl acetate, acetal, ethyl isobutyrate, ethyl acetoacetate, methyl acetoacetate, nitroethane and 2,2-dimethoxypropane.

5,338,411
SEPARATION OF ETHANOL FROM ISOPROPANOL BY AZEOTROPIC DISTILLATION
Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.
Filed Jan. 14, 1994, Ser. No. 181,044
Int. Cl.[5] B01D *3/36;* **C07C** *29/84*
U.S. Cl. 203—60 **1 Claim**

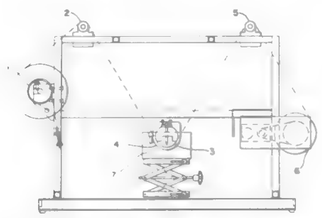
1. A method for recovering ethanol from a mixture of ethanol and isopropanol which comprises distilling a mixture of ethanol and isopropanol in the presence of an azeotrope forming agent, recovering the ethanol and the azeotrope forming agent as overhead product and obtaining the isopropanol as bottoms product, wherein said azeotrope forming agent consists of one material selected from the group consisting of methyl formate, ethyl formate, t-butyl methyl ether, acetone, and cyclopentane.

5,338,412
ELECTROCHEMICAL DEVICE FOR REMOVAL AND REGENERATION OF OXYGEN AND METHOD
Melvyn I. Burk, 21001 Halburton Rd., Beachwood, Ohio 44122, and Daniel A. Scherson, 3235 Redwood Rd., Cleveland Heights, Ohio 44118
Filed Apr. 27, 1992, Ser. No. 874,727
Int. Cl.[5] C25B *1/02*
U.S. Cl. 204—59 R **12 Claims**



5. A method for concentrating oxygen, comprising the steps of:
bringing a gas comprising oxygen into contact with a gas-permeable cathode;
applying an external potential difference between the cathode and a gas permeable anode to promote the reduction of oxygen to peroxide and then peroxide to concentrated oxygen;
converting the oxygen to peroxide at the cathode according to a two electron process;
diffusing the peroxide through a solid polymer electrolyte wetted with water from the gas-permeable cathode to the gas-permeable anode such that the peroxide is stable as it diffuses through the electrolyte; and
converting the diffused peroxide to oxygen at the anode according to a two electron process.

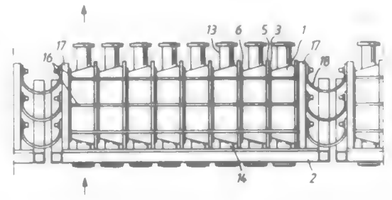
5,338,413
METHOD FOR THE PREPARATION OF A POLYMERIC SHAPED ARTICLE CONTAINING AN ELECTRICALLY CONDUCTIVE POLYMER
Hans K. van Dijk, Geleen, and Ronald M. A. M. Schellekens, Meerssen, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands
Filed Jul. 15, 1993, Ser. No. 91,715
Claims priority, application Netherlands, Jul. 15, 1992, 9201274
Int. Cl.[5] C25B *3/02;* **C25D** *11/32*
U.S. Cl. 204—59 R **16 Claims**



1. A method for the preparation of a polymeric shaped article containing an electrically conductive polymer comprising:
providing an anode as a first electrode and a cathode as a second electrode in contact with an electrolyte-containing medium containing monomers, which on polymerization form an electrically conductive polymer;
moving an electrically conductive base shaped article along the anode wherein at least part of the base shaped article is in contact with the anode, in the presence of the electrolyte-containing medium and applying a voltage between said anode and said second electrode whereby the monomers polymerize and form an electrically conductive polymer coating on at least a part said base-shaped article.

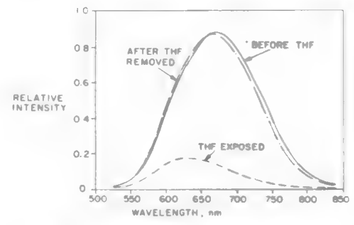
5,338,414
ELECTROLYTIC CELL, ELECTROLYZER AND A METHOD OF PERFORMING ELECTROLYSIS
Anders Ullman, Ljungaverk; Johan Wanngard, Sundsvall; Mikael Tenfalt, and Olov Dalenius, both of Ljungaverk, all of Sweden, assignors to Permascand AB, Ljungaverk, Sweden
PCT No. PCT/SE91/00645, § 371 Date Jun. 8, 1993, § 102(e) Date Jun. 8, 1993, PCT Pub. No. WO92/07115, PCT Pub. Date Apr. 30, 1992
PCT Filed Sep. 25, 1991, Ser. No. 39,087
Claims priority, application Sweden, Oct. 10, 1990, 9003226
Int. Cl.[5] C25B *1/02, 1/26, 9/00*
U.S. Cl. 204—95 **14 Claims**

13. A method of performing electrolysis comprising the steps of feeding an electrolytic solution to an electrolytic cell, applying an electric voltage thereto and recovering electrolytic products from the cell, wherein the electrolytic cell comprises an anode end wall and a cathodic end wall facing each other and supporting alternately arranged plate-shaped anodes and cathodes extending substantially perpendicularly to said end walls, at least some of said anodes and/or cathodes cooperating with the opposite end wall via electrically insulating spacer members enabling compressive forces to be transmitted between said end walls.



14. A method as claimed in claim 13, wherein said electrolytic solution comprises an aqueous sodium chloride solution and wherein the electrolytic products comprise sodium hypochlorite and hydrogen gas.

5,338,415
METHOD FOR DETECTION OF CHEMICALS BY REVERSIBLE QUENCHING OF SILICON PHOTOLUMINESCENCE
Michael J. Sailor, La Jolla; Grace Credo; Julie Heinrich, both of San Diego, and Jeffery M. Lauerhaas, La Jolla, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Jun. 22, 1992, Ser. No. 901,753
Int. Cl.[5] C25F *3/12;* **H01L** *21/306;* **B44C** *1/22;* **G01J** *3/30*
U.S. Cl. 204—129.2 **7 Claims**



1. A method for monitoring contamination of an environment by molecules of organic solvent which comprises:
forming porous silicon on a silicon surface wherein said porous silicon photoluminesces upon illumination by laser light in an uncontaminated environment;
positioning said porous silicon in said environment;
illuminating said porous silicon with laser light; and
detecting changes in the photoluminescence intensity wherein decreases in the intensity indicate presence of contamination.

2. A method as in claim 1 wherein the step of forming porous silicon comprises:
selecting a substrate having a silicon surface; and
electrochemically etching said silicon surface while exposing said silicon surface to a light source.

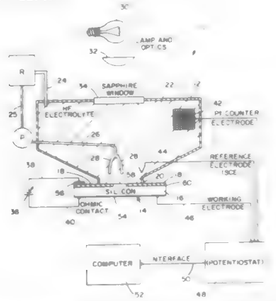
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,416

ELECTROCHEMICAL ETCHING PROCESS

Richard Mlcak, Somerville, and Harry L. Tuller, Wellesley, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 5, 1993, Ser. No. 14,324
Int. Cl.[5] C25F *3/12, 3/14*
U.S. Cl. 204—129.3 **22 Claims**



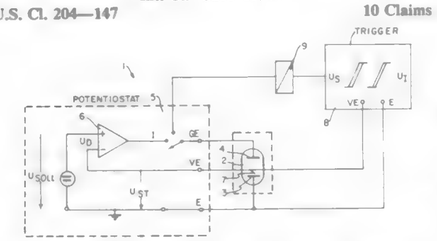
1. An electrochemical etching process comprising:
forming n and p type regions on a semiconductor substrate;
exposing the n and p regions of the substrate to an electrochemical etchant with an electrical cell bias applied between the substrate and etchant;
controlling p-n junction bias between the n and p regions; and
setting cell bias and p-n junction bias for selective electrochemical etching of the p and regions, the p and n regions capable of being selectively etched by the etchant while under an anodic bias, the anodic bias of a selected region promoting the etching of that region.

5,338,417

CATHODIC CORROSION PROTECTION FOR AN ALUMINUM-CONTAINING SUBSTRATE

Volker Brücken, Konigsstein, and Werner Huppatz, Bonn, both of Fed. Rep. of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Fed. Rep. of Germany

Filed Aug. 8, 1991, Ser. No. 741,934
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1990, 4025088
Int. Cl.[5] C23F *13/00*
U.S. Cl. 204—147 **10 Claims**



10. A method of achieving cathodic protection against corrosion for a surface of a metallic aluminum-containing substrate, which is flushed by an electrolyte, the method comprising the steps of:
carrying out an electrolysis between a counterelectrode and the substrate to be protected until a first critical voltage is attained that is above a potential for uniform surface attack;
switching off said electrolysis in response to said first critical voltage having been attained, said first critical voltage being beneath a pitting potential;
measuring a control voltage corresponding to a difference between the electrochemical potential of a reference electrode and the electrochemical potential of the substrate to be protected during the time that said electrolysis is switched off;
switching said electrolysis on in response to detection of said measured control voltage reaching a second critical voltage after an elapse of a set time interval, said time interval having a duration sufficient for preventing said measured control voltage from exceeding said first critical voltage when said control voltage has a redox potential curve with an expected slope; and
switching on said electrolysis in response to said control voltage exhibiting a certain temporal change that exceeds a set time interval for switching off said electrolysis so as to prevent said measured control voltage from exceeding said second critical voltage as would arise if said electrolysis is kept switched off for the entire duration of said set time interval.

5,338,418

PROCESS FOR PRODUCTION OF HYDROXOCOBALAMIN

Takayuki Hirayama, and Takashi Kiyota, both of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,463
Claims priority, application Japan, Sep. 17, 1991, 3-236486
Int. Cl.[5] C07H *23/00*; C07D *403/14*
U.S. Cl. 204—158.21 **1 Claim**

1. A process for the production of hydroxocobalamin comprising:
(1) contacting a solution containing coenzyme-type vitamin B_{12} with a divinylbenzene/styrene copolymer resin so that the coenzyme-type vitamin B is absorbed onto the resin;
(2) washing the resin with purified water or aqueous washing solution at a temperature between 30° C. and 70° C. so as to remove the impurities;
(3) eluting the coenzyme-type vitamin B_{12} absorbed on the resin with an aqueous solution containing at least 25% by volume of a lower alcohol;
(4) irradiating the eluate with light so as to convert coenzyme-type vitamin B_{12} to hydroxocobalamin;
(5) contacting the hydroxocobalamin-containing solution from step (4) with silica or alumina; and
(6) recovering the unbound, purified hydroxocobalamin.

5,338,419

ELECTRODEPOSITION BATH CONTAINING A URETHANE

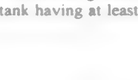
Susanne Wehner, Villmar, Fed. Rep. of Germany; Heinz Klima, Bad Voeslau, Austria; Michael Hoenel, Wiesbaden, Fed. Rep. of Germany; Peter Ziegler, Mainz, Fed. Rep. of Germany, and Gerd Walz, Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 7, 1993, Ser. No. 58,933
Claims priority, application Fed. Rep. of Germany, May 11, 1992, 4215480
Int. Cl.[5] C25D *13/10*
U.S. Cl. 204—181.4 **8 Claims**

1. An electrodeposition liquid composition containing an electrophoretically depositable binder, a curing agent, and 0.01 to 5 per cent by weight of a monofunctional urethane of the formula

$$R_1—NHCOO—R_2$$

in which R_1 is C_4-C_{22}-alkyl or B_1-NH-B_2-[X-B_3]$_n$-, wherein
B_1 is selected from the group consisting of hydrogen, C_1-C_{18}-alkyl and —COOR$_2$,
B_2 and B_3 are individually C_2-C_{14}-alkylene,
X is selected from the group consisting of —O—, —S—, —NH— and >N-(C_1-C_4)-alkyl,
R_2 is selected from the group consisting of $—(C_2H_4O)_y—R_1$, $—(C_2H_7O)_y—R_1$ and



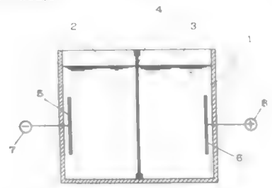
n is an integer from 0 to 5
R is C_1-C_{18}-alkyl,
R_3 is selected from the group consisting of hydrogen, C_1-C_{18}-alkyl, hydroxyalkyl, phenyl, C_1-C_4-alkylphenyl and C_2-C_{10}-alkenyl,
R_4 and R_5 are individually hydrogen or C_1-C_4-alkyl and
A is a chemical bond or a divalent group selected from the group consisting of —O—, —CH_2O— and —CH_2OCO—
y is zero or an integer from 1 to 4.

5,338,420

PROCESS FOR PREPARING HIGH α-GLYCOSYL-L-ASCORBIC ACID, AND SEPARATION SYSTEM FOR THE PROCESS

Hajime Aga; Masaru Yoneyama, and Shuzo Sakai, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Dec. 14, 1992, Ser. No. 990,081
Claims priority, application Japan, Jan. 30, 1992, 4-057617
Int. Cl.[5] C25B *3/00*
U.S. Cl. 204—182.6 **10 Claims**



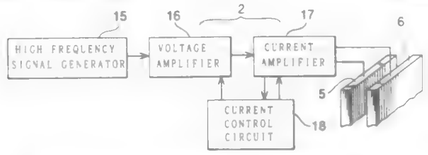
1. A process for preparing an α-glycosyl-L-ascorbic acid containing product, which comprises:
(a) subjecting an aqueous solution containing α-glycosyl-L-ascorbic acid and L-ascorbic acid and optionally a saccharide to electrodialysis through a first anion-exchange membrane having a molecular weight cut-off in the range of about 100–200 to allow said L-ascorbic acid to predominantly permeate said first membrane and to separate said L-ascorbic from α-glycosylL-ascorbic acid, and when said saccharide is present also through a second anion-exchange membrane having a molecular weight cut-off in the range of about 200–1,000 to allow said α-glycosyl-L-ascorbic acid to predominantly permeate said second membrane and to separate said α-glycosyl-L-ascorbic acid from said saccharide; and
(b) recovering the resultant α-glycosyl-L-ascorbic acid containing product.

5,338,421

METHOD OF AND APPARATUS FOR SEPARATION BY AGGLOMERATION

Naoki Abe, Okazaki; Fumio Kawahara, Toyota, and Noboru Inoue, Osaka, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha; MEC International Corporation, both of Toyota and Zeotek LRC Corporation, Osaka, all of Japan

Filed Aug. 2, 1993, Ser. No. 100,170
Claims priority, application Japan, Aug. 7, 1992, 4-211850; Jul. 8, 1993, 5-169008
Int. Cl.[5] C02F *1/463*
U.S. Cl. 204—186 **7 Claims**



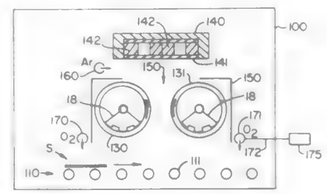
1. A method of separating an aqueous colloidal solution into water and an agglomerate of colloidal particles comprising the steps of:
accommodating said aqueous colloidal solution in a tank, the tank having at least one pair of electrodes; and
agglomerating said colloidal particles by applying a high frequency voltage between the electrodes of each pair of electrodes, a frequency of said high frequency voltage being at least a frequency at which polarity inversion occurs, said polarity inversion occurring earlier than a reaction of generation period oxygen with said colloidal particles.

5,338,422

DEVICE AND METHOD FOR DEPOSITING METAL OXIDE FILMS

Abraham I. Belkind, North Plain Field, N.J.; Leonard Wamboldt, Huntington, Mass., and Jesse D. Wolfe, San Ramon, Calif., assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed Sep. 29, 1992, Ser. No. 953,491
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.12 **15 Claims**



1. A method of forming a thin film of metal oxide compound on a substrate within an evacuated chamber, said method comprising the steps of:
providing one or more first magentraons each having a metal sputtering material on an outer surface thereof;
positioning said substrate opposite said one or more first magentrons so that sputtered material from each magnetron is deposited onto said substrate;
causing an inert gas to flow into said vacuum chamber and to exit near said one or more first magnetrons;
providing one or more second magentrons each comprising of a rotatable cylindrical magnetron having a metal sputtering material on an outer surface thereof, wherein said one or more second magnetrons are positioned between said one or more first magnetrons and said substrate;
causing oxygen gas to flow into said vacuum chamber and to exit near said one or more second magnetrons wherein the flow rate of the oxygen is maintained at an effective rate to enable said one or more first magnetrons to sputter substantially in the metallic mode;
applying potential to said one or more first magnetrons to cause sputtering; and
applying potential to said one or more second magnetrons.

5,338,423

METHOD OF ELIMINATING METAL VOIDING IN A TITANIUM NITRIDE/ALUMINUM PROCESSING

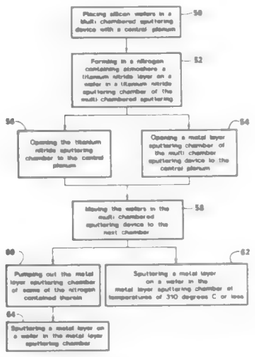
Gregory Hindman, and Jack Berg, both of Boise, Id., assignors to Zilog, Inc., Campbell, Calif.

Filed Nov. 6, 1992, Ser. No. 972,961
Int. Cl.[5] C23C *14/34*; B65G *49/05*
U.S. Cl. 204—192.12 **14 Claims**

1. A method of processing layers on silicon wafers in a multi-chambered wafer processing device with a central plenum comprising:
forming a first layer by sputtering off a target in a nitrogen containing environment in a first chamber of the multi-chambered wafer processing device;
thereafter, opening the first chamber to the central plenum;
thereafter, opening a metal layer sputtering chamber of the

VOL 1165 ISS 3 AG 16 1994 UMI

multi-chambered wafer processing device to the central plenum;



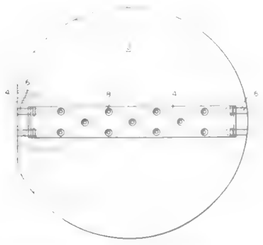
thereafter, pumping out the metal layer sputtering chamber; and thereafter, sputtering a metal layer including aluminum on a wafer in said metal layer sputtering chamber.

5,338,424

MASKS FOR APPLYING DOTS ON SEMICONDUCTOR WAFERS

Gideon Drimer, Ramot, and Arie Glazer, Mevasseret Zion, both of Israel, assignors to Persys Technology Ltd., Jerusalem, Israel

Filed Dec. 29, 1992, Ser. No. 998,135
Claims priority, application Israel, Jun. 5, 1992, 102.120
Int. Cl.[5] C23C *15/00*
U.S. Cl. 204—298.11 **5 Claims**



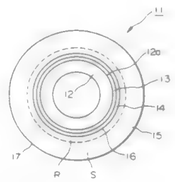
1. A mask utilizable in the production of a multiplicity of capacitors on selected regions of a semiconductor wafer, comprising a shaped, thin sheet of material having spaced-apart holes made therein and at least one recess formed adjacent each of at least two opposite edges thereof, said recesses being respectively configured to be engaged by substantially matching portions of clamps releasably affixing the mask onto the wafer in a thin assembly that can be inserted into and removed from a sputtering machine without interruption of production.

5,338,425

TARGET UNITS

Akifumi Mishima; Munenori Mashima, and Jun Tamura, all of Sanda, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,571
Claims priority, application Japan, Jun. 28, 1991, 3-159131
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.12 **12 Claims**



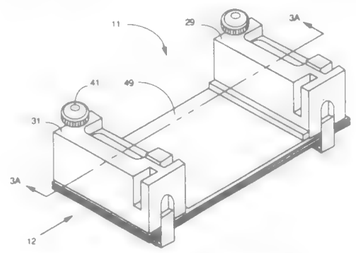
1. A sputtering target comprising:
a cylindrical substrate having an outer peripheral surface;
a target layer provided on said outer peripheral surface of said substrate, said target layer being formed of a silicon alloy containing at least one ingredient selected from the group consisting of Cr, Ti and Zr; and
an intermediate layer interposed between said target layer and said substrate;
wherein said target layer has an inner portion adjoining said intermediate layer and an outer portion disposed away from said intermediate layer, said at least one ingredient in said silicon alloy being present in a greater concentration in said inner portion than in said outer portion.

5,338,426

HORIZONTAL POLYACRYLAMIDE GEL ELECTROPHORESIS

John Shigeura, Fremont; John A. Bridgham, Hillsborough; Louis B. Hoff, Belmont, and P. Eric Mayrand, Pacifica, all of Calif., assignors to Applied Biosystems, Inc., Foster City, Calif.

Filed Aug. 28, 1992, Ser. No. 936,979
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—299 R **9 Claims**



1. An electrophoresis apparatus comprising:
a first and a second surface spaced-apart defining a volume therebetween for casting an electrophoretic gel film, said volume having a first end and a second end;
a first electrode proximate said first end and a second electrode proximate said second end, said electrodes connectable to a power supply for establishing an electromotive force for inducing electrophoretic action;
a first reservoir at said first end configured to hold buffer solution immersing said first end and said first electrode with said spaced-apart surfaces oriented substantially horizontally and oriented substantially vertically; and

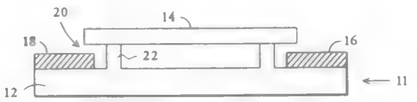
a second reservoir at said second end configured to hold buffer solution immersing said second end and said second electrode with said spaced-apart surfaces oriented substantially horizontally and oriented substantially vertically.

5,338,427

SINGLE USE SEPARATION CARTRIDGE FOR A CAPILLARY ELECTROPHORESIS INSTRUMENT

Robert J. Shartle, Livermore, and Robert S. Dubrow, San Carlos, both of Calif., assignors to Biometric Imaging Inc., Mountain View, Calif.

Filed Feb. 26, 1993, Ser. No. 23,088
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—299 R **43 Claims**



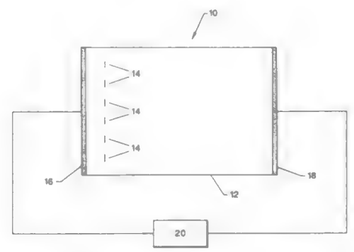
1. A single use cartridge for an electrophoresis instrument comprising:
a support structure;
at least one capillary tube horizontally disposed by said support structure, said capillary tube having longitudinally opposed ends; and
electrodes formed on said structure adjacent to said capillary ends, said electrodes being planar electrically conductive films disposed beneath said capillary tube ends adapted for electrical contact with said capillary ends when said capillary tube is filled with a conductive liquid solution, said conductive liquid solution being statically confined in said capillary tube, said film being a homogenously conductive plastic,
whereby an electromotive force is produced along said capillary tube by connecting the pair of electrodes located at opposite ends of said capillary tube to an external voltage supply when said capillary tube is filled with said conductive substance.

5,338,428

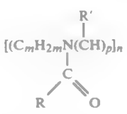
POLY(N-ACYLALKYLENIMINE) ELECTROPHORESIS SUPPORT MEDIA

Thomas Zewert, Pasadena, and Michael G. Harrington, La Canada, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 28, 1993, Ser. No. 69,075
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—299 R **19 Claims**



1. An electrophoresis support media comprising a polymer gel which is in a shape suitable for use in electrophoresis, wherein said polymer gel includes at least one sample receiving location where a sample to be analyzed is applied to said polymer gel, said polymer gel comprising a polymer having the formula



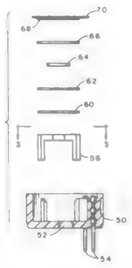
wherein m and p are between 1 and 3, n is between about and 10,000, where R is an alkyl, perfluoroalkyl or phenyl group and wherein R' is H or an alkyl group.

5,338,429

ELECTROCHEMICAL TOXIC GAS SENSOR

Joseph D. Jolson, Pittsburgh, and Alan A. Schneider, Wexford, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Mar. 5, 1993, Ser. No. 27,044
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—415 **20 Claims**



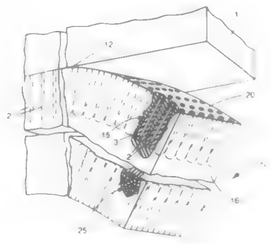
1. An electrochemical toxic gas sensor comprising a housing; a working electrode, a counter electrode, and a liquid electrolyte within the housing; the electrodes being electrically separate from one another but ionically connected via the electrolyte; a gas porous membrane for keeping the liquid electrolyte within the housing; and an electrical contact for each electrode which passes through the housing, the electrical contact comprising an electrically-conducting feedthrough having a flute.

5,338,430

NANOSTRUCTURED ELECTRODE MEMBRANES

Edward E. Parsonage, Minneapolis, and Mark K. Debe, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 23, 1992, Ser. No. 995,891
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—412 **26 Claims**



1. An electrochemical cell comprising:

VOL 1165 ISS 3 AG 16 1994 UMI

(a) a working electrode comprising a first encapsulant layer, having a first set of nanostructured elements embedded therein, wherein one end of each nanostructured element is embedded within the encapsulant layer and the other end of each nanostructured element is coincident with a first surface of the first encapsulant layer, such that the first surface is a conductive surface;

(b) a counter electrode comprising a second encapsulant layer, having a second set of nanostructured elements embedded therein, wherein one end of each nanostructured element is embedded within the encapsulant layer and the other end of each nanostructured element is coincident with a first surface of the second encapsulant layer, such that the first surface is a conductive surface; and

(c) at least one electrolyte [such that]provided the electrolyte is in intimate contact with the conductive surface of both sets of nanostructured elements of the working and counter electrodes.

6. The electrochemical cell according to claim 1, further comprising a reference electrode comprising a third encapsulant having a third set of nanostructured elements embedded therein.

5,338,431

OXYGEN CONCENTRATION DETECTING APPARATUS

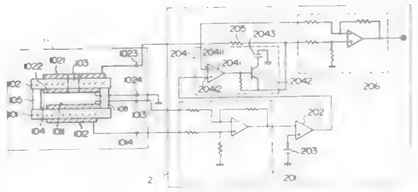
Hiroshi Yorita, Anjo; Toshihiko Igashira, Toyokawa; Michiyasu Moritsugu, Okazaki, and Yoshiki Chujo, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Continuation of Ser. No. 747,030, Aug. 19, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 978,076

Claims priority, application Japan, Aug. 20, 1990, 2-219658

Int. Cl.[5] **G01N** *27/409, 27/41;* **F02M** *25/07*

U.S. Cl. 204—424 **6 Claims**



1. An oxygen concentration detecting apparatus for an internal combustion engine, comprising:

an intake pipe, an exhaust pipe, and an exhaust gas recirculation pipe, connecting between said exhaust pipe and a first area of said intake pipe;

a sensor comprising a pumping cell and a sensing cell each comprising a solid electrolyte capable of conducting oxygen ions including electrodes formed on surfaces of each of said pumping and sensing cells, said sensor located in the intake pipe downstream of and near said first area to detect an oxygen concentration in an intake air/exhaust air mixture therein;

a support structure, connected with said pumping and sensing cells to form a closed chamber therein;

an opening portion for communicating between said closed chamber and its surrounding environment in such a manner that the oxygen partial pressure of said closed space has a tendency to become equal to the oxygen partial pressure in the surrounding environment;

electromotive force detecting means for differentially detecting and amplifying an electromotive force generated between the electrodes of said sensing cell to produce an amplified electromotive force signal;

a voltage source for applying a voltage between the electrodes of said pumping cell;

a current detecting means for detecting a current flowing in said pumping cell as a signal representing the oxygen concentration when a voltage is applied between the electrodes of said pumping cell; and

control means, receiving the amplified electromotive force signal, for controlling said voltage source to maintain said electromotive force at a specified value at which value said current flowing in said pumping cell is 70% or less of a limiting current of said sensor, which is a value at which current flowing in said pumping cell saturates when the voltage is applied between the electrodes of said pumping cell.

5,338,432

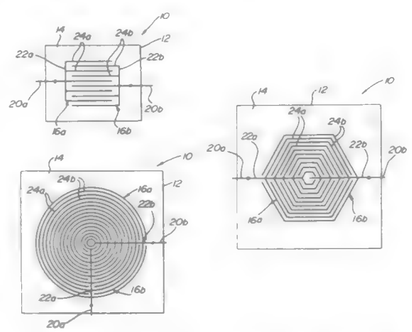
CORROSIVITY SENSOR

Vinod S. Agarwala, Warminster, and Fred Pearlstein, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 942,914, Sep. 10, 1992. This application Jun. 30, 1993, Ser. No. 87,237

Int. Cl.[5] **C25D** *5/02*

U.S. Cl. 205—118 **7 Claims**



1. A method of making a corrosivity sensor having a relatively thin non-conductive base with a first conductive element fixed thereto and a second conductive element fixed thereto, the second conductive element being electrically isolated from the first conductive element, comprising the steps of:

providing the relatively thin non-conductive base with a thin copper layer bonded thereto;

applying resist to shield two distinct areas of the copper layer while leaving the remainder of the copper layer unshielded, the first distinct area comprising a bus bar and a plurality of strips extending therefrom, and the second distinct area comprising a bus bar and a plurality of strips extending therefrom, and being interdigitated with the strips of the first distinct area;

removing the unshielded remainder of the copper layer;

removing the resist to expose the two distinct areas of the copper layer;

electrodepositing a first conductive material onto the first distinct area of the copper layer forming the first conductive element of the corrosivity sensor; and

electrodepositing a second conductive material onto the second distinct area of the copper layer forming the second conductive element of the corrosivity sensor.

5,338,433

CHROMIUM ALLOY ELECTRODEPOSITION AND SURFACE FIXATION OF CALCIUM PHOSPHATE CERAMICS

George W. Maybee, Harvest; Timothy E. Taylor, Huntsville; Elmer L. Field, Huntsville; Clyde Riley, Huntsville; William R. Lacefield, Jr., Birmingham; Harold D. Coble, and Harini Dasarathy, both of Huntsville, all of Ala., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 17, 1993, Ser. No. 77,272

Int. Cl.[5] **C25D** *3/56, 13/02*

U.S. Cl. 205—178 **24 Claims**

1. A process for simultaneous electrodeposition of at least a two component alloy system of cobalt and chromium on a substrate which comprises

electrolyzing an aqueous solution consisting essentially of divalent cobalt and trivalent chromium ions and ethylenediaminetetraacetic acid, at a pH of about 3 to about 5, in an electrolytic cell containing an anode and a cathode, and

codepositing cobalt and chromium on said cathode as the substrate.

5,338,434

PROCESS FOR THE COATING OF ELECTRICALLY CONDUCTIVE SUBSTRATES AND A CATHODICALLY DEPOSITABLE AQUEOUS ELECTROCOATING PAINT

Dieter Rühl, Münster; Klaus Arlt, Senden; Ulrich Heilmann; Ulrich Heimann, both of Münster, and Udo Höffmann, Drensteinfurt, all of Fed. Rep. of Germany, assignors to BASF Lacke & Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

PCT No. PCT/EP91/00803, § 371 Date Jan. 11, 1993, § 102(e) Date Jan. 11, 1993, PCT Pub. No. WO91/18063, PCT Pub. Date Nov. 28, 1991

PCT Filed Apr. 25, 1991, Ser. No. 946,374

Claims priority, application Fed. Rep. of Germany, May 16, 1990, 4015703

Int. Cl.[5] **C09D** *5/44, 5/08*

U.S. Cl. 205—229 **13 Claims**

1. A process for the coating of electrically conductive substrates, comprising the steps of

(1) immersing the electrically conductive substrate in an aqueous electrocoating paint,

(2) connecting the electrically conductive substrate to a direct current power supply so that the substrate acts as a cathode,

(3) depositing a film on the substrate using direct current,

(4) removing a substrate having a deposited paint film thereon from the electrocoating paint and

(5) baking the deposited paint film,

wherein the aqueous electrocoating paint comprises 2 to 10%, by weight of an anticorrosive pigment based on zinc silicate and further including 1 to 15% by weight of a very fine quartz powder or cristobalite powder, wherein said powder is coated with epoxysilane or aminosilane, the percentages by weight being based on the total solids content of the electrocoating paint and wherein the anticorrosive pigment is prepared by fusing together 35 to 65% by weight of ZnO, 15 to 35% by weight of SiO_2 and up to 20% by weight of at least one compound selected from the group consisting of B_2O_3, WO_3, MoO_3, SnO_2, and mixtures thereof, the percentages by weight always totaling 100.

5,338,435

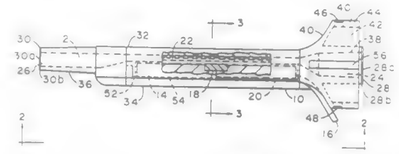
INTEGRATED CIRCUIT HYDRATED SENSOR APPARATUS

Ronald E. Betts, La Jolla; Douglas R. Savage, Del Mar; Richard J. Koerner, San Diego; Matthew J. Leader, Laguna Niguel, all of Calif.; Kee V. Sin, Lino Lakes, Minn.; Jeffrey A. Graves, San Juan Capistrano, and Marshall L. Sherman, Cardiff, both of Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 721,025, Jun. 26, 1991, abandoned, and a continuation-in-part of Ser. No. 721,030, Jun. 26, 1991, abandoned. This application Jun. 26, 1992, Ser. No. 905,255

Int. Cl.[5] **G01N** *27/26*

U.S. Cl. 204—406 **51 Claims**



1. An apparatus having a preconditioned sensor and electronic circuit, comprising:

nonconducting substrate with at least one electrochemical sensor and with electrical circuitry in electrical contact with the sensor to convey electrical impulses from the sensor,

housing having at least one part enclosing the nonconducting substrate and forming a channel in fluid contact with the at least one sensor on the substrate, wherein the channel has two openings form the housing for fluid flow through the channel and that is in fluid contact with the at least one sensor on the substrate to allow fluid in the channel to be in fluid contact with the sensor where one opening is adapted for receipt of a fluid sample for measurement of a component by the sensor, and another opening is positioned in the channel after the at least one sensor,

fluid occupying a substantial portion of the channel to precondition the membrane of the one or more sensors,

seals that are substantially impervious to at least moisture associated with the channel to maintain the hydrating fluid in contact with one or more sensors and to minimize the transport of hydrating fluid away from contact with the one or more sensors,

electrical attachment means electrically associated with the circuit means of the substrate to convey the sensor signals from the apparatus for interpretation,

wherein the hydrating fluid is electrically isolated from the electric circuitry of the substrate and the electrical attachment means.

5,338,436

DEWAXING PROCESS

Mohsen N. Harandi, Lawrenceville, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Continuation of Ser. No. 779,658, Oct. 21, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,267

Int. Cl.[5] **C10G** *63/06, 69/14, 69/02, 57/02*

U.S. Cl. 208—80 **20 Claims**

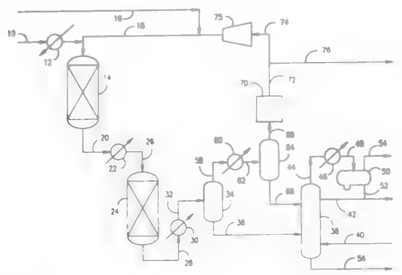
1. A process for dewaxing a hydrocarbon feedstock comprising the steps of:

(a) catalytically dewaxing said feedstock by contact with a dewaxing catalyst under conditions sufficient to crack wax molecules and produce olefins having 10 or less carbon atoms; and

(b) catalytically oligomerizing olefins in the effluent from step (a) by contact of the entire effluent from step (a) with

VOL 1165 ISS 3 AG 16 1994 UMI

an oligomerization catalyst under conditions sufficient to oligomerize olefins therein, wherein the temperature of the oligomerization reaction of step (b) is at least 5° C. less than the temperature of the dewaxing reaction of step (a),



wherein the pour point of the effluent of step (a) is the same as the pour point of the effluent of step (b).

5,338,437

METHOD FOR HYDROCRACKING A HEAVY HYDROCARBON OIL UTILIZING A FAUJASITE ALUMINOSILICATE

Ryuichiro Iwamoto; Ikusei Nakamura, and Akira Iino, all of Chiba, Japan, assignors to Research Association For Residual Oil Processing, Tokyo, Japan

Division of Ser. No. 583,873, Sep. 14, 1990, Pat. No. 5,139,984. This application Apr. 21, 1992, Ser. No. 871,407

Claims priority, application Japan, Oct. 4, 1989, 1-257660; Aug. 30, 1990, 2-226716

Int. Cl.[5] C10G *47/16*

U.S. Cl. 208—111 **16 Claims**

1. A method for hydrocracking a heavy hydrocarbon oil comprising contacting a heavy hydrocarbon oil with hydrogen and a hydrocracking catalyst comprising (i) a metallic element belonging to Group VIb of the Periodic Table in an amount of 3 to 24% by weight based on the total weight of the hydrocracking catalyst and (ii) a metallic element belonging to Group VIII of the Periodic Table in an amount of 0.7 to 20% by weight based on the total weight of the hydrocracking catalyst, said metallic element being supported on a carrier, wherein said carrier is a composition comprising (a) a faujasite aluminosilicate which absorbs infrared in a frequency region of $3740 \pm 10\ cm^{-1}$ in an absorption percentage A of at least 20% and absorbs infrared in a frequency region of $3560 \pm 10\ cm^{-1}$ in an absorption percentage B of at least 5%, the ratio of A/B being at least 2, said faujasite aluminosilicate having a specific surface area of at least 650 m^2/g, said faujasite aluminosilicate having a framework SiO_2/Al_2O_3 molar ratio of from 20 to 50, and said faujasite aluminosilicate having a lattice constant of from 24.15 to 24.50 Åand (b) an inorganic oxide, said faujasite aluminosilicate being present in the composition in an amount of from 5 to 95% by weight based on the total of the amounts of said faujasite aluminosilicate and said inorganic oxide, at a temperature of 350° to 450° C., a pressure of 50 to 200 kg/cm^2, a ratio of hydrogen to oil of 500 to 5,000 Nm^3 /kl and a LHSV of 0.1 to 10 $hour^{-1}$.

5,338,438

PROCESS AND APPARATUS FOR THE HOMOGENIZATION OF THE MIXTURE OF SOLID PARTICLES AND HYDROCARBON VAPORS BEING TREATED IN A FLUIDIZED BED WITHIN A TUBULAR REACTOR FOR THE CRACKING OF HYDROCARBONS

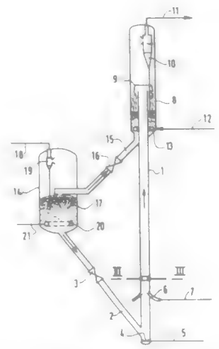
Vincent Demoulin, Paris; Marc Fersing, Saint Adresse; Thierry Patureaux, Montivilliers, and Denis Pontvianne, Montrouge, all of France, assignors to Total Raffinage Distribution S.A., Levallois Perret, France

Filed Nov. 5, 1991, Ser. No. 788,216

Claims priority, application France, Nov. 8, 1990, 90-13874

Int. Cl.[5] C10G *11/18*

U.S. Cl. 208—153 **15 Claims**



1. A process for rendering substantially homogeneous a mixture of hot solid particles and hydrocarbon vapors being treated within a fluidized bed of a tubular reactor for cracking hydrocarbons; said reactor having a zone of injection where hydrocarbon feedstock is introduced into the reactor, a reaction zone where at least 75% of droplets of the feedstock are vaporized, and, a side wall having an interior surface; said process comprising injecting a fluid in the gaseous state into the reactor away from, one or more points on the interior surface of the side wall, directly downstream of the zone of injection, and in the reaction zone; wherein the fluid in the gaseous state is injected into the reactor within the bounds defined by a plane which makes an angle of from about 30 to about 150 degrees with the axis of the reactor and the injecting is effective to counteract backmixing and to counteract accumulation of particles in the vicinity of the side wall.

5,338,439

PROCESS AND APPARATUS FOR REGENERATION OF FCC CATALYST WITH REDUCED NOX AND OR DUST EMISSIONS

Hartley Owen, Belle Mead, N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 20, 1992, Ser. No. 963,353

Int. Cl.[5] C10G *11/00*

U.S. Cl. 208—153 **6 Claims**

1. A process for the fluidized catalytic cracking of a feed to lighter products, and multi-stage regeneration of catalyst in a fast fluidized bed auxiliary regenerator and a fast fluidized bed coke combustor, comprising:

cracking said feed in a vertical riser reactor having an inlet in a lower portion thereof for said feed and for a stream of regenerated cracking catalyst from a bubbling, dense phase fluidized bed of catalyst in a primary catalyst regenerator vessel, said reactor having an outlet in an upper portion thereof for discharging a mixture of spent cracking catalyst and cracked products into a reactor vessel;

separating, in said reactor vessel, cracked vapor products from spent catalyst discharged from said riser reactor to produce a cracked vapor product stream which is removed and a spent catalyst stream;

stripping said spent catalyst stream in a catalyst stripping means having an inlet for spent catalyst from said reactor vessel, an inlet for stripping gas in a lower portion, and an outlet in a lower portion for stripped catalyst;

transferring stripped catalyst from said stripping means to an auxiliary regenerator vessel;

turbulent or fast fluidized bed regeneration of said stripped catalyst from said stripping means by contact with an oxygen containing regeneration gas in an auxiliary regenerator vessel external to, and along side of, said primary regenerator vessel, said auxiliary regenerator having:

an inlet for stripped catalyst:

an inlet in a lower portion for regeneration gas; and

an outlet in an upper portion thereof for partially

regenerated catalyst and flue gas; and said primary regenerator vessel having:

a fast fluidized bed coke combustor having an inlet for spent catalyst and an inlet for regeneration gas;

a dilute phase transport riser in an upper portion of said coke combustor for transferring a dilute phase mixture of catalyst and flue gas up from said coke combustor to a riser outlet at a top portion of said transport riser; and

a regenerator vessel for holding a dense bed of regenerated catalyst receiving catalyst and flue gas discharged

from said transport riser, and having in a lower portion of said vessel a regenerated catalyst outlet for transfer of regenerated catalyst to said cracking reactor;

transferring said partially regenerated catalyst and flue gas from said auxiliary regenerator to said coke combustor via a transfer line having an inlet connective with said auxiliary regenerator outlet and a horizontal outlet in said coke combustor connective with at least one auxiliary cyclone;

cyclonically separating in said auxiliary cyclone at least 85% of said partially regenerated catalyst from flue gas in said coke combustor, said auxiliary cyclone having:

a tangential inlet horn connective with said horizontal outlet of said transfer line;

a vertical vapor outlet extending up from said cyclone toward said dilute phase transport riser;

a vertical solids outlet dipleg extending down into said coke combustor; and

discharging down into said coke combustor a solids rich stream of partially regenerated catalyst via said dipleg outlet and discharging up toward an inlet of said transport riser a flue gas rich dilute phase via said cyclone vapor outlet;

fast fluidized bed regeneration of said partially regenerated catalyst in said coke combustor;

combining in said dilute phase transport riser all catalyst and all flue gas discharged from said coke combustor, and discharging from said transport riser cyclone outlet said combined stream into said primary regenerator vessel and separating said discharged combined stream to produce a flue gas stream which is withdrawn from said vessel and a regenerated catalyst stream which is returned to said cracking reactor.

5,338,440

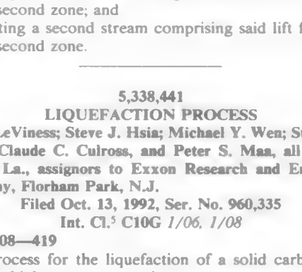
CONTROLLED METHOD OF TRANSPORTING CATALYST BETWEEN ZONES

Paul A. Sechrist, Des Plaines; Roger R. Lawrence, Elmhurst, and Larry D. Richardson, Roselle, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 30, 1992, Ser. No. 998,331

Int. Cl.[5] C10G *35/10*

U.S. Cl. 208—173 **20 Claims**



1. A method of transferring solid particles in at least semi-continuous flow from a first zone containing a first fluid to a second zone containing a second fluid while inhibiting communication of said fluids, which method comprises the steps of:

a) withdrawing an effluent stream comprising said solid particles and said first fluid via gravity-flow from said first zone;

b) passing said effluent stream into a purge zone;

c) passing a purged effluent stream comprising said solid particles from said purge zone and into a lift zone;

d) passing a transport stream comprising a lift fluid into said lift zone;

e) passing a purge stream comprising said lift fluid from said lift zone and through said purge zone countercurrent to said effluent stream at a rate that is not less than that effective to purge said first fluid from the total void volume in said purge zone and less than that effective to terminate the flow of solid particles through said purge zone;

f) passing a purge zone exit stream comprising said lift fluid and said first fluid from said purge zone and into said first zone, and rejecting a first stream comprising said lift fluid from said first zone;

g) passing a lift stream comprising said lift fluid and said solid particles from said lift zone at a velocity of said lift fluid effective to lift said solid particles out of said lift zone and into a lift conduit;

h) passing said lift stream through said lift conduit and into said second zone; and

i) rejecting a second stream comprising said lift fluid from said second zone.

5,338,441

LIQUEFACTION PROCESS

Steve C. LeViness; Steve J. Hsia; Michael Y. Wen; Stephen M. Davis; Claude C. Culross, and Peter S. Maa, all of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 13, 1992, Ser. No. 960,335

Int. Cl.[5] C10G *1/06, 1/08*

U.S. Cl. 208—419 **12 Claims**

1. A process for the liquefaction of a solid carbonaceous material, which process comprises:

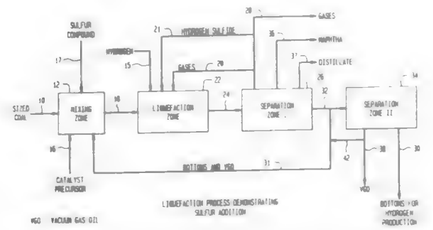
a. forming a mixture of solid carbonaceous material, a cata-

VOL 1165 ISS 3 AG 16 1994 UMI

lyst or a catalyst precursor and an effective amount of a solvent, said catalyst or catalyst precursor being comprised of a thermally decomposable compound of Groups IIB, IVB, VB, VIB, VIIB and VIII of the Periodic Table of the Elements;

b. introducing a sulfiding agent selected from the group consisting of elemental sulfur, hydrogen sulfide, and sulfur containing hydrocarbons into said mixture under conditions sufficient to convert the solid carbonaceous material to a sulfur promoted solid carbonaceous material, wherein the sulfur promoted solid carbonaceous material is comprised of about 0.1–5 wt % active sulfur, on a moisture free basis;

c. introducing said mixture into a Liquefaction Zone wherein at least a portion of said sulfur promoted solid carbonaceous material is converted under liquefaction conditions in the presence of hydrogen to a liquid product.



5,338,442

PROCESS FOR CONVERTING AND UPGRADING ORGANIC RESOURCE MATERIALS IN AQUEOUS ENVIRONMENTS

Michael Siskin, Livingston, N.J.; Alan R. Katritzky, Gainesville, Fla., and Glen B. Brons, Phillipsburg, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 411,121, Sep. 22, 1989, abandoned. This application Mar. 16, 1992, Ser. No. 852,438

Int. Cl.[5] C10G *1/04*

U.S. Cl. 208—435 **13 Claims**

1. A process for converting and upgrading organic resource materials to produce more desirable, value added materials comprising contacting an organic resource material selected from the group consisting of coal, shale, coal liquid, shale oils, heavy oil and bitumens with liquid water in the absence of externally supplied hydrogen and reducing agents, in the presence of an acid catalyst selected from the group consisting of brine, clay and mixtures thereof; controlling the temperature in a range from above about 200° C. to below the critical temperature of water to maintain the water in a liquid phase, wherein the pressure is the autogeneous vapor pressure generated in the system; and continuing said contacting for a time sufficient to effect said conversion and upgrading.

5,338,443

FILTER MEDIA TENSIONING DEVICE

Scott M. McEwen, Bowling Green, Ohio, assignor to Henry Filters, Inc., Bowling Green, Ohio

Filed Jun. 29, 1992, Ser. No. 905,445

Int. Cl.[5] B01D *29/96, 33/04, 33/056*

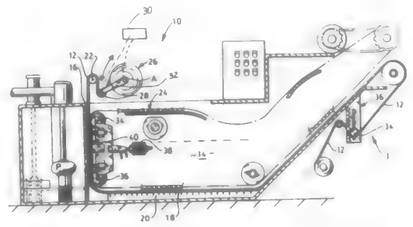
U.S. Cl. 210—91 **6 Claims**

1. In an improved filtration apparatus including an upper tank for holding dirty liquid and having an imperforate end wall and a perforate floor, and a lower filtrate compartment beneath the floor for receiving liquid from the upper tank through said perforate floor, filter media between said upper tank and said perforate floor, a guide roller over which the filter media is moved downwardly and positioned to guide the filter media along the end wall and along the floor for filtering out contaminants as the dirty liquid is received from the tank into the filtrate compartment, and means for moving the filter media, wherein the improvement comprises:

a filter media feed mechanism having an axis of rotation and mounting a roll of filter media adjacent said guide roller, said feed mechanism being mounted relative to the upper tank;

a rotatable tension roller and means to position said tension roller for providing a constant tension, the tension roller movably mounted for generally vertical movement in a range of motion between said feed mechanism and the guide roller thereby to provide constant tension on the filter media being moved; and

a brake mechanism means cooperably connected to said filter media feed mechanism and rotatable tension roller for stopping and releasing filter media; said brake mechanism means being actuable by the rotatable tension roller to release filter media as said tension roller moves upwardly to an upper limit of its range of motion and said brake mechanism being applied as said tension roller moves downwardly to a lower limit of its range of motion.



5,338,444

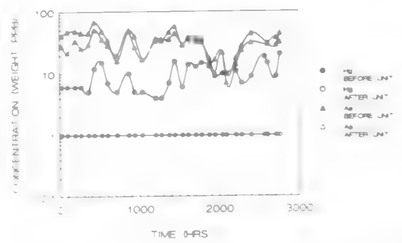
PROCESS FOR REMOVING MERCURY FROM ORGANIC MEDIA WHICH ALSO CONTAIN ARSENIC

Frederik R. van Buren, Terneuzen; Leendert Deij, Axel, both of Netherlands; Gunnar Merz, and Hans P. Schneider, both of Stade, Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 9, 1992, Ser. No. 987,911

Int. Cl.[5] B01D *15/00*

U.S. Cl. 210—660 **8 Claims**



1. A process for removing mercury from an organic medium which at least contains mercury and arsenic which comprises contacting the organic medium with a solid polymeric substrate containing thiol groups bound to the polymeric substrate through aliphatic groups.

5,338,445

MODULE FOR A REACTOR FOR ANAEROBIC WASTE WATER TREATMENT

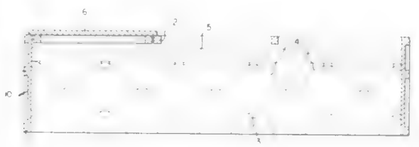
Michael Zumbragel, and Volker Bach, both of Aarbergen, Fed. Rep. of Germany, assignors to Passavant-Werke AG, Fed. Rep. of Germany

Filed Jan. 21, 1993, Ser. No. 7,134

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1992, 4201864

Int. Cl.[5] C02F *3/28*

U.S. Cl. 210—150 **9 Claims**



1. An UASB reactor for anaerobic waste water treatment comprising:

a plurality of modules, each module comprising:

walls defining the module,

an overflow channel for treated waste water, the height of said overflow channel defining an overflow threshold,

a plurality of immersed collection domes for collecting digester gas, said domes being staggered over an entire cross-section of the module and each including a gas drain which drains into a collection pipe, said collection pipe feeding into a top evacuation line,

an air drain which drains into a middle evacuation line for collecting waste air above the water level of said overflow channel,

a water drain which drains into a lower evacuation line for removing water from said overflow channel,

said gas drain, said air drain, and said water drain all located on a common side of the module and being connected in a gas tight manner with said top evacuation line, said middle evacuation line and said lower evacuation line, respectively, and

means for covering the module; and

a discharge duct external to all of said modules, said discharge duct including said top evacuation line, said middle evacuation line, and said lower evacuation line, and means for closing off said evacuation lines in said discharge duct from communication with the drains on each of said modules.

5,338,446

FILTER UNIT FOR IN-LINE USE IN A POOL VACUUM HOSE

Michael L. Schuman, El Monte, and Kenneth E. Price, Whittier, both of Calif., assignors to Rainbow Lifegard Products, Inc., El Monte, Calif.

Filed Feb. 12, 1993, Ser. No. 17,465

Int. Cl.[5] B01D *35/02*

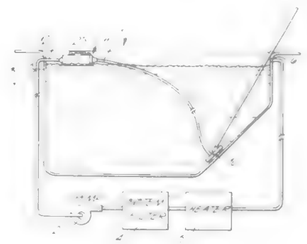
U.S. Cl. 210—169 **6 Claims**

1. An axial flow filter unit for use in-line between a first hose from a pool cleaning implement and a second hose to a water flow line for a circulating pump, the filter unit comprising:

an elongated filter housing including:

intake and outlet ports located at opposite ends of the housing for communication with said first and second hoses, respectively; and,

flow directing means for removeably supporting a radial-flow hollow-core cartridge filter element in the housing for flow of liquid from the intake port radially inwardly through a supported filter element and from the filter element axially through the outlet port, the flow directing means being defined to selectively enable basket and bag filter elements to be supported in the housing and to occupy space therein otherwise occupied by a cartridge filter element.



5,338,447

BIOREACTOR

Sjoerd Vellinga, Tjalleberd, Netherlands, assignor to Paques B.V., Balk, Netherlands

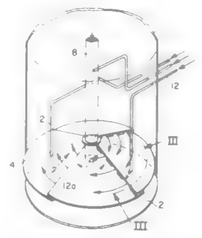
PCT No. PCT/NL91/00118, § 371 Date Mar. 19, 1993, § 102(e) Date Mar. 19, 1993, PCT Pub. No. WO92/01637, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 5, 1991, Ser. No. 960,359

Claims priority, application Netherlands, Jul. 19, 1990, 9001654

Int. Cl.[5] C02F *3/28*

U.S. Cl. 210—195.1 **9 Claims**



1. A bioreactor comprising a reactive vessel having an inlet system for material and a reaction chamber located above said inlet system, said inlet system having outflow openings that are at least partially tangentially oriented, the bioreactor comprising a partition that separates the reaction chamber from a chamber in which said inlet system is disposed, said partition having at least one radial slit formed by two radial edge strips overlapping one another and vertically spaced apart, said at least one radial slit interconnecting said chamber in which said inlet system is disposed and said reaction chamber.

5,338,448

METHOD OF PREVENTING CONTAMINATION OF A CHROMATOGRAPHY COLUMN

Douglas T. Gjerde, Saratoga, Calif., assignor to Sarasep, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 962,097, Oct. 16, 1992, abandoned. This application Apr. 27, 1993, Ser. No. 52,601

Int. Cl.[5] B01D *15/08*

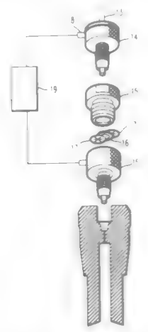
U.S. Cl. 210—198.2 **22 Claims**

1. A method of preventing contamination of a chromatography separation column containing stationary phase chromatographic material, by particulate or dissolved contaminants in a sample stream, comprising:

retaining particulate and dissolved contaminants in a protec-

VOL 1165 ISS 3 AG 16 1994 UMI

tive pad by passing the sample stream through the protective pad before the sample stream contacts the separation



column, wherein said protective pad comprises a fabric or membrane sorptive chromatographic material.

5,338,449

BRINE REFINING APPARATUS

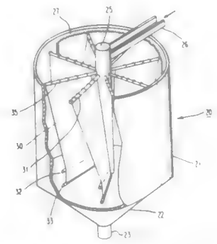
Shigeo Ichiyanagi, Kanagawa; Shojiro Iwai, and Masahiro Deguchi, both of Osaka, all of Japan, assignors to Turumisoda Kabushiki Kaisya, Kanagawa and Miura Engineering International Kabushiki Kaisya, Osaka, both of Japan

Filed Sep. 9, 1992, Ser. No. 942,062

Claims priority, application Japan, Sep. 12, 1991, 3-260497; Sep. 23, 1991, 3-272023

Int. Cl.[5] B01D *21/08*

U.S. Cl. 210—205 **3 Claims**



1. An apparatus for refining brine including calcium and magnesium ions, comprising:

a source of caustic alkali;

a source of carbonate alkali;

means for adding the caustic alkali and the carbonate alkali to the brine to produce a raw solution including flocks;

a settling tank for receiving the raw solution and sinking the flocks to separate the flocks from the brine; the settling tank having a cylindrical wall having a peripheral inner surface, the settling tank having a vertical inlet conduit placed centrally in the cylindrical wall of the settling tank, the inlet conduit having an outer peripheral surface, the inlet conduit having an upper port through which the raw solution is introduced into the inlet conduit and a lower port through which the raw solution is discharged from the inlet conduit into the settling tank;

a number of sheet members arranged in spaced-facing relation to each other within the settling tank, each of the sheet members having a surface inclined at a predetermined angle with respect to a vertical plane crossing the corresponding sheet member, the sheet members being arranged radially above the outlet port of the inlet conduit between the peripheral outer surface of the inlet conduit and the peripheral inner surface of the cylindrical wall;

first support rods arranged between the outer peripheral surface of the inlet conduit and the inner peripheral surface of the cylindrical wall, each of the first support rods being secured at one end thereof to the outer peripheral surface of the inlet conduit or the inner peripheral surface of the cylindrical wall; and

second support rods arranged below the first support rods between the outer peripheral surface of the inlet conduit and the inner peripheral surface of the cylindrical wall, each of the second support rods being secured at one end thereof to the outer peripheral surface of the inlet conduit or the inner peripheral surface of the cylindrical wall, the second support rods being angularly deviated to make the predetermined angle with respect to the corresponding first support rods;

the sheet members having upper ends supported by the respective first support rods and lower ends secured to respective weight rods, the sheet members being draped over the respective second support rods.

5,338,450

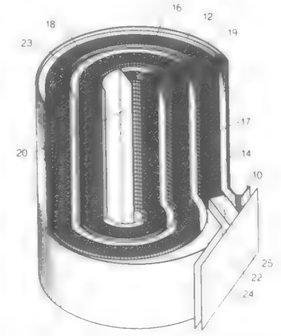
SPIRAL-WOUND ADSORBER MODULE

Richard T. Maurer, Nanuet, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Jun. 28, 1993, Ser. No. 82,698

Int. Cl.[5] B01D *29/07, 53/14*

U.S. Cl. 210—286 **14 Claims**



1. A spiral-wound adsorber apparatus comprising:

a) a layer of adsorbent having a thickness and extending along a longitudinal axis and wrapped in a spiral about said longitudinal axis:

b) an inlet screen and an outlet screen on opposite sides of said layer of adsorbent for retaining said adsorbent in said spiral and for supplying and withdrawing a fluid from opposite sides of said adsorbent bed through said inlet screen and said outlet screen;

c) at least one impermeable wall wrapped between said inlet and outlet screen defining an inlet channel between an impermeable wall and said inlet screen to distribute fluid to said inlet screen and defining an outlet channel between an impermeable wall and said outlet screen to collect fluid from said outlet screen;

d) an inlet conduit in fluid communication with said inlet channel for supplying fluid to said inlet channel;

e) an outlet conduit in fluid communication with said outlet channel for withdrawing fluid from said outlet channel; and,

f) means at opposite transverse ends of said layer of adsorbent for retaining said adsorbent and structurally supporting said inlet and outlet screens.

5,338,451

APPARATUS FOR TREATING PULP

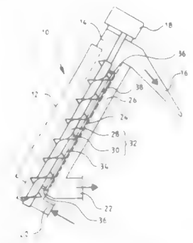
Pentti Lindberg, and Risto Ljokkoi, both of Karhula, Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Mar. 15, 1993, Ser. No. 33,319

Claims priority, application Finland, Mar. 13, 1992, 921085

Int. Cl.[5] B01D *35/28*

U.S. Cl. 210—405 **11 Claims**



1. An apparatus for treating pulp, comprising an outer casing, a stationary screen mounted within the outer casing, the screen having an interior, a screen space being defined between the outer casing and the screen for receiving a fraction which passes through the screen means for discharging a fraction remaining in the interior of the screen, an essentially vertically extending feed screw rotatably mounted within the interior of the screen, the feed screw comprising a shaft and a pulp conveying means, the feed screw having a periphery, further comprising a nozzle conduit extending substantially parallel to the shaft, means for supplying washing liquid to the nozzle conduit, the nozzle conduit comprising a plurality of perforations for spraying washing liquid on the screen and being mounted at the periphery of the feed screw adjacent the screen.

5,338,452

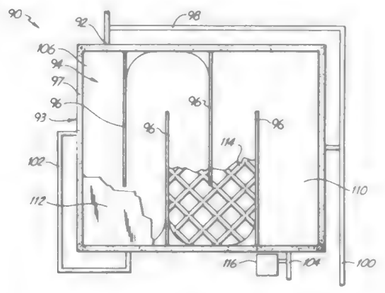
HIGH RATE ANAEROBIC REACTOR FOR PRIMARY TREATMENT OF HIGH STRENGTH WASTEWATER

Surya R. Pidaparti, Eagan, Minn., assignor to The Lemna Corporation, Mendota Heights, Minn.

Filed Jan. 14, 1993, Ser. No. 4,520

Int. Cl.[5] C02F *3/28*

U.S. Cl. 210—603 **23 Claims**



18. A method for anaerobically treating a continuous flow of wastewater, the method comprising:

channeling the continuous flow of wastewater to a first reactor to fill the first reactor, the first reactor comprising:

a wastewater container for containing the wastewater;

an influent intake for receiving the wastewater; and

an effluent outlet for discharging effluent from the wastewater container after being clarified;

channeling the continuous flow of wastewater to a second reactor to fill the second reactor, the second reactor being coupled in parallel with the first reactor and comprising:

a wastewater container for containing the wastewater;

an influent intake for receiving the wastewater; and

an effluent outlet for discharging effluent from the wastewater container after being clarified;

deploying a network of floating barriers across a top surface of the wastewater, so the barriers stabilize a surface sludge crust formed on the top surface of the wastewater;

discharging effluent from the first reactor during the channeling of wastewater to the first reactor;

anaerobically treating the wastewater in the second reactor during the discharging of effluent from the first reactor; and

clarifying the wastewater in the second reactor during the discharging of effluent from the first reactor.

5,338,453

RECOVERY OF PHENOLS FROM HYDROCARBON MIXTURES

Edward A. Fraini, Lake Jackson, and George W. Tepera, Sweeny, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 27, 1992, Ser. No. 920,236

Int. Cl.[5] B01D *11/04*

U.S. Cl. 210—634 **22 Claims**

1. A process for recovering phenols from a mixture containing hydrocarbons and/or oxygenated hydrocarbons having a boiling point greater than that of the phenol and at least about 1 part per million by weight of at least one phenol comprising, (a) admixing the mixture with sufficient lower molecular weight hydrocarbon solvent to reduce the surface tension of the mixture and (b) contacting the resulting admixture with an aqueous solution of inorganic base such that at least a portion of the phenols are extracted into the aqueous solution.

5,338,454

CHIRAL MOBILE PHASE ADDITIVES FOR IMPROVED LIQUID-CHROMATOGRAPHY SEPARATIONS

Keith J. Duff, Howard, Pa., assignor to Supelco, Incorporated, Bellefonte, Pa.

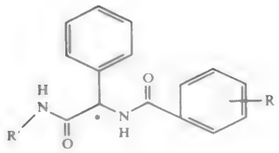
Filed Aug. 27, 1992, Ser. No. 936,158

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 **16 Claims**

1. A method for separating enantiomers, diastereoisomers or mixtures thereof which comprises passing a mobile phase containing the dissolved enantiomers, diastereoisomers, or mixtures thereof, through a chromatographic column containing an enantiomeric, chiral stationary phase covalently bonded through a stable bond to a particulate support, wherein the mobile phase further contains an enantiomeric, chiral mobile-phase additive selected such that the asymmetric carbon atom or atoms of the chiral stationary phase and the groups attached thereto, excluding the linking group on the chiral stationary phase, are repeated in the chiral mobile-phase additive, but with opposite chirality, wherein the linking group on the chiral stationary phase is structurally homologous to the linking group on the chiral mobile-phase additive and wherein the enatiomertic, chiral stationary phase and the enantiomeric, chiral mobile-phase additive share the structure

VOL 1165 ISS 3 AUG 16 1994 UMI



wherein R is one or two electron-withdrawing groups, and R' is a C1–C20 aryl or linear or branched alkyl group.

5,338,455

PROCESS FOR THE SEPARATION OF COMPONENTS IN AN ORGANIC LIQUID MEDIUM AND A SEMI-PERMEABLE COMPOSITE MEMBRANE THEREFOR

Dirk M. Koenben, Dedemsvaart, and Aloysius H. A. Tinnemans, Zeist, both of Netherlands, assignors to X-Flow B.V., Ah Almelo, Netherlands

Filed Jun. 5, 1991, Ser. No. 111,166

Claims priority, application Netherlands, Jun. 6, 1990, 9001275

Int. Cl.[5] B01D *61/08*

U.S. Cl. 210—654 **6 Claims**

1. A process for the separation of components in an organic liquid medium with a semi-permeable composite membrane with a porous carrier substrate on which a polymer network obtained by interfacial polymerization is applied, characterized in that the organic liquid medium is brought into contact with such semi-permeable composite membrane of which the polymer network is built from a reactive polyfunctional monomer having as reactive groups —NHR_1, wherein R_1 is hydrogen or a C_1–C_{20} alkyl group, —OH or —SH and and one reactive polyfunctional monomer or oligomer or prepolymer or polymer having reactive —NCO groups built from a polyalkylene oxide with terminal —OH groups, either branched or not and either substituted or not, and an aromatic or aliphatic isocyanate with at least two —NCO groups.

5,338,456

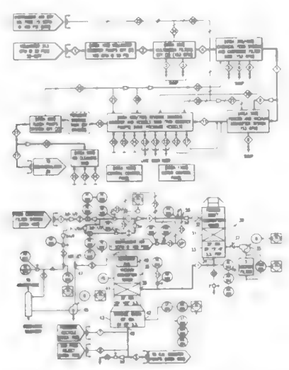
WATER PURIFICATION SYSTEM AND METHOD

Lewis E. Stivers, 920 Westbrook Dr., Plano, Tex. 75075

Filed Feb. 19, 1993, Ser. No. 19,555

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—652 **17 Claims**



1. A water purification process for removing dissolved solids of the type that are normally present in a water supply, comprising the steps of:

providing a forced draft decarbonator having an inlet, and a product outlet;

providing a vacuum degasifier having an inlet, a product outlet and a water level sensor;

providing a reverse osmosis unit having an inlet, a product outlet and a brine outlet;

locating the vacuum degasifier downstream of said forced draft decarbonator with the product outlet of the forced draft decarbonator being coupled to the inlet of the vacuum degasifier;

locating the reverse osmosis unit downstream of said vacuum degasifier with the product outlet of the vacuum degasifier being coupled to the inlet of the reverse osmosis unit;

providing water to be purified to the inlet of the forced draft decarbonator, the forced draft decarbonator providing an initial reduction in the level of carbon dioxide in the water and the vacuum degasifier providing a further reduction in said level as the water is processed therethrough; and

adjusting the rate at which water to be purified is provided to the inlet of the forced draft decarbonator as a function of a predetermined water level in the vacuum degasifier to provide a substantially constant flow rate output from the vacuum degasifier.

5,338,457

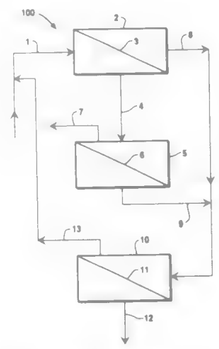
REMOVAL OF ALUMINUM AND SULFATE IONS FROM AQUEOUS SOLUTIONS

John Capozzola, Syracuse, and David K. Kennedy, Constantia, both of N.Y., assignors to General Chemical Corporation, Parsippany, N.J.

Filed Apr. 19, 1993, Ser. No. 49,545

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—652 **19 Claims**



1. A process for purifying aluminum and sulfate-containing waste water which comprises passing said waste water solutions through a semi-permeable reverse osmosis membrane under pressure to produce a purified aqueous solution permeate and an aqueous solution concentrated in aluminum and sulfate ions.

5,338,458

METHOD FOR REMOVING CHLORAMINE WITH CATALYTIC CARBON

Robert V. Carrubba; Richerd A Hayden, and Thomas M. Matviya, all of Pittsburgh, Pa., assignors to Calgon Carbon Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1993, Ser. No. 7,146

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—668 **6 Claims**

COMPARISON OF CHLORAMINE REMOVAL AND t-3/4 TIME

	[illegible]	CARBON [illegible] NUMBER (%)	t-3/4 TIME [illegible]	[illegible] FROM [illegible]
1	[illegible]	54.8	2.4	75
2	[illegible]	[illegible]	4.6	48
3	0.503	54.0	9.4	40
4	0.499	58.3	23.4	35
5	0.511	[illegible]	54.4	35
6	0.497	[illegible]	[illegible]	[illegible]

1. The process for the removal of chloramines from solutions or streams which comprises contacting said solutions or streams with a catalytically-active carbonaceous char having a t-¾ time less than about 15 minutes.

5,338,459

MUDDY AND WASTE WATER TREATMENT METHOD

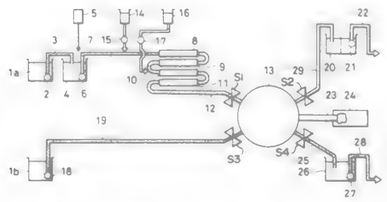
Kaoru Hirose, Kochi, Japan, assignor to Daiyo Kiko Industry, Inc., Kochi, Japan

Division of Ser. No. 845,203, Mar. 3, 1992, Pat. No. 5,252,202. This application Sep. 17, 1993, Ser. No. 122,338

Claims priority, application Japan, Nov. 19, 1991, 3-331379; Dec. 13, 1991, 3-352057

Int. Cl.[5] C02F *1/38*

U.S. Cl. 210—710 **2 Claims**



1. A water treatment method for waste muddy water from water excavation engineering and/or industrial waste water and used muddy water once used in water excavation works comprising;

a first treatment process performing a dehydration treatment of the waste muddy water and/or industrial waste water which includes a flocculating step for flocculating fine muddy particles contained in the waste muddy water and/or industrial waste water to form floccus; a first solid-liquid separating step for separating the floccus to a solid part and a liquid part, which is operated in a first operation mode; a discharging step for discharging the liquid part through a filtering step; and a solid part treatment step for dehydrating the solid part separated at the first solid-liquid separating step; and

a second treatment process performing a regeneration treatment of the used muddy water which has a higher specific gravity than the waste muddy water and is enriched with muddy particles by the water excavation works which includes a used muddy water receiving step for receiving the used muddy water from an excavation site; a second solid-liquid separating step for separating the used muddy water to a solid part and a liquid part, which is operated in a second operation mode; and a reusing step for reusing the separated liquid part which is free from the muddy particles by the solid-liquid separating step in the water excavation works; and a solid part treatment step for dehydrating the solid part separated at the second solid-liquid separating step, wherein the first and second separating steps use a separating system with a valve means for alternatively switching between the first and second operation modes.

5,338,460

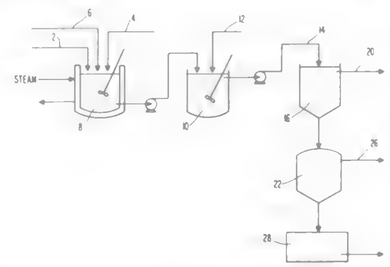
SULFIDE PRECIPITATION OF HEAVY METALS FROM AQUEOUS SOLUTIONS

Jeffrey H. Yen, Woolwich, N.J., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Apr. 22, 1993, Ser. No. 51,509

Int. Cl.[5] C02F *1/62*

U.S. Cl. 210—724 **6 Claims**



1. A process of the removal of dissolved heavy metal selected from the group consisting of arsenic, antimony, tin and lead, from an aqueous solution contaminated therewith comprising reacting at least one said heavy metal with a water-soluble inorganic sulfide or hydrosulfide at a stoichiometric ratio of from about 2 to about 4.5, at a pH between about 2 to about 3.5 and at a temperature ranging between at least 100° F. and less than 212° F. during the reaction and precipitation of the heavy metal sulfide product of the reaction, continuing the process and maintaining said temperature for a time at least sufficient to precipitate the heavy metal in an amount equivalent to a removal efficiency in excess of 90%, and separating the precipitate from the purified solution.

5,338,461

METHOD OF DISINFECTING A WATER SYSTEM WITH A DRY OXIDIZER COMPOSITION

Ronald L. Jones, Norcross, Ga., assignor to Bio-Lab, Inc., Decatur, Ga.

Continuation of Ser. No. 596,462, Oct. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 431,824, Nov. 6, 1989, Pat. No. 5,015,643. This application Sep. 24, 1992, Ser. No. 950,907

The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.

Int. Cl.[5] C02F *1/76, 1/68;* **A01N** *43/66, 59/00*

U.S. Cl. 210—755 **3 Claims**

1. A method of disinfecting a water system using an oxidizer composition, wherein said oxidizer composition has a distinctive color prior to addition to the water, said method comprising adding a blue pigmented, dry oxidizer composition consisting essentially of (a) 99.5–99.99% by weight of a halogen releasing compound selected from the group consisting of trichloro-s-triazinetrione, sodium dichloro-s-triazinetrione, a mixture of trichloro-s-triazinetrione and sodium bromide, and a mixture of sodium dichloro-s-triazinetrione and sodium bromide, and (b) 0.01–0.5% by weight of lazurite, to the water system, wherein the lazurite when decomposed in the water does not add a blue color to the water, and wherein said dry oxidizer composition is color-stable when dry.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,462

ACTIVE CARBON MATERIALS, PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF

Hisaki Abe; Toshio Kondoh; Hideki Fukuda; Mayumi Takahashi; Tetsuo Aoyama, and Masahiro Miyake, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Division of Ser. No. 805,174, Dec. 11, 1991, Pat. No. 5,242,879.
This application Jun. 15, 1993, Ser. No. 76,770
Claims priority, application Japan, Dec. 13, 1990, 2-410091; Dec. 13, 1990, 2-410092; Jun. 14, 1991, 3-169003; Nov. 8, 1991, 3-293239; Nov. 8, 1991, 3-293240
Int. Cl.[5] C02F *1/70, 1/72*
U.S. Cl. 210—757 9 Claims

1. A method for decomposition of a water-polluting material comprising

subjecting protein-containing sludge or a waste material comprising microbial proteins or biologically activated sludge to carbonization, with or without shaping said sludge or waste materials, at a temperature of from 150° C. to 600° C., thereby producing carbonized material,

subjecting said carbonized material to an activation treatment at a temperature of from 700° C. to 1,100° C. under an inert gas or a reducing gas atmosphere consisting essentially of steam or gaseous carbon dioxide, thereby producing an activated carbon material,

contacting said water polluting material with said activated carbon material for a time sufficient to decompose at least a portion of said water polluting material,

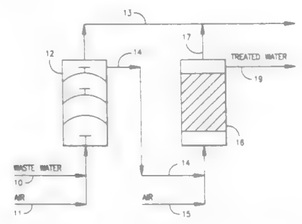
wherein said activated carbon material comprises from 1 to 5% by weight of nitrogen, from 3 to 30% by weight of oxygen and from 40 to 95% by weight of carbon, said activated carbon material having an average pore radius of from about 15 to 30 Å, with the proviso that mesopores occupy at least 50% by volume.

5,338,463

WASTEWATER TREATMENT BY CATALYTIC OXIDATION

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed May 12, 1990, Ser. No. 61,127
Int. Cl.[5] C02F *1/74*
U.S. Cl. 210—763 12 Claims



1. A method for reducing the chemical oxygen demand of waste water comprising the steps of:

(a) feeding a cyanide-free wastewater containing a reducing compound selected from sulfide, thiosulfate, sulfite, mercaptan, or disulfide along with a source of oxygen into a reaction zone containing a porous solid substrate comprising a material selected from the group consisting of zeolite and activated carbon having a water insoluble copper compound deposited thereon;

(b) contacting said waste water and said source of oxygen with said substrate at a temperature of less than 300 degrees F. and a pressure less than 200 psia which catalytically oxidizes said reducing compound; and

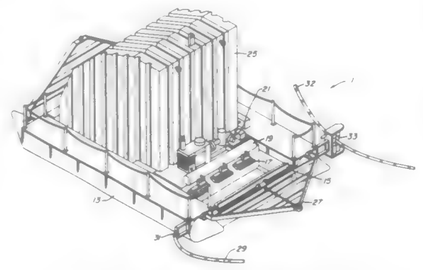
(c) discharging the waste water from the reaction zone whereby said waste water has a substantially lower concentration of said reducing compound.

5,338,464

OIL SPILL RECOVERY APPARATUS AND METHOD

Leonard D. Marr, P.O. Box 2255, Denton, Tex. 76202

Filed Aug. 7, 1992, Ser. No. 927,140
Int. Cl.[5] B01D *17/02*
U.S. Cl. 210—776 16 Claims



15. A method for recovering oil spilled on a body of water, comprising in combination:

providing a tank;

pivotally mounting the tank about a rotational axis to a flotation means for providing buoyancy to the tank;

skimming a surface layer from the body of water;

separating at least part of the oil from water in the surface layer skimmed into a separated product, and pumping the separated product into the tank; and

allowing the tank to pivot relative to the flotation means about the rotational axis and move downward gradually relative to the flotation means as the tank fills with the separated product.

5,338,465

AQUEOUS GELLABLE COMPOSITION WITH DELAYED GELLING TIME

Thomas P. Lockhart, Lodi, and Paola Albonico, Milan, both of Italy, assignors to Eniricerche S.p.A. and Agip S.p.A., both of Milan, Italy

Filed Mar. 19, 1992, Ser. No. 853,839
Claims priority, application Italy, Mar. 28, 1991, MI.91-A/000858
Int. Cl.[5] E21B *33/13*
U.S. Cl. 252—8.551 22 Claims

1. Aqueous gellable composition containing an organic, water-soluble polymer crosslinkable with chromium ion and a crosslinking/retardant system of the formula:

$$Cr(L)_m.nL'$$

wherein:

Cr is a trivalent chromium ion;

L is an organic ligand consisting of a monocarboxylate or dicarboxylate ion, optionally bearing one or more amino or hydroxy functional group(s), complexed with chromium ion;

L′ is a monocarboxy or dicarboxy acid, optionally bearing one or more amino or hydroxy functional group(s), not complexed with chromium ion;

m is a number from 1 to 3;

n is a number from 0.5 to 100;

with the proviso that in the crosslinking/retardant system, the acid of which L is the ion specified is different from L′.

5,338,466

Patent Not Issued For This Number

5,338,467

SULFONATE GREASE IMPROVEMENT

William D. Olson, Scarborough; Ronald J. Muir, and Theo I. Eliades, both of West Hill, all of Canada, assignors to Witco Corporation, New York, N.Y.

Filed Mar. 3, 1993, Ser. No. 25,867
Int. Cl.[5] C10M *115/10, 113/00*
U.S. Cl. 252—33.4 9 Claims

1. The process of forming a non-Newtonian oil composition in the form of a grease comprising an overbased calcium sulfonate and solid particles of colloidally dispersed calcium carbonate in the form of calcite which comprises heating overbased calcium sulfonate, amorphous calcium carbonate and a converting agent comprising a fatty acid of twelve to twenty-four carbon atoms in an oleaginous medium.

5,338,468

SULFURIZED OLEFINS

Joseph A. Arvizzigno, Brooklyn, N.Y.; Henry Ashjian, East Brunswick, and Roger P. Napier, Washington, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 5, 1992, Ser. No. 956,195
Int. Cl.[5] C10M *135/00, 135/02*
U.S. Cl. 252—45 13 Claims

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor amount of a non-staining, low odor multifunctional antiwear/antioxidant/copper corrosion inhibiting additive product of reaction free or substantially free of dithiolethione compounds prepared by reacting isobutylene and elemental sulfur with a base selected from the group consisting of ammonia, aliphatic, aromatic or alicyclic amines with at least 1.0% water solubility in the presence of predetermined amounts of added water to form the desired additive product of reaction and wherein the reaction is carried out at temperatures varying from 140° C. to 200° C., pressures varying from 180 psi to 1500 psi or are autogenous and in molar ratios of isobutylene to sulfur to water to base varying from 1.0/1.25/0.2/0.2 to 1.0/2.75/1.2/0.8 and with a reaction time varying from 2 to about 12 hours.

5,338,469

MANNICH TYPE COMPOUNDS AS ANTIOXIDANTS

Lloyd A. Nelson, Yardley, Pa., and Leslie R. Rudnick, Lawrenceville, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

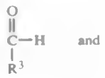
Filed Dec. 7, 1992, Ser. No. 986,208
Int. Cl.[5] C10M *159/16*
U.S. Cl. 252—49.6 11 Claims

1. A composition comprising a major amount of an oil of lubricating viscosity or grease or other solid lubricant prepared therefrom and a minor multifunctional antioxidant/corrosion inhibiting amount of a product of reaction of;

(1) an arylamine having the generalized structure:

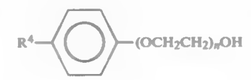


(2) an aldehyde having the general structure



and

(3) an oxylated alkylated phenol having the general structure



where R^1 and R^2 are the same or different and are phenyl, naphthyl, alkyl-naphthyl, or p-tolyl; R^3 is selected from hydrogen and alkyl radicals containing from 1 to 8 carbon atoms;

where R^4 comprises C_5 to C_{35} alkyl; and n represents a number from 1 to 100.

5,338,470

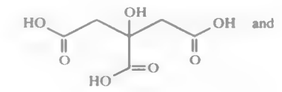
ALKYLATED CITRIC ACID ADDUCTS AS ANTIWEAR AND FRICTION MODIFYING ADDITIVES

John Hiebert, Bensalem, Pa.; Carleton N. Rowe, Wenonah, and Leslie R. Rudnick, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 10, 1992, Ser. No. 988,493
Int. Cl.[5] C10M *145/22, 149/00*
U.S. Cl. 252—51.5 A 7 Claims

1. A composition comprising a major amount of an oil of lubricating viscosity or grease prepared therefrom and a minor multifunctional antioxidant/extreme pressure inhibiting amount of a product of reaction of;

(1) a citric acid having the generalized structure:



and

(2) an alkyl alcohol or an amine having the generalized structure

nXRy

where R is C1 to C200 hydrocarbyl or hydrocarbylene or a mixture thereof, and may optionally contain oxygen, nitrogen or sulfur, X is an amine, alcohol, thiol or a metal amide, alkoxide or thiolate, the metal is sodium, potassium, or calcium, and n is a number from 0.2 to 5.0.

5,338,471

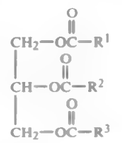
POUR POINT DEPRESSANTS FOR INDUSTRIAL LUBRICANTS CONTAINING MIXTURES OF FATTY ACID ESTERS AND VEGETABLE OILS

Kasturi Lal, Willoughby, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 15, 1993, Ser. No. 137,445
Int. Cl.[5] C10M *141/02*
U.S. Cl. 252—56 S 69 Claims

1. A composition, comprising;

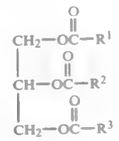
(A) at least one vegetable or synthetic triglyceride oil of the formula



wherein R^1, R^2 and R^3 are aliphatic hydrocarbyl groups having at least 60 percent monounsaturated character and containing from about 6 to about 24 carbon atoms;

VOL 1165 ISS 3 AG 16 1994 UMI

(B) esters from the transesterification of at least one animal or vegetable oil triglyceride of the formula

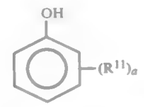


with an alcohol or phenol R^4OH wherein R^1, R^2 and R^3 are aliphatic groups containing from about 6 to about 24 carbon atoms and R^4 is an aliphatic group containing from 1 to about 10 carbon atoms or an aromatic or substituted aromatic group containing from 6 to about 50 carbon atoms;

(C) a pour point depressant;

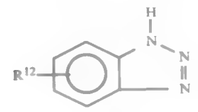
(D) at least one performance additive selected from the group consisting of

(1) at least one alkyl phenol of the formula



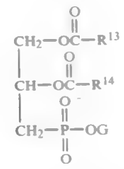
wherein R^{11} is an alkyl group containing from 1 up to about 24 carbon atoms and a is an integer of from 1 up to 5;

(2) a benzotriazole of the formula



wherein R^{12} is hydrogen or an alkyl group of 1 up to about 24 carbon atoms;

(3) a phosphatide of the formula



wherein R^{13} and R^{14} are aliphatic hydrocarbyl groups containing from 8 to about 24 carbon atoms, and G is selected from the group consisting of hydrogen;



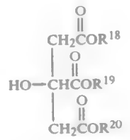
and

(4) a thiocarbamate of the formula



wherein R^{15} is an alkyl group containing from 1 to about 24 carbon atoms, phenyl or alkyl phenyl wherein the alkyl group contains from 1 to about 18 carbon atoms, R^{16} and R^{17} are hydrogen or an alkyl group containing from 1 to about 6 carbon atoms, with the proviso that R^{16} and R^{17} are not both hydrogen;

(5) citric acid and derivatives of citric acid of the formula



wherein R^{18}, R^{19} and R^{20} are independently hydrogen or aliphatic hydrocarbyl groups containing from 1 to about 12 carbon atoms, or an aromatic or substituted aromatic groups containing from 6 to about 50 carbon atoms with the proviso that at least one of R^{17}, R^{18} and R^{19} is an aliphatic hydrocarbyl group;

(6) a coupled phosphorus-containing amide of the formula

wherein X^1, X^2 and X^3 independently is oxygen or sulfur;

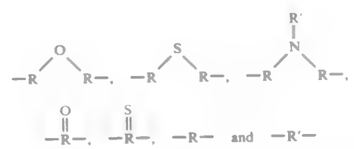
wherein R^{21} and R^{22}, independently is a hydrocarbyl, a hydrocarbyl-based oxy, the hydrocarbyl portions of which contain 6 to about 22 carbon atoms, or a hydrocarbyl-based thio, having from 4 to about 34 carbon atoms;

wherein R^{23}, R^{24}, R^{25} and R^{26}, independently is hydrogen, or an alkyl having from 1 to about 22 carbon atoms, or an aromatic, an alkyl-substituted aromatic or an aromatic-substituted alkyl having from 6 to about 34 atoms;

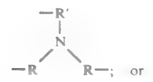
wherein n is zero or 1;

wherein n′ is 2 or 3

wherein R^{27} is hydrogen; and when n′ is 2, R^{28} is selected from the group consisting of



wherein R is an alkyl moiety, in the form of alkylene or alkylidene containing from 1 to 12 carbon atoms and R′ is an alkyl moiety, alkylene, alkylidene or carboxyl containing 1 to 60 carbon atoms and when n′ is 3, R^{27} is



(7) a methylacrylate derivative formed by the reaction of equal molar mounts of a phosphorus acid of the formula



with methylacrylate wherein X^1 and X^2 are oxygen or sulfur and R^{29} and R^{30} are each independently a hydrocarbyl, a hydrocarbyl-based thio or preferably a hydrocarbyl-based oxy group wherein the hydrocarbyl portion contains from 1 to about 30 carbon atoms and remaining acidity is neutralized with 1 mole propylene oxide for each 20–25 moles of phosphorus acid;

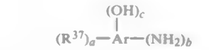
(8) a metal overbased composition;

(9) a carboxylic dispersant composition;

(10) a nitrogen-containing organic composition comprising

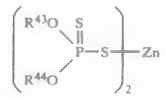
(a) an acylated, nitrogen containing compound having a substituent of at least 10 aliphatic carbon atoms made by reacting a carboxylic acylating agent with at least one amino compound containing at least one —NH group, said acylating agent being linked to said amino compound through an imido, amido, amidine or acyloxy ammonium linkage; and

(b) at least one amino phenol of the general formula



wherein R^{37} is a substantially saturated, hydrocarbon-based substituent of at least 10 aliphatic carbon atoms; a, b and c are each independently an integer of one up to three times the number of aromatic nuclei present in Ar with the proviso that the sum of a, b and c does not exceed the unsaturated valences of Ar; and Ar is an aromatic moiety having 0–3 optional substituents selected from the group consisting of lower alkyl, lower alkoxyl, nitro, halo or combinations of two or more of said substituents;

(11) a zinc salt of the formula

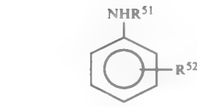


wherein R^{43} and R^{44} are independently hydrocarbyl groups containing from about 3 to about 20 carbon atoms;

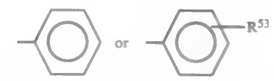
(12) a sulfurized composition wherein the sulfurized composition is a sulfurized olefin prepared by reacting an olefin with sulfur or sulfur halide complex;

(13) at least one viscosity index improver; and

(14) at least one aromatic amine of the formula



wherein R^{51} is



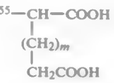
and R^{52} and R^{53} are independently a hydrogen or an alkyl group containing from 1 up to about 24 carbon atoms; and optionally

(E) at least one oil selected from the group consisting of

(1) synthetic ester base oil comprising the reaction of a monocarboxylic acid of the formula

$R^{54}COOH$

or a dicarboxylic acid of the formula



with an alcohol of the formula

$R^{56}(OH)_n$

wherein R^{54} is a hydrocarbyl group containing from about 4 to about 24 carbon atoms, R^{55} is hydrogen or a hydrocarbyl group containing from about 4 to about 50 carbon atoms, R^{56} is a hydrocarbyl group containing from 1 to about 24 carbon atoms, m is an integer of from 0 to about 6 and n is an integer of from 1 to about 6;

(2) a mineral oil;

(3) a polyalphaolefin; and

(4) a vegetable oil.

5,338,472

ELECTROLYTIC SOLUTION FOR ELECTROLYTIC CAPACITOR

Yutaka Yokoyama; Tatsunori Tsuji, both of Tokyo; Makoto Ue, and Tomohiro Sato, both of Ibaraki, all of Japan, assignors to Nippon Chemi-Con Corporation and Mitsubishi Petrochemical Co., Ltd., both of Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 977,640

Claims priority, application Japan, Nov. 19, 1991, 3-330152

Int. Cl.[5] **H01G** *9/02;* **H01M** *6/16*

U.S. Cl. 252—62.2 **9 Claims**

1. An electrolytic solution for an electrolytic capacitor, comprising a solution comprising a mixed solvent of γ-butyrolactone and ethylene glycol having dissolved therein a quaternary alkylammonium salt formed with an anion component selected from the group consisting of phthalic acid, maleic acid, and benzoic acid, as a solute, wherein the solution further contains colloidal silica in an amount of from 0.5 to 10 parts by weight per 100 parts by weight of the solution and at least one phosphorus compound selected from the group consisting of dibutyl phosphate and phosphorous acid in a total amount of from 0.5 to 5 parts by weight, per 100 parts by weight of the solution.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,473

AQUEOUS BETA COBALTOUS HYDROXIDE AND METHOD FOR MAKING

Jean A. Lown, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 771,488, Oct. 4, 1991, abandoned, which is a division of Ser. No. 447,668, Dec. 8, 1989, Pat. No. 5,057,299. This application Mar. 11, 1993, Ser. No. 31,033

Int. Cl.[5] **C09D** *5/23*

U.S. Cl. 252—62.51 **3 Claims**

1. A composition that is an admixture of ingredients comprising blue cobaltous hydroxide and a complex of cobaltous ion and a complexing agent, said composition being formed by combining the following materials:

a) the cobaltous ion;

b) the complexing agent wherein the complexing agent is selected from the group consisting of an α-hydroxy carboxylic acid; a salt of an α-hydroxy carboxylic acid; an α-amino carboxylic acid; a salt of an α-amino carboxylic acid; and mixtures thereof, and

wherein the cobaltous ion is in excess relative to the complexing agent;

c) a sufficient amount of hydroxide ion such that the molar ratio of the hydroxide ion to the cobaltous ion is more than about 2; and

d) an aqueous medium.

5,338,474

SYSTEM FOR RELEASING BLEACH FROM A BLEACH PRECURSOR IN THE WASH USING AN ENZYME ACTIVATOR

Howard B. Kaiserman, Guttenberg, and Daniel J. Kuzmenka, Lyndhurst, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Feb. 25, 1992, Ser. No. 841,395

Int. Cl.[5] **C11D** *3/395, 17/00;* **C01B** *15/10*

U.S. Cl. 252—95 **6 Claims**

5. A detergent composition comprising

(1) 2–85% by weight detergent active; and

(2) a composition for release of bleach peracid in the wash comprising:

(a) peracid bleach precursor enzyme substrate which is a diacyl peroxide having the structure:



wherein R and R_1 are the same or different and are selected from the group consisting of saturated or unsaturated alkyl having 1 to 20 carbons, aryl and alkaryl; and

(b) a lipase enzyme used in an amount such that the final composition has a lipolytic enzyme activity of from 100 to 0,005;

wherein the lipase enzyme reacts with said enzyme substrate to release a peracid in the wash.

5,338,475

CARPET CLEANING COMPOSITION WITH BLEACH

Garland P. Corey, Milltown, N.J.; Elmer M. King, Albaquerque, N. Mex., and Ralph E. Rypkema, Lodi, N.J., assignors to Sterling Drug, Inc., New York, N.Y.

Filed Aug. 16, 1991, Ser. No. 745,782

Int. Cl.[5] **C11D** *3/24, 3/39, 3/395, 3/43*

U.S. Cl. 252—102 **7 Claims**

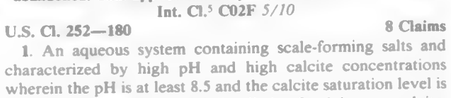
1. A carpet cleaning composition consisting of:

a. on a weight-to-weight basis of about 0.30 to 2.2 percent of hydrogen peroxide;

b. from about 0.05 to about 5.0 percent of a nonionic, anionic or amphoteric surfactant or mixtures thereof;

c. a pH in the range above 4.0 and below 6.4; and

d. from about 0.07 to about 1.8 percent of a mixture of (i) α--w-fluoropoly-(difluoromethylene) lithium salt of the general formula F(CF2)n-CH2CH2-S-CH2CM2-COOLi (I) , where n is 6 to 12, and (ii) the diethanolamine salt of a perfluoroalkyl phosphate represented by the general formula:



(II)

mono/bis-diethanolamine salt

where n is 6 to 12;

wherein the weight ratio of (i) to (ii) is from about 1:1 to about 1:2.

5,338,476

GRANULAR LAUNDRY DETERGENT COMPOSITIONS HAVING IMPROVED SOLUBILITY

Eugene J. Pancheri, Montgomery, and Meleksima Koc, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 688,009, Apr. 19, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 98,170

Int. Cl.[5] **C11D** *3/12, 1/02, 1/38, 1/66*

U.S. Cl. 252—174.14 **13 Claims**

1. A granular laundry detergent composition comprising:

(a) a spray dried detergent granule containing a detergent surfactant selected from the group consisting of anionics, nonionics, ampholytics, cationics, and mixtures thereof:

(b) from about 5 to 75 weight % of admixed sodium carbonate: and

(c) from about 7 to about 15 weight % of admixed citric acid;

wherein the detergent surfactant comprises from about 5 to about 70 weight % of said composition, wherein the weight ratio of (b):(c) is from about 2:1 to about 15:1, wherein the composition is prepared by a process spray drying said detergent granule from an alkaline aqueous mix said sodium carbonate (b) and said citric acid (c) wherein said sodium carbonate (b) and said citric acid (c) are not spray dried, with said detergent granule whereby said sodium carbonate will react with said citric acid to release carbon dioxide when said composition is formed into a laundering solution.

5,338,477

POLYETHER POLYAMINO METHYLENE PHOSPHONATES FOR HIGH PH SCALE CONTROL

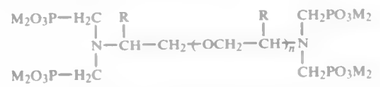
Shih-Ruey T. Chen, Pittsburgh, and Gary F. Matz, Carnegie, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 708,527, May 31, 1991, abandoned. This application May 11, 1992, Ser. No. 879,231

Int. Cl.[5] **C02F** *5/10*

U.S. Cl. 252—180 **8 Claims**

1. An aqueous system containing scale-forming salts and characterized by high pH and high calcite concentrations wherein the pH is at least 8.5 and the calcite saturation level is at least 150 times the solubility limit of calcium as calcite, which further contains, in an amount sufficient to establish a concentration of from 10 to 50 mg/L, a polyether polyamino methylene phosphonate of the formula:



where n is an integer or fractional integer which is, or on average is, from about 2 to about 12, inclusive; M is hydrogen or a cation of an alkali metal salt; and each R may be the same or different and is independently selected from hydrogen and methyl.

5,338,478

STABILIZED POLYETHER POLYOL AND POLYURETHANE FOAM OBTAINED THEREFROM

Lawrence B. Barry, Newington, and Mark C. Richardson, Cheshire, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Division of Ser. No. 37,058, Mar. 25, 1993, Pat. No. 5,256,333. This application Jul. 27, 1993, Ser. No. 97,698

Int. Cl.[5] **C09K** *3/00, 15/32, 15/08*

U.S. Cl. 252—182.21 **17 Claims**

1. A polyether polyol stabilized against degradation by the inclusion therein of a stabilizing amount of a liquid stabilizer composition comprising:

a) a diarylamine;

b) a hindered phenol; and,

c) a pentaerythritol disphosphite.

5,338,479

BLOCKED ISOCYANATE BLEND HAVING A HIGH ISOCYANATE CONTENT

Kam P. Panandiker, Shorewood, and Morris R. Olson, Minnetonka, both of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 654,212, Feb. 12, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,602

Int. Cl.[5] **C09K** *3/00;* **C09D** *167/00*

U.S. Cl. 252—183.71 **10 Claims**

1. A solvent dispersible polymeric vehicle comprising:

a polyester polymer having a hydroxyl group with an active hydrogen reactive with an isocyanate group, the polymer having a hydroxyl value in the range of from about 30 to about 300 and a molecular weight in the range of from about 370 to about 4,000; and

a cross-linking agent comprising a blend of a blocked diisocyanate compound and a blocked polyisocyanate compound, the diisocyanate compound and the polyisocyanate compound having isocyanate groups which have been blocked by a blocking agent, the blend having from about 20 to about 34 weight percent isocyanate groups available for reaction with the polymer after deblocking with at least about 30 percent isocyanate groups in the cross-linking agent being from the diisocyanate compound, the polyisocyanate compound having more than two isocyanate groups, the blend being substantially free of a blocked urethane prepolymer, the polymer and cross-linking agent being in a ratio in the range of from about 10/1 to about 1/1 polymer to cross-linking agent.

5,338,480

COMPOSITIONS AND METHODS TO CLEAN CONTACT LENSES

Anthony J. Dziabo, El Toro; Hampar Karageozian, Laguna Hills; Paul S. Ripley, Irvine; Sam W. Lam, Laguna Niguel, and J. Abraham Espiritu, Oceanside, all of Calif., assignors to Allegan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 416,074, Oct. 2, 1989, Pat. No. 5,078,908, and a continuation-in-part of Ser. No. 461,405, Jan. 5, 1990, and a continuation-in-part of Ser. No. 461,540, Jan. 5, 1990, Pat. No. 4,997,626. This application Mar. 4, 1991, Ser. No. 664,601

Int. Cl.[5] **A61L** *2/18, 2/20*

U.S. Cl. 252—187.21 **25 Claims**

1. A composition comprising an effective debris removing amount of an enzyme component effective in removing debris from a contact lens, and a chlorine dioxide destroying component effective in destroying chlorine dioxide, said enzyme component being included in said composition relative to said chlorine dioxide destroying component so that said enzyme component is released in a liquid medium containing chlorine dioxide substantially at the same time or after said chlorine dioxide destroying component is released in said liquid medium to destroy chlorine dioxide contained in said liquid medium, thereby allowing said enzyme component to remove debris from a contact lens in said liquid medium; said chlorine dioxide destroying component being present in an amount effective to destroy all the chlorine dioxide contained in said liquid medium.

18. A method for removing debris from a contact lens comprising:

contacting a contact lens with a liquid medium containing a disinfectant component in the presence of a composition comprising an enzyme component which is incompatible with said disinfectant component and is effective in removing debris from a contact lens and a disinfectant destroying component effective in destroying said disinfectant component after being released in said liquid medium, said disinfectant destroying component being present in an amount effective to destroy all said disinfectant component in said liquid medium; and

releasing said enzyme component and said disinfectant destroying component from said composition in said liquid medium and removing debris from said contact lens in said liquid medium, said enzyme component being released in said liquid medium substantially at the same time or after said disinfectant destroying component is released in said liquid medium.

5,338,481

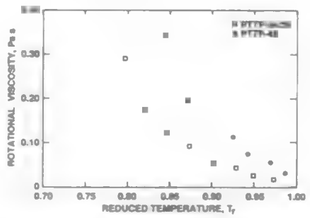
ASYMMETRICAL NONPOLAR DIPHENYL-DIACETYLENE LIQUID CRYSTALS EUTECTIC MIXTURES

Shin-Tson Wu, Northridge; J. David Margerum, Woodland Hills; Hsiang-Hui B. Meng, West Covina, and Larry R. Dalton, Monterey, all of Calif., assignors to Hughes Aircraft Company and University of Southern California (USC), both of Los Angeles, Calif.

Filed Aug. 10, 1992, Ser. No. 927,698

Int. Cl.[5] **C09K** *19/52;* **F21V** *9/04*

U.S. Cl. 252—299.01 **12 Claims**



1. A diphenyl-diacetylene liquid crystal compound comprising:

the general structure of

$$R_1—C_6H_4—C{\equiv}C—C{\equiv}C—C_6H_4—R_2$$

wherein R_1 is selected from the group consisting of an alkyl group having the general formula (C_nH_{2n+1}), an alkoxy group having the general formula (OC_nH_{2n+1}), wherein n ranges from 1 to 12; an alkenyl group having the general formula (C_nH_{2n-1}) and an alkenyloxy group having the general formula (OC_nH_{2n-1}), wherein n ranges from 2 to 12;

R_2 is independently selected from the consisting of an alkyl having the general formula (C_mH_{2m+1}), wherein m ranges from 1 to 12; an alkenyl group having the general formula (C_mH_{2m-1}) and an alkenyloxy group having the general formula (OC_mH_{2m-1}), wherein m ranges from 2 to 12; and

VOL 1165 ISS 3 AG 16 1994 UMI

n is not equal to m.

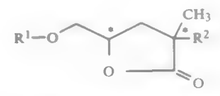
5,338,482

LIQUID CRYSTALLINE COMPOUNDS, LIQUID CRYSTAL COMPOSITIONS CONTAINING THE SAME AND USE THEREOF

Kazuhiko Sakaguchi, Toyonaka, and Tohru Kitamura, Kyoto, both of Japan, assignors to Daiso Co., Ltd., Osaka, Japan

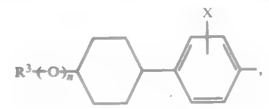
Filed Jul. 26, 1990, Ser. No. 557,777
Claims priority, application Japan, Jul. 27, 1989, 1-195729
Int. Cl.[5] C09K *19/34, 19/00;* **C07D** *309/00;* **G02F** *1/13*
U.S. Cl. 252—299.61 **8 Claims**

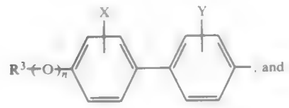
1. A liquid crystalline composition comprising (a) at least one compound having an optically active γ-lactone ring of the formula (A):

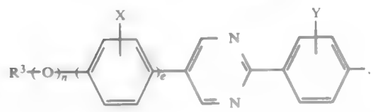


(A)

wherein R^1 is a group selected from the class consisting of





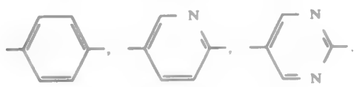


n and e are each independently 0 or 1, R^3 is an alkyl group having 1 to 15 carbon atoms or an alkenyl group having 2 to 15 carbon atoms, said alkyl and alkenyl groups having each optionally one or more asymmetric carbon atoms, X and Y are each hydrogen atom, a halogen atom or a cyano group, R^2 is an alkyl group having 1 to 15 carbon atoms or an alkenyl group having 2 to 15 carbon atoms, said alkyl and alkenyl groups having each optionally one or more asymmetric carbon atoms, and means an asymmetric carbon atom, and (b) a compound of the general formula (J):

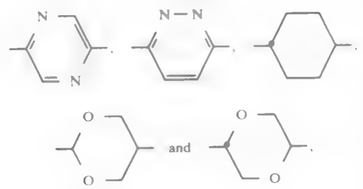


(J)

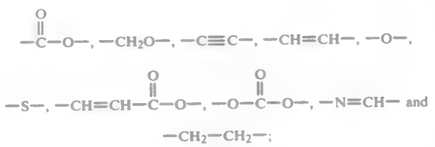
wherein E, F and G are each independently a 6-membered ring selected from the group consisting of:



-continued



the hydrogen atom(s) in the 6-membered ring being optionally substituted with a halogen atom, cyano group or nitro group; a is 0 or 1; W, K, L and M are each a single bond or a group selected from the class consisting of



provided that K is a single bond when a=0; R^6 and R^7 are each independently a straight chain or branched chain alkyl group having 1 to 15 carbon atoms, which may contain one or more asymmetric carbon atoms.

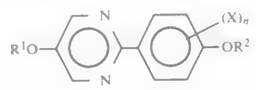
5,338,483

ANISOTROPIC COMPOUNDS HAVING NEMATIC PHASE AND LIQUID CRYSTAL MIXTURES

Tuong Huynh-ba, Baden, and Maged A. Osman, Zürich, both of Switzerland, assignors to Merck Patent GmbH, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 477,490, Feb. 9, 1990, Pat. No. 5,179,101, which is a continuation of Ser. No. 800,920, Nov. 25, 1985, Pat. No. 5,227,484, which is a continuation of Ser. No. 457,567, Jan. 13, 1983, abandoned. This application Jan. 21, 1993, Ser. No. 6,951
Claims priority, application Switzerland, Jan. 14, 1982, 198/82; Jan. 19, 1982, 292/82; May 4, 1982, 2725/82
Int. Cl.[5] C07D *239/02;* **C09K** *3/34;* **G02F** *1/13*
U.S. Cl. 252—299.61 **4 Claims**

1. A liquid crystal mixture comprising at least one compound of the formula:



wherein R^1 and R^2 are independently C_1-12 straight or branched alkyl, X is selected from the group consisting of fluorine, chlorine, bromine, iodine, and nitrile, and n is 1 or 2, in an amount effective to provide liquid-crystalline properties to said mixture.

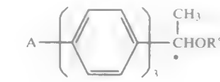
5,338,484

OPTICALLY ACTIVE BENZENE DERIVATIVES, PROCESS FOR PRODUCING THE SAME AND LIQUID-CRYSTALLINE SUBSTANCES CONTAINING SAID DERIVATIVES AS ACTIVE INGREDIENT AND OPTICAL SWITCHING ELEMENTS

Takayuki Higashii, Kishiwada, and Masayoshi Minai, Moriyama, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 986,871, Dec. 4, 1992, Pat. No. 5,274,168, which is a continuation of Ser. No. 589,500, Nov. 9, 1990, abandoned, which is a division of Ser. No. 170,409, Mar. 18, 1988, Pat. No. 5,002,693. This application Oct. 18, 1993, Ser. No. 136,827
Claims priority, application Japan, Mar. 23, 1987, 62-69485; May 27, 1987, 62-132600; Jul. 7, 1987, 62-170030
Int. Cl.[5] C09K *19/12;* **C07C** *69/76, 43/02*
U.S. Cl. 252—299.65 **1 Claim**

1. An optically active benzene derivative represented by the formula:



wherein A represents alkyl or alkoxy having 1 to 15 carbon atoms; R' represents a hydrogen atom or —COR in which R represents alkyl having 2 to 14 carbon atoms; and * indicates an asymmetric carbon atom.

5,338,485

POLYACRYLATE ESTERS WITH LONG-CHAIN HYDROCARBON AND POLYOXYALKYLENE GROUPS AND THEIR USE AS SURFACE ACTIVE SUBSTANCES

Jürgen Fock, Düsseldorf; Eberhard Esselborn, and Dietmar Schaefer, both of Essen, all of Fed. Rep. of Germany, assignors to The Goldschmidt AG, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 471,554, Jan. 29, 1990, Pat. No. 5,133,898. This application Feb. 27, 1992, Ser. No. 843,912
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1989, 3906702
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] B01F *17/42;* **C08F** *8/14, 20/18, 120/18*
U.S. Cl. 252—309 **13 Claims**

1. A polyacrylate ester having long-chain hydrocarbon and polyoxyalkylene groups prepared by transesterifying a polyacrylate alkyl ester, the alkyl groups of which contain 1 to 4 carbon atoms and which is obtained by free radical polymerization, wherein the transesterification is carried out with a mixture of

a) alcohol selected from at least one member of the group consisting of

a1) saturated aliphatic alcohols having 4 to 22 carbon atoms,

a2) unsaturated aliphatic alcohols having 8 to 22 carbon atoms,

a3) alkyl phenols, the alkyl groups of which in each case have 8 to 12 carbon atoms, and their oxyalkylation products containing 1 to 3 oxyalkylene groups, selected from the group consisting of oxyethylene groups, oxypropylene groups, and a combination thereof, and

b) polyoxyalkylene monool of the average formula

$$R^1O\text{-}(C_nH_{2n}O\text{-})_xH$$

wherein R^1 is the hydrocarbon group of a starter alcohol, R^1OH,

n is 2, 3 or 4 and has an average value of 2 to 3 in the average polyoxyalkylene group

x has an average value of 4 to 50 in the average polyoxyalkylene group, and

the molar ratio of a:b is 1:11 to 28:1, in such amounts, that up to 70% of the ester groups are reacted in the presence of a transesterification catalyst at a temperature of 70° to 160° C., the non-uniformity coefficient of ester ranging from 1.6 to 2.5 and by contrast said coefficient of ester prepared by the known state of the art copolymerization method ranging from 2.4 to 7.3, the coefficient of any specific ester prepared by the present method never being the same as the coefficient of the same ester prepared by the copolymerization method.

13. A water/oil emulsion comprising water, a natural or synthetic oil and as an emulsifier, a polyacrylate ester defined in claim 1.

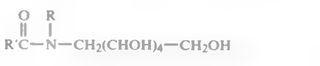
5,338,486

HIGH CATALYST PROCESS FOR GLUCAMIDE DETERGENTS

Daniel S. Connor; Jeffrey J. Scheibel, and Ju-Nan Kao, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 590,638, Sep. 28, 1990, abandoned. This application Jan. 21, 1993, Ser. No. 7,039
Int. Cl.[5] B01F *17/22;* **C07C** *233/01;* **C11D** *7/32*
U.S. Cl. 252—357 **3 Claims**

1. In a process for preparing a linear glucamide surfactant of the formula



from the reaction of a fatty acid ester and an N-alkylglucamine which is a member selected from the group consisting of N-methylglucamine, N-ethylglucamine, N-propylglucamine and N-butylglucamine, wherein R is the alkyl residue of said N-alkylglucamine and R' is the residue of the fatty acid ester, the improvement which comprises conducting said reaction in the presence of a fatty alcohol ethoxylate and using an N-alkylglucamine having a heavy metal content of about 20 ppm or lower and a free sugar content of about 5 weight percent or lower in the presence of from about 25 weight percent to about 85 weight percent, based on the sum of the reactants, of a catalyst which is a member selected from the group consisting of trilithium phosphate, trisodium phosphate, tripotassium phosphate, tetrasodium pyrophosphate, tetrapotassium pyrophosphate, pentasodium tripolyphosphate, pentapotassium tripolyphosphate, lithium hydroxide, sodium hydroxide, potassium hydroxide, calcium hydroxide, lithium carbonate, sodium carbonate, potassium carbonate, disodium tartrate, dipotassium tartrate, sodium potassium tartrate, trisodium citrate, tripotassium citrate, sodium basic silicates, potassium basic silicates, sodium basic aluminosilicates, potassium basic aluminosilicates and mixtures thereof, whereby the conversion of N-alkylglucamine to glucamine surfactant is about 80 mole percent or higher and the conversion of N-alkylglucamine to cyclic glucamide or esteramide by-products is about 10 mole percent or lower.

5,338,487

CATALYZED PROCESS FOR GLUCAMIDE DETERGENTS

Daniel S, Connor; Jeffrey J. Scheibel, and Ju-Nan Kao, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 590,639, Sep. 28, 1990, abandoned. This application Jan. 26, 1993, Ser. No. 9,369
Int. Cl.[5] B01F *17/22;* **C07C** *233/01;* **C11D** *7/32*
U.S. Cl. 252—357 **3 Claims**

1. In a process for preparing a linear glucamide surfactant of the formula

VOL 1165 ISS 3 AG 16 1994 UMI



from the reaction of a fatty acid ester and an N-alkylglucamine which is a member selected from the group consisting of N-methylglucamine, N-ethylglucamine, N-propylglucamine and N-butylglucamine, wherein R is the alkyl residue of said N-alkylglucamine and R′ is the residue of the fatty acid eter, the improvement which comprises conducting said reaction using an N-alkylglucamine having a heavy metal content of about 20 ppm or lower and a free sugar content of about 5 weight percent or lower in the presence of from about 2 mole percent to about 10 mole percent, based on N-alkylglucamine, of a catalyst which is a member selected from the group consisting of trilithium phosphate, trisodium phosphate, tripotassium phosphate, tetrasodium pyrophosphate, tetrapotassium pyrophosphate, pentasodium tripolyphosphate, pentapotassium tripolyphosphate, lithium hydroxide, sodium hydroxide, potassium hydroxide, calcium hydroxide, lithium carbonate, sodium carbonate, potassium carbonate, disodium tartrate, dipotassium tartrate, sodium potassium tartrate, trisodium citrate, tripotassium citrate, sodium basic silicates, potassium basic silicates, sodium basic aluminosilicates, potassium basic aluminosilicates and mixtures thereof, whereby the conversion of N-alkylglucamine to glucamine surfactant is about 80 mole percent or higher and the conversion of N-alkylglucamine to cyclic glucamide or esteramide by-products is about 10 mole percent or lower.

5,338,488

PROCESS FOR THE PRODUCTION OF SYNTHESIS GAS BY OXIDATIVE CONVERSON OF METHANE (OR NATURAL GAS) USING COMPOSITE CATALYST CONTAINING TRANSITIONAL AND ALKINE EARTH METAL OXIDES

Vasant R. Choudhary; Amarjeet M. Rajput; Subhash D. Sansare; Bathula Prabhakar, and Ajit S. Mamman, all of Maharashtra, India, assignors to Council of Scientific Research, New Delhi

Filed Sep. 10, 1992, Ser. No. 943,181
Int. Cl.[5] C01B *3/38*
U.S. Cl. 252—373 **15 Claims**

1. A process for the production of synthesis gas consisting of a mixture of carbon monoxide and hydrogen by oxidative conversion of methane or natural gas, the process comprising

1) passing continuously a gaseous reaction mixture comprising the methane or natural gas and oxygen, with or without water vapors, over a composite catalyst containing transition and alkaline earth metal oxides in a fixed bed reactor at a pressure in the range of 0.5–50 atm, a temperature in the range of 300°–900° C., a gas hourly space velocity in the range of 10^3–10^8 $cm^3 . g.^{-1} h.^{-1}$, a CH_4 or natural gas/O_2 mole ratio in the range of 1.8 to 4, and a H_2O/CH_4 or natural gas mole ratio in the range of 0–3.0, whereby to produce gaseous products containing synthesis gas; said composite catalyst being represented by the formula T_mAO_n, wherein T is a transition element selected from the group consisting of Ni, Co, Pd, Ru, Rh, Ir and mixtures thereof, wherein m is a mole ratio of T/A and is from 0.01 to 100, wherein A is an alkaline earth element selected from the group consisting of Mg, Ca, Ba, Sr and mixtures thereof, wherein O is oxygen and n is a number of oxygen atoms required to fulfil the valence requirement of the transition and alkaline earth elements in the catalyst, and wherein the composite catalyst is prepared by (i) mixing thoroughly catalyst precursors consisting essentially of: a) one or more finely ground transitional metal compounds represented by the formula TX_a; wherein T is the transitional element; wherein X is selected from the group consisting of NO_3, CH_3COO, OH, O, CO_3 and Cl; and wherein a is a number of X required to complete the valence requirement of the transitional element; and b) one or more finely ground alkaline earth metal compounds represented by the formula AY_b; wherein A is the alkaline earth element; wherein Y is selected from the group consisting of NO_3, OH, O, CO_3 and CH_3COO; and wherein b is a number of Y required to complete the valence requirement of the alkaline earth element; said catalyst precursors having a T/A mole ratio of about 0.01 to about 100; ii) heating the mixture of catalyst precursors to dryness at a temperature of about 80°–250° C. in air to form a dried mass; iii) decomposing the dried mass containing catalyst precursors to their oxides at a temperature of about 400°–1200° C. in the presence of air or inert gas or under vacuum for about 0.5 to 50 h to form a decomposed mass; iv) powdering the decomposed mass and forming catalyst pellets, extrudes or granules therefrom; and v) calcining the catalyst at a temperature of about 400°–1500° C. in the presence of air, inert gas, CO or their mixture or under vacuum for about 1 to 100 h; and

2) separating the synthesis gas from the gaseous products.

5,338,489

DESLAGGING GASIFIERS BY CONTROLLED HEAT AND DERIVATIZATION

Dick Y. Jung, Fishkill, N.Y.; James K. Wolfenbarger, Torrance, Calif.; Donald D. Brooker, Hopewell Junction, N.Y.; Allen M. Robin, Anaheim, and Jerrold S. Kassman, Long Beach, both of Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 15, 1993, Ser. No. 6,028
Int. Cl.[5] C01B *3/22, 3/24*
U.S. Cl. 252—373 **25 Claims**

1. A process for removing slag from partial oxidation reactors which comprises:

(1) stopping a partial oxidation reaction which has deposited solid slag in a partial oxidation reactor;

(2) adding at least one derivatizing agent, which is a free-oxygen-containing or -producing material, to the reactor which reacts with the slag to make derivatized slag having a lower fluidizing point;

(3) providing a temperature in the reactor at which derivatized slag fluidizes and leaves the reactor through an outlet; and

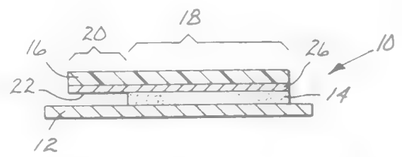
(4) controlling the deslagging rate by regulating derivatizing agent and temperature levels in the reactor to prevent slag from filling the outlet.

5,338,490

TWO-PHASE COMPOSITES OF IONICALLY-CONDUCTIVE PRESSURE-SENSITIVE ADHESIVE, BIOMEDICAL ELECTRODES USING THE COMPOSITES, AND METHODS OF PREPARING THE COMPOSITE AND THE BIOMEDICAL ELECTRODES

Timothy M. Dietz, St. Paul, Minn.; Robert A. Asmus, Hudson, Wis., and Rosa Uy, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 792,374, Nov. 15, 1991, abandoned. This application Aug. 31, 1993, Ser. No. 114,971
Int. Cl.[5] A61F *13/02;* **C08J** *3/00;* **C08K** *5/15;* **C08L** *5/00*
U.S. Cl. 252—500 **30 Claims**



1. A two-phase composite of ionically-conductive, pressure-sensitive adhesive, comprising:

a continuous phase of hydrophilic, solid state pressure-sensitive adhesive composition ionically-conductive without the requirement of water being present in the composition, and a discontinous phase of domains of hydrophobic, pressure-sensitive adhesive composition dispersed in the continuous phase to enhance pressure-sensitive adhesive properties for contacting mammalian skin while maintaining acceptable alternating current impedance;

wherein the continuous phase and the discontinous phase have a composite ratio by weight of from about 196:1 to about 3:1 continuous phase:discontinuous phase;

wherein the continuous phase of hydrophilic, solid state pressure-sensitive adhesive composition comprises:

(a) from 5 to 50 weight percent of a polymer electrolyte complex, and

(b) from 50 to 95 weight percent of an essentially non-volatile plasticizer present to form a cohesive, pliable, pressure-sensitive adhesive;

said polymer electrolyte complex comprising a solid solution of from 0.5 to 5 weight percent of an ionic salt dissolved in a solvating polymer and ionically conductive without the requirement of water;

said solvating polymer being selected from the group consisting of crosslinked poly(N-vinyl lactam); crosslinked polyacrylamide and its ionic forms; crosslinked polyacrylic acid and its salts; crosslinked poly(2-acrylamide-2-methylpropane sulfonic acid), its salts, crosslinked copolymers of the acid, crosslinked copolymers of salts of the acid, or mixtures thereof, or combinations thereof; and

wherein the discontinous phase of domains of hydrophobic pressure sensitive adhesive composition is selected from the group consisting of polyacrylates, polyolefins, silicone adhesives, natural or synthetically derived rubber base adhesives, and polyvinyl ethers or blends thereof.

5,338,491

CLEANING COMPOSITIONS WITH GLYCEROL AMIDES

Daniel S. Connor; Jeffrey J. Scheibel, both of Cincinnati; Yi-Chang Fu, Wyoming; Bruce P. Murch, Cincinnati; Randall A. Watson, Cincinnati, and Kirsten L. McKillop, Cincinnati, all of Ohio, assignors to Ohio, Cincinnati, Ohio

Division of Ser. No. 857,887, Mar. 26, 1992, Pat. No. 5,223,179. This application Feb. 22, 1993, Ser. No. 20,513
Int. Cl.[5] C11D *3/32, 1/66*
U.S. Cl. 252—548 **13 Claims**

1. A cleaning composition, comprising:

(a) from about 1% to about 30% by weight of an N-(1,2-propanediol) fatty acid amide surfactant of the formula



wherein R is a C_7–C_{21} hydrocarbyl species and R^1 is a C_1–C_6 hydrocarbyl or substituted hydrocarbyl species;

(b) at least about 1% by weight of one or more non-amide detersive surfactants;

(c) from 0% to about 50% by weight of a detergency builder;

(d) from 0% to about 5% by weight of a detersive enzyme;

(e) from 0% to about 25% by weight of active adjunct materials; and

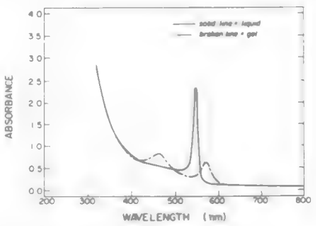
(f) the balance of the composition comprising moisture and carrier ingredients.

5,338,492

NARROW BAND RADIATION FILTER FILMS

Hans P. Panzer, Stamford; Lino Giovanni, Shelton, both of Conn.; Martin L. Cohen, White Plains, N.Y., and Wei S. Yen, Norwalk, Conn., assignors to CYTEC Technology Corp., Wilmington, Del.

Continuation of Ser. No. 601,977, Oct. 23, 1990, abandoned. This application Nov. 20, 1992, Ser. No. 980,411
The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.
Int. Cl.[5] F21V *9/00;* **G02B** *5/24*
U.S. Cl. 252—582 **18 Claims**



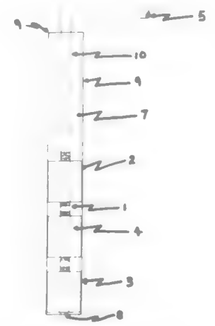
1. A narrow band radiation filter comprising a crystalline colloidal array of charged particles of a copolymer of styrene and a comonomer selected from the group consisting of 1-sodium, 1-allyloxy-2-hydroxylpropane sulfonate; styrene sulfonate; 2-acrylamido-2-methylpropane sulfonate; 3-sulfopropyl-methyacrylate potassium salt and vinyl sulfonate fixed in a self-supporting film of polymeric hydrogel wherein the polymer in the hydrogel film is a polymer comprising acrylamide, an optional water-soluble comonomer of vinyl pyrrolidone or hydroxyethylmethacrylic acid ester and N,N-methylenebisacrylamide.

5,338,493

METHOD FOR DISPOSAL OF RADIOACTIVE WASTE

Joe K. Welch, P. O. Box 753, Temple, Tex. 76503

Continuation-in-part of Ser. No. 328,906, Dec. 14, 1989, abandoned. This application Feb. 8, 1993, Ser. No. 870,001
Int. Cl.[5] G21F *9/00*
U.S. Cl. 588—16 **1 Claim**



1. A method to safely dispose of radioactive waste for thousands of years which consists of drilling a bore hole from 2,000 to 10,000 feet below the surface of the earth; casing the hole using cement pump down the hole; putting stainless steel cylinders filled with radioactive waste into the hole; and wither cooling or sealing the waste using a circulating system such that:

VOL 1165 ISS 3 AG 16 1994 UMI

the cylinders have a diameter from two to six inches less than that of the inside diameter of the hole casing, a central axial bore hole with a diameter from three to five inches, and standard pipe screw threads on the top and bottom which allow the cylinders to be attached to one another;

the inside diameter of the well casing is from 15 to 30 inches;

the top of the last cylinder put in the hole is at least 1,000 feet, below the bottom of any existing water table through which the hole passes;

the bottom of the first cylinder put into the hole has a footing that allows liquid to flow down through the central bore hole, and back up between the outside surface of the cylinders and the inner surface of the well casing.

5,338,494

METHOD OF INSPECTION WITH COLD LIGHT PENETRANT

Michael P. Ritter, Glendora, and William H. Long, Lytle Creek, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 31, 1992, Ser. No. 922,441
Int. Cl.[5] C09K *3/00;* **G01N** *31/00*
U.S. Cl. 252—700 **3 Claims**

1. A method for performing penetrant inspection of a surface without the use of an external light source to identify and determine the nature of flaws or defects in the surface, comprising:

applying a first penetrant composition to the surface being inspected,

applying a second luminescing composition atop said first composition which chemically reacts with the first composition to cause emission of visible light,

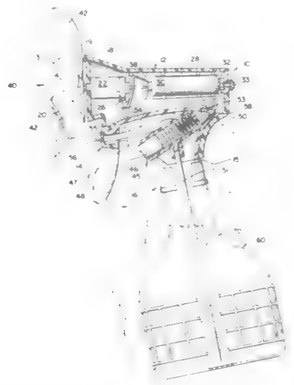
whereby surface flaws or defects trap a sufficient amount of the first composition to permit reaction to occur with the second composition when the latter is applied over the first composition, thereby resulting a chemical reaction which yields visible light so that said flaws or defects can be identified and located.

5,338,495

PORTABLE MISTING FAN

Gregory A. Steiner, Lisle, and Terry Arnieri, Addison, both of Ill., assignors to Innovative Design Enterprises, Addison, Ill.

Filed Oct. 18, 1993, Ser. No. 136,914
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—28 **7 Claims**



1. An integral portable fan and atomizing head unit forming a portable cooling unit, adapted for direct attachment to a fluid reservoir of the type having connection means for accepting the connection thereto of the cooling unit, comprising in combination,

a head unit formed by an upper chamber and a lower chamber and having a connector secured to said lower chamber,

said upper chamber provided with a motor and electrical means to activate and deactivate said motor, and fan means including flexible fan blades mounted externally on said upper chamber and connected to said motor to turn in response to the activation of said motor,

said lower chamber provided with pump means and pump activation means carried therein and provided with an atomizing head in fluid communication with said pump means and pump activation means,

said atomizing head being positioned below said upper chamber and in direct horizontal alignment with said fan means,

said connector on said lower chamber being adapted to disengageably engage the connection means of the fluid reservoir,

said upper chamber, lower chamber and connector formed as an integral head unit,

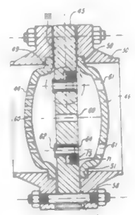
whereby said head unit may be disengageably engaged to a fluid reservoir which provides a source of fluid and said pump means may be activated to expel a fluid in the path of the fan means when the fan means is simultaneously activated in response to the activation of said motor thereby to provide a portable cooling unit.

5,338,496

PLATE TYPE PRESSURE-REDUCTING DESUPERHEATER

Arthur J. Talbot, Marblehead, Mass., and John M. Cowley, Conyers, Ga., assignors to Atwood & Morrill Co., Inc., Salem, Mass.

Filed Apr. 22, 1993, Ser. No. 51,163
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—78.2 **6 Claims**



1. A pressure reducing and desuperheating device for use in a stream or gas conduit, comprising:

at least a first plate baffle,

said first plate baffle defining a plurality of Venturi passages through said first plate baffle, said passages having axes parallel to the flow of steam or gas in said conduit,

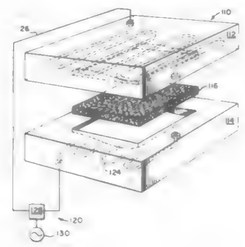
said first plate baffle further including liquid discharge means located in at least some of said passages for discharging liquid at said passages to mix with the steam or gas passing through said passages, and liquid passage conduits defined by said first plate baffle for communicating between said liquid discharge means and a liquid source further including a second plate baffle, downstream from said first plate baffle and spaced apart form said first plate baffle, said second plate baffle defining a plurality of second passages through said second plate baffle, said second passages arranged coaxially with at least some of said Venturi passages in said first plate baffle.

5,338,497

INDUCTION HEATING METHOD FOR FORMING COMPOSITE ARTICLES

Allan D. Murray, Dearborn; Michael D. Tisack, Ann Arbor, and Yitah R. Wu, Inkster, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 3, 1992, Ser. No. 862,946
Int. Cl.[5] B29C *35/02*
U.S. Cl. 264—25 **27 Claims**



1. An induction heating method of forming a composite article comprising:

molding composite material in a mold, the composite material comprising non-induction heatable reinforcement material and induction heatable material in a thermally curable polymer based resin;

curing the polymer based resin at least partially while in the mold by exposure to a time varying magnetic field; and

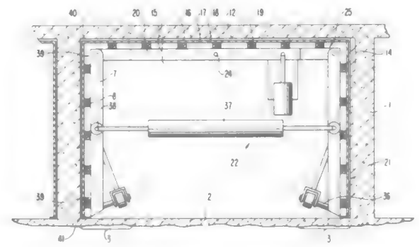
removing the composite article from the mold.

5,338,498

METHOD FOR FORMWORK, AND DISMANTLING OF FORMWORK, OF WALLS OF POURED MATERIAL RAISED ABOVE A REFERENCE SURFACE, AND MEANS FOR EMPLOYMENT OF THIS METHOD

Louis Lefebvre, Résidence Orsay C3 630 Avenue de la République, 59800 Lille, France

Filed Jun. 19, 1992, Ser. No. 901,136
Claims priority, application France, Jun. 20, 1991, 91 07903
Int. Cl.[5] B28B *7/08;* **E04B** *1/16;* **E04G** *11/00*
U.S. Cl. 264—31 **7 Claims**



1. A method for assembling formwork and disassembling formwork for forming vertical walls of poured material raised above a reference surface, the formwork having boards (3), each including a plate (6) having two faces (4, 5), one of the faces being a shuttering face (4) having a height substantially equal to a height of a vertical wall being formed and the formwork having stiffeners (7, 8) disposed in two perpendicular directions and attached to another of the two faces of the plate (6) to maintain the plate (6) against the vertical wall (1) which is being formed,

the reference surface (2) having benchmarks (26) with vertical faces (26*b*) rising to a height lower than the height intended for the vertical wall (1); each vertical face defining an intended location of a plane of a face (48) of the vertical wall (1) and against which bases (29) of the shuttering faces (4) are positionable to maintain the shuttering faces (4) in the planes of the faces (48) of the vertical wall (1),

each of the boards (3) being attached by the stiffeners (7, 8) to a structure having at least one point of support (10, 11) on the reference surface (2) offset from the board by a given distance behind the board,

each of the boards (3) being equipped with wheels (31, 32) at their base, each wheel rotating freely about an axis (33) of a cap (34) associated with the board,

the formwork further having means (36) maintaining the wheels (31) above a plane of the reference surface (3) when the vertical wall (1) is being formed;

the method comprising the steps of:

(a) assembling the formwork by:

(a1) starting from an unshuttered positioned in which each of the wheels (31, 32) rests on the reference surface while the shuttering faces are raised from the reference surface, rocking the base (29) of each of the shuttering faces (4) toward the intended location of the vertical wall (1) by rotating about an axis defined by the support points (10) of the wheels (31) on the reference surface (2) until a lower edge (35) of each of the shuttering faces (4) is made to rest on the reference surface (2),

(a2) continuing the rocking of the base (29) of each of the shuttering faces (4) by rotating about an axis defined by the lower edge (35) of each of the shuttering faces as the wheels (31) are raised from the reference surface thus placing the formwork in the shuttered position; and

(b) disassembling the formwork following the pouring of material next to the boards to form the vertical wall (1) by:

(b1) from the shuttered position with the lower edge (35) of each of the shuttering faces (4) on the reference surface, rocking the base (29) of each of the shuttering faces (4) away from the formed vertical wall (1) by rotating about the axis defined by the lower edge (35) of each of the shuttering faces (4) until the wheels (31) rest on the reference surface (2), and

(b2) continuing the rocking of the base in the same direction by now rotating about the axis defined by the support points (10) of the wheels (31) resting on the reference surface (2) until the lower edge (35) of each of the shuttering faces (4) is raised from the reference surface (2) thus placing the formwork in the unshuttered position.

4. An apparatus for forming vertical walls of poured material raised above a reference surface by assembling formwork and disassembling formwork for the vertical walls comprising:

formwork having boards (3), each including a plate (6) having two faces (4, 5), one of the faces being a shuttering face (4) having a height substantially equal to a height of the vertical wall being formed and the formwork having stiffeners (7, 8) disposed in two perpendicular directions and attached to another one of the two faces of the plate (6) to maintain the plate (6) against the another one of the two faces of vertical wall (1) which is being formed,

the reference surface (2) having benchmarks (26) with vertical faces (26*b*) rising to a height lower than the height intended for the vertical wall (1); each vertical face defining an intended location of a plane of a face (48) of the vertical wall (1) and against which bases (29) of the shuttering faces (4) are positionable to maintain the shuttering

VOL 1165 ISS 3 AG 16 1994 UMI

faces (4) in the planes of the faces (48) of the vertical wall (1) during formation thereof,

each of the boards (3) being attached by the stiffeners (7, 8) to a structure having at least one point of support (10, 11) on the reference surface (2) offset from the board by a given distance behind the board,

each of the boards (3) being equipped with wheels (31, 32) at their base, each wheel rotating freely about an axis (33) of a cap (34) associated with the board,

the formwork further having means (36) maintaining the wheels (31) above a plane of the reference surface (3) while the vertical wall (1) is being formed; and wherein the wheels are mounted such that, in the shuttered position during the forming of the vertical wall, the wheels are entirely above a level of a lower edge (35) of each of the shuttering faces (4) which lower edges (35) are made to rest on the reference surface by rocking action of the bases, and in the unshuttered position when the shuttering faces are displaced from the reference surface, the wheels are resting on the reference surface, and

the apparatus further including means (37) for controlling rocking action of the bases of the shuttering faces such that the bases of the shuttering faces are rocked either toward or away from the intended location of the vertical wall by rotation about an axis defined by the support points of the wheels resting on the reference surface and that rocking of the bases of the shuttering faces by rotation about an axis defined by the lower edge of each of the shuttering faces resting on the reference surface causes the wheels to be either raised above the reference surface or lowered to rest on the reference surface, respectively.

5,338,499

METHOD FOR THE FABRICATION OF A COMPOSITE STRUCTURE

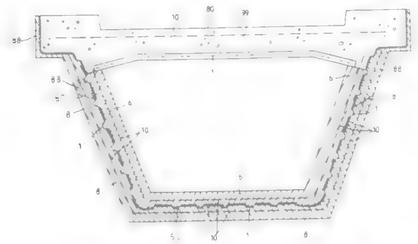
Seppo I. Ryynänen, Kouvola, Finland, assignor to Gerestek Oy, Finland

Continuation of Ser. No. 842,411, Mar. 26, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 121,891

Claims priority, application Finland, Sep. 29, 1989, 894535; Sep. 29, 1989, 894536

Int. Cl.[5] B28B *19/00;* **E04B** *1/16*

U.S. Cl. 264—34 **17 Claims**



1. A method for fabrication of a bridge from a composite structure, by combining profile plate and concrete, the method comprising the steps of:

(a) transporting and placing the profile plate at a bridge building site, the profile plate including means for securing the concrete on the profile plate;

(b) pre-assembling the profile plate into a configuration corresponding to a desired bridge structure, the pre-assembled profile plate being comprised of a light-weight, easily handled structure having a load bearing strength which is increased at the bridge building site;

(c) spraying a layer of concrete onto the securing means of said profile plate to increase the load bearing strength of the pre-assembled profile plate;

(d) allowing the layer of concrete to partially set;

(e) spraying another layer of concrete on said concrete layer to further increase the load bearing strength of the pre-assembled profile plate ; and

repeating steps (c) through (e), to apply a plurality of layers of concrete on said profile plate until the desired bridge structure is fabricated.

5,338,500

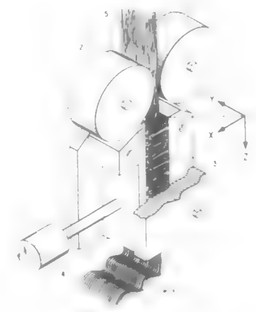
PROCESS FOR PREPARING FIBERBALLS

Walter B. Halm, Lippetal, Fed. Rep. of Germany; William J. Jones, Jr., Greenville, N.C.; James F. Kirkbride, Wilmington, Del.; Ilan Marcus, Versoix, Switzerland, and Adrian C. Snyder, Greenville, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 820,141, Jan. 13, 1992, Pat. No. 5,238,162, which is a division of Ser. No. 589,960, Sep. 28, 1990, Pat. No. 5,112,684, which is a continuation-in-part of Ser. No. 508,878, Apr. 12, 1990, abandoned, and a continuation-in-part of Ser. No. 549,818, Jul. 9, 1990, abandoned, and a continuation-in-part of Ser. No. 549,847, Jul. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 290,385, Dec. 27, 1988, Pat. No. 4,940,502, which is a continuation-in-part of Ser. No. 921,644, Oct. 21, 1986, Pat. No. 4,794,038, which is a continuation-in-part of Ser. No. 734,423, May 15, 1985, Pat. No. 4,618,531, said Ser. No. 549,818, is a continuation-in-part of Ser. No. 290,385, May 15, 1985. This application Jul. 19, 1993, Ser. No. 73,294

Int. Cl.[5] D04H *1/58*

U.S. Cl. 264—122 **13 Claims**



1. A process for preparing fiberballs, wherein mechanically-crimped staple fiber of length about 10 to about 100 mm is prepared having a primary and a secondary crimp, said primary crimp having a frequency of about 14 to about 40 crimps/10 cm and said secondary crimp having a frequency of about 4 to about 16 crimps/10 cm, and whereby the average amplitude of the secondary crimp is at least 4 times the average amplitude of the primary crimp, and wherein said mechanically-crimped staple fiber in opened condition is processed through a roller card modified to make fiberballs having a random distribution and entanglement of fibers within each ball and of average diameter about 2 to about 20 mm.

5,338,501

INSERT ON EXTENDED DECK AND PROCESS OF MOLDING

Ronald Marsilio, Mogadore, Ohio, assignor to American Standard Inc., New York, N.Y.

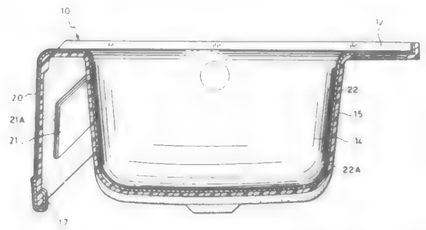
Division of Ser. No. 625,510, Dec. 11, 1990, Pat. No. 5,119,518. This application Feb. 26, 1992, Ser. No. 842,021

Int. Cl.[5] B29C *45/14, 45/33*

U.S. Cl. 264—219 **12 Claims**

1. A method for molding a sanitary fixture having a reservoir and an extended deck on one side of the reservoir, comprising:

a) attaching an insert onto a deck face of a mold receptor said insert shaped to reduce the cross-sectional area of a portion of a void between the shell's deck and the deck forming face of the mold receptor, said reduction in cross-sectional area being at least a distance from an outer edge of the shell's deck which is from about 8% to about 24% of the length of the deck of the sanitary fixture;



b) loading a shell for receiving a layer of hardenable material onto said mold receptor, leaving a void between said mold receptor and a side of the shell, and a void between said insert and a deck of said shell;

c) introducing hardenable material into said void; and

d) removing a molded article including the shell-coated with hardened material from said mold receptor.

5,338,502

PROCESS FOR PREPARING MOLDED ARTICLES OF HYDROLYZED ETHYLENE-VINYL ACETATE COPOLYMERS

Takamasa Moriyama; Hiroki Masumoto, both of Takatsuki, and Kuniyasu Kato, Joyo, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 22, 1992, Ser. No. 902,162

Claims priority, application Japan, Jun. 24, 1991, 3-151788

Int. Cl.[5] B29C *51/02*

U.S. Cl. 264—322 **6 Claims**

1. A process for preparing a molded article with low gas permeability and superior flex-crack resistance, stretchability and thermoformability comprising the steps of:

separately melting a hydrolyzed ethylene-vinyl acetate copolymer and a polyolefin,

mixing the melted copolymer with the melted polyolefin in a weight ratio of hydrolyzed ethylene-vinyl acetate copolymer to polyolefin of 30/70 to 70/30 to form a mixture, and

molding the mixture to form a molded article composed of a polymer alloy of hydrolyzed ethylene-vinyl acetate copolymer and polyolefin, wherein the polyolefin is finely dispersed in a matrix of the hydrolyzed ethylene-vinyl acetate copolymer.

5,338,503

METHOD OF MAKING A BOTTLE WITH A HANDLE

Tateo Yanagisawa; Hisayoshi Yamada; Katsumi Sakamoto; Seiki Inagawa, all of Hiratsuka; Yukihide Umetsu; Takeshi Uchida, both of Tokyo; Hideyo Nakahara, and Yoshiharu Fukumoto, both of Hiratsuka, all of Japan, assignors to Mitsubishi Plastics Industries Limited, Tokyo, Japan

Continuation of Ser. No. 778,111, Dec. 12, 1991, abandoned. This application May 5, 1993, Ser. No. 56,938

Claims priority, application Japan, Apr. 12, 1990, 2-96954; Apr. 18, 1990, 2-102092; Apr. 18, 1990, 2-102093; May 22, 1990, 53294[U]; Jul. 26, 1990, 2-198496; Nov. 8, 1990, 2-303052

Int. Cl.[5] B29C *49/20*

U.S. Cl. 264—516 **2 Claims**

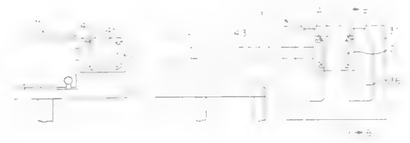
1. A method of making a bottle with a handle comprising the steps of:

disposing a synthetic resin parison between opened half-cylindrical molds;

moving an attaching head having at least one handle body detachably attached thereto in a first direction from an original position to a position between said parison and one of said half-cylindrical molds;

moving said attaching head in a second direction toward said one half-cylindrical mold so as to position said at least one handle body in at least one handle fitting groove having a shape which approximates an outline shape of the handle body and is provided on the one half-cylindrical mold, said at least one handle fitting groove comprising suction means through which air is blown;

tacking said at least one handle body to said at least one handle fitting groove on said one half-cylindrical mold;



retracting said attaching head from said one half-cylindrical mold by removing said attaching head from between said parison and said one half-cylindrical mold so that attaching head is retracted to said original position;

sucking air through said suction hole so as to secure said at least one handle body to the at least one handle fitting groove on said one half-cylindrical mold;

closing said opened half-cylindrical molds after said retracting step; and

blow molding by blowing pressurized air into said parison so as to integrate said parison with at least one handle body.

5,338,504

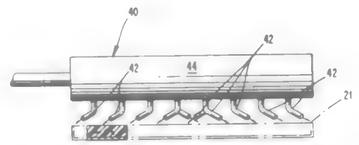
DECORATIVE SURFACE COVERINGS HAVING PLATEY MATERIAL

C. David Wang, Wilmington, Del.; Jeffrey R. Shultz, Salem, N.J., and Hao A. Chen, Glen Mills, Pa., assignors to Mannington Mills, Inc., Salem, N.J.

Division of Ser. No. 873,379, Jun. 12, 1986, Pat. No. 4,756,951. This application Apr. 7, 1988, Ser. No. 178,596

Int. Cl.[5] B29C *43/00*

U.S. Cl. 264—555 **13 Claims**



1. A method of forming a decorative surface covering comprising the steps of:

(a) casting a hardenable, fluid, transparent or translucent layer containing a platey material, which is capable of reflecting and diffracting visible light at various angles as the visible light passes within the transparent or translucent layer; and

(b) reorienting the platey material within the transparent or translucent layer at two or more different angles with respect to the surface of the layer under conditions which provide an enhanced three dimensional effect to the decorative surface covering;

wherein in step (b) the platey material is reoriented by positionally directing onto the transparent or translucent layer containing the platey material a plurality of jet streams.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,505

SILVER BASE ELECTRICAL CONTACT MATERIAL AND METHOD OF MAKING THE SAME

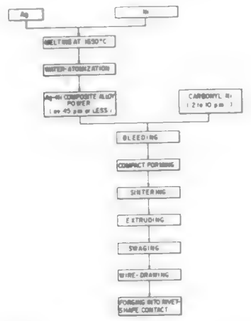
Koji Tsuji; Yoshinbou Takegawa, both of Nara; Hayato Inada, Ibaraki, and Shuji Yamada, Ashiya, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Division of Ser. No. 718,035, Jun. 20, 1991, Pat. No. 5,198,015. This application Dec. 28, 1992, Ser. No. 997,216

Claims priority, application Japan, Jun. 21, 1990, 2-164839; May 14, 1991, 3-139826

Int. Cl.[5] B22F *3/12*

U.S. Cl. 419—10 **10 Claims**



1. A method of making a silver base electrical contact material, said method comprising the steps of:

preparing a silver-nickel liquid solution containing 1 to 5 wt % of nickel;

applying a high pressure water jet in collision with a stream of said sliver-nickel liquid solution in order to atomize said liquid solution into a resulting silver-nickel alloy powder which is inoculated with oxygen supplied from within said high pressure water, said alloy powder containing nickel particles having an average particle size of not more than 1 μm and being uniformly dispersed in a silver matrix;

blending said alloy powder with an additional nickel powder to form a compact;

sintering said compact in such a manner as to internally oxidize nickel with said embedded oxygen to obtain a resulting sintered material containing nickel and nickel oxide particles dispersed in said sliver matrix,

wherein the resultant material contains 0.5 to 39.9 wt % of nickel, 0.14 to 7.0 wt % of nickel oxides, and balance silver, and contains not less than 0.4 wt % of nickel constituting said nickel and nickel particles having a particle size of not more than 1 μm.

5,338,506

PROCESS FOR MAKING NON-MAGNETIC NICKEL TUNGSTEN CARBIDE CEMENTED CARBIDE COMPOSITIONS AND ARTICLES MADE FROM THE SAME

John W. Friedericha, West Branch; Prakash K. Mirchandani, Troy, and Paul J. Krudy, Wet Branch, all of Mich., assignors to Valenite Inc., Madison Hts., Mich.

Filed Dec. 21, 1992, Ser. No. 993,790

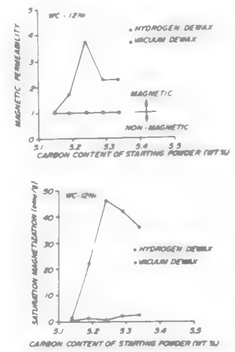
Int. Cl.[5] B22F *1/00*

U.S. Cl. 419—44 **10 Claims**

1. A process for making non magnetic Ni-WC cemented carbide articles in a furnace, said process comprising:

(a) dewaxing a green Ni-WC cemented carbide substrate in the presence of hydrogen gas at a pressure less than about 1000 torr and at a sufficient flow rate and a sufficient time to affect the saturation magnetization and magnetic permeability of the Ni-WC cemented carbide substrate;

(b) pumping out the hydrogen gas and introducing argon at a pressure in the range of about 1 torr to 1000 torr;



(c) increasing the temperature up to the sintering temperature to facilitate sintering of the Ni-WC cemented carbide substrate; and

(d) cooling the furnace to room temperature.

5,338,507

SILVER ADDITIVES FOR CERAMIC SUPERCONDUCTORS

John T. Anderson, Woodside; V. K. Nagesh, Cupertino, and Richard C. Ruby, Menlo Park, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 423,511, Oct. 13, 1989, Pat. No. 5,071,826, which is a continuation of Ser. No. 74,799, Jul. 17, 1987, abandoned, which is a continuation-in-part of Ser. No. 32,414, Mar. 30, 1987, abandoned. This application Aug. 29, 1991, Ser. No. 751,463

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] B22F *3/10, 3/16*

U.S. Cl. 505—470 **14 Claims**

1. A method for making a superconductor material comprising the steps of:

firstly producing a multitude of copper-oxide based superconductor grains;

secondly mixing a material comprising silver with said superconductor grains; and

thirdly heating said mixture of said superconductor grains and said material comprising silver to cause intergranular silver to electrically contact said superconductor grains.

5,338,508

ALLOY STEEL POWDERS FOR INJECTION MOLDING USE, THEIR COMPOUNDS AND A METHOD FOR MAKING SINTERED PARTS FROM THE SAME

Minoru Nitta; Yoshisato Kiyota; Yukio Makiishi; Hiroshi Ohtsubo; Toshio Watanabe, and Yasuhiro Habu, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation of Ser. No. 799,755, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 377,903, Jul. 10, 1989, abandoned. This application Oct. 16, 1992, Ser. No. 962,607

Claims priority, application Japan, Jul. 13, 1988, 63-172532; Aug. 20, 1988, 63-206719; Aug. 20, 1988, 63-206720

Int. Cl.[5] C22C *38/02, 38/04, 38/10*

U.S. Cl. 420—120 **2 Claims**

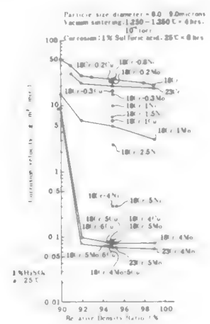
1. An iron-cobalt based alloy steel powder for injection-molding use, wherein the alloy steel powder is adapted to be injection-molded after blending the alloy steel powder with an organic binder and the injection-molded article is subsequently

debound and sintered at a sintering temperature in the range of 1350° C. or more,

said alloy steel powder comprising spherically-shaped, water atomized particles of an average particle diameter of 20 μm or less, said alloy steel consisting of

0.01 to 1.00% by weight of carbon;

0.01 to 1.00% by weight of silicon;



0.01 to 2.00% by weight of manganese, wherein the manganese/silicon ratio is 1.00 or greater;

15.0 to 60.0% by weight of cobalt;

at least one optional element selected from the group consisting of 1.0 to 4.0% by weight of vanadium,

0.02 to 1.00% by weight of boron,

0.05 to 1.00% by weight of phosphorus, and

the balance of iron and incidental impurities.

5,338,509

METHOD OF USING PD-ALLOY PINNING WIRES IN TURBINE BLADE CASTING

Duncan R. Coupland, High Wycombe, and Mark L Doyle, Alperton, both of England, assignors to Johnson Matthey Public Limited Company, London, England

Division of Ser. No. 946,639, Sep. 18, 1992, abandoned. This application Sep. 9, 1993, Ser. No. 118,354

Claims priority, application United Kingdom, Sep. 20, 1991, 9120161.6

Int. Cl.[5] C22C *5/00*

U.S. Cl. 420—463 **9 Claims**

1. In the production of turbine blades by casting using pinning wire to support a mould, the improvement comprising using as the pinning wire a palladium alloy wire comprising an alloy of palladium and at least one member of the group consisting of noble and refractory metals.

5,338,510

CAST ALUMINUM ALLOY AND TOOLING FIXTURE THEREFROM

Romeo A. Zuech, 6238 Orcutt Rd., San Luis Obispo, Calif. 93401

Filed Oct. 4, 1993, Ser. No. 130,777

Int. Cl.[5] C22C *21/10, 21/12*

U.S. Cl. 420—532 **3 Claims**

1. An aluminum base casting alloy consisting essentially of by weight: 1.5–6% copper, 0.5–4.5% zinc, 0.2–1.5% nickel, 0.2–1.5% iron, 0.2–1.8% magnesium, 0.05–1.2% manganese, and remainder aluminum and minor impurities.

5,338,511

UNDECYLENATE DEODORANTS FOR SEWAGE SLUDGES

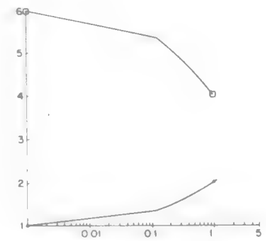
Aime Menassa, Paris, and Henri Caupin, Versailles, both of France, assignors to Delta Agro Industries, Paris and Atochem, Puteaux, both of France

Filed Dec. 19, 1990, Ser. No. 630,181

Claims priority, application France, Dec. 19, 1989, 89 16792

Int. Cl.[5] A61L *9/01*

U.S. Cl. 422—5 **8 Claims**



1. A process for deodorizing a malodorous sewage sludge, comprising treating such sewage sludge with an effective deodorizing amount of at least one alkyl ester of undecylenic acid and/or at least one polyoxyalkylene ester of undecylenic acid having from 2 to 10 oxyalkylene recurring units.

5,338,512

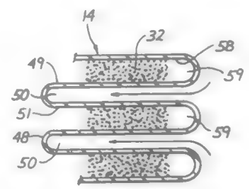
METHOD FOR OXYGENATION OF A PATIENT'S BLOOD

Wilfred F. Mathewson, Bonsall; Richard L. Bringham, San Clemente; Philip L. Ritger, Huntington Beach, and David L. Karshmer, Redwood City, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 848,897, Mar. 10, 1992, Pat. No. 5,225,161, which is a continuation of Ser. No. 260,164, Oct. 20, 1988, Pat. No. 5,120,501. This application Mar. 2, 1993, Ser. No. 24,998

Int. Cl.[5] A61M *1/14*

U.S. Cl. 422—46 **11 Claims**



1. A method of oxygenating a patient's blood, comprising the steps of providing a device comprising a thermally conductive core centrally disposed within a housing and having a heat exchange surface, the device further comprising a plurality of gas permeable membranes and a plurality of blood flow passageways, the plurality of blood flow passageways positioned parallel to the heat exchange surface and defined by the heat exchange surface and the plurality of gas permeable membranes, each of the plurality of gas permeable membranes having a hollow lumen;

passing a gas through the hollow lumens by the plurality of gas permeable membranes; and

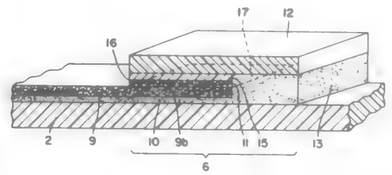
passing a patient's blood through the device by simultaneously exposing the blood to the heat exchange surface and the plurality of gas permeable membranes.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,513
TEST CARRIER FOR THE ANALYTICAL DETERMINATION OF A COMPONENT OF A LIQUID SAMPLE

Reiner Schlipfenbacher, Lampertheim; Joachim Steinbiss, Lorsch, and Heinz-Friedrich Trasch, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 814,183, Dec. 19, 1991, abandoned, which is a continuation of Ser. No. 384,982, Jul. 25, 1989, abandoned. This application Mar. 17, 1993, Ser. No. 32,757
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1988, 3826056
Int. Cl.[5] G01N *31/22*
U.S. Cl. 422—56 **9 Claims**

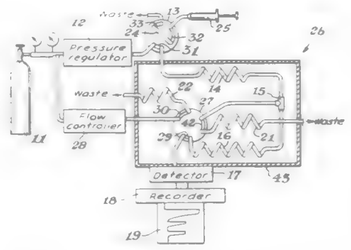


1. Test carrier useful in determination of a component of a liquid sample, comprising:
(A) a base layer,
(B) a liquid transport path comprising, in longitudinal array:
(i) a sample application region,
(ii) a preevaluation region and
(iii) an evaluation region, and;
(C) a signal formation layer, wherein:
(a) said liquid transport path is parallel to said base layer,
(b) said liquid transport path contains a plurality of binding partners, at least one of which is labelled, wherein said plurality of binding partners are positioned in said liquid transport path prior to said evaluation region, so that said labeled binding partner forms a mobile, labeled complex in the presence of said component which is indicative thereof,
(c) said evaluation region comprises an absorbent, liquid transport layer which, prior to application of said liquid sample is in fluid communication with said sample application region and said preevaluation region thereby permitting liquid exchange,
(d) said signal formation layer contains a soluble signal forming reagent, which when contacted with said liquid sample is liberated from said signal formation layer and reacts with said mobile labeled complex to form an optically detectable signal indicative of said component in the liquid phase,
(e) said liquid transport layer of said evaluation region and said signal formation layer are positioned parallel to each other, and prior to application of said liquid sample are in fluid communication, permitting liquid exchange in a direction perpendicular to said base layer, said parallel arrangement of said signal formation layer to said liquid transport layer for fluid communication being at the last section of said liquid transport path, and
(f) said soluble signal forming reagent is embedded in a slowly soluble film layer, said signal formation reagent being more rapidly soluble than said slowly soluble film layer and liquid moves in said liquid transport layer at a speed which permits spreading out therein in a direction parallel to said base layer prior to dissolving said slowly soluble film and formation of said optically detectable signal,
whereby said liquid sample first spreads laterally in said liquid transport path in a direction parallel to said liquid transport layer surface and then uniformly penetrates the signal formation layer in a direction perpendicular to the base layer from the liquid transport layer, and dissolves said slowly soluble film layer and said color forming reagent contained therein, so as to allow said signal forming reagent of subpart (d) to react in the liquid phase with said mobile, labelled complex of subpart (b).

5,338,514
VENTED CAPILLARY GAS CHROMATOGRAPHY APPARATUS

Paul L. Morabito; Terrence McCabe, and Joseph F. Hiller, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 25, 1993, Ser. No. 111,808
Int. Cl.[5] G01N *30/00*
U.S. Cl. 422—89 **4 Claims**



1. In a vented capillary gas chromatograph suitable for on-column injection, the vented capillary gas chromatograph being especially suitable for use with a mass spectrometer detector, the vented capillary gas chromatograph comprising a means for supplying a carrier gas, a means for injecting a liquid sample, a retention gap, a connector, a capillary gas chromatography column, and a detector; the means for supplying a carrier gas, the means for injecting a liquid sample, the retention gap, the connector, the capillary gas chromatography column and the detector each being respectively in series fluid communication; a divert valve, the divert valve being in fluid communication with the connector; a vent restrictor, a bleed restrictor, the vent restrictor and the bleed restrictor each being in fluid communication with the divert valve so the divert valve can alternatively provide fluid communication between the connector and the vent restrictor or between the connector and the bleed restrictor; the column having an inlet end and an outlet end, the inlet end of the column being connected to the connector, wherein the improvement comprising: replacing the divert valve with a multi-position fluid flow switch having at least two positions, the flow switch being in fluid communication with a means for supplying a gas, with the connector, with the bleed restrictor, with the vent restrictor, with the outlet end of the column, and with the detector so when the flow switch is in a first position, the outlet end of the column is in fluid communication with the detector and the connector is in fluid communication with the bleed restrictor, and when the flow switch is in a second position, the means for supplying a gas is in fluid communication with the detector, the outlet end of the column is in fluid communication with the bleed restrictor and the connector is in fluid communication with the vent restrictor.

5,338,515
SO_2 SENSOR

Ralph A. Dalla Betta, Mountain View, and David R. Sheridan, Menlo Park, both of Calif., assignors to Catalytica, Inc., Mountain View, Calif.

Filed Aug. 17, 1990, Ser. No. 569,066
Int. Cl.[5] G01N *31/10, 25/20*
U.S. Cl. 422—95 **14 Claims**

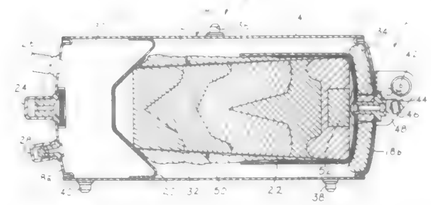


1. A device for measuring SO_2 concentration in a flowing gas stream comprising:
a. an oxidation catalyst selected from the group consisting of Ru, Rh, Pd, Os, Ir, Group VIB metal oxides, and Group VIII metal oxides and adapted to oxidize oxidizable components of the flowing gas stream but not SO_2, said catalyst being situated to oxidize said oxidizable components in the flowing gas stream prior to contacting the flowing gas stream with a catalytic sensor element;
b. a catalytic sensor element comprising a catalyst suitable for oxidizing SO_2 to SO_3 in the presence of oxygen and a temperature measuring device, where the catalyst is placed about as a layer over the temperature measuring device so that the catalyst is in physical and thermal contact with the temperature measuring device and where the catalyst is in contact with the flowing gas stream, and the heat produced by oxidizing SO_2 raises the temperature of the temperature measuring device substantially proportionally to the SO_2 concentration in the flowing gas stream;
c. a reference element adapted to detect the ambient temperature of the flowing gas stream in the vicinity of the catalytic sensor element; and
d. a flowing gas temperature controller for controlling the temperature of the flowing gas stream prior to its passage over the catalytic sensor element to operating temperature.

5,338,516
CHEMICAL OXYGEN GENERATOR

Yunchang Zhang, Lenexa, and James C. Cannon, Olathe, both of Kans., assignors to Puritan-Bennett Corporation, Lenexa, Kans.

Division of Ser. No. 683,276, Apr. 10, 1991, Pat. No. 5,198,147. This application Dec. 10, 1992, Ser. No. 988,827
Int. Cl.[5] A62B *7/08;* **C01B** *11/14, 11/18*
U.S. Cl. 422—126 **13 Claims**

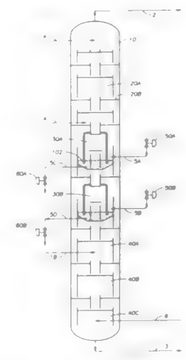


1. An oxygen generator comprising: a closed canister having an outlet valve;
an oxygen-generating candle installed in said canister for producing a breathable gas and including therein an amount of an oxygen source which upon ignition and decomposition thereof, will yield oxygen and residual chlorine, said candle comprising from about 0.5–15% by weight of a metal powder fuel, from about 20–99% by weight of an oxygen source selected from the group consisting of sodium chlorate, potassium chlorate, lithium chlorate, sodium perchlorate, potassium perchlorate and lithium perchlorate, and from about 0.05–10% by weight of a non-toxic additive incorporated into said candle for suppression of said residual chlorine and smoothing the decomposition of said candle, said additive being selected from the group consisting of: (1) the oxides, hydroxides and carbonates of calcium and the rare earth elements; (2) the hydroxides and carbonates of magnesium; and (3) mixtures of the foregoing, said additive being in intimate admixture with said fuel and oxygen source for suppressing the formation of free chlorine and smoothing the decomposition of said candle upon said ignition thereof, said candle being operable for producing said breathable gas over a period of several minutes; and
means for igniting said candle.

5,338,517
CATALYTIC DISTILLATION COLUMN REACTOR AND TRAY

William T. Evans, III, Houston, Tex., and Karl Stork, Munich, Fed. Rep. of Germany, assignors to Chemical Research & Licensing Company, Pasadena, Tex.

Filed May 18, 1992, Ser. No. 884,378
Int. Cl.[5] B01J *8/18*
U.S. Cl. 422—191 **11 Claims**



5. A distillation column reactor for simultaneously carrying out chemical reactions and separating the reactants and products, comprising:
(a) a vessel of suitable material and construction for the desired reaction and distillation conditions;
(b) feed inlet means for introducing feed into said vessel;
(c) vapor outlet means for removing vapors from said vessel;
(d) liquid outlet means for removing liquid from said vessel;
(e) standard distillation structures disposed within said vessel; and
(f) at least one draft chimney tray disposed within said vessel to support a catalyst thereon, each of said draft chimney trays comprising
i) a catalyst support plate having openings therethrough for vapor passage upward through said draft chimney tray;
ii) a draft chimney disposed directly above said openings in said catalyst support plate to increase the vapor velocity thereby fluidizing the catalyst in the liquid on said draft chimney tray;

VOL 1165 ISS 3 AG 16 1994 UMI

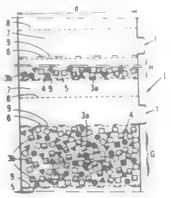
iii) a hood disposed above said draft chimney to deflect the rising vapor, liquid and catalyst downward toward said support plate;
iv) a weir secured to said support plate to maintain a liquid level on said draft chimney tray;
v) liquid distribution means disposed above said support to distribute the liquid from above onto said draft chimney tray; and
vi) a downcomer area adjacent said weir to conduct the liquid from said draft chimney tray to a next tray below.

5,338,518

DISTILLATION-REACTION APPARATUS AND ITS USE FOR CARRYING OUT BALANCED REACTION

Marie-Claire Marion, Villeurbanne; Alain Forestiere, Vernaison, and Henri Delhomme, Sainte-Foy-Les Lyon, all of France, assignors to Institute Francais Du Petrole, Rueil Malmaison, France

Filed Jul. 8, 1992, Ser. No. 910,380
Claims priority, application France, Jul. 9, 1991, 91 08716; Feb. 4, 1992, 92 01323
Int. Cl.[5] B01J *8/02, 8/18;* **B01D** *47/16*
U.S. Cl. 422—211 **15 Claims**



1. A distillation-reaction apparatus comprising at least one distillation-reaction zone, said zone containing, on a perforated support permitting the passage of fluids, at least one element J comprising a container having an internal volume, vt, and containing a quantity of catalytic solid particles, said particles having a volume, Va, of more than zero but below the internal volume, Vt, of said container, said container having an outer envelope permeable to fluids and impermeable to the solid catalytic particles, and at least one element K having at least the double function of ensuring a predetermined vacuum level in the distillation-reaction zone and ensuring a distillation effect, said vacuum level defined as (Vt-Va)/Vt, said elements J and K, alone or in combination, having sufficient mechanical strength to withstand, without excessive deformation, the load of all the elements J and K present in said distillation-reaction zone, and the perforations of said perforated support being smaller than said elements J and K so that the perforated support can retain said elements J and K.

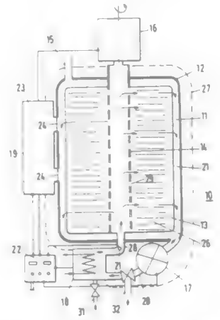
5,338,519

PROCESS AND APPARATUS FOR SEPARATING SUBSTANCES BY CRYSTALLIZATION

Slobodan Jancic, Lugano, and Evangelos Sakellariou, Zurich, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Division of Ser. No. 805,325, Dec. 10, 1991, Pat. No. 5,230,769.
This application Mar. 24, 1993, Ser. No. 36,322
Claims priority, application Switzerland, Dec. 21, 1990, 04109/90
Int. Cl.[5] B01D *9/04*
U.S. Cl. 422—253 **13 Claims**

1. A crystallizer comprising
a housing;
a three-dimensional crystallization carrier matrix of large specific area between 2,000 and 10,000 m^2/m^3 in said housing;
a rotatable shaft fixed to said matrix for rotating said matrix in said housing;
a motor for rotating said shaft;
heating means for melting a mixture of substances containing flexible C-H chains in said housing into a flowable melt;



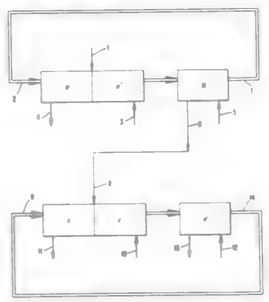
conveyor means for conveying the melt through said matrix; and
a temperature control means for controlling the temperature of the melt.

5,338,520

RECOVERY OF NEODYMIUM/DIDYMIUM VALUES FROM BASTNAESITE ORES

Alain Leveque, and Jean-Luc Le Loarer, both of La Rochelle, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Mar. 19, 1987, Ser. No. 27,872
Claims priority, application France, Mar. 19, 1986, 86 03889
Int. Cl.[5] C01F *17/00*
U.S. Cl. 423—21.1 **19 Claims**



1. A process for the recovery of neodymium or didymium values, comprising (i) calcining a bastnaesite ore, (ii) selectively leaching said calcined bastnaesite with an aqueous solution of nitric acid to solubilize therein trivalent rare earth values, wherein the amount of nitric acid used in said leaching is about the stoichiometric equivalent of the amount of trivalent rare earth elements present in said calcined ore, thereby producing a less soluble residue which comprises cerium and thorium values, (iii) separating said insoluble residue, and (iv) liquid/liquid extracting desired neodymium or didymium values from said nitric acid solution.

5,338,521

PROCESS FOR REVERSIBLY ABSORBING ACID GASES FROM GASEOUS MIXTURES

Robert Quinn, East Texas; Guido P. Pez, Allentown, and John B. Appleby, Lansdale, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 10, 1992, Ser. No. 973,897
Int. Cl.[5] B01D *47/00;* **C01B** *17/16;* **C01C** *3/00;* **B01J** *8/00*
U.S. Cl. 423—210.5 **13 Claims**

1. A process for reversibly absorbing an acid gas from a gaseous mixture containing the acid gas, the process consisting essentially of:
contacting the gaseous mixture with the salt hydrate at a temperature above the melt temperature of the salt hydrate melt into which a portion of the acid gas is absorbed; and
cooling the salt hydrate melt to a temperature sufficient to solidify the salt hydrate melt and to desorb the acid gas from the solidifying salt hydrate.

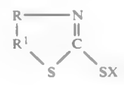
5,338,522

STABILIZATION OF AQUEOUS HYDROXYLAMINE SOLUTIONS

Howard I. Heitner, Stamford, Conn., assignor to Cytec Technology Corp., Wilmington, Del.

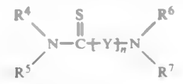
Division of Ser. No. 704,475, May 23, 1991, Pat. No. 5,227,146.
This application Dec. 21, 1992, Ser. No. 993,752
The portion of the term of thispatent subsequent to Dec. 21, 2009, has been disclaimed.
Int. Cl.[5] C01B *21/20*
U.S. Cl. 423—265 **14 Claims**

1. A stabilized solution containing an hydroxylamine or an at least partially neutralized hydroxylamine salt in water and an effective decomposition inhibiting amount of a compound selected from the group consisting of those having the formula:



I

wherein R and R^1 are each CHR^2 groups or together form a substituted or unsubstituted aryl or cylcoalkyl group, X is hydrogen or a monovalent cation and each R^2 group is, individually, a C_1–C_4 alkyl group or hydrogen; or

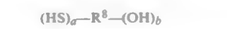


IV

wherein R^4, R^5, R^6 and R^7 are individually, hydrogen a C_1–C_{10} alkyl group or an aryl group, Y is a



group and n is is 0 or 1; or



VII

wherein R^8 is a polvalent alkylene radical of 2-20 carbon atoms and a and b are integers of 1-3, inclusive, the sum of a and b not exceeding 4.

5,338,523

METHOD OF MAKING TRANSITION METAL CARBIDE AND BORIDE POWDERS

Vladimir D. Krstic, 7 Lochinvar Road, Kingston, Ontario, Canada K7M 6R9

Filed Oct. 26, 1992, Ser. No. 966,376
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] C04B *35/56;* **C01B** *31/30, 35/04, 31/34*
U.S. Cl. 423—289 **11 Claims**

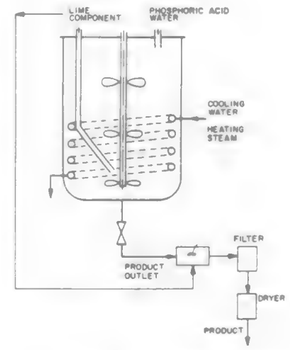
1. A method of making transition metal carbides and borides, comprising mixing as reactants transition metal oxides with carbon powder, when producing carbides, or mixing as reactants transition metal oxides with carbon and boron oxide when producing transition metal borides, the method comprising the steps of: (i) heating the reactants in a reaction chamber under a non-reactive gas pressure until the reactants reach a temperature of between 1200 and 2000 degrees C. wherein the pressure is maintained at a level sufficient to prevent the substantial loss of oxide or carbon from the reactants; (ii) subsequently maintaining the temperature of the reactants between 1200 and 2000 degrees C. to force the reactants to react producing carbides or borides and carbon monoxide as a by-product, and simultaneously applying a subatmospheric pressure to the reactants which is in the range from about 5 millitorrs to about 3000 millitorrs which pressure is sufficient to remove carbon monoxide from the reaction chamber, thereby the removal of the carbon monoxide drives the reaction to substantial completion.

5,338,524

PROCESS FOR THE PRODUCTION OF COARSE-GRAINED, ANHYDROUS CALCIUM MONOHYDROGEN PHOSPHATE (DICALCIUM PHOSPHATE ANHYDRIDE) AND A DEVICE FOR CARRYING OUT THE PROCESS

Alexander Maurer, Mannheim; Guenter Raab; Gudrun Raab, both of Laudenbach; Hans-Georg Steinert, Eschelbronn, and Richard Taenzler, Laudenbach, all of Fed. Rep. of Germany, assignors to BK Ladenburg GmbH, Ladenburg, Fed. Rep. of Germany

Filed Dec. 23, 1992, Ser. No. 997,368
Int. Cl.[5] C01B *25/32*
U.S. Cl. 423—309 **12 Claims**



1. A method of making coarse-grained dicalcium phosphate anhydride, at least 95% of which consists of particles with a grain diameter of > about 45 μm, comprising:
a) introducing a highly reactive calcium component at a temperature of about 60° to about 100° C. directly into a stirrer zone of a reaction vessel having one or more turbulent stirrer zones and introducing an equivalent amount of

VOL 1165 ISS 3 AG 16 1994 UMI

aqueous phosphoric acid into another zone of said vessel, wherein the speed of introducing the highly reactive calcium component is regulated to maintain a pH value of from about 3.0 to about 4.5 in said stirrer zone, whereby a precipitated product is formed;

b) removing the whole or a portion of the precipitated product and cooling the removed portion to a temperature within the range of from about 40° to about 60° C.;

c) mixing said removed portion with additional calcium component to maintain a pH value of from about 5.5 to about 6.8;

d) further stirring said removed portion for 10 to about 60 minutes; and

e) filtering and drying the resultant coarse-grained dicalcium phosphate anhydride.

5,338,525

MFI-TYPE ZEOLITE AND ITS PREPARATION PROCESS

Jean-Francois Joly, Paris; Philippe Caullet, Illzach; Jean-Louis Guth; Anne-Catherine Faust, both of Mulhouse; Nathalie Brunard, and Frédéric Kolenda, both of Lyons, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison Cedex, France

PCT No. PCT/FR91/01068, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO92/12096, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 24, 1991, Ser. No. 923,880

Claims priority, application France, Dec. 27, 1990, 90 16529

Int. Cl.[5] C01B *33/26;* **B01J** *29/06*

U.S. Cl. 423—326 **15 Claims**

1. Synthetic crystalline zeolite of the MFI type, characterized by:

a) its following approximate general formula:

$$M^{+}(x+y)[Si_{996-(x+y)}Al_xGa_yO_{192}]^{(x+y)-}$$

in which M represents an alkaline cation and/or an ammonium cation and/or a proton, x is a number between 0 and 24, y a number between 0 and 24 and (x+y) a number between 0.64 and 24,

b) a X-ray diagram of its ammonium form shown in Table I of the description and

c) a fluorine content of its ammonium form between approximately 0.01 and 2.0% by weight, said zeolite having been synthesized in a fluoride medium and in the absence of an organic agent.

10. A process for the preparation of a synthetic crystalline zeolite of the MFI type, which comprises the following steps:

a) forming a solution of a reaction mixture having a pH below approximately 9and containing water, at least one silica source, at least one aluminum source, at least one gallium source, at least one mobilizing agent source containing fluoride ions, at least one alkaline cation A^{+} source, and optionally at least one ammonium cation source; said reaction mixture having a composition, in molar ratio terms, within the following value ranges:

Si/(Al+Ga) : 1–60

F^{-}/Si : 0.1–10

H_2O/Si : 5–100

A^{+}/Si : 0.1–10

$A^{+}/(A^{+}+NH_4^{+})$: 0.1–1; and

b) maintaining said reaction mixture at a temperature between approximately 90° and 300° C. until a crystalline zeolite is obtained; said zeolite having the following approximate general formula:

$$M^{+}(x+y)[Si_{(96-(x+y))}Al_xGa_yO_{192}]^{(x+y)-}$$

wherein M represents an alkaline cation and/or an ammonium cation and/or a proton, x is a number between 0 and 24, y is a number between 0 and 24 and (x+y) a number between 0.64 and 24; a X-ray diagram of its ammonium form shown in Table I of the specification, and fluorine content of its ammonium form between approximately 0.01 and 2.0% by weight, said zeolite having been synthesized in the absence of an organic agent.

5,338,526

DIVALENT TRANSITION-METAL-ALUMINOSILICATE HYDROCARBON CONVERSION CATALYSTS HAVING MAZZITE-LIKE STRUCTURES, ECR-23-D

David E. W. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 746,264, Aug. 15, 1991, Pat. No. 5,185,137, which is a continuation of Ser. No. 554,628, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 283,037, Dec. 5, 1988, abandoned, which is a continuation of Ser. No. 14,203, Feb. 4, 1987, abandoned, which is a continuation of Ser. No. 763,652, Aug. 8, 1985, abandoned. This application Feb. 1, 1993, Ser. No. 11,914

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] C01B *33/26;* **B01J** *29/06*

U.S. Cl. 423—328.2 **21 Claims**

1. A crystalline microporous transition-metal-aluminosilicate catalyst which is isostructural to a mazzite zeolite and wherein a Ni, Co, Zn or mixtures thereof portion of is in the tetrahedral position of the transition-metal-aluminosilicate.

11. A process for producing a microporous transition-metal-aluminosilicate catalyst isostructural to a mazzite zeolite and a portion of Ni, Co and Zn and mixtures thereof within the tetrahedral framework of the transition-metal-aluminosilicate, comprising the steps of:

preparing a reaction mixture comprising an alumina source, a silica source, a divalent transition metal source, a sodium oxide source, an organic template, and a seed source with substantial mixing,

maintaining the reaction mixture at a temperature and for a time sufficient to crystallize said transition-metal-aluminosilicate,

recovering said transition-metal-aluminosilicate catalyst, and calcining said catalyst to remove the trapped template ions.

5,338,527

ZIRCONIUM SILICATE COMPOSITION, METHOD OF PREPARATION AND USES THEREOF

Susan L. Lambert, Rolling Meadows, Ill., assignor to UOP, Des Plaines, Ill.

Filed Aug. 20, 1992, Ser. No. 932,538

Int. Cl.[5] C01B *33/32*

U.S. Cl. 423—332 **12 Claims**

1. A composition of matter having the formula

$$M_xSi_yZr_zO_w$$

where M is an ammonium ion, a hydronium ion, an alkali metal or mixtures thereof, x is the moles of M and varies from about 1 to about 5, y is the moles of silicon and varies from about 2 to about 5, z is the moles of zirconium and varies from about 4 to about 6 and w is the moles of oxygen and varies from about 17 to about 25 said composition having a characteristic x-ray powder diffraction pattern which contains at least the d-spacings and relative intensities set forth in Table A:

TABLE A

d (Å)	Relative Intensity
11.7	VS
4.12	W
3.69	M
3.16	M

TABLE A-continued

d (Å)	Relative Intensity
2.96	S
2.75	W
2.25	M
2.05	W
1.84	M
1.57	W
1.53	M

5,338,528

ALKALI METAL SILICATE COMPOSITION WITH SODIUM CARBONATE ADDITIVE

Olle Sörensson, Lindome, and Krister Severinsson, Kungälv, both of Sweden, assignors to Eka Nobel AB, Sweden

Continuation of Ser. No. 680,135, Apr. 3, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 75,927

Claims priority, application Sweden, Nov. 14, 1990, 9003643-5

Int. Cl.[5] C01B *33/32*

U.S. Cl. 423—333 **12 Claims**

1. Solid alkali metal silicate having a molar ratio SiO_2:M_2O from about 1.5 to about 3, in which M is sodium, the silicate also containing from about 7 to about 20% by weight of sodium carbonate based on the dry material and the water content being from about 14 to about 22% by weight based on the total weight.

5,338,529

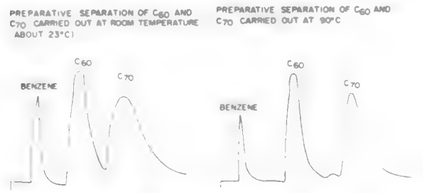
RECOGNITION AND SEPARATION OF CARBON CLUSTERS

William H. Pirkle, Champaign, and Christopher J. Welch, Northbrook, both of Ill., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

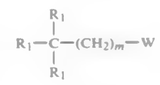
Filed Apr. 27, 1992, Ser. No. 874,791

Int. Cl.[5] C01B *31/00*

U.S. Cl. 423—445 B **28 Claims**



1. A method for separating a carbon cluster from a mixture containing the same which comprises contacting a mixture containing at least one carbon cluster with a recognition selector said recognition selector having the formula



wherein R_2 is



wherein

R_2 is O, S or NR_{12}, wherein R_{12} is independently hydrogen or P=O with the proviso that when R_{12} is P=O, then only one such group is present and all R_2's are additionally bonded to R_{12};

R_4 is independently O, S or NH,

R_3 and R_5 are each independently hydrogen or lower alkyl of up to 6 carbon atoms,

n and o are each independently zero, 1, 2 or 3,

p, q, r, s and t are each independently zero or 1,

Ar is a monocyclic or ortho-fused polycyclic aromatic moiety having up to 10 carbon atoms, either of which may be unsubstituted or substituted with one or more lower alkyl of up to 6 carbon atoms, NO_2, $N(R_6)_3^{+}$, CN, $COOR_7$, SO_3H, COR_8 and OR_9 wherein R_6, R_7, R_8 and R_9 are each independently hydrogen or lower alkyl;

W is H or $CH{=}CH_2$; and

m is 1 to 10,

under conditions effective to form a complex between said carbon cluster and said recognition selector; separating said complex from said mixture and recovering said carbon cluster from said complex.

5,338,530

RECOVERY OF GLYCINE AND GLAUBER'S SALT FROM WASTE CRYSTAL LIQUORS

Jon C. Thunberg, Milford, N.H., assignor to Hampshire Chemical Corp., Lexington, Mass.

Continuation of Ser. No. 336,366, Aug. 11, 1989, Pat. No. 4,986,976. This application Nov. 9, 1990, Ser. No. 612,660

The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.

Int. Cl.[5] C01D *5/00*

U.S. Cl. 423—551 **30 Claims**

1. A process for separating glycine and sodium sulfate decahydrate crystals from a starting aqueous solution comprising glycine and sodium sulfate, said process comprising the steps of:

a. precipitating a solid mixture of glycine and sodium sulfate decahydrate in the same mother liquor; and

b. separating the solid mixture from the mother liquor.

5,338,531

PRODUCTION OF HYDROGEN PEROXIDE

Karl T. Chuang, 14717 - 45 Avenue, Edmonton, Alberta, Canada T6H 5R4 , and Bing Zhou, #21, 10910 - 53 A Avenue, Edmonton, Alberta, Canada T6H 0S3

Filed Jan. 21, 1992, Ser. No. 823,688

Int. Cl.[5] C01B *15/01*

U.S. Cl. 423—584 **10 Claims**

1. A process for producing hydrogen peroxide by direct oxidation of hydrogen with oxygen in an acidic aqueous medium, comprising:

(a) contacting said hydrogen and oxygen containing acidic aqueous medium with a catalyst consisting of at least one Group VIII metal on a partially hydrophobic, partially hydrophilic support in a pressure vessel;

(b) providing a source of sodium and chloride ions to the acidic aqueous medium either at the outset of the reaction or once there is a decline in catalytic activity;

(c) maintaining the pressure in the vessel in the range of 3.5 MPa–20 MPa, with a hydrogen partial pressure below the explosive limit; and

(d) maintaining the temperature in the range of the freezing point of the aqueous medium to about 60° C.;

wherein the catalyst support is fluorinated carbon with a level of fluorination such that it is partially hydrophobic to allow the gaseous reactants to contact the catalyst, while being partially hydrophilic to diffuse the formed hydrogen peroxide from the catalyst to the aqueous medium; and wherein the level of fluorination is in the range of about 10 to 65% F.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,532

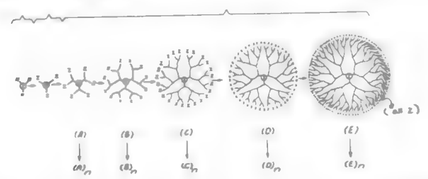
STARBURST CONJUGATES

Donald A. Tomalia, Midland, Mich.; Donald A. Kaplan, Cincinnati, Ohio; William J. Kruper, Jr., Sanford, Mich.; Roberta C. Cheng, Midland, Mich.; Ian A. Tomlinson, Midland, Mich.; Michael J. Fazio, Midland, Mich.; David M. Hedstrand, Midland, Mich., and Larry R. Wilson, Beaverton, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 386,049, Jul. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 87,266, Aug. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 897,455, Aug. 18, 1986, abandoned. This application Feb. 13, 1991, Ser. No. 654,851

Int. Cl.[5] A61K *43/00, 31/74, 31/785, 31/80*

U.S. Cl. 424—1.49 65 Claims



1. A solvent soluble, radially symmetrical dense star polymer conjugate which comprises

at least one solvent soluble, radially symmetrical dense star polymer wherein the dense star polymer has at least one core branch emanating from a core, said branch having at least one terminal group provided that

(1) the ratio of terminal groups to the core branches is two or greater,

(2) the density of terminal groups per unit volume in the polymer is at least 1.5 times that of an extended conventional star polymer having similar core and monomeric moieties and a comparable molecular weight and number of core branches, each of such branches of the extended conventional star polymer bearing only one terminal group, and

(3) the dense star polymer has a molecular volume that is no more than about 80 percent of the molecular volume of said extended conventional star polymer as determined by dimensional studies using scaled Corey-Pauling molecular models, and

has regular dendritic branching;

attached to or linked to the surface of the dense star polymer or encapsulated within the interior of the dense star polymer by means of covalent bonding, hydrogen bonding, adsorption, absorption, metallic bonding, van der Waals forces, ionic bonding, coulombic forces, hydrophobic or hydrophilic forces, or any combination thereof, at least one carried material wherein the carried material is a contrast agent, a fluorescing entity, a paramagnetic entity, a radionuclide, or an aromatic ultraviolet absorber, with the proviso that the carried material maintaining its effectiveness in the conjugate.

5,338,533

CONTROLLED RELEASE DEVICE, AND METHOD OF PREPARATION

Guy Derrien, Cagnes sur Mer, France, assignor to Laboratoires Virbac, Carros, France

Continuation of Ser. No. 634,848, Dec. 27, 1990, abandoned. This application May 27, 1992, Ser. No. 888,317

Claims priority, application France, Jan. 2, 1990, 90 00009

Int. Cl.[5] A01N *25/10*

U.S. Cl. 424—411 5 Claims

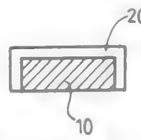
1. An antiparasite collar enabling one or more active agents to be released in a gradual and programmed manner, said device comprising a shaped body of: a powder comprising a resin, at least one plasticizer, at least one active agent carrier and at least one active agent;

wherein the improvement comprises preparing said device by:

a) preparing a powder comprising between 10 to 60 weight % of resin based on the total weight of resin, plasticizer, active agent carrier and active agent, said resin comprising polymers or copolymers selected from the group consisting of vinyl polymers, polyethylenes, polypropylenes, polyacetates, polyurethanes and vinyl acetates, heating said powder to a temperature between about 70° C. to 80° C.;

heating at least one plasticizer to about the same temperature as said powder and hot-spraying said plasticizer onto said powder, thereby saturating said resin with said at least one plasticizer to form a plasticized product in the form of a dry powder; wherein between 5 and 40 weight % of said at least one plasticizer based on the total weight of resin, plasticizer, active agent carrier and active agent is fully absorbed, wherein said plasticizer is an ester selected from the group consisting of phthalates, adipates, sebacates and phosphates;

b) cooling said plasticized product obtained in a) to a temperature below about 30° C. so that said plasticized product becomes inert relative to said at least one active agent;



c) cold mixing said plasticized product obtained in b) with between 5% and 80 weight % of at least one carrier of said at least one active agent based on the total weight of resin, plasticizer, active agent carrier and active agent, wherein said at least one carrier is selected from the group consisting of: sawdust, natural or synthetic textile fibers, and mineral fillers including barium sulfate, calcium carbonate, zeolites, diatomaceous earths, kaolin, talc, silica, hydrated calcium silicate, antimony trioxide, titanium oxide, and glass microbeads; said at least one carrier absorbing or adsorbing said at least one active agent in order to regulate the total release of said at least one active agent;

d) adding between 3 and 80 weight % of said at least one active agent based on the total weight of resin, plasticizer, active agent carrier and active agent, said at least one active agent being selected from the group consisting of o,o-diethyl-o-(2-isopropyl-4-methyl-6-pyrimidinyl) phosphoro-thiorate), N'-(2,4-Dimethylphenyl)-N-[[(2,4-dimethylphenyl)imino]methyl]-N-(methylmethanimidamide and 2-(1-Methylethoxy)phenol methylcarbamate; and

e) shape forming the powder obtained in d), which device releases said at least one active agent uniformly and completely.

5,338,534

Patent Not Issued For This Number

5,338,535

NON-AQUEOUS LIQUID POWDER

Dieter R. Berndt, Allenwood, N.J., assignor to The Safe & Dry Company, Inc., Spring Lake, N.J.

Continuation-in-part of Ser. No. 771,217, Oct. 4, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 995,795

Int. Cl.[5] A61K *7/02*

U.S. Cl. 424—69 25 Claims

1. A talc-free liquid body powder composition consisting essentially of about 25% to about 75% by weight of a starch powder and about 25% to about 75% by weight of a volatile cyclomethicone mixed together to form a lotion or cream, said cyclomethicone in said composition, after application of said composition to a skin surface, evaporating to leave said starch powder on said skin surface.

5,338,536

PERSONAL CARE COMPOSITIONS CONTAINING POLYALKYLSILOXANE COPOLYMERS

Raymond J. Thimineur, Scotia; Frank J. Traver, Troy, and Virginia M. Van Valkenburgh, West Lebanon, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Aug. 8, 1991, Ser. No. 742,258

Int. Cl.[5] A61K *7/00, 7/06, 7/075*

U.S. Cl. 424—70 2 Claims

1. A method for treating hair or skin, comprising the step of applying to the hair or skin a personal care composition comprising:

(A) from about 0.25 to about 15 parts by weight per 100 parts carrier medium of a polyalkylsiloxane copolymer having a melting point of from about −40° C. to about +40° C. and being selected from:

(1) a polyalkylsiloxane copolymer fluid comprising:

(a) monofunctional units having the general formula $R_aR_b{}^1SiO_{1/2}$,

(b) difunctional units having the general formula $RR^1SiO_{2/2}$, and

(c) difunctional units having the general formula $RR^2SiO_{2/2}$,

wherein the molar ratio of $R_aR_b{}^1SiO_{1/2}$ units to the sum of the $RR^1SiO_{2/2}$ units and $RR^2SiO_{2/2}$ units is from about 0.004:1 to about 0.5:1, and the molar ratio of $RR^1SiO_{2/2}$ units to $RR^2SiO_{2/2}$ units is from about 19:1 to about 3:7;

(2) a polyalkylsiloxane copolymer fluid comprising:

(a) monofunctional units having the general formula $R_aR_b{}^1SiO_{1/2}$,

(b) difunctional units having the general formula $RR^1SiO_{2/2}$, and

(c) difunctional units having the general formula $RR^3SiO_{2/2}$,

wherein the molar ratio of $R_aR_b{}^1SiO_{1/2}$ units to the sum of the $RR^1SiO_{2/2}$ units and $RR^3SiO_{2/2}$ units is from about 0.004:1 to about 0.5:1, and the molar ratio of $RR_1SiO_{2/2}$ units to $RR^3SiO_{2/2}$ units is from about 9:1 to about 1:19;

(3) a polyalkylsiloxane copolymer fluid comprising:

(a) monofunctional units having the general formula $R_aR_b{}^1SiO_{1/2}$,

(b) difunctional units having the general formula $RR^2SiO_{2/2}$, and

(c) difunctional units having the general formula $RR^3SiO_{2/2}$,

wherein the molar ratio of $R_aR_b{}^1SiO_{1/2}$ units to the sum of the $RR^2SiO_{2/2}$ units and $RR^3SiO_{2/2}$ units is from about 0.004:1 to about 0.5:1, and the molar ratio of $RR^2SiO_{2/2}$ units to $RR^3SiO_{2/2}$ units is from about 9:1 to about 1:19;

(4) a polyalkylsiloxane copolymer fluid comprising:

(a) monofunctional units having general formula $R_aR_b{}^1SiO_{2/2}$,

(b) difunctional units having the general formula $RR^1SiO_{2/2}$,

(c) difunctional units having the general formula $RR^2SiO_{2/2}$, and

(d) difunctional units having the general formula $RR^3SiO_{2/2}$,

wherein the molar ratio of $R_aR_b{}^1SiO_{1/2}$ units to the sum of the $RR^1SiO_{2/2}$ units, $RR^2SiO_{2/2}$ units, and $RR^3SiO_{2/2}$ units is from about 0.004:1 to about 0.5:1, the molar ratio of $RR^1SiO_{2/2}$ units to $RR^2SiO_{2/2}$ units is from about 19:1 to about 30:70; and the molar ratio of $RR^3SiO_{2/2}$ units to the sum of $RR^1SiO_{2/2}$ units and $RR^2SiO_{2/2}$ units is from about 1:9 to about 19:1;

(5) a polyalkylsiloxane copolymer resin comprising:

(a) monofunctional units having the general formula $R_cR_d{}^1SiO_{1/2}$,

(b) monofunctional units having the general formula $R_cR_d{}^2SiO_{1/2}$,

and

(c) tetrafunctional units having the general formula $SiO_{4/2}$,

wherein the molar ratio of $R_cR_d{}^1SiO_{1/2}$ units and $R_cR_d{}^2SiO_{1/2}$ units to $SiO_{4/2}$ units is from about 4:1 to about 3:2;

(6) a polyalkylsiloxane copolymer resin comprising:

(a) monofunctional units having the general formula $R_cR_d{}^1SiO_{1/2}$,

(b) monofunctional units having the general formula $R_cR_d{}^3SiO_{1/2}$,

and

(c) tetrafunctional units having the general formula $SiO_{4/2}$,

wherein the molar ratio of $R_cR_d{}^1SiO_{1/2}$ units and $R_cR_d{}^3Si-O_{1/2}$ units to $SiO_{4/2}$ units is from about 4:1 to about 3:2;

(7) a polyalkylsiloxane copolymer resin comprising:

(a) monofunctional units having the general formula $R_cR_d{}^2SiO_{1/2}$,

(b) monofunctional units having the general formula $R_cR_d{}^3SiO_{1/2}$,

and

(c) tetrafunctional units having the general formula $SiO_{4/2}$,

wherein the molar ratio of $R_cR_d{}^2SiO_{1/2}$ units and $R_cR_d{}^3SiO_f$ units to $SiO_{4/2}$ units is from about 4:1 to about 3:2; or

(8) a polyalkylsiloxane copolymer resin comprising:

(a) monofunctional units having the general formula $R_cR_d{}^1SiO_{1/2}$,

(b) monofunctional units having the general formula $R_cR_d{}^2SiO_{1/2}$,

(c) monofunctional units having the general formula $R_cR_d{}^3SiO_{1/2}$,

and

(d) tetrafunctional units having the general formula $SiO_{4/2}$,

wherein the molar ratio of $R_cR_d{}^1SiO_{1/2}$ units, $R_cR_d{}^2Si-O_f$ units and $R_cR_d{}^3SiO_{1/2}$ units to $SiO_{4/2}$ units is from about 4:1 to about 3:2; wherein "a" is a number from 0 to 3, "b" is a number from 0 to 3, "a"+"b" is equal to 3, "c" is a number from 0 to 2, "d" is a number from 1 to 3, "c"+"d" is equal to 3, each R is independently an alkyl radical having from 1 to about 4 carbon atoms, a phenyl radical, or a phenethyl radical; each R^1 is independently a linear alkyl radical having from about 15 to about 36 carbon atoms; each R_2 is independently a linear alkyl radical having from about 6 to about 14 carbon atoms; and each R^3 is independently a branched alkyl radical having from about 5 to about 36 carbon atoms, the weighted average of R^1, R^2, and R^3 in the copolymer being sufficient to provide an average of from about 14 to about 30 carbon atoms in the sum of $R^1+R^2+R_3$; and

(B) a cosmetically acceptable carrier medium.

5,338,537

ORAL COMPOSITIONS

Donald J. White, Jr., Fairfield; Edward R. Cox, Germantown, and Rama Kasturi, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 5, 1993, Ser. No. 132,392

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—52 6 Claims

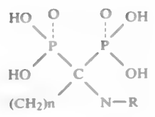
1. An oral anticalculus antiplaque/gingivitis composition with reduced tendency to stain consisting essentially of:

(a) a safe and effective amount of stannous fluoride;

(b) a safe and effective amount of stannous gluconate;

(c) a safe and effective amount of polyphosphonate anion source having the following structure:

VOL 1165 ISS 3 AG 16 1994 UMI



wherein R can be hydrogen or lower alkyl and n is an integer from 3 to 5

(d) an acceptable oral dentrifice carrier.

5,338,538

PREBRUSHING PYROPHOSPHATE-CONTAINING LIQUID ORAL COMPOSITIONS

Robert E. Tricca, Redwood City, Calif.; William T. Doran, Dover, and Catherine L. Gray, Morristown, both of N.J., assignors to Pfizer Inc, New York, N.Y.

Continuation-in-part of Ser. No. 896,275, Jun. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 736,851, Jul. 29, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 80,023

Int. Cl.[5] A61K *7/16*

U.S. Cl. 424—57 **23 Claims**

1. A stable, liquid oral prebrushing composition for loosening and removing plaque present on dental surfaces which composition is free from flocculation or crystal formation after storing for seven days at about 35 °F. or redissolves any flocculation or crystal formation at about 35° F. on increasing the temperature of the composition to room temperature comprising a detergent builder selected from the group consisting of a dialkali metal pyrophosphate salt, a tetraalkali metal pyrophosphate salt and a mixture thereof providing at least about 0.3% by weight $P_2O_7^{-4}$, and about 0.08 to about 2.0% by weight of sodium lauryl sulfate based on the weight of the prebrushing composition, said composition having a pH of about 7.2 to about 7.9.

5,338,539

BENZOFURAN DERIVATIVES USEFUL AS SUNSCREENS

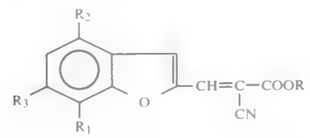
Giuseppe Raspanti, Bergamo, Italy, assignor to 3V Inc., Weehawkin, N.J.

Filed Jun. 7, 1993, Ser. No. 72,789

Int. Cl.[5] A61K *7/42;* **C07D** *405/12, 307/81*

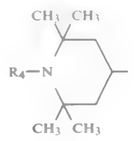
U.S. Cl. 424—59 **7 Claims**

1. A compound of formula (I)



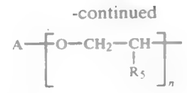
(I)

in which R is C_1–C_{18} straight or branched alkyl, C_5–C_{12} cycloalkyl, or a group of formula (II), (III) or (IV)

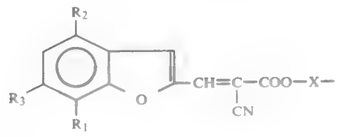


II

-continued



III



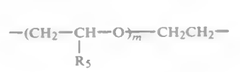
IV

in which

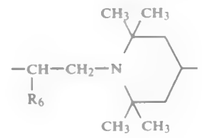
R_4 and R_5 are hydrogen or methyl;

A is C_1–C_{18} straight or branched alkyl, C_5–C_8 cycloalkyl, n can be an integer 1 to 10;

X is C_2–C_{18} straight or branched alkylene or the divalent residue of formula (V) or (VI)



V



VI

in which

m is an integer 1 to 20 and R_6 is hydrogen, methyl or ethyl;

R_1 and R_2 can be the same or different and are hydrogen or C_1–C_8 straight or branched alkyl;

R_3 is hydrogen or lower alkoxy.

5,338,540

HAIR WAVING AND STRAIGHTENING COMPOSITION

G. Jae Lee, Trumbull, and Herbert Edelstein, Stratford, both of Conn., assignors to Conopco, Inc., Greenwich, Conn.

Continuation of Ser. No. 222,343, Jul. 20, 1988, abandoned, which is a continuation of Ser. No. 28,009, Mar. 18, 1987, abandoned, which is a continuation of Ser. No. 697,608, Feb. 4, 1985, abandoned. This application Feb. 9, 1990, Ser. No. 478,039

Int. Cl.[5] A61K *7/09*

U.S. Cl. 424—71 **15 Claims**

1. In a hair waving or straightening composition of matter consisting essentially of a sulfite and/or bisulfite system having pH in the range of 5.5 to 8.5, the improvement which comprises: including in said reducing system the combination of urea in an amount of 10 to 20% by weight and at least 0.07% by weight of at least one cationic polyquaternary compound having a conductivity, when measured at 0.1% by weight concentration, from 225 micro mhos to 25 micro mhos.

5,338,541

DUAL CATIONIC TERPOLYMERS PROVIDING SUPERIOR CONDITIONING PROPERTIES IN HAIR, SKIN AND NAIL CARE PRODUCTS

Gary F. Matz, Rosslyn Farms, and Craig Vaughan, Freedom, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 15, 1992, Ser. No. 961,574

Int. Cl.[5] A61K *7/11, 7/04*

U.S. Cl. 424—71 **8 Claims**

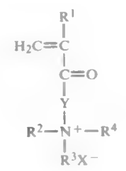
1. A composition for treating hair, skin and nails in which a cosmetically acceptable medium is used which contains from 0.1–10% by weight of a dual cationic terpolymer having a

weight average molecular weight of from about 10 thousand to 10 million, said terpolymer consisting essentially of:

(a) from at least 30 to as much as 75 weight percent of acrylamide (AM),

(b) from at least 25 to as much as 80 weight percent of the cationic monomer dimethyldiallylammonium chloride (DMDAAC), and

(c) from at least 5 to as much as 35 weight percent of a second cationic monomer of the formula:



where Y is —O—A— or —NH—A—, where A is ethyl or propyl; R^1 is H or CH_3; R^2, R^3 and R^4 are independently selected from H and $C_{1\text{-}12}$alkyl; and X^- is an anion.

5,338,542

DISULFIDE LINKED IMMUNOTOXINS WITH MOLECULAR GROUPINGS IN THE LINKER WHICH CAUSE STERIC HINDRANCE TO THE DISULFIDE LINKAGE

Philip E. Thorpe, London, England, assignor to ICRF (Patents) Limited, London, England

Continuation of Ser. No. 446,666, Dec. 6, 1989, which is a division of Ser. No. 90,386, Aug. 27, 1987, Pat. No. 4,880,935, which is a continuation of Ser. No. 884,641, Jul. 11, 1986, abandoned. This application Jun. 19, 1991, Ser. No. 716,762

Int. Cl.[5] A61K *39/44;* **C07K** *17/02, 15/28*

U.S. Cl. 424—180.1 **9 Claims**



1. In an immunotoxin comprising an antibody that recognizes a tumor associated antigen linked via a heterobifunctional agent of the disulphide type to a cytotoxin through a disulphide link, the improvement which comprises providing in the heterobifunctional agent a molecular grouping containing both a substituted methylene group and a phenylene group, the molecular grouping creating steric hinderance in relation to the disulphide link.

5,338,543

THIMEROSAL INACTIVATED MYCOPLASMA HYOPNEUMONIAE VACCINE

Gerald R. Fitzgerald, Earlham, and C. Joseph Welter, Des Moines, both of Iowa, assignors to Ambico, Inc., Dallas Center, Iowa

Continuation-in-part of Ser. No. 841,632, Feb. 27, 1992, abandoned. This application May 29, 1992, Ser. No. 889,911

Int. Cl.[5] A61K *39/02*

U.S. Cl. 424—264.1 **12 Claims**

1. A method for producing a *Mycoplasma hyopneumonia* vaccine comprising contacting live *Mycoplasma hyopneumonia* bacteria with an inactivating concentration of Thimerosal to inactivate the *Mycoplasma hyopneumonia* bacteria, and incorporating the inactivated bacteria into a pharmaceutically acceptable carrier to produce a *Mycoplasma hyopneumonia* vaccine.

2. The *Mycoplasma hyopneumoniae* vaccine produced by the process of claim 1.

5,338,544

CRYIIB PROTEIN, INSECTICIDAL COMPOSITIONS AND METHODS OF USE THEREOF

William P. Donovan, Levittown, Pa., assignor to Ecogen Inc., Del.

Continuation of Ser. No. 751,452, Aug. 28, 1991, abandoned, which is a division of Ser. No. 379,015, Jul. 11, 1989, Pat. No. 5,073,632, which is a continuation-in-part of Ser. No. 39,542, Apr. 16, 1987, abandoned. This application Feb. 26, 1993, Ser. No. 23,736

Int. Cl.[5] A01N *63/00, 37/18*

U.S. Cl. 424—93.2 **6 Claims**

1. A CryIIB protein which is insecticidal against lepidopteran insects, the protein having an amino acid sequence as shown in FIG. 6 at positions 874 to 2775.

5,338,545

CHEMICAL PREVENTION OR REVERSAL OF CATARACT BY PHASE SEPARATION INHIBITORS

John I. Clark, Seattle, Wash.; George M. Thurston, Belmont, and Xiao-Yan Li, Arlington, both of Mass., assignors to Oculon Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 840,058, Feb. 21, 1992, abandoned, and Ser. No. 451,955, Dec. 15, 1989, abandoned, said Ser. No. 840,058, is a continuation of Ser. No. 451,350, Dec. 15, 1989, Pat. No. 5,091,421, which is a continuation-in-part of Ser. No. 198,850, May 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 58,140, Jun. 4, 1987, abandoned, said Ser. No. 451,955, is a continuation-in-part of Ser. No. 198,850, Jun. 4, 1987. This application Apr. 13, 1992, Ser. No. 868,288

Int. Cl.[5] A61K *37/48*

U.S. Cl. 424—94.1 **2 Claims**

1. A method for preventing or inhibiting the formation of cataract in the lens of a living warm-blooded animal in need thereof, comprising administering to the animal a therapeutically or prophylactically effective mount of coenzyme A.

5,338,546

TISSUE PLASMINOGEN ACTIVATOR VARIANTS WITH DECREASED CLEARANCE

William F. Bennett, San Mateo; Bruce A. Keyt, Pacifica, and Mark J. Zoller, San Francisco, all of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 912,040, Jul. 9, 1992, Pat. No. 5,246,850, which is a continuation of Ser. No. 560,515, Jul. 31, 1990, abandoned. This application Mar. 16, 1993, Ser. No. 33,612

Int. Cl.[5] C12N *9/64, 15/00;* **A61K** *37/547*

U.S. Cl. 424—94.64 **17 Claims**

1. A human tissue plasminogen activator (t-PA) amino acid

VOL 1165 ISS 3 AG 16 1994 UMI

sequence variant having an alternation consisting essentially of the substitution of

a) a naturally occurring L-alpha-amino acid at at least one of amino acid positions **94** and **95**, or

b) alanine or glycine at each of amino acid positions **236**, **238**, and **240**, or

c) a naturally occurring L-alpha-amino acid at each of amino acid positions **94** and **95** in combination with either the substitution of either alamine or glycine at each of amino acid positions **236**, **238** and **240**, or with the substitution of alanine at each of amino acid positions **296**, **297**, **298** and **299**, or

d) a naturally occurring L-alpha amino acid at each of amino acid positions **94** and **95**, or alanine or glycine at each of amino acid positions **236**, **238** and **240** in combination with either the substitution of asparagine at amino acid position **103**, or with the substitution of glutamine at amino acid position **117** of wild-type human t-PA,

wherein each of amino acid positions **236**, **238** and **240** is substituted with the same amino acid, and wherein said variant is capable of converting plasminogen to plasmin and has a decreased clearance from the bloodstream as compared to wild-type human t-PA.

5,338,547

BOWMAN-BIRK INHIBITOR PRODUCT FOR USE AS AN ANTICARCINOGENESIS AGENT

Ann R. Kennedy, Wynnewood, Pa., and Bernard F. Szuhaj, Fort Wayne, Ind., assignors to Trustees of the Univ. of Pennsylvania, Philadelphia, Pa. and Central Soya, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 824,719, Jan. 17, 1992, Pat. No. 5,217,717, which is a continuation-in-part of Ser. No. 579,155, Sep. 6, 1990, abandoned. This application Nov. 2, 1992, Ser. No. 973,335

Int. Cl.[5] A61K *35/78, 47/00*

U.S. Cl. 424—195.1 **18 Claims**

1. A method for inhibiting carcinogenesis in an animal which is susceptible to cancer comprising:

(a) providing a Bowman-Birk inhibitor product produced by the steps consisting essentially of:

(i) providing soybean solubles produced from acidic aqueous-extracted hexane-defatted soybeans;

(ii) diluting the soybean solubles with an aqueous solution to form a slurry;

(iii) separating the aqueous soluble portion of the soybean solubles from the slurry to form a purified soybean soluble composition;

(iv) diluting the purified soybean soluble composition with an aqueous solution and ultrafiltering the aqueous soluble portion of the diluted purified soybean soluble composition at least once to form a crude Bowman-Birk inhibitor concentrate; and

(v) drying the crude Bowman-Birk inhibitor concentrate and recovering a Bowman-Birk inhibitor concentrate product; and

(b) administering the Bowman-Birk inhibitor concentrate product to an animal which is susceptible to cancer in an amount effective to inhibit carcinogenesis.

5,338,548

METHOD FOR INCREASING THE STORAGE STABILITY OF PHYSOSTIGMINE

Frank Kochinke, and Richard W. Baker, both of Fremont, Calif., assignors to Pharmetrix Corporation, Menlo Park, Calif.

Continuation of Ser. No. 487,546, Mar. 2, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 20,009

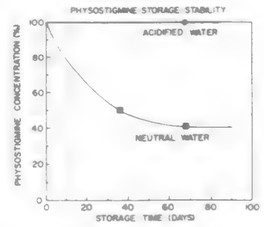
Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—449 **6 Claims**

1. A process for increasing the storage stability of physostigmine comprised of:

a. dissolving a polymer having a water absorption of less than 5 wt % at 100% relative humidity at 20° C. and physostigmine in a solvent to form a drug and polymer solution;

b. casting said drug and polymer solution to form a cast solution;



c. removing the solvent from said cast solution to form a matrix; and

d. recovering said matrix.

5,338,549

POWDERED PSYLLIUM DRINK MIX COMPOSITIONS CONTAINING ANTIOXIDANT

Lee A. Hord, Mason, and Robert E. Barron, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 21, 1992, Ser. No. 994,372

Int. Cl.[5] A61K *35/78, 9/14, 9/16, 31/725*

U.S. Cl. 424—439 **6 Claims**

1. A psyllium husk-containing powdered drink mix composition comprising:

(a) from about 20% to about 90% psyllium husk;

(b) from about 10% to about 80% powdered drink mix carrier material selected from the group consisting of water dispersible hydrolyzed starch oligosaccharide, monosaccharide, disaccharide, polyglucose, polymaltose and mixtures t hereof;

(c) from about 1 ppm to about 0.02% of a free radical scavenging antioxidant material selected from the group consisting of tert-buty-hydroquinone, propyl gallate, butylated hydroxytoluene, butylated hydroxyanisole, and mixtures thereof, said antioxidant material being in contact with the psyllium husk by coating the psyllium husk with a coating comprising some or all of the antioxidant material;

and wherein further said composition is in a powdered from mixable with a liquid to form a suspension of the psyllium husk.

5,338,550

STEREOISOMER THERAPY

David E. Edgren, El Granada; Gurdish K. Bhatti, Fremont, and Judy A. Magruder, Mountain View, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 694,173, May 1, 1991, Pat. No. 5,204,116. This application Dec. 21, 1992, Ser. No. 993,541

Int. Cl.[5] A61K *9/24*

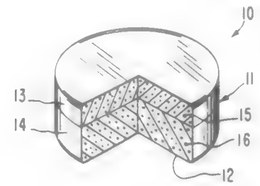
U.S. Cl. 424—473 **7 Claims**

1. A dosage form for delivering a drug to a patient in need of drug therapy, said dosage form comprising:

(a) a first layer comprising 0.10 ng to 500 mg of a stereoisomer drug and from 1 wt % to 99 wt % of a hydroxypropylcellulose ether;

(b) a second layer comprising 1 mg to 650 mg of a racemic drug and from 1 wt % to 99 wt % of a hydroxypropylmethylcellulose ether; and wherein,

(c) the first layer releases the stereoisomer drug over a period from immediate release up to 1 hour independently of



the second layer that releases the racemic drug over a period up to 24 hours.

5,338,551

POLYFUNCTIONAL AGROCHEMICAL BICARBONATE-CONTAINING COMPOSITIONS

M. Stephen Lajoie, 14 Launcelot La., Basking Ridge, N.J. 07926

Filed Jul. 2, 1992, Ser. No. 907,625

Int. Cl.[5] A01N *59/00, 25/12, 25/24, 25/32*

U.S. Cl. 424—717 **13 Claims**

1. A dry pulverulent composition which has a combination of ingredients comprising

(1) a particulated fungicidal ingredient wherein the average particle size diameter is in the range between about 10–600 microns; and (2) an inorganic salt ingredient selected from the group consisting of alkali metal bicarbonates, ammonium bicarbonate and mixtures thereof, which is adsorbed on the surface of the particulated fungicidal ingredient, in a fungicidally effective quantity between about 1–80 weight percent, based on the weight of said particulated fungicidal ingredient.

5,338,552

PROCESS FOR PRODUCING BREAD DOUGH

Hideo Nasu; Toshihiko Tezuka, and Seijiro Inoue, all of Inashiki, Japan, assignors to Kyowa Hakko Kogyo, Co., Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 916,131

Claims priority, application Japan, Nov. 30, 1990, 2-334658

Int. Cl.[5] A21D *2/06, 2/14*

U.S. Cl. 426—19 **3 Claims**

1. A process for producing bread dough which comprises kneading, for 3 to 15 minutes, 40 to 80 parts by weight of flour, 30 to 80 parts by weight of water, provided that the amount of water does not exceed that of flour, and a suitable amount of yeast, and adding an acid to the mixture for kneading to adjust the pH of the kneaded mixture to 4 to 5 as a first step; adding to the mixture immediately or after allowing the mixture to rest, such an amount of flour that the total amount thereof will reach 100 parts by weight; and adding a salt to adjust the pH of the dough to 5 to 6, followed by kneading as a second step.

5,338,553

PROCESS OF TREATING WATER CONTAINING EFFLUENT FROM CHEESE-MAKING OPERATIONS

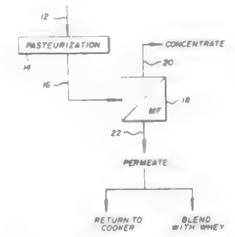
David A. Johnson, and Jeffrey D. Lorch, both of Hudson, Wis., assignors to Niro, A/S, Soeborg, Denmark

Filed Sep. 15, 1992, Ser. No. 944,786

Int. Cl.[5] A23C *9/12*

U.S. Cl. 426—36 **10 Claims**

1. A cheese-making process comprising treating a milk product so as to form curd and whey, separating the curd from the whey, contacting the curd with water at an elevated temperature in a cooking operation to form a water containing material including milk fats, separating the curd from a water-containing material including milk fats, subjecting the water-containing material including milk fats to microfiltration in a microfilter containing a ceramic membrane so as to produce a concentrate rich in said milk fats and a permeate, and recovering said concentrate and said permeate.



5,338,554

PROCESS FOR PRODUCING A SOLUBLE COCOA PRODUCT

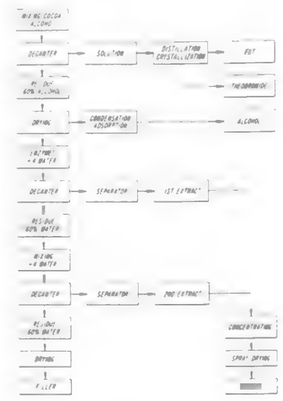
Siegfried Vogt, Lilienthal; Wolfgang Krempel, and Ute Assenmacher, both of Bremen, all of Fed. Rep. of Germany, assignors to Jacobs Suchard AG, Zurich, Switzerland

Continuation of Ser. No. 493,517, Mar. 14, 1990, abandoned. This application Mar. 31, 1992, Ser. No. 861,035

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1989, 3908649

Int. Cl.[5] A23F *5/00*

U.S. Cl. 426—45 **8 Claims**



1. A process for producing a soluble cocoa product which has reduced fat and theobromine contents comprising:

a) subjecting roasted cocoa powder to extraction with ethanol in the temperature range of between 60° C. and 80° C. so as to produce an extract containing fat and theobromine and a cocoa powder residue with reduced fat and theobromine contents;

b) separating the extract and the cocoa powder residue;

c) subjecting the cocoa powder residue to extraction with ethanol in the temperature range of between 60° C. and 80° C. so as to produce a further extract containing fat and theobromine and a cocoa powder residue with further reduced fat and theobromine contents;

d) separating the further extract and the cocoa powder residue;

e) mixing the cocoa powder residue from step d) with water

VOL 1165 ISS 3 AG 16 1994 UMI

and agitating the mixture in the temperature range of between 60° C. and 95° C. to produce an aqueous extract and cocoa powder residue;

f) separating the aqueous extract and the cocoa powder residue;

g) mixing the cocoa powder residue from step f) with water and agitating the mixture in the temperature range of between 60° C. and 95° C. to produce a further aqueous extract and cocoa powder residue; and

h) concentrating the aqueous extract.

5,338,555

PRODUCTION OF A BEVERAGE BASE OF COCOA-COATED SUGAR GRAINS

William G. Caly, Jougne, France, assignor to Nestec S.A., Vevey, Switzerland

Filed Mar. 5, 1992, Ser. No. 846,595

Claims priority, application European Pat. Off., Mar. 28, 1991, 91104934.4

Int. Cl.[5] **A23C** *9/156;* **A23G** *1/00*

U.S. Cl. 426—96 **7 Claims**

1. A process for preparing a beverage base consisting of the steps of moistening crystallized sugar grains having a mean diameter of from 250 μm to 500 μm to obtain moistened grains having a moisture content of from 5% to 12% by weight, mixing the moistened grains with at least one coating ingredient which comprises cocoa powder so that the at least one coating ingredient coats the grains to obtain coated grains, and then drying the coated grains.

5,338,556

HIGH INTENSITY MICROWAVE PUFFING OF THICK R-T-E CEREAL FLAKES

Edward C. Schwab, New Brighton; George E. Brown, Edina; Kristin L. Thomas, Rosemount, and Terry R. Harrington, Albertville, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 899,574, Jun. 18, 1992, Pat. No. 5,196,218, which is a continuation of Ser. No. 744,546, Aug. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 726,591, Jul. 8, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,505

Int. Cl.[5] **A23L** *1/00;* **A21D** *15/00*

U.S. Cl. 426—241 **54 Claims**

1. A method for expanding and tenderizing a flake R-T-E cereal base to improve its flavor and texture, comprising the step of:

A. providing untoasted, unexpanded R-T-E cereal flakes

1) having a moisture content ranging from about 8% to 20%, and

2) having a flake thickness of about 0.025 to 0.150 inch,

B. heating the untoasted R-T-E cereal flakes with a high intensity microwave field for a sufficient period of time to provide an expanded and tenderized finished flake R-T-E cereal having a moisture content of about 1% to 5% and an expansion ratio of at least 1.5,

wherein the microwave field has a field strength of about 125–350 V/cm.

5,338,557

MICROWAVE EXTRACTION OF VOLATILE OILS

J. R. Jocelyn Paré, Gloucester, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of the Environment, Ottawa, Canada

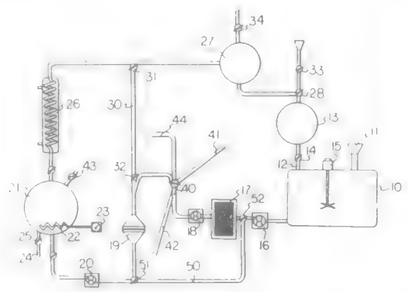
Continuation-in-part of Ser. No. 670,769, Mar. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 519,588, May 7, 1990, Pat. No. 5,002,784. This application Mar. 10, 1993, Ser. No. 29,358

Claims priority, application Canada, May 16, 1989, 600322

The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.

Int. Cl.[5] **A23L** *1/00*

U.S. Cl. 426—241 **12 Claims**



1. A process for extracting soluble products including volatile oils from biological material comprising:

(b) contacting the sub-divided material with a non-aqueous extractant which is transparent or partially transparent to microwave radiation;

(c) exposing the sub-divided material while in contact with sufficient extractant to enable extraction to occur, to a microwave energy source to effect differential heating between said biological material and said non-aqueous extractant to thereby express said volatile oils from said biological material and immediately cooling the expressed volatile oils from said biological material with said non-aqueous extractant to a temperature below the temperature at which the expressed volatile oils are extracted from the biological material; and

(d) separating the residual material from the extractant phase.

5,338,558

PROCESS FOR PREPARING STABILIZED, PARTIALLY-DEHYDRATED AROMATIC PLANT PRODUCTS

Thein Aung, and Charles V. Fulger, both of Cockeysville, Md., assignors to McCormick & Company, Inc., Sparks, Md.

Filed Dec. 9, 1992, Ser. No. 988,191

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

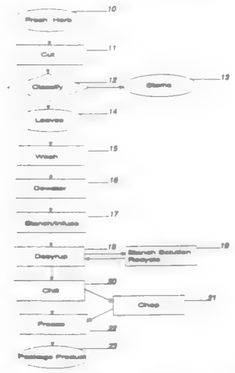
Int. Cl.[5] **A23L** *1/221;* **A23B** *7/08*

U.S. Cl. 426—327 **16 Claims**

1. A process for preparing a frozen herb product comprising:

a. introducing the herb into an infusion bath comprising 10 to 70% by weight of an osmotic agent at a temperature of at least about 180° F. for a time sufficient to reduce the water activity coefficient of the herb to below about 0.97 and cause infusion of the osmotic agent into the herb; and

b. subsequently freezing the infused herb.



5,338,559

METHOD AND APPARATUS FOR MAKING EXPANDED FOOD STUFFS

Heinz-Josef Schaaf, Otto-Hahn-Strasse, D-6277 Bad Camberg, Fed. Rep. of Germany

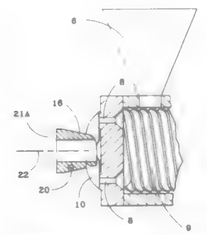
PCT No. PCT/EP92/01783, § 371 Date Apr. 9, 1993, § 102(e) Date Apr. 9, 1993, PCT Pub. No. WO93/03912, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 6, 1992, Ser. No. 39,094

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4127811

Int. Cl.[5] **A23P** *1/00;* **B26D** *5/00*

U.S. Cl. 426—448 **19 Claims**



15. Method of making expanded foodstuffs, said method comprising:

feeding an expandable mixture into an apparatus for making expanded foodstuffs;

extruding said expandable mixture, said step of extruding comprising the steps of moving and pressurizing said expandable mixture into a means for creating extrudate thereby creating, upon emergence of said moved and pressurized mixture, an extrudate from said expandable mixture;

generating a region of reduced pressure substantially proximate an emerging section of said means for creating extrudate; and

cutting said extrudate substantially upon emergence of said extrudate from said means for creating extrudate.

5,338,560

EDIBLE PLASTIC DISPERSION HAVING A RAPID GEL-SETTING STARCH

Leendert H. Wesdorp; Robert A. Madsen, both of Ellicott City, Md.; James Kasica, Whitehouse Station; Marie Kowblansky, Springfield, both of N.J., and Anthony Morrison, Bedford, Great Britain, assignors to Van den Bergh Foods Company, Division of Conopco, Inc., Lisle, Ill.

Continuation-in-part of Ser. No. 899,443, Jun. 16, 1992, Pat. No. 5,279,844. This application Nov. 13, 1992, Ser. No. 976,236

The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.

Int. Cl.[5] **A23L** *1/0522, 1/0532, 1/0526, 1/0562*

U.S. Cl. 426—573 **10 Claims**

1. An edible plastic dispersion not having a continuous fat phase, including at least two condensed phases, at least one of which is continuous which dispersion comprises:

(a) 0.1 to 99 wt. % of a first gel-forming composition containing 1–8 times the critical concentration of a gelling agent selected from the group consisting of gelatin, kappa-carrageenan, iota-carrageenan, alginate, agar, gellan, pectin, furcelleran, locust bean gum, xanthan gum, guar gum and mixtures thereof; and

(b) 1–99.9 wt. % of a second gel-forming composition containing 1–8 times the critical concentrations of a gelling starch having a rheological property in an aqueous dispersion characterized by a log one-half G'_{max} value at no more than about 7,250 seconds when prepared at a concentration to yield a log G''_{max} value of 5.0 at 11° C. at 15,000 seconds provided that the aqueous dispersion of the gelling starch is initially prepared at 0 to 40°.

5,338,561

WATER-CONTINUOUS EMULSIONS BASED ON POLYSACCHARIDES

Iain J. Campbell; Wayne G. Morley, both of Wellingborough, and Ian T. Norton, Rushden, all of Great Britain, assignors to Van Den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Feb. 25, 1993, Ser. No. 23,183

Claims priority, application European Pat. Off., Feb. 26, 1992, 92301629.9

Int. Cl.[5] **A23D** *7/00*

U.S. Cl. 426—602 **14 Claims**

1. A water-continuous fat emulsion comprising a fat phase comprising 1–60 wt % of the total composition;

an aqueous phase consisting of one or more gelling polysaccharide capable of forming a gel such that the aqueous phase at temperature T is fluid and has a shear modulus that is at least three times lower than a shear modulus of the gel obtained under quiescent conditions at the same temperature T,

the gelling polysaccharide being present as microgels with a mean equivalent diameter of less than 100 μm, and

the water-continuous fat emulsion displaying a spoonable rheology at 5° C. as follows:

a yield value of >50 Pa, when extrapolating from shear rates between 100 and 300 S^{-1},

a Bingham viscosity <500 mPa.s between shear rates of between 100 and 300 S^{-1},

a failure at stress at a strain of <0.5 Radians, and

a food component selected from a group consisting of a flavor, a salt, a colorant, an acid protein component, an emulsifier, a thickener and mixtures thereof.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,562

LOW FAT SPREAD AND PROCESS FOR MAKING SAME

William M. Humphreys, Isboej, Denmark, assignor to FMC Corporation, Philadelphia, Pa.

Filed Nov. 25, 1992, Ser. No. 981,649
Int. Cl.[5] A23D 9/04
U.S. Cl. 426—603 31 Claims

1. A spread comprising:
a low fat spread that is a water-in-oil emulsion having as ingredients in the following properties:
at least 56% water, as a disperse phase,
0.01–10 % of a microcrystalline cellulose/galactomannan coprocessed fat substitute having a mean particle size within the range of 8–35 microns,
an effective amount of stabilizer for the fat substitute,
0.1 to 2.0 % of a gum suitable for structuring the emulsion,
a continuous phase comprising no more than 28 weight percent oil, and
an effective amount of emulsifier suitable for maintaining a stable water-in-oil emulsion,
with all percentages being weight percentages being based on the total emulsion weight, and with the cumulative percentages of the ingredients being 100%.

5,338,563

PROCESS FOR THE PREPARATION OF A SPATTER-RESISTANT LOW-FAT SPREAD

Thomas L. Mikulka, Lake Hiawatha; Nicola T. Bennardo, South Plainfield; Steven D. Wienick, Lincoln Park, and Thomas M. Trainor, Sparta, all of N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Filed May 1, 1992, Ser. No. 877,560
Int. Cl.[5] A23D 7/00
U.S. Cl. 426—604 13 Claims

1. A process for preparing a spatter-resistant, stick-type emulsified spread having a fat content of less than 50%, comprising:
preparing a liquid fat phase comprising fat and an emulsifier effective for forming a water-in-oil emulsion;
preparing an aqueous phase comprising water, flavor, and a gelling agent;
agitating the aqueous phase and the fat phase together under conditions effective to form a water-in-oil emulsion;
cooling and agitating the emulsion under conditions effective to crystallize fat and at least partially gel the aqueous phase; then
admixing lecithin with the emulsion; and
forming the resulting cooled emulsion containing lecithin to form a spatter-resistant, stick-type spread.

5,338,564

FAT SUBSTITUTE COMPOSITIONS INCLUDING WAXES FOR A REDUCED LAXATIVE EFFECT

Richard S. Meyer, Federal Way, and Michael L. Campbell, Kent, both of Wash., assignors to Curtis-Burns, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 857,063, Mar. 24, 1992, which is a continuation-in-part of Ser. No. 677,553, Mar. 29, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 941,711
Int. Cl.[5] A23D 9/00
U.S. Cl. 426—612 14 Claims

1. A fat substitute food composition comprising fat ingredients and non-fat ingredients, wherein greater than 10% of the fat ingredients are replaced by a fat substitute composition comprising an edible, substantially non-digestible fat substitute material having a melting point of about 37° C. or less and a wax as an anti-laxative agent in an amount sufficient to reduce leakage of the non-digestible fat substitute material through the anal sphincter of a mammal, wherein the wax is selected from the group consisting of animal and insect waxes, vegetable waxes, mineral waxes, synthetic waxes, and mixtures thereof, wherein the fat substitute composition is incorporated into said non-fat ingredients of said food composition, by mixing the fat substitute composition into said non-fat ingredients or frying said non-fat ingredients in said fat substitute material at elevated temperature with adsorption of said fat substitute material to result in a calorie reduction.

5,338,565

METHOD OF FORMING A MEMBRANE, ESPECIALLY A LATEX MEMBRANE, HAVING A BIOCIDE BARRIER

Robin R. T. Shlenker, 2165 E. Alameda, Denver, Colo. 80209; Clive C. Solomons; Jerry D. Plunkett, both of Denver, Colo., and Clayton S. Smith, Golden, Colo., assignors to Robin R. T. Shlenker, Denver, Colo.

Continuation of Ser. No. 825,546, Jan. 24, 1992, Pat. No. 5,165,953, which is a continuation of Ser. No. 536,773, Jun. 12, 1990, Pat. No. 5,128,168, which is a continuation-in-part of Ser. No. 482,978, Feb. 22, 1990, Pat. No. 5,045,341, which is a continuation-in-part of Ser. No. 246,337, Sep. 19, 1988, Pat. No. 4,935,260, which is a continuation-in-part of Ser. No. 143,184, Jan. 13, 1988, Pat. No. 4,919,966, which is a continuation-in-part of Ser. No. 74,629, Jul. 17, 1987, Pat. No. 4,771,482. This application Nov. 16, 1992, Ser. No. 976,881
Int. Cl.[5] A01N 1/02
U.S. Cl. 427—2.25 24 Claims

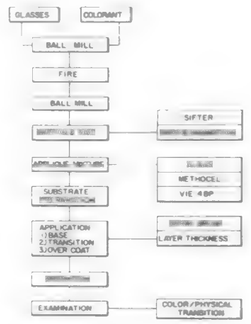
1. A method of making a material having a biocide barrier comprising the steps of:
applying a first coating of a liquid material selected from the group consisting of polymeric latex, a polymer dissolved in a solvent, and liquid polymers onto a former;
applying a coating of biocide over the first coating already on the former; and
applying a second coating of a liquid material selected from the group consisting of polymeric latex, a polymer dissolved in a solvent, and liquid polymers over the biocide and the first coating.

5,338,566

METHOD UTILIZING A CERAMIC FOR TEMPERATURE MEASUREMENT

Otto J. Gregory, Wakefield, R.I., and Joseph J. McCauley, III, West Haven, Conn., assignors to Avco Corporation, Providence, R.I.

Division of Ser. No. 461,252, Jan. 5, 1990, Pat. No. 5,135,795. This application May 28, 1992, Ser. No. 870,811
Int. Cl.[5] B05D 5/06
U.S. Cl. 427—8 10 Claims



1. A method of providing on the surface of a substrate a thermally responsive coating capable of at least one of visually and physically indicating an elevated temperature to which the substrate is subjected, said method comprising the steps of:
melting glass forming ceramic material substantially comprising SiO_2 to form a molten mass;
infusing into the molten mass material comprised of at least one colorant metallic oxide in an amount up to approximately 5% by weight of the molten mass;
quenching to the solid state the molten mixture composed of the ceramic material and the colorant metallic oxide;
crushing and classifying the solid state mixture into a powder comprised of particles in the size range of less than approximately 38 microns; and
applying the powder mixture to the surface of the substrate as a film.

5,338,567

PRINTED CIRCUITS AND BASE MATERIALS PRECATALYZED FOR METAL DEPOSITION

Thomas S. Kohm, Huntington, N.Y., assignor to AMP-AKZO Corporation, Newark, Del.

Continuation of Ser. No. 698,851, May 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 534,959, Jun. 8, 1990, abandoned. This application Nov. 20, 1992, Ser. No. 979,481
Int. Cl.[5] C23C 26/00
U.S. Cl. 427—98 8 Claims

1. In a method of manufacturing fully-additive printed wiring boards by electrolessly plating copper on precatalyzed base material, the base material containing a polymeric resin, woven glass cloth reinforcement and a palladium catalyzed clay filler to render the base material catalytic throughout for electrolessly depositing copper without an activation step, the improvement comprising:
providing in the polymeric resin a phenolic resin component and a silicate filler, said silicate filler being between 30 and 100 parts per hundred parts of the polymeric resin, and being present in an amount sufficient to initiate electroless copper deposition at least four times faster than initiation on precatalyzed base material without said silicate filler and phenolic resin.

5,338,568

ADDITIVE FOR TWO COMPONENT EPOXY RESIN COMPOSITIONS

Steven A. Lohnes, and Francis R. Crowne, both of Ontario, Canada, assignors to Cappar Ltd., Brampton, Canada

Continuation of Ser. No. 610,723, Nov. 7, 1990, abandoned, which is a division of Ser. No. 307,869, Feb. 8, 1989, abandoned. This application Nov. 5, 1992, Ser. No. 972,060
Int. Cl.[5] B32B 35/00; B05D 5/10
U.S. Cl. 427—136 20 Claims

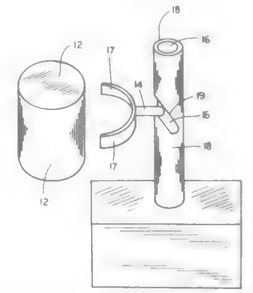
1. A method of filling cracks in cementitious substrates comprising applying to the area to be filled a composition comprising:
A) a resin component which comprises:
(a) from about 50% to about 99% by weight of a liquid epoxy resin having a molecular weight of from about 400 to about 1000 daltons which is the product of the reaction of C_{1-4} alkylidene-diphenol and an epihalohydrin,
(b) from 0 to about 20% by weight of a mono, di, or trifunctional glycidyl ether which is the reaction product of an aliphatic or aromatic polyether and an epihalohydrin,
(c) from 0 to about 30% by weight of a polyglycol diepoxide,
(d) from about 1 to about 10% by weight of a polyhydroxy compound selected from the group consisting of glycerine, ethylene glycol, diethylene glycol, and triethylene glycol; and
B) a hardener component which comprises:
(a) from about 60 to about 98% by weight of a curing agent having functional groups capable of effecting crosslinking of the oxirane groups present in said epoxy resin,
(b) from 0 to about 30% by weight of an accelerator,
(c) from about 2 to about 10% by weight of a trialkylsilane; wherein the weight ratio of resin component A) to hardener component B) is from about 2:1 to about 4:1.

5,338,569

PROCESS FOR COATING DOWELS WITH WATER SOLUBLE GLUE

J. Mel Hatch, 4850 S. Hidden Cove Cir., Murray, Utah 84123

Filed Apr. 14, 1993, Ser. No. 47,711
Int. Cl.[5] B05D 5/10, 7/06
U.S. Cl. 427—212 7 Claims



1. A method for coating dowels with a substantially uniform coat of water soluble glue, said method comprising the steps of placing a plurality of dowels and a preselected amount of liquid, water soluble glue in a closed container;
shaking the container such that the container moves in a combination oscillating motion comprising an up and down movement and a back and forth movement that is substantially perpendicular to the up and down movement, said container being shaken for a time sufficient to cover the dowels with a substantially uniform coat of the liquid, water soluble glue;
depositing the dowels coated with the liquid, water soluble glue on a drying surface;
applying heat and a stream of air to an exposed surface of the dowels on the drying surface;
when the exposed surface of the coat of water soluble glue on the dowels has become essentially tack free but before the coat has dried completely, dislodging the dowels from the drying surface such that the dowels are not adherent to the drying surface and forcing individual dowels to rotate about their longitudinal axis whereby any dowels that are stuck to each other will be separated into free individual dowels; and
continuing to dry the dowels until the dowels can be accumulated in a mass without sticking to each other.

5,338,570

METHOD FOR FINISHING WOOD SLATTED ARTICLES OF FURNITURE

Thomas E. Cressman, Quakertown, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 18, 1993, Ser. No. 18,958
Int. Cl.[5] B05D 3/12
U.S. Cl. 427—240 42 Claims

1. A method for finishing an article of wood furniture comprising the steps of:
dipping said article into a coating material for at least about 10 seconds;
removing said article from said coating material and draining said article for at least about 20 seconds; and
spinning said dipped and drained article for at least about 40 seconds at a rate of at least about 80 RPM's for evenly distributing said coating for finishing said article of furniture.

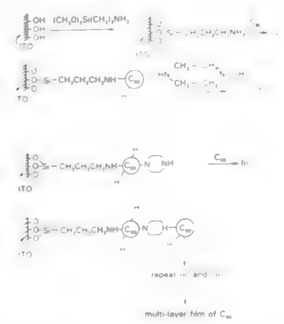
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,571

METHOD OF FORMING SELF-ASSEMBLED, MONO- AND MULTI-LAYER FULLERENE FILM AND COATED SUBSTRATES PRODUCED THEREBY

Chad A. Mirkin, Skokie; Kaimin Chen, Chicago, and W. Brett Caldwell, Glenview, all of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Feb. 10, 1993, Ser. No. 16,820
Int. Cl.[5] B05D *3/00*
U.S. Cl. 427—299 22 Claims



1. A method of forming a fullerene layer on a substrate, comprising chemically modifying a surface of the substrate to provide bond-forming species at the surface effective to covalently bond with fullerenes in solution, and contacting the treated substrate with a solution of fullerenes to form a fullerene layer covalently bonded to the chemically modified substrate surface.

5,338,572

INDUSTRIAL PROCEDURE FOR THE APPLICATION OF A P.T.F.E. FILM ON ALUMINUM SURFACES

Michele Montagna, Pesaro, Italy, assignor to Alluflon- S.p.A., Mondavio, Italy

Continuation of Ser. No. 969,424, Oct. 30, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 156,793
Int. Cl.[5] B05D *3/04*
U.S. Cl. 427—309 6 Claims

1. A procedure for the application of polytetrafluoroethylene film on aluminum surfaces comprising the following sequence of production phases:

a) degreasing the aluminum surfaces in an aqueous solution;
b) washing with water;
c) an optional rapid bath in a hydrochloric acid solution followed by rinsing in water;
d) drying;
e) applying the film on the aluminum surfaces by a rolling process through a set of four machines in which:

I) the mixture used in the first rolling machine consists of:

Product	80% by weight
thickening solution + coloring pigments	20% by weight

II) the mixture used in the second rolling machine consists of:

Product	50% by weight
polytetrafluoroethylene	25% by weight
thickening solution + coloring	25% by weight

-continued

pigments	

III) the mixture used in the third and fourth rolling machines is an aqueous solution of polytetrafluoroethylene and coloring pigments; whereby the product consists of the following components in the following percentages:

A) Polyamide-imide	35.714% by weight
B) dimethylaminoethanol	7.143% by weight
C) water	57.143% by weight

whereby the thickening solution in the mixture used in the first and second rolling machines consists of the following components in the following percentages:

D) isobutyl alcohol	11.4% by weight
E) dichloropropane hexane	9.5% by weight
F) alkylphenolethoxylate	79.1% by weight.

5,338,573

COMPOUND FOR COVERING A SUBSTRATE

Derek Davies, Clifton Hall, Clifton, Ashbourne, Derbyshire DE6 2GL/GB, Great Britain, and Kenneth Hughes, 25 Portland Drive, Nuneaton, Warwickshire CV10 9HZ/GB, Great Britain

PCT No. PCT/GB91/00106, § 371 Date Mar. 6, 1992, § 102(e) Date Mar. 6, 1992, PCT Pub. No. WO91/12218, PCT Pub. Date Aug. 22, 1991
PCT Filed Jan. 25, 1991, Ser. No. 838,437
Claims priority, application United Kingdom, Feb. 9, 1990, 9002942; Nov. 19, 1990, 9025064
Int. Cl.[5] B05D *1/00*; C04B *14/02*
U.S. Cl. 427—331 22 Claims

11. A process for producing a hard material from a dry cementitious mixture comprising a cement constituent and an aggregate constituent for producing a hard cementitious material, the relative proportions and grading of the constituents being such that (i) the bulk compacted volume of finer particles of both said constituents exceeds the volume of voids between compared coarser particles of the aggregate constituent as determined in the absence of the finer particles such that the coarser particles are suspended in and spaced apart by the finer particles so as to avoid segregation of the mixture, (ii) the ratio Rvc is 3 or less, and (iii) the ratio Rsv is 2 is more, wherein Rvc is the ratio of total volume of voids in the dry mixture when compacted to the absolute volume of the cement constituent, and Rsv is the ratio of total absolute volume of all constituents to total volume of voids in the dry mixture when compacted, the process including the steps of laying the dry mixture onto a substrate, sparingly applying water to the surface of the mixture to dampen a surface layer of the mixture for setting the cement in said surface layer, and subsequently applying more water for setting and hardening the cement below the surface layer.

5,338,574

METHOD FOR PRODUCING A PAINTED SILICONE ELASTOMER

Virginia K. O'Neil, and Andreas T. F. Wolf, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 30, 1993, Ser. No. 40,047
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—387 51 Claims

44. A method of producing a cured silicone elastomer with a surface coated with a hardened protective coating comprising

blending a room temperature vulcanizable silicone composition comprising a polydiorganosiloxane having condensable end groups, a moisture sensitive silicon-crosslinker, and a filler with a protective coating adhesion additive selected from the group consisting of a natural drying oil and a mixture of a natural drying oil and a metal dryer, to make a modified composition,

exposing the modified composition to moisture until a cured elastomeric surface is obtained and a homogeneous dull surface develops, thereafter

applying a protective coating composition selected from the group consisting of varnishes, lacquers, shellacs, and paints, hardenable at ambient conditions over at least a portion of the cured elastomeric surface where the protective coating composition wets the surface to which it is applied and produces an essentially flaw-free film, thereafter

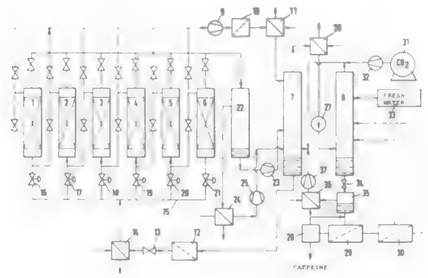
allowing the protective coating composition to harden producing a cohesive bond between the protective coating composition and the cured silicone elastomer.

5,338,575

PROCESS FOR THE QUASI-CONTINUOUS DECAFFEINATION OF RAW COFFEE

Hedi Ben-Nasr, Gelsenkirchen-Resse, and Hubert Coenen, Essen, both of Fed. Rep. of Germany, assignors to Kohlensäure-Werke Rud.Buse GmbH & Co., Bad Hönningen, Fed. Rep. of Germany

Continuation of Ser. No. 899,042, Jun. 16, 1992, abandoned, which is a continuation of Ser. No. 639,203, Jan. 9, 1991, abandoned. This application May 5, 1993, Ser. No. 57,014
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1990, 4000474
Int. Cl.[5] A23F *5/20*
U.S. Cl. 426—427 15 Claims



1. A process for decaffeinating raw coffee beans by selective extraction of caffeine contained therein by means of a solvent that is liquid under ambient conditions, comprising the steps of

(a) extracting the caffeine from the raw coffee beans for a period of between one to several hours by means of a liquid solvent that is comprised of water and that has been saturated with carbon dioxide at a temperature of between about 20° C. and 110° C. and at a pressure of between about 30 bar and 300 bar to provide a charged liquid solvent;
(b) abruptly or within a few minutes reducing the pressure to between about 1 bar and about 10 bar to expand the raw coffee beans;
(c) rinsing the expanded raw coffee beans in the liquid solvent for a period of between a few minutes to two hours;
(d) drying the expanded raw coffee beans to reduce the water content thereof to that required for a subsequent roasting process and provide decaffeinated and pre-dried raw coffee beans;
(e) roasting the decaffeinated and pre-dried raw coffee beans;
(f) selectively separating the caffeine from the charged liquid solvent in a separate succeeding cycle by means of supercritical CO_2 and recovering the caffeine in pure crystalline form; and
(g) reusing the decaffeinated pressurized solvent, to replace CO_2 losses occurring during caffeine extracting in step (a), as solvent for the extraction of caffeine and for rinsing.

5,338,576

SILICON CARBIDE SINTERED ARTICLE AND METHOD

Shigeru Hanzawa, Kagamihara, and Tsuneo Komiyama, Toki, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 21, 1992, Ser. No. 994,311
Claims priority, application Japan, Dec. 27, 1991, 3-345928; Dec. 15, 1992, 4-354033
Int. Cl.[5] C04B *35/56*; C01B *31/36*
U.S. Cl. 427—430.1 16 Claims

1. A silicon-carbide sintered article prepared by a process comprising the step of:

permeating molten silicon into a carbon compact having a plurality of domains consisting essentially of elemental carbon,

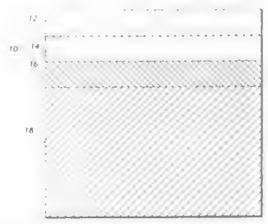
wherein Lc(002), which indicates a length of a domain in the direction perpendicular to a C(002) surface of elemental carbon in the carbon compact, is no greater than 1000 angstrom.

5,338,577

METAL WITH CERAMIC COATING AND METHOD

Jackie B. Burdette, II, Guyton, Ga., assignor to Kemira, Inc., Savannah, Ga.

Filed May 14, 1993, Ser. No. 62,066
Int. Cl.[5] B05D *1/08*
U.S. Cl. 427—453 9 Claims



1. A method for coating metal substrates with a multi-layer ceramic composition comprising the steps of:

a. applying at least one coating layer of stainless steel to the substrate;
b. applying at least one coating layer of a thermal shock-resistant ceramic coating over the stainless steel layer while maintaining the temperature of the coated substrate below about 700° F.
c. cooling the coated substrate to a temperature of below about 250° F.; and
d. applying at least one coating layer of an abrasion-resistant ceramic material over the thermal shock-resistant ceramic material while maintaining the temperature of the substrate below about 700° F.

VOL 1165 ISS 3 AUG 16 1994 UMI

5,338,578

METHOD FOR ACHIEVING A SMOOTH POWDER COATED FINISH ON A LOW DENSITY COMPRESSION-MOLDED PLASTIC ARTICLE

Burr L. Leach, Marion, Ind., assignor to GenCorp Inc., Fairlawn, Ohio

Filed Jan. 21, 1993, Ser. No. 6,564
Int. Cl.[5] B05D *1/06*
U.S. Cl. 427—470 13 Claims

1. A method of achieving a coated finish on a preselected major surface of a compression molded substrate having opposing major surfaces, said substrate comprising a vinyl ester or polyester resin including from about 75 to 130 parts by weight of a hollow filler per 100 parts by weight of said vinyl ester or polyester resin, wherein the method comprises the steps of:

heating said preselected surface to a temperature of from about 250° F. (121° C.) to about 350° F. (177° C.);

applying a layer of powder to said preselected heated surface, said powder comprising a thermosetting epoxy or polyester or acrylic powder; and

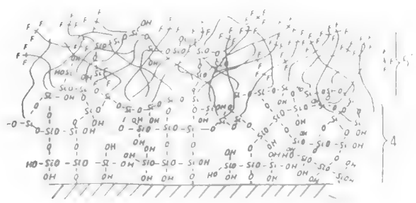
maintaining said heated surface at said temperature by the application of a directed heat only to said surface, and subsequently curing said powder to form said coating.

5,338,579

METHOD OF MANUFACTURING A CHEMICALLY ADSORBED FILM

Kazufumi Ogawa; Mamoru Soga; Shinji Ozaki, and Shigeo Ikuta, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 27, 1993, Ser. No. 68,533
Claims priority, application Japan, May 27, 1992, 4-135427
Int. Cl.[5] B05D *1/02*
U.S. Cl. 427—539 16 Claims



1. A method of manufacturing a chemically adsorbed film, comprising the steps of:

spray-coating a solution containing a chlorosilane-based or thiol-based chemical adsorbent on a substrate surface comprising active hydrogen groups in a dry atmosphere, wherein the chemical adsorbent comprises chlorosilyl or thiol groups at one end of the molecules and at least one group selected from the group consisting of a straight hydrocarbon, fluorocarbon and siloxane chain; and

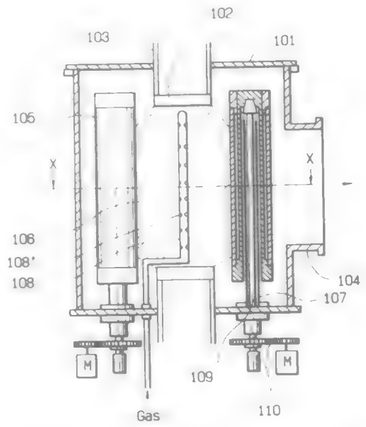
generating a condensation reaction between said active hydrogen groups on said substrate surface and said chlorosilyl or thiol groups of said chemical adsorbent and forming a chemically adsorbed film on said substrate surface via covalent bonds.

5,338,580

METHOD OF PREPARATION OF FUNCTIONAL DEPOSITED FILM BY MICROWAVE PLASMA CHEMICAL VAPOR DEPOSITION

Hiroyuki Katagiri, Shiga; Tetsuya Takei, and Toshiyasu Shirasuna, both of Nagahama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 707,297, May 29, 1991, abandoned, which is a continuation of Ser. No. 435,178, Nov. 13, 1989, abandoned. This application May 13, 1992, Ser. No. 884,286
Claims priority, application Japan, Nov. 15, 1988, 63-286733
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—575 6 Claims



1. A microwave plasma chemical vapor deposition process for forming a functional deposited film on each of a plurality of cylindrical substrates by means of a microwave plasma chemical vapor deposition conducted in a substantially enclosed film-forming chamber, said film-forming chamber comprising an outer wall having an end portion thereof hermetically provided with a microwave introducing window to which a waveguide extending from a microwave power source is connected, said film-forming chamber having a substantially cylindrical discharge space encircled by surfaces of said cylindrical substrates, each of said cylindrical substrates being supported by a substrate working means, said film-forming chamber being provided with means for evacuating the inside of said film-forming chamber, said process comprising:

(a) longitudinally disposing a gas feed pipe provided with a plurality of gas liberation holes at the center position of said discharge space such that said gas feed pipe is arranged substantially parallel to said cylindrical substrates and at a position situated in the range of 20% or less of the shortest distance between the apparent center of said discharge space and the substrate surfaces;

(b) radially supplying against the substrate surfaces a raw material gas through said plurality of gas liberation holes of said gas feed pipe while moving the surface of each of said cylindrical substrates by said substrate working means;

(c) maintaining the gaseous pressure of said discharge space at a value of 100 mTorr or less; and

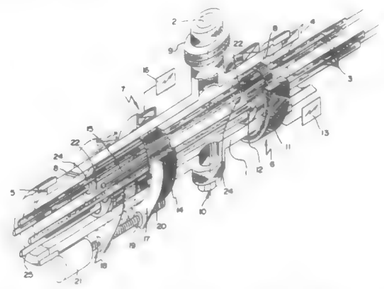
(d) applying into said discharge space microwave energy through said microwave introducing window to cause microwave glow discharge in said discharge space, whereby said functional deposited film is formed on the surface of each of said cylindrical substrates.

5,338,581

PROCESS AND APPARATUS FOR THE CONTINUOUS OR INTERMITTENT COATING OF OBJECTS IN A LIQUID MASS

Jose Delot, Sens, France, assignor to Delot Process, S.A., Trappes Cedex, France

PCT No. PCT/FR90/00405, § 371 Date Jan. 30, 1992, § 102(e) Date Jan. 30, 1992, PCT Pub. No. WO90/15166, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 8, 1990, Ser. No. 778,078
Claims priority, application France, Jun. 9, 1989, 89 07697; Aug. 29, 1989, 89 11344
The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—598 20 Claims



1. Apparatus for continuously or intermittently coating continuous or non-continuous objects with a liquid coating product, said apparatus comprising:

a housing comprising a tubular body composed of material permeable to magnetic fields and adapted to contain a liquid coating product, said housing having a longitudinal axis, an inlet end and an outlet end; and

at least one electromagnetic valve at each of said inlet end and said outlet end, comprising:

at least one multiphase field coil arranged around said tubular body to create a sliding magnetic field along the longitudinal axis of said tubular body, the sliding magnetic field capable of pushing back the liquid coating product within said tubular body; and

an elongated, magnetic core fixedly positioned in said tubular body along a central, longitudinal axis of said tubular body.

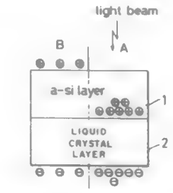
5,338,582

PHOTOCONDUCTOR COUPLED LIQUID CRYSTAL LIGHT VALVE

Takashi Hayakawa, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 849,527, Mar. 11, 1992, abandoned. This application Sep. 8, 1993, Ser. No. 118,093
Claims priority, application Japan, Mar. 12, 1991, 3-046806
Int. Cl.[5] G02F *1/1335*
U.S. Cl. 428—1 11 Claims

1. A photoconductor coupled liquid crystal light valve which comprises a pair of substrates opposite to each other, transparent electrodes arranged on each of the substrates, either one having a photoconductive layer and a carrier trapping layer formed over the transparent electrodes, a liquid crystal layer injected between the substrates and a voltage application means between the transparent electrodes, the carrier trapping layer having a dopant comprising an element selected from group IIIA or VA in an amount higher than present in the photoconductive layer, and the carrier trapping



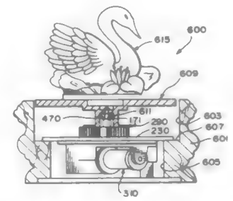
layer being located between the photoconductive layer and the liquid crystal layer.

5,338,583

DECORATIVE DISPLAY DEVICE

Jack Hou, Taipei, Taiwan, assignor to Giftec, Ltd., Alexandria, Va.

Continuation-in-part of Ser. No. 805,657, Dec. 12, 1991, Pat. No. 5,286,535. This application Aug. 11, 1993, Ser. No. 104,636
The portion of the term of this patent subsequent to Aug. 11, 2010, has been disclaimed.
Int. Cl.[5] G09F *19/00*
U.S. Cl. 428—7 7 Claims



1. A display device comprising:

a) a hollow base;

b) a drive mechanism and a drive shaft supported within the base, the drive shaft being drivingly connected to the drive mechanism;

c) a rotatable drive plate including an upper surface for supporting an ornament thereon, a bottom wall, a recess extending inwardly from the upper surface and terminating at the bottom wall, a socket extending downwardly from the bottom wall, and the drive shaft being engaged within the socket;

d) a fastening means disposed within the recess for securing the drive plate to the drive shaft; and

e) whereby actuation of the drive mechanism causes the drive shaft to rotate the drive plate and impart a corresponding rotation to the ornament.

5,338,584

ARTIFICIAL GRANITE SOLID MATERIAL

Yoshikazu Kubota, Fujinomiya; Masayasu Kamijo, Fuji; Hiroshi Otsu, and Takashi Kamiya, both of Aichi, all of Japan, assignors to Kohjin Co., Ltd., Tokyo and Aica Kogyo Co., Ltd., Aichi, both of Japan

Filed Nov. 2, 1990, Ser. No. 608,482
Int. Cl.[5] B44F *9/04*
U.S. Cl. 428—15 2 Claims

1. An artificial granite produced by impregnating a paper sheet having a granitic fleck pattern with a thermosetting resin to give a paper containing from 25 to 60% by weight of the resin on a dry basis, said paper comprising:

(A) form 20 to 80% by weight of cellulose pulp,

(B) from 2 to 40% by weight of an artificial fiber,

VOL 1165 ISS 3 AG 16 1994 UMI

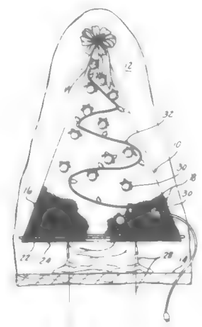
(C) from 10 to 70% by weight of an inorganic filler less than 10 μm in average diameter, and
(D) from 1 to 30% by weight of a fine-grained additive consisting of grains from 10 to 500 μm in average diameter, and having a color hue different from that of the inorganic filler (C), and
drying the resin-impregnated paper sheet and forming and hot-pressing a laminate comprising a plurality of the dried sheets.

5,338,585

ORNAMENTAL CHRISTMAS DISPLAY

Joan K. Fraus, 1898 Henrietta, Birmingham, Mich. 48009, and Pamela M. S. Smith, 29606 Moran, Farmington Hills, Mich. 48336

Filed Dec. 31, 1992, Ser. No. 999,220
Int. Cl.[5] A47G *33/06*
U.S. Cl. 428—18 **9 Claims**



1. An ornamental Christmas tree display comprising:
a backing sheet of a pliable material, in a generally triangular shape having an upper apex and a lower base edge;
said backing sheet formed with a pattern of closely spaced openings;
an array of garland segments interwoven into said openings in said pattern formed in said backing sheet to be attached to said backing sheet, all of said garland segments extending from side-to-side on said backing sheet parallel to said lower base edge;
said array of said garland segments densely covering one side of said backing sheet to create the impression of a Christmas tree; and,
a hanging element secured to said apex of said backing sheet to enable vertical hanging of said display,
said backing sheet and garland segments being able to be rolled up together without detaching said garland segments by rolling said backing sheet in the direction extending from said lower base edge to said upper apex.

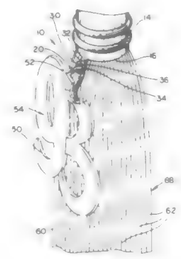
5,338,586

TASSEL TAG ORNAMENT ATTACHMENT ASSEMBLY

Bernard Chalfin, 50 Mayflower Dr., Tenafly, N.J. 07670

Filed Oct. 14, 1992, Ser. No. 961,118
Int. Cl.[5] B44C *3/00*; A44C *25/00*
U.S. Cl. 428—28 **16 Claims**

1. A tassel and ornament assembly, comprising:
a tassel adapted to hang in a vertical orientation along an axis;
a binding band, comprising:
a substantially cylindrical shell enclosing said tassel and having a lower lip; and
suspension ring means extending from said lower lip of said binding band and integral therewith, said suspension ring means occupying a first plane; and
an ornamental member adapted to hang in a vertical orientation and occupying a second plane, comprising hook



means extending from said ornamental member for receipt within said suspension ring means when said second plane of said ornamental member is substantially perpendicular to said first plane of said suspension ring means and is intersected by said axis of said tassel.

5,338,587

ELECTROGRAPHIC METHODS

Joseph Mammino, Penfield; Dennis Abramsohn, Pittsford; George J. Heeks, Rochester; Arnold W. Henry, Pittsford; Louis D. Fratangelo, Fairport; David H. Pan, Rochester, and Santokh S. Badesha, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 54,172, Apr. 30, 1993, abandoned. This application Dec. 30, 1993, Ser. No. 175,661
Int. Cl.[5] G05G *13/22*
U.S. Cl. 428—35.7 **10 Claims**

1. An electrographic imaging method comprising:
(a) providing an electroreceptor imaging member comprising: a supporting substrate, a conductive ground plane, an optional blocking barrier layer, an optional adhesive layer, and an outer charge retentive layer comprising a volume grafted elastomer which is a substantially uniform integral interpenetrating and crosslinked network of a hybrid composition comprising a polyorganosiloxane grafted fluoroelastomer;
(b) depositing a uniform electrostatic charge on the imaging member or discharging a receiving member to a low or uniform voltage;
(c) creating an electrostatic latent image by imagewise deposition of charged particles on the imaging member;
(d) developing the electrostatic latent image with electrostatically attractable marking particles to form a toner image using dry or liquid developer;
(e) transferring the toner image to the receiving member;
(f) optionally cleaning; and
(g) optionally repeating the charging, image writing, developing, transferring, and cleaning steps.

5,338,588

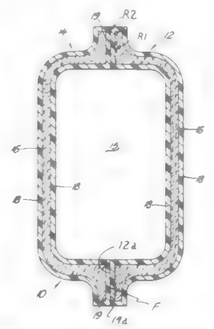
METHOD OF MAKING REINFORCED STRUCTURAL COMPOSITE ASSEMBLIES AND ASSEMBLY PRODUCED THEREBY

Charles R. Billiu, Mount Clemens, Mich., assignor to Ticom Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 732,618, Jul. 19, 1991, Pat. No. 5,173,142. This application Nov. 12, 1992, Ser. No. 974,418
Int. Cl.[5] B29D *22/00, 23/00*
U.S. Cl. 428—36.3 **26 Claims**

1. A method of making a hollow section fiber reinforced composite assembly, comprising the steps of:

a) forming a first rigid, fiber reinforced, EB-curable thermoplastic composite member,
b) forming a second rigid, fiber reinforced, EB-curable thermoplastic composite member,
c) providing EB-curable adhesive material at an interface formed by assembling the composite members,



d) fusion bonding the first and second fiber reinforced, thermoplastic members at spaced apart locations to form a hollow section, and
e) subjecting the fusion bonded hollow section to irradiation by electrons effective to cure the adhesive material and the fusion bonded first and second fiber reinforced, EB-curable thermoplastic members to a thermoset condition.

5,338,589

POLYETHYLENE MOLDING COMPOSITION

Ludwig Böhm, Hattersheim am Main; Hans-Frieder Enderle, Frankfurt am Main, and Horst Jarstrow, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 3, 1992, Ser. No. 893,322
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1991, 4118378
Int. Cl.[5] C08L *23/06, 23/08, 23/18*
U.S. Cl. 428—36.9 **15 Claims**

1. A polyethylene molding composition having a density (23° C.) of 0.930 to 0.940 g/cm^3, and a MFI 190/2.16 of 0.05 to 1.0 g/10 min, comprising 50 to 80% by weight of a HD polyethylene having a density (23° C.) of 0.940 to 0.960 g/cm^3, a MFI 190/2.16 of 0.01 to 0.5 g/10 min and a broad bimodal molecular mass distribution, wherein said HD polyethylene is produced by a two-stage polymerization process, said polymerization process having a first stage producing a first polymer, and a second stage producing an end polymer, wherein the polymer of the first stage has a viscosity number of 40 to 80 cm^3/g and the end polymer after the second stage has a viscosity number of 270 to 330 cm^3/g and 20 to 50% by weight of a linear polyethylene having a low density (23° C.) of 0.910 to 0.925 g/cm^3 and a MFI 190/2.16 of 0.5 to 2.0 g/10 min.

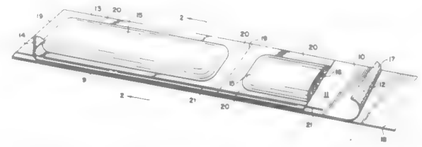
5,338,590

ENCAPSULATED LIQUID ADHESIVE CARRIER

Peter A. Rodriguez, 1785 Selva Marina Dr., Atlantic Beach, Fla. 32233

Filed Jun. 23, 1993, Ser. No. 81,556
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 **16 Claims**

1. A laminate carrier comprising an elongated base sheet having top and bottom surfaces, an elongated cover sheet sealed discontinuously to said top surface so as to provide separate small volumes filled with liquid adhesive between said cover sheet and said base sheet, an elongated layer of pressure-sensitive adhesive on said bottom surface, an elongated release film covering said pressure-sensitive adhesive layer, and an elongated substantially crush resistant element extending along



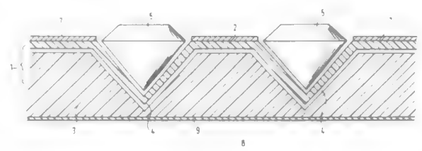
said base and cover sheets and being sealed therebetween adjacent said small volumes.

5,338,591

DECORATIVE ELEMENT HAVING A PLURALITY OF GEMS AND A METHOD FOR PRODUCING IT

Martin Pöll, Fritzens, Austria, assignor to D. Swarovski & Co., Wattens, Austria

Continuation of Ser. No. 827,379, Jan. 29, 1992, abandoned. This application May 21, 1993, Ser. No. 65,463
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1991, 4104337
Int. Cl.[5] B32B *3/16*
U.S. Cl. 428—67 **14 Claims**



1. A decorative element having a plurality of gems which are held in a carrier, characterized in that the carrier (1) comprises
a) an upper impressible layer (2),
b) a lower impressible layer (3), and
c) an irreversibly deformable layer (4) disposed between the layers (2, 3), the layers (2) (3) and (4) being adhesively interconnected, the gems (5) being pressed into the carrier (1) from above in an ornamental arrangement, and the irreversibly deformable layer (4) being a layer which assumes the form of the setting side of the gems (5) when the latter are pressed in.

5,338,592

PRODUCTION METHOD FOR COMPOSITE MOLDED ARTICLE

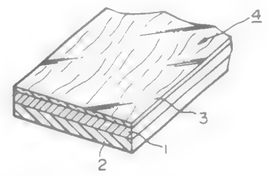
Hisayoshi Ohsumi; Takeshi Matsumoto; Shinji Kato; Mitsuo Ishizuka, and Shoichi Kaneko, all of Hamamatsu, Japan, assignors to Yamaha, Japan

Filed Sep. 8, 1992, Ser. No. 941,411
Claims priority, application Japan, Sep. 6, 1991, 3-227505
Int. Cl.[5] B32B *31/14*
U.S. Cl. 428—106 **20 Claims**

1. A production method for a composite molded article, the method comprising the steps of:
a) subjecting a front surface of a wooden overlay sheet, having a wooden material on the front surface thereof, to color treatment with a colorant including a resin-based primer;

VOL 1165 ISS 3 AG 16 1994 UMI

b) injection-molding a transparent resin layer onto the front surface of the color-treated wooden overlay sheet; and



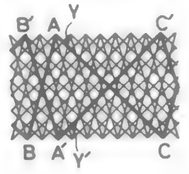
c) molding a synthetic resin core material onto the rear surface of the color-treated wooden overlay sheet.

5,338,593

MULTIAXIAL NONWOVEN FABRIC

Yasuo Sasaki, Houya; Haruhisa Tani, Tokorozawa; Yuuki Kuroiwa, Niiza, and Setsuya Tsuyama, Tokyo, all of Japan, assignors to Polymer Processing Research Institute Ltd., Japan

Division of Ser. No. 359,569, Jun. 1, 1989. This application Nov. 29, 1993, Ser. No. 158,892
Claims priority, application Japan, Jun. 6, 1989, 63-138888
Int. Cl.[5] B32B *5/12*
U.S. Cl. 428—110 4 Claims



1. A multiaxial nonwoven fabric comprising:
(a) a warp material; and
(b) a multiplicity of continuous yarns laid in tensioned, intersected relation by successive bending at a predetermined angle and on two opposite sides of the fabric corresponding to two widthwise ends of said warp material, thereby forming a yarn assembly in which each of said yarns is oriented to assume a scalene or right-angled triangle as determined by taking one vertex against the straight line between the two other vertices, and subsequently by adhesive bonding onto said warp material.

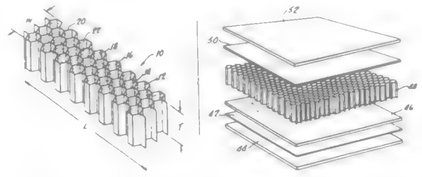
5,338,594

FOAM FILLED HONEYCOMB AND METHODS FOR THEIR PRODUCTION

Yen-Seine Wang, San Ramon; Frank Lee; Ching-Chi Kuo, both of Danville, and Ken Baron, San Ramon, all of Calif., assignors to Hexcel Corporation, Pleasanton, Calif.

Filed Feb. 7, 1992, Ser. No. 832,401
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—117 28 Claims

1. A high strength structural material having improved mechanical properties, said structural material comprising:
a cellular material comprising a plurality of open-ended cells arranged side-by-side defining a geometric shape;
said open-ended cells filled with polycyanurate foam wherein said cellular material containing the foam exhibits a compressive strength greater than that obtained by



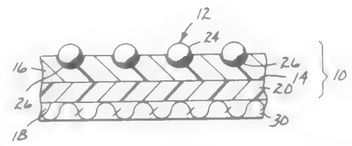
adding the compressive strength of said cellular material to the compressive strength of said foam.

5,338,595

LAUNDERABLE RETROREFLECTIVE APPLIQUE WITH METAL-AZO DYE

Wu-Shyong Li, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 697,653, May 8, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,331
Int. Cl.[5] G02B *5/128;* B32B *25/02*
U.S. Cl. 428—143 19 Claims



1. A retroreflective applique comprising a monolayer of retroreflective elements partially embedded in and protruding from the front surface of a binder layer wherein said binder layer contains between about 0.01 and about 2.0 weight percent of a black chromium-azo dye to camouflage the color of any exposed portions of said binder layer.

5,338,596

PROCESS FOR PRODUCING A LEAD STORAGE BATTERY WITH A THIXOTROPIC GEL ELECTROLYTE

Dieter Bechtold, Bad Vilbel, and Jürgen Vollbert, Hattersheim, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Dec. 24, 1992, Ser. No. 996,737
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202497
Int. Cl.[5] H01M *10/10*
U.S. Cl. 429—190 13 Claims

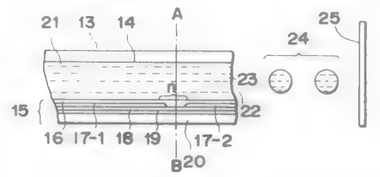
1. A process for filling a lead storage battery including a plurality of electrodes and a plurality of separators associated with the electrodes with a thixotropic gel electrolyte comprised of sulfuric acid and a gelling agent, comprising the steps of:
impregnating pores of the electrodes and pores of the separators with a first phase of the electrolyte which does not contain the gelling agent, in an amount which is sufficient to fill substantially all of the pores of the electrodes and substantially all of the pores of the separators only to an extent that a capillary-active pore system is able to retain the sulfuric acid containing no gelling agent, so that substantially no freely mobile electrolyte is present in the storage battery; and thereafter,
filling remaining electrolyte space within the storage battery with a second phase of the electrolyte which contains a gelling agent, so that the storage battery is filled to a normal level with the sulfuric acid containing the gelling agent.

5,338,597

RECORDING MEDIUM AND INK-JET RECORDING METHOD EMPLOYING THE SAME

Yutaka Kurabayashi, Yokohama; Mamoru Sakaki, Sagamihara, and Tomomi Kaneko, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1992, Ser. No. 818,766
Claims priority, application Japan, Jan. 14, 1991, 3-015979
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 8 Claims



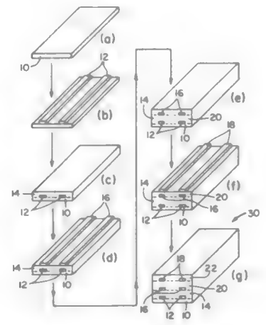
1. A recording medium comprising a substrate having an ink-receiving layer which contains basic magnesium carbonate, and a cationic surfactant and/or a nonionic surfactant,
wherein the recording medium contains said surfactant in a range of from 0.05 to 2.0% by weight based on said basic magnesium carbonate.

5,338,598

SINTERED INORGANIC COMPOSITES COMPRISING CO-SINTERED TAPE REINFORCEMENT

Thomas D. Ketcham, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Dec. 14, 1992, Ser. No. 991,633
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—210 12 Claims



1. A composite article comprising a sintered matrix composed of ceramic, glass or metal incorporating one or more co-sintered polycrystalline ceramic reinforcing members disposed within one or more reinforcement planes in the article, wherein:
the matrix is selected from the group consisting of (i) polycrystalline ceramics selected from zirconia, stabilized or partially stabilized zirconia, hafnia, alumina, β-alumina, β''-alimina, silica, titania, magnesia, mullite, spinel, chromium oxide, sialon, nasicon, silicon carbide, zirconium carbide, tungsten carbide, titanium carbide, silicon nitride, titanium nitride, aluminum nitride, titanium diboride, zircon, cordierite, forsterite, perovskites, pyrochlores, garnets, monticellite, and combinations thereof, (ii) alkaline earth aluminosilicate glasses, and (iii) sintered metals composed of platinum, platinum-rhodium, or steel alloys;
the reinforcing members comprise ceramic sheet or tape members having a width:thickness aspect ratio of at least about 3:1 and a thickness not exceeding about 250 micrometers;
the ratio of the total area of the reinforcing members in any reinforcement plane to the total area of the reinforcement plane does not exceed about 1:2; and
no reinforcement member occupies more than 25% of the area of any reinforcement plane.

5,338,599

VIBRATION-DAMPING STRUCTURAL COMPONENT

David J. Barrett, Erdenheim, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1991, Ser. No. 800,902
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—212 5 Claims

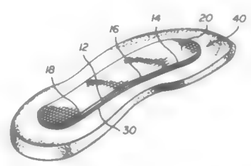
1. A laminated structural component with superior resistance to flexural vibrations, comprising:
a viscoelastic damping layer; and
two load-bearing layers bonded to said viscoelastic damping layer to sandwich said damping layer therebetween, each of said load-bearing layers comprising an outer stiffness sublayer and an inner compliant sublayer, said inner compliant sublayer being positioned between said outer stiffness sublayer and said viscoelastic damping layer, and said inner compliant sublayer having an extensional elastic modulus which is at least 25 percent less than that of said outer stiffness sublayer and at least ten times greater than that of said viscoelastic damping layer and having a shear elastic modulus which is at least ten times greater than that of said viscoelastic damping layer, and the thickness of said compliant sublayer being 15 to 30 percent of the thickness of one of said load-bearing layers.

5,338,600

COMPOSITE THERMOPLASTIC MATERIAL INCLUDING A COMPLIANT LAYER

Douglas R. Fitchmun, Woodland Hills, and Niran Perera, Simi Valley, both of Calif., assignors to Medical Materials Corporation, Camarillo, Calif.

Filed Aug. 19, 1991, Ser. No. 746,740
Int. Cl.[5] B32B *7/02, 27/00;* D03D *3/00*
U.S. Cl. 428—213 38 Claims



1. A thermoplastic thermoformable composite material for shaping into a complex form without rippling or buckling, including,
a core of a thermoplastic material,
layers of a fabric material respectively positioned at opposite sides of the core of the thermoplastic material,
additional layers of a thermoplastic material enveloping and impregnating the layers of the fabric material,
the core of the thermoplastic material being provided with a sufficient thickness to obtain a movement of the layers of the fabric material independently of each other during the

VOL 1165 ISS 3 AG 16 1994 UMI

shaping of the composite material into the complex form, and

a further layer of a thermoplastic material bonded to one of the additional layers of the thermoplastic material and having properties to enhance the abrasion resistance, and impact strength of the composite material.

5,338,601

POLYOLEFIN BARRIER FILMS FOR PREVENTING SOLVENT ATTACK ON PLASTIC RESINS

Jan Brands, Terneuzen; Henri J. M. Grünbauer, Oostburg, and Kees-Jeen van Duin, Terneuzen, all of Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 20, 1990, Ser. No. 630,671
Int. Cl.[5] B32B *3/26*
U.S. Cl. 428—319.7 **10 Claims**

1. An insulative cabinet wall structure for use in a thermally insulated apparatus which comprises:

a. an outer wall element;

b. an inner wall element comprising a styrene-based thermoplastic resin;

c. a foamed-in-situ polyurethane foam contiguous to said outer wall element and positioned between said outer wall element and said inner wall element; and

d. a barrier film interposed between said foamed-in-situ polyurethane foam and said inner wall element,

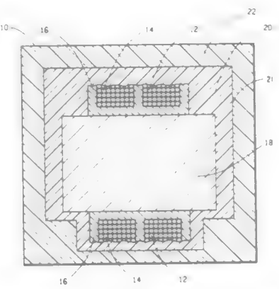
characterized in that the barrier film comprises a linear low density polyethylene (LLDPE) or a high density polyethylene (HDPE) resin.

5,338,602

ARTICLE OF MANUFACTURE

M. Lana Sheer, Chadds Ford, Pa., and John C. Solenberger, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 748,332, Aug. 21, 1991, Pat. No. 5,236,779, which is a continuation-in-part of Ser. No. 433,819, Nov. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 251,772, Oct. 3, 1988, abandoned. This application Apr. 30, 1993, Ser. No. 54,209
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—323 **2 Claims**



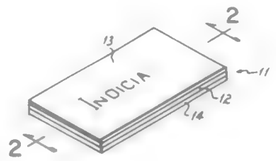
1. An improved article of manufacture comprising: an electrical device having electrically active components, said components being encapsulated with a first layer of an electrically insulating resin, and a second layer of a thermally conductive material forming the outer surface of said article, said second layer comprising an electrically insulating resin of the same composition as the first electrically insulating resin filled with up to 60 weight percent graphite particles with a particle size range of from 0.5 microns to 420 microns, said graphite particles being oriented within a plane of the resin and present in such an amount that adjacent graphite particles touch each other forming thermal conductive paths throughout the resin matrix providing improved thermal conductivity, there being a single phase interface formed between said first and second layer such that the layers appear as one at the interface.

5,338,603

ORNAMENTAL TRANSFER SPECIALLY ADAPTED FOR ADHERENCE TO NYLON

John E. Mahn, Sr., 6154 Oakhaven Dr., Cincinnati, Ohio 45238, and John E. Mahn, Jr., 5878 Valleyway Ct., Cincinnati, Ohio 45247

Continuation of Ser. No. 218,709, Jul. 13, 1988, abandoned. This application Jul. 2, 1990, Ser. No. 547,338
Int. Cl.[5] C09J *7/02, 167/02*
U.S. Cl. 428—349 **9 Claims**



1. An ornamental heat transfer comprising an upper indicia bearing layer bonded to a second layer, said second layer comprising thermosettable uncured linear saturated polyester in combination with a heat activated curing agent

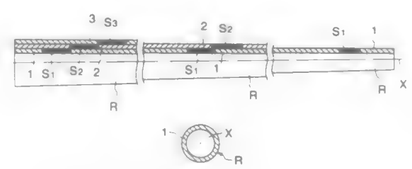
wherein said heat activated curing agent is a blocked isocyanate said transfer being heat bondable to a woven nylon having 150 warp and weave to form a bond.

5,338,604

FISHING ROD STOCK AND METHOD OF MANUFACTURING SAME

Toshihiko Yasui, Tondabayashi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Dec. 14, 1992, Ser. No. 989,818
Claims priority, application Japan, Dec. 18, 1991, 3-333776
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—36.3 **10 Claims**



1. Fishing rod stock comprising:

a first resin layer including a first reinforcing fiber and formed over an entire axial length of the fishing rod stock; and

a second resin layer including a second reinforcing fiber having a higher modulus of elasticity than the first reinforcing fiber of said first resin layer, and wound on a rearward portion of said fishing rod stock shorter than the entire length thereof, the second reinforcing fiber of said second resin layer progressively increasing in winding quantity toward a rear end of said fishing rod stock;

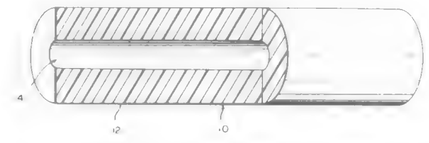
wherein only said first resin layer is formed at a tip end portion of the rod stock, whereas, at said rearward portion of the rod stock, said second resin layer is wound with progressively increasing winding quantity toward the rear end of the rod stock, such that the rod stock when flexed is free from marked local bending and also bends in an arcuate form toward said rear end thereof so as to distribute a bending force throughout the rod stock.

5,338,605

HOLLOW CARBON FIBERS

Robert L. Noland, Carson City, Nev., and Timothy D. O'Brien, Crofton, Md., assignors to Ketema, Inc., Odenton, Md.

Continuation-in-part of Ser. No. 476,050, Jan. 31, 1990, Pat. No. 5,298,313, and a continuation-in-part of Ser. No. 534,075, Jun. 6, 1990. This application Apr. 22, 1991, Ser. No. 688,410
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—398 **19 Claims**



1. An improved carbon reinforcement and insulation fiber formed from a hollow precursor fiber, said carbon fiber having a round cross-section and being hollow by the provision of a continuous hollow bore therethrough, said hollow carbon fiber having an equivalent or apparent specific gravity approximately 20–50% less than a solid carbon fiber of the said size formed of the same precursor material, the wall of said fiber being substantially non-porous.

9. An improved insulation and reinforcement carbon fiber formed from a hollow resinous precursor fiber, said carbon fiber being substantially non-porous and having a generally consistent circular cross-section and being hollow by the provision of a continuous bore therethrough from end to end, said fiber being generally continuously and uniformly hollow along its length, the cross-sectional area of said hollow bore being approximately 35%, plus or minus 10%, of the cross-section of said carbon fibers, wherein said hollow precursor fiber is spun while injecting a stream of gas at the center thereof to form said continuous hollow bore.

5,338,606

POLYESTER COMPOSITIONS

Alan W. White, Kingsport; Barry G. Pearcy, Church Hill; Marc A. Strand, and Joey C. Carico, both of Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 863,906, Apr. 6, 1992, abandoned, which is a division of Ser. No. 777,942, Oct. 17, 1991, Pat. No. 5,132,391, which is a continuation-in-part of Ser. No. 546,953, Jul. 2, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 88,956
Int. Cl.[5] B32B *15/08*
U.S. Cl. 428—458 **6 Claims**

1. A coated article comprising a metal, cellulose material or synthetic polymer having coated thereon a a polyester composition comprising a polyester containing:

A. dicarboxylic acid residues comprising at least 75 mole percent of terephthalic acid residues; and

B. diol residues consisting essentially of residues of (i) ethylene glycol and (ii) diethylene glycol wherein the mole ratio of (i):(ii) is about 9:1 to 1:1;

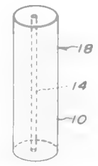
wherein the polyester has copolymerized therein or reacted therewith a phosphite residue.

5,338,607

1.3 MICROMETER-BAND AMPLIFYING OPTICAL FIBER PREFORM

Hiromi Kawamoto; Yoshinori Kubota; Natsuya Nishimura, and Akira Sakanoue, all of Ube, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jan. 19, 1993, Ser. No. 6,340
Claims priority, application Japan, Jan. 20, 1992, 4-007821
Int. Cl.[5] B32B *17/02*
U.S. Cl. 428—373 **4 Claims**



1. A 1.3 μm-band amplifying optical fiber preform having a core and a cladding, wherein the diametral ratio of cladding to core is 50:1 or more and the specific refractive index ratio of cladding to core is 3.5% or more, said preform comprising:

a core made from a fluoride glass which is doped with a rare earth; and

a cladding not having absorption at an amplification wavelength of 1.3 μm surrounding said core and being selected from the group consisting of oxide glasses and fluoroxide glasses.

5,338,608

AMORPHOUS COPOLYMERS OF TWO FLUORINATED RING MONOMERS

Paul R. Resnick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 65,044, May 24, 1993, which is a division of Ser. No. 878,481, May 5, 1992, Pat. No. 5,276,121. This application Nov. 9, 1993, Ser. No. 149,403
Int. Cl.[5] B05D *5/00;* **B32B** *17/02, 17/10, 33/00;* **G11B** *5/255, 5/72*
U.S. Cl. 428—392 **1 Claim**

1. A light-transmitting device selected from the group consisting of lenses, windows, optical filters, and prisms, said device carrying on at least one surface thereof a coating of an amorphous copolymer of 1–99.5 mole % of perfluoro(2,2-dimethyl-1,3-dioxole) with a complementary amount of 99–0.5 mole % of at least one other comonomer, said copolymer being selected from the group consisting of dipolymers with perfluoro(butenyl vinyl ether) and terpolymers with perfluoro(butenyl vinyl ether) and with a third comonomer, wherein the third comonomer can be (a) a perhaloolefin in which halogen is fluorine or chlorine, but at least one half of the halogen atoms must be fluorine, or (b) a perfluoro(alkyl vinyl ether); the amount of the third comonomer, when present, being at most 40 mole % of the total composition.

5,338,609

FRACTIONAL MELT FLOW RATE POLYMER POWDERS AND PROCESS FOR THEIR PREPARATION

Daniel J. Ondrus, West Chester, and Manfred Heimberg, Cincinnati, both of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Continuation of Ser. No. 784,862, Oct. 30, 1991, abandoned. This application May 21, 1993, Ser. No. 66,358
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—402 **20 Claims**

1. A microfine powder of a partially crosslinked olefin copolymer resin having a melt flow rate less than 1 and com-

VOL 1165 ISS 3 AG 16 1994 UMI

prised of from 80 to 99.75 weight percent C_{2-3} α-olefin and from 0.25 to 20 weight percent unsaturated alkoxysilane of the formula

$$R—Si(R^{\cdot})_n(Y)_{3-n}$$

where R is an ethylenically unsaturated hydrocarbon radical having from 2 to 6 carbon atoms, R˙is a hydrocarbon radical having from 1 to 10 carbon atoms, Y is an alkoxy group having from 1 to 4 carbon atoms and n is an integer from 0 to 2, characterized by having particles which are spherical or substantially spherical in shape with 80 percent or more of said particles ranging in size from 10 microns up to 200 microns.

5,338,610

GOLF BALL COMPOSITIONS

Michael J. Sullivan, Chicopee, Mass., assignor to Lisco, Inc., Tampa, Fla.

Continuation of Ser. No. 856,552, Mar. 24, 1992, Pat. No. 5,187,013, which is a continuation-in-part of Ser. No. 642,469, Jan. 17, 1991, Pat. No. 5,098,105, which is a continuation-in-part of Ser. No. 449,774, Dec. 13, 1989, Pat. No. 4,986,545. This application Feb. 12, 1993, Ser. No. 17,143

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] **A63B** *37/12*

U.S. Cl. 428—407 **3 Claims**

1. A golf ball comprising a core and a cover, wherein the cover is formed from a composition comprising from about 5 to about 50 parts by weight of a polar modified thermoplastic elastomer, wherein the polar modified thermoplastic elastomer is a copolymer of paramethylstyrene and isobutylene, and from about 95 to about 50 parts by weight of an ionomeric resin based on 100 parts by weight in the composition, wherein the ionomeric resin is an ionic copolymer of an olefin and a metal salt of an unsaturated carboxylic acid.

5,338,611

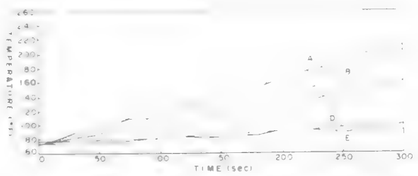
METHOD OF WELDING THERMOPLASTIC SUBSTRATES WITH MICROWAVE FREQUENCIES

Herbert J. Lause, Murrysville; Kristen L. Parks, Robinson Township, Indiana County; Larry D. Tanis, Kiskiminetas, and David D. Leon, Murrysville, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 20, 1990, Ser. No. 481,296

Int. Cl.[5] **B32B** *27/36*

U.S. Cl. 428—412 **19 Claims**



1. A method for welding substrates of a thermoplastic synthetic resinous material, comprising,

(a) interposing between said substrates, in contact with each, in a weld-zone in which a weld is to be made, a strip comprising a thermoplastic carrier polymer miscible with said material, said carrier having dispersed therein from about 1% to 20% by weight of submicron electrically conductive carbon black particles which are absorptive to microwave frequencies in the range from about 0.5 GHz to about 10 GHz, which have a surface resistivity less than 100 ohm-cm/cm, and a BET surface area of at least about 100 m^2/g, said substrates and strip forming an assembly;

(b) subjecting said assembly to an electromagnetic field having sufficient power in said frequency range to heat said assembly non-uniformly, the temperature diminishing from above the glass transition temperature T_g or melting point T_m of said material near said interface, to below said T_g or T_m outside said weld-zone; and,

(c) terminating exposure of said assembly to said field when said carrier vanishes by forming a single phase with said thermoplastic material of said substrates;

whereby said weld is made without substantial deformation of said substrates in said assembly.

14. A shaped article suitable for use as a structural vehicle component and consisting essentially of at least two sections of a fiber-reinforced material welded together by microwave energy in the frequency range from about 0.5 GHz to about 10 GHz, said article being formed by interposing between and in contact with said sections in a weld-zone, a strip having an average thickness in the range from about 5 to about 50 mils comprising a thermoplastic carrier polymer miscible with said material, said carrier having homogeneously dispersed therein from about 1% to 20% by weight of submicron electrically conductive carbon black particles which are absorptive to microwave frequencies in said range, which particles have a surface resistivity less than 100 ohm-cm/cm, a BET surface area of at least 100 m^2/g, and an average primary particle size smaller than about 100 nanometers, said strip functioning to position said carbon black particles in said weld-zone; subjecting said weld-zone to an electromagnetic field having sufficient power in said frequency range to heat said assembly non-uniformly, the temperature in said weld-zone diminishing from above the glass transition temperature T_g or melting point T_m of said material near said interface, to below said T_g or T_m outside said weld-zone; terminating exposure of said assembly to said field when said carrier vanishes by forming a single phase with the thermoplastic material in said weld-zone; and, cooling said weld-zone to form said article having essentially the same dimensions as that of said assembly.

5,338,612

THERMO-SENSITIVE TRANSFER RIBBON FOR FORMING DRY TYPE LETTERING SHEET

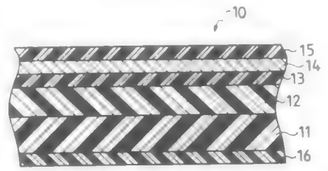
Takashi Kawaguchi, Nishikasugaigun, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 1, 1992, Ser. No. 983,635

Claims priority, application Japan, Dec. 3, 1991, 3-319050

Int. Cl.[5] **B41M** *5/26*

U.S. Cl. 428—412 **25 Claims**



1. A thermo-sensitive transfer ribbon for forming a dry type lettering sheet, comprising:

a film sheet having an upper surface and a back surface,

a pressure-sensitive adhesive layer formed on the upper surface of the film sheet, including a binder agent and a pressure-sensitive adhesive and having a viscosity, a thermo-sensitive adhesion, a hardness and a cohesion,

a first protecting layer formed on the pressure-sensitive adhesive layer, for protecting thereof,

a metallic layer deposited on the first protecting layer,

a transfer property control layer formed on the metallic layer, including a thermo-sensitive adhesive resin and a tackiness resin mixed with each other and having a viscosity, a thermo-sensitive adhesion, a hardness and a cohesion higher than those of the pressure-sensitive adhesive layer.

5,338,613

PHOTOCURABLE URETHANE ACRYLATE RESIN COMPOSITION WHICH IS WEATHER RESISTANT

Akio Tomotsugu, Osaka, and Keiji Hida, Ibaraki, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Apr. 9, 1992, Ser. No. 865,541

Claims priority, application Japan, Apr. 9, 1991, 3-104720

Int. Cl.[5] **B32B** *27/00, 27/40;* **C08G** *71/04*

U.S. Cl. 428—425.8 **7 Claims**

1. A photocurable resin composition comprising

(a) 10 to 90 parts by weight of a urethane acrylate resin which is a reaction product of

(A) a polyester having

(1) an alicyclic dicarboxylic acid component selected from the group consisting of hexahydrophthalic acid, 4-methylhexahydrophthalic acid and 1,4 -cyclohexane-dicarboxylic acid which accounts for 100 mole percent of the total acid component of the polyester, and

(2) an alcohol component selected from the group consisting of 3-(3-hydroxy-2,2-dimethylpropanoyloxy)-2,2-dimethylpropanol or a mixture thereof with at least one of 1,4-hexanediol, trimethylolpropane, pentaerythritol and dipentaerythritol, with

(B) either

(i) an aliphatic or alicyclic polyisocyanate and then with an active hydrogen compound containing a polymerizable unsaturated group or

(ii) a monofunctional isocyanate compound having a polymerizable unsaturated group;

(b) 90 to 10 parts by weight of an acrylic or methacrylic acid ester of a non-aromatic polyol as a non-aromatic crosslinking agent; and

(c) an amount of a photosensitizer effective to initiate a photopolymerization reaction between (a) and (b).

5,338,614

POLYOLEFIN-ACRYLIC BONDED COMPOSITES

Kenneth W. Bartz, Baytown; David J. Cherry, Dallas, and George D. Howell, Arlington, all of Tex., assignors to UV-TEC, Inc., Arlington, Tex.

Filed Dec. 22, 1992, Ser. No. 995,125

Int. Cl.[5] **B32B** *13/12*

U.S. Cl. 428—448 **11 Claims**

1. A bonded composite, comprising:

a crosslinked acrylic surface coated with a functional silane compound selected from the group consisting of γ-aminopropyltrialkoxysilane, γ-epoxypropyltrialkoxysilane, and γ-hydroxpropyltrialkoxysilane; and

a polyolefin layer having a surface containing a maleated functionality selected from the group consisting of a maleated polyolefin and a mixture of a maleated polyolefin and a polyolefin, wherein the functional silane compound bonds to the maleated functionality of the polyolefin surface layer and to the crosslinked, acrylic surface.

5,338,615

THIN GENUINE GOLD SIGN MAKING FILM

Charles E. Quick, and Jamie R. Quick, both of Middletown, N.Y., assignors to Signgold Corporation, Middletown, N.Y.

Continuation-in-part of Ser. No. 946,396, Sep. 17, 1992, Pat. No. 5,240,778. This application Apr. 28, 1993, Ser. No. 54,525

The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—457 **5 Claims**

1. A genuine gold film substrate layer sign making material which can be cut with a computer-aided sign making system for making signs, comprising:

a plurality of substrate layers, such that one of said layers is genuine gold; and

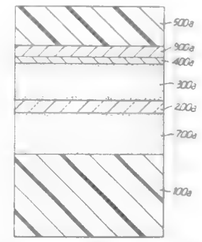
said sign making material compiling flexible film for leaving a desired symbol selected from the group consisting of letters or graphics durably fixed in position upon a sign; and wherein

said plurality of layers comprises a transparent cover layer for viewing the genuine gold layer in the completed sign; and wherein

said genuine gold layer is vapor deposited; and

said genuine gold layer is from about 100 to about 300 angstroms thick; and wherein

said plurality of layers further includes an opaque layer for visually contrasting with said genuine gold layer and for setting off said genuine gold layer in bold, easily viewed relief; and wherein



said opaque layer is disposed within said plurality of layers such that, in the completed sign, said opaque layer is disposed behind said genuine gold layer with respect to a viewer's line of sight; and wherein

said opaque layer is comprised of metal and wherein said metal opaque layer is vapor deposited; and wherein

said metal opaque vapor deposited layer is from about 300 angstroms in thickness to about 1200 angstroms in thicknesses; and wherein

the plurality of layers is bonded upon one another in a multi-layered structure, further

wherein said plurality of substrate layers is less than 6.5 mils in thickness.

5,338,616

FAR-INFRARED EMITTER OF HIGH EMISSIVITY AND CORROSION RESISTANCE AND METHOD FOR THE PREPARATION THEREOF

Kazuhide Ishii; Tatsuo Kawasaki, both of Chiba; Noriyuki Kuriyama, Hyogo; Shoji Dohi, Osaka; Akio Nakashiba, Osaka, and Souhei Miyazaki, Osaka, all of Japan, assignors to Kawasaki Steel Corporation, Kyogo and Osaka Gas Co., Ltd., Osaka, both of Japan

Continuation of Ser. No. 371,083, Jun. 26, 1989, abandoned. This application Apr. 8, 1993, Ser. No. 47,613

Claims priority, application Japan, Jul. 26, 1988, 63-184630; Jul. 26, 1988, 63-184631

Int. Cl.[5] **C22C** *38/22*

U.S. Cl. 428—472 **7 Claims**

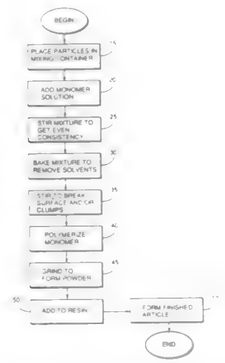


1. A method of improving the corrosion resistance of far-infrared emitter comprising a body made from a stainless steel comprising from 20% to 35% by weight of chromium and a chromium oxide layer formed on the stainless steel body by high temperature oxidation treatment with a thickness corresponding to a weight of at least 0.2 mg/cm^2, wherein the method comprises including in the stainless steel from 0.5 to 5.0% by weight of molybdenum, up to 3.0% by weight of

VOL 1165 ISS 3 AG 16 1994 UMI

manganese, and up to 3.0% by weight of silicon, the balance being iron and unavoidable impurities.

5,338,617
RADIO FREQUENCY ABSORBING SHIELD AND METHOD
David M. Workinger, Mesa, and Robert D. Fraser, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 30, 1992, Ser. No. 983,210
Int. Cl.[5] B22F *3/00, 5/00;* **H01Q** *17/00*
U.S. Cl. 428—551 **20 Claims**



1. A method for preparing a plastic containing insulating metal powder particles, said method comprising steps of:
placing the metal powder particles in a mixing container;
adding a solution comprising a monomer dissolved in a solvent to the metal powder particles to form a mixture;
stirring the mixture to provide an even consistency;
baking the mixture to remove solvents;
stirring the mixture to break the surface of the mixture;
polymerizing the monomer;
grinding the mixture to form a powder; and
including the powder in a plastic matrix.

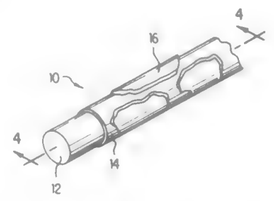
5,338,618
ELECTRIC CONTACT MATERIAL AND ELECTRIC CONTACT USING SAID MATERIAL
Satoshi Suzuki; Nobuyuki Shibata, both of Nikko; Ryotomo Shirakawa, Imaichi, and Akira Matsuda, Kiyotaki, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Mabuchi Motor Kabushiki Kaisha, Matsudo, both of Japan
Division of Ser. No. 556,825, Jul. 23, 1990, Pat. No. 5,171,643. This application Sep. 25, 1992, Ser. No. 951,587
Claims priority, application Japan, Aug. 2, 1989, 1-200860; Aug. 2, 1989, 1-200861
Int. Cl.[5] C22C *5/06;* **H01H** *1/02*
U.S. Cl. 428—614 **9 Claims**

1. An electric contact material consisting essentially of
(a) lithium oxide of 0.01 to 2.0% by weight when represented in terms of Li;
(b) an oxide of at least one rare earth element of 0.05 to 0.10% by weight when represented in terms of the rare earth element; and
(c) the remainder being Ag or a Ag alloy.

5,338,619
COPPER FOIL FOR PRINTED CIRCUITS AND METHOD OF PRODUCING SAME
Katsuhito Fukuda, Kyoto; Masato Takami, Uji; Hirokazu Hasegawa, Kyoto; Chiaki Nakajima, Shiga, and Kenji Isihara, Kyoto, all of Japan, assignors to Fukuda Metal Foil and Powder Co., Ltd., Kyoto, Japan
Filed Aug. 4, 1992, Ser. No. 924,527
Int. Cl.[5] B32B *15/20*
U.S. Cl. 428—623 **4 Claims**

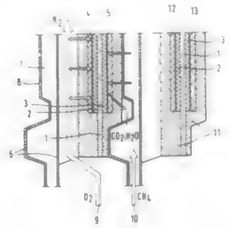
1. A copper foil for printed circuits having a heat-discoloration and a rust-preventive resistant coat on a shiny side thereof, comprising:
a first layer of a zinc composition comprising zinc and an oxide of chromium formed on the shiny side of said copper foil, and
a second layer comprising a silane coupling agent containing 0.01–20 mg/m^2 of Si and a phosphorous compound with 0.01–20 mg/m^2 of phosphorous formed on the first layer.

5,338,620
METAL WIRE WITH A LAYER OF COATING FOR REINFORCING ARTICLES MADE OF ELASTOMERIC MATERIALS, AND ARTICLES MADE OF ELASTOMERIC MATERIALS REINFORCED WITH THE SAID WIRE
Wim J. Van Ooij, Farfield, Ohio, and Jayaramachandran Giridhar, Namakkal, India, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy
Filed Sep. 9, 1992, Ser. No. 942,263
Claims priority, application Italy, Sep. 9, 1991, MI91 A 002376
Int. Cl.[5] B32B *15/06;* **B60C** *9/00*
U.S. Cl. 428—625 **13 Claims**



1. A metal wire for reinforcement of articles made of elastomeric material, provided with a coating which comprises two concentric layers arranged radially one on top of the other, said layers made of an alloy selected from the group consisting of a zinc-cobalt alloy and zinc-nickel alloy, the alloy from which the radially inner layer of the coating is made is a zinc-cobalt alloy and it has a zinc content of from 95% to 98% and a cobalt content of less than 5% and the alloy from which the radially outer layer of the coating is made has a nickel or cobalt content of from 50% to 90%.

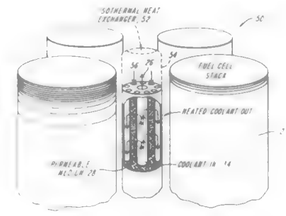
5,338,621
APPARATUS FOR CONVERTING CHEMICAL ENERGY OF FUEL INTO ELECTRICAL ENERGY WITH A PLURALITY OF HIGH-TEMPERATURE FUEL CELLS
Ulf Bossel, Baldeggstrasse 13, CH-5400 Baden, Switzerland
PCT No. PCT/EP92/00384, § 371 Date Mar. 9, 1992, § 102(e) Date Mar. 9, 1992, PCT Pub. No. WO92/16029, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 24, 1992, Ser. No. 941,045
Claims priority, application Switzerland, Mar. 5, 1991, 00654/91
Int. Cl.[5] H01M *8/24, 2/00*
U.S. Cl. 429—18 **10 Claims**



1. An apparatus for converting chemical energy of a fuel into electrical energy, the apparatus comprising:
a plurality of high-temperature fuel cells arranged parallel to each other and having each:
a solid electrolyte,
an oxygen electrode comprising Mn oxides doped with SrO and having a Cr surface layer, and
a fuel electrode comprising Ni/ZrO_2 cermet and having a Ni surface layer;
a non-conductive separating plate formed as a double shell hollow body and arranged between each two adjacent fuels cells for separating oxygen environment of said oxygen electrode of one of the two adjacent fuel cells from a fuel gas environment of said fuel electrode of another of the two adjacent fuel cells, and for supplying gaseous media to the fuel cell and for carrying off the gaseous media form the fuel cell;
current collectors which are adjacent respective said oxygen electrode and said fuel electrode for electrically connecting adjacent fuel cells; and
a non-conductive highly elastic gas-permeable constructional element located between the separating plate and a respective current collector for pressing the respective current collector to a respective one of the fuel and oxygen electrodes substantially along an entire surface of the respective current collector.

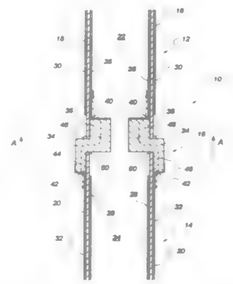
5,338,622
THERMAL CONTROL APPARATUS
Michael S. Hsu, Lincoln, and Ethan D. Hoag, East Boston, both of Mass., assignors to Ztek Corporation, Waltham, Mass.
Filed Apr. 12, 1993, Ser. No. 45,996
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—26 **44 Claims**

1. An energy system comprising:
an electrochemical converter operating as a heat source; and
a thermal control apparatus thermally integrated with said electrochemical converter having an isothermal surface temperature, said apparatus including
a gas-permeable, thermally conductive medium;
means for establishing a thermal gradient in said medium, said thermal gradient being generally normal to an isothermal boundary defined at one surface of said medium; and



means for generating a flow of a working fluid through said medium, said flow being generally along the direction of said thermal gradient.

5,338,623
SERIES TUBULAR DESIGN FOR SOLID ELECTROLYTE OXYGEN PUMP
Jesse A. Nachlas; Dale M. Taylor, both of Salt Lake City, and Merrill A. Wilson, West Jordan, all of Utah, assignors to Ceramatec, Inc., Salt Lake City, Utah
Filed Feb. 28, 1992, Ser. No. 843,303
Int. Cl.[5] H01M *8/12*
U.S. Cl. 429—31 **29 Claims**



1. An electrochemical solid-state device for transporting ions through a ceramic electrolyte comprising: a plurality of individual electrolytic cells, each said cell
having an ion conducting electrolyte having a first surface and a second surface, an anode formed to said first surface, a cathode formed to said second surface and opposing ends, wherein each said electrolytic cell has the anode formed on the same surface;
conductive interconnecting structure positioned between an end of one electrolytic cell and an end of an adjacent electrolytic cell providing a pathway for movement of electrons between the anode of said one electrolytic cell and the cathode of said adjacent electrolytic cell; and
sealing means for sealing said electrolytic cells to said interconnecting structure to provide a gas-tight seal therebetween, said sealing means being positioned relative to said conductive interconnecting structure to be spaced from said pathway for movement of electrons.

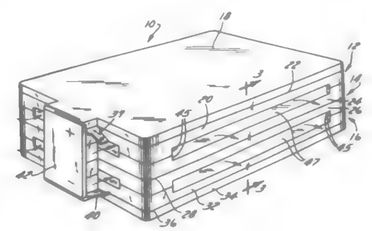
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,624

THERMAL MANAGEMENT OF RECHARGEABLE BATTERIES

Robert G. Gruenstern, Muskego; Ronald J. Bast, Greendale, both of Wis.; Julio A. Aldecoa, Santa Cruz, and Lawrence F. Miller, Santa Clara, both of Calif., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Feb. 8, 1993, Ser. No. 14,804
Int. Cl.[5] H01M *2/02*
U.S. Cl. 429—120 11 Claims



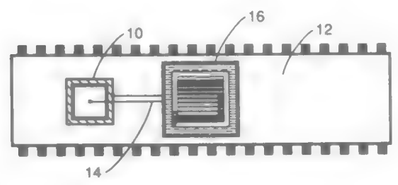
1. A battery including a plurality of cells, each cell including casings containing electrode components, said cells being joined to one another to form a battery stack, and projections on at least some of the casings to space one casing from an adjoining casing and providing an air space for heat dissipation between at least two adjacent cells.

5,338,625

THIN FILM BATTERY AND METHOD FOR MAKING SAME

John B. Bates, Oak Ridge; Nancy J. Dudney, Knoxville; Greg R. Gruzalski, Oak Ridge, and Christopher F. Luck, Knoxville, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Jul. 29, 1992, Ser. No. 921,538
Int. Cl.[5] H01M *6/18*
U.S. Cl. 429—193 6 Claims



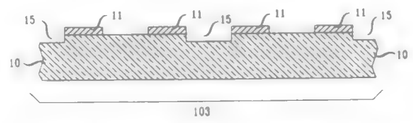
1. A thin-film electrochemical cell comprising:
a) a substrate;
b) a first and a second electrically conductive film deposited on the surface of said substrate, said first and second films separated horizontally and said first film larger than said second film;
c) a third film of electrically conductive material deposited over said first film;
d) a fourth film of an electrolyte overlapping said third film to extend upon said first film and to partially extend upon said substrate separating said first and second films, said electrolyte having the composition Li_xPO_yNz where x has an approximate value of 2.8, $2y=3z$ has an approximate value of 7.8 and z has a value between 0.16 and 0.46; and
e) a fifth film of electrically conductive and chemically active material deposited over the remainder of said substrate separating said first and second films and over substantially all of said second and said fourth films, said fifth film being electrochemically stable in contact with said fourth film.

5,338,626

FABRICATION OF PHASE-SHIFTING LITHOGRAPHIC MASKS

Joseph G. Garofalo, South Orange, N.J.; Robert L. Kostelak, Jr., Morris Plains; Christophe Pierrat, and Sheila Vaidya, both of Watchung, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 797,495, Nov. 22, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 982,270
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 13 Claims



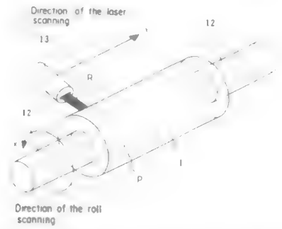
1. A method of making a phase-shifting mask including the steps of:
(a) providing a body comprising a patterned opaque layer located on a top major surface of an optically transparent substrate, and a resist layer located on the top surface of the body, the resist layer being negative tone with respect to first actinic radiation and positive tone with respect to second actinic radiation, the negative tone of the first actinic radiation dominating over the positive tone of the second actinic radiation, and the patterned opaque layer comprising at least first, second, and third successive portions that define a first gap region located and extending between the first and second portions and a second gap region located and extending between the second and third portions;
(b) directing a patterned beam of the first actinic radiation onto the top major surface of the resist layer, the patterned beam of the first actinic radiation filling the first gap region but being absent everywhere in the second gap region, and the patterned beam having edges that do not coincide with edges of the patterned opaque layer;
(c) directing a flood beam of the second actinic radiation onto a bottom major surface of the substrate, the substrate being transparent with respect to the second actinic radiation, and the patterned opaque layer being opaque with respect to the second actinic radiation, whereby the flood beam is incident in those regions of the resist layer which do not overlie the patterned opaque layer;
(d) developing the resist layer, whereby the resist layer is removed in, and only in, those regions where the flood beam of the second actinic radiation was incident in the absence of the patterned beam's having been incident, and whereby other regions of the resist layer, including those regions that overlie the opaque layer and those regions that were exposed to the first actinic radiation, remain in place and form a patterned resist layer; and
(e) subjecting the top surfaces of the patterned resist layer and of the body to anisotropic etching, whereby those portions of the transparent substrate that are not covered by the patterned resist layer are removed to a prescribed depth in the substrate.

5,338,627

METHOD FOR MANUFACTURING ROTARY SCREEN

Tatsuo Shigeta, Chiba, Japan, assignor to Think Laboratory Co., Ltd., Chiba, Japan

Filed May 22, 1992, Ser. No. 887,094
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—6 5 Claims



1. A method of manufacturing rotary screens comprising the steps of:
supporting a roll coated with a high-sensitivity photosensitive film at both ends and rotating said roll at a predetermined speed;
scanning a multiple number of laser beams arranged in a prescribed manner in the lengthwise direction of said roll while said laser beams are driven by electronic data which is preset so that desired halftone points of negative halftone image are exposed on said roll;
developing said roll in which said negative halftone image is exposed;
nickel plating said developed roll so that a surrounding area of said halftone points are filled with nickel; and
removing a rotary halftone screen made of nickel from said plate roll.

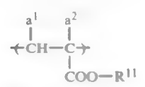
5,338,628

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 15, 1992, Ser. No. 945,717
Claims priority, application Japan, Sep. 17, 1991, 3-262508; Nov. 27, 1991, 3-335810
Int. Cl.[5] G03G *15/08*
U.S. Cl. 430—95 12 Claims

1. An electrophotographic light-sensitive material, comprising a support having provided thereon at least one photoconductive layer containing an inorganic photoconductive substance, a spectral sensitizing dye and a binder resin, wherein the binder resin comprises at least one resin (A) shown below and at least one resin (B) shown below;
Resin (A)
A starlike copolymer having a weight average molecular weight of from 1×10^3 to 2×10^4 and comprising an organic molecule having bonded thereto at least three polymer chains each containing a polymer component (a) corresponding to a repeating unit represented by the following formula (I):

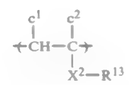


(I)

wherein a^1 and a^2 each represents a hydrogen atom, a halogen atom, a cyano group or a hydrocarbon group, and R^{11} represents a hydrocarbon group; and a polymer component (b) containing at least one polar group selected from the group consisting of $—PO_3H_2$, $—SO_3H$, —COOH,



and a cyclic acid anhydride-containing group, wherein R^1 represents a hydrocarbon group or $—OR^2$ where R^2 represents a hydrocarbon group, and wherein polymer component (a) is present in an amount of at least 30% by weight and component (b) is present in an amount from 1 to 20% by weight,
Resin (B)
A resin having a weight average molecular weight of from 3×10^4 to 1×10^6 and containing at least 30% by weight of a polymer component corresponding to a repeating unit represented by the following formula (III):



(III)

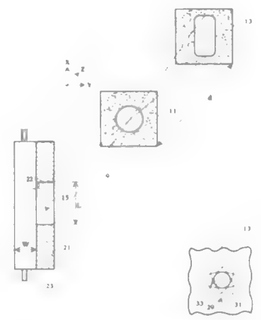
wherein c^1 and c^2 each represents a hydrogen atom, a halogen atom, a cyano group or a hydrocarbon group; X^2 represents $—(CH_2)_rCOO—$, $—(CH_2)_rOCO—$, —O—or —CO—, wherein r represents an integer of from 0 to 3; and R^{13} represents a hydrocarbon group.

5,338,629

METHOD OF MAKING PHOTO STENCILS FOR CATHODE RAY TUBE SCREEN DEPOSITION

Robert A. Hibbard, Elburn, and Thomas M. Remec, Des Plaines, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 655,561, Feb. 13, 1991, Pat. No. 5,158,491. This application Jun. 30, 1992, Ser. No. 906,615
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—23 20 Claims



1. A method of manufacturing progeny photostencils useful for interchangeable proximity print screening of the faceplates of phosphor displays, comprising:
a) providing a parent stencil having a predetermined pattern of features, the features having a predetermined configuration;
b) providing photoresist-coated progeny stencil blank, and locating the progeny stencil blank a predetermined distance in proximity to the parent stencil;
c) exposing the photoresist with a rectangular light source radiated through the parent stencil;
d) developing the exposed photoresist; whereby a pattern of

VOL 1165 ISS 3 AG 16 1994 UMI

features is formed to provide a progeny stencil in the predetermined pattern of the parent stencil, the features in the progeny stencil differing in size or shape, or both, from those of the parent stencil.

5,338,630

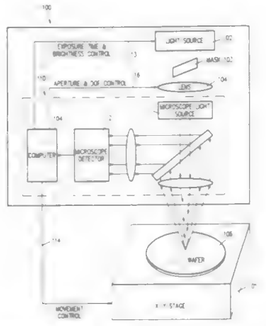
PHOTOLITHOGRAPHY CONTROL SYSTEM AND METHOD USING LATENT IMAGE MEASUREMENTS

Euisik Yoon, Sunnyvale; Robert W. Allison, Jr., San Jose, and Ronald P. Kovacs, Mountain View, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 846,590, Mar. 5, 1992, Pat. No. 5,283,141. This application Nov. 18, 1993, Ser. No. 154,603

Int. Cl.[5] G03C *5/00;* **H01L** *21/00;* **G01R** *31/26*

U.S. Cl. 430—30 **7 Claims**



1. A photolithography system for processing at least one semiconductor wafer having a photoresist layer thereon, said system having a set of control parameters, said system comprising:

positioning means for positioning said wafers within said system;

exposing means for exposing said photoresist to light and printing at least one mask pattern on said photoresist;

a phase contrast microscope positioned to measure linewidth characteristics of latent images of said at least one mask pattern on said photoresist of said wafer prior to developing said photoresist; and

adjustment means for adjusting said control parameters according to said measured linewidth characteristics of said latent images.

5,338,631

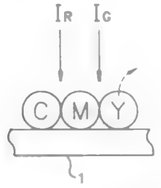
METHOD OF FORMING COLOR IMAGES

Sadao Masubuchi, Chofu, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 684,935, Apr. 25, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,295

Int. Cl.[5] G03G *13/01*

U.S. Cl. 430—42 **9 Claims**



1. A color image forming method by applying light-transmitting color toners of a plurality of colors on an photoconductive layer in the form of a single layer, exposing said photoconductive layer from a color toner side, and developing the exposed color toners, and transferring a developed image to a transfer drum or a recording sheet, characterized in that the color toners consist of three kinds of color toners for transmitting cyan, magenta, and yellow color components and expressing the same colors as the transmitted color components, wherein said exposing includes exposing to red, green, and blue light components whose exposure energy amounts are variable and are caused to be incident on the color toners on said photoconductive layer, wherein the color toners forming a positive image are selectively separated from said photoconductive layer by changing a combination of the color light components and the exposure energy amounts to selectively remove all, one, two or none of said three kinds of color toners in a particular first region of said photoconductive layer to provide a first color in said first region and to selectively remove all one, two or none of said three kinds of color toners in a second region to simultaneously provide a second color different from said first color in said second region

wherein separation of only one kind of color toner in said first and second regions results from exposure of said first and second regions respectively to two colors of said raid, green and blue light, each having a first intensity and wherein separation of two kinds of color toner in said first and second regions results from exposure of said first and second regions respectively to one color of said red, green and blue light having an intensity of about twice said first intensity.

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ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND ELECTROPHOTOGRAPHIC DEVICE USING THE SAME

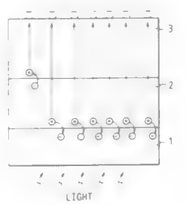
Yuichi Hashimoto, Tokyo; Shoji Amamiya, Sagamihara, and Teigo Sakakibara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 591,761, Oct. 2, 1990, abandoned. This application Dec. 3, 1992, Ser. No. 985,438

Claims priority, application Japan, Oct. 2, 1989, 1-255324

Int. Cl.[5] G03G *15/02*

U.S. Cl. 430—58 **15 Claims**



1. An electrophotographic photosensitive member comprising a light-transmissive electroconductive substrate having a first work function and a photosensitive layer on said substrate, said photosensitive layer comprising an organic charge generating material having a second work function and a charge transporting material having a third work function, wherein the difference between the first and second work function is 0.5 eV or more and is a value greater than the difference between the second and third work functions, whereby the number of the photoconductive carriers formed by said organic charge generating material and said substrate being more than the number of the photoconductive carriers formed by said organic charge generating material and said charge transporting material.

5,338,633

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Mamoru Nozomi; Sumiko Watabe, and Ryoko Aso, all of Yokohama, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

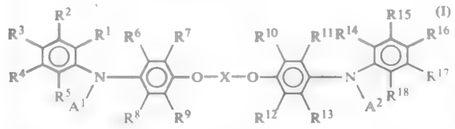
Filed May 22, 1992, Ser. No. 886,845

Claims priority, application Japan, May 23, 1991, 3-118766; Apr. 28, 1992, 4-110248

Int. Cl.[5] G03G *5/06*

U.S. Cl. 430—59 **30 Claims**

1. An electrophotographic photoreceptor comprising an electrically conductive substrate and a photoconductive layer formed thereon, wherein said photoconductive layer contains a compound of the formula (I):



(I)

wherein R^1 to R^{18} are respectively and independently a hydrogen atom, a halogen atom, a saturated or unsaturated aliphatic hydrocarbon group, an aromatic hydrocarbon group, an alkoxy group, an aryloxy group, a dialkylamino group or a diarylamino group, wherein the aliphatic hydrocarbon group, the aromatic hydrocarbon group, the alkoxy group, the alkoxy group, the dialkylamino group and the diarylamino group may behave substituents, X is a substituted or unsubstituted bivalent hydrocarbon group selected from an alkylene group, an alkenylene group, a cyclohexylene group, a phenylene group, and xylylene, each of A^1 and A^2 is a saturated or unsaturated aliphatic hydrocarbon group or an aromatic hydrocarbon group, or is bonded to R^5 or R^{18} of the adjacent phenyl group to form a nitrogen-containing heterocyclic ring, wherein the aliphatic hydrocarbon group, the aromatic hydrocarbon group and the nitrogen-containing heterocyclic ring may have substituents.

5,338,634

PHOTOSENSITIVE MEMBER COMPRISING AN AMINO COMPOUND

Hideaki Ueda, Kawanishi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

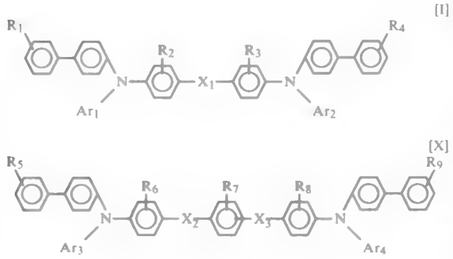
Filed Jul. 30, 1992, Ser. No. 921,721

Claims priority, application Japan, Jul. 31, 1991, 3-191766; Oct. 17, 1991, 3-269281

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—59 **11 Claims**

1. A photosensitive member having a photosensitive layer on an electrically conductive substrate, wherein the photosensitive layer comprises a diamino compound represented by the following general formula [I] or [X]:



[I]

[X]

in which Ar_1, Ar_2, Ar_3 and Ar_4 represent respectively an alkyl group, an aralkyl group, an aryl group, a biphenyl group or a heterocyclic group, each of which may have a substituent; R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 represent respectively a hydrogen atom, an alkyl group, an alkoxy group or a halogen atom; X_1 represents —O—, —S— or



X_2 and X_3 are the same and represent respectively —O—, —S— or



(in which R_{10} and R_{11} represent respectively a hydrogen atom, an alkyl group or an aryl group; the alkyl group and the aryl group may have a substituent; n represents an integer of 1–4).

5,338,635

Patent Not Issued For This Number

5,338,636

DICHLOROTIN PHTHALOCYANINE CRYSTAL ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING THE SAME, AND COATING COMPOSITION FOR ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Katsumi Nukada; Akira Imai; Katsumi Daimon; Masakazu Iijima; Kiyokazu Mashimo; Yasuo Sakaguchi, and Ichiro Takegawa, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 948,482, Sep. 22, 1992, abandoned. This application Jan. 6, 1993, Ser. No. 1,515

Claims priority, application Japan, Sep. 27, 1991, 3-274872; Jan. 13, 1992, 4-021683; Jan. 20, 1992, 4-27448

Int. Cl.[5] G03G *5/06;* **C09B** *47/08*

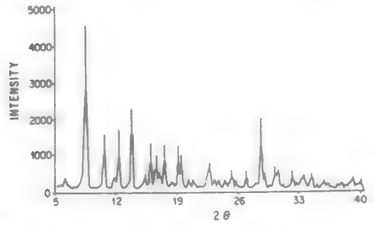
U.S. Cl. 430—59 **14 Claims**

1. A dichlorotin phthalocyanine crystal having distinct diffraction peaks at 8.5°, 11.2°, 14.5°, and 27.2° of the Bragg angles ($2\theta \pm 0.2$) in the X-ray diffraction spectrum.

2. An electrophotographic photoreceptor comprising a conductive substrate having formed thereon a photosensitive layer comprising a dichlorotin phthalocyanine crystal having distinct diffraction peaks at 8.5°, 11.2°, 14.5°, and 27.2° of the Bragg angles ($2\theta \pm 0.2$) in the X-ray diffraction spectrum.

VOL 1165 ISS 3 AG 16 1994 UMI

13. A coating composition as claimed in claim **12**, wherein said polyvinyl acetal resin is at least one resin selected from



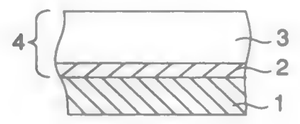
polyvinyl butyral, polyvinyl formal, and partially acetal-modified polyvinyl butyral.

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ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH PERYLENE AND STYRYL COMPOUNDS

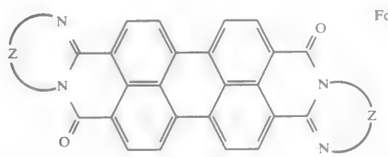
Akira Kinoshita; Tomoko Suzuki, and Kazumasa Watanabe, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,133
Claims priority, application Japan, Jul. 3, 1991, 3-162958
Int. Cl.[5] G03G *5/09*
U.S. Cl. 430—83 **6 Claims**

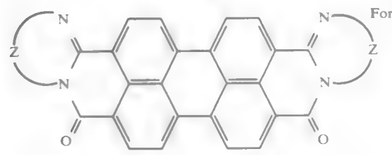


1. An electrophotographic photoreceptor which comprises a conductive substrate and a photoreceptive layer provided thereon, wherein the photoreceptive layer contains at least one of perylene compounds represented by Formula (I) and Formula (II) as the carrier-generating material, and a stryl compound represented by Formula (III) as the carrier-transport material,

Formula (I)

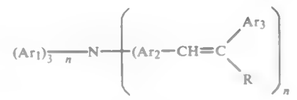


Formula (II)



wherein Z represents each a substituted or non-substituted divalent aromatic group,

Formula (III)



wherein Ar_1, Ar_2 and Ar3 each represents a substituted or non-substituted aromatic group, n is an integer of 2 or 3.

5,338,638

TONER FOR DEVELOPING ELECTROSTATIC IMAGE AND PROCESS FOR PRODUCTION THEREOF

Kiyoko Tsuchiya, Yokosuka; Koichi Tomiyama, Kawasaki; Masayoshi Kato, Iruma; Tsutomu Kukimoto, and Hiroshi Yusa, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 797,992
Claims priority, application Japan, Nov. 29, 1990, 2-332693
Int. Cl.[5] G03G *9/087*
U.S. Cl. 430—106 **49 Claims**

1. A toner for developing an electrostatic image, comprising: a binder resin and a colorant, wherein the binder resin shows a molecular weight distribution on a GPC chromatogram of its tetrahydrofuran (THF)-soluble resin content including at least 15% and below 35% of a resin component in a molecular weight region of at most 5000 and at least 3% of a resin component in a molecular weight region of at least 5×10^6 and showing a main peak in a molecular weight region of 5000 to 10^5, and the binder resin has an acid value of 2–100 mg KOH/g.

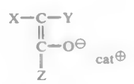
5,338,639

ELECTROSTATIC TONER CONTAINING A KETO COMPOUND AS A CHARGE STABILIZER

Gunter-Rudolf Schroeder, Heidelberg, and Udo Mayer, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP92/00534, § 371 Date Jul. 20, 1993, § 102(e) Date Jul. 20, 1993, PCT Pub. No. WO92/16878, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 11, 1992, Ser. No. 90,042
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1991, 4109086
Int. Cl.[5] G03G *9/097*
U.S. Cl. 430—110 **8 Claims**

1. An electrostatic toner containing a polymeric binder and, as a charge stabilizer, a compound of the formula I



(I)

where Z is C_1–C_{20}-alkyl which is unsubstituted or substituted by phenyl or Z is C_5–C_7-cycloalkyl or unsubstituted or substituted phenyl, X and Y are identical or different and, independently of one another, are each cyano or a radical of the formula —CO—OR^1, —CO—NR^1R^2 or —CO—R^3, where R^1 is C_1–C_{20}-alkyl which is unsubstituted or substituted by phenyl or R^1 is C_3–C_7-cycloalkyl, R^2 is hydrogen or C_1–C_4-alkyl and R^3 is C_1–C_{20}-alkyl which is unsubstituted or substituted by phenyl or R^3 is C_5–C_7-cycloalkyl or unsubstituted or substituted phenyl, or X and Y together form a radical of the formula —CO—L—CO— or —CO—CH=$C(CH_3)$—O—CO—, where L is C_2–C_4-alkylene, and $cat^{\oplus}$ is one equivalent of a cation.

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SILOXANE POLYMERS AND POSITIVE WORKING LIGHT-SENSITIVE COMPOSITIONS COMPRISING THE SAME

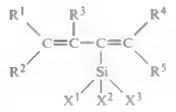
Toshiaki Aoai, and Kazuyoshi Mizutani, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Division of Ser. No. 550,446, Jul. 10, 1990, Pat. No. 5,216,105. This application Aug. 28, 1992, Ser. No. 936,788
Claims priority, application Japan, Jul. 12, 1989, 1-179784; Jul. 13, 1989, 1-180738; Jul. 14, 1989, 1-181878; Jul. 14, 1989, 1-181879; Jul. 14, 1989, 1-181880; Jan. 9, 1990, 2-1795; Jan. 9, 1990, 2-1796
Int. Cl.[5] C08G *77/04;* **G03C** *1/54, 1/735, 1/675*
U.S. Cl. 430—154 **18 Claims**

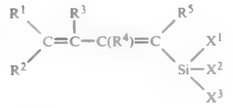
1. A positive working light-sensitive composition comprising:

(a) a compound capable of generating an acid through irradiation of actinic rays or radiant rays, and

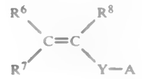
(b) a siloxane polymer having at least 1 mol % of a repeating unit obtained by hydrolysis or alkoxylation followed by condensation of a cyclic heat addition product between a diene compound of formula (I) or (II) and an olefin or acetylene compound of formula (III), (IV) or (V):



(I)



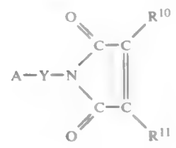
(II)



(III)



(IV)



(V)

wherein

R^1 to R^5 may be same or different and represent hydrogen atoms, alkyl, aryl or alkoxy groups;

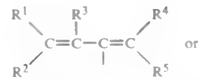
R^6 to R^9 may be same or different and represent hydrogen or halogen atoms, cyano, alkyl, aryl, alkoxy, —SO_2—R^{12}, —SO_3—R^{12}, —CO—R^{12}, —CO—NH—R^{12}, —COO—R^{12}, or —Y—A, wherein R^{12} represents an alkyl or aryl group;

R^{10} and R^{11} represent hydrogen atoms, alkyl or aryl groups;

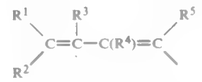
Y represents a single bond, a divalent aromatic or aliphatic hydrocarbon group;

A represents an acid decomposable group;

X^1, X^2 and X^3 may be same or different and represent halogen atoms, hydroxy, carboxy, oxime, amide, ureido, amino, alkyl, aryl, aralkyl, alkoxy, aryloxy, —Y—A,



or



provided that at least two of X^1, X^2 and X^3 are halogen atoms, hydroxy, carboxy, oxime, amide, ureido, amino, alkoxy or aryloxy groups and two of R^6 to R^8 and Y, or R^{10} and R^{11} may combine to form a ring.

5,338,641

POSITIVE-WORKING RADIATION-SENSITIVE MIXTURE AND COPYING MATERIAL PRODUCED THEREFROM COMPRISING AN α,α-BIS(SULFONYL) DIAZO METHANE AS AN ACID FORMING COMPOUND

Georg Pawlowski, Wiesbaden; Hans-Joachim Merrem, Seeheim-Jugenheim; Juergen Lingnau, Mainz-Laubenheim; Ralph Dammel, Klein-Winterheim, and Horst Roeschert, Biebelried, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 578,465, Sep. 7, 1990, abandoned. This application Mar. 4, 1993, Ser. No. 26,077
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930086
Int. Cl.[5] G03F *7/022;* **G03C** *1/76*
U.S. Cl. 430—165 **25 Claims**

1. A positive-working radiation-sensitive mixture consisting essentially of, in admixture:

a) a compound which forms an acid on irradiation, in an amount sufficient to cleave compound b),

b) a compound having at least one C—O—C or C—O—Si bond which can be cleaved by the acid formed by compound a), said mixture comprising an amount of compound b) sufficient to render the mixture soluble or at least swellable in aqueous-alkaline solution when the acid formed from compound a) upon irradiation cleaves compound b), and

c) a water-insoluble binder which is soluble or at least swellable in aqueous alkaline solutions, said binder being present in an amount sufficient to form a uniform film when a layer of the positive-working radiation-sensitive mixture is coated on a substrate, wherein the compound (a) is an α,α-bis(sulfonyl)diazomethane derivative of the formula I



I

in which R is an alkyl, cycloalkyl, aryl or heteroaryl radical, any of which may be unsubstituted or substituted by one or more substituents.

5,338,642

DIAZO TYPE RECORDING MATERIAL COMPRISING TWO COUPLERS WHEREIN THE NOVEL COUPLER USED IS A BIS-MALONAMIDE

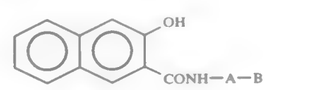
Toshiharu Tanaka; Sadao Ishige; Takekatsu Sugiyama, and Hirokazu Shimada, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1992, Ser. No. 997,320
Claims priority, application Japan, Dec. 27, 1991, 3-359102
Int. Cl.[5] G03C *1/58*
U.S. Cl. 430—173 **14 Claims**

1. A diazo type recording material comprising on a support

VOL 1165 ISS 3 AG 16 1994 UMI

at least one recording layer containing a light-sensitive diazo compound incorporated in microcapsules and a coupling component which undergoes reaction with said diazo compound in a basic atmosphere to develop a color, wherein said coupling component is a mixture of at least one compound represented by the following general formula (I) and at least one compound represented by the following general formula (II):



(I)



(II)

wherein A represents an alkylene group having from 1 to 22 carbon atoms; B represents a hydrogen atom, cyclohexyl group, morpholino group or piperidino group; and R_1, R_2, R_3 and R_4 each represent a hydrogen atom, an alkyl group having from 1 to 5 carbon atoms, an alkoxy group having from 1 to 5 carbon atoms or halogen atom.

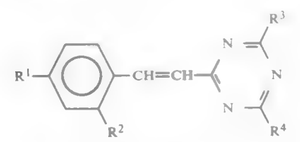
5,338,643

O-QUINONEDIAZIDE PHOTOSENSITIVE COMPOSITION CONTAINING S-TRIAZINE COMPOUND, NOVOLAK RESIN, VINYL-BASED POLYMER AND A DYE

Daisuke Kanazawa; Mitsuru Sasaki; Toshiyuki Urano, all of Yokohama; Youko Yamashita, Hino, and Shinichi Matsubara, Hachiouji, all of Japan, assignors to Mitsubishi Kasei Corporation and Konica Corporation, both of Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,708
Claims priority, application Japan, Dec. 25, 1991, 3-343664
Int. Cl.[5] G03F *7/023*
U.S. Cl. 430—190 **17 Claims**

1. A photosensitive composition, comprising in admixture:
(A) 5 to 60 wt % of an o-quinonediazide compound;
(B) 0.05 to 10 wt % of an s-triazine compound represented by the following general formula (I):



(I)

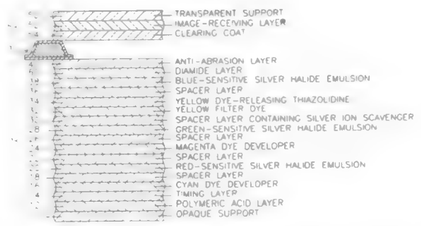
(wherein R^1 and R^2 each represent one selected from the group consisting of an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group and hydrogen atom, and R^3 and R^4 each represent one selected from the group consisting of a trihaloalkyl group having 1 to 4 carbon atoms and a trihaloalkenyl group having 1 to 4 carbon atoms;
(C) 0.01 to 10 wt % of a dye for changing the colortone by the interaction with the photodecomposition product of said s-triazine compound;
(D) 30 to 90 wt % of a novolak resin containing less than 5 wt % of unpolymerized phenols; and
(E) 1 to 60 wt % of a vinyl-based polymer having at least a phenolic hydroxyl group.

5,338,644

PROCESS AND COMPOSITION FOR USE IN PHOTOGRAPHIC MATERIALS CONTAINING HYDROQUIHONES

Lloyd D. Taylor, Lexington, and John C. Warner, Norwood, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 732,836, Jul. 19, 1991, Pat. No. 5,177,262. This application Dec. 23, 1992, Ser. No. 996,120
Int. Cl.[5] G03C *5/54, 1/42, 1/48*
U.S. Cl. 430—214 **22 Claims**



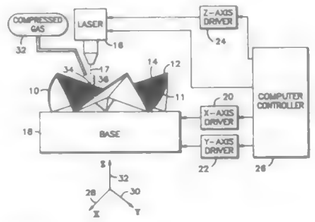
1. A photographic product for forming a diffusion transfer image and comprising:
a photosensitive element comprising at least one photosensitive silver halide emulsion layer having associated therewith an image dye-providing material, the photosensitive element further comprising at least one hydroquinone, the photosensitive element being such that upon its exposure to light and contact with an alkaline developing composition, image dye is released from non-exposed regions of the photosensitive element; and
an image-receiving element in superposed relationship or adapted to be placed in superposed relationship with the photosensitive element so as to receive image dye released from the photosensitive element and thereby form an image,
at least one of the photosensitive element and the image-receiving element comprising a diamide of an aromatic dicarboxylic acid in which two carboxyl groups are arranged para to one another on the same phenyl ring, the diamide being an N,N,N',N'-tetrasubstituted diamide, in which each of the substituents on the amide nitrogen atoms is independently an alkyl, cycloalkyl or aryl group.

5,338,645

THREE DIMENSIONAL PRINTED CIRCUITS

James M. Henderson; Vernon R. Scott, both of Scottsdale, and Kenneth C. Cote, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 16, 1986, Ser. No. 874,733
Int. Cl.[5] G03C *5/00, 1/00;* **B23K** *9/00*
U.S. Cl. 430—311 **2 Claims**



1. A method of fabricating a printed circuit, said method comprising the steps of:

providing a non-conductive substrate which transmits radiation having a wavelength equivalent to the wavelength of energy by a laser, and the substrate having a surface;
depositing a conducting material on the surface of the substrate so that the material maintains a depth of less than 2 microns on the surface;
adjusting a power level and a position of the laser relative to the surface of the substrate so that a pulse of laser energy produced by energizing the laser vaporizes conductive material from the substrate without harming the substrate;
moving the laser and the substrate relative to one another in a predetermined pattern so that the surface of the substrate continuously resides in a focal zone of the laser;
selectively energizing the laser in coordination with said moving step to vaporize portions of conductive material from the substrate; and
plating additional conductive material to the conductive material remaining on the substrate after said moving and selectively energizing steps.

5,338,646

OPTICAL MEMORY DEVICE HAVING AN IMPROVED LIGHT REFLECTION OR OPTICAL MEMORY LAYER

Junichiro Nakayama, Shiki; Tomoyuki Miyake, Nara; Hiroyuki Katayama, Nara; Kazuo Van, Nara, and Kenji Ohta, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 540,096, Jun. 19, 1990, abandoned. This application Feb. 8, 1993, Ser. No. 15,066
Claims priority, application Japan, Jun. 22, 1989, 1-160407
Int. Cl.[5] G03C *1/72;* **G11B** *5/702, 5/706*
U.S. Cl. 430—270 **15 Claims**

1. An optical memory device consisting of a transparent platic substrate having guide tracks and an optical memory layer laminated on one surface of the substrate, in which the optical memory layer consist essentially of a UV-ray or electron ray cured resin of a mixture containing the resin and an optical recording material and is formed on the substrate without the use of a solvent.

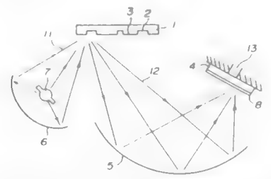
12. An optical memory device consisting of a transparent substrate and a light reflection layer laminated on one surface of the substrate, in which the light reflection layer consists essentially of a UV-ray or electron ray cured resin of a mixture containing the resin and a light reflective metal powder.

5,338,647

REFLECTION TYPE PHOTOMASK AND REFLECTION TYPE PHOTOLITHOGRAPHY METHOD COMPRISING A CONCAVO-CONVEX SURFACE

Kenji Nakagawa, Isehara, and Kenichi Kawashima, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 667,934, Mar. 12, 1991, Pat. No. 5,190,836. This application Oct. 22, 1992, Ser. No. 965,086
Claims priority, application Japan, Mar. 16, 1991, 2-67601
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—322 **14 Claims**



1. A photolithography method comprising the steps of:
irradiating a light from a light source on a reflection type photomask which has a concavo-convex reflecting surface which includes a first region and a second region which have a relative height difference so that a light reflected from the first region and a light reflected from the second region have a predetermined phase difference caused by a difference in lengths of optical paths of the lights which reflect at the first and second regions:
imaging the lights reflected from the first and second regions of the photomask onto a photoresist layer which is formed on a wafer by use of an optical system so as to develop a pattern on the photoresist layer; and
developing the pattern on the photoresist layer depending on a light intensity of the light imaged thereon.

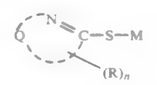
5,338,648

PROCESS OF PROCESSING SILVER HALIDE PHOTOGRAPHIC MATERIAL AND PHOTOGRAPHIC PROCESSING COMPOSITION HAVING A FIXING ABILITY

Tetsuro Kojima, and Nobuo Watanabe, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 836,958, Feb. 19, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,091
Claims priority, application Japan, Feb. 19, 1991, 3-45459
Int. Cl.[5] G03C *7/42*
U.S. Cl. 430—393 **7 Claims**

1. A process for processing an imagewise exposed silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer, comprising the steps of developing in a developing bath and processing in a processing bath having a fixing ability containing as a fixing agent at least one compound represented by the following formula (I) in an amount of from 2×10^{-1} to 3 mol/l for a fixing bath and in an amount of from 2×10^{-2} mol/l to 10 mol/l for a bleach-fixing bath:



(I)

wherein Q represents an atomic group necessary for forming a 5- or 6-membered heterocyclic ring, which heterocyclic ring may be condensed with a carbon aromatic ring or a heteroaromatic ring; R represents an alkyl group, an alkenyl group, an aralkyl group, an aryl group or a heterocyclic group, each group represented by R being substituted by at least one substituent selected from the group consisting of a carboxyl group or salt thereof, a sulfonic acid group or salt thereof, a phosphonic acid group or salt thereof, an amino group and an ammonium group, or R represents a single bond; n represents an integer of from 1 to 3; and M represents a cation group, wherein the processing bath having a fixing ability contains thiosulfate ion in an amount of less than 0.01 mol/l.

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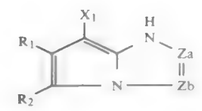
PHOTOGRAPHIC PROCESSING COMPOSITION AND BLEACHING OR BLEACH-FIXING METHOD

Tadashi Inaba; Hisashi Okada; Ryo Suzuki; Yasuhiro Katsuoka, and Hiroyuki Seki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kawagawa, Japan

Filed Sep. 14, 1993, Ser. No. 120,461
Claims priority, application Japan, Sep. 17, 1992, 4-247814
Int. Cl.[5] G03C *7/00, 5/44, 5/38, 5/42*
U.S. Cl. 430—430 **20 Claims**

1. A process for processing an imagewise exposed silver halide photographic material, comprising developing in a color developing solution containing a color developing agent and processing in a processing composition having a bleaching capacity containing as a bleaching agent a metal chelate compound of a chelate-forming compound or salt thereof and a metal ion selected from the group consisting of Fe(III), Mn(III), Co(III), Rh(II), Rh(III), Au(II), Au(III) and Ce(IV), said chelate-forming compound or salt thereof being represented by formula (I):

VOL 1165 ISS 3 AG 16 1994 UMI



(II)

where Za represents —C(R3)= and and Zb is —N=; R1 and R2 each are an electron attractive group having a Hammett's phono group, a sulfo group, a hydroxyl group, a mercapto group, an aryl group, a heterocyclic group, an alkylthio group, an amidino group, a guanidino group or a carbamoyl group; L1, L2 and L3 each represents a divalent aliphatic group, a divalent aromatic group or a divalent connecting group formed by a combination of a divalent aliphatic group and a divalent aromatic group; m and n each represents an integer 0 or 1; R represents a hydrogen atom, an aliphatic group or an aromatic group; and M represents a hydrogen atom or a cation.

5,338,650

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masaru Iwagaki, Hino, Japan, assignor to Konica Corporation, Japan

Filed Feb. 17, 1993, Ser. No. 18,783
Claims priority, application Japan, Feb. 21, 1992, 4-35265
Int. Cl.[5] G03C *3/00*
U.S. Cl. 430—496 **7 Claims**

1. A silver halide color photographic light-sensitive material which comprises a transparent support having on one side thereof photographic component layers comprising a red-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer, a blue-sensitive silver halide emulsion layer and which is in the form of a 35±1 mm-wide roll film having perforations, wherein a total area of the perforations accounts for 0.6 to 6.0% of the entire area of the silver halide color photographic material, said transparent support having a thickness of 70 to 113 μm, a total thickness of said photographic component layers being 10 to 21 μm, at a temperature of 23° C. and a relative humidity of 55%.

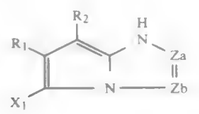
5,338,651

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

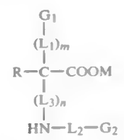
Hideaki Naruse; Makoto Suzuki, and Takehiko Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 981,860
Claims priority, application Japan, Nov. 27, 1991, 3-335917
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—505 **16 Claims**

1. A silver halide color photographic light-sensitive material comprising a support and provided thereon at least one silver halide emulsion layer containing a cyan dye-forming coupler, a silver halide emulsion layer containing a magenta dye-forming coupler and a silver halide emulsion layer containing a yellow dye-forming coupler, wherein the silver halide emulsion layer containing the cyan dye-forming coupler contains at least one cyan dye-forming coupler represented by the following Formula (I) or (II) and the silver halide emulsion layer containing the yellow dye-forming coupler contains at least one yellow dye-forming coupler represented by the following Formula (III) or (IV):

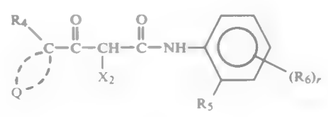


(I)



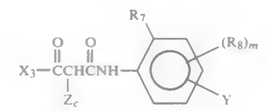
(I)

wherein G_1 and G_2 each represents a carboxyl group, a phos-substituents constant σ_p of 0.2 or more and the sum of the σ_p values of R_1 and R_2 is 0.65 or more; R_3 represents a hydrogen atom or a substituent; X_1 represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; the group represented by R_1, R_2, R_3 or X_1 may be a divalent group and combine with a polymer which is higher than a dimer and which has a high molecular chain to form a homopolymer or a copolymer;



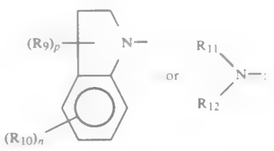
(III)

wherein, R_4 represents a monovalent group excluding a hydrogen atom; Q represents a group of non-metallic atoms necessary to form a 3 to 5-membered hydrocarbon ring or a 3 to 5-membered heterocyclic ring containing at least one hetero atom selected from N, S, O and P together with C, provided that R_4 is not combined with Q to form a ring; R_5 represents a hydrogen atom, a halogen atom, an alkoxy group, an aryloxy group, an alkyl group, or an amino group; R_6 represents a substituent group, X_2 represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; r represents an integer of 0 to 4, provided that when r is plural, R_6 is the same or different;



(IV)

wherein R_7 represents a halogen atom or an alkoxy group; X_3 represents



R_8, R_9 and R_{10} each represents a substituent; R_{11} represents an alkyl group; R_{12} represents an alkyl group or an aryl group; Z_c represents a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; Y represents an alkoxycarbonyl group, a sulfamoyl group, a carbamoyl group, an N-sulfonylsulfamoyl group, an N-acylsulfamoyl group, an acylamino group, an N-sulfonylcarbamoyl group, or a sulfonamido group; and p, m and n represent the integers of 0 to 2, 0 to 3 and 0 to 4, respectively.

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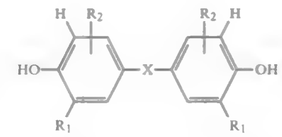
SELECTED STRUCTURALLY DEFINED NOVOLAK BINDER RESINS AND THEIR USE IN PHOTORESIST PATTERN FORMATION

Thomas R. Sarubbi, Providence, R.I., and Joseph J. Sizensky, Seekonk, Mass., assignors to OCG Microelectronic Marterials, Inc., West Paterson, N.J.

Division of Ser. No. 787,454, Nov. 4, 1991, Pat. No. 5,306,594. This application Feb. 9, 1994, Ser. No. 194,293
Int. Cl.[5] G03F *7/30, 7/023*
U.S. Cl. 430—326 **6 Claims**

1. The process for forming positive resist patterns on a substrate comprising:

(1) coating said substrate with a radiation-sensitive composition useful as a positive-working photoresist, said composition comprising an admixture of o-quinonediazide compound and a novolak resin composition consisting of the reaction product of a para-, para-bonded bisphenol having formula (A):



(A)

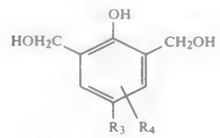
wherein

R_1=lower alkyl group having 1–4 carbon atoms, halogen, or lower alkoxy group having 1–4 carbon atoms; wherein

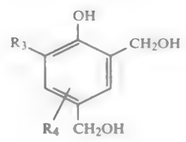
R_2=hydrogen or lower alkyl group having 1–4 carbon atoms; and wherein

X is selected from the group consisting of CH_2, $CH(CH_3)$, $C(CH_3)_2$, O, and S;

with a bismethylol monomer selected from a difunctional ortho-, ortho-phenolic bismethylol of formula (B), a difunctional ortho-, para-phenolic bismethylol of formula (C), or mixtures thereof:



(B)



(C)

wherein

R_3 is selected from CH_3, CH_2CH_3, Cl, and Br; wherein

R_4 is selected from H and CH_3; and wherein the amount of said o-quinonediazide compound being about 5% to about 40% by weight and the amount of said binder resin being about 50% to 95% by weight, based on the total solid content of said radiation-sensitive composition;

(2) subjecting said coating on said substrate to an image-wise exposure of radiation energy; and

(3) subjecting said image-wise exposed coated substrate to a developing solution wherein the exposed areas of said radiation-exposed coating are dissolved and removed from the substrate, thereby resulting in positive image-wise pattern in the coating.

5,338,653

PHENOLIC NOVOLAK RESIN COMPOSITIONS CONTAINING 5-INDANOL AND THEIR USE A PROCESS FOR FORMING POSITIVE RESIST PATTERNS

Medhat A. Toukhy, Barrington, R.I., assignor to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Division of Ser. No. 122,953, Sep. 20, 1993, which is a division of Ser. No. 21,634, Feb. 22, 1993, Pat. No. 5,250,653. This application Feb. 9, 1994, Ser. No. 194,193
Int. Cl.[5] G03F *7/30, 7/023*
U.S. Cl. 430—326 **4 Claims**

1. The process for forming positive resist patterns on a substrate comprising:

(1) coating said substrate with a radiation-sensitive composition useful as a positive working photoresist, said composition comprising an admixture of o-quinonediazide compound and a binder resin comprising a condensation product of at least one aldehyde source with a phenolic source comprising 5-indanol and at least one unit of a phenolic monomer selected from the group consisting of phenol, cresols, xylenols, and trimethylphenols; the amount of said o-quinonediazide compound being about 5% to about 40% by weight and the amount of said binder resin being about 60 to 95% by weight, based on the total solids content of said radiation-sensitive composition;

(2) subjecting said coating on said substrate to an image-wise exposure of radiant energy; and

(3) subjecting said image-wise exposed coated substrate to a developing solution wherein the exposed areas of said radiation-exposed coating are dissolved and removed from the substrate, thereby resulting in positive image-wise pattern in the coating.

5,338,654

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Naoki Saito; Takayoshi Kamio; Seiji Ichijima, and Keiji Mihayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 10, 1993, Ser. No. 58,924
Claims priority, application Japan, May 11, 1992, 4-143669
Int. Cl.[5] G03C *1/08, 7/26, 7/32*
U.S. Cl. 430—557 **25 Claims**

1. A silver halide color photographic material containing at least one coupler compound of the following general formula (1) in at least one hydrophilic colloid layer which is provided on a support:

$$R^1OCOCHXCONR^2R^3$$

where R^1 represents a branched substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted heterocyclic group; R^2 represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted heterocyclic group; R^3 represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted heterocyclic group; X represents a group which splits off from the coupler compound when the coupler compound is reacted with an oxidation product of an aromatic primary amine developing agent; and R^2 and R^3 are the same or different, or may be bonded to each other to form a ring.

5,338,655

METHOD FOR MANUFACTURING A SILVER HALIDE EMULSION

Mitsuhiro Kubotera, and Makoto Kajiwara, both of Odawara, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,055
Claims priority, application Japan, Sep. 19, 1991, 3-268488
Int. Cl.[5] G03C *1/015, 1/025, 1/09, 1/14*
U.S. Cl. 430—569 **15 Claims**

1. A method for manufacturing a silver halide emulsion

VOL 1165 ISS 3 AG 16 1994 UMI

comprising, in order, the steps of: forming a silver halide grain desalting, spectral sensitizing by adding a spectral sensitizing dye and chemical maturing, wherein the spectral sensitizing is carried at a temperature not lower than 25° C. and not higher than 55° C.; and the chemical maturing is carried out at a temperature higher than the temperature of the spectral sensitizing.

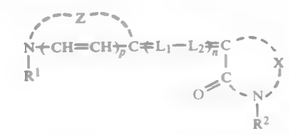
5,338,656

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Akihiko Ikegawa; Yuji Mihara, and Masaki Okazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 21, 1993, Ser. No. 49,428
Int. Cl.[5] G03C *1/12*
U.S. Cl. 430—577 **9 Claims**

1. A silver halide photographic material comprising a light-sensitive silver halide layer spectrally sensitized with a sensitizing dye represented by the following general formula (I):



(I)

wherein Z represents nonmetal atoms necessary to complete a 5- or 6-membered heterocyclic ring; X represents non-metal atoms necessary to complete a 5- or 6-membered acidic nucleus; R^2 represents $-(CH_2)_r-CONHSO_2-R^3$, $-(CH_2)_s-SO_2NHCO-R^4$, $-(CH_2)_t-CONHCO-R^5$ or $-(CH_2)_u-SO_2NHSO_2-R^6$; R^3, R^4, R^5 and R^6 each represent an alkyl group, an alkoxy group or an amino group; r, s, t and u each represent an integer from 1 to 5; R^1 has the same meaning as R^2 or represents an alkyl group substituted by a sulfo or carboxyl group; p represents 0 or 1; L_1 and L_2 each represent a methine group; and n represents 0, 1, 2 or 3.

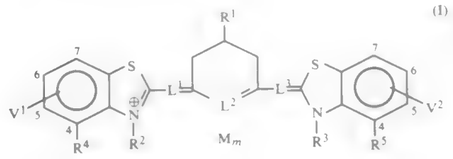
5,338,657

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takashi Kato, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 14, 1993, Ser. No. 46,873
Claims priority, application Japan, Apr. 17, 1992, 4-122812
Int. Cl.[5] G03C *1/20*
U.S. Cl. 430—584 **13 Claims**

1. A silver halide photographic material, which comprises a light-sensitive silver halide emulsion layer containing a methine dye represented by the following formula (I):



(I)

wherein

R^1 represents an alkyl, aryl or heterocyclic group;

R^2 and R^3 each represents an alkyl group;

R^4 and R^5 each independently represents an alkyl group, an alkoxy group, an aryloxy group, a hydrogen atom, a halogen atom, or a hydroxyl group, provided that at least one of R^4 and R^5 represents an alkyl, alkoxy, or aryloxy group;

V^1 and V^2 each independently represents a hydrogen atom, a halogen atom, or an atomic group;

L^1, L^2, and L^3 each represents a methine group;

M represents a charge neutralizing ion; and

m is the number which would result in neutralization of the compound according to formula (I).

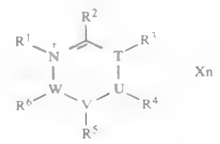
5,338,658

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Shigeo Hirano, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 685,770, Apr. 16, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 52,284
Claims priority, application Japan, Apr. 17, 1990, 2-101159
Int. Cl.[5] G03C *1/485*
U.S. Cl. 430—598 **13 Claims**

1. A silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide photographic emulsion layer and one hydrophilic colloid layer, which contains at least one nitrogen-containing heterocyclic ring compound having a charge represented by formula (I) in said emulsion layer or in a hydrophilic colloid layer adjacent thereto:



(I)

wherein T, U, V and W each represents CH or N and the nitrogen-containing heterocyclic ring completed by T, U, V, and W contains 1 to 3 nitrogen atoms; R^1 represents a substituent group; R^2, R^3, R^4, R^5 and R^6 each represents a hydrogen atom or a substituent group, provided that at least one of R^2 to R^6 represents a group to be eliminated under an alkaline condition; X represents a counter ion for balancing charge; n represents the number of counter ions necessary for balancing said charge; and any pair of adjacent groups of R^1 to R^6 may combine with each other to form a ring.

5,338,659

METHOD FOR DETERMINING ANALYTE CONCENTRATION BY CROSS-REACTIVITY PROFILING

Lawrence M. Kauvar, San Francisco, Calif., and Stuart M. Ambler, Longmont, Colo., assignors to Terrapin Technologies, Inc., South San Francisco, Calif.

Filed Apr. 2, 1991, Ser. No. 678,849
Int. Cl.[5] C12Q *1/00*; G01N *33/53, 33/566, 33/563*
U.S. Cl. 435—7.1 **26 Claims**

1. A method to identify analyte and to determine analyte concentration of a sample containing at least one member analyte of a set of analytes cross-reactive with at least two specific binding reagents, wherein said cross-reactive set of analytes contains at least 2 members, which method comprises:

1) contacting the sample with each specific binding reagent of a panel containing n specific binding reagents reactive with the members of the set wherein n is an integer and is at least 2;

2) measuring the binding affinity of each specific binding reagent in the panel with the sample;

3) recording each said binding affinity of each said binding reagent in said panel;

4) arranging said recorded binding affinities into a convenient pattern for comparison to obtain a cross-reactivity of specific binding reagents (CRSBR) profile of said sample; and

5) comparing said CRSBR profile thus obtained with a set of CRSBR reference profiles for individual member analytes and mixtures of member analytes thereby to find a matching CRSBR reference profile corresponding to a composition for which the identity and concentration of each said member analyte is known,

wherein each CRSBR reference profile for an individual member analyte consists of binding affinities for all specific binding reagents of said panel against a single concentration of an individual member analyte arranged in said convenient pattern in a physical embodiment, and

wherein each CRSBR reference profile for a mixture of said member analytes consists of binding affinities for all specific binding reagents of said panel against a single concentration of a single mixture of two or more member analytes arranged in said convenient pattern, said binding affinities for said single mixture being calculated by combining said recorded binding affinities for single concentrations of said individual member analytes.

5,338,660

DIAGNOSIS OF FASCIOLA INFECTIONS BY DETECTION OF ANTIGENS IN FECES OR INTESTINAL CONTENT

Mohamed M. El Bahy, El Giza, Egypt; John B. Malone, Jr.; William J. Todd, and Kenneth L. Schnorr, all of Baton Rouge, La., assignors to Board of Supervisors of Louisiana State University and Agricutural and Mechanical College, Baton Rouge, La.

Filed Jul. 12, 1991, Ser. No. 729,053
Int. Cl.[5] G01N *33/569*
U.S. Cl. 435—7.22 **12 Claims**

1. A method for diagnosing *Fasciola hepatica* infection, comprising the steps of:

(a) combining a sample selected from the group consisting of feces and intestinal content with an antibody which specifically binds Gellah 26 antigen, said antigen being an antigen of *Fasciola hepatica* having a molecular weight of about 26,000 daltons;

(b) incubating said sample with said antibody for a time and under conditions sufficient for the formation of antibody-Gellah 26 antigen complexes; and

(c) detecting the presence of said complexes formed in step (b) as an indication of *Fasciola hepatica* infection.

5,338,661

MONOCLONAL ANTIBODY SPECIFIC FOR A HUMAN TUMOUR-ASSOCIATED ANTIGEN

Jens C. Jensenius, Finsens Allé 28, 5230 Odense M; Per Borup-Christensen, Christian Lundsvej 1, 5792 Årslev, and Karin Erb, Belvedere 11, 5700 Svendborg, all of Denmark

PCT No. PCT/DK88/00059, § 371 Date Sep. 29, 1989, § 102(e) Date Sep. 29, 1989, PCT Pub. No. WO88/07377, PCT Pub. Date Oct. 6, 1988
PCT Filed Mar. 30, 1988, Ser. No. 411,469
Claims priority, application Denmark, Apr. 3, 1987, 1699/87
Int. Cl.[5] G01N *33/574, 33/546*; C07K *15/14*
U.S. Cl. 435—7.23 **13 Claims**

2. Monoclonal antibody C-OU1, produced by the human-human hybridoma cell line B9165 (ECACC 87040201), or a different monoclonal antibody which specifically, binds the same epitope as is specifically bound by C-OU1, or a specific binding fragment of monoclonal antibody C-OU1 or of said different monoclonal antibody.

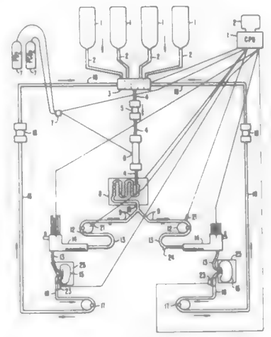
5. A method of screening a sample of a body fluid or tissue for the presence of a carcinoma-associated antigen which comprises contacting a sample of a body fluid or tissue with the antibody or antibody fragment of claim 2 and detecting the binding of said antibody or antibody fragment to antigen present in the sample.

5,338,662

ORGAN PERFUSION DEVICE

Fereydoon Sadri, Redmond, Wash., assignor to Bio-Preserve Medical Corporation, Redmond, Wash.

Filed Sep. 21, 1992, Ser. No. 949,187
Int. Cl.[5] A01N *1/02*
U.S. Cl. 435—1 **18 Claims**



1. An organ perfusion device comprising:

a first fluid conduit fluidly connecting a source of a perfusate to a first pump;

a second fluid conduit for fluidly connecting the first pump to an organ;

a means to regulate the pressure of the perfusate in the second fluid conduit; and

a means to regulate the flow rate of the perfusate through the second fluid conduit,

which pump has a pump speed that may provide either constant perfusion pressure, or constant flow rate that allows the organ perfusion pressure to vary.

5,338,663

METHOD OF IDENTIFYING INHIBITORS OF β-PROTEIN ESTERASE ACTIVITY

Huntington Potter, Boston, and Usamah Kayyali, Somerville, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 572,671, Aug. 24, 1990, abandoned. This application Jan. 13, 1992, Ser. No. 819,361
Int. Cl.[5] C12Q *1/00, 1/44, 1/37*; C12N *9/50*
U.S. Cl. 435—4 **2 Claims**

1. A method of identifying a compound which is an inhibitor of β-protein esterase activity, comprising the steps of:

a) combining β-protein, a substrate upon which β-protein acts and a compound which is a potential inhibitor of β-protein esterase activity, under conditions suitable for β-protein to act upon the substrate; and

b) determining whether β-protein acts upon the substrate at a lower rate in the presence of the compound than in the absence of the compound,

wherein a lower rate in the presence of the compound is indicative of the ability of the compound to inhibit β-protein esterase activity.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,664

ASSAY FOR DETECTION OF BACTERIAL IRON TRANSPORT INHIBITORS

Margareta K. Tuckman, Tenafly, N.J., and Marcia S. Osburne, Lexington, Mass., assignors to American Cyanamid Company, Wayne, N.J.

Filed Dec. 4, 1992, Ser. No. 985,972
Int. Cl.[5] C12Q *1/10*; C12N *1/00*
U.S. Cl. 435—4 **9 Claims**

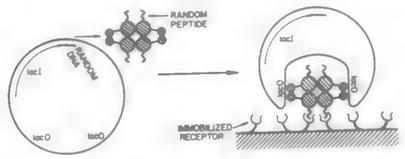
1. A method for identifying a TonB inhibitor in a test sample comprising:
(a) growing a TonB$^+$ microorganism in the presence of the test sample and, an agent known to be lethal to said microorganism; the lethal activity of said agent being mediated by TonB;
(b) identifying as positive a test sample with which the lethal activity of the agent is not observed;
(c) growing on a low-iron medium said TonB$^+$ microorganism in the presence of the test sample identified as positive in (b);
(d) confirming as positive a test sample with which growth inhibition of the microorganism on the low-iron medium of (c) is observed.

5,338,665

PEPTIDE LIBRARY AND SCREENING METHOD

Peter J. Schatz, Mountain View, and Willem P. C. Stemmer, Menlo Park, both of Calif., assignors to Affymax Technologies N.V., Curaco, Netherlands Antilles

Continuation-in-part of Ser. No. 778,233, Oct. 16, 1991, Pat. No. 5,270,170. This application Oct. 15, 1992, Ser. No. 963,321
Int. Cl.[5] C12Q *1/68*; C12N *1/21, 15/63, 15/72*
U.S. Cl. 435—6 **13 Claims**



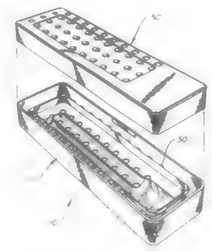
1. A method for generating and screening a random peptide library, said method comprising the steps of:
(a) transforming host cells with at least 10^6 different vectors, each of which (i) encodes a fusion protein composed of a random peptide linked to a DNA binding protein consisting essentially of two lac headpieces joined by a linker; and (ii) contains a lacO or a derivative lacO binding site, and culturing the resultant transformed host cells under conditions such that said fusion protein is produced and binds to a vector that encodes the fusion protein;
(b) lysing the cells transformed in step (a) under conditions such that the fusion protein remains bound to the vector that encodes the fusion protein;
(c) contacting the fusion proteins with a receptor under conditions conducive to specific peptide-receptor binding; and
(d) isolating the vector that encodes a peptide that binds to said receptor.

5,338,666

METHOD FOR DISTRIBUTING A LIQUID SAMPLE INTO A MULTIPLE ALIQUOT DEVICE

James F. Monthony, Baltimore; Dwight Livingston, Towson; Jayakumar Reuben, Fallston, and Robert C. Tite, Baltimore, all of Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 644,786, Jan. 23, 1991, Pat. No. 5,182,082. This application Mar. 31, 1992, Ser. No. 860,841
Int. Cl.[5] C12Q *1/04, 1/24*
U.S. Cl. 435—34 **2 Claims**



1. A method for identifying microbes comprising:
(a) providing multiple aliquot device comprising a sample distribution element comprising an upper surface and a lower surface substantially parallel to each other, means for containing and/or guiding said sample associated with said upper surface, and at least one well disposed between said upper and lower surfaces wherein said well comprises an upper mouth opening that forms a substantially sharp junction with said upper surface, a lower mouth opening in said lower surface, a sidewall connecting said upper mouth opening with said lower mouth opening, and a sidewall bottom surface associated with said lower mouth opening; and an outer-base element associated with a portion of said sample distribution element comprising a bottom with an inner surface and at least one well bottom raised from said inner surface; wherein said sidewall bottom of said well of said sample distribution element and said well bottom of said outer-base element are substantially parallel to each other and from a spaced means to allow the escape of air;
(b) distributing liquid sample without air entrapment to said multiple aliquot device;
(c) subjecting said sample to at least one substrate useful for identifying and detecting microbes; and
(d) examining said sample for chemical and optically detectable change so as to identify microbes in said sample.

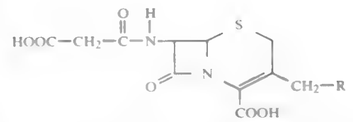
5,338,667

MICROBIOLOGICAL PROCESS FOR THE PRODUCTION OF MALONYL-7-AMINO-CEPHALOSPORANIC ACID DERIVATIVES USING SPHINGOMONAS SP. DSM 7007

Sabine Schurr, Eimeldingen, Fed. Rep. of Germany, and Andreas Tschech, Aarau, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

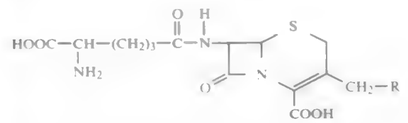
Filed Apr. 27, 1993, Ser. No. 52,623
Claims priority, application Switzerland, Apr. 29, 1992, 1381/92
Int. Cl.[5] C12P *1/00, 35/00, 35/06*; C12N *1/00*
U.S. Cl. 435—47 **4 Claims**

1. A microbiological process for the production of a malonyl-7-aminocephalosporanic acid derivative of formula:



III

wherein R is a hydrogen atom, a hydroxyl group or an acetoxy group, or a soluble salt thereof, comprising converting a cephalosporin C derivative substrate of formula:



IV

wherein R is a hydrogen atom, a hydroxyl group or an acetoxy group, or a soluble salt thereof, with the microorganism Sphingomonas sp. DSM 7007 to produce the product according to the formula III.

5,338,668

OPIOID PEPTIDES DERIVED FROM WHEAT PROTEINS

Masaaki Yoshikawa, Joyo, and Shin-ichi Fukudome, Kyoto, both of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Division of Ser. No. 801,388, Dec. 2, 1991, Pat. No. 5,268,360. This application May 14, 1993, Ser. No. 61,065
Claims priority, application Japan, Dec. 27, 1990, 2-418333; Feb. 27, 1991, 3-53745; Jun. 18, 1991, 3-171879
Int. Cl.[5] A61K *37/00*; C12P *21/06*
U.S. Cl. 435—68.1 **4 Claims**

1. A process of preparing an opioid peptide, which comprises:
hydrolyzing a wheat protein with an acid protease;
further hydrolyzing the hydrolyzate with a neutral protease derived from Bacillus, Aspergillus or trypsin-chymotrypsin or an alkaline protease derived from Bacillus; and
recovering from the resultant hydrolyzate an opioid peptide material containing at least one opioid peptide species selected from the group consisting of Gly-Tyr-Tyr-Pro (SEQ ID NO:l), Gly-Tyr-Tyr-Pro-Thr (SEQ ID NO:2), Tyr-Gly-Gly-Trp-Leu (SEQ ID NO:5), Tyr-Pro-Ile-Ser-Leu (SEQ ID NO:4) and Tyr-Gly-Gly-Trp (SEQ ID NO:6).

5,338,669

METHOD OF PRODUCING FUSION PROTEINS

Stephen D. Gillies, Hingham, Mass., assignor to Abbott Biotech, Incorporated, Needham, Mass.

Continuation of Ser. No. 810,522, Dec. 17, 1991, Pat. No. 5,196,320, which is a continuation of Ser. No. 409,889, Sep. 20, 1989, abandoned. This application Jul. 17, 1992, Ser. No. 916,034
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] C12N *15/13, 15/62*
U.S. Cl. 435—69.1 **5 Claims**

1. A method of producing a chimeric antibody having a predetermined specificity, said method comprising the steps of:
(a) providing a variable (V) region cassette comprising
a first nucleic acid having a sequence that encodes a V region having a predetermined specificity, said first nucleic acid being covalently linked through its 3' end to
a second nucleic acid having a sequence that encodes a splice donor site,
wherein a portion of the 3' end of said first nucleic acid, together with said second nucleic acid, comprises a synthetic oligonucleotide;
(b) ligating said V region cassette with a third nucleic acid having a sequence therein that encodes a human immunoglobulin constant (C) region, said third nucleic acid further comprising a 5' splice acceptor site at its 5' end, compatible with said synthetic splice donor site on said V region cassette;
(c) transfecting said ligated nucleic acid into a eucaryotic host cell, and
(d) culturing said transfected host cell to produce said chimeric antibody having said predetermined specificity and antigen binding activity.

5,338,670

PRODUCTION OF BORDETELLA PERTUSSIS TOXIN WITH A LOW CONCENTRATION OF IRON

Ronald D. Sekura; Yan-Ling Zhang, and Joseph Shiloach, all of Rockville, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 504,022, Apr. 4, 1990, abandoned, which is a continuation of Ser. No. 338,459, Apr. 17, 1989, abandoned, which is a continuation of Ser. No. 889,621, Jul. 28, 1986, abandoned. This application Dec. 11, 1992, Ser. No. 989,908
Int. Cl.[5] C12P *21/00*
U.S. Cl. 435—71.3 **6 Claims**

1. A method for the enhanced production of a *Bordetella pertussis* toxin, which comprises the steps of:
(a) charging a fermentor of a commercial scale capacity with a sterilized first medium, which is capable of supporting the growth of *Bordetella pertussis* and the production of a *Bordetella pertussis* toxin;
(b) inoculating said first medium with a culture of *Bordetella pertussis* bacteria which has been grown in a second culture medium containing a growth promoting amount of an iron salt, to give a combined first and second medium having a concentration of iron which is equivalent to the concentration of iron in a solution containing about 1.0 mg/liter of $FeSO_4 \cdot 7\ H_2O$; and
(c) cultivating the *Bordetella pertussis* bacteria present in the combined mediums under agitated submerged culture conditions at about 36° C. in the presence of an antifoam agent and dissolved oxygen at about a 40% saturation level.

5,338,671

DNA AMPLIFICATION WITH THERMOSTABLE DNA POLYMERASE AND POLYMERASE INHIBITING ANTIBODY

Edward R. Scalice; David J. Sharkey, both of Rochester; Kenneth G. Christy, Jr., North Chili; Theodore W. Esders, Webster, and John L. Daiss, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1992, Ser. No. 958,144
Int. Cl.[5] C12P *19/34*; C12Q *1/68*; C07K *15/28*
U.S. Cl. 435—91.2 **13 Claims**

1. A method for the amplification of a target nucleic acid comprising the steps of:
A. contacting a specimen suspected of containing a target nucleic acid with the following polymerase chain reaction reagents:
1) a primer complementary to said targeted nucleic acid,
2) a thermostable DNA polymerase,
3) a temperature sensitive inhibitor for said thermostable DNA polymerase,
said inhibitor being an antibody which is specific to said thermostable DNA polymerase and which inhibits said

VOL 1165 ISS 3 AG 16 1994 UMI

thermostable DNA polymerase at a temperature T_1 which is less than about 85° C. such that enzymatic activity of said thermostable DNA polymerase is inhibited, and

said inhibitor being irreversibly inactivated at a temperature T_2 which is greater than T_1 and is also greater than about 40° C., so that said thermostable DNA polymerase regains its enzymatic activity,

4) a DNA polymerase cofactor, and

5) more than one deoxyribonucleoside-5'-triphosphate,

wherein said thermostable DNA polymerase is stable at T_2, and

B. bringing the resulting mixture to at least temperature T_2 to inactivate said thermostable DNA polymerase inhibitor and to allow the formation of primer extension products.

5,338,672

METHOD FOR PRODUCING L-3, 4-DIHYDROXYPHENYALANINE BY ERWINIA HAVING TYROSINASE ACTIVITY

Takayasu Tsuchida; Yoshitaka Nishimoto; Takuya Kotani, and Katsuo Iizumi, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,268
Int. Cl.[5] C12P *13/22*
U.S. Cl. 435—108 3 Claims

1. A method for producing L-3,4-dihydroxyphenylalanine, comprising:

culturing a microorganism belonging to the species *Erwinia herbicola* and having β-tyrosinase activity until reaching a stationary phase,

further maintaining the culture for 6 to 24 hours while maintaining the pH within a range of from 7 to 8.3,

recovering said cells from said culture,

contacting said cells with catechol, pyruvic acid and ammonium ion, or catechol and L-serine to produce L-3,4-dihydroxyphenylalanine, and

recovering said L-3,4-dihydroxyphenylalanine.

5,338,673

PROCESS FOR THE SELECTIVE PRODUCTION OF POLYUNSATURATED FATTY ACIDS FROM A CULTURE OF MICROALGAE OF THE PORPHYRIDIUM CRUENTUM

Catherine Thepenier, Manosque; Claude Gudin, Aix en Provence, and Bruno Sarrobert, Manosque, all of France, assignors to Commissariat a L'Energie Atomique, Paris and Societe USSI, Saint Quentin Yvelines Cedex, both of France

Filed Jan. 25, 1993, Ser. No. 8,710
Claims priority, application France, Jan. 28, 1992, 92 00861
Int. Cl.[5] C12P *7/64;* A01H *13/00*
U.S. Cl. 435—134 9 Claims

1. A process for the selective production of polyunsaturated fatty acids from a culture of microalgae of *Porphyridium cruentum* comprising:

i) culturing *Porphyridium cruentum* suspended in a liquid culture medium, in a closed, tubular photobioreactor, wherein said culture medium is adapted for the culture of *Porphyridium cruentum,* having an NaCl concentration above 0.2M, at a temperature of between approximately 20 and 30 degrees Celsius to form a biomass;

ii) removing from said photobioreactor at least a part of said biomass;

iii) cooling the removed biomass to a temperature of between approximately 4° and 15° C. for a period of at least 12 hours, thereby effecting an increase of the ratio of C 20:5 to C 20:4 unsaturated fatty acids in said removed biomass as compared to the ratio prior to the application of cooling.

5,338,674

PROCESS FOR PRODUCING A VACCINE FOR A PATHOGENIC RNA VIRUS AND PRODUCT THEREOF

Stephen E. Wright, 2111 Lakeline Dr., Salt Lake City, Utah 84109

Continuation of Ser. No. 469,985, Feb. 25, 1983, abandoned. This application Oct. 2, 1986, Ser. No. 914,620
Int. Cl.[5] C12N *15/09;* A61K *39/12*
U.S. Cl. 435—172.3 4 Claims

1. A live, non-pathogenic vaccine for a pathogenic RNA virus, comprising an immunologically effective amount of a viral, antigenic, genomic construct having an antigenic determinant region of the RNA virus, but no pathogenic properties, the viral, antigenic, genomic construct being the RAV-Ac″ virus.

4. A process for producing a live, non-pathogenic, recombinant vaccine conferring immunity against the PrASV avian tumor virus in chickens, comprising inserting the PrASV env A gene into a RAV-O virus by marker rescue such that said PrASV env A gene replaces the endogenous envelope gene of the RAV-O virus; and selecting for the recombinant in C/E cells.

5,338,675

TOXIC METABOLIC PRODUCT OF HIRSUTELLA SP.

Clayton W. McCoy, Winter Park, Fla.; Alain J. Vey, Saint-Christol, and Isabelle M. Mazet, Cheval Blanc, both of France, assignors to University of Florida, Gainesville, Fla.; l'Institut National de la Recherche Agronomique (INRA) and le centre National de la Rechercho Scientifique (CNRS), both of Paris, France

Filed Jun. 23, 1992, Ser. No. 903,005
Int. Cl.[5] C12N *9/00;* A01N *63/00;* C12P *21/04;* C07H *19/00*
U.S. Cl. 435—183 3 Claims

1. Substantially pure hirsutellin A polypeptide having insecticidal properties.

5,338,676

CEPHALOSPORIN ACETYLHYDROLASE GENE AND PROTEIN ENCODED BY SAID GENE

Kenji Mitsushima, Osaka; Akio Takimoto, Kobe; Shigeo Yaqi, Takatsuki, and Takayasu Sonoyama, Sakai, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 688,299, Apr. 22, 1991. This application Nov. 25, 1992, Ser. No. 980,517
Claims priority, application Japan, Apr. 27, 1990, 2-113483
Int. Cl.[5] C12N *9/18, 15/00*
U.S. Cl. 435—197 12 Claims

1. A purified protein having the amino acid sequence of Sequence I.D. No. 1.

5,338,677

HEPARINASE FREE OF AN ANTICOAGULANT COMPONENT FROM *FLAVOBACTERIUM HEPARINUM*

Joseph J. Zimmermann, Elm Grove, Wis.; N. Tracey Lewis, Brossard, and Robert A. Heft, Ville St. Laurent, both of Canada, assignors to Ibex Technologies, Inc., Montreal, Can-[illegible]

Division of Ser. No. 680,330, Apr. 4, 1991, Pat. No. 5,262,325. This application Nov. 15, 1993, Ser. No. 153,134
Int. Cl.[5] C12N *9/24, 1/12, 1/00*
U.S. Cl. 435—200 6 Claims

1. A heparinase isolated from *Flavobacterium heparinum,* said heparinase free of an anticoagulant component, having optimal activity at pH=6.5 to 7.0; salt concentration=0.1 M, and 37° C.,

wherein the anticoagulant component does not bind to a polysulfated resin at pH 7.0, conductivity between 3 and 12 mmhos, and the heparinase does bind to a polysulfated resin at pH 7.0, conductivity between 3 and 12 mmhos.

5,338,678

EXPRESSION OF DNA SEQUENCES ENCODING A THERMALLY STABLE CYTOSINE DEAMINASE FROM SACCHAROMYCES

Peter D. Senter, Seattle; Peter C. D. Su; Hans Marquardt, both of Mercer Island; Martha S. Hayden, and Peter Linsley, both of Seattle, all of Wash., assignors to Oncogen, a Limited Partnership, Seattle, Wash.

Continuation-in-part of Ser. No. 365,020, Jun. 9, 1989, abandoned. This application Jun. 1, 1990, Ser. No. 531,646
Int. Cl.[5] C12N *5/00, 1/20, 15/00;* C07H *15/12*
U.S. Cl. 435—227 9 Claims

1. An isolated nucleotide sequence encoding a thermally stable Saccharomyces cytosine deaminase having the protein sequence depicted in FIG. 10.

5,338,679

VERTEBRATE POXVORIS EXPRESSION VECTOR UNDER THE CONTROL OF ENTOMOPOXVIRUS SPHEROIDIN GENE PROMOTER

Kai-Chung L. Yuen, Ville St. Laurent, and Basil Arif, Sualt Ste. Marie, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by National Research Council Canada and Forestry Canada, Quebec, Canada

Filed Jan. 8, 1991, Ser. No. 638,742
Int. Cl.[5] C12N *7/01, 15/86, 15/11;* A61K *39/275*
U.S. Cl. 435—235.1 12 Claims

1. A recombinant vertebrate poxvirus which comprises in its genome (i) a bidirectional spheroidin promoter of entomopox *Choristoneura biennis* and (ii) at least one heterologous gene coding for at least one protein, said heterologous gene or genes being operatively linked to said bidirectional *Choristoneura biennis* promoter.

5,338,680

NON-PRODUCER CELL LINES TRANSFORMED BY AMV

Carlo Moscovici, and M. Giovannella Moscovici, both of 6816 NW. 18th Ave., Gainsville, Fla. 32605

Continuation of Ser. No. 802,711, Dec. 6, 1991, abandoned, which is a continuation of Ser. No. 529,623, May 29, 1990, abandoned. This application Aug. 19, 1993, Ser. No. 109,107
Int. Cl.[5] C12N *5/00, 15/00*
U.S. Cl. 435—240.2 1 Claim

1. A cell line consisting essentially of chicken cells selected from the group consisting of ATCC CRL 10465, and progeny thereof; ATCC CRL 10466, and progeny thereof; ATCC CRL 10467, and progeny thereof; and ATCC CRL 10468, and progeny thereof; which cell line is capable of being cultured and maintained in a culture medium free of chicken serum and free of tryptose phosphate.

5,338,681

METHOD OF ISOLATING POLYSACCHARIDE PRODUCING BACTERIA FROM NON-POLYSACCHARIDE PRODUCING BACTERIA WITH GELLAN

Wolf-Dieter Deckwer; Detlef Lobas, and Adrian Schumpe, all of Braunschweig, Fed. Rep. of Germany, assignors to Gesellschaft fur Biotechnologische Forschung mbH GBF, Braunschweig, Fed. Rep. of Germany

Filed Mar. 26, 1992, Ser. No. 858,114
Int. Cl.[5] C12P *19/12, 19/04;* C12N *1/02, 1/20*
U.S. Cl. 435—252.1 13 Claims

1. Method for isolating a polysaccharide extracellularly producing bacteria from a culture containing a mixture of non-polysaccharide extracellularly producing bacteria, and polysaccharide extracellularly producing bacteria, which comprises;

(a) streaking a mixture of polysaccharide extracellularly producing bacterial cells and non-polysaccharide extracellularly producing bacterial cells on a nutrient medium which contains unsubstituted gellan as a gellant, and which is effective for growth of the polysaccharide extracellularly producing bacterial cells; and

(b) culturing the cells on the nutrient medium;

(c) whereby cells of the polysaccharide extracellularly producing bacteria are isolated from the non-polysaccharide extracellularly producing bacteria cells by not sinking into the nutrient mediums, whereas the non-polysaccharide extracellularly producing cells sink into the nutrient medium.

5,338,682

LACTIC ACID BACTERIA, ANTIBACTERIAL SUBSTANCE PRODUCED BY THE BACTERIA, FERMENTED MILK STARTER CONTAINING THE BACTERIA, AND PROCESS FOR PRODUCING FERMENTED MILK BY USING THE STARTER

Masahiro Sasaki, Tokyo; Satoshi Ishii; Yoshihiko Yamauchi, both of Sapporo; Katsushi Kitamura, Yamanashi; Shuji Toyoda, and Kenkichi Ahiko, both of Sapporo, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Division of Ser. No. 658,031, Feb. 22, 1991, abandoned. This application Jul. 27, 1992, Ser. No. 919,458
Claims priority, application Japan, Feb. 23, 1990, 2-044067; Jan. 26, 1991, 3-041443
Int. Cl.[5] C12P *1/04, 7/56;* C12N *1/20*
U.S. Cl. 435—253.4 3 Claims

1. An isolated and purified lactic acid bacteria *Streptococcus salivarius subsp. thermophilus,* SBT 1277 (FERM BP-3234), or a variant thereof produced by transforming the bacteria by ultraviolet ray radiation treatment or by treatment with N-methyl-N'-nitro-N-nitrosoguanine, which isolated and purified bacteria or variant thereof, when cultured in a liquid culture medium, produces an antibacterial substance having the following properties:

(a) said substance is a peptide or protein, or a conjugate thereof,

(b) said substance is digested by trypsin,

(c) said substance is not digested by phospholipase D, and

(d) said substance exhibits thermal stability even after being heated at pH 8.0 and 100° C. for 30 minutes.

5,338,683

VACCINIA VIRUS CONTAINING DNA SEQUENCES ENCODING HERPESVIRUS GLY COPROTEINS

Enzo Paoletti, Albany, N.Y., assignor to Health Research Incorporated, Albany, N.Y.

Continuation-in-part of Ser. No. 394,488, Aug. 16, 1989, abandoned, and Ser. No. 90,209, Aug. 27, 1987, abandoned, which is a division of Ser. No. 622,135, Jun. 19, 1984, Pat. No. 4,722,848, which is a continuation-in-part of Ser. No. 446,824, Dec. 8, 1982, Pat. No. 4,603,112, which is a continuation-in-part of Ser. No. 334,456, Dec. 24, 1981, Pat. No. 4,769,330, said Ser. No. 394,488, is a continuation-in-part of Ser. No. 339,004, Apr. 17, 1989, abandoned. This application Apr. 4, 1990, Ser. No. 502,834
The portion of the term of this patent subsequent to Jul. 29, 2003, has been disclaimed.
Int. Cl.[5] C12N *15/00*
U.S. Cl. 435—320.1 12 Claims

1. A recombinant vaccinia virus containing therein DNA from herpesvirus in a nonessential region of the vaccinia virus genome; wherein said DNA codes for a herpesvirus glycoprotein.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,684

STABLE AQUEOUS FK506 STANDARDS

Frank C. Grenier, Libertyville; Julie A. Laczkiw, Addison; Merry E. Bergmann, Lombard, all of Ill., and David R. Blonski, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 752,410, Aug. 30, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,942

Int. Cl.[5] G01N *31/00*

U.S. Cl. 436—8 **21 Claims**

1. An in vitro aqueous composition suitable as a standard for a diagnostic assay for FK506 comprising:

(1) FK506;

(2) whole blood cells which have not been fixed;

(3) water; and

(4) an organic solvent compatible with FK506 and the whole blood cells at a concentration of less than 10% weight-/volume; wherein said whole blood cells are present in an amount sufficient to enhance the stability of FK506 in said composition over the stability of FK506 in said composition without the presence of said whole blood cells for at least one day at 37° C.

5,338,685

PROCESS FOR THE CONTINUOUS QUANTITATIVE DETERMINATION OF FLUORINE-CONTAINING COMPOUNDS

Klaus Frenk, Schopfheim, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,675

Claims priority, application Switzerland, Dec. 19, 1991, 3778/91

Int. Cl.[5] G01N *31/00, 33/00*

U.S. Cl. 436—124 **12 Claims**

1. A process for the continuous quantitative determination of the concentration of fluorine-containing compounds in a gases which comprises treating a gas that contains a fluorine-containing compound with an aqueous solution of an amine to liberate fluoride ions from the fluorine-containing compound and determining the concentration of the liberated fluoride ions by a direct potentiometric method.

5,338,686

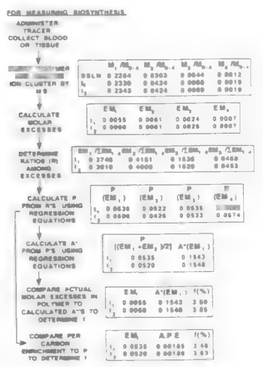
METHOD FOR MEASURING IN VIVO SYNTHESIS OF BIOPOLYMERS

Marc K. Hellerstein, 4 Anson Way, Kensington, Calif. 94707

Filed Apr. 29, 1992, Ser. No. 876,752

Int. Cl.[5] G01N *31/00, 24/00, 33/543*

U.S. Cl. 436—173 **9 Claims**



1. A method for determining the proportion of mass isotopically labeled subunits in a subunit precursor pool from which a biopolymer containing at least two such subunits is synthesized in a subject, comprising

administering to the subject, a mass isotopically labeled precursor subunit:

by said administering, producing after a selected period of subunit incorporation, an enrichment of the mass isotopically labeled subunit in the biopolymer;

isolating the biopolyme recomprising at least two subunits from the subject after said incorporation period;

determining relative frequencies of at least two different mass isotopomers of the biopolymer using mass spectrometer wherein each said mass isotopomer comprises at least two biopoymer subunits and wherein each said mass isotopomer contains at least one mass isotopically labeled subunit; and

calculating from said relative frequencies, the proportion of mass isotopically labeled subunits in the subunit precursor pool from which the biopolymer was synthesized.

5,338,687

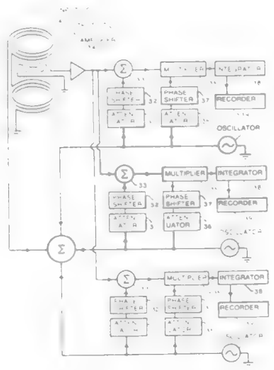
DETECTION OF BIOLOGICAL MACROMOLECULES BY NMR-SENSITIVE LABELS

Lawrence L. Lee, 3776 Martha St., San Diego, Calif. 92117, and James Gautsch, 451 S. Granados Ave., Solana Beach, Calif. 92075

Filed Sep. 11, 1992, Ser. No. 943,552

Int. Cl.[5] G01N *24/08, 33/561, 33/58*

U.S. Cl. 436—173 **10 Claims**



1. An apparatus for detecting electrophoretically separated biological molecules having at least one nuclear magnetic resonance-sensitive isotope comprising:

a) a magnet for providing a magnetic field of at least 1000 gauss at a predetermined sample area;

b) excitation means for exciting at least three nuclear magnetic resonance-sensitive isotopes of said separated biological molecules at said predetermined sample area;

c) detection means for detecting and identifying which of said at least three nuclear magnetic resonance-sensitive isotopes are present in the separated biological molecules at said predetermined sample area; and

d) an electrophoresis column positioned to deliver the separated biological molecules to the sample area where at least one nuclear magnetic-sensitive isotope is subjected to the magnetic field of the magnet, excited by the excitation means, and detected and identified by the detection means.

5,338,688

METHOD FOR THE METERED APPLICATION OF A BIOCHEMICAL ANALYTICAL LIQUID TO A TARGET

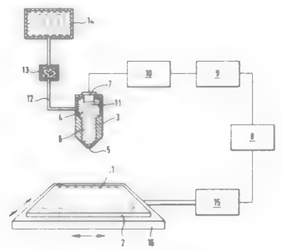
Rolf Deeg, Bernried; Eberhard Maurer, Weilheim; Reiner Babiel, Eberfing; Sigmar Klose, Berg, and Bernhard Köpfer, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 735,580, Jul. 25, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 19,828

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1990, 4024545

Int. Cl.[5] G01N *1/10*

U.S. Cl. 436—180 **16 Claims**



1. A method for the metered application of a biochemical analytical liquid containing a heat-sensitive protein to a target, comprising the step of successively ejecting a plurality of quantities of the biochemical analytical liquid with high frequency from a jet chamber through a jet associated therewith onto the target by rapidly heating said biochemical analytical liquid by a heating element which is in thermal contact with said chamber for evaporating and expanding a part of the volume of the biochemical analytical liquid in the jet chamber so as to eject a predetermined quantity of the biochemical analytical liquid through the jet, wherein a majority of the heat-sensitive protein is not destroyed or denatured.

5,338,689

METHOD AND CARD FOR DETECTING ANTIGENS AND/OR ANTIBODIES

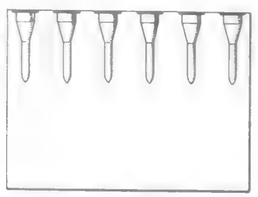
Lapierre Yves, Dullins, France; Dieter Josef, Fribourg, Switzerland; Jean Adam, Meyriez, Switzerland, and Susanne Greber-Widmer, Herrenschwanden, Switzerland, assignors to Stiftung fur diagnostische Forschung, Murten, Switzerland

Continuation of Ser. No. 684,459, Apr. 11, 1991, abandoned, which is a continuation of Ser. No. 122,152, Nov. 11, 1987, abandoned. This application Oct. 30, 1992, Ser. No. 969,532

Claims priority, application Switzerland, Aug. 24, 1987, 3240/87

Int. Cl.[5] G01N *33/537, 33/538, 33/555, 33/558*

U.S. Cl. 436—518 **37 Claims**



1. A method of detecting an antibody in a fluid by an indirect Coombs test, said method comprising:

providing a microreaction vessel containing a slurry of suspension of inert particles and Coombs serum, said vessel being substantially transparent and having an upper portion and a lower portion, said upper portion having a greater diameter or width than the lower portion, with a transition portion situated between the upper portion and the lower portion, said upper portion having a sealed, openable upper sample receiving end and said lower portion having a closed lower end;

adding the fluid to the vessel;

adding to the vessel a carrier bound antigen which specifically binds to the antibody to form an optically detectable binding complex, to form a mixture with the fluid, wherein said mixture is located generally above the inert particles;

incubating the mixture of the fluid and the carrier-bound antigen to form an optically detectable binding complex between the carrier-bound antigen and antibody;

centrifuging the vessel; and

observing the location of any carrier-bound antigen/antibody complex to determine the presence of the antibody, with a strongly positive reaction being indicated by the antigen-antibody complex lying upon or within a top portion of a layer of the inert particles, weakly positive reaction being indicated by the antigen-antibody complex located within a lower portion of the layer of inert particles, and a negative reaction being indicated by the absence of the antigen-antibody complex, with the carrier-bound antigen lying beneath the inert particles.

5,338,690

PHOTOELECTRONIC CONVERSION DEVICE

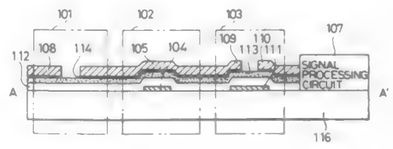
Masaki Fukaya, Isehara; Soichiro Kawakami, Nagahama; Satoshi Itabashi, Atsugi; Katsunori Terada, Sagamihara; Ihachiro Gofuku, Hiratsuka; Katsumi Nakagawa, Nagahama; Katsunori Hatanaka; Yoshinori Isobe, both of Yokohama; Toshihiro Saika, Atsugi; Tetsuya Kaneko, Yokohama; Nobuko Kitahara, Tama, and Hideyuki Suzuki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 496,402, Mar. 20, 1990, abandoned, which is a division of Ser. No. 412,586, Sep. 25, 1989, Pat. No. 4,931,661, which is a continuation of Ser. No. 246,962, Sep. 21, 1988, abandoned, which is a continuation of Ser. No. 5,886, Jan. 22, 1987, abandoned. This application Jul. 9, 1992, Ser. No. 912,651

Claims priority, application Japan, Jan. 24, 1986, 61-11981; Jan. 24, 1986, 61-11982; Feb. 20, 1986, 61-33777; Jun. 7, 1986, 61-131099; Jun. 23, 1986, 61-144990; Jun. 30, 1986, 61-153281

Int. Cl.[5] H01L *21/205*

U.S. Cl. 437—3 **15 Claims**



1. A method of producing a photoelectric conversion device having photoelectric conversion elements arranged in the form of an array and a transfer transistor section connected thereto, both of the photoelectric conversion elements and the transfer transistor section having a semiconductor layer using amorphous silicon as a matrix and formed on a common substrate, comprising:

forming at least portions of a photo-conductive layer of the photoelectric conversion elements and the semiconductor layer of the transfer transistor section from a common amorphous silicon layer;

etching the amorphous silicon layer constituting the semiconductor layer of the transfer transistor section; and

making the thickness of the semiconductor layer of the

VOL 1165 ISS 3 AG 16 1994 UMI

transfer transistor section thinner than the thickness of the photoconductive layer.

5,338,691

METHOD OF MAKING A PHOTODIODE WITH REDUCED JUNCTION AREA

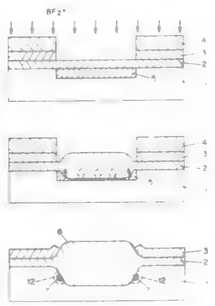
Yoshinari Enomoto, and Yoshio Tsuruta, both of Matsumoto, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 704,052, May 22, 1991, Pat. No. 5,243,215. This application May 21, 1993, Ser. No. 65,567

Claims priority, application Japan, May 31, 1990, 2-142336; Sep. 20, 1990, 2-253164

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—3 **3 Claims**



1. A method for manufacturing a semiconductor device equipped with a light-receiving element having a first semiconductor layer of a first conductive type having a first surface, an element isolation region at said first surface of said first semiconductor layer, said element isolation region having a tilted edge embedded in said first surface of said first semiconductor layer, and an embedded region of a second conductive type embedded between said first surface of said first semiconductor layer and said tilted edge of said element isolation region, said method of manufacturing comprising the steps of:

masking regions of a semiconductor layer of said first conductive type not to be used as the element isolation regions on said first surface of said first semiconductor layer;

implanting an ion impurity of said second conduction type into said unmasked region of said semiconductor layer of said first conductive type; and

thermally oxidizing said unmasked region of said semiconductor layer of said first conductive type;

whereby the unmasked region is caused to expand and produce said element isolation region having said tilted edge and said embedded region is formed in said tilted edge of said element isolation region.

5,338,692

METHOD OF GENERATING ACTIVE SEMICONDUCTOR STRUCTURES BY MEANS OF STARTING STRUCTURES WHICH HAVE A 2D CHARGE CARRIER LAYER PARALLEL TO THE SURFACE

Andreas D. Wieck, Sindelfingen, and Klaus Ploog, Stuttgart, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft Zur Forderung der Wissenschaften E.V., Gottingen, Fed. Rep. of Germany

Continuation of Ser. No. 513,995, Apr. 26, 1990, abandoned. This application May 3, 1993, Ser. No. 93,971

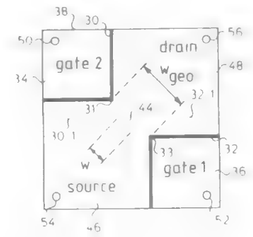
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1989, 3914007; Dec. 20, 1989, 3942125; Dec. 22, 1989, 3942693

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—24 **35 Claims**

1. A method for generating an active semiconductor structure from a starting structure having a surface and a two-dimensional charge carrier layer substantially parallel to said surface, the method comprising the steps of:

a) treating the starting structure to form lateral potential barriers in said two-dimensional charge carrier layer, said lateral potential barriers acting as line-like insulating boundaries extending through said two-dimensional charge carrier layer whereby to divide up said starting structure into at least one source region, at least one drain



region, at least one gate region and at least one channel region extending between said source and drain regions and adjacent to said gate region, with said channel region having a width lying in the order of magnitude of the thickness of the two-dimensional charge carrier layer, i.e. of the electron wavelength, and

(b) forming contacts to said two-dimensional charge carrier layer at said source, drain and gate regions.

5,338,693

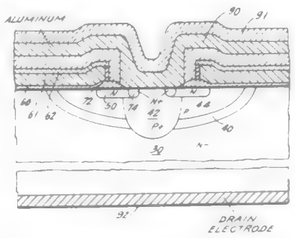
PROCESS FOR MANUFACTURE OF RADIATION RESISTANT POWER MOSFET AND RADIATION RESISTANT POWER MOSFET

Daniel M. Kinzer, Riverside; Perry Merrill, El Segundo, and Kyle A. Spring, Hawthorne, all of Calif., assignors to International Rectifier Corporation, El Segundo, Calif.

Filed Jan. 8, 1987, Ser. No. 1,629

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—29 **18 Claims**



1. A process for the manufacture of a power MOSFET having improved radiation resistance, comprising the steps of: forming a plurality of spaced channel regions of a first conductivity type into a surface of a semiconductor wafer region of a second conductivity type by process steps which include driving impurities into said wafer for a first depth beneath said surface by a high temperature drive to define a plurality of channel regions; forming respective source regions of the second conductivity type and of a predetermined resistance into said region and within each of said channel regions by a process step which includes driving impurities into said wafer for a second depth beneath said surface which is less than said first depth, with an outer periphery of each of said source regions being spaced from an outer periphery of its respective channel region at said surface, thereby to define channel areas

between the foregoing, spaced outer peripheries; said predetermined resistance being sufficiently high to act as a ballasting resistance for preventing device failure due to parasitic-bipolar-transistor-induced current hogging in one or more of said source regions; forming a gate oxide over at least selected ones of said channel areas; and forming a gate electrode over said gate oxide and a source electrode over said source regions.

5,338,694

METHOD OF FABRICATING BICMOS DEVICE

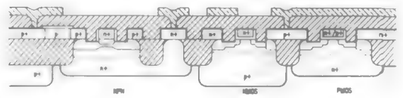
Vida Ilderem, Puyallup; Ali A. Iranmanesh, Federal Way; Alan G. Solheim, Puyallup; Christopher S. Blair, Puyallup; Rick C. Jerome, Puyallup; Rajeeva Lahri, Puyallup, and Madan Biswal, Puyallup, all of Wash., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 502,943, Apr. 2, 1990, abandoned. This application Mar. 9, 1992, Ser. No. 847,876

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 **1 Claim**



1. A method of forming semiconductor devices including a gate insulating region for a field effect gate, wherein said semiconductor devices include a bipolar transistor formed in a first region, an n-channel field effect (NMOS) transistor formed in a second region, and a p-channel field effect (PMOS) transistor formed in a third region, said method comprising the steps of:

in a p-type semiconductor substrate, masking and implanting n-type dopants for formations of an n-type buried layer for said PMOS and bipolar transistors;

masking and implanting p-type dopants for formation of a p-type buried layer for said NMOS transistor and p-type channel stops adjacent said first region;

forming an n-type epitaxial silicon layer on said substrate;

forming field oxide regions adjacent said first, said second and said third regions, as well as between a sink and a base region of said first region;

masking and implanting n-type dopants into said sink region to a first dopant concentration;

masking and implanting n-type dopants into said third region to a second dopant concentration; and

masking and implanting p-type dopants into said second and third regions so as to adjust a threshold voltage of said NMOS and PMOS transistors;

forming an insulator region on a surface of a semiconductor substrate, comprising forming a gate oxide layer on said epitaxial layer;

forming a first polysilicon layer on said insulator;

forming a mask on portions of said polysilicon layer, said portions defining gate regions of field effect devices, comprising masking said first layer of polysilicon and said oxide layer to define gate oxide regions for said NMOS and PMOS transistors;

removing said polysilicon and said insulator from said surface in regions not protected by said mask;

forming a conductive region along said surface above said insulator region, comprising forming a second layer of polysilicon on said first layer of polysilicon and said epitaxial layer;

etching said conductive region to form said gate in said gate regions above said insulator regions, comprising masking and implanting n-type and p-type dopants into said second polysilicon layer and etching said polysilicon layer to form emitter, base, collector contacts for said bipolar transistor; source and drain contacts for said NMOS and PMOS transistors; and gate polysilicon regions for said NMOS and PMOS transistors;

said method further comprising thereafter the steps of

implanting n-type dopant to form a lightly doped diffusion in said NMOS transistor;

masking and implanting Boron to form a lightly doped diffusion for PMOS and bipolar transistors;

forming sidewall oxide on said emitter, base, collector contacts of said bipolar transistor, said source and drain contacts of said NMOS and PMOS transistors, and said gate polysilicon regions of said NMOS and PMOS transistors;

masking said sidewall oxide on said emitter contact and said gate polysilicon regions and removing sidewall oxide from exposed regions;

implanting p-type dopants into said first and third regions;

implanting n-type dopants into said second regions;

forming a refractory metal layer across at least said first, second and third regions and heating said substrate so as to form metal silicide where said refractory metal contacts silicon;

removing unreacted metal from at least said first, said second, and said third regions; and

forming an interconnect system for said NMOS, said PMOS and said bipolar transistors.

5,338,695

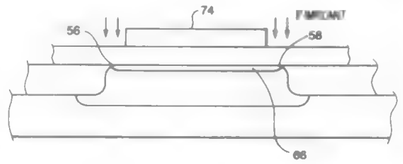
MAKING WALLED EMITTER BIPOLAR TRANSISTOR WITH REDUCED BASE NARROWING

Perumal Ratnam, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 24, 1992, Ser. No. 981,188

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 **12 Claims**



1. A method for fabricating a walled-emitter bipolar transistor having an emitter and a collector of a first polarity and a base of a second polarity, wherein the method comprises the steps of:

providing a semiconductor substrate having a region of the first polarity isolated by isolation oxide; and then

uniformly doping a portion of the substrate with a dopant of the second polarity to form a base that extends to the isolation oxide; and thereafter

doping the substrate with a dopant of the first polarity to form an emitter that extends to the isolation oxide along an emitter-isolation oxide junction; and

further doping the semiconductor substrate along the emitter-isolation oxide junction with a dopant of the second polarity to increase the level of dopant of the second polarity in the base adjacent to the isolation oxide, wherein said further doping occurs in the vicinity of the emitter-isolation oxide junction and not over the entire emitter area.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,696

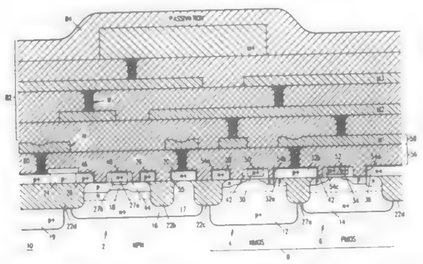
METHOD OF FABRICATING BICMOS DEVICE

Vida Ilderem, Puyallup; Ali A. Iranmanesh, Federal Way; Alan G. Solheim, Puyallup; Christopher S. Blair, Puyallup; Rick C. Jerome, Puyallup; Rajeeva Lahri, Puyallup, and Madan Biswal, Puyallup, all of Wash., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 847,876, Mar. 9, 1992, which is a continuation of Ser. No. 502,943, Apr. 2, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 22,708

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—34 3 Claims



1. A method of forming a semiconductor structure comprising field effect devices and bipolar transistors, said bipolar transistors having base regions of a first conductivity type, at least a portion of said field effect devices having channel regions of said first conductivity type, comprising the steps of:

a) masking selected regions of said semiconductor structure, said selected regions including at least said base regions of said bipolar transistors;

b) implanting said semiconductor structure with a dopant of said first conductivity type to provide said channel regions of said devices having first characteristics;

c) forming a polysilicon layer over at least said base regions;

d) masking second selected regions of said semiconductor structure, said second selected regions including at least said channel regions of said field effect devices;

e) implanting said polysilicon layer with a dopant of said first conductivity type; and

f) diffusing dopants from said polysilicon layer into underlying silicon to provide at least a portion of said base regions of said bipolar transistors with second characteristics.

5,338,697

DOPING METHOD OF BARRIER REGION IN SEMICONDUCTOR DEVICE

Kenji Aoki; Tadao Akamine, and Naoto Saito, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed Dec. 3, 1990, Ser. No. 620,615

Claims priority, application Japan, Dec. 1, 1989, 1-313719; Dec. 1, 1989, 1-313720; Dec. 1, 1989, 1-313726; Dec. 6, 1989, 1-318553; Dec. 6, 1989, 1-318554

Int. Cl.[5] H01L *21/76, 21/336*

U.S. Cl. 437—40 8 Claims

1. A method of producing a field effect transistor comprising:

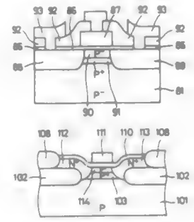
first step for removing an oxide film from a first semiconductor layer of a first conductivity type to expose an active surface;

second step for applying a gas containing an impurity component of the first conductivity type to the active surface so that an impurity layer containing the impurity component of the first conductivity type is adsorbed at the active surface;

third step for depositing a second semiconductor layer on the impurity layer;

fourth step for forming sequentially a gate insulating film and a gate electrode on the deposited second semiconductor layer; and

fifth step for introducing another impurity component of a second conductivity type selectively through a pair of



regions divided by the gate electrode from each other into the semiconductor layers in a certain depth level below a horizontal level of the impurity layer to form a pair of source and drain regions so that a channel region is provided in the second semiconductor layer between the source and drain regions while a channel stopper region composed of the impurity layer of the first conductivity is arranged under the channel region.

5,338,698

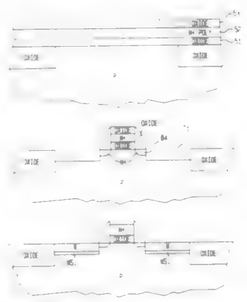
METHOD OF FABRICATING AN ULTRA-SHORT CHANNEL FIELD EFFECT TRANSISTOR

Seshadri Subbanna, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1992, Ser. No. 995,416

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 8 Claims



1. A method of fabricating a field effect transistor including the steps of

forming blanket layers of a gate oxide, a gate electrode material and an oxide overlying said layer of gate electrode material, over a layer of semiconductor material of a first conductivity type having shallow isolation trenches formed therein,

patterning said blanket layers to remove said blanket layers except at a generally centered location between a pair of said shallow isolation trenches, remaining portions of said blanket layers being laterally separated from edges of said shallow isolation trenches,

implanting an impurity of a second conductivity type to a first depth between edges of said remaining portions of said blanket layers and said shallow trenches,

forming sidewall spacers on said remaining portions of said blanket layers,

removing material from a surface of said layer of semiconductor material to a second depth, said second depth exceeding said first depth, between edges of said shallow trenches of said sidewall spacers, and

depositing metal in volumes formed by said removing step.

5,338,699

METHOD OF MAKING A SEMICONDUCTOR INTEGRATED DEVICE HAVING GATE SIDEWALL STRUCTURE

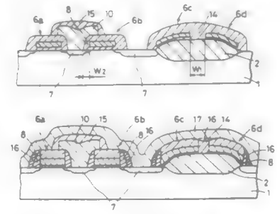
Makoto Ohi; Hideaki Arima; Natsuo Ajika; Atsushi Hachisuka, and Yasushi Matsui, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 692,395, Apr. 25, 1991, Pat. No. 5,233,212. This application Jan. 29, 1993, Ser. No. 10,691

Claims priority, application Japan, May 2, 1990, 2-116271

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 5 Claims



1. A manufacturing method of a semiconductor device comprising the steps of:

forming an element isolation region on the surface of a semiconductor substrate having active regions of a first conductivity type for isolating and insulating said active regions;

subsequently forming a plurality of gate electrodes arranged substantially parallel to each other on the surface of said semiconductor substrate wherein a top portion of each of said plurality of gate electrodes is covered with an insulating film;

forming first impurity regions having a first impurity concentration in the surface of said semiconductor substrate adjacent and extending beneath said plurality of gate electrodes by implanting impurity ions of a second conductivity type onto the surface of said semiconductor substrate using said gate electrodes as masks;

depositing an insulating film entirely over said semiconductor substrate;

forming insulating layers on the side walls of said gate electrodes by performing anisotropic etching on said insulating film deposited;

forming second impurity regions in the surface of said semiconductor substrate adjacent and extending beneath said insulating layers formed on the side walls of said gate electrodes, said second impurity regions having a second impurity concentration higher than said first impurity concentration and formed by implanting impurity ions of the second conductivity type onto the surface of said semiconductor substrate, using said gate electrodes and said insulating layers as masks; and

forming a conductive interconnection layer on said semiconductor substrate formed substantially perpendicularly to said gate electrodes and electrically connected with said highly concentrated impurity regions,

wherein in the formation process of said gate electrodes, said gate electrodes are patterned so that spaces between opposing side walls of adjacent ones of said gate electrodes on the element isolation region (2) are smaller than the thickness twice as large as that of said insulating layers to be formed on the side walls of said gate electrodes in the active regions.

5,338,700

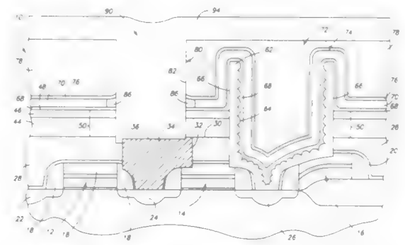
METHOD OF FORMING A BIT LINE OVER CAPACITOR ARRAY OF MEMORY CELLS

Charles H. Dennison, and Aftab Ahmad, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Apr. 14, 1993, Ser. No. 47,668

Int. Cl.[5] H01L *21/72*

U.S. Cl. 437—60 33 Claims



1. A method of forming a bit line over capacitor array of memory cells comprising:

providing an array of substantially electrically isolated word lines atop a semiconductor wafer;

providing active areas about the word lines to define an array of memory cell FETs, the active areas being defined by a first active region for electrical connection with a memory cell capacitor and a second active region for electrical connection with a bit line;

providing a planarized first layer of an insulating material over the word lines and active areas, the planarized layer of insulating material having an upper surface which is above the word lines;

providing first contact openings through the first layer of insulating material to second active regions;

providing first conductive material pillars within the first contact openings, the first pillars having upper surfaces which are elevationally above the word lines;

providing a covering layer of insulating material over the planarized first layer of insulating material and first pillars;

providing capacitor contact openings through the covering layer to electrically connect with the first active regions;

providing capacitors within the capacitor contact openings;

providing an overlying layer of insulating material over the covering layer of insulating material and over the capacitors;

providing bit line contact openings through the overlying layer and the covering layer to the first pillar upper surfaces; and

providing a digit line layer of conductive material atop the wafer and within the bit line contact openings, the digit line layer electrically connecting with the first pillar upper surfaces.

5,338,701

METHOD FOR FABRICATION OF W-POLYCIDE-TO-POLY CAPACITORS WITH HIGH LINEARITY

Shun-Liang Hsu; Chun-Yi Shi, both of Hsin-Chu, and Mou-Shiung Lin, Hsinchu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Filed Nov. 3, 1993, Ser. No. 145,154

Int. Cl.[5] H01L *21/334, 21/283*

U.S. Cl. 437—60 20 Claims

8. A method for forming an integrated circuit in and on a

VOL 1165 ISS 3 AG 16 1994 UMI

silicon substrate, with a polycide-to-polysilicon capacitor with low voltage coefficient and high linearity, and with a CMOS device with polycide gate, comprising:

forming field oxide regions, n-well and p-well regions, and gate oxide regions in and on said silicon substrate;

forming a first layer of polysilicon, having a suitable doping concentration, on the surface of said substrate and said field oxide regions;

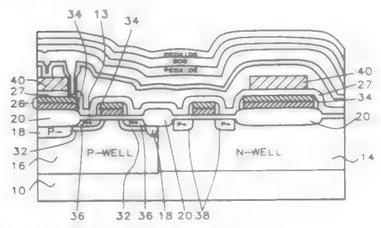
forming a layer of silicide over said layer of polysilicon;

ion implanting in a vertical direction into said layer of silicide to produce said low voltage coefficient and high linearity;

forming a layer of interpoly oxide over said layer of silicide;

densifying said layer of interpoly oxide;

forming a second layer of polysilicon, on the surface of said layer of interpoly oxide;



doping said second layer of polysilicon;

patterning said second layer of polysilicon to form the top plate of said capacitor;

removing said layer of interpoly oxide except in the area under said top plate of said capacitor, where it acts as a capacitor dielectric;

patterning said layer of silicide and said layer of polysilicon, to form a polycide bottom plate of said capacitor and to form said polycide gate;

annealing said layer of silicide;

forming source and drain regions of said CMOS device in said substrate in the regions between said polycide gate and said field oxide regions; and

forming remaining layers to complete said integrated circuit.

5,338,702

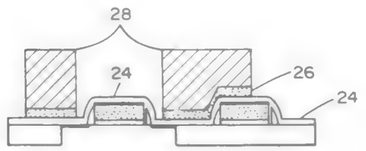
METHOD FOR FABRICATING TUNGSTEN LOCAL INTERCONNECTIONS IN HIGH DENSITY CMOS

Edward Kobeda, Raleigh, N.C.; Jeffrey P. Gambino, Gaylordsville, Conn.; George G. Gifford, Poughkeepsie, and Nickolas J. Mazzeo, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 27, 1993, Ser. No. 9,511

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—192 **13 Claims**



1. A method for fabricating at least one tungsten local interconnection in a high density CMOS circuit comprising the steps of:

a. providing a silicon substrate having circuit elements formed thereon;

b. depositing an etch stop layer of chromium on the circuit elements and the silicon substrate;

c. depositing a conductive layer of tungsten non-selectively on said chromium layer;

d. patterning a photoresist mask lithographically over said tungsten layer;

e. etching said tungsten layer stopping on said chromium layer;

f. stripping said photoresist mask at a temperature less than 100° C.; and

g. using a direction O_2 reactive ion etch to remove said chromium layer selectively to said silicon substrate.

5,338,703

METHOD FOR PRODUCING A RECESSED GATE FIELD EFFECT TRANSISTOR

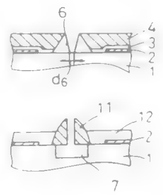
Hiroshi Matsuoka, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 86,895

Claims priority, application Japan, Oct. 26, 1992, 4-311426

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—203 **13 Claims**



1. A method for producing a recessed gate field effect transistor including a recess in a semiconductor substrate and a gate electrode disposed in the recess comprising:

applying a photoresist film to a surface of a semiconductor substrate and to source and drain electrodes on the semiconductor substrate;

forming a first insulating film on said photoresist film;

forming a resist pattern having an opening on said first insulating film;

etching said first insulating film and said photoresist film to form an opening having a width increasing in the direction of said semiconductor substrate using said resist pattern as a mask;

forming a pair of side walls comprising a second insulating film in and at opposite sides of the opening in said first insulating film and said photoresist film;

forming a recess by etching said semiconductor substrate using the opening narrowed by said side walls as a mask;

selectively removing said side walls by etching;

depositing gate metal on said first insulating film and on said semiconductor substrate in the recess to form a gate electrode; and

removing unnecessary gate metal by dissolving said photoresist film.

7. A method for producing an FET comprising:

forming a dummy gate on a semiconductor substrate on which source and drain electrodes are present;

forming side walls comprising first insulating film on both sides of and contacting said dummy gate;

applying a photoresist film to said substrate covering said source and drain electrodes and said dummy gate;

treating said photoresist film to expose part of said side walls;

selectively removing said dummy gate by etching, leaving an opening between said side walls;

forming a recess by etching said semiconductor substrate through the opening;

selectively removing said side walls by etching;

depositing gate metal on said resist film and in the recess to form a gate electrode; and

removing unnecessary gate metal by dissolving said resist film.

5,338,704

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

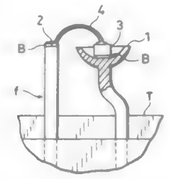
Atsushi Imai, and Tuyoshi Hishida, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 2, 1992, Ser. No. 970,372

Claims priority, application Japan, Nov. 15, 1991, 3-300371

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **5 Claims**



1. A method of manufacturing a semiconductor device by using a frame which has at least one chip bonding portion for mounting a semiconductor chip, the frame further having at least one lead portion, the semiconductor device including a wire having a first end for connection to the semiconductor chip and a second end for connection to the lead portion of the frame, the method comprising the steps of:

(1) applying a layer of conductive adhesive to the lead portion of the frame;

(2) solidifying the conductive adhesive layer on the lead portion of the frame; and

(3) bonding the second end of the wire to the solidified conductive adhesive layer on the lead portion of the frame.

5,338,705

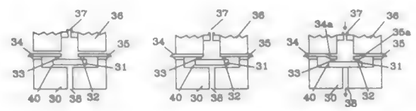
PRESSURE DIFFERENTIAL DOWNSET

Guy Harris, Carrollton; Duane Callaway, Grand Prairie, and Rajesh Shah, Lewisville, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 10, 1992, Ser. No. 943,278

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—217 **5 Claims**



1. A method for downsetting a semiconductor die to move the die edge away from the lead frame leads attached to the die, comprising the steps of:

suspending a mounted semiconductor die over a cavity in a base by the lead frame leads;

rigidly clamping the lead frame leads against the base; and

providing a nonmechanical pressure deferential across the semiconductor die to downset the die in the base cavity, moving the semiconductor die away from the lead frame leads attached thereto.

5,338,706

Patent Not Issued For This Number

5,338,707

PROCESS FOR PRODUCTION OF HIGH-PURITY MULLITES

Tomoyuki Inui, 5-43, Utoyama 1-chome, Uji-shi, Kyoto-fu, and Masashi Inoue, Kyoto University Shokuin-shukusha 123, Gokashou-kanyuchi, Uji-shi, Kyoto-fu, both of Japan

Filed May 20, 1992, Ser. No. 886,551

Claims priority, application Japan, May 21, 1991, 3-145355

Int. Cl.[5] C03C *3/00*

U.S. Cl. 501—12 **4 Claims**

1. A process for the production of high purity mullites which comprises reacting an aluminum alkoxide with a silicon alkoxide in an Al/Si atomic ratio of 2:1 to 7:1 in an aromatic hydrocarbon solvent in a hermetically sealed reactor at a temperature of 200° C.–350° C. and calcining the resulting reaction product at a temperature of 900° C.–1600° C.

5,338,708

PALLADIUM THICK FILM COMPOSITIONS

John J. Felten, Chapel Hill, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1993, Ser. No. 170,103

Int. Cl.[5] C03C *8/18*

U.S. Cl. 501—19 **5 Claims**

1. A thick film conductor composition consisting essentially of a mixture of:

(a) 30–80% wt. finely divided particles of palladium powder having a surface area of 3–10 square meters/gm and density of 0.5–0.7 grams/cc;

(b) 2–10% wt. finely divided particles of a refractory inorganic binder;

all of (a)and (b) being dispersed in (c) 68–10% wt. of an organic medium;

wherein the firing temperature of the composition is from 800°–950° C.

5,338,709

PROCESS FOR PRODUCING GRANULATED STRONTIUM CARBONATE WITH A STRONTIUM-CONTAINING BINDER

Gilberto M. Planes, Monterey, Mexico, assignor to Solvay Barium Strontium GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 7, 1993, Ser. No. 116,770

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1992, 4229901

Int. Cl.[5] C03C *6/00*

U.S. Cl. 501—27 **16 Claims**

1. A process for producing granulated strontium carbonate comprising the steps of:

mixing strontium carbonate with a binder selected from the group consisting of strontium oxide, strontium hydroxide, and hydrated strontium hydroxide in the presence of water, and

granulating and drying the resulting mixture.

5,338,710

CERAMIC SUBSTRATE SINTERED AT LOW TEMPERATURES

Juji Ishigame, Hamura, and Yoshiaki Matsumura, Oume, both of Japan, assignors to Sumitomo Metal Mining Company, Limited, Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 134,899

Claims priority, application Japan, Dec. 9, 1992, 4-351545

Int. Cl.[5] C03C *1/00, 14/00*

U.S. Cl. 501—32 **8 Claims**

1. A ceramic substrate which is sintered at a temperature below 900° C. and which comprises:

50 to 65% by weight of a mixture composed of 20 to 50% by volume of an anorthite crystal phase, 1 to 20% by volume of a gahnite crystal phase, and a balance of a glass phase; and

35 to 50% by weight of alumina as a filler.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,711

HIGH ALUMINA REFRACTORY SHAPES

Lawrence D. Fitch, Bethel Park, and Stanley A. Smith, Pittsburgh, both of Pa., assignors to Indresco Inc., Dallas, Tex.

Filed Jan. 21, 1993, Ser. No. 81,437
Int. Cl.[5] C04B 35/10, 35/56
U.S. Cl. 501—89 11 Claims

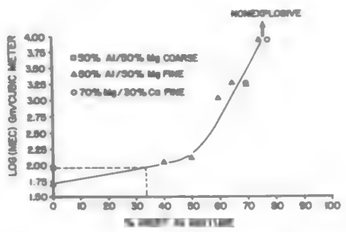
1. A mix for forming a high alumina refractory shape with high resistance to aluminum penetration consisting essentially of at least about 60% by weight aluminum oxide, about 1 to 5% by weight boron phosphate, and about 5 to 15% by weight silicon carbide, and for each 100 parts by weight of the mix, a phosphorous-containing binder in an amount sufficient to bind the mix.

5,338,712

PRODUCTION OF NON-EXPLOSIVE FINE METALLIC POWDERS

John P. MacMillan, Renfrew; Douglas J. Zaliani, Stittsville, and Martin J. Bray, Renfrew, all of Canada, assignors to Timminco Ltd., Toronto, Canada

Filed Feb. 4, 1993, Ser. No. 13,347
Int. Cl.[5] C04B 35/02
U.S. Cl. 501—94 16 Claims



1. A process for producing a substantially non-explosive powder containing finely divided particles of metal selected from the group consisting of aluminum, magnesium, or alloys of aluminum, magnesium or calcium, comprising simultaneously grinding a mixture of pieces of said metal with pieces of a refractory material to produce a ground mixture containing finely divided metallic particles, at least 50% of which are less than 100 mesh, and finely divided refractory particles said metallic and refractory particles being intimately mixed together, said refractory particles constituting between 40% and 90% of the said ground mixture and having 50% of the refractory material less than 65 mesh, and being present in such particle sizes and quantities as ensure that the Minimum Explosible Concentration, as tested in a 20-L vessel with a chemical igniter, is greater than 100 gm/m^3.

5,338,713

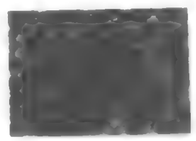
SINTERED BODY OF ALUMINA AND PARTIALLY STABILIZED ZIRCONIA, A PROCESS FOR MAKING THE SAME AND A METHOD OF PREPARING A POWDER FOR SINTERING

Hiroyoshi Takagi, Kasugai; Masanobu Awano, Nagoya, and Yuzi Hoshi, Funabashi, all of Japan, assignors to Agency of Industrial Science and Technology and Nissan Chemical Industries Ltd., both of Tokyo, Japan

Continuation of Ser. No. 927,890, Aug. 11, 1992, abandoned, which is a continuation of Ser. No. 532,634, Jun. 4, 1990, abandoned. This application May 25, 1993, Ser. No. 66,654
Claims priority, application Japan, Jun. 8, 1989, 1-146102
Int. Cl.[5] C04B 35/48
U.S. Cl. 501—105 5 Claims

1. A sintered body comprised of alumina and partially stabilized zirconia and having an average grain size diameter not exceeding 0.7 micron obtained by the process comprising:

preparing a wet mixture of a uniformly divided alumina powder of at least 99.95% purity having a primary particle diameter not exceeding 0.15 micron and an average particle diameter greater than 0.1 micron and not greater than 0.3 micron, and 10 to 50% by volume of a partially



stabilized zirconia powder of at least 99.95% purity having an average particle diameter not exceeding 0.3 micron, molding the mixture, and

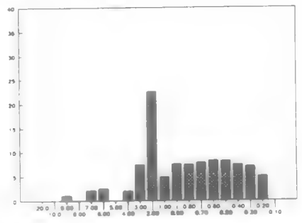
sintering the molded product at a temperature of 1300° to 1500° C. at atmospheric pressure.

5,338,714

COMPOSITE ALUMINA/METAL POWDERS, CERMETS MADE FROM SAID POWDERS, AND PROCESSES OF PRODUCTION

Abel Rousset, Ramonville, and Xavier DeVaux, Lanouaille, both of France, assignors to Centre National de la Recherche Scientifique (C.N.R.S.), Paris, France

PCT No. PCT/FR91/00606, § 371 Date Mar. 24, 1992, § 102(e) Date Mar. 24, 1992, PCT Pub. No. WO92/01645, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 22, 1991, Ser. No. 856,153
Claims priority, application France, Jul. 24, 1990, 90 09790
Int. Cl.[5] C04B 35/16
U.S. Cl. 501—127 15 Claims



1. A process for the production of a composite powder of ceramic/metal comprising:

(a) preparing an aqueous solution of a mixed carboxylic salt of aluminum and one or more transition metals, having the formula $Al_{1-x}M_x(R)_n$ where M represents the transition metal or metals, R is a carboxylic radical, x is less than 0.3 and n is a whole number,

(b) precipitating the mixed salt by an organic solvent miscible with water, in which said salt is stable and insoluble,

(c) separating the precipitate obtained from the liquid phase and recovering the precipitate in the form of a micronic powder of mixed salt precursor,

(d) subjecting said precursor to a thermal decomposition treatment in the presence of oxygen at a temperature of between 300° C. and 500° C. for decomposing the precursor and producing a mixed amorphous oxide of aluminum and the transition metal or metals $(Al_2O_3)_{1-x}M_{2x}O_y$, where y is a whole number which is a function of the valence of the transition metal or metals,

(e) in the case of metals or alloys having a melting point less than 1600° C., subjecting the mixed oxide to an annealing heat treatment in the presence of oxygen at a temperature of between 1000° C. and 1300° C. for obtaining a solid crystallized solution of aluminum and oxides of the transition metal or metals,

(f) reducing either the mixed amorphous oxide from step (d), or in the case of metals or alloys having a low melting point, the solid crystalline solution from step (e), by a heat treatment under a reducing atmosphere free of water vapor at a temperature of between 1000° C. and 1300° C. for a period of more than 2 hours.

5,338,715

CATALYST FOR EXHAUST GAS PURIFICATION

Kozo Iida; Shigeru Nojima, both of Hiroshima; Serizawa Satoru, Nagasaki, and Norihisa Kobayashi, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,107
Claims priority, application Japan, Jul. 9, 1991, 3-168008; Aug. 1, 1991, 3-192829; Dec. 3, 1991, 3-319195; Dec. 26, 1991, 3-344273
Int. Cl.[5] B01J 29/28, 29/30, 29/36
U.S. Cl. 502—64 4 Claims

1. In a catalyst for exhaust gas purification wherein a crystalline silicate has strongly acidic sites which promote removal of metal in the presence of high-temperature steam, the improvement comprising:

a crystalline silicate having in a dehydrated state a chemical formula, in terms of the molar ratio of oxides,

$$aR_2O.bMO.Al_2O_3cSiO_2$$

where R is selected from the group consisting of an alkali metal ion, a hydrogen ion, and a mixture thereof, M is at least one alkaline earth metal selected from the group consisting of Ca, Mg, Sr, and Ba, a=0–2, b=0.03–40, providing that a+b>1 and c=11–3000;

said silicate having an X-ray diffraction pattern described in the following X-ray diffraction table

Lattice spacing (d value)	Relative intensity
11.2 ± 0.3	VS
10.0 ± 0.3	VS
6.7 ± 0.2	W
6.4 ± 0.2	M
6.0 ± 0.2	M
5.7 ± 0.2	W
5.6 ± 0.2	M
4.6 ± 0.1	W
4.25 ± 0.1	M
3.85 ± 0.1	VS
3.75 ± 0.1	S
3.65 ± 0.1	S
3.3 ± 0.1	M
3.05 ± 0.1	W
3.0 ± 0.1	M

where,
VS = Very Strong
S = Strong
M = Moderate
W = Weak; and

said crystalline silicate containing at least one metal selected from the group consisting of elements in Groups Ib and VIII of the periodic table;

said at least one alkaline earth metal being within the crystalline lattice of said crystalline silicate so that the strongly acidic sites in the crystalline silicate are reduced and demetallization in the presence of high-temperature steam in use is inhibited whereby durability of the catalyst is improved while maintaining catalytic activities.

5,338,716

NON-OXIDE METAL CERAMIC CATALYSTS COMPRISING METAL OXIDE SUPPORT AND INTERMEDIATE CERAMIC PASSIVATING LAYER

Kelly B. Triplett, Stamford, Conn.; Johst H. Burk, Mohegan Lake, N.Y.; Fawzy G. Sherif, Stony Point, N.Y., and Willem Vreugdenhil, Katonah, N.Y., assignors to Akzo Nobel nv, Arnhem, Netherlands

Filed Dec. 1, 1992, Ser. No. 984,129
Int. Cl.[5] B01J 29/06, 27/224, 27/22, 27/24
U.S. Cl. 502—64 10 Claims

1. A supported non-oxide metal ceramic catalyst which comprises:

(a) an oxidic support;

(b) a passivating layer, on the support, of a ceramic silicon carbide; and

(c) a non-oxide metal-containing ceramic catalyst component from the group consisting of Group VIB transitional metal carbide and nitride on the passivating layer.

5,338,717

METHOD FOR THE PREPARATION OF SUPPORTED HYDROGENATION AND HYDROTREATING CATALYSTS

Clyde L. Aldridge, and Kenneth L. Riley, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 30,751, Mar. 11, 1993, which is a continuation-in-part of Ser. No. 632,723, Dec. 24, 1990, Pat. No. 5,198,100. This application Oct. 22, 1993, Ser. No. 141,839
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[5] B01J 37/02, 37/16, 37/20, 27/19
U.S. Cl. 502—211 28 Claims

1. A method for preparing a catalyst composition suitable for removing heteroatoms from a heteroatom-containing feedstock, which method comprises:

(a) impregnating an inorganic oxide support material with a Group VI heteropolyacid;

(b) treating said impregnated support with an aqueous solution of a reducing agent which is capable of at least partially reducing the Group VI metal of the heteropolyacid;

(c) drying said treated support at a temperature from about 20° C. to about 200° C. at about atmospheric pressure;

(d) impregnating the treated support with a Group VIII metal salt of an acid having an acidity less than that of the Group VI heteropolyacid;

(e) drying said impregnated treated support at a temperature from about 20° C. to about 200° C. at about atmospheric pressure; and

(f) sulfiding said impregnated support, thereby forming the catalyst.

5,338,718

THERMAL TRANSFER SHEET AND THERMAL TRANSFER IMAGE FORMING METHOD

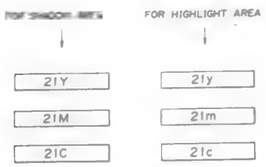
Hideaki Sato, and Hiroshi Eguchi, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Mar. 25, 1992, Ser. No. 857,614
Claims priority, application Japan, Mar. 26, 1991, 3-84431; Mar. 26, 1991, 3-84433
Int. Cl.[5] B41M 5/035, 5/38
U.S. Cl. 503—227 11 Claims

1. A thermal transfer image forming method capable of gradation-recording by controlling a heat energy in which a thermal transfer sheet having a substrate film and a dye layer containing a dye and a binder on the surface side of the substrate film is superposed on an image-receiving sheet and the thermal transfer sheet is supplied with heat in imagewise shape from the back surface side of the substrate film to form an image on the image-receiving sheet, the method comprising the steps of:

VOL 1165 ISS 3 AG 16 1994 UMI

preparing a first thermal transfer sheet provided with a dye layer for a shadow area having an optical density, OD, of not less than 1, and a second thermal transfer sheet provided with a dye layer for a highlight area having an optical density, OD, of not more than 1, with respect to a



same hue; said dye layers for shadow and highlight area containing different dyes from each other, forming a heavy density portion of the same hue by use of the first thermal transfer sheet for the shadow area; and

forming a light density portion of the same hue by use of the second thermal transfer sheet for the highlight area.

5,338,719

PHENOXY OR PYRIDYLOXY-2H-1,4-BENZOXAZINE-3-ONE DERIVATIVE AND HERBICIDE CONTAINING SAME AS ACTIVE INGREDIENT

Naoko Kawaguchi, Moriguchi; Harukazu Fukami, Kyoto; Ryuichi Sago, Isehara, and Keitaro Ikai, Hiratsuka, all of Japan, assignors to Suntory Limited, Osaka, Japan

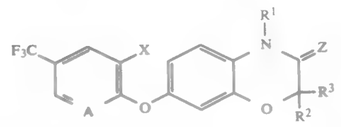
Continuation of Ser. No. 738,137, Jul. 30, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 48,957

Claims priority, application Japan, Oct. 4, 1990, 2-265071; Oct. 4, 1990, 2-265072

Int. Cl.[5] C07D *265/36, 413/12;* **A01N** *43/84*

U.S. Cl. 504—224 **4 Claims**

1. A benzoxazine derivative having the formula (I) or a salt thereof:



wherein A represents N or a CY group, where Y represents a hydrogen atom or a halogen atom;

X represents a chlorine atom;

Z represents an oxygen atom;

R^1 represents a lower alkyl group which may also be substituted with a halogen atom;

R^2 represents a hydrogen atom or a lower alkyl group;

R^3 represents a carboxyl group which may be esterified with a lower alkanol, a lower alkenol, a lower alkynol or a phenol or amidated with an ammonia, a primary amine, or a secondary amine.

5,338,720

TRIAZOLE COMPOUNDS AND HERBICIDAL COMPOSITIONS

Masaki Takeuchi, Saitama, and Mitsuru Kanzaki, Shizuoka, both of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP91/01041, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO92/02512, PCT Pub. Date Feb. 20, 1992

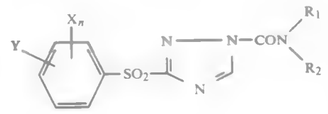
PCT Filed Aug. 3, 1991, Ser. No. 972,461

Claims priority, application Japan, Aug. 3, 1990, 2-206483

Int. Cl.[5] A01N *43/653;* **C07D** *249/12*

U.S. Cl. 504—273 **6 Claims**

1. A triazole compound represented by the formula:



wherein X denotes a hydrogen atom, a halogen or a lower alkyl group, Y denotes a halogen substituted lower alkoxy group, R_1 and R_2 which may be the same or different each denotes an ethyl or propyl group, and n is an integer of 0–4.

5,338,721

PROCESS FOR MANUFACTURING A SUPERCONDUCTING COMPOSITE

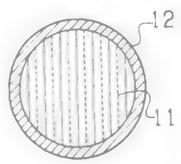
Susumu Yamamoto; Teruyuki Murai; Nozomu Kawabe; Tomoyuki Awazu; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 189,366, May 2, 1988, Pat. No. 5,122,507. This application May 18, 1992, Ser. No. 884,137

Claims priority, application Japan, May 1, 1987, 62-108120; May 6, 1987, 62-110289; May 7, 1987, 62-111582; Jun. 10, 1987, 62-144366; Sep. 14, 1987, 62-230638

Int. Cl.[5] B32B *9/00*

U.S. Cl. 505—230 **17 Claims**



1. A wire composite comprising a copper oxide superconductor and an outer metal pipe on which said superconductor is supported, characterized in that said outer metal pipe is made of at least one of metals selected from a group consisting of alloys of gold, silver and platinum, said copper oxide superconductor is selected from a group consisting of:

(1) a copper oxide including Ba and Y,

(2) a copper oxide including Ba and La,

(3) a copper oxide including Sr and La,

(4) a copper oxide including Sr, Ca and Bi, and

(5) a copper oxide including Ba, Ca and Tl.

5,338,722

METHOD OF FORMING SUPERCONDUCTING OXIDE CERAMIC MATERIALS HAVING HIGH CRITICAL DENSITIES OF SUPERCONDUCTING CURRENT

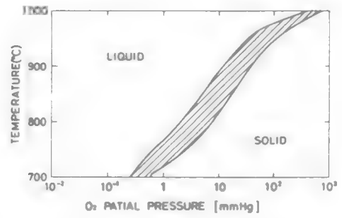
Yasuhiko Takemura, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 824,920, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 379,973, Jul. 14, 1989, abandoned. This application Mar. 12, 1993, Ser. No. 32,172

Claims priority, application Japan, Jul. 18, 1988, 63-179788

Int. Cl.[5] C01G *3/02;* **H01L** *39/24*

U.S. Cl. 505—500 **11 Claims**



1. A method of forming superconducting material comprising the steps of:

placing a material which comprises an oxide superconducting material or precursor material thereof in a reservoir;

heating said reservoir to a temperature at which said material is melted;

maintaining said material at said temperature in an oxygen reduced atmosphere wherein oxygen is present in said reservoir at an initial pressure; and

increasing said initial pressure of said oxygen to a higher pressure than said initial pressure while maintaining said temperature to thereby form said superconducting material.

5,338,723

FIBRINOGEN RECEPTOR ANTAGONISTS

Ruth F. Nutt, Green Lane; Stephen F. Brady, Philadelphia; Daniel F. Veber, Ambler, and Mark E. Duggan, Wynnewood, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 840,605, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 717,173, Jun. 17, 1991, abandoned, which is a continuation of Ser. No. 421,224, Oct. 13, 1989, abandoned. This application Sep. 21, 1992, Ser. No. 948,331

Int. Cl.[5] C07K *7/00, 7/64;* **A61K** *37/02*

U.S. Cl. 514—11 **5 Claims**

1. A fibrinogen receptor antagonist selected from the group consisting of:

and

c(Aha-(homoLys)-Gly—Asp—Trp—Pro).

5,338,724

ANTIMICROBIAL PROTEINS, COMPOSITIONS CONTAINING SAME AND USES THEREOF

Joelle E. Gabay, New York, and Carl E. Nathan, Larchmont, both of N.Y., assignors to Cornell Research Foundation, Inc. and Rockefeller University, both of New York, N.Y.

Division of Ser. No. 125,684, Nov. 25, 1987, Pat. No. 5,087,569, which is a continuation-in-part of Ser. No. 106,524, Oct. 6, 1987, Pat. No. 5,126,257, which is a continuation-in-part of Ser. No. 935,509, Nov. 26, 1986, abandoned. This application Feb. 11, 1992, Ser. No. 835,725

The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—12 **7 Claims**

1. A purified polypeptide which is a human polymorphonuclear leukocyte polypeptide having antimicrobial activity against bacteria and fungi at a pH between 5.0 and 8.0, a predicted molecular weight of 24,832 daltons and the amino acid sequence shown in combined FIGS. **20A** and **20B**.

5,338,725

ANTI-AGGREGATORY AGENTS FOR PLATELETS

Iwao Ojima, Stony Brook; Masakatsu Eguchi, Setauket, both of N.Y.; Young-Im Oh, Annandale, N.J., and Barry S. Coller, Dix Hills, N.Y., assignors to The Research Foundation of the State University of New York, Albany, N.Y.

Filed Jun. 30, 1992, Ser. No. 906,525

Int. Cl.[5] A61K *37/02;* **C07K** *7/06, 7/08*

U.S. Cl. 514—13 **5 Claims**

1. A peptide selected from the group consisting of:

$(RDGFPG)_2Dab—G—OH$;

$(RDGFPG)_2Dab—NH_2$;

$(RGDF)_2Lys—NH_2$;

$(GRGDF)_2Lys—NH_2$;

$(GRGDF)_2Orn—NH_2$; and

$(RGDF)_2Dac—NH_2$.

5,338,726

ENDOTHELIN CONVERTING ENZYME INHIBITORS

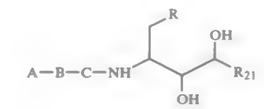
Kazumi Shiosaki, Libertyville; Andrew S. Tasker, Lindenhurst, both of Ill., and Terry J. Opgenorth, Racine, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 696,487, May 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 649,649, Jan. 31, 1991, abandoned. This application Sep. 29, 1992, Ser. No. 954,403

Int. Cl.[5] A61K *37/02;* **C07K** *5/06, 5/08, 5/10*

U.S. Cl. 514—17 **8 Claims**

1. A method for inhibiting endothelin converting enzyme comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of the formula:



wherein

A is acetyl, pivaloyl, t-butyloxycarbonyl, benzyloxycarbonyl or phenylsulfonyl; or A is $HO_2C(CH_2)_nC(O)$— wherein n is 1 to 3; or A is $R_{1a}C(O)$— or $R_{1a}S(O)_2$— wherein R_{1a} is morpholinyl, piperazinyl or piperazinyl substituted with loweralkyl; or A is (aminoalkyl)(alkyl-)aminocarbonyl, (alkylaminoalkyl)(alkyl)aminocarbonyl or (dialkylaminoalkyl)(alkyl)aminocarbonyl;

B is —$N(R_4)CH(R_3)C(O)$— wherein R_4 is hydrogen or loweralkyl and R_3 is cycloalkyl;

VOL 1165 ISS 3 AG 16 1994 UMI

C is —N(R5)CH(R6)C(O)— wherein R5 is hydrogen or loweralkyl and R6 is loweralkyl;
R is naphthyl or indolyl; and
R21 is loweralkyl; or a pharmaceutically acceptable salt, ester or prodrug thereof.

5,338,727
THERAPEUTIC AGENT FOR THE PREVENTION OR TREATMENT OF ADULT RESPIRATORY DISTRESS SYNDROME

Mitchell Glass, Wilmington, Del.; Joseph C. Williams, Elkton, Md., and Ross L. Stein, Scotch Plains, N.J., assignors to Imperial Chemical Industries PLC, Millbank, England

Continuation of Ser. No. 528,295, May 24, 1990. This application Aug. 3, 1992, Ser. No. 924,686
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—19 **18 Claims**

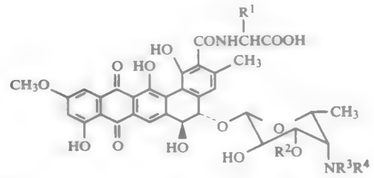
1. A method of prevention or treatment of adult respiratory distress syndrome in a mammal in need thereof which comprises administering to said mammal an effective amount of 4-(4-chlorophenylsulphonylcarbamoyl)benzoyl-L-valyl-L-proline 1(RS)-(1-trifluoroacetyl-2-methylpropyl)amide, or a pharmaceutically acceptable salt thereof.

5,338,728
PRADIMICIN COMPOUNDS

Hajime Kamachi, Urayasu; Minoru Hirano, Tachikawa, and Shinji Masuyoshi, Yokohama, all of Japan, assignors to Bristol-Myers Squibb, New York, N.Y.

Filed Aug. 14, 1992, Ser. No. 929,931
Int. Cl.[5] A61K *31/70;* **C07H** *15/24*
U.S. Cl. 514—27 **27 Claims**

1. A compound having the formula



wherein
R1 is H, methyl, or hydroxymethyl, provided that when R1 is methyl or hydroxymethyl, the resulting amino acid residue has the D configuration;
R2 is H or β-D-xylosyl;
R3 is H or alkyl of one to six carbon atoms;
R4 is —CN, —NO,



or a pharmaceutically acceptable salt thereof.

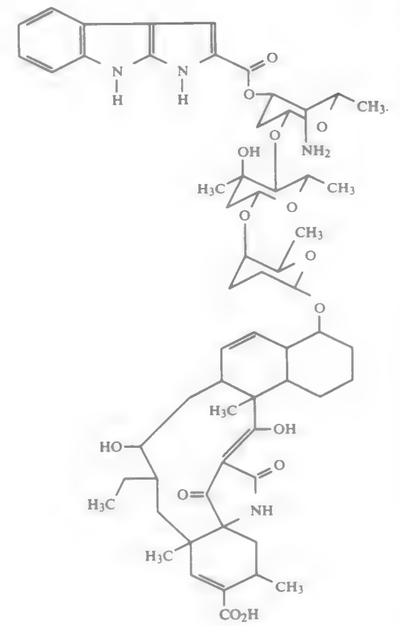
24. A method for treating fungal infections in a mammalian host comprising administering to said host an antifungal effective amount of a compound of claim 1.

5,338,729
ANTIBIOTIC 42D005 α AND β

Weidong Ding, Nanuet; George A. Ellestad, Pearl River; Darren Abbanat, Cornwall, and Valerie Bernan, New City, all of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 26, 1993, Ser. No. 52,724
Int. Cl.[5] C07H *17/00;* **A61K** *31/70, 31/71, 31/735*
U.S. Cl. 514—27 **12 Claims**

1. The compound 42D005α which has the structure:

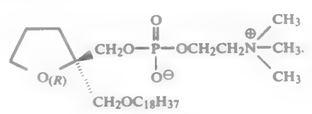


5,338,730
USE OF THE (R) ISOMER OF 2-[(2-OCTA-DECYLOXYMETHYL-TETRAHYDRO-2-FURANYLMETHOXY)-HYDROXYPHOSPHINYLOXY]-N,N,N-TRIMETHYLETHANAMINIUM HYDROXIDE INNER SALT-4-OXIDE IN TREATING MULTIPLE SCLEROSIS

Heinrich Estermann, Allschwil, Switzerland; Prasad K. Kapa, Parsippany, N.J.; Russell L. Underwood, Randolph, N.J., and William J. Houlihan, Mountain Lakes, N.J., assignors to Sandoz Ltd., Basle, Switzerland

Division of Ser. No. 692,094, Apr. 26, 1991, Pat. No. 5,229,377, which is a continuation-in-part of Ser. No. 647,396, Jan. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 540,438, Jun. 19, 1990, abandoned. This application Jun. 4, 1993, Ser. No. 73,215
Int. Cl.[5] A61K *31/665;* **C07F** *9/141*
U.S. Cl. 514—99 **5 Claims**

1. A method of treating multiple sclerosis comprising administering to a subject in need of such treatment a therapeutically effective amount of the (R) isomer of 2-[(2-octadecyloxymethyl-tetrahydro-2-furanylmethoxy)-hydroxyphosphinyloxy]-N,N,N-trimethylethanaminium hydroxide inner salt-4-oxide having the formula

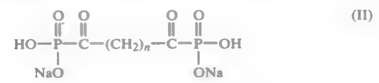


5,338,731
BISPHOSPHONATES, PROCESSES FOR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Eli Breuer, Jerusalem, and Gersbon Golomb, Efrat, both of Israel, assignors to Yissum, Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation-in-part of Ser. No. 764,035, Sep. 23, 1991, Pat. No. 5,196,409, which is a division of Ser. No. 570,266, Aug. 20, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 28,905
Claims priority, application Israel, Aug. 20, 1989, 91362
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] A61K *31/66;* **C07F** *9/40, 9/38*
U.S. Cl. 514—108 **39 Claims**

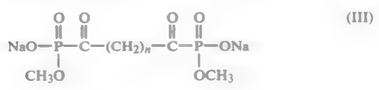
1. Bisphosphonate compounds of the Formula (II):



(II)

wherein n is 5, 7–9, 11–18, 20, 22 or 24.

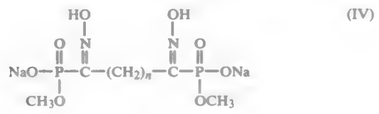
2. Bisphosphonate compounds of the Formula (III):



(III)

wherein n is from 4 to 24.

3. Bisphosphonate compounds of the Formula (IV):



(IV)

wherein n is 4–18, 20, 22 or 24.

5,338,732
MEGESTROL ACETATE FORMULATION

Anne E. Atzinger, Lebanon; Robert J. Bequette, and Robert E. Davis, both of Evansville, all of Ind., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 839,061, Feb. 19, 1992, abandoned, which is a continuation of Ser. No. 717,155, Jun. 18, 1991, abandoned. This application May 13, 1992, Ser. No. 882,218
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—178 **10 Claims**

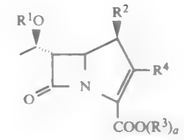
1. An oral pharmaceutical composition comprising micronized megestrol acetate at a concentration of 15 to 150 mg/mL in combination with polysorbate at a concentration of 0.005% to 0.015% weight/volume and polyethylene glycol at a concentration of greater than 5% weight/volume which composition forms a stable flocculated suspension in water.

5,338,733
ISOXAZOLIDINYL CARBAPENEM DERIVATIVE

Mitsuru Imuta, Neyagawa, and Koichi Nishi, Nara, both of Japan, assignors to Shionogi Seiyaku Kabushiki Kaisha, Osaka, Japan

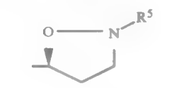
Filed Mar. 30, 1993, Ser. No. 39,957
Claims priority, application Japan, Apr. 1, 1992, 4-080065
Int. Cl.[5] C07D *487/00;* **A01N** *43/00;* **A61K** *31/395*
U.S. Cl. 514—210 **16 Claims**

1. A carbapenem derivative represented by Formula I:

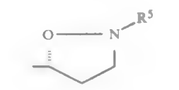


(I)

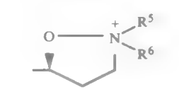
wherein R1 is a hydrogen or a hydroxy protecting group; R2 is substituted or non-substituted lower alkyl; R3 is hydrogen, an inorganic base, an organic base selected from the group consisting of triethylamine salt, pyridine salt, picoline salt, ethanolamine salt, triethanolamine salt, dicyclohexylamine salt, N,N'-dibenzylethylenediamine salt and dibenzylamine salt, or a carboxy protecting group; a is 0 or 1; and R4 is a group represented by any of the following Formulae II through V:



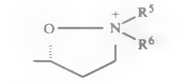
(II)



(III)



(IV)



(V)

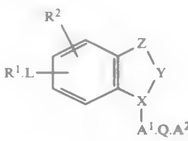
wherein R5 and R6 are independently substituted or non-substituted lower alkyl, or the salts thereof.

5,338,734
HETEROCYCLIC AMIDE DERIVATIVES AND PHARMACEUTICAL USE THEREOF

Peter R. Bernstein, Wallingford, Pa.; Frederick J. Brown, Newark; Victor G. Matassa, Wilmington, both of Del., and Ying K. Yee, Square, Pa., assignors to Zeneca Inc., Wilmington, Del.

Division of Ser. No. 711,478, Jun. 6, 1991, Pat. No. 5,179,112, which is a division of Ser. No. 380,059, Jul. 14, 1989, Pat. No. 5,030,643, which is a division of Ser. No. 852,798, Apr. 16, 1986, Pat. No. 4,859,692. This application Nov. 25, 1992, Ser. No. 981,718
Claims priority, application United Kingdom, Apr. 17, 1985, 85/09882; Oct. 17, 1985, 85/25658
Int. Cl.[5] C07D *265/36, 279/16;* **A61K** *31/54*
U.S. Cl. 514—224.2 **15 Claims**

1. A compound of formula I



I

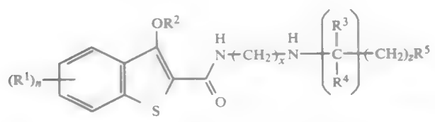
wherein the group >X—Y—Z— is >N—CRbRe—CRcRf—Zb—

VOL 1165 ISS 3 AG 16 1994 UMI

wherein
Rb and Rc are each hydrogen or, together with the existing carbon to carbon bond, form an unsaturated linkage;
Re and Rf are independently hydrogen or (1-4C)alkyl;
Zb is oxy or thio;
the group $R^1.L$— stands for amidic radicals of the formula: $R^1.W.CO.NH$— or $R^1.W.CS.NH$—, in which R^1 is selected from the group consisting of (a) (2-10C)alkyl optionally containing 1 or more fluorine substituents; (b) phenyl-(1-6C)alkyl in which the (1-6C)alkyl moiety may optionally bear a fluoro or (1-4C)alkoxy substituent and in which the phenyl moiety may optionally bear a substituent selected from the group consisting of halogeno, (1-4C)alkyl, (1-4C)alkoxy and trifluoromethyl; and (c) (3-8C)cycloalkyl or (3-8C)cycloalkyl-(1-6C)alkyl, the cyclic moiety of any of which optionally may contain one unsaturated linkage and may optionally bear 1 or 2 (1-4C)alkyl substituents;
W is oxy, thio, imino or a direct link to R^1;
R^2 is hydrogen, halogeno, (1-4C)alkyl or (1-4C)alkoxy;
Q is phenylene optionally bearing 1 or more substituents independently selected from the group consisting of halogeno, hydroxy, (1-4C)alkyl, (1-4C) alkoxy and trifluoromethyl;
A^1 is (1-2C)alkylene or vinylene;
A^2 is methylene, vinylene or a direct link to M; and
M is an acidic group selected from the group consisting of carboxy, 1H-tetrazol-5-yl and an acylsulphonamide residue of the formula —$CO.NH.SO_mR^3$ in which m is the integer 1 or 2 and R^3 is selected from the group consisting of (1-6C)alkyl, (3-8C)cycloalkyl, (6-12C)aryl, heteroaryl comprising 5–12 atoms at least one of which is carbon and at least one of which is selected from a group consisting of oxygen, sulfur and nitrogen, and (6-12C)aryl-(1-4C)alkyl, in any of which the aromatic or heteroaromatic moiety may bear 1 or 2 substituents selected from the group consisting of halogeno, (1-4C)alkyl, (1-4C)alkoxy, trifluoromethyl, nitro and amino;
or a pharmaceutically acceptable salt thereof.

5,338,735
PHARMACEUTICAL COMPOUNDS
John Fairhurst, Basingstoke, and David E. Tupper, Reading, both of England, assignors to Lilly Industries Limited, Basingstoke, England
Continuation of Ser. No. 975,021, Nov. 12, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 104,272
Claims priority, application United Kingdom, Nov. 18, 1991, 9124439.2; Aug. 26, 1992, 9218112.2
Int. Cl.[5] A61K *31/38;* **C07D** *333/70*
U.S. Cl. 514—233.5 **6 Claims**

1. A compound of the formula:

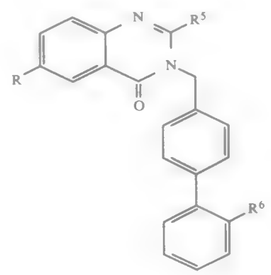


in which each R^1 is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, halogen or nitro, and n is 0, 1, 2 or 3, R^2 is hydrogen, C_{1-4} alkyl or C_{2-4} alkenyl, R^3 and R^4 are each hydrogen, C_{1-4} alkyl, optionally substituted phenyl or C_{6-9} cycloalkyl optionally substituted by 1 to 4 C_{1-4} alkyl groups, R^5 is optionally substituted phenyl, tetrahydronaphthyl, phthalimido, saccharinyl, glutaramido, C_{6-10} cycloalkyl optionally substituted with 1 to 4 C_{1-4} alkyl groups or a phenyl group, or C_{4-9} heterosubstituted cycloalkyl optionally substituted with 1 to 4 alkyl groups, x is 1, 2 or 3, y is 0 or 1 and z is 0, 1, 2 or 3; and salts thereof.

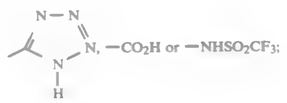
5,338,736
ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6-SUBSTITUTED QUINAZOLINONES
Jeremy I. Levin, Nanuet, N.Y., assignor to American Cyanamid Company, Wayne, N.J.
Filed Oct. 7, 1993, Ser. No. 133,473
Int. Cl.[5] A61K *31/505;* **C07D** *239/90, 239/91*
U.S. Cl. 514—259 **11 Claims**

1. A quinazolinone compound having the formula:

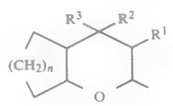
FORMULA I



wherein
R^6 is



R^5 is lower alkyl of 3 to 5 carbon atoms;
R is:



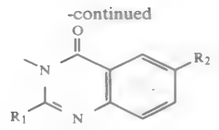
R^1, R^2, and R^3 are independently selected from H and lower alkyl of 1 to 4 carbon atoms, n is one or two; or the pharmaceutically acceptable salts thereof.

5,338,737
BIPHENYL OXADIAZOLES AND THIADIAZOLES AS ANGIOTENSIN II ANTAGONISTS
David T. Connor, Ann Arbor, and Catherine R. Kostlan, Saline, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.
Division of Ser. No. 899,395, Jun. 16, 1992, Pat. No. 5,210,204. This application Feb. 12, 1993, Ser. No. 17,228
Int. Cl.[5] A61K *31/435, 31/42*
U.S. Cl. 514—259 **8 Claims**

1. A method of treating hypertension comprising administering to a host suffering therefrom a therapeutic effective amount of a compound of the formula

-continued

Ia

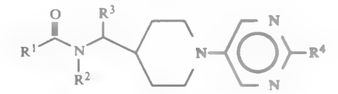


wherein X' is oxygen or sulfur; R_1 is R_1' are each independently lower alkyl; R_2 is CH_2OH, CHO, or CO_2R_4; R_3 is hydrogen, halo, or a pyrrole group attached at the nitrogen atom and unsubstituted or substituted by lower alkyl, and R_4 is hydrogen or lower alkyl;
a tautomer thereof and a pharmaceutically acceptable salt thereof.

5,338,738
CEREBRAL FUNCTION ENHANCERS: ACYCLIC AMIDE DERIVATIVES OF PYRIMIDINYLPIPERIDINES
Ronald J. Matson, Meriden, and Joseph P. Yevich, Southington, both of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.
Filed Apr. 19, 1993, Ser. No. 49,749
Int. Cl.[5] C07D *401/04;* **A61K** *31/505*
U.S. Cl. 514—256 **10 Claims**

1. A compound of Formula I and the pharmaceutically

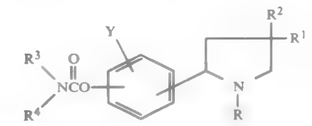
I



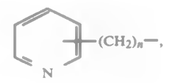
acceptable acid addition salts thereof wherein
R^1 is selected from the group consisting of hydrogen C_{1-4} alkyl, C_{5-7} cycloalkyl, C_{7-8} bicycloalkyl-methyl, phenyl, phenyl-lower alkyl, phenyl-hydroxy-lower alkyl, and pyridinyl;
R^2 and R^3 are independently selected from hydrogen and C_{1-4} alkyl; and
R^4 is selected from hydrogen, halogen, or trifluoromethyl.

5,338,739
(PYRROLIDINYL)PHENYL CARBAMATES, COMPOSITIONS AND USE
David G. Wettlaufer, Phillipsburg, and Peter A. Nemoto, Raritan, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.
Filed Mar. 10, 1994, Ser. No. 208,554
Int. Cl.[5] A61K *31/40, 31/535;* **C07D** *207/12, 413/06*
U.S. Cl. 514—235.5 **18 Claims**

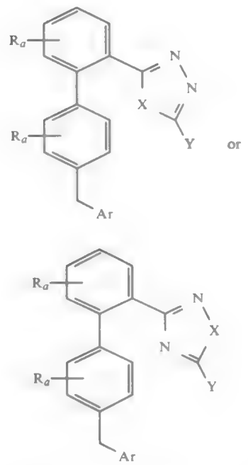
1. A compound of the formula



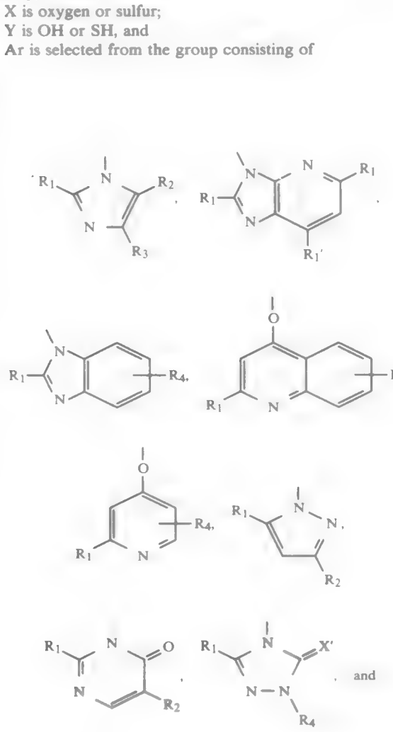
wherein:
a. R is hydrogen, loweralkyl, a group of the formula



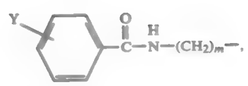
a group of the formula



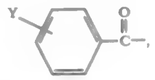
wherein R_a is independently hydrogen, lower alkyl, lower alkoxy, or halo;
X is oxygen or sulfur;
Y is OH or SH, and
Ar is selected from the group consisting of



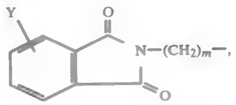
VOL 1165 ISS 3 AG 16 1994 UMI



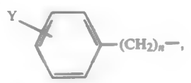
a group of the formula



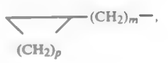
a group of the formula



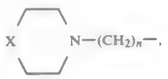
a group of the formula



a group of the formula



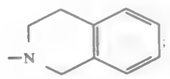
or a group of the formula



wherein X is $—CH_2—$, —O—, or —S—, Y is hydrogen, loweralkyl, loweralkoxy, hydroxy, halogen, or trifluoromethyl, and m is 1 to 5, n is 1 to 5, and p is 1,2,3,4, or 5;

b. R^1 and R^2 are independently hydrogen or loweralkyl;

c. R^3 and R^4 are independently hydrogen, loweralkyl, phenyl or phenyl substituted by one or more loweralkyl, loweralkoxy, hydroxy, halogen, or trifluoromethyl groups, or taken together with the nitrogen atom to which they are bound form a pyrrolidinyl, piperidinyl, morpholinyl, or thiomorpholinyl group, or a group of the formula



the optical isomers, or pharmaceutically acceptable salts thereof.

5,338,740

ANGIOTENSIN II RECEPTOR ANTAGONISTS

Philip C. Carpino, Mystic; Ronald T. Wester, Ledyard, and Paul A. Da Silva Jardine, Mystic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 13, 1993, Ser. No. 91,099

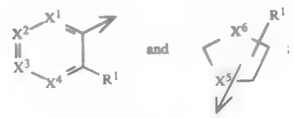
Int. Cl.[5] A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—259 **13 Claims**

1. A compound of the formula:

Ar—W—Het

wherein Ar is selected from the group consisting of



and X^1, X^2, X^3 and X^4 are independently selected from CR^2 and nitrogen;

one of X^5 and X^6 is CH and the other is S;

R^1 is selected from the group consisting of CO_2H, $NHSO_2CF_3$, $CONHSO_2(C_1–C_8)$alkyl, PO_3H, SO_3H, $—CONHSO_2(C_6H_5)$, $CONHSO_2CF_3$, tetrazole,



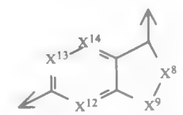
and $—SO_2NHCO_2(C_1–C_8)$alkyl;

R^2 is selected from hydrogen, $(C_1–C_8)$alkyl, $(C_2–C_{10})$alkenyl, $(C_3–C_8)$cycloalkyl, halo, hydroxy, —O—$(C_1–C_6)$alkyl, —S—$(C_1–C_6)$alkyl, —SO—$(C_1–C_6)$alkyl, —SO_2—$(C_1–C_6)$alkyl, $—NR^3R^4$, and phenyl, wherein said phenyl is optionally mono-, di- or tri-substituted with substituents independently selected from hydrogen, $(C_1–C_8)$alkyl, $(C_2–C_{10})$alkenyl, $(C_3–C_8)$cycloalkyl, halo, $(C_1–C_6)$alkoxy, —S—$(C_1–C_6)$alkyl, —SO—$(C_1–C_6)$alkyl, —SO_2—$(C_1–C_6)$alkyl, —O—$(C_1–C_6)$alkyl, and $—NR^3R^4$;

R^3 and R^4 are independently selected from hydrogen, $(C_1–C_8)$alkyl, $(C_2–C_{10})$alkenyl and $(C_3–C_8)$cycloalkyl, or R^3 and R^4, together with the nitrogen to which they are attached, form a cyclic 5–7 membered saturated or partially saturated carbocyclic or heterocyclic ring with one or two heteroatoms independently selected from nitrogen, oxygen and sulfur; and

the dotted line represents that the ring containing X^5 and X^6 is aromatic;

W is a carbobicyclic or heterobicyclic ring system having the formula



and each of X^8 and X^9 is independently selected from CHR^5, O, S, SO, SO_2, and NR^6;

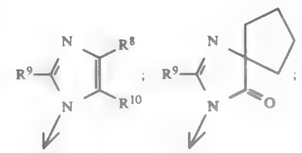
X^{12}, X^{13}, and X^{14} are independently selected from CR^7 or N;

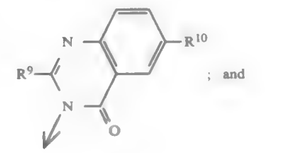
R^5 is selected from hydrogen, $(C_1–C_8)$alkyl, $(C_2–C_{10})$alkenyl, $(C_3–C_8)$cycloalkyl, —O—$(C_1–C_6)$alkyl, and phenyl, wherein said phenyl is optionally mono-, di- or tri-substituted with substituents independently selected from hydrogen, $(C_1–C_8)$alkyl, $(C_2–C_{10})$alkenyl, $(C_3–C_8)$cycloalkyl, halo, $(C_1–C_6)$alkoxy, —S—$(C_1–C_6)$alkyl, —SO—$(C_1–C_6)$alkyl, —SO_2—$(C_1–C_6)$alkyl, —O—$(C_1–C_6)$alkyl, and $—NR^3R^4$;

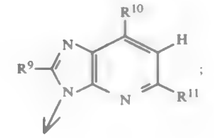
R^6 is selected from $(C_1–C_8)$alkyl, $(C_3–C_8)$cycloalkyl and phenyl, wherein said cycloalkyl is saturated or partially saturated and wherein said cycloalkyl may optionally contain a heteroatom selected from nitrogen, oxygen, and sulfur, and said phenyl is optionally mono-, di- or tri-substituted with substituents independently selected from hydrogen, $(C_1–C_8)$alkyl, $(C_2–C_{10})$alkenyl, $(C_3–C_8)$cycloalkyl, halo, $(C_1–C_6)$alkoxy, —S—$(C_1–C_6)$alkyl —SO—$(C_1–C_6)$alkyl, —SO_2—$(C_1–C_6)$alkyl, —O—$(C_1–C_6)$alkyl, and $—NR^3R^4$;

R^7 is selected from hydrogen, $(C_1–C_8)$alkyl, $(C_2–C_{10})$alkenyl, $(C_3–C_8)$cycloalkyl, halo, hydroxy, —O—$(C_1–C_6)$alkyl, —S—$(C_1–C_6)$alkyl, —SO—$(C_1–C_6)$alkyl, —SO_2—$(C_1–C_6)$alkyl, $—NR^3R^4$, and phenyl, wherein said phenyl is optionally mono-, di- or tri-substituted with substituents selected from hydrogen, $(C_1–C_8)$alkyl, $(C_2–C_{10})$alkenyl, $(C_3–C_8)$cycloalkyl, halo, $(C_1–C_6)$alkoxy, —S—$(C_1–C_6)$alkyl, —SO—$(C_1–C_6)$alkyl, —SO_2—$(C_1–C_6)$alkyl, —O—$(C_1–C_6)$alkyl, and $—NR^3R^4$; and

Het is selected from the group consisting of:







and R^8, R^9, R^{10} and R^{11} are independently selected from hydrogen, $(C_1–C_8)$alkyl, $(C_2–C_{10})$alkenyl, $(C_3–C_8)$cycloalkyl, halo, $(C_1–C_6)$alkoxy, —S—$(C_1–C_6)$alkyl, —SO—$(C_1–C_6)$alkyl, $—CO_2H$, $—SO_2N_3R^4$, $—NR^3R^4$, and phenyl, wherein said phenyl is optionally mono-, di-, or tri-substituted with halo, hydroxy, nitro, $(C_1–C_8)$alkyl, $(C_3–C_6)$cycloalkyl, $(C_1–C_7)$alkoxy, $(C_1–C_7)$alkylthio, and amino, wherein said amino is optionally mono- or di-substituted with $(C_1–C_7)$alkyl;

and wherein each occurrence of R^3 can be the same or different from any other occurrence of R^3, and each occurrence of R^4 can be the same or different from any other occurrence of R^4;

with the proviso that no more than two of X^1, X^2, X^3 and X^4 can be nitrogen;

or a pharmaceutically acceptable salt thereof.

5,338,741

1-HYDROXYALKYLXANTHINES AND MEDICAMENTS CONTAINING THEM

René Fumeaux, La Tour-de-Peilz, and Georges Philippossian, Lausanne, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 823,019, Jan. 15, 1992, which is a continuation of Ser. No. 453,026, Dec. 21, 1989, abandoned, which is a continuation of Ser. No. 109,957, Oct. 19, 1987, abandoned. This application Dec. 29, 1992, Ser. No. 998,876

Claims priority, application Switzerland, Oct. 27, 1986, 4253/86-8

Int. Cl.[5] A61K *31/52;* **C07D** *473/06*

U.S. Cl. 514—262 **2 Claims**

1. The compound 1-(2-hydroxyethyl)-3-propyl xanthine or a physiologically acceptable salt thereof.

5,338,742

NEMATICIDAL USE OF 4-ARALKYLPYRIDINES

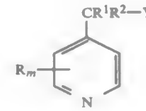
Ronald E. Hackler, Indianapolis; Glen P. Jourdan, and Leon N. Davis, both of Morristown, all of Ind., assignors to DowElanco, Indianapolis, Ind.

Filed Sep. 3, 1991, Ser. No. 753,492

Int. Cl.[5] A01N *43/40*

U.S. Cl. 514—277 **23 Claims**

1. A method of inhibiting a nematode population which comprises applying to nematodes or an infested locus thereof, a nematode inactivating amount of a compound of the formula (1):


(1)

or an N-oxide thereof, wherein

R is halo, $(C_1–C_4)$ alkyl, $(C_3–C_4)$ branched alkyl, $(C_1–C_4)$ alkoxy, halo $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkylthio, $(C_1–C_4)$ alkylsulfinyl, $(C_1–C_4)$ alkylsulfonyl, or substituted amino;

m is 0 or 1 if R is other than halo and m is 1–4 if R is halo; each R may be the same or different if m is greater than 1;

R^1 and R^2 are independently H, $(C_1–C_4)$ alkyl, $(C_2–C_4)$ alkenyl or alkynyl, CN, or OH, or R^1 and R^2 combine to form a carbocyclic ring containing four to six carbon atoms;

Y is a bond or a bivalent hydrocarbon radical one to six carbon atoms long, unsubstituted or substituted with one or more groups independently selected from $(C_1–C_4)$ alkyl, $(C_2–C_4)$ alkenyl or $(C_3–C_7)$ alkynyl, branched $(C_3–C_7)$ alkyl, $(C_3–C_7)$ cycloalkyl $(C_3–C_7)$ cycloalkenyl, halo, halo $(C_1–C_4)$ alkyl, halo $(C_1–C_4)$ alkoxy, hydroxy, or $(C_1–C_4)$ acyl; and

Z is a phenyl group or a phenyl group substituted with one or more groups independently selected from:

halo,
$(C_3–C_8)$ cycloalkyl,
$(C_3–C_8)$ cycloalkenyl,
phenoxy,
substituted phenoxy,
phenylthio,
substituted phenylthio,
phenyl,
substituted phenyl,
NO_2,



where R^{13} is $(C_1–C_7)$ alkyl, halo $(C_1–c_7)$ alkyl, $(C_3–C_7)$

VOL 1165 ISS 3 AG 16 1994 UMI

branched alkyl, halo (C_3–C_7) branched alkyl, (C_3–C_7-)cycloalkyl, halo (C_3–C_7) cycloalkyl, phenyl, or substituted phenyl,
acetoxy,
OH,
CN,
$SiR^3R^4R^5$ or $OSiR^3R^4R^5$, where R^3,R^4 and R^5 are independently (C_1–C_4) alkyl, (C_3–C_4) branched alkyl, phenyl, or substituted phenyl,
NR^6R^7, where R^6 and R^7 are independently H, (C_1–C_4) alkyl, or (C_1–C_4) acyl,
S(O) R^8, or SO_2R^8, where R^8 is (C_1–C_{10}) alkyl, phenyl, or substituted phenyl;
a C_1–C_{12} saturated or unsaturated hydrocarbon chain, straight chain or branched, including or not including a hetero atom selected from O, S, SO, SO_2, NR^6, or SiR^3R^4, where R^3, R^4, and R^6 are as defined above, and unsubstituted or substituted with halo, halo (C_1–C_4) alkoxy, hydroxy, (C_3–C_8) cycloalkyl or cycloalkenyl, (C_1–C_4) acyl, phenoxy, substituted phenoxy, phenyl, substituted phenyl, phenylthio, or substituted phenylthio;
(C_1–C_7) alkoxy unsubstituted or substituted with halo, phenyl, substituted phenyl, (C_3–C_8) cycloalkyl or cycloalkenyl, phenoxy, or substituted phenoxy; or
(C_1–C_7) alkylthio unsubstituted or substituted with halo, phenyl, substituted phenyl, (C_3–C_8) cycloalkyl or cycloalkenyl, phenoxy or substituted phenoxy.

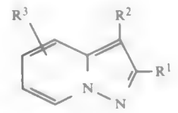
5,338,743

NEW USE OF THE ADENOSINE ANTAGONIST

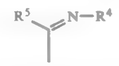
Youichi Shiokawa, Ibaraki; Atsushi Akahane, Hyogo; Hirohito Katayama, Nishinomiya, and Takafumi Mitsunaga, Ashiya, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 648,320, Jan. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 540,325, Jun. 19, 1990, Pat. No. 5,102,869, which is a continuation-in-part of Ser. No. 495,799, Mar. 19, 1990, Pat. No. 5,102,878, which is a continuation-in-part of Ser. No. 407,747, Sep. 15, 1989, Pat. No. 4,994,453, which is a continuation-in-part of Ser. No. 202,526, Jun. 6, 1988, Pat. No. 4,925,849, and Ser. No. 715,460, Jun. 14, 1991, Pat. No. 5,155,114, which is a continuation-in-part of Ser. No. 626,009, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 466,929, Jan. 18, 1990, Pat. No. 4,985,444. This application Mar. 10, 1992, Ser. No. 847,286
Claims priority, application Philippines, Jul. 9, 1991, 42760
Int. Cl.[5] A61K *31/33, 31/395, 31/55, 31/54, 31/535, 31/53, 31/50, 31/495, 31/505, 31/435, 31/44*
U.S. Cl. 514—300 **15 Claims**

1. A method for the treatment of pancreatitis, which comprises administering an effective amount of a pyrazolopyridine compound of the following formula:



wherein
R^1 is lower alkyl, aryl which may have one or more substituent(s) selected from the group consisting of halogen, lower alkoxy, nitro, amino, protected amino, (C_1–C_4)alkylamino and di(C_1–C_4)alkylamino, or a heterocyclic group selected from the group consisting of saturated or unsaturated 3- to 8-membered heteromonocyclic groups containing from 1 to 4 nitrogen atom(s), saturated or unsaturated condensed heterocyclic groups containing from 1 to 4 nitrogen atom(s), saturated or unsaturated 3- to 8-membered heteromonocyclic groups containing from 1 to 2 oxygen atom(s) and from 1 to 3 nitrogen atom(s), unsaturated condensed heterocyclic groups containing from 1 to 2 oxygen atom(s) and from 1 to 3 nitrogen atom(s), saturated or unsaturated 3- to 8-membered heteromonocyclic groups containing from 1 to 2 sulphur atom(s) and from 1 to 3 nitrogen atom(s), unsaturated condensed heterocyclic groups containing from 1 to 2 sulphur atom(s) and from 1 to 3 nitrogen atom(s), unsaturated 3- to 8-membered heteromonocyclic groups containing from 1 to 2 sulphur atom(s), unsaturated 3- to 8-membered heteromonocyclic groups containing an oxygen atom, unsaturated 3- to 8-membered heteromonocyclic groups containing an oxygen atom and from 1 to 2 sulphur atom(s), unsaturated condensed heterocyclic groups containing from 1 to 2 sulphur atom(s) and unsaturated condensed heterocyclic groups containing an oxygen atom and from 1 to 2 sulphur atoms,
R^2 is a group of the formula



wherein R^4 is protected amino or hydroxy and R^5 is hydrogen or lower alkyl;
cyano;
a group of the formula —A—R^6, wherein R^6 is an acyl group, and A is lower aliphatic hydrocarbon group which may have one or more suitable halogen substituent(s);
amidated carboxy;
an unsaturated heterocyclic group selected from the group consisting of unsaturated 3- to 8-membered heteromonocyclic groups containing from 1 to 4 nitrogen atom(s), unsaturated condensed heterocyclic groups containing from 1 to 4 nitrogen atom(s), unsaturated 3- to 8-membered heteromonocyclic groups containing from 1 to 2 oxygen atom(s) and from 1 to 3 nitrogen atom(s), unsaturated condensed heterocyclic groups containing from 1 to 2 oxygen atom(s) and from 1 to 3 nitrogen atom(s), unsaturated 3- to 8-membered heteromonocyclic groups containing from 1 to 2 sulphur atom(s) and from 1 to 3 nitrogen atom(s), unsaturated condensed heterocyclic groups containing from 1 to 2 sulphur atom(s) and from 1 to 3 nitrogen atom(s), unsaturated 3- to 8-membered heteromonocyclic groups containing from 1 to 2 sulphur atom(s), unsaturated 3- to 8-membered heteromonocyclic groups containing an oxygen atom, unsaturated 3-8-membered heteromonocyclic groups containing an oxygen atom and from 1 to 2 sulphur atom(s), unsaturated condensed heterocyclic groups containing from 1 to 2 sulphur atom(s) and unsaturated condensed heterocyclic groups containing an oxygen atom and from 1 to 2 sulphur atoms, which may have one or more substituent(s) selected from the group consisting of carboxy(lower)alkenyl; amino; di(lower)alkylamino; halogen; lower alkoxy; oxo; hydroxy; cyano; acyl; amino(lower)alkyl; lower alkylamino(lower)alkyl; carboxy(lower)alkylamino(lower)alkyl; protected carboxy(lower)alkylamino(lower)alkyl; lower alkylamino(lower)alkyl having hydroxy and naphthyloxy; protected amino(lower)alkyl; cyano(lower)alkyl; cyano(higher)alkyl; lower alkyl which may have one or more suitable substituent(s) selected from the group consisting of hydroxy, halogen, lower alkoxy and acyl; higher alkyl having an unsaturated 3- to 8-membered heteromonocyclic group containing from 1 to 4 nitrogen atom(s); phenyl(lower)alkyl; lower alkenyl; lower alkyl having a heterocyclic group selected from the group consisting of a saturated or unsaturated 3- to 8-membered heteromonocyclic group containing from 1 to 4 nitrogen atom(s), a saturated 3- to 8-membered heteromonocyclic group containing from 1 to 2 oxygen atom(s) and from 1 to 3 nitrogen atom(s), and saturated 3 to 8-membered heteromonocyclic group containing from 1 to 2 oxygen atom(s), in which said heterocyclic group may have from 1 to 3 suitable substituent(s) selected from the group consisting of hydroxy(lower)alkyl and phenyl which may have a lower alkoxy substituent; and dihydrochromenyl which may have one or more substituent(s) selected from the group consisting of lower alkyl, hydroxy and cyano; or
amino or protected amino; and
R^3 is hydrogen, lower alkyl, lower alkoxy or halogen; or a pharmaceutically acceptable salt thereof, to a human being having pancreatitis or an animal having pancreatitis in need thereof.

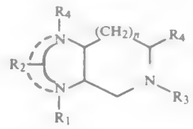
5,338,744

ANGIOTENSIN II ANTAGONISTS USED TO TREAT REPRODUCTIVE FUNCTIONS ASSOCIATED WITH AT_2 RECEPTORS

David T. Dudley; John C. Hodges; Thomas A. Pugsley, and Michael D. Taylor, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 760,585, Sep. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 591,928, Oct. 2, 1990, abandoned. This application Aug. 19, 1992, Ser. No. 932,167
Int. Cl.[5] A61K *31/415, 31/34*
U.S. Cl. 514—303 **3 Claims**

1. A method for regulating the reproductive functions associated with AT_2 receptors in a mammal in need thereof which comprises administering to said mammal an effective amount of a compound of Formula I



I

wherein
(1) is a single or a double bond;
(2) one of R_1 is present and is
(a) alkyl of from four to twenty carbons, inclusive,

(b)



wherein y is zero, one, two, three, four, or five, R′ is cycloalkyl of from four to twenty carbons, inclusive in a one-, two-, or three saturated ring system, said ring consisting of from four to eight carbons inclusive, each ring unsubstituted or substituted by a straight or branched lower alkyl group, naphthyl, heteroaryl consisting of 2-, 3-, or 4-pyridyl; 1-, 2-, or 4-imidazolyl; 1-, 2-, 3-, 4-, 5-, 6-, or 7-indolyl, 2-, or 3-thienyl; 2-, or 3-furyl; or 1-, 2-, or 3-pyrazolyl, phenyl unsubstituted or substituted with from one to five substituents selected from the group consisting of lower alkyl, halo, trifluoromethyl, hydroxy, lower alkoxy, lower alkyl acyloxy, amino, N-lower monoalkylamino, N,N-lower dialkylamino, lower thioalkyl, lower alkylsulfonyl, nitro and



wherein R^{10} is lower alkyl, phenyl unsubstituted or substituted by lower alkyl, or —NHR_{11} wherein R_{11} is hydrogen or lower alkyl, and R″ is hydrogen, lower alkyl, cycloalkyl of from four to twenty carbons, inclusive in a one-, two-, or three-saturated ring system, said ring consisting of from four to eight carbons inclusive, each ring unsubstituted or substituted by a straight or branched lower alkyl group, naphthyl, phenyl unsubstituted or substituted with from one to five substituents selected from the group consisting of alkyl, halo, trifluoromethyl, amino, N-lower monoalkylamino, N,N-lower dialkylamino, lower thioalkyl, lower alkylsulfonyl, and nitro;
(3) R_2 is
(a) hydrogen,
(b) halo,
(c) lower alkyl,
(d) R′—$(CH_2)_x$ wherein x is one, two, three, four, or five and R′ is independently as defined above,
(e)



wherein R′ is independently as defined above, or
(f) R′—CH(OH)— wherein R′ is independently as defined above;
(4) R_3 is
(a) R′—(CH—)$_x$ wherein x and R′ are independently as defined above,
(b)



wherein R′ and y are independently as defined above, and R‴ is lower alkyl, cycloalkyl of from four to twenty carbons, inclusive in a one-, two-, or three-saturated ring system, said ring consisting of from four to eight carbons inclusive, each ring unsubstituted or substituted by a straight or branched lower alkyl group, naphthyl, phenyl unsubstituted or substituted with from one to five substituents selected from the group consisting of alkyl, halo, trifluoromethyl, amino, N-lower monoalkylamino, N,N-lower dialkylamino, lower thioalkyl, lower alkylsulfonyl, and nitro;



wherein R_5 is
(i) alkyl of from one to fifteen carbons, inclusive,

(ii)

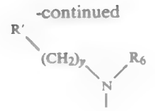


wherein R′, R″, and y are independently as defined above, (iii) —(—CH═CR_6—)—R_1 wherein R_6 is hydrogen or lower alkyl and R_1 is as defined above,

(iv)

VOL 1165 ISS 3 AUG 16 1994 UMI

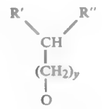
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wherein y, R′, and R_6 are independently as defined above,

(v) R′—(—CH_2—)$_y$—O— wherein y and R′ are independently as defined above,

(vi)



wherein R′, R″, and y are independently as defined above,

(c)



wherein R_5 is independently as defined above;

(5) R_4 is

(a) —(CH_2OR_7 wherein R_7 is hydrogen, lower acyl, a lower alkyl,

(b)



wherein R_7 is independently as defined above and R_8 is hydrogen, lower alkyl, or benzyl,

(c)



(d)



(e)

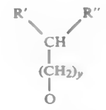


wherein R_9 is hydrogen, lower alkyl, or benzyl; and

(6) n is one; with the overall proviso that R_9 cannot be hydrogen, methyl, or ethyl when R_3 is R′—(CH_2)$_x$ or



wherein R_5 is R′—(CH_2)$_y$O— or



wherein each of R′, R″, x, and y are as defined above or a pharmaceutically acceptable salt thereof.

5,338,745

AMIDE DERIVATIVES OF DIHYDROCAFFEIC ACID AND THEIR APPLICATION TO PHARMACEUTICALS

Nobuyuki Fukazawa; Hajime Iizuka; Osamu Yano, all of Mobara, and Yukio Miyama, Chousei, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporation, Tokyo, Japan

PCT No. PCT/JP91/01063, § 371 Date Apr. 8, 1992, § 102(e) Date Apr. 8, 1992, PCT Pub. No. WO92/02490, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 8, 1991, Ser. No. 847,005

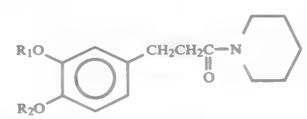
Claims priority, application Japan, Aug. 10, 1990, 2-210244

Int. Cl.^{5} A61K *31/445*; C07D *211/12, 407/02*

U.S. Cl. 514—330 **3 Claims**

1. An amide derivative of dihydrocaffeic acid represented by the formula (I):

(I)



in which R_1 and R_2 are independently a propargyl, benzyl or pyridylmethyl group, or R_1 and R_2 are bound together to form a —CH_2CH_2— group; or a pharmacologically acceptable salt thereof.

5,338,746

THIOSEMICARBAZONIC ACID ESTERS

Martin Missbach, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 66,814, May 24, 1993, abandoned. This application Sep. 15, 1993, Ser. No. 121,973

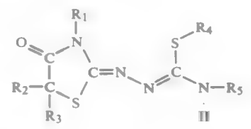
Claims priority, application Switzerland, Jun. 3, 1992, 01-777/92-1

Int. Cl.^{5} A61K *31/425*; C07D *277/04*

U.S. Cl. 514—369 **8 Claims**

1. A compound of formula I

(I)



II

wherein

R_1 and R_5 are lower alkyl, lower alk-2-en-1-yl or lower alk-2-yn-1-yl,

R_2 and R_3 independently of one another are hydrogen or lower alkyl or together are lower alkylidene and

R_4 is lower alkyl, lower alkoxy, lower alk-2-en-1-yl, lower alk-2-yn-1-yl, aryl-lower alkyl, aryl-lower alkenyl or lower alkoxycarbonyl-lower alkyl,

or a salt or tautomeric compound or double-bond isomer thereof.

5,338,747

BENZOISOTHIAZOLINONE-1-DIOXIDE DERIVATIVES AS ELASTASE INHIBITORS

Ladislas Robert, Senteny; Elemer Moczar, Gif sur Yvette; William G. Hornebeck, Versailles, and Christiane M. P. Kerneur, Vitry sur Seine, all of France, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Mar. 7, 1991, Ser. No. 666,093

Claims priority, application France, Mar. 8, 1990, 90 02951

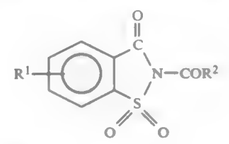
Int. Cl.^{5} C07D *275/06*

U.S. Cl. 514—373 **2 Claims**

1. A composition comprising:

(i) an elastase inhibitor which is at least one benzisothioazolinone-1-dioxide derivative having the formula:

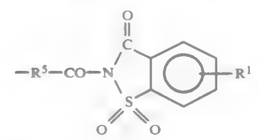
(I)



where

R^1 is a hydrogen;

R^2 is a group with the formula:



and

R^5 is a divalent saturated aliphatic group; and

(ii) a pharmaceutically or cosmetically acceptable carrier or vehicle.

5,338,748

STERILANT COMPOSITION

Stanley L. Wachman, Cherry Hill, and Sidney Karlan, Nutley, both of N.J., assignors to Cetylite Industries, Inc., Pennsauken, N.J.

Continuation of Ser. No. 866,010, Apr. 9, 1992, abandoned, which is a continuation of Ser. No. 758,400, Aug. 27, 1991, Pat. No. 5,124,359, which is a continuation-in-part of Ser. No. 210,626, Jun. 23, 1988, Pat. No. 4,923,899, which is a continuation-in-part of Ser. No. 139,166, Dec. 22, 1987, abandoned, which is a continuation of Ser. No. 906,557, Sep. 8, 1986, abandoned, which is a continuation of Ser. No. 776,479, Sep. 16, 1985, abandoned, which is a continuation of Ser. No. 692,776, Jan. 18, 1985, abandoned. This application Dec. 9, 1993, Ser. No. 164,627

Int. Cl.^{5} A01N *33/12, 35/00, 43/40/43/54*

U.S. Cl. 514—358 **13 Claims**

1. A biocidal, aqueous, composition for killing bacteria, spores, fungi, and viruses on nonabsorbent surface comprising:

a) two quaternary ammonium compounds, each in the amount of from about 0.05 to 3 percent by weight, one of said two quaternary ammonium compounds is a heterocyclic quaternary ammonium compound, and the other of said quaternary ammonium compounds is an aliphatic quaternary ammonium compound having an aromatic and an alkyl moiety or having a long chain aliphatic and a lower alkyl moiety;

b) one aliphatic dialdehyde having from 2 to 6 carbon atoms in the amount of from about 0.5 to about 7 percent by weight; and

c) at least one aliphatic hydroxyl compound having from 1 to 8 carbon atoms in the amount from 0.1 to about 3 percent by weight;

all weight percents being in the final use dilution.

5,338,749

DIARYL-SUBSTITUTED HETEROCYCLIC COMPOUNDS, THEIR PREPARATION AND DRIGS AND COSMETICS OBTAINED THEREFROM

Hans-Heiner Wuest, Dossenheim; Bernd Janssen, Ludwigshafen, both of Fed. Rep. of Germany; William V. Murray, Belle Mead; Michael P. Wachter, Bloomsbury, both of N.J., and Stanley Bell, Narbeth, Pa., assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 717,264, Jun. 18, 1991, Pat. No. 5,196,532, which is a division of Ser. No. 476,875, Feb. 8, 1990, Pat. No. 5,061,705. This application Nov. 6, 1992, Ser. No. 972,518

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1989, 3903993

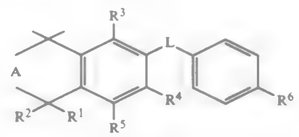
Int. Cl.^{5} A61K *31/415*; C07D *271/06, 403/02*

U.S. Cl. 514—364 **6 Claims**

1. Compounds of the formula I

I

(III)



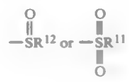
where R^1 and R^2 are each hydrogen or methyl, A is an ethylene or methylene radical which is unsubstituted or substituted by methyl, hydroxyl or oxo,

L is an imidazole or oxadiazole,

R^3 is hydrogen, a hydroxy or C_1–C_6-alkoxy group, R^4 is hydrogen, C_1–C_4-alkyl, halogen or methoxy,

R^5 is hydrogen, methoxy or tert-butyl,

R^6 is hydrogen, methyl, nitrile or a C_2–C_{10}-ketal group or the group —CHR^7OR^8,—CHR^7—NR^9R^{10}, —COR^{11}, —SR^{12},



in which

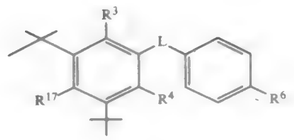
R^7 is hydrogen or C_1–C_4-alkyl,

R^8 is hydrogen, C_1–C_4-alkyl or C_1–C_{20}-alkanoyl or is benzoyl which is unsubstituted or substituted by methoxy, nitro, methyl or chlorine,

R^9 and R^{10} are each hydrogen, C_1–C_4-alkyl or C_1–C_6-alkanoyl or are each benzoyl which is unsubstituted or substituted as for R^8, or R^9 and R^{10}, together with the nitrogen atom to which they are bonded, form a saturated, 5-membered or 6-membered heterocyclic group which may contain oxygen as the second heteroatom,

R^{11} is hydrogen, C_1–C_4-alkyl, —OR^{13} or —$NR^{14}R^{15}$, where R^{13} is hydrogen, unsubstituted or hydroxyl-substituted C_1–C_8-alkyl, aryl or aralkyl which is unsubstituted or substituted by chlorine, bromine, methyl, methoxy or nitro, substitution in the case of the aralkyl group being in the aryl moiety, and where R^{14} and R^{15} are each hydrogen, unsubstituted or hydroxyl-substituted C_1–C_6-alkyl or an aralkyl or aryl group which is unsubstituted or substituted as for R^{13}, or R^{14} and R^{15}, together with the nitrogen atom towhich they are bonded, form a heterocyclic group as defined above for R^9 and R^{10}, and R^{12} is C_1–C_4-alkyl, or compounds of formula Ia

VOL 1165 ISS 3 AG 16 1994 UMI



Ia

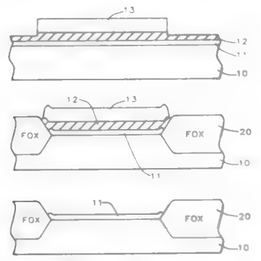
where R^3, R^4, R^6 and L have the above-mentioned meanings and R^{17} is hydrogen or hydroxyl, or their physiologically tolerated salts.

5,338,750

FABRICATION METHOD TO PRODUCE PIT-FREE POLYSILICON BUFFER LOCAL OXIDATION ISOLATION

Hsiao-Chin Tuan, and Hu H. Chao, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Nov. 27, 1992, Ser. No. 982,708
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—70 11 Claims



1. A method of forming a silicon oxide isolation region on the surface of a silicon wafer comprising:

forming a thin layer of silicon oxide on said wafer;

forming a layer of undoped polysilicon on said silicon oxide layer;

forming a layer of silicon nitride on said polysilicon layer;

ion implanting an impurity into said layer of undoped polysilicon in a concentration greater than about 5 E 15 atoms/cm^3 to form a doped polysilicon layer, and not annealing the doped polysilicon;

patterning said silicon nitride layer;

forming said silicon oxide isolation region by thermal oxidation; and

removing in one continuous etching step, using phosphoric acid (H_3PO_4) at a temperature of between about 150° and 180° C., said silicon nitride and doped polysilicon layers to complete the formation of said isolation region on the surface of 15 said wafer, wherein the etching rate of said silicon nitride and doped polysilicon are closer because of said not annealing the doped polysilicon.

5,338,751

Patent Not Issued For This Number

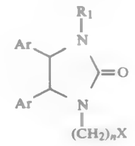
5,338,752

SUBSTITUTED 2-IMIDAZOLONE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS

Deirdre M. B. Hickey, Welwyn; David G. Cooper, Harlow, and Albert A. Jaxa-Chamiec, Rickmansworth, all of England, assignors to SK&F Laboratories Ltd., Welwyn Garden City, England

PCT No. PCT/GB91/01543, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/04331, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 10, 1991, Ser. No. 30,094
Claims priority, application United Kingdom, Sep. 11, 1990, 9019839.1
Int. Cl.[5] A61K *31/415;* C07D *257/04, 233/32;* C07F *9/06*
U.S. Cl. 514—382 16 Claims

1. A compound of structure (I):



(I)

in which

each group Ar is the same or different and is optionally substituted phenyl or optionally substituted heteroaryl, wherein the heteroaryl is independently selected from a saturated or unsaturated 5 or 6 membered ring comprising 1 to 3 heteroatoms selected from nitrogen, oxygen or sulfur,

R^1 is hydrogen, C_{1-4}alkyl, optionally substituted phenyl or optionally substituted heteroaryl, wherein the heteroaryl is independently selected from a saturated or unsaturated 5 or 6 membered ring comprising 1 to 3 heteroatoms selected from nitrogen, oxygen or sulfur;

n is 4 to 12; and

X is 5-tetrazolyl, SO_3H, $P(O)(OR)_2$, $P(O)(OH)_2$, or $P(O)(R)(OR)$ in which R is hydrogen or C_{1-4}alkyl,

or a pharmaceutically acceptable salt thereof.

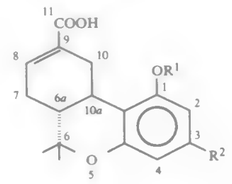
5,338,753

(3R,4R)-Δ 6 TETRAHYDROCANNABINOL-7-OIC ACIDS USEFUL AS ANTIINFLAMMATORY AGENTS AND ANALGESICS

Sumner H. Burstein, 6 Knight Rd., Framingham, Mass. 01701, and Raphael Mechoulam, Jerusalem, Israel, assignors to Sumner H. Burstein, Framingham, Mass.

Filed Jul. 14, 1992, Ser. No. 913,096
Int. Cl.[5] A61K *31/35;* C07D *311/80*
U.S. Cl. 514—454 18 Claims

1. A compound of the formula



wherein R^1 is a hydrogen atom, —$COCH_3$ or —$COCH_2CH_3$; R^2 is a branched C_5-C_{12} alkyl.

7. A method of relieving pain in a mammal comprising administering to said mammal an effective analgesic amount of a compound according to claim 1.

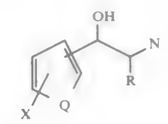
5,338,754

2-PYRROLIDINO-1-ALKANOL DERIVATIVES AS ANTIISCHEMIC AGENTS

Bertrand L. Chenard, Waterford, Conn., assignor to Pfizer Inc, New York, N.Y.

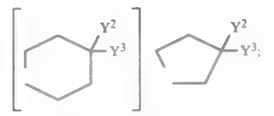
Division of Ser. No. 932,844, Aug. 20, 1992, Pat. No. 5,272,160, which is a division of Ser. No. 784,446, Oct. 23, 1991, Pat. No. 5,185,343. This application Jul. 23, 1993, Ser. No. 96,913
Int. Cl.[5] A61K *31/40;* C07D *207/12*
U.S. Cl. 514—422 12 Claims

1. A compound of the formula:



D (II)

wherein D is



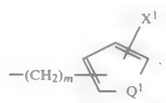
R is H, (C_1–C_6)alkyl, (C_2–C_6)alkenyl or (C_2–C_6)alkynyl;

Q is S or CH=CH;

X is hydrogen, (C_1–C_6)alkyl, halo, OR^1, $OCOR^1$, CO_2R^1, SR^1, NHR^1, $NHCOR^1$, $CONH_2$ or CH;

R^1 is hydrogen or (C_1–C_3)alkyl;

Y^2 and Y^3 are taken separately, and Y^2 is OH and Y^3 is



Q^1 is independently a value of Q as defined above;

X^1 is independently a value of X as defined above;

m is 0, 1, 2, 3 or 4; and

a pharmaceutically-acceptable acid addition salt thereof.

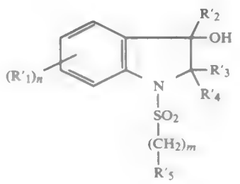
5,338,755

N-SULFONYLINDOLINE DERIVATIVES, THEIR PREPARATION AND THE PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Jean Wagnon, Montpellier; Paul de Cointet, Toulouse; Dino Nisato; Claude Plouzane, both of Saint Georges D'Orques; Claudine Serradeil-Legal, Escalquens, and Bernard Tonnerre, Vailhauques, all of France, assignors to Elf Sanofi, Paris, France

Continuation-in-part of Ser. No. 737,655, Jul. 30, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 923,839
Claims priority, application France, Jul. 31, 1990, 90 09778; Aug. 2, 1991, 91 09908
Int. Cl.[5] A61K *31/40, 31/405;* C07D *209/04*
U.S. Cl. 514—414 12 Claims

1. A compound of formula:



(I)'

in which:

R'_1 is a halogen atom, a C_1–C_4 alkyl, a hydroxyl, a C_1–C_4 alkoxy, a benzyloxy group, a cyano group, a trifluoromethyl group, nitro group or an amino group;

R'_2 is a C_1–C_6 alkyl, a C_3–C_7 cycloalkyl, C_5–C_7 cycloalkene or a phenyl which is unsubstituted or monosubstituted or polysubstituted by a C_1–C_4 alkyl, a C_1–C_4 alkoxy, a halogen, a trifluoromethyl group or an amino group, or R'_2 is a nitrophenyl which is unsubstituted or monosubstituted by a trifluoromethyl group or monosubstituted or polysubstituted by a C_1–C_4 alkyl or a halogen;

R'_3 is a hydrogen atom;

R'_4 is a carbamoyl group of formula $CONR'_6R'_7$;

R'_5 is a C_1–C_4 alkyl; a 1-naphthyl; a 2-naphthyl; a 5-dimethylamino-1-naphthyl; a phenyl which is unsubstituted or substituted by one or more substituents selected from the group consisting of a halogen atom, a C_1–C_4 alkyl, a trifluoromethyl group, an amino group which is free or substituted by one or two C_1–C_4 alkyls, a hydroxyl, a C_1–C_4 alkoxy, a C_2–C_4 alkenoxy, a C_1–C_4 alkylthio, a trifluoromethoxy group, a benzyloxy group, a cyano group, a carboxyl group, a C_1–C_4 alkoxycarbonyl group, a carbamoyl group which is free or substituted by one or two C_1–C_4 alkyls or a C_1–C_4 alkylamino group, or R'_5 is a nitrophenyl which is unsubstituted or monosubstituted by a trifluoromethyl group or a C_2–C_4 alkenoxy or mono- or polysubstituted by a halogen, a C_1–C_4 alkyl, a C_1–C_4 alkoxy, a C_1–C_4 alkylthio, a trifluoromethoxy group or a benzyloxy group;

R'_6 and R'_7 together, with the nitrogen atom to which they are connected, form a saturated, 5-membered ring containing a single nitrogen atom and substituted by R_8 and R_9;

R_8 is R'_8 is a group $(CH_2)_q$ which is itself substituted by a carboxyl group, a C_1–C_4 alkoxycarbonyl group, a benzyloxycarbonyl group, a carbamoyl group which is free or substituted by a hydroxyl or by one or two C_1–C_4 alkyls or an aminocarbothioyl group which is free or substituted by one or two C_1–C_4 alkyls;

R_9 is hydrogen, a halogen, a group $(CH_2)_rOR_{10}$, a group $(CH_2)_rNR_{11}R_{12}$, a group $(CH_2)_rCONR_{11}R'_{11}$ or an azido group;

R_{10} is hydrogen, a C_1–C_4 alkyl, a mesyl or a tosyl;

R_{11} and R'_{11} and R_{12} are each a hydrogen or a C_1–C_4 alkyl or R_{11} is hydrogen and R_{12} is a benzyloxycarbonyl or a C_1–C_4 alkoxycarbonyl;

n is 0, 1 or 2;

m is 0, 1 or 2;

q is 0, 1, 2 or 3;

r is 0, 1, 2 or 3, with the limitation that r is not zero when R_8 and R_9 is at the alpha-position of the intracyclic amide nitrogen;

t is 0 or 1;

as well as its possible salts.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,756

BENZIMIDAZOLE COMPOUNDS

Michel Fortin; Daniel Frechet, both of Paris; Gilles Hamon, Le Raincy; Simone Jouquey, Paris, and Jean-Paul Vevert, Pantin, all of France, assignors to Roussel Uclaf, France

Filed Jun. 7, 1991, Ser. No. 712,247

Claims priority, application France, Jun. 8, 1990, 90 07136; Mar. 13, 1991, 91 03043

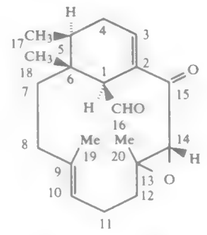
Int. Cl.[5] A61K *31/415;* C07D *213/74, 233/48, 235/08, 471/04*

U.S. Cl. 514—394 3 Claims

1. A compound selected from the group consisting of 2-butyl-1-[(4-carboxyphenyl)-methyl]-1H-benzimidazol-6-carboxylic acid; 4-[(2-butyl-1H-benzimidazol-1-yl)-methyl] benzoic acid; 4-[(2-butyl-1H-benzimidazol-1-yl)-methyl]-N-(1H-indol-4yl)benzamide acid and 4-[(2-butyl-5,6-dimethyl-1H-benzimidazol-1-yl)-methyl]-benzoic acid.

3. A method of inducing angiotensin II receptor antagonistic activity in warm-blooded animals comprising administering to warm-blooded animals an amount of at least one compound selected from the group consisting of 2-butyl-1-[(4-carboxyphenyl)-methyl]-1H-benzimidazol-6-carboxylic acid; 4-[(2-butyl-1H-benzimidazol-1-yl)-methyl]-benzoic acid; 4-[(2-butyl-1H-benzimidazol-1-yl)-methyl]-N-(1H-indol-4yl) benzamide acid; 4-[(2-butyl-5,6-dimethyl-1H-benzimidazol-1-yl)-methyl] benzoic acid sufficient to induce angiotensin II receptor antagonistic activity.

I



5,338,757

METHOD FOR TREATING RETINOPATHY AND OTHER SMALL VESSEL DISORDERS ASSOCIATED WITH DIABETES

Thomas W. Gardner, Hershey, and Theodore M. Hollis, State College, both of Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Division of Ser. No. 312,693, Feb. 17, 1989, Pat. No. 5,019,591. This application May 1, 1991, Ser. No. 694,431

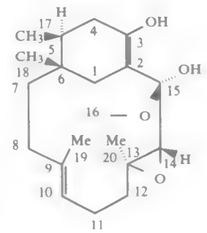
The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[5] A61K *31/34, 31/135*

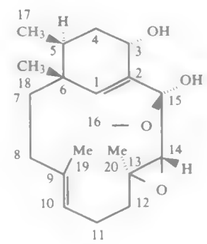
U.S. Cl. 514—461 8 Claims

1. A method for treating small vessel complications associated with diabetes which comprises administering a therapeutically effective amount of an antihistamine or a pharmaceutically acceptable derivative thereof to a mammal having small vessel complications associated with diabetes, wherein the antihistamine is selected from the group consisting of diphenhydramine, terfenadine, mequitazine, astemizole, acrivastine, clemastine, ketotifen, azatadien, oxatomide, azelastine, doxepine, piperoxan, mepyramine, chlorpheniramine, triprolidine and promethazine.

II

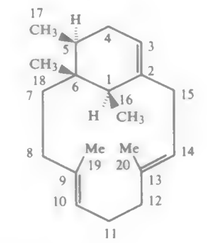


III



or

IV



5,338,758

BICYCLIC DITERPENE PAF ANTAGONIST COMPOUNDS

Min Chu, Union; Mahesh Patel, Verona; Ann C. Horan, Summit, and Vincent P. Gullo, Liberty Corner, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 863,275, Apr. 3, 1992, abandoned. This application Sep. 30, 1992, Ser. No. 954,414

Int. Cl.[5] C07D *307/77;* A61K *31/34*

U.S. Cl. 514—468 2 Claims

1. A compound represented by the formulas I, II, III or IV:



in chemically pure form.

5,338,759

VANADYL COMPLEXES OF HYDROXAMATE CHELATORS AND PHARMACEUTICAL COMPOSITIONS COMPRISING THEM

Yoram Shechter; Abraham Shanzer, and Jacqueline Libman, all of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

PCT No. PCT/EP92/02306, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993, PCT Pub. No. WO93/07155, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 6, 1992, Ser. No. 70,384

Claims priority, application Israel, Oct. 7, 1991, 99666

Int. Cl.[5] A61K *31/28;* C07F *9/00*

U.S. Cl. 514—492 15 Claims

1. A vanadyl complex of a compound of the general formula I:

$$R^2R^3C(CH_2O(CH_2)_mCO[NHCHR(CH_2)_qCO]_n\text{-}NOHR^1)_2 \quad (I)$$

wherein m is 1 or 2; q is 0, 1 or 2; n is 0 or 1; R, R^1, R^2 and R^3 independently designate each hydrogen, aryl, aralkyl, or alkyl optionally substituted by X, wherein X is OH, OR^4, $OCOR^4$, SH, SR, SCOR, COOH, $COOR^4$, $CONH_2$, $CONHR^4$, $CONR^4R^5$, NH_2, NHR^4, NR^4R^5 or $NHCOR^4$, where R^4 and R^5 are alkyl, and one of R^2 or R^3 may further designate X.

9. A method for the oral treatment of diabetes which comprises administering to a diabetic patient effective amounts of a vanadyl salt and a compound of the general formula (I):

$$R^2R^3C(CH_2O(CH_2)_mCO[NHCHR(CH_2)_qCO]_n\text{-}NOHR^1)_2 \quad (I)$$

wherein m is 1 or 2; q is 0, 1 or 2; n or 0 or 1; R, R^1, R^2 and R^3 independently designate each hydrogen, aryl, aralkyl, or alkyl optionally substituted by X, wherein X is OH, OR^4, $OCOR^4$, SH, SR, SCOR, COOH, $COOR^4$, $CONH_2$, $CONHR^4$, $CONR^4R^5$, NH_2, NHR^4, NR^4R^5 or $NHCOR^4$, where R^4 and R^5 are alkyl, and one of R^2 or R^3 may further designate X.

11. A pharmaceutical composition for the treatment of diabetes, comprising a vanadyl salt and a compound of the general formula (I):

$$R^2R^3C(CH_2O(CH_2)_mCO[NHCHR(CH_2)_qCO]_n\text{-}NOHR^1)_2 \quad (I)$$

wherein m is 1 or 2; q is 0, 1 or 2; n or 0 or 1; R, R^1, R^2 and R^3 independently designate each hydrogen, aryl, aralkyl, or alkyl optionally substituted by X, wherein X is OH, OR^4, $OCOR^4$, SH, SR, SCOR, COOH, $COOR^4$, $CONH_2$, $CONHR^4$, $CONR^4R^5$, NH_2, NHR^4, NR^4R^5 or $NHCOR^4$, where R^4 and R^5 are alkyl, and one of R^2 or R^3 may further designate X, wherein said vanadyl salt and said compound of formula (I) are separated from one another in the composition.

5,338,760

UREA DERIVATIVES, THEIR PREPARATION AND MEDICINAL PRODUCTS CONTAINING THEM

Jean-Dominique Bourzat, Vincennes; Marc Capet, Thiais; Claude Cotrel, Paris; Claude Guyon, Saint-Maur des Fosses; Franco Manfre, Vitry sur Seine, and Gérard Roussel, Soisy sur Seine, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony Cedex, France

PCT No. PCT/FR91/00195, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO91/13862, PCT Pub. Date Sep. 19, 1991

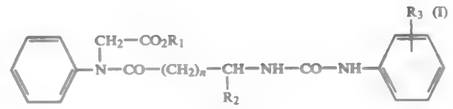
PCT Filed Mar. 11, 1991, Ser. No. 934,686

Claims priority, application France, Mar. 13, 1990, 90 03187

Int. Cl.[5] C07C *229/26;* A61K *31/13*

U.S. Cl. 514—539 7 Claims

1. A compound of formula



in which:

R_1 represents an alkyl radical,

R_2 represents a phenyl radical or a chain $-(CH_2)_m-CO-R_4$ in which m is equal to 0, 1 or 2 and R_4 represents a hydroxyl, alkoxy or amino radical,

R_3 represents a hydrogen or halogen atom or an alkyl, alkoxy or alkylthio radical, and

n is equal to 0 or 1,

on the understanding that the alkyl and alkoxy radicals and alkyl portions contain 1 to 4 carbon atoms in a straight or branched chain, as well as its racemates and enantiomers and its salts.

5,338,761

EMULSIFIED COMPOSITION

Hideo Nakajima; Miyuki Kobchi, and Satoshi Tomomasa, all of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Filed Sep. 28, 1989, Ser. No. 413,940

Claims priority, application Japan, Sep. 29, 1988, 63-245120

Int. Cl.[5] A61K *47/00*

U.S. Cl. 514—772 6 Claims

1. An emulsified composition having an average particle size of 0.010 to 0.070 μm comprising at least the following components, (A), (B) and (C);

(A) at least one lipid selected from the group consisting of vegetable oils, synthetic and semi-synthetic mono-, di-, and tri-glycerides, sterols, cholesterol esters, and monoesters and at least one lipid-soluble drug, selected from the group consisting of antitumor agents, antibacterial and antifungal agents, non-steroidal antiphlogistics, hormone agents, and lipid-soluble vitamins, the content of the drug being 1×10^{-6}% to 99.9% by weight in the component (A);

(B) glycerol and water, the content of the glycerol being an isotonic concentration or more; and

(C) at least one component selected from the group consisting of phospholipids and water-soluble nonionic surfactants having a molecular weight of 1000 or more, said phospholipids being selected from the group consisting of yolk lecithin, soybean lecithin and hydrogenated products thereof, phosphatidyl inositol, phosphatidylserine, sphingomyelin, phosphatidicacid, and phytoglycolipid, wherein the weight ratio of (A)/(C) is 0.5 to 5 and the weight ratio of (A)/(B)/(C) is 1–40/40–95/0.5–20, said emulsified composition being emulsified by using a mixture of glycerol and water at a weight ratio of glycerol/water during emulsification of 3/7 to 9/1.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,762

WATER-BASED MICROEMULSUION FORMULATION OF A CARBAMATE ESTER

Kolazi S. Narayanan, Palisades Park, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 777,033, Oct. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 654,250, Feb. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,014, Jun. 28, 1990, Pat. No. 5,156,666, which is a continuation-in-part of Ser. No. 505,030, Apr. 5, 1990, Pat. No. 5,160,528, which is a continuation-in-part of Ser. No. 448,707, Dec. 11, 1989, Pat. No. 5,071,463. This application Nov. 19, 1992, Ser. No. 978,860

Int. Cl.[5] A01N *25/00, 37/18*

U.S. Cl. 514—788 5 Claims

1. A clear, efficacious aqueous microemulsion of a carbamate ester comprising:

(a) about 0.005–1% by weight of an agriculturally active carbamate ester,

(b) about 0.01–10% by weight of sodium dodecyl sulfate,

(c) about 1–15% by weight of a C_6–C_{18} alkyl pyrrolidone, and

(d) at least about 80% by weight of water.

5,338,763

PROCESS FOR THE PREPARATION OF COMPOUNDS CONTAINING HYDROXYL GROUPS AND THEIR USE IN THE PRODUCTION OF POLYURETHANE RESINS

Thomas Münzamy, Dormagen; Werner Rassbofer, Cologne; Karl-Heinz Dörner, Pulheim, and Ulrich Limna, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 986,167

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1991, 4140967

Int. Cl.[5] C08J *11/04*

U.S. Cl. 521—49.5 9 Claims

1. A process for the preparation of compounds containing alcoholic hydroxyl groups comprising

1) heating to a temperature of from about 120° to about 250° C. a mixture of

(A) a size reduced polyurethane urea or polyurea waste in which the molar ratio of urea groups to urethane groups is from 1:20 to 1:0 with

(B) a polyhydric alcohol having a molecular weight in the range of from 62 to 250

(C) up to 1000% by weight based on the weight of (A), of at least one polyhydroxyl compound having a molecular weight above 250 which is non-volatile under distillation conditions in a ratio by weight of (A):(B) of from 3:1 to 1:10 to form a homogeneous liquid reaction mixture,

2) distilling the homogeneous mixture from 1) at reduced pressure to remove at least 10% of the polyhydric alcohol (B), so that the residue of the distillation has a content of free polyhydric alcohol (B) of at most 50% by weight, exclusive of any component (C) present, and

3) optionally, adding up to 1000% by weight, based on the weight of starting component (A), of at least one polyhydroxyl compound having a molecular weight above 250 which is nonvolatile under distillation conditions to the distillation residue.

5,338,764

PROCESS FOR THE PREPARATION OF FOAMED PROPYLENE POLYMER ARTICLES

Giuseppe Lesca, Milan; Daniele Romanini, Ferrara, and Annibale Vezzoli, Como, all of Italy, assignors to Himont Incorporated, Wilmington, Del.

Division of Ser. No. 119,766, Oct. 10, 1993. This application Feb. 24, 1994, Ser. No. 204,013

Claims priority, application Italy, Sep. 15, 1992, MI92 A 002123

Int. Cl.[5] C08J *9/16*

U.S. Cl. 521—60 3 Claims

1. Foamed beads produced by a process comprising extruding a propylene polymer having (a) a melt strength from 5 to 40 cN and (b) at least part of its macromolecular chains branched in the presence of a foaming agent and cutting the strand of said propylene polymer after the strand exits the extruder die to form the foamed beads.

5,338,765

METHOD OF AND APPARATUS FOR CONTINUOUSLY FOAMING A POLYIMIDE POWDER

Daniel E. Near, Littleton; Royce M. Feagans, Morrison, and Ward T. Hobert, Littleton, all of Colo., assignors to Schuller International, Inc., Denver, Colo.

Filed Nov. 23, 1993, Ser. No. 158,070

Int. Cl.[5] B29C *35/00;* C08J *9/02*

U.S. Cl. 521—50.5 11 Claims

1. A method of continuously foaming a polyimide prepolymer powder comprising:

continuously depositing a prepolymer powder in a continuous layer on a continuous metallic conveyor belt that has been preheated to a temperature of at least 175 degrees Centigrade;

moving the continuous prepolymer powder layer through a heated oven on the continuous metallic conveyor belt;

heating an upper portion of the prepolymer powder layer by oven air convection and infrared radiation and heating a lower portion of the prepolymer powder layer by heat conduction from the metallic conveyor belt to react and foam the prepolymer powder layer to form a continuous piece of foam bun.

5,338,766

SUPERABSORBENT POLYMER FOAM

Dean V. Phan, West Chester, and Paul D. Trokhan, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 26, 1993, Ser. No. 38,580

Int. Cl.[5] C08J *9/28*

U.S. Cl. 521—63 14 Claims

1. A superabsorbent polymer foam comprising a plurality of mutually connected struts of superabsorbent polymer material to form open cells, said foam having:

(a) a surface area to mass ratio of at least about 0.2 m^2/g;

(b) an average cell size of less than about 100 microns; and

(c) a density of less than about 0.5 g/cm^3.

5,338,767

THIXOTROPIC POLYURETHANE SYSTEMS

Jean-Francois Sartelet, Verzy; Francois R. Sanch, Chalons sur Marne, both of France, and Zissis Aggias, Duesseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/01284, § 371 Date Mar. 19, 1993, § 102(e) Date Mar. 19, 1993, PCT Pub. No. WO92/01725, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 10, 1991, Ser. No. 969,814

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1990, 4023005

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—159 23 Claims

1. A polyurethane system comprising a polyol component and a polyisocyanate component resin wherein said polyol component is comprised of a mixture of at least one polyamidoamine and at least one low molecular weight polyfunctional amine.

5,338,768

SUBSTANTIALLY CLOSED CELL RIGID POLYURETHANE FOAMS

Jelle D. Boer, Coye-la-Foret, and Bernard Auguet, Pont Ste Maxence, both of France, assignors to Arco Chemical Technology, L.P., Wilmington, Del.

Continuation of Ser. No. 413,367, Sep. 27, 1989, abandoned. This application Sep. 11, 1992, Ser. No. 943,995

Claims priority, application United Kingdom, Jun. 10, 1988, [illegible]

Int. Cl.[5] C08G *18/32*

U.S. Cl. 521—164 23 Claims

1. A laminate comprising a polyurethane foam core in which the polyurethane foam is a closed cell rigid polyurethane foam made using water as the sole blowing agent, which polyurethane foam is prepared from a polyol composition having a functionality greater than 2, and comprising at least one first component (1) which is prepared by reacting alkylene oxide with an initiator having a functionality of more than 2, at least one aromatic ring, and at least one amino nitrogen atom, where the viscosity of the first component is in the range of 3,500 to 20,000 cps at about 25° C.; and at least one second component (2) selected from the group consisting of monohydroxy organic compounds, polyols, and mixtures thereof, said second component having a functionality or average functionality of at least 1 but less than 3 and a molecular weight (M_w) or average molecular weight in the range of 250 to 4,000, said second component being free of polyester polyol and having a viscosity less than that of the first component at about 25° C.; and which closed cell rigid polyurethane foam is scorch-free and has a density not greater than about 50 kg/m^3.

5,338,769

PHOTO-CURABLE RESIN COMPOSITION

Ryoichi Miyamoto, Kyoto, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 11, 1992, Ser. No. 833,744

Claims priority, application Japan, Feb. 12, 1991, 3-038867; Feb. 12, 1991, 3-038868; Feb. 12, 1991, 3-038869; Feb. 12, 1991, 3-038870; Feb. 12, 1991, 3-038871

Int. Cl.[5] C08F *2/50;* C08L *3/02*

U.S. Cl. 522—88 15 Claims

1. A photo-curable resin composition containing:

(A) 30 to 60 parts by weight of a polycarbonate having a number average molecular weight of between 200 and 10,000 and containing at least two (meth)acrylate groups in the molecule,

(B) 40 to 70 parts by weight of an organic polymer fine powder having an average particle diameter of between 1 μm and 50 μm, wherein said organic polymer fine powder is a member selected from the group consisting of fine powders of paraffin wax, polyolefin, starch and paraformaldehyde, and

(C) 0.04 to 4 parts by weight of a photo-radical polymerization initiator.

5. The photo-curable resin composition of claim 1, wherein the organic polymer fine powder is paraffin wax fine powder.

5,338,770

GAS PERMEABLE THROMBO-RESISTANT COATINGS AND METHODS OF MANUFACTURE

Suzanne Winters, Salt Lake City; Kenneth A. Solen, Orem; Clifton G. Sanders, Salt Lake City; JD Mortensen, Sandy, and Gaylord Berry, Salt Lake City, all of Utah, assignors to Cardiopulmonics, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 215,014, Jul. 5, 1988, Pat. No. 5,262,451, which is a continuation-in-part of Ser. No. 204,115, Jun. 8, 1988, Pat. No. 4,850,958. This application Apr. 12, 1990, Ser. No. 509,063

The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.

Int. Cl.[5] A01N *1/00;* A61M *25/00*

U.S. Cl. 523—112 33 Claims

1. A method for producing a thrombo-resistant coating for use on gas permeable surfaces which contact blood, the method comprising the steps of:

(a) obtaining a gas permeable material having a gas permeable siloxane surface onto which a plurality of amine functional groups have been bonded;

(b) reacting the amine functional groups on the siloxane surface with poly(ethylene oxide) chains terminated with functional groups capable of reacting with the amine functional groups on the siloxane surface, thereby resulting in a product having single poly(ethylene oxide) chains which are bonded to corresponding single amine functional groups, said product being gas permeable;

(c) reacting the product of step (b) with at least one bioactive molecule capable of counteracting at least one blood-material incompatibility reaction such that a single bioactive molecule is correspondingly coupled to a single poly-(ethylene oxide) chain, thereby resulting in a gas permeable siloxane surface to which are attached, by a poly(ethylene oxide) chain, a plurality of the at least one bioactive molecule which react with blood components which come in proximity to the siloxane surface of the gas permeable material in order to resist at least one blood-material incompatibility reaction.

5,338,771

JOINT ENDOPROSTHESIS WITH AL_2O_3 CERAMIC HEAD AND A COMPOSITE SOCKET AND PROCESS FOR MAKING IT

Gerd Neumann, Berlin; Peter Hutschenreuther, Stadtroda; Willfried Glien, Hermsdorf; Dagmar Raab; Barbara Leuner, both of Ilmenau; Gabriele Steinborn, and Georg Berger, both of Berlin, all of Fed. Rep. of Germany, assignors to Eska Medical Luebeck Medizin Technik GmbH, Luebeck, Fed. Rep. of Germany

PCT No. PCT/DE90/00913, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO91/08000, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 28, 1990, Ser. No. 852,228

Claims priority, application German Democratic Rep., Nov. 28, 1989, 334926

Int. Cl.[5] A61L *27/00;* C08K *3/22*

U.S. Cl. 523—113 12 Claims

1. A process for manufacturing a joint endoprosthesis having an Al_2O_3 ceramic head and a composite socket comprising the steps:

(a) fusing an inorganic mixture of a first component mixture and a second component to form a ceramic, glass ceramic or sintered glass ceramic material having apatite and/or wollastonite crystal phases, wherein the first component

VOL 1165 ISS 3 AG 16 1994 UMI

mixture comprises, in percent by mass of the first component mixture,

31–34%	CaO
10–12%	P_2O_5
43–46%	SiO_2
3–5%	Na_2O
2–3.5%	MgO
3–5%	CaF_2

and the second component comprises 0.5 to 11%, relative to the mass of the first component mixture, of a compound selected from the group consisting of Al_2O_3, ZrO_2, TiO_2 and mixtures thereof, with the proviso that TiO_2 be present in the inorganic mixture at no more than 5% of the first component mixture;

(b) cooling and comminuting the ceramic material such that the comminuted ceramic material has a grain size distribution of:

200–500 microns	less than 10%
160–200 microns	15 to 25%
125–160 microns	40 to 50%
100–125 microns	20 to 30%
less than 100 microns	less than 20%
less than 10 microns	less than 0.1%;

(c) introducing the comminuted ceramic material into a polymeric matrix comprising polyurethane or an epoxy resin to prepare a composite of ceramic material and matrix;

(d) curing the composite resulting from step (c) to provide a composite socket; and

(e) combining the composite socket with an Al_2O_3 ceramic head such that the difference between the radius of the socket and the radius of the head lies within the range of 25 to 350 microns, and the radius of the socket and the radius of the head deviate from an ideal spherical shape by 30 microns or less.

5,338,772

IMPLANT MATERIAL

Hans-Jörg Bauer, Flomborn; Gerd Bauer, Kleinostheim; Elvira Dingeldein, Dreieich, and Helmut Wahlig, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 22, 1992, Ser. No. 901,481

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1991, 4120325

Int. Cl.[5] A61F *2/00;* **B32B** *3/26*

U.S. Cl. 523—115 **19 Claims**

1. An implant material comprising a composite material containing calcium phosphate ceramic particles and bioabsorbable polymer, wherein the proportion of calcium phosphate ceramic particles in the material is at least 50% by weight and said particles are joined to one another by polymer bridges, thereby defining a three-dimensional open-pore structure in which the particle surfaces are covered with polymer to the extent of not more than 50%.

5,338,773

DENTAL COMPOSITION AND METHOD

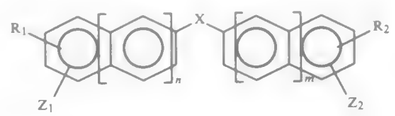
Kewang Lu; Chin-Teh Huang, both of Dover, and Paul Hammesfahr, Wyoming, all of Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Apr. 19, 1993, Ser. No. 49,221

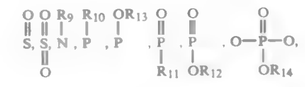
Int. Cl.[5] A61K *6/08;* **C07C** *321/00, 322/00, 315/00*

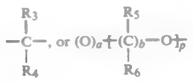
U.S. Cl. 523—116 **20 Claims**

1. A dental cement composition, comprising:
a cation source and
a polymerizable monomer compound of the general formula



wherein
X, is O, S,





R_1 and R_2 each independently is a polymerizable unsaturated moiety having from 2 to 13 carbon atoms,
R_3, R_4, R_5, and R_6 each independently is hydrogen, halogen, alkyl of from 1 to 10 carbon atoms or halogenated alkyl of from 1 to 10 carbon atoms,
R_9, R_{10}, R_{11}, R_{12}, R_{13} and R_{14} each independently is hydrogen, alkyl having from 1 to 10 carbon atoms or aryl having from 6 to 10 carbon atoms.
Z_1 and Z_2 each independently is a moiety including an acid group or a reactive acid derivative,
a, m and n each independently is 0 or 1,
b and
p each independently is an integer from 1 to 10.

5,338,774

POLYURETHANE-FORMING BINDER SYSTEMS CONTAINING A POLYPHOSPHORYL CHLORIDE

William R. Dunnavant, Columbus, and Robert B. Fechter, Worthington, both of Ohio, assignors to Ashland Oil, Inc., Columbus, Ohio

Filed Jul. 15, 1992, Ser. No. 913,577

Int. Cl.[5] C08K *5/51;* **C08G** *18/08, 18/54;* **B22C** *9/02*

U.S. Cl. 523—143 **9 Claims**

1. A foundry mix comprising:
(A) a major amount of hot aggregate; and
(B) an effective bonding amount of a binder system comprising as separate components:
(1) a phenolic resin component;
(2) a polyisocyanate component comprising:
(a) an organic polyisocyanate; and
(b) an effective bench life extending amount of a polyphosphoryl chloride.

5,338,775

CORRECTION FLUID

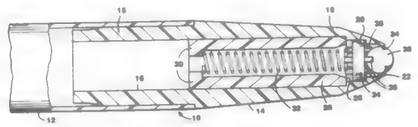
Gary F. Matz, Rosslyn Farms, Pa., and Kimberly B. Sanborn, South Weymouth, Mass., assignors to The Gillette Company, Boston, Mass.

Filed May 19, 1992, Ser. No. 885,514

Int. Cl.[5] C09D *10/00*

U.S. Cl. 523—161 **13 Claims**

1. An aqueous correction fluid having a shear-thinning index of between 0.08 to 0.50, said correction fluid comprising a binding resin, titanium dioxide as an opacifying agent, water, and a sufficient quantity of a suspending agent to provide said fluid with said shear-thinning index, said correction fluid being capable of obscuring an underlying typewritten marking when applied over said marking on a paper substrate and of providing a surface capable of receiving a corrective typewritten ink



marking that can be easily read, said correction fluid having a drying time of about 60 seconds or less.

5,338,776

TIRE SEALER AND INFLATOR

Philip L. Peelor, Mentor; John J. Moran, Willoughby Hills, both of Ohio, and Lloyd T. Flanner, Nags Head, N.C., assignors to Aerosol Systems, Inc., Macedonia, Ohio

Continuation of Ser. No. 837,376, Feb. 14, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,585

Int. Cl.[5] C08K *3/36;* **C08L** *15/02*

U.S. Cl. 523—166 **30 Claims**

1. An anhydrous, essentially nonflammable sealant and inflator composition for introduction into an interior of a pneumatic tire through a valve stem, comprising:
10 to 90 weight percent of a propellant;
90 to 10 weight percent of a solvent; and
0.1 to 30 weight percent of a one part air dryable thermoplastic acrylic resin selected from the group consisting of an acrylic acid polymer, an acrylic acid copolymer, a methacrylic acid polymer, a methacrylic acid copolymer and ester derivatives thereof, substantially dissolved in said solvent, said resin forming a continuous coating on an interior surface of a tire cavity about a puncture in said tire, through non-foaming evaporation of said solvent and rotation of said tire.

5,338,777

SURFACE MODIFIED FILLERS AND COMPOSITIONS CONTAINING THE SAME

Michael E. Tarquini, Havre de Grace, Md., assignor to J. M. Huber Corporation, Rumson, N.J.

Division of Ser. No. 727,294, Jul. 9, 1991, Pat. No. 5,194,458, which is a continuation of Ser. No. 611,553, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 191,763, May 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 129,755, Dec. 4, 1987, abandoned, which is a continuation of Ser. No. 95,456, Sep. 11, 1987, Pat. No. 5,055,284, which is a continuation-in-part of Ser. No. 811,230, Dec. 20, 1985, abandoned. This application Jan. 5, 1993, Ser. No. 768

Int. Cl.[5] C08K *9/06*

U.S. Cl. 523—212 **17 Claims**

1. A thermoplastic composition, comprising at least one thermoplastic polymer and a fire retardant filler comprising substantially amorphous sodium aluminocarbonate particles having a surface coating thereon, said surface coating comprising an organofunctional silane or an organofunctional titanate.

5,338,778

REMOVAL OF HYDROGEN SULFIDE FROM FLUID STREAMS

Stephen A. Bedell, Lake Jackson, and John D. Myers, Clute, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 238,024, Aug. 29, 1988, abandoned. This application Oct. 3, 1990, Ser. No. 592,402

Int. Cl.[5] C01B *17/00*

U.S. Cl. 423—220 **29 Claims**

1. A process for the removal of H_2S from a fluid stream which comprises the steps of
A) contacting said stream in a contacting zone with an aqueous solution having at least two components and not containing a water soluble substance structurally related to anthraquinone or naphthoquinone and derivable from anthraquinone or naphthoquinone, said solution containing:
(1) an effective amount of an iron (III) chelate to oxidize H_2S to sulfur, as a first component, and
(2) as a second component, an amount of a water soluble anionic polymer containing sulfonic acid groups, carboxyl groups or mixtures thereof which is effective to stabilize said chelate,
whereby said iron chelate in said solution is reduced to an iron (II) chelate, a purified gas stream is produced, and sulfur particles are produced,
B) regenerating said reduced iron chelate in an oxidizing zone,
C) removing at least a portion of said sulfur particles, and
D) recycling said regenerated iron chelate to said contacting zone.

5,338,779

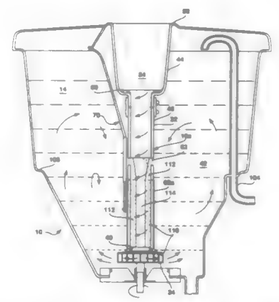
DRY POLYMER ACTIVATION APPARATUS AND METHOD

Carl L. Brazelton, Kankakee, Ill., assignor to Stranco, Inc, Bradley, Ill.

Filed Sep. 18, 1992, Ser. No. 946,915

Int. Cl.[5] C08J *3/02, 3/05*

U.S. Cl. 523—313 **18 Claims**



1. A method for dissolving a measured amount of dry polymer particles batchwise in dilution water, the method comprising:
filling a mixing vessel with the dilution water to a predetermined level;
circulating the dilution water through a mixing assembly which extends downward within said vessel, said mixing assembly including a tube assembly and an impeller in fluid communication with said assembly, said circulating step including flowing the dilution water from said vessel into said mixing assembly through at least one dispersion port defined by said tube assembly and producing a high shear condition within said mixing assembly;

VOL 1165 ISS 3 AG 16 1994 UMI

introducing the dry polymer into said mixing assembly;
dispersing the polymer in said dilution water to form a slurry mixture without forming significant agglomerations of the dry polymer particles;
reducing the circulation through said mixing assembly after the polymer has been dispersed into the slurry and before substantial hydration of the polymer particles has occurred, said reducing including producing a low shear mixing flow in said mixing vessel to form a polymer solution; and
maintaining said low shear mixing flow as the viscosity of said polymer solution increases to fully activate said dry polymer in the dilution water without excessively damaging the polymer in said solution, whereby the dry polymer is both dispersed and activated in the same mixing vessel without forming significant agglomerations.

5,338,780

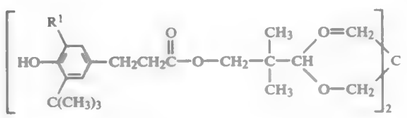
POLYOLEFIN RESIN COMPOSITION CONTAINING CARBON BLACK

Fumitoshi Kojima, Ibaraki, and Tetsuo Yamaguchi, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 24, 1993, Ser. No. 156,903
Claims priority, application Japan, Dec. 9, 1992, 4-329214
Int. Cl.[5] C08K *5/34, 5/35*
U.S. Cl. 523—453 **10 Claims**

1. A polyolefin resin composition containing carbon black, which comprises:
(A) polyolefin resin containing carbon black;
(B) a phenolic compound represented by the following formula (I):

(I)



wherein R^1 is alkyl of 1 to 4 carbon atoms;
(C) an organic sulfur compound selected from the compounds represented by the following formulas (II-1) and (II-2):

$(R^2—OCOCH_2CH_2)_2S$ (II-1)

$(R^2—SCH_2CHCOOCH_2)_4C$ (II-2)

wherein R^2 is alkyl of 4 to 20 carbon atoms;
(D) a piperidine compound having at least one 2,2,6,6-tetramethylpiperidine ring in a molecule; and
(E) an epoxy compound of bisphenol A glycidyl ether.

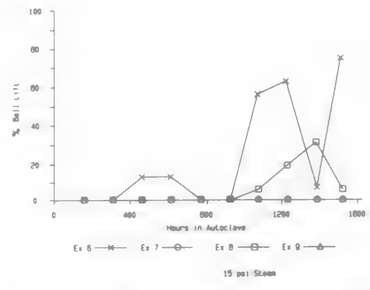
5,338,781

FLAME RETARDANT EPOXY MOLDING COMPOUND FOR ENCAPSULATING A SEMICONDUCTOR DEVICE

Anthony A. Gallo, Olean, N.Y., assignor to Dexter Electronic Materials Division of Dexter Corp., N.Y.

Division of Ser. No. 418,757, Oct. 5, 1989, Pat. No. 5,041,254, which is a continuation-in-part of Ser. No. 258,547, Oct. 17, 1988, abandoned. This application May 22, 1991, Ser. No. 692,863
Int. Cl.[5] C08F *283/00*
U.S. Cl. 523—460 **18 Claims**

1. An epoxy molding compound comprising:
(a) about 5–25 percent by weight of compound of an epoxy;
(b) about 4–20 percent by weight of compound of a phenol-derived or a substituted phenol derived resin hardener;
(c) an effective amount of a catalyst for the reaction between a resin of said epoxy and said hardener in an amount of from about 0.1 to 10% by weight of the combined weight of epoxy and hardener;
(d) an effective amount of a mold release agent for the release of the cured molding compound from a mold in an amount of between about 0.01 and about 2 percent by weight of compound;
(e) between about 50 and 85 percent by weight of compound of a filler; and
(f) a flame retardant system of:



(1) from about 0.40 to about 0.8% antimony pentoxide by weight of molding compound;
(2) a reactive organic compound containing at least about 1.0% of bromine by weight of molding compound, said reactive organic compound being an individual component or being contained in one or more of said components (a)–(e) of said molding compound; and
(3) from about 1.60 to about 4.0% bismuth trioxide by weight of molding compound.

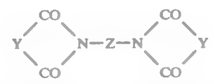
5,338,782

DIALKYLIDENECYCLOBUTANE/BISIMIDE/EPOXY COMPOSITIONS

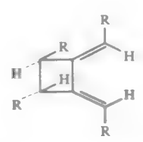
Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 27, 1993, Ser. No. 68,322
Int. Cl.[5] C08G *59/40, 65/00*
U.S. Cl. 523—466 **19 Claims**

1. A composition comprising
(a) a difunctional bisimide of an unsaturated dicarboxylic acid as represented by the structural formula



in which Y is a substituted or unsubstituted divalent moiety containing at least 2 carbon atoms and a carbon-carbon double bond, and Z is a divalent linking group;
(b) an epoxy resin;
(c) a 1,2-dialkylidenecyclobutane as represented by the formula



in which each R is selected independently from the group consisting of hydrogen, C_{1-10} alkyl, halo, aryl, alkoxy, aryloxy, alkylthio, arylthio and dialkylamino;

(d) a curing agent for the epoxy resin.

5,338,783

SILICONE BINDER MATERIAL AND PRODUCTS FORMED THEREFROM

Thomas O. Olsen, Wichita, Kans., assignor to STC, Inc., Wichita, Kans.

Filed Dec. 11, 1991, Ser. No. 804,963
Int. Cl.[5] C08K *3/00*
U.S. Cl. 524—3 **15 Claims**

1. A layered roofing comprising:
between 3 and 25% by weight of a room temperature vulcanizing silicone rubber;
between 5 and 40% by weight of silicon dioxide; and
between 45 and 90% by weight of a quantity of aggregates.

5,338,784

ARTICLE OF MANUFACTURE AND COMPOSITION FOR MAINTAINING THE INTEGRITY OF HOSIERY

Carole L. Kent, 8 Hitching Post La., Chappaqua, N.Y. 10514, and Dieter Frank, Naperville, Ill., assignors to Carole L. Kent, Chicago, Ill.

Division of Ser. No. 716,904, Jun. 18, 1991, Pat. No. 5,151,302. This application Sep. 23, 1992, Ser. No. 950,427
Int. Cl.[5] C08L *1/00;* **A61K** *7/04*
U.S. Cl. 524—31 **7 Claims**

1. An article of manufacture useful for preventing a tear, hole or run in hosiery from expanding comprising the combination of a roll-on bottle and the composition of nitrocellulose, resin, dioctylphthalate, and a solvent or solvent mixture contained in the bottle, said composition being in suitable form for application from said bottle to said tear, hole or run in roll-on form.

5,338,785

FLEXIBLE PACKAGING PRINTING INK CONTAINING CELLULOSE ACETATE BUTYRATE

Robert J. Catena, Belleville; Gastone Artusa, Little Falls; Albert A. Kveglis, Pine Brook; Jason J. Bosco, Carlstadt; Sonia Barreto, Belleville; Mathew C. Mathew, Bloomfield, and Mark D. Schneider, Dumont, all of N.J., assignors to Sun Chemical Corporation, Fort Lee, N.J.

Filed Jul. 21, 1993, Ser. No. 95,647
Int. Cl.[5] C08K *5/05;* **C08L** *1/14*
U.S. Cl. 524—39 **11 Claims**

1. A flexible packaging printing ink comprising:
(a) a copolymer of polyethyleneglycol methacrylate and a polyamide resin, wherein said resin has a weight average molecular weight in the range of 40,000 to 60,000 and is prepared by the condensation of a dibasic acid mixture with a diamine mixture, said dibasic acid mixture comprises: (i) about 0.5–0.8 equivalents of a C_{20}–C_{44} dibasic acid mixture comprised of about 60–100% dimers, 0–40% trimers and 0–5% monomers, and (ii) about 0.2–0.7 equivalents of at least one C_6–C_{12} dibasic acid, said diamine mixture comprises about 0.5–0.8 equivalents of piperazine or a substituted piperazine and the balance comprises at least one C_2–C_{12} alkyl diamine;
(b) a pigment;
(c) a solvent selected from the group consisting of n-propanol, isopropanol, n-butanol and a mixture of n-propanol and n-propyl acetate; and
(d) cellulose acetate butyrate.

5,338,786

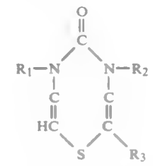
STABILIZED URETHANE BASED SURFACE COATING

Holger Blum, Parkallee 75, D-2000 Hamburg 13, Fed. Rep. of Germany

Filed Feb. 17, 1993, Ser. No. 18,703
Claims priority, application European Pat. Off., Apr. 15, 1992, 92106475.4
Int. Cl.[5] C08K *5/3477*
U.S. Cl. 524—83 **20 Claims**

1. An improved mineral-filled urethane pre-polymer-based surface coating, comprising free isocyanate groups, the improvement comprising
(a) a thiophene of the chemical formula

(I)



wherein R_1 and R_2 are independently (C_1–C_8)acyl; and R_3 is (C_1–C_{12})acyl, (C_1–C_8)alkyl or (C_6–C_{12})aryl substituted with hydrogen, halogen, NO_2, CN, alkoxy or carbonyloxyalkyl, said halogen, NO_2, CN, alkoxy and carbonyloxyalkyl substituent being non-reactive with components of the surface coating and
(b) an arylsulphonylisocyanate of the chemical formula

$R_4—SO_2—N=C=O$ (II)

wherein R_4 is (C_6–C_{12}) aryl or (C_6–C_{12})aryl substituted with at least one hydrogen, halogen, NO_2, alkoxy or carbonyloxyalkyl substituent, and wherein said aryl substituent is non-reactive with components of the surface coating.

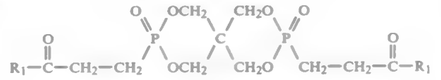
5,338,787

NEW PENTAERYTHRYL PHOSPHONATES CONTAINING SELF-EXTINGUISHING THERMOPLASTIC COMPOSITIONS

William Giroldini, San Donato Milanese; Gianluigi Landoni, Milan; Antonio Rinaldi, and Carlo Neri, both of San Donato Milanese, all of Italy, assignors to Enichem Synthesis, S.p.A., Palermo, Italy

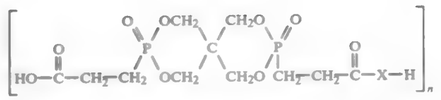
Division of Ser. No. 927,212, Aug. 6, 1992, Pat. No. 5,288,869. This application Nov. 9, 1993, Ser. No. 149,311
Claims priority, application Italy, Aug. 7, 1991, MI91 A 00216
Int. Cl.[5] C08K *5/5357*
U.S. Cl. 524—100 **16 Claims**

1. A self-extinguishing thermoplastic polymeric composition comprising a thermoplastic polymer selected from the group consisting of olefinic polymers or copolymers, linear polyesters, unsaturated polyesters, polyurethanes, acrylonitrile-styrene copolymers (SAN), and acrylonitrile-butadiene-styrene terpolymers (ABS) and an effective amount of a self-extinguishing additive selected from the group consisting of pentaerythryl diphosphonates having the formula (I)

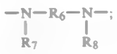


and poly(pentaerythryl diphosphonates having the formula (II)

VOL 1165 ISS 3 AG 16 1994 UMI



where R_1 is OH, OM, OR_2 or NR_3R_4; M is Zn, Ca, Mg, Al or Ti; R_2 is a linear or branched C_1–C_6 alkyl or a linear or branched mono- or poly-hydroxy substituted C_2–C_6 alkyl; R_3 and R_4 are the same or different and are selected from the group consisting of H, a linear or branched unsubstituted C_1–C_6 alkyl, and a linear or branched amino-substituted or hydroxy-substituted C_2–C_6 alkyl, a heterocyclic residue or R_3 and R_4 together form a non-aromatic heterocyclic structure on a nitrogen atom and optionally one or more other heteroatoms; X is —O—R_5—O— or



R_5 is a linear or branched C_2–C_6 alkyl or an aromatic radical; R_6 is a linear or branched C_2–C_6 alkyl or an aromatic or heterocyclic radical; R_7 and R_8 are the same or different, and are selected from the group consisting of H and a linear or branched C_1–C_6 alkyl or R_7 and R_8 together form a C_1–C_2 alkylene; and n is between 2 and 50.

5,338,788

POLYVINYL CHLORIDE PLASTISOL SEALER COMPOSITION

Koji Miyataka, Fort Lee, N.J., and Takashi Nakayama, Takatsuki, Japan, assignors to Sunstar Giken Kabushiki Kaisha, Osaka, Japan

Filed Jun. 4, 1992, Ser. No. 894,365
Claims priority, application Japan, Jun. 7, 1991, 3-136448
Int. Cl.[5] C08K *5/29*
U.S. Cl. 524—197 **4 Claims**

1. A polyvinyl chloride plastisol sealer composition which comprises (A) a polyvinyl chloride resin containing a hydroxy group or a carboxy group in the molecule (B) a blocked polyisocyanate compound, and (C) an isocyanuric acid compound containing two or more groups selected from epoxy group, hydroxy group, and carboxy group in the molecule, wherein the blocked polyisocyanate compound (B) and the isocyanuric acid compound (C) are contained in an amount of 20 to 60 parts by weight and 5 to 35 parts by weight, respectively to 100 parts by weight of the polyvinyl chloride resin (A).

5,338,789

FIBER-REINFORCED POLYPHENYLENE ETHER MOLDING COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Thomas Grosse-Puppendahl; Christian Baron, both of Haltern, and Friedrich G. Schmidt, Münster, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 591,891, Oct. 2, 1990, abandoned. This application Apr. 9, 1992, Ser. No. 865,631
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1989, 3935169
Int. Cl.[5] C08K *5/11, 5/29, 3/40, 3/04*
U.S. Cl. 524—314 **13 Claims**

1. A fiber-reinforced thermoplastic molding composition comprising as ingredients:

a) 97 to 50% by weight, relative to the sum of (a) and (b), moldable thermoplastic ingredients, the moldable thermoplastic ingredients in the molding composition consisting of a mixture of 30 to 100 parts by weight of a polyphenylene ether, 0 to 70 parts by weight of a styrene polymer which is polystyrene, impact-modified polystyrene or styrene-butadiene copolymer, 0 to 10 parts by weight of a polyoctenylene and 0.1 to 2.5 parts by weight of a compound of formula (I) or (II)

$$R_1—CO—CR^2=CR^3—CO—R^4 \quad (I)$$

$$R^1—CO—CR^2=CR^3{}_2 \quad (I)$$

in which R^1 and R^4 are hydroxyl, aryloxy an/or alkoxy groups having up to 12 carbon atoms or together are —O— or —NR^5—, R^2 and R^3 denote hydrogen or an alkyl or cycloalkyl group having up to 12 carbon atoms, an alkyl group substituted by the radical COR^1, an aryl group, chlorine or together an alkylene group having up to 12 carbon atoms, wherein R^5 is hydrogen or an alkyl, aralkyl or aryl group, each having up to 12 carbon atoms, a compound which under conditions of mixing in the melt which may be formed during the compounding of the ingredients of the thermoplastic molding composition is converted to a compound of formula (I) or (II) by known reactions, or a compound which is a copolymer of a compound of formula (I) or (II) with a vinyl aromatic, and

b) 3 to 50% by weight of carbon fibers and/or glass fibers whose surfaces bear functional groups which are capable of entering into chemical coupling reactions with a compound of formula (I) or (II) or with said copolymer of a compound of formula (I) or (II).

5,338,790

POLYMER COMPOSITIONS

Ananda M. Chatterjee, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 14, 1993, Ser. No. 92,651
Int. Cl.[5] C08K *5/09, 5/01*
U.S. Cl. 524—400 **7 Claims**

1. In a polymer composition consisting essentially of:

(a) a random copolymer of about 0.8% to about 20% by weight of butene-1 and about 80% to about 99.2% by weight of propylene, and

(b) at least one additive selected from antioxidants, ultraviolet absorbers, dispersants, acid neutralizing agents and process stabilizers, wherein the improvement comprises the incorporation of a clarifying agent selected from calcium montanate, at about 0.02% to about 1.2% by weight of the composition, and polypropylene wax, at from about 0.02% to about 1.2% by weight of the composition, or combinations thereof, wherein the total of the combination is from about 0.02% to about 1.2% by weight of the composition.

5,338,791

FIRE-RETARDANT COMPOSITIONS

Dominic Chaplin, Berkshire, United Kingdom, assignor to Alcan International Limited, Montreal, Canada

PCT No. PCT/GB91/01280, § 371 Date Jan. 27, 1993, § 102(e) Date Jan. 27, 1993, PCT Pub. No. WO92/02578, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 29, 1991, Ser. No. 969,831
Claims priority, application United Kingdom, Jul. 27, 1990, 9016511
Int. Cl.[5] C08K *3/38*
U.S. Cl. 524—401 **8 Claims**

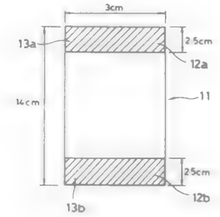
1. A fire-retardant polymer composition comprising a polymer, a source of halogen and a zinc borate, characterised in that the composition includes a divalent metal stannate, the mixture of the zinc borate and divalent metal stannate being in a fire-retardant amount.

5,338,792

HEAT-RESISTANT OVERWRAP FILM FROM 4-METHYL-1-PENTENE AND ISOBUTYLENE AND 1-BUTENE

Yasushi Nagase; Masami Kobayashi, both of Onoda; Tatsuo Kato, and Shinichi Imuta, both of Kuga, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo and Chugoku Resin Co., Ltd., Yamaguchi, both of Japan

Filed May 20, 1993, Ser. No. 63,761
Claims priority, application Japan, May 20, 1992, 4-127089
Int. Cl.[5] C08J *5/10*
U.S. Cl. 524—477 **20 Claims**



1. A heat-resistant overwrap single layer film formed from a resin composition comprising:

(A) 98–70 parts by weight of a 4-methyl-1-pentene polymer,

(B) 1–15 parts by weight of an isobutylene polymer having a kinematic viscosity of 2–5000 cSt at 100° C., and

(C) 1–15 parts by weight of a butene-1 solid polymer,

with the sum of (A)+(B)+(C) being 100 parts by weight.

5,338,793

ERASABLE INK

Rachel M. Loftin, Halifax, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 2, 1992, Ser. No. 892,186
Int. Cl.[5] C08K *9/00*
U.S. Cl. 524—571 **42 Claims**

1. An erasable ink for marking boards comprising a water dispersible pigment, silica, a latex, and water, said ink having the ability to form continuous unbroken lines on a smooth, substantially non-porous surface without forming a continuous film, said lines being erasable from said surface, after drying by a dry eraser.

5,338,794

PROCESS FOR PRODUCING SOLUTION OF HIGH-MOLECULAR WEIGHT POLYCARBODIIMIDE

Yasuo Imashiro, and Ikuo Takahashi, both of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,031
Claims priority, application Japan, Dec. 27, 1991, 3-359565
Int. Cl.[5] C08L *79/00;* **C08K** *5/02*
U.S. Cl. 524—792 **2 Claims**

1. A process for producing a high-molecular weight polycarbodiimide solution by subjecting an aliphatic diisocyanate selected from the group consisting of isophorone diisocyanate, 4,4'-dicyclohexylmethane diisocyanate, tetramethylxylylene diisocyanate and mixtures thereof to decarboxylation and condensation reaction in the presence of a carbodiimidization catalyst, in which process, a solvent selected from the group consisting of tetrachloroethylene, trichloroethylene, tetrachloroethane, trichloroethane and mixtures thereof is used as the polymerization solvent; the monomer concentration is 18% by weight or less, and the reaction temperature is 80° C. or above.

5,338,795

HOUSING AND THERMOPLASTIC RESIN COMPOSITIONS INCLUDING POLYETHER ESTER AMIDE, STYRENE BASED RESIN AND VINYL COPOLYMER

Tadao Fukumoto, Tsushima; Masatoshi Iwamoto, and Akihiko Kishimoto, both of Nagoya, Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 747,469, Aug. 13, 1991, abandoned, which is a continuation of Ser. No. 295,239, Jan. 9, 1989, abandoned, which is a division of Ser. No. 36,088, Apr. 9, 1987, abandoned. This application Nov. 23, 1992, Ser. No. 980,106
Claims priority, application Japan, Apr. 14, 1986, 61-84338; May 14, 1986, 61-108503; May 20, 1986, 61-115528
Int. Cl.[5] C08L *77/12*
U.S. Cl. 525—66 **13 Claims**

1. Intrinsically antistatic thermoplastic resin compositions, comprising (A) 1 to 40 weight % of a polyether ester amide, (B) 95 to 60 weight % of at least one thermoplastic styrene based resin which is free of carboxyl groups selected from the group consisting of polystyrene, rubber modified polystyrene, styrene acrylonitrile copolymer and styrene-rubbery polymer-acrylonitrile graft copolymer, and (C) 0.1–10 weight % of a vinyl copolymer containing carboxyl groups, said weight % being based on the weight of the entire composition.

5,338,796

THERMOPLASTIC COMPOSITION BASED ON POLYPHENYLENE ETHER AND POLYAMIDE

Domenico Vianello, Campalto; Armando Benetton, Treviso; Alessandro Moro, Cazzago; Roberto Pippa, Noale, and Aldo Longo, Castelnuovo Angeli frazione di Curtatone, all of Italy, assignors to Montedipe s.r.l., Milan, Italy

Continuation-in-part of Ser. No. 672,802, Mar. 21, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,106
Claims priority, application Italy, Mar. 22, 1990, 19777 A/90
Int. Cl.[5] C08L *23/16, 71/12, 77/06*
U.S. Cl. 525—66 **21 Claims**

1. A thermoplastic composition comprising: 100 parts by weight of a resinous composition comprising:

(A) 5–95% by weight of a polyphenylene ether functionalized with a compound containing in its molecular structure at least a double or triple carbon-carbon bond and at least a carboxylic acid, anhydride, amide, imide, ester, amino, or hydroxyl group;

(B) 95–5% by weight of a polyamide; and

(C) 1–100 parts by weight, for 100 parts by weight of mixture A+B, of an olefinic elastomer containing, grafted thereon, a vinylaromatic monomer,

wherein the olefinic elastomer is an ethylene/propylene/non-conjugated diene terpolymer, wherein the diene content is approximately from 2 to 20% by weight calculated on the terpolymer, said terpolymer having a Mooney viscosity, ML-4, at 100° C. ranging from 30 to 90, and an iodine number greater than 5,

wherein the vinylaromatic polymer, formed during the graft polymerization of the vinylaromatic monomer, molecular weight (Mw) ranges from about 600,000 to about 1,700,000,

wherein the vinylaromatic monomer content is greater than 1% by weight calculated on the grafted polymer, and

wherein the vinylaromatic polymer is partially grafted on the rubber-like substrate and partially forms a polymer in physical admixture with the grafter polymer.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,797

POLYETHERIMIDE ESTER ELASTOMERIC COMPOSITIONS

Warren J. Peascoe, WestStockbridge, Mass., and John A. Tyrell, Williamsville, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 546,654, Jun. 28, 1990, abandoned, which is a continuation of Ser. No. 152,524, Feb. 5, 1988, abandoned. This application May 14, 1993, Ser. No. 63,101

Int. Cl.[5] C08L *71/04*

U.S. Cl. 525—66 7 Claims

1. A molded thermoplastic elastomer article comprising:

A.) a polyetherimide ester copolymer; and

B.) a modulus reducing amount of a rubbery interpolymer comprising a crosslinked alkoxyalkyl (methy)acrylate rubbery phase and an emulsion polymerized crosslinked styrene-acrylonitrile copolymer phase interpenetrating said alkoxyalkyl(meth)acrylate rubbery phase to form an integral rubbery interpolymer whereby said thermoplastic elastomer article has enhanced delamination resistance: wherein said polyetherimide ester copolymer is the reaction product of (a) one or more diols having from 2 to 8 carbon atoms; (b) one or more dicarboxylic acids having a molecular weight of less than about 300; and (c) one or more polyoxyalkylene diimide diacids and wherein said styrene-acrylonitrile comprises from about 55:45 to about 85:15 weight parts of styrene to acrylonitrile.

5,338,798

BLOCK COPOLYMERS CONTAINING STEREOREGULAR POLYMETHYL METHACRYLATE AND THEIR BLENDS WITH POLYCARBONATES

Michael A. Drzewinski, Princeton Junction, N.J., assignor to Istituto Guido Donegani S.p.A., Novara and Enichem S.p.A., Milan, both of Italy

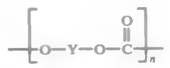
Filed Sep. 30, 1992, Ser. No. 953,950

Int. Cl.[5] C08L *69/00, 53/00*

U.S. Cl. 525—92 11 Claims

1. A resin composition comprising a blend of:

(I) 1 to 99 wt % of a polycarbonate of formula



where Y is a divalent aromatic radical of formula



where W is C_1–C_6 straight or branched alkyl, carbonyl, sulfonyl, oxygen, sulfur or single bond, and n is an integer between 10 and 30,000;

(ii) 99 to 1 wt % of a block copolymer containing a block of polymethylmethacrylate in which at least 60% of the monomer units are in the syndiotactic configuration and a block selected from the group consisting of polybutadiene, polyisoprene, poly-C_1–C_{10}-alkylacrylate, polystyrene, polyC_1–C_4(alkyl)styrene, dienic rubber and siloxane elastomer.

5,338,799

CURING TYPE RESIN COMPOSITION

Hiroharu Ohsugi, and Keita Mizutani, both of Osaka, Japan, assignors to Nippon Paint Co. Ltd., Osaka, Japan

Filed Dec. 18, 1992, Ser. No. 993,023

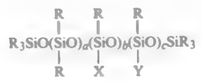
Claims priority, application Japan, Dec. 27, 1991, 3-346690

Int. Cl.[5] C08L *43/00*

U.S. Cl. 525—123 24 Claims

1. A curing type resin composition comprising:

a copolymer including a silicone compound and an α,β-unsaturated vinyl monomer, wherein said silicone compound is selected from the group consisting of: silicone compounds of structural formula (1) and silicone compounds of structural formula (2), as follows:



(1)



(2)

wherein:

X is selected from the group consisting of a 3-acryloxypropyl group and a 3-methacryloxypropyl group;

Y is selected from the group consisting of a 3-glycidoxypropyl group; a 2-(3′,4′-epoxycyclohexyl)ethyl group; a 3-hydroxypropyl group; a 3-(2′-hydroxyethoxy)propyl group; and a 3-(4′-(3′,3′-dihydroxymethyl)butoxy)propyl group,

R is selected from the group consisting of a phenyl group and an alkyl group having 1 to 6 carbon atoms; and

a, b, and c are numbers in the following ranges:

$1 \leqq a \leqq 20$

$0.5 \leqq b \leqq 2$

$1 \leqq c \leqq 10$,

and

a curing agent, wherein individual molecules of the curing agent include at least two functional groups which are capable of reacting with a functional group in the Y group of said silicone compound.

5,338,800

PLURAL LIQUID PACK TYPE HEAT-CURABLE RESIN COMPOSITION AND PROCESS FOR PRODUCING SHAPED RESIN ARTICLE THEREFROM

Hiroyuki Umetani, and Takeyoshi Yamada, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 876,423, Apr. 30, 1992, abandoned. This application May 18, 1993, Ser. No. 62,732

Claims priority, application Japan, May 1, 1991, 3-126462; Dec. 20, 1991, 3-354456

Int. Cl.[5] C08F *8/30*

U.S. Cl. 525—126 9 Claims

1. A plural liquid pack type heat-curable resinous composition comprising a combination of:

liquid a containing at least one of a polyisocyanate compound (a), and

liquid B containing at least one of a radically polymerizable unsaturated monomer (b) bearing no functional group reactive with an isocyanate group, at least one of a polyol compound (c) bearing no radically polymerizable unsaturated bond, and at least one of a ring-forming catalyst (d) for forming an isocyanurate ring,

wherein at least one of a radical catalyst (e) is included in the liquid A and/or the liquid B,

wherein the hydroxyl group of the polyol compound (c) is present in a range of from 5 to 75 equivalents per 100 equivalents of the isocyanate group in the polyisocyanate compound (a) and the radically polmerizable unsaturated monomer (b) is present in a range of from 5 to 150 parts by weight per 100 parts by weight of the total amount of the polyisocyanate compound (a) and the polyol compound (c).

5,338,801

COMPOSITIONS OF PROPYLENE POLYMER MATERIALS AND OLEFIN POLYMER MATERIALS WITH REDUCED GLOSS

Stanley E. Eppert, Jr., New Castle, Del., assignor to Himont Incorporated, Wilmington, Del.

Filed Oct. 20, 1993, Ser. No. 139,963

Int. Cl.[5] C08L *23/10, 23/16, 23/26, 53/00*

U.S. Cl. 525—232 7 Claims

1. A polyolefin composition comprising (A) from 70 to 90% of a propylene polymer material consisting essentially of:

(1) from 10 to 50% of a propylene homopolymer having an isotactic index, or a copolymer selected from the group consisting of (a) propylene and ethylene, (b) propylene, ethylene and a CH_2=CHR alpha-olefin, where R is a C_{2-8} straight or branched alkyl, and (c) propylene and an alpha-olefin, as defined above in (1)(b), said copolymer containing from 85 to 99% propylene and having an isotactic index greater than 80 to 98%,

(2) from 5 to 20% of a semi-crystalline, essentially linear copolymer fraction having a crystallinity of about 20 to 60%, by differential scanning calorimetry (DSC), wherein the copolymer is selected from the group consisting of (a) ethylene and propylene containing over 55% ethylene; (b) ethylene, propylene, and an alpha-olefin, as defined above in (1)(b), containing from 1 to 10% of the alpha-olefin and over 55% up to 98%, of both ethylene and alpha-olefin; and (c) ethylene and an alpha-olefin, as defined in (1)(b), containing over 55% up to 98% of said alpha-olefin, which copolymer is insoluble in xylene at room or ambient temperature, and

(3) from 40 to 80% of a copolymer fraction selected from the group consisting of a copolymer of (a) ethylene and propylene wherein the copolymer contains from 20% to less than 40% ethylene; (b) ethylene, propylene, and an alpha-olefin, as defined in (1)(b), wherein the alpha-olefin is present in an amount of from 1 to 10%, and the amount of ethylene and alpha-olefin present is from 20% to less than 40%; and (c) ethylene and an alpha-olefin, as defined in (1)(b), containing from 20 to less than 40% of the alpha-olefin, and optionally with 0.5 to 10% of a diene, said copolymer fraction being soluble in xylene at ambient temperature, and having an intrinsic viscosity of from 1.7 to 3.0 dl/g, wherein the total amount of (2) and (3) fractions, based on the total olefin polymer composition is from about 65% to 80%, the weight ratio of (2)/(3) is from 0.1 to about 0.3, and the total content of ethylene or C_{4-8} alpha-olefin or combination thereof in (2+3) is less than 50% and (B) from 30 to 10% of a olefin polymer material selected from the group consisting of:

(1) a partially crosslinked thermoplastic olefin elastomer composition consisting essentially of:

(a) 50 parts by weight of a thermoplastic elastomer consisting essentially of:

(i) from 30 to 70% of a propylene homopolymer having an isotactic index greater than 90, or a crystalline propylene copolymer with ethylene and/or C_{4-8} alpha-olefin having a propylene content greater than 85% and an isotactic index of greater than 85%;

(ii) from 30 to 70% of an amorphous ethylene-propylene or butene copolymer fraction, optionally containing from 1 to 10% of a diene, which is xylene soluble at room temperature, and contains from 30 to 70% ethylene;

(iii) from 10 to 30% of a semi-crystalline ethylene-propylene or butene copolymer which is xylene insoluble at room temperature and contains greater than 90% ethylene; and

(iv) from 2 to 20 parts by weight of polybutene-1 based on 100 parts of (i)+(ii)+(iii), wherein the ratio of polybutene-1 to rubber is less than 0.5; and

(b) 55 parts by weight of an olefin rubber composition consisting essentially of:

(i) a homopolymer of propylene having an isotactic index greater than 90, and (ii) an ethylene-propylene copolymer rubber containing 30 to 70% ethylene; and

(2) an ethylene-propylene-conjugated diene terpolymer rubber having an ethylene content of 40 to 77%, and diene content of from 2 to 10%; and

(3) mixtures thereof.

5,338,802

LOW TEMPERATURE CONVERSION OF POLYMERIZED ESTERS

Donn A. DuBois, and Robert J. Sutherland, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 21, 1992, Ser. No. 904,152

Int. Cl.[5] C08F *293/00, 297/02, 267/06*

U.S. Cl. 525—299 14 Claims

1. A process for making a polymer, comprising the: steps of:

anionically polymerizing a conjugated alkadiene or an alkenyl aromatic compound to form living polymer molecules;

anionically polymerizing a (1-methyl-1-alkyl)alkyl ester, (1-aryl-1-alkyl)alkyl ester, or derivatives thereof to form adjacent units of the ester on the living polymer molecules; and

reacting the polymerized ester with an amine.

5,338,803

MODIFIED CPE FOR PVC IMPACT MODIFICATION

Yun C. Sun, Folsom, Calif., and David W. Liou, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1992, Ser. No. 868,908

Int. Cl.[5] C08F *255/02, 259/02*

U.S. Cl. 525—309 24 Claims

1. A chlorinated polyethylene composition, comprising a chlorinated polyethylene resin having a chlorine content of from about 30% to about 42%, graft polymerized with an ethylenically unsaturated monomer selected from the group consisting of an ethylenically unsaturated carboxylic acid ester monomer, a monovinyl aromatic monomer and mixtures thereof.

5,338,804

METHACRYLIC RESIN CAST PLATE HAVING TRANSPARENCY AND IMPACT RESISTANCE, AND PROCESS FOR PREPARATION THEREOF

Akihiro Toritani; Suehiro Tayama, and Yasunori Kawachi, all of Ohtake, Japan, assignors to Mitsubishi Rayon Company, Inc., Tokyo, Japan

Division of Ser. No. 680,782, Jun. 26, 1989, Pat. No. 5,169,903, which is a continuation of Ser. No. 371,276, Jun. 26, 1989, abandoned. This application Jul. 17, 1992, Ser. No. 914,415

Int. Cl.[5] C08F *265/06, 279/02, 285/00;* C08L *51/04*

U.S. Cl. 525—310 4 Claims

1. A process for the preparation of a methacrylic resin cast plate having a high transparency and an excellent impact resistance, which comprises dispersing a graft copolymer obtained by graft polymerization of a monomer of a hard resin component containing at least 90% by weight of methyl methacrylate onto a rubber copolymer having an average particle diameter of 0.1 to 1 μm and a cross linked structure and containing at least 45% by weight of unbranched butyl acrylate, into 100

VOL 1165 ISS 3 AG 16 1994 UMI

parts by weight of a monomer component selected from the group consisting of methyl methacrylate, an ethylenically unsaturated monomer mixture comprising at least 90% by weight of methyl methacrylate and up to 10% by weight of at least one ethylenically unsaturated monomer copolymerizable therewith, a partial polymerization product thereof, and a mixture thereof, the amount of the graft polymer being 5 to 20 parts by weight as the amount of the rubber copolymer; and then polymerizing the thus-obtained mixture in a casing mold.

5,338,805

POLYMETHACRYLIMIDES HAVING HIGH HEAT DISTORTION RESISTANCE

Siegmund Besecke, Hameln; Andreas Deckers, Ludwigshafen, and Harald Lauke, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 16, 1993, Ser. No. 31,907

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1992, 4208994

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—330.5 2 Claims

1. A copolymer which is processable by a thermoplastic method and which is obtained by

(1) copolymerizing a monomer mixture of

(A) from 1 to 99% by weight of at least one monomer of the formula I

$$CH_2=C(E)CH_2—O—CH_2C(F)=CH_2 \qquad I$$

where E and F are selected from the group consisting of —$COOR^1$; —COR^1, —$CONR^2R^3$ and —CN, R^1 is H, C_1–C_{18}-alkyl, C_3–C_8-cycloalkyl, C_3–C_8-cycloalkyl-C_1–C_5-alkyl, in which the cycloalkyl rings may be monosubstituted to trisubstituted by C_1–C_4-alkyl or C_1–C_4-alkoxy, or hydroxy-C_1–C_5-alkyl, amino-C_1–C_5-alkyl, N-C_1–C_4-alkylamino-C_1–C_5-alkyl, N,N-di-C_1–C_4-alkylamino-C_1–C_5-alkyl, C_5–C_{18}-aryl, C_5–C_{18}-aryl-C_1–C_4-alkyl, in which the aryl groups may carry up to three of the following groups: halogen, C_1–C_{22}-alkyl, C_1–C_4-alkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, aminocarbonyl, C_1–C_4-alkylaminocarbonyl, di-C_1–C_4-alkylaminocarbonyl, nitrilo, nitro, amino, C_1–C_4-alkylamino or di-C_1–C_4-alkylamino and R^2 and R^3 are each H, C_1–C_{18}-alkyl, C_3–C_8-cycloalkyl, C_3–C_8-cycloalkyl-C_1–C_5-alkyl, in which the cycloalkyl rings may be monosubstituted to trisubstituted by C_1–C_4-alkyl or C_1–C_4-alkoxy, or C_5–C_{18}-aryl or C_8–C_{18}-aryl-C_1–C_4-alkyl, in which the aryl groups may carry up to three of the following groups: halogen, C_1–C_{22}-alkyl, C_1–C_4-alkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, aminocarbonyl, C_1–C_4-alkylaminocarbonyl, di-C_1–C_4-alkylaminocarbonyl, nitrilo, nitro, amino, C_1–C_4-alkylamino or di-C_1–C_4-alkylamino,

(B) from 99 to 1% by weight of at least one compound selected from the group consisting of acrylic and methacrylic acid and C_1–C_{20}-alkyl and C_5–C_{12}-cycloalkyl esters of acrylic and methacrylic acid .

and

(C) from 0 to 98% by weight of at least one further monomer which differs from A) and B) and is capable of undergoing free radical polymerization

and

(2) reacting these copolymers with a compound of the formula II

$$R^4NH_2 \qquad II$$

where R^4 is hydrogen, C_1–C_{22}-alkyl, C_5–C_8-cycloalkyl, C_5–C_{10}-aryl or C_5–C_{10}-aryl-C_1–C_4-alkyl and these radicals, with the exception of hydrogen and C_1–C_{22}-alkyl, may be monosubstituted to trisubstituted by radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, and a mixture thereof.

5,338,806

TOUGH, PROCESSABLE SIMULTANEOUS SEMI-INTERPENETRATING POLYIMIDES

Ruth H. Pater, Tabb, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 430,470, Nov. 2, 1989, abandoned. This application Jan. 31, 1992, Ser. No. 829,792

Int. Cl.[5] C08J *5/08;* C08K *3/04*

U.S. Cl. 525—421 9 Claims

1. A process for preparing a tough, processable semi-interpenetrating polymer network, which process comprises:

(a) mixing an uncrosslinked, acetylene-terminated thermosetting polyimide prepolymer with monomer precursors of a thermoplastic polyimide at a weight ratio from about 95:5 to 5:95 to form a mixture;

(b) allowing the mixture to react below 300° C., whereby flow of the thermosetting polyimide prepolymer is decreased by the presence of the monomer precursors of the thermoplastic polyimide to form a mixture containing a thermosetting polyimide and a thermoplastic polyimide; and

(c) heating the mixture containing the thermosetting polyimide and the thermoplastic polyimide above 300° C., whereby flow of the thermosetting polyimide is increased resulting in a tough, processable semi-interpenetrating polymer network.

5,338,807

SYNTHESIS OF CREPING AIDS BASED ON POLYAMIDES CONTAINING METHYL BIS (3 AMINOPROPYLAMINE)

Herbert H. Espy, Wilmington, Del., and William W. Maslanka, Landenberg, Pa., assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 23, 1991, Ser. No. 814,734

Int. Cl.[5] C08G *69/48*

U.S. Cl. 525—430 8 Claims

1. A creping aid comprising the polyamide reaction product of a polyamide of a dicarboxylic acid or of the ester of an aliphatic dicarboxylic acid and methyl bis(3-aminopropyl)amine with epicyhlorohydrin in a mole ratio of the polyamide to the epichlorohydrin between about 1:0.1 and about 1:0.33.

5,338,808

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYESTER RESINS

Guido Ghisolfi, Tortona, Italy, assignor to M.& G. Ricerche S.p.A., Pozzilli, Italy

PCT No. PCT/EP92/00670, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO92/17522, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 26, 1992, Ser. No. 952,884

Claims priority, application Italy, Mar. 29, 1991, MI91A000864

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—437 8 Claims

1. A process for the continuous production of high molecular weight polyester resins from resins having a lower molecular weight comprising the steps of blending the resin in molten state with additive different from a dianhydride of an aromatic tetracarboxylic acid, pelletizing the resin to form granules, subjecting the granules to crystallization and then to a solid state polyaddition reaction, characterized in that the additive is a compound containing at least two groups which react by addition reactions in the solid state with the terminal groups of the resin.

5,338,809

CHEWING GUM OR CONFECTION CONTAINING FLAVORANT ADSORBED ON SILICA

Joseph W. Bell, Bethlehem, Pa., and Thomas J. Carroll, Oak Ridge, N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Filed Jan. 19, 1993, Ser. No. 4,873

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—5 20 Claims

1. A flavored product which is a chewing gum or confection comprising as the flavoring component thereof, one or more flavorants adsorbed on finely divided amorphous silica, wherein said flavoring component is encapsulated, and wherein said one or more adsorbed flavorants are releasable from said product upon chewing of said product.

5,338,810

METHOD FOR PRODUCTION OF ACRYLATE AND ACRYLATE-CONTAINING POLYMER

Tadao Shimomura, Toyonaka; Yoshio Irie, Himeji; Hitoshi Takahashi, Himeji; Katsuhiro Kajikawa, Himeji; Jyunichi Saga, Himeji; Teruaki Fujiwara, Himeji, and Takumi Hatsuda, Himeji, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 428,350, Oct. 27, 1989, Pat. No. 5,210,298. This application Mar. 8, 1993, Ser. No. 27,678

Claims priority, application Japan, Oct. 28, 1988, 63-270773

Int. Cl.[5] C08F *2/00, 130/04, 120/06*

U.S. Cl. 526—75 27 Claims

1. A method for the production of an acrylate-containing polymer having low residual monomer levels by the polymerization of a monomer component containing at least a monomeric acrylate produced by a series of neutralization reactions of acrylic acid and a basic substance, said series of neutralization reactions comprising sequentially

(A) a step of supplying acrylic acid and said basic substance to water thereby subjecting them to a neutralization reaction while constantly retaining the neutralization ratio of acrylic acid within the neutralization reaction system in the range of 75 to 100 mol %,

(B) a step of adjusting the neutralization ratio of acrylic acid within said neutralization reaction system in the range of 100.1 to 110 mol % by supplying said basic substance to said neutralization reaction system,

(C) a step of retaining the neutralization ratio of acrylic acid within said neutralization reaction system in the range of 100.1 to 110 mol % for a period in the range of 1 to 120 minutes thereby allowing the neutralization reaction product to age, and

(D) a step of adjusting the neutralization reaction system in the range of 20 to 100 mol % by supplying acrylic acid to said neutralization reaction system, whereby said monomer component is formed,

thereafter polymerizing said monomer component by the series of steps, comprising sequentially

(E) deaerating the aqueous monomer solution with an inert gas,

(F) adding a polymerization initiator to said aqueous monomer solution, and

(G) subjecting the resultant mixture to polymerization conditions.

5,338,811

Patent Not Issued For This Number

5,338,812

OLEFIN POLYMERIZATION

Ronald D. Knudsen, Bartlesville; Gil R. Hawley; Dennis R. Kidd, both of Dewey, and Randall A. Porter, Bartlesvillea, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

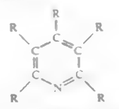
Filed Dec. 24, 1991, Ser. No. 813,169

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] C07F *4/26, 10/00*

U.S. Cl. 526– 130 7 Claims

1. A process for the polymerization of olefins comprising contacting said olefins under polymerization conditions with a catalyst system comprising a diluent selected from the group consisting of benzene, xylene, toluene, cyclohexane, paraffin hydrocarbons having from 4 to 12 carbon atoms, and mixtures thereof; a silicated alumina gel substrate; bis(1,5-cyclooctadiene) nickel(0); and a pyridine carboxylic acid component having the structural formula:



wherein C is a carbon atom, N is a nitrogen atom, and R can be one of either hydrogen, an alkyl group or a carboxylic acid group.

5,338,813

COPOLYMERS OF VINYL DIOXOLANES AND MALEIMIDES

Richard W. Bleyins, Rochester, and S. Richard Turner, Pittsford, both of N.Y., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 998,205, Dec. 30, 1992, Pat. No. 5,310,839. This application Jan. 24, 1994, Ser. No. 185,081

Int. Cl.[5] C08F *2/06, 4/04, 4/34, 222/40, 224/00*

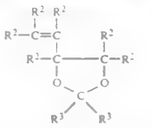
U.S. Cl. 526—208 4 Claims

1. A process for preparing a copolymer comprising polymerized repeating monomeric units of (a) a maleimide reactant and (b) a 4-vinyl-1,3-dioxolane reactant which comprises contacting:

(i) a maleimide reactant having up to about 24 carbon atoms; and

(ii) a dioxolane reactant having the formula:

Formula I



wherein:

each R^2 independently represents hydrogen or alkyl having 1 to 4 carbon atoms; and

each R^3 independently represents hydrogen, alkyl, or aryl having up to about 10 carbon atoms or when taken together represent a cyclic alkylene or arylene group having up to 20 carbon atoms;

said process being conducted in the presence of a free radical initiator, at a temperature within the range of from −10° C. to about 180° C.

5,338,814

PROCESS FOR MAKING NARROW MOLECULAR WEIGHT DISTRIBUTION POLYVINYLPYRROLIDONE K-90 POLYMERS

Chi-San Wu; James F. Curry, both of Wayne, N.J., and James P. Cullen, Bartonsville, Pa., assignors to ISP Investments Inc., Wilmington, Del.

Filed Apr. 21, 1993, Ser. No. 51,107

Int. Cl.[5] C08F *2/04, 26/10*

U.S. Cl. 526—210 2 Claims

1. A process for making polyvinylpyrrolidone K-90 having a

VOL 1165 ISS 3 AG 16 1994 UMI

polydispersity of less than 6, which comprises polymerizing vinylpyrrolidone monomer by free radical solution polymerization in water in the presence of polyethylene glycol having a molecule weight of about 300 as a chain transfer agent.

5,338,815

FINE PARTICULATE CROSSLINKED TYPE N-VINYLAMIDE RESIN AND MICROGEL, PROCESS FOR PREPARING SAME, AND USE THEREOF

Toshiyuki Aizawa; Hitoshi Nakamura, both of Oita, and Tetsuhiko Yamaguchi, Kawasaki, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Division of Ser. No. 723,038, Jun. 28, 1991, Pat. No. 5,280,095. This application Nov. 30, 1993, Ser. No. 159,242

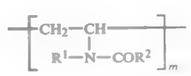
Claims priority, application Japan, Apr. 23, 1991, 3-092325

Int. Cl.[5] C08F *20/54*

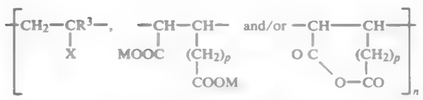
U.S. Cl. 526—307.6 **5 Claims**

1. A microgel of a crosslinked N-vinylcarboxylic acid amide resin comprising a fine particle crosslinked N-vinylcarboxylic acid amide resin gelled with water or an organic solvent, said fine particle crosslinked N-vinylcarboxylic acid amide resin having an average particle size of 10 μm or less comprising backbone chains of a homopolymer comprising repeating units (A) or copolymer comprising repeating units (A) and (B) of the formulae:

(A)



(B)



wherein R^1, R^2 and R^3 each independently represents a hydrogen atom or a methyl group; X represents a group —COOY, wherein Y represents a hydrogen atom, an alkali metal atom, a C_1–C_{18} alkyl group or a lower alkyl group substituted with a hydroxyl group, a dialkylamino group or a quaternary ammonium group; a group CONHZ, wherein Z represents a hydrogen group or a lower alkyl group substituted with a dialkylamino group, a quaternary ammonium group, a sulfonic acid group or an alkali metal salt thereof; a cyano group, a 2-ketopyrrolidinyl group, a lower alkoxy group, a lower acyl group, a lower alkoxycarbonyl group or a lower alkyl group substituted with a sulfonic acid group or an alkali metal salt thereof: M represents a hydrogen atom, an alkali metal atom, or an ammonium group, with the proviso that when R^3 is a methyl group, X is not a cyano group, a 2-ketopyrrolidinyl group, a lower alkoxy group, a lower acyl group, a lower alkoxycarbonyl group or a lower alkyl group substitutes with a sulfonic acid group or an alkali metal salt thereof, p represents 0 to 1, and the molar ratio of m:n represents 30–100:70–0, said resin being produced by the steps of:

precipitation (co)polymerizing 30 to 100 mol % of (A) a compound having the formula (I): $CH_2{=}CHNR^1COR^2$, wherein R^1 and R^2 are the same as defined above and 0 to 70 mol % of (B) at least one of fumaric acid, maleic acid or itaconic acid or anhydrides thereof, N-vinyl-2-pyrrolidone or compounds having the formula (II): $CH_2{=}CR^3X$, wherein R^3 and X are the same as defined above, in the presence of at least one crosslinking agent selected from the group consisting of:

N,N′-1,4-butylenebis(N-vinylacetamide),

N,N′-1,6-hexylenebis(N-vinylacetamide),

N,N′-1,10-decylenebis(N-vinylacetamide),

N,N′-3,6-dioxa-1,5-pentylenebis(N-vinylacetamide),

N,N′-xylenebis(N-vinylacetamide), and

N,N′-diacetyl-N,N′-divinyl-1,4-bisaminomethylcyclohexane,

in a non-aqueous solvent which uniformly dissolves the reaction components upon initiation of the reaction and

converting the carboxyl groups or sulfonic acid groups in the molecules with an alkali metal or ammonium hydroxide, if necessary.

5,338,816

HYDROPHOBIC POLYELECTROLYTES USED IN REMOVING COLOR

Manian Ramesh, Naperville; John W. Sparapany, Bolingbrook; Martha R. Finck, Countryside; Kristine S. Siefert, Crete, and Chandrashekar S. Shetty, Lisle, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 935,550, Aug. 26, 1992, Pat. No. 5,283,306. This application Oct. 7, 1993, Ser. No. 132,946

Int. Cl.[5] C08F *36/00*

U.S. Cl. 526—312 **18 Claims**

1. A semi-batch process for making a hydrophobic polyelectrolyte copolymer which comprises the steps of:

adding diallyldimethylammonium chloride to a polymerization reactor vessel in an amount between about 1 to about 19 weight percent;

heating the diallyldimethylammonium chloride to a temperature in the range between about 47° C. to about 57° C.;

adding a polymer initiator dropwise to said diallyldimethylammonium chloride in an amount between about 0.05 to about 0.4 weight percent;

adding a hydrophobic monomer selected from the group consisting of quaternized dimethyl aminoethylacrylates and quaternized dimethylaminoethylmethacrylates dropwise to said diallyldimethylammonium chloride in an amount between about 3 to about 19 weight percent; and

heating the mixture of diallyldimethylammonium chloride, polymer initiator and hydrophobic monomer to a temperature in the range between about 47° C. to about 82° C.

5,338,817

METHOD FOR THE PREPARATION OF A SILICONE RESIN

Katsutoshi Mine; Takashi Nakamura, and Motoshi Sasaki, all of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1993, Ser. No. 155,894

Claims priority, application Japan, Feb. 9, 1993, 5-044589

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—12 **16 Claims**

1. A method for preparing a silicone resin comprising:

(I) hydrolyzing and condensing (A) a disiloxane with the general formula

$$[R^1{}_2HSi]_2O$$

and (B) an alkyl silicate with the general formula

$$Si(OR^2)_4$$

in (C) an aqueous solution which contains at least 30 weight % alcohol and at least 5 weight % inorganic acid; wherein R^1 is a monovalent hydrocarbon group, R^2 is an alkyl group; and components (A) axle (B) are used in a proportion such that the moles of component (A)/moles of component (B) is in the range of 0.05–0.6; and

(II) isolating the silicone resin product with (D) an organic solvent which is poorly soluble in water and which has a dielectric constant of at least 4.

5,338,818

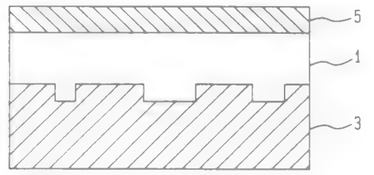
SILICON CONTAINING POSITIVE RESIST FOR DUV LITHOGRAPHY

William R. Brunsvold, Poughkeepsie; Premlatha Jagannathan, Patterson; Steve S. Miura, Wappingers Falls; Melvin W. Montgomery, New Windsor; Harbans S. Sachdev, Hopewell Junction, and Ratnam Sooriyakumaran, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

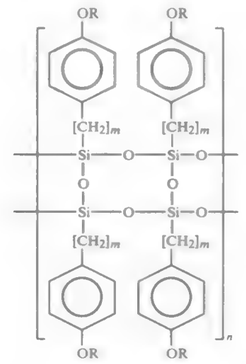
Filed Sep. 10, 1992, Ser. No. 943,086

Int. Cl.[5] C08G *77/00*

U.S. Cl. 528—43 **4 Claims**



1. An acid sensitive polymer having the formula:



wherein m is 0 or 1, and wherein n is at least 3, and wherein the R constituents are either hydrogen groups or X constituent groups which have the formula:



wherein the X constituents are selected form the group consisting of secondary alkyl, t-butyl, substituted deactivated secondary benzyl, and 1-(deactivated heterocyclic) secondary alkyl pendant groups, said X constituent groups and said hydrogen groups being present at a X constituent:hydrogen ratio ranging from 15:85 to 50:50.

5,338,819

SOLID ISOCYANATE DERIVATIVES USEFUL IN ONE COMPONENT POLYURETHANE ADHESIVES

Thirumurti Narayan, Grosse Ile; Anthony W. Tantillo, Troy, and John R. Stoll, Woodhaven, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Nov. 29, 1991, Ser. No. 799,814

Int. Cl.[5] C08G *18/10, 18/30*

U.S. Cl. 528—60 **4 Claims**

1. A process for the preparation of a solid isocyanate terminated prepolymer in the form of a powder, comprising reacting a polyisocyanate with a low molecular weight polyol mixture in the presence of a urethane reaction promoting catalyst, in a solvent in which said polyisocyanate is soluble and in which said solid isocyanate terminated prepolymer is not soluble, and separating said solid isocyanate terminated prepolymer from the reaction mixture, wherein said polyisocyanate is selected from the group consisting of the toluene diisocyanates, the methylene bis(phenylisocyanate)s, the polymethylene polyphenylene polyisocyanates, and the modified isocyanates wherein two of the above isocyanate molecules are linked together with a urea, biuret, carbodiimide, uretdione, uretonimine or urethane linkage; wherein said low molecular weight polyol mixture comprises a mixture of simple glycols or triols optionally containing less than 30 weight percent based on the weight of the total polyol mixture of a polyoxyethylene glycol having a molecular weight below about 1000; wherein the simple glycol is a straight chain glycol having no more than one alkyl branch located on a carbon to which a hydroxyl group is attached when the glycol hydroxyl groups are not separated by more than two carbon atoms and wherein the monomeric isocyanate and glycol mixture is reacted in a ratio of 1.6 or more mole equivalents of isocyanate to 1 mole equivalent of glycol.

5,338,820

WATER-BLOWN POLYURETHANE INTEGRAL SKIN FOAM

Richard P. Harrison, Lincoln Park; Michael Scarpati, Trenton; Thirumurti Narayan, Grosse Ile, and Blair J. Zagata, Troy, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 48,444, Apr. 15, 1993. This application Feb. 4, 1994, Ser. No. 192,402

Int. Cl.[5] C08G *18/70, 18/14*

U.S. Cl. 528—67 **11 Claims**

1. A quasi-prepolymer composition comprising the reaction product of from 0.5 weight percent to 30.0 weight percent or less uretonimine-carbodiimide-modified 4,4′-diphenylmethane diisocyanate and from 50 weight percent to 80 weight percent 4,4′-diphenylmethane diisocyanate with from 15 weight percent to 40 weight percent of a polyether polyol composition containing a predominant amount of secondary hydroxyl groups and having an average molecular weight from 2,000 to 10,000 and an average functionality from 1.5 to 3.2.

5,338,821

ARYL-ETHER-SULPHONE MONOMERS AND ARYL-ETHER-KEYTONE-SULFPHONE POLYMERS

Ian D. H. Towle, Cirencester, England, assignor to Raychem Limited, London, United Kingdom

PCT No. PCT/GB91/01858, § 371 Date Apr. 26, 1993, § 102(e) Date Apr. 26, 1993, PCT Pub. No. WO92/07843, PCT Pub. Date May 14, 1992

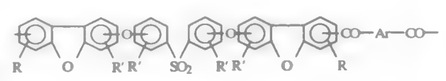
PCT Filed Oct. 23, 1991, Ser. No. 39,471

Claims priority, application United Kingdom, Oct. 26, 1990, 9023365.1

Int. Cl.[5] C08G *75/23*

U.S. Cl. 528—173 **7 Claims**

1. A polymer having a FESEFKetone repeat unit of formula



wherein each R independently is H, or C_1–C_{10} alkyl, and each R′ independently is H, C_1–C_{10} alkyl, or Cl or F, and Ar is a mono- or poly-nuclear aromatic moiety in which two or more arylene groups if present may be linked by

VOL 1165 ISS 3 AG 16 1994 UMI

—CO—, —O—, —$C(CH_3)_2$—, —$C(CF_3)_2$—, or by a direct or fused-ring bond.

5,338,822

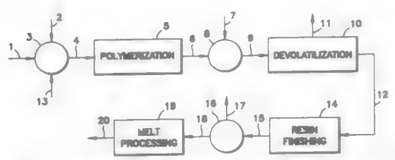
MELT-STABLE LACTIDE POLYMER COMPOSITION AND PROCESS FOR MANUFACTURE THEREOF

Patrick R. Gruber, St. Paul; Jeffrey J. Kolstad, Wayzata; Eric S. Hall, Crystal; Robin S. Eichen Conn, Minneapolis, and Christopher M. Ryan, Chisago City, all of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Filed Oct. 2, 1992, Ser. No. 955,690

Int. Cl.[5] C08G *63/08*

U.S. Cl. 528—354 **37 Claims**



1. A melt-stable lactide polymer composition, comprising:

(a) a plurality of polylactide polymer chains, said plurality having a number average molecular weight of from about 10,000 to about 300,000;

(b) lactide in a concentration of less than about 2 percent by weight;

(c) water, if present at all, present in a concentration of less than about 1000 parts-per-million; and

(d) a stabilizing agent in an amount sufficient to reduce depolymerization of said plurality of polylactide polymer chains during melt-processing, such that the generation of lactide is less than about 2 percent by weight of the composition from a devolatilized sample in the first hour at a temperature of 180° C. and atmospheric pressure.

5,338,823

LITHIUM/HMPA-PROMOTED SYNTHESIS OF POLY(PHENYLENES)

James M. Tour, 3700 Linbrook Dr., Columbia, S.C. 29204, and Eric B. Stephens, 1600 Longcreek Dr. Apt. 2002, Columbia, S.C. 29210

Division of Ser. No. 543,673, Jun. 25, 1990, Pat. No. 5,169,929. This application Dec. 7, 1992, Ser. No. 987,353

Int. Cl.[5] C08G *61/00*

U.S. Cl. 528—397 **8 Claims**

1. A method of preparing a benzenoid polymer comprising the steps of:

(a) polymerizing a lithioarylhalide compound in the presence of a polar aprotic compound which is not decomposed by alkyllithium compounds;

(b) separating the polymerized benzenoid polymer from any unreacted starting materials;

(c) dissolving the separated material in a solvent;

(d) treating the dissolved material with an excess of an alkyllithium compound that undergoes lithium/halogen exchange to replace halogen atoms attached to the polymer with lithium; and

(e) quenching the lithiated polymer with an electrophile or water.

5,338,824

REMOVAL OF ALKALI METAL METHOXIDE CATALYST RESIDUE FROM HYDROXY-TERMINATED CONJUGATED DIENE POLYMERS

Zaida Diaz, Houston, Tex., and Raymond C. Tsiang, Taipei, Taiwan, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 6, 1993, Ser. No. 87,646

Int. Cl.[5] C08F *6/08*

U.S. Cl. 528—482 **4 Claims**

1. A process of removing an alkali metal alkoxide catalyst residue from an anionically polymerized hydroxy-terminated conjugated diene polymer, which comprises contacting a solution of the polymer with an adsorbent which is an ultrastable Y zeolite in the hydrogen form.

5,338,825

POLYMER PREPARATION

Arleen M. Bradford; Petrus W. N. M. Van Leeuwen, and Annetta M. Wullink-Schelvis, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 25, 1993, Ser. No. 67,320

Claims priority, application European Pat. Off., May 27, 1992, 92201534.2

Int. Cl.[5] C08G *67/02*

U.S. Cl. 528—392 **11 Claims**

1. A process for the preparation of copolymers which comprises reacting carbon monoxide and one or more ethylenically unsaturated compounds under polymerization conditions in the presence of a catalyst system comprising:

at least one metal selected from the Groups Vi, VII or VIII of the Periodic Table attached to

a stabilizing organic compound by a covalent bond via a carbon atom to said metal and containing at least one group capable of forming an additional non-covalent bond with said metal(s).

5,338,826

STRUCTURES FROM LOW DIELECTRIC POLYIMIDES

Anne K. St. Clair; Terry L. St. Clair, both of Poquoson, and William P. Winfree, Williamsburg, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administation, Washington, D.C.

Continuation-in-part of Ser. No. 376,482, Jul. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 73,542, Jul. 15, 1987, abandoned. This application Sep. 28, 1992, Ser. No. 954,108

Int. Cl.[5] C08G *73/10;* **B05D** *5/06;* **B32B** *27/00*

U.S. Cl. 528—353 **15 Claims**

1. A process for preparing a structure which is effective as an electrical insulator or as a transmitter-receiver of electromagnetic energy, the process comprising:

(A) providing a suitable substrate; and

(B) covering the substrate with an adhering layer of a low-dielectric, high-temperature, linear, aromatic polyimide prepared by a process which comprises:

(1) selecting aromatic diamine and aromatic dianhydride reactants to meet at least two of the following three conditions:

(a) a reactant must have minimal permanent or inducible electrical dipolar characteristics as a result of the presence of pendant or bridging groups therein;

(b) a reactant must impart a high degree of free volume to the polymer caused by inefficient chain packing therein in the solid state as a result of the presence of pendant or bridging groups therein; and

(c) a reactant must have fluorine atoms chemically attached thereto; and

(2) chemically combining equimolar quantities of the aromatic diamine and aromatic dianhydride reactants in a solvent to form a high molecular weight polyamic acid solution, and converting the high molecular weight polyamic acid to the corresponding low dielectric, high temperature linear aromatic polyimide.

5,338,827

POLYIMIDE RESINS USEFUL AT HIGH TEMPERATURES

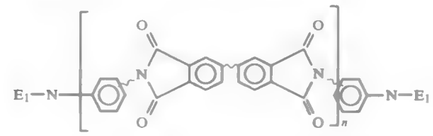
Tito T. Serafini, Redlands; Paul G. Cheng, Rancho Palos Verdes; Kenneth K. Ueda, Lomita, and Ward F. Wright, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 472,036, Jan. 30, 1990, Pat. No. 5,091,505, and a continuation-in-part of Ser. No. 472,198, Jan. 30, 1990, Pat. No. 5,132,395. This application Dec. 27, 1991, Ser. No. 816,304

Int. Cl.[5] C08G *69/26, 63/08, 75/00;* **C08L** *67/00*

U.S. Cl. 528—353 **30 Claims**

1. A composition of matter comprising low molecular weight prepolymers suitable for chain extension and crosslinking to form high molecular weight, thermally stable polyimides, the prepolymers having the formula:



where (i) each E_1 is independently an end cap radical having at least one unsaturated moiety and being capable of undergoing addition polymerization,

(ii) the nitrogen of the structure:



consists essentially of nitrogen in the meta- and para-positions, the ratio between the meta- and para- nitrogen being from about 3:2 to about 4:1, and

(iii) n is at least 2 and is sufficiently small that the average molecular weight of the prepolymers is less than about 50,000.

5,338,828

MESOGENIC CYCLIC IMINO ETHER-CONTAINING COMPOSITIONS AND POLYMERIZATION PRODUCTS THEREOF

Robert E. Hefner, Jr., and Jimmy D. Earls, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

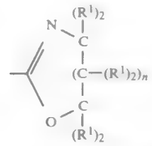
Division of Ser. No. 832,070, Feb. 6, 1992, Pat. No. 5,281,675. This application Sep. 10, 1993, Ser. No. 119,852

Int. Cl.[5] C08G *59/18;* **C08K** *5/35, 7/02*

U.S. Cl. 528—179 **8 Claims**

1. The product resulting from polymerizing a polymerizable composition comprising

(A) a cyclic imino ether containing one or more rodlike mesogenic moieties and one or two terminal groups of the formula:



wherein each **R1** is independently hydrogen or a hydrocarbyl group having 1 to about 3 carbon atoms and n has a value of 0 or 1, said cyclic imino ether not including 2-(4-(4-methoxy-4'-biphenyloxy)butyl)-2-oxazoline, 2-(6-(4-methoxy-4'-methoxy-4'-biphenyloxy)hexyl)-2oxazoline or 2-(4-(4-phenylphenoxy)-butyl)-2-oxazoline; and

(B) one or more polymerization catalysts therefor.

5,338,829

PEPTIDES DERIVED FROM HUMAN IMMUNODEFICIENCY VIRUS-1 GP160

David B. Weiner, Penn Wynne; Mark I. Greene, Penn Valley, and William V. Williams, Havertown, all of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 582,889, Oct. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 183,840, Apr. 20, 1988, abandoned. This application Oct. 19, 1992, Ser. No. 932,078

Int. Cl.[5] A61K *37/02;* **C07K** *3/00, 5/00, 15/00*

U.S. Cl. 530—324 **5 Claims**

1. A peptide consisting of the amino acid sequence gly-glu-ile-lys-asn-cys-ser-phe-asn-ile-ser-thr-ser-ile-arg-gly-lys-val-gln-lys-glu-tyr-ala.

5,338,830

BIOLOGICALLY ACTIVE PEPTIDE DERIVED FROM CHICKEN (CHICKEN CNP)

Hisayuki Matsuo, 5-15-141, 5-chome, Onoharahigashi, Minoo-shi, Osaka; Kenji Kangawa, Miyazaki, and Naoto Minamino, Osaka, all of Japan, assignors to Suntory Limited and Hisayuki Matsuo, Osaka

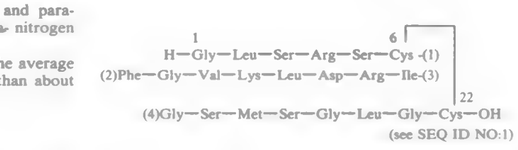
Filed Sep. 4, 1991, Ser. No. 754,947

Claims priority, application Japan, Sep. 7, 1990, 2-238293

Int. Cl.[5] C07K *7/00;* **A61K** *37/02*

U.S. Cl. 530—326 **1 Claim**

1. An isolated biologically active peptide having the formula:



(see SEQ ID NO:1)

wherein (1) and (2), (3) and (4) directly bind, and the cystein residues (Cys) at positions 6 and 22 form an intramolecular disulfide bond, and an acid addition salt thereof.

5,338,831

METHOD OF MAKING MULTIPLE SYNTHESIS OF PEPTIDES ON SOLID SUPPORT

Michal Lebl, Praha, Czechoslovakia; Jutta Eichler, Berlin, Fed. Rep. of Germany; Vit Pokorny, Praha, Czechoslovakia; Jiří Jehnička, Praha, Czechoslovakia; Petr Mudra, Praha, Czechoslovakia; Karel Ženíšek, Praha, Czechoslovakia; Alena Stierandová, Červený Kostelec, Czechoslovakia; Jan Kalousek, Praha, Czechoslovakia, and Jan Bolf, Praha, Czechoslovakia, assignors to Academy of Sciences of the Czech Republic changed from Ceskoslovenska akademie ved, Praha, Czechoslovakia

Continuation of Ser. No. 645,121, Jan. 24, 1991, Pat. No. 5,202,418. This application Dec. 14, 1992, Ser. No. 992,288

Claims priority, application Czechoslovakia, Feb. 2, 1990, PV 508-90

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] A61K *37/02*

U.S. Cl. 530—334 **6 Claims**

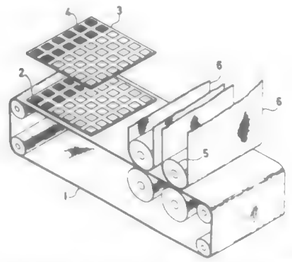
1. A method of synthesizing peptides, comprising the steps of:

VOL 1165 ISS 3 AG 16 1994 UMI

providing a planar carrier on a disk, which carrier is divided into a plurality of individual compartments, each compartment containing an inert porous material, a circular path being defined around said disk, said compartments being circumferentially spaced around said circular path, a functional group of an amino acid residue being anchored onto the inert porous material of each compartment to form a plurality of individual functionalized compartments;

arranging a dosing head at a fixed location adjacent said circular path, the dosing head including means for directly dispensing measured quantities of at least one liquid component from a common reservoir of such component;

positioning the disk so that a first one of the individual functionalized compartments is positioned to receive a liquid component directly dispensed by the dosing head;



directly dispensing a measured quantity of the liquid component to said first individual functionalized compartment from the common reservoir thereof, via the dosing head, the liquid component dispensed thereto providing an amino acid to form a covalent bond with the functional group of the amino acid residue in said first individual functionalized compartment positioned to receive the liquid component for peptide synthesis in said first individual functionalized compartment receiving the measured quantity;

rotating the disk to position a second individual functionalized compartment along the circular path to receive the liquid component dispensed by the dosing head; and

subsequently dispensing at least one other amino acid to another individual functionalized compartment in at least one other step for completing the synthesis of peptides.

5,338,832

ANTIGEN RECOGNIZED BY MCA 16-88

Nicholas Pomato, Frederick, Md.; Ebo S. Bos, De Veiesstratt, Netherlands; Martin V. Haspel, Silver Spring, Md.; Michael G. Hanna, Jr., Frederick, Md., and Michael L. Berman, Potomac, Md., assignors to Akzo N.V., Velperweg, Netherlands

Continuation of Ser. No. 343,475, Feb. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 69,478, Jul. 2, 1987, abandoned. This application Aug. 13, 1992, Ser. No. 929,842

Int. Cl.[5] C07K *13/00, 5/00, 15/28*

U.S. Cl. 530—350 **4 Claims**

1. An essentially pure human tumor cell soluble protein antigen comprising the human tumor cell epitope to which human monoclonal antibody 16-88 binds, found on a tumor associated antigen expressed by colon carcinoma cell lines HT-29, SW1463, SW948, SW403, LoVo and WiDr, said antigen comprising a soluble protein having a molecular weight of approximately 900K when determined by gel filtration column chromatography, a molecular weight of approximately 100–140K when determined by native gradient polyacrylamide gel electrophoresis, and an isoelectric focusing point of about pH 5.5, and which migrates as soluble peptides of approximately 35K to 43K when subjected to sodium dodecyl sulfate polyacrylamide gel electrophoresis performed under reducing conditions, said antigen further comprising epitopes to which monoclonal antibodies to cytokeratin 8 bind and to which monoclonal antibodies to cytokeratins 18 and 19 bind, but not to which antibodies to vimentin bind.

5,338,833

CARBOXY TERMINAL IL-6 MUTEINS

Dana M. Fowlkes, New York, N.Y., assignor to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Jul. 23, 1992, Ser. No. 918,181

Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—351 **15 Claims**



1. A mutein of human IL-6 having increased activity wherein the Phenylalanine residue at position 171 of the native IL-6 sequence shown in SEQ. ID. NOS. 1–2 and in FIG. 1 is replaced by a Leucine residue and/or the Leucine residue at position 175 of the native IL-6 sequence shown in SEQ. ID. NOS. 1–2 and in FIG. 1 is replaced by a Methionine residue.

5,338,834

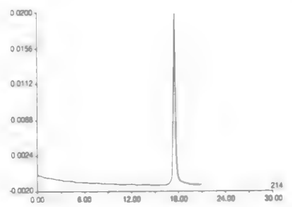
ULTRAPURE HUMAN INTERLEUKIN-6

Ashley M. Williams, Mississauga, Canada, assignor to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Filed Jan. 26, 1993, Ser. No. 9,973

Int. Cl.[5] C07K *3/02, 3/20, 3/22, 15/06*

U.S. Cl. 530—351 **10 Claims**



1. A method for obtaining essentially pure human interleukin-6 comprising the steps of:

1) fractionating a preparation containing human interleukin-6 by cation-exchange chromatography using a column comprising a cationic resin, and eluting from said column a first interleukin-6 sample;

2) fractionating said first interleukin-6 sample by hydrophobic chromatography using an adsorption column comprising a hydrophobic adsorbent, and eluting from said adsorption column a second interleukin-6 sample;

3) fractionating said second interleukin-6 sample by reverse-phase high performance liquid chromatography in the presence of a cationic charge modifier; and

4) collecting essentially pure human interleukin-6;

wherein steps 1) and 2) are interchangeable.

5,338,835

CTP-EXTENDED FORM OF FSH

Irving Boime, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Division of Ser. No. 532,254, Jun. 1, 1990, Pat. No. 5,177,193, which is a continuation-in-part of Ser. No. 313,646, Feb. 21, 1989, abandoned. This application Sep. 24, 1992, Ser. No. 950,801

Int. Cl.[5] C07K *13/00;* **A61K** *37/38*

U.S. Cl. 530—398 **4 Claims**

1. An extended human FSH subunit wherein the amino acid sequence of a carboxy terminal peptide (CTP) representing positions from about 112–118 to 145 of the human chorionic gonadotrophin beta subunit is appended to the C-terminal amino acid residue at position 111 of a wild-type human FSH beta subunit.

5,338,836

BIOLOGICALLY ACTIVE PORCINE SOMATOTROPIN POLYPEPTIDES AND METHODS OF USING THE SAME

Bosco S. Wang, Cranbury, N.J.; Hong-Ming Shieh, Longhorne, Pa., and Martin J. Corbett, Mt. Holly, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Jul. 29, 1992, Ser. No. 922,523

Int. Cl.[5] A61K *37/02, 37/36;* **C07K** *7/00;* **A01N** *37/18*

U.S. Cl. 530—399 **2 Claims**

1. An isolated polypeptide corresponding to the epitope for porcine somatotropin (pST), wherein the polypeptide has the amino acid sequence shown in Seq. I.D. 1 from about amino acid number 54 to about amino acid number 95.

5,338,837

GLYCOSYLATED STEROID DERIVATIVES FOR TRANSPORT ACROSS BIOLOGICAL MEMBRANES AND PROCESS FOR MAKING SAME

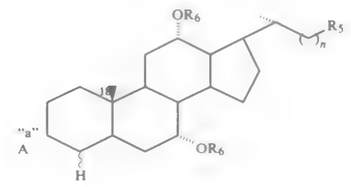
Daniel E. Kahne, Princeton, N.J., assignor to The Trustees of Princeton University, Princeton, N.J.

Filed Dec. 13, 1991, Ser. No. 806,985

Int. Cl.[5] C07J *9/00, 41/00;* **A61K** *31/56*

U.S. Cl. 536—5 **60 Claims**

1. A compound having the formula:



wherein

A is O, OH, OR^6, NR^7R^8, N_3, $NHCOR^7$, OCOAr, O—CO—OR^9, O—CO—R^9, $NCH_2C_6H_5$, and in which Ar is phenyl or phenyl substituted with 1–3 groups selected from the group consisting of halogen, C_1–C_{12} alkyl or C_1–C_3 alkoxy;

"a" is a single bond in the alpha or beta configuration with the proviso that when A=O, "a" is a double bond;

R^5 is CO_2R^{10}, CH_2OR^9, $CONH_2$, $CONHR^7$, $CONR^7R^8$, CO—S—R^{10}, $CH_2S(O)_p$—S—R^{10}, CH_2NH_2,CH_2NHR^7,$CH_2NR^7R^8$, CH_2—S(O)$_p$—S—R^{10};

R^6 is a glycosyl moiety comprising 1–10 monosaccharide units in which the glycosidic linkage at the anomeric carbon of each monosaccharide unit is independently alpha or beta;

R^7 or R^8, independently are H, C_1–C_4 alkyl, C_3–C_7 cycloalkyl, C_4–C_{10} alkylcycloalkyl, phenyl, benzyl, or, taken together are $(CH_2)_f$ where f=3–6;

R^9 is H, or C_1–C_3 alkyl;

R^{10} is H, C_1–C_{10} alkyl, C_1–C_{10} alkenyl, C_1–C_{10} alkynyl, C_6H_5 or $CH_2C_6H_5$;

p is 0, 1 or 2;

n is 0, 1 or 2;

or a pharmaceutically suitable salt thereof, provided that the compound of the formula (I) is not 3α-ethylcarbonate-cis-5,10-bis-α,α-7,12-(2,3,4,6-tetra-O-benyl)glucosyl cholic acid methyl ester.

5,338,838

ANTIOXIDATION ACTIVE SUBSTANCE AND UTILIZATION THEREOF

Yoshihide Hagiwara, and Hideaki Hagiwara, both of Takarazuka, Japan, assignors to Yoshihide Hagiwara, Takarazuka, Japan

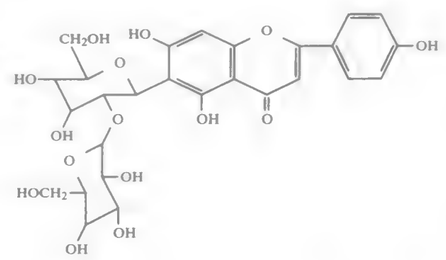
Division of Ser. No. 745,251, Aug. 14, 1991. This application Jun. 3, 1992, Ser. No. 893,069

Claims priority, application Japan, Aug. 17, 1990, 2-217344; Aug. 21, 1990, 2-220398; Mar. 1, 1991, 3-059374; Mar. 4, 1991, 3-062558; Mar. 4, 1991, 3-062688

Int. Cl.[5] C07H *17/08, 1/08*

U.S. Cl. 536—8 **15 Claims**

1. A method of extracting 2'-O-glucosyl-isovitexin of formula:



from green leaves of a green leaf plant, which comprises the steps of

crushing the green leaves of a plant of the Gramineae family to obtain a green juice from the green leaves, drying the green juice to obtain a dry powder, contacting the dry powder with n-hexane to recover a fraction (a) which is insoluble in the n-hexane,

extracting the fraction (a) with an aqueous ethanol solution with a water content of 0–80% to recover a fraction (b) which is soluble in the aqueous ethanol solution,

adsorbing the fraction (b) on a resin adsorbent and then eluting it with an aqueous methanol solution with a water content of 0–80% to recover a fraction (c) which is soluble in the aqueous methanol solution, and

treating the fraction (c) with an aqueous methanol solution with a water content of 30–70% and crystallizing 2'-O-glucosyl-isovitexin.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,839

DNA ENCODING NESTIN PROTEIN

Ronald D. G. McKay, Brookline, Mass., and Urban Lendahl, Stockholm, Sweden, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 660,412, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 603,803, Oct. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 201,762, Jun. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 180,548, Apr. 12, 1988, abandoned. This application Mar. 19, 1992, Ser. No. 853,913

Int. Cl.[5] C07H *21/04;* C12Q *1/68*

U.S. Cl. 536—235 5 Claims

1. Isolated DNA encoding nestin protein and consisting of the nucleotide sequence of SEQ ID NO: 1.

2. Isolated DNA encoding nestin protein and consisting of the nucleotide sequence of SEQ ID NO: 3.

5,338,840

DNA ENCODING GLIOMA-DERIVED GROWTH FACTOR HAVING VASCULAR ENDOTHELIAL CELL GROWTH PROMOTING ACTIVITY

Marvin L. Bayne, Westfield; Kenneth A. Thomas, Jr., Chatham Burough, and Gregory L. Conn, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 500,421, Mar. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 356,477, May 24, 1989, abandoned. This application May 27, 1992, Ser. No. 889,547

Int. Cl.[5] C07K *13/00;* A61K *37/36*

U.S. Cl. 536—23.51 1 Claim

1. A purified and isolated DNA molecule encoding glioma-derived growth factor having the nucleotide sequence as shown in the FIGURE.

5,338,841

DNA SEGMENTS CONTROLLING PRODUCTION OF XANTHAN GUM

Thomas J. Pollock, and Linda Thorne, both of San Diego, Calif., assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan and Shin-Etsu Bio, Inc., San Diego, Calif.

Division of Ser. No. 517,551, Apr. 24, 1990, Pat. No. 5,279,961, which is a continuation of Ser. No. 180,945, Apr. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 38,302, Apr. 14, 1987, abandoned. This application Jan. 24, 1992, Ser. No. 825,600

Int. Cl.[5] C12N *15/31, 1/21*

U.S. Cl. 536—23.7 1 Claim

1. An isolated DNA sequence encoding genetic information controlling the synthesis of xanthan, said sequence having a restriction map of a segment selected from the group consisting of clH5, cl, c9H7, c82, c9, a fragment of C9H7 comprising c9e, a fragment of c82 comprising c9e, a fragment of c9 comprising c9e, and c9e.

5,338,842

YERSINIA INV NUCLEIC ACIDS

Ralph R. Isberg, Brookine, Mass.; Virginia Miller, Los Angeles, and Stanley Falkow, Portola Valley, both of Calif., assignors to The Board of Trustees of Leland Stanford Jr. University, Stanford, Calif.

Continuation of Ser. No. 559,904, Jul. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 340,375, Apr. 19, 1989, which is a continuation-in-part of Ser. No. 761,222, Jul. 31, 1985, abandoned. This application May 22, 1992, Ser. No. 890,317

Claims priority, application PCT Int'l Appl., Apr. 18, 1990, PCT/US90/02131

Int. Cl.[5] C12N *15/31, 1/21;* C12Q *1/68*

U.S. Cl. 536—23.7 15 Claims

1. An isolated nucleic acid comprising at least 50 nucleotides of a *Yersinia inv* structural gene.

5,338,843

FLUOROGENIC AND CHROMOGENIC β-LACTAMASE SUBSTRATES

J. Michael Quante, Durham; Randal A. Hoke, Cary; Patrick D. Mize, Durham; Daniel L. Woodard, Raleigh, and O. Elmo Millner, deceased, late of Durham, all of N.C. by Margaret Millner, legal representative , assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

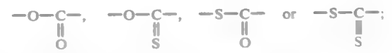
Filed Jan. 30, 1992, Ser. No. 828,093

Int. Cl.[5] C07D *501/34;* A61K *31/545*

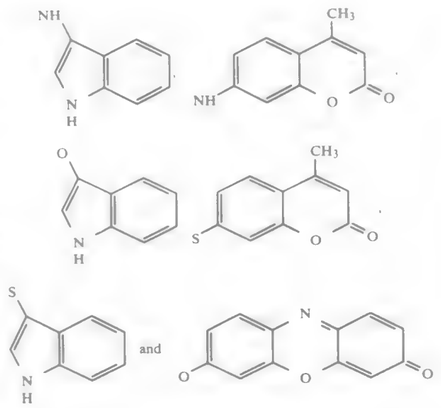
U.S. Cl. 540—222 10 Claims

1. A fluorogenic or chromogenic compound having the following structure:

wherein,



Y is selected from the group consisting of:



Z is 2-amino-α-(methoxyimino)-4-thiazolacetyl of 2-thienylacetyl, and;

M is hydrogen or a metal cation.

5,338,844

2-SUBSTITUTED-2-CYCLOPENTENONE COMPOUND AND ANTICANCER AGENT AND BONE FORMATION ACCELERATOR COMPRISING SAME AS ACTIVE INGREDIENT

Satoshi Sugiura; Toru Minoshima; Atsuo Hazato, and Yoshinori Kato, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

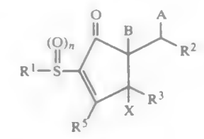
Continuation of Ser. No. 690,889, Jun. 19, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 104,393

Claims priority, application Japan, Oct. 19, 1989, 1-272296

Int. Cl.[5] C07C *405/00*

U.S. Cl. 544—318 9 Claims

1. A 2-substituted-2-cyclopentenone compound represented by the following formula (I):



(I)

wherein R^1 stands for a substituted or unsubstituted monocyclic or bicyclic heterocyclic group having 1 to 9 carbon atoms and having at least one element selected from the group consisting of nitrogen, oxygen and sulfur, or any combined group thereof; said substituent being selected from the group consisting of (i) a halogen atom; (ii) an oxo group; (iii) a cyano group; (iv) a nitro group; (v) —$COOR^{61}$, wherein R^{61} stands for a hydrogen atom; one equivalent of a cation; a residue of a saccharide; or an aliphatic hydrocarbon group having 1 to 10 carbon atoms which may be substituted with a halogen atom, an oxo group, a hydroxyl group, a tri(C_1–C_7) hydrocarbon silyloxy group, an acyloxy group having 2 to 7 carbon atoms, an alkoxycarbonyloxy group having 2 to 5 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an alicyclic hydrocarbon group having 4 to 10 carbon atoms or an aromatic hydrocarbon group having 6 to 10 carbon atoms; (vi) —OR^{71}, wherein R^{71} stands for a hydrogen atom; an acyl group having 2 to 7 carbon atoms; an alkoxycarbonyl group having 2 to 5 carbon atoms; a tri(C_1–C_7) hydrocarbon silyl group; a group capable of forming an acetal bond together with the oxygen atom bonded to the R^{71}; an aliphatic hydrocarbon group having 1 to 10 carbon atoms or an alicyclic hydrocarbon group having 4 to 10 carbon atoms which may be substituted with a halogen atom, an oxo group, a hydroxyl group, a carboxyl group, a tri(C_1–C_7) hydrocarbon silyloxy group; an acyloxy group having 7 to 7 carbon atoms, an alkoxycarbonylxoy group having 2 to 5 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an alkoxycarbonyl group having 2 to 5 carbon atoms or an aromatic hydrocarbon group having 6 to 10 carbon atoms; or an aromatic hydrocarbon group having 6 to 10 carbon atoms which may be substituted with a halogen atom, a hydroxyl group, a nitro group, a tri(C_1–C_7)hydrocarbon silyloxy group, an alkoxy group having 1 to 4 carbon atoms, an acyloxy group having 2 to 7 carbon atoms, an alkoxycarbonyloxy group having 2 to 5 carbon atoms, an acyl group having 2 to 7 carbon atoms, a carboxyl group, an alkoxycarbonyl group having 2 to 5 carbon atoms or an alkyl group having 1 to 4 carbon atoms; (vii) —$CONR^{81}R^{810}$, wherein R^{81} and R^{810}, which may be the same or different from each other, stand for a hydrogen atom; an aliphatic hydrocarbon group having 1 to 10 carbon atoms or an alicyclic hydrocarbon group having 4 to 10 carbon atoms which may be substituted with a halogen atom, an oxo group, a hydroxyl group, a tri(C_1–C_7)hydrocarbon silyloxy group, an acyloxy group having 2 to 7 carbon atoms, an alkoxycarbvonyloxy group having 2 to 5 carbon atoms, an alkoxy group having 1 to 4 carbon atoms or an aromatic hydrocarbon group having 6 to 10 carbon atoms; an aromatic hydrocarbon group having 6 to 10 carbon atoms which may be substituted with a halogen atom, a hydroxyl group, a nitro group, a tri-(C_1–C_7) hydrocarbon silyloxy group, an acyloxy group having 2 to 7 carbon atoms, an alkoxycarbonylxoy group having 2 to 5carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an acyl group having 2 to 7 carbon atoms, a carboxyl group, an alkoxycarbonyl group having 2 to 5 carbon atoms or an alkyl group having 1 to 4 carbon atoms; or a group wherein R^{81} and R^{810} are combined with each other to form a five- or six-membered ring; (vii) —$NR^{91}R^{910}$, wherein R^{91} and R^{910}, which may be the same of different from each other, stand for a hydrogen atom; an aliphatic hydrocarbon group having 1 to 10 carbon atoms or an alicyclic hydrocarbon group having 4 to 10 carbon atoms which may be substituted with a halogen atom, an oxo group, a hydroxyl group, a carboxyl group, a tri(C_1–C_7) hydrocarbon silyloxy group, an acyloxy group having 2 to 7 carbon atoms, an alkoxycarbonyloxy group having 2 to 5 carbon atoms, an alkoxy group having 1 to 4 carbon atoms or an aromatic hydrocarbon group having 6 to 10 carbon atoms; an aromatic hydrocarbon group having 6 to 10 carbon atoms which may be substituted with a halogen atom, a hydroxy group, a nitro group, a tri(C_1–C_7)hydrocarbon silyloxy group, an acyloxy group having 2 to 7 carbon atoms, an alkoxycarbonyloxy group having 2 to 5 carbon atoms, an alkoxy group having 1 to 4 carbon atoms or an alkyl group having 1 to 4 carbon atoms; or a group wherein R^{91} and R^{910} are combined with each other to form a five- or six-membered ring; (ix) an aliphatic hydrocarbon group having 1 to 10 carbon atoms; (x) an alicyclic hydrocarbon group having 4 to 10 carbon atoms; (xi) an aromatic hydrocarbon group having 6 to 10 carbon atoms; and (xii) a heterocyclic group having 1 to 9 carbon atoms;

R^2 stands for a substituted or unsubstituted (i) aliphatic hydrocarbon group having 1 to 10 carbon atoms, (ii) alicyclic hydrocarbon group having 4 to 10 carbon atoms, (iii) aromatic hydrocarbon group having 6 to 10 carbon atoms or (iv) heterocyclic group having 1 to 9 carbon atoms; wherein the substituent for R^2 is defined in the same way as the substituent for R^1, provided that the substituent —$COOR^{61}$ in the definition of R^1 is —$COOR^{62}$ where R^{62} is defined in the same way as R^{61} except that R^{62} further stands for an aliphatic hydrocarbon having 1 to 10 carbon atoms substituted with a nitro group, (b) the substituent —OR^{71} in the definition or R^1 is OR^{72} where R^{72} is defined in the same way as R^{71} except that R^{72} does not represent an aromatic hydrocarbon group having 6 to 10 carbon atoms which is substituted with an alkoxy group having 1 to 4 carbon atoms or an acyloxy group having 2 to 7 carbon atoms, (c) the substituent —$CONR^{81}R^{810}$ in the definition of R^1 is —$CONR^{82}R^{820}$ where R^{82} and R^{820} are defined in the same way as R^{81} and R^{810}, respectively, (d) the substituent —$NR^{91}R^{910}$ in the definition of R^1 is —$NR^{92}R^{920}$ independently further stand for an aromatic hydrocarbon group having 6 to 10 carbon atoms which is substituted with an acyl group having 2 to 7 carbon atoms, a carboxyl group, or an alkoxycarbonyl group having 2 to 5 carbon atoms, and (e) R^2 further may stand for —SR^{76}, wherein R^{76} stands for an aliphatic hydrocarbon group having 1 to 10 carbon atoms or an alicyclic hydrocarbon group having 4 to 10 carbon atoms which may be substituted with a halogen atom, an oxo group, a hydroxyl group, a carboxyl group, a tri(C_1–C_7) hydrocarbon silyloxy group, an acyloxy group having 2 to 7 carbon atoms, an alkoxycarbonyloxy group having 2 to 5 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an alkylcarbonyl group having 2 to 5 carbon atoms or an aromatic hydrocarbon group having 6 to 10 carbon atoms; an aromatic hydrocarbon having 6 to 10 carbon atoms which may be substituted with a halogen atom, a hydroxyl group, a tri(C_1–C_7)hydrocarbon silyloxy group, a nitro group, an acyloxy group having 2 to 7 carbon atoms, an alkoxycarbonyloxy group having 2 to 5 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an acyl group having 2 to 7 carbon atoms, a carboxyl group, an alkoxycarbonyl group having 2 to 5 carbon atoms or an alkyl group having 1 to 4 carbon atoms; p1 R^3 stands for a hydrogen atom or a substituted

VOL 1165 ISS 3 AG 16 1994 UMI

or unsubstituted (i) aliphatic hydrocarbon group having 1 to 10 carbon atoms, (ii) alicyclic hydrocarbon group having 4 to 10 carbon atoms or (iii) aromatic hydrocarbon group having 6 to 10 carbon atoms; wherein the substituent for R^3 is defined in the same way as the substituent for R^1, provide that (a) the substituent —$COOR^{61}$ in the definition of R^1 is —$COOR^{63}$ where R^{63} is defined in the same way as R^{61} except that R^{63} further stands for an aliphatic hydrocarbon group having 1 to 10 carbon atoms substituted with a nitro group, (b) the substituent —OR^{71} in the definition of R^1 is —OR^{73} where R^{73} is defined in the same way as R^{71}, (c) the substituent —$CONR^{81}R^{810}$ in the definition of R^1 is —$CONR^{83}R^{830}$ where R^{83} and R^{830} are defined in the same way as R^{81} and R^{810}, respectively, and (d) the substituent —$NR^{91}R^{910}$ is —$NR^{93}R^{930}$ where R^{93} and R^{930} are defined in the same way as R^{91} and R^{910}, respectively, except that R^{93} and R^{930} independently further stand for an aromatic hydrocarbon group having 6 to 10 carbon atoms which is substituted with an acyl group having 2 to 7 carbon atoms, a carboxyl group, or an alkoxycarbonyl group having 2 to 5 carbon atoms;

X stands for a hydrogen atom or —OR^4, wherein R^4 stands for a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an acyl group having 2 to 7 carbon atoms, an alkoxycarbonyl group having 2 to 5 carbon atoms, a tri(C_1–C_7) hydrocarbon silyl group or a group capable of forming an acetal bond together with the oxygen atom attached to the R^4, provided that X is absent when R^3 is bonded to the carbon atom bonding thereto through a double bond;

R^5 stands for a hydrogen atom, or a substituted or unsubstituted (i) aliphatic hydrocarbon group having 1 to 10 carbon atoms or (ii) an alicyclic hydrocarbon group having 4 to 10 carbon atoms; wherein the substituent for R^5 is defined in the same way as the substituent for R^1, provided that (a) the substituent —$COOR^{61}$ in the definition of R^1 is —$COOR^{65}$ where R^{65} is defined in the same way as R^{61} except that R^{65} further stands for an aliphatic hydrocarbon group having 1 to 10 carbon atoms substituted with a nitro group, (b) the substituent —OR^{71} in the definition of R^1 is —OR^{75} where R^{75} is defined in the same way as R^{71}, (c) the substituent —$CONR^{81}R^{810}$ in the definition of R^1 is —$CONR^{85}R^{850}$ where R^{85} and R^{850} are defined in the same way as R^{81} and R^{810}, respectively, and (d) the substituent —$NR^{91}R^{910}$ in the definition of R^1 is —$NR^{95}R^{950}$ where R^{95} and R^{950} are defined in the same way as R^{91} and R^{910}, respectively, except that R^{95} and R^{950} independently further stand for an aromatic hydrocarbon group having 6 to 10 carbon atoms which is substituted with an acyl group having 2 to 7 carbon atoms, a carboxyl group, or an alkoxycarbonyl group having 2 to 5 carbon atoms;

B stands for a hydrogen atom where A stands for a hydrogen atom, a hydroxyl group, an acyloxy group having 2 to 7 carbon atoms, an alkoxycarbonyloxy group having 2 to 5 carbon atoms, a sulfonyloxy group having 1 to 7 carbon atoms or

$$\overset{(O)_m}{\underset{\|}{}}\!\!-S-R^1,$$

or A and B are combined with each other to form a bond; m and n, which may be the same or different from each other, stand for 0, 1 or 2.

5,338,845

ASPERGILLUS SPECIES, CYCLIC DIMERIC DIPEPTIDE DERIVATIVE SUBSTANCE P ANTAGONIST BIOSYNTHETIC PRODUCTS THEREOF, AND PROCESS FOR PREPARATION THEREOF

Colin J. Barrow, East Pikeland Township, Chester County, Pa.; James E. Brownell; David R. Houck, both of Colonie, N.Y.; Anderson C. Hong, Taipei, Taiwan; Janet L. Popp, Upper Providence Township, Montogmery County, Pa., and David M. Sedlock, Bethlehem, N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

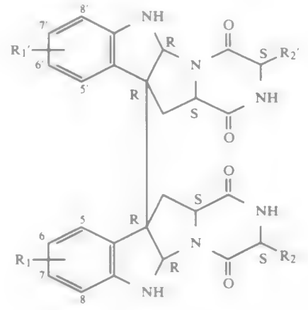
Filed Dec. 2, 1992, Ser. No. 984,668

Int. Cl.[5] **C07D** *519/00;* **A61K** *31/495*

U.S. Cl. 544—343 **4 Claims**

1. A compound having the structural formula

Formula I



wherein

R_1 and R_1' are the same or different and are selected from the group consisting of hydrogen, halo, lower-alkyl and lower-alkoxy;

R_2 and R_2' are the same or different and are selected from the group consisting of phenyl-lower-alkyl wherein phenyl is unsubstituted or substituted by halo or lower-alkyl, lower-alkyl except methyl, lower-alkylthio-lower-alkyl, trifluoromethyl-lower-alkyl, lower-alkenyl, thienyl-lower-alkyl and lower-cycloalkyl-lower-alkyl; and

R and S represent in each instance the steric configuration of the adjacent carbon atom.

5,338,846

PROCESS FOR PREPARING ARYL PIPERAZINYL-HETEROCYCLIC COMPOUNDS WITH A PIPERAZINE SALT

Frank R. Busch, Gales Ferry; Paul Bowles, Groton; Douglas John, New London; Meldrum Allen, Uncasville; Sabeto A. DiRoma, and Dennis M. Godek, both of Glastonbury, all of Conn., assignors to Pfizer Inc., New York, N.Y.

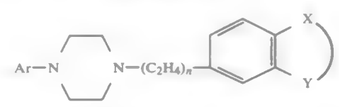
Continuation-in-part of Ser. No. 936,179, Aug. 26, 1992, Pat. No. 5,206,366, and Ser. No. 939,204, Sep. 1, 1992. This application Apr. 20, 1993, Ser. No. 49,905

Int. Cl.[5] **C07D** *417/06, 413/06*

U.S. Cl. 544—368 **19 Claims**

1. A process for preparing a compound of the formula:

I



or a pharmaceutically acceptable acid addition salt thereof, wherein

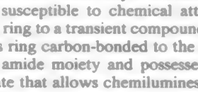
Ar is naphthyl optionally substituted with one to four substituents independently selected from fluoro, chloro, trifluoromethyl, methoxy, cyano and nitro; quinolyl; 6-hydroxy-8-quinolyl; isoquinolyl; quinazolyl; benzoisothiazolyl and an oxide or dioxide thereof, each optionally substituted with one or more substituents independently selected from fluoro, chloro, trifluoromethyl, methoxy, cyano, and nitro; benzothiazolyl; benzothiadiazolyl; benzotriazolyl; benzoxazolyl; benzoxazolonyl; indolyl; indanyl optionally substituted by one or two fluoro; 3-indazolyl optionally substituted by 1-trifluoromethylphenyl; and phthalazinyl;

n is 1 or 2; and

X and Y, together with the phenyl to which they are attached, from a ring system selected from quinolyl; 2-hydroxyquinolyl; benzothiazolyl; 2-aminobenzothiazolyl; benzoisothiazolyl; indazolyl; 2-hydroxyindazolyl; indolyl; spiro[cyclopentane-1,3'-indolinyl]; and oxindolyl; wherein said ring system may optionally be substituted with one to three substituents independently selected from (C_1–C_3)alkyl, or with one substituent selected from chloro, fluoro, and phenyl optionally substituted by one chloro or fluoro; benzoxazolyl; 2-aminobenzoxazolyl; benzoxazolonyl; 2-aminobenzoxazolinyl; benzothiazolonyl; benzoimidazolonyl; and benzotriazolyl;

which comprises reacting a piperazine salt of the formula

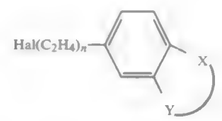
II



wherein Z is fluoro, chloro, bromo, iodo, methanesulfonate, trifluoromethanesulfonate, or trifluoroacetate; and

Ar is as defined above, with an alkyl halide containing compound of the formula

III



wherein n, X and Y are as defined above and Hal is fluoro, chloro, bromo or iodo, in water with a reagent to neutralize the hydrohalic acid, heating the mixture under conditions which are suitable to effect the coupling of said piperazine salt with said alkyl halide containing compound and, if desired, preparing the corresponding pharmaceutically acceptable acid addition salt.

5,338,847

HYDROLYTICALLY STABLE CHEMILUMINESCENT LABELS AND THEIR CONJUGATES, AND ASSAYS THEREFROM BY ADDUCT FORMATION

Frank McCapra, Seaford, Great Britain, assignor to London Diagnostics, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 140,040, Dec. 31, 1987, abandoned, and a continuation-in-part of Ser. No. 291,843, Dec. 29, 1988, abandoned, and a continuation-in-part of Ser. No. 418,956, Oct. 10, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 860,001

Int. Cl.[5] **C07D** *219/02, 219/04*

U.S. Cl. 546—104 **15 Claims**

1. A chemiluminescent compound comprising an aryl ester, thioester or amide of a carboxylic acid substituted heterocyclic ring that is susceptible to chemical attack to dissociate the heterocyclic ring to a transient compound in which the heterocyclic ring is ring carbon-bonded to the carbonyl of the ester, thioester or amide moiety and possesses a heteroatom in an oxidation state that allows chemiluminescence by dissociating a compound that decays to produce chemiluminescence, at the carbon bonded to the carbonyl, the aryl ring is ring carbon-bonded to the oxygen, sulfur or nitrogen of the ester, thioester or amide, as the case may be, and contains at least three substituents on a six-member ring, the substitution on the six-member ring comprises three or more groups acting in concert to sterically and electronically hinder hydrolysis of the ester, thioester or amide linkage, two of said groups are diortho electron donating substitutio. on the aryl unit in conjunction with meta and/or para substituents that possess a σ_p value greater than 0 and less than 1, and an adduct affixed at the carbon atom of the heterocyclic ring to which the ester, thioester or amide carbonyl carbon is directly bonded.

5,338,848

INDOLIZINETRIMETHINE DYES

Michael Acker, Heidelberg; Bernhard Albert, Maxdorf, and Michael Schmitt, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP92/00660, § 371 Date Jul. 20, 1993, § 102(e) Date Jul. 20, 1993, PCT Pub. No. WO92/17548, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 25, 1992, Ser. No. 90,041

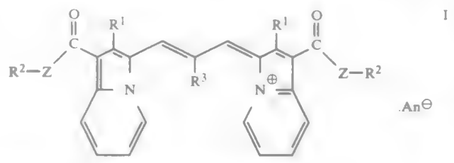
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1991, 4110808

Int. Cl.[5] **C07D** *401/04*

U.S. Cl. 546—112 **4 Claims**

1. An indolizinetrimethine dye of the general formula I

I



where the variables are defined as follows:

R^1 is C_1–C_{22}-alkyl which may be substituted by halogen, hydroxyl, C_1–C_6-alkoxy, benzyloxy, C_1–C_6-alkanoyl, C_1–C_6-alkoxycarbonyl or phenyl, C_3–C_7-cycloalkyl, which may be substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, or phenyl which may be substituted by halogen, hydroxyl, cyano, C_1–C_6-alkyl, C_1–C_6-alkoxy, carboxyl, C_1–C_6-alkoxycarbonyl or hydroxysulfonyl,

R^2 has one of the meanings of R^1, except than the carbon chain of C_1-C_{22}-alkyl may be interrupted by from one to five oxygen atoms in ether function,

R^3 is hydrogen, halogen or C_1–C_6-alkyl,

Z is —O— or —NH—, and

$An^{\ominus}$ is one equivalent of an acid anion.

5,338,849

AZAINDOLES, PREPARATION PROCESSES AND MEDICINAL PRODUCTS CONTAINING THEM

Didier Festal, Ecully; Denis Descours, Villeurbanne, and Jacques Decerprit, Miribel, all of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyon, France

Filed Feb. 4, 1993, Ser. No. 13,427

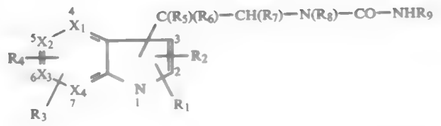
Claims priority, application France, Feb. 14, 1992, 92 01701

Int. Cl.[5] **C07D** *471/04;* **A61K** *31/405, 31/44*

U.S. Cl. 546—113 **12 Claims**

1. A compound selected from the group consisting of compounds of the formula I,

VOL 1165 ISS 3 AG 16 1994 UMI



wherein

one of the groups X_1 to X_4 is nitrogen and the others are CH;

R_1 and R_2, which may be located at position 1, 2 or 3 of azaindole, each are selected from hydrogen, linear or branched C_1 to C_{12} alkyl or C_2 to C_6 alkenyl optionally substituted at the ω position with a group selected from carboxyl, C_1 to C_3 alkyl carboxylate and phenyl; R_1 and R_2 can also be C_3 to C_8 cycloalkyl or C_3 to C_8 cycloalkenyl or, when they are at position 2 or 3 of azaindole, halogen, or C_1 to C_4 alkylthio; R_1 and R_2 can also be phenyl or benzyl, unsubstituted or having one to three substituents selected from halogen and C_1 to C_4 alkyl, C_1 to C_4 alkoxy and C_1 to C_4 alkylthio, or thienyl or pyridyl which can optionally have a substituent selected from halogen and C_1 to C_4 alkyl and C_1 to C_4 alkoxy; one of R_1 and R_2 can also be selected from hydroxymethyl, (C_1 to C_4 alkoxy)methyl, N,N-di(C_1 to C_4 alkyl)amino(C_1 to C_4 alkyl)oxymethyl, piperidino, carboxyl and C_1 to C_3 alkyl carboxylate and the other hydrogen;

R_3 and R_4, which may be located on the ventricles 4, 5, 6 of 7 of azaindole provided that these vertices embody carbon, each are selected from hydrogen, halogen, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, C_1 to C_6 alkylthio or C_3 to C_8 cycloalkyl;

$—C(R_5)(R_6)—CH(R_7)—N(R_8)—CO—NH—R_9$ may be attached to the verticles 1, 2, or 3 of azaindole, on the understanding that, when nitrogen at position 1 of azaindole is not substituted with one of R_1, R_2 or $—C(R_5)(R_6)—CH(R_7)—N(R_8)—CO—NH—R_9$, it bears hydrogen;

R_5 and R_6 are each selected from hydrogen, C_1 to C_{12} alkyl, C_2 to C_6 alkenyl, C_3 to C_8 cycloalkyl, C_3 to C_8 cycloalkenyl, C_2 to C_{12} alkoxyalkyl, C_2 to C_{12} alkyl-thioalkyl, or alternatively R_5 and R_6 together form and alkylene chain of the formula $—(CH_2)_p—$ optionally substituted with one or two C_1 to C_4 alkyl and in which p can assume the values 3 to 7, or an alkyleneoxyalkylene chain of the formula $—(CH_2)_x—O—(CH_2)—_y$, in which x and y can independently assume the value 1 or 2;

R_7 is selected from hydrogen, C_2 to C_6 alkyl and C_3 to C_8 cycloalkyl;

one of the substituents R_5 to R_7 can also be phenyl or benzyl, unsubstituted or having one to three substituents selected from halogen, C_1 to C_4 alkyl, alkoxy and alkylthio;

R_8 is selected from hydrogen, C_1 to C_{12} alkyl, C_3 to C_8 cycloalkyl and benzyl which is unsubstituted or bears 1 to 3 substituents selected from halogen, C_1 to C_4 alkyl, alkoxy and alkylthio;

R_9 is pyrimidyl or phenyl, unsubstituted or bearing one to three substituents selected from halogen and C_1 to C_4 alkyl, C_1 to C_4 alkoxy and C_1 to C_4 alkylthio.

5,338,850

PYRIDINIUM DERIVATIVES

Ko Kakamura; Toshikazu Hochi, and Kazuhara Ienaga, all of Hyogo, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

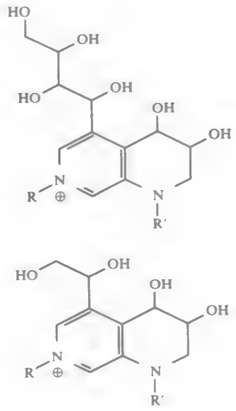
Filed Mar. 23, 1993, Ser. No. 35,619

Claims priority, application Japan, Mar. 24, 1992, 4-100394; Jun. 24, 1992, 4-191649

Int. Cl.[5] C07D *471/04;* G01N *33/53*

U.S. Cl. 546—122 **19 Claims**

1. A pyridinium derivative represented by formula (I) or (II):



(I)

(II)

wherein R and R′ may be the same or different and are optionally substituted alkyl groups, and pharmaceutically acceptable salts of the derivatives.

5,338,851

SYNTHESIS OF CIS-DECAHYDROISOQUINOLINE-3-CARBOXYLIC ACIDS

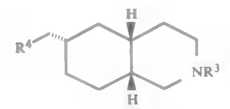
Bret E. Huff, Indianapolis; Vien V. Khau, Carmel; Michael J. Martinelli, and Barry C. Peterson, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 31, 1993, Ser. No. 40,759

Int. Cl.[5] C07D *217/14, 217/06, 217/04*

U.S. Cl. 546—141 **15 Claims**

1. A compound of the formula

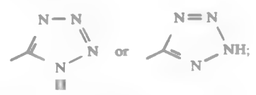


IV

wherein

R^3 is hydrogen, C_1–C_6 alkyl, arylalkyl, acyl, C_1–C_6 alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, aryloxycarbonyl, or arylalkoxycarbonyl;

R^4 is CO_2R^5, $CON(R^5)_2$, $PO(OR^5)_2$,



R^5 is hydrogen, C_1–C_6 alkyl, or arylalkyl.

5,338,852

AZAVESAMICOLS

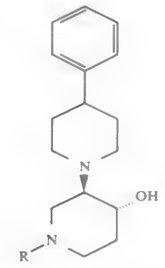
Simon M. N. Efange, Plymouth, Minn., and Stanley M. Parsons, Santa Barbara, Calif., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jun. 3, 1992, Ser. No. 893,129

Int. Cl.[5] C07D *211/40*

U.S. Cl. 546—188 **6 Claims**

1. An anticholinergic compound of the structural formula:



wherein R is:

substituted or unsubstituted phenyl, benzyl or benzoyl.

5,338,853

DERIVATIVES OF N-HALS-SUBSTITUTED AMIC ACID HYDRAZIDE

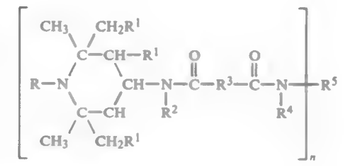
Ronald E. MacLeay, Williamsville, and Harold C. Lange, Grand Island, both of N.Y., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 455,219, Dec. 22, 1989, abandoned. This application Nov. 18, 1991, Ser. No. 793,741

Int. Cl.[5] C08K *5/3432;* C07D *211/56, 211/30*

U.S. Cl. 546—224 **25 Claims**

1. A compound having the formula



I

wherein

R is hydrogen, oxyl, hydroxy, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted araliphatic of 7–22 carbons, substituted or unsubstituted aliphatic acyl of 2–20 carbons, substituted or unsubstituted alicyclic acyl of 7–16 carbons, substituted or unsubstituted aryl acyl of 7–11 carbons, substituted or unsubstituted araliphatic acyl of 8–22 carbons, $—C(=O)N(R^6)(R^7)$, $—C(=O))_aO—R^8$, $—(CH_2)_aC(=O)O—R^9$ or $—(CH_2—CH(R^1)—O)_b—R^{10}$;

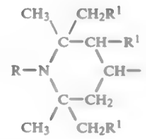
n is 1 or 2;

a is 1 or 2;

b is an integer of 2–50;

R^1 is hydrogen or lower alkyl of 1–4 carbons;

R^2 is hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted aryl of 6–14 carbons, substituted or unsubstituted araliphatic of 7–22 carbons, 2-cyanoethyl or a radical of the formula



where R and R^1 are as previously defined;

R^3 is a direct bond, a substituted or unsubstituted aliphatic diradical of 1–20 carbons, a substituted or unsubstituted aryl diradical of 6–12 carbons, a substituted or unsubstituted alicyclic diradical of 5–12 carbons or a substituted or unsubstituted araliphatic diradical of 7–22 carbons, where the diradical may contain 1–6 —O—, —S— or —NH— heteroatoms with the proviso that multiple heteroatoms must be separated from each other and the diradical ends by at least one carbon atom;

R^2 and R^3 may be linked together to form a 5-membered lactam ring;

R^4 is hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons or substituted or unsubstituted araliphatic of 7–22 carbons;

when n is 1, R^5 is $—N=C(R^{11})(R^{12})$, $—N(R^{13})(R^{14})$ or $—N(R^6)—Q—R^{15}$,

when n is 2, R^5 is $—N(R^6)—Q—R^{17}—Q—N(R^6)—$;

Q is —C(=O)—, —C(=O)—O—, —C(=O)—N(R^4)—, —C(=S)—N(R^4)— or $—S(=O)_2—$, in which R^4 is as previously defined;

R^6 and R^7 are independently hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted aryl of 6–14 carbons or substituted or unsubstituted araliphatic of 7–22 carbons;

R^8 is substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted aryl of 6–14 carbons or substituted or unsubstituted araliphatic of 7–22 carbons;

R^9 is hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted aryl of 6–14 carbons or substituted or unsubstituted araliphatic of 7–22 carbons;

R^{10} is hydrogen or aliphatic of 1–4 carbons;

R^{11} and R^{12} are independently hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted aryl of 6–14 carbons, substituted or unsubstituted araliphatic of 7–22 carbons;

R^{11} and R^{12} may be linked together to form a substituted or unsubstituted alicyclic ring of 5–12 carbons or may be linked together through an —O—, —S— or —NH— heteroatom to form a heterocyclic ring of 5–12 atoms wherein the —NH— may be substituted by lower alkyl of 1–4 carbons;

R^{13} is hydrogen, substituted or unsubstitued aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted araliphatic of 7–22 carbons or substituted or unsubstituted aryl of 6–14 carbons, where the R^{13} substituents are chloro, bromo, cyano, hydroxy, epoxy, alkyl of 1–20 carbons, cycloalkyl of 5–12 carbons, aryl of 6–14 carbons, aralkyl of 7–22 carbons, alkoxy of 1–20 carbons, cycloalkoxy of 5–12 carbons, aryloxy of 6–14 carbons, aralkoxy of 7–15 carbons, aliphatic acyloxy of 2–20 carbons, alicyclic acyloxy of 6–13 carbons, aryl acyloxy of 7–15 carbons, alkylthio of 1–12 carbons, trialkoxysilyl of 3–12 carbons or araliphatic acyloxy of 8–16 carbons, wherein any alkyl or cycloalkyl substituent group may contain isolated double bonds;

R^{14} is substituted or unsubstitued aliphatic of 1–20 carbons, substituted or unsubstituted allcyclic of 5–12 carbons, substituted or unsubstituted araliphatic of 7–22 carbons or

VOL 1165 ISS 3 AG 16 1994 UMI

substituted or unsubstituted aryl of 6–14 carbons, where the R^{14} substituents are chloro, bromo, cyano, hydroxy, epoxy, alkyl of 1–20 carbons, cycloalkyl of 5–12 carbons, aryl of 6–14 carbons, aralkyl of 7–22 carbons, alkoxy of 1–20 carbons, cycloalkoxy of 5–12 carbons, aryloxy of 6–14 carbons, aralkoxy of 7–15 carbons, aliphatic acyloxy of 2–20 carbons, alicyclic acyloxy of 6–13 carbons, aryl acyloxy of 7–15 carbons, alkylthio of 1–12 carbons, trialkoxysilyl of 3–12 carbons or araliphatic acyloxy of 8–16 carbons, wherein any alkyl or cycloalkyl substituent group may contain isolated double bonds;

R^{15} is hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted aryl of 6–14 carbons or substituted or unsubstituted araliphatic of 7–22 carbons;

when Q is —C(=O)—, R^{15} may also be 2-(3,5-dialkyl-4-hydroxyphenyl)ethyl of 13–21 carbons, 3,5-dialkyl-4-hydroxyphenyl of 11–19 carbons in which the alkyl groups are branched or unbranched alkyl of 1–8 carbons, 4-benzoyl-3-hydroxyphenoxymethyl, 2-alkylthioethyl of 3–20 carbons, alkylthiomethyl of 2–20 carbons, 2-(dialkylaminoalkylthio)ethyl of 5–30 carbons or R^{16}—NH—C(=O)—R^3—;

when Q is —C(=O)—O—, R^{15} may also be 2,2,6,6-tetramethyl-4-piperidinyl, in which the piperidinyl nitrogen is unsubstituted or substituted with methyl, ethyl, allyl, oxyl, hydroxyl, benzyl, benzoyl or acetyl; 2-(3-hydroxy-4-benzoylphenoxy)ethyl; 2-acryloyloxyethyl; 2-methacryloyloxyethyl; 2-(3-hydroxy-4-benzotriazol-2-ylphenoxy)ethyl; 3-(3-benzotriazol-2-yl-4-hydroxyphenyl)propyl, in which the benzotriazolyl may be substituted in the 5 position with chlorine, methoxy, ethoxy, methoxycarbonyl or ethoxycarbonyl and the phenyl group may be substituted ortho to the hydroxy group with an alkyl group of 1–12 carbons or an aralkyl group of 9–12 carbons; 2-(3,5-dialkyl-4-hydroxyphenyl)ethyl of 13–21 carbons, 3-(3,5-dialkyl-4hydroxyphenyl)propyl of 14–22 carbons or 2-[3-(3,5-dialkyl-4-hydroxyphenyl)propionyloxy]ethyl of 16–24 carbons, in which the alkyl groups are branched or unbranched alkyl of 1–8 carbons; with the proviso that when Q is —(C=O)—O—, R^{15} is not hydrogen;

R^{16} is substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted aryl of 6–14 carbons, substituted or unsubstituted araliphatic of 7–22 carbons, 3,5-dialkyl-4-hydroxyphenyl of 11–19 carbons in which the alkyl groups are independently branched or unbranched alkyl of 1–8 carbons or 2,2,6,6-tetramethyl-4-piperidinyl, in which the nitrogen may be substituted with methyl, ethyl, allyl, oxyl, hydroxyl, benzyl, benzoyl or acetyl; and

R^{17} is a substituted or unsubstituted aliphatic diradical of 1–20 carbons, substituted or unsubstituted aryl diradical of 6–12 carbons, substituted or unsubstituted alicyclic diradical of 5–12 carbons or substituted or unsubstituted araliphatic diradical of 7–22 carbons, where the diradicals may contain 1–6 —O—, —S— or —NH— heteroatoms, with the proviso that multiple heteroatoms must be separated from each other and the diradical ends by at least one carbon atom;

substituents for any of R, R^2, R^3, R^4, R^6, R^7, R^8, R^9, R^{11}, R^{12}, R^{15}, R^{16} or R^{17} are independently selected from the group consisting of one or more of chloro, bromo, alkyl of 1–8 carbons, alkoxy of 1–8 carbons, phenoxy, cyano, hydroxy, epoxy, carboxy, alkoxycarbonyl of 2–6 carbons, alkanoyloxy of 1–4 carbons, alkanoyl of 1–4 carbons, acryloyl, acryloyloxy, methacryloyl, methacryloyloxy, hydroxymethyl, 2-hydroxyethyl, alkylthio of 1–4 carbons or trialkoxysilyl of 3–12 carbons, with the proviso that when Q is —C(=O)—, R^{15} may not be substituted with a carboxy group; and

where R is 2-hydroxy substituted aliphatic or 2-hydroxy substituted allcyclic, substituents for R are also selected from the group consisting of aliphatic of 1–20 carbons, alicyclic of 5–12 carbons, aryl of 6–14 carbons, araliphatic of 7–22 carbons, alkoxy of 1–20 carbons, cycloalkoxy of 5–12 carbons, aryloxy of 6–14 carbons, aralkoxy of 7–15 carbons, aliphatic acyloxy of 2–20 carbons, alicyclic acyloxy of 6–13 carbons, aryl acyloxy of 7–15 carbons or araliphatic acyloxy of 8–16 carbons, where any alkyl or cycloalkyl substituent group of the 2-hydroxy substituted group may contain isolated double bonds.

5,338,854

FLUORESCENT FATTY ACIDS DERIVED FROM DIPYRROMETHENEBORON DIFLUORIDE DYES

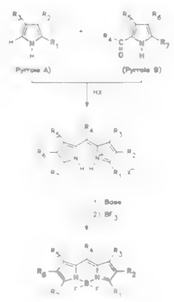
Hee C. Kang, and Richard P. Haugland, both of Eugene, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Filed Feb. 13, 1991, Ser. No. 654,881

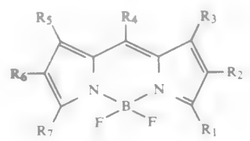
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.

Int. Cl.[5] **H01S** *3/20;* **C07D** *207/44;* **C07F** *5/02*

U.S. Cl. 548—110 **20 Claims**



1. A compound of the formula:



wherein at least one of substituents R_1, R_2, R_3, R_4, R_5, R_6 and R_7 is a carboxylic acid terminated residue, wherein said residue is a linear hydrocarbon chain that is fully saturated or unsaturated, or contains one or more branches, again being saturated or unsaturated, said substituent containing 5 to 22 carbon atoms;

wherein at least one of substituents R_1, R_2, R_3, R_5, R_6 and R_7 is an aryl or heteroaryl residue, where said aryl residue is unsubstituted phenyl, unsubstituted naphthyl, lower alkyl- or alkoxy-substituted phenyl, or lower alkyl- or alkoxy-substituted naphthyl, and where said heteroaryl residue is pyrrole, thiophene, furan, oxazole, isoxazole, oxadiazole, imidazole, benzoxazole, benzothiazole, benzimidazole, benzofuran, or indole; and the remaining substituents R_1, R_2, R_3, R_4, R_5, R_6 and R_7, which may be the same or different, are alkyl or arylalkyl residues containing 1 to 16 aliphatic carbon atoms, or aryl or heteroaryl residues, where said aryl residue is unsubstituted phenyl, unsubstituted naphthyl, lower alkyl- or alkoxy-substituted phenyl, or lower alkyl- or alkoxy-substituted naphthyl, and where said heteroaryl residue is pyrrole, thiophene, furan, oxazole, isoxazole, oxadiazole, imidazole, benzoxazole, benzothizole, benzimidazole, benzofuran, or indole, or H.

5,338,855

THIAZOLIDINE COMPOUNDS CONTAINING A QUINONE GROUP, THEIR PREPARATION AND THEIR THERAPEUTIC USES

Takao Yoshioka; Takahide Nishi; Tsutomu Kanai; Yuichi Aizawa; Kunio Wada; Takashi Fujita, and Hiroyoshi Horikoshi, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

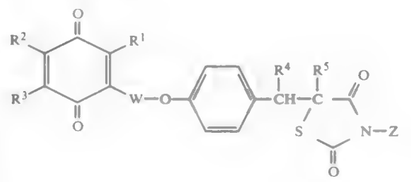
Filed Dec. 28, 1992, Ser. No. 997,210

Claims priority, application Japan, Dec. 26, 1991, 3-344570

Int. Cl.[5] **C07D** *277/34;* **A01K** *31/425*

U.S. Cl. 514—369 **29 Claims**

1. Compounds of formula (I):



wherein:

R^1 represents an alkyl group having from 1 to 5 carbon atoms;

R^2 and R^3 are the same or different and each represents an alkyl group having from 1 to 5 carbon atoms or an alkoxy group having from 1 to 5 carbon atoms,

or

R^2 and R^3 together form a benzene ring which is unsubstituted or which is substituted by at least one substituent selected from the group consisting of substituents A, defined below, and, when R^2 and R^3 together form said benzene ring, R^1 represents a hydrogen atom, a halogen atom or an alkyl group having from 1 to 5 carbon atoms;

R^4 and R^5 both represent hydrogen atoms, or R^4 and R^5 together represent a single carbon-carbon bond;

W represents a single bond or an alkylene group having from 1 to 5 carbon atoms; and

Z represents a hydrogen atom or a 1/x equivalent of a cation, where x is the charge on the cation; and

substituents A are selected from the group consisting of alkyl groups having from 1 to 5 carbon atoms, alkoxy groups having from 1 to 5 carbon atoms and halogen atoms.

5,338,856

3,4-N,TRISUBSTITUTED-4,5-DIHYDRO-1H-PYRAZOLE-1-CARBOXAMIDES AND THEIR USE AS INSECTICIDES

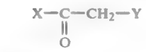
Michael J. Ricks, Concord, and Yulan C. Tong, Walnut Creek, both of Calif., assignors to DowElanco, Indianapolis, Ind.

Filed Aug. 17, 1992, Ser. No. 931,098

Int. Cl.[5] **C07D** *277/24, 263/32*

U.S. Cl. 548—204 **5 Claims**

1. A 1,2-diarylethanone compound of the formula



wherein

Y represents a 5-membered aromatic heterocyclic ring moiety containing one ring oxygen or sulfur atom and one ring nitrogen atom, which moiety is attached through a carbon atom and is optionally substituted with one substituent selected from F, Cl, Br, CN, COQ, R, OR′, SR′, SOR′, SO_2R', NO_2, and OAr and optionally additionally substituted with a F substituent;

X represents phenyl optionally substituted in the 4-position with F, Cl, Br, CN, COQ, R, OR′, SR′, SOR′, SO_2R', NO_2, or OAr and/or in the 3-position with F, Cl, Br, CN, R, or OR′;

R represents C_1–C_3 alkyl, C_2–C_3 alkenyl, or C_2–C_3 alkynyl optionally singly to completely substituted with fluorine or chlorine;

R′ represents C_1–C_3 alkyl optionally singly to completely substituted with fluorine or chlorine;

Ar represents phenyl optionally substituted with 1 or 2 compatible substituents selected from F, Cl, Br, CN, COQ, R, OR′, SR′, SOR′, SO_2R', and NO_2;

Q represents OR^2, SR^2, NH^2, NHR^2, OR $NR^2{}_2$; and

R2 represents C_1–C_4 alkyl, C_3–C_4 alkenyl, or C_3–C_4 alkynyl.

5,338,857

AMINOKETONE DERIVATIVES OF 1,2-OXAZOLE AND USE THEREOF

Norio Ohto; Kazutoshi Horikomi, both of Chiba; Akira Matsubara, Kanagawa; Hideki Tanada, Chiba; Kazuya Sakai, Chiba; Seitaro Kajiya, Chiba; Akira Mizuchi, Chiba, and Hideshi Shimizu, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Continuation-in-part of Ser. No. 558,869, Jul. 30, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 839,434

Claims priority, application Japan, Aug. 4, 1989, 1-201410; Feb. 26, 1991, 3-030739

Int. Cl.[5] **C07D** *413/06;* **A61K** *31/42*

U.S. Cl. 548—248 **7 Claims**

3. An aminoketone derivative represented by the following formula (I), or a physiologically acceptable salt thereof:

wherein R^6 represents a phenyl group optionally substituted by one or more substituents selected from the group consisting of halogen atoms, C_{1-2} alkoxy groups, C_{1-2} groups, trifluoromethyl groups, cyano groups, nitro groups, amino groups, dimethylamino groups, acetamido groups, methaneszulfonylamido groups, acetyl groups and C_{1-2} alkoxycarbonyl groups;

R^2 represents a hydrogen atom, a C_{1-4} alkyl, benzyl, methoxy, phenyl, allyl, trifluoromethyl- or C_{1-2}-alkoxy-substituted C_{1-2} alkyl, or cyclopropylmethyl group;

R^3 represents a hydrogen atom or a C_{1-2} alkyl group, or R^2 and R^3 are coupled together to form a five- or six-membered alicyclic group provided R^2 and R^3 are not both hydrogen; and

R^4 and R^5 are coupled together into a cyclic form to form a pyrrolidino group optionally substituted by one or more substituents selected from the group consisting of methyl, acetyl and benzyl groups.

5,338,858

TRIAZOLYL, TETRAZOLYL AND AZIDO-SUBSTITUTED FATTY ACID ANALOG ENZYME SUBSTRATES

Balekudru Devadas, St. Louis; Jeffrey I. Gordon, Olivette, and Steven P. Adams, St. Charles, all of Mo., assignors to Washington University, St. Louis, Mo.

Continuation of Ser. No. 596,183, Oct. 12, 1990, abandoned. This application Oct. 20, 1992, Ser. No. 963,620

Int. Cl.[5] **C07D** *257/04, 255/02;* **C07C** *117/08*

U.S. Cl. 548—253 **15 Claims**

1. A composition of matter having a chemical structure as follows:

wherein

VOL 1165 ISS 3 AG 16 1994 UMI

Z=azido, tetrazolyl or triazolyl,
R=H or C_1–C_8 alkyl,
X=7–11,
wherein an oxygen or sulfur is positioned between said two CH_2 groups from carbon position 2 to within 1 carbon or Z and wherein said tetrazolyl and said triazolyl are attached to said $(CH_2)_xCOOR$ at a primary nitrogen and wherein said tetrazolyl is a mixture of N-1 and N-3 isomers and said triazolyl is an N-1 isomer.

5,338,859

PROCESS FOR THE PRODUCTION OF CALCIUM SALTS OF HYDANTOIC ACIDS

Apurba Bhattacharya, Corpus Christi, Tex., assignor to Hoechst Celanese Corporation, Sommerville, N.J.

Filed Feb. 12, 1993, Ser. No. 16,628
Int. Cl.[5] C07D *233/90, 211/60, 207/16;* **C07C** *149/247*
U.S. Cl. 548—312.1 **14 Claims**

1. A process for the production of a calcium salt of a hydantoic acid comprising reacting a hydantoin at a temperature between 50° C. and 180° C. with a calcium base and separating the precipitated calcium salt of the hydantoic acid.

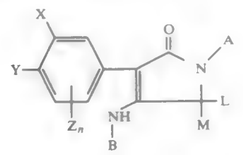
5,338,860

4-(SUBSTITUTED)AMINO-3-ARYLPYRROLINONE DERIVATIVES

Bernd Baasner, Bergisch Gladbach; Reiner Fischer, Monheim; Arno Widdig, Odenthal-Blecher; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesllschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 985,377
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1991, 4141399
Int. Cl.[5] C07D *207/263;* **A01N** *43/36*
U.S. Cl. 548—550 **8 Claims**

1. A 4-(substituted)amino-3-arylpyrrolinone derivative of the general formula (I) wherein



(I)

X represents hydrogen, fluorine, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, n- or i-propoxy, trifluoromethyl, trifluoromethoxy, or
Y represents hydrogen, fluorine, chlorine, bromine, methyl, methoxy, trifluoromethoxy or trifluoromethyl,
n represents 0 and
A represents methyl, ethyl, n-propyl, iso-propyl, n-, iso-, sec.- or tert.-butyl, or represents an in each case straight-chain or branched radical from the series comprising pentyl, hexyl, heptyl, octyl, halogeno-C_1–C_3-alkyl, allyl, propargyl, methoxymethyl, methoxyethyl, ethoxymethyl, ethoxyethyl, cyclopropyl, cyclopentyl, cyclohexyl, or represents phenyl or benxyl, each of which is unsubstituted or monosubstituted to trisubstituted by identical or different substituents from the series comprising fluorine, chlorine, trifluoromethyl,
B represents hydrogen, the group —CO—R or the group



L represents hydrogen or an optionally halogen-substituted straight-chain or branched radical from the series comprising C_1–C_8-alkyl, cycloalkyl which has 3 to 6 ring atoms or aryl which is optionally substituted by fluorine, chlorine, bromine, methyl, ethyl, propyl, iso-propyl, methoxy, ethoxy, trifluoromethyl or nitro,
M represents hydrogen or a straight-chain or branched radical from the series comprising C_1–C_6-alkyl,
or in which
A and L or L and M together with the atoms to which they are bonded form a 3 to 6-membered ring, optionally substituted by C_1–C_4-alkyl, and/or interrupted by oxygen/-sulphur,
R represents an optionally halogen-substituted straight-chain or branched radical from the series comprising C_1–C_8-alkyl, C_1–C_4-alkenyl, C_1–C_6-alkoxy-C_2–C_4-alkyl, cycloalkyl which has 3 to 6 ring atoms and the enantiomeric compounds of the formula (I) with the exception of the compounds: 4-amino-1-cyclopropyl-3-(3-trifluoromethylphenyl)-3-pyrrolin-2-one and 4-amino-1-isopropyl-3-(3-trifluoromethylphenyl)-3-pyrrolin-2-one.

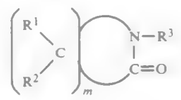
5,338,861

PROCESS FOR THE PREPARATION OF N-SUBSTITUTED LACTAMS

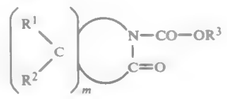
Artur Botta; Hans-Josef Buysch; Otto Immel, all of Krefeld, and Lothar Puppe, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 24, 1992, Ser. No. 919,818
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1991, 4125457
Int. Cl.[5] C07D *215/22, 213/64, 201/04, 207/267*
U.S. Cl. 548—552 **16 Claims**

1. A process for the preparation of a N-substituted lactam of the formula

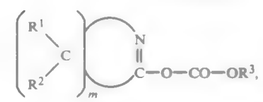


in which
m denotes an integer from 2 to 12,
R^1 and R^2 independently of one another represent hydrogen, straight-chain or branched C_1–C_6-alkyl, straight-chain or branched C_3–C_6-alkenyl, cyclohexyl, benzyl, phenyl, fluorine, chlorine or bromine, two substituents R^1 and R^2 other than hydrogen being present on the number of C ring members designated by the integer m and wherein one of the C ring members in brackets not adjacent to the carbonyl or nitrogen in the ring can optionally be replaced by $—N(CH_3)—$ or $—N(C_2H_5)—$, and wherein several of the C ring members may optionally be lined by double bonds and wherein two or more of the C ring members in brackets together with the R^1 and R^2 radicals may form an aromatic or cycloaliphatic ring, and
R^3 denotes straight-chain or branched C_1–C_8-alkyl, C_3–C_8-alkenyl, or cycloalkyl
wherein a lactam N-carboxylate or lactim O-carboxylate of the formulae



or

-continued



in which m, R^1, R^2, and R^3 have the above meaning, are cleaved, with elimination of CO_2, at temperatures of 80° to 450° C. in the gas or the liquid phase, in the case of the use of a lactim O-carboxylate the intermediately formed lactim ether being rearranged under the reaction conditions to the N-substituted lacatam.

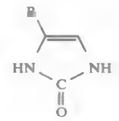
5,338,862

PROCESS FOR THE PRODUCTION OF 2-IMIDAZOLONES

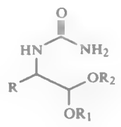
Charles E. Aiman, and Edward D. Daugs, both of Midland, Mich., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 971,713, Nov. 4, 1992, abandoned, which is a continuation of Ser. No. 902,437, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 818,510, Jan. 8, 1992, abandoned, which is a continuation of Ser. No. 751,596, Aug. 21, 1991, abandoned, which is a continuation of Ser. No. 639,392, Jan. 10, 1991, abandoned, which is a continuation of Ser. No. 511,870, Apr. 20, 1990, abandoned, which is a continuation of Ser. No. 379,730, Jul. 14, 1989, abandoned, which is a continuation of Ser. No. 181,015, Apr. 13, 1988, abandoned. This application Mar. 29, 1993, Ser. No. 39,539
Int. Cl.[5] C07D *233/30*
U.S. Cl. 578—316.4 **8 Claims**

1. A process for producing a 2-Imidazolone of the formula:



wherein R is represented by hydrogen or a C_{1-4} alkyl, comprising conducting an acid catalyzed condensation, in an alcoholic solvent, at about 50° C. to about 100° C. ureidoacetal of the formula:



wherein R is represented by hydrogen or a C_{1-4} alkyl, and each of R_1 and R_2 are independently represented by a C_{1-4} alkyl.

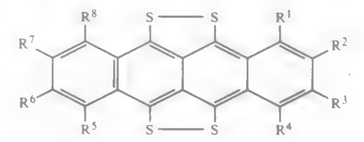
5,338,863

PROCESS FOR THE PREPARATION OF TETRATHIOTETRACENES

Marcus Baumann, Basel; Carl W. Mayer, Riehen; Wolfgang Wernet, Freiburg, and Walter Fischer, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

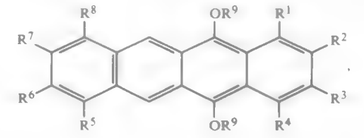
Division of Ser. No. 356,827, May 24, 1989, Pat. No. 5,206,390. This application Jan. 11, 1993, Ser. No. 3,067
Claims priority, application Switzerland, May 27, 1988, 2008/88; Jul. 19, 1988, 2754/88
Int. Cl.[5] C07F *7/08;* **C07D** *495/06*
U.S. Cl. 549—4 **16 Claims**

1. A process for the preparation of 5,6,11,12-tetrathiotetracenes of the formula III



(III)

in which R^1 to R^8 independently of one another are H or a substituent selected from the group consisting of —F, —Si(C-$_1$–C_4alkyl)$_3$ or —$COOR^{10}$; or adjacent radicals of R^1 to R^8 are —CO—O—CO—; or R^1 to R^8 are independently a substituent selected from the group consisting of C_1–C_{20}alkyl-$(X)_p$—, C_3–C_8cycloalkyl-$(X)_p$—, C_1–C_{12}-alkyl-C_3–C_8cycloalkyl-$(X)_p$—, C_3–C_8cycloalkyl-CH_2—$(X)_p$—, C_1–C_{12}alkyl-C_3–C_8-cycloalkyl-CH_2—$(X)_p$—, C_6–C_{10}aryl-X—, C_7–C_{20}alkaryl-X—, C_7–C_{12}-aralkyl-$(X)_p$— or C_8–C_{20}alkaralkyl-$(X)_p$— or —Y—$(C_mH_{2m}—O)_n$—R^{10} each of which is unsubstituted or substituted by —F, —OH, C_1–C_{12}alkoxy, C_1–C_{12}-acyloxy or —$COOR^{10}$; R^{10} is H or C_1–C_{18}alkyl, X is —O—, —S—, —SO— or —SO_2— and Y is —O— or —S—, and p is 0 or 1, m is a number from 2 to 6 and n is a number from 2 to 20; which process comprises reacting a compound of the formula Ia



(Ia)

in which R^1 to R^8 are as defined above and R^9 is C_1–C_6acyl which is unsubstituted or substituted by —F, with sulfur in the presence of a catalytic amount of a sulfonic acid.

5,338,864

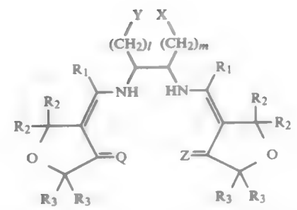
HEXADENTATE LIGANDS USEFUL IN RADIOGRAPHIC IMAGING AGENTS

Steven R. Woulfe, Ballwin, and Raghavan Rajagopalan, Maryland Heights, both of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

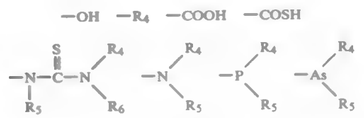
Filed Jul. 6, 1992, Ser. No. 909,377
Int. Cl.[5] C07D *307/30, 307/32, 407/12;* **C07F** *9/00*
U.S. Cl. 549—207 **3 Claims**

1. A ligand useful in forming radionuclide complexes, said ligand having the general formula:

VOL 1165 ISS 3 AG 16 1994 UMI

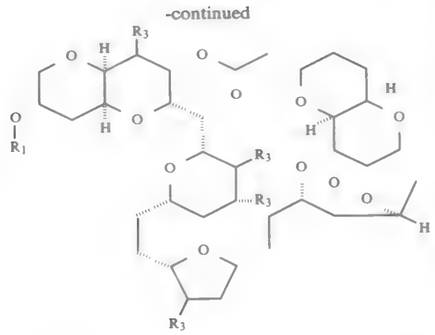


wherein R_1, R_2 and R_3 are the same or different and are selected from the group consisting of hydrogen, alkyl, phenyl, hydroxyl, alkoxyl, mono- or poly- hydroxyalkyl, mono- or poly- alkoxyalkyl, alkoxycarbonyl or carbamoyl; l and m may be the same or different and are from 1 to 6; Q and Z may be the same or different and are an O, N or S atom; X and Y may be the same or different and are selected from the group consisting of



wherein R_4, R_5 and R_6 may be the same or different and are selected from the group consisting of hydrogen, alkyl, phenyl, hydroxyl, alkoxyl, mono- or poly- hydroxyalkyl, mono- or poly- alkoxyalkyl, alkoxycarbonyl, amino, alkylamino, aminoalkyl, or carbamoyl.

-continued



where each R_1, independently, is —H or an alcohol protecting group; R_2 is O or a protected ketone group; and each R_3, independently, is —H or an alkyl group having 5 or fewer carbon atoms.

5,338,865

SYNTHESIS OF HALICHONDRIN B AND NORHALICHONDRIN B

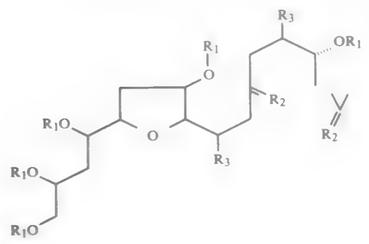
Yoshito Kishi, Belmont, Mass.; Francis G. Fang, Durham, N.C.; Craig J. Forsyth, Arlington; Paul M. Scola, Watertown, both of Mass., and Suk K. Yoon, Seoul, Rep. of Korea, assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 849,769, Mar. 12, 1992, abandoned. This application Jan. 29, 1993, Ser. No. 11,104

Int. Cl.[5] C07D *307/93, 309/00, 323/00*

U.S. Cl. 549—214 **6 Claims**

1. A compound having the following structure:



5,338,866

CRYSTAL MODIFICATION OF 2-(3-METHYLANILINO)-3-METHYL-6-DIETHYLAMINOFLUORAN, PROCESS FOR THE PREPARATION THEREOF, AND RECORDING MATERIALS CONTAINING SAID CRYSTAL MODIFICATION

Yojiro Kumagae; Shigeo Fujita; Mansuke Matsumoto; Sayuri Wada, and Shuuichi Hashimoto, all of Osaka, Japan, assignors to Yamamoto Chemicals, Inc., Osaka, Japan

Filed Dec. 11, 1992, Ser. No. 989,566

Claims priority, application Japan, Dec. 12, 1991, 3-329119; Nov. 16, 1992, 4-305537

Int. Cl.[5] C07D *311/88*

U.S. Cl. 549—226 **4 Claims**

1. A β-type crystal modification of 2-(3-methylanilino)-3-methyl-6-diethylaminofluoran that is characteristic by characteristic peaks at diffraction angles at $2\theta \pm 0.2°$ of 7.6°, 12.2°, 14.9°, 15.9°, 17.6° and 22.8° on X-ray diffractiometry using Cu-Kα rays and which has a melting point in the range of 186°–191° C.

5,338,867

PREPARATION OF 4β- AMINO PODOPHYLLOTOXIN COMPOUNDS

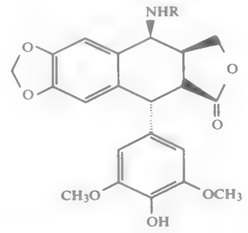
William Choy; Jen Chen, both of Sunnyvale, and Bijan Almassian, Belmont, all of Calif., assignors to Genelabs Technologies, Inc., Redwood City, Calif.

Filed Apr. 24, 1992, Ser. No. 872,282

Int. Cl.[5] C07D *307/77*

U.S. Cl. 549—298 **5 Claims**

1. A method of preparing a 4′-0-demethyl-4β-NHR podophyllotoxin compound of the form:



wherein NHR has the form:

(a)



or

(b) $NH—(CH_2)_n—NR_1R_2$,

where X is a radical selected from the group consisting of a halide, amine, monoalkyl amine, dialkylamine, nitro, acid, or ester of a lower alkyl group, R_1, R_2 are hydrogen or lower alkyl groups, and n=2–4, said method comprising:

reacting a mixture of α and β epimers of 4′-0-demethyl-4-bromo-podophyllotoxin with H_2NR under basic conditions, to form a second mixture of α and β epimers of 4′-0-demethyl-4-NHR-podophyllotoxin, and acidic reactionproduct impurities,

removing from the second mixture, acidic impurities which bind to silica gel in a dichloromethane solvent, yielding a purified mixture of the 4′-0-demethyl-4-NHR-podophyllotoxin α and β epimers, and

crystallizing 4′-0-demethyl-4β-NHR-podophyllotoxin from its α epimer in the purified mixture.

5,338,868

PROCESS FOR PREPARING ALPHA-AMINO-PHENYLACETIC ACID-TRIFLUOROMETHANE SULFONIC ACID MIXED ANHYDRIDES

Károly Bán; Annamária Bán; Lajosné Páli; Márta Kruppa; Éva Somfai, and Csaba Huszár, all of Budapest, Hungary, assignors to Chinoin Gyogyszer- es Vegyeszeti Termekek Gyara Rt., Budaest, Hungary

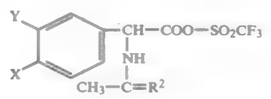
Filed May 24, 1991, Ser. No. 689,828

Claims priority, application Hungary, Jul. 27, 1989, 3818/89

Int. Cl.[5] C07D *305/12;* **C07C** *229/00*

U.S. Cl. 549—323 **4 Claims**

1. A process for the preparation of a compound of the Formula (VI)



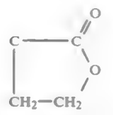
(VI)

wherein

X is a hydrogen atom or OH;

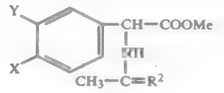
Y is a hydrogen atom, OH or a methyl group;

R^2 is a CH—COOR group, where R is a $C_{1\ to\ 2}$ alkyl group, or R^2 is a group of the Formula (XI)



(XI)

wherein a condensed salt of the Formula (IV)



(IV)

wherein Me is a sodium or potassium cation, is reacted with a reactive derivative of trifluoromethane-sulfonic acid of the Formula (V)

$F_3C—SO_2OH$ (V).

5,338,869

HYDROXYPHENYLPROPIONIC ESTER HAVING NOVEL CRYSTAL STRUCTURE

Kikumitsu Inoue; Manji Sasaki, both of Nishinomiya, and Shinichi Yachigo, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 9, 1993, Ser. No. 87,866

Claims priority, application Japan, Jul. 23, 1992, 4-196870; Apr. 16, 1993, 5-089737

Int. Cl.[5] C07D *319/06*

U.S. Cl. 549—335 **5 Claims**

1. 3,9-Bis[2-{3-(3-t-butyl-4-hydroxy-5-methylphenyl)propionyloxy}-1,1-dimethylethyl]-2,4,8,10-tetraoxaspiro[5.5]undecane which has a crystal structure showing a sharp X-ray diffraction peak at a diffraction angle $2\theta = 7.9°$ by X-ray diffraction measurement using an X-ray of Cu-K_α wavelength.

5,338,870

THERMAL CONDENSATION OF POLYHYDRIC ALCOHOLS TO FORM POLYETHERCYCLICPOLYOLS

George C. Blytas, Houston; Eugene L. Holloway, Richmond, and Anne H. Zuzich, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 672,200, Mar. 19, 1991, abandoned. This application Aug. 21, 1992, Ser. No. 933,617

Int. Cl.[5] C07D *319/12*

U.S. Cl. 549—378 **29 Claims**

1. A method for preparing polyethercyclicpolyol by thermal condensation, comprising:

(a) heating a reaction mixture in the presence of an alkali metal hydroxide catalyst, said reaction mixture comprising a reactant selected from the group consisting of (1) a polyol having at least three hydroxyl groups of which at least two of the hydroxyl groups are vicinal, (2) precursors of the polyol, (3) cyclic derivatives of the polyol, and (4) mixtures thereof, said heating initiating the thermal condensation;

(b) removing water formed during the thermal condensation; and

(c) continuing the thermal condensation until at least 1.05 moles of water per mole of reactant are removed, wherein the condensation goes to completion without incurring substantial undesirable degeneration.

5,338,871

PREPARATION OF FORM 1 RANITIDINE HYDROCHLORIDE

Teng-Ko Ngool, Scarborough; Jeffry D. McGolrick; Casimir Antczak, both of Aurora, and James L. A. Tindall, Goodwood, all of Canada, assignors to Torcan Chemical Ltd., Aurora, Canada

Continuation of Ser. No. 811,143, Dec. 20, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,354

Int. Cl.[5] C07D *307/52*

U.S. Cl. 549—492 **9 Claims**

1. A process for preparing Form 1 ranitidine hydrochloride, which comprises:

forming a solution of ranitidine hydrochloride in a mixed solvent comprising at least one C_1–C_4 alkanol and a C_6–C_{10} aromatic hydrocarbon, the volume ratio of alkanol(s) to hydrocarbon being from about 1:1 to 1:2;

and initiating crystallization of Form 1 ranitidine hydrochloride from said solution in the presence of seed crystals of pure Form 1 ranitidine hydrochloride.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,872

PROCESS FOR THE PREPARATION OF 10-DESACETOXYBACCATIN III AND 10-DESACETOXYTAXOL AND DERIVATIVES THEREOF

Robert A. Holton, and Carmen Somoza, both of Tallahassee, Fla., assignors to Florida State University, Tallahassee, Fla.

Filed Jan. 15, 1993, Ser. No. 5,229
Int. Cl.[5] C07C 305/14
U.S. Cl. 549—510 10 Claims

1. A process for the preparation of a 10-desacetoxy or 10-desoxy tetracyclic taxane comprising reacting a tetracyclic taxane having a C9 keto substituent and a C10 hydroxy or acetoxy substituent with samarium diiodide.

5,338,873

Patent Not Issued For This Number

5,338,874

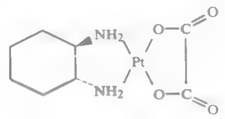
CIS OXALATO (TRANS 1-1,2—CYCLOHEXANEDIAMINE) PT(II) HAVING OPTICALLY HIGH PURITY

Chihiro Nakanishi; Yuko Ohnishi; Junji Ohnishi; Junichi Taniuchi; Koji Okamoto, and Takeshi Tozawa, all of Kanagawa, Japan, assignors to Tanaka Kikinzoku Kogyo K.K., Japan

Filed Apr. 7, 1993, Ser. No. 43,901
Claims priority, application Japan, Jan. 12, 1993, 5-019508
Int. Cl.[5] C07F 15/00
U.S. Cl. 556—137 2 Claims

1. Optically pure cis-oxalato (trans-1-1,2-cyclohexanediamine) Pt(II) having a general formula of Formula (1).

(1)



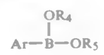
5,338,875

BORON CONTAINING INTERMEDIATES USEFUL IN THE PREPARATION OF CARBAPENEMS

Ann DeCamp, Scotch Plains; Ulf H. Dolling, Westfield; Yulan Li, Edison; Dale L. Rieger, Westfield; Nobuyoshi Yasuda, Mountainside, and Lyndon C. Xavier, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

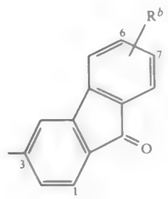
Filed Nov. 19, 1992, Ser. No. 978,598
Int. Cl.[5] C07F 7/02
U.S. Cl. 556—402 4 Claims

1. A compound of Formula



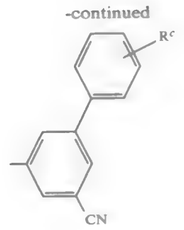
wherein
Ar is

(a)



-continued

(b)



R^b is
(a) C_{1-3} alkyl,
(b) C_{1-3} alkoxy,
(c) substituted C_{1-3} alkyl, wherein the substituent is hydroxy, or
(d) hydroxy C_{1-3} alkyl, wherein the hydroxy is optionally protected with a silyl protecting group selected from tri-C_{1-4} alkyl silyl, phenyl di C_{1-4} alkyl and diphenyl mono C_{1-4} alkyl silyl;
R^c is
(a) C_{1-3} alkyl,
(b) hydroxy C_{1-3} alkyl, wherein the hydroxy is optionally protected with a silyl protecting group selected from tri-C_{1-4} alkyl silyl, phenyl di C_{1-4} alkyl and diphenyl mono C_{1-4} alkyl silyl;
and wherein R_4 and R_5 are each individually hydrogen or C_{1-6} alkyl or R_4 and R_5 are taken together are C_{1-6} alkyl.

5,338,876

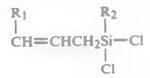
ALKENYCHLOROSILANES AND DIRECT SYNTHESIS THEREOF

Il N. Jung, Seoul; Seung H. Yeon, Kyungki-Do; Bong W. Lee, Kwangju, and Bok R. Yoo, Seoul, all of Rep. of Korea, assignors to Korea Institute of Science and Technology (KIST), Seoul, Rep. of Korea

Filed Jun. 10, 1993, Ser. No. 75,134
Claims priority, application Rep. of Korea, Jun. 13, 1992, 10292/1992
Int. Cl.[5] C07F 7/08, 7/16
U.S. Cl. 556—431 19 Claims

1. Alkenylchlorosilanes of formula (I)

Formula (I)



wherein R_1 is $SiHCl_2$, $SiCl_3$ or CH_2SiCl_3 and R_2 is hydrogen.

5,338,877

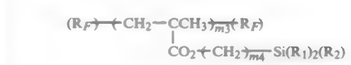
FLUOROALKYL GROUP-CONTAINING ORGANOSILICON OLIGOMER, METHOD FOR PREPARING SAME AND SURFACE TREATING AGENT

Hideo Sawada; Motohiro Mitani, both of Tsukuba; Masaharu Nakayama, Tsuchiura, and Takeo Matsumoto, Tsukuba, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

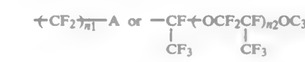
Division of Ser. No. 791,989, Nov. 14, 1991, Pat. No. 5,288,891.
This application Aug. 24, 1993, Ser. No. 111,183
Claims priority, application Japan, Nov. 22, 1990, 2-319811; Feb. 16, 1991, 3-022444; May 21, 1991, 3-116115; May 21, 1991, 3-116116; Aug. 1, 1991, 3-193097; Aug. 1, 1991, 3-193098
Int. Cl.[5] C07F 7/08, 7/18
U.S. Cl. 556—440 20 Claims

1. A fluoroalkyl group-containing organosilicon oligomer represented by the following formula (IV) of:

(IV)



wherein R_1 and R_2 each are the same or different groups and stand for an alkyl, alkoxy or alkylcarbonyloxy group having 1 to 10 carbon atoms, m_3 represents an integer of 1 to 10, m_4 represents an integer of 1 to 5 and R_F stands for



where A represents a hydrogen atom, a fluorine atom or a chlorine atom, n_1 represents an integer of 1 to 10, n_2 represents an integer of 0 to 8.

5,338,878

ALKYL CARBONATE EXTRACTION PROCESS

Michael A. Pacheco, Naperville, Ill.; Franklin D. Darrington, and Albert L. Hensley, Jr., both of Munster, Ind., assignors to Amoco Corporation, Chicago, Ill.

Filed Jan. 29, 1993, Ser. No. 11,246
Int. Cl.[5] C07C 69/96
U.S. Cl. 558—277 20 Claims

1. A process for separating alkyl carbonate from a feedstock comprising at least one alkyl carbonate and at least one alkanol comprising extracting said alkyl carbonate from said feedstock in a liquid-liquid extraction step comprising a first extraction solvent comprising hydrocarbon selective for extracting alkyl carbonates relative to alkanol in an amount sufficient to extract a substantial portion of said alkyl carbonate from said feedstock and a second solvent comprising water in an amount sufficient to extract a substantial portion of said alkanol from said feedstock.

5,338,879

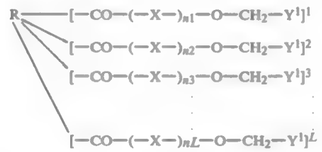
LACTONE-MODIFIED ALICYCLIC COMPOSITION AND AN EPOXIDIZED COMPOSITION THEREOF

Takaaki Fujiwa; Shin Takemoto, both of Otake; Tomohisa Isobe, Iwakuni, and Yoshiyuki Harano, Otake, all of Japan, assignors to Daicel Chemical Industries, Ltd., Tokyo, Japan

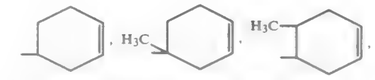
Division of Ser. No. 895,360, Jun. 8, 1992, Pat. No. 5,198,509, which is a division of Ser. No. 728,114, Jul. 10, 1991, Pat. No. 5,169,965. This application Aug. 13, 1992, Ser. No. 930,094
Claims priority, application Japan, Jul. 10, 1990, 2-182124; Aug. 17, 1990, 2-216569; Nov. 2, 1990, 2-298482; Nov. 9, 1990, 2-303929
Int. Cl.[5] C07C 69/74
U.S. Cl. 560—116 5 Claims

1. A lactone-modified alicyclic compound of the formula

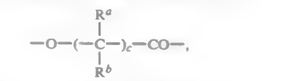
(I)



wherein, R is an alkyl group, an aromatic group or an alkenyl group having carbon number of from 1 to 30, Y^1 is at least one of the structural groups;



X is the structural group derived from a lactone



R^a and R^b each independently is hydrogen or a methyl group, c is a number of from 4 to 8, n1 to nL represents 0 or a number of more than 0, respectively, n1+n2+n3+ . . . +nL is 1 or a number of more than 1, which corresponds to the total mole number of lactone introduced into one molecule, L represents 2 or a number of more than 2.

5,338,880

Patent Not Issued For This Number

5,338,881

PROCESS FOR PREPARING DIKETONES

Theodore R. Walker, Jr.; Winston J. Jackson, Jr., and Jean C. Fleischer, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jul. 23, 1990, Ser. No. 556,677
Int. Cl.[5] C07C 59/76
U.S. Cl. 562—462 22 Claims

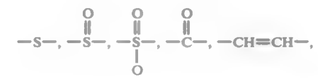
1. A process for producing a diketone compound comprising contacting
(A) at least one aromatic dicarboxylic acid containing 8 to 30 carbon atoms, wherein said aromatic dicarboxylic acid is
(I) a compound of the formula

HOOC—$R^2$13 COOH

wherein R^2 is
(a) a phenylene moiety optionally substituted with up to three substituents selected from the group consisting of lower alkyl, lower alkoxy, halo, hydroxy, acyl, perfluoroalkyl, cyano, nitro, dialkylamino, and acylamino,
(b) a naphthylene moiety optionally substituted with up to six substituents selected from the group consisting of lower alkyl, lower alkoxy, halo, hydroxy, acyl, perfluoroalkyl, cyano, nitro, dialkylamino, and acylamino, or
(c) a biphenylene moiety optionally substituted with up to eight substituents selected from the group consisting of lower alkyl, lower alkoxy, halo, hydroxy, acyl, perfluoroalkyl, cyano, nitro, dialkylamino, and acylamino;
and wherein the —COOH moieties are directly bonded to an aromatic ring and are separated from each other by at least three carbon atoms; or
(II) a compound of the formula

HOOC—R^2—Y—R^2—COOH

wherein Y is a direct bond,



and each R^2, independently, is as defined hereinabove, with

VOL 1165 ISS 3 AG 16 1994 UMI

(B) at least one polynuclear aromatic compound containing 10 to 30 carbon atoms,

in the presence of at least one solvent, phosphorus pentoxide, and at least a catalytic amount of at least one alkylsulfonic acid containing 1 to 4 carbon atoms, under conditions to promote formation of the desired diketone,

said conditions comprising a molar ratio of reactant A to reactant B from of about 1 to 2.

5,338,882

PROCESS FOR THE PRODUCTION OF DMT-INTERMEDIATE PRODUCT OF SPECIFIC PURITY AND PURE TEREPHTHALIC ACID

Hermann-Josef Korte, Niederkassel; Anton Miletic, Troisdorf; Hans U. Neutzler, Wetter; Anton Schoengen, Witten; Johann H. Schroeder, Dortmund, and Ralf Wirges, Niederkassel, all of Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Division of Ser. No. 761,768, Aug. 15, 1991, Pat. No. 5,286,896. This application Nov. 4, 1993, Ser. No. 145,540

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1989, 3904586

Int. Cl.[5] **C07C** *51/09, 51/43*

U.S. Cl. 562—483 **18 Claims**

1. A process, comprising:

(a) jointly oxidizing a mixture containing predominantly para-xylene (p-X) and paratoluic acid methyl ester (p-TE) in the liquid phase with an oxygen-containing gas;

(b) esterifying the acids produced in the oxidation step (a) with methanol;

(c) distilling the reaction mixture produced in the esterification step (b) into:

(I) a p-TE rich fraction,

(II) a fraction containing more than 99% by weight DMT and its isomers, and

(III) a high boiling residue fraction which has a DMT content of 15 to 70% by weight,

(d) recycling the p-TE fraction I to oxidation step (a),

(e) subjecting the DMT fraction II to single solvent recrystallization to a DMT intermediate product such that the amount of hydroxymethyl-benzoic acid methyl ester (HM-BME) and terephthaladehydic acid methyl ester (TAE) amount together to less than 200 ppm in the DMT intermediate product, and

(f) processing the DMT intermediate product of step (e) by either i) subjecting the DMT intermediate product to a second solvent recrystallization in methanol or ii) hydrolyzing the DMT intermediate product to form terephthalic acid, crystallizing from the hydrolysis mother liquor the terephthalate acid formed and drying the crystallized terephthalate acid.

5,338,883

BENZENESULFONYL CARBOXAMIDE COMPOUNDS INTERMEDIATE COMPOUNDS AND METHODS OF PREPARATION THEREOF AND USE OF SAID COMPOUNDS AND INTERMEDIATE COMPOUNDS AS HERBICIDAL AGENTS

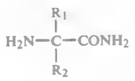
Sergio I. Alvarado, Princeton; Alvin D. Crews, Jr., Plainsboro; Peter J. Wepplo, Princeton; Robert F. Doehner, Jr., East Windsor; Thomas E. Brady, Whitehouse Station; David M. Gange, Princeton, and Desiree L. Little, Burlington, all of N.J., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 856,262, Mar. 23, 1992, Pat. No. 5,252,539, which is a division of Ser. No. 611,626, Nov. 13, 1990, Pat. No. 5,120,854, which is a division of Ser. No. 417,400, Oct. 5, 1989, Pat. No. 4,992,094, which is a division of Ser. No. 214,507, Jul. 7, 1988, Pat. No. 4,883,914, which is a continuation-in-part of Ser. No. 86,416, Aug. 17, 1987, abandoned. This application Jul. 6, 1993, Ser. No. 87,952

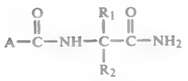
Int. Cl.[5] **C07C** *233/04*

U.S. Cl. 564—90 **7 Claims**

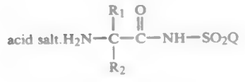
1. Intermediates having the structures:



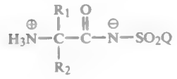
IV



VI



X



XI

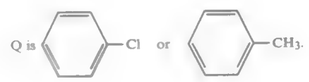
wherein

A is hydrogen or methyl;

R_1 is methyl;

R_2 is isopropyl;

W is oxygen or sulfur;



5,338,884

METHOD FOR THE PREPARATION OF ARYLALKANOLAMINEACYLATES

Ahmed M. Tafesh, Corpus Christi, Tex.; Olan S. Fruchey, Bad Soden/T.S., Fed. Rep. of Germany, and Charles B. Hilton, Corpus Christi, Tex., assignors to Hoechst Celanese, Somerville, N.J.

Division of Ser. No. 698,504, May 10, 1991, Pat. No. 5,220,063. This application Oct. 2, 1992, Ser. No. 913,124

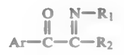
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[5] **C07C** *209/00*

U.S. Cl. 564—138 **19 Claims**

1. A method of preparing the hydrochloride salt of an arylalkanolamine, which comprises the steps of:

a) providing a compound of the formula



wherein,

R_1 = an hydroxyl, alkyl, or alkyloxy radical

R_2 = hydrogen or a C_1–C_8 alkyl or cycloalkyl radical, and

Ar = an unsubstituted phenyl radical, or a phenyl radical substituted at the ortho position, the para position, or both the ortho and para positions, or an unsubstituted naphthyl radical, or a naphthyl radical substituted at one or more of the 1, 3, 6, and 7 positions, wherein the substituents are selected from the group consisting of hydroxyl, alkoxy, alkyl, phenyl, and benzyl radicals, wherein the alkyl component is a branched or unbranched C_1–C_8 alkyl radical, wherein any of said alkyl, phenyl, and benzyl radicals are optionally substituted with one or more substituents selected from amino, hydroxyl, sulfonic acid, and sulfinic acid radicals, and wherein said phenyl and benzyl substituents are optionally substituted with a C_1–C_8 alkoxy radical, or both;

b) reacting said compound with hydrogen in a reaction medium comprising an acyl donor selected from carboxylic acids, carboxylic acid anhydrides, and carboxylic acid esters or mixtures thereof having a melting point below 100° C. and a hydrogenation catalyst comprising a transition metal catalyst on an inert support, to form a carboxylic acid salt of an arylalkanolamine if said selected acyl donor is a carboxylic acid, or to form the acylamide of an arylalkanolamine if said selected acyl donor is said ester or anhydride, and

c) reacting said acylamide or amine acylate salt of the arylalkanolamine with hydrogen chloride in a reaction medium comprising a C_1–C_3 alkyl alcohol.

5,338,885

PROCESS FOR THE PREPARATION OF DIPHENYLAMINES

Otto Immel; Gerhard Darsow, and Hans-Josef Buysch, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

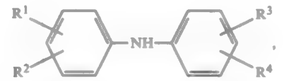
Filed Sep. 24, 1992, Ser. No. 950,613

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 4132945

Int. Cl.[5] **C07C** *209/26*

U.S. Cl. 564—398 **11 Claims**

1. A process for the preparation of a diphenylamine of the formula



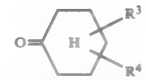
in which

R^1, R^2, R^3 and R^4 independently of one another denote hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy,

wherein an aniline of the formula



is reacted in the gas phase with a cyclohexanone of the formula



in which in the formulae the radicals R^1–R^4 have the above meaning, and in which aniline and cyclohexanone are present in a molar ratio of 1:10–10:1 over a supported catalyst containing 0.05–5% by weight of rhodium or a rhodium/platinum metal combination at 200°–450° C. and 0.1–20 bar.

5,338,886

PROCESS FOR PREPARATION OF AROMATIC THIOLS

Mark Rule, and James T. Tanner, III, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation-in-part of Ser. No. 886,584, May 21, 1992, abandoned. This application May 17, 1993, Ser. No. 61,468

Int. Cl.[5] **C07C** *319/02;* **C07D** *209/04, 207/48, 333/46*

U.S. Cl. 568—66 **10 Claims**

1. A process for the preparation of an aromatic thiol corresponding to the structure

A-(SH)n

wherein A is a substituted or unsubstituted aromatic radical and n is 1, 2, 3, 4, 5 or 6 comprising contacting at a temperature in the range of 80° C. to 200° C. an aromatic halide corresponding to the structure

A-Xm

wherein A is the same as above, X is bromine or iodine and m is 1, 2, 3, 4, 5, or 6 with thiourea in the presence of nickel metal, wherein each of the halide atoms on the aromatic ring of the aromatic halide react with one equivalent of thiourea to place an SH group on the aromatic ring in place of the halide atom.

5,338,887

PROCESS FOR THE PREPARATION OF DIHYDROPEROXYALKYL POLYPHENYLS AND DIHYDROXY POLYPHENYLS

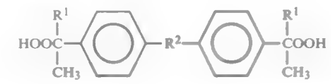
Guo-shuh J. Lee, and Kenneth A. Burdett, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 343,473, Apr. 26, 1989, abandoned. This application Nov. 6, 1991, Ser. No. 858,465

Int. Cl.[5] **C07C** *409/08*

U.S. Cl. 568—564 **9 Claims**

1. A dihydroperoxyalkyl polyphenyl compound of the following formula:



wherein R^1 is separately in each occurrence methyl or ethyl, and R^2 is phenylene or phenoxy.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,888

PREPARATION OF E,Z-BUTENEDIAL BIS(DIALKYL ACETALS)

Joachim Paust, Neuhofen, and Wolfgang Krause, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

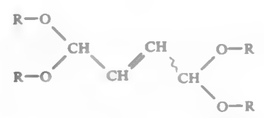
Filed Jul. 6, 1993, Ser. No. 86,028

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1992, 4223889

Int. Cl.[5] C07C *41/01, 41/28, 41/50*

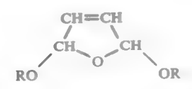
U.S. Cl. 568—596 4 Claims

1. A process for preparing E,Z-butenedial bis(dialkyl acetals) of the formula I



(I)

where R is $—CH_3$, $—C_2H_5$ or $—C_3H_7$, by reacting the 2,5-dialkoxy-2,5-dihydrofuran of the formula II



(II)

where R has the abovementioned meanings, with the corresponding alkanol of the formula III R OH (III) where R has the abovementioned meanings, in the presence of a catalyst selected from the group consisting of a mineral acid and a strong organic acid at elevated temperature, wherein the reaction is carried out in the presence of 0.9–1.5 mol of the corresponding trialkyl orthoformate of the formula IV



(IV)

where R has the abovementioned meanings, per mol of the furan of the formula II, and in the presence of catalytic amounts of said mineral acid or of said strong organic acid, neither of which attacks the reactants.

5,338,889

ALKANE REJECTION IN C_4 ETHERIFICATION AND ISOMERIZATION PROCESS

Bipin V. Vora, Darien; Tamotsu Imai, Mount Prospect, and Peter J. Pujado, Palatine, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 29, 1992, Ser. No. 998,169

Int. Cl.[5] C07C *41/06*

U.S. Cl. 568—697 5 Claims

1. A process for the production of methyl tertiary butyl ether MTBE from a mixed C_4 feedstream comprising butanes, normal butenes, and isobutene, and a monohydroxy alcohol, said process comprising:

(a) passing a selective hydrogenation zone feed stream to a selective hydrogenation zone and contacting said selective hydrogenation zone feed stream with a selective hydrogenation catalyst at selective hydrogenation conditions to saturate diolefins and produce a selectively hydrogenated effluent stream;

(b) passing said selectively hydrogenated effluent stream to an isomerization reaction zone as an isomerization zone feed for the skeletal isomerization of normal butenes and contacting said isomerization zone feed with an isomerization catalyst at isomerization conditions to produce an isomerization zone effluent stream;

(c) passing at least a portion of said isomerization zone effluent stream directly to an adsorption zone as an adsorption feed, contacting said adsorption feed with an adsorbent at adsorption conditions to separate said adsorption feed into a saturate stream comprising butane isomers and an etherification zone feed fraction comprising butane isomers, isobutene and normal butenes;

(d) mixing at least a portion of said etherification zone feed fraction with a C_1–C_5 monohydroxy alcohol to produce a combined feed and contacting said combined feed with an etherification catalyst in an etherification zone at etherification conditions to react isobutene with said alcohol and producing an etherification effluent stream comprising, alcohol, MTBE, isobutane, and normal butene isomers;

(e) passing a separation zone input stream comprising said etherification effluent stream to a first separation zone, withdrawing a high boiling first fraction comprising said MTBE from said separation zone, separating light gases, isobutane, and alcohol from the remainder of said etherification zone effluent stream and withdrawing a second fraction comprising normal butene isomers from separation zone;

(f) passing at least a portion of said second fraction to a second separation zone and separating said second fraction into a butene-1 product stream having a purity of at least 99 wt % and third fraction comprising normal butane and butene-2;

(g) passing at least a portion of said third fraction to said isomerization zone; and,

(h) passing a mixed C_4 feedstream into at least one of said selective hydrogenation zone, said adsorption zone, and said isomerization zone.

5,338,890

ONE STEP SYNTHESIS OF METHYL T-BUTYL ETHER FROM T-BUTANOL USING ALKYLSULFONIC ACID-MODIFIED OXIDE CATALYSTS

John F. Knifton, Austin, and John R. Sanderson, Leander, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jul. 19, 1993, Ser. No. 92,963

Int. Cl.[5] C07C *41/09*

U.S. Cl. 568—698 9 Claims

1. In a method for the synthesis of methyl t-butyl ether from t-butanol and methanol in one step, the improvement comprising accomplishing the reaction in one step, using a heterogeneous catalyst comprising an alkylsulfonic acid covalently bonded to an oxide of Group III or IV of the Periodic Table.

5,338,891

MUSICAL TONE CONTROL DEVICE WITH PERFORMING GLOVE

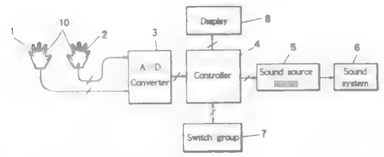
Takamichi Masubuchi, and Katutoshi Kouchi, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed May 28, 1992, Ser. No. 890,575

Claims priority, application Japan, May 30, 1991, 3-127294

Int. Cl.[5] G10H *1/053, 1/18, 1/46*

U.S. Cl. 84—600 14 Claims



12. A musical tone control apparatus comprising: finger motion sensing means for sensing a bending motion of a finger of a hand; musical tone controlling means for controlling generation of a musical tone according to the sensed bending motion of the finger; wrist movement sensing means for sensing a flexional movement of a wrist of the same hand; and tone generation suppressing means operative while the flexional movement of the wrist is sensed for suppressing the generation of the musical tone through the musical tone controlling means.

5,338,892

MUSICAL TONE GENERATION APPARATUS UTILIZING PITCH DEPENDENT TIMING DELAY

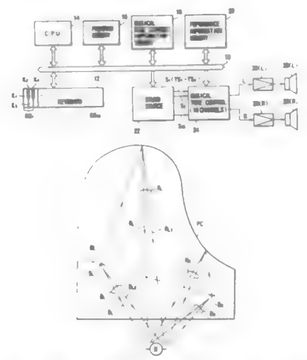
Satoshi Sekine, and Junichi Fujimori, both of Shizuoka, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 568,900, Aug. 17, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 85,478

Claims priority, application Japan, Sep. 16, 1989, 1-240472

Int. Cl.[5] G10H *5/00, 1/02*

U.S. Cl. 84—662 19 Claims



1. A musical tone generation apparatus comprising:

(a) pitch designation means for designating a pitch, said pitch designation being divided into a plurality of pitch groups;

(b) instruction means for instructing a timing shift of a second tone with respect to a first tone, the magnitude of the timing shift being controlled as a function of the designated pitch (or the pitch group to which the designated pitch belongs); and

(c) signal generation means for generating first and second musical tone signals having the designated pitch and having the timing shift instructed by said instruction means in correspondence with the designated pitch (or the pitch group to which the designated pitch belongs).

5,338,893

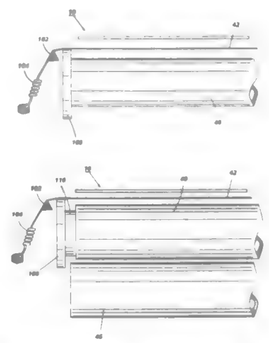
DONOR ROLL WITH ELECTRODE SPACER FOR SCAVENGELESS DEVELOPMENT IN A XEROGRAPHIC APPARATUS

Cyril G. Edmunds, and Gerald T. Lioy, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 16, 1993, Ser. No. 106,744

Int. Cl.[5] G03G *15/08*

U.S. Cl. 118—647 10 Claims



1. An apparatus for developing a latent image in a development zone, comprising:

a housing defining a chamber for storing a supply of developer material therein;

a donor roll, mounted at least partially in the chamber of the housing, the donor roll including a portion thereof being adapted to advance developer material to the development zone to develop the latent image, and including a region of increased diameter disposed along a length of the donor roll which is spaced from the development zone, the region of increased diameter having a diameter greater than the portion of the donor roll in the development zone; and

an electrode wire positioned between the latent image and the donor roll, the electrode wire being electrically biased to detach toner particles from the donor roll so as to form a toner powder cloud in the development zone with detached toner particles from the toner cloud developing the latent image, with a portion of the electrode wire being in sliding contact with the region of increased diameter of the donor roll, whereby the electrode wire is maintained at a substantially constant spacing from the donor roll.

5,338,894

IMAGE FORMING METHOD WITH IMPROVED DEVELOPMENT

Masaki Uchiyama, Ichikawa; Hirohide Tanikawa; Yasutaka Akashi, both of Yokohama; Masaaki Taya, Kawasaki, and Makoto Unno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1991, Ser. No. 763,253

Claims priority, application Japan, Sep. 21, 1990, 2-250109; Sep. 21, 1990, 2-250110

Int. Cl.[5] G03G *15/08*

U.S. Cl. 118—653 15 Claims

1. An image forming method, comprising:

(a) providing a gap of a predetermined size between a latent image-bearing member for carrying an electrostatic latent

VOL 1165 ISS 3 AG 16 1994 UMI

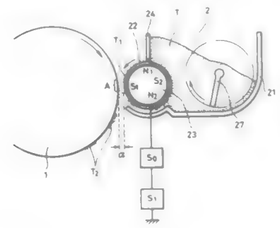
image and a toner-carrying member for carrying a magnetic toner on the surface thereof in a developing region;

(b) regulating the thickness of a magnetic toner layer formed on said toner-carrying member to a value smaller than said size of said gap; wherein

(i) said magnetic toner comprises a binding resin and a magnetic iron oxide;

(ii) said magnetic toner has a particle size distribution in which 12% or more by number of the magnetic toner particles are 5 μm or smaller and 33% or less by number of the magnetic toner particles are 8 to 12.7 μm and in which magnetic toner particles not smaller than 16 μm exist in an amount not greater than 2.0% in terms of volume, with the volume means particle size of said magnetic toner particles ranging from 4 to 10 μm;

(iii) said binding resin has an overall acid value (A) of 2 to 100 mgKOH/g as measured through hydrolysis of acid anhydride groups in said binding resin and a total acid value (B) derived form said acid anhydrides below 6



mgKOH/g, the ratio (B)/(A) being not greater than 0.6;

(iv) said magnetic iron oxide has an FeO content between 25 to 30 wt. % based on total weight of the magnetic iron oxide; and

(c) applying a bias voltage having a D.C. bias component and an asymmetric A.C. bias component between said toner-carrying member and said latent image-bearing member in said developing region so as to form an A.C. bias electric field having a developing voltage component and a reverse-development voltage component, said developing voltage component being (i) equal to or greater than said reverse-development voltage component and (ii) having a duration smaller than that of said reverse-development voltage component, so as to cause said magnetic toner to move from said toner-carrying member to said latent image-bearing member, thereby developing said electrostatic latent image on said latent image-bearing member.

5,338,895

DEVELOPING APPARATUS

Akihito Ikegawa, Sakai; Kouichi Aritomo, Itami; Kazuki Tsukamoto, Katano, and Michiya Yamashita, Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 552,069, Jul. 13, 1990, abandoned. This application Feb. 11, 1993, Ser. No. 16,671

Claims priority, application Japan, Jul. 17, 1989, 1-185266

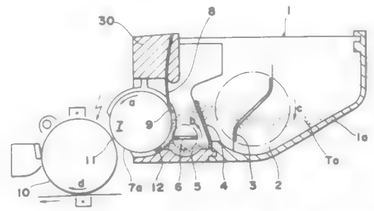
Int. Cl.[5] G03G *15/00*

U.S. Cl. 118—661 **12 Claims**

1. A developing apparatus for developing an electrostatic latent image on an electrostatic latent image carrier comprising:

developer carrier means having an outer surface for retaining an electrostatically charged developer thereon and being provided rotatably; and

regulating means formed by a bending plate which has a supporting portion, a bent portion and a bent corner having a curvature radius of 0.5 mm or less formed between the supporting portion and the bent portion, said supporting portion defining a rear end of said bending plate, said bent portion and bent corner defining a forward end of said bending plate, said supporting portion fixedly disposed at said rear end and having a substantially flat contacting portion which is substantially flat in a rear-to-front direction of said plate and is in area contact with the surface of said developer carrier means and is disposed close to the bent corner, said bent corner formed with a round curvature shape having a predetermined curvature



radius and having a bent angle of 60°–90°, said bent portion being bent with respect to said substantially flat contact portion in a direction away from the developer carrier means, said front end of said bending plate which contains said bent portion and said bent corner being located upstream of said supporting portion with reference to a direction of rotation of said developer carrier means, the entirety of said bent portion being situated farther from said surface than said bent corner.

5,338,896

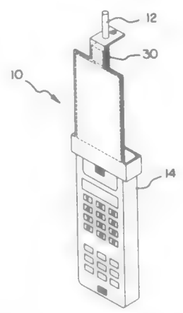
SHIELD DEVICE FOR CELLULAR PHONES

David M. Danforth, 82 Fairy Dell Rd., Clinton, Conn. 06413

Filed Sep. 3, 1993, Ser. No. 115,574

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 R **6 Claims**



1. A shield device for cellular phones whereby the shield device protects a user form microwaves emitted and received by an antenna, said shield device comprising:

a shielding means for blocking the passage of microwaves; and;

a cover means for positioning the shield means adjacent the cellular phone antenna, the cover means having pocket means for receiving the shielding means;

wherein the cover means comprises a cover with a top end having an upper tab integral therewith and a bottom end having a pair of integral, opposing lower tabs adapted as a means for securing the cover means to said cellular phone, the upper tab having a pair of apertures therethrough for receiving the cellular phone antenna, thereby securing the top end of the cover means to the cellular phone, the lower tabs having hook and loop fasteners cooperably secured thereto for securing the bottom end of the cover means to the cellular phone.

5,338,897

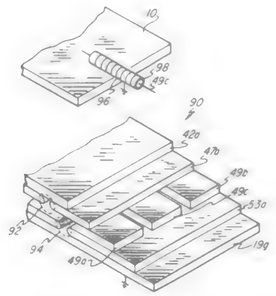
COAXIAL SHIELD FOR A SEMICONDUCTOR DEVICE

Ching-Yuh Tsay, Richardson, and Khen-Sang Tan, Plano, both of Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.

Filed Jul. 30, 1991, Ser. No. 738,010

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 R **15 Claims**



1. A protected signal conductor for a semiconductor device, comprising:

a signal conductor on a semiconductor die disposed between and isolated from a top conductor, a bottom conductor, a first side conductor, and a second side conductor; and

wherein the top conductor, the bottom conductor, the first side conductor, and the second side conductor are electrically biased.

5,338,898

DEVICE FOR FACILITATING AND PROTECTING THE CONNECTION BETWEEN CONDUCTIVE CABLES AND ASSOCIATED TERMINALS FOR CONNECTION TO ELECTRICAL APPARATUS, PARTICULARLY THE ELECTROMAGNET OF A MOTOR VEHICLE STARTER MOTOR

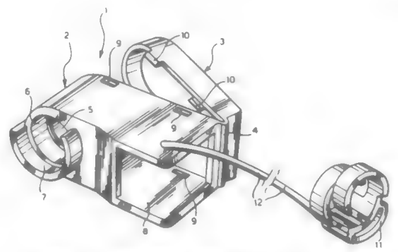
SMO' Luciano, and Spina Donato, both of Turin, Italy, assignors to Fiat Auto S.p.A., Torino, Italy

Continuation of Ser. No. 857,169, Mar. 25, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 80,090

Claims priority, application Italy, Mar. 26, 1991, TO91 U 000068

Int. Cl.[5] H01R *13/46*

U.S. Cl. 174—138 F **3 Claims**



1. A system for facilitating connection of at least one conductive cable with an associated connection terminal of an electrical apparatus comprising a device for facilitating the connection in combination with said terminal;

said device comprising a box-like body having a base and a cover of electrically insulating material, said base having a seat defining an opening through which the terminal extends with the terminal engaging the seat with a force fit, an aperture for the introduction of said at least one conductive cable and an integral centering abutment projecting exteriorly from said body and extending partially around said opening for centering the body angularly relative to the connecting terminal;

said terminal being shaped so as to be engaged with form coupling by the integral centering abutment of said body, whereby in the engaged condition of said body with said terminal the aperture for receiving said at least one conductive cable has a predetermined angular orientation relative to the terminal;

means hingedly connecting said cover to said base so as to be turnable relative to said base between an open position and a closed position; and

an external retaining member connected to said body and attachable to said at least one cable.

5,338,899

PACKAGING OF ELECTRONIC DEVICES

Trevor C. Gainey, Kent, England, assignor to LSI Logic Corporation, Milpitas, Calif.

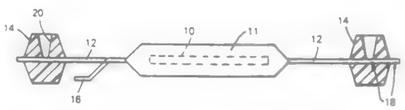
PCT No. PCT/GB91/01458, § 371 Date May 14, 1992, § 102(e) Date May 14, 1992, PCT Pub. No. WO92/03845, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 28, 1991, Ser. No. 856,894

Claims priority, application United Kingdom, Aug. 28, 1990, 9018764

Int. Cl.[5] H01L *23/02*

U.S. Cl. 174—52.4 **19 Claims**



4. A packaged electronic device comprising:

an electronic device encased in a package body,

a leadframe extending from the package body and including leads extending both radially from the package body and formed to extend axially below the leadframe to a depth below the leadframe, and

guard means, formed separately and distinctly from the package body and secured to the leadframe, said guard means being disposed both above and below the leadframe for protecting the leads,

said guard means being dimensioned and positioned so that it extends axially below the leadframe to a greater depth than the leads.

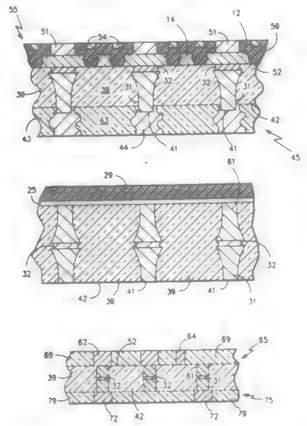
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,900

STRUCTURES FOR ELECTRICALLY CONDUCTIVE DECALS FILLED WITH INORGANIC INSULATOR MATERIAL

Mark S. Schneider, Poughkeepsie; John Acocella; Lester W. Herron, both of Hopewell Junction; Mark R. Kordus, Pleasant Valley, and Louis H. Wirtz, Highland, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 918,876, Jul. 22, 1992, abandoned, which is a continuation of Ser. No. 665,631, Mar. 6, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,367
The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 20 Claims



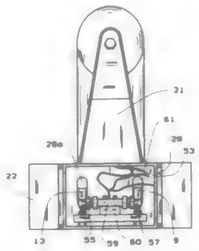
1. A transferable electrical connection decal member, wherein said transferable member comprises, at least one first electrically conductive island having two faces and a peripheral wall, at least one second electrically conductive island having two faces and a peripheral wall, and wherein at least one of said first and said second islands has at least one third electrically conductive island having two faces and a peripheral wall therebetween such that at least a portion of one face of said third island physically contacts at least a portion of one face of said first island while at least a portion of the second face of said third island physically contacts at least a portion of one face of said second island and provides an electrical connection between said first and said second island, wherein the material of said third island is different than the material of said first and second islands, and wherein said peripheral wall of said third island and at least a portion of said peripheral wall of either said first island or said second island or both is completely surrounded by an inorganic insulator material while the faces of said first and said second island not in electrical contact with said third island are exposed, thereby forming said transferably electrical connection decal member and, wherein said transferable electrical connection decal member is transferred onto a layer or substrate having at least one dielectric material and at least one electrically conductive material, such that at least a portion of said exposed face of either said first or said second island is in physical contact with at least a portion of said electrically conductive material of said layer or substrate, while at least a portion of said inorganic insulator material is in physical contact with at least a portion of said dielectric material of said layer or substrate.

5,338,901

CONVEYOR BELT WEIGHER INCORPORATING TWO END LOCATED PARALLEL-BEAM LOAD CELLS

Ron Dietrich, Lenzburg, Ill., assignor to Kaskaskia Valley Scale Company, Lenzburg, Ill.

Filed Jun. 22, 1992, Ser. No. 901,678
Int. Cl.[5] G01G *11/14, 13/02, 23/02, 19/00*
U.S. Cl. 177—16 5 Claims



1. A conveyor belt weighbridge unit measuring weight and volume of bulk material passing along a conveyor belt during movement of the belt, said weighbridge unit provided for eliminating torsional distortions to the measured weight during weight analysis by the said unit, comprising:

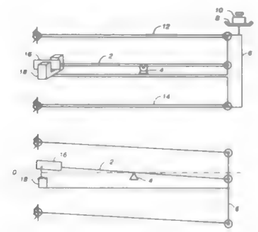
support means for supporting said conveyor belt, said support means arranged transversely to the conveyor belt, said support means having a first end and a second end, a first pair of load cells and a second pair of load cells, said first pair of load cells cooperatively connected to said first end of the support means by a first pair of weight transfer bars, said second pair of load cells being cooperatively connected to said second end opposite said first end of said support means by a second pair of weight transfer bars, at least two strain gauges, said strain gauges being operatively connected to the first pair and said second second pair of load cells, said strain gauges disposed for measuring deflections in the load cells caused by vertical and torsional force components during movement of said bulk material on said conveyor belt, frame members for the conveyor belt arranged laterally relative to the conveyor belt which supports the load cells along a line of travel of said conveyor belt, one of each pair of transfer bars extending from each said end of the support means, one of each of said pair of weight transfer bars resting upon one of said load cells wherein a four point support for the support means is provided to furnish measurement of the deflections caused in said load cells by the vertical and torsional forces generated through movement of the material ladened on said conveyor belt said said first pair and said second pair of weight transfer bars at each said end of the support means providing the sole support for the support means and the conveyor belt, said support means being supported by said load cells vertically above the conveyor belt frame members, a speed sensor cooperatively connected to said support means, said speed sensor disposed to measure a speed of travel of said conveyor belt over said weighbridge unit, and a computerized integrator means, said integrator means disposed to integrate vertical and torsional force components of movement of said conveyor to balance out and eliminate effects of the torsional force component generated by the movement of said conveyor and convert the vertical force components and said speed of the conveyor into the weight of the material passing on said conveyor belt and for further calculation into a volume of said material being conveyed on said conveyor.

5,338,902

ELECTRONIC BALANCE

Mitsumasa Uchiike, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 25, 1993, Ser. No. 36,827
Claims priority, application Japan, Apr. 27, 1992, 4-136112
Int. Cl.[5] G01G *21/24, 3/08*
U.S. Cl. 177—255 4 Claims



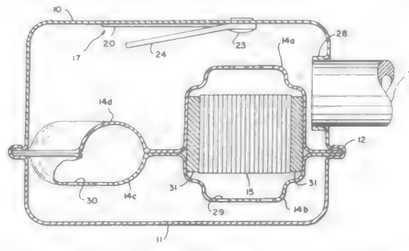
1. In an electronic balance having a beam rotatably supported at a mid-point thereof and incorporating a Roberval mechanism comprising a vertically elongated member rotatably attached to one end of said beam so as to remain vertically oriented as said beam swings around said mid-point, and a shutter for a position sensor capable of detecting the position of said shutter with respect thereto, said shutter being attached to the other end of said beam and a weighing pan being attached to said vertically elongated member, the improvement wherein said position sensor and said vertically elongated member are firmly attached to each other and move together such that said position sensor and said shutter move in mutually opposite directions as said beam swings around said mid-point.

5,338,903

COMBINATION MUFFLER AND CATALYTIC CONVERTER

James R. Winberg, Brookfield, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Continuation of Ser. No. 752,763, Aug. 30, 1991, abandoned.
This application Nov. 17, 1993, Ser. No. 154,154
Int. Cl.[5] F01N *3/00*
U.S. Cl. 181—231 10 Claims



1. A muffler for an exhaust system of a one or two cylinder internal combustion engine, comprising:

a hollow muffler body having an exhaust gas inlet connected to the exhaust system of a one or two cylinder engine, and an exhaust gas outlet;

partition means disposed transversely within said muffler body for dividing said muffler body into a first chamber communicating with said exhaust gas inlet and a second chamber communicating with said exhaust gas outlet, said partition means defining a third chamber having an upstream end opening to said first chamber and a downstream end opening to said second chamber, said upstream end including gas distribution means for uniformly distributing exhaust gases from said first chamber into said third chamber, said gas distribution means comprises a perforated wall portion;

a catalytic converter including a catalyzer disposed within said third chamber for oxidizing and reducing unburned exhaust gas components prior to said components discharge into said second chamber and from said exhaust gas outlet;

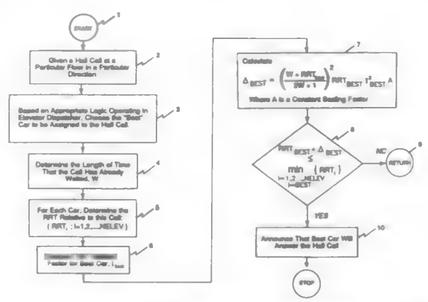
a secondary air supply means mounted within said muffler body, said secondary air supply means operable in response to exhaust gas pressure within said first chamber between a normally closed position and an open position which permits atmospheric air to flow into said first chamber within the interior of said muffler body, and said secondary air supply means includes an opening formed in said muffler body communicating between atmosphere and said first chamber, and valve means mounted within said first chamber operable to open and close said opening.

5,338,904

EARLY CAR ANNOUNCEMENT

Bruce A. Powell, Canton, and David J. Sirag, Jr., South Windsor, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Sep. 29, 1993, Ser. No. 128,931
Int. Cl.[5] B66B *3/00, 1/18*
U.S. Cl. 187—137 3 Claims



1. A method of announcing to a waiting passenger which elevator car of a plurality of elevator cars will serve a hall call registered by said waiting passenger, comprising:

temporarily assigning a car to answer said hall call, said car being the assigned car;

measuring the remaining response time (RRT) for each car of said plurality, in response to registration of the hall call, wherein said RRT for a car is an estimation of the time required for an elevator to reach the commitment point of the floor at which the hall call is registered, given the car calls and hall calls to which the car is committed;

providing an RRT inflation factor of said assigned car as a function of the number of potential stops for the assigned car between the position of the assigned car at a given time and the floor of hall call registration, indicative of the likelihood that the RRT of said assigned car will become inflated because of the assignment of the car assigned to the registered hall call to future hall calls or car calls;

committing the assigned car to service said hall call and announcing the assignment to the waiting passenger when the assigned car has its RRT at least a calculated number of seconds lower than the car with the next lowest RRT, wherein said number of seconds is selected as a function of the RRT inflation factor.

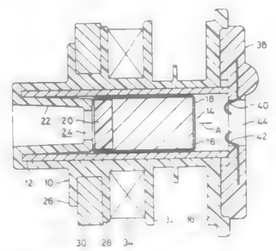
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,905

ACCELERATION SENSOR

Kazuo Yoshimura, Kanagawa, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,368
Claims priority, application Japan, Mar. 30, 1992, 4-074099
Int. Cl.[5] H01H 35/14, 1/54
U.S. Cl. 200—61.45 M 5 Claims



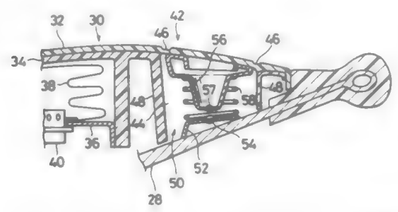
1. An acceleration sensor comprising:
a cylinder made of a conductive material;
a magnetized inertial member mounted in the cylinder so as to be movable longitudinally of the cylinder;
a conductive member mounted at least on one end surface of the inertial member which is on a side of one longitudinal end of the cylinder;
a pair of electrodes which are disposed at said one longitudinal end of the cylinder and which, when the conductive member of the inertial member makes contact with the electrodes, are caused to conduct via the conductive member, at least a portion of the electrodes which can magnetically attract the inertial member when the electrodes contact the conductive member of the inertial member being made of a magnetic material so that when the conductive member of the inertial member contacts the electrodes, said portion of the electrodes magnetically attracts the inertial member to prevent chattering between the inertial member and the electrodes; and
an attracting member disposed near the other longitudinal end of the cylinder and made of a magnetic material, the attracting member magnetically attracting the inertial member.

5,338,906

MODULE COVER OF AIR BAG SYSTEM

Keishi Yokota, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 983,383
Claims priority, application Japan, Dec. 17, 1991, 3-333411
Int. Cl.[5] H01H 9/00
U.S. Cl. 200—61.54 6 Claims



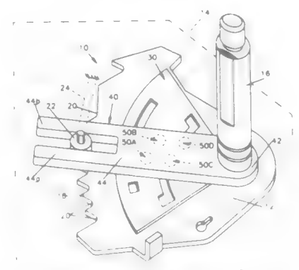
1. A module cover of an air bag system for a driver attached to a steering wheel having a spoke and a horn switch comprising:
a soft outer layer and a hard inner layer for forming the module cover, said outer layer being substantially directly disposed over the inner layer,
a central portion for covering an air bag,
an extending portion extending sideway from the central portion and located above the spoke,
a horn switch actuating portion formed in the extending portion, said horn switch actuating portion consisting of the soft outer layer and being surrounded by a groove extending inwardly from an outer surface of the soft outer layer, and
a space situated between the horn switch actuating portion and the spoke and completely surrounded by a side wall, said side wall being integrally formed with the inner layer and extending downwardly and substantially perpendicularly from the outer layer toward the spoke so that the horn switch fixed on the spoke is located in the space under the horn switch actuating portion.

5,338,907

VEHICULAR TRANSMISSION SENSOR APPARATUS RESPONSIVE TO GEAR SELECTION

Gary A. Baker, North Scituate, R.I., and Dale R. Sogge, Wrentham, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 819,439, Jan. 10, 1992, Pat. No. 5,191,178. This application Nov. 19, 1992, Ser. No. 978,603
Int. Cl.[5] H01H 9/06
U.S. Cl. 200—61.88 11 Claims



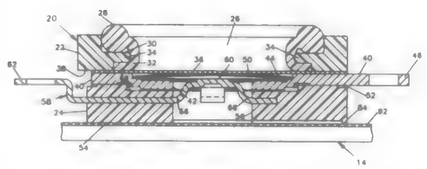
1. A switch system for use with motor vehicle transmission apparatus having a pivotably mounted manual shaft and a detent lever with a plurality of detents on an outer edge surface thereof, each detent corresponding to a specific transmission gear selection, the detent lever being mounted on the shaft so that the angular orientation of the detent lever is fixed to that of the shaft, comprising a switch housing mounted adjacent the detent lever, the switch housing having a base, a switch arm mounted on the shaft so that the angular orientation of the switch arm is fixed to that of the shaft, the switch arm extending into the switch housing spaced from the base, switch means mounted within the switch housing including at least one first electrical contact being mounted on the switch arm and at least one second electrical contact being mounted on the base, the first electrical contact being slidable between respective contacts engaged and contacts disengaged positioned with the second electrical contact as the manual shaft and switch arm are pivoted, and means for electrically energizing the switch and for outputting a signal therefrom corresponding to the respective contacts engaged and disengaged position.

5,338,908

VENTED PRESSURE SWITCH APPARATUS

Aziz Rahman, East Taunton, Mass., and Gary A. Baker, North Scituate, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 8, 1993, Ser. No. 73,729
Int. Cl.[5] H01H 35/34
U.S. Cl. 200—83 P 13 Claims



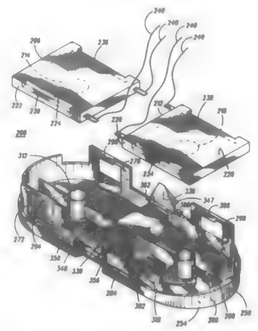
8. A pressure responsive switch assembly for use with hydraulic fluid of motor vehicle transmission systems comprising a lead frame formed of electrically conductive material encased in electrically insulative material, the lead frame provided with at least one switch receiving aperture, at least one electrical lead forming a connection point extending into the at least one aperture, a bracket for mounting the switch assembly to a transmission housing, the bracket overlying the encased lead frame and each switch receiving aperture, a pressure responsive switch received in the at least one aperture, the switch having first and second housing members each having an opening extending from a top surface of a respective housing member to a bottom surface thereof, the housing members each formed of electrically insulating material and being attached to one another, means to place the opening in the first housing in communication with a hydraulic fluid source, a first electrically conductive terminal member disposed between the first and second housing members, the terminal extending laterally from the switch in a first direction, a second electrically conductive terminal member mounted in the second housing member, the second terminal extending laterally from the switch in a second direction, one of the first and second terminals aligned with and connected to the connection point, and a movable electrically conductive member movable in dependence upon the pressure level of the hydraulic fluid source between a first position in which an electrically conductive path exists between the first and second terminals and a second position in which the electrically conductive path between the first and second terminals is interrupted, the bottom surface of the second housing member being generally circular in plan view and having a selected member of generally sector shaped alternating high and recessed surface areas with a sealing rib formed along the outer periphery of the recessed surface areas, the recessed areas being in communication with the opening in the second housing member, at least one arc shaped recessed channel formed through a high surface area to two adjacent low surface areas on one side of a line passing through the laterally extending terminals and a recessed surface area disposed on another side of said line, and first and second apertures formed through the bracket in alignment with each switch receiving aperture, one of the first and second apertures in alignment with one of the arc shaped recessed channel and a recessed surface area and the other of the first and second apertures in alignment with the other of the arc shaped channel and the recessed surfaced area, thereby forming a vent path through apertures in the bracket, the arc shaped channel and the recessed surface area to the opening in the second housing member.

5,338,909

ROCKER-TYPE SUPPORT ASSEMBLY

Ronald F. Stanley, Lake Zurich, and Ernest E. Soderlund, Elgin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1992, Ser. No. 937,260
Int. Cl.[5] H01H 3/02
U.S. Cl. 200—339 22 Claims



1. A rocker support assembly for supporting at least one actuation switch, said at least one actuation switch being responsive to application of an actuation force upon a face surface thereof, said rocker support assembly being mountable at a receiving surface defined upon a substrate of a predefined thickness and having an opening extending between a top side surface and a bottom side surface thereof, the receiving surface being formed from portions of the top side surface of the substrate about the opening extending through the substrate, said rocker support assembly comprising:
a support body defining a top face surface, a bottom face surface and side edge surfaces, the bottom face surface of said support body having dimensions adapted for permitting positioning of the at least one actuation switch beneath said bottom face surface
means extending from the support body beneath the bottom face surface and being engageable with the at least one actuation switch for maintaining the at least one actuation switch in a desired orientation relative to the support body;
means, extending from the support body beneath the bottom face surface of the support body and being engageable with the receiving surface for affixing the support body to the receiving surface while permitting limited rocking movement of the support body thereabout upon application of a twisting moment to the support body; and
means coupled to and extending beneath the bottom face surface of the support body for engaging with the face surface of the actuation switch, said means for engaging being operative to abut against the face surface of the actuation switch and to generate the actuation force to actuate the actuation switch responsive to times in which the twisting moment applied to the support body causes pivotal movement thereof in a first direction.

5,338,910

WALL CONTROLLER

Powell Tsai, No. 76, Wei Daw II St., Lai Tsuoh Li, Taichung, Taiwan

Filed Feb. 12, 1993, Ser. No. 17,271
Int. Cl.[5] H01H 15/02
U.S. Cl. 200—547 1 Claim

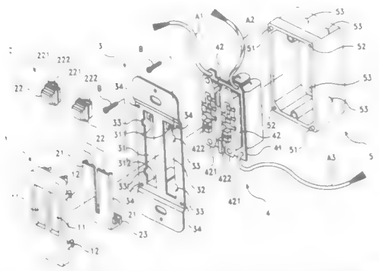
1. A wall controller comprising:
a cover plate made in a rectangular shape having two slide slots, and pairs of back hooks;
a switch control slide assembly, said switch control slide

VOL 1165 ISS 3 AG 16 1994 UMI

assembly comprising two vertical parallel rails, two control slides respectively mounted and slid on said rails and extended out of said cover plate through said slide slots, and angle strip horizontally connected to said vertical parallel rails at bottom end thereof, each control slide having a resilient mounting portion for inserting said rail, and a recessed hole;

a mounting plate connected to said cover plate to hold said switch control slide assembly therebetween, said mounting plate comprising two switch slots corresponding to said slide slots on said cover plate, two downward hooks respectively projected from said switch slots at top end thereof, a horizontal support extends backward from said switch slot at bottom end thereof, pairs of retaining notches, on which said back hooks of said cover plate are hooked respectively, and round holes at four corners of said mounting plate around said switch slots;

a control circuit assembly supported on said horizontal support of said mounting plate, said control circuit assembly comprising two switching devices mounted on a circuit board by two face panels, said face panels being



respectively inserted in said switch slots on said mounting plate and hooked between said downward hooks of said mounting plate and said angle strip of said switch control slide assembly, each switching device being respectively engaged into said recessed hole on either said control slide and moved by the respective control slide to control the speed of rotation of a ceiling fan or the intensity of light of a lighting fixture, said circuit board comprising a lighting fixture neutral wire, a hot wire, and a ceiling fan neutral wire; and

a junction box being made in the shape of a rectangular box connected to said mounting plate to hold said control circuit assembly inside said junction box, said junction box comprising two pins at two diagonal front corners thereof fitted into two corresponding round holes on said mounting plate, two round holes at the other two diagonal front corners thereof respectively connected to the other two round holes on said mounting plate by screws, a plurality of wire holes on the back thereof, through which said lighting fixture neutral wire, said hot wire and said ceiling fan neutral wire are respectively inserted.

5,338,911

MICROWAVE SUSCEPTOR WITH ATTENUATOR FOR HEAT CONTROL

Lawrence C. Brandberg, Minneapolis; Denise E. Hanson, Elk River, and Jeffrey T. Watkins, St. Paul, all of Minn., assignors to Golden Valley Microwave Foods Inc., Edina, Minn.

Continuation of Ser. No. 456,159, Dec. 22, 1989, Pat. No. 4,970,358. This application Oct. 19, 1990, Ser. No. 601,451

The portion of the term of this patent subsequent to Nov. 13, 2007, has been disclaimed.

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—759 **24 Claims**

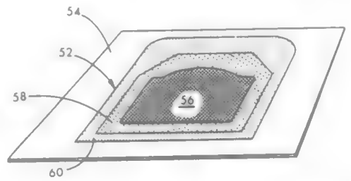
1. A microwave susceptor construction comprising:

(a) a backing; and,

(b) microwave susceptor material positioned on said backing; said microwave susceptor material including:

(i) a sufficient amount of microwave active material for heating of said susceptor material upon absorption of microwave energy of appropriate wavelength; and,

(ii) mineral hydrate attenuator material containing bound



water; said mineral hydrate attenuator material exhibiting dissociation of water upon a selected absorption of heat; said mineral hydrate attenuator material being provided: in heat conductive relationship with said microwave active material; and, in an amount sufficient to absorb heat and selectively inhibit overheating of said microwave susceptor construction during use.

5,338,912

AUTOMATIC BROKEN WIRE REPAIRING METHOD FOR WIRE ELECTRIC DISCHARGE MACHINING DEVICES

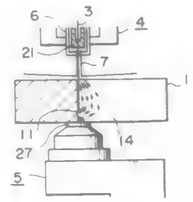
Takeshi Iwasaki; Takeshi Yatomi; Shigeaki Naka, and Toshio Suzuki, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 766,084

Claims priority, application Japan, Sep. 28, 1990, 2-257437

Int. Cl.[5] B23H *7/10*

U.S. Cl. 219—69.12 **8 Claims**



5. An automatic repairing method for a broken wire electrode of a wire electrode electric discharge machining device, comprising the steps of:

stopping an electrical discharge machining operation upon detection of an occurrence of breaking of a wire electrode;

feeding replacement wire electrode from a feeding-side wire guide unit to a receiving-side wire guide unit of the wire electrode electric discharge machining device at a breaking position of the broken wire electrode, to insert the replacement wire electrode through a machined groove of a workpiece near a machining front and to span the replacement wire electrode across the feeding-side wire guide unit to the receiving-side wire guide unit;

wherein a liquid supplied to the feeding-side wire guide unit is sucked to the receiving-side wire guide unit via the machined groove of the workpiece during said feeding step, such that an attitude of the replacement wire electrode is constrained by a flow of the liquid within the machined groove of the workpiece; and

turning on a machining power source and restarting the electrical discharge machining after said replacement wire electrode is spanned across the feeding-side wire guide unit to the receiving wire guide unit.

5,338,913

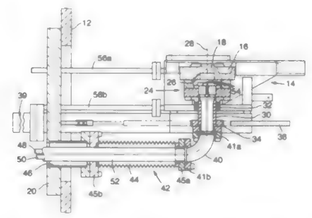
ELECTRON BEAM GUN WITH LIQUID COOLED ROTATABLE CRUCIBLE

Peter W. Finn, Fremont; Larry F. Willitzer, Rodeo, both of Calif., and Karl-Heinz Maurer, Nuertingen, Fed. Rep. of Germany, assignors to TFI Telemark, Fremont, Calif.

Filed Dec. 28, 1992, Ser. No. 997,596

Int. Cl.[5] B23K *15/00*

U.S. Cl. 219—121.16 **9 Claims**



1. An electron beam gun assembly comprising, in combination;

a crucible, means for rotating said crucible about an axis, an elongate housing means extending at an angle to said axis; and

inlet and outlet flexible crucible cooling tubes passing through said housing means and connected to said crucible support structure for passing cooling fluid to cool said crucible;

said housing including an elongate metallic bellows which varies in length as said crucible rotates.

5,338,914

THERMAL CUTTING MACHINE

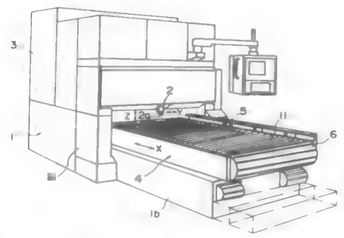
Kenji Omote, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,316

Claims priority, application Japan, Mar. 11, 1992, 4-052403; May 1, 1992, 4-112503

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.67 **20 Claims**



1. A thermal cutting machine for cutting a workpiece, said machine comprising a workpiece table for supporting the workpiece and for moving the workpiece in the X-axis direction, and a machining nozzle for emitting a heat source against the workpiece positioned on the workpiece table, said machining nozzle being movable in a Y-axis direction path which is perpendicular to the X-axis direction; wherein said workpiece table comprises:

a chain conveyor having a pair of parallel spaced-apart endless chains;

a grid table composed of grid elements laterally spanning the space between said chains and being supported by said chains, said chain conveyor being positioned such that at least one grid element is located in a position which corresponds to the Y-axis direction path of said machining nozzle; and

a retracting means for retracting the at least one grid element which is located in the position which corresponds to the Y-axis direction path of said machining nozzle, by depressing the part of the chains supporting said at least one grid element.

5,338,915

PROCESS FOR TEXTURING THE SURFACES OF WORKPIECES WITH A LASER BEAM

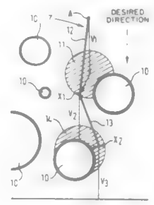
Peter Hildebrand, Pfronten; Gunter Eberl, Waltenhofen; Josef Neumaier, Pfronten-Steinach, and Peter Wrba, Unterthingau, all of Fed. Rep. of Germany, assignors to MAHO Aktiengesellschaft, Pfronten, Fed. Rep. of Germany

Filed Oct. 8, 1992, Ser. No. 958,252

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1991, 4133620

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.69 **23 Claims**



1. A process for texturing a surface of a workpiece with a laser beam controlled by a control unit, comprising the steps of:

determining a trajectory (2);

determining a plurality of desired points (3) on the trajectory that divides the trajectory (2) into a plurality of segments (4);

determining a surface area associated with each desired point (3); and

selecting a tracking point (6) within each surface area (5) by arbitrary selection;

determining a tracking line (7) using tracking points (6) on the surface of the workpiece (1) to be processed; and

tracing the laser beam along the tracking line (7) under control of the control unit.

5,338,916

CONTROL CIRCUIT FOR ALTERNATING CURRENT TIG WELDER

George D. Blankenship, Chardon; Michael D. Hoffa, Euclid, and Gary A. Mikitin, Mayfield Hts., all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Filed Apr. 26, 1993, Ser. No. 53,090

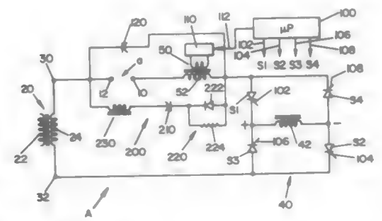
Int. Cl.[5] B23K *9/073*

U.S. Cl. 219—130.4 **23 Claims**

1. In an A.C. TIG welder for passing a current across an arc gap between a workpiece and a non-consumable electrode alternately between a first direction of an arc current flow with the electrode negative and a second direction of arc current flow with said electrode positive, said welder comprising a transformer with a load voltage creating secondary winding in series with said gap and with a squaring circuit, said squaring circuit comprising a choke a first SCR controlled switching

VOL 1165 ISS 3 AG 16 1994 UMI

circuit for passing current through said choke in a given flux creating direction when said arc current is passing in said first direction and a second SCR controlled switching circuit for passing current through said choke in said given flux creating direction when said arc current is passing in said second direction, and control means for activating said first switching circuit at a first time when said load voltage is at a first polarity and said second switching circuit at a second time when said load voltage is at a second polarity, the improvement comprising: a current control circuit connected in parallel with said arc



gap, said current control circuit having energy storing means, charging means for allowing said energy storing means to be charged rapidly according to the voltage across said arc gap tending to cause current flow across said gap and, discharge means for controlling discharge of said energy storing means across said gap when an arc is created across said gap by current flow whereby said energy storage means being charged and discharged in the same arc current flow direction, said energy storage means discharging across said arc gap a high voltage pulse to form an arc in the absence of said arc across said arc gap.

5,338,917

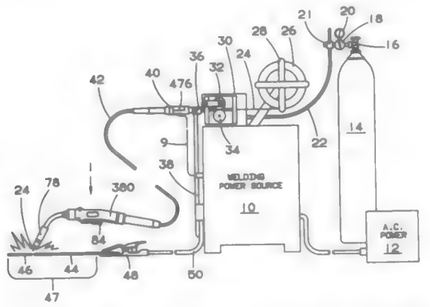
ERGONOMIC WELDING GUN WITH QUICK DISCONNECT CABLE ASSEMBLY

Kyle H. Stuart, and Dale R. Bervig, both of Wichita, Kans., assignors to Tweco Products, Inc., Wichita, Kans.

Filed Feb. 26, 1992, Ser. No. 843,322

Int. Cl.[5] **B23K** *9/173*

U.S. Cl. 219—137.63 **12 Claims**



1. A welding system including a conventional elongate coaxial cable connected on one end to an air cooled MIG welding gun and on the other end to a rear connector, the combination being connected to a conventional power source which provides inert shielding gas, continuous welding wire and electricity which is conveyed through the rear connector, through the conventional coaxial welding cable to the MIG welding gun, the welding cable having an exterior tubular layer of insulation, a hollow tubular layer of copper stranding underneath the layer of exterior insulation, a hollow gas hose positioned inside the hollow tubular layer of copper stranding, a welding wire feed tube positioned inside the hollow gas hose and control wires positioned underneath the exterior insulation and running the length of the elongate coaxial welding cable, the welding system comprising in combination:

a. a quick disconnect cable assembly for releasably connecting one end of a conventional elongate coaxial welding cable to said MIG welding gun and for releasably connecting the other end of the cable to a rear connector, having:

1) a first interchangeable cable connector attached to one end of the elongate coaxial welding cable, said first interchangeable cable connector having an elongate central bore for conveying the shielding gas and the continuous welding wire, said first interchangeable cable connector including an elongate extension having two tubular segments, the first tubular segment sized and arranged to engage the interior of the gas hose and the second tubular segment having a larger diameter than said first segment and sized and arranged to engage the interior of the tubular layer of copper stranding;

2) first means for connecting the copper stranding to said second tubular segment of said extension of said first interchangeable cable connector;

3) first means for releasably attaching said first interchangeable cable connector and the coaxial welding cable to said welding gun or the rear connector, said attachment being accomplished without having to completely disassemble said MIG welding gun or the rear connector;

4) first means for releasably attaching the control wires to complimentary control wires in said MIG welding gun or the rear connector;

5) first means for providing a gas seal between said elongate central bore of said first interchangeable cable connector and said MIG welding gun or said rear connector;

6) a second interchangeable cable connector attached to the other end of the elongate coaxial welding cable, said first interchangeable cable connector having an elongate central bore for conveying the shielding gas and the continuous welding wire, said second interchangeable cable connector including an elongate extension having two tubular segments, the first tubular segment sized and arranged to engage the interior of the gas hose and the second tubular segment having a larger diameter than the first segment and sized and arranged to engage the interior of the tubular layer of copper stranding;

7) second means for connecting the copper stranding to said second tubular segment of said extension of said second interchangeable cable connector;

8) second means for releasably attaching said second interchangeable cable connector and the coaxial welding cable to the rear connector on said MIG welding gun, said attachment being accomplished without having to completely disassemble the rear connector or said MIG welding gun;

9) second means for releasably attaching the control wires to complimentary control wires in the rear connector or said MIG welding gun;

10) second means for providing a gas seal between said elongate central bore of said second interchangeable cable connector and said MIG welding gun or the rear connector; and

11) said first interchangeable cable connector and said second interchangeable cable connector being substantially the same so said first interchangeable cable connector can also be attached to either said MIG welding gun or the rear connector and said second interchangeable cable connector can also be attached to either said MIG welding gun or to the rear connector to allow the ends of the cable to be switched between said MIG welding gun and the rear connector without having to completely disassemble either said MIG welding gun or the rear connector;

b. said MIG welding gun having:

1) a conductor tube assembly including:

a) a rigid elongate hollow conductor tube for conveying shielding gas and continuous welding wire, said conductor tube having a first end and a second end;

b) said first end of said conductor tube having a ball-shaped protrusion formed on the terminus thereof;

c) a gas diffuser threadably engaging said second end of said conductor tube, said gas diffuser including:

i) an upper interior chamber and a lower interior chamber divided by an interior shoulder with a central bore passing through said interior shoulder, said bore allowing communication between said upper chamber and said lower chamber;

ii) a plurality of gas passageways in said gas diffuser allowing shielding gas to pass from said upper interior chamber to the exterior of said gas diffuser to form a shielding blanket of inert gas about the welding wire; and

iii) a protrusion extending into the lower chamber of said gas diffuser;

d) an elongate contact tip being generally cylindrical in shape with a central bore running from the first end to the second end for the passage of continuous welding wire, said contact tip including:

i) a tangential flat surface formed on said first end of said contact tip allowing said contact tip to freely slip into said lower chamber of said gas diffuser, avoiding said protrusion;

ii) a channel cut in the outer circumference of said contact tip through said flat surface, said channel receiving said protrusion when said contact tip is rotated in said lower chamber of said gas diffuser, removably wedging said contact tip in place in said diffuser;

iii) a circumferential shoulder formed on said contact tip near said first end to contact said gas diffuser for improved transmission of electricity and heat through said gas diffuser and said contact tip; and

2) a handle assembly including:

a) a hollow handle having an oval shaped upper surface and a protruding rectangular shaped lower surface, the handle having a gentle downward bend in the rear portion of approximately 10° or more from the longitudinal axis to facilitate grasping of said handle by the operator;

b) an elongate trigger pivotally attached to said handle for actuating the power source to provide shielding gas, continuous welding wire and electricity to said MIG welding gun;

c) a connector block positioned inside said handle having a spherical socket formed in the front end thereof, said socket sized and arranged to receive said ball-shaped protrusion of said conductor tube, said connector block having a central bore in communication with said spherical socket for conveying shielding gas and welding wire; and

d) means for applying pressure to said ball-shaped protrusion and said connector block to allow said conductor tube to rotate 360° about the centerline of said handle and to articulate approximately 15° or more in a conical area extending from said front end of said connector block.

5,338,918

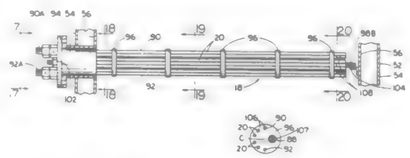
HEAT GENERATOR ASSEMBLY IN A MATERIAL PROCESSING APPARATUS

Roger D. Eshleman, 506 Clayton Ave., Waynesboro, Pa. 17268

Filed Dec. 9, 1992, Ser. No. 987,936

Int. Cl.[5] **F27D** *11/02*

U.S. Cl. 219—411 **15 Claims**



1. A heat generator assembly, comprising:

(a) a pair of elongated electrically-conductive positive and negative electrodes each having spaced opposite end portions;

(b) a plurality of elongated electric heating elements each having spaced opposite end portions and being constructed of electrically-resistive material operable for emitting heat radiation; and

means for supporting said positive and negative electrodes and said electric heating elements in spaced apart and substantially parallel relation to one another between said respective opposite end portions thereof; said supporting means including

(i) an elongated support member having spaced opposite end portions, and

(ii) a plurality of spacer elements supported along said support member in spaced relation from one another between said opposite end portions thereof, said spacer elements supporting said positive and negative electrodes and said elongated electric heating elements at spaced locations between said opposite end portions thereof so as to position said positive and negative electrodes and said electric heating elements in spaced apart and substantially parallel relation to one another between said opposite end portions thereof,

(iii) each of said spacer elements being an electrically-insulative disc having a center, an array of holes arranged in asymmetrical relation to said center and permitting passage therethrough of said positive and negative electrodes and said electric heating elements and an aperture offset from said center away from said array of holes and permitting passage therethrough of said elongated support member; and

(d) means for electrically connecting selected ones of said opposite end portions of said electric heating elements with selected ones of said opposite end portions of said positive and negative electrodes so as to define at least one electrical circuit path between said positive and negative electrodes and through said electric heating elements.

5,338,919

HEATER FOR SHEET MATERIAL AND METHOD FOR ADJUSTING RESISTANCE OF SAME

Fumiaki Tagashira; Shigeo Ota; Shinya Yukawa, and Shingo Ooyama, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 21, 1992, Ser. No. 993,668

Claims priority, application Japan, Dec. 28, 1991, 3-359320; Dec. 28, 1991, 3-359327

Int. Cl.[5] **H05B** *3/16*

U.S. Cl. 219—543 **13 Claims**

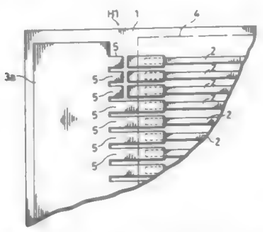
1. A heater for a sheet material comprising:

an electrically insulating substrate; and

a plurality of resistor strips formed on the substrate to extend side by side between first and second electrodes;

VOL 1165 ISS 3 AG 16 1994 UMI

wherein at least one of the resistor strips is electrically connected to both of the first and second electrodes while at least another of the resistor strips is electrically separated from the first electrode; and



wherein the first electrode has a plurality of integral comb-like teeth, at least one of the comb-like teeth being severed between the first electrode and said at least another resistor strip.

5,338,920

METHOD OF MANUFACTURING AND JOINING ELECTRO-FUSION FITTING

Shigeru Okuaka; Hideki Kasa; Masayuki Sakaguchi; Junsuke Kyomen, and Takashi Tago, all of Osaka, Japan, assignors to Metcal, Inc., Menlo Park, Calif. and Kubota Corporation, Japan

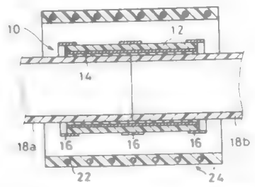
PCT No. PCT/JP91/01647, § 371 Date Aug. 28, 1992, § 102(e) Date Aug. 28, 1992, PCT Pub. No. WO92/09842, PCT Pub. Date Nov. 6, 1992

PCT Filed Nov. 29, 1991, Ser. No. 915,849

Claims priority, application Japan, Nov. 30, 1990, 2-339048

Int. Cl.[5] H05B *6/10;* **F16L** *47/02*

U.S. Cl. 219—633 **8 Claims**



1. A method of joining an electro-fusion fitting and a member to be joined made of a first synthetic resin material and having a first joint surface to each other, comprising the steps of:

(a) preparing an electro-fusion fitting including a body made of a second synthetic resin material and having a second joint surface along said first joint surface of said member to be joined and a magnetic alloy member so formed as to be continuous in an axial direction generally on said second joint surface of said body, said first and second synthetic resin materials respectively having first and second fusion temperatures, said magnetic alloy member having a Curie temperature equal to or higher than said first and second fusion temperatures and below temperatures that would damage the resin materials;

(b) fixing said member to be joined and said electro-fusion fitting to each other in a state where said first joint surface and said second joint surface are in contact with each other; and

(c) applying high frequency current to said magnetic alloy member in a region where a joint is to be formed, and

(d) preventing electromagnetic radiation from linking a region of at least one of the member and the fitting to produce a cold zone between the regions where fusion occurs.

5,338,921

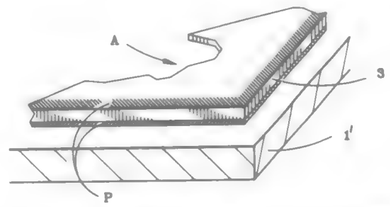
METHOD OF DISTRIBUTING HEAT IN FOOD CONTAINERS ADAPTED FOR MICROWAVE COOKING AND NOVEL CONTAINER STRUCTURE

David Maheux, Laconia, and Robert Tomich, Concord, both of N.H., assignors to Universal Packaging Corporation, Concord, N.H.

Filed Feb. 16, 1993, Ser. No. 17,808

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—730 **22 Claims**



1. A method of uniformly distributing the heat generated by microwave interaction with a thin, flexible and non-self-supporting metallized film carried adjacent and co-extending over a substantial area of an inner wall of a disposable container for food to be exposed to microwave energy, as in an oven, that comprises, adhering the periphery of said metallized film to said wall peripherally to mount the film with substantially its major intermediate area loosely and flexibly spaced from said wall to define an air pocket between the film and said wall, and exposing the container with food therein to microwave-interacting heat generated along the metallized film, as it flexes in response to such convection, more uniformly to heat, crisp and/or brown the food in the container.

5,338,922

TRAY EXTENDING APPARATUSES FOR AN OVEN

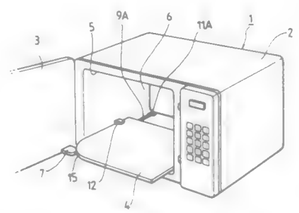
Young D. Kim, and Sung H. Hong, both of Suweon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 12, 1993, Ser. No. 17,514

Claims priority, application Rep. of Korea, Feb. 17, 1992, 92-2265[U]; Feb. 17, 1992, 92-2266[U]

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—763 **6 Claims**



1. In an oven having a housing forming a cooking chamber having a front opening, and a door connected to a front side of said housing for opening and closing said opening, a food-supporting tray disposed in said chamber, said tray including front and rear edges interconnected by side edges, first and second mounting means disposed adjacent respective side edges of said tray for supporting said tray for forward and rearward movement in said chamber and for converting gravitational force acting on said tray into a force displacing a front portion of said tray forwardly through said opening when said door is open, each of said first and second mounting means comprising roller means carried by one of said tray and housing and disposed in channel means carried by the other of said tray and housing, said roller means being rotatable about a horizontal axis extending transversely of said side edges and being shaped such that a largest cross section of said roller means lies at the axial center thereof, said cross section becoming progressively smaller toward each axial end, said channel means including opposite front and rear ends one of which being horizontally wider than the other, said wider end being shorter than an axial length of said roller means so that said roller means engages horizontally spaced sides of said channel means and so that gravity biases said roller means toward said wider end of said channel means, a front portion of said tray projecting outwardly through said front opening when said roller means is at said wider end, said door including a surface arranged to push said tray rearwardly into said chamber against the bias of gravity when said door is closed.

5,338,923

SYSTEM FOR THE EXCHANGE OF DATA BETWEEN AN ELECTRONIC OBJECT COUPLED TO A TRANSFER DEVICE WITH DISTINCT DATA BIT RATES, INSERTABLE OBJECT AND CORRESPONDING TRANSFER DEVICE

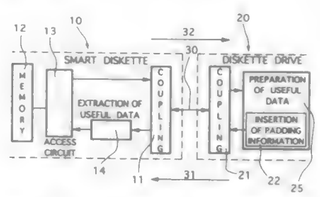
Francois Grieu, Paris, France, assignor to Smartdiskette GmbH, Idstein/TS, Fed. Rep. of Germany

Filed Apr. 16, 1992, Ser. No. 869,784

Claims priority, application France, Apr. 25, 1991, 91 05369

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—492 **13 Claims**



1. A system for the exchange of data between at least one movable, insertable electronic object and at least one transfer device,

said insertable object comprising an electronic memory associated with an access circuit and coupling means enabling the temporary coupling of said insertable object with said transfer device;

said transfer device comprising means for the transfer of data between the memory of the insertable object and the transfer device;

said insertable object emulating a magnetic recording support with respect to a magnetic read/write head of the transfer device, the data exchange bit rate of the transfer device being greater than that of the access circuit of the memory of the insertable object, wherein said system comprises means to limit the bit rate of useful data in the apparent bit rate of data entering and leaving the transfer device, so that it is compatible with the bit rate leaving and entering the access circuit of the memory of the insertable object, said means to limit the bit rate consisting of at least one means belonging to the group including the redundant coding and the n times ($n \geq 2$) replication of at least certain of said useful data, in the flow of data entering and leaving and the transfer device.

5,338,924

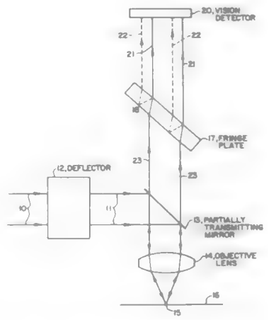
APPARATUS AND METHOD FOR AUTOMATIC FOCUSING OF LIGHT USING A FRINGE PLATE

William A. Barrett, and Amit Puri, both of San Jose, Calif., assignors to Lasa Industries, Inc., San Jose, Calif.

Filed Aug. 11, 1992, Ser. No. 927,959

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.4 **20 Claims**



1. A fringe focus apparatus comprising:

a) a light beam, which is planar, parallel, and monochromatic,

b) a deflector through which the light beam passes, which scans the beam through a range of angles,

c) an objective lens with a focal point, placed such that the light beam passes through the lens and focuses to the focal point,

d) a work surface in the line of the optic axis of the lens and in the vicinity of or at the focal point, the light beam striking the work surface, and reflecting off it,

e) a fringe plate positioned in the path of the light beam after it reflects off the work surface, and passes back through the lens,

f) a vision detector on which are formed interference patterns from the interference of the light beam split by passing through the fringe plate,

g) a means for processing the signal from the vision detector while the light beam is scanned through an angle to determine if the signal is characteristic of a focused or unfocused condition of the light beam on the work piece, and

h) a means for changing the position of the lens relative to the work piece.

5,338,925

APPARATUS FOR SIMULTANEOUSLY DETECTING A PLURALITY OF DISCRETE LASER MODULATION FREQUENCIES HAVING CIRCUITRY FOR BACKGROUND RADIATION CANCELING

William F. Matthews, Wilton, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 17, 1993, Ser. No. 47,331

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 B **19 Claims**

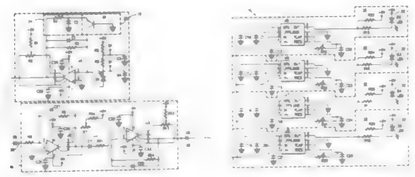
1. An apparatus for simultaneously detecting a plurality of discrete laser modulation frequencies; said apparatus comprising:

a laser detector circuit having means for canceling background radiation, said laser detector circuit generating an output signal containing all laser modulation frequencies of an illuminating light;

a signal amplifier stage, said signal amplifier stage being adapted to receive and amplify said output signal generated by said laser detector circuit and provide an amplified output signal; and

VOL 1165 ISS 3 AG 16 1994 UMI

at least one discrete frequency detection circuit, each said discrete frequency detection circuit including means for



providing an output signal in response to the presence of a preselected laser modulation frequency in said amplified output signal.

5,338,926

X-RAY IMAGING TUBE HAVING A LIGHT-ABSORBING PROPERTY

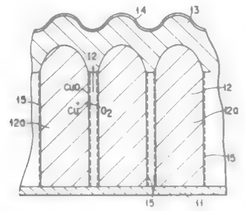
Atsuya Yoshida, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 22, 1992, Ser. No. 886,824

Claims priority, application Japan, May 24, 1991, 3-120178; May 13, 1992, 4-120775

Int. Cl.[5] H01J *1/62*

U.S. Cl. 250—214 VT **12 Claims**



1. An X-ray image intensifier comprising:

an input phosphor screen which includes a substrate,

a discontinuous phosphor layer formed on said substrate, and

a continuous phosphor layer formed on said discontinuous phosphor layer, said discontinuous phosphor layer comprising:

a plurality of columnar crystals separated from each other and containing a substance for absorbing light emitted from a phosphor upon incidence of an X-ray,

light absorbing layers containing a compound of said substance and having a concentration of said substance higher on outer surfaces thereof than that in interiors thereof being integrally formed on adjacent side surfaces of said columnar crystal, said light-absorbing layers are not present at an interface between said discontinuous phosphor layer, said light-absorbing layer comprising one of an oxide layer and a nitride layer which is formed by heat-treating said continuous and discontinuous phosphor layer in an atmosphere of one of oxygen and nitrogen, and

a gap between said adjacent surfaces of said columnar crystals is no less than 0.1 μm.

5,338,927

PROXIMITY FOCUSING IMAGE INTENSIFIER TUBE WITH SPACER SHIMS

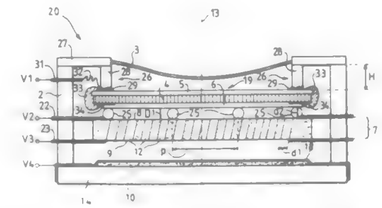
Paul de Groot, St Ismier, and Yves Beauvais, St Egreve, both of France, assignors to Thomson Tube Electroniques, Velizy, France

Filed Jan. 29, 1993, Ser. No. 10,781

Claims priority, application France, Jan. 31, 1992, 92 01090

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 VT **11 Claims**



1. An image intensifier tube for converting input radiation to amplified light output, said tube comprising a primary screen and a slab of microchannels wherein said slab has a central region and an outer region, the primary screen comprising a scintillator borne by a supporting plate and photocathode borne by the scintillator, the photocathode facing an input face of the slab of microchannels, wherein the primary screen is fixedly joined to the slab of microchannels by at least one insulator shim located in said central region of said slab of microchannels.

5,338,928

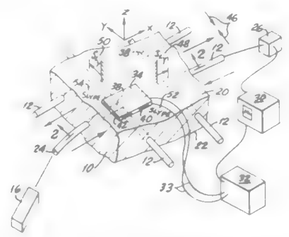
SYSTEM AND METHOD FOR CONTROLLING DEFORMATION OF A STRUCTURE HAVING A PHASE SHIFT DETECTOR

James R. Jamieson, Maineville; Ahmad P. Zahedi, Cincinnati, and Heidi J. Stegemiller, Franklin, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 28, 1993, Ser. No. 55,169

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—227.21 **20 Claims**



1. A system for controlling deformation of a structure, comprising:

a composite material;

a plurality of optical fibers embedded within said composite material;

a light source connected to one end of each of said optical fibers;

a light phase shift detector connected to an opposite end of each of said optical fibers;

a plurality of piezoelectric actuators connected to said material; and

control means connected to said light phase shift detector and to said piezoelectric actuators for providing an excitation voltage to said piezoelectric actuators as a function of phase shift of light transmitted from said light source to said light phase shift detector.

5,338,929

MICROMACHINED SENSOR DEVICE USING A BEAM OF LIGHT WITH A FREQUENCY SWEPT MODULATED INTENSITY TO ACTIVATE AT LEAST TWO RESONANCE MODES OF THE SENSOR ELEMENT

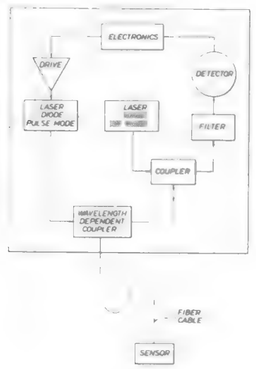
Bindert S. Douma, and Peter Eigenraam, both of CM Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 2, 1993, Ser. No. 24,995

Claims priority, application European Pat. Off., Mar. 30, 1992, 92200910.5

Int. Cl.[5] G01L *1/10*

U.S. Cl. 250—231.1 **34 Claims**



1. A method for monitoring strain variations of a strain responsive element of a micromachined sensor device, the method comprising the steps of:

(a) irradiating said element by a beam of light with at least frequency swept modulated intensity for activating said element such that at least two oscillation resonance modes are activated subsequently at their resonance frequencies;

(b) determining frequency characteristics of said device when subjected to predefined parameter conditions by measuring the corresponding resonance frequencies of two said resonance modes at said predefined parameter conditions;

(c) determining correspondingly two parameter values for said device by fitting the measured resonance frequencies upon the corresponding frequency characteristics;

(d) subjecting said element to outside parameter conditions; and

(e) detecting the beam of light after being modified correspondingly by said activated element.

5,338,930

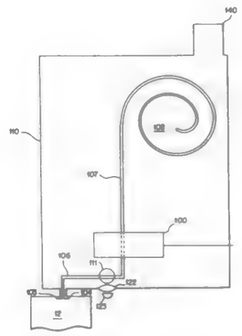
FREQUENCY STANDARD USING AN ATOMIC FOUNTAIN OF OPTICALLY TRAPPED ATOMS

Steven Chu, Stanford, Calif.; Carl Weiman, Boulder, and William Swann, Jamestown, both of Colo., assignors to Research Corporation Technologies, Tucson, Ariz.

Continuation of Ser. No. 708,394, May 31, 1991, which is a continuation-in-part of Ser. No. 531,754, Jun. 1, 1990, abandoned, and a continuation-in-part of Ser. No. 561,995, Aug. 2, 1990, abandoned. This application Nov. 24, 1992, Ser. No. 983,093

Int. Cl.[5] H05H *3/02*

U.S. Cl. 250—251 **12 Claims**



8. An optical trap comprising:

means for generating a plurality of laser beams;

means for forming a vacuum around a three dimensional target area;

means for forming a vacuum around the optical trap;

means for introducing a predetermined species of atoms into the target area;

means for introducing a predetermined species of atoms into the vacuum;

means for directing the laser beams to the three dimensional target area such that the net light pressure is zero in the target area;

means for changing the frequency of two laser beams in at least one direction so as to make the light pressure in the target area nonuniform in said at least one direction; and

means for magnetically guiding the atoms along a predetermined path.

5,338,931

PHOTOIONIZATION ION MOBILITY SPECTROMETER

Glenn E. Spangler, Lutherville; Joseph E. Roehl, Baltimore, both of Md.; Gautam B. Patel, New Freedom, Pa., and Alvin Dorman, Baltimore, Md., assignors to Environmental Technologies Group, Inc., Baltimore, Md.

Filed Apr. 23, 1992, Ser. No. 872,311

Int. Cl.[5] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—287 **24 Claims**

1. An improved photoionization ion mobility spectrometer system for the detection of ionizable chemical species, comprising:

(a) a housing having a main chamber therein, said main chamber comprising a photoionization chamber and a drift chamber;

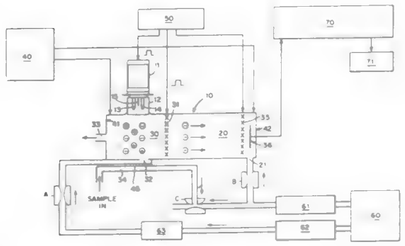
(b) drift gas inlet passage in communication with said drift chamber for entering a drift gas therethrough;

(c) an exhaust passage in communication with said photoionization chamber for exiting said drift gas;

(d) pumping means for forcing said drift gas to travel in said main chamber in a first direction;

VOL 1165 ISS 3 AG 16 1994 UMI

(e) a carrier gas inlet passage in communication with said photoionization chamber for introducing a carrier gas into said photoionization chamber;
(f) a gas sample inlet means in communication with said photoionizaton chamber for introducing a gas sample to be analyzed into said photoionization chamber;
(g) a lamp means exposed to said photoionization chamber for ionizing said gas sample therein to form ionized gas sample, said lamp means comprising
(i) an electrical pulse transformer,
(ii) a flashlamp filled with about two atmospheres of noble gas and sealed with a window for transmitting light with desired wavelength, and



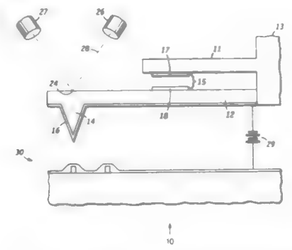
(iii) said flashlamp further containing two electrodes and at least one trigger probe, said trigger probe being connected to said pulse transformer and said electrodes being connected to a capacitor of high energy, said capacitor being adapted to discharge when a trigger pulse from said pulse transformer causes an ionization of said noble gas in said flashlamp and a discharge of said capacitor;
(h) electrode means for driving said ionized gas sample in said main chamber in a second direction countercurrent to said first direction; and
(i) detector means placed in said drift chamber for detecting said ionized gas sample.

5,338,932

METHOD AND APPARATUS FOR MEASURING THE TOPOGRAPHY OF A SEMICONDUCTOR DEVICE

N. David Theodore, Mesa, and Juan P. Carrejo, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1993, Ser. No. 168
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—306 **25 Claims**



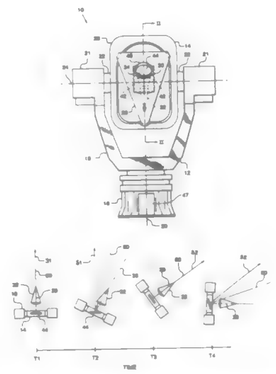
1. A method of measuring the topography of a semiconductor device comprising:
providing a semiconductor device having a surface;
providing a variable flexibility probe having a tip projecting perpendicularly from a first surface of the variable flexibility probe wherein the variable flexibility probe is electrically coupled to a scanning tunneling microscope;
establishing a first stiffness of the variable flexibility probe;
placing the tip at a first point that is a first distance above the surface;
applying a tunneling voltage between the tip and the surface;
measuring a first tunneling current;
moving the tip to a second point that is in a plane wherein the plane includes the first point and is substantially parallel to the semiconductor device;
measuring a second tunneling current;
returning the tip to the first point;
removing the tunneling voltage;
establishing a second stiffness of the variable flexibility probe wherein the second stiffness is less than the first stiffness;
moving the tip perpendicularly toward the surface to a third point on the surface;
measuring a first repulsive force;
moving the tip to a fourth point on the surface wherein the fourth point is displaced perpendicularly toward the surface from the second point;
measuring a second repulsive force;
moving the tip to a fifth point on the surface; and
measuring a third repulsive force.

5,338,933

SCANNING OPTICAL SENSOR

Robert D. Reeves, Aurora, and T. Garry Brown, Toronto, both of Canada, assignors to Spar Aerospace Limited, Brampton, Canada

Filed Feb. 2, 1993, Ser. No. 12,413
Int. Cl.[5] G02B *26/10*
U.S. Cl. 250—334 **17 Claims**

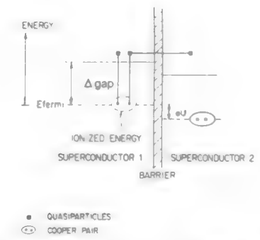


5,338,934

RADIATION DETECTING DEVICE AND METHOD FOR FABRICATING THE SAME

Shinichi Morohashi, and Satoshi Komiya, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 16, 1993, Ser. No. 92,614
Claims priority, application Japan, Jul. 17, 1992, 4-199126; Oct. 19, 1992, 4-280002
Int. Cl.[5] H01L *31/00*
U.S. Cl. 250—336.2 **32 Claims**



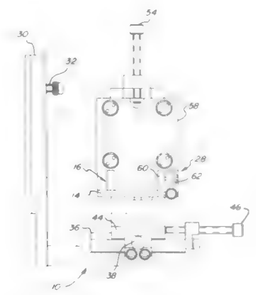
1. A radiation detecting device comprising a substrate, a first superconductor layer formed on the substrate, a barrier layer formed on the first superconductor layer, and a second superconductor layer formed on the barrier layer, a junction formed of the first superconductor layer, the barrier layer and the second superconductor layer receiving radiation for detection thereof,
the first superconductor layer being a Ta layer,
the barrier layer including a TaOx layer, an AlOx layer, a HfOx layer or a ZrOx layer,
a radiation stopping layer of a material having a large radiation stopping power being formed on the underside of the substrate, and
an opening being formed in the substrate and the radiation stopping layer directly below the junction, radiation being incident to the junction through the opening.

5,338,935

POSITIONING DEVICE FOR INFRARED ACCESSORIES IN FTIR SPECTROMETERS

William L. Truett, P.O. Box 2162, West Brattleboro, Vt. 05302, and Jeffrey L. Tosi, 42 Oak Hill Acres, Hinsdale, N.H. 03451

Filed Sep. 25, 1992, Ser. No. 951,138
Int. Cl.[5] G01N *21/35*
U.S. Cl. 250—339.06 **18 Claims**



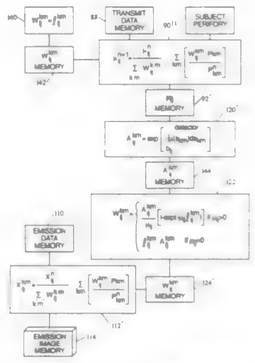
1. For use with an FTIR spectrometer having an infrared detector, a sample positioning assembly for positioning a sample to be analyzed in a precise position relative to the detector, comprising;
(a) a base;
(b) a stage movably supported on said base, said base including positioning means for moving said stage in X, Y and Z axes relative to said base;
(c) a sample holder supported on said stage for movement therewith;
(d) means mounting said holder on said stage for pivotal motion relative to said stage about the Z axis to direct the radiation passing through said sample holder to the detector; and
(e) movement means on said stage for pivoting said sample holder in the X-Y plane relative to said stage and for retaining said sample holder in a controlled position relative to said stage.

5,338,936

SIMULTANEOUS TRANSMISSION AND EMISSION CONVERGING TOMOGRAPHY

Grant T. Gullberg, 789 E. Northcliffe Dr., Salt Lake City, Utah 84103; Hugh T. Morgan, 1040 W. Mill Dr., Highland Heights, Ohio 44143; Chi-Hua Tung, 329 University Village, Salt Lake City, Utah 84108; Gengsheng L. Zeng, 147 S. 1000 E., Apt. #4, Salt Lake City, Utah 84102, and Paul E. Christian, 2944 Brookburn Rd., Salt Lake City, Utah 84109

Continuation-in-part of Ser. No. 712,676, Jun. 10, 1991, Pat. No. 5,210,421. This application Mar. 8, 1993, Ser. No. 27,882
Int. Cl.[5] G01T *1/166*
U.S. Cl. 250—363.04 **25 Claims**



25. In an emission tomographic apparatus which includes a plurality of gamma camera heads, a transmission source opposite at least one of the heads, a means for moving the gamma camera heads and the transmission radiation source around a subject examination region, a collimating means for collimating radiation received by the gamma camera heads, a means for determining an actual periphery of a subject in the examination region, and a reconstruction means for evaluating transmission radiation attenuation properties of transmission radiation received by the at least one gamma camera head and for determining an emission source distribution of radiation emitting sources distributed within the subject, THE IMPROVEMENT COMPRISING:
the reconstruction means using the actual subject periphery determined by the actual periphery determining means and the evaluated transmission radiation attenuation properties for determining the emission source distribution.

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,937

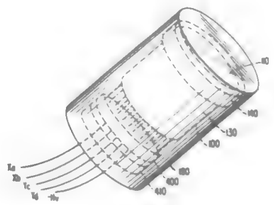
RADIATION IMAGING DEVICE HAVING AN ENLARGED UNIFORM FIELD OF VIEW

Farhad Daghighian, New York; Saul Miodownik, West Hempstead; Peter Shenderov, Brooklyn, and Behzad Eshaghian, New York, all of N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Jun. 14, 1993, Ser. No. 77,015

Int. Cl.[5] G01T *1/20*

U.S. Cl. 250—368 **11 Claims**



1. An imaging apparatus for creating images of radiation emitting objects comprising:

a scintillator for receiving radiation rays and converting the radiation rays into light signals, the scintillator having an edge;

a position sensitive light signal detector optically connected to the scintillator for receiving the light signals; and

a light guide positioned about the edge of the scintillator for channelling light signals which reach the edge of the scintillator away from the scintillator such that the channeled light signals are not received by the position sensitive light signal detector.

5,338,938

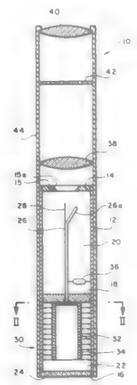
GAMMA RADIATION FIELD INTENSITY METER

Louis H. Thacker, Knoxville, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Apr. 9, 1993, Ser. No. 44,678

Int. Cl.[5] G01T *1/142*

U.S. Cl. 250—377 **12 Claims**



1. A gamma radiation intensity meter, comprising:

a first electrode defining an ionization chamber containing a gas;

a second electrode disposed within the first electrode and having an electroscope element whose position relative to the second electrode is a function of a voltage applied to the second electrode;

constant current source means for establishing a fixed current irrespective of voltage between the first and second electrodes; and

resistance means for establishing a voltage between the first and second electrodes by means of flow of all or part of the constant current applied by the current source means, a fraction of the fixed current substantially linearly proportional to the intensity of a radiation field being shunted through the ionization chamber, thereby changing the potential and the position of the electroscope element,

wherein the constant current source means has an open-circuit voltage of between 18 KV and 63 KV.

5,338,939

CHARGED PARTICLE BEAM EXPOSURE INCLUDING A HEAT BLOCKING PARTITION POSITIONED NEAR DEFLECTING COILS

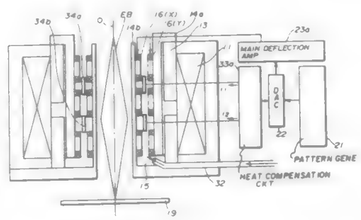
Hisayasu Nishino; Akio Yamada; Yoshihisa Ose, and Hiroshi Yasuda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 39, Jan. 4, 1993. This application May 26, 1993, Ser. No. 67,108

Claims priority, application Japan, Jan. 13, 1992, 4-004195; May 29, 1992, 4-137330

Int. Cl.[5] H01J *3/32*

U.S. Cl. 250—396 ML **19 Claims**



1. A charged particle beam exposure method for deflecting a charged particle beam in a deflection system which includes electromagnetic deflection coils and an electromagnetic lens, said charged particle beam exposure method comprising the steps of:

(a) controlling the deflection system based on deflection data; and

(b) blocking heat radiation from at least the electromagnetic deflection coils by a partition so as to prevent the heat radiation from reaching the electromagnetic lens and to prevent heat conduction to the electromagnetic lens by the partition.

5,338,940

APPARATUS FOR ION IMPLANTATION INCLUDING CONTACTLESS COOLING AND BEAM CURRENT MEASUREMENT MEANS

Kunihiko Takeyama, Kyoto, Japan, assignor to Nissin High Voltage Co., Ltd., Kyoto, Japan

Filed Jul. 21, 1992, Ser. No. 917,208

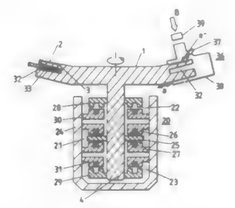
Claims priority, application Japan, Jul. 22, 1991, 3-204543; Jul. 22, 1991, 3-204544

Int. Cl.[5] H01J *37/30*; G21K *5/08*

U.S. Cl. 250—492.2 **16 Claims**

1. An apparatus for ion implantation, comprising:

a wafer disk having wafer receiving faces and a heat dissipating zone, a wafer being mounted on each of said wafer receiving faces; and



cooling means separated from said wafer disk by said heat dissipating zone in a contactless manner for cooling said wafer disk through heat radiation.

5,338,941

RADIATION SHIELDING TRANSPORT CONTAINER FOR IRRADIATED NUCLEAR REACTOR FUEL ELEMENTS AND METHOD OF APPLYING SEALING COATING TO SAME

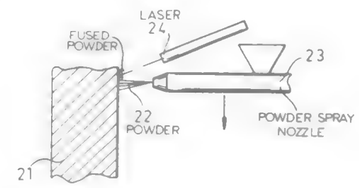
Manfred Sappok, Tönisvorst, Fed. Rep. of Germany, assignor to Siempelkamp Giesserei GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Jan. 27, 1993, Ser. No. 9,460

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1992, 4204527

Int. Cl.[5] G21F *5/00*

U.S. Cl. 250—506.1 **8 Claims**



1. A method of making a radiation shielding container for irradiated nuclear-reactor fuel elements, comprising the steps of:

(a) casting a spherulitic cast iron container body to form surfaces, said container body having a recessed seat for a cover and a cover is received in said seat, said surfaces having open pores in the cast iron;

(b) coating said surfaces with particles of a metal or metal alloy selected from the group which consists of nickel, nickel-based alloys, and austenitic nickel/chromium stainless steels and of a particle size smaller in diameter than the diameter of said pores, thereby filling said pores with said particles; and

(c) applying a laser beam upon said particles and said surfaces to at least partially fuse said particles to form a particle melt and bond said particles together and to said surfaces.

5,338,942

SEMICONDUCTOR PROJECTIONS HAVING LAYERS WITH DIFFERENT LATTICE CONSTANTS

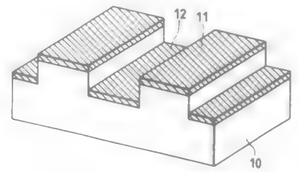
Akio Nishida, Misato; Eiichi Murakami, Hachioji, and Kiyokazu Nakagawa, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1993, Ser. No. 90

Claims priority, application Japan, Jan. 16, 1992, 4-005799

Int. Cl.[5] H01L *29/04*

U.S. Cl. 257—17 **8 Claims**



1. A semiconductor device comprising:

a) a semiconductor crystalline substrate having a plurality of projections each projection having an area of 0.01 μm^2 to 4 μm^2 or having a plurality of stripe projections each stripe projection having a width of 0.01 μm to 1 μm; and

b) a semiconductor crystalline layer formed on each of said plurality of projections, said layer having different lattice constants from those of said semiconductor crystalline substrate.

5,338,943

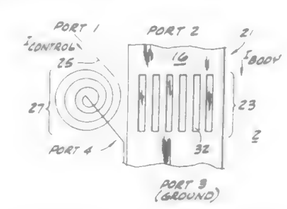
MAGNETIC FLUX-ENHANCED CONTROL LINE FOR SUPERCONDUCTING FLUX FLOW TRANSISTOR

William Wilber, Neptune; Roland Cadotte, Jr., Freehold, both of N.J.; Adam Rachlin, Germantown, Md., and Michael Cummings, Howell, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 1, 1993, Ser. No. 115,502

Int. Cl.[5] H01L *39/22*; H03K *3/38*

U.S. Cl. 505—193 **4 Claims**



1. A superconducting flux flow transistor (SFFT) comprising:

a substrate;

a superconducting electrode deposited on the substrate providing a voltage output, the superconducting electrode having a region of weakened superconductor and carrying a current I_{body}; and

a control line carrying a current $I_{Control}$ and having a portion thereof displaced in proximity to the weakened region for providing a localized magnetic field through the weakened region, said magnetic field being a function of $I_{Control}$ wherein the magnetic flux through the weakened region induces vortices in the weakened region creating a resistance r_o, said proximate portion of the control line forming a tortuous current path whereby the magnetic flux through the weakened region is increased which increases r_o in the weakened region thereby increasing the

VOL 1165 ISS 3 AG 16 1994 UMI

output voltage of the SFFT wherein the proximate portion of the control line forms a spiral current path.

5,338,944

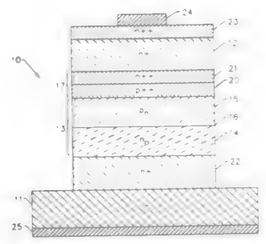
BLUE LIGHT-EMITTING DIODE WITH DEGENERATE JUNCTION STRUCTURE

John A. Edmond, Apex; Hua-Shuang Kong, Raleigh; Vladimir Dmitriev, Fuquay-Varina, and Gary E. Bulman, Cary, all of N.C., assignors to Cree Research, Inc., Durham, N.C.

Filed Sep. 22, 1993, Ser. No. 125,284

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—76 **47 Claims**



1. A light emitting diode that emits light in the blue region of the visible spectrum with increased brightness and efficiency, said light emitting diode comprising:

an n-type silicon carbide substrate;

an n-type silicon carbide top layer;

a light emitting p-n junction structure between said n-type substrate and said n-type top layer, said p-n junction being formed of respective portions of n-type silicon carbide and p-type silicon carbide; and

means between said n-type top layer and said n-type substrate for coupling said n-type top layer to said light-emitting p-n junction structure while preventing n-p-n behavior between said n-type top layer, said p-type portion in said junction structure, and said n-type substrate.

5,338,945

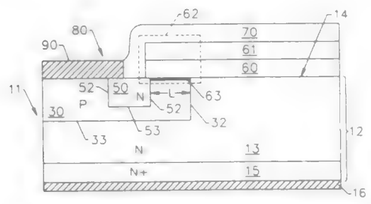
SILICON CARBIDE FIELD EFFECT TRANSISTOR

Bantval J. Baliga, and Mohit Bhatnagar, both of Raleigh, N.C., assignors to North Carolina State University at Raleigh, Raleigh, N.C.

Filed Feb. 15, 1994, Ser. No. 196,717

Int. Cl.[5] H01L *29/10, 29/161, 29/167*

U.S. Cl. 257—77 **12 Claims**



1. A silicon carbide field effect transistor comprising:

a monocrystalline silicon carbide drain region having dopant ions of first conductivity type therein;

a silicon carbide base region in said monocrystalline drain region, said base region forming a P-N junction with said monocrystalline drain region and having uniformly distributed dopant ions of second conductivity type and uniformly distributed electrically inactive ions therein; and

a silicon carbide source region in said base region, said source region forming a P-N junction with said base region and having uniformly distributed dopant ions of first conductivity type and uniformly distributed electrically inactive ion therein.

5,338,946

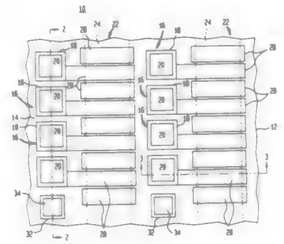
SOLID STATE IMAGE SENSOR WITH FAST RESET

Robert M. Guidash, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 8, 1993, Ser. No. 2,446

Int. Cl.[5] H01L *29/60, 29/796, 31/05*

U.S. Cl. 257—223 **5 Claims**



1. An image sensor comprising:

a body of a semiconductor material of one conductivity type having a surface;

a plurality of photodetectors in the body at the surface and arranged in at least one line;

a shift register in the body at the surface and extending along the line of photodetectors;

a buried region of a conductivity type opposite that of the body within the body and spaced from the surface, the buried region extending under all of the photodetectors and the shift register; and

a contact region extending through the body from the surface to the buried region, the contact region being of the same conductivity type as the buried region but of higher conductivity.

5,338,947

AVALANCHE PHOTODIODE INCLUDING A MULTIPLICATION LAYER AND A PHOTOABSORPTION LAYER

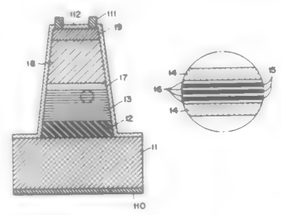
Isao Watanabe, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 993,706

Claims priority, application Japan, Dec. 20, 1991, 3-338651

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 257—186 **7 Claims**



1. An avalanche photodiode including a multiplication layer and a photoabsorption layer, said multiplication layer being formed of a semiconductor superlattice structure formed of an alternating stacked structure consisting essentially of superlattice barrier layers and short period superlattice well layers said short period superlattice well layers being at least two kinds of semiconductors and being equivalently regarded to be a mixed crystal of said at least two kinds of semiconductors said at least two kinds of semiconductors including a first kind of superconductor constituting a barrier layer in said short period superlattice well layer and a second kind of superconductor constituting a well layer in said short period superlattice well layer.

5,338,948

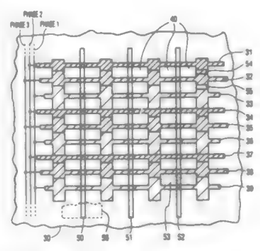
CHARGE-COUPLED DEVICE WITH OPEN GATE STRUCTURE

Gary R. Sims, Tucson, Ariz., assignor to Photometrics, Ltd., Tucson, Ariz.

Continuation-in-part of Ser. No. 698,453, May 10, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 33,190

Int. Cl.[5] H01L *29/78, 27/14, 31/00*

U.S. Cl. 257—249 **10 Claims**



1. A charge-coupled device comprising a semiconductor substrate of a first conductivity type and having an implant of the opposite conductivity type at a surface region of said substrate, said device including an electrically-insulating layer on said surface, said device also including a multi-phase electrode structure formed on said insulating layer, said electrode structure comprising a plurality of electrical conductors each comprising a series of H-shaped geometries, each of said H-shaped geometries comprising a horizontal and two vertical elements, like-positioned ones of said vertical elements of adjacent electrical conductors overlapping each other in a manner to generate therebeneath a pattern of potential wells, said pattern moving to a succession of positions beneath said vertical elements for moving charge quanta therealong in response to a multiphase pulse sequence on said electrical conductors.

5,338,949

SEMICONDUCTOR DEVICE HAVING SERIES-CONNECTED JUNCTION FIELD EFFECT TRANSISTORS

Franciscus A. C. M. Schoofs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

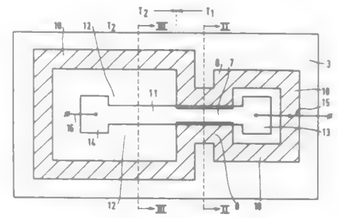
Filed Apr. 12, 1993, Ser. No. 46,689

Claims priority, application European Pat. Off., Apr. 14, 1992, 92201046.7

Int. Cl.[5] H01L *29/80*

U.S. Cl. 257—269 **6 Claims**

1. A semiconductor device comprising a semiconductor body with a layer-shaped region of a first conductivity type which adjoins a surface and is provided with a first junction field effect transistor (JFET) having a channel which can be pinched off in a lateral direction parallel to the surface, said transistor channel adjoining the surface and being separated by a pn junction from an adjoining portion of the semiconductor body which forms a gate region of the transistor, characterized in that the channel comprises a surface zone of the second conductivity type provided in the layer-shaped region of the first conductivity type, in that a channel-limiting surface zone of the first conductivity type with a higher doping concentration than that of the layer-shaped region forms the gate region and is provided in the layer-shaped region, and in that a second junction field effect transistor (JFET) with a channel of the second conductivity type and a gate region of the first conductivity type is connected in series with the first junction field effect transistor (JFET), the second transistor having a higher breakdown voltage and a higher pinch-off voltage than a breakdown voltage and a pinch-off voltage of the first transistor.



5,338,950

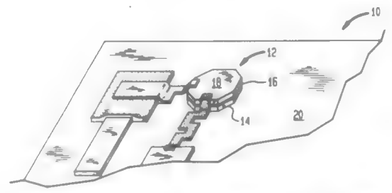
MULTIPLE PORT THIN FILM CAPACITOR

Inder J. Bahl, Roanoke, Va., assignor to ITT Corporation, New York, N.Y.

Filed Aug. 23, 1993, Ser. No. 110,575

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—277 **12 Claims**



1. A capacitor element for an integrated circuit, comprising:

a first layer, said first layer being formed of an electrically conductive material;

a second layer, said second layer being formed of an electrically conductive material; and

a third layer, said third layer being formed of a dielectric material and being disposed in laminar relation between said first and second layers, each of said layers has an octagonal shape for reducing the return loss characteristics of said capacitor element.

5,338,951

STRUCTURE OF HIGH DIELECTRIC CONSTANT METAL/DIELECTRIC/SEMICONDUCTOR CAPACITOR FOR USE AS THE STORAGE CAPACITOR IN MEMORY DEVICES

George Argos, Jr., and Thottam S. Kalkur, both of Colorado Springs, Colo., assignors to Ramtron International Corporation, Colorado Springs, Colo.

Filed Nov. 6, 1991, Ser. No. 788,547

Int. Cl.[5] H01L *29/68, 27/22;* **G11C** *11/22, 11/24*

U.S. Cl. 257—295 **19 Claims**

1. A semiconductor capacitor structure comprising:

a substrate;

a buffer layer located directly over and in contact with said substrate, wherein said buffer layer is comprised of a

VOL 1165 ISS 3 AG 16 1994 UMI

compound selected from the group comprised of zirconium oxide, lanthanum oxide and titanium oxide;



a layer of ferroelectric material located directly over and in contact with said buffer layer; and

a top electrode located over said ferroelectric material.

5,338,952

NON-VOLATILE MEMORY

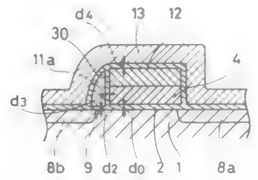
Yoshimitsu Yamauchi, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 851,558, Mar. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 744,509, Aug. 14, 1991, abandoned. This application Sep. 13, 1993, Ser. No. 120,320

Claims priority, application Japan, Jun. 7, 1991, 3-136800; Jul. 30, 1991, 3-214532

Int. Cl.[5] H01L *29/68*

U.S. Cl. 257—315 50 Claims



1. A non-volatile memory having a memory cell, the memory cell comprising:

a semiconductor substrate having first and second impurity diffusion layers,

a first insulating film and a tunnel dielectric film provided on the semiconductor substrate between the first and the second impurity diffusion layers, the first insulating film formed on the side of the first impurity diffusion layer, the tunnel dielectric film formed on the side of the second impurity diffusion layer,

an auxiliary gate electrode formed on the first insulating film,

a floating gate formed on the tunnel dielectric film and adjacent a side wall of the auxiliary gate electrode through an insulating film, and

a control gate electrode covering the floating gate and at least partially covering the auxiliary gate electrode through a second insulating film,

wherein channel hot electrons are injected from the inversion layer formed under the first electrode, which is controlled by the first electrode, to the floating gate.

5,338,953

ELECTRICALLY ERASABLE AND PROGRAMMABLE SEMICONDUCTOR MEMORY DEVICE WITH TRENCH MEMORY TRANSISTOR AND MANUFACTURING METHOD OF THE SAME

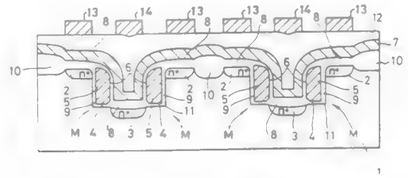
Setsuo Wake, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,662

Claims priority, application Japan, Jun. 20, 1991, 3-148567; Feb. 19, 1992, 4-032027

Int. Cl.[5] H01L *29/68*

U.S. Cl. 267—316 7 Claims



3. An electrically erasable and programmable semiconductor memory device comprising:

a semiconductor substrate of a first conductivity type, having a main surface and trenches defined by side walls and bottom walls;

a plurality of memory cells arranged in a matrix form of m rows and n columns, each of said m rows including adjacent pairs of memory cells with the adjacent pairs being isolated from each other by an isolating and insulating form formed on said main surface of said semiconductor substrate;

m number of word lines associated with the memory cells in each row;

n number of bit lines associated with the memory cells in each column; and

a plurality of source lines associated with the memory cells in each column,

each of said memory cells comprising:

a first gate electrode including a first portion and a second portion, said first portion being formed on a side wall of a trench with a first insulating film having a first thickness interposed therebetween, and said second portion being formed on a bottom wall of said trench with a second insulating film having a second thickness smaller than said first thickness interposed therebetween;

a first impurity region of a second conductivity type formed at a portion of said main surface of said semiconductor substrate adjacent to said side wall of said trench and located at the vicinity of said first portion of said first gate electrode;

a second impurity region of a second conductivity type formed on said bottom wall of said trench and located at the vicinity of said second portion of said first gate electrode; and

a second gate electrode formed on said first gate electrode with a third insulating film interposed therebetween,

said first impurity region, said second impurity region and said second gate electrode being connected to a bit line, a source line and a word line, respectively.

5,338,954

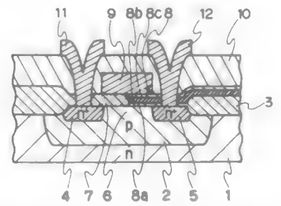
SEMICONDUCTOR MEMORY DEVICE HAVING AN INSULATING FILM AND A TRAP FILM JOINED IN A CHANNEL REGION

Noriyuki Shimoji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 3, 1993, Ser. No. 12,654

Int. Cl.[5] H01L *29/68*

U.S. Cl. 257—326 7 Claims



1. A semiconductor memory device having a plurality of memory transistors arranged in a matrix configuration, each of the memory transistors comprising

a semiconductor substrate having a source region, a drain region and a channel region intermediate between the source and drain regions; a gate insulating film formed on one side of the channel region;

a trap film formed on the other side of the channel region so as to join with the gate insulating film, said trap film comprises an insulating material; and

a gate electrode formed only in the channel region and extending over the gate insulating film and the trap film.

5,338,955

SEMICONDUCTOR DEVICE HAVING STACKED TYPE CAPACITOR

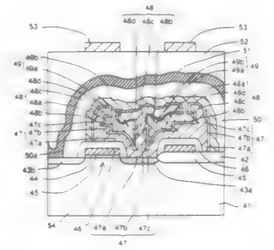
Katsuhiko Tamura, and Atsuko Kawai, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,870

Claims priority, application Japan, Mar. 27, 1992, 4-070825

Int. Cl.[5] H01L *29/68*

U.S. Cl. 257—306 10 Claims



1. A semiconductor device, comprising:

a capacitor upper electrode having an upper layer and a lower layer connected with each other;

a capacitor lower electrode surrounding the lower layer of said capacitor upper electrode; and

a capacitor insulating film interposed between said capacitor upper electrode and said capacitor lower electrode,

wherein the upper layer of said capacitor upper electrode covers the upper surface and both side surfaces of said capacitor lower electrode, and the upper and lower layers of the capacitor upper electrode are electrically connected at corresponding annular portions thereof,

and further wherein said capacitor lower electrode includes a first electrode layer and a second electrode layer electrically connected to each other, said first electrode layer extending under the lower layer of said capacitor upper electrode with said capacitor insulating film therebetween, and said second electrode layer extending on an upper surface of the lower layer of said capacitor upper electrode with said capacitor insulating film therebetween.

5,338,956

ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY HAVING A THIN FILM TRANSFERRING TRANSISTOR OVER A FLOATING GATE MEMORY TRANSISTOR

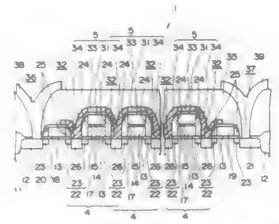
Akihiro Nakamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,712

Claims priority, application Japan, Apr. 5, 1991, 3-102110

Int. Cl.[5] H01L *29/68*; G11C *11/40*

U.S. Cl. 257—316 1 Claim



1. An electrically erasable and programmable semiconductor memory array comprising:

a semiconductor substrate of a first conductivity type,

parallel bit lines provided above said substrate, and

rewritable memory cells connected to said bit lines through a first transfer transistor, said memory cells comprising NAND cell blocks each of which has a series array of memory cell transistors, each of said memory transistors having a second transfer transistor of enhancement type,

wherein said memory transistor has semiconductor regions of a second conduction type opposite to said first conductivity type, a first gate insulating film formed on said semiconductor substrate in regions between said semiconductor regions of said second conductivity type, a floating gate electrode formed over said first gate insulating film, a second gate insulating film formed over said floating gate electrode, a control gate electrode formed over said second gate insulating film, a third gate insulating film formed over said second conductive film, and a semiconductor film for forming said second transfer transistor,

said second transfer transistor having a channel region above said floating gate electrode and a source or drain region above said semiconductor region and said control gate as a gate electrode in common with said memory transistor,

said semiconductor film being formed over said third gate insulating film and connected through contact holes to said semiconductor regions of said second conduction type.

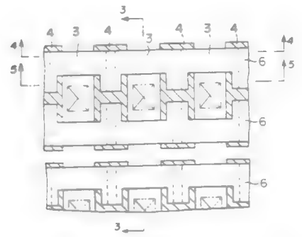
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,957

NONVOLATILE SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THEREOF

Atsushi Fukumoto; Makoto Ohi; Hiroshi Onoda; Natsuo Ajika, and Yuichi Kunori, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1993, Ser. No. 110,151
Claims priority, application Japan, Aug. 27, 1992, 4-228552
Int. Cl.[5] H01L *29/68; G11C 11/34*
U.S. Cl. 257—316 4 Claims



1. A nonvolatile semiconductor memory device comprising:
a semiconductor substrate having a main surface,
(m×n) charge storage electrodes arranged in a matrix of m rows and n columns on the main surface of said semiconductor substrate with a first insulating film therebetween,
a pair of impurity regions serving as source/drain regions, formed with a predetermined distance therebetween on the main surface of said semiconductor substrate to sandwich in the column direction a channel region formed right beneath said charge storage electrode,
an element isolation region formed between each column across two adjacent columns of said charge storage electrode, and
m control electrodes corresponding to each row and formed on said charge storage electrode with a second insulating film therebetween,
wherein the width in the column direction of said charge storage electrode and said control electrode above said element isolation region is set to be wider than the width in the column direction of the same above said channel region forming a wider area, so that in said wider area said charge storage electrode and said control electrode above said element isolation region protrude in opposite column directions with respect to the width of said electrodes above said channel region.

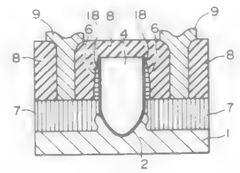
5,338,958

SEMICONDCUTOR DEVICE WITH HIGH SPEED FIELD EFFECT TRANSISTOR STRUCTURE REDUCING CONCENTRATIONS OF ELECTRIC FIELD NEAR DRAIN REGION

Hiroshi Mitsumoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,284
Claims priority, application Japan, Jan. 29, 1992, 4-038489
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—330 1 Claim

1. A semiconductor device comprising a MISFET which includes a gate polysilicon between a source region and a drain region, said gate polysilicon being covered with a gate insulator film,
said gate polysilicon covered with said gate insulator film including a protruded, curved bottom portion extending in a direction of said substrate and into said substrate;
said bottom portion having a curved surface and said gate insulator film having a most protruded part into said substrate;
said source region and drain region each including a bottom surface located above said most protruded part of said gate insulator film; and
at least said drain region including in the vicinity of a bottom thereof and around said protruded curved bottom portion of said gate polysilicon covered with said gate insulator



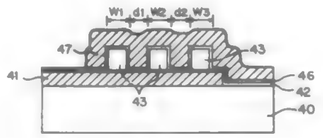
film, a shaped sidewall portion including a lower portion protruding towards said bottom portion of said gate polysilicon and an upper portion of a concave shape to form a pocket between said upper portion and said gate insulator film.

5,338,959

THIN FILM TRANSISTOR WITH THREE DIMENSIONAL MULTICHANNEL STRUCTURE

Weonkeun Kim, Incheon; Chulsoo Kim, Kyungki-do, and Jeongin Han, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Mar. 30, 1993, Ser. No. 40,016
Claims priority, application Rep. of Korea, Mar. 30, 1992, 92-5291; Jun. 27, 1992, 92-11366; Jun. 27, 1992, 92-11367
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—331 10 Claims



1. A thin film transistor gate structure comprising:
(a) a substrate;
(b) a plurality of spaced apart semiconductive strips formed substantially parallel to one another and to said substrate, each said strip having a channel portion;
(c) a gate insulating layer surrounding a cross-sectional periphery of each said channel portion of each said semiconductive strip; and
(d) a gate electrode surrounding said gate insulating layer, a portion of said gate electrode being disposed on said substrate.

5,338,960

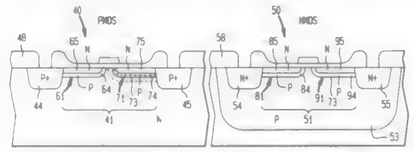
FORMATION OF DUAL POLARITY SOURCE/DRAIN EXTENSIONS IN LATERAL COMPLEMENTARY CHANNEL MOS ARCHITECTURES

James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 5, 1992, Ser. No. 925,077
Int. Cl.[5] H01L *29/68, 21/265*
U.S. Cl. 257—335 28 Claims

1. A method of manufacturing a CMOS architecture comprising the steps of:
(a) forming a PMOS device in a first surface portion of a semiconductor layer having N type conductivity and an NMOS device in a second surface portion of said semiconductor layer having P type conductivity, said PMOS device having respective first source and drain regions of

P conductivity type formed in spaced apart portions of said first surface portion of said semiconductor layer, a first gate insulator layer overlying said first surface portion of said semiconductor layer between said first source and drain regions and a first gate electrode disposed on said first gate insulator layer above a first channel region, and said NMOS device having respective second source and drain regions of N conductivity type formed in spaced apart portions of said second surface portion of said semiconductor layer, a second gate insulator layer overlying said second surface portion of said semiconductor layer between said second source and drain regions, and a sec-



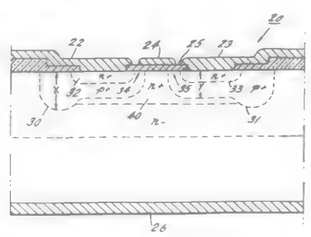
ond gate electrode disposed on said second gate insulator layer above a second channel region; and
(b) forming respective dual conductivity type lateral extension regions, contiguous with at least one of the first source and drain regions and extending laterally therefrom toward said first channel region, and also contiguous with at least one of the second source and drain regions and extending laterally therefrom toward said second channel region, each respective dual conductivity type lateral extension region containing a first lateral extension region portion of a first conductivity type overlying and contacting a second lateral extension region portion of a second conductivity type.

5,338,961

HIGH POWER MOSFET WITH LOW ON-RESISTANCE AND HIGH BREAKDOWN VOLTAGE

Alexander Lidow, Manhattan Beach, and Thomas Herman, Redondo Beach, both of Calif., assignors to International Rectifier Corporation, El Segundo, Calif.

Continuation of Ser. No. 303,818, Jan. 30, 1989, Pat. No. 5,191,396, which is a division of Ser. No. 90,664, Aug. 28, 1987, abandoned, which is a division of Ser. No. 456,813, Jan. 10, 1983, Pat. No. 4,705,759, which is a division of Ser. No. 232,713, Feb. 9, 1981, Pat. No. 4,376,286, which is a continuation of Ser. No. 951,310, Oct. 13, 1978, abandoned. This application Feb. 12, 1993, Ser. No. 17,511
The portion of the term of this patent subsequent to Mar. 8, 2000, has been disclaimed.
Int. Cl.[5] H01L *29/76, 29/94*
U.S. Cl. 257—342 50 Claims



1. A high power metal oxide silicon field effect transistor device exhibiting relatively low on-resistance and relatively high breakdown voltage; said device comprising:
a wafer of semiconductor material having first and second opposing semiconductor surfaces; said wafer of semiconductor material having a relatively lightly doped major body portion for receiving junctions and being doped with impurities of one conductivity type;
at least first and second spaced base regions of the opposite conductivity type to said one conductivity type formed in said wafer and extending from said first semiconductor surface to a first depth beneath said first semiconductor surface; the space between said at least first and second base regions defining a common conduction region of one conductivity type at a given first semiconductor surface location;
first and second source regions of said one conductivity type formed in each pair of said at least first and second base regions respectively at first and second first surface locations and extending from said first and second first surface locations to a depth less than said first depth; said first and second source regions being laterally spaced along said first semiconductor surface from the facing respective edges of said common conduction region thereby to define first and second channel regions along said first semiconductor surface between each pair of said first and second source regions, respectively and said common conduction region;
source electrode means connected to said source regions;
gate insulation layer means on said surface, disposed at least on said first and second channel regions;
gate electrode means on said gate insulation layer means; said gate electrode means overlying said first and second channel regions;
a drain conductive region remote from said common region and separated therefrom by said relatively lightly doped major body portion;
a drain electrode coupled to said drain conductive region;
said common region being relatively highly doped, compared to said relatively lightly doped major body portion and extending from said given first semiconductor surface location to a depth greater than the depth of said source region, whereby resistance to current flow at the junctures between said first and second surface channel regions and said common region and between said common region and said relatively lightly doped major body portion is reduced;
said first and second source regions being formed by a process step in which the impurities for defining said first and second first surface locations in a single step.

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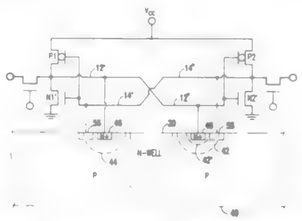
Patent Not Issued For This Number

5,338,963

SOFT ERROR IMMUNE CMOS STATIC RAM CELL

William A. Klaasen, Underhill, Vt., and Wen-Yuan Wang, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1993, Ser. No. 43,090
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—376 10 Claims



1. A memory cell comprising in combination:
a storage node including at least two spatially separated

VOL 1165 ISS 3 AG 16 1994 UMI

depletion regions formed in a semiconductor substrate of a first conductivity type;

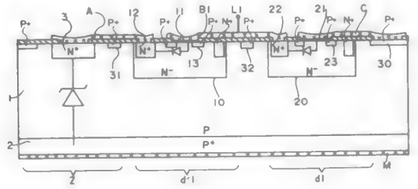
a well of a second conductivity type formed in said semiconductor substrate and located between said at least two spatially separated depletion regions for reducing collection of charge engendered by ionizing radiation in the vicinity of a first of said at least two spatially separated depletion regions at a second of said at least two spatially separated depletions regions.

5,338,964

INTEGRATED CIRCUIT COMPRISING A PROTECTION DIODE ARRAY

Eric Bernier, Tours, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Mar. 25, 1993, Ser. No. 37,082
Claims priority, application France, Mar. 26, 1992, 92 04130
Int. Cl.[5] H01L *29/161, 29/205, 29/225*
U.S. Cl. 257—476 20 Claims



1. A protection diode array, comprising:

a low doped substrate of a first conductivity type having a highly doped lower surface;

first and second groups of low doped wells of a second conductivity type formed in an upper surface of the substrate;

an ohmic contact and a Schottky contact on each well;

a highly doped region of the second conductivity type on the upper surface of the substrate;

a first metallization coupling the ohmic contacts of the first group of wells to the highly doped region of the second conductivity type;

a second metallization coupling the Schottky contacts of the second group of wells together;

a plurality of third metallizations, each of the plurality of third metallizations respectively coupling a Schottky contact of the first group of wells to an ohmic contact of the second group of wells; and

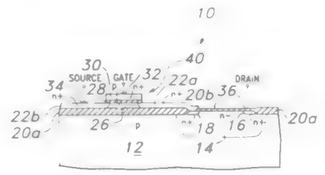
a fourth metallization disposed on a rear surface of the substrate.

5,338,965

HIGH VOLTAGE STRUCTURES WITH OXIDE ISOLATED SOURCE AND RESURF DRIFT REGION IN BULK SILICON

Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 857,875, Mar. 26, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 53,028
Int. Cl.[5] H01L *27/01, 27/23, 29/68, 29/78*
U.S. Cl. 257—492 15 Claims



1. A high voltage power transistor, comprising:

a lateral semiconductor-on-insulator, SOI, transistor; and

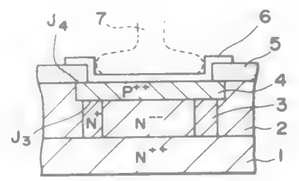
a bulk semiconductor drain drift region connected to the SOI transistor.

5,338,966

VARIABLE CAPACITANCE DIODE DEVICE

Takeshi Kasahara, Tsurugashima, Japan, assignor to Toko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 870,225, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 584,794, Sep. 19, 1990, abandoned. This application May 27, 1993, Ser. No. 76,024
Claims priority, application Japan, Sep. 21, 1989, 1-246155; Sep. 21, 1989, 1-246156
Int. Cl.[5] H01L *29/93*
U.S. Cl. 257—597 14 Claims



1. A variable capacitance diode device comprising:

a semiconductor substrate of a first conductive type;

an epitaxial layer of the first conductive type, having a low concentration of impurities deposited on said semiconductor substrate;

a first diffusion layer of the first conductive type having a higher concentration of impurities diffused therein than the concentration in said epitaxial layer, said first diffusion layer being formed in said epitaxial layer and shaped in a form of a column having a cylindrical interior region, a cylindrical columnar portion of said epitaxial layer being disposed in said interior region; and

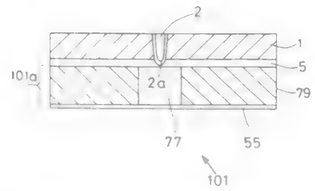
a second diffusion layer of a second conductive type, having a high concentration of impurities diffused therein, said second diffusion layer being formed shallowly in a portion of said epitaxial layer above one end of said first diffusion layer to abut there against to form a P-N junction with the first diffusion layer.

5,338,967

SEMICONDUCTOR DEVICE STRUCTURE WITH PLATED HEAT SINK AND SUPPORTING SUBSTRATE

Katsuya Kosaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1993, Ser. No. 57,790
Claims priority, application Japan, Jan. 12, 1993, 5-003034
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—620 10 Claims



1. A semiconductor device structure comprising:

a semiconductor substrate having opposite front and rear surfaces and an active element on the front surface; and

a supporting substrate supporting said semiconductor substrate and disposed on the rear surface of the semiconductor substrate, said supporting substrate comprising:

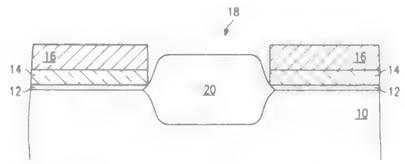
a radiating layer for radiating heat generated by said active element and disposed on a part of the rear surface of said semiconductor substrate directly opposite said active element, and p2 a plated metal layer selected from the group consisting of Rh, Pt, and Ni-B-W, said plated metal layer having a linear thermal expansion coefficient nearer to the linear thermal expansion coefficient of said semiconductor substrate than the linear thermal expansion coefficient of said radiating layer and disposed on part of the rear surface of said semiconductor substrate but not directly opposite said active element.

5,338,968

METHOD OF FORMING ISOLATED REGIONS OF OXIDE

Robert Hodges, Euless, and Frank Bryant, Denton, both of Tex., assignors to SGS-Thomson, Carrollton, Tex.

Division of Ser. No. 738,580, Jul. 31, 1991. This application Sep. 4, 1992, Ser. No. 940,451
Int. Cl.[5] H01L *29/34, 29/06, 27/12, 29/78*
U.S. Cl. 257—647 3 Claims



1. A structure consisting of a portion of a semiconductor integrated circuit, comprising:

a substrate;

a pad oxide layer disposed over a portion of the substrate;

a field oxide region disposed over all remaining portions of the substrate not covered by the pad oxide layer;

a layer of polysilicon disposed over the pad oxide layer, wherein the polysilicon layer has a polysilicon/nitride compound in outer regions thereof; and

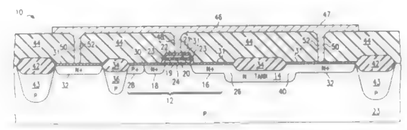
a nitride layer disposed over the nitrogen doped polysilicon layer.

5,338,969

UNERASABLE PROGRAMMABLE READ-ONLY MEMORY

Cetin Kaya, Dallas, Tex., assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed Jun. 27, 1991, Ser. No. 722,569
Int. Cl.[5] H01L *29/68, 29/40;* G11C *7/02*
U.S. Cl. 257—659 27 Claims



1. An unerasable memory formed in the face of a layer of semiconductor of a first conductivity type comprising:

an unerasable read only memory cell having first and second source/drain regions formed in said face of a second conductivity type opposite said first conductivity type spaced by a channel area, a floating gate conductor insulatively adjacent said channel area, and a control gate conductor insulatively adjacent said floating gate conductor;

a heavily doped moat formed in said face of said second conductivity type laterally surrounding said memory cell;

a load device coupling said moat with said first source/drain of said memory cell; and

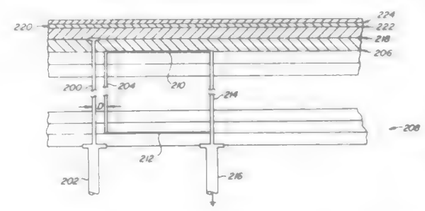
a shield having a first portion formed spaced from and substantially in parallel to said face, and a second portion formed at an angle to said face and coupling said first portion with said moat, said shield enclosing said memory cell.

5,338,970

MULTI-LAYERED INTEGRATED CIRCUIT PACKAGE WITH IMPROVED HIGH FREQUENCY PERFORMANCE

Steven R. Boyle, Santa Clara; Robert J. Proebsting, Los Altos Hills, and William H. Herndon, Sunnyvale, all of Calif., assignors to Intergraph Corporation, Huntsville, Ala.

Filed Mar. 24, 1993, Ser. No. 36,564
Int. Cl.[5] H01L *25/04, 23/02, 23/12, 23/16*
U.S. Cl. 257—659 11 Claims



1. An improved multi-layered integrated circuit package having a plurality of interleaved layers of conductive material and dielectric material sandwiched between a top plate and a bottom plate, and surrounding a die-attach area of predetermined size, the package comprising:

an array of external connectors, extending from the bottom plate and spaced apart at a predetermined dimension;

a first plurality of via columns spaced apart at a predetermined dimension and electrically connecting each external connector of said array of external connectors to a predetermined horizontal path on a selected layer of conductive material; and

at least one parallel via column disposed adjacent to one of said first plurality of via columns at a prescribed distance

VOL 1165 ISS 3 AG 16 1994 UMI

less than said predetermined dimension, and connecting to a second via column through at least two horizontal conductive paths on at least two parallel layers of conductive material to form a conductive closed loop,

wherein said conductive closed loop at a prescribed distance provides for electromagnetic coupling between said at least one parallel via column and said one of said first plurality of via columns to form a two-wire transmission line for controlling a characteristic impedance of said one of said first plurality of via columns.

5,338,971

ELECTRONIC DEVICE STRUCTURE WITH STUDS LOCATING LEAD FRAME ON BACKING PLATE

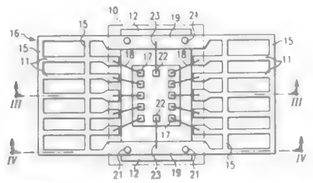
Paolo Casati, Sesto San Giovanni; Marziano Corno, Vaprio d'Adda, and Giuseppe Marchisi, Milan, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Nov. 27, 1992, Ser. No. 982,314

Claims priority, application Italy, Nov. 29, 1991, MI91 A 003201

Int. Cl.[5] H01L *23/48, 23/44, 23/52, 23/02*

U.S. Cl. 257—666 **28 Claims**



1. An electronic device structure, comprising:

a plate of thermally and electrically conductive material;

a chip having a first surface thereof electrically and thermally connected to said plate, and containing one or more miniature electronic devices and one or more bond pads on a second surface thereof;

a plurality of externally accessible conductive leads, each having one end adjacent to said chip;

at least one of said leads being widened to define a beam which is electrically and mechanically attached to said plate by a shaped metal connection;

wires interconnecting said leads to said bond pads of said chip, at least one said wire being attached to said metal beam; and

a plastic body encapsulating said chip, and each of said wires, and at least part of said beam, and at least part of said plate.

5,338,972

LEAD FRAME WITH DEFORMABLE BUFFER PORTIONS

Atsuhito Negoro, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

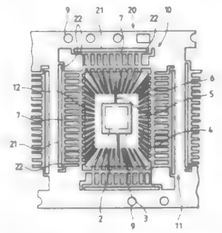
Filed Apr. 23, 1993, Ser. No. 52,554

Claims priority, application Japan, Aug. 10, 1992, 4-235260

Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*

U.S. Cl. 257—666 **5 Claims**

1. A lead frame comprising a frame formed with groups of lead terminals arranged to extend outwardly through the peripheral sides of a resin body in which the frame is embedded, a plurality of main buffer portions formed in the frame coupling the terminals together in groups at the outer ends thereof, a plurality of slits formed outside of the buffer portions, each of which extends farther at at least one end thereof than the corresponding side of said resin body, and an auxiliary buffer portion having two perpendicular legs connecting each end of each main buffer portion and an adjacent section bar or side rail of the frame in which one leg of the auxiliary buffer portion constitutes a longitudinal extension of a side of the corresponding main buffer portion defining one side of an adjacent slit and the other leg of the auxiliary buffer portion extends perpendicularly thereto to join the main buffer portion directly to the



adjacent section bar or side rail and to define one end of an adjacent slit, thereby supporting the main buffer portion while allowing motion of the main buffer portion toward or away from the adjacent section bar or side rail and inhibiting motion of the main buffer portion parallel thereto.

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CARRIER FOR FILM CARRIER TYPE SEMICONDUCTOR DEVICE

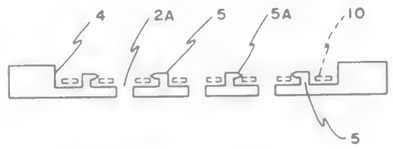
Akira Yoshigai, Tokyo, Japan, assignor to Nec Corporation, Japan

Continuation of Ser. No. 747,685, Aug. 20, 1991, abandoned. This application Nov. 1, 1993, Ser. No. 146,806

Claims priority, application Japan, Aug. 22, 1990, 2-220207

Int. Cl.[5] H01L *23/48, 21/60*

U.S. Cl. 257—668 **12 Claims**



1. A carrier for mounting a film carried type of semiconductor device, said semiconductor device having an insulating base film in which a plurality of sprocket holes are formed, said carrier comprising:

a substrate having an upper surface;

a recess formed in part of said substrate and extending downwardly from said upper surface, said recess providing menas for holding said film carrier type semiconductor device;

an opening formed in said recess;

a first fixing hook array comprising a plurality of fixing hooks, extending in a first direction and being formed on said recess; and

a second fixing hook array comprising a plurality of fixing hooks extending in said first direction and formed on said recess, said second fixing hook array being separated from said first fixing hook array by a distance interposing said opening, said distance extending in a second direction which is perpendicular to said first direction;

each of said fixing hooks belonging to said first and second fixing hook arrays being arranged for insertion into each of said sprocket holes and including;

a pillar upstanding from said recess, said pillar having an upper surface and first, second, third and fourth side surface, said first and third side surfaces defining a a first length of said pillar extending in said first direction, said second and said fourth side surfaces defining a second length of said pillar extending in said second direction, said first length of said pillar being shorter than a corresponding dimension of an associated one of said sprocket holes in said first direction, and said second length of said pillar being shorter than a corresponding dimension of said associated one of said sprocket holes in said second direction;

a projecting portion extending in said first direction from an upper section of one of said first and third side surfaces of said pillar, and having a tapered upper surface declining continuously from said upper surface of said pillar to form a tip; and

a protrusion extending in said second direction and away from one of said second and fourth side surfaces of said pillar, said protrusion being on a lower section of said one of said first and second surfaces and having a varied length in said first direction such that said length of said protrusion decreases from said one of said first and second surface, and said protrusion having a width such that said film carrier type semiconductor device is installed on said carrier in a precise position, a spacing being formed in said sprocket holes between said protrusion and said insulating base film.

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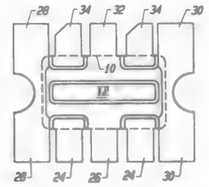
RF POWER TRANSISTOR PACKAGE

David S. Wisherd, Sunnyvale, Calif., and Howard D. Bartlow, Wilsonville, Oreg., assignors to Spectrian, Inc., Mountain View, Calif.

Filed Mar. 17, 1993, Ser. No. 32,227

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—691 **13 Claims**



1. A lead structure for an RF power transistor comprising:

a ceramic substrate having opposing sides and opposing ends,

an approximately centrally disposed pad for mounting a semiconductor chip on one side of said substrate,

a plurality of input leads attached to and extending from said ceramic substrate on one side of said substrate,

a plurality of input ground leads attached to and extending from said ceramic substrate with an input ground lead positioned between all adjacent input leads,

a plurality of output leads attached to and extending from said ceramic substrate on an opposite side of said substrate, and

a plurality of output ground leads attached to and extending from said ceramic substrate with an output ground lead positioned between all adjacent output leads.

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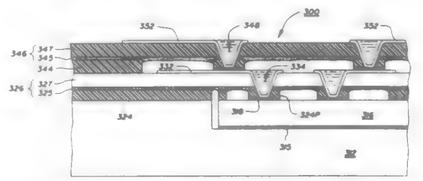
HIGH DENSITY INTERCONNECT STRUCTURE INCLUDING A SPACER STRUCTURE AND A GAP

Herbert S. Cole, Jr., Burnt Hills, and James W. Rose, Guilderland, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 2, 1990, Ser. No. 546,965

Int. Cl.[5] H01L *23/48, 29/46, 29/54*

U.S. Cl. 257—750 **29 Claims**



1. In a high density interconnect structure of the type comprising an electronic component having contact pads on a first surface thereof, an interconnection structure thereover including a first layer of polymer dielectric material disposed over said electronic component, said layer of polymer dielectric material having apertures therein disposed in alignment with at least selected ones of said contact pads, a first patterned conductive layer overlying said first dielectric layer and extending into said apertures into ohmic contact with said selected ones of said contact pads, the improvement comprising:

a spacer structure disposed on a portion of said first surface of said electronic component, leaving other portions of said first surface free of spacer structure; and

said first layer of polymer dielectric material being bonded to said spacer structure and spaced from said first surface of said electronic component by said spacer structure.

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INTERACTIVE LANGUAGE CONVERSION SYSTEM

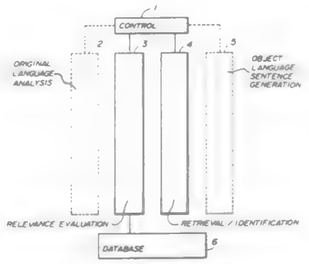
Phyllis Anwyl, Yokohama, and Toru Matsuda, Machida, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 16, 1992, Ser. No. 899,269

Claims priority, application Japan, Jun. 20, 1991, 3-175944; Dec. 11, 1991, 3-351636

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.01 **17 Claims**



1. A language conversion system for converting an original language into an object language using a computer, said language conversion system comprising:

a database of expression patterns in the object language;

relevance evaluation means, coupled to said database, for evaluating a relevance of each expression pattern in the object language to an input in the original language;

retrieval and identification means for retrieving and identifying, from the input in the original language, information

VOL 1165 ISS 3 AG 16 1994 UMI

requested by the expression pattern in the object language which is required to generate an output in the object language;

selection means for selecting the expression pattern in the object language conforming to the input in the original language, depending on the relevance evaluated in said relevance evaluation means;

output means for generating the output in the object language, based on the required information retrieved and identified from the input in the original language by said retrieval and identification means; and

control means, coupled to said relevance evaluation means, said retrieval and identification means, said selection means, and said output means, for controlling operation sequences thereof.

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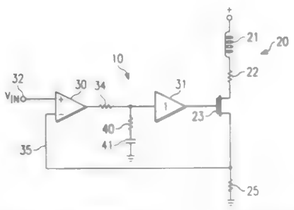
COMPENSATED CIRCUIT FOR DRIVING INDUCTIVE LOADS WITH VERY HIGH BANDWIDTH

Francesco Carobolante, Phoenix, Ariz., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 783,839, Oct. 29, 1991, abandoned. This application Jan. 27, 1993, Ser. No. 9,433

Int. Cl.[5] H03K *17/687, 3/01;* **H02K** *29/00*

U.S. Cl. 307—270 **27 Claims**



1. A circuit for controlling a current in a load having an inductive component, comprising:

a sense resistor and a current control device in series with said load;

a high gain differential amplifier, having a non-inverting input connected to receive an input control signal and having an inverting input connected to said sense resistor;

a low gain amplifier having an input connected to receive an output of said high gain amplifier and an output connected to control said current control device;

and a first compensation resistor and a capacitor in series between the input of the low gain amplifier and a reference potential, said resistor and capacitor being sized to insure that with increasing frequency a first gain rolloff to below unity gain is caused by said load.

5,338,978

FULL SWING POWER DOWN BUFFER CIRCUIT WITH MULTIPLE POWER SUPPLY ISOLATION

David H. Larsen, Scarborough, and James B. Boomer, Falmouth, both of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.

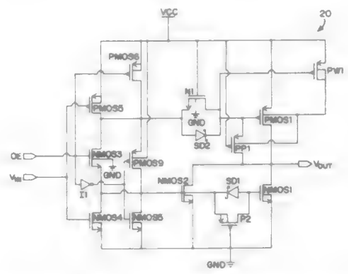
Filed Feb. 10, 1993, Ser. No. 16,009

Int. Cl.[5] H03K *17/10*

U.S. Cl. 307—443 **27 Claims**

1. A buffer circuit having an output for delivering output signals of high and low potential levels and a selected output transistor having a primary current path coupled between the output and a selected power rail of opposite high and low potential power rails, said selected output transistor having a control node coupled in the buffer circuit for controlling the conducting state of the selected output transistor primary current path, said selected output transistor being fabricated in a well of first type carrier semiconductor material formed in a substrate of second type carrier semiconductor material, said well being coupled to the selected power rail and the substrate being coupled to the opposite power rail, the improvement comprising:

a well isolation switch transistor having a primary current path coupled between the well of the output transistor and the selected power rail, said well isolation switch transistor having a control node coupled to the control node of



the selected output transistor for controlling the conducting state of the well isolation switch transistor substantially in phase with the selected output transistor thereby isolating the output transistor well from the selected power rail when the output transistor is not conducting, said selected output transistor being a PMOS transistor, said well being an NWELL, and said well isolation switch transistor being a PMOS transistor.

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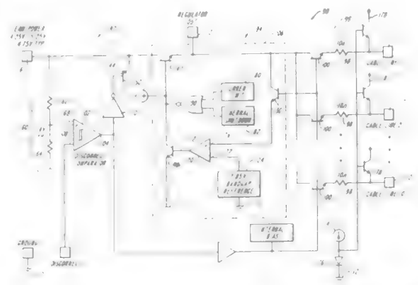
CONTROLLABLE BUS TERMINATOR

Robert A. Mammano, Costa Mesa, Calif., and Mark Jordan, Manchester, N.H., assignors to Unitrode Corporation, Billerica, Mass.

Continuation of Ser. No. 990,133, Dec. 14, 1992, abandoned, which is a continuation of Ser. No. 755,072, Sep. 5, 1991, Pat. No. 5,272,396. This application Jul. 7, 1993, Ser. No. 88,911

Int. Cl.[5] H03K *17/16, 3/01*

U.S. Cl. 307—443 **20 Claims**



1. A controllable bus terminator, for providing a switchable termination on a bus having a plurality of conductors, said controllable bus terminator comprising:

a voltage regulator;

a plurality of termination networks;

a plurality of electrically controllable switches, each of said switches, said voltage regulator, and a corresponding one of said termination networks being coupled in series, wherein each of said switches couples the voltage regulator to a corresponding conductor through said termination network when the corresponding switch is in a first state and wherein each of said switches disconnects the voltage regulator from said corresponding conductor when the corresponding switch is in a second state;

a control circuit comprising an output terminal coupled to each of said plurality of electrically controllable switches, said control circuit for providing a first control signal which causes each of said electrically controllable switches to switch from said first state to said second state and for providing a second control signal which causes each of said electrically controllable switches to switch from said second state to said first state; and

wherein the output terminal of said control circuit is coupled to said voltage regulator and wherein a first one of said first and second control signals turns on said voltage regulator and a second one of said first and second control signals turns off said voltage regulator.

5,338,981

SEMICONDUCTOR DEVICE HAVING A DECODING CIRCUIT FOR SELECTION CHIPS

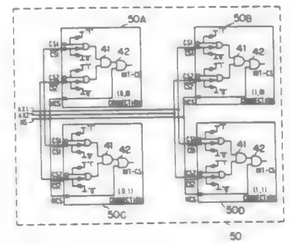
Ki-Hong Kim; Chang-Seok Lee; Hyung-Moo Park; Hyung-Jin Yoon, and Sin-Chong Park, all of Daejeon-shi, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

Filed Sep. 8, 1992, Ser. No. 940,214

Claims priority, application Rep. of Korea, Sep. 7, 1991, 91-15639

Int. Cl.[5] G11C *8/00*

U.S. Cl. 307—463 **5 Claims**



1. A semiconductor device comprising:

at least one external address line for providing an external address signal;

a plurality of chips in which predetermined extended addresses are allocated for each of the chips to select the chips in a multiple-chip module; and

a plurality of semiconductor chip selectors, for supplying internal chip select signals to select one of said plurality of chips in response to said external addresses and a module select signal; each of said semiconductor chip selectors having:

at least one decoder for receiving the extended address and outputting a predetermined logic signal, and

a first AND gate for receiving said module select signal and said logic signal of said at least one decoder and outputting said internal chip select signals, wherein each of said at least one decoder comprises:

a plurality of chip select units corresponding to the number of the chips in the multiple-chip module; and

a second AND gate for receiving outputs of said chip select units and outputting said logic signal,

wherein each input logic level in each of said plurality of chip selecting units is determined by a level signal of one of said at least one external address lines when said respective chip select unit is connected with one of said external address lines, and each input logic level in said respective chip selecting units is determined by a predefined logic level held in the chip select unit when said respective chip select unit is not connected with the external address line.

5,338,982

PROGRAMMABLE LOGIC DEVICE

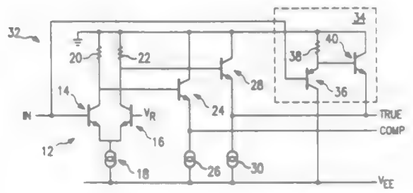
Keiichi Kawana, Tokyo, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Mar. 26, 1992, Ser. No. 857,974

Claims priority, application Japan, Mar. 29, 1991, 3-066768

Int. Cl.[5] H03K *19/173*

U.S. Cl. 307—465 **6 Claims**



1. An emitter coupled logic gate having a fast operating speed, comprising:

an input node receiving an input signal;

circuitry for generating a reference voltage;

a differential transistor pair comprising first and second transistors each having a base, an emitter and a collector, the base of said first transistor coupled to said input node and driven by said input signal and the base of said second transistor driven by a reference voltage such that said first transistor conducts responsive to said input signal being greater than said reference voltage and said second transistor conducts responsive to said reference voltage being greater than said input signal;

a PNP transistor having a base, an emitter and a collector, the base of said PNP transistor driven by said input signal such that the voltage on the emitter of the PNP transistor will rise in response to a fast transition of said input signal from a low logic level to a high logic level;

an output node; and

a third transistor having a base coupled to the emitter of said PNP transistor, an emitter coupled to said output node, and a collector coupled to a predetermined voltage greater than or equal to the voltage of the high logic level such that said predetermined voltage is applied to said output node responsive to the voltage rise of the emitter of the PNP transistor when the input signal transitions from a low logic level to a high logic level.

4. A semiconductor integrated circuit having electrically writable functions, comprising:

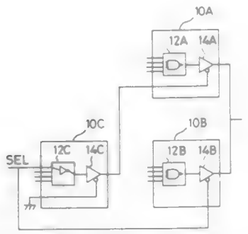
a plurality of logical blocks having electrically writable functions; and

wire elements capable of programmably connecting said logical blocks to each other,

wherein each of said logical blocks includes a programmable gate element having a control terminal, an output of said

VOL 1165 ISS 3 AG 16 1994 UMI

programmable gate element of said logical block is connectable to one of the control terminal and the output of an other of said programmable gate elements, and said



programmable gate element assumes a first state of a totem-pole output and a second state of an open drain output.

5,338,983

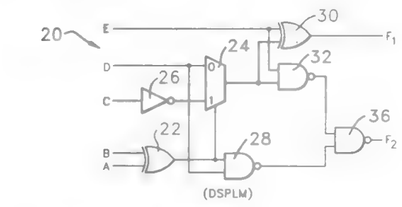
APPLICATION SPECIFIC EXCLUSIVE OF BASED LOGIC MODULE ARCHITECTURE FOR FPGAS

Manisha Agarwala, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 35,554, Mar. 23, 1993, abandoned, which is a continuation of Ser. No. 783,301, Oct. 28, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 166,330

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **10 Claims**



1. A logic module, comprising:

five input terminals;

two or more output terminals; and

control logic for selectively coupling one or more of the input terminals to one of the output terminals.

5,338,984

LOCAL AND EXPRESS DIAGONAL BUSSES IN A CONFIGURABLE LOGIC ARRAY

Jim Sutherland, Sunnyvale, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Division of Ser. No. 752,282, Aug. 29, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 13,969

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465.1 **3 Claims**

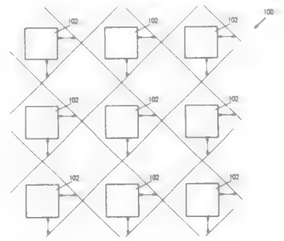
1. A configurable logic array comprising:

a plurality of individually configurable logic cells arranged in a matrix that includes a plurality of horizontal rows of logic cells and a plurality of vertical columns of logic cells;

at least one horizontally aligned express bus running between adjacent rows of logic cells, said logic cells in said adjacent rows being selectively connectable thereto;

at least one vertically aligned express bus running between adjacent columns of logic cells, said logic cells in said adjacent columns being selectively connectable thereto; and

at least one generally diagonally aligned express bus running between adjacent diagonally aligned logic cells, said adjacent diagonally aligned logic cells being selectively connectable thereto.



5,338,985

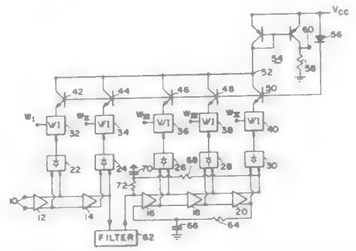
LOW VOLTAGE, SIMPLIFIED AND TEMPERATURE COMPENSATED LOGARITHMIC DETECTOR

Ali Fotowat-Ahmady, Sunnyvale, and Nasrollah S. Navid, Saratoga, both of Calif., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 709,245, Jun. 3, 1991. This application Apr. 28, 1993, Ser. No. 54,472

Int. Cl.[5] H03G *3/00;* **G06G** *7/12*

U.S. Cl. 307—494 **17 Claims**



1. An electronic circuit with a logarithmic detector, comprising:

i) amplifying means responsive to an input voltage for amplifying the input voltage to produce a series of amplified versions of the input voltage;

ii) isolated rectifying means for rectifying the amplified versions to produce rectified versions, said isolated rectifying means being isolated from the amplifying means such that the isolated rectifying means is not loaded by the amplifying means;

iii) rescaling and conversion means coupled to the isolated rectifying means for rescaling and converting the rectified versions into currents; and

iv) current summing means coupled to the rescaling and conversion means for summing the currents to produce an aggregated current at an output.

5,338,986

LATCH-UP RESISTANT CMOS OUTPUT CIRCUIT

Masahiro Kurimoto, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,754

Claims priority, application Japan, May 28, 1992, 4-137018

Int. Cl.[5] H01L *27/02*

U.S. Cl. 307—303.2 **13 Claims**

1. A CMOS output circuit for outputting a signal to an

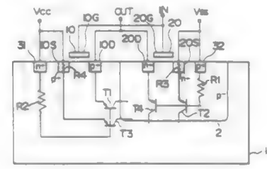
output terminal thereof, activated by supplying a higher voltage and a lower voltage, comprising:

a substrate of a first conductivity, having a major surface and being fed with one of said higher and lower voltages;

a well of a second conductivity opposite to said first conductivity, having a major surface, being formed in said substrate, and being fed with the other of said higher and lower voltages;

a first MOS transistor, being formed on said major surface of said well, and having a source of said first conductivity being fed with said other of said higher and lower voltages, and a drain of said first conductivity being connected to said output terminal;

a second MOS transistor being formed on said major surface



of said substrate, and having a source of said first conductivity being fed with said one of said higher and lower voltages, and a drain of said first conductivity being connected to said output terminal; and

a resistive component provided at least at one of the sources of said first and second MOS transistors so as to be serially connected to a parasitic bipolar transistor whose emitter is formed by said one of the sources, wherein said resistive component is formed from a layout in which a distance between a contact for said source of one of said first and second MOS transistors and a gate of said one of said first and second MOS transistors is longer than a distance between a contact for said drain of said one of said first and second MOS transistors and said gate of said one of said first and second MOS transistors.

5,338,987

HIGH SPEED, LOW POWER HIGH COMMON MODE RANGE VOLTAGE MODE DIFFERENTIAL DRIVER CIRCUIT

Stephen R. Tomasetti, Lewisville, Tex., and Danny Tsong, Taipei, Taiwan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 782,929, Oct. 25, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 150,741

Int. Cl.[5] H03K *3/01, 19/02*

U.S. Cl. 307—570 **9 Claims**

1. A driver circuit having an input node and an output node, comprising:

a first current source coupled to the input node and coupled to a voltage supply;

a first bipolar transistor having a base coupled to the current source, and being coupled to the voltage supply and the output node;

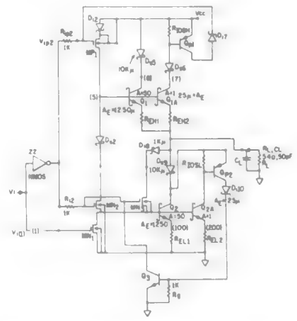
a first current limiting circuit coupled to the output node and the first bipolar transistor;

a second current source coupled to the input node and a second voltage supply;

a second bipolar transistor having a base coupled to the second current source and further coupled between the second voltage supply and the output node;

a second current limiting circuit coupled to the output node and the second bipolar transistor; and

a third bipolar transistor having a base coupled to the base of the first bipolar transistor, an emitter coupled to the emitter of the first bipolar transistor and a collector coupled to



the collector of the first bipolar transistor, the third bipolar transistor being scaled to the first bipolar transistor.

5,338,988

VOLTAGE CONVERTING CIRCUIT WITH LOW CONSUMPTION DRIVER

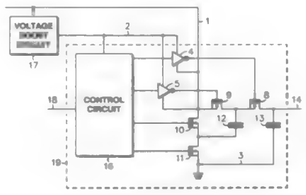
Norihisa Yamamura, Tokyo, and Kotaro Okada, Narashino, both of Japan, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 20, 1993, Ser. No. 139,489

Claims priority, application Japan, Oct. 21, 1992, 4-305877

Int. Cl.[5] H03K *17/687*

U.S. Cl. 307—578 **2 Claims**



1. A voltage converting circuit receiving an input voltage from an input voltage line and an increased voltage higher than the input voltage from an increased voltage line, for providing an output voltage higher than the input voltage at an output terminal, comprising:

a first pair of gate devices serially connected between the input voltage line and a ground;

a second pair of gate devices serially connected between the input voltage line and the output terminal;

a first capacitor connected between a node between the first pair of gate devices and a node between the second pair of gate devices, for boosting the output voltage;

a second capacitor connected between the output terminal and the ground for smoothing the output voltage;

a control circuit for controlling said pairs of gate devices; and

a pair of drivers connected so as to operate between the increased voltage and the input voltage, for driving the second pair of gate devices respectively under the control of the control circuit.

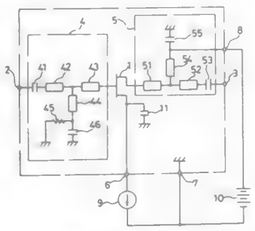
VOL 1165 ISS 3 AG 16 1994 UMI

5,338,989

MICROWAVE INTEGRATED CIRCUIT

Noriyuki Tanino, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1990, Ser. No. 627,979
Claims priority, application Japan, Dec. 18, 1989, 1-329325; Jun. 29, 1990, 2-173183
Int. Cl.[5] H03K *17/687, 3/353, 3/01;* G06G *7/10*
U.S. Cl. 307—571 10 Claims



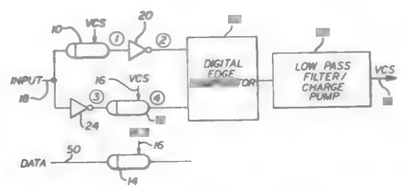
1. A microwave integrated circuit comprising:
an input terminal for receiving an input signal;
an output terminal for providing an output signal;
a source bias constant current source;
an input matching circuit including a first microwave line and
a first resistor;
a first capacitor;
a field effect transistor comprising a gate grounded via said first microwave line and said first resistor, a source grounded via said first capacitor and connected to said source bias constant current source, and a rain;
said input matching circuit being connected to said source of said field effect transistor and said input terminal;
an output matching circuit connected between said drain of said field effect transistor and said output terminal; and
a one-fourth wavelength line having first and second ends and a second capacitor connected the second end of said one-fourth wavelength line and ground, said first end being connected to said source of said field effect transistor and said second end being connected to said source bias constant current source.

5,338,990

REGULATED DELAY LINE

Perry W. Lou, Carlsbad, Calif., assignor to Brooktree Corporation, San Diego, Calif.

Continuation of Ser. No. 717,004, Jun. 18, 1991, abandoned.
This application Feb. 19, 1993, Ser. No. 19,784
Int. Cl.[5] H03K *5/159, 3/01*
U.S. Cl. 307—603 9 Claims



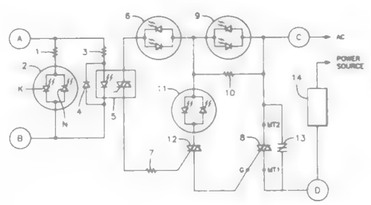
1. In combination for use with input data having rising edges and falling edges to provide a symmetrical delay between the rising and falling edges,
a first delay line,
first means for providing an input signal having first and second logic levels,
second means including the first delay line for introducing the input signal to the first delay line for delay by the delay line and for then providing a first signal with the second logic level from the second means when the input signal has the first logic level,
a second delay line,
third means including the second delay line for introducing the input signal to the second means to provide a second signal with the second logic level when the input signal has the first logic level and for then providing a delay of the second signal with the second logic level by the second delay line,
fourth means responsive to the respective production by the second and third means of the first and second delayed signals with the second logic level for producing a control signal indicating the relative times of production of such first and second delayed signals with the second logic level by the second and third means, and
fifth means responsive to the control signal from the fourth means for providing respective adjustments by the second means and the third means in the delays in the first and second delay lines to minimize any difference between the relative times of production by the second and third means of the first and second delayed signals with the second logic level.

5,338,991

HIGH POWER SOLID STATE RELAY WITH INPUT PRESENCE AND POLARITY INDICATION

Chao-Cheng Lu, 4-4, Alley 27, Lane 143, Chun Kung Rd., Taipei, Taiwan 11614

Filed Dec. 28, 1992, Ser. No. 997,695
Int. Cl.[5] H03K *17/70, 17/78*
U.S. Cl. 307—632 3 Claims



1. A solid state relay comprising an input means consisted of an input circuit, and an output means consisted of a phototriac circuit and a triac darlington circuit, said input circuit having two input ends for receiving an input voltage and a first shunt circuit and a second shunt circuit, said first shunt circuit comprising a limit current resistor connected in series to a dual color indicator lamp, the dual color indicator lamp of said first shunt circuit being arranged so as to produce different colors of light for identifying the polarity of the input voltage and its presence, said second shunt circuit comprising a limit current resistor and a light emitting diode of an input end of a phototriac coupler, which corresponds to said phototriac circuit of said output means for control thereof, respectively connected in series, the light emitting diode of said phototriac coupler being reversely connected in parallel with a diode.

5,338,992

COIL STRUCTURE OF CEILING FAN MOTOR

Wen-Cheng Tsai, No. 1-1, Sec. 2, Tan Fu Rd., Tan Jzi Hsian, Taichung Hsien, Taiwan

Filed Jul. 15, 1993, Ser. No. 91,286
Int. Cl.[5] H02K *11/00*
U.S. Cl. 310—71 2 Claims

1. A coil structure of a ceiling fan motor comprising:
a stator made up of a plurality of silicon steel sheets stacked together;

a spindle mounted centrally in said stator and provided with an axial hole and a circumferential wall with a through hole communicating with said axial hole;
a plurality of stator coils disposed in slots of said stator, with said slots being equal in number to said stator coils; and
a plurality of power input wires connecting said stator coils with a switch for a power source;



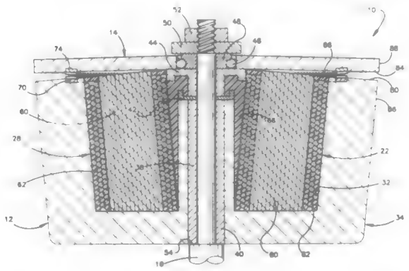
wherein said stator is provided thereon with a coil set having a plurality of fastening clips, a locking plate and an insulating plate, with each of said fastening clips having a hooked portion for retaining securely an enameled copper wire of said stator coils and further having a retaining groove for holding securely said power input wires and still further having two wings engageable securely with said locking plate under which said insulating plate is disposed.

5,338,993

MOTOR APPARATUS

Edward R. Briggs, Fullerton; Gary H. Daebelliehn, Buena Park; Peter S. Winzen, Hermosa Beach, and Donald R. Bellgraph, Gardena, all of Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 1, 1993, Ser. No. 24,686
Int. Cl.[5] H02K *7/06*
U.S. Cl. 310—82 66 Claims



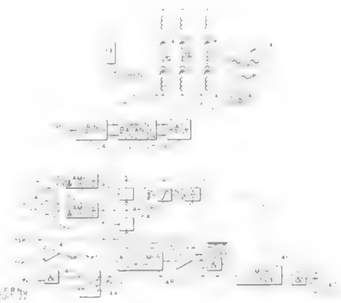
1. A motor apparatus comprising a stator having a first annular array of gear teeth, a rotor having a second annular array of gear teeth, a plurality of motor coils connected with said stator and sequentially energizeable to cause said rotor to move relative to said stator with said first and second annular arrays of gear teeth in meshing engagement, said first and second annular arrays of gear teeth cooperating to effect rotation of said rotor relative to said stator during movement of said rotor under the influence of said plurality of motor coils, and control means for effecting sequential energization of said plurality of motor coils, said control means including a plurality of first switch means each of which is connected with a first end portion of one of said motor coils of said plurality of motor coils, a plurality of second switch means each of which is connected with a second end portion of one of said motor coils of said plurality of motor coils, each of said first and second switch means being operable between a conducting condition and a nonconducting condition, means for effecting operation of a first one of said switch means of said first plurality of switch means and a first one of said switch means of said second plurality of switch means from the nonconducting condition to the conducting condition to effect energization of a first one of said motor coils under the influence of electrical current conducted through said first one of said first plurality of switch means and said first one of said second plurality of switch means, means for effecting operation of said first one of said first plurality of switch means from the conducting condition to the nonconducting condition while maintaining said first one of said second plurality of switch means in the conducting condition to establish a flow of electrical current from said first one of said plurality of motor coils back to said first one of said plurality of motor coils through said first one of said second plurality of switch means to thereby tend to maintain said first one of said plurality of motor coils energized with said first one of said first plurality of switch means in the nonconducting condition, and means for effecting operation of said first one of said second plurality of switch means from the conducting condition to the nonconducting condition after operation of said first one of said first plurality of switch means from the conducting condition to the nonconducting condition to interrupt the flow of current back to said first one of said plurality of motor coils.

5,338,994

METHOD AND APPARATUS FOR ACHIEVING CURRENT BALANCE IN PARALLEL CONNECTED SWITCHING DEVICES

Georges R. E. Lezan, Roanoke, and Loren H. Walker, Salem, both of Va., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 779,124, Oct. 16, 1991, abandoned, which is a continuation of Ser. No. 382,942, Jul. 20, 1989, abandoned. This application Jun. 4, 1993, Ser. No. 71,375
Int. Cl.[5] H02J *1/14, 3/06;* H03K *17/72*
U.S. Cl. 307—86 33 Claims

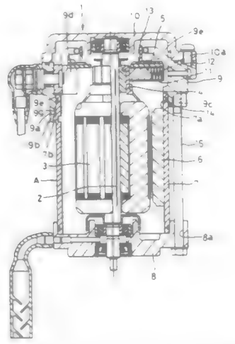


1. For transferring electrical power between two electrical power sources, a switching arrangement comprising:
a) at least one plurality of series connections each comprising a switching device and an inductor, the series connections being connected in parallel with the parallel combination being connected between said two power sources;

VOL 1165 ISS 3 AG 16 1994 UMI

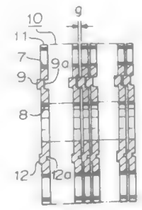
b) means to control the conductive state of said switching devices to effect periods of simultaneous current within each of the series connections alternating with periods of no current within said connections;
c) means to provide individual current signals representing the respective currents in each of the simultaneously conducting devices of said plurality;
d) means to provide an average current signal representing the average value of said individual current signals;
e) means to develop a difference signal as a function of the difference between the respective individual current signal and the average current signal;
f) means to integrate said difference signal to provide an integrated signal;
f) means to generate control signals operative to render conductive associated ones of said switching devices; and,
g) means responsive to said integrated signal to vary the time, with respect to a predetermined norm of associated devices, of application of said control signal to the associated ones of said devices whereby differences in current value within said devices are reduced.

5,338,995
CASING STRUCTURE OF A MOTOR
Shigeru Takada, Toyama, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Kiryu, Japan
Filed Feb. 12, 1993, Ser. No. 17,184
Claims priority, application Japan, Feb. 14, 1992, 4-013842[U]
Int. Cl.[5] H02K *5/04*
U.S. Cl. 310—89 **12 Claims**



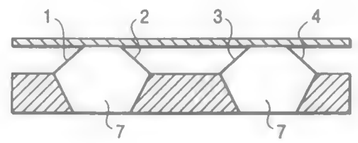
1. A motor casing wherein a bracket, with which a brush holder which slidably contacts a commutator of an armature provided within a cylindrical yoke is provided integrally, is attached to an edge portion of an opening of the cylindrical yoke in an inner peripheral surface on which a permanent magnet is fixed,
said motor casing comprising:
a yoke;
a bracket having a tubular peripheral edge portion, said tubular peripheral edge portion having inner and outer peripheral surfaces, said bracket being attached to said yoke such that an outer peripheral surface of an edge portion of an opening of said yoke is placed on the inner peripheral surface of the tubular peripheral edge portion of the bracket;
an annular recessed groove formed on the outer peripheral surface of the edge portion of the opening of the yoke, the tubular peripheral edge portion of said bracket being placed on the outer peripheral surface of the edge portion of the opening of the yoke, a seal being inserted into the annular recessed groove so that an outer circumference of the seal projects from the outer peripheral surface of the yoke in a normal condition;
a positioning projection provided in the outer peripheral surface of the yoke; and
a positioning piece having a positioning recessed portion, said positioning piece projecting from an extreme end of the tubular peripheral edge portion of the bracket, said positioning projection provided in the outer peripheral surface of the yoke being engaged with the positioning recessed portion to perform axial positioning of the bracket with respect to the yoke while preventing axial turning of the bracket with respect to the yoke, an inner peripheral surface of the positioning piece being larger than an outer diameter of the seal projecting from said outer peripheral surface of the yoke so that the positioning piece does not interfere with the seal during placement of the bracket on the yoke.

5,338,996
ARMATURE CORE
Kyohei Yamamoto, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 16, 1993, Ser. No. 77,092
Claims priority, application Japan, Jun. 25, 1992, 4-192890
Int. Cl.[5] H02K *1/06*
U.S. Cl. 310—217 **3 Claims**



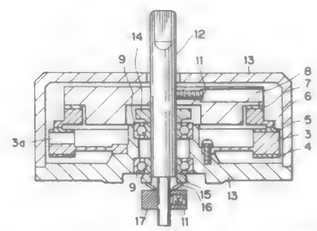
1. An armature comprising:
a plurality of core sheets each having a plurality of slots, a plurality of punched-in recesses formed on a bottom surface of each core sheet and a plurality of punched-out protrusions formed on a top surface of each core sheet by punching in said plurality of punch-in recesses, both said protrusions and said recesses being formed by press-working;
said plurality of core sheets being laminated by press-fitting said plurality of core sheets together by respectively inserting said plurality of punched-out protrusions arrange don said top surface of each core sheet into said plurality of punched-out recesses on said bottom surface of a contiguous core sheet thereby positioning and integrally laminating said plurality of core sheets; and
wherein a plurality of clearance protrusions, each having a very small height, are formed on said top surface of each core sheet and a plurality of clearance recesses formed on said bottom surface of each core sheet, each of said clearance recesses having a width smaller than a width of said plurality of clearance protrusions, said clearance protrusions and said clearance recesses being arranged to provide a very small clearance between two contiguous core sheets.

5,338,997
MICROMANIPULATOR FOR MOVING OBJECTS
Wolfgang Benecke, Berlin, Fed. Rep. of Germany, assignor to Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V., Fed. Rep. of Germany
Continuation of Ser. No. 601,749, Nov. 13, 1990, abandoned. This application Mar. 22, 1993, Ser. No. 35,505
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 3814616
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—307 **9 Claims**



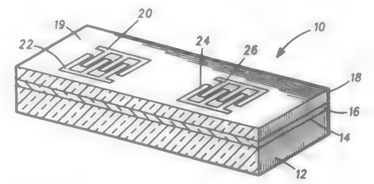
1. A micromanipulator for moving an object, comprising movable tongues of superimposed layers of different materials having varying thermal expansion disposed on one side of a body, one of the materials being a silicon compound, where loose ends of the tongues are arranged so as to allow the object to lay on the tongues either directly or through an object carrier, and wherein heating elements are disposed on said tongues.

5,338,998
VIBRATION DRIVEN ACTUATOR
Koji Kitani, Chofu, and Toru Nakanishi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 14,221, Feb. 5, 1993, abandoned. This application Oct. 28, 1993, Ser. No. 142,121
Claims priority, application Japan, Feb. 6, 1992, 4-021163
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **20 Claims**



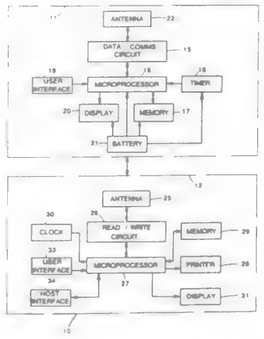
1. A vibration driven motor or actuator comprising:
a vibration member for generating a vibration wave by an applied electrical signal and having a first contact surface; and
a contacting member having a second contact surface which frictionally contacts the first contact surface of said vibration member and for receiving the vibration generated in said vibration member,
wherein one of said first and second contact surfaces is formed of a composite resin prepared by filling one of aromatic polyimide, thermosetting polyimide, a pitch-based carbon fiber, and a molybdenum disulfide powder in a polytetrafluoroethylene resin as a base material, and the other contact surface is formed of an aluminum alloy containing silicon powder.

5,338,999
PIEZOELECTRIC LEAD ZIRCONIUM TITANATE DEVICE AND METHOD FOR FORMING SAME
Ed S. Ramakrishnan, and Wei-Yean Howng, both of Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 5, 1993, Ser. No. 57,027
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—358 **10 Claims**



1. A piezoelectric device comprising
a substrate formed of a material selected from the group consisting of silicon and gallium arsenide,
a first film applied to the substrate and composed of a lead-free zirconium titanate material, and
a piezoelectric film applied to the first film and composed of a lead zirconium titanate compound.

5,339,000
SYSTEM FOR MONITORING PARKED VEHICLES
Oded Bashan, Karmiel; Moshe Aduk, Kiryat-Shemona; Ronnie Gilboa, Moshav Beit-Hillel; Nehemya Itay, Kibbutz Kfar-Giladi, and Dubi Shure, Kfar Vradim, all of Israel, assignors to Easy Park Ltd., Rosh Rina, Israel
Filed Jul. 20, 1992, Ser. No. 916,389
Claims priority, application Israel, Jul. 18, 1991, 98880
Int. Cl.[5] G08G *1/14*
U.S. Cl. 340—932.2 **20 Claims**



1. A system for monitoring a plurality of parked vehicles, the system comprising a portable parking tag for each of said vehicles, each one of said parking tag being placed in a respective one of said vehicles; and a reading device;
each of said portable parking tag including:
a non-contact data communications circuit for effecting data transfer by means of mutual electro-magnetic coupling with the reading device,
a parking tag memory coupled to the data communications circuit for storing at least one validity criterion together with parking tariff data and parking credit data,
a parking tag antenna coupled to the data communications circuit for transmitting a first signal representative of said

VOL 1165 ISS 3 AUG 16 1994 UMI

at least one validity criterion stored in the parking tag memory,

electrical supply means coupled to the non-contact data communications circuit and to the parking tag memory for supplying electrical power thereto, said electrical supply means including an uninterrupted electrical supply means,

a timer means coupled to the non-contact data communications circuit and to the uninterrupted electrical supply means and being responsive to respective start and stop signals for measuring an elapsed time period; and

a processing means coupled to the timer means and to the uninterrupted electrical supply means and being responsive to the elapsed time period, to the parking tariff data and to the parking credit data for determining a parking debit and an available parking credit;

the reading device including:

a reading device antenna for receiving the first signal,

a reading circuit coupled to the reading device antenna and responsive to the first signal for reading said at least one validity criterion stored in the memory of the parking tag,

validity verification means coupled to the reading circuit and responsive to the first signal for generating a validity signal, and

outputs means coupled to the validity verification means and responsive to the validity signal for producing a validity indication.

5,339,001

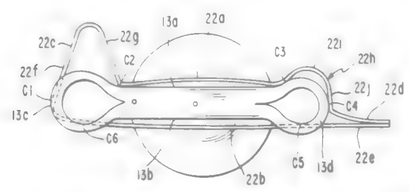
ELECTRIC LAMP HAVING IMPROVED SUPPORT STRAPS FOR PLANAR SEALS

Norman R. King, Hammondsport; Jiri Sip, and Antonin J. Dvorak, both of Painted Post, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Oct. 15, 1992, Ser. No. 961,564

Int. Cl.[5] H01J *5/00*

U.S. Cl. 313—25 **24 Claims**



1. In an electric lamp having a light source capsule energizeable for emitting light and including a generally planar seal sealing said capsule in a gas-tight manner, said seal having two generally parallel major faces and two opposing minor faces extending transversely between said major faces, a support rod extending adjacent a minor face of said seal, and a metallic support strap extending about and holding said seal and fixed to said support rod, the improvement comprising:

said support strap including a stiffly resilient strip of metal having two spaced and opposing major leg portions each extending in contact with a respective major seal face, an elastically deformable jaw portion the major portion of which is not in contact with a said seal face, and end portions fixed to each other adjacent one of said seal faces,

said elastically deformable jaw portion being arranged such that with said end portions fixed to each other adjacent said one seal face said elastically deformable portion is elastically deformed and firmly biases other portions of said support strap against at least two of said seal faces for holding said seal therebetween.

5,339,002

ELECTRIC LAMP AND OPTICALLY ALIGNABLE CEMENTLESS BASE COMBINATION

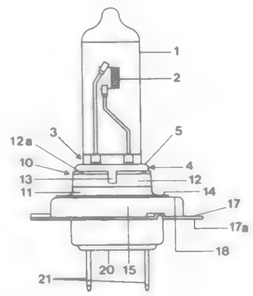
Alfred Braun, Herbrechtingen; Peter Helbig, Sontheim/Br.; Hermann Steiner, Herbrechtingen, and Walter Schoenherr, Giengen, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft F. Electrische Gluehlampen mbH, Munich, Fed. Rep. of Germany

Filed Dec. 2, 1991, Ser. No. 800,997

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 9017224[U]

Int. Cl.[5] H01K *1/46*

U.S. Cl. 313—318 **24 Claims**



1. An electrical lamp having

a light source (**1**) defining a lamp axis, including a light emitting element (**2**);

an optically alignable cementless base (**4**, **10**, **15**, **20**) retaining said light source, said base including

a metallic holder structure (**4**) coupled to the light source (**1**);

an at least part-metallic positioning or locating element (**15**) having an optical reference surface (**17***a*) and a plane, flat auxiliary reference surface (**18***b*);

a metallic tubular adjustment sleeve (**10**) surrounding the holder structure, at least in part, said holder structure being axially adjustable in said adjustment sleeve (**10**) to permit adjustment of said light source (**1**) with respect to said adjustment sleeve, and subsequent attachment, after adjustment, of the holder structure (**4**) to said sleeve (**10**),

and wherein said tubular adjustment sleeve (**10**) comprises a sheet-metal element, which sheet-metal element is formed with a laterally projecting flange (**14**, **14***a*), said flange having a counter reference surface (**14***b*) which is in surface contact with said plane, flat auxiliary reference surface (**18***b*),

said adjustment sleeve being positioned with said counter reference surface (**14***b*) on said auxiliary reference (**18***b*) to be rotatable and laterally shiftable with respect thereto to permit additional adjustment of said light source (**1**) with respect to the positioning or locating element (**15**) and its optical reference surface (**17***a*);

wherein, after adjustment of the light source (**1**) with respect to the positioning or locating element (**15**), said tubular sheet-metal adjustment sleeve (**10**) and said positioning or locating element (**15**) are secured together by a metal-to-metal connection; and

wherein the lateral dimension of the projecting flange (**14**, **14***a*) is between 5 to 20 times the wall thickness of the adjustment sleeve;

said auxiliary reference surface (**18***b*) is a circular ring having an outer diameter which is about 20% larger than the diameter of said projecting flange (**14**, **14***a*); and

wherein said counter reference surface (**14***b*) on said flange (**14**, **14***a*) is devoid of burrs or seams.

5,339,003

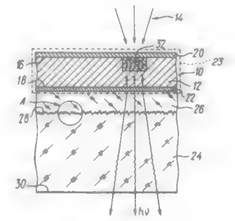
LASER SCREEN FOR A CATHODE-RAY TUBE

Vladimir I. Kozlovsky; Alexander S. Nasibov, and Yan K. Skasyrsky, all of Moscow, U.S.S.R., assignors to Principia Optics, Inc., Los Angeles, Calif. and P.N. Lebedev Institute of Physics, Moscow, U.S.S.R.

Filed Jun. 22, 1992, Ser. No. 902,008

Int. Cl.[5] H01J *29/10;* **H01L** *21/302*

U.S. Cl. 313—463 **5 Claims**



1. A laser screen comprising;

an optical cavity having a first reflecting mirror positioned on one side of said cavity and a second partly transparent mirror having two surfaces positioned on the opposite side of said optical cavity,

a semiconductor member capable of lasing under the effect of an external excitation and having two opposite sides whereby optical radiation emerges through at least one of said two sides with one surface of said reflecting mirror positioned against one side of said semiconductor member and the first surface of said partly transparent mirror positioned against the other side of said semiconductor member; and

a transparent heat removing support having a connection side connected to said optical cavity;

whereby said connection side of said support has a roughness formed by surface irregularities, and the arithmetic mean of distances between adjacent individual irregularities and RMS deviation of a dimension of said individual irregularities in the direction of the light output do not exceed a pixel size.

5,339,004

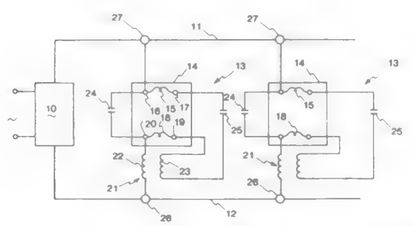
REGULATING BALLAST WITH POWER FACTOR CORRECTION FOR HIGH-FREQUENCY GASEOUS DISCHARGE LAMPS

Pierce M. Murphy, LaCrosse, Wis., assignor to First Lighting, Inc., St. Paul, Minn.

Continuation of Ser. No. 771,004, Oct. 2, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 80,994

Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—244 **2 Claims**



1. A method of operating a high-frequency gas discharge lighting system comprising the steps of:

providing a plurality of gaseous discharge lamps, each having a first filament having first and second electrodes and a second filament also having first and second electrodes;

directly connecting a first capacitor between the first electrodes;

connecting one of said first electrodes to a source of high frequency and the other of said first electrodes through an inductive reactance, having feedback means, to said source of high frequency;

connecting a second capacitor and said feedback means on said inductive reactance between said second electrodes, said capacitors being of predetermined values the sum of which is resonant at the frequency of the lighting system and the values of said first capacitor and the inductor are related to combine to maintain a unity power factor.

5,339,005

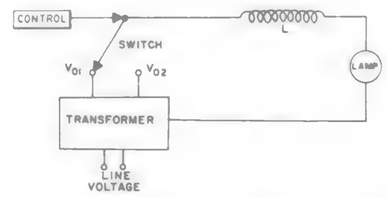
METHOD AND CIRCUIT FOR IMPROVING HID LAMP STARTING

Wojciech W. Byszewski, Concord; Brian Dale, Lynnfield; Philip D. Gregor, Acton; A. Bowman Budinger, Westford, and Yan M. Li, Cambridge, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 816,453, Dec. 31, 1991, abandoned, which is a division of Ser. No. 529,025, May 25, 1990, Pat. No. 5,118,994. This application Oct. 6, 1993, Ser. No. 132,776

Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—244 **2 Claims**



1. A circuit arrangement for igniting and operating a high intensity discharge lamp normally requiring a predetermined starting voltage which causes a predetermined tungsten emission during the thermionic arc phase of lamp starting, said circuit arrangement comprising:

a first AC supply source providing a first AC voltage across said lamp during lamp starting, said first AC voltage being greater than the predetermined starting voltage of said lamp;

a second AC supply source providing a second AC voltage lower than said first AC voltage;

an inductive ballast having an input;

switch means for coupling said first or said second AC supply source to said input of said inductive ballast; and

control means for controlling operation of said switch means whereby said first AC supply source is coupled to the input of said inductive ballast during lamp starting so as to substantially reduce said predetermined tungsten emission during the thermionic arc phase of lamp starting and whereby said second AC supply source is coupled to the input of said inductive ballast during normal lamp operation.

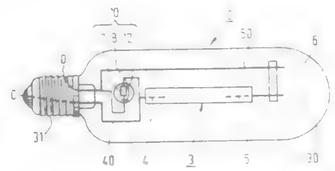
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,006

HIGH PRESSURE DISCHARGE LAMP

Johannes A. T. Schellen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 2, 1993, Ser. No. 25,451
Claims priority, application European Pat. Off., Mar. 13, 1992, 92200731.5
Int. Cl.[5] H01J *19/78*
U.S. Cl. 315—58 19 Claims



1. A high-pressure discharge lamp having a sealed outer envelope, a discharge vessel mounted within said outer envelope, said discharge vessel including electrodes between which a discharge extends in the operational condition of the lamp, current-supply conductors connected to each of said discharge electrodes, and an ignition circuit including a fuse within the outer envelope, characterized in that:

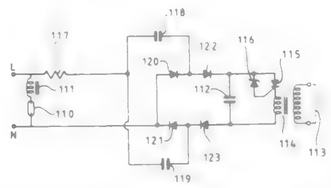
the fuse is placed in an oxidizing atmosphere capsule within the outer envelope.

5,339,007

INSECT KILLERS

Colin R. G. Walton, Birmingham, United Kingdom, assignor to Apco International Limited, Herfordshire, England

Filed Jul. 13, 1992, Ser. No. 912,348
Claims priority, application United Kingdom, Jul. 11, 1991, 9114935.1; Aug. 30, 1991, 9118576.9
Int. Cl.[5] H05B *37/00;* A01M *1/22*
U.S. Cl. 315—205 4 Claims



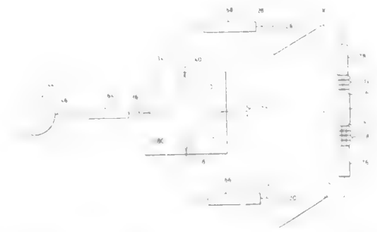
1. An insect killer comprising a discharge lamp, a grid towards which flying insects are attracted by said lamp and an energising circuit for said grid, said energising circuit comprising a step-up pulse transformer having a secondary winding connected to the grid and a primary winding, a discharge capacitor, a trigger device connected in series with said primary winding and in parallel with said discharge capacitor and a charging circuit for said discharge capacitor, said charging circuit comprising a full wave voltage-doubler circuit.

5,339,008

ELECTROMAGNETIC DISCHARGE APPARTUS WITH DUAL POWER AMPLIFIERS

Walter P. Lapatovich, Marlborough; Scott J. Butler, North Oxford, and Robert K. Smith, Wilmington, all of Mass., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Apr. 13, 1993, Ser. No. 46,694
Int. Cl.[5] H05B *41/26*
U.S. Cl. 315—248 14 Claims



1. An electromagnetic discharge apparatus comprising:

electrodeless discharge lamp including a discharge vessel having a first end and a second end and containing a fill material which supports electromagnetic discharge;

first power amplifier having an input and having an output electromagnetically coupled to said first end of said electrodeless discharge lamp;

second power amplifier having an input and having an output electromagnetically coupled to said second end of said electrodeless discharge lamp;

power divider having an input and having a first output coupled to said input of said first power amplifier and a second output coupled to said input of said second power amplifier; and

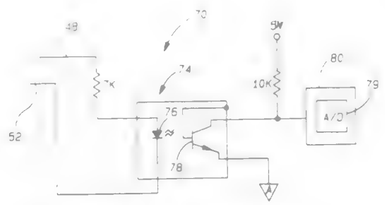
high frequency oscillator for providing a low power signal having an output coupled to said input of said power divider.

5,339,009

METHOD AND APPARATUS FOR DISTINGUISHING INPUT SIGNALS AND GENERATING A COMMON DIMMING SIGNAL

Henry Lai, Bloomfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 742,247, Aug. 8, 1991, abandoned. This application Jun. 25, 1992, Ser. No. 904,717
Int. Cl.[5] G05F *1/00*
U.S. Cl. 315—291 8 Claims



1. A control circuit having a ground potential for receiving and distinguishing input signals on the lamp lines of an instrument panel dimming circuit in generating a common dimming signal to set the corresponding dimming level, comprising:

input means for coupling and stabilizing distinct input signals to a control circuit; and

an analog-to-digital converter in electrical contact with said input means for statistically differentiating between said input signals to generate a common dimming signal;

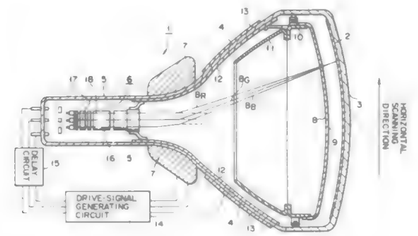
said input means comprises an optoisolator in electrical contact with said lamp lines for isolating said input signals from said analog-to-digital converter, said optoisolator including a light emitting diode in electrical contact with said input signal.

5,339,010

COLOR CATHODE-RAY TUBE APPARATUS

Hiroshi Urata, Fukaya; Toshinao Sone, Kumagaya; Kazunori Nakane, Saitama; Kazunori Satou, and Kiyoshi Tokita, both of Fukaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 731,041, Jul. 17, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 37,536
Claims priority, application Japan, Jul. 17, 1990, 2-188236
Int. Cl.[5] H01J *29/51*
U.S. Cl. 315—368.17 6 Claims



1. A color cathode-ray tube apparatus comprising:

a phosphor screen having a plurality of trios, each of which define one color picture element in a horizontal direction, each of said trios consisting of first, second and third phosphor elements, arranged in a horizontal direction, for emitting red, green and blue light rays, respectively;

means for generating first, second and third video signals, each of which correspond to one of said trios and have first, second and third video signal components;

means for delaying said first and second video signal components by different periods of time with respect to said third video signal component;

electron beam generating means for simultaneously generating a first, a second, and a third electron beam in response to said first, second and third video signals, wherein each of said first, second and third electron beams have first, second and third beam components, respectively, which are modulated for one of said plurality of trios in response to said first, second and third video signal components from said delay means, respectively;

means for converging said first, second and third electron beams at a convergent point located between said phosphor screen and said electron beam generating means, and for applying said first, second and third electron beams diverged from said converging point to said first, second and third phosphor elements of different trios, respectively, thereby causing said phosphor elements to emit red, green and blue light rays, respectively, wherein a first repelling force acting on said first, second and third electron beams traveling from said electron beam generating means to said convergent point being substantially canceled by a second repelling force acting of said first, second and third electron beams traveling from said converging point to said phosphor screen; and

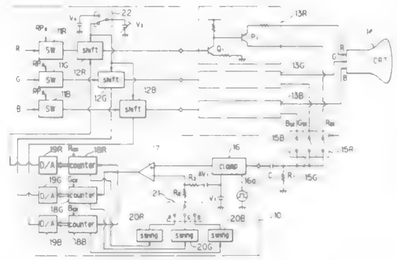
means for deflecting said first, second and third electron beams in a horizontal and vertical direction so as to allow said first, second and third phosphor elements of said different trios to be scanned with said first, second and third beam components of said first, second and third electron beams at different times, respectively.

5,339,011

DISPLAY DEVICE

Takahiko Tamura, Tokyo, and Satoshi Miura, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,776
Claims priority, application Japan, Feb. 18, 1992, 4-061009
Int. Cl.[5] G09G *1/04;* H01J *1/04;* H04N *5/18*
U.S. Cl. 315—383 3 Claims



1. A display device having a CRT for displaying video signals organized into fields and having picture portions and retrace portions, said display device comprising:

means for adding reference pulses to said retrace portions within every field of said video signals, thereby producing cathode currents;

converter means for converting said cathode currents into voltage pulses;

a comparator which compares the voltage pulses with a given reference voltage;

a plurality of forward-backward counters which count the output signals from the comparator;

a plurality of D/A converters for respectively converting the output signals from the forward-backward counters into analog form; and

a plurality of level shifters which control the DC components of the video signal according to the output voltages from the D/A converters, whereby the cutoff characteristics of the CRT are controlled.

5,339,012

METHOD AND CIRCUIT ARRANGEMENT FOR SENSOR-LESS DETECTION OF THE ROTATIONAL ANGLE OF A DAMPER-LESS SYNCHRONOUS MACHINE, PREFERABLY EXCITED BY A PERMANENT MAGNET, AND SUPPLIED BY A RECTIFIER

Manfred Schroedl, Sieggraben, and Thomas Stefan, Bisamberg, both of Austria, assignors to Elin Energieanwendung GmbH, Vienna, Austria

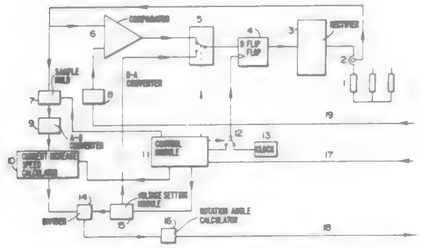
PCT No. PCT/AT91/00081, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/01331, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 2, 1991, Ser. No. 966,061
Claims priority, application Austria, Jul. 13, 1990, 1493/90; Apr. 19, 1991, 822/91
Int. Cl.[5] H02P *6/02*
U.S. Cl. 318—254 9 Claims

1. A system for executing sensor-less detection of the rotation angle of a magnetic wheel of a synchronous machine having a permanent magnet and supplied by a rectifier, said system comprising:

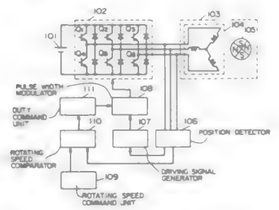
means for generating voltage pulses with said rectifier, said voltage pulses being supplied by a stator winding of said synchronous machine;

VOL 1165 ISS 3 AG 16 1994 UMI

means for forming measuring signals based on said voltage pulses;
means for calculating the position of said magnetic wheel; and
means for supplying said measuring signals to said calculating means;
said calculating means comprising a divider for calculating a quotient value equal to a voltage area indicator divided by a detected temporal change in current in the stator winding of said synchronous machine, said quotient value comprising a complex differential inductance value, having an amplitude and phase that each fluctuate approximately sinusoidally, the fluctuations being based on the angle of rotation of the magnetic wheel position, means for changing at least the voltage area indicator by a given increment in phase, means for measuring the corresponding temporal change in current, and means for determining a new complex differential inductance value based on the change in the voltage area indicator, whereby said calculating means calculates the angular position of the magnetic wheel as a function of the complex differential inductance values.

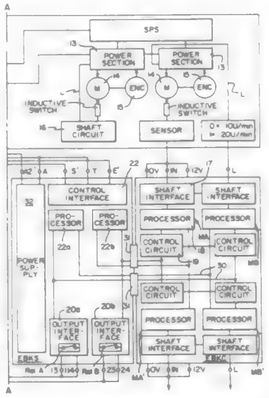


5,339,013
METHOD AND APPARATUS FOR DRIVING A BRUSHLESS MOTOR INCLUDING VARYING THE DUTY CYCLE IN RESPONSE TO VARIATIONS IN THE ROTATIONAL SPEED
Mitsuhisa Nakai; Shiro Maeda, and Toshiaki Yagi, all of Kusatsu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 768,546, Sep. 30, 1991, abandoned. This application May 7, 1993, Ser. No. 57,458
Claims priority, application Japan, Feb. 14, 1990, 2-34322
Int. Cl.[5] H02P 7/00
U.S. Cl. 318—254 3 Claims



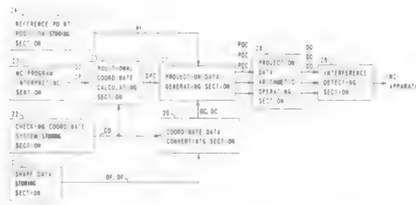
1. A driving method for a brushless motor having windings and a magnet rotor, said method comprising:
determining an actual rotating speed of the motor by detecting and processing of voltage signals induced in the windings of the brushless motor;
inputting a target rotating speed;
performing feedback control wherein a duty control operation for controlling a voltage applied to the brushless motor is made on the basis of a comparison between the actual rotating speed of the brushless motor and the target rotating speed;
determining correcting duty data by comparing the duty output by the duty control with a duty value taken from a predetermined rotating speed versus duty curve; and
in response to a change of the target rotating speed, performing the duty control on the basis of the predetermined rotating speed versus duty curve and the correcting duty data,
wherein the gradient of the predetermined rotating speed versus duty curve is changed so as to have different values at a time of low speed rotation and at a time of high speed rotation, respectively.

5,339,014
APPARATUS FOR SAFETY MONITORING IN PROTECTIVE ARRANGEMENTS WITH NORMAL AND ENHANCED SAFETY OF MACHINERY PERFORMING MULTIPLE-AXIS ROTATIONS
Gerhard Nesper, Oberstenfeld, Fed. Rep. of Germany, assignor to Elge Elektronik-Geräteverk GmbH & Co., Schopfloch, Fed. Rep. of Germany
Filed Jul. 15, 1991, Ser. No. 730,201
Claims priority, application European Pat. Off., Jul. 12, 1990, 90113345.4
Int. Cl.[5] H02H 7/08; G05B 19/405; B25J 19/06; F16P 3/00
U.S. Cl. 318—563 9 Claims



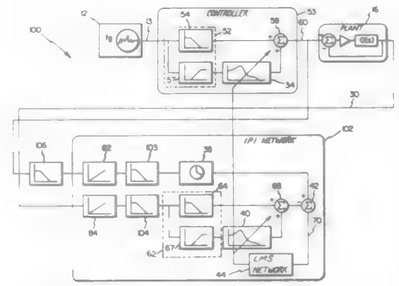
1. An apparatus for safety monitoring of rotating machinery, said machinery having a protective device to prevent contact therewith, first and second shaft circuits for monitoring rotation of shafts of said machinery, shut-off contactors in a power supply section thereof, a protective device monitoring circuit for indicating the operation of said protective device, and a manually-activated monitoring circuit for controlling slow rotation of said machinery, said safety monitoring apparatus comprising:
a power supply unit, said power supply unit responsive to said protective device and manually activated monitoring circuits for controlling power to said shut-off contactors of said machinery;
a terminating control unit, said terminating control unit responsive to said first shaft circuit of said machinery for generating a first control signal indicating the rotational condition of said machinery;
at least one supplemental control unit, said supplementary control unit responsive to said second shaft circuit of said machinery for generating a second control signal indicating a rotational condition of said machinery;
a power supply unit subhousing;
a terminating control unit subhousing;
and at least one supplemental control unit subhousing;
each of said subhousings having plug contact means for providing electrical and mechanical connections;
and lead means for connecting said power supply unit subhousing, said at least one supplemental control unit subhousing and said terminating control unit subhousing in series.

5,339,015
INTERFERENCE CHECKING METHOD AND APPARATUS FOR NUMERICAL CONTROL MACHINING TOOL
Yoshimaro Hanaki, and Kyoichi Yamamoto, both of Niwa, Japan, assignors to Okuma Corporation, Nagoya, Japan
Filed Nov. 2, 1992, Ser. No. 969,965
Claims priority, application Japan, Nov. 7, 1991, 3-319788
Int. Cl.[5] G05B 19/18
U.S. Cl. 318—600 8 Claims



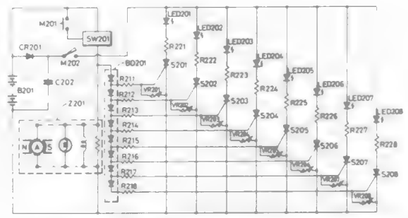
1. An interference checking method for a numerical control machine tool, comprising the steps of:
storing in a storing means, a plurality of shape data of machining parts, movable in accordance with numerical control information of the numerical control machine tool;
storing in the storing means, the data of static parts that may interfere with said movable parts, wherein the number of structural elements of said static parts is different from that of said movable parts;
converting in a converting means, the plurality of shape data stored in said storing means into three-dimensional orthogonal data unique to said machine tool;
generating in a generating means, projection data by projecting said three-dimensional orthogonal data onto three-orthogonal planes, each plane including two orthogonal coordinate axes;
determining by an arithmetic operation in an arithmetic operating means, whether or not the projection data on each plane overlap one another;
detecting an interference in a detecting means, if the arithmetic operating means determines that the projection data of one plane overlaps the projection data of all other planes;
repeating the determining step and the detecting step for all movable parts, starting from the movable part having the least number of structural elements until the completion of the steps for the movable part having the greatest number of structural elements, thereby completing the interference check.

5,339,016
CROSSOVER AND SPECTRAL PREEMPHASIS NETWORKS FOR ADAPTIVE INVERSE CONTROL
Bradford K. Thoen, Eden Prairie, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.
Filed Jan. 14, 1993, Ser. No. 4,710
Int. Cl.[5] G05B 11/42
U.S. Cl. 318—610 22 Claims



1. A feedback control system providing an adjusted command signal to a plant, which controls a subsystem and provides a feedback signal representative of the subsystem's achieved response to the adjusted command signal, the control system comprising:
controller means responsive to a command signal having a plurality of command signal components, each command signal component having a distinct amplitude and a distinct frequency in a range of relatively high and low frequencies, the controller means comprising:
an adaptive filter for adjusting the amplitude of the relatively high frequency command signal components in accordance with a dynamic behavior of the adaptive filter,
means for passing at least the relatively low frequency command signal components, and
summing means for generating the adjusted command signal in response to the output from the adaptive filter and the command signal components passed by the means for passing; and
compensation means for adjusting a dynamic behavior of the adaptive filter in response to the feedback signal and the adjusted command signal.

5,339,017
BATTERY CHARGE MONITOR
Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan
Filed Jun. 24, 1992, Ser. No. 903,503
Claims priority, application United Kingdom, Jul. 3, 1991, 9114382
Int. Cl.[5] H02J 7/00
U.S. Cl. 320—13 6 Claims



1. An arrangement for detecting and indicating the state of

VOL 1165 ISS 3 AG 16 1994 UMI

charge of a rechargeable battery, the arrangement comprising a discharge circuit arranged to be connected to terminals of the battery, the discharge circuit including a switch in series with a load, said load further comprising an electrical system of a motor vehicle including a starter motor of said vehicle, and means for detecting an initial voltage drop across said load, said voltage drop being dependent upon the internal resistance of the battery, and the arrangement further comprising a display device which is responsive to said voltage drop and arranged to display the state of charge of the battery.

5,339,018

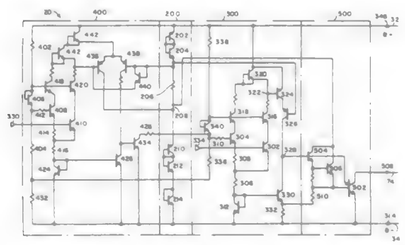
INTEGRATED CIRCUIT MONITOR FOR STORAGE BATTERY VOLTAGE AND TEMPERATURE

A. Paul Brokaw, Burlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 789,764, Nov. 8, 1991, abandoned, which is a continuation of Ser. No. 373,918, Jun. 30, 1989, abandoned. This application Nov. 17, 1992, Ser. No. 978,185

Int. Cl.[5] H02J *7/04*

U.S. Cl. 320—35 **35 Claims**



1. An apparatus for monitoring storage battery voltage as a function of storage battery temperature, comprising:

means for sensing the storage battery voltage; and

comparator means, including band-gap reference cell means, having at least two transistors operated at different current densities, for sensing the storage battery temperature and for providing a reference voltage threshold that varies with variations in the storage battery temperature by combining a voltage that changes in a manner proportional to changes in temperature with a voltage that changes in a manner complementary to changes in temperature, for comparing the storage battery voltage sensed by the means for sensing with the reference voltage threshold.

5,339,019

CURRENT SINK

Paul Benz, Stuttgart, Fed. Rep. of Germany, assignor to ALCATEL N.V., Amsterdam, Netherlands

Continuation of Ser. No. 806,315, Dec. 13, 1991, abandoned. This application Jul. 8, 1993, Ser. No. 87,356

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1990, 4041761

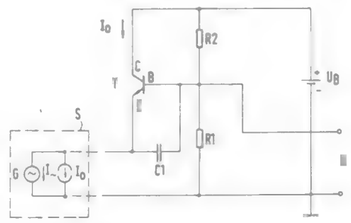
Int. Cl.[5] G05F *1/56*

U.S. Cl. 323—286 **9 Claims**

1. A current sink circuit comprising:

an electronic component having a control terminal, a current input terminal and a current output terminal, the current input and output terminals defining a switched current path, the switched current path being switchable by the control terminal to a low-impedance condition for sinking a current flowing through the switched current path; and

filter means, directly coupled to the control terminal and the current input terminal, and having a frequency-dependent passband, for passing signals of a predetermined frequency range from the current input terminal to the control terminal, thereby making the electronic component present a high impedance to the signals of the predetermined frequency range;



wherein, the current sink circuit acts on an input thereto and receives current components of an input signal which are not processed further by the electronic component.

5,339,020

VOLTAGE REGULATING INTEGRATED CIRCUIT

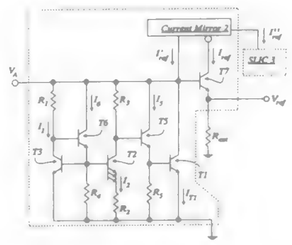
Marco Siligoni, deceased, late of Vittuone, Italy by Ivana Marcioni, legal representative , and Aldo Torazzina, Monza, Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agate Brianza, Israel

Filed Jul. 20, 1992, Ser. No. 916,517

Claims priority, application Italy, Jul. 18, 1991, MI91 A 001994

Int. Cl.[5] G06F *3/16*

U.S. Cl. 323—313 **37 Claims**



1. A circuit, comprising:

a current source, connected to pull up a reference node;

a first bipolar transistor, connected to pull down said reference node;

second and third bipolar transistors, each connected to be operated at a substantially constant respective current, said second and third transistors having different respective emitter current densities;

a first resistor, connected with said second and third transistors in such relation that the voltage drop across said resistor corresponds to the difference between the respective base-emitter voltages of said second and third transistors;

a fourth bipolar transistor, having a base which is operatively connected to be driven by a sum of said voltage drop across said first resistor with at least one forward-biased-junction-voltage, and having an emitter which is operatively connected to drive the base of said first transistor;

a second resistor, connected between said emitter of said fourth transistor and ground, and

an additional resistor, connected between a base terminal of said third transistor and ground.

5,339,021

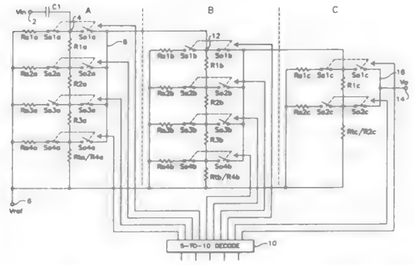
CASCADED RESISTANCE LADDER ATTENUATOR NETWORK

David Thomson, Fremont, Calif., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Feb. 24, 1993, Ser. No. 21,804

Int. Cl.[5] H03H *7/26*

U.S. Cl. 323—354 **20 Claims**



1. A resistor ladder network with a base ladder voltage attenuator stage having a desired input resistance Ri, comprising

a reference voltage node,

a termination attenuation step comprising a resistor of resistance value Ri connected between an input node for said step and said reference voltage node,

a plurality of pre-termination attenuation steps connected in cascade and terminated by said termination step, each of said pre-termination attenuation steps comprising a respective input node, a respective series resistor having a resistance value

$$\frac{Ri(1-A)}{A}$$

connected between its respective input node and the input node for the next successive step, and a respective shunt resistor having a resistance value

$$\frac{Ri}{1-A}$$

connected between its respective input node and said reference voltage node, where A is a constant step-to-step attenuation factor for each of said pre-termination steps that yields equal step attenuations, the input nodes for at least some of said steps providing output taps for obtaining progressively attenuated voltage signals from said attenuator stage, and the input resistances of each of said attenuation steps being substantially equal,

an output lie,

respective output switches between said output line and the input nodes of said attenuation steps,

respective shunt switches controlling the flow of current from the input nodes of said steps through their respective shunt resistors, and

a switch control for closing the output switch for only one step at a time and for opening the shunt switch only in the same step as the closed output switch.

5,339,022

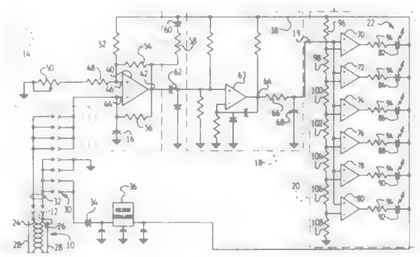
CAPACITIVE CABLE LENGTH INDICATOR

David F. Fleming, Palmyra; James M. Raudenbush, Middletown, and Raymond M. Carlisle, Loysville, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 24, 1992, Ser. No. 950,369

Int. Cl.[5] G01R *27/26*

U.S. Cl. 324—67 **8 Claims**



1. An arrangement for indicating the length of a cable (**10**) made up of two wires (**24, 26**), comprising:

an electrical oscillator stage (**14**) including a frequency setting capacitor (**16**);

means (**30, 32**) for connecting a first (**24**) of said cable wires to a first side of said capacitor and the other (**26**) of said cable wires to the other side of said capacitor;

means (**18**) for providing a voltage corresponding to the frequency of oscillation of the oscillator stage; and

means (**20**) for displaying a visual representation of said voltage;

wherein said oscillator stage (**14**) comprises:

a comparator (**40**) having an output terminal (**42**), an inverting input terminal (**44**) and a non-inverting input terminal (**46**);

first resistor means (**48, 50**) coupling said non-inverting input terminal to a first reference potential;

second resistor means (**52**) coupling said non-inverting input terminal to a second reference potential higher than said first reference potential;

third resistor means (**54**) coupling said non-inverting input terminal (**46**) to said output terminal (**42**);

fourth resistor means (**56**) coupling said inverting input terminal (**44**) to said output terminal (**42**);

means for coupling said capacitor first side to said inverting input terminal (**44**); and

means for coupling said capacitor second side to said first reference potential.

5,339,023

NONDESTRUCTIVE TESTING APPARATUS FOR DETERMINING THE ORIENTATION OF REINFORCING BARS WITHIN A CONCRETE STRUCTURE

Roman Kruchowy, Somis; Dan Goff, Ventura, and Anthony Smith, Oxnard, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 860,742, Mar. 25, 1992, abandoned. This application Dec. 17, 1992, Ser. No. 991,939

Int. Cl.[5] G01B *7/10, 7/14, 7/26;* **G01V** *3/165*

U.S. Cl. 324—67 **7 Claims**

1. A measuring apparatus for the nondestructive testing of an underwater concrete structure said measuring apparatus being adapted to locate and determine the orientation of at least one reinforcing bar within an underwater concrete structure, said measuring apparatus comprising:

probe means for generating a magnetic field, said probe means being adapted for movement over the surface of said underwater concrete structure being tested such that whenever said reinforcing bar is placed within the mag-

VOL 1165 ISS 3 AG 16 1994 UMI

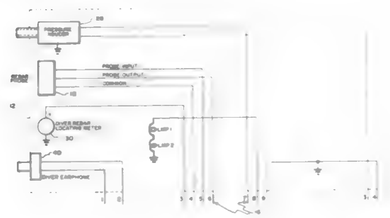
netic field generated by said probe means the shape of said magnetic field is distorted indicating the location and orientation of said reinforcing bar;

means electrically coupled to said probe means for providing an analog signal in response to the distortion in the shape of said magnetic field by the presence of said reinforcing bar, said analog signal being indicative of the distance between said probe means and said reinforcing bar;

processing means having an analog signal input and a data input, said analog signal input receiving said analog signal from said analog signal providing means, said processing means converting said analog signal from said analog signal providing means into digital data and then sorting said digital data;

keypad means for entering via the data input of said processing means a rebar number for said reinforcing bar, the rebar number indicating the outside diameter of said reinforcing bar, said rebar number being an integer within a range of between two and sixteen;

said processing means responsive to the rebar number for said reinforcing bar and said analog signal calculating a parameter RCOV representing the depth of said reinforcing bar within said underwater concrete structure using the equation



$$RCOV = A - B \cdot RRDG + C \cdot RSQR - D \cdot RCUBE + E \cdot RQUAD - F \cdot RQUIN$$

wherein RRDG is said analog signal and where,

RSQR = RRDG·RRDG and,

RCUBE = RRDG·RSQR and,

RQUAD = RRDG·RCUBE and,

RQUIN = RRDG·RQUAD; and

wherein A, B, C, D, E and F are variable parameters, all these parameters being determined by the rebar number for said reinforcing bar supplied to the data input of said processing means by said keypad means; and

power supplying means for providing a direct current voltage to said processing means and said analog signal providing means;

said power supplying means having a self contained rechargeable battery electrically connected to said processing means and said analog signal providing means; and

sensing circuit means for disconnecting said battery from said processing means and said signal generating means when said battery discharges below a predetermined voltage, said predetermined voltage being about 11.3 volts.

5,339,024

BATTERY WITH ELECTROCHEMICAL TESTER

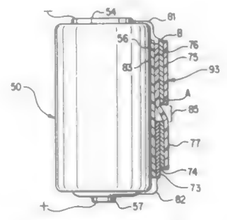
Han C. Kuo, Burlington; Ignacio Chi, Dracut; LiFun Lin, Lincoln, and Louis L. Wu, Boston, all of Mass., assignors to Duracell Inc., Bethel, Conn.

Continuation-in-part of Ser. No. 764,610, Sep. 24, 1991, Pat. No. 5,250,905. This application Jul. 22, 1992, Ser. No. 914,944

Int. Cl.[5] G01N *27/416*

U.S. Cl. 324—435 **17 Claims**

1. A condition indicator for an electrochemical power source, said indicator comprising an anode active layer, a cathode active layer and an electrolyte layer, said electrolyte layer contacting at least a portion of both said anode and cathode active layers, said condition indicator being geometrically designed to provide a predetermined selective discharge pattern whereby the discharge reaction begins at a first region of one of said anode and cathode active layers and continues therefrom towards remote regions thereof.



5,339,025

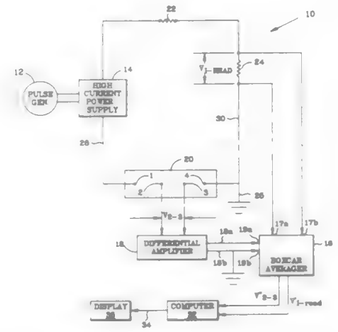
METHOD FOR DETERMINING THE GRANULAR NATURE OF SUPERCONDUCTORS USING PULSED CURRENT

Thomas E. Jones, Spring Valley, and Wayne C. McGinnis, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1993, Ser. No. 10,685

Int. Cl.[5] G01N *27/00*

U.S. Cl. 324—71.6 **9 Claims**



1. A method for determining the granular nature of a superconductive material, comprising the steps of:

conducting a substantially rectangular current pulse having an amplitude through said superconductive material, said superconductive material having a critical temperature;

maintaining the temperature of said superconductive material at a substantially constant temperature which does not exceed said critical temperature of said superconductive material;

determining said amplitude of said current pulse;

determining the electrical resistance, R, of said superconductive material resulting from conducting said current pulse through said superconductive material;

increasing said amplitude of said current pulse until said electrical resistance of said superconductive material becomes saturated;

determining an electrical resistance difference, δ, between a saturated electrical resistance, R_1, of said saturated superconductive material and a total normal state electrical resistance of said superconductive material;

generating a first output signal if $|\delta| \leqq \epsilon$, where ϵ represents a predetermined limit, where said first output signal corresponds to said superconductive material having a homogeneous microscopic morphology; and

generating a second output signal if $|\delta| > \epsilon$, where said second output signal corresponds to said superconductive material having a granular microscopic morphology.

5,339,026

FIBER-OPTIC SENSOR WITH FIRST AND SECOND BIMODE FIBERS

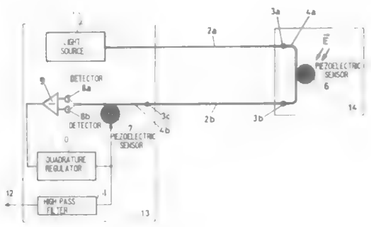
Klaus Bohnert, Niederrohrdorf, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Aug. 28, 1992, Ser. No. 936,799

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128687

Int. Cl.[5] G01R *19/00*

U.S. Cl. 324—96 **8 Claims**



1. A fiber-optic sensor for alternating electric fields and voltages comprising:

a multimode laser diode for generating a laser beam;

a first monomode fiber for transmitting the laser beam;

a first bimode fiber for receiving and propagating the laser beam transmitted by the first monomode fiber, wherein a fundamental mode LP_{01} and an even mode LP_{11} of the fiber propagate in the first bimode fiber with a first path difference between the fundamental mode LP_{01} and even mode LP_{11};

a piezoelectric sensor element attached to the first bimode fiber such that a change in dimension of the piezoelectric sensor element in electric field results in a change in length in the first bimode fiber;

a second monomode fiber for receiving an transmitting the laser beam propagated through the first bimode fiber;

a second bimode fiber for receiving and propagating the laser beam transmitted by the second monomode fiber, wherein the fundamental mode LP_{01} and the even mode LP_{11} of the laser beam propagate in the second bimode fiber with a second path difference between the fundamental mode LP_{01} and even mode LP_{11}; and

means for varying a length of the second bimode fiber to compensate for the change in length of the first bimode fiber induced by the piezoelectric sensor element.

5,339,027

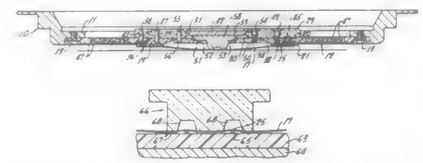
RIGID-FLEX CIRCUITS WITH RAISED FEATURES AS IC TEST PROBES

Blake F. Woith, Orange; William R. Crumly, Anaheim, and Jacques F. Linder, Rancho Palos Verdes, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 752,422, Aug. 30, 1991, Pat. No. 5,264,787. This application Feb. 24, 1993, Ser. No. 22,253

Int. Cl.[5] G01R *1/073*

U.S. Cl. 324—754 **7 Claims**



1. A device for testing an electrical circuit element having contacts thereon in a predetermined pattern comprising

a flexible membrane,

a plurality of contacts on one side of said membrane, said contacts being in a predetermined pattern corresponding in position to the pattern of contacts on a device to be tested,

circuit means on said membrane extending away from said contacts for connection to a test circuit,

means for supporting said diaphragm outwardly of said contacts,

a support form engaging the opposing side of said membrane,

means for positioning said support form so that a surface of said form engages said membrane and deflects said membrane outwardly, whereby said contacts on said membrane can be pressed against contacts of a device to be tested,

said surface of said support form having recess means therein opposite from and following the pattern of said contacts on said membrane and providing portions of said surface on either side of said recess means, whereby said portions of said surface on either side of said recess means can hold said contacts on said membrane for engagement with contacts of a device to be tested.

5,339,028

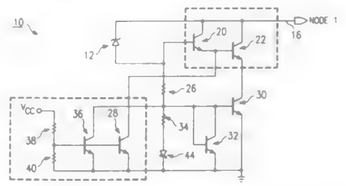
TEST CIRCUIT FOR SCREENING PARTS

Kevin M. Ovens, Garland, and Jeffrey A. Niehaus, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 919,071, Jul. 23, 1992, Pat. No. 5,196,787. This application Jan. 22, 1993, Ser. No. 7,439

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—158.1 **10 Claims**



1. A method of testing an integrated circuit comprising the steps of:

providing model circuitry on the integrated circuit, said model circuitry having a plurality of transistors with a size

VOL 1165 ISS 3 AG 16 1994 UMI

ratio proportional to the minimum desired beta characteristic of the transistors on the integrated circuit, said transistors being coupled so that the current drawn by said transistors is proportional to said size ratio of said transistors;

providing a test node coupled to a pin of said integrated circuit and to said model circuitry;

measuring DC characteristics of said model circuitry by observing the current drawn by said transistors within said model circuitry in response to certain voltages being applied at said test node, said observations being made without enabling the other circuitry on the integrated circuit; and

estimating the operating performance of the transistors within the integrated circuit from the observed current measurements of the model circuitry.

5,339,029

METHODS AND APPARATUS FOR MEASURING THE POSTION OF AN EDGE OF A METAL STRIP BY ELECTRONIC INDUCTION

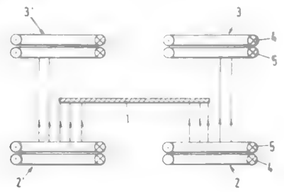
Harald Wagner, Kreuztal, Fed. Rep. of Germany, assignor to Elecktro-Mechanik GmbH, Wenden, Fed. Rep. of Germany

Filed Aug. 14, 1992, Ser. No. 929,396

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4126921

Int. Cl.[5] G01B *7/00, 7/14*

U.S. Cl. 324—207.17 **15 Claims**



1. An arrangement comprising a metal strip having an edge, and an apparatus for inductively measuring the position of said edge within a measuring range lying in a plane of said strip, said apparatus comprising:

primary and secondary coils of elongated shape, each surrounding an inner area which defines a lengthwise axis and a widthwise axis, said widthwise axis being shorter than said lengthwise axis, said lengthwise axis being longer than said measuring range, said area being free of a metallic core, said primary and secondary coils being disposed opposite one another to define a space therebetween in which said edge of said strip is disposed and being oriented perpendicular to said lengthwise axis when viewed in a direction perpendicular to said metal strip;

an exciter circuit connected to said primary coil for feeding alternating voltage thereto at a frequency of at least 10 KHz;

a detector circuit connected to said secondary coil for determining a voltage induced in said secondary coil by said primary coil;

at least one of said primary and secondary coils being operated generally in its resonant frequency; and

a shield of magnetically conductive material disposed at a distance from said at least one coil and surrounding all sides thereof, except a side thereof facing the metal strip.

5,339,030

MULTI-DISPLACEMENT DETECTING APPARATUS

Yasukazu Hayashi, Niwa, Japan, assignor to Okuma Corporation, Nagoya, Japan

Filed Sep. 22, 1992, Ser. No. 948,309

Claims priority, application Japan, Sep. 25, 1991, 3-273176

Int. Cl.[5] G01B *7/30, 7/34*

U.S. Cl. 324—207.23 **3 Claims**



1. A multi-displacement detecting apparatus, comprising:

a moving section whose surface is continuously irregular in the moving direction;

a stationary section including a plurality of sensors each outputting a signal that contains an output component whose level is proportional to a sine-wave value of a displacement in said moving direction and has an amplitude modulated in proportion to a variation in a gap from said irregular surface; and

an arithmetic logic means for inputting the output signals of said plurality of sensors and for outputting a displacement in said moving direction and another at least one displacement of said moving section;

wherein said arithmetic logic means converts the output signals of said plurality of sensors into a sine-wave value signal whose level is proportional to a sine-wave value of a displacement in said moving direction and a cosine-wave value signal whose level is proportional to a sine-wave value of a displacement in said moving direction and whose phase differs 90° from said sine-wave value signal, and applies an inverse tangent to said sine-wave value signal and cosine-wave value signal, and provides a displacement in said moving direction, and wherein said arithmetic logic means also converts the output signals of said plurality of sensors into a first signal that varies according to a displacement in said moving direction and a second signal which is provided by modulating said first signal in amplitude proportionally to said variation in the gap, and dividing said second signal by said first signal, and providing a displacement in the gap direction.

5,339,031

METHOD AND APPARATUS FOR NON-CONTACT HOLE ECCENTRICITY AND DIAMETER MEASUREMENT

Engmin J. Chern, Columbia, Md., assignor to The United States of America as represented by the Administrator, National Aeronautics & Space Administration, Washington, D.C.

Filed Jun. 26, 1992, Ser. No. 904,620

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] G01B *7/28, 5/20;* **G01N** *27/72, 27/90*

U.S. Cl. 324—219 **20 Claims**

9. A system for measuring a parameter of a hole in a specimen under test, comprising:

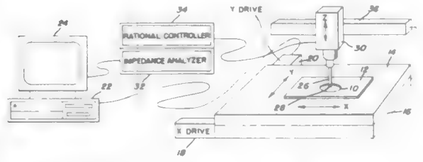
(a) platform means for supporting said specimen;

(b) means for translating said platform means;

(c) an eddy current hole probe including a sensor coil for insertion into the hole;

(d) probe holder means for axially rotating the probe and positioning the sensor coil at a predetermined depth in the hole;

(e) control means for automatically controlling the measurement of at least the diameter of the hole at a predetermined depth and including means for generating a



signal of the average impedance value of the sensor coil as the probe is rotated in the hole for providing a measurement of the parameter of the diameter of the hole; and

(f) means for providing an indication of the diameter measurement.

5,339,032

MAGNETIC RESONANCE IMAGING APPARATUS

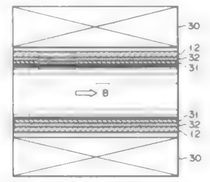
Mineyuki Konishi, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1990, Ser. No. 618,386

Claims priority, application Japan, Nov. 28, 1989, 1-308547

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—318 **15 Claims**



1. In a magnetic resonance imaging apparatus comprising:

static magnetic field generating means for generating a static magnetic field along the direction of a first axis;

gradient magnetic field generating coil means for generating gradient magnetic fields along the direction of said first axis and the directions of second and third axes orthogonal to said first axis;

a radio-frequency coil means for transmitting or receiving electromagnetic waves from a direction other than the direction of said first axis; and

a radio-frequency shielding body disposed between said gradient magnetic field generating coil means and said radio-frequency coil means and having a thickness along the directions of said second and third axes,

the improvement wherein said radio-frequency shielding body is formed of a conductive material having a thickness less than approximately $1/\sqrt{\pi \, fo \, \sigma \, \mu}$

where: π is a constant equal to the ratio of the circumference of a circle to its diameter;

fo is the Larmor frequency of the atomic nuclei of an imaging object;

σ is the conductivity of the conductive material; and

μ is the magnetic permeability of the conductive material; and is arranged to interrupt electromagnetic coupling between said gradient magnetic field generating coil means and said radio-frequency coil means resulting from a radio-frequency pulse applied to said radio-frequency coil means and reduce a time constant of eddy currents generated in the surface of said gradient magnetic field coil means.

5,339,033

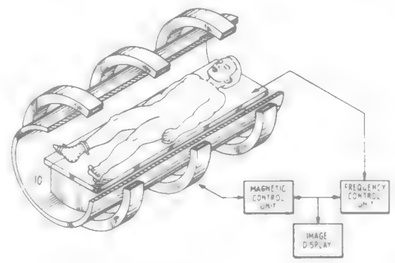
METHOD OF IMPROVING FAT SATURATION DURING MRI

Steven S. Eilenberg, Solana Beach; W. Dean Kirkland, El Cajon, and Mark A. Walters, San Diego, all of Calif., assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Filed Aug. 11, 1992, Ser. No. 928,953

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—309 **33 Claims**



1. A method of improving fat saturation during magnetic resonance imaging, comprising:

providing a container which holds a non-protonated or minimally protonated fat saturation enhancing material;

placing said container on a part of the part of the body of a patient to be scanned with a magnetic resonance imaging system;

imaging said part of the body with a magnetic resonance imaging system.

5,339,034

METHOD FOR OBSERVING TIME VARIATIONS OF SIGNAL INTENSITIES OF A NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY IMAGE

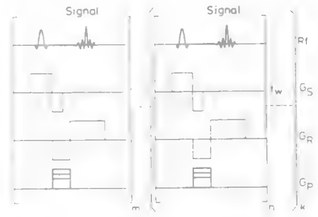
Jürgen Hennig, Freiburg, Fed. Rep. of Germany, assignor to Bruker Medizintechnik GmbH, Rheinstetten, Fed. Rep. of Germany

Filed Dec. 14, 1992, Ser. No. 990,140

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142726

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **12 Claims**



1. A method of obtaining a time sequence of nuclear magnetic resonance (NMR) tomograms of a measuring volume comprising the steps of:

a) selecting a sectional plane in the measuring volume;

b) recording a high spatial resolution NMR tomogram data set f, having m members, $f_1 \ldots f_m$;

c) recording a low spatial resolution NMR tomogram data set f' having n members, $f_1' \ldots f_n'$, with $n << m$;

d) waiting a time t_w after step c);

e) repeating steps c) and d) in sequence to obtain k low

VOL 1165 ISS 3 AG 16 1994 UMI

spatial resolution data sets f'^k, each having n members, $f_1'^k \ldots f_n'^k$; and

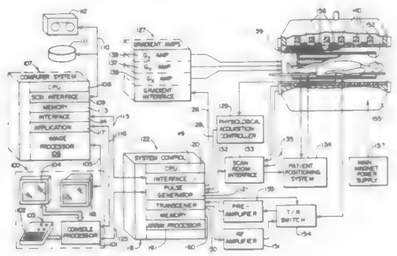
f) combining the high resolution data set f with the k low resolution data sets f'^k to form k combined data sets f''^k for reconstructing NMR tomograms of the sectional plane with high resolution in space and time.

5,339,035

MR IMAGING WITH RECTANGULAR MAGNETIZATION TRANSFER PULSE

Erika Schneider, New Berlin, and Matthew A. Bernstein, Waukesha, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed May 7, 1993, Ser. No. 57,940
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 5 Claims



1. A method of enhancing the contrast of an image produced from NMR data acquired during a scan in which a series of pulse sequences are executed to elicit NMR signals from long-T_2 spins in a subject at a selected Larmor resonant frequency, which comprises:

applying a substantially rectangular shaped RF saturation pulse to the subject prior to the acquisition of said NMR data to substantially reduce the net magnetization of short-T_2 spins in the subject, the frequency of said substantially rectangular shaped RF saturation pulse being offset from said selected Larmor resonant frequency by an amount which prevents the substantially rectangular shaped RF saturation pulse from reducing the net magnetization of long-T_2 spins at said selected Larmor resonant frequency.

5,339,036

LOGGING WHILE DRILLING APPARATUS WITH BLADE MOUNTED ELECTRODE FOR DETERMINING RESISTIVITY OF SURROUNDING FORMATION

Brian Clark, Missouri City; Stephen D. Bonner, Sugar Land; Jacques Jundt, Missouri City, all of Tex., and Martin Luling, Danbury, Conn., assignors to Schlumberger Technology Corporation, Houston, Tex.

Division of Ser. No. 786,137, Oct. 31, 1991, Pat. No. 5,235,285. This application May 21, 1993, Ser. No. 65,276
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] G01V *3/18, 3/38;* E21B *47/12, 49/00*
U.S. Cl. 324—338 21 Claims

1. A measurement-while-drilling system for determining the resistivity of formations surrounding a borehole being drilled in the earth by a drill bit at the end of a drill string, comprising:

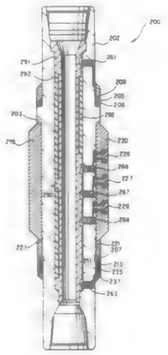
a drill collar in said drill string, said drill collar comprising an elongated tubular body formed of an electrically conductive material;

a toroidal antenna mounted on said body in an insulating medium, said antenna comprising a coil mounted on a toroidal core having an axis substantially coincident with the drill collar axis;

means for energizing said toroidal antenna to induce a current which travels in a path that includes said body and said formations;

a blade mounted on said body;

an electrode mounted in said blade; and



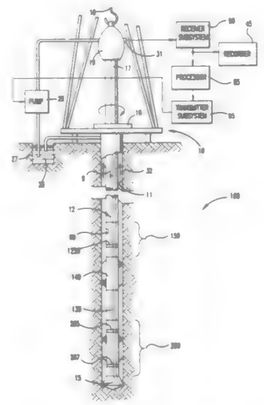
means for measuring at said electrode an electrical signal resulting from said current, said electrical signal being an indication of the resistivity of said formations.

5,339,037

APPARATUS AND METHOD FOR DETERMINING THE RESISTIVITY OF EARTH FORMATIONS

Stephen D. Bonner, Sugar Land; Richard A. Rosthal, and Abdullah A. Bagersh, both of Houston, all of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Oct. 9, 1992, Ser. No. 955,101
Int. Cl.[5] G01V *3/20, 3/18*
U.S. Cl. 324—366 42 Claims



1. Apparatus for determining the resistivity of formations surrounding an earth borehole, comprising:

an elongated electrically conductive body that is moveable through the borehole;

first transmitter means for establishing a first current in the body from a first transmitter position on the body, said first current traveling in a path that includes the body and the formations;

an electrode on said body having a surface that is electrically isolated from the surface of the body;

means for measuring at said electrode a first electrical signal resulting from said first current;

second transmitter means for establishing a second current in the body from a second transmitter position on the body that is spaced from the first transmitter position, said second current traveling in a path that includes the body and the formations;

means for measuring at said electrode a second electrical signal resulting from said second current;

current monitor means for measuring the axial current passing a monitor position on the body to obtain a monitor current value; and

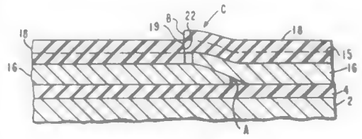
means for deriving an indication of formation resistivity as a function of said first electrical signal, said second electrical signal, and said monitor current value.

5,339,038

ASSEMBLY FOR DETECTING AND LOCATING CABLE PINCHING

Robert A. Boenning, Timonium, Md.; Karl F. Schoch, Jr., Penn Hills, Pa.; Daryl V. Stough, North Huntingdon, Pa., and Francis W. Navish, Jr., East Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 6, 1992, Ser. No. 910,854
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—539 31 Claims



1. An assembly for use in a pinching detection and location system, said assembly comprising:

a layer of semiconductive material;

a layer of switching material positioned adjacent said layer of semiconductive material, said switching layer being laterally offset from said semiconductive layer transverse to a longitudinal length of said semiconductive layer and non-conductive in an unstressed state and conductive in a stressed state; and

a reinforcing means for reinforcing the assembly;

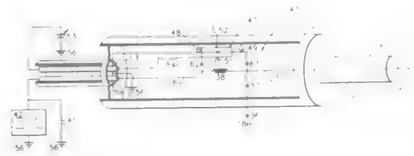
wherein the assembly is wrapped in surrounding relationship about an unarmored cable.

5,339,039

LANGMUIR PROBE SYSTEM FOR RADIO FREQUENCY EXCITED PLASMA PROCESSING SYSTEM

Robert N. Carlile, Tucson, Ariz., and Sam G. Geha, Sunnyvale, Calif., assignors to Arizona Board of Regents on Behalf of the University of Arizona, Tucson, Ariz.

Filed Sep. 29, 1992, Ser. No. 953,561
Int. Cl.[5] C23C *14/00*
U.S. Cl. 324—655 22 Claims



1. A Langmuir probe system for measuring characteristics of a plasma which is excited by radio frequency energy, comprising:

a moveable Langmuir probe adapted for immersion and movement in said plasma;

a moveable resonant circuit adapted for immersion and movement in said plasma, electrically connected to said moveable Langmuir probe, said moveable resonant circuit comprising:

inductive means, electrically connected to said moveable Langmuir probe; and

semiconductor variable capacitive means, electrically connected to said moveable Langmuir probe, wherein said semiconductor variable capacitive means is responsive to an electrical input signal for electrically varying the capacitance thereof and tuning the moveable resonant circuit to reduce distortions which arise from the radio frequency energy; and

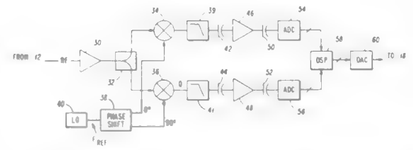
Langmuir probe energization input means, electrically connected to said moveable resonant circuit, for providing an energization signal to said moveable Langmuir probe, for measuring the characteristics of the plasma which is excited by radio frequency energy.

5,339,040

AM DEMODULATION RECEIVER USING DIGITAL SIGNAL PROCESSOR

Roger K. Loper, Marion, Iowa, assignor to Rockwell International Coproration, Seal Beach, Calif.

Filed Jul. 9, 1993, Ser. No. 89,864
Int. Cl.[5] H03D *1/02;* H04B *1/26*
U.S. Cl. 329—358 21 Claims



1. In an AM receiver converting an AM signal to in-phase (I) and quadrature-phase (Q) component signals representative of the AM signal, and AC-coupling the component signals to provide representative digital I and Q signals, a method of demodulating the AM signal including processing the digital I and Q signals to compensate for carrier signal energy removed from the amplitude modulated signal by the AC-coupling, the method comprising the steps of:

(a) determining the absolute values of the I and Q digital signals;

(b) comparing the absolute value of the I digital signal to the absolute value of the Q digital signal and determining which value is greater;

(c) in response to said step of comparing and determining, providing a digital output by scaling the greater value based upon the ratio of the absolute values of the I and Q digital signals; and

(d) converting the digital output to an analog signal representing the AM demodulated signal.

5,339,041

HIGH EFFICIENCY POWER AMPLIFIER

John H. Nitardy, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 6, 1993, Ser. No. 88,201
Int. Cl.[5] H03F *3/38;* H04L *27/04*
U.S. Cl. 330—10 9 Claims

1. An amplifier for processing an input signal to produce an amplified output signal, the input signal having a modulated

VOL 1165 ISS 3 AG 16 1994 UMI

envelope and a frequency that may shift among a plurality of different frequencies, said amplifier comprising:

pulse shaping means for processing the input signal to produce a shaped signal exhibiting the same frequency and phase as the input signal;

envelope detection means for processing the input signal to produce an envelope signal that represents the envelope of the input signal;



power supply means for tracking and amplifying the envelope signal to produce a supply signal; and

switch-mode signal source means for receiving the shaped signal and the supply signal and for producing an amplified signal whose phase and frequency are determined by the shaped signal and whose envelope is modulated by the supply signal.

5,339,042

INPUT STAGE OFFSET COMPENSATION DEVICE

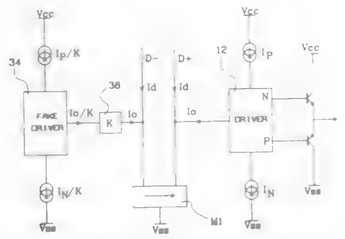
Jean-Claude Kaire, Vourey; Bernard Majoux, Meylan, and Serge Pontarollo, Pont de Claix, all of France, assignors to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Jan. 28, 1993, Ser. No. 10,605

Claims priority, application France, Jan. 31, 1992, 92 01312

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—255 **22 Claims**



22. A method for compensating an offset of an input stage having first and second current output legs, the first output leg connected to an input of a real stage that pushes a parasitic current into the first leg, comprising the steps of:

providing a compensation current having a value equal to a value of the parasitic current divided by a predetermined factor greater than one; and

amplifying the compensation current by an amount equal to the predetermined factor before pushing the compensation current into the second leg.

5,339,043

WAVE PROPAGATION SIGNAL TRANSMISSION DEVICE AND APPLICATIONS OF THE DEVICE TO THE AMPLIFICATION OF SUCH SIGNALS

Jacques Chahbazian, Bruyeres le Chatel, France, assignor to Prana Recherche et Development, Bruyeres Le Chatel, France

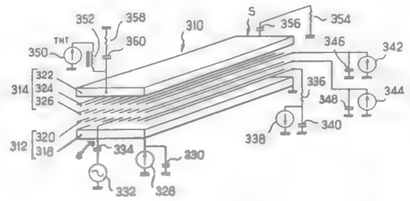
PCT No. PCT/FR91/01056, § 371 Date Aug. 21, 1992, § 102(e) Date Aug. 21, 1992, PCT Pub. No. WO92/11693, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 20, 1991, Ser. No. 920,506

Claims priority, application France, Dec. 21, 1990, 90 16175

Int. Cl.[5] H03F *3/60*

U.S. Cl. 330—56 **5 Claims**



1. Wave propagation signal transmitting device comprising:

a vacuum enclosure having at least two coupled parallel lines said enclosure including

a first HF input and electron emitting line having in parallel relationship a linear continuous thermionic cathode electrode for emitting electrons and a linear control grid electrode,

a second HF output and electron receiving line having in parallel relationship a linear continuous anode electrode for receiving electrons and linear decoupling/accelerating screen grid electrode means,

said first and second lines being stacked face to face so as to arrange the cathode electrode and the anode electrode in an outer position,

said first and second lines presenting at opposite ends thereof an input end and an output end,

said linear control grid electrode being connected at the output end thereof to a load impedance and being adapted to receive a HF input wave signal at the input end thereof, said HF input signal for controlling electron flux emitted from the cathode,

said anode electrode being connected at the input end thereof to a reverse load impedance and being adapted to deliver a HF output wave signal at the output end thereof connected to an useful load impedance after receiving the controlled electron flux from the first line,

said cathode electrode, control grid electrode, decoupling-/accelerating screen grid electrode means and anode electrode defining means for amplifying the input HF signal so as to generate through said controlled electron flux the output HF signal upon propagation of the HF signals from the input end to the output end of the lines, and

said first and second lines presenting distributed inductive and capacitive constants and being coupled to obtain a distributed mode wave propagation of said output HF signals.

5,339,044

HIGH LINEARITY DIFFERENTIAL CIRCUIT

Jean-Claude Perraud, St. Aubin sur Mer, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1993, Ser. No. 15,109

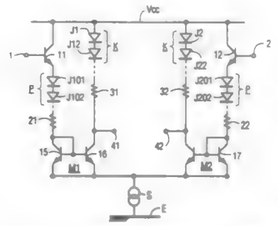
Claims priority, application France, Feb. 19, 1992, 92 01884

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—252 **15 Claims**

1. A high linearity differential circuit, comprising: a DC

current source feeding from a supply voltage reference terminal emitter-collector paths of a differential pair of input transistors, a collector of each of said input transistors being fed from another supply voltage terminal, a base of an input transistor receiving an input voltage signal and an emitter of each input transistor being connected to the DC current source via a respective emitter load resistor each of which has the value R, characterized in that a control branch of a current mirror



comprising q forward biased junctions is connected between the emitter of each input transistor and the current source, in that an output branch of the current mirror is connected to said other supply voltage terminal via an output load resistor in series with a non-zero number k of forward biased junctions, and in that the value of each of the output load resistors is selected to be practically equal to $k.R/(1+q)$ so as to obtain a voltage gain at the output, said gain being equal to $k/(1+q)$ relative to the input voltage signal.

5,339,045

COMPARATOR START-UP ARRANGEMENT

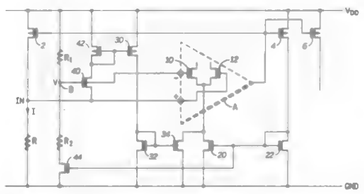
Andreas Ruszcnyak, Chene-Bougeries, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1992, Ser. No. 980,037

Claims priority, application United Kingdom, Dec. 20, 1991, 9127088.0

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—253 **9 Claims**



1. A circuit including an operational amplifier having first and second inputs and an output and including an input stage comprising first and second transistors coupled in differential configuration and being powered by a first current source, the first current source being powered from the output of the operational amplifier, wherein, in order to ensure start up of the amplifier, a second current source is coupled to the differential pair of transistors, and a sensing means is coupled across the first and second inputs of the operational amplifier and arranged to control energisation of the second current source in order to switch off the second current source after switch on of the amplifier.

5,339,046

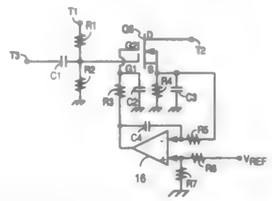
TEMPERATURE COMPENSATED VARIABLE GAIN AMPLIFIER

Richard K. Kornfeld, San Diego; Ana L. Weiland, Encinitas, both of Calif., and Mitsunari Okazaki, Fukushima, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan and Qualcomm Inc., San Diego, Calif.

Filed Jun. 3, 1993, Ser. No. 72,303

Int. Cl.[5] H03G *3/30;* **H03F** *1/30;* **H04B** *17/00, 1/04*

U.S. Cl. 330—277 **13 Claims**



1. An amplifier comprising:

a field effect transistor having two gate terminals, a drain terminal, and a source terminal;

a comparator having two input terminals and an output terminal;

wherein a first input terminal of said comparator is connected to a reference voltage, said second input terminal of said comparator is connected to said source terminal and said output terminal of said comparator is connected to one of said two gate terminals; and

a source of said reference voltage which includes a second comparator having two input terminals and an output terminal, said two input terminals of said second comparator being connected to respectively a reference signal and a signal strength indicating signal, and said output terminal of said second comparator being connected to said first input terminal of said first comparator.

5,339,047

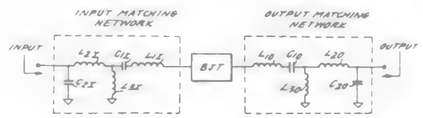
X-BAND BIPOLAR JUNCTION TRANSISTOR AMPLIFIER

Muhammad A. Mizan, Ocean, and Raymond C. McGowan, Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 18, 1993, Ser. No. 18,969

Int. Cl.[5] H03F *3/60*

U.S. Cl. 330—286 **10 Claims**



1. An X-band low-noise, small-signal amplifier for operation in the frequency range of 8–12.5 GHz, comprising:

input means for receiving an X-band signal, said input means including input and output means and an input impedance matching network; said input impedance matching network including a series connection of a first inductor, a first capacitor and a second inductor extending from the BJT to the input terminal in that ordering third inductor connected between the ground and the connection point of said first capacitor and said second inductor, and a second capacitor connected between the ground and input terminals;

VOL 1165 ISS 3 AG 16 1994 UMI

a two port bipolar junction transistor (BJT) being capable of operating between 8 and 12.5 GHz and having an input electrode, an output electrode, and a ground electrode, said input electrode being connected for receiving said signal from said input means, said output electrode delivering an amplified signal from said transistor, and said ground electrode being grounded; and

output means for receiving said amplified signal from said output electrode and providing said amplified signal to further circuitry, said output means including second input and output terminals and an output impedance matching network; said output impedance matching network including a series connection of a fourth inductor, a third capacitor and a fifth inductor extending from the BJT to the second output terminal in that order, a sixth inductor connected between the ground and the connection point of said third capacitor and said fifth inductor, and a fourth capacitor connected between the ground and the second output terminal;

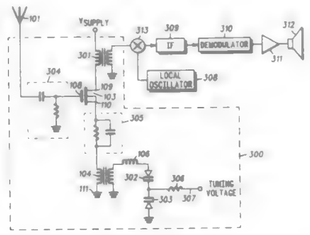
wherein all the foregoing components we disposed on a dielectric board, wherein each said inductor comprises a microstrip formed on said board, and wherein at least one of said capacitors is formed by a pair of cladding portions formed on opposite sides of said board.

5,339,048

RADIO FREQUENCY AMPLIFIER

Paul J. Weber, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1993, Ser. No. 55,461
Int. Cl.[5] H03F *3/191*
U.S. Cl. 330—302 **11 Claims**



1. An amplifier that amplifies radio frequency signals, the amplifier comprises:

a transistor that has a signal terminal, a supply terminal, and a return terminal, wherein the signal terminal receives the radio frequency signals;

an output impedance matching transformer operably coupled to the supply terminal and a voltage supply source;

an impedance transformer having a primary winding and a secondary winding, wherein the primary winding is operably coupled to the return terminal and a signal common, wherein the impedance transformer has a predetermined turns ratio between the primary winding and the secondary winding, and wherein gain of the amplifier substantially equals an impedance of the output impedance matching transformer divided by an impedance of the impedance transformer; and

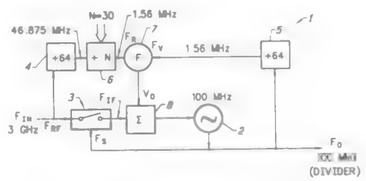
a tuned series resonant circuit operably coupled to the secondary winding of the impedance transformer.

5,339,049

ULTRA LOW NOISE FREQUENCY DIVIDER/MULTIPLIER

Donald A. Bradley, Morgan Hill, Calif., assignor to Wiltron Company, Morgan Hill, Calif.

Filed Apr. 22, 1993, Ser. No. 51,624
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—16 **6 Claims**



1. A frequency divider comprising:

a voltage controlled oscillator having an input for receiving a control voltage and an output for providing an output signal having a frequency F_O;

first means for dividing the frequency F_{IN} of an input signal by a predetermined number D for providing a signal having a frequency F_{IN}/D;

second means for dividing the frequency F_{IN}/D by a predetermined number N for providing a signal having a frequency F_R, said second means including a programmable dividing means;

third means for dividing the output signal having the frequency F_O by the predetermined number D for providing a signal having a frequency F_V;

means for sampling the input signal having the frequency F_{IN} at the frequency F_O for providing an intermediate signal having an intermediate frequency F_{IF}, wherein $F_{IF}=0$ when $F_O=F_{IN}/N$;

means responsive to the frequencies F_R and F_V for providing an error signal having a polarity and magnitude corresponding to the difference between the frequencies F_R and F_V; and

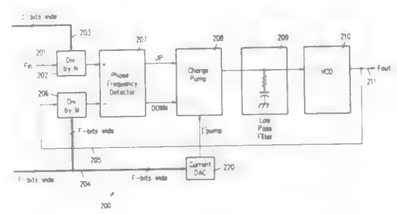
means responsive to the error signal and the signal having the frequency F_{IF} for providing a control voltage for locking the VCO at the frequency F_O wherein F_O is equal to F_{IN}/N.

5,339,050

FREQUENCY SYNTHESIZING PHASE LOCK LOOP WITH UNVARYING LOOP PARAMETERS

William D. Llewellyn, San Jose, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Filed Apr. 27, 1993, Ser. No. 53,628
Int. Cl.[5] H03L *7/089, 7/107, 7/18*
U.S. Cl. 331—16 **33 Claims**



1. A frequency synthesizing circuit comprising:

an input terminal for receiving a reference signal having a reference frequency;

an output terminal for providing an output signal having an output frequency;

an error detector having a first input lead, a second input lead, and an output port for providing up/down control signals;

a first divider responsive to a first division factor and having an input lead coupled to said input terminal and an output lead coupled to said first input lead of said error detector;

a second divider responsive to a second division factor and having an input lead coupled to said output terminal and an output lead coupled to said second input lead of said error detector;

a voltage controlled oscillator having an input lead for receiving a frequency control signal and an output lead coupled to said output terminal of said frequency synthesizing circuit;

a charge pump having a first input port coupled to said output port of said error detector for receiving said up/down control signals, an output lead coupled to said input lead of said voltage controlled oscillator, and a current control input lead for receiving a signal indicative of the magnitude of charge pump current to be used by said charge pump in providing a signal on said output lead of said charge pump in response to said up/down control signals from said error detector; and

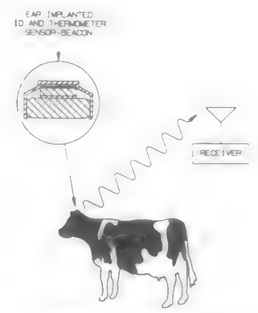
a control circuit responsive to said first division factor for providing said signal indicative to said current control input lead of said charge pump.

5,339,051

MICRO-MACHINED RESONATOR OSCILLATOR

Dale R. Koehler; Jeffry J. Sniegowski; Hugh M. Bivens, and Kurt O. Wessendorf, all of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 803,815, Dec. 9, 1991, Pat. No. 5,198,716. This application Mar. 30, 1993, Ser. No. 39,638
Int. Cl.[5] H03B *5/36;* **H01L** *41/08*
U.S. Cl. 331—65 **51 Claims**



1. A resonator-oscillator apparatus, remote from a data receiving apparatus, comprising:

a micro-machined housing comprising a resonator-oscillator means with a frequency of oscillation of greater than approximately one (1) MHz;

means for activating a power source of said resonator-oscillator means; and

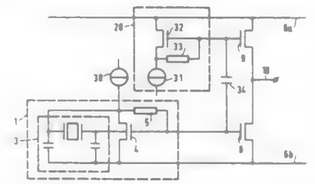
sensor apparatus output means.

5,339,052

OSCILLATOR CIRCUIT HAVING A FIFTY PERCENT DUTY CYCLE

Abraham L. Melse, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 11, 1993, Ser. No. 75,709
Claims priority, application European Pat. Off., Jun. 15, 1992, 92201740.5
Int. Cl.[5] H03B *5/36*
U.S. Cl. 331—75 **5 Claims**



1. An oscillator circuit comprising an oscillating stage and an output stage, the oscillating stage being coupled to an input of the output stage for feeding an input signal thereto combining a generated oscillating signal with a first DC bias, said first DC bias being dependent on an amplitude of the oscillating signal, the output stage comprising

a series arrangement of main current channels of a first and a second output transistor of complementary conductivity types, coupled between a first and a second supply terminal,

the input being coupled to a control electrode of the first transistor and, via a capacitor, to a control electrode of the second transistor,

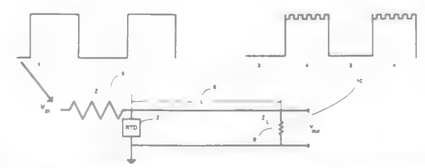
a node in the series arrangement between the first and the second transistor being coupled to an output of the oscillator circuit, the output stage, in operation, driving an output voltage to switch substantially between a first and a second output level when the input signal crosses an input switching level, and bias-generating means for generating a second DC bias at a control electrode of the second transistor so as to adjust the input switching level to the median level of the input signal in dependence on the amplitude of the oscillating signal.

5,339,053

INSTANT-ON MICROWAVE OSCILLATORS USING RESONANT TUNNELING DIODE

Robert A. Lux, Toms River; Thomas E. Koscica, Clark, and James F. Harvey, Tinton Falls, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 17, 1993, Ser. No. 123,011
Int. Cl.[5] H03B *7/08, 7/14*
U.S. Cl. 331—99 **21 Claims**



1. An instant-on microwave oscillator circuit comprising a conductive transmission line having an impedance Z_O; a ground plane; a pair of output terminals connected one on each of said transmission line and said ground plane and an impedance Z_L between said output terminals and having an impedance value which is less than Z_O; a pair of input terminals

VOL 1165 ISS 3 AG 16 1994 UMI

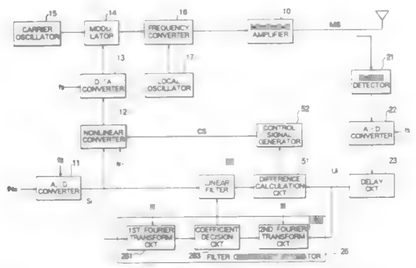
connected one on each of said transmission line and said ground plane and a resonant tunneling diode connected between said input terminals; an impedance Z connected to the input terminal on said transmission line; means for applying a square wave shaped switched power supply signal to the resonant tunneling diode through impedance Z; and means for separating the square wave and the output oscillation signals at said output terminals.

5,339,054

MODULATED SIGNAL TRANSMISSION SYSTEM COMPENSATED FOR NONLINEAR AND LINEAR DISTORTION

Tetsu Taguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 84,609
Claims priority, application Japan, Jul. 1, 1992, 4-173930
Int. Cl.[5] H04L *25/49*
U.S. Cl. 332—100 **7 Claims**



1. A modulated signal transmission system for use in modulating an input signal of a baseband to produce, through a nonlinear amplifier, a modulated signal which is substantially free from both a nonlinear distortion end a linear distortion, said nonlinear amplifier having a nonlinear amplification characteristic, said modulated signal transmission system comprising:

linear detection means partially supplied with said modulated signal for linearly detecting said modulated signal to produce a linearly detected signal;

estimating means supplied with said input signal and said linearly detected signal for estimating said linear distortion to produce an estimated signal including said estimated linear distortion;

difference calculation means supplied with said estimated signal and said linearly detected signal for calculating a difference of electric power between said estimated signal and said linearly detected signal to produce a control signal representative of said difference; and

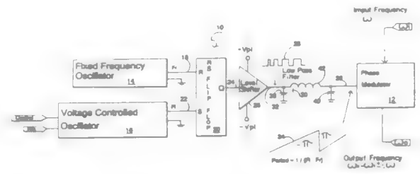
nonlinear converting means, which has a controllable nonlinear conversion characteristic for compensation of said nonlinear amplification characteristic of the nonlinear amplifier and which is supplied with said input signal and said control signal, for carrying out nonlinear conversion of said input signal in response to said control signal so as to reduce said difference and to thereby remove both said nonlinear and said linear distortions.

5,339,055

SERRODYNE PHASE MODULATOR HAVING RAMP GENERATED BY COMBINING TWO OSCILLATOR SIGNALS

Michael A. Wyatt, Clearwater, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 18, 1992, Ser. No. 992,551
Int. Cl.[5] H03C *3/00;* **H03K** *4/08*
U.S. Cl. 332—144 **2 Claims**



1. A frequency phase modulator, comprising:

phase modulating means coupled to an input frequency for generating a modulated output frequency;

fixed frequency generator means for generating a first frequency output;

variable frequency generating means for generating a second frequency output;

flip-flop means coupled to said fixed frequency generating means and said variable frequency generating means for generating a plurality of pulses in response to said first and said second frequency output; and

means coupled to said phase modulating means for converting said pulses to a voltage ramp waveform to vary said modulated output frequency, said converting means including level shifting means for generating pulses having a voltage level for causing a π phase change in said phase modulating means.

5,339,056

VARIABLE DELAY LINE WITH MICROSTRIP DELAY ELEMENTS SELECTIVELY CONNECTED BY SLIDING SWITCHES

Mitsunori Kaneko, and Yukinori Miyake, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 753,415, Aug. 30, 1991, Pat. No. 5,177,457. This application Dec. 23, 1992, Ser. No. 996,400
Claims priority, application Japan, Sep. 13, 1990, 2-243524
Int. Cl.[5] H03H *7/20*
U.S. Cl. 333—139 **1 Claim**

1. A variable delay line with microstrip delay elements selectively connected by sliding switches, comprising:

a package housing;

a printed circuit board provided within said package housing;

a ground conductor pattern printed on a backside of said circuit board;

an electrical circuit printed on a top surface of said circuit board so as to include input and output terminal lands;

a plurality of pairs of shunt lands, each pair being connected by a microstrip line printed on said top surface;

a plurality of pairs of element connection lands printed on said top surface;

a plurality of microstrip delay elements, each printed on said top surface and connected to one of said pairs of element connection lands; and

a plurality of sliding switches, each having a pair of connecting contacts movable between a first position in which said connecting contacts connect said shunt microstrip line in series to said electrical circuit and a second position in which said connecting contacts connect said microstrip delay element in series to said electrical circuit while

disconnecting said shunt microstrip line from said electrical circuit, thereby eliminating major mismatching ele-



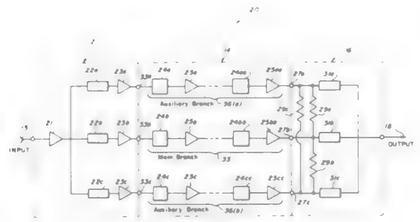
ments from said delay line, resulting in enhanced high-frequency characteristics.

5,339,057

LIMITED BANDWIDTH MICROWAVE FILTER

Christen Rauscher, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1993, Ser. No. 25,210
Int. Cl.[5] H03H *15/00, 7/38*
U.S. Cl. 333—166 **28 Claims**



1. A filter comprising:

coupling means for receiving an input signal in the microwave frequency spectrum and dividing said input signal into a plurality of portions, each portion of said plurality of portions of input signal being applied to a predetermined output port of a plurality of output ports of said coupling means;

filter means for receiving said plurality of portions of said input signal from said coupling means into a primary signal branch and one or more auxiliary signal branches, each branch having active circuits for transmission amplitude variations and passive circuit elements for transmission phase variation with frequency to provide filtering said plurality of portions of said input signal as a function of the microwave frequency to produce a plurality of filtered portions; and

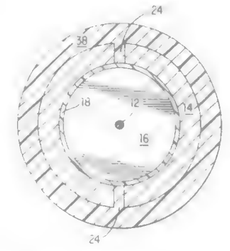
output means for receiving said plurality of filtered portions of said input signal from said filter means and combining said plurality of filtered portions of said input signal into a composite filtered signal output.

5,339,058

RADIATING COAXIAL CABLE

Roger M. Lique, Jackson, Miss., assignor to Trilogy Communications, Inc., Pearl, Miss.

Filed Oct. 22, 1992, Ser. No. 965,148
Int. Cl.[5] H01Q *13/22*
U.S. Cl. 333—237 **20 Claims**



12. A radiating cable comprising:

a central conductor;

a plurality of coaxial dielectric members connected to and spaced along the length of said central conductor; and

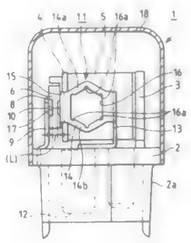
a radiating sheath concentrically formed on said dielectric members, wherein said radiating sheath includes at least a pair of continuous slots or gaps along the length thereof spaced from each other by 180°.

5,339,059

ELECTROMAGNETIC RELAY

Shotaro Kawamura, Kariya, and Hiroshi Yamada, Aichi, both of Japan, assignors to Anden Co., Ltd., Anjo and Nippondenso Co., Ltd., Kariya, both of Japan

Filed Aug. 5, 1993, Ser. No. 102,254
Claims priority, application Japan, Aug. 7, 1992, 4-232994
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—78 **11 Claims**



1. An electromagnetic switch comprising:

a support plate;

a movable switching contact movably supported by a movable switching contact assembly arranged on said support plate;

a fixed switching contact;

a magnetic coil assembly responsive to a control switching signal to urge said movable switching contact assembly so that said movable switching contact engages said fixed switching contact; and

retainer means for retaining said fixed switching contact apart from said movable switching contact at a preselected interval, said retainer means including:

a switching contact mounting portion having disposed thereon said fixed switching contact, said switching contact mounting portion including a first attachment point and a second attachment point;

VOL 1165 ISS 3 AG 16 1994 UMI

a supporting portion secured to said support plate; and

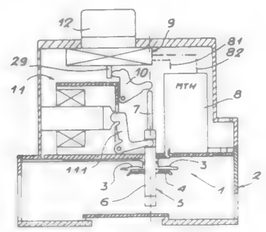
first and second connecting portions extending between said switching contact mounting portion and said supporting portion, said first and second connecting portions being attached to said switching contact mounting portion at said first and second attachment points, respectively, said first and second connecting portions including first and second curved portions, respectively, said first and second curved portions being geometrically oriented so as to be deformable when preselected forces are applied to said first and second curved portions in opposite directions to each other, thereby changing an interval between said switching contact mounting portion and said supporting portion and moving said switching contact mounting portion so as to adjust a positional relation between said movable and fixed switching contacts when said moveable and fixed switching contacts are not engaged.

5,339,060

PROTECTIVE SWITCH

Christian Blanchard, Rueil-Malmaison; Michel Lauraire, Saint Maur Des Fosses, and Didier Vigouroux, Jouy-Le-Moutier, all of France, assignors to Telemecanique, Rueil Malmaison, France

Filed May 24, 1993, Ser. No. 65,775
Claims priority, application France, May 22, 1992, 92 06270
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—132 **9 Claims**



1. A protective switch comprising:

at least one pole having at least one moving contact that cooperates with a stationary contact;

a control mechanism for actuating said moving contact;

a trip mechanism for assuring protection against overloads and excess currents and that acts on said control mechanism for actuating said moving contact;

a rotary knob rotatable around a pivot pin for activating said control mechanism, wherein the control mechanism comprises a lever for opening the contacts that is pivotable from an on position corresponding to closing of the contacts to a position corresponding to opening of the contacts; and

a pivoting cocking mechanism for bringing back and holding said opening lever in the on position of the contacts, wherein said trip mechanism includes a mechanism for controlling the mechanical separation of the opening lever and of the cocking mechanism so as to free said opening lever.

5,339,061

IRON-FREE TRANSFORMER

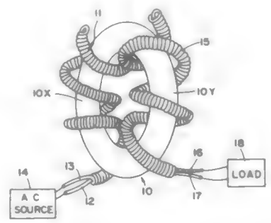
Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, New York, N.Y., a part interest

Filed Jun. 1, 1993, Ser. No. 68,784
Int. Cl.[5] H01F *1/00, 5/00, 27/28*
U.S. Cl. 335—216 **9 Claims**

1. A transformer for transferring electrical energy from a primary flux tube winding to a secondary flux tube winding without any electrical connection or inductive coupling therebetween, said transformer comprising:

(a) an iron-free, non-magnetic, closed-circuit, electrically-conductive loop having input and output sections:

(b) a first solenoidal flux tube formed by an elongated helix, said helix being spiralled about said input section to form said primary flux tube winding, whereby an AC current flowing through this winding creates an electromagnetic filed whose lines of flux spiral about the section to induce



therein an alternating current that circulates through the loop and flows through the output section; and

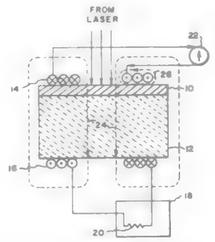
(c) a second solenoidal flux tube formed by an elongated helix, said helix being spiralled about said output section to form said secondary flux tube winding, whereby the current flowing through the output section of the loop includes an EMF in the secondary flux tube winding which causes a current flow in a load coupled to the secondary winding.

5,339,062

HIGH POWER ENERGY TRANSFER SYSTEM UTILIZING HIGH TEMPERATURE SUPERCONDUCTORS

William R. Donaldson, Pittsford; Deepnarayan Gupta, and Alan M. Kadin, both of Rochester, all of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Jul. 8, 1993, Ser. No. 88,936
Int. Cl.[5] H01F *1/00, 36/00;* **H03K** *3/38*
U.S. Cl. 505—1 **20 Claims**



8. A method of transferring electrical energy in a range of at least 100 Joules per cubic meter which comprises the steps of:

storing said energy of at least 100 Joules per cubic meter in a primary magnetic field;

isolating said field from a secondary inductive element with a superconductive shielding member of material which remains in a superconductive state in the presence of a magnetic field containing energy in said range; and

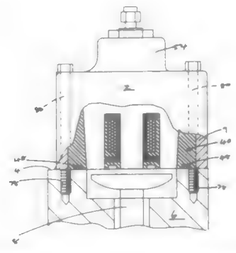
heating said shielding member to drive it normal for a period of time sufficient to transfer the energy in said primary field to said secondary element and an electrical load connected thereto, being carried out with a laser pulse incident on said shielding member.

5,339,063

SOLENOID STATOR ASSEMBLY FOR ELECTRONICALLY ACTUATED FUEL INJECTOR

Anh Pham, Lakewood, Calif., assignor to SKF U.S.A., Inc., Compton, Calif.

Filed Oct. 12, 1993, Ser. No. 134,689
Int. Cl.[5] F02M *47/02;* **B05B** *1/30;* **H01F** *7/08*
U.S. Cl. 335—260 **7 Claims**



1. A solenoid stator assembly for an electronically activated fuel injector, mountable upon a generally flat mounting seat forming part of the fuel injector and securable thereto by mounting bolts engaging the fuel injector, the stator assembly comprising,

a rigid, metal outer housing having,

a generally flat housing base shaped to fit upon the mounting seat of the fuel injector;

interior surfaces defining a generally rectangular interior chamber extending vertically within said housing from an opening through said housing base;

mounting portions receiving the mounting bolts to secure said housing to the fuel injector with said housing base mounted on the mounting seat of the fuel injector;

an E-shaped stator core located generally centrally within said interior chamber having,

a core base extending in a longitudinal direction parallel to and spaced vertically above said outer housing base, said core base positioned above said opening in said outer housing base;

two outer pole pieces depending generally perpendicularly from opposite longitudinal ends of said core base;

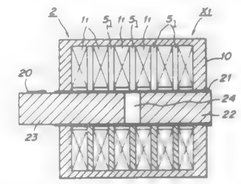
a center pole piece depending generally perpendicularly from said core base positioned centrally between said outer pole pieces; said outer and central pole pieces having free ends disposed within said opening in said outer housing base generally flush therewith;

an insulative, plastic, inner housing extending between said stator core and said interior surfaces of said outer housing to fixedly secure said core within said interior chamber, said inner housing resting upon portions of the mounting seat of the fuel injector and being firmly clamped thereagainst by securement of said outer housing to the mounting seat by the mounting bolts; said inner housing being reinforced by said outer housing against bulging pressure developed within the assembly by fuel escaping from the injector.

an exciting coil assembly positioned within said magnetic frame, said exciting coil assembly including

a plurality of series-connected exciting coil portions spaced from each other along said longitudinal axis, each of said exciting coil portions having a first centrally located aperture surrounding said longitudinal axis; and

a plurality of conductor plates, each of said conductor plates having a second centrally located aperture of substantially the same diameter as said first centrally located aperture and having a radial slit therein which extends from said second aperture to a periphery of said conductor plate, each of said conductor plates being interposed between a pair of said exciting coil portions thereby forming a centrally located cylindrical volume of substantially uniform diameter defined by said first and second apertures,



each of said plurality of conductor plates being further provided with a hollow cylindrical member surrounding said second aperture, having substantially the same diameter as said second aperture, and having a slit therein extending in said longitudinal direction which is continuous with the radial slit in said conductor plate, each of said hollow cylindrical members extending along said longitudinal axis from a corresponding conductor plate toward a first end of said magnetic frame; and wherein a first end conductor plate not having said hollow cylindrical member is interposed between the first end of said magnetic frame and an adjacent exciting coil portion of said exciting coil assembly, and a second end conductor plate having said hollow cylindrical member is interposed between a second end of said magnetic frame and another adjacent exciting coil portion of said exciting coil assembly.

5,339,064

MAGNETIC FLUX CONVERGING TYPE HIGH SPEED ELECTROMAGNET

Kazuo Bessho, 10-37, Hashiba-Cho, Kanazawa City, Ishikawa Pref., Japan

Filed Dec. 17, 1992, Ser. No. 992,006
Claims priority, application Japan, Dec. 26, 1991, 3-356831
Int. Cl.[5] H01F *5/00, 3/00*
U.S. Cl. 335—282 **8 Claims**

1. A magnetic flux converging type high speed electromagnet, comprising

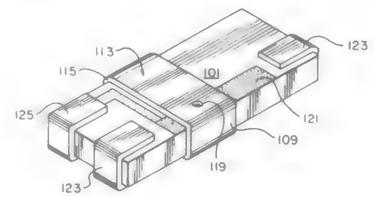
a magnetic frame having a longitudinal axis; and

5,339,065

ADJUSTABLE MICROELECTRONIC POTENTIOMETER

Stephen A. Slenker, 26 Cummings Rd., Tyngsboro, Mass. 01879

Filed Jun. 10, 1993, Ser. No. 75,036
Int. Cl.[5] H01C *10/16, 10/38;* **H03H** *7/25*
U.S. Cl. 338—133 **11 Claims**



1. A miniature potentiometer, comprising:

a substrate;

a resistor comprising a length of electrically resistive material having two ends and disposed on a first side of the substrate, parallel to a first edge of the substrate;

a conductive stripe disposed on a second side of the substrate, parallel to the first edge;

VOL 1165 ISS 3 AG 16 1994 UMI

a plurality of C-shaped end terminals mechanically attached to the substrate and each electrically connected to the resistor: and

a C-shaped sliding contact, slidably coupled to the substrate on the first edge so as to electrically connect a point along the resistor to a point along the conductive stripe.

5,339,066

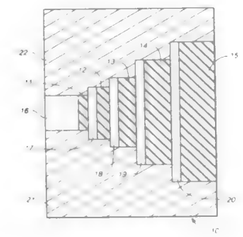
ENERGY-MEASURING RESISTOR BANK

Anthony M. Marques, Lexington; Paul R. Kelley, Needham, both of Mass.; William K. Jones, Islamorada, Fla.; Masatoshi Fukuda, Tewksbury, and Overton H. Manuel, Brockton, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 45,340

Int. Cl.[5] H01C *1/012*

U.S. Cl. 338—306 **3 Claims**



1. An energy-measuring resistor bank, comprising:

a substrate having a flat surface;

at least two resistors, each of said resistors being of identical individual resistance value and each of said resistors having a unique energy dissipating capacity, each resistor having a first end and a second end, each resistor being formed of a corresponding strip of resistive material deposited on the flat surface of said substrate;

a first connecting means for electrically connecting together the first ends of all said resistors; and

a second connecting means for electrically connecting together the second ends of all said resistors.

5,339,067

INTEGRATED VOLTAGE DIVIDER AND CIRCUIT EMPLOYING AN INTEGRATED VOLTAGE DIVIDER

Larry L. Harris, and Baker P. L. Scott, III, both of Austin, Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed May 7, 1993, Ser. No. 60,431

Int. Cl.[5] H01C *1/14*

U.S. Cl. 338—323 **22 Claims**

1. A resistor voltage divider, comprising:

a resistor body; and

a plurality of taps distributed along said resistor body, said plurality of taps including,

a plurality of accessible output taps, and



at least one inaccessible compensation tap whereby the at least one inaccessible compensation tap compensates for parasitic resistance.

5,339,068

CONDUCTIVE CHIP-TYPE CERAMIC ELEMENT AND METHOD OF MANUFACTURE THEREOF

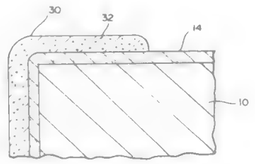
Masakiyo Tsunoda; Hiroaki Nakajima, and Masami Koshimura, all of Saitama, Japan, assignors to Mitsubishi Materials Corp., Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 79,347

Claims priority, application Japan, Dec. 18, 1992, 4-356128; Apr. 7, 1993, 5-080471

Int. Cl.[5] H01C *1/148*

U.S. Cl. 338—332 **38 Claims**



1. A chip-type ceramic element comprising:

a conductive ceramic body having opposing end surfaces;

a terminal electrode covering each of said opposing end surfaces;

an insulating layer made from an inorganic insulating material;

said insulating layer covering at least a portion of said ceramic body;

each said terminal electrode including a first layer contacting said ceramic body; and

said first layer being a baked electrode layer, wherein said baked electrode layer is a burned combination of said insulating material and a conductive paste.

5,339,069

BRAKE MONITORING SYSTEM

Wesley Penner, Burnaby; Gordon Penner, and Robert Penner, both of Port Moody, all of Canada, assignors to Tripen Enterprises Ltd., Burnaby, Canada

Filed Jul. 1, 1992, Ser. No. 907,150

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—454 **7 Claims**

1. A method for monitoring a brake for wear, said brake

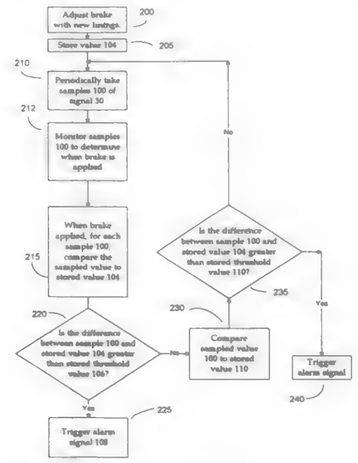
comprising a cam rotatable about an axis, actuator means coupled to said cam for turning said cam about said axis, a brake pad operatively associated with said cam and adjacent to an inner surface of a brake drum, said brake pad movable, by turning said cam about said axis through a cam angle, between a disengaged position wherein said brake pad is spaced apart from said inner surface of said brake drum and an engaged position wherein said brake pad is in forceable engagement with said inner surface of said brake drum, said method comprising the steps of:

(a) providing:

i) a transducer coupled to said cam, said transducer adapted to provide a signal representative of said cam angle relative to a reference cam angle;

ii) means for transmitting said signal from said transducer to an electronic computing means, said computing means for measuring said signal, comparing said measured signal to stored values, and generating an alarm signal when said measured signal has an unacceptable value; and,

iv) warning means operatively associated with said computing means and responsive to said alarm signal for



alerting an operator of said brake when said alarm signal is present;

(b) making a first measurement of said signal when said brake pad is new, said cam angle is a first angle and said brake pad is in a first position relative to said brake drum;

(c) storing a first value representative of said first measurement in said computing means;

(d) while said brake is being operated and said brake pad is in said engaged position, operating said computing means to:

i) make a second measurement of said signal;

ii) store a second value representative of said second measurement;

iii) calculate a third value from a difference of said first and second values, said third value representative of a difference between said first angle and said cam angle when said second measurement was made;

iv) compare said third value with a stored acceptable value to test whether said third value is acceptable or unacceptable; and

v) trigger said alarm signal to activate said warning means if said third value is unacceptable.

5,339,070

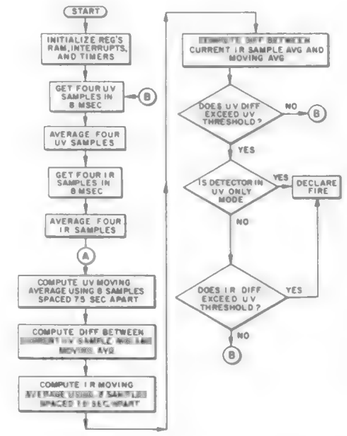
COMBINED UV/IR FLAME DETECTION SYSTEM

Jeffrey S. Yalowitz, Huntsville; James M. Morrison, Meridianville, and Hilary E. Roberts, Huntsville, all of Ala., assignors to SRS Technologies, Huntsville, Ala.

Filed Jul. 21, 1992, Ser. No. 915,617

Int. Cl.[5] G08B *17/12*

U.S. Cl. 340—578 **13 Claims**



1. A flame detection system comprising:

an ultraviolet optical sensor, and first and second infrared optical sensors, each of said sensors being adapted for converting electromagnetic energy inputs to electrical outputs, each of said sensors having optical filter means for restricting passage of electromagnetic energy to predetermined wavelengths and amplifier means for amplifying the output thereof;

means connected to the amplifier means of said ultraviolet optical sensor for limiting the amplifier output in response to reception by said ultraviolet sensor of electromagnetic energy which exceeds a predetermined energy level;

an electrical bridge circuit means having a resistor as each of two legs thereof and having said first and said second infrared optical sensors respectively as the other legs thereof, said bridge circuit being adapted to receive an electrical input at the connections between each said resistor and infrared optical sensor and to provide output signals from connections made between each of said resistors and between each of said infrared optical sensors;

a following amplifier being capacitively coupled to the output of said electrical bridge circuit;

means connected to the outputs of said ultraviolet optical sensor and each of said infrared optical sensors for converting the analog signals therefrom to digital data streams;

means for processing said data streams;

means providing temporary storage of said data;

means within said processing means for establishing threshold levels to discriminate against predetermined types of signals;

means within said processing means for testing and comparing processed outputs from said ultraviolet and said infrared sensors so as to determine whether flame conditions are indicated;

means for producing an alarm signal in response to a determination by the processing means that flame conditions have been detected.

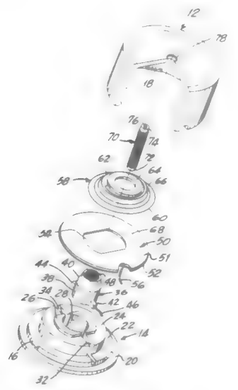
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,071

SHOCK SENSOR

Ira Eckhaus, 3221 Skillman Ave., Oceanside, N.Y. 11572

Filed Mar. 26, 1993, Ser. No. 38,712
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—665 13 Claims



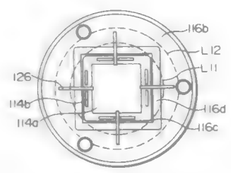
1. An electrical shock sensor comprising:
an electrically insulating house;
an electrically conductive plug member entirely contained within said housing, having a conical configuration and including means for coupling to one terminal of a source of electrical energy;
an electrically conductive annular collar coaxially positioned over and seated onto said conical configuration to be in engagement therewith;
an electrically conductive spring means connected between said annular collar and a stationary part of said housing and including means for coupling to another terminal of the source of electrical energy, adjusting means for initially adjusting the extent of the stretching of the spring means to initially set the seated axial position of the annular collar along the conical configuration, whereby natural vibrations will cause the spring to oscillate without displacement of the annular collar while impact to the housing causes the spring to jar thereby displacing the annular collar moving it out of engagement with the conical configuration.

5,339,072

FIRE DETECTOR WITH ANTI-TAMPERING MEASURES FOR USE IN VEHICLES

Masanobu Agata, Tokyo, Japan, assignor to Nohmi Bosai, Ltd, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,559
Claims priority, application Japan, Dec. 9, 1991, 3-324694; Dec. 9, 1991, 3-324695
Int. Cl.[5] G08B *17/00*
U.S. Cl. 340—693 16 Claims



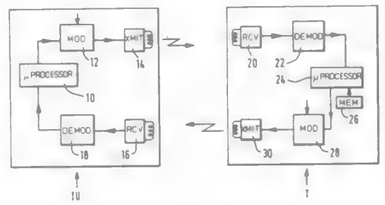
1. A fire detector for use in a vehicle such as an aircraft comprising: a main body having a head portion for letting in products of combustion and a fire detection portion for performing fire detection in response to the products of combustion let in from said head portion; and a mounting portion receiving most of said main body and provided with a central opening portion for allowing said head portion to protrude in order to perform fire monitoring; wherein said fire detector further comprises blocking means around said central opening portion of said mounting portion for preventing articles, including paper cups, wherein there are normally provided on said vehicle, small-mouth type paper cups and one or more standard sizes of paper cups having mouths larger than said small-mouth type paper cups, from being mounted on said head portion of said fire detector, said blocking means having a height approximately equal to or higher than that of said head portion protruding from said central opening portion, the height thereof decreasing with distance away from said head portion.

5,339,073

ACCESS CONTROL EQUIPMENT AND METHOD FOR USING THE SAME

Harold Dodd, Blyth, and Brian J. Stanier, Stockton on Tees, both of Great Britain, assignors to Identec Limited, Durham, England

Continuation-in-part of Ser. No. 563,674, Aug. 3, 1990, abandoned, which is a continuation of Ser. No. 229,646, Aug. 8, 1988, abandoned. This application Mar. 25, 1991, Ser. No. 674,655
Int. Cl.[5] G06F *7/04*
U.S. Cl. 340—825.31 10 Claims



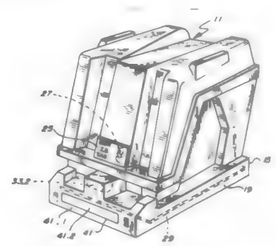
1. Access control equipment comprising:
a plurality of transponders; and
an interrogation unit having means for emitting interrogation signals and means for controlling said interrogation signals, said interrogation unit interrogating all said transponders within range of said interrogation unit;
each of said plurality of transponders having means for receiving the interrogation signals, and means for storing an identity code different from that of other transponders, the identity code comprising a plurality of fields, each field holding information having a value selected from a plurality of possible values, wherein
said means for controlling said interrogation signals causes said interrogation unit to simultaneously interrogate said transponders to determine the values of information held by said transponders in a first field, then to interrogate those transponders which have responded with the values they hold in the first field to determine the values which they hold in a second field, then to interrogate those transponders which have responded with the values they hold in the first and second fields to determine the values which they hold in a third field, and so on until all fields have been interrogated,
said plurality of transponders each further comprising means for sending group reply signals to the interrogation unit, said group reply signals containing the value which is held by the transponder in the field being interrogated,
wherein each interrogation after a first interrogation is based upon the group reply signals received from the plurality of transponders, and successive interrogations are narrowed such that only those transponders for which group reply signals have been received are further interrogated, said interrogation unit further comprising means for converting group reply signals received in response to interrogation signals interrogating all fields, into the identity codes of those transponders within range.

5,339,074

VERY LOW FREQUENCY TRACKING SYSTEM

Richard P. Shindley, and Randall S. Williams, both of Chaska, Minn., assignors to Fluoroware, Inc., Chaska, Minn.

Filed Sep. 13, 1991, Ser. No. 759,538
Int. Cl.[5] H04B *5/00*
U.S. Cl. 340—825.31 5 Claims



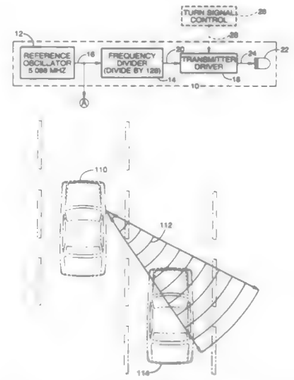
1. A device for identifying a particular instrumentality at a particular location, comprising
a tag portion attachable to such an instrumentality and comprising a transponder portion generating and transmitting a radio frequency identification signal in response to receipt of a radio frequency transmitted inquiry,
an instrumentality identifying station,
a proximity sensor portion sensing the presence and absence of the instrumentality adjacent the instrumentality identifying station and respectively producing sensor indications of the presence and the absence of the instrumentality,
said instrumentality identifying station comprising an antenna portion and a radio frequency sensor portion generating the radio frequency transmitted inquiry through the antenna portion in response to the proximity sensor portion producing sensor indications of the presence of the instrumentality and receiving the radio frequency identification signal through the antenna portion from the transponder portion and producing an output indication representing the transponder identification signal, the radio frequency sensor portion terminating generation of the radio frequency transmitted inquiry when a clear and reliable output indication identifying the tag portion has been produced, and the radio frequency sensor portion also preventing, after producing said clear and reliable output indication, generation of a subsequent radio frequency transmitted inquiry until the proximity sensor portion has subsequently produced sensor indications of the absence of the instrumentality and has thereafter again produced sensor indications of the presence of the instrumentality, and
a control means regularly polling said instrumentality identification station and inducing said proximity sensor portion to sense the presence or absence of the instrumentality adjacent the instrumentality identification station.

5,339,075

VEHICULAR COLLISION AVOIDANCE APPARATUS

Terrill Abst, P.O. Box 1902, Modesto, Calif. 95353, and Don H. Keilen, San Jose, Calif., assignors to Terrill Abst, Modesto, Calif.

Filed Nov. 24, 1992, Ser. No. 982,076
Int. Cl.[5] G08G *1/16*
U.S. Cl. 340—903 14 Claims



1. An apparatus for alerting the driver of a vehicle to the presence of an adjacent vehicle while changing lanes, comprising:
(a) transmitting means for transmitting a first signal, said transmitting means operatively responsive to a turn signal activation control in said vehicle;
(b) receiving means for receiving a second signal, said second signal representing a reflection of said first signal;
(c) signal detecting means for detecting presence of said second signal, said signal detecting means coupled to said receiving means;
(d) frequency discriminating means for determining a frequency differential between said second signal and said first signal and producing a doppler sense signal indicative of said frequency differential, said frequency discriminating means coupled to said signal detecting means;
(e) doppler sense means for sensing polarity of said doppler sense signal; and
(f) tone generating means for generating a first audible tone indicative of a positive frequency differential, a second audible tone indicative of a negative frequency differential, and a third audible tone indicative of said first signal and said second signal having a substantially identical frequency, said tone generating means operatively responsive to said doppler sense means.

5,339,076

DATA COMPRESSION USING CONTENT ADDRESSABLE MEMORY

Ching-Lin Jiang, Palo Alto, Calif., assignor to Integrated Information Technology, Santa Clara, Calif.

Filed Apr. 27, 1992, Ser. No. 876,771
Int. Cl.[5] H03M *7/30*
U.S. Cl. 341—51 1 Claim

1. An apparatus for compressing text comprising a plurality of characters, the text having groups of characters referred to as matched phrases that match preceding groups of characters in the text referred to as matching phrases, wherein the matched phrases are represented by pointer data individually comprising an offset value indicating the offset of the matched phrase from the matching phrase and a length value indicating the length of the matched phrase, comprising:

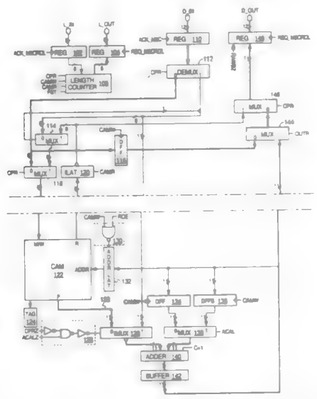
VOL 1165 ISS 3 AG 16 1994 UMI

a content addressable memory ("CAM") for progressively storing portions of the text in addressable locations of the CAM and progressively comparing an input character from the text following the portion of the text stored in the CAM with the portion of the text stored in the CAM until a match fail results, said CAM having a pointer output for furnishing upon match fail a first address in the CAM of a character in the matching phrase;

a length counter responsive to match events in the CAM for counting the number of matches until the match fail results;

a register for storing a second address relative to the CAM of a character in a matched phrase corresponding to the character in the matching phrase having its address furnished by the CAM;

an adder receiving said pointer output and the output of said register for determining an offset value in accordance with the first and second addresses, upon a match event, the



pointer output of said CAM effectively applying a zero value to said adder, said adder further receiving a one for incrementing the output of said register by one;

a second register for storing upon a match event a third address one greater than the address in said first register; and

a first multiplexer for selecting said first register for application to said adder upon each match event during encoding and decoding modes, and selecting said second register for input to said adder upon a match fail event during decoding mode; and

a second multiplexer for selecting the pointer output of said CAM for application to said adder during encoding mode and upon a match event during decoding mode, and selecting an offset value for application to said adder upon a match fail event during decoding mode;

wherein upon a match fail event during decoding mode, an offset address is calculated by said adder and applied to said CAM.

5,339,077

COMMA CODE GENERATOR

Jack Venbrux, and Kelly Cameron, both of Moscow, Id., assignors to Idaho Research Foundation, Inc., Moscow, Id.

Filed Aug. 18, 1992, Ser. No. 931,826

Int. Cl.[5] H03M *7/40*

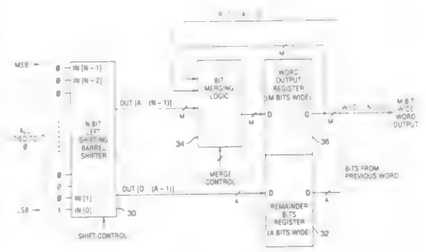
U.S. Cl. 341—67 **13 Claims**

1. An apparatus for generating a comma code comprising:

a. means for receiving a data word having a data value m;

b. a storage apparatus coupled to receive the data value, the storage apparatus having a plurality of single bit storage elements arranged to provide an M bit code word output;

c. means for initializing each of the single bit storage elements to a first value; and



d. means for selectively inverting a logic state of an appropriate one of the single bit storage elements.

5,339,078

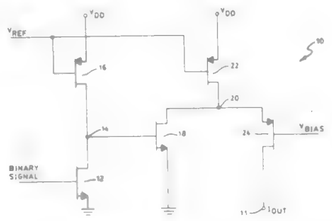
DIGITAL TO ANALOG CONVERTER SWITCH CIRCUIT

Scott D. Vernon, San Diego, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Jul. 12, 1993, Ser. No. 90,603

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—136 **18 Claims**



1. A circuit for providing an output current having characteristics indicating a binary input voltage having a first characteristic representing a binary "1" and a second characteristic representing a binary "0", comprising:

means for generating a substantially constant current;

switching means responsive to a switching signal for either feeding said substantially constant current as output current to an output terminal or diverting said substantially constant current in accordance with said switching signal, said switching means having a first propagation delay for switching on current to said output terminal and a second propagation delay for switching off current to said output terminal, said first and second propagation delays being unequal; and

means responsive to said binary input voltage for providing said switching signal to said switching means, said providing means having unequal propagation delays for a binary input voltage transition from a "1" to a "0" than for a transition from a "0" to a "1" to compensate for said first and second propagation delays of said switching means being unequal wherein a propagation delay from a first one of said binary input voltage transitions to a corresponding switching on or switching off of said substantially constant current to said output terminal of said switching means is substantially equal to a propagation delay from the opposite one of said binary input voltage transitions to a corresponding switching on or switching off of said substantially constant current to said output terminal of said switching means.

5,339,079

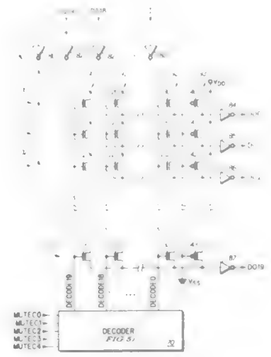
DIGITAL-TO-ANALOG CONVERTER WITH A FLEXIBLE DATA INTERFACE

Robert C. Ledzius, Austin; James S. Irwin, Paige, and Dhirajlal N. Manvar, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1992, Ser. No. 860,381

Int. Cl.[5] H03M *1/66;* **G11C** *19/00*

U.S. Cl. 341—144 **20 Claims**



1. A digital-to-analog converter with a flexible data interface comprising:

means for providing parallel input data;

a counter for incrementing a count from zero to a predetermined number when enabled in a first mode, and for providing a plurality of most significant bit positions of said count;

a decoder for decoding said plurality of most significant bit positions of said count to provide a plurality of decoded control signals; and

a shift matrix coupled to said providing means and to said decoder, for shifting said parallel input data by a number of bit positions determined by said plurality of decoded control signals to provide parallel output data.

5,339,080

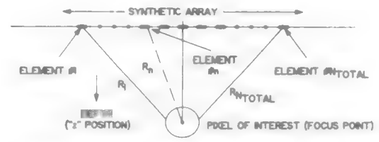
EARTH-PENETRATING SYNTHETIC IMAGE RADAR

William J. Steinway, Maitland; James E. Thomas; Carl R. Barrett, both of Orlando, all of Fla., and Buddy G. Beck, Fairfax, Va., assignors to Coleman Research Corporation, Fairfax, Va.

Filed Apr. 8, 1993, Ser. No. 43,715

Int. Cl.[5] G01S *13/08, 13/90*

U.S. Cl. 342—22 **3 Claims**



1. A frequency-stepped radar imaging system for gathering data related to at least one characteristic of a subject area, comprising:

frequency generator means for generating a stepped-frequency synthetic radar image, said frequency generator further comprising a plurality of frequency synthesizer means, each capable of outputting a signal at a discrete frequency;

control means for alternately controlling each of said plurality of frequency synthesizer means so that said plurality of frequency synthesizer means alternately step through a series of discrete frequencies;

switching means for alternately selecting said signal output from each of said frequency synthesizer means as a local oscillator signal;

transmitter means for transmitting a radar signal related in frequency to said local oscillator signal;

reference receiver means for creating a reference signal related to said local oscillator signal;

transmission signal receiver means for receiving said radar signal transmitted by said transmitter means; and,

means for extracting from said reference receiver means and said transmission receiver means said data related to said at least one characteristic of said subject area.

5,339,081

VEHICLE DETECTION SYSTEMS

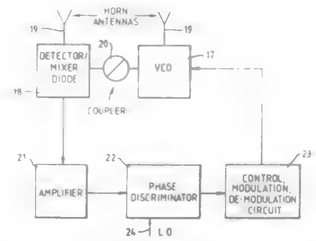
Brian Jefferis, and Shaun D. Morgan, both of Hampshire, England, assignors to Peek Traffic Limited, Hampshire, England

Filed Apr. 9, 1992, Ser. No. 866,219

Claims priority, application United Kingdom, Apr. 9, 1991, 9107476

Int. Cl.[5] G01S *13/56*

U.S. Cl. 342—28 **12 Claims**



1. Apparatus for detecting the presence of vehicles for the control of traffic signal lights, comprising:

at least one radar head;

means for mounting that head on or adjacent to a traffic signal light head to view the location controlled by the signal lights;

emission generating means for generating a ramped frequency emission to provide a frequency modulated continuous wave (FMCW) signal to the head for vehicle presence detection in the FMCW mode;

means for alternatively generating a constant frequency emission to the head for vehicle movement detection in a doppler mode;

means for switching repeatedly between the FMCW mode and the doppler mode;

means to deliver a detect signal output whenever a vehicle takes up to a position where it is a target for the radar beam from the radar head; and

means for adapting the radar head for two-way communication with suitably equipped vehicle, the two-way communication occurring in the dead periods between sending of the FMCW signal and the doppler signal.

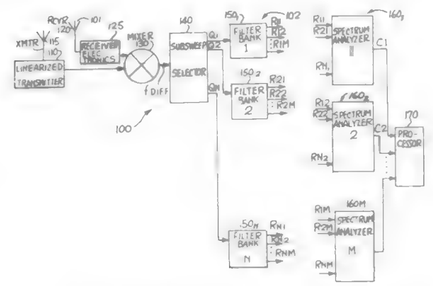
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,082

FM/CW SENSOR PROCESSOR FOR TARGET RECOGNITION

Keith H. Norsworthy, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1983, Ser. No. 537,061
Int. Cl.[5] G01S *13/26*; F41G *7/28*
U.S. Cl. 342—90 **27 Claims**



1. A processor for characterizing reflectors in the footprint of a sensor, said footprint including a plurality of range bins and said sensor being capable of transmitting FM/CW signals having a sweep period into said sensor footprint, receiving reflection signals from said transmitted FM/CW signals striking reflectors in said sensor footprint, and mixing said transmitted and received signals to form an output signal, said processor comprising:

a) means for dividing said sweep period into a first number of subsweep intervals;

b) means coupled to said sweep period dividing means for measuring, during each of said subsweep intervals, the power of said output signal in each of a second number of frequency windows each corresponding to a different range bin in said sensor footprint; and

c) means coupled to said power measuring means for analyzing the power measurements in each of said second number of frequency windows made during all of said subsweep intervals and for producing a third number of characterization signals representing the spatial characteristics of reflectors in said corresponding range bins.

5,339,083

TRANSMIT-RECEIVE MODULE

Kazuyoshi Inami, Kanagawa, Japan, assignor to Mitsubishi Denki Kasbushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,019
Claims priority, application Japan, Sep. 4, 1991, 3-070816[U]
Int. Cl.[5] G01S *3/36*
U.S. Cl. 342—157 **22 Claims**

1. In a phased array radar having a plurality of element antennas, the phased array radar comprising:

a plurality of transmit-receive modules including a phase shifter for changing a phase of RF signals, a high-power amplifier for amplifying transmission RF signals, a low-noise amplifier for amplifying received RF signals, a pair of duplexers for switching a propagation path between the transmission and received RF signal amplifiers

an exciter for generating and outputting transmission RF signals;

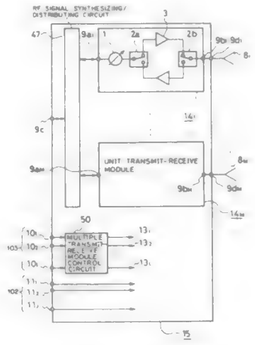
a receiver for processing received RF signals from each transmit-receive module;

an RF signal synthesizing/distributing circuit for distributing transmission RF signals from the exciter to each transmit-receive module and for synthesizing received RF signals from each transmit-receive module and outputting the synthesized received signal to the receiver;

a power source and supply voltage feed circuit for feeding a supply voltage to each transmit-receive module;

a beam oriented control circuit for generating and outputting a negative potential control signal for controlling each transmit-receive module; and

a control signal distributing circuit for receiving the control signal and distributing the control signal to an individual



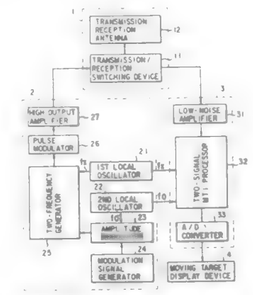
control circuit within each transmit-receive module, wherein the individual control circuit comprises a gate array which receives the negative potential control signal, converts the negative potential control signal to a driving signal and outputs the driving signal to the phase shifter, the duplexers, the high-power and the low-noise amplifiers within each transmit-receive module.

5,339,084

RADAR APPARATUS

Tsutomu Watanabe, Kawasaki, and Mitsuyoshi Shinonaga, Yokohama, both of Japan. assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 19, 1993, Ser. No. 34,896
Claims priority, application Japan, Mar. 31, 1992, 4-077175
Int. Cl.[5] G01S *13/538*
U.S. Cl. 342—160 **5 Claims**



1. A radar apparatus comprising:

local signal generating means for generating a first local signal and a second local signal which are coherent sine wave signals having different frequencies;

local signal modulation means for modulating one of the first and second local signals generated from the local signal generating means, thereby generating a composite signal of two signals modulated by different modulation functions;

two-frequency generating means for generating first and

second transmission signals of different frequencies on the basis of a combination of the composite signal obtained by the local signal modulation means and the non-modulated local signal;

transmission/reception means for repeatedly transmitting the first and second transmission signals generated by the two-frequency generating means in a time-sharing manner, and receiving a reflection signal of the transmitted signals;

signal separating means for separating the received signal received by the transmission/reception means into two frequency components corresponding to the first and second transmission signals;

MTI processing means for separating each reception signal separated by the signal separating means into two signal components modulated by the different modulation functions and removing a reflection signal from a static clutter by a subtraction operation, and thereafter synchronizing the two reception signals, thereby extracting a reflection signal component from a moving target; and

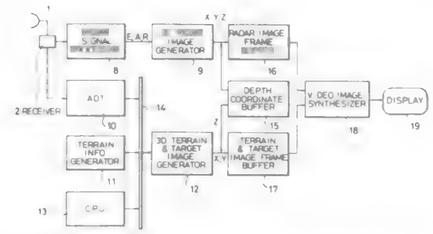
display means for displaying the moving target on the basis of the detection output from the MTI processing means.

5,339,085

THREE-DIMENSIONAL RADAR DISPLAY

Yoshiyuki Katoh; Masatoshi Kameyama, both of Kamakura, and Shigekichi Higo, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 88,426
Claims priority, application Japan, Jul. 14, 1992, 4-208576
Int. Cl.[5] G01S *7/20*
U.S. Cl. 342—180 **18 Claims**



1. A method of generating a radar image from a radar signal, comprising the steps of:

(a) converting said radar signal to digital information comprising echo amplitude information and polar coordinate information, said polar coordinate information including a range, an elevation angle, and an azimuth angle;

(b) converting said polar coordinate information to radar image coordinate information expressed in a three-dimensional orthogonal coordinate system having a horizontal coordinate, a vertical coordinate, and a depth coordinate, said three-dimensional orthogonal coordinate system representing position in relation to a certain viewpoint;

(c) storing said echo amplitude information as radar image values in a radar image frame buffer at addresses corresponding to said horizontal coordinate and said vertical coordinate; and

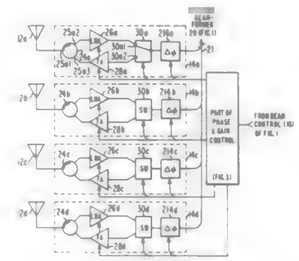
(d) displaying said radar image values as image intensities on a display unit at positions corresponding to said addresses.

5,339,086

PHASED ARRAY ANTENNA WITH DISTRIBUTED BEAM STEERING

Amedeo DeLuca, Philadelphia, Pa.; James E. Gentry, Sr., Mount Laurel, N.J.; David L. Thomas, Millville, N.J.; Norman R. Landry, and Ashok K. Agrawal, both of Mount Laurel, N.J., assignors to General Electric Co., Moorestown, N.J.

Filed Feb. 22, 1993, Ser. No. 20,698
Int. Cl.[5] H01Q *3/22*
U.S. Cl. 342—371 **8 Claims**



1. A phased array antenna system, comprising:

a plurality of arrayed antenna elements arranged in groups to form an antenna array;

a phase shifting arrangement coupled to each of said antenna elements, for phase-shifting signals transduced by the associated antenna element along two coordinate axes associated with said associated antenna, in response to parallel digital formatted phase control signals, whereby a plurality of said phase shifting arrangements are arranged in groups;

antenna beam control means for generating beam angle signals representative of the direction in which an antenna beam is to be formed by said antenna array;

multipartite phase control means coupled to said plurality of phase shifting arrangements and to said antenna control means, each part of said multipartite phase control means being simultaneously coupled with said phase shifting arrangements of one of said groups of phase shifting arrangements, each one of said parts of said multipartite phase control means including:

(a) first memory means, said first memory means being programmed with location information relating to the locations of the associated ones of said phase shifting arrangements in said array;

(b) second memory means, said second memory means being programmed with processing instructions relating to conversion of said beam angle signals into components associated with said antenna coordinate axes;

(c) intermediate command generating means coupled to said first and second memory means, and to said antenna control means, for processing said beam angle signals by means of said processing instructions and said location information for producing parallel digital unformatted phase shifter control signals representing the phase shifts which each of said phase shifting arrangements must provide to cause said antenna beam to be formed in said direction;

(d) third memory means, said third memory means being programmed with format information relating to the format of said formatted phase control signals required by said phase shifting arrangements of said one of said groups; and

(e) formatting means coupled to said third memory means and to said intermediate command generating means, for formatting said unformatted phase shifter control signals for forming said parallel digital formatted phase control signals.

VOL 1165 ISS 3 AG 16 1994 UMI

5,339,087

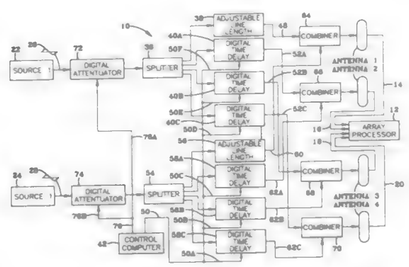
WAVEFRONT SIMULATOR FOR EVALUATING RF COMMUNICATION ARRAY SIGNAL PROCESSORS

Steven B. Minarik, Warminster, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1993, Ser. No. 145,352

Int. Cl.[5] H01Q *3/22*

U.S. Cl. 342—375 **6 Claims**



1. A simulator that emulates the RF signals needed to evaluate a RF communication array signal processor, said simulator comprising:

(a) at least one splitter receiving a first output signal at a predetermined frequency in the megahertz range and splitting said first output signal into a plurality of second output signals;

(b) at least one adjustable delay line receiving one of said second output signals and having a preselected time delay, said adjustable time delay developing a third output signal that is made available to a RF communication array signal processor; and

(c) at least one digital delay line receiving one of said output second signals and being responsive to a first control signal for selecting a predetermined time delay, said digital delay line developing a fourth output signal that is also made available to said RF communication array signal processor;

(d) at least one digital antenuator receiving said first output signal and routing said first output signal to said at least one splitter, said at least one digital antenuator being responsive to a second control signal for selecting a predetermined antenuation of said respective first output signal.

5,339,088

METHOD AND APPARATUS FOR MEASUREMENT OF DIRECTION

Barry J. Gorham, Loughton, and James R. Dudley, Waltham Abbey, both of England, assignors to British Technology Group Ltd., London, England

PCT No. PCT/GB91/01213, § 371 Date Jan. 10, 1993, § 102(e) Date Jan. 10, 1993, PCT Pub. No. WO92/01949, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 19, 1991, Ser. No. 966,198

Claims priority, application United Kingdom, Jul. 20, 1990, 9015945.0

Int. Cl.[5] G01S *3/02*; G01B *11/26*

U.S. Cl. 342—459 **6 Claims**

1. A direction-measuring instrument for measuring a direction of a remote source of radiation comprising:

support means;

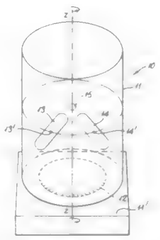
a detector head rotatably mounted on said support means for rotation about a fixed axis; and

position-indicating means for providing an output signal indicating a rotational position of the detector head,

said detector head comprising:

detector means including two detectors disposed side-by-side in said fixed axis direction sensitive to a radiation emitted by the remote source; and

means for forming an image of the remote source which transits across the detector means in a transmit direction as the detector head rotates, said mean for forming an image being such that the image formed comprises two line-image components which extend transversely to the transit direction and which are oppositely inclined to said transit direction; and



said detector means being arranged, in response to the transit across it of each line-image component, to cause an instantaneous angular position of the detector head as indicated by the position indicating means to be recorded;

computing means for deriving a first and a second component measurement of the direction of the remote source, said first component measurement being from a mean of two recorded angular positions and said second component being from a difference between said two recorded angular positions.

5,339,089

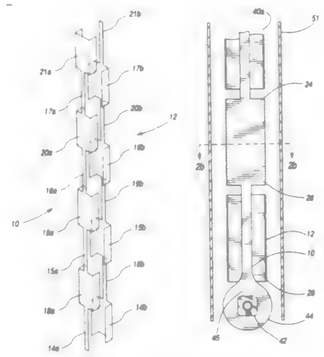
ANTENNA STRUCTURE

Geza Dienes, Claremont, Calif., assignor to Andrew Corporation, Orland Park, Ill.

Continuation-in-part of Ser. No. 618,152, Nov. 23, 1990, abandoned. This application Apr. 2, 1993, Ser. No. 42,497

Int. Cl.[5] H01Q *1/38*

U.S. Cl. 343—700 MS **22 Claims**



1. A radio frequency antenna, comprising:

a first conductive section having alternating wide trough and narrow flat portions;

an opposing second conductive section having alternating wide trough and narrow flat portions which are arranged opposite the narrow and wide portions, respectively, of the first conductive section such that each of said wide trough portions of said first conductive section partially surrounds said narrow flat portion of said second conductive section and each of said wide trough portions of said second conductive section partially surrounds said narrow flat portion of said first conductive section;

wherein a gap is formed between the first and second conductive sections such that the first and second conductive sections form, at least in part, an elongated unit having a first end and a second end; and

coupling means, electrically coupled to the first and second conductive sections, for coupling a radio frequency signal to the antenna.

5,339,090

SPATIAL LIGHT MODULATORS

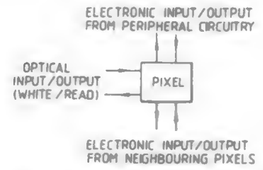
William A. Crossland, Harlow; David Vass, Edinburgh, both of Great Britain, and Neil Collings, Peseux, Switzerland, assignors to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 540,905, Jun. 29, 1990, abandoned. This application Sep. 10, 1992, Ser. No. 943,134

Claims priority, application United Kingdom, Jun. 23, 1989, [illegible]

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—90 **9 Claims**



1. A smart spatial modulator device whose output comprises an optical beam modulated in accordance with optical and/or electronic input signals, the device including a pixel comprising:

a chiral smectic liquid crystal material disposed between a semiconductor substrate carrying a first electrode and a panel carrying a second electrode;

first electronic circuitry formed in the semiconductor substrate in the vicinity of the first electrode for changing the sate of the liquid crystal material;

further electronic circuitry formed in the semiconductor substrate in the vicinity of the first electrode to provide pointwise operations at the pixel, said pointwise operations including logic function, amplification and thresholding;

a photodetector outputs said optical input signal for addressing said pixel;

said further electronic circuitry includes an electronic input circuitry which outputs said electronic input signal for addressing said pixel in addition to the addressing by said optical input signal or alternatively to the addressing by said optical input signal, said first and further electronic circuitry acting instantaneously to process said input optical and/or electronic signal or signals and to change the state of the liquid crystal material to modulate the output optical beam and/or to provide an electronic output in accordance with the processing carried out; the device further including a plurality of said pixels, said plurality of pixels being in combination with neighboring pixels to form an array, and each pixel of the plurality individually performs an identical logic function to the other pixels of the plurality, the array performs one of a plurality of different respective logic functions in dependence on the interconnection of said plurality of pixels.

5,339,091

PAPERLESS PORTABLE BOOK

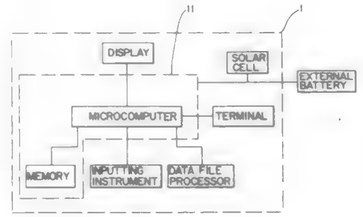
Shunpei Yamazaki, Tokyo, and Toshiji Hamatani, Atsugi, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 702,122, May 16, 1991, abandoned, which is a continuation of Ser. No. 205,750, Jun. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 70,589, Jul. 7, 1987, abandoned. This application Oct. 14, 1992, Ser. No. 961,021

Claims priority, application Japan, Jul. 7, 1986, 61-160651; Sep. 1, 1986, 61-134751

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—104 **8 Claims**



1. A paperless book comprising:

a first memory for storing information in encoded form;

a reproducing device for reading information from said memory;

a display means for visualizing said information;

a temporary memory for temporarily storing data supplied thereto from said first memory where the amount of data which can be stored in the temporary memory is greater than the amount of data which can be displayed by said display means;

a matrix array of sensors associated with said display means which can be actuated by a user to designate particular portions of a displayed page;

emphasizing means connected to said temporary memory and said display means for receiving said user designations, for storing flags identifying the designated portions, and for modifying the appearance of said portions to visually highlight said portions during display on the display means; and

reference retrieving means connected to the display means for receiving a user instruction to recall a selected page of text containing said designated portion and for causing immediate retrieval and display on the display means of the previously designated information.

5,339,092

BEAM FORMER FOR MATRIX DISPLAY

Michael J. Johnson; William R. Hancock, both of Phoenix, and Brent H. Larson, Glendale, all of Ariz., assignors to Honeywell Inc, Minneapolis, Minn.

Continuation of Ser. No. 823,578, Jan. 16, 1992, abandoned, which is a continuation of Ser. No. 432,105, Nov. 6, 1989, abandoned. This application Jan. 13, 1993, Ser. No. 5,851

Int. Cl.[5] G09G *5/36, 3/20, 3/36*

U.S. Cl. 345—136 **14 Claims**

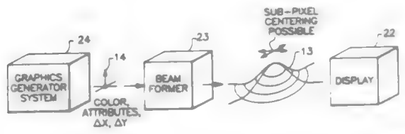
1. A graphics system apparatus to apply an anti-aliasing filter to an output of an image memory configuration to improve the image quality of an active matrix display having one or more pixels each identified by unique addresses, comprising:

a modified graphics generator having an output means for providing standard integer x and y addresses corresponding to the unique addresses of said one or more pixels, and for providing data elements, including image data ele-

VOL 1165 ISS 3 AUG 16 1994 UMI

ments and sub-pixel or fractional address data elements representative of an image to be displayed;

a modified image memory including storage for said image data elements and said sub-pixel or fractional address data elements provided by said modified graphics generator at locations indicated by said standard integer x and y addresses, said modified image memory having an input connected to receive said image data elements and said sub-pixel or fractional address data elements from said modified graphics generator output means, said modified image memory having an output means for providing a sub-pixel output, including said sub-pixel or fractional address data elements; and



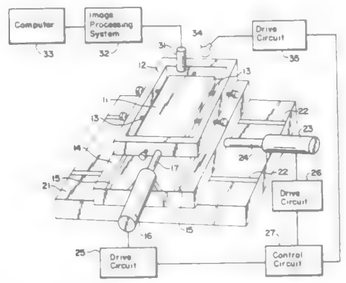
a beamformer having a point spread function of gaussian profile with regard to intensity covering a window including a plurality of pixels around an output pixel, said beamformer including means for generating an intensity output for said output pixel as a function of said image data elements and said sub-pixel or fractional address data elements for one or more of said plurality of pixels in said window covered by said point spread function, said active matrix display having an input to receive said intensity output from said beamformer for display of said image on said display.

5,339,093

LIQUID CRYSTAL PANEL INSPECTION METHOD

Eryohei Kumagai; Kaoru Hiiro; Harumi Shimizu, and Tooru Takahashi, all of Tokyo, Japan, assignors to Ezel, Inc., Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,356
Claims priority, application Japan, Dec. 4, 1990, 2-404006
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—149 7 Claims



1. A method for inspecting a liquid crystal panel, said liquid crystal panel being divided into a plurality of single parts which are each constituent, isolable, and inspectable, each of said single parts being a unit area of an image which is a pattern to be inspected to judge whether it is defective by comparing said pattern to be inspected with a reference pattern recorded beforehand, said method comprising the steps of:

selecting a unit area of an image without a defect from a liquid crystal panel to be inspected;

generating an upper limit reference pattern from a reference pattern by adding a predetermined upper limit brightness to each pixel of said reference pattern;

setting a brightness of each pixel in said upper limit brightness pattern equal to a maximum pixel brightness in a neighborhood of said pixel to obtain a processed upper limit brightness pattern;

generating a lower limit reference pattern from said reference pattern by subtracting a predetermined lower limit brightness to each pixel of said reference pattern;

setting a brightness of each pixel in said lower limit brightness pattern equal to a minimum pixel brightness in a neighborhood of said pixel to obtain a processed lower limit brightness pattern;

comparing a brightness of each pixel of the processed upper limit reference pattern with a brightness of a corresponding pixel of a pattern to be inspected;

comparing a brightness of each pixel of the processed lower limit reference pattern with a brightness of a corresponding pixel of a pattern to be inspected;

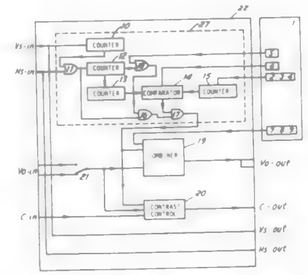
determining that the liquid crystal panel to be inspected is acceptable when more than a predetermined number of pixels have a brightness between brightnesses of corresponding pixels in said processed upper limit reference pattern and said processed lower limit reference pattern and that the liquid crystal panel to be inspected is not acceptable when less than said predetermined number of pixels have a brightness between the brightnesses of said corresponding pixels.

5,339,094

VDU LINE MARKER

Nicholas J. Murrell, and Joyce A. Murrell, both of 9, Haston Crescent, Kinnoull, Perth, Scotland PH2 7XD

Continuation of Ser. No. 460,883, Mar. 5, 1990, abandoned. This application Dec. 24, 1991, Ser. No. 812,816
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—157 14 Claims



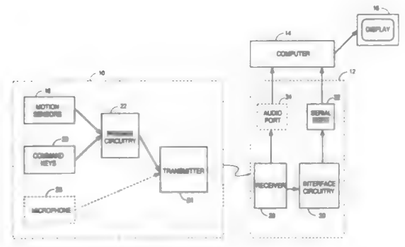
1. Apparatus for electronically generating a movable marker for a line on a video display unit (VDU) associated with a computer having a central processing unit (CPU), said apparatus being completely independent of the CPU and connectable in series between a computer video output and an associated video display unit, said apparatus comprising circuit means having input means for coupling to the computer video output to receive a first video signal therefrom and output means for coupling to the visual display unit, the circuit means comprising detecting means responsive to synchronising information in the video signal for detecting a desired datum position in the video signal, means for indicating the desired position in the video signal at which a marker is to be inserted in accordance with a control input, counting means coupled to the detecting means for providing a signal representing a scanning position in the video signal relative to the datum position and means for generating the marker in an output video signal at the output means when the scanning position represented by the signal from the counting means reaches the desired position as determined by the indicating means.

5,339,095

MULTI-MEDIA POINTING DEVICE

Peter M. Redford, Los Gatos, Calif., assignor to TV Interactive Data Corporation, Calif.

Filed Dec. 5, 1991, Ser. No. 804,240
Int. Cl.[5] G09G *5/08*
U.S. Cl. 345—158 35 Claims



1. In a multimedia display system including a display device, a computer that controls the display device, and input apparatus for supplying user input information to the computer, an improved input apparatus comprising:

(A) a remote unit, including:

(1) sensor means for measuring the inclination of the remote unit relative to a horizontal plane and for producing corresponding inclination signals, said sensor means having

(a) a housing having a first axis passing therethrough and positionable parallel to said horizontal plane, said housing containing a predetermined quantity of liquid,

(b) an inclination sensitive element located within said housing, such that said element is free to move within said housing under the influence of gravity, the location of said element within said housing being directly related to rotation of said housing about said first axis, said element being capable of influencing the direction of light cast thereon as a function of its location within said housing, and

(c) detector means for monitoring the location of said inclination sensitive element within said housing and for developing said inclination signals commensurate therewith, said detector means including

(i) at least one light emitting component mounted along said first axis and operative to emit light in the direction of said element,

(ii) a first pair of light measuring components mounted proximate said housing on opposite sides thereof and along a second axis passing through said housing, said first axis and said second axis being mutually perpendicular, said light measuring components being operative to receive light emitted from said light emitting component and influenced by said element and to develop outputs commensurate with a characteristic thereof, and

(iii) signal producing means responsive to the outputs developed by said light measuring components and operative to produce said inclination signals;

(2) command switch means for sensing user input and producing corresponding command signals; and

(3) transmitter means for transmitting said inclination and command signals; and

(B) a base unit, including:

(1) receiver means for receiving said inclination and command signals from the remote unit; and

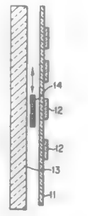
(2) interface means for communicating the received inclination and command signals to the computer.

5,339,096

FLEXIBLE, INTUITIVE, OPERATOR FOR COMPUTER PERIPHERALS

Richard F. Beaufort, Boise, Id., and James M. Sangroniz, Brembate diSopra, Italy, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 888,937, May 26, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,972
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—156 12 Claims



1. A panel for displaying a list of the functions of a human interface device, and selecting one item from said list at a time comprising:

a light transmissive face including a plurality of readable descriptions, said readable descriptions listing the possible functions of said human interface device, said light transmissive face having a front side and a backside, all of said readable descriptions being readable from said front side;

a colored background located in close proximal relationship to said backside of said light transmissive face, the color of said colored background selected to cause a reduction in readability of said readable descriptions when viewed from said front side; and

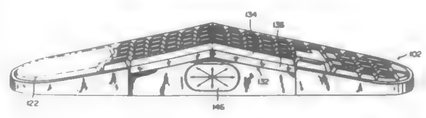
an opaquing member movably interposed between said light transmissive face and said colored background to selectively diminish said reduction in readability of a selected portion of said readable descriptions thus visually indicating said one item of said list to be performed by said human interface device, all of said readable descriptions remaining readable from said front side.

5,339,097

COMPUTER KEYBOARD

Alan H. Grant, 3208 Woodhollow Dr., Chevy Chase, Md. 20815

Continuation-in-part of Ser. No. 328,234, Mar. 24, 1989, Pat. No. 5,119,078, which is a continuation-in-part of Ser. No. 33,039, Mar. 31, 1987, abandoned, which is a continuation-in-part of Ser. No. 921,616, Oct. 21, 1986, abandoned. This application Mar. 6, 1992, Ser. No. 846,710
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—168 24 Claims



1. A keyboard for a computer for operating with hands of a user disposed in a prehensile position, said keyboard comprising:

a keyboard body,

keyboard means located at an upper surface of said keyboard body and having keys for depressing by movement of fingers of a user in a first direction;

spacing means mounted at a forward edge of said keyboard means for operating by movement of a thumb of the user;

VOL 1165 ISS 3 AG 16 1994 UMI

activating means mounted on said keyboard body on a surface transverse to said upper surface, located centrally with respect to a length of said keyboard means for movement in all directions to control all directions of movement of a cursor on a display screen of the computer by movement of at least one thumb of a user in a second direction transverse to said first direction for engagement of said keyboard means and said activating means by the user's hands disposed substantially in a prehensile alignment position with the thumb opposed to the fingers in a substantially grasping motion between the thumb and fingers of the user to cause actuation of said keyboard means and said activating means while the thumb and fingers are in close proximity in prehensile alignment when using the keyboard and whereby ulnar abducted deviation and hand-pronation are reduced.

5,339,098

LIQUID DISCHARGE RECORDING APPARATUS HAVING APPARATUS FOR EFFECTING PREPARATORY EMISSION

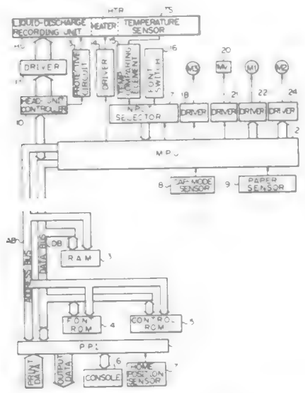
Akira Nagatomo, Yokohama; Yoshifumi Hattori, Yamato; Isao Ebisawa, Tokyo; Tsutomu Abe, Isehara; Takashi Ohbe, Atsugi; Hiroshi Iida, Machida, and Kenjiro Watanabe, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 746,217, Aug. 16, 1991, abandoned, which is a continuation of Ser. No. 603,252, Oct. 25, 1990, abandoned, which is a continuation of Ser. No. 455,765, Dec. 28, 1989, abandoned, which is a continuation of Ser. No. 332,385, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 136,441, Dec. 17, 1987, abandoned, which is a continuation of Ser. No. 809,774, Dec. 17, 1985, abandoned. This application Jul. 15, 1992, Ser. No. 914,029

Claims priority, application Japan, Feb. 21, 1984, 59-268613; Dec. 21, 1984, 59-268601; Dec. 21, 1984, 59-268602; Dec. 21, 1984, 59-268603; Dec. 21, 1984, 59-268604; Dec. 21, 1984, 59-268606; Dec. 21, 1984, 59-268607; Dec. 21, 1984, 59-268608; Dec. 21, 1984, 59-268609; Dec. 21, 1984, 59-268610; Dec. 21, 1984, 59-268612; Dec. 21, 1984, 59-268615; Dec. 21, 1984, 59-269405

Int. Cl.[5] B41J *2/165*

U.S. Cl. 347—5 **39 Claims**



1. A liquid-discharge recording apparatus comprising:

a liquid-discharge recording unit having emission energy generating means for providing energy to act on a liquid to heat said liquid and to form at least one liquid droplet in response to a record signal having a voltage, a frequency, and a pulse width, said recording unit being capable of emitting the at least one liquid droplet when said record signal is supplied to said emission energy generating means;

dedicated recording unit controlling means connected to said liquid-discharge recording unit for setting said record signal voltage, frequency, and pulse width, and for supplying said record signal to said emission energy generating means in response to a command signal; and

processing means, separate from said recording unit controlling means and connected to said liquid-discharge recording unit through said dedicated recording unit controlling means, for providing said command signal to said dedicated recording unit controlling means when a power supply is turned on, thereby causing said dedicated recording unit controlling means to set said record signal voltage, frequency, and pulse width to cause said liquid-discharge recording unit to preliminarily emit at least one liquid droplet prior to emission of liquid droplets for deposit on a recording medium to perform a record operation.

5,339,099

LINE THERMAL PRINTER HAVING DRIVING PULSES OF VARIABLE PULSE WIDTH

Shinji Nureki, and Kazuhisa Oonishi, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Mar. 15, 1991, Ser. No. 670,072

Claims priority, application Japan, Mar. 16, 1990, 2-67862

Int. Cl.[5] B41J *2/36*

U.S. Cl. 346—76 PH **18 Claims**

1. A line thermal printer comprising:

a line thermal head for effecting dot printing in line sequence for each line in response to a power supply pulse having a pulse width;

a driving circuit for selectively supplying the power supply pulse to said line thermal head in accordance with printing dot data;

a dot data memory for storing a number of printing dot data for each line in synchronism with line sequence printing and for sending the stored printing dot data to said driving circuit;

a heat accumulation counter for measuring the number of printing dot data for each line from the dot data memory and counting the measured numbers cumulatively to provide a count value;

a multiplier for multiplying repeatedly the count value of said heat accumulation counter by a heat radiation constant in a predetermined cycle so as to correct and update the count value; and

an arithmetic unit for calculating the pulse width of the power supply pulse in synchronism with line sequence printing and based on the count value of said heat accumulation counter which is corrected and updated, and for controlling said driving circuit based on the calculated pulse width of the power supply pulse.

5,339,100

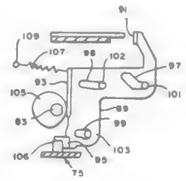
ENVELOPE PRESENCE SENSING MECHANISM FOR A THERMAL POSTAGE METER

John D. Mistyurik, Troy, Ohio, assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 24, 1992, Ser. No. 950,340

Int. Cl.[5] B41J *13/26*

U.S. Cl. 346—134 **2 Claims**



1. A position sensing assembly for a thermal printing postage meter having a base supporting a registration wall and a deck, and a thermal print head fixably mounted to said registration wall above a portion of said deck to define a print station for printing a postage indicia on an envelope having a leading edge positioned on said deck in said print station, comprising:

a position sensing lever having an envelope facing surface;

positioning means for supporting said position sensing lever in a first position such that said envelope facing surface extends generally perpendicular to said deck to encounter said leading edge of said envelope such that said leading edge may deflect said position sensing lever when positioned in said print station and for repositioning said position sensing lever in a second position removing said envelope facing surface from encountering said leading edge of said envelope; and

microcontroller means in communication with said positioning means for causing said positioning means to position said position sensing lever in said second position when encountering said envelope leading edge upon initiation of a meter print cycle and for causing said positioning means to position said position sensing lever in said first position when said print cycle is completed.

5,339,101

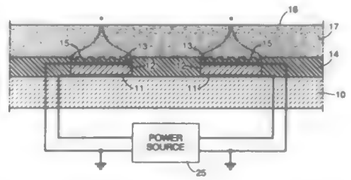
ACOUSTIC INK PRINTHEAD

Eric G. Rawson, Saratoga; Babur B. Hadimioglu, Mountian View, and Butrus T. Khuri-Yakub, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1991, Ser. No. 815,730

Int. Cl.[5] G01D *15/16*

U.S. Cl. 347—46 **26 Claims**



1. A printhead for an acoustic ink printer, comprising a substrate, an acoustic transducer on a first surface of said substrate, a dielectric layer on said transducer, and a lens formed in said dielectric layer over the transducer.

5,339,102

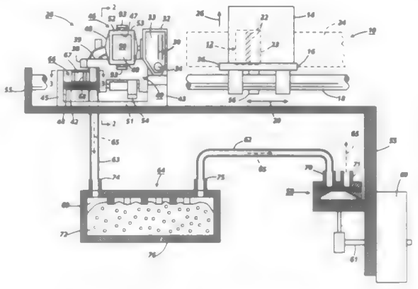
CAPPING CARRIAGE FOR INK JET PRINTER MAINTENANCE STATION

Michael Carlotta, Sodus, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1992, Ser. No. 976,133

Int. Cl.[5] B41J *2/165*

U.S. Cl. 347—32 **6 Claims**



1. A cap carriage for use in a maintenance station of an ink jet printer, the printer including a bidirectionally translatable carriage supporting a print cartridge having a printhead with nozzles in a nozzle face for printing ink droplets ejected from said nozzles onto a recording medium at a printing zone in the printer, the translatable carriage being controlled by drive member under the control of a printer controller, the maintenance station being positioned at one side of the printing zone for translation of a print cartridge thereto on the translatable carriage for capping by the cap carriage, the cap carriage comprising:

a movable base having two parallel walls spaced from each other and a catch fixed to the base for intercepting the translatable carriage for movement in unison therewith when the translatable carriage enters the maintenance station, the base being slidably mounted on at least one guide rail for movement therealong;

a movable cap means for sealing the nozzles in the printhead nozzle face while the movable base is moving in unison with the translatable carriage, the cap means being slidably mounted in the base walls for movement in a direction perpendicular to the movement of the base; and

means for moving the cap means from a position spaced from the printhead nozzle face to a position in which the cap means seals against printhead nozzle face and surrounds the nozzles therein, the moving means being actuated in response to movement of the base.

5,339,103

PART MACHINING PROGRAMMING USING A CAMERA INTERCHANGEABLE WITH MACHING NOZZLE

Robert H. Schmidt, 16820 Creek Ridge Trail, Minnetonka, Minn. 55345, and Dan Martin, 4328 Aldrich Ave. S., Minneapolis, Minn. 55409

Filed Aug. 18, 1992, Ser. No. 931,599

Int. Cl.[5] H04N *7/18*

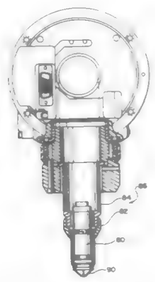
U.S. Cl. 348—95 **9 Claims**

1. In a method for creating a part machining program for a three dimensional processing machine for a workpiece in which the machine positions a multi-axis processing head which carries an attached machining nozzle to various points along a path indicated by a scribe line applied to a master workpiece to teach a machine controller to follow a taught path through a plurality of points, the coordinates of which are entered into the machine controller and stored to form the basis for a part machining program for commanding the ma-

VOL 1165 ISS 3 AG 16 1994 UMI

chining nozzle to move along the taught path and for performing machining operations at specified points in accordance with further instructions inserted into the part machining program, an improved method of teaching comprising the steps of:

(a) mounting a camera assembly on the processing head with the camera aligned for forming an image of the portion of the workpiece surface immediately beneath the nozzle;



(b) monitoring a display means connected for receiving the image formed by the camera and using a displayed crosshair reference point to define the point where a beam passing through the nozzle would strike the workpiece; and

(c) moving the processing head to align the crosshairs of the display means with multiple points along the scribed line and storing the coordinates of the translational and rotational axes corresponding to each of the points.

5,339,104

MOTION DETECTING APPARATUS

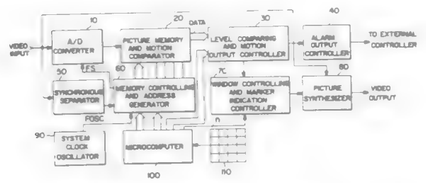
Sam P. Hong, Kyungsangbook, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 9, 1992, Ser. No. 987,690

Claims priority, application Rep. of Korea, Dec. 9, 1991, 22501/1991

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—155 **20 Claims**



1. A motion detecting apparatus, comprising:

an analog/digital converter for sampling a video signal input from a charge-coupled device camera and converting the sampled signal into a digital signal;

a synchronous separator for separating said sampled video signal into a horizontal synchronous signal and a vertical synchronous signal;

a system clock generator for generating a system clock signal;

a microcomputer for controlling motion detection, a window/marker indication and window editing in response to key signals from a keyboard;

a memory control and address generator for receiving the horizontal synchronous signal and vertical synchronous signal from said synchronous separator and outputting an address signal and a control signal for determining an effective sampling region and a motion comparing region under control of said microcomputer;

a picture memory comparator for receiving the digital video signal from said analog/digital converter and detecting motion of an image by comparing previously input field data and currently input field data under control of said memory control and address generator;

a level comparing and motion output controller for comparing the motion of the image from said picture memory and motion comparator with a limit value and a reference value and controlling a motion output;

an alarm output controller for outputting an alarm control signal to an external controller when said level comparing and motion output controller indicates the motion of the image exceeds the limit value;

a window control and marker indication controller for controlling a window and a marker indication in response to an address signal, for designating a magnitude of a window/marker of said memory control and address generator, and a window/marker selection control signal of the microcomputer upon receipt of the motion output from the level comparing and motion output controller; and

a picture synthesizer for synthesizing the motion output from said window control and marker indication controller and the video signal and outputting a video signal indicated with a window or a marker.

5,339,105

MULTI-FORMAT DIGITAL IMAGE PICKUP APPARATUS

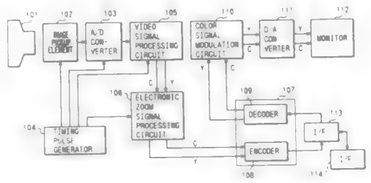
Noriyuki Iura, Yokohama; Takuya Imaide, Fujisawa, and Toshiro Kinugasa, Hiratsuka, all of Japan, assignors to Hitaci, Ltd., Tokyo, Japan

Filed Aug. 11, 1993, Ser. No. 104,573

Claims priority, application Japan, Aug. 26, 1992, 4-226888

Int. Cl.[5] H04N *5/262*

U.S. Cl. 348—240 **22 Claims**



1. An image pickup apparatus comprising:

a timing pulse generator;

an imager for outputting a signal in synchronization with a horizontal scanning pulse supplied from said timing pulse generator, said imager having an effective pixel number requiring the horizontal scanning pulse of a frequency f_0 to produce the signal having a normal aspect ratio;

a video signal processing circuit for processing the signal outputted from said imager and or generating a video signal; and

an electronic zoom signal processing circuit for enlarging the video signal generated by said video signal processing circuit in the horizontal direction;

wherein said timing pulse generator supplies said imager with the horizontal scanning pulse having a frequency f which is higher than said frequency f_0 of the horizontal scanning pulse required by the effective pixel number and a horizontal scanning period of said imager, and said electronic zoom signal processing circuit enlarges said video signal at a ratio of f/f_0 times in the horizontal direction to produce an enlarged video signal having the normal aspect ratio.

5,339,106

PHOTOELECTRIC CONVERSION APPARATUS ELIMINATING NOISE IN AN OUTPUT SIGNAL

Isamu Ueno, Atsugi; Seiji Hashimoto, Yokohama, and Masami Takeda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

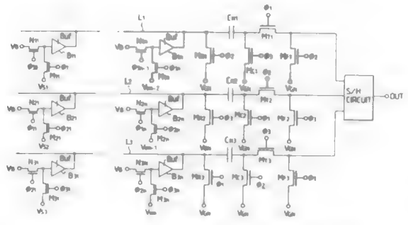
Division of Ser. No. 868,773, Apr. 15, 1992, abandoned, which is a division of Ser. No. 508,893, Apr. 5, 1990, Pat. No. 5,162,912.

This application Mar. 25, 1993, Ser. No. 38,053

Claims priority, application Japan, Apr. 10, 1989, 1-87891; Apr. 10, 1989, 1-87893; Jun. 6, 1989, 1-142140

Int. Cl.[5] H04N *5/335*

U.S. Cl. 348—243 **7 Claims**



1. A photoelectric conversion apparatus, comprising:

(a) a plurality of buffer means each for receiving and amplifying a sensor signal via first switching means and receiving and amplifying a predetermined reference signal;

(b) a plurality of output lines each connected to a corresponding output of one of said plurality of buffer means;

(c) a plurality of charge storage means each connected to a corresponding one of said output lines each for selectively storing a corresponding output signal of one of said plurality of buffer means;

(d) resetting means connected to input and output sides of each of said plurality of charge storage means for selectively resetting charge stored in each of said plurality of charge storage means; and

(e) selecting means for selectively reading out a charge signal from an output side of one of said plurality of charge storage means,

wherein the predetermined reference signal is substantially the same as a dark signal level of a signal to be supplied to the first switching means.

5,339,107

COLOR OPTICAL SCANNER WITH ROTATING COLOR FILTER ASSEMBLY

Steven G. Henry, Fort Collins; Dean Buck, and Jerry L. Bybee, both of Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 19, 1992, Ser. No. 932,166

Int. Cl.[5] H04N *1/04*

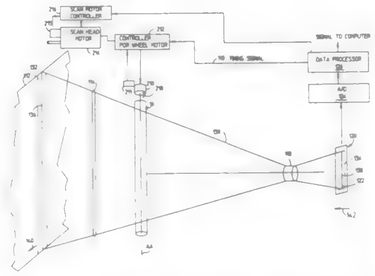
U.S. Cl. 348—270 **13 Claims**

1. A color optical scanner for generating data representative of a color image of an object which is scanned comprising:

a) a linear sensor array located on an image plane for generating a data signal indicative of the intensity of light impinged thereon and having a sensor sampling interval of a predetermined length;

b) imaging means for imaging a moving scan area on said object containing a plurality of scan lines on an image plane and for defining an imaging light path extending from said scan area on said object to said image plane;

c) color wheel means disposed between said object and said image plane along said imaging light path and having an axis of rotation extending transversely of said light path and having a peripheral portion comprising a plurality of filter portions of different spectral range transmissibility which are sequentially rotated into intersecting relationship with said imaging light path during different color



imaging intervals having durations equal to said sensor sampling interval.

5,339,108

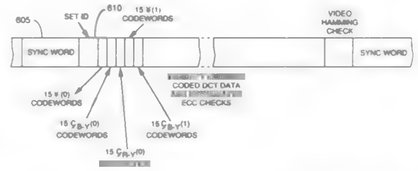
ORDERING AND FORMATTING CODED IMAGE DATA AND RECONSTRUCTING PARTIAL IMAGES FROM THE DATA

Charles H. Coleman, Round Mountain, Nev.; Sidney D. Miller, Mountain View, and Peter Smidth, Menlo Park, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 865,315, Apr. 9, 1992, abandoned. This application Jun. 9, 1992, Ser. No. 896,511

Int. Cl.[5] H04N *7/133, 5/92*

U.S. Cl. 348—408 **36 Claims**



1. A method for compressing a digital image signal and for decompressing the compressed digital image signal, the method comprising the steps of:

receiving the image signal;

stratifying the received image signal into a plurality of image blocks, each image block being of predetermined size and each image block including image data from the image signal for defining a respective portion of the image signal;

transforming each respective image block of the image signal to obtain a respective transform coefficient block, a transform coefficient block including a plurality of transform coefficients, the respective transform coefficients of a transform coefficient block being usable for reconstructing the corresponding portion of the image signal;

structuring the plurality of transform coefficients of the transform coefficient block into a predetermined visibility order;

generating an ordered block of image transform coefficients from the visibility ordered transform coefficients;

providing the ordered block of transform coefficients to a communications medium as a segment of predetermined size;

retrieving at least a snatch from an ordered block of transform coefficients from the communications medium; and

reconstructing a partial image signal from the snatch of retrieved transform coefficients.

VOL 1165 ISS 3 AG 16 1994 UMI

5,339,109

APPARATUS FOR INTERPOLATING SCANNING LINES OF TV SIGNAL IN TV

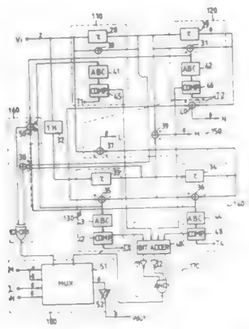
Sung H. Hong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 23, 1992, Ser. No. 996,038

Claims priority, application Rep. of Korea, Dec. 23, 1991, 23894/1991

Int. Cl.[5] H04N 7/01, 11/20

U.S. Cl. 348—441 8 Claims



1. An apparatus for interpolating scanning lines of a TV signal in a TV, comprising:

scanning the interpolating means for discriminating vertical, horizontal and diagonal edge patterns of a received video signal of the TV signal and extracting a signal for interpolation from the video signal using vertical, 45° and 135° diagonal average values; wherein said scanning line interpolating means includes:

a one line memory for delaying the received video signal by one line; first horizontal comparison means for delaying the received video signal by one sample, detecting a difference between the video signal and the one sample-delayed video signal, taking an absolute value of the detected difference and comparing the absolute value with a predetermined reference value;

second horizontal comparison means for delaying the one sample-delayed video signal from said first horizontal comparison means by one sample, detecting a difference between the one sample-delayed video signal and the two-sample-delayed video signal, taking an absolute value of the detected difference and comparing the absolute value with a predetermined reference value;

third horizontal comparison means for delaying the one line-delayed video signal from said one line memory by one sample, detecting a difference between the one line-delayed video signal and the one line-delayed and then one sample-delayed video signal, taking an absolute value o the detected difference and comparing the absolute value with a predetermined reference value;

fourth horizontal comparing means for delaying the one line-delayed and then one sample-delayed video signal from said third horizontal comparison means by one sample, detecting a difference between the one line-delayed and then one sample-delayed video signal and the one line-delayed and then two-sample-delayed video signal, taking an absolute value of the detected difference and comparing the absolute value with a predetermined reference value;

diagonal/vertical sum signal output means for summing up the received video signal and the one line-delayed and then two-sample-delayed video signal from said fourth horizontal comparison means to output a first diagonal sum signal, summing up the two-sample-delayed video signal from said second horizontal comparison means and the one line-delayed video signal from said one line memory to output a second diagonal sum signal and summing up the one sample-delayed video signal from said first horizontal comparison means and the one line-delayed and then one sample-delayed video signal from said third horizontal comparison means to output a vertical sum signal;

first control signal generating means for adding the horizontal difference signals from said first to fourth horizontal comparison means, detecting a vertical difference signal between the one sample-delayed video signal from said first horizontal comparison means and the one line-delayed and then one sample-delayed video signal from said third horizontal comparison means and exclusive-ORing the sign bit of the added signal and that of the vertical difference signal to generate a control signal;

second control signal generating means for generating a control signal in response to control signals from said first to fourth horizontal comparison means;

interpolation signal output means for selecting one of the first and second diagonal sum signals and the vertical sum signal from said diagonal/vertical sum signal output means in response to the control signals from said first and second control signal generating means, the selected signal having the smallest difference, averaging the selected signal and outputting the averaged signal as the interpolation signal;

first time compressing means for compressing the time of the interpolation signal from said scanning line interpolating means; and

second time compressing means for compressing the time of the video signal; and

switching means for selectively and in turn outputting output signals from said first and second time compressing means.

5,339,110

SOUND MULTIPLEX BROADCAST RECEIVER AND METHOD OF CONTROLLING DISPLAY THEREOF

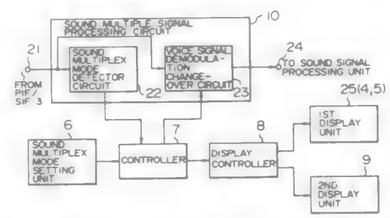
Youji Hara, Yokosuka, and Yasuhiro Kasahara, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 14, 1993, Ser. No. 4,519

Claims priority, application Japan, Jan. 24, 1992, 4-011107

Int. Cl.[5] H04N 5/60

U.S. Cl. 348—485 20 Claims



1. A sound multiplex broadcast receiver for use in a sound multiplex broadcast system employing sound multiple signals having a plurality of sound multiplex modes, comprising:

mode detecting means for detecting at least one sound multiplex mode of the sound multiple signals received by a tuner and outputting a mode detection signal representing the detected mode;

mode setting means for selectively setting by a user s set sound multiplex mode representing one of said at least one sound multiplex mode detected by said mode detecting means or one of said plurality of sound multiplex modes other than said at least one sound multiplex mode and outputting a mode setting signal representing the set sound multiplex mode;

selecting means for selecting, from demodulated sound output signals obtained by demodulating the sound multiple signals received by said tuner in a demodulator, one demodulated sound output signal on a basis of a combination of said mode detection signal and said mode setting signal and supplying the selected one demodulated sound output signal to sound output means, the selected one demodulated sound output signal being coincident with the set sound multiplex mode whenever the set sound multiplex mode is inched in the sound multiple signals; and,

display means connected to said selecting means for simultaneously displaying a mode of said one demodulated sound output signal selected by said selecting means and said detected mode indicated by said mode detection signal.

10. A display control method for a sound multiplex broadcast receiver for use in a sound multiplex broadcast system employing sound multiple signals having a plurality of sound multiplex modes, comprising the steps of:

detecting at least one sound multiplex mode of the sound multiple signals received by the receiver;

selectively setting by a user a set sound multiplex mode representing one of said at least one sound multiplex mode detected by said mode detecting means or one of said plurality of sound multiplex modes other than said at least one sound multiplex mode;

selecting, from demodulated sound output signals obtained by demodulating the sound multiple signals in a demodulator of the receiver, one demodulated sound output signal on a basis of a combination of the detected at least one sound multiplex mode and the set sound multiplex mode and supplying the selected one demodulated sound output signal to sound output means, the selected one demodulated sound output signal being coincident with the set sound multiplex mode whenever the set sound multiplex mode is included in the sound multiple signals; and

displaying a mode of the one demodulated sound output signal thus selected and said detected at least one sound multiplex mode.

19. A sound multiplex broadcast receiver for use in a sound multiplex broadcast system employing sound multiple signals having a plurality of sound multiplex modes, comprising:

mode detecting means for detecting a least one sound multiplex mode of sound multiple signals received by a tuner and outputting a mode detection signal representing the detected mode;

mode setting means for selectively setting by a user a sound multiplex mode representing one of said at least one sound multiplex mode detected by said mode detecting means or one of said plurality of sound multiplex modes other than said at least one sound multiplex mode and outputting a mode setting signal representing the set sound multiplex mode;

mode selecting means for selecting one mode from said plurality of sound multiplex modes on the basis of a combination of said mode detection signal and said mode setting signal and outputting a mode selection signal;

sound output selecting means for selecting, from demodulated sound output signals obtained by demodulating by a demodulator the sound multiple signals received by said tuner, one demodulated sound output signal according to said mode selection signal and supplying the selected one demodulated sound output signal to sound output means; and,

display means connected to said mode selecting means for simultaneously displaying a mode of said one demodulated sound output signal selected by said selecting means and said detected mode indicated by said mode detection signal.

5,339,111

FORMAT ADAPTIVE SYNC SIGNAL GENERATOR

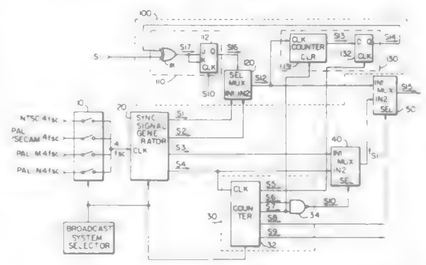
Hyun J. Park, Kyunggi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Mar. 1, 1993, Ser. No. 24,138

Claims priority, application Rep. of Korea, Feb. 29, 1992, 92-3344

Int. Cl.[5] H04N 5/06

U.S. Cl. 348—524 5 Claims



5. A sync signal generating apparatus for converting broadcast signals including sync signals that correspond to a first one of a plurality of broadcast systems to broadcast signals that correspond to a second selected one of the plurality of broadcast systems, said sync signal generating apparatus comprising:

a broadcast system selection switch having a first set of inputs each being coupled to a signal having a subcarrier frequency corresponding to the plurality of broadcast systems, respectively, and an output for selectively outputting one of said signals;

a sync signal generator, responsive to the output of said broadcast system selection switch, for generating even and odd horizontal sync signals, a vertical sync signal, and an equalizing signal which correspond to the respective broadcast systems;

means, coupled to said even and odd horizontal sync signals, for selectively generating a first signal corresponding to one of said even and odd horizontal sync signals;

means, coupled to said vertical sync signal and equalizing signal, for selectively generating a second signal corresponding to one of said vertical sync signal and said equalizing signal; and

means, coupled to said first and second signals, for selectively generating a composite sync signal corresponding to a combination of said first and second signals.

5,339,112

AUTOMATIC PHASE CONTROLLING CIRCUIT FOR PROCESSING REPRODUCED CHROMA SIGNALS

Mitsumo Kawano, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 4, 1992, Ser. No. 985,913

Claims priority, application Japan, Dec. 10, 1991, 3-326020

Int. Cl.[5] H04N 9/02

U.S. Cl. 348—549 12 Claims

1. An automatic phase controlling circuit for processing reproduced chroma signals, comprising:

frequency converting means for converting, in accordance with a local signal, a low range converted chroma signal reproduced from a recording medium to a carrier chroma signal having a phase;

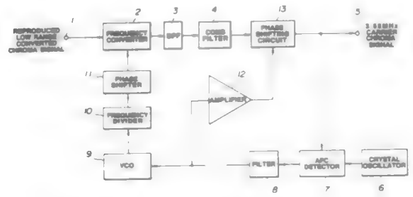
a comb filter for removing a crosstalk component from the carrier chroma signal output from the frequency converting means;

phase shifting means for shifting, in response to a controlling signal, the phase of the carrier chroma signal output from the comb filter and outputting a phase-shifted carrier chroma signal;

VOL 1165 ISS 3 AG 16 1994 UMI

variable oscillating means for varying an oscillation frequency in response to the controlling signal and oscillating the local signal, used in the frequency converting means, in accordance therewith; and

phase detecting means for comparing a phase of a color burst signal of the phase-shifted carrier chroma signal to a phase of a predetermined reference signal and outputting the



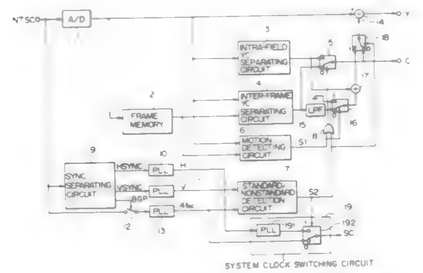
controlling signal in accordance therewith to control the oscillation frequency of the variable oscillating means in accordance therewith and to control the phase shifting means to control an amount that the phase shifting means shifts the phase of the carrier chroma signal to remove fluctuation in the phase of the carrier chroma signal, introduced by the comb filter, to provide the phase-shifted carrier chroma signal.

5,339,113

MOTION-AND NONSTANDARD-ADAPTIVE THREE-DIMENSIONAL YC SEPARATING CIRCUIT FOR NTSC SIGNAL

Kiyoshi Iwasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 24, 1993, Ser. No. 125,733
Claims priority, application Japan, Sep. 28, 1992, 4-282399
Int. Cl.[5] H04N *9/78*
U.S. Cl. 348—604 **8 Claims**



1. A three-dimensional YC separating circuit for separating an NTSC composite video signal into a Y signal and a C signal, comprising:

an intra-field YC separating circuit for receiving said NTSC composite video signal to generate a first C signal having a definite frequency bandwidth;

an inter-frame YC separating circuit for receiving said NTSC composite video signal to generate a second C signal;

a low pass filter connected to an output of said inter-frame YC separating circuit, said low pass filter having a cut-off frequency smaller than a lower cut-off frequency of said definite frequency bandwidth;

an adder, connected to an output of said intra-field YC separating circuit and an output of said low pass filter, to generate an output;

a motion detecting circuit for receiving said NTSC composite video signal to detect whether said NTSC composite video signal is for a static image part of an image or for a dynamic image part thereof;

a standard/nonstandard detecting circuit for receiving said signal to detect NTSC composite video whether said NTSC composite video signal is standard or nonstandard; and

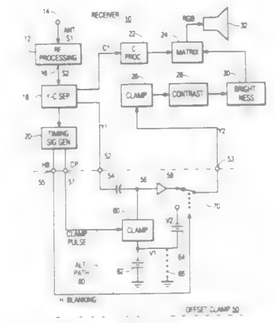
a subtractor, connected to said adder, for subtracting the output of said adder from said NTSC composite video signal to generate said Y signal, when said NTSC composite video signal is detected as a nonstandard signal by said standard/nonstandard detecting circuit and detected as said static image part of said image by said motion detecting circuit.

5,339,114

TELEVISION RECEIVER WITH LUMINANCE SIGNAL CLAMPED OFFSET AND RE-CLAMPED PRIOR TO CONTRAST CONTROL FOR PREVENTING BLACK LEVEL CHANGES WITH CONTRAST CONTROL CHANGES WHEN DISPLAYING LUMINANCE SIGNALS HAVING ELEVATED BLACK LEVEL

William A. Lagoni; Ronald T. Keen, both of Indianapolis, and Charles B. Neal, Zionsville, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jul. 29, 1992, Ser. No. 922,107
Int. Cl.[5] H04N *5/16*
U.S. Cl. 348—673 **4 Claims**



1. Television receiving apparatus, comprising:

a source for providing a video input signal having two time intervals comprising an active video interval and a horizontal blanking interval,

circuit means for coupling said video input signal to a first clamp circuit for providing a first clamped video output signal that is clamped at a level corresponding to a back porch level of the horizontal blanking portion of the video signal coupled thereto by said circuit means;

a contrast control circuit coupled to said clamp circuit and responsive to said clamped video output signal for providing a clamped and contrasted adjusted video output signal;

display means coupled to said contrast control circuit and responsive to said clamped and contrast adjusted video output signal for providing displayed images representative thereof;

said video input signal having a pedestal level in said blanking interval and having a black level in said active video interval that differs from said pedestal level by a given amount;

characterized in that:

for counteracting a tendency for changes in the contrast control to alter the black level of said displayed images, said circuit means comprises:

offsetting means having an input coupled to said source and having an output coupled to said input of said clamp circuit: for offsetting said video input signal applied to said clamp circuit by said given amount during one of said active video and horizontal blanking intervals of said video input signal,

said offsetting means comprising:

a second clamp circuit including a capacitor having a first plate connected to the output of said signal source for receiving said video input signal and means for coupling a second plate of said capacitor to a first reference level during a back porch portion of said blanking interval of said video input signal to provide a second clamped video signal;

a source for providing a second reference level having a value which differs by said given amount from the value of said first reference level; and

switching circuit means responsive to said second clamped video signal, to said second reference level and to a horizontal blanking timing signal supplied thereto for producing and applying a modified video output signal to said first clamp circuit; and wherein

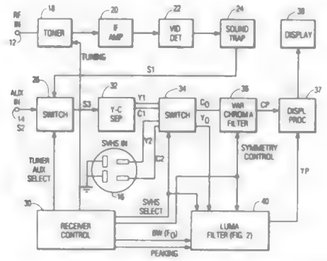
said modified video signal having an active video interval that is uniformly offset relative to the back porch level of said second clamped video signal by said given amount and in a given polarity for counteracting said tendency for said changes in said contrast control to change said black level of said displayed images.

5,339,115

VARIABLE BANDWIDTH LUMINANCE FILTER WITH COMMONLY TUNED DELAY AND AMPLITUDE CONTROLLING FILTERS PROVIDING FREQUENCY INDEPENDENT AND BANDWIDTH INDEPENDENT DELAY CHARACTERISTIC

William A. Lagoni, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Sep. 16, 1992, Ser. No. 946,281
Int. Cl.[5] H04N *9/64*
U.S. Cl. 348—711 **10 Claims**



1. A luminance signal filter for use in a television receiver, having plural luminance signal sources of differing bandwidths comprising:

switch means coupled to said sources for providing a selected luminance signal for display;

control means for (i) controlling the selection of said video input signals and for (ii) providing a bandwidth control signal indicative of the nominal bandwidth of said selected luminance signal;

a tunable filter responsive to said bandwidth control signal for determining the bandwidth of said selected luminance signal applied to said display;

said tunable filter having a delay which varies as a function of the frequency of components within the filter passband and which also varies with changes in said bandwidth of said selected luminance signal; and

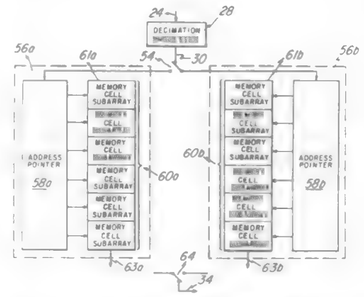
a variable delay circuit coupled in series with said tunable filter and responsive to said bandwidth control input signal for providing delay equalization for said signal frequencies within said passband of said tunable filter and for concurrently providing a substantially constant overall delay for said luminance signal for said differing bandwidths.

5,339,116

DMD ARCHITECTURE AND TIMING FOR USE IN A PULSE-WIDTH MODULATED DISPLAY SYSTEM

Paul M. Urbanus, Dallas, and Jeffrey B. Sampsell, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 35,525, Mar. 23, 1993, Pat. No. 5,278,652, which is a continuation of Ser. No. 678,761, Apr. 1, 1991, abandoned. This application Oct. 15, 1993, Ser. No. 137,650
Int. Cl.[5] H04N *5/00*
U.S. Cl. 348—716 **20 Claims**



1. A method of displaying data comprising address memory cells and loading display data into said memory cells, wherein said display data is comprised of at least two data bits, transferring the contents of said memory cells onto display pixels so that each said data bit is displayed for a portion of the total frame time appropriate for the level of significance of said data bit.

5,339,117

TUNING APPARATUS FOR TELEVISION SYSTEM AND METHOD OF CONTROLLING THE SAME

Han B. Song, Kumi; Jae K. Lee, Daeku, and Woon K. Baik, Kumi, all of Rep. of Korea, assignors to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 12, 1992, Ser. No. 897,423
Claims priority, application Rep. of Korea, Jul. 31, 1991, 91-1321
Int. Cl.[5] H04N *5/50*
U.S. Cl. 348—733 **14 Claims**

1. A tuning apparatus for a television system, comprising:

rotary encoding means, including a slidable and rotatable channel changing mechanism, said rotary encoding means outputting a plurality of signals with varying phases in accordance with a rotation of said channel changing mechanism;

control means for calculating a channel number in accordance with the plurality of signals from said rotary encoding means and outputting channel receive data corresponding to the channel number; and

tuning means for receiving a television broadcasting signal of a channel corresponding to the channel receive data from said control means and for tuning said television system to the television broadcasting signal.

5. A method of controlling tuning in a television system, comprising the steps of:

(a) simultaneously generating two signals with a phase difference with respect to each other, corresponding to a

VOL 1165 ISS 3 AG 16 1994 UMI

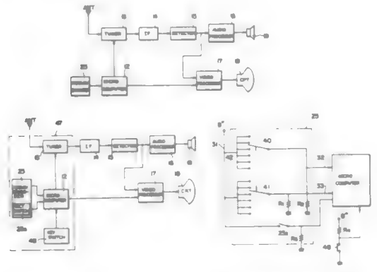
channel change if a current channel value is changed by a channel changing mechanism;

(b) generating a channel increment signal or channel decrement signal and error signal, in accordance with the two signals;

(c) calculating a new channel value in accordance with the channel increment direction or the channel decrement direction; and

(d) tuning a tuner of said television system with channel receive data corresponding to the new channel value such that said tuner selects a new channel corresponding to the new channel value.

11. A method of controlling tuning in a television system that includes a channel changing mechanism that can be rotated, comprising the steps of:



(a) performing a channel change corresponding to a current broadcasting mode if a channel change signal is generated as a function of rotation by said channel changing mechanism;

(b) recalling and displaying a current channel value in the current broadcasting mode if a channel recall signal is generated as a function of the channel changing mechanism being moved;

(c) changing the current broadcasting mode into a desired broadcasting mode if a broadcasting mode change signal is generated; and

(d) performing a channel change corresponding to the broadcasting mode change signal in accordance with the inputted channel change signal and displaying the changed channel value.

5,339,118

TONE CORRECTING APPARATUS FOR LASER DISPLAY SYSTEM

Shigekatsu Tagami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,710

Claims priority, application Japan, Feb. 17, 1992, 4-029740

Int. Cl.[5] H04N *1/40, 3/08, 9/31, 5/74*

U.S. Cl. 348—744 **10 Claims**

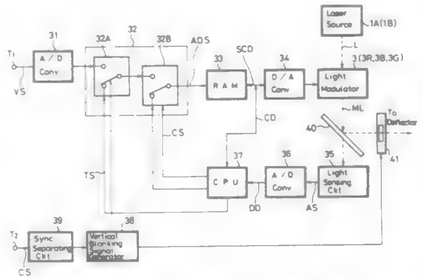
1. A tone correcting apparatus for an image display apparatus in which a light from a light source is modulated on the basis of a video signal and displayed as an image, comprising:

a) test signal generating means for generating a test signal, wherein the test signal is generated during a blanking period of said video signal;

b) memory means for outputting tone correction data on the basis of said test signal;

c) modulating means for modulating the light from said light source on the basis of said tone correction data;

d) detecting means for detecting the modulated light from said modulating means; and



e) control means for calculating correction data on the basis of the modulated light detected by said detecting means and storing said correction data in said memory means.

5,339,119

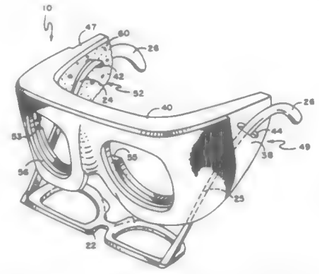
EYE PROTECTION DEVICE COMPRISING A FOAM RUBBER-LIKE RESILIENT INSERT MEMBER

Lawrence C. Gardner, 24 Elliott Rd., Sterling, Mass. 01564

Filed Dec. 17, 1993, Ser. No. 168,131

Int. Cl.[5] G02C *1/00;* **A61F** *9/02*

U.S. Cl. 351—158 **12 Claims**



1. An eye protection device for use in combination with a pair of eyeglasses having a frame, a bridge, a first lens, a second lens, a first hinge member and a second hinge member, a first rearwardly extending side earpiece, and a second rearwardly extending side earpiece, said device to be worn on the face of a user, comprising:

a foam rubber-like member having a front portion having a first end and a second end, a rear inner side and a front outer side, said front portion having a first lens aperture and a second lens aperture defined therein, said foam rubber-like member having a first side portion and a second side portion with each side portion having an end, an inner side and an outer side, said first and second side portion being contiguous, respectively, with said first and second ends of said front portion and extending rearwards from said front portion, said foam rubber-like member having a thickness;

a first eyeglass frame receipt channel and a second eyeglass frame receipt channel, said first and second eyeglass frame receipt channels defined, respectively, around said first and second lens apertures in said foam rubber-like member; and

a first eyeglass earpiece aperture and a second eyeglass earpiece aperture, said first and second eyeglass earpiece apertures defined, respectively, in said first and second side portions of said foam rubber-like member for said first and second eyeglass earpieces to pass therethrough.

5,339,120

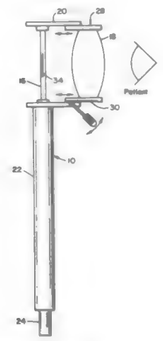
RETINA EVALUATION RETICLE APPARATUS

Frank L. Oglesby, Jr., 1417 Plainview St., Kingsport, Tenn. 37664

Filed Nov. 16, 1992, Ser. No. 976,539

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—211 **4 Claims**



1. A retina evaluation reticle apparatus and means for removably positioning said apparatus within a vertical plane at a focusing point of a slit lamp biomicroscope and spaced in said slit lamp biomicroscope from a patient to be examined, said retina evaluation reticle apparatus including a reticle defining and including thereacross a grid for enabling measurements to be made from the optic nerve of said patient during an indirect biomicroscopy of the eye, and a condensing lens coaxially spaced from said reticle toward said patient for forming an aerial image of said optic nerve upon said grid and having opposite faces that are located in two vertical planes, said grid being sized with reference to an expected average diameter of said optic nerve and a dioptric power of said condensing lens.

5,339,121

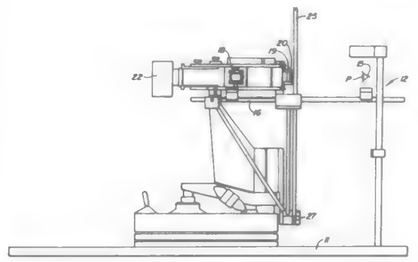
RECTILINEAR PHOTOKERATOSCOPE

John Shimmick, Redwood City, and Charles R. Munnerlyn, Sunnyvale, both of Calif., assignors to Visx, Incorported, Santa Clara, Calif.

Filed Nov. 1, 1991, Ser. No. 786,650

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—212 **8 Claims**



1. A method of determining the refractive power of a point on the anterior corneal surface of an eye, said method comprising the steps of:

capturing an image of a grid reflected from the anterior surface of the cornea, the grid having intersecting lines arranged in a pattern which forms a substantially rectilinear grid when reflected from a curved surface having a radius of curvature lying within a predetermined range;

measuring the spatial frequency f of grid lines between the reference point corresponding to the chief ray of the pupil of the eye and the point whose refractive power is to measured; and

calculating the refractive power from the relationship D=af+b, where a and b are predetermined constant values.

5,339,122

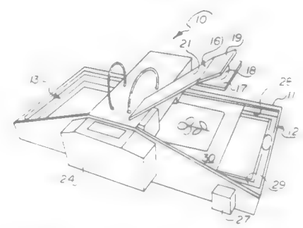
OVERHEAD PROJECTOR WITH AUTOMATIC DOCUMENT POSITIONER

Donald J. Polak, Brentwood, Tenn., and Thomas J. Bush, Canton Center, Conn., assignors to Pelikan, Inc., Franklin, Tenn.

Filed Nov. 12, 1993, Ser. No. 151,792

Int. Cl.[5] G03B *23/04*

U.S. Cl. 353—103 **8 Claims**



1. An overhead projector for projecting images contained on media comprising:

(a) a housing having first and second media holders,

(b) a platen movable between said first and second media holder,

(c) a lifter for lifting media to and from said first or second holder onto or off of said platen,

(d) an image projector for projecting an image on said media positioned on said platen,

(e) a drive for moving said platen between said first and second media holders, and

(f) selectable electrical controls for controlling said drive, lifter and image projector in preselected or random sequence.

5,339,123

DATA IMPRINTING DEVICE FOR CAMERA

Isao Soshi; Motoyuki Ohtake, and Hidenori Miyamoto, all of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 10, 1993, Ser. No. 120,019

Claims priority, application Japan, Sep. 10, 1992, 4-241896; Jan. 28, 1993, 5-012073

Int. Cl.[5] G03B *17/24*

U.S. Cl. 354—106 **13 Claims**

1. A data imprinting device for use in a camera, comprising:

at least one light emitting element;

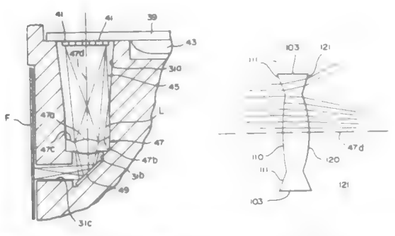
means for guiding illuminating light emitted from said at least one light emitting element;

a lens;

said lens including a central portion and a peripheral refract-

VOL 1165 ISS 3 AG 16 1994 UMI

ing surface integrally formed around said central portion; and



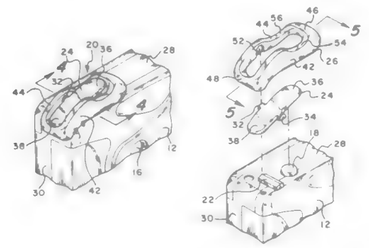
said peripheral refracting surface having a shape effective for refracting said illuminating light cast thereon away from an optical axis passing through said central portion.

5,339,124

UNDERWATER PRESSURE PROTECTION SWITCH

Wolfgang Harms, 216 Haddon Ave., Ste. 522, Westmont, N.J. 08108

Filed Nov. 23, 1993, Ser. No. 157,384
Int. Cl.[5] G03B *17/08*
U.S. Cl. 354—64 **18 Claims**



1. In an underwater camera including a camera body having a depressible actuator button carried thereon and a water resistant flexible housing enclosing said camera body, the improvement comprising:

a toggle lever pivotally mounted on said camera body; said lever having a first end that overlies said button so that depression of said first end toward said camera body depresses said button; said lever having a second end which moves in unison with said first end, depression of said second end toward said camera body acting to move said first end away from said camera body, and

toggle frame means mounted on said camera body adjacent said lever, at least a portion of said frame means extending outwardly from said camera body to reduce the amount of contact between said flexible housing and said first end of said lever.

5,339,125

CAMERA WITH DATA IMPRINTING DEVICE

Vladimir Fridman, New City, N.Y., and Arthur Zawodny, Somerville, N.J., assignors to Concord Camera Corporation, Avenel, N.J.

Filed Feb. 2, 1993, Ser. No. 12,238
Int. Cl.[5] G03B *17/24, 15/02*
U.S. Cl. 354—106 **13 Claims**

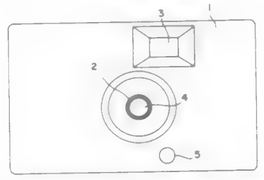
1. A camera for imprinting symbols on film, comprising:

a. a first aperture in the camera for allowing light to pass therethrough to the other side of the film;

b. a first shutter associated with said first aperture for controlling when the light is to pass through said first aperture to the film in the camera for allowing to light to pass therethrough;

c. a flash bulb for activation when said first shutter is activated when ambient light is insufficient to properly expose the film;

d. a second aperture for allowing light to pass therethrough from said flash bulb to the other side of the film;



e. a second shutter associated with said second aperture for controlling when the light is to pass through said second aperture to the film;

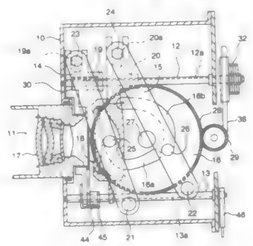
f. a symbol imprinting means having symbol thereon in optical communication with said second aperture and the film and positioned therebetween, thereby when said second shutter is activated, light can pass therethrough for allowing a symbol to be exposed on the other side of the film.

5,339,126

ZOOM LENS BARREL

Takashi Shimose, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 73,759
Claims priority, application Japan, Jun. 17, 1992, 4-183125; Aug. 4, 1992, 4-228055; Oct. 16, 1992, 4-278445; Dec. 15, 1992, 4-334588
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—195.12 **30 Claims**



1. A lens system which controls an exposure value through the lens system at variable focal lengths thereof, said system comprising:

a base;

a first lens unit for holding a first lens, movably mounted on said base;

a second lens unit for holding a second lens, movably mounted on said base;

means for moving at least one of said first lens unit and said second lens unit to change a focal length of the lens system, provided on said base;

a first guide means for guiding said first and second lens units in a direction axial to said lens system;

a second guide means having a guide shaft parallel to the axial direction of said lens system, and having a cam portion formed on said guide shaft;

means for rotating said guide shaft of said second guide means; and

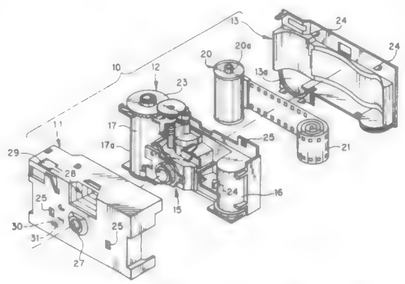
controlling means for controlling said exposure value, said controlling means being connected to said guide shaft of said second guide means, wherein a portion of said controlling means complements said cam portion of said guide shaft and slides along said guide shaft in accordance with a movement of at least one of said first lens unit and said second lens unit, and is rotated in accordance with a rotation of said guide shaft, said rotation being controlled by an operation member which senses a suitable exposure and generates a driving force to adjust said controlling means accordingly.

5,339,127

LENS-FITTED PHOTOGRAPHIC FILM PACKAGE

Katsuji Muramatsu, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 27, 1993, Ser. No. 112,522
Claims priority, application Japan, Aug. 27, 1992, 4-228963
Int. Cl.[5] G03B *17/02*
U.S. Cl. 354—288 **12 Claims**



1. A lens-fitted photographic film package which has a package body containing a roll of photographic film and having an exposure mechanism for exposing said photographic film, said package body having at least a first part and a second part which are molded from resin, said lens-fitted photographic film package comprising:

at least one projection formed integrally with said first part, said projection being brought into contact with said second part and elastically deformed by said second part when said parts are removably assembled into said package body, said projection being adapted to indicate that at least said first part is suitable for reuse if said projection elastically recovers an initial shape when said parts are disassembled, and that at least said first part is not suitable for reuse if said projection is permanently deformed.

5,339,128

RESIST PROCESSING METHOD

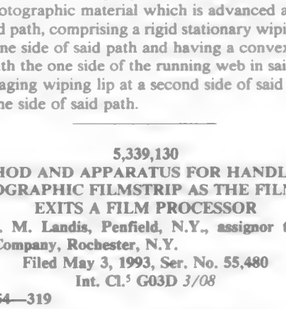
Kiyohisa Tateyama; Masami Akimoto, both of Kumamoto, and Mitsuru Ushijima, Tama, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Kumamoto, both of Japan

Continuation-in-part of Ser. No. 904,505, Jun. 25, 1992, Pat. No. 5,202,716, which is a continuation-in-part of Ser. No. 627,357, Dec. 14, 1990, Pat. No. 5,177,514, which is a continuation of Ser. No. 308,470, Feb. 10, 1989, Pat. No. 4,985,722. This application Mar. 15, 1993, Ser. No. 31,464
Claims priority, application Japan, Feb. 12, 1988, 63-30219; Nov. 5, 1991, 3-318441
Int. Cl.[5] G03D *5/00*
U.S. Cl. 354—317 **30 Claims**

1. A resist processing method comprising, the steps of:

taking out a substrate from a cassette and transferring the substrate to a delivering/receiving means at a load/unload section by a first carrying means;

carrying the substrate from the delivering/receiving means to a process section including a plurality of process units by a second carrying means;



resist-processing the substrate in each of said process units of the process section;

carrying the substrate from the process section to the delivering/receiving means by the second carrying means; and

housing the substrate into the cassette at the load/unload section by the first carrying means.

5,339,129

DEVICE FOR WIPING LIQUIDS OFF RUNNING WEBS OF PHOTOGRAPHIC MATERIAL

Wilfried Hehn, Munich, and Viktor Osegowitsch, Taufkirchen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 11,676
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, 4204440
Int. Cl.[5] G03D *3/08, 5/00*
U.S. Cl. 354—318 **4 Claims**



1. Device for removing liquid from both sides of a running web of photographic material which is advanced along a predetermined path, comprising a rigid stationary wiping member adjacent one side of said path and having a convex portion in contact with the one side of the running web in said path; and a web engaging wiping lip at a second side of said path opposite said one side of said path.

5,339,130

METHOD AND APPARATUS FOR HANDLING A PHOTOGRAPHIC FILMSTRIP AS THE FILMSTRIP EXITS A FILM PROCESSOR

Newton C. M. Landis, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

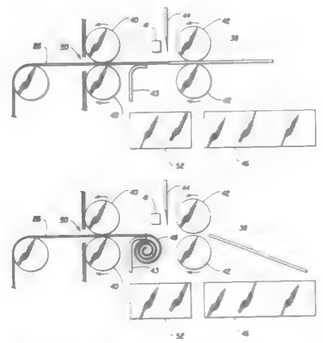
Filed May 3, 1993, Ser. No. 55,480
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—319 **7 Claims**

1. A method of handling a photographic filmstrip as the

VOL 1165 ISS 3 AG 16 1994 UMI

filmstrip exits a film processor, wherein the filmstrip is initially coiled about a spool inside a supply cartridge such that a core set is imparted to the filmstrip causing the filmstrip to curl in a longitudinal direction when not constrained, said method comprising the steps of:

passing a leading end of said filmstrip adjacent constraining means after said leading end exits said film processor; and



contacting said leading end of said filmstrip against said constraining means such that, as said filmstrip continues to exit said film processor, said filmstrip coils up against said constraining means to prevent said filmstrip from curling back against where it exits from said film processor.

5,339,131

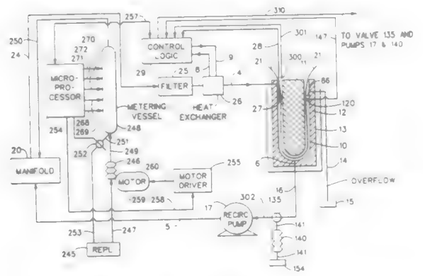
AUTOMATIC REPLENISHMENT, CALIBRATION AND METERING SYSTEM FOR A PHOTOGRAPHIC PROCESSING APPARATUS

John H. Rosenburgh, Hilton; Robert L. Horton, Rochester, and David L. Patton, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1993, Ser. No. 56,455

Int. Cl.[5] G03D *3/02*

U.S. Cl. 354—324 **19 Claims**



1. A rack and a tank apparatus for processing photosensitive materials, in which processing solution flows through a rack and a tank, the rack and the tank are relatively dimensioned so that a volume for holding and moving processing solution and photosensitive material is formed, said apparatus characterized by:

means for replenishing the processing solution in precisely controlled amounts of a replenishing solution to be delivered is determined prior to actual delivery so that the replenishing solution provided is consistent with the required amount needed.

5,339,132

MOUNT STRUCTURE OF A LIGHT EMITTING ELEMENT ARRAY IN ELECTRONIC PHOTOGRAPHIC APPARATUS

Hiroyuki Tomita, and Kohichi Yoshida, both of Tokyo, Japan, assignors to Fujitsu Isotec Limited, Kanagawa and Fujitsu Limited, Tokyo, both of Japan

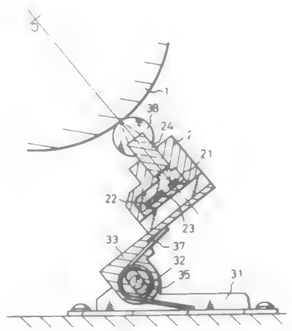
PCT No. PCT/JP92/00907, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993

PCT Filed Jul. 16, 1992, Ser. No. 982,736

Claims priority, application Japan, Jul. 16, 1991, 3-174997; Feb. 27, 1992, 4-040861

Int. Cl.[5] G03G *21/00, 15/00*

U.S. Cl. 355—200 **7 Claims**



1. A mount structure of a light emitting element array in an electronic photographic apparatus, comprising a photoconductor drum (1) rotatably driven around an axis, a light emitting element array (2) having a plurality of light emitting elements (21) arranged parallel to the axis of the photoconductor drum (1) and opposite to an outer surface thereof, characterized by

a fixed bracket (31) fixedly mounted on the electronic photographing apparatus;

a rotatable bracket (33) rotatably mounted on the fixed bracket (31) and fixedly secured to the light emitting element array (2);

a bias means (37) for urging the light emitting element array (2) against the outer surface of the photoconductor drum (1);

a space keeping means being pushed by the bias means (37) against the outer surface of the photoconductor drum (1) so as to maintain a constant distance between the light emitting element array (2) and the outer surface of the photoconductor drum (1);

wherein the rotatable bracket (33) is rotatably mounted on the fixed bracket (31) by a pair of bearings (34, 35) arranged a certain interval apart and parallel to the axis of the photoconductor drum (1); the rotatable bracket (33) is supported on said fixed bracket (31) so as to be movable toward or away from the photoconductor drum (1) at one of the bearings (35);

wherein said one of the bearings (35) comprises an elongated hole (35) formed by either one of the fixed bracket (31) and the rotatable bracket (33) and a shaft (32) provided on the other bracket and engaged with the elongated hole (35); and

wherein the bias means (37) for urging the light emitting element array (2) against the outer surface of the photoconductor drum (1) comprises a pair of torsion springs arranged in the vicinity of said pair of bearings (34, 35), respectively.

5,339,133

IMAGE FORMING APPARATUS INCLUDING PROCESS CARTRIDGE WITH MAGNETIC CONNECTOR

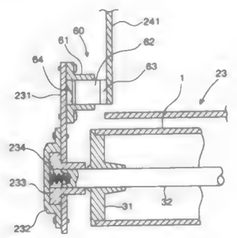
Naoki Otomo; Atsuo Ohmura, and Toshio Shida, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 11, 1993, Ser. No. 60,343

Claims priority, application Japan, May 19, 1992, 4-032942

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **1 Claim**



1. An image forming apparatus comprising:

(a) a process cartridge including at least a photoreceptor, detachably mountable on a main body of said apparatus;

(b) a magnetic connector provided on said process cartridge; and

(c) a plate member provided on said main body, onto which said magnetic connector is connected when said process cartridge is inserted into said main body, said process cartridge being thereby grounded to said main body, and said photoreceptor being grounded through said magnetic connector,

said magnetic connector comprising a magnet, outer plate surrounding said magnet, and a spring member provided between said magnet and a frame provided on said process cartridge for mounting said magnetic connector to said process cartridge, there being electric continuity between said outer plate and said frame through said spring member.

5,339,134

AUTOMATIC DOCUMENT FEEDER FOR IMAGE FORMING APPARATUS

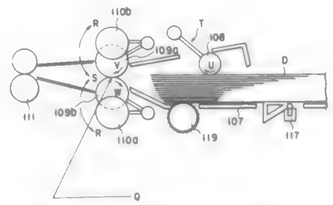
Hajime Nakamura, Tokyo, and Tokumi Matsunami, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 16, 1993, Ser. No. 31,846

Claims priority, application Japan, Mar. 31, 1992, 4-106221

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—202 **9 Claims**



1. An image reading apparatus comprising:

means for reading images recorded on documents;

means for holding the documents on which the images to be read by the reading means are recorded;

means for feeding the documents from the holding means, the feeding means including a first taking out roller which is brought into contact with a top sheet of the documents for taking out the top sheet of the documents and a second taking out roller which is brought into contact with a bottom sheet of the documents, the first and second taking out rollers being selectively activated in accordance with conditions for taking out the documents; and

means for transporting the documents taken out by the feeding means to the reading means.

5,339,135

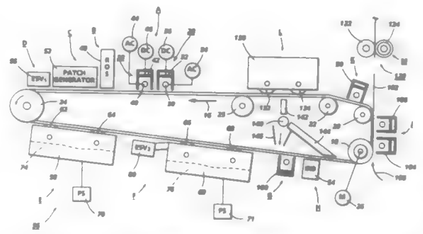
CHARGED AREA (CAD) IMAGE LOSS CONTROL IN A TRI-LEVEL IMAGING APPARATUS

Mark A. Scheuer, Williamson; Daniel W. MacDonald, Farmington; Kenneth S. Palumbo, Irondequoit; Anthony L. Paolini, W. Henrietta; Robin E. Berman, and Carl B. Hurwitch, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 755,473, Sep. 5, 1991. This application Mar. 11, 1993, Ser. No. 31,049

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **5 Claims**



1. In a method of creating tri-level images on a charge retentive surface during operation of a tri-level imaging apparatus, the steps including:

uniformly charging said charge retentive surface by using a charging device;

forming a tri-level image on said charge retentive surface, said tri-level image comprising a discharged image area and a charged image area;

developing said discharged image area with toner;

measuring the voltage level of said charged image area by using a first sensing device and controlling the operation of said charging device for compensating for charged area voltage loss occurring during said development step;

monitoring the voltage level of undeveloped tri-level images on said charge retentive surface by using a second sensing device; and

when a predetermined value is sensed by said second sensing device controlling the operation of said charging device with said second sensing device.

5,339,136

IMAGE FORMING APPARATUS HAVING IMAGE REGISTRATION MEANS

Michael H. Parsons, Arvada, Colo., and Kevin M. Johnson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 26, 1993, Ser. No. 51,929

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **6 Claims**

1. Image forming apparatus comprising:

a transfer member movable through an endless path through a transfer zone,

means for securing a receiving sheet having a leading edge to the transfer member for movement through at least a portion of the endless path of the transfer member including the transfer zone,

VOL 1165 ISS 3 AG 16 1994 UMI

an image member movable through an endless path through transfer relation with a secured receiving sheet in the transfer zone,

means for forming an electrostatic image having a leading edge on the image member,

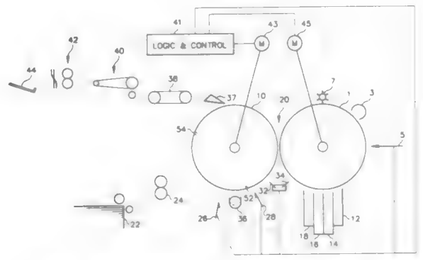
means for applying toner to the electrostatic image to form a toner image having a leading edge on the image member,

first determining means for determining the location of the leading edge of the electrostatic or toner image on the image member,

sensible means associated with the transfer member indicative of the approximate location of the leading edge of a secured receiving sheet,

second determining means for determining the distance along the endless path of the transfer member between the actual leading edge of the receiving sheet and the sensible means indicative of the approximate location,

third determining means for determining the location of said



sensible means indicative of said approximate location, and

logic and control including means for adjusting the motion of the transfer member through its endless path to assure a predetermined spacial relationship between the leading edge of the toner image and the leading edge of the receiving sheet in the transfer zone in response to said first, second and third determining means,

wherein said sensible means indicative of the approximate location of the leading edge of a receiving sheet is an area on the transfer member having a characteristic which is distinguishable from the leading edge of the receiving sheet and which area has a leading edge itself also distinguishable from the rest of the transfer member and wherein the means for determining the distance between the leading edge of the receiving sheet and the sensible means includes means for sensing the distinguishing characteristic of the area at both its leading edge and at the leading edge of the receiving sheet.

5,339,137

IMAGE FORMING APPARATUS

Hiroshi Kusumoto; Daisuke Hayashi; Hideki Ishida; Shoichi Kitagawa; Takashi Nagashima, and Mitsugu Miyamoto, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 13, 1993, Ser. No. 120,717

Claims priority, application Japan, Sep. 17, 1992, 4-248172; Sep. 24, 1992, 4-254828

Int. Cl.[5] G03G *15/02*

U.S. Cl. 355—208 **9 Claims**

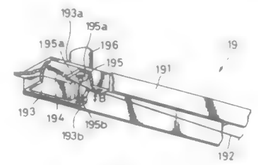
1. An image forming apparatus comprising:

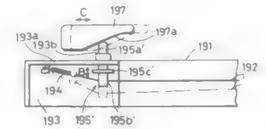
a photosensitive body;

a charge wire disposed along the photosensitive body at a specified spacing from the photosensitive body and adapted for charging the photosensitive body, the charge wire being tiltable in a plane passing through the axis of the photosensitive body wire and perpendicularly intersecting a surface of said photosensitive body;

detecting means for detecting an image density distribution in a main scanning direction of copy paper carrying a copied image of an original document;

tilt angle calculating means for calculating, based on a detected image density distribution, a correcting tilt angle of





the charge wire to obtain a desired image density distribution in the main scanning direction; and

tilt angle control means for controlling the tilt angle of the charge wire in accordance with a calculated correcting tilt angle.

5,339,138

ELECTROPHOTOGRAPHIC IMAGE FORMATION METHOD

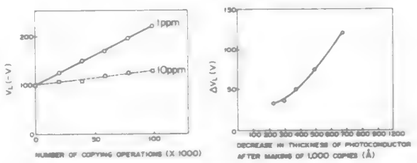
Naoshi Mishima; Toshio Fukagai; Kiyoshi Taniguchi; Hiroyuki Kishi; Tomohiro Inoue, all of Numazu, and Yoshiaki Kawasaki, Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 111,513

Claims priority, application Japan, Aug. 26, 1992, 4-250706

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—296 **1 Claim**



1. An electrophotographic image formation method using an electrophotographic photoconductor comprising an electroconductive support, and a photoconductive layer comprising a charge generation layer and a charge transport layer which are successively overlaid on said support, comprising the steps of:

charging the surface of said electrophotographic photoconductor uniformly to a predetermined polarity,

exposing said charged surface of said photoconductor to light images to form electrostatic latent images thereon,

developing said electrostatic latent images to visible toner images by a developer,

transferring said visible toner images to an image-receiving medium, and

cleaning the surface of said photoconductor, with the concentration of ozone in the ambient atmosphere around said photoconductor being controlled in the range from 5 to 50 ppm, and the abrasion of said photoconductive layer being controlled to 300 Å or less per 1000 revolutions of said photoconductor.

5,339,139

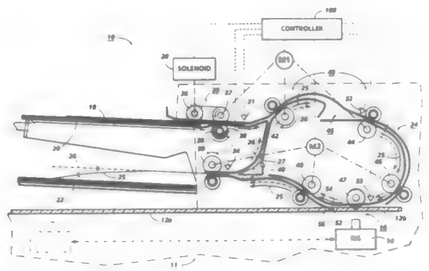
DOCUMENT FEEDER WITH POSITIVE DOCUMENT REMOVAL FROM IMAGING PLATEN

Jack K. Fullerton, Webster; Richard A. Beck, Fairport; Fred B. Clark, W. Henrietta; Gordon B. Reid, Walworth, and Keith A. Nau, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 12, 1993, Ser. No. 135,097

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—215 **10 Claims**



1. In a document reproduction system with a first large imaging platen on which documents placed thereon are scanned by an imager system moving under said first platen; a second and smaller imaging platen closely adjacent to said first platen; and an automatic document feeding system for automatically sequentially feeding documents to be imaged; wherein said automatic document feeding system feeds documents to be imaged to said smaller second imaging platen by moving the documents onto the upper surface of said second platen and past a fixed position imaging station at said second imaging platen, and wherein said imager system is stationarily positioned at said fixed position imaging station for said imaging of said documents fed by said automatic document feeding system;

wherein said first and second imaging platens have opposing edges closely adjacent to one another;

and wherein a recess is provided between said first and second imaging platens between said closely adjacent edges, said recess extending substantially below the upper surface of said imaging platen;

and wherein said automatic document feeding system includes a document lead edge catching and deflecting system which extends down into said recess to catch and deflect documents away from said upper surface of said second imaging platen after said documents have been moved onto said upper surface of said second imaging platen by said automatic document feeding system and moved past said fixed position imaging station.

5,339,140

METHOD AND APPARATUS FOR CONTROL OF TONER CHARGE

Robert E. Zeman, Webster, and Thomas K. Hilbert, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1992, Ser. No. 971,121

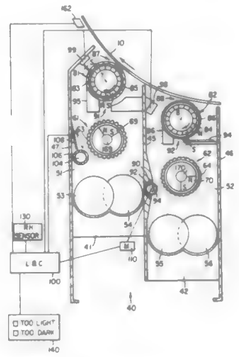
Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—246 **14 Claims**

1. Method of applying a charged toner to an image member from a developer of which said toner is at least a component, said method comprising the steps of:

moving the developer through a path which brings the developer into toning relation with said image member and into contact with a triboelectric charging surface,

determining the level of charge on said toner, and



adjusting the extent of contact between said developer and said triboelectric charging surface to control the level of the charge on the toner.

5,339,141

DEVELOPING DEVICE WITH A DEVELOPER CARRIER CAPABLE OF FORMING NUMEROUS MICROFIELDS THEREON

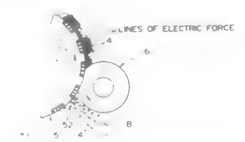
Koji Suzuki, Yokohama; Yuichi Ueno, Kawasaki; Katsuhiro Aoki, Yokohama; Naoki Iwata, Tokyo; Akira Sawada, Yokohama, and Takatsugu Fujishiro, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

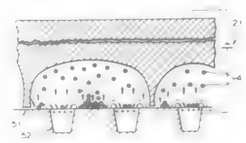
Filed Feb. 16, 1993, Ser. No. 18,258

Claims priority, application Japan, Feb. 16, 1992, 4-061113; Feb. 17, 1992, 4-061148; Feb. 17, 1992, 4-061149; Feb. 17, 1992, 4-061150; Jul. 20, 1992, 4-215635; Jul. 27, 1992, 4-220777

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—246 **45 Claims**





1. A developing device for developing a latent image electrostatically formed on an image carrier by a developer constituted by a single component, comprising:

a developer carrier for selectively holding a charge on a surface thereof to form a great number of microfields to thereby carry the developer and supply said developer to the image carrier; and

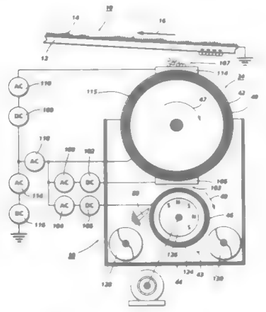
developer supplying means for frictionally charging the developer to cause said developer to deposit on said developer carrier;

said developer supplying means comprising:

VOL 1165 ISS 3 AG 16 1994 UMI

charging means for selectively charging said surface of said developer carrier to thereby form said microfields;
electrode means applied with a predetermined potential and facing said surface of said developer carrier while being spaced apart from said surface by a gap sufficient to maintain said microfields, said electrode means forming around said microfields electric fields which exert an electrostatic force on the frictionally charged developer toward said surface of said developer carrier; and
transporting means for transporting the frictionally charged developer to said surface of said developer carrier on which said electric fields and said microfields are formed.

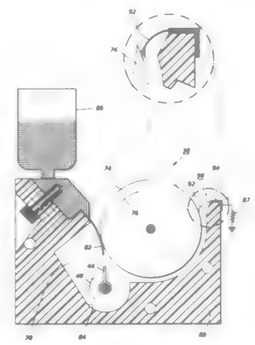
5,339,142
AC/DC SPATIALLY PROGRAMMABLE DONOR ROLL FOR XEROGRAPHIC DEVELOPMENT
Dan A. Hays, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jul. 30, 1992, Ser. No. 921,674
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 **10 Claims**



1. Apparatus for forming images on an image receiving surface with developer, said apparatus comprising:
a supply of single component uncharged toner;
a moving donor member including a plurality of spaced apart electrodes closely adjacent the surface thereof for transporting developer from said supply to a development zone adjacent said image receiving surface;
means for loading toner particles onto said donor member, said loading means comprising means for applying a voltage to some of said electrodes in a loading zone;
means for charging said toner after its loading on said donor member;
means operatively associated with selected ones of said electrodes for forming transported toner into a cloud of marking particles in said development zone;
means for controlling the spacing of said cloud of marking particles relative to said image receiver without strongly interacting with said image receiving surface.

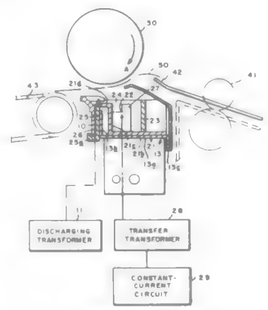
5,339,143
DEVELOPER UNIT CONDUCTIVE BRUSH
Brendan W. Kunzmann, Rochester, N.Y., assignor to Xerox Corporation, Stramford, Conn.
Filed Mar. 8, 1993, Ser. No. 28,011
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 **20 Claims**

1. An apparatus for developing a latent image recorded on an image receiving member in a development zone, including:
a housing defining a chamber storing a supply of developer material therein;
means, disposed at least partially in the chamber of said housing, for transporting developer material to the development zone to develop the latent image recorded on the image receiving member, said transporting means comprising a donor roll for transporting the developer material, and means for metering the developer material being advanced by said donor roll to form a metered layer of developer material on said donor roll; and
a brush comprising a multiplicity of conductive bristles contacting the layer of the developer material on said donor roll to minimize triboelectric charge variations in



the developer material on said donor roll creating a substantially uniform charge level in the developer material thereon, said brush comprising an electrically conductive support having said bristles extending outwardly therefrom with said bristles having free ends contacting the metered layer of developer material being transported by said donor roll, and means for electrically grounding said support, each of said bristles ranges from about 6 to about 20 microns in diameter.

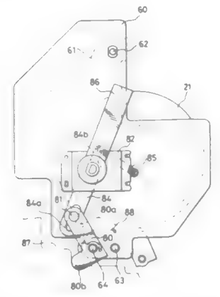
5,339,144
RECORDING PAPER SEPARATING DEVICE WITH CONSTANT CURRENT CONTROL
Yukio Nakai, Nara; Hiroshi Kida, Yamatokoriyama; Masashi Hirai, Ikoma; Masahiko Fujita, Soraku, and Takahiro Fukunaga, Sakurai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 29, 1991, Ser. No. 751,195
Claims priority, application Japan, Aug. 31, 1990, 2-232176; Feb. 8, 1991, 3-018008
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—274 **9 Claims**



1. A recording paper separating device for use in an electrophotographic apparatus, comprising:

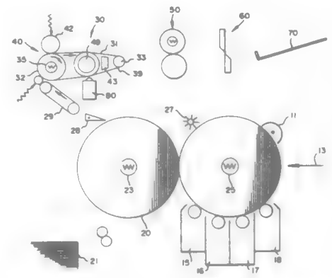
a transfer charger for transferring a toner image from a photosensitive means onto a recording paper by discharge effected by a charging wire accommodated in a shield casing,
a bias-loaded recording paper discharging means,
a power source, and
a control means for mainlining a current supplied from the power source to the charging wire constant except for current flowing through the recording paper discharging means,
wherein the discharging means includes a conductive thin plate extending transverse to a direction in which the recording paper is fed, and said conductive thin plate having a straight edge adjacent to the recording paper being fed, the straight edge being covered with an electrically resisting material that is provided with openings spaced at intervals to that the discharging means is exposed through the openings.

5,339,145
TORQUE TRANSMITTING COUPLING AND IMAGE FORMING APPARATUS EMPLOYING SAME
Hiroyoshi Omura, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Jan. 11, 1993, Ser. No. 2,905
Claims priority, application Japan, Jan. 17, 1992, 4-00619
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—277 **18 Claims**



1. A torque transmitting coupling for coupling a spring clutch, connected to a driving system, with a driven system, said transmitting coupling comprising:
a first coupling member connected to said spring clutch;
a second coupling member connected to said driven system;
a drive shaft of said driving system, said drive shaft having one end to which said first coupling member is fixed, and an opposite end to which said spring clutch is attached;
a driven shaft of said driven system, said driven shaft having one end to which said second coupling member is fixed; and
operation means for turning said second coupling member; wherein
coaxial engagement of said first and second coupling members is such that torque applied to said driven system independently of said driving system is transmitted by said second coupling member to said first coupling member when the torque is applied during rotation in only one rotational direction, and not transmitted to said first coupling member during rotation in a rotational direction opposite said one direction, said one rotational direction being a direction in which said spring clutch becomes disengaged from connection to said driving system;
said spring clutch is disengaged when said operation means turns said second coupling member in said direction in which said second coupling member transmits torque to said first coupling member;
a coupling face of each of said first and second couplings is partly formed of a flat surface, which flat surface meets a surface sloping circumferentially therefrom in a direction of increasing axial dimension of each said coupling, ending in an abutment shelf substantially perpendicular to and meeting said flat surface; and
said abutment shelves of both coupling members are formed such that they can be brought into mutually abutting contact.

5,339,146
METHOD AND APPARATUS FOR PROVIDING A TONER IMAGE HAVING AN OVERCOAT
Muhammad Aslam; Alec N. Mutz, both of Rochester; Dinesh Tyagi, Fairport, and Kevin M. Johnson, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 1, 1993, Ser. No. 41,091
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **10 Claims**



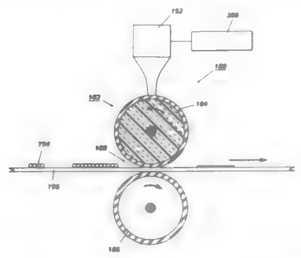
1. Image forming apparatus comprising:
means for forming a toner image on a receiving sheet,
a fixing device including
a fusing member having a movable fusing surface for contacting the toner image on the receiving sheet,
means for heating the toner image, and
means for applying a clear heat softenable particulate material to the fusing surface before the fusing surface contacts the toner image to form a clear overcoat on the toner image.

5,339,147
SEQUENTIAL ULTRASONIC FUSING PROCESS
Christopher Snelling, Penfield, and Dale R. Mashtare, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 24, 1993, Ser. No. 158,061
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **19 Claims**

1. A method of fusing toner images to substrates such as plain paper, including the steps of:
supporting a viscoelastic material in an endless path;
moving a substrate containing toner images thereon through a nip formed by said material and a pressure member;
using an acoustic transducer, elevating the temperature of said viscoelastic material at a location remote from said nip; and

VOL 1165 ISS 3 AG 16 1994 UMI

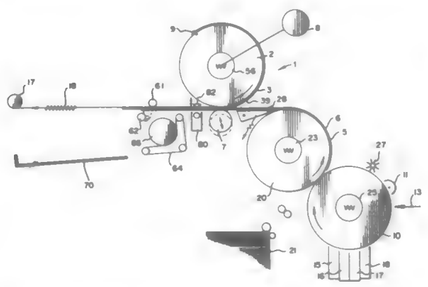
moving a portion of said viscoelastic material heated by said acoustic transducer through said nip simultaneously with



the movement of said toner images therethrough whereby heat energy is transferred to said toner images.

5,339,148
IMAGE FORMING APPARATUS HAVING RECOIL FUSER

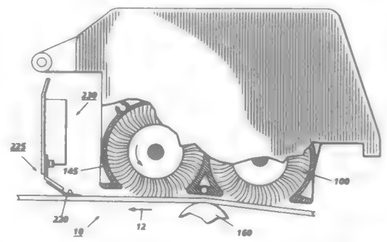
Kevin M. Johnson, and Thomas C. Merle, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 41,366, Apr. 1, 1993, abandoned. This application Aug. 9, 1993, Ser. No. 105,099
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—290 **25 Claims**



1. Image forming apparatus comprising:
means for forming a toner image on a receiving sheet,
a fusing sheet,
means for overlaying the fusing sheet and the receiving sheet with the toner image between the sheets,
means for heating the receiving sheet,
pressure applying means forming a pressure nip,
means for moving the fusing sheet and the heated receiving sheet through the nip in a first direction to fix the toner image to the receiving sheet,
means for moving the receiving sheet and fusing sheet in a second direction opposite the first direction, and
means for separating the receiving sheet and fusing sheet during movement of the receiving sheet and fusing sheet in the second direction.

5,339,149
NON-STICK SPOTS BLADE

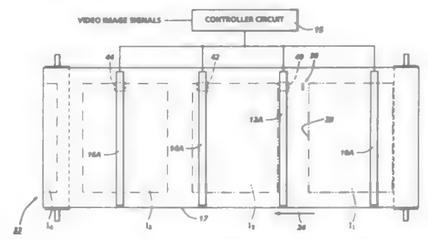
Nero R. Lindblad, Ontario; Douglas A. Lundy, Webster, and Kip L. Jugle, Holcomb, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 23, 1993, Ser. No. 110,258
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—297 **10 Claims**



1. An apparatus for cleaning the residual materials from an imaging surface, comprising:
a housing;
a holder attached to said housing;
a primary cleaner, at least partially enclosed in said housing; and
a resilient blade, having a resiliency ranging from about 20% to about 25%, said blade being located upstream from said primary cleaner, said blade having one end coupled to said holder and a free end opposite thereto, said free end being in pressure contact with the imaging surface having a minimal coefficient of friction therebetween enabling said free end to be in continuous slidable contact with said imaging surface.

5,339,150
MARK DETECTION CIRCUIT FOR AN ELECTROGRAPHIC PRINTING MACHINE

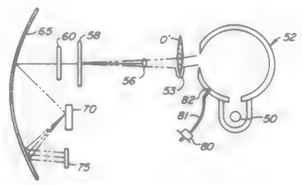
Fred F. Hubble, III; James P. Martin, and Jeffrey J. Folkins, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 23, 1993, Ser. No. 35,830
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R **13 Claims**



1. An electrophotographic printing machine which incorporates a photoreceptor belt which moves along a preselected path,
imaging means for forming a plurality of registered color images on the surface of said belt, said color images formed in overlying registration to form a composite color image,
means for forming at least one target line on the surface of said belt,
means for sensing said target line and for generating an output signal representing detection of the center of said target line, and
means responsive to said output signal for maintaining the overlying registration of said color images.

5,339,151
SPECTROMETER FOR LENSOMETER

Alan L. Shinn, Berkeley, Calif., assignor to Humphrey Instruments Incorporated, San Leandro, Calif.
Filed Jul. 28, 1992, Ser. No. 920,746
Int. Cl.[5] G01J *3/28*
U.S. Cl. 356—328 **15 Claims**

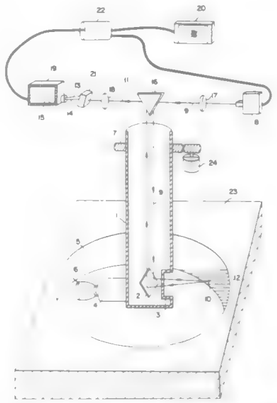


1. In a spectrometer for measuring the spectral transmission of the material of a lens to be tested independent of the power of such lens to be tested comprising:
a mounting for holding said lens to be tested during measurement by said spectrometer;
a uniform extended light source for passing light through said lens to be tested in said mounting, said extended light source having a dimension selected with respect to said lens to be tested, for enabling light passing through said lens to be tested to be incident on at least a portion of said light source at all anticipated powers and amounts of decentration of said lens to be tested;
a light path between said uniform extended light source and a detector, said light path passing through said lens to be tested therebetween;
means for producing from said lens to be tested a constant size bundle of rays in said light path, said means including first and second stops between said lens to be tested and said detector;
spectrometer means for receiving said light from said constant size bundle of rays for the analysis of a spectral image of light passing through said lens to be tested; and,
said detector coupled to said spectrometer means for receiving said spectral image of light from said uniform extended light source passing through said lens to be tested in said holder.

5,339,152
HOLOGRAPHIC INSPECTION SYSTEM WITH INTEGRAL STRESS INDUCER

Michael Horn, South Setauket, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Apr. 24, 1992, Ser. No. 873,225
Int. Cl.[5] G01B *9/021*
U.S. Cl. 356—347 **47 Claims**

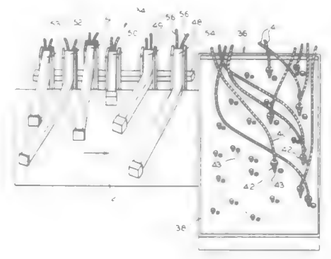
21. An apparatus for remote inspection of a surface, comprising:
a radiation source including means for emitting coherent radiation;
probe means including a probe for guiding said coherent radiation onto a selected surface and thereby cause the coherent radiation to reflect from the selected surface, said probe comprising means integral with the probe for inducing stress in the selected surface;
phase extraction means for extracting phase information from said coherent radiation reflected from said selected surface,
wherein said phase extraction means includes a beam splitter for splitting the coherent radiation reflected from said selected surface into two parts, means for phase-shifting one of the two parts, and means for recombining the two parts to thereby create an interference pattern, and
further comprising image capture means for capturing and recording said phase information, and
means for rotating said probe about a longitudinal axis



thereof to thereby cause said coherent radiation to be directed onto different surfaces of a bore into which the probe is placed, and timing means for synchronizing said image capture means, stress inducing means, and rotating means to cause an image to be captured for each surface simultaneously with a maximum induced stress on said selected surface.

5,339,153
LABEL INSPECTION MACHINE

William J. Kane, Geneva, and Gregory A. Chouinard, Wasco, both of Ill., assignors to The Label Printers, Aurora, Ill.
Filed Dec. 3, 1992, Ser. No. 985,021
Int. Cl.[5] G01N *21/89*
U.S. Cl. 356—394 **15 Claims**



1. A label inspection system for automatically inspecting print on labels carried seriatim on a web, comprising:
a photoelectric sensing system including a light sensor sensing reflected light and an electrical control circuit providing an output at a select first or second electrical state dependent upon sensed reflected light being above or below a select level;
means mounting said sensor at a select transverse position in a path of movement of the web to sense reflected light along a select longitudinal path of the web, said select longitudinal path including a portion of the labels carried

VOL 1165 ISS 3 AG 16 1994 UMI

on the web intended to have print, said print acting to minimize reflected light;

detect means for sensing proximity of said sensor relative to a select longitudinal portion of each successive label and providing an enable signal relative thereto; and

a control circuit operably coupled to said sensing system and said detect means including logic means for analyzing said sensing system output only when said enable signal is received, and an output circuit for indicating the presence or absence of print on each label dependent upon if reflected light is above or below the select level when said logic means is analyzing said sensing system output.

5,339,154

METHOD AND APPARATUS FOR OPTICAL MEASUREMENT OF OBJECTS

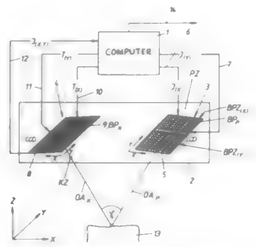
Joachim Gassler, Geisingen, and Robert Massen, Radolfszell, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt Gmb & Co., Biberach/Riss, Fed. Rep. of Germany

Filed Oct. 15, 1992, Ser. No. 969,923

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1991, 4134117

Int. Cl.[5] G01B *11/24*

U.S. Cl. 356—376 **7 Claims**



1. A method for optically measuring objects, comprising the steps of:

a) imaging at least one optical pattern on an object, said optical pattern having at least two brightness ranges, being produced by a light beam generated by at least one projector and diverging outward from a projector central point, and being arranged in a plane of projection of the projector,

b) imaging on a sensor surface of at least one camera, the pattern imaged on the object, said camera being located in a given position relative to the projector and being directed at the object at a parallax angle relative to the projector, said image on the sensor surface being produced by a beam path converging toward a camera central point, said sensor surface including sensor elements representing camera side image points, including the steps of

1) measuring light intensities on the sensor elements, and

2) storing in a computer data values representing the measured light intensities;

c) using the computer to determine a phase position of each camera-side image point from the measured light intensity on the sensor element representing the camera-side image point, and storing the determined phase positions in the computer, wherein the phase position of each camera-side image point corresponds to a phase position of an associated respective object side image point imaged on the object and is dependent on the vertical position of said associated object side image point;

d) determining and storing in the computer the position in space, relative to a reference system of coordinates, of the projector central point, the camera central point, and the sensor elements of the sensor surface;

e) splitting the pattern in the plane of projection of the projector into projector-side image points, and determining and storing in the computer the respective positions of the projector-side image points relative to the reference system of coordinates;

f) using the computer to correlate camera-side image points and projector-side image points of equal phase position; and

g) the computer determining the position in space, relative to the reference system of coordinates, of imaginary projector-side and camera-side straight lines passing through the correlated projector-side or camera-side image points of equal phase position and the projector central point or the camera central point respectively, on computer also determining points of intersection of the determined imaginary straight lines and the position of the respectively correlated object-side image points or object surface points.

5,339,155

OPTICAL WAVELENGTH MODULATED LONG-PATH GAS MONITORING APPARATUS

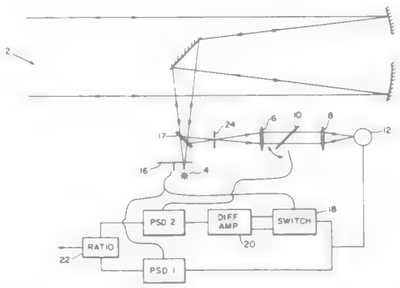
Roger H. Partridge, Leatherhead; Robert H. Bradsell, Hampton, and Peter T. Woods, Walton-on-Thames, all of United Kingdom, assignors to Secretary of State for Trade Industry, London, England

Continuation of Ser. No. 731,745, Jul. 16, 1991, abandoned. This application Mar. 31, 1993, Ser. No. 40,565

Claims priority, application United Kingdom, Jul. 18, 1990, 9015800

Int. Cl.[5] G01N *21/31, 21/35*

U.S. Cl. 356—419 **10 Claims**



1. Optical long-path gas monitoring apparatus comprising radiation source means for providing a radiation beam having a broad range of wavelengths, wavelength modulation means for modulating the radiation beam at a wavelength modulation frequency over all of the wavelengths between two limits appropriate for the gas being monitored in order to produce amplitude modulation of the radiation beam in the presence of the gas being monitored, amplitude modulation means for modulating the radiation beam at a frequency different from that of the wavelength modulation frequency, radiation detector means for converting the radiation into an electrical signal, and signal processing means comprising two phase sensitive detectors to demodulate the amplitude modulated and phase modulated signals respectively to provide, upon ratioing the outputs of the phase sensitive detectors, a signal dependent upon the gas being monitored, the optical long-path gas monitoring apparatus being such that the amplitude modulation means is positioned in front of the radiation source means and in the path of a radiation beam emitted from the radiation source means into the atmosphere, and the wavelength modulation means is positioned in front of the radiation detector means such that it will be traversed by the radiation beam after the radiation beam has traversed a selected portion of the atmosphere, and the optical long-path gas monitoring apparatus being such as to include an electronic switch which is controlled by the amplitude modulation means and whose

purpose is to provide two different signals at times when the amplitude modulation means is open and closed respectively, which signals when subtracted one from the other remove spurious signals in the wavelength modulation channel due to external stray radiation.

5,339,156

FACSIMILE MAIL SYSTEM LINKED TO DATA COMMUNICATION SYSTEM

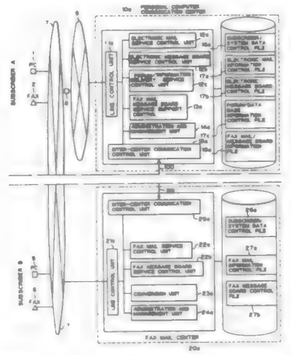
Toshio Ishii, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 18, 1992, Ser. No. 855,106

Claims priority, application Japan, Mar. 19, 1991, 3-053968

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—402 **42 Claims**



1. A communication center apparatus connected to a plurality of data terminals through a communication network for managing and controlling transmissions of text and binary information, including electronic mails, among said plurality of data terminals, to a facsimile mail center and to at least one of a plurality of facsimile terminals, the apparatus comprising:

electronic mail service control means for controlling transmission of electronic mails,

first communication control means for controlling communication operations between said electronic mail service control means and the plurality of data terminals, on the side of the communication center apparatus, and

second communication control means for controlling communication operations between said electronic mail service control means and the facsimile mail center through a signal path for connecting the communication center apparatus with the facsimile mail center, on the side of the communication center apparatus.

5,339,157

RAPIDLY TUNABLE INTEGRATED OPTICAL FILTER

Bernard Glance, Colts Neck, and Robert W. Wilson, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 19, 1993, Ser. No. 19,961

Int. Cl.[5] G02B *6/28*

U.S. Cl. 385—24 **7 Claims**

1. A tunable integrated optical filter, comprising:

an input frequency routing device for receiving a plurality of multiplexed optical frequencies; and

an output frequency routing device responsive to the input frequency routing device for producing an optical output



representing a selected one or more of the multiplexed optical frequencies.

5,339,158

SEPARATION/SYNTHESIS MIRROR DEVICE IN LIQUID FILLED HOUSING WITH INDEX MATCHING

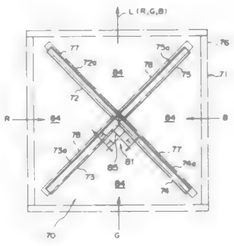
Masayuki Akiyama, and Manabu Akagi, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,344

Claims priority, application Japan, Feb. 28, 1992, 4-043741

Int. Cl.[5] H04N *9/31*

U.S. Cl. 348—757 **18 Claims**



1. A three color/separation synthesis mirror device comprising:

a housing;

four dichroic mirrors which are arranged in the housing and cross with each other at right angles to form an X-shape;

a liquid filled in the housing so as to submerge the respective dichroic mirrors,

wherein a refractive index of the liquid is higher than that of the dichroic mirrors; and

means for heating said liquid so as to cause the refractive index of the liquid to approach that of the dichroic mirrors.

15. A device according to claim **14**, wherein said correction prism is in the form of a rectangular post having a regular square cross-section.

5,339,159

COLOR MISREGISTRATION DETECTOR AND COLOR MISREGISTRATION EASING SYSTEM

Kazunari Nakamura, Hino, and Kenji Matsunaka, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,264

Claims priority, application Japan, Oct. 2, 1991, 3-255269; Oct. 2, 1991, 3-255270

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—71 **48 Claims**

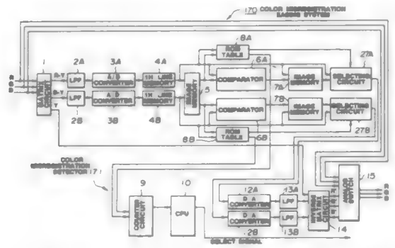
1. A color misregistration detector for detecting misregistration in a color image signal of a subject imaged using a field sequential type imaging means, comprising:

a color information detecting means for detecting at least a value of color information contained in said color image signal;

VOL 1165 ISS 3 AG 16 1994 UMI

a color information comparing means for comparing color information detected by said color information detecting means with given color information;

a distribution calculating means for calculating distribution



with regard to a result of comparing obtained by said color information comparing means; and

a determining means for determining a cause of color misregistration based on the distribution calculated by said distribution calculating means.

5,339,160

CHARACTER DISPLAY DEVICE FOR SYNCHRONIZING OPERATION OF VIDEO RAM TO OPERATION OF CPU

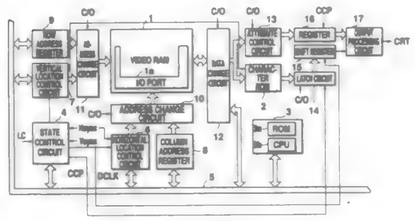
Hiroyasu Shindou, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 16, 1993, Ser. No. 48,734

Claims priority, application Japan, Apr. 24, 1992, 4-106608

Int. Cl.[5] H04N *5/445, 7/08*

U.S. Cl. 348—571 **8 Claims**



1. In a character display device for displaying characters on a television screen, the improvement comprising:

a CPU which executes a series of processing steps in sequence according to machine cycles, each machine cycle being made up of a first portion coincident with a first plurality of clock periods and a second portion coincident with a second plurality of clock periods;

first address signal generation means for generating a first address signal in response to CPU operation timing;

second address signal generation means for generating a second address signal in synchronization with horizontal scanning and vertical scanning of television signals;

address change means coupled to said first address signal generation means and said second address signal generation means and controlled according to clock periods of the machine cycles for alternately outputting the first address signal during the first portion of one machine cycle and selectively outputting said second address signal during the second portion of the one machine cycle;

a video RAM being accessed according to said first or second address signal output from said address change means in synchronism with clock periods of the machine cycles, said video RAM having data for character display on the television screen written therein or read therefrom; and

television signal generation means for generating television signals to display characters on the television screen in response to data read from said video RAM.

5,339,161

CCD DRIVING IC CIRCUIT

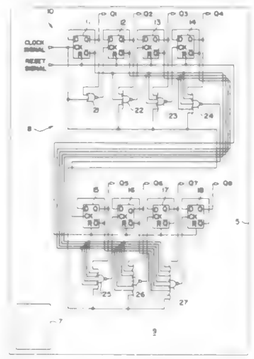
Takayuki Masui, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 7, 1992, Ser. No. 864,952

Claims priority, application Japan, Nov. 29, 1991, 3-316771

Int. Cl.[5] H04N *5/335*

U.S. Cl. 348—312 **10 Claims**



1. A CCD driving IC circuit comprising:

a timing signal generator for generating a timing signal; and

a synchronizing signal generator for generating a TV reference signal;

said synchronizing signal generator including a plurality of frequency dividers each having a data signal input, a clock signal input, a non-inverted output and an inverted output and a plurality of logic circuits;

said timing signal generator and said synchronizing signal generator being formed on the same chip;

said frequency dividers and said logic circuits being connected alternately in series such that a first of said plurality of logic circuits receives an input clock signal and a non-inverted output from one of said plurality of frequency dividers, the remaining ones of said plurality of logic circuits being connected to another of said plurality of logic circuits and receiving an input clock signal, a non-inverted output from one of said frequency dividers and an inverted output from one or more of said frequency dividers other than said one frequency divider, the outputs of said logic circuits being applied to another one of said frequency dividers different from said one frequency divider and the one or more of said frequency dividers as a clock input and an inverted output of each of said frequency dividers being applied thereto as a data signal input;

said synchronizing signal generator including said plurality of frequency dividers configured in multiple rows with each having a respective output;

said frequency dividers being interconnected such that a same number of outputs change state during a change in state of said clock signal input;

said logic circuits activate the other one frequency divider when the active signal level of said clock input signal and the signal level of the inverted signal are the same with respect to each other.

5,339,162

DRIVING APPARATUS OF IMAGE PICK-UP DEVICE FOR PREVENTING LEAKAGE OF ACCUMULATED ELECTRICAL CHARGES

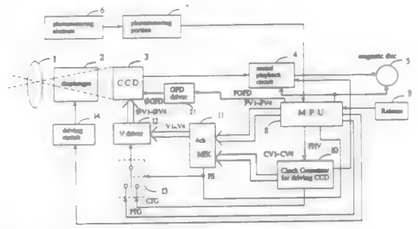
Nobuhiro Tani, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 561,718, Aug. 1, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 51,809

Claims priority, application Japan, Aug. 8, 1989, 1-206245

Int. Cl.[5] H04N *5/335*

U.S. Cl. 348—298 **8 Claims**



1. An image pick-up driving apparatus, comprising:

an image pick-up device having a light receiving portion that converts an image of an object to be photographed into electrical charges to be accumulated, and a signal transfer portion that transfers said accumulated electrical charges;

first means for controlling said image pick-up device by periodically issuing a first signal for transferring electrical charges accumulated in said light receiving portion to said signal transfer portion, said first controlling means issuing a second signal for starting an accumulation of electrical charges in said light receiving portion and for discharging unnecessary electrical charges accumulated in said signal transfer portion to a substrate; and

second means for controlling said image pick-up device by issuing a third signal for discharging unnecessary electrical charges directly to said substrate over a period of time from when electrical charges accumulated in said light receiving portion are transferred to said transfer portion, in response to said first signal issued by said first controlling means, until a diaphragm associated with said image pick-up device is closed.

5,339,163

AUTOMATIC EXPOSURE CONTROL DEVICE USING PLURAL IMAGE PLANE DETECTION AREAS

Hideo Homma, Tokyo; Kitahiro Kaneda, Kanagawa, and Kunihiko Yamada, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 323,300, Mar. 14, 1989, abandoned. This application Apr. 9, 1992, Ser. No. 865,632

Claims priority, application Japan, Mar. 16, 1988, 63-62690; Mar. 18, 1988, 63-66946

Int. Cl.[5] H04N *5/243*

U.S. Cl. 348—229 **32 Claims**

1. A light measuring device comprising:

a) image sensing means for sensing an image formed on an image sensing plane and outputting image signals corresponding to a sensed image;

b) area setting means for setting a predetermined detection area on a part of said image sensing plane;

c) light measuring means for measuring light on the basis of levels of the image corresponding to the inside and the outside of said detection area, respectively;

d) judging means for judging a lighting condition of said second image sensing plane on the basis of an output of said light measuring means; and

e) control means for

automatically determining degrees of weighting the image signals output by said image sensing means corresponding to the inside and the outside of said detection area, respectively, in accordance with an output of said judging means;

attaching predetermined weights to signal levels of said

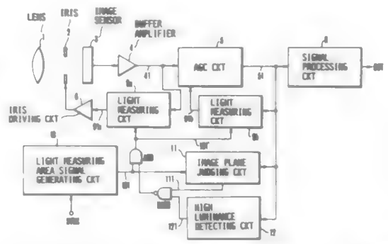


image signals corresponding to the inside and the outside of said detection area on the basis of the determined degree of weighting, and

performing exposure control action on the basis of an exposure control signal obtained by adding the weighted signals.

5,339,164

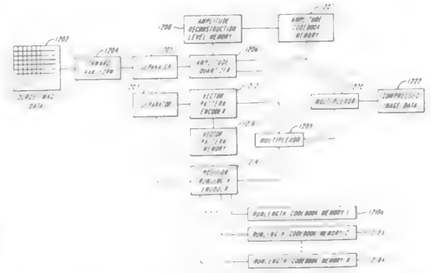
METHOD AND APPARATUS FOR ENCODING OF DATA USING BOTH VECTOR QUANTIZATION AND RUNLENGTH ENCODING AND USING ADAPTIVE RUNLENGTH ENCODING

Jae S. Lim, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 24, 1991, Ser. No. 813,326

Int. Cl.[5] G06K *9/36*

U.S. Cl. 358—261.1 **16 Claims**



1. A method of encoding location information pertaining to a source position signal characterized by positions of a set of selected coefficients, ordered in at least one dimension, said method comprising the steps of:

a. for a first component of said position signal, generating a signal encoding the locations of said selected coefficients by vector quantization; and

b. for a second component of said position signal, generating a signal encoding the locations of said selected coefficients by runlength encoding.

3. A method of runlength encoding location information pertaining to a source position signal characterized by positions of a set of selected coefficients, ordered in at least one dimension, said method comprising the steps of:

a. for a first run segment of said position signal, generating a signal encoding the locations of said selected coefficients using a first codebook; and

b. for at least one additional segment of said position signal,

VOL 1165 ISS 3 AG 16 1994 UMI

generating a signal encoding the locations of said selected coefficients using at least one additional codebook.

6. A method of decoding a signal based on encoding a source position signal characterized by positions of a set of selected coefficients, ordered in at least one dimension, said encoding signal having been generated by the steps of: for a first component of said position signal, generating a signal encoding the locations of said selected coefficients by vector quantization; and for a second component of said position signal, generating a signal encoding the locations of said selected coefficients by runlength encoding; said method of decoding comprising the steps of:

a. decoding said signal encoding the locations of said selected coefficients that was generated by runlength encoding; and

b. decoding said signal encoding the locations of said selected coefficients that was generated by vector quantization.

8. A method of decoding a signal based on encoding by runlength a source position signal characterized by positions of a set of selected coefficients, ordered in at least one dimension, said encoding signal having been generated by the steps of: for a first run segment of said position signal, generating a signal encoding the locations of said selected coefficients using a first codebook; and for at least one additional segment of said position signal, generating a signal encoding the locations of said selected coefficients using at least one additional codebook, said decoding method comprising the steps of:

a. decoding said locations encoded using a first codebook by using a first reverse codebook; and

b. decoding said locations encoded using a second codebook by using a second reverse codebook.

5,339,165

VIDEO SIGNAL RECORDING/REPRODUCING APPARATUS

Sadayuki Inoue, and Kyoto Fujii, both of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

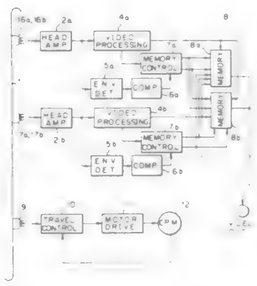
Continuation of Ser. No. 816,844, Dec. 31, 1991, Pat. No. 5,214,515, which is a continuation of Ser. No. 545,127, Jun. 26, 1990, abandoned, which is a continuation of Ser. No. 114,541, Oct. 28, 1987, abandoned. This application Mar. 1, 1993, Ser. No. 24,488

Claims priority, application Japan, Oct. 28, 1986, 61-257408; Jun. 26, 1987, 62-160347; Jul. 15, 1987, 62-109149

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] H04N *9/79*

U.S. Cl. 358—312 **7 Claims**



1. A video signal recording and reproducing apparatus wherein a video signal of one field period, including a synchronization signal, is recorded on a plurality of tracks on a recording medium in an L-channel/S-segment recording system, L and S being respectively positive integers which are never simultaneously equal to one, said apparatus comprising:

at least one rotating reproduction head provided for each of the L-channels for reproducing a video signal on said recording medium;

processor means coupled to said rotating reproduction head for demodulating the video signal reproduced by said rotating reproduction head and detecting the synchronization signal in the video signal, said processor means outputting the demodulated video signal and synchronization signal;

storing means capable of storing a video signal of at least one field period for storing the demodulated video signal output from the processor means;

storage control means for controlling said storing means so that the demodulated video signal is written in said storing means in synchronism with the detected synchronization signal and so that the stored video signal is read out in asynchronism with the detected synchronization signal; and

recording medium travel control means for selecting a traveling speed of said recording medium so that in case of high speed playback, said recording medium travel control means selects the traveling speed of said recording medium to be $(N=m/M)$ times a recording speed, N being equal to $0, \pm 1, \pm 2, \ldots$, and m and M being positive integers having no common divisor except one and so that no integer r exists which satisfies the equation $(N+m/M)\times M\times k=r\times S$, wherein $k=1, 2, 3, \ldots, S-1$ and $M>m$.

5,339,166

MOTION-DEPENDENT IMAGE CLASSIFICATION FOR EDITING PURPOSES

François LeBrat, Paris; Jean-Marie Fouillet, Neuilly Sur Marne, and Francis Etienne, Clamart, all of France, assignors to Telediffusion De France, France

Filed Oct. 30, 1992, Ser. No. 968,063

Claims priority, application France, Oct. 30, 1991, 91 13397

Int. Cl.[5] H04N *5/93*

U.S. Cl. 358—311 **17 Claims**

1. A video analysis system for editing a recorded or broadcast, televised program in the form of a succession of images, each image being recorded or broadcast in the form of audio- and video-frequency data associated with the image of order k in question and of an associated time code representative of said image, wherein said system comprises:

means for measuring the time variance of the composition of the images, by determination, between two successive images of order $k-1$, k, of an image difference signal and of corresponding parameters representative of the scenic activity of the recorded or broadcast program for a group of at least two successive images, of order $k-1$, k;

means for analyzing the recorded or broadcast program making it possible, from said difference signal and from said corresponding parameters representative of said scenic activity, to establish data representative of the cutting-up into shots, which consist of a group of p successive images, of said recorded or broadcast, televised program.

5,339,167

REPRODUCTION SPEED CONTROLLER FOR IMAGE SIGNAL REPRODUCING APPARATUS

Kazuo Kuroda, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,529

Claims priority, application Japan, Dec. 26, 1991, 3-344811

Int. Cl.[5] H04N *5/95*

U.S. Cl. 358—339 **9 Claims**

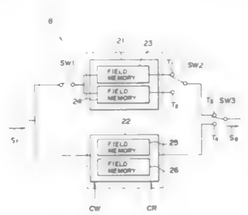
9. A method for controlling reproduction speed of a video signal having first field image signal and second field image signal, comprising the steps of:

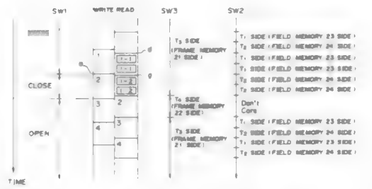
writing said video signal first field image signal and second field image signal into memory in synchronism with a write reference signal which corresponds to a frequency of said video signal;

reading out the first field image signal and the second field image signal alternately from said memory in synchronism with a read reference signal having a fixed frequency;

detecting a passing of the read reference signal over the write reference signal on the basis of the frequency difference between said write reference signal and said read reference signal when the frequency of the write reference signal is lower than the frequency of the read reference signal; and

successively reading out the first field image signal twice and then successively reading out the second field image twice when said passing is detected.





5,339,168

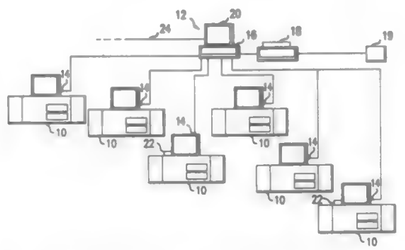
COPIER/DUPLICATOR NETWORK

Eugene S. Evanitsky; Tomlinson G. Rauscher, both of Pittsford; Joseph Filion, Fairport; Douglas Sundquist, Rochester; Riley Warddrip, Webster, and Daniel Auman, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 31, 1991, Ser. No. 815,470

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—402 **20 Claims**



1. An image duplicating apparatus comprising:

a plurality of image duplicating devices each having a two-way communications port for receiving and transmitting data; and

a data processing device electronically coupled to the two-way communications port of each of the image duplicating devices for reading information from and transmitting information to each of the image duplicating devices, wherein the data processing device is capable of reading information from at least one of the image duplicating devices while said image duplicating device is performing an image duplicating operation.

5,339,169

ELECTRONIC FILING SYSTEM

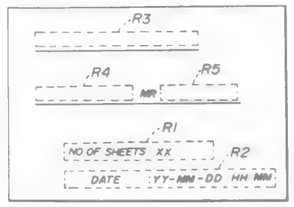
Tsuneo Meguro, Hadano, and Hiroshi Sakata, Tottori, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,762

Claims priority, application Japan, Feb. 20, 1991, 3-045675

Int. Cl.[5] A04N *1/00*

U.S. Cl. 358—403 **8 Claims**



1. An electronic filing system comprising:

image storage means in which at least an image of a document being scanned by a scanner is stored in a prescribed format;

transmission control means for carrying out a facsimile transmission procedure in which the image stored in the image storage means is transmitted to an external station which is designated;

cover page generating means for generating an image of a cover page with respect to a designated station, said image of said cover page being transmitted prior to the first page of the document being transmitted to the designated station, and for storing the generated image of the cover page in a storage device;

input means for inputting attribute data of each of data blocks in the image of the cover page to which a set of character strings with respect to the designated station is allocated, so that said attribute data is stored in the image storage means;

character data storage means for storing a set of character strings with respect to each of external stations to which an image of a document is transmitted; and

control means for fetching a set of character strings with respect to a designated station from said character data storage means when an image is transmitted to the designated station, for generating output image data from each of the fetched character strings on the basis of the attribute data stored in the image storage means, and for generating an output image of the cover page by allocating the output image data to the data blocks whose attribute data is input by the input means, so that said output image of the cover page is transmitted to the designated station prior to said first page of the document being transmitted.

5,339,170

IMAGE PROCESSING SYSTEM AND METHOD EMPLOYING HYBRID FILTERING TO PROVIDE IMPROVED RECONSTRUCTION OF CONTINUOUS TONE IMAGES FROM HALFTONE SCREEN-STRUCTURED IMAGES

Zhigang Fan, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 31, 1991, Ser. No. 815,219

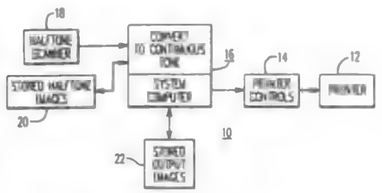
Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—456 **5 Claims**

1. An image processing system for converting screen structured halftone images to continuous tone images, said system comprising:

VOL 1165 ISS 3 AG 16 1994 UMI

means for sequentially generating value data for successive pixels of a halftone image;
first means for sequentially filtering each pixel in the halftone image in a first image direction in accordance with a first low pass filter to generate an intermediately filtered image;
second means for sequentially filtering each pixel in the intermediately filtered image in a second image direction in accordance with a second edge preserving filter to generate a hybrid filtered image;
means for generating an output continuous tone image con-



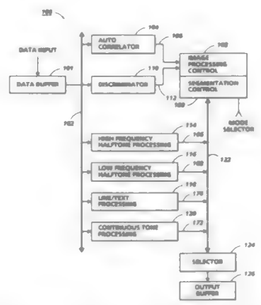
taining the hybrid filtered image pixels for storage or processing to a halftone copy or print;
said first filter being an averaging filter and said second filter being a pattern matching filter;
means for determining full dot templates for the input halftone image;
the second image direction for said pattern matching filter being perpendicular to the first direction for said averaging filter; and
said pattern matching filter including means for finding the best match between the full dot templates and pixel data in a predetermined filter window.

5,339,171
IMAGE PROCESSING APPARATUS ESPECIALLY SUITABLE FOR PRODUCING SMOOTH-EDGED OUTPUT MULTI-LEVEL TONE DATA HAVING FEWER LEVELS THAN INPUT MULTI-LEVEL TONE DATA
Tetsuo Fujisawa, Urawa, and Yukio Sakano, Fuchuu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 687,572, Apr. 19, 1991. This application Jun. 4, 1992, Ser. No. 893,094
Claims priority, application Japan, Apr. 24, 1990, 2-106490; Apr. 24, 1990, 2-106491; Jan. 11, 1991, 3-012539; Jun. 5, 1991, 3-132665
Int. Cl.[5] H04N *1/40, 1/21*; G06K *9/38*
U.S. Cl. 358—458 **15 Claims**



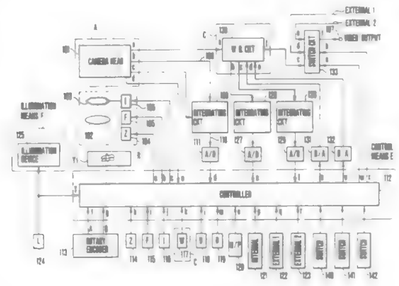
8. An image processing apparatus comprising
a scanner for inputting image data indicative of an image with a multilevel tone:
multilevel data means for generating multilevel tone data from said input image data using a prescribed error diffusion process, said multilevel data means including means for outputting image data having pixels to which said multilevel tone data is assigned;
storage means for temporarily storing a value of one of two successive pixels included in said image data output by said multilevel data means;
two-pixel processing means for converting said value of said one pixel stored in said storage means into a first value, and for generating second values of said two successive pixels using said first value Of said one pixel, so that output image data is output to a printer;
control means for adjusting an exposure time of the printer in accordance with predetermined characteristic relationship between the exposure time and a dot intensity, thus allowing a value of intensity of each dot of the output image output to the printer is proportional to an intensity of said two successive pixels supplied by said multilevel data means; and
error data means for adding a weighted error data to each pixel of said input image data, said weighted error data corresponding to a difference between a value of each said pixel and a predetermined threshold value;
wherein:
each pixel of said output image data is described by said second values of said two successive pixels generated by said two-pixel processing means;
said multilevel data means includes a memory for storing a data conversion table, said weighted error data being defined in said data conversion table stored in said memory in accordance with a difference between a value of each said pixel of said input image data and a predetermined threshold value; and
said control means includes a memory means for temporarily storing a value of a preceding pixel of said two successive pixels, allowing said control means to convert each value of said multilevel tone data into an image data value by every two pixel data in accordance with said data conversion table stored in said memory.

5,339,172
APPARATUS AND METHOD FOR SEGMENTING AN INPUT IMAGE IN ONE OF A PLURALITY OF MODES
David C. Robinson, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 11, 1993, Ser. No. 76,072
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—462 **26 Claims**



1. A printing apparatus for processing image data represented by a plurality of pixels corresponding with a plurality of image-related signals, respectively, a selected one of the image-related signals corresponding with a first image type and being processed, in parallel, with means for determining the image type of selected ones of the image-related signals, a first image processing module and a second image processing module, the first image processing module having an output and being adapted to process images of the first image type and the second image processing module having an output and being adapted to process images of a second type, the processed image data being transmitted to and outputted with an output device, comprising:
a memory section, communicating with the determining means, the first image processing module and the second image processing module, for buffering the plurality of image-related signals;
an output section, communicating with the output device, for receiving image-related signals processed with a selected one of the first image processing module and the second image processing module, the image-related signals being used to control the output device; and
a control section, communicating with the determining means, the first image processing module, the second image processing module and said output section, said control section including a segmentation controller adapted to cause the output signal from the second image processing module to be transmitted to said output section when image-related signals of the first image type are transmitted, in parallel, to both the first image processing module and the second image processing module.

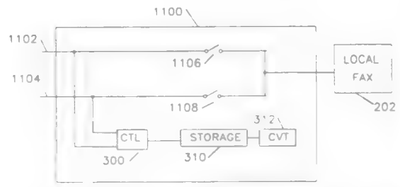
5,339,173
IMAGING APPARATUS HAVING OBJECT PLATE AND VARIABLY POSITIONABLE IMAGE SENSOR
Shigeru Jinnai, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 620,062, Nov. 29, 1990, abandoned. This application Dec. 2, 1993, Ser. No. 161,207
Claims priority, application Japan, Dec. 5, 1989, 1-314309; Dec. 27, 1989, 1-336496
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—471 **15 Claims**



1. An image input device, comprising:
a) an object plate on which an object to be read is placed;
b) image sensing means for sensing an image of said object and outputting an image signal,
wherein said image sensing means includes an optical system for picking up said object as an optical image;
c) support means for supporting said image sensing means in such a way that the position of said image sensing means relative to said object plate is variable;
d) detecting means for detecting a change in position of said image sensing means relative to said object plate; and
e) control means for controlling said image sensing means,
wherein said control means is arranged to control whether or not an adjusting operation of said image sensing means is to be effected in response to an output of said detecting means.

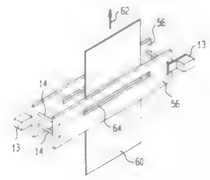
5,339,174
FACSIMILE MACHINE TIME SHIFTING AND CONVERTING APPARATUS
Scott C. Harris, 7988 Foxmoor Dr., Dunn Loring, Va. 22027
Filed May 2, 1989, Ser. No. 346,211
Int. Cl.[5] H04N *1/32*
U.S. Cl. 358—442 **10 Claims**

5. A communication/conversion apparatus for a local facsimile machine, comprising:
means for connecting with two separate telephone lines;
means for communicating with a selected facsimile machine, including sending to said selected facsimile machine and receiving from said selected facsimile machine standard format facsimile handshaking signals;
means for recording an audio signal indicative of a substantive facsimile communication other than said handshaking signals from the selected facsimile machine; and
processing means, for:



detecting an incoming call on either of said two telephone lines from a remote facsimile machine, and determining if said local facsimile machine is busy; and
commanding said communicating means to send said handshaking signals to said remote facsimile machine when said local machine is busy, and for commanding said recording means to record said audio signals therefrom.

5,339,175
IMAGE CAPTURE APPARATUS HAVING MEANS FOR DETECTING THE THICKNESS OF A DOCUMENT TO BE CAPTURED
Kyoichi Omata, Shinjuku, and Nobuhiko Matsui, Yokohama, both of Japan, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 8, 1993, Ser. No. 28,100
Claims priority, application Japan, Apr. 21, 1992, 4-101001
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—498 **9 Claims**



1. An image capture apparatus that optically scans a document as the document is being transported, the image capture apparatus comprising:
transporting means for moving documents along a predetermined path;
first and second plates facing each other and between which is guided a document in motion received from the transporting means, at least one of the first and second plates defining an aperture therein through which light from a light source is directed onto a prescribed region of the document in motion therebetween;
detecting means for detecting the thickness of the document moving along the predetermined path and generating an output drive control signal representative of the thickness of said document; and
actuator means responsive to the drive control signals received from the drive control means for moving at least one of the first and second plates in a direction that is perpendicular to a document scanning surface to provide a minimum space between the document and the first and

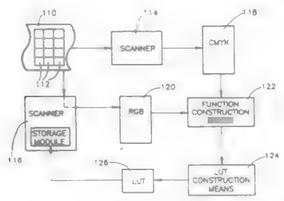
VOL 1165 ISS 3 AG 16 1994 UMI

second plates that still allows passage of the document between the first and second plates.

5,339,176
APPARATUS AND METHOD FOR COLOR CALIBRATION

Zeev Smilansky, Rehovot; Haim Z. Melman, Kfar Saba; Yoav Bresler, Tel Aviv; Matty J. Litvak, Petach Tikva; Haim Kreitman, and Itai Yad-Shalom, both of Kfar Saba, all of Israel, assignors to Scitex Corporation Ltd., Herzliya, Israel

Filed Feb. 4, 1991, Ser. No. 650,468
Claims priority, application Israel, Feb. 5, 1990, 93274; Dec. 27, 1990, 96816; Dec. 30, 1990, 96829; Jan. 15, 1991, 96955
Int. Cl.[5] H04N *1/46*; G03F *3/08*
U.S. Cl. 358—504 **64 Claims**



1. A technique for calibrating a color processing device comprising the steps of:

comparing a first digital representation of a colored image with a second digital representation thereof, said first digital representation defining a plurality of first non-scalar color values, said second digital representation defining a plurality of second non-scalar color values corresponding to the plurality of said first non-scalar color values, thereby to provide a transformation pairing each individual one of said first non-scalar color values with a value relatively close to the corresponding one of said second non-scalar color values;

employing at least the transformation to control operation of said color processing device to be calibrated,

whereby the color processing device is calibrated generally without reference to human aesthetic judgement, and

wherein said first digital representation is characterized in that processing said first digital representation of said colored image with the color processing device provides a second representation of said colored image which defines a provided plurality of color values, each individual one of said provided plurality of color values being substantially equal to a corresponding one of a predetermined plurality of color values falling within a range of said color processing device.

5,339,177
INCOHERENT/COHERENT SOURCE ARRAY FOR MULTIPLEXED HOLOGRAPHIC RECORDING AND READOUT

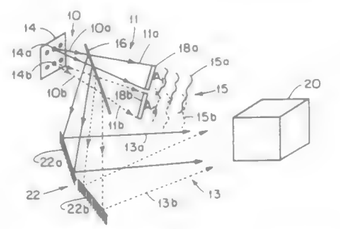
B. Keith Jenkins, Long Beach, and Armand R. Tanguay, Jr., Fullerton, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Division of Ser. No. 505,790, Apr. 6, 1990, Pat. No. 5,121,231. This application Feb. 13, 1992, Ser. No. 834,924
Int. Cl.[5] G03H *1/04*; H01S *3/10*
U.S. Cl. 359—35 **28 Claims**

1. An incoherent/coherent holographic recording and readout source array for use in incoherent/coherent holographic recording and readout comprising:

(a) a set of individually coherent light sources comprising a two-dimensional array;

(b) means for simultaneously activating a group of two or more of said individually coherent light sources, said individually coherent light sources of said group having at least one emission wavelength in common, pairwise; and

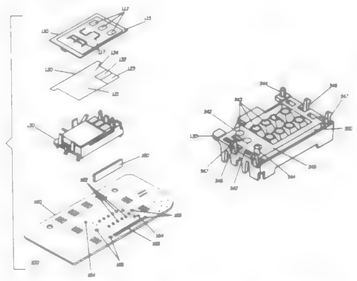


(c) means for assuring mutual incoherence among said individually coherent light sources of said group.

5,339,178
LCD ASSEMBLY WITH LIGHT PIPE HAVING LIGHTGUIDES EXTENDING FROM SURFACE TO SURFACE AND RETAINING MEANS INTEGRAL WITH THE LIGHTPIPE

William C. Phelps, III, Plantation; Dwayne A. Daggs, Sunrise; William H. Robertson, Jr., Plantation, and Tyler D. Jensen, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 19, 1993, Ser. No. 33,926
Int. Cl.[5] G02F *1/1335*; G02B *6/00*
U.S. Cl. 359—42 **19 Claims**



18. A liquid crystal display assembly comprising:

a liquid crystal display;

a support structure;

a lightpipe for mounting said liquid crystal display to said support structure;

retaining means integrally located on said lightpipe for securing said liquid crystal display to said lightpipe;

mounting means integrally located on said lightpipe for mounting said lightpipe to said support structure;

said lightpipe has a upper planar surface and a lower planar surface;

said liquid crystal display is mounted onto said upper planar surface of said lightpipe and secured by said retaining means;

said lightpipe is mounted onto said support structure using said mounting means such that said lower planar surface faces said support structure;

said lightpipe has lightguides originating on said lower planar surface and proceeding through said lightpipe towards said upper planar surface, said lightguides capable of directing light from said lower planar surface towards said upper planar surface;

said lightpipe has a channel for housing an electrical connector;

an electrical source connected to said support structure;

an electrical connector;

said electrical connector is mounted through said electrical connector housing channel thereby connecting said liquid crystal display;

said electrical connector comprises an elastomeric connector;

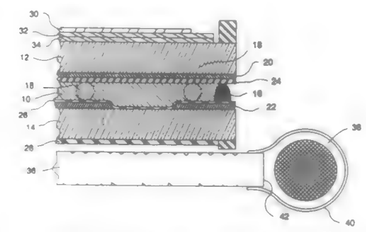
a light filter interposed between said liquid crystal display and said lightpipe; and

locating means integrally attached to said lightpipe for orienting said lightpipe on said support structure.

5,339,179
EDGE-LIT TRANSFLECTIVE NON-EMISSIVE DISPLAY WITH ANGLED INTERFACE MEANS ON BOTH SIDES OF LIGHT CONDUCTING PANEL

Charles A. Rudisill, and Daniel J. Whittle, both of Apex, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 1, 1992, Ser. No. 955,524
Int. Cl.[5] G02F *1/1335*; F21V *7/04*; G02B *6/00*
U.S. Cl. 359—49 **15 Claims**



4. A transflective non-emissive display apparatus comprising:

a non-emissive light means for controlling the passage of light whereby portions of said display appear light or dark to a viewer in front of the display depending on whether light is passed or not passed by corresponding portions of said light means;

a light conducting panel behind said non-emissive light means, said light conducting panel having front, back and side walls, said front and back walls oriented for reflecting ambient light that has passed through said light means;

an edge light source for introducing light in one of the side walls of said light conducting panel;

at least one of said front and back walls having surface indentations in the wall;

a plurality of said indentations having indentation wall angles oriented relative to incident ambient light to refract and reflect the ambient light towards said non-emissive light means at a useable viewing angle for the viewer; and

a plurality of said indentations having indentation wall angles oriented relative to incident edge light to refract and reflect the edge light towards said non-emissive light means at a useable viewing angle,

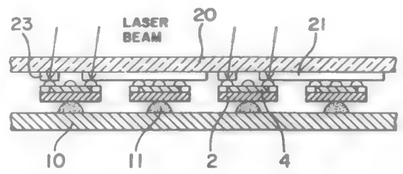
wherein said indentations comprise:

indentations in said front wall having wall angles for reflecting the ambient light that passed through said non-emissive light means back through said non-emissive light means at a useable viewing angle and for reflecting edge light inside the light conducting panel towards the back wall; indentations in the back wall having wall angles for reflecting ambient light, refracted through the front wall, and edge light out the front wall and toward said non-emissive light means.

5,339,180
FLAT DISPLAY

Tadanobu Katoh, 1291 Chihara, Yakuno-cho, Amada-gun, Kyoto, Japan

Filed Nov. 2, 1992, Ser. No. 970,256
Claims priority, application Japan, Nov. 5, 1991, 3-350543
Int. Cl.[5] G02F *1/1343*
U.S. Cl. 359—58 **9 Claims**



1. A flat display comprises:

a lower substrate including a matrix of pixel electrodes, column lines each extending along column direction and row lines each extending along row direction;

an upper substrate having a common electrode;

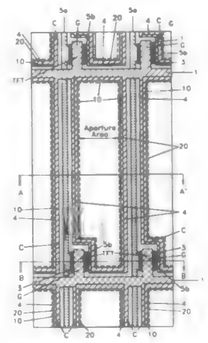
an electrically responsible material filled between said lower and upper substrates, and for changing its characteristic of light by applying electric energy;

a plurality of active elements provided on another substrate and each having three bonding pads connected to said pixel electrode, column and row lines, respectively, after each of said active elements is aligned with the corresponding position of said lower substrate in up side down fashion to transfer said active elements to said lower substrate through a transfer plate.

5,339,181
LIQUID CRYSTAL DISPLAY COMPRISING A STORAGE CAPACITOR INCLUDING THE CLOSED-ENDED ELECTRODE FOR PROVIDING A CURRENT BATH FOR CIRCUMVENTING BREAK

Sang-soo Kim, Seoul; In-sik Jang, Suwon; Nam-deog Kim, and Jeong-ha Son, both of Songpa, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Aug. 25, 1992, Ser. No. 934,396
Claims priority, application Rep. of Korea, Sep. 5, 1991, 91-15530
Int. Cl.[5] G02F *1/1335*
U.S. Cl. 359—59 **13 Claims**



1. A liquid crystal display, including:

a front glass substrate having inboard and outboard surfaces;

a rear glass substrate having inboard and outboard surfaces,

VOL 1165 ISS 3 AG 16 1994 UMI

and oriented in parallel, spaced-apart relation to said front glass substrate, with said inboard surfaces of said front and rear glass substrates facing each other;

a plurality of rows of scanning signal electrodes and columns of display signal electrodes arranged in a matrix configuration on said inboard surface of said rear glass substrate, to thereby define a matrix of pixel regions, each of which is bounded by two adjacent ones of said rows of scanning signal electrodes and two adjacent ones of said columns of display signal electrodes;

a pixel electrode disposed in each of said pixel regions;

a switching element disposed in each of said pixel regions and connected between a respective one of said display signal electrodes and a respective one of said pixel electrodes;

a storage capacitor disposed in each of said pixel regions, wherein each said storage capacitor includes a first electrode overlapping a marginal edge portion of a respective one of said pixel electrodes around the entire periphery thereof, whereby said first electrode is closed-ended;

a black matrix light shield layer disposed on said inboard surface of said front glass substrate, said black matrix light shield layer being patterned in such a manner as to define a matrix of light transmissive apertures aligned with said matrix of pixel regions;

a color filter layer disposed on said inboard surface of said front glass substrate and overlying said black matrix light shield layer, said color filter layer including light transmissive portions overlying said light transmissive apertures;

a transparent electrode disposed over said color filter layer; and,

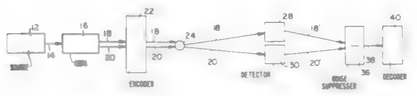
a layer of liquid crystal sandwiched between said front glass substrate and said rear glass substrate.

5,339,182

METHOD AND APPARATUS FOR QUANTUM COMMUNICATION EMPLOYING NONCLASSICAL CORRELATIONS OF QUADRATURE-PHASE AMPLITUDES

Harry J. Kimble, LaCanada, Calif.; Zhe-Yu Ou, Indianapolis, Ind., and Silvania E. Pereira, Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 19, 1993, Ser. No. 19,594
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—112 **22 Claims**



15. An apparatus for transmitting information, comprising:

means for generating first and second optical beams having correlated quantum noise;

means for generating a third optical beam having an information content;

means for combining said third optical beam with each of said first and second optical beams to produce first and second combined beams, wherein the information content of said third beam is obscured within correlated quantum noise within each individual combined beam;

means for transmitting said first and second combined beams;

means for detecting said first and second combined beams; and

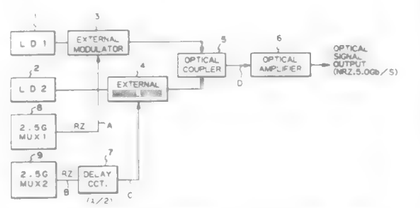
means for combining said first and second combined beams to substantially eliminate said correlated quantum noise from said beams, leaving said information beam.

5,339,183

OPTICAL SIGNAL TRANSMISSION DEVICE

Katsuo Suzuki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1993, Ser. No. 33,617
Claims priority, application Japan, Mar. 19, 1992, 4-064052
Int. Cl.[5] H04J *4/00, 14/02*
U.S. Cl. 359—123 **3 Claims**



1. An optical signal transmission device comprising:

a plurality of laser diodes having different oscillating wavelengths;

a plurality of exclusive external modulators provided according to the number of said plurality of laser diodes for receiving corresponding outputs of said respective laser diodes, and for modulating output lights of said laser diodes by separate electrical signals;

optical coupler means for coupling the modulated output lights from said plurality of external modulators together; and

optical amplifying means for amplifying the output level of the modulated optical lights coupled by said optical coupler means,

wherein the modulated optical outputs of said external modulators are delivered to an optical fiber transmission line in a time-series-mode;

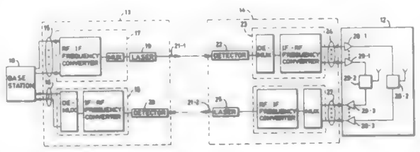
said separate electrical signals for modulating the external modulators are switched and delivered by a signal switching means receiving a plurality of electrical signals; and said signal switching means includes a flip-flop for inputting an electrical clock signal and at least two gates for inputting electrical signals each having a bit rate fb and being in an NRZ (Non-return-to-zero) mode, and said optical amplifier outputs a dual-multiplexed optical signal.

5,339,184

FIBER OPTIC ANTENNA REMOTING FOR MULTI-SECTOR CELL SITES

Douglas D. Tang, Chelmsford, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 15, 1992, Ser. No. 898,993
Int. Cl.[5] H04J *14/02;* **H04B** *10/00;* **A01F** *12/20*
U.S. Cl. 359—124 **19 Claims**



1. A communication link for transmitting a plurality of radio frequency (RF) downlink signal bands, each including a plurality of RF transmit channels, from a base station to a remote cellular hub, and for transmitting a plurality of RF uplink signal bands, each including a plurality of RF cellular channels, from the remote cellular hub to the base station, comprising:

downlink conversion means for converting each RF downlink signal band to a respective intermediate frequency (IF) downlink signal band;

downlink generation means for generating a downlink optical channel including said IF downlink signal bands;

downlink transmission means for optically transmitting said downlink optical channel over a first optical path;

downlink detection means at the remote cellular hub for detecting the downlink optical channel and recovering said RF downlink signal bands;

uplink conversion means for converting each RF uplink signal band to a respective IF uplink signal band;

uplink generation means for generating an uplink optical channel including said IF uplink signal bands;

uplink transmission means for optically transmitting said uplink optical channel over a second optical path; and

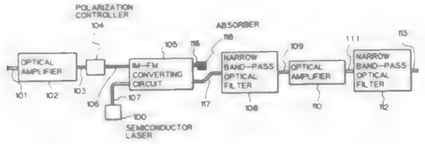
uplink detection means at the base station for detecting the uplink optical channel and recovering said RF uplink signal bands.

5,339,185

OPTICAL TIMING EXTRACTION CIRCUIT

Kazuhisa Kaede, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,086
Claims priority, application Japan, Jul. 29, 1991, 3-212775
Int. Cl.[5] H04J *14/00*
U.S. Cl. 359—158 **8 Claims**



1. An optical timing extraction circuit comprising:

converting means for converting an intensity modulated signal to an optical frequency modulated signal, said converting means modulating an optical frequency of a second light by a first light, said first light being modulated in intensity by an NRZ signal whose transmission rate is B bit/sec and said second light being a CW light;

first narrow band-pass optical filter means receiving said second light, for selectively reflecting said second light which has been modulated in frequency by said converting means, a transmission center frequency of said first narrow band-pass optical filter means coinciding with a central frequency of said second light, a transmission bandwidth of said first narrow band-pass optical filter means being substantially equal to a modulated width of the frequency of said second light; and

second narrow band-pass optical filter means having a free spectral range substantially equal to B Hz for extracting and emitting an optical clock signal of sinusoidal form whose frequency is B Hz, said optical clock signal being extracted from said second light modulated in intensity by said first narrow band-pass optical filter means.

5,339,186

OPTICAL DATA PACKET COMPRESSOR/DECOMPRESSOR

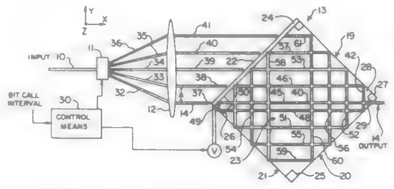
Robert T. Weverka, Boulder, Colo., assignor to The University of Colorado Foundation, Inc., Boulder, Colo.

Filed Nov. 13, 1992, Ser. No. 976,089
Int. Cl.[5] H04J *14/08*
U.S. Cl. 359—140 **20 Claims**

12. Apparatus for modifying the bit cell interval of a binary optical signal comprising N light pulses positioned with N bit cells, the apparatus comprising;

an optical reflection cavity defining a light propagation axis X, said cavity having first and second planar and parallel mirrors spaced from each other along said X axis, said cavity having third and fourth planar and parallel mirrors spaced from each other along said X axis, the reflective surfaces of said first, second, third and fourth mirrors facing inward of said cavity, and said first mirror being controllable between a light transmissive state and a light reflective state,

said mirrors establishing N optical reflection paths internal to said reflection cavity and extending between said mirrors, said internal reflection paths being of progressively greater length from internal path 1 to internal path N,



internal path 1 having an extension that extends external of said reflection cavity, and all of internal paths 2 through N including internal path 1 and its extension as an end portion thereof,

scanner means mounted on the other side of said first mirror from said second mirror, said scanner means being operable to receive light pulses that pass through said first mirror in its transmissive state, and to direct the light pulses back through said first mirror in its transmissive state in a manner to sequentially establishing said N internal optical paths, and

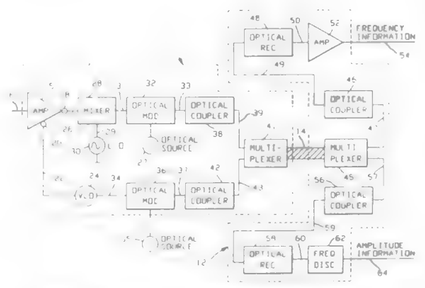
control means for controlling said scanner means and said first mirror in a manner to sequentially render said first mirror transmissive, and to control said scanner means to sequentially establish said N internal optical paths in synchronism with said bit cells.

5,339,187

WIDE DYNAMIC RANGE HIGH FREQUENCY SIGNAL TRANSMISSION UTILIZING A LOGARITHMIC AMPLIFIER

George F. Nelson, Coon Rapids, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 14, 1992, Ser. No. 944,620
Int. Cl.[5] H04B *10/04;* **H04J** *14/00*
U.S. Cl. 359—182 **16 Claims**



1. A signal transmission system constructed to convert amplitude-modulated radio frequency (r.f.) carrier input signals

VOL 1165 ISS 3 AG 16 1994 UMI

into two different wavelength output signals that are transmitted to a receiver means via a signal coupling means, wherein said signal coupling means comprises said first and second signal transmission means coupled to said receiving means, each of which supplies one of said wavelength output signals to said receiving means, comprising

(a) signal translation means comprising at least a first optical source and modulation means coupled to supply an optical signal of a first wavelength to said first signal transmission means, and signal providing means for providing an amplitude information signal of a second wavelength to said second signal transmission means,

(b) amplifier means coupled to receive said input signal and is constructed to produce a first output signal which has an amplitude that is logarithmically proportional to the amplitude of said input signal and a second output signal which is an amplitude-limited r.f. carrier signal version of said input signal,

(c) signal path means coupled between said amplifier means to receive said second output signal, and said first optical source and modulation means for modulating said first optical source and modulation means so as to enable said first optical source and modulation means to supply said output signal of said first wavelength,

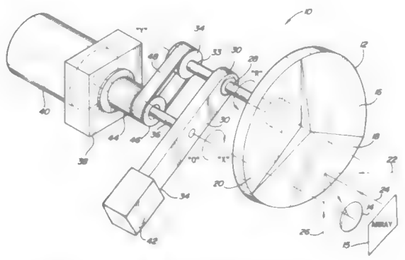
(d) voltage-controlled-oscillator means having a control input coupled to said amplifier means to receive said first optical signal constructed to supply a VCO output signal that is a function of said first output signal to said signal providing means to enable said signal providing means to provide said output signal of said second wavelength.

5,339,188

STEP STARE SCANNING APPARATUS AND METHOD

Bradley G. Fritzel, Hermosa Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 16, 1992, Ser. No. 945,779
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—200 23 Claims



1. A step stare scanning device, comprising:

a scanning pupil;

a reflector having a plurality of reflecting surfaces, each surface being angled with respect to each other; and

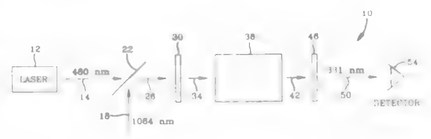
moving means for causing said reflector to rotate in a first angular direction about a first axis and substantially simultaneously orbit in a second axis so that signals received at said reflecting surfaces are relfected to said scanning pupil.

5,339,189

NONLINEAR FREQUENCY CONVERSION OPTICAL FILTER

Bruce P. Boczar, Trevose, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 20, 1993, Ser. No. 123,959
Int. Cl.[5] G02F *1/39*
U.S. Cl. 359—326 23 Claims



17. A system for performing optical filtering comprising:

a first filter for receiving light energy composed of two different frequencies and first filtering said received light energy in a first frequency band to provide first filtered light energy;

a nonlinear optical device for receiving said first filtered light energy to provide frequency converted light energy in a second frequency band having a value selected from the group comprising the sum and the difference of said two different frequencies; and

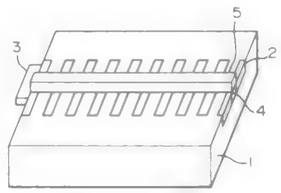
a second filter for filtering said frequency converted light energy in said second frequency band, wherein said first and second frequency bands are selected to prevent the same light energy from passing through both said first and second filters.

5,339,190

OPTICAL WAVEGUIDE SECOND HARMONIC GENERATING ELEMENT AND METHOD OF MAKING THE SAME

Yukihiro Yamamoto, and Noriko Yamada, both of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 16, 1993, Ser. No. 47,183
Claims priority, application Japan, Apr. 16, 1992, 4-122773; Jun. 5, 1992, 4-171948; Nov. 27, 1992, 4-341151
Int. Cl.[5] G02F *1/37*
U.S. Cl. 359—332 7 Claims



1. An optical waveguide second harmonic generating element comprising:

a KTP single-crystal substrate sliced at a z-plane:

a plurality of polarization reversal areas periodically formed in a predetermined direction on the z-plane of said substrate, said polarization reversal areas having reversed directions of spontaneous polarization; and

a channel waveguide extending along said direction across said plurality of polarization reversal areas for propagating a light,

wherein said channel waveguide includes a first waveguide having a larger refractive index than that of said substrate for propagating the light, and a second ridge waveguide having a refractive index smaller than that of said first waveguide and larger than that of said substrate and extending parallel to said first waveguide for propagating a second harmonic of said light.

5,339,191

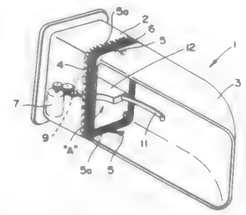
Patent Not Issued For This Number

5,339,192

STRUCTURE OF BACK MIRROR FOR VEHICLE

Seong H. Cho, Usung Apt. 13-302, Sam-dong 146-71, Uiwang-si, Kyongki-do, 437-040, Rep. of Korea

Filed Dec. 29, 1992, Ser. No. 997,927
Claims priority, application Rep. of Korea, Dec. 30, 1991, 25105/1991
Int. Cl.[5] G02B *7/18;* B60R *1/06*
U.S. Cl. 359—841 2 Claims



1. A back mirror structure comprising:

a moving member being hinged by a shaft to a fixed member, said fixed member being fixed to a vehicle body so as to be able to fold and unfold,

a driving device being provided within an interior of said fixed member, said driving device being firmly fixed to the fixed member,

said driving device including a forward and reverse rotation motor, at least one reducing gear, and a driving gear meshing with said at least one reducing gear and surrounded by a cap,

a band spring having a first end and a second end, said first end of said band spring being fixed to a connecting pin standing erect on a top surface of said driving gear, and said second end being fixed to said moving member,

a guiding channel for the band spring being formed in a groove formed on an interior surface of said cap, said cap covering a top of said band spring, said second end of said band spring being extended or contracted along the guiding channel upon driving of said motor, so that a folding and unfolding of said moving member can be carried out,

a flexible creased cover covering throughout an entire surface around a contacting circumferential surface of said fixed member and said moving member, and

said shaft coupling said fixed member and said moving member, and being formed in a "C"-shape, and a supporting bar for reinforcing and supporting said fixed member and said moving member being provided at upper and lower portions of said shaft.

5,339,193

ANAMORPHOTIC ATTACHMENT FOR A PROJECTION OBJECTIVE

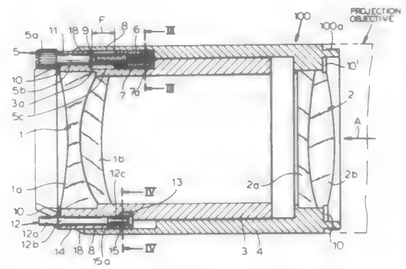
Heinz Korpert, Bad Kreuznach, and Ralf Linn, Niedermoschel, both of Fed. Rep. of Germany, assignors to Jos. Schneider Optische Werke Kreuznach GmbH & Co. KG, Kreuznach, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 931,292
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1991, 4127255
Int. Cl.[5] G02B *7/02, 13/08*
U.S. Cl. 359—819 30 Claims

1. An anamorphotic attachment for a projection objective, comprising:

a fixed outer elongated tubular mounting provided with means for affixing said outer tubular mounting to said projection objective at a rear end of said outer tubular mounting;

an axially movable inner tubular mounting telescopingly received in said outer tubular mounting, axially shiftable relative to said outer tubular mounting and extending substantially to a front end of said outer tubular mounting;



a front lens group mounted in said inner tubular mounting at a front end thereof and a rear lens group mounted in said outer tubular mounting at said rear end thereof and forming with said front lens group an anamorphotic projection system; and

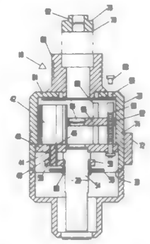
means received in a lateral region of said inner mounting and axially coupling said mountings while being actuatable at a front side of the attachment for shifting said inner tubular mounting in said outer tubular mounting.

5,339,194

POWER ZOOM OPTICAL UNIT WITH ENCODER

Robert Yates, Newport Beach, Calif., assignor to RAM Optical Instrumentation, Inc., Huntington Beach, Calif.

Filed Aug. 17, 1992, Ser. No. 930,364
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—696 19 Claims



1. In an optical unit for use with an optics receiving and processing unit which unit comprises an assembly of an optical zoom lens mounted within a zoom lens housing and having a rotatable barrel for adjustment of its magnification power, the improvement which comprises;

a. a zoom lens drive motor with an output drive shaft mounted in said assembly and including gear means rotationally interconnecting the drive shaft of said drive motor to said rotatable barrel of said zoom lens; and

a rotational position encoder also mounted in said assembly, including:

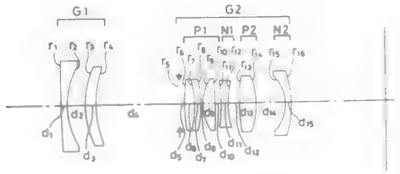
b. position registering means comprising an array of equally spaced registering elements carried on said rotatable barre; and

c. a position sensor fixedly secured in said assembly at a

VOL 1165 ISS 3 AG 16 1994 UMI

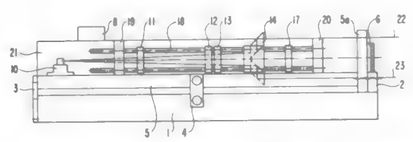
location to sense the rotational displacement of said position registering means.

5,339,195
TWO UNIT ZOOM LENS SYSTEM
Yasuji Ogata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jul. 23, 1992, Ser. No. 917,331
Claims priority, application Japan, Jul. 24, 1991, 3-182750
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—691 **12 Claims**



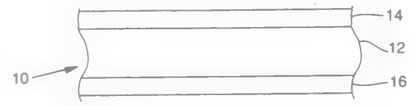
1. A two-unit zoom lens system comprising, in order from the object side:
a first lens unit having negative refracting power, and
a second lens unit consisting of, in order from the object side, a first positive sub-lens unit, a first negative sub-lens unit located with a first separation between said first negative sub-lens unit and said first positive sub-lens unit, a second positive sub-lens unit with a second separation between said second positive sub-lens unit and said first negative sub-lens unit and a second negative sub-lens unit with a third separation between said second negative sub-lens unit and said second positive sub-lens unit, said second lens unit having a positive power as a whole,
wherein for zooming from a wide angle end to a telephoto end, a separation between said first lens unit and said second lens unit is varied while the first, second, and third separations are kept constant.

5,339,196
OPTICAL DEVICE FOR MEASURING THE SPEED OF A MOVED SURFACE BY MEANS OF A MEASURING LIGHT BEAM FROM A LASER
Volker Grebe, Dortmund, Fed. Rep. of Germany, assignor to Mesacon Gesellschaft fur MeBtechnik MbH, Fed. Rep. of Germany
PCT No. PCT/EP91/01854, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO92/06388, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 27, 1991, Ser. No. 859,375
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1990, 9013557[U]
Int. Cl.[5] G02B *27/10, 5/04;* **G01P** *3/68*
U.S. Cl. 359—640 **3 Claims**



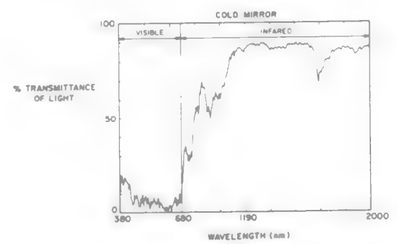
1. An optical device for measuring the speed of a moving surface through utilization of a laser beam split into two sub-beams, said optical device comprising:
a transmitting prism arrangement comprising two prism bodies, each of said prism bodies being associated with one of said sub-beams;
each prism body having base surfaces, refractive surfaces and reflective surfaces arranged and oriented for allowing said associated sub-beam to enter said respective prism body to be guided in said respective prism body and to leave said respective prism body;
said sub-beam leaving said prism body being displaced outwardly in relation to a center plane of said transmitting prism arrangement between said prism bodies so that the degree of beam splitting is increased and said sub-beams converge on a common point of intersection;
said prism bodies being secured at a glass mounting plate and said base surfaces of said prism bodies being arranged in a plane-parallel manner.

5,339,197
OPTICAL PELLICLE WITH CONTROLLED TRANSMISSION PEAKING
Yung-Tsai Yen, 1192 St. Anthony Ct., Los Altos, Calif. 94022
Continuation of Ser. No. 884,464, May 13, 1992, abandoned, which is a continuation of Ser. No. 331,495, Mar. 31, 1989, abandoned. This application Jan. 13, 1994, Ser. No. 182,376
Int. Cl.[5] G02B *1/10;* **B32B** *27/00*
U.S. Cl. 359—359 **14 Claims**



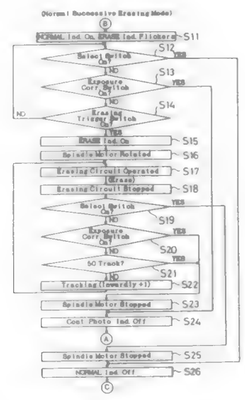
1. A high-transmissivity, optical pellicle having predetermined, precise thickness and including an organic base layer with a single organic anti-reflective coating layer on each side thereof, the pellicle having a total physical thickness of about 1.4 microns plus or minus 0.1 micron, and the transmissivity of the pellicle positively peaking at mercury's I, H and G spectral lines, with the organic coating layers and the total thickness of the pellicle providing durability and uniformity, and with the transmissivity of the mercury I and G spectral lines being at least about 99 percent, and the transmissivity of the mercury H spectral line being at least about 98 percent.

5,339,198
ALL-POLYMERIC COLD MIRROR
John A. Wheatly, and Gregg A. Motter, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Oct. 16, 1992, Ser. No. 963,305
Int. Cl.[5] G02B *5/28, 1/10*
U.S. Cl. 359—359 **2 Claims**



1. An all-polymeric cold mirror of at least first and second diverse polymeric materials, the mirror comprising a sufficient number of alternating layers of said first and second polymeric materials such that at least 50% of peak reflecting visible light of a wavelength of between about 380–680 nm incident on said polymeric cold mirror is reflected, at least 50% of infrared light between about 680–2000 nm is transmitted or absorbed, and wherein absorption in the wavelength range of between about 300–380 nm is at least 50%.

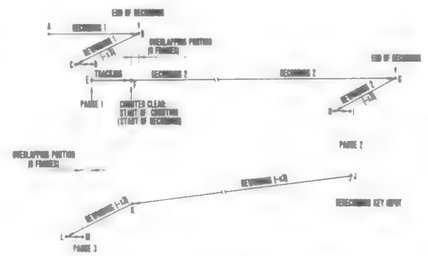
5,339,199
STILL VIDEO DEVICE WITH SELECTABLE SUCCESSIVE ERASURE OF AUDIO AND/OR VIDEO TRACKS
Kimiaki Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 705,670, May 24, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 88,589
Claims priority, application Japan, May 25, 1990, 2-136526
Int. Cl.[5] H04N *5/781;* **G11B** *5/024*
U.S. Cl. 360—35.1 **32 Claims**



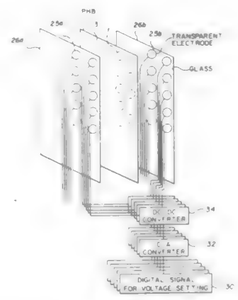
1. A still video device in which a recording medium is mounted, said recording medium having a plurality of tracks on which audio signals and video signals are recordable, said still video device comprising:
means for selecting a successive erasing mode;
means for erasing at least one of an audio signal and a video signal recorded at a predetermined track of said recording medium;
means for designating at least one of said audio signal and said video signal recorded in said recording medium that is to be erased;
means for controlling said erasing means to successively erase at least one of said audio signal and said video signal stored at a plurality of tracks which are designated by said designating means when said successive erasing mode is selected by said selecting means; and
means for cancelling said successive erasing during an operation of said successive erasing mode.

5,339,200
SIGNAL RECORDING APPARATUS WITH REERECORDING FACILITY
Shinichi Koyama, Tokyo, and Nobutoshi Takayama, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 26, 1992, Ser. No. 841,822
Claims priority, application Japan, Mar. 1, 1991, 3-036181; Mar. 19, 1991, 3-054799
Int. Cl.[5] G11B *15/20*
U.S. Cl. 360—24.2 **35 Claims**

1. A signal recording apparatus comprising:
(a) a capstan for transporting a tape-shaped recording medium along a length thereof;
(b) a head for performing recording of a signal on the tape-shaped recording medium;
(c) a rotation detector for generating a pulse signal, according to a rotation of said capstan;
(d) a counter for counting the pulse signal;
(e) an operating member;
(f) a control circuit capable of receiving a count value of said counter and arranged to control an operation of said capstan and an operation of said counter, said control circuit responding to an operation of said operating member to cause said capstan to make the tape-shaped recording medium travel to a vicinity of a past recording start position, according to the count value of said counter;
(g) detecting means for detecting an amount by which the tape-shaped recording medium travels from the vicinity of the position where the tape-shaped recording medium was located at the start time of the immediately previous recording; and
(h) disabling means for disabling the operation of said operating member, according to an output of said detecting means.



5,339,201
OPTICAL COMPUTING ELEMENT
Tetsuya Nishimura; Motomu Yoshimura, and Mitsuo Maeda, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 571,761, Aug. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 312,073, Feb. 16, 1989, abandoned. This application Jul. 20, 1992, Ser. No. 917,666
Claims priority, application Japan, Feb. 17, 1988, 63-36024
Int. Cl.[5] G02B *5/22;* **G11C** *13/00;* **G11B** *7/00*
U.S. Cl. 359—891 **7 Claims**



1. An optical filtering element for an optical computer, the optical computer including means for processing light rays which include a plurality of wavelength components for carrying out computing functions, comprising:

VOL 1165 ISS 3 AG 16 1994 UMI

a photo-chemical hole burning means for selectively transmitting at least one wavelength component in the light rays through the photo-chemical hole burning means, the at least one wavelength component containing a subset of the plurality of wavelength components in the light rays; and

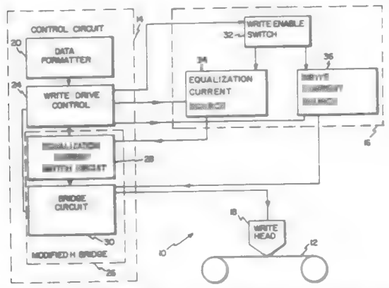
means for changing a light transmission characteristic of the photo-chemical hole burning means to select the at least one wavelength component to be transmitted through the photo-chemical hole burning means.

5,339,202

METHOD AND APPARATUS FOR AMPLITUDE COMPENSATED WRITE EQUALIZATION

John E. Heinz, Plymouth; Michael E. Hamerly, Vadnais Heights; Richard W. Molstad, St. Paul; Theodore A. Schwarz, Woodbury, and Robert J. Youngquist, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 26, 1993, Ser. No. 37,285
Int. Cl.[5] G11B *5/09, 5/035*
U.S. Cl. 360—46 7 Claims



1. An amplitude-adjusted write-equalized recording circuit for recording data onto a magnetic tape comprising:

write head means for receiving a flow of current and converting the flow of current into a magnetic field, having a polarity which is a function of the direction of current flow;

write current source means for furnishing to the write head a write current (I_W) representative of a data stream to be written onto the magnetic tape;

equalization current source means for furnishing to the write head equalization current (I_{EQ}) for adjusting the amplitude of write equalization pulses in the write-equalized data stream, the write current source means and equalization current source means together furnishing to the write head current representative of data to be written onto the magnetic tape;

control means for regulating current flow from the write and equalization current source means through the write head, the control means introducing write-equalization pulses from the equalization current source into the current going to the write head having amplitudes different from amplitudes of the write current representative of data to be written, the control means including:

means for receiving a data stream;

means for converting the data stream into write current switching control signals and equalization current switching control signals;

first switching means responsive to the write current switch control signals for allowing write current (I_W) to flow in first and second directions in the write head as a function of the write current switch control signals; and

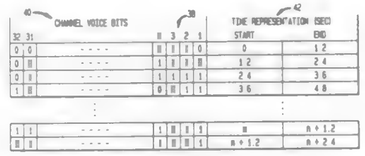
second switching means responsive to the equalization current switch control signals for allowing equalization current (I_{EQ}) to flow through the write head in the same direction as the write current during a write equalization pulse and to ground during normal writing of the data.

5,339,203

APPARATUS AND METHOD OF RETRIEVING A MESSAGE FROM A DIGITAL AUDIO TAPE

John Heaitz, Bethel, and Robert B. Swick, Stratford, both of Conn., assignors to Dictaphone Corporation, Stratford, Conn.

Filed Dec. 21, 1993, Ser. No. 171,290
Int. Cl.[5] G11B *5/19, 5/00, 15/18*
U.S. Cl. 360—39 20 Claims



1. A method for searching a digital audio tape (DAT) for a message, the steps comprising:

a) creating a bit map table that writes a "1" bit for audio and a "0" bit for the absence of audio on a digital audio tape,

b) storing the bit map table in a memory,

c) scanning the memory to find a predetermined number of 0 bits in sequence,

d) scanning the portion of the memory adjacent to the predetermined number of 0 bits,

e) determining if a predetermined number of 1 bits adjacent to the predetermined number of 0 bits, and

f) identifying such combination of 0 bits and 1 bits as a message.

5,339,204

SYSTEM AND METHOD FOR SERVOWRITING A MAGNETIC DISK DRIVE

David T. James, Catisfield; Anthony W. Leonard, Rowlands Castle, and Peter J. Elliott, Alresford, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1992, Ser. No. 989,409
Claims priority, application United Kingdom, Dec. 12, 1991, 9125594
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—51 9 Claims

1. A method of servo-writing a magnetic disk drive,

said disk drive including a head-disk assembly (HDA) which has a substantially sealed housing, one or more coaxial, rotatable magnetic data storage disks, located within the housing, a magnetic transducer head for each data storage disk for data transfer therewith located within the housing, and means located within the housing for moving the transducer heads in unison radially across the disk surfaces, said substantially sealed housing having a window for viewing a circular clock track on one of the magnetic data storage disks, said method comprising the steps of:

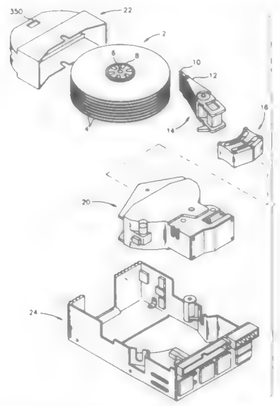
writing a circular clock track within the sealed HDA at radius R1 using a Monte Carlo technique;

moving the transducer heads to radius R2;

reading through said window the clock track by measuring the change in polarization of light reflected from the disk surface using a magneto-optical head outside said sealed HDA; and

simultaneously with said step of reading the clock track,

writing a servo track at radius R2 with said transducer heads, the timing of the transitions for said servo track at



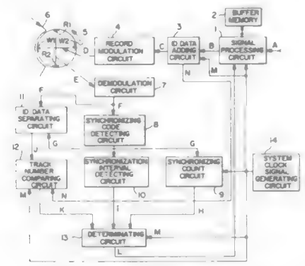
radius R2 being determined by the timing of the transitions read from said clock track.

5,339,205

RECORDING/REPRODUCTION APPARATUS WITH ERROR DETECTION CAPABILITY

Kengo Sudoh, and Chitoku Kiyonaga, both of Hiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 18, 1991, Ser. No. 779,231
Claims priority, application Japan, Oct. 23, 1990, 2-286811
Int. Cl.[5] G11B *5/09;* G06F *11/00*
U.S. Cl. 360—53 21 Claims



10. A recording/reproduction apparatus for recording data onto a recording medium having a plurality of recording tracks and for reading and reproducing the recorded data from said recording medium, comprising:

recording means for serially recording a predetermined number of data blocks into each of said plurality of recording tracks, each of said predetermined number of data blocks having a track data indicating a recording track in which a corresponding data block is to be recorded and a position data at a predetermined position;

reproducing means for reproducing each data block recorded in said plurality of recording tracks by said recording means;

count means for counting the number of said reproduced data blocks;

position data extracting means for extracting said position data from each of said reproduced data blocks;

track data extracting means for extracting said track data from each of said reproduced data blocks; and

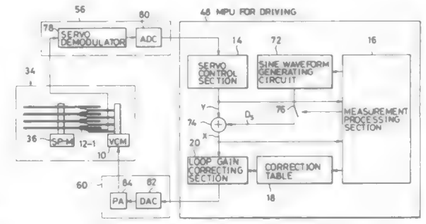
determination means, responsive to outputs of said count means, said track data extracting means and said position data extracting means, for determining whether said predetermined number of data blocks are correctly recorded in each of said plurality of recording tracks.

5,339,206

POSITIONING CONTROL METHOD AND APPARATUS OF HEAD WHICH IS USED IN MAGNETIC DISK APPARATUS

Eisaku Takahashi, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Feb. 23, 1993, Ser. No. 21,328
Claims priority, application Japan, Mar. 31, 1992, 4-076629
Int. Cl.[5] G11B *21/02, 5/596*
U.S. Cl. 360—75 16 Claims



1. A positioning control method of a head which is used in a magnetic disk apparatus, comprising:

a servo control step of moving the head to a cylinder position on a disk medium designated by a command from a higher order apparatus by a speed control of an actuator and switching a control mode to a position control when the head reaches said cylinder position, thereby allowing the head to trace a track on the medium;

a measuring step of adding a sine wave signal having a zero-cross frequency f_0 of open loop gain characteristics to a drive signal of said actuator in a state in which the head has been moved to a predetermined cylinder position and has been position controlled when a measurement mode is set, outputting a resultant addition signal X, calculating an open loop gain G_{OP} from said addition signal X and an actual position deviation signal Y which is fed back by the driving of the actuator due to the addition signal X, and further calculating a new correction coefficient K by the product of the reciprocal number of said open loop gain G_{OP} and a correction coefficient K used in the measurement;

a correction table updating step of storing the new correction coefficient K obtained in said measuring step into a correction table while using the cylinder position as an address pointer; and

a correcting step of reading out the correction coefficient K with reference to said correction table on the basis of the cylinder position at which the head is at present located when an ordinary mode is set, correcting the drive signal to said actuator by multiplying said read-out correction coefficient K to said drive signal, and outputting said corrected drive signal to the actuator.

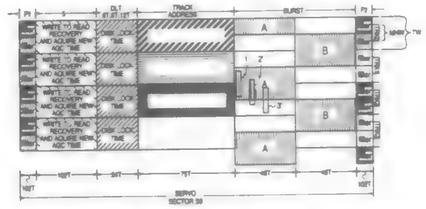
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,207

SERVO SYSTEM FOR PROVIDING INCREASED RECORDING DENSITY AND IMPROVED OPERATION OF THE AGC CIRCUITRY

Ronald R. Moon, Los Gatos; Gregg J. Uhlendorf, Morgan Hill, and Daniel E. Barnard, San Jose, all of Calif., assignors to NEC Corporation, Japan

Filed Mar. 10, 1992, Ser. No. 850,326
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.05 11 Claims



1. A track following system for controlling the position of a magnetic head above a track having a centerline on a magnetic recording medium, said track having a first edge on a first side of said centerline and a second edge on a second side of said centerline, said system comprising:

a magnetic recording medium having a first burst pattern of a predetermined length and extending from said centerline toward said first edge of said track, a second burst pattern of a predetermined length, said second burst pattern extending from said centerline toward said second edge of said track;

a magnetic head supported on a movable actuator arm for positioning said magnetic head above said track in operative relationship with said track for detecting said patterns and producing an output signal for each of said patterns, the amplitude of the output signal being representative of the position of said head with respect to said track centerline;

actuator drive means connected to said actuator arm, said actuator drive means producing a force in response to receipt of a drive signal to move said actuator arm;

circuit means coupled to said magnetic head for receiving said output signals from said magnetic head, comparing the value of said signals to predetermined values and producing an output drive signal; and

means coupling said output from said circuit means to said actuator drive means to move said head to a position above the centerline of said track, wherein said track is divided into a plurality of sectors, each of said sectors including said first and second burst patterns, and each of said sectors including an address portion for identifying the track, and further wherein predetermined ones of said address portions are of a first length and others of said address portions are of a second length.

5,339,208

ASSEMBLY FOR SUPPORTING A MAGNETIC HEAD TO FLOAT RELATIVE TO A MAGNETIC DISK

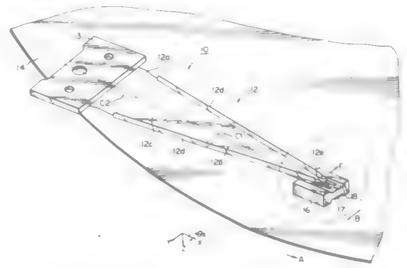
Takashi Yumura; Kiyoshi Funai, and Tetsu Yamamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1991, Ser. No. 772,212
Claims priority, application Japan, Oct. 5, 1990, 2-268807; Mar. 25, 1991, 3-60348
Int. Cl.[5] G11B *5/48*
U.S. Cl. 360—104 9 Claims

1. An assembly for supporting a magnetic head to float relative to a magnetic disk, comprising:

a load arm extending substantially tangentially of a magnetic disk and moved substantially radially of the magnetic disk, said load arm having a proximal end, and a distal end and including a spring portion at its proximal end;

gimbal means secured to the distal end of said load arm and including a pivot, said load arm including a contact point at its distal end to contact with said pivot; and



a magnetic head slider secured to said gimbal means and adapted to support a magnetic head, said magnetic head slider being urged toward the magnetic disk by said spring portion of said load arm, and said gimbal means allowing said magnetic head slider to pitch and roll about said pivot with movement of said magnetic disk;

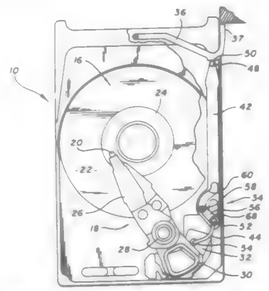
said load arm having a shear center at said contact point.

5,339,209

PLUG-IN ACTUATOR LATCH MECHANISM

F. Eugene Dion, Longmont, Colo., assignor to Maxtor Corporation, San Jose, Calif.

Continuation of Ser. No. 975,846, Nov. 13, 1992, Pat. No. 5,313,350. This application Nov. 5, 1993, Ser. No. 147,626
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[5] G11B *21/22*
U.S. Cl. 360—105 12 Claims



1. A hard disk drive card unit that can be coupled to a first connector of a computer, comprising:

a housing having a second connector adapted to be mated with the first connector;

a magnetic disk operatively connected to said housing;

an actuator arm assembly coupled to said housing and adapted to move a magnetic head relative to said magnetic disk; and,

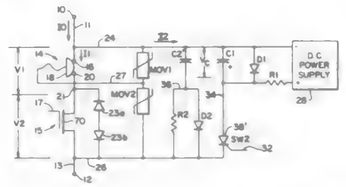
a latch means that is coupled to said magnetic head and contacts the first connector of the computer such that said latch means moves said magnetic head and secures said magnetic head to prevent further movement of said magnetic head, when said second connector is detached from the first connector and said latch means is moved out of contact with the first connector.

5,339,210

DC CIRCUIT INTERRUPTER

Edward K. Howell, Hendersonville, N.C., assignor to General Electric Company, New York, N.Y.

Filed Jul. 22, 1992, Ser. No. 916,752
Int. Cl.[5] H02H *7/00*; H01H *9/30, 9/56*
U.S. Cl. 361—9 5 Claims



1. In a circuit interrupter for interrupting load current flow in a power line connected in series circuit between a source electric power and a load, comprising:

first switching means comprising separable contacts normally maintained in closed position;

controlled impedance means serially connected with said separable contacts to comprise therewith a network for conduction of load current between a source of electric power and a load;

said controlled impedance means providing a first impedance and thus a first voltage drop during the normal flow of load current but being capable of being switched to provide a second impedance higher than said first impedance in response to a current interruption signal;

a current diversion circuit connected across said network having first capacitance means precharged to a predetermined voltage of a first polarity and second switching means connected in series with said capacitance means across said network;

said second switching means being normally open until closed by a current interruption signal to discharge said first capacitance means through said network to supply to said network a pulse sufficient to reduce current through said network to a first current value and, in conjunction with said controlled impedance means being switched to said second impedance, to divert load current from said network to said current diversion circuit to permit said separable contacts to open without arcing;

said first switching means having actuating means for opening said separable contacts subsequent to the diversion of load current whereupon the voltage across said separable contacts approximates the variable voltage across said first capacitance means, which responsive to the diverted load current, descends from the predetermined voltage of a first polarity to zero and the ascends in amplitude with a second polarity, corresponding to the polarity of the source of electric power;

turn off means for turning off said second switching means subsequent to said separable contacts having opened while the voltage of second polarity across said first capacitance means, and thus the voltage across said separable contacts prevented voltage breakdown across the contacts; circuit means to divert energy, remaining from load current in the current diversion circuit, from the open second switching means and to dissipate such energy, said circuit means comprising voltage clamping means and snubber means, said snubber means diverting energy from said second switching means upon its opening and causing the voltage across said first capacitance means and said second switching means to rise above the magnitude of the voltage of a source of electric power to cause said voltage clamping means to conduct and dissipate the electrical energy remaining in the network, said controlled impedance means comprising a field effect transistor having source drain and gate electrodes and a pair of oppositely poled parasitic diodes in series circuit across said source and drain electrodes, said source and drain electrodes being connected in circuit with said first switching means, said gate electrode being connected to receive a signal responsive to a load current interruption command, to increase the voltage across said source and drain electrodes, said separable contacts comprising first and second fixed contacts and a movable bridging contact and said voltage clamping means comprising first and second varistor devices connected in series circuit across said network, said separable contacts further comprising a flexible connection from the junction of said first and second varistor devices to said bridging contact such that upon opening of said bridging contact and said second switching means the first and second varistor devices equally share the voltage across said varistor devices to maximize the breakdown voltage across the varistor devices.

5,339,211

VARIABLE CAPACITOR

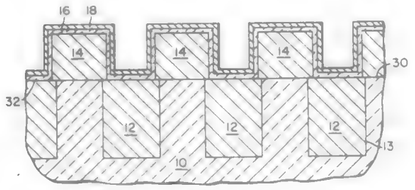
Udo C. Pernisz, and Keith W. Michael, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 915,572, Jul. 20, 1992, Pat. No. 5,283,545, which is a continuation-in-part of Ser. No. 694,721, May 2, 1991. This application Oct. 26, 1992, Ser. No. 966,640
Int. Cl.[5] H01G *7/00*
U.S. Cl. 361—277 14 Claims

1. In an electrical or electronic circuit having at least one capacitor device connected in the circuit by at least a pair of electrodes, the improvement comprising a variable capacitor device in the form of a silicon dioxide film derived from the oxidation of a hydrogen silsesquioxane resin, the silicon dioxide film being characterized by a jV curve which includes both linear and non-linear regions for the device, the jV curve of the silicon dioxide film including: (i) a first non-linear region wherein increasing the voltage applied to the device increases the current to a current maximum, at which time a measurement of the capacitance of the device shows a high value and a strong dependence on the applied bias; followed by (ii) a second non-linear region of a negative differential resistance wherein increasing the voltage applied to the device decreases the current to a current minimum while the voltage is increasing; the jV curve of the silicon dioxide film including (iii) a third region capable of being activated by a voltage in excess of the voltage at the current minimum, at which time a rapid removal of the excess voltage causes the current to decrease in an essentially linear fashion which switches the capacitance of the device from the high value and the strong dependence on the applied bias to a low value and a weak dependence on the applied bias; the jV curve of the silicon dioxide film further including (iv) a fourth region wherein an increase of the voltage applied to the device up to a threshold voltage causes a rapid transition from a linear current increase to n non-linear current increase which continues to a current maximum.

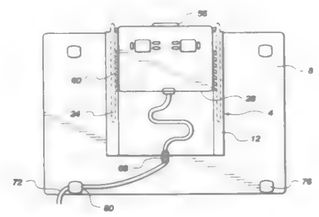
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,212
SIDEWALL DECOUPLING CAPACITOR
Robert M. Geffken, Burlington, Vt., and Lawrence J. Dunlop, Mt. Pleasant, S.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 3, 1992, Ser. No. 984,769
Int. Cl.[5] H01G 1/14
U.S. Cl. 361—306.2 13 Claims



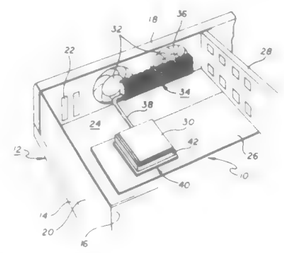
1. A capacitor comprising:
a) a first plate, said first plate comprising:
an interlevel insulator layer having a top surface thereof;
a first plurality of vias extending into said top surface of said interlevel insulator layer;
a conductive material filling each of said first plurality of vias, said conductive material having a top surface thereof;
a first plurality of interconnect lines overlying said interlevel insulator layer, each of said interconnect lines having a top surface, first and second opposing sidewalls, and a bottom surface, wherein said bottom surface of each of said interconnect lines is positioned upon said top surface of said interlevel insulator layer partially overlapping said conductive material, each of said interconnect lines thereby being electrically connected to said conductive material;
wherein a top surface of said first plate is formed by non-overlapped top surface of said conductive material, said first sidewalls of said interconnect lines, said top surfaces of said interconnect lines, and said second sidewalls of said interconnect lines;
b) a dielectric insulator layer overlying said top surface of said first plate; and
c) a second plate overlying said dielectric insulator layer, said second plate comprising a conductive layer.

5,339,213
PORTABLE COMPUTER TOUCH PAD ATTACHMENT
James L. O'Callaghan, Salt Lake City, Utah, assignor to Cirque Corporation, Salt Lake City, Utah
Filed Nov. 16, 1992, Ser. No. 977,134
Int. Cl.[5] H05K 7/14; G06F 1/16
U.S. Cl. 361—683 16 Claims



1. A device for attaching a computer input touch pad to a portable computer having a generally flat underside, comprising
a tray for receiving and holding the touch pad, the tray comprising a top plate and a bottom plate that fit together, one on top of the other, to enclose and securely hold the touch pad, said top plate having openings to expose buttons, pads, and the like for operating the touch pad, and said bottom plate having a recess for receiving components that extend from the touch pad and a tab that is graspable for moving the tray and touch pad between the location under the computer and the exposed location; and
means for attaching the tray to the underside of the portable computer, and for allowing movement of the tray, and thus the touch pad, between a location under the computer where the touch pad operating surface is not exposed, and a location from under the computer where the touch pad operating surface is exposed.

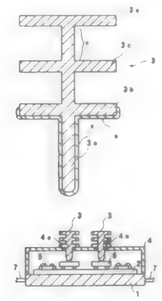
5,339,214
MULTIPLE-FAN MICROPROCESSOR COOLING THROUGH A FINNED HEAT PIPE
Daryl Nelson, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
Filed Feb. 12, 1993, Ser. No. 16,843
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—695 8 Claims



5. A computer assembly, comprising:
a chassis having a baseplate and a back wall;
a first fan attached to said back wall, said first fan being adapted to generate a stream of air;
a heat sink that is coupled to said chassis and has a plurality of fins that are adjacent to said first fan such that said stream of air flows across said fins;
a mounting plated coupled to said chassis, said mounting plate having a first side and an opposite second side;
a first electronic package mounted to said first side of said mounting plate, said first electronic package being capable of generating heat;
a heat pipe mounted to said second side of said mounting plate, said heat pipe being adapted to transfer heat from said first electronic package to said heat sink.

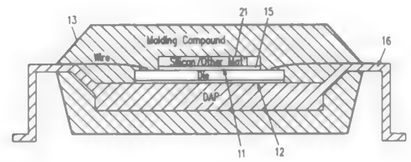
5,339,215
HEAT SINK, METHOD OF MANUFACTURING THE SAME, AND DEVICE OF MANUFACTURING THE SAME
Masanori Nishiguchi, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jul. 7, 1992, Ser. No. 909,707
Claims priority, application Japan, Jul. 12, 1991, 3-172731
Int. Cl.[5] H01L 23/36
U.S. Cl. 361—704 18 Claims

1. A heat sink assembly comprising:
a semiconductor chip;
a cap hermetically sealing said semiconductor chip;
an absorption portion inserted into an opening formed in said cap hermetically sealing said semiconductor chip, the absorption portion making solid-to-solid contact with the semiconductor chip and having a cross section cut along an upper surface of the cap which is smaller than a cross section of the semiconductor chip cut along the upper surface of the cap, the absorption portion for absorbing the heat generated from the semiconductor chip;
a heat dissipation portion connected to the absorption portion and exposed to the outside of the cap, for dissipating



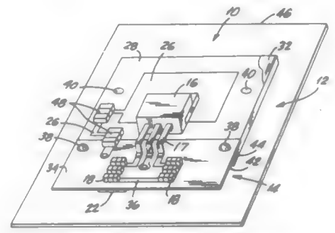
the heat absorbed by the absorption portion from the semiconductor chip; and
a contact surface arranged between the absorption portion and the heat dissipation portion and fixed on the upper surface of the cap, the contact surface being coated with an adhesive material.

5,339,216
DEVICE AND METHOD FOR REDUCING THERMAL CYCLING IN A SEMICONDUCTOR PACKAGE
Peng-Cheng Lin, Cupertino, and Hem P. Takiar, Fremont, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Mar. 2, 1993, Ser. No. 25,296
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—707 9 Claims



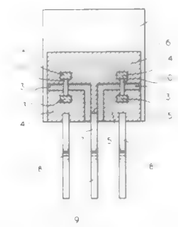
1. In a semiconductor package containing at least one electrically-functional die having an active side to which a plurality of wires is attached, an arrangement comprising a die attachment pad on a top of which is said electrically-functional die, and a non-electrically functional, thermally conductive and substantially rigid die having a common boundary with the active side of the electrically-functional die in a thermally transferable and physically reinforcing position such that, said non-electrically functional die reduces thermal stresses on said electrically-functional die and re-enforces the strength of said electrically-functional die, wherein said wires of the electrically-functional die are disposed beyond the common boundary of said non-electrically functional die and said electrically-functional die.

5,339,217
COMPOSITE PRINTED CIRCUIT BOARD AND MANUFACTURING METHOD THEREOF
Isaac Cohen, Dix Hills, and William Svoronos, Hauppauge, both of N.Y., assignors to Lambda Electronics, Inc., Melville, N.Y.
Filed Apr. 20, 1993, Ser. No. 50,508
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—707 18 Claims



1. A composite printed circuit board comprising:
a metal substrate printed circuit section having,
a first layer of a thermally conductive metal for providing high thermal conductivity,
a second layer made of a thermally conductive and electrically insulative material disposed adjacently to said first layer, said second layer having an upper surface upon which electrically conductive wiring may be disposed; and
an insulator substrate printed circuit board section forming an integral mounting surface with said metal substrate printed circuit section, said insulator substrate printed circuit section further comprising,
a first layer of insulative material, and
a second layer of a metallic foil disposed adjacently to at least one side of said first layer of insulative material for forming a conductive wiring layout.

5,339,218
SURFACE MOUNT DEVICE
Robert Veeck, Woodland Hills, Calif., assignor to Microsemi Corporation, Santa Ana, Calif.
Filed May 20, 1993, Ser. No. 63,763
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—707 5 Claims



1. A circuit board assembly comprising a surface-mounted microelectronic device combination, including:
a metallic base member having a layer of electrical insulation bonded thereto;
at least three metallic mounting pads patterned on the surface of said insulation layer;
a first hermetically sealed diode mounted thereon, having one terminal bonded to the first of said pads, and the other terminal bonded to the second of said pads;
a second hermetically sealed diode mounted thereon, having

VOL 1165 ISS 3 AG 16 1994 UMI

one terminal bonded to said second pad, and the other terminal bonded to the third pad; and

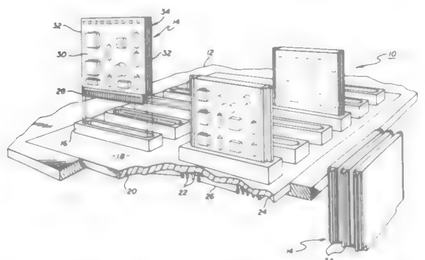
at least three elongated metallic leads, each having a first segment bonded to or integral with one of said pads, respectively, and a second segment extending beyond one edge of said base member, shaped to include a portion thereof substantially in the same plane as the lower surface of said base member, connected to at least one circuit of the circuit board.

5,339,219

MODULATED ELECTRONIC BREADBOARD

Alex Urich, 27402 Via Caudaloso, Mission Viejo, Calif. 92692

Filed Apr. 5, 1993, Ser. No. 43,033
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **14 Claims**



1. A modulated electrical breadboard assembly kit, comprising:

a motherboard having a plurality of pins;

a plurality of wires attached to said pins of said motherboard;

a plurality of connectors mounted to said motherboard and coupled to said pins; and,

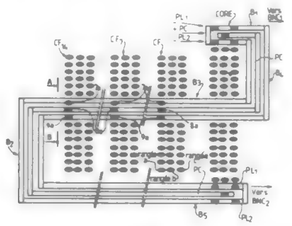
a plurality of individual modules coupled to said connectors, each module providing an electrical function.

5,339,220

HOST STRUCTURE FOR ADAPTORS FOR TERMINALS BELONGING TO A DISTRIBUTED DATA PROCESSING ARCHITECTURE

Antoine Chotard, Villepreux; Jean-Jacques Belloir, Echirolles, and Thierry Icets, Saint-Martin-Le-Vinoux, all of France, assignors to Bull, S.A., Paris, France

PCT No. PCT/FR91/01038, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992, PCT Pub. No. WO92/11744, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 19, 1991, Ser. No. 920,321
Claims priority, application France, Dec. 20, 1990, 90 16032
Int. Cl.[5] H05K *7/14, 5/00*
U.S. Cl. 361—796 **13 Claims**



1. A host structure (P) for terminal adaptors (AD–AD$_{14}$, ADI) belonging to a distributed information processing architecture (ARCH), formed of a plurality of information processing systems (SI, SI$_1$, SIS$_j$, SAD, . . . , SAD$_j$) , each connected by way of communication servers (SERV, SERV$_1$, SERV, SERV$_j$) to a plurality of networks (RE, RE$_1$, . . . , RE$_k$) each system being connected to a plurality of synchronous or asynchronous terminals (T$_1$, T$_2$, T$_3$, T$_{m1}$, T$_{m2}$, T$_{m3}$) by way of at least one of the networks (RE) and terminal adaptors (AD, . . , AD$_m$ . . . , AD$_j$), each of which is connected on the one hand to said network and on the other to at least one terminal (T$_1$-T$_3$, T$_{m1}$-T$_{m3}$, T-T$_{j3}$) by way of a synchronous or asynchronous transmission link, characterized in that said host structure includes:

a first compartment (CAV) containing a plurality of cartridges (**1**, AD–AD$_{14}$, ADI) being parallel to one another, and each containing a board carrying a terminal adaptor having an electronic circuit, a base substrate (**3**) to which the board is fixed, a front face (**4**) and a back face (**5**) perpendicular to the board and to the substrate (**3**), respectively, and including first connection means (**8–10**) for connection to transmission medium links among input-/output terminals associated with an adaptor carried by the board, and second connection means (**14**) for Connection with a specific bus (BCE, BCE$_j$), and a lid (**11**) parallel to the board and to the base substrate (**3**) for closing the cartridge and enclosing the board,

a second compartment (CAR) containing an electrical supply to the boards contained in the first compartment and a ventilation device (VNT) of the structure,

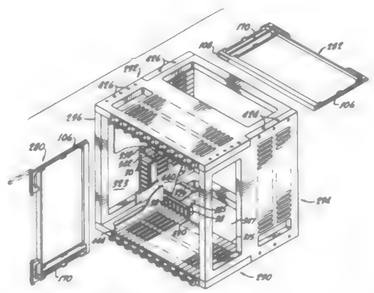
the first and second compartments being separated by a backpanel (FP) carrying a copper bus (BCE, BCE$_j$) specific to a network (RE) to which the boards carrying the terminal adaptors are connected, wherein the specific bus (BCE, BCE$_j$) and the network (RE) are of the Ethernet type, the specific bus including three separate tracks (PC, PL$_1$, PL$_2$), a central track (PC) for transporting information and being equidistant from two lateral tracks (PL$_1$, P$_2$), said lateral tracks serving to provide a sheathing layer for the central track, each of the tracks being formed by a conductor engraved into the copper, the backpanel (FP) including means (CF–CF$_{14}$, CORE) for connecting the boards to the network (RE) and to the bus (BCE), on the one hand, and to the power supply (ALIM), on the other.

5,339,221

PRINTED CIRCUIT BOARD MOUNTING CAGE

Theodore R. Conroy-Waas, Tustin, and Peter W. Moore, Rossmoor, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 31, 1992, Ser. No. 923,201
Int. Cl.[5] H05K *7/14*
U.S. Cl. 361—796 **12 Claims**



1. A mounting cage for supporting a plurality of circuit boards comprising:

first and second pairs of mutually parallel and mutually spaced support panels having front and rear edges,

panels of each of said pairs extending between and fixedly interconnecting panels of the other of said pairs to define a rigid cage having a front opening framed by front edges of panels of said pairs and a rear opening framed by rear edges of said pairs,

panels of each of said pairs each including circuit board receiving guideways with guideways of each pair forming mutually opposed and aligned pairs of guideways, each pair of said guideways being configured and arranged to receive opposite edges of a circuit board, and

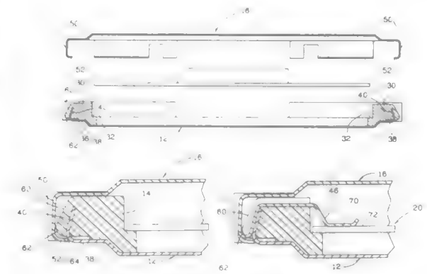
the guideways of said first pair of panels extending from said front edges toward said rear edges, the guideways of said second pair of panels extending from said rear edges thereof toward said front edges, whereby a first group of circuit boards may be slidably inserted into said cage through said front opening, and wherein a second group of circuit boards may be slidably inserted into said cage through said rear opening.

5,339,222

SHIELDED PRINTED CIRCUIT CARD HOLDER

Randy G. Simmons, Winston-Salem; Riley K. Barker, Lexington, and Ronald D. Sizemore, Germantown, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 6, 1993, Ser. No. 43,316
Int. Cl.[5] H05K *9/00*
U.S. Cl. 361—818 **6 Claims**



1. A shielded printed circuit (PC) card holder for receiving a PC card, where at least one end of said card is adapted to be electrically connected to an I/O type connector, said holder comprising a rectangular bottom cover member formed of a conductive material, corner supports integrally molded to said bottom cover member at the respective corners thereof, where each said support includes a lower flange portion to which said bottom cover member is exposed, and a rectangular upper cover member whose periphery includes a downwardly extending flange adapted to engage said lower flange portion in electrical contact with said bottom cover member over a major portion of the periphery thereof, whereby to provide continuous shielding against distortion of data signals between the PC card and said I/O type connector.

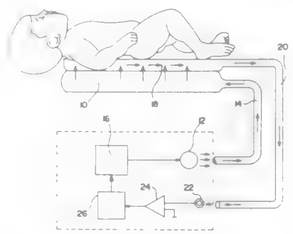
5,339,223

SERVOCONTROL FOR FIBEROPTIC PHOTOTHERAPY PAD

Vladimir Kremenchugsky, Reisterstown, and Anthony Buttitta, Ellicott City, both of Md., assignors to Ohmeda Inc., Liberty Corner, N.J.

Filed Mar. 24, 1993, Ser. No. 36,612
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 **28 Claims**

20. A light detecting and light emitting interwoven fiberoptic pad for use with a light source and a light detector to provide light phototherapy to an infant, said fiberoptic pad adapted to be located in close proximity to the infant, said fiberoptic pad comprising light emitting optical fibers and light collecting optical fibers interwoven together, said light emitting optical fibers having a connector means adapted to receive light radiation from the light source and to emit that received radiation toward the infant, and said light collecting optical



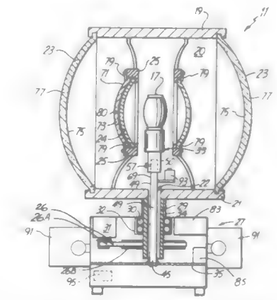
fibers located adjacent the infant to collect representative light emitted by said light emitting optical fibers impinging upon the infant and having a connector means to collect such detected light for transmission therefrom to the light detector.

5,339,224

AIRPORT BEACON

Gary B. Woehler, Crosby, Minn., assignor to Hali-Brite, Inc., Crosby, Minn.

Filed Feb. 11, 1993, Ser. No. 16,787
Int. Cl.[5] F21V *21/30*
U.S. Cl. 362—35 **11 Claims**



1. An airport beacon for use with a source of electrical energy, the beacon comprising:

a stationary housing having an opening;

a rotatable lamp housing including a lens assembly mounted thereto, and a hollow drive shaft fixed to the rotatable lamp housing and aligned with an opening in the rotatable lamp housing, the drive shaft extending through the opening in the stationary housing and into the stationary housing;

bearing means, mounted proximate the opening in the stationary housing and engaging the hollow drive shaft, for rotatably mounting the drive shaft to the stationary housing;

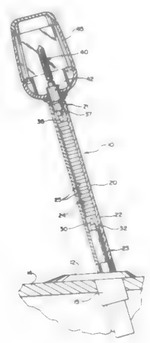
an elongated lamp support extending through the hollow drive shaft and the opening in the stationary housing and having a first end fixedly mounted to the stationary housing and a second end extending through the opening in the rotatable lamp housing and into the rotatable lamp housing;

a high intensity lamp mounted on the second end of the lamp support within the rotatable lamp housing and aligned with the lens assembly, the high intensity lamp being connected to the source of electrical energy by electrical

VOL 1165 ISS 3 AG 16 1994 UMI

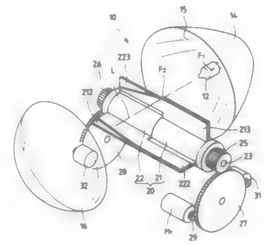
leads extending from the high intensity lamp, through the hollow drive shaft to the source of electrical energy;
a drive motor, coupled to the stationary housing; and
a timing assembly coupled to the drive motor and the hollow drive shaft for rotating the hollow drive shaft around the elongated lamp support such that the rotatable lamp housing and lens assembly are rotated around the high intensity lamp.

5,339,225
ILLUMINATED WAND
Ron Wiggerman, 100 Ronda Rd., McHenry, Ill. 60050
Filed Feb. 8, 1993, Ser. No. 14,641
Int. Cl.[5] B63B *45/00*
U.S. Cl. 362—61 **2 Claims**



1. An illuminated wand for use as a boat stern running light comprising,
a tubular wand having an elongate configuration with a top end and a lower end,
said wand being formed of a material permitting light to radiate therefrom,
said wand provided with a first light source positioned adjacent the lower end of said wand and adapted to emit light in an upward direction, and a second light source positioned adjacent the top end thereof, and adapted to emit light in a downward direction,
a third light source mounted at the top end of said wand and adapted to emit light in an upward and outward direction therefrom,
said wand having a substantially smooth outer wall and having an inner wall provided with a light diffractive surface,
said lower end of said wand having connection means associated therewith for permitting the connection of said wand to a power source for providing power to said first, second and third light sources,
whereby said wand may be mounted onto a boat stern and function as a boat stern running light, having an upper illuminated light, and wherein the length of said wand is further illuminated to form a running light illuminated substantially from top to bottom.

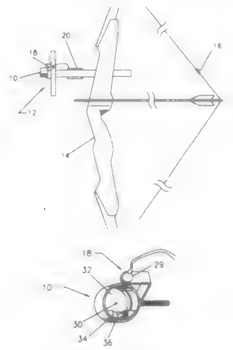
5,339,226
PROJECTION HEAD LAMP FOR CARS
Masaaki Ishikawa, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Jun. 1, 1993, Ser. No. 69,358
Claims priority, application Japan, Jun. 3, 1992, 4-142361
Int. Cl.[5] B60Q *1/02, 1/04*
U.S. Cl. 362—61 **8 Claims**



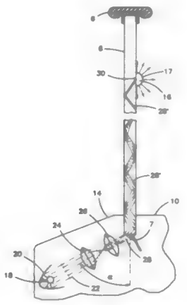
1. A projection type headlamp, comprising:
a substantially oval reflector;
a light source disposed at a first focal point of said reflector;
a projection lens disposed in front of said reflector; and
shade means for cutting at a predetermined position a part of light beam emitted from said light source and reflected by said reflector to form a desired light distribution pattern, said shade means being provided between said reflector and said projection lens in the vicinity of a second focal point of said reflector and substantially at a focus point of said projection lens, said shade means via motor and gear means rotating along a horizontal axis thereof which is perpendicular to an axis of said light source, said shade means comprising:
a first shade member having at least two plates spaced apart from each other by a predetermined angle; and
a second shade member having at least two plates spaced apart from each other by a predetermined angle,
said blades of said first and second shade members successively positioning at said predetermined position during the rotation of said shade means, whereby said part of light beam reflected by said reflector always cutting generally by one of said plates.

5,339,227
ILLUMINATOR FOR ARCHERY AIMING SCOPE
Kenneth C. Jones, 7212 Ludwood Ct., Alexandria, Va. 22306
Filed Aug. 4, 1993, Ser. No. 101,835
Int. Cl.[5] F21V *33/00;* **F41G** *1/00*
U.S. Cl. 362—109 **3 Claims**

1. An illuminating device for attachment to an archery sighting scope comprising a light source, a focusing means for said light source, a support means for said light source and focusing means, and an energy source connected to said light source, the improvement wherein said illuminating device simultaneously brightly illuminates the aiming mark of said sighting scope, illuminates the level of said sighting scope, and provides an unobstructed view through said sighting scope by having said light source, said focusing means, and said support means located so as to illuminate the aiming mark and level from a position outside the viewing area of said sighting scope.

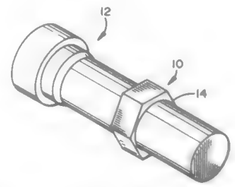


5,339,228
ESCALACOR OR MOVING WALKWAY BALUSTRADE ILLUMINATION
Frank Baethge; Lutz Klein, and Ali Naghi, all of Hanover, Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.
Filed Oct. 13, 1993, Ser. No. 137,451
Int. Cl.[5] F21S *3/14*
U.S. Cl. 362—146 **7 Claims**



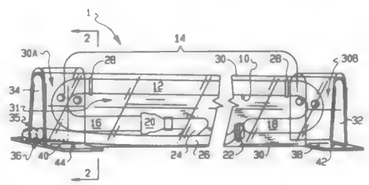
1. An illumination system for an escalator or moving walkway, said system comprising:
a) a glass balustrade;
b) an inner and outer deck assembly flanking a lower end portion of said glass balustrade with a bottom surface of said balustrade being disposed within said deck assembly;
c) a light source disposed in said deck assembly in close proximity with said bottom surface of said balustrade;
d) light gathering means adjacent to said light source and operable to provide a parallel ray light beam and direct said light beam toward said bottom surface of said balustrade at an angle of incidence which results in light from said light beam being refracted into the interior of said glass balustrade;
e) a light-refracting rail disposed on a surface of said glass balustrade at a location spaced upwardly away from said bottom surface of said balustrade; and
f) said glass balustrade providing means for reflecting said light beam internally of said glass balustrade, and refracting said light beam into said light-refracting rail to differentially illuminate said rail on said glass balustrade.

5,339,229
FLASHLIGHT ANTI-ROLL AND POSITIONING DEVICE
John J. Snyder, 25 Hall Rd., Greenville, S.C. 29609
Filed Aug. 30, 1993, Ser. No. 113,180
Int. Cl.[5] F21L *15/18*
U.S. Cl. 362—208 **9 Claims**



1. A positioning device for a flashlight and the like having a substantially cylindrical body portion, said positioning device comprising:
an annular member having an interior opening passing therethrough;
said interior opening being dimensioned to at least partially encircle the substantially cylindrical body of the flashlight;
said annular member having an exterior surface opposing said interior opening and said annular member comprising a magnetized plastic material; and
at least one substantially planar surface provided on said exterior surface of said annular member.

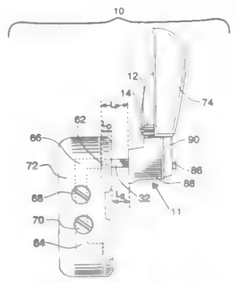
5,339,230
ENCAPSULATED CHARGED GAS LIGHT APPARATUS
Philip E. Devorris, 305 Fairways, Hollidaysburg, Pa. 16648
Filed Sep. 1, 1993, Ser. No. 115,940
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—216 **21 Claims**



1. A lighting apparatus, comprising:
an elongated tubular housing member having a front and rear, and first and second open ends;
a charged gas light source configured and dimensioned to be snugly received within said tubular member;
at least one conducting element for connecting said light source to a power source, said element passing through one said open end and being connected to said light source at a point spaced from both said open ends; and
first and second endcap members removably secured to and sealing said open ends, wherein one said endcap member defines an operative passage for said conducting element therethrough.

VOL 1165 ISS 3 AUG 16 1994 UMI

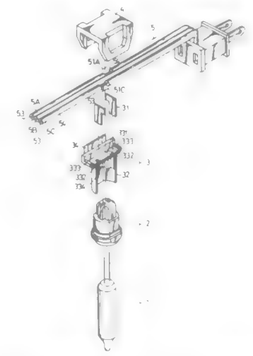
5,339,231
SAFETY NIGHT LIGHT SYSTEM AND METHOD OF MANUFACTURE THEREOF
Veronica Parsolano, Floral Park, N.Y., and James E. Meehan, Ste. Veronique, Canada, assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Nov. 10, 1992, Ser. No. 973,909
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—226 **11 Claims**



1. A night light comprising: a housing having a front wall and a rear wall;
a cover integral with said housing
light source receiving means for receiving a light source and mounted within said housing;
electrical conductors mounted within an electrical outlet;
shockproof safety means for establishing an electrical connection between said light source receiving means and said electrical conductors mounted within said electrical outlet;
said shockproof safety means comprising a first and a second blade, each protruding from said rear wall of said housing and having a free end and capable of being inserted into said electrical outlet, said first and second blades when so inserted each engaging a different one of said electrical conductors, the surfaces of said first and second blades adjacent their respective free ends barely mating with and establishing an electrical connection with its associated electrical conductor mounted within said outlet wherein the spacing between a surface of said electrical outlet and the rear wall of said housing is no less than $\frac{1}{8}$ inch and no greater than $\frac{3}{4}$ inch.

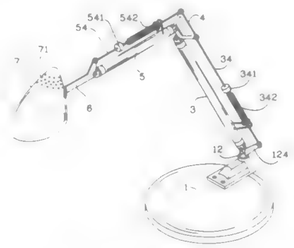
5,339,232
MINIATURE LIGHT SET
Te H. Lin, No. 34, alley 39, Lane 452, Pei-Da Rd., Hsin-chu city, Taiwan
Filed Jan. 12, 1993, Ser. No. 3,454
Int. Cl.[5] F21V *21/00*
U.S. Cl. 362—391 **20 Claims**

1. In a miniature light set which includes a plurality of miniature light lamps, lamp base, lampholder and cord, the improvement comprising:
a wireway located in the upper part of the lampholder, said wireway comprising
an elongate central channel formed by a central base and two upstanding walls mounted to the sides of said base,
a transverse, upstanding pressing bar mounted at each end of said base,
two longitudinally spaced apart cavity recesses located between said pressing bars, and
said wireway further including a conductor plate mounted in each said recess; and
a snap-on cover with press bars and press bits projecting downwardly underneath said cover, said press bars extending into said wireway channel between said pressing bars when said cover is mounted on said wireway such that the ends of said press bars extend to a level that is below the top end of the pressing bars, the underside of said press bit having a cavity recess therein which is aligned with said conductor plates, but is spaced therefrom when said cover is mounted on said wireway;



said cord being located in said wireway channel and being comprised of a plurality of wires, each said wire having a central conductor surrounded by a sheath of insulation, and a first and a second of said wires having a portion of said insulation stripped off at a location corresponding to the location of said conductor plates.

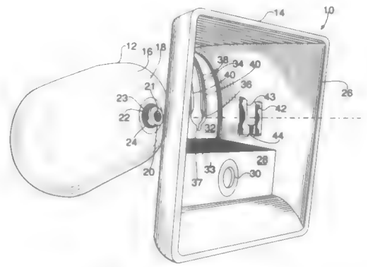
5,339,233
LAMP ASSEMBLY
Roger Yang, 2F No. 21, Pao-Ching St., sung Shan, Taipei, Taiwan
Filed May 12, 1993, Ser. No. 61,585
Int. Cl.[5] F21V *21/18*
U.S. Cl. 362—402 **3 Claims**



1. A lamp assembly comprising:
a lamp stand;
an axle holder detachably fastened to said lamp stand by screws, said axle holder having an axle hole in a top surface;
a swivel device having a stub bottom shaft revolvably fastened to said axle hole on said axle holder, and an arched upright support, said arched upright support comprising a bevel frame obliquely extended upwards at one side;
a lamp shade having holes for dissipation of heat and a socket mount to hold a lamp socket;
a mid-angle trapezoidal open frame having a pin hole on each corner thereof;
a lower arm having a first forked connector at one end pivotably connected to said arched upright support and a second forked connector at an opposite end pivotably

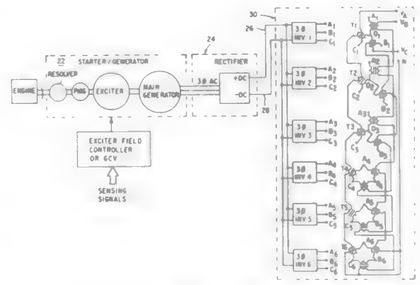
connected to a first of said pin holes of said mid-angle trapezoidal open frame;
a lower wiring tube having a bottom end pivotably connected to said bevel frame of said swivel device by a connecting member and a top end pivotably connected to a second of said pin holes of said mid-angle trapezoidal open frame;
a first retaining device to adjustably hold said lower arm and said lower wiring tube to said swivel device in a desired angle, said first retaining device comprising a stop loop fastened to said lower arm around said lower wiring tube, a spring coil sleeved on said lower wiring tube and stopped between a fixed ring and a movable ring on said lower wiring tube, the movable ring being stopped at the stop loop;
a triple-terminal connecting frame having a first terminal, a second terminal, and a third terminal, said third terminal being fixed to said lamp shade;
an upper arm having a first forked connector at one end pivotably connected to a fourth of said pin holes of said mid-angle trapezoidal open frame and a second forked connector pivotably connected to said first terminal of said triple-terminal connecting frame;
an upper wiring tube having a bottom end pivotably connected to a third of said pin holes of said mid-angle trapezoidal open frame by a connecting member and a top end pivotably connected to said second terminal of said triple-terminal connecting frame by a connecting member; and
a second retaining device to adjustably hold said upper arm and said upper wiring tube to said lower arm and said lower wiring tube in a desired angle, said second retaining device comprising a stop loop fastened to said upper arm around said upper wiring tube, a spring coil sleeved on said upper wiring tube and stopped between a fixed ring and a movable ring on said second retaining device being stopped at the stop loop on said upper arm.

5,339,234
LIGHTING FIXTURE WITH RATCHETED SWIVEL SOCKET SLIDING WITHIN SLOT
Thomas Russello, Howell, and Richard Sangiamo, Linden, both of N.J., assignors to The Genlyte Group Incorporated, Secaucus, N.J.
Filed Apr. 23, 1993, Ser. No. 52,483
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—419 **5 Claims**



1. A lighting fixture comprising:
a base means including a concave-shaped arcuate portion;
a socket assembly means, including means for engaging a bulb, means for receiving electrical power, and a shroud including a proximal portion with a convex-shaped arcuate portion complementary to said concave-shaped arcuate portion;
means for engaging said base means to said socket assembly means, including means for ratchedly rotating said socket assembly, and means for adjusting an azimuthal orientation of said socket assembly by sliding said convex-shaped arcuate portion against said concave-shaped arcuate portion;
said means for engaging said base means to said socket assembly means including a male element extending from said convex-shaped arcuate portion of said socket assembly means engaged by a slot in said concave-shaped arcuate portion of said base means;
said male element having an outer diameter and laterally opposed parallel notches separated by a distance less than said outer diameter; and
said slot including a first portion of a width substantially equal to said outer diameter of said male element, and a second portion of a width substantially equal to said distance separating said laterally opposed parallel notches.

5,339,235
FAULT COMPENSATING MULTI-STEP WAVE INVERTER
Sampat Shekhawat, Tinton Falls; Robert C. Eckenfelder, Point Pleasant; John J. Tumpey, Oakhurst; Alfred W. Wohlberg, Neptune, and Kapal Gandikota, Atlantic Highlands, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.
Filed May 11, 1993, Ser. No. 60,286
Int. Cl.[5] H02M *1/12*
U.S. Cl. 363—43 **14 Claims**



1. An multi-step, alternating current power supply having a failed-operation redundancy safety system comprising:
a. an inverter for converting DC voltage to AC voltage, said inverter comprising:
i. a multiple pair of inverter bridges, with each bridge having at least one pair of unidirectional conducting semiconductor switches, wherein an equal number of said switches are in circuit connection with a first DC power rail and the remaining equal number of said switches are in circuit connection with a second DC power rail;
ii. triggering means to properly sequence the firing of each switch to-provide at least one output waveform from each inverter bridge, wherein each waveform is phase shifted;
iii. a first transformer and a second transformer in circuit connection with each pair of inverter bridges, said first and second transformer each having a primary and a secondary winding, said primary windings being in circuit connection with the output of each associated pair of said inverting bridges, said primary winding of said first transformer being in wye-connection, and said primary winding of said second transformer being in delta-connection; and
iv. said secondary windings being magnetically coupled with associated said primary windings, said secondary windings connected in a series-add connection,
whereby a phase shift between each inverter bridge is such that

VOL 1165 ISS 3 AG 16 1994 UMI

said AC voltage waveform consists of at least 24 steps per cycle;

wherein the compensation of said multi-step AC power supply during a fault condition comprises:

b. sensing means to detect a short circuit within said semiconductor switches;

c. identifying means to identify a short-circuited switch in a faulted inverter bridge;

d. disabling means to disable the switches within said faulted inverter bridge complementary to said short-circuited switch;

e. enabling means to enable the switches within said faulted inverter in circuit connection with the same DC power rail as said short-circuited switch;

f. adjusting means to adjust the firing sequence of the remaining semiconductors not in circuit connection with said faulted inverter bridge wherein said phase shift between each active inverter bridge increases;

whereby said AC voltage waveform consists of at least 18 steps per cycle.

5,339,236

CHARGE PUMP CIRCUIT FOR INTERMEDIATE VOLTAGE BETWEEN POWER SUPPLY VOLTAGE AND ITS DOUBLE VOLTAGE

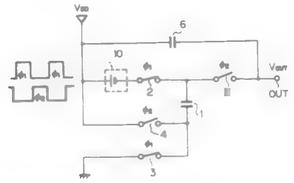
Akio Tamagawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,809

Claims priority, application Japan, Mar. 23, 1992, 4-064416

Int. Cl.[5] H02M *3/07*

U.S. Cl. 363—59 **24 Claims**



1. A charge pump circuit comprising:

first and second power supply terminals;

an output terminal;

first and second switch means connected to said first and second power supply terminals, respectively;

a charge supplying capacitor having a first terminal connected via said first switch means to said first power supply terminal and a second terminal connected via said second switch means to said second power supply terminal;

a constant-voltage means interposed in a circuit formed by said first and second switch means and said charge supplying capacitor between said first and second power supply terminals;

a third switch means connected between said first power supply terminal and the second terminal of said charge supplying capacitor;

a fourth switch means connected between the first terminal of said charge supplying capacitor and said output terminal; and

a smoothing capacitor serially connected between one of said first and second power supply terminals and said output terminal,

whereby closing of said first and second switch means and opening of said third and fourth switch means generates a voltage across said charge supplying capacitor and subsequently, opening of said first and second switch means and closing of said third and fourth switch means transfers the voltage across said charge supplying capacitor plus a voltage at said first terminal to said output terminal, wherein said constant voltage means is interposed between said first switch means and the first terminal of said charge supplying capacitor.

5,339,237

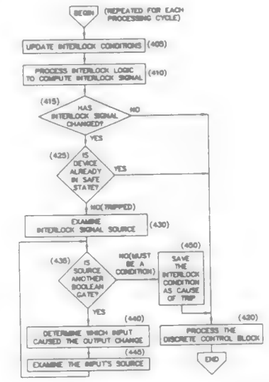
METHOD FOR INTERLOCK TRACING FOR DISCRETE DEVICES IN A PROCESS CONTROL SYSTEM

Pankaj H. Mody, Maple Glen; Richard P. Himmer, Blue Bell, and John J. Herman, Ft. Washington, all of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 1, 1993, Ser. No. 41,257

Int. Cl.[5] G05B *9/02*

U.S. Cl. 364—184 **6 Claims**



1. In a process control system, said process control system including devices for controlling a process, and further wherein there is associated with predetermined ones of said devices an interlock system which includes interlock logic for defining an interlock strategy, each interlock logic of each of the predetermined devices providing an interlock signal to a function logic block which represents the device in the process control system, and further wherein a plurality of logic signals indicate interlock conditions, the logic signals including Boolean signals directly from the process or derived from signals from the process, said interlock conditions being combined by the interlock logic thereby generating the interlock system, a method for tracing back through the interlock logic to identify a predetermined condition which causes an interlock trip condition, said method comprising the steps of:

a) periodically updating the status of the predetermined conditions;

b) determining a new status of the interlock signal from the updated status of the predetermining conditions;

c) remembering the updated status of the predetermined conditions;

d) determining if the interlock signal has changed state;

e) if the interlock signal has changed state, determining if the device is already in a safe state;

f) if the device is already in a safe state,

i) exiting to step (h); otherwise

ii) examining the source of the interlock signal from the logic signals until the source is determined to be a predetermined condition signal;

g) saving the predetermined condition signal as the cause of the interlock trip; and

h) exiting from the method.

5,339,238

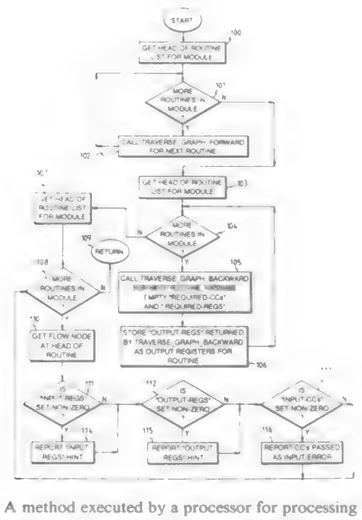
REGISTER USAGE TRACKING IN TRANSLATING CODE FOR DIFFERENT MACHINE ARCHITECTURES BY FORWARD AND REVERSE TRACING THROUGH THE PROGRAM FLOW GRAPH

Thomas R. Benson, 14 Summer La., Hollis, N.H. 03049

Filed Mar. 7, 1991, Ser. No. 666,084

Int. Cl.[5] G06F *9/45*

U.S. Cl. 395—700 **19 Claims**



13. A method executed by a processor for processing a first computer code in a compiler or code translator, comprising the steps of:

generating a flow graph in an intermediate language from said first computer code, the flow graph being composed of blocks, and the blocks being composed of intermediate-language elements, where each element represents a single expression in said first computer code, and where each block represents a sequence of one or more elements;

tracing through each block of said flow graph in a forward direction to detect reference to registers and to create an output-register set, and in each said block:

if a reference to a register is a read from a register already written to in the current block, removing such register from the output-register set,

if a reference to a register is a write, adding such register to the output-register set,

if a reference to a register is a write to the register, recording such register in a written-register set for this block,

if a reference to a register is a read from the register not yet written to in the current block, recording such register in an input-register set for this block,

passing said output-register set to the succeeding block,

tracing through each block of said flow graph in a reverse direction, and for each said block passing the input-register set to a predecessor block, and in each predecessor block updating the input-register set to include registers in the input-register set passed to this predecessor block by a successor block and not in the written-register set for this predecessor block,

upon completing said step of tracing for all of said blocks, reporting by visual means to a user of said processor the content of said output-register set.

5,339,239

INFORMATION COLLECTING AND/OR SERVICE FURNISHING SYSTEMS BY WHICH A USER CAN REQUEST INFORMATION FROM A CENTRAL DATA BASE USING A PORTABLE PERSONAL TERMINAL AND AN ACCESS TERMINAL

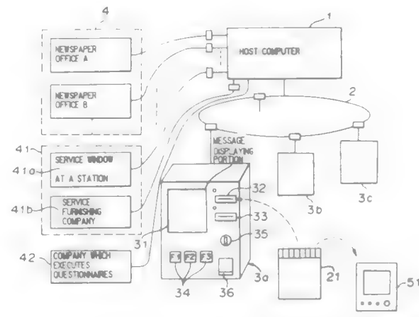
Toshiyuki Manabe; Osamu Murakami, both of Tokyo; Keiichi Takeuchi, Hiratsuka, and Junichi Matsuura, Tokyo, all of Japan, assignors to Mitsubishi Plastics Industries Limited, Tokyo; Hudson Soft Co., Ltd., Sapporo and JAL Data Communication & Systems Co., Ltd., Tokyo, all of Japan

Filed Oct. 11, 1990, Ser. No. 596,707

Claims priority, application Japan, Oct. 13, 1989, 1-265087; Nov. 30, 1989, 1-311551; Nov. 30, 1989, 1-311552; May 22, 1990, 2-131924; Jun. 7, 1990, 2-60524[U]

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—401 **8 Claims**



1. An information collecting system for collecting information corresponding to a demand item by accessing a data base, having a communication interface, which stores information corresponding to said demand item, comprising:

an IC memory card, including:

a memory means;

input and output means for receiving and outputting data information, respectively;

a menu area for storing one or more menus, each of which includes a listing of information which can be accessed by a user from said data base; and

a data base for storing said demand item and also data obtained from said data base;

an access terminal, having a communication interface, for connection to said data base through a network and a host computer, including:

means for storing one or more menus, each of which includes a listing of information which can be accessed by a user from said data base;

a menu checking means for comparing said one or more menus stored on said IC memory card with said one or more menus stored in said access terminal; and

means for recording, onto said menu area of said IC memory card, any menus which exist in said access terminal and are not stored on said IC memory card;

a portable personal terminal including a menu displaying means for displaying said one or more menus stored on said IC memory card from which the user can select desired data from said data base corresponding to said demand item, and also for displaying said data obtained from said data base which has been stored in the data area of said IC memory card; and

means for recording said demand item onto the IC memory card.

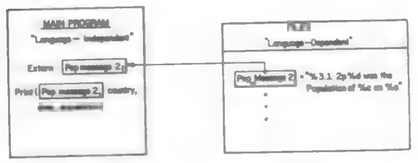
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,240

SYSTEM AND METHOD FOR CONSTRUCTION OF LANGUAGE INDEPENDENT PRINT FORMAT STATEMENTS THROUGH USE OF DATA STRUCTURES FOR ARBITRARY ORDERING OF PRINT PARAMETERS

Arthur J. Beaverson, Maynard, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 724,573
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—419.14 28 Claims



1. A system for controlling the printing of a message having a plurality of strings of text and a plurality of parameter values disposed therein, comprising:

means for designating in a print statement the locations of the parameter values within the message;

means for formatting a printing of the parameter values at the designated locations within the message; and

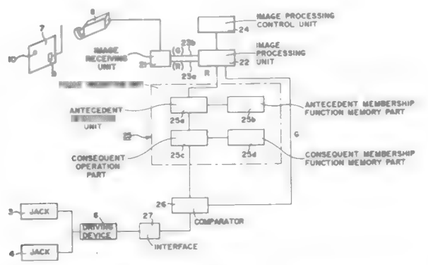
means for reordering the parameter values within the message after the locations of the parameter values have been designated in the print statement without altering the locations of the parameter said print statement.

5,339,241

METHOD AND SYSTEM FOR CONTROLLING A TRAVELLING BODY SO AS TO MOVE FORWARD ALONG THE PREDETERMINED ROUTE OF THE MOVEMENT OF TRAVELLING BODY

Isao Fujimori, Higashi-murayama; Shigeru Matsumori, Tokyo; Takashi Kano, Chofu, and Toshio Sumi, Kodaira, all of Japan, assignors to Kabushiki Kaisha Isekikaihatsu Koki, Tokyo, Japan

Filed Jun. 24, 1991, Ser. No. 719,941
Claims priority, application Japan, Jul. 13, 1990, 2-184133
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—424.02 6 Claims



1. A control system for controlling a travelling body having a main body and steering means connected to the main body, along a predetermined route, said system comprising:

an optical pointer indicating the displacement of the steering means relative to the main body;

a light source emitting a visible light beam extending along the predetermined route;

an indicator positioned within the main body and on which said optical pointer and the visible light beam are projected;

color image pickup means facing said indicator;

color image receiving means for displaying an image monitored by said color image pickup means;

image processing means, connected to said color image receiving means, for determining the coordinates of said optical pointer and the visible light beam projected on said indicator;

fuzzy operation means for calculating a manipulated value based on predetermined membership functions of antecedent and consequent operation units corresponding to the coordinates of the visible light beam calculated by said image processing means;

comparator means for comparing the manipulated value calculated by said fuzzy operation means with the coordinates of said optical pointer calculated by said image processing means and outputting as a controlled value a difference between the manipulated value and the coordinates of said optical pointer; and

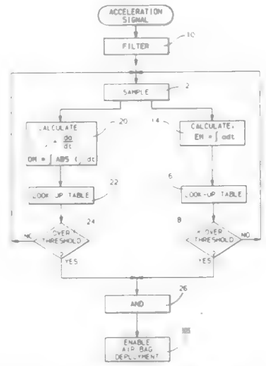
driving means for driving the steering means according to the controlled value outputted from said comparator means into said driving means.

5,339,242

METHOD AND APPARATUS FOR VEHICLE CRASH DISCRIMINATION BASED ON OSCILLATION AND ENERGY CONTENT

John D. Reid, Troy, and Jack L. Jensen, Highland, both of Mich., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Nov. 26, 1991, Ser. No. 797,850
Int. Cl.[5] B60R *21/32*
U.S. Cl. 364—424.05 14 Claims



1. A method of controlling deployment of an inflatable restraint system for a motor vehicle comprising the steps of:

obtaining vehicle acceleration data, detecting an onset of a crash event at periodic intervals of time after said onset of the crash event, computing a change in vehicle velocity from said acceleration data, selecting a time dependent velocity boundary value from a boundary curve in a velocity vs. time domain which bounds velocity vs. time test data of a plurality of non-deployment events, and comparing said change in vehicle velocity with said velocity boundary value,

at periodic intervals of time after said onset of the crash event, computing an oscillation value corresponding to an oscillation content of the acceleration data, selecting a time dependent oscillation boundary value from a boundary curve in an oscillation vs. time domain which bounds oscillation vs. time test data of at least one non-deployment event, and comparing said oscillation value with said oscillation boundary value, and

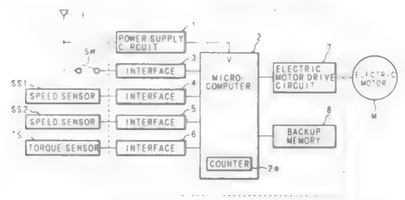
deploying the restraint system when said change in vehicle velocity exceeds said velocity boundary value and said oscillation value exceeds said oscillation boundary value.

5,339,243

POWER STEERING APPARATUS

Hirofumi Matsuoka, Souraku, and Hidetoshi Tabuse, Ikoma, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Aug. 26, 1992, Ser. No. 935,596
Claims priority, application Japan, Sep. 13, 1991, 3-082516[U]
Int. Cl.[5] B62D *5/04*
U.S. Cl. 364—424.05 6 Claims



1. A power steering apparatus for a vehicle, comprising:

a torque sensor for detecting steering force;

an actuator for assisting the steering force according to the torque detected by said torque sensor;

a first vehicle speed sensor for detecting a vehicle speed value;

a second vehicle speed sensor for detecting a vehicle speed value; and

control means for controlling said actuator according to the vehicle speed values detected by said first and second vehicle speed sensors;

said control means including:

means for comparing the vehicle speed value detected by said first vehicle speed sensor with the vehicle speed value detected by said second vehicle speed sensor;

means for detecting the difference in magnitude between the two vehicle speed values detected by said first and second vehicle speed sensors; and

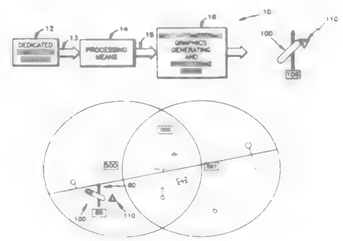
means for integrating the detected vehicle speed value of larger magnitude to produce a control vehicle speed value for control of said actuator when said detected difference is greater than a predetermined value.

5,339,244

INTEGRATED TIME/LIMIT EXCEEDANCE CUE SYSTEM

Lorren Stiles, Jr., Roxbury; Nicholas D. Lappos, Milford, and Gregory P. Wright, Ansonia, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 13, 1992, Ser. No. 929,323
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—424.06 15 Claims



1. An integrated time/limit exceedance cue system for alerting a pilot that a specific aircraft subsystem has exceeded an established operating range and is operating in a time critical exceedance condition defined by a predetermined time limit, comprising:

sensor subsystem means for monitoring operation of aircraft subsystems and providing parameter signals representing operating conditions of the aircraft subsystems;

processing means for comparing said parameter signals against stored threshold values defining limits for established operating ranges of the aircraft subsystems and for generating an activation signal indicative of exceedance of the established operating range by the specific aircraft subsystem and operation thereof in the time critical exceedance condition; and

graphics generating/processing means operative in response to said activation signal for generating a visual cue, said visual cue being a symbolic image defined by an outline having a predetermined length and wherein said outline defines a void region, said symbolic image alerting the pilot that the specific aircraft subsystem has exceeded the established operating image and is operating in the time critical exceedance condition;

said graphics generating/processing means being further operative for continually modifying said visual cue by filling in said void region thereof in proportion to said predetermined length of said outline and elapsed time of operation of the specific aircraft subsystem in the time critical exceedance condition with respect to the predetermined time limit thereof to provide the pilot with a time varying visual cue wherein said filled-in void region of said outline is a relative visual indication of the elapsed time of operation of the specific aircraft subsystem within the time critical exceedance condition in relative proportion to the predetermined time limit; and wherein

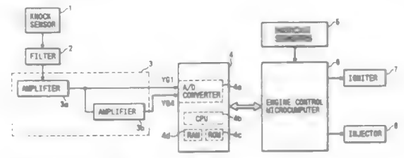
said void region which is unfilled provides a relative visual indication to the pilot of time remaining in the predetermined time limit.

5,339,245

SYSTEM FOR DETECTING COMBUSTION STATE IN INTERNAL COMBUSTION ENGINE

Yoshihiko Hirata, Oobu, and Koji Sakakibara, Hekinan, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 23, 1991, Ser. No. 812,109
Claims priority, application Japan, Dec. 26, 1990, 2-406994
Int. Cl.[5] F02P *5/14*; G06F *15/48*; G06G *7/70*
U.S. Cl. 364—431.08 2 Claims



1. A combustion state detecting system for an internal combustion engine, comprising:

combustion state detecting means for detecting a combustion state of said engine and for outputting a continuous detection signal being indicative thereof, where said detection signal includes a plurality of detection signal portions per combustion cycle;

amplifying means for amplifying said detection signal with one of a plurality of selectable different amplification factors;

amplification-factor switching means for selecting an amplification factor for said amplifying means on the basis of a value of a current portion of said detection signal within a continuous time period of a combustion cycle of said

VOL 1165 ISS 3 AG 16 1994 UMI

engine, where said amplifying means uses said amplification factor corresponding to said current portion of said detection signal within a current combustion cycle for amplifying a next portion of said detection signal within said current combustion cycle, thereby changing said amplification factor more than once per combustion cycle;

combustion state decision means for performing an analog-to-digital conversion on each of said amplified portions of said detection signal, thereby obtaining a local maximum value corresponding to each of said amplified portions, and for deciding about the combustion state of said engine on the basis of a comparison between each of said local maximum values within said continuous time period and a threshold value,

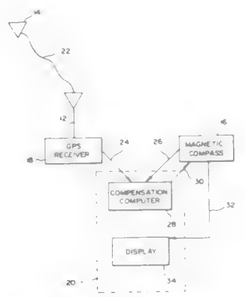
wherein said local maximum value is compared with said first and second predetermined values so that a gain for the next analog-to-digital conversion is decreased when said local maximum value is greater than said first predetermined value in a high-gain state and increased when said local maximum value is smaller than said second predetermined value in a gain-decreased state, said second predetermined value being set to be smaller than said first predetermined value, and the analog-to-digital conversion value and information relating to the gain are stored and used for calculation.

5,339,246

APPARATUS FOR CORRECTING VEHICULAR COMPASS HEADING WITH THE AID OF THE GLOBAL POSITIONING SYSTEM

Wei-Wen Kao, Fremont, Calif., assignor to Zexel Corporation Diahatsu-Nissan, Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,651
Int. Cl.[5] G01C *17/38*; G06F *15/50*
U.S. Cl. 364—457 **4 Claims**



1. A vehicle navigation system comprising:

a GPS receiver;

means for transforming outputs of said GPS receiver into a true heading;

means for indicating as magnetic heading and for transmitting said magnetic heading to a computing means;

said computing means, responsive to at least two values of said magnetic heading, for producing a compensation factor that, when used to compensate said magnetic heading, adjusts said magnetic heading to correspond to said true heading; and

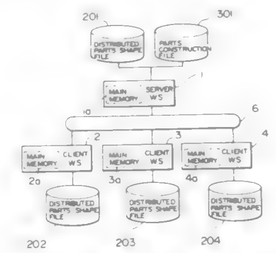
said computing means including means for normalizing said two values of said magnetic heading.

5,339,247

DISTRIBUTED DATA CAD SYSTEM

Shigeki Kirihara, Kawasaki; Shigeru Arai, Yokohama, and Koichi Mitsuda, Kamakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,316
Claims priority, application Japan, Apr. 19, 1991, 3-088113
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **16 Claims**



1. A computer aided design (CAD) system using distributed data, comprising:

a server work station (WS) and a plurality of client WSs which are mutually connected;

a parts construction file which is connected to said server WS and in which construction information indicative of a hierarchy relation among a plurality of parts constructing an assembly, identifiers corresponding to said parts, and parts shape names corresponding to said parts is stored;

a plurality of parts shape files which are respectively connected to said plurality of client WSs and distributively store shape data of said plurality of parts constructing said assembly; and

a parts shape management table which is provided for each of said client WSs and indicates corresponding relation between said plurality of parts shape names and their storing destinations in said parts shape files,

wherein in response to the identifier which has been transmitted from arbitrary one of said plurality of client WSs and which designates the assembly whose shape should be displayed on a display device, said server WS searches the parts construction file and obtains the parts shape names corresponding to a plurality of parts constructing the designated assembly corresponding to said identifier and transmits said parts shape names to the client WS, so that the client WS refers to said parts shape management table and collects the shape data of the parts constructing the assembly from said plurality of parts shape files, and the assembly is displayed on the display device associated to the client WS.

5,339,248

APPARATUS FOR MOUNTING ELECTRONIC COMPONENT ON SUBSTRATE

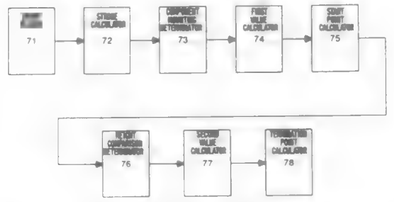
Muneyoshi Fujiwara, Katano; Wataru Hirai, Hirakata; Takahiro Yonezawa, Neyagawa, and Kunio Sakurai, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 27, 1992, Ser. No. 935,990
Int. Cl.[5] G06F *15/46*; B23P *19/04*
U.S. Cl. 364—468 **4 Claims**

1. An apparatus for mounting, on a substrate placed in position by an XY-table, a first electronic component supplied from an electronic component-supply section, comprising:

an electronic component-holding portion for holding the first electronic component and being vertically movable; and

means for setting a movement-prohibiting time period of the XY-table by calculating a period of time in which there is a possibility that the first electronic component and a second electronic component mounted on the substrate



may interfere with each other, based on the height t of the first electronic component and the maximum height H_1 of the second electronic component.

5,339,249

MACHINE CONTROL SYSTEM

William R. Schaeffer, Monticello, Ind., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Oct. 29, 1991, Ser. No. 784,279
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—474.18 **6 Claims**

1. A feedback apparatus in combination with a programmable machine controller for a multi-spindle machine having a plurality of spindles each producing a part thereon wherein the controller provides electrical output signals that control the position of at least one machine tool used to form machined parts on said spindles, said machine tool having a position, the feedback apparatus comprising:

a measuring device that provides an electrical output signal that is indicative of a characteristic of each machine part which characteristic is related to the position of the corresponding machine tool,

a data analyzer for receiving said measuring device outputs and calculating an average value and range for said characteristic among a first subgroup of said part, said first group comprising a predetermined number of said parts made on each spindle of the machine, said data analyzer providing electrical output signal indicating average value and range of said characteristic of said parts in said first subgroup, and

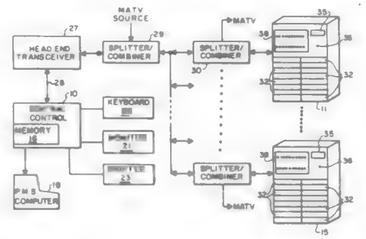
a programmable offset device that receives said output signals from said data analyzer and instructs the controller to offset the machine tool position responsive to said output signals from said data analyzer, whereby said average value and range are maintained within predetermined limits, said programmable offset device including a setup subroutine that is initiated when said range exceeds a predetermined limit or when said characteristic of any said parts is outside predetermined control limits, wherein said setup subroutine calculates an average value of said characteristic for a predetermined plurality of said parts from each spindle and instructs said machine controller to offset said corresponding machine tool position responsive to said average value calculated for each respective spindle.

5,339,250

INTERACTIVE NETWORK FOR REMOTELY CONTROLLED HOTEL VENDING SYSTEMS

Martin J. Durbin, Oak Forest, Ill., assignor to Inn Room Systems, Inc., Sudbury, Mass.

Continuation of Ser. No. 539,105, Jun. 15, 1990, abandoned.
This application Oct. 22, 1992, Ser. No. 965,610
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—479 **15 Claims**



1. A hotel room vending network comprising:

a central control unit;

a plurality of vending units remote from said central control unit, each vending unit containing a plurality of vendable articles and comprising vending unit control means connected to said central control unit;

display means in each of said vending units;

said central control unit comprising means for transmitting price information representing the prices of a plurality of said vendable articles contained by at least one of said vending units to the vending unit containing those articles;

storage means in each of said vending units for contemporaneously storing price information for a plurality of said vendable articles received from said central control unit; and

said vending unit control means comprises display control means responsive to operator interaction for retrieving price information from said storage means and controlling said display means to display the price of one of said vendable articles represented by said price information.

5,339,251

APPARATUS FOR ADAPTIVELY TUNING TO A RECEIVED PERIODIC SIGNAL

Safdar M. Asghar, and Yan Zhou, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 22, 1991, Ser. No. 796,318
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.06 **16 Claims**

1. An apparatus for adaptively tuning to a received periodic signal; the apparatus comprising:

an oscillator means for generating a sinusoidal estimated output signal, said estimated output signal being algorithmically derived from said received signal, said algorithmic derivation involving a plurality of factors; said algorithmic derivation occurring according to the following relationship:

$$est.x_{n+1} = Kx_n - x_{n-1}$$

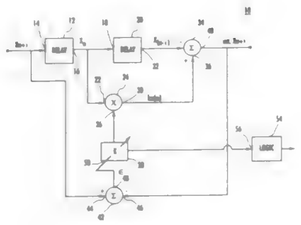
where: est. x_{n+1} = said estimated output signal

$X_r + 1 = \cos((n+1)+\Delta)$

$x_n = \cos((n)\Delta)$

VOL 1165 ISS 3 AG 16 1994 UMI

$x_{n-1}=\cos((n-1)\Delta$
K=a constant representing

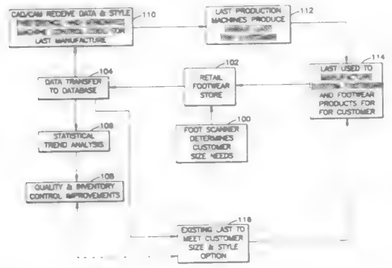


$K=2\cos\Delta$
where

$$\Delta=\frac{2\pi f}{f_s}$$

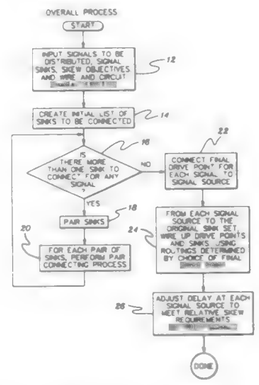
f=an estimate of frequency of said received signal
f_s=sampling frequency of the apparatus; and
a difference determining means for determining a difference between two signals, said difference determining means comparing said received signal with said estimated output signal and generating at least one error signal representative of said difference between said estimated output signal and said received signal;
said at least one error signal being operatively supplied to said oscillator means appropriately to affect at least one factor of said plurality of factors to alter said estimated output signal to reduce said difference.

5,339,252
INTEGRATED SYSTEM FOR FOOT MEASUREMENT, LAST AND FOOTWEAR MANUFACTURE
Jay P. White, Bend, Oreg.; Wesley A. Thies, Red Wing, Minn.; William J. Sweasy, Jr., Red Wing, Minn., and Joseph P. Goggin, Red Wing, Minn., assignors to Foot Image Technology, Inc., Bend, Oreg.
Continuation of Ser. No. 520,534, May 11, 1990, abandoned.
This application Jan. 7, 1993, Ser. No. 2,120
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **21 Claims**



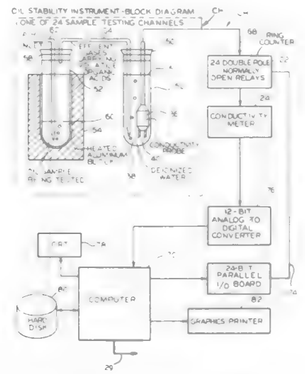
1. A system for integrated foot measurement and last manufacture comprising:
a) foot sizing means for determining foot sizing data by empirically measuring a foot to enable proper fit of a predetermined footwear style with the measured foot, the foot sizing means including a reference surface and first means for measuring a bottom of the foot to obtain pressure data corresponding to the amount of pressure exerted against a first plurality of points of the bottom of the foot by the reference surface, the pressure data being at least a portion of the foot sizing data, the foot sizing means further including second means for measuring the bottom of the foot to obtain distance data corresponding to the distance from the reference surface of a second plurality of points of the bottom of the foot not exerting pressure against the reference surface, the distance data being a portion of the foot sizing data;
b) data processing means logically coupled to the foot sizing means for receiving the foot sizing data from the foot sizing means and for transmitting the foot sizing and footwear style data to other system components; and
c) computer automated design means for receiving the foot sizing and footwear style data from the data processing means, the computer automated design means including means for deriving machine readable data from the received foot sizing data and footwear style data, the machine readable data being in a form suitable for transmission to footwear last production machinery for manufacture of a footwear last.

5,339,253
METHOD AND APPARATUS FOR MAKING A SKEW-CONTROLLED SIGNAL DISTRIBUTION NETWORK
Keith M. Carrig, Jericho; David J. Hathaway, Underhill Center; Keith W. Lallier, Essex Junction; Jeannie T. H. Panner, Underhill Center, and Terrence W. Sehr, Jericho, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 14, 1991, Ser. No. 715,178
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **28 Claims**



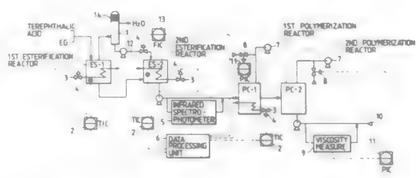
15. A method of making a skew-controlled signal distribution network for feeding signals in a logic network from a plurality of signal sources to a plurality of sinks, at least some of which require differing generating functions comprised of signals from different signal sources, where the location of the signal sources are known and a discrete number of possible locations, relative latency requirement and input capacitance of each sink is known, comprising the steps of:
(a) generating a list of sinks to be connected;
(b) pairing the sinks to be connected within the constraints of a chosen set of pairing rules;
(c) for any pair in which the sinks require differing generating functions, inserting generating circuitry at at least one of the sinks which will render at least one of the required generating function inputs for each of the sinks in the pair to be the same;
(d) adding to the list of sinks to be connected any generating circuitry input resulting from an application of step (c) to a particular pair of sinks where the signal required for said generating circuitry input is not matched by the required signal of another generating circuitry input resulting from said application of step (c);
(e) determining for each pair of identical generating function inputs resulting from steps (a) through (c) at least one wire connection path within the constraints of a chosen set of wiring rules;
(f) establishing at least one drive point on each path which will result in the delivery of a signal applied thereto to each of the sinks in the associated pair for that path at a time satisfying its latency requirement relative to the other sink in the pair;
(g) subtracting from the list of sinks to be connected any sinks to which steps (e) and (f) have been applied and adding to the list as a single sink any sets of drive points established in step (f);
(h) iteratively applying steps (a) through (g) so as to create a converging tree of drive points until a single set of drive points is established for each signal source;
(i) connecting each signal source to one of the drive points in its corresponding single set;
(j) connecting the drive points which were paired at each successive fanout level on a tree by tree basis; and
(k) connecting the last fanout level of drive points to their associated pairs of sinks.

5,339,254
INSTRUMENT FOR DETERMINING THE STABILITY OF FAT OR OIL
Mark G. Matlock, Mount Zion; Ronald T. Sleeter, Decatur, and Tod A. Jebe, Oreana, all of Ill., assignors to Archer Daniels Midland Company, Ill.
Filed Mar. 1, 1991, Ser. No. 663,576
Int. Cl.[5] G01N *27/26*; G06F *15/20*
U.S. Cl. 364—499 **25 Claims**



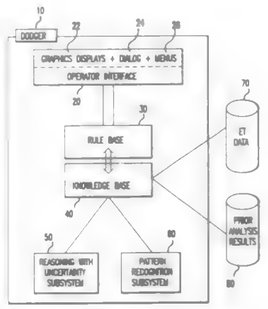
1. A system for monitoring the stability of auto-oxidizable compounds, said system comprising a plurality of probes for monitoring numerous fat or oil samples and sending electrical signals indicating the condition of said fat or oil being monitored, common means responsive to said signals from any one of said probes for measuring the oil stability index ("OSI") of said fat or oil being measured by said one probe, means for sequentially coupling individual ones of said probes to said common means for measuring said OSI time responsive to the signals of the coupled probe, and computer means responsive to said signals from said common means for indicating the OSI of samples.

5,339,255
METHOD OF CONTROLLING SYNTHESIS REACTION
Fumiyuki Suzuki; Tohru Ogura, and Yukio Shirakura, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 10, 1993, Ser. No. 15,597
Claims priority, application Japan, Feb. 14, 1992, 4-059122
Int. Cl.[5] G06F *15/46*; G06G *7/58*
U.S. Cl. 364—500 **4 Claims**



1. A method of controlling synthesis reaction of a synthetic high molecular resin comprising a polymer resin, comprising the steps of:
substantially continuously measuring an infrared spectral absorption of a reaction intermediate product comprising a low polymerization polyester product of a polycondensation reaction; and
controlling reaction conditions on the basis of said measured infrared spectral absorption.

5,339,256
EXPERT SYSTEM FOR ANALYZING EDDY CURRENT MEASUREMENTS
Arthur J. Levy, Schenectady; Jane E. Oppenlander, Scotia; David M. Brudnoy, Albany; James M. Englund, and Kent C. Loomis, both of Clifton Park, all of N.Y., assignors to The United States of Americas as represented by the United States Department of Energy, Washington, D.C.
Filed Nov. 27, 1991, Ser. No. 797,622
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—506 **18 Claims**
MICROFICHE APPENDIX INCLUDED
(11 Microfiche, 1000 Pages)



1. A computer-based method of analyzing eddy current signals to provide information about flaws in a metallic object, using an expert system, wherein said eddy current signals are obtained prior to using said expert system by passing an eddy current probe along said metallic object, detecting any change in current by a change in electrical impedance, and recording said change in electrical impedance as electrical signal data on a storage device, comprising the steps of:
a) retrieving said electrical signal data for one said metallic object from said storage device for analysis;

VOL 1165 ISS 3 AG 16 1994 UMI

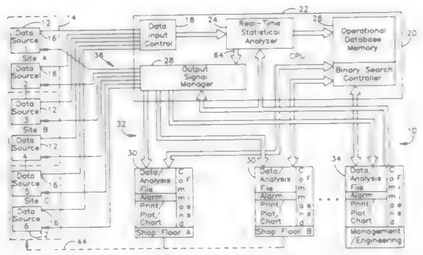
b) calibrating said expert system;
c) associating calibration information with said data;
d) displaying said data as graphical data patterns;
e) analyzing said graphical data patterns in a consistent and uniform manner, wherein said analyzing includes applying a rule base and a knowledge base, said knowledge base including reasoning with uncertainty and pattern recognition to interpret said electrical signal data; and wherein said pattern recognition comprises obtaining geometric parameters from said graphical data patterns and storing said parameters in said knowledge base; and
f) presenting a diagnosis of said flaws.

5,339,257

REAL-TIME STATISTICAL PROCESS MONITORING SYSTEM

John E. Layden; David J. Layden, both of Indianapolis, and Thomas H. Pearson, Fishers, all of Ind., assignors to Automated Technology Associates Inc., Indianapolis, Ind.

Filed May 15, 1991, Ser. No. 700,548
Int. Cl.[5] H04J *3/14*; G06F *15/20*
U.S. Cl. 364—552 36 Claims



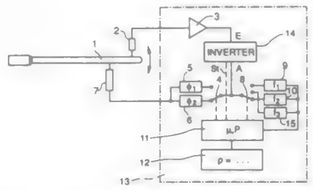
1. A system for monitoring a multiparameter manufacturing process by examining on a real-time basis a stream of data units, each data unit including a numerical characteristic indicative of a current state of one of the parameters of that manufacturing process and a tag identifying the parameter, the system comprising:
grouping means, operating on each data unit as it is received by the monitoring system, for grouping all of the data units having identical tags together into groups of numerical characteristics, the size of each group being selectively variable for each tag,
pattern recognition means, operating as each data unit is received on each group of numerical characteristics assembled by the grouping means, for recognizing statistical patterns in the numerical characteristics, each pattern recognition means recognizing a single selected statistical pattern and including an output for result values indicative of the such recognition,
a plurality of registers, each register receiving the result values from a selected pattern recognition means,
comparing means for comparing the content of each register with a chosen standard for that register as each result value is received in the register to provide a comparison result at an output thereof indicative of the significance of any recognized statistical pattern, and
signal managing means for directing to at least one controller of the manufacturing process a signal of the comparison result of any register the output of which indicates that a statistically significant pattern of numerical characteristics has been identified, the signal including an indication of the significance of the pattern and the manufacturing process parameter involved to permit human evaluation of and, if necessary, intervention in the manufacturing process.

5,339,258

APPARATUS FOR DETERMINING THE DENSITY OF LIQUIDS AND GASES FROM A PERIOD OF AN OSCILLATOR FILLED WITH A TEST SAMPLE

Hans Stabinger, Peterstalstr, 156, A-8042 Graz; Hans Leopold, Sonnleitenweg 17, A-8043 Graz, and Helmut Heimel, Hugo-Schuchardtstr. 34, A-8010 Graz, all of Austria

Filed May 1, 1992, Ser. No. 877,891
Int. Cl.[5] G01N *9/00*
U.S. Cl. 364—558 10 Claims



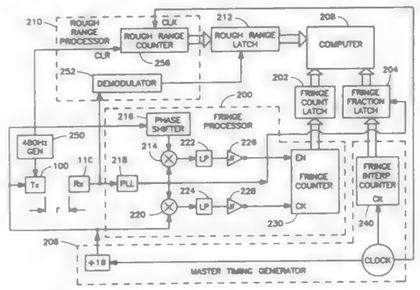
1. An apparatus for determining liquid and gas density, said apparatus comprising:
an oscillator filled with a test sample;
a sensor for detecting oscillations of said oscillator and outputting a sensor signal responsive to said detected oscillations;
an oscillation amplifier for amplifying said sensor signal and providing said amplified signal at an output;
a actuator for receiving said amplified signal and driving said oscillator;
at least one phase shifting circuit;
at least one change-over switch for selectively connecting said at least one phase shifting circuit to said oscillation amplifier to cause a phase shift of said amplified signal; and
determining means responsive to said sensor signal for determining the density of said test sample.

5,339,259

HIGH SPEED HIGH RESOLUTION ULTRASONIC POSITION AND ORIENTATION TRACKER

Samuel C. Puma, Torrance; John B. Sinacori, Pebble Beach, both of Calif., and Yorke J. Brown, Binghamton, N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jul. 10, 1992, Ser. No. 912,962
Int. Cl.[5] G01S *1/72*
U.S. Cl. 364—559 21 Claims



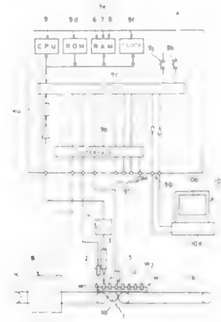
1. An ultrasonic tracking system, comprising:
a transmitter producing an ultrasonic continuous wave transmitted signal at first location;
a receiver sensing a received ultrasonic continuous wave signal corresponding to said transmitted signal at a second location;
means connected to said transmitter and to said receiver for measuring a phase difference between said transmitted and received signals and for generating an incremental or decremental count whenever an increase or decrease, respectively in said phase difference results in a phase difference of zero;
means for maintaining an algebraic sum of said incremental and decremental counts indicative of an integral number of wavelengths of said transmitted signal by which said first and second locations are displaced from one another relative to an initial displacement, said algebraic sum being updated with each zero crossing of said phase difference; and
means for sensing a number of predetermined fractions of one wavelength of said transmitted signal by which said transmitted and received signals are out of phase with respect to one another, said number of predetermined fractions being updated with each cycle of said transmitted ultrasonic signal, the displacement of said first and second locations being determined as integral number of wavelengths plus said number of predetermined fractions of said wavelength.

5,339,260

APPARATUS FOR CHECKING SIZE OF A WORK

Kenji Miura, Fukuoka, Japan, assignor to RIX Corporation, Fukuoka, Japan

Filed Apr. 23, 1992, Ser. No. 872,898
Claims priority, application Japan, Apr. 23, 1991, 3-122296
Int. Cl.[5] G01B *11/04*
U.S. Cl. 364—560 11 Claims



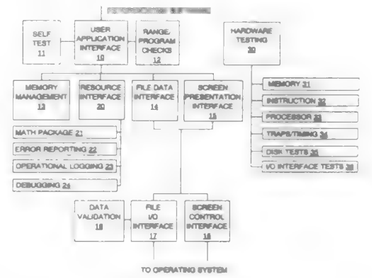
1. A size checking apparatus for a work, comprising:
constant speed transporting means for the work;
measuring means for continuously measuring a distance from a measurement sensor to a measuring position on the work while the work is being transported along one direction, an output measuring value of the measurement means being an analog signal;
trigger signal generating means for sensing that the work has passed and for commencing an acquisition of the output measurement value by the measuring means in response to a trigger signal;
pulse signal generating means for generating a pulse signal in synchronism with the transportation of the work;
an average value holding circuit for holding in a time sequential mode during one cycle, an average value calculated from either a measurement value time-sequentially coincident with the pulse signal, or measurement values with each other in synchronism with the pulse signal;
an upper limit data holding circuit for holding an upper limit value which has been set by increasing/decreasing one cycle of a pedestal level of a maximum value obtained by time-sequentially acquiring only maximum values among previously obtained measurement values in synchronism with the pulse signal, or one cycle of the average value based upon standard deviation at an arbitrary measurement point of the work, or the maximum value as well as a minimum value;
a lower limit value data holding circuit for holding a lower limit value which has been set by increasing/decreasing one cycle of a pedestal level of a minimum value obtained by time-sequentially acquiring only the minimum values by comparing minimum values among previously obtained measurement values in synchronism with the pulse signal, or one cycle of the average value based upon standard deviation at an arbitrary measurement point of the work or the maximum value as well as the minimum value;
a calculation processing unit for setting an allowable range which is formed by comparing the output measurement value in synchronism with the pulse signal with the previously acquired output measurement value to discriminate the maximum value from the minimum value, by a maximum value waveform based upon the maximum value and also a minimum value waveform based upon the minimum value, or by rearranging the maximum value waveform and the minimum value waveform, and for outputting a defect signal when the measurement value overwritten to an allowable range formed by an upper limit waveform based on the upper limit value and also a lower limit waveform based on the lower limit value is deviated from the allowable range; and
a connection unit for a computer, for setting a quantity of works to be measured, a measuring time period, and a measuring number in the calculation processing unit, for setting a range for increasing/decreasing a pedestal level by a standard deviation which has been obtained by all measurement values at the arbitrary measuring point of the work, for setting the allowable range and further for displaying the allowable range and the waveforms of the measurement values.

5,339,261

SYSTEM FOR OPERATING APPLICATION SOFTWARE IN A SAFETY CRITICAL ENVIRONMENT

Alexander M. Adelson, Peekskill, N.Y.; Alan J. Eisenberg, Monmouth Junction, N.J., and Richard J. Farrelly, Wayne, Pa., assignors to Base 10 Systems, Inc., Trenton, N.J.

Filed Oct. 22, 1992, Ser. No. 964,742
Int. Cl.[5] G06F *15/20, 11/34*
U.S. Cl. 364—570 28 Claims



1. A system for running application software in a safety critical environment, comprising:
data processing means having a memory, a clock, a processor, an operating system for running application software thereunder and means for entering input data for use with the application software, wherein the application software performs calculations on data to produce calculated data and output data;
means for providing a safety critical environment including background and foreground safety critical functions for

VOL 1165 ISS 3 AUG 16 1994 UMI

said application software running in conjunction with the operating system, comprising means forming an intermediate shell comprising means for interfacing with the operating system, means for interfacing with the application software to run the application software under the operating system, and means for controlling both the foreground and the background safety critical functions while the application software is running in conjunction with the operating system, comprising

means for testing the intermediate shell as a background safety critical function independent of and while the application software is running in conjunction with the operating system,

means for continuously monitoring operations of the memory, clock and processor as a background safety critical function while the application software is running and for producing event data corresponding thereto,

means for indicating an error in operations of the intermediate shell, clock, memory and processor as a foreground safety critical function,

means for continuously monitoring input data as a background safety critical function while the application software is running,

means for maintaining a log of the input data and the event data,

means for storing ranges and formats for input data, output data and calculated data,

means for continuously comparing the input data, output data and calculated data with the stored ranges and formats as a background safety critical function while the application software is running, and

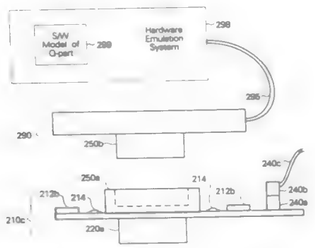
means for indicating an unfavorable comparison as a foreground safety critical function.

5,339,262

METHOD AND APPARATUS FOR INTERIM, IN-SITU TESTING OF AN ELECTRONIC SYSTEM WITH AN INCHOATE ASIC

Michael D. Rostoker, Boulder Creek; David Gluss, Woodside, and Tom Harrington, Mountain View, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 10, 1992, Ser. No. 911,846
Int. Cl.[5] G06G *7/62*
U.S. Cl. 364—578 **20 Claims**



14. Apparatus for testing the performance of a target electronic system ultimately employing an ASIC comprising a core cell and surrounding logic, using an inchoate ASIC on an interim basis, comprising:

an interim electronic system, equivalent to the target electronic system without the inchoate ASIC;

a socket on the interim electronic system carrying all connections to the inchoate ASIC;

a separate pod having a plug for plugging into the socket, said pod further comprising:

a functional model of the core cell;

at least one programmable logic device, said programmable logic device(s) configured as surrogate surrounding logic;

means for providing connections between the programmable logic device(s), the functional model of the core cell, and the plug; and

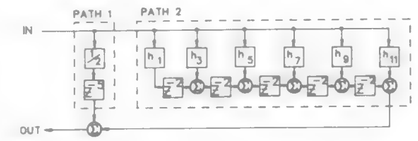
means for plugging the pod into the interim electronic system.

5,339,263

COMBINED DECIMATION/INTERPOLATION FILTER FOR ADC AND DAC

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jan. 28, 1993, Ser. No. 10,093
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.1 **8 Claims**



1. A decimation filter, comprising:

(a) a first signal path consisting essentially of a high-speed delay element driving a high-speed-to-low-speed sampler driving at least one low speed delay element;

(b) a second signal path consisting essentially of a high-speed-to-low-speed sampler driving an even number of taps, the taps including:

(1) a first tap comprising a multiplier; and

(2) an odd number of subsequent taps, each having a previous tap, and each comprising a multiplier, a low-speed delay element driven by the previous tap, and a summer driven by the multiplier and the delay element;

the multiplier comprising means for simulating multiplication by shifting and varying an incoming signal according to primary primitives which are powers of two varied by one; the taps including a pair of middle taps, each middle tap having a tap weight equal to the tap weight of the other middle tap; each tap other than the middle taps having a tap symmetrical to it about the middle taps; each non-middle tap having a tap weight equal to the tap weight of its symmetrical tap; the sum of the delays of the second signal path being twice the delay of the first signal path; and the tap weights being selected to produce a half band low pass response;

(c) means for summing outputs from the first and second signal paths; and

(d) means for time domain multiplexing the summed outputs of the signal paths.

5,339,264

SYMMETRIC TRANSPOSED FIR DIGITAL FILTER

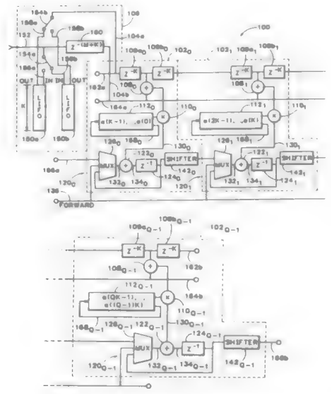
Ahmed Said, Beaverton, and Michael Seckora, Gales Creek, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jul. 27, 1992, Ser. No. 919,798
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.16 **16 Claims**

1. A symmetric transposed finite impulse response digital filter, comprising:

a data input circuit receiving plural input signal components and prearranging them in accordance with a predetermined symmetric format; and

plural sequentially-arranged filter cells in data communication with the data input circuit, each filter cell except a first and last filter cell being connectable between a pair of adjacent filter cells, and each filter cell having processing elements for processing selected symmetric input signal components in accordance with corresponding filter coefficients to form a sum of products thereof, and having a



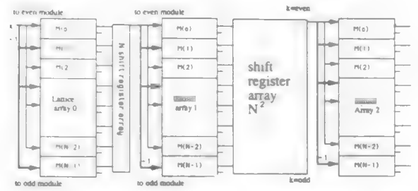
product terminal connected to at least one adjacent filter cell to transfer to the adjacent filter cell a sum of products.

5,339,265

OPTIMAL UNIFIED ARCHITECTURES FOR THE REAL-TIME COMPUTATION OF TIME-RECURSIVE DISCRETE SINUSOIDAL TRANSFORMS

K. J. Ray Liu, Silver Spring, Md., and Chin-Te Chiu, Chiayi, Taiwan, assignors to University of Maryland at College Park, College Park, Md.

Filed Aug. 31, 1992, Ser. No. 937,100
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—725 **23 Claims**



1. A two-dimensional transform processor which uses at least one discrete cosine transform (DCT) processor to produce an N-dimensional transform without transposition and provides a fully pipelined structure with a throughput rate of N clock cycles for an N×N successive serial input data with parallel output data comprising:

a serial input connected to inputs of a first lattice army having N lattice modules;

said first lattice array having outputs for providing a non-inverted information output and an inverted information output, said first lattice array for computing a first 1-dimensional discrete cosine transform;

said non-inverted information output coupled to at least one shift array;

said shift array interconnected to a first half of a second lattice array for even transforms and thus forming an even transform lattice array;

said even transform lattice array interconnected to a first shift register array, said first shift register array having a feedback interconnection between an output and an input thereof;

said inverted information output coupled to at least one other shift array;

said shift army interconnected to a second half of said second lattice array for odd transforms and thus forming an odd transfer lattice array; and

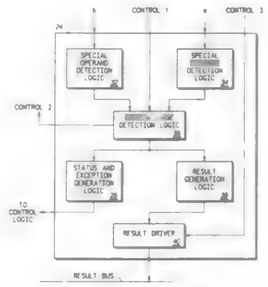
said odd transform lattice array interconnected to a second shift register array, said second shift register array having a feedback interconnection between output and input thereof.

5,339,266

PARALLEL METHOD AND APPARATUS FOR DETECTING AND COMPLETING FLOATING POINT OPERATIONS INVOLVING SPECIAL OPERANDS

Christopher N. Hinds; Eric V. Fiene; Daniel T. Marquette, and Eric E. Quintana, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 29, 1993, Ser. No. 158,324
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **22 Claims**



1. A data processing system comprising:

at least one floating point mathematical unit having a first input for receiving a first operand, a second input for receiving a second operand, and an output for providing a floating point result based upon the first and second operands, the output being selectively coupled to an output bus; and

a special floating point operand detect logic, coupled in parallel to the at least one floating point mathematical unit and having a first input for receiving the first operand, a second input for receiving the second operand, and an output, the special floating point operand detect logic detecting a floating point operation and operands which result in an incorrect floating point calculation in the at least one floating point mathematical unit, the special floating point operand detect logic providing a correct result, via the output of the special floating point operand detect logic, to the output bus based upon the first and second operands and the floating point operation if the incorrect floating point calculation is detected, the output of the at least one floating point mathematical unit otherwise being provided.

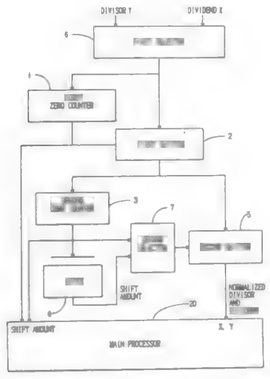
VOL 1165 ISS 3 AUG 16 1994 UMI

5,339,267

PREPROCESSOR OF DIVISION DEVICE EMPLOYING HIGH RADIX DIVISION SYSTEM

Eiki Ito, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 854,098, Mar. 19, 1992, abandoned. This application Jun. 2, 1993, Ser. No. 71,341
Claims priority, application Japan, Mar. 19, 1991, 3-078265
Int. Cl.[5] G06F *7/52, 7/38*
U.S. Cl. 364—761 **5 Claims**



1. A division device preprocessor for preprocessing a divisor and a dividend to be subjected to high radix division capable of producing a partial quotient of "n" bits ($n \geqq 2$) at one time, the divisor and the dividend each being expressed as a binary number of plural successive bits in corresponding, plural successive bit positions, each bit having either a "0" or a "1" bit value, and thus each including binary numbers having a number of leading bit positions including one or more bit positions in which the corresponding, leading successive bits have continuous "0" bit values, comprising:

means for normalizing the input divisor and producing a normalized divisor and for normalizing the input dividend relatively to the normalized divisor and producing a relatively normalized dividend, the normalizing means shifting the plural successive bits, of the corresponding successive bit positions, of the input divisor to respective and higher, corresponding bit positions of the normalized divisor in accordance with a bit position shift number defined by the number of leading successive bits of the input divisor having continuous "0" bit values and shifting the plural successive bits of the input dividend to respective and higher, corresponding bit positions of the relatively normalized dividend by a dividend bit position shift number such that the difference between the divisor shift number and the dividend shift number is an integer multiple of "n";

means for calculating the difference between the number of bit positions defined by the divisor bit position shift number and the number of bit positions defined by the dividend bit position shift number and producing a corresponding bit position shift difference output; and

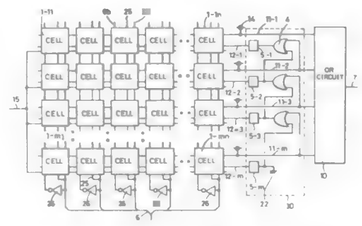
means for storing the normalized divisor, the relatively normalized dividend, and the bit position shift number difference and for supplying same as simultaneous outputs for high radix division of the dividend by the divisor and whereby the digit number of the resulting quotient is also an integer multiple of "n", the division may be stopped at a predetermined digit position, and a desired remainder is produced simultaneously with the quotient.

5,339,268

CONTENT ADDRESSABLE MEMORY CELL AND CONTENT ADDRESSABLE MEMORY CIRCUIT FOR IMPLEMENTING A LEAST RECENTLY USED ALGORITHM

Hirohisa Machida, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,865
Claims priority, application Japan, May 8, 1992, 4-116131
Int. Cl.[5] G11C *15/04*
U.S. Cl. 365—49 **6 Claims**



1. A content addressable memory cell provided corresponding to a crossing between a bit line and a matching line to compare an applied data with a stored data to drive said matching line according to the comparison result, comprising

main storage means for storing data,

comparison means for comparing the data on said bit line with the data stored in said main storage means for driving said matching line according to match and mismatch of both data,

sub-storage means for storing data,

data transfer means responsive to a transfer instruct signal for transferring and storing into said sub-storage means the data stored in the main storage means of a memory cell adjacent along said bit line, and

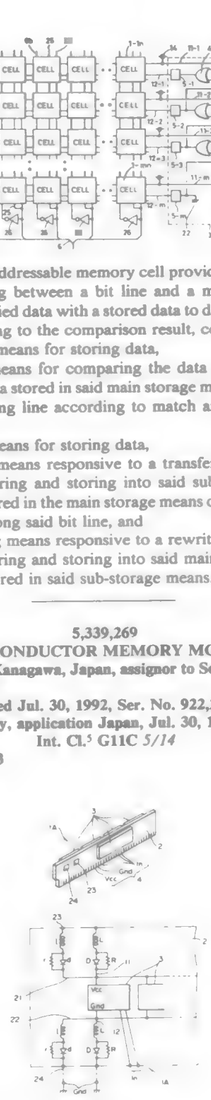
data rewriting means responsive to a rewrite instruct signal for transferring and storing into said main storage means the data stored in said sub-storage means.

5,339,269

SEMICONDUCTOR MEMORY MODULE

Yuichi Takagi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 922,266
Claims priority, application Japan, Jul. 30, 1991, 3-190374
Int. Cl.[5] G11C *5/14*
U.S. Cl. 365—63 **9 Claims**



1. A memory module comprising:

electrodes arranged on one side edge of a laminated substrate; and

a plurality of memory elements mounted on the surface of said laminated substrate,

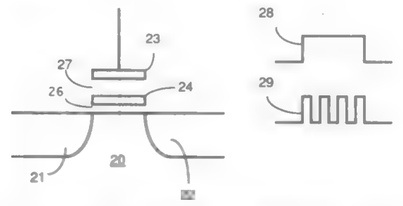
wherein signal line electrodes for said memory elements are arranged on one side edge of said laminated substrate, and respective electrode terminals for a second power supply line and a second grounding line connected in parallel to a first power supply line and a first grounding line are provided on a surface of said laminated substrate, at a position of the substrate wherein the amplitude of the voltage distribution generated on said first power supply line and said first grounding line when said memory elements are driven is maximized.

5,339,270

AC DRAIN VOLTAGE CHARGING SOURCE FOR PROM DEVICES

Chun Jiang, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Jun. 23, 1993, Ser. No. 82,124
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **4 Claims**



1. A method for programming a programmable read only memory having a source, a drain, a floating gate and a control gate, wherein the floating gate region is separated from the drain by a tunnel oxide region, the method comprising the steps of:

(a) placing a DC signal on the control gate; and

(b) placing an oscillating signal on the drain, wherein an oscillating frequency and a fall time for the oscillating signal are selected so that upon the oscillating signal reaching a minimum voltage, hot electrons at the drain tunnel through the tunnel oxide region to the floating gate, thereby charging the floating gate.

5,339,271

SEMICONDUCTOR MEMORY CIRCUIT

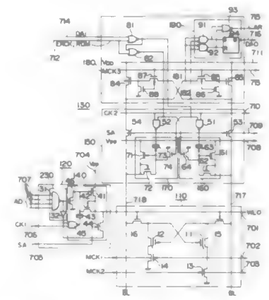
Kouji Tanagawa, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 846,205
Claims priority, application Japan, Mar. 5, 1991, 3-038383
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.04 **26 Claims**

1. A semiconductor memory circuit having memory cells for storing data therein, comprising:

the memory cells for storing data, each memory cell including two storage semiconductor elements, the storage semiconductor elements being permitted to have their operations stopped, respectively, in response to a first operation control signal and a second operation control signal;

a data control circuit for performing reading, writing and erasing of data with respect to the two storage semiconductor elements of the memory cell, the data control circuit being adapted to supply a first level of voltage to each of the storage semiconductor elements so as to write data into a first one of the storage semiconductor elements and at the same time to erase data written in a second one of said storage semiconductor elements, the data control circuit being additionally adapted to amplify the data read out from the storage semiconductor element to generate an output data signal; and



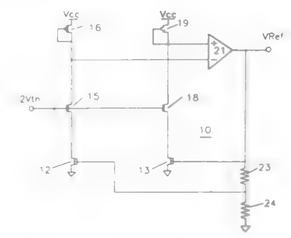
a data selector circuit for selecting the memory cell, with respect to which reading-out, writing-in and erasing of data are performed, in response to address data, the data selector circuit being adapted to supply said first level of voltage to a word line of the selected memory cell.

5,339,272

PRECISION VOLTAGE REFERENCE

Kerry Tedrow, Orangevale; Mase Taub, Elk Grove, and Neal Mielke, Los Altos Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 21, 1992, Ser. No. 993,408
Int. Cl.[5] G05F *1/56*
U.S. Cl. 365—189.09 **11 Claims**



1. A precision voltage reference circuit comprising a pair of similar flash EEPROM memory cells each having a source, drain, floating gate, and control gate, each of the pair of similar flash EEPROM memory cells having a different charge on its floating gate; means for connecting each of said cells in a pair of parallel circuits in which equal current values are generated in an equilibrium condition; means responsive to currents in the pair of parallel circuits for providing an output voltage which may be used as a reference value when the currents are in equilibrium; and means for sensing variations in the output voltage to vary the current through the flash EEPROM memory cells to bring the currents into equilibrium when the output voltage varies from the voltage provided at equilibrium.

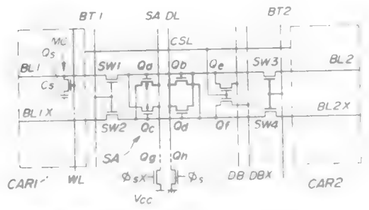
VOL 1165 ISS 3 AUG 16 1994 UMI

5,339,273

SEMICONDUCTOR MEMORY DEVICE HAVING A TESTING FUNCTION AND METHOD OF TESTING THE SAME

Masao Taguchi, Kawasaki, Japan, assignor to Fujitsu Ltd., Kanagawa, Japan

Filed Dec. 13, 1991, Ser. No. 806,406
Claims priority, application Japan, Dec. 14, 1990, 2-410668
Int. Cl.[5] G11C 29/00, 7/00
U.S. Cl. 365—201 15 Claims



1. A semiconductor memory device comprising:

a sense amplifier;

two bit line pairs coupled to said sense amplifier via switches;

a plurality of word lines;

at least one memory cell array including a plurality of memory cells, each of the memory cells being coupled to one bit line pair and one word line; and

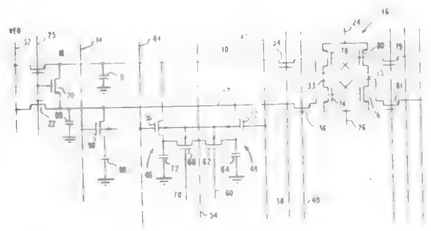
varying means, coupled to the bit lines, for varying a capacitance of at least a selected one of the bit line pairs in response to a predetermined signal which indicates a test mode in which an operation of the semiconductor memory device is tested, said varying means for increasing the capacitance of the selected bit line pair in the test mode compared to the capacitance of the selected bit line pair during normal read/write operation of the semiconductor memory device, whereby when said two bit line pairs are connected to said sense amplifier via said switches in the test mode, said selected bit line pair functions as a capacitor when the other of the two bit line pairs is in use.

5,339,274

VARIABLE BITLINE PRECHARGE VOLTAGE SENSING TECHNIQUE FOR DRAM STRUCTURES

Sang H. Dhong, Mahopac, N.Y.; Toshiaki Kirihata, South Burlington, Vt.; Hyun J. Shin, Mahopac, N.Y.; Toshio Sunaga, Kusatsu; Yoichi Taira, Setagaya, both of Japan, and Lewis M. Terman, South Salem, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,644
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—203 18 Claims



4. An array of DRAM cells using a variable precharge voltage sensing technique comprising:

an array of memory cells, comprising pluralities of memory cells, each plurality of memory cells having an associated bitline;

an array of reference cells, each reference cell being associated with a respective plurality of memory cells, a bitline associated with a first plurality of memory cells and a bitline associated with a second plurality of memory cells forming an associated pair of bitlines;

means for precharging each reference cell in said array to a fixed predetermined voltage;

means for setting each of said pair of bitlines to a precharge voltage and for varying said precharge voltage depending upon a level of sensed date in the associated pluralities of memory cells during a previous RAS cycle; and

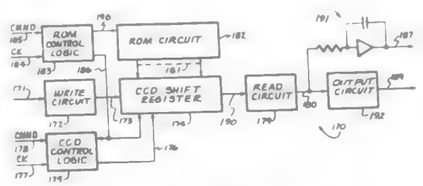
an array of sensing amplifier means, each sensing amplifier coupled to an associated pair of bitlines, for sensing relative levels of the signals on each associated pair of bitlines.

5,339,275

ANALOG MEMORY SYSTEM

Gilbert P. Hyatt, 7841 Jennifer Cir., La Palma, Calif. 90623

Continuation of Ser. No. 520,277, Aug. 4, 1983, Pat. No. 4,910,706, which is a division of Ser. No. 160,871, Jun. 19, 1980, Pat. No. 4,445,189, which is a continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, abandoned, Ser. No. 134,958, Apr. 19, 1971, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 402,520, Oct. 1, 1973, Pat. No. 4,825,364, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, and Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819. This application Mar. 16, 1990, Ser. No. 495,808
Int. Cl.[5] G11C 13/00, 11/00
U.S. Cl. 365—45 34 Claims



6. An analog memory system comprising:

a charge memory storing multiple state charge signals having an information content related to the signal state;

a refresh circuit coupled to the charge memory and refreshing the stored multiple state charge signals to reduce amplitude degradation;

a shifting circuit coupled to the charge memory and shifting the multiple state charge signals stored by the charge memory;

a converter coupled to the charge memory and generating digital output signals in response to the multiple state charge signals stored by the charge memory; and

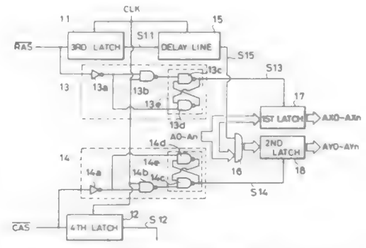
a filter processor including a weighting circuit coupled to the converter and generating weighted digital signals in response to the digital output signals and an integrator coupled to the multiplier and generating digital filtered signals by integrating the digital product signals.

5,339,276

SYNCHRONOUS DYNAMIC RANDOM ACCESS MEMORY

Atsushi Takasugi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 791,388, Nov. 14, 1991, Pat. No. 5,287,327.
This application Nov. 2, 1993, Ser. No. 144,557
Claims priority, application Japan, Nov. 20, 1990, 2-316523
Int. Cl.[5] G11C 13/00
U.S. Cl. 365—230.02 6 Claims



1. A synchronous dynamic random-access memory that provides data output in response to multiplexed address signals, a first control signal, a second control signal, and a clock signal, comprising:

a memory cell array having a plurality of memory cells;

an address input circuit for latching said address signals on a first transition of said clock signal selected by said first control signal to generate an X-address, and on a second transition of said clock signal selected by said second control signal to generate a Y-address;

a decoding circuit coupled to said memory cell array and said address input circuit, for selecting at least one memory cell in said memory cell array according to said X-address and said Y-address; and

an output circuit coupled to said memory cell array, for outputting data from said memory cells in synchronization with said clock, wherein said output circuit comprises:

a multiple data latch circuit for simultaneously latching data read from a plurality of said memory cells;

a consecutive output control circuit for selecting data latched in said multiple data latch circuit, different data being selected in different clock cycles; and

a tri-state output circuit for externally outputting data selected by said consecutive output control circuit.

5,339,277

ADDRESS BUFFER

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Apr. 30, 1993, Ser. No. 56,078
Int. Cl.[5] G11C 8/00
U.S. Cl. 365—230.08 23 Claims

13. An address buffer in an integrated circuit, comprising:

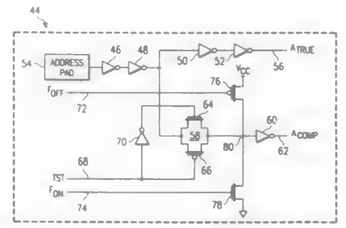
an input signal line;

a pass gate;

at least one logic gate connected in series between the input signal line and an input to the pass gate;

a pull up transistor and a pull down transistor connected to an output of the pass gate, wherein the pull up and pull down transistors are used to generate a first control signal; and

a first inverter and a second inverter connected in series to the output of the at least one logic gate, wherein the at least one logic gate, the first and second inverters are used to generate a second control signal, and wherein the first control signal and the second control signal are set to a single output voltage level during a special operating mode of the integrated circuit.

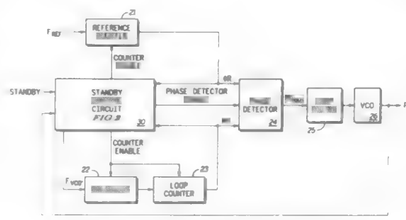


5,339,278

METHOD AND APPARATUS FOR STANDBY RECOVERY IN A PHASE LOCKED LOOP

James S. Irwin, Paige; David F. Moeller, and Karl J. Huehne, both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 12, 1993, Ser. No. 44,790
Int. Cl.[5] H03L 7/00
U.S. Cl. 331—16 12 Claims



1. A method for improving standby recovery in a phase locked loop comprising the steps of:

disabling a reference counter, loop counter means, and a phase detector in response to an activation of a standby signal;

enabling both said reference counter and said loop counter means in response to an inactivation of said standby signal;

decoupling a voltage controlled oscillator (VCO) output signal from an input of said loop counter means in response to an activation of a loop counter output signal;

recoupling said VCO output signal to said input of said loop counter means in response to an activation of a reference counter output signal; and

enabling said phase detector.

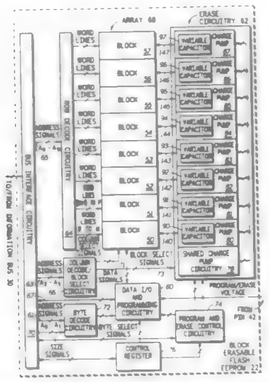
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,279

BLOCK ERASABLE FLASH EEPROM APPARATUS AND METHOD THEREOF

Thomas R. Toms; Ann E. Harwood; Yoshiko K. Inoue, and Clinton C. K. Kuo, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 7, 1993, Ser. No. 57,924
Int. Cl.[5] G11C *11/34, 7/00, 8/00*
U.S. Cl. 365—185 20 Claims



1. An electrically erasable programmable read only memory (EEPROM), comprising:
a plurality of bit lines;
an array of flash EEPROM memory cells, said array of flash EEPROM memory cells having a first block of flash EEPROM memory cells and a second block of flash EEPROM memory cells, the first block of flash EEPROM memory cells being coupled to the second block of flash EEPROM memory cells by way of said plurality of bit lines;
a first charge pump circuit; and
a second charge pump circuit;
wherein the first block of flash EEPROM memory cells comprises:
at least a portion of a first row;
a first source conductor coupled to said at least the portion of the first row; and
a first block conductor coupled to said first source conductor and to said first charge pump circuit; and
wherein the second block of flash EEPROM memory cells comprises:
at least a portion of a second row;
a second source conductor coupled to said at least the portion of the second row; and
a second block conductor coupled to said second source conductor and to said second charge pump circuit; and
wherein said first block of flash EEPROM memory cells can be erased independently of said second block of flash EEPROM memory cells.

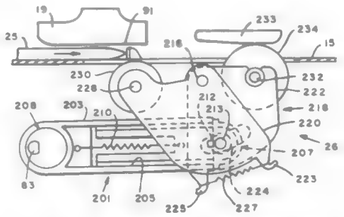
5,339,280

PLATEN ROLLER AND PRESSURE ROLLER ASSEMBLIES FOR THERMAL POSTAGE METER

Stephen F. Goldberg, Dayton, and John D. Mistyurik, Troy, both of Ohio, assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 24, 1992, Ser. No. 950,339
Int. Cl.[5] B41J *11/04*
U.S. Cl. 346—134 2 Claims

1. A platen roller assembly for a thermal printing postage meter having a base supporting a registration wall and a deck and a thermal print head fixably mounted to said registration wall above a portion of said deck to define a print station for printing a postage indicia on an envelope having a leading edge positioned on said deck in said print station, comprising:
a platen roller;
drive means for rotating said platen roller: and
linking means for rotatively supporting said platen roller in a home position below said deck and biasing said platen roller in a second position above said deck towards said thermal print head through an aperture in said deck.
a pressure roller:
an ejection plate fixably mounted to said registration wall above said deck longitudinally in line with said thermal print head:
said linking means having means for rotatively supporting said pressure roller in a home position biasing against said ejection plate through an aperture in said deck when said platen roller is in the home position and rotatively supporting said pressure roller in a second position below said deck when said platen roller is in said second position: and
drive means for rotating said pressure roller,
a first shaft rotatably mounted in said base;
a second shaft rotatably mounted in said base;
a microcontroller mounted in said base;
a motor fixably mounted in said base and having an output shaft coupled to said first shaft for causing rotation of said first shaft;
a motor controller in bus communication with said microcontroller and said motor being responsive to microcontroller position commands for causing said motor to drivenly position said shaft;
a first pivot link assembly having:



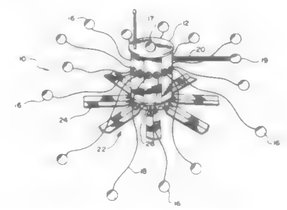
a link arm having a first link section and second link section slidably received in a channel of said first link section and spring means for biasing said second link section into said channel of said first link section;
a first end of said first link section being rotatively mounted eccentrically around said first shaft;
a first link plate pivotally mounted around said second shaft at one point and pivotally mounted around connecting shaft at another point;
a second link plate pivotally mounted around said second shaft at one point and includes a slot wherein said connecting shaft rides therein;
means for biasing said first and second link plate in a converging direction;
a second pivot link assembly laterally aligned to said first linking arm assembly having a:
a link arm having a first link section and a second link section slidably received in a channel of said first link section and spring means for biasing said second link section into said channel of said first link section;
a first end of said first link section being rotatively mounted eccentrically around said first shaft;
a first link plate pivotally mounted around said second shaft at one point and pivotally mounted around a connecting shaft at another point;
a second link plate pivotally mounted around said second shaft at one point and includes a slot wherein said connecting shaft rides therein;
means for biasing said first and second link plate in a converged direction; and,
said platen roller being rotatively mounted between said first link plates.

5,339,281

COMPACT DEPLOYABLE ACOUSTIC SENSOR

Patrenahalli M. Narendra, Edina; Russell D. Braunling; William J. Wegerer, II, both of Eden Prairie, and Jonathan C. Werder, Maple Grove, all of Minn., assignors to Alliant Techsystems Inc., Hopkins, Minn.

Filed Aug. 5, 1993, Ser. No. 102,466
Int. Cl.[5] H04B *1/59;* G01S *3/80*
U.S. Cl. 367—5 20 Claims



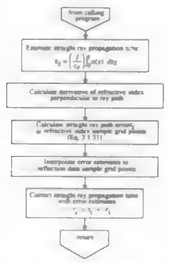
1. A compact deployable sensor comprising:
a) a housing;
b) a plurality of transducers carried inside the housing;
c) means for randomly distributing the transducers within a predefined area surrounding the housing, the transducers being conductively connected to the housing and each generating an analog output signal indicative of the acoustic energy received from a target;
d) self-survey means electrically connected to the plurality of transducers for determining the position of the transducers relative to the housing;
e) computing means electrically connected to the plurality of transducers for analyzing acoustic energy received by the plurality of transducers.

5,339,282

RESOLUTION ENHANCEMENT FOR ULTRASONIC REFLECTION MODE IMAGING

Paul K. Kuhn, Midvale, and Steven A. Johnson, Salt Lake City, both of Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Oct. 2, 1992, Ser. No. 956,036
Int. Cl.[5] G03B *42/06*
U.S. Cl. 367—7 29 Claims



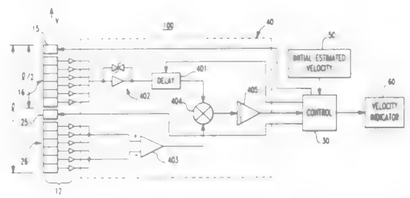
1. In a reflection mode imaging system, an improved means of reconstructing reflectivity images from acoustic or ultrasonic waves, with the use of speed of sound velocity mapping from measured or estimated means, said improved means comprising: signal processing means constructed and arranged to use the calculus of variations to effect a correction of variations in propagation time along a path of propagation due to changes in the refractive index and variations in the speed of sound of an imaging target to estimate the error in a straight line path and to remove this error from a predicted time of propagation for said straight line path to calculate an actual time of propagation for an actual path propagation to predict times of arrivals of a reflected energy waveform.

5,339,283

APPARATUS AND METHOD FOR MEASURING VELOCITY

George A. Gilmour, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 13, 1993, Ser. No. 105,574
Int. Cl.[5] G01S *15/58*
U.S. Cl. 367—89 20 Claims



1. An apparatus for measuring velocity relative to a reference plane, comprising:
a linear sonar array disposed parallel to a direction along which velocity components are to be measured, including from a foremost position to a rearmost position:
first transmitting means for transmitting a first sonar pulse,
a plurality of first receiving means for receiving an echo of said first sonar pulse and for issuing first reception signals in response thereto,
second transmitting means for transmitting a second sonar pulse, and
a plurality of second receiving means for receiving an echo of said second sonar pulse and for issuing second reception signals in response thereto, said plurality of second receiving means corresponding in number to said plurality of first receiving means;
control means for transmitting a first control signal to said first transmitting means causing said first transmitting means to transmit said first sonar pulse, and for transmitting a second control signal to said second transmitting means after a predetermined time delay has lapsed following the transmission of said first control signal, said predetermined time delay being determined such that said second transmitting means is controlled to transmit said second sonar pulse when said second transmitting means is in the same position relative to the reference plane which said first transmitting means was in when said first transmitting means transmitted said first sonar pulse; and
signal processing means for delaying the first reception signals by an amount of time equal to said predetermined time delay, and for correlating the delayed first reception signals with the second reception signals,
wherein said control means adjusts the predetermined time delay based upon the correlation result in order to ensure that said second transmitting means is controlled by said control means to transmit said second sonar pulse when said second transmitting means is in the same position relative to the reference plane which said first transmitting means was in when said first transmitting means transmitted said first sonar pulse, and outputs a signal representative of the velocity relative to the reference plane.

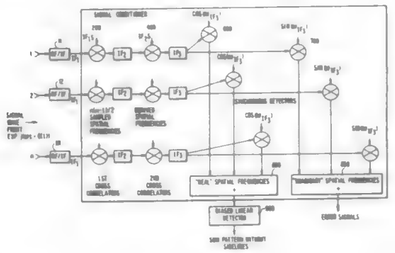
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,284

SIGNAL PROCESSOR FOR ELIMINATION OF SIDELOBE RESPONSES AND GENERATION OF ERROR SIGNALS

Julius A. Kaiser, Kensington, Md., assignor to Frederick Herold & Associates, Inc., Greenbelt, Md.

Filed Jul. 17, 1992, Ser. No. 914,624
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—103 27 Claims



1. A signal processor for eliminating sidelobe responses from signals produced by an antenna array of spaced antenna elements, said signal processor comprising:

means for converting a received wavefront signal from each antenna element of the antenna array to a signal of a first intermediate frequency and a signal of a second intermediate frequency;

first cross-correlating means for cross-correlating the first intermediate frequency signal from each element with the second intermediate frequency signal of each of the other array elements to form signals containing sampled spatial frequency components;

second cross-correlating means for cross-correlating selected pairs of the signals containing sampled spatial frequency components to produce signals containing derived spatial frequency components;

means, responsive to the signals containing derived spatial frequency components, for deriving a single beam output signal which varies as a function of an angle of incidence of the wavefront received by the array; and

means for eliminating sidelobe responses from the single beam output signal.

5,339,285

MONOLITHIC LOW NOISE PREAMPLIFIER FOR PIEZOELECTRIC SENSORS

Timothy B. Straw, New London, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

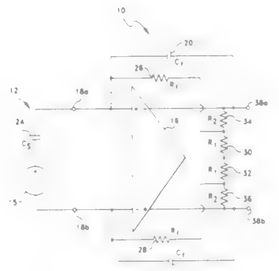
Filed Apr. 12, 1993, Ser. No. 45,143
Int. Cl.[5] H04B *1/06;* H03F *3/45*
U.S. Cl. 367—135 6 Claims

1. A low noise preamplifier for piezoelectric sensors comprising:

a full differential amplifier with common mode feedback;

a pair of feedback capacitors for use in conjunction with input capacitance in controlling preamplifier gain; and

means for both discharging any accumulated DC voltage on circuit capacitors and for forming a high pass filter for rejecting low frequency background noise from the preamplifier input, said means includes a feedback configuration of resistors, said configuration of resistors comprises a plurality of first resistors serially connected between said full differential amplifier outputs, a second resistor connected between one of said full differential amplifier inputs and a first node between two of said plurality of first resistors, and a third resistor connected between the other



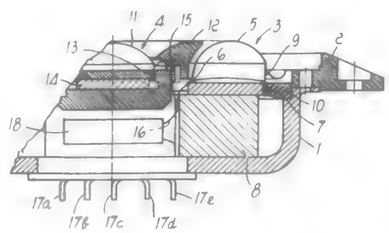
of said full differential inputs and a second node between two of said plurality of first resistors.

5,339,286

COMPOSITE ELECTROACOUSTIC TRANSDUCER

Lino Esposto, Senigallia, Italy, assignor to C.I.A.R.E. S.p.A., Senigallia, Italy

Filed Jan. 11, 1993, Ser. No. 3,051
Claims priority, application Italy, Jan. 14, 1992, BO92A000012
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—140 4 Claims



1. Composite electroacoustic transducer for reproducing medium and high frequencies, comprising a transducer assigned to reproducing medium frequencies provided with a convex-shaped membrane which extends in an annular shape and a transducer assigned to reproducing high frequencies provided with a convex-shaped membrane arranged coaxially to the center and on the same plane of said transducer assigned to reproducing medium frequencies.

5,339,287

AIRBORNE SENSOR FOR LISTENING TO ACOUSTIC SIGNALS

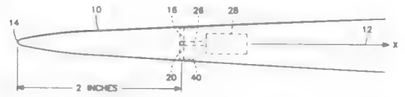
Andrew B. Bauer, Orange, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Apr. 20, 1993, Ser. No. 49,796
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—140 11 Claims

1. An acoustic sensor for use in an atmospheric condition which contains both winds and turbulence encountered on the exterior surface of a moving airborne flight vehicle comprising:

a probe housing having a streamlined shape extending longitudinally along an axis oriented close to the direction of flight of the said vehicle, said probe housing having a set of spaced plural concave indentations in the exterior surface thereof extending inwardly in a direction toward said axis and located at a particular longitudinal location along said axis;

a set of spaced radial airflow passages extending inwardly from respective openings in a surface of said probe housing toward said axis and located at said particular longitudinal location along said axis, whereby said respective openings are located in respective ones of said concave indentations, means forming a central manifold within said



probe housing, said passages merging at said central manifold;

a microphone coupled to said central manifold to sense acoustic signals in said manifold;

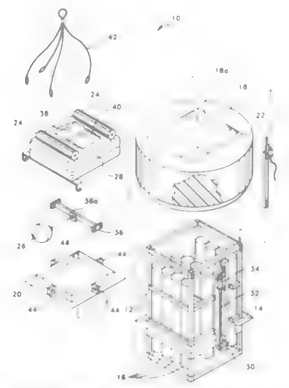
wherein said particular longitudinal location along said axis is such as to minimize in said acoustic signals noise attributable to fluctuations in said wind in a direction along said axis, and wherein said concave indentations have indentation depths such as to minimize in said acoustic signal noise attributable to wind transverse to said axis.

5,339,288

UNDERWATER SOUND SOURCE WITH REMOTE CONTROLLED ACTUATOR

Darren J. Blier, Westerly, R.I.; Christopher J. Dubord, Niantic, Conn., and David W. Grande, Bradford, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 12, 1993, Ser. No. 89,913
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—145 10 Claims



1. A radio controlled acoustic sound source for deploying acoustic charges comprising:

a frame having a plurality of vertical members and a plurality of horizontal members disposed so as to form a rectangular open-sided box having a longitudinal axis;

a buoyant collar disposed about and affixed to said frame, said buoyant collar providing buoyant force to support the buoy partially above the surface of the ocean in such a way that said longitudinal axis remains substantially vertical;

a plurality of hollow launch tubes open on at least the lower end thereof, each said launch tube provided for holding and launching at least one said acoustic charge, said launch tubes being disposed vertically within said frame;

a plurality of hinged doors, each of said hinged doors being disposed upon the lower end of each of said plurality of launch tubes to retain said charges in said launch tube and allow escape of said charges upon launch, said plurality of hinged doors each being hinged to one said launch tube at the periphery of said door to allow said door to open from a horizontal position obstructing the lower end of said launch tube to the vertical position clearing the lower end of said launch tube;

a plurality of electrically controlled actuator means, one actuator means being disposed on the lower end of each said launch tube, each said actuator means being controllable to open each said hinged door;

a power supply positioned on the top of said frame;

a radio receiver positioned on the top of said frame and powered by said power supply, said receiver receiving radio control signals;

an electrical control means positioned on the top of said frame and powered by said power supply, said electrical control means being electrically connected to said actuator means and to said radio receiver to cause said actuator means to open one of said hinged doors deploying said acoustic charges contained in said launch tube when a command is received by said radio receiver;

a sensor means operatively connected with each said hinged door to generate a signal when said hinged door changes from the horizontal to the vertical position and communicates said signal with identification of said hinged door; and

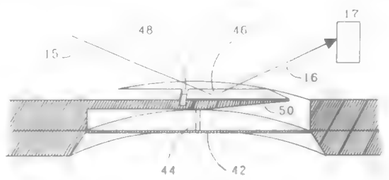
a radio transmitter powered by said power supply having an antenna, said radio transmitter being electrically connected to said sensor means to transmit said signal with identification to said remote source to inform said remote source of the position of said hinged door.

5,339,289

ACOUSTIC AND ULTRASOUND SENSOR WITH OPTICAL AMPLIFICATION

Jon W. Erickson, 3406 Rambow Dr., Palo Alto, Calif. 94306

Continuation-in-part of Ser. No. 895,544, Jun. 8, 1992, Pat. No. 5,249,163. This application Apr. 5, 1993, Ser. No. 42,726
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[5] G01H *1/00*
U.S. Cl. 367—149 7 Claims



1. An acoustic sensor comprising:

a first reflective surface responsive to incident sound waves,

a light beam incident upon said reflective surface,

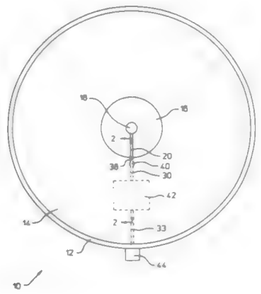
a reflected light beam which is the reflection of said incident light beam from said first reflective surface,

a position sensitive light detector so arranged as to sense the position of said reflected light beam,

and optical means for amplifying a movement of said position of said reflected light beam on said position sensitive light detector in response to said incident sound waves.

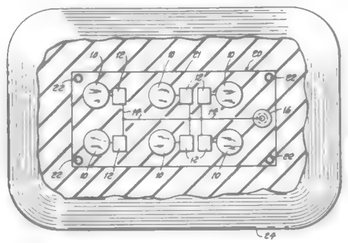
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,290
MEMBRANE HYDROPHONE HAVING INNER AND OUTER MEMBRANES
Michael Greenstein, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 16, 1993, Ser. No. 49,681
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—163 20 Claims



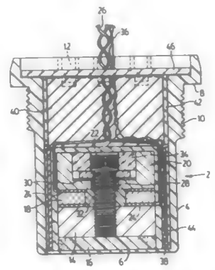
11. A hydrophone comprising:
a support membrane;
a planar first membrane having an inside edge and an outside edge, said first membrane coupled at said outside edge to said support member;
a piezoelectric polymer membrane connected to said first membrane proximate to said inside edge, said piezoelectric polymer membrane having a poled active area having an acoustic propagation axis, said first membrane and said piezoelectric polymer membrane being generally parallel and being offset in the direction of said acoustic propagation axis; and
means electrically connected to said poled active area for conducting electrical charge therefrom.

5,339,291
FLEXIBLE COMPONENT SHEET EMBEDDING OPERATIONAL COMPONENTS
John J. Libuha, Old Lyme, and William F. Wardle, Mystic, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 7, 1969, Ser. No. 826,055
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—165 3 Claims



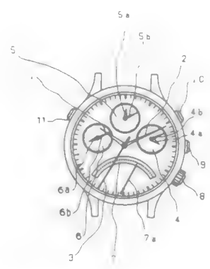
1. In combination with a ships underwater outside surface areas,
a sonar conformal array comprising a carrier sheet of flexible material having acoustic properties substantially the same as those of seawater and substantially impermeable to seawater, and having embedded therein sonar transducers, solid state preamplifiers and interconnecting wiring which extend out the carrier sheet for connection elsewhere, and perimeter fairing means of flexible material joined to the carrier sheet and in combination with the carrier sheet having a flat surface cemented to the ship surfaces areas.

5,339,292
ACOUSTIC TRANSDUCER
William J. Brown; Bogdan Cherek, and Henry T. Viukko, all of Peterborough, Canada, assignors to Milltronics Ltd., Peterborough, Canada
Filed Sep. 28, 1992, Ser. No. 952,812
Claims priority, application United Kingdom, Sep. 27, 1991, 91205H0.7
Int. Cl.[5] H04R *1/28, 17/00*
U.S. Cl. 367—176 6 Claims



2. An acoustic transducer having an active transducer subassembly comprising a substantially rigid plate having a front substantially planar radiating surface, coupling means applied to the radiating surface and comprising at least one layer of acoustic propagation material of acoustic impedance intermediate between that of the material of the plate and that of a gaseous atmosphere into which the plate is to radiate, a driver assembly rigidly secured to an opposite rear surface of the plate and comprising a loading block, a piezoelectric element between the loading block and the plate, means maintaining the piezoelectric element acoustically coupled to the plate and to the loading block, and means establishing electrical connections to the piezoelectric element to permit excitement of the latter at a predetermined frequency and on an axis of the driver assembly perpendicular to the radiating surface; and
a passive portion comprising an elongated tubular housing, moulded from a synthetic resin and defining a passage which is open at one end and closed at an opposite end by a thin, integral wall coupled by said coupling means to the plate, the housing having internal cross-section dimensions greater than those of said plate and said driver assembly and a longitudinal axis common with that of said driver assembly, a wrapping of acoustically decoupling material surrounding the plate and driver assembly except for the front surface of the plate, a mass of somewhat elastomeric potting compound surrounding said wrapping within the housing and mounting the assembly within said other end of the passage with the coupling means contacting said thin integral end wall, an external mounting ring through which the transducer is mounted, the mounting ring surrounding the housing to the rear of the loading block of the driver, and a layer of acoustic decoupling material between the housing and the potting material within the mounting ring.

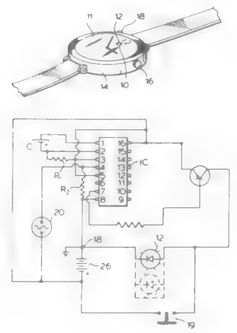
5,339,293
WATCH WITH HANDS FOR MULTIPLE TIME DISPLAYS
Yasuo Kamiyama; Takeo Mutou, and Takashi Osa, all of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
PCT No. PCT/JP92/01167, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO93/06535, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 11, 1992, Ser. No. 50,106
Claims priority, application Japan, Sep. 13, 1991, 3-81871[U]; Mar. 13, 1992, 4-21958[U]
Int. Cl.[5] G04B *19/22, 19/24, 19/04*
U.S. Cl. 368—21 5 Claims



1. A watch with hands for multiple time displays comprising:
a first hand display section positioned at approximately a center of a display section,
a plurality of second hand display sections situated around the first hand display section and having dual center wheels (38, 39),
a drive gear train for the first hand display section and including a second minute wheel (36) engaging simultaneously the dual center wheels (38, 39) of the plurality of the second hand display sections to move together, and
an adjustment mechanism for the second hand display sections arranged independently from the drive gear train for the first hand display section, said adjustment mechanism including;
a dual wheel (43),
the dual center wheel (38),
planetary gears (44, 45) formed on the dual center wheel (38),
an external adjustment member (9), and
a dual adjustment member (49) rotationally driven by the external adjustment member (9), wherein said dual wheel (43) engages the planetary wheel (44) and is rotatably regulated by a jumper spring (42), said dual wheel (43) having a dual hour wheel (46) engaging the planetary wheel (45) and coaxially arranged therewith, said dual hour wheel (46) rotating by rotation of the dual center wheel (38) at a speed lower than that of the dual center wheel (38) and rotating at an integer fraction of one rotation relative to one pitch rotation of the dual wheel (43).

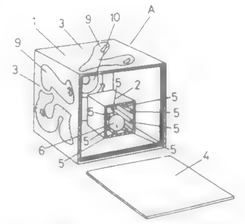
5,339,294
WATCH WITH LIGHT MEANS
Nicholas A. Rodgers, c/o Shaw & Co. SJO 892, P.O. Box 025216, Miami, Fla. 33102-521
Filed Nov. 10, 1993, Ser. No. 149,908
Int. Cl.[5] G04B *19/30*
U.S. Cl. 368—67 20 Claims

1. Watch comprising:
a timekeeping means,
a display means for displaying the time generated by the timekeeping means,
at least one light source mounted on said watch to be visible exteriorly thereof,
a battery,
a switch which alternates between OFF and ON states responsive to motion of said watch,
a circuit to selectively electrically connect said battery with said at least one light source to illuminate said source,



said circuit, responsive to the transition of said switch from OFF to ON state, to so connect said power source to said light source,
and means for disconnecting said power source from said light source on the elapsing of a predetermined time period after said transition.

5,339,295
TIMER
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Inc., Tokyo, Japan
Filed Aug. 23, 1993, Ser. No. 110,550
Claims priority, application Japan, Sep. 9, 1992, 4-69445[U]
Int. Cl.[5] G04F *8/00;* G04B *19/00*
U.S. Cl. 368—108 12 Claims



1. A timer comprising:
a plurality of square or rectangular side plates,
a polygonal cube frame formed by connecting said plurality of square or rectangular side plates to each other,
a main hollow body (1) constituted by said polygonal cube frame and lids (4, 4*a*, 4*b*) with the configuration corresponding to that of the upper and lower openings of said polygonal cube frame,
a time setting device (2) containing side plates, a spherical conductor (6) and further provided with two ON-contacts (5, 5) in the shape of a stick mounted at each inner surface of the side plates of said device (2) having a reduced and almost the same pattern as that of said main hollow body, and
said time setting device (2) being fixed to the main hollow body (1) within said body in a manner such that the side plates of said device (2) and main hollow body (1) are parallel.

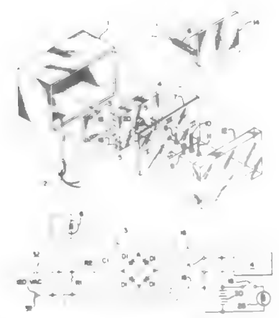
VOL 1165 ISS 3 AUG 16 1994 UMI

5,339,296

ELECTRIC ALARM CLOCK WITH BATTERY BACK-UP

Joel K. Davis, Athens, Ga., assignor to General Time Corporation, Norcross, Ga.

Filed Jun. 3, 1992, Ser. No. 893,239
Int. Cl.[5] G04B *19/30*
U.S. Cl. 368—67 4 Claims



1. An electric alarm clock comprising:
a dial made from translucent material and having graphics thereon for indicating time;
time and alarm indicating hands mounted on the dial;
a first set of terminals adapted to be connected to a rechargeable battery;
a second set of terminals adapted to be connected to an AC power source;
a charge circuit coupled to said second set of terminals for converting an AC voltage to DC voltage in order to supply a recharging voltage to a battery connected to the first set of terminals;
a quartz alarm movement supplied with DC power from the first set of terminals for driving the time indicating hands and performing an alarm function in accordance with the position of the alarm indicating hand;
a dial illuminating DC lamp;
a momentary ON-OFF switch coupling the first set of terminals to the DC lamp such that the DC lamp receives power from a rechargeable battery connected to the first set of terminals only when the switch is actuated;
an AC lamp coupled to said second set of terminals for illuminating the dial only when supplied with power from said second set of terminals; and
a molded light diffuser mounted behind said dial for piping and disbursing light rays from the AC and DC lamps through the dial.

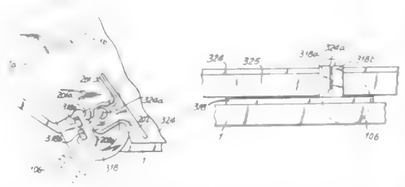
5,339,297

SWITCHING ARRANGEMENT FOR APPLYING BATTERY VOLTAGE TO CIRCUITRY BLOCK IN AN ANALOG TIMEPIECE

Hiroshi Suzuki; Shigeru Aoki; Akihiko Maruyama, and Nobuhiro Koike, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 540,065, Jun. 19, 1990, abandoned.
This application Jan. 21, 1993, Ser. No. 7,045
Claims priority, application Japan, Jun. 19, 1989, 1-156436
Int. Cl.[5] G04C *17/00*
U.S. Cl. 368—321 18 Claims

1. An electronic timepiece comprising:
a body having an interior region and an exterior region;
a power source essentially positioned in the interior region of said body
a circuitry block coupled to said power source and essentially positioned in the interior region of said body;
a switching device for controlling application of a voltage from the power source to the circuitry block and including switching means and at least two electrode patterns, said switching means including a U-shaped member having a first bent portion and a second bent portion, said first bent portion including a first contact portion and a second contact portion, said switching means essentially positioned in the interior region of said body;
control means for manual operation from the exterior region of the body of the timepiece for actuating said switching device;
wherein a proximate end of the first electrode pattern is electrically coupled to said power source and a proximate



end of the second electrode pattern is electrically coupled to said circuitry block, said U-shaped member normally biased away from said first electrode pattern and said second electrode pattern and said U-shaped member being positioned and constructed to move towards said first and second electrode patterns in response to an external pressure manually applied to said control means so that said first contact portion of said first bent portion contacts said first electrode pattern and said second contact portion of said first bent portion subsequently contacts said second electrode pattern to provide an electrical path between said first electrode pattern and said second electrode pattern.

5,339,298

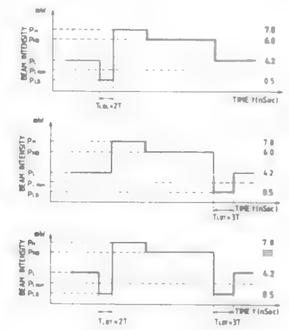
OVER-WRITE CAPABLE MAGNETOOPTICAL RECORDING METHOD WITH WIDENED POWER MARGIN, AND MAGNETOOPTICAL RECORDING APPARATUS USED IN THIS METHOD

Jun Saito, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,934
Claims priority, application Japan, Sep. 13, 1991, 3-234674
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 6 Claims

1. An over-write magnetooptical recording method having improved ease of discrimination of data, comprising the steps of:
preparing an over-write multi-layered magnetooptical recording medium, which consists of at least two layers including a memory layer and a writing layer, and in which the memory layer and the writing layers are exchange-coupled to each other, a direction of magnetization of the writing layer can be aligned in a predetermined direction at room temperature without changing a direction of magnetization of the memory layer, and the direction of the magnetization of the writing layer is already aligned in the predetermined direction;
rotating said medium;
radiating a laser beam onto said medium;
pulse-modulating an intensity of the laser beam between a high level P_H and a low level P_L according to binary coded information to be recorded; and
applying a bias field to an irradiation position of the laser beam,

wherein when a mark previously formed by the beam at the high level P_H is defined as a pre-recorded mark, and a minimum low level P_L for erasing the pre-recorded mark upon irradiation of a DC-ON laser beam is defined as a limit value P_{Lmin},
when the intensity of the laser beam is increased from the



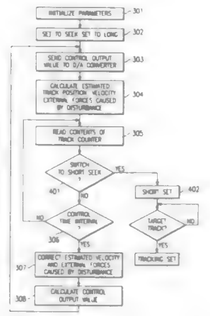
low level P_L to the high level P_H, the intensity is temporarily decreased below the limit value P_{Lmin} and is then increased to the high level P_H, the intensity of the laser beam is decreased to continue the mark formation after mark formation based on the high level P_H is started, and the intensity is returned to the low level P_L after the mark formation.

5,339,299

OPTICAL DISK DRIVE APPARATUS FOR SEARCHING A TARGET TRACK

Naoyuki Kagami, Fujisawa, and Hiroaki Kubo, Oomihachiman, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1992, Ser. No. 978,604
Claims priority, application Japan, Dec. 25, 1991, 3-343335
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—32 13 Claims



1. An optical disk drive apparatus comprising:
a coarse tracking actuator for driving an optical head;
a fine tracking actuator for driving an objective lens on said optical head;
tracking error detecting means for generating a tracking error signal indicating a positional difference between an optical spot irradiated on an optical disk and a target disk;
means for driving said coarse tracking actuator in the tracking direction based on the number of remaining tracks from the current track to the target track and for driving said fine tracking actuator in the tracking direction based on a relative position error signal if the number of remaining tracks is not smaller than a predetermined number; and
means for driving said coarse tracking actuator in the tracking direction based on said relative position error signal and for driving said fine tracking actuator in the tracking direction under velocity control based on said tracking error signal if the number of remaining tracks is smaller than the predetermined number.

5,339,300

OPTICAL DATA RECORDING APPARATUS AND AN OPTICAL DATA RECORDING/REPRODUCING METHOD PERFORMING SERVO CONTROL WITH BOTH A RECORDING LIGHT BEAM AND A REPRODUCING LIGHT BEAM

Yuichiro Akatsuka, and Horiguchi Toshio, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 7,625
Claims priority, application Japan, Jan. 24, 1992, 4-010808; May 14, 1992, 4-121934
Int. Cl.[5] G11B *7/09*
U.S. Cl. 369—44.29 23 Claims

1. An optical data recording apparatus, which irradiates light beams to a recording medium having a plurality of tracks and provides at least data recording to said recording medium, comprising:
first light source means for emitting light including a recording light beam;
second light source means for emitting a light beam having a power weaker than said recording light beam;
error signal detection means having error signal detection means for detecting at least one of:
a track error signal showing a shift between an irradiation position of a light beam sent from said second light source means to said recording medium and a position of one of said tracks, and
a focus error signal showing a shift between a focal position of a light beam from said second light source means and a position of said recording medium;
control means for controlling at least one of an irradiation position, and a focal position of said recording light beam to said recording medium, based on at least one of the track error signal and the focus error signal detected by said error signal detection means; and
memory means for storing a correction value for canceling a shift of at least one of the irradiation position of said recording light beam and the focal position of said recording light beam in response to emission of a light beam from said first light source means onto said recording medium, at least one of said shifts being generated when at least one of the irradiation position and the focal position of said recording light beam to said recording medium is controlled based on at least one of the track error signal and focus error signal detected by said error signal detection means, and said correction value being added to at least

VOL 1165 ISS 3 AUG 16 1994 UMI

one of the track error signal and the focus error signal by said control means.

5,339,301

OPTICALLY READABLE RECORD CARRIER FOR RECORDING INFORMATION, METHOD AND APPARATUS FOR MANUFACTURING SUCH, APPARATUS FOR RECORDING AND READING INFORMATION ON A SUCH A RECORD CARRIER

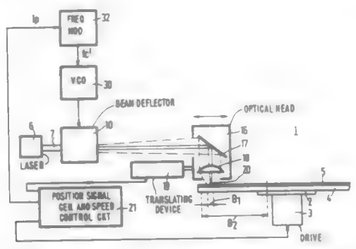
Wilhelmus P. M. Raaymakers; Franciscus L. J. M. Kuijpers; Aartje W. Veenis; Johannes H. T. Pasman, and Hendricus A. M. Mulder, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 430,918, Oct. 31, 1989, abandoned, which is a continuation of Ser. No. 105,064, Oct. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 15,454, Feb. 17, 1987, abandoned. This application Jul. 29, 1993, Ser. No. 99,770

Claims priority, application Netherlands, Oct. 6, 1986, 8602504; Mar. 20, 1987, 8700655

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—50 **5 Claims**



1. A record carrier comprising a disc-shaped substrate having a spiral or concentric pattern of tracks on a surface thereof and the radiation-sensitive layer extending over the track pattern, said tracks being adapted to have information recorded thereon and read therefrom by a scanning beam of radiation which successively scans the successive tracks and produces detectable radiation therefrom; characterized in that:

said tracks are in the form of ridges of substantially constant width which extend to a uniform height above the surface of said substrate;

each track has a periodic wobble in a radial direction on said substrate which during scanning of a track modifies the radiation therefrom in accordance with a frequency modulated clock signal, the frequency modulation of said clock signal constituting a digital position-information signal;

the clock signal of each track has a frequency corresponding to the speed of scanning of said track, whereby it is adapted for use as a scanning speed control signal; and

the digital position-information signal of each track identifies successive positions along said track and the relative position of said track in the track pattern.

5,339,302

RF SIGNAL-COMPENSATED SYSTEM FOR READING AN OPTICAL DISC PLAYER WITH AN ABSOLUTE TIME DETECTOR

Hiroyuki Takahashi, and Shinichi Nagahara, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 966,916

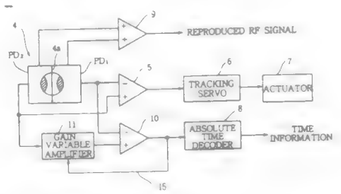
Claims priority, application Japan, Oct. 31, 1991, 3-313554

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—54 **4 Claims**

1. A reading system for an optical disc having a spiral groove with a wobbled inside wall and pits for representing recorded data, and a pair of photodetector elements for detecting a spot of a laser beam reflected on the optical disc, the system comprising:

differential amplifier means connected to said photodetector elements, for deriving a difference between outputs of said photodetector elements;



means for adjusting a level of at least one of the outputs to a level of the other output, so that said difference becomes zero, wherein said differential amplifier means produces a wobbled signal without an RF signal; and

absolute time detecting means for detecting an absolute time from the wobbled signal.

5,339,303

APPARATUS FOR REPRODUCING INFORMATION FROM OPTICAL DISK ON WHICH INFORMATION IN RECORDED BY MARK LENGTH RECORDING

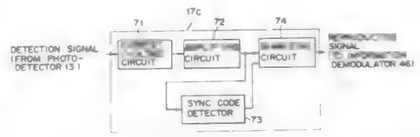
Tomohisa Yoshimaru, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 30, 1991, Ser. No. 737,489

Claims priority, application Japan, Jul. 31, 1990, 2-201533

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—59 **3 Claims**



1. A data reproducing apparatus for reproducing data from an optical disk having a fixed code section and a data recording section, the fixed code section having fixed widths to pit-to-pit distances is 1:n, n being a natural number, the data recording section having pits which are continuous with the pits of the fixed code section and which represent recorded data with pit widths and pit-to-pit distances, the data reproducing apparatus comprising:

first detecting means for detecting pits on the disk and generating an analog signal corresponding to the fixed code data and the recorded data;

second detecting means for detecting the fixed code data from the analog signal detected by the first detecting means and outputting a corresponding detection signal;

determining means for determining an average value of the analog signal detected by the first detecting means while the second detecting means is detecting the fixed code data, thereby determining the average value based on the fixed code data detected by the second detecting means; and

binarizing means for determining a binary representation of the analog signal detected by the first detecting means using the average value determined by the determining means as a slice level when the second detecting means is not detecting the fixed code data, thereby binarizing the recorded data in the analog signal by comparing the average value slice level with a threshold level.

5,339,304

OPTICAL DISC HAVING TWO-STEP PIT STRUCTURE AND PICKUP APPARATUS

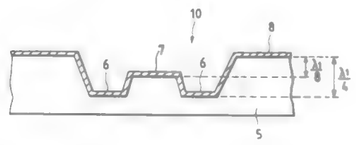
Minoru Hanaoka, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 787,583, Nov. 4, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,117

Claims priority, application Japan, Jun. 6, 1991, 3-135101

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—109 **10 Claims**



1. An optical disc comprising:

a first set of pits arranged in a track direction and having a first depth; and

a second set of pits arranged adjacent to and within said first set of pits and in the track direction, said second set of pits having a second depth.

5,339,305

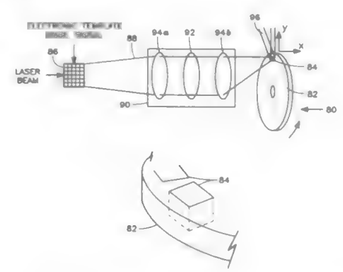
DISK-BASED OPTICAL CORRELATOR AND METHOD

Kevin R. Curtis, Lancaster, and Demetri Psaltis, Pasadena, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Aug. 14, 1992, Ser. No. 930,095

Int. Cl.[5] G11B *7/00;* **G06K** *9/76*

U.S. Cl. 369—112 **34 Claims**



8. An optical recording medium useful for performing optical correlations, comprising:

an optical recording layer of a thickness sufficient for recording volume holographic information throughout the volume of each of a plurality of spots therein;

a plurality of recorded spots in said medium spaced apart along a first direction, each of said spots including plural multiplexed volume holograms of template images imaged along said first direction and Fourier transformed along a second direction orthogonal to said first direction.

5,339,306

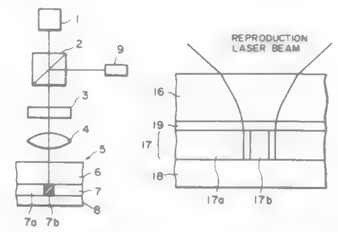
DETECTING INTERFERENTIAL DIFFRACTION OF A REFLECTED BEAM FROM A POLYMER LIQUID CRYSTAL RECORDING MEDIUM

Kazuo Yoshinaga, Machida; Katsuya Oikawa, Yokohama, and Toshikazu Ohnishi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 514,965, Apr. 26, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 892,657

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—275.1 **7 Claims**



1. An information reproduction apparatus, comprising:

a memory medium including a memory layer comprising a polymer liquid crystal and a reflection layer disposed on a substrate, the memory layer comprising a record pit formed by irradiation with a writing optical beam, thereby providing said pit with a width and a refractive index which is different from that of a neighboring non-record part,

a means for irradiating the record pit with a reproducing optical beam having a spot diameter larger than the width of the record pit, and

a means for detecting interferential diffraction of a reflected beam from the record pit to reproduce recorded data.

5,339,307

DATA COMMUNICATION SYSTEM WITH A LOCAL NETWORK INTERFACE

Robert A. Curtis, Hudson, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 724,564, Jun. 28, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 52,808

Int. Cl.[5] H04J *3/02;* **H04L** *25/40*

U.S. Cl. 370—13.1 **12 Claims**

1. The data communication system including a plurality of nodes, comprising:

data bus means;

current bus means;

a plurality of transceivers, each said transceiver coupled to an associated node and to the data bus means and the current bus means, for data communication between the transceiver and the associated node, each transceiver inserting a current signal onto the current bus means when the transceiver is placing data onto the data bus means, and each transceiver having media device interface means coupled to an output terminal of the associated node and responsive to a data received sequence generated by the associated node, the media device interface means having a first output terminal coupled to the data bus means, for transmitting a data received voltage signal thereto, and a second output terminal for generating a current source enable signal when the transceiver is placing the data onto the data bus means, wherein the controlled current source is provided with a control input terminal coupled to a second output terminal of the media device interface means, and is further provided with an output terminal coupled to the current bus means, for generating a current of a predetermined magnitude in response to the current source enable signal;

VOL 1165 ISS 3 AG 16 1994 UMI

first resistor means having one terminal coupled to one terminal end of said current bus means, and having the other terminal coupled to a reference voltage source;

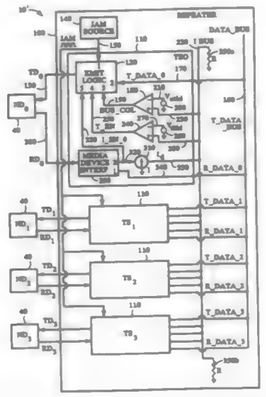
second resistor means having one terminal coupled to the other terminal end of the current bus means, and having the other terminal coupled to the reference voltage source;

a jam source means for generating a jam signal having a predetermined bit pattern;

collision threshold voltage source means for generating a collision threshold voltage of a first predetermined magnitude;

bus collision detector means, having a first input terminal responsive to the collision threshold voltage and a second input terminal coupled to the current bus, for generating a bus collision signal; and

data threshold voltage source means for generating a data threshold voltage of a second predetermined magnitude;



data bus threshold detector means, having a first input terminal responsive to the data threshold voltage and a second input terminal coupled to the current bus, for generating a transmission enable signal; and

data transmit logic means, having a first input terminal responsive to the jam signal, a second input terminal responsive to a data transmitted voltage signal from the data bus means, a third input terminal responsive to the bus collision signal, a fourth input terminal responsive to the transmission enable signal, a fifth input terminal responsive to the current source enable signal, and an output terminal of the data transmit logic means coupled to an input terminal of the node, for transmitting a data transmitted sequence to the associated node in the absence of the bus collision signal whenever the transmission enable signal is present and for transmitting the jam signal whenever the bus collision signal is present.

5,339,308

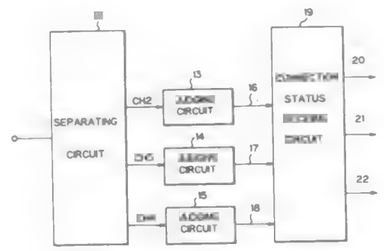
SIGNAL SIZE JUDGING APPARATUS

Hiroki Rikiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 19,656
Claims priority, application Japan, Feb. 19, 1992, 4-069636
Int. Cl.[5] H04J *3/12, 3/22*
U.S. Cl. 370—17 **2 Claims**

1. A signal size judging apparatus for judging the connection status of basic signals for a plurality of constituent channels, said basic signals having particular bit rate and frame construction, in a digital transmission system capable of transmitting signals of higher bit rate than the particular bit rate by inputting identification signals indicating connection with immediately preceding basic signal within a frame at the time of synchronous multiplexing after frame alignment of the basic signals of a plurality of channels to connect the basic signals for the plurality of channels within a multiplexed signal, comprising:

separating means for receiving the multiplexed signal and for separating the multiplexed signal into its constituent basic signals for each channel,



a set of judging means, each corresponding to the basic signal for each channel except the foremost channel, for receiving the output basic signals of said separating means and for judging whether or not the basic signal for the channel concerned is connected to the basic signal for the channel immediately preceding said channel, and

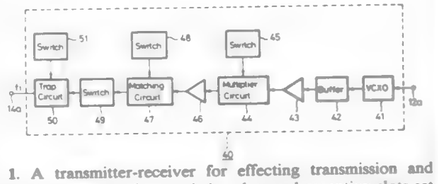
connection status deciding means for deciding as to how the basic signals for the plurality of channels are connected on the basis of all of the possible results of judgment of said judging means.

5,339,309

TRANSMITTER-RECEIVER

Shin Saito, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 24, 1992, Ser. No. 996,715
Claims priority, application Japan, Dec. 27, 1991, 3-346621
Int. Cl.[5] H04B *1/40;* **H04L** *5/14*
U.S. Cl. 370—29 **6 Claims**



1. A transmitter-receiver for effecting transmission and reception by way of transmission slots and reception slots set within one channel in a time division manner, comprising:

(a) a frequency synthesizer for producing a signal having a first predetermined frequency corresponding to said one channel;

(b) a transmitting circuit receiving input data for forming a transmission signal having said first predetermined frequency from said input data and said signal from said frequency synthesizer; and

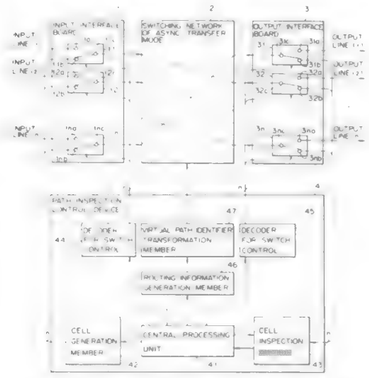
(c) a receiving circuit for forming output data from a reception signal having said first predetermined frequency by mixing said reception signal with said signal having said first predetermined frequency from said frequency synthesizer, wherein said transmitting circuit includes modulating means for modulating said input data into a second predetermined frequency and a multiplier circuit for converting an output signal of said modulating means into a predetermined intermediate frequency, the supply of a voltage to said multiplier circuit being stopped during a period of said reception slots.

5,339,310

SWITCHING APPARATUS FOR SWITCHED NETWORK OF ASYNCHRONOUS TRANSFER MODE

Ikuo Taniguchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki and Nippon Telegraph and Telephone Corp., Tokyo, both of Japan

Filed Mar. 11, 1992, Ser. No. 849,339
Claims priority, application Japan, Mar. 14, 1991, 3-049474
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **3 Claims**



1. A switching apparatus for a switched network operable in an asynchronous transfer mode comprising:

an input interface board adapted to receive cells for path inspection and having a sequence of switches;

a switching network connected to said input interface board and having switching circuits for switching the transmissions of the cells for path inspection in accordance with external routing information;

an output interface board connected to said switching network and having a sequence of switches for delivering the cells for path inspection received from said switching network; and

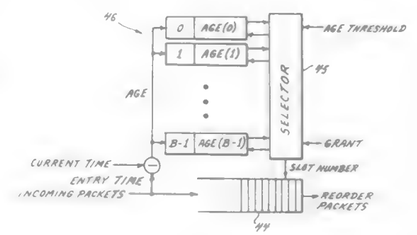
a path inspection control device connected to said input interface board, said switching network and said output interface board for controlling the path inspection through said input interface board, said switching network and said output interface board, said path inspection control device operating such that cells for path inspection are supplied in parallel to said input interface board, routing information is supplied to said switching network, the transmissions of the cells for path inspection are delivered in parallel formation from said output interface board, the cells for path inspection delivered from said output interface board are compared with predetermined comparison data and the routing information and the cells for path inspection or the comparison data are changed in synchronization with predetermined time signals, the cells for path inspection being scheduled and the scheduled cells for path inspection being passed in parallel from the input side to the output side, in order to confirm the normalness of the switching functions of all the sequences of switches and switching circuits.

5,339,311

DATA PACKET RESEQUENCER FOR A HIGH SPEED DATA SWITCH

Jonathan S. Turner, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Continuation of Ser. No. 663,100, Mar. 1, 1991, Pat. No. 5,260,935. This application Jan. 19, 1993, Ser. No. 5,587
The portion of the term of this patent subsequent to Nov. 9, 2000, has been disclaimed.
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **3 Claims**



1. In a high speed data packet switch having means for routing a plurality of data packets between a plurality of inputs and a plurality of outputs, said routing means being indifferent to any sequence of said data packets so that data packets routed therethrough are permitted to appear at said plurality of outputs in a sequence different from the sequence of said data packets at said plurality of inputs, the improvement comprising means for resequencing said data packets at said plurality of outputs into the same sequence as said data packets were in as said plurality of inputs, said re-sequencing means including means for placing said data packets into the same sequence determined by the time each of said data packets was received at said plurality of inputs, a buffer associated with each of said outputs for receiving and storing a plurality of data packets therefrom, and means for determining the age of said stored data packets, the means for determining the age of said data packets comprising means for time stamping said data packets with an entry time as they arrive at said inputs and means for comparing said entry time with an exit time as said data packets arrive at said buffers, the difference between said entry time and said exit time being defined as the present age of said data packets.

5,339,312

STATION INTERFACE UNIT

Laurence D. Sawyer, Park City; Robert A. Lindsay, Bountiful, and Steven C. Tate, Manti, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 17, 1993, Ser. No. 32,574
Int. Cl.[5] H04L *29/12*
U.S. Cl. 370—85.1 **13 Claims**

1. A parallel bit word interface unit for connection to a bus, comprising:

input phase adjuster means for adjusting the input data phase to provide stable input data,

input register means coupled to the output of said input phase adjuster means for receiving single parallel bit words having an address field and a data field,

sink decoding means coupled to the output of said input register means for comparing stared addresses with the address field of said single parallel bit words and having an enable signal generation means,

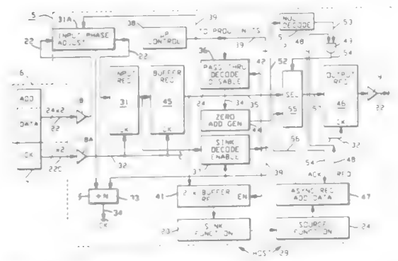
sink buffer register means coupled to the output of said input register means and to said enable signal generation means for storing the data field of said single parallel words when enabled by said sink decoding means,

buffer storage means coupled to the output of said input

VOL 1165 ISS 3 AG 16 1994 UMI

register means for receiving and storing said single parallel bit words,

output register means coupled to said buffer storage means for receiving and storing single parallel bit words to be passed onto a bus from said interface unit,



pass through decoding means coupled to the output of said sink decoding means for generating a disable signal, and

zero address generation means coupled to the output of said pass through decoding means for filling and storing the address field of said output register means with zeros when not disabled by said pass through decoding means.

5,339,313

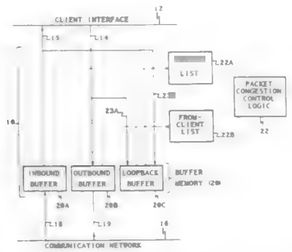
METHOD AND APPARATUS FOR TRAFFIC CONGESTION CONTROL IN A COMMUNICATION NETWORK BRIDGE DEVICE

Siman-Tov Ben-Michael; Philip P. Lozowick, both of Jerusalem, Israel; William Hawe, Pepperell, and Butler Lampson, Cambridge, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 722,747

Int. Cl.[5] H04L *12/46*

U.S. Cl. 370—85.13 **16 Claims**



1. A method for controlling the flow of data packets that are either outbound from a half-duplex client interface using a Carrier Sense Multiple Access with Collision Detection (CSMA/CD) protocol, to a communication network, or inbound from the communication network to the client interface, in such a manner as to minimize buffer memory requirements, the method comprising the steps of:

receiving inbound data packets from a communication network;

storing each inbound data packet, if necessary, until the client interface becomes available;

transmitting the packet onto the client interface;

receiving outbound data packets from the client interface;

storing each outbound data packet, if necessary, until the communication network becomes available;

transmitting the outbound data packet onto the communication network; and

controlling the steps of transmitting to and receiving from the client interface, to minimize buffering requirements; wherein the step of controlling transmitting to and receiving from the client interface includes selecting a time interval to wait before retransmitting in the event of a conflict for access to the client interface, the time interval being selected based on the numbers of inbound and outbound data packets stored for later processing.

5,339,314

PACKET DATA TRANSMISSION UNIT HAVING OCCUPIED, IDLE, AND RELEASED STATES THEREFOR

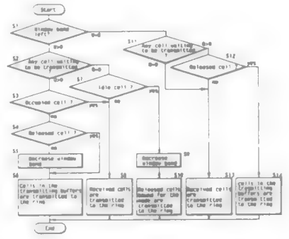
Tsutomu Tanaka, Nishinomiya, and Hiroshi Yokota, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 13, 1992, Ser. No. 882,608

Claims priority, application Japan, May 14, 1991, 3-107802

Int. Cl.[5] H04J *1/16*

U.S. Cl. 370—13 **23 Claims**



19. A method of controlling data packet flow at a node in a data transmission system comprising the steps of:

designating three states for the data packets: occupied, idle, and released, and coding the data packets into three corresponding types to create an occupied packet, an idle packet, and a released packet, an idle packet being one which contains no user data, a released packet being one containing no user data and further containing an address identifying said packet as a released packet;

transmitting an occupied packet from said node at least when a packet received by said node is idle and there are data to be transmitted and continuing to transmit packets until the number of packets transmitted reaches a selected limit assigned to the node;

after said limit has been exceeded, transmitting an occupied packet from said node only when a received packet is in the released state and there are data to be transmitted; and

responding to a packet received at said node which is in the idle state, and to the concurrent absence of data to be transmitted by said node, to transmit a released packet from said node.

5,339,315

CABLE BROADCASTING SYSTEM AND THE TRANSMISSION CENTER FOR ON DEMAND PROGRAM SERVICES

Kazuki Maeda; Kuniaki Utsumi, and Katsuyuki Fujito, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 22, 1992, Ser. No. 887,475

Claims priority, application Japan, May 24, 1991, 3-119832; Jan. 27, 1992, 4-120809

Int. Cl.[5] H04N *7/173*

U.S. Cl. 370—85.1 **23 Claims**

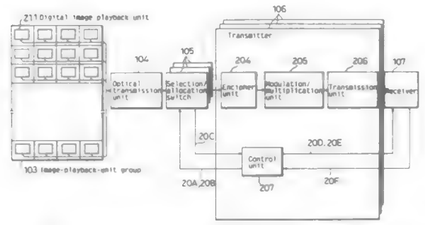
1. A transmission center for on demand television for communicating with subscribers and providing a plurality of television channels to subscribers, each channel being capable of

carrying at least one image signal, the transmission center comprising:

an image playback means for producing a plurality of image programs repetitively, each image program being simultaneously available in more than one version, the versions being identical except for being time-shifted in relation to one another;

a receiving means for receiving a demand for an image program from the subscribers;

a first selection means for selecting the image program demanded by the subscriber, the selected image program being one of the versions of the plurality of image programs repetitively produced by the image playback means;



a second selection means for selecting an available channel in a transmission line connecting the transmission center and a group of the subscribers to provide the selected image program to the subscribers as the image signal;

a signal processing means for enciphering the image signal of the selected image program, and subsequently modulating and multiplexing the enciphered image signal;

a transmission means for transmitting the image signal of the image program selected by the first selection means to the subscriber on the channel selected by the second selection means after the processing of the signal by the signal processing means; and

a notifying means for notifying the subscriber of the selected channel and a deciphering key for the image signal.

5,339,316

WIRELESS LOCAL AREA NETWORK SYSTEM

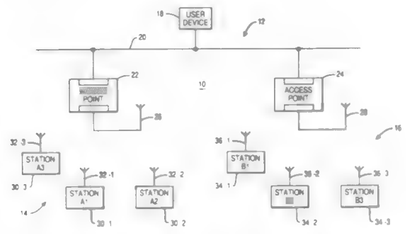
Wilhelmus J. M. Diepstraten, Diessen, Netherlands, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 2, 1993, Ser. No. 42,190

Claims priority, application United Kingdom, Nov. 13, 1992, 9223890

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.13 **11 Claims**



8. In a local area network system, including a wired local area network (**12**) connected via bridging means (**22**) to a wireless local area network (**14**) having a plurality of wireless stations (**30**) communicating over a wireless channel, the improvement comprising:

said wireless stations (**30**) including transmission means (**32**) adapted to transmit information packets over said wireless channel;

said bridging means (**22**) including wireless transceiver means (**26,62**) adapted to receive information packets transmitted over said wireless channel and to sense whether a first acknowledge signal (**90**) transmitted from a destination wireless station (**30**) included in said wireless local area network (**14**) is detected during a predetermined time interval (T3) following receipt of an information packet, said wireless transceiver means (**26,62**) being adapted to transmit a second acknowledgment signal (**92**) on said wireless channel of said information packet if an information packet is validly received at said bridging means (**22**) and if said first acknowledge signal has not been detected during said predetermined time interval (T3); and

said bridging means (**22**) includes further transceiver means (**40**), whereby if no first acknowledge signal is detected in said predetermined time interval (T3), said information packet is retransmitted by said wireless transceiver means (**26,62**) over said wireless channel.

5,339,317

PACKET COMMUNICATIONS NETWORK AND COMMUNICATIONS METHOD

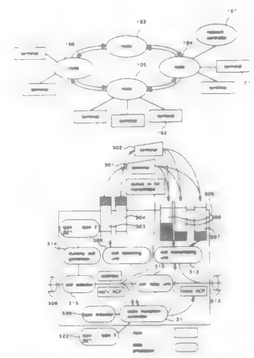
Tsutomu Tanaka, Nishinomiya; Hiroshi Yokota, and Kouji Kubota, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 28, 1992, Ser. No. 937,480

Claims priority, application Japan, Aug. 28, 1991, 3-217143; May 22, 1992, 4-131125

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—85.15 **12 Claims**



1. A packet communications network transmitting data between nodes by the use of a plurality of cell slots circulating the network, the network being characterized by a bandwidth, the network comprising:

a plurality of nodes connected in a ring network;

a network controller connected to one of said nodes for allocating one of a plurality of portions of said bandwidth to each of said nodes;

a center node inserted in said ring network for sequentially generating, at a selected rate, first and second types of cell slots for transmitting first and second types of data, respectively, each of said cell slots including a type code identifying said cell slot as being associated with one of said first and second types of data, each of said cell slots including a status code defined for use according to a first

VOL 1165 ISS 3 AG 16 1994 UMI

ring access system when said cell slot is associated with said first type of data and defined for use according to a second ring access system when said cell slot is associated with said second type of data;

each of said plurality of nodes comprising:

address detection means for detecting whether a node receiving a cell slot is an addressee node;

type detection means for detecting whether said received cell slot is associated with said first data type or said second data type;

status detection means for detecting said status code of said received cell slot;

data putting means for putting data on said received cell slot according to said first ring access system when said received cell slot is of said first data type and according to said second ring access system when said received cell slot is of said second data type; and

status transition means for changing said status code of said received cell according to said ring first access system when said received cell is of said first data type and according to said second ring access system when said received cell slot is of said second data type.

5,339,318

VPI AND VCI ASSIGNMENT SYSTEM IN ATM SYSTEM

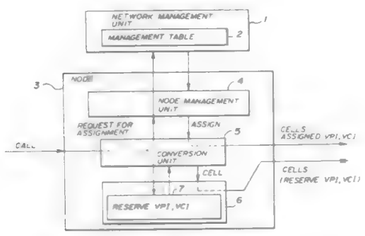
Kenji Tanaka; Susumu Eda; Katsumi Oomuro; Ryuji Hyodo; Osamu Sekihata; Hiroyuki Hatta, and Reiko Norizuki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 22, 1992, Ser. No. 964,924

Claims priority, application Japan, Oct. 24, 1991, 3-277543

Int. Cl.[5] H04J *3/12*

U.S. Cl. 370—110.1 **15 Claims**



1. A channel assignment system in combination with a network having a plurality of nodes and a plurality of terminals, each of the nodes including a conversion unit which generates fixed-length cells, including channel identification and data, from data sent from one of the terminals, and a node management unit which manages a corresponding node, said channel assignment system comprising:

management means for assigning virtual channels to calls and managing information concerning virtual channels currently assigned to the calls and idle virtual channels;

assignment requesting means, provided in each of the nodes and connected to said management means, for requesting said management means to assign an idle virtual channel to a call received from one terminal of the plurality of terminals;

channel identification set means for setting channel identification of the cells based on the idle virtual channel; and

assignment cancelling means, provided in each of the nodes and connected to said management means, for requesting said management means to set said virtual channel assigned to said call in an idle state in response to an end of a communication related to said call.

5,339,319

ROTARY TYPE STORAGE APPARATUS AND CONTROL METHOD THEREOF

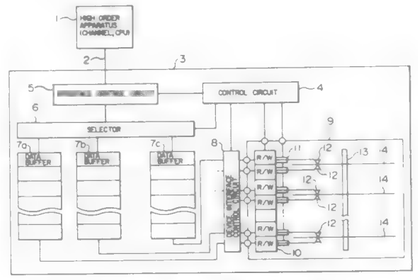
Yuji Yamane, Odawara; Toshimitsu Kaku, Sagamihara; Yasushi Fukuda, Odawara; Hitoshi Komatsu; Nobuhiro Matsumura, both of Kanagawa; Shigenori Okamine, Kodaira; Kiyoshi Matsumoto, Kokubunji; Soichi Isono, Yokohama, and Kunihiko Kizaki, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1991, Ser. No. 724,716

Claims priority, application Japan, Jul. 5, 1990, 2-178323

Int. Cl.[5] G06F *11/00;* **G11B** *7/13*

U.S. Cl. 371—10.2 **6 Claims**



1. A rotary type storage apparatus, comprising:

a rotary type storage medium to which a plurality of concentric or spiral information tracks are set, and having a plurality of information recording planes in which each of said plurality of information tracks is subdivided into a plurality of sectors in a circumferential direction;

a plurality of read/write heads provided with each or said information recording planes and for accessing said information tracks; and

a head drive mechanism for controlling positioning operations of said plurality of read/write heads to said information tracks;

at least one of said plurality of information recording planes being used as a recording plane for allotting substitution information tracks provided with a substitution sector corresponding to a failed sector present on another information recording plane;

wherein said head drive mechanism is a single head drive mechanism; said plurality of read/write heads are simultaneously positioned to a cylinder constructed of a group of the information tracks positioned at the same position of said plural information recording planes in a radial direction thereof by way of said single head drive mechanism, whereby in a group of said information tracks belonging to said cylinder, the information read/write operations for said plurality of sectors present at the same position along a circumferential direction are performed at the same time; and said substitution sector is arranged at a subsequent sector position with respect to said plurality of sectors which are present at the same position along the circumferential direction in the substitution information track belonging to the same cylinder.

5,339,320

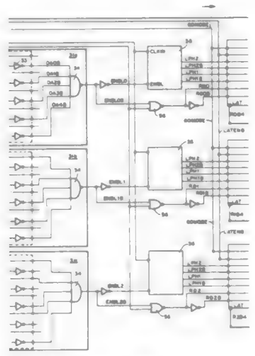
ARCHITECTURE OF CIRCUITRY FOR GENERATING TEST MODE SIGNALS

Mickey L. Fandrich, Placerville; Jerry A. Kreifels, Citrus Heights, and Virgil N. Kynett, El Dorado Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 12, 1991, Ser. No. 791,772

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—22.1 **10 Claims**



1. An arrangement for generating signals for causing a particular set of test conditions within a digital circuit, comprising:

a plurality of latches for storing individual bits of data representing the test conditions to be accomplished within the digital circuit, the latches each having input and output terminals;

the output terminals of each of the latches being connected to individual portions of the digital circuit to effect the test conditions;

means connected to the input terminals of the latches for setting individual selected ones of the latches to provide the test conditions.

5,339,321

DECODING SIGNAL ERROR CONCEALMENT SYSTEM

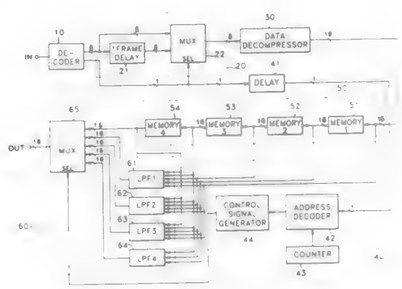
Seung-kwon Paek, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Mar. 14, 1991, Ser. No. 669,466

Claims priority, application Rep. of Korea, Jun. 29, 1990, 90-9769

Int. Cl.[5] G11B *20/18*

U.S. Cl. 371—31 **6 Claims**



1. A decoding error concealment system for a digital VTR system for reproducing image data and removing error signals in the image data which is coded in N×N blocks where N is greater than 1 and recorded on tape comprising:

an error correction decoder for outputting specified bits of data corresponding to coded image data recorded on tape and an error flag signal, respectively;

a block data selecting unit for selecting between specified bits of data transmitted from one terminal of the said error correction decoder and data from a fixed frame preceding the transmitted data according to the level of the error flag signal transmitted from the other terminal of the error correction decoder;

a block data decoding unit for separating specified bytes of code selectively output from said block data selecting unit into luminance and chrominance blocks of N×N bytes of image elements and decoding the blocks;

an address and control signal generating unit for generating an address for recognizing the position of the image element within the N×N block according to the level of the error flag output from the other terminal of the said error correction decoder and outputting a control signal according to this address,

a line memory unit for sequentially storing the data separated into luminance and chrominance blocks by said block data decoding unit into several line memories serially connected to an output terminal of said block data decoding unit, and

a filtering data selecting unit for filtering data transmitted from input and output terminals of the serially connected line memories of said line memory unit and for selecting a filtered output in dependence upon the position of the image element within the N×N block of image elements selected by said block data selecting unit according to the control signal output from said address and control signal generating unit to reproduce the filtered output.

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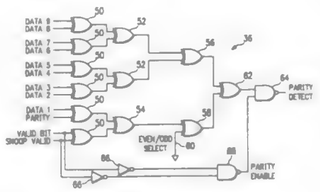
CACHE TAG PARITY DETECT CIRCUIT

Bahador Rastegar, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Mar. 29, 1991, Ser. No. 677,313

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—51.1 **20 Claims**



8. A cache tag memory, comprising:

a memory array having a plurality of addressable entries, and further having, for each entry a parity bit and first and second valid bits indicating whether the entry is valid;

a first input/output port connected to said memory array;

a second input/output port connected to said memory array;

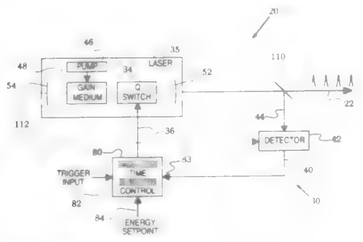
a parity generating circuit for generating a parity bit indicating parity for a data value stored into a memory array entry, and for storing such parity bit into the array;

a first and a second parity detect circuit connected to said memory array and associated with said first and second input/output ports, respectively; and

disabling means connected to said first and second parity detect circuits for disabling them when the first and second valid bits for an entry are in a preselected state

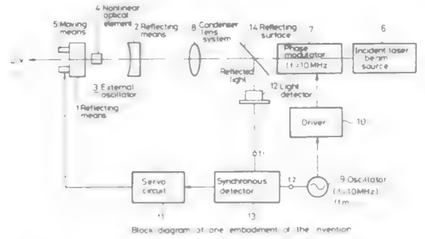
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,323
LASER SYSTEM FOR CONTROLLING EMITTED PULSE ENERGY
John Hunter, and Sunil Gupta, both of Camarillo, Calif., assignors to Lumonics Corporation, Camarillo, Calif.
Filed Apr. 30, 1993, Ser. No. 55,965
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—25 8 Claims



1. A laser system for controlling the energy of emitted light pulses to substantially equal an energy setpoint, comprising:
a laser including a Q-switch having high loss and low loss states respectively causing output light emission from said laser to be absent and present;
a light detector responsive to said output light emission for producing a feedback signal; and
a controller placing said Q-switch in said high loss state for a time duration dependent upon said feedback signal and said energy setpoint.

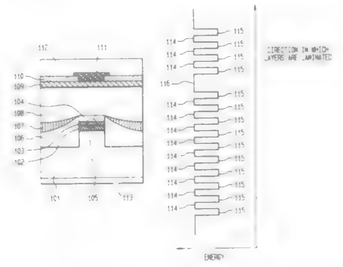
5,339,324
LASER BEAM GENERATOR INCLUDING AUTOMATIC RESONATOR LENGTH CONTROL
Naoya Eguchi, Tokyo, and Michio Oka, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 22, 1993, Ser. No. 96,346
Claims priority, application Japan, Jul. 28, 1992, 4-201328
Int. Cl.[5] H01S *3/13, 3/08*
U.S. Cl. 372—29 14 Claims



Block diagram of one embodiment of the invention

1. A laser beam generator for generating a wavelength converted laser beam comprising:
a source of light;
an external resonator;
a pair of reflecting means provided at said external resonator;
a nonlinear optical crystal provided in said external resonator and provided an incident laser beam from said source of light thereto;
a moving means for moving at least one of said pair of reflecting means in an optical axis direction and making resonator length control; and
wherein said moving means is supplied with a resonator length error signal due to a deviation between the length of said external resonator and that to said incident laser beam and with a reflected signal from said resonator as a result of reflection of said incident laser beam from said resonator as pulling-in signals for resonator length servo.

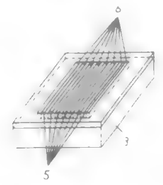
5,339,325
STRAINED MULTIPLE QUANTUM WELL SEMICONDUCTOR LASER AND A METHOD FOR PRODUCING THE SAME
Masahiro Kito, Toyonaka, and Yasushi Matsui, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 4, 1993, Ser. No. 101,933
Claims priority, application Japan, Aug. 4, 1992, 4-207743
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 16 Claims



1. A strained multiple quantum well semiconductor laser comprising:
a semiconductor substrate;
a multiple quantum well active layer including a plurality of quantum well layers and a plurality of barrier layers, each of the plurality of quantum well layers having a lattice constant different from a lattice constant of the semiconductor substrate, and each of the plurality of barrier layers being interposed between two of the quantum well layers; and
a multilayer structure including the multiple quantum well active layer, the multilayer structure being formed upon the semiconductor substrate,
wherein at least one of the plurality of barrier layers is thicker than the other barrier layers, thereby serving as a layer for absorbing strain which is stored in the barrier layers due to a difference between the lattice constant of the semiconductor substrate and the lattice constant of each quantum well layer.

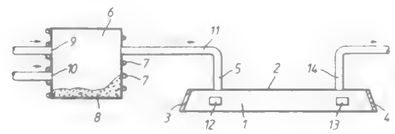
5,339,326
REFLECTOR FOR SEMICONDUCTOR LASER END-FACE AND METHOD OF MANUFACTURING THE SAME
Ayumu Tsujimura, Takatsuki; Kazuhiro Ohkawa, Hirakata; Shigeo Yoshii, Nagaokakyo, and Tsuneo Mitsuyu, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Ogawa, Japan
Filed Aug. 30, 1993, Ser. No. 112,978
Claims priority, application Japan, Sep. 14, 1992, 4-244376
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—49 11 Claims

1. A reflector for an end-face of a semiconductor laser device comprising at least two dielectric films having a refractive index different from each other deposited on the end-face of a



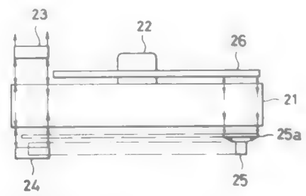
semiconductor laser device having an oscillating wavelength from 370 to 600 nm.

5,339,327
METAL VAPOUR LASER APPARATUS
Ewan S. Livingstone, Chelmsford, and Graeme L. Clark, Basildon, both of United Kingdom, assignors to EEV Limited, Chelmsford, United Kingdom
Filed Jul. 12, 1993, Ser. No. 89,440
Claims priority, application United Kingdom, Jul. 30, 1992, 9216270
Int. Cl.[5] H01S *3/22, 3/223*
U.S. Cl. 372—56 11 Claims



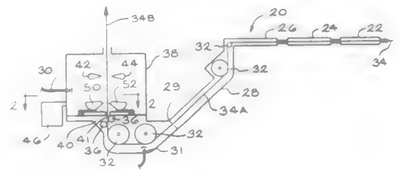
1. Metal vapour laser apparatus comprising: a chamber; means for passing a halogen or halogen donor gas over the surfaces of metal in said chamber to produce metal halide; a laser tube; means for introducing said metal halide into said laser tube from said chamber; and means for dissociating said metal halide to produce metal vapour for use in the laser process.

5,339,328
SOLID-STATE LASER
Hiroshi Miura, Tokyo, Japan, assignor to Nec Corporation, Japan
Filed Sep. 9, 1992, Ser. No. 942,289
Claims priority, application Japan, Sep. 18, 1991, 3-237540
Int. Cl.[5] H01S *3/091*
U.S. Cl. 372—70 6 Claims



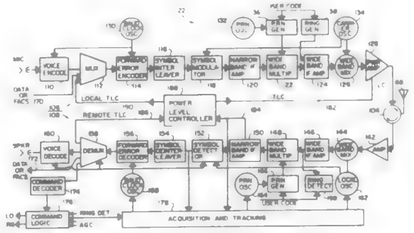
1. A solid-state laser including a laser medium which is optically excitable for giving a laser light emission, a multiplicity of laser diodes for optically pumping said laser medium, and a resonator in the form of a pair of mirrors in a resonance-emission region for optically resonating said pumped medium in said resonance-emission region, said laser comprising:
means for optically pumping regions of said laser medium, outside said resonance-emission region, by irradiating light emitted from said laser diodes, and
means for sequentially moving said laser medium pumped with laser diodes into said resonance-emission region within a life time of said laser medium from outside of said resonance emission region to increase laser output power.

5,339,329
INDUCTION HEATED MENISCUS COATING VESSEL
Charles Flinchum, Hamilton, Ohio; Gerald L. Barney, Ashland, Ky.; Gregory S. Burgess, Proctorville, Ohio; Davis L. Kleinmeyer, Ashland, Ky., and Larry E. Parrella, Middletown, Ohio, assignors to Armco Steel Company, L.P., Middletown, Ohio
Filed Jan. 25, 1993, Ser. No. 8,105
Int. Cl.[5] H05B *6/22*
U.S. Cl. 373—138 15 Claims



1. For use with apparatus for meniscus coating at least one surface of metal strip, comprising:
a shallow vessel for containing a body of molten metal,
the vessel including a shell having and inside surface, a refractory lining the inside surface of the shell, means for inductively heating by magnetic flux the molten metal and means for concentrating the magnetic flux of the heating means, the concentrating means being positioned below the heating means which underlies the body of molten metal.

5,339,330
INTEGRATED CELLULAR COMMUNICATIONS SYSTEM
Albert J. Mallinckrodt, Santa Ana, Calif., assignor to David D. Otten, Redondo Beach, Calif.
Continuation-in-part of Ser. No. 495,497, Mar. 19, 1990, Pat. No. 5,073,900. This application Oct. 24, 1991, Ser. No. 781,972
The portion of the term of this patent subsequent to Dec. 17, 2008, has been disclaimed.
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 12 Claims



1. A cellular communications system comprising:
at least one space node having a multiple beam antenna positioned so to establish a first set of cells, each space node including means for transmitting and receiving different predetermined sets of code division multiple access

VOL 1165 ISS 3 AUG 16 1994 UMI

coded, spread spectrum waveforms digitally modulated and incorporating forward error correction coding with the waveforms being located in a predetermined frequency band common to all space nodes;

the antenna having a reflector with a multiple element feed disposed in the focal region of the reflector;

at least one surface node positioned so to establish a second set of cells, each surface node including means for transmitting and receiving the predetermined sets of code division multiple access coded, spread spectrum waveforms in the predetermined frequency band; and

a plurality of user units within the cells, each unit including means for communicating with each satellite node and with each surface node and being operatively responsive to a predetermined one of the sets of code division multiple access coded waveforms to thereby establish selective communication with at least one of the nodes.

5,339,331

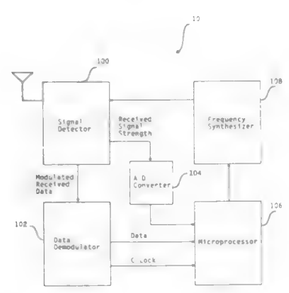
FREQUENCY HOPPING SPREAD SPECTRUM RECEIVER

Bruce A. Beauchamp; James C. Beffa, both of Sunnyvale, and David H. Flournoy, Livermore, all of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Sep. 9, 1993, Ser. No. 119,779

Int. Cl.[5] H04L *27/30, 9/00*

U.S. Cl. 375—1 **9 Claims**



1. A receiver for receipt of a frequency hopping spread spectrum signal with a predetermined hopping pattern and modulated using audio frequency signals, the receiver comprising:

signal detect means, coupled to receive the frequency hopping signal, for detecting a received signal at a given frequency;

means, coupled to said signal detect means, for measuring a strength of said received signal;

means, coupled to said signal detect means, for demodulating said received signal and detecting the audio frequency signals;

microprocessor means coupled to said signal detect means, measuring means and demodulating means for determining a presence of valid received signal; and

means, coupled to said signal detect means and controlled by said microprocessor means, for stepping a frequency of said signal detect means through the predetermined hopping pattern.

5,339,332

ARRANGEMENT FOR MONITORING THE BIT RATE IN ATM NETWORKS

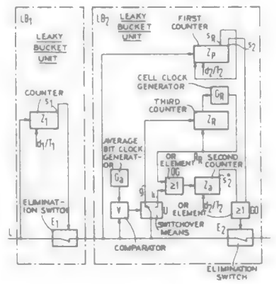
Anton Kammerl, Groebenzell, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 20, 1992, Ser. No. 932,684

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1991, 4128411

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 375—10 **8 Claims**



1. A system for bit rate monitoring in an ATM network, comprising:

first leaky bucket means for monitoring a peak bit rate $r_p = B_Z \cdot d_1/T_1$, where B_Z = plurality of bits per ATM cell, d_1 = decrementation value and T_1 = decrementation period of the first leaky bucket means, and defining for a full-rate burst a maximum possible plurality $n_{max} = s_1 + kd_1$ of ATM cells up to a response of the first leaky bucket means, where $k = 1 + (s_1 - d_1)/((T_1/t_z) - d_1)$, s_1 = response threshold of the first leaky bucket means and t_z = duration between beginning of a first bit and end of a last bit of an ATM cell at a maximum transmission rate;

second leaky bucket means having an ATM Cell input connected to an ATM cell output Of the first leaky bucket unit means for monitoring an average bit rate $r_a = B_Z \cdot d_2/T_2$, where d_2 = decrementation value and T_2 = decrementation period of the second leaky bucket means, and defining a maximum duration $t_{max} = s_2 \cdot B_Z/(r_p - r_a)$ of a peak rate burst where s_2 = response threshold of the second leaky bucket means;

said second leaky bucket means having first, second, and third counter means;

said first counter means having said response threshold s_2 and also a reset threshold s_R for resetting the first counter means to zero upon a downward crossing of the reset threshold S_R, said reset threshold s_R lying a few counting steps before said response threshold s_2, said response threshold s_2 having a counter reading which is incremented with ATM cells arriving at said input of said second leaky bucket means, and being decremented by said decrementation value d_2 with said decrementation period T_2;

said second counter means being connected to be incremented with the ATM cells arriving in the second leaky bucket unit means with a bit rate $r < r_a$ and decremented by said decrementation value d_2 with the decrementation period T_2, said second counter means having a lower response threshold $s^*_2 < s_2$ than said first counter means, said lower response threshold when reached providing an output for elimination or marking of excess ATM cells;

means for elimination or marking of the excess ATM cells, said means being connected to said lower response threshold s_2 output from said first counter means; and

said third counter means being incremented with the ATM cells arriving in the second leaky bucket unit with a bit rate $r > r_a$ and decremented with an output from a cell clock generator means for providing a smoothed, lower cell clock rate R_R, said smoothed, lower cell clock rate R_R also being connected to simultaneously increment said second counter means.

5,339,333

FSK DEMODULATOR USING SIGNAL TRANSITIONS

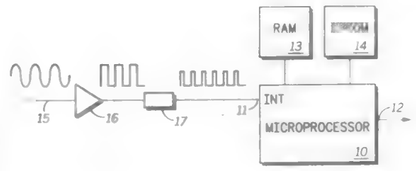
Ilan Zehngut, Ra'anana, and Uzi Zakai, Raut, both of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 29, 1993, Ser. No. 10,955

Claims priority, application United Kingdom, Feb. 20, 1992, 9203704.3

Int. Cl.[5] H03D *3/00;* **H04L** *27/14*

U.S. Cl. 375—88 **10 Claims**



1. An FSK (Frequency Shift Keying) demodulator comprising:

means for receiving and digitizing an FSK signal;

processing means arranged to identify first, second, third and fourth consecutive transitions of the FSK signal and the times of said transitions; calculate a first period between the first and third transitions and a second period between the second and fourth transitions and indicate a change of frequency in the signal when the first and second periods lie on opposite sides of a threshold period and no change of frequency when the first and second periods lie on the same side of the threshold period.

5,339,334

METHOD AND APPARATUS FOR DIVERSITY RECEPTION

Elie J. Baghdady, 21 Overlook Dr., Weston, Mass. 02193

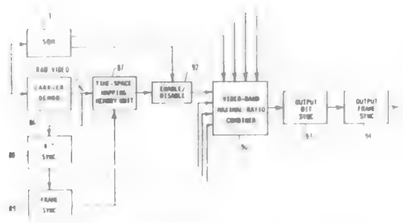
Division of Ser. No. 400,769, Aug. 30, 1989, Pat. No. 5,128,969.

This application Dec. 20, 1991, Ser. No. 811,292

The portion of the term of this patent subsequent to Jul. 7, 2007, has been disclaimed.

Int. Cl.[5] H04B *7/10;* **H04L** *1/02*

U.S. Cl. 375—100 **16 Claims**



16. Apparatus of video-band combining a multiplicity of diversely received replicas of the same digitally modulated signal wave originating in the same remote transmitter, each of said diversely received replicas being obtained by a separate receiver means, said apparatus comprising:

means for measuring the predetection IF signal-to-noise power ratio of each of said replicas of said signal wave within the predetection IF band width of said receiver means;

means for carrier-level demodulation of each of said replicas of said signal wave to derive a video bit-stream-signal-plus-noise waveform available from each of said replicas;

means for operating on each of said video bit-stream-signal-plus-noise waveforms to derive from each its bit and frame timing/synchronization time markers relative to a time/-clock reference of said receiver means;

means for employing said frame synchronization time markers to align, in time phase, said video bit-stream-signal-plus-noise waveforms;

means for weighing each of said video bit-stream-signal-plus-noise waveforms with said signal-to-noise power ratio for corresponding signal replicas, and summing the weighted and time-aligned video bit-stream-signal-plus-noise waveforms; and

means for performing bit-by-bit detection of said sum to transform a resultant sum waveform into an output sequence of digital bit symbols.

5,339,335

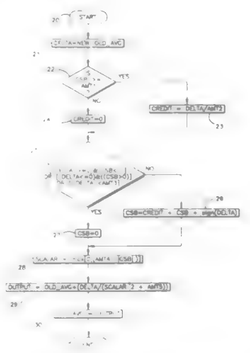
METHOD AND APPARATUS FOR DIGITALLY PROCESSING AND FILTERING SIGNALS IN INDUSTRIAL CONTROL APPLICATIONS

Richard J. Molnar, Willoughby, Ohio, assignor to Elsag International B.V., Amsterdam, Netherlands

Filed Dec. 15, 1992, Ser. No. 990,516

Int. Cl.[5] H04B *1/10*

U.S. Cl. 375—103 **2 Claims**



1. In a device having an input and an output, said device operating in repetitively occurring predetermined intervals of time, a method for processing a digital signal at said input during that one of said predetermined intervals of time which is presently occurring to thereby provide a filtered digital signal at said output, said device including means for storing said filtered digital signal at said output and a trend indicator, said method comprising the steps of:

a) calculating the difference in amplitude between said digital signal at said input during said presently occurring one of said predetermined intervals of time and said filtered digital signal at said output stored in said means for storing during a previously occurring one of said predetermined intervals of time;

b) determining whether said trend indicator stored in said means for storing during said previously occurring one of said predetermined intervals of time permits a tracking credit;

c) calculating the permitted tracking credit as a function of an assumed noiseband of said digital signal at said input

VOL 1165 ISS 3 AG 16 1994 UMI

during said presently occurring one of said predetermined intervals of time and said difference in amplitude;

d) comparing said difference in amplitude:

i. to said trend indicator; and

ii. to a predetermined amount based on a function of said assumed noiseband;

e) changing said trend indicator:

i. to zero either when said difference and said trend indicator disagree or when the absolute value of said difference is less then said predetermined amount based on a function of said assumed noiseband; or

ii. by adding to said trend indicator the permitted tracking credit and a predetermined amount related to the polarity of said difference;

f) calculating a filter factor based on a function of said trend indicator changed during said presently occurring one of said predetermined intervals of time;

g) using said filter factor in said device to thereby provide said filtered digital signal at said output; and

h) replacing said filtered digital signal at said output and said trend indicator stored in said means for storing during said previously occurring one of said predetermined intervals of time with said filtered digital signal and said trend indicator changed during said presently occurring one of said predetermined intervals of time in said means for storing.

5,339,336

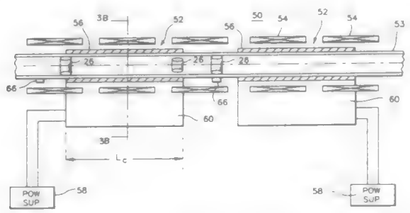
HIGH CURRENT ION RING ACCELERATOR

Ravindra N. Sudan, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 17, 1993, Ser. No. 19,115

Int. Cl.[5] G21B *1/00*

U.S. Cl. 376—107 **12 Claims**



1. An accelerator structure for accelerating ion rings containing an equal number of positive ions and negative electrons and thereby being charge neutralized, said accelerator structure comprising:

a plurality of serially arranged accelerator modules for applying a pulsed magnetic field to a charge neutralized ion ring to thereby cause said ring to accelerate, each said accelerator module including means to apply a time varying inductive azimuthal electric field to a charge neutralized ion ring as it passes through each module;

means to synchronize the time varying inductive azimuthal electric field in each accelerator module with the passage of a charge neutralized ion ring through each module so that the magnitude of a transient magnetic field associated with the electric field is at a minimum as an ion ring enters each module, and is at a maximum as an ion ring exits each module; and,

means to apply a static magnetic field to a charge neutralized ion ring to confine it radially as it passes through said plurality of serially arranged accelerator modules;

whereby, the synchronized time varying inductive azimuthal electric field in each accelerator module will cause an incremental increase in energy of a charge neutralized ion ring through compression of the ring in each module, and expansion and acceleration in an axial direction as a ring exits each accelerator module.

5,339,337

PERMUTED BLOCK SYNCHRONIZATION

Stephen N. Levine, Itasca, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 814,231, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 419,052, Oct. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 411,959, Sep. 25, 1989, abandoned. This application Mar. 12, 1993, Ser. No. 35,877

Int. Cl.[5] H04L *7/04*

U.S. Cl. 375—114 **8 Claims**



3. A method of synchronization comprising:

receiving a transmission having synchronization words predeterminally arranged in relation to information of interest,

detecting at least certain of those synchronization words and their arrangement with respect to one another,

and synchronizing to the information of interest using the detected arrangement of one detected word in relation to another and their arrangement in relation to the information of interest.

5,339,338

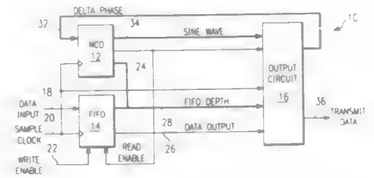
APPARATUS AND METHOD FOR DATA DESYNCHRONIZATION

Paul M. Elliott, Jenner, Calif., assignor to DSC Communications Corporation, Plano, Tex.

Filed Oct. 6, 1992, Ser. No. 957,223

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—118 **15 Claims**



1. Apparatus for data desynchronization, comprising:

a numerically controlled oscillator producing a periodic wave function and a phase fraction output;

a first-in first-out memory, coupled to said numerically controlled oscillator, receiving a data input stream and producing data output stream and a first-in first-out memory depth output; and

an output circuit coupled to said numerically controlled oscillator and first-in first-out memory and receiving and combining said phase fraction output and said first-in first-out memory depth output to produce a jitter-free delta phase output for controlling said numerically controlled oscillator, said output circuit further receiving said

periodic wave function from said numerically controlled oscillator and producing a high resolution transmit clock in response thereto, and further receiving said data output stream from said first-in first-out memory and retransmitting it in response to said transmit clock.

5,339,339

PROCESS FOR CARRYING OUT AN INSPECTION ROUND OF NUCLEAR INSTALLATIONS

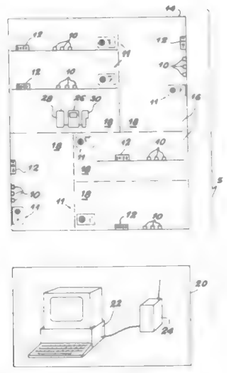
Jean-Louis Petitclerc, Tourlaville, and Jean-Louis Ricaud, Paris, both of France, assignors to COGEMA - Compagnie Generale des Matieres Nucleaires, Velizy Villacoublay, France

Continuation of Ser. No. 855,454, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 621,791, Dec. 4, 1990, abandoned. This application Sep. 22, 1993, Ser. No. 125,493

Claims priority, application France, Dec. 5, 1989, 89 16059

Int. Cl.[5] G21C *17/00*

U.S. Cl. 376—245 **9 Claims**



1. Process for performing a monitoring or inspection round of a nuclear site over which are distributed collection or reading points carrying an identification on the said points indicated by labels, sensors and equipments, at least one sensor and at least one equipment having a certain operating state being grouped around a collection point, the round being performed by a watchman, carrying a portable microcomputer equipped with a screen associated with a radiofrequency transceiver and a wand reader for reading labels characterized in that it comprises:

(A) beforehand

(a) recording in a central computer connected to a radiofrequency transceiver,

(i) a sequence or combination of collection points, sensors to be checked and equipments to be checked and/or whose operating state is to be modified, said sequence constituting the round,

(ii) information including at least reference values, tolerance thresholds and assistance comments on the watchman's decision concerning the collection points, the sensors to be checked and the equipments to be checked and/or whose operating state is to be modified,

(b) copying again the recording performed in (a) in the portable microcomputer,

(B) during the round, at each passage to a collection point the watchman reads the label carrying the identification reference of the point using the wand reader;

(a) performing a validation affirming passage to the collection point and for each validation a pinpointing signal of said collection point is transmitted by the transmitter connected to the portable microcomputer to the receiver connected to the central computer and recorded in the latter,

(b) checking the sensors supplying information, recording said information in the portable microcomputer and comparing same with prerecorded information concerning said sensors in such a way as to detect any abnormal state,

(c) checking and/or modifying the operating state of the equipment, recording information concerning said equipment and comparing the same with prerecorded information concerning said equipment so as to detect any abnormal state,

(d) said portable microcomputer providing to the watchman an immediate comparison at an installation site between measured information and prerecorded values corresponding to a normal operation of the installations, historical information of the measurements performed during preceding rounds and assistance comments as a function of the comparison made by the microcomputer thereby providing an immediate diagnosis for the watchman to analyze abnormal situations of said installation site and act on the process as a result thereof, any abnaormal state detection in (b) and (c) leading to the transmission by the transmitter of the portable microcomputer to the receiver of the central computer, the watchman being able then to change the passage sequence of the collection points, sensors or equipments not planned during the definition of the round or even interrupt his round,

(C) at the end of the round, the information recorded in the portable microcomputer is coped again into the central computer for processing.

5,339,340

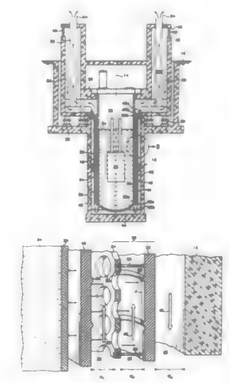
LIQUID METAL REACTOR AIR COOLING BAFFLE

Anstein Hunsbedt, Los Gatos, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jul. 16, 1993, Ser. No. 92,096

Int. Cl.[5] G21C *15/18*

U.S. Cl. 376—299 **20 Claims**



15. In a nuclear reactor comprising a reactor vessel having a nuclear fuel core submerged in liquid coolant, a containment vessel encircling said reactor vessel, a baffle encircling said containment vessel for enhancing air cooling thereof, and a silo encircling said baffle, said baffle comprising a cylindrical outer wall arranged between and concentric with said containment vessel and said silo, said outer wall and said silo forming a downcomer therebetween for channeling cooling air downward, and said containment vessel and said outer wall forming

VOL 1165 ISS 3 AG 16 1994 UMI

a riser therebetween for channeling cooling air from said downcomer upward, the improvement wherein:

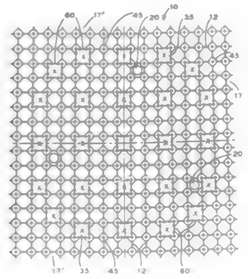
a cylindrical inner wall is arranged between and concentric with said containment vessel and said outer wall for dividing said riser into inner and outer risers, said inner wall comprising a plurality of apertures for allowing the passage of thermal radiation from said containment vessel to said outer wall.

5,339,341

MID SPAN MIXER GRID

Raymond A. King; David A. Farnsworth, both of Lynchburg, and Jerome S. D'Orio, Forest, all of Va., assignors to B&W Fuel Company, Lynchburg, Va.

Filed Sep. 17, 1993, Ser. No. 123,419
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—439 **7 Claims**



1. A mixer grid for a nuclear reactor fuel assembly, the grid comprising:

a plurality of strips arranged in interlocking rows and columns defining a plurality of cells therebetween, the cells for receiving a nuclear fuel rod of a nuclear reactor fuel assembly, the strips interlocking at a corner of each cell; and

a stopper fixed to each corner of each cell for channeling and mixing a coolant through each cell for cooling the nuclear fuel rods of the nuclear reactor fuel assembly.

5,339,342

FUEL ASSEMBLY FOR A BOILING WATER REACTOR WITH A REDUNDANT SUPPORT STRUCTURE AND A LOCKED FUEL ASSEMBLY CASE

Werner Meier, Kunreuth; Hans-Joachim Lippert, Hoechstadt-/Aisch; Peter Rau, Leutenbach, and Lothar Koerner, Hoechberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

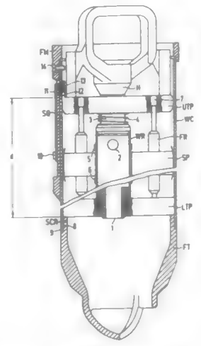
Filed Jan. 11, 1993, Ser. No. 3,105
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1992, 4200363; Apr. 15, 1992, 4212645
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—446 **20 Claims**

1. A fuel assembly for a boiling water reactor, comprising:

a) approximately mutually parallel fuel rods in a bundle having upper and lower ends;

b) a skeleton holding said bundle and having a handle, an upper tie plate retained on said handle at said upper end of said bundle, a lower tie plate at said lower end of said bundle, and at least one support element joining together said lower tie plate and said upper tie plate;

c) a fuel assembly case in which said skeleton and said bundle are inserted; and



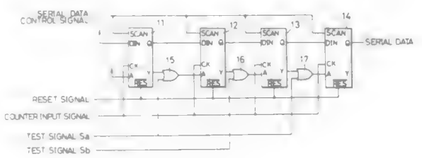
d) redundant support means holding said lower tie plate, said fuel assembly case and said upper tie plate together independently of said skeleton, when said handle is lifted.

5,339,343

COUNTER CIRCUIT WITH OR GATES INTERCONNECTING STAGES TO PROVIDE ALTERNATE TESTING OF ODD AND EVEN STAGES DURING TEST MODE

Yoshinori Hashimoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 21, 1992, Ser. No. 886,389
Claims priority, application Japan, May 29, 1991, 3-126043
Int. Cl.[5] H03K *21/40*
U.S. Cl. 377—29 **5 Claims**



1. An N-bit counter circuit comprising:

N stages, each including a one-bit counter having a data input, a carry input, a data output, and a carry output, said N stages being connected in series with each other such that the data output of each one-bit counter at each of the N stages is connected with the data input of the next one-bit counter at the next stage, and such that the data output of the one-bit counter at the last stage is connected with an output of said N-bit counter circuit;

(N−1) input OR gates, each connected exclusively between two one-bit counters which are located adjacent to each other, one input of the n-th OR gate being connected with the carry output of the n-th one-bit counter, an output of the n-th OR gate being connected with the carry input of the (n+1)-th one-bit counter;

a first test signal input, connected with other inputs of odd numbered OR gates, for receiving a first predetermined test signal; and

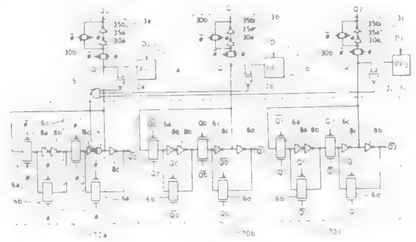
a second test signal input, connected with other inputs of even numbered OR gates, for receiving a second predetermined test signal.

5,339,344

COUNTER DEVICE AND METHOD OF OPERATING THE SAME

Masatoshi Kimura, and Minobu Yazawa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 700,024, May 14, 1991. This application Aug. 5, 1993, Ser. No. 102,327
Claims priority, application Japan, Jun. 1, 1990, 2-145204
Int. Cl.[5] G11C *8/00*
U.S. Cl. 377—39 **5 Claims**



1. A semiconductor memory device including a memory cell array having a plurality of memory cells arranged in rows and columns, comprising:

counting means for counting a clock signal to generate a row address indicating a row in said memory cell array;

storage means for storing a defective row address specifying a defective row having a defective memory cell connected thereto in said memory cell array;

comparing means for comparing a count of said count means and said defective row address;

adjusting means coupled to receive an output of said comparing means and operable in response thereto, for skipping a count of said counting means to the very next count upon coincidence of the count of said counting means and said defective row address; and

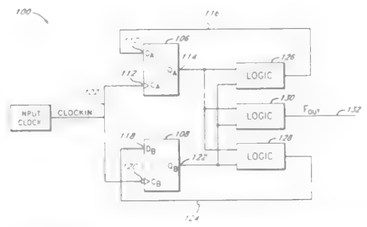
decoder means coupled to receive the generated row address from said counting means for selecting a corresponding row in said memory cell array.

5,339,345

FREQUENCY DIVIDER CIRCUIT

Lewis R. Mote, Jr., Laguna Hills, Calif., assignor to AST Research Inc., Irvine, Calif.

Filed Aug. 31, 1992, Ser. No. 938,279
Int. Cl.[5] H03K *21/10, 23/48*
U.S. Cl. 377—48 **9 Claims**



1. A logic circuit incorporated in a large scale integrated circuit that receives an input clock signal and generates an output clock signal with a frequency which is the frequency of the input clock signal divided by 1.5, comprising:

a first storage element, said first storage element having a first data input, a first clock input and a first data output, said first storage element storing said first data input on occurrence of each rising edge of said input clock signal at said first clock input;

a second storage element, said second storage element having a second data input, a second clock input, and a second data output, said second storage element storing said second data input on occurrence of each falling edge of said input clock signal at said second clock input; and

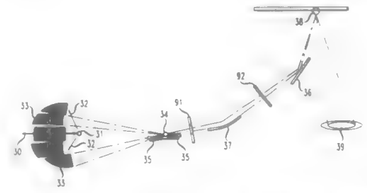
combinatorial logic responsive to said first data output and said second data output to provide an output signal of said circuit, said output signal having a frequency which is the frequency of said input clock signal divided by 1.5, said combinational logic further providing a first input signal to said first data input of said first storage element and providing a second input signal to said second data input of said second storage element.

5,339,346

DEVICE FABRICATION ENTAILING PLASMA-DERIVED X-RAY DELINEATION

Donald L. White, Morris Plains, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 20, 1993, Ser. No. 65,331
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—34 **17 Claims**



1. Process for fabrication of a device comprising at least one element of least dimension $\leqq 0.25\ \mu m$, such process comprising construction of a plurality of successive levels, each level entailing lithographic delineation, in accordance with which a subject mask pattern is imaged on an image plane, ultimately to result in removal of or addition of material in delineated regions, at least one such level entailing ringfield projection lithographic delineation by use of radiation in the soft x-ray spectrum, and in which such radiation is derived from a laser-produced plasma characterized in that emission from the plasma is collected by a collector lens including at least four paired mirror facets, in which members of each pair are symmetrically disposed about an axis of the source and in which paired members individually produce complementary images of the entirely of an illumination field, whereby paired members together produce an evenly illuminated compensated field and the entire illumination field is of an intensity which is the sum of all facet-produced image fields.

5,339,347

METHOD FOR MICROBEAM RADIATION THERAPY

Daniel N. Slatkin, Sound Beach; F. Avraham Dilmanian, Yaphank, and Per O. Spanne, Shoreham, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 27, 1993, Ser. No. 52,927
Int. Cl.[5] A61N *5/10*
U.S. Cl. 378—65 **44 Claims**

1. A method of performing radiation therapy on a patient comprising the step of

irradiating a target tissue with a therapeutic quantity of high energy electromagnetic radiation from a radiation source through at least two substantially mutually parallel spatially distinct microbeam envelopes, each envelope describing a path having a width less than about i millimeter,

VOL 1165 ISS 3 AG 16 1994 UMI

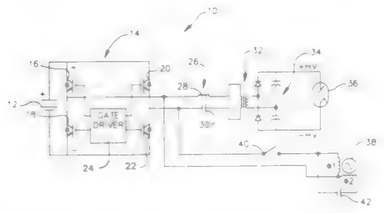
wherein the target tissue within the microbeam envelope receives a summed absorbed dose of radiation exceeding a maximum absorbed dose survivable by the target tissue and non-target tissue between adjacent microbeam envelopes receives a summed absorbed dose of radiation less than a minimum absorbed dose lethal to non-target tissue thereby permitting irradiated non-target tissue to regenerate.

5,339,348

X-RAY TUBE ROTOR CONTROLLER USING THE MAIN HIGH VOLTAGE INVERTERS FOR ACCELERATION

William F. Wirth, Sullivan, and Jonathan R. Schmidt, Wales, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 2, 1992, Ser. No. 970,512
Int. Cl.[5] H05G *1/66*
U.S. Cl. 378—93 **9 Claims**



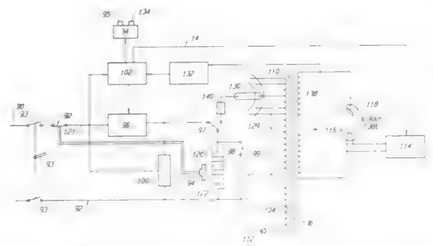
1. An x-ray tube rotor controller comprising a DC voltage source, a rotary anode drive circuit including a rotary anode motor designed as an induction motor for driving the x-ray tube anode, characterized in that the x-ray tube rotor controller comprises a first inverter circuit having a full bridge arrangement for accelerating the anode using a first switch to connect the induction motor to the full bridge output, and further for generating high voltage for the x-ray tube using the full bridge, wherein the first switch is disconnected from the rotor when the motor reaches a rated anode speed, a second switch connects the motor to the second inverter to maintain the rated anode speed during x-ray exposure.

5,339,349

PORTABLE X-RAY UNIT

Millan Y. Xeno, P.O. Box 238, Davidson, NSW 2085, Australia

Filed Oct. 26, 1992, Ser. No. 966,433
Int. Cl.[5] H02M *3/335*
U.S. Cl. 378—101 **8 Claims**



1. A portable x-ray unit for controlled emission of radiation comprising:

a shielded casing having an x-ray tube with a voltage-select having a conducting mode and a non-conducting mode;

a transformer for delivering high voltage to the x-ray tube from an a.c. power source, wherein the transformer has a primary winding connected to the a.c. power source and a secondary winding connected to the x-ray tube; and

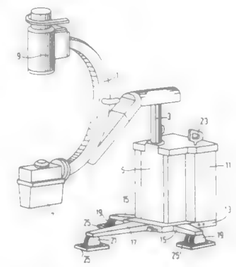
electronic circuit means for emulating a full-wave, rectified power delivery to the transformer, wherein the electronic circuit means includes a dummy load and the transformer has a tertiary winding connected to the dummy load, wherein the secondary winding and the x-ray tube comprise a power load for the transformer in the conducting mode of the x-ray tube, and the tertiary winding and the dummy load comprise a power load for the transformer in the non-conducting mode of the x-ray tube.

5,339,350

X-RAY APPARATUS COMPRISING WHEELS PROVIDED WITH CABLE DEFLECTOR

Jacobus A. Thelosen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 9, 1993, Ser. No. 164,241
Claims priority, application European Pat. Off., Dec. 9, 1992, 92203823.7
Int. Cl.[5] A61B *6/10*
U.S. Cl. 378—198 **9 Claims**



1. An X-ray apparatus, comprising a frame which supports at least an X-ray source and an X-ray detector and is attached to a base which comprises wheels enabling the apparatus to be displaced on an approximately horizontal floor surface, characterized in that each of the wheels is provided with a cable deflector which comprises an approximately horizontally arranged collar which is made of a rigid material and which encloses the wheel at a distance of less than 10 mm from the floor surface.

5,339,351

EMERGENCY RESPONSE SYSTEM

John D. Hoskinson, 623 Glacier Ave. South, Pacific, Wash. 98047, and Stephen W. Horton, 900 East Fulton, No. 2, Mt. Vernon, Wash. 98273

Filed Jun. 2, 1992, Ser. No. 892,446
Int. Cl.[5] H04M *11/04*
U.S. Cl. 379—45 **70 Claims**

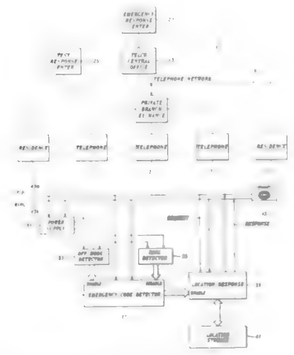
1. An emergency response system for a telephone network comprising at least one central office and a plurality of telephones coupled to said at least one central office either directly or indirectly, said emergency response system comprising:

(a) a plurality of location identification modules, said plurality of location identification modules being associated with the telephones of said telephone network by connecting the location identification modules across the pair of tip and ring wires of the telephone lines extending to said associated telephones on a one-to-one basis such that each pair of tip and ring wires is connected to a separate location identification module, said location identification modules including:

(1) storage means for storing information about the location identification of all associated telephones connected to the pair of tip and ring wires to which the location identification module is connected;

(2) enabling means for enabling said location identification modules to respond to a request for location identification information when an associated telephone goes off-hook and an emergency code is dialed by the associated telephone; and

(3) sending means for sending said location identification information stored in said storage means to an emergency response center after being enabled upon receipt



of a request for said location identification information from said emergency response center; and

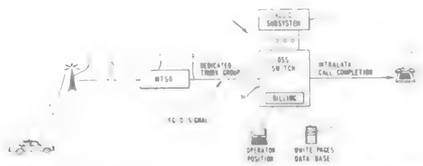
(b) an emergency response center forming part of said telephone network and connected by said at least one central office to said telephones when any of said telephones dials said emergency code, said emergency response center including location request means for requesting location identification information from the location identification module associated with a telephone connected to said emergency response center.

5,339,352

DIRECTORY ASSISTANCE CALL COMPLETION VIA MOBILE SYSTEMS

Michael G. Armstrong, Philadelphia, Pa., and Jennifer L. Glacken, Bel Air, Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Oct. 1, 1992, Ser. No. 953,675
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **34 Claims**



1. A method of providing a directory assistance call completion service to a wireless communication service subscriber comprising:

receiving a request for directory assistance from a wireless communication terminal at a mobile communications switching office;

forwarding data identifying the wireless communication terminal from the mobile communications switching office to an operator service system;

establishing a landline communication link between the mobile communications switching office and the operator service system to provide two way communications between the wireless communication terminal and the operator service system;

receiving information from the wireless communication terminal identifying a particular listing from a directory of listings;

retrieving a destination number corresponding to the identified listing;

receiving a request for completion of a communication link between the wireless communication terminal and a station identified by the destination number;

establishing a landline communication link to provide a complete communication connection between the wireless communication terminal and the identified station; and

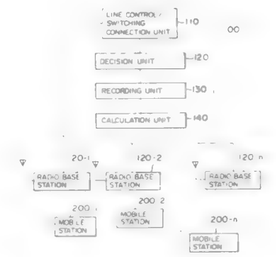
recording the identity of the wireless communication terminal in the operator service system.

5,339,353

MOBILE COMMUNICATION SYSTEM

Masaru Asahara; Takuro Oguchi, and Shunroku Sasaki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 5, 1992, Ser. No. 847,705
Claims priority, application Japan, Mar. 6, 1991, 3-39677; Mar. 19, 1991, 3-54720; Mar. 19, 1991, 3-54722
Int. Cl.[5] H04M *11/00;* **H04B** *1/00*
U.S. Cl. 379—59 **17 Claims**



1. A mobile communication system for controlling communication of a plurality of mobile stations with radio channels, comprising:

decision means for sequentially sending call signals to said mobile stations and for determining whether or not each of the mobile stations is maintained in a call receivable state by determining whether or not each of the mobile stations responds to one of said call signals;

recording means, coupled to said decision means, for recording determination results obtained by said decision means and times when decisions are made; and

receivable period calculating means, coupled to said recording means, for calculating the receivable periods of said mobile stations on the basis of the determination results and said times.

5,339,354

SHARED LINE TELEPHONE ANSWERING DEVICE

James F. Becker, 7735 Overlake Dr. W., and Andrew S. Mayer, 9421 Lake Washington Blvd., NE., both of Bellevue, Wash. 98004

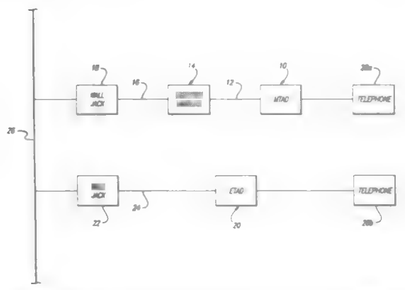
Filed Mar. 19, 1991, Ser. No. 671,504
Int. Cl.[5] H04M *1/65, 3/50*
U.S. Cl. 379—67 **13 Claims**

1. A system of plural telephone answering devices connected to and sharing a signal telephone line wherein:

VOL 1165 ISS 3 AG 16 1994 UMI

a first telephone answering device coupled to said single telephone line, said first telephone answering device detecting incoming ring signals on said single telephone line and becoming active in response thereto;

an adapter module connected to and between said single telephone line and said first telephone answering device, said adapter module becoming active upon reception of a tone or tone sequence transmitted by said single telephone line, and said adapter module temporarily disconnecting said first telephone answering device from said single



telephone line upon reception said tone or tone sequence; and

a second telephone answering device connected to said single telephone line, said second telephone answering device ignoring ring signals incoming from said single telephone line, said second telephone answering device becoming active upon reception of a tone or tone sequence incoming from said single telephone line, said second telephone answering device is switchably controllable to act as either a first or second telephone answering device.

5,339,355

MODEM POOLING SYSTEM FOR COMMUNICATING BETWEEN A TELEPHONE AND A PLURALITY OF DATA TERMINALS

Hideyasu Mori, Hino; Yuichi Yamazaki, Hachioji; Hiroshi Mano, Hino; Norimitsu Ikehata, Sagamihara; Takashi Aoki, Akishima, and Yoshikazu Sano, Hino, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 19, 1991, Ser. No. 716,804

Claims priority, application Japan, Jun. 19, 1990, 2-160591

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—94 **19 Claims**

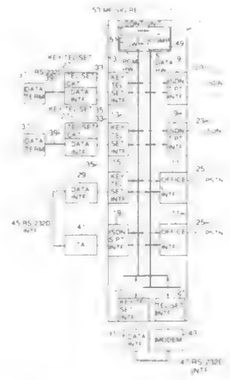
1. A modem pooling system in which a modem is pooled to enable communications between a telephone line and a plurality of data terminals respectively, comprising:

switching means for opening/closing a first communication channel between the telephone line and the modem and second communication channels between the plurality of data terminals and the modem;

terminal selecting means for selecting a data terminal from the plurality of data terminals when there is a call incoming from the telephone line;

exchange control means for closing one of the second communication channels between the selected data terminal and the modem by controlling said switching means, when there is a call incoming from the telephone line to establish a status equivalent to that where the selected data terminal is directly coupled to the modem; and

call control means for informing the modem of the call incoming from the telephone line to allow the modem to send a call signal to the selected data terminal, after one of the second communication channels between the selected



data terminal and the modem has been closed when there is a call incoming from the telephone line.

5,339,356

VIRTUAL PRIVATE NETWORK CONNECTING SYSTEM

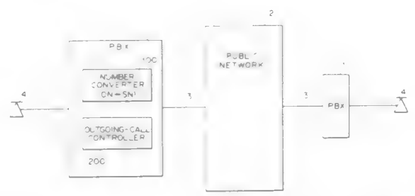
Tadao Ishii, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1992, Ser. No. 854,308

Claims priority, application Japan, Mar. 20, 1991, 3-056570

Int. Cl.[5] H04M *7/00, 3/00*

U.S. Cl. 379—234 **8 Claims**



1. A virtual private network connecting system in combination with a virtual private network formed by accommodating in a public network a plurality of PBX units each assigned a unique private office number, each of said PBX units comprising:

number converting means for converting a private office number assigned to a destination PBX unit to a subscriber number assigned to said destination PBX unit by said public network and identifying a method of terminating a call from said public network to said destination PBX unit when an extension accommodated in one of said PBX units issues a call and dials said private office number assigned to said destination PBX unit; and

outgoing call control means for controlling communication between a called extension accommodated in said destination PBX unit through said public network according to a number conversion result provided by said number converting means and a result of the identification of the method of terminating connection.

5,339,357

TELEPHONE DIALING SYSTEM WITH ERROR INDICATING FUNCTION

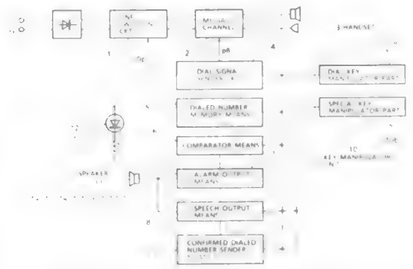
Kouji Sawamura, and Yuzo Moriuchi, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 15, 1992, Ser. No. 820,776

Claims priority, application Japan, Jan. 24, 1991, 3-007166

Int. Cl.[5] H04M *1/27*

U.S. Cl. 379—355 **12 Claims**



1. A dialing system for use in a telephone system, comprising:

dialed telephone number memory means for storing a dialed telephone number consisting of a required number of digits,

comparator means for comparing first individual digit data of the dialed telephone number stored in said memory means and second individual digit data of a telephone number presently being manually dialed and for generating a first output when more than a first predetermined number of the digits of said first and second individual digit data coincide with each other while less than a second predetermined number of said digits of said first and second individual digit data do not coincide with each other,

alarm output means for issuing an alarm in response to said first output of said comparator means,

speech output means for generating a speech output announcing the dialed telephone number stored in said memory means and compared by said comparator means,

a specified special key for manipulation by a user of said dialing system to generate a selection unit, and

confirmed dialed telephone number sender means for sending out the dialed telephone number announced by said speech output means in response to said selection input generated by manipulation of said specified special key, whereby when a telephone number is incorrectly dialed during manual re-dialing of a telephone number previously dialed and stored in the memory means, an alarm is issued, and the telephone number previously dialed is confirmed by generation of said speech output so that the telephone number previously dialed can be sent out again.

5,339,358

TELEPHONE KEYPAD MATRIX

Adel Danish, Cairo, Egypt; Sherif Danish, Foster City, and Kris W. Kimbrough, Redwood City, both of Calif., assignors to Danish International, Inc., Sunnyvale, Calif.

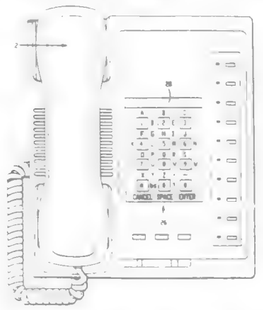
Continuation-in-part of Ser. No. 500,370, Mar. 28, 1990, Pat. No. 5,117,455. This application May 26, 1992, Ser. No. 888,738

The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—368 **4 Claims**

1. A matrix for entering alphanumeric characters into a first computer means for delivery to a service provider computer means configured as a facsimile system, the matrix comprising a pattern of characters prearranged on a conventional telephone keypad, the pattern arrayed so that only one character is placed between any two adjacent keys of the keypad.



5,339,359

Patent Not Issued For This Number

5,339,360

METHOD OF SYNCHRONIZING LEDS BETWEEN A DIGITAL TELEPHONE AND REMOTE OPTIONS

Norman Endick, and Larry Stell, both of Austin, Tex., assignors to ROLM Company, Santa Clara, Calif.

Continuation-in-part of Ser. No. 916,286, Jul. 17, 1992. This application Oct. 30, 1992, Ser. No. 969,639

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—386 **19 Claims**



1. In a digital telephone having an interface to a telephony communications switch, a base telephone coupled to the switch, and an auxiliary device coupled to the base telephone, each of the auxiliary device and the base telephone including a cadence control state machine; a method of synchronizing visual indicators on the base telephone with the visual indicators on the auxiliary device comprising the steps of:

setting the visual indicators on the base telephone to an initial state;

setting the visual indicators on the auxiliary device to the initial state;

operating a first visual indicator on the base telephone at a first cadence;

operating a second visual indicator on the auxiliary device at a second cadence, the second cadence being substantially the same as the first cadence;

when the cadence control state machine of the base telephone is in a predetermined state, sending a synchronize

VOL 1165 ISS 3 AG 16 1994 UMI

message to the auxiliary device and then continuing to operate the first visual indicator at the first cadence; and,

upon receipt of the synchronize message by the auxiliary device, setting the cadence control state machine of the auxiliary device to the predetermined state and then continuing to operate the second visual indicator at the second cadence.

5,339,361

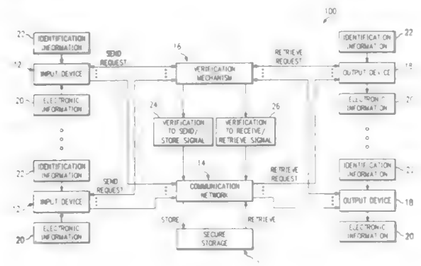
SYSTEM AND METHOD FOR AUTHENTICATING TRANSMISSION AND RECEIPT OF ELECTRONIC INFORMATION

Robert C. Schwalm, Plano, and Gerhard P. H. Deffner, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 4, 1992, Ser. No. 985,999

Int. Cl.[5] **H04L** *9/32, 1/44;* **G10L** *5/06;* **G06K** *9/62*

U.S. Cl. 380—23 **23 Claims**



1. A system for authenticating the transmission of electronic information, comprising:

a plurality of input devices for accepting electronic information and sender's identification information;

a verification mechanism for verifying the sender and a recipient;

a secure storage with templates, said secure storage having a time-stamp of transmission of electronic information transfer;

a communication network for transmitting the electronic information;

a transmission verification signal to said communication network;

a receipt verification signal to said communication network; and

a plurality of output devices for receiving the electronic information and accepting recipient identification information.

5,339,362

AUTOMOTIVE AUDIO SYSTEM

Wayne Harris, Higley, Ariz., assignor to Rockford Corporation, Tempe, Ariz.

Filed Jan. 7, 1992, Ser. No. 819,365

Int. Cl.[5] **H04B** *1/00*

U.S. Cl. 381—86 **10 Claims**

1. An automotive audio system comprising:

an amplifier housing including a plurality of amplifier slots and a plurality of amplifier sockets each associated with one of said amplifier slots;

a plurality of amplifier components inserted within said amplifier slots, each component including a plug end fitting within one of said amplifier sockets when said component is installed within the associated amplifier slot;

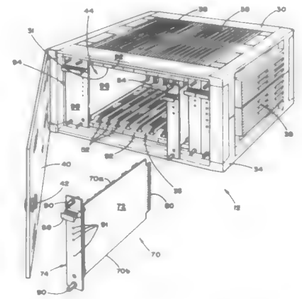
an amplifier output circuit including speaker output terminals electrically connected to said amplifier sockets;

a controller housing including a plurality of controller slots and a plurality of controller sockets each associated with one of said controller slots, said controller housing further including audio signal bus means for delay-chaining said controller sockets together enabling an audio signal to be serially routed to said sockets;

a plurality of signal processing components insertable within said controller slots, each component including a plug end fitting within one of said controller slots when said component is installed within the associated controller slot, said signal processing components being physically interchangeable within said controller slots;

a communications bus within said controller housing and connected to said controller sockets enabling communication with components plugged into said controller sockets; and

a controller component within said housing and connected to said communications bus, said controller component including means for determining the location and type of signal processing components installed within said controller slots, said controller component including means for configuring said system in response to said determined signal processing components, said controller component further including means for issuing control signals to said determined signal processing components.



5,339,363

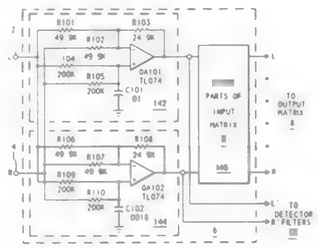
APPARATUS FOR ENHANCING MONOPHONIC AUDIO SIGNALS USING PHASE SHIFTERS

James W. Fosgate, 4750 E. 1200 South, Heber City, Utah 84032

Division of Ser. No. 789,529, Nov. 14, 1991, Pat. No. 5,263,087, which is a continuation-in-part of Ser. No. 533,091, Jun. 8, 1990, Pat. No. 5,172,415. This application Dec. 1, 1992, Ser. No. 983,645

Int. Cl.[5] **H03G** *1/00;* **H04R** *5/00*

U.S. Cl. 381—97 **8 Claims**



1. Apparatus for the enhancement of a monophonic audio input signal to be processed by a surround sound processor, said apparatus being inserted between external left and right stereo input connectors of said processor and the corresponding internal input terminals of said processor, said input signal

supplied to the input of the apparatus through said left and right stereo input connectors, said apparatus comprising:

first single-pole all-pass phase shifting means for producing a phase shift ranging from near zero at low frequencies to near 180 degrees at high frequencies;

second single-pole all-pass phase shifting means for producing a phase shift ranging from near zero at low frequencies to near 180 degrees at high frequencies;

said first and second phase shifting means each receiving the input signal at equal amplitudes from either or both said left and right external stereo input connectors;

said second phase shifting means having its pole at a different frequency from that of said first phase-shifting means, for providing a phase difference between the outputs of said first and second phase shifting means which is near zero at low and high audio frequencies and substantially larger at audio frequencies within a middle audio range;

the outputs of said first and second phase shifting means being respectively connected to said left and right input terminals of said surround processor wherein each said phase shifting means comprises;

an operational amplifier;

first and second equal resistors connected from said left and right external stereo input connectors to the inverting input of said operational amplifier;

third and fourth equal resistors connected from said left and right external stereo input connectors to the non-inverting input of said operational amplifier;

feedback resistor of value half that of said first or second equal resistors connected between the output and the inverting input of said operational amplifier;

phase-shift capacitor connected between the non-inverting input of said operational amplifier and ground;

said phase-shift capacitor with said third and fourth equal resistors having a time constant which determines said pole of said phase shifting means;

said phase-shift capacitor in each of said first and second phase shifting means being of a different value, all corresponding resistors in the two phase-shifting means being equal;

the outupts of said operational amplifiers of said first and second phase shifting means being connected respectively to the internal left and right input terminals of said surround sound processor.

5,339,364

DEVICE FOR CONVERSION BETWEEN ELECTRICAL OSCILLATIONS AND ACOUSTIC WAVES

Jean-Francois Lenain, Coudray, and Alfred Bientz, Chateau-Gontier, both of France, assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 24, 1993, Ser. No. 36,605

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1992, 4209595

Int. Cl.[5] **H04R** *25/00*

U.S. Cl. 381—173 **10 Claims**

1. A device for conversion between electrical oscillations and acoustic waves comprising:

an electro-acoustic converter including

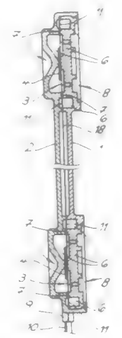
a carrier substrate **(11)** having an integrally formed sound membrane **(3)** and a piezoelectric element **(4)** mounted thereon, the carrier substrate **(11)** including a first region and a second region with a substrate joining region **(18)** therebetween, wherein said substrate-joining region includes at least one conductive trace **(12)** printed thereon connected at one end to the piezoelectric element **(4)**; and

a housing assembly including

two housing shells **(1,2)** one of the shells **(1)** having an integrally formed acoustic element **(6)** in the form of a sound window which adjoins a portion of the electro-acoustic converter and having a mechanical retainer **(7)** thereon for retaining the carrier substrate **(11)** within the housing assembly,

the housing assembly further including complementary interengaging means on each of the two housing shells **(1,2)** for holding the two housing shells to one another,

wherein the housing assembly is defined by a telephone handset including an earpiece region **(15)**, a mouthpiece region **(16)**, and a connecting handle region **(17)** therebetween, the first region of the carrier substrate **(11)** being positioned in the earpiece region **(15)**, the second region of the circuit substrate being positioned in the mouthpiece region **(16)**, and the substrate-joining region **(18)** of the carrier substrate being positioned in the connecting handle region **(17)**.



5,339,365

IMAGE PROCESSING APPARATUS CAPABLE OF USING FUZZY LOGIC

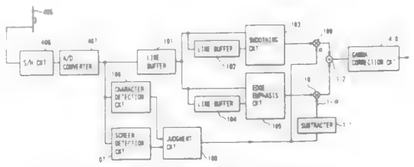
Takashi Kawai, and Kenichi Outa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1990, Ser. No. 572,419

Claims priority, application Japan, Aug. 31, 1989, 1-225342; Aug. 31, 1989, 1-225352

Int. Cl.[5] **G06K** *9/36*

U.S. Cl. 382—54 **30 Claims**



1. An image processing apparatus comprising:

a) input means for inputting an image signal;

b) processing means for processing the image signal which was input by said input means and for outputting an image processed signal;

c) first extracting means for extracting a first parameter relating to a first kind of characteristic of the image signal;

d) second extracting means for extracting a second parameter relating to a second kind of characteristic of the input image signal;

e) memory means for storing membership functions relating to the first and second parameters;

f) rule storage means for storing a plurality of rules representing relations between the first and second parameters and a controlling parameter for determining a processing condition for use by said processing means; and

g) inference means for inferring the controlling parameter by using the membership functions stored in said memory

VOL 1165 ISS 3 AUG 16 1994 UMI

means and the plurality of rules stored in said rule storage means,

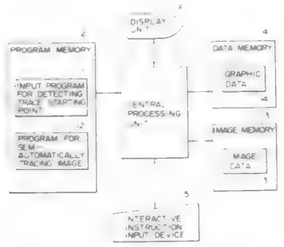
wherein the controlling parameter is a multi-value datum.

5,339,366

METHOD FOR THE INPUT OF A TRACE STARTING POINT OF AN IMAGE

Yutaka Tanaka, and Naruto Takasaki, both of Yokohama, Japan, assignors to Hitachi Software Engineering Co., Ltd., Yokohama, Japan

Filed Sep. 3, 1991, Ser. No. 753,993
Claims priority, application Japan, Sep. 3, 1990, 2-232664
Int. Cl.[5] G06K *9/30*
U.S. Cl. 382—22 **30 Claims**



1. A method of operating an image processing device for tracing a line image of image data, which device has an image memory for storing the image data, a semi-automatic image-trace processing section, a display, and an input unit to specify and enter a trace starting point and an instruction to start the tracing, the method comprising:

displaying the line image of the image data on the display;

entering a line segment to intersect the line image;

automatically determining an intersecting point at which the line segment intersects the line image;

entering the intersecting point as the trace starting point;

entering the instruction to start the tracing; and

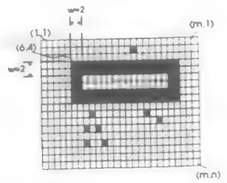
thereafter automatically tracing the line image using the trace starting point.

5,339,367

IDENTIFYING CURVES WITHIN A SCANNED IMAGE

Gerhard Roth, Gloucester, Canada, assignor to National Research Council of Canada, Ottawa, Canada

Filed Dec. 2, 1992, Ser. No. 984,501
Int. Cl.[5] G06K *9/48*
U.S. Cl. 382—22 **9 Claims**



1. A method of identifying a curve represented by points, each of the points being stored in a binary form in a unique, addressable location in a random access memory array, comprising the steps of:

a) sampling the binary data in the random access memory array to obtain a plurality of sampled points;

b) using a minimal subset of the sampled points as seed values for generating an equation for a curve that intersects the sampled points;

c) determining the number of points in the random access memory array that lie on a path of a predetermined width w corresponding to the curve defined by the equation; and,

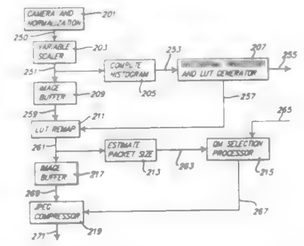
d) repeating steps (a) to (c) and selecting the curve lying on the path of width w having the greatest number of corresponding points determined in step (c).

5,339,368

DOCUMENT IMAGE COMPRESSION SYSTEM AND METHOD

Michael J. Higgins-Luthman, Livonia; Robert C. Kidd, Ann Arbor; Robert D. Klein, Farmington; Robert C. Yen, Novi, and Charles M. Zalinski, Canton, all of Mich., assignors to Unisys Corporation, Bluebell, Pa.

Filed Nov. 21, 1991, Ser. No. 796,703
Int. Cl.[5] G26K *9/36*
U.S. Cl. 382—56 **28 Claims**



1. In a discrete transform system having a transform compressor for compressing document image data arranged as a plurality of pixels, each pixel representing one of a plurality of gray levels, the transform compressor utilizing a plurality of transform coefficients to effect compression, a system for modifying the transform coefficients comprising:

means for storing a plurality of modifier matrices, each matrix of said plurality comprising data for altering transform coefficients, the data of each matrix being preselected to produce a different packet size for a given document image;

means for estimating a packet size of memory space required to store the document image data for a given document after compression by the discrete transform system;

means for supplying a desired target packet size;

selection processor means coupled to the means for estimating and coupled to the means for supplying a desired packet size, and operative to select one of said plurality of matrices as a function of a packet size estimate and a function of desired target packet size;

said selection processor being operative to select at least one first matrix if the estimated packet size is above the desired target packet size and operative to select at least one second matrix if the estimated packet size is not above the desired target packet size; and

transmitting means for transmitting the selected one of said plurality of matrices to said transform compressor for use in altering the plurality of transform coefficients.

5,339,369

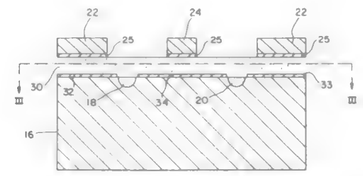
HIGH-SPEED EXTERNAL MODULATOR

Samuel Hopfer, Jerusalem, and Yosef Shani, Ramat-Hen, both of Israel, assignors to General Microwave Israel Corporation, Jerusalem, Israel

Filed Oct. 23, 1992, Ser. No. 965,191
Int. Cl.[5] G02B *6/12*
U.S. Cl. 385—2 **22 Claims**

1. An optical modulator for modulation of optical waves by RF energy guided for electro-optic interaction comprising:

a dielectric substrate having a plurality of pathways oriented to serve respectively as an RF transmission line and an optical waveguide, said substrate dielectric being characterized by substantial electro-optic interaction, said pathways having means including overlapping portions for



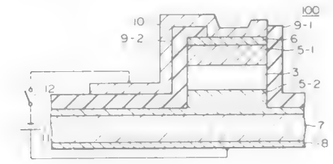
matching the velocity of said optical and RF waves along the overlapping portions, and a plurality of electrically floating electrodes located generally above the dielectric substrate and optical waveguide, and below a dielectric buffer layer which is situated generally below the RF transmission line.

5,339,370

OPTICAL MODULATOR AND OPTICAL COMMUNICATION SYSTEM UTILIZING THE SAME

Hirohisa Sano, Kokubunji, and Hiroaki Inoue, Saitama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 682,678, Apr. 9, 1991. This application Apr. 16, 1993, Ser. No. 47,339
Claims priority, application Japan, Apr. 12, 1990, 2-94942
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—2 **25 Claims**



1. An optical modulator comprising;

two cladding layers respectively doped into different conductive types;

a light absorption layer formed between said cladding layers for propagating incident light and for absorbing the light in response to a voltage applied between said cladding layers;

an optical waveguide layer formed between the cladding layers and optically and operatively connected to the light absorption layer for propagating the light; and

a layer transparent to the light in which the optical modulator is buried.

5,339,371

OPTICAL INTERCONNECTION NETWORKS AND PROCESSES

Yasuo Tomita, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

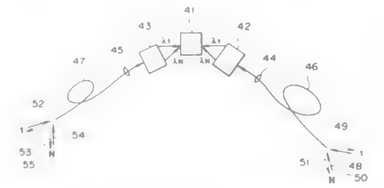
Filed Feb. 6, 1992, Ser. No. 831,986
Claims priority, application Japan, Feb. 8, 1991, 3-039482
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—24 **12 Claims**

1. An optical interconnection network comprising:

a phase-conjugate mirror for receiving light beams propagating through said network;

at least one channel at an input side of said network, an incoming light beam being propagated through said input side channel to enter said phase-conjugate mirror; and

at least one channel at an output side of said network, a light beam always being propagated through said output side channel to enter said phase-conjugate mirror,



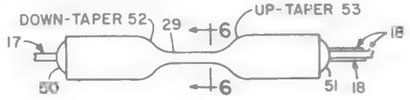
wherein each of said input and output side channels is arranged such that light beams of different wavelengths enter a respective channel at different predetermined angles to perform a self-routing function.

5,339,372

LOW LOSS COUPLER

William J. Miller; Daniel A. Nolan, and David L. Weidman, all of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jun. 9, 1993, Ser. No. 75,129
Int. Cl.[5] G02B *6/28;* **C03C** *25/02*
U.S. Cl. 385—29 **12 Claims**



1. A fiber optic coupler comprising

at lest two single-mode optical fibers, each having a core surrounded by a cladding, the lowest refractive index of any of said claddings being n_2, portions of said fibers extending side-by-side and being tapered and fused together to form a coupling region having input and output ends, at least two of said fibers constituting output fibers that extend from the output end of said coupling region,

said coupling region being surrounded by a medium having a refractive index n_3 that is lower than n_2, said medium comprising an elongated body of matrix glass having two end regions and a midregion, said optical fibers extending longitudinally within said body and being fused together along with a midregion of said body, the diameter of the central portion of said midregion being smaller than the diameters of said end regions, said central portion of said body midregion constituting said coupling region, and

composite mode inhibiting means comprising transparent material of refractive index n_4 extending between the claddings of adjacent output fibers in the coupling region, wherein n_4 is less than n_2.

5,339,373

OPTICAL BRANCHING AND COUPLING DEVICE

Haruo Tanaka, and Naotaro Nakata, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 14, 1993, Ser. No. 120,420
Claims priority, application Japan, Sep. 22, 1992, 4-253179
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—31 **7 Claims**

1. An optical branching and coupling device connected to a first optical fiber for inputting a first ray of light and a second ray of light of which respective wavelengths are different from

VOL 1165 ISS 3 AG 16 1994 UMI

each other and for outputting the first ray and to a second optical fiber for outputting the second ray, and having therein a light-emitting element for emitting the first ray and a light-receiving element for receiving the first ray,

the optical branching and coupling device comprising a first filter for receiving the two rays input from the first optical fiber and a ray of light emitted from the light-emitting element, and a second filter for receiving the rays from the first filter and sending them to the second optical fiber and to the light-receiving element,



wherein the first filter is formed, on its front side, with a first filter film adapted to substantially transmit the first ray and to substantially reflect the second ray and, on its back side, with a mirror film adapted to transmit a portion of each of the rays and to reflect the rest thereof; and

wherein the second filter is formed, on its front side, with a second filter film adapted to substantially transmit the first ray and to substantially reflect the second ray and, on its back side, with an antireflective film adapted to substantially transmit the first ray

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5,339,374

FUSED BICONICAL TAPER FIBER OPTIC COUPLER STATION AND FABRICATION TECHNIQUES

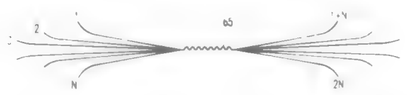
Kent A. Murphy, Roanoke; Michael F. Gunther, Blacksburg, and Richard O. Claus, Christiansburg, all of Va., assignors to The Center for Innovative Technology, Herndon; Virginia Polytechnic Institute & State University and Virginia Tech Intellectual Properties, Inc., both of Blacksburg, all of Va.

Continuation-in-part of Ser. No. 777,669, Oct. 15, 1991, Pat. No. 5,216,731. This application May 26, 1993, Ser. No. 67,868

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[5] **G02B** *6/00. 6/36*

U.S. Cl. 385—43 **9 Claims**



1. A biconical-taper coupler for distributing higher order modes and lower order modes in an input fiber uniformly to a plurality of output fibers, said plurality of output fibers including said input fiber, said coupler comprising a unitary unscrambled biconical-taper region including a first tapered region, a second tapered region and a minimum tapered region between said first tapered region and said second tapered region, said first tapered region being rotated with respect to said second tapered region.

5,339,375

CONNECTOR FOR COUPLING A MULTIPLE CHANNEL CABLE TO A CUVETTE

Ralph M. Kerns, Laguna, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 770,672, Oct. 3, 1991, Pat. No. 5,282,466. This application Nov. 12, 1992, Ser. No. 975,451

Int. Cl.[5] **G02B** *6/36*

U.S. Cl. 385—53 **2 Claims**

1. A connector for coupling a multiple channel cable to a cuvette, the curvette having two spaced apart keys located on opposing sides of a window with which the cable is to be aligned, each key having an opposing aperture and flange, the connector comprising:

a generally cylindrical knob through which the cable extends, said knob having two longitudinally extending extensions and two radially extending lips, each said lip being sized to be received within the opposing apertures and having a stop portion and a raised lock portion between which the flange may be positioned;

a foot disposed on the end of the cable to be aligned with the window, said foot being generally cylindrical and rotatable with respect to said knob, said foot having two radially extending opposing stops which, together with said extensions, limit the rotation of said knob with respect to said foot from a first position where said lips are aligned radially with said stops to a second position where said lips are radially offset from said stops, each said stop having a key slot sized to receive the keys on the cuvette; and

spring means disposed between said knob and said foot for biasing said knob away from said foot, said connector being adapted to receive the keys of the cuvette while in said second position, said connector being further adapted to permit rotation of said knob to said first position while axial pressure is applied on the cuvette and said foot in the direction of the cable, such that said lips are received within the opposing apertures and the flange is locked into place between said stop portion and said raised lock portion by releasing the axial pressure.

5,339,376

GROOVED OPTICAL FIBER CONNECTOR INCORPORATING ELASTIC GUIDE PIN PRESSING MEMBERS

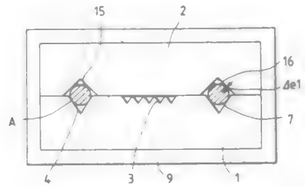
Toshiaki Kakii; Makoto Honjo; Hidetoshi Ishida; Hiroshi Katsura; Toru Yamanishi; Kazumichi Miyabe, all of Kanagawa; Tadashi Haibara, and Michito Matsumoto, both of Ibaraki, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph and Telephone Corp., Tokyo, both of Japan

Filed Sep. 9, 1992, Ser. No. 942,061

Claims priority, application Japan, Sep. 9, 1991, 3-258482; Sep. 9, 1991, 3-258483; Aug. 17, 1992, 4-241313

Int. Cl.[5] **G02B** *6/38*

U.S. Cl. 385—71 **4 Claims**



1. An optical connector for connecting optical fibers, comprising:

a guide pin;

a guide-groove substrate having guide grooves for positioning said optical fibers and said guide pin, said guide pin contacting a predetermined location on one of said guide grooves by which said guide pin is positioned;

an upper plate having a groove portion for covering said guide pin positioned in said one of said guide grooves when said upper plate is coupled to said guide-groove substrate; and

an elastic guide-pin pressing member provided in said groove portion at a position above said location where said one of said guide pin grooves contacts said guide pin.

5,339,377

OPTICAL FIBER SPLICER FOR RIBBON-SHAPED OPTICAL FIBER CORDS

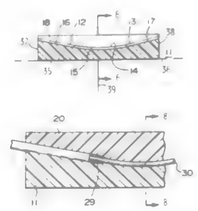
Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Matsudo, Japan

Filed May 13, 1993, Ser. No. 60,524

Claims priority, application Japan, Nov. 13, 1992, 4-328515

Int. Cl.[5] **K02B** *6/38*

U.S. Cl. 385—98 **16 Claims**



1. An optical fiber splicer for splicing first and second ribbon-shaped optical fiber cords, each of said optical fiber cords including a sheathed portion wherein a sheath surrounds a plurality of optical fibers and a sheathless portion wherein the plurality of optical fibers project from said sheathed portion, comprising:

an aligning member including

a base surface having a longitudinal axis therein;

first and second spaced end portions projecting from said base surface, said aligning member having a central axis located between said first and second end portions extending in a direction perpendicular to said base surface, and a transverse axis extending in a direction perpendicular to said longitudinal and central axes;

a concave surface symmetrically disposed with respect to said central axis extending in the direction of said longitudinal axis and spaced from said base surface, the distance between said concave surface and said base surface increasing gradually from the central axis toward said first and second end portions, said concave surface having a plurality of substantially V-shaped aligning grooves therein spaced from each other along said transverse axis and extending in the direction of said longitudinal axis;

first and second linear inclined surfaces interposed between said concave surface and said first and second end portions respectively, each of said linear inclined surfaces making a continuous and smooth transition from a bottom of each of said aligning grooves in said concave surface, the distance between each of said inclined surfaces and said base surface increasing linearly from said concave surface toward one of said first and second end portions, each of said inclined surfaces including a recessed sheath receiving portion extending in the directions of said longitudinal and transverse axes; and

a pair of side plates spaced in the transverse direction and extending between said first and second end portions in the direction of said longitudinal axis; and

a cover member adapted to be fitted into said aligning member for assembly therewith, said cover member including

a top surface;

third and fourth spaced end portions projecting from said top surface;

a convex surface symmetrically disposed with respect to said central axis extending in the direction of said longitudinal axis, the distance between said convex surface and said top surface decreasing gradually from the central axis toward said third and fourth end portions, the curvature of said convex surface corresponding to that of the concave surface of said aligning member;

third and fourth linear inclined surfaces interposed between said convex surface and said third and fourth end portions respectively, each of said third and fourth linear inclined surfaces making a continuous and smooth transition with said convex surface, the distance between each of said third and fourth inclined surfaces and said top surface decreasing linearly from said convex surface toward one of said third and fourth end portions to correspond to said first and second linear inclined surfaces, each of said third and fourth inclined surfaces further including a recessed sheath receiving portion extending in the direction of said longitudinal and transverse axes and corresponding to the sheath receiving portions of said first and second linear inclined surfaces respectively; and

a pair of flanges spaced in the direction of the transverse axis and extending between said third and fourth end portions in the directions of said longitudinal axis, the sheath receiving portions of said first and third linear inclined surfaces receiving the sheathed portion of said first optical fiber cords, the sheath receiving portions of said second and fourth linear inclined surfaces receiving the sheathed portion of said second optical fiber cords, and said V-shaped aligning grooves receiving the sheathless portions of said first and second optical fiber cords, whereby corresponding ends of said optical fibers are brought into optical contact with each other.

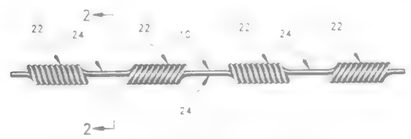
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,378

TORQUE-BALANCED EXTENDABLE FIBER OPTIC CABLE

Gregory A. Simonds, Old Lyme, and Louis E. Sansone, Brooklyn, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1993, Ser. No. 134,192
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—100 8 Claims



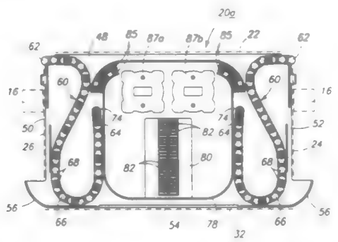
1. An extendable fiber optic cable comprising:
a rigid, yet bendable tubular core;
a viscous gel completely filling said tubular core for providing lubrication;
a plurality of optical fibers, extending through said core and suspended in said gel;
fiber reinforcement means, disposed around said tubular core for providing reinforcement; and
an elastomeric outer jacket disposed over said reinforcement means, for providing a protective cover for said cable;
said cable having a plurality of permanently formed coiled segments which are coiled in alternating directions.

5,339,379

TELECOMMUNICATION FIBER OPTIC CABLE DISTRIBUTION APPARATUS

Duane B. Kutsch, Otis Orchards; Glen M. Larson; Lloyd W. Lohf, both of Spokane, all of Wash., and Paul D. Johnson, Post Falls, Id., assignors to Telect, Inc., Liberty Lake, Wash.

Filed Jun. 18, 1993, Ser. No. 79,054
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—135 27 Claims



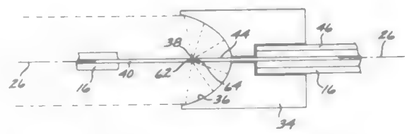
15. A telecommunication fiber optic distribution apparatus for cross-connecting first optical fibers from a multi-fiber cable to second optical fibers from a plurality of distribution cables, comprising:
an upright frame
a tray support housing mounted on the frame forming an enclosure having a rear wall, side walls, a top wall and a bottom wall;
a plurality of vertically spaced horizontal tray guides mounted to the housing;
a plurality of optical fiber trays mounted within the housing enclosure supported on the horizontal tray guides for movement relative to the rear wall between retracted storage positions in which the trays are within the enclosure and extended service positions in which the trays extend outward from the enclosure;
elongated multi-fiber carriers mounted within the trays, each having one end operatively connected to the support housing and an opposite end operatively connected to the tray and an articulating intermediate section that retracts and extends with corresponding movement of the trays for receiving and supporting the first and second optical fibers within the trays to protect and prevent the fibers from being bent in an arc having a radius of curvature that is less than a prescribed value during such tray movement.

5,339,380

OPTICAL FIBER LASER FUSION SPLICER

Joseph A. Wysocki, Oxnard; Michael R. Vince, Thousand Oaks; Stephen W. McCahon, Newbury Park, and John T. Kenna, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 904,249, Jun. 25, 1992. This application Nov. 19, 1993, Ser. No. 155,609
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—136 5 Claims



1. An optical fiber clamp used to hold a cylindrical optical fiber having a buffer layer of a preestablished radius, comprising:
a base having an outer clamping surface;
a slot in the base, the slot having a lower end convexly curved to about the radius of the optical fiber and precisely located relative to the clamping surface;
a retainer having a tongue that removably slides into the slot, the tongue having a lower end concavely curved to about the radius of the optical fiber, the retainer being dimensioned such that an outer surface of the retainer is flush with the outer clamping surface of the base when the retainer is assembled to the base with an optical fiber captured between the lower end of the slot and the lower end of the tongue.

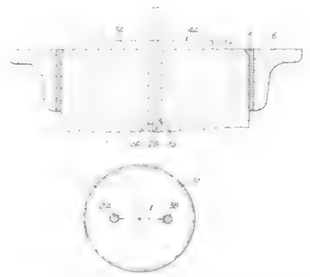
5,339,381

OPTICAL FIBER COMPOSITE INSULATORS

Mitsuji Ikeda; Ryoichi Mine, both of Nagoya; Masayuki Nozaki, Ama, and Tadashi Sugiura, Okazaki, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 18, 1993, Ser. No. 33,751
Claims priority, application Japan, Mar. 23, 1992, 4-064765; Mar. 23, 1992, 4-065276; Mar. 24, 1992, 4-065784; Mar. 24, 1992, 4-065787; Mar. 24, 1992, 4-066017
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—138 10 Claims

1. An optical fiber composite insulator comprising an insulator body in which a through hole having a substantially radially circular cross section is provided, a plurality of optical fibers passed through said through hole, and an organic insulating material gas-tightly sealing the optical fibers in the through hole, wherein a diameter of said through hole is not more than 13 mm, said optical fibers are located inside a hypothetical circle drawn on any plane orthogonal to an axis of the through hole and having a center coaxial with that of said through hole, said hypothetical circle having a diameter equal to 95% of that



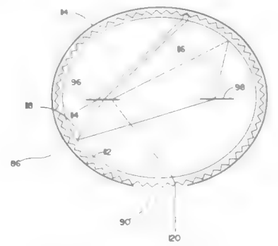
of the through hole, and a distance between any optical fibers is not less than 0.1 mm.

5,339,382

PRISM LIGHT GUIDE LUMINAIRE WITH EFFICIENT DIRECTIONAL OUTPUT

Lorne A. Whitehead, Vancouver, Canada, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 23, 1993, Ser. No. 21,525
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—146 39 Claims



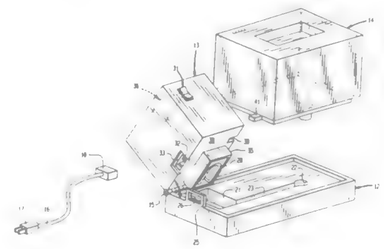
1. A prism light guide luminaire, comprising:
(a) opaque and light emitting surface portions which together form a selected cross-sectional configuration;
(b) said opaque surface portion having a light reflecting characteristic;
(c) said light emitting surface portion comprising prism light guide material for confining, within said luminaire, light rays incident upon said material at angles falling within an acceptance angular range of said material;
(d) a light scattering area comprising light scattering means for redirecting light into angles falling outside said acceptance angular range, said area having a predefined shape and location;
wherein said cross-sectional configuration, said light reflecting characteristic, said light scattering area shape and location are selected such that:
(i) light redirected by said light scattering area which does not pass directly from said scattering area to said light emitting surface portion and escape through said light emitting surface portion is substantially efficiently reflected by said material directly back onto said scattering area; and,
(ii) all paths along which light may pass directly from said scattering area to said light emitting surface portion define a solid angle less than 2π.

5,339,383

ELECTRICAL HUMIDIFER WITH DETACHABLE CONNECTOR PLUG SAFETY INTERLOCK SYSTEM ALLOWING INTERIOR ACCESS ONLY WHEN UNPLUGGED

Frank Marino, Upton, Mass., assignor to Duracraft Corporation, Whitinsville, Mass.

Division of Ser. No. 921,531, Jul. 29, 1992, Pat. No. 5,228,107. This application Dec. 8, 1992, Ser. No. 988,590
Int. Cl.[5] H05B *1/02;* F24F *3/14*
U.S. Cl. 392—406 4 Claims



1. A humidifier comprising:
base means defining a reservoir and a latch aperture;
a humidifier unit hingedly mounted on said base means over said reservoir and movable to provide access thereto, said humidifier unit including an electrically energized humidification means for inducing dispersion of liquid and defining a discharge opening for discharging liquid dispersed by said humidification means;
circuit means coupled to said humidification means and comprising an on-off switch for selectively controlling energization thereof, an electrical connection means retained by and connected to said humidification means for supplying power thereto, said connection means being aligned with said latch aperture when said humidifier unit is operatively mounted on said base means, and a power cord having an electrical plug detachably connectable with said connection means through said aperture when said humidifier unit is operatively mounted on said base means, and wherein engagement between said plug and said latch aperture of said base means prevents movement of said humidifier unit relative to said base means to prevent access to said reservoir so long as said plug and said connection means are in operative engagement.

5,339,384

CODE-EXCITED LINEAR PREDICTIVE CODING WITH LOW DELAY FOR SPEECH OR AUDIO SIGNALS

Juin-Hwey Chen, Neshanic Station, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 837,522, Feb. 18, 1992. This application Feb. 22, 1994, Ser. No. 200,805
Int. Cl.[5] G10L *3/00, 9/14, 9/18*
U.S. Cl. 395—2.2 8 Claims

1. A method of encoding comprising:
(a) receiving a set of input audio samples representative of an audio signal, the set of input audio samples comprising a first portion and a second portion;
(b) applying a first hybrid window to the second portion of the set of input audio samples to generate a first windowed second portion;
(c) generating a set of quantized audio samples approximating the set of input audio samples, the set of quantized audio samples comprising a first portion and a second portion;

VOL 1165 ISS 3 AG 16 1994 UMI

(d) applying a second hybrid window to the second portion of the set of quantized audio samples to generate a second windowed second portion;
(e) generating a modified digital signal obtained from a set of gain scaled excitation samples, the modified digital signal comprising a first portion and a second portion;
(f) applying a third hybrid window to the second portion of the modified digital signal to generate a third windowed second portion; the first hybrid window, the second hybrid window and the third hybrid window being represented by $w_m(n)$ according to the equations:

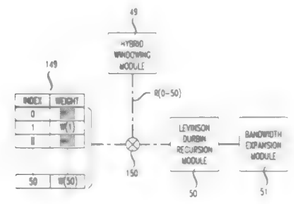
$$w_m(n)=f_m(n)=b\alpha^{-[n-(m-N-1)]}$$

if $n \leqq m-N-1$

$$w_m(n)=g_m(n)=-\sin[c(n-m)]$$

if $m-N \leqq n \leqq m-1$

$$w_m(n)=0$$

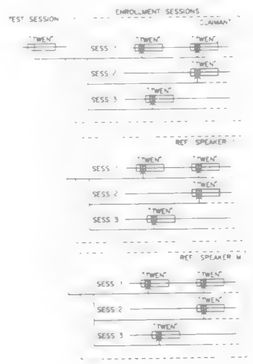


if $n \geqq m$

and wherein N is equal to about 30 and α is equal to about 0.98282 for the first hybrid window, N is equal to about 35 and α is equal to about 0.99283 for the second hybrid window, and N is equal to about 20 and α is equal to about 0.96468 for the third hybrid window;
(g) calculating a first plurality of coefficients from the first windowed second portion;
(h) calculating a second plurality of coefficients from the second windowed second portion;
(i) calculating a third plurality of coefficients from the third windowed second portion;
(j) deriving a first set of predictor coefficients, a second set of predictor coefficients, and a third set of predictor coefficients from the first plurality of coefficients, the second plurality of coefficients, and the third plurality of coefficients, respectively;
(l) outputting the index.

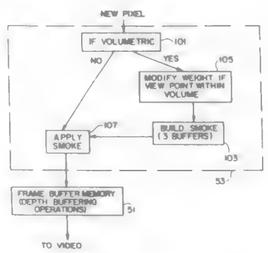
5,339,385
SPEAKER VERIFIER USING NEAREST-NEIGHBOR DISTANCE MEASURE
Alan L. Higgins, San Diego, Calif., assignor to ITT Corporation, New York, N.Y.
Filed Jul. 22, 1992, Ser. No. 918,560
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.55 **33 Claims**

1. In a Speaker Verification System comprising a means for processing spoken test into frames of speech, a means for enrolling a speaker into the system, a means for eliciting a spoken test phrase from a speaker claiming to be a specified enrolled speaker, a means for determining one or more verification distances between said spoken test phrase and corresponding "words" entered into the system during said enrollment into the system of said specified enrolled speaker, and a means for determining a verification score from such verification distance data and for determining therefrom whether said claiming speaker is said specified enrolled speaker, the improvement wherein:
said processing means includes a means for converting said spoken text into non-parametric speech vectors, whereby at least one of said speech vectors is included in each of said frames of speech; and
said determination of said verification distance includes a determination of nearest-neighbor Euclidean distances



between single frames of speech associated with said spoken test phrase and corresponding frames of speech associated with said "words" entered into the system during said enrollment into the system of said specified enrolled speaker and between single frames of speech associated with said enrollment "words" of said specified enrolled speaker and corresponding frames of speech associated with said spoken test phrase.

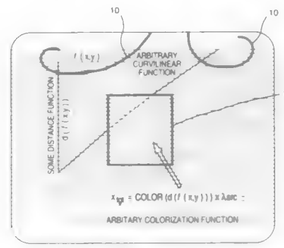
5,339,386
VOLUMETRIC EFFECTS PIXEL PROCESSING
Brian T. Sodenberg, Woodinville, and Mark L. Kenworthy, Renton, both of Wash., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.
Filed Aug. 8, 1991, Ser. No. 741,996
Int. Cl.[5] G06F *15/72, 15/62*
U.S. Cl. 395—122 **8 Claims**



8. In a real time image generation system operating form polygon defined surface data in which opaque object pixels are defined by at least a color attribute and a depth value and in which volumetric pixel items are defined by at least a color attribute, a depth value, an opacity weight and an opacity gradient value, apparatus for generating volumetric effects comprising:
means for storing in a data buffer a color attribute, a depth value, an opacity weight value, and an opacity gradient

value characterizing the volumetric effects applicable to each pixel;
means operative as successive object pixel definitions are read for comparing the depth values of the current object definition with the depth value held in said buffer and calculating, as a function of the relative depth values and the corresponding opacity gradient and weight values, a relative weight to associate with the corresponding color attribute in the buffer;
means for mixing the object color attribute and the color attribute from said buffer as a function of said relative weighting to obtain a result color attribute which is output as the color for the respective pixel.

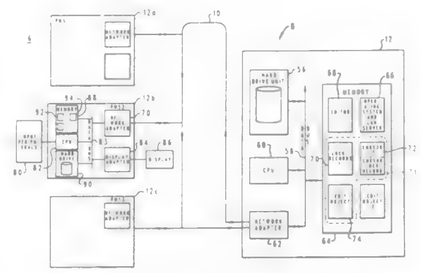
5,339,387
PLANAR COLOR GRADIENTS CONSTRUCTED AS AN ARBITRARY FUNCTION OF A DISTANCE FUNCTION FROM AN ARBITRARY 2-D CURVILINEAR FUNCTION
Carl B. Frankel, San Francisco, Calif., assignor to Abekas Video Systems, Inc., Redwood City, Calif.
Filed Oct. 24, 1991, Ser. No. 783,633
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—131 **8 Claims**



1. An apparatus for electronically generating colorized characters for a character display, comprising:
first memory means for storing character defining data;
input means for allowing a user to specify one or more characters to be displayed, one or more curves, and one or more colorization functions which specify the colors of a pixel of the video display device at a distance defined by a distance function; and
processing means for reading the character defining data for the character display and for generating and outputting electronic colorization data for each pixel of the character display by electronically calculating the colorization function as a function of the distance function from said one or more curves.

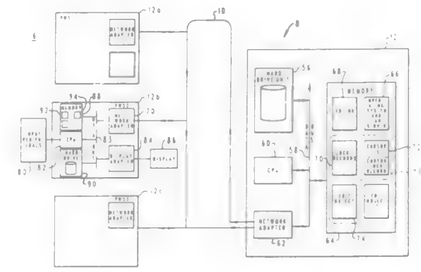
5,339,388
CURSOR LOCK REGION
Cary L. Bates, Rochester, and Jeffrey M. Ryan, Byron, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1991, Ser. No. 816,451
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—153 **14 Claims**

1. In a multi-media collaborative computer based system including a network connecting a plurality of terminals of communication, an output display device for each terminal, a user input device for each terminal, and a shared data object concurrently accessible by a plurality of users of the system, a method of protecting transitory, floating blocks of the shared data object from concurrent manipulation originating with more than one user, the method comprising the steps performed by a computer of:
responsive to a user obtaining access to the shared data object, assigning the user a cursor available for display on the output display devices;
releasing a previously established cursor associated lock region upon movement of the cursor outside of the previously established cursor associated lock;



responsive to the movement of the cursor, determining a position for a cursor associated lock region related to the position of the cursor in the shared data object; and
if the position for the cursor associated lock region does not include a portion of an established lock region, establishing the cursor associated lock region for the cursor.

5,339,389
USER SELECTABLE LOCK REGIONS
Cary L. Bates, Rochester, and Jeffrey M. Ryan, Byron, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1991, Ser. No. 816,459
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—153 **14 Claims**



1. In a multi-media collaborative computer based editing system including a network connecting a plurality of terminals for communication, an output display device for each terminal, a user input device for each terminal, and a shared data object concurrently accessible by a plurality of users of the system, a method of protecting regions of the shared data object from manipulation originating from more than one user, the method comprising the steps performed by a computer of:
responsive to a user accessing the shared data object, assigning the user a distinguishing cursor available for display in any private view;
allowing an establishing user to select through the cursor an area in the shared data object for an associated region;
examining the area to determine if the area conflicts with any existing lock regions or any owned regions associated with a user other than the establishing user; and
if no conflicts exist, establishing a lock region from the area

VOL 1165 ISS 3 AG 16 1994 UMI

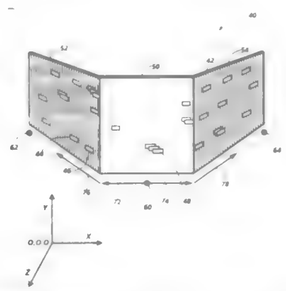
independent of the position of the cursor of the establishing user.

5,339,390

OPERATING A PROCESSOR TO DISPLAY STRETCHED CONTINUATION OF A WORKSPACE

George G. Robertson; Jock Mackinlay, both of Palo Alto, and Stuart K. Card, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 488,587, Mar. 5, 1990, abandoned. This application Feb. 25, 1993, Ser. No. 23,466
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—157 22 Claims



1. A method of operating a processor connected for providing image data to an image output device that includes a display, the image output device presenting images on the display in response to the image data, the method comprising acts of:

providing first image data so that the image output device presents a first image, the first image including a first set of two or more display features that are perceptible as positioned relative to each other in a first workspace; and

providing second image data so that the image output device presents a second image following the first image in sequence, the second image including a second set of two or more display features that are perceptible as continuations of the first set of display features, the second set of display features being perceptible as positioned relative to each other in a second workspace;

the first and second workspaces being perceptible as surfaces; each surface having first and second sections that meet at an angle along a first edge so that first and second sections are perceptible in three dimensions; the angle not being equal to 180 degrees; the first and second sections of the second workspace being perceptible as continuations respectively of the first and second sections of the first workspace;

the second workspace being perceptible as a stretched continuation of the first workspace; the second workspace including a stretched part in its first section that is perceptible as a stretched continuation of a part of the first workspace; the second workspace also including a part in its second section that accommodates stretching.

5,339,391

COMPUTER DISPLAY UNIT WITH ATTRIBUTE ENHANCED SCROLL BAR

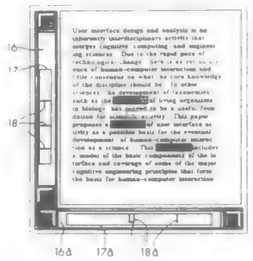
David A. Wroblewski, Austin, Tex.; William C. Hill, Montville, N.J., and Timothy P. McCandless, Austin, Tex., assignors to Microelectronics And Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 523,117, May 14, 1990, abandoned. This application Aug. 4, 1993, Ser. No. 102,021
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—157 34 Claims

1. In an interactive data display computer system including a processing unit for processing data, a memory for storing a data file, and a data display screen for displaying data to a user, said data display screen including a data display field in a first region and a scroll bar field in a second region separated form said first region, a method of presenting a user with an attribute-enhanced scroll bar comprising:

display in said data display field a portion of some but not all of said data file;

displaying in said scroll bar field a shaft representing a length of said data file;



displaying in said scroll bar field a car within said shaft representing a position of said portion relative to said length; and

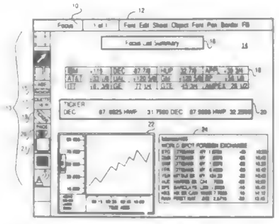
displaying in said scroll bar field an attribute map within said shaft comprising indicia representing a position of each occurrence of selected data in said data field relative to said length, said attribute map being visually distinguishable from said car.

5,339,392

APPARATUS AND METHOD FOR CREATION OF A USER DEFINABLE VIDEO DISPLAYED DOCUMENT SHOWING CHANGES IN REAL TIME DATA

Jeffrey S. Risberg, 3249 Morris Dr., Palo Alto, Calif. 94303, and Marion D. Skeen, 3826 Magnolia Dr., Palo Alto, Calif. 94306

Continuation-in-part of Ser. No. 632,551, Dec. 21, 1990, which is a continuation-in-part of Ser. No. 601,117, Oct. 22, 1990, Pat. No. 5,257,369, which is a continuation-in-part of Ser. No. 386,584, Jul. 27, 1989, Pat. No. 5,187,787. This application Dec. 28, 1990, Ser. No. 636,044
Int. Cl.[5] G06F *15/62, 15/16*
U.S. Cl. 395—161 46 Claims



1. An apparatus for transforming a blank display of a computer into an active document having one or more pages of user defined display showing at least the changing values of data the value of which may change over time, said display changing as the values of said data changes, comprising:

a computer for storing and executing one or more programs, and having a display;

at least one source of changeable data;

a data path coupling said computer to said at least one source of changeable data;

a communication program in execution on said computer for carrying out subject based addressing for receiving subscription requests specifying a subject on which data is desired and for mapping the subject of each said subscription request to the identity and/or location of one or more sources of data on that subject, and for automatically establishing at least one subscription communication path via said data path to at least one of said sources of data on each said subject such that the current value of said data on each said subject for which there is an active subscription and all updates thereto will be obtained and made available for display;

a dispatcher program in execution on said computer and coupled to said communication program and to said input devices for receiving requests from a user via one or more of said input devices to display on said computer one or more items of said changeable data generated by said source of changeable data, said requests for data specified only by subject, and for generating and sending to said communication program a subscription request for each said subject thereby causing retrieval by said communication program on a subscription basis only said requested items of changeable data and all updates thereto via said data path, and for making said retrieved data and all changes thereto available for display; and

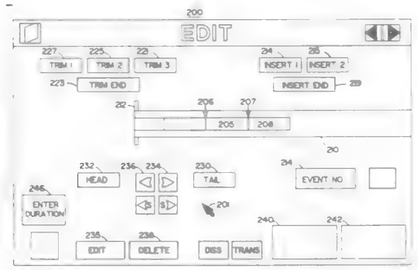
a document composition program in execution on said computer and coupled at least to said dispatcher program and to said computer display for accepting composition commands entered by a user via said dispatcher program, said compositions commands defining the desired content and appearance on said display of said active document and for receiving from said dispatcher program said changeable data retrieved by said communication program and displaying said changeable data on said display at the location and in the manner specified by said user through said composition commands such that the displayed values virtually instantaneously reflect changes in the value of said changeable data as said values change over time.

5,339,393

GRAPHICAL USER INTERFACE FOR DISPLAYING AVAILABLE SOURCE MATERIAL FOR EDITING

Robert Duffy, Milpitas, and O. F. Morgan, San Jose, both of Calif., assignors to Sony Electronics, Inc., Park Ridge, N.J.

Filed Apr. 15, 1993, Ser. No. 47,825
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—161 26 Claims



1. In a computer controlled editing system for editing a multi-media production including a central processing unit (CPU) coupled to a display device and storage means coupled to said CPU, a method for displaying available source material for editing comprising the steps of:

storing a plurality of source logs comprising a start point and an end point identifying all available source material for editing by said computer controlled editing system;

displaying, on said display device, at least one sequence of a plurality of source material blocks on a timeline such that a tail point of a first source material block is adjacent to a head point of a subsequent source material block on said timeline, said head and tail points for each source material block displayed defining up to all of said available source material identified by a corresponding source log;

providing a means to select a source material block for re-editing including providing a means to indicate a point on said selected source material block for which re-edit is desired;

selecting a re-edit function; and

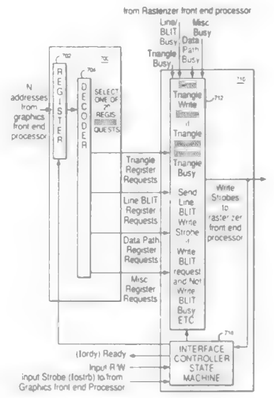
displaying, on said display device upon selection of said re-edit function, available source material required for said re-edit function selected and corresponding to said selected source material block and said point indicated by distinguishing said available source material from said source material blocks on said timeline by size, color and relative layering.

5,339,394

I/O REGISTER PROTECTION CIRCUIT

Lee E. Johnson, Jr., Round Rock; Daryl J. Kokoszka; Steven P. Larky, both of Austin, all of Tex., and Paolo Sidoli, Bresso Milano, Italy, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 614,469, Nov. 15, 1990. This application Jul. 31, 1992, Ser. No. 924,357
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—325 9 Claims



1. A data processing system comprising:

a plurality of processors each including means for providing a busy signal;

a first register means for storing data to be processed by said processors;

a plurality of second register means coupled to said first register means for storing data from said first register means, each said second register means providing data stored in said second register means to at least one processor;

a decoder, coupled to said first register means, for providing distribution signals indicating which of said second register means should receive said data stored in said first register means; and

control means, coupled to said decoder and said processor means, for receiving said busy and distribution signals and prohibiting data storage from said first register means to said second register means providing said stored data to a processor when any of the processors the register means is providing said stored data to provides a busy signal.

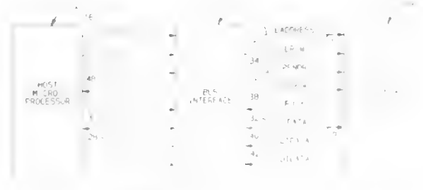
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,395

INTERFACE CIRCUIT FOR INTERFACING A PERIPHERAL DEVICE WITH A MICROPROCESSOR OPERATING IN EITHER A SYNCHRONOUS OR AN ASYNCHRONOUS MODE

James K. Pickett; Philip A. Inman, and Matthew D. Sale, all of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Sep. 17, 1992, Ser. No. 947,126
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—325 15 Claims



1. An interface circuit for interfacing a peripheral device and a microprocessor to enable data transference between a microprocessor data bus and a memory location within the peripheral device, the interface circuit comprising:

means for selecting an operating mode for the interface circuit, the operating mode being one of a synchronous mode and an asynchronous mode, whereby the interface circuit is operated in a synchronous mode when the microprocessor utilizes synchronous bus control and in an asynchronous mode when the microprocessor utilizes asynchronous bus control;

means for receiving a request for access to a peripheral memory location from the microprocessor;

means for providing the peripheral device with an address specifying the peripheral memory location being requested for access by the microprocessor;

means for receiving a clock signal from the microprocessor;

a temporary data storage register for temporarily storing data receiving from the microprocessor and the peripheral device;

means coupling the microprocessor data bus and the data storage register for data transference between the microprocessor data bus and the interface circuit;

means coupling the peripheral device and the data storage register for data transference between the interface circuit and the peripheral memory location;

means for receiving an indication from the peripheral device indicating that the peripheral device is engaged in transferring data between the data storage register and the peripheral memory location; and

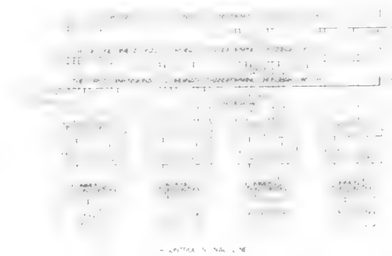
control means responsive to the interface operating mode, the clock signal, the request for access from the microprocessor, and the indication of engagement in data transference from the peripheral device, for separately timing and controlling (A) data transference between the microprocessor data bus and the data storage register, and (B) data transference between the data storage register and the peripheral memory location.

5,339,396

INTERCONNECTION NETWORK AND CROSSBAR SWITCH FOR THE SAME

Akira Muramatsu, Kawasaki; Ikuo Yoshihara, Tama; Kazuo Nakao, Sagamihara; Takehisa Hayashi, Kodaira; Teruo Tanaka, and Shigeo Nagashima, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 780,420, Oct. 22, 1991, abandoned, which is a continuation of Ser. No. 272,528, Nov. 17, 1988, abandoned. This application Sep. 10, 1993, Ser. No. 119,601
Claims priority, application Japan, Nov. 18, 1987, 62-289323
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 4 Claims



1. A computer implemented method for asynchronously selecting a communication interconnection path among a plurality of processor elements wherein each of the processor elements are identified by a coordinate set and wherein the processor elements are communicatively connected by a plurality of coordinate transforming crossbar switches, comprising steps of:

initiating an information transfer request for an information packet from a first processor element identified by a first coordinate set to a second processor element identified by a second coordinate set;

comparing by the first processor element of a first coordinate of the first coordinate set with a corresponding first coordinate of the second coordinate set, wherein the coordinate sets are comprised of a plurality of coordinates each having a preselected sequential priority for the comparing;

transferring the information packet from the first processor element to a first coordinate transforming crossbar switch selected for communicating the information packet among processor elements on a first coordinate dimensional basis comprising the first coordinate of the first coordinate set and inputting the information packet from the first coordinate transforming crossbar switch to a first selected processing element having a corresponding first coordinate equal to a first coordinate of the second coordinate set, when the comparing indicates that the first coordinates between the first coordinate set and the second coordinate set are different; and,

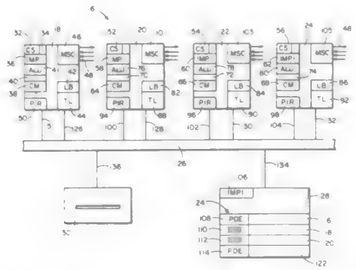
sequentially comparing a next priority coordinate of the first selected processing element with a corresponding next priority coordinate of the second coordinate set, sequentially transferring the information packet to a corresponding next coordinate transforming crossbar switch for communicating among the processor elements on a next coordinate dimensional basis comprising a next coordinate of the first coordinate set, when the sequential comparing indicates that the next priority coordinates are different and sequentially inputting the information packet to a next selected processing element having a next priority coordinate equal to a next coordinate of the second coordinate set whereby the communication is complete when the next selected processing element is the second processing element.

5,339,397

HARDWARE PRIMARY DIRECTORY LOCK

Richard G. Eikill; Sheldon B. Levenstein; Lynn A. McMahon, all of Rochester, and Joseph P. Weigel, Oronoco, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1990, Ser. No. 596,812
Int. Cl.[5] G06F *12/10, 12/14, 13/00, 13/376*
U.S. Cl. 395—400 14 Claims



1. In a data processing network including a plurality of processing devices for executing computer program instructions to manipulate bit-encoded data, a main storage memory shared by the processing devices and having a plurality of page frames for storing bit-encoded data, an auxiliary storage means shared by the processing devices for storing bit-encoded data, and an interface connected to the processing devices, to the main storage memory and to the auxiliary storage means for transmitting bit-encoded data among the processing devices, the main storage memory and the auxiliary storage facility; and

wherein the main storage memory includes a primary directory containing primary mapping information for associating real addresses of the page frames with virtual addresses corresponding to data storage locations in the auxiliary storage means;

a system for resolving contentions among the processing devices for the primary mapping information, the system including:

a primary directory lock,

a plurality of control store means, one in each of the processing devices, containing computer program instructions including control words for requesting the primary directory lock and for acquiring the primary directory lock as a condition precedent to performing data operations on the primary mapping information;

wherein each processing device includes a hardware address translate means for requesting control of the interface for access to the primary directory to perform address translations on the primary mapping information without acquiring the primary directory lock, and a secondary directory containing secondary mapping information including a portion of the primary mapping information;

a first signalling means for generating a lock-acquired signal when one of the processing devices acquires control of the primary directory lock and continues to hold the primary directory lock and for generating a lock-released signal when said one of the processing devices completes a data operation on the mapping information and releases the primary directory lock;

a second signalling means for generating an interface-requested signal when the hardware translate means of one of the processing devices requests control of the interface and for generating an interface-acquired signal when the hardware translate means gains control of the interface;

a transmission means for: (i) transmitting the lock-acquired signal to the other ones of the processing devices, thereby preventing the other processing devices from acquiring control of the primary directory lock as long as the other processing devices continue to receive the lock-acquired signal; (ii) providing the lock-released signal to the other processing devices, to enable the other processing devices to acquire control of the primary directory lock; and (iii) providing the interface-requested and interface-acquired signals to all of the other processing devices;

wherein each processing device, responsive to receiving the interface-requested signal, is inhibited from gaining access to the primary directory via the primary directory lock until it no longer receives either the interfaced-requested signal or the interface-acquired signal; and

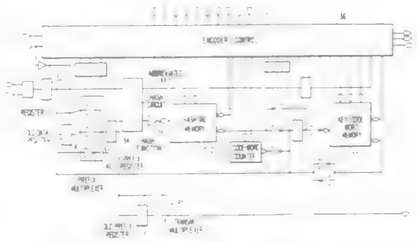
wherein the lock-acquired signal inhibits the hardware translate means of each of the processing devices from gaining control of the interface until the processing device receives the lock-released signal.

5,339,398

MEMORY ARCHITECTURE AND METHOD OF DATA ORGANIZATION OPTIMIZED FOR HASHING

Imran A. Shah, North White Plains, N.Y., and Brian C. Johnson, Stamford, Conn., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 750,220, Aug. 19, 1991, abandoned, which is a continuation of Ser. No. 388,279, Jul. 31, 1989, abandoned. This application Jul. 14, 1992, Ser. No. 913,764
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—400 8 Claims



1. A method of pipe-lined memory accessing for a multiplicity of sequentially received data values forming a string, comprising:

receiving said sequentially received data values,

storing pointer values in a first memory,

storing data values and respective further pointer values in a second memory at locations corresponding to pointer values in said first memory,

hashing respective prefix-data combinations formed from a respective prefix and a respective one of said data values to provide a respective hash value, said respective hash value including an address in said first memory,

responsive to hashing of a given prefix-data combination including a given received data value, and the resulting hash value corresponding to one location in said first memory at which a pointer value is already stored, hashing the next received data value with an assumed prefix having a value corresponding to that already stored pointer value; comparing the data value stored at the location corresponding to said pointer value stored at said one location in said second memory with a value related to said given received data value, while hashing said assumed prefix with said next received data value; and selecting the prefix for the next hashing responsive to the result of the comparison, and

responsive to hashing of said given prefix-data combination including said given received data value, and the resulting

VOL 1165 ISS 3 AG 16 1994 UMI

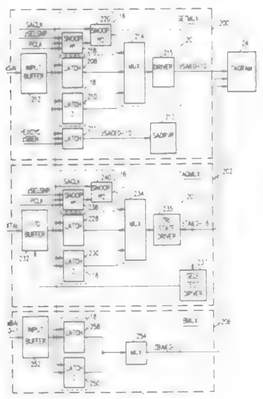
hash value corresponding to a location in said first memory at which a pointer value is not already stored, hashing the next received data value with a prefix having a value corresponding to said given received data value.

5,339,399

CACHE CONTROLLER THAT ALTERNATELY SELECTS FOR PRESENTATION TO A TAG RAM A CURRENT ADDRESS LATCH AND A NEXT ADDRESS LATCH WHICH HOLD ADDRESSES CAPTURED ON AN INPUT BUS

Yong Lee, Santa Clara; Nagraj Palasamudram, and James Nadir, both of San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 12, 1991, Ser. No. 684,180
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—425 **4 Claims**



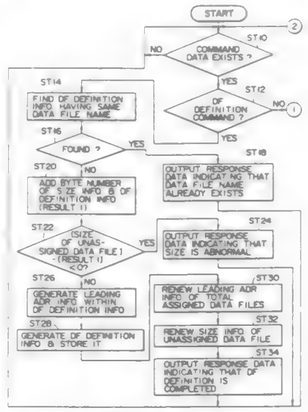
1. In a data processing system including
an input address bus;
a cache controller connected to said input address bus;
a cache data-array connected to said cache controller and to said input address bus;
said input address bus carrying a bus address;
control logic in said cache controller for controlling references to said cache data-array comprising:
a first address latch connected to said input address bus;
a second address latch connected to said input address bus;
clocking means for generating a first clock signal and a second clock signal;
first means connected to said clocking means, responsive to said first clock signal for capturing a current address on said input address bus into one of said first and second address latches at the beginning of a current cycle;
second means connected to said clocking means, responsive to said second clock signal for capturing a next address on said input address bus into the other one of said first and second address latches at the beginning of a next cycle;
said other one of said latches holding said next address until said current cycle ends;
third means connected to said first and second latches and to said clocking means for alternately selecting one of said first and second latches on successive cycles of said clocking means to thereby receive an input address at each successive clock cycle; and,
fourth means connected to an output of said first address latch and to an output of said second address latch for gating of one of either said current address or said next address to said control logic.

5,339,400

PORTABLE ELECTRONIC DEVICE CAPABLE OF SELECTIVELY PROVIDING UNUSED AREA SIZE OF WHOLE MEMORY OR MEMORY SEGMENTS TO EXTERNAL DEVICE

Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 6, 1991, Ser. No. 711,626
Claims priority, application Japan, Jun. 7, 1990, 2-147481
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **8 Claims**



7. A method of issuing a portable electronic device having a memory and being connectable to an external device, said method comprising:
first step of receiving a data file definition command and data file definition data including data file size data, from said external device;
second step of storing in said memory said data file definition data in accordance with said data file definition command, and thereby dividing said memory into a plurality of data file areas;
third step of calculating an unused area size of said memory by subtracting said data file size data from a storage capacity of said memory;
fourth step of receiving from said external device a data area definition command and area definition data including area size data;
fifth step of storing said area definition data in a selected one of said data file areas in accordance with said data area definition command;
sixth step of calculating an unused data area of said selected data file areas based on said area size data and a second area size information corresponding to said selected data file areas;
seventh step of receiving from said external device a size information output command and target data for designating a target area of said memory;
eighth step of outputting, when the target data designates total memory, said unused area size; and
ninth step of outputting, when the target data designates one of said plurality of data file areas, an unused data area information corresponding to said designated data file areas.

5,339,401

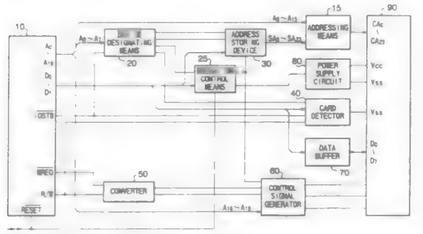
Patent Not Issued For This Number

5,339,402

SYSTEM FOR CONNECTING AN IC MEMORY CARD TO A CENTRAL PROCESSING UNIT OF A COMPUTER

Tetsushi Ueda, c/o Showakojo, Rhythm Watch Co., Ltd. 496 Obusuma, Showa-machi, Saitama-Pref., Japan

Filed Jul. 28, 1992, Ser. No. 920,912
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **20 Claims**



1. A system for controlling transmission data between an IC memory card and a central processing unit (CPU) of a computer comprising:
device designating means responsive to a designating instruction from the CPU for generating a plurality of device designating signals;
operation control means, responsive to one of said device designating signals, for latching data applied from the CPU and for producing operation control signals dependent upon said latched data;
address storing means responsive to another of said device designating signals for storing a plurality of data applied from the CPU as segment data, and responsive to one of said operation control signals for producing a plurality of said stored segment data;
addressing means for arithmetically adding said segment data applied from said address storing means to high order bit signals of an offset address from the CPU to produce added address data, and for combining said added address data with low order bit signals of said offset address to produce an IC memory card address, whereby said addressing means produces a greater number of IC memory card addresses than a maximum value of said offset address;
converter means responsive to memory instructions from the CPU for generating a memory read signal and a memory write signal;
control signal generator means responsive to one of said operation control signals for applying IC memory card control signals to an IC memory card in response to said memory read signal, said memory write signal, and an access instruction from the CPU; and
data buffer means for allowing a bidirectional transmission of data between the IC memory card and the CPU.

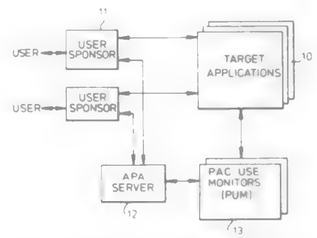
5,339,403

ACCESS CONTROL IN A DISTRIBUTED COMPUTER SYSTEM

Thomas A. Parker, Calne, United Kingdom, assignor to International Computers Limited, Putney, England

Continuation of Ser. No. 694,462, May 1, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 42,441
Claims priority, application United Kingdom, May 11, 1990, 9010603; Jul. 9, 1990, 9015104
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—425 **3 Claims**

1. In a distributed computer system, a method of controlling access from a user program to a plurality of target programs, the method comprising the steps:
(a) issuing said user program with an encrypted privilege attribute certificate (PAC), said PAC indicating which of said target programs the user program is permitted to access,
(b) transmitting the encrypted PAC from the user program to one of the target programs,
(c) transmitting the encrypted PAC from said one of the target programs to a validation unit,
(d) in the validation unit, decrypting the encrypted PAC and checking whether the PAC permits the user program to access said one of the target programs,



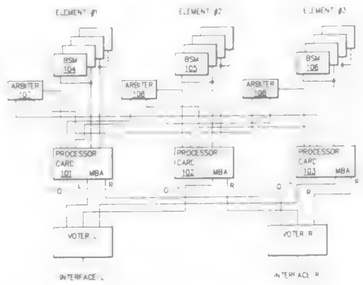
(e) returning a message from the validation unit to said one of the target programs, indicating whether the user program is permitted to access said one of the target programs, and
(f) returning a success/failure indication from said one of the target programs to said user program indicating whether the user program is permitted to access said one of the target programs.

5,339,404

ASYNCHRONOUS TMR PROCESSING SYSTEM

Gilbert C. Vandling, III, Endicott, N.Y., assignor to International Business Machines Corporation, New York, N.Y.

Filed May 28, 1991, Ser. No. 706,497
Int. Cl.[5] G06F *11/08*
U.S. Cl. 395—575 **7 Claims**



1. An asynchronous triple modular redundancy processing system with local arbitration, comprising:
N processor elements,
N arbiter elements associated respectively with each of said processor elements,
a memory uniquely associated with each processor element,
a bidirectional control bus between each arbiter and its associated processor, and
a unidirectional control bus between each processor arbiter and the other processors of the system, means for providing each processor with knowledge of which processor of the system is a requestor,
means for providing to each processor which requester of other elements is competing for service within said system,

VOL 1165 ISS 3 AG 16 1994 UMI

and a plurality of voters for providing service arbitration votes with voting for output transmission and without voting for inputs.

5,339,405

COMMAND QUIESCE FUNCTION

David A. Elko, Poughkeepsie; Jeffrey A. Frey, Fishkill; Audrey A. Helffrich, Poughkeepsie; Jeffrey M. Nick, Fishkill, and Michael D. Swanson, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,330

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **8 Claims**



1. A data processing system comprising:

one or more command initiators;

a command responder receiving one or more commands from one or more of said command initiators for execution by said responder;

one or more links connecting said initiators to said responder;

indicator means in said responder associated with each of said links, set by said responder, to indicate a possible problem with said link communication after receipt of a command on said link; and

indicator testing means in said command responder, operative upon receipt of a subsequent command on any of said links, for preventing execution of the subsequent command if any of said indicator means is in the set state after receipt of a previous command.

5,339,406

RECONSTRUCTING SYMBOL DEFINITIONS OF A DYNAMICALLY CONFIGURABLE OPERATING SYSTEM DEFINED AT THE TIME OF A SYSTEM CRASH

Michael W. Carney, Merrimacport, Mass.; Timothy Marsland, Palo Alto, Calif., and William F. Pittore, Lexington, Mass., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 3, 1992, Ser. No. 862,823

Int. Cl.[5] G06F *11/34*

U.S. Cl. 395—575 **16 Claims**

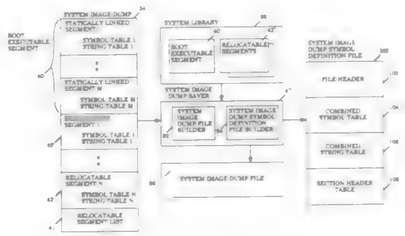
7. In a computer system comprising a central processing unit (CPU) executing a dynamically configurable operating system, wherein said operating system comprises symbol definitions that change dynamically, an apparatus for reconstructing said symbol definitions of said operating system defined at the time of a system crash to aid debugging said system crash, said apparatus comprising:

a non-pageable relocatable segment list comprising names of relocatable segments of said operating system that are loaded into said memory by said CPU and linked at any particular point in time, said operating system comprising a root executable segment that is loaded from a system library into said memory by said CPU during system start up and a plurality of relocatable segments that are loaded from said system library into said memory by said CPU and linked on an as needed basis, said system library being coupled to said CPU and said memory, said system library containing a first copy of said operating system;

maintenance means coupled to said CPU for maintaining said non-pageable relocatable segment list;

dumping means coupled to said CPU for dumping an image of said operating system in said memory at the time of a system crash onto a dump device, said system image dump comprising images of unpaged sections of said root executable and relocatable segments, and said list, in said memory at the time of said system crash, said root executable and relocatable segments comprising individually pageable and non-pageable sections, said dump device being coupled to said memory;

determining means coupled to said CPU for determining said relocatable segments that are loaded in said memory and linked at the time of said system crash using said



relocatable segment list dumped, said dump device being coupled to said CPU; and

first building means coupled to said CPU for building a system image dump symbol definition file on a storage device comprising all symbol definitions of said operating system defined at the time of said system crash regardless whether said symbol definitions are paged out or not, said symbol definition file being built using said root executable and selected ones of said relocatable segments stored in mass storage, said selected ones of said relocatable segments being said relocatable segments that are determined to be loaded in said memory at the time of said system crash, said storage device being coupled to said CPU, said mass storage comprising a second copy of said operating system;

whereby allowing said system image symbol definition file to be used in aid of debugging said system crash.

5,339,407

RECOVERY OF CACHED DATA FROM A MALFUNCTIONING CPU

Gary S. Goldman; Silas P. Elash, both of San Jose, and Jeffrey L. Baker, Milpitas, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Sep. 29, 1992, Ser. No. 954,506

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—575 **25 Claims**

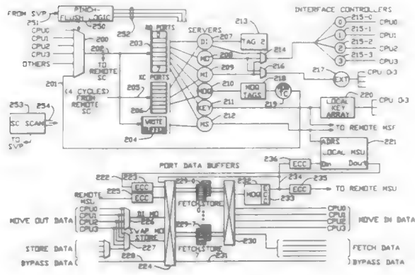
1. A computer system, comprising:

a processing unit including a cache memory and means for detecting errors in the processing unit;

a mainstore;

means, coupled to the processing unit and the mainstore, for controlling transfer of data between the cache memory and the mainstore; and

a service processor, coupled to the processing unit, the mainstore and the means for controlling transfer of data, and responsive to the detection of errors in the processing unit, for stopping the processing unit and moving data out



of the cache memory to the mainstore across a path separate from the means for controlling.

5,339,408

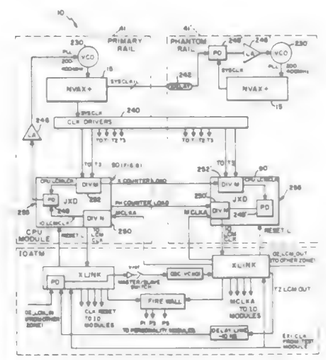
METHOD AND APPARATUS FOR REDUCING CHECKING COSTS IN FAULT TOLERANT PROCESSORS

William Bruckert; Thomas D. Bissett, both of Northboro; Glenn Dearth, Groton, and Paul Paternoster, Marlboro, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 30, 1992, Ser. No. 998,715

Int. Cl.[5] G06F *11/16*

U.S. Cl. 395—575 **11 Claims**



1. An apparatus comprising:

a central processing unit comprising:

first and second processors to process an identical instruction stream;

a data bus coupled to said first and second processors;

means for providing said first processor to furnish data to said data bus and to receive data from said data bus in response to said identical instruction stream; and

means for providing said second processor to receive data from said data bus in response to said identical instruction stream.

5,339,409

IMAGE STORAGE/SEARCH APPARATUS FOR MERGING IMAGE AND RELATED KEY CODES WHEN MATCH FOUND BETWEEN KEY CODE AND SPECIFIC CHARACTER CODE OF IMAGE

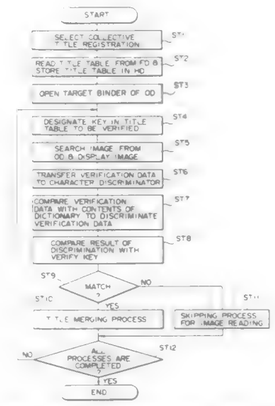
Hiroshi Sakuragi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1990, Ser. No. 633,793

Claims priority, application Japan, Dec. 28, 1989, 1-344401

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—600 **10 Claims**



1. An image data storage apparatus wherein a plurality of image data each associated with a first number of related key codes are stored and desired image data is searched by specifying at least one of the related key codes of the desired image data, said image data storage apparatus comprising:

a first storage medium capable of storing the plurality of related key codes;

a second storage medium capable of storing the plurality of image data and the plurality of related key codes;

first storing means for storing, in the first storage medium, a plurality of the first number of related key codes respectively corresponding to a plurality of the image data to be stored in the second storage medium;

second storing means for storing, in the second storage medium, a plurality of character codes together with the plurality of image data, each of the character codes being assigned to one image data and corresponding to at least one of the first number of related key codes of the one image data;

first means for reading at least one of the plurality of the first number of related key codes from the first storage medium;

means for designating at least one of the first number of related key codes read out by the first reading means;

second means for reading the character codes associated with the plurality of image data from the second storage medium;

means for finding from the character codes, read out by the reading means, a specific character code corresponding to the key code designated by the designating means;

means for merging the first number of related key codes, corresponding to the specific character code found by the finding means, with the image data corresponding to the specific character code and stored in the second storage medium; and

means, coupling to said first reading means, said second reading means, said designating means, said finding means, and said merging means, for sequentially repeating, for a plurality of said image data, the merging of the key codes

VOL 1165 ISS 3 AG 16 1994 UMI

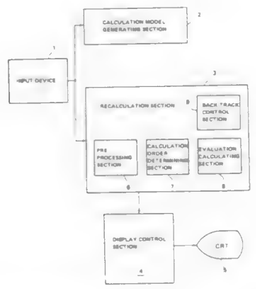
performed by the merging means so long as the finding means finds the specific character code corresponding to the key code designated by the designating means.

5,339,410

METHOD OF BIDIRECTIONAL RECALCULATION

Naoki Kanai, Tokyo, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 398,123, Aug. 23, 1989, abandoned. This application Jul. 9, 1992, Ser. No. 912,048
Claims priority, application Japan, Sep. 9, 1988, 63-224449
Int. Cl.[5] G06F *15/00, 15/30, 15/32*
U.S. Cl. 395—600 **5 Claims**



1. A spreadsheet system having a recalculation function in both a forward and reverse direction comprising:

means for establishing a calculation model in said spreadsheet system having at least one relational node corresponding to an inputted relation and a plurality of cell nodes including a function value cell node, a variable value cell node, and a propagation constraint cell node connected to said relational node by a plurality of arcs;

means for inputting by a user a first change instruction for said variable value cell node;

means for marking said calculation model in response to said first change instruction based on a series of predetermined rules describing a recalculating order of said function value cell node, variable value cell node and propagation constraint cell node;

a first means for automatically recalculating a value for said function value cell node based on said inputted relation at said relational node in said forward direction in response to said first change instruction based on the markings on said calculation model placed thereon by said marking means;

means for inputting by a user a second change instruction for said function value cell node; means for marking said calculation model in response to said second change instruction for said function value cell node based on said predetermined rules; and

a second means for automatically recalculating a new value for said propagation constraint cell node in said reverse direction using an inverse function of said inputted relation in response to said second change instruction and said markings on said calculation model.

5,339,411

METHOD FOR MANAGING ALLOCATION OF MEMORY SPACE

Charles J. Heaton, Jr., Southbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 631,833, Dec. 21, 1990, abandoned. This application Oct. 22, 1993, Ser. No. 142,541
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—600 **3 Claims**

1. A method of operation of a data processing device having a memory space to manage allocation of said memory space, operation of said data processing device comprising the steps of:

a) storing first data, said first data specifying first and second ends for a first memory block;

b) storing second data, said second data specifying a maximum fragment size which can be allocated from said first memory block;

c) responding to a memory request generated by an application being executed by said data processing device to allocate a fragment to said application, said memory request specifying a requested fragment size, said responding step including the further steps of:

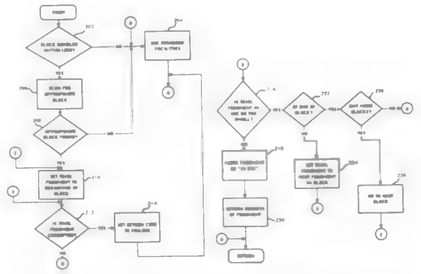
c1) comparing said requested fragment size to said maximum fragment size; and

c2) allocating an unallocated fragment to said application from said block only if said requested fragment size is less than said maximum fragment size, and otherwise;

c3) responding to said memory request in a predetermined manner without making said requested allocation from said block;

c4) allocating to said application another unallocated fragment of said memory space which has no addressed portions in common with said first memory block;

c5) storing third data, said third data specifying first and second ends for a second memory block;



c6) storing fourth data, said fourth data specifying a maximum fragment size which can be allocated from said second memory block, wherein said maximum fragment size which can be allocated from said second memory block is greater than said maximum fragment size which can be allocated from said first memory block;

c7) if said requested fragment size is greater than said memory fragment size which can be allocated from said first memory block, then responding to said memory request by allocating an unallocated fragment from said second memory block to said application only if said requested fragment size is less than said maximum fragment size which can be allocated from said second memory block; and otherwise

c8) responding to said memory request in a predetermined manner without making said requested allocation from said first memory block and without making said requested allocation from said second memory block;

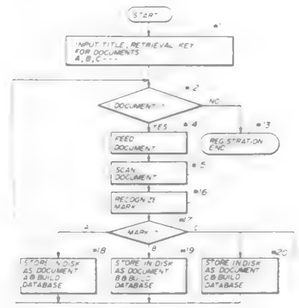
c9) allocating to said application said another unallocated fragment of said memory space which has no addressed portions in common with said first memory block and which further has no addressed portions in common with said second memory block.

5,339,412

ELECTRONIC FILING SYSTEM USING A MARK ON EACH PAGE OF THE DOCUMENT FOR BUILDING A DATABASE WITH RESPECT TO PLURALITY OF MULTI-PAGE DOCUMENTS

Kazumasa Fueki, Urawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 610,573, Nov. 8, 1990, abandoned. This application Dec. 13, 1993, Ser. No. 164,883
Claims priority, application Japan, Nov. 20, 1989, 1-301774
Int. Cl.[5] G06F *7/10, 15/40*
U.S. Cl. 395—600 **9 Claims**



1. An electronic filing system for filing a plurality of documents, each document including one or more pages, each page having a mark which is uniquely associated with the document that includes that page, the mark located at a predetermined position on each page of the document, said electronic filing system comprising:

input means for inputting retrieval information for each of the plurality of documents;

data base means for storing and managing the retrieval information input form said input means;

image scanner means for scanning each page of each document and outputting image data related to the scanned pages;

storage means for storing the page image data received from said image scanner means;

recognition means for recognizing the mark on each page of each document based on a portion of the image data stored in said storage means by reading a specific storage area of said storage means; and

control means coupled to said input means, said database means, said image scanner means, said storage means and said recognition means for carrying out a document registration process including building a database with respect to the plurality of documents by associating each page of each document together based upon the mark on each page recognized by said recognition means and the retrieval information which is stored in said database means for each document when carrying out the document registration process.

5,339,413

DATA STREAM PROTOCOL FOR MULTIMEDIA DATA STREAMING DATA PROCESSING SYSTEM

Michael J. Koval; William W. Lawton, both of Boca Raton; John G. Tyler, Boynton Beach, and Scott L. Winters, Plantation, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1992, Ser. No. 934,069
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—650 **18 Claims**

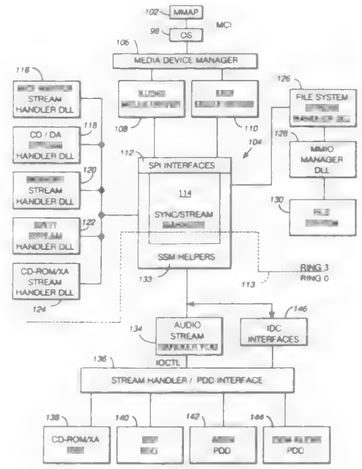
1. In a multimedia data processing system comprising a personal computer having processor and a storage system, said storage system including a memory for storing at least one multimedia application program and a multitasking operating system for execution by said processor, data streaming apparatus operable under said operating system and said application program for streaming data from a source device to a target device in accordance with a streaming protocol, said apparatus comprising:

a plurality of programmable stream handlers stored in said storage system and including at least one source stream handler and at least one target stream handler;

a plurality of predefined streaming protocol control blocks (SPCBs) stored in said storage system and including a first SPCB for said source stream handler and a second SPCB for said target stream handler;

each of said predefined SPCBs containing a plurality of fields for storing stream protocol parameters including data type, number of buffers needed to maintain continuous streaming of data, and size of buffers;

said source stream handler comprising a callable first routine for creating a source thread as a task under said operating system and blocking such source thread, and a callable second routine for unblocking said source thread and streaming data from said source device to said buffers;



said target stream handler comprising a callable third routine for creating a target thread as a task under said operating system and blocking such target thread, and a callable fourth routine for unblocking said target thread and streaming data from said buffers to said target device;

and stream manager means operable in response to execution of a stream create call instruction in said application program, to create a data stream by

calling said first routine and said third routine to set up source and target threads as multitask threads under said operating system and block on such threads,

creating a negotiated source SPCB and a negotiated target SPCB by negotiating differences between said first and second SPCBs, said negotiated source SPCB and said negotiated target SPCB defining a negotiated streaming protocol mutually acceptable to both said source handler and said target handler,

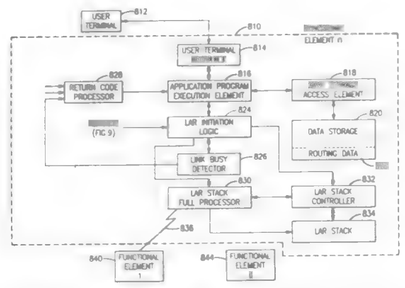
and dynamically allocating in said memory a plurality of buffers for said data stream in accordance with said streaming protocol defined in said negotiated source and target SPCBs.

VOL 1165 ISS 3 AG 16 1994 UMI

5,339,414
DATA PROCESSING SYSTEM INCLUDING LINKED FUNCTIONAL UNITS

Jit S. Chana, Totton; Pete J. Lupton, Eastleigh, and Dennis L. Plum, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1992, Ser. No. 965,092
Claims priority, application United Kingdom, Oct. 24, 1991, 9122541.1
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—650 **16 Claims**



1. Data processing apparatus in which data items are communicated by data links between functional units forming part of said apparatus, wherein requesting functional elements issue link acquisition requests (LAR), requesting links to other functional elements, said data processing apparatus comprising:

means for storing a LAR in a stack at a requesting functional element;

means connected to said LAR stack for determining whether said stack of waiting requests has reached a predetermined size;

means connected to said storing means and said determining means for selecting one of several alternative actions when said means for storing a LAR has reached said predetermined size.

5,339,415
DUAL LEVEL SCHEDULING OF PROCESSES TO MULTIPLE PARALLEL REGIONS OF A MULTI-THREADED PROGRAM ON A TIGHTLY COUPLED MULTIPROCESSOR COMPUTER SYSTEM

Robert E. Strout, II, Livermore, Calif.; George A. Spix, Eau Claire, Wis.; Jon A. Masamitsu; David M. Cox, both of Livermore, Calif.; Gregory G. Gaertner, Eau Claire, Wis.; Diane M. Wengelski, Eau Claire, Wis., and Keith J. Thompson, Eau Claire, Wis., assignors to Cray Research, Inc., Eagan, Minn.

Continuation of Ser. No. 571,955, Aug. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 537,466, Jun. 14, 1990, abandoned. This application Nov. 9, 1992, Ser. No. 973,598
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—650 **4 Claims**

1. In an operating system having a plurality of shared storage resources accessible by a plurality of processors for running a multithreaded program, a two level scheduling method of executing said multithreaded program, comprising the steps of:

(a) assigning program threads of said multithreaded program to processes;

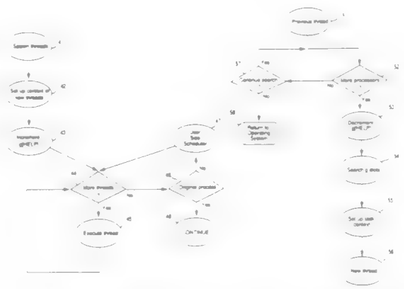
(b) storing in a first shared storage resource context for executing said processes corresponding to said program threads;

(c) queuing in a second shared storage resource a value representing the number of said program threads in said multithreaded program to be executed;

(d) determining that a processor is available to execute a process having context stored in said first shared storage resource; and

(e) scheduling said processes for execution by said processors, comprising the steps of:

scanning by said available processor a queue in said second shared storage resource to respond to a positive value in said second shared storage resource;



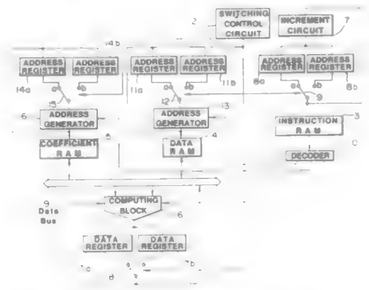
decrementing said second shared storage resource value using said available processor; and

accessing contents of said first shared storage resource corresponding to said scan for initiating execution, using said available processor, of a process associated with accessed context.

5,339,416
DIGITAL PROCESSING APPARATUS FOR SIMULTANEOUSLY PROCESSING TWO OR MORE JOBS BY SWITCHING BETWEEN TWO OR MORE INSTRUCTION ADDRESS REGISTER

Taro Nakagami, Kanagawa, and Akira Sakamoto, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 475,012, Feb. 5, 1990, abandoned. This application Jan. 14, 1993, Ser. No. 4,628
Claims priority, application Japan, Feb. 28, 1989, 1-46752
Int. Cl.[5] G06F *9/00, 9/38, 9/44*
U.S. Cl. 395—650 **9 Claims**



1. A digital signal processing apparatus for simultaneously processing two or more jobs and comprising at least an instruction memory, a data memory and a computing block, which operates according to instruction clocks cyclicly supplied from a source, operatively connected to each other and wherein the improvement resides in that:

(a) two or more instruction address registers are associated with the instruction memory for separately supplying instruction address data for different jobs; and

(b) switching means supplied with the instruction clocks for cyclicly switching between the two or more instruction address registers according to a predetermined pattern of the instruction clocks to cyclicly connect the instruction address registers to the instruction memory for cyclicly supplying instruction address data from a current job and then one or more previous jobs to the instruction memory to enable processing by the computing block to by cyclicly switched between the current job and one or more previous jobs, wherein the jobs to be processed require different processing times and further wherein the predetermined pattern of instruction clocks is selected so that the switching means connects the instruction memory to a first one of the instruction address registers for a first continuous period of N instruction clocks for a job requiring a longest processing time and to another of the instruction address registers for a second continuous period of M instruction clocks for a job requiring a second longest processing time, where N and M are both integers and N>M

5,339,417
COMPUTER SYSTEM WITH TWO LEVELS OF GUESTS

Jefferson J. Connell, Cupertino; Vernon R. Johnson, Sunnyvale; Peter H. Lipman, Cupertino, and Robert M. Maier, San Jose, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 816,641, Jan. 2, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 77,819
Int. Cl.[5] G06F *9/06*
U.S. Cl. 395—650 **1 Claim**



1. A computer system having a chief system control program executing in a real machine and having a plurality of architecturally defined registers including general registers used to store user information and including control registers used for control functions, a common register array comprising,

common random access memory means having locations for said general registers and for said control registers, said memory including,

common write means for writing input information into the memory for said general registers and said control registers,

common output means for providing output data read from the memory for said general registers and said control registers,

common write address means for providing write addresses for the input data to be written into the memory for general registers and said control registers,

common read address means for providing read addresses for reading the output data from the memory for said general registers and said control registers,

means for loading a control location in the memory with control information designating control status by the chief system control program,

one or more first-level system control programs executing under said chief system control program, said chief system control program transferring control between the first-level system control programs and said chief system control program through a control interruption using the control location in said register array,

one or more second-level system control programs executing under said first-level system control programs, said chief system control program transferring control between the second-level system control programs and said chief system control program through one control interruption using the control location in said register array and bypassing said first-level system control programs.

5,339,418
MESSAGE PASSING METHOD

Jeffrey A. East, Aptos, and Marilyn E. Fries, Redmond, both of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 939,392, Aug. 31, 1992, abandoned, which is a continuation of Ser. No. 374,099, Jun. 29, 1989, abandoned. This application Dec. 16, 1993, Ser. No. 168,577
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—650 **9 Claims**



1. A method of storing and distributing messages in a data processing system, the steps of the method performed by said data processing system, comprising:

establishing a message queue that stores messages in a computer memory in an order sequence, said message queue having a beginning and an end;

providing a multiplicity of reader interfaces to said message queue, each reader interface accessing all the messages stored in said message queue in sequence starting at the beginning of said message queue, such that each message stored in said message queue is accessed only once by each reader interface,

running at least one writer process, said at least one writer process generating messages;

storing each message generated by said at least one writer process at the end of said message queue;

running a multiplicity of reader processes;

coupling each reader process to one of said multiplicity of reader interfaces such that each reader interface is coupled to at least one of said reader processes;

each reader process prompting the reader interface coupled thereto to access a next one of said messages in said message queue and to pass a copy thereof to said reader process; and

each reader interface, in response to said prompting by said at least one reader process coupled thereto, passing a copy

VOL 1165 ISS 3 AG 16 1994 UMI

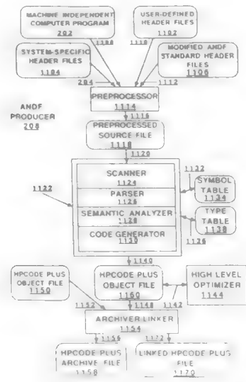
of a next one of said messages stored in said message queue to a reader process coupled to said reader interface that first prompts said reader interface, and then preventing access to said next one of said messages by any other reader processes coupled to said reader interface, such that each message stored in said message queue is accessed by exactly one of said at least one reader processes coupled to each said reader interface.

5,339,419

ANDF COMPILER USING THE HPCODE-PLUS COMPILER INTERMEDIATE LANGUAGE

Paul Chan, Cupertino; Manoj Dadoo; Karl Pettis, both of San Jose, and Vatsa Santhanan, Sunnyvale, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 25, 1990, Ser. No. 543,049
Int. Cl.[5] G06F *9/45*
U.S. Cl. 395—700 **71 Claims**



1. A computer software compiler system, adapted for use with a machine independent computer program that may use machine dependent standard header files, said computer software compiler system comprising:

one or more heterogeneous computer platforms:

a producer, implemented in one of the one or more heterogeneous computer platforms, which receives the machine independent computer program as input and which generates a compiler intermediate representation of the machine independent computer program, said compiler intermediate representation comprising compiler intermediate instructions from a compiler intermediate language, wherein said producer generates said compiler intermediate representation in a machine independent manner, such that machine dependent decisions are deferred, and such that said compiler intermediate representation is architecture neutral and represents an architecture neutral distribution format; and

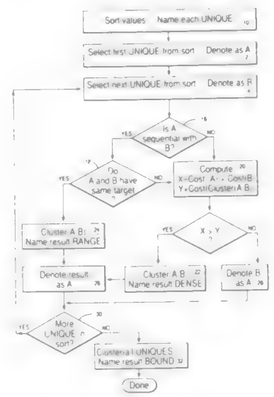
one or more installers, implemented in the one or more heterogeneous computer platforms, said one or more installers receiving said compiler intermediate representation as input and generating object code representations of the machine independent computer program, said object code representations being machine dependent on the one or more heterogeneous computer platforms upon which said one or more installers reside.

5,339,420

PARTITIONING CASE STATEMENTS FOR OPTIMAL EXECUTION PERFORMANCE

Steven M. Hoxey, Claremont, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1991, Ser. No. 649,093
Claims priority, application Canada, Feb. 14, 1990, 2010068
Int. Cl.[5] G06F *9/45*
U.S. Cl. 395—700 **8 Claims**



1. A method for optimizing the compiling of a program having multi-way branch statements, said method comprising the steps of:

(a) selecting a multi-way branch statement from said multi-way branch statements;

(b) examining said selected multi-way branch statement to determine the relative costs for each of a plurality of instruction sequences to implement said multi-way branch statement;

(c) comparing the relative cost for executing each of said plurality of instruction sequences:

(d) selecting one of said instruction sequences from said plurality of instruction sequences that carries the least cost;

(e) implementing said selected least-cost instruction sequence in the compiled version of said program; and

(f) repeating said steps (a) through (e) for each of said multi-way branch statements in said program.

5,339,421

GENERAL DATA STREAM PARSER FOR ENCODING AND DECODING DATA AND PROGRAM INTERFACE FOR SAME

Barron C. Housel, III, Chapel Hill, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

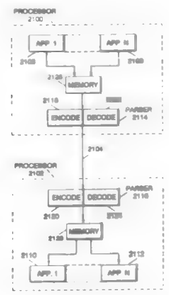
Filed Mar. 22, 1991, Ser. No. 673,439
Int. Cl.[5] G06F *7/10*
U.S. Cl. 395—700 **7 Claims**

1. In a data processing system including at least one processing node with a data communications channel, a computer implemented method of parsing data in a data stream incoming on the channel and communicating the data to a program executing on the node, said data stream having one of a plurality of different formats, comprising the computer implemented steps of:

initializing this instance of communication between a parser and the program, said initialing including identifying a parse table among a plurality of parse tables, each of said parse tables containing linked data descriptors which define the order of occurrence of individual data items within the data stream, thereby defining the format of the data stream,

identifying one or more templates each of which corresponds to one or more said data items and allocating private storage for individual items, wherein said template defines storage locations in the private storage for passing the data items with which it is associated between the program and the parser and thereafter

by the program, requesting a templates worth of data received by the parser on the channel from the data stream



by issuing a call to the parser identifying the parse table, the state of encoding or decoding of the data stream by the parse table defining the next template to be used,

by the parser, decoding the incoming data in accordance with the format of the data stream as indicated by the identified parse table to extract the individual data items, by repetitively interpreting the descriptors of the parse table in synchronization with the incoming data stream, and

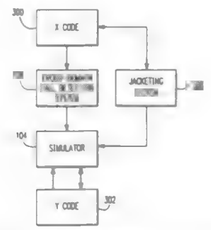
storing the individual data items in their respective allocated storage areas for the program.

5,339,422

SYSTEM AND METHOD FOR JACKETING CROSS-DOMAIN CALLS IN A MULTI-CODE EXECUTION AND DEBUGGING SYSTEM WITHIN A MULTI-ARCHITECTURE ENVIRONMENT

Ronald F. Brender, Hollis, N.H., and Michael V. Iles, Basingstoke, England, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 7, 1991, Ser. No. 665,752
Int. Cl.[5] G06F *9/40, 9/46*
U.S. Cl. 395—700 **13 Claims**



1. A computer system embodying a first hardware architecture and comprising:

A) a processor for executing a plurality of first routines each including at least one call complying with a first call convention characteristic of a first domain, said processor being operable to simulate a second computer hardware architecture for executing a plurality of second routines each including at least one call complying with a second calling convention characteristic of a second domain, each said call of a plurality of said first and second routines comprising a cross-domain call from one of said first and second domains comprising a calling domain to the other of said first and second domains comprising a called domain;

B) memory means for storing said first and second routines and a plurality of results of said first and second routines;

C) means for jacketing each said cross-domain call requesting service in said called domain, and for jacketing each said cross-domain call comprising a return including call results from said called domain after the requested service has been performed; said jacket means including

i) means for transforming first jacketing information specifying a first set of parameters complying with the one of said first and second calling conventions that is characteristic of said calling domain into second jacketing information specifying a second set of parameters complying with the one of said first and second calling conventions that is characteristic of said called domain; said transforming means including jacket table means compiled from jacket description information for mapping said first set of parameters into said second set of parameters, and said second set of parameters into said first set of parameters; and

ii) jacket memory means coupled with said jacket table means for storing said jacket description information for each said first and second routine that includes any of said cross-domain calls, said jacket description information stored in said jacket memory means including (a) an identification of call type, (b) an identification of said first and second parameters, (c) an identification of a call result memory location in which said call results of the cross-domain call can be stored, and (d) an identification of a routine memory location containing information to be preserved during said cross-domain call; and

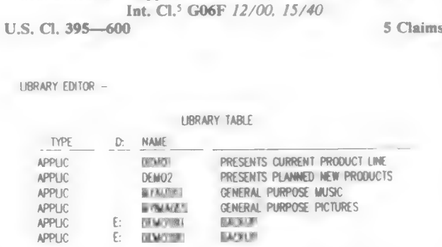
D) said processor being coupled with said transforming means and responsive to said second jacketing information for effecting said cross-domain calls after jacketing.

5,339,423

SYSTEM FOR ACCESSING OBJECTS EXTERNAL TO AN APPLICATION USING TABLES CONTAINING PATH DEFINITIONS

Bradley J. Beitel, Woodside; Charles L. Haug, Santa Cruz, and Elba M. Sobrino, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 892,683, May 27, 1992, abandoned, which is a continuation of Ser. No. 367,081, Jun. 16, 1989, abandoned. This application Mar. 9, 1993, Ser. No. 28,718
Int. Cl.[5] G06F *12/00, 15/40*
U.S. Cl. 395—600 **5 Claims**



1. In a data processing system which includes a central processor including an arithmetic logic unit, memory and a plurality of application files, certain application files acting as library repositories for audio/visual objects which are includable in other application files, each said audio/visual object including a name by which said audio/visual object is uniquely identifiable, a method carried out by said central processor for

VOL 1165 ISS 3 AG 16 1994 UMI

referencing audio/visual objects listed in said library repositories, comprising:

(a) creating in memory in said data processing system, a new application that includes a plurality of objects of one or more types, said types including reference objects which are included in said new application only by name, and objects which are defined in said new application by code residing therein;

(b) creating in said memory a multi-line listing of objects for said new application, said listing including data concerning reference objects, said multi-line listing being independent from objects included in said new application, each line of said multi-line listing including data comprising a first field area for an object's name and a second field area for a reference object's path definition to a different application containing code for said reference object; and

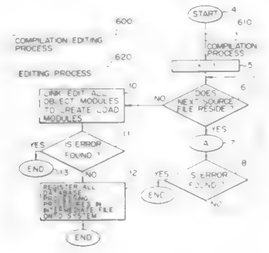
(c) operating said data processing system to perform said new application and to access the objects included in said new application where any said reference object is referenced by accessing said multi-line listing, fetching said path definition associated with the reference object, and accessing said code for said reference object in said different application using said path definition.

5,339,424

SYSTEM AND METHOD FOR COMPILING AND EXECUTING A COMPUTER PROGRAM WRITTEN IN MORE THAN ONE PROGRAMMING LANGUAGE

Shinya Fushimi, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 869,957
Claims priority, application Japan, Apr. 19, 1991, 3-088435
Int. Cl.[5] G06F *9/45*
U.S. Cl. 395—650 **19 Claims**



1. A system for compiling and executing a program, the program including a first program division written in a first programming language and a second program division written in a second programming language, the system using an operating system for managing modules by using identifiers and for controlling execution of the modules and comprising:

(a) a program processor including:

(i) means for compiling the program to produce, from said first program division and said second program division, a first module and a second module, and for obtaining an identifier assigned by the operating system to the first module, and

(iii) means for registering the second module by using the identifier assigned by the operating system to the first module; and

(b) a program executor including:

(i) means for executing said first module,

(ii) means for retrieving the registered second module by using the identifier assigned to said first module while executing said first module, and

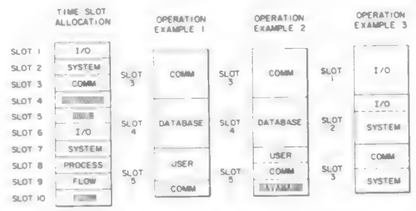
(iii) means for executing said second module.

5,339,425

OPERATING SYSTEM FOR A PROCESS CONTROLLER

Richard J. Vanderah, and John G. Kern, both of Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Clayton, Mo.

Continuation of Ser. No. 622,937, Dec. 11, 1990, abandoned.
This application Dec. 22, 1993, Ser. No. 172,867
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—700 **28 Claims**



1. A process controller for interfacing with a plurality of I/O devices, said process controller performing a number of tasks related to the operation of the I/O devices, said process controller comprising:

a plurality of I/O circuits that are connectable to a plurality of I/O devices;

a processor coupled to periodically communicate with said I/O circuits, said processor periodically executing a plurality of tasks related to the operation of the I/O devices in a plurality of successive time slots;

means coupled to said processor for establishing said plurality of successive time slots, each of said plurality of tasks being allocated to a different one of said successive time slots;

means for determining whether a first of said tasks was completely performed during a first time slot to which said first task was allocated; and

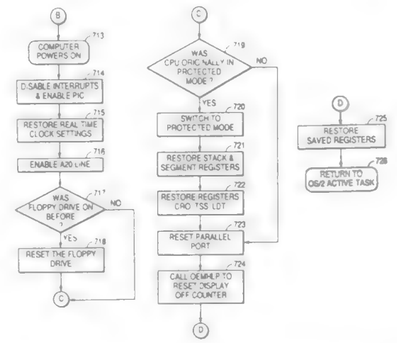
means for executing a second of said tasks during said first time slot if said first task was completely performed during said first time slot.

5,339,426

SYSTEM AND METHOD FOR RESUME PROCESSING INITIALIZATION

Kinya Aoshima, Fussa, Japan, assignor to Toshiba America Information Systems, Inc., Irvine, Calif.

Filed Dec. 7, 1993, Ser. No. 162,359
Int. Cl.[5] G06F *9/06*
U.S. Cl. 395—700 **12 Claims**



1. An apparatus for setting a periodic interrupt rate of a real time clock in a computer system, having an operating system, comprising;

a power-up signal detector for indicating that computer system information is to be reset;

an enabler, responsive to said power-up signal detector, for enabling an A20 address line; and

a clock setter, responsive to said power-up signal detector, for configuring the real time clock such that the periodic interrupt rate is set to a specified periodic interrupt rate for the operating system.

5,339,427

METHOD AND APPARATUS FOR DISTRIBUTED LOCKING OF SHARED DATA, EMPLOYING A CENTRAL COUPLING FACILITY

David A. Elko; John F. Isenberg, Jr.; Brian B. Moore, all of Poughkeepsie, N.Y.; Jimmy P. Strickland, Saratoga, Calif.; Michael D. Swanson, Poughkeepsie, and George W. Wang, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,808
Int. Cl.[5] G06F *12/14*
U.S. Cl. 395—725 **17 Claims**



1. A locking apparatus for managing access to shared data by a plurality of transactions, said access to said shared data controlled by two or more data managers executing in a processing complex comprising one or more processors, said shared data comprising shared resources, each of said processors coupled to all others of said processors and to said shared data, said apparatus comprising:

a) a plurality of lock managers (LM's) each executing on one of said processors, each of the LM's responsive to a serialization request, by an associated one of said two cr more data managers, to serialize an access attempt for one of said shared resources, each of said LM's comprising:

i) a tailored lock manager (TLM) means for formulating a locking request for said shared resource in response to said serialization request;

ii) a system lock manager (SLM) means for providing local and first global locking services, responsive to said locking request, said SLM means comprising local status indication means and distributed contention resolution means, said local status indication means comprising: a local hash table means for indicating lock ownership state so that said locking request can be granted without communication with others of said one or more processors, or with a structured external storage facility, if said one of said shared resources is indicated as being owned in said requested state; said distributed contention resolution means comprising a global table means;

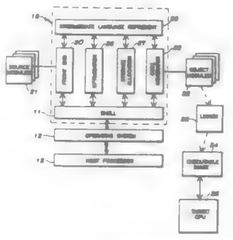
b) a structured external storage facility (SES) connected to each SLM, said SES comprising a SES lock manager (SESLM) means for providing second global locking services when required for said locking request, said SESLM means comprising global lock table means for global indication of lock ownership state of said shared resource, and further comprising list means for recording modify information for recovering portions of said shared data.

5,339,428

COMPILER ALLOCATING A REGISTER TO A DATA ITEM USED BETWEEN A USE AND STORE OF ANOTHER DATA ITEM PREVIOUSLY ALLOCATED TO THE REGISTER

Curt K. Burmeister, Somerville, Mass.; Kevin W. Harris, Nashua; William B. Noyce, Hollis, both of N.H., and Steven O. Hobbs, Westford, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 4, 1991, Ser. No. 754,549
Int. Cl.[5] G06F *12/02, 9/45*
U.S. Cl. 395—700 **19 Claims**



7. Apparatus for allocating registers in a compiler, comprising:

a) means for identifying and recording temporary items in a unit of code, each of said temporary items requiring storage;

b) means for identifying and recording a lifetime of each one of said temporary items, said lifetime of said each of said temporary items being an interval of time between the creation and the last use of said each of said of said temporary items in said unit of code;

c) means for identifying and recording holes in the lifetime of each one of said temporary items, said hole in the lifetime of said each one of said temporary items being an interval of time between a use and a store of said each one of said temporary items in said unit of code; and

d) means responsive to said recorded temporary items, lifetimes of temporary items and holes in lifetime for allocating to one of said registers one of said temporary items having a lifetime fitting within one of said holes of a second of said temporary items, said second temporary item having been previously allocated to said one register.

5,339,429

PARALLEL PROCESSING SYSTEM AND COMPILING METHOD USED THEREFOR

Teruo Tanaka, Hachioji; Yasuhiro Inagami; Yoshiko Tamaki, both of Kodaira; Tadayuki Sakakibara, Kunitachi, and Katsuyoshi Kitai, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 8, 1992, Ser. No. 880,544
Claims priority, application Japan, May 8, 1991, 3-102480
Int. Cl.[5] G06F *9/44, 12/12*
U.S. Cl. 395—700 **9 Claims**

1. A parallel processing system comprising:

a plurality of subsystems; and

a shared extended storage shared by said plurality of subsystems identified by having a shared extended storage (ES)

VOL 1165 ISS 3 AG 16 1994 UMI

identifier, wherein each of said plurality of subsystems includes:

a main storage for storing data, instructions and control parameter information;

a local extended storage identified to a local ES identifier;

at least one processor for issuing main storage (MS) addresses to said main storage to fetch the instructions from said main storage, executing the fetched instructions, fetching the control parameter information in response to a specific one of the fetched instructions, and issuing a specific MS address, a specific ES address, an ES identifier, a data length and an access request based on the fetched control parameter information; and

a system controller for passing the MS addresses from said processor to said main storage and the instructions and the control parameter information from said main storage to said processor, and selectively transferring the data from said main storage to one of said local extended storage or said shared extended storage in response to the access request based on the specific MS address, the specific ES address, the data length and the ES identifier from said processor.

5,339,430

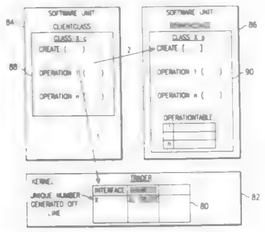
SYSTEM FOR DYNAMIC RUN-TIME BINDING OF SOFTWARE MODULES IN A COMPUTER SYSTEM

Kenneth Lundin, Södertälje, and Ulf Markström, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jul. 1, 1992, Ser. No. 907,307

Int. Cl.[5] G06F *9/44*

U.S. Cl. 395—700 **35 Claims**



1. A method of dynamically binding, within a computing system having a kernel, first and second software modules respectively contained within first and second software applications, said method comprising the steps of:

providing a linked procedure call mechanism having a trader portion;

providing a client interface, said client interface capable of accessing said trader portion;

providing a server interface, said server interface capable of accessing said trader portion;

inserting said client interface into said first software module;

inserting said server interface into said second software module;

identifying said client interface by executing said first software module;

identifying said server interface by accessing said trader portion with said identified client interface; and

substituting said server interface in place of said identified client interface, during execution of said first software module, thereby dynamically binding said first and second software modules.

5,339,431

SOFTWARE COMPILER AND LINKER WITH IMPROVED LINE-NUMBER TABLE

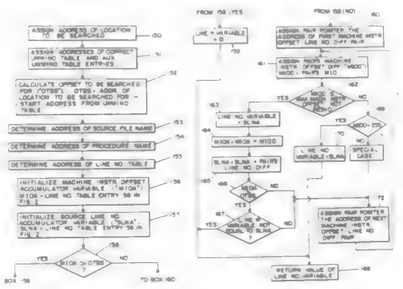
Richard R. Rupp; Gary A. Coutant, and Joseph A. Coha, all of San Jose, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 422,125, Oct. 16, 1989, abandoned.

This application Aug. 17, 1992, Ser. No. 931,641

Int. Cl.[5] G06F *15/38*

U.S. Cl. 395—700 **1 Claim**



1. In a method of translating the contents of source code files into a machine executable code file using a computer system with one or more compilers and a linker, each source code file having procedures, the line number of each line of source code in each source code file being determined by a compiler and read by the linker, the method of translating a procedure in a source code file into the machine executable code file comprising the steps of:

a. generating, by a compiler, an object code file for the procedure;

b. reading, by the linker, the object code file;

c. determining, by the linker, how the object code file will be organized in the machine executable code file;

d. translating, by the linker, the object code file into machine executable codes having one or more lines and each line having a line number;

e1. generating, by the linker, an unwind table for the procedure, the unwind table comprising a first entry, which is the address of the first machine executable code of the machine executable code file of the procedure; and

f1. generating, by the linker, a line number table to track the contents of the source code file to the contents of the machine executable code, the line number table having

a first entry indicating an offset from two addresses, the first address being the address of a first machine executable code in the block of machine executable codes generated by the procedure, the second address being the address of a first machine executable code in a block of machine executable codes generated by a first source code line in said procedure,

a second entry indicating the line number of the first source code line, and

a plurality of pairs of difference entries, for each pair of difference entries,

one entry being a difference between the line number of a current source code line and a previous source code line immediately before the current source code line, and

the second entry being a difference between the addresses of two machine executable codes, one being the first machine executable code from the block of machine executable code generated by the current source code line, and the other being the first machine executable code from the block of machine executable code generated by the previous source code line;

such that when an exception occurs at one of the machine executable codes at run-time, the line number table and the unwind table of the procedure corresponding to the machine executable code are used to locate the particular source code line which corresponds to the machine executable code having the exception, and the method, as performed by the software system, comprises the steps of:

g. adding the first entry of the unwind table for the procedure to the first entry of the line number table to generate the value for the machine instruction offset accumulator variable;

h. retrieving the second entry from the line number table to generate the value for the source line number accumulator variable;

i. comparing the value of the machine instruction offset accumulator variable to the address of the machine executable code having the exception;

j. returning zero to the address of the particular source code line and stopping the method if the address of the machine executable code having an exception being less than the value of the machine instruction offset accumulator variable;

k. checking the next entry in the line number table;

l. returning the value of the source line number accumulator variable to be the address of the particular source code line and stopping the method if the next entry being the final code indicator;

m. adding the first entry in the next pair of difference entries into the value in the source line accumulator variable and adding the second entry in that pair of difference entries from the line number table to the machine instruction offset accumulator variable;

n. comparing the value in the machine instruction offset accumulator variable to the address of the machine executable code having the exception;

o. subtracting from the value in the source line accumulator variable the first entry in the pair of difference entries in the line number table and returning the value in the source line number accumulator variable to be the address of the particular source code line and stopping the method if the address of the machine executable code having the exception being less than the value in the machine instruction offset accumulator variable address; and

p. repeating steps k to o until the method is stopped.

5,339,432

METHOD AND SYSTEM FOR PROVIDING USER CONTROL OF DEVICE DRIVER CONFIGURATION

Andrew P. R. Crick, Woodinville, Wash., assignor to Microsoft Corporation, Redmond, Wash.

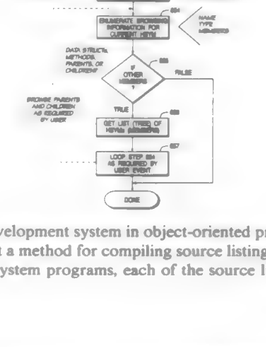
Filed Oct. 13, 1992, Ser. No. 960,794

Int. Cl.[5] G06F *3/023, 3/14*

U.S. Cl. 395—700 **23 Claims**

1. A method, performed by a computer having a device driver, for providing a user with control of configuration of the device driver, the method comprising the steps of:

identifying definition information for the device driver, the definition information including definition statements that specify a manner in which configuration information is to be obtained from the user and in which a configuration parameter is to be set, each definition statement having a function relating to the setting of configuration information;



obtaining configuration information form the user in accordance with the definition statements of the identified definition information;

setting the configuration parameter in accordance with the obtained configuration information and the definition statements of the identified definition information; and

configuring the device driver in accordance with the set configuration parameter.

5,339,433

SYMBOL BROWSING IN AN OBJECT-ORIENTED DEVELOPMENT SYSTEM

Lars K. Frid-Nielsen, Santa Cruz, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Filed Nov. 19, 1992, Ser. No. 979,575

Int. Cl.[5] G06F *9/46*

U.S. Cl. 395—700 **33 Claims**

1. In a development system in object-oriented programming environment a method for compiling source listings into application and system programs, each of the source listings com-

VOL 1165 ISS 3 AG 16 1994 UMI

prising a plurality of symbols for instructing operation of a program, a method for browsing symbols comprising:

(a) compiling a source listing containing the symbols into an object file, said object file storing a reference for each symbol in said source listing;

(b) selecting a symbol of interest with an input device coupled to a device displaying said source listing;

(c) receiving a request from a user for browsing a symbol of interest;

(d) retrieving said reference stored in said object file and using said reference to determine program information specific for the symbol of interest; and

(e) displaying said information to the user.

5,339,434

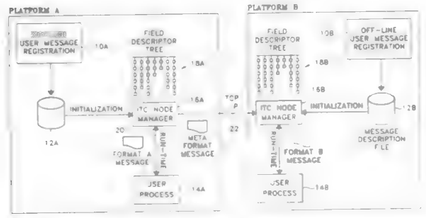
HETEROGENEOUS DATA TRANSLATION SYSTEM

Edvin A. Rusis, El Segundo, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 7, 1992, Ser. No. 986,214

Int. Cl.[5] **G06F** *15/16, 13/38*

U.S. Cl. 395—700 **10 Claims**



1. A method for exchanging data between application programs running on heterogeneous computer platforms having different internal data formats, the method comprising the steps of:

preregistering each message format with each of the platforms that will be involved in the exchange of data, wherein the step of preregistering a message format generates a definition of the message format in a message description file;

initializing each platform to contain field descriptors for each message format preregistered with the platform, wherein the initializing step uses the message descriptor files to generate the field descriptors, and each field descriptor completely defines a field in the message format;

prior to transmission of a message from a platform, translating the message from its native format to a meta format, using the field descriptors obtained from preregistering the message format;

transmitting the message in meta format from one platform to another;

receiving the message at another platform; and

translating the received message from the meta format to the native format of the receiving platform, using the field descriptors obtained from preregistering the message format, whereby application programs running on heterogeneous platforms can communicate without regard to possible differences in internal message and memory formats.

5,339,435

HETEROGENEOUS SOFTWARE CONFIGURATION MANAGEMENT APPARATUS

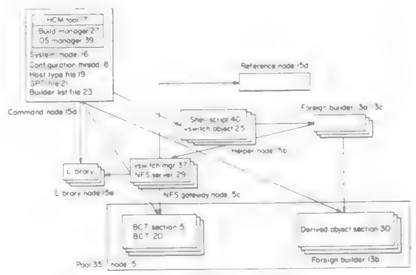
David C. Lubkin, Nashua; Douglas B. Robinson, Hollis, both of N.H.; Robert P. Chase, Jr., Newton, Mass.; Paul J. Leach, Winchester, Mass.; Daniel L. McCue, III, Framingham, Mass., and David B. Leblang, Wayland, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 662,561, Feb. 28, 1991, abandoned.

This application Nov. 24, 1993, Ser. No. 158,180

Int. Cl.[5] **G06F** *15/20*

U.S. Cl. 395—700 **23 Claims**



1. Apparatus for heterogeneous building of computer software comprising:

a plurality of computers loosely coupled in a network, at least one computer in the plurality of computers being a foreign computer with respect to a first computer in the plurality of computers such that said network is heterogeneous;

a configuration managing member executable on the first computer for building a user desired software system in the heterogeneous network, the software system having a multiplicity of components, each component being derivable from a respective source element, the configuration managing member building the software system by deriving each component from its source element including, for each component, the configuration managing member having one of the computers translate the source element of the component to form an output element from that computer, the configuration managing member enabling at least one component to be translated by the foreign computer to generate a foreign computer output element of the one component, such that one of the first computer and foreign computer combines output elements including foreign computer output elements of the software system components to build the desired software system.

5,339,436

METHOD OF IMPLEMENTING A RELOCATED COMPILED LIBRARY PROGRAM WITH AN INTERPRETER TO CONTROL A MANUFACTURING LINE

Hirokazu Tairaku; Kenichi Inoue; Chiaki Ito; Kenji Takimoto, and Shigetoshi Tanido, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Continuation of Ser. No. 865,886, Apr. 9, 1992, abandoned, which is a division of Ser. No. 572,899, Aug. 24, 1990, Pat. No. 5,175,864. This application Jan. 21, 1993, Ser. No. 7,010

Claims priority, application Japan, Aug. 31, 1989, 1-224939; Aug. 31, 1989, 1-224940; Jan. 29, 1990, 2-6149[U]; Mar. 5, 1990, 2-52990; Apr. 10, 1990, 2-94339; May 9, 1990, 2-47643[U]

Int. Cl.[5] **G06F** *9/45*

U.S. Cl. 395—700 **1 Claim**

1. Method of executing a relocated compiled library program with an interpreter to control a manufacturing line which

comprises memory means in which a user memory area is set for storing a middle word of an interpreter type language program, and processor means for executing, separately, said compiled library program stored in a library area of said user memory area and said middle word of said interpreter type language program; wherein said method comprises the steps of:

A) in said library area in which said complied library program is stored, creating:

a) an adapter area set at a top of said library area, said adapter area storing adapter programs for stacking arguments of said interpreter type language program and for calling main functions in said compiled library program,

b) a data area set at a rear of said library area, said data area storing initial data of static variables to be used in execution of said main functions in said compiled library program, and

c) an address converting table set at a bottom of said library area, said address converting table respectively storing each of a plurality of relative addresses (X) and (y) as a pair, wherein each said relative address (X) comprises an address relative from a top address of said compiled library program to one of a plurality of position dependent code addresses, and each said relative address (Y) comprises an address relative from said top address of said compiled library program to one of a plurality of branch destination addresses indicated by said one of said plurality dependent code addresses;

B) after loading said compiled library program in said library area, performing the following steps:

a) changing said interpreter type language program, said changing resulting in a shift position of said library area, and

b) changing each of said plurality of relative addresses (X) and (Y) in said address converting table as a result of said changing;

C) when said interpreter starts and said interpreter type language program is executed, performing the following steps:

a) copying said initial data in said data area into the main functions in said complied library program,

b) changing the plurality of branch destination addresses using said changed relative addresses (X) and (Y) in said address converting table,

c) calling said compiled library program as a subroutine,

d) executing said adapter programs to stack the arguments of said interpreter type language program and call the main functions in said compiled library program, and

e) executing said main functions in said compiled library program using said stacked arguments.

5,339,437

METHOD AND APPARATUS FOR SAVING A SYSTEM IMAGE ONTO PERMANENT STORAGE THAT IS OPERATING SYSTEM INDEPENDENTLY

Desmond Yuen, San Leandro, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 858,323, Mar. 25, 1992, abandoned.

This application Oct. 20, 1993, Ser. No. 140,277

Int. Cl.[5] **G06F** *12/06;* **G01R** *31/28*

U.S. Cl. 395—700 **14 Claims**



1 In a computer system comprising a central processing unit (CPU) coupled to at least one memory unit and at least one permanent storage unit for executing at least an operating system comprising a plurality of said CPU's instructions, said CPU further having at least two modes of program execution, a real mode and a protected mode, and at least one interrupt for interrupting program execution, a method for saving a system image of said computer system onto said at least one permanent storage unit in a manner that is independent of said operating system, said method comprising the steps of:

(a) interrupting execution of said operating system and other programs, if any, upon receipt of a pre-determined input, said interruption being unmaskable by said operating system and other programs, if any, and having a higher priority than other interruptions;

(b) switching in and mapping a dedicated memory area of said at least one memory unit to a pre-determined segment of main memory space of said computer system, said dedicated memory area comprising a pre-stored interrupt processing program having executable instructions for saving a system image onto a reserved system image save area of said at least one permanent storage unit,

said dedicated memory area being normally not mapped as part of said main memory space thereby keeping said dedicated memory area inaccessible to said operating system and other programs, if any, executed by said CPU,

said system image save area being pre-reserved on said at least one permanent storage unit and made known to said interrupt processing program in a predetermined manner, said reserved system image save area not being formatted and used for general storage by said operating system;

(c) storing current system state data of said computer system into said dedicated memory area for subsequent resumption of execution of said operating system and other programs, if any;

(d) switching said CPU into said real mode of execution; and

(e) starting execution of said interrupt processing program in said real mode and saving a system image of said computer system onto said reserved system image save area, said saved system image of said computer system comprising said stored system state data of said computer system.

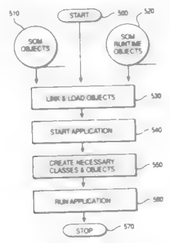
VOL 1165 ISS 3 AG 16 1994 UMI

5,339,438

VERSION INDEPENDENCE FOR OBJECT ORIENTED PROGRAMS

Mike H. Conner; Andrew R. Martin, and Larry K. Raper, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 805,663, Dec. 12, 1991, abandoned.
This application Dec. 10, 1993, Ser. No. 165,552
Int. Cl.[5] G06F *9/45, 9/00*
U.S. Cl. 395—700 11 Claims



1. A system for externally accessing computer implemented reusable object libraries having a consistent binary interface, comprising:

means for specifying object data and object methods to create an object specification;

means for compiling said object specification to create a computer executable object specification in said reusable object library; and

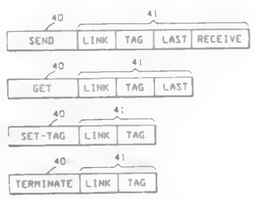
means for collecting object data and object method addresses in said reusable object library into an externally accessible data structure having a defined binary interface when said specified object library is loaded for execution in a computer system.

5,339,439

APPARATUS FOR INTERFACING A REAL-TIME COMMUNICATION LINK TO AN ASYNCHRONOUS DIGITAL COMPUTER SYSTEM BY UTILIZING GROUPED DATA TRANSFER COMMANDS GROUPED FOR EFFECTING TERMINATION

Robert A. Latimer, Plymouth Meeting, and David W. Heileman, Jr., West Chester, both of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 503,195, Apr. 2, 1990, Pat. No. 5,255,371. This application Jul. 26, 1993, Ser. No. 96,287
Int. Cl.[5] G06F *3/00, 13/00*
U.S. Cl. 395—275 15 Claims



1. Apparatus for interfacing a real-time data link to a digital computer system, said digital computer system including data storage means, said apparatus comprising:

data buffer means coupling said data link to said data storage means for buffering data received from said data storage means to be sent to said data link and for buffering data received from said data link to be sent to said data storage means,

Instruction Processor (IP) means in said digital computer system for issuing a sequence of Data Transfer Command (DTC) commands, said DTC commands including a SEND command and a GET command, each said DTC command having a TAG parameter, said IP means further operative for grouping said DTC commands into groups of related sequential commands by performing a SET-TAG function by setting said TAG parameter of each of said related sequential commands of a group to a common group value, said common group value being different for different groups, respectively, so that operations controlled by said DTC commands of a group of related sequential commands can be terminated as a group,

control processor means coupled to said IP means, said data storage means and said data buffer means for receiving said DTC commands from said IP means and for processing said SEND command and said GET command by sending data from said data storage means to said data buffer means in response to said SEND command and getting data from said data buffer means to said data storage means in response to said GET command, and

data link interface means controlled by said control processor means and coupled between said data buffer means and said data link for transmitting, over said data link, said data sent to said data buffer means in response to said SEND command and for receiving from said data link into said data buffer means data to be transferred from said data buffer means to said data storage means in response to said GET command,

said control processor means further operative for performing a TERMINATE function with respect to one of said groups by terminating, as a group, operations controlled by said related sequential commands of said one of said groups,

said control processor means performing said TERMINATE function in response to a stimulus requiring said TERMINATE function to be performed,

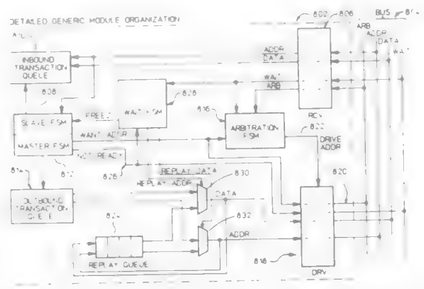
said control processor means performing said TERMINATE function with respect to said one of said groups by performing said TERMINATE function with respect to DTC commands having said TAG parameters thereof set to said common group value of said one of said groups.

5,339,440

WAIT STATE MECHANISM FOR A HIGH SPEED BUS WHICH ALLOWS THE BUS TO CONTINUE RUNNING A PRESET NUMBER OF CYCLES AFTER A BUS WAIT IS REQUESTED

Edward M. Jacobs, Mt. View; Kenneth K. Chan, San Jose, and Thomas B. Alexander, Santa Clara, all of Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Aug. 21, 1992, Ser. No. 933,434
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—325 6 Claims



1. A digital computer apparatus of the type having a computer bus with separate data and address sections and the computer bus having bus cycles of time during which data is driven onto and read from the bus, comprising:

a data bus driver module for driving a sequence of data onto the data section of the computer bus and simultaneously storing the driven data in a data relay queue;

an address bus driver module for driving a sequence of data onto the address section of the computer bus and simultaneously storing the driven data in an address relay queue;

the data bus driver and the address bus driver modules operative to continue to drive the sequence of data on the respective sections of the computer bus simultaneously during a bus wait period associated with a wait command asserted by a bus module;

the data bus driver and the address bus driver modules operative to replay on the respective busses, after a determination of the bus wait period, the data stored in the respective replay queues; and

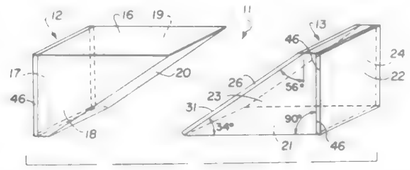
data on the computer bus is pipelined such that data driven on the address section of the computer bus precedes, by at least one bus cycle, associated data driven on the data section of the computer bus.

5,339,441

POLARIZING DEVICE WITH OPTICALLY CONTACTED THIN FILM INTERFACE FOR HIGH POWER DENSITY ULTRAVIOLET LIGHT

Thomas A. Kardos, Nesconsett, N.Y., and Fred G. Kinley, Mission Viejo, Calif., assignors to Advanced Intervention Systems, Inc., Irvine, Calif.

Filed Jul. 2, 1992, Ser. No. 907,893
Int. Cl.[5] G02B *5/30, 27/28, 1/10, 5/04*
U.S. Cl. 359—352 26 Claims



1. In an optical device for use at a design wavelength of approximately 308 nanometers, a first piece of glass having a first mating surface, a second piece of glass having a second mating surface for mating with the mating surface of the first piece of glass, said first and second mating surface having a minimum surface smoothness of $\lambda/10$ to $\lambda/20$ and a multilayer thin film optical coating disposed between the mating surfaces of the first and second pieces of glass, said mating surfaces and said thin film coating forming a physical bond therebetween to provide a monolith without the use of a cement or intervening fluid.

5,339,442

IMPROVED SYSTEM OF RESOLVING CONFLICTING DATA PROCESSING MEMORY ACCESS REQUESTS

Louis A. Lippincott, Roebling, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1992, Ser. No. 954,743
Int. Cl.[5] G06F *13/364*
U.S. Cl. 395—725 3 Claims

1. A request arbitration device in a data processing system having a plurality of request generating devices, comprising:

single receiving means for first receiving a first plurality of requests arriving at differing arrival times within a first time period;

single priority means responsive to an output from said single receiving means indicative of the content of said first plurality of requests for first prioritizing the requests of said first plurality of requests independently of a plurality of arrival times during a second time period, said second time period occurring later than said first time period; and,

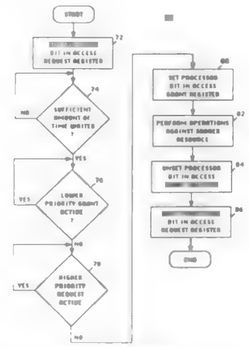
said receiving means being adapted for second receiving a second plurality of requests arriving at said plurality of arrival times within said second time period, whereby said data processing system handles said first plurality of requests prior to and independent of said second plurality of requests.

5,339,443

ARBITRATING MULTIPROCESSOR ACCESSES TO SHARED RESOURCES

James M. Lockwood, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 794,573, Nov. 19, 1991, abandoned.
This application Dec. 17, 1992, Ser. No. 991,497
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—725 20 Claims



1. In a computer system comprising a plurality of processors coupled to a shared resource, a method for arbitrating access to said shared resource by said processors, said method comprising the steps of:

a) setting an assigned request indicator of an access request semaphore by a requesting processor to a request access to said shared resource, said access request semaphore comprising a plurality of access request indicators correspondingly assigned to said processors, said access request indicators being priority ordered, said priority order being statically predetermined;

b) waiting a predetermined amount of time, said predetermined amount of time being sufficiently long for said setting to be detected by each of said processors;

c) retrieving an access grant semaphore repeatedly and determining if said shared resource is currently granted to a lower priority processor by said requesting processor, said access grant semaphore comprising a plurality of access grant indicators correspondingly assigned to said

VOL 1165 ISS 3 AG 16 1994 UMI

processors, said access grant indicators being similarly priority ordered as said access request indicators;

d) retrieving said access request semaphore repeatedly and determining if said shared resource is currently requested by a higher priority processor by said requesting processor when said shared resource is not granted to a lower priority processor;

e) setting its assigned access grant indicator of said access grant semaphore by said requesting processor to grant itself access to said shared resource when said shared resource is not requested by a higher priority processor;

f) accessing said shared resource by said granted processor; and

g) resetting its assigned access grant indicator of said access grant semaphore by said accessing processor to remove itself from being granted access to said shared resource upon completion of accessing said shared resource; and

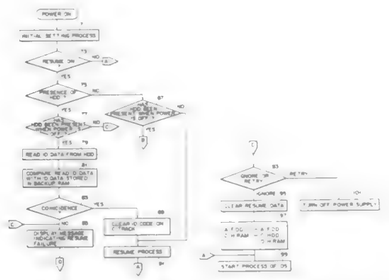
h) resetting its assigned access request indicator of said access request semaphore by said ungranted processor to remove itself from requesting access to said shared resource upon resetting its assigned access grant indicator of said access grant semaphore.

5,339,444

PORTABLE COMPUTER RESETTING RESUME ERROR CAUSED FROM HDD LOADED CONDITION BEING CHANGED AND STARTING OS

Shuzo Nakajima, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 24, 1991, Ser. No. 781,906
Claims priority, application Japan, Nov. 27, 1990, 2-324300
Int. Cl.[5] G06F *11/30, 1/00*
U.S. Cl. 395—750 **16 Claims**



1. A method for controlling a portable computer having an external-memory loading/unloading mechanism, and capable of performing a resume function, the method comprising the steps of:

determining presence or absence of change of a loaded condition of an external memory, when the portable computer is powered while the computer is set in a resume mode;

displaying data indicating a resume error when it is determined that the loaded condition of said external memory has changed; and

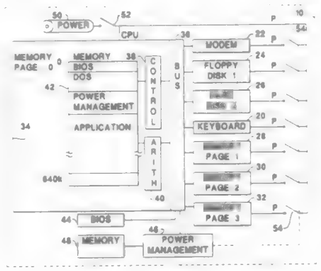
executing one of, in response to an external command, ignoring the resume mode and performing a setup process.

5,339,445

METHOD OF AUTONOMOUSLY REDUCING POWER CONSUMPTION IN A COMPUTER SYTEM BY COMPILING A HISTORY OF POWER CONSUMPTION

Laszlo R. Gasztonyi, Penfield, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 16, 1992, Ser. No. 977,030
Int. Cl.[5] G06F *1/32*
U.S. Cl. 395—750 **19 Claims**



1. A method of reducing power consumption in a battery powered computer system that operates a plurality of application programs, the computer system including a plurality of power consuming assets that may function during operation of an application program, the method comprising the steps of:

a. monitoring the power consumption of the power consuming assets during a first operation of each of the application programs;

b. recording the monitored power consumption of each of the power consuming assets for each of the application programs in a look-up table in the computer system;

c. recalling the recorded power consumption of the power consuming assets for an application program from the look-up table for a subsequent operation of the application program; and

d. automatically reducing power available to the power consuming assets in response to the recalled power consumption during the subsequent operation of the application program by reducing all or part of the power from those assets that require no or less power so that computer system power consumption may be reduced.

5,339,446

POWER SUPPLY AND METHOD FOR USE IN A COMPUTER SYSTEM TO CONFIRM A SAVE OPERATION OF THE COMPUTER SYSTEM AND TO STOP A SUPPLY OF POWER TO THE COMPUTER SYSTEM AFTER CONFIRMATION

Takuma Yamasaki, and Yuuichi Saito, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 962,039, Oct. 15, 1992, abandoned, which is a continuation of Ser. No. 884,451, May 14, 1992, abandoned, which is a continuation of Ser. No. 571,839, Aug. 23, 1990, abandoned, which is a continuation of Ser. No. 134,370, Dec. 17, 1987, abandoned. This application May 18, 1993, Ser. No. 62,733
Claims priority, application Japan, Dec. 26, 1986, 61-315314
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—750 **67 Claims**

1. A power supply system for use in a computer comprising:

a power supply section comprising any of a battery and an AC adapter, said power supply section having an output voltage;

a power output section coupled to said power supply section and including

coupling means for supplying power from said power supply section to said computer system, and

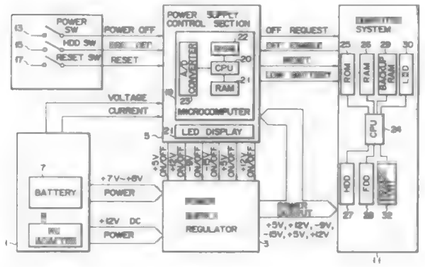
means, responsive to a power off signal, for inhibiting the supply of all power to said computer system; and

a power control section having

coupling means for connecting said power control section to said computer system through a serial transmission path,

means including a microcomputer for detecting a degradation of said power supply section output voltage indicative of impending power failure, for receiving an externally-supplied power off request signal and subsequently transmitting a system power off request signal through said serial transmission path to command a save operation to be performed by said computer system, and for receiving an acknowledgment signal through said serial transmission path to confirm the completion of said save operation,

means for transmitting said power off signal to said power output section to inhibit the supply of power through



said power output section after receipt of said acknowledgment signal,

a low batter display section,

means for monitoring a voltage and a current of said battery, changing a reference voltage value in accordance with a detected current value, comparing a detected voltage value with said reference voltage value and causing said low battery display section to indicate a low battery when said detected voltage value is below said reference voltage value, and

means for dividing a level of said low battery into first through third sub-levels in accordance with said detected current value, causing said low battery display section to indicate said low battery upon detection of said first sub-level, sending said power off request signal to said computer system upon detection of said second sub-level, and outputting said power off signal to said power output section.

5,339,447

ONES COUNTING CIRCUIT, UTILIZING A MATRIX OF INTERCONNECTED HALF-ADDERS, FOR COUNTING THE NUMBER OF ONES IN A BINARY STRING OF IMAGE DATA

Keith Balmer, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 17, 1989, Ser. No. 437,857
Int. Cl.[5] G06F *7/50*
U.S. Cl. 395—775 **12 Claims**

1. A circuit for counting the number of "ones" in a binary string of X_N bits, comprising:

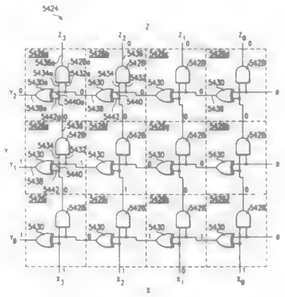
a matrix of M rows and N columns of count cells, where M is equal to $\log_2(X_N=1)$ rounded up to the neareest integer and N is equal to X_N, each count cell including:

an AND gate having first and second inputs and an output forming a first output of said count cell;

an XOR gate having first and second inputs and an output forming a second output fo said count cell;

said first input of said AND gate connected to said first input of said XOR gate and forming a first input of said count cell, said second input of said AND gate connected to said second input of said XOR gate and forming a second input of said matrix of cell circuit;

said count cells in said matrix interconnected wherein said first input of each count cell is connected to said first output of a corresponding count cell in a prior row, said first input of each count cell in a first orw receiving a



corresponding bit of said binary string, and said second input of each count cell is connected to said second output of a corresponding count cell in a a prior column, said second input of each count cell in a first column receiving a "zero"; and

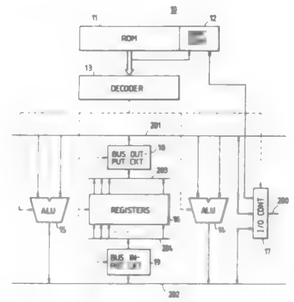
said matrix receiving said binary string and producing an output binary number at corresponding second outputs of a last column of said matrix indicative of the number of "ones" in said binary string.

5,339,448

MICROPROCESSOR WITH IMPROVED INTERNAL TRANSMISSION

Shigeya Tanaka; Masahiro Iwamura; Tatsumi Yamauchi, all of Hitachi; Tatsuo Nojiri, Takasaki; Hisashi Tada, Hitachi, and Tetsuo Nakano, Oume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 387,225, Jul. 28, 1989, abandoned. This application Jan. 22, 1993, Ser. No. 15,296
Claims priority, application Japan, Jul. 28, 1988, 63-188857
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—775 **16 Claims**



1. A microprocessor comprising:

means for generating control signals for controlling the operation of the microprocessor in response to an instruction applied to the microprocessor;

an operation unit adapted to execute a data processing on the

VOL 1165 ISS 3 AG 16 1994 UMI

basis of data supplied to the microprocessor in accordance with the control signals generated by said means for generating;

means for storing the data to be processed by said operation unit and a result of the data processing executed by said operation unit;

a read bus and a write bus coupled to said operation unit to communicate data between said operation unit and said means for storing;

at least one auxiliary read bus and at least one auxiliary write bus coupled to outputs and inputs of said means for storing, respectively;

at least one bus output circuit and at least one bus input circuit, responsive to the control signals generated by said means for generating, adapted to couple and decouple said at least one auxiliary read bus with and from said read bus and adapted to couple and decouple said at least one auxiliary write bus with and from said write bus, respectively;

wherein said at least one bus output circuit is adapted to decouple said at least one auxiliary read bus from said read bus such that no auxiliary read bus is coupled with said read bus;

wherein said at least one bus input circuit is adapted to decouple said at least one auxiliary write bus from said write bus such that no auxiliary, write bus is coupled with said write bus; and

wherein one bus output circuit couples one auxiliary read bus to said read bus only when a read access to said means for storing occurs and one bus input circuit couples one auxiliary write bus to said write bus only when a write access to said means for storing occurs.

5,339,449

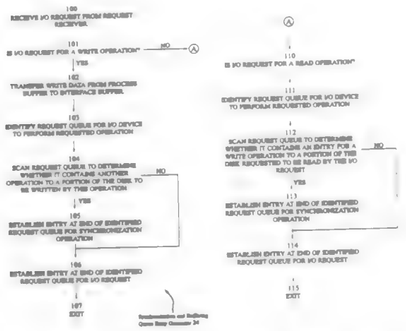
SYSTEM AND METHOD FOR REDUCING STORAGE CHANNELS IN DISK SYSTEMS

Paul A. Karger, Acton, Mass.; Andrew H. Mason, Hollis, N.H.; John C. R. Wray, Shrewsbury, Mass.; Paul T. Robinson, Arlington, Mass.; Anthony L. Priborsky, Gardner, Mass.; Clifford E. Kahn, Framingham, Mass., and Timothy E. Leonard, Cambridge, England, assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 485,216, Feb. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 373,872, Jun. 30, 1989, abandoned. This application Aug. 11, 1993, Ser. No. 105,762

Int. Cl.[5] G06F *13/38*

U.S. Cl. 395—700 **29 Claims**



20. A method of operating a computer system, referred to for convenience as a prioritized completion reordering/deallocation/shared-pages method, to process in an input/output (I/O) request, referred to as **R1**, generated by a requesting process **P1** executing in said computer system,

(1) the computer system including (A) an I/O subsystem which performs and reports completion of at least one type of I/O operation in response to I/O requests, and (B) addressable memory,

(2) said I/O request comprising a request that the I/O subsystem transfer requested data between the I/O subsystem and a process buffer BP associated with said requesting process **P1**, that is, from the I/O subsystem to the process buffer BP or vice versa,

(3) said process buffer BP including one or more allocable memory portions in a memory system that are allocated to said process buffer BP,

(4) said I/O request **R1** being for a transfer of requested data between one or more "requested-data memory portions" of said memory portions allocated to the process buffer BP and the I/O subsystem, that is, from the one or more requested-data memory portions to the I/O subsystem or vice versa, and

(5) one or more of said requested-data memory portions being shared with one or more additional processes executing in said computer system,

said method comprising the steps of:

(a) receiving the I/O request;

(b) writing an entry **E1** corresponding to the I/O request **R1** into a first-in/first-out (FIFO) request queue in said addressable memory;

(c) said entry **E1** including a completion flag that may be selectively set or cleared;

(d) said request queue having:

(1) an earliest-made entry EE (which may be the same as the entry **E1**) corresponding to an earliest-made I/O request RE (which may be the same as the I/O request **R1**) generated by an earliest requesting process PE (which may be the same as the process **P1**) and associated with a de-allocated requested-data memory portion of a process buffer BE associated with the requesting process PE,

(2) if said earliest-made entry EE is not the same as said entry **E1**, said request queue further having zero or more intervening entries corresponding to intervening I/O requests made by respective intervening requesting processes (any one or more of which may be the same as the requesting process **P1**),

(3) each of said earliest-made entry EE and said intervening entries having a respective completion flag;

(e) de-allocating said one or more requested-data memory portions from the process buffer **BP** in conjunction with said step (b) of writing entry **E1** to the request queue;

(f) clearing the completion flag associated with said I/O request **R1**;

(g) initiating processing of the I/O request **R1** by the I/O subsystem;

(h) receiving a completion report from the I/O subsystem for the I/O request **R1**;

(i) setting the completion flag associated with said I/O request **R1**; and

(j)

(1) testing whether the completion flag of the earliest-made entry in the FIFO request queue is set, and if so, then:

(A) reporting completion of the earliest-made I/O request RE to the earliest requesting process,

(B) re-allocating the requested-data memory portions of the process buffer BE to the buffer BE in conjunction with step (A) of reporting completion of the earliest-made I/O request RE to the requesting process PE,

(C) deleting the earliest-made entry from the FIFO request queue, resulting either in an empty request queue or in a new earliest-made entry in the request queue; and

(2) if the FIFO request queue is nonempty after completion of step (1), then repeating step (1) until (A) the earliest-made entry is an entry whose completion flag is not set, or (B) the request queue is empty.

5,339,450

COMPUTER SYSTEM INCLUDING A TERMINAL OPERABLE AS A SERVICE PROCESSOR AND A WORK STATION

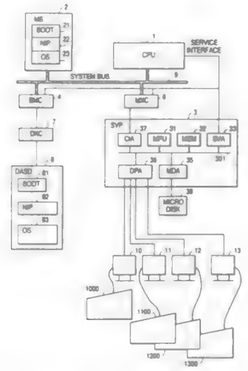
Toyokazu Nagahara, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 442,915, Nov. 28, 1989, abandoned. This application Dec. 7, 1992, Ser. No. 987,537

Claims priority, application Japan, Dec. 2, 1988, 63-306343

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—700 **11 Claims**



6. A computer system having hardware, comprising:

a main storage unit for storing an operating system, an initial program, a terminal designation program designating a service processor terminal number and validity designation information ,and an application program,

a central processing unit connected to said main storage unit, reading instructions of the initial program stored in said main storage unit and executing predetermined processings and calculations,

a service processor connected to said main storage unit and the central processing unit, to load programs into said main storage unit

a plurality of terminals each assigned a terminal number and connected to said service processor, any of said plurality of terminals being usable as a work station for processing the application program and as a service processor terminal for reinitializing and controlling the hardware of said computer system,

request storing means located in said service processor and operatively connected to said plurality of terminals, for storing a console indication indicating which of said terminals is the service processor terminal and a request indication indicating receipt of a request for connection to the service processor from one of said plurality of terminals, requesting use as the service processor terminal,

loading means, operatively connected to said main storage unit, for storing and loading the terminal designation program into said main storage unit responsive to the request for connection issued by the one of said plurality of terminals,

reading means located in said service processor and operatively connected to said main storage unit, for reading the validity designation information stored in said main storage unit after the terminal designation program is loaded by said loading means, and

number storing means, operatively connected to said loading means and said request storing means, for storing in said main storage unit for use by the terminal designation program, a new terminal number identifying the one of the plurality of terminals to indicate that the terminal connection request was input and corresponds to the one of said plurality of terminals when the validity designation information has been previously set to indicate that the service processor terminal number may be changed by said number storing means.

5,339,451

DATA TRANSMISSION SYSTEM WHEREIN THE SETTING OF THE TRANSMIT DATA WORD NUMBER INDICATES WHETHER A NEW TRANSMISSION OR RETRANSMISSION SHOULD BE SENT

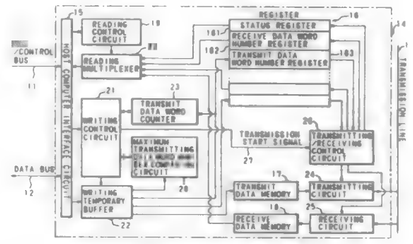
Akiya Arimoto; Yasushi Okamoto, and Kikuo Muramatsu, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 11, 1993, Ser. No. 3,087

Claims priority, application Japan, Feb. 18, 1992, 4-030609

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—800 **13 Claims**



1. A communication apparatus comprising:

a transmission control apparatus which has storing means for storing a transmit data word number and transmission information,

wherein said transmit data word number indicates an amount of said transmission information to be transmitted during each transmission cycle, and

said transmission control apparatus transmits and receives according to a communication standard in which the transmit data word number must be less than a set predetermined limit during each transmission cycle; and

a microcomputer connected to said transmission control apparatus wherein said microcomputer provides said transmission control apparatus with said transmission information and sets said transmit data word number in said transmission control apparatus thereby causing said transmission control apparatus to transmit said transmission information;

wherein said transmission control apparatus includes detecting means for detecting whether or not the transmit data word number set by said microcomputer is less than said predetermined limit,

wherein said microcomputer sets the transmit data word number to be less than said predetermined limit in said transmission control apparatus when a first transmission is performed, and

wherein said microcomputer sets the transmit data word number to be greater than said predetermined limit in said transmission control apparatus when re-transmitting is performed after a failure has been detected in said first transmission, and

wherein said transmission control apparatus transmits new transmission information when said transmit data word number set from said microcomputer is less than said predetermined limit, and

wherein said transmission control apparatus immediately

VOL 1165 ISS 3 AG 16 1994 UMI

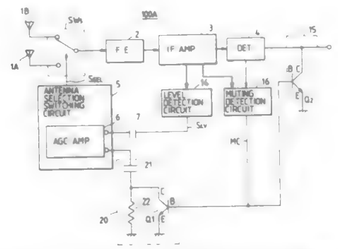
re-transmits previously stored transmission information when said detecting means detects that the transmit data word number set from said microcomputer is greater than said predetermined limit.

5,339,452

SWITCHING DIVERSITY RECEPTION SYSTEM

Kazuaki Sagawara, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 941,375
Claims priority, application Japan, Sep. 18, 1991, 3-074984[U]
Int. Cl.[5] H04B *1/10, 7/08*
U.S. Cl. 455—212 **6 Claims**



1. A switching diversity reception system comprising:
a plurality of antennas;
selection switching means for selectively switching among said plurality of antennas to output one of respective output signals of said plurality of antennas having the largest induced voltage;
means for converting the selected one antenna output signal to an audio signal to be outputted as an output signal of said system;
muting control means for detecting a level of the induced voltage of said selected one antenna output signal so as to output a muting control signal when the detected level of said induced voltage is smaller than a predetermined value, said selection switching means performing the antenna switching always in response to said muting control signal so that muting and the antenna switching always occur in synchronism; and
muting means for muting said audio signal for a predetermined time in response to said muting control signal and in synchronism with said antenna switching.

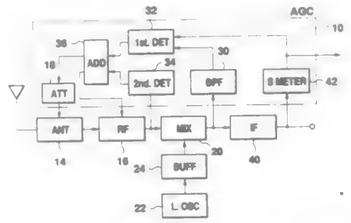
5,339,453

AGC CIRCUIT FOR RADIO RECEIVER HAVING AGC SENSITIVITY COMPENSATED BY IF OUTPUT SIGNAL

Sakae Sugayama, and Keiji Kobayashi, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 28, 1991, Ser. No. 723,077
Claims priority, application Japan, Jun. 29, 1990, 2-171851; Oct. 31, 1990, 2-295023
Int. Cl.[5] H04B *1/26*
U.S. Cl. 455—239.1 **6 Claims**

1. An AGC circuit for a radio receiver which detects a receiving signal level to generate an AGC signal corresponding to the detected signal level, and controls the gain of an RF amplifying circuit, comprising:
(a) a filter circuit for allowing components of a predetermined frequency band in the output signal from a mixer connected to an output of said RF amplifying circuit to pass therethrough;
(b) a first level detecting circuit having a frequency band restricted by said filter circuit, detecting an output signal level of the mixer, and forming a first AGC loop which has a detecting sensitivity varying in accordance with the degree of detuning with respect to an IF frequency;
(c) a second level detecting circuit for detecting an input signal level of the mixer, and forming a second AGC loop which has a detecting sensitivity constant irrespective of the degree of detuning with respect to the IF frequency;
(d) an adder circuit for adding the first level detecting signal to the second level detecting signal to output an AGC signal;
(e) an S meter circuit for detecting the level of a desired signal output from an IF section to which the mixer output is supplied and sending an output to the first level detecting circuit; and
(f) an AGC compensating circuit responsive to the output of the S meter circuit for reducing the output of said first level detecting circuit in accordance with the reduction in the level of the desired signal output from the IF section, for lowering the detecting sensitivity of the first AGC loop to reduce adjacent channel disturbance.

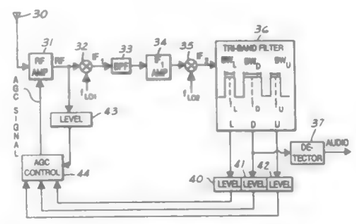


5,339,454

AUTOMATIC GAIN CONTROL FOR RF AMPLIFIER

Yao H. Kuo, Canton, and John F. Kennedy, Garden City, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 5, 1991, Ser. No. 740,242
Int. Cl.[5] H04B *1/10, 1/26*
U.S. Cl. 455—247.1 **8 Claims**



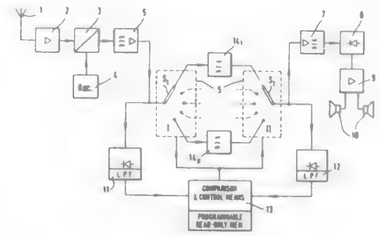
6. Radio receiver apparatus comprising:
radio frequency (RF) amplifier means having a controllable gain responsive to an automatic gain control (AGC) signal for amplifying received RF radio signals by said controllable gain;
RF level detecting means coupled to said RF amplifier means for level detecting a wideband signal;
mixer means coupled to said RF amplifier means for mixing said amplified RF radio signals to derive intermediate frequency (IF) signals;
tri-band filter means coupled to said mixer means for tri-band filtering said IF signals to derive a lower channel signal, a desired channel signal, and an upper channel signal;
tri-band level detecting means coupled to said tri-band filter means for level detecting said tri-band filtered IF signals to produce a lower channel level, a desired channel level, and an upper channel level; and
AGC generator means coupled to said RF amplifier means, said RF level detecting means, and said tri-band level detecting means for generating said AGC signal in response to said wideband signal level whereby said controllable gain maintains said wideband signal level at less than or equal to a predetermined limit, and for modifying said AGC signal to provide an increase in said controllable gain if said desired channel level is below a predetermined threshold except when said lower channel level and said upper channel level are equal and are above a predetermined level.

5,339,455

RADIO RECEIVER ADJACENT-CHANNEL INTERFERENCE SUPPRESSION CIRCUIT

Lothar Vogt, Hohenhameln; Stefan Bartels, Hildesheim; Rainer Arnold, Sibbesse, and Detlef Schwarz, Hanover, all of Fed. Rep. of Germany, assignors to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Feb. 23, 1993, Ser. No. 21,029
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1992, 4208605
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—266 **4 Claims**



1. An adjacent-channel interference detection and suppression circuit for a mobile radio receiver comprising
a plurality of circuit elements (5, 6 7) defining an intermediate frequency signal path in said receiver;
means (14_1–14_N) for adjusting frequency bandwidth in said signal path, including a plurality of filters of differing respective bandwidths, and switching means interposing at least one of said filters in said signal path;
first means (11) for measuring a first signal level, at an input of said at least one filter;
second means (11) for measuring a second signal level, at an output of said at least one filter; and
comparison and control means (13), having a pair of inputs, connected to respective outputs of said first and second measuring means, subtracting said second signal level from said first signal level to determine a difference value and, on the basis of said difference value, generating an output control signal which causes said switching means (6) to interpose, in said signal path, one of said filters (14) whose bandwidth is sufficiently narrow to substantially prevent adjacent-channel interference.

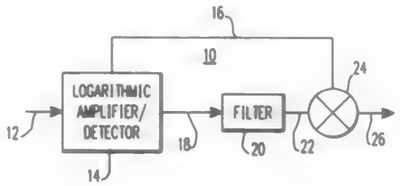
5,339,456

METHOD AND CIRCUIT FOR NON-COOPERATIVE INTERFERENCE SUPPRESSION OF RADIO FREQUENCY SIGNALS

Roger W. Dickerson, Montgomery, Ohio, assignor to Xetron Corporation, Cincinnati, Ohio

Filed Dec. 11, 1991, Ser. No. 806,053
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—303 **17 Claims**

1. A circuit for separating a radio frequency signal of interest from an interfering signal, said circuit comprising:
means for receiving a composite signal and for producing first and second signals, said first signal being representative of the composite signal and said second signal being representative of the envelope of the composite signal, wherein the composite signal includes the interfering signal and the signal of interest;
means for removing selected components from the second signal to produce a filtered signal; and



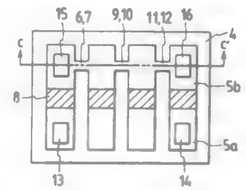
a first mixer for mixing the filtered signal with the first signal, to produce an output signal including a component representative of the signal of interest having a greater spectral power density than other components of the output signal.

5,339,457

SUPERCONDUCTIVE ELECTROMAGNETIC WAVE MIXER AND SUPERCONDUCTIVE ELECTROMAGNETIC WAVE MIXING APPARATUS EMPLOYING THE SAME

Takehiko Kawasaki; Katsuhiko Shinjo; Keisuke Yamamoto, and Norio Kaneko, all of Atsugi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 679,833, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 444,441, Dec. 1, 1989, abandoned. This application Feb. 5, 1992, Ser. No. 829,556
Claims priority, application Japan, Dec. 9, 1988, 63-310085; Oct. 24, 1989, 1-274924; Oct. 24, 1989, 1-274925; Oct. 24, 1989, 1-274926; Nov. 24, 1989, 1-304581
Int. Cl.[5] H04B *1/28*
U.S. Cl. 455—333 **20 Claims**



1. A superconductive electromagnetic wave mixer comprising a local-oscillator source located inside said mixer and a receiving section, said receiving section serving as a section at which an electromagnetic wave from the local-oscillator source and an externally originating electromagnetic wave are combined, wherein said local-oscillator source and said receiving section each comprises at least one Josephson junction employing at least one oxide superconductor.

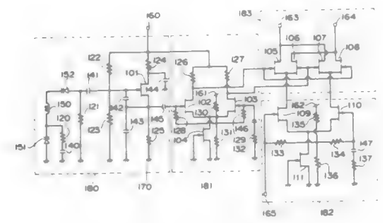
VOL 1165 ISS 3 AUG 16 1994 UMI

5,339,458

FREQUENCY CONVERTER UNIT FOR USE IN A HIGH-FREQUENCY RECEIVER

Tadayoshi Nakatsuka, Osaka, and Hideki Yagita, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 12, 1992, Ser. No. 897,881
Claims priority, application Japan, Jun. 13, 1991, 3-141684
Int. Cl.[5] H04B *1/28*
U.S. Cl. 455—333 10 Claims



1. A frequency converter unit comprising:
oscillator means which is provided with a type of FETs each having a large K value and a high gain, where K is a parameter measured in microamperes per square volt, expressed in the equation

$$Ids = K(Vgs - Vth)^2$$

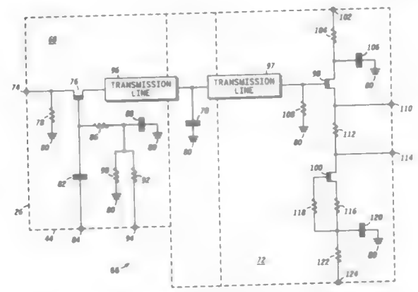
where Ids represents the drain current of the FET, Vgs represents the voltage across the gate and the source, and Vth represents the threshold level of the FET; and
frequency mixer means which is provided with another type of FETs each having a small K value; wherein the K value of each of the FETs employed in said oscillator means is set at least 20 percent greater than the K value of each of the FETs employed in said frequency mixer means.

5,339,459

HIGH SPEED SAMPLE AND HOLD CIRCUIT AND RADIO CONSTRUCTED THEREWITH

Thomas E. Schiltz, Chandler, and Carl R. Nuckolls, Fountain Hills, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 3, 1992, Ser. No. 985,477
Int. Cl.[5] H04B *1/28*; H03K *5/159*
U.S. Cl. 455—333 17 Claims



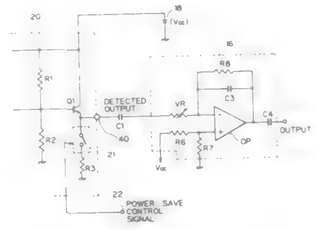
2. A high speed sample and hold circuit comprising:
a sampling switch having an input for receiving a signal to be sampled and having an output;
a hold capacitor coupled to said sampling switch output;
a first transistor configured in a common drain circuit arrangement, having a gate coupled to said sampling switch output and having a source;
a second transistor having a drain and a source, said second transistor configured as a substantially constant current source, said second transistor being coupled to said source of said first transistor, wherein said sampling switch, hold capacitor, first transistor and second transistor each reside within a common integrated circuit;
a first resistor residing within said common integrated circuit and being coupled between said source of said first transistor and said drain of said second transistor;
a second resistor residing within said common integrated circuit and being coupled to said source of said second transistor;
a first external contact of said common integrated circuit coupled to said source of said first transistor; and
a second external contact of said common integrated circuit coupled to said drain of said second transistor.

5,339,460

AMPLIFIER PROVIDED AT OUTPUT STAGE OF INTERMEDIATE FREQUENCY AMPLIFYING CIRCUIT OF MOBILE COMMUNICATION SYSTEM

Minoru Sakata, and Noriyoshi Komatsu, both of Sendai, Japan, assignors to Fujitsu Limited, Japan

Filed Oct. 13, 1992, Ser. No. 959,779
Int. Cl.[5] H04B *1/18*
U.S. Cl. 455—343 5 Claims



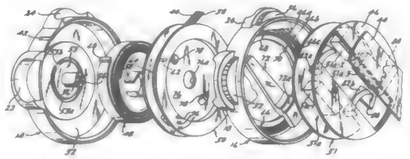
1. In a mobile communication system wherein only the circuits necessary for detecting a call send or a call receive operation are activated intermittently to reduce power consumption from the battery during a stand-by period, and all of the circuits are continuously activated by being supplied with power during a call operation, an amplifier provided at an output stage of an intermediate frequency amplifying circuit of said mobile communication system comprising:
an output transistor an output terminal thereof being connected to a load circuit via a capacitive connecting circuit;
a circuit for supplying an operating direct current, other than through the capacitive connecting circuit, to said output transistor; and
a semiconductor switch provided in said current supply circuit and operatively connected to the output terminal of said output transistor, and to an input of said capacitive connecting circuit said semiconductor switch further including,
an input for receiving a control signal to switch control of said semiconductor switch periodically in a predetermined time when said system is in a stand-by period but continuously when said system is in a calling period.

5,339,461

COMPACT RADIO FREQUENCY RECEIVER HAVING TAKE-UP SPOOL HOUSED EARPHONE CONDUCTORS

Harley M. Luplow, 300 Woodridge, Bloomfield Hills, Mich. 48304

Filed Sep. 20, 1991, Ser. No. 762,758
Int. Cl.[5] H04B *1/08*
U.S. Cl. 455—351 1 Claim



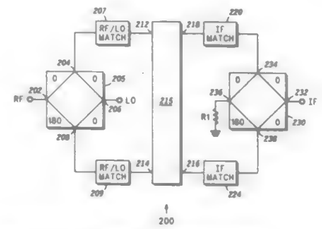
1. A compact, portable FM stereo receiver apparatus, said apparatus comprising:
independent left and right earphone transducers;
a generally circular spindle housing section, said spindle housing section including means for housing independent left and right earphone transducers;
a generally circular ratchet housing section operable to cooperatively couple with said spindle housing section, said ratchet housing section and said spindle housing section when coupled together forming means protruding therefrom for independently, removably housing said left and right earphone transducers;
a spool rotatably mounted within said ratchet and spindle housing sections;
independent left and right channel conductors electrically coupled to said earphone transducers and woundably disposed upon said spool, and operable to be manually unwound from said spool through an opening with at least one of said ratchet and spindle housing sections by a user of said apparatus;
a flat coil spring operatively associated with said spindle housing section and said spool for generating a constant biasing force to constantly urge said spool in a rewind direction;
a ratchet arm operatively associated with said ratchet housing section for maintaining said spool stationary against said biasing force generated by said flat coil spring after said left and right channel conductors have been unwound by a user an approximate, desired length outwardly of said apparatus;
pushbutton release means operatively associated with said ratchet arm for urging said ratchet arm outwardly of said spool to enable said biasing force generated by said flat coil spring to windably rotate said spool in said rewind direction, thereby rewinding said left and right channel conductors upon said spool;
an FM stereo receiver disposed within said ratchet and spindle housing sections and operatively associated with said independent left and right channel conductors; and
a removable battery for powering said FM stereo receiver and
wherein said spool comprises a central wall portion having a plurality of tab members protruding therefrom; and
wherein said ratchet arm is operable to ride over said tab portions without interrupting rotating movement of said spool when said left and right channel conductors are manually unwound from said spool, said elongated ratchet arm being operable to abuttingly engage at least one of said tab members when said spool is rotatably urged in said rewind direction by said biasing force from said flat coil spring, to thereby maintain said spool stationary after said left and right channel conductors have been unwound from said spool an approximate, desired length.

5,339,462

BROADBAND MIXER CIRCUIT AND METHOD

Joseph Staudinger, Gilbert; William B. Beckwith, and Warren L. Seely, both of Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1991, Ser. No. 787,354
Int. Cl.[5] H04B *1/26*
U.S. Cl. 455—330 26 Claims



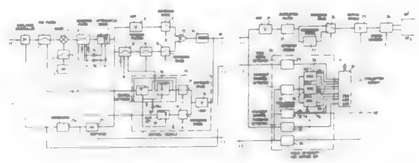
9. A signal mixing apparatus comprising:
a first signal splitting/combining network having first through fourth ports, wherein there is substantially no relative phase shift between the first port and the second port and between the first port and the third port and between the second port and the fourth port, and wherein there is substantially 180° relative phase shift between the third port and the fourth port;
a second signal splitting/combining network having first through fourth ports, wherein there is substantially no relative phase shift between the first port and the second port and between the first port and the third port and between the second port and the fourth port, and wherein there is substantially 180° relative phase shift between the third port and the fourth port;
a four port mixer element having two ports coupled to said second and third ports of said first signal splitting/combining network and having another two ports coupled to said second and third ports of said second signal splitting/combining network;
a first input/output port coupled to said first port of said second signal splitting/combining network;
a second input/output port coupled to said first port of said first signal splitting/combining network; and
a third input/output port coupled to said fourth port of said first signal splitting/combining network.

5,339,463

FM RECEIVER WITH MUTING CIRCUIT

Jens Hansen, Berlin, Fed. Rep. of Germany, assignor to H.u.C. Elektronik GmbH, Berlin, Fed. Rep. of Germany

PCT No. PCT/DE89/00360, § 371 Date Oct. 30, 1990, § 102(e) Date Oct. 30, 1990, PCT Pub. No. WO89/12356, PCT Pub. Date Dec. 14, 1989
PCT Filed May 30, 1989, Ser. No. 601,747
Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818748
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—213 24 Claims



1. An improved FM receiver which includes an IF unit

VOL
1165
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AG
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having a plurality of stages and an LF unit having a plurality of stages, the stages of the IF unit including a relatively narrowband IF filter having a controllable center frequency, wherein the improvement comprises:

at least one stage of the IF unit has a control input port and at least one stage of the LF unit has a control input port;

the FM receiver additionally includes a transmission characteristic change means for changing a signal transmission characteristic of at least one of the IF and LF units, said means comprising

a signal detector module (**28**) including detector circuits (**29** to **33**) for detecting values characteristic of receiving or interference states, with the inputs of said detector circuits each being connected with a stage of the IF or LF unit, and outputs for signals characteristic of receiving or interference states, respectively, and

evaluation means (**400,600**) for generating processed signals characteristic of receiving or interference states, respectively, as control signals to influence the processing characteristic of at least one of the IF and LF units, with inputs of the evaluation means being connected with outputs of the signal detector module and the outputs of the evaluation means being connected with control input ports of the IF and LF unit, respectively; and

wherein one of the stages of the LF unit is a muting circuit (**25**) which receives an LF signal having a signal level and which selectively reduces the level of the LF signal, the muting circuit having a control input port that receives a signal from the detector module.

DESIGN PATENTS

GRANTED AUG. 16, 1994

ERRATA

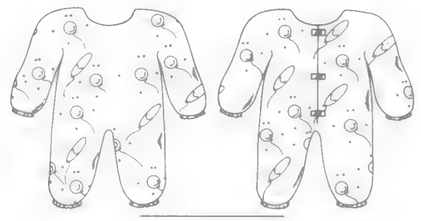
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VOL
1165
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3
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DESIGNS

AUGUST 16, 1994

349,595
DISPOSABLE COVERALL
Albert Miltz, Jr., 718 S. Finley, Lombard, Ill. 60148
Filed Jun. 25, 1992, Ser. No. 903,556
Term of patent 14 years
U.S. Cl. D2—714



349,596
COMBINED CAP VISOR AND HOLOGRAM
Roberta Booth, 5326 Sunset Blvd., Los Angeles, Calif. 90027
Filed Apr. 24, 1992, Ser. No. 873,552
Term of patent 14 years
U.S. Cl. D2—893



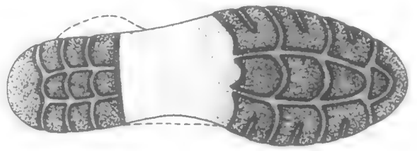
349,597
FOOTBALL NECKTIE
James A. Bethel, P.O. Box 3622, Capitol Heights, Md. 20743
Filed Dec. 28, 1992, Ser. No. 3,091
Term of patent 14 years
U.S. Cl. D2—608



349,598
LIGHTED BOOT
Richard A. McDonald, and Maria Hutt, both of Flat 2, 203 Coley Park, Wensley Road, Reading, Berkshire, England
Filed Jun. 3, 1991, Ser. No. 709,396
Term of patent 14 years
U.S. Cl. D2—910

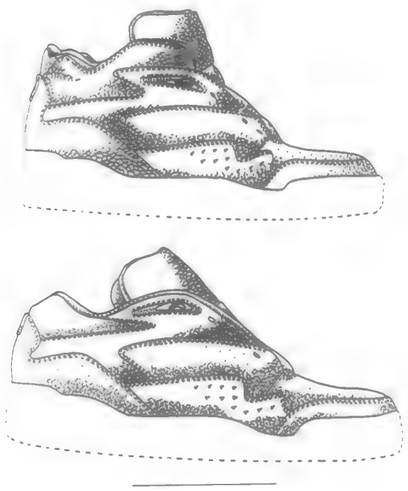


349,599
SHOE SOLE
Patricia A. Kennedy, Newton, Mass., assignor to The Rockport Company, Inc., Marlboro, Mass.
Filed Feb. 1, 1994, Ser. No. 18,222
Term of patent 14 years
U.S. Cl. D2—953

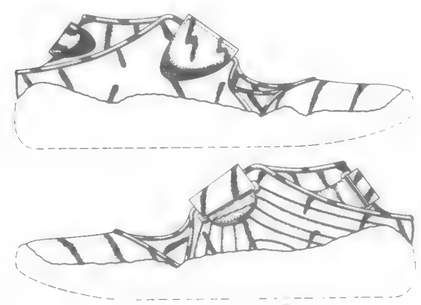


VOL 1165 ISS 3 AG 16 1994 UMI

349,600
SHOE UPPER
Judith R. Close, Dedham, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Continuation of Ser. No. 873,277, Apr. 22, 1992, Pat. No. Des. 333,905. This application Mar. 15, 1993, Ser. No. 7,593
The portion of the term of this patent subsequent to Mar. 16, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—969



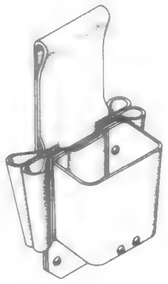
349,601
SHOE UPPER
Calvin M. Buck, IV, Beaverton, Oreg., assignor to Nike Inc., Beaverton, Oreg.
Filed Oct. 19, 1993, Ser. No. 14,294
Term of patent 14 years
U.S. Cl. D2—969



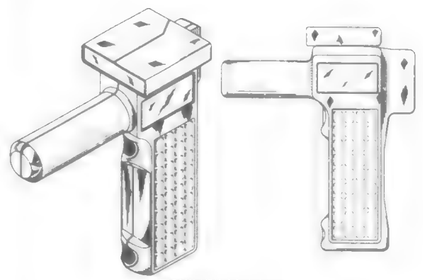
349,602
STORAGE CONTAINER FOR DOCUMENT PROTECTION
David P. Denault, Atherton, Calif., assignor to Investment, Development and Edifice Associates, San Francisco, Calif.
Filed Nov. 13, 1992, Ser. No. 3,031
Term of patent 14 years
U.S. Cl. D3—227



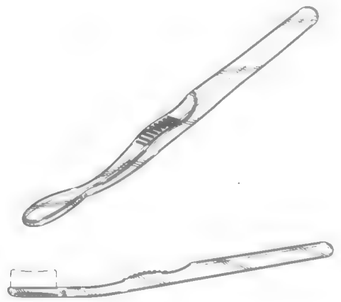
349,603
TOOL HOLDER
Alvin J. Doerksen, 11555 - 136 Street, Edmonton, Alberta, Canada T5M 1M4
Division of Ser. No. 692,024, Apr. 26, 1991, Pat. No. Des. 338,748. This application Aug. 5, 1993, Ser. No. 10,626
Claims priority, application Canada, Nov. 28, 1990, 28-11-90-11
The portion of the term of this patent subsequent to Aug. 24, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—228



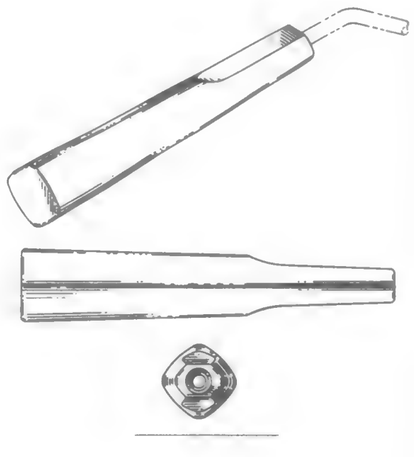
349,604
GRIP HELD DATA ENTRY COMPUTER HAVING A PLURALITY OF AUTOMATIC IDENTIFICATION READERS
Rajendra Kumar, and John W. Morrison, II, both of Akron, Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio
Filed May 7, 1993, Ser. No. 8,164
Term of patent 14 years
U.S. Cl. D14—100



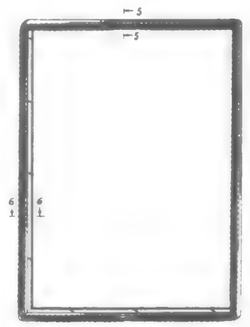
349,605
TRANSPARENT TOOTHBRUSH HANDLE
Peter Schneider, Koenigstein, and Juergen Greubel, Heidenrod, both of Fed. Rep. of Germany, assignors to Gillette Canada Inc., Kirkland, Canada
Filed Mar. 24, 1993, Ser. No. 6,107
Term of patent 14 years
U.S. Cl. D4—104



349,606
PAINT ROLLER HAND GRIP
Robert A. O'Neil, Glen Ellyn, Ill., assignor to EZ Paintr Corporation, Milwaukee, Wis.
Filed Nov. 12, 1992, Ser. No. 1,389
Term of patent 14 years
U.S. Cl. D4—138

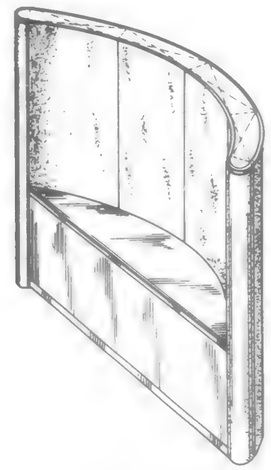


349,607
RECTANGULAR FRAME WITH LINKS
Peter V. Ilaria, East Hanover, and William Macowski, Caldwell, both of N.J., assignors to Tropar Manufacturing Company, Inc., Florham Park, N.J.
Filed Dec. 18, 1992, Ser. No. 2,737
Term of patent 14 years
U.S. Cl. D6—300

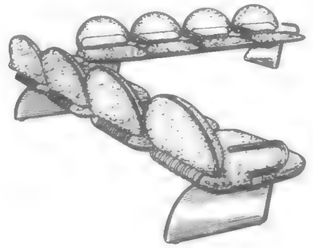


VOL 1165 ISS 3 AG 16 1994 UMI

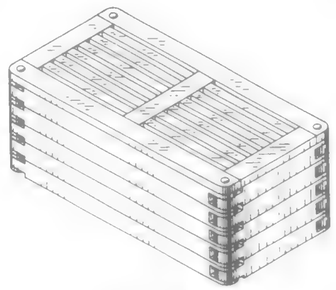
349,608
CURVED PANEL WITH COUNTER
Gordon P. Savoie, Long Beach, Calif., assignor to Skyline Displays, Inc., Burnsville, Minn.
Filed Apr. 8, 1991, Ser. No. 681,374
The portion of the term of this patent subsequent to Oct. 19, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—332



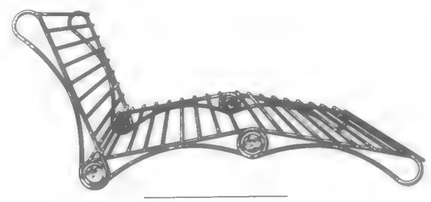
349,609
MODULAR SEATING UNIT
Robert J. Aronowitz, New York, and Bernard D. Katzanek, Dobbs Ferry, both of N.Y., assignors to Robert Bernard Associates, Irvington, N.Y.
Filed Jun. 3, 1993, Ser. No. 9,129
Term of patent 14 years
U.S. Cl. D6—381



349,610
COMBINED BENCH AND DECORATIVE STORAGE BOX
Harry W. Scott, Jr., Dover; Randall W. Britt, and Kenneth L. Renfroe, both of Russellville, all of Ark., assignors to Thompson Industries, Inc., Russellville, Ark.
Filed Apr. 9, 1992, Ser. No. 866,337
The portion of the term of this patent subsequent to Aug. 17, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—336



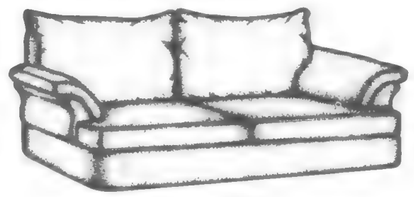
349,611
FURNITURE FRAME
Nathan Kipperman, 666 Greenwich St., Apt. 709, New York, N.Y. 10014
Filed Nov. 13, 1992, Ser. No. 1,418
Term of patent 14 years
U.S. Cl. D6—361



349,612
CHAIR
Marshall B. Ward, High Point, N.C., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Nov. 18, 1992, Ser. No. 1,624
Term of patent 14 years
U.S. Cl. D6—370



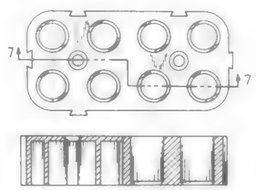
349,613
SOFA
Joseph S. Greene, Hickory, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Jun. 16, 1992, Ser. No. 899,657
Term of patent 14 years
U.S. Cl. D6—381



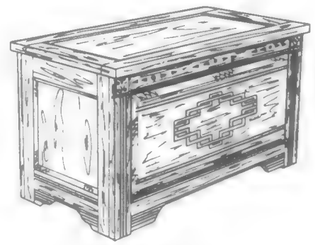
349,614
BED
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 19, 1992, Ser. No. 886,018
Term of patent 14 years
U.S. Cl. D6—393



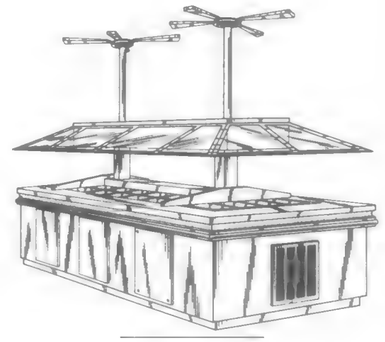
349,615
MODULE USED TO FORM A HOLDING TRAY FOR FLORAL DELIVERY
Delvin D. McLaughlin, 222 Woodland Park, Milan, Ill. 61264
Filed Jul. 6, 1993, Ser. No. 10,344
Term of patent 14 years
U.S. Cl. D6—403



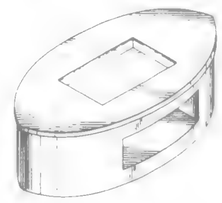
349,616
CEDAR CHEST
H. Thomas Keller, High Point, N.C., assignor to Vaughn Furniture Company, Inc., Galax, Va.
Filed Apr. 10, 1992, Ser. No. 867,801
Term of patent 14 years
U.S. Cl. D6—440



349,617
SALAD BAR WITH FAN
Kenneth M. Herman, Lanham, Md., assignor to Shoppers Food Warehouse Corporation, Lanham, Md.
Filed Sep. 26, 1991, Ser. No. 765,713
Term of patent 14 years
U.S. Cl. D6—481

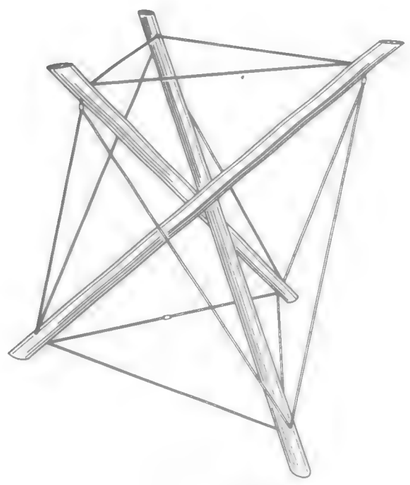


349,618
COFFEE TABLE
Jesse Barfield, Houston, Tex., assignor to Sports Designs By Jesse Barfield, Inc., Houston, Tex.
Continuation of Ser. No. 934,967, Aug. 25, 1992, abandoned.
This application Nov. 10, 1993, Ser. No. 15,245
Term of patent 14 years
U.S. Cl. D6—482

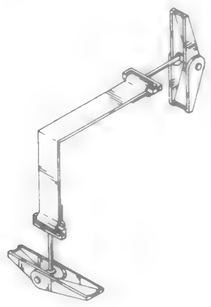


VOL 1165 ISS 3 AG 16 1994 UMI

349,619
TABLE BASE
George K.-C. Li, 10 Juniper La., West Hartford, Conn. 06117
Filed Nov. 27, 1992, Ser. No. 1,972
Term of patent 14 years
U.S. Cl. D6—499



349,620
PORTABLE FOOTREST FOR CHAIRLIFTS
William A. Matteson, 78 Hyde St., Burlington, Vt. 05401
Filed Oct. 21, 1992, Ser. No. 623
Term of patent 14 years
U.S. Cl. D6—501



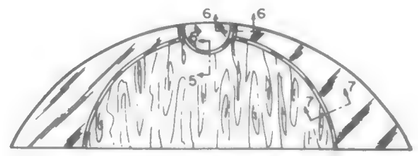
349,621
CHAIR ARM
Robert L. Wilson, Memphis, Tenn., assignor to Chromcraft Revington, Inc., Senatobia, Miss.
Filed Sep. 21, 1993, Ser. No. 13,216
Term of patent 14 years
U.S. Cl. D6—501



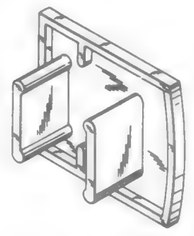
349,622
MOTORIZED SIDE RAIL FOR HOSPITAL BEDS
Margaret Allen; Paul Allen, both of 252 E 3100 S., Bountiful, Utah 84010, and T. Kevin Wilson, 5570 Morning Breeze Dr., Kearns, Utah 84118
Filed Dec. 11, 1992, Ser. No. 2,384
Term of patent 14 years
U.S. Cl. D6—503



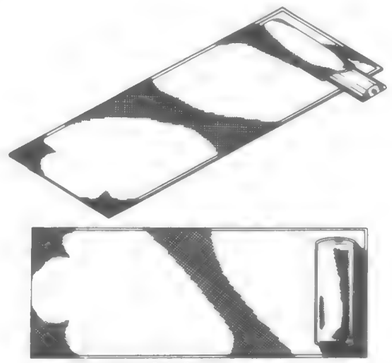
349,623
HEADBOARD
Carlo Bargagli-Stoffi, 2550 Polk St., Union, N.J. 07083
Filed Jun. 29, 1993, Ser. No. 10,197
Term of patent 14 years
U.S. Cl. D6—505



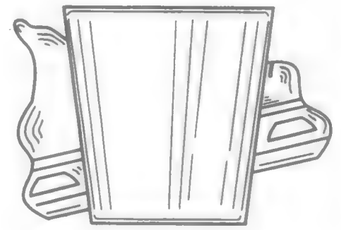
349,624
ENDCAP
Donald E. Fraser, Owensboro, and Richard N. Anderson, Whitesville, both of Ky., assignors to Hunter Douglas, Inc., Upper Saddle River, N.J.
Filed Mar. 19, 1992, Ser. No. 854,053
Term of patent 14 years
U.S. Cl. D6—580



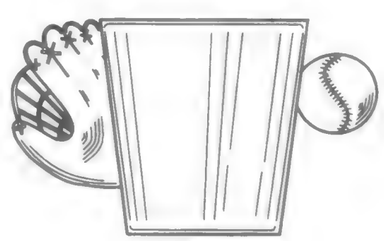
349,625
COMBINED BEACH TOWEL AND INFLATABLE HEADREST
John Da Palma, 5227 Rorer St., Philadelphia, Pa. 19120
Filed Apr. 24, 1992, Ser. No. 873,074
Term of patent 14 years
U.S. Cl. D6—596



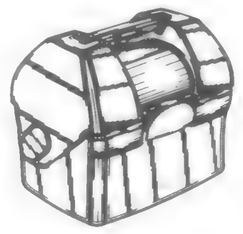
349,626
DRINKING GLASS
Kenneth D. Rigsby, 7911 Dunbarton Ave., Los Angeles, Calif. 90045
Filed Oct. 9, 1992, Ser. No. 395
Term of patent 14 years
U.S. Cl. D7—515



349,627
DRINKING GLASS
Kenneth D. Rigsby, 7911 Dunbarton Ave., Los Angeles, Calif. 90045
Filed Oct. 9, 1992, Ser. No. 394
Term of patent 14 years
U.S. Cl. D7—515

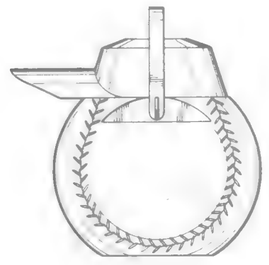


349,628
PIVOT TOP COOLER
W. Henry Kahl, Wooster, and Allan G. Ross, Stow, both of Ohio, assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Jun. 1, 1993, Ser. No. 8,961
Term of patent 14 years
U.S. Cl. D7—605

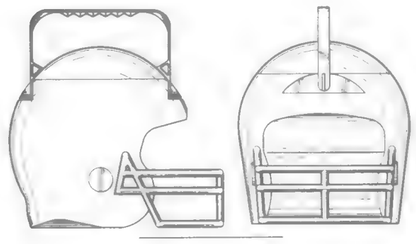


VOL 1165 ISS 3 AG 16 1994 UMI

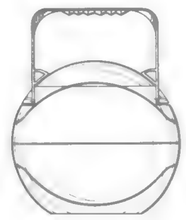
349,629
STYROFOAM ICE CHEST
Christopher L. Redmon, Houston, Tex., assignor to Cooler Concepts, Inc., Houston, Tex.
Filed Feb. 12, 1993, Ser. No. 4,850
Term of patent 14 years
U.S. Cl. D7—606



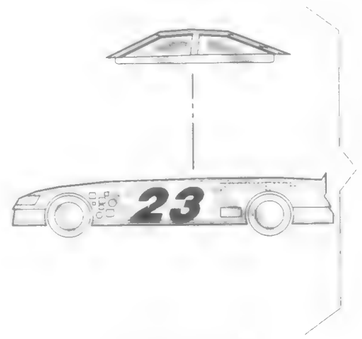
349,630
STYROFOAM ICE CHEST
Christopher L. Redmon, Houston, Tex., assignor to Cooler Concepts, Inc., Houston, Tex.
Filed Feb. 12, 1993, Ser. No. 4,851
Term of patent 14 years
U.S. Cl. D7—606



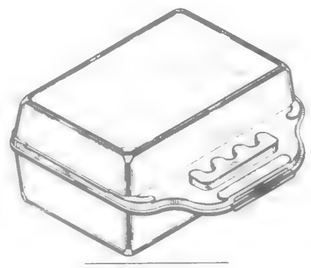
349,631
STYROFOAM ICE CHEST
Christopher L. Redmon, Houston, Tex., assignor to Cooler Concepts, Inc., Houston, Tex.
Filed Feb. 12, 1993, Ser. No. 4,852
Term of patent 14 years
U.S. Cl. D7—606



349,632
COLLECTIBLE RACE CAR COOKIE JAR
Linda Nicholson, and Clarence Russell, both of Rte. 4 - Box 16, Clyde, N.C. 28721
Filed Aug. 20, 1992, Ser. No. 931,538
Term of patent 14 years
U.S. Cl. D7—613



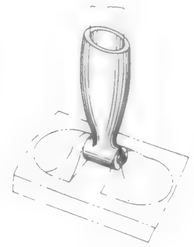
349,633
LUNCH BOX
Calvin S. Krupa, Plymouth, Minn., assignor to Ultra Pac. Inc., Rogers, Minn.
Filed Jun. 23, 1993, Ser. No. 9,749
Term of patent 14 years
U.S. Cl. D7—109



349,634
CUTTING LINE FOR A ROTATING LINE TRIMMER
David B. Skinner, and Gordon Ferguson, both of Columbia, S.C., assignors to Shakespeare Company, Columbia, S.C.
Filed Feb. 12, 1992, Ser. No. 834,509
Term of patent 14 years
U.S. Cl. D8—8



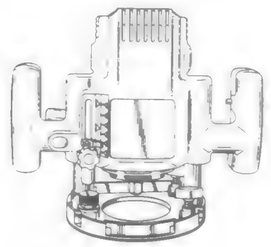
349,635
TOOL HANDLE CONNECTOR
Enzo Berti, Venice, Italy, and Robert J. Libman, Champaign, Ill., assignors to The Libman Company, Arcola, Ill.
Filed Oct. 7, 1992, Ser. No. 179
Term of patent 14 years
U.S. Cl. D8—14



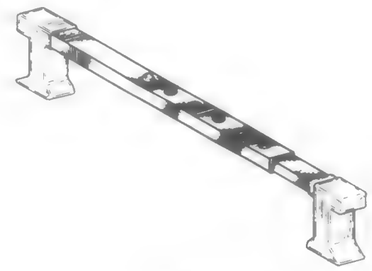
349,636
HORSESHOE NIPPERS
Valor P. White, P.O. Box 66, and Richard J. Lacey, 187 Highway 28 E., both of Farson, Wyo. 82932
Filed Mar. 20, 1992, Ser. No. 854,267
Term of patent 14 years
U.S. Cl. D8—52



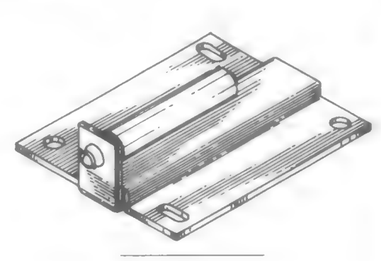
349,637
PLUNGE ROUTER
Kiyoshi Hoshino, Yokohama, Japan; Ronald C. McCurry, West Union, and Robert McCracken, Easley, both of S.C., assignors to Ryobi Motor Products Corp., Easley, S.C.
Filed Apr. 5, 1993, Ser. No. 6,708
Term of patent 14 years
U.S. Cl. D8—67



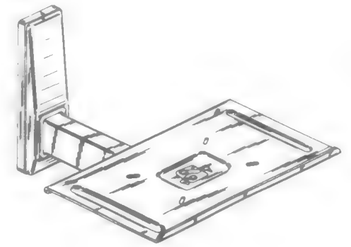
349,638
LOCK FOR PICKUP TRUCK REAR WINDOW
Roberto S. Gutierrez, P.O. Box 94, Mesilla Park, N. Mex. 88047
Filed May 14, 1992, Ser. No. 881,549
Term of patent 14 years
U.S. Cl. D8—331



349,639
MOUNTING BRACKET FOR DISPLAYING FIREARMS
James A. Kimbrell, P.O. Box 751, Sylva, N.C. 28779
Filed Oct. 18, 1991, Ser. No. 778,643
Term of patent 14 years
U.S. Cl. D8—349



349,640
WALL MOUNTABLE SUPPORT BRACKET
Richard J. Whitaker, Guernsey, Channel Islands, assignor to Commercial Brains Limited, Guernsey, United Kingdom
Filed May 5, 1992, Ser. No. 878,505
Claims priority, application United Kingdom, Nov. 9, 1991, 2018870
Term of patent 14 years
U.S. Cl. D8—363

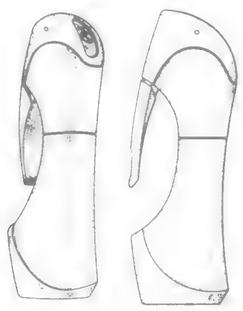


VOL 1165 ISS 3 AG 16 1994 UMI

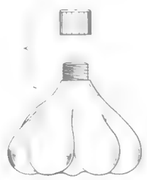
349,641
HOOK
Michael Moliner, Montreal, Canada, assignor to SportRack Canada Inc., Granby, Canada
Filed Dec. 22, 1992, Ser. No. 2,873
Claims priority, application Canada, Sep. 1, 1992, 01-09-92-6
Term of patent 14 years
U.S. Cl. D8—367



349,642
PUMP SPRAY BOTTLE
Melvin Abfier, Stamford, Conn., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Jan. 6, 1993, Ser. No. 3,426
Term of patent 14 years
U.S. Cl. D9—300



349,643
COMBINED CONTAINER AND CAP
Christopher Szymanski, Shipley, England, assignor to Healthilife Limited, West Yorkshire, England
Filed Feb. 24, 1992, Ser. No. 840,710
Term of patent 14 years
U.S. Cl. D9—329



349,644
TABLET DISPENSING CONTAINER
Hisakazu Miyairi, Tokyo; Masaru Tamura, Funabashi, and Natsuo Shinozaki, Matsudo, all of Japan, assignors to Miyarisan Pharmaceutical Co., Ltd., Nagano and Yoshino Kogyosho Co., Ltd., Tokyo, both of Japan
Filed May 19, 1992, Ser. No. 885,552
Claims priority, application Japan, Nov. 20, 1991, 3-103388[U]
Term of patent 14 years
U.S. Cl. D9—339

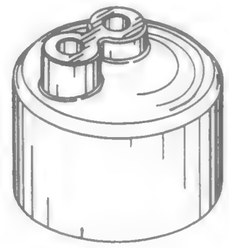


349,645
CARTON WITH A SLIDING LID
Brino A. van Loo, Sassenheim, Netherlands, assignor to Stadium Design B.V., Hillegom, Netherlands
Filed Jan. 21, 1993, Ser. No. 3,900
Claims priority, application Benelux, Jul. 20, 1992, 22706-03
Term of patent 14 years
U.S. Cl. D9—422

349,646
STORAGE CONTAINER WITH HINGED LID
Thomas Dickinson, St. Louis, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Filed May 20, 1993, Ser. No. 8,613
Term of patent 14 years
U.S. Cl. D9—423



349,647
CONTAINER CAP
Robert C. Moffitt, Laguna Hills, Calif., assignor to The Water Factory, Irvine, Calif.
Filed Jul. 11, 1988, Ser. No. 217,273
The portion of the term of this patent subsequent to Nov. 16, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—435

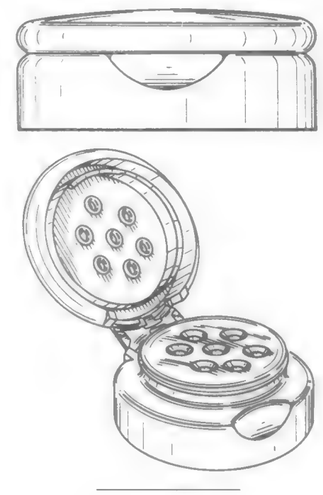


349,648
CLOSURE FOR VIALS
Joseph V. Tirrell, Sand Lake, and Neil H. Brown, Nassau, both of N.Y., assignors to Sterling Winthrop Inc., Malvern, Pa.
Filed Jun. 2, 1992, Ser. No. 892,001
Term of patent 14 years
U.S. Cl. D9—439

349,649
DISPENSER ASSEMBLY
Emmanuel A. Hanna, Lakeview Terrace, Calif., assignor to Bobrick Washroom Equipment, Inc., North Hollywood, Calif.
Filed Nov. 19, 1991, Ser. No. 795,079
Term of patent 14 years
U.S. Cl. D9—448



349,650
BOTTLE CAP
John Lonczak, Newburgh; Leonard A. Filiz; Kin S. Yan, both of New York, and Victor Ivenitsky, Bronx, all of N.Y., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Filed Aug. 20, 1992, Ser. No. 932,857
Term of patent 14 years
U.S. Cl. D9—449

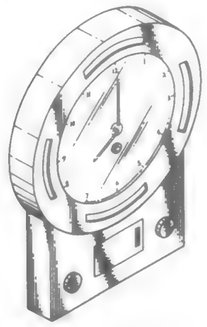


349,651
CONTAINER
Morton R. Saffer, Golden, Colo., assignor to CCW Products, Inc., Arvada, Colo.
Filed Jun. 8, 1993, Ser. No. 9,194
Term of patent 14 years
U.S. Cl. D9—528

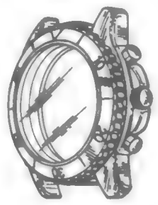


VOL 1165 ISS 3 AG 16 1994 UMI

349,652
COMBINATION CLOCK AND SMOKE DETECTOR
John Grant, Jr., 3507 Hikes La., Louisville, Ky. 40218
Filed Dec. 13, 1991, Ser. No. 806,448
Term of patent 14 years
U.S. Cl. D10—2



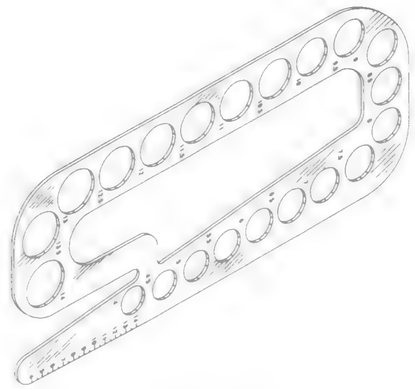
349,653
WATCH CASE
Barbara Giardiello, Naples, Italy, assignor to Artime S.A., Neuchatel, Switzerland
Filed May 15, 1992, Ser. No. 883,721
Claims priority, application Hague, Nov. 18, 1991, DMA/001634
Term of patent 14 years
U.S. Cl. D10—30



349,654
WATCH
Barbara Giardiello, Naples, Italy, assignor to Artime S.A., Neuchatel, Switzerland
Filed May 15, 1992, Ser. No. 883,720
Claims priority, application Hague, Nov. 18, 1991, DMA/001634
Term of patent 14 years
U.S. Cl. D10—39



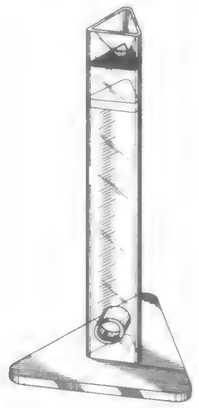
349,655
COMBINATION FINGER AND RING SIZING DEVICE
Stephen A. Round, Foster, R.I., assignor to S. Round's Inc., North Scituate, R.I.
Filed Jun. 3, 1993, Ser. No. 9,077
Term of patent 14 years
U.S. Cl. D10—64



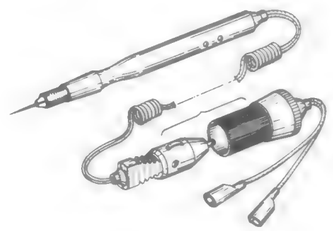
349,656
STRAIGHT EDGE COIL CUTTER
Allan MacLeod, 4917 Epsom Court, Niagara Falls, Ontario, Canada L2H 1V8
Filed Oct. 9, 1992, Ser. No. 263
Term of patent 14 years
U.S. Cl. D10—65



349,657
TRANSIT
Paul Paradice, Rte. 2, Box 74-C, Collins, Ga. 30421
Filed Mar. 6, 1992, Ser. No. 845,476
Term of patent 14 years
U.S. Cl. D10—66



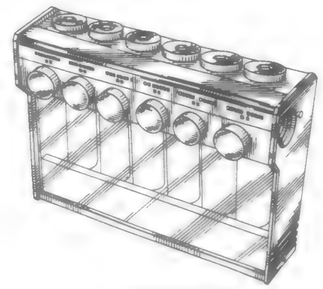
349,658
ELECTRONIC VOLTAGE TESTER
Kevin P. Walsh, P.O. Box 57373, New Orleans, La. 70157
Filed Sep. 15, 1992, Ser. No. 945,338
Term of patent 14 years
U.S. Cl. D10—78



349,659
TIRE PRESSURE INDICATOR
Tien-Tsai Huang, No. 4, Lane 30, Wu-Chang St., Pan-Chiao City, Taiwan
Filed Aug. 5, 1993, Ser. No. 11,482
Term of patent 14 years
U.S. Cl. D10—86

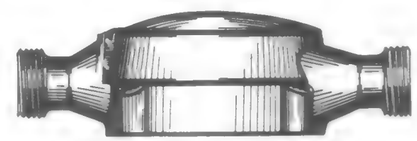


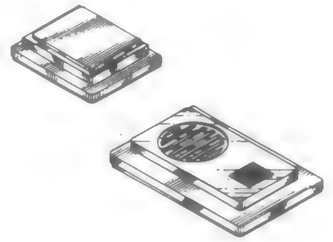
349,660
FLUID FLOW METER
James Chaplin; John C. Nielsen; Edward J. Lazzeroni, Sr., all of Racine, and Timothy E. Zollers, Milwaukee, all of Wis., assignors to Racine Federated, Racine, Wis.
Filed Mar. 31, 1993, Ser. No. 6,557
Term of patent 14 years
U.S. Cl. D10—96



349,661
WATER METER HOUSING
George DeJarlais, Wauwatosa, and Mark D. Slaugenhoup, Kewaskum, both of Wis., assignors to Badger Meter, Inc., Milwaukee, Wis.
Filed Feb. 3, 1993, Ser. No. 4,387
Term of patent 14 years
U.S. Cl. D10—99

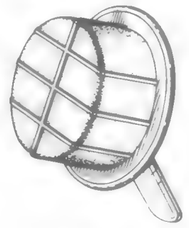
349,662
COMBINED TRANSMITTER AND RECEIVER FOR LOCATING LOST REMOTE CONTROL UNITS
David L. Butcher, and Angela R. Butcher, both of 321 E. Seventh St., Wellston, Ohio 45692
Filed Jan. 29, 1993, Ser. No. 4,193
Term of patent 14 years
U.S. Cl. D10—104



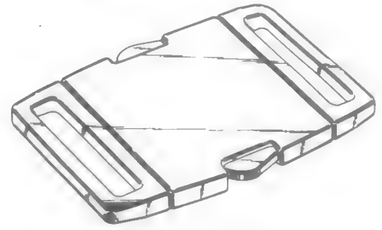


VOL 1165 ISS 3 AG 16 1994 UMI

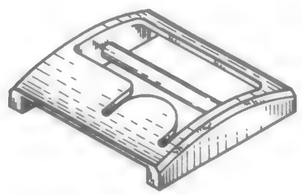
349,663
BOUQUET HOLDER
Valerie L. Spicer, 37 St. Davids Road, Tavistock, Devon, England
Filed Sep. 28, 1993, Ser. No. 13,590
Claims priority, application United Kingdom, Mar. 31, 1993, 2030123
Term of patent 14 years
U.S. Cl. D11—164



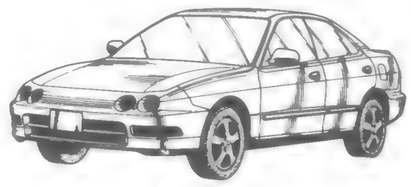
349,664
BUCKLE
Eiji Ueno, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Dec. 23, 1992, Ser. No. 2,944
Claims priority, application Japan, Jun. 24, 1992, 4-18488
Term of patent 14 years
U.S. Cl. D11—216



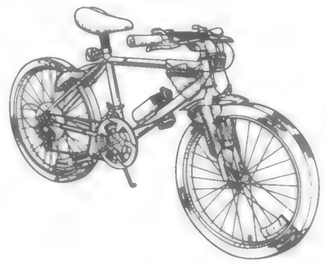
349,665
BUCKLE
Dana Franklin, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Division of Ser. No. 670,206, Mar. 15, 1991, Pat. No. Des. 333,803. This application Mar. 4, 1993, Ser. No. 5,508
Term of patent 14 years
U.S. Cl. D11—218



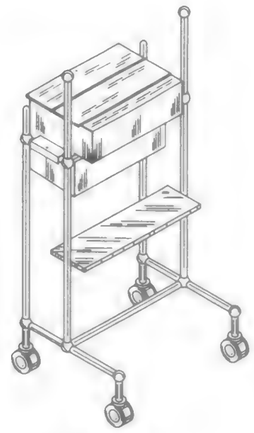
349,666
AUTOMOBILE
Akira Shimoyama; Harumi Okano; Junji Yuki, all of Saitama; Mutsumi Koshiishi; Tatsuya Oda, both of Tokyo, and Shuichi Etoh, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 29, 1992, Ser. No. 935
Term of patent 14 years
U.S. Cl. D12—92



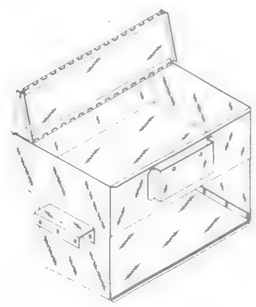
349,667
BICYCLE
Timothy J. Dietz, Springboro, and Andrew J. Bean, Cincinnati, both of Ohio, assignors to Huffy Corporation, Dayton, Ohio
Filed Dec. 7, 1992, Ser. No. 2,258
Term of patent 14 years
U.S. Cl. D12—111



349,668
CHANGE STROLLER WITH AN ACCESSORY CONTAINER
Linton Mathews; Teresa L. Mathews, both of 6621 Cowboy Trail, Las Vegas, Nev. 89121, and Philip M. Stephens, 1624 S. Palm St., #34, Las Vegas, Nev. 89104
Division of Ser. No. 945,332, Sep. 15, 1992. This application Feb. 28, 1994, Ser. No. 19,443
Term of patent 14 years
U.S. Cl. D12—129



349,669
CHANGE STROLLER ACCESSORY CONTAINER
Linton Mathews; Teresa L. Mathews, both of 6621 Cowboy Trail, Las Vegas, Nev. 89121, and Philip M. Stephens, 1624 S. Palm St., #34, Las Vegas, Nev. 89104
Division of Ser. No. 945,332, Sep. 15, 1992. This application Feb. 28, 1994, Ser. No. 19,442
Term of patent 14 years
U.S. Cl. D12—133



349,670
AUTOMOBILE TIRE
Yasufumi Ichiki, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Mar. 3, 1993, Ser. No. 5,414
Claims priority, application Japan, Sep. 22, 1992, 4-27628
Term of patent 14 years
U.S. Cl. D12—146



349,671
AUTOMOBILE TIRE
Shinzi Seimiya, Hiratsuka; Izumi Kuramochi; Kohtaroh Iwabuchi, both of Tokyo, and Hisaya Morishita, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Jul. 14, 1992, Ser. No. 913,078
Claims priority, application Japan, Jan. 28, 1992, 4-1812
Term of patent 14 years
U.S. Cl. D12—147



VOL 1165 ISS 3 AUG 16 1994 UMI

349,672
AUTOMOBILE TIRE
Shinzi Seimiya, Hiratsuka; Izumi Kuramochi; Kohtaroh Iwabuchi, both of Tokyo, and Hisaya Morishita, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Jul. 14, 1992, Ser. No. 913,079
Claims priority, application Japan, Jan. 28, 1992, 4-1813
Term of patent 14 years
U.S. Cl. D12—147



349,673
AUTOMOBILE TIRE
Shinzi Seimiya, Hiratsuka; Izumi Kuramochi; Kohtaroh Iwabuchi, both of Tokyo, and Hisaya Morishita, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Jul. 14, 1992, Ser. No. 913,080
Claims priority, application Japan, Jan. 28, 1992, 4-1814
Term of patent 14 years
U.S. Cl. D12—147



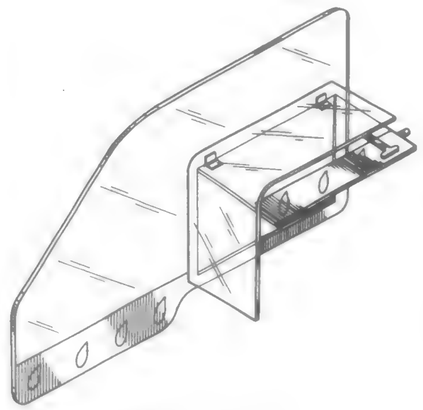
349,674
AUTOMOBILE TIRE
Shinzi Seimiya, Hiratsuka; Izumi Kuramochi; Kohtaroh Iwabuchi, both of Tokyo, and Hisaya Morishita, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Jul. 14, 1992, Ser. No. 913,081
Claims priority, application Japan, Jan. 28, 1992, 4-1811
Term of patent 14 years
U.S. Cl. D12—147



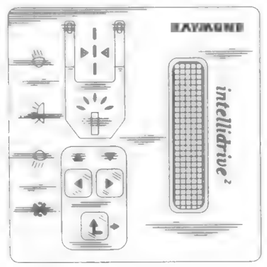
349,675
AUTOMOBILE TIRE
Kazunori Shinohara, and Shinichi Abe, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 8, 1993, Ser. No. 9,197
Claims priority, application Japan, Dec. 9, 1992, 4-36007
Term of patent 14 years
U.S. Cl. D12—147



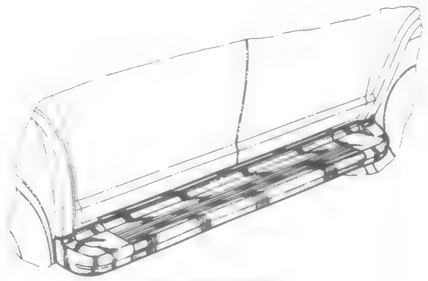
349,676
AUXILIARY WINDOW FOR AUTOMOBILES
Willard Peterson, 5753 Lake Crest, Columbiaville, Mich. 48421, and Clarence Peterson, 3745 E. Co. Line Rd., Hale, Mich. 48739
Filed Jun. 25, 1992, Ser. No. 904,533
Term of patent 14 years
U.S. Cl. D12—183



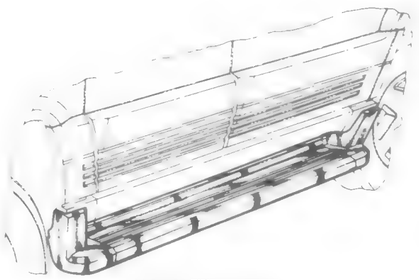
349,677
FRONT FACE OF AN OPERATOR DISPLAY PANEL FOR A MATERIAL HANDLING VEHICLE
Isaac Avitan, Vestal, N.Y., assignor to Raymond Corporation, Greene, N.Y.
Filed Apr. 25, 1991, Ser. No. 691,593
Term of patent 14 years
U.S. Cl. D12—192



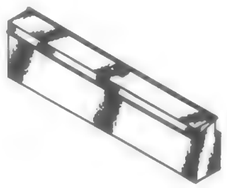
349,678
VEHICLE RUNNING BOARD
Donald R. Waddington, Huntsville, and Robert J. Boulard, HammerBay, both of Canada, assignors to Algonquin Industries International, Inc., Huntsville
Filed Apr. 19, 1993, Ser. No. 7,313
Term of patent 14 years
U.S. Cl. D12—203



349,679
VEHICLE RUNNING BOARD
Donald R. Waddington, Huntsville, and Robert J. Boulard, HammerBay, both of Canada, assignors to Algonquin Industries International, Inc., Huntsville
Filed Apr. 19, 1993, Ser. No. 7,326
Term of patent 14 years
U.S. Cl. D12—203

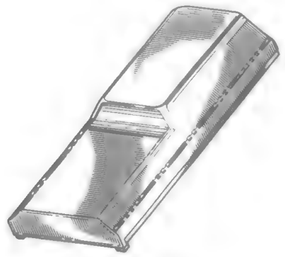


349,680
TRUCK BED TOOL BOX
Richard E. Powell, 4904 Kirk St., Gillette, Wyo. 82716
Filed Jun. 18, 1993, Ser. No. 9,583
Term of patent 14 years
U.S. Cl. D12—406

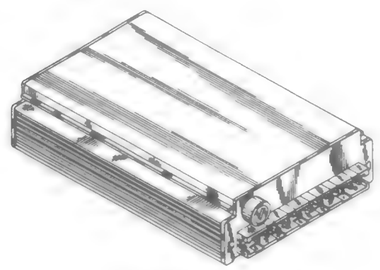


VOL 1165 ISS 3 AG 16 1994 UMI

349,681
BATTERY HOUSING FOR A PORTABLE RADIO
Craig Siddoway, Davie, and James Tracy, Margate, both of Fla., assignors to Motgorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 765,863, Sep. 25, 1991, abandoned. This application Jun. 21, 1993, Ser. No. 10,591
Term of patent 14 years
U.S. Cl. D13—103



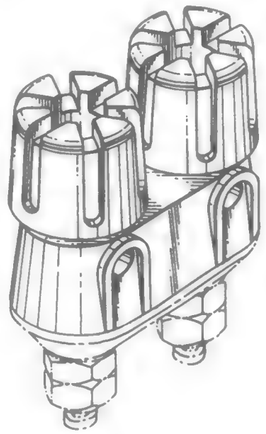
349,682
POWER CONVERTER CASING
Hansjuerg Hunziker, Embrach, Switzerland, assignor to Melcher AG, Uster, Switzerland
Filed Apr. 8, 1993, Ser. No. 6,912
Term of patent 14 years
U.S. Cl. D13—110



349,683
SPARK PLUG EXTENDER
Ulf Arens, San Diego, Calif., assignor to Viking Autotronic, Inc., North Miami Beach, Fla.
Filed Aug. 10, 1992, Ser. No. 927,359
Term of patent 14 years
U.S. Cl. D13—127



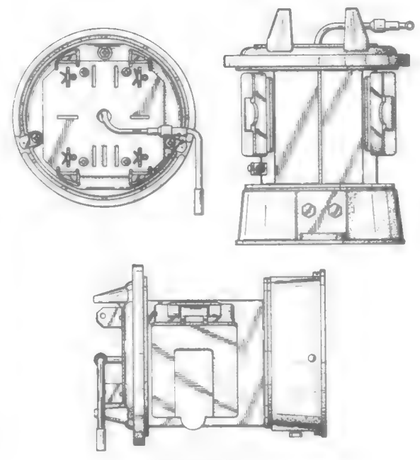
349,684
ELECTRICAL TERMINAL
John Yair, Hagley, England, assignor to Cliff Electronic Components Limited, Surrey, Great Britain
Filed Jan. 22, 1993, Ser. No. 3,972
Claims priority, application United Kingdom, Jul. 22, 1992, 2,024487
Term of patent 14 years
U.S. Cl. D13—133



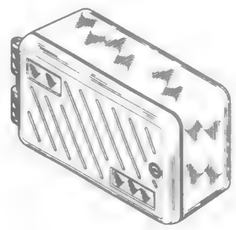
349,685
ELECTRICAL FITTING PRIMARILY IN THE FORM OF A CONNECTOR
John Yair, Hagley, England, assignor to Cliff Electronic Components Limited, Surrey, Great Britain
Filed Jan. 22, 1993, Ser. No. 3,978
Claims priority, application United Kingdom, Jul. 22, 1992, 2,024,486
Term of patent 14 years
U.S. Cl. D13—133



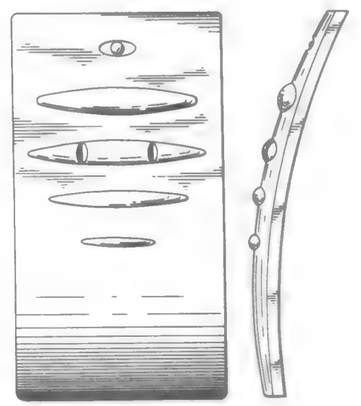
349,686
TEMPORARY METERED ELECTRICAL POWER WATTHOUR METER SOCKET ADAPTER
Darrell A. Robinson, Highland, and Allen V. Pruehs, Howell, both of Mich., assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.
Filed Sep. 30, 1992, Ser. No. 954,246
Term of patent 14 years
U.S. Cl. D13—146



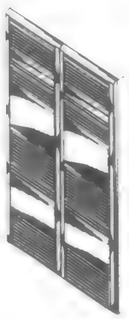
349,687
RADIO FREQUENCY SWITCH BOX
Bee L. Khoo, Johor Bahru, Malaysia, and Huan S. Chia, Singapore, Singapore, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 13, 1990, Ser. No. 508,399
Term of patent 14 years
U.S. Cl. D13—162



349,688
FRONT PANEL OF A REMOTE CONTROL FOR A CEILING FAN
Richard M. Holbrook, Redondo Beach, Calif., assignor to Casablanca Fan Company, City of Industry, Calif.
Filed May 24, 1993, Ser. No. 8,670
Term of patent 14 years
U.S. Cl. D13—162

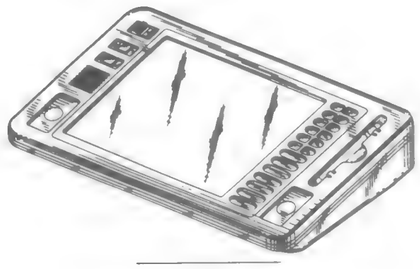


349,689
OUTER SURFACE OF A SET OF DOORS FOR AN ELECTRONIC EQUIPMENT CABINET
Thomas G. Beaumont, Bedford, Tex.; Jon N. Diaz, Chicago, Ill.; David J. Clark, Elgin, Ill., and Michael K. Bullock, Naperville, Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 28, 1993, Ser. No. 8,969
Term of patent 14 years
U.S. Cl. D13—184

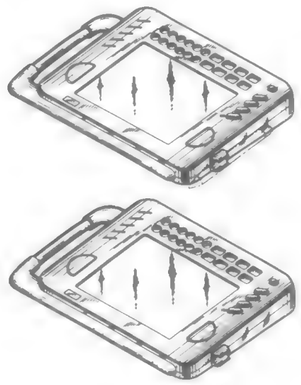


VOL 1165 ISS 3 AG 16 1994 UMI

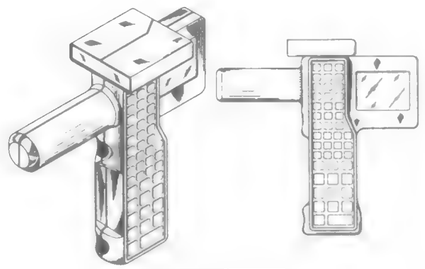
349,690
DATA INPUT MACHINE FOR A TELEVISION MONITOR
Yukari Miyata, and Hideaki Yoshii, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 29, 1992, Ser. No. 889,320
Claims priority, application Japan, Dec. 12, 1991, 3-37541
Term of patent 14 years
U.S. Cl. D14—100



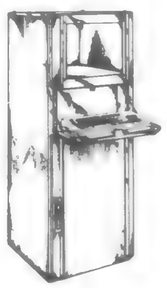
349,691
DATA INPUT MACHINE FOR A TELEVISION MONITOR
Hiromi Takeichi, and Hiroshi Date, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 29, 1992, Ser. No. 889,751
Claims priority, application Japan, Dec. 21, 1991, 3-37540
Term of patent 14 years
U.S. Cl. D14—100



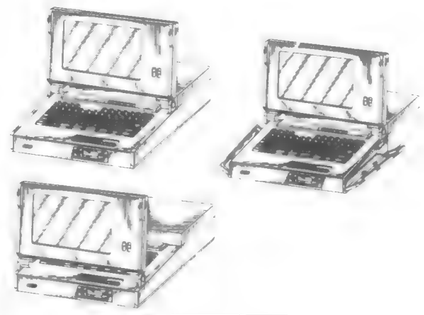
349,692
GRIP HELD DATA ENTRY COMPUTER HAVING A PLURALITY OF AUTOMATIC IDENTIFICATION READERS AND MODIFIED DISPLAY
Rajendra Kumar, and John W. Morrison, II, both of Akron, Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio
Filed May 7, 1993, Ser. No. 8,119
Term of patent 14 years
U.S. Cl. D14—116



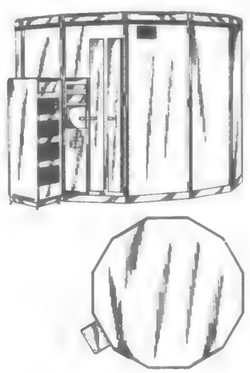
349,693
HOUSING FOR ENCLOSING A PERSONAL COMPUTER
Ansgar Brossardt, Krailling, Fed. Rep. of Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany
Filed Mar. 12, 1990, Ser. No. 492,867
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1989, M8906401.1
Term of patent 14 years
U.S. Cl. D14—102



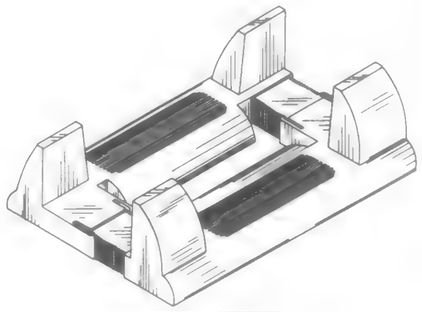
349,694
PORTABLE COMPUTER
Shingo Takimoto, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan
Filed Jul. 27, 1992, Ser. No. 919,130
Claims priority, application Japan, Feb. 27, 1992, 4-5524
Term of patent 14 years
U.S. Cl. D14—106



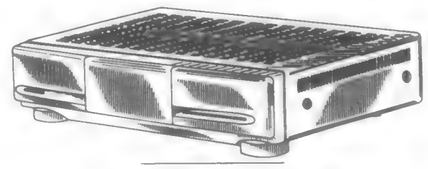
349,695
CABINET FOR ROBOTICS LIBRARY SYSTEM FOR HANDLING DATA STORAGE CARTRIDGES FOR A COMPUTER SYSTEM
Steven R. Aaker; Jorgen Frandsen, both of Louisville; Ronald W. Korngiebel, Broomfield, and Gregory D. Volan, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Dec. 28, 1992, Ser. No. 3,038
Term of patent 14 years
U.S. Cl. D14—107



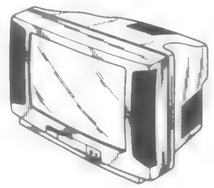
349,696
ADJUSTABLE COMPUTER STAND
Edward L. Hames, Peterborough, N.H., assignor to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Sep. 16, 1992, Ser. No. 948,854
Term of patent 14 years
U.S. Cl. D14—114



349,697
SATELLITE COMMUNICATION RECEIVING DEMODULATOR
Yoshio Fujino, Kobe, Japan, assignor to DX Antenna Company Limited, Kobe, Japan
Filed Apr. 10, 1992, Ser. No. 866,543
Term of patent 14 years
U.S. Cl. D14—125

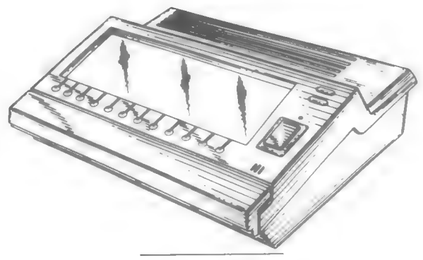


349,698
TELEVISION RECEIVER
Tae B. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 26, 1993, Ser. No. 5,199
Claims priority, application Japan, Sep. 17, 1992, 15600/1992
Term of patent 14 years
U.S. Cl. D14—126

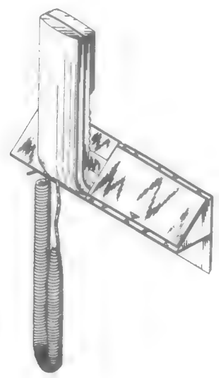


VOL 1165 ISS 3 AG 16 1994 UMI

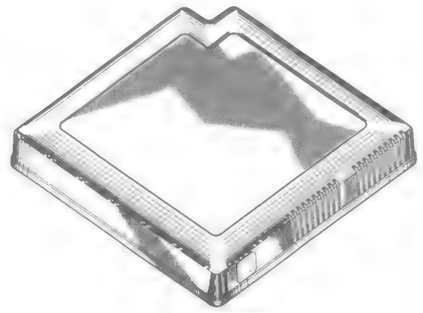
349,699
TELEPHONE ANSWERING AND VOICE MESSAGING MACHINE
Ronen Sacher, Glenrock; Tamir T. Friedrich, Ramsey, both of N.J., and Abraham Leibson, Hollcong, Pa., assignors to Bogen Communications, Inc., Ramsey, N.J.
Filed May 17, 1993, Ser. No. 8,480
Term of patent 14 years
U.S. Cl. D14—141



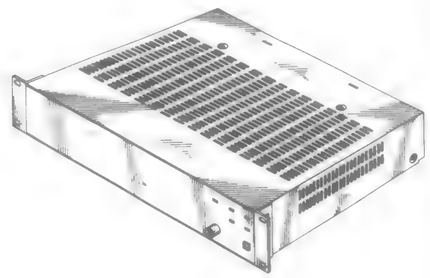
349,700
TELEPHONE WITH A HOLDER
Martin Iseli, Bern; Christine Emmert, Solothurn, and Hans-Rudolf Reber, Günsberg, all of Switzerland, assignors to Bang & Ollufsen Holding A/S, Stuer, Denmark
Continuation of Ser. No. 775,242, Oct. 10, 1991, abandoned. This application Jun. 21, 1993, Ser. No. 10,651
Claims priority, application Denmark, Jun. 17, 1991, MA 0632 1991
Term of patent 14 years
U.S. Cl. D14—142



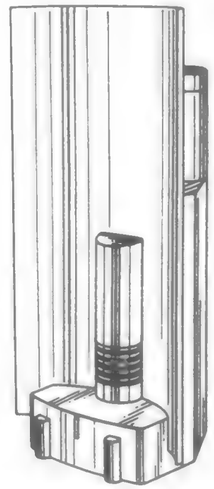
349,701
HOUSING FOR FIXED CELLULAR TELEPHONE
Scott D. Beutler, Barrington; Jaime M. Narea, Westmont; Albert L. Nagele, Wilmette; Daniel K. Elekman, Buffalo Grove, and Ricardo S. Blanco, Melrose Park, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 12, 1993, Ser. No. 5,786
Term of patent 14 years
U.S. Cl. D14—149



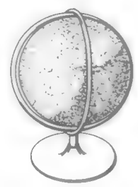
349,702
AMPLIFIER
Noriyuki Daichyo, Takarazuka, Japan, assignor to Toa Kabushiki Kaisha, Kobe, Japan
Filed Jun. 2, 1992, Ser. No. 891,476
Term of patent 14 years
U.S. Cl. D14—198



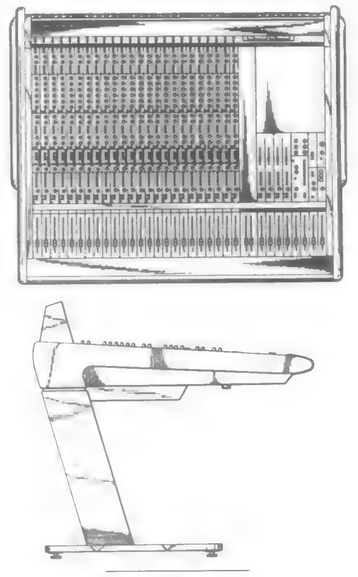
349,703
SPEAKER SYSTEM
Tetsuhisa Kawamoto, Misato, Japan, assignor to Aiwa Co., Ltd., Tokyo, Japan
Filed Oct. 15, 1992, Ser. No. 470
Claims priority, application Japan, May 25, 1992, 4-15152
Term of patent 14 years
U.S. Cl. D14—211



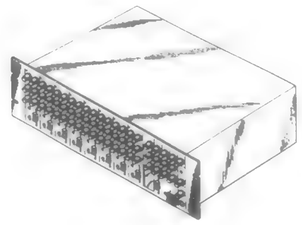
349,704
LOUD SPEAKER ENCLOSURE
Tun S. Tsing, 3270 S. Pineridge, Kissimmee, Fla. 34746
Filed Nov. 18, 1992, Ser. No. 1,586
Term of patent 14 years
U.S. Cl. D14—216



349,705
AUDIO MIXER
Masafumi Ito, Tokyo; Koji Suzuki, Tokorozawa; Shigeru Hasegawa, Kodaira, and Katsuhiro Takashima, Yokohama, all of Japan, assignors to Teac Corporation, Musashino, Japan
Filed Apr. 9, 1990, Ser. No. 507,177
Claims priority, application Japan, Oct. 9, 1989, 1-36863
Term of patent 14 years
U.S. Cl. D14—217

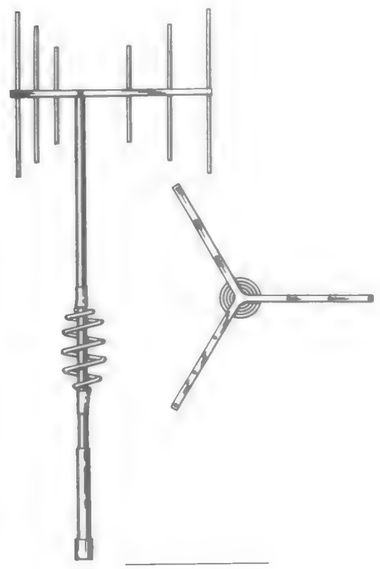


349,706
AUDIO MIXER
Masafumi Ito, Nakano, and Shigeru Hasegawa, Kodaira, both of Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Feb. 27, 1992, Ser. No. 843,979
Claims priority, application Japan, Sep. 2, 1991, 3-26427
Term of patent 14 years
U.S. Cl. D14—217

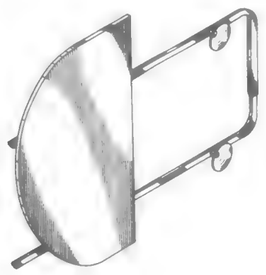


VOL 1165 ISS 3 AG 16 1994 UMI

349,707
MOBILE GROUND PLANE ANTENNA
Aaron R. Drake, 20109 Shady Meadow Way, Newalla, Okla. 74857
Filed May 21, 1992, Ser. No. 886,464
Term of patent 14 years
U.S. Cl. D14—233



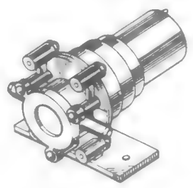
349,708
SUN SCREEN FOR USE WITH A TELEVISION
Michael A. Henson, 191 Haynes Rd., Marion, N.C. 28752
Filed Nov. 20, 1992, Ser. No. 1,695
Term of patent 14 years
U.S. Cl. D14—239



349,709
COMMUNICATIONS WORKSTATION
Thomas M. Dair, Valley Cottage, N.Y.; Daniel J. Formosa, Montvale, N.J., and Stuart H. Lee, New York, N.Y., assignors to V Band Corporation, Elmsford, N.Y.
Filed Jul. 30, 1993, Ser. No. 11,285
Term of patent 14 years
U.S. Cl. D14—241



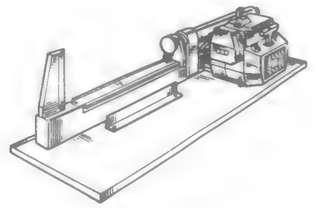
349,710
GEAR PUMP
Kazuo Moro, 55, Higashiasakawa-machi, Hachioji-shi, Tokyo, Japan
Filed Apr. 28, 1989, Ser. No. 345,348
Term of patent 14 years
U.S. Cl. D15—7



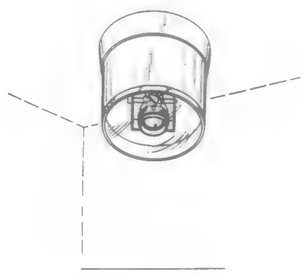
349,711
CART FOR LINE STRIPER
Anthony J. Torntore, Bloomington, and James K. Barnett, Cottage Grove, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Mar. 3, 1992, Ser. No. 845,438
Term of patent 14 years
U.S. Cl. D15—13



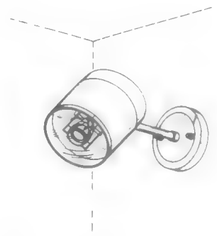
349,712
COMBUSTION ENGINE DRIVEN WOOD SPLITTING MACHINE
Jerzy Janczak, S:t Mickelsgatan, Sweden, assignor to Jonsered Power Products AB, Partille, Sweden
Filed Apr. 30, 1993, Ser. No. 7,675
Claims priority, application Sweden, Nov. 4, 1992, 92-2317
Term of patent 14 years
U.S. Cl. D15—127



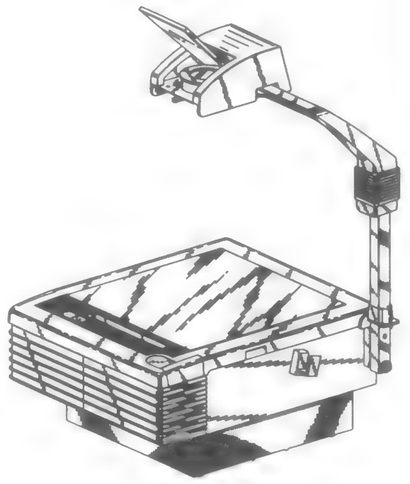
349,713
SURVEILLANCE CAMERA
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company Ltd., Japan
Filed May 6, 1992, Ser. No. 879,219
Claims priority, application Japan, Nov. 18, 1991, 3-34739
Term of patent 14 years
U.S. Cl. D16—203



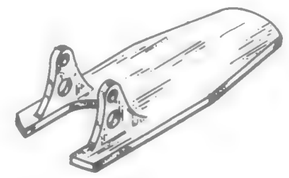
349,714
SURVEILLANCE CAMERA
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company Ltd., Japan
Filed May 6, 1992, Ser. No. 879,222
Claims priority, application Japan, Nov. 18, 1991, 3-34740
Term of patent 14 years
U.S. Cl. D16—203



349,715
TRANSMISSIVE TYPE OVERHEAD PROJECTOR
Michael E. Darland, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 22, 1992, Ser. No. 2,321
Term of patent 14 years
U.S. Cl. D16—232

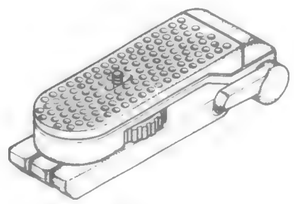


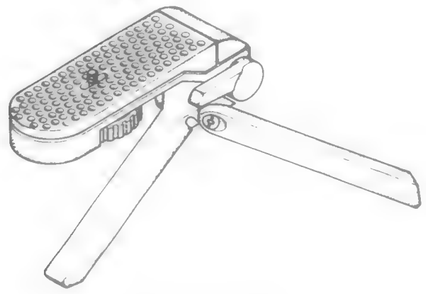
349,716
FOOT PAD FOR A MONO POD CAMERA SUPPORT
Dave O'Farrill, 530 Pine St., and Ralph S. Colombo, 817 Kern St., both of Chico, Calif. 95928
Filed Oct. 5, 1992, Ser. No. 30
Term of patent 14 years
U.S. Cl. D16—242



VOL 1165 ISS 3 AG 16 1994 UMI

349,717
CAMERA TRIPOD
M. Akaike, Tokyo, and H. Usui, Tama, both of Japan, assignors to Hakuba Photo Industry Co., Ltd., Tokyo, Japan
Filed Mar. 4, 1993, Ser. No. 5,440
Term of patent 14 years
U.S. Cl. D16—244

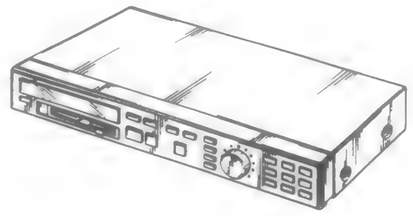




349,718
TRIPOD HEAD
Chien S. Chen, No. 10, Lane 20, Chung Yuan Rd., Lu Chou Hsiang, Taipei Hsien, Taiwan
Filed Nov. 16, 1992, Ser. No. 1,496
Term of patent 14 years
U.S. Cl. D16—245



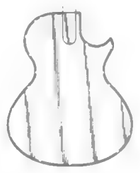
349,719
ELECTRONIC CONTROLLER UNIT FOR A PIANO
Kunio Ohta, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Jul. 20, 1992, Ser. No. 918,381
Claims priority, application Japan, Jan. 21, 1992, 4-1166
Term of patent 14 years
U.S. Cl. D17—9



349,720
GUITAR HEAD STOCK
Ki Y. Kim, Viersen, Fed. Rep. of Germany, assignor to Young Chang Akki (Europe) GmbH, Viersen, Fed. Rep. of Germany
Filed Feb. 26, 1992, Ser. No. 841,445
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 9106079
Term of patent 14 years
U.S. Cl. D17—20



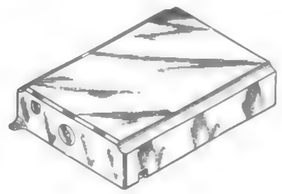
349,721
GUITAR BODY
John T. Riboloff, Antioch, Tenn., assignor to Gibson Guitar Corp., Nashville, Tenn.
Filed Jan. 15, 1993, Ser. No. 3,934
Term of patent 14 years
U.S. Cl. D17—20



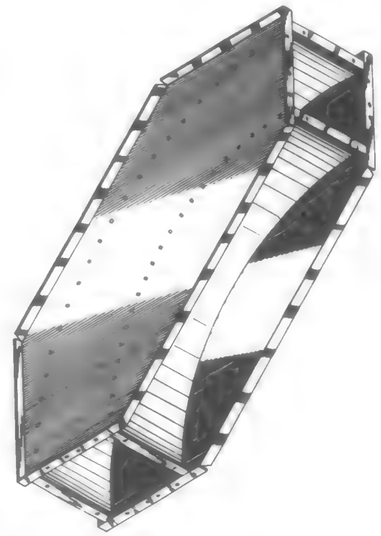
349,722
ELECTRONIC CALCULATOR
Akihiro Miyahara, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,485
Claims priority, application Japan, Apr. 7, 1992, 4-10073
Term of patent 14 years
U.S. Cl. D18—7



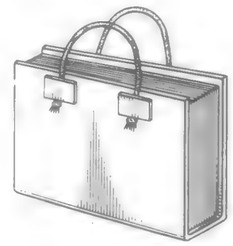
349,723
INK CARTRIDGE
Toshihiko Ujita, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 620,288, Nov. 30, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 5,424
Claims priority, application Japan, Jun. 6, 1990, 2-19167
The portion of the term of this patent subsequent to Dec. 22, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—12



349,724
CORNER CONDUIT FOR A PNEUMATICALLY-PROPELLED CARRIER SYSTEM
Victor J. Vogel, Oak Ridge, N.J., assignor to Mosler Inc., Hamilton, Ohio
Division of Ser. No. 948,769, Sep. 14, 1992. This application Dec. 22, 1993, Ser. No. 16,722
Term of patent 14 years
U.S. Cl. D18—35



349,725
BOOK COVER WITH HANDLES
Ron Roy, 13030 Moor Park, Studio City, Calif. 91604
Filed Nov. 4, 1992, Ser. No. 1,158
Term of patent 14 years
U.S. Cl. D19—26

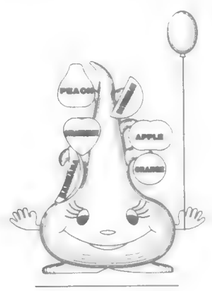


VOL 1165 ISS 3 AG 16 1994 UMI

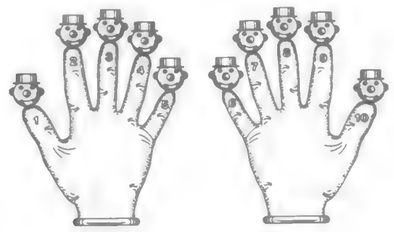
349,726
CARICATURE PORTION FOR A WRITING INSTRUMENT
George C. Radmilovic, Parma; Peter F. Bertolo, Chesterland, and Mario G. Bertolo, South Euclid, all of Ohio, assignors to Mr. Memo Products, Inc., South Euclid, Ohio
Continuation-in-part of Ser. No. 637,073, Jan. 3, 1991, Pat. No. 5,158,384. This application Oct. 26, 1992, Ser. No. 845
Term of patent 14 years
U.S. Cl. D19—54



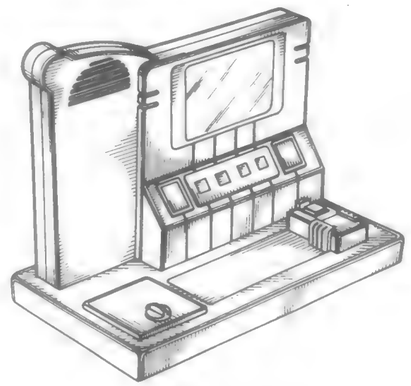
349,727
EDUCATIONAL TOY FIGURE
Lisa L. Burns, 226 Old Oaken Bucket Rd., Norwell, Mass. 02061
Filed Feb. 3, 1992, Ser. No. 829,179
Term of patent 14 years
U.S. Cl. D19—59



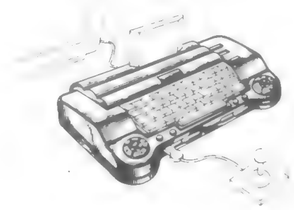
349,728
SET OF EDUCATIONAL CHARACTER PUPPETS
Marjorie Cheever, 314 N. Maple St., Townsend, Mont. 59644
Filed Mar. 29, 1993, Ser. No. 6,515
Term of patent 14 years
U.S. Cl. D19—59



349,729
EDUCATIONAL TOY
Wai M. Wong, Shatin, Hong Kong, assignor to Vtech Industries, Inc., Wheeling, Ill.
Filed Mar. 10, 1992, Ser. No. 849,144
Claims priority, application United Kingdom, Nov. 6, 1991, 2018810
Term of patent 14 years
U.S. Cl. D19—60



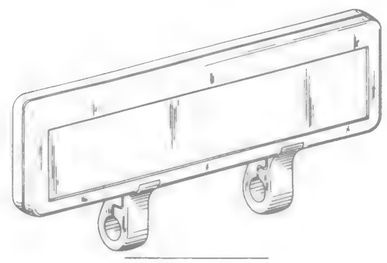
349,730
HOUSING FOR ELECTRONIC INSTRUCTIONAL GAME APPARATUS
Kwok K. Fung, Chai Wan, Hong Kong, assignor to Vtech Industries, Inc., Wheeling, Ill.
Filed Nov. 13, 1992, Ser. No. 1,412
Term of patent 14 years
U.S. Cl. D19—60



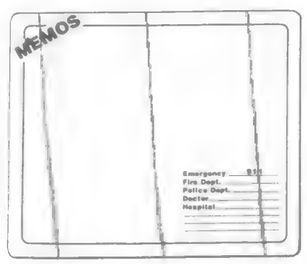
349,731
CLIP BOARD
Steven Leveen; Lori G. Leveen, both of Boca Raton; Israel Pycher, Plantation; Christopher Roncone, Lake Worth, and Laura McColskey, Palm Beach Gardens, all of Fla., assignors to Levenger Company, Delray Beach, Fla.
Filed Aug. 18, 1992, Ser. No. 932,036
Term of patent 14 years
U.S. Cl. D19—88



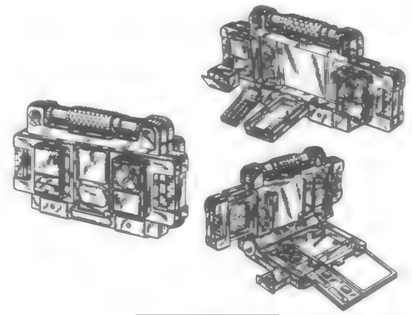
349,732
ADVERTISING SIGNHOLDER FOR TROLLEYS
Petrus M. Bogaards, 33, Pinaskade, NL-2725, En Zoetermeer, Netherlands
Filed Jul. 21, 1993, Ser. No. 10,872
Term of patent 14 years
U.S. Cl. D20—40



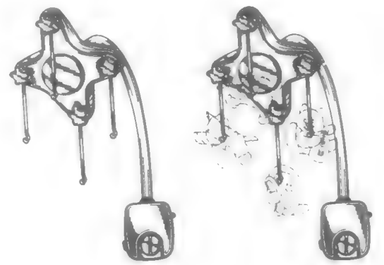
349,733
MAGNETIC MEMO BOARD
Roy M. Svee, Bloomington, Minn., assignor to J. B. Goodhouse, Inc., Minnetonka, Minn.
Filed Jun. 17, 1991, Ser. No. 716,338
Term of patent 14 years
U.S. Cl. D20;42



349,734
ACTIVITY TOY
Martin J. Richards, Nottingham, England, assignor to Britains Petite Limited, United Kingdom
Filed Apr. 9, 1992, Ser. No. 885,622
Claims priority, application United Kingdom, Oct. 23, 1991, 2018492; Oct. 23, 1991, 2018493; Oct. 23, 1991, 2018494
Term of patent 14 years
U.S. Cl. D21—59

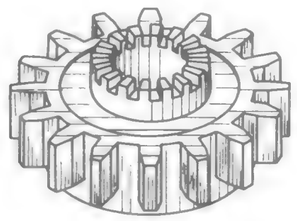


349,735
MOBILE FOR CRIB
Joseph C. Cacciola, Hudson, Ohio; Elizabeth Knight, Westwood, Mass., and Jeffery G. Martin, Hudson, Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Feb. 4, 1993, Ser. No. 4,430
Term of patent 14 years
U.S. Cl. D21—63

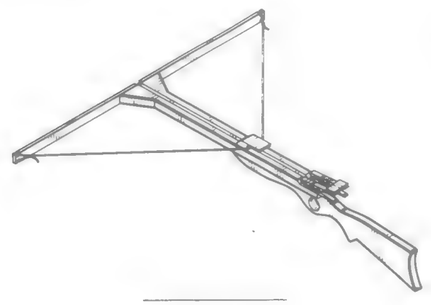


VOL 1165 ISS 3 AG 16 1994 UMI

349,736
TOY GEAR WHEEL
Jan Hatting, Vejle, Denmark, assignor to Interlego, A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,824
Term of patent 14 years
U.S. Cl. D21—108



349,737
TOY CROSS BOW
Edward G. Bartling, 3879 S. Hallmark Dr., West Valley City, Utah 84119
Filed Feb. 22, 1993, Ser. No. 5,075
Term of patent 14 years
U.S. Cl. D21—145



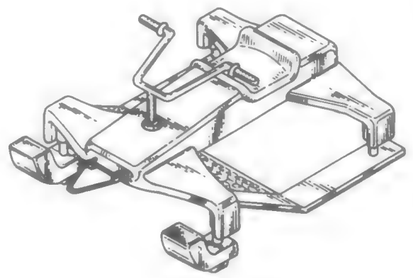
349,738
BOUNDARY BARRIER FOR A SPORTS PLAYING FIELD
Robert O. Naegele, III, Minneapolis, and James E. Becker, Chaska, both of Minn., assignors to In-Line Sport Systems, Inc., Minneapolis, Minn.
Filed Sep. 20, 1993, Ser. No. 13,173
Term of patent 14 years
U.S. Cl. D21—199



349,739
GOLF BALL RETRIEVER
John T. Kahl, Jr., Baltimore, Md., assignor to Down Under, L.C., Towson, Md.
Filed Oct. 2, 1992, Ser. No. 155
Term of patent 14 years
U.S. Cl. D21—206



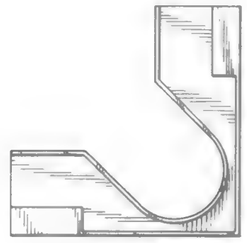
349,740
WATER SKI VEHICLE
Charles J. Tabor, 3520 Burns Trail, Chattanooga, Tenn. 37419
Filed Jan. 12, 1993, Ser. No. 3,653
Term of patent 14 years
U.S. Cl. D21—228



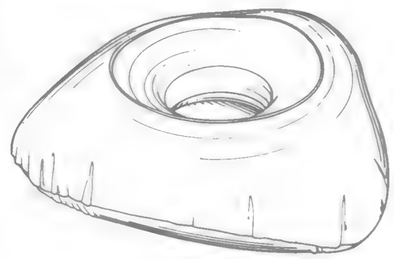
349,741
BODY BOARD
Jonothon M. W. McIntyre, 6733 Hinds Ave., N. Hollywood, Calif. 91606
Filed Jun. 4, 1993, Ser. No. 9,058
Term of patent 14 years
U.S. Cl. D21—228



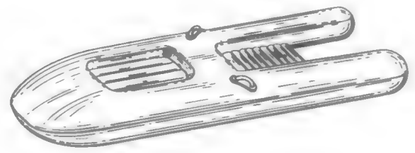
349,742
BILLIARD TABLE POCKET
Jeffrey C. Tyne, R.D. #10, Box 10430, Newton, N.J. 07860
Filed Jan. 25, 1993, Ser. No. 4,203
Term of patent 14 years
U.S. Cl. D21—232



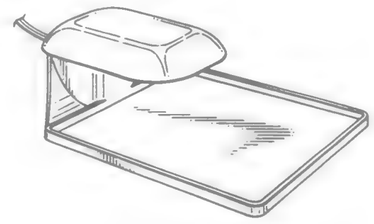
349,743
TOWABLE WATERCRAFT
Walter W. Hare, Bellevue, Wash., assignor to Pacific Market, Inc., Seattle, Wash.
Filed Oct. 20, 1992, Ser. No. 609
Term of patent 14 years
U.S. Cl. D21—237



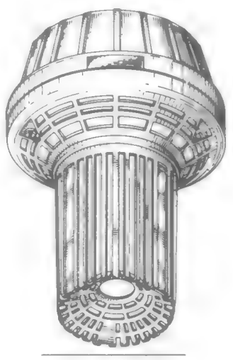
349,744
RECREATIONAL FLOTATION DEVICE FOR A PLURALITY OF USERS
Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Sep. 2, 1993, Ser. No. 12,509
Term of patent 14 years
U.S. Cl. D21—237



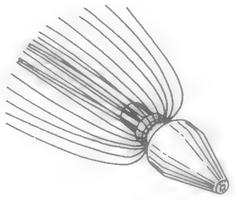
349,745
INSECT TRAP
Alan Vaudry, 98-C Burnside Road West, Victoria, British Columbia, Canada V9A 1B5
Filed Feb. 18, 1992, Ser. No. 838,474
Term of patent 14 years
U.S. Cl. D22—122



349,746
INSECT KILLER
Sal G. DeYoreo, Andover, Mass., assignor to Armatron International, Inc., Melrose, Mass.
Filed Jan. 27, 1993, Ser. No. 4,046
Term of patent 14 years
U.S. Cl. D22—122



349,747
FISHING LURE
Eugene M. Patrin, Wyoming, Minn., assignor to Timothy Heasley, Chisago City, Minn., a part interest
Filed May 4, 1993, Ser. No. 7,829
Term of patent 14 years
U.S. Cl. D22—128



VOL 1165 ISS 3 AG 16 1994 UMI

349,748
ILLUMINATED FISHING POLE
Raymond A. Lacero, 1505 La Fonda-Apt. 4012-Box 89, Las Cruces, N. Mex. 88001
Filed May 22, 1992, Ser. No. 886,489
Term of patent 14 years
U.S. Cl. D22—139



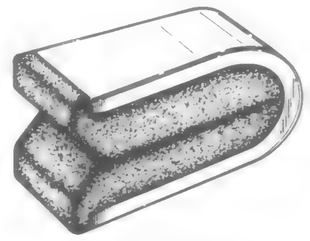
349,749
LINE GUIDE FOR FISHING RODS
Shigeru Yamamoto, and Shuichi Kimura, both of Higashikurume, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 28, 1992, Ser. No. 875,265
Claims priority, application Japan, Oct. 30, 1991, 3-32919; Mar. 23, 1992, 4-8129
Term of patent 14 years
U.S. Cl. D22—143



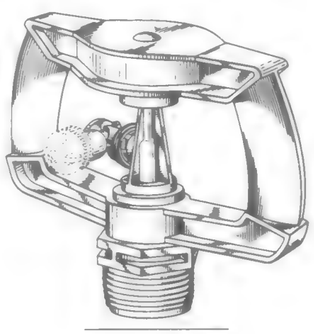
349,750
ROLLER GUIDE FOR A FISHING ROD
Moon H. Boo, 367-2 Songnai-Dong, Nam-Ku, Bucheon-City, Rep. of Korea
Filed Aug. 26, 1992, Ser. No. 935,751
Claims priority, application Rep. of Korea, Apr. 2, 1992, 5026/1992
Term of patent 14 years
U.S. Cl. D22—143



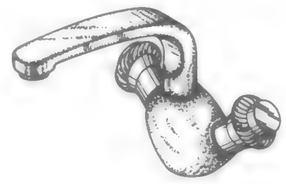
349,751
FISHING POLE HOLDER
Dennis J. Ruff, R.D. #3, Box 360AA, Bainbridge, N.Y. 13733
Filed Apr. 27, 1992, Ser. No. 874,572
Term of patent 14 years
U.S. Cl. D22—147



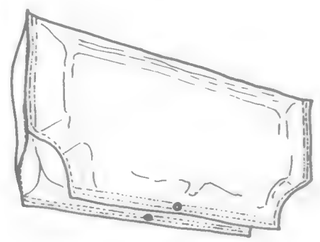
349,752
ROTATING SPINNER IRRIGATION SPRINKLER
Hans D. Christen, La Verne, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Oct. 19, 1993, Ser. No. 14,452
Term of patent 14 years
U.S. Cl. D23—214



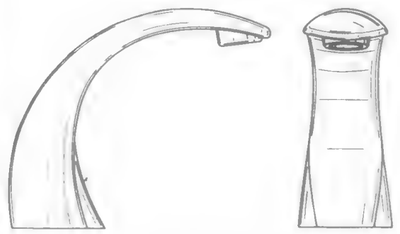
349,753
FAUCET
Jenn-Yuh Chen, Taipei, Taiwan, assignor to Hocheng Pottery Mfg. Co., Ltd., Taipei, Taiwan
Filed Mar. 26, 1992, Ser. No. 858,353
Term of patent 14 years
U.S. Cl. D23—241



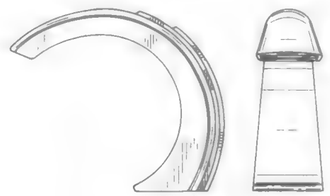
349,754
INSULATED COVER FOR A BACKFLOW PREVENTION WATER VALVE
Gurdeep S. Pawar, and Gloria A. Mercado, both of 33 Tennessee St., Vallejo, Calif. 94590
Filed Nov. 14, 1991, Ser. No. 792,766
Term of patent 14 years
U.S. Cl. D23—249



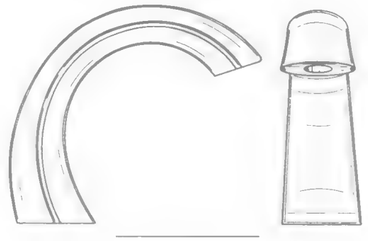
349,755
FAUCET SPOUT
Sydney Altman, 655 N. La Peer Dr., Los Angeles, Calif. 90069
Filed Nov. 13, 1992, Ser. No. 1,420
Term of patent 14 years
U.S. Cl. D23—255



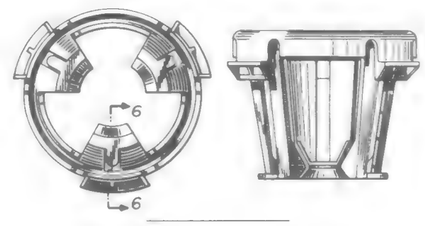
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FAUCET SPOUT
Sydney Altman, 655 N. La Peer Dr., Los Angeles, Calif. 90069
Filed Nov. 13, 1992, Ser. No. 1,436
Term of patent 14 years
U.S. Cl. D23—255



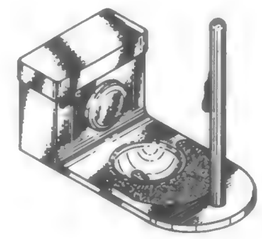
349,757
FAUCET SPOUT
Sydney Altman, 655 North La Peer Dr., Los Angeles, Calif. 90069
Filed Nov. 17, 1992, Ser. No. 1,530
Term of patent 14 years
U.S. Cl. D23—255



349,758
COLLET
Raymond L. Hallbach, Simpsonville, S.C.; Robert C. Dreisig, West Chester, and David I. McDonald, Cincinnati, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Apr. 23, 1992, Ser. No. 873,043
Term of patent 14 years
U.S. Cl. D23—259



349,759
SANITARY WATER CLOSET
Usman M. Baig, 5 Danae Ct., Holmdel, N.J. 07733
Filed Nov. 20, 1992, Ser. No. 1,709
Term of patent 14 years
U.S. Cl. D23—295

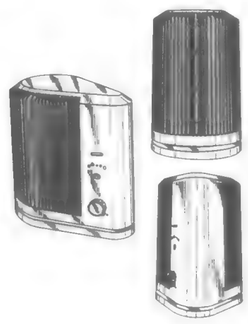


VOL 1165 ISS 3 AG 16 1994 UMI

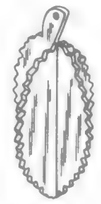
349,760
COMBINED HEATED AND ILLUMINATED TOILET SEAT
Zachrey Schlumpf, 1103 Linden St., Woodbridge, Va. 22191
Filed May 8, 1992, Ser. No. 880,336
Term of patent 14 years
U.S. Cl. D23—311



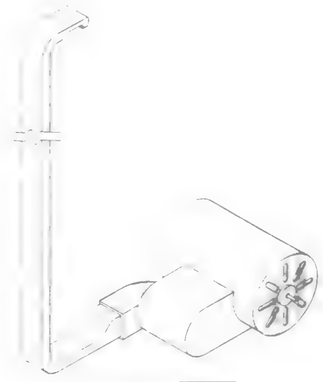
349,761
HOUSING FOR AN ELECTRIC HEATER
Joseph M. Canning, Cohasset, Mass., assignor to Holmes Products Corp., Milford, Mass.
Filed Apr. 13, 1993, Ser. No. 7,027
Term of patent 14 years
U.S. Cl. D23—337



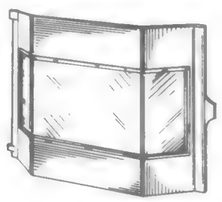
349,762
PINE CONE AIR FRESHENER
John O. El-Assir, 1622 Brownstone, Apt. 324, Toledo, Ohio 43615
Filed Nov. 2, 1993, Ser. No. 14,770
Term of patent 14 years
U.S. Cl. D23—367



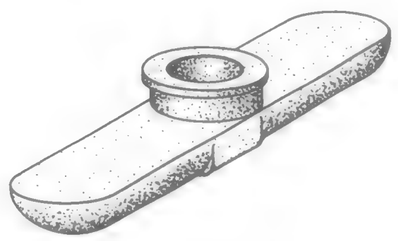
349,763
ROOF-MOUNTED SMOKE EXHAUST FOR USE IN REMOVING CIGARETTE SMOKE FROM THE INTERIOR OF AN AUTOMOBILE
Dean R. Cromer, 921 S. Davis D-60, Jerome, Id. 83338
Filed Jan. 21, 1993, Ser. No. 3,916
Term of patent 14 years
U.S. Cl. D23—371



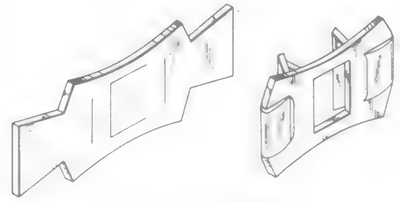
349,764
WOOD STOVE DOOR WITH SINGLE WINDOW
Oliver J. Whitfield, 543 Vicmar Dr., Bow, Wash. 98232
Filed Aug. 9, 1991, Ser. No. 743,557
Term of patent 14 years
U.S. Cl. D23—347



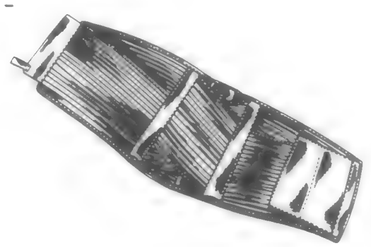
349,765
FEEDING TUBE RETAINER
Ronald D. Russo, Barrington, R.I., assignor to Sandoz Ltd., Basel, Switzerland
Filed Apr. 24, 1992, Ser. No. 874,329
Term of patent 14 years
U.S. Cl. D24—128



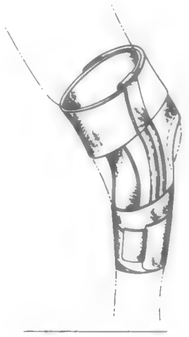
349,766
HAMMER TOE CORRECTIVE PAD
Bruce Frankel, 98 Ottawa Road S., Marlboro, N.J. 07726
Filed Aug. 3, 1992, Ser. No. 923,178
Term of patent 14 years
U.S. Cl. D24—189



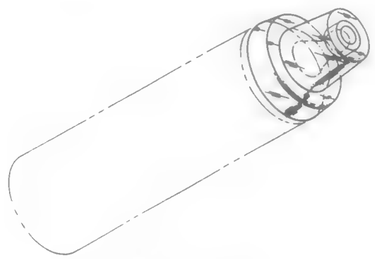
349,767
RETENTION BELT
Francois Courtet, Saint Bonnet les Oules, France, assignor to Etsthuasne & Cie, Saint Etienne, France
Filed Jun. 3, 1992, Ser. No. 892,515
Claims priority, application France, Dec. 6, 1991, 917.955
Term of patent 14 years
U.S. Cl. D24—190



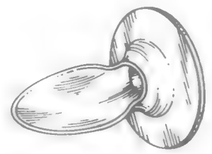
349,768
HOCK JOINT BRACE
Elizabeth Rabe, 1129 N. Everett St., Glendale, Calif. 91207
Filed Dec. 11, 1992, Ser. No. 2,523
Term of patent 14 years
U.S. Cl. D24—190



349,769
PROTECTIVE CAP FOR A BABY BOTTLE
Richard D. Green, 12979 Culver Blvd., Los Angeles, Calif. 90066
Filed Nov. 2, 1992, Ser. No. 997
Term of patent 14 years
U.S. Cl. D24—197

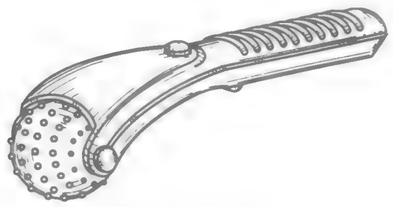


349,770
BABY FOOD DISPENSER
William R. Jarnagin, Manteca, Calif., assignor to Larry D. Madoski, Manteca, Calif., a part interest
Filed Mar. 2, 1992, Ser. No. 844,692
Term of patent 14 years
U.S. Cl. D24—198



VOL 1165 ISS 3 AG 16 1994 UMI

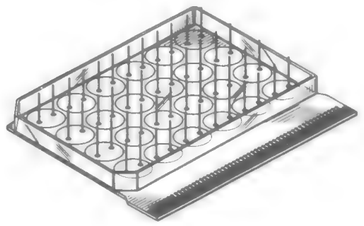
349,771
MASSAGER
Luc M. D. Heiligenstein, Chicago; Peter S. Langmar, Kenilworth, and Stephen B. Melamed, Chicago, all of Ill., assignors to Sunbeam Corporation, Fort Lauderdale, Fla.
Filed May 26, 1993, Ser. No. 8,794
Term of patent 14 years
U.S. Cl. D24—211



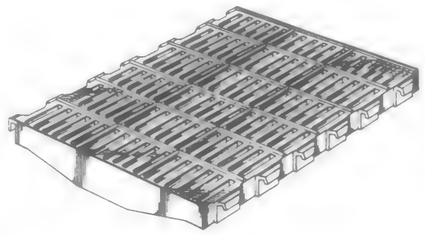
349,772
MASSAGER
Yoshikiyo Yamasaki, Sakai, and Shinichiro Fujimoto, Osaka, both of Japan, assignors to Kabushiki Kaisha Japan Health and Kabushiki Kaisha Fuji Iryoki, both of Osaka, Japan
Filed Jun. 25, 1992, Ser. No. 904,870
Term of patent 14 years
U.S. Cl. D24—215



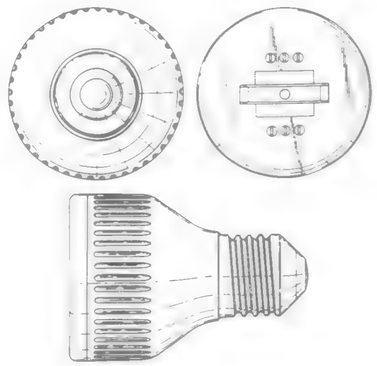
349,773
LID FOR A CELL CULTURE TRAY
Patricia J. Malin, Palo Alto, and Oskar W. Huber, Belmont, both of Calif., assignors to Oncotherapeutics, Palo Alto, Calif.
Filed Jul. 29, 1992, Ser. No. 923,157
Term of patent 14 years
U.S. Cl. D24—224



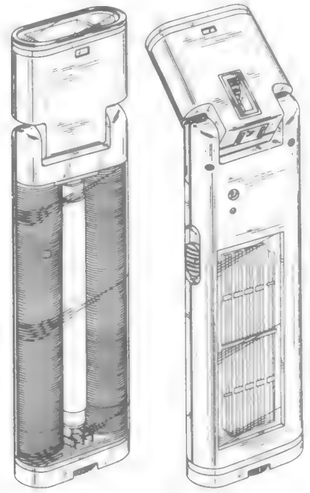
349,774
FLOORING GRATE
Bjarne Kongsgaard, Ikast, Denmark, assignor to Ikadan System A/S, Ikast, Denmark
Filed Aug. 17, 1992, Ser. No. 929,538
Term of patent 14 years
U.S. Cl. D25—156



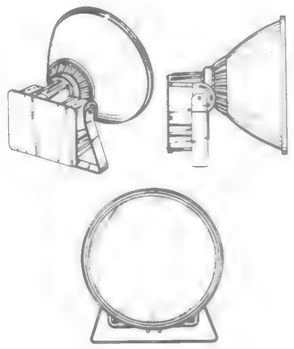
349,775
FLUORESCENT LAMP ADAPTER BASE
Ram Shalvi, Hong Kong, Hong Kong, assignor to Solar Wide Industrial Ltd., Hong Kong, Hong Kong
Filed Apr. 2, 1992, Ser. No. 862,277
Claims priority, application United Kingdom, Oct. 4, 1991, 2018007
Term of patent 14 years
U.S. Cl. D26—3



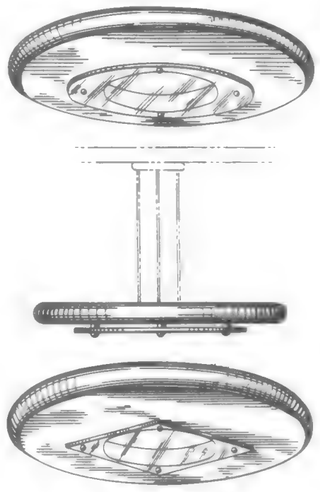
349,776
COMBINED FLUORESCENT LAMP AND FLASHLIGHT
Se K. Yuen, Hong Kong, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jul. 2, 1992, Ser. No. 908,234
Claims priority, application United Kingdom, May 21, 1992, 2023028
Term of patent 14 years
U.S. Cl. D26—37



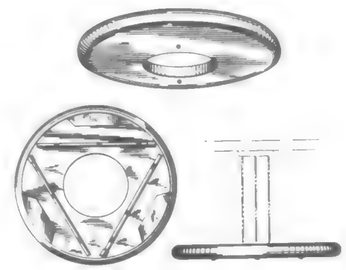
349,777
FLOOD LIGHT
Rick M. Kelly, and Herbert A. Fouke, both of Newark, Ohio, assignors to Holophane Lighting, Inc., Newark, Ohio
Filed Jun. 11, 1992, Ser. No. 896,348
Term of patent 14 years
U.S. Cl. D26—63



349,778
CEILING LIGHTING FIXTURE
Dennis E. Johnson, Grafton, and Scott P. Malmsten, West Bend, both of Wis., assignors to SPI Lighting, Inc., Mequon, Wis.
Filed Oct. 15, 1992, Ser. No. 468
Term of patent 14 years
U.S. Cl. D26—86

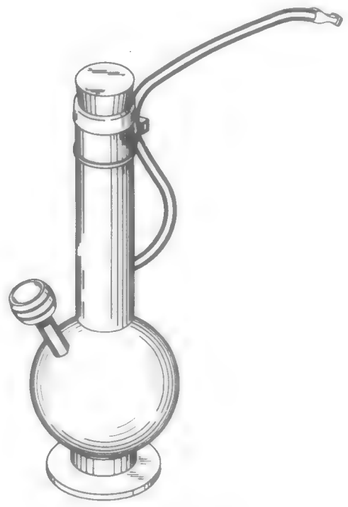


349,779
LIGHTING FIXTURE MOUNTABLE ON AN OVERHEAD SUPPORT
Dennis E. Johnson, Grafton, and Scott P. Malmsten, West Bend, both of Wis., assignors to SPI Lighting, Inc., Mequon, Wis.
Filed Oct. 15, 1992, Ser. No. 486
Term of patent 14 years
U.S. Cl. D26—88

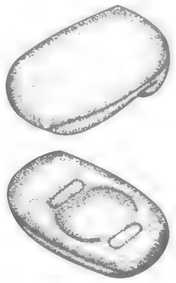


VOL 1165 ISS 3 AG 16 1994 UMI

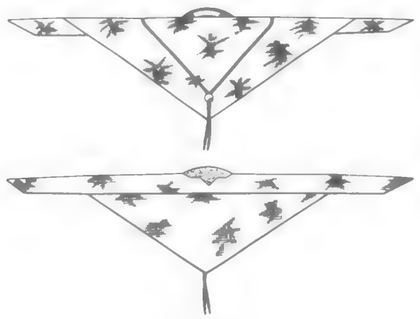
349,780
TOBACCO HOOKAH
Randolph A. Heine, Pinellas Park, Fla., assignor to New Tradition Pipe Company, Pinellas Park, Fla.
Filed Dec. 16, 1993, Ser. No. 16,483
Term of patent 14 years
U.S. Cl. D27—162



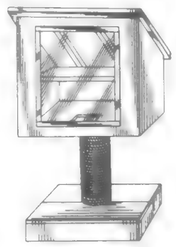
349,781
SOAP BAR
John C. Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 10, 1992, Ser. No. 866,682
Term of patent 14 years
U.S. Cl. D28—8.1



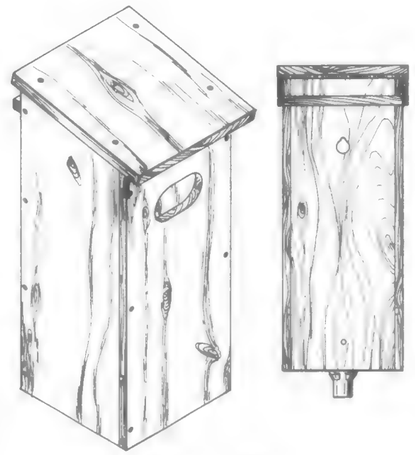
349,782
RESPIRATORY PROTECTION SCARF
Henry Cole, Unit 1, 28 South Island Place, London SW9 0DX, Great Britain
Filed Feb. 10, 1992, Ser. No. 835,735
Claims priority, application United Kingdom, Aug. 8, 1991, 2-016-549
Term of patent 14 years
U.S. Cl. D29—108



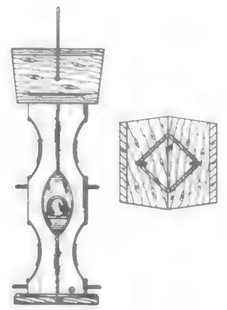
349,783
CAT HOUSE FOR CATS OR OTHER SMALL ANIMALS
Michael L. Berger, 4002 Blackpool Rd., Rockville, Md. 20853
Filed Feb. 26, 1992, Ser. No. 841,437
Term of patent 14 years
U.S. Cl. D30—108



349,784
COMBINED WOOD DUCK BOX AND NEST BOWL
Jeffrey T. Burns, Minneapolis, and Roman A. Kramer, Bloomington, both of Minn., assignors to RFG Outdoors, Robbinsdale, Minn.
Filed Jul. 7, 1992, Ser. No. 910,003
Term of patent 14 years
U.S. Cl. D30—110



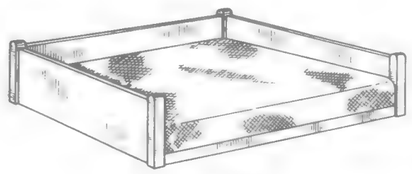
349,785
SQUARE TUBE BIRD FEEDER
Victor Fasino, 62 Oneida Ave., Landing, N.J. 07850
Filed Nov. 23, 1992, Ser. No. 1,732
Term of patent 14 years
U.S. Cl. D30—127



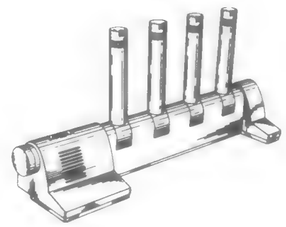
349,786
PET TOY
Joseph P. Markham, Lakewood, Colo., assignor to Bounce, Inc., Lakewood, Colo.
Filed Sep. 27, 1993, Ser. No. 13,549
Term of patent 14 years
U.S. Cl. D30—160



349,787
BED FOR PETS
Franklin McMahon, New York, N.Y., assignor to Univer International Corp., New York, N.Y.
Filed Nov. 2, 1992, Ser. No. 1,019
Term of patent 14 years
U.S. Cl. D30—118

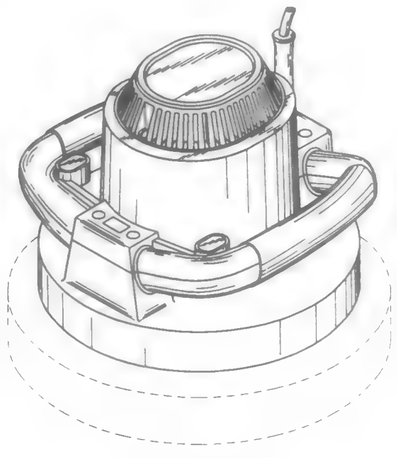


349,788
FOOTWEAR DRYER
Colette Laferriére, 664-B, Des Martinets, St-Lambert de Lóis Québec, Canada G0S 2W0, and Lise Laferriére, 199, Rang 4, St-Georges-de-Windsor Québec, Canada J0A 1J0
Filed Oct. 2, 1992, Ser. No. 89
Claims priority, application Canada, Apr. 3, 1992, 03-04-92-8
Term of patent 14 years
U.S. Cl. D32—1

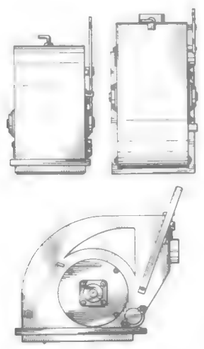


VOL 1165 ISS 3 AG 16 1994 UMI

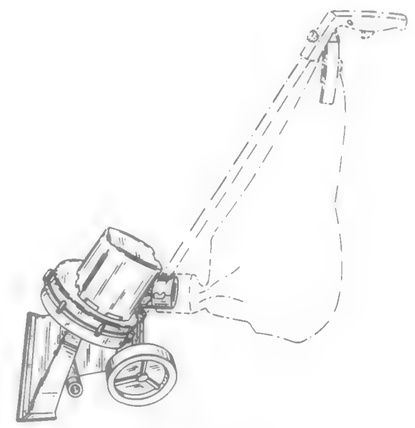
349,789
HOUSING FOR POLISHER
Roderick F. Bunyea, Westminster, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Nov. 24, 1992, Ser. No. 1,846
Term of patent 14 years
U.S. Cl. D32—19



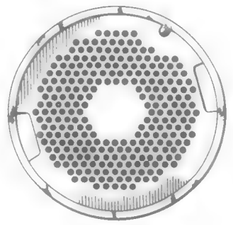
349,790
BLAST HEAD FOR AN ABRASIVE CLEANING MACHINE
Robert E. Hoover, 2837 Elsie Ave., Toledo, Ohio 43613
Filed Sep. 2, 1992, Ser. No. 939,627
Term of patent 14 years
U.S. Cl. D32—25



349,791
WHEELED TYPE SUCTION PRODUCING UNIT FOR VACUUM CLEANER
Robert C. Berfield, Jersey Shore, and Ronald F. Meland, Muncy, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.
Filed May 19, 1988, Ser. No. 196,087
Term of patent 14 years
U.S. Cl. D32—31



349,792
CLEANING TOOL FOR A MEAT GRINDER DYE
John E. Mulholland, 102 Buckshire Dr., Holland, Pa. 18966
Filed Feb. 8, 1991, Ser. No. 652,906
Term of patent 14 years
U.S. Cl. D32—35



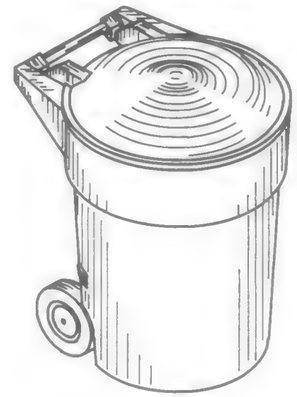
349,793
CARPET SWEEPER
Terry L. Zahuranec, Hudson, and Craig M. Saunders, Rocky River, both of Ohio, assignors to Royal Appliance Mfg. Co., Cleveland, Ohio
Filed Jul. 17, 1991, Ser. No. 731,705
The portion of the term of this patent subsequent to Apr. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—38



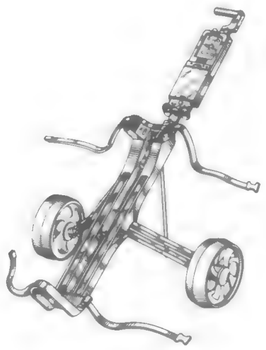
349,794
SPONGE
Alton L. Hayes, Jr., 1730 Murdock Rd., Dallas, Tex. 75217
Filed Jun. 15, 1992, Ser. No. 898,744
Term of patent 14 years
U.S. Cl. D32—40



349,795
WASTE CONTAINER
Charles D. Schauer, St. Petersburg; David H. M. Holihan, Seminole, and Michael Connors, St. Petersburg, all of Fla., assignors to City of St. Petersburg, St. Petersburg, Fla.
Filed Aug. 17, 1992, Ser. No. 930,917
Term of patent 14 years
U.S. Cl. D34—5

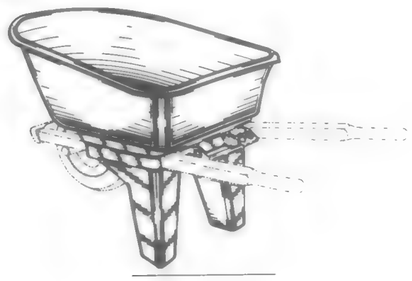


349,796
GOLF CART
Robert J. Wimberley, Houston, Tex., and Charles Y. Choi, Mt. Prospect, Ill., assignors to Ajay Leisure Products, Inc., Delevan, Wis.
Continuation of Ser. No. 974,743, Nov. 13, 1992, abandoned.
This application May 13, 1993, Ser. No. 8,289
Term of patent 14 years
U.S. Cl. D34—15

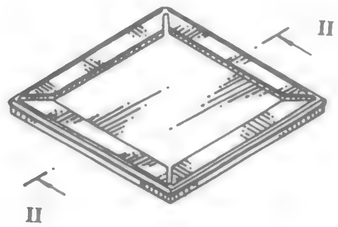


VOL 1165 ISS 3 AG 16 1994 UMI

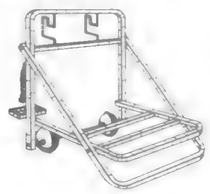
349,797
WHEELBARROW
Jonathan M. Daugherty, Wilkes-Barre, Pa., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Apr. 15, 1993, Ser. No. 7,128
Term of patent 14 years
U.S. Cl. D34—16



349,798
CORDED INSERTED PIECE FOR LOAD LIFTING PADS
Andrej Hude, Kranj, and Marko Benedik, Zabnica, both of Slovenia, assignors to Sava Kranj Industrija Gumijevih, Usnjenih in Kemicnih Izdelkov, Kranj, Slovenia
Filed Feb. 26, 1992, Ser. No. 846,450
Claims priority, application Yugoslavia, Aug. 26, 1991, M412/91
Term of patent 14 years
U.S. Cl. D34—28



349,799
BEACH CADDY
Donald A. Caldwell, 1145 Patricia Dr., Allentown, Pa. 18103; Rick J. Heller, 458 Edgemont Ave., Palmerton, Pa. 18071, and Robert A. Boehret, 1968 Latta St., Allentown, Pa. 18104
Filed Dec. 29, 1992, Ser. No. 3,126
Term of patent 14 years
U.S. Cl. D34—26



349,800
TRAILER JACK HOUSING
James W. Chambers, Rockford, Ill., assignor to Atwood Industries, Inc., Rockford, Ill.
Filed Jan. 11, 1993, Ser. No. 3,591
Term of patent 14 years
U.S. Cl. D34—31



349,801
STABILIZER JACK FOR VEHICLES
Jeffrey P. Few, West Hills, Calif., and Thomas Rumler, Bristol, Ind., assignors to Norco Industries, Inc., Compton, Calif.
Filed Sep. 27, 1993, Ser. No. 13,586
Term of patent 14 years
U.S. Cl. D34—31



349,802
VEHICLE LIFT
Shunji Isogai, Hekinan, Japan, assignor to Sugiyasu Industries Co., Ltd., Takahama, Japan
Filed Oct. 28, 1993, Ser. No. 14,691
Claims priority, application Japan, May 10, 1993, 5-13603
Term of patent 14 years
U.S. Cl. D34—31



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TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF AUGUST, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Lindberg, Pentti; and Ljokkoi, Risto, 5,338,451, Cl. 210-405.000.
A.M. Haire Truck Bodies, Inc.: *See*—
Haire, Darrell; K.; and Haire, Andrew R., 5,338,050, Cl. 280-476.100.
AB Volvo: *See*—
Pettersson, Rolf; Liden, Per-Åke; and Liljengren, John-Erik, 5,337,594, Cl. 72-446.000.
Abbanat, Darren: *See*—
Ding, Weidong; Ellestad, George A.; Abbanat, Darren; and Bernan, Valerie, 5,338,729, Cl. 514-27.000.
Abbott Biotech, Incorporated: *See*—
Gillies, Stephen D., 5,338,669, Cl. 435-69.100.
Abbott, Joan; Cangialosi, Richard; and Pethica, Brian A., to Electro-Biology, Inc. Electromagnetic bioresponse by selective spectral suppression in pulsed field stimulation. 5,338,286, Cl. 600-14.000.
Abbott, Kenneth E.; and Lyons, Patrick J., to Stripping Technologies, Inc Floor recovery hopper and system therewith. 5,337,900, Cl. 209-257.000.
Abbott Laboratories: *See*—
Grenier, Frank C.; Luczkiw, Julie A.; Bergmann, Merry E.; and Blonski, David R., 5,338,684, Cl. 436-8.000.
Shiosaki, Kazumi; Tasker, Andrew S.; and Opgenorth, Terry J., 5,338,726, Cl. 514-17.000.
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Reichert, Donald G., 5,338,384, Cl. 156-212.000.
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Fukuda, Hiroyuki; Funabashi, Masayuki; and Abe, Hikonori, 5,338,320, Cl. 29-623.100.
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Abe, Kimihiro: *See*—
Saitoh, Hitoshi; Endo, Takayoshi; Yagi, Sakai; Abe, Kimihiro; and Koumatsu, Seiji, 5,338,217, Cl. 439-246.000.
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Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,339,098, Cl. 347-5.000.
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Lee, Ching-Pang; Goebel, Steven G.; and Abuaf, Nesim, 5,337,568, Cl. 60-755.000.
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Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,338,831, Cl. 530-334.000.
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Acquired Technolgy, Inc.: *See*—
Mercado, Emilio A., 5,338,318, Cl. 8-512.000.
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Yves, Lapierre; Josef, Dieter; Adam, Jean; and Greber-Widmer, Susanne, 5,338,689, Cl. 436-518.000.
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Adams, Lori T.: *See*—
Johnson, Karen T.; Adams, Lori T.; Montgomery, April D.; and Montgomery, John W., 5,337,934, Cl. 224-153.000.
Adams, Robert D., to Adventec, Inc. Needle protected syringe. 5,338,304, Cl. 604-110.000.
Adams, Steven P.: *See*—
Devadas, Balekudru; Gordon, Jeffrey I.; and Adams, Steven P., 5,338,858, Cl. 548-253.000.
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Anderie, Wolf; and Stussi, Edgar, 5,337,492, Cl. 36-28.000.
Aduk, Moshe: *See*—
Bashan, Oded; Aduk, Moshe; Gilboa, Ronnie; Itay, Nehemya; and Shure, Dubi, 5,339,000, Cl. 340-932.200.
Advanced Intervention Systems, Inc.: *See*—
Kardos, Thomas A.; and Kinley, Fred G., 5,339,441, Cl. 359-352.000.
Advanced Micro Devices, Inc.: *See*—
Asghar, Safdar M.; and Zhou, Yan, 5,339,251, Cl. 364-724.060.
Advanced Polymers, Incorporated: *See*—
Saab, Mark A., 5,337,734, Cl. 128-4.000.
Advanced Surgical, Inc.: *See*—
Heaven, Malcolm D.; Shapiro, Stephen J.; and Hess, Robert L., 5,337,754, Cl. 128-749.000.
Advanced Technology Materials, Inc.: *See*—
Gardiner, Robin A.; and Kirlin, Peter S., 5,337,651, Cl. 92-87.000.
Adventec, Inc.: *See*—
Adams, Robert D., 5,338,304, Cl. 604-110.000.
Aerojet General Corporation: *See*—
Polackowyj, John, 5,338,383, Cl. 156-80.000.
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Peelor, Philip L.; Moran, John J.; and Flanner, Lloyd T., 5,338,776, Cl. 523-166.000.
Aerospatiale Societe Nationale Industrielle: *See*—
Le Touche, Roger, 5,338,177, Cl. 425-384.000.
Affymax Technologies N.V.: *See*—
Schatz, Peter J.; and Stemmer, Willem P. C., 5,338,665, Cl. 435-6.000.
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Hellwig, Helmut, 5,337,851, Cl. 180-162.000.
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Takagi, Hiroyoshi; Awano, Masanobu; and Hoshi, Yuzi, 5,338,713, Cl. 501-105.000
Agfa-Gevaert Aktiengesellschaft: *See*—
Hehn, Wilfried; and Osegowitsch, Viktor, 5,339,129, Cl. 354-318.000.
Aggias, Zissis: *See*—
Sartelet, Jean-Francois; Sanch, Francois R.; and Aggias, Zissis, 5,338,767, Cl. 521-159.000.
Agip S.p.A.: *See*—
Lockhart, Thomas P.; and Albonico, Paola, 5,338,465, Cl. 252-8.551.
Agrawal, Ashok K.: *See*—
DeLuca, Amedeo; Gentry, James E., Sr.; Thomas, David L.; Landry, Norman R.; and Agrawal, Ashok K., 5,339,086, Cl 342-371.000.
Ahad, Munir J., to Nelson Hoffman, Inc. Track device for mounting an entertainment module in chairs slotted. 5,337,676, Cl. 104-139.000.
Ahiko, Kenkichi: *See*—
Sasaki, Masahiro; Ishii, Satoshi; Yamauchi, Yoshihiko; Kitamura, Katsushi; Toyoda, Shuji; and Ahiko, Kenkichi, 5,338,682, Cl. 435-253.400.

VOL 1165 ISS 3 AG 16 1994 UMI

Ahmad, Aftab: *See*—
Dennison, Charles H.; and Ahmad, Aftab, 5,338,700, Cl. 437-60.000.

Aica Kogyo Co., Ltd.: *See*—
Kubota, Yoshikazu; Kamijo, Masayasu; Otsu, Hiroshi; and Kamiya, Takashi, 5,338,584, Cl. 428-15.000.

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Quinn, Robert; Pez, Guido P.; and Appleby, John B., 5,338,521, Cl. 423-210.500.

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Takeuchi, Kunihiro; Kaneko, Hideyuki; and Ishizuka, Hideki, 5,338,063, Cl. 280-735.000.

Airspray International B.V.: *See*—
van der Heijden, Edgar I. M., 5,337,929, Cl. 222-402.180.

Aisan Kogyo Kabushiki Kaisha: *See*—
Kasuya, Kazusato; and Sugiura, Mitsuo, 5,337,721, Cl. 123-519.000.

Aisen Seiki Kabushiki Kaisha: *See*—
Satoh, Munetaka; Ito, Sadao; and Nawa, Hiroshi, 5,337,995, Cl. 248-429.000.

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Yoshioka, Takao; Nishi, Takahide; Kanai, Tsutomu; Aizawa, Yuichi; Wada, Kunio; Fujita, Takashi; and Horikoshi, Hiroyoshi, 5,338,855, Cl. 514-369.000.

Ajika, Natsuo: *See*—
Fukumoto, Atsushi; Ohi, Makoto; Onoda, Hiroshi; Ajika, Natsuo; and Kunori, Yuichi, 5,338,957, Cl. 257-316.000.
Ohi, Makoto; Arima, Hideaki; Ajika, Natsuo; Hachisuka, Atsushi; and Matsui, Yasushi, 5,338,699, Cl. 437-52.000.

Ajinomoto Co., Inc.: *See*—
Tsuchida, Takayasu; Nishimoto, Yoshitaka; Kotani, Takuya; and Iizumi, Katsuo, 5,338,672, Cl. 435-108.000.

Akagi, Manabu: *See*—
Akiyama, Masayuki; and Akagi, Manabu, 5,339,158, Cl. 348-757.000.

Akagi, Toshimichi: *See*—
Arakawa, Yukio; Akagi, Toshimichi; Hatamura, Kouichi; and Kishida, Makoto, 5,337,724, Cl. 123-563.000.

Akahane, Atsushi: *See*—
Shiokawa, Youichi; Akahane, Atsushi; Katayama, Hirohito; and Mitsunaga, Takafumi, 5,338,743, Cl. 514-300.000.

Akamine, Tadao: *See*—
Aoki, Kenji; Akamine, Tadao; and Saito, Naoto, 5,338,697, Cl. 437-40.000.

Akashi, Yasutaka: *See*—
Uchiyama, Masaki; Tanikawa, Hirohide; Akashi, Yasutaka; Taya, Masaaki; and Unno, Makoto, 5,338,894, Cl. 118-653.000.

Akatsuka, Yuichiro; and Horiguchi Toshio, to Olympus Optical Co., Ltd. Optical data recording apparatus and an optical data recording-/reproducing method performing servo control with both a recording light beam and a reproducing light beam. 5,339,300, Cl. 369-44.290.

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Tateyama, Kiyohisa; Akimoto, Masami; and Ushijima, Mitsuru, 5,339,128, Cl. 354-317.000.

Akiyama, Masayuki; and Akagi, Manabu, to Pioneer Electronic Corporation. Separation/synthesis mirror device in liquid filled housing with index matching. 5,339,158, Cl. 348-757.000.

Akzo Nobel nv: *See*—
Triplett, Kelly B.; Burk, Johst H.; Sherif, Fawzy G.; and Vreugdenhil, Willem, 5,338,716, Cl. 502-64.000.

Akzo N.V.: *See*—
Pomato, Nicholas; Bos, Ebo S.; Haspel, Martin V.; Hanna, Michael G., Jr.; and Berman, Michael L., 5,338,832, Cl. 530-350.000.

Alberni Thermodynamics Ltd.: *See*—
Dick, Brian G., 5,337,574, Cl. 62-89.000.

Albert, Bernhard: *See*—
Acker, Michael; Albert, Bernhard; and Schmitt, Michael, 5,338,848, Cl. 546-112.000.

Albert Einstein College of Medicine of Yeshiva University: *See*—
Rubin, Stuart A.; and Murthy, Vasantha L., 5,337,737, Cl. 601-33.000.

Albert, Phyllis F.: *See*—
Fletcher, Robert B.; Bigham, Wilson S.; and Albert, Phyllis F., 5,338,368, Cl. 134-40.000.

Albonico, Paola: *See*—
Lockhart, Thomas P.; and Albonico, Paola, 5,338,465, Cl. 252-8.551.

Albrecht, David E. Combination fluid flow ports. 5,338,075, Cl. 285-368.000.

Albrecht, Richard W.: *See*—
Meade, Robert J.; Albrecht, Richard W.; and Weisgerber, Robert H., 5,338,154, Cl. 415-173.700.

Alcan International Limited: *See*—
Chaplin, Dominic, 5,338,791, Cl. 524-401.000.

ALCATEL N.V.: *See*—
Benz, Paul, 5,339,019, Cl. 323-286.000.

Alcor, Inc.: *See*—
Hundere, Alf; Wilson, George R., III; Dowda, Thomas; Dowda, James; and Anderson, David, 5,337,599, Cl. 73-61.620.

Aldecoa, Julio A.: *See*—
Gruenstern, Robert G.; Bast, Ronald J.; Aldecoa, Julio A.; and Miller, Lawrence F., 5,338,624, Cl. 429-120.000.

Aldous, Stephen C.: *See*—
Beckham, D. Scott; Putnam, Greg A.; Bolt, Lorraine; Aldous, Stephen C.; Dake, Guy M.; and Henrie, James B., 5,338,210, Cl. 439-131.000.

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Marmorstein, Leon M.; Petuhov, Ignaty M.; Sidorov, Vladimir S.; Aleksandrov, Piotr A.; and Grebennikov, Valentin T., 5,337,825, Cl. 166-307.000.

Alexander, Jerry: *See*—
Egan, Daniel; Alexander, Jerry; McKinney, James T.; and Runyon, John F., 5,337,608, Cl. 73-865.600.

Alexander, Thomas B.: *See*—
Jacobs, Edward M.; Chan, Kenneth K.; and Alexander, Thomas B., 5,339,440, Cl. 395-325.000.

Allan, Richard D.: *See*—
Waite, Timothy P.; and Allan, Richard D., 5,337,877, Cl. 194-317.000.

Allegan, Inc.: *See*—
Dziabo, Anthony J.; Karageozian, Hampar; Ripley, Paul S.; Lam, Sam W.; and Espiritu, J. Abraham, 5,338,480, Cl. 252-187.210.

Allelix Biopharmaceuticals Inc.: *See*—
Williams, Ashley M., 5,338,834, Cl. 530-351.000.

Allen, Meldrum: *See*—
Busch, Frank R.; Bowles, Paul; John, Douglas; Allen, Meldrum; DiRoma, Sabeto A.; and Godek, Dennis M., 5,338,846, Cl. 544-368.000.

Allen, William G. Portable support apparatus for evaporative cooling. 5,337,960, Cl. 239-280.500.

Alliance Pharmaceutical Corp.: *See*—
Eilenberg, Steven S.; Kirkland, W. Dean; and Walters, Mark A., 5,339,033, Cl. 324-309.000.

Alliant Techsystems Inc.: *See*—
Narendra, Patrenahalli M.; Braunling, Russell D.; Wegerer, William J., II; and Werder, Jonathan C., 5,339,281, Cl. 367-5.000.

AlliedSignal Inc.: *See*—
Barr, Kevin P., 5,337,553, Cl. 60-39.020.
Fathimulla, Mohammed A.; and Loughran, Thomas C., 5,338,394, Cl. 156-643.000.
Rossigno, Louis P.; and Hewitt, Wayne A., 5,338,107, Cl. 303-113.300.
Shekhawat, Sampat; Eckenfelder, Robert C.; Tumpey, John J.; Wohlberg, Alfred W.; and Gandikota, Kapal, 5,339,235, Cl. 363-43.000.

Allison, Robert W., Jr.: *See*—
Yoon, Euisik; Allison, Robert W., Jr.; and Kovacs, Ronald P., 5,338,630, Cl. 430-30.000.

Allmendinger, Franz: *See*—
Funk, Helmut; Allmendinger, Franz; and Weber, Markus, 5,338,022, Cl. 271-184.000.

Alluflon- S.p.A.: *See*—
Montagna, Michele, 5,338,572, Cl. 427-309.000.

Almassian, Bijan: *See*—
Choy, William; Chen, Jen; and Almassian, Bijan, 5,338,867, Cl. 549-298.000.

Alon, Gad: *See*—
Jain, Sanjeev; Vermette, John E.; Weber, Richard; Doub, Robert J.; Alon, Gad; and Day, Alan G., III, 5,337,757, Cl. 128-779.000.

Alps Electric Co., Ltd.: *See*—
Kornfeld, Richard K.; Weiland, Ana L.; and Okazaki, Mitsunari, 5,339,046, Cl. 330-277.000.

Aluminum Company of America: *See*—
Lause, Herbert J.; Parks, Kristen L.; Tanis, Larry D.; and Leon, David D., 5,338,611, Cl. 428-412.000.

Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Doehner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., to American Cyanamid Company. Benzenesulfonyl carboxamide compounds intermediate compounds and methods of preparation thereof and use of said compounds and intermediate compounds as herbicidal agents. 5,338,883, Cl. 564-90.000.

Alza Corporation: *See*—
Edgren, David E.; Bhatti, Gurdish K.; and Magruder, Judy A., 5,338,550, Cl. 424-473.000.

Amadesi, Paolo; Cappelli, Fabio; and Pazzaglia, Sergio, to ITEA S.r.l. Process and plant for the disposal of waste. 5,337,683, Cl. 110-346.000.

Amamiya, Shoji: *See*—
Hashimoto, Yuichi; Amamiya, Shoji; and Sakakibara, Teigo, 5,338,632, Cl. 430-58.000.

Amanze, Charles U. Interlocking means for magnetic alphanumeric characters. 5,337,501, Cl. 40-621.000.

Ambico, Inc.: *See*—
Fitzgerald, Gerald R.; and Welter, C. Joseph, 5,338,543, Cl. 424-264.100.

Ambler, Stuart M.: *See*—
Kauvar, Lawrence M.; and Ambler, Stuart M., 5,338,659, Cl. 435-7.100.

Amcast Industrial Corporation: *See*—
Waggoner, John P., 5,337,477, Cl. 29-890.052.

Amdahl Corporation: *See*—
Connell, Jefferson J.; Johnson, Vernon R.; Lipman, Peter H.; and Maier, Robert M., 5,339,417, Cl. 395-650.000.
Goldman, Gary S.; Elash, Silas P.; and Baker, Jeffrey L., 5,339,407, Cl. 395-575.000.

Amemiya, Kouji: *See*—
Ohga, Yuichi; Danzuka, Toshio; Saito, Masahide; Amemiya, Kouji; and Yokota, Hiroshi, 5,338,327, Cl. 65-414.000.

American Cyanamid Company: *See*—
Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Doehner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., 5,338,883, Cl. 564-90.000.
Ding, Weidong; Ellestad, George A.; Abbanat, Darren; and Bernan, Valerie, 5,338,729, Cl. 514-27.000.
Levin, Jeremy I., 5,338,736, Cl. 514-259.000.
Tuckman, Margareta K.; and Osburne, Marcia S., 5,338,664, Cl. 435-4.000.
Wang, Bosco S.; Shieh, Hong-Ming; and Corbett, Martin J., 5,338,836, Cl. 530-399.000.

American District Enterprises, Inc.: *See*—
McGee, Jeffrey S.; Fesi, Joseph E.; and Murphy, John F., 5,337,876, Cl. 194-236.000.

American Packaging Corporation: *See*—
Kucksdorf, Arthur E.; Muhs, Jeffrey D.; and Hammer, Scott D., 5,338,117, Cl. 383-9.000.

American Standard Inc.: *See*—
Marsilio, Ronald, 5,338,501, Cl. 264-219.000.
Riffe, Delmar R.; Kotlarek, Peter A.; and Utter, Robert E., 5,338,159, Cl. 417-203.000.

Amoco Corporation: *See*—
Pacheco, Michael A.; Darrington, Franklin D.; and Hensley, Albert L., Jr., 5,338,878, Cl. 558-277.000.
Warren, Tommy M.; and Winters, Warren J., 5,337,839, Cl. 175-62.000.

AMP-AKZO Corporation: *See*—
Kohm, Thomas S., 5,338,567, Cl. 427-98.000.

Ampex Corporation: *See*—
Coleman, Charles H.; Miller, Sidney D.; and Smidth, Peter, 5,339,108, Cl. 348-408.000.

Amprobe Instrument: *See*—
Wright, Austin J., Jr.; and Pecukonis, Joseph P., 5,338,228, Cl. 439-621.000.

Amr, Yehia M.: *See*—
Zhao, Guoquan; Amr, Yehia M.; Bushnell, Peter R.; Drucker, Alan S.; and Nash, Eric J., 5,337,580, Cl. 62-262.000.

Anagram International, Inc.: *See*—
Kieves, Garry, 5,338,243, Cl. 446-220.000.

Analog Devices, Inc.: *See*—
Brokaw, A. Paul, 5,339,018, Cl. 320-35.000.
Thomson, David, 5,339,021, Cl. 323-354.000.

Anden Co., Ltd.: *See*—
Kawamura, Shotaro; and Yamada, Hiroshi, 5,339,059, Cl. 335-78.000.

Anderie, Wolf; and Stussi, Edgar, to adidas AG. Shoe bottom, in particular for sports shoes. 5,337,492, Cl. 36-28.000.

Anderson, David: *See*—
Hundere, Alf; Wilson, George R., III; Dowda, Thomas; Dowda, James; and Anderson, David, 5,337,599, Cl. 73-61.620.

Anderson Group Limited: *See*—
Bewick, Colin, 5,338,104, Cl. 299-85.000.

Anderson, John McC.: *See*—
McAdams, Eric T.; McLaughlin, James A.; and Anderson, John McC., 5,337,748, Cl. 128-640.000.

Anderson, John T.; Nagesh, V. K.; and Ruby, Richard C., to Hewlett-Packard Company. Silver additives for ceramic superconductors. 5,338,507, Cl. 505-470.000.

Anderson, Leonard M.; and Howarth, John J., to Measurex Corporation. Multiple cost measurement and control apparatus and method. 5,338,361, Cl. 118-689.000.

Anderson, Roy C.; and Leege, James W., to Rexnord Corporation. Chain with self aligning flight support links. 5,337,886, Cl. 198-728.000.

Andersson, Roine; and Rundqvist, Lars-Goran, to Celleco-Hedemora AB. Hydrocyclone plant. 5,337,899, Cl. 209-728.000.

Andonov, Radmir: *See*—
Lonardi, Emile; Metz, Jean; Mailliet, Pierre; Thillen, Guy; Andonov, Radmir; and Malivoir, Philippe, 5,338,013, Cl. 266-271.000.

Andreatidis, John P.: *See*—
Johnson, Norman W.; and Andreatidis, John P., 5,338,337, Cl. 75-654.000.

Andrew Corporation: *See*—
Dienes, Geza, 5,339,089, Cl. 343-700.0MS.

Angeion Corporation: *See*—
Barlow, Edward A., 5,338,299, Cl. 604-96.000.

Angeli, Anthony E. Insert for converting a button cover for use as another type of jewelry article. 5,337,584, Cl. 63-1.100.

Angelier, Robert: *See*—
Devic, Michel; and Angelier, Robert, 5,338,402, Cl. 162-24.000.

Antczak, Casimir: *See*—
Ngooi, Teng-Ko; McGolrick, Jeffry D.; Antczak, Casimir; and Tindall, James L. A., 5,338,871, Cl. 549-492.000.

Anwyl, Phyllis; and Matsuda, Toru, to Ricoh Company, Ltd. Interactive language conversion system. 5,338,976, Cl. 364-419.010.

Aoai, Toshiaki; and Mizutani, Kazuyoshi, to Fuji Photo Film Co., Ltd. Siloxane polymers and positive working light-sensitive compositions comprising the same. 5,338,640, Cl. 430-154.000.

Aoike, Tatsuyuki, to Canon Kabushiki Kaisha. Photovoltaic device. 5,338,370, Cl. 136-258.000.

Aoki, Katsuhiro: *See*—
Suzuki, Koji; Ueno, Yuichi; Aoki, Katsuhiro; Iwata, Naoki; Sawada, Akira; and Fujishiro, Takatsugu, 5,339,141, Cl. 355-246.000.

Aoki, Kenji; Akamine, Tadao; and Saito, Naoto, to Seiko Instruments Inc. Doping method of barrier region in semiconductor device. 5,338,697, Cl. 437-40.000.

Aoki, Shigeru: *See*—
Suzuki, Hiroshi; Aoki, Shigeru; Maruyama, Akihiko; and Koike, Nobuhiro, 5,339,297, Cl. 368-321.000.

Aoki, Takashi: *See*—
Mori, Hideyasu; Yamazaki, Yuichi; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,339,355, Cl. 379-94.000.

Aoshima, Kinya, to Toshiba America Information Systems, Inc. System and method for resume processing initialization. 5,339,426, Cl. 395-700.000.

Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased (by Huessy, Mary Brownlow, legal representative), to International Business Machines Corporation. Process for producing ceramic circuit structures having conductive vias. 5,337,475, Cl. 29-852.000.

Aoyama, Tetsuo: *See*—
Abe, Hisaki; Kondoh, Toshio; Fukuda, Hideki; Takahashi, Mayumi; Aoyama, Tetsuo; and Miyake, Masahiro, 5,338,462, Cl. 210-757.000.

Apco International Limited: *See*—
Walton, Colin R. G., 5,339,007, Cl. 315-205.000.

APD Cryogenics, Inc.: *See*—
Longsworth, Ralph C., 5,337,572, Cl. 62-51.200.

Apple, Phillip C. Two-piece self-locking pole stand assembly. 5,337,989, Cl. 248-519.000.

Appleby, John B.: *See*—
Quinn, Robert; Pez, Guido P.; and Appleby, John B., 5,338,521, Cl. 423-210.500.

Applied Biosystems, Inc.: *See*—
Shigeura, John; Bridgham, John A.; Hoff, Louis B.; and Mayrand, P. Eric, 5,338,426, Cl. 204-299.00R.

Applied Materials, Inc.: *See*—
Szwejkowski, Chester A.; Lum, Robert; and Fried, Thierry, 5,338,398, Cl. 156-655.000.

Appolonia, John J., to BOC Group, Inc., The. Apparatus and method of freezing food. 5,337,573, Cl. 62-63.000.

Aqrit Industries Ltd.: *See*—
Peterson, Gregg L., 5,337,821, Cl. 166-250.000.

Aqua Products, Inc.: *See*—
Erlich, Giora, 5,337,434, Cl. 15-1.700.

Arai, Shigeru: *See*—
Kirihara, Shigeki; Arai, Shigeru; and Mitsuda, Koichi, 5,339,247, Cl. 364-468.000.

Arakawa, Yukio; Akagi, Toshimichi; Hatamura, Kouichi; and Kishida, Makoto, to Mazda Motor Corporation. Intake system for an internal combustion engine with a supercharger. 5,337,724, Cl. 123-563.000.

Araki, Kouji, to Kabushiki Kaisha Toshiba. Method for manufacturing a laminated plate used in a semiconductor device. 5,338,392, Cl. 156-634.000.

Arbach, Gary; and Bradshaw, Leonard. Business form/receipt recording system. 5,338,068, Cl. 283-116.000.

Archer Daniels Midland Company: *See*—
Matlock, Mark G.; Sleeter, Ronald T.; and Jebe, Tod A., 5,339,254, Cl. 364-499.000.

Arco Chemical Technology, L.P.: *See*—
Boer, Jelle D.; and Auguet, Bernard, 5,338,768, Cl. 521-164.000

Argos, George, Jr.; and Kalkur, Thottam S., to Ramtron International Corporation. Structure of high dielectric constant metal/dielectric/-semiconductor capacitor for use as the storage capacitor in memory devices. 5,338,951, Cl. 257-295.000.

Arif, Basil: *See*—
Yuen, Kai-Chung L.; and Arif, Basil, 5,338,679, Cl. 435-235.100.

VOL 1165 ISS 3 AG 16 1994 UMI

Arima, Hideaki: *See*—
Ohi, Makoto; Arima, Hideaki; Ajika, Natsuo; Hachisuka, Atsushi; and Matsui, Yasushi, 5,338,699, Cl. 437-52.000.

Arima, Katsumi, to Union Special Japan Ltd. Looper thread holding apparatus for a sewing machine and method of holding a looper thread. 5,337,688, Cl. 112-298.000.

Arimoto, Akiya; Okamoto, Yasushi; and Muramatsu, Kikuo, to Mitsubishi Denki Kabushiki Kaisha. Data transmission system wherein the setting of the transmit data word number indicates whether a new transmission or retransmission should be sent. 5,339,451, Cl. 395-800.000.

Aritomo, Kouichi: *See*—
Ikegawa, Akihito; Aritomo, Kouichi; Tsukamoto, Kazuki; and Yamashita, Michiya, 5,338,895, Cl. 118-661.000.

Arizona Board of Regents on Behalf of the University of Arizona: *See*—
Carlile, Robert N.; and Geha, Sam G., 5,339,039, Cl. 324-655.000.

Arlt, Klaus: *See*—
Ruhl, Dieter; Arlt, Klaus; Heilmann, Ulrich; Heimann, Ulrich; and Hoffmann, Udo, 5,338,434, Cl. 205-229.000.

Armco Steel Company, L.P.: *See*—
Flinchum, Charles; Barney, Gerald L.; Burgess, Gregory S.; Kleinmeyer, Davis L.; and Parrella, Larry E., 5,339,329, Cl. 373-138.000.

Armstrong International, Inc.: *See*—
Schlesch, Ronald D.; and Cheskaty, Rex B., 5,337,703, Cl. 122-379.000.

Armstrong, John C.; and Palson, Richard C. J., to New England Pharmaceuticals, Inc. Inhalation devices. 5,337,740, Cl. 128-203.120.

Armstrong, Michael G.; and Glacken, Jennifer L., to Bell Atlantic Network Services, Inc. Directory assistance call completion via mobile systems. 5,339,352, Cl. 379-58.000.

Arney, Michelle: *See*—
Cornelius, Richard G.; Arney, Michelle; and Pray, James R., 5,338,295, Cl. 604-96.000.

Arnieri, Terry: *See*—
Steiner, Gregory A.; and Arnieri, Terry, 5,338,495, Cl. 261-28.000.

Arnold, Rainer: *See*—
Vogt, Lothar; Bartels, Stefan; Arnold, Rainer; and Schwarz, Detlef, 5,339,455, Cl. 455-266.000.

Arnoth, Frank W.; and Hoffman, William C., Jr., to Freeshworld, Inc. Cutter blade assembly. 5,337,640, Cl. 83-444.000.

Arthur Eugster Ag: *See*—
Fischer, Daniel; and Eugster, Arthur, 5,337,652, Cl. 99-282.000.

Artusa, Gastone: *See*—
Catena, Robert J.; Artusa, Gastone; Kveglis, Albert A.; Bosco, Jason J.; Barreto, Sonia; Mathew, Mathew C.; and Schneider, Mark D., 5,338,785, Cl. 524-39.000.

Arvizzigno, Joseph A.; Ashjian, Henry; and Napier, Roger P., to Mobil Oil Corporation. Sulfurized olefins. 5,338,468, Cl. 252-45.000.

Asahara, Masaru; Oguchi, Takuro; and Sasaki, Shunroku, to Fujitsu Limited. Mobile communication system. 5,339,353, Cl. 379-59.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Ogawa, Kimiaki, 5,339,199, Cl. 360-35.100.
Shirai, Masami, 5,338,021, Cl. 271-160.000.
Takahashi, Nagashige; and Shibuya, Hiromichi, 5,337,731, Cl. 128-4.000.
Tani, Nobuhiro, 5,339,162, Cl. 348-298.000.

Asakura, Nobuyuki: *See*—
Endo, Mitsuo; and Asakura, Nobuyuki, 5,338,233, Cl. 439-877.000.

Asch, Sabine. Three-dimensional puzzle. 5,338,034, Cl. 273-155.000.

Asea Brown Boveri Ltd.: *See*—
Bertels, Pieter F. M., 5,337,554, Cl. 60-39.181.
Bohnert, Klaus, 5,339,026, Cl. 324-96.000.
Kreitmeier, Franz, 5,338,155, Cl. 415-211.200.

Asghar, Safdar M.; and Zhou, Yan, to Advanced Micro Devices, Inc. Apparatus for adaptively tuning to a received periodic signal. 5,339,251, Cl. 364-724.060.

Ashbaugh, Millard G. Carrier for fishing lures. 5,337,511, Cl. 43-57.100.

Ashjian, Henry: *See*—
Arvizzigno, Joseph A.; Ashjian, Henry; and Napier, Roger P., 5,338,468, Cl. 252-45.000.

Ashland Oil, Inc.: *See*—
Dunnavant, William R.; and Fechter, Robert B., 5,338,774, Cl. 523-143.000.
Luttinger, Lionel B.; Rudy, Rosanna P.; and Holtzapfel, Paul J., 5,338,346, Cl. 106-14.290.

Aslam, Muhammad; Mutz, Alec N.; Tyagi, Dinesh; and Johnson, Kevin M., to Eastman Kodak Company. Method and apparatus for providing a toner image having an overcoat. 5,339,146, Cl. 355-285.000.

Asmus, Robert A.: *See*—
Dietz, Timothy M.; Asmus, Robert A.; and Uy, Rosa, 5,338,490, Cl. 252-500.000.

Aso, Ryoko: *See*—
Nozomi, Mamoru; Watabe, Sumiko; and Aso, Ryoko, 5,338,633, Cl. 430-59.000.

Assenmacher, Ute: *See*—
Vogt, Siegfried; Krempel, Wolfgang; and Assenmacher, Ute, 5,338,554, Cl. 426-45.000.

AST Research Inc.: *See*—
Mote, Lewis R., Jr., 5,339,345, Cl. 377-48.000.

AT&T Bell Laboratories: *See*—
Chen, Juin-Hwey, 5,339,384, Cl. 395-2.200.
Garofalo, Joseph G.; Kostelak, Robert L., Jr.; Pierrat, Christophe; and Vaidya, Sheila, 5,338,626, Cl. 430-5.000.
Glance, Bernard; and Wilson, Robert W., 5,339,157, Cl. 385-24.000.
Melatti, Livio R.; and Velasco, Victor J., 5,338,223, Cl. 439-482.000.
White, Donald L., 5,339,346, Cl. 378-34.000.

Atochem: *See*—
Menassa, Aime; and Caupin, Henri, 5,338,511, Cl. 422-5.000.

Attenni, Johann: *See*—
Frank, Kurt; Attenni, Johann; Schmidt, Albert; and Weigl, Max, 5,338,163, Cl. 417-410.00R.

Atwood & Morrill Co., Inc.: *See*—
Talbot, Arthur J.; and Cowley, John M., 5,338,496, Cl. 261-78.200.

Atzinger, Anne E.; Bequette, Robert J.; and Davis, Robert E., to Bristol-Myers Squibb Company. Megestrol acetate formulation. 5,338,732, Cl. 514-178.000.

Aube, Jean-Yves; and Giry, Emmanuel, to Isover Saint-Gobain. Process and device for obtaining mineral fibers. 5,338,329, Cl. 65-521.000.

Aubermann, Tibor, to Matisa Materiel Industriel S.A. Train for replacing a railroad track having retractable drive mechanisms for traveling on the cross-ties without rails. 5,337,675, Cl. 104-2.000.

Auguet, Bernard: *See*—
Boer, Jelle D.; and Auguet, Bernard, 5,338,768, Cl. 521-164.000.

Auman, Daniel: *See*—
Evanitsky, Eugene S.; Rauscher, Tomlinson G.; Filion, Joseph; Sundquist, Douglas; Warddrip, Riley; and Auman, Daniel, 5,339,168, Cl. 358-402.000.

Aung, Thein; and Fulger, Charles V., to McCormick & Company, Inc. Process for preparing stabilized, partially-dehydrated aromatic plant products. 5,338,558, Cl. 426-327.000.

Austin, Irving G. Device and system for supporting drums and other percussion musical instruments. 5,337,646, Cl. 84-421.000.

Autoclave Engineers, Inc.: *See*—
Smith, Charles W.; and Stanford, Thomas B., Jr., 5,337,446, Cl. 15-21.100.

Automated Systems, Inc.: *See*—
Claycomb, Bruce A.; and Opperthauser, Keith G., 5,337,880, Cl. 198-347.300.

Automated Technology Associates Inc.: *See*—
Layden, John E.; Layden, David J.; and Pearson, Thomas H., 5,339,257, Cl. 364-552.000.

Autosplice, Inc.: *See*—
Zahn, Irwin, 5,337,468, Cl. 29-842.000.

Autotech Robotics Limited: *See*—
Gilbert, Graham P., 5,337,938, Cl. 228-102.000.

Avco Corporation: *See*—
Gregory, Otto J.; and McCauley, Joseph J., III, 5,338,566, Cl. 427-8.000.

AVS Ing. J.C. Roemer GmbH: *See*—
Romer, Joachim C., 5,337,785, Cl. 137-625.650.

Awano, Masanobu: *See*—
Takagi, Hiroyoshi; Awano, Masanobu; and Hoshi, Yuzi, 5,338,713, Cl. 501-105.000.

Awazu, Tomoyuki: *See*—
Yamamoto, Susumu; Murai, Teruyuki; Kawabe, Nozomu; Awazu, Tomoyuki; Yazu, Shuji; and Jodai, Tetsuji, 5,338,721, Cl. 505-230.000.

B. Braun Medical, Inc.: *See*—
Ryan, William P., 5,338,314, Cl. 604-284.000.

B.F. Goodrich Company, The: *See*—
Fahrner, Alan J.; and Weisend, Norbert A., Jr., 5,337,978, Cl. 244-134.00A.

B&W Fuel Company: *See*—
King, Raymond A.; Farnsworth, David A.; and D'Orio, Jerome S., 5,339,341, Cl. 376-439.000.

Baasner, Bernd; Fischer, Reiner; Widdig, Arno; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengsellschaft. 4-(substituted)amino-3-arylpyrrolinone derivatives. 5,338,860, Cl. 548-550.000.

Babcock & Wilcox Company, The: *See*—
Brown, Clinton A.; Hellyer, William E.; Huston, John T.; and Dickman, Anthony W., 5,337,438, Cl. 15-318.100.

Babiel, Reiner: *See*—
Deeg, Rolf; Maurer, Eberhard; Babiel, Reiner; Klose, Sigmar; and Kopfer, Bernhard, 5,338,688, Cl. 436-180.000.

Bach, Volker: *See*—
Zumbragel, Michael; and Bach, Volker, 5,338,445, Cl. 210-150.000

Backerud, Stig L., to Sintercast AB. Method for the production of compacted graphite cast iron. 5,337,799, Cl. 164-4.100.

Bader, Christian, to Mercedes-Benz AG. Hybrid drive for a motor vehicle. 5,337,848, Cl. 180-65.200.

Badesha, Santokh S.: *See*—
Mammino, Joseph; Abramsohn, Dennis; Heeks, George J.; Henry, Arnold W.; Fratangelo, Louis D.; Pan, David H.; and Badesha, Santokh S., 5,338,587, Cl. 428-35.700.

Badillo, Paul, to Ralph's Industrial Sewing Machine Company. Expansion kit for programmable sewing machine. 5,337,685, Cl. 112-121.150.

Baerveldt, Konrad. Extruded thermoplastic elastomer expansion joint. 5,338,130, Cl. 404-33.000.

Baethge, Frank; Klein, Lutz; and Naghi, Ali, to Otis Elevator Company. Escalacor or moving walkway balustrade illumination. 5,339,228, Cl. 362-146.000.

Bagersh, Abdullah A.: *See*—
Bonner, Stephen D.; Rosthal, Richard A.; and Bagersh, Abdullah A., 5,339,037, Cl. 324-366.000

Baghdady, Elie J. Method and apparatus for diversity reception. 5,339,334, Cl. 375-100.000.

Bahl, Inder J., to ITT Corporation. Multiple port thin film capacitor. 5,338,950, Cl. 257-277.000.

Baik, Woon K.: *See*—
Song, Han B.; Lee, Jae K.; and Baik, Woon K., 5,339,117, Cl. 348-733.000.

Baker, Freddie R. Colostomy protection device. 5,338,315, Cl. 604-395.000.

Baker, Gary A.; and Sogge, Dale R., to Texas Instruments Incorporated. Vehicular transmission sensor apparatus responsive to gear selection. 5,338,907, Cl. 200-61.880.

Baker, Gary A.: *See*—
Rahman, Aziz; and Baker, Gary A., 5,338,908, Cl. 200-83.00P.

Baker Hughes, Incorporated: *See*—
Tibbitts, Gordon A., 5,337,844, Cl. 175-434.000.

Baker, Jeffrey L.: *See*—
Goldman, Gary S.; Elash, Silas P.; and Baker, Jeffrey L., 5,339,407, Cl. 395-575.000.

Baker, Johnny P.: *See*—
Nix, Charles D.; Baker, Johnny P.; and Huntley, William F., 5,337,694, Cl. 114-144.00R.

Baker, Josefina T.: *See*—
Matusewicz, Richard S.; and Baker, Josefina T., 5,337,426, Cl. 4-661.000.

Baker, Richard W.: *See*—
Kochinke, Frank; and Baker, Richard W., 5,338,548, Cl. 424-449.000.

Bakke, Asbjorn; and Pedersen, Tore, to Kongsberg Automotive A/S. Force or pressure augmenting device. 5,337,564, Cl. 60-555.000.

Bales, Randy J.; Gilbert, Klay E.; and Bell, Steven R., to Weber Aircraft, Inc. Track fitting for aircraft seats. 5,337,979, Cl. 244-118.100.

Baliga, Bantval J.; and Bhatnagar, Mohit, to North Carolina State University at Raleigh. Silicon carbide field effect transistor. 5,338,945, Cl. 257-77.000.

Ballard, James: *See*—
Liegel, Reinald D.; Ballard, James; Graham, James C.; Wisner, Craig A.; and Russell, Jeffrey V., 5,338,015, Cl. 269-71.000.

Balmer, Keith, to Texas Instruments Incorporated. Ones counting circuit, utilizing a matrix of interconnected half-adders, for counting the number of ones in a binary string of image data. 5,339,447, Cl. 395-775.000.

Baltimore Therapeutic Equipment Co.: *See*—
Jain, Sanjeev; Vermette, John E.; Weber, Richard; Doub, Robert J.; Alon, Gad; and Day, Alan G., III, 5,337,757, Cl. 128-779.000.

Ban, Annamaria: *See*—
Ban, Karoly; Ban, Annamaria; Pali, Lajosne ; Kruppa, Marta; Somfai, Eva; and Huszar, Csaba, 5,338,868, Cl. 549-323.000.

Ban, Karoly; Ban, Annamaria; Pali, Lajosne ; Kruppa, Marta; Somfai, Eva; and Huszar, Csaba, to Chinoin Gyogyszer- es Vegyeszeti Termekek Gyara Rt. Process for preparing alpha-amino-phenylacetic acid-trifluoromethane sulfonic acid mixed anhydrides. 5,338,868, Cl. 549-323.000.

Ban, Koichi: *See*—
Kajino, Yuuichi; Ban, Koichi; Honda, Yuuji; and Sugi, Hikaru, 5,337,802, Cl. 165-22.000.

Baran, Paul; and Palmer, Ronald S., to Metricom, Inc. Current sensor using current transformer with sintered primary. 5,338,332, Cl 75-247.000.

Barbee, Steven G.; Heinz, Tony F.; Li, Leping; and Ratzlaff, Eugene H., to International Business Machines Corporation. Contactless real-time in-situ monitoring of a chemical etching process. 5,338,390, Cl. 156-627.000.

Barbier, George Albert Eugene: *See*—
Barbier, Georges A. E.; Marquis, Patrick R. P. P.; and Binet, Yvon, 5,337,756, Cl. 128-763.000.

Barbier, Georges A. E.; Marquis, Patrick R. P. P.; and Binet, Yvon, to Thuaudet, Sylvain; Barbier, George Albert Eugene; Marquis, Patrick Roger P. P.; and Binet, Yvon. Blood sampling device with a vacuum tube. 5,337,756, Cl. 128-763.000.

Bargesser, Walter R. Butt hinge pin lock. 5,337,453, Cl. 16-380.000.

Barker, John M.: *See*—
Plyley, Alan K.; Barker, John M.; Vidal, Claude; and Redmond, Russell J., 5,338,305, Cl. 604-164.000.

Barker, Riley K.: *See*—
Simmons, Randy G.; Barker, Riley K.; and Sizemore, Ronald D., 5,339,222, Cl. 361-818.000.

Barlow, Edward A., to Angeion Corporation. Balloon catheter. 5,338,299, Cl. 604-96.000.

Barmag AG: *See*—
Teich, Udo; and Deters, Ludger A., 5,337,967, Cl. 242-35.50A.

Barnard, Daniel E.: *See*—
Moon, Ronald R.; Uhlendorf, Gregg J.; and Barnard, Daniel E., 5,339,207, Cl. 360-77.050.

Barney, Gerald L.: *See*—
Flinchum, Charles; Barney, Gerald L.; Burgess, Gregory S.; Kleinmeyer, Davis L.; and Parrella, Larry E., 5,339,329, Cl. 373-138.000.

Baron, Christian: *See*—
Grosse-Puppendahl, Thomas; Baron, Christian; and Schmidt, Friedrich G., 5,338,789, Cl. 524-314.000.

Baron, Ken: *See*—
Wang, Yen-Seine; Lee, Frank; Kuo, Ching-Chi; and Baron, Ken, 5,338,594, Cl. 428-117.000.

Barootian, Arthur: *See*—
Schultz, Bruce R.; Henderson, Kirk P.; and Barootian, Arthur, 5,337,605, Cl. 73-335.020.

Barr, Kevin P., to AlliedSignal Inc. Endothermic fluid based thermal management method. 5,337,553, Cl. 60-39.020.

Barreto, Sonia: *See*—
Catena, Robert J.; Artusa, Gastone; Kveglis, Albert A.; Bosco, Jason J.; Barreto, Sonia; Mathew, Mathew C.; and Schneider, Mark D., 5,338,785, Cl. 524-39.000.

Barrett, Carl R.: *See*—
Steinway, William J.; Thomas, James E.; Barrett, Carl R.; and Beck, Buddy G., 5,339,080, Cl. 342-22.000.

Barrett, David J., to United States of America, Navy. Vibration-damping structural component. 5,338,599, Cl. 428-212.000.

Barrett, Mark D.: *See*—
Grace, Todd S.; Barrett, Mark D.; Bilodeau, Vic L.; McCarty, Gary L.; Greenwood, Brian F.; Prough, J. Robert; and Torregrossa, Louis O., 5,338,366, Cl. 127-37.000.

Barrett, William A.; and Puri, Amit, to Lasa Industries, Inc. Apparatus and method for automatic focusing of light using a fringe plate. 5,338,924, Cl. 250-201.400.

Barringer, H. Paul; Kirsch, Gary E.; Mott, Keith C.; and Tung, Lawrence Y., to Hydril Company, The. Threaded pipe connection. 5,338,074, Cl. 285-334.000.

Barrington, Burchus Q., to Halliburton Company. Tester valve. 5,337,826, Cl. 166-319.000.

Barron, Robert E.: *See*—
Hord, Lee A.; and Barron, Robert E., 5,338,549, Cl. 424-439.000.

Barrow, Colin J.; Brownell, James E.; Houck, David R.; Hong, Anderson C.; Popp, Janet L.; and Sedlock, David M., to Sterling Winthrop Inc. Aspergillus species, cyclic dimeric dipeptide derivative substance P antagonist biosynthetic products thereof, and process for preparation thereof. 5,338,845, Cl. 544-343.000.

Barry, Lawrence B.; and Richardson, Mark C., to Uniroyal Chemical Company, Inc. Stabilized polyether polyol and polyurethane foam obtained therefrom. 5,338,478, Cl. 252-182.210.

Bartels, Stefan: *See*—
Vogt, Lothar; Bartels, Stefan; Arnold, Rainer; and Schwarz, Detlef, 5,339,455, Cl. 455-266.000.

Bartlow, Howard D.: *See*—
Wisherd, David S.; and Bartlow, Howard D., 5,338,974, Cl. 257-691.000.

Barton, Lewis, to Drake & DiPello, Inc. Method of producing flexible suspendible pouches and pouch produced therefrom. 5,337,539, Cl. 53-413.000.

Bartz, Kenneth W.; Cherry, David J.; and Howell, George D., to UVTEC, Inc. Polyolefin-acrylic bonded composites. 5,338,614, Cl. 428-448.000.

Base 10 Systems, Inc.: *See*—
Adelson, Alexander M.; Eisenberg, Alan J.; and Farrelly, Richard J., 5,339,261, Cl. 364-570.000.

Basek, Charles, to Lawn Claw International Inc. Lawn and garden tool for the removal of ground plugs. 5,338,078, Cl. 294-50.500.

BASF Aktiengesellschaft: *See*—
Acker, Michael; Albert, Bernhard; and Schmitt, Michael, 5,338,848, Cl. 546-112.000.
Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, 5,338,805, Cl. 525-330.500.
Paust, Joachim; and Krause, Wolfgang, 5,338,888, Cl. 568-596.000.
Schroeder, Gunter-Rudolf; and Mayer, Udo, 5,338,639, Cl. 430-110.000.
Wuest, Hans-Heiner; Janssen, Bernd; Murray, William V.; Wachter, Michael P.; and Bell, Stanley, 5,338,749, Cl. 514-364.000.

BASF Corporation: *See*—
Harrison, Richard P.; Scarpati, Michael; Narayan, Thirumurti; and Zagata, Blair J., 5,338,820, Cl. 528-67.000.
Narayan, Thirumurti; Tantillo, Anthony W.; and Stoll, John R., 5,338,819, Cl. 528-60.000.

BASF Lacke & Farben Aktiengesellschaft: *See*—
Ruhl, Dieter; Arlt, Klaus; Heilmann, Ulrich; Heimann, Ulrich; and Hoffmann, Udo, 5,338,434, Cl. 205-229.000.

Bashan, Oded; Aduk, Moshe; Gilboa, Ronnie; Itay, Nehemya; and Shure, Dubi, to Easy Park Ltd. System for monitoring parked vehicles. 5,339,000, Cl. 340-932.200.

Bassett, James H. Repositioning mechanism for an agricultural implement. 5,337,832, Cl. 172-504.000.

Bast, Ronald J.: *See*—
Gruenstern, Robert G.; Bast, Ronald J.; Aldecoa, Julio A.; and Miller, Lawrence F., 5,338,624, Cl. 429-120.000.

Bates, Cary L.; and Ryan, Jeffrey M., to International Business Machines Corporation. Cursor lock region. 5,339,388, Cl. 395-153.000.

Bates, Cary L.; and Ryan, Jeffrey M., to International Business Machines Corporation. User selectable lock regions. 5,339,389, Cl. 395-153.000.

Bates, John B.; Dudney, Nancy J.; Gruzalski, Greg R.; and Luck, Christopher E., to Martin Marietta Energy Systems, Inc. Thin film battery and method for making same. 5,338,625, Cl. 429-193.000.

Bates, Warren A.: *See*—
Lineberry, Daniel C.; and Bates, Warren A., 5,338,207, Cl. 439-62.000.

Battenfeld GmbH: *See*—
Miese, Manfred; and Holzschuh, Johann, 5,338,174, Cl 425-150.000.

Bauer, Andrew B., to Northrop Grumman Corporation. Airborne sensor for listening to acoustic signals. 5,339,287, Cl. 367-140.000.

Bauer, Gerd: *See*—
Bauer, Hans-Jorg; Bauer, Gerd; Dingeldein, Elvira; and Wahlig, Helmut, 5,338,772, Cl. 523-115.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Bauer, Hans-Jorg; Bauer, Gerd; Dingeldein, Elvira; and Wahlig, Helmut, to Merck Patent Gesellschaft mit beschrankter Haftung. Implant material. 5,338,772, Cl. 523-115.000.

Bauer, Heinz; Becker, Burckhard; and Frohnhaus, Ernst-Reinhard, to C. Rob. Hammerstein GmbH, Firma. Longitudinal guide for longitudinal adjustment devices for vehicle seats. 5,338,119, Cl. 384-47.000.

Bauerfeind, Herbert: *See*—
Bauerfeind, Peter; and Bauerfeind, Herbert, 5,337,733, Cl. 128-4.000.

Bauerfeind, Peter; and Bauerfeind, Herbert. Tubular inserting device with variable rigidity. 5,337,733, Cl. 128-4.000.

Baues, Wilfried: *See*—
Euer, Hartmut; Baues, Wilfried; and Wernicke, Joachim, 5,338,199, Cl. 434-14.000.

Baum, Charles S., to Baum Research & Development Co., Inc., The. Golf club. 5,338,024, Cl. 273-78.000.

Baum Research & Development Co., Inc., The: *See*—
Baum, Charles S., 5,338,024, Cl. 273-78.000.

Baumann, Karl-Heinz: *See*—
Gotz, Hans; and Baumann, Karl-Heinz, 5,338,089, Cl. 296-180.500.

Baumann, Marcus; Mayer, Carl W.; Wernet, Wolfgang; and Fischer, Walter, to Ciba-Geigy Corporation. Process for the preparation of tetrathiotetracenes. 5,338,863, Cl. 549-4.000.

Baxter International Inc.: *See*—
Mathewson, Wilfred F.; Bringham, Richard L.; Ritger, Philip L.; and Karshmer, David L., 5,338,512, Cl. 422-46.000.

Bayer AG: *See*—
Kohler, Berndt-Ullrich; and Kurokawa, Haruki, 5,338,355, Cl. 106-457.000.

Bayer Aktiengesellschaft: *See*—
Botta, Artur; Buysch, Hans-Josef; Immel, Otto; and Puppe, Lothar, 5,338,861, Cl. 548-552.000.
Immel, Otto; Darsow, Gerhard; and Buysch, Hans-Josef, 5,338,885, Cl. 564-398.000.
Munzamy, Thomas; Rasshofer, Werner; Dorner, Karl-Heinz; and Limna, Ulrich, 5,338,763, Cl. 521-49.500.

Bayer Aktiengsellschaft: *See*—
Baasner, Bernd; Fischer, Reiner; Widdig, Arno; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,338,860, Cl. 548-550.000.

Bayliss, Brian S.: *See*—
Simpson, Leslie J.; and Bayliss, Brian S., 5,338,090, Cl. 297-216.200.

Bayne, Marvin L.; Thomas, Kenneth A., Jr.; and Conn, Gregory L., to Merck & Co., Inc. DNA encoding glioma-derived growth factor having vascular endothelial cell growth promoting activity. 5,338,840, Cl. 536-23.510.

Beames, Douglas M. Building wall construction. 5,337,530, Cl. 52-426.000.

Beasom, James D., to Harris Corporation. Formation of dual polarity source/drain extensions in lateral complementary channel MOS architectures. 5,338,960, Cl. 257-335.000.

Beaty, Keith D.; and Jansen, Curtis E., to Implant Innovations, Inc. Dental laboratory components and procedures for anatomical restoration on artificial root fixtures. 5,338,196, Cl. 433-172.000.

Beauchamp, Bruce A.; Beffa, James C.; and Flournoy, David H., to Lockheed Corporation. Frequency hopping spread spectrum receiver. 5,339,331, Cl. 375-1.000.

Beaufort, Richard F.; and Sangroniz, James M., to Hewlett-Packard Company. Flexible, intuitive, operator for computer peripherals. 5,339,096, Cl. 345-156.000.

Beauvais, Yves: *See*—
de Groot, Paul; and Beauvais, Yves, 5,338,927, Cl. 250-214.0VT.

Beaverson, Arthur J., to Digital Equipment Corporation. System and method for construction of language independent print format statements through use of data structures for arbitrary ordering of print parameters. 5,339,240, Cl. 364-419.140.

Bechtel Group, Inc.: *See*—
Greenwalt, Richard B., 5,338,336, Cl. 75-445.000.

Bechtold, Dieter; and Vollbert, Jurgen, to Varta Batterie Aktiengesellschaft. Process for producing a lead storage battery with a thixotropic gel electrolyte. 5,338,596, Cl. 429-190.000.

Beck, Buddy G.: *See*—
Steinway, William J.; Thomas, James E.; Barrett, Carl R.; and Beck, Buddy G., 5,339,080, Cl. 342-22.000.

Beck, John R., Jr. Patient hoist. 5,337,908, Cl. 212-189.000.

Beck, Richard A.: *See*—
Fullerton, Jack K.; Beck, Richard A.; Clark, Fred B.; Reid, Gordon B.; and Nau, Keith A., 5,339,139, Cl. 355-215.000.

Becker, Burckhard: *See*—
Bauer, Heinz; Becker, Burckhard; and Frohnhaus, Ernst-Reinhard, 5,338,119, Cl. 384-47.000

Becker, James F.; and Mayer, Andrew S. Shared line telephone answering device. 5,339,354, Cl. 379-67.000.

Becker, Willi, to Heidelberger Druckmaschinen AG. Device for fastening and changing the position of a cylinder dressing. 5,337,666, Cl. 101-415.100.

Becker, William L.; and Kuestner, William J., to In-Situ, Inc. Method and apparatus for measuring pressure in a sealed well using a differential transducer. 5,337,601, Cl. 73-155.000.

Beckham, D. Scott; Putnam, Greg A.; Bolt, Lorraine; Aldous, Stephen C.; Dake, Guy M.; and Henrie, James B., to Megahertz Corporation. Media connector interface for use with a PCMCIA-architecture communications card. 5,338,210, Cl. 439-131.000.

Beckman Instruments, Inc.: *See*—
Matusewicz, Richard S.; and Baker, Josefina T., 5,337,426, Cl. 4-661.000.

Beckwith, William B.: *See*—
Staudinger, Joseph; Beckwith, William B.; and Seely, Warren L., 5,339,462, Cl. 455-330.000.

Becton, Dickinson and Company: *See*—
Imbert, Claude, 5,338,309, Cl. 604-187.000.
Lewandowski, Raymond D., 5,338,310, Cl. 604-192.000.
Montgomery, David B., 5,338,312, Cl. 604-230.000.
Monthony, James F.; Livingston, Dwight; Reuben, Jayakumar; and Tite, Robert C., 5,338,666, Cl. 435-34.000.
Quante, J. Michael; Hoke, Randal A.; Mize, Patrick D.; Woodard, Daniel L.; and Millner, O. Elmo, deceased, 5,338,843, Cl. 540-222.000

Bedell, Stephen A.; and Myers, John D., to Dow Chemical Company, The. Removal of hydrogen sulfide from fluid streams. 5,338,778, Cl. 423-220.000.

Beffa, James C.: *See*—
Beauchamp, Bruce A.; Beffa, James C.; and Flournoy, David H., 5,339,331, Cl. 375-1.000.

Behr GmbH & Co.: *See*—
Damsohn, Herbert; and Wolf, Walter, 5,338,253, Cl. 454-158.000.

Behrens, Robert N.: *See*—
Eavenson, Jimmy N., Sr.; Behrens, Robert N.; Friesen, Henry; and Hamm, Nicholas, 5,337,849, Cl. 180-24.120.

Beitel, Bradley J.; Haug, Charles L.; and Sobrino, Elba M., to International Business Machines Corporation. System for accessing objects external to an application using tables containing path definitions. 5,339,423, Cl. 395-600.000.

Belkind, Abraham I.; Wamboldt, Leonard; and Wolfe, Jesse D., to BOC Group, Inc., The. Device and method for depositing metal oxide films. 5,338,422, Cl. 204-192.120.

Bell Atlantic Network Services, Inc.: *See*—
Armstrong, Michael G.; and Glacken, Jennifer L., 5,339,352, Cl. 379-58.000.

Bell, Joseph W.; and Carroll, Thomas J., to Nabisco, Inc. Chewing gum or confection containing flavorant adsorbed on silica. 5,338,809, Cl. 426-5.000.

Bell, Stanley: *See*—
Wuest, Hans-Heiner; Janssen, Bernd; Murray, William V.; Wachter, Michael P.; and Bell, Stanley, 5,338,749, Cl. 514-364.000.

Bell, Steven R.: *See*—
Bales, Randy J.; Gilbert, Klay E.; and Bell, Steven R., 5,337,979, Cl. 244-118.100.

Belle De St. Claire: *See*—
Berger, Robert P.; and Benson, Steven, 5,337,804, Cl. 164-287.000.

Bellgraph, Donald R.: *See*—
Briggs, Edward R.; Daebelliehn, Gary H.; Winzen, Peter S.; and Bellgraph, Donald R., 5,338,993, Cl. 310-82.000.

Belloir, Jean-Jacques: *See*—
Chotard, Antoine; Belloir, Jean-Jacques; and Iceta, Thierry, 5,339,220, Cl. 361-796.000.

Belsom, Keith: *See*—
Giles, Charles; Belsom, Keith; and Schuler, Warren, 5,337,583, Cl. 60-752.000.

Ben-Michael, Siman-Tov; Lozowick, Philip P.; Hawe, William; and Lampson, Butler, to Digital Equipment Corporation. Method and apparatus for traffic congestion control in a communication network bridge device. 5,339,313, Cl. 370-85.130

Ben-Nasr, Hedi; and Coenen, Hubert, to Kohlensaure-Werke Rud.Buse GmbH & Co. Process for the quasi-continuous decaffeination of raw coffee. 5,338,575, Cl. 426-427.000.

Benaron, David A. Device and method for in vivo qualitative or quantative measurement of blood chromophore concentration using blood pulse spectrophotometry. 5,337,745, Cl. 128-633.000.

Bender, Douglas J., to Hughes Aircraft Company. Method and apparatus for compensating for solar torque transients on a satellite during a solar eclipse. 5,337,981, Cl. 244-164.000.

Benderly, Abraham; and Bravo, Audrey, to Rohm and Haas Company. Use of iron salts as corrosion inhibitors in titanium vessels. 5,338,375, Cl. 148-252.000.

Benecke, Wolfgang, to Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V. Micromanipulator for moving objects. 5,338,997, Cl. 310-307.000.

Benetton, Armando: *See*—
Vianello, Domenico; Benetton, Armando; Moro, Alessandro; Pippa, Roberto; and Longo, Aldo, 5,338,796, Cl. 525-66.000.

Bennardo, Nicola T.: *See*—
Mikulka, Thomas L.; Bennardo, Nicola T.; Wienick, Steven D.; and Trainor, Thomas M., 5,338,563, Cl. 426-604.000.

Bennett, Paul T.; Gutteridge, Ronald J.; Koury, Daniel N., Jr.; Mietus, David F.; and Ristic, Ljubisa, to Motorola, Inc. Laterally sensitive accelerometer and method for making. 5,337,606, Cl. 73-517.00R.

Bennett, William F.; Keyt, Bruce A.; and Zoller, Mark J., to Genentech, Inc. Tissue plasminogen activator variants with decreased clearance. 5,338,546, Cl. 424-94.640.

Benson, Steven: *See*—
Berger, Robert P.; and Benson, Steven, 5,.37,804, Cl. 164-287.000.

Benson, Thomas R. Register usage tracking in translating code for different machine architectures by forward and reverse tracing through the program flow graph. 5,339,238, Cl. 395-700.000.

Benz, Paul, to ALCATEL N.V. Current sink. 5,339,019, Cl. 323-286.000.

Bequette, Robert J.: *See*—
Atzinger, Anne E.; Bequette, Robert J.; and Davis, Robert E., 5,338,732, Cl. 514-178.000.

Beretta, Fausto. Motor vehicle automatic parking system, and related improved silos structure. 5,338,145, Cl. 414-254.000.

Berg, Jack: *See*—
Hindman, Gregory; and Berg, Jack, 5,338,423, Cl. 204-192.120.

Berg, Lloyd, to Berg, Lloyd. Separation of 2-butanol from t-amyl alcohol by azeotropic distillation. 5,338,410, Cl. 203-57.000

Berg, Lloyd, to Berg, Lloyd. Separation of ethanol from isopropanol by azeotropic distillation. 5,338,411, Cl. 203-60.000.

Berg, Marvin J.: *See*—
Mihail, Stavros; and Berg, Marvin J., 5,337,795, Cl. 141-144.000.

Berger, Georg: *See*—
Neumann, Gerd; Hutschenreuther, Peter; Glien, Willfried; Raab, Dagmar; Leuner, Barbara; Steinborn, Gabriele; and Berger, Georg, 5,338,771, Cl. 523-113.000.

Berger, Robert P.; and Benson, Steven, to Belle De St. Claire. Adjustable mold positioner. 5,337,804, Cl. 164-287.000.

Berges, Hanns-Peter, to Leybold Aktiengesellschaft. Dry-running vacuum pump. 5,338,167, Cl. 418-104.000.

Berges, Rudiger; and Berges, Ulrich, to Rudiger Berges GmbH. Umbrella with an improved handle. 5,337,771, Cl. 135-25.400.

Berges, Ulrich: *See*—
Berges, Rudiger; and Berges, Ulrich, 5,337,771, Cl. 135-25.400.

Bergesio, Giuseppe, to Roltra Morse S.p.A. Vehicle window regulating device. 5,337,519, Cl. 49-351.000.

Bergmann, Konrad: *See*—
Strack, Ludger; Bergmann, Konrad; and Laeller, Klaus, 5,337,424, Cl. 4-557.000.

Bergmann, Merry E.: *See*—
Grenier, Frank C.; Luczkiw, Julie A.; Bergmann, Merry E.; and Blonski, David R., 5,338,684, Cl. 436-8.000.

Berman, Michael L.: *See*—
Pomato, Nicholas; Bos, Ebo S.; Haspel, Martin V.; Hanna, Michael G., Jr.; and Berman, Michael L., 5,338,832, Cl. 530-350.000.

Berman, Robin E.: *See*—
Scheuer, Mark A.; MacDonald, Daniel W.; Palumbo, Kenneth S.; Paolini, Anthony L.; Berman, Robin E.; and Hurwitch, Carl B., 5,339,135, Cl. 355-208.000.

Bernan, Valerie: *See*—
Ding, Weidong; Ellestad, George A.; Abbanat, Darren; and Bernan, Valerie, 5,338,729, Cl. 514-27.000.

Bernard, Ronald V. Cable splicing vise apparatus. 5,337,547, Cl. 57-22.000.

Berndt, Dieter R., to Safe & Dry Company, Inc., The. Non-aqueous liquid powder. 5,338,535, Cl. 424-69.000.

Bernier, Eric, to SGS-Thomson Microelectronics S.A. Integrated circuit comprising a protection diode array. 5,338,964, Cl. 257-476.000.

Bernier, Raymond. Electrical interconnection device. 5,338,232, Cl. 439-733.000.

Bernstein, Matthew A.: *See*—
Schneider, Erika; and Bernstein, Matthew A., 5,339,035, Cl. 324-309.000.

Bernstein, Peter R.; Brown, Frederick J.; Matassa, Victor G.; and Yee, Ying K., to Zeneca Inc. Heterocyclic amide derivatives and pharmaceutical use thereof. 5,338,734, Cl. 514-224.200.

Berry, Gaylord: *See*—
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, JD; and Berry, Gaylord, 5,338,770, Cl. 523-112.000.

Berry Plastics Corporation: *See*—
Jochem, David J., 5,337,912, Cl. 220-306.000.

Bertels, Pieter F. M., to Asea Brown Boveri Ltd. Method for reducing the pressure of a gas from a primary network. 5,337,554, Cl. 60-39.181.

Berthou, Herve : *See*—
Sandoz, Frederic; and Berthou, Herve , 5,337,585, Cl. 65-391.000.

Bervig, Dale R.: *See*—
Stuart, Kyle H.; and Bervig, Dale R., 5,338,917, Cl. 219-137.630.

Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, to BASF Aktiengesellschaft. Polymethacrylimides having high heat distortion resistance. 5,338,805, Cl. 525-330.500

Beson, John. Dual seal ball valve. 5,338,003, Cl. 251-172.000.

Bessey, Boyd T.: *See*—
Mullin, Howard; and Bessey, Boyd T., 5,338,126, Cl. 402-64.000.

Bessho, Kazuo. Magnetic flux converging type high speed electromagnet. 5,339,064, Cl. 335-282.000.

Bestmann, Lothar. Arrangement for shoreline construction, maintenance, and protection, and methods for making and using the same. 5,338,131, Cl. 405-24.000.

Bethlehem Steel Corporation: *See*—
Hoffman, John P.; Nestler, Alvin M.; Witek, Edward T.; and Idstein, Donald J., 5,337,470, Cl. 29-426.500.

Betts, Ronald E.; Savage, Douglas R.; Koerner, Richard J.; Leader, Matthew J.; Sin, Kee V.; Graves, Jeffrey A.; and Sherman, Marshall L., to PPG Industries, Inc. Integrated circuit hydrated sensor apparatus. 5,338,435, Cl. 204-406.000.

Bewick, Colin, to Anderson Group Limited. Auxiliary cutter for a mining machine having coaxial cutter drums. 5,338,104, Cl. 299-85.000.

Bhagwat, Anand W.; Palmer, Kenneth J.; and Prakash, Amit, to Goodyear Tire & Rubber Company, The. Apparatus for manufacturing ply stock. 5,337,972, Cl. 242-129.800.

Bhatnagar, Mohit: *See*—
Baliga, Bantval J.; and Bhatnagar, Mohit, 5,338,945, Cl. 257-77.000.

Bhattacharya, Apurba, to Hoechst Celanese Corporation. Process for the production of calcium salts of hydantoic acids. 5,338,859, Cl. 548-312.100.

Bhatti, Gurdish K.: *See*—
Edgren, David E.; Bhatti, Gurdish K.; and Magruder, Judy A., 5,338,550, Cl. 424-473.000.

Biard, Daniel: *See*—
Drobish, James L.; Biard, Daniel; and Merritt, Joyce R., 5,337,926, Cl. 222-309.000.

Bielfeldt, Friedrich B., to Maschinenfabrik J. Dieffenbacher GmbH & Co. Continuously working press having entry systems for applying a variable pressure prior to a material being pressed. 5,337,655, Cl. 100-93.00P.

Bientz, Alfred: *See*—
Lenain, Jean-Francois; and Bientz, Alfred, 5,339,364, Cl. 381-173.000.

Bigham, Wilson S.: *See*—
Fletcher, Robert B.; Bigham, Wilson S.; and Albert, Phyllis F., 5,338,368, Cl. 134-40.000.

Bih-Lien, Chen L. Screwdriver with replaceable driver bits. 5,337,637, Cl. 81-439.000.

Billiu, Charles R., to Ticom Corporation. Method of making reinforced structural composite assemblies and assembly produced thereby. 5,338,588, Cl. 428-36.300.

Bilodeau, Vic L.: *See*—
Grace, Todd S.; Barrett, Mark D.; Bilodeau, Vic L.; McCarty, Gary L.; Greenwood, Brian F.; Prough, J. Robert; and Torregrossa, Louis O., 5,338,366, Cl. 127-37.000.

Bimba Manufacturing Company: *See*—
Rab, Dennis, 5,337,598, Cl. 73-49.800.

Binet, Yvon: *See*—
Barbier, Georges A. E.; Marquis, Patrick R. P. P.; and Binet, Yvon, 5,337,756, Cl. 128-763.000.

Bio-Lab, Inc.: *See*—
Jones, Ronald L., 5,338,461, Cl. 210-755.000.

Bio-Preserve Medical Corporation: *See*—
Sadri, Fereydoon, 5,338,662, Cl. 435-1.000.

Biometric Imaging Inc.: *See*—
Shartle, Robert J.; and Dubrow, Robert S., 5,338,427, Cl. 204-299.00R.

Biosig Instruments Inc.: *See*—
Lekhtman, Gregory, 5,337,753, Cl. 128-706.000.

Bissell Inc.: *See*—
Steinberg, Gary L.; Pino, Giovanni; Gibbs, Kenneth E.; Norwood, Richard L.; and Smith, Gary L., 5,337,443, Cl. 15-344.000.

Bissett, Thomas D.: *See*—
Bruckert, William; Bissett, Thomas D.; Dearth, Glenn; and Paternoster, Paul, 5,339,408, Cl. 395-575.000.

Biswal, Madan: *See*—
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,694, Cl. 437-31.000.
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,696, Cl. 437-34.000.

Bitter, Dieter; Bornkessel, Eberhard; and Schnabel, Horst, to Krupp VDM GmbH. Gastight connection between tubes of small diameter. 5,338,072, Cl. 285-286.000.

Bivens, Hugh M.: *See*—
Koehler, Dale R.; Sniegowski, Jeffry J.; Bivens, Hugh M.; and Wessendorf, Kurt O., 5,339,051, Cl. 331-65.000.

BK Ladenburg GmbH: *See*—
Maurer, Alexander; Raab, Guenter; Raab, Gudrun; Steinert, Hans-Georg; and Taenzler, Richard, 5,338,524, Cl. 423-309.000.

Blair, Christopher S.: *See*—
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,694, Cl. 437-31.000.
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,696, Cl. 437-34.000.

Blake, Joseph W., III, to Kaufman, Jack, a part interest. Urological evacuator. 5,338,294, Cl. 604-38.000.

Blanchard, Christian; Lauraire, Michel; and Vigouroux, Didier, to Telemecanique. Protective switch. 5,339,060, Cl. 335-132.000.

Blanco, Angel. Drywall joint finishing tool. 5,338,128, Cl. 403-206.000.

Blanke, Uwe; Kern, Hans J.; Schmidt, Friedrich; Hanke, Thomas; Murray, Peter E.; Schnatwinkel, Michael; and Wilmes, Manfred, to Weidmuller Interface GmbH & Co. Labelling device for electrical terminal blocks. 5,338,224, Cl. 439-491.000.

Blankenship, Ernest B., to Research Products/Blankenship Corporation. Incinerator toilet with apparatus for controlling lid and split bowl. 5,337,422, Cl. 4-111.500.

Blankenship, George D.; Hoffa, Michael D.; and Mikitin, Gary A., to Lincoln Electric Company, The. Control circuit for alternating current TIG welder. 5,338,916, Cl. 219-130.400.

Blaupunkt Werke GmbH: *See*—
Vogt, Lothar; Bartels, Stefan; Arnold, Rainer; and Schwarz, Detlef, 5,339,455, Cl. 455-266.000.

Bleicher, Manfred: *See*—
Bohne, Ulrich; Kabatnik, Wilfried; Bleicher, Manfred; Hecht, Joachim; and Lamprecht, Justus, 5,337,835, Cl. 173-13.000

Bleyins, Richard W.; and Turner, S. Richard, to Eastman Chemical Company. Copolymers of vinyl dioxolanes and maleimides. 5,338,813, Cl. 526-208.000.

Blier, Darren J.; Dubord, Christopher J.; and Grande, David W., to United States of America, Navy. Underwater sound source with remote controlled actuator. 5,339,288, Cl. 367-145.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Block, Christian, to Siemens Matsushita Components GmbH & Co KG. Method for soldering a ceramic body of an electrical component into a metal housing. 5,337,939, Cl. 228-124.100.

Blomquist, Michael L., to Pharmacia Deltec, Inc. Systems and methods for communicating with ambulatory medical devices such as drug delivery devices. 5,338,157, Cl. 417-2.000.

Blonski, David R.: *See*—
Grenier, Frank C.; Luczkiw, Julie A.; Bergmann, Merry E.; and Blonski, David R., 5,338,684, Cl. 436-8.000.

Blum, Alvin S. Concealed belt-mounted valuables holder. 5,337,936, Cl. 224-253.000.

Blum, Holger. Stabilized urethane based surface coating. 5,338,786, Cl. 524-83.000.

Blundell, David W.; and Wilson, Neil D., to Group Lotus PLC. Internal combustion engine. 5,337,707, Cl. 123-65.0PE.

Blytas, George C.; Holloway, Eugene L.; and Zuzich, Anne H., to Shell Oil Company. Thermal condensation of polyhydric alcohols to form polyethercyclicpolyols. 5,338,870, Cl. 549-378.000.

Board of Supervisors of Louisiana State University and Agricutural and Mechanical College: *See*—
El Bahy, Mohamed M.; Malone, John B., Jr.; Todd, William J.; and Schnorr, Kenneth L., 5,338,660, Cl. 435-7.220.

BOC Group, Inc., The: *See*—
Appolonia, John J., 5,337,573, Cl. 62-63.000.
Belkind, Abraham I.; Wamboldt, Leonard; and Wolfe, Jesse D., 5,338,422, Cl. 204-192.120.

Boczar, Bruce P., to United States of America, Navy. Nonlinear frequency conversion optical filter. 5,339,189, Cl. 359-326.000.

Boden, Hellmut; Uhland, Eberhard; and Wobbe, Hans, to Werner & Pfleiderer GmbH. Process and apparatus for two stage treatment of plastic materials. 5,338,112, Cl. 366-75.000.

Boehringer Mannheim GmbH: *See*—
Deeg, Rolf; Maurer, Eberhard; Babiel, Reiner; Klose, Sigmar; and Kopfer, Bernhard, 5,338,688, Cl. 436-180.000.
Schlipfenbacher, Reiner; Steinbiss, Joachim; and Trasch, Heinz-Friedrich, 5,338,513, Cl. 422-56.000.

Boeing Company, The: *See*—
Fleming, Michael A.; and Sturm, Michael C., 5,337,977, Cl. 244-129.500.
Nitardy, John H., 5,339,041, Cl. 330-10.000.
Norsworthy, Keith H., 5,339,082, Cl. 342-90.000.
Roberts, Robert M.; and Douglas, William A., 5,337,647, Cl. 87-31.000.
Rumberger, William E.; and Steffier, Wayne S., 5,337,974, Cl. 244-49.000.

Boenning, Robert A.; Schoch, Karl F., Jr.; Stough, Daryl V.; and Navish, Francis W., Jr., to Westinghouse Electric Corporation. Assembly for detecting and locating cable pinching. 5,339,038, Cl. 324-539.000.

Boer, Jelle D.; and Auguet, Bernard, to Arco Chemical Technology, L.P. Substantially closed cell rigid polyurethane foams. 5,338,768, Cl. 521-164.000.

Bofors AB: *See*—
Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, 5,337,649, Cl. 89-14.050.

Bohm, Ludwig; Enderle, Hans-Frieder; and Jarstrow, Horst, to Hoechst Aktiengesellschaft. Polyethylene molding composition. 5,338,589, Cl. 428-36.900.

Bohne, Ulrich; Kabatnik, Wilfried; Bleicher, Manfred; Hecht, Joachim; and Lamprecht, Justus, to Robert Bosch GmbH. Drill and/or impact hammer. 5,337,835, Cl. 173-13.000.

Bohnen, Norbert: *See*—
Grecksch, Hans; Heidtmann, Thomas; and Bohnen, Norbert, 5,337,551, Cl. 57-281.000.

Bohnert, Klaus, to Asea Brown Boveri Ltd. Fiber-optic sensor with first and second bimode fibers. 5,339,026, Cl. 324-96.000.

Boime, Irving, to Washington University. CTP-extended form of FSH. 5,338,835, Cl. 530-398.000.

Boissiere, Bruno; and Bossus, Michel, to Thomson-Brandt Armements. Locking device for a casing containing pyrotechnic materials. 5,337,672, Cl. 102-481.000.

Bolf, Jan: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,338,831, Cl. 530-334.000.

Bolt Beranek and Newman Inc.: *See*—
Sodenberg, Brian T.; and Kenworthy, Mark L., 5,339,386, Cl. 395-122.000.

Bolt, Lorraine: *See*—
Beckham, D. Scott; Putnam, Greg A.; Bolt, Lorraine; Aldous, Stephen C.; Dake, Guy M.; and Henrie, James B., 5,338,210, Cl. 439-131.000.

Bomin Solar GmbH & Co. KG: *See*—
Kleinwachter, Hans; Kleinwachter, Jurgen; and Weber, Eckhart, 5,337,562, Cl. 60-519.000.

Bond Equipment Corp.: *See*—
Swilley, Wilson H.; and Wohlhutter, Michael D., 5,338,250, Cl. 452-136.000

Bondurant, Louis E. Decreasing alcohol content of fountain solutions for planographic printing. 5,338,344, Cl. 106-2.000.

Bonko, Mark L., to Goodyear Tire & Rubber Company, The. Agricultural tire comprising lugs of defined height and inclination. 5,337,814, Cl. 152-209.00B.

Bonko, Mark L.; and Lopp, Loran C., Jr., to Goodyear Tire & Rubber Company, The. Pneumatic agricultural tire. 5,337,816, Cl. 152-209.00R.

Bonner, Stephen D.; Rosthal, Richard A.; and Bagersh, Abdullah A., to Schlumberger Technology Corporation. Apparatus and method for determining the resistivity of earth formations. 5,339,037, Cl. 324-366.000.

Bonner, Stephen D.: *See*—
Clark, Brian; Bonner, Stephen D.; Jundt, Jacques; and Luling, Martin, 5,339,036, Cl. 324-338.000.

Bonzelius, Karsten: *See*—
Borens, Manfred; Busch, Dietrich; Leroux, Roland; Scheidler, Regina; and Bonzelius, Karsten, 5,337,727, Cl. 126-200.000.

Boomer, James B.: *See*—
Larsen, David H.; and Boomer, James B., 5,338,978, Cl. 307-443.000.

Borcherdt, D. Thomas, to Borcherdt, D. Thomas. Mast track clutch assembly for sailboards. 5,337,691, Cl. 114-39.200.

Borens, Manfred; Busch, Dietrich; Leroux, Roland; Scheidler, Regina; and Bonzelius, Karsten, to Schott Glaswerke. Window for a device with elevated inner chamber temperature. 5,337,727, Cl. 126-200.000.

Borg-Warner Automotive, Inc.: *See*—
Kirkwood, Malcolm E., 5,337,867, Cl. 192-3.290.

Borland International, Inc.: *See*—
Frid-Nielsen, Lars K., 5,339,433, Cl. 395-700.000.

Bornkessel, Eberhard: *See*—
Bitter, Dieter; Bornkessel, Eberhard; and Schnabel, Horst, 5,338,072, Cl. 285-286.000.

Borup-Christensen, Per: *See*—
Jensenius, Jens C.; Borup-Christensen, Per; and Erb, Karin, 5,338,661, Cl. 435-7.230.

Bos, Ebo S.: *See*—
Pomato, Nicholas; Bos, Ebo S.; Haspel, Martin V.; Hanna, Michael G., Jr.; and Berman, Michael L., 5,338,832, Cl. 530-350.000.

Bosco, Jason J.: *See*—
Catena, Robert J.; Artusa, Gastone; Kveglis, Albert A.; Bosco, Jason J.; Barreto, Sonia; Mathew, Mathew C.; and Schneider, Mark D., 5,338,785, Cl. 524-39.000.

Bossel, Ulf. Apparatus for converting chemical energy of fuel into electrical energy with a plurality of high-temperature fuel cells. 5,338,621, Cl. 429-18.000.

Bossus, Michel: *See*—
Boissiere, Bruno; and Bossus, Michel, 5,337,672, Cl. 102-481.000.

Boteler, William C., to Hubbell Incorporated. Clamping assembly for electrical cables. 5,338,222, Cl. 439-469.000.

Botta, Artur; Buysch, Hans-Josef; Immel, Otto; and Puppe, Lothar, to Bayer Aktiengesellschaft. Process for the preparation of N-substituted lactams. 5,338,861, Cl. 548-552.000.

Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, to Rhone-Poulenc Rorer S.A. Urea derivatives, their preparation and medicinal products containing them. 5,338,760, Cl. 514-539.000.

Bowen, David C.; and Long, Jerry A., to Molex Incorporated. Electrical connector for high density ribbon cable. 5,338,221, Cl. 439-405.000.

Bower, Robert K., to Westvaco Corporation. Stackable container. 5,337,950, Cl. 229-164.000.

Bowler, Geoffrey H.; and Chow, Bruce H. B., to Manchester Plastics, Ltd. Air outlet louver assembly. 5,338,252, Cl. 454-155.000.

Bowles, Paul: *See*—
Busch, Frank R.; Bowles, Paul; John, Douglas; Allen, Meldrum; DiRoma, Sabeto A.; and Godek, Dennis M., 5,338,846, Cl. 544-368.000.

Bowman, Christopher J., to Rogers, Allen William. Fire fighting foam generation system. 5,337,830, Cl. 169-14.000.

Bowman, Jeffrey M.: *See*—
McCutcheon, Andrew J.; Bowman, Jeffrey M.; and Gambetta, David L., 5,338,006, Cl. 251-327.000.

Boyd, Gary P., to Smart Corporation, The. Marine engine maintenance. 5,337,774, Cl. 137-1.000.

Boyd, Ron. Spray control system for multiple segment boom sprayers. 5,337,959, Cl. 239-163.000.

Boyle, Steven R.; Proebsting, Robert J.; and Herndon, William H., to Intergraph Corporation. Multi-layered integrated circuit package with improved high frequency performance. 5,338,970, Cl. 257-659.000.

Bradford, Arleen M.; Van Leeuwen, Petrus W. N. M.; and Wullink-Schelvis, Annetta M., to Shell Oil Company. Polymer preparation. 5,338,825, Cl. 528-392.000.

Bradley, Donald A., to Wiltron Company. Ultra low noise frequency divider/multiplier. 5,339,049, Cl. 331-16.000.

Bradsell, Robert H.: *See*—
Partridge, Roger H.; Bradsell, Robert H.; and Woods, Peter T., 5,339,155, Cl. 356-419.000.

Bradshaw, Leonard: *See*—
Arbach, Gary; and Bradshaw, Leonard, 5,338,068, Cl. 283-116.000.

Brady, Stephen F.: *See*—
Nutt, Ruth F.; Brady, Stephen F.; Veber, Daniel F.; and Duggan, Mark E., 5,338,723, Cl. 514-11.000.

Brady, Thomas E.: *See*—
Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Doehner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., 5,338,883, Cl. 564-90.000.

Brage, Anders N., to Forsvarets Forskningsanstalt. Countermass for recoilless weapons. 5,337,648, Cl. 89-1.704.

Brambani, Eric J.; and Munshi, Jonathan, to General Electric Company. Ceramic tip and compliant attachment interface for a gas turbine fuel nozzle. 5,337,961, Cl. 239-397.500.

Brandberg, Lawrence C.; Hanson, Denise E.; and Watkins, Jeffrey T., to Golden Valley Microwave Foods Inc. Microwave susceptor with attenuator for heat control. 5,338,911, Cl. 219-759.000.

Brandl, Sebastian: *See*—
Mayer, Walter; Brandl, Sebastian; and Neumeyer, Josef, 5,337,550, Cl. 57-263.000.

Brands, Jan; Grunbauer, Henri J. M.; and van Duin, Kees-Jeen, to Dow Chemical Company, The. Polyolefin barrier films for preventing solvent attack on plastic resins. 5,338,601, Cl. 428-319.700.

Brandt, Bernd A., to Ontario Hydro. Jib assembly. 5,337,854, Cl. 182-2.000.

Branigan, Brendan, to Masimo Corporation. Low noise finger cot probe. 5,337,744, Cl. 128-633.000.

Brashear, Daniel F.: *See*—
Metcalf, Jeffrey D.; and Brashear, Daniel F., 5,338,273, Cl. 482-70.000.

Brault, Isabelle: *See*—
Heritier-Best, Pierre; Brault, Isabelle; and Judelle, Bernard, 5,337,790, Cl. 251-129.210.

Braun, Alfred; Helbig, Peter; Steiner, Hermann; and Schoenherr, Walter, to Patent-Treuhand-Gesellschaft F. Electrische Gluehlampen mbH. Electric lamp and optically alignable cementless base combination. 5,339,002, Cl. 313-318.000.

Braunling, Russell D.: *See*—
Narendra, Patrenahalli M.; Braunling, Russell D.; Wegerer, William J., II; and Werder, Jonathan C., 5,339,281, Cl. 367-5.000.

Bravo, Audrey: *See*—
Benderly, Abraham; and Bravo, Audrey, 5,338,375, Cl. 148-252.000.

Bray, Martin J.: *See*—
MacMillan, John P.; Zuliani, Douglas J.; and Bray, Martin J., 5,338,712, Cl. 501-94.000.

Brazelton, Carl L., to Stranco, Inc. Dry polymer activation apparatus and method. 5,338,779, Cl. 523-313.000.

Brechtel, Heinz, to MAN Roland Druckmaschinen AG. Mechanism for adjusting the skew angle of inclination of a printing plate on its plate cylinder. 5,337,486, Cl. 33-617.000.

Brender, Ronald F.; and Iles, Michael V., to Digital Equipment Corporation. System and method for jacketing cross-domain calls in a multi-code execution and debugging system within a multi-architecture environment. 5,339,422, Cl. 395-700.000.

Breneman, William C.; Crane, William C.; Walsh, Michael J.; and Warren, Eric A., to OSi Specialties, Inc. Process for the emulsification of polydimethyl siloxane oils, organomodified siloxane oils and organic oil using non-ionic surfactants. 5,338,352, Cl. 106-285.000.

Bresler, Yoav: *See*—
Smilansky, Zeev; Melman, Haim Z.; Bresler, Yoav; Litvak, Matty J.; Kreitman, Haim; and Yad-Shalom, Itai, 5,339,176, Cl. 358-504.000

Breuer, Eli; and Golomb, Gershon, to Yissum, Research Development Company of the Hebrew University of Jerusalem. Bisphosphonates, processes for preparation and pharmaceutical compositions containing the same. 5,338,731, Cl. 514-108.000.

Bridgham, John A.: *See*—
Shigeura, John; Bridgham, John A.; Hoff, Louis B.; and Mayrand, P. Eric, 5,338,426, Cl. 204-299.00R.

Briggs, Edward R.; Daebelliehn, Gary H.; Winzen, Peter S.; and Bellgraph, Donald R., to Eaton Corporation. Motor apparatus. 5,338,993, Cl. 310-82.000.

Briggs & Stratton Corporation: *See*—
Winberg, James R., 5,338,903, Cl. 181-231.000.

Bringham, Richard L.: *See*—
Mathewson, Wilfred F.; Bringham, Richard L.; Ritger, Philip L.; and Karshmer, David L., 5,338,512, Cl. 422-46.000.

Bristol-Myers Squibb: *See*—
Kamachi, Hajime; Hirano, Minoru; and Masuyoshi, Shinji, 5,338,728, Cl. 514-27.000.

Bristol-Myers Squibb Company: *See*—
Atzinger, Anne E.; Bequette, Robert J.; and Davis, Robert E., 5,338,732, Cl. 514-178.000.
Matson, Ronald J.; and Yevich, Joseph P., 5,338,738, Cl. 514-256.000.

British Gas plc: *See*—
Smith, Colin, 5,337,498, Cl. 34-487.000.

British Technology Group Ltd.: *See*—
Gorham, Barry J.; and Dudley, James R., 5,339,088, Cl. 342-459.000.
Singer, Alfred R. E.; McGeough, Joseph; and Roche, Allen D., 5,337,631, Cl. 76-107.100.

Broberg, Daniel M.; Campbell, Glenn, Sr.; and Varley, Paul, to Northland Aluminum Products, Inc. Portable oven air circulator. 5,337,654, Cl. 99-447.000.

Brockner, Henry W.; Mohan, Robert J.; and Lassen, Richard, to Ford Motor Company. Automotive fuel pump with modular pump housing. 5,338,165, Cl. 417-423.100.

Brokaw, A. Paul, to Analog Devices, Inc. Integrated circuit monitor for storage battery voltage and temperature. 5,339,018, Cl. 320-35.000.

Brons, Glen B.: *See*—
Siskin, Michael; Katritzky, Alan R.; and Brons, Glen B., 5,338,442, Cl. 208-435.000.

Brooker, Donald D.: *See*—
Jung, Dick Y.; Wolfenbarger, James K.; Brooker, Donald D.; Robin, Allen M.; and Kassman, Jerrold S., 5,338,489, Cl. 252-373.000.

Brooks, Charles P.; Leahy, Donald J.; Fowler, Mark M.; and Everidge, Jackie K., Jr., to Whitaker Corporation, The. Electrical interface with microwipe action. 5,338,209, Cl. 439-66.000.

Brooktree Corporation: *See*—
Lou, Perry W., 5,338,990, Cl. 307-603.000.

Bross, Arthur; and Walsh, Thomas J., to International Business Machines Corporation. High density electronic connector and method of assembly. 5,338,208, Cl. 439-66.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Kawaguchi, Takashi, 5,338,612, Cl. 428-412.000.

Brown, Christopher R., to Foxboro Company, The. Monolithic flow tube with improved dielectric properties for use with a magnetic flowmeter. 5,337,607, Cl. 73-861.120.

Brown, Clinton A.; Hellyer, William E.; Huston, John T.; and Dickman, Anthony W., to Babcock & Wilcox Company, The. Method and apparatus for constant progression of a cleaning jet across heated surfaces. 5,337,438, Cl. 15-318.100.

Brown, Curtis W. Dual purpose adjustable tree stand unit. 5,337,990, Cl. 248-526.000.

Brown, David L.: *See*—
Brown, Donald E.; and Brown, David L., 5,337,505, Cl. 42-95.000.

Brown, Donald E.; and Brown, David L. Tool kit for cleaning firearms. 5,337,505, Cl. 42-95.000.

Brown, Frederick J.: *See*—
Bernstein, Peter R.; Brown, Frederick J.; Matassa, Victor G.; and Yee, Ying K., 5,338,734, Cl. 514-224.200.

Brown, George E.: *See*—
Schwab, Edward C.; Brown, George E.; Thomas, Kristin L.; and Harrington, Terry R., 5,338,556, Cl. 426-241.000.

Brown, Jonathan W.: *See*—
Massie, Keith J.; Brown, Jonathan W.; and McGilvray, James A., 5,337,822, Cl. 166-264.000

Brown, Joseph B., deceased: *See*—
Kasmark, James W., Jr.; and Brown, Joseph B., deceased, 5,338,340, Cl. 96-135.000.

Brown, Mary Louise, Administratix: *See*—
Kasmark, James W., Jr.; and Brown, Joseph B., deceased, 5,338,340, Cl. 96-135.000.

Brown, Peter E., to Jebron Limited. Method of swinging a pivoted door to a selected position and cam and follower mechanism for use in the method. 5,337,448, Cl. 16-53.000.

Brown, T. Garry: *See*—
Reeves, Robert D.; and Brown, T. Garry, 5,338,933, Cl. 250-334.000.

Brown, William J.; Cherek, Bogdan; and Viuhko, Henry T., to Milltronics Ltd. Acoustic transducer. 5,339,292, Cl. 367-176.000.

Brown, Yorke J.: *See*—
Puma, Samuel C.; Sinacori, John B.; and Brown, Yorke J., 5,339,259, Cl. 364-559.000.

Brownell, James E.: *See*—
Barrow, Colin J.; Brownell, James E.; Houck, David R.; Hong, Anderson C.; Popp, Janet L.; and Sedlock, David M., 5,338,845, Cl. 544-343.000.

Brownlow, James M., deceased: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Brucken, Volker; and Huppatz, Werner, to Vereinigte Aluminium-Werke Aktiengesellschaft. Cathodic corrosion protection for an aluminum-containing substrate. 5,338,417, Cl. 204-147.000.

Bruckert, William; Bissett, Thomas D.; Dearth, Glenn; and Paternoster, Paul, to Digital Equipment Corporation. Method and apparatus for reducing checking costs in fault tolerant processors. 5,339,408, Cl. 395-575.000.

Brudnoy, David M.: *See*—
Levy, Arthur J.; Oppenlander, Jane E.; Brudnoy, David M.; Englund, James M.; and Loomis, Kent C., 5,339,256, Cl. 364-506.000.

Bruke, Richard L., to Spirac Engineering AB. Conveying and compacting apparatus having a shaftless spiral in a casing with drainage openings. 5,337,658, Cl. 100-127.000.

Bruker Medizintechnik GmbH: *See*—
Hennig, Jurgen, 5,339,034, Cl. 324-309.000.

Brunard, Nathalie: *See*—
Joly, Jean-Francois; Caullet, Philippe; Guth, Jean-Louis; Faust, Anne-Catherine; Brunard, Nathalie; and Kolenda, Frederic, 5,338,525, Cl. 423-326.000.

Brunet, Michel: *See*—
Lugez, Pierre; Jouillat, Claude; and Brunet, Michel, 5,337,923, Cl 222-183.000.

Brunker, David L.: *See*—
Lee, Shiuan E.; Wong, Yuen P.; and Brunker, David L., 5,338,215, Cl. 439-188.000.

Brunsvold, William R.; Jagannathan, Premlatha; Miura, Steve S.; Montgomery, Melvin W.; Sachdev, Harbans S.; and Sooriyakumaran, Ratnam, to International Business Machines Corporation. Silicon containing positive resist for DUV lithography. 5,338,818, Cl. 528-43.000.

Bryant, Frank: *See*—
Hodges, Robert; and Bryant, Frank, 5,338,968, Cl. 257-647.000.

Bryce, Brian; and Wilhite, Mathew, to Molex Incorporated. Electrical connector assembly. 5,338,230, Cl. 439-629.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Bryce, James R.; Burke, Rodger W.; and Reisdorf, Paul A., to Molex Incorporated. Panel mounting system for electrical connectors. 5,338,226, Cl. 439-571.000.

Buchi Laboratoriums-Technik AG: *See*—
Trunner, Josef, 5,337,806, Cl. 165-47.000.

Buck, Dean: *See*—
Henry, Steven G.; Buck, Dean; and Bybee, Jerry L., 5,339,107, Cl. 348-270.000.

Buck, Manfred: *See*—
Fehrle, Siegfried; Kabatnik, Wilfried; Buck, Manfred; Dietz, Klaus; Hoelzel, Martin; Kleyer, Klaus; Schmid, Wolfgang; and Wanner, Karl, 5,337,945, Cl. 227-109.000.

Buckley, Daniel T., to C. A. Lawton Company, The. Apparatus for making preforms. 5,338,169, Cl. 425-82.100.

Budinger, A. Bowman: *See*—
Byszewski, Wojciech W.; Dale, Brian; Gregor, Philip D.; Budinger, A. Bowman; and Li, Yan M., 5,339,005, Cl. 315-244.000.

Bueche, Kenneth M.: *See*—
Spaulding, Gregory L.; Spaulding, Pamela M.; and Bueche, Kenneth M., 5,337,919, Cl. 221-2.000.

Buehler AG: *See*—
Gmuer, Bruno, 5,337,541, Cl. 53-459.000.

Buehlmann, Thomas, to Ikotek Informatik, Kommunikation und Fertigungstechnik AG. Method and plant for recovering secondary raw materials from garbage. 5,337,964, Cl. 241-17.000.

Buff, Bret E.; Khau, Vien V.; Martinelli, Michael J.; and Peterson, Barry C., to Eli Lilly and Company. Synthesis of cis-decahydroisoquinoline-3-carboxylic acids. 5,338,851, Cl. 546-141.000.

Bulgrien, Garth H.; and Hansen, Charles A., to Ford New Holland, Inc. Powershift transmission with overlapping ranges of ratios. 5,337,624, Cl. 74-335.000.

Bull, S.A.: *See*—
Chotard, Antoine; Belloir, Jean-Jacques; and Iceta, Thierry, 5,339,220, Cl. 361-796.000.

Bulman, Gary E.: *See*—
Edmond, John A.; Kong, Hua-Shuang; Dmitriev, Vladimir; and Bulman, Gary E., 5,338,944, Cl. 257-76.000.

Bundy Corporation: *See*—
McNaughton, James; and Walker, Donald C., 5,338,002, Cl. 251-149.600.

Burd, Alexander L. Combined boiler water temperature control. 5,337,955, Cl. 236-91.00F.

Burdett, Kenneth A.: *See*—
Lee, Guo-shuh J.; and Burdett, Kenneth A., 5,338,887, Cl. 568-564.000.

Burdette, Jackie B., II, to Kemira, Inc. Metal with ceramic coating and method. 5,338,577, Cl. 427-453.000.

Burdick, Joel W., IV: *See*—
Grundfest, Warren S.; Burdick, Joel W., IV; and Slatkin, Andrew B., 5,337,732, Cl. 128-4.000.

Burgess, Gregory S.: *See*—
Flinchum, Charles; Barney, Gerald L.; Burgess, Gregory S.; Kleinmeyer, Davis L.; and Parrella, Larry E., 5,339,329, Cl. 373-138.000.

Burk, Johst H.: *See*—
Triplett, Kelly B.; Burk, Johst H.; Sherif, Fawzy G.; and Vreugdenhil, Willem, 5,338,716, Cl. 502-64.000.

Burk, Melvyn I.; and Scherson, Daniel A. Electrochemical device for removal and regeneration of oxygen and method. 5,338,412, Cl. 204-59.00R.

Burke, Robert J.; and Weber, Paul J. Railroad wheel flange lubricator mounting. 5,337,860, Cl. 184-3.200.

Burke, Rodger W.: *See*—
Bryce, James R.; Burke, Rodger W.; and Reisdorf, Paul A., 5,338,226, Cl. 439-571.000.

Burmeister, Curt K.; Harris, Kevin W.; Noyce, William B.; and Hobbs, Steven O., to Digital Equipment Corporation. Compiler allocating a register to a data item used between a use and store of another data item previously allocated to the register. 5,339,428, Cl. 395-700.000.

Burmer, Christian, to Siemens Aktiengesellschaft. Method for the local removal of UV-transparent insulation layers on a semiconductor substrate. 5,338,393, Cl. 156-643.000.

Burndy Corporation: *See*—
Lomastro, Joseph A.; and Nager, Urs F., 5,337,566, Cl. 60-632.000.

Burns, Stephen R.: *See*—
Harris, Gregory; Nicholson, Roy V.; Burns, Stephen R.; and Lackey, Robert W., 5,337,445, Cl. 15-394.000.

Burroughs, Mike: *See*—
Rehkemper, Jeffrey; Burroughs, Mike; Rehkemper, Steven; and Osborne, Kimberlee, 5,338,027, Cl. 273-58.00K.

Burstein, Sumner H.; and Mechoulam, Raphael, to Burstein, Sumner H. (3R,4R)-Δ 6 tetrahydrocannabinol-7-oic acids useful as antiinflammatory agents and analgesics. 5,338,753, Cl. 514-454.000.

Busch, Dietrich: *See*—
Borens, Manfred; Busch, Dietrich; Leroux, Roland; Scheidler, Regina; and Bonzelius, Karsten, 5,337,727, Cl. 126-200.000.

Busch, Frank R.; Bowles, Paul; John, Douglas; Allen, Meldrum; DiRoma, Sabeto A.; and Godek, Dennis M., to Pfizer Inc. Process for preparing aryl piperazinyl-heterocyclic compounds with a piperazine salt. 5,338,846, Cl. 544-368.000.

Bush, Thomas J.: *See*—
Polak, Donald J.; and Bush, Thomas J., 5,339,122, Cl. 353-103.000.

Bushnell, Peter R.: *See*—
Zhao, Guoquan; Amr, Yehia M.; Bushnell, Peter R.; Drucker, Alan S.; and Nash, Eric J., 5,337,580, Cl. 62-262.000.

Butler, Scott J.: *See*—
Lapatovich, Walter P.; Butler, Scott J.; and Smith, Robert K., 5,339,008, Cl. 315-248.000.

Butler, Walt R. Mulch plate. 5,337,545, Cl. 56-320.200.

Buttitta, Anthony: *See*—
Kremenchugsky, Vladimir; and Buttitta, Anthony, 5,339,223, Cl. 362-32.000.

Buysch, Hans-Josef: *See*—
Botta, Artur; Buysch, Hans-Josef; Immel, Otto; and Puppe, Lothar, 5,338,861, Cl. 548-552.000.
Immel, Otto; Darsow, Gerhard; and Buysch, Hans-Josef, 5,338,885, Cl. 564-398.000.

Buzzi, Carlo A.: *See*—
Saxer, Ulrich P.; and Buzzi, Carlo A., 5,337,436, Cl. 15-104.940.

Bybee, Jerry L.: *See*—
Henry, Steven G.; Buck, Dean; and Bybee, Jerry L., 5,339,107, Cl. 348-270.000.

Byszewski, Wojciech W.; Dale, Brian; Gregor, Philip D.; Budinger, A. Bowman; and Li, Yan M., to GET Laboratories Incorporated. Method and circuit for improving hid lamp starting. 5,339,005, Cl. 315-244.000.

Byun, Jae H., to Koh, Seon Woong. Circuit, having multiple series resonant paths, for lighting a blinking fluorescent lamp without adversely affecting lamp life. 5,338,110, Cl. 315-94.000.

C. A. Lawton Company, The: *See*—
Buckley, Daniel T., 5,338,169, Cl. 425-82.100.

C.I.A.R.E. S.p.A.: *See*—
Esposto, Lino, 5,339,286, Cl. 367-140.000.

C.R. Bard, Inc.: *See*—
McIntyre, Jon T., 5,338,298, Cl. 604-96.000.

C. Rob. Hammerstein GmbH, Firma: *See*—
Bauer, Heinz; Becker, Burckhard; and Frohnhaus, Ernst-Reinhard, 5,338,119, Cl. 384-47.000.

Cabel-Con, Inc.: *See*—
Jacobsen, Ingolf G.; and Langham, Arvin L., 5,338,225, Cl. 439-585.000.

Cabloptic S.A.: *See*—
Sandoz, Frederic; and Berthou, Herve , 5,337,585, Cl. 65-391.000.

Cadorniga, Lauro C., to Dunlop Slazenger Corporation. Golf ball. 5,338,038, Cl. 273-216.000.

Cadotte, Roland, Jr.: *See*—
Wilber, William; Cadotte, Roland, Jr.; Rachlin, Adam; and Cumminga, Michael, 5,338,943, Cl. 505-193.000.

Caldwell, W. Brett: *See*—
Mirkin, Chad A.; Chen, Kaimin; and Caldwell, W. Brett, 5,338,571, Cl. 427-299.000.

Calgon Carbon Corporation: *See*—
Carrubba, Robert V.; Hayden, Richerd A; and Matviya, Thomas M., 5,338,458, Cl. 210-668.000.

Calgon Corporation: *See*—
Chen, Shih-Ruey T.; and Matz, Gary F., 5,338,477, Cl. 252-180.000.
Matz, Gary F.; and Vaughan, Craig, 5,338,541, Cl. 424-71.000.

California Institute of Technology: *See*—
Kimble, Harry J.; Ou, Zhe-Yu; and Pereira, Silvania E., 5,339,182, Cl. 359-112.000.
Zewert, Thomas; and Harrington, Michael G., 5,338,428, Cl. 204-299.00R.

Callaway, Duane: *See*—
Harris, Guy; Callaway, Duane; and Shah, Rajesh, 5,338,705, Cl. 437-217.000.

Caly, William G., to Nestec S.A. Production of a beverage base of cocoa-coated sugar grains. 5,338,555, Cl. 426-96.000.

Cameron, Kelly: *See*—
Venbrux, Jack; and Cameron, Kelly, 5,339,077, Cl. 341-67.000.

Campbell, Glenn, Sr.: *See*—
Broberg, Daniel M.; Campbell, Glenn, Sr.; and Varley, Paul, 5,337,654, Cl. 99-447.000.

Campbell, Iain J.; Morley, Wayne G.; and Norton, Ian T., to Van Den Bergh Foods Co., Division of Conopco, Inc. Water-continuous emulsions based on polysaccharides. 5,338,561, Cl. 426-602.000.

Campbell, Michael L.: *See*—
Meyer, Richard S.; and Campbell, Michael L., 5,338,564, Cl. 426-612.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of the Environment: *See*—
Pare, J. R. Jocelyn, 5,338,557, Cl. 426-241.000.

Canada, Her Majesty the Queen in right of Canada, as represented by National Research Council Canada and Forestry: *See*—
Yuen, Kai-Chung L.; and Arif, Basil, 5,338,679, Cl. 435-235.100.

Cangialosi, Richard: *See*—
Abbott, Joan; Cangialosi, Richard; and Pethica, Brian A., 5,338,286, Cl. 600-14.000.

Cannon, James C.: *See*—
Zhang, Yunchang; and Cannon, James C., 5,338,516, Cl. 422-126.000.

Canon Kabushiki Kaisha: *See*—
Aoike, Tatsuyuki, 5,338,370, Cl. 136-258.000.
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.
Hashimoto, Yuichi; Amamiya, Shoji; and Sakakibara, Teigo, 5,338,632, Cl. 430-58.000.
Homma, Hideo; Kaneda, Kitahiro; and Yamada, Kunihiko, 5,339,163, Cl. 348-229.000.

Jinnai, Shigeru, 5,339,173, Cl. 358-471.000.

Katagiri, Hiroyuki; Takei, Tetsuya; and Shirasuna, Toshiyasu, 5,338,580, Cl. 427-575.000.

Kawai, Takashi; and Outa, Kenichi, 5,339,365, Cl. 382-54.000.

Kawasaki, Takehiko; Shinjo, Katsuhiko; Yamamoto, Keisuke; and Kaneko, Norio, 5,339,457, Cl. 455-333.000.

Kitani, Koji; and Nakanishi, Toru, 5,338,998, Cl. 310-323.000.

Koyama, Shinichi; and Takayama, Nobutoshi, 5,339,200, Cl. 360-24.200.

Kurabayashi, Yutaka; Sakaki, Mamoru; and Kaneko, Tomomi, 5,338,597, Cl. 428-195.000.

Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,339,098, Cl. 347-5.000.

Tomita, Yasuo, 5,339,371, Cl. 385-24.000.

Tsuchiya, Kiyoko; Tomiyama, Koichi; Kato, Masayoshi; Kukimoto, Tsutomu; and Yusa, Hiroshi, 5,338,638, Cl. 430-106.000.

Uchiyama, Masaki; Tanikawa, Hirohide; Akashi, Yasutaka; Taya, Masaaki; and Unno, Makoto, 5,338,894, Cl. 118-653.000.

Ueno, Isamu; Hashimoto, Seiji; and Takeda, Masami, 5,339,106, Cl. 348-243.000.

Yoshinaga, Kazuo; Oikawa, Katsuya; and Ohnishi, Toshikazu, 5,339,306, Cl. 369-275.100.

Cantrell, Charles E. Guitar neck apparatus. 5,337,643, Cl. 84-293.000.

Capet, Marc: *See*—
Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,338,760, Cl. 514-539.000.

Capitol Spouts, Inc.: *See*—
Abrams, Robert S.; and Miller, Joseph H., 5,338,385, Cl. 156-252.000.

Capozzola, John; and Kennedy, David K., to General Chemical Corporation. Removal of aluminum and sulfate ions from aqueous solutions. 5,338,457, Cl. 210-652.000.

Cappar Ltd.: *See*—
Lohnes, Steven A.; and Crowne, Francis R., 5,338,568, Cl. 427-136.000.

Cappelli, Fabio: *See*—
Amadesi, Paolo; Cappelli, Fabio; and Pazzaglia, Sergio, 5,337,683, Cl. 110-346.000.

Card, Stuart K.: *See*—
Robertson, George G.; Mackinlay, Jock; and Card, Stuart K., 5,339,390, Cl. 395-157.000.

Cardiopulmonics, Inc.: *See*—
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, JD; and Berry, Gaylord, 5,338,770, Cl. 523-112.000.

Cardon, Hugh L. Scriptwriting guidance device. 5,337,484, Cl. 33-41.200.

Cargill, Incorporated: *See*—
Gruber, Patrick R.; Kolstad, Jeffrey J.; Hall, Eric S.; Eichen Conn, Robin S.; and Ryan, Christopher M., 5,338,822, Cl. 528-354.000.
Panandiker, Kam P.; and Olson, Morris R., 5,338,479, Cl. 252-183.710.

Carico, Joey C.: *See*—
White, Alan W.; Pearcy, Barry G.; Strand, Marc A.; and Carico, Joey C., 5,338,606, Cl. 428-458.000.

Carlile, Robert N.; and Geha, Sam G., to Arizona Board of Regents on Behalf of the University of Arizona. Langmuir probe system for radio frequency excited plasma processing system. 5,339,039, Cl. 324-655.000.

Carlisle, Raymond M.: *See*—
Fleming, David F.; Raudenbush, James M.; and Carlisle, Raymond M., 5,339,022, Cl. 324-67.000.

Carlotta, Michael, to Xerox Corporation. Capping carriage for ink jet printer maintenance station. 5,339,102, Cl. 347-32.000.

Carmichael, Kathleen M.: *See*—
Pai, Damodar M.; DeFeo, Paul J.; and Carmichael, Kathleen M., 5,338,635, Cl. 430-59.000.

Carnesi, Thomas. Laterally adjustable socket with means for providing visible indication of socket operating position. 5,337,634, Cl. 81-128.000.

Carney, Michael W.; Marsland, Timothy; and Pittore, William F., to Sun Microsystems, Inc. Reconstructing symbol definitions of a dynamically configurable operating system defined at the time of a system crash. 5,339,406, Cl. 395-575.000.

Carobolante, Francesco, to SGS-Thomson Microelectronics, Inc. Compensated circuit for driving inductive loads with very high bandwidth. 5,338,977, Cl. 307-270.000.

Carpenter Manufacturing Co., Inc.: *See*—
Carpenter, Thomas S.; and Hand, David D., 5,337,633, Cl. 81-9.510.

Carpenter, Thomas S.; and Hand, David D., to Carpenter Manufacturing Co., Inc. Arrangement and method of use of cooperative blades for severing coating layers on filamentary members. 5,337,633, Cl. 81-9.510.

Carpino, Philip C.; Wester, Ronald T.; and Da Silva Jardine, Paul A., to Pfizer Inc. Angiotensin II receptor antagonists. 5,338,740, Cl. 514-259.000.

Carrejo, Juan P.: *See*—
Theodore, N. David; and Carrejo, Juan P., 5,338,932, Cl. 250-306.000.

Carrier Corporation: *See*—
Thompson, Kevin D., 5,337,952, Cl. 236-10.000.
Zhao, Guoquan; Amr, Yehia M.; Bushnell, Peter R.; Drucker, Alan S.; and Nash, Eric J., 5,337,580, Cl. 62-262.000.

Carrig, Keith M.; Hathaway, David J.; Lallier, Keith W.; Panner, Jeannie T. H.; and Sehr, Terrence W., to International Business Machines Corporation. Method and apparatus for making a skew-controlled signal distribution network. 5,339,253, Cl. 364-489.000.

Carroll, Thomas J.: *See*—
Bell, Joseph W.; and Carroll, Thomas J., 5,338,809, Cl. 426-5.000.

Carroll, William G., to Maxim Inc. Compact balloon inflater and loader apparatus and method. 5,337,540, Cl. 53-459.000.

Carrubba, Robert V.; Hayden, Richerd A; and Matviya, Thomas M., to Calgon Carbon Corporation. Method for removing chloramine with catalytic carbon. 5,338,458, Cl. 210-668.000.

Casati, Paolo; Corno, Marziano; and Marchisi, Giuseppe, to SGS-Thomson Microelectronics, S.r.l. Electronic device structure with studs locating lead frame on backing plate. 5,338,971, Cl. 257-666.000.

Catalytica, Inc.: *See*—
Dalla Betta, Ralph A.; and Sheridan, David R., 5,338,515, Cl. 422-95.000.

Catena, Robert J.; Artusa, Gastone; Kveglis, Albert A.; Bosco, Jason J.; Barreto, Sonia; Mathew, Mathew C.; and Schneider, Mark D., to Sun Chemical Corporation. Flexible packaging printing ink containing cellulose acetate butyrate. 5,338,785, Cl. 524-39.000.

Caterpillar Inc.: *See*—
Scheel, Horst; and Stevenson, Thomas T., 5,337,717, Cl. 123-426.000.
Swanson, Victor E.; Feucht, Joel D.; and Shoup, Stephen G., 5,338,153, Cl. 415-168.200.

Caterpillar Paving Products Inc.: *See*—
Lent, Kevin C.; and Holsapple, Brad L., 5,338,102, Cl. 299-10.000.

Caullet, Philippe: *See*—
Joly, Jean-Francois; Caullet, Philippe; Guth, Jean-Louis; Faust, Anne-Catherine; Brunard, Nathalie; and Kolenda, Frederic, 5,338,525, Cl. 423-326.000.

Caupin, Henri: *See*—
Menassa, Aime; and Caupin, Henri, 5,338,511, Cl. 422-5.000.

Cazaillon, Jean-Mary: *See*—
Szafranski, Pierre; and Cazaillon, Jean-Mary, 5,338,051, Cl. 280-607.000.

Cech, Leonard S.: *See*—
Rohr, Eric L.; Cech, Leonard S.; and Saltzman, Barry M., 5,338,347, Cl. 106-14.440.

Cedarapids, Inc.: *See*—
Yocum, Gene H., 5,338,188, Cl. 432-114.000.

Cedars-Sinai Medical Center: *See*—
Grundfest, Warren S.; Burdick, Joel W., IV; and Slatkin, Andrew B., 5,337,732, Cl. 128-4.000.

Celleco-Hedemora AB: *See*—
Andersson, Roine; and Rundqvist, Lars-Goran, 5,337,899, Cl. 209-728.000.

Center for Innovative Technology, The: *See*—
Murphy, Kent A.; Gunther, Michael F.; and Claus, Richard O., 5,339,374, Cl. 385-43.000.

Central Glass Company, Limited: *See*—
Kawamoto, Hiromi; Kubota, Yoshinori; Nishimura, Natsuya; and Sakanoue, Akira, 5,338,607, Cl. 428-373.000.
Tanaka, Katsuto; Makita, Kensuke; and Moriguchi, Yasuo, 5,338,350, Cl. 106-19.00D.

Central Iron and Steel Research Institute: *See*—
Liu, Goudong; Zhang, Chuanli; Ma, Hongliang; Xu, Shizhen; Li, Jingbei; Li, Xuecai; and Ding, Lidong, 5,338,376, Cl. 148-304.000.

Central Soya: *See*—
Kennedy, Ann R.; and Szuhaj, Bernard F., 5,338,547, Cl. 424-195.100.

Centre National de la Recherche Scientifique (C.N.R.S.): *See*—
Rousset, Abel; and DeVaux, Xavier, 5,338,714, Cl. 501-127.000.

Ceramatec, Inc.: *See*—
Nachlas, Jesse A.; Taylor, Dale M.; and Wilson, Merrill A., 5,338,623, Cl. 429-31.000.

Cetylite Industries, Inc.: *See*—
Wachman, Stanley L.; and Karlan, Sidney, 5,338,748, Cl. 514-358.000.

Chahbazian, Jacques, to Prana Recherche et Development. Wave propagation signal transmission device and applications of the device to the amplification of such signals. 5,339,043, Cl. 330-56.000.

Chalfin, Bernard. Tassel tag ornament attachment assembly. 5,338,586, Cl. 428-28.000.

Chambonnet, Bernard, to La Spirotechnique Industrielle et Commerciale. Belt structure, particularly for accessories. 5,337,935, Cl. 224-224.000.

Champagne, Robert J., Jr.: *See*—
Chancey, Roger; and Champagne, Robert J., Jr., 5,337,840, Cl. 175-107.000.

Champion International Corporation: *See*—
Griffin, Edward R.; Urban, Wesley R.; and Hintsala, Arlen J., 5,337,490, Cl. 34-117.000.

Chan, Kenneth K.: *See*—
Jacobs, Edward M.; Chan, Kenneth K.; and Alexander, Thomas B., 5,339,440, Cl. 395-325.000.

Chan, Michael L. F. Dual pocket display folder for sheet material. 5,337,889, Cl. 206-215.000.

Chan, Paul; Dadoo, Manoj; Pettis, Karl; and Santhanan, Vatsa, to Hewlett-Packard Company. ANDF compiler using the HPcode-plus compiler intermediate language. 5,339,419, Cl. 395-700.000.

Chana, Jit S.; Lupton, Pete J.; and Plum, Dennis L., to International Business Machines Corporation. Data processing system including linked functional units. 5,339,414, Cl. 395-650.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Chance, Christopher N.: *See—*
Newsome, Reginald W.; DeBlasio, James A.; Talley, Robert E.; Adams, John M.; Chance, Christopher N.; Evers, Donald H.; Harris, William C.; and Kirby, Michael A., 5,337,948, Cl. 229-120.150.

Chancey, Roger; and Champagne, Robert J., Jr., to International Drilling Systems, Inc. Improved mud motor system incorporating fluid bearings. 5,337,840, Cl. 175-107.000.

Chandler, Virginia E.: *See—*
Harris, Bradley D.; and Chandler, Virginia E., 5,337,674, Cl. 102-530.000.

Chao, Hu H.: *See—*
Tuan, Hsiao-Chin; and Chao, Hu H., 5,338,750, Cl. 437-70.000.

Chaplin, Dominic, to Alcan International Limited. Fire-retardant compositions. 5,338,791, Cl. 524-401.000.

Chase, Robert P., Jr.: *See—*
Lubkin, David C.; Robinson, Douglas B.; Chase, Robert P., Jr.; Leach, Paul J.; McCue, Daniel L., III; and Leblang, David B., 5,339,435, Cl. 395-700.000.

Chatterjee, Ananda M., to Shell Oil Company. Polymer compositions. 5,338,790, Cl. 524-400.000.

Chek, Paul W. Hydro-therapeutic rehab-footgear. 5,338,275, Cl. 482-111.000.

Chemical Research & Licensing Company: *See—*
Evans, William T., III; and Stork, Karl, 5,338,517, Cl. 422-191.000.

Chen, Hao A.: *See—*
Wang, C. David; Shultz, Jeffrey R.; and Chen, Hao A., 5,338,504, Cl. 264-555.000.

Chen, Jen: *See—*
Choy, William; Chen, Jen; and Almassian, Bijan, 5,338,867, Cl. 549-298.000.

Chen, Juin-Hwey, to AT&T Bell Laboratories. Code-excited linear predictive coding with low delay for speech or audio signals. 5,339,384, Cl. 395-2.200.

Chen, Kaimin: *See—*
Mirkin, Chad A.; Chen, Kaimin; and Caldwell, W. Brett, 5,338,571, Cl. 427-299.000.

Chen, Shih-Ruey T.; and Matz, Gary F., to Calgon Corporation. Polyether polyamino methylene phosphonates for high pH scale control. 5,338,477, Cl. 252-180.000.

Chen, We-Yu. Apparatus and method for automatic transmission system fluid exchange and internal system flushing. 5,337,708, Cl. 123-198.00A.

Chen, Wensen: *See—*
Homer, Peter K.; Parenti, Robert V.; DeStefano, Joel; Chen, Wensen; Talley, Eric; and Close, John E., 5,337,980, Cl. 244-158.00R.

Chenard, Bertrand L., to Pfizer Inc. 2-pyrrolidino-1-alkanol derivatives as antiischemic agents. 5,338,754, Cl. 514-422.000.

Cheng, Paul G.: *See—*
Serafini, Tito T.; Cheng, Paul G.; Ueda, Kenneth K.; and Wright, Ward F., 5,338,827, Cl. 528-353.000.

Cheng, Peter S. C. Device for scattering a multitude of objects and method of making same. 5,338,242, Cl. 446-220.000.

Cheng, Roberta C.: *See—*
Tomalia, Donald A.; Kaplan, Donald A.; Kruper, William J., Jr.; Cheng, Roberta C.; Tomlinson, Ian A.; Fazio, Michael J.; Hedstrand, David M.; and Wilson, Larry R., 5,338,532, Cl. 424-1.490.

Chennault, Kennith. Neckwear anchoring device. 5,337,457, Cl. 24-49.00R.

Cherek, Bogdan: *See—*
Brown, William J.; Cherek, Bogdan; and Viuhko, Henry T., 5,339,292, Cl. 367-176.000.

Chern, Engmin J., to United States of America, Administrator, National Aeronautics & Space Administration. Method and apparatus for non-contact hole eccentricity and diameter measurement. 5,339,031, Cl. 324-219.000.

Cherry, David J.: *See—*
Bartz, Kenneth W.; Cherry, David J.; and Howell, George D., 5,338,614, Cl. 428-448.000.

Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See—*
Robert, Ladislas; Moczar, Elemer; Hornebeck, William G.; and Kerneur, Christiane M. P., 5,338,747, Cl. 514-373.000.

Cheskaty, Rex B.: *See—*
Schlesch, Ronald D.; and Cheskaty, Rex B., 5,337,703, Cl 122-379.000.

Chevalier, Jean: *See—*
Kroll, Harry H.; and Chevalier, Jean, 5,338,343, Cl. 106-1.230.

Chhatwal, Kn S., to Intellikey Corporation. Electronic lock and key system. 5,337,588, Cl. 70-278.000.

Chi, Ignacio: *See—*
Kuo, Han C.; Chi, Ignacio; Lin, LiFun; and Wu, Louis L., 5,339,024, Cl. 324-435.000.

Chiba, Masakazu: *See—*
Kiuchi, Toru; Ogata, Kenji; Chiba, Masakazu; Matsuhashi, Toshiaki; Taguchi, Masahiro; and Tominaga, Motonori, 5,338,062, Cl. 280-735.000.

Chickering, James: *See—*
Newell, Scott W.; and Chickering, James, 5,337,751, Cl. 128-682.000.

Chien, An Y. Roundness error and crown electronic measuring system. 5,337,485, Cl. 33-550.000.

Chien, Kuo-Neng. Ceiling fan blade. 5,338,156, Cl. 416-132.00A.

Chien, Mu-Yen. Grindstone shield and worktable of grinding machine. 5,337,522, Cl. 51-240.00A.

Chinoin Gyogyszer- es Vegyeszeti Termekek Gyara Rt.: *See—*
Ban, Karoly; Ban, Annamaria; Pali, Lajosne ; Kruppa, Marta; Somfai, Eva; and Huszar, Csaba, 5,338,868, Cl. 549-323.000.

Chiovitti, Domenico, to Finoll Recycling Ltd. Method and apparatus for recycling asphalt based roofing material. 5,337,965, Cl. 241-19.000.

Chiu, Bernard; Gatchell, Stephen; and Wang, Jui-Shang, to Duracraft Corp. Filter air cleaner. 5,338,324, Cl. 55-385.200.

Chiu, Chin-Te: *See—*
Liu, K. J. Ray; and Chiu, Chin-Te, 5,339,265, Cl. 364-725.000.

Cho, Seong H. Structure of back mirror for vehicle. 5,339,192, Cl. 359-841.000.

Chopp, Timothy J. Power-driven golf cup cutter. 5,337,831, Cl. 172-22.000.

Chotard, Antoine; Belloir, Jean-Jacques; and Iceta, Thierry, to Bull, S.A. Host structure for adaptors for terminals belonging to a distributed data processing architecture. 5,339,220, Cl. 361-796.000.

Choudhary, Vasant R.; Rajput, Amarjeet M.; Sansare, Subhash D.; Prabhakar, Bathula; and Mamman, Ajit S., to Council of Scientific Research. Process for the production of synthesis gas by oxidative converson of methane (or natural gas) using composite catalyst containing transitional and alkine earth metal oxides. 5,338,488, Cl. 252-373.000.

Chouinard, Gregory A.: *See—*
Kane, William J.; and Chouinard, Gregory A., 5,339,153, Cl. 356-394.000.

Chow, Bruce H. B.: *See—*
Bowler, Geoffrey H.; and Chow, Bruce H. B., 5,338,252, Cl 454-155.000.

Choy, William; Chen, Jen; and Almassian, Bijan, to Genelabs Technologies, Inc. Preparation of 4β- amino podophyllotoxin compounds. 5,338,867, Cl. 549-298.000.

Christensen, David M.: *See—*
Schuchert, Eugene H.; Christensen, David M.; and McGuire, Samuel B., 5,337,590, Cl. 72-157.000.

Christensen, Thorkild: *See—*
Thomsen, Svend E.; Christensen, Thorkild; and Zenker, Siegfried, 5,337,778, Cl. 137-117.000.

Christian, Donald J.: *See—*
Mills, Robert L.; Lodholz, John C.; Sarat-Chandra, Rangasami; Orlando, Franklin P.; and Christian, Donald J., 5,337,885, Cl. 198-502.400.

Christian, Paul E.: *See—*
Gullberg, Grant T.; Morgan, Hugh T.; Tung, Chi-Hua; Zeng, Gengsheng L.; and Christian, Paul E., 5,338,936, Cl. 250-363.040.

Christy, Kenneth G., Jr.: *See—*
Scalice, Edward R.; Sharkey, David J.; Christy, Kenneth G., Jr.; Esders, Theodore W.; and Daiss, John L., 5,338,671, Cl 435-91.200.

Chrysler Corporation: *See—*
Pavur, Carol P.; and Schnurr, Martin W., 5,338,138, Cl. 411-107.000.
Roth, David B., 5,337,704, Cl. 123-41.100.

Chu, Min; Patel, Mahesh; Horan, Ann C.; and Gullo, Vincent P., to Schering Corporation. Bicyclic diterpene PAF antagonist compounds. 5,338,758, Cl. 514-468.000.

Chu, Steven; Weiman, Carl; and Swann, William, to Research Corporation Technologies. Frequency standard using an atomic fountain of optically trapped atoms. 5,338,930, Cl. 250-251.000.

Chuang, Karl T.; and Zhou, Bing. Production of hydrogen peroxide. 5,338,531, Cl. 423-584.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Takeuchi, Masaki; and Kanzaki, Mitsuru, 5,338,720, Cl. 504-273.000.

Chugoku Resin co., Ltd.: *See—*
Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo; and Imuta, Shinichi, 5,338,792, Cl. 524-477.000.

Chujo, Yoshiki: *See—*
Yorita, Hiroshi; Igashira, Toshihiko; Moritsugu, Michiyasu; and Chujo, Yoshiki, 5,338,431, Cl. 204-424.000.

Chumsae, Mark S.: *See—*
Vipond, Edward W.; and Chumsae, Mark S., 5,337,994, Cl. 248-289.100.

Chung, Hae Y.: *See—*
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,337,431, Cl. 8-159.000.

Church & Dwight Co., Inc.: *See—*
Yam, Benny S.; and Winston, Anthony E., 5,338,323, Cl. 51-307.000.

Ciba-Geigy Corporation: *See—*
Baumann, Marcus; Mayer, Carl W.; Wernet, Wolfgang; and Fischer, Walter, 5,338,863, Cl. 549-4.000.
Frenk, Klaus, 5,338,685, Cl. 436-124.000.
Kaschig, Jurgen; and Reinert, Gerhard, 5,338,319, Cl. 8-586.000.
Missbach, Martin, 5,338,746, Cl. 514-369.000.

Cirque Corporation: *See—*
O'Callaghan, James L., 5,339,213, Cl. 361-683.000.

Citizen Watch Co., Ltd.: *See—*
Kamiyama, Yasuo; Mutou, Takeo; and Osa, Takashi, 5,339,293, Cl. 368-21.000.
Masubuchi, Sadao, 5,338,631, Cl. 430-42.000.

Clark, Brian; Bonner, Stephen D.; Jundt, Jacques; and Luling, Martin, to Schlumberger Technology Corporation. Logging while drilling apparatus with blade mounted electrode for determining resistivity of surrounding formation. 5,339,036, Cl. 324-338.000.

Clark, Dennis E.: *See—*
Clark, Richard J.; Clark, Richard K.; and Clark, Dennis E., 5,337,709, Cl. 123-65.0VC.

Clark, Fred B.: *See—*
Fullerton, Jack K.; Beck, Richard A.; Clark, Fred B.; Reid, Gordon B.; and Nau, Keith A., 5,339,139, Cl. 355-215.000.

Clark, Graeme L.: *See—*
Livingstone, Ewan S.; and Clark, Graeme L., 5,339,327, Cl. 372-56.000.

Clark Industries, Inc.: *See—*
Clark, Richard J.; Clark, Richard K.; and Clark, Dennis E., 5,337,709, Cl. 123-65.0VC.

Clark, J. Bennett: *See—*
Jenneman, Gary E.; and Clark, J. Bennett, 5,337,820, Cl. 166-246.000.

Clark, John I.; Thurston, George M.; and Li, Xiao-Yan, to Oculon Corporation. Chemical prevention or reversal of cataract by phase separation inhibitors. 5,338,545, Cl. 424-94.100.

Clark, Richard J.; Clark, Richard K.; and Clark, Dennis E., to Clark Industries, Inc. One piece cylinder liner including a draftless water jacket. 5,337,709, Cl. 123-65.0VC.

Clark, Richard K.: *See—*
Clark, Richard J.; Clark, Richard K.; and Clark, Dennis E., 5,337,709, Cl. 123-65.0VC.

Claude Laval Corporation: *See—*
Mazzei, Angelo L.; and Ford, Steven D., 5,338,341, Cl. 96-208.000.

Claus, Richard O.: *See—*
Murphy, Kent A.; Gunther, Michael F.; and Claus, Richard O., 5,339,374, Cl. 385-43.000.

Clausen, Mark K. Rotatable platter storage and retrieval system. 5,337,920, Cl. 221-5.000.

Claycomb, Bruce A.; and Opperthauser, Keith G., to Automated Systems, Inc. Article storage carousel with automatic conveyor loading and unloading. 5,337,880, Cl. 198-347.300.

Clearfix Corporation: *See—*
Norville, William C., 5,337,524, Cl. 51-391.000.

Cleaveland, Earl G. Automatic inflatable PFD. 5,338,239, Cl. 441-106.000

Clement, Heinz, to Rieter Machine Works, Ltd. Method and apparatus for opening a wadding lap. 5,337,456, Cl. 19-115.00R.

Clement, Thomas P.; and Weber, David P., to Mectra Labs, Inc. Disposable lavage with instrument shield. 5,338,292, Cl. 604-22.000.

Cleo, Inc.: *See—*
Mitelman, Roman; and Smith, Gary B., 5,337,895, Cl. 206-416.000.

Close, John E.: *See—*
Homer, Peter K.; Parenti, Robert V.; DeStefano, Joel; Chen, Wensen; Talley, Eric; and Close, John E., 5,337,980, Cl. 244-158.00R.

Coad, George L., to Lang, Richard A. Rollaway extendable planar fabric closure. 5,337,818, Cl. 160-66.000.

Coble, Harold D.: *See—*
Maybee, George W.; Taylor, Timothy E.; Field, Elmer L.; Riley, Clyde; Lacefield, William R., Jr.; Coble, Harold D.; and Dasarathy, Harini, 5,338,433, Cl. 205-178.000.

Cockfield, Joe B.; Fadial, Sabrina B.; and Marco, Francis W., to Milliken Research Corporation. Method and apparatus to create an improved moire fabric. 5,337,460, Cl. 28-167.000.

Codikow, Ralph. Subdividing device. 5,337,480, Cl. 30-114.000.

Coenen, Hubert: *See—*
Ben-Nasr, Hedi; and Coenen, Hubert, 5,338,575, Cl. 426-427.000.

COGEMA - Compagnie Generale des Matieres Nucleaires: *See—*
Petitclerc, Jean-Louis; and Ricaud, Jean-Louis, 5,339,339, Cl. 376-245.000.

Coha, Joseph A.: *See—*
Rupp, Richard R.; Coutant, Gary A.; and Coha, Joseph A., 5,339,431, Cl. 395-700.000.

Cohen, Isaac; and Svoronos, William, to Lambda Electronics, Inc. Composite printed circuit board and manufacturing method thereof. 5,339,217, Cl. 361-707.000.

Cohen, Martin L.: *See—*
Panzer, Hans P.; Giovanni, Lino; Cohen, Martin L.; and Yen, Wei S., 5,338,492, Cl. 252-582.000.

Cohen, Zaki; and Deckel, Eli. Automatic shaving apparatus. 5,337,478, Cl. 30-41.500.

Cole, Herbert S., Jr.; and Rose, James W., to General Electric Company. High density interconnect structure including a spacer structure and a gap. 5,338,975, Cl. 257-750.000.

Coleman, Charles H.; Miller, Sidney D.; and Smidth, Peter, to Ampex Corporation. Ordering and formatting coded image data and reconstructing partial images from the data. 5,339,108, Cl. 348-408.000.

Coleman Company, Inc., The: *See—*
Holub, Timothy M., 5,337,911, Cl. 220-254.000.

Coleman Research Corporation: *See—*
Steinway, William J.; Thomas, James E.; Barrett, Carl R.; and Beck, Buddy G., 5,339,080, Cl. 342-22.000.

Colip, Merlynn. Multipurpose fifth wheel step frame semi tractor trailer. 5,338,101, Cl. 298-17.00R.

Coller, Barry S.: *See—*
Ojima, Iwao; Eguchi, Masakatsu; Oh, Young-Im; and Coller, Barry S., 5,338,725, Cl. 514-13.000.

Collings, Neil: *See—*
Crossland, William A.; Vass, David; and Collings, Neil, 5,339,090, Cl. 345-90.000.

Commissariat a L'Energie Atomique: *See—*
Thepenier, Catherine; Gudin, Claude; and Sarrobert, Bruno, 5,338,673, Cl. 435-134.000.

Concord Camera Corporation: *See—*
Fridman, Vladimir; and Zawodny, rthur, 5,339,125, Cl. 354-106.000.

Conn, Gregory L.: *See—*
Bayne, Marvin L.; Thomas, Kenneth A., Jr.; and Conn, Gregory L., 5,338,840, Cl. 536-23.510.

Connell, Jefferson J.; Johnson, Vernon R.; Lipman, Peter H.; and Maier, Robert M., to Amdahl Corporation. Computer system with two levels of guests. 5,339,417, Cl. 395-650.000.

Connelly Skis, Inc.: *See—*
Gillis, Donald B., 5,338,238, Cl. 441-68.000.

Conner, Mike H.; Martin, Andrew R.; and Raper, Larry K., to International Business Machines Corporation. Version independence for object oriented programs. 5,339,438, Cl. 395-700.000.

Connor, Daniel S.; Scheibel, Jeffrey J.; and Kao, Ju-Nan, to Procter & Gamble Company, The. High catalyst process for glucamide detergents. 5,338,486, Cl. 252-357.000.

Connor, Daniel S,; Scheibel, Jeffrey J.; and Kao, Ju-Nan, to Procter & Gamble Company, The. Catalyzed process for glucamide detergents. 5,338,487, Cl. 252-357.000.

Connor, Daniel S.; Scheibel, Jeffrey J.; Fu, Yi-Chang; Murch, Bruce P.; Watson, Randall A.; and McKillop, Kirsten L., to Ohio. Cleaning compositions with glycerol amides. 5,338,491, Cl. 252-548.000.

Connor, David T.; and Kostlan, Catherine R., to Warner-Lambert Company. Biphenyl oxadiazoles and thiadiazoles as angiotensin II antagonists. 5,338,737, Cl. 514-259.000.

Conopco, Inc.: *See—*
Lee, G. Jae; and Edelstein, Herbert, 5,338,540, Cl. 424-71.000.

Conros Corporation: *See—*
Dickie, Robert G., 5,337,924, Cl. 222-212.000.

Conroy, James E.; Devine, William D.; and Ruschak, Kenneth J., to Eastman Kodak Company. Hopper preparation pan with edge walls. 5,338,359, Cl. 118-412.000.

Conroy-Wass, Theodore R.; and Moore, Peter W., to Hughes Aircraft Company. Printed circuit board mounting cage. 5,339,221, Cl. 361-796.000.

Construction Fasteners, Inc.: *See—*
Hulsey, Tommy R., 5,338,141, Cl. 411-375.000.

Contico International, Inc.: *See—*
Foster, Donald D.; and Nelson, Philip L., 5,337,928, Cl. 222-383.000.

Cook, Arnold J. Reactive coating. 5,337,800, Cl. 164-72.000.

Cook, Roger J., to Hydro International Limited. Vortex valves. 5,337,789, Cl. 137-812.000.

Cook Urological Incorporated: *See—*
Hasson, Harrith M.; Pingleton, Edward D.; and Thomson, Paul G., 5,338,317, Cl. 606-206.000.

Cooker, John T. Spinal support for reclining persons. 5,338,289, Cl. 602-19.000.

Cooper, David G.: *See—*
Hickey, Deirdre M. B.; Cooper, David G.; and Jaxa-Chamiec, Albert A., 5,338,752, Cl. 514-382.000.

Cooper, Emanuel I.: *See—*
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Corbett, Martin J.: *See—*
Wang, Bosco S.; Shieh, Hong-Ming; and Corbett, Martin J., 5,338,836, Cl. 530-399.000.

Cordis Corporation: *See—*
Diaz, Juan-Carlos, 5,338,301, Cl. 604-96.000.

Corey, Garland P.; King, Elmer M.; and Rypkema, Ralph E., to Sterling Drug, Inc. Carpet cleaning composition with bleach. 5,338,475, Cl. 252-102.000.

Corley, Larry S., to Shell Oil Company. Dialkylidenecyclobutane/-bisimide/epoxy compositions. 5,338,782, Cl. 523-466.000.

Cornelius, Richard G.; Arney, Michelle; and Pray, James R., to SciMed Life Systems, Inc. Dilatation catheter with polyimide-encased stainless steel braid proximal shaft. 5,338,295, Cl. 604-96.000.

Cornell Research Foundation, Inc.: *See—*
Gabay, Joelle E.; and Nathan, Carl E., 5,338,724, Cl. 514-12.000.
Sudan, Ravindra N., 5,339,336, Cl. 376-107.000.

Corning Incorporated: *See—*
Ketcham, Thomas D., 5,338,598, Cl. 428-210.000.
Miller, William J.; Nolan, Daniel A.; and Weidman, David L., 5,339,372, Cl. 385-29.000.

Corno, Marziano: *See—*
Casati, Paolo; Corno, Marziano; and Marchisi, Giuseppe, 5,338,971, Cl. 257-666.000

Coss, Ronald G.; and Hogan, Donald J., to Micro Motors, Inc. Torque control ratchet wrench. 5,337,638, Cl. 81-483.000.

Cote, Kenneth C.: *See—*
Henderson, James M.; Scott, Vernon R.; and Cote, Kenneth C., 5,338,645, Cl. 430-311.000.

Cotrel, Claude: *See—*
Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,338,760, Cl. 514-539.000.

Council of Scientific Research: *See—*
Choudhary, Vasant R.; Rajput, Amarjeet M.; Sansare, Subhash D.; Prabhakar, Bathula; and Mamman, Ajit S., 5,338,488, Cl. 252-373.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Coupland, Duncan R.; and Doyle, Mark L, to Johnson Matthey Public Limited Company. Method of using Pd-alloy pinning wires in turbine blade casting. 5,338,509, Cl. 420-463.000.

Coutant, Gary A.: *See—*
Rupp, Richard R.; Coutant, Gary A.; and Coha, Joseph A., 5,339,431, Cl. 395-700.000.

Cowan, Kenneth M., to Shell Oil Company. Coal slag universal fluid. 5,337,824, Cl. 166-293.000.

Cowley, John M.: *See—*
Talbot, Arthur J.; and Cowley, John M., 5,338,496, Cl. 261-78.200.

Cox, David M.: *See—*
Strout, Robert E., II; Spix, George A.; Masamitsu, Jon A.; Cox, David M.; Gaertner, Gregory G.; Wengelski, Diane M.; and Thompson, Keith J., 5,339,415, Cl. 395-650.000.

Cox, Edward R.: *See—*
White, Donald J., Jr.; Cox, Edward R.; and Kasturi, Rama, 5,338,537, Cl. 424-52.000.

Cox, James E., to SciMed Life Systems, Inc. Performance enhancement adaptor for intravascular balloon catheter. 5,338,300, Cl. 604-96.000.

Crane, Robert F.: *See—*
Wentworth, Steven W.; Crane, Robert F.; Haas, Jon A.; and Reynolds, Payce, 5,337,837, Cl. 175-19.000.

Crane, William C.: *See—*
Breneman, William C.; Crane, William C.; Walsh, Michael J.; and Warren, Eric A., 5,338,352, Cl. 106-285.000.

Cray Research, Inc.: *See—*
Strout, Robert E., II; Spix, George A.; Masamitsu, Jon A.; Cox, David M.; Gaertner, Gregory G.; Wengelski, Diane M.; and Thompson, Keith J., 5,339,415, Cl. 395-650.000.

Creative Extruded Products, Inc.: *See—*
Gross, Michael G.; and Young, Jack D., 5,338,087, Cl. 296-146.150.

Credo, Grace: *See—*
Sailor, Michael J.; Credo, Grace; Heinrich, Julie; and Lauerhaas, Jeffery M., 5,338,415, Cl. 204-129.200.

Cree Research, Inc.: *See—*
Edmond, John A.; Kong, Hua-Shuang; Dmitriev, Vladimir; and Bulman, Gary E., 5,338,944, Cl. 257-76.000.

Creighton University Office of Technology Licensing: *See—*
Stovall, Daryl R., 5,338,023, Cl. 273-15.00R.

Cressman, Thomas E., to Westinghouse Electric Corp. Method for finishing wood slatted articles of furniture. 5,338,570, Cl. 427-240.000.

Crews, Alvin D., Jr.: *See—*
Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Dohehner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., 5,338,883, Cl. 564-90.000

Crick, Andrew P. R., to Microsoft Corporation. Method and system for providing user control of device driver configuration. 5,339,432, Cl. 395-700.000.

Cripe, David A.: *See—*
Jones, David R.; Winterland, Garry L.; and Cripe, David A., 5,338,041, Cl. 273-260.000.

Crosby, Joseph B.: *See—*
Steffes, Karl M.; Crosby, Joseph B.; Gandre, Jerry D.; and Swindler, Dan E., 5,338,214, Cl. 439-160.000.

Crossland, William A.; Vass, David; and Collings, Neil, to Northern Telecom Limited. Spatial light modulators. 5,339,090, Cl. 345-90.000.

Crowne, Francis R.: *See—*
Lohnes, Steven A.; and Crowne, Francis R., 5,338,568, Cl. 427-136.000.

Crumly, William R.: *See—*
Woith, Blake F.; Crumly, William R.; and Linder, Jacques F., 5,339,027, Cl. 324-754.000.

Crutcher, William C. Combination toy and faucet fountain. 5,337,956, Cl. 239-27.000.

Crystal Semiconductor Corporation: *See—*
Harris, Larry L.; and Scott, Baker P. L., III, 5,339,067, Cl 338-323.000.

CTI Industries Corporation: *See—*
Van Dyke, Mark J.; and Reiter, Ernst R., 5,338,241, Cl. 446-75.000.

Cullen, James P.: *See—*
Wu, Chi-San; Curry, James F.; and Cullen, James P., 5,338,814, Cl. 526-210.000.

Culross, Claude C.: *See—*
LeViness, Steve C.; Hsia, Steve J.; Wen, Michael Y.; Davis, Stephen M.; Culross, Claude C.; and Maa, Peter S., 5,338,441, Cl. 208-419.000.

Cummings, Michael: *See—*
Wilber, William; Cadotte, Roland, Jr.; Rachlin, Adam; and Cummings, Michael, 5,338,943, Cl. 505-193.000.

Cunard, Joel C., to Hedstrom Corporation. Play gym bearing cover. 5,338,127, Cl. 403-79.000.

Curry, James F.: *See—*
Wu, Chi-San; Curry, James F.; and Cullen, James P., 5,338,814, Cl. 526-210.000.

Curtis-Burns, Inc.: *See—*
Meyer, Richard S.; and Campbell, Michael L., 5,338,564, Cl. 426-612.000

Curtis, Kevin R.; and Psaltis, Demetri, to Northrop Grumman Corporation. Disk-based optical correlator and method. 5,339,305, Cl. 369-112.000.

Curtis, Robert A., to Digital Equipment Corporation. Data communication system with a local network interface. 5,339,307, Cl. 370-13.100.

Cutler, Gerald. Three-dimensional chess. 5,338,040, Cl. 273-241.000.

Cyril-Scott Company: *See—*
McClelland, E. Leslie, 5,337,942, Cl. 229-72.000.

Cytec Technology Corp.: *See—*
Heitner, Howard I., 5,338,522, Cl. 423-265.000.
Panzer, Hans P.; Giovanni, Lino; Cohen, Martin L.; and Yen, Wei S., 5,338,492, Cl. 252-582.000.

Czekai, David A.: *See—*
Scarborough, Victoria D.; Czekai, David A.; and Powell, Jeffery E. G., 5,338,345, Cl. 106-2.000.

D-Mark, Inc.: *See—*
Kasmark, James W., Jr.; and Brown, Joseph B., deceased, 5,338,340, Cl. 96-135.000.

D. Swarovski & Co.: *See—*
Poll, Martin, 5,338,591, Cl. 428-67.000.

DACIM Laboratory Inc.: *See—*
Wu, Chuang-Jy; and Lavelle, Christopher L. B., 5,338,198, Cl. 433-213.000.

Dadoo, Manoj: *See—*
Chan, Paul; Dadoo, Manoj; Pettis, Karl; and Santhanan, Vatsa, 5,339,419, Cl. 395-700.000

Daebelliehn, Gary H.: *See—*
Briggs, Edward R.; Daebelliehn, Gary H.; Winzen, Peter S.; and Bellgraph, Donald R., 5,338,993, Cl. 310-82.000.

Daggs, Dwayne A.: *See—*
Phelps, William C., III; Daggs, Dwayne A.; Robertson, William H., Jr.; and Jensen, Tyler D., 5,339,178, Cl. 359-42.000

Daghighian, Farhad; Miodownik, Saul; Shenderov, Peter; and Eshaghian, Behzad, to Sloan-Kettering Institute for Cancer Research. Radiation imaging device having an enlarged uniform field of view. 5,338,937, Cl. 250-368.000.

Dai Nippon Printing Co., Ltd.: *See—*
Sato, Hideaki; and Eguchi, Hiroshi, 5,338,718, Cl. 503-227.000.

Daicel Chemical Industries, Ltd.: *See—*
Fujiwa, Takaaki; Takemoto, Shin; Isobe, Tomohisa; and Harano, Yoshiyuki, 5,338,879, Cl. 560-116.000.
Nelson, Steven R.; and Swiderski, Gregory, 5,338,061, Cl. 280-729.000

Daihisa, Takuji: *See—*
Matsumoto, Akira; Morita, Kiyoo; and Daihisa, Takuji, 5,337,973, Cl. 242-347.000.

Daimler-Benz AG: *See—*
Gotz, Hans; and Baumann, Karl-Heinz, 5,338,089, Cl. 296-180.500.

Daimon, Katsumi: *See—*
Nukada, Katsumi; Imai, Akira; Daimon, Katsumi; Iijima, Masakazu; Mashimo, Kiyokazu; Sakaguchi, Yasuo; and Takegawa, Ichiro, 5,338,636, Cl. 430-59.000.

Dainippon Screen Mtg. Co., Ltd.: *See—*
Matsuoka, Kazuyuki; and Fujimoto, Yasuhisa, 5,337,668, Cl. 101-481.000

Daiso Co., Ltd.: *See—*
Sakaguchi, Kazuhiko; and Kitamura, Tohru, 5,338,482, Cl. 252-299.610.

Daiss, John L.: *See—*
Scalice, Edward R.; Sharkey, David J.; Christy, Kenneth G., Jr.; Esders, Theodore W.; and Daiss, John L., 5,338,671, Cl. 435-91.200.

Daiwa Seiko, Inc.: *See—*
Oyama, Mitsuyoshi; and Tsurufuji, Tomoyoshi, 5,337,507, Cl. 43-23.000.

Daiyo Kiko Industry, Inc.: *See—*
Hirose, Kaoru, 5,338,459, Cl. 210-710.000.

Dake, Guy M.: *See—*
Beckham, D. Scott; Putnam, Greg A.; Bolt, Lorraine; Aldous, Stephen C.; Dake, Guy M.; and Henrie, James B., 5,338,210, Cl. 439-131.000

Dale, Brian: *See—*
Byszewski, Wojciech W.; Dale, Brian; Gregor, Philip D.; Budinger, A. Bowman; and Li, Yan M., 5,339,005, Cl. 315-244.000

Dalenius, Olov: *See—*
Ullman, Anders; Wanngard, Johan; Tenfalt, Mikael; and Dalenius, Olov, 5,338,414, Cl. 204-95.000.

Dalessandro, David A.; Sanderson, George G.; and Kula, John S., to Ethicon, Inc. Catheter and sheath assembly. 5,338,296, Cl. 604-96.000.

Dalhuisen, Peter B., to P. B. Dalhuisen Gasresearch Apeldoorn B.V. Gas burner system, gas burner and a method for combustion control. 5,338,184, Cl. 431-12.000.

Dalla Betta, Ralph A.; and Sheridan, David R., to Catalytica, Inc. SO_2 sensor. 5,338,515, Cl. 422-95.000.

Dalton, Larry R.: *See—*
Wu, Shin-Tson; Margerum, J. David; Meng, Hsiang-Hui B.; and Dalton, Larry R., 5,338,481, Cl. 252-299.010.

Dammel, Ralph: *See—*
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,338,641, Cl. 430-165.000.

Damsohn, Herbert; and Wolf, Walter, to Behr GmbH & Co. Filter for an air-conditioning or heating system for a motor vehicle. 5,338,253, Cl. 454-158.000.

Dana Corporation: *See—*
Eley, James M., 5,338,161, Cl. 417-307.000.
Willis, Harry G., Jr.; and Shuster, Mark M., 5,338,046, Cl 277-180.000.
Zlotek, Thaddeus F., 5,337,869, Cl. 192-45.100.

Danforth, David M. Shield device for cellular phones. 5,338,896, Cl. 174-35.00R.

Danfoss A/S: *See—*
Thomsen, Svend E.; Christensen, Thorkild; and Zenker, Siegfried, 5,337,778, Cl. 137-117.000.

Danish, Adel; Danish, Sherif; and Kimbrough, Kris W., to Danish International, Inc. Telephone keypad matrix. 5,339,358, Cl. 379-368.000.

Danish International, Inc.: *See—*
Danish, Adel; Danish, Sherif; and Kimbrough, Kris W., 5,339,358, Cl. 379-368.000.

Danish, Sherif: *See—*
Danish, Adel; Danish, Sherif; and Kimbrough, Kris W., 5,339,358, Cl. 379-368.000.

Danzuka, Toshio: *See—*
Aikawa, Haruhiko; Ishiguro, Yoichi; and Danzuka, Toshio, 5,338,328, Cl. 65-530.000.
Ohga, Yuichi; Danzuka, Toshio; Saito, Masahide; Amemiya, Kouji; and Yokota, Hiroshi, 5,338,327, Cl. 65-414.000.

Darredeau, Bernard, to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude. Process and installation for the transfer of liquid. 5,337,569, Cl. 62-22.000.

Darrington, Franklin D.: *See—*
Pacheco, Michael A.; Darrington, Franklin D.; and Hensley, Albert L., Jr., 5,338,878, Cl. 558-277.000.

Darsow, Gerhard: *See—*
Immel, Otto; Darsow, Gerhard; and Buysch, Hans-Josef, 5,338,885, Cl. 564-398.000.

Dart Industries Inc.: *See—*
Fukuda, Takeshi, 5,337,913, Cl. 220-326.000.
Picozza, Augusto A.; and Fukuda, Takeshi, 5,337,910, Cl. 220-203.000.

Dasarathy, Harini: *See—*
Maybee, George W.; Taylor, Timothy E.; Field, Elmer L.; Riley, Clyde; Lacefield, William R., Jr.; Coble, Harold D.; and Dasarathy, Harini, 5,338,433, Cl. 205-178.000.

Dasgupta, Sunil P., to Hercules Incorporated. Enhancement of paper dry strength by anionic and cationic guar combination. 5,338,407, Cl. 162-168.300.

Da Silva Jardine, Paul A.: *See—*
Carpino, Philip C.; Wester, Ronald T.; and Da Silva Jardine, Paul A., 5,338,740, Cl. 514-259.000.

Daugs, Edward D.: *See—*
Aiman, Charles E.; and Daugs, Edward D., 5,338,862, Cl. 578-316.400.

Davidson, James. Locking apparatus and gripless nut for securing quick release mechanisms. 5,337,587, Cl. 70-233.000.

Davies, Derek; and Hughes, Kenneth. Compound for covering a substrate. 5,338,573, Cl. 427-331.000.

Davis, Joel K., to General Time Corporation. Electric alarm clock with battery back-up. 5,339,296, Cl. 368-67.000.

Davis, Leon N.: *See—*
Hackler, Ronald E.; Jourdan, Glen P.; and Davis, Leon N., 5,338,742, Cl. 514-277.000.

Davis, Robert E.: *See—*
Atzinger, Anne E.; Bequette, Robert J.; and Davis, Robert E., 5,338,732, Cl. 514-178.000.

Davis, Stephen M.: *See—*
LeViness, Steve C.; Hsia, Steve J.; Wen, Michael Y.; Davis, Stephen M.; Culross, Claude C.; and Maa, Peter S., 5,338,441, Cl. 208-419.000.

Day, Alan G., III: *See—*
Jain, Sanjeev; Vermette, John E.; Weber, Richard; Doub, Robert J.; Alon, Gad; and Day, Alan G., III, 5,337,757, Cl. 128-779.000.

Dearborn, Timothy C.: *See—*
Zaccai, Gianfranco; Rousmaniere, Arthur S.; Dearborn, Timothy C.; Noble, Lynn; and Misage, Thomas J., 5,337,525, Cl. 52-35.000.

Dearth, Glenn: *See—*
Bruckert, William; Bissett, Thomas D.; Dearth, Glenn; and Paternoster, Paul, 5,339,408, Cl. 395-575.000.

Debe, Mark K.: *See—*
Parsonage, Edward E.; and Debe, Mark K., 5,338,430, Cl. 204-412.000.

De Bin, Rene F.; and Lambrecht, Emiel, to FMC Corporation. Apparatus for rolling up web material. 5,337,968, Cl. 242-521.000.

DeBlasio, James A.: *See—*
Newsome, Reginald W.; DeBlasio, James A.; Talley, Robert E.; Adams, John M.; Chance, Christopher N.; Evers, Donald H.; Harris, William C.; and Kirby, Michael A., 5,337,948, Cl. 229-120.150.

De Blasis, Ruben E. High-performance internal-combustion engine, particularly of the four-stroke type. 5,337,706, Cl. 123-52.300.

Dec-Kor, Inc.: *See—*
Vollink, Dan H., 5,337,986, Cl. 248-218.400.

DeCamp, Ann; Dolling, Ulf H.; Li, Yulan; Rieger, Dale L.; Yasuda, Nobuyoshi; and Xavier, Lyndon C., to Merck & Co., Inc. Boron containing intermediates useful in the preparation of carbapenems. 5,338,875, Cl. 556-402.000.

Decerprit, Jacques: *See—*
Festal, Didier; Descours, Denis; and Decerprit, Jacques, 5,338,849, Cl. 546-113.000.

Deckel, Eli: *See—*
Cohen, Zaki; and Deckel, Eli, 5,337,478, Cl. 30-41.500.

Deckers, Andreas: *See—*
Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, 5,338,805, Cl. 525-330.500.

Deckwer, Wolf-Dieter; Lobas, Detlef; and Schumpe, Adrian, to Gesellschaft fur Biotechnologische Forschung mbH GBF. Method of isolating polysaccharide producing bacteria from non-polysaccharide producing bacteria with gellan. 5,338,681, Cl. 435-252.100.

de Cointet, Paul: *See—*
Wagnon, Jean; de Cointet, Paul; Nisato, Dino; Plouzane, Claude; Serradeil-Legal, Claudine; and Tonnerre, Bernard, 5,338,755, Cl. 514-414.000.

Deeg, Rolf; Maurer, Eberhard; Babiel, Reiner; Klose, Sigmar; and Kopfer, Bernhard, to Boehringer Mannheim GmbH. Method for the metered application of a biochemical analytical liquid to a target. 5,338,688, Cl. 436-180.000.

Deere & Company: *See—*
Eavenson, Jimmy N., Sr.; Behrens, Robert N.; Friesen, Henry; and Hamm, Nicholas, 5,337,849, Cl. 180-24.120.
Testerman, Michael D., 5,337,871, Cl. 192-85.00R.
Tracy, Lawrence P., 5,337,714, Cl. 123-279.000.

DeFeo, Paul J.: *See—*
Pai, Damodar M.; DeFeo, Paul J.; and Carmichael, Kathleen M., 5,338,635, Cl. 430-59.000.

Deffner, Gerhard P. H.: *See—*
Schwalm, Robert C.; and Deffner, Gerhard P. H., 5,339,361, Cl. 380-23.000.

de Groot, Paul; and Beauvais, Yves, to Thomson Tube Electroniques. Proximity focusing image intensifier tube with spacer shims. 5,338,927, Cl. 250-214.0VT.

Deguchi, Masahiro: *See—*
Ichiyanagi, Shigeo; Iwai, Shojiro; and Deguchi, Masahiro, 5,338,449, Cl. 210-205.000.

Deij, Leendert: *See—*
van Buren, Frederik R.; Deij, Leendert; Merz, Gunnar; and Schneider, Hans P., 5,338,444, Cl. 210-660.000.

de Laforcade, Vincent, to L'Oreal. Push-button actuating member for a liquid dispenser. 5,337,927, Cl. 222-321.000.

Delbeke, Robert G.: *See—*
Dickerson, D. C.; and Delbeke, Robert G., 5,338,057, Cl 280-675.000.

Delco Electronics Corporation: *See—*
Pickett, James K.; Inman, Philip A.; and Sale, Matthew D., 5,339,395, Cl. 395-325.000.
Reid, John D.; and Jensen, Jack L., 5,339,242, Cl. 364-424.050.

Delhomme, Henri: *See—*
Marion, Marie-Claire; Forestiere, Alain; and Delhomme, Henri, 5,338,518, Cl. 422-211.000.

de Lhoneux, Benoit: *See—*
Takai, Yosuke; Studinka, Josef; and de Lhoneux, Benoit, 5,338,357, Cl. 106-724.000.

Dell U.S.A., L.P.: *See—*
Steffes, Karl M., 5,337,464, Cl. 29-401.100.

Dellmann, Paul G.: *See—*
Stapp, Georg; and Dellmann, Paul G., 5,338,365, Cl. 127-2.000.

Delot, Jose, to Delot Process, S.A. Process and apparatus for the continuous or intermittent coating of objects in a liquid mass. 5,338,581, Cl. 427-598.000.

Delot Process, S.A.: *See—*
Delot, Jose, 5,338,581, Cl. 427-598.000.

Delta Agro Industries: *See—*
Menassa, Aime; and Caupin, Henri, 5,338,511, Cl. 422-5.000.

DeLuca, Amedeo; Gentry, James E., Sr.; Thomas, David L.; Landry, Norman R.; and Agrawal, Ashok K., to General Electric Co. Phased array antenna with distributed beam steering. 5,339,086, Cl. 342-371.000.

Deluxe Corporation: *See—*
Pennaz, Thomas J., 5,338,351, Cl. 106-20.00R.

DeMatteis, Robert B. Plastic bags and handle construction for plastic bags. 5,338,118, Cl. 383-10.000.

Demoulin, Vincent; Fersing, Marc; Patureaux, Thierry; and Pontvianne, Denis, to Total Raffinage Distribution S.A. Process and apparatus for the homogenization of the mixture of solid particles and hydrocarbon vapors being treated in a fluidized bed within a tubular reactor for the cracking of hydrocarbons. 5,338,438, Cl. 208-153.000.

Den Norske Stats Oljeselskap A.S: *See—*
Halvorsen, Christian, Jr.; and Hurst, Andrew R., 5,337,596, Cl. 73-38.000.
Tailby, Roger, 5,337,819, Cl. 166-222.000.

Denis, Gerard; and La Barre, Paul, to Sidel. Equipment for the manufacture of polyethylene terephthalate containers. 5,338,181, Cl. 425-526.000

Denney, Norma L.: *See—*
Whiteside, Dennis K.; Walker, Donald R.; and Denney, Norma L., 5,337,417, Cl. 2-2.000.

Dennison, Charles H.; and Ahmad, Aftab, to Micron Semiconductor, Inc. Method of forming a bit line over capacitor array of memory cells. 5,338,700, Cl. 437-60.000.

Dentsply Research & Development Corp.: *See—*
Lu, Kewang; Huang, Chin-Teh; and Hammesfahr, Paul, 5,338,773, Cl. 523-116.000.

Derrien, Michel, to Messier-Bugatti. Raisable landing gear for heavier-than-air aircraft, in particular for helicopters. 5,337,976, Cl. 244-102.00A.

Derrieu, Guy, to Laboratoires Virbac. Controlled release device, and method of preparation. 5,338,533, Cl. 424-411.000.

Deschamps, Joel: *See—*
Trocherie, Jean-Pierre A. L.; Marriere, Marc G. P.; and Deschamps, Joel, 5,338,111, Cl. 366-205.000.

Descours, Denis: *See—*
Festal, Didier; Descours, Denis; and Decerprit, Jacques, 5,338,849, Cl. 546-113.000

VOL 1165 ISS 3 AG 16 1994 UMI

Design and Engineering Associates: *See—*
King, Richard J.; and Gordon, John R., 5,338,303, Cl. 604-110.000.

DeStefano, Joel: *See—*
Homer, Peter K.; Parenti, Robert V.; DeStefano, Joel; Chen, Wensen; Talley, Eric; and Close, John E., 5,337,980, Cl. 244-158.00R.

Deters, Ludger A.: *See—*
Teich, Udo; and Deters, Ludger A., 5,337,967, Cl. 242-35.50A.

Deutsche Babcock Energie- und Umwelttechnik AG: *See—*
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,338,326, Cl. 55-213.000.

Deutschmann, Herbert, to MTU Friedrichshafen GmbH. Supercharged multi-cylinder internal-combustion engine interior exhaust pipe. 5,337,559, Cl. 60-321.000.

Devadas, Balekudru; Gordon, Jeffrey I.; and Adams, Steven P., to Washington University. Triazolyl, tetrazolyl and azido-substituted fatty acid analog enzyme substrates. 5,338,858, Cl. 548-253.000.

DeVaux, Xavier: *See—*
Rousset, Abel; and DeVaux, Xavier, 5,338,714, Cl. 501-127.000.

Devic, Michel; and Angelier, Robert, to Societe Atochem. Process for preparing a bleached chemithermomechanical pulp. 5,338,402, Cl. 162-24.000.

Devine, William D.: *See—*
Conroy, James E.; Devine, William D.; and Ruschak, Kenneth J., 5,338,359, Cl. 118-412.000.

Devorris, Philip E. Encapsulated charged gas light apparatus. 5,339,230, Cl. 362-216.000.

Dexter Electronic Materials Division of Dexter CXorp.: *See—*
Gallo, Anthony A., 5,338,781, Cl. 523-460.000

DFM Corporation: *See—*
Stanesic, John M., 5,338,088, Cl. 296-180.100.

d'Herripon, Bastiaan A.: *See—*
Hendriks, Emery F. M.; Roovers, Wilhelmus W. C. M.; and d'Herripon, Bastiaan A., 5,337,628, Cl. 477-48.000.

Dhong, Sang H.; Kirihata, Toshiaki; Shin, Hyun J.; Sunaga, Toshio; Taira, Yoichi; and Terman, Lewis M., to International Business Machines Corporation. Variable bitline precharge voltage sensing technique for DRAM structures. 5,339,274, Cl. 365-203.000.

Diamond, Donald A. Photo radiation treatment apparatus and method. 5,337,741, Cl. 600-8.000.

Diaz, Juan-Carlos, to Cordis Corporation. Extendable balloon-on-a-wire catheter, system and treatment procedure. 5,338,301, Cl. 604-96.000.

Diaz, Zaida; and Tsiang, Raymond C., to Shell Oil Company. Removal of alkali metal methoxide catalyst residue from hydroxy-terminated conjugated diene polymers. 5,338,824, Cl. 528-482.000.

Dick, Brian G., to Alberni Thermodynamics Ltd. Heating and cooling system for a building. 5,337,574, Cl. 62-89.000.

Dickerson, D. C.; and Delbeke, Robert G., to Mascotech, Inc. Upper control arm for vehicle suspension. 5,338,057, Cl. 280-675.000.

Dickerson, Roger W., to Xetron Corporation. Method and circuit for non-cooperative interference suppression of radio frequency signals. 5,339,456, Cl. 455-303.000.

Dickie, Robert G., to Conros Corporation. Integral pump bottle. 5,337,924, Cl. 222-212.000.

Dickman, Anthony W.: *See—*
Brown, Clinton A.; Hellyer, William E.; Huston, John T.; and Dickman, Anthony W., 5,337,438, Cl. 15-318.100.

Dictaphone Corporation: *See—*
Henits, John; and Swick, Robert B., 5,339,203, Cl. 360-39.000.

Die-X Tooling Systems: *See—*
Morrison, Richard E., 5,337,639, Cl. 83-111.000.

Dienes, Geza, to Andrew Corporation. Antenna structure. 5,339,089, Cl. 343-700.0MS.

Diepstraten, Wilhelmus J. M., to NCR Corporation. Wireless local area network system. 5,339,316, Cl. 370-85.130.

Dietrich Reimelt KG: *See—*
Stapp, Georg; and Dellmann, Paul G., 5,338,365, Cl. 127-2.000

Dietrich, Ron, to Kaskaskia Valley Scale Company. Conveyor belt weigher incorporating two end located parallel-beam load cells. 5,338,901, Cl. 177-16.000.

Dietz, Klaus: *See—*
Fehrle, Siegfried; Kabatnik, Wilfried; Buck, Manfred; Dietz, Klaus; Hoelzel, Martin; Kleyer, Klaus; Schmid, Wolfgang; and Wanner, Karl, 5,337,945, Cl. 227-109.000.

Dietz, Timothy M.; Asmus, Robert A.; and Uy, Rosa, to Minnesota Mining and Manufacturing Company. Two-phase composites of ionically-conductive pressure-sensitive adhesive, biomedical electrodes using the composites, and methods of preparing the composite and the biomedical electrodes. 5,338,490, Cl. 252-500.000.

Diffrient, Niels, to Howe Furniture Corporation. Computer training and support table system. 5,337,657, Cl. 108-115.000.

Digital Equipment Corporation: *See—*
Beaverson, Arthur J., 5,339,240, Cl. 364-419.140.
Ben-Michael, Siman-Tov; Lozowick, Philip P.; Hawe, William; and Lampson, Butler, 5,339,313, Cl. 370-85.130.
Brender, Ronald F.; and Iles, Michael V., 5,339,422, Cl. 395-700.000.
Bruckert, William; Bissett, Thomas D.; Dearth, Glenn; and Paternoster, Paul, 5,339,408, Cl. 395-575.000.
Burmeister, Curt K.; Harris, Kevin W.; Noyce, William B.; and Hobbs, Steven O., 5,339,428, Cl. 395-700.000.
Curtis, Robert A., 5,339,307, Cl. 370-13.100.
East, Jeffrey A.; and Fries, Marilyn E., 5,339,418, Cl. 395-650.000.
Karger, Paul A.; Mason, Andrew H.; Wray, John C. R.; Robinson, Paul T.; Pribor sky, Anthony L.; Kahn, Clifford E.; and Leonard, Timothy E., 5,339,449, Cl. 395-700.000

Digiulio, Neil N. Wall secretary. 5,337,906, Cl. 211-88.000

Dilmanian, F. Avraham: *See—*
Slatkin, Daniel N.; Dilmanian, F. Avraham; and Spanne, Per O., 5,339,347, Cl. 378-65.000.

Dimeff, John. Gas flow meter. 5,337,617, Cl. 73-861.540.

Ding, Lidong: *See—*
Liu, Goudong; Zhang, Chuanli; Ma, Hongliang; Xu, Shizhen; Li, Jingbei; Li, Xuecai; and Ding, Lidong, 5,338,376, Cl 148-304.000.

Ding, Weidong; Ellestad, George A.; Abbanat, Darren; and Bernan, Valerie, to American Cyanamid Company. Antibiotic 42D005 α and β . 5,338,729, Cl. 514-27.000.

Dingeldein, Elvira: *See—*
Bauer, Hans-Jorg; Bauer, Gerd; Dingeldein, Elvira; and Wahlig, Helmut, 5,338,772, Cl. 523-115.000.

Dion, F. Eugene, to Maxtor Corporation. Plug-in actuator latch mechanism. 5,339,209, Cl. 360-105.000.

DiRoma, Sabeto A.: *See—*
Busch, Frank R.; Bowles, Paul; John, Douglas; Allen, Meldrum; DiRoma, Sabeto A.; and Godek, Dennis M., 5,338,846, Cl. 544-368.000.

Dispensing Technologies, Inc.: *See—*
Spaulding, Gregory L.; Spaulding, Pamela M.; and Bueche, Kenneth M., 5,337,919, Cl. 221-2.000.

Divecha, Amarnath P.; Karmarkar, Subhash D.; Ferrando, William A.; and Hoover, Scott M., to United States of America, Navy. Method of centrifugally casting reinforced composite articles. 5,337,803, Cl. 164-98.000.

Dmitriev, Vladimir: *See—*
Edmond, John A.; Kong, Hua-Shuang; Dmitriev, Vladimir; and Bulman, Gary E., 5,338,944, Cl. 257-76.000.

Dodd, Harold; and Stanier, Brian J., to Identec Limited. Access control equipment and method for using the same. 5,339,073, Cl. 340-825.310.

Doehner, Robert F., Jr.: *See—*
Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Doehner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., 5,338,883, Cl. 564-90.000.

Dohi, Shoji: *See—*
Ishii, Kazuhide; Kawasaki, Tatsuo; Kuriyama, Noriyuki; Dohi, Shoji; Nakashiba, Akio; and Miyazaki, Souhei, 5,338,616, Cl. 428-472.000.

Dolling, Ulf H.: *See—*
DeCamp, Ann; Dolling, Ulf H.; Li, Yulan; Rieger, Dale L.; Yasuda, Nobuyoshi; and Xavier, Lyndon C., 5,338,875, Cl. 556-402.000.

Donaldson, William R.; Gupta, Deepnarayan; and Kadin, Alan M., to University of Rochester, The. High power energy transfer system utilizing high temperature superconductors. 5,339,062, Cl. 505-1.000.

Donato, Spina: *See—*
Luciano, SMO' ; and Donato, Spina, 5,338,898, Cl. 174-138.00F.

Donovan, William P., to Ecogen Inc. CryIIB protein, insecticidal compositions and methods of use thereof. 5,338,544, Cl. 424-93.200.

Doran, William T.: *See—*
Tricca, Robert E.; Doran, William T.; and Gray, Catherine L., 5,338,538, Cl. 424-57.000.

Dorfman, Donald; and Poma, Frank, to Rite Charge Corporation. Refrigerant and H.V.A.C. ducting leak detector. 5,337,576, Cl. 62-127.000.

D'Orio, Jerome S.: *See—*
King, Raymond A.; Farnsworth, David A.; and D'Orio, Jerome S., 5,339,341, Cl. 376-439.000.

Dorman, Alvin: *See—*
Spangler, Glenn E.; Roehl, Joseph E.; Patel, Gautam B.; and Dorman, Alvin, 5,338,931, Cl. 250-287.000.

Dorner, Karl-Heinz: *See—*
Munzamy, Thomas; Rasshofer, Werner; Dorner, Karl-Heinz; and Limna, Ulrich, 5,338,763, Cl. 521-49.500.

Doub, Robert J.: *See—*
Jain, Sanjeev; Vermette, John E.; Weber, Richard; Doub, Robert J.; Alon, Gad; and Day, Alan G., III, 5,337,757, Cl. 128-779.000.

Douglas, William A.: *See—*
Roberts, Robert M.; and Douglas, William A., 5,337,647, Cl. 87-31.000.

Douma, Bindert S.; and Eigenraam: Peter, to Shell Oil Company. Micromachined sensor device using a beam of light with a frequency swept modulated intensity to activate at least two resonance modes of the sensor element. 5,338,929, Cl. 250-231.100.

Dow Chemical Company, The: *See—*
Bedell, Stephen A.; and Myers, John D., 5,338,778, Cl. 423-220.000.
Brands, Jan; Grunbauer, Henri J. M.; and van Duin, Kees-Jeen, 5,338,601, Cl. 428-319.700.
Fraini, Edward A.; and Tepera, George W., 5,338,453, Cl. 210-634.000.
Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,338,828, Cl. 528-179.000.
Lee, Guo-shuh J.; and Burdett, Kenneth A., 5,338,887, Cl. 568-564.000
Morabito, Paul L.; McCabe, Terrence; and Hiller, Joseph F., 5,338,514, Cl. 422-89.000.
Sun, Yun C.; and Liou, David W., 5,338,803, Cl. 525-309.000.
Tomalia, Donald A.; Kaplan, Donald A.; Kruper, William J., Jr.; Cheng, Roberta C.; Tomlinson, Ian A.; Fazio, Michael J.; Hedstrand, David M.; and Wilson, Larry R., 5,338,532, Cl. 424-1.490.

van Buren, Frederik R.; Deij, Leendert; Merz, Gunnar; and Schneider, Hans P., 5,338,444, Cl. 210-660.000.
Wheatly, John A.; and Motter, Gregg A., 5,339,198, Cl. 359-359.000.

Dow Corning Corporation: *See—*
O'Neil, Virginia K.; and Wolf, Andreas T. F., 5,338,574, Cl. 427-387.000.
Pernisz, Udo C.; and Michael, Keith W., 5,339,211, Cl. 361-277.000.

Dow Corning Toray Silicone Co., Ltd.: *See—*
Mine, Katsutoshi; Nakamura, Takashi; and Sasaki, Motoshi, 5,338,817, Cl. 528-12.000.

Dowbrands Inc.: *See—*
Wilson, Daniel C.; and Klaber, Kenneth E., 5,337,921, Cl. 222-105.000

Dowda, James: *See—*
Hundere, Alf; Wilson, George R., III; Dowda, Thomas; Dowda, James; and Anderson, David, 5,337,599, Cl. 73-61.620.

Dowda, Thomas: *See—*
Hundere, Alf; Wilson, George R., III; Dowda, Thomas; Dowda, James; and Anderson, David, 5,337,599, Cl. 73-61.620.

DowElanco: *See—*
Hackler, Ronald E.; Jourdan, Glen P.; and Davis, Leon N., 5,338,742, Cl. 514-277.000.
Ricks, Michael J.; and Tong, Yulan C., 5,338,856, Cl. 548-204.000.

Doyle, Mark L: *See—*
Coupland, Duncan R.; and Doyle, Mark L, 5,338,509, Cl. 420-463.000.

Drake & DiPello, Inc.: *See—*
Barton, Lewis, 5,337,539, Cl. 53-413.000.

Drexl, Hans-Jurgen: *See—*
Sturmer, Winfried; and Drexl, Hans-Jurgen, 5,337,866, Cl. 477-175.000.

Drimer, Gideon; and Glazer, Arie, to Persys Technology Ltd. Masks for applying dots on semiconductor wafers. 5,338,424, Cl. 204-298.110.

Drobish, James L.; Biard, Daniel; and Merritt, Joyce R., to Procter & Gamble Company, The. Spray pump package employing multiple orifices for dispensing liquid in different spray patterns with automatically adjusted optimized pump stroke for each pattern. 5,337,926, Cl. 222-309.000

Drucker, Alan S.: *See—*
Zhao, Guoquan; Amr, Yehia M.; Bushnell, Peter R.; Drucker, Alan S.; and Nash, Eric J., 5,337,580, Cl. 62-262.000.

Drzewinski, Michael A., to Istituto Guido Donegani S.p.A.; and Enichem S.p.A. Block copolymers containing stereoregular polymethyl methacrylate and their blends with polycarbonates. 5,338,798, Cl. 525-92.000

DSC Communications Corporation: *See—*
Elliott, Paul M., 5,339,338, Cl. 375-118.000.

DSM N.V.: *See—*
van Dijk, Hans K.; and Schellekens, Ronald M. A. M., 5,338,413, Cl. 204-59.00R.

DuBois, Donn A.; and Sutherland, Robert J., to Shell Oil Company. Low temperature conversion of polymerized esters. 5,338,802, Cl. 525-299.000.

Dubord, Christopher J.: *See—*
Blier, Darren J.; Dubord, Christopher J.; and Grande, David W., 5,339,288, Cl. 367-145.000.

Dubrow, Robert S.: *See—*
Shartle, Robert J.; and Dubrow, Robert S., 5,338,427, Cl. 204-299.00R

Ducret, Lucien C., to Seatek Co., Inc. Cable and wire stripper. 5,337,479, Cl. 30-90.600.

Ducrocq, Marc; and Tomita, Shinji, to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process and installation for the production of oxygen gas under high pressure by air distillation. 5,337,571, Cl. 62-39.000.

Dudash, Eugene S.: *See—*
Wiltsey, Ronald A.; and Dudash, Eugene S., 5,338,092, Cl. 297-228.110.

Dudley, David T.; Hodges, John C.; Pugsley, Thomas A.; and Taylor, Michael D., to Warner-Lambert Company. Angiotensin II antagonists used to treat reproductive functions associated with AT_2 receptors. 5,338,744, Cl. 514-303.000.

Dudley, James R.: *See—*
Gorham, Barry J.; and Dudley, James R., 5,339,088, Cl. 342-459.000.

Dudney, Nancy J.: *See—*
Bates, John B.; Dudney, Nancy J.; Gruzalski, Greg R.; and Luck, Christopher E., 5,338,625, Cl. 429-193.000.

Duff, Keith J., to Supelco, Incorporated. Chiral mobile phase additives for improved liquid-chromatography separations. 5,338,454, Cl. 210-635.000.

Duffy, Robert; and Morgan, O. F., to Sony Electronics, Inc. Graphical user interface for displaying available source material for editing. 5,339,393, Cl. 395-161.000.

Duggan, Mark E.: *See—*
Nutt, Ruth F.; Brady, Stephen F.; Veber, Daniel F.; and Duggan, Mark E., 5,338,723, Cl. 514-11.000.

Duginske, Mark A. Woodworking machinery jig and fixture system. 5,337,641, Cl. 83-468.000.

Duncombe, Peter R.: *See—*
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Dunham, William D.; Hladilek, Jerry A.; McNeill, Steven R.; Pierman, John A.; Rogan, Charles T.; and Turk, Robert L., to Outboard Marine Corporation. Latch mechanism for outboard motor cowl assembly. 5,338,236, Cl. 440-77.000.

Dunlop, Lawrence J.: *See—*
Geffken, Robert M.; and Dunlop, Lawrence J., 5,339,212, Cl. 361-306.200.

Dunlop Slazenger Corporation: *See—*
Cadorniga, Lauro C., 5,338,038, Cl. 273-216.000.

Dunnavant, William R.; and Fechter, Robert B., to Ashland Oil, Inc. Polyurethane-forming binder systems containing a polyphosphoryl chloride. 5,338,774, Cl. 523-143.000.

Du Pont de Nemours, E. I., and Company: *See—*
Felten, John J., 5,338,708, Cl. 501-19.000.
Fleming, John A.; and Kakos, Edward A., 5,338,283, Cl. 494-10.000.
Halm, Walter B.; Jones, William J., Jr.; Kirkbride, James F.; Marcus, Ilan; and Snyder, Adrian C., 5,338,500, Cl. 264-122.000.
Resnick, Paul R., 5,338,608, Cl. 428-392.000.
Sheer, M. Lana; and Solenberger, John C., 5,338,602, Cl. 428-323.000.

Duracell Inc.: *See—*
Kuo, Han C.; Chi, Ignacio; Lin, LiFun; and Wu, Louis L., 5,339,024, Cl. 324-435.000.

Duracraft Corp.: *See—*
Chiu, Bernard; Gatchell, Stephen; and Wang, Jui-Shang, 5,338,324, Cl. 55-385.200.
Marino, Frank, 5,339,383, Cl. 392-406.000.

Durbin, Martin J., to Inn Room Systems, Inc. Interactive network for remotely controlled hotel vending systems. 5,339,250, Cl. 364-479.000.

Durkopp Adler AG: *See—*
Kuhlmann, Walter, 5,337,883, Cl. 198-465.400.

Dvorak, Antonin J.: *See—*
King, Norman R.; Sip, Jiri; and Dvorak, Antonin J., 5,339,001, Cl. 313-25.000.

Dyson, Karen. Hay feeder for livestock. 5,337,699, Cl. 119-60.000.

Dziabo, Anthony J.; Karageozian, Hampar; Ripley, Paul S.; Lam, Sam W.; and Espiritu, J. Abraham, to Allegan, Inc. Compositions and methods to clean contact lenses. 5,338,480, Cl. 252-187.210.

E-Z Dispensers, Inc.: *See—*
Grubb, Eddie C., 5,337,784, Cl. 137-625.380.

E-Z Trail, Inc.: *See—*
Kuhns, Dan A., 5,338,079, Cl. 296-15.000.

Earls, Jimmy D.: *See—*
Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,338,828, Cl. 528-179.000.

Earth Resources Corporation: *See—*
Gold, Jeffrey W.; and Nickens, Dan A., 5,337,793, Cl. 141-1.000.

Earth Tool Corporation: *See—*
Wentworth, Steven W.; Crane, Robert F.; Haas, Jon A.; and Reynolds, Payce, 5,337,837, Cl. 175-19.000.

East, Jeffrey A.; and Fries, Marilyn E., to Digital Equipment Corporation. Message passing method. 5,339,418, Cl. 395-650.000.

Eastman Chemical Company: *See—*
Bleyins, Richard W.; and Turner, S. Richard, 5,338,813, Cl. 526-208.000.
Rule, Mark; and Tanner, James T., III, 5,338,886, Cl. 568-66.000.
Walker, Theodore R., Jr.; Jackson, Winston J., Jr.; and Fleischer, Jean C., 5,338,881, Cl. 562-462.000.
White, Alan W.; Pearcy, Barry G.; Strand, Marc A.; and Carico, Joey C., 5,338,606, Cl. 428-458.000.

Eastman Kodak Company: *See—*
Aslam, Muhammad; Mutz, Alec N.; Tyagi, Dinesh; and Johnson, Kevin M., 5,339,146, Cl. 355-285.000.
Conroy, James E.; Devine, William D.; and Ruschak, Kenneth J., 5,338,359, Cl. 118-412.000.
Ernst, Gerard W.; and Guyette, Gregory P., 5,337,767, Cl. 134-104.100.
Funk, Helmut; Allmendinger, Franz; and Weber, Markus, 5,338,022, Cl. 271-184.000.
Guidash, Robert M., 5,338,946, Cl. 257-223.000.
Johnson, Kevin M.; and Merle, Thomas C., 5,339,148, Cl. 355-290.000.
Landis, Newton C. M., 5,339,130, Cl. 354-319.000.
Long, Michael, 5,337,642, Cl. 83-687.000.
Niedospial, John J., Jr., 5,337,971, Cl. 242-348.000.
Omata, Kyoichi; and Matsui, Nobuhiko, 5,339,175, Cl. 358-498.000.
Parsons, Michael H.; and Johnson, Kevin M., 5,339,136, Cl. 355-208.000.
Rosenburgh, John H.; Horton, Robert L.; and Patton, David L., 5,339,131, Cl. 354-324.000.
Scalice, Edward R.; Sharkey, David J.; Christy, Kenneth G., Jr.; Esders, Theodore W.; and Daiss, John L., 5,338,671, Cl. 435-91.200.
Scarborough, Victoria D.; Czekai, David A.; and Powell, Jeffery E. G., 5,338,345, Cl. 106-2.000.
Zeman, Robert E.; and Hilbert, Thomas K., 5,339,140, Cl. 355-246.000.

Easy Park Ltd.: *See—*
Bashan, Oded; Aduk, Moshe; Gilboa, Ronnie; Itay, Nehemya; and Shure, Dubi, 5,339,000, Cl. 340-932.200.

VOL 1165 ISS 3 AG 16 1994 UMI

Eaton Corporation: *See—*
Briggs, Edward R.; Daebelliehn, Gary H.; Winzen, Peter S.; and Bellgraph, Donald R., 5,338,993, Cl. 310-82.000.
Hampton, Keith, 5,337,711, Cl. 123-90.170.
Liu, Chia H.; and Slicker, James M., 5,337,868, Cl. 477-74.000.
Oltean, Jerry M.; and Mack, William J., 5,337,874, Cl. 192-111.00A.

Eavenson, Jimmy N., Sr.; Behrens, Robert N.; Friesen, Henry; and Hamm, Nicholas, to Deere & Company. Axle mounting mechanism. 5,337,849, Cl. 180-24.120.

EBAC Limited: *See—*
Salkeld, Paul; Gibbs, Andrew; and Tansley, Robert, 5,337,922, Cl. 222-129.000.

Eberl, Gunter: *See—*
Hildebrand, Peter; Eberl, Gunter; Neumaier, Josef; and Wrba, Peter, 5,338,915, Cl. 219-121.690

Ebert, Michael: *See—*
Reick, Franklin G., 5,339,061, Cl. 335-216.000.

Ebisawa, Isao: *See—*
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,339,098, Cl. 347-5.000.

Eckenfelder, Robert C.: *See—*
Shekhawat, Sampat; Eckenfelder, Robert C.; Tumpey, John J.; Wohlberg, Alfred W.; and Gandikota, Kapal, 5,339,235, Cl. 363-43.000.

Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., to Pitney Bowes Inc. Mailing machine including printing speed calibrating means. 5,337,660, Cl. 101-91.000.

Eckhaus, Ira. Shock sensor. 5,339,071, Cl. 340-665.000.

Ecogen Inc.: *See—*
Donovan, William P., 5,338,544, Cl. 424-93.200.

Eda, Susumu: *See—*
Tanaka, Kenji; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Sekihata, Osamu; Hatta, Hiroyuki; and Norizuki, Reiko, 5,339,318, Cl. 370-110.100.

Edelstein, Herbert: *See—*
Lee, G. Jae; and Edelstein, Herbert, 5,338,540, Cl. 424-71.000

Edgren, David E.; Bhatti, Gurdish K.; and Magruder, Judy A., to Alza Corporation. Stereoisomer therapy. 5,338,550, Cl. 424-473.000.

Edmond, John A.; Kong, Hua-Shuang; Dmitriev, Vladimir; and Bulman, Gary E., to Cree Research, Inc. Blue light-emitting diode with degenerate junction structure. 5,338,944, Cl. 257-76.000

Edmunds, Cyril G.; and Lioy, Gerald T., to Xerox Corporation. Donor roll with electrode spacer for scavengeless development in a xerographic apparatus. 5,338,893, Cl. 118-647.000.

Edstrom Industries, Inc.: *See—*
Edstrom, William E.; Froehlich, Edward T.; and Grkavac, George J., 5,337,696, Cl. 119-18.000.

Edstrom, William E.; Froehlich, Edward T.; and Grkavac, George J., to Edstrom Industries, Inc. Animal watering system and watering valve usable therewith. 5,337,696, Cl. 119-18.000

EEV Limited: *See—*
Livingstone, Ewan S.; and Clark, Graeme L., 5,339,327, Cl. 372-56.000.

Efange, Simon M. N.; and Parsons, Stanley M., to University of Minnesota, Regents of the. Azavesamicols. 5,338,852, Cl. 546-188.000.

Egan, Daniel; Alexander, Jerry; McKinney, James T.; and Runyon, John F., to Minnesota Mining and Manufacturing Company. Drive roller torque reference cartridge. 5,337,608, Cl. 73-865.600.

Egenolf, Bernhard, to Whitaker Corporation, The. Electrical contact. 5,338,229, Cl. 439-839.000.

Eguchi, Hiroshi: *See—*
Sato, Hideaki; and Eguchi, Hiroshi, 5,338,718, Cl. 503-227.000.

Eguchi, Masakatsu: *See—*
Ojima, Iwao; Eguchi, Masakatsu; Oh, Young-Im; and Coller, Barry S., 5,338,725, Cl. 514-13.000.

Eguchi, Naoya; and Oka, Michio, to Sony Corporation. Laser beam generator including automatic resonator length control. 5,339,324, Cl. 372-29.000.

Eichen Conn, Robin S.: *See—*
Gruber, Patrick R.; Kolstad, Jeffrey J.; Hall, Eric S.; Eichen Conn, Robin S.; and Ryan, Christopher M., 5,338,822, Cl. 528-354.000.

Eichler, Jutta: *See—*
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Sterandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,338,831, Cl. 530-334.000.

Eiermann, Kenneth L. Method and apparatus for latent heat extraction. 5,337,577, Cl. 62-173.000.

Eigenraam: Peter: *See—*
Douma, Bindert S.; and Eigenraam: Peter, 5,338,929, Cl. 250-231.100.

Eikill, Richard G.; Levenstein, Sheldon B.; McMahon, Lynn A.; and Weigel, Joseph P., to International Business Machines Corporation. Hardware primary directory lock. 5,339,397, Cl. 395-400.000.

Eilenberg, Steven S.; Kirkland, W. Dean; and Walters, Mark A., to Alliance Pharmaceutical Corp. Method of improving fat saturation during MRI. 5,339,033, Cl. 324-309.000

Eisenberg, Alan J.: *See—*
Adelson, Alexander M.; Eisenberg, Alan J.; and Farrelly, Richard J., 5,339,261, Cl. 364-570.000.

Eka Nobel AB: *See—*
Sorensson, Olle; and Severinsson, Krister, 5,338,528, Cl. 423-333.000.

Ekdahl, Royce L.; and Jordan, C. Minuard, to Scott Manufacturing, Inc. Boll buggy. 5,338,140, Cl. 414-346.000.

Elash, Silas P.: *See—*
Goldman, Gary S.; Elash, Silas P.; and Baker, Jeffrey L., 5,339,407, Cl. 395-575.000.

El Bahy, Mohamed M.; Malone, John B., Jr.; Todd, William J.; and Schnorr, Kenneth L., to Board of Supervisors of Louisiana State University and Agricutural and Mechanical College. Diagnosis of Fasciola infections by detection of antigens in feces or intestinal content. 5,338,660, Cl. 435-7.220.

Electro-Mechanik GmbH: *See—*
Wagner, Harald, 5,339,029, Cl. 324-207.170.

Electric Power Research Institute: *See—*
Fleming, Marvin F.; Hersh, Samuel; and Liu, Soung-Nan, 5,337,611, Cl. 73-622.000.

Electro-Biology, Inc.: *See—*
Abbott, Joan; Cangialosi, Richard; and Pethica, Brian A., 5,338,286, Cl. 600-14.000.

Electro Scientific Industries, Inc.: *See—*
Nami, Robert B.; Hamrick, Edward A.; Herrmann, Jakob; and Mitchell, Angelo M., 5,337,893, Cl. 206-329.000.

Electronics and Telecommunications Research Institute: *See—*
Kim, Ki-Hong; Lee, Chang-Seok; Park, Hyung-Moo; Yoon, Hyung-Jin; and Park, Sin-Chong, 5,338,981, Cl. 307-463.000

Eley, James M., to Dana Corporation. Gear pump having internal bypass valve. 5,338,161, Cl. 417-307.000.

Elf Atochem North America, Inc.: *See—*
MacLeay, Ronald E.; and Lange, Harold C., 5,338,853, Cl. 546-224.000.
Yen, Jeffrey H., 5,338,460, Cl. 210-724.000.

Elf Sanofi: *See—*
Wagnon, Jean; de Cointet, Paul; Nisato, Dino; Plouzane, Claude; Serradeil-Legal, Claudine; and Tonnerre, Bernard, 5,338,755, Cl. 514-414.000.

Elge Elektronik-Geratewerk GmbH & Co.: *See—*
Nesper, Gerhard, 5,339,014, Cl. 318-563.000

Elharar, Shimon. Candle and method of making same. 5,338,187, Cl. 431-288.000.

Eli Lilly and Company: *See—*
Buff, Bret E.; Khau, Vien V.; Martinelli, Michael J.; and Peterson, Barry C., 5,338,851, Cl. 546-141.000.

Eliades, Theo I.: *See—*
Olson, William D.; Muir, Ronald J.; and Eliades, Theo I., 5,338,467, Cl. 252-33.400

Eliezer, Zwy: *See—*
Marcus, Harris L.; Eliezer, Zwy; and Fine, Morris E., 5,338,374, Cl 148-237.000.

Elin Energieanwendung GmbH: *See—*
Schroedl, Manfred; and Stefan, Thomas, 5,339,012, Cl. 318-254.000.

Elko, David A.; Frey, Jeffrey A.; Helffrich, Audrey A.; Nick, Jeffrey M.; and Swanson, Michael D., to International Business Machines Corporation. Command quiesce function. 5,339,405, Cl. 395-575.000.

Elko, David A.; Isenberg, John F., Jr.; Moore, Brian B.; Strickland, Jimmy P.; Swanson, Michael D.; and Wang, George W., to International Business Machines Corporation. Method and apparatus for distributed locking of shared data, employing a central coupling facility. 5,339,427, Cl. 395-725.000.

Ellestad, George A.: *See—*
Ding, Weidong; Ellestad, George A.; Abbanat, Darren; and Bernan, Valerie, 5,338,729, Cl. 514-27.000

Elliott, Paul M., to DSC Communications Corporation. Apparatus and method for data desynchronization. 5,339,338, Cl. 375-118.000.

Elliott, Peter J.: *See—*
James, David T.; Leonard, Anthony W.; and Elliott, Peter J., 5,339,204, Cl. 360-51.000.

Elsag International B.V.: *See—*
Molnar, Richard J., 5,339,335, Cl. 375-103.000

Eltner, Bruno; and Zahn, Erich M., to Heidelberger Druckmaschinen AG. Device for aligning a sheet pile. 5,338,020, Cl. 271-158.000.

E+M Maschinenbau GmbH: *See—*
Sporl, Helmut, 5,338,116, Cl. 366-286.000.

Embishi Aluminum Wheels Ltd.: *See—*
Suzuki, Junichi, 5,338,105, Cl. 301-29.200

Emhart Inc.: *See—*
Rossler, Andreas; Waltenberg, Hans-Dieter; and Tessarsch, Norbert, 5,337,463, Cl. 29-243.521.

Endelman, Ken. Exercise apparatus. 5,338,278, Cl. 482-142.000.

Enderle, Hans-Frieder: *See—*
Bohm, Ludwig; Enderle, Hans-Frieder; and Jarstrow, Horst, 5,338,589, Cl. 428-36.900.

Endick, Norman; and Stell, Larry, to ROLM Company. Method of synchronizing LEDS between a digital telephone and remote options. 5,339,360, Cl. 379-386.000.

Endo, Mitsuo; and Asakura, Nobuyuki, to Yazaki Corporation. Structure for electrically connecting a terminal and a wire. 5,338,233, Cl. 439-877.000

Endo, Takayoshi: *See—*
Saitoh, Hitoshi; Endo, Takayoshi; Yagi, Sakai; Abe, Kimihiro; and Koumatsu, Seiji, 5,338,217, Cl. 439-246.000.

Engel, Hans E.: *See—*
Mehlert, Martin; and Engel, Hans E., 5,337,878, Cl. 198-323.000.

Englund, James M.: *See—*
Levy, Arthur J.; Oppenlander, Jane E.; Brudnoy, David M.; Englund, James M.; and Loomis, Kent C., 5,339,256, Cl. 364-506.000

Enichem S.p.A.: *See—*
Drzewinski, Michael A., 5,338,798, Cl. 525-92.000

Enichem Synthesis, S.p.A.: *See—*
Giroldini, William; Landoni, Gianluigi; Rinaldi, Antonio; and Neri, Carlo, 5,338,787, Cl. 524-100.000.

Eniricerche S.p.A.: *See—*
Lockhart, Thomas P.; and Albonico, Paola, 5,338,465, Cl. 252-8.551.

Enokizono, Tomoki, to Kabushiki Kaisha Toshiba. Utensil drying apparatus. 5,337,500, Cl. 34-77.000.

Enomoto, Yoshinari; and Tsuruta, Yoshio, to Fuji Electric Co., Ltd. Method of making a photodiode with reduced junction area. 5,338,691, Cl. 437-3.000.

Envigro, Inc.: *See—*
Karthauser, Bradley C.; and Lindsay, Paul D., 5,337,517, Cl. 47-71.000.

Enviro-Gro Technologies: *See—*
Glorioso, John D., 5,337,496, Cl. 34-378.000.

Environmental Technologies Group, Inc.: *See—*
Spangler, Glenn E.; Roehl, Joseph E.; Patel, Gautam B.; and Dorman, Alvin, 5,338,931, Cl. 250-287.000.

Eppert, Stanley E., Jr., to Himont Incorporated. Compositions of propylene polymer materials and olefin polymer materials with reduced gloss. 5,338,801, Cl. 525-232.000.

Erb, Elisha W.; and Resch, Darrel R. Pneumatic atomizer having improved flow paths for accomplishing the atomization of liquids. 5,337,962, Cl. 239-424.500.

Erb, Karin: *See—*
Jensenius, Jens C.; Borup-Christensen, Per; and Erb, Karin, 5,338,661, Cl. 435-7.230.

Ergonomic Equipment Pty. Ltd.: *See—*
Grout, John E., 5,337,678, Cl. 108-147.000.

Erickson, Jon W. Acoustic and ultrasound sensor with optical amplification. 5,339,289, Cl. 367-149.000.

Erlich, Giora, to Aqua Products, Inc. Directional control means for robotic swimming pool cleaners. 5,337,434, Cl. 15-1.700.

Ernst, Gerard W.; and Guyette, Gregory P., to Eastman Kodak Company. Apparatus and method for cleaning the surface of a web. 5,337,767, Cl. 134-104.100.

Esders, Theodore W.: *See—*
Scalice, Edward R.; Sharkey, David J.; Christy, Kenneth G., Jr.; Esders, Theodore W.; and Daiss, John L., 5,338,671, Cl. 435-91.200

Eshaghian, Behzad: *See—*
Daghighian, Farhad; Miodownik, Saul; Shenderov, Peter; and Eshaghian, Behzad, 5,338,937, Cl. 250-368.000.

Eshleman, Roger D. Apparatus and method for transferring batched materials. 5,338,144, Cl. 414-152.000.

Eshleman, Roger D. Heat generator assembly in a material processing apparatus. 5,338,918, Cl. 219-411.000.

Eska Medical Luebeck Medizin Technik GmbH: *See—*
Neumann, Gerd; Hutschenreuther, Peter; Glien, Willfried; Raab, Dagmar; Leuner, Barbara; Steinborn, Gabriele; and Berger, Georg, 5,338,771, Cl. 523-113.000.

Eskandry, Ezra D. Reversible triangular box with advertising and safety signs on alternate faces. 5,337,947, Cl. 229-115.000.

Espiritu, J. Abraham: *See—*
Dziabo, Anthony J.; Karageozian, Hampar; Ripley, Paul S.; Lam, Sam W.; and Espiritu, J. Abraham, 5,338,480, Cl. 252-187.210.

Esposto, Lino, to C.I.A.R.E. S.p.A. Composite electroacoustic transducer. 5,339,286, Cl. 367-140.000.

Espy, Herbert H.; and Maslanka, William W., to Hercules Incorporated. Synthesis of creping aids based on polyamides containing methyl bis (3 aminopropylamine). 5,338,807, Cl. 525-430.000.

Esselborn, Eberhard: *See—*
Fock, Jurgen; Esselborn, Eberhard; and Schaefer, Dietmar, 5,338,485, Cl. 252-309.000.

Estermann, Heinrich; Kapa, Prasad K.; Underwood, Russell L.; and Houlihan, William J., to Sandoz Ltd. Use of the (R) isomer of 2-[(2-octa-decyloxymethyl-tetrahydro-2-furanylmethoxy)-hydroxyphosphinyloxy]-N,N,N-trimethylethanaminium hydroxide inner salt-4-oxide in treating multiple sclerosis. 5,338,730, Cl. 514-99.000.

Ethicon, Inc.: *See—*
Dalessandro, David A.; Sanderson, George G.; and Kula, John S., 5,338,296, Cl. 604-96.000.
Stephens, Randy R.; Roxas, Renato; and Groenke, Gregory C., 5,338,307, Cl. 604-167.000.

Etienne, Francis: *See—*
LeBrat, Francois; Fouillet, Jean-Marie; and Etienne, Francis, 5,339,166, Cl. 358-311.000.

Eudy, James R. Continuous-feed paper, method of forming single sheets from continuous feed paper,and method of forming continuous feed paper. 5,338,122, Cl. 400-613.200.

Euer, Hartmut; Baues, Wilfried; and Wernicke, Joachim, to Ingenieurburo fur Elektro-Mechanische Technologien Dipl-Ing Hartmut Euer. Aerial tow target. 5,338,199, Cl. 434-14.000

Eugster, Arthur: *See—*
Fischer, Daniel; and Eugster, Arthur, 5,337,652, Cl. 99-282.000.

Evanitsky, Eugene S.; Rauscher, Tomlinson G.; Filion, Joseph; Sundquist, Douglas; Warddrip, Riley; and Auman, Daniel, to Xerox Corporation. Copier/duplicator network. 5,339,168, Cl. 358-402.000.

Evans, Mark D.; and Oestreich, Roger C., to Modern Controls, Inc. Tablet sensor. 5,337,902, Cl. 209-539.000.

Evans, Paul S., to Quartzdyne, Inc. Apparatus for pressure transducer isolation. 5,337,612, Cl. 73-706.000.

Evans, William T., III; and Stork, Karl, to Chemical Research & Licensing Company. Catalytic distillation column reactor and tray. 5,338,517, Cl. 422-191.000.

Everidge, Jackie K., Jr.: *See—*
Brooks, Charles P.; Leahy, Donald J.; Fowler, Mark M.; and Everidge, Jackie K., Jr., 5,338,209, Cl. 439-66.000.

Evers, Donald H.: *See—*
Newsome, Reginald W.; DeBlasio, James A.; Talley, Robert E.; Adams, John M.; Chance, Christopher N.; Evers, Donald H.; Harris, William C.; and Kirby, Michael A., 5,337,948, Cl. 229-120.150.

Everts, Robert G.; and Rickard, Harry G., to Ryobi Outdoor Products, Inc. Laminated gear and method of forming a laminated gear. 5,337,626, Cl. 74-445.000.

Expertek: *See—*
Peake, Don A.; and Weymouth, Brian M., 5,337,597, Cl. 73-45.500.

Exxon Research and Engineering Company: *See—*
Aldridge, Clyde L.; and Riley, Kenneth L., 5,338,717, Cl. 502-211.000.
LeViness, Steve C.; Hsia, Steve J.; Wen, Michael Y.; Davis, Stephen M.; Culross, Claude C.; and Maa, Peter S., 5,338,441, Cl. 208-419.000.
Polizzotti, Richard S.; McCandlish, Larry E.; and Kugler, Edwin L., 5,338,330, Cl. 75-228.000.
Siskin, Michael; Katritzky, Alan R.; and Brons, Glen B., 5,338,442, Cl. 208-435.000.
Vaughan, David E. W.; and Strohmaier, Karl G., 5,338,526, Cl. 423-328.200.

Ezel, Inc.: *See—*
Kumagai, Eryohei; Hiiro, Kaoru; Shimizu, Harumi; and Takahashi, Tooru, 5,339,093, Cl. 345-149.000.

Fadial, Sabrina B.: *See—*
Cockfield, Joe B.; Fadial, Sabrina B.; and Marco, Francis W., 5,337,460, Cl. 28-167.000.

Fah, Jim; and Lee, Mike. Automatic watering and feeding mechanism for potted plants. 5,337,930, Cl. 222-630.000.

Fahrner, Alan J.; and Weisend, Norbert A., Jr., to B.F. Goodrich Company, The. Leading edge pneumatic deicer assembly. 5,337,978, Cl. 244-134.00A.

Fairhurst, John; and Tupper, David E., to Lilly Industries Limited. Pharmaceutical compounds. 5,338,735, Cl. 514-233.500.

Falcus, Steven J., to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The. Loading of flextensional transducer shells. 5,337,461, Cl. 29-25.350.

Falkow, Stanley: *See—*
Isberg, Ralph R.; Miller, Virginia; and Falkow, Stanley, 5,338,842, Cl. 536-23.700.

Falzone, Peter A. Golf club of the iron type. 5,338,029, Cl. 273-80.200.

Fan, Zhigang, to Xerox Corporation. Image processing system and method employing hybrid filtering to provide improved reconstruction of continuous tone images from halftone screen-structured images. 5,339,170, Cl. 358-456.000.

Fandrich, Mickey L.; Kreifels, Jerry A.; and Kynett, Virgil N., to Intel Corporation. Architecture of circuitry for generating test mode signals. 5,339,320, Cl. 371-22.100.

Fang, Francis G.: *See—*
Kishi, Yoshito; Fang, Francis G.; Forsyth, Craig J.; Scola, Paul M.; and Yoon, Suk K., 5,338,865, Cl. 549-214.000.

Farnsworth, David A.: *See—*
King, Raymond A.; Farnsworth, David A.; and D'Orio, Jerome S., 5,339,341, Cl. 376-439.000.

Farooq, Shaji: *See—*
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000

Farrar, Randolph C., to FireComp, Inc. Fire resistant and high temperature insulating composition. 5,338,349, Cl. 106-18.120.

Farrelly, Richard J.: *See—*
Adelson, Alexander M.; Eisenberg, Alan J.; and Farrelly, Richard J., 5,339,261, Cl. 364-570.000.

Farrington, Robert B., to Midwest Research Institute. Increasing jet entrainment, mixing and spreading. 5,338,254, Cl. 454-284.000

Fassman, Arnold; Rigo, Stephen J.; and Spath, Alfred, to Pitney Bowes Inc. Mailing machine including postage meter having rotary postage printing drum provided with an envelope deflector. 5,337,665, Cl. 101-235.000.

Fathimulla, Mohammed A.; and Loughran, Thomas C., to AlliedSignal Inc. Method for etching indium based III-V compound semiconductors. 5,338,394, Cl. 156-643.000.

Faust, Anne-Catherine: *See—*
Joly, Jean-Francois; Caullet, Philippe; Guth, Jean-Louis; Faust, Anne-Catherine; Brunard, Nathalie; and Kolenda, Frederic, 5,338,525, Cl. 423-326.000.

Fazio, Michael J.: *See—*
Tomalia, Donald A.; Kaplan, Donald A.; Kruper, William J., Jr.; Cheng, Roberta C.; Tomlinson, Ian A.; Fazio, Michael J.; Hedstrand, David M.; and Wilson, Larry R., 5,338,532, Cl. 424-1.490.

Feagans, Royce M.: *See—*
Near, Daniel E.; Feagans, Royce M.; and Hobert, Ward T., 5,338,765, Cl. 521-50.500.

Fechter, Robert B.: *See—*
Dunnavant, William R.; and Fechter, Robert B., 5,338,774, Cl. 523-143.000

VOL 1165 ISS 3 AG 16 1994 UMI

Federal Hill Farm, Inc.: *See—*
Widmyer, Ronald L., 5,337,698, Cl. 119-51.040.

Fehrle, Siegfried; Kabatnik, Wilfried; Buck, Manfred; Dietz, Klaus; Hoelzel, Martin; Kleyer, Klaus; Schmid, Wolfgang; and Wanner, Karl, to Robert Bosch GmbH. Device for driving-in stitches. 5,337,945, Cl. 227-109.000.

Feith, Johann: *See—*
Steinbeck, Horst; and Feith, Johann, 5,337,817, Cl. 157-21.000.

Feldmann, Manfred, to MTU Motoren- Und Turbinen-Union Muenchen GmbH. Arrangement for sealing structural members using a V-shaped insert, particularly in the case of turbo-engines. 5,338,152, Cl. 415-139.000.

Felten, John J., to Du Pont de Nemours, E. I., and Company. Palladium thick film compositions. 5,338,708, Cl. 501-19.000.

Ferrando, William A.: *See—*
Divecha, Amarnath P.; Karmarkar, Subhash D.; Ferrando, William A.; and Hoover, Scott M., 5,337,803, Cl. 164-98.000.

Ferrara, Daniel A., Jr., to ISPG, Inc. Injection device for injecting a fluid into food. 5,337,925, Cl. 222-214.000.

Ferrone, Rock A. Automatic trimming machine. 5,338,282, Cl. 493-342.000.

Fersing, Marc: *See—*
Demoulin, Vincent; Fersing, Marc; Patureaux, Thierry; and Pontvianne, Denis, 5,338,438, Cl. 208-153.000.

Fesi, Joseph E.: *See—*
McGee, Jeffrey S.; Fesi, Joseph E.; and Murphy, John F., 5,337,876, Cl. 194-236.000.

Festal, Didier; Descours, Denis; and Decerprit, Jacques, to Lipha, Lyonnaise Industrielle Pharmaceutique. Azaindoles, preparation processes and medicinal products containing them. 5,338,849, Cl. 546-113.000.

Festo KG: *See—*
Stoll, Kurt, 5,338,005, Cl. 251-214.000.

Feucht, Joel D.: *See—*
Swanson, Victor E.; Feucht, Joel D.; and Shoup, Stephen G., 5,338,153, Cl. 415-168.200.

Fiat Auto S.p.A.: *See—*
Luciano, SMO' ; and Donato, Spina, 5,338,898, Cl. 174-138.00F

Fichtel & Sachs AG: *See—*
Sturmer, Winfried; and Drexl, Hans-Jurgen, 5,337,866, Cl. 477-175.000.

Field, Elmer L.: *See—*
Maybee, George W.; Taylor, Timothy E.; Field, Elmer L.; Riley, Clyde; Lacefield, William R., Jr.; Coble, Harold D.; and Dasarathy, Harini, 5,338,433, Cl. 205-178.000.

Fiene, Eric V.: *See—*
Hinds, Christopher N.; Fiene, Eric V.; Marquette, Daniel T.; and Quintana, Eric E., 5,339,266, Cl. 364-748.000.

Figgie International Inc.: *See—*
Whiteside, Dennis K.; Walker, Donald R.; and Denney, Norma L., 5,337,417, Cl. 2-2.000.

File, Jonathan P. Portable suspension device and system for scaffolding. 5,337,855, Cl. 182-150.000.

Filion, Joseph: *See—*
Evanitsky, Eugene S.; Rauscher, Tomlinson G.; Filion, Joseph; Sundquist, Douglas; Warddrip, Riley; and Auman, Daniel, 5,339,168, Cl. 358-402.000.

Fillers, James J. Ladder anchoring pins. 5,337,856, Cl. 182-107.000.

Finck, Martha R.: *See—*
Ramesh, Manian; Sparapany, John W.; Finck, Martha R.; Siefert, Kristine S.; and Shetty, Chandrashekar S., 5,338,816, Cl. 526-312.000.

Fine, Morris E.: *See—*
Marcus, Harris L.; Eliezer, Zwy; and Fine, Morris E., 5,338,374, Cl. 148-237.000.

Finkle, Eugene. Noninvasive male potency device. 5,338,288, Cl. 600-41.000.

Finn, Peter W.; Willitzer, Larry F.; and Maurer, Karl-Heinz, to TFI Telemark. Electron beam gun with liquid cooled rotatable crucible. 5,338,913, Cl. 219-121.160.

Finoll Recycling Ltd.: *See—*
Chiovitti, Domenico, 5,337,965, Cl. 241-19.000

Fintube Limited Partnership: *See—*
Ryan, Jerry E., 5,337,807, Cl. 165-146.000.

Fiondella, Stephen J., to Honeywell Inc. Circumferential sealing apparatus. 5,337,787, Cl. 137-625.690.

FireComp, Inc.: *See—*
Farrar, Randolph C., 5,338,349, Cl. 106-18.120.

First Lighting, Inc.: *See—*
Murphy, Pierce M., 5,339,004, Cl. 315-244.000.

Fischer, Daniel; and Eugster, Arthur, to Arthur Eugster Ag. Espresso machine. 5,337,652, Cl. 99-282.000.

Fischer, Moritz, to Inventio AG. Tread element for moving pavement or escalator. 5,337,879, Cl. 198-333.000.

Fischer, Rainer. Extrusion blow molding apparatus for making hollow plastic articles. 5,338,175, Cl. 425-185.000.

Fischer, Reiner: *See—*
Baasner, Bernd; Fischer, Reiner; Widdig, Arno; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,338,860, Cl. 548-550.000.

Fischer, Walter: *See—*
Baumann, Marcus; Mayer, Carl W.; Wernet, Wolfgang; and Fischer, Walter, 5,338,863, Cl. 549-4.000.

Fisher Controls International, Inc.: *See—*
Vanderah, Richard J.; and Kern, John G., 5,339,425, Cl. 395-700.000.

Fishman, Lawrence R.; and Parker, Kenneth, to Korg/Fishpark Associates. Stringed musical instrument with multi-laminate fretboard. 5,337,644, Cl. 84-314.00R.

Fissenko, Vladimir, to Transsonic Uberschall-Anlagen GmbH. Method and device for pressure jumps in two-phase mixtures. 5,338,113, Cl. 366-177.000.

Fitch, Lawrence D.; and Smith, Stanley A., to Indresco Inc. High alumina refractory shapes. 5,338,711, Cl. 501-89.000.

Fitchmun, Douglas R.; and Perera, Niran, to Medical Materials Corporation. Composite thermoplastic material including a compliant layer. 5,338,600, Cl. 428-213.000.

Fitting, Dale W.: *See—*
Prosser, William H.; Kriz, Ronald D.; and Fitting, Dale W., 5,337,610, Cl. 73-599.000.

Fitzgerald, Gerald R.; and Welter, C. Joseph, to Ambico, Inc. Thimerosal inactivated mycoplasma hyopneumoniae vaccine. 5,338,543, Cl. 424-264.100.

Flannagan, Michael L. Dental handpiece shroud to protect against percutaneous injury. 5,338,195, Cl. 433-116.000.

Flanner, Lloyd T.: *See—*
Peelor, Philip L.; Moran, John J.; and Flanner, Lloyd T., 5,338,776, Cl. 523-166.000.

Fleischer, Jean C.: *See—*
Walker, Theodore R., Jr.; Jackson, Winston J., Jr.; and Fleischer, Jean C., 5,338,881, Cl. 562-462.000.

Fleming, David F.; Raudenbush, James M.; and Carlisle, Raymond M., to Whitaker Corporation, The. Capacitive cable length indicator. 5,339,022, Cl. 324-67.000.

Fleming, John A.; and Kakos, Edward A., to Du Pont de Nemours, E. I., and Company. Centrifuge rotor identification system. 5,338,283, Cl. 494-10.000.

Fleming, Marvin F.; Hersh, Samuel; and Liu, Soung-Nan, to Electric Power Research Institute. Method of simulating ultrasonic inspection of flaws. 5,337,611, Cl. 73-622.000.

Fleming, Michael A.; and Sturm, Michael C., to Boeing Company, The. Vent-latch interlock assembly for an aircraft door. 5,337,977, Cl. 244-129.500.

Fletcher, Robert B.; Bigham, Wilson S.; and Albert, Phyllis F., to Minnesota Mining and Manufacturing Company. Method for removing oil or asphalt from inorganic particles having pigment in an outer layer thereof. 5,338,368, Cl. 134-40.000.

Flinchum, Charles; Barney, Gerald L.; Burgess, Gregory S.; Kleinmeyer, Davis L.; and Parrella, Larry E., to Armco Steel Company, L.P. Induction heated meniscus coating vessel. 5,339,329, Cl. 373-138.000.

Floh, Karl-Heinz: *See—*
Kohlen, Helmut; Hensen, Helmuth; and Floh, Karl-Heinz, 5,337,882, Cl. 198-452.000.

Florida State University: *See—*
Holton, Robert A.; and Somoza, Carmen, 5,338,872, Cl. 549-510.000.

Flournoy, David H.: *See—*
Beauchamp, Bruce A.; Beffa, James C.; and Flournoy, David H., 5,339,331, Cl. 375-1.000.

Flow International Corporation: *See—*
Raghavan, Chidambaram; Kostohris, Kraig T.; and Hawes, Adrain C. O., 5,337,561, Cl. 60-421.000.

Fluid Mills, Inc.: *See—*
Francis, Gordon G.; and Hebert, Richard W., 5,337,966, Cl. 241-46.060.

Fluoroware, Inc.: *See—*
Shindley, Richard P.; and Williams, Randall S., 5,339,074, Cl. 340-825.310.

FMC Corporation: *See—*
De Bin, Rene F.; and Lambrecht, Emiel, 5,337,968, Cl. 242-521.000.
Humphreys, William M., 5,338,562, Cl. 426-603.000.
Mills, Robert L.; Lodholz, John C.; Sarat-Chandra, Rangasami; Orlando, Franklin P.; and Christian, Donald J., 5,337,885, Cl. 198-502.400.

Fock, Jurgen; Esselborn, Eberhard; and Schaefer, Dietmar, to Goldschmidt AG, The. Polyacrylate esters with long-chain hydrocarbon and polyoxyalkylene groups and their use as surface active substances. 5,338,485, Cl. 252-309.000.

Focke & Co. (GmbH & Co.): *See—*
Focke, Heinz; and Holloch, Johannes, 5,338,150, Cl. 414-799.000.

Focke, Heinz; and Holloch, Johannes, to Focke & Co. (GmbH & Co.). Apparatus for handling articles, such as cartons. 5,338,150, Cl. 414-799.000.

Fohl, Artur, to TRW Repa GmbH. Belt tightener for vehicle safety belt systems. 5,338,065, Cl. 280-806.000.

Folkins, Jeffrey J.: *See—*
Hubble, Fred F., III; Martin, James P.; and Folkins, Jeffrey J., 5,339,150, Cl. 355-326.00R.

Foot Image Technology, Inc.: *See—*
White, Jay P.; Thies, Wesley A.; Sweasy, William J., Jr.; and Goggin, Joseph P., 5,339,252, Cl. 364-468.000.

Ford Motor Company: *See—*
Brockner, Henry W.; Mohan, Robert J.; and Lassen, Richard, 5,338,165, Cl. 417-423.100.
Gonzales, Frank, Jr.; and Mortimer, Timothy J., 5,337,715, Cl. 123-325.000.
Janotik, Adam M.; and Kazyak, Lawrence P., 5,338,080, Cl. 296-29.000.
Kuo, Yao H.; and Kennedy, John F., 5,339,454, Cl. 455-247.100.
Lai, Henry, 5,339,009, Cl. 315-291.000.

Murray, Allan D.; Tisack, Michael D.; and Wu, Yitah R., 5,338,497, Cl. 264-25.000.

Ford New Holland, Inc.: *See—*
Bulgrien, Garth H.; and Hansen, Charles A., 5,337,624, Cl 74-335.000

Ford, Steven D.: *See—*
Mazzei, Angelo L.; and Ford, Steven D., 5,338,341, Cl. 96-208.000.

Fordee, William H.; and Keating, Henry M., to Keating Koupling, Inc. Machine and method of making duct coupling. 5,337,591, Cl. 72-168.000.

Forestiere, Alain: *See—*
Marion, Marie-Claire; Forestiere, Alain; and Delhomme, Henri, 5,338,518, Cl. 422-211.000.

Forsse, Earl K.; and Forsse, Janis R. Modular book binder. 5,338,125, Cl. 402-46.000.

Forsse, Janis R.: *See—*
Forsse, Earl K.; and Forsse, Janis R., 5,338,125, Cl. 402-46.000.

Forsvarets Forskningsanstalt: *See—*
Brage, Anders N., 5,337,648, Cl. 89-1.704.

Forsyth, Craig J.: *See—*
Kishi, Yoshito; Fang, Francis G.; Forsyth, Craig J.; Scola, Paul M.; and Yoon, Suk K., 5,338,865, Cl. 549-214.000.

Fortin, Michel; Frechet, Daniel; Hamon, Gilles; Jouquey, Simone; and Vevert, Jean-Paul, to Roussel Uclaf. Benzimidazole compounds. 5,338,756, Cl. 514-394.000.

Fortlage, Paul: *See—*
Rush, Robert; and Fortlage, Paul, 5,337,786, Cl. 137-625.680.

Fosgate, James W. Apparatus for enhancing monophonic audio signals using phase shifters. 5,339,363, Cl. 381-97.000.

Foster, Donald D.; and Nelson, Philip L., to Contico International, Inc. Sealing gasket for a trigger sprayer. 5,337,928, Cl. 222-383.000.

Foster, L. Dale; and Reeder, Ryan A., to Hill-Rom Company, Inc. Ventilator, care cart and motorized transport each capable of nesting within and docking with a hospital bed base. 5,337,845, Cl. 180-11.000.

Fotowat-Ahmady, Ali; and Navid, Nasrollah S., to North American Philips Corporation. Low voltage, simplified and temperature compensated logarithmic detector. 5,338,985, Cl. 307-494.000.

Fouillet, Jean-Marie: *See—*
LeBrat, Francois; Fouillet, Jean-Marie; and Etienne, Francis, 5,339,166, Cl. 358-311.000.

Fournier, Jacques: *See—*
Janssen, Sylvain; Fournier, Jacques; and Larmurier, Claude, 5,337,797, Cl. 141-206.000.

Fowler, Mark M.: *See—*
Brooks, Charles P.; Leahy, Donald J.; Fowler, Mark M.; and Everidge, Jackie K., Jr., 5,338,209, Cl. 439-66.000.

Fowlkes, Dana M., to University of North Carolina at Chapel Hill, The. Carboxy terminal IL-6 muteins. 5,338,833, Cl. 530-351.000.

Foxboro Company, The: *See—*
Brown, Christopher R., 5,337,607, Cl. 73-861.120.

Fraini, Edward A.; and Tepera, George W., to Dow Chemical Company, The. Recovery of phenols from hydrocarbon mixtures. 5,338,453, Cl. 210-634.000.

Francis, Gordon G.; and Hebert, Richard W., to Fluid Mills, Inc. Method and apparatus for the reduction and classification of solids particles. 5,337,966, Cl. 241-46.060.

Frank, Dieter: *See—*
Kent, Carole L.; and Frank, Dieter, 5,338,784, Cl. 524-31.000.

Frank, Jeffrey A.: *See—*
Laughlin, Glenn M.; Frank, Jeffrey A.; and Hirschhaut, Bruce, 5,338,095, Cl. 297-440.100.

Frank, Kurt; Attenni, Johann; Schmidt, Albert; and Weigl, Max, to Robert Bosch GmbH. Electrohydraulic device, particularly electrical fuel pump for motor vehicle. 5,338,163, Cl. 417-410.00R.

Frank, Kurt: *See—*
Kemmner, Ulrich; Frank, Kurt; and Niederkofler, Michael, 5,338,151, Cl. 415-55.100.

Frankel, Carl B., to Abekas Video Systems, Inc. Planar color gradients constructed as an arbitrary function of a distance function from an arbitrary 2-D curvilinear function. 5,339,387, Cl. 395-131.000.

Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, to Bofors AB. Device for controlling ammunition units discharged in salvos by charges composable from part charges. 5,337,649, Cl. 89-14.050.

Fraser, Robert D.: *See—*
Workinger, David M.; and Fraser, Robert D., 5,338,617, Cl. 428-551.000.

Fratangelo, Louis D.: *See—*
Mammino, Joseph; Abramsohn, Dennis; Heeks, George J.; Henry, Arnold W.; Fratangelo, Louis D.; Pan, David H.; and Badesha, Santokh S., 5,338,587, Cl. 428-35.700.

Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V.: *See—*
Benecke, Wolfgang, 5,338,997, Cl. 310-307.000.

Fraus, Joan K.; and Smith, Pamela M. S. Ornamental christmas display. 5,338,585, Cl. 428-18.000.

Frechet, Daniel: *See—*
Fortin, Michel; Frechet, Daniel; Hamon, Gilles; Jouquey, Simone; and Vevert, Jean-Paul, 5,338,756, Cl. 514-394.000.

Frederick Herold & Associates, Inc.: *See—*
Kaiser, Julius A., 5,339,284, Cl. 367-103.000.

Fredriksson, Lars-Berno: *See—*
Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, 5,337,649, Cl. 89-14.050.

Freeshworld, Inc.: *See—*
Arnoth, Frank W.; and Hoffman, William C., Jr., 5,337,640, Cl. 83-444.000.

Freisinger, Henry; and Wittmann, Heinz, to HTM Sport - und Freizeitgeraete Aktiengesellschaft. Safety ski binding release and reset mechanism. 5,338,052, Cl. 280-612.000.

Frelich, Jeffrey J.; Miotto, Ronald L.; and Wiltsey, Ronald A., to Lear Seating Corporation. Method for bonding fabric to seat cushion trenches. 5,338,386, Cl. 156-290.000.

Frenk, Klaus, to Ciba-Geigy Corporation. Process for the continuous quantitative determination of fluorine-containing compounds. 5,338,685, Cl. 436-124.000.

Frey, Jeffrey A.: *See—*
Elko, David A.; Frey, Jeffrey A.; Helffrich, Audrey A.; Nick, Jeffrey M.; and Swanson, Michael D., 5,339,405, Cl. 395-575.000.

Frey, Wolfram; and Trube, Hans, to Mercedes-Benz AG. Headlamp cleaning unit for the front area of a motor vehicle. 5,337,439, Cl. 15-250.002.

Freyre, Arthur E.: *See—*
Fulghum, Oscar T., Jr.; and Freyre, Arthur E., 5,337,811, Cl. 144-208.00B.

Frid-Nielsen, Lars K., to Borland International, Inc. Symbol browsing in an object-oriented development system. 5,339,433, Cl. 395-700.000.

Fridman, Vladimir; and Zawodny, rthur, to Concord Camera Corporation. Camera with data imprinting device. 5,339,125, Cl. 354-106.000.

Fried, Thierry: *See—*
Szwejkowski, Chester A.; Lum, Robert; and Fried, Thierry, 5,338,398, Cl. 156-655.000.

Friederichs, John W.; Mirchandani, Prakash K.; and Krudy, Paul J., to Valenite Inc. Process for making non-magnetic nickel tungsten carbide cemented carbide compositions and articles made from the same. 5,338,506, Cl. 419-44.000.

Fries, Marilyn E.: *See—*
East, Jeffrey A.; and Fries, Marilyn E., 5,339,418, Cl. 395-650.000.

Friesen, Henry: *See—*
Eavenson, Jimmy N., Sr.; Behrens, Robert N.; Friesen, Henry; and Hamm, Nicholas, 5,337,849, Cl. 180-24.120.

Fritzel, Bradley G., to Hughes Aircraft Company. Step stare scanning apparatus and method. 5,339,188, Cl. 359-200.000.

Froehlich, Edward T.: *See—*
Edstrom, William E.; Froehlich, Edward T.; and Grkavac, George J., 5,337,696, Cl. 119-18.000.

Frohnhaus, Ernst-Reinhard: *See—*
Bauer, Heinz; Becker, Burckhard; and Frohnhaus, Ernst-Reinhard, 5,338,119, Cl. 384-47.000.

Fruchey, Olan S.: *See—*
Tafesh, Ahmed M.; Fruchey, Olan S.; and Hilton, Charles B., 5,338,884, Cl. 564-138.000.

Fu, Yi-Chang: *See—*
Connor, Daniel S.; Scheibel, Jeffrey J.; Fu, Yi-Chang; Murch, Bruce P.; Watson, Randall A.; and McKillop, Kirsten L., 5,338,491, Cl. 252-548.000.

Fueki, Kazumasa, to Ricoh Company, Ltd. Electronic filing system using a mark on each page of the document for building a database with respect to plurality of multi-page documents. 5,339,412, Cl. 395-600.000.

Fuji Electric Co., Ltd.: *See—*
Enomoto, Yoshinari; and Tsuruta, Yoshio, 5,338,691, Cl. 437-3.000
Toyama, Kouichi, 5,338,000, Cl. 250-223.00B.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Aihara, Masaaki, 5,337,556, Cl. 60-276.000.

Fuji Photo Film Co., Ltd.: *See—*
Aoai, Toshiaki; and Mizutani, Kazuyoshi, 5,338,640, Cl. 430-154.000.
Hirano, Shigeo, 5,338,658, Cl. 430-598.000.
Ikegawa, Akihiko; Mihara, Yuji; and Okazaki, Masaki, 5,338,656, Cl. 430-577.000.
Inaba, Tadashi; Okada, Hisashi; Suzuki, Ryo; Katsuoka, Yasuhiro; and Seki, Hiroyuki, 5,338,649, Cl. 430-430.000.
Isozaki, Masakazu, 5,337,499, Cl. 34-549.000.
Kato, Eiichi; and Ishii, Kazuo, 5,338,628, Cl. 430-95.000
Kato, Takashi, 5,338,657, Cl. 430-584.000.
Kojima, Tetsuro; and Watanabe, Nobuo, 5,338,648, Cl. 430-393.000
Matsumoto, Akira; Morita, Kiyoo; and Daihisa, Takuji, 5,337,973, Cl. 242-347.000.
Muramatsu, Katsuji, 5,339,127, Cl. 354-288.000.
Naruse, Hideaki; Suzuki, Makoto; and Sato, Takehiko, 5,338,651, Cl. 430-505.000.
Saito, Naoki; Kamio, Takayoshi; Ichijima, Seiji; and Mihayashi, Keiji, 5,338,654, Cl. 430-557.000.
Suzuki, Fumiyuki; Ogura, Tohru; and Shirakura, Yukio, 5,339,255, Cl. 364-500.000
Takahashi, Hisashi; Shimizu, Shigehisa; Fujiwara, Takayuki; Mino, Satoshi; and Sugii, Tatsuo, 5,337,536, Cl. 53-135.300.
Tanaka, Toshiharu; Ishige, Sadao; Sugiyama, Takekatsu; and Shimada, Hirokazu, 5,338,642, Cl. 430-173.000.

Fuji Xerox Co., Ltd.: *See—*
Nukada, Katsumi; Imai, Akira; Daimon, Katsumi; Iijima, Masakazu; Mashimo, Kiyokazu; Sakaguchi, Yasuo; and Takegawa, Ichiro, 5,338,636, Cl. 430-59.000.
Oka, Koichi; and Ichikawa, Hirokazu, 5,337,474, Cl. 29-846.000

Fujihara, Kunihisa: *See—*
Miyamoto, Masaaki; Yuzaki, Yoshinori; and Fujihara, Kunihisa, 5,337,441, Cl. 15-318.100.

Fujii, Kyoto: *See—*
Inoue, Sadayuki; and Fujii, Kyoto, 5,339,165, Cl. 358-312.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Fujikiko Kabushiki Kaisha: *See*—
Ikegaya, Isao; and Sugimoto, Kunihisa, 5,338,093, Cl. 297-367.000.

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Sekine, Satoshi; and Fujimori, Junichi, 5,338,892, Cl. 84-662.000.

Fujimoto, Yasuhisa: *See*—
Matsuoka, Kazuyuki; and Fujimoto, Yasuhisa, 5,337,668, Cl. 101-481.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Shiokawa, Youichi; Akahane, Atsushi; Katayama, Hirohito; and Mitsunaga, Takafumi, 5,338,743, Cl. 514-300.000.

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Suzuki, Koji; Ueno, Yuichi; Aoki, Katsuhiro; Iwata, Naoki; Sawada, Akira; and Fujishiro, Takatsugu, 5,339,141, Cl. 355-246.000.

Fujita, Masahiko: *See*—
Nakai, Yukio; Kida, Hiroshi; Hirai, Masashi; Fujita, Masahiko; and Fukunaga, Takahiro, 5,339,144, Cl. 355-274.000.

Fujita, Shigeo: *See*—
Kumagae, Yojiro; Fujita, Shigeo; Matsumoto, Mansuke; Wada, Sayuri; and Hashimoto, Shuuichi, 5,338,866, Cl. 549-226.000.

Fujita, Takashi: *See*—
Yoshioka, Takao; Nishi, Takahide; Kanai, Tsutomu; Aizawa, Yuichi; Wada, Kunio; Fujita, Takashi; and Horikoshi, Hiroyoshi, 5,338,855, Cl. 514-369.000.

Fujito, Katsuyuki: *See*—
Maeda, Kazuki; Utsumi, Kuniaki; and Fujito, Katsuyuki, 5,339,315, Cl. 370-85.100.

Fujitsu Isotec Limited: *See*—
Tomita, Hiroyuki; and Yoshida, Kohichi, 5,339,132, Cl. 355-200.000.

Fujitsu Limited: *See*—
Asahara, Masaru; Oguchi, Takuro; and Sasaki, Shunroku, 5,339,353, Cl. 379-59.000.
Ishii, Tadao, 5,339,356, Cl. 379-234.000.
Ishii, Toshio, 5,339,156, Cl. 358-402.000.
Ito, Eiki, 5,339,267, Cl. 364-761.000
Kobayashi, Atsuhisa; Tokunaga, Haruhiko; and Moriyama, Hitoshi, 5,338,121, Cl. 400-322.000.
Kogure, Seiji; and Niishiro, Mamoru, 5,337,467, Cl. 29-840.000.
Kurihara, Kazuaki; Sasaki, Kenichi; and Kawarada, Motonobu, 5,338,364, Cl. 118-729.000.
Morohashi, Shinichi; and Komiya, Satoshi, 5,338,934, Cl. 250-336.200.
Nagahara, Toyokazu, 5,339,450, Cl. 395-700.000.
Nakagawa, Kenji; and Kawashima, Kenichi, 5,338,647, Cl. 430-322.000.
Nishino, Hisayasu; Yamada, Akio; Oae, Yoshihisa; and Yasuda, Hiroshi, 5,338,939, Cl. 250-396.0ML.
Sakata, Minoru; and Komatsu, Noriyoshi, 5,339,460, Cl. 455-343.000.
Suzuki, Katsuo, 5,339,183, Cl. 359-123.000.
Taguchi, Masao, 5,339,273, Cl. 365-201.000.
Takahashi, Eisaku, 5,339,206, Cl. 360-75.000.
Tanaka, Kenji; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Sekihata, Osamu; Hatta, Hiroyuki; and Norizuki, Reiko, 5,339,318, Cl. 370-110.100.
Taniguchi, Ikuo, 5,339,310, Cl. 370-60.000.
Tomita, Hiroyuki; and Yoshida, Kohichi, 5,339,132, Cl. 355-200.000.

Fujiwa, Takaaki; Takemoto, Shin; Isobe, Tomohisa; and Harano, Yoshiyuki, to Daicel Chemical Industries, Ltd. Lactone-modified alicyclic composition and an epoxidized composition thereof. 5,338,879, Cl. 560-116.000.

Fujiwara, Hisashi: *See*—
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi; Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, 5,337,881, Cl. 198-409.000

Fujiwara, Muneyoshi; Hirai, Wataru; Yonezawa, Takahiro; and Sakurai, Kunio, to Matsushita Electric Industrial Co., Ltd. Apparatus for mounting electronic component on substrate. 5,339,248, Cl. 364-468.000.

Fujiwara, Takayuki: *See*—
Takahashi, Hisashi; Shimizu, Shigehisa; Fujiwara, Takayuki; Mino, Satoshi; and Sugii, Tatsuo, 5,337,536, Cl. 53-135.300.

Fujiwara, Teruaki: *See*—
Shimomura, Tadao; Irie, Yoshio; Takahashi, Hitoshi; Kajikawa, Katsuhiro; Saga, Jyunichi; Fujiwara, Teruaki; and Hatsuda, Takumi, 5,338,810, Cl. 526-75.000.

Fukagai, Toshio: *See*—
Mishima, Naoshi; Fukagai, Toshio; Taniguchi, Kiyoshi; Kishi, Hiroyuki; Inoue, Tomohiro; and Kawasaki, Yoshiaki, 5,339,138, Cl. 355-296.000.

Fukami, Harukazu: *See*—
Kawaguchi, Naoko; Fukami, Harukazu; Sago, Ryuichi; and Ikai, Keitaro, 5,338,719, Cl. 504-224.000.

Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, to Canon Kabushiki Kaisha. Photoelectronic conversion device. 5,338,690, Cl. 437-3.000.

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Fukuda, Hideki: *See*—
Abe, Hisaki; Kondoh, Toshio; Fukuda, Hideki; Takahashi, Mayumi; Aoyama, Tetsuo; and Miyake, Masahiro, 5,338,462, Cl. 210-757.000.

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Fukuda, Masatoshi: *See*—
Marques, Anthony M.; Kelley, Paul R.; Jones, William K.; Fukuda, Masatoshi; and Manuel, Overton H., 5,339,066, Cl. 338-306.000.

Fukuda Metal Foil and Powder Co., Ltd.: *See*—
Fukuda, Katsuhito; Takami, Masato; Hasegawa, Hirokazu; Nakajima, Chiaki; and Isihara, Kenji, 5,338,619, Cl. 428-623.000.

Fukuda, Takeshi, to Dart Industries Inc. Lunch box with utensil pocket. 5,337,913, Cl. 220-326.000.

Fukuda, Takeshi: *See*—
Picozza, Augusto A.; and Fukuda, Takeshi, 5,337,910, Cl. 220-203.000.

Fukuda, Yasushi: *See*—
Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, 5,339,319, Cl. 371-10.200.

Fukudome, Shin-ichi: *See*—
Yoshikawa, Masaaki; and Fukudome, Shin-ichi, 5,338,668, Cl. 435-68.100.

Fukuhara, Hiroshi, to Kabushiki Kaisha Fukuhara Seisakusho. Automatic drain device. 5,337,779, Cl. 137-187.000.

Fukui, Wataru; and Ohsawa, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for internal combustion engine. 5,337,716, Cl. 123-425.000.

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Fukumoto, Tadao; Iwamoto, Masatoshi; and Kishimoto, Akihiko, to Toray Industries, Inc. Housing and thermoplastic resin compositions including polyether ester amide, styrene based resin and vinyl copolymer. 5,338,795, Cl. 525-66.000.

Fukumoto, Yoshiharu: *See*—
Yanagisawa, Tateo; Yamada, Hisayoshi; Sakamoto, Katsumi; Inagawa, Seiki; Umetsu, Yukihide; Uchida, Takeshi; Nakahara, Hideyo; and Fukumoto, Yoshiharu, 5,338,503, Cl. 264-516.000.

Fukunaga, Takahiro: *See*—
Nakai, Yukio; Kida, Hiroshi; Hirai, Masashi; Fujita, Masahiko; and Fukunaga, Takahiro, 5,339,144, Cl. 355-274.000.

Fukutomi, Masaaki; and Watanabe, Hirokazu, to Yoshida Kogyo K.K. Cord stopper. 5,337,458, Cl. 24-115.00H.

Fulger, Charles V.: *See*—
Aung, Thein; and Fulger, Charles V., 5,338,558, Cl. 426-327.000.

Fulghum Industries, Inc.: *See*—
Fulghum, Oscar T., Jr.; and Freyre, Arthur E., 5,337,811, Cl. 144-208.00B.

Fulghum, Oscar T., Jr.; and Freyre, Arthur E., to Fulghum Industries, Inc. Debarker infeed conveyor. 5,337,811, Cl. 144-208.00B.

Full-Zone Corporation: *See*—
Huang, Thomas N., 5,338,244, Cl. 446-242.000.

Fullerton, Jack K.; Beck, Richard A.; Clark, Fred B.; Reid, Gordon B.; and Nau, Keith A., to Xerox Corporation. Document feeder with positive document removal from imaging platen. 5,339,139, Cl. 355-215.000.

Fumagalli, Frank: *See*—
Wolcovitch, Brian; and Fumagalli, Frank, 5,337,903, Cl. 211-13.000

Fumeaux, Rene ; and Philippossian, Georges, to Nestec S.A. 1-hydroxyalkylxanthines and medicaments containing them. 5,338,741, Cl. 514-262.000.

Funabashi, Masayuki: *See*—
Fukuda, Hiroyuki; Funabashi, Masayuki; and Abe, Hikonori, 5,338,320, Cl. 29-623.100.

Funai, Kiyoshi: *See*—
Yumura, Takashi; Funai, Kiyoshi; and Yamamoto, Tetsu, 5,339,208, Cl. 360-104.000.

Funk, Helmut; Allmendinger, Franz; and Weber, Markus, to Eastman Kodak Company. Device for stacking and aligning individually supplied sheets. 5,338,022, Cl. 271-184.000.

Furre, Arnold: *See*—
Torgrimsen, Tor; Stangeland, Kjell-Egil; and Furre, Arnold, 5,337,843, Cl. 175-334.000.

Furukawa Electric Co., Ltd., The: *See*—
Higashiura, Atsushi; Sano, Fumikazu; Tokimori, Yoshitaka; and Natsume, Yoshitaka, 5,337,941, Cl. 228-205.000.
Horikawa, Hiroshi; Tsuzuki, Yoshikazu; Mogi, Hisashi; and Matsubara, Kazuo, 5,338,070, Cl. 285-177.000.

Suzuki, Satoshi; Shibata, Nobuyuki; Shirakawa, Ryotomo; and Matsuda, Akira, 5,338,618, Cl. 428-614.000.

Fushimi, Shinya, to Mitsubishi Denki Kabushiki Kaisha. System and method for compiling and executing a computer program written in more than one programming language. 5,339,424, Cl. 395-650.000.

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Gaertner, Gregory G.: *See*—
Strout, Robert E., II; Spix, George A.; Masamitsu, Jon A.; Cox, David M.; Gaertner, Gregory G.; Wengelski, Diane M.; and Thompson, Keith J., 5,339,415, Cl. 395-650.000.

Gainey, Trevor C., to LSI Logic Corporation. Packaging of electronic devices. 5,338,899, Cl. 174-52.400.

Galens, Peter: *See*—
Johnson, Larry E.; and Galens, Peter, 5,338,382, Cl. 156-72.000.

Gallagher, Dennis M.: *See*—
Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,337,660, Cl. 101-91.000.

Gallagher, Gwyn: *See*—
LeBlanc, George; and Gallagher, Gwyn, 5,337,452, Cl. 16-367.000.

Gallo, Anthony A., to Dexter Electronic Materials Division of Dexter CXorp. Flame retardant epoxy molding compound for encapsulating a semiconductor device. 5,338,781, Cl. 523-460.000.

Gambetta, David L.: *See*—
McCutcheon, Andrew J.; Bowman, Jeffrey M.; and Gambetta, David L., 5,338,006, Cl. 251-327.000.

Gambino, Jeffrey P.: *See*—
Kobeda, Edward; Gambino, Jeffrey P.; Gifford, George G.; and Mazzeo, Nickolas J., 5,338,702, Cl. 437-192.000.

Gambro AB: *See*—
Jeppsson, Jan-Bertil; and Losell, Ingvar, 5,338,293, Cl. 604-29.000.

Gandikota, Kapal: *See*—
Shekhawat, Sampat; Eckenfelder, Robert C.; Tumpey, John J.; Wohlberg, Alfred W.; and Gandikota, Kapal, 5,339,235, Cl. 363-43.000.

Gandre, Jerry D.: *See*—
Steffes, Karl M.; Crosby, Joseph B.; Gandre, Jerry D.; and Swindler, Dan E., 5,338,214, Cl. 439-160.000.

Gange, David M.: *See*—
Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Doehner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., 5,338,883, Cl. 564-90.000.

Gardiner, Robin A.; and Kirlin, Peter S., to Advanced Technology Materials, Inc. Apparatus and method for protection of pumps used for delivery of air- or moisture-sensitive liquids. 5,337,651, Cl. 92-87.000.

Gardner, Lawrence C. Eye protection device comprising a foam rubber-like resilient insert member. 5,339,119, Cl. 351-158.000.

Gardner, Thomas W.; and Hollis, Theodore M., to Penn State Research Foundation, The. Method for treating retinopathy and other small vessel disorders associated with diabetes. 5,338,757, Cl. 514-461.000.

Garofalo, Joseph G.; Kostelak, Robert L., Jr.; Pierrat, Christophe; and Vaidya, Sheila, to AT&T Bell Laboratories. Fabrication of phase-shifting lithographic masks. 5,338,626, Cl. 430-5.000.

Gassler, Joachim; and Massen, Robert, to Kaltenbach & Voigt Gmb & Co. Method and apparatus for optical measurement of objects. 5,339,154, Cl. 356-376.000.

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Gasztonyi, Laszlo R., to Harris Corporation. Method of autonomously reducing power consumption in a computer sytem by compiling a history of power consumption. 5,339,445, Cl. 395-750.000.

Gatchell, Stephen: *See*—
Chiu, Bernard; Gatchell, Stephen; and Wang, Jui-Shang, 5,338,324, Cl. 55-385.200.

Gautsch, James: *See*—
Lee, Lawrence L.; and Gautsch, James, 5,338,687, Cl. 436-173.000.

Geffken, Robert M.; and Dunlop, Lawrence J., to International Business Machines Corporation. Sidewall decoupling capacitor. 5,339,212, Cl. 361-306.200.

Geha, Sam G.: *See*—
Carlile, Robert N.; and Geha, Sam G., 5,339,039, Cl. 324-655.000.

GenCorp Inc.: *See*—
Hein, Richard D., 5,338,011, Cl. 267-140.120.
Leach, Burr L., 5,338,578, Cl. 427-470.000.

Genelabs Technologies, Inc.: *See*—
Choy, William; Chen, Jen; and Almassian, Bijan, 5,338,867, Cl. 549-298.000.

Genentech, Inc.: *See*—
Bennett, William F.; Keyt, Bruce A.; and Zoller, Mark J., 5,338,546, Cl. 424-94.640.

General Chemical Corporation: *See*—
Capozzola, John; and Kennedy, David K., 5,338,457, Cl. 210-652.000.

General Electric Company: *See*—
Brambani, Eric J.; and Munshi, Jonathan, 5,337,961, Cl. 239-397.500.
Cole, Herbert S., Jr.; and Rose, James W., 5,338,975, Cl. 257-750.000
DeLuca, Amedeo; Gentry, James E., Sr.; Thomas, David L.; Landry, Norman R.; and Agrawal, Ashok K., 5,339,086, Cl. 342-371.000.
Homer, Peter K.; Parenti, Robert V.; DeStefano, Joel; Chen, Wensen; Talley, Eric; and Close, John E., 5,337,980, Cl. 244-158.00R.

Howell, Edward K., 5,339,210, Cl. 361-9.000.
Hunsbedt, Anstein, 5,339,340, Cl. 376-299.000.
Jamieson, James R.; Zahedi, Ahmad P.; and Stegemiller, Heidi J., 5,338,928, Cl. 250-227.210.
Kelly, Thomas J., 5,338,379, Cl. 148-410.000.
Lee, Ching-Pang; Goebel, Steven G.; and Abuaf, Nesim, 5,337,568, Cl. 60-755.000.
Lezan, Georges R. E.; and Walker, Loren H., 5,338,994, Cl. 307-86.000.
Meade, Robert J.; Albrecht, Richard W.; and Weisgerber, Robert H., 5,338,154, Cl. 415-173.700.
Peascoe, Warren J.; and Tyrell, John A., 5,338,797, Cl. 525-66.000.
Schneider, Erika; and Bernstein, Matthew A., 5,339,035, Cl. 324-309.000.
Thimineur, Raymond J.; Traver, Frank J.; and Van Valkenburgh, Virginia M., 5,338,536, Cl. 424-70.000.
Wirth, William F.; and Schmidt, Jonathan R., 5,339,348, Cl. 378-93.000.

General Microwave Israel Corporation: *See*—
Hopfer, Samuel; and Shani, Yosef, 5,339,369, Cl. 385-2.000.

General Mills, Inc.: *See*—
Schwab, Edward C.; Brown, George E.; Thomas, Kristin L.; and Harrington, Terry R., 5,338,556, Cl. 426-241.000.

General Motors Corporation: *See*—
Reitz, Dieter, 5,337,712, Cl. 123-90.220.

General Time Corporation: *See*—
Davis, Joel K., 5,339,296, Cl. 368-67.000.

Genie Industries: *See*—
Neubauer, Willi B.; Smith, Paul K.; and Harvey, Philip J., 5,337,858, Cl. 182-148.000.

Genlyte Group Incorporated, The: *See*—
Russello, Thomas; and Sangiamo, Richard, 5,339,234, Cl. 362-419.000.

Gentry, Charles B.; and Visser, James T., to Granco Clark, Inc. Extrusion billet taper quench unit. 5,337,768, Cl. 134-122.00R.

Gentry, James E., Sr.: *See*—
DeLuca, Amedeo; Gentry, James E., Sr.; Thomas, David L.; Landry, Norman R.; and Agrawal, Ashok K., 5,339,086, Cl. 342-371.000.

Geobiotics, Inc.: *See*—
Kohr, William J., 5,338,338, Cl. 75-711.000.

Georgia-Pacfic Corporation: *See*—
Moorman, Stephen E., 5,337,679, Cl. 108-51.300.

Gerestek Oy: *See*—
Ryynanen, Seppo I., 5,338,499, Cl. 264-34.000.

Gerst, Michael: *See*—
Gloe, Karl-Heinz; Gerst, Michael; and Kreuzer, Helmuth, 5,337,589, Cl. 72-11.000

Gesellschaft fur Biotechnologische Forschung mbH GBF: *See*—
Deckwer, Wolf-Dieter; Lobas, Detlef; and Schumpe, Adrian, 5,338,681, Cl. 435-252.100.

Gesellschaft fur okologische Okomobil Technologie fur Fahrzeuge GmbH: *See*—
Thurner, Jorg, 5,338,160, Cl. 417-273.000.

GET Laboratories Incorporated: *See*—
Byszewski, Wojciech W.; Dale, Brian; Gregor, Philip D.; Budinger, A. Bowman; and Li, Yan M., 5,339,005, Cl. 315-244.000.

Ghisolfi, Guido, to M.& G. Ricerche S.p.A. Process for the production of high molecular weight polyester resins. 5,338,808, Cl. 525-437.000.

Gibbs, Andrew: *See*—
Salkeld, Paul; Gibbs, Andrew; and Tansley, Robert, 5,337,922, Cl. 222-129.000.

Gibbs, Kenneth E.: *See*—
Steinberg, Gary L.; Pino, Giovanni; Gibbs, Kenneth E.; Norwood, Richard L.; and Smith, Gary L., 5,337,443, Cl. 15-344.000.

Gibson, Michael E. Pitot static tube having accessible heating element. 5,337,602, Cl. 73-182.000.

Giess, Edward A.: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Gifford, George G.: *See*—
Kobeda, Edward; Gambino, Jeffrey P.; Gifford, George G.; and Mazzeo, Nickolas J., 5,338,702, Cl. 437-192.000.

Giftec, Ltd.: *See*—
Hou, Jack, 5,338,583, Cl. 428-7.000.

Gilbert, Graham P., to Autotech Robotics Limited. Workpiece handling system. 5,337,938, Cl. 228-102.000.

Gilbert, Klay E.: *See*—
Bales, Randy J.; Gilbert, Klay E.; and Bell, Steven R., 5,337,979, Cl. 244-118.100.

Gilboa, Ronnie: *See*—
Bashan, Oded; Aduk, Moshe; Gilboa, Ronnie; Itay, Nehemya; and Shure, Dubi, 5,339,000, Cl. 340-932.200.

Giles, Charles; Belsom, Keith; and Schuler, Warren, to United Technologies Corporation. Replaceable clip. 5,337,583, Cl. 60-752.000.

Gillette Company, The: *See*—
Loftin, Rachel M., 5,338,793, Cl. 524-571.000.
Matz, Gary F.; and Sanborn, Kimberly B., 5,338,775, Cl. 523-161.000.

Gillies, Stephen D., to Abbott Biotech, Incorporated. Method of producing fusion proteins. 5,338,669, Cl. 435-69.100.

VOL 1165 ISS 3 AG 16 1994 UMI

Gillis, Donald B., to Connelly Skis, Inc. Compression molded water ski and method of making the same. 5,338,238, Cl. 441-68.000.
Gilman Paper Company: *See—*
Marx, Edmund N., Jr., 5,338,408, Cl. 162-301.000.
Gilmour, George A., to Westinghouse Electric Corp. Apparatus and method for measuring velocity. 5,339,283, Cl. 367-89.000.
Giovagnoli, Paul S., to Master Pitching Machine, Inc. Ball collection and distribution apparatus for multiple baseball pitching units. 5,338,025, Cl. 273-26.00D.
Giovanni, Lino: *See—*
Panzer, Hans P.; Giovanni, Lino; Cohen, Martin L.; and Yen, Wei S., 5,338,492, Cl. 252-582.000.
Giridhar, Jayaramachandran: *See—*
Van Ooij, Wim J.; and Giridhar, Jayaramachandran, 5,338,620, Cl. 428-625.000.
Giroldini, William; Landoni, Gianluigi; Rinaldi, Antonio; and Neri, Carlo, to Enichem Synthesis, S.p.A. New pentaerythryl phosphonates containing self-extinguishing thermoplastic compositions. 5,338,787, Cl. 524-100.000.
Giry, Emmanuel: *See—*
Aube, Jean-Yves; and Giry, Emmanuel, 5,338,329, Cl. 65-521.000.
Gjerde, Douglas T., to Sarasep, Inc. Method of preventing contamination of a chromatography column. 5,338,448, Cl. 210-198.200.
Glacken, Jennifer L.: *See—*
Armstrong, Michael G.; and Glacken, Jennifer L., 5,339,352, Cl. 379-58.000.
Glaenzer Spicer: *See—*
Guimbretiere, Pierre, 5,338,266, Cl. 475-89.000.
Glance, Bernard; and Wilson, Robert W., to AT&T Bell Laboratories. Rapidly tunable integrated optical filter. 5,339,157, Cl. 385-24.000.
Glass, James X.: *See—*
Patla, James A., Sr.; and Glass, James X., 5,338,031, Cl. 273-118.00R.
Glass, Mitchell; Williams, Joseph C.; and Stein, Ross L., to Imperial Chemical Industries PLC. Therapeutic agent for the prevention or treatment of adult respiratory distress syndrome. 5,338,727, Cl. 514-19.000.
Glazer, Arie: *See—*
Drimer, Gideon; and Glazer, Arie, 5,338,424, Cl. 204-298.110.
Glien, Willfried: *See—*
Neumann, Gerd; Hutschenreuther, Peter; Glien, Willfried; Raab, Dagmar; Leuner, Barbara; Steinborn, Gabriele; and Berger, Georg, 5,338,771, Cl. 523-113.000.
Globe-Union Inc.: *See—*
Gruenstern, Robert G.; Bast, Ronald J.; Aldecoa, Julio A.; and Miller, Lawrence F., 5,338,624, Cl. 429-120.000.
Gloe, Karl-Heinz; Gerst, Michael; and Kreuzer, Helmuth, to Whitaker Corporation, The. Method of and apparatus for controlling the crimp height of crimped electrical connections. 5,337,589, Cl. 72-11.000.
Glorioso, John D., to Enviro-Gro Technologies. Sludge treatment process. 5,337,496, Cl. 34-378.000
Gluss, David: *See—*
Rostoker, Michael D.; Gluss, David; and Harrington, Tom, 5,339,262, Cl. 364-578.000.
Gmuer, Bruno, to Buehler AG. Method for the automatic supply of bags and bag hanging apparatus. 5,337,541, Cl. 53-459.000.
Goby, Andre , to Stoba AG. Manually lockable seal. 5,337,503, Cl 40-665.000.
Godek, Dennis M.: *See—*
Busch, Frank R.; Bowles, Paul; John, Douglas; Allen, Meldrum; DiRoma, Sabeto A.; and Godek, Dennis M., 5,338,846, Cl. 544-368.000.
Godfrey, Craig W.; Noack, Timothy J.; and Schwendemann, Kenneth L., to Halliburton Company. Valve apparatus. 5,338,001, Cl. 251-58.000.
Goebel, Steven G.: *See—*
Lee, Ching-Pang; Goebel, Steven G.; and Abuaf, Nesim, 5,337,568, Cl. 60-755.000.
Goff, Dan: *See—*
Kruchowy, Roman; Goff, Dan; and Smith, Anthony, 5,339,023, Cl. 324-67.000.
Gofuku, Ihachiro: *See—*
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.
Goggin, Joseph P.: *See—*
White, Jay P.; Thies, Wesley A.; Sweasy, William J., Jr.; and Goggin, Joseph P., 5,339,252, Cl. 364-468.000.
Gold, Jeffrey W.; and Nickens, Dan A., to Earth Resources Corporation. Cylinder rupture vessel. 5,337,793, Cl. 141-1.000.
Gold Star Co., Ltd.: *See—*
Kim, Jin Young, 5,338,240, Cl. 445-24.000.
Song, Han B.; Lee, Jae K.; and Baik, Woon K., 5,339,117, Cl. 348-733.000.
Goldberg, Lewis B. Storage and display rack. 5,337,904, Cl. 211-13.000.
Goldberg, Stephen F., to Pitney Bowes Inc. Thermal postage meter drive system. 5,337,661, Cl. 101-91.000.
Goldberg, Stephen F.; and Mistyurik, John D., to Pitney Bowes Inc. Platen roller and pressure roller assemblies for thermal postage meter. 5,339,280, Cl. 346-134.000.
Golden Valley Microwave Foods Inc.: *See—*
Brandberg, Lawrence C.; Hanson, Denise E.; and Watkins, Jeffrey T., 5,338,911, Cl. 219-759.000.
Goldman, Gary S.; Elash, Silas P.; and Baker, Jeffrey L., to Amdahl Corporation. Recovery of cached data from a malfunctioning CPU. 5,339,407, Cl. 395-575.000.
Goldschmidt AG, The: *See—*
Fock, Jurgen; Esselborn, Eberhard; and Schaefer, Dietmar, 5,338,485, Cl. 252-309.000.
Goldstar Co., Ltd.: *See—*
Hong, Sam P., 5,339,104, Cl. 348-155.000.
Hong, Sung H., 5,339,109, Cl. 348-441.000.
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,337,431, Cl. 8-159.000.
Golomb, Gershon: *See—*
Breuer, Eli; and Golomb, Gershon, 5,338,731, Cl. 514-108.000.
Gonzales, Frank, Jr.; and Mortimer, Timothy J., to Ford Motor Company. Engine deceleration intake air flow reduction and fuel shut-off control. 5,337,715, Cl. 123-325.000.
Gonzales, Michael. Rotating quick release mechanism for securing parts to bicycles. 5,338,142, Cl. 411-402.000.
Goodyear Tire & Rubber Company, The: *See—*
Bhagwat, Anand W.; Palmer, Kenneth J.; and Prakash, Amit, 5,337,972, Cl. 242-129.800.
Bonko, Mark L., 5,337,814, Cl. 152-209.00B
Bonko, Mark L.; and Lopp, Loran C., Jr., 5,337,816, Cl. 152-209.00R.
Graas, Maurice, 5,337,815, Cl. 152-209.00R.
Goossens, Philip A., to Pemko Manufacturing Company. Gear hinge 5,337,451, Cl. 16-354.000.
Gordon, Edward A., to Sony Electronics Inc. Molding device having a ring-gating and hole forming valve gate pin. 5,338,183, Cl. 425-564.000.
Gordon, Jeffrey I.: *See—*
Devadas, Balekudru; Gordon, Jeffrey I.; and Adams, Steven P., 5,338,858, Cl. 548-253.000.
Gordon, John R.: *See—*
King, Richard J.; and Gordon, John R., 5,338,303, Cl. 604-110.000
Gorham, Barry J.; and Dudley, James R., to British Technology Group Ltd. Method and apparatus for measurement of direction. 5,339,088, Cl. 342-459.000.
Goring, Christine B. Saddle and equipment cart. 5,338,049, Cl. 280-47.190.
Goss, Jack. Flow meter. 5,337,615, Cl. 73-861.330.
Gotz, Hans; and Baumann, Karl-Heinz, to Daimler-Benz AG. Windscreen for a convertible automobile. 5,338,089, Cl. 296-180.500.
Gould, Debra K.: *See—*
Keller, David J.; and Gould, Debra K., 5,338,395, Cl. 156-643.000
Gould, Robert F.; and Robinson, Merritt A., to Jandy Industries. Pool cleaner. 5,337,433, Cl. 15-1.700.
Graas, Maurice, to Goodyear Tire & Rubber Company, The. Pneumatic tire having improved wet traction. 5,337,815, Cl. 152-209.00R.
Grace, Todd S.; Barrett, Mark D.; Bilodeau, Vic L.; McCarty, Gary L.; Greenwood, Brian F.; Prough, J. Robert; and Torregrossa, Louis O., to Kamyr, Inc. Acid pre-hydrolysis reactor system. 5,338,366, Cl. 127-37.000.
Graco Inc.: *See—*
Plager, Steven P.; and Kvinge, Daniel J., 5,337,791, Cl. 138-30.000
Graham, James C.: *See—*
Liegel, Reinald D.; Ballard, James; Graham, James C.; Wisner, Craig A.; and Russell, Jeffrey V., 5,338,015, Cl. 269-71.000.
Graham, Stephen A., to Natural Reserves Group, Inc. Technique and apparatus for selective multi-zone vertical and/or horizontal completions. 5,337,808, Cl. 166-191.000.
Granco Clark, Inc.: *See—*
Gentry, Charles B.; and Visser, James T., 5,337,768, Cl. 134-122.00R.
Grande, David W.: *See—*
Blier, Darren J.; Dubord, Christopher J.; and Grande, David W., 5,339,288, Cl. 367-145.000.
Graney, Francis X. Method of constructing a seat for a wooden deck 5,337,471, Cl. 29-432.000.
Grant, Alan H. Computer keyboard. 5,339,097, Cl. 345-168.000.
Graves, Jeffrey A.: *See—*
Betts, Ronald E.; Savage, Douglas R.; Koerner, Richard J.; Leader, Matthew J.; Sin, Kee V.; Graves, Jeffrey A.; and Sherman, Marshall L., 5,338,435, Cl. 204-406.000.
Gray, Catherine L.: *See—*
Tricca, Robert E.; Doran, William T.; and Gray, Catherine L., 5,338,538, Cl. 424-57.000.
Grebe, Volker, to Mesacon Gesellschaft fur MeBtechnik MbH. Optical device for measuring the speed of a moved surface by means of a measuring light beam from a laser. 5,339,196, Cl. 359-640.000.
Grebennikov, Valentin T.: *See—*
Marmorstein, Leon M.; Petuhov, Ignaty M.; Sidorov, Vladimir S.; Aleksandrov, Piotr A.; and Grebennikov, Valentin T., 5,337,825, Cl. 166-307.000
Greber-Widmer, Susanne: *See—*
Yves, Lapierre; Josef, Dieter; Adam, Jean; and Greber-Widmer, Susanne, 5,338,689, Cl. 436-518.000.
Grecksch, Hans; Heidtmann, Thomas; and Bohnen, Norbert, to W. Schlafhorst AG & Co. Textile machine tube transport assembly with full package and empty tube capability. 5,337,551, Cl. 57-281.000.
Green, David T.: *See—*
Remiszewski, Stanley H.; and Green, David T., 5,337,937, Cl. 227-182.000
Green, Dennis J.; Szela, Edward R.; Yamarik, George J.; and Martin, David R., to United Technologies Corporation. Airfoil core trailing edge region. 5,337,805, Cl. 164-369.000.

Green, William L.: *See—*
Ingram, Ralph H.; and Green, William L., 5,337,859, Cl. 184-6.210.
Greene, Mark I.: *See—*
Weiner, David B.; Greene, Mark I.; and Williams, William V., 5,338,829, Cl. 530-324.000.
Greenmaster Industrial Corporation: *See—*
Wang, Leao, 5,338,271, Cl. 482-52.000.
Greenstein, Michael, to Hewlett-Packard Company. Membrane hydrophone having inner and outer membranes. 5,339,290, Cl. 367-163.000.
Greenwalt, Richard B., to Bechtel Group, Inc. Method of processing electric arc furnace dust and providing fuel for an iron making process. 5,338,336, Cl. 75-445.000.
Greenwell, Joseph D.; Kalany, Robert M.; and Paselsky, John M., to R A. Jones & Co. Inc. Quick-disconnect lug for a cartoning machine. 5,337,887, Cl. 198-803.000.
Greenwood, Brian F.: *See—*
Grace, Todd S.; Barrett, Mark D.; Bilodeau, Vic L.; McCarty, Gary L.; Greenwood, Brian F.; Prough, J. Robert; and Torregrossa, Louis O., 5,338,366, Cl. 127-37.000.
Greenwood, Christopher J., to Torotrak (Development) Limited. Toroidalrace rolling-traction type transmission. 5,338,268, Cl. 476-10.000.
Greer, Thomas W., to Reliable Corporation of America, The. Method of playing multiple bingo game apparatus. 5,338,042, Cl. 273-269.000.
Gregg, David W., to United States of America, Energy. Mixing device for materials with large density differences. 5,338,115, Cl. 366-263.000.
Gregor, Philip D.: *See—*
Byszewski, Wojciech W.; Dale, Brian; Gregor, Philip D.; Budinger, A. Bowman; and Li, Yan M., 5,339,005, Cl. 315-244.000.
Gregory, Otto J.; and McCauley, Joseph J., III, to Avco Corporation. Method utilizing a ceramic for temperature measurement. 5,338,566, Cl. 427-8.000.
Grenier, Frank C.; Luczkiw, Julie A.; Bergmann, Merry E.; and Blonski, David R., to Abbott Laboratories. Stable aqueous FK506 standards. 5,338,684, Cl. 436-8.000.
Gribble, Robert J. Field dog training device and method. 5,337,702, Cl. 119-786.000.
Grieu, Francois, to Smartdiskette GmbH. System for the exchange of data between an electronic object coupled to a transfer device with distinct data bit rates, insertable object and corresponding transfer device. 5,338,923, Cl. 235-492.000.
Griewahn, Gary L. Multilevel bicycle rack for motor vehicles. 5,337,932, Cl. 224-42.03B.
Griffin, Edward R.; Urban, Wesley R.; and Hintsala, Arlen J., to Champion International Corporation. Single tier dryer threading nozzle for paper machines. 5,337,490, Cl. 34-117.000.
Grkavac, George J.: *See—*
Edstrom, William E.; Froehlich, Edward T.; and Grkavac, George J., 5,337,696, Cl. 119-18.000.
Groenke, Gregory C.: *See—*
Stephens, Randy R.; Roxas, Renato; and Groenke, Gregory C., 5,338,307, Cl. 604-167.000.
Gross-Given Manufacturing Co.: *See—*
Sellers, Timothy M, 5,337,653, Cl. 99-289.00R.
Gross, Michael G.; and Young, Jack D., to Creative Extruded Products, Inc. Anti-squeak molding. 5,338,087, Cl. 296-146.150.
Grosse-Puppendahl, Thomas; Baron, Christian; and Schmidt, Friedrich G., to Huels Aktiengesellschaft. Fiber-reinforced polyphenylene ether molding compositions and process for their preparation. 5,338,789, Cl. 524-314.000.
Group Lotus PLC: *See—*
Blundell, David W.; and Wilson, Neil D., 5,337,707, Cl. 123-65.0PE.
Grout, John E., to Ergonomic Equipment Pty. Ltd. Adjustable desk frame. 5,337,678, Cl. 108-147.000.
Groves, Keith N.: *See—*
Haysom, Elbert M.; and Groves, Keith N., 5,337,420, Cl. 2-410.000
Grubb, Eddie C., to E-Z Dispensers, Inc. Flow control valve. 5,337,784, Cl. 137-625.380.
Gruber, Patrick R.; Kolstad, Jeffrey J.; Hall, Eric S.; Eichen Conn, Robin S.; and Ryan, Christopher M., to Cargill, Incorporated. Melt-stable lactide polymer composition and process for manufacture thereof. 5,338,822, Cl. 528-354.000.
Gruenstern, Robert G.; Bast, Ronald J.; Aldecoa, Julio A.; and Miller, Lawrence F., to Globe-Union Inc. Thermal management of rechargeable batteries. 5,338,624, Cl. 429-120.000.
Grumman Aerospace Corporation: *See—*
Horn, Michael, 5,339,152, Cl. 356-347.000.
Grunbauer, Henri J. M.: *See—*
Brands, Jan; Grunbauer, Henri J. M.; and van Duin, Kees-Jeen, 5,338,601, Cl. 428-319.700.
Grundfest, Warren S.; Burdick, Joel W., IV; and Slatkin, Andrew B., to Cedars-Sinai Medical Center. Robotic endoscopy. 5,337,732, Cl. 128-4.000.
Gruzalski, Greg R.: *See—*
Bates, John B.; Dudney, Nancy J.; Gruzalski, Greg R.; and Luck, Christopher E., 5,338,625, Cl. 429-193.000.
GTE Laboratories Incorporated: *See—*
Tang, Douglas D., 5,339,184, Cl. 359-124.000.
Guckel, Martin; Schrader, Jurgen; and Wilms, Bernd, to Mercedes-Benz AG. Folding top for motor vehicles. 5,338,085, Cl. 296-121.000.
Gudin, Claude: *See—*
Thepenier, Catherine; Gudin, Claude; and Sarrobert, Bruno, 5,338,673, Cl. 435-134.000.
Guidash, Robert M., to Eastman Kodak Company. Solid state image sensor with fast reset. 5,338,946, Cl. 257-223.000.
Guimbretiere, Pierre, to Glaenzer Spicer. Differential transmission device and viscous coupler, especially for a motor vehicle. 5,338,266, Cl. 475-89.000.
Gullberg, Grant T.; Morgan, Hugh T.; Tung, Chi-Hua; Zeng, Gengsheng L.; and Christian, Paul E. Simultaneous transmission and emission converging tomography. 5,338,936, Cl. 250-363.040.
Gullo, Vincent P.: *See—*
Chu, Min; Patel, Mahesh; Horan, Ann C.; and Gullo, Vincent P., 5,338,758, Cl. 514-468.000.
Gundjian, Arshavir, to Nocopi International Ltd. Method and security substrate for protecting against duplication with a color copier. 5,338,066, Cl. 283-67.000.
Gundjian, Arshevir, to Nocopi International Ltd. Switchon-switchoff, multistate, interactive, antiphotocopying antifraud and antifaxing system. 5,338,067, Cl. 283-67.000.
Gunther, Michael F.: *See—*
Murphy, Kent A.; Gunther, Michael F.; and Claus, Richard O., 5,339,374, Cl. 385-43.000.
Gupta, Deepnarayan: *See—*
Donaldson, William R.; Gupta, Deepnarayan; and Kadin, Alan M., 5,339,062, Cl. 505-1.000.
Gupta, Sunil: *See—*
Hunter, John; and Gupta, Sunil, 5,339,323, Cl. 372-25.000.
Gute, Robert M., to Plasta Fiber Industries Corp. Visor detent spring clip. 5,338,083, Cl. 296-97.900.
Guth, Jean-Louis: *See—*
Joly, Jean-Francois; Caullet, Philippe; Guth, Jean-Louis; Faust, Anne-Catherine; Brunard, Nathalie; and Kolenda, Frederic, 5,338,525, Cl. 423-326.000.
Gutteridge, Ronald J.: *See—*
Bennett, Paul T.; Gutteridge, Ronald J.; Koury, Daniel N., Jr.; Mietus, David F.; and Ristic, Ljubisa, 5,337,606, Cl. 73-517.00R.
Guyette, Gregory P.: *See—*
Ernst, Gerard W.; and Guyette, Gregory P., 5,337,767, Cl. 134-104.100.
Guyon, Claude: *See—*
Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,338,760, Cl. 514-539.000.
H.u.C. Elektronik GmbH: *See—*
Hansen, Jens, 5,339,463, Cl. 455-213.000.
Haas, Jon A.: *See—*
Wentworth, Steven W.; Crane, Robert F.; Haas, Jon A.; and Reynolds, Payce, 5,337,837, Cl. 175-19.000.
Haas, Norman C. Electrical appliance current supply control apparatus. 5,338,218, Cl. 439-346.000.
Habchi, Elie E. Self-unfolding shelter. 5,337,772, Cl. 135-104.000.
Haber, Judy; Haber, Sharon; and Lambert, Greta S. Multi-use hair piece. 5,337,763, Cl. 132-54.000.
Haber, Sharon: *See—*
Haber, Judy; Haber, Sharon; and Lambert, Greta S., 5,337,763, Cl. 132-54.000.
Haberle, Fritz; Kleiner, Horst; and Oravetz, Josef, to Mercedes-Benz AG. Fastening of a strip to a rearwardly accessible carrier part. 5,338,077, Cl. 293-120.000.
Habermehl, G. Lyle. Screwdriving apparatus for use in driving screws joined together in a strip. 5,337,635, Cl. 81-434.000
Habu, Yasuhiro: *See—*
Nitta, Minoru; Kiyota, Yoshisato; Makiishi, Yukio; Ohtsubo, Hiroshi; Watanabe, Toshio; and Habu, Yasuhiro, 5,338,508, Cl. 420-120.000.
Hachisuka, Atsushi: *See—*
Ohi, Makoto; Arima, Hideaki; Ajika, Natsuo; Hachisuka, Atsushi; and Matsui, Yasushi, 5,338,699, Cl. 437-52.000.
Hackler, Ronald E.; Jourdan, Glen P.; and Davis, Leon N., to DowElanco. Nematicidal use of 4-aralkylpyridines. 5,338,742, Cl. 514-277.000
Hadimioglu, Babur B.: *See—*
Rawson, Eric G.; Hadimioglu, Babur B.; and Khuri-Yakub, Butrus T., 5,339,101, Cl. 347-46.000.
Haest, Wilfried. Plastic mailbox. 5,337,953, Cl. 232-17.000.
Haga, Takashi: *See—*
Sakai, Ichiro; Sakaguchi, Shinichi; and Haga, Takashi, 5,337,630, Cl. 477-131.000.
Hagiwara, Hideaki: *See—*
Hagiwara, Yoshihide; and Hagiwara, Hideaki, 5,338,838, Cl. 536-8.000.
Hagiwara, Shigeharu: *See—*
Kato, Takaaki; Suzuki, Kiyomi; Hagiwara, Shigeharu; and Takanashi, Hiroaki, 5,338,173, Cl. 425-150.000.
Hagiwara, Yoshihide; and Hagiwara, Hideaki, to Yoshihide Hagiwara. Antioxidation active substance and utilization thereof. 5,338,838, Cl. 536-8.000.
Haibara, Tadashi: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, 5,339,376, Cl. 385-71.000.
Haines, Raymond. Hand gun safety storage cabinet. 5,338,109, Cl. 312-222.000
Haire, Andrew R.: *See—*
Haire, Darrell; K.; and Haire, Andrew R., 5,338,050, Cl 280-476.100.

VOL 1165 ISS 3 AG 16 1994 UMI

Haire, Darrell; K.; and Haire, Andrew R., to A.M. Haire Truck Bodies, Inc. Converter dolly for permitting backing up of tandem trailers. 5,338,050, Cl. 280-476.100.

Hale, Alan P. Support device for a laptop computer. 5,337,985, Cl. 248-174.000.

Hali-Brite, Inc.: *See*—
Woehler, Gary B., 5,339,224, Cl. 362-35.000.

Hall, Charles E., Jr. Apparatus for storing and preserving food products and for selectively dispensing the food products from the apparatus. 5,337,915, Cl. 220-404.000.

Hall, Eric S.: *See*—
Gruber, Patrick R.; Kolstad, Jeffrey J.; Hall, Eric S.; Eichen Conn, Robin S.; and Ryan, Christopher M., 5,338,822, Cl. 528-354.000.

Halliburton Company: *See*—
Barrington, Burchus Q., 5,337,826, Cl. 166-319.000.
Godfrey, Craig W.; Noack, Timothy J.; and Schwendemann, Kenneth L., 5,338,001, Cl. 251-58.000.

Halm, Walter B.; Jones, William J., Jr.; Kirkbride, James F.; Marcus, Ilan; and Snyder, Adrian C., to Du Pont de Nemours, E. I., and Company. Process for preparing fiberballs. 5,338,500, Cl. 264-122.000.

Halvorsen, Christian, Jr.; and Hurst, Andrew R., to Den Norske Stats Oljeselskap A.S. Apparatus for measuring permeability of a rock sample. 5,337,596, Cl. 73-38.000.

Hamano, Ichiro: *See*—
Ohmori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, 5,337,796, Cl. 141-168.000.

Hamatani, Toshiji: *See*—
Yamazaki, Shunpei; and Hamatani, Toshiji, 5,339,091, Cl. 345-104.000.

Hamelers, Bertus V. M.; and Woelders, Johan A., to N.V. Vuilafvoer Maatschappij Vam. Method for processing vegetable, fruit and garden waste. 5,337,898, Cl. 209-10.000.

Hamerly, Michael E.: *See*—
Heinz, John E.; Hamerly, Michael E.; Molstad, Richard W.; Schwarz, Theodore A.; and Youngquist, Robert J., 5,339,202, Cl. 360-46.000.

Hamm, Nicholas: *See*—
Eavenson, Jimmy N., Sr.; Behrens, Robert N.; Friesen, Henry; and Hamm, Nicholas, 5,337,849, Cl. 180-24.120.

Hammer, Scott D.: *See*—
Kucksdorf, Arthur E.; Muhs, Jeffrey D.; and Hammer, Scott D., 5,338,117, Cl. 383-9.000.

Hammesfahr, Paul: *See*—
Lu, Kewang; Huang, Chin-Teh; and Hammesfahr, Paul, 5,338,773, Cl. 523-116.000.

Hamon, Gilles: *See*—
Fortin, Michel; Frechet, Daniel; Hamon, Gilles; Jouquey, Simone; and Vevert, Jean-Paul, 5,338,756, Cl. 514-394.000.

Hampshire Chemical Corp.: *See*—
Thunberg, Jon C., 5,338,530, Cl. 423-551.000.

Hampton, Keith, to Eaton Corporation. Camshaft phase change device 5,337,711, Cl. 123-90.170.

Hamrick, Edward A.: *See*—
Nami, Robert B.; Hamrick, Edward A.; Herrmann, Jakob; and Mitchell, Angelo M., 5,337,893, Cl. 206-329.000.

Hamula, Warren. Orthodontic band with antitip rest and driving notch. 5,338,191, Cl. 433-23.000.

Han, Jeongin: *See*—
Kim, Weonkeun; Kim, Chulsoo; and Han, Jeongin, 5,338,959, Cl. 257-331.000.

Hanaki, Yoshimaro; and Yamamoto, Kyoichi, to Okuma Corporation. Interference checking method and apparatus for numerical control machining tool. 5,339,015, Cl. 318-600.000.

Hanaoka, Minoru, to Pioneer Electronic Corporation. Optical disc having two-step pit structure and pickup apparatus. 5,339,304, Cl. 369-109.000.

Hancock, William R.: *See*—
Johnson, Michael J.; Hancock, William R.; and Larson, Brent H., 5,339,092, Cl. 345-136.000.

Hand, David D.: *See*—
Carpenter, Thomas S.; and Hand, David D., 5,337,633, Cl. 81-9.510.

Hanel, Albert L.: *See*—
Young, Gary B.; Hanel, Albert L.; and Veselka, Kenneth R., 5,337,444, Cl. 15-352.000.

Hanke, Thomas: *See*—
Blanke, Uwe; Kern, Hans J.; Schmidt, Friedrich; Hanke, Thomas; Murray, Peter E.; Schnatwinkel, Michael; and Wilmes, Manfred, 5,338,224, Cl. 439-491.000.

Hanna, Michael G., Jr.: *See*—
Pomato, Nicholas; Bos, Ebo S.; Haspel, Martin V.; Hanna, Michael G., Jr.; and Berman, Michael L., 5,338,832, Cl. 530-350.000.

Hannon, William G., to Rockwell International Corporation. Printing press with blanket cylinder throw off apparatus and method. 5,337,664, Cl. 101-218.000.

Hansen, Charles A.: *See*—
Bulgrien, Garth H.; and Hansen, Charles A., 5,337,624, Cl. 74-335.000.

Hansen, Jens, to H.u.C. Elektronik GmbH. FM receiver with muting circuit. 5,339,463, Cl. 455-213.000.

Hanson, Denise E.: *See*—
Brandberg, Lawrence C.; Hanson, Denise E.; and Watkins, Jeffrey T., 5,338,911, Cl. 219-759.000.

Hanzawa, Shigeru; and Komiyama, Tsuneo, to NGK Insulators, Ltd. Silicon carbide sintered article and method. 5,338,576, Cl. 427-430.100.

Hara, Youji; and Kasahara, Yasuhiro, to Hitachi, Ltd. Sound multiplex broadcast receiver and method of controlling display thereof. 5,339,110, Cl. 348-485.000.

Harandi, Mohsen N., to Mobil Oil Corp. Dewaxing process. 5,338,436, Cl. 208-80.000.

Harano, Yoshiyuki: *See*—
Fujiwa, Takaaki; Takemoto, Shin; Isobe, Tomohisa; and Harano, Yoshiyuki, 5,338,879, Cl. 560-116.000.

Harms, Wolfgang. Underwater pressure protection switch. 5,339,124, Cl. 354-64.000.

Harold, Billy E. No-swallow device for fish hooks and the like. 5,337,509, Cl. 43-42.740.

Harrington, Michael G.: *See*—
Zewert, Thomas; and Harrington, Michael G., 5,338,428, Cl. 204-299.00R.

Harrington, Terry R.: *See*—
Schwab, Edward C.; Brown, George E.; Thomas, Kristin L.; and Harrington, Terry R., 5,338,556, Cl. 426-241.000.

Harrington, Tom: *See*—
Rostoker, Michael D.; Gluss, David; and Harrington, Tom, 5,339,262, Cl. 364-578.000.

Harris, Bradley D.; and Chandler, Virginia E., to Morton International, Inc. Printed circuit bridge for an air bag inflator. 5,337,674, Cl. 102-530.000.

Harris Corporation: *See*—
Beasom, James D., 5,338,960, Cl. 257-335.000.
Gasztonyi, Laszlo R., 5,339,445, Cl. 395-750.000.

Harris, Gregory; Nicholson, Roy V.; Burns, Stephen R.; and Lackey, Robert W., to Robert W. Lackey Corporation. Vacuum fan duster. 5,337,445, Cl. 15-394.000.

Harris, Guy; Callaway, Duane; and Shah, Rajesh, to Texas Instruments Incorporated. Pressure differential downset. 5,338,705, Cl. 437-217.000.

Harris, Kevin W.: *See*—
Burmeister, Curt K.; Harris, Kevin W.; Noyce, William B.; and Hobbs, Steven O., 5,339,428, Cl. 395-700.000.

Harris, Larry L.; and Scott, Baker P. L., III, to Crystal Semiconductor Corporation. Integrated voltage divider and circuit employing an integrated voltage divider. 5,339,067, Cl. 338-323.000.

Harris, Scott C. Facsimile machine time shifting and converting apparatus. 5,339,174, Cl. 358-442.000.

Harris, Wayne, to Rockford Corporation. Automotive audio system. 5,339,362, Cl. 381-86.000.

Harris, William C.: *See*—
Newsome, Reginald W.; DeBlasio, James A.; Talley, Robert E.; Adams, John M.; Chance, Christopher N.; Evers, Donald H.; Harris, William C.; and Kirby, Michael A., 5,337,948, Cl. 229-120.150.

Harrison, Richard P.; Scarpati, Michael; Narayan, Thirumurti; and Zagata, Blair J., to BASF Corporation. Water-blown polyurethane integral skin foam. 5,338,820, Cl. 528-67.000.

Hartman, Lewis C. Step flashing strip. 5,337,526, Cl. 52-58.000.

Hartmann, Ulrich: *See*—
Pinto, Akiva; Lucassen, Guenter; Schmidt-Doepper, Ulrich; Hartmann, Ulrich; and Heuermann, Winfried, 5,337,455, Cl. 19-105.000.

Harvey, James F.: *See*—
Lux, Robert A.; Koscica, Thomas E.; and Harvey, James F., 5,339,053, Cl. 331-99.000.

Harvey, Larry; Sheaffer, William; Staniec, Robert; and McLean, Malcolm, to Harvey Universal, Inc. Snail and slug deterrent barrier. 5,337,513, Cl. 43-124.000.

Harvey, Philip J.: *See*—
Neubauer, Willi B.; Smith, Paul K.; and Harvey, Philip J., 5,337,858, Cl. 182-148.000.

Harvey Universal, Inc.: *See*—
Harvey, Larry; Sheaffer, William; Staniec, Robert; and McLean, Malcolm, 5,337,513, Cl. 43-124.000.

Harwood, Ann E.: *See*—
Toms, Thomas R.; Harwood, Ann E.; Inoue, Yoshiko K.; and Kuo, Clinton C. K., 5,339,279, Cl. 365-185.000.

Hasegawa, Hirokazu: *See*—
Fukuda, Katsuhito; Takami, Masato; Hasegawa, Hirokazu; Nakajima, Chiaki; and Isihara, Kenji, 5,338,619, Cl. 428-623.000.

Hasegawa, Kiyoshi: *See*—
Hashimoto, Shigeru; Hasegawa, Kiyoshi; and Tashiro, Yasunori, 5,338,170, Cl. 425-92.000.

Hasegawa, Ryusuke: *See*—
VonHoene, Robert M.; and Hasegawa, Ryusuke, 5,338,373, Cl. 148-121.000.

Hasegawa, Takanori, to Riso Kagaku Corporation. Pressure printing device. 5,337,662, Cl. 101-126.000.

Hashimoto, Seiji: *See*—
Ueno, Isamu; Hashimoto, Seiji; and Takeda, Masami, 5,339,106, Cl. 348-243.000.

Hashimoto, Shigeru; Hasegawa, Kiyoshi; and Tashiro, Yasunori, to Rheon Automatic Machinery Co., Ltd. Device for charging fillings. 5,338,170, Cl. 425-92.000.

Hashimoto, Shuuichi: *See*—
Kumagae, Yojiro; Fujita, Shigeo; Matsumoto, Mansuke; Wada, Sayuri; and Hashimoto, Shuuichi, 5,338,866, Cl. 549-226.000.

Hashimoto, Yoshinori, to Sharp Kabushiki Kaisha. Counter circuit with or gates interconnecting stages to provide alternate testing of odd and even stages during test mode. 5,339,343, Cl. 377-29.000.

Hashimoto, Yuichi; Amamiya, Shoji; and Sakakibara, Teigo, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member and electrophotographic device using the same. 5,338,632, Cl. 430-58.000.

Haspel, Martin V.: *See*—
Pomato, Nicholas; Bos, Ebo S.; Haspel, Martin V.; Hanna, Michael G., Jr.; and Berman, Michael L., 5,338,832, Cl. 530-350.000.

Hasson, Harrith M. Vaginal stabilizer cannula. 5,338,302, Cl. 604-105.000

Hasson, Harrith M.; Pingleton, Edward D.; and Thomson, Paul G., to Vance Products Incorporated; and Cook Urological Incorporated. Rotational surgical instrument handle. 5,338,317, Cl. 606-206.000.

Hata, Yoshitaka; Kuga, Tetsuya; Kurihara, Hidekazu; and Kogame, Toshihiko, to Murata Manufacturing Co., Ltd. Heat treat furnace. 5,338,189, Cl. 432-124.000.

Hatamura, Kouichi: *See*—
Arakawa, Yukio; Akagi, Toshimichi; Hatamura, Kouichi; and Kishida, Makoto, 5,337,724, Cl. 123-563.000.

Hatanaka, Katsunori: *See*—
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.

Hatanaka, Shigemi: *See*—
Ohmori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, 5,337,796, Cl. 141-168.000.

Hatch, J. Mel. Process for coating dowels with water soluble glue. 5,338,569, Cl. 427-212.000.

Hathaway, David J.: *See*—
Carrig, Keith M.; Hathaway, David J.; Lalljer, Keith W.; Panner, Jeannie T. H.; and Sehr, Terrence W., 5,339,253, Cl. 364-489.000.

Hatsuda, Takumi: *See*—
Shimomura, Tadao; Irie, Yoshio; Takahashi, Hitoshi; Kajikawa, Katsuhiro; Saga, Jyunichi; Fujiwara, Teruaki; and Hatsuda, Takumi, 5,338,810, Cl. 526-75.000.

Hatta, Hiroyuki: *See*—
Tanaka, Kenji; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Sekihata, Osamu; Hatta, Hiroyuki; and Norizuki, Reiko, 5,339,318, Cl. 370-110.100.

Hattori, Yoshifumi: *See*—
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,339,098, Cl. 347-5.000

Haug, Charles L.: *See*—
Beitel, Bradley J.; Haug, Charles L.; and Sobrino, Elba M., 5,339,423, Cl. 395-600.000.

Hauge, Leif J. Pressure exchanger having axially inclined rotor ducts. 5,338,158, Cl. 417-64.000.

Haugland, Richard P.: *See*—
Kang, Hee C.; and Haugland, Richard P., 5,338,854, Cl. 548-110.000.

Hauglin, Bernt-Otto, to Rottefella A/S. Cross-country or touring ski binding for cross-country ski boots. 5,338,053, Cl. 280-615.000.

Haupt, Josef, to Zahnradfabrik Friedrichshafen AG. Hydropneumatic vehicle suspension. 5,338,010, Cl. 267-64.160

Hawe, William: *See*—
Ben-Michael, Siman-Tov; Lozowick, Philip P.; Hawe, William; and Lampson, Butler, 5,339,313, Cl. 370-85.130.

Hawes, Adrain C. O.: *See*—
Raghavan, Chidambaram; Kostohris, Kraig T.; and Hawes, Adrain C. O., 5,337,561, Cl. 60-421.000.

Hawley, Gil R.: *See*—
Knudsen, Ronald D.; Hawley, Gil R.; Kidd, Dennis R.; and Porter, Randall A., 5,338,812, Cl. 526-130.000.

Hayakawa, Kohji; and Sasaki, Yosuke, to Kabushiki Kaisha Komatsu Seisakusho. Die-clamping apparatus with aligning device. 5,338,171, Cl. 425-138.000.

Hayakawa, Takashi, to Sharp Kabushiki Kaisha. Photoconductor coupled liquid crystal light valve. 5,338,582, Cl. 428-1.000.

Hayashi, Daisuke: *See*—
Kusumoto, Hiroshi; Hayashi, Daisuke; Ishida, Hideki; Kitagawa, Shoichi; Nagashima, Takashi; and Miyamoto, Mitsugu, 5,339,137, Cl. 355-208.000.

Hayashi, Takehisa: *See*—
Muramatsu, Akira; Yoshihara, Ikuo; Nakao, Kazuo; Hayashi, Takehisa; Tanaka, Teruo; and Nagashima, Shigeo, 5,339,396, Cl. 395-325.000.

Hayashi, Yasuhiro: *See*—
Nishiyama, Shigeru; and Hayashi, Yasuhiro, 5,337,794, Cl. 141-144.000.

Hayashi, Yasukazu, to Okuma Corporation. Multi-displacement detecting apparatus. 5,339,030, Cl. 324-207.230.

Hayden, Martha S.: *See*—
Senter, Peter D.; Su, Peter C. D.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,338,678, Cl. 435-227.000.

Hayden, Richerd A: *See*—
Carrubba, Robert V.; Hayden, Richerd A; and Matviya, Thomas M., 5,338,458, Cl. 210-668.000.

Hayes, Kenneth R.: *See*—
Koontz, Robert A.; and Hayes, Kenneth R., 5,337,673, Cl. 102-491.000.

Hayes, Lloyd M. Cue ball angle determinator. 5,338,262, Cl. 473-2.000.

Hays, Bill J. Clutch design and manufacture. 5,337,870, Cl. 192-70.140.

Hays, Dan A., to Xerox Corporation. AC/DC spatially programmable donor roll for xerographic development. 5,339,142, Cl. 355-259.000.

Haysom, Elbert M.; and Groves, Keith N. Method and apparatus for mounting and locating a helmet comfortably on the head of a person, and combination resulting therefrom. 5,337,420, Cl. 2-410.000.

Hazato, Atsuo: *See*—
Sugiura, Satoshi; Minoshima, Toru; Hazato, Atsuo; and Kato, Yoshinori, 5,338,844, Cl. 544-318.000.

Health Research Incorporated: *See*—
Paoletti, Enzo, 5,338,683, Cl. 435-320.100.

Heaton, Charles J., Jr., to Pitney Bowes Inc. Method for managing allocation of memory space. 5,339,411, Cl. 395-600.000

Heaven, Malcolm D.; Shapiro, Stephen J.; and Hess, Robert L., to Advanced Surgical, Inc. Inflatable isolation bag. 5,337,754, Cl 128-749.000.

Hebert, Richard W.: *See*—
Francis, Gordon G.; and Hebert, Richard W., 5,337,966, Cl. 241-46.060

Hecht, Joachim: *See*—
Bohne, Ulrich; Kabatnik, Wilfried; Bleicher, Manfred; Hecht, Joachim; and Lamprecht, Justus, 5,337,835, Cl. 193-13.000.

Hedman, Lennard D., to Ingersoll Milling Machine Company, The Link system. 5,337,462, Cl. 29-33.00P.

Hedstrand, David M.: *See*—
Tomalia, Donald A.; Kaplan, Donald A.; Kruper, William J., Jr.; Cheng, Roberta C.; Tomlinson, Ian A.; Fazio, Michael J.; Hedstrand, David M.; and Wilson, Larry R., 5,338,532, Cl. 424-1.490

Hedstrom Corporation: *See*—
Cunard, Joel C., 5,338,127, Cl. 403-79.000
Smith, Stephen W., 5,338,260, Cl. 472-118.000.

Heeks, George J.: *See*—
Mammino, Joseph; Abramsohn, Dennis; Heeks, George J.; Henry, Arnold W.; Fratangelo, Louis D.; Pan, David H.; and Badesha, Santokh S., 5,338,587, Cl. 428-35.700.

Hefner, Robert E., Jr.; and Earls, Jimmy D., to Dow Chemical Company, The. Mesogenic cyclic imino ether-containing compositions and polymerization products thereof. 5,338,828, Cl. 528-179.000

Heft, Robert A.: *See*—
Zimmermann, Joseph J.; Lewis, N. Tracey; and Heft, Robert A., 5,338,677, Cl. 435-200.000.

Hehn, Wilfried; and Osegowitsch, Viktor, to Agfa-Gevaert Aktiengesellschaft. Device for wiping liquids off running webs of photographic material. 5,339,129, Cl. 354-318.000.

Heidelberger Druckmaschinen AG: *See*—
Becker, Willi, 5,337,666, Cl. 101-415.100
Eltner, Bruno; and Zahn, Erich M., 5,338,020, Cl. 271-158.000

Heidtmann, Thomas: *See*—
Grecksch, Hans; Heidtmann, Thomas; and Bohnen, Norbert, 5,337,551, Cl. 57-281.000.

Heierli, Jacob, to MLS Mikrowellen-Labor-Systeme GmbH. Apparatus for distilling liquids in a vacuum. 5,338,409, Cl. 202-205.000.

Heil, John S. Valve seal apparatus. 5,338,004, Cl. 251-214.000.

Heileman, David W., Jr.: *See*—
Latimer, Robert A.; and Heileman, David W., Jr., 5,339,439, Cl. 395-275.000.

Heilmann, Ulrich: *See*—
Ruhl, Dieter; Arlt, Klaus; Heilmann, Ulrich; Heimann, Ulrich; and Hoffmann, Udo, 5,338,434, Cl. 205-229.000.

Heimann, Ulrich: *See*—
Ruhl, Dieter; Arlt, Klaus; Heilmann, Ulrich; Heimann, Ulrich; and Hoffmann, Udo, 5,338,434, Cl. 205-229.000

Heimberg, Manfred: *See*—
Ondrus, Daniel J.; and Heimberg, Manfred, 5,338,609, Cl. 428-402.000

Heimel, Helmut: *See*—
Stabinger, Hans; Leopold, Hans; and Heimel, Helmut, 5,339,258, Cl. 364-558.000

Hein, Richard D., to GenCorp Inc. Force dampening torque strut for an automobile engine. 5,338,011, Cl. 267-140.120.

Hein-Werner Corporation: *See*—
Heyl, Derrick; and Terpstra, David M., 5,337,521, Cl. 51-105.0VG.
Liegel, Reinald D.; Ballard, James; Graham, James C.; Wisner, Craig A.; and Russell, Jeffrey V., 5,338,015, Cl. 269-71.000

Heinonen, Erkki, to Instrumentarium Corporation. Fluid vaporizing apparatus. 5,337,738, Cl. 128-203.120.

Heinrich, Julie: *See*—
Sailor, Michael J.; Credo, Grace; Heinrich, Julie; and Lauerhaas, Jeffery M., 5,338,415, Cl. 204-129.200

Heinz, John E.; Hamerly, Michael E.; Molstad, Richard W.; Schwarz, Theodore A.; and Youngquist, Robert J., to Minnesota Mining and Manufacturing Company. Method and apparatus for amplitude compensated write equalization. 5,339,202, Cl. 360-46.000

Heinz, Tony F.: *See*—
Barbee, Steven G.; Heinz, Tony F.; Li, Leping; and Ratzlaff, Eugene H., 5,338,390, Cl. 156-627.000.

Heitner, Howard I., to Cytec Technology Corp. Stabilization of aqueous hydroxylamine solutions. 5,338,522, Cl. 423-265.000

Helbig, Peter: *See*—
Braun, Alfred; Helbig, Peter; Steiner, Hermann; and Schoenherr, Walter, 5,339,002, Cl. 313-318.000

Helffrich, Audrey A.: *See*—
Elko, David A.; Frey, Jeffrey A.; Helffrich, Audrey A.; Nick, Jeffrey M.; and Swanson, Michael D., 5,339,405, Cl. 395-575.000

Hellerstein, Marc K. Method for measuring in vivo synthesis of biopolymers. 5,338,686, Cl. 436-173.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Hellwig, Helmut, to AGB - Werke GmbH. Steering mechanism for road cutter. 5,337,851, Cl. 180-162.000.

Hellyer, William E.: *See—*
Brown, Clinton A.; Hellyer, William E.; Huston, John T.; and Dickman, Anthony W., 5,337,438, Cl. 15-318.100.

Henden Tranas, Randi. Apparatus for indicating correct back posture. 5,337,759, Cl. 128-782.000.

Henderson, James M.; Scott, Vernon R.; and Cote, Kenneth C., to Motorola, Inc. Three dimensional printed circuits. 5,338,645, Cl. 430-311.000.

Henderson, Kirk P.: *See—*
Schultz, Bruce R.; Henderson, Kirk P.; and Barootian, Arthur, 5,337,605, Cl. 73-335.020.

Henderson, Richard W.; and Lightsey, George R., to Southeastern Research Laboratories, Inc. Safety device for preventing uncontrolled flareup in wick-fed liquid fuel burners. 5,338,185, Cl. 431-33.000.

Hendren, Ronald D., to Universal Technologies, Inc. Gift wrap and method. 5,337,943, Cl. 229-87.190.

Hendriks, Emery F. M.; Roovers, Wilhelmus W. C. M.; and d'Herripon, Bastiaan A., to Van Doorne's Transmissie B.V. Electronically controlled continuously variable transmission. 5,337,628, Cl. 477-48.000.

Henits, John; and Swick, Robert B., to Dictaphone Corporation. Apparatus and method of retrieving a message from a digital audio tape. 5,339,203, Cl. 360-39.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Sartelet, Jean-Francois; Sanch, Francois R.; and Aggias, Zissis, 5,338,767, Cl. 521-159.000.

Hennessy, Timothy H.; and Maney, Patrick M., to Spraying Systems Co. Screw-in type spray nozzle and method of assembly. 5,337,958, Cl. 239-71.000.

Hennig, Jurgen, to Bruker Medizintechnik GmbH. Method for observing time variations of signal intensities of a nuclear magnetic resonance tomography image. 5,339,034, Cl. 324-309.000.

Henrie, James B.: *See—*
Beckham, D. Scott; Putnam, Greg A.; Bolt, Lorraine; Aldous, Stephen C.; Dake, Guy M.; and Henrie, James B., 5,338,210, Cl. 439-131.000.

Henriet, Dominique; Paul, Didier; and Prost, Laurent, to Ugine, Aciers de Chatillon et Gueugnon. Pickling process in an acid bath of metallic products containing titanium or at least one chemical element of the titanium family. 5,338,367, Cl. 134-3.000.

Henry, Arnold W.: *See—*
Mammino, Joseph; Abramsohn, Dennis; Heeks, George J.; Henry, Arnold W.; Fratangelo, Louis D.; Pan, David H.; and Badesha, Santokh S., 5,338,587, Cl. 428-35.700.

Henry Filters, Inc.: *See—*
McEwen, Scott M., 5,338,443, Cl. 210-91.000.

Henry, Steven G.; Buck, Dean; and Bybee, Jerry L., to Hewlett-Packard Company. Color optical scanner with rotating color filter assembly. 5,339,107, Cl. 348-270.000.

Hensen, Helmuth: *See—*
Kohlen, Helmut; Hensen, Helmuth; and Floh, Karl-Heinz, 5,337,882, Cl. 198-452.000.

Hensley, Albert L., Jr.: *See—*
Pacheco, Michael A.; Darrington, Franklin D.; and Hensley, Albert L., Jr., 5,338,878, Cl. 558-277.000.

Hercules Incorporated: *See—*
Dasgupta, Sunil P., 5,338,407, Cl. 162-168.300.
Espy, Herbert H.; and Maslanka, William W., 5,338,807, Cl. 525-430.000.
Smith, Douglas C., 5,338,406, Cl. 162-168.200.

Hergeth Hollingsworth GmbH: *See—*
Pinto, Akiva; Lucassen, Guenter; Schmidt-Doepper, Ulrich; Hartmann, Ulrich; and Heuermann, Winfried, 5,337,455, Cl. 19-105.000.

Hergeth, Hubert A. Milling machine on paths. 5,337,454, Cl. 19-80.00R.

Heritier-Best, Pierre; Brault, Isabelle; and Judelle, Bernard, to Sagem Allumage. Assembly for controlling an exhaust gas recirculation valve for an internal combustion engine. 5,337,790, Cl. 251-129.210.

Herman, John J.: *See—*
Mody, Pankaj H.; Himmer, Richard P.; and Herman, John J., 5,339,237, Cl. 364-184.000.

Herman Miller, Inc.: *See—*
Zaccai, Gianfranco; Rousmaniere, Arthur S.; Dearborn, Timothy C.; Noble, Lynn; and Misage, Thomas J., 5,337,525, Cl. 52-35.000.

Herman, Thomas: *See—*
Lidow, Alexander; and Herman, Thomas, 5,338,961, Cl. 257-342.000.

Hermann, George D.: *See—*
Mollenauer, Kenneth H.; Hermann, George D.; Howell, Thomas A.; and Monfort, Michelle Y., 5,338,313, Cl. 604-249.000.

Herndon, John. Method and apparatus for bicycle riding instruction. 5,338,204, Cl. 434-247.000.

Herndon, William H.: *See—*
Boyle, Steven R.; Proebsting, Robert J.; and Herndon, William H., 5,338,970, Cl. 257-659.000.

Herrmann, Jakob: *See—*
Nami, Robert B.; Hamrick, Edward A.; Herrmann, Jakob; and Mitchell, Angelo M., 5,337,893, Cl. 206-329.000.

Herron, Lester W.: *See—*
Schneider, Mark S.; Acocella, John; Herron, Lester W.; Kordus, Mark R.; and Wirtz, Louis H., 5,338,900, Cl. 174-250.000.

Hersh, Samuel: *See—*
Fleming, Marvin F.; Hersh, Samuel; and Liu, Soung-Nan, 5,337,611, Cl. 73-622.000.

Hersman, Michael J. Stake-based support system for use in the landscaping industry. 5,337,993, Cl. 248-156.000.

Hess, Robert L.: *See—*
Heaven, Malcolm D.; Shapiro, Stephen J.; and Hess, Robert L., 5,337,754, Cl. 128-749.000.

Hetchler, Robert L. Cargo restraint apparatus. 5,338,136, Cl. 410-100.000.

Heuermann, Winfried: *See—*
Pinto, Akiva; Lucassen, Guenter; Schmidt-Doepper, Ulrich; Hartmann, Ulrich; and Heuermann, Winfried, 5,337,455, Cl. 19-105.000.

Hewitt, Wayne A.: *See—*
Rossigno, Louis P.; and Hewitt, Wayne A., 5,338,107, Cl. 303-113.300.

Hewlett-Packard Company: *See—*
Anderson, John T.; Nagesh, V. K.; and Ruby, Richard C., 5,338,507, Cl. 505-470.000.
Beaufort, Richard F.; and Sangroniz, James M., 5,339,096, Cl. 345-156.000.
Chan, Paul; Dadoo, Manoj; Pettis, Karl; and Santhanan, Vatsa, 5,339,419, Cl. 395-700.000.
Greenstein, Michael, 5,339,290, Cl. 367-163.000.
Henry, Steven G.; Buck, Dean; and Bybee, Jerry L., 5,339,107, Cl. 348-270.000.
Jacobs, Edward M.; Chan, Kenneth K.; and Alexander, Thomas B., 5,339,440, Cl. 395-325.000.
Lubkin, David C.; Robinson, Douglas B.; Chase, Robert P., Jr.; Leach, Paul J.; McCue, Daniel L., III; and Leblang, David B., 5,339,435, Cl. 395-700.000.
Rupp, Richard R.; Coutant, Gary A.; and Coha, Joseph A., 5,339,431, Cl. 395-700.000.

Hexcel Corporation: *See—*
Wang, Yen-Seine; Lee, Frank; Kuo, Ching-Chi; and Baron, Ken, 5,338,594, Cl. 428-117.000.

Heyl, Derrick; and Terpstra, David M., to Hein-Werner Corporation. Valve grinder. 5,337,521, Cl. 51-105.0VG.

Hibbard, Robert A.; and Remec, Thomas M., to Zenith Electronics Corporation. Method of making photo stencils for cathode ray tube screen deposition. 5,338,629, Cl. 430-23.000.

Hickey, Deirdre M. B.; Cooper, David G.; and Jaxa-Chamiec, Albert A., to SK&F Laboratories Ltd. Substituted 2-imidazolone derivatives, their preparation and pharmaceutical compositions. 5,338,752, Cl. 514-382.000.

Hida, Keiji: *See—*
Tomotsugu, Akio; and Hida, Keiji, 5,338,613, Cl. 428-425.800.

Hidese, Wataru, to Matsushita Electric Industrial Co., Ltd., 03. Apparatus and method for bonding outer leads. 5,338,381, Cl. 156-64.000.

Hiebert, John; Rowe, Carleton N.; and Rudnick, Leslie R., to Mobil Oil Corporation. Alkylated citric acid adducts as antiwear and friction modifying additives. 5,338,470, Cl. 252-51.50A.

Higashii, Takayuki; and Minai, Masayoshi, to Sumitomo Chemical Company, Limited. Optically active benzene derivatives, process for producing the same and liquid-crystalline substances containing said derivatives as active ingredient and optical switching elements. 5,338,484, Cl. 252-299.650.

Higashiura, Atsushi; Sano, Fumikazu; Tokimori, Yoshitaka; and Natsume, Yoshitaka, to Furukawa Electric Co., Ltd., The; and Nippondenso Co., Ltd. Magnet wire having a high heat resistance and a method of removing insulating film covering magnet wire. 5,337,941, Cl. 228-205.000.

Higgins, Alan L., to ITT Corporation. Speaker verifier using nearest-neighbor distance measure. 5,339,385, Cl. 395-2.550.

Higgins-Luthman, Michael J.; Kidd, Robert C.; Klein, Robert D.; Yen, Robert C.; and Zalinski, Charles M., to Unisys Corporation. Document image compression system and method. 5,339,368, Cl. 382-56.000.

Higo, Shigekichi: *See—*
Katoh, Yoshiyuki; Kameyama, Masatoshi; and Higo, Shigekichi, 5,339,085, Cl. 342-180.000.

Hiiro, Kaoru: *See—*
Kumagai, Eryohei; Hiiro, Kaoru; Shimizu, Harumi; and Takahashi, Tooru, 5,339,093, Cl. 345-149.000.

Hijikata, Kenichi; Komiyama, Shozo; and Maruyama, Hitoshi, to Mitsubishi Materials Corporation. Low-permeability high-strength target material for the formation of thin magnetooptical recording films. 5,338,331, Cl. 75-246.000.

Hilbert, Thomas K.: *See—*
Zeman, Robert E.; and Hilbert, Thomas K., 5,339,140, Cl. 355-246.000.

Hildebrand, Peter; Eberl, Gunter; Neumaier, Josef; and Wrba, Peter, to MAHO Aktiengesellschaft. Process for texturing the surfaces of workpieces with a laser beam. 5,338,915, Cl. 219-121.690.

Hildebrand, Reinhard; and Schramm, Michael, to Siemens Aktiengesellschaft. Method and apparatus for fresh-air control in the mid-level area of a motor vehicle. 5,338,249, Cl. 454-126.000.

Hill, Alan M; and Meeks, William R., to Lawrence Paper Company. Reciprocating sheet feeder apparatus for box blank fabrication equipment having an adjustable pusher element. 5,338,019, Cl. 271-139.000.

Hill, David I., to K-Swiss Inc. Shoe with a tongue extending from a liner. 5,337,493, Cl. 36-54.000.

Hill, Jane. Shower curtain. 5,337,425, Cl. 4-610.000.

Hill, Peter R.: *See—*
Lutin, Gregory D.; and Hill, Peter R., 5,337,529, Cl. 52-389.000.

Hill-Rom Company, Inc.: *See—*
Foster, L. Dale; and Reeder, Ryan A., 5,337,845, Cl. 180-11.000

Hill, William C.: *See—*
Wroblewski, David A.; Hill, William C.; and McCandless, Timothy P., 5,339,391, Cl. 395-157.000.

Hiller, Joseph F.: *See—*
Morabito, Paul L.; McCabe, Terrence; and Hiller, Joseph F., 5,338,514, Cl. 422-89.000.

Hilton, Charles B.: *See—*
Tafesh, Ahmed M.; Fruchey, Olan S.; and Hilton, Charles B., 5,338,884, Cl. 564-138.000.

Himmer, Richard P.: *See—*
Mody, Pankaj H.; Himmer, Richard P.; and Herman, John J., 5,339,237, Cl. 364-184.000.

Himont Incorporated: *See—*
Eppert, Stanley E., Jr., 5,338,801, Cl. 525-232.000.
Lesca, Giuseppe; Romanini, Daniele; and Vezzoli, Annibale, 5,338,764, Cl. 521-60.000.

Hindman, Gregory; and Berg, Jack, to Zilog, Inc. Method of eliminating metal voiding in a titanium nitride/aluminum processing. 5,338,423, Cl. 204-192.120.

Hinds, Christopher N.; Fiene, Eric V.; Marquette, Daniel T.; and Quintana, Eric E., to Motorola, Inc. Parallel method and apparatus for detecting and completing floating point operations involving special operands. 5,339,266, Cl. 364-748.000.

Hindt, Gary L. Dolly carrier. 5,338,146, Cl. 414-462.000.

Hingle, Pierre M. Portable washing apparatus. 5,337,437, Cl. 15-104.920.

Hinoura, Koichi: *See—*
Kobayashi, Yoshirou; Hinoura, Koichi; and Nagamoto, Akihiro, 5,337,549, Cl. 57-236.000.

Hinton, Thomas R. Improvements in fencing. 5,338,007, Cl. 256-48.000.

Hintsala, Arlen J.: *See—*
Griffin, Edward R.; Urban, Wesley R.; and Hintsala, Arlen J., 5,337,490, Cl. 34-117.000.

Hirai, Masashi: *See—*
Nakai, Yukio; Kida, Hiroshi; Hirai, Masashi; Fujita, Masahiko; and Fukunaga, Takahiro, 5,339,144, Cl. 355-274.000.

Hirai, Wataru: *See—*
Fujiwara, Muneyoshi; Hirai, Wataru; Yonezawa, Takahiro; and Sakurai, Kunio, 5,339,248, Cl. 364-468.000.

Hiramoto, Haruo; Ito, Tomoaki; and Tojo, Katsutoshi, to Molex Incorporated. Electric connector. 5,338,219, Cl. 439-350.000.

Hirano, Masahiro; and Takeuchi, Hiroyasu, to Mitsubishi Materials Corporation. Calcium phosphate granular cement and method for producing same. 5,338,356, Cl. 106-690.000.

Hirano, Minoru: *See—*
Kamachi, Hajime; Hirano, Minoru; and Masuyoshi, Shinji, 5,338,728, Cl. 514-27.000.

Hirano, Shigeo, to Fuji Photo Film Co., Ltd. Silver halide photographic materials. 5,338,658, Cl. 430-598.000.

Hirata, Yoshihiko; and Sakakibara, Koji, to Nippondenso Co., Ltd. System for detecting combustion state in internal combustion engine. 5,339,245, Cl. 364-431.080.

Hirayama, Takayuki; and Kiyota, Takashi, to Nippon Oil Co., Ltd. Process for production of hydroxocobalamin. 5,338,418, Cl. 204-158.210.

Hiromori Inc.: *See—*
Hiromori, Junji, 5,339,295, Cl. 368-108.000.

Hiromori, Junji, to Hiromori Inc. Timer. 5,339,295, Cl. 368-108.000.

Hirose Electric Co., Ltd.: *See—*
Kaneko, Mitsunori; and Miyake, Yukinori, 5,339,056, Cl. 333-139.000.

Hirose, Kaoru, to Daiyo Kiko Industry, Inc. Muddy and waste water treatment method. 5,338,459, Cl. 210-710.000.

Hiroyuki, Katayama: *See—*
Junichiro, Nakayama; Tomoyuki, Miyake; Hiroyuki, Katayama; Kazuo, Van; and Kenji, Ohta, 5,338,646, Cl. 430-270.000.

Hirschhaut, Bruce: *See—*
Laughlin, Glenn M.; Frank, Jeffrey A.; and Hirschhaut, Bruce, 5,338,095, Cl. 297-440.100.

Hishida, Tuyoshi: *See—*
Imai, Atsushi; and Hishida, Tuyoshi, 5,338,704, Cl. 437-209.000.

Hitachi, Ltd.: *See—*
Hara, Youji; and Kasahara, Yasuhiro, 5,339,110, Cl. 348-485.000.
Kato, Keizo; Horigome, Shinkichi; Suzuki, Ryo; and Ito, Masaru, 5,338,178, Cl. 425-385.000.
Kirihara, Shigeki; Arai, Shigeru; and Mitsuda, Koichi, 5,339,247, Cl. 364-468.000.
Muramatsu, Akira; Yoshihara, Ikuo; Nakao, Kazuo; Hayashi, Takehisa; Tanaka, Teruo; and Nagashima, Shigeo, 5,339,396, Cl. 395-325.000.
Nishida, Akio; Murakami, Eiichi; and Nakagawa, Kiyokazu, 5,338,942, Cl. 257-17.000.
Sano, Hirohisa; and Inoue, Hiroaki, 5,339,370, Cl. 385-2.000.
Tanaka, Shigeya; Iwamura, Masahiro; Yamauchi, Tatsumi; Nojiri, Tatsuo; Tada, Hisashi; and Nakano, Tetsuo, 5,339,448, Cl. 395-775.000.
Tanaka, Teruo; Inagami, Yasuhiro; Tamaki, Yoshiko; Sakakibara, Tadayuki; and Kitai, Katsuyoshi, 5,339,429, Cl. 395-700.000
Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, 5,339,319, Cl. 371-10.200.

Hitachi Metals, Ltd.: *See—*
Tabaru, Kazunori, 5,338,372, Cl. 148-103.000.

Hitachi Software Engineering Co., Ltd.: *See—*
Tanaka, Yutaka; and Takasaki, Naruto, 5,339,366, Cl. 382-22.000.

Hitaci, Ltd.: *See—*
Iura, Noriyuki; Imaide, Takuya; and Kinugasa, Toshiro, 5,339,105, Cl. 348-240.000.

Hiyama, Dean H.: *See—*
Hiyama, Kazuo; Hiyama, Howard K.; and Hiyama, Dean H., 5,337,514, Cl. 47-44.000.

Hiyama, Howard K.: *See—*
Hiyama, Kazuo; Hiyama, Howard K.; and Hiyama, Dean H., 5,337,514, Cl. 47-44.000.

Hiyama, Kazuo; Hiyama, Howard K.; and Hiyama, Dean H. Method and apparatus for plant culture. 5,337,514, Cl. 47-44.000.

Hladilek, Jerry A.: *See—*
Dunham, William D.; Hladilek, Jerry A.; McNeill, Steven R.; Pierman, John A.; Rogan, Charles T.; and Turk, Robert L., 5,338,236, Cl. 440-77.000.

Hoag, Ethan D.: *See—*
Hsu, Michael S.; and Hoag, Ethan D., 5,338,622, Cl. 429-26.000.

Hobbs, Steven O.: *See—*
Burmeister, Curt K.; Harris, Kevin W.; Noyce, William B.; and Hobbs, Steven O., 5,339,428, Cl. 395-700.000.

Hobert, Ward T.: *See—*
Near, Daniel E.; Feagans, Royce M.; and Hobert, Ward T., 5,338,765, Cl. 521-50.500.

Hochi, Toshikazu: *See—*
Kakamura, Ko; Hochi, Toshikazu; and Ienaga, Kazuhara, 5,338,850, Cl. 546-122.000.

Hockney, Philip K., to Hockney Pty Ltd. Extruded aluminum spring hanger. 5,337,997, Cl. 248-596.000.

Hockney Pty Ltd.: *See—*
Hockney, Philip K., 5,337,997, Cl. 248-596.000.

Hodges, John C.: *See—*
Dudley, David T.; Hodges, John C.; Pugsley, Thomas A.; and Taylor, Michael D., 5,338,744, Cl. 514-303.000.

Hodges, Robert; and Bryant, Frank, to SGS-Thomson. Method of forming isolated regions of oxide. 5,338,968, Cl. 257-647.000.

Hodgins, Bruce J.; and Roth, Robert L., to O.I. Corporation. Radiant energy sample heating and temperature control. 5,337,619, Cl. 73-863.110.

Hoechst Aktiengesellschaft: *See—*
Bohm, Ludwig; Enderle, Hans-Frieder; and Jarstrow, Horst, 5,338,589, Cl. 428-36.900.
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,338,641, Cl. 430-165.000.
Wehner, Susanne; Klima, Heinz; Hoenel, Michael; Ziegler, Peter; and Walz, Gerd, 5,338,419, Cl. 204-181.400.

Hoechst Celanese: *See—*
Tafesh, Ahmed M.; Fruchey, Olan S.; and Hilton, Charles B., 5,338,884, Cl. 564-138.000.

Hoechst Celanese Corporation: *See—*
Bhattacharya, Apurba, 5,338,859, Cl. 548-312.100.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Wettlaufer, David G.; and Nemoto, Peter A., 5,338,739, Cl. 514-235.500.

Hoelzel, Martin: *See—*
Fehrle, Siegfried; Kabatnik, Wilfried; Buck, Manfred; Dietz, Klaus; Hoelzel, Martin; Kleyer, Klaus; Schmid, Wolfgang; and Wanner, Karl, 5,337,945, Cl. 227-109.000.

Hoenel, Michael: *See—*
Wehner, Susanne; Klima, Heinz; Hoenel, Michael; Ziegler, Peter; and Walz, Gerd, 5,338,419, Cl. 204-181.400.

Hoff, Louis B.: *See—*
Shigeura, John; Bridgham, John A.; Hoff, Louis B.; and Mayrand, P. Eric, 5,338,426, Cl. 204-299.00R.

Hoffa, Michael D.: *See—*
Blankenship, George D.; Hoffa, Michael D.; and Mikitin, Gary A., 5,338,916, Cl. 219-130.400.

Hoffman, John P.; Nestler, Alvin M.; Witek, Edward T.; and Idstein, Donald J., to Bethlehem Steel Corporation. Method and apparatus for removing a nozzle insert from a steelmaking ladle. 5,337,470, Cl. 29-426.500.

Hoffman, Philip L.; and Signorello, Richard J., to Simco/Ramic Corporation. Lubrication system for a conveyor belt. 5,337,884, Cl. 198-500.000.

Hoffman, William C., Jr.: *See—*
Arnoth, Frank W.; and Hoffman, William C., Jr., 5,337,640, Cl. 83-444.000.

Hoffmann, Udo: *See—*
Ruhl, Dieter; Arlt, Klaus; Heilmann, Ulrich; Heimann, Ulrich; and Hoffmann, Udo, 5,338,434, Cl. 205-229.000.

Hogan, Dennis L., to Security Tag Systems, Inc. Magnetically releasable clamp. 5,337,459, Cl. 24-136.00A.

Hogan, Donald J.: *See—*
Coss, Ronald G.; and Hogan, Donald J., 5,337,638, Cl. 81-483.000.

Hohmann, Ralf; Kleinhens, Bernd; Kohlhaus, Olaf; Mann, Stephan; and Spors, Ralf, to Rasmussen GmbH. Pipe coupling. 5,338,071, Cl. 285-233.000.

Hoke, Randal A.: *See—*
Quante, J. Michael; Hoke, Randal A.; Mize, Patrick D.; Woodard, Daniel L.; and Millner, O. Elmo, deceased, 5,338,843, Cl. 540-222.000.

Hollis, Theodore M.: *See—*
Gardner, Thomas W.; and Hollis, Theodore M., 5,338,757, Cl. 514-461.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Hollnagel, Harold E., to KCS Industries Inc. Oil filter crushing apparatus having air bag actuator. 5,337,656, Cl. 100-98.00R.

Holloch, Johannes: *See*—
Focke, Heinz; and Holloch, Johannes, 5,338,150, Cl. 414-799.000.

Holloway, Eugene L.: *See*—
Blytas, George C.; Holloway, Eugene L.; and Zuzich, Anne H., 5,338,870, Cl. 549-378.000.

Holsapple, Brad L.: *See*—
Lent, Kevin C.; and Holsapple, Brad L., 5,338,102, Cl. 299-10.000.

Holton, Robert A.; and Somoza, Carmen, to Florida State University. Process for the preparation of 10-desacetoxybaccatin III and 10-desacetoxytaxol and derivatives thereof. 5,338,872, Cl. 549-510.000.

Holtzapfel, Paul J.: *See*—
Luttinger, Lionel B.; Rudy, Rosanna P.; and Holtzapfel, Paul J., 5,338,346, Cl. 106-14.290.

Holub, Timothy M., to Coleman Company, Inc., The. Container with main lid and auxiliary lid hingedly mounted on the main-lid. 5,337,911, Cl. 220-254.000.

Holzschuh, Johann: *See*—
Miese, Manfred; and Holzschuh, Johann, 5,338,174, Cl. 425-150.000.

Homer, Peter K.; Parenti, Robert V.; DeStefano, Joel; Chen, Wensen; Talley, Eric; and Close, John E., to General Electric Co. Spacecraft-to-launch-vehicle transition. 5,337,980, Cl. 244-158.00R.

Homma, Hideo; Kaneda, Kitahiro; and Yamada, Kunihiko, to Canon Kabushiki Kaisha. Automatic exposure control device using plural image plane detection areas. 5,339,163, Cl. 348-229.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Sakai, Ichiro; Sakaguchi, Shinichi; and Haga, Takashi, 5,337,630, Cl. 477-131.000.

Honda, Yuuji: *See*—
Kajino, Yuuichi; Ban, Koichi; Honda, Yuuji; and Sugi, Hikaru, 5,337,802, Cl. 165-22.000.

Hondulas, John L. Treatment of polluted water using wetland plants in a floating habitat. 5,337,516, Cl. 47-65.000.

Honeywell Inc: *See*—
Johnson, Michael J.; Hancock, William R.; and Larson, Brent H., 5,339,092, Cl. 345-136.000.

Honeywell Inc.: *See*—
Fiondella, Stephen J., 5,337,787, Cl. 137-625.690.
Mody, Pankaj H.; Himmer, Richard P.; and Herman, John J., 5,339,237, Cl. 364-184.000.
Sherry, Lance, 5,337,982, Cl. 244-186.000.
Wyatt, Michael A., 5,339,055, Cl. 332-144.000.

Hong, Anderson C.: *See*—
Barrow, Colin J.; Brownell, James E.; Houck, David R.; Hong, Anderson C.; Popp, Janet L.; and Sedlock, David M., 5,338,845, Cl. 544-343.000.

Hong, Sam P., to Goldstar Co., Ltd. Motion detecting apparatus. 5,339,104, Cl. 348-155.000.

Hong, Sung H., to Goldstar Co., Ltd. Apparatus for interpolating scanning lines of TV signal in TV. 5,339,109, Cl. 348-441.000.

Hong, Sung H.: *See*—
Kim, Young D.; and Hong, Sung H., 5,338,922, Cl. 219-763.000.

Honjo, Makoto: *See*—
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, 5,339,376, Cl. 385-71.000.

Honma, Yasuhiro: *See*—
Ohmori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, 5,337,796, Cl. 141-168.000.

Hoover, Scott M.: *See*—
Divecha, Amarnath P.; Karmarkar, Subhash D.; Ferrando, William A.; and Hoover, Scott M., 5,337,803, Cl. 164-98.000.

Hoover Universal, Inc.: *See*—
Vailliencourt, Dwayne, 5,337,909, Cl. 215-1.00C

Hopfer, Samuel; and Shani, Yosef, to General Microwave Israel Corporation. High-speed external modulator. 5,339,369, Cl. 385-2.000.

Hopkins, Robert L. Partitioned sign panel for billboards. 5,337,502, Cl. 40-624.000.

Horan, Ann C.: *See*—
Chu, Min; Patel, Mahesh; Horan, Ann C.; and Gullo, Vincent P., 5,338,758, Cl. 514-468.000.

Hord, Lee A.; and Barron, Robert E., to Procter & Gamble Company, The. Powdered psyllium drink mix compositions containing antioxidant. 5,338,549, Cl. 424-439.000.

Horiba Instruments, Incorporated: *See*—
Lewis, Gary W., 5,337,595, Cl. 73-23.310.

Horigome, Shinkichi: *See*—
Kato, Keizo; Horigome, Shinkichi; Suzuki, Ryo; and Ito, Masaru, 5,338,178, Cl. 425-385.000.

Horiguchi Toshio: *See*—
Akatsuka, Yuichiro; and Horiguchi Toshio, 5,339,300, Cl. 369-44.290.

Horikawa, Hiroshi; Tsuzuki, Yoshikazu; Mogi, Hisashi; and Matsubara, Kazuo, to Furukawa Electric Co., Ltd. Diameter-reducing member joint device. 5,338,070, Cl. 285-177.000.

Horikomi, Kazutoshi: *See*—
Ohto, Norio; Horikomi, Kazutoshi; Matsubara, Akira; Tanada, Hideki; Sakai, Kazuya; Kajiya, Seitaro; Mizuchi, Akira; and Shimizu, Hideshi, 5,338,857, Cl. 548-248.000.

Horikoshi, Hiroyoshi: *See*—
Yoshioka, Takao; Nishi, Takahide; Kanai, Tsutomu; Aizawa, Yuichi; Wada, Kunio; Fujita, Takashi; and Horikoshi, Hiroyoshi, 5,338,855, Cl. 514-369.000.

Horn, Michael, to Grumman Aerospace Corporation. Holographic inspection system with integral stress inducer. 5,339,152, Cl 356-347.000.

Hornebeck, William G.: *See*—
Robert, Ladislas; Moczar, Elemer; Hornebeck, William G.; and Kerneur, Christiane M. P., 5,338,747, Cl. 514-373.000.

Horton, Robert L.: *See*—
Rosenburgh, John H.; Horton, Robert L.; and Patton, David L., 5,339,131, Cl. 354-324.000

Horton, Stephen W.: *See*—
Hoskinson, John D.; and Horton, Stephen W., 5,339,351, Cl. 379-45.000.

Hoshi, Yuzi: *See*—
Takagi, Hiroyoshi; Awano, Masanobu; and Hoshi, Yuzi, 5,338,713, Cl. 501-105.000.

Hoshizaki Denki Kabushiki Kaisha: *See*—
Ishihara, Michiharu, 5,337,575, Cl. 62-126.000

Hosiden Corporation: *See*—
Nakamura, Masahiko, 5,338,227, Cl. 439-607.000.

Hoskinson, John D.; and Horton, Stephen W. Emergency response system. 5,339,351, Cl. 379-45.000.

Hosogi, Yasuhiro: *See*—
Yutori, Toshiaki; Katsumata, Masaaki; Kato, Takehiko; and Hosogi, Yasuhiro, 5,338,380, Cl. 148-532.000.

Hosokawa Seisakusho Co., Ltd.: *See*—
Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, 5,338,182, Cl. 425-562.000.

Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, to Hosokawa Seisakusho Co., Ltd. Pressure molding apparatus for molten resin. 5,338,182, Cl. 425-562.000.

Hou, Jack, to Giftec, Ltd. Decorative display device. 5,338,583, Cl. 428-7.000

Houck, David R.: *See*—
Barrow, Colin J.; Brownell, James E.; Houck, David R.; Hong, Anderson C.; Popp, Janet L.; and Sedlock, David M., 5,338,845, Cl. 544-343.000.

Houck, Deborah J. Thermal holders for cups for use in vehicles. 5,337,984, Cl. 248-146.000.

Houlihan, William J.: *See*—
Estermann, Heinrich; Kapa, Prasad K.; Underwood, Russell L.; and Houlihan, William J., 5,338,730, Cl. 514-99.000.

Housel, Barron C., III, to International Business Machines Corporation. General data stream parser for encoding and decoding data and program interface for same. 5,339,421, Cl. 395-700.000.

Howard, James J. Portable tailgate-mounted vise. 5,338,016, Cl. 269-97.000.

Howarth, John J.: *See*—
Anderson, Leonard M.; and Howarth, John J., 5,338,361, Cl. 118-689.000

Howe Furniture Corporation: *See*—
Diffrient, Niels, 5,337,657, Cl. 108-115.000.

Howe, Michael E. Paint roller cover cleaning device. 5,337,769, Cl. 134-138.000.

Howell, Edward K., to General Electric Company. DC circuit interrupter. 5,339,210, Cl. 361-9.000.

Howell, George D.: *See*—
Bartz, Kenneth W.; Cherry, David J.; and Howell, George D., 5,338,614, Cl. 428-448.000.

Howell, Thomas A.: *See*—
Mollenauer, Kenneth H.; Hermann, George D.; Howell, Thomas A.; and Monfort, Michelle Y., 5,338,313, Cl. 604-249.000.

Howng, Wei-Yean: *See*—
Ramakrishnan, Ed S.; and Howng, Wei-Yean, 5,338,999, Cl. 310-358.000

Hoxey, Steven M., to International Business Machines Corporation Partitioning case statements for optimal execution performance. 5,339,420, Cl. 395-700.000.

Hrdina, Kenneth: *See*—
Zhen, Yong S.; and Hrdina, Kenneth, 5,338,334, Cl. 75-362.000

Hristofas, Konstantinos: *See*—
Naddeo, Ronald C.; Hristofas, Konstantinos; and Magnotta, Vincent L., 5,338,401, Cl. 162-6.000

Hromas, Joe C.; and Patel, Dinesh R., to Schlumberger Technology Corporation. Pressure-controlled well tester adapted to be selectively retained in a predetermined operating position. 5,337,827, Cl. 166-321.000.

Hsia, Steve J.: *See*—
LeViness, Steve C.; Hsia, Steve J.; Wen, Michael Y.; Davis, Stephen M.; Culross, Claude C.; and Maa, Peter S., 5,338,441, Cl 208-419.000

Hsu, Michael S.; and Hoag, Ethan D., to Ztek Corporation. Thermal control apparatus. 5,338,622, Cl. 429-26.000.

Hsu, Shun-Liang; Shi, Chun-Yi; and Lin, Mou-Shiung, to Taiwan Semiconductor Manufacturing Company. Method for fabrication of w-polycide-to-poly capacitors with high linearity. 5,338,701, Cl. 437-60.000.

Hsu, Su-Yuan. Handlebar structure for a collapsible bicycle. 5,337,609, Cl. 74-551.300.

HTM Sport - und Freizeitgeraete Aktiengesellschaft: *See*—
Freisinger, Henry; and Wittmann, Heinz, 5,338,052, Cl. 280-612.000.

Huang, Chin-Teh: *See*—
Lu, Kewang; Huang, Chin-Teh; and Hammesfahr, Paul, 5,338,773, Cl. 523-116.000.

Huang, Chung Ming. Process for the transfer printing of a gulf club head. 5,337,670, Cl. 101-487.000.

Huang, Kuo-Jao; Lee, Chung-Ming; Li, Chi-An; and Liu, Yeong-Kuang, to Industrial Technology Research Institute. Automatic tool switching mechanism. 5,337,623, Cl. 74-813.00R.

Huang, Mien-Cheng, to Taiwan Charwell Enterprise, Co., Ltd. Locking device for a front seat of a double stroller. 5,338,096, Cl. 297-243.000.

Huang, Thomas N., to Full-Zone Corporation. Hoop toy. 5,338,244, Cl. 446-242.000.

Hubbell Incorporated: *See*—
Boteler, William C., 5,338,222, Cl. 439-469.000.
Oko, Frederick J., 5,338,213, Cl. 439-148.000.

Hubble, Fred F., III; Martin, James P.; and Folkins, Jeffrey J., to Xerox Corporation. Mark detection circuit for an electrographic printing machine. 5,339,150, Cl. 355-326.00R.

Hudson Soft Co., Ltd.: *See*—
Manabe, Toshiyuki; Murakami, Osamu; Takeuchi, Keiichi; and Matsuura, Junichi, 5,339,239, Cl. 364-401.000.

Huehne, Karl J.: *See*—
Irwin, James S.; Moeller, David F.; and Huehne, Karl J., 5,339,278, Cl. 331-16.000

Huels Aktiengesellschaft: *See*—
Grosse-Puppendahl, Thomas; Baron, Christian; and Schmidt, Friedrich G., 5,338,789, Cl. 524-314.000.

Huessy, Mary Brownlow, legal representative: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Hughes Aircraft Company: *See*—
Bender, Douglas J., 5,337,981, Cl. 244-164.000.
Conroy-Wass, Theodore R.; and Moore, Peter W., 5,339,221, Cl. 361-796.000.
Fritzel, Bradley G., 5,339,188, Cl. 359-200.000.
Loving, Ronald E., 5,337,567, Cl. 60-722.000.
Matthews, William F., 5,338,925, Cl. 250-214.00B.
Smith, Charles W.; and Stanford, Thomas B., Jr., 5,337,446, Cl. 15-21.100.
Woith, Blake F.; Crumly, William R.; and Linder, Jacques F., 5,339,027, Cl. 324-754.000.
Wu, Shin-Tson; Margerum, J. David; Meng, Hsiang-Hui B.; and Dalton, Larry R., 5,338,481, Cl. 252-299.010.
Wysocki, Joseph A.; Vince, Michael R.; McCahon, Stephen W.; and Kenna, John T., 5,339,380, Cl. 385-136.000.

Hughes, Kenneth: *See*—
Davies, Derek; and Hughes, Kenneth, 5,338,573, Cl. 427-331.000.

Huls Aktiengesellschaft: *See*—
Korte, Hermann-Josef; Miletic, Anton; Neutzler, Hans U.; Schoengen, Anton; Schroeder, Johann H.; and Wirges, Ralf, 5,338,882, Cl. 562-483.000.

Hulsey, Tommy R., to Construction Fasteners, Inc. Corrosion resistant cap for fastener. 5,338,141, Cl. 411-375.000.

Humphrey Instruments Incorporated: *See*—
Shinn, Alan L., 5,339,151, Cl. 356-328.000.

Humphreys, William M., to FMC Corporation. Low fat spread and process for making same. 5,338,562, Cl. 426-603.000.

Hundere, Alf; Wilson, George R., III; Dowda, Thomas; Dowda, James; and Anderson, David, to Alcor, Inc. Apparatus and method for determining the thermal stability of fluids. 5,337,599, Cl. 73-61.620.

Hunsbedt, Anstein, to General Electric Company. Liquid metal reactor air cooling baffle. 5,339,340, Cl. 376-299.000.

Hunt, Ronald. E.; and Whitehead, Verlon E. Disk storage device. 5,338,108, Cl. 312-9.170.

Hunter, John; and Gupta, Sunil, to Lumonics Corporation. Laser system for controlling emitted pulse energy. 5,339,323, Cl. 372-25.000.

Huntley, William F.: *See*—
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Brucken, Volker; and Huppatz, Werner, 5,338,417, Cl. 204-147.000.

Hurst, Andrew R.: *See*—
Halvorsen, Christian, Jr.; and Hurst, Andrew R., 5,337,596, Cl 73-38.000.

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Scheuer, Mark A.; MacDonald, Daniel W.; Palumbo, Kenneth S.; Paolini, Anthony L.; Berman, Robin E.; and Hurwitch, Carl B., 5,339,135, Cl. 355-208.000.

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Brown, Clinton A.; Hellyer, William E.; Huston, John T.; and Dickman, Anthony W., 5,337,438, Cl. 15-318.100.

Huszar, Csaba: *See*—
Ban, Karoly; Ban, Annamaria; Pali, Lajosne ; Kruppa, Marta; Somfai, Eva; and Huszar, Csaba, 5,338,868, Cl. 549-323.000

Hutschenreuther, Peter: *See*—
Neumann, Gerd; Hutschenreuther, Peter; Glien, Willfried; Raab, Dagmar; Leuner, Barbara; Steinborn, Gabriele; and Berger, Georg, 5,338,771, Cl. 523-113.000.

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Barringer, H. Paul; Kirsch, Gary E.; Mott, Keith C.; and Tung, Lawrence Y., 5,338,074, Cl. 285-334.000.

Hydro International Limited: *See*—
Cook, Roger J., 5,337,789, Cl. 137-812.000.

Hyodo, Ryuji: *See*—
Tanaka, Kenji; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Sekihata, Osamu; Hatta, Hiroyuki; and Norizuki, Reiko, 5,339,318, Cl. 370-110.100.

Hyundai Motor Company: *See*—
Jang, Jaedeog, 5,337,625, Cl. 74-335.000.

Ibex Technologies, Inc.: *See*—
Zimmermann, Joseph J.; Lewis, N. Tracey; and Heft, Robert A., 5,338,677, Cl. 435-200.000.

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Jerman, John H., 5,338,400, Cl. 156-647.000.

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Chotard, Antoine; Belloir, Jean-Jacques; and Iceta, Thierry, 5,339,220, Cl. 361-796.000.

Ichijima, Seiji: *See*—
Saito, Naoki; Kamio, Takayoshi; Ichijima, Seiji; and Mihayashi, Keiji, 5,338,654, Cl. 430-557.000.

Ichikawa, Hirokazu: *See*—
Oka, Koichi; and Ichikawa, Hirokazu, 5,337,474, Cl. 29-846.000.

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Thorpe, Philip E., 5,338,542, Cl. 424-180.100.

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Wiseman, Raymond, 5,338,149, Cl. 414-792.700.

Idaho Research Foundation, Inc.: *See*—
Venbrux, Jack; and Cameron, Kelly, 5,339,077, Cl. 341-67.000.

Ideal-Standard GmbH: *See*—
Strack, Ludger; Bergmann, Konrad; and Laeller, Klaus, 5,337,424, Cl. 4-557.000.

Identec Limited: *See*—
Dodd, Harold; and Stanier, Brian J., 5,339,073, Cl. 340-825.310

Idstein, Donald J.: *See*—
Hoffman, John P.; Nestler, Alvin M.; Witek, Edward T.; and Idstein, Donald J., 5,337,470, Cl. 29-426.500.

Ienaga, Kazuhara: *See*—
Kakamura, Ko; Hochi, Toshikazu; and Ienaga, Kazuhara, 5,338,850, Cl. 546-122.000.

Igarashi, Tsutomu: *See*—
Kodama, Shinji; and Igarashi, Tsutomu, 5,338,211, Cl. 439-135.000.

Igashira, Toshihiko: *See*—
Yorita, Hiroshi; Igashira, Toshihiko; Moritsugu, Michiyasu; and Chujo, Yoshiki, 5,338,431, Cl. 204-424.000.

Ignasiak, Boleslaw: *See*—
Ignasiak, Teresa; Strausz, Otto; Ignasiak, Boleslaw; Janiak, Jerzy; Pawlak, Wanda; Szymocha, Kazimierz; and Turak, Ali A., 5,338,322, Cl. 44-620.000.

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Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,339,098, Cl. 347-5.000.

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Kurihara, Noriyuki; Iida, Yoshikatsu; and Matsumoto, Hiromatsu, 5,337,722, Cl. 123-527.000.

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Nukada, Katsumi; Imai, Akira; Daimon, Katsumi; Iijima, Masakazu; Mashimo, Kiyokazu; Sakaguchi, Yasuo; and Takegawa, Ichiro, 5,338,636, Cl. 430-59.000.

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Iwamoto, Ryuichiro; Nakamura, Ikusei; and Iino, Akira, 5,338,437, Cl. 208-111.000

Iizuka, Hajime: *See*—
Fukazawa, Nobuyuki; Iizuka, Hajime; Yano, Osamu; and Miyama, Yukio, 5,338,745, Cl. 514-330.000.

Iizumi, Katsuo: *See*—
Tsuchida, Takayasu; Nishimoto, Yoshitaka; Kotani, Takuya; and Iizumi, Katsuo, 5,338,672, Cl. 435-108.000.

Ikai, Keitaro: *See*—
Kawaguchi, Naoko; Fukami, Harukazu; Sago, Ryuichi; and Ikai, Keitaro, 5,338,719, Cl. 504-224.000.

Ikeda, Mitsuji; Mine, Ryoichi; Nozaki, Masayuki; and Sugiura, Tadashi, to NGK Insulators, Ltd. Optical fiber composite insulators. 5,339,381, Cl. 385-138.000

Ikeda, Wakaharu: *See*—
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi,

VOL 1165 ISS 3 AG 16 1994 UMI

Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, 5,337,881, Cl. 198-409.000.

Ikegawa, Akihiko; Mihara, Yuji; and Okazaki, Masaki, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,338,656, Cl. 430-577.000.

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Mori, Hideyasu; Yamazaki, Yuichi; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,339,355, Cl. 379-94.000.

Ikotek Informatik, Kommunikation und Fertigungstechnik AG: *See—*
Buehlmann, Thomas, 5,337,964, Cl. 241-17.000.

Ikuta, Shigeo: *See—*
Ogawa, Kazufumi; Soga, Mamoru; Ozaki, Shinji; and Ikuta, Shigeo, 5,338,579, Cl. 427-539.000.

Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, to National Semiconductor Corporation. Method of fabricating BiC-MOS device. 5,338,694, Cl. 437-31.000.

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Iles, Michael V.: *See—*
Brender, Ronald F.; and Iles, Michael V., 5,339,422, Cl. 395-700.000.

Imahashi, Issei, to Tokyo Electron Limited. Apparatus for processing semiconductor wafer comprising continuously rotating wafer table and plural chamber compartments. 5,338,362, Cl. 118-719.000.

Imai, Akira: *See—*
Nukada, Katsumi; Imai, Akira; Daimon, Katsumi; Iijima, Masakazu; Mashimo, Kiyokazu; Sakaguchi, Yasuo; and Takegawa, Ichiro, 5,338,636, Cl. 430-59.000.

Imai, Atsushi; and Hishida, Tuyoshi, to Rohm Co., Ltd. Semiconductor device and method of manufacturing the same. 5,338,704, Cl. 437-209.000.

Imai, Hisato; and Mori, Sadayori, to Totex Corporation. Cart for hand baggage. 5,338,054, Cl. 280-655.000.

Imai, Keisuke; Yamamoto, Toshimasa; Numazawa, Akio; Iwata, Hitoshi; and Watanabe, Yasutaka, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Preloader for a webbing retractor. 5,337,970, Cl. 242-374.000.

Imai, Tamotsu: *See—*
Vora, Bipin V.; Imai, Tamotsu; and Pujado, Peter J., 5,338,889, Cl 568-697.000.

Imaide, Takuya: *See—*
Iura, Noriyuki; Imaide, Takuya; and Kinugasa, Toshiro, 5,339,105, Cl. 348-240.000.

Imashiro, Yasuo; and Takahashi, Ikuo, to Nisshinbo Industries, Inc. Process for producing solution of high-molecular weight polycarbodiimide. 5,338,794, Cl. 524-792.000.

Imbert, Claude, to Becton, Dickinson and Company. Syringe having two component barrel. 5,338,309, Cl. 604-187.000.

Immel, Otto; Darsow, Gerhard; and Buysch, Hans-Josef, to Bayer Aktiengesellschaft. Process for the preparation of diphenylamines. 5,338,885, Cl. 564-398.000.

Immel, Otto: *See—*
Botta, Artur; Buysch, Hans-Josef; Immel, Otto; and Puppe, Lothar, 5,338,861, Cl. 548-552.000.

Imperial Chemical Industries PLC: *See—*
Glass, Mitchell; Williams, Joseph C.; and Stein, Ross L., 5,338,727, Cl. 514-19.000
Noakes, Timothy J., 5,337,963, Cl. 239-690.000

Implant Innovations, Inc.: *See—*
Beaty, Keith D.; and Jansen, Curtis E., 5,338,196, Cl. 433-172.000.

Imuta, Mitsuru; and Nishi, Koichi, to Shionogi Seiyaku Kabushiki Kaisha. Isoxazolidinyl carbapenem derivative. 5,338,733, Cl. 514-210.000.

Imuta, Shinichi: *See—*
Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo and Imuta, Shinichi, 5,338,792, Cl. 524-477.000.

In-Situ, Inc.: *See—*
Becker, William L.; and Kuestner, William J., 5,337,601, Cl 73-155.000.

Inaba, Tadashi; Okada, Hisashi; Suzuki, Ryo; Katsuoka, Yasuhiro; and Seki, Hiroyuki, to Fuji Photo Film Co., LTd. Photographic processing composition and bleaching or bleach-fixing method. 5,338,649, Cl. 430-430.000.

Inada, Hayato: *See—*
Tsuji, Koji; Takegawa, Yoshinbou; Inada, Hayato; and Yamada, Shuji, 5,338,505, Cl. 419-10.000.

Inagami, Yasuhiro: *See—*
Tanaka, Teruo; Inagami, Yasuhiro; Tamaki, Yoshiko; Sakakibara, Tadayuki; and Kitai, Katsuyoshi, 5,339,429, Cl. 395-700.000.

Inagawa, Seiki: *See—*
Yanagisawa, Tateo; Yamada, Hisayoshi; Sakamoto, Katsumi; Inagawa, Seiki; Umetsu, Yukihide; Uchida, Takeshi; Nakahara, Hideyo; and Fukumoto, Yoshiharu, 5,338,503, Cl. 264-516.000.

Inami, Kazuyoshi, to Mitsubishi Denki Kasbushiki Kaisha. Transmit-receive module. 5,339,083, Cl. 342-157.000

Indresco Inc.: *See—*
Fitch, Lawrence D.; and Smith, Stanley A., 5,338,711, Cl. 501-89.000.

Industrial Technology Research Institute: *See—*
Huang, Kuo-Jao; Lee, Chung-Ming; Li, Chi-An; and Liu, Yeong-Kuang, 5,337,623, Cl. 74-813.00R.
Tuan, Hsiao-Chin; and Chao, Hu H., 5,338,750, Cl. 437-70.000.

Infection Control Products, Inc.: *See—*
Russell, John P., 5,337,419, Cl. 2-9.000.

Ingenieurburo fur Elektro-Mechanische Technologien Dipl-Ing Hartmut Euer: *See—*
Euer, Hartmut; Baues, Wilfried; and Wernicke, Joachim, 5,338,199, Cl. 434-14.000.

Ingersoll Milling Machine Company, The: *See—*
Hedman, Lennard D., 5,337,462, Cl. 29-33.00P.

Ingersoll-Rand Company: *See—*
Mills, Floyd D., 5,337,713, Cl. 123-179.300.

Ingle, Harry C.: *See—*
McKenzie, Charles R.; and Ingle, Harry C., 5,337,907, Cl. 211-88.000.

Ingram, Ralph H.; and Green, William L., to Shell Oil Company. Process gas compressor train fugitive emissions recovery system. 5,337,859, Cl. 184-6.210.

Inland Steel Company: *See—*
Pielet, Howard M.; Kreevich, William J.; Tindyala, Masood A.; and Knoepke, John R., 5,338,009, Cl. 266-229.000.

Inman, Philip A.: *See—*
Pickett, James K.; Inman, Philip A.; and Sale, Matthew D., 5,339,395, Cl. 395-325.000.

Inn Room Systems, Inc.: *See—*
Durbin, Martin J., 5,339,250, Cl. 364-479.000.

Innovative Design Enterprises: *See—*
Steiner, Gregory A.; and Arnieri, Terry, 5,338,495, Cl. 261-28.000.

Inoue, Hiroaki: *See—*
Sano, Hirohisa; and Inoue, Hiroaki, 5,339,370, Cl. 385-2.000.

Inoue, Kenichi: *See—*
Tairaku, Hirokazu; Inoue, Kenichi; Ito, Chiaki; Takimoto, Kenji; and Tanido, Shigetoshi, 5,339,436, Cl. 395-700.000.

Inoue, Kikumitsu: Sasaki, Nanji; and Yachigo, Shinichi, to Sumitomo Chemical Company, Limited. Hydroxyphenylpropionic ester having novel crystal structure. 5,338,869, Cl. 549-335.000.

Inoue, Masashi: *See—*
Inui, Tomoyuki; and Inoue, Masashi, 5,338,707, Cl. 501-12.000.

Inoue, Michio; Yamamoto, Tadashi; and Ogawa, Hiroshi, to Toyoda Gosei Co., Ltd. Air bag cover including horn switch. 5,338,059, Cl. 280-728.00B.

Inoue, Noboru: *See—*
Abe, Naoki; Kawahara, Fumio; and Inoue, Noboru, 5,338,421, Cl. 204-186.000.

Inoue, Noriyuki: *See—*
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi; Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, 5,337,881, Cl. 198-409.000.

Inoue, Sadayuki; and Fujii, Kyoto, to Mitsubishi Denki Kabushiki Kaisha. Video signal recording/reproducing apparatus. 5,339,165, Cl. 358-312.000.

Inoue, Seijiro: *See—*
Nasu, Hideo; Tezuka, Toshihiko; and Inoue, Seijiro, 5,338,552, Cl. 426-19.000.

Inoue, Tomohiro: *See—*
Mishima, Naoshi; Fukagai, Toshio; Taniguchi, Kiyoshi; Kishi, Hiroyuki; Inoue, Tomohiro; and Kawasaki, Yoshiaki, 5,339,138, Cl. 355-296.000.

Inoue, Yoshiko K.: *See—*
Toms, Thomas R.; Harwood, Ann E.; Inoue, Yoshiko K.; and Kuo, Clinton C. K., 5,339,279, Cl. 365-185.000.

Institut Francais du Petrole: *See—*
Joly, Jean-Francois; Caullet, Philippe; Guth, Jean-Louis; Faust, Anne-Catherine; Brunard, Nathalie; and Kolenda, Frederic, 5,338,525, Cl. 423-326.000.

Institute Francais Du Petrole: *See—*
Marion, Marie-Claire; Forestiere, Alain; and Delhomme, Henri, 5,338,518, Cl. 422-211.000.

Institute of Gas Technology: *See—*
Zhen, Yong S.; and Hrdina, Kenneth, 5,338,334, Cl. 75-362.000.

Instrumentarium Corporation: *See—*
Heinonen, Erkki, 5,337,738, Cl. 128-203.120.

Integrated Information Technology: *See—*
Jiang, Ching-Lin, 5,339,076, Cl. 341-51.000.

Intel Corporation: *See—*
Fandrich, Mickey L.; Kreifels, Jerry A.; and Kynett, Virgil N., 5,339,320, Cl. 371-22.100.
Lee, Yong; Palasamudram, Nagraj; and Nadir, James, 5,339,399, Cl. 395-425.000
Lippincott, Louis A., 5,339,442, Cl. 395-725.000.
Nelson, Daryl, 5,339,214, Cl. 361-695.000.
Tedrow, Kerry; Taub, Mase; and Mielke, Neal, 5,339,272, Cl. 365-189.090.
Yuen, Desmond, 5,339,437, Cl. 395-700.000.

Intellikey Corporation: *See—*
Chhatwal, Kn S., 5,337,588, Cl. 70-278.000.

Intergraph Corporation: *See—*
Boyle, Steven R.; Proebsting, Robert J.; and Herndon, William H., 5,338,970, Cl. 257-659.000.

International Business Machines Corporation: *See—*
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.
Barbee, Steven G.; Heinz, Tony F.; Li, Leping; and Ratzlaff, Eugene H., 5,338,390, Cl. 156-627.000.
Bates, Cary L.; and Ryan, Jeffrey M., 5,339,388, Cl. 395-153.000.
Bates, Cary L.; and Ryan, Jeffrey M., 5,339,389, Cl. 395-153.000.
Beitel, Bradley J.; Haug, Charles L.; and Sobrino, Elba M., 5,339,423, Cl. 395-600.000.
Bross, Arthur; and Walsh, Thomas J., 5,338,208, Cl. 439-66.000.
Brunsvold, William R.; Jagannathan, Premlatha; Miura, Steve S.; Montgomery, Melvin W.; Sachdev, Harbans S.; and Sooriyakumaran, Ratnam, 5,338,818, Cl. 528-43.000.
Carrig, Keith M.; Hathaway, David J.; Lallier, Keith W.; Panner, Jeannie T. H.; and Sehr, Terrence W., 5,339,253, Cl. 364-489.000.
Chana, Jit S.; Lupton, Pete J.; and Plum, Dennis L., 5,339,414, Cl. 395-650.000.
Conner, Mike H.; Martin, Andrew R.; and Raper, Larry K., 5,339,438, Cl. 395-700.000.
Dhong, Sang H.; Kirihata, Toshiaki; Shin, Hyun J.; Sunaga, Toshio; Taira, Yoichi; and Terman, Lewis M., 5,339,274, Cl. 365-203.000
Eikill, Richard G.; Levenstein, Sheldon B.; McMahon, Lynn A.; and Weigel, Joseph P., 5,339,397, Cl. 395-400.000
Elko, David A.; Frey, Jeffrey A.; Helffrich, Audrey A.; Nick, Jeffrey M.; and Swanson, Michael D., 5,339,405, Cl. 395-575.000.
Elko, David A.; Isenberg, John F., Jr.; Moore, Brian B.; Strickland, Jimmy P.; Swanson, Michael D.; and Wang, George W., 5,339,427, Cl. 395-725.000.
Geffken, Robert M.; and Dunlop, Lawrence J., 5,339,212, Cl. 361-306.200.
Housel, Barron C., III, 5,339,421, Cl. 395-700.000.
Hoxey, Steven M., 5,339,420, Cl. 395-700.000.
James, David T.; Leonard, Anthony W.; and Elliott, Peter J., 5,339,204, Cl. 360-51.000.
Johnson, Lee E., Jr.; Kokoszka, Daryl J.; Larky, Steven P.; and Sidoli, Paolo, 5,339,394, Cl. 395-325.000.
Kagami, Naoyuki; and Kubo, Hiroaki, 5,339,299, Cl. 369-32.000.
Kanai, Naoki, 5,339,410, Cl. 395-600.000.
Klaasen, William A.; and Wang, Wen-Yuan, 5,338,963, Cl 257-376.000.
Kobeda, Edward; Gambino, Jeffrey P.; Gifford, George G.; and Mazzeo, Nickolas J., 5,338,702, Cl. 437-192.000.
Koval, Michael J.; Lawton, William W.; Tyler, John G.; and Winters, Scott L., 5,339,413, Cl. 395-650.000.
Rudisill, Charles A.; and Whittle, Daniel J., 5,339,179, Cl. 359-49.000.
Schneider, Mark S.; Acocella, John; Herron, Lester W.; Kordus, Mark R.; and Wirtz, Louis H., 5,338,900, Cl. 174-250.000.
Subbanna, Seshadri, 5,338,698, Cl. 437-40.000.
Vandling, Gilbert C., III, 5,339,404, Cl. 395-575.000.

International Computers Limited: *See—*
Parker, Thomas A., 5,339,403, Cl. 395-425.000.

International Drilling Systems, Inc.: *See—*
Chancey, Roger; and Champagne, Robert J., Jr., 5,337,840, Cl. 175-107.000.

International Paper Company: *See—*
Lucas, Paul C.; Messenger, Ronald J.; Macklem, Elizabeth A.; and Nykwest, Lawrence C., 5,338,404, Cl. 162-163.000.

International Rectifier Corporation: *See—*
Kinzer, Daniel M.; Merrill, Perry; and Spring, Kyle A., 5,338,693, Cl. 437-29.000.
Lidow, Alexander; and Herman, Thomas, 5,338,961, Cl. 257-342.000.

Inui, Tomoyuki; and Inoue, Masashi. Process for production of high-purity mullites. 5,338,707, Cl. 501-12.000.

Inventio AG: *See—*
Fischer, Moritz, 5,337,879, Cl. 198-333.000.

Inventus, Inc.: *See—*
Johnson, Karen T.; Adams, Lori T.; Montgomery, April D.; and Montgomery, John W., 5,337,934, Cl. 224-153.000.

Ipposhi, Takashi: *See—*
Sugahara, Kazuyuki; and Ipposhi, Takashi, 5,338,388, Cl. 117-44.000.

IPSCO Enterprises Inc.: *See—*
Tempel, Lorne F., 5,337,792, Cl. 138-96.00R.

Iranmanesh, Ali A.: *See—*
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,694, Cl. 437-31.000.
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,696, Cl. 437-34.000.

Irie, Yoshio: *See—*
Shimomura, Tadao; Irie, Yoshio; Takahashi, Hitoshi; Kajikawa, Katsuhiro; Saga, Jyunichi; Fujiwara, Teruaki; and Hatsuda, Takumi, 5,338,810, Cl. 526-75.000.

Irwin, James S.; Moeller, David F.; and Huehne, Karl J., to Motorola, Inc. Method and apparatus for standby recovery in a phase locked loop. 5,339,278, Cl. 331-16.000.

Irwin, James S.: *See—*
Ledzius, Robert C.; Irwin, James S.; and Manvar, Dhirajlal N., 5,339,079, Cl. 341-144.000.

Isberg, Ralph R.; Miller, Virginia; and Falkow, Stanley, to Leland Stanford Jr. University, The Board of Trustees of. Yersinia INV nucleic acids. 5,338,842, Cl. 536-23.700.

Isenberg, John F., Jr.: *See—*
Elko, David A.; Isenberg, John F., Jr.; Moore, Brian B.; Strickland, Jimmy P.; Swanson, Michael D.; and Wang, George W., 5,339,427, Cl. 395-725.000.

Ishi, Yuji; Nagao, Toru; and Sato, Harumatsu, to Itoki Co., Ltd. Shell structure for use with a chair having synchronously moving seat and seat back. 5,338,099, Cl. 297-452.330.

Ishida, Hideki: *See—*
Kusumoto, Hiroshi; Hayashi, Daisuke; Ishida, Hideki; Kitagawa, Shoichi; Nagashima, Takashi; and Miyamoto, Mitsugu, 5,339,137, Cl. 355-208.000.

Ishida, Hidetoshi: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, 5,339,376, Cl. 385-71.000.

Ishida, Hisashi, to NEC Corporation. Method of making a multilayer printed wiring board. 5,337,466, Cl. 29-830.000.

Ishigame, Juji; and Matsumura, Yoshiaki, to Sumitomo Metal Mining Company, Limited. Ceramic substrate sintered at low temperatures. 5,338,710, Cl. 501-32.000.

Ishige, Sadao: *See—*
Tanaka, Toshiharu; Ishige, Sadao; Sugiyama, Takekatsu; and Shimada, Hirokazu, 5,338,642, Cl. 430-173.000.

Ishiguro, Yoichi: *See—*
Aikawa, Haruhiko; Ishiguro, Yoichi; and Danzuka, Toshio, 5,338,328, Cl. 65-530.000.

Ishihara, Michiharu, to Hoshizaki Denki Kabushiki Kaisha. Display apparatus for displaying abnormalities in low temperature cabinets. 5,337,575, Cl. 62-126.000.

Ishii, Kazuhide; Kawasaki, Tatsuo; Kuriyama, Noriyuki; Dohi, Shoji; Nakashiba, Akio; and Miyazaki, Souhei, to Kawasaki Steel Corporation; and Osaka Gas Co., Ltd. Far-infrared emitter of high emissivity and corrosion resistance and method for the preparation thereof. 5,338,616, Cl. 428-472.000.

Ishii, Kazuo: *See—*
Kato, Eiichi; and Ishii, Kazuo, 5,338,628, Cl. 430-95.000

Ishii, Satoshi: *See—*
Sasaki, Masahiro; Ishii, Satoshi; Yamauchi, Yoshihiko; Kitamura, Katsushi; Toyoda, Shuji; and Ahiko, Kenkichi, 5,338,682, Cl. 435-253.400.

Ishii, Tadao, to Fujitsu Limited. Virtual private network connecting system. 5,339,356, Cl. 379-234.000.

Ishii, Toshio, to Fujitsu Limited. Facsimile mail system linked to data communication system. 5,339,156, Cl. 358-402.000.

Ishikawa, Isao: *See—*
Takahashi, Satoshi; and Ishikawa, Isao, 5,338,267, Cl. 475-227.000.

Ishikawa, Masaki, to Koito Manufacturing Co., Ltd. Projection head lamp for cars. 5,339,226, Cl. 362-61.000.

Ishitsubo, Ryuichi: *See—*
Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, 5,338,182, Cl. 425-562.000.

Ishizuka, Hideki: *See—*
Takeuchi, Kunihiro; Kaneko, Hideyuki; and Ishizuka, Hideki, 5,338,063, Cl. 280-735.000

Ishizuka, Mitsuo: *See—*
Ohsumi, Hisayoshi; Matsumoto, Takeshi; Kato, Shinji; Ishizuka, Mitsuo; and Kaneko, Shoichi, 5,338,592, Cl. 428-106.000.

Isihara, Kenji: *See—*
Fukuda, Katsuhito; Takami, Masato; Hasegawa, Hirokazu; Nakajima, Chiaki; and Isihara, Kenji, 5,338,619, Cl. 428-623.000.

Isley, Reggald E.: *See—*
Woods, Randy J.; and Isley, Reggald E., 5,337,847, Cl. 180-9.520.

Isobe, Tomohisa: *See—*
Fujiwa, Takaaki; Takemoto, Shin; Isobe, Tomohisa; and Harano, Yoshiyuki, 5,338,879, Cl. 560-116.000.

Isobe, Yoshinori: *See—*
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl 437-3.000.

Isono, Soichi: *See—*
Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, 5,339,319, Cl. 371-10.200.

Isover Saint-Gobain: *See—*
Aube, Jean-Yves; and Giry, Emmanuel, 5,338,329, Cl. 65-521.000.

Isozaki, Masakazu, to Fuji Photo Film Co., Ltd. Drier apparatus for drying sheets of photosensitive material. 5,337,499, Cl. 34-549.000.

ISP Investments Inc.: *See—*
Narayanan, Kolazi S., 5,338,762, Cl. 514-788.000.
Wu, Chi-San; Curry, James F.; and Cullen, James P., 5,338,814, Cl 526-210.000.

ISPG, Inc.: *See—*
Ferrara, Daniel A., Jr., 5,337,925, Cl. 222-214.000.

Istituto Guido Donegani S.p.A.: *See—*
Drzewinski, Michael A., 5,338,798, Cl. 525-92.000

Isuzu Motors, Ltd.: *See—*
Kuwahara, Tohru, 5,337,862, Cl. 188-158.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Itabashi, Satoshi: *See*—
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.

Itay, Nehemya: *See*—
Bashan, Oded; Aduk, Moshe; Gilboa, Ronnie; Itay, Nehemya; and Shure, Dubi, 5,339,000, Cl. 340-932.200.

ITEA S.r.l.: *See*—
Amadesi, Paolo; Cappelli, Fabio; and Pazzaglia, Sergio, 5,337,683, Cl. 110-346.000.

Ito, Chiaki: *See*—
Tairaku, Hirokazu; Inoue, Kenichi; Ito, Chiaki; Takimoto, Kenji; and Tanido, Shigetoshi, 5,339,436, Cl. 395-700.000.

Ito, Eiki, to Fujitsu Limited. Preprocessor of division device employing high radix division system. 5,339,267, Cl. 364-761.000.

Ito, Masaru: *See*—
Kato, Keizo; Horigome, Shinkichi; Suzuki, Ryo; and Ito, Masaru, 5,338,178, Cl. 425-385.000.

Ito, Sadao: *See*—
Satoh, Munetaka; Ito, Sadao; and Nawa, Hiroshi, 5,337,995, Cl. 248-429.000.

Ito, Tomoaki: *See*—
Hiramoto, Haruo; Ito, Tomoaki; and Tojo, Katsutoshi, 5,338,219, Cl. 439-350.000.

Itoki Co., Ltd.: *See*—
Ishi, Yuji; Nagao, Toru; and Sato, Harumatsu, 5,338,099, Cl. 297-452.330.

ITT Corporation: *See*—
Bahl, Inder J., 5,338,950, Cl. 257-277.000.
Higgins, Alan L., 5,339,385, Cl. 395-2.550.
Rees, Richard W. A., 5,338,100, Cl. 297-452.100.

Iura, Noriyuki; Imaide, Takuya; and Kinugasa, Toshiro, to Hitaci, Ltd. Multi-format digital image pickup apparatus. 5,339,105, Cl. 348-240.000.

Ivey, Troy D. Multi-vessel receptacle for laparoscopic instruments. 5,337,894, Cl. 206-370.000.

IVG Australia Pty. Ltd.: *See*—
Wade, Malcolm V., 5,338,258, Cl. 464-6.000.

Iwagaki, Masaru, to Konica Corporation. Silver halide color photographic light-sensitive material. 5,338,650, Cl. 430-496.000.

Iwai, Shojiro: *See*—
Ichiyanagi, Shigeo; Iwai, Shojiro; and Deguchi, Masahiro, 5,338,449, Cl. 210-205.000.

Iwamoto, Masatoshi: *See*—
Fukumoto, Tadao; Iwamoto, Masatoshi; and Kishimoto, Akihiko, 5,338,795, Cl. 525-66.000.

Iwamoto, Ryuichiro; Nakamura, Ikusei; and Iino, Akira, to Research Association For Residual Oil Processing. Method for hydrocracking a heavy hydrocarbon oil utilizing a faujasite aluminosilicate. 5,338,437, Cl. 208-111.000.

Iwamura, Masahiro: *See*—
Tanaka, Shigeya; Iwamura, Masahiro; Yamauchi, Tatsumi; Nojiri, Tatsuo; Tada, Hisashi; and Nakano, Tetsuo, 5,339,448, Cl. 395-775.000.

Iwasaki, Kiyoshi, to NEC Corporation. Motion-and nonstandard-adaptive three-dimensional YC separating circit for NTSC signal. 5,339,113, Cl. 348-604.000.

Iwasaki, Takeshi; Yatomi, Takeshi; Naka, Shigeaki; and Suzuki, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Automatic broken wire repairing method for wire electric discharge machining devices. 5,338,912, Cl. 219-69.120.

Iwata, Hitoshi: *See*—
Imai, Keisuke; Yamamoto, Toshimasa; Numazawa, Akio; Iwata, Hitoshi; and Watanabe, Yasutaka, 5,337,970, Cl. 242-374.000.

Iwata, Naoki: *See*—
Suzuki, Koji; Ueno, Yuichi; Aoki, Katsuhiro; Iwata, Naoki; Sawada, Akira; and Fujishiro, Takatsugu, 5,339,141, Cl. 355-246.000.

Iwatani, Toshihiko: *See*—
Takeuchi, Hiromasa; Iwatani, Toshihiko; and Yamaguchi, Takumi, 5,338,036, Cl. 273-187.200.

J. M. Huber Corporation: *See*—
Tarquini, Michael E., 5,338,777, Cl. 523-212.000.

J.M. Voith GmbH: *See*—
Schiel, Christian, 5,338,279, Cl. 492-7.000.

Jackson, Winston J., Jr.: *See*—
Walker, Theodore R., Jr.; Jackson, Winston J., Jr.; and Fleischer, Jean C., 5,338,881, Cl. 562-462.000.

Jacobs, Edward M.; Chan, Kenneth K.; and Alexander, Thomas B., to Hewlett-Packard Co. Wait state mechanism for a high speed bus which allows the bus to continue running a preset number of cycles after a bus wait is requested. 5,339,440, Cl. 395-325.000.

Jacobs, Michael. Glass cutter. 5,337,483, Cl. 30-164.950.

Jacobs Suchard AG: *See*—
Vogt, Siegfried; Krempel, Wolfgang; and Assenmacher, Ute, 5,338,554, Cl. 426-45.000.

Jacobsen, Ingolf G.; and Langham, Arvin L., to Cabel-Con, Inc. Hexagonal crimp connector. 5,338,225, Cl. 439-585.000.

Jagannathan, Premlatha: *See*—
Brunsvold, William R.; Jagannathan, Premlatha; Miura, Steve S.; Montgomery, Melvin W.; Sachdev, Harbans S.; and Sooriyakumaran, Ratnam, 5,338,818, Cl. 528-43.000.

Jain, Sanjeev; Vermette, John E.; Weber, Richard; Doub, Robert J.; Alon, Gad; and Day, Alan G., III, to Baltimore Therapeutic Equipment Co. Device for inducing and registering imbalance. 5,337,757, Cl. 128-779.000.

JAL Data Communication & Systems Co., Ltd.: *See*—
Manabe, Toshiyuki; Murakami, Osamu; Takeuchi, Keiichi; and Matsuura, Junichi, 5,339,239, Cl. 364-401.000.

James, David T.; Leonard, Anthony W.; and Elliott, Peter J., to International Business Machines Corporation. System and method for servowriting a magnetic disk drive. 5,339,204, Cl. 360-51.000.

Jamieson, James R.; Zahedi, Ahmad P.; and Stegemiller, Heidi J., to General Electric Company. System and method for controlling deformation of a structure having a phase shift detector. 5,338,928, Cl. 250-227.210.

Jancic, Slobodan; and Sakellariou, Evangelos, to Sulzer Brothers Limited. Process and apparatus for separating substances by crystallization. 5,338,519, Cl. 422-253.000.

Jandy Industries: *See*—
Gould, Robert F.; and Robinson, Merritt A., 5,337,433, Cl. 15-1.700.

Jang, In-sik: *See*—
Kim, Sang-soo; Jang, In-sik; Kim, Nam-deog; and Son, Jeong-ha, 5,339,181, Cl. 359-59.000.

Jang, Jaedeog, to Hyundai Motor Company. Shift valve of a hydraulic control system for automatic transmission. 5,337,625, Cl. 74-335.000.

Janiak, Jerzy: *See*—
Ignasiak, Teresa; Strausz, Otto; Ignasiak, Boleslaw; Janiak, Jerzy; Pawlak, Wanda; Szymocha, Kazimierz; and Turak, Ali A., 5,338,322, Cl. 44-620.000.

Janning, Eugene A., Jr.: *See*—
Miller, Gale W.; Janning, Eugene A., Jr.; and Janning, John L., 5,338,287, Cl. 600-25.000.

Janning, John L.: *See*—
Miller, Gale W.; Janning, Eugene A., Jr.; and Janning, John L., 5,338,287, Cl. 600-25.000.

Janotik, Adam M.; and Kazyak, Lawrence P., to Ford Motor Company. Space frame construction. 5,338,080, Cl. 296-29.000.

Jansen, Curtis E.: *See*—
Beaty, Keith D.; and Jansen, Curtis E., 5,338,196, Cl. 433-172.000.

Jansen, Sabrina: *See*—
Jaworski, Frank; Jansen, Sabrina; and Jaworski, Wayne, 5,337,528, Cl. 52-182.000.

Janssen, Bernd: *See*—
Wuest, Hans-Heiner; Janssen, Bernd; Murray, William V.; Wachter, Michael P.; and Bell, Stanley, 5,338,749, Cl. 514-364.000.

Janssen, Sylvain; Fournier, Jacques; and Larmurier, Claude, to Schlumberger Industries. Hydrocarbon dispenser nozzle. 5,337,797, Cl. 141-206.000.

Japan Steel Works, Ltd., The: *See*—
Kato, Takaaki; Suzuki, Kiyomi; Hagiwara, Shigeharu; and Takanashi, Hiroaki, 5,338,173, Cl. 425-150.000.

Japan Tobacco Inc.: *See*—
Okumoto, Yutaka, 5,337,761, Cl. 131-84.100.

Jarstrow, Horst: *See*—
Bohm, Ludwig; Enderle, Hans-Frieder; and Jarstrow, Horst, 5,338,589, Cl. 428-36.900.

Jaworski, Frank; Jansen, Sabrina; and Jaworski, Wayne. Child assist rail and support system. 5,337,528, Cl. 52-182.000.

Jaworski, Wayne: *See*—
Jaworski, Frank; Jansen, Sabrina; and Jaworski, Wayne, 5,337,528, Cl. 52-182.000.

Jaxa-Chamiec, Albert A.: *See*—
Hickey, Deirdre M. B.; Cooper, David G.; and Jaxa-Chamiec, Albert A., 5,338,752, Cl. 514-382.000.

JBG Original Designs Incorporated: *See*—
Laughlin, Glenn M.; Frank, Jeffrey A.; and Hirschhaut, Bruce, 5,338,095, Cl. 297-440.100.

Jebe, Tod A.: *See*—
Matlock, Mark G.; Sleeter, Ronald T.; and Jebe, Tod A., 5,339,254, Cl. 364-499.000.

Jebron Limited: *See*—
Brown, Peter E., 5,337,448, Cl. 16-53.000.

Jedamski, Karsten, to Korber AG. Apparatus for storing and distributing comminuted tobacco. 5,337,762, Cl. 131-108.000.

Jefferis, Brian; and Morgan, Shaun D., to Peek Traffic Limited. Vehicle detection systems. 5,339,081, Cl. 342-28.000.

Jehnicka, Jifi: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,338,831, Cl. 530-334.000.

Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, to Deutsche Babcock Energie- und Umwelttechnik AG. Device for monitoring filter components. 5,338,326, Cl. 55-213.000.

Jeng, Yen-Ming. Air ventilation helmet. 5,337,421, Cl. 2-425.000.

Jenkins, B. Keith; and Tanguay, Armand R., Jr., to University of Southern California. Incoherent/coherent source array for multiplexed holographic recording and readout. 5,339,177, Cl. 359-35.000.

Jenneman, Gary E.; and Clark, J. Bennett, to Phillips Petroleum Company. Injection of scale inhibitors for subterranean microbial processes. 5,337,820, Cl. 166-246.000.

Jennings, Alfred R., Jr., to Mobil Oil Corporation. Use of carbon dioxide for gas-lifting heavy oil. 5,337,828, Cl. 166-372.000.

Jensen, Jack L.: *See*—
Reid, John D.; and Jensen, Jack L., 5,339,242, Cl. 364-424.050.

Jensen, Richard H. Adjustable decking system for use in supporting freight in a compartment. 5,338,137, Cl. 410-146.000.

Jensen, Tyler D.: *See*—
Phelps, William C., III; Daggs, Dwayne A.; Robertson, William H., Jr.; and Jensen, Tyler D., 5,339,178, Cl. 359-42.000.

Jensenius, Jens C.; Borup-Christensen, Per; and Erb, Karin. Monoclonal antibody specific for a human tumour-associated antigen. 5,338,661, Cl. 435-7.230.

Jeppsson, Jan-Bertil; and Losell, Ingvar, to Gambro AB. Set of tubes for peritoneal dialysis. 5,338,293, Cl. 604-29.000.

Jerbic, Michael J.: *See*—
Williamson, James T.; and Jerbic, Michael J., 5,338,172, Cl. 425-143.000.

Jerman, John H., to IC Sensors, Inc. Micromachining process for making perfect exterior corner in an etchable substrate. 5,338,400, Cl. 156-647.000.

Jerome, Rick C.: *See*—
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,694, Cl. 437-31.000.
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,696, Cl. 437-34.000.

Jiang, Ching-Lin, to Integrated Information Technology. Data compression using content addressable memory. 5,339,076, Cl. 341-51.000.

Jiang, Chun, to VLSI Technology, Inc. AC drain voltage charging source for PROM devices. 5,339,270, Cl. 365-185.000.

Jiang, Xin H.; and Kirkman, Scott, to LSI Logic Corporation. Fixture for testing mounting integrity of heat sinks on semiconductor packages, and method of testing. 5,337,614, Cl. 73-827.000.

Jidosha Denki Kogyo Kabushiki Kaisha: *See*—
Tanaka, Masaki, 5,338,076, Cl. 292-336.300.

Jidosha Kiki Co., Ltd.: *See*—
Uyama, Shintaro, 5,337,650, Cl. 91-376.00R.

Jilin University of Technology: *See*—
Peng, Fuhua, 5,338,134, Cl. 407-26.000.

Jinnai, Shigeru, to Canon Kabushiki Kaisha. Imaging apparatus having object plate and variably positionable image sensor. 5,339,173, Cl. 358-471.000.

Jochem, David J., to Berry Plastics Corporation. Sturdy aerosol can lid. 5,337,912, Cl. 220-306.000.

Jodai, Tetsuji: *See*—
Yamamoto, Susumu; Murai, Teruyuki; Kawabe, Nozomu; Awazu, Tomoyuki; Yazu, Shuji; and Jodai, Tetsuji, 5,338,721, Cl. 505-230.000.

Joerns Healthcare Inc.: *See*—
Krauska, Bernard J.; Wisniewski, Randy; and Peterson, Warren J., 5,337,428, Cl. 5-611.000.

John, Douglas: *See*—
Busch, Frank R.; Bowles, Paul; John, Douglas; Allen, Meldrum; DiRoma, Sabeto A.; and Godek, Dennis M., 5,338,846, Cl. 544-368.000.

Johnson, Brian C.: *See*—
Shah, Imran A.; and Johnson, Brian C., 5,339,398, Cl. 395-400.000.

Johnson, David A.; and Lorch, Jeffrey D., to Niro, A/S. Process of treating water containing effluent from cheese-making operations. 5,338,553, Cl. 426-36.000.

Johnson, Dwight N. Float operated fill valve. 5,337,781, Cl. 137-434.000.

Johnson, Karen T.; Adams, Lori T.; Montgomery, April D.; and Montgomery, John W., to Inventus, Inc. Flipover carrying device. 5,337,934, Cl. 224-153.000.

Johnson, Kevin M.; and Merle, Thomas C., to Eastman Kodak Company. Image forming apparatus having recoil fuser. 5,339,148, Cl. 355-290.000.

Johnson, Kevin M.: *See*—
Aslam, Muhammad; Mutz, Alec N.; Tyagi, Dinesh; and Johnson, Kevin M., 5,339,146, Cl. 355-285.000.
Parsons, Michael H.; and Johnson, Kevin M., 5,339,136, Cl. 355-208.000.

Johnson, Larry E.; and Galens, Peter, to Ultrafab Inc. Fabrication of pile weatherstripping having fins. 5,338,382, Cl. 156-72.000.

Johnson, Lee E., Jr.; Kokoszka, Daryl J.; Larky, Steven P.; and Sidoli, Paolo, to International Business Machines Corporation. I/O register protection circuit. 5,339,394, Cl. 395-325.000.

Johnson Matthey Public Limited Company: *See*—
Coupland, Duncan R.; and Doyle, Mark L, 5,338,509, Cl. 420-463.000.

Johnson, Michael J.; Hancock, William R.; and Larson, Brent H., to Honeywell Inc. Beam former for matrix display. 5,339,092, Cl. 345-136.000.

Johnson, Norman W.; and Andreatidis, John P., to Mount Isa Mines Limited. Beneficiation process. 5,338,337, Cl. 75-654.000.

Johnson, Paul D.: *See*—
Kutsch, Duane B.; Larson, Glen M.; Lohf, Lloyd W.; and Johnson, Paul D., 5,339,379, Cl. 385-135.000.

Johnson Service Company: *See*—
Schultz, Bruce R.; Henderson, Kirk P.; and Barootian, Arthur, 5,337,605, Cl. 73-335.020.

Johnson, Steven A.: *See*—
Kuhn, Paul K.; and Johnson, Steven A., 5,339,282, Cl. 367-7.000.

Johnson, Vernon R.: *See*—
Connell, Jefferson J.; Johnson, Vernon R.; Lipman, Peter H.; and Maier, Robert M., 5,339,417, Cl. 395-650.000.

Johnston, Robert E.; and Wade, Richard P., to Weyerhaeuser Company. Fiberboard pallet. 5,337,680, Cl. 108-51.300.

Johnston, Walter S., to Purecussion, Inc. Musical drum mount with circumferentially adjustable insulating supports. 5,337,645, Cl. 84-421.000.

Jolson, Joseph D.; and Schneider, Alan A., to Mine Safety Appliances Company. Electrochemical toxic gas sensor. 5,338,429, Cl. 204-415.000.

Joly, Jean-Francois; Caullet, Philippe; Guth, Jean-Louis; Faust, Anne-Catherine; Brunard, Nathalie; and Kolenda, Frederic, to Institut Francais du Petrole. MFI-type zeolite and its preparation process. 5,338,525, Cl. 423-326.000.

Jones, Arthur A. Leg exercise machines. 5,338,274, Cl. 482-100.000.

Jones, David R.; Winterland, Garry L.; and Cripe, David A. Sports chess game apparatus. 5,338,041, Cl. 273-260.000.

Jones, Kenneth C. Illuminator for archery aiming scope. 5,339,227, Cl. 362-109.000.

Jones, Ronald L., to Bio-Lab, Inc. Method of disinfecting a water system with a dry oxidizer composition. 5,338,461, Cl. 210-755.000.

Jones, Thomas E.; and McGinnis, Wayne C., to United States of America, Navy. Method for determining the granular nature of superconductors using pulsed current. 5,339,025, Cl. 324-71.600.

Jones, William J., Jr.: *See*—
Halm, Walter B.; Jones, William J., Jr.; Kirkbride, James F.; Marcus, Ilan; and Snyder, Adrian C., 5,338,500, Cl. 264-122.000.

Jones, William K.: *See*—
Marques, Anthony M.; Kelley, Paul R.; Jones, William K.; Fukuda, Masatoshi; and Manuel, Overton H., 5,339,066, Cl. 338-306.000.

Jordan, C. Minuard: *See*—
Ekdahl, Royce L.; and Jordan, C. Minuard, 5,338,140, Cl. 414-346.000.

Jordan, Mark: *See*—
Mammano, Robert A.; and Jordan, Mark, 5,338,979, Cl. 307-443.000.

Josef, Dieter: *See*—
Yves, Lapierre; Josef, Dieter; Adam, Jean; and Greber-Widmer, Susanne, 5,338,689, Cl. 436-518.000.

Jos. Schneider Optische Werke Kreuznach GmbH & Co. KG: *See*—
Korpert, Heinz; and Linn, Ralf, 5,339,193, Cl. 359-819.000.

Jouillat, Claude: *See*—
Lugez, Pierre; Jouillat, Claude; and Brunet, Michel, 5,337,923, Cl. 222-183.000.

Jouquey, Simone: *See*—
Fortin, Michel; Frechet, Daniel; Hamon, Gilles; Jouquey, Simone; and Vevert, Jean-Paul, 5,338,756, Cl. 514-394.000.

Jourdan, Glen P.: *See*—
Hackler, Ronald E.; Jourdan, Glen P.; and Davis, Leon N., 5,338,742, Cl. 514-277.000.

Judelle, Bernard: *See*—
Heritier-Best, Pierre; Brault, Isabelle; and Judelle, Bernard, 5,337,790, Cl. 251-129.210.

Jugle, Kip L.: *See*—
Lindblad, Nero R.; Lundy, Douglas A.; and Jugle, Kip L., 5,339,149, Cl. 355-297.000.

Juki Corporation: *See*—
Nagata, Yoshinobu, 5,337,686, Cl. 112-260.000.

Jull, Gwendolen A.; and Richardson, Carolyn A. Exercise monitoring device. 5,338,276, Cl. 482-113.000.

Jundt, Jacques: *See*—
Clark, Brian; Bonner, Stephen D.; Jundt, Jacques; and Luling, Martin, 5,339,036, Cl. 324-338.000.

Jung, Dick Y.; Wolfenbarger, James K.; Brooker, Donald D.; Robin, Allen M.; and Kassman, Jerrold S., to Texaco Inc. Deslagging gasifiers by controlled heat and derivatization. 5,338,489, Cl. 252-373.000.

Jung, Il N.; Yeon, Seung H.; Lee, Bong W.; and Yoo, Bok R., to Korea Institute of Science and Technology (KIST). Alkenychlorosilanes and direct synthesis thereof. 5,338,876, Cl. 556-431.000.

Junichiro, Nakayama; Tomoyuki, Miyake; Hiroyuki, Katayama; Kazuo, Van; and Kenji, Ohta, to Sharp Kabushiki Kaisha. Optical memory device having an improved light reflection or optical memory layer. 5,338,646, Cl. 430-270.000.

K.E.W. Industri A/S: *See*—
Krarup, Karsten, 5,338,162, Cl. 417-367.000.

K & K Inc.: *See*—
Kato, Koji; and Oshima, Reiji, 5,337,418, Cl. 2-2.000.

K-Swiss Inc.: *See*—
Hill, David I., 5,337,493, Cl. 36-54.000.

Kabatnik, Wilfried: *See*—
Bohne, Ulrich; Kabatnik, Wilfried; Bleicher, Manfred; Hecht, Joachim; and Lamprecht, Justus, 5,337,835, Cl. 173-13.000.
Fehrle, Siegfried; Kabatnik, Wilfried; Buck, Manfred; Dietz, Klaus; Hoelzel, Martin; Kleyer, Klaus; Schmid, Wolfgang; and Wanner, Karl, 5,337,945, Cl. 227-109.000.

Kabushiki Kaisha Fukuhara Seisakusho: *See*—
Fukuhara, Hiroshi, 5,337,779, Cl. 137-187.000.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
Aga, Hajime; Yoneyama, Masaru; and Sakai, Shuzo, 5,338,420, Cl. 204-182.600.

Kabushiki Kaisha Isekikaihatsu Koki: *See*—
Fujimori, Isao; Matsumori, Shigeru; Kano, Takashi; and Sumi, Toshio, 5,339,241, Cl. 364-424.020.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Yutori, Toshiaki; Katsumata, Masaaki; Kato, Takehiko; and Hosogi, Yasuhiro, 5,338,380, Cl. 148-532.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Hayakawa, Kohji; and Sasaki, Yosuke, 5,338,171, Cl. 425-138.000.
Ogaki, Koji; Matsuda, Tomoo; Takagi, Kimihiko; and Sakamoto, Takuya, 5,337,846, Cl. 180-8.200.

VOL 1165 ISS 3 AG 16 1994 UMI

Omote, Kenji, 5,338,914, Cl. 219-121.670.

Kabushiki Kaisha Meidensha: *See*—
Kaneko, Kimihiko; Takahashi, Masami; and Nakajima, Akira, 5,337,600, Cl. 73-117.000.

Kabushiki Kaisha Tiyoda Seisakusho: *See*—
Mizusawa, Yoshitada; and Toya, Matsumi, 5,338,358, Cl. 118-401.000.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Imai, Keisuke; Yamamoto, Toshimasa; Numazawa, Akio; Iwata, Hitoshi; and Watanabe, Yasutaka, 5,337,970, Cl. 242-374.000.

Kabushiki Kaisha Toshiba: *See*—
Araki, Kouji, 5,338,392, Cl. 156-634.000.
Enokizono, Tomoki, 5,337,500, Cl. 34-77.000.
Iijima, Yasuo, 5,339,400, Cl. 395-425.000.
Kasahara, Akihiro; Yamada, Akira; Yoshizawa, Takashi; Wada, Katsutoshi; and Yamasaki, Hideo, 5,337,865, Cl. 188-378.000.
Kawano, Mitsumo, 5,339,112, Cl. 348-549.000.
Konishi, Mineyuki, 5,339,032, Cl. 324-318.000.
Mori, Hideyasu; Yamazaki, Yuichi; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,339,355, Cl 379-94.000.
Nakajima, Shuzo, 5,339,444, Cl. 395-750.000.
Nakamura, Hajime; and Matsunami, Tokumi, 5,339,134, Cl. 355-202.000.
Sakuragi, Hiroshi, 5,339,409, Cl. 395-600.000.
Urata, Hiroshi; Sone, Toshinao; Nakane, Kazunori; Satou, Kazunori; and Tokita, Kiyoshi, 5,339,010, Cl. 315-368.170.
Watanabe, Tsutomu; and Shinonaga, Mitsuyoshi, 5,339,084, Cl. 342-160.000.
Yamasaki, Takuma; and Saito, Yuuichi, 5,339,446, Cl. 395-750.000.
Yoshida, Atsuya, 5,338,926, Cl. 250-214.0VT.
Yoshimaru, Tomohisa, 5,339,303, Cl. 369-59.000.

Kabushikigaisha Tokyo Kikai Seisakusho: *See*—
Shiba, Noriyuki, 5,337,944, Cl. 226-108.000.

Kadin, Alan M.: *See*—
Donaldson, William R.; Gupta, Deepnarayan; and Kadin, Alan M., 5,339,062, Cl. 505-1.000.

Kaede, Kazuhisa, to NEC Corporation. Optical timing extraction circuit. 5,339,185, Cl. 359-158.000.

Kagami, Naoyuki; and Kubo, Hiroaki, to International Business Machines Corporation. Optical disk drive apparatus for searching a target track. 5,339,299, Cl. 369-32.000.

Kahn, Clifford E.: *See*—
Karger, Paul A.; Mason, Andrew H.; Wray, John C. R.; Robinson, Paul T.; Priborsky, Anthony L.; Kahn, Clifford E.; and Leonard, Timothy E., 5,339,449, Cl. 395-700.000.

Kahne, Daniel E., to Princeton University, The Trustees of. Glycosylated steroid derivatives for transport across biological membranes and process for making same. 5,338,837, Cl. 536-5.000.

Kaire, Jean-Claude; Majoux, Bernard; and Pontarollo, Serge, to SGS-Thomson Microelectronics S.A. Input stage offset compensation device. 5,339,042, Cl. 330-255.000.

Kaiser, Julius A., to Frederick Herold & Associates, Inc. Signal processor for elimination of sidelobe responses and generation of error signals. 5,339,284, Cl. 367-103.000.

Kaiserman, Howard B.; and Kuzmenka, Daniel J., to Lever Brothers Company, Division of Conopco, Inc. System for releasing bleach from a bleach precursor in the wash using an enzyme activator. 5,338,474, Cl. 252-95.000.

Kajikawa, Katsuhiro: *See*—
Shimomura, Tadao; Irie, Yoshio; Takahashi, Hitoshi; Kajikawa, Katsuhiro; Saga, Jyunichi; Fujiwara, Teruaki; and Hatsuda, Takumi, 5,338,810, Cl. 526-75.000.

Kajino, Yuuichi; Ban, Koichi; Honda, Yuuji; and Sugi, Hikaru, to Nippondenso Co., Ltd. Vehicle air conditioner having driver and passenger units which operate independently of one another. 5,337,802, Cl. 165-22.000.

Kajita Construction Company: *See*—
Kajita, Yusuke, 5,337,533, Cl. 52-741.100.

Kajita, Yusuke, to Kajita Construction Company. Process for constructing a wooden building. 5,337,533, Cl. 52-741.100.

Kajiwara, Makoto: *See*—
Kubotera, Mitsuhiro; and Kajiwara, Makoto, 5,338,655, Cl. 430-569.000.

Kajiya, Seitaro: *See*—
Ohto, Norio; Horikomi, Kazutoshi; Matsubara, Akira; Tanada, Hideki; Sakai, Kazuya; Kajiya, Seitaro; Mizuchi, Akira; and Shimizu, Hideshi, 5,338,857, Cl. 548-248.000.

Kakamura, Ko; Hochi, Toshikazu; and Ienaga, Kazuhara, to Nippon Zoki Pharmaceutical Co., Ltd. Pyridinium derivatives. 5,338,850, Cl. 546-122.000.

Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi; Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Overhead work suspension conveyor. 5,337,881, Cl. 198-409.000.

Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, to Sumitomo Electric Industries, Ltd.; and Nippon Telegraph and Telephone Corp. Grooved optical fiber connector incorporating elastic guide pin pressing members. 5,339,376, Cl. 385-71.000.

Kakos, Edward A. *See*—
Fleming, John A.; and Kakos, Edward A., 5,338,283, Cl. 494-10.000.

Kaku, Toshimitsu: *See*—
Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, 5,339,319, Cl. 371-10.200.

Kakuta, Masayuki: *See*—
Nagao, Tsuyoshi; Kakuta, Masayuki; Kida, Yasuhiko; Takeda, Yoshiyuki; and Yoshida, Takeshi, 5,338,018, Cl. 271-3.000.

Kalany, Robert M.: *See*—
Greenwell, Joseph D.; Kalany, Robert M.; and Paselsky, John M., 5,337,887, Cl. 198-803.000.

Kalidini, Sanyasi R. Sampling tool. 5,337,620, Cl. 73-864.640.

Kalish, Milton. Portable easel system. 5,337,996, Cl. 248-460.000.

Kalkur, Thottam S.: *See*—
Argos, George, Jr.; and Kalkur, Thottam S., 5,338,951, Cl. 257-295.000.

Kalousek, Jan: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,338,831, Cl. 530-334.000.

Kaltenbach & Voigt Gmb & Co.: *See*—
Gassler, Joachim; and Massen, Robert, 5,339,154, Cl. 356-376.000.

Kaltenbach & Voigt GmbH & Co.: *See*—
Strohmaier, Ernst, 5,338,194, Cl. 433-82.000.

Kalthoff, Udo: *See*—
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,338,326, Cl. 55-213.000.

Kamachi, Hajime; Hirano, Minoru; and Masuyoshi, Shinji, to Bristol-Myers Squibb. Pradimicin compounds. 5,338,728, Cl. 514-27.000.

Kameyama, Masatoshi: *See*—
Katoh, Yoshiyuki; Kameyama, Masatoshi; and Higo, Shigekichi, 5,339,085, Cl. 342-180.000.

Kamijo, Masayasu: *See*—
Kubota, Yoshikazu; Kamijo, Masayasu; Otsu, Hiroshi; and Kamiya, Takashi, 5,338,584, Cl. 428-15.000.

Kamio, Takayoshi: *See*—
Saito, Naoki; Kamio, Takayoshi; Ichijima, Seiji; and Mihayashi, Keiji, 5,338,654, Cl. 430-557.000

Kamiya, Takashi: *See*—
Kubota, Yoshikazu; Kamijo, Masayasu; Otsu, Hiroshi; and Kamiya, Takashi, 5,338,584, Cl. 428-15.000.

Kamiyama, Yasuo; Mutou, Takeo; and Osa, Takashi, to Citizen Watch Co., Ltd. Watch with hands for multiple time displays. 5,339,293, Cl. 368-21.000.

Kammerl, Anton, to Siemens Aktiengesellschaft. Arrangement for monitoring the bit rate in ATM networks. 5,339,332, Cl. 375-10.000.

Kamyr, Inc.: *See*—
Grace, Todd S.; Barrett, Mark D.; Bilodeau, Vic L.; McCarty, Gary L.; Greenwood, Brian F.; Prough, J. Robert; and Torregrossa, Louis O., 5,338,366, Cl. 127-37.000.

Kanai, irokazu, to Riso Kagaku Corporation. Card printing method, original positioning holder, and card printing paper. 5,337,669, Cl. 101-485.000.

Kanai, Naoki, to International Business Machines Corporation. Method of bidirectional recalculation. 5,339,410, Cl. 395-600.000.

Kanai, Tsutomu: *See*—
Yoshioka, Takao; Nishi, Takahide; Kanai, Tsutomu; Aizawa, Yuichi; Wada, Kunio; Fujita, Takashi; and Horikoshi, Hiroyoshi, 5,338,855, Cl. 514-369.000.

Kanazawa, Daisuke; Sasaki, Mitsuru; Urano, Toshiyuki; Yamashita, Youko; and Matsubara, Shinichi, to Mitsubishi Kasei Corporation; and Konica Corporation. O-quinonediazide photosensitive composition containing s-triazine compound, novolak resin, vinyl-based polymer and a dye. 5,338,643, Cl. 430-190.000.

Kane, William J.; and Chouinard, Gregory A., to Label Printers, The. Label inspection machine. 5,339,153, Cl. 356-394.000.

Kaneda, Kitahiro: *See*—
Homma, Hideo; Kaneda, Kitahiro; and Yamada, Kunihiko, 5,339,163, Cl. 348-229.000.

Kaneko, Hideyuki: *See*—
Takeuchi, Kunihiro; Kaneko, Hideyuki; and Ishizuka, Hideki, 5,338,063, Cl. 280-735.000.

Kaneko, Kimihiko; Takahashi, Masami; and Nakajima, Akira, to Kabushiki Kaisha Meidensha. Flat belt type drive chassis dynamometer with compact construction. 5,337,600, Cl. 73-117.000.

Kaneko, Mitsunori; and Miyake, Yukinori, to Hirose Electric Co., Ltd. Variable delay line with microstrip delay elements selectively connected by sliding switches. 5,339,056, Cl. 333-139.000.

Kaneko, Norio: *See*—
Kawasaki, Takehiko; Shinjo, Katsuhiko; Yamamoto, Keisuke; and Kaneko, Norio, 5,339,457, Cl. 455-333.000.

Kaneko, Shoichi: *See*—
Ohsumi, Hisayoshi; Matsumoto, Takeshi; Kato, Shinji; Ishizuka, Mitsuo; and Kaneko, Shoichi, 5,338,592, Cl. 428-106.000.

Kaneko, Tetsuya: *See*—
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.

Kaneko, Tomomi: *See*—
Kurabayashi, Yutaka; Sakaki, Mamoru; and Kaneko, Tomomi, 5,338,597, Cl. 428-195.000.

Kang, Hee C.; and Haugland, Richard P., to Molecular Probes, Inc. Fluorescent fatty acids derived from dipyrrometheneboron difluoride dyes. 5,338,854, Cl. 548-110.000.

Kangawa, Kenji: *See*—
Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, 5,338,830, Cl. 530-326.000.

Kano, Takashi: *See*—
Fujimori, Isao; Matsumori, Shigeru; Kano, Takashi; and Sumi, Toshio, 5,339,241, Cl. 364-424.020.

Kanzaki, Mitsuru: *See*—
Takeuchi, Masaki; and Kanzaki, Mitsuru, 5,338,720, Cl. 504-273.000.

Kao Corporation: *See*—
Ohmori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, 5,337,796, Cl. 141-168.000.

Kao, Ju-Nan: *See*—
Connor, Daniel S.; Scheibel, Jeffrey J.; and Kao, Ju-Nan, 5,338,486, Cl. 252-357.000.
Connor, Daniel S.; Scheibel, Jeffrey J.; and Kao, Ju-Nan, 5,338,487, Cl. 252-357.000.

Kao, Wei-Wen, to Zexel Corporation Diahatsu-Nissan. Apparatus for correcting vehicular compass heading with the aid of the global positioning system. 5,339,246, Cl. 364-457.000.

Kapa, Prasad K.: *See*—
Estermann, Heinrich; Kapa, Prasad K.; Underwood, Russell L.; and Houlihan, William J., 5,338,730, Cl. 514-99.000.

Kaplan, Donald A.: *See*—
Tomalia, Donald A.; Kaplan, Donald A.; Kruper, William J., Jr.; Cheng, Roberta C.; Tomlinson, Ian A.; Fazio, Michael J.; Hedstrand, David M.; and Wilson, Larry R., 5,338,532, Cl. 424-1.490.

Karageozian, Hampar: *See*—
Dziabo, Anthony J.; Karageozian, Hampar; Ripley, Paul S.; Lam, Sam W.; and Espiritu, J. Abraham, 5,338,480, Cl. 252-187.210.

Kardos, Thomas A.; and Kinley, Fred G., to Advanced Intervention Systems, Inc. Polarizing device with optically contacted thin film interface for high power density ultraviolet light. 5,339,441, Cl. 359-352.000.

Karger, Paul A.; Mason, Andrew H.; Wray, John C. R.; Robinson, Paul T.; Priborsky, Anthony L.; Kahn, Clifford E.; and Leonard, Timothy E., to Digital Equipment Corporation. System and method for reducing storage channels in disk systems. 5,339,449, Cl. 395-700.000.

Karl, Rupert: *See*—
Schuller, Edmund; Karl, Rupert; Stanglmair, Anton; and Schneider, Gottfried, 5,337,552, Cl. 57-406.000.

Karlan, Sidney: *See*—
Wachman, Stanley L.; and Karlan, Sidney, 5,338,748, Cl. 514-358.000.

Karmarkar, Subhash D.: *See*—
Divecha, Amarnath P.; Karmarkar, Subhash D.; Ferrando, William A.; and Hoover, Scott M., 5,337,803, Cl. 164-98.000.

Karshmer, David L.: *See*—
Mathewson, Wilfred F.; Bringham, Richard L.; Ritger, Philip L.; and Karshmer, David L., 5,338,512, Cl. 422-46.000.

Karthauser, Bradley C.; and Lindsay, Paul D., to Envigro, Inc. Transferable growing tray apparatus. 5,337,517, Cl. 47-71.000.

Kasa, Hideki: *See*—
Okusaka, Shigeru; Kasa, Hideki; Sakaguchi, Masayuki; Kyomen, Junsuke; and Tago, Takashi, 5,338,920, Cl. 219-633.000.

Kasahara, Akihiro; Yamada, Akira; Yoshizawa, Takashi; Wada, Katsutoshi; and Yamasaki, Hideo, to Kabushiki Kaisha Toshiba. Viscoelastic substance and objective lens driving apparatus with the same. 5,337,865, Cl. 188-378.000.

Kasahara, Takeshi, to Toko Kabushiki Kaisha. Variable capacitance diode device. 5,338,966, Cl. 257-597.000.

Kasahara, Yasuhiro: *See*—
Hara, Youji; and Kasahara, Yasuhiro, 5,339,110, Cl. 348-485.000.

Kaschig, Jurgen; and Reinert, Gerhard, to Ciba-Geigy Corporation. Process for the photochemical and thermal stabilization of polyamide fibre material with a copper complex having fibre-affinity and an oxalic acid diarylamide. 5,338,319, Cl. 8-586.000.

Kasica, James: *See*—
Wesdorp, Leendert H.; Madsen, Robert A.; Kasica, James; Kowblansky, Marie; and Morrison, Anthony, 5,338,560, Cl. 426-573.000.

Kaskaskia Valley Scale Company: *See*—
Dietrich, Ron, 5,338,901, Cl. 177-16.000.

Kasmark, James W., Jr.; and Brown, Joseph B., deceased (by Brown, Mary Louise, Administratix), to D-Mark, Inc. Filter and method of making same. 5,338,340, Cl. 96-135.000.

Kassman, Jerrold S.: *See*—
Jung, Dick Y.; Wolfenbarger, James K.; Brooker, Donald D.; Robin, Allen M.; and Kassman, Jerrold S., 5,338,489, Cl. 252-373.000.

Kastner, Michael, to Volkswagen AG. Coupling for interconnecting hood with a vehicle component and for disconnecting a vehicle electric circuit during a collision. 5,337,852, Cl. 180-274.000.

Kasturi, Rama: *See*—
White, Donald J., Jr.; Cox, Edward R.; and Kasturi, Rama, 5,338,537, Cl. 424-52.000.

Kasuya, Kazusato; and Sugiura, Mitsuo, to Aisan Kogyo Kabushiki Kaisha. Fuel vapor processing apparatus. 5,337,721, Cl. 123-519.000.

Katagiri, Hiroyuki; Takei, Tetsuya; and Shirasuna, Toshiyasu, to Canon Kabushiki Kaisha. Method of preparation of functional deposited film by microwave plasma chemical vapor deposition. 5,338,580, Cl 427-575.000.

Katayama, Hirohito: *See*—
Shiokawa, Youichi; Akahane, Atsushi; Katayama, Hirohito; and Mitsunaga, Takafumi, 5,338,743, Cl. 514-300.000.

Kato, Eiichi; and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Electrophotographic light-sensitive material. 5,338,628, Cl. 430-95.000.

Kato, Keizo; Horigome, Shinkichi; Suzuki, Ryo; and Ito, Masaru, to Hitachi, Ltd. Embossing metal hold. 5,338,178, Cl. 425-385.000.

Kato, Koji; and Oshima, Reiji, to K & K Inc. Protector and article of sportswear using the same. 5,337,418, Cl. 2-2.000.

Kato, Kuniyasu: *See*—
Moriyama, Takamasa; Masumoto, Hiroki; and Kato, Kuniyasu, 5,338,502, Cl. 264-322.000.

Kato, Masayoshi: *See*—
Tsuchiya, Kiyoko; Tomiyama, Koichi; Kato, Masayoshi; Kukimoto, Tsutomu; and Yusa, Hiroshi, 5,338,638, Cl. 430-106.000.

Kato, Shinji: *See*—
Ohsumi, Hisayoshi; Matsumoto, Takeshi; Kato, Shinji; Ishizuka, Mitsuo; and Kaneko, Shoichi, 5,338,592, Cl. 428-106.000.

Kato, Takaaki; Suzuki, Kiyomi; Hagiwara, Shigeharu; and Takanashi, Hiroaki, to Japan Steel Works, Ltd., The. Parison controller of blow molding apparatus. 5,338,173, Cl. 425-150.000.

Kato, Takashi, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,338,657, Cl. 430-584.000.

Kato, Takehiko: *See*—
Yutori, Toshiaki; Katsumata, Masaaki; Kato, Takehiko; and Hosogi, Yasuhiro, 5,338,380, Cl. 148-532.000.

Kato, Tatsuo: *See*—
Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo; and Imuta, Shinichi, 5,338,792, Cl. 524-477.000.

Kato, Yoshinori: *See*—
Sugiura, Satoshi; Minoshima, Toru; Hazato, Atsuo; and Kato, Yoshinori, 5,338,844, Cl. 544-318.000.

Katoh, Tadanobu. Flat display. 5,339,180, Cl. 359-58.000.

Katoh, Yoshiyuki; Kameyama, Masatoshi; and Higo, Shigekichi, to Mitsubishi Denki Kabushiki Kaisha. Three-dimensional radar display. 5,339,085, Cl. 342-180.000.

Katritzky, Alan R.: *See*—
Siskin, Michael; Katritzky, Alan R.; and Brons, Glen B., 5,338,442, Cl. 208-435.000.

Katsumata, Masaaki: *See*—
Yutori, Toshiaki; Katsumata, Masaaki; Kato, Takehiko; and Hosogi, Yasuhiro, 5,338,380, Cl. 148-532.000.

Katsuoka, Yasuhiro: *See*—
Inaba, Tadashi; Okada, Hisashi; Suzuki, Ryo; Katsuoka, Yasuhiro; and Seki, Hiroyuki, 5,338,649, Cl. 430-430.000.

Katsura, Hiroshi: *See*—
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, 5,339,376, Cl. 385-71.000.

Kaufman, Jack: *See*—
Blake, Joseph W., III, 5,338,294, Cl. 604-38.000.

Kauvar, Lawrence M.; and Ambler, Stuart M., to Terrapin Technologies, Inc. Method for determining analyte concentration by cross-reactivity profiling. 5,338,659, Cl. 435-7.100.

Kawabe, Nozomu: *See*—
Yamamoto, Susumu; Murai, Teruyuki; Kawabe, Nozomu; Awazu, Tomoyuki; Yazu, Shuji; and Jodai, Tetsuji, 5,338,721, Cl. 505-230.000.

Kawabe, Takashi: *See*—
Murakami, Nobuaki; and Kawabe, Takashi, 5,337,720, Cl. 123-481.000.

Kawachi, Yasunori: *See*—
Toritani, Akihiro; Tayama, Suehiro; and Kawachi, Yasunori, 5,338,804, Cl. 525-310.000.

Kawaguchi, Naoko; Fukami, Harukazu; Sago, Ryuichi; and Ikai, Keitaro, to Suntory Limited. Phenoxy or pyridyloxy-2H-1,4-benzoxazine-3-one derivative and herbicide containing same as active ingredient. 5,338,719, Cl. 504-224.000.

Kawaguchi, Takashi, to Brother Kogyo Kabushiki Kaisha. Thermosensitive transfer ribbon for forming dry type lettering sheet. 5,338,612, Cl. 428-412.000.

Kawahara, Fumio: *See*—
Abe, Naoki; Kawahara, Fumio; and Inoue, Noboru, 5,338,421, Cl. 204-186.000

Kawai, Atsuko: *See*—
Tamura, Katsuhiko; and Kawai, Atsuko, 5,338,955, Cl. 257-306.000.

Kawai, Takashi; and Outa, Kenichi, to Canon Kabushiki Kaisha. Image processing apparatus capable of using fuzzy logic. 5,339,365, Cl. 382-54.000.

Kawakami, Soichiro: *See*—
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.

Kawamoto, Hiromi; Kubota, Yoshinori; Nishimura, Natsuya; and Sakanoue, Akira, to Central Glass Company, Limited. 1.3 micrometer-band amplifying optical fiber preform. 5,338,607, Cl. 428-373.000.

Kawamura, Osamu; and Murata, Shigeo, to Nippon Piston Ring Co., Ltd.; and Nissan Motor Co., Ltd. Synchronizer ring. 5,337,872, Cl. 192-107.00M.

Kawamura, Shotaro; and Yamada, Hiroshi, to Anden Co., Ltd.; and Nippondenso Co., Ltd. Electromagnetic relay. 5,339,059, Cl. 335-78.000.

Kawana, Keiichi, to Kawasaki Steel Corporation. Programmable logic device. 5,338,982, Cl. 307-465.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Kawano, Mitsumo, to Kabushiki Kaisha Toshiba. Automatic phase controlling circuit for processing reproduced chroma signals. 5,339,112, Cl. 348-549.000.

Kawarada, Motonobu: *See*—
Kurihara, Kazuaki; Sasaki, Kenichi; and Kawarada, Motonobu, 5,338,364, Cl. 118-729.000.

Kawasaki Steel Corporation: *See*—
Ishii, Kazuhide; Kawasaki, Tatsuo; Kuriyama, Noriyuki; Dohi, Shoji; Nakashiba, Akio; and Miyazaki, Souhei, 5,338,616, Cl. 428-472.000.
Kawana, Keiichi, 5,338,982, Cl. 307-465.000.
Nitta, Minoru; Kiyota, Yoshisato; Makiishi, Yukio; Ohtsubo, Hiroshi; Watanabe, Toshio; and Habu, Yasuhiro, 5,338,508, Cl. 420-120.000.

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Ishii, Kazuhide; Kawasaki, Tatsuo; Kuriyama, Noriyuki; Dohi, Shoji; Nakashiba, Akio; and Miyazaki, Souhei, 5,338,616, Cl. 428-472.000.

Kawasaki, Yoshiaki: *See*—
Mishima, Naoshi; Fukagai, Toshio; Taniguchi, Kiyoshi; Kishi, Hiroyuki; Inoue, Tomohiro; and Kawasaki, Yoshiaki, 5,339,138, Cl. 355-296.000.

Kawashima, Kenichi: *See*—
Nakagawa, Kenji; and Kawashima, Kenichi, 5,338,647, Cl. 430-322.000.

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Kaya, Cetin, to Texas Instruments, Incorporated. Unerasable programmable read-only memory. 5,338,969, Cl. 257-659.000.

Kayyali, Usamah: *See*—
Potter, Huntington; and Kayyali, Usamah, 5,338,663, Cl. 435-4.000.

Kazuo, Van: *See*—
Junichiro, Nakayama; Tomoyuki, Miyake; Hiroyuki, Katayama; Kazuo, Van; and Kenji, Ohta, 5,338,646, Cl. 430-270.000.

Kazyak, Lawrence P.: *See*—
Janotik, Adam M.; and Kazyak, Lawrence P., 5,338,080, Cl. 296-29.000

KCS Industries Inc.: *See*—
Hollnagel, Harold E., 5,337,656, Cl. 100-98.00R.

Keating, Henry M.: *See*—
Fordee, William H.; and Keating, Henry M., 5,337,591, Cl. 72-168.000.

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Fordee, William H.; and Keating, Henry M., 5,337,591, Cl 72-168.000.

Kee, Kok-Hiong, to Sherwood Medical Company. Suction control valve. 5,337,780, Cl. 137-381.000.

Keen, Ronald T.: *See*—
Lagoni, William A.; Keen, Ronald T.; and Neal, Charles B., 5,339,114, Cl. 348-673.000.

Keilen, Don H.: *See*—
Abst, Terrill; and Keilen, Don H., 5,339,075, Cl. 340-903.000.

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Kelley, Donald W., to Qualtec Data Products, Inc. Security retaining member. 5,337,999, Cl. 248-551.000.

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Marques, Anthony M.; Kelley, Paul R.; Jones, William K.; Fukuda, Masatoshi; and Manuel, Overton H., 5,339,066, Cl. 338-306.000.

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Kemira, Inc.: *See*—
Burdette, Jackie B., II, 5,338,577, Cl. 427-453.000.

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Kenji, Ohta: *See*—
Junichiro, Nakayama; Tomoyuki, Miyake; Hiroyuki, Katayama; Kazuo, Van; and Kenji, Ohta, 5,338,646, Cl. 430-270.000.

Kenna, John T.: *See*—
Wysocki, Joseph A.; Vince, Michael R.; McCahon, Stephen W.; and Kenna, John T., 5,339,380, Cl. 385-136.000.

Kennametal Inc.: *See*—
Materkowski, James P., 5,337,801, Cl. 164-98.000.

Kennedy, Ann R.; and Szuhaj, Bernard F., to Univ. of Pennsylvania, Trustees of the; and Central Soya. Bowman-Birk inhibitor product for use as an anticarcinogenesis agent. 5,338,547, Cl. 424-195.100.

Kennedy, David K.: *See*—
Capozzola, John; and Kennedy, David K., 5,338,457, Cl. 210-652.000.

Kennedy, John F.: *See*—
Kuo, Yao H.; and Kennedy, John F., 5,339,454, Cl. 455-247.100.

Kent, Carole L.; and Frank, Dieter, to Kent, Carole L. Article of manufacture and composition for maintaining the integrity of hosiery. 5,338,784, Cl. 524-31.000.

Kenworthy, Mark L.: *See*—
Sodenberg, Brian T.; and Kenworthy, Mark L., 5,339,386, Cl. 395-122.000.

Kern, Hans J.: *See*—
Blanke, Uwe; Kern, Hans J.; Schmidt, Friedrich; Hanke, Thomas; Murray, Peter E.; Schnatwinkel, Michael; and Wilmes, Manfred, 5,338,224, Cl. 439-491.000.

Kern, John G.: *See*—
Vanderah, Richard J.; and Kern, John G., 5,339,425, Cl. 395-700.000.

Kerneur, Christiane M. P.: *See*—
Robert, Ladislas; Moczar, Elemer; Hornebeck, William G.; and Kerneur, Christiane M. P., 5,338,747, Cl. 514-373.000.

Kerns, Ralph M., to Medtronic, Inc. Connector for coupling a multiple channel cable to a cuvette. 5,339,375, Cl. 385-53.000.

Kerr Manufacturing Company: *See*—
Steele, Charles E., 5,338,114, Cl. 366-216.000.

Kerrigan, Peter J. Power cord lock. 5,338,212, Cl. 439-134.000.

Ketcham, Thomas D., to Corning Incorporated. Sintered inorganic composites comprising co-sintered tape reinforcement. 5,338,598, Cl. 428-210.000.

Ketema, Inc.: *See*—
Noland, Robert L.; and O'Brien, Timothy D., 5,338,605, Cl 428-398.000.

Keyt, Bruce A.: *See*—
Bennett, William F.; Keyt, Bruce A.; and Zoller, Mark J., 5,338,546, Cl. 424-94.640.

Khau, Vien V.: *See*—
Buff, Bret E.; Khau, Vien V.; Martinelli, Michael J.; and Peterson, Barry C., 5,338,851, Cl. 546-141.000.

Khuri-Yakub, Butrus T.: *See*—
Rawson, Eric G.; Hadimioglu, Babur B.; and Khuri-Yakub, Butrus T., 5,339,101, Cl. 347-46.000.

Kida, Hiroshi: *See*—
Nakai, Yukio; Kida, Hiroshi; Hirai, Masashi; Fujita, Masahiko; and Fukunaga, Takahiro, 5,339,144, Cl. 355-274.000.

Kida, Yasuhiko: *See*—
Nagao, Tsuyoshi; Kakuta, Masayuki; Kida, Yasuhiko; Takeda, Yoshiyuki; and Yoshida, Takeshi, 5,338,018, Cl. 271-3.000.

Kidd, Dennis R.: *See*—
Knudsen, Ronald D.; Hawley, Gil R.; Kidd, Dennis R.; and Porter, Randall A., 5,338,812, Cl. 526-130.000.

Kidd, Robert C.: *See*—
Higgins-Luthman, Michael J.; Kidd, Robert C.; Klein, Robert D.; Yen, Robert C.; and Zalinski, Charles M., 5,339,368, Cl. 382-56.000.

Kieves, Garry, to Anagram International, Inc. Three-dimensional non-latex balloon. 5,338,243, Cl. 446-220.000.

Kikuchi, Akira: *See*—
Sato, Chuichi; Kikuchi, Akira; Saito, Hiroshi; and Takaira, Shinichi, 5,337,497, Cl. 34-412.000.

Kilgar, Mark R. Emergency drive belt apparatus. 5,338,265, Cl. 474-256.000.

Kim, Chulsoo: *See*—
Kim, Weonkeun; Kim, Chulsoo; and Han, Jeongin, 5,338,959, Cl. 257-331.000.

Kim, Hyung S.: *See*—
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,337,431, Cl. 8-159.000.

Kim, Jin Young, to Gold Star Co., Ltd. Method of making a liquid crystal display. 5,338,240, Cl. 445-24.000.

Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., to Goldstar Co., Ltd. Apparatus for and method of determining quality of clothes to be washed. 5,337,431, Cl. 8-159.000.

Kim, Jungihl: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Kim, Ki-Hong; Lee, Chang-Seok; Park, Hyung-Moo; Yoon, Hyung-Jin; and Park, Sin-Chong, to Electronics and Telecommunications Research Institute. Semiconductor device having a decoding circuit for selection chips. 5,338,981, Cl. 307-463.000.

Kim, Nam-deog: *See*—
Kim, Sang-soo; Jang, In-sik; Kim, Nam-deog; and Son, Jeong-ha, 5,339,181, Cl. 359-59.000.

Kim, Sang-soo; Jang, In-sik; Kim, Nam-deog; and Son, Jeong-ha, to Samsung Electronics Co., Ltd. Liquid crystal display comprising a storage capacitor including the closed-ended electrode for providing a current bath for circumventing break. 5,339,181, Cl. 359-59.000.

Kim, Weonkeun; Kim, Chulsoo; and Han, Jeongin, to Samsung Electronics Co., Ltd. Thin film transistor with three dimensional multichannel structure. 5,338,959, Cl. 257-331.000.

Kim, Young D.; and Hong, Sung H., to Samsung Electronics Co., Ltd. Tray extending apparatuses for an oven. 5,338,922, Cl. 219-763.000.

Kim, Young-Ho: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Kimble, Harry J.; Ou, Zhe-Yu; and Pereira, Silvania E., to California Institute of Technology. Method and apparatus for quantum communication employing nonclassical correlations of quadrature-phase amplitudes. 5,339,182, Cl. 359-112.000.

Kimbrough, Kris W.: *See*—
Danish, Adel; Danish, Sherif; and Kimbrough, Kris W., 5,339,358, Cl. 379-368.000.

Kimura, Akiyoshi: *See*—
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi; Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, 5,337,881, Cl. 198-409.000.

Kimura, Masatoshi; and Yazawa, Minobu, to Mitsubishi Denki Kabushiki Kaisha. Counter device and method of operating the same. 5,339,344, Cl. 377-39.000.

King, Elmer M.: *See*—
Corey, Garland P.; King, Elmer M.; and Rypkema, Ralph E., 5,338,475, Cl. 252-102.000.

King, Norman R.; Sip, Jiri; and Dvorak, Antonin J., to North American Philips Corporation. Electric lamp having improved support straps for planar seals. 5,339,001, Cl. 313-25.000.

King, Raymond A.; Farnsworth, David A.; and D'Orio, Jerome S., to B&W Fuel Company. Mid span mixer grid. 5,339,341, Cl. 376-439.000

King, Richard J.; and Gordon, John R., to Design and Engineering Associates. Safety syringes. 5,338,303, Cl. 604-110.000.

Kinley, Fred G.: *See*—
Kardos, Thomas A.; and Kinley, Fred G., 5,339,441, Cl 359-352.000.

Kinoshita, Akira; Suzuki, Tomoko; and Watanabe, Kazumasa, to Konica Corporation. Electrophotographic photoreceptor with perylene and styryl compounds. 5,338,637, Cl. 430-83.000.

Kinoshita, Shoji; Nanbu, Hideo; and Tanaka, Katsumasa, to Sakurai Graphic Systems Corporation. Ink washing device for a printing machine. 5,337,667, Cl. 101-424.000.

Kinugasa, Toshiro: *See*—
Iura, Noriyuki; Imaide, Takuya; and Kinugasa, Toshiro, 5,339,105, Cl. 348-240.000

Kinzer, Daniel M.; Merrill, Perry; and Spring, Kyle A., to International Rectifier Corporation. Process for manufacture of radiation resistant power MOSFET and radiation resistant power MOSFET. 5,338,693, Cl. 437-29.000.

Kirby, Michael A.: *See*—
Newsome, Reginald W.; DeBlasio, James A.; Talley, Robert E.; Adams, John M.; Chance, Christopher N.; Evers, Donald H.; Harris, William C.; and Kirby, Michael A., 5,337,948, Cl 229-120.150.

Kirihara, Shigeki; Arai, Shigeru; and Mitsuda, Koichi, to Hitachi, Ltd. Distributed data CAD system. 5,339,247, Cl. 364-468.000

Kirihata, Toshiaki: *See*—
Dhong, Sang H.; Kirihata, Toshiaki; Shin, Hyun J.; Sunaga, Toshio; Taira, Yoichi; and Terman, Lewis M., 5,339,274, Cl. 365-203.000.

Kirkbride, James F.: *See*—
Halm, Walter B.; Jones, William J., Jr.; Kirkbride, James F.; Marcus, Ilan; and Snyder, Adrian C., 5,338,500, Cl. 264-122.000.

Kirkland, W. Dean: *See*—
Eilenberg, Steven S.; Kirkland, W. Dean; and Walters, Mark A., 5,339,033, Cl. 324-309.000.

Kirkman, Scott: *See*—
Jiang, Xin H.; and Kirkman, Scott, 5,337,614, Cl. 73-827.000.

Kirkwood, Malcolm E., to Borg-Warner Automotive, Inc. Torque converter having a continuous slip bypass clutch with multiple friction plates. 5,337,867, Cl. 192-3.290.

Kirlin, Peter S.: *See*—
Gardiner, Robin A.; and Kirlin, Peter S., 5,337,651, Cl. 92-87.000

Kirsch, Gary E.: *See*—
Barringer, H. Paul; Kirsch, Gary E.; Mott, Keith C.; and Tung, Lawrence Y., 5,338,074, Cl. 285-334.000.

Kishi, Hiroyuki: *See*—
Mishima, Naoshi; Fukagai, Toshio; Taniguchi, Kiyoshi; Kishi, Hiroyuki; Inoue, Tomohiro; and Kawasaki, Yoshiaki, 5,339,138, Cl. 355-296.000

Kishi, Yoshito; Fang, Francis G.; Forsyth, Craig J.; Scola, Paul M.; and Yoon, Suk K., to President and Fellows of Harvard College. Synthesis of halichondrin B and norhalichondrin B. 5,338,865, Cl. 549-214.000.

Kishida, Makoto: *See*—
Arakawa, Yukio; Akagi, Toshimichi; Hatamura, Kouichi; and Kishida, Makoto, 5,337,724, Cl. 123-563.000.

Kishimoto, Akihiko: *See*—
Fukumoto, Tadao; Iwamoto, Masatoshi; and Kishimoto, Akihiko, 5,338,795, Cl. 525-66.000.

Kita, Yasuo, to Shimadzu Corporation. Continuously variable transmission with corrected differential pressure in a low speed mode. 5,337,629, Cl. 477-52.000.

Kitagawa, Shoichi: *See*—
Kusumoto, Hiroshi; Hayashi, Daisuke; Ishida, Hideki; Kitagawa, Shoichi; Nagashima, Takashi; and Miyamoto, Mitsugu, 5,339,137, Cl. 355-208.000.

Kitahara, Nobuko: *See*—
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.

Kitai, Katsuyoshi: *See*—
Tanaka, Teruo; Inagami, Yasuhiro; Tamaki, Yoshiko; Sakakibara, Tadayuki; and Kitai, Katsuyoshi, 5,339,429, Cl. 395-700.000.

Kitamura, Junichi; Sadakane, Hirofumi; and Tomiyama, Yoshio, to Kubota Corporation. Lawn mower for use both as riding and walking operator type. 5,337,543, Cl. 56-10.800.

Kitamura, Katsushi: *See*—
Sasaki, Masahiro; Ishii, Satoshi; Yamauchi, Yoshihiko; Kitamura, Katsushi; Toyoda, Shuji; and Ahiko, Kenkichi, 5,338,682, Cl. 435-253.400.

Kitamura, Tohru: *See*—
Sakaguchi, Kazuhiko; and Kitamura, Tohru, 5,338,482, Cl. 252-299.610.

Kitamura, Tsutomu, to Sumitomo Wiring Systems, Ltd. Jig for assembling wire harness. 5,338,014, Cl. 269-47.000.

Kitani, Koji; and Nakanishi, Toru, to Canon Kabushiki Kaisha. Vibration driven actuator. 5,338,998, Cl. 310-323.000.

Kito, Masahiro; and Matsui, Yasushi, to Matsushita Electric Industrial Co., Ltd. Strained multiple quantum well semiconductor laser and a method for producing the same. 5,339,325, Cl. 372-45.000.

Kitoh, Syunji: *See*—
Tanaka, Toshiharu; and Kitoh, Syunji, 5,337,447, Cl. 16-2.000.

Kitterman, Donald M. Dispenser valve. 5,337,931, Cl. 222-525.000.

Kiuchi, Toru; Ogata, Kenji; Chiba, Masakazu; Matsuhashi, Toshiaki; Taguchi, Masahiro; and Tominaga, Motonori, to Toyota Jidosha Kabushiki Kaisha; Nippondenso Co., Ltd.; and Nippon Soken, Inc Side collision sensor system for side airbag apparatus. 5,338,062, Cl. 280-735.000.

Kiyonaga, Chitoku: *See*—
Sudoh, Kengo; and Kiyonaga, Chitoku, 5,339,205, Cl. 360-53.000

Kiyota, Takashi: *See*—
Hirayama, Takayuki; and Kiyota, Takashi, 5,338,418, Cl. 204-158.210.

Kiyota, Yoshisato: *See*—
Nitta, Minoru; Kiyota, Yoshisato; Makiishi, Yukio; Ohtsubo, Hiroshi; Watanabe, Toshio; and Habu, Yasuhiro, 5,338,508, Cl. 420-120.000.

Kizaki, Kunihiko: *See*—
Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, 5,339,319, Cl. 371-10.200.

Klaasen, William A.; and Wang, Wen-Yuan, to International Business Machines Corporation. Soft error immune CMOS static RAM cell. 5,338,963, Cl. 257-376.000

Klaber, Kenneth E.: *See*—
Wilson, Daniel C.; and Klaber, Kenneth E., 5,337,921, Cl 222-105.000

Klauke, Friedrich: *See*—
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,338,326, Cl. 55-213.000

Klein, Lutz: *See*—
Baethge, Frank; Klein, Lutz; and Naghi, Ali, 5,339,228, Cl. 362-146.000

Klein, Robert D.: *See*—
Higgins-Luthman, Michael J.; Kidd, Robert C.; Klein, Robert D.; Yen, Robert C.; and Zalinski, Charles M., 5,339,368, Cl. 382-56.000

Kleiner, Horst: *See*—
Haberle, Fritz; Kleiner, Horst; and Oravetz, Josef, 5,338,077, Cl 293-120.000.

Kleinhens, Bernd: *See*—
Hohmann, Ralf; Kleinhens, Bernd; Kohlhaus, Olaf; Mann, Stephan; and Spors, Ralf, 5,338,071, Cl. 285-233.000.

Kleinmeyer, Davis L.: *See*—
Flinchum, Charles; Barney, Gerald L.; Burgess, Gregory S.; Kleinmeyer, Davis L.; and Parrella, Larry E., 5,339,329, Cl. 373-138.000

Kleinwachter, Hans; Kleinwachter, Jurgen; and Weber, Eckhart, to Bomin Solar GmbH & Co. KG. Stirling engine. 5,337,562, Cl. 60-519.000

Kleinwachter, Jurgen: *See*—
Kleinwachter, Hans; Kleinwachter, Jurgen; and Weber, Eckhart, 5,337,562, Cl. 60-519.000.

Kleyer, Klaus: *See*—
Fehrle, Siegfried; Kabatnik, Wilfried; Buck, Manfred; Dietz, Klaus; Hoelzel, Martin; Kleyer, Klaus; Schmid, Wolfgang; and Wanner, Karl, 5,337,945, Cl. 227-109.000

Klima, Heinz: *See*—
Wehner, Susanne; Klima, Heinz; Hoenel, Michael; Ziegler, Peter; and Walz, Gerd, 5,338,419, Cl. 204-181.400

Klose, Sigmar: *See*—
Deeg, Rolf; Maurer, Eberhard; Babiel, Reiner; Klose, Sigmar; and Kopfer, Bernhard, 5,338,688, Cl. 436-180.000.

Klotz, David A. Sub-base for top-mounted gunsight. 5,337,506, Cl 42-101.000

Knelson, Benjamin. Centrifugal separator with substantially continuous discharge of fines. 5,338,284, Cl. 494-28.000.

Knickerbocker, Sarah H.: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim,

VOL 1165 ISS 3 AG 16 1994 UMI

Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Knifton, John F.; and Sanderson, John R., to Texaco Chemical Company. One step synthesis of methyl t-butyl ether from t-butanol using alkylsulfonic acid-modified oxide catalysts. 5,338,890, Cl. 568-698.000.

Knisley, Glenn E. Trailer alignment device. 5,338,047, Cl. 280-3.000.

Knoepke, John R.: *See—*
Pielet, Howard M.; Kreevich, William J.; Tindyala, Masood A.; and Knoepke, John R., 5,338,009, Cl. 266-229.000.

Knudsen, Ronald D.; Hawley, Gil R.; Kidd, Dennis R.; and Porter, Randall A., to Phillips Petroleum Company. Olefin polymerization. 5,338,812, Cl. 526-130.000.

Kobayashi, Atsuhisa; Tokunaga, Haruhiko; and Moriyama, Hitoshi, to Fujitsu Limited. Shuttle apparatus for printer. 5,338,121, Cl. 400-322.000.

Kobayashi, Hiroaki: *See—*
Ohmori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, 5,337,796, Cl. 141-168.000.

Kobayashi, Keiji: *See—*
Sugayama, Sakae; and Kobayashi, Keiji, 5,339,453, Cl. 455-239.100.

Kobayashi, Masami: *See—*
Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo; and Imuta, Shinichi, 5,338,792, Cl. 524-477.000.

Kobayashi, Norihisa: *See—*
Iida, Kozo; Nojima, Shigeru; Satoru, Serizawa; and Kobayashi, Norihisa, 5,338,715, Cl. 502-64.000.

Kobayashi, Shigenori: *See—*
Tamaki, Kuniaki; and Kobayashi, Shigenori, 5,337,465, Cl. 29-740.000.

Kobayashi, Yoshirou; Hinoura, Koichi; and Nagamoto, Akihiro, to Tokusen Kogyo Company Limited. Steel cord for reinforcement of rubber products. 5,337,549, Cl. 57-236.000.

Kobeda, Edward; Gambino, Jeffrey P.; Gifford, George G.; and Mazzeo, Nickolas J., to International Business Machines Corporation. Method for fabricating tungsten local interconnections in high density CMOS. 5,338,702, Cl. 437-192.000.

Kobilarcik, Albert T.; and Stephens, William T., to Rubbermaid Incorporated. Mailbox mounting bracket. 5,337,954, Cl. 232-38.000.

Koc, Meleksima: *See—*
Pancheri, Eugene J.; and Koc, Meleksima, 5,338,476, Cl. 252-174.140.

Kochinke, Frank; and Baker, Richard W., to Pharmetrix Corporation. Method for increasing the storage stability of physostigmine. 5,338,548, Cl. 424-449.000.

Kocur, Basil: *See—*
Kocur, Walter; and Kocur, Basil, 5,338,297, Cl. 604-96.000.

Kocur Medical Associates: *See—*
Kocur, Walter; and Kocur, Basil, 5,338,297, Cl. 604-96.000.

Kocur, Walter; and Kocur, Basil, to Kocur Medical Associates. Cervical canal balloon catheter. 5,338,297, Cl. 604-96.000.

Kodama, Shinji; and Igarashi, Tsutomu, to Yazaki Corporation. Connector cover structure. 5,338,211, Cl. 439-135.000.

Koehler, Dale R.; Sniegowski, Jeffry J.; Bivens, Hugh M.; and Wessendorf, Kurt O., to Sandia Corporation. Micro-machined resonator oscillator. 5,339,051, Cl. 331-65.000.

Koenhen, Dirk M.; and Tinnemans, Aloysius H. A., to X-Flow B.V. Process for the separation of components in an organic liquid medium and a semi-permeable composite membrane therefor. 5,338,455, Cl. 210-654.000.

Koerner, Lothar: *See—*
Meier, Werner; Lippert, Hans-Joachim; Rau, Peter; and Koerner, Lothar, 5,339,342, Cl. 376-446.000.

Koerner, Richard J.: *See—*
Betts, Ronald E.; Savage, Douglas R.; Koerner, Richard J.; Leader, Matthew J.; Sin, Kee V.; Graves, Jeffrey A.; and Sherman, Marshall L., 5,338,435, Cl. 204-406.000.

Kogame, Toshihiko: *See—*
Hata, Yoshitaka; Kuga, Tetsuya; Kurihara, Hidekazu; and Kogame, Toshihiko, 5,338,189, Cl. 432-124.000.

Kogure, Seiji; and Niishiro, Mamoru, to Fujitsu Limited. Method of producing wire-bonded substrate assembly. 5,337,467, Cl. 29-840.000.

Koh, Seon Woong: *See—*
Byun, Jae H., 5,338,110, Cl. 315-94.000.

Kohchi, Miyuki: *See—*
Nakajima, Hideo; Kohchi, Miyuki; and Tomomasa, Satoshi, 5,338,761, Cl. 514-772.000.

Kohjin Co., Ltd.: *See—*
Kubota, Yoshikazu; Kamijo, Masayasu; Otsu, Hiroshi; and Kamiya, Takashi, 5,338,584, Cl. 428-15.000.

Kohlen, Helmut; Hensen, Helmuth; and Floh, Karl-Heinz, to W. Schlafhorst AG & Co. Transport system for mutually independent caddies. 5,337,882, Cl. 198-452.000.

Kohlensaure-Werke Rud.Buse GmbH & Co.: *See—*
Ben-Nasr, Hedi; and Coenen, Hubert, 5,338,575, Cl. 426-427.000.

Kohler, Berndt-Ullrich; and Kurokawa, Haruki, to Bayer AG. Method of preparing goethite. 5,338,355, Cl. 106-457.000.

Kohlhaus, Olaf: *See—*
Hohmann, Ralf; Kleinhens, Bernd; Kohlhaus, Olaf; Mann, Stephan; and Spors, Ralf, 5,338,071, Cl. 285-233.000.

Kohm, Thomas S., to AMP-AKZO Corporation. Printed circuits and base materials precatalyzed for metal deposition. 5,338,567, Cl. 427-98.000.

Kohr, William J., to Geobiotics, Inc. Method for recovering gold and other precious metals from carbonaceous ores. 5,338,338, Cl. 75-711.000.

Koike, Nobuhiro: *See—*
Suzuki, Hiroshi; Aoki, Shigeru; Maruyama, Akihiko; and Koike, Nobuhiro, 5,339,297, Cl. 368-321.000

Koito Industries, Ltd.: *See—*
Simpson, Leslie J.; and Bayliss, Brian S., 5,338.090, Cl. 297-216.200.

Koito Manufacturing Co., Ltd.: *See—*
Ishikawa, Masaaki, 5,339,226, Cl. 362-61.000.

Kojima, Fumitoshi; and Yamaguchi, Tetsuo, to Sumitomo Chemical Company, Limited. Polyolefin resin composition containing carbon black. 5,338,780, Cl. 523-453.000.

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Kokoszka, Daryl J.: *See—*
Johnson, Lee E., Jr.; Kokoszka, Daryl J.; Larky, Steven P.; and Sidoli, Paolo, 5,339,394, Cl. 395-325.000.

Kolenda, Frederic: *See—*
Joly, Jean-Francois; Caullet, Philippe; Guth, Jean-Louis; Faust, Anne-Catherine; Brunard, Nathalie; and Kolenda, Frederic, 5,338,525, Cl. 423-326.000.

Kolstad, Jeffrey J.: *See—*
Gruber, Patrick R.; Kolstad, Jeffrey J.; Hall, Eric S.; Eichen Conn, Robin S.; and Ryan, Christopher M., 5,338,822, Cl. 528-354.000.

Komatsu, Hitoshi: *See—*
Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, 5,339,319, Cl. 371-10.200.

Komatsu, Kazunari, to Mazda Motor Corporation. Engine exhaust purification system. 5,337,558, Cl. 60-276.000.

Komatsu, Noriyoshi: *See—*
Sakata, Minoru; and Komatsu, Noriyoshi, 5,339,460, Cl. 455-343.000

Komiya, Satoshi: *See—*
Morohashi, Shinichi; and Komiya, Satoshi, 5,338,934, Cl. 250-336.200.

Komiyama, Shozo: *See—*
Hijikata, Kenichi; Komiyama, Shozo; and Maruyama, Hitoshi, 5,338,331, Cl. 75-246.000.

Komiyama, Tsuneo: *See—*
Hanzawa, Shigeru; and Komiyama, Tsuneo, 5,338,576, Cl. 427-430.100.

Kondo, Koichi: *See—*
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.

Kondoh, Katsuyoshi; and Takeda, Yoshinobu, to Sumitomo Electric Industries, Ltd. Oil pump made of aluminum alloys. 5,338,168, Cl. 418-179.000.

Kondoh, Toshio: *See—*
Abe, Hisaki; Kondoh, Toshio; Fukuda, Hideki; Takahashi, Mayumi; Aoyama, Tetsuo; and Miyake, Masahiro, 5,338,462, Cl. 210-757.000.

Kong, Hua-Shuang: *See—*
Edmond, John A.; Kong, Hua-Shuang; Dmitriev, Vladimir; and Bulman, Gary E., 5,338,944, Cl. 257-76.000.

Kongsberg Automotive A/S: *See—*
Bakke, Asbjorn; and Pedersen, Tore, 5,337,564, Cl. 60-555.000.

Konica Corporation: *See—*
Iwagaki, Masaru, 5,338,650, Cl. 430-496.000.
Kanazawa, Daisuke; Sasaki, Mitsuru; Urano, Toshiyuki; Yamashita, Youko; and Matsubara, Shinichi, 5,338,643, Cl. 430-190.000.
Kinoshita, Akira; Suzuki, Tomoko; and Watanabe, Kazumasa, 5,338,637, Cl. 430-83.000.
Kubotera, Mitsuhiro; and Kajiwara, Makoto, 5,338,655, Cl. 430-569.000.
Otomo, Naoki; Ohmura, Atsuo; and Shida, Toshio, 5,339,133, Cl. 355-200.000.
Shimose, Takashi, 5,339,126, Cl. 354-195.120.

Konig, Dieter: *See—*
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,338,326, Cl. 55-213.000.

Konishi, Mineyuki, to Kabushiki Kaisha Toshiba. Magnetic resonance imaging apparatus. 5,339,032, Cl. 324-318.000.

Konzal, Daryl R., to Paper Machinery Corporation. Multi-mandrel programmable turret apparatus and method of effecting time modulation thereof. 5,337,622, Cl. 74-813.00R.

Koontz, Robert A.; and Hayes, Kenneth R., to United States of America, Navy. Controlled fragmentation warhead case. 5,337,673, Cl. 102-491.000

Kopfer, Bernhard: *See—*
Deeg, Rolf; Maurer, Eberhard; Babiel, Reiner; Klose, Sigmar; and Kopfer, Bernhard, 5,338,688, Cl. 436-180.000.

Korber AG *See—*
Jedamski, Karsten, 5,337,762, Cl. 131-108.000.

Kordus, Mark R.: *See—*
Schneider, Mark S.; Acocella, John; Herron, Lester W.; Kordus, Mark R.; and Wirtz, Louis H., 5,338,900, Cl. 174-250.000.

Korea Institute of Science and Technology (KIST): *See—*
Jung, Il N.; Yeon, Seung H.; Lee, Bong W.; and Yoo, Bok R., 5,338,876, Cl. 556-431.000.

Korg/Fishpark Associates: *See—*
Fishman, Lawrence R.; and Parker, Kenneth, 5,337,644, Cl. 84-314.00R.

Kornfeld, Richard K.; Weiland, Ana L.; and Okazaki, Mitsunari, to Alps Electric Co., Ltd.; and Qualcomm Inc. Temperature compensated variable gain amplifier. 5,339,046, Cl. 330-277.000.

Korpert, Heinz; and Linn, Ralf, to Jos. Schneider Optische Werke Kreuznach GmbH & Co. KG. Anamorphotic attachment for a projection objective. 5,339,193, Cl. 359-819.000.

Korte, Hermann-Josef; Miletic, Anton; Neutzler, Hans U.; Schoengen, Anton; Schroeder, Johann H.; and Wirges, Ralf, to Huls Aktiengesellschaft. Process for the production of DMT-intermediate product of specific purity and pure terephthalic acid. 5,338,882, Cl. 562-483.000.

Kortenbach Verwaltungs-Und Beteiligungsgesellschaft mbH and Company: *See—*
Wang, Max S., 5,337,770, Cl. 135-25.300.

Kosaki, Katsuya, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device structure with plated heat sink and supporting substrate. 5,338,967, Cl. 257-620.000.

Koscica, Thomas E.: *See—*
Lux, Robert A.; Koscica, Thomas E.; and Harvey, James F., 5,339,053, Cl. 331-99.000.

Koshimura, Masami: *See—*
Tsunoda, Masakiyo; Nakajima, Hiroaki; and Koshimura, Masami, 5,339,068, Cl. 338-332.000.

Kostelak, Robert L., Jr.: *See—*
Garofalo, Joseph G.; Kostelak, Robert L., Jr.; Pierrat, Christophe; and Vaidya, Sheila, 5,338,626, Cl. 430-5.000.

Kostlan, Catherine R.: *See—*
Connor, David T.; and Kostlan, Catherine R., 5,338,737, Cl. 514-259.000.

Kostohris, Kraig T.: *See—*
Raghavan, Chidambaram; Kostohris, Kraig T.; and Hawes, Adrain C. O., 5,337,561, Cl. 60-421.000.

Kotani, Takuya: *See—*
Tsuchida, Takayasu; Nishimoto, Yoshitaka; Kotani, Takuya; and Iizumi, Katsuo, 5,338,672, Cl. 435-108.000.

Kotlarek, Peter A.: *See—*
Riffe, Delmar R.; Kotlarek, Peter A.; and Utter, Robert E., 5,338,159, Cl. 417-203.000.

Kouchi, Katutoshi: *See—*
Masubuchi, Takamichi; and Kouchi, Katutoshi, 5,338,891, Cl. 84-600.000.

Koumatsu, Seiji: *See—*
Saitoh, Hitoshi; Endo, Takayoshi; Yagi, Sakai; Abe, Kimihiro; and Koumatsu, Seiji, 5,338,217, Cl. 439-246.000.

Koury, Daniel N., Jr.: *See—*
Bennett, Paul T.; Gutteridge, Ronald J.; Koury, Daniel N., Jr.; Mietus, David F.; and Ristic, Ljubisa, 5,337,606, Cl. 73-517.00R.

Kovacs, Ronald P.: *See—*
Yoon, Euisik; Allison, Robert W., Jr.; and Kovacs, Ronald P., 5,338,630, Cl. 430-30.000.

Koval, Michael J.; Lawton, William W.; Tyler, John G.; and Winters, Scott L., to International Business Machines Corporation. Data stream protocol for multimedia data streaming data processing system. 5,339,413, Cl. 395-650.000.

Kovari, Kalman. Measuring instrument for determining displacements in soil, rock, foundation soil or construction materials. 5,337,613, Cl. 73-784.000.

Kowblansky, Marie: *See—*
Wesdorp, Leendert H.; Madsen, Robert A.; Kasica, James; Kowblansky, Marie; and Morrison, Anthony, 5,338,560, Cl. 426-573.000.

Koyama, Shinichi; and Takayama, Nobutoshi, to Canon Kabushiki Kaisha. Signal recording apparatus with rerecording facility. 5,339,200, Cl. 360-24.200.

Koyo Seiko Co., Ltd.: *See—*
Matsuoka, Hirofumi; and Tabuse, Hidetoshi, 5,339,243, Cl. 364-424.050.

Kozlovsky, Vladimir I.; Nasibov, Alexander S.; and Skasyrsky, Yan K., to Principia Optics, Inc.; and P.N. Lebedev Institute of Physics. Laser screen for a cathode-ray tube. 5,339,003, Cl. 313-463.000.

Kranick, Gordon S.: *See—*
Orr, Larry W.; and Kranick, Gordon S., 5,338,012, Cl. 267-140.500.

Krarup, Karsten, to K.E.W. Industri A/S. High-pressure cleaner with air-cooled motor. 5,338,162, Cl. 417-367.000.

Krasner, Janet H.; and Krasner, Paul R. Automatic toothbrush. 5,337,435, Cl. 15-23.000.

Krasner, Paul R.: *See—*
Krasner, Janet H.; and Krasner, Paul R., 5,337,435, Cl. 15-23.000.

Kraus, Stephen A.: *See—*
Woods, Harlan L.; Lewis, Richard C.; Nagy, Peter; and Kraus, Stephen A., 5,337,940, Cl. 228-190.000.

Krause, Wolfgang: *See—*
Paust, Joachim; and Krause, Wolfgang, 5,338,888, Cl. 568-596.000.

Krauska, Bernard J.; Wisniewski, Randy; and Peterson, Warren J., to Joerns Healthcare Inc. Adjustable bed with mechanical jack. 5,337,428, Cl. 5-611.000.

Kreevich, William J.: *See—*
Pielet, Howard M.; Kreevich, William J.; Tindyala, Masood A.; and Knoepke, John R., 5,338,009, Cl. 266-229.000.

Kregel, Lane. Swing training unit. 5,338,026, Cl. 273-26.00E

Kreifels, Jerry A.: *See—*
Fandrich, Mickey L.; Kreifels, Jerry A.; and Kynett, Virgil N., 5,339,320, Cl. 371-22.100.

Kreitman, Haim: *See—*
Smilansky, Zeev; Melman, Haim Z.; Bresler, Yoav; Litvak, Matty J.; Kreitman, Haim; and Yad-Shalom, Itai, 5,339,176, Cl. 358-504.000.

Kreitmeier, Franz, to Asea Brown Boveri Ltd. Multi-zone diffuser for turbomachine. 5,338,155, Cl. 415-211.200.

Kremenchugsky, Vladimir; and Buttitta, Anthony, to Ohmeda Inc. Servocontrol for fiberoptic phototherapy pad. 5,339,223, Cl. 362-32.000.

Krempel, Wolfgang: *See—*
Vogt, Siegfried; Krempel, Wolfgang; and Assenmacher, Ute, 5,338,554, Cl. 426-45.000.

Krenzler, Leo M. Mouse trap. 5,337,512, Cl. 43-82.000.

Kreuzer, Helmuth: *See—*
Gloe, Karl-Heinz; Gerst, Michael; and Kreuzer, Helmuth, 5,337,589, Cl. 72-11.000.

Kriz, Ronald D.: *See—*
Prosser, William H.; Kriz, Ronald D.; and Fitting, Dale W., 5,337,610, Cl. 73-599.000.

Kroll, Harry H.; and Chevalier, Jean, to Technic Incorporated. Catalytic electroless gold plating baths. 5,338,343, Cl. 106-1.230.

Krstic, Vladimir D. Method of making transition metal carbide and boride powders. 5,338,523, Cl. 423-289.000.

Kruchowy, Roman; Goff, Dan; and Smith, Anthony, to United States of America, Navy. Nondestructive testing apparatus for determining the orientation of reinforcing bars within a concrete structure. 5,339,023, Cl. 324-67.000.

Krudy, Paul J.: *See—*
Friederichs, John W.; Mirchandani, Prakash K.; and Krudy, Paul J., 5,338,506, Cl. 419-44.000.

Krumm, Herbert, to Rheinmetall GmbH. Gun tube. 5,337,504, Cl. 42-78.000.

Kruper, William J., Jr.: *See—*
Tomalia, Donald A.; Kaplan, Donald A.; Kruper, William J., Jr.; Cheng, Roberta C.; Tomlinson, Ian A.; Fazio, Michael J.; Hedstrand, David M.; and Wilson, Larry R., 5,338,532, Cl. 424-1.490.

Krupp VDM GmbH: *See—*
Bitter, Dieter; Bornkessel, Eberhard; and Schnabel, Horst, 5,338,072, Cl. 285-286.000.

Kruppa, Marta: *See—*
Ban, Karoly; Ban, Annamaria; Pali, Lajosne ; Kruppa, Marta; Somfai, Eva; and Huszar, Csaba, 5,338,868, Cl. 549-323.000.

Kubo, Hiroaki: *See—*
Kagami, Naoyuki; and Kubo, Hiroaki, 5,339,299, Cl. 369-32.000.

Kubota Corporation: *See—*
Kitamura, Junichi; Sadakane, Hirofumi; and Tomiyama, Yoshio, 5,337,543, Cl. 56-10.800.
Okusaka, Shigeru; Kasa, Hideki; Sakaguchi, Masayuki; Kyomen, Junsuke; and Tago, Takashi, 5,338,920, Cl. 219-633.000.

Kubota, Kouji: *See—*
Tanaka, Tsutomu; Yokota, Hiroshi; and Kubota, Kouji, 5,339,317, Cl. 370-85.150.

Kubota, Yoshikazu; Kamijo, Masayasu; Otsu, Hiroshi; and Kamiya, Takashi, to Kohjin Co., Ltd.; and Aica Kogyo Co., Ltd. Artificial granite solid material. 5,338,584, Cl. 428-15.000.

Kubota, Yoshinori: *See—*
Kawamoto, Hiromi; Kubota, Yoshinori; Nishimura, Natsuya; and Sakanoue, Akira, 5,338,607, Cl. 428-373.000.

Kubotera, Mitsuhiro; and Kajiwara, Makoto, to Konica Corporation. Method for manufacturing a silver halide emulsion. 5,338,655, Cl. 430-569.000

Kucharczyk, Jerzy W.; and Skrzypczak, Jan, to Kucharczyk, Jerzy W. Hoist apparatus for cargo compartment. 5,338,147, Cl. 414-542.000.

Kucksdorf, Arthur E.; Muhs, Jeffrey D.; and Hammer, Scott D., to American Packaging Corporation. Bag and method of making the same. 5,338,117, Cl. 383-9.000.

Kuestner, William J.: *See—*
Becker, William L.; and Kuestner, William J., 5,337,601, Cl. 73-155.000.

Kuga, Tetsuya: *See—*
Hata, Yoshitaka; Kuga, Tetsuya; Kurihara, Hidekazu; and Kogame, Toshihiko, 5,338,189, Cl. 432-124.000.

Kugler, Edwin L.: *See—*
Polizzotti, Richard S.; McCandlish, Larry E.; and Kugler, Edwin L., 5,338,330, Cl. 75-228.000.

Kuhlmann, Walter, to Durkopp Adler AG. Rail for conveyor for transporting goods hanging on hangers. 5,337,883, Cl. 198-465.400.

Kuhn, Paul K.; and Johnson, Steven A., to University of Utah Research Foundation. Resolution enhancement for ultrasonic reflection mode imaging. 5,339,282, Cl. 367-7.000.

Kuhns, Dan A., to E-Z Trail, Inc. Vehicle with perforated panels. 5,338,079, Cl. 296-15.000.

Kuijpers, Franciscus L. J. M.: *See—*
Raaymakers, Wilhelmus P. M.; Kuijpers, Franciscus L. J. M.; Veenis, Aartje W.; Pasman, Johannes H. T.; and Mulder, Hendricus A. M., 5,339,301, Cl. 369-50.000.

Kukimoto, Tsutomu: *See—*
Tsuchiya, Kiyoko; Tomiyama, Koichi; Kato, Masayoshi; Kukimoto, Tsutomu; and Yusa, Hiroshi, 5,338,638, Cl. 430-106.000

Kula, John S.: *See—*
Dalessandro, David A.; Sanderson, George G.; and Kula, John S., 5,338,296, Cl. 604-96.000.

Kumagae, Yojiro; Fujita, Shigeo; Matsumoto, Mansuke; Wada, Sayuri; and Hashimoto, Shuuichi, to Yamamoto Chemicals, Inc. Crystal modification of 2-(3-methylanilino)-3-methyl-6-diethylaminofluoran,

VOL 1165 ISS 3 AG 16 1994 UMI

process for the preparation thereof, and recording materials containing said crystal modification. 5,338,866, Cl. 549-226.000.

Kumagai, Eryohei; Hiiro, Kaoru; Shimizu, Harumi; and Takahashi, Tooru, to Ezel, Inc. Liquid crystal panel inspection method. 5,339,093, Cl. 345-149.000.

Kunimori, Nagatoshi: *See*—
Noguchi, Kazuo; Mori, Yoshikatsu; Kunimori, Nagatoshi; and Mori, Hideo, 5,338,135, Cl. 408-233.000.

Kunori, Yuichi: *See*—
Fukumoto, Atsushi; Ohi, Makoto; Onoda, Hiroshi; Ajika, Natsuo; and Kunori, Yuichi, 5,338,957, Cl. 257-316.000.

Kunzmann, Brendan W., to Xerox Corporation. Developer unit conductive brush. 5,339,143, Cl. 355-259.000.

Kuo, Ching-Chi: *See*—
Wang, Yen-Seine; Lee, Frank; Kuo, Ching-Chi; and Baron, Ken, 5,338,594, Cl. 428-117.000.

Kuo, Clinton C. K.: *See*—
Toms, Thomas R.; Harwood, Ann E.; Inoue, Yoshiko K.; and Kuo, Clinton C. K., 5,339,279, Cl. 365-185.000.

Kuo, Han C.; Chi, Ignacio; Lin, LiFun; and Wu, Louis L., to Duracell Inc. Battery with electrochemical tester. 5,339,024, Cl. 324-435.000.

Kuo, Yao H.; and Kennedy, John F., to Ford Motor Company. Automatic gain control for RF amplifier. 5,339,454, Cl. 455-247.100.

Kurabayashi, Toru: *See*—
Nishizawa, Jun-ichi; and Kurabayashi, Toru, 5,338,389, Cl. 117-89.000.

Kurabayashi, Yutaka; Sakaki, Mamoru; and Kaneko, Tomomi, to Canon Kabushiki Kaisha. Recording medium and ink-jet recording method employing the same. 5,338,597, Cl. 428-195.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Fukuda, Hiroyuki; Funabashi, Masayuki; and Abe, Hikonori, 5,338,320, Cl. 29-623.100.

Kuribayashi, Shuhei: *See*—
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.

Kurihara, Hidekazu: *See*—
Hata, Yoshitaka; Kuga, Tetsuya; Kurihara, Hidekazu; and Kogame, Toshihiko, 5,338,189, Cl. 432-124.000.

Kurihara, Kazuaki; Sasaki, Kenichi; and Kawarada, Motonobu, to Fujitsu Limited. Process and apparatus for producing diamond film. 5,338,364, Cl. 118-729.000.

Kurihara, Noriyuki; Iida, Yoshikatsu; and Matsumoto, Hiromatsu, to Yamaha Hatsudoki Kabushiki Kaisha. Fuel control and feed system for gas fueled engine. 5,337,722, Cl. 123-527.000.

Kurimoto, Masahiro, to Oki Electric Industry Co., Ltd. Latch-up resistant CMOS output circuit. 5,338,986, Cl. 307-303.200.

Kuriyama, Noriyuki: *See*—
Ishii, Kazuhide; Kawasaki, Tatsuo; Kuriyama, Noriyuki; Dohi, Shoji; Nakashiba, Akio; and Miyazaki, Souhei, 5,338,616, Cl. 428-472.000.

Kuroda, Kazuo, to Pioneer Electronic Corporation. Reproduction speed controller for image signal reproducing apparatus. 5,339,167, Cl. 358-339.000.

Kuroiwa, Yuuki: *See*—
Sasaki, Yasuo; Tani, Haruhisa; Kuroiwa, Yuuki; and Tsuyama, Setsuya, 5,338,593, Cl. 428-110.000.

Kurokawa, Haruki: *See*—
Kohler, Berndt-Ullrich; and Kurokawa, Haruki, 5,338,355, Cl. 106-457.000.

Kurtz, Thomas D. Mirror mounting bracket. 5,337,988, Cl. 248-477.000.

Kusano, Hideo. Pool for practicing and enjoying water-skiing. 5,338,205, Cl. 434-253.000.

Kusumoto, Hiroshi; Hayashi, Daisuke; Ishida, Hideki; Kitagawa, Shoichi; Nagashima, Takashi; and Miyamoto, Mitsugu, to Mita Industrial Co., Ltd. Image forming apparatus. 5,339,137, Cl. 355-208.000.

Kutsch, Duane B.; Larson, Glen M.; Lohf, Lloyd W.; and Johnson, Paul D., to Telect, Inc. Telecommunication fiber optic cable distribution apparatus. 5,339,379, Cl. 385-135.000.

Kuwahara, Tohru, to Isuzu Motors, Ltd. Eddy-current brake with magnets shaped to contain magnetic field. 5,337,862, Cl. 188-158.000.

Kuzmenka, Daniel J.: *See*—
Kaiserman, Howard B.; and Kuzmenka, Daniel J., 5,338,474, Cl. 252-95.000.

Kveglis, Albert A.: *See*—
Catena, Robert J.; Artusa, Gastone; Kveglis, Albert A.; Bosco, Jason J.; Barreto, Sonia; Mathew, Mathew C.; and Schneider, Mark D., 5,338,785, Cl. 524-39.000.

Kverneland Klepp AS: *See*—
Torgrimsen, Tor; Stangeland, Kjell-Egil; and Furre, Arnold, 5,337,843, Cl. 175-334.000.

Kvinge, Daniel J.: *See*—
Plager, Steven P.; and Kvinge, Daniel J., 5,337,791, Cl. 138-30.000.

Kwan, Norman H. K. Dental implant having cutting means. 5,338,197, Cl. 433-174.000.

Kynett, Virgil N.: *See*—
Fandrich, Mickey L.; Kreifels, Jerry A.; and Kynett, Virgil N., 5,339,320, Cl. 371-22.100.

Kyomen, Junsuke: *See*—
Okusaka, Shigeru; Kasa, Hideki; Sakaguchi, Masayuki; Kyomen, Junsuke; and Tago, Takashi, 5,338,920, Cl. 219-633.000.

Kyowa Hakko Kogyo, Co.: *See*—
Nasu, Hideo; Tezuka, Toshihiko; and Inoue, Seijiro, 5,338,552, Cl. 426-19.000.

Kyushu University: *See*—
Ohta, Michio; Matsuya, Shigeki; Shiraishi, Takanobu; and Nakagawa, Masaharu, 5,338,378, Cl. 148-405.000.

La Spirotechnique Industrielle et Commerciale: *See*—
Chambonnet, Bernard, 5,337,935, Cl. 224-224.000.

La Barre, Paul: *See*—
Denis, Gerard; and La Barre, Paul, 5,338,181, Cl. 425-526.000.

Label Printers, The: *See*—
Kane, William J.; and Chouinard, Gregory A., 5,339,153, Cl. 356-394.000.

Laboratoires Virbac: *See*—
Derrieu, Guy, 5,338,533, Cl. 424-411.000.

Lacefield, William R., Jr.: *See*—
Maybee, George W.; Taylor, Timothy E.; Field, Elmer L.; Riley, Clyde; Lacefield, William R., Jr.; Coble, Harold D.; and Dasarathy, Harini, 5,338,433, Cl. 205-178.000.

Lackey, Robert W.: *See*—
Harris, Gregory; Nicholson, Roy V.; Burns, Stephen R.; and Lackey, Robert W., 5,337,445, Cl. 15-394.000.

Laeller, Klaus: *See*—
Strack, Ludger; Bergmann, Konrad; and Laeller, Klaus, 5,337,424, Cl. 4-557.000.

Lagoni, William A.; Keen, Ronald T.; and Neal, Charles B., to Thomson Consumer Electronics, Inc. Television receiver with luminance signal clamped offset and re-clamped prior to contrast control for preventing black level changes with contrast control changes when displaying luminance signals having elevated black level. 5,339,114, Cl. 348-673.000.

Lagoni, William A., to Thomson Consumer Electronics, Inc. Variable bandwidth luminance filter with commonly tuned delay and amplitude controlling filters providing frequency independent and bandwidth independent delay characteristic. 5,339,115, Cl. 348-711.000.

Lahar, Donald H.; and Lahar, Scott B. Oil spill containment system. 5,338,132, Cl. 405-69.000.

Lahar, Scott B.: *See*—
Lahar, Donald H.; and Lahar, Scott B., 5,338,132, Cl. 405-69.000

Lahri, Rajeeva: *See*—
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,694, Cl. 437-31.000.
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,696, Cl. 437-34.000.

Lai, Chin-Chun. Cylindrical vanity case. 5,337,890, Cl. 206-235.000.

Lai, Henry, to Ford Motor Company. Method and apparatus for distinguishing input signals and generating a common dimming signal. 5,339,009, Cl. 315-291.000.

L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude: *See*—
Darredeau, Bernard, 5,337,569, Cl. 62-22.000.
Ducrocq, Marc; and Tomita, Shinji, 5,337,571, Cl. 62-39.000.

Lajoie, M. Stephen. Polyfunctional agrochemical bicarbonate-containing compositions. 5,338,551, Cl. 424-717.000.

Lal, Kasturi, to Lubrizol Corporation, The. Pour point depressants for industrial lubricants containing mixtures of fatty acid esters and vegetable oils. 5,338,471, Cl. 252-56.00S.

Lallier, Keith W.: *See*—
Carrig, Keith M.; Hathaway, David J.; Lallier, Keith W.; Panner, Jeannie T. H.; and Sehr, Terrence W., 5,339,253, Cl. 364-489.000.

Lam, Sam W.: *See*—
Dziabo, Anthony J.; Karageozian, Hampar; Ripley, Paul S.; Lam, Sam W.; and Espiritu, J. Abraham, 5,338,480, Cl. 252-187.210

Lamb, Steve R.: *See*—
Moore, Robert R.; Lamb, Steve R.; Lamoreux, Larry W.; and McTeigue, Michael H., 5,337,758, Cl. 128-781.000.

Lambda Electronics, Inc.: *See*—
Cohen, Isaac; and Svoronos, William, 5,339,217, Cl. 361-707.000.

Lambert, Greta S.: *See*—
Haber, Judy; Haber, Sharon; and Lambert, Greta S., 5,337,763, Cl. 132-54.000.

Lambert, Susan L., to UOP. Zirconium silicate composition, method of preparation and uses thereof. 5,338,527, Cl. 423-332.000.

Lambrecht, Emiel: *See*—
De Bin, Rene F.; and Lambrecht, Emiel, 5,337,968, Cl. 242-521.000.

Lamoreux, Larry W.: *See*—
Moore, Robert R.; Lamb, Steve R.; Lamoreux, Larry W.; and McTeigue, Michael H., 5,337,758, Cl. 128-781.000.

Lamprecht, Justus: *See*—
Bohne, Ulrich; Kabatnik, Wilfried; Bleicher, Manfred; Hecht, Joachim; and Lamprecht, Justus, 5,337,835, Cl. 173-13.000.

Lampson, Butler: *See*—
Ben-Michael, Siman-Tov; Lozowick, Philip P.; Hawe, William; and Lampson, Butler, 5,339,313, Cl. 370-85.130.

Landis, Newton C. M., to Eastman Kodak Company. Method and apparatus for handling a photographic filmstrip as the filmstrip exits a film processor. 5,339,130, Cl. 354-319.000.

Landoni, Gianluigi: *See*—
Giroldini, William; Landoni, Gianluigi; Rinaldi, Antonio; and Neri, Carlo, 5,338,787, Cl. 524-100.000.

Landry, Norman R.: *See*—
DeLuca, Amedeo; Gentry, James E., Sr.; Thomas, David L.; Landry, Norman R.; and Agrawal, Ashok K., 5,339,086, Cl 342-371.000.

Lane, Charles A.; Woodward, Ian D.; and Tyrrell, Derek L., to Waddington & Duval Limited. Dispensing taps. 5,337,775, Cl. 137-68.100.

Lane, Christopher K. High performance coolant system with manifold for large diesel engines. 5,337,705, Cl. 123-41.330.

Lane, Terry. Floatable toothpick assembly. 5,337,766, Cl. 132-329.000.

Lang, Ko-Wei: *See*—
Sutton, Robert F.; Tabibzadeh, Ramin; and Lang, Ko-Wei, 5,338,164, Cl. 417-413.00A.

Lang, Richard A.: *See*—
Coad, George L., 5,337,818, Cl. 160-66.000.

Lange, Harold C.: *See*—
MacLeay, Ronald E.; and Lange, Harold C., 5,338,853, Cl. 546-224.000.

Langham, Arvin L.: *See*—
Jacobsen, Ingolf G.; and Langham, Arvin L., 5,338,225, Cl. 439-585.000.

Lapatovich, Walter P.; Butler, Scott J.; and Smith, Robert K., to Osram Sylvania Inc. Electromagnetic discharge appartus with dual power amplifiers. 5,339,008, Cl. 315-248.000.

Lappos, Nicholas D.: *See*—
Stiles, Lorren, Jr.; Lappos, Nicholas D.; and Wright, Gregory P., 5,339,244, Cl. 364-424.060.

Larky, Steven P.: *See*—
Johnson, Lee E., Jr.; Kokoszka, Daryl J.; Larky, Steven P.; and Sidoli, Paolo, 5,339,394, Cl. 395-325.000.

Larmurier, Claude: *See*—
Janssen, Sylvain; Fournier, Jacques; and Larmurier, Claude, 5,337,797, Cl. 141-206.000.

Larsen, David H.; and Boomer, James B., to National Semiconductor Corporation. Full swing power down buffer circuit with multiple power supply isolation. 5,338,978, Cl. 307-443.000.

Larson, Brent H.: *See*—
Johnson, Michael J.; Hancock, William R.; and Larson, Brent H., 5,339,092, Cl. 345-136.000.

Larson, Glen M.: *See*—
Kutsch, Duane B.; Larson, Glen M.; Lohf, Lloyd W.; and Johnson, Paul D., 5,339,379, Cl. 385-135.000.

Larsson, Larseric: *See*—
Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, 5,337,649, Cl. 89-14.050.

Lasa Industries, Inc.: *See*—
Barrett, William A.; and Puri, Amit, 5,338,924, Cl. 250-201.400.

Lassen, Richard: *See*—
Brockner, Henry W.; Mohan, Robert J.; and Lassen, Richard, 5,338,165, Cl. 417-423.100.

Latham, William C. Dart game "outs" indicating device. 5,338,032, Cl. 273-148.00R.

Latimer, Robert A.; and Heileman, David W., Jr., to Unisys Corporation. Apparatus for interfacing a real-time communication link to an asynchronous digital computer system by utilizing grouped data transfer commands grouped for effecting termination. 5,339,439, Cl. 395-275.000.

Lauerhaas, Jeffery M.: *See*—
Sailor, Michael J.; Credo, Grace; Heinrich, Julie; and Lauerhaas, Jeffery M., 5,338,415, Cl. 204-129.200.

Laughlin, Glenn M.; Frank, Jeffrey A.; and Hirschhaut, Bruce, to JBG Original Desigas Incorporated. Upholstered seating system. 5,338,095, Cl. 297-440.100.

Lauke, Harald: *See*—
Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, 5,338,805, Cl. 525-330.500.

Lauraire, Michel: *See*—
Blanchard, Christian; Lauraire, Michel; and Vigouroux, Didier, 5,339,060, Cl. 335-132.000.

Lauritsen, Georg, to Maskinfabriken Taarup A/S. Mower conditioner. 5,337,544, Cl. 56-15.700.

Lause, Herbert J.; Parks, Kristen L.; Tanis, Larry D.; and Leon, David D., to Aluminum Company of America. Method of welding thermoplastic substrates with microwave frequencies. 5,338,611, Cl. 428-412.000.

Lavelle, Christopher L. B.: *See*—
Wu, Chuang-Jy; and Lavelle, Christopher L. B., 5,338,198, Cl. 433-213.000.

Lawn Claw International Inc.: *See*—
Basek, Charles, 5,338,078, Cl. 294-50.500.

Lawrence Paper Company: *See*—
Hill, Alan M; and Meeks, William R., 5,338,019, Cl. 271-139.000

Lawrence, Roger R.: *See*—
Sechrist, Paul A.; Lawrence, Roger R.; and Richardson, Larry D., 5,338,440, Cl. 208-173.000.

Lawton, William W.: *See*—
Koval, Michael J.; Lawton, William W.; Tyler, John G.; and Winters, Scott L., 5,339,413, Cl. 395-650.000.

Layden, David J.: *See*—
Layden, John E.; Layden, David J.; and Pearson, Thomas H., 5,339,257, Cl. 364-552.000.

Layden, John E.; Layden, David J.; and Pearson, Thomas H., to Automated Technology Associates Inc. Real-time statistical process monitoring system. 5,339,257, Cl. 364-552.000.

Layne, Timothy H.: *See*—
Ross, Philip E.; Stanton, Leonard T.; and Layne, Timothy H., 5,337,693, Cl. 114-69.000.

le centre National de la Rechercho Scientifique (CNRS): *See*—
McCoy, Clayton W.; Vey, Alain J.; and Mazet, Isabelle M., 5,338,675, Cl. 435-183.000.

Leach, Burr L., to GenCorp Inc. Method for achieving a smooth powder coated finish on a low density compression-molded plastic article. 5,338,578, Cl. 427-470.000.

Leach, Paul J.: *See*—
Lubkin, David C.; Robinson, Douglas B.; Chase, Robert P., Jr.; Leach, Paul J.; McCue, Daniel L., III; and Leblang, David B., 5,339,435, Cl. 395-700.000.

Leader, Matthew J.: *See*—
Betts, Ronald E.; Savage, Douglas R.; Koerner, Richard J.; Leader, Matthew J.; Sin, Kee V.; Graves, Jeffrey A.; and Sherman, Marshall L., 5,338,435, Cl. 204-406.000.

Leahy, Donald J.: *See*—
Brooks, Charles P.; Leahy, Donald J.; Fowler, Mark M.; and Everidge, Jackie K., Jr., 5,338,209, Cl. 439-66.000.

Lear Seating Corporation: *See*—
Frelich, Jeffrey J.; Miotto, Ronald L.; and Wiltsey, Ronald A., 5,338,386, Cl. 156-290.000.
Wiltsey, Ronald A.; and Dudash, Eugene S., 5,338,092, Cl. 297-228.110.

Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, to Academy of Sciences of the Czech Republic changed from Ceskoslovenska akademie ved. Method of making multiple synthesis of peptides on solid support. 5,338,831, Cl. 530-334.000.

LeBlanc, George; and Gallagher, Gwyn, to United Technologies Corporation. Sealed hinge arrangement. 5,337,452, Cl. 16-367.000.

Leblang, David B.: *See*—
Lubkin, David C.; Robinson, Douglas B.; Chase, Robert P., Jr.; Leach, Paul J.; McCue, Daniel L., III; and Leblang, David B., 5,339,435, Cl. 395-700.000.

LeBrat, Francois; Fouillet, Jean-Marie; and Etienne, Francis, to Telediffusion De France. Motion-dependent image classification for editing purposes. 5,339,166, Cl. 358-311.000.

Ledzius, Robert C.; Irwin, James S.; and Manvar, Dhirajlal N., to Motorola, Inc. Digital-to-analog converter with a flexible data interface. 5,339,079, Cl. 341-144.000.

Lee, Adolfo. Roller type material rack. 5,337,875, Cl. 193-35.00R.

Lee, Bong W.: *See*—
Jung, Il N.; Yeon, Seung H.; Lee, Bong W.; and Yoo, Bok R., 5,338,876, Cl. 556-431.000.

Lee, Byeong H.: *See*—
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,337,431, Cl. 8-159.000.

Lee, Chang-Seok: *See*—
Kim, Ki-Hong; Lee, Chang-Seok; Park, Hyung-Moo; Yoon, Hyung-Jin; and Park, Sin-Chong, 5,338,981, Cl. 307-463.000.

Lee, Ching-Pang; Goebel, Steven G.; and Abuaf, Nesim, to General Electric Company. Micro-grooved heat transfer wall. 5,337,568, Cl. 60-755.000.

Lee, Chung-Ming: *See*—
Huang, Kuo-Jao; Lee, Chung-Ming; Li, Chi-An; and Liu, Yeong-Kuang, 5,337,623, Cl. 74-813.00R.

Lee, Frank: *See*—
Wang, Yen-Seine; Lee, Frank; Kuo, Ching-Chi; and Baron, Ken, 5,338,594, Cl. 428-117.000.

Lee, G. Jae; and Edelstein, Herbert, to Conopco, Inc. Hair waving and straightening composition. 5,338,540, Cl. 424-71.000.

Lee, Guo-shuh J.; and Burdett, Kenneth A., to Dow Chemical Company, The. The Process for the preparation of dihydroperoxyalkyl polyphenyls and dihydroxy polyphenyls. 5,338,887, Cl. 568-564.000.

Lee, Jae K.: *See*—
Song, Han B.; Lee, Jae K.; and Baik, Woon K., 5,339,117, Cl. 348-733.000.

Lee, Lawrence L.; and Gautsch, James. Detection of biological macromolecules by NMR-sensitive labels. 5,338,687, Cl. 436-173.000.

Lee, Mike: *See*—
Fah, Jim; and Lee, Mike, 5,337,930, Cl. 222-630.000.

Lee, Shiuan E.; Wong, Yuen P.; and Brunker, David L., to Molex Incorporated. Jack assembly including a contact switching system. 5,338,215, Cl. 439-188.000.

Lee, Trevor M. Swimming aid. 5,338,235, Cl. 441-59.000.

Lee, Yong; Palasamudram, Nagraj; and Nadir, James, to Intel Corporation. Cache controller that alternately selects for presentation to a tag RAM a current address latch and a next address latch which hold addresses captured on an input bus. 5,339,399, Cl. 395-425.000.

Leege, James W.: *See*—
Anderson, Roy C.; and Leege, James W., 5,337,886, Cl. 198-728.000.

Lefebvre, Louis. Method for formwork, and dismantling of formwork, of walls of poured material raised above a reference surface, and means for employment of this method. 5,338,498, Cl. 264-31.000

Lehman, Arlin D., to Polmonary Data Service Instrumentation, Inc. Disposable bacteria filter. 5,337,739, Cl. 128-205.270.

Leinweber Systems, Inc.: *See*—
Martin, Robert L., 5,337,798, Cl. 141-331.000.

Lekhtman, Gregory, to Biosig Instruments Inc. Heart rate monitor. 5,337,753, Cl. 128-706.000.

Leland Stanford Jr. University, The Board of Trustees of: *See*—
Isberg, Ralph R.; Miller, Virginia; and Falkow, Stanley, 5,338,842, Cl. 536-23.700.

Le Loarer, Jean-Luc: *See*—
Leveque, Alain; and Le Loarer, Jean-Luc, 5,338,520, Cl. 423-21.100.

Lemelson, Jerome H. Measuring instrument and method. 5,337,488, Cl. 33-784.000.

Lemna Corporation, The: *See*—
Pidaparti, Surya R., 5,338,452, Cl. 210-603.000.

VOL 1165 ISS 3 1994 AG 16 UMI

Lenain, Jean-Francois; and Bientz, Alfred, to Molex Incorporated. Device for conversion between electrical oscillations and acoustic waves. 5,339,364, Cl. 381-173.000.

Lendahl, Urban: *See—*
McKay, Ronald D. G.; and Lendahl, Urban, 5,338,839, Cl. 536-235.000.

Lent, Kevin C.; and Holsapple, Brad L., to Caterpillar Paving Products Inc. Method of mining. 5,338,102, Cl. 299-10.000.

Leon, David D.: *See—*
Lause, Herbert J.; Parks, Kristen L.; Tanis, Larry D.; and Leon, David D., 5,338,611, Cl. 428-412.000.

Leonard, Anthony W.: *See—*
James, David T.; Leonard, Anthony W.; and Elliott, Peter J., 5,339,204, Cl. 360-51.000.

Leonard, Timothy E.: *See—*
Karger, Paul A.; Mason, Andrew H.; Wray, John C. R.; Robinson, Paul T.; Priborsky, Anthony L.; Kahn, Clifford E.; and Leonard, Timothy E., 5,339,449, Cl. 395-700.000.

Leopold, Hans: *See—*
Stabinger, Hans; Leopold, Hans; and Heimel, Helmut, 5,339,258, Cl. 364-558.000.

Leroux, Roland: *See—*
Borens, Manfred; Busch, Dietrich; Leroux, Roland; Scheidler, Regina; and Bonzelius, Karsten, 5,337,727, Cl. 126-200.000.

Lesca, Giuseppe; Romanini, Daniele; and Vezzoli, Annibale, to Himont Incorporated. Process for the preparation of foamed propylene polymer articles. 5,338,764, Cl. 521-60.000.

Le Touche, Roger, to Aerospatiale Societe Nationale Industrielle. Hot compacting device for the production of parts requiring simultaneous pressure and temperature rises. 5,338,177, Cl. 425-384.000.

Leuner, Barbara: *See—*
Neumann, Gerd; Hutschenreuther, Peter; Glien, Willfried; Raab, Dagmar; Leuner, Barbara; Steinborn, Gabriele; and Berger, Georg, 5,338,771, Cl. 523-113.000.

Leupold, Herbert A.; and McLane, George F., to United States of America, Army. Method of making cylindrical and spherical permanent magnet structures. 5,337,472, Cl. 29-607.000.

Levenstein, Sheldon B.: *See—*
Eikill, Richard G.; Levenstein, Sheldon B.; McMahon, Lynn A.; and Weigel, Joseph P., 5,339,397, Cl. 395-400.000.

Leveque, Alain; and Le Loarer, Jean-Luc, to Rhone-Poulenc Chimie. Recovery of neodymium/didymium values from bastnaesite ores. 5,338,520, Cl. 423-21.100.

Lever Brothers Company, Division of Conopco, Inc.: *See—*
Kaiserman, Howard B.; and Kuzmenka, Daniel J., 5,338,474, Cl. 252-95.000.

Levin, Jeremy I., to American Cyanamid Company. Angiotensin II receptor blocking 2,3,6-substituted quinazolinones. 5,338,736, Cl. 514-259.000.

Levine, Shirley S. Method for teaching reading using hand-held reading guide. 5,338,201, Cl. 434-178.000.

Levine, Stephen N., to Motorola, Inc. Permuted block synchronization. 5,339,337, Cl. 375-114.000.

LeViness, Steve C.; Hsia, Steve J.; Wen, Michael Y.; Davis, Stephen M.; Culross, Claude C.; and Maa, Peter S., to Exxon Research and Engineering Company. Liquefaction process. 5,338,441, Cl. 208-419.000.

Leviton Manufacturing Co., Inc.: *See—*
Parsolano, Veronica; and Meehan, James E., 5,339,231, Cl. 362-226.000.

Levy, Abner. Specimen package. 5,337,896, Cl. 206-456.000.

Levy, Arthur J.; Oppenlander, Jane E.; Brudnoy, David M.; Englund, James M.; and Loomis, Kent C., to United States of America, Energy. Expert system for analyzing eddy current measurements. 5,339,256, Cl. 364-506.000.

Lew, Hyok S. Mass flowmeter. 5,337,616, Cl. 73-861.380.

Lewandowski, Raymond D., to Becton, Dickinson and Company. Needle device having safety indication features. 5,338,310, Cl. 604-192.000.

Lewis, Gary W., to Horiba Instruments, Incorporated. Subsonic venturi proportional and isokinetic sampling methods and apparatus. 5,337,595, Cl. 73-23.310.

Lewis, N. Tracey: *See—*
Zimmermann, Joseph J.; Lewis, N. Tracey; and Heft, Robert A., 5,338,677, Cl. 435-200.000.

Lewis, Richard C.: *See—*
Woods, Harlan L.; Lewis, Richard C.; Nagy, Peter; and Kraus, Stephen A., 5,337,940, Cl. 228-190.000.

Leybold Aktiengesellschaft: *See—*
Berges, Hanns-Peter, 5,338,167, Cl. 418-104.000.

Lezan, Georges R. E.; and Walker, Loren H., to General Electric Company. Method and apparatus for achieving current balance in parallel connected switching devices. 5,338,994, Cl. 307-86.000.

Li, Chi-An: *See—*
Huang, Kuo-Jao; Lee, Chung-Ming; Li, Chi-An; and Liu, Yeong-Kuang, 5,337,623, Cl. 74-813.00R.

Li, Jingbei: *See—*
Liu, Goudong; Zhang, Chuanli; Ma, Hongliang; Xu, Shizhen; Li, Jingbei; Li, Xuecai; and Ding, Lidong, 5,338,376, Cl. 148-304.000.

Li, Leping: *See—*
Barbee, Steven G.; Heinz, Tony F.; Li, Leping; and Ratzlaff, Eugene H., 5,338,390, Cl. 156-627.000.

Li, Wu-Shyong, to Minnesota Mining and Manufacturing Company. Launderable retroreflective applique with metal-azo dye. 5,338,595, Cl. 428-143.000.

Li, Xiao-Yan: *See—*
Clark, John I.; Thurston, George M.; and Li, Xiao-Yan, 5,338,545, Cl. 424-94.100.

Li, Xuecai: *See—*
Liu, Goudong; Zhang, Chuanli; Ma, Hongliang; Xu, Shizhen; Li, Jingbei; Li, Xuecai; and Ding, Lidong, 5,338,376, Cl. 148-304.000.

Li, Yan M.: *See—*
Byszewski, Wojciech W.; Dale, Brian; Gregor, Philip D.; Budinger, A. Bowman; and Li, Yan M., 5,339,005, Cl. 315-244.000.

Li, Yulan: *See—*
DeCamp, Ann; Dolling, Ulf H.; Li, Yulan; Rieger, Dale L.; Yasuda, Nobuyoshi; and Xavier, Lyndon C., 5,338,875, Cl. 556-402.000.

Libman, Jacqueline: *See—*
Shechter, Yoram; Shanzer, Abraham; and Libman, Jacqueline, 5,338,759, Cl. 514-492.000.

Libuha, John J.; and Wardle, William F., to United States of America, Navy. Flexible component sheet embedding operational components. 5,339,291, Cl. 367-165:000.

Liden, Per-Åke: *See—*
Pettersson, Rolf; Liden, Per-Åke; and Liljengren, John-Erik, 5,337,594, Cl. 72-446.000.

Lidow, Alexander; and Herman, Thomas, to International Rectifier Corporation. High power MOSFET with low on-resistance and high breakdown voltage. 5,338,961, Cl. 257-342.000.

Liegel, Reinald D.; Ballard, James; Graham, James C.; Wisner, Craig A.; and Russell, Jeffrey V., to Hein-Werner Corporation. Lifting device including a multiple-axis motion module. 5,338,015, Cl. 269-71.000.

Lift-U, Division of Hogan Mfg., Inc.: *See—*
Kempf, Dale, 5,338,264, Cl. 474-168.000.

Lightsey, George R.: *See—*
Henderson, Richard W.; and Lightsey, George R., 5,338,185, Cl 431-33.000.

Liljengren, John-Erik: *See—*
Pettersson, Rolf; Liden, Per-Åke; and Liljengren, John-Erik, 5,337,594, Cl. 72-446.000.

Lilly Industries Limited: *See—*
Fairhurst, John; and Tupper, David E., 5,338,735, Cl. 514-233.500.

Lim, Jae S., to Massachusetts Institute of Technology. Method and apparatus for encoding of data using both vector quantization and runlength encoding and using adaptive runlength encoding. 5,339,164, Cl. 358-261.100.

Limna, Ulrich: *See—*
Munzamy, Thomas; Rasshofer, Werner; Dorner, Karl-Heinz; and Limna, Ulrich, 5,338,763, Cl. 521-49.500.

Lin, LiFun: *See—*
Kuo, Han C.; Chi, Ignacio; Lin, LiFun; and Wu, Louis L., 5,339,024, Cl. 324-435.000.

Lin, Mou-Shiung: *See—*
Hsu, Shun-Liang; Shi, Chun-Yi; and Lin, Mou-Shiung, 5,338,701, Cl. 437-60.000.

Lin, Peng-Cheng; and Takiar, Hem P., to National Semiconductor Corporation. Device and method for reducing thermal cycling in a semiconductor package. 5,339,216, Cl. 361-707.000.

Lin, Te H. Miniature light set. 5,339,232, Cl. 362-391.000.

Lincoln Electric Company, The: *See—*
Blankenship, George D.; Hoffa, Michael D.; and Mikitin, Gary A., 5,338,916, Cl. 219-130.400.

Lindberg, Pentti; and Ljokkoi, Risto, to A. Ahlstrom Corporation. Apparatus for treating pulp. 5,338,451, Cl. 210-405.000.

Lindblad, Nero R.; Lundy, Douglas A.; and Jugle, Kip L., to Xerox Corporation. Non-stick spots blade. 5,339,149, Cl. 355-297.000.

Linder, Jacques F.: *See—*
Woith, Blake F.; Crumly, William R.; and Linder, Jacques F., 5,339,027, Cl. 324-754.000.

Lindsay, Paul D.: *See—*
Karthauser, Bradley C.; and Lindsay, Paul D., 5,337,517, Cl. 47-71.000.

Lindsay, Robert A.: *See—*
Sawyer, Laurence D.; Lindsay, Robert A.; and Tate, Steven C., 5,339,312, Cl. 370-85.100.

Lineberry, Daniel C.; and Bates, Warren A., to Whitaker Corporation, The. Multi-row right angle connectors. 5,338,207, Cl. 439-62.000.

Lingnau, Juergen: *See—*
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,338,641, Cl. 430-165.000.

Linn, Ralf: *See—*
Korpert, Heinz; and Linn, Ralf, 5,339,193, Cl. 359-819.000.

Linsley, Peter: *See—*
Senter, Peter D.; Su, Peter C. D.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,338,678, Cl. 435-227.000.

l'Institut National de la Recherche Agronomique (INRA): *See—*
McCoy, Clayton W.; Vey, Alain J.; and Mazet, Isabelle M., 5,338,675, Cl. 435-183.000.

Liou, David W.: *See—*
Sun, Yun C.; and Liou, David W., 5,338,803, Cl. 525-309.000.

Lioy, Gerald T.: *See—*
Edmunds, Cyril G.; and Lioy, Gerald T., 5,338,893, Cl. 118-647.000.

Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
Festal, Didier; Descours, Denis; and Decerprit, Jacques, 5,338,849, Cl. 546-113.000.

Lipman, Peter H.: *See—*
Connell, Jefferson J.; Johnson, Vernon R.; Lipman, Peter H.; and Maier, Robert M., 5,339,417, Cl. 395-650.000.

Lippert, Hans-Joachim: *See—*
Meier, Werner; Lippert, Hans-Joachim; Rau, Peter; and Koerner, Lothar, 5,339,342, Cl. 376-446.000.

Lippincott, Louis A., to Intel Corporation. Improved system of resolving conflicting data processing memory access requests. 5,339,442, Cl. 395-725.000.

Lique, Roger M., to Trilogy Communications, Inc. Radiating coaxial cable. 5,339,058, Cl. 333-237.000.

Lisco, Inc.: *See—*
Sullivan, Michael J., 5,338,610, Cl. 428-407.000.

Little, Desiree L.: *See—*
Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Doehner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., 5,338,883, Cl. 564-90.000.

Litvak, Matty J.: *See—*
Smilansky, Zeev; Melman, Haim Z.; Bresler, Yoav; Litvak, Matty J.; Kreitman, Haim; and Yad-Shalom, Itai, 5,339,176, Cl 358-504.000.

Liu, Chia H.; and Slicker, James M., to Eaton Corporation. Touch point identification for automatic clutch controller. 5,337,868, Cl. 477-74.000.

Liu, Goudong; Zhang, Chuanli; Ma, Hongliang; Xu, Shizhen; Li, Jingbei; Li, Xuecai; and Ding, Lidong, to Central Iron and Steel Research Institute. Iron-nickel based high permeability amorphous alloy. 5,338,376, Cl. 148-304.000.

Liu, K. J. Ray; and Chiu, Chin-Te, to University of Maryland at College Park. Optimal unified architectures for the real-time computation of time-recursive discrete sinusoidal transforms. 5,339,265, Cl. 364-725.000.

Liu, Soung-Nan: *See—*
Fleming, Marvin F.; Hersh, Samuel; and Liu, Soung-Nan, 5,337,611, Cl. 73-622.000.

Liu, Yeong-Kuang: *See—*
Huang, Kuo-Jao; Lee, Chung-Ming; Li, Chi-An; and Liu, Yeong-Kuang, 5,337,623, Cl. 74-813.00R.

Livingston, Dwight: *See—*
Monthony, James F.; Livingston, Dwight; Reuben, Jayakumar; and Tite, Robert C., 5,338,666, Cl. 435-34.000.

Livingstone, Ewan S.; and Clark, Graeme L., to EEV Limited. Metal vapour laser apparatus. 5,339,327, Cl. 372-56.000.

Lizell, Magnus B., to Monroe Auto Equipment Company. Method and apparatus for absorbing mechanical shock. 5,337,863, Cl. 188-299.000.

Ljokkoi, Risto: *See—*
Lindberg, Pentti; and Ljokkoi, Risto, 5,338,451, Cl. 210-405.000

Ljungstrom, Tommy B. G., to Tetra Laval Holdings & Finance S.A. Gable-top carton blank for diverse packaging machines and methods of making and using the blank. 5,337,538, Cl. 53-456.000.

Llewellyn, William D., to National Semiconductor Corp. Frequency synthesizing phase lock loop with unvarying loop parameters. 5,339,050, Cl. 331-16.000.

Lobas, Detlef: *See—*
Deckwer, Wolf-Dieter; Lobas, Detlef; and Schumpe, Adrian, 5,338,681, Cl. 435-252.100.

Lobel, Wolfgang, to Lohr & Bromkamp GmbH. Composite shaft coupling element having reinforced eyes. 5,338,259, Cl. 464-93.000.

Lockhart, Thomas P.; and Albonico, Paola, to Eniricerche S.p.A.; and Agip S.p.A. Aqueous gellable composition with delayed gelling time. 5,338,465, Cl. 252-8.551.

Lockheed Corporation: *See—*
Beauchamp, Bruce A.; Beffa, James C.; and Flournoy, David H., 5,339,331, Cl. 375-1.000.

Lockwood, James M., to Sun Microsystems, Inc. Arbitrating multiprocessor accessos to shared resources. 5,339,443, Cl. 395-725.000.

Lodholz, John C.: *See—*
Mills, Robert L.; Lodholz, John C.; Sarat-Chandra, Rangasami; Orlando, Franklin P.; and Christian, Donald J., 5,337,885, Cl 198-502.400.

Loftin, Rachel M., to Gillette Company, The. Erasable ink. 5,338,793, Cl. 524-571.000.

Lohf, Lloyd W.: *See—*
Kutsch, Duane B.; Larson, Glen M.; Lohf, Lloyd W.; and Johnson, Paul D., 5,339,379, Cl. 385-135.000.

Lohnes, Steven A.; and Crowne, Francis R., to Cappar Ltd. Additive for two component epoxy resin compositions. 5,338,568, Cl. 427-136.000.

Lohr & Bromkamp GmbH: *See—*
Lobel, Wolfgang, 5,338,259, Cl. 464-93.000.

Lomastro, Joseph A.; and Nager, Urs F., to Burndy Corporation. Powder actuated compression tool. 5,337,566, Cl. 60-632.000.

Lonardi, Emile; Metz, Jean; Mailliet, Pierre; Thillen, Guy; Andonov, Radmir; and Malivoir, Philippe, to Paul Wurth S.A. Machine for piercing a taphole for a shaft furnace. 5,338,013, Cl. 266-271.000.

London Diagnostics, Inc.: *See—*
McCapra, Frank, 5,338,847, Cl. 546-104.000.

Long, Jerry A.: *See—*
Bowen, David C.; and Long, Jerry A., 5,338,221, Cl. 439-405.000

Long, Michael, to Eastman Kodak Company. Punch block support arm and process for mounting punches on such a block. 5,337,642, Cl. 83-687.000.

Long, William H.: *See—*
Ritter, Michael P.; and Long, William H., 5,338,494, Cl. 252-700.000.

Longo, Aldo: *See—*
Vianello, Domenico; Benetton, Armando; Moro, Alessandro; Pippa, Roberto; and Longo, Aldo, 5,338,796, Cl. 525-66.000

Longsworth, Ralph C., to APD Cryogenics, Inc. Cryogenic refrigerator with single stage compressor. 5,337,572, Cl. 62-51.200.

Lonza Ltd.: *See—*
Schurr, Sabine; and Tschech, Andreas, 5,338,667, Cl. 435-47.000.

Loomis, Kent C.: *See—*
Levy, Arthur J.; Oppenlander, Jane E.; Brudnoy, David M.; Englund, James M.; and Loomis, Kent C., 5,339,256, Cl. 364-506.000.

Loper, Roger K., to Rockwell International Coproration. AM demodulation receiver using digital signal processor. 5,339,040, Cl. 329-358.000

Lopp, Loran C., Jr.: *See—*
Bonko, Mark L.; and Lopp, Loran C., Jr., 5,337,816, Cl. 152-209.00R.

Lorch, Jeffrey D.: *See—*
Johnson, David A.; and Lorch, Jeffrey D., 5,338,553, Cl 426-36.000.

L'Oreal: *See—*
de Laforcade, Vincent, 5,337,927, Cl. 222-321.000.

Losell, Ingvar: *See—*
Jeppsson, Jan-Bertil; and Losell, Ingvar, 5,338,293, Cl. 604-29.000.

Lott, Gene. Refrigerated waste container with germicidal lamp. 5,337,581, Cl. 62-264.000.

Lou, Perry W., to Brooktree Corporation. Regulated delay line. 5,338,990, Cl. 307-603.000.

Loughran, Thomas C.: *See—*
Fathimulla, Mohammed A.; and Loughran, Thomas C., 5,338,394, Cl. 156-643.000

Louisiana-Pacific Corporation: *See—*
Westphal, John L., 5,338,339, Cl. 95-282.000.

Loving, Ronald E., to Hughes Aircraft Company. Liquid fuel power plant and method. 5,337,567, Cl. 60-722.000.

Lown, Jean A., to Minnesota Mining and Manufacturing Company. Aqueous beta cobaltous hydroxide and method for making. 5,338,473, Cl. 252-62.510.

Lowndes, Richard H.: *See—*
Young, Howard L.; and Lowndes, Richard H., 5,337,746, Cl 128-635.000

Lozowick, Philip P.: *See—*
Ben-Michael, Siman-Tov; Lozowick, Philip P.; Hawe, William; and Lampson, Butler, 5,339,313, Cl. 370-85.130.

LSI Logic Corporation: *See—*
Gainey, Trevor C., 5,338,899, Cl. 174-52.400.
Jiang, Xin H.; and Kirkman, Scott, 5,337,614, Cl. 73-827.000.
Rostoker, Michael D.; Gluss, David; and Harrington, Tom, 5,339,262, Cl. 364-578.000.

Lu, Chao-Cheng. High power solid state relay with input presence and polarity indication. 5,338,991, Cl. 307-632.000.

Lu, Kewang; Huang, Chin-Teh; and Hammesfahr, Paul, to Dentsply Research & Development Corp. Dental composition and method. 5,338,773, Cl. 523-116.000.

Lubkin, David C.; Robinson, Douglas B.; Chase, Robert P., Jr.; Leach, Paul J.; McCue, Daniel L., III; and Leblang, David B., to Hewlett-Packard Company. Heterogenous software configuration management apparatus. 5,339,435, Cl. 395-700.000.

Lubrizol Corporation, The: *See—*
Lal, Kasturi, 5,338,471, Cl. 252-56.00S.
Rohr, Eric L.; Cech, Leonard S.; and Saltzman, Barry M., 5,338,347, Cl. 106-14.440.

Luca, Toncelli. Mold filling apparatus. 5,338,179, Cl. 425-447.000.

Lucas, Paul C.; Messenger, Ronald J.; Macklem, Elizabeth A.; and Nykwest, Lawrence C., to International Paper Company. Method of forming a lignin reinforced cellulosic product. 5,338,404, Cl 162-163.000.

Lucassen, Guenter: *See—*
Pinto, Akiva; Lucassen, Guenter; Schmidt-Doepper, Ulrich; Hartmann, Ulrich; and Heuermann, Winfried, 5,337,455, Cl. 19-105.000.

Luciano, SMO' ; and Donato, Spina, to Fiat Auto S.p.A. Device for facilitating and protecting the connection between conductive cables and associated terminals for connection to electrical apparatus, particularly the electromagnet of a motor vehicle starter motor 5,338,898, Cl. 174-138.00F.

Luck, Christopher E.: *See—*
Bates, John B.; Dudney, Nancy J.; Gruzalski, Greg R.; and Luck, Christopher E., 5,338,625, Cl. 429-193.000.

Luczkiw, Julie A.: *See—*
Grenier, Frank C.; Luczkiw, Julie A.; Bergmann, Merry E.; and Blonski, David R., 5,338,684, Cl. 436-8.000.

Lugez, Pierre; Jouillat, Claude; and Brunet, Michel, to Valois (societe anonvme). Flexible, inwardly foldable container for a liquid or a paste to be dispensed without ingress of air, and a method of manufacture 5,337,923, Cl. 222-183.000.

Luling, Martin: *See—*
Clark, Brian; Bonner, Stephen D.; Jundt, Jacques; and Luling, Martin, 5,339,036, Cl. 324-338.000.

Lum, Robert: *See—*
Szwejkowski, Chester A.; Lum, Robert; and Fried, Thierry, 5,338,398, Cl. 156-655.000.

Lumonics Corporation: *See—*
Hunter, John; and Gupta, Sunil, 5,339,323, Cl. 372-25.000

VOL 1165 ISS 3 AG 16 1994 UMI

Lundin, Kenneth; and Markstrom, Ulf, to Telefonaktiebolaget L M Ericsson. System for dynamic run-time binding of software modules in a computer system. 5,339,430, Cl. 395-700.000.

Lundy, Douglas A.: *See*—
Lindblad, Nero R.; Lundy, Douglas A.; and Jugle, Kip L., 5,339,149, Cl. 355-297.000.

Luplow, Harley M. Compact radio frequency receiver having take-up spool housed earphone conductors. 5,339,461, Cl. 455-351.000.

Lupton, Pete J.: *See*—
Chana, Jit S.; Lupton, Pete J.; and Plum, Dennis L., 5,339,414, Cl 395-650.000.

Lurssen, Klaus: *See*—
Bassner, Bernd; Fischer, Reiner; Widdig, Arno; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,338,860, Cl. 548-550.000.

Lutin, Gregory D.; and Hill, Peter R. Roof tile mounting system. 5,337,529, Cl. 52-389.000.

Luttinger, Lionel B.; Rudy, Rosanna P.; and Holtzapfel, Paul J., to Ashland Oil, Inc. Soft coating compositions for metals. 5,338,346, Cl. 106-14.290.

Lutzke, David. Handgrip for link chain. 5,337,449, Cl. 16-111.00R.

Lux, Robert A.; Koscica, Thomas E.; and Harvey, James F., to United States of America, Army. Instant-on microwave oscillators using resonant tunneling diode. 5,339,053, Cl. 331-99.000.

Lyford, Keith S. Practice golf club. 5,338,035, Cl. 273-186.200.

Lyons, Patrick J.: *See*—
Abbott, Kenneth E.; and Lyons, Patrick J., 5,337,900, Cl. 209-257.000.

M.& G. Ricerche S.p.A.: *See*—
Ghisolfi, Guido, 5,338,808, Cl. 525-437.000.

Ma, Hongliang: *See*—
Liu, Goudong; Zhang, Chuanli; Ma, Hongliang; Xu, Shizhen; Li, Jingbei; Li, Xuecai; and Ding, Lidong, 5,338,376, Cl. 148-304.000.

Maa, Peter S.: *See*—
LeViness, Steve C.; Hsia, Steve J.; Wen, Michael Y.; Davis, Stephen M.; Culross, Claude C.; and Maa, Peter S., 5,338,441, Cl. 208-419.000.

Mabuchi Motor Kabushiki Kaisha: *See*—
Suzuki, Satoshi; Shibata, Nobuyuki; Shirakawa, Ryotomo; and Matsuda, Akira, 5,338,618, Cl. 428-614.000.

MacDonald, Daniel W.: *See*—
Scheuer, Mark A.; MacDonald, Daniel W.; Palumbo, Kenneth S.; Paolini, Anthony L.; Berman, Robin E.; and Hurwitch, Carl B., 5,339,135, Cl. 355-208.000.

Machida, Hirohisa, to Mitsubishi Denki Kabushiki Kaisha. Content addressable memory cell and content addressable memory circuit for implementing a least recently used algorithm. 5,339,268, Cl. 365-49.000.

Mack, Heinz. Locking device for an articulator. 5,338,193, Cl. 433-57.000.

Mack, William J.: *See*—
Oltean, Jerry M.; and Mack, William J., 5,337,874, Cl. 192-111.00A.

Mackinlay, Jock: *See*—
Robertson, George G.; Mackinlay, Jock; and Card, Stuart K., 5,339,390, Cl. 395-157.000.

Macklem, Elizabeth A.: *See*—
Lucas, Paul C.; Messenger, Ronald J.; Macklem, Elizabeth A.; and Nykwest, Lawrence C., 5,338,404, Cl. 162-163.000.

MacLeay, Ronald E.; and Lange, Harold C., to Elf Atochem North America, Inc. Derivatives of N-HALS-substituted amic acid hydrazides. 5,338,853, Cl. 546-224.000.

MacMillan, John P.; Zuliani, Douglas J.; and Bray, Martin J., to Timmino Ltd. Production of non-explosive fine metallic powders. 5,338,712, Cl. 501-94.000.

Madsen, Robert A.: *See*—
Wesdorp, Leendert H.; Madsen, Robert A.; Kasica, James; Kowblansky, Marie; and Morrison, Anthony, 5,338,560, Cl. 426-573.000.

Maeda, Kazuki; Utsumi, Kuniaki; and Fujito, Katsuyuki, to Matsushita Electric Industrial Co., Ltd. Cable broadcasting system and the transmission center for on demand program services. 5,339,315, Cl. 370-85.100.

Maeda, Mitsuo: *See*—
Nishimura, Tetsuya; Yoshimura, Motomu; and Maeda, Mitsuo, 5,339,201, Cl. 359-891.000.

Maeda, Shiro: *See*—
Nakai, Mitsuhisa; Maeda, Shiro; and Yagi, Toshiaki, 5,339,013, Cl. 318-254.000.

Magni, Giorgio, to OMCI S.p.A. Officine Metalmeccaniche Construzioni Industriali. Differential-brake group for vehicle driving axles. 5,337,853, Cl. 180-370.000.

Magnotta, Vincent L.: *See*—
Naddeo, Ronald C.; Hristofas, Konstantinos; and Magnotta, Vincent L., 5,338,401, Cl. 162-6.000.

Magruder, Judy A.: *See*—
Edgren, David E.; Bhatti, Gurdish K.; and Magruder, Judy A., 5,338,550, Cl. 424-473.000.

Maguire, Michael D., to United States of America, Air Force. Endoscope cleansing catheter and method of use. 5,337,730, Cl. 128-4.000.

Maheux, David; and Tomich, Robert, to Universal Packaging Corporation. Method of distributing heat in food containers adapted for microwave cooking and novel container structure. 5,338,921, Cl. 219-730.000.

Mahn, John E., Jr.: *See*—
Mahn, John E., Sr.; and Mahn, John E., Jr., 5,338,603, Cl. 428-349.000.

Mahn, John E., Sr.; and Mahn, John E., Jr. Ornamental transfer specially adapted for adherence to nylon. 5,338,603, Cl. 428-349.000

MAHO Aktiengesellschaft: *See*—
Hildebrand, Peter; Eberl, Gunter; Neumaier, Josef; and Wrba, Peter, 5,338,915, Cl. 219-121.690.

Mahurkar, Sakharam D. Hypodermic needle assembly. 5,338,311, Cl. 604-195.000.

Maier, Robert M.: *See*—
Connell, Jefferson J.; Johnson, Vernon R.; Lipman, Peter H.; and Maier, Robert M., 5,339,417, Cl. 395-650.000.

Mailey, John W., to MCAM Industries, Inc. In-toto connector. 5,337,983, Cl. 248-74.300.

Mailliet, Pierre: *See*—
Lonardi, Emile; Metz, Jean; Mailliet, Pierre; Thillen, Guy; Andonov, Radmir; and Malivoir, Philippe, 5,338,013, Cl. 266-271.000.

Majoux, Bernard: *See*—
Kaire, Jean-Claude; Majoux, Bernard; and Pontarollo, Serge, 5,339,042, Cl. 330-255.000.

Makiishi, Yukio: *See*—
Nitta, Minoru; Kiyota, Yoshisato; Makiishi, Yukio; Ohtsubo, Hiroshi; Watanabe, Toshio; and Habu, Yasuhiro, 5,338,508, Cl. 420-120.000.

Makita, Kensuke: *See*—
Tanaka, Katsuto; Makita, Kensuke; and Moriguchi, Yasuo, 5,338,350, Cl. 106-19.00D.

Malhi, Satwinder, to Texas Instruments Incorporated. High voltage structures with oxide isolated source and resurf drift region in bulk silicon. 5,338,965, Cl. 257-492.000.

Malivoir, Philippe: *See*—
Lonardi, Emile; Metz, Jean; Mailliet, Pierre; Thillen, Guy; Andonov, Radmir; and Malivoir, Philippe, 5,338,013, Cl. 266-271.000.

Mallinckrodt, Albert J., to Otten, David D. Integrated cellular communications system. 5,339,330, Cl. 375-1.000.

Mallinckrodt Medical, Inc.: *See*—
Woulfe, Steven R.; and Rajagopalan, Raghavan, 5,338,864, Cl. 549-207.000.

Mallory, Glen O., Jr. Stabilized electroless nickel plating baths. 5,338,342, Cl. 106-1.220.

Malone, John B., Jr.: *See*—
El Bahy, Mohamed M.; Malone, John B., Jr.; Todd, William J.; and Schnorr, Kenneth L., 5,338,660, Cl. 435-7.220.

Mamman, Ajit S.: *See*—
Choudhary, Vasant R.; Rajput, Amarjeet M.; Sansare, Subhash D.; Prabhakar, Bathula; and Mamman, Ajit S., 5,338,488, Cl. 252-373.000.

Mammano, Robert A.; and Jordan, Mark, to Unitrode Corporation. Controllable bus terminator. 5,338,979, Cl. 307-443.000.

Mammino, Joseph; Abramsohn, Dennis; Heeks, George J.; Henry, Arnold W.; Fratangelo, Louis D.; Pan, David H.; and Badesha, Santokh S., to Xerox Corporation. Electrographic methods. 5,338,587, Cl. 428-35.700.

MAN Roland Druckmaschinen AG: *See*—
Brechtel, Heinz, 5,337,486, Cl. 33-617.000.

Manabe, Toshiyuki; Murakami, Osamu; Takeuchi, Keiichi; and Matsuura, Junichi, to Mitsubishi Plastics Industries Limited; Hudson Soft Co., Ltd.; and JAL Data Communication & Systems Co., Ltd. Information collecting and/or service furnishing systems by which a user can request information from a central data base using a portable personal terminal and an access terminal. 5,339,239, Cl. 364-401.000.

Manchester Plastics, Ltd.: *See*—
Bowler, Geoffrey H.; and Chow, Bruce H. B., 5,338,252, Cl. 454-155.000.

Maney, Patrick M.: *See*—
Hennessy, Timothy H.; and Maney, Patrick M., 5,337,958, Cl. 239-71.000.

Manfre, Franco: *See*—
Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,338,760, Cl. 514-539.000.

Mangino, Albert R., Sr. Layout tool. 5,337,487, Cl. 33-760.000.

Mann, Stephan: *See*—
Hohmann, Ralf; Kleinhens, Bernd; Kohlhaus, Olaf; Mann, Stephan; and Spors, Ralf, 5,338,071, Cl. 285-233.000.

Mannesmann Rexroth GmbH: *See*—
Rott, Horst, 5,337,783, Cl. 137-625.270.

Mannington Mills, Inc.: *See*—
Wang, C. David; Shultz, Jeffrey R.; and Chen, Hao A., 5,338,504, Cl. 264-555.000.

Mano, Hiroshi: *See*—
Mori, Hideyasu; Yamazaki, Yuichi; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,339,355, Cl. 379-94.000.

Manuel, Overton H.: *See*—
Marques, Anthony M.; Kelley, Paul R.; Jones, William K.; Fukuda, Masatoshi; and Manuel, Overton H., 5,339,066, Cl. 338-306.000.

Manvar, Dhirajlal N.: *See*—
Ledzius, Robert C.; Irwin, James S.; and Manvar, Dhirajlal N., 5,339,079, Cl. 341-144.000.

Marchisi, Giuseppe: *See*—
Casati, Paolo; Corno, Marziano; and Marchisi, Giuseppe, 5,338,971, Cl. 257-666.000.

Marcioni, Ivana, legal representative: *See*—
Siligoni, Marco, deceased; and Torazzina, Aldo, 5,339,020, Cl. 323-313.000.

Marco, Francis W.: *See*—
Cockfield, Joe B.; Fadial, Sabrina B.; and Marco, Francis W., 5,337,460, Cl. 28-167.000.

Marcus, Harris L.; Eliezer, Zwy; and Fine, Morris E., to United States of America, Navy. Method of making copper-titanium nitride alloy. 5,338,374, Cl. 148-237.000.

Marcus, Ilan: *See*—
Halm, Walter B.; Jones, William J., Jr.; Kirkbride, James F.; Marcus, Ilan; and Snyder, Adrian C., 5,338,500, Cl. 264-122.000.

Margerum, J. David: *See*—
Wu, Shin-Tson; Margerum, J. David; Meng, Hsiang-Hui B.; and Dalton, Larry R., 5,338,481, Cl. 252-299.010.

Marino, Frank, to Duracraft Corporation. Electrical humidifer with detachable connector plug safety interlock system allowing interior access only when unplugged. 5,339,383, Cl. 392-406.000.

Marion, Marie-Claire; Forestiere, Alain; and Delhomme, Henri, to Institute Francais Du Petrole. Distillation-reaction apparatus and its use for carrying out balanced reaction. 5,338,518, Cl. 422-211.000.

Markstrom, Ulf: *See*—
Lundin, Kenneth; and Markstrom, Ulf, 5,339,430, Cl. 395-700.000.

Marmorstein, Leon M.; Petuhov, Ignaty M.; Sidorov, Vladimir S.; Aleksandrov, Piotr A.; and Grebennikov, Valentin T., to UMA Ltd. Method of oil well productivity increase. 5,337,825, Cl. 166-307.000.

Marquardt, Hans: *See*—
Senter, Peter D.; Su, Peter C. D.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,338,678, Cl. 435-227.000.

Marques, Anthony M.; Kelley, Paul R.; Jones, William K.; Fukuda, Masatoshi; and Manuel, Overton H., to United States of America, Navy. Energy-measuring resistor bank. 5,339,066, Cl. 338-306.000.

Marquette, Daniel T.: *See*—
Hinds, Christopher N.; Fiene, Eric V.; Marquette, Daniel T.; and Quintana, Eric E., 5,339,266, Cl. 364-748.000.

Marquis, Patrick R. P. P.: *See*—
Barbier, Georges A. E.; Marquis, Patrick R. P. P.; and Binet, Yvon, 5,337,756, Cl. 128-763.000.

Marquis, Patrick Roger P. P.: *See*—
Barbier, Georges A. E.; Marquis, Patrick R. P. P.; and Binet, Yvon, 5,337,756, Cl. 128-763.000.

Marr, Leonard D. Oil spill recovery apparatus and method. 5,338,464, Cl. 210-776.000.

Marriere, Marc G. P.: *See*—
Trocherie, Jean-Pierre A. L.; Marriere, Marc G. P.; and Deschamps, Joel, 5,338,111, Cl. 366-205.000.

Mars, Inc.: *See*—
Waite, Timothy P.; and Allan, Richard D., 5,337,877, Cl. 194-317.000.

Marsilio, Ronald, to American Standard Inc. Insert on extended deck and process of molding. 5,338,501, Cl. 264-219.000.

Marsland, Timothy: *See*—
Carney, Michael W.; Marsland, Timothy; and Pittore, William F., 5,339,406, Cl. 395-575.000.

Martin, Andrew R.: *See*—
Conner, Mike H.; Martin, Andrew R.; and Raper, Larry K., 5,339,438, Cl. 395-700.000.

Martin Automatic, Inc.: *See*—
Martin, John R., 5,337,969, Cl. 242-553.000.

Martin, Dan: *See*—
Schmidt, Robert H.; and Martin, Dan, 5,339,103, Cl. 348-95.000.

Martin, David R.: *See*—
Green, Dennis J.; Szela, Edward R.; Yamarik, George J.; and Martin, David R., 5,337,805, Cl. 164-369.000.

Martin, James P.: *See*—
Hubble, Fred F., III; Martin, James P.; and Folkins, Jeffrey J., 5,339,150, Cl. 355-326.00R.

Martin, John R., to Martin Automatic, Inc. Flying paster. 5,337,969, Cl. 242-553.000.

Martin Marietta Energy Systems, Inc.: *See*—
Bates, John B.; Dudney, Nancy J.; Gruzalski, Greg R.; and Luck, Christopher E., 5,338,625, Cl. 429-193.000.
Thacker, Louis H., 5,338,938, Cl. 250-377.000.

Martin, Paul E. Easily removable faucet handle. 5,337,450, Cl. 16-114.00R

Martin, Robert L., to Leinweber Systems, Inc. Friction material distributor funnel. 5,337,798, Cl. 141-331.000.

Martinelli, Michael J.: *See*—
Buff, Bret E.; Khau, Vien V.; Martinelli, Michael J.; and Peterson, Barry C., 5,338,851, Cl. 546-141.000.

Maruyama, Akihiko: *See*—
Suzuki, Hiroshi; Aoki, Shigeru; Maruyama, Akihiko; and Koike, Nobuhiro, 5,339,297, Cl. 368-321.000.

Maruyama, Hitoshi: *See*—
Hijikata, Kenichi; Komiyama, Shozo; and Maruyama, Hitoshi, 5,338,331, Cl. 75-246.000.

Maruyama, Noboru. Liquid heating apparatus. 5,337,728, Cl. 126-344.000.

Marx, Edmund N., Jr., to Gilman Paper Company. Paper forming unit with two dandy rolls. 5,338,408, Cl. 162-301.000.

Masamitsu, Jon A.: *See*—
Strout, Robert E., II; Spix, George A.; Masamitsu, Jon A.; Cox, David M.; Gaertner, Gregory G.; Wengelski, Diane M.; and Thompson, Keith J., 5,339,415, Cl. 395-650.000.

Maschinenfabrik J. Dieffenbacher GmbH & Co.: *See*—
Bielfeldt, Friedrich B., 5,337,655, Cl. 100-93.00P.

Mascotech, Inc.: *See*—
Dickerson, D. C.; and Delbeke, Robert G., 5,338,057, Cl. 280-675.000.
Vrana, John J.; and Richart, Leland M., 5,338,056, Cl. 280-673.000.

Mascotte, Lawrence L. Shoe covering members. 5,337,491, Cl. 36-7.10R.

Mashima, Munenori: *See*—
Mishima, Akifumi; Mashima, Munenori; and Tamura, Jun, 5,338,425, Cl. 204-298.120.

Mashimo, Kiyokazu: *See*—
Nukada, Katsumi; Imai, Akira; Daimon, Katsumi; Iijima, Masakazu; Mashimo, Kiyokazu; Sakaguchi, Yasuo; and Takegawa, Ichiro, 5,338,636, Cl. 430-59.000.

Mashtare, Dale R.: *See*—
Snelling, Christopher; and Mashtare, Dale R., 5,339,147, Cl. 355-285.000.

Masimo Corporation: *See*—
Branigan, Brendan, 5,337,744, Cl. 128-633.000.

Maskinfabriken Taarup A/S: *See*—
Lauritsen, Georg, 5,337,544, Cl. 56-15.700.

Maslanka, William W.: *See*—
Espy, Herbert H.; and Maslanka, William W., 5,338,807, Cl. 525-430.000.

Mason, Andrew H.: *See*—
Karger, Paul A.; Mason, Andrew H.; Wray, John C. R.; Robinson, Paul T.; Priborsky, Anthony L.; Kahn, Clifford E.; and Leonard, Timothy E., 5,339,449, Cl. 395-700.000.

Massachusetts Institute of Technology: *See*—
Lim, Jae S., 5,339,164, Cl. 358-261.100.
McKay, Ronald D. G.; and Lendahl, Urban, 5,338,839, Cl. 536-235.000.
Mlcak, Richard; and Tuller, Harry L., 5,338,416, Cl. 204-129.300.

Massen, Robert: *See*—
Gassler, Joachim; and Massen, Robert, 5,339,154, Cl. 356-376.000.

Massie, Keith J.; Brown, Jonathan W.; and McGilvray, James A. Well fluid sampling tool. 5,337,822, Cl. 166-264.000.

Master Pitching Machine, Inc.: *See*—
Giovagnoli, Paul S., 5,338,025, Cl. 273-26.00D.

Master S.A.S. Di Ronchi Francesco & C.: *See*—
Ronchi, Francesco, 5,337,586, Cl. 68-5.00D.

Masubuchi, Sadao, to Citizen Watch Co., Ltd. Method of forming color images. 5,338,631, Cl. 430-42.000.

Masubuchi, Takamichi; and Kouchi, Katutoshi, to Yamaha Corporation. Musical tone control device with performing glove. 5,338,891, Cl. 84-600.000.

Masui, Takayuki, to Sharp Kabushiki Kaisha. CCD driving IC circuit. 5,339,161, Cl. 348-312.000.

Masumoto, Hiroki: *See*—
Moriyama, Takamasa; Masumoto, Hiroki; and Kato, Kuniyasu, 5,338,502, Cl. 264-322.000.

Masuyoshi, Shinji: *See*—
Kamachi, Hajime; Hirano, Minoru; and Masuyoshi, Shinji, 5,338,728, Cl. 514-27.000.

Matassa, Victor G.: *See*—
Bernstein, Peter R.; Brown, Frederick J.; Matassa, Victor G.; and Yee, Ying K., 5,338,734, Cl. 514-224.200.

Materkowski, James P., to Kennametal Inc. Wear-resistant steel castings. 5,337,801, Cl. 164-98.000.

Mathew, Mathew C.: *See*—
Catena, Robert J.; Artusa, Gastone; Kveglis, Albert A.; Bosco, Jason J.; Barreto, Sonia; Mathew, Mathew C.; and Schneider, Mark D., 5,338,785, Cl. 524-39.000.

Mathewson, Wilfred F.; Bringham, Richard L.; Ritger, Philip L.; and Karshmer, David L., to Baxter International Inc. Method for oxygenation of a patient's blood. 5,338,512, Cl. 422-46.000.

Matisa Materiel Industriel S.A.: *See*—
Aubermann, Tibor, 5,337,675, Cl. 104-2.000.

Matlock, Mark G.; Sleeter, Ronald T.; and Jebe, Tod A., to Archer Daniels Midland Company. Instrument for determining the stability of fat or oil. 5,339,254, Cl. 364-499.000.

Matson, Ronald J.; and Yevich, Joseph P., to Bristol-Myers Squibb Company. Cerebral function enhancers: acyclic amide derivatives of pyrimidinylpiperidines. 5,338,738, Cl. 514-256.000.

Matsubara, Akira: *See*—
Ohto, Norio; Horikomi, Kazutoshi; Matsubara, Akira; Tanada, Hideki; Sakai, Kazuya; Kajiya, Seitaro; Mizuchi, Akira; and Shimizu, Hideshi, 5,338,857, Cl. 548-248.000.

Matsubara, Kazuo: *See*—
Horikawa, Hiroshi; Tsuzuki, Yoshikazu; Mogi, Hisashi; and Matsubara, Kazuo, 5,338,070, Cl. 285-177.000.

Matsubara, Shinichi: *See*—
Kanazawa, Daisuke; Sasaki, Mitsuru; Urano, Toshiyuki; Yamashita, Youko; and Matsubara, Shinichi, 5,338,643, Cl. 430-190.000.

Matsuda, Akira: *See*—
Suzuki, Satoshi; Shibata, Nobuyuki; Shirakawa, Ryotomo; and Matsuda, Akira, 5,338,618, Cl. 428-614.000.

Matsuda, Tomoo: *See*—
Ogaki, Koji; Matsuda, Tomoo; Takagi, Kimihiko; and Sakamoto, Takuya, 5,337,846, Cl. 180-8.200.

Matsuda, Toru: *See*—
Anwyl, Phyllis; and Matsuda, Toru, 5,338,976, Cl. 364-419.010.

Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, to Mitsubishi Jukogyo Kabushiki Kaisha; and Seiryo Engineering Co., Ltd. Car storage apparatus for car carrier. 5,338,143, Cl. 414-142.100.

VOL 1165 ISS 3 AG 16 1994 UMI

Matsuhashi, Toshiaki: *See—*
Kiuchi, Toru; Ogata, Kenji; Chiba, Masakazu; Matsuhashi, Toshiaki; Taguchi, Masahiro; and Tominaga, Motonori, 5,338,062, Cl. 280-735.000.
Matsui, Nobuhiko: *See—*
Omata, Kyoichi; and Matsui, Nobuhiko, 5,339,175, Cl. 358-498.000
Matsui, Yasushi: *See—*
Kito, Masahiro; and Matsui, Yasushi, 5,339,325, Cl. 372-45.000.
Ohi, Makoto; Arima, Hideaki; Ajika, Natsuo; Hachisuka, Atsushi; and Matsui, Yasushi, 5,338,699, Cl. 437-52.000.
Matsumori, Shigeru: *See—*
Fujimori, Isao; Matsumori, Shigeru; Kano, Takashi; and Sumi, Toshio, 5,339,241, Cl. 364-424.020.
Matsumoto, Akira; Morita, Kiyoo; and Daihisa, Takuji, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 5,337,973, Cl. 242-347.000.
Matsumoto, Hiromatsu: *See—*
Kurihara, Noriyuki; Iida, Yoshikatsu; and Matsumoto, Hiromatsu, 5,337,722, Cl. 123-527.000.
Matsumoto, Kiyoshi: *See—*
Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, 5,339,319, Cl. 371-10.200.
Matsumoto, Mansuke: *See—*
Kumagae, Yojiro; Fujita, Shigeo; Matsumoto, Mansuke; Wada, Sayuri; and Hashimoto, Shuuichi, 5,338,866, Cl. 549-226.000.
Matsumoto, Michito: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, 5,339,376, Cl. 385-71.000.
Matsumoto, Takeo: *See—*
Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; and Matsumoto, Takeo, 5,338,877, Cl. 556-440.000.
Matsumoto, Takeshi: *See—*
Ohsumi, Hisayoshi; Matsumoto, Takeshi; Kato, Shinji; Ishizuka, Mitsuo; and Kaneko, Shoichi, 5,338,592, Cl. 428-106.000.
Matsumoto, Tohru, to Mitsubishi Denki Kabushiki Kaisha. Wind direction controlling apparatus. 5,338,251, Cl. 454-153.000.
Matsumura, Nobuhiro: *See—*
Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, 5,339,319, Cl. 371-10.200.
Matsumura, Yoshiaki: *See—*
Ishigame, Juji; and Matsumura, Yoshiaki, 5,338,710, Cl. 501-32.000.
Matsunaga, Takao: *See—*
Tokuda, Shoji; Matsunaga, Takao; Shinmoto, Kazuhiro; Terada, Koichi; and Yamamoto, Yoshimi, 5,337,555, Cl. 60-276.000.
Matsunaka, Kenji: *See—*
Nakamura, Kazunari; and Matsunaka, Kenji, 5,339,159, Cl. 348-71.000.
Matsunami, Tokumi: *See—*
Nakamura, Hajime; and Matsunami, Tokumi, 5,339,134, Cl. 355-202.000.
Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, to Suntory Limited; and Matsuo, Hisayuki. Biologically active peptide derived from chicken (chicken CNP). 5,338,830, Cl. 530-326.000.
Matsuoka, Hirofumi; and Tabuse, Hidetoshi, to Koyo Seiko Co., Ltd. Power steering apparatus. 5,339,243, Cl. 364-424.050.
Matsuoka, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Method for producing a recessed gate field effect transistor. 5,338,703, Cl. 437-203.000.
Matsuoka, Kazuyuki; and Fujimoto, Yasuhisa, to Dainippon Screen Mtg. Co., Ltd. Method of and apparatus for producing register mark pattern. 5,337,668, Cl. 101-481.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Fujiwara, Muneyoshi; Hirai, Wataru; Yonezawa, Takahiro; and Sakurai, Kunio, 5,339,248, Cl. 364-468.000
Hidese, Wataru, 5,338,381, Cl. 156-64.000.
Kito, Masahiro; and Matsui, Yasushi, 5,339,325, Cl. 372-45.000.
Maeda, Kazuki; Utsumi, Kuniaki; and Fujito, Katsuyuki, 5,339,315, Cl. 370-85.100.
Nakai, Mitsuhisa; Maeda, Shiro; and Yagi, Toshiaki, 5,339,013, Cl. 318-254.000.
Nakatsuka, Tadayoshi; and Yagita, Hideki, 5,339,458, Cl 455-333.000.
Nemoto, Takahiro, 5,337,998, Cl. 248-634.000.
Ogawa, Kazufumi; Soga, Mamoru; Ozaki, Shinji; and Ikuta, Shigeo, 5,338,579, Cl. 427-539.000.
Sawamura, Kouji; and Moriuchi, Yuzo, 5,339,357, Cl. 379-355.000.
Tanaka, Tsutomu; and Yokota, Hiroshi, 5,339,314, Cl. 370-13.000.
Tanaka, Tsutomu; Yokota, Hiroshi; and Kubota, Kouji, 5,339,317, Cl. 370-85.150.
Tsujimura, Ayumu; Ohkawa, Kazuhiro; Yoshii Shigeo; and Mitsuyu, Tsuneo, 5,339,326, Cl. 372-49.000.
Matsushita Electric Works, Ltd.: *See—*
Tsuji, Koji; Takegawa, Yoshinbou; Inada, Hayato; and Yamada, Shuji, 5,338,505, Cl. 419-10.000.
Matsuura, Junichi: *See—*
Manabe, Toshiyuki; Murakami, Osamu; Takeuchi, Keiichi; and Matsuura, Junichi, 5,339,239, Cl. 364-401.000.
Matsuya, Shigeki: *See—*
Ohta, Michio; Matsuya, Shigeki; Shiraishi, Takanobu; and Nakagawa, Masaharu, 5,338,378, Cl. 148-405.000.
Matthews, William F., to Hughes Aircraft Company. Apparatus for simultaneously detecting a plurality of discrete laser modulation frequencies having circuitry for background radiation canceling 5,338,925, Cl. 250-214.00B.
Matusewicz, Richard S.; and Baker, Josefina T., to Beckman Instruments, Inc. Disposable sample collection device. 5,337,426, Cl. 4-661.000.
Matviya, Thomas M.: *See—*
Carrubba, Robert V.; Hayden, Richerd A; and Matviya, Thomas M., 5,338,458, Cl. 210-668.000
Matz, Gary F.; and Vaughan, Craig, to Calgon Corporation. Dual cationic terpolymers providing superior conditioning properties in hair, skin and nail care products. 5,338,541, Cl. 424-71.000.
Matz, Gary F.; and Sanborn, Kimberly B., to Gillette Company, The Correction fluid. 5,338,775, Cl. 523-161.000
Matz, Gary F.: *See—*
Chen, Shih-Ruey T.; and Matz, Gary F., 5,338,477, Cl. 252-180.000
Maule, Alexander. Apparatus for the production of bricks and the like 5,338,180, Cl. 425-466.000
Maupin, James H. Panel system and method for building construction 5,337,535, Cl. 52-748.000.
Maurer, Alexander; Raab, Guenter; Raab, Gudrun; Steinert, Hans-Georg; and Taenzler, Richard, to BK Ladenburg GmbH. Process for the production of coarse-grained, anhydrous calcium monohydrogen phosphate (dicalcium phosphate anhydride) and a device for carrying out the process. 5,338,524, Cl. 423-309.000.
Maurer, Eberhard: *See—*
Deeg, Rolf; Maurer, Eberhard; Babiel, Reiner; Klose, Sigmar; and Kopfer, Bernhard, 5,338,688, Cl. 436-180.000.
Maurer, Karl-Heinz: *See—*
Finn, Peter W.; Willitzer, Larry F.; and Maurer, Karl-Heinz, 5,338,913, Cl. 219-121.160.
Maurer, Richard T., to UOP. Spiral-wound adsorber module. 5,338,450, Cl. 210-286.000.
Mauz, Uwe, to Mercedes-Benz AG. Independent wheel suspension. 5,338,055, Cl. 280-668.000.
Max-Planck-Gesellschaft Zur Forderung der Wissenschaften E.V.: *See—*
Wieck, Andreas D.; and Ploog, Klaus, 5,338,692, Cl. 437-24.000
Maxim Inc.: *See—*
Carroll, William G., 5,337,540, Cl. 53-459.000.
Maxtor Corporation: *See—*
Dion, F. Eugene, 5,339,209, Cl. 360-105.000.
Maybee, George W.; Taylor, Timothy E.; Field, Elmer L.; Riley, Clyde; Lacefield, William R., Jr.; Coble, Harold D.; and Dasarathy, Harini, to McDonnell Douglas Corporation. Chromium alloy electrodeposition and surface fixation of calcium phosphate ceramics. 5,338,433, Cl. 205-178.000
Mayer, Andrew S.: *See—*
Becker, James F.; and Mayer, Andrew S., 5,339,354, Cl. 379-67.000.
Mayer, Carl W.: *See—*
Baumann, Marcus; Mayer, Carl W.; Wernet, Wolfgang; and Fischer, Walter, 5,338,863, Cl. 549-4.000.
Mayer, Udo: *See—*
Schroeder, Gunter-Rudolf; and Mayer, Udo, 5,338,639, Cl. 430-110.000.
Mayer, Walter; Brandl, Sebastian; and Neumeyer, Josef, to Rieter Ingolstadt Spinnereimaschinenbau AG. Method and device for stopping a spool on an open-end spinning machine. 5,337,550, Cl. 57-263.000.
Mayrand, P. Eric: *See—*
Shigeura, John; Bridgham, John A.; Hoff, Louis B.; and Mayrand, P. Eric, 5,338,426, Cl. 204-299.00R
Mazda Motor Corporation: *See—*
Arakawa, Yukio; Akagi, Toshimichi; Hatamura, Kouichi; and Kishida, Makoto, 5,337,724, Cl. 123-563.000.
Komatsu, Kazunari, 5,337,558, Cl. 60-276.000.
Tokuda, Shoji; Matsunaga, Takao; Shinmoto, Kazuhiro; Terada, Koichi; and Yamamoto, Yoshimi, 5,337,555, Cl. 60-276.000.
Mazet, Isabelle M.: *See—*
McCoy, Clayton W.; Vey, Alain J.; and Mazet, Isabelle M., 5,338,675, Cl. 435-183.000.
Mazursky, Richard B.; Waskin, David M.; and Taylor, Steven N., to Vtech Industries, Inc. Water toy. 5,338,044, Cl. 273-402.000
Mazzei, Angelo L.; and Ford, Steven D., to Claude Laval Corporation. Separator for removing gases from water. 5,338,341, Cl. 96-208.000.
Mazzeo, Nickolas J.: *See—*
Kobeda, Edward; Gambino, Jeffrey P.; Gifford, George G.; and Mazzeo, Nickolas J., 5,338,702, Cl. 437-192.000.
McAdams, Eric T.; McLaughlin, James A.; and Anderson, John McC. Biosignal electrode. 5,337,748, Cl. 128-640.000.
MCAM Industries, Inc.: *See—*
Mailey, John W., 5,337,983, Cl. 248-74.300.
McCabe, Terrence: *See—*
Morabito, Paul L.; McCabe, Terrence; and Hiller, Joseph F., 5,338,514, Cl. 422-89.000
McCahon, Stephen W.: *See—*
Wysocki, Joseph A.; Vince, Michael R.; McCahon, Stephen W.; and Kenna, John T., 5,339,380, Cl. 385-136.000.
McCandless, Timothy P.: *See—*
Wroblewski, David A.; Hill, William C.; and McCandless, Timothy P., 5,339,391, Cl. 395-157.000
McCandlish, Larry E.: *See—*
Polizzotti, Richard S.; McCandlish, Larry E.; and Kugler, Edwin L., 5,338,330, Cl. 75-228.000.
McCapra, Frank, to London Diagnostics, Inc. Hydrolytically stable chemiluminescent labels and their conjugates, and assays therefrom by adduct formation. 5,338,847, Cl. 546-104.000.

McCarthy, Daniel F., to Scully Signal Company. Positively-locking, quick-release coupling. 5,338,069, Cl. 285-38.000.
McCarty, Gary L.: *See—*
Grace, Todd S.; Barrett, Mark D.; Bilodeau, Vic L.; McCarty, Gary L.; Greenwood, Brian F.; Prough, J. Robert; and Torregrossa, Louis O., 5,338,366, Cl. 127-37.000.
McCauley, Joseph J., III: *See—*
Gregory, Otto J.; and McCauley, Joseph J., III, 5,338,566, Cl. 427-8.000.
McClelland, E. Leslie, to Cyril-Scott Company. Film-processing envelope. 5,337,942, Cl. 229-72.000.
McClure, David C., to SGS-Thomson Microelectronics, Inc. Address buffer. 5,339,277, Cl. 365-230.080.
McCormack, Edward B. Modified wood splitter. 5,337,810, Cl. 144-193.00A.
McCormick & Company, Inc.: *See—*
Aung, Thein; and Fulger, Charles V., 5,338,558, Cl. 426-327.000.
McCoy, Clayton W.; Vey, Alain J.; and Mazet, Isabelle M., to University of Florida; l'Institut National de la Recherche Agronomique (INRA); and le centre National de la Rechercho Scientifique (CNRS). Toxic metabolic product of Hirsutella sp. 5,338,675, Cl. 435-183.000.
McCue, Daniel L., III: *See—*
Lubkin, David C.; Robinson, Douglas B.; Chase, Robert P., Jr.; Leach, Paul J.; McCue, Daniel L., III; and Leblang, David B., 5,339,435, Cl. 395-700.000.
McCue, Sam V. Fishing line release. 5,337,510, Cl. 43-43.120.
McCutcheon, Andrew J.; Bowman, Jeffrey M.; and Gambetta, David L., to Technaflow, Inc. Gate valve with improved seal unit. 5,338,006, Cl. 251-327.000.
McDonnell Douglas Corporation: *See—*
Maybee, George W.; Taylor, Timothy E.; Field, Elmer L.; Riley, Clyde; Lacefield, William R., Jr.; Coble, Harold D.; and Dasarathy, Harini, 5,338,433, Cl. 205-178.000.
McEwen, Scott M., to Henry Filters, Inc. Filter media tensioning device. 5,338,443, Cl. 210-91.000.
McFarland, Andrew R.; Rodgers, John C.; Ortiz, Carlos A.; and Nelson, David C., to University of California Office of Technology Transfer, The Regents of the. Elbow mass flow meter. 5,337,603, Cl. 73-202.000.
MCG International, Inc.: *See—*
Reeves, William, 5,337,752, Cl. 128-700.000.
McGee, Jeffrey S.; Fesi, Joseph E.; and Murphy, John F., to American District Enterprises, Inc. Counter-top vending machine. 5,337,876, Cl. 194-236.000.
McGeough, Joseph: *See—*
Singer, Alfred R. E.; McGeough, Joseph; and Roche, Allen D., 5,337,631, Cl. 76-107.100.
McGilvray, James A.: *See—*
Massie, Keith J.; Brown, Jonathan W.; and McGilvray, James A., 5,337,822, Cl. 166-264.000.
McGinnis, Wayne C.: *See—*
Jones, Thomas E.; and McGinnis, Wayne C., 5,339,025, Cl. 324-71.600.
McGolrick, Jeffry D.: *See—*
Ngooi, Teng-Ko; McGolrick, Jeffry D.; Antczak, Casimir; and Tindall, James L. A., 5,338,871, Cl. 549-492.000.
McGowan, Raymond C.: *See—*
Mizan, Muhammad A.; and McGowan, Raymond C., 5,339,047, Cl. 330-286.000.
McGuire, Samuel B.: *See—*
Schuchert, Eugene H.; Christensen, David M.; and McGuire, Samuel B., 5,337,590, Cl. 72-157.000.
McIntyre, Jon T., to C.R. Bard, Inc. Double-tapered balloon. 5,338,298, Cl. 604-96.000.
McKay, Ronald D. G.; and Lendahl, Urban, to Massachusetts Institute of Technology. DNA encoding nestin protein. 5,338,839, Cl. 536-235.000.
McKay, William D. Fluid dispensing comb. 5,337,764, Cl. 132-116.000.
McKenzie, Charles R.; and Ingle, Harry C., to Sport Supply Group Inc. Holder for beverage containers and related articles. 5,337,907, Cl. 211-88.000.
McKillip, John J. Combination stencil and label apparatus and method for forming and attaching same. 5,337,663, Cl. 101-127.100.
McKillop, Kirsten L.: *See—*
Connor, Daniel S.; Scheibel, Jeffrey J.; Fu, Yi-Chang; Murch, Bruce P.; Watson, Randall A.; and McKillop, Kirsten L., 5,338,491, Cl. 252-548.000.
McKinney, James T.: *See—*
Egan, Daniel; Alexander, Jerry; McKinney, James T.; and Runyon, John F., 5,337,608, Cl. 73-865.600.
McLane, George F.: *See—*
Leupold, Herbert A.; and McLane, George F., 5,337,472, Cl. 29-607.000.
McLaughlin, James A.: *See—*
McAdams, Eric T.; McLaughlin, James A.; and Anderson, John McC., 5,337,748, Cl. 128-640.000.
McLean, Malcolm: *See—*
Harvey, Larry; Sheaffer, William; Staniec, Robert; and McLean, Malcolm, 5,337,513, Cl. 43-124.000
McMahon, Lynn A.: *See—*
Eikill, Richard G.; Levenstein, Sheldon B.; McMahon, Lynn A.; and Weigel, Joseph P., 5,339,397, Cl. 395-400.000.
McNaughton, James; and Walker, Donald C., to Bundy Corporation. Fluid conduit quick connectors with anti-spill valves. 5,338,002, Cl. 251-149.600.
McNeill, Steven R.: *See—*
Dunham, William D.; Hladilek, Jerry A.; McNeill, Steven R.; Pierman, John A.; Rogan, Charles T.; and Turk, Robert L., 5,338,236, Cl. 440-77.000.
McTeigue, Michael H.: *See—*
Moore, Robert R.; Lamb, Steve R.; Lamoreux, Larry W.; and McTeigue, Michael H., 5,337,758, Cl. 128-781.000.
Meade, Robert J.; Albrecht, Richard W.; and Weisgerber, Robert H., to General Electric Company. Turbine disk interstage seal axial retaining ring. 5,338,154, Cl. 415-173.700.
Mears, Michael G. Dual blade utility knife. 5,337,481, Cl. 30-162.000.
Measurex Corporation: *See—*
Anderson Leonard M.; and Howarth, John J., 5,338,361, Cl. 118-689.J00.
MEC International Corporation: *See—*
Abe, Naoki; Kawahara, Fumio; and Inoue, Noboru, 5,338,421, Cl. 204-186.000.
Mechoulam, Raphael: *See—*
Burstein, Sumner H.; and Mechoulam, Raphael, 5,338,753, Cl. 514-454.000.
Mectra Labs, Inc.: *See—*
Clement, Thomas P.; and Weber, David P., 5,338,292, Cl. 604-22.000.
Medical Materials Corporation: *See—*
Fitchmun, Douglas R.; and Perera, Niran, 5,338,600, Cl. 428-213.000.
Medina, Henry. Collapsible wheelchair. 5,338,048, Cl. 280-5.220.
Medtronic, Inc.: *See—*
Kerns, Ralph M., 5,339,375, Cl. 385-53.000.
Meehan, James E.: *See—*
Parsolano, Veronica; and Meehan, James E., 5,339,231, Cl. 362-226.000.
Meeks, William R.: *See—*
Hill, Alan M; and Meeks, William R., 5,338,019, Cl. 271-139.000.
Megahertz Corporation: *See—*
Beckham, D. Scott; Putnam, Greg A.; Bolt, Lorraine; Aldous, Stephen C.; Dake, Guy M.; and Henrie, James B., 5,338,210, Cl. 439-131.000.
Meguro, Tsuneo; and Sakata, Hiroshi, to Ricoh Company, Ltd. Electronic filing system. 5,339,169, Cl. 358-403.000.
Mehlert, Martin; and Engel, Hans E., to Otis Elevator Company. Assembly and method for adjusting brake force for passenger conveyor emergency brake. 5,337,878, Cl. 198-323.000.
Meier, Werner; Lippert, Hans-Joachim; Rau, Peter; and Koerner, Lothar, to Siemens Aktiengesellschaft. Fuel assembly for a boiling water reactor with a redundant support structure and a locked fuel assembly case. 5,339,342, Cl. 376-446.000.
Meixner, Hans-Werner, to Pi-Patent Gesellschaft mit beschraenkter Haftung (GmbH). Device for driving a tool movable to and fro in axial direction. 5,337,565, Cl. 60-594.000.
Melatti, Livio R.; and Velasco, Victor J., to AT&T Bell Laboratories. Hybrid wafer probe. 5,338,223, Cl. 439-482.000.
Melman, Haim Z.: *See—*
Smilansky, Zeev; Melman, Haim Z.; Bresler, Yoav; Litvak, Matty J.; Kreitman, Haim; and Yad-Shalom, Itai, 5,339,176, Cl. 358-504.000.
Melse, Abraham L., to U.S. Philips Corporation. Oscillator circuit having a fifty percent duty cycle. 5,339,052, Cl. 331-75.000.
Melville, Iain A.; and Rauch, Robert P., deceased (by Rauch, Micheline M. E., Patrick A. Rauch and Stephen E. Rauch, administrators), to Tioxide Group Services Limited. Composite pigmentary material. 5,338,354, Cl. 106-442.000.
Memphis Light, Gas and Water Division: *See—*
Richey, Enoch, 5,337,469, Cl. 29-402.120.
Menassa, Aime; and Caupin, Henri, to Delta Agro Industries; and Atochem. Undecylenate deodorants for sewage sludges. 5,338,511, Cl. 422-5.000.
Meng, Hsiang-Hui B.: *See—*
Wu, Shin-Tson; Margerum, J. David; Meng, Hsiang-Hui B.; and Dalton, Larry R., 5,338,481, Cl. 252-299.010.
Mercado, Emilio A., to Acquired Technolgy, Inc. Method for dyeing polyethylene terephthalate films. 5,338,318, Cl. 8-512.000.
Mercedes-Benz AG: *See—*
Bader, Christian, 5,337,848, Cl. 180-65.200.
Frey, Wolfram; and Trube, Hans, 5,337,439, Cl. 15-250.002.
Guckel, Martin; Schrader, Jurgen; and Wilms, Bernd, 5,338,085, Cl. 296-121.000.
Haberle, Fritz; Kleiner, Horst; and Oravetz, Josef, 5,338,077, Cl. 293-120.000.
Mauz, Uwe, 5,338,055, Cl. 280-668.000.
Merck & Co., Inc.: *See—*
Bayne, Marvin L.; Thomas, Kenneth A., Jr.; and Conn, Gregory L., 5,338,840, Cl. 536-23.510.
DeCamp, Ann; Dolling, Ulf H.; Li, Yulan; Rieger, Dale L.; Yasuda, Nobuyoshi; and Xavier, Lyndon C., 5,338,875, Cl. 556-402.000.
Nutt, Ruth F.; Brady, Stephen F.; Veber, Daniel F.; and Duggan, Mark E., 5,338,723, Cl. 514-11.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Bauer, Hans-Jorg; Bauer, Gerd; Dingeldein, Elvira; and Wahlig, Helmut, 5,338,772, Cl. 523-115.000.
Huynh-ba, Tuong; and Osman, Maged A., 5,338,483, Cl. 252-299.610.
Merle, Thomas C.: *See—*
Johnson, Kevin M.; and Merle, Thomas C., 5,339,148, Cl 355-290.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Merrell Dow Pharmaceuticals Inc.: *See—*
Aiman, Charles E.; and Daugs, Edward D., 5,338,862, Cl. 578-316.400.

Merrem, Hans-Joachim: *See—*
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,338,641, Cl. 430-165.000.

Merrill, Perry: *See—*
Kinzer, Daniel M.; Merrill, Perry; and Spring, Kyle A., 5,338,693, Cl. 437-29.000

Merritt, Joyce R.: *See—*
Drobish, James L.; Biard, Daniel; and Merritt, Joyce R., 5,337,926, Cl. 222-309.000.

Merz, Gunnar: *See—*
van Buren, Frederik R.; Deij, Leendert; Merz, Gunnar; and Schneider, Hans P., 5,338,444, Cl. 210-660.000.

Mesacon Gesellschaft fur MeBtechnik MbH: *See—*
Grebe, Volker, 5,339,196, Cl. 359-640.000.

Messenger, Jeff. Well casing liner suspension hanger. 5,337,809, Cl. 166-208.000.

Messenger, Ronald J.: *See—*
Lucas, Paul C.; Messenger, Ronald J.; Macklem, Elizabeth A.; and Nykwest, Lawrence C., 5,338,404, Cl. 162-163.000.

Messier-Bugatti: *See—*
Derrien, Michel, 5,337,976, Cl. 244-102.00A.

Metcal, Inc.: *See—*
Okusaka, Shigeru; Kasa, Hideki; Sakaguchi, Masayuki; Kyomen, Junsuke; and Tago, Takashi, 5,338,920, Cl. 219-633.000.

Metcalf, Jeffrey D.; and Brashear, Daniel F., to Roadmaster Corporation. Quick change mechanism for synchronous/asynchronous exercise machine. 5,338,273, Cl. 482-70.000.

Metricom, Inc.: *See—*
Baran, Paul; and Palmer, Ronald S., 5,338,332, Cl. 75-247.000.

Metz, Jean: *See—*
Lonardi, Emile; Metz, Jean; Mailliet, Pierre; Thillen, Guy; Andonov, Radmir; and Malivoir, Philippe, 5,338,013, Cl. 266-271.000.

Meyer, Richard S.; and Campbell, Michael L., to Curtis-Burns, Inc. Fat substitute compositions including waxes for a reduced laxative effect. 5,338,564, Cl. 426-612.000.

Michael, Harald. Vacuum-operated draining systems. 5,337,773, Cl. 137-1.000.

Michael, Keith W.: *See—*
Pernisz, Udo C.; and Michael, Keith W., 5,339,211, Cl. 361-277.000

Michael Weinig Aktiengesellschaft: *See—*
Schmitt, Gerhard, 5,337,812, Cl. 144-230.000.

Micro Motors, Inc.: *See—*
Coss, Ronald G.; and Hogan, Donald J., 5,337,638, Cl. 81-483.000.

Microelectronics And Computer Technology Corporation: *See—*
Wroblewski, David A.; Hill, William C.; and McCandless, Timothy P., 5,339,391, Cl. 395-157.000

Micron Semiconductor, Inc.: *See—*
Dennison, Charles H.; and Ahmad, Aftab, 5,338,700, Cl. 437-60.000.
Keller, David J.; and Gould, Debra K., 5,338,395, Cl. 156-643.000.

Microsemi Corporation: *See—*
Veeck, Robert, 5,339,218, Cl. 361-707.000.

Microsoft Corporation: *See—*
Crick, Andrew P. R., 5,339,432, Cl. 395-700.000.

Midwest Air Products Co., Inc.: *See—*
Sumrack, Charles J., 5,338,248, Cl. 454-49.000.

Midwest Research Institute: *See—*
Farrington, Robert B., 5,338,254, Cl. 454-284.000.

Mielke, Neal: *See—*
Tedrow, Kerry; Taub, Mase; and Mielke, Neal, 5,339,272, Cl. 365-189.090.

Miese, Manfred; and Holzschuh, Johann, to Battenfeld GmbH. Displacement and/or actuating force drive device for an injection molding machine. 5,338,174, Cl. 425-150.000.

Mietus, David F.: *See—*
Bennett, Paul T.; Gutteridge, Ronald J.; Koury, Daniel N., Jr.; Mietus, David F.; and Ristic, Ljubisa, 5,337,606, Cl. 73-517.00R.

Mihail, Stavros; and Berg, Marvin J., to Promation Incorporated. Apparatus for introducing filler material into containers. 5,337,795, Cl. 141-144.000.

Mihara, Yuji: *See—*
Ikegawa, Akihiko; Mihara, Yuji; and Okazaki, Masaki, 5,338,656, Cl. 430-577.000

Mihayashi, Keiji: *See—*
Saito, Naoki; Kamio, Takayoshi; Ichijima, Seiji; and Mihayashi, Keiji, 5,338,654, Cl. 430-557.000.

Mikami, Akira: *See—*
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi; Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, 5,337,881, Cl. 198-409.000.

Mikitin, Gary A.: *See—*
Blankenship, George D.; Hoffa, Michael D.; and Mikitin, Gary A., 5,338,916, Cl. 219-130.400.

Mikulka, Thomas L.; Bennardo, Nicola T.; Wienick, Steven D.; and Trainor, Thomas M., to Nabisco, Inc. Process for the preparation of a spatter-resistant low-fat spread. 5,338,563, Cl. 426-604.000

Miles, Jeffrey A. Battery powered model car. 5,338,247, Cl. 446-456.000.

Miletic, Anton: *See—*
Korte, Hermann-Josef; Miletic, Anton; Neutzler, Hans U.; Schoengen, Anton; Schroeder, Johann H.; and Wirges, Ralf, 5,338,882, Cl. 562-483.000.

Miller, Douglas C., to Plasta Fiber Industries Corp. Apparatus for securing fabric to a visor. 5,338,082, Cl. 296-97.100.

Miller, Elmo E. Welt lock furniture construction. 5,338,091, Cl. 297-218.000.

Miller, Gale W.; Janning, Eugene A., Jr.; and Janning, John L. Electromagnetic induction hearing aid device. 5,338,287, Cl. 600-25.000.

Miller, Joseph H.: *See—*
Abrams, Robert S.; and Miller, Joseph H., 5,338,385, Cl. 156-252.000.

Miller, Lawrence F.: *See—*
Gruenstern, Robert G.; Bast, Ronald J.; Aldecoa, Julio A.; and Miller, Lawrence F., 5,338,624, Cl. 429-120.000.

Miller, Sidney D.: *See—*
Coleman, Charles H.; Miller, Sidney D.; and Smidth, Peter, 5,339,108, Cl. 348-408.000.

Miller, Virginia: *See—*
Isberg, Ralph R.; Miller, Virginia; and Falkow, Stanley, 5,338,842, Cl. 536-23.700.

Miller, William J.; Nolan, Daniel A.; and Weidman, David L., to Corning Incorporated. Low loss coupler. 5,339,372, Cl. 385-29.000.

Milliken Research Corporation: *See—*
Cockfield, Joe B.; Fadial, Sabrina B.; and Marco, Francis W., 5,337,460, Cl. 28-167.000.

Millner, Margaret, legal representative: *See—*
Quante, J. Michael; Hoke, Randal A.; Mize, Patrick D.; Woodard, Daniel L.; and Millner, O. Elmo, deceased, 5,338,843, Cl. 540-222.000

Millner, O. Elmo, deceased: *See—*
Quante, J. Michael; Hoke, Randal A.; Mize, Patrick D.; Woodard, Daniel L.; and Millner, O. Elmo, deceased, 5,338,843, Cl 540-222.000.

Mills, Floyd D., to Ingersoll-Rand Company. Feedback controlled engine starting system. 5,337,713, Cl. 123-179.300

Mills, Robert L.; Lodholz, John C.; Sarat-Chandra, Rangasami; Orlando, Franklin P.; and Christian, Donald J., to FMC Corporation. Alignment monitor and method. 5,337,885, Cl. 198-502.400.

Milltronics Ltd.: *See—*
Brown, William J.; Cherek, Bogdan; and Viuhko, Henry T., 5,339,292, Cl. 367-176.000.

Minai, Masayoshi: *See—*
Higashii, Takayuki; and Minai, Masayoshi, 5,338,484, Cl. 252-299.650.

Minami, Toshihiko: *See—*
Kawata, Yoshinobu; and Minami, Toshihiko, 5,338,363, Cl. 118-725.000.

Minamino, Naoto: *See—*
Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, 5,338,830, Cl. 530-326.000.

Minarik, Steven B., to United States of America, Navy. Wavefront simulator for evaluating RF communication array signal processors. 5,339,087, Cl. 342-375.000.

Mine, Katsutoshi; Nakamura, Takashi; and Sasaki, Motoshi, to Dow Corning Toray Silicone Co., Ltd. Method for the preparation of a silicone resin. 5,338,817, Cl. 528-12.000.

Mine, Ryoichi: *See—*
Ikeda, Mitsuji; Mine, Ryoichi; Nozaki, Masayuki; and Sugiura, Tadashi, 5,339,381, Cl. 385-138.000

Mine Safety Appliances Company: *See—*
Jolson, Joseph D.; and Schneider, Alan A., 5,338,429, Cl. 204-415.000

Minnesota Mining and Manufacturing Company: *See—*
Dietz, Timothy M.; Asmus, Robert A.; and Uy, Rosa, 5,338,490, Cl. 252-500.000
Egan, Daniel; Alexander, Jerry; McKinney, James T.; and Runyon, John F., 5,337,608, Cl. 73-865.600.
Fletcher, Robert B.; Bigham, Wilson S.; and Albert, Phyllis F., 5,338,368, Cl. 134-40.000.
Heinz, John E.; Hamerly, Michael E.; Molstad, Richard W.; Schwarz, Theodore A.; and Youngquist, Robert J., 5,339,202, Cl. 360-46.000.
Li, Wu-Shyong, 5,338,595, Cl. 428-143.000.
Lown, Jean A., 5,338,473, Cl. 252-62.510.
Parsonage, Edward E.; and Debe, Mark K., 5,338,430, Cl 204-412.000.
Plyley, Alan K.; Barker, John M.; Vidal, Claude; and Redmond, Russell J., 5,338,305, Cl. 604-164.000.
Skaer, Dean A., 5,337,901, Cl. 209-315.000.
Whitehead, Lone A., 5,339,382, Cl. 385-146.000.

Mino, Satoshi: *See—*
Takahashi, Hisashi; Shimizu, Shigehisa; Fujiwara, Takayuki; Mino, Satoshi; and Sugii, Tatsuo, 5,337,536, Cl. 53-135.300

Minolta Camera Kabushiki Kaisha: *See—*
Ikegawa, Akihito; Aritomo, Kouichi; Tsukamoto, Kazuki; and Yamashita, Michiya, 5,338,895, Cl. 118-661.000.
Ueda, Hideaki, 5,338,634, Cl. 430-59.000.

Minoshima, Toru: *See—*
Sugiura, Satoshi; Minoshima, Toru; Hazato, Atsuo; and Kato, Yoshinori, 5,338,844, Cl. 544-318.000.

Miodownik, Saul: *See—*
Daghighian, Farhad; Miodownik, Saul; Shenderov, Peter; and Eshaghian, Behzad, 5,338,937, Cl. 250-368.000.

Miotto, Ronald L.: *See—*
Frelich, Jeffrey J.; Miotto, Ronald L.; and Wiltsey, Ronald A., 5,338,386, Cl. 156-290.000.

Mirchandani, Prakash K.: *See—*
Friederichs, John W.; Mirchandani, Prakash K.; and Krudy, Paul J., 5,338,506, Cl. 419-44.000.

Mirkin, Chad A.; Chen, Kaimin; and Caldwell, W. Brett, to Northwestern University. Method of forming self-assembled, mono- and multilayer fullerene film and coated substrates produced thereby. 5,338,571, Cl. 427-299.000.

Misage, Thomas J.: *See—*
Zaccai, Gianfranco; Rousmaniere, Arthur S.; Dearborn, Timothy C.; Noble, Lynn; and Misage, Thomas J., 5,337,525, Cl. 52-35.000.

Mishima, Akifumi; Mashima, Munenori; and Tamura, Jun, to Mitsubishi Materials Corporation. Target units. 5,338,425, Cl. 204-298.120.

Mishima, Naoshi; Fukagai, Toshio; Taniguchi, Kiyoshi; Kishi, Hiroyuki; Inoue, Tomohiro; and Kawasaki, Yoshiaki, to Ricoh Company, Ltd. Electrophotographic image formation method. 5,339,138, Cl. 355-296.000.

Missbach, Martin, to Ciba-Geigy Corporation. Thiosemicarbazonic acid esters. 5,338,746, Cl. 514-369.000.

Mistyurik, John D., to Pitney Bowes Inc. Envelope presence sensing mechanism for a thermal postage meter. 5,339,100, Cl. 346-134.000.

Mistyurik, John D.: *See—*
Goldberg, Stephen F.; and Mistyurik, John D., 5,339,280, Cl. 346-134.000.

Mita Industrial Co., Ltd.: *See—*
Kusumoto, Hiroshi; Hayashi, Daisuke; Ishida, Hideki; Kitagawa, Shoichi; Nagashima, Takashi; and Miyamoto, Mitsugu, 5,339,137, Cl. 355-208.000.
Nagao, Tsuyoshi; Kakuta, Masayuki; Kida, Yasuhiko; Takeda, Yoshiyuki; and Yoshida, Takeshi, 5,338,018, Cl. 271-3.000.
Nishiyama, Shigeru; and Hayashi, Yasuhiro, 5,337,794, Cl. 141-144.000.
Omura, Hiroyoshi, 5,339,145, Cl. 355-277.000.

Mitamura, Nobuaki; and Okita, Shigeru, to NSK Ltd. Ball-and-roller bearing. 5,338,377, Cl. 148-318.000.

Mitani, Motohiro: *See—*
Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; and Matsumoto, Takeo, 5,338,877, Cl. 556-440.000.

Mitchell, Angelo M.: *See—*
Nami, Robert B.; Hamrick, Edward A.; Herrmann, Jakob; and Mitchell, Angelo M., 5,337,893, Cl. 206-329.000.

Mitelman, Roman; and Smith, Gary B., to Cleo, Inc. Protective end cap for paper rolled on a tube. 5,337,895, Cl. 206-416.000.

Mitsuba Electric Manufacturing Co., Ltd.: *See—*
Takada, Shigeru, 5,338,995, Cl. 310-89.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Arimoto, Akiya; Okamoto, Yasushi; and Muramatsu, Kikuo, 5,339,451, Cl. 395-800.000.
Fukui, Wataru; and Ohsawa, Toshio, 5,337,716, Cl. 123-425.000.
Fukumoto, Atsushi; Ohi, Makoto; Onoda, Hiroshi; Ajika, Natsuo; and Kunori, Yuichi, 5,338,957, Cl. 257-316.000.
Fushimi, Shinya, 5,339,424, Cl. 395-650.000.
Inoue, Sadayuki; and Fujii, Kyoto, 5,339,165, Cl. 358-312.000.
Iwasaki, Takeshi; Yatomi, Takeshi; Naka, Shigeaki; and Suzuki, Toshio, 5,338,912, Cl. 219-69.120.
Katoh, Yoshiyuki; Kameyama, Masatoshi; and Higo, Shigekichi, 5,339,085, Cl. 342-180.000.
Kawata, Yoshinobu; and Minami, Toshihiko, 5,338,363, Cl. 118-725.000.
Kimura, Masatoshi; and Yazawa, Minobu, 5,339,344, Cl 377-39.000.
Kosaki, Katsuya, 5,338,967, Cl. 257-620.000.
Machida, Hirohisa, 5,339,268, Cl. 365-49.000.
Matsumoto, Tohru, 5,338,251, Cl. 454-153.000.
Matsuoka, Hiroshi, 5,338,703, Cl. 437-203.000.
Nishimura, Tetsuya; Yoshimura, Motomu; and Maeda, Mitsuo, 5,339,201, Cl. 359-891.000.
Ohi, Makoto; Arima, Hideaki; Ajika, Natsuo; Hachisuka, Atsushi; and Matsui, Yasushi, 5,338,699, Cl. 437-52.000.
Ohtagaki, Shigeki; and Miura, Kazunori, 5,338,058, Cl. 280-707.000.
Sugahara, Kazuyuki; and Ipposhi, Takashi, 5,338,388, Cl. 117-44.000.
Tamura, Katsuhiko; and Kawai, Atsuko, 5,338,955, Cl. 257-306.000.
Tanino, Noriyuki, 5,338,989, Cl. 307-571.000.
Wake, Setsuo, 5,338,953, Cl. 267-316.000.
Yamamoto, Kyohei, 5,338,996, Cl. 310-217.000.
Yumura, Takashi; Funai, Kiyoshi; and Yamamoto, Tetsu, 5,339,208, Cl. 360-104.000.

Mitsubishi Denki Kasbushiki Kaisha: *See—*
Inami, Kazuyoshi, 5,339,083, Cl. 342-157.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Abe, Hisaki; Kondoh, Toshio; Fukuda, Hideki; Takahashi, Mayumi; Aoyama, Tetsuo; and Miyake, Masahiro, 5,338,462, Cl. 210-757.000

Mitsubishi Jidosha Kogyo Kabushi Kaisha: *See—*
Murakami, Nobuaki; and Kawabe, Takashi, 5,337,720, Cl. 123-481.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi; Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, 5,337,881, Cl. 198-409.000.
Togai, Kazuhide, 5,337,719, Cl. 123-478.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Iida, Kozo; Nojima, Shigeru; Satoru, Serizawa; and Kobayashi, Norihisa, 5,338,715, Cl. 502-64.000.
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.
Miyamoto, Masaaki; Yuzaki, Yoshinori; and Fujihara, Kunihisa, 5,337,441, Cl. 15-318.100.

Mitsubishi Kakoki Kaisha Ltd.: *See—*
Omori, Kazuki, 5,338,285, Cl. 494-55.000.

Mitsubishi Kasei Corporation: *See—*
Kanazawa, Daisuke; Sasaki, Mitsuru; Urano, Toshiyuki; Yamashita, Youko; and Matsubara, Shinichi, 5,338,643, Cl. 430-190.000.
Nozomi, Mamoru; Watabe, Sumiko; and Aso, Ryoko, 5,338,633, Cl. 430-59.000

Mitsubishi Materials Corporation: *See—*
Hijikata, Kenichi; Komiyama, Shozo; and Maruyama, Hitoshi, 5,338,331, Cl. 75-246.000.
Hirano, Masahiro; and Takeuchi, Hiroyasu, 5,338,356, Cl. 106-690.000.
Mishima, Akifumi; Mashima, Munenori; and Tamura, Jun, 5,338,425, Cl. 204-298.120.
Tsunoda, Masakiyo; Nakajima, Hiroaki; and Koshimura, Masami, 5,339,068, Cl. 338-332.000.

Mitsubishi Metal Corporation: *See—*
Nakayama, Ryoji; Takeshita, Takuo; and Ogawa, Tamotsu, 5,338,371, Cl. 148-101.000.

Mitsubishi Oil Co., Ltd.: *See—*
Tachiki, Kiyohiro, 5,338,321, Cl. 44-451.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Yokoyama, Yutaka; Tsuji, Tatsunori; Ue, Makoto; and Sato, Tomohiro, 5,338,472, Cl. 252-62.200.

Mitsubishi Plastics Industries Limited: *See—*
Manabe, Toshiyuki; Murakami, Osamu; Takeuchi, Keiichi; and Matsuura, Junichi, 5,339,239, Cl. 364-401.000.
Yanagisawa, Tateo; Yamada, Hisayoshi; Sakamoto, Katsumi; Inagawa, Seiki; Umetsu, Yukihide; Uchida, Takeshi; Nakahara, Hideyo; and Fukumoto, Yoshiharu, 5,338,503, Cl. 264-516.000.

Mitsubishi Rayon Company, Inc.: *See—*
Toritani, Akihiro; Tayama, Suehiro; and Kawachi, Yasunori, 5,338,804, Cl. 525-310.000.

Mitsuda, Koichi: *See—*
Kirihara, Shigeki; Arai, Shigeru; and Mitsuda, Koichi, 5,339,247, Cl. 364-468.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Miyamoto, Ryoichi, 5,338,769, Cl. 522-88.000.
Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo; and Imuta, Shinichi, 5,338,792, Cl. 524-477.000.

Mitsui Toatsu Chemicals Incorporated: *See—*
Ohto, Norio; Horikomi, Kazutoshi; Matsubara, Akira; Tanada, Hideki; Sakai, Kazuya; Kajiya, Seitaro; Mizuchi, Akira; and Shimizu, Hideshi, 5,338,857, Cl. 548-248.000.

Mitsui Toatsu Chemicals, Incorporation: *See—*
Fukazawa, Nobuyuki; Iizuka, Hajime; Yano, Osamu; and Miyama, Yukio, 5,338,745, Cl. 514-330.000.

Mitsumoto, Hiroshi, to NEC Corporation. Semicondcutor device with high speed field effect transistor structure reducing concentrations of electric field near drain region. 5,338,958, Cl. 257-330.000.

Mitsunaga, Takafumi: *See—*
Shiokawa, Youichi; Akahane, Atsushi; Katayama, Hirohito; and Mitsunaga, Takafumi, 5,338,743, Cl. 514-300.000.

Mitsushima, Kenji; Takimoto, Akio; Yagi, Shigeo; and Sonoyama, Takayasu, to Shionogi & Co., Ltd. Cephalosporin acetylhydrolase gene and protein encoded by said gene. 5,338,676, Cl. 435-197.000.

Mitsuyu, Tsuneo: *See—*
Tsujimura, Ayumu; Ohkawa, Kazuhiro; Yoshii Shigeo; and Mitsuyu, Tsuneo, 5,339,326, Cl. 372-49.000.

Miura Engineering International Kabushiki Kaisya: *See—*
Ichiyanagi, Shigeo; Iwai, Shojiro; and Deguchi, Masahiro, 5,338,449, Cl. 210-205.000.

Miura, Hiroshi, to Nec Corporation. Solid-state laser. 5,339,328, Cl. 372-70.000.

Miura, Kazunori: *See—*
Ohtagaki, Shigeki; and Miura, Kazunori, 5,338,058, Cl. 280-707.000.

Miura, Kenji, to RIX Corporation. Apparatus for checking size of a work. 5,339,260, Cl. 364-560.000.

Miura, Satoshi: *See—*
Tamura, Takahiko; and Miura, Satoshi, 5,339,011, Cl. 315-383.000.

Miura, Steve S.: *See—*
Brunsvold, William R.; Jagannathan, Premlatha; Miura, Steve S.; Montgomery, Melvin W.; Sachdev, Harbans S.; and Sooriyakumaran, Ratnam, 5,338,818, Cl. 528-43.000

Miyabe, Kazumichi: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, 5,339,376, Cl. 385-71.000.

Miyake, Masahiro: *See—*
Abe, Hisaki; Kondoh, Toshio; Fukuda, Hideki; Takahashi, Mayumi; Aoyama, Tetsuo; and Miyake, Masahiro, 5,338,462, Cl 210-757.000.

Miyake, Yukinori: *See—*
Kaneko, Mitsunori; and Miyake, Yukinori, 5,339,056, Cl 333-139.000.

Miyama, Yukio: *See—*
Fukazawa, Nobuyuki; Iizuka, Hajime; Yano, Osamu; and Miyama, Yukio, 5,338,745, Cl. 514-330.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Miyamoto, Hidenori: *See*—
Soshi, Isao; Ohtake, Motoyuki; and Miyamoto, Hidenori, 5,339,123, Cl. 354-106.000.

Miyamoto, Masaaki; Yuzaki, Yoshinori; and Fujihara, Kunihisa, to Mitsubishi Jukogyo Kabushiki Kaisha. Extraction/insertion type soot blowing apparatus. 5,337,441, Cl. 15-318.100.

Miyamoto, Mitsugu: *See*—
Kusumoto, Hiroshi; Hayashi, Daisuke; Ishida, Hideki; Kitagawa, Shoichi; Nagashima, Takashi; and Miyamoto, Mitsugu, 5,339,137, Cl. 355-208.000.

Miyamoto, Ryoichi, to Mitsui Petrochemical Industries, Ltd. Photocurable resin composition. 5,338,769, Cl. 522-88.000.

Miyataka, Koji; and Nakayama, Takashi, to Sunstar Giken Kabushiki Kaisha. Polyvinyl chloride plastisol sealer composition. 5,338,788, Cl. 524-197.000.

Miyauchi, Yuuji: *See*—
Washizu, Katsushi; and Miyauchi, Yuuji, 5,338,073, Cl. 285-319.000.

Miyazaki, Souhei: *See*—
Ishii, Kazuhide; Kawasaki, Tatsuo; Kuriyama, Noriyuki; Dohi, Shoji; Nakashiba, Akio; and Miyazaki, Souhei, 5,338,616, Cl. 428-472.000.

Mizan, Muhammad A.; and McGowan, Raymond C., to United States of America, Army. X-band bipolar junction transistor amplifier. 5,339,047, Cl. 330-286.000.

Mize, Patrick D.: *See*—
Quante, J. Michael; Hoke, Randal A.; Mize, Patrick D.; Woodard, Daniel L.; and Millner, O. Elmo, deceased, 5,338,843, Cl 540-222.000.

Mizuchi, Akira: *See*—
Ohto, Norio; Horikomi, Kazutoshi; Matsubara, Akira; Tanada, Hideki; Sakai, Kazuya; Kajiya, Seitaro; Mizuchi, Akira; and Shimizu, Hideshi, 5,338,857, Cl. 548-248.000.

Mizusawa, Yoshitada; and Toya, Matsumi, to Kabushiki Kaisha Tiyoda Seisakusho; and Sakura Finetechnical Co., Ltd. Apparatus for dyeing tissues. 5,338,358, Cl. 118-401.000.

Mizutani, Kazuyoshi: *See*—
Aoai, Toshiaki; and Mizutani, Kazuyoshi, 5,338,640, Cl. 430-154.000.

Mizutani, Keita: *See*—
Ohsugi, Hiroharu; and Mizutani, Keita, 5,338,799, Cl. 525-123.000.

Mlcak, Richard; and Tuller, Harry L., to Massachusetts Institute of Technology. Electrochemical etching process. 5,338,416, Cl. 204-129.300.

MLS Mikrowellen-Labor-Systeme GmbH: *See*—
Heierli, Jacob, 5,338,409, Cl. 202-205.000.

Mobil Oil Corporation: *See*—
Arvizzigno, Joseph A.; Ashjian, Henry; and Napier, Roger P., 5,338,468, Cl. 252-45.000.
Harandi, Mohsen N., 5,338,436, Cl. 208-80.000.
Hiebert, John; Rowe, Carleton N.; and Rudnick, Leslie R., 5,338,470, Cl. 252-51.50A.
Jennings, Alfred R., Jr., 5,337,828, Cl. 166-372.000.
Nelson, Lloyd A.; and Rudnick, Leslie R., 5,338,469, Cl. 252-49.600.
Owen, Hartley; and Schipper, Paul H., 5,338,439, Cl. 208-153.000.
Yan, Tsoung Y., 5,338,463, Cl. 210-763.000.

Moczar, Elemer: *See*—
Robert, Ladislas; Moczar, Elemer; Hornebeck, William G.; and Kerneur, Christiane M. P., 5,338,747, Cl. 514-373.000.

Modern Controls, Inc.: *See*—
Evans, Mark D.; and Oestreich, Roger C., 5,337,902, Cl. 209-539.000.

Mody, Pankaj H.; Himmer, Richard P.; and Herman, John J., to Honeywell Inc. Method for interlock tracing for discrete devices in a process control system. 5,339,237, Cl. 364-184.000.

Moeller, David F.: *See*—
Irwin, James S.; Moeller, David F.; and Huehne, Karl J., 5,339,278, Cl. 331-16.000.

Mogi, Hisashi: *See*—
Horikawa, Hiroshi; Tsuzuki, Yoshikazu; Mogi, Hisashi; and Matsubara, Kazuo, 5,338,070, Cl. 285-177.000.

Mohan, Robert J.: *See*—
Brockner, Henry W.; Mohan, Robert J.; and Lassen, Richard, 5,338,165, Cl. 417-423.100.

Moisdon, Roger G. F. Vertical sail boat. 5,337,690, Cl. 114-39.100.

Molecular Probes, Inc.: *See*—
Kang, Hee C.; and Haugland, Richard P., 5,338,854, Cl. 548-110.000.

Molex Incorporated: *See*—
Bowen, David C.; and Long, Jerry A., 5,338,221, Cl. 439-405.000.
Bryce, Brian; and Wilhite, Mathew, 5,338,230, Cl. 439-629.000.
Bryce, James R.; Burke, Rodger W.; and Reisdorf, Paul A., 5,338,226, Cl. 439-571.000.
Hiramoto, Haruo; Ito, Tomoaki; and Tojo, Katsutoshi, 5,338,219, Cl. 439-350.000.
Lee, Shiuan E.; Wong, Yuen P.; and Brunker, David L., 5,338,215, Cl. 439-188.000.
Lenain, Jean-Francois; and Bientz, Alfred, 5,339,364, Cl. 381-173.000.
Wilhite, Mathew, 5,338,231, Cl. 439-660.000.

Moll, Philipp. Process for bringing together, aligning, and co-processing flaccid workpiece layers. 5,337,687, Cl. 112-262.300.

Mollenauer, Kenneth H.; Hermann, George D.; Howell, Thomas A.; and Monfort, Michelle Y., to Thomas J. Fogarty, M.D. Adjustable valve having a radially compressible sealing body. 5,338,313, Cl. 604-249.000.

Molnar, Richard J., to Elsag International B.V. Method and apparatus for digitally processing and filtering signals in industrial control applications. 5,339,335, Cl. 375-103.000.

Molstad, Richard W.: *See*—
Heinz, John E.; Hamerly, Michael E.; Molstad, Richard W.; Schwarz, Theodore A.; and Youngquist, Robert J., 5,339,202, Cl. 360-46.000

Monfort, Michelle Y.: *See*—
Mollenauer, Kenneth H.; Hermann, George D.; Howell, Thomas A.; and Monfort, Michelle Y., 5,338,313, Cl. 604-249.000.

Monroe Auto Equipment Company: *See*—
Lizell, Magnus B., 5,337,863, Cl. 188-299.000.

Montagna, Michele, to Alluflon- S.p.A. Industrial procedure for the application of a P.T.F.E. film on aluminum surfaces. 5,338,572, Cl. 427-309.000.

Montedipe s.r.l.: *See*—
Vianello, Domenico; Benetton, Armando; Moro, Alessandro; Pippa, Roberto; and Longo, Aldo, 5,338,796, Cl. 525-66.000.

Montgomery, April D.: *See*—
Johnson, Karen T.; Adams, Lori T.; Montgomery, April D.; and Montgomery, John W., 5,337,934, Cl. 224-153.000.

Montgomery, David B., to Becton, Dickinson and Company. Article having multi-layered lubricant and method therefor. 5,338,312, Cl. 604-230.000

Montgomery, John W.: *See*—
Johnson, Karen T.; Adams, Lori T.; Montgomery, April D.; and Montgomery, John W., 5,337,934, Cl. 224-153.000.

Montgomery, Melvin W.: *See*—
Brunsvold, William R.; Jagannathan, Premlatha; Miura, Steve S.; Montgomery, Melvin W.; Sachdev, Harbans S.; and Sooriyakumaran, Ratnam, 5,338,818, Cl. 528-43.000

Monthony, James F.; Livingston, Dwight; Reuben, Jayakumar; and Tite, Robert C., to Becton, Dickinson and Company. Method for distributing a liquid sample into a multiple aliquot device. 5,338,666, Cl. 435-34.000.

Moon, Ronald R.; Uhlendorf, Gregg J.; and Barnard, Daniel E., to NEC Corporation. Servo system for providing increased recording density and improved operation of the AGC circuitry. 5,339,207, Cl. 360-77.050.

Moore, Brian B.: *See*—
Elko, David A.; Isenberg, John F., Jr.; Moore, Brian B.; Strickland, Jimmy P.; Swanson, Michael D.; and Wang, George W., 5,339,427, Cl. 395-725.000.

Moore, Peter W.: *See*—
Conroy-Wass, Theodore R.; and Moore, Peter W., 5,339,221, Cl 361-796.000.

Moore, Robert R.; Lamb, Steve R.; Lamoreux, Larry W.; and McTeigue, Michael H., to Orthopedic Systems, Inc. Spine motion analyzer and method. 5,337,758, Cl. 128-781.000.

Moorman, Stephen E., to Georgia-Pacfic Corporation. Pallet constructed of sheet material. 5,337,679, Cl. 108-51.300.

Morabito, Paul L.; McCabe, Terrence; and Hiller, Joseph F., to Dow Chemical Company, The. Vented capillary gas chromatography apparatus. 5,338,514, Cl. 422-89.000.

Moran, John J.: *See*—
Peelor, Philip L.; Moran, John J.; and Flanner, Lloyd T., 5,338,776, Cl. 523-166.000.

Morando, Jorge A. Annealing and tunnel furnace rolls. 5,338,280, Cl. 492-36.000.

Morgan, Hugh T.: *See*—
Gullberg, Grant T.; Morgan, Hugh T.; Tung, Chi-Hua; Zeng, Gengsheng L.; and Christian, Paul E., 5,338,936, Cl. 250-363.040.

Morgan, O. F.: *See*—
Duffy, Robert; and Morgan, O. F., 5,339,393, Cl. 395-161.000.

Morgan, Shaun D.: *See*—
Jefferis, Brian; and Morgan, Shaun D., 5,339,081, Cl. 342-28.000.

Mori, Hideo: *See*—
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.
Noguchi, Kazuo; Mori, Yoshikatsu; Kunimori, Nagatoshi; and Mori, Hideo, 5,338,135, Cl. 408-233.000.

Mori, Hideyasu; Yamazaki, Yuichi; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, to Kabushiki Kaisha Toshiba. Modem pooling system for communicating between a telephone and a plurality of data terminals. 5,339,355, Cl. 379-94.000.

Mori, Sadayori: *See*—
Imai, Hisato; and Mori, Sadayori, 5,338,054, Cl. 280-655.000.

Mori, Yoshikatsu: *See*—
Noguchi, Kazuo; Mori, Yoshikatsu; Kunimori, Nagatoshi; and Mori, Hideo, 5,338,135, Cl. 408-233.000.

Mori, Yoshinori: *See*—
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.

Moriguchi, Yasuo: *See*—
Tanaka, Katsuto; Makita, Kensuke; and Moriguchi, Yasuo, 5,338,350, Cl. 106-19.00D

Morita, Kiyoo: *See*—
Matsumoto, Akira; Morita, Kiyoo; and Daihisa, Takuji, 5,337,973, Cl. 242-347.000.

Morita, Yoshikazu: *See*—
Uda, Masahiro; Morita, Yoshikazu; and Oosaki, Katsuhisa, 5,338,333, Cl. 75-352.000.

Moritsugu, Michiyasu: *See*—
Yorita, Hiroshi; Igashira, Toshihiko; Moritsugu, Michiyasu; and Chujo, Yoshiki, 5,338,431, Cl. 204-424.000.

Moriuchi, Yuzo: *See*—
Sawamura, Kouji; and Moriuchi, Yuzo, 5,339,357, Cl. 379-355.000.

Moriyama, Hitoshi: *See*—
Kobayashi, Atsuhisa; Tokunaga, Haruhiko; and Moriyama, Hitoshi, 5,338,121, Cl. 400-322.000.

Moriyama, Takamasa; Masumoto, Hiroki; and Kato, Kuniyasu, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Process for preparing molded articles of hydrolyzed ethylene-vinyl acetate copolymers. 5,338,502, Cl. 264-322.000.

Morley, Wayne G.: *See*—
Campbell, Iain J.; Morley, Wayne G.; and Norton, Ian T., 5,338,561, Cl. 426-602.000.

Moro, Alessandro: *See*—
Vianello, Domenico; Benetton, Armando; Moro, Alessandro; Pippa, Roberto; and Longo, Aldo, 5,338,796, Cl. 525-66.000.

Morohashi, Shinichi; and Komiya, Satoshi, to Fujitsu Limited. Radiation detecting device and method for fabricating the same. 5,338,934, Cl. 250-336.200.

Morrison, Anthony: *See*—
Wesdorp, Leendert H.; Madsen, Robert A.; Kasica, James; Kowblansky, Marie; and Morrison, Anthony, 5,338,560, Cl. 426-573.000.

Morrison, James M.: *See*—
Yalowitz, Jeffrey S.; Morrison, James M.; and Roberts, Hilary E., 5,339,070, Cl. 340-578.000.

Morrison, Richard E., to Die-X Tooling Systems. Outfeed lifter ramp for blanking boxes and other die-cut paper products. 5,337,639, Cl. 83-111.000.

Morrison, Robert J. Contact lens case. 5,337,888, Cl. 206-5.100.

Mortensen, JD: *See*—
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, JD; and Berry, Gaylord, 5,338,770, Cl. 523-112.000.

Mortimer, Timothy J.: *See*—
Gonzales, Frank, Jr.; and Mortimer, Timothy J., 5,337,715, Cl. 123-325.000.

Morton International, Inc.: *See*—
Harris, Bradley D.; and Chandler, Virginia E., 5,337,674, Cl. 102-530.000.
Soderquist, Quin, 5,338,060, Cl. 280-728.00B.

Moscovici, Carlo; and Moscovici, M. Giovannella. Non-producer cell lines transformed by AMV. 5,338,680, Cl. 435-240.200.

Moscovici, M. Giovannella: *See*—
Moscovici, Carlo; and Moscovici, M. Giovannella, 5,338,680, Cl. 435-240.200.

Mote, Lewis R., Jr., to AST Research Inc. Frequency divider circuit. 5,339,345, Cl. 377-48.000.

Motorola, Inc.: *See*—
Abdala, Julio A.; and Olkoski, Jill C., 5,338,396, Cl. 156-655.000.
Bennett, Paul T.; Gutteridge, Ronald J.; Koury, Daniel N., Jr.; Mietus, David F.; and Ristic, Ljubisa, 5,337,606, Cl. 73-517.00R.
Henderson, James M.; Scott, Vernon R.; and Cote, Kenneth C., 5,338,645, Cl. 430-311.000.
Hinds, Christopher N.; Fiene, Eric V.; Marquette, Daniel T.; and Quintana, Eric E., 5,339,266, Cl. 364-748.000.
Irwin, James S.; Moeller, David F.; and Huehne, Karl J., 5,339,278, Cl. 331-16.000.
Ledzius, Robert C.; Irwin, James S.; and Manvar, Dhirajlal N., 5,339,079, Cl. 341-144.000.
Levine, Stephen N., 5,339,337, Cl. 375-114.000.
Phelps, William C., III; Daggs, Dwayne A.; Robertson, William H., Jr.; and Jensen, Tyler D., 5,339,178, Cl. 359-42.000.
Ramakrishnan, Ed S.; and Howng, Wei-Yean, 5,338,999, Cl. 310-358.000
Rusznyak, Andreas, 5,339,045, Cl. 330-253.000.
Sanders, Paul W., 5,338,397, Cl. 156-659.100.
Schiltz, Thomas E.; and Nuckolls, Carl R., 5,339,459, Cl. 455-333.000
Stanley, Ronald F.; and Soderlund, Ernest E., 5,338,909, Cl. 200-339.000.
Staudinger, Joseph; Beckwith, William B.; and Seely, Warren L., 5,339,462, Cl. 455-330.000.
Suppelsa, Anthony B.; Mullen, William B., III; and Urbish, Glenn F., 5,338,391, Cl. 156-630.000.
Theodore, N. David; and Carrejo, Juan P., 5,338,932, Cl. 250-306.000
Toms, Thomas R.; Harwood, Ann E.; Inoue, Yoshiko K.; and Kuo, Clinton C. K., 5,339,279, Cl. 365-185.000.
Weber, Paul J., 5,339,048, Cl. 330-302.000.
Workinger, David M.; and Fraser, Robert D., 5,338,617, Cl 428-551.000.
Yamamura, Norihisa; and Okada, Kotaro, 5,338,988, Cl. 307-578.000.
Zehngut, Ilan; and Zakai, Uzi, 5,339,333, Cl. 375-88.000.

Mott, Keith C.: *See*—
Barringer, H. Paul; Kirsch, Gary E.; Mott, Keith C.; and Tung, Lawrence Y., 5,338,074, Cl. 285-334.000.

Motter, Gregg A.: *See*—
Wheatly, John A.; and Motter, Gregg A., 5,339,198, Cl. 359-359.000.

Moulinex (Societe Anonyme): *See*—
Trocherie, Jean-Pierre A. L.; Marriere, Marc G. P.; and Deschamps, Joel, 5,338,111, Cl. 366-205.000.

Mount Isa Mines Limited: *See*—
Johnson, Norman W.; and Andreatidis, John P., 5,338,337, Cl. 75-654.000.

Mouri, Hiroshi; and Watanabe, Masayuki, to Nissan Motor Co., Ltd. Rear wheel steering control system for automotive vehicles. 5,337,850, Cl. 180-140.000.

MTD Products Inc.: *See*—
Rush, Robert; and Fortlage, Paul, 5,337,786, Cl. 137-625.680.

MTS Systems Corporation: *See*—
Thoen, Bradford K., 5,339,016, Cl. 318-610.000.

MTU Friedrichshafen GmbH: *See*—
Deutschmann, Herbert, 5,337,559, Cl. 60-321.000.

MTU Motoren- Und Turbinen-Union Muenchen GmbH: *See*—
Feldmann, Manfred, 5,338,152, Cl. 415-139.000.

Mudra, Petr: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,338,831, Cl. 530-334.000.

Muhs, Jeffrey D.: *See*—
Kucksdorf, Arthur E.; Muhs, Jeffrey D.; and Hammer, Scott D., 5,338,117, Cl. 383-9.000.

Muir, Ronald J.: *See*—
Olson, William D.; Muir, Ronald J.; and Eliades, Theo I., 5,338,467, Cl. 252-33.400.

Mukai, Toshio. Hammer type soil excavating machine. 5,337,841, Cl. 175-293.000.

Mulder, Hendricus A. M.: *See*—
Raaymakers, Wilhelmus P. M.; Kuijpers, Franciscus L. J. M.; Veenis, Aartje W.; Pasman, Johannes H. T.; and Mulder, Hendricus A. M., 5,339,301, Cl. 369-50.000.

Mulder, Jan W., to Rohm and Haas Company. Lined container. 5,337,914, Cl. 220-403.000.

Mullen, William B., III: *See*—
Suppelsa, Anthony B.; Mullen, William B., III; and Urbish, Glenn F., 5,338,391, Cl. 156-630.000.

Muller-Landau, Friedel: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Mullin, Howard; and Bessey, Boyd T. Hinge binder device. 5,338,126, Cl. 402-64.000.

Munnerlyn, Charles R.: *See*—
Shimmick, John; and Munnerlyn, Charles R., 5,339,121, Cl. 351-212.000.

Munshi, Jonathan: *See*—
Brambani, Eric J.; and Munshi, Jonathan, 5,337,961, Cl. 239-397.500.

Munzamy, Thomas; Rasshofer, Werner; Dorner, Karl-Heinz; and Limna, Ulrich, to Bayer Aktiengesellschaft. Process for the preparation of compounds containing hydroxyl groups and their use in the production of polyurethane resins. 5,338,763, Cl. 521-49.500.

Murai, Teruyuki: *See*—
Yamamoto, Susumu; Murai, Teruyuki; Kawabe, Nozomu; Awazu, Tomoyuki; Yazu, Shuji; and Jodai, Tetsuji, 5,338,721, Cl. 505-230.000.

Murakami, Eiichi: *See*—
Nishida, Akio; Murakami, Eiichi; and Nakagawa, Kiyokazu, 5,338,942, Cl. 257-17.000.

Murakami, Nobuaki; and Kawabe, Takashi, to Mitsubishi Jidosha Kogyo Kabushi Kaisha. Engine control method. 5,337,720, Cl. 123-481.000.

Murakami, Osamu: *See*—
Manabe, Toshiyuki; Murakami, Osamu; Takeuchi, Keiichi; and Matsuura, Junichi, 5,339,239, Cl. 364-401.000.

Muramatsu, Akira; Yoshihara, Ikuo; Nakao, Kazuo; Hayashi, Takehisa; Tanaka, Teruo; and Nagashima, Shigeo, to Hitachi, Ltd. Interconnection network and crossbar switch for the same. 5,339,396, Cl. 395-325.000.

Muramatsu, Katsuji, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film package. 5,339,127, Cl. 354-288.000

Muramatsu, Kikuo: *See*—
Arimoto, Akiya; Okamoto, Yasushi; and Muramatsu, Kikuo, 5,339,451, Cl. 395-800.000.

Murata Manufacturing Co., Ltd.: *See*—
Hata, Yoshitaka; Kuga, Tetsuya; Kurihara, Hidekazu; and Kogame, Toshihiko, 5,338,189, Cl. 432-124.000.
Tamaki, Kuniaki; and Kobayashi, Shigenori, 5,337,465, Cl. 29-740.000.

Murata, Shigeo: *See*—
Kawamura, Osamu; and Murata, Shigeo, 5,337,872, Cl. 192-107.00M.

Murch, Bruce P.: *See*—
Connor, Daniel S.; Scheibel, Jeffrey J.; Fu, Yi-Chang; Murch, Bruce P.; Watson, Randall A.; and McKillop, Kirsten L., 5,338,491, Cl. 252-548.000.

Murphy, John F.: *See*—
McGee, Jeffrey S.; Fesi, Joseph E.; and Murphy, John F., 5,337,876, Cl. 194-236.000.

Murphy, Kent A.; Gunther, Michael F.; and Claus, Richard O., to Center for Innovative Technology, The; Virginia Polytechnic Institute & State University; and Virginia Tech Intellectual Properties,

VOL 1165 ISS 3 AG 16 1994 UMI

Inc. Fused biconical taper fiber optic coupler station and fabrication techniques. 5,339,374, Cl. 385-43.000.

Murphy, Pierce M., to First Lighting, Inc. Regulating ballast with power factor correction for high-frequency gaseous discharge lamps. 5,339,004, Cl. 315-244.000.

Murray, Allan D.; Tisack, Michael D.; and Wu, Yitah R., to Ford Motor Company. Induction heating method for forming composite articles. 5,338,497, Cl. 264-25.000.

Murray, Peter E.: *See*—
Blanke, Uwe; Kern, Hans J.; Schmidt, Friedrich; Hanke, Thomas; Murray, Peter E.; Schnatwinkel, Michael; and Wilmes, Manfred, 5,338,224, Cl. 439-491.000.

Murray, William V.: *See*—
Wuest, Hans-Heiner; Janssen, Bernd; Murray, William V.; Wachter, Michael P.; and Bell, Stanley, 5,338,749, Cl. 514-364.000.

Murrell, Joyce A.: *See*—
Murrell, Nicholas J.; and Murrell, Joyce A., 5,339,094, Cl. 345-157.000.

Murrell, Nicholas J.; and Murrell, Joyce A. VDU line marker. 5,339,094, Cl. 345-157.000.

Murthy, Vasantha L.: *See*—
Rubin, Stuart A.; and Murthy, Vasantha L., 5,337,737, Cl. 601-33.000.

Murza, Stefan D.; and Spector, George. Giant gummy bear. 5,338,245, Cl. 446-267.000.

Mustafa, Mahir M. Instrument. 5,337,489, Cl. 33-832.000.

Mutou, Takeo: *See*—
Kamiyama, Yasuo; Mutou, Takeo; and Osa, Takashi, 5,339,293, Cl. 368-21.000.

Mutz, Alec N.: *See*—
Aslam, Muhammad; Mutz, Alec N.; Tyagi, Dinesh; and Johnson, Kevin M., 5,339,146, Cl. 355-285.000.

Myers, John D.: *See*—
Bedell, Stephen A.; and Myers, John D., 5,338,778, Cl. 423-220.000.

Nabisco, Inc.: *See*—
Bell, Joseph W.; and Carroll, Thomas J., 5,338,809, Cl. 426-5.000.
Mikulka, Thomas L.; Bennardo, Nicola T.; Wienick, Steven D.; and Trainor, Thomas M., 5,338,563, Cl. 426-604.000.

Nachlas, Jesse A.; Taylor, Dale M.; and Wilson, Merrill A., to Ceramatec, Inc. Series tubular design for solid electrolyte oxygen pump. 5,338,623, Cl. 429-31.000.

Naddeo, Ronald C.; Hristofas, Konstantinos; and Magnotta, Vincent L., to Air Products and Chemicals, Inc. Oxygen detackification in secondary fiber recovery. 5,338,401, Cl. 162-6.000.

Nadir, James: *See*—
Lee, Yong; Palasamudram, Nagraj; and Nadir, James, 5,339,399, Cl. 395-425.000.

Nagahara, Shinichi: *See*—
Takahashi, Hiroyuki; and Nagahara, Shinichi, 5,339,302, Cl. 369-54.000.

Nagahara, Toyokazu, to Fujitsu Limited. Computer system including a terminal operable as a service processor and a work station. 5,339,450, Cl. 395-700.000.

Nagamoto, Akihiro: *See*—
Kobayashi, Yoshirou; Hinoura, Koichi; and Nagamoto, Akihiro, 5,337,549, Cl. 57-236.000.

Nagao, Toru: *See*—
Ishi, Yuji; Nagao, Toru; and Sato, Harumatsu, 5,338,099, Cl. 297-452.330.

Nagao, Tsuyoshi; Kakuta, Masayuki; Kida, Yasuhiko; Takeda, Yoshiyuki; and Yoshida, Takeshi, to Mita Industrial Co., Ltd. Automatic document feeder. 5,338,018, Cl. 271-3.000.

Nagase, Yasushi; Kobayashi, Masami; Kato, Tatsuo; and Imuta, Shinichi, to Mitsui Petrochemical Industries, Ltd.; and Chugoku Resin co., Ltd. Heat-resistant overwrap film from 4-methyl-1-pentene and isobutylene and 1-butene. 5,338,792, Cl. 524-477.000.

Nagashima, Shigeo: *See*—
Muramatsu, Akira; Yoshihara, Ikuo; Nakao, Kazuo; Hayashi, Takehisa; Tanaka, Teruo; and Nagashima, Shigeo, 5,339,396, Cl. 395-325.000.

Nagashima, Takashi: *See*—
Kusumoto, Hiroshi; Hayashi, Daisuke; Ishida, Hideki; Kitagawa, Shoichi; Nagashima, Takashi; and Miyamoto, Mitsugu, 5,339,137, Cl. 355-208.000.

Nagata, Yoshinobu, to Juki Corporation. Needle plate apparatus for sewing machine. 5,337,686, Cl. 112-260.000.

Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, to Canon Kabushiki Kaisha. Liquid discharge recording apparatus having apparatus for effecting preparatory emission. 5,339,098, Cl. 347-5.000.

Nager, Urs F.: *See*—
Lomastro, Joseph A.; and Nager, Urs F., 5,337,566, Cl. 60-632.000.

Nagesh, V. K.: *See*—
Anderson, John T.; Nagesh, V. K.; and Ruby, Richard C., 5,338,507, Cl. 505-470.000

Naghi, Ali: *See*—
Baethge, Frank; Klein, Lutz; and Naghi, Ali, 5,339,228, Cl. 362-146.000.

Nagy, Peter: *See*—
Woods, Harlan L.; Lewis, Richard C.; Nagy, Peter; and Kraus, Stephen A., 5,337,940, Cl. 228-190.000

Nailco, Inc.: *See*—
Thomas, Donald L.; and Ryan, Jane, 5,337,632, Cl. 81-3.550.

Naka, Shigeaki: *See*—
Iwasaki, Takeshi; Yatomi, Takeshi; Naka, Shigeaki; and Suzuki, Toshio, 5,338,912, Cl. 219-69.120.

Nakagami, Taro; and Sakamoto, Akira, to Sony Corporation. Digital processing apparatus for simultaneously processing two or more jobs by switching between two or more instruction address register. 5,339,416, Cl. 395-650.000.

Nakagawa, Katsumi: *See*—
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.

Nakagawa, Kenji; and Kawashima, Kenichi, to Fujitsu Limited. Reflection type photomask and reflection type photolithography method comprising a concavo-convex surface. 5,338,647, Cl. 430-322.000.

Nakagawa, Kiyokazu: *See*—
Nishida, Akio; Murakami, Eiichi; and Nakagawa, Kiyokazu, 5,338,942, Cl. 257-17.000.

Nakagawa, Masaharu: *See*—
Ohta, Michio; Matsuya, Shigeki; Shiraishi, Takanobu; and Nakagawa, Masaharu, 5,338,378, Cl. 148-405.000.

Nakahara, Hideyo: *See*—
Yanagisawa, Tateo; Yamada, Hisayoshi; Sakamoto, Katsumi; Inagawa, Seiki; Umetsu, Yukihide; Uchida, Takeshi; Nakahara, Hideyo; and Fukumoto, Yoshiharu, 5,338,503, Cl. 264-516.000.

Nakahara, Kiyoshi: *See*—
Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, 5,338,182, Cl. 425-562.000.

Nakai, Mitsuhisa; Maeda, Shiro; and Yagi, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for driving a brushless motor including varying the duty cycle in response to variations in the rotational speed. 5,339,013, Cl. 318-254.000.

Nakai, Yukio; Kida, Hiroshi; Hirai, Masashi; Fujita, Masahiko; and Fukunaga, Takahiro, to Sharp Kabushiki Kaisha. Recording paper separating device with constant current control. 5,339,144, Cl. 355-274.000.

Nakajima, Akira: *See*—
Kaneko, Kimihiko; Takahashi, Masami; and Nakajima, Akira, 5,337,600, Cl. 73-117.000.

Nakajima, Chiaki: *See*—
Fukuda, Katsuhito; Takami, Masato; Hasegawa, Hirokazu; Nakajima, Chiaki; and Isihara, Kenji, 5,338,619, Cl. 428-623.000.

Nakajima, Hideo; Kohchi, Miyuki; and Tomomasa, Satoshi, to Shiseido Company Ltd. Emulsified composition. 5,338,761, Cl. 514-772.000.

Nakajima, Hiroaki: *See*—
Tsunoda, Masakiyo; Nakajima, Hiroaki; and Koshimura, Masami, 5,339,068, Cl. 338-332.000.

Nakajima, Shuzo, to Kabushiki Kaisha Toshiba. Portable computer resetting resume error caused from HDD loaded condition being changed and starting OS. 5,339,444, Cl. 395-750.000

Nakamura, Akihiro, to Sony Corporation. Electrically erasable and programmable read only memory having a thin film transferring transistor over a floating gate memory transistor. 5,338,956, Cl. 257-316.000.

Nakamura, Hajime; and Matsunami, Tokumi, to Kabushiki Kaisha Toshiba. Automatic document feeder for image forming apparatus. 5,339,134, Cl. 355-202.000.

Nakamura, Hitoshi: *See*—
Aizawa, Toshiyuki; Nakamura, Hitoshi; and Yamaguchi, Tetsuhiko, 5,338,815, Cl. 526-307.600.

Nakamura, Ikusei: *See*—
Iwamoto, Ryuichiro; Nakamura, Ikusei; and Iino, Akira, 5,338,437, Cl. 208-111.000.

Nakamura, Kazunari; and Matsunaka, Kenji, to Olympus Optical Co., Ltd. Color misregistration detector and color misregistration easing system. 5,339,159, Cl. 348-71.000.

Nakamura, Masahiko, to Hosiden Corporation. Plug-type multipolar electrical connector. 5,338,227, Cl. 439-607.000.

Nakamura, Nobuyuki, to Nissei Plastic Industrial Co., Ltd. Ball screw. 5,337,627, Cl. 74-459.000.

Nakamura, Takashi: *See*—
Mine, Katsutoshi; Nakamura, Takashi; and Sasaki, Motoshi, 5,338,817, Cl. 528-12.000.

Nakamura, Yoshiki: *See*—
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi; Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, 5,337,881, Cl. 198-409.000.

Nakane, Kazunori: *See*—
Urata, Hiroshi; Sone, Toshinao; Nakane, Kazunori; Satou, Kazunori; and Tokita, Kiyoshi, 5,339,010, Cl. 315-368.170.

Nakanishi, Chihiro; Ohnishi, Yuko; Ohnishi, Junji; Taniuchi, Junichi; Okamoto, Koji; and Tozawa, Takeshi, to Tanaka Kikinzoku Kogyo K.K. CIS oxalato (trans 1-1,2—cyclohexanediamine) PT(II) having optically high purity. 5,338,874, Cl. 556-137.000.

Nakanishi, Toru: *See*—
Kitani, Koji; and Nakanishi, Toru, 5,338,998, Cl. 310-323.000.

Nakano, Tetsuo: *See*—
Tanaka, Shigeya; Iwamura, Masahiro; Yamauchi, Tatsumi; Nojiri, Tatsuo; Tada, Hisashi; and Nakano, Tetsuo, 5,339,448, Cl. 395-775.000

Nakao, Kazuo: *See*—
Muramatsu, Akira; Yoshihara, Ikuo; Nakao, Kazuo; Hayashi, Takehisa; Tanaka, Teruo; and Nagashima, Shigeo, 5,339,396, Cl. 395-325.000.

Nakashiba, Akio: *See*—
Ishii, Kazuhide; Kawasaki, Tatsuo; Kuriyama, Noriyuki; Dohi, Shoji; Nakashiba, Akio; and Miyazaki, Souhei, 5,338,616, Cl. 428-472.000.

Nakashima, Takuya: *See*—
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.

Nakata, Naotaro: *See*—
Tanaka, Haruo; and Nakata, Naotaro, 5,339,373, Cl. 385-31.000.

Nakatsuka, Tadayoshi; and Yagita, Hideki, to Matsushita Electric Industrial Co., Ltd. Frequency converter unit for use in a high-frequency receiver. 5,339,458, Cl. 455-333.000.

Nakayama, Masaharu: *See*—
Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; and Matsumoto, Takeo, 5,338,877, Cl. 556-440.000.

Nakayama, Ryoji; Takeshita, Takuo; and Ogawa, Tamotsu, to Mitsubishi Metal Corporation. Rare earth permanent magnet powder, method for producing same and bonded magnet. 5,338,371, Cl. 148-101.000.

Nakayama, Takashi: *See*—
Miyataka, Koji; and Nakayama, Takashi, 5,338,788, Cl. 524-197.000.

Nalco Chemical Company: *See*—
Ramesh, Manian; Sparapany, John W.; Finck, Martha R.; Siefert, Kristine S.; and Shetty, Chandrashekar S., 5,338,816, Cl. 526-312.000.

Nami, Robert B.; Hamrick, Edward A.; Herrmann, Jakob; and Mitchell, Angelo M., to Electro Scientific Industries, Inc. High capacity carrier plate. 5,337,893, Cl. 206-329.000.

Nanami, Masayoshi, to Sanshin Kogyo Kabushiki Kaisha. Water injection propulsion device. 5,338,234, Cl. 440-38.000.

Nanbu, Hideo: *See*—
Kinoshita, Shoji; Nanbu, Hideo; and Tanaka, Katsumasa, 5,337,667, Cl. 101-424.000.

Napier, Roger P.: *See*—
Arvizzigno, Joseph A.; Ashjian, Henry; and Napier, Roger P., 5,338,468, Cl. 252-45.000.

Narayan, Thirumurti; Tantillo, Anthony W.; and Stoll, John R., to BASF Corporation. Solid isocyanate derivatives useful in one component polyurethane adhesives. 5,338,819, Cl. 528-60.000.

Narayan, Thirumurti: *See*—
Harrison, Richard P.; Scarpati, Michael; Narayan, Thirumurti; and Zagata, Blair J., 5,338,820, Cl. 528-67.000.

Narayanan, Kolazi S., to ISP Investments Inc. Water-based microemulsuion formulation of a carbamate ester. 5,338,762, Cl. 514-788.000.

Narendra, Patrenahalli M.; Braunling, Russell D.; Wegerer, William J., II; and Werder, Jonathan C., to Alliant Techsystems Inc. Compact deployable acoustic sensor. 5,339,281, Cl. 367-5.000.

Narita, Masaki, to Suzuki Motor Corporation. Self-diagnostic apparatus for exhaust gas recirculating apparatus. 5,337,725, Cl. 123-571.000.

Naruse, Hideaki; Suzuki, Makoto; and Sato, Takehiko, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 5,338,651, Cl. 430-505.000.

Nasca, Gerald. Reversible foundation bolt holder. 5,337,534, Cl. 52-745.210.

Nash, Eric J.: *See*—
Zhao, Guoquan; Amr, Yehia M.; Bushnell, Peter R.; Drucker, Alan S.; and Nash, Eric J., 5,337,580, Cl. 62-262.000.

Nasibov, Alexander S.: *See*—
Kozlovsky, Vladimir I.; Nasibov, Alexander S.; and Skasyrsky, Yan K., 5,339,003, Cl. 313-463.000.

Nasu, Hideo; Tezuka, Toshihiko; and Inoue, Seijiro, to Kyowa Hakko Kogyo, Co. Process for producing bread dough. 5,338,552, Cl. 426-19.000.

Nathan, Carl E.: *See*—
Gabay, Joelle E.; and Nathan, Carl E., 5,338,724, Cl. 514-12.000.

National Research Council of Canada: *See*—
Roth, Gerhard, 5,339,367, Cl. 382-22.000.

National Semiconductor Corporation: *See*—
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,694, Cl. 437-31.000.
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,696, Cl. 437-34.000.
Larsen, David H.; and Boomer, James B., 5,338,978, Cl 307-443.000.
Lin, Peng-Cheng; and Takiar, Hem P., 5,339,216, Cl. 361-707.000.
Llewellyn, William D., 5,339,050, Cl. 331-16.000.
Ratnam, Perumal, 5,338,695, Cl. 437-31.000.
Sutherland, Jim, 5,338,984, Cl. 307-465.100.
Yoon, Euisik; Allison, Robert W., Jr.; and Kovacs, Ronald P., 5,338,630, Cl. 430-30.000.

Natsume, Yoshitaka: *See*—
Higashiura, Atsushi; Sano, Fumikazu; Tokimori, Yoshitaka; and Natsume, Yoshitaka, 5,337,941, Cl. 228-205.000.

Natural Reserves Group, Inc.: *See*—
Graham, Stephen A., 5,337,808, Cl. 166-191.000.

Nau, Keith A.: *See*—
Fullerton, Jack K.; Beck, Richard A.; Clark, Fred B.; Reid, Gordon B.; and Nau, Keith A., 5,339,139, Cl. 355-215.000.

Nauchi, Takashi: *See*—
Okuno, Tetsuya; and Nauchi, Takashi, 5,338,008, Cl. 266-105.000.

Navid, Nasrollah S.: *See*—
Fotowat-Ahmady, Ali; and Navid, Nasrollah S., 5,338,985, Cl. 307-494.000.

Navish, Francis W., Jr.: *See*—
Boenning, Robert A.; Schoch, Karl F., Jr.; Stough, Daryl V.; and Navish, Francis W., Jr., 5,339,038, Cl. 324-539.000.

Nawa, Hiroshi: *See*—
Satoh, Munetaka; Ito, Sadao; and Nawa, Hiroshi, 5,337,995, Cl. 248-429.000.

NCR Corporation: *See*—
Diepstraten, Wilhelmus J. M., 5,339,316, Cl. 370-85.130.

Neal, Charles B.: *See*—
Lagoni, William A.; Keen, Ronald T.; and Neal, Charles B., 5,339,114, Cl. 348-673.000.

Nealy, Robert B. Connector for attachment of a leash or the like. 5,338,237, Cl. 441-74.000.

Near, Daniel E.; Feagans, Royce M.; and Hobert, Ward T., to Schuller International, Inc. Method of and apparatus for continuously foaming a polyimide powder. 5,338,765, Cl. 521-50.500.

NEC Corporation: *See*—
Ishida, Hisashi, 5,337,466, Cl. 29-830.000.
Iwasaki, Kiyoshi, 5,339,113, Cl. 348-604.000.
Kaede, Kazuhisa, 5,339,185, Cl. 359-158.000.
Mitsumoto, Hiroshi, 5,338,958, Cl. 257-330.000.
Miura, Hiroshi, 5,339,328, Cl. 372-70.000.
Moon, Ronald R.; Uhlendorf, Gregg J.; and Barnard, Daniel E., 5,339,207, Cl. 360-77.050.
Rikiyama, Hiroki, 5,339,308, Cl. 370-17.000.
Taguchi, Tetsu, 5,339,054, Cl. 332-100.000.
Tamagawa, Akio, 5,339,236, Cl. 363-59.000.
Watanabe, Isao, 5,338,947, Cl. 257-186.000.
Yoshigai, Akira, 5,338,973, Cl. 257-668.000.

Neftel, Frederic. Implantable device for estimating glucose levels. 5,337,747, Cl. 128-635.000.

Negoro, Atsuhito, to Rohm Co., Ltd. Lead frame with deformable buffer portions. 5,338,972, Cl. 257-666.000.

Neisser, Mark O.: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Nelson, Daryl, to Intel Corporation. Multiple-fan microprocessor cooling through a finned heat pipe. 5,339,214, Cl. 361-695.000.

Nelson, David C.: *See*—
McFarland, Andrew R.; Rodgers, John C.; Ortiz, Carlos A.; and Nelson, David C., 5,337,603, Cl. 73-202.000.

Nelson, George F., to Unisys Corporation. Wide dynamic range high frequency signal transmission utilizing a logarithmic amplifier. 5,339,187, Cl. 359-182.000.

Nelson Hoffman, Inc.: *See*—
Ahad, Munir J., 5,337,676, Cl. 104-139.000.

Nelson, John, to Robertshaw Controls Company. Pneumatic valve with slow start and quick exhaust. 5,337,788, Cl. 137-627.500.

Nelson, Lloyd A.; and Rudnick, Leslie R., to Mobil Oil Corporation. Mannich type compounds as antioxidants. 5,338,469, Cl. 252-49.600.

Nelson, Philip L.: *See*—
Foster, Donald D.; and Nelson, Philip L., 5,337,928, Cl 222-383.000.

Nelson, Steven R.; and Swiderski, Gregory, to Daicel Chemical Industries, Ltd. Air bag having double-wall construction. 5,338,061, Cl. 280-729.000.

Nemoto, Peter A.: *See*—
Wettlaufer, David G.; and Nemoto, Peter A., 5,338,739, Cl. 514-235.500.

Nemoto, Takahiro, to Matsushita Electric Industrial Co., Ltd. Device for attaching magnetic disk unit. 5,337,998, Cl. 248-634.000.

Neri, Carlo: *See*—
Giroldini, William; Landoni, Gianluigi; Rinaldi, Antonio; and Neri, Carlo, 5,338,787, Cl. 524-100.000.

Nesper, Gerhard, to Elge Elektronik-Geratewerk GmbH & Co. Apparatus for safety monitoring in protective arrangements with normal and enhanced safety of machinery performing multiple-axis rotations. 5,339,014, Cl. 318-563.000.

Nestec S.A : *See*—
Caly, William G., 5,338,555, Cl. 426-96.000.
Fumeaux, Rene ; and Philippossian, Georges, 5,338,741, Cl. 514-262.000.

Nestler, Alvin M.: *See*—
Hoffman, John P.; Nestler, Alvin M.; Witek, Edward T.; and Idstein, Donald J., 5,337,470, Cl. 29-426.500.

Neubauer, Willi B.; Smith, Paul K.; and Harvey, Philip J., to Genie Industries. Safety system for multi-stage lifts. 5,337,858, Cl. 182-148.000.

Neumaier, Josef: *See*—
Hildebrand, Peter; Eberl, Gunter; Neumaier, Josef; and Wrba, Peter, 5,338,915, Cl. 219-121.690.

Neumann, Gerd; Hutschenreuther, Peter; Glien, Willfried; Raab, Dagmar; Leuner, Barbara; Steinborn, Gabriele; and Berger, Georg, to Eska Medical Luebeck Medizin Technik GmbH. Joint endoprosthesis with Al_2O_3 ceramic head and a composite socket and process for making it. 5,338,771, Cl. 523-113.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Neumeyer, Josef: *See—*
Mayer, Walter; Brandl, Sebastian; and Neumeyer, Josef, 5,337,550, Cl. 57-263.000

Neutzler, Hans U.: *See—*
Korte, Hermann-Josef; Miletic, Anton; Neutzler, Hans U.; Schoengen, Anton; Schroeder, Johann H.; and Wirges, Ralf, 5,338,882, Cl. 562-483.000.

New England Pharmaceuticals, Inc.: *See—*
Armstrong, John C.; and Palson, Richard C. J., 5,337,740, Cl. 128-203.120.

Newell, Scott W.; and Chickering, James, to Siemens Medical Electronics, Inc. Air flow control apparatus and method for an automatic blood pressure gauge. 5,337,751, Cl. 128-682.000

Newsome, Reginald W.; DeBlasio, James A.; Talley, Robert E.; Adams, John M.; Chance, Christopher N.; Evers, Donald H.; Harris, William C.; and Kirby, Michael A., to Philip Morris Incorporated. Half-carton structure and method of forming same. 5,337,948, Cl. 229-120.150.

NGK Insulators, Ltd.: *See—*
Hanzawa, Shigeru; and Komiyama, Tsuneo, 5,338,576, Cl. 427-430.100.
Ikeda, Mitsuji; Mine, Ryoichi; Nozaki, Masayuki; and Sugiura, Tadashi, 5,339,381, Cl. 385-138.000.

Ngooi, Teng-Ko; McGolrick, Jeffry D.; Antczak, Casimir; and Tindall, James L. A., to Torcan Chemical Ltd. Preparation of form 1 ranitidine hydrochloride. 5,338,871, Cl. 549-492.000.

Nichols, Thomas K. Head holder for brain tomography. 5,337,760, Cl. 128-845.000.

Nicholson, Roy V.: *See—*
Harris, Gregory; Nicholson, Roy V.; Burns, Stephen R.; and Lackey, Robert W., 5,337,445, Cl. 15-394.000

Nick, Jeffrey M.: *See—*
Elko, David A.; Frey, Jeffrey A.; Helffrich, Audrey A.; Nick, Jeffrey M.; and Swanson, Michael D., 5,339,405, Cl. 395-575.000.

Nickens, Dan A.: *See—*
Gold, Jeffrey W.; and Nickens, Dan A., 5,337,793, Cl. 141-1.000.

Niederkofler, Michael: *See—*
Kemmner, Ulrich; Frank, Kurt; and Niederkofler, Michael, 5,338,151, Cl. 415-55.100.

Niedospial, John J., Jr., to Eastman Kodak Company. Torque transmission clutch for film spool. 5,337,971, Cl. 242-348.000.

Niehaus, Jeffrey A.: *See—*
Ovens, Kevin M.; and Niehaus, Jeffrey A., 5,339,028, Cl 324-158.100.

Niishiro, Mamoru: *See—*
Kogure, Seiji; and Niishiro, Mamoru, 5,337,467, Cl. 29-840.000

Nikon Corporation: *See—*
Saito, Jun, 5,339,298, Cl. 369-13.000.
Soshi, Isao; Ohtake, Motoyuki; and Miyamoto, Hidenori, 5,339,123, Cl. 354-106.000

Nilsson, Kenth A. S., to Qenico AB. Device for circulating and applying a viscous material in patches on a substrate. 5,338,360, Cl. 118-602.000.

Nilsson, Neile: *See—*
Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, 5,337,649, Cl. 89-14.050.

Nippon Chemi-Con Corporation: *See—*
Yokoyama, Yutaka; Tsuji, Tatsunori; Ue, Makoto; and Sato, Tomohiro, 5,338,472, Cl. 252-62.200.

Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
Moriyama, Takamasa; Masumoto, Hiroki; and Kato, Kuniyasu, 5,338,502, Cl. 264-322.000.

Nippon Oil Co., Ltd.: *See—*
Hirayama, Takayuki; and Kiyota, Takashi, 5,338,418, Cl. 204-158.210.

Nippon Oil and Fats Co., Ltd.: *See—*
Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; and Matsumoto, Takeo, 5,338,877, Cl. 556-440.000.

Nippon Paint Co. Ltd.: *See—*
Ohsugi, Hiroharu; and Mizutani, Keita, 5,338,799, Cl. 525-123.000.
Tomotsugu, Akio; and Hida, Keiji, 5,338,613, Cl. 428-425.800.

Nippon Piston Ring Co., Ltd.: *See—*
Kawamura, Osamu; and Murata, Shigeo, 5,337,872, Cl. 192-107.00M.

Nippon Shokubai Kagaku Kogyo: *See—*
Uchino, Hiroyoshi; and Yoneda, Tadahiro, 5,338,353, Cl. 106-426.000.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
Shimomura, Tadao; Irie, Yoshio; Takahashi, Hitoshi; Kajikawa, Katsuhiro; Saga, Jyunichi; Fujiwara, Teruaki; and Hatsuda, Takumi, 5,338,810, Cl. 526-75.000.

Nippon Soken, Inc.: *See—*
Kiuchi, Toru; Ogata, Kenji; Chiba, Masakazu; Matsuhashi, Toshiaki; Taguchi, Masahiro; and Tominaga, Motonori, 5,338,062, Cl. 280-735.000.
Yorita, Hiroshi; Igashira, Toshihiko; Moritsugu, Michiyasu; and Chujo, Yoshiki, 5,338,431, Cl. 204-424.000.

Nippon Steel Corporation: *See—*
Yamamoto, Yukihiro; and Yamada, Noriko, 5,339,190, Cl. 359-332.000.

Nippon Telegraph and Telephone Corp.: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, 5,339,376, Cl. 385-71.000.
Taniguchi, Ikuo, 5,339,310, Cl. 370-60.000.

Nippon Zoki Pharmaceutical Co., Ltd.: *See—*
Kakamura, Ko; Hochi, Toshikazu; and Ienaga, Kazuhara, 5,338,850, Cl. 546-122.000.

Nippondenso Co., Ltd.: *See—*
Higashiura, Atsushi; Sano, Fumikazu; Tokimori, Yoshitaka; and Natsume, Yoshitaka, 5,337,941, Cl. 228-205.000.
Hirata, Yoshihiko; and Sakakibara, Koji, 5,339,245, Cl. 364-431.080.
Kajino, Yuuichi; Ban, Koichi; Honda, Yuuji; and Sugi, Hikaru, 5,337,802, Cl. 165-22.000.
Kawamura, Shotaro; and Yamada, Hiroshi, 5,339,059, Cl. 335-78.000.
Kiuchi, Toru; Ogata, Kenji; Chiba, Masakazu; Matsuhashi, Toshiaki; Taguchi, Masahiro; and Tominaga, Motonori, 5,338,062, Cl. 280-735.000

Niro, A/S: *See—*
Johnson, David A.; and Lorch, Jeffrey D., 5,338,553, Cl. 426-36.000

Nisato, Dino: *See—*
Wagnon, Jean; de Cointet, Paul; Nisato, Dino; Plouzane, Claude; Serradeil-Legal, Claudine; and Tonnerre, Bernard, 5,338,755, Cl. 514-414.000

Nishi, Koichi: *See—*
Imuta, Mitsuru; and Nishi, Koichi, 5,338,733, Cl. 514-210.000.

Nishi, Takahide: *See—*
Yoshioka, Takao; Nishi, Takahide; Kanai, Tsutomu; Aizawa, Yuichi; Wada, Kunio; Fujita, Takashi; and Horikoshi, Hiroyoshi, 5,338,855, Cl. 514-369.000.

Nishida, Akio; Murakami, Eiichi; and Nakagawa, Kiyokazu, to Hitachi, Ltd. Semiconductor projections having layers with different lattice constants. 5,338,942, Cl. 257-17.000.

Nishiguchi, Masanori, to Sumitomo Electric Industries, Ltd. Heat sink, method of manufacturing the same, and device of manufacturing the same. 5,339,215, Cl. 361-704.000.

Nishimoto, Yoshitaka: *See—*
Tsuchida, Takayasu; Nishimoto, Yoshitaka; Kotani, Takuya; and Iizumi, Katsuo, 5,338,672, Cl. 435-108.000.

Nishimura, Natsuya: *See—*
Kawamoto, Hiromi; Kubota, Yoshinori; Nishimura, Natsuya; and Sakanoue, Akira, 5,338,607, Cl. 428-373.000.

Nishimura, Tetsuya; Yoshimura, Motomu; and Maeda, Mitsuo, to Mitsubishi Denki Kabushiki Kaisha. Optical computing element. 5,339,201, Cl. 359-891.000.

Nishino, Hisayasu; Yamada, Akio; Oae, Yoshihisa; and Yasuda, Hiroshi, to Fujitsu Limited. Charged particle beam exposure including a heat blocking partition positioned near deflecting coils. 5,338,939, Cl. 250-396.0ML.

Nishiyama, Shigeru; and Hayashi, Yasuhiro, to Mita Industrial Co., Ltd. Powder filling apparatus and a method for filling a container with powder. 5,337,794, Cl. 141-144.000.

Nishizawa, Jun-ichi; and Kurabayashi, Toru, to Research Development Corporation of Japan. Method of epitaxially growing compound crystal and doping method therein. 5,338,389, Cl. 117-89.000.

Nissan Chemical Industries Ltd.: *See—*
Takagi, Hiroyoshi; Awano, Masanobu; and Hoshi, Yuzi, 5,338,713, Cl. 501-105.000.

Nissan Motor Co., Ltd.: *See—*
Kawamura, Osamu; and Murata, Shigeo, 5,337,872, Cl. 192-107.00M
Mouri, Hiroshi; and Watanabe, Masayuki, 5,337,850, Cl. 180-140.000

Nissei Plastic Industrial Co., Ltd.: *See—*
Nakamura, Nobuyuki, 5,337,627, Cl. 74-459.000.

Nisshin Flour Milling Co., Ltd.: *See—*
Yoshikawa, Masaaki; and Fukudome, Shin-ichi, 5,338,668, Cl. 435-68.100.

Nisshin Steel Co., Ltd.: *See—*
Uda, Masahiro; Morita, Yoshikazu; and Oosaki, Katsuhisa, 5,338,333, Cl. 75-352.000.

Nisshinbo Industries, Inc.: *See—*
Imashiro, Yasuo; and Takahashi, Ikuo, 5,338,794, Cl. 524-792.000.

Nissin High Voltage Co., Ltd.: *See—*
Takeyama, Kunihiko, 5,338,940, Cl. 250-492.200.

Nitardy, John H., to Boeing Company, The. High efficiency power amplifier. 5,339,041, Cl. 330-10.000.

Nitta, Minoru; Kiyota, Yoshisato; Makiishi, Yukio; Ohtsubo, Hiroshi; Watanabe, Toshio; and Habu, Yasuhiro, to Kawasaki Steel Corporation. Alloy steel powders for injection molding use, their compounds and a method for making sintered parts from the same. 5,338,508, Cl. 420-120.000

Nix, Charles D.; Baker, Johnny P.; and Huntley, William F. Trim apparatus for outboard motor. 5,337,694, Cl. 114-144.00R.

Noack, Timothy J.: *See—*
Godfrey, Craig W.; Noack, Timothy J.; and Schwendemann, Kenneth L., 5,338,001, Cl. 251-58.000.

Noakes, Timothy J., to Imperial Chemical Industries PLC. Spraying device. 5,337,963, Cl. 239-690.000.

Nobileau, Philippe C. Preform, apparatus, and methods for casing and/or lining a cylindrical volume. 5,337,823, Cl. 166-277.000.

Noble, Lynn: *See—*
Zaccai, Gianfranco; Rousmaniere, Arthur S.; Dearborn, Timothy C.; Noble, Lynn; and Misage, Thomas J., 5,337,525, Cl. 52-35.000.

Nocopi International Ltd.: *See—*
Gundjian, Arshavir, 5,338,066, Cl. 283-67.000.
Gundjian, Arshevir, 5,338,067, Cl. 283-67.000.

Noda, Akiko: *See—*
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.

Noguchi, Kazuo; Mori, Yoshikatsu; Kunimori, Nagatoshi; and Mori, Hideo, to Sumitomo Electric Industries, Ltd. Drill and lock screw employed for fastening the same. 5,338,135, Cl. 408-233.000.

Nohmi Bosai, Ltd: *See—*
Agata, Masanobu, 5,339,072, Cl. 340-693.000.

Nojima, Shigeru: *See—*
Iida, Kozo; Nojima, Shigeru; Satoru, Serizawa; and Kobayashi, Norihisa, 5,338,715, Cl. 502-64.000.

Nojiri, Tatsuo: *See—*
Tanaka, Shigeya; Iwamura, Masahiro; Yamauchi, Tatsumi; Nojiri, Tatsuo; Tada, Hisashi; and Nakano, Tetsuo, 5,339,448, Cl. 395-775.000.

Nolan, Daniel A.: *See—*
Miller, William J.; Nolan, Daniel A.; and Weidman, David L., 5,339,372, Cl. 385-29.000.

Noland, Robert L.; and O'Brien, Timothy D., to Ketema, Inc. Hollow carbon fibers. 5,338,605, Cl. 428-398.000.

Noll Manufacturing Co.: *See—*
Akehurst, Kenneth S., 5,338,255, Cl. 454-292.000.

Noll, Marvin H. Modular apparatus for preparing articles to be mailed. 5,338,387, Cl. 156-441.500.

Norizuki, Reiko: *See—*
Tanaka, Kenji; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Sekihata, Osamu; Hatta, Hiroyuki; and Norizuki, Reiko, 5,339,318, Cl. 370-110.100.

Norsk Hydro a.s.: *See—*
Saxena, Surendra K., 5,338,335, Cl. 75-403.000.

Norsworthy, Keith H., to Boeing Company, The. FM/CW sensor processor for target recognition. 5,339,082, Cl. 342-90.000.

North American Philips Corporation: *See—*
Fotowat-Ahmady, Ali; and Navid, Nasrollah S., 5,338,985, Cl. 307-494.000.
King, Norman R.; Sip, Jiri; and Dvorak, Antonin J., 5,339,001, Cl. 313-25.000.
Shah, Imran A.; and Johnson, Brian C., 5,339,398, Cl. 395-400.000

North Carolina State University at Raleigh: *See—*
Baliga, Bantval J.; and Bhatnagar, Mohit, 5,338,945, Cl. 257-77.000.

Northern Telecom Limited: *See—*
Crossland, William A.; Vass, David; and Collings, Neil, 5,339,090, Cl. 345-90.000.

Northland Aluminum Products, Inc.: *See—*
Broberg, Daniel M.; Campbell, Glenn, Sr.; and Varley, Paul, 5,337,654, Cl. 99-447.000.

Northrop Grumman Corporation: *See—*
Bauer, Andrew B., 5,339,287, Cl. 367-140.000.
Curtis, Kevin R.; and Psaltis, Demetri, 5,339,305, Cl. 369-112.000
Puma, Samuel C.; Sinacori, John B.; and Brown, Yorke J., 5,339,259, Cl. 364-559.000.

Northwestern University: *See—*
Mirkin, Chad A.; Chen, Kaimin; and Caldwell, W. Brett, 5,338,571, Cl. 427-299.000.

Norton, Ian T.: *See—*
Campbell, Iain J.; Morley, Wayne G.; and Norton, Ian T., 5,338,561, Cl. 426-602.000.

Norville, William C., to Clearfix Corporation. Methods and apparatus for removing scratches from plastic surfaces. 5,337,524, Cl. 51-391.000

Norwood, Richard L.: *See—*
Steinberg, Gary L.; Pino, Giovanni; Gibbs, Kenneth E.; Norwood, Richard L.; and Smith, Gary L., 5,337,443, Cl. 15-344.000

Novo Nordisk A/S: *See—*
Pedersen, Lars S., 5,338,403, Cl. 162-72.000.

Noyce, William B.: *See—*
Burmeister, Curt K.; Harris, Kevin W.; Noyce, William B.; and Hobbs, Steven O., 5,339,428, Cl. 395-700.000.

Nozaki, Masayuki: *See—*
Ikeda, Mitsuji; Mine, Ryoichi; Nozaki, Masayuki; and Sugiura, Tadashi, 5,339,381, Cl. 385-138.000.

Nozomi, Mamoru; Watabe, Sumiko; and Aso, Ryoko, to Mitsubishi Kasei Corporation. Electrophotographic photoreceptor. 5,338,633, Cl. 430-59.000.

NSK Ltd.: *See—*
Mitamura, Nobuaki; and Okita, Shigeru, 5,338,377, Cl. 148-318.000
Sadakata, Kiyoshi; and Saito, Katsumi, 5,338,064, Cl. 280-775.000
Sato, Chuichi; Kikuchi, Akira; Saito, Hiroshi; and Takaira, Shinichi, 5,337,497, Cl. 34-412.000.

Nuckolls, Carl R.: *See—*
Schiltz, Thomas E.; and Nuckolls, Carl R., 5,339,459, Cl. 455-333.000.

Nukada, Katsumi; Imai, Akira; Daimon, Katsumi; Iijima, Masakazu; Mashimo, Kiyokazu; Sakaguchi, Yasuo; and Takegawa, Ichiro, to Fuji Xerox Co., Ltd. Dichlorotin phthalocyanine crystal electrophotographic photoreceptor using the same, and coating composition for electrophotographic photoreceptor. 5,338,636, Cl. 430-59.000.

Numazawa, Akio: *See—*
Imai, Keisuke; Yamamoto, Toshimasa; Numazawa, Akio; Iwata, Hitoshi; and Watanabe, Yasutaka, 5,337,970, Cl. 242-374.000.

Nunez, Raul. Convertible article carrier. 5,337,933, Cl. 224-151.000.

Nunez Serrano, Guillermo, to SIMCO, S.A., a part interest. Didactic puzzle game. 5,338,033, Cl. 273-153.00S.

Nureki, Shinji; and Oonishi, Kazuhisa, to Seiko Instruments Inc. Line thermal printer having driving pulses of variable pulse width. 5,339,099, Cl. 346-76.0PH.

Nutt, Ruth F.; Brady, Stephen F.; Veber, Daniel F.; and Duggan, Mark E., to Merck & Co., Inc. Fibrinogen receptor antagonists. 5,338,723, Cl. 514-11.000.

N.V. Vuilafvoer Maatschappij Vam: *See—*
Hamelers, Bertus V. M.; and Woelders, Johan A., 5,337,898, Cl. 209-10.000.

Nykwest, Lawrence C.: *See—*
Lucas, Paul C.; Messenger, Ronald J.; Macklem, Elizabeth A.; and Nykwest, Lawrence C., 5,338,404, Cl. 162-163.000.

O.I. Corporation: *See—*
Hodgins, Bruce J.; and Roth, Robert L., 5,337,619, Cl. 73-863.110.

Oae, Yoshihisa: *See—*
Nishino, Hisayasu; Yamada, Akio; Oae, Yoshihisa; and Yasuda, Hiroshi, 5,338,939, Cl. 250-396.0ML.

Obersteller, Udo; and Schlink, Wilhelm, to Pelikan GmbH. Double-ended pen. 5,338,123, Cl. 401-34.000.

O'Brien, Timothy D.: *See—*
Noland, Robert L.; and O'Brien, Timothy D., 5,338,605, Cl. 428-398.000.

O'Callaghan, James L., to Cirque Corporation. Portable computer touch pad attachment. 5,339,213, Cl. 361-683.000.

OCG Microelectronic Marterials, Inc.: *See—*
Sarubbi, Thomas R.; and Sizensky, Joseph J., 5,338,652, Cl. 430-326.000.

OCG Microelectronic Materials, Inc.: *See—*
Toukhy, Medhat A., 5,338,653, Cl. 430-326.000.

Oculon Corporation: *See—*
Clark, John I.; Thurston, George M.; and Li, Xiao-Yan, 5,338,545, Cl. 424-94.100.

Oden, Alan D. Traffic delineation foam system and method. 5,338,129, Cl. 404-9.000.

Oestreich, Roger C.: *See—*
Evans, Mark D.; and Oestreich, Roger C., 5,337,902, Cl 209-539.000.

Ogaki, Koji; Matsuda, Tomoo; Takagi, Kimihiko; and Sakamoto, Takuya, to Kabushiki Kaisha Komatsu Seisakusho. Disaster relief robot and operation controller therefor. 5,337,846, Cl. 180-8.200

Ogata, Kenji: *See—*
Kiuchi, Toru; Ogata, Kenji; Chiba, Masakazu; Matsuhashi, Toshiaki; Taguchi, Masahiro; and Tominaga, Motonori, 5,338,062, Cl. 280-735.000.

Ogata, Yasuji, to Olympus Optical Co., Ltd. Two unit zoom lens system. 5,339,195, Cl. 359-691.000.

Ogawa, Hiroshi: *See—*
Inoue, Michio; Yamamoto, Tadashi; and Ogawa, Hiroshi, 5,338,059, Cl. 280-728.00B.

Ogawa, Kazufumi; Soga, Mamoru; Ozaki, Shinji; and Ikuta, Shigeo, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing a chemically adsorbed film. 5,338,579, Cl. 427-539.000.

Ogawa, Kimiaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Still video device with selectable successive erasure of audio and/or video tracks. 5,339,199, Cl. 360-35.100.

Ogawa, Tamotsu: *See—*
Nakayama, Ryoji; Takeshita, Takuo; and Ogawa, Tamotsu, 5,338,371, Cl. 148-101.000.

Oglesby, Frank L., Jr. Retina evaluation reticle apparatus. 5,339,120, Cl. 351-211.000.

Oguchi, Takuro: *See—*
Asahara, Masaru; Oguchi, Takuro; and Sasaki, Shunroku, 5,339,353, Cl. 379-59.000.

Ogura, Tohru: *See—*
Suzuki, Fumiyuki; Ogura, Tohru; and Shirakura, Yukio, 5,339,255, Cl. 364-500.000.

Oh, Young-Im: *See—*
Ojima, Iwao; Eguchi, Masakatsu; Oh, Young-Im; and Coller, Barry S., 5,338,725, Cl. 514-13.000.

Ohba, Takashi: *See—*
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,339,098, Cl. 347-5.000.

Ohga, Yuichi; Danzuka, Toshio; Saito, Masahide; Amemiya, Kouji; and Yokota, Hiroshi, to Sumitomo Electric Industries, Ltd. Method of flame abrasion of glass preform. 5,338,327, Cl. 65-414.000.

Ohi, Makoto; Arima, Hideaki; Ajika, Natsuo; Hachisuka, Atsushi; and Matsui, Yasushi, to Mitsubishi Denki Kabushiki Kaisha. Method of making a semiconductor integrated device having gate sidewall structure. 5,338,699, Cl. 437-52.000.

Ohi, Makoto: *See—*
Fukumoto, Atsushi; Ohi, Makoto; Onoda, Hiroshi; Ajika, Natsuo; and Kunori, Yuichi, 5,338,957, Cl. 257-316.000.

Ohio: *See—*
Connor, Daniel S.; Scheibel, Jeffrey J.; Fu, Yi-Chang; Murch, Bruce P.; Watson, Randall A.; and McKillop, Kirsten L., 5,338,491, Cl. 252-548.000.

Ohkawa, Kazuhiro: *See—*
Tsujimura, Ayumu; Ohkawa, Kazuhiro; Yoshii Shigeo; and Mitsuyu, Tsuneo, 5,339,326, Cl. 372-49.000.

Ohmeda Inc.: *See—*
Kremenchugsky, Vladimir; and Buttitta, Anthony, 5,339,223, Cl. 362-32.000

Ohmori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, to Kao Corporation; and

VOL 1165 ISS 3 AG 16 1994 UMI

Shibuya Kogyo Co., Ltd. Article transportation processing system. 5,337,796, Cl. 141-168.000.

Ohmura, Atsuo: *See—*
Otomo, Naoki; Ohmura, Atsuo; and Shida, Toshio, 5,339,133, Cl. 355-200.000.

Ohnishi, Junji: *See—*
Nakanishi, Chihiro; Ohnishi, Yuko; Ohnishi, Junji; Taniuchi, Junichi; Okamoto, Koji; and Tozawa, Takeshi, 5,338,874, Cl 556-137.000.

Ohnishi, Toshikazu: *See—*
Yoshinaga, Kazuo; Oikawa, Katsuya; and Ohnishi, Toshikazu, 5,339,306, Cl. 369-275.100.

Ohnishi, Yuko: *See—*
Nakanishi, Chihiro; Ohnishi, Yuko; Ohnishi, Junji; Taniuchi, Junichi; Okamoto, Koji; and Tozawa, Takeshi, 5,338,874, Cl. 556-137.000.

Ohnishi, Yutaka, to Tachi-S Co., Ltd. Seat back of an automotive seat. 5,338,098, Cl. 297-452.600.

Ohsawa, Toshio: *See—*
Fukui, Wataru; and Ohsawa, Toshio, 5,337,716, Cl. 123-425.000.

Ohshima, Shinji: *See—*
Oka, Kengo; and Ohshima, Shinji, 5,338,039, Cl. 273-232.000.

Ohsugi, Hiroharu; and Mizutani, Keita, to Nippon Paint Co. Ltd. Curing type resin composition. 5,338,799, Cl. 525-123.000.

Ohsumi, Hisayoshi; Matsumoto, Takeshi; Kato, Shinji; Ishizuka, Mitsuo; and Kaneko, Shoichi, to Yamaha. Production method for composite molded article. 5,338,592, Cl. 428-106.000.

Ohta, Michio; Matsuya, Shigeki; Shiraishi, Takanobu; and Nakagawa, Masaharu, to Kyushu University. Dental gold alloy with age-hardenability at intraoral temperature. 5,338,378, Cl. 148-405.000.

Ohtagaki, Shigeki; and Miura, Kazunori, to Mitsubishi Denki Kabushiki Kaisha. Damping force control system for vehicle suspension. 5,338,058, Cl. 280-707.000.

Ohtake, Motoyuki: *See—*
Soshi, Isao; Ohtake, Motoyuki; and Miyamoto, Hidenori, 5,339,123, Cl. 354-106.000.

Ohto, Norio; Horikomi, Kazutoshi; Matsubara, Akira; Tanada, Hideki; Sakai, Kazuya; Kajiya, Seitaro; Mizuchi, Akira; and Shimizu, Hideshi, to Mitsui Toatsu Chemicals Incorporated. Aminoketone derivatives of 1,2-oxazole and use thereof. 5,338,857, Cl. 548-248.000.

Ohtsubo, Hiroshi: *See—*
Nitta, Minoru; Kiyota, Yoshisato; Makiishi, Yukio; Ohtsubo, Hiroshi; Watanabe, Toshio; and Habu, Yasuhiro, 5,338,508, Cl. 420-120.000.

Oikawa, Katsuya: *See—*
Yoshinaga, Kazuo; Oikawa, Katsuya; and Ohnishi, Toshikazu, 5,339,306, Cl. 369-275.100.

Ojima, Iwao; Eguchi, Masakatsu; Oh, Young-Im; and Coller, Barry S., to Research Foundation of the State University of New York, The. Anti-aggregatory agents for platelets. 5,338,725, Cl. 514-13.000.

Oka, Kengo; and Ohshima, Shinji, to Sumitomo Rubber Industries, Ltd. Golf ball. 5,338,039, Cl. 273-232.000.

Oka, Koichi; and Ichikawa, Hirokazu, to Fuji Xerox Co., Ltd. Process for fabricating electronic devices and image sensor. 5,337,474, Cl. 29-846.000.

Oka, Michio: *See—*
Eguchi, Naoya; and Oka, Michio, 5,339,324, Cl. 372-29.000.

Okada, Hisashi: *See—*
Inaba, Tadashi; Okada, Hisashi; Suzuki, Ryo; Katsuoka, Yasuhiro; and Seki, Hiroyuki, 5,338,649, Cl. 430-430.000.

Okada, Kotaro: *See—*
Yamamura, Norihisa; and Okada, Kotaro, 5,338,988, Cl. 307-578.000.

Okada, Shoichi: *See—*
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi; Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, 5,337,881, Cl. 198-409.000.

Okamine, Shigenori: *See—*
Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, 5,339,319, Cl. 371-10.200.

Okamoto, Koji: *See—*
Nakanishi, Chihiro; Ohnishi, Yuko; Ohnishi, Junji; Taniuchi, Junichi; Okamoto, Koji; and Tozawa, Takeshi, 5,338,874, Cl. 556-137.000.

Okamoto, Yasushi: *See—*
Arimoto, Akiya; Okamoto, Yasushi; and Muramatsu, Kikuo, 5,339,451, Cl. 395-800.000.

Okazaki, Masaki: *See—*
Ikegawa, Akihiko; Mihara, Yuji; and Okazaki, Masaki, 5,338,656, Cl. 430-577.000.

Okazaki, Mitsunari: *See—*
Kornfeld, Richard K.; Weiland, Ana L.; and Okazaki, Mitsunari, 5,339,046, Cl. 330-277.000

Oki Electric Industry Co., Ltd.: *See—*
Kurimoto, Masahiro, 5,338,986, Cl. 307-303.200.
Takasugi, Atsushi, 5,339,276, Cl. 365-230.020.
Tanagawa, Kouji, 5,339,271, Cl. 365-189.040.

Okita, Shigeru: *See—*
Mitamura, Nobuaki; and Okita, Shigeru, 5,338,377, Cl. 148-318.000.

Oko, Frederick J., to Hubbell Incorporated. Submersible pump pothead test plug. 5,338,213, Cl. 439-148.000.

Okuda, Toshiyuki: *See—*
Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, 5,338,182, Cl. 425-562.000.

Okuma Corporation: *See—*
Hanaki, Yoshimaro; and Yamamoto, Kyoichi, 5,339,015, Cl. 318-600.000.
Hayashi, Yasukazu, 5,339,030, Cl. 324-207.230.

Okumoto, Yutaka, to Japan Tobacco Inc. System and a method for manufacturing cigarettes. 5,337,761, Cl. 131-84.100.

Okuno, Tetsuya; and Nauchi, Takashi, to Senju Metal Industry Co., Ltd. Solder reflow furnace. 5,338,008, Cl. 266-105.000.

Okusaka, Shigeru; Kasa, Hideki; Sakaguchi, Masayuki; Kyomen, Junsuke; and Tago, Takashi, to Metcal, Inc.; and Kubota Corporation. Method of manufacturing and joining electro-fusion fitting. 5,338,920, Cl. 219-633.000.

Olive, Graham J., to Rediffusion Simulation Limited. Method and apparatus for generating an elliptical image. 5,338,200, Cl. 434-43.000.

Olkoski, Jill C.: *See—*
Abdala, Julio A.; and Olkoski, Jill C., 5,338,396, Cl. 156-655.000.

Olsen, Thomas O., to STC, Inc. Silicone binder material and products formed therefrom. 5,338,783, Cl. 524-3.000.

Olson, Morris R.: *See—*
Panandiker, Kam P.; and Olson, Morris R., 5,338,479, Cl. 252-183.710.

Olson, Troy C. Microprocessor-based irrigation system with moisture sensors in multiple zones. 5,337,957, Cl. 239-63.000.

Olson, William D.; Muir, Ronald J.; and Eliades, Theo I., to Witco Corporation. Sulfonate grease improvement. 5,338,467, Cl. 252-33.400.

Oltean, Jerry M.; and Mack, William J., to Eaton Corporation. Method/system for determining clutch touch point. 5,337,874, Cl. 192-111.00A.

Olympus Optical Co., Ltd.: *See—*
Akatsuka, Yuichiro; and Horiguchi Toshio, 5,339,300, Cl. 369-44.290.
Nakamura, Kazunari; and Matsunaka, Kenji, 5,339,159, Cl. 348-71.000.
Ogata, Yasuji, 5,339,195, Cl. 359-691.000.

Oman, Ronald. Portable heater for vehicle engines. 5,337,729, Cl. 126-350.00A.

Omata, Kyoichi; and Matsui, Nobuhiko, to Eastman Kodak Company. Image capture apparatus having means for detecting the thickness of a document to be captured. 5,339,175, Cl. 358-498.000.

OMCI S.p.A. Officine Metalmeccaniche Construzioni Industriali: *See—*
Magni, Giorgio, 5,337,853, Cl. 180-370.000.

Omori, Kazuki, to Mitsubishi Kakoki Kaisha Ltd. Rotary discharged type centrifugal separator having a pantograph link-type scraper. 5,338,285, Cl. 494-55.000.

Omori Machinery Co., Ltd.: *See—*
Omori, Shozo, 5,337,542, Cl. 53-550.000.

Omori, Shozo, to Omori Machinery Co., Ltd. Shrink-wrapping method and apparatus. 5,337,542, Cl. 53-550.000.

Omote, Kenji, to Kabushiki Kaisha Komatsu Seisakusho. Thermal cutting machine. 5,338,914, Cl. 219-121.670.

Omura, Hiroyoshi, to Mita Industrial Co., Ltd. Torque transmitting coupling and image forming apparatus employing same. 5,339,145, Cl. 355-277.000.

Oncogen, a Limited Partnership: *See—*
Senter, Peter D.; Su, Peter C. D.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,338,678, Cl. 435-227.000.

Ondrus, Daniel J.; and Heimberg, Manfred, to Quantum Chemical Corporation. Fractional melt flow rate polymer powders and process for their preparation. 5,338,609, Cl. 428-402.000.

O'Neil, Virginia K.; and Wolf, Andreas T. F., to Dow Corning Corporation. Method for producing a painted silicone elastomer. 5,338,574, Cl. 427-387.000.

Onoda, Hiroshi: *See—*
Fukumoto, Atsushi; Ohi, Makoto; Onoda, Hiroshi; Ajika, Natsuo; and Kunori, Yuichi, 5,338,957, Cl. 257-316.000.

Ontario Hydro: *See—*
Brandt, Bernd A., 5,337,854, Cl. 182-2.000.

Oomuro, Katsumi: *See—*
Tanaka, Kenji; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Sekihata, Osamu; Hatta, Hiroyuki; and Norizuki, Reiko, 5,339,318, Cl. 370-110.100.

Oonishi, Kazuhisa: *See—*
Nureki, Shinji; and Oonishi, Kazuhisa, 5,339,099, Cl. 346-76.0PH.

Oosaki, Katsuhisa: *See—*
Uda, Masahiro; Morita, Yoshikazu; and Oosaki, Katsuhisa, 5,338,333, Cl. 75-352.000.

Ooyama, Shingo: *See—*
Tagashira, Fumiaki; Ota, Shigeo; Yukawa, Shinya; and Ooyama, Shingo, 5,338,919, Cl. 219-543.000.

Opgenorth, Terry J.: *See—*
Shiosaki, Kazumi; Tasker, Andrew S.; and Opgenorth, Terry J., 5,338,726, Cl. 514-17.000.

Oppenlander, Jane E.: *See—*
Levy, Arthur J.; Oppenlander, Jane E.; Brudnoy, David M.; Englund, James M.; and Loomis, Kent C., 5,339,256, Cl. 364-506.000.

Opperthauser, Keith G.: *See—*
Claycomb, Bruce A.; and Opperthauser, Keith G., 5,337,880, Cl 198-347.300.

Oravetz, Josef: *See—*
Haberle, Fritz; Kleiner, Horst; and Oravetz, Josef, 5,338,077, Cl. 293-120.000.

Orlando, Franklin P.: *See—*
Mills, Robert L.; Lodholz, John C.; Sarat-Chandra, Rangasami; Orlando, Franklin P.; and Christian, Donald J., 5,337,885, Cl. 198-502.400.

Orr, Larry W.; and Kranick, Gordon S., to Paccar Inc. Vehicle suspension. 5,338,012, Cl. 267-140.500.

Orsini, Louis V., Jr., to Torrington Company, The. Method of making a camshaft. 5,337,476, Cl. 29-888.100.

Orthopedic Systems, Inc.: *See—*
Moore, Robert R.; Lamb, Steve R.; Lamoreux, Larry W.; and McTeigue, Michael H., 5,337,758, Cl. 128-781.000.

Ortiz, Carlos A.: *See—*
McFarland, Andrew R.; Rodgers, John C.; Ortiz, Carlos A.; and Nelson, David C., 5,337,603, Cl. 73-202.000.

Osa, Takashi: *See—*
Kamiyama, Yasuo; Mutou, Takeo; and Osa, Takashi, 5,339,293, Cl. 368-21.000.

Osaka Gas Co., Ltd.: *See—*
Ishii, Kazuhide; Kawasaki, Tatsuo; Kuriyama, Noriyuki; Dohi, Shoji; Nakashiba, Akio; and Miyazaki, Souhei, 5,338,616, Cl. 428-472.000.

Osborne, Kimberlee: *See—*
Rehkemper, Jeffrey; Burroughs, Mike; Rehkemper, Steven; and Osborne, Kimberlee, 5,338,027, Cl. 273-58.00K.

Osburne, Marcia S.: *See—*
Tuckman, Margareta K.; and Osburne, Marcia S., 5,338,664, Cl. 435-4.000.

Osegowitsch, Viktor: *See—*
Hehn, Wilfried; and Osegowitsch, Viktor, 5,339,129, Cl. 354-318.000.

Oshima, Reiji: *See—*
Kato, Koji; and Oshima, Reiji, 5,337,418, Cl. 2-2.000.

OSi Specialties, Inc.: *See—*
Breneman, William C.; Crane, William C.; Walsh, Michael J.; and Warren, Eric A., 5,338,352, Cl. 106-285.000.

Osman, Maged A.: *See—*
Huynh-ba, Tuong; and Osman, Maged A., 5,338,483, Cl. 252-299.610.

Osram Sylvania Inc.: *See—*
Lapatovich, Walter P.; Butler, Scott J.; and Smith, Robert K., 5,339,008, Cl. 315-248.000.

Ota, Shigeo: *See—*
Tagashira, Fumiaki; Ota, Shigeo; Yukawa, Shinya; and Ooyama, Shingo, 5,338,919, Cl. 219-543.000.

Otis Elevator Company: *See—*
Baethge, Frank; Klein, Lutz; and Naghi, Ali, 5,339,228, Cl. 362-146.000.
Mehlert, Martin; and Engel, Hans E., 5,337,878, Cl. 198-323.000.
Powell, Bruce A.; and Sirag, David J., Jr., 5,338,904, Cl. 187-137.000.

Otomo, Naoki; Ohmura, Atsuo; and Shida, Toshio, to Konica Corporation. Image forming apparatus including process cartridge with magnetic connector. 5,339,133, Cl. 355-200.000.

Otsu, Hiroshi: *See—*
Kubota, Yoshikazu; Kamijo, Masayasu; Otsu, Hiroshi; and Kamiya, Takashi, 5,338,584, Cl. 428-15.000.

Otten, David D.: *See—*
Mallinckrodt, Albert J., 5,339,330, Cl. 375-1.000.

Ou, Zhe-Yu: *See—*
Kimble, Harry J.; Ou, Zhe-Yu; and Pereira, Silvania E., 5,339,182, Cl. 359-112.000.

Outa, Kenichi: *See—*
Kawai, Takashi; and Outa, Kenichi, 5,339,365, Cl. 382-54.000

Outboard Marine Corporation: *See—*
Dunham, William D.; Hladilek, Jerry A.; McNeill, Steven R.; Pierman, John A.; Rogan, Charles T.; and Turk, Robert L., 5,338,236, Cl. 440-77.000.

Outlaw, George R.: *See—*
Ptacek, Fred L.; Outlaw, George R.; and Smith, Charles R., 5,337,578, Cl. 62-195.000.

Ovens, Kevin M., to Texas Instruments Incorporated. Circuit for providing a high-speed logic transition. 5,338,980, Cl. 307-455.000.

Ovens, Kevin M.; and Niehaus, Jeffrey A., to Texas Instruments Incorporated. Test circuit for screening parts. 5,339,028, Cl. 324-158.100

Owen, Hartley; and Schipper, Paul H., to Mobil Oil Corporation. Process and apparatus for regeneration of FCC catalyst with reduced NOx and or dust emissions. 5,338,439, Cl. 208-153.000.

Oyama, Mitsuyoshi; and Tsurufuji, Tomoyoshi, to Daiwa Seiko, Inc. Handle for fishing rod. 5,337,507, Cl. 43-23.000.

Ozaki, Shinji: *See—*
Ogawa, Kazufumi; Soga, Mamoru; Ozaki, Shinji; and Ikuta, Shigeo, 5,338,579, Cl. 427-539.000.

P. B. Dalhuisen Gasresearch Apeldoorn B.V.: *See—*
Dalhuisen, Peter B., 5,338,184, Cl. 431-12.000.

P.N. Lebedev Institute of Physics: *See—*
Kozlovsky, Vladimir I.; Nasibov, Alexander S.; and Skasyrsky, Yan K., 5,339,003, Cl. 313-463.000.

Paccar Inc.: *See—*
Orr, Larry W.; and Kranick, Gordon S., 5,338,012, Cl. 267-140.500.

Pacheco, Michael A.; Darrington, Franklin D.; and Hensley, Albert L., Jr., to Amoco Corporation. Alkyl carbonate extraction process. 5,338,878, Cl. 558-277.000.

Pacific Handy Cutter, Inc.: *See—*
Schmidt, G. Gerry, 5,337,482, Cl. 30-162.000

Paek, Seung-kwon, to Samsung Electronics Co., Ltd. Decoding signal error concealment system. 5,339,321, Cl. 371-31.000.

Pagano, Anthony M.; Tuman, David H.; and Pagano, Margaret E. Birthing board. 5,337,427, Cl. 5-602.000.

Pagano, Margaret E.: *See—*
Pagano, Anthony M.; Tuman, David H.; and Pagano, Margaret E., 5,337,427, Cl. 5-602.000.

Pai, Damodar M.; DeFeo, Paul J.; and Carmichael, Kathleen M., to Xerox Corporation. Layered photoreceptor structures with overcoatings containing a triphenyl methane. 5,338,635, Cl. 430-59.000.

Palasamudram, Nagraj: *See—*
Lee, Yong; Palasamudram, Nagraj; and Nadir, James, 5,339,399, Cl. 395-425.000.

Pali, Lajosne : *See—*
Ban, Karoly; Ban, Annamaria; Pali, Lajosne ; Kruppa, Marta; Somfai, Eva; and Huszar, Csaba, 5,338,868, Cl. 549-323.000.

Pallet Reefer Company, The: *See—*
Saia, Louis P., III; and Wilbrandt, Cynthia S., 5,337,579, Cl. 62-239.000.

Palmer, Kenneth J.: *See—*
Bhagwat, Anand W.; Palmer, Kenneth J.; and Prakash, Amit, 5,337,972, Cl. 242-129.800.

Palmer, Ronald S.: *See—*
Baran, Paul; and Palmer, Ronald S., 5,338,332, Cl. 75-247.000.

Palson, Richard C. J.: *See—*
Armstrong, John C.; and Palson, Richard C. J., 5,337,740, Cl. 128-203.120.

Palumbo, Kenneth S.: *See—*
Scheuer, Mark A.; MacDonald, Daniel W.; Palumbo, Kenneth S.; Paolini, Anthony L.; Berman, Robin E.; and Hurwitch, Carl B., 5,339,135, Cl. 355-208.000.

Pan, David H.: *See—*
Mammino, Joseph; Abramsohn, Dennis; Heeks, George J.; Henry, Arnold W.; Fratangelo, Louis D.; Pan, David H.; and Badesha, Santokh S., 5,338,587, Cl. 428-35.700.

Panandiker, Kam P.; and Olson, Morris R., to Cargill, Incorporated. Blocked isocyanate blend having a high isocyanate content. 5,338,479, Cl. 252-183.710.

Pancheri, Eugene J.; and Koc, Meleksima, to Procter & Gamble Company, The. Granular laundry detergent compositions having improved solubility. 5,338,476, Cl. 252-174.140.

Panner, Jeannie T. H.: *See—*
Carrig, Keith M.; Hathaway, David J.; Lallier, Keith W.; Panner, Jeannie T. H.; and Sehr, Terrence W., 5,339,253, Cl. 364-489.000

Panzer, Hans P.; Giovanni, Lino; Cohen, Martin L.; and Yen, Wei S., to CYTEC Technology Corp. Narrow band radiation filter films. 5,338,492, Cl. 252-582.000.

Paoletti, Enzo, to Health Research Incorporated. Vaccinia virus containing DNA sequences encoding herpesvirus gly coproteins. 5,338,683, Cl. 435-320.100.

Paolini, Anthony L.: *See—*
Scheuer, Mark A.; MacDonald, Daniel W.; Palumbo, Kenneth S.; Paolini, Anthony L.; Berman, Robin E.; and Hurwitch, Carl B., 5,339,135, Cl. 355-208.000.

Paper Machinery Corporation: *See—*
Konzal, Daryl R., 5,337,622, Cl. 74-813.00R.

Paques B.V.: *See—*
Vellinga, Sjoerd, 5,338,447, Cl. 210-195.100.

Pare, J. R. Jocelyn, to Canada, Her Majesty the Queen in right of, as represented by the Minister of the Environment. Microwave extraction of volatile oils. 5,338,557, Cl. 426-241.000.

Parenti, Robert V.: *See—*
Homer, Peter K.; Parenti, Robert V.; DeStefano, Joel; Chen, Wensen; Talley, Eric; and Close, John E., 5,337,980, Cl. 244-158.00R.

Park, Hyun J., to Samsung Electronics Co., Ltd. Format adaptive sync signal generator. 5,339,111, Cl. 348-524.000.

Park, Hyung-Moo: *See—*
Kim, Ki-Hong; Lee, Chang-Seok; Park, Hyung-Moo; Yoon, Hyung-Jin; and Park, Sin-Chong, 5,338,981, Cl. 307-463.000.

Park, Jae M.: *See—*
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Park, Sin-Chong: *See—*
Kim, Ki-Hong; Lee, Chang-Seok; Park, Hyung-Moo; Yoon, Hyung-Jin; and Park, Sin-Chong, 5,338,981, Cl. 307-463.000.

Parker Hannifin Corporation: *See—*
Schaeffer, William R., 5,339,249, Cl. 364-474.180.

Parker, Kenneth: *See—*
Fishman, Lawrence R.; and Parker, Kenneth, 5,337,644, Cl. 84-314.00R.

Parker, Thomas A., to International Computers Limited. Access control in a distributed computer system. 5,339,403, Cl. 395-425.000.

Parks, Kristen L.: *See—*
Lause, Herbert J.; Parks, Kristen L.; Tanis, Larry D.; and Leon, David D., 5,338,611, Cl. 428-412.000.

Parrella, Larry E.: *See—*
Flinchum, Charles; Barney, Gerald L.; Burgess, Gregory S.; Kleinmeyer, Davis L.; and Parrella, Larry E., 5,339,329, Cl. 373-138.000.

Parsolano, Veronica; and Meehan, James E., to Leviton Manufacturing Co., Inc. Safety night light system and method of manufacture thereof. 5,339,231, Cl. 362-226.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Parsonage, Edward E.; and Debe, Mark K., to Minnesota Mining and Manufacturing Company. Nanostructured electrode membranes. 5,338,430, Cl. 204-412.000.

Parsons, Michael H.; and Johnson, Kevin M., to Eastman Kodak Company. Image forming apparatus having image registration means. 5,339,136, Cl. 355-208.000.

Parsons, Stanley M.: *See—*
Efange, Simon M. N.; and Parsons, Stanley M., 5,338,852, Cl. 546-188.000.

Partridge, Roger H.; Bradsell, Robert H.; and Woods, Peter T., to Secretary of State for Trade Industry. Optical wavelength modulated long-path gas monitoring apparatus. 5,339,155, Cl. 356-419.000.

Paselsky, John M.: *See—*
Greenwell, Joseph D.; Kalany, Robert M.; and Paselsky, John M., 5,337,887, Cl. 198-803.000.

Pasman, Johannes H. T.: *See—*
Raaymakers, Wilhelmus P. M.; Kuijpers, Franciscus L. J. M.; Veenis, Aartje W.; Pasman, Johannes H. T.; and Mulder, Hendricus A. M., 5,339,301, Cl. 369-50.000.

Passavant-Werke AG: *See—*
Zumbragel, Michael; and Bach, Volker, 5,338,445, Cl. 210-150.000.

Patel, Dinesh R.: *See—*
Hromas, Joe C.; and Patel, Dinesh R., 5,337,827, Cl. 166-321.000.

Patel, Gautam B.: *See—*
Spangler, Glenn E.; Roehl, Joseph E.; Patel, Gautam B.; and Dorman, Alvin, 5,338,931, Cl. 250-287.000.

Patel, Mahesh: *See—*
Chu, Min; Patel, Mahesh; Horan, Ann C.; and Gullo, Vincent P., 5,338,758, Cl. 514-468.000.

Patent-Treuhand-Gesellschaft F. Electrische Gluehlampen mbH: *See—*
Braun, Alfred; Helbig, Peter; Steiner, Hermann; and Schoenherr, Walter, 5,339,002, Cl. 313-318.000.

Pater, Ruth H., to United States of America, National Aeronautics and Space Administration. Tough, processable simultaneous semi-interpenetrating polyimides. 5,338,806, Cl. 525-421.000.

Paternoster, Paul: *See—*
Bruckert, William; Bissett, Thomas D.; Dearth, Glenn; and Paternoster, Paul, 5,339,408, Cl. 395-575.000

Patla, James A., Sr.; and Glass, James X., to Williams Electronics Games, Inc. Combination tilt switch and playfield incline indicator. 5,338,031, Cl. 273-118.00R.

Patt, Rudolf; and Rachor, Georg, to Stora Feldmuhle Aktiengesellschaft. Production of fiber pulp by impregnating the lignocellulosic material with an aqueous alcoholic SO_2 solution prior to defibration. 5,338,405, Cl. 162-25.000.

Patton, David L.: *See—*
Rosenburgh, John H.; Horton, Robert L.; and Patton, David L., 5,339,131, Cl. 354-324.000.

Patureaux, Thierry: *See—*
Demoulin, Vincent; Fersing, Marc; Patureaux, Thierry; and Pontvianne, Denis, 5,338,438, Cl. 208-153.000

Paul, Didier: *See—*
Henriet, Dominique; Paul, Didier; and Prost, Laurent, 5,338,367, Cl. 134-3.000.

Paul Wurth S.A.: *See—*
Lonardi, Emile; Metz, Jean; Mailliet, Pierre; Thillen, Guy; Andonov, Radmir; and Malivoir, Philippe, 5,338,013, Cl. 266-271.000.

Paulson, Wallace S. Non-stretch bending of sheet material to form cyclically variable cross-section members. 5,337,592, Cl. 72-177.000.

Paust, Joachim; and Krause, Wolfgang, to BASF Aktiengesellschaft. Preparation of E,Z-butenedial bis(dialkyl acetals). 5,338,888, Cl. 568-596.000.

Pavur, Carol P.; and Schnurr, Martin W., to Chrysler Corporation. Stud mounting clip for panel. 5,338,138, Cl. 411-107.000.

Pawlak, Wanda: *See—*
Ignasiak, Teresa; Strausz, Otto; Ignasiak, Boleslaw; Janiak, Jerzy; Pawlak, Wanda; Szymocha, Kazimierz; and Turak, Ali A., 5,338,322, Cl. 44-620.000.

Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, to Hoechst Aktiengesellschaft. Positive-working radiation-sensitive mixture and copying material produced therefrom comprising an α,α-bis(sulfonyl) diazo methane as an acid forming compound. 5,338,641, Cl. 430-165.000.

Pazzaglia, Sergio: *See—*
Amadesi, Paolo; Cappelli, Fabio; and Pazzaglia, Sergio, 5,337,683, Cl. 110-346.000.

Peake, Don A.; and Weymouth, Brian M., to Expertek. Bubble emission volume quantifier. 5,337,597, Cl. 73-45.500.

Pearcy, Barry G.: *See—*
White, Alan W.; Pearcy, Barry G.; Strand, Marc A.; and Carico, Joey C., 5,338,606, Cl. 428-458.000.

Pearlstein, Fred: *See—*
Agarwala, Vinod S.; and Pearlstein, Fred, 5,338,432, Cl. 205-118.000.

Pearson, Thomas H.: *See—*
Layden, John E.; Layden, David J.; and Pearson, Thomas H., 5,339,257, Cl. 364-552.000.

Peascoe, Warren J.; and Tyrell, John A., to General Electric Company. Polyetherimide ester elastomeric compositions. 5,338,797, Cl. 525-66.000.

Pecukonis, Joseph P.: *See—*
Wright, Austin J., Jr.; and Pecukonis, Joseph P., 5,338,228, Cl. 439-621.000

Pedersen, Lars S., to Novo Nordisk A/S. Hydrolysis of resin in pulp with an enzyme and a hydrosulfite. 5,338,403, Cl. 162-72.000.

Pedersen, Tore: *See—*
Bakke, Asbjorn; and Pedersen, Tore, 5,337,564, Cl. 60-555.000.

Peek Traffic Limited: *See—*
Jefferis, Brian; and Morgan, Shaun D., 5,339,081, Cl. 342-28.000

Peelor, Philip L.; Moran, John J.; and Flanner, Lloyd T., to Aerosol Systems, Inc. Tire sealer and inflator. 5,338,776, Cl. 523-166.000.

Peeno, Sherman L. Vehicle snack tray. 5,337,677, Cl. 108-45.000.

Peinemann, Manfred K. A., to Rockwell International Corporation. Breathing system for hypersonic aircraft. 5,337,975, Cl. 244-53.00B.

Pelikan GmbH: *See—*
Obersteller, Udo; and Schlink, Wilhelm, 5,338,123, Cl. 401-34.000

Pelikan, Inc.: *See—*
Polak, Donald J.; and Bush, Thomas J., 5,339,122, Cl. 353-103.000.

Pemko Manufacturing Company: *See—*
Goossens, Philip A., 5,337,451, Cl. 16-354.000.

Peng, Fuhua, to Jilin University of Technology. Gear finishing hob. 5,338,134, Cl. 407-26.000.

Penn Engineering & Manufacturing Corp.: *See—*
Swanstrom, Kenneth A., 5,338,139, Cl. 411-353.000.

Penn State Research Foundation, The: *See—*
Gardner, Thomas W.; and Hollis, Theodore M., 5,338,757, Cl 514-461.000.

Pennaz, Thomas J., to Deluxe Corporation. Ink composition and method of making, using and recovering such composition. 5,338,351, Cl. 106-20.00R

Penner, Gordon: *See—*
Penner, Wesley; Penner, Gordon; and Penner, Robert, 5,339,069, Cl. 340-454.000

Penner, Robert: *See—*
Penner, Wesley; Penner, Gordon; and Penner, Robert, 5,339,069, Cl. 340-454.000.

Penner, Wesley; Penner, Gordon; and Penner, Robert, to Tripen Enterprises Ltd. Brake monitoring system. 5,339,069, Cl. 340-454.000.

Pereira, Silvania E.: *See—*
Kimble, Harry J.; Ou, Zhe-Yu; and Pereira, Silvania E., 5,339,182, Cl. 359-112.000.

Perera, Niran: *See—*
Fitchmun, Douglas R.; and Perera, Niran, 5,338,600, Cl. 428-213.000

Permascand AB: *See—*
Ullman, Anders; Wanngard, Johan; Tenfalt, Mikael; and Dalenius, Olov, 5,338,414, Cl. 204-95.000.

Pernisz, Udo C.; and Michael, Keith W., to Dow Corning Corporation Variable capacitor. 5,339,211, Cl. 361-277.000

Perraud, Jean-Claude, to U.S. Philips Corporation. High linearity differential circuit. 5,339,044, Cl. 330-252.000.

Perry, Charles O. Flexible reclining chair. 5,338,094, Cl. 297-411.400.

Perry, Michael R.; and Wykes, Katharine A. Pipeline. 5,337,776, Cl. 137-68.100.

Persys Technology Ltd.: *See—*
Drimer, Gideon; and Glazer, Arie, 5,338,424, Cl. 204-298.110.

Peterson, Barry C.: *See—*
Buff, Bret E.; Khau, Vien V.; Martinelli, Michael J.; and Peterson, Barry C., 5,338,851, Cl. 546-141.000.

Peterson, Gregg L., to Aqrit Industries Ltd. Method and apparatus for the determination of formation fluid flow rates and reservoir deliverability. 5,337,821, Cl. 166-250.000.

Peterson, Warren J.: *See—*
Krauska, Bernard J.; Wisniewski, Randy; and Peterson, Warren J., 5,337,428, Cl. 5-611.000.

Pethica, Brian A.: *See—*
Abbott, Joan; Cangialosi, Richard; and Pethica, Brian A., 5,338,286, Cl. 600-14.000.

Petitclerc, Jean-Louis; and Ricaud, Jean-Louis, to COGEMA - Compagnie Generale des Matieres Nucleaires. Process for carrying out an inspection round of nuclear installations. 5,339,339, Cl. 376-245.000.

Pettersson, Rolf; Liden, Per-Åke; and Liljengren, John-Erik, to AB Volvo. Arrangement at press line. 5,337,594, Cl. 72-446.000.

Pettis, Karl: *See—*
Chan, Paul; Dadoo, Manoj; Pettis, Karl; and Santhanan, Vatsa, 5,339,419, Cl. 395-700.000.

Petuhov, Ignaty M.: *See—*
Marmorstein, Leon M.; Petuhov, Ignaty M.; Sidorov, Vladimir S.; Aleksandrov, Piotr A.; and Grebennikov, Valentin T., 5,337,825, Cl. 166-307.000.

Pez, Guido P.: *See—*
Quinn, Robert; Pez, Guido P.; and Appleby, John B., 5,338,521, Cl. 423-210.500.

Pfeifer, Thomas M.: *See—*
Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,337,660, Cl. 101-91.000.

Pfeiffer, C. Boyd. Fishing lure and method. 5,337,508, Cl. 43-42.030.

Pfizer Inc: *See—*
Chenard, Bertrand L., 5,338,754, Cl. 514-422.000.
Tricca, Robert E.; Doran, William T.; and Gray, Catherine L., 5,338,538, Cl. 424-57.000

Pfizer Inc.: *See—*
Busch, Frank R.; Bowles, Paul; John, Douglas; Allen, Meldrum; DiRoma, Sabeto A.; and Godek, Dennis M., 5,338,846, Cl. 544-368.000.
Carpino, Philip C.; Wester, Ronald T.; and Da Silva Jardine, Paul A., 5,338,740, Cl. 514-259.000.

Pham, Anh, to SKF U.S.A., Inc. Solenoid stator assembly for electronically actuated fuel injector. 5,339,063, Cl. 335-260.000.

Phan, Dean V.; and Trokhan, Paul D., to Procter & Gamble Company, The. Superabsorbent polymer foam. 5,338,766, Cl. 521-63.000.

Pharmacia Deltec, Inc.: *See—*
Blomquist, Michael L., 5,338,157, Cl. 417-2.000.

Pharmetrix Corporation: *See—*
Kochinke, Frank; and Baker, Richard W., 5,338,548, Cl 424-449.000

Phelps, William C., III; Daggs, Dwayne A.; Robertson, William H., Jr.; and Jensen, Tyler D., to Motorola, Inc. LCD assembly with light pipe having lightguides extending from surface to surface and retaining means integral with the lightpipe. 5,339,178, Cl. 359-42.000.

Philip Morris Incorporated: *See—*
Newsome, Reginald W.; DeBlasio, James A.; Talley, Robert E.; Adams, John M.; Chance, Christopher N.; Evers, Donald H.; Harris, William C.; and Kirby, Michael A., 5,337,948, Cl. 229-120.150.

Philippossian, Georges: *See—*
Fumeaux, Rene ; and Philippossian, Georges, 5,338,741, Cl. 514-262.000.

Phillips Petroleum Company: *See—*
Jenneman, Gary E.; and Clark, J. Bennett, 5,337,820, Cl. 166-246.000.
Knudsen, Ronald D.; Hawley, Gil R.; Kidd, Dennis R.; and Porter, Randall A., 5,338,812, Cl. 526-130.000.

Photometrics, Ltd.: *See—*
Sims, Gary R., 5,338,948, Cl. 257-249.000.

Pi-Patent Gesellschaft mit beschraenkter Haftung (GmbH): *See—*
Meixner, Hans-Werner, 5,337,565, Cl. 60-594.000.

Pickett, James K.; Inman, Philip A.; and Sale, Matthew D., to Delco Electronics Corporation. Interface circuit for interfacing a peripheral device with a microprocessor operating in either a synchronous or an asynchronous mode. 5,339,395, Cl. 395-325.000.

Picozza, Augusto A.; and Fukuda, Takeshi, to Dart Industries Inc. Food processing container. 5,337,910, Cl. 220-203.000.

Pidaparti, Surya R., to Lemna Corporation, The. High rate anaerobic reactor for primary treatment of high strength wastewater. 5,338,452, Cl. 210-603.000.

Pielet, Howard M.; Kreevich, William J.; Tindyala, Masood A.; and Knoepke, John R., to Inland Steel Company. Tundish for molten alloy containing dense, undissolved alloying ingredient. 5,338,009, Cl. 266-229.000.

Pierce, Jim D., to Sandia Corporation. Crash resistant container. 5,337,917, Cl. 220-468.000.

Pierman, John A.: *See—*
Dunham, William D.; Hladilek, Jerry A.; McNeill, Steven R.; Pierman, John A.; Rogan, Charles T.; and Turk, Robert L., 5,338,236, Cl. 440-77.000.

Pierrat, Christophe: *See—*
Garofalo, Joseph G.; Kostelak, Robert L., Jr.; Pierrat, Christophe; and Vaidya, Sheila, 5,338,626, Cl. 430-5.000.

Pingleton, Edward D.: *See—*
Hasson, Harrith M.; Pingleton, Edward D.; and Thomson, Paul G., 5,338,317, Cl. 606-206.000.

Pino, Giovanni: *See—*
Steinberg, Gary L.; Pino, Giovanni; Gibbs, Kenneth E.; Norwood, Richard L.; and Smith, Gary L., 5,337,443, Cl. 15-344.000.

Pinto, Akiva; Lucassen, Guenter; Schmidt-Doepper, Ulrich; Hartmann, Ulrich; and Heuermann, Winfried, to Hergeth Hollingsworth GmbH. Device and method for pneumatically feeding a feeding chute. 5,337,455, Cl. 19-105.000.

Pioneer Electronic Corporation: *See—*
Akiyama, Masayuki; and Akagi, Manabu, 5,339,158, Cl. 348-757.000.
Hanaoka, Minoru, 5,339,304, Cl. 369-109.000.
Kuroda, Kazuo, 5,339,167, Cl. 358-339.000.
Sugawara, Kazuaki, 5,339,452, Cl. 455-212.000.
Takahashi, Hiroyuki; and Nagahara, Shinichi, 5,339,302, Cl. 369-54.000.

Pioneering Concepts Incorporated: *See—*
Schultz, Glen R., 5,338,166, Cl. 417-442.000.

Pippa, Roberto: *See—*
Vianello, Domenico; Benetton, Armando; Moro, Alessandro; Pippa, Roberto; and Longo, Aldo, 5,338,796, Cl. 525-66.000.

Pippins, Sherlock K. Tooth assembly for excavating apparatus. 5,337,495, Cl. 37-453.000.

Pirelli Coordinamento Pneumatici S.p.A.: *See—*
Van Ooij, Wim J.; and Giridhar, Jayaramachandran, 5,338,620, Cl. 428-625.000.

Pirhonen, Markku. Method of shaping and a series of shaping implements for slalom boots. 5,337,432, Cl. 12-115.200.

Pirkle, William H.; and Welch, Christopher J., to Research Corporation Technologies, Inc. Recognition and separation of carbon clusters. 5,338,529, Cl. 423-445.00B.

Pitney Bowes Inc.: *See—*
Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,337,660, Cl. 101-91.000.
Fassman, Arnold; Rigo, Stephen J.; and Spath, Alfred, 5,337,665, Cl. 101-235.000.
Goldberg, Stephen F., 5,337,661, Cl. 101-91.000.
Goldberg, Stephen F.; and Mistyurik, John D., 5,339,280, Cl. 346-134.000.
Heaton, Charles J., Jr., 5,339,411, Cl. 395-600.000.
Mistyurik, John D., 5,339,100, Cl. 346-134.000.

Pittore, William F.: *See—*
Carney, Michael W.; Marsland, Timothy; and Pittore, William F., 5,339,406, Cl. 395-575.000.

Plager, Steven P.; and Kvinge, Daniel J., to Graco Inc. Dynamic surge suppressor for fluid flow lines. 5,337,791, Cl. 138-30.000.

Planes, Gilberto M., to Solvay Barium Strontium GmbH. Process for producing granulated strontium carbonate with a strontium-containing binder. 5,338,709, Cl. 501-27.000.

Plasta Fiber Industries Corp.: *See—*
Gute, Robert M., 5,338,083, Cl. 296-97.900.
Miller, Douglas C., 5,338,082, Cl. 296-97.100.

Ploog, Klaus: *See—*
Wieck, Andreas D.; and Ploog, Klaus, 5,338,692, Cl. 437-24.000.

Plouzane, Claude: *See—*
Wagnon, Jean; de Cointet, Paul; Nisato, Dino; Plouzane, Claude; Serradeil-Legal, Claudine; and Tonnerre, Bernard, 5,338,755, Cl. 514-414.000.

Plum, Dennis L.: *See—*
Chana, Jit S.; Lupton, Pete J.; and Plum, Dennis L., 5,339,414, Cl. 395-650.000.

Plunkett, Jerry D.: *See—*
Shlenker, Robin R. T.; Solomons, Clive C.; Plunkett, Jerry D.; and Smith, Clayton S., 5,338,565, Cl. 427-2.250.

Plyley, Alan K.; Barker, John M.; Vidal, Claude; and Redmond, Russell J., to Minnesota Mining and Manufacturing Company. Trocar 5,338,305, Cl. 604-164.000.

Pokorny, Vit: *See—*
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,338,831, Cl. 530-334.000.

Polackowyj, John, to Aerojet General Corporation. Tank insulation method with cryogenic exposure. 5,338,383, Cl. 156-80.000.

Polak, Donald J.; and Bush, Thomas J., to Pelikan, Inc. Overhead projector with automatic document positioner. 5,339,122, Cl. 353-103.000.

Polaroid Corporation: *See—*
Taylor, Lloyd D.; and Warner, John C., 5,338,644, Cl. 430-214.000

Polizzotti, Richard S.; McCandlish, Larry E.; and Kugler, Edwin L., to Exxon Research & Engineering Company. Multiphase composite particle containing a distribution of nonmetallic compound particles. 5,338,330, Cl. 75-228.000.

Poll, Martin, to D. Swarovski & Co. Decorative element having a plurality of gems and a method for producing it. 5,338,591, Cl. 428-67.000.

Pollock, Thomas J.; and Thorne, Linda, to Shin-Etsu Chemical Co., Ltd.; and Shin-Etsu Bio, Inc. DNA segments controlling production of xanthan gum. 5,338,841, Cl. 536-23.700.

Polmonary Data Service Instrumentation, Inc.: *See—*
Lehman, Arlin D., 5,337,739, Cl. 128-205.270.

Polyfibre S.A.: *See—*
Takai, Yosuke; Studinka, Josef; and de Lhoneux, Benoit, 5,338,357, Cl. 106-724.000.

Polymer Processing Research Institute Ltd.: *See—*
Sasaki, Yasuo; Tani, Haruhisa; Kuroiwa, Yuuki; and Tsuyama, Setsuya, 5,338,593, Cl. 428-110.000.

Poma, Frank: *See—*
Dorfman, Donald; and Poma, Frank, 5,337,576, Cl. 62-127.000.

Pomato, Nicholas; Bos, Ebo S.; Haspel, Martin V.; Hanna, Michael G., Jr.; and Berman, Michael L., to Akzo N.V. Antigen recognized by MCA 16-88. 5,338,832, Cl. 530-350.000.

Pontarollo, Serge: *See—*
Kaire, Jean-Claude; Majoux, Bernard; and Pontarollo, Serge, 5,339,042, Cl. 330-255.000.

Pontvianne, Denis: *See—*
Demoulin, Vincent; Fersing, Marc; Patureaux, Thierry; and Pontvianne, Denis, 5,338,438, Cl. 208-153.000.

Popp, Janet L.: *See—*
Barrow, Colin J.; Brownell, James E.; Houck, David R.; Hong, Anderson C.; Popp, Janet L.; and Sedlock, David M., 5,338,845, Cl. 544-343.000.

Porcari, Vincenzo; and Riva, Gianluigi, to Ramsey Technology, Inc. Load sensing assembly. 5,337,618, Cl. 73-862.634.

Porter, Randall A.: *See—*
Knudsen, Ronald D.; Hawley, Gil R.; Kidd, Dennis R.; and Porter, Randall A., 5,338,812, Cl. 526-130.000.

Potter, Huntington; and Kayyali, Usamah, to President and Fellows of Harvard College. Method of identifying inhibitors of β-protein esterase activity. 5,338,663, Cl. 435-4.000.

Powell, Bruce A.; and Sirag, David J., Jr., to Otis Elevator Company. Early car announcement. 5,338,904, Cl. 187-137.000.

Powell, Jeffery E. G.: *See—*
Scarborough, Victoria D.; Czekai, David A.; and Powell, Jeffery E. G., 5,338,345, Cl. 106-2.000.

PPG Industries, Inc.: *See—*
Betts, Ronald E.; Savage, Douglas R.; Koerner, Richard J.; Leader, Matthew J.; Sin, Kee V.; Graves, Jeffrey A.; and Sherman, Marshall L., 5,338,435, Cl. 204-406.000.

Prabhakar, Bathula: *See—*
Choudhary, Vasant R.; Rajput, Amarjeet M.; Sansare, Subhash D.; Prabhakar, Bathula; and Mamman, Ajit S., 5,338,488, Cl. 252-373.000.

Prakash, Amit: *See—*
Bhagwat, Anand W.; Palmer, Kenneth J.; and Prakash, Amit, 5,337,972, Cl. 242-129.800.

Prana Recherche et Development: *See—*
Chahbazian, Jacques, 5,339,043, Cl. 330-56.000.

Praxair Technology, Inc.: *See—*
Prosser, Neil M., 5,337,570, Cl. 62-25.000.

Pray, James R.: *See—*
Cornelius, Richard G.; Arney, Michelle; and Pray, James R., 5,338,295, Cl. 604-96.000.

VOL 1165 ISS 3 AG 16 1994 UMI

President and Fellows of Harvard College: *See—*
Kishi, Yoshito; Fang, Francis G.; Forsyth, Craig J.; Scola, Paul M.; and Yoon, Suk K., 5,338,865, Cl. 549-214.000.
Potter, Huntington; and Kayyali, Usamah, 5,338,663, Cl. 435-4.000.
Priborsky, Anthony L.: *See—*
Karger, Paul A.; Mason, Andrew H.; Wray, John C. R.; Robinson, Paul T.; Priborsky, Anthony L.; Kahn, Clifford E.; and Leonard, Timothy E., 5,339,449, Cl. 395-700.000.
Price, Kenneth E.: *See—*
Schuman, Michael L.; and Price, Kenneth E., 5,338,446, Cl. 210-169.000.
Prince Corporation: *See—*
Young, Nathan W.; and Shafer, Russell P., Jr., 5,338,081, Cl 296-37.140.
Princeton University, The Trustees of: *See—*
Kahne, Daniel E., 5,338,837, Cl. 536-5.000.
Principia Optics, Inc.: *See—*
Kozlovsky, Vladimir I.; Nasibov, Alexander S.; and Skasyrsky, Yan K., 5,339,003, Cl. 313-463.000.
Probe Adventures, Inc.: *See—*
Underwood, Mark R., 5,338,257, Cl. 460-8.000.
Procter & Gamble Company, The: *See—*
Connor, Daniel S.; Scheibel, Jeffrey J.; and Kao, Ju-Nan, 5,338,486, Cl. 252-357.000.
Connor, Daniel S.; Scheibel, Jeffrey J.; and Kao, Ju-Nan, 5,338,487, Cl. 252-357.000.
Drobish, James L.; Biard, Daniel; and Merritt, Joyce R., 5,337,926, Cl. 222-309.000.
Hord, Lee A.; and Barron, Robert E., 5,338,549, Cl. 424-439.000.
Pancheri, Eugene J.; and Koc, Meleksima, 5,338,476, Cl. 252-174.140.
Phan, Dean V.; and Trokhan, Paul D., 5,338,766, Cl. 521-63.000.
White, Donald J., Jr.; Cox, Edward R.; and Kasturi, Rama, 5,338,537, Cl. 424-52.000.
Proebsting, Robert J.: *See—*
Boyle, Steven R.; Proebsting, Robert J.; and Herndon, William H., 5,338,970, Cl. 257-659.000.
Promation Incorporated: *See—*
Mihail, Stavros; and Berg, Marvin J., 5,337,795, Cl. 141-144.000.
Prosser, Neil M., to Praxair Technology, Inc. Cryogenic rectification system for producing lower purity oxygen. 5,337,570, Cl. 62-25.000.
Prosser, William H.; Kriz, Ronald D.; and Fitting, Dale W., to United States of America, natinal Aeronautics and Space Administration. Method of determining load in anisotropic non-crystalline materials using energy flux deviation. 5,337,610, Cl. 73-599.000.
Prost, Laurent: *See—*
Henriet, Dominique; Paul, Didier; and Prost, Laurent, 5,338,367, Cl. 134-3.000.
Prough, J. Robert: *See—*
Grace, Todd S.; Barrett, Mark D.; Bilodeau, Vic L.; McCarty, Gary L.; Greenwood, Brian F.; Prough, J. Robert; and Torregrossa, Louis O., 5,338,366, Cl. 127-37.000.
Pryor, Jeffery W.: *See—*
Pryor, John W.; and Pryor, Jeffery W., 5,337,992, Cl. 248-125.000.
Pryor, John W.; and Pryor, Jeffery W., to Pryor Products, Inc. Support device for ambulatory patient. 5,337,992, Cl. 248-125.000.
Pryor Products, Inc.: *See—*
Pryor, John W.; and Pryor, Jeffery W., 5,337,992, Cl. 248-125.000
Psaltis, Demetri: *See—*
Curtis, Kevin R.; and Psaltis, Demetri, 5,339,305, Cl. 369-112.000.
Ptacek, Fred L.; Outlaw, George R.; and Smith, Charles R., to Wynn's Climate Systems, Inc. Trapped air monitor for a refrigerant recovery unit. 5,337,578, Cl. 62-195.000.
Pudenz-Schulte Medical Research Corporation: *See—*
Speckman, Lori C.; and Watson, David A., 5,338,291, Cl. 604-9.000.
Pugsley, Thomas A.: *See—*
Dudley, David T.; Hodges, John C.; Pugsley, Thomas A.; and Taylor, Michael D., 5,338,744, Cl. 514-303.000.
Pujado, Peter J.: *See—*
Vora, Bipin V.; Imai, Tamotsu; and Pujado, Peter J., 5,338,889, Cl. 568-697.000.
Puma, Samuel C.; Sinacori, John B.; and Brown, Yorke J., to Northrop Grumman Corporation. High speed high resolution ultrasonic position and orientation tracker. 5,339,259, Cl. 364-559.000.
Puppe, Lothar: *See—*
Botta, Artur; Buysch, Hans-Josef; Immel, Otto; and Puppe, Lothar, 5,338,861, Cl. 548-552.000.
Purecussion, Inc.: *See—*
Johnston, Walter S., 5,337,645, Cl. 84-421.000.
Puri, Amit: *See—*
Barrett, William A.; and Puri, Amit, 5,338,924, Cl. 250-201.400.
Puritan-Bennett Corporation: *See—*
Zhang, Yunchang; and Cannon, James C., 5,338,516, Cl. 422-126.000.
Putnam, Greg A.: *See—*
Beckham, D. Scott; Putnam, Greg A.; Bolt, Lorraine; Aldous, Stephen C.; Dake, Guy M.; and Henrie, James B., 5,338,210, Cl. 439-131.000.
Qenico AB: *See—*
Nilsson, Kenth A. S., 5,338,360, Cl. 118-602.000.
Qualcomm Inc.: *See—*
Kornfeld, Richard K.; Weiland, Ana L.; and Okazaki, Mitsunari, 5,339,046, Cl. 330-277.000.
Qualtec Data Products, Inc.: *See—*
Kelley, Donald W., 5,337,999, Cl. 248-551.000.
Quante, J. Michael; Hoke, Randal A.; Mize, Patrick D.; Woodard, Daniel L.; and Millner, O. Elmo, deceased (by Millner, Margaret, legal representative), to Becton, Dickinson and Company. Fluorogenic and chromogenic β-lactamase substrates. 5,338,843, Cl. 540-222.000.
Quantum Chemical Corporation: *See—*
Ondrus, Daniel J.; and Heimberg, Manfred, 5,338,609, Cl. 428-402.000.
Quartzdyne, Inc.: *See—*
Evans, Paul S., 5,337,612, Cl. 73-706.000.
Quick, Charles E.; and Quick, Jamie R., to Signgold Corporation. Thin genuine gold sign making film. 5,338,615, Cl. 428-457.000.
Quick, Jamie R.: *See—*
Quick, Charles E.; and Quick, Jamie R., 5,338,615, Cl. 428-457.000.
Quickie Manufacturing Corporation: *See—*
Vosbikian, Peter S.; and Vartanian, Haig, 5,337,440, Cl. 15-143.100.
Quinn, Robert; Pez, Guido P.; and Appleby, John B., to Air Products and Chemicals, Inc. Process for reversibly absorbing acid gases from gaseous mixtures. 5,338,521, Cl. 423-210.500.
Quintana, Eric E.: *See—*
Hinds, Christopher N.; Fiene, Eric V.; Marquette, Daniel T.; and Quintana, Eric E., 5,339,266, Cl. 364-748.000.
R. A. Jones & Co. Inc.: *See—*
Greenwell, Joseph D.; Kalany, Robert M.; and Paselsky, John M., 5,337,887, Cl. 198-803.000.
Raab, Dagmar: *See—*
Neumann, Gerd; Hutschenreuther, Peter; Glien, Willfried; Raab, Dagmar; Leuner, Barbara; Steinborn, Gabriele; and Berger, Georg, 5,338,771, Cl. 523-113.000.
Raab, Gudrun: *See—*
Maurer, Alexander; Raab, Guenter; Raab, Gudrun; Steinert, Hans-Georg; and Taenzler, Richard, 5,338,524, Cl. 423-309.000.
Raab, Guenter: *See—*
Maurer, Alexander; Raab, Guenter; Raab, Gudrun; Steinert, Hans-Georg; and Taenzler, Richard, 5,338,524, Cl. 423-309.000.
Raaymakers, Wilhelmus P. M.; Kuijpers, Franciscus L. J. M.; Veenis, Aartje W.; Pasman, Johannes H. T.; and Mulder, Hendricus A. M., to U.S. Philips Corporation. Optically readable record carrier for recording information, method and apparatus for manufacturing such, apparatus for recording and reading information on a such a record carrier. 5,339,301, Cl. 369-50.000.
Rab, Dennis, to Bimba Manufacturing Company. Leak test port plug. 5,337,598, Cl. 73-49.800.
Rachlin, Adam: *See—*
Wilber, William; Cadotte, Roland, Jr.; Rachlin, Adam; and Cummings, Michael, 5,338,943, Cl. 505-193.000.
Rachor, Georg: *See—*
Patt, Rudolf; and Rachor, Georg, 5,338,405, Cl. 162-25.000.
Raghavan, Chidambaram; Kostohris, Kraig T.; and Hawes, Adrain C. O., to Flow International Corporation. Ultra high pressure multiple intensifier system. 5,337,561, Cl. 60-421.000.
Rahman, Aziz; and Baker, Gary A., to Texas Instruments Incorporated. Vented pressure switch apparatus. 5,338,908, Cl. 200-83.00P.
Rainbow Lifegard Products, Inc.: *See—*
Schuman, Michael L.; and Price, Kenneth E., 5,338,446, Cl. 210-169.000.
Rajagopalan, Raghavan: *See—*
Woulfe, Steven R.; and Rajagopalan, Raghavan, 5,338,864, Cl. 549-207.000.
Rajput, Amarjeet M.: *See—*
Choudhary, Vasant R.; Rajput, Amarjeet M.; Sansare, Subhash D.; Prabhakar, Bathula; and Mamman, Ajit S., 5,338,488, Cl. 252-373.000.
Ralph's Industrial Sewing Machine Company: *See—*
Badillo, Paul, 5,337,685, Cl. 112-121.150.
RAM Optical Instrumentation, Inc.: *See—*
Yates, Robert, 5,339,194, Cl. 359-696.000.
Ramakrishnan, Ed S.; and Howng, Wei-Yean, to Motorola, Inc. Piezoelectric lead zirconium titanate device and method for forming same 5,338,999, Cl. 310-358.000.
Ramesh, Manian; Sparapany, John W.; Finck, Martha R.; Siefert, Kristine S.; and Shetty, Chandrashekar S., to Nalco Chemical Company. Hydrophobic polyelectrolytes used in removing color. 5,338,816, Cl. 526-312.000.
Ramsey Technology, Inc.: *See—*
Porcari, Vincenzo; and Riva, Gianluigi, 5,337,618, Cl. 73-862.634.
Ramtron International Corporation: *See—*
Argos, George, Jr.; and Kalkur, Thottam S., 5,338,951, Cl. 257-295.000.
Raper, Larry K.: *See—*
Conner, Mike H.; Martin, Andrew R.; and Raper, Larry K., 5,339,438, Cl. 395-700.000.
Rapid Cool Corporation: *See—*
Williamson, James T.; and Jerbic, Michael J., 5,338,172, Cl. 425-143.000.
Rasmussen GmbH: *See—*
Hohmann, Ralf; Kleinhens, Bernd; Kohlhaus, Olaf; Mann, Stephan; and Spors, Ralf, 5,338,071, Cl. 285-233.000.
Raspanti, Giuseppe, to 3V Inc. Benzofuran derivatives useful as unscreeens. 5,338,539, Cl. 424-59.000.
Rasshofer, Werner: *See—*
Munzamy, Thomas; Rasshofer, Werner; Dorner, Karl-Heinz; and Limna, Ulrich, 5,338,763, Cl. 521-49.500.
Rassmann, Christoph, to Westfalia Becorit Industrietechnik GmbH. Control arrangement for adjusting the position of a mineral winning machine in a mineral mining installation. 5,338,103, Cl. 299-32.000.

Rastegar, Bahador, to SGS-Thomson Microelectronics, Inc. Cache tag parity detect circuit. 5,339,322, Cl. 371-51.100.
Ratnam, Perumal, to National Semiconductor Corporation. Making walled emitter bipolar transistor with reduced base narrowing. 5,338,695, Cl. 437-31.000.
Ratzlaff, Eugene H.: *See—*
Barbee, Steven G.; Heinz, Tony F.; Li, Leping; and Ratzlaff, Eugene H., 5,338,390, Cl. 156-627.000.
Rau, Peter: *See—*
Meier, Werner; Lippert, Hans-Joachim; Rau, Peter; and Koerner, Lothar, 5,339,342, Cl. 376-446.000.
Rauch, Micheline M. E., Patrick A. Rauch and Stephen E. Rauch, administrators: *See—*
Melville, Iain A.; and Rauch, Robert P., deceased, 5,338,354, Cl. 106-442.000.
Rauch, Robert P., deceased: *See—*
Melville, Iain A.; and Rauch, Robert P., deceased, 5,338,354, Cl 106-442.000
Raudenbush, James M.: *See—*
Fleming, David F.; Raudenbush, James M.; and Carlisle, Raymond M., 5,339,022, Cl. 324-67.000.
Raufoss AS: *See—*
Varmo, Kjell O., 5,337,671, Cl. 102-334.000.
Rauscher, Christen, to United States of America, Navy. Limited bandwidth microwave filter. 5,339,057, Cl. 333-166.000.
Rauscher, Tomlinson G.: *See—*
Evanitsky, Eugene S.; Rauscher, Tomlinson G.; Filion, Joseph; Sundquist, Douglas; Warddrip, Riley; and Auman, Daniel, 5,339,168, Cl. 358-402.000.
Rawlings, Lyle K. Roof-integratable photovolatic modules. 5,338,369, Cl. 136-246.000.
Rawson, Eric G.; Hadimioglu, Babur B.; and Khuri-Yakub, Butrus T., to Xerox Corporation. Acoustic ink printhead. 5,339,101, Cl. 347-46.000.
Raychem Limited: *See—*
Towle, Ian D. H., 5,338,821, Cl. 528-173.000.
Raytheon Company: *See—*
Vernon, Scott D., 5,339,078, Cl. 341-136.000.
Reddy, Pratap K. Method of using a laparoscopic retractor. 5,337,736, Cl. 128-20.000
Redford, Peter M., to TV Interactive Data Corporation. Multi-media pointing device. 5,339,095, Cl. 345-158.000.
Rediffusion Simulation Limited: *See—*
Olive, Graham J., 5,338,200, Cl. 434-43.000.
Redmond, Russell J.: *See—*
Plyley, Alan K.; Barker, John M.; Vidal, Claude; and Redmond, Russell J., 5,338,305, Cl. 604-164.000.
Reeder, Ryan A.: *See—*
Foster, L. Dale; and Reeder, Ryan A., 5,337,845, Cl. 180-11.000.
Rees, Richard W. A., to ITT Corporation. High strength automotive seat frame and method. 5,338,100, Cl. 297-452.100.
Reeves, Robert D.; and Brown, T. Garry, to Spar Aerospace Limited. Scanning optical sensor. 5,338,933, Cl. 250-334.000.
Reeves, William, to MCG International, Inc. System for simultaneously producing and synchronizing spectral patterns of heart sounds and an ECG signal. 5,337,752, Cl. 128-700.000.
Rehkemper, Jeffrey; Burroughs, Mike; Rehkemper, Steven; and Osborne, Kimberlee. Tossing and catching play object. 5,338,027, Cl. 273-58.00K.
Rehkemper, Steven: *See—*
Rehkemper, Jeffrey; Burroughs, Mike; Rehkemper, Steven; and Osborne, Kimberlee, 5,338,027, Cl. 273-58.00K.
Rehm, Peter H. Cryptographic guessing game. 5,338,043, Cl. 273-272.000.
Rehwinkel, Heiko: *See—*
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,338,326, Cl. 55-213.000.
Reichert, Donald G., to ABC Packaging Machine Corporation. Method and apparatus for applying sealing tape to cases moving on a conveyor. 5,338,384, Cl. 156-212.000.
Reick, Franklin G., to Ebert, Michael, a part interest. Iron-free transformer. 5,339,061, Cl. 335-216.000.
Reid, Gordon B.: *See—*
Fullerton, Jack K.; Beck, Richard A.; Clark, Fred B.; Reid, Gordon B.; and Nau, Keith A., 5,339,139, Cl. 355-215.000.
Reid, John D.; and Jensen, Jack L., to Delco Electronics Corp. Method and apparatus for vehicle crash discrimination based on oscillation and energy content. 5,339,242, Cl. 364-424.050.
Reid, Robert C. Concrete floor system. 5,337,532, Cl. 52-687.000.
Reinert, Gerhard: *See—*
Kaschig, Jurgen; and Reinert, Gerhard, 5,338,319, Cl. 8-586.000.
Reisdorf, Paul A.: *See—*
Bryce, James R.; Burke, Rodger W.; and Reisdorf, Paul A., 5,338,226, Cl. 439-571.000.
Reiter, Ernst R.: *See—*
Van Dyke, Mark J.; and Reiter, Ernst R., 5,338,241, Cl. 446-75.000
Reitz, Dieter, to General Motors Corporation. Valve gear for at least two simultaneously operated valves. 5,337,712, Cl. 123-90.220.
Reliable Corporation of America, The: *See—*
Greer, Thomas W., 5,338,042, Cl. 273-2o9.000.
Remec, Thomas M.: *See—*
Hibbard, Robert A.; and Remec, Thomas M., 5,338,629, Cl. 430-23.000.
Remiszewski, Stanley H.; and Green, David T., to United States Surgical Corporation. Surgical stapling apparatus. 5,337,937, Cl. 227-182.000.
Replay Amusements, Inc.: *See—*
Stegman, David E., 5,338,261, Cl. 473-1.000.
Repperger, Daniel W.; and Tripp, Lloyd D., to United States of America, Air Force. Fatigue indicator based on arterial oxygen. 5,337,743, Cl. 128-633.000.
Resch, Darrel R.: *See—*
Erb, Elisha W.; and Resch, Darrel R., 5,337,962, Cl. 239-424.500.
Research Association For Residual Oil Processing: *See—*
Iwamoto, Ryuichiro; Nakamura, Ikusei; and Iino, Akira, 5,338,437, Cl. 208-111.000.
Research Corporation Technologies: *See—*
Chu, Steven; Weiman, Carl; and Swann, William, 5,338,930, Cl 250-251.000
Research Corporation Technologies, Inc.: *See—*
Pirkle, William H.; and Welch, Christopher J., 5,338,529, Cl. 423-445.00B
Research Development Corporation of Japan: *See—*
Nishizawa, Jun-ichi; and Kurabayashi, Toru, 5,338,389, Cl. 117-89.000.
Research Foundation of the State University of New York, The: *See—*
Ojima, Iwao; Eguchi, Masakatsu; Oh, Young-Im; and Coller, Barry S., 5,338,725, Cl. 514-13.000.
Research Products/Blankenship Corporation: *See—*
Blankenship, Ernest B., 5,337,422, Cl. 4-111.500.
Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. Amorphous copolymers of two fluorinated ring monomers. 5,338,608, Cl. 428-392.000.
Reuben, Jayakumar: *See—*
Monthony, James F.; Livingston, Dwight; Reuben, Jayakumar; and Tite, Robert C., 5,338,666, Cl. 435-34.000.
Rexnord Corporation: *See—*
Anderson, Roy C.; and Leege, James W., 5,337,886, Cl. 198-728.000.
Reynolds, Payce: *See—*
Wentworth, Steven W.; Crane, Robert F.; Haas, Jon A.; and Reynolds, Payce, 5,337,837, Cl. 175-19.000.
Rheams, William N. Educational aid for mathematics. 5,338,203, Cl. 434-208.000
Rheinmetall GmbH: *See—*
Krumm, Herbert, 5,337,504, Cl. 42-78.000.
Rheon Automatic Machinery Co., Ltd.: *See—*
Hashimoto, Shigeru; Hasegawa, Kiyoshi; and Tashiro, Yasunori, 5,338,170, Cl. 425-92.000.
Rhone-Poulenc Chimie: *See—*
Leveque, Alain; and Le Loarer, Jean-Luc, 5,338,520, Cl 423-21.100.
Rhone-Poulenc Rorer S.A.: *See—*
Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,338,760, Cl 514-539.000.
Ricaud, Jean-Louis: *See—*
Petitclerc, Jean-Louis; and Ricaud, Jean-Louis, 5,339,339, Cl. 376-245.000.
Richardson, Carolyn A.: *See—*
Jull, Gwendolen A.; and Richardson, Carolyn A., 5,338,276, Cl. 482-113.000
Richardson, Larry D.: *See—*
Sechrist, Paul A.; Lawrence, Roger R.; and Richardson, Larry D., 5,338,440, Cl. 208-173.000.
Richardson, Mark C.: *See—*
Barry, Lawrence B.; and Richardson, Mark C., 5,338,478, Cl 252-182.210.
Richardson, Mary Jane: *See—*
Richardson, Thomas W.; and Richardson, Mary Jane, 5,337,946, Cl. 227-110.000.
Richardson, Thomas W.; and Richardson, Mary Jane. System for affixing a device to a workpiece. 5,337,946, Cl. 227-110.000.
Richart, Leland M.: *See—*
Vrana, John J.; and Richart, Leland M., 5,338,056, Cl. 280-673.000.
Richey, Enoch, to Memphis Light, Gas and Water Division. Method of repairing poles. 5,337,469, Cl. 29-402.120.
Rickard, Harry G.: *See—*
Everts, Robert G.; and Rickard, Harry G., 5,337,626, Cl. 74-445.000.
Ricker, Thomas H. Shoe with retractable cleats. 5,337,494, Cl 36-61.000.
Ricks, Michael J.; and Tong, Yulan C., to DowElanco. 3,4-N,trisubstituted-4,5-dihydro-1H-pyrazole-1-carboxamides and their use as insecticides. 5,338,856, Cl. 548-204.000.
Ricoh Company, Ltd.: *See—*
Anwyl, Phyllis; and Matsuda, Toru, 5,338,976, Cl. 364-419.010.
Fueki, Kazumasa, 5,339,412, Cl. 395-600.000
Fujisawa, Tetsuo; and Sakano, Yukio, 5,339,171, Cl. 358-458.000.
Meguro, Tsuneo; and Sakata, Hiroshi, 5,339,169, Cl. 358-403.000.
Mishima, Naoshi; Fukagai, Toshio; Taniguchi, Kiyoshi; Kishi, Hiroyuki; Inoue, Tomohiro; and Kawasaki, Yoshiaki, 5,339,138, Cl. 355-296.000.
Suzuki, Koji; Ueno, Yuichi; Aoki, Katsuhiro; Iwata, Naoki; Sawada, Akira; and Fujishiro, Takatsugu, 5,339,141, Cl. 355-246.000.
Rieger, Dale L.: *See—*
DeCamp, Ann; Dolling, Ulf H.; Li, Yulan; Rieger, Dale L.; Yasuda, Nobuyoshi; and Xavier, Lyndon C., 5,338,875, Cl. 556-402.000.
Rieter Ingolstadt Spinnereimaschinenbau AG: *See—*
Mayer, Walter; Brandl, Sebastian; and Neumeyer, Josef, 5,337,550, Cl. 57-263.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Schuller, Edmund; Karl, Rupert; Stanglmair, Anton; and Schneider, Gottfried, 5,337,552, Cl. 57-406.000.

Rieter Machine Works, Ltd.: *See*—
Clement, Heinz, 5,337,456, Cl. 19-115.00R.

Riffe, Delmar R.; Kotlarek, Peter A.; and Utter, Robert E., to American Standard Inc. Co-rotational scroll compressor supercharger device. 5,338,159, Cl. 417-203.000.

Right Way Co.: *See*—
Sung, Lan-Chung, 5,338,028, Cl. 273-73.00A.

Rigo, Stephen J.: *See*—
Fassman, Arnold; Rigo, Stephen J.; and Spath, Alfred, 5,337,665, Cl. 101-235.000.

Rikiyama, Hiroki, to NEC Corporation. Signal size judging apparatus. 5,339,308, Cl. 370-17.000.

Riley, Clyde: *See*—
Maybee, George W.; Taylor, Timothy E.; Field, Elmer L.; Riley, Clyde; Lacefield, William R., Jr.; Coble, Harold D.; and Dasarathy, Harini, 5,338,433, Cl. 205-178.000.

Riley, Kenneth L.: *See*—
Aldridge, Clyde L.; and Riley, Kenneth L., 5,338,717, Cl. 502-211.000.

Rinaldi, Antonio: *See*—
Giroldini, William; Landoni, Gianluigi; Rinaldi, Antonio; and Neri, Carlo, 5,338,787, Cl. 524-100.000.

Ripley, Paul S.: *See*—
Dziabo, Anthony J.; Karageozian, Hampar; Ripley, Paul S.; Lam, Sam W.; and Espiritu, J. Abraham, 5,338,480, Cl. 252-187.210.

Risberg, Jeffrey S.; and Skeen, Marion D. Apparatus and method for creation of a user definable video displayed document showing changes in real time data. 5,339,392, Cl. 395-161.000.

Risley Fluidic Power Ltd.: *See*—
Woods, Randy J.; and Isley, Reggald E., 5,337,847, Cl. 180-9.520.

Riso Kagaku Corporation: *See*—
Hasegawa, Takanori, 5,337,662, Cl. 101-126.000.
Kanai, irokazu, 5,337,669, Cl. 101-485.000.

Ristic, Ljubisa: *See*—
Bennett, Paul T.; Gutteridge, Ronald J.; Koury, Daniel N., Jr.; Mietus, David F.; and Ristic, Ljubisa, 5,337,606, Cl. 73-517.00R.

Rita, Robert A.: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Rite Charge Corporation: *See*—
Dorfman, Donald; and Poma, Frank, 5,337,576, Cl. 62-127.000.

Ritger, Philip L.: *See*—
Mathewson, Wilfred F.; Bringham, Richard L.; Ritger, Philip L.; and Karshmer, David L., 5,338,512, Cl. 422-46.000.

Ritter, Gerhard. Holder for a thin-walled card, especially a bank card, credit card, identity card or the like. 5,337,813, Cl. 150-147.000.

Ritter, Michael P.; and Long, William H., to Rockwell International Corporation. Method of inspection with cold light penetrant. 5,338,494, Cl. 252-700.000.

Riva, Gianluigi: *See*—
Porcari, Vincenzo; and Riva, Gianluigi, 5,337,618, Cl. 73-862.634.

RIX Corporation: *See*—
Miura, Kenji, 5,339,260, Cl. 364-560.000.

Rizzo, Salvatore J. Machine for smoothing ground surfaces. 5,337,833, Cl. 172-520.000.

Ro-An Industries Corporation: *See*—
Terranova, Peter, 5,338,281, Cl. 493-28.000.

Roadmaster Corporation: *See*—
Metcalf, Jeffrey D.; and Brashear, Daniel F., 5,338,273, Cl. 482-70.000.

Robert Bosch GmbH: *See*—
Bohne, Ulrich; Kabatnik, Wilfried; Bleicher, Manfred; Hecht, Joachim; and Lamprecht, Justus, 5,337,835, Cl. 173-13.000.
Fehrle, Siegfried; Kabatnik, Wilfried; Buck, Manfred; Dietz, Klaus; Hoelzel, Martin; Kleyer, Klaus; Schmid, Wolfgang; and Wanner, Karl, 5,337,945, Cl. 227-109.000.
Frank, Kurt; Attenni, Johann; Schmidt, Albert; and Weigl, Max, 5,338,163, Cl. 417-410.00R.
Kemmner, Ulrich; Frank, Kurt; and Niederkofler, Michael, 5,338,151, Cl. 415-55.100.

Robert, Ladislas; Moczar, Elemer; Hornebeck, William G.; and Kerneur, Christiane M. P., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Benzoisothiazolinone-1-dioxide derivatives as elastase inhibitors. 5,338,747, Cl. 514-373.000.

Robert W. Lackey Corporation: *See*—
Harris, Gregory; Nicholson, Roy V.; Burns, Stephen R.; and Lackey, Robert W., 5,337,445, Cl. 15-394.000.

Roberts, Hilary E.: *See*—
Yalowitz, Jeffrey S.; Morrison, James M.; and Roberts, Hilary E., 5,339,070, Cl. 340-578.000.

Roberts, Robert M.; and Douglas, William A., to Boeing Company, The. 3 dimensional braiding apparatus. 5,337,647, Cl. 87-31.000.

Robertshaw Controls Company: *See*—
Nelson, John, 5,337,788, Cl. 137-627.500.

Robertson, George G.; Mackinlay, Jock; and Card, Stuart K., to Xerox Corporation. Operating a processor to display stretched continuation of a workspace. 5,339,390, Cl. 395-157.000.

Robertson, William H., Jr.: *See*—
Phelps, William C., III; Daggs, Dwayne A.; Robertson, William H., Jr.; and Jensen, Tyler D., 5,339,178, Cl. 359-42.000.

Robin, Allen M.: *See*—
Jung, Dick Y.; Wolfenbarger, James K.; Brooker, Donald D.; Robin, Allen M.; and Kassman, Jerrold S., 5,338,489, Cl. 252-373.000.

Robins, Kevin J. Hydroponic gardening method and apparatus. 5,337,515, Cl. 47-62.000.

Robinson, David C., to Xerox Corporation. Apparatus and method for segmenting an input image in one of a plurality of modes. 5,339,172, Cl. 358-462.000.

Robinson, Douglas B.: *See*—
Lubkin, David C.; Robinson, Douglas B.; Chase, Robert P., Jr.; Leach, Paul J.; McCue, Daniel L., III; and Leblang, David B., 5,339,435, Cl. 395-700.000.

Robinson, Merritt A.: *See*—
Gould, Robert F.; and Robinson, Merritt A., 5,337,433, Cl. 15-1.700.

Robinson, Paul T.: *See*—
Karger, Paul A.; Mason, Andrew H.; Wray, John C. R.; Robinson, Paul T.; Priborsky, Anthony L.; Kahn, Clifford E.; and Leonard, Timothy E., 5,339,449, Cl. 395-700.000.

Robinson, Stanley D. Drill steel. 5,337,842, Cl. 175-323.000.

Roccaforte, Harry I., to Waldorf Corporation. Sturdy sandwich carton. 5,337,951, Cl. 229-186.000.

Roche, Allen D.: *See*—
Singer, Alfred R. E.; McGeough, Joseph; and Roche, Allen D., 5,337,631, Cl. 76-107.100.

Rock City Box Company: *See*—
Voss, Harry A., 5,337,916, Cl. 220-418.000.

Rockefeller University: *See*—
Gabay, Joelle E.; and Nathan, Carl E., 5,338,724, Cl. 514-12.000.

Rockford Corporation: *See*—
Harris, Wayne, 5,339,362, Cl. 381-86.000.

Rockwell International Coproration: *See*—
Loper, Roger K., 5,339,040, Cl. 329-358.000.

Rockwell International Corporation: *See*—
Hannon, William G., 5,337,664, Cl. 101-218.000.
Peinemann, Manfred K. A., 5,337,975, Cl. 244-53.00B.
Ritter, Michael P.; and Long, William H., 5,338,494, Cl. 252-700.000
Sutton, Robert F.; Tabibzadeh, Ramin; and Lang, Ko-Wei, 5,338,164, Cl. 417-413.00A.
White, Stanley A., 5,339,263, Cl. 364-724.100.

Rodgers, John C.: *See*—
McFarland, Andrew R.; Rodgers, John C.; Ortiz, Carlos A.; and Nelson, David C., 5,337,603, Cl. 73-202.000.

Rodgers, Nicholas A. Watch with light means. 5,339,294, Cl. 368-67.000.

Rodriguez, Peter A. Encapsulated liquid adhesive carrier. 5,338,590, Cl. 428-40.000.

Roehl, Joseph E.: *See*—
Spangler, Glenn E.; Roehl, Joseph E.; Patel, Gautam B.; and Dorman, Alvin, 5,338,931, Cl. 250-287.000.

Roeschert, Horst: *See*—
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,338,641, Cl. 430-165.000

Rogan, Charles T.: *See*—
Dunham, William D.; Hladilek, Jerry A.; McNeill, Steven R.; Pierman, John A.; Rogan, Charles T.; and Turk, Robert L., 5,338,236, Cl. 440-77.000.

Rogers, Allen William: *See*—
Bowman, Christopher J., 5,337,830, Cl. 169-14.000.

Roh, Young H.: *See*—
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,337,431, Cl. 8-159.000.

Rohm Co., Ltd.: *See*—
Imai, Atsushi; and Hishida, Tuyoshi, 5,338,704, Cl. 437-209.000.
Negoro, Atsuhito, 5,338,972, Cl. 257-666.000.
Shimoji, Noriyuki, 5,338,954, Cl. 257-326.000.
Tagashira, Fumiaki; Ota, Shigeo; Yukawa, Shinya; and Ooyama, Shingo, 5,338,919, Cl. 219-543.000.
Tanaka, Haruo; and Nakata, Naotaro, 5,339,373, Cl. 385-31.000.

Rohm and Haas Company: *See*—
Benderly, Abraham; and Bravo, Audrey, 5,338,375, Cl. 148-252.000.
Mulder, Jan W., 5,337,914, Cl. 220-403.000.

Rohr, Eric L.; Cech, Leonard S.; and Saltzman, Barry M., to Lubrizol Corporation, The. Corrosion inhibition composition. 5,338,347, Cl. 106-14.440.

Roll-A-Cover Inc.: *See*—
Wardell, James R., 5,338,084, Cl. 296-105.000.

ROLM Company: *See*—
Endick, Norman; and Stell, Larry, 5,339,360, Cl. 379-386.000.

Roltra Morse S.p.A.: *See*—
Bergesio, Giuseppe, 5,337,519, Cl. 49-351.000.

Romanini, Daniele: *See*—
Lesca, Giuseppe; Romanini, Daniele; and Vezzoli, Annibale, 5,338,764, Cl. 521-60.000.

Romano, Anthony. Back pedal brake for derailleur bicycle 5,337,861, Cl. 188-24.170.

Romer, Joachim C., to AVS Ing. J.C. Roemer GmbH. Valve. 5,337,785, Cl. 137-625.650.

Ronchi, Francesco, to Master S.A.S. Di Ronchi Francesco & C. Oxidation intensifier for continuous warp-chain indigo dyeing machines. 5,337,586, Cl. 68-5.00D

Ronnblom, Ahrne, to Stalteknik I Skelleftea AB. Laterally movable fork arrangement attached to a working machine. 5,338,148, Cl. 414-667.000

Roovers, Wilhelmus W. C. M.: *See*—
Hendriks, Emery F. M.; Roovers, Wilhelmus W. C. M.; and d'Herripon, Bastiaan A., 5,337,628, Cl. 477-48.000.

Rose, James W.: *See*—
Cole, Herbert S., Jr.; and Rose, James W., 5,338,975, Cl. 257-750.000.

Rosenburgh, John H.; Horton, Robert L.; and Patton, David L., to Eastman Kodak Company. Automatic replenishment, calibration and metering system for a photographic processing apparatus. 5,339,131, Cl. 354-324.000

Ross, Philip E.; Stanton, Leonard T.; and Layne, Timothy H. Internal liners for oil tankers or barges to minimize oil spills. 5,337,693, Cl. 114-69.000.

Rossigno, Louis P.; and Hewitt, Wayne A., to AlliedSignal Inc. Control valve actuator. 5,338,107, Cl. 303-113.300.

Rossler, Andreas; Waltenberg, Hans-Dieter; and Tessarsch, Norbert, to Emhart Inc. Rivet setting tool. 5,337,463, Cl. 29-243.521.

Rosthal, Richard A.: *See*—
Bonner, Stephen D.; Rosthal, Richard A.; and Bagersh, Abdullah A., 5,339,037, Cl. 324-366.000

Rostoker, Michael D.; Gluss, David; and Harrington, Tom, to LSI Logic Corporation. Method and apparatus for interim, in-situ testing of an electronic system with an inchoate ASIC. 5,339,262, Cl. 364-578.000

Roth, David B., to Chrysler Corporation. Engine cooling system with thermostat coolant flow control between head and block. 5,337,704, Cl. 123-41.100.

Roth, Gerhard, to National Research Council of Canada. Identifying curves within a scanned image. 5,339,367, Cl. 382-22.000.

Roth, Robert L.: *See*—
Hodgins, Bruce J.; and Roth, Robert L., 5,337,619, Cl. 73-863.110.

Rothen, Johann; Zobirei, Bernd; and Schult, Manfred, to WABCO Standard GmbH. Process for braking a vehicle. 5,338,106, Cl. 303-9.690.

Rott, Horst, to Mannesmann Rexroth GmbH. Poppet valve. 5,337,783, Cl. 137-625.270.

Rottefella A/S: *See*—
Hauglin, Bernt-Otto, 5,338,053, Cl. 280-615.000.

Rousmaniere, Arthur S.: *See*—
Zaccai, Gianfranco; Rousmaniere, Arthur S.; Dearborn, Timothy C.; Noble, Lynn; and Misage, Thomas J., 5,337,525, Cl 52-35.000.

Roussel, Gerard: *See*—
Bourzat, Jean-Dominique; Capet, Marc; Cotrel, Claude; Guyon, Claude; Manfre, Franco; and Roussel, Gerard, 5,338,760, Cl. 514-539.000.

Roussel Uclaf: *See*—
Fortin, Michel; Frechet, Daniel; Hamon, Gilles; Jouquey, Simone; and Vevert, Jean-Paul, 5,338,756, Cl. 514-394.000

Rousset, Abel; and DeVaux, Xavier, to Centre National de la Recherche Scientifique (C.N.R.S.). Composite alumina/metal powders, cermets made from said powders, and processes of production. 5,338,714, Cl. 501-127.000.

Rowe, Carleton N.: *See*—
Hiebert, John; Rowe, Carleton N.; and Rudnick, Leslie R., 5,338,470, Cl. 252-51.50A.

Roxas, Renato: *See*—
Stephens, Randy R.; Roxas, Renato; and Groenke, Gregory C., 5,338,307, Cl. 604-167.000.

Rubbermaid Incorporated: *See*—
Kobilarcik, Albert T.; and Stephens, William T., 5,337,954, Cl. 232-38.000.

Rubin, Stuart A.; and Murthy, Vasantha L., to Albert Einstein College of Medicine of Yeshiva University. Dynamic orthosis with proportional resistance. 5,337,737, Cl. 601-33.000.

Ruby, Richard C.: *See*—
Anderson, John T.; Nagesh, V. K.; and Ruby, Richard C., 5,338,507, Cl. 505-470.000.

Rudiger Berges GmbH: *See*—
Berges, Rudiger; and Berges, Ulrich, 5,337,771, Cl. 135-25.400.

Rudisill, Charles A.; and Whittle, Daniel J., to International Business Machines Corp. Edge-lit transflective non-emissive display with angled interface means on both sides of light conducting panel. 5,339,179, Cl. 359-49.000.

Rudnick, Leslie R.: *See*—
Hiebert, John; Rowe, Carleton N.; and Rudnick, Leslie R., 5,338,470, Cl. 252-51.50A.
Nelson, Lloyd A.; and Rudnick, Leslie R., 5,338,469, Cl 252-49.600.

Rudy, Rosanna P.: *See*—
Luttinger, Lionel B.; Rudy, Rosanna P.; and Holtzapfel, Paul J., 5,338,346, Cl. 106-14.290

Ruhl, Dieter; Arlt, Klaus; Heilmann, Ulrich; Heimann, Ulrich; and Hoffmann, Udo, to BASF Lacke & Farben Aktiengesellschaft. Process for the coating of electrically conductive substrates and a cathodically depositable aqueous electrocoating paint. 5,338,434, Cl. 205-229.000.

Rule, Mark; and Tanner, James T., III, to Eastman Chemical Company. Process for preparation of aromatic thiols. 5,338,886, Cl. 568-66.000.

Rumberger, William E.; and Steffler, Wayne S., to Boeing Company, The. Wing pivot structure. 5,337,974, Cl. 244-49.000.

Rundqvist, Lars-Goran: *See*—
Andersson, Roine; and Rundqvist, Lars-Goran, 5,337,899, Cl. 209-728.000.

Runyon, John F.: *See*—
Egan, Daniel; Alexander, Jerry; McKinney, James T.; and Runyon, John F., 5,337,608, Cl. 73-865.600.

Rupp, Richard R.; Coutant, Gary A.; and Coha, Joseph A., to Hewlett-Packard Company. Software compiler and linker with improved line-number table. 5,339,431, Cl. 395-700.000.

Ruschak, Kenneth J.: *See*—
Conroy, James E.; Devine, William D.; and Ruschak, Kenneth J., 5,338,359, Cl. 118-412.000.

Rush, Robert; and Fortlage, Paul, to MTD Products Inc. Slide actuation valve. 5,337,786, Cl. 137-625.680.

Rusis, Edvin A., to TRW Inc. Heterogeneous data translation system. 5,339,434, Cl. 395-700.000.

Russell, Jeffrey V.: *See*—
Liegel, Reinald D.; Ballard, James; Graham, James C.; Wisner, Craig A.; and Russell, Jeffrey V., 5,338,015, Cl. 269-71.000.

Russell, John P., to Infection Control Products, Inc. Face protector. 5,337,419, Cl. 2-9.000.

Russello, Thomas; and Sangiamo, Richard, to Genlyte Group Incorporated, The. Lighting fixture with ratcheted swivel socket sliding within slot. 5,339,234, Cl. 362-419.000.

Ruszkyak, Andreas, to Motorola, Inc. Comparator start-up arrangement. 5,339,045, Cl. 330-253.000.

Ryan, Christopher M.: *See*—
Gruber, Patrick R.; Kolstad, Jeffrey J.; Hall, Eric S.; Eichen Conn, Robin S.; and Ryan, Christopher M., 5,338,822, Cl. 528-354.000.

Ryan, Jane: *See*—
Thomas, Donald L.; and Ryan, Jane, 5,337,632, Cl. 81-3.550.

Ryan, Jeffrey M.: *See*—
Bates, Cary L.; and Ryan, Jeffrey M., 5,339,388, Cl. 395-153.000
Bates, Cary L.; and Ryan, Jeffrey M., 5,339,389, Cl. 395-153.000

Ryan, Jerry E., to Fintube Limited Partnership. Flow dependent finned tube. 5,337,807, Cl. 165-146.000.

Ryan, William P., to B. Braun Medical, Inc. Rotating Y-connector. 5,338,314, Cl. 604-284.000.

Ryobi Outdoor Products, Inc.: *See*—
Everts, Robert G.; and Rickard, Harry G., 5,337,626, Cl 74-445.000.

Rypkema, Ralph E.: *See*—
Corey, Garland P.; King, Elmer M.; and Rypkema, Ralph E., 5,338,475, Cl. 252-102.000.

Ryynanen, Seppo I., to Gerestek Oy. Method for the fabrication of a composite structure. 5,338,499, Cl. 264-34.000.

Saab, Mark A., to Advanced Polymers, Incorporated. Disposable sheath with optically transparent window formed continuously integral therewith. 5,337,734, Cl. 128-4.000.

Saab-Scanig Aktiebolag: *See*—
Sjostrom, Sverker, 5,337,864, Cl. 188-378.000.

Saari, Michelle R. Daily diet management planner and method. 5,338,202, Cl. 434-127.000.

Sachdev, Harbans S.: *See*—
Brunsvold, William R.; Jagannathan, Premlatha; Miura, Steve S.; Montgomery, Melvin W.; Sachdev, Harbans S.; and Sooriyakumaran, Ratnam, 5,338,818, Cl. 528-43.000.

Sadakane, Hirofumi: *See*—
Kitamura, Junichi; Sadakane, Hirofumi; and Tomiyama, Yoshio, 5,337,543, Cl. 56-10.800.

Sadakata, Kiyoshi; and Saito, Katsumi, to NSK Ltd. Tilting type steering apparatus. 5,338,064, Cl. 280-775.000.

Sadri, Fereydoon, to Bio-Preserve Medical Corporation. Organ perfusion device. 5,338,662, Cl. 435-1.000.

Safe & Dry Company, Inc., The: *See*—
Berndt, Dieter R., 5,338,535, Cl. 424-69.000

Saga, Jyunichi: *See*—
Shimomura, Tadao; Irie, Yoshio; Takahashi, Hitoshi; Kajikawa, Katsuhiro; Saga, Jyunichi; Fujiwara, Teruaki; and Hatsuda, Takumi, 5,338,810, Cl. 526-75.000.

Sagem Allumage: *See*—
Heritier-Best, Pierre; Brault, Isabelle; and Judelle, Bernard, 5,337,790, Cl. 251-129.210.

Sago, Ryuichi: *See*—
Kawaguchi, Naoko; Fukami, Harukazu; Sago, Ryuichi; and Ikai, Keitaro, 5,338,719, Cl. 504-224.000.

Saia, Louis P., III; and Wilbrandt, Cynthia S., to Pallet Reefer Company, The. Portable self-contained cooler/freezer apparatus for use on airplanes, common carrier type unrefrigerated truck lines, and the like. 5,337,579, Cl. 62-239.000.

Said, Ahmed; and Seckora, Michael, to Tektronix, Inc. Symmetric transposed FIR digital filter. 5,339,264, Cl. 364-724.160.

Saika, Toshihiro: *See*—
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl 437-3.000.

Sailor, Michael J.; Credo, Grace; Heinrich, Julie; and Lauerhaas, Jeffery M., to University of California, The Regents of the. Method for detection of chemicals by reversible quenching of silicon photoluminescence. 5,338,415, Cl. 204-129.200.

St. Clair, Anne K.; St. Clair, Terry L.; and Winfree, William P., to United States of America, National Aeronautics and Space Admini-

VOL 1165 ISS 3 AG 16 1994 UMI

station. Structures from low dielectric polyimides. 5,338,826, Cl. 528-353.000.
St. Clair, Terry L.: *See*—
St. Clair, Anne K.; St. Clair, Terry L.; and Winfree, William P., 5,338,826, Cl. 528-353.000.
Saito, Eiichi: *See*—
Ohmori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, 5,337,796, Cl. 141-168.000.
Saito, Hiroshi: *See*—
Sato, Chuichi; Kikuchi, Akira; Saito, Hiroshi; and Takaira, Shinichi, 5,337,497, Cl. 34-412.000.
Saito, Jun, to Nikon Corporation. Over-write capable magnetooptical recording method with widened power margin, and magnetooptical recording apparatus used in this method. 5,339,298, Cl. 369-13.000.
Saito, Katsumi: *See*—
Sadakata, Kiyoshi; and Saito, Katsumi, 5,338,064, Cl. 280-775.000.
Saito, Masahide: *See*—
Ohga, Yuichi; Danzuka, Toshio; Saito, Masahide; Amemiya, Kouji; and Yokota, Hiroshi, 5,338,327, Cl. 65-414.000.
Saito, Naoki; Kamio, Takayoshi; Ichijima, Seiji; and Mihayashi, Keiji, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,338,654, Cl. 430-557.000.
Saito, Naoto: *See*—
Aoki, Kenji; Akamine, Tadao; and Saito, Naoto, 5,338,697, Cl. 437-40.000.
Saito, Ryutaro: *See*—
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.
Saito, Shin, to Sony Corporation. Transmitter-receiver. 5,339,309, Cl. 370-29.000.
Saito, Yuuichi: *See*—
Yamasaki, Takuma; and Saito, Yuuichi, 5,339,446, Cl. 395-750.000.
Saitoh, Hitoshi; Endo, Takayoshi; Yagi, Sakai; Abe, Kimihiro; and Koumatsu, Seiji, to Yazaki Corporation. Connector terminal. 5,338,217, Cl. 439-246.000.
Sakaguchi, Kazuhiko; and Kitamura, Tohru, to Daiso Co., Ltd. Liquid crystalline compounds, liquid crystal compositions containing the same and use thereof. 5,338,482, Cl. 252-299.610.
Sakaguchi, Masayuki: *See*—
Okusaka, Shigeru; Kasa, Hideki; Sakaguchi, Masayuki; Kyomen, Junsuke; and Tago, Takashi, 5,338,920, Cl. 219-633.000.
Sakaguchi, Shinichi: *See*—
Sakai, Ichiro; Sakaguchi, Shinichi; and Haga, Takashi, 5,337,630, Cl. 477-131.000.
Sakaguchi, Yasuo: *See*—
Nukada, Katsumi; Imai, Akira; Daimon, Katsumi; Iijima, Masakazu; Mashimo, Kiyokazu; Sakaguchi, Yasuo; and Takegawa, Ichiro, 5,338,636, Cl. 430-59.000.
Sakai, Ichiro; Sakaguchi, Shinichi; and Haga, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle automatic transmission control system. 5,337,630, Cl. 477-131.000.
Sakai, Kazuya: *See*—
Ohto, Norio; Horikomi, Kazutoshi; Matsubara, Akira; Tanada, Hideki; Sakai, Kazuya; Kajiya, Seitaro; Mizuchi, Akira; and Shimizu, Hideshi, 5,338,857, Cl. 548-248.000.
Sakai, Shuzo: *See*—
Aga, Hajime; Yoneyama, Masaru; and Sakai, Shuzo, 5,338,420, Cl. 204-182.600.
Sakaki, Mamoru: *See*—
Kurabayashi, Yutaka; Sakaki, Mamoru; and Kaneko, Tomomi, 5,338,597, Cl. 428-195.000.
Sakakibara, Koji: *See*—
Hirata, Yoshihiko; and Sakakibara, Koji, 5,339,245, Cl. 364-431.080.
Sakakibara, Tadayuki: *See*—
Tanaka, Teruo; Inagami, Yasuhiro; Tamaki, Yoshiko; Sakakibara, Tadayuki; and Kitai, Katsuyoshi, 5,339,429, Cl. 395-700.000.
Sakakibara, Teigo: *See*—
Hashimoto, Yuichi; Amamiya, Shoji; and Sakakibara, Teigo, 5,338,632, Cl. 430-58.000.
Sakamoto, Akira: *See*—
Nakagami, Taro; and Sakamoto, Akira, 5,339,416, Cl. 395-650.000.
Sakamoto, Katsumi: *See*—
Yanagisawa, Tateo; Yamada, Hisayoshi; Sakamoto, Katsumi; Inagawa, Seiki; Umetsu, Yukihide; Uchida, Takeshi; Nakahara, Hideyo; and Fukumoto, Yoshiharu, 5,338,503, Cl. 264-516.000.
Sakamoto, Takuya: *See*—
Ogaki, Koji; Matsuda, Tomoo; Takagi, Kimihiko; and Sakamoto, Takuya, 5,337,846, Cl. 180-8.200.
Sakano, Yukio: *See*—
Fujisawa, Tetsuo; and Sakano, Yukio, 5,339,171, Cl. 358-458.000.
Sakanoue, Akira: *See*—
Kawamoto, Hiromi; Kubota, Yoshinori; Nishimura, Natsuya; and Sakanoue, Akira, 5,338,607, Cl. 428-373.000.
Sakata, Hiroshi: *See*—
Meguro, Tsuneo; and Sakata, Hiroshi, 5,339,169, Cl. 358-403.000.
Sakata, Minoru; and Komatsu, Noriyoshi, to Fujitsu Limited. Amplifier provided at output stage of intermediate frequency amplifying circuit of mobile communication system. 5,339,460, Cl. 455-343.000.
Sakellariou, Evangelos: *See*—
Jancic, Slobodan; and Sakellariou, Evangelos, 5,338,519, Cl. 422-253.000.
Sakura Finetechnical Co., Ltd.: *See*—
Mizusawa, Yoshitada; and Toya, Matsumi, 5,338,358, Cl. 118-401.000.
Sakuragi, Hiroshi, to Kabushiki Kaisha Toshiba. Image storage/search apparatus for merging image and related key codes when match found between key code and specific character code of image. 5,339,409, Cl. 395-600.000.
Sakurai Graphic Systems Corporation: *See*—
Kinoshita, Shoji; Nanbu, Hideo; and Tanaka, Katsumasa, 5,337,667, Cl. 101-424.000.
Sakurai, Kunio: *See*—
Fujiwara, Muneyoshi; Hirai, Wataru; Yonezawa, Takahiro; and Sakurai, Kunio, 5,339,248, Cl. 364-468.000
Sale, Matthew D.: *See*—
Pickett, James K.; Inman, Philip A.; and Sale, Matthew D., 5,339,395, Cl. 395-325.000.
Salerno, Albert. Fiber-lighted stylet. 5,337,735, Cl. 128-11.000
Salkeld, Paul; Gibbs, Andrew; and Tansley, Robert, to EBAC Limited. Apparatus for dispensing liquid from an inverted container. 5,337,922, Cl. 222-129.000.
Salomon S.A.: *See*—
Szafranski, Pierre; and Cazaillon, Jean-Mary, 5,338,051, Cl. 280-607.000.
Saltzman, Barry M.: *See*—
Rohr, Eric L.; Cech, Leonard S.; and Saltzman, Barry M., 5,338,347, Cl. 106-14.440.
Sampsell, Jeffrey B.: *See*—
Urbanus, Paul M.; and Sampsell, Jeffrey B., 5,339,116, Cl 348-716.000.
Samsung Electronics Co., Ltd.: *See*—
Kim, Sang-soo; Jang, In-sik; Kim, Nam-deog; and Son, Jeong-ha, 5,339,181, Cl. 359-59.000.
Kim, Weonkeun; Kim, Chulsoo; and Han, Jeongin, 5,338,959, Cl. 257-331.000.
Kim, Young D.; and Hong, Sung H., 5,338,922, Cl. 219-763.000.
Paek, Seung-kwon, 5,339,321, Cl. 371-31.000.
Park, Hyun J., 5,339,111, Cl. 348-524.000.
Sanborn, Kimberly B.: *See*—
Matz, Gary F.; and Sanborn, Kimberly B., 5,338,775, Cl 523-161.000.
Sanch, Francois R.: *See*—
Sartelet, Jean-Francois; Sanch, Francois R.; and Aggias, Zissis, 5,338,767, Cl. 521-159.000.
Sanders, Clifton G.: *See*—
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, JD; and Berry, Gaylord, 5,338,770, Cl. 523-112.000.
Sanders, Paul W., to Motorola, Inc. Method of forming a semiconductor device. 5,338,397, Cl. 156-659.100
Sanderson, George G.: *See*—
Dalessandro, David A.; Sanderson, George G.; and Kula, John S., 5,338,296, Cl. 604-96.000.
Sanderson, John R.: *See*—
Knifton, John F.; and Sanderson, John R., 5,338,890, Cl. 568-698.000.
Sandia Corporation: *See*—
Koehler, Dale R.; Sniegowski, Jeffry J.; Bivens, Hugh M.; and Wessendorf, Kurt O., 5,339,051, Cl. 331-65.000.
Pierce, Jim D., 5,337,917, Cl. 220-468.000.
Sandoz, Frederic; and Berthou, Herve , to Cabloptic S.A. Method for producing an optical fiber. 5,337,585, Cl. 65-391.000.
Sandoz Ltd.: *See*—
Estermann, Heinrich; Kapa, Prasad K.; Underwood, Russell L.; and Houlihan, William J., 5,338,730, Cl. 514-99.000.
Sangiamo, Richard: *See*—
Russello, Thomas; and Sangiamo, Richard, 5,339,234, Cl. 362-419.000.
Sangroniz, James M.: *See*—
Beaufort, Richard F.; and Sangroniz, James M., 5,339,096, Cl. 345-156.000.
Sankyo Company, Limited: *See*—
Yoshioka, Takao; Nishi, Takahide; Kanai, Tsutomu; Aizawa, Yuichi; Wada, Kunio; Fujita, Takashi; and Horikoshi, Hiroyoshi, 5,338,855, Cl. 514-369.000.
Sano, Fumikazu: *See*—
Higashiura, Atsushi; Sano, Fumikazu; Tokimori, Yoshitaka; and Natsume, Yoshitaka, 5,337,941, Cl. 228-205.000.
Sano, Hirohisa; and Inoue, Hiroaki, to Hitachi, Ltd. Optical modulator and optical communication system utilizing the same. 5,339,370, Cl. 385-2.000.
Sano, Yoshikazu: *See*—
Mori, Hideyasu; Yamazaki, Yuichi; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,339,355, Cl. 379-94.000.
Sansare, Subhash D.: *See*—
Choudhary, Vasant R.; Rajput, Amarjeet M.; Sansare, Subhash D.; Prabhakar, Bathula; and Mamman, Ajit S., 5,338,488, Cl. 252-373.000.
Sanshin Kogyo Kabushiki Kaisha: *See*—
Nanami, Masayoshi, 5,338,234, Cl. 440-38.000.
Sansone, Louis E.: *See*—
Simonds, Gregory A.; and Sansone, Louis E., 5,339,378, Cl. 385-100.000.
Santel, Hans-Joachim: *See*—
Baasner, Bernd; Fischer, Reiner; Widdig, Arno; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,338,860, Cl. 548-550.000.
Santhanan, Vatsa: *See*—
Chan, Paul; Dadoo, Manoj; Pettis, Karl; and Santhanan, Vatsa, 5,339,419, Cl. 395-700.000.

Santos, Villamor B. Split-type air-conditioning apparatus. 5,337,582, Cl. 62-311.000.
Sanyo Electric Co., Ltd.: *See*—
Shindou, Hiroyasu, 5,339,160, Cl. 348-571.000.
Sugayama, Sakae; and Kobayashi, Keiji, 5,339,453, Cl. 455-239.100.
Sappok, Manfred, to Siempelkamp Giesserel GmbH & Co. Radiation shielding transport container for irradiated nuclear reactor fuel elements and method of applying sealing coating to same. 5,338,941, Cl. 250-506.100.
Sarasep, Inc.: *See*—
Gjerde, Douglas T., 5,338,448, Cl. 210-198.200
Sarat-Chandra, Rangasami: *See*—
Mills, Robert L.; Lodholz, John C.; Sarat-Chandra, Rangasami; Orlando, Franklin P.; and Christian, Donald J., 5,337,885, Cl. 198-502.400.
Sarrobert, Bruno: *See*—
Thepenier, Catherine; Gudin, Claude; and Sarrobert, Bruno, 5,338,673, Cl. 435-134.000.
Sartelet, Jean-Francois; Sanch, Francois R.; and Aggias, Zissis, to Henkel Kommanditgesellschaft auf Aktien. Thixotropic polyurethane systems. 5,338,767, Cl. 521-159.000.
Sarubbi, Thomas R.; and Sizensky, Joseph J., to OCG Microelectronic Marterials, Inc. Selected structurally defined novolak binder resins and their use in photoresist pattern formation. 5,338,652, Cl. 430-326.000.
Sasaki, Kenichi: *See*—
Kurihara, Kazuaki; Sasaki, Kenichi; and Kawarada, Motonobu, 5,338,364, Cl. 118-729.000.
Sasaki, Masahiro; Ishii, Satoshi; Yamauchi, Yoshihiko; Kitamura, Katsushi; Toyoda, Shuji; and Ahiko, Kenkichi, to Snow Brand Milk Products Co., Ltd. Lactic acid bacteria, antibacterial substance produced by the bacteria, fermented milk starter containing the bacteria, and process for producing fermented milk by using the starter. 5,338,682, Cl. 435-253.400.
Sasaki, Mitsuru: *See*—
Kanazawa, Daisuke; Sasaki, Mitsuru; Urano, Toshiyuki; Yamashita, Youko; and Matsubara, Shinichi, 5,338,643, Cl. 430-190.000.
Sasaki, Motoshi: *See*—
Mine, Katsutoshi; Nakamura, Takashi; and Sasaki, Motoshi, 5,338,817, Cl. 528-12.000.
Sasaki, Nanji: *See*—
Inoue, Kikumitsu; Sasaki, Nanji; and Yachigo, Shinichi, 5,338,869, Cl. 549-335.000.
Sasaki, Shunroku: *See*—
Asahara, Masaru; Oguchi, Takuro; and Sasaki, Shunroku, 5,339,353, Cl. 379-59.000.
Sasaki, Yasuo; Tani, Haruhisa; Kuroiwa, Yuuki; and Tsuyama, Setsuya, to Polymer Processing Research Institute Ltd. Multiaxial nonwoven fabric. 5,338,593, Cl. 428-110.000.
Sasaki, Yosuke: *See*—
Hayakawa, Kohji; and Sasaki, Yosuke, 5,338,171, Cl. 425-138.000.
Sato, Chuichi; Kikuchi, Akira; Saito, Hiroshi; and Takaira, Shinichi, to NSK Ltd. Method and apparatus for drying bearing. 5,337,497, Cl. 34-412.000.
Sato, Harumatsu: *See*—
Ishi, Yuji; Nagao, Toru; and Sato, Harumatsu, 5,338,099, Cl. 297-452.330.
Sato, Hideaki; and Eguchi, Hiroshi, to Dai Nippon Printing Co., Ltd. Thermal transfer sheet and thermal transfer image forming method. 5,338,718, Cl. 503-227.000.
Sato, Takehiko: *See*—
Naruse, Hideaki; Suzuki, Makoto; and Sato, Takehiko, 5,338,651, Cl. 430-505.000.
Sato, Tomohiro: *See*—
Yokoyama, Yutaka; Tsuji, Tatsunori; Ue, Makoto; and Sato, Tomohiro, 5,338,472, Cl. 252-62.200.
Satoh, Munetaka; Ito, Sadao; and Nawa, Hiroshi, to Aisen Seiki Kabushiki Kaisha. Power seat frame assembly. 5,337,995, Cl. 248-429.000.
Satoru, Serizawa: *See*—
Iida, Kozo; Nojima, Shigeru; Satoru, Serizawa; and Kobayashi, Norihisa, 5,338,715, Cl. 502-64.000.
Satou, Kazunori: *See*—
Urata, Hiroshi; Sone, Toshinao; Nakane, Kazunori; Satou, Kazunori; and Tokita, Kiyoshi, 5,339,010, Cl. 315-368.170.
Savage, Douglas R.: *See*—
Betts, Ronald E.; Savage, Douglas R.; Koerner, Richard J.; Leader, Matthew J.; Sin, Kee V.; Graves, Jeffrey A.; and Sherman, Marshall L., 5,338,435, Cl. 204-406.000.
Savin, Ronald R. Zinc powder-rich coating composition. 5,338,348, Cl. 106-14.440
Sawada, Akira: *See*—
Suzuki, Koji; Ueno, Yuichi; Aoki, Katsuhiro; Iwata, Naoki; Sawada, Akira; and Fujishiro, Takatsugu, 5,339,141, Cl. 355-246.000.
Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; and Matsumoto, Takeo, to Nippon Oil and Fats Co., Ltd. Fluoroalkyl group-containing organosilicon oligomer, method for preparing same and surface treating agent. 5,338,877, Cl. 556-440.000.
Sawamura, Kouji; and Moriuchi, Yuzo, to Matsushita Electric Industrial Co., Ltd. Telephone dialing system with error indicating function. 5,339,357, Cl. 379-355.000.
Sawatsky, Kim R. Article storage organizer. 5,337,987, Cl. 248-231.800.
Sawyer, Laurence D.; Lindsay, Robert A.; and Tate, Steven C., to Unisys Corporation. Station interface unit. 5,339,312, Cl. 370-85.100.
Saxena, Surendra K., to Norsk Hydro a.s. Method for treatment of oil contaminated filings of magnesium and magnesium alloys. 5,338,335, Cl. 75-403.000.
Saxer, Ulrich P.; and Buzzi, Carlo A. Brushless tooth cleaning device. 5,337,436, Cl. 15-104.940.
Scalice, Edward R.; Sharkey, David J.; Christy, Kenneth G., Jr.; Esders, Theodore W.; and Daiss, John L., to Eastman Kodak Company. DNA amplification with thermostable DNA polymerase and polymerase inhibiting antibody. 5,338,671, Cl. 435-91.200.
Scarborough, Victoria D.; Czekai, David A.; and Powell, Jeffery E. G., to Eastman Kodak Company. Water-based water repellent coating compositions. 5,338,345, Cl. 106-2.000.
Scarpati, Michael: *See*—
Harrison, Richard P.; Scarpati, Michael; Narayan, Thirumurti; and Zagata, Blair J., 5,338,820, Cl. 528-67.000.
Schaaf, Heinz-Josef. Method and apparatus for making expanded food stuffs. 5,338,559, Cl. 426-448.000.
Schaefer, Dietmar: *See*—
Fock, Jurgen; Esselborn, Eberhard; and Schaefer, Dietmar, 5,338,485, Cl. 252-309.000.
Schaeffer, William R., to Parker Hannifin Corporation. Machine control system. 5,339,249, Cl. 364-474.180.
Schatz, Peter J.; and Stemmer, Willem P. C., to Affymax Technologies N.V. Peptide library and screening method. 5,338,665, Cl. 435-6.000.
Scheel, Horst; and Stevenson, Thomas T., to Caterpillar Inc. Timing control for an engine having a capacitor discharge ignition system. 5,337,717, Cl. 123-426.000.
Scheibel, Jeffrey J.: *See*—
Connor, Daniel S.; Scheibel, Jeffrey J.; and Kao, Ju-Nan, 5,338,486, Cl. 252-357.000.
Connor, Daniel S.; Scheibel, Jeffrey J.; and Kao, Ju-Nan, 5,338,487, Cl. 252-357.000.
Connor, Daniel S.; Scheibel, Jeffrey J.; Fu, Yi-Chang; Murch, Bruce P.; Watson, Randall A.; and McKillop, Kirsten L., 5,338,491, Cl. 252-548.000.
Scheidler, Regina: *See*—
Borens, Manfred; Busch, Dietrich; Leroux, Roland; Scheidler, Regina; and Bonzelius, Karsten, 5,337,727, Cl. 126-200.000.
Schellekens, Ronald M. A. M.: *See*—
van Dijk, Hans K.; and Schellekens, Ronald M. A. M., 5,338,413, Cl. 204-59.00R.
Schellen, Johannes A. T., to U.S. Philips Corporation. High pressure discharge lamp. 5,339,006, Cl. 315-58.000.
Schenck Auto-Service Gerate GmbH: *See*—
Steinbeck, Horst; and Feith, Johann, 5,337,817, Cl. 157-21.000.
Schering Corporation: *See*—
Chu, Min; Patel, Mahesh; Horan, Ann C.; and Gullo, Vincent P., 5,338,758, Cl. 514-468.000.
Scherson, Daniel A.: *See*—
Burk, Melvyn I.; and Scherson, Daniel A., 5,338,412, Cl. 204-59.00R.
Scheuer, Mark A.; MacDonald, Daniel W.; Palumbo, Kenneth S.; Paolini, Anthony L.; Berman, Robin E.; and Hurwitch, Carl B., to Xerox Corporation. Charged area (CAD) image loss control in a tri-level imaging apparatus. 5,339,135, Cl. 355-208.000.
Schiel, Christian, to J.M. Voith GmbH. Hydrostatically supported sag-compensation roll, in particular for paper manufacturing machines. 5,338,279, Cl. 492-7.000.
Schiltz, Thomas E.; and Nuckolls, Carl R., to Motorola, Inc. High speed sample and hold circuit and radio constructed therewith. 5,339,459, Cl. 455-333.000.
Schipper, Paul H.: *See*—
Owen, Hartley; and Schipper, Paul H., 5,338,439, Cl. 208-153.000.
Schlein, Allen P. Device for assisting a person to transfer into and from a bed. 5,337,430, Cl. 5-662.000.
Schlesch, Ronald D.; and Cheskaty, Rex B., to Trouvay & Cauvin; and Armstrong International, Inc. Steam generator. 5,337,703, Cl. 122-379.000.
Schlink, Wilhelm: *See*—
Obersteller, Udo; and Schlink, Wilhelm, 5,338,123, Cl. 401-34.000.
Schlipfenbacher, Reiner; Steinbiss, Joachim; and Trasch, Heinz-Friedrich, to Boehringer Mannheim GmbH. Test carrier for the analytical determination of a component of a liquid sample. 5,338,513, Cl. 422-56.000.
Schlumberger Industries: *See*—
Janssen, Sylvain; Fournier, Jacques; and Larmurier, Claude, 5,337,797, Cl. 141-206.000.
Schlumberger Technology Corporation: *See*—
Bonner, Stephen D.; Rosthal, Richard A.; and Bagersh, Abdullah A., 5,339,037, Cl. 324-366.000.
Clark, Brian; Bonner, Stephen D.; Jundt, Jacques; and Luling, Martin, 5,339,036, Cl. 324-338.000.
Hromas, Joe C.; and Patel, Dinesh R., 5,337,827, Cl. 166-321.000
Schmid, Wolfgang: *See*—
Fehrle, Siegfried; Kabatnik, Wilfried; Buck, Manfred; Dietz, Klaus; Hoelzel, Martin; Kleyer, Klaus; Schmid, Wolfgang; and Wanner, Karl, 5,337,945, Cl. 227-109.000.
Schmidt, Albert: *See*—
Frank, Kurt; Attenni, Johann; Schmidt, Albert; and Weigl, Max, 5,338,163, Cl. 417-410.00R.
Schmidt-Doepper, Ulrich: *See*—
Pinto, Akiva; Lucassen, Guenter; Schmidt-Doepper, Ulrich; Hartmann, Ulrich; and Heuermann, Winfried, 5,337,455, Cl. 19-105.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Schmidt, Friedrich: *See*—
Blanke, Uwe; Kern, Hans J.; Schmidt, Friedrich; Hanke, Thomas; Murray, Peter E.; Schnatwinkel, Michael; and Wilmes, Manfred, 5,338,224, Cl. 439-491.000.

Schmidt, Friedrich G.: *See*—
Grosse-Puppendahl, Thomas; Baron, Christian; and Schmidt, Friedrich G., 5,338,789, Cl. 524-314.000.

Schmidt, G. Gerry, to Pacific Handy Cutter, Inc. Safety blade for utility knife. 5,337,482, Cl. 30-162.000.

Schmidt, Jonathan R.: *See*—
Wirth, William F.; and Schmidt, Jonathan R., 5,339,348, Cl. 378-93.000.

Schmidt, Robert H.; and Martin, Dan. Part machining programming using a camera interchangeable with maching nozzle. 5,339,103, Cl. 348-95.000.

Schmidt, Robert R.: *See*—
Baasner, Bernd; Fischer, Reiner; Widdig, Arno; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,338,860, Cl. 548-550.000.

Schmitt, Gerhard, to Michael Weinig Aktiengesellschaft. Blade head for cutting blades. 5,337,812, Cl. 144-230.000.

Schmitt, Michael: *See*—
Acker, Michael; Albert, Bernhard; and Schmitt, Michael, 5,338,848, Cl. 546-112.000.

Schnabel, Horst: *See*—
Bitter, Dieter; Bornkessel, Eberhard; and Schnabel, Horst, 5,338,072, Cl. 285-286.000.

Schnatwinkel, Michael: *See*—
Blanke, Uwe; Kern, Hans J.; Schmidt, Friedrich; Hanke, Thomas; Murray, Peter E.; Schnatwinkel, Michael; and Wilmes, Manfred, 5,338,224, Cl. 439-491.000.

Schneider, Alan A.: *See*—
Jolson, Joseph D.; and Schneider, Alan A., 5,338,429, Cl. 204-415.000.

Schneider, Erika; and Bernstein, Matthew A., to General Electric Company. MR imaging with rectangular magnetization transfer pulse. 5,339,035, Cl. 324-309.000.

Schneider, Gottfried: *See*—
Schuller, Edmund; Karl, Rupert; Stanglmair, Anton; and Schneider, Gottfried, 5,337,552, Cl. 57-406.000.

Schneider, Hans P.: *See*—
van Buren, Frederik R.; Deij, Leendert; Merz, Gunnar; and Schneider, Hans P., 5,338,444, Cl. 210-660.000.

Schneider, Mark D.: *See*—
Catena, Robert J.; Artusa, Gastone; Kveglis, Albert A.; Bosco, Jason J.; Barreto, Sonia; Mathew, Mathew C.; and Schneider, Mark D., 5,338,785, Cl. 524-39.000.

Schneider, Mark S.; Acocella, John; Herron, Lester W.; Kordus, Mark R.; and Wirtz, Louis H., to International Business Machines Corporation. Structures for electrically conductive decals filled with inorganic insulator material. 5,338,900, Cl. 174-250.000.

Schnorr, Kenneth L.: *See*—
El Bahy, Mohamed M.; Malone, John B., Jr.; Todd, William J.; and Schnorr, Kenneth L., 5,338,660, Cl. 435-7.220.

Schnurr, Martin W.: *See*—
Pavur, Carol P.; and Schnurr, Martin W., 5,338,138, Cl. 411-107.000.

Schoch, Karl F., Jr.: *See*—
Boenning, Robert A.; Schoch, Karl F., Jr.; Stough, Daryl V.; and Navish, Francis W., Jr., 5,339,038, Cl. 324-539.000.

Schoengen, Anton: *See*—
Korte, Hermann-Josef; Miletic, Anton; Neutzler, Hans U.; Schoengen, Anton; Schroeder, Johann H.; and Wirges, Ralf, 5,338,882, Cl. 562-483.000.

Schoenherr, Walter: *See*—
Braun, Alfred; Helbig, Peter; Steiner, Hermann; and Schoenherr, Walter, 5,339,002, Cl. 313-318.000.

Schoofs, Franciscus A. C. M., to U.S. Philips Corporation. Semiconductor device having series-connected junction field effect transistors. 5,338,949, Cl. 257-269.000.

Schoonmaker, Richard P.: *See*—
Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,337,660, Cl. 101-91.000.

Schott Glaswerke: *See*—
Borens, Manfred; Busch, Dietrich; Leroux, Roland; Scheidler, Regina; and Bonzelius, Karsten, 5,337,727, Cl. 126-200.000.

Schrader, Jurgen: *See*—
Guckel, Martin; Schrader, Jurgen; and Wilms, Bernd, 5,338,085, Cl 296-121.000.

Schrage, David A. Recyclable plastic pallet. 5,337,681, Cl. 108-56.100.

Schramm, Michael: *See*—
Hildebrand, Reinhard; and Schramm, Michael, 5,338,249, Cl. 454-126.000.

Schroeder, Gunter-Rudolf; and Mayer, Udo, to BASF Aktiengesellschaft. Electrostatic toner containing a keto compound as a charge stabilizer. 5,338,639, Cl. 430-110.000.

Schroeder, Johann H.: *See*—
Korte, Hermann-Josef; Miletic, Anton; Neutzler, Hans U.; Schoengen, Anton; Schroeder, Johann H.; and Wirges, Ralf, 5,338,882, Cl. 562-483.000.

Schroedl, Manfred; and Stefan, Thomas, to Elin Energieanwendung GmbH. Method and circuit arrangement for sensor-less detection of the rotational angle of a damper-less synchronous machine, preferably excited by a permanent magnet, and supplied by a rectifier. 5,339,012, Cl. 318-254.000.

Schuchert, Eugene H.; Christensen, David M.; and McGuire, Samuel B. Method and apparatus for bending tubes using split bend die. 5,337,590, Cl. 72-157.000.

Schuler, Warren: *See*—
Giles, Charles; Belsom, Keith; and Schüler, Warren, 5,337,583, Cl. 60-752.000.

Schuller, Edmund; Karl, Rupert; Stanglmair, Anton; and Schneider, Gottfried, to Rieter Ingolstadt Spinnereimaschinenbau AG. Open-end spinning machine frame structure. 5,337,552, Cl. 57-406.000.

Schuller International, Inc.: *See*—
Near, Daniel E.; Feagans, Royce M.; and Hobert, Ward T., 5,338,765, Cl. 521-50.500.

Schult, Manfred: *See*—
Rothen, Johann; Zobirei, Bernd; and Schult, Manfred, 5,338,106, Cl. 303-9.690.

Schultz, Bruce R.; Henderson, Kirk P.; and Barootian, Arthur, to Johnson Service Company. Enclosure for humidity sensing element. 5,337,605, Cl. 73-335.020.

Schultz, Glen R., to Pioneering Concepts Incorporated. Evacuation pump system for both rigid and flexible containers. 5,338,166, Cl. 417-442.000.

Schuman, Michael L.; and Price, Kenneth E., to Rainbow Lifegard Products, Inc. Filter unit for in-line use in a pool vacuum hose. 5,338,446, Cl. 210-169.000.

Schumpe, Adrian: *See*—
Deckwer, Wolf-Dieter; Lobas, Detlef; and Schumpe, Adrian, 5,338,681, Cl. 435-252.100.

Schurr, Sabine; and Tschech, Andreas, to Lonza Ltd. Microbiological process for the production of malonyl-7-amino-cephalosporanic acid derivatives using Sphingomonas sp. DSM 7007. 5,338,667, Cl. 435-47.000.

Schwab, Edward C.; Brown, George E.; Thomas, Kristin L.; and Harrington, Terry R., to General Mills, Inc. High intensity microwave puffing of thick R-T-E cereal flakes. 5,338,556, Cl. 426-241.000.

Schwalm, Robert C.; and Deffner, Gerhard P. H., to Texas Instruments Incorporated. System and method for authenticating transmission and receipt of electronic information. 5,339,361, Cl. 380-23.000.

Schwarz, Detlef: *See*—
Vogt, Lothar; Bartels, Stefan; Arnold, Rainer; and Schwarz, Detlef, 5,339,455, Cl. 455-266.000.

Schwarz, Theodore A.: *See*—
Heinz, John E.; Hamerly, Michael E.; Molstad, Richard W.; Schwarz, Theodore A.; and Youngquist, Robert J., 5,339,202, Cl. 360-46.000.

Schwendemann, Kenneth L.: *See*—
Godfrey, Craig W.; Noack, Timothy J.; and Schwendemann, Kenneth L., 5,338,001, Cl. 251-58.000.

SciMed Life Systems, Inc.: *See*—
Cornelius, Richard G.; Arney, Michelle; and Pray, James R., 5,338,295, Cl. 604-96.000.
Cox, James E., 5,338,300, Cl. 604-96.000.

Scitex Corporation Ltd.: *See*—
Smilansky, Zeev; Melman, Haim Z.; Bresler, Yoav; Litvak, Matty J.; Kreitman, Haim; and Yad-Shalom, Itai, 5,339,176, Cl. 358-504.000.

Scola, Paul M.: *See*—
Kishi, Yoshito; Fang, Francis G.; Forsyth, Craig J.; Scola, Paul M.; and Yoon, Suk K., 5,338,865, Cl. 549-214.000.

Scott, Baker P. L., III: *See*—
Harris, Larry L.; and Scott, Baker P. L., III, 5,339,067, Cl. 338-323.000.

Scott Manufacturing, Inc.: *See*—
Ekdahl, Royce L.; and Jordan, C. Minuard, 5,338,140, Cl. 414-346.000.

Scott, Vernon R.: *See*—
Henderson, James M.; Scott, Vernon R.; and Cote, Kenneth C., 5,338,645, Cl. 430-311.000.

Scully Signal Company: *See*—
McCarthy, Daniel F., 5,338,069, Cl. 285-38.000.

Seatek Co., Inc.: *See*—
Ducret, Lucien C., 5,337,479, Cl. 30-90.600.

Sechrist, Paul A.; Lawrence, Roger R.; and Richardson, Larry D., to UOP. Controlled method of transporting catalyst between zones. 5,338,440, Cl. 208-173.000.

Seckora, Michael: *See*—
Said, Ahmed; and Seckora, Michael, 5,339,264, Cl. 364-724.160.

Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The: *See*—
Falcus, Steven J., 5,337,461, Cl. 29-25.350.

Secretary of State for Trade Industry: *See*—
Partridge, Roger H.; Bradsell, Robert H.; and Woods, Peter T., 5,339,155, Cl. 356-419.000.

Security Tag Systems, Inc.: *See*—
Hogan, Dennis L., 5,337,459, Cl. 24-136.00A.

Sedlock, David M.: *See*—
Barrow, Colin J.; Brownell, James E.; Houck, David R.; Hong, Anderson C.; Popp, Janet L.; and Sedlock, David M., 5,338,845, Cl. 544-343.000.

Seeley, Wayne C. Photo or art easel and self-mailer. 5,337,949, Cl. 229-92.800.

Seely, Warren L.: *See*—
Staudinger, Joseph; Beckwith, William B.; and Seely, Warren L., 5,339,462, Cl. 455-330.000.

Sehr, Terrence W.: *See*—
Carrig, Keith M.; Hathaway, David J.; Lallier, Keith W.; Panner, Jeannie T. H.; and Sehr, Terrence W., 5,339,253, Cl. 364-489.000.

Seiko Epson Corporation: *See*—
Suzuki, Hiroshi; Aoki, Shigeru; Maruyama, Akihiko; and Koike, Nobuhiro, 5,339,297, Cl. 368-321.000.

Seiko Instruments Inc.: *See*—
Aoki, Kenji; Akamine, Tadao; and Saito, Naoto, 5,338,697, Cl. 437-40.000.
Nureki, Shinji; and Oonishi, Kazuhisa, 5,339,099, Cl. 346-76.0PH.

Seikoh Giken Co., Ltd.: *See*—
Takahashi, Mitsuo, 5,339,377, Cl. 385-98.000.

Seiryo Engineering Co., Ltd.: *See*—
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.

Seki, Hiroyuki: *See*—
Inaba, Tadashi; Okada, Hisashi; Suzuki, Ryo; Katsuoka, Yasuhiro; and Seki, Hiroyuki, 5,338,649, Cl. 430-430.000.

Sekihata, Osamu: *See*—
Tanaka, Kenji; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Sekihata, Osamu; Hatta, Hiroyuki; and Norizuki, Reiko, 5,339,318, Cl. 370-110.100.

Sekine, Satoshi; and Fujimori, Junichi, to Yamaha Corporation. Musical tone generation apparatus utilizing pitch dependent timing delay. 5,338,892, Cl. 84-662.000.

Sekura, Ronald D.; Zhang, Yan-Ling; and Shiloach, Joseph, to United States of America, Health and Human Services. Production of bordetella pertussis toxin with a low concentration of iron. 5,338,670, Cl. 435-71.300

Sellers, Timothy M, to Gross-Given Manufacturing Co. Coffee brewing apparatus. 5,337,653, Cl. 99-289.00R.

Semeraro, Michael A. Pie crust lifter. 5,338,176, Cl. 425-374.000.

Semiconductor Energy Laboratory Co., Ltd.: *See*—
Takemura, Yasuhiko, 5,338,722, Cl. 505-500.000.
Yamazaki, Shunpei; and Hamatani, Toshiji, 5,339,091, Cl. 345-104.000.

Senju Metal Industry Co., Ltd.: *See*—
Okuno, Tetsuya; and Nauchi, Takashi, 5,338,008, Cl. 266-105.000.

Sentage Corporation: *See*—
Tregillis, John S., 5,338,190, Cl. 433-6.000.

Senter, Peter D.; Su, Peter C. D.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, to Oncogen, a Limited Partnership. Expression of DNA sequences encoding a thermally stable cytosine deaminase from saccharomyces. 5,338,678, Cl. 435-227.000.

Sequa Corporation: *See*—
Whelan, Edward J., 5,337,659, Cl. 101-40.000.

Serafini, Tito T.; Cheng, Paul G.; Ueda, Kenneth K.; and Wright, Ward F., to TRW Inc. Polyimide resins useful at high temperatures. 5,338,827, Cl. 528-353.000.

Serradeil-Legal, Claudine: *See*—
Wagnon, Jean; de Cointet, Paul; Nisato, Dino; Plouzane, Claude; Serradeil-Legal, Claudine; and Tonnerre, Bernard, 5,338,755, Cl. 514-414.000.

Severinsson, Krister: *See*—
Sorensson, Olle; and Severinsson, Krister, 5,338,528, Cl. 423-333.000.

SGS-Thomson: *See*—
Hodges, Robert; and Bryant, Frank, 5,338,968, Cl. 257-647.000.

SGS-Thomson Microelectronics, Inc.: *See*—
Carobolante, Francesco, 5,338,977, Cl. 307-270.000.
McClure, David C., 5,339,277, Cl. 365-230.080.
Rastegar, Bahador, 5,339,322, Cl. 371-51.100.

SGS-Thomson Microelectronics, S.r.l.: *See*—
Casati, Paolo; Corno, Marziano; and Marchisi, Giuseppe, 5,338,971, Cl. 257-666.000.
Siligoni, Marco, deceased; and Torazzina, Aldo, 5,339,020, Cl. 323-313.000.

SGS-Thomson Microelectronics S.A.: *See*—
Bernier, Eric, 5,338,964, Cl. 257-476.000.
Kaire, Jean-Claude; Majoux, Bernard; and Pontarollo, Serge, 5,339,042, Cl. 330-255.000.

Shafer, Russell P., Jr.: *See*—
Young, Nathan W.; and Shafer, Russell P., Jr., 5,338,081, Cl. 296-37.140.

Shah, Imran A.; and Johnson, Brian C., to North American Philips Corporation. Memory architecture and method of data organization optimized for hashing. 5,339,398, Cl. 395-400.000.

Shah, Rajesh: *See*—
Harris, Guy; Callaway, Duane; and Shah, Rajesh, 5,338,705, Cl 437-217.000.

Shani, Yosef: *See*—
Hopfer, Samuel; and Shani, Yosef, 5,339,369, Cl. 385-2.000.

Shanzer, Abraham: *See*—
Shechter, Yoram; Shanzer, Abraham; and Libman, Jacqueline, 5,338,759, Cl. 514-492.000.

Shapiro, Stephen J.: *See*—
Heaven, Malcolm D.; Shapiro, Stephen J.; and Hess, Robert L., 5,337,754, Cl. 128-749.000.

Sharkey, David J.: *See*—
Scalice, Edward R.; Sharkey, David J.; Christy, Kenneth G., Jr.; Esders, Theodore W.; and Daiss, John L., 5,338,671, Cl. 435-91.200.

Sharp Kabushiki Kaisha: *See*—
Hashimoto, Yoshinori, 5,339,343, Cl. 377-29.000.
Hayakawa, Takashi, 5,338,582, Cl. 428-1.000.
Junichiro, Nakayama; Tomoyuki, Miyake; Hiroyuki, Katayama; Kazuo, Van; and Kenji, Ohta, 5,338,646, Cl. 430-270.000
Masui, Takayuki, 5,339,161, Cl. 348-312.000.
Nakai, Yukio; Kida, Hiroshi; Hirai, Masashi; Fujita, Masahiko; and Fukunaga, Takahiro, 5,339,144, Cl. 355-274.000.
Sudoh, Kengo; and Kiyonaga, Chitoku, 5,339,205, Cl. 360-53.000.
Yamauchi, Yoshimitsu, 5,338,952, Cl. 257-315.000.

Shartle, Robert J.; and Dubrow, Robert S., to Biometric Imaging Inc. Single use separation cartridge for a capillary electrophoresis instrument. 5,338,427, Cl. 204-299.00R.

Shaw, David C. H.; and Shaw, Judy Z. Z. Automatic sprinkler control override apparatus. 5,337,777, Cl. 137-78.200.

Shaw, Judy Z. Z.: *See*—
Shaw, David C. H.; and Shaw, Judy Z. Z., 5,337,777, Cl. 137-78.200.

Shaw, Robert R.: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Shaw, Thomas M.: *See*—
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Shea, Reeford P. Automatic screw feeder. 5,337,636, Cl. 81-435.000.

Sheaffer, William: *See*—
Harvey, Larry; Sheaffer, William; Staniec, Robert; and McLean, Malcolm, 5,337,513, Cl. 43-124.000.

Shechter, Yoram; Shanzer, Abraham; and Libman, Jacqueline, to Yeda Research and Development Co. Ltd. Vanadyl complexes of hydroxamate chelators and pharmaceutical compositions comprising them. 5,338,759, Cl. 514-492.000.

Sheer, M. Lana; and Solenberger, John C., to Du Pont de Nemours, E. I., and Company. Article of manufacture. 5,338,602, Cl. 428-323.000

Shekhawat, Sampat; Eckenfelder, Robert C.; Tumpey, John J.; Wohlberg, Alfred W.; and Gandikota, Kapal, to AlliedSignal Inc. Fault compensating multi-step wave inverter. 5,339,235, Cl. 363-43.000.

Shell Oil Company: *See*—
Blytas, George C.; Holloway, Eugene L.; and Zuzich, Anne H., 5,338,870, Cl. 549-378.000.
Bradford, Arleen M.; Van Leeuwen, Petrus W. N. M.; and Wullink-Schelvis, Annetta M., 5,338,825, Cl. 528-392.000.
Chatterjee, Ananda M., 5,338,790, Cl. 524-400.000.
Corley, Larry S., 5,338,782, Cl. 523-466.000.
Cowan, Kenneth M., 5,337,824, Cl. 166-293.000
Diaz, Zaida; and Tsiang, Raymond C., 5,338,824, Cl. 528-482.000.
Douma, Bindert S.; and Eigenraam: Peter, 5,338,929, Cl. 250-231.100.
DuBois, Donn A.; and Sutherland, Robert J., 5,338,802, Cl. 525-299.000.
Ingram, Ralph H.; and Green, William L., 5,337,859, Cl. 184-6.210.

Shenderov, Peter: *See*—
Daghighian, Farhad; Miodownik, Saul; Shenderov, Peter; and Eshaghian, Behzad, 5,338,937, Cl. 250-368.000.

Sheridan, David R.: *See*—
Dalla Betta, Ralph A.; and Sheridan, David R., 5,338,515, Cl 422-95.000.

Sherif, Fawzy G.: *See*—
Triplett, Kelly B.; Burk, Johst H.; Sherif, Fawzy G.; and Vreugdenhil, Willem, 5,338,716, Cl. 502-64.000.

Sherman, Marshall L.: *See*—
Betts, Ronald E.; Savage, Douglas R.; Koerner, Richard J.; Leader, Matthew J.; Sin, Kee V.; Graves, Jeffrey A.; and Sherman, Marshall L., 5,338,435, Cl. 204-406.000

Sherry, Lance, to Honeywell Inc. Apparatus and method for controlling the vertical profile of an aircraft. 5,337,982, Cl. 244-186.000.

Sherwood Medical Company: *See*—
Kee, Kok-Hiong, 5,337,780, Cl. 137-381.000.

Shetty, Chandrashekar S.: *See*—
Ramesh, Manian; Sparapany, John W.; Finck, Martha R.; Siefert, Kristine S.; and Shetty, Chandrashekar S., 5,338,816, Cl. 526-312.000.

Shi, Chun-Yi: *See*—
Hsu, Shun-Liang; Shi, Chun-Yi; and Lin, Mou-Shiung, 5,338,701, Cl. 437-60.000.

Shiba, Noriyuki, to Kabushikigaisha Tokyo Kikai Seisakusho. Paper web guide device having alternating driving and braking guide rollers. 5,337,944, Cl. 226-108.000.

Shibata, Nobuyuki: *See*—
Suzuki, Satoshi; Shibata, Nobuyuki; Shirakawa, Ryotomo; and Matsuda, Akira, 5,338,618, Cl. 428-614.000.

Shibuya, Hiromichi: *See*—
Takahashi, Nagashige; and Shibuya, Hiromichi, 5,337,731, Cl 128-4.000.

Shibuya Kogyo Co., Ltd.: *See*—
Ohmori, Toshiyuki; Hatanaka, Shigemi; Honma, Yasuhiro; Kobayashi, Hiroaki; Saito, Eiichi; and Hamano, Ichiro, 5,337,796, Cl. 141-168.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Shida, Toshio: *See—*
Otomo, Naoki; Ohmura, Atsuo; and Shida, Toshio, 5,339,133, Cl. 355-200.000

Shieh, Hong-Ming: *See—*
Wang, Bosco S.; Shieh, Hong-Ming; and Corbett, Martin J., 5,338,836, Cl. 530-399.000.

Shigeta, Tatsuo, to Think Laboratory Co., Ltd. Method for manufacturing rotary screen. 5,338,627, Cl. 430-6.000.

Shigeura, John; Bridgham, John A.; Hoff, Louis B.; and Mayrand, P. Eric, to Applied Biosystems, Inc. Horizontal polyacrylamide gel electrophoresis. 5,338,426, Cl. 204-299.00R.

Shiloach, Joseph: *See—*
Sekura, Ronald D.; Zhang, Yan-Ling; and Shiloach, Joseph, 5,338,670, Cl. 435-71.300.

Shimada, Hirokazu: *See—*
Tanaka, Toshiharu; Ishige, Sadao; Sugiyama, Takekatsu; and Shimada, Hirokazu, 5,338,642, Cl. 430-173.000.

Shimadzu Corporation: *See—*
Kita, Yasuo, 5,337,629, Cl. 477-52.000.
Shimizu, Koji, 5,337,749, Cl. 128-653.300.
Uchiike, Mitsumasa, 5,338,902, Cl. 177-255.000.

Shimano Inc.: *See—*
Yasui, Toshihiko, 5,338,604, Cl. 428-36.300.

Shimizu, Harumi: *See—*
Kumagai, Eryohei; Hiiro, Kaoru; Shimizu, Harumi; and Takahashi, Tooru, 5,339,093, Cl. 345-149.000.

Shimizu, Hideshi: *See—*
Ohto, Norio; Horikomi, Kazutoshi; Matsubara, Akira; Tanada, Hideki; Sakai, Kazuya; Kajiya, Seitaro; Mizuchi, Akira; and Shimizu, Hideshi, 5,338,857, Cl. 548-248.000.

Shimizu, Koji, to Shimadzu Corporation. Magnetic resonance vascular imaging. 5,337,749, Cl. 128-653.300.

Shimizu, Shigehisa: *See—*
Takahashi, Hisashi; Shimizu, Shigehisa; Fujiwara, Takayuki; Mino, Satoshi; and Sugii, Tatsuo, 5,337,536, Cl. 53-135.300.

Shimmick, John; and Munnerlyn, Charles R., to Visx, Incorported. Rectilinear photokeratoscope. 5,339,121, Cl. 351-212.000.

Shimoji, Noriyuki, to Rohm Co., Ltd. Semiconductor memory device having an insulating film and a trap film joined in a channel region. 5,338,954, Cl. 257-326.000.

Shimomura, Tadao; Irie, Yoshio; Takahashi, Hitoshi; Kajikawa, Katsuhiro; Saga, Jyunichi; Fujiwara, Teruaki; and Hatsuda, Takumi, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Method for production of acrylate and acrylate-containing polymer. 5,338,810, Cl. 526-75.000.

Shimose, Takashi, to Konica Corporation. Zoom lens barrel. 5,339,126, Cl. 354-195.120.

Shin-Etsu Bio, Inc.: *See—*
Pollock, Thomas J.; and Thorne, Linda, 5,338,841, Cl. 536-23.700

Shin-Etsu Chemical Co., Ltd.: *See—*
Pollock, Thomas J.; and Thorne, Linda, 5,338,841, Cl. 536-23.700.

Shin, Hyun J.: *See—*
Dhong, Sang H.; Kirihata, Toshiaki; Shin, Hyun J.; Sunaga, Toshio; Taira, Yoichi; and Terman, Lewis M., 5,339,274, Cl. 365-203.000.

Shindley, Richard P.; and Williams, Randall S., to Fluoroware, Inc. Very low frequency tracking system. 5,339,074, Cl. 340-825.310.

Shindou, Hiroyasu, to Sanyo Electric Co., Ltd. Character display device for synchronizing operation of video ram to operation of CPU. 5,339,160, Cl. 348-571.000.

Shinjo, Katsuhiko: *See—*
Kawasaki, Takehiko; Shinjo, Katsuhiko; Yamamoto, Keisuke; and Kaneko, Norio, 5,339,457, Cl. 455-333.000.

Shinmoto, Kazuhiro: *See—*
Tokuda, Shoji; Matsunaga, Takao; Shinmoto, Kazuhiro; Terada, Koichi; and Yamamoto, Yoshimi, 5,337,555, Cl. 60-276.000.

Shinn, Alan L., to Humphrey Instruments Incorporated. Spectrometer for lensometer. 5,339,151, Cl. 356-328.000.

Shinonaga, Mitsuyoshi: *See—*
Watanabe, Tsutomu; and Shinonaga, Mitsuyoshi, 5,339,084, Cl. 342-160.000.

Shiokawa, Youichi; Akahane, Atsushi; Katayama, Hirohito; and Mitsunaga, Takafumi, to Fujisawa Pharmaceutical Co., Ltd. New use of the adenosine antagonist. 5,338,743, Cl. 514-300.000.

Shionogi & Co., Ltd.: *See—*
Mitsushima, Kenji; Takimoto, Akio; Yaqi, Shigeo; and Sonoyama, Takayasu, 5,338,676, Cl. 435-197.000.

Shionogi Seiyaku Kabushiki Kaisha: *See—*
Imuta, Mitsuru; and Nishi, Koichi, 5,338,733, Cl. 514-210.000.

Shiosaki, Kazumi; Tasker, Andrew S.; and Opgenorth, Terry J., to Abbott Laboratories. Endothelin converting enzyme inhibitors. 5,338,726, Cl. 514-17.000.

Shirai, Masami, to Asahi Kogaku Kogyo Kabushiki Kaisha. Paper feeding mechanism. 5,338,021, Cl. 271-160.000.

Shiraishi, Takanobu: *See—*
Ohta, Michio; Matsuya, Shigeki; Shiraishi, Takanobu; and Nakagawa, Masaharu, 5,338,378, Cl. 148-405.000.

Shirakawa, Ryotomo: *See—*
Suzuki, Satoshi; Shibata, Nobuyuki; Shirakawa, Ryotomo; and Matsuda, Akira, 5,338,618, Cl. 428-614.000.

Shirakura, Yukio: *See—*
Suzuki, Fumiyuki; Ogura, Tohru; and Shirakura, Yukio, 5,339,255, Cl. 364-500.000.

Shirasuna, Toshiyasu: *See—*
Katagiri, Hiroyuki; Takei, Tetsuya; and Shirasuna, Toshiyasu, 5,338,580, Cl. 427-575.000.

Shiseido Company Ltd.: *See—*
Nakajima, Hideo; Kohchi, Miyuki; and Tomomasa, Satoshi, 5,338,761, Cl. 514-772.000.

Shlenker, Robin R. T.; Solomons, Clive C.; Plunkett, Jerry D.; and Smith, Clayton S., to Shlenker, Robin R. T. Method of forming a membrane, especially a latex membrane, having a biocide barrier. 5,338,565, Cl. 427-2.250.

Shoup, Stephen G.: *See—*
Swanson, Victor E.; Feucht, Joel D.; and Shoup, Stephen G., 5,338,153, Cl. 415-168.200.

Showa Denko K.K.: *See—*
Aizawa, Toshiyuki; Nakamura, Hitoshi; and Yamaguchi, Tetsuhiko, 5,338,815, Cl. 526-307.600.

Shultz, Jeffrey R.: *See—*
Wang, C. David; Shultz, Jeffrey R.; and Chen, Hao A., 5,338,504, Cl. 264-555.000.

Shure, Dubi: *See—*
Bashan, Oded; Aduk, Moshe; Gilboa, Ronnie; Itay, Nehemya; and Shure, Dubi, 5,339,000, Cl. 340-932.200.

Shuster, Mark M.: *See—*
Willis, Harry G., Jr.; and Shuster, Mark M., 5,338,046, Cl. 277-180.000

Sidel: *See—*
Denis, Gerard; and La Barre, Paul, 5,338,181, Cl. 425-526.000.

Sidoli, Paolo: *See—*
Johnson, Lee E., Jr.; Kokoszka, Daryl J.; Larky, Steven P.; and Sidoli, Paolo, 5,339,394, Cl. 395-325.000.

Sidorov, Vladimir S.: *See—*
Marmorstein, Leon M.; Petuhov, Ignaty M.; Sidorov, Vladimir S.; Aleksandrov, Piotr A.; and Grebennikov, Valentin T., 5,337,825, Cl. 166-307.000.

Siefert, Kristine S.: *See—*
Ramesh, Manian; Sparapany, John W.; Finck, Martha R.; Siefert, Kristine S.; and Shetty, Chandrashekar S., 5,338,816, Cl. 526-312.000

Sieling, Nicolaas L. Hay raking and tedding apparatus. 5,337,546, Cl. 51-365.000.

Siemens Aktiengesellschaft: *See—*
Burmer, Christian, 5,338,393, Cl. 156-643.000.
Hildebrand, Reinhard; and Schramm, Michael, 5,338,249, Cl. 454-126.000.
Kammerl, Anton, 5,339,332, Cl. 375-10.000.
Meier, Werner; Lippert, Hans-Joachim; Rau, Peter; and Koerner, Lothar, 5,339,342, Cl. 376-446.000.

Siemens Matsushita Components GmbH & Co KG: *See—*
Block, Christian, 5,337,939, Cl. 228-124.100.

Siemens Medical Electronics, Inc.: *See—*
Newell, Scott W.; and Chickering, James, 5,337,751, Cl. 128-682.000.

Siempelkamp Giesserel GmbH & Co.: *See—*
Sappok, Manfred, 5,338,941, Cl. 250-506.100.

Signgold Corporation: *See—*
Quick, Charles E.; and Quick, Jamie R., 5,338,615, Cl. 428-457.000.

Signorello, Richard J.: *See—*
Hoffman, Philip L.; and Signorello, Richard J., 5,337,884, Cl. 198-500.000.

Siligoni, Marco, deceased (by Marcioni, Ivana, legal representative); and Torazzina, Aldo, to SGS-Thomson Microelectronics, S.r.l. Voltage regulating integrated circuit. 5,339,020, Cl. 323-313.000.

Simco/Ramic Corporation: *See—*
Hoffman, Philip L.; and Signorello, Richard J., 5,337,884, Cl. 198-500.000.

SIMCO, S.A.: *See—*
Nunez Serrano, Guillermo, 5,338,033, Cl. 273-153.00S.

Simmons, Randy G.; Barker, Riley K.; and Sizemore, Ronald D., to Whitaker Corporation, The. Shielded printed circuit card holder. 5,339,222, Cl. 361-818.000

Simonds, Gregory A.; and Sansone, Louis E., to United States of America, Navy. Torque-balanced extendable fiber optic cable. 5,339,378, Cl. 385-100.000.

Simpson, Leslie J.; and Bayliss, Brian S., to Koito Industries, Ltd. Leg structure of seat for absorbing impact energy. 5,338,090, Cl. 297-216.200.

Sims, Gary R., to Photometrics, Ltd. Charge-coupled device with open gate structure. 5,338,948, Cl. 257-249.000.

Sin, Kee V.: *See—*
Betts, Ronald E.; Savage, Douglas R.; Koerner, Richard J.; Leader, Matthew J.; Sin, Kee V.; Graves, Jeffrey A.; and Sherman, Marshall L., 5,338,435, Cl. 204-406.000.

Sinacori, John B.: *See—*
Puma, Samuel C.; Sinacori, John B.; and Brown, Yorke J., 5,339,259, Cl. 364-559.000.

Singer, Alfred R. E.; McGeough, Joseph; and Roche, Allen D., to British Technology Group Limited. Method of producing tools and dies. 5,337,631, Cl. 76-107.100.

Sintercast AB: *See—*
Backerud, Stig L., 5,337,799, Cl. 164-4.100

Sip, Jiri: *See—*
King, Norman R.; Sip, Jiri; and Dvorak, Antonin J., 5,339,001, Cl. 313-25.000.

Sirag, David J., Jr.: *See—*
Powell, Bruce A.; and Sirag, David J., Jr., 5,338,904, Cl. 187-137.000.

Siskin, Michael; Katritzky, Alan R.; and Brons, Glen B., to Exxon Research & Engineering Co. Process for converting and upgrading organic resource materials in aqueous environments. 5,338,442, Cl. 208-435.000.

Sizemore, Ronald D.: *See—*
Simmons, Randy G.; Barker, Riley K.; and Sizemore, Ronald D., 5,339,222, Cl. 361-818.000.

Sizensky, Joseph J.: *See—*
Sarubbi, Thomas R.; and Sizensky, Joseph J., 5,338,652, Cl. 430-326.000.

Sjostrom, Sverker, to Saab-Scanig Aktiebolag. Suspension system with improved resonance damping and a method for regulating the suspension system. 5,337,864, Cl. 188-378.000.

SK&F Laboratories Ltd.: *See—*
Hickey, Deirdre M. B.; Cooper, David G.; and Jaxa-Chamiec, Albert A., 5,338,752, Cl. 514-382.000.

Skaer, Dean A., to Minnesota Mining and Manufacturing Company. Process for screening granules. 5,337,901, Cl. 209-315.000.

Skasyrsky, Yan K.: *See—*
Kozlovsky, Vladimir I.; Nasibov, Alexander S.; and Skasyrsky, Yan K., 5,339,003, Cl. 313-463.000.

Skeen, Marion D.: *See—*
Risberg, Jeffrey S.; and Skeen, Marion D., 5,339,392, Cl. 395-161.000.

SKF U.S.A., Inc.: *See—*
Pham, Anh, 5,339,063, Cl. 335-260.000.

Skrzypczak, Jan: *See—*
Kucharczyk, Jerzy W.; and Skrzypczak, Jan, 5,338,147, Cl. 414-542.000

Slatkin, Andrew B.: *See—*
Grundfest, Warren S.; Burdick, Joel W., IV; and Slatkin, Andrew B., 5,337,732, Cl. 128-4.000.

Slatkin, Daniel N.; Dilmanian, F. Avraham; and Spanne, Per O., to United States of America, Energy. Method for microbeam radiation therapy. 5,339,347, Cl. 378-65.000.

Sleeter, Ronald T.: *See—*
Matlock, Mark G.; Sleeter, Ronald T.; and Jebe, Tod A., 5,339,254, Cl. 364-499.000.

Slenker, Stephen A. Adjustable microelectronic potentiometer. 5,339,065, Cl. 338-133.000.

Slicker, James M.: *See—*
Liu, Chia H.; and Slicker, James M., 5,337,868, Cl. 477-74.000.

Sloan-Kettering Institute for Cancer Research: *See—*
Daghighian, Farhad; Miodownik, Saul; Shenderov, Peter; and Eshaghian, Behzad, 5,338,937, Cl. 250-368.000.

Smart Corporation, The: *See—*
Boyd, Gary P., 5,337,774, Cl. 137-1.000.

Smartdiskette GmbH: *See—*
Grieu, Francois, 5,338,923, Cl. 235-492.000.

Smidth, Peter: *See—*
Coleman, Charles H.; Miller, Sidney D.; and Smidth, Peter, 5,339,108, Cl. 348-408.000.

Smilansky, Zeev; Melman, Haim Z.; Bresler, Yoav; Litvak, Matty J.; Kreitman, Haim; and Yad-Shalom, Itai, to Scitex Corporation Ltd. Apparatus and method for color calibration. 5,339,176, Cl. 358-504.000

Smith, Anthony: *See—*
Kruchowy, Roman; Goff, Dan; and Smith, Anthony, 5,339,023, Cl. 324-67.000.

Smith, Charles R.: *See—*
Ptacek, Fred L.; Outlaw, George R.; and Smith, Charles R., 5,337,578, Cl. 62-195.000.

Smith, Charles W.; and Stanford, Thomas B., Jr., to Autoclave Engineers, Inc.; and Hughes Aircraft Company. Apparatus for applying ultrasonic energy in precision cleaning. 5,337,446, Cl. 15-21.100.

Smith, Clayton S.: *See—*
Shlenker, Robin R. T.; Solomons, Clive C.; Plunkett, Jerry D.; and Smith, Clayton S., 5,338,565, Cl. 427-2.250.

Smith, Colin, to British Gas plc. Drying apparatus with air direction arrangement. 5,337,498, Cl. 34-487.000.

Smith, Douglas C., to Hercules Incorporated. Dry strength additive for paper. 5,338,406, Cl. 162-168.200.

Smith, Gary B.: *See—*
Mitelman, Roman; and Smith, Gary B., 5,337,895, Cl. 206-416.000

Smith, Gary L.: *See—*
Steinberg, Gary L.; Pino, Giovanni; Gibbs, Kenneth E.; Norwood, Richard L.; and Smith, Gary L., 5,337,443, Cl. 15-344.000.

Smith, Pamela M. S.: *See—*
Fraus, Joan K.; and Smith, Pamela M. S., 5,338,585, Cl. 428-18.000.

Smith, Paul K.: *See—*
Neubauer, Willi B.; Smith, Paul K.; and Harvey, Philip J., 5,337,858, Cl. 182-148.000.

Smith, Robert K.: *See—*
Lapatovich, Walter P.; Butler, Scott J.; and Smith, Robert K., 5,339,008, Cl. 315-248.000.

Smith, Stanley A.: *See—*
Fitch, Lawrence D.; and Smith, Stanley A., 5,338,711, Cl. 501-89.000.

Smith, Stephen W., to Hedstrom Corporation. Children's swing. 5,338,260, Cl. 472-118.000.

Snap-Tite, Inc.: *See—*
Wilcox, Wayne, 5,337,782, Cl. 137-614.030.

Snelling, Christopher; and Mashtare, Dale R., to Xerox Corporation. Sequential ultrasonic fusing process. 5,339,147, Cl. 355-285.000.

Sniegowski, Jeffry J.: *See—*
Koehler, Dale R.; Sniegowski, Jeffry J.; Bivens, Hugh M.; and Wessendorf, Kurt O., 5,339,051, Cl. 331-65.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Sasaki, Masahiro; Ishii, Satoshi; Yamauchi, Yoshihiko; Kitamura, Katsushi; Toyoda, Shuji; and Ahiko, Kenkichi, 5,338,682, Cl. 435-253.400.

Snyder, Adrian C.: *See—*
Halm, Walter B.; Jones, William J., Jr.; Kirkbride, James F.; Marcus, Ilan; and Snyder, Adrian C., 5,338,500, Cl. 264-122.000.

Snyder, John J. Flashlight anti-roll and positioning device. 5,339,229, Cl. 362-208.000.

Sobrino, Elba M.: *See—*
Beitel, Bradley J.; Haug, Charles L.; and Sobrino, Elba M., 5,339,423, Cl. 395-600.000.

Societe Atochem: *See—*
Devic, Michel; and Angelier, Robert, 5,338,402, Cl. 162-24.000.

Societe USSI: *See—*
Thepenier, Catherine; Gudin, Claude; and Sarrobert, Bruno, 5,338,673, Cl. 435-134.000.

Sodenberg, Brian T.; and Kenworthy, Mark L., to Bolt Beranek and Newman Inc. Volumetric effects pixel processing. 5,339,386, Cl. 395-122.000.

Soderlund, Ernest E.: *See—*
Stanley, Ronald F.; and Soderlund, Ernest E., 5,338,909, Cl 200-339.000.

Soderquist, Quin, to Morton International, Inc. Energy dissipation features in air bag closures. 5,338,060, Cl. 280-728.00B.

Soes, Lucas; and Vugts, Franciscus G., to Whitaker Corporation, The. Electrical connector housing assembly and an electrical terminal therefor. 5,338,220, Cl. 439-403.000.

Soga, Mamoru: *See—*
Ogawa, Kazufumi; Soga, Mamoru; Ozaki, Shinji; and Ikuta, Shigeo, 5,338,579, Cl. 427-539.000.

Sogge, Dale R.: *See—*
Baker, Gary A.; and Sogge, Dale R., 5,338,907, Cl. 200-61.880.

Solen, Kenneth A.: *See—*
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, JD; and Berry, Gaylord, 5,338,770, Cl. 523-112.000.

Solenberger, John C.: *See—*
Sheer, M. Lana; and Solenberger, John C., 5,338,602, Cl. 428-323.000.

Solheim, Alan G.: *See—*
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,694, Cl. 437-31.000.
Ilderem, Vida; Iranmanesh, Ali A.; Solheim, Alan G.; Blair, Christopher S.; Jerome, Rick C.; Lahri, Rajeeva; and Biswal, Madan, 5,338,696, Cl. 437-34.000.

Solomons, Clive C.: *See—*
Shlenker, Robin R. T.; Solomons, Clive C.; Plunkett, Jerry D.; and Smith, Clayton S., 5,338,565, Cl. 427-2.250

Solvay Barium Strontium GmbH: *See—*
Planes, Gilberto M., 5,338,709, Cl. 501-27.000.

Somfai, Eva: *See—*
Ban, Karoly; Ban, Annamaria; Pali, Lajosne ; Kruppa, Marta; Somfai, Eva; and Huszar, Csaba, 5,338,868, Cl. 549-323.000.

Somoza, Carmen: *See—*
Holton, Robert A.; and Somoza, Carmen, 5,338,872, Cl. 549-510.000.

Son, Jeong-ha: *See—*
Kim, Sang-soo; Jang, In-sik; Kim, Nam-deog; and Son, Jeong-ha, 5,339,181, Cl. 359-59.000.

Sone, Toshinao: *See—*
Urata, Hiroshi; Sone, Toshinao; Nakane, Kazunori; Satou, Kazunori; and Tokita, Kiyoshi, 5,339,010, Cl. 315-368.170.

Song, Han B.; Lee, Jae K.; and Baik, Woon K., to Gold Star Co., Ltd. Tuning apparatus for television system and method of controlling the same. 5,339,117, Cl. 348-733.000.

Sonoyama, Takayasu: *See—*
Mitsushima, Kenji; Takimoto, Akio; Yaqi, Shigeo; and Sonoyama, Takayasu, 5,338,676, Cl. 435-197.000.

Sony Corporation: *See—*
Eguchi, Naoya; and Oka, Michio, 5,339,324, Cl. 372-29.000.
Nakagami, Taro; and Sakamoto, Akira, 5,339,416, Cl. 395-650.000.
Nakamura, Akihiro, 5,338,956, Cl. 257-316.000.
Saito, Shin, 5,339,309, Cl. 370-29.000.
Tagami, Shigekatsu, 5,339,118, Cl. 348-744.000.
Takagi, Yuichi, 5,339,269, Cl. 365-63.000.
Tamura, Takahiko; and Miura, Satoshi, 5,339,011, Cl. 315-383.000.
Yanagida, Toshiharu, 5,338,399, Cl. 156-662.000.

Sony Electronics, Inc.: *See—*
Duffy, Robert; and Morgan, O. F., 5,339,393, Cl. 395-161.000.
Gordon, Edward A., 5,338,183, Cl. 425-564.000.

Sooriyakumaran, Ratnam: *See—*
Brunsvold, William R.; Jagannathan, Premlatha; Miura, Steve S.; Montgomery, Melvin W.; Sachdev, Harbans S.; and Sooriyakumaran, Ratnam, 5,338,818, Cl. 528-43.000.

Sorensen, Kurt I. Method and an apparatus for taking and analyzing level determined samples of pore gas/liquid from a subterranean formation. 5,337,838, Cl. 175-59.000.

Sorensson, Olle; and Severinsson, Krister, to Eka Nobel AB. Alkali metal silicate composition with sodium carbonate additive. 5,338,528, Cl. 423-333.000.

Soshi, Isao; Ohtake, Motoyuki; and Miyamoto, Hidenori, to Nikon Corporation. Data imprinting device for camera. 5,339,123, Cl. 354-106.000.

Soughan, John J. Granulable container means and method. 5,337,537, Cl. 53-452.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Southeastern Research Laboratories, Inc.: *See—*
Henderson, Richard W.; and Lightsey, George R., 5,338,185, Cl. 431-33.000.

SpaceLabs Medical, Inc.: *See—*
Walloch, Richard A., 5,337,750, Cl. 128-680.000.

Spalt, Gregory P.: *See—*
Spalt, Taylor E.; and Spalt, Gregory P., 5,337,857, Cl. 182-122.000.

Spalt, Taylor E.; and Spalt, Gregory P. Ladder adaptable platform. 5,337,857, Cl. 182-122.000.

Spangler, Glenn E.; Roehl, Joseph E.; Patel, Gautam B.; and Dorman, Alvin, to Environmental Technologies Group, Inc. Photoionization ion mobility spectrometer. 5,338,931, Cl. 250-287.000.

Spanne, Per O.: *See—*
Slatkin, Daniel N.; Dilmanian, F. Avraham; and Spanne, Per O., 5,339,347, Cl. 378-65.000.

Spar Aerospace Limited: *See—*
Reeves, Robert D.; and Brown, T. Garry, 5,338,933, Cl. 250-334.000.

Sparapany, John W.: *See—*
Ramesh, Manian; Sparapany, John W.; Finck, Martha R.; Siefert, Kristine S.; and Shetty, Chandrashekar S., 5,338,816, Cl. 526-312.000.

Spath, Alfred: *See—*
Fassman, Arnold; Rigo, Stephen J.; and Spath, Alfred, 5,337,665, Cl. 101-235.000.

Spaulding, Gregory L.; Spaulding, Pamela M.; and Bueche, Kenneth M., to Dispensing Technologies, Inc. Automatic dispensing system for prescriptions and the like. 5,337,919, Cl. 221-2.000.

Spaulding, Pamela M.: *See—*
Spaulding, Gregory L.; Spaulding, Pamela M.; and Bueche, Kenneth M., 5,337,919, Cl. 221-2.000.

Spease, David T., to Teleflex Incorporated. Cable end fitting retainer and method for making same. 5,337,621, Cl. 74-502.400.

Speckman, Lori C.; and Watson, David A., to Pudenz-Schulte Medical Research Corporation. Glaucoma shunt and method for draining aqueous humor. 5,338,291, Cl. 604-9.000.

Spector, George: *See—*
Murza, Stefan D.; and Spector, George, 5,338,245, Cl. 446-267.000.
Spicer, Zorroz W.; and Spector, George, 5,338,124, Cl. 401-280.000.

Spectrian, Inc.: *See—*
Wisherd, David S.; and Bartlow, Howard D., 5,338,974, Cl. 257-691.000.

Spicer, Zorroz W.; and Spector, George. Water squirt toothbrush. 5,338,124, Cl. 401-280.000.

Spirac Engineering AB: *See—*
Bruke, Richard L., 5,337,658, Cl. 100-127.000.

Spix, George A.: *See—*
Strout, Robert E., II; Spix, George A.; Masamitsu, Jon A.; Cox, David M.; Gaertner, Gregory G.; Wengelski, Diane M.; and Thompson, Keith J., 5,339,415, Cl. 395-650.000.

Sporl, Helmut, to E+M Maschinenbau GmbH. Guide means for a submersible mixer and the like. 5,338,116, Cl. 366-286.000.

Spors, Ralf: *See—*
Hohmann, Ralf; Kleinhens, Bernd; Kohlhaus, Olaf; Mann, Stephan; and Spors, Ralf, 5,338,071, Cl. 285-233.000.

Sport Supply Group Inc.: *See—*
McKenzie, Charles R.; and Ingle, Harry C., 5,337,907, Cl. 211-88.000.

Spraying Systems Co.: *See—*
Hennessy, Timothy H.; and Maney, Patrick M., 5,337,958, Cl. 239-71.000.

Spring, Kyle A.: *See—*
Kinzer, Daniel M.; Merrill, Perry; and Spring, Kyle A., 5,338,693, Cl. 437-29.000.

Srivatsa, Kadiyali M. Catheter introducing device. 5,338,306, Cl. 604-165.000.

SRS Technologies: *See—*
Yalowitz, Jeffrey S.; Morrison, James M.; and Roberts, Hilary E., 5,339,070, Cl. 340-578.000.

Stabinger, Hans; Leopold, Hans; and Heimel, Helmut. Apparatus for determining the density of liquids and gases from a period of an oscillator filled with a test sample. 5,339,258, Cl. 364-558.000.

Stalteknik I Skelleftea AB: *See—*
Ronnblom, Ahrne, 5,338,148, Cl. 414-667.000.

Stanelle, Karl-Heinz. Filter cartridge. 5,338,325, Cl. 55-213.000.

Stanesic, John M., to DFM Corporation. Rear air deflector shield for cargo-style door vehicle. 5,338,088, Cl. 296-180.100.

Stanford, Thomas B., Jr.: *See—*
Smith, Charles W.; and Stanford, Thomas B., Jr., 5,337,446, Cl. 15-21.100.

Stangeland, Kjell-Egil: *See—*
Torgrimsen, Tor; Stangeland, Kjell-Egil; and Furre, Arnold, 5,337,843, Cl. 175-334.000.

Stanglmair, Anton: *See—*
Schuller, Edmund; Karl, Rupert; Stanglmair, Anton; and Schneider, Gottfried, 5,337,552, Cl. 57-406.000.

Staniec, Robert: *See—*
Harvey, Larry; Sheaffer, William; Staniec, Robert; and McLean, Malcolm, 5,337,513, Cl. 43-124.000.

Stanier, Brian J.: *See—*
Dodd, Harold; and Stanier, Brian J., 5,339,073, Cl. 340-825.310.

Stanley, Ronald F.; and Soderlund, Ernest E., to Motorola, Inc. Rocker-type support assembly. 5,338,909, Cl. 200-339.000.

Stanton, Leonard T.: *See—*
Ross, Philip E.; Stanton, Leonard T.; and Layne, Timothy H., 5,337,693, Cl. 114-69.000.

Stapp, Georg; and Dellmann, Paul G., to Dietrich Reimelt KG. Apparatus for conditioning confectioners' sugar and the like. 5,338,365, Cl. 127-2.000.

Staudinger, Joseph; Beckwith, William B.; and Seely, Warren L., to Motorola, Inc. Broadband mixer circuit and method. 5,339,462, Cl. 455-330.000.

STC, Inc.: *See—*
Olsen, Thomas O., 5,338,783, Cl. 524-3.000.

Steele, Charles E., to Kerr Manufacturing Company. Mixing arm assembly for automatic capsule mixing device. 5,338,114, Cl. 366-216.000.

Stefan, Thomas: *See—*
Schroedl, Manfred; and Stefan, Thomas, 5,339,012, Cl. 318-254.000

Steffes, Karl M., to Dell U.S.A., L.P. Method of convertibly upgrading a personal computer. 5,337,464, Cl. 29-401.100.

Steffes, Karl M.; Crosby, Joseph B.; Gandre, Jerry D.; and Swindler, Dan E. Expansion card/riser card module for desktop computers. 5,338,214, Cl. 439-160.000.

Steffier, Wayne S.: *See—*
Rumberger, William E.; and Steffier, Wayne S., 5,337,974, Cl. 244-49.000.

Stegemiller, Heidi J.: *See—*
Jamieson, James R.; Zahedi, Ahmad P.; and Stegemiller, Heidi J., 5,338,928, Cl. 250-227.210.

Stegman, David E., to Replay Amusements, Inc. Pool cue stand and chalk holder. 5,338,261, Cl. 473-1.000.

Stein, Ross L.: *See—*
Glass, Mitchell; Williams, Joseph C.; and Stein, Ross L., 5,338,727, Cl. 514-19.000.

Steinbeck, Horst; and Feith, Johann, to Schenck Auto-Service Gerate GmbH. Rotatable tire mounting disk and process. 5,337,817, Cl. 157-21.000.

Steinberg, Gary L.; Pino, Giovanni; Gibbs, Kenneth E.; Norwood, Richard L.; and Smith, Gary L., to Bissell Inc. Vacuum cleaner. 5,337,443, Cl. 15-344.000.

Steinbiss, Joachim: *See—*
Schlipfenbacher, Reiner; Steinbiss, Joachim; and Trasch, Heinz-Friedrich, 5,338,513, Cl. 422-56.000.

Steinborn, Gabriele: *See—*
Neumann, Gerd; Hutschenreuther, Peter; Glien, Willfried; Raab, Dagmar; Leuner, Barbara; Steinborn, Gabriele; and Berger, Georg, 5,338,771, Cl. 523-113.000.

Steiner, Gregory A.; and Arnieri, Terry, to Innovative Design Enterprises. Portable misting fan. 5,338,495, Cl. 261-28.000.

Steiner, Hermann: *See—*
Braun, Alfred; Helbig, Peter; Steiner, Hermann; and Schoenherr, Walter, 5,339,002, Cl. 313-318.000.

Steinert, Hans-Georg: *See—*
Maurer, Alexander; Raab, Guenter; Raab, Gudrun; Steinert, Hans-Georg; and Taenzler, Richard, 5,338,524, Cl. 423-309.000.

Steinway, William J.; Thomas, James E.; Barrett, Carl R.; and Beck, Buddy G., to Coleman Research Corporation. Earth-penetrating synthetic image radar. 5,339,080, Cl. 342-22.000.

Stell, Larry: *See—*
Endick, Norman; and Stell, Larry, 5,339,360, Cl. 379-386.000.

Stemmer, Willem P. C.: *See—*
Schatz, Peter J.; and Stemmer, Willem P. C., 5,338,665, Cl 435-6.000.

Stemmle, Denis J., to Xerox Corporation. Sorting and finishing apparatus. 5,338,017, Cl. 270-53.000

Stephens, Eric B.: *See—*
Tour, James M.; and Stephens, Eric B., 5,338,823, Cl. 528-397.000.

Stephens, Randy R.; Roxas, Renato; and Groenke, Gregory C., to Ethicon, Inc. Adaptor cap for trocar assembly. 5,338,307, Cl. 604-167.000.

Stephens, William T.: *See—*
Kobilarcik, Albert T.; and Stephens, William T., 5,337,954, Cl. 232-38.000.

Sterling Drug, Inc.: *See—*
Corey, Garland P.; King, Elmer M.; and Rypkema, Ralph E., 5,338,475, Cl. 252-102.000.

Sterling Winthrop Inc.: *See—*
Barrow, Colin J.; Brownell, James E.; Houck, David R.; Hong, Anderson C.; Popp, Janet L.; and Sedlock, David M., 5,338,845, Cl. 544-343.000.

Stevenson, Thomas T.: *See—*
Scheel, Horst; and Stevenson, Thomas T., 5,337,717, Cl 123-426.000.

Stewart, Gordon D. Scraper apparatus. 5,337,442, Cl. 15-236.010.

Stierandova, Alena: *See—*
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,338,831, Cl. 530-334.000.

Stiftung fur diagnostische Forschung: *See—*
Yves, Lapierre; Josef, Dieter; Adam, Jean; and Greber-Widmer, Susanne, 5,338,689, Cl. 436-518.000.

Stihl, Andreas: *See—*
Adam, Roland, 5,337,710, Cl. 123-73.00C.

Stiles, Lorren, Jr.; Lappos, Nicholas D.; and Wright, Gregory P., to United Technologies Corporation. Integrated time/limit exceedance cue system. 5,339,244, Cl. 364-424.060.

Stivers, Lewis E. Water purification system and method. 5,338,456, Cl. 210-652.000.

Stoba AG: *See—*
Goby, Andre , 5,337,503, Cl. 40-665.000.

Stoll, John R.: *See—*
Narayan, Thirumurti; Tantillo, Anthony W.; and Stoll, John R., 5,338,819, Cl. 528-60.000.

Stoll, Kurt, to Festo KG. Sealing ring for multi-way valves. 5,338,005, Cl. 251-214.000.

Stora Feldmuhle Aktiengesellschaft: *See—*
Patt, Rudolf; and Rachor, Georg, 5,338,405, Cl. 162-25.000.

Stork, Karl: *See—*
Evans, William T., III; and Stork, Karl, 5,338,517, Cl. 422-191.000.

Stough, Daryl V.: *See—*
Boenning, Robert A.; Schoch, Karl F., Jr.; Stough, Daryl V.; and Navish, Francis W., Jr., 5,339,038, Cl. 324-539.000.

Stovall, Daryl R., to Creighton University Office of Technology Licensing. Removable portable basketball net. 5,338,023, Cl. 273-15.00R.

Strack, Ludger; Bergmann, Konrad; and Laeller, Klaus, to Ideal-Standard GmbH. Shower enclosure. 5,337,424, Cl. 4-557.000.

Stranco, Inc: *See—*
Brazelton, Carl L., 5,338,779, Cl. 523-313.000.

Strand, Marc A.: *See—*
White, Alan W.; Pearcy, Barry G.; Strand, Marc A.; and Carico, Joey C., 5,338,606, Cl. 428-458.000.

Strausz, Otto: *See—*
Ignasiak, Teresa; Strausz, Otto; Ignasiak, Boleslaw; Janiak, Jerzy; Pawlak, Wanda; Szymocha, Kazimierz; and Turak, Ali A., 5,338,322, Cl. 44-620.000.

Straw, Timothy B., to United States of America, Navy. Monolithic low noise preamplifier for piezoelectric sensors. 5,339,285, Cl. 367-135.000.

Strickland, Jimmy P.: *See—*
Elko, David A.; Isenberg, John F., Jr.; Moore, Brian B.; Strickland, Jimmy P.; Swanson, Michael D.; and Wang, George W., 5,339,427, Cl. 395-725.000.

Stripping Technologies, Inc.: *See—*
Abbott, Kenneth E.; and Lyons, Patrick J., 5,337,900, Cl. 209-257.000.

Strohmaier, Ernst, to Kaltenbach & Voigt GmbH & Co. Medical treatment device and method for cleaning a flexible tube line. 5,338,194, Cl. 433-82.000.

Strohmaier, Karl G.: *See—*
Vaughan, David E. W.; and Strohmaier, Karl G., 5,338,526, Cl. 423-328.200.

Strout, Robert E., II; Spix, George A.; Masamitsu, Jon A.; Cox, David M.; Gaertner, Gregory G.; Wengelski, Diane M.; and Thompson, Keith J., to Cray Research, Inc. Dual level scheduling of processes to multiple parallel regions of a multi-threaded program on a tightly coupled multiprocessor computer system. 5,339,415, Cl. 395-650.000.

Stuart, Kyle H.; and Bervig, Dale R., to Tweco Products, Inc. Ergonomic welding gun with quick disconnect cable assembly. 5,338,917, Cl. 219-137.630.

Studinka, Josef: *See—*
Takai, Yosuke; Studinka, Josef; and de Lhoneux, Benoit, 5,338,357, Cl. 106-724.000

Sturm, Michael C.: *See—*
Fleming, Michael A.; and Sturm, Michael C., 5,337,977, Cl. 244-129.500.

Sturmer, Winfried; and Drexl, Hans-Jurgen, to Fichtel & Sachs AG. Device for monitoring a friction clutch. 5,337,866, Cl. 477-175.000.

Stussi, Edgar: *See—*
Anderie, Wolf; and Stussi, Edgar, 5,337,492, Cl. 36-28.000.

Su, Peter C. D.: *See—*
Senter, Peter D.; Su, Peter C. D.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,338,678, Cl. 435-227.000.

Subbanna, Seshadri, to International Business Machines Corporation. Method of fabricating an ultra-short channel field effect transistor. 5,338,698, Cl. 437-40.000.

Sudan, Ravindra N., to Cornell Research Foundation, Inc. High current ion ring accelerator. 5,339,336, Cl. 376-107.000.

Sudoh, Kengo; and Kiyonaga, Chitoku, to Sharp Kabushiki Kaisha. Recording/reproduction apparatus with error detection capability. 5,339,205, Cl. 360-53.000.

Sugahara, Kazuyuki; and Ipposhi, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Method of forming single-crystal semiconductor films. 5,338,388, Cl. 117-44.000.

Sugawara, Kazuaki, to Pioneer Electronic Corporation. Switching diversity reception system. 5,339,452, Cl. 455-212.000.

Sugayama, Sakae; and Kobayashi, Keiji, to Sanyo Electric Co., Ltd. AGC circuit for radio receiver having AGC sensitivity compensated by if output signal. 5,339,453, Cl. 455-239.100.

Sugi, Hikaru: *See—*
Kajino, Yuuichi; Ban, Koichi; Honda, Yuuji; and Sugi, Hikaru, 5,337,802, Cl. 165-22.000.

Sugii, Tatsuo: *See—*
Takahashi, Hisashi; Shimizu, Shigehisa; Fujiwara, Takayuki; Mino, Satoshi; and Sugii, Tatsuo, 5,337,536, Cl. 53-135.300.

Sugimoto, Kunihisa: *See—*
Ikegaya, Isao; and Sugimoto, Kunihisa, 5,338,093, Cl. 297-367.000.

Sugiura, Mitsuo: *See—*
Kasuya, Kazusato; and Sugiura, Mitsuo, 5,337,721, Cl. 123-519.000.

Sugiura, Satoshi; Minoshima, Toru; Hazato, Atsuo; and Kato, Yoshinori, to Teijin Limited. 2-substituted-2-cyclopentenone compound and anticancer agent and bone formation accelerator comprising same as active ingredient. 5,338,844, Cl. 544-318.000.

Sugiura, Tadashi: *See—*
Ikeda, Mitsuji; Mine, Ryoichi; Nozaki, Masayuki; and Sugiura, Tadashi, 5,339,381, Cl. 385-138.000.

Sugiyama, Takekatsu: *See—*
Tanaka, Toshiharu; Ishige, Sadao; Sugiyama, Takekatsu; and Shimada, Hirokazu, 5,338,642, Cl. 430-173.000.

Sullivan, Michael J., to Lisco, Inc. Golf ball compositions. 5,338,610, Cl. 428-407.000.

Sulzer Brothers Limited: *See—*
Jancic, Slobodan; and Sakellariou, Evangelos, 5,338,519, Cl. 422-253.000.

Sulzhik, Nikolai; Timoshchenko, Pavel N.; and Trotsenko, Vitaly V. Radiation burner. 5,338,186, Cl. 431-115.000.

Sumi, Toshio: *See—*
Fujimori, Isao; Matsumori, Shigeru; Kano, Takashi; and Sumi, Toshio, 5,339,241, Cl. 364-424.020.

Sumitomo Chemical Company, Limited: *See—*
Higashi, Takayuki; and Minai, Masayoshi, 5,338,484, Cl. 252-299.650.
Inoue, Kikumitsu; Sasaki, Nanji; and Yachigo, Shinichi, 5,338,869, Cl. 549-335.000.
Kojima, Fumitoshi; and Yamaguchi, Tetsuo, 5,338,780, Cl. 523-453.000.

Sumitomo Electric Industries, Ltd.: *See—*
Ohga, Yuichi; Danzuka, Toshio; Saito, Masahide; Amemiya, Kouji; and Yokota, Hiroshi, 5,338,327, Cl. 65-414.000.

Sumitomo Electric Industries, Ltd.: *See—*
Aikawa, Haruhiko; Ishiguro, Yoichi; and Danzuka, Toshio, 5,338,328, Cl. 65-530.000.
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, 5,339,376, Cl. 385-71.000.
Kondoh, Katsuyoshi; and Takeda, Yoshinobu, 5,338,168, Cl. 418-179.000.
Nishiguchi, Masanori, 5,339,215, Cl. 361-704.000.
Noguchi, Kazuo; Mori, Yoshikatsu; Kunimori, Nagatoshi; and Mori, Hideo, 5,338,135, Cl. 408-233.000.
Yamamoto, Susumu; Murai, Teruyuki; Kawabe, Nozomu; Awazu, Tomoyuki; Yazu, Shuji; and Jodai, Tetsuji, 5,338,721, Cl. 505-230.000.

Sumitomo Metal Mining Company, Limited: *See—*
Ishigame, Juji; and Matsumura, Yoshiaki, 5,338,710, Cl. 501-32.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Oka, Kengo; and Ohshima, Shinji, 5,338,039, Cl. 273-232.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Kitamura, Tsutomu, 5,338,014, Cl. 269-47.000.
Tanaka, Toshiharu; and Kitoh, Syunji, 5,337,447, Cl. 16-2.000.

Summers, Burg W. Material decontamination apparatus and method. 5,337,684, Cl. 110-346.000.

Sumrack, Charles J., to Midwest Air Products Co., Inc. Ventilation apparatus for removing vapors. 5,338,248, Cl. 454-49.000.

Sun Chemical Corporation: *See—*
Catena, Robert J.; Artusa, Gastone; Kveglis, Albert A.; Bosco, Jason J.; Barreto, Sonia; Mathew, Mathew C.; and Schneider, Mark D., 5,338,785, Cl. 524-39.000.

Sun Microsystems, Inc.: *See—*
Carney, Michael W.; Marsland, Timothy; and Pittore, William F., 5,339,406, Cl. 395-575.000.
Lockwood, James M., 5,339,443, Cl. 395-725.000.

Sun, Yun C.; and Liou, David W., to Dow Chemical Company, The. Modified CPE for PVC impact modification. 5,338,803, Cl. 525-309.000.

Sunaga, Toshio: *See—*
Dhong, Sang H.; Kirihata, Toshiaki; Shin, Hyun J.; Sunaga, Toshio; Taira, Yoichi; and Terman, Lewis M., 5,339,274, Cl 365-203.000.

Sundquist, Douglas: *See—*
Evanitsky, Eugene S.; Rauscher, Tomlinson G.; Filion, Joseph; Sundquist, Douglas; Warddrip, Riley; and Auman, Daniel, 5,339,168, Cl. 358-402.000.

Sung, Lan-Chung, to Right Way Co. Racket stringing apparatus. 5,338,028, Cl. 273-73.00A.

Sunstar Giken Kabushiki Kaisha: *See—*
Miyataka, Koji; and Nakayama, Takashi, 5,338,788, Cl. 524-197.000.

Suntory Limited: *See—*
Kawaguchi, Naoko; Fukami, Harukazu; Sago, Ryuichi; and Ikai, Keitaro, 5,338,719, Cl. 504-224.000.
Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, 5,338,830, Cl. 530-326.000.

Supelco, Incorporated: *See—*
Duff, Keith J., 5,338,454, Cl. 210-635.000.

Suppelsa, Anthony B.; Mullen, William B., III; and Urbish, Glenn F., to Motorola, Inc. Method of making a substrate having selectively releasing conductive runners. 5,338,391, Cl. 156-630.000.

Sutherland, Jim, to National Semiconductor Corp. Local and express diagonal busses in a configurable logic array. 5,338,984, Cl. 307-465.100.

Sutherland, Robert J.: *See—*
DuBois, Donn A.; and Sutherland, Robert J., 5,338,802, Cl 525-299.000.

Suto, Shohei, to Taiyo Kogyo Co., Ltd. Suspension systems of vehicle toys. 5,338,246, Cl. 446-466.000.

Sutton, Robert F.; Tabibzadeh, Ramin; and Lang, Ko-Wei, to Rockwell International Corporation. Positive displacement micropump. 5,338,164, Cl. 417-413.00A.

VOL 1165 ISS 3 AG 16 1994 UMI

Suzuki, Fumiyuki; Ogura, Tohru; and Shirakura, Yukio, to Fuji Photo Film Co., Ltd. Method of controlling synthesis reaction. 5,339,255, Cl. 364-500.000.

Suzuki, Hideyuki: *See*—
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.

Suzuki, Hiroshi; Aoki, Shigeru; Maruyama, Akihiko; and Koike, Nobuhiro, to Seiko Epson Corporation. Switching arrangement for applying battery voltage to circuitry block in an analog timepiece. 5,339,297, Cl. 368-321.000.

Suzuki, Junichi, to Embishi Aluminum Wheels Ltd. Wheel for vehicle. 5,338,105, Cl. 301-29.200.

Suzuki, Katsuo, to Fujitsu Limited. Optical signal transmission device. 5,339,183, Cl. 359-123.000.

Suzuki, Kiyomi: *See*—
Kato, Takaaki; Suzuki, Kiyomi; Hagiwara, Shigeharu; and Takanashi, Hiroaki, 5,338,173, Cl. 425-150.000.

Suzuki, Koji; Ueno, Yuichi; Aoki, Katsuhiro; Iwata, Naoki; Sawada, Akira; and Fujishiro, Takatsugu, to Ricoh Company, Ltd. Developing device with a developer carrier capable of forming numerous microfields thereon. 5,339,141, Cl. 355-246.000.

Suzuki, Makoto: *See*—
Naruse, Hideaki; Suzuki, Makoto; and Sato, Takehiko, 5,338,651, Cl. 430-505.000.

Suzuki Motor Corporation: *See*—
Narita, Masaki, 5,337,725, Cl. 123-571.000.
Toyoda, Katsuhiko, 5,337,557, Cl. 60-276.000.

Suzuki, Ryo: *See*—
Inaba, Tadashi; Okada, Hisashi; Suzuki, Ryo; Katsuoka, Yasuhiro; and Seki, Hiroyuki, 5,338,649, Cl. 430-430.000.
Kato, Keizo; Horigome, Shinkichi; Suzuki, Ryo; and Ito, Masaru, 5,338,178, Cl. 425-385.000.

Suzuki, Satoshi; Shibata, Nobuyuki; Shirakawa, Ryotomo; and Matsuda, Akira, to Furukawa Electric Co., Ltd., The; and Mabuchi Motor Kabushiki Kaisha. Electric contact material and electric contact using said material. 5,338,618, Cl. 428-614.000.

Suzuki, Tomoko: *See*—
Kinoshita, Akira; Suzuki, Tomoko; and Watanabe, Kazumasa, 5,338,637, Cl. 430-83.000.

Suzuki, Toshio: *See*—
Iwasaki, Takeshi; Yatomi, Takeshi; Naka, Shigeaki; and Suzuki, Toshio, 5,338,912, Cl. 219-69.120.

Svoronos, William: *See*—
Cohen, Isaac; and Svoronos, William, 5,339,217, Cl. 361-707.000.

Swann, William: *See*—
Chu, Steven; Weiman, Carl; and Swann, William, 5,338,930, Cl. 250-251.000.

Swanson, Michael D.: *See*—
Elko, David A.; Frey, Jeffrey A.; Helffrich, Audrey A.; Nick, Jeffrey M.; and Swanson, Michael D., 5,339,405, Cl. 395-575.000.
Elko, David A.; Isenberg, John F., Jr.; Moore, Brian B.; Strickland, Jimmy P.; Swanson, Michael D.; and Wang, George W., 5,339,427, Cl. 395-725.000.

Swanson, Victor E.; Feucht, Joel D.; and Shoup, Stephen G., to Caterpillar Inc. Non-drip fluid circulating pump. 5,338,153, Cl. 415-168.200.

Swanstrom, Kenneth A., to Penn Engineering & Manufacturing Corp. Shrouded captive screw. 5,338,139, Cl. 411-353.000.

Sweasy, William J., Jr.: *See*—
White, Jay P.; Thies, Wesley A.; Sweasy, William J., Jr.; and Goggin, Joseph P., 5,339,252, Cl. 364-468.000.

Sweeney, Edward C., III. Exercise machine. 5,338,272, Cl. 482-57.000.

Swick, Robert B.: *See*—
Henits, John; and Swick, Robert B., 5,339,203, Cl. 360-39.000.

Swiderski, Gregory: *See*—
Nelson, Steven R.; and Swiderski, Gregory, 5,338,061, Cl. 280-729.000.

Swilley, Wilson H.; and Wohlhutter, Michael D., to Bond Equipment Corp. Plate deboner. 5,338,250, Cl. 452-136.000.

Swindler, Dan E.: *See*—
Steffes, Karl M.; Crosby, Joseph B.; Gandre, Jerry D.; and Swindler, Dan E., 5,338,214, Cl. 439-160.000.

Syers, Steven A. Crab castle for an aquarium and combination therewith. 5,337,701, Cl. 119-251.000.

Szafranski, Pierre; and Cazaillon, Jean-Mary, to Salomon S.A. Sliding apparatus, such as a ski, and an element attached thereto. 5,338,051, Cl. 280-607.000.

Szela, Edward R.: *See*—
Green, Dennis J.; Szela, Edward R.; Yamarik, George J.; and Martin, David R., 5,337,805, Cl. 164-369.000.

Szuhaj, Bernard F.: *See*—
Kennedy, Ann R.; and Szuhaj, Bernard F., 5,338,547, Cl. 424-195.100.

Szwejkowski, Chester A.; Lum, Robert; and Fried, Thierry, to Applied Materials, Inc. Tungsten silicide etch process selective to photoresist and oxide. 5,338,398, Cl. 156-655.000.

Szymocha, Kazimierz: *See*—
Ignasiak, Teresa; Strausz, Otto; Ignasiak, Boleslaw; Janiak, Jerzy; Pawlak, Wanda; Szymocha, Kazimierz; and Turak, Ali A., 5,338,322, Cl. 44-620.000.

Tabaru, Kazunori, to Hitachi Metals, Ltd. Anisotropic rare-earth permanent magnets and method for making same, and metal mold for molding anisotropic permanent magnets. 5,338,372, Cl. 148-103.000.

Tabibzadeh, Ramin: *See*—
Sutton, Robert F.; Tabibzadeh, Ramin; and Lang, Ko-Wei, 5,338,164, Cl. 417-413.00A.

Tabuse, Hidetoshi: *See*—
Matsuoka, Hirofumi; and Tabuse, Hidetoshi, 5,339,243, Cl. 364-424.050.

Tachi-S Co., Ltd.: *See*—
Ohnishi, Yutaka, 5,338,098, Cl. 297-452.600.

Tachiki, Kiyohiro, to Mitsubishi Oil Co., Ltd. Gasoline-blended methanol fuel for internal combustion engines. 5,338,321, Cl. 44-451.000.

Tada, Hisashi: *See*—
Tanaka, Shigeya; Iwamura, Masahiro; Yamauchi, Tatsumi; Nojiri, Tatsuo; Tada, Hisashi; and Nakano, Tetsuo, 5,339,448, Cl. 395-775.000.

Taenzler, Richard: *See*—
Maurer, Alexander; Raab, Guenter; Raab, Gudrun; Steinert, Hans-Georg; and Taenzler, Richard, 5,338,524, Cl. 423-309.000.

Tafesh, Ahmed M.; Fruchey, Olan S.; and Hilton, Charles B., to Hoechst Celanese. Method for the preparation of arylalkanolamineacylates. 5,338,884, Cl. 564-138.000.

Tagami, Shigekatsu, to Sony Corporation. Tone correcting apparatus for laser display system. 5,339,118, Cl. 348-744.000.

Tagashira, Fumiaki; Ota, Shigeo; Yukawa, Shinya; and Ooyama, Shingo, to Rohm Co., Ltd. Heater for sheet material and method for adjusting resistance of same. 5,338,919, Cl. 219-543.000.

Tago, Takashi: *See*—
Okusaka, Shigeru; Kasa, Hideki; Sakaguchi, Masayuki; Kyomen, Junsuke; and Tago, Takashi, 5,338,920, Cl. 219-633.000.

Taguchi, Masahiro: *See*—
Kiuchi, Toru; Ogata, Kenji; Chiba, Masakazu; Matsuhashi, Toshiaki; Taguchi, Masahiro; and Tominaga, Motonori, 5,338,062, Cl. 280-735.000.

Taguchi, Masao, to Fujitsu Ltd. Semiconductor memory device having a testing function and method of testing the same. 5,339,273, Cl. 365-201.000.

Taguchi, Tetsu, to NEC Corporation. Modulated signal transmission system compensated for nonlinear and linear distortion. 5,339,054, Cl. 332-100.000.

Tailby, Roger, to Den norske stats oljeselskap a.s. Washing tool. 5,337,819, Cl. 166-222.000.

Taira, Yoichi: *See*—
Dhong, Sang H.; Kirihata, Toshiaki; Shin, Hyun J.; Sunaga, Toshio; Taira, Yoichi; and Terman, Lewis M., 5,339,274, Cl. 365-203.000.

Tairaku, Hirokazu; Inoue, Kenichi; Ito, Chiaki; Takimoto, Kenji; and Tanido, Shigetoshi, to Yokogawa Electric Corporation. Method of implementing a relocated compiled library program with an interpreter to control a manufacturing line. 5,339,436, Cl. 395-700.000.

Taiwan Charwell Enterprise, Co., Ltd.: *See*—
Huang, Mien-Cheng, 5,338,096, Cl. 297-243.000.

Taiwan Semiconductor Manufacturing Company: *See*—
Hsu, Shun-Liang; Shi, Chun-Yi; and Lin, Mou-Shiung, 5,338,701, Cl. 437-60.000

Taiyo Kogyo Co., Ltd.: *See*—
Suto, Shohei, 5,338,246, Cl. 446-466.000.

Takada, Shigeru, to Mitsuba Electric Manufacturing Co., Ltd. Casing structure of a motor. 5,338,995, Cl. 310-89.000.

Takagi, Hiroyoshi; Awano, Masanobu; and Hoshi, Yuzi, to Agency of Industrial Science and Technology; and Nissan Chemical Industries Ltd. Sintered body of alumina and partially stabilized zirconia, a process for making the same and a method of preparing a powder for sintering. 5,338,713, Cl. 501-105.000.

Takagi, Kimihiko: *See*—
Ogaki, Koji; Matsuda, Tomoo; Takagi, Kimihiko; and Sakamoto, Takuya, 5,337,846, Cl. 180-8.200.

Takagi, Yuichi, to Sony Corporation. Semiconductor memory module. 5,339,269, Cl. 365-63.000.

Takahashi, Eisaku, to Fujitsu Limited. Positioning control method and apparatus of head which is used in magnetic disk apparatus. 5,339,206, Cl. 360-75.000.

Takahashi, Hiroyuki; and Nagahara, Shinichi, to Pioneer Electronic Corporation. RF signal-compensated system for reading an optical disc player with an absolute time detector. 5,339,302, Cl. 369-54.000.

Takahashi, Hisashi; Shimizu, Shigehisa; Fujiwara, Takayuki; Mino, Satoshi; and Sugii, Tatsuo, to Fuji Photo Film Co., Ltd. Packaging apparatus. 5,337,536, Cl. 53-135.300.

Takahashi, Hitoshi: *See*—
Shimomura, Tadao; Irie, Yoshio; Takahashi, Hitoshi; Kajikawa, Katsuhiro; Saga, Jyunichi; Fujiwara, Teruaki; and Hatsuda, Takumi, 5,338,810, Cl. 526-75.000

Takahashi, Ikuo: *See*—
Imashiro, Yasuo; and Takahashi, Ikuo, 5,338,794, Cl. 524-792.000.

Takahashi, Masami: *See*—
Kaneko, Kimihiko; Takahashi, Masami; and Nakajima, Akira, 5,337,600, Cl. 73-117.000.

Takahashi, Mayumi: *See*—
Abe, Hisaki; Kondoh, Toshio; Fukuda, Hideki; Takahashi, Mayumi; Aoyama, Tetsuo; and Miyake, Masahiro, 5,338,462, Cl. 210-757.000.

Takahashi, Mitsuo, to Seikoh Giken Co., Ltd. Optical fiber splicer for ribbon-shaped optical fiber cords. 5,339,377, Cl. 385-98.000.

Takahashi, Nagashige; and Shibuya, Hiromichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Endoscope stand. 5,337,731, Cl. 128-4.000.

Takahashi, Satoshi; and Ishikawa, Isao, to Zexel Corporation. Worm differential gear mechanism. 5,338,267, Cl. 475-227.000.

Takahashi, Tooru: *See*—
Kumagai, Eryohei; Hiiro, Kaoru; Shimizu, Harumi; and Takahashi, Tooru, 5,339,093, Cl. 345-149.000.

Takai, Yosuke; Studinka, Josef; and de Lhoneux, Benoit, to Polyfibre S.A. Fibre reinforced shaped solid articles. 5,338,357, Cl. 106-724.000.

Takaira, Shinichi: *See*—
Sato, Chuichi; Kikuchi, Akira; Saito, Hiroshi; and Takaira, Shinichi, 5,337,497, Cl. 34-412.000.

Takami, Masato: *See*—
Fukuda, Katsuhito; Takami, Masato; Hasegawa, Hirokazu; Nakajima, Chiaki; and Isihara, Kenji, 5,338,619, Cl. 428-623.000.

Takanashi, Hiroaki: *See*—
Kato, Takaaki; Suzuki, Kiyomi; Hagiwara, Shigeharu; and Takanashi, Hiroaki, 5,338,173, Cl. 425-150.000.

Takasaki, Naruto: *See*—
Tanaka, Yutaka; and Takasaki, Naruto, 5,339,366, Cl. 382-22.000.

Takasugi, Atsushi, to Oki Electric Industry Co., Ltd. Synchronous dynamic random access memory. 5,339,276, Cl. 365-230.020.

Takata Corporation: *See*—
Yokota, Keishi, 5,338,906, Cl. 200-61.540.
Yoshimura, Kazuo, 5,338,905, Cl. 200-61.45M.

Takayama, Nobutoshi: *See*—
Koyama, Shinichi; and Takayama, Nobutoshi, 5,339,200, Cl. 360-24.200.

Takeda, Masami: *See*—
Ueno, Isamu; Hashimoto, Seiji; and Takeda, Masami, 5,339,106, Cl. 348-243.000.

Takeda, Yoshinobu: *See*—
Kondoh, Katsuyoshi; and Takeda, Yoshinobu, 5,338,168, Cl. 418-179.000.

Takeda, Yoshiyuki: *See*—
Nagao, Tsuyoshi; Kakuta, Masayuki; Kida, Yasuhiko; Takeda, Yoshiyuki; and Yoshida, Takeshi, 5,338,018, Cl. 271-3.000.

Takegawa, Ichiro: *See*—
Nukada, Katsumi; Imai, Akira; Daimon, Katsumi; Iijima, Masakazu; Mashimo, Kiyokazu; Sakaguchi, Yasuo; and Takegawa, Ichiro, 5,338,636, Cl. 430-59.000.

Takegawa, Yoshinbou: *See*—
Tsuji, Koji; Takegawa, Yoshinbou; Inada, Hayato; and Yamada, Shuji, 5,338,505, Cl. 419-10.000.

Takei, Tetsuya: *See*—
Katagiri, Hiroyuki; Takei, Tetsuya; and Shirasuna, Toshiyasu, 5,338,580, Cl. 427-575.000.

Takemoto, Shin: *See*—
Fujiwa, Takaaki; Takemoto, Shin; Isobe, Tomohisa; and Harano, Yoshiyuki, 5,338,879, Cl. 560-116.000.

Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Method of forming superconducting oxide ceramic materials having high critical densities of superconducting current. 5,338,722, Cl. 505-500.000.

Takeshita, Takuo: *See*—
Nakayama, Ryoji; Takeshita, Takuo; and Ogawa, Tamotsu, 5,338,371, Cl. 148-101.000.

Takeuchi, Hiromasa; Iwatani, Toshihiko; and Yamaguchi, Takumi, to Universal System Control, Inc. Golf exercising aid device. 5,338,036, Cl. 273-187.200.

Takeuchi, Hiroyasu: *See*—
Hirano, Masahiro; and Takeuchi, Hiroyasu, 5,338,356, Cl. 106-690.000.

Takeuchi, Keiichi: *See*—
Manabe, Toshiyuki; Murakami, Osamu; Takeuchi, Keiichi; and Matsuura, Junichi, 5,339,239, Cl. 364-401.000.

Takeuchi, Kunihiro; Kaneko, Hideyuki; and Ishizuka, Hideki, to Airbag Systems Company, Ltd. Vehicle safety device control apparatus. 5,338,063, Cl. 280-735.000.

Takeuchi, Masaki; and Kanzaki, Mitsuru, to Chugai Seiyaku Kabushiki Kaisha. Triazole compounds and herbicidal compositions. 5,338,720, Cl. 504-273.000.

Takeyama, Kunihiko, to Nissin High Voltage Co., Ltd. Apparatus for ion implantation including contactless cooling and beam current measurement means. 5,338,940, Cl. 250-492.200.

Takiar, Hem P.: *See*—
Lin, Peng-Cheng; and Takiar, Hem P., 5,339,216, Cl. 361-707.000.

Takimoto, Akio: *See*—
Mitsushima, Kenji; Takimoto, Akio; Yaqi, Shigeo; and Sonoyama, Takayasu, 5,338,676, Cl. 435-197.000.

Takimoto, Kenji: *See*—
Tairaku, Hirokazu; Inoue, Kenichi; Ito, Chiaki; Takimoto, Kenji; and Tanido, Shigetoshi, 5,339,436, Cl. 395-700.000.

Talbot, Arthur J.; and Cowley, John M., to Atwood & Morrill Co., Inc. Plate type pressure-reducting desuperheater. 5,338,496, Cl. 261-78.200.

Talley, Eric: *See*—
Homer, Peter K.; Parenti, Robert V.; DeStefano, Joel; Chen, Wensen; Talley, Eric; and Close, John E., 5,337,980, Cl. 244-158.00R.

Talley, Robert E.: *See*—
Newsome, Reginald W.; DeBlasio, James A.; Talley, Robert E.; Adams, John M.; Chance, Christopher N.; Evers, Donald H.; Harris, William C.; and Kirby, Michael A., 5,337,948, Cl 229-120.150.

Tamagawa, Akio, to NEC Corporation. Charge pump circuit for intermediate voltage between power supply voltage and its double voltage. 5,339,236, Cl. 363-59.000.

Tamaki, Kuniaki; and Kobayashi, Shigenori, to Murata Manufacturing Co., Ltd. Chip part handling apparatus. 5,337,465, Cl. 29-740.000.

Tamaki, Yoshiko: *See*—
Tanaka, Teruo; Inagami, Yasuhiro; Tamaki, Yoshiko; Sakakibara, Tadayuki; and Kitai, Katsuyoshi, 5,339,429, Cl. 395-700.000.

Tamura, Jun: *See*—
Mishima, Akifumi; Mashima, Munenori; and Tamura, Jun, 5,338,425, Cl. 204-298.120.

Tamura, Katsuhiko; and Kawai, Atsuko, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device having stacked type capacitor. 5,338,955, Cl. 257-306.000.

Tamura, Takahiko; and Miura, Satoshi, to Sony Corporation. Display device. 5,339,011, Cl. 315-383.000.

Tan, Khen-Sang: *See*—
Tsay, Ching-Yuh; and Tan, Khen-Sang, 5,338,897, Cl. 174-35.00R.

Tan, Marz Y. Furniture construction. 5,338,097, Cl. 297-445.000.

Tanada, Hideki: *See*—
Ohto, Norio; Horikomi, Kazutoshi; Matsubara, Akira; Tanada, Hideki; Sakai, Kazuya; Kajiya, Seitaro; Mizuchi, Akira; and Shimizu, Hideshi, 5,338,857, Cl. 548-248.000.

Tanagawa, Kouji, to Oki Electric Industry Co., Ltd. Semiconductor memory circuit. 5,339,271, Cl. 365-189.040.

Tanaka, Haruo; and Nakata, Naotaro, to Rohm Co., Ltd. Optical branching and coupling device. 5,339,373, Cl. 385-31.000.

Tanaka, Katsumasa: *See*—
Kinoshita, Shoji; Nanbu, Hideo; and Tanaka, Katsumasa, 5,337,667, Cl. 101-424.000.

Tanaka, Katsuto; Makita, Kensuke; and Moriguchi, Yasuo, to Central Glass Company, Limited. Ink composition for forming thin film. 5,338,350, Cl. 106-19.00D.

Tanaka, Kenji; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Sekihata, Osamu; Hatta, Hiroyuki; and Norizuki, Reiko, to Fujitsu Limited. VPI and VCI assignment system in ATM system. 5,339,318, Cl. 370-110.100.

Tanaka Kikinzoku Kogyo K.K.: *See*—
Nakanishi, Chihiro; Ohnishi, Yuko; Ohnishi, Junji; Taniuchi, Junichi; Okamoto, Koji; and Tozawa, Takeshi, 5,338,874, Cl. 556-137.000.

Tanaka, Masaki, to Jidosha Denki Kogyo Kabushiki Kaisha. Actuator device. 5,338,076, Cl. 292-336.300.

Tanaka, Shigeya; Iwamura, Masahiro; Yamauchi, Tatsumi; Nojiri, Tatsuo; Tada, Hisashi; and Nakano, Tetsuo, to Hitachi, Ltd. Microprocessor with improved internal transmission. 5,339,448, Cl. 395-775.000.

Tanaka, Teruo; Inagami, Yasuhiro; Tamaki, Yoshiko; Sakakibara, Tadayuki; and Kitai, Katsuyoshi, to Hitachi, Ltd. Parallel processing system and compiling method used therefor. 5,339,429, Cl. 395-700.000.

Tanaka, Teruo: *See*—
Muramatsu, Akira; Yoshihara, Ikuo; Nakao, Kazuo; Hayashi, Takehisa; Tanaka, Teruo; and Nagashima, Shigeo, 5,339,396, Cl. 395-325.000.

Tanaka, Toshiharu; and Kitoh, Syunji, to Sumitomo Wiring Systems, Ltd. Grommet. 5,337,447, Cl. 16-2.000.

Tanaka, Toshiharu; Ishige, Sadao; Sugiyama, Takekatsu; and Shimada, Hirokazu, to Fuji Photo Film Co., Ltd. Diazo type recording material comprising two couplers wherein the novel coupler used is a bis-malonamide. 5,338,642, Cl. 430-173.000.

Tanaka, Tsutomu; and Yokota, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Packet data transmission unit having occupied, idle, and released states therefor. 5,339,314, Cl. 370-13.000.

Tanaka, Tsutomu; Yokota, Hiroshi; and Kubota, Kouji, to Matsushita Electric Industrial Co., Ltd. Packet communications network and communications method. 5,339,317, Cl. 370-85.150

Tanaka, Yutaka; and Takasaki, Naruto, to Hitachi Software Engineering Co., Ltd. Method for the input of a trace starting point of an image. 5,339,366, Cl. 382-22.000.

Tang, Douglas D., to GTE Laboratories Incorporated. Fiber optic antenna remoting for multi-sector cell sites. 5,339,184, Cl. 359-124.000.

Tanguay, Armand R., Jr.: *See*—
Jenkins, B. Keith; and Tanguay, Armand R., Jr., 5,339,177, Cl. 359-35.000.

Tani, Haruhisa: *See*—
Sasaki, Yasuo; Tani, Haruhisa; Kuroiwa, Yuuki; and Tsuyama, Setsuya, 5,338,593, Cl. 428-110.000

Tani, Nobuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Driving apparatus of image pick-up device for preventing leakage of accumulated electrical charges. 5,339,162, Cl. 348-298.000.

Tanido, Shigetoshi: *See*—
Tairaku, Hirokazu; Inoue, Kenichi; Ito, Chiaki; Takimoto, Kenji; and Tanido, Shigetoshi, 5,339,436, Cl. 395-700.000.

Taniguchi, Ikuo, to Fujitsu Limited; and Nippon Telegraph and Telephone Corp. Switching apparatus for switched network of asynchronous transfer mode. 5,339,310, Cl. 370-60.000.

Taniguchi, Kiyoshi: *See*—
Mishima, Naoshi; Fukagai, Toshio; Taniguchi, Kiyoshi; Kishi, Hiroyuki; Inoue, Tomohiro; and Kawasaki, Yoshiaki, 5,339,138, Cl. 355-296.000.

Tanikawa, Hirohide: *See*—
Uchiyama, Masaki; Tanikawa, Hirohide; Akashi, Yasutaka; Taya, Masaaki; and Unno, Makoto, 5,338,894, Cl. 118-653.000

Tanino, Noriyuki, to Mitsubishi Denki Kabushiki Kaisha. Microwave integrated circuit. 5,338,989, Cl. 307-571.000.

Tanis, Larry D.: *See*—
Lause, Herbert J.; Parks, Kristen L.; Tanis, Larry D.; and Leon, David D., 5,338,611, Cl. 428-412.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Taniuchi, Junichi: *See*—
Nakanishi, Chihiro; Ohnishi, Yuko; Ohnishi, Junji; Taniuchi, Junichi; Okamoto, Koji; and Tozawa, Takeshi, 5,338,874, Cl. 556-137.000.

Tanner, James T., III: *See*--
Rule, Mark; and Tanner, James T., III, 5,338,886, Cl. 568-66.000.

Tansley, Robert: *See*—
Salkeld, Paul; Gibbs, Andrew; and Tansley, Robert, 5,337,922, Cl. 222-129.000.

Tantillo, Anthony W.: *See*—
Narayan, Thirumurti; Tantillo, Anthony W.; and Stoll, John R., 5,338,819, Cl. 528-60.000.

Tapphorn, David E. Disk excavating and grading attachment. 5,337,834, Cl. 172-810.000.

Tarquini, Michael E., to J. M. Huber Corporation. Surface modified fillers and compositions containing the same. 5,338,777, Cl. 523-212.000.

Tashiro, Yasunori: *See*—
Hashimoto, Shigeru; Hasegawa, Kiyoshi; and Tashiro, Yasunori, 5,338,170, Cl. 425-92.000.

Tasker, Andrew S.: *See*—
Shiosaki, Kazumi; Tasker, Andrew S.; and Opgenorth, Terry J., 5,338,726, Cl. 514-17.000.

Tate, Steven C.: *See*—
Sawyer, Laurence D.; Lindsay, Robert A.; and Tate, Steven C., 5,339,312, Cl. 370-85.100.

Tateyama, Kiyohisa; Akimoto, Masami; and Ushijima, Mitsuru, to Tokyo Electron Limited; and Tokyo Electron Kyushu Limited. Resist processing method. 5,339,128, Cl. 354-317.000.

Taub, Mase: *See*—
Tedrow, Kerry; Taub, Mase; and Mielke, Neal, 5,339,272, Cl. 365-189.090.

Taya, Masaaki: *See*—
Uchiyama, Masaki; Tanikawa, Hirohide; Akashi, Yasutaka; Taya, Masaaki; and Unno, Makoto, 5,338,894, Cl. 118-653.000.

Tayama, Suehiro: *See*—
Toritani, Akihiro; Tayama, Suehiro; and Kawachi, Yasunori, 5,338,804, Cl. 525-310.000.

Taylor, Dale M.: *See*—
Nachlas, Jesse A.; Taylor, Dale M.; and Wilson, Merrill A., 5,338,623, Cl. 429-31.000.

Taylor, Lloyd D.; and Warner, John C., to Polaroid Corporation. Process and composition for use in photographic materials containing hydroquihones. 5,338,644, Cl. 430-214.000.

Taylor, Michael D.: *See*—
Dudley, David T.; Hodges, John C.; Pugsley, Thomas A.; and Taylor, Michael D., 5,338,744, Cl. 514-303.000.

Taylor, Steven N.: *See*—
Mazursky, Richard B.; Waskin, David M.; and Taylor, Steven N., 5,338,044, Cl. 273-402.000.

Taylor, Timothy E.: *See*—
Maybee, George W.; Taylor, Timothy E.; Field, Elmer L.; Riley, Clyde; Lacefield, William R., Jr.; Coble, Harold D.; and Dasarathy, Harini, 5,338,433, Cl. 205-178.000.

Taylor, William T. Hydraulic release tool. 5,337,829, Cl. 166-377.000.

Technaflow, Inc.: *See*—
McCutcheon, Andrew J.; Bowman, Jeffrey M.; and Gambetta, David L., 5,338,006, Cl. 251-327.000.

Technic Incorporated: *See*—
Kroll, Harry H.; and Chevalier, Jean, 5,338,343, Cl. 106-1.230.

Technischer Uberwachungsverein Bayern e.V.: *See*—
Hupfer, Peter, 5,338,206, Cl. 434-305.000.

Tedrow, Kerry; Taub, Mase; and Mielke, Neal, to Intel Corporation. Precision voltage reference. 5,339,272, Cl. 365-189.090.

Teich, Udo; and Deters, Ludger A., to Barmag AG. Textile yarn processing apparatus. 5,337,967, Cl. 242-35.50A.

Teijin Limited: *See*—
Sugiura, Satoshi; Minoshima, Toru; Hazato, Atsuo; and Kato, Yoshinori, 5,338,844, Cl. 544-318.000.
Umetani, Hiroyuki; and Yamada, Takeyoshi, 5,338,800, Cl. 525-126.000.

Tektronix, Inc.: *See*—
Said, Ahmed; and Seckora, Michael, 5,339,264, Cl. 364-724.160.

Telect, Inc.: *See*—
Kutsch, Duane B.; Larson, Glen M.; Lohf, Lloyd W.; and Johnson, Paul D., 5,339,379, Cl. 385-135.000.

Telediffusion De France: *See*—
LeBrat, Francois; Fouillet, Jean-Marie; and Etienne, Francis, 5,339,166, Cl. 358-311.000.

Teleflex Incorporated: *See*—
Spease, David T., 5,337,621, Cl. 74-502.400.

Telefonaktiebolaget L M Ericsson: *See*—
Lundin, Kenneth; and Markstrom, Ulf, 5,339,430, Cl. 395-700.000.

Telemecanique: *See*—
Blanchard, Christian; Lauraire, Michel; and Vigouroux, Didier, 5,339,060, Cl. 335-132.000.

Tempel, Lorne F., to IPSCO Enterprises Inc. Protective cover for pipe end. 5,337,792, Cl. 138-96.00R.

Tenfalt, Mikael: *See*—
Ullman, Anders; Wanngard, Johan; Tenfalt, Mikael; and Dalenius, Olov, 5,338,414, Cl. 204-95.000.

Tepera, George W.: *See*—
Fraini, Edward A.; and Tepera, George W., 5,338,453, Cl. 210-634.000.

Terada, Katsunori: *See*—
Fukaya, Masaki; Kawakami, Soichiro; Itabashi, Satoshi; Terada, Katsunori; Gofuku, Ihachiro; Nakagawa, Katsumi; Hatanaka, Katsunori; Isobe, Yoshinori; Saika, Toshihiro; Kaneko, Tetsuya; Kitahara, Nobuko; and Suzuki, Hideyuki, 5,338,690, Cl. 437-3.000.

Terada, Koichi: *See*—
Tokuda, Shoji; Matsunaga, Takao; Shinmoto, Kazuhiro; Terada, Koichi; and Yamamoto, Yoshimi, 5,337,555, Cl. 60-276.000.

Terman, Lewis M.: *See*—
Dhong, Sang H.; Kirihata, Toshiaki; Shin, Hyun J.; Sunaga, Toshio; Taira, Yoichi; and Terman, Lewis M., 5,339,274, Cl. 365-203.000.

Terpstra, David M.: *See*—
Heyl, Derrick; and Terpstra, David M., 5,337,521, Cl. 51-105.0VG.

Terranova, Peter, to Ro-An Industries Corporation. Wicket servo method and device in a bag making machine. 5,338,281, Cl. 493-28.000.

Terrapin Technologies, Inc.: *See*—
Kauvar, Lawrence M.; and Ambler, Stuart M., 5,338,659, Cl. 435-7.100.

Tessarsch, Norbert: *See*—
Rossler, Andreas; Waltenberg, Hans-Dieter; and Tessarsch, Norbert, 5,337,463, Cl. 29-243.521.

Testerman, Michael D., to Deere & Company. Calibration method for transmission control clutches. 5,337,871, Cl. 192-85.00R.

Tetra Laval Holdings & Finance S.A.: *See*—
Ljungstrom, Tommy B. G., 5,337,538, Cl. 53-456.000.

Texaco Chemical Company: *See*—
Knifton, John F.; and Sanderson, John R., 5,338,890, Cl. 568-698.000.

Texaco Inc.: *See*—
Jung, Dick Y.; Wolfenbarger, James K.; Brooker, Donald D.; Robin, Allen M.; and Kassman, Jerrold S., 5,338,489, Cl. 252-373.000.

Texas Instruments Incorporated: *See*—
Agarwala, Manisha, 5,338,983, Cl. 307-465.000.
Baker, Gary A.; and Sogge, Dale R., 5,338,907, Cl. 200-61.880.
Balmer, Keith, 5,339,447, Cl. 395-775.000.
Harris, Guy; Callaway, Duane; and Shah, Rajesh, 5,338,705, Cl. 437-217.000.
Kaya, Cetin, 5,338,969, Cl. 257-659.000.
Malhi, Satwinder, 5,338,965, Cl. 257-492.000.
Ovens, Kevin M., 5,338,980, Cl. 307-455.000.
Ovens, Kevin M.; and Niehaus, Jeffrey A., 5,339,028, Cl. 324-158.100.
Rahman, Aziz; and Baker, Gary A., 5,338,908, Cl. 200-83.00P.
Schwalm, Robert C.; and Deffner, Gerhard P. H., 5,339,361, Cl. 380-23.000.
Tomasetti, Stephen R.; and Tsong, Danny, 5,338,987, Cl. 307-570.000.
Tsay, Ching-Yuh; and Tan, Khen-Sang, 5,338,897, Cl. 174-35.00R.
Urbanus, Paul M.; and Sampsell, Jeffrey B., 5,339,116, Cl. 348-716.000.
Yamashita, Takahisa, 5,337,723, Cl. 123-549.000.

Tezuka, Toshihiko: *See*—
Nasu, Hideo; Tezuka, Toshihiko; and Inoue, Seijiro, 5,338,552, Cl. 426-19.000.

TFI Telemark: *See*—
Finn, Peter W.; Willitzer, Larry F.; and Maurer, Karl-Heinz, 5,338,913, Cl. 219-121.160.

Thacker, Louis H., to Martin Marietta Energy Systems, Inc. Gamma radiation field intensity meter. 5,338,938, Cl. 250-377.000.

Thelosen, Jacobus A., to U.S. Philips Corporation. X-ray apparatus comprising wheels provided with cable deflector. 5,339,350, Cl. 378-198.000.

Theodore, N. David; and Carrejo, Juan P., to Motorola, Inc. Method and apparatus for measuring the topography of a semiconductor device. 5,338,932, Cl. 250-306.000.

Thepenier, Catherine; Gudin, Claude; and Sarrobert, Bruno, to Commissariat a L'Energie Atomique; and Societe USSI. Process for the selective production of polyunsaturated fatty acids from a culture of microalgae of the porphyridium cruentum. 5,338,673, Cl. 435-134.000.

Thies, Wesley A.: *See*—
White, Jay P.; Thies, Wesley A.; Sweasy, William J., Jr.; and Goggin, Joseph P., 5,339,252, Cl. 364-468.000.

Thillen, Guy: *See*—
Lonardi, Emile; Metz, Jean; Mailliet, Pierre; Thillen, Guy; Andonov, Radmir; and Malivoir, Philippe, 5,338,013, Cl. 266-271.000.

Thimineur, Raymond J.; Traver, Frank J.; and Van Valkenburgh, Virginia M., to General Electric Company. Personal care compositions containing polyalkylsiloxane copolymers. 5,338,536, Cl. 424-70.000.

Think Laboratory Co., Ltd.: *See*—
Shigeta, Tatsuo, 5,338,627, Cl. 430-6.000.

Thirion de Briel, Jacques, to Valeo. Friction liner for a clutch friction plate having a plurality of friction liners, especially for a motor vehicle. 5,337,873, Cl. 192-107.00R.

Thoen, Bradford K., to MTS Systems Corporation. Crossover and spectral preemphasis networks for adaptive inverse control. 5,339,016, Cl. 318-610.000.

Thomas, David L.: *See*—
DeLuca, Amedeo; Gentry, James E., Sr.; Thomas, David L.; Landry, Norman R.; and Agrawal, Ashok K., 5,339,086, Cl. 342-371.000.

Thomas, Donald L.; and Ryan, Jane, to Nailco, Inc. Combination beverage container and door opener. 5,337,632, Cl. 81-3.550.

Thomas J. Fogarty, M.D.: *See*—
Mollenauer, Kenneth H.; Hermann, George D.; Howell, Thomas A.; and Monfort, Michelle Y., 5,338,313, Cl. 604-249.000.

Thomas, James E.: *See*—
Steinway, William J.; Thomas, James E.; Barrett, Carl R.; and Beck, Buddy G., 5,339,080, Cl. 342-22.000.

Thomas, Kenneth A., Jr.: *See*—
Bayne, Marvin L.; Thomas, Kenneth A., Jr.; and Conn, Gregory L., 5,338,840, Cl. 536-23.510.

Thomas, Kristin L.: *See*—
Schwab, Edward C.; Brown, George E.; Thomas, Kristin L.; and Harrington, Terry R., 5,338,556, Cl. 426-241.000.

Thompson Fabricating Company, Inc.: *See*—
Thompson, Sidney L.; and Wilkerson, Claude D., 5,337,531, Cl. 52-640.000.

Thompson, Keith J.: *See*—
Strout, Robert E., II; Spix, George A.; Masamitsu, Jon A.; Cox, David M.; Gaertner, Gregory G.; Wengelski, Diane M.; and Thompson, Keith J., 5,339,415, Cl. 395-650.000.

Thompson, Kevin D., to Carrier Corporation. Adaptive microprocessor control system and method for providing multiple heating modes in twinned furnaces. 5,337,952, Cl. 236-10.000.

Thompson, Sidney L.; and Wilkerson, Claude D., to Thompson Fabricating Company, Inc. Adjustable camber truss. 5,337,531, Cl 52-640.000.

Thomsen, Svend E.; Christensen, Thorkild; and Zenker, Siegfried, to Danfoss A/S. Pressure control valve. 5,337,778, Cl. 137-117.000.

Thomson-Brandt Armements: *See*—
Boissiere, Bruno; and Bossus, Michel, 5,337,672, Cl. 102-481.000.

Thomson Consumer Electronics, Inc.: *See*—
Lagoni, William A.; Keen, Ronald T.; and Neal, Charles B., 5,339,114, Cl. 348-673.000.
Lagoni, William A., 5,339,115, Cl. 348-711.000.

Thomson, David, to Analog Devices, Inc. Cascaded resistance ladder attenuator network. 5,339,021, Cl. 323-354.000.

Thomson, Paul G.: *See*—
Hasson, Harrith M.; Pingleton, Edward D.; and Thomson, Paul G., 5,338,317, Cl. 606-206.000.

Thomson Tube Electroniques: *See*—
de Groot, Paul; and Beauvais, Yves, 5,338,927, Cl. 250-214.0VT.

Thorne, Linda: *See*—
Pollock, Thomas J.; and Thorne, Linda, 5,338,841, Cl. 536-23.700.

Thorpe, Philip E., to ICRF (Patents) Limited. Disulfide linked immunotoxins with molecular groupings in the linker which cause steric hindrance to the disulfide linkage. 5,338,542, Cl. 424-180.100.

Thuaudet, Sylvain: *See*—
Barbier, Georges A. E.; Marquis, Patrick R. P. P.; and Binet, Yvon, 5,337,756, Cl. 128-763.000.

Thunberg, Jon C., to Hampshire Chemical Corp. Recovery of glycine and Glauber's salt from waste crystal liquors. 5,338,530, Cl. 423-551.000.

Thurner, Jorg, to Gesellschaft fur okologische Okomobil Technologie fur Fahrzeuge GmbH. Individual controllable cylinder-plunger assemblies of a radial piston pump. 5,338,160, Cl. 417-273.000.

Thurston, George M.: *See*—
Clark, John I.; Thurston, George M.; and Li, Xiao-Yan, 5,338,545, Cl. 424-94.100.

Tibbitts, Gordon A., to Baker Hughes, Incorporated. Drill bit having diamond film cutting elements. 5,337,844, Cl. 175-434.000.

Ticom Corporation: *See*—
Billiu, Charles R., 5,338,588, Cl. 428-36.500.

Tilders, Benno V., to Union Special GmbH. Feed dog mechanism for sewing machine. 5,337,689, Cl. 112-323.000.

Timmino Ltd.: *See*—
MacMillan, John P.; Zuliani, Douglas J.; and Bray, Martin J., 5,338,712, Cl. 501-94.000.

Timoshchenko, Pavel N.: *See*—
Sulzhik, Nikolai; Timoshchenko, Pavel N.; and Trotsenko, Vitaly V., 5,338,186, Cl. 431-115.000.

Tindall, James L. A.: *See*—
Ngooi, Teng-Ko; McGolrick, Jeffry D.; Antczak, Casimir; and Tindall, James L. A., 5,338,871, Cl. 549-492.000.

Tindyala, Masood A.: *See*—
Pielet, Howard M.; Kreevich, William J.; Tindyala, Masood A.; and Knoepke, John R., 5,338,009, Cl. 266-229.000.

Tinnemans, Aloysius H. A.: *See*—
Koenhen, Dirk M.; and Tinnemans, Aloysius H. A., 5,338,455, Cl. 210-654.000.

Tioxide Group Services Limited: *See*—
Melville, Iain A.; and Rauch, Robert P., deceased, 5,338,354, Cl. 106-442.000.

Tisack, Michael D.: *See*—
Murray, Allan D.; Tisack, Michael D.; and Wu, Yitah R., 5,338,497, Cl. 264-25.000.

Tite, Robert C.: *See*—
Monthony, James F.; Livingston, Dwight; Reuben, Jayakumar; and Tite, Robert C., 5,338,666, Cl. 435-34.000.

Todd, William J.: *See*—
El Bahy, Mohamed M.; Malone, John B., Jr.; Todd, William J.; and Schnorr, Kenneth L., 5,338,660, Cl. 435-7.220.

Toft, Bobbie L. Foldable, disposable kitty litter container. 5,337,700, Cl. 119-168.000

Togai, Kazuhide, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Engine control system and method. 5,337,719, Cl. 123-478.000.

Tojo, Katsutoshi: *See*—
Hiramoto, Haruo; Ito, Tomoaki; and Tojo, Katsutoshi, 5,338,219, Cl. 439-350.000.

Tokimori, Yoshitaka: *See*—
Higashiura, Atsushi; Sano, Fumikazu; Tokimori, Yoshitaka; and Natsume, Yoshitaka, 5,337,941, Cl. 228-205.000.

Tokita, Kiyoshi: *See*—
Urata, Hiroshi; Sone, Toshinao; Nakane, Kazunori; Satou, Kazunori; and Tokita, Kiyoshi, 5,339,010, Cl. 315-368.170.

Toko Kabushiki Kaisha: *See*—
Kasahara, Takeshi, 5,338,966, Cl. 257-597.000.

Tokuda, Shoji; Matsunaga, Takao; Shinmoto, Kazuhiro; Terada, Koichi; and Yamamoto, Yoshimi, to Mazda Motor Corporation. Failure detection system for air-fuel ratio control system. 5,337,555, Cl. 60-276.000.

Tokunaga, Haruhiko: *See*—
Kobayashi, Atsuhisa; Tokunaga, Haruhiko; and Moriyama, Hitoshi, 5,338,121, Cl. 400-322.000.

Tokusen Kogyo Company Limited: *See*—
Kobayashi, Yoshirou; Hinoura, Koichi; and Nagamoto, Akihiro, 5,337,549, Cl. 57-236.000.

Tokyo Electron Kyushu Limited: *See*—
Tateyama, Kiyohisa; Akimoto, Masami; and Ushijima, Mitsuru, 5,339,128, Cl. 354-317.000.

Tokyo Electron Limited: *See*—
Imahashi, Issei, 5,338,362, Cl. 118-719.000.
Tateyama, Kiyohisa; Akimoto, Masami; and Ushijima, Mitsuru, 5,339,128, Cl. 354-317.000.

Tomalia, Donald A.; Kaplan, Donald A.; Kruper, William J., Jr.; Cheng, Roberta C.; Tomlinson, Ian A.; Fazio, Michael J.; Hedstrand, David M.; and Wilson, Larry R., to Dow Chemical Company, The. Starburst conjugates. 5,338,532, Cl. 424-1.490.

Tomasetti, Stephen R.; and Tsong, Danny, to Texas Instruments Incorporated. High speed, low power high common mode range voltage mode differential driver circuit. 5,338,987, Cl. 307-570.000.

Tomich, Robert: *See*—
Maheux, David; and Tomich, Robert, 5,338,921, Cl. 219-730.000.

Tominaga, Motonori: *See*—
Kiuchi, Toru; Ogata, Kenji; Chiba, Masakazu; Matsuhashi, Toshiaki; Taguchi, Masahiro; and Tominaga, Motonori, 5,338,062, Cl. 280-735.000.

Tomita, Hiroyuki; and Yoshida, Kohichi, to Fujitsu Isotec Limited; and Fujitsu Limited. Mount structure of a light emitting element array in electronic photographic apparatus. 5,339,132, Cl. 355-200.000.

Tomita, Shinji: *See*—
Ducrocq, Marc; and Tomita, Shinji, 5,337,571, Cl. 62-39.000.

Tomita, Yasuo, to Canon Kabushiki Kaisha. Optical interconnection networks and processes. 5,339,371, Cl. 385-24.000.

Tomiyama, Koichi: *See*—
Tsuchiya, Kiyoko; Tomiyama, Koichi; Kato, Masayoshi; Kukimoto, Tsutomu; and Yusa, Hiroshi, 5,338,638, Cl. 430-106.000.

Tomiyama, Yoshio: *See*—
Kitamura, Junichi; Sadakane, Hirofumi; and Tomiyama, Yoshio, 5,337,543, Cl. 56-10.800.

Tomlinson, Ian A.: *See*—
Tomalia, Donald A.; Kaplan, Donald A.; Kruper, William J., Jr.; Cheng, Roberta C.; Tomlinson, Ian A.; Fazio, Michael J.; Hedstrand, David M.; and Wilson, Larry R., 5,338,532, Cl. 424-1.490.

Tomomasa, Satoshi: *See*—
Nakajima, Hideo; Kohchi, Miyuki; and Tomomasa, Satoshi, 5,338,761, Cl. 514-772.000.

Tomotsugu, Akio; and Hida, Keiji, to Nippon Paint Co., Ltd. Photocurable urethane acrylate resin composition which is weather resistant. 5,338,613, Cl. 428-425.800.

Tomoyuki, Miyake: *See*—
Junichiro, Nakayama; Tomoyuki, Miyake; Hiroyuki, Katayama; Kazuo, Van; and Kenji, Ohta, 5,338,646, Cl. 430-270.000.

Toms, Thomas R.; Harwood, Ann E.; Inoue, Yoshiko K.; and Kuo, Clinton C. K., to Motorola, Inc. Block erasable flash EEPROM apparatus and method thereof. 5,339,279, Cl. 365-185.000.

Tong, Yulan C.: *See*—
Ricks, Michael J.; and Tong, Yulan C., 5,338,856, Cl. 548-204.000.

Tonna, Anthony. Ventilator. 5,338,256, Cl. 454-310.000.

Tonnerre, Bernard: *See*—
Wagnon, Jean; de Cointet, Paul; Nisato, Dino; Plouzane, Claude; Serradeil-Legal, Claudine; and Tonnerre, Bernard, 5,338,755, Cl. 514-414.000.

Toray Industries, Inc.: *See*—
Fukumoto, Tadao; Iwamoto, Masatoshi; and Kishimoto, Akihiko, 5,338,795, Cl. 525-66.000.

Torazzina, Aldo: *See*—
Siligoni, Marco, deceased; and Torazzina, Aldo, 5,339,020, Cl. 323-313.000.

Torcan Chemical Ltd.: *See*—
Ngooi, Teng-Ko; McGolrick, Jeffry D.; Antczak, Casimir; and Tindall, James L. A., 5,338,871, Cl. 549-492.000.

Torgrimsen, Tor; Stangeland, Kjell-Egil; and Furre, Arnold, to Kverneland Klepp AS. Hole opener for the top hole section of oil/gas wells. 5,337,843, Cl. 175-334.000.

Toritani, Akihiro; Tayama, Suehiro; and Kawachi, Yasunori, to Mitsubishi Rayon Company, Inc. Methacrylic resin cast plate having transparency and impact resistance, and process for preparation thereof. 5,338,804, Cl. 525-310.000.

Tornero, Lino E. Lever clamp mechanism. 5,338,133, Cl. 403-321.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Torotrak (Development) Limited: *See—*
Greenwood, Christopher J., 5,338,268, Cl. 476-10.000.

Torregrossa, Louis O.: *See—*
Grace, Todd S.; Barrett, Mark D.; Bilodeau, Vic L.; McCarty, Gary L.; Greenwood, Brian F.; Prough, J. Robert; and Torregrossa, Louis O., 5,338,366, Cl. 127-37.000.

Torrington Company, The: *See—*
Orsini, Louis V., Jr., 5,337,476, Cl. 29-888.100.

Toshiba America Information Systems, Inc.: *See—*
Aoshima, Kinya, 5,339,426, Cl. 395-700.000.

Tosi, Jeffrey L.: *See—*
Truett, William L.; and Tosi, Jeffrey L., 5,338,935, Cl. 250-339.060.

Total Raffinage Distribution S.A.: *See—*
Demoulin, Vincent; Fersing, Marc; Patureaux, Thierry; and Pontvianne, Denis, 5,338,438, Cl. 208-153.000.

Totex Corporation: *See—*
Imai, Hisato; and Mori, Sadayori, 5,338,054, Cl. 280-655.000.

Toth, John B. Water and dirt protective, camcorder, shooting case. 5,337,891, Cl. 206-316.200.

Toukhy, Medhat A., to OCG Microelectronic Materials, Inc. Phenolic novolak resin compositions containing 5-indanol and their use a process for forming positive resist patterns. 5,338,653, Cl. 430-326.000.

Tour, James M.; and Stephens, Eric B. Lithium/HMPA-promoted synthesis of poly(phenylenes). 5,338,823, Cl. 528-397.000.

Towle, Ian D. H., to Raychem Limited. Aryl-ether-sulphone monomers and aryl-ether-keytone-sulfphone polymers. 5,338,821, Cl. 528-173.000.

Toya, Matsumi: *See—*
Mizusawa, Yoshitada; and Toya, Matsumi, 5,338,358, Cl. 118-401.000.

Toyama, Kouichi, to Fuji Electric Co., Ltd. Cylindrical container inner surface tester based on an image processing technology. 5,338,000, Cl. 250-223.00B.

Toyoda Gosei Co., Ltd.: *See—*
Inoue, Michio; Yamamoto, Tadashi; and Ogawa, Hiroshi, 5,338,059, Cl. 280-728.00B.

Toyoda, Katsuhiko, to Suzuki Motor Corporation. Air-fuel ratio control device for internal combustion engine. 5,337,557, Cl. 60-276.000.

Toyoda, Shuji: *See—*
Sasaki, Masahiro; Ishii, Satoshi; Yamauchi, Yoshihiko; Kitamura, Katsushi; Toyoda, Shuji; and Ahiko, Kenkichi, 5,338,682, Cl. 435-253.400.

Toyohara, Hirohide. Golf training apparatus. 5,338,037, Cl. 273-187.600.

Toyota Jidosha Kabushiki Kaisha: *See—*
Abe, Naoki; Kawahara, Fumio; and Inoue, Noboru, 5,338,421, Cl. 204-186.000.
Kiuchi, Toru; Ogata, Kenji; Chiba, Masakazu; Matsuhashi, Toshiaki; Taguchi, Masahiro; and Tominaga, Motonori, 5,338,062, Cl. 280-735.000.
Yorita, Hiroshi; Igashira, Toshihiko; Moritsugu, Michiyasu; and Chujo, Yoshiki, 5,338,431, Cl. 204-424.000.

Tozawa, Takeshi: *See—*
Nakanishi, Chihiro; Ohnishi, Yuko; Ohnishi, Junji; Taniuchi, Junichi; Okamoto, Koji; and Tozawa, Takeshi, 5,338,874, Cl. 556-137.000.

Tracy, Lawrence P., to Deere & Company. Engine piston with a dual combustion bowl lip radius. 5,337,714, Cl. 123-279.000.

Trainor, Thomas M.: *See—*
Mikulka, Thomas L.; Bennardo, Nicola T.; Wienick, Steven D.; and Trainor, Thomas M., 5,338,563, Cl. 426-604.000.

Transsonic Uberschall-Anlagen GmbH: *See—*
Fissenko, Vladimir, 5,338,113, Cl. 366-177.000.

Trasch, Heinz-Friedrich: *See—*
Schlipfenbacher, Reiner; Steinbiss, Joachim; and Trasch, Heinz-Friedrich, 5,338,513, Cl. 422-56.000.

Traver, Frank J.: *See—*
Thimineur, Raymond J.; Traver, Frank J.; and Van Valkenburgh, Virginia M., 5,338,536, Cl. 424-70.000.

Tregillis, John S., to Sentage Corporation. Dental appliance. 5,338,190, Cl. 433-6.000.

Tricca, Robert E.; Doran, William T.; and Gray, Catherine L., to Pfizer Inc. Prebrushing pyrophosphate-containing liquid oral compositions. 5,338,538, Cl. 424-57.000.

Trilogy Communications, Inc.: *See—*
Lique, Roger M., 5,339,058, Cl. 333-237.000.

Trimarchi, Sharon M.: *See—*
Trimarchi, William M.; and Trimarchi, Sharon M., 5,337,697, Cl. 119-19.000.

Trimarchi, William M.; and Trimarchi, Sharon M. Feline window perch. 5,337,697, Cl. 119-19.000.

Tripen Enterprises Ltd.: *See—*
Penner, Wesley; Penner, Gordon; and Penner, Robert, 5,339,069, Cl. 340-454.000.

Triplett, Kelly B.; Burk, Johst H.; Sherif, Fawzy G.; and Vreugdenhil, Willem, to Akzo Nobel nv. Non-oxide metal ceramic catalysts comprising metal oxide support and intermediate ceramic passivating layer. 5,338,716, Cl. 502-64.000.

Tripp, Lloyd D.: *See—*
Repperger, Daniel W.; and Tripp, Lloyd D., 5,337,743, Cl. 128-633.000.

Trocherie, Jean-Pierre A. L.; Marriere, Marc G. P.; and Deschamps, Joel, to Moulinex (Societe Anonyme). Kitchen appliance, such as a mixer provided with a safety retractable detent. 5,338,111, Cl. 366-205.000.

Troiani, Thomas C. Transparent bottom boat. 5,337,692, Cl. 114-61.000.

Trokhan, Paul D.: *See—*
Phan, Dean V.; and Trokhan, Paul D., 5,338,766, Cl. 521-63.000.

Trotsenko, Vitaly V.: *See—*
Sulzhik, Nikolai; Timoshchenko, Pavel N.; and Trotsenko, Vitaly V., 5,338,186, Cl. 431-115.000.

Trouvay & Cauvin: *See—*
Schlesch, Ronald D.; and Cheskaty, Rex B., 5,337,703, Cl. 122-379.000

Trube, Hans: *See—*
Frey, Wolfram; and Trube, Hans, 5,337,439, Cl. 15-250.002.

Truett, William L.; and Tosi, Jeffrey L. Positioning device for infrared accessories in FTIR spectrometers. 5,338,935, Cl. 250-339.060.

Trunner, Josef, to Buchi Laboratoriums-Technik AG. Method and device for heating or cooling a reaction flask. 5,337,806, Cl. 165-47.000.

TRW Inc.: *See—*
Rusis, Edvin A., 5,339,434, Cl. 395-700.000.
Serafini, Tito T.; Cheng, Paul G.; Ueda, Kenneth K.; and Wright, Ward F., 5,338,827, Cl. 528-353.000.

TRW Repa GmbH: *See—*
Fohl, Artur, 5,338,065, Cl. 280-806.000.

Tsai, Powell. Wall controller. 5,338,910, Cl. 200-547.000.

Tsai, Wen-Cheng. Coil structure of ceiling fan motor. 5,338,992, Cl. 310-71.000.

Tsay, Ching-Yuh; and Tan, Khen-Sang, to Texas Instruments, Incorporated. Coaxial shield for a semiconductor device. 5,338,897, Cl. 174-35.00R.

Tschech, Andreas: *See—*
Schurr, Sabine; and Tschech, Andreas, 5,338,667, Cl. 435-47.000.

Tsiang, Raymond C.: *See—*
Diaz, Zaida; and Tsiang, Raymond C., 5,338,824, Cl. 528-482.000.

Tsong, Danny: *See—*
Tomasetti, Stephen R.; and Tsong, Danny, 5,338,987, Cl. 307-570.000.

Tsuchida, Takayasu; Nishimoto, Yoshitaka; Kotani, Takuya; and Iizumi, Katsuo, to Ajinomoto Co., Inc. Method for producing L-3, 4-dihydroxyphenyalanine by Erwinia having tyrosinase activity. 5,338,672, Cl. 435-108.000.

Tsuchiya, Kiyoko; Tomiyama, Koichi; Kato, Masayoshi; Kukimoto, Tsutomu; and Yusa, Hiroshi, to Canon Kabushiki Kaisha. Toner for developing electrostatic image and process for production thereof. 5,338,638, Cl. 430-106.000.

Tsuji, Kae: *See—*
Matsuda, Yoshitaka; Kondo, Koichi; Kuribayashi, Shuhei; Noda, Akiko; Nakashima, Takuya; Saito, Ryutaro; Tsuji, Kae; Mori, Hideo; and Mori, Yoshinori, 5,338,143, Cl. 414-142.100.

Tsuji, Koji; Takegawa, Yoshinbou; Inada, Hayato; and Yamada, Shuji, to Matsushita Electric Works, Ltd. Silver base electrical contact material and method of making the same. 5,338,505, Cl. 419-10.000.

Tsuji, Tatsunori: *See—*
Yokoyama, Yutaka; Tsuji, Tatsunori; Ue, Makoto; and Sato, Tomohiro, 5,338,472, Cl. 252-62.200.

Tsujimura, Ayumu; Ohkawa, Kazuhiro; Yoshii Shigeo; and Mitsuyu, Tsuneo, to Matsushita Electric Industrial Co., Ltd. Reflector for semiconductor laser end-face and method of manufacturing the same. 5,339,326, Cl. 372-49.000.

Tsukamoto, Kazuki: *See—*
Ikegawa, Akihito; Aritomo, Kouichi; Tsukamoto, Kazuki; and Yamashita, Michiya, 5,338,895, Cl. 118-661.000.

Tsunoda, Masakiyo; Nakajima, Hiroaki; and Koshimura, Masami, to Mitsubishi Materials Corp. Conductive chip-type ceramic element and method of manufacture thereof. 5,339,068, Cl. 338-332.000.

Tsurufuji, Tomoyoshi: *See—*
Oyama, Mitsuyoshi; and Tsurufuji, Tomoyoshi, 5,337,507, Cl. 43-23.000.

Tsuruta, Yoshio: *See—*
Enomoto, Yoshinari; and Tsuruta, Yoshio, 5,338,691, Cl. 437-3.000.

Tsuyama, Setsuya: *See—*
Sasaki, Yasuo; Tani, Haruhisa; Kuroiwa, Yuuki; and Tsuyama, Setsuya, 5,338,593, Cl. 428-110.000.

Tsuzuki, Yoshikazu: *See—*
Horikawa, Hiroshi; Tsuzuki, Yoshikazu; Mogi, Hisashi; and Matsubara, Kazuo, 5,338,070, Cl. 285-177.000.

Tuan, Hsiao-Chin; and Chao, Hu H., to Industrial Technology Research Institute. Fabrication method to produce pit-free polysilicon buffer local oxidation isolation. 5,338,750, Cl. 437-70.000.

Tucker, Marilyn. Head support for bed-ridden patients. 5,337,429, Cl. 5-643.000.

Tuckey, Charles H., to Walbro Corporation. Electronic fuel injection system with heat-pressure response. 5,337,718, Cl. 123-464.000.

Tuckman, Margareta K.; and Osburne, Marcia S., to American Cyanamid Company. Assay for detection of bacterial iron transport inhibitors. 5,338,664, Cl. 435-4.000.

Tuller, Harry L.: *See—*
Micak, Richard; and Tuller, Harry L., 5,338,416, Cl. 204-129.300.

Tuman, David H.: *See—*
Pagano, Anthony M.; Tuman, David H.; and Pagano, Margaret E., 5,337,427, Cl. 5-602.000.

Tumpey, John J.: *See—*
Shekhawat, Sampat; Eckenfelder, Robert C.; Tumpey, John J.; Wohlberg, Alfred W.; and Gandikota, Kapal, 5,339,235, Cl. 363-43.000.

Tung, Chi-Hua: *See—*
Gullberg, Grant T.; Morgan, Hugh T.; Tung, Chi-Hua; Zeng, Gengsheng L.; and Christian, Paul E., 5,338,936, Cl. 250-363.040.

Tung, Lawrence Y.: *See—*
Barringer, H. Paul; Kirsch, Gary E.; Mott, Keith C.; and Tung, Lawrence Y., 5,338,074, Cl. 285-334.000.

Tupper, David E.: *See—*
Fairhurst, John; and Tupper, David E., 5,338,735, Cl. 514-233.500.

Turak, Ali A.: *See—*
Ignasiak, Teresa; Strausz, Otto; Ignasiak, Boleslaw; Janiak, Jerzy; Pawlak, Wanda; Szymocha, Kazimierz; and Turak, Ali A., 5,338,322, Cl. 44-620.000.

Turk, Robert L.: *See—*
Dunham, William D.; Hladilek, Jerry A.; McNeill, Steven R.; Pierman, John A.; Rogan, Charles T.; and Turk, Robert L., 5,338,236, Cl. 440-77.000.

Turner, Jonathan S., to Washington University. Data packet resequencer for a high speed data switch. 5,339,311, Cl. 370-60.000.

Turner, S. Richard: *See—*
Bleyins, Richard W.; and Turner, S. Richard, 5,338,813, Cl. 526-208.000.

Turumisoda Kabushiki Kaisya: *See—*
Ichiyanagi, Shigeo; Iwai, Shojiro; and Deguchi, Masahiro, 5,338,449, Cl. 210-205.000.

Tuthill Corporation: *See—*
Vipond, Edward W.; and Chumsae, Mark S., 5,337,994, Cl. 248-289.100.

TV Interactive Data Corporation: *See—*
Redford, Peter M., 5,339,095, Cl. 345-158.000.

Tweco Products, Inc.: *See—*
Stuart, Kyle H.; and Bervig, Dale R., 5,338,917, Cl. 219-137.630.

Tyagi, Dinesh: *See—*
Aslam, Muhammad; Mutz, Alec N.; Tyagi, Dinesh; and Johnson, Kevin M., 5,339,146, Cl. 355-285.000.

Tyler, John G.: *See—*
Koval, Michael J.; Lawton, William W.; Tyler, John G.; and Winters, Scott L., 5,339,413, Cl. 395-650.000.

Tymco, Inc.: *See—*
Young, Gary B.; Hanel, Albert L.; and Veselka, Kenneth R., 5,337,444, Cl. 15-352.000.

Tyrell, John A.: *See—*
Peascoe, Warren J.; and Tyrell, John A., 5,338,797, Cl. 525-66.000.

Tyrrell, Derek L.: *See—*
Lane, Charles A.; Woodward, Ian D.; and Tyrrell, Derek L., 5,337,775, Cl. 137-68.100.

Tyutinman, Adolf. Automobile window shade system. 5,338,086, Cl. 296-138.000.

Uchida, Takeshi: *See—*
Yanagisawa, Tateo; Yamada, Hisayoshi; Sakamoto, Katsumi; Inagawa, Seiki; Umetsu, Yukihide; Uchida, Takeshi; Nakahara, Hideyo; and Fukumoto, Yoshiharu, 5,338,503, Cl. 264-516.000.

Uchiike, Mitsumasa, to Shimadzu Corporation. Electronic balance. 5,338,902, Cl. 177-255.000.

Uchino, Hiroyoshi; and Yoneda, Tadahiro, to Nippon Shokubai Kagaku Kogyo. Method for production of powder of fine inorganic particles. 5,338,353, Cl. 106-426.000.

Uchiyama, Masaki; Tanikawa, Hirohide; Akashi, Yasutaka; Taya, Masaaki; and Unno, Makoto, to Canon Kabushiki Kaisha. Image forming method with improved development. 5,338,894, Cl. 118-653.000.

Uda, Masahiro; Morita, Yoshikazu; and Oosaki, Katsuhisa, to Nisshin Steel Co., Ltd. Production of powdery intermetallic compound having very fine particle size. 5,338,333, Cl. 75-352.000.

Ue, Makoto: *See—*
Yokoyama, Yutaka; Tsuji, Tatsunori; Ue, Makoto; and Sato, Tomohiro, 5,338,472, Cl. 252-62.200.

Ueda, Hideaki, to Minolta Camera Kabushiki Kaisha. Photosensitive member comprising an amino compound. 5,338,634, Cl. 430-59.000.

Ueda, Kenneth K.: *See—*
Serafini, Tito T.; Cheng, Paul G.; Ueda, Kenneth K.; and Wright, Ward F., 5,338,827, Cl. 528-353.000.

Ueda, Tetsushi. System for connecting an IC memory card to a central processing unit of a computer. 5,339,402, Cl. 395-425.000.

Ueno, Isamu; Hashimoto, Seiji; and Takeda, Masami, to Canon Kabushiki Kaisha. Photoelectric conversion apparatus eliminating noise in an output signal. 5,339,106, Cl. 348-243.000.

Ueno, Yuichi: *See—*
Suzuki, Koji; Ueno, Yuichi; Aoki, Katsuhiro; Iwata, Naoki; Sawada, Akira; and Fujishiro, Takatsugu, 5,339,141, Cl. 355-246.000.

Ugine, Aciers de Chatillon et Gueugnon: *See—*
Henriet, Dominique; Paul, Didier; and Prost, Laurent, 5,338,367, Cl. 134-3.000.

Uhland, Eberhard: *See—*
Boden, Hellmut; Uhland, Eberhard; and Wobbe, Hans, 5,338,112, Cl. 366-75.000.

Uhlendorf, Gregg J.: *See—*
Moon, Ronald R.; Uhlendorf, Gregg J.; and Barnard, Daniel E., 5,339,207, Cl. 360-77.050.

Ullman, Anders; Wanngard, Johan; Tenfalt, Mikael; and Dalenius, Olov, to Permascand AB. Electrolytic cell, electrolyzer and a method of performing electrolysis. 5,338,414, Cl. 204-95.000.

Ultrafab Inc.: *See—*
Johnson, Larry E.; and Galens, Peter, 5,338,382, Cl. 156-72.000.

UMA Ltd.: *See—*
Marmorstein, Leon M.; Petuhov, Ignaty M.; Sidorov, Vladimir S.; Aleksandrov, Piotr A.; and Grebennikov, Valentin T., 5,337,825, Cl. 166-307.000.

Umetani, Hiroyuki; and Yamada, Takeyoshi, to Teijin Limited. Plural liquid pack type heat-curable resin composition and process for producing shaped resin article therefrom. 5,338,800, Cl. 525-126.000.

Umetsu, Yukihide: *See—*
Yanagisawa, Tateo; Yamada, Hisayoshi; Sakamoto, Katsumi; Inagawa, Seiki; Umetsu, Yukihide; Uchida, Takeshi; Nakahara, Hideyo; and Fukumoto, Yoshiharu, 5,338,503, Cl. 264-516.000.

Underwood, Mark R., to Probe Adventures, Inc. Combine sieve distributor apparatus. 5,338,257, Cl. 460-8.000.

Underwood, Russell L.: *See—*
Estermann, Heinrich; Kapa, Prasad K.; Underwood, Russell L.; and Houlihan, William J., 5,338,730, Cl. 514-99.000.

Union Special GmbH: *See—*
Tilders, Benno V., 5,337,689, Cl. 112-323.000.

Union Special Japan Ltd.: *See—*
Arima, Katsumi, 5,337,688, Cl. 112-298.000.

Uniroyal Chemical Company, Inc.: *See—*
Barry, Lawrence B.; and Richardson, Mark C., 5,338,478, Cl. 252-182.210.

Unisys Corporation: *See—*
Higgins-Luthman, Michael J.; Kidd, Robert C.; Klein, Robert D.; Yen, Robert C.; and Zalinski, Charles M., 5,339,368, Cl. 382-56.000.
Latimer, Robert A.; and Heileman, David W., Jr., 5,339,439, Cl. 395-275.000.
Nelson, George F., 5,339,187, Cl. 359-182.000.
Sawyer, Laurence D.; Lindsay, Robert A.; and Tate, Steven C., 5,339,312, Cl. 370-85.100.

United States of America
Administrator, National Aeronautics & Space Administration: *See—*
Chern, Engmin J., 5,339,031, Cl. 324-219.000.
Air Force: *See—*
Maguire, Michael D., 5,337,730, Cl. 128-4.000.
Repperger, Daniel W.; and Tripp, Lloyd D., 5,337,743, Cl. 128-633.000.
Army: *See—*
Leupold, Herbert A.; and McLane, George F., 5,337,472, Cl. 29-607.000.
Lux, Robert A.; Koscica, Thomas E.; and Harvey, James F., 5,339,053, Cl. 331-99.000.
Mizan, Muhammad A.; and McGowan, Raymond C., 5,339,047, Cl. 330-286.000.
Wilber, William; Cadotte, Roland, Jr.; Rachlin, Adam; and Cummings, Michael, 5,338,943, Cl. 505-193.000.
Energy: *See—*
Gregg, David W., 5,338,115, Cl. 366-263.000.
Levy, Arthur J.; Oppenlander, Jane E.; Brudnoy, David M.; Englund, James M.; and Loomis, Kent C., 5,339,256, Cl. 364-506.000.
Slatkin, Daniel N.; Dilmanian, F. Avraham; and Spanne, Per O., 5,339,347, Cl. 378-65.000.
Health and Human Services: *See—*
Sekura, Ronald D.; Zhang, Yan-Ling; and Shiloach, Joseph, 5,338,670, Cl. 435-71.300.
natinal Aeronautics and Space Administration: *See—*
Prosser, William H.; Kriz, Ronald D.; and Fitting, Dale W., 5,337,610, Cl. 73-599.000.
National Aeronautics and Space Administation: *See—*
St. Clair, Anne K.; St. Clair, Terry L.; and Winfree, William P., 5,338,826, Cl. 528-353.000.
National Aeronautics and Space Administration: *See—*
Pater, Ruth H., 5,338,806, Cl. 525-421.000.
Navy: *See—*
Agarwala, Vinod S.; and Pearlstein, Fred, 5,338,432, Cl. 205-118.000.
Barrett, David J., 5,338,599, Cl. 428-212.000.
Blier, Darren J.; Dubord, Christopher J.; and Grande, David W., 5,339,288, Cl. 367-145.000.
Boczar, Bruce P., 5,339,189, Cl. 359-326.000.
Divecha, Amarnath P.; Karmarkar, Subhash D.; Ferrando, William A.; and Hoover, Scott M., 5,337,803, Cl. 164-98.000.
Jones, Thomas E.; and McGinnis, Wayne C., 5,339,025, Cl. 324-71.600.
Koontz, Robert A.; and Hayes, Kenneth R., 5,337,673, Cl. 102-491.000.
Kruchowy, Roman; Goff, Dan; and Smith, Anthony, 5,339,023, Cl. 324-67.000.
Libuha, John J.; and Wardle, William F., 5,339,291, Cl. 367-165.000.
Marcus, Harris L.; Eliezer, Zwy; and Fine, Morris E., 5,338,374, Cl. 148-237.000
Marques, Anthony M.; Kelley, Paul R.; Jones, William K.; Fukuda, Masatoshi; and Manuel, Overton H., 5,339,066, Cl. 338-306.000.
Minarik, Steven B., 5,339,087, Cl. 342-375.000.
Rauscher, Christen, 5,339,057, Cl. 333-166.000.
Simonds, Gregory A.; and Sansone, Louis E., 5,339,378, Cl. 385-100.000.
Straw, Timothy B., 5,339,285, Cl. 367-135.000.

U.S. Philips Corporation: *See—*
Melse, Abraham L., 5,339,052, Cl. 331-75.000.
Perraud, Jean-Claude, 5,339,044, Cl. 330-252.000.
Raaymakers, Wilhelmus P. M.; Kuijpers, Franciscus L. J. M.; Veenis, Aartje W.; Pasman, Johannes H. T.; and Mulder, Hendricus A. M., 5,339,301, Cl. 369-50.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Schellen, Johannes A. T., 5,339,006, Cl. 315-58.000.
Schoofs, Franciscus A. C. M., 5,338,949, Cl. 257-269.000.
Thelosen, Jacobus A., 5,339,350, Cl. 378-198.000.

United States Surgical Corporation: *See—*
Remiszewski, Stanley H.; and Green, David T., 5,337,937, Cl. 227-182.000.

United Technologies Corporation: *See—*
Giles, Charles; Belsom, Keith; and Schuler, Warren, 5,337,583, Cl. 60-752.000
Green, Dennis J.; Szela, Edward R.; Yamarik, George J.; and Martin, David R., 5,337,805, Cl. 164-369.000.
LeBlanc, George; and Gallagher, Gwyn, 5,337,452, Cl. 16-367.000.
Stiles, Lorren, Jr.; Lappos, Nicholas D.; and Wright, Gregory P., 5,339,244, Cl. 364-424.060.

Unitrode Corporation: *See—*
Mammano, Robert A.; and Jordan, Mark, 5,338,979, Cl. 307-443.000

Univ. of Pennsylvania, Trustees of the: *See—*
Kennedy, Ann R.; and Szuhaj, Bernard F., 5,338,547, Cl. 424-195.100.

Universal Packaging Corporation: *See—*
Maheux, David; and Tomich, Robert, 5,338,921, Cl. 219-730.000.

Universal System Control, Inc.: *See—*
Takeuchi, Hiromasa; Iwatani, Toshihiko; and Yamaguchi, Takumi, 5,338,036, Cl. 273-187.200.

Universal Technologies, Inc.: *See—*
Hendren, Ronald D., 5,337,943, Cl. 229-87.190.

University of California, The Regents of the: *See—*
Sailor, Michael J.; Credo, Grace; Heinrich, Julie; and Lauerhaas, Jeffery M., 5,338,415, Cl. 204-129.200.

University of California Office of Technology Transfer, The Regents of the: *See—*
McFarland, Andrew R.; Rodgers, John C.; Ortiz, Carlos A.; and Nelson, David C., 5,337,603, Cl. 73-202.000.

University of Colorado Foundation, Inc., The: *See—*
Weverka, Robert T., 5,339,186, Cl. 359-140.000.

University of Florida: *See—*
McCoy, Clayton W.; Vey, Alain J.; and Mazet, Isabelle M., 5,338,675, Cl. 435-183.000.

University of Maryland at College Park: *See—*
Liu, K. J. Ray; and Chiu, Chin-Te, 5,339,265, Cl. 364-725.000.

University of Minnesota, Regents of the: *See—*
Efange, Simon M. N.; and Parsons, Stanley M., 5,338,852, Cl. 546-188.000.

University of North Carolina at Chapel Hill, The: *See—*
Fowlkes, Dana M., 5,338,833, Cl. 530-351.000.

University of Pennsylvania, Trustees of the: *See—*
Weiner, David B.; Greene, Mark I.; and Williams, William V., 5,338,829, Cl. 530-324.000.

University of Rochester, The: *See—*
Donaldson, William R.; Gupta, Deepnarayan; and Kadin, Alan M., 5,339,062, Cl. 505-1.000.

University of Southern California: *See—*
Jenkins, B. Keith; and Tanguay, Armand R., Jr., 5,339,177, Cl. 359-35.000.

University of Southern California (USC): *See—*
Wu, Shin-Tson; Margerum, J. David; Meng, Hsiang-Hui B.; and Dalton, Larry R., 5,338,481, Cl. 252-299.010.

University of Utah Research Foundation: *See—*
Kuhn, Paul K.; and Johnson, Steven A., 5,339,282, Cl. 367-7.000.

Unno, Makoto: *See—*
Uchiyama, Masaki; Tanikawa, Hirohide; Akashi, Yasutaka; Taya, Masaaki; and Unno, Makoto, 5,338,894, Cl. 118-653.000.

UOP: *See—*
Lambert, Susan L., 5,338,527, Cl. 423-332.000.
Maurer, Richard T., 5,338,450, Cl. 210-286.000.
Sechrist, Paul A.; Lawrence, Roger R.; and Richardson, Larry D., 5,338,440, Cl. 208-173.000.
Vora, Bipin V.; Imai, Tamotsu; and Pujado, Peter J., 5,338,889, Cl. 568-697.000

Urano, Toshiyuki: *See—*
Kanazawa, Daisuke; Sasaki, Mitsuru; Urano, Toshiyuki; Yamashita, Youko; and Matsubara, Shinichi, 5,338,643, Cl. 430-190.000.

Urata, Hiroshi; Sone, Toshinao; Nakane, Kazunori; Satou, Kazunori; and Tokita, Kiyoshi, to Kabushiki Kaisha Toshiba. Color cathode-ray tube apparatus. 5,339,010, Cl. 315-368.170.

Urban, Wesley R.: *See—*
Griffin, Edward R.; Urban, Wesley R.; and Hintsala, Arlen J., 5,337,490, Cl. 34-117.000.

Urbanus, Paul M.; and Sampsell, Jeffrey B., to Texas Instruments Incorporated. DMD architecture and timing for use in a pulse-width modulated display system. 5,339,116, Cl. 348-716.000.

Urbish, Glenn F.: *See—*
Suppelsa, Anthony B.; Mullen, William B., III; and Urbish, Glenn F., 5,338,391, Cl. 156-630.000.

Uribe, Aramando B. Safety device for overhead doors. 5,337,520, Cl. 49-197.000.

Urich, Alex. Modulated electronic breadboard. 5,339,219, Cl. 361-760.000.

Ushijima, Mitsuru: *See—*
Tateyama, Kiyohisa; Akimoto, Masami; and Ushijima, Mitsuru, 5,339,128, Cl. 354-317.000.

Usui Kokusai Sangyo Kaisha Ltd.: *See—*
Washizu, Katsushi; and Miyauchi, Yuuji, 5,338,073, Cl. 285-319.000.

Utsumi, Kuniaki: *See—*
Maeda, Kazuki; Utsumi, Kuniaki; and Fujito, Katsuyuki, 5,339,315, Cl. 370-85.100.

Utter, Robert E.: *See—*
Riffe, Delmar R.; Kotlarek, Peter A.; and Utter, Robert E., 5,338,159, Cl. 417-203.000.

UVTEC, Inc.: *See—*
Bartz, Kenneth W.; Cherry, David J.; and Howell, George D., 5,338,614, Cl. 428-448.000.

Uy, Rosa: *See—*
Dietz, Timothy M.; Asmus, Robert A.; and Uy, Rosa, 5,338,490, Cl. 252-500.000.

Uyama, Shintaro, to Jidosha Kiki Co., Ltd. Booster for brake or clutch. 5,337,650, Cl. 91-376.00R.

Vaidya, Sheila: *See—*
Garofalo, Joseph G.; Kostelak, Robert L., Jr.; Pierrat, Christophe; and Vaidya, Sheila, 5,338,626, Cl. 430-5.000.

Vailliencourt, Dwayne, to Hoover Universal, Inc. Hot fill plastic container having a radial reinforcement rib. 5,337,909, Cl. 215-1.00C.

Valenite Inc.: *See—*
Friederichs, John W.; Mirchandani, Prakash K.; and Krudy, Paul J., 5,338,506, Cl. 419-44.000.

Valeo: *See—*
Thirion de Briel, Jacques, 5,337,873, Cl. 192-107.00R.

Vallabhaneni, Rao: *See—*
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Valois (societe anonvme): *See—*
Lugez, Pierre; Jouillat, Claude; and Brunet, Michel, 5,337,923, Cl. 222-183.000.

Van Den Bergh Foods Co., Division of Conopco, Inc.: *See—*
Campbell, Iain J.; Morley, Wayne G.; and Norton, Ian T., 5,338,561, Cl. 426-602.000.
Wesdorp, Leendert H.; Madsen, Robert A.; Kasica, James; Kowblansky, Marie; and Morrison, Anthony, 5,338,560, Cl. 426-573.000.

Van Doorne's Transmissie B.V.: *See—*
Hendriks, Emery F. M.; Roovers, Wilhelmus W. C. M.; and d'Herripon, Bastiaan A., 5,337,628, Cl. 477-48.000.

Van Bavel, Cornelius H. M.; and Van Vavel, Michael G. Apparatus for measuring sap flow. 5,337,604, Cl. 73-204.220.

van Buren, Frederik R.; Deij, Leendert; Merz, Gunnar; and Schneider, Hans P., to Dow Chemical Company, The. Process for removing mercury from organic media which also contain arsenic. 5,338,444, Cl. 210-660.000

Vance Products Incorporated: *See—*
Hasson, Harrith M.; Pingleton, Edward D.; and Thomson, Paul G., 5,338,317, Cl. 606-206.000.

Vanderah, Richard J.; and Kern, John G., to Fisher Controls International, Inc. Operating system for a process controller. 5,339,425, Cl. 395-700.000

van der Heijden, Edgar I. M., to Airspray International B.V. Mixing chamber for mixing a gaseous and a liquid component. 5,337,929, Cl. 222-402.180.

van Dijk, Hans K.; and Schellekens, Ronald M. A. M., to DSM N.V. Method for the preparation of a polymeric shaped article containing an electrically conductive polymer. 5,338,413, Cl. 204-59.00R.

Vandling, Gilbert C., III, to International Business Machines Corporation. Asynchronous TMR processing system. 5,339,404, Cl. 395-575.000.

van Duin, Kees-Jeen: *See—*
Brands, Jan; Grunbauer, Henri J. M.; and van Duin, Kees-Jeen, 5,338,601, Cl. 428-319.700.

Van Dyke, Mark J.; and Reiter, Ernst R., to CTI Industries Corporation. Packaged balloon and greeting card. 5,338,241, Cl. 446-75.000.

Van Hise, Jon A.: *See—*
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000

Van Leeuwen, Petrus W. N. M.: *See—*
Bradford, Arleen M.; Van Leeuwen, Petrus W. N. M.; and Wullink-Schelvis, Annetta M., 5,338,825, Cl. 528-392.000.

Van Ooij, Wim J.; and Giridhar, Jayaramachandran, to Pirelli Coordinamento Pneumatici S.p.A. Metal wire with a layer of coating for reinforcing articles made of elastomeric materials, and articles made of elastomeric materials reinforced with the said wire. 5,338,620, Cl. 428-625.000.

Van Valkenburgh, Virginia M.: *See—*
Thimineur, Raymond J.; Traver, Frank J.; and Van Valkenburgh, Virginia M., 5,338,536, Cl. 424-70.000.

Van Vavel, Michael G.: *See—*
Van Bavel, Cornelius H. M.; and Van Vavel, Michael G., 5,337,604, Cl. 73-204.220.

Varley, Paul: *See—*
Broberg, Daniel M.; Campbell, Glenn, Sr.; and Varley, Paul, 5,337,654, Cl. 99-447.000.

Varmo, Kjell O., to Raufoss AS. Arrangement in a smoke shell. 5,337,671, Cl. 102-334.000.

Varta Batterie Aktiengesellschaft: *See—*
Bechtold, Dieter; and Vollbert, Jurgen, 5,338,596, Cl. 429-190.000.

Vartanian, Haig: *See—*
Vosbikian, Peter S.; and Vartanian, Haig, 5,337,440, Cl. 15-143.100.

Vass, David: *See—*
Crossland, William A.; Vass, David; and Collings, Neil, 5,339,090, Cl. 345-90.000.

Vaughan, Craig: *See—*
Matz, Gary F.; and Vaughan, Craig, 5,338,541, Cl. 424-71.000.

Vaughan, David E. W.; and Strohmaier, Karl G., to Exxon Research and Engineering Company. Divalent transition-metal-aluminosilicate hydrocarbon conversion catalysts having mazzite-like structures, ECR-23-D. 5,338,526, Cl. 423-328.200.

Veber, Daniel F.: *See—*
Nutt, Ruth F.; Brady, Stephen F.; Veber, Daniel F.; and Duggan, Mark E., 5,338,723, Cl. 514-11.000.

Veeck, Robert, to Microsemi Corporation. Surface mount device. 5,339,218, Cl. 361-707.000.

Veenis, Aartje W.: *See—*
Raaymakers, Wilhelmus P. M.; Kuijpers, Franciscus L. J. M.; Veenis, Aartje W.; Pasman, Johannes H. T.; and Mulder, Hendricus A. M., 5,339,301, Cl. 369-50.000.

Velasco, Victor J.: *See—*
Melatti, Livio R.; and Velasco, Victor J., 5,338,223, Cl. 439-482.000.

Vellinga, Sjoerd, to Paques B.V. Bioreactor. 5,338,447, Cl. 210-195.100.

Venbrux, Jack; and Cameron, Kelly, to Idaho Research Foundation, Inc. Comma code generator. 5,339,077, Cl. 341-67.000.

Vereinigte Aluminium-Werke Aktiengesellschaft: *See—*
Brucken, Volker; and Huppatz, Werner, 5,338,417, Cl. 204-147.000.

Vermette, John E.: *See—*
Jain, Sanjeev; Vermette, John E.; Weber, Richard; Doub, Robert J.; Alon, Gad; and Day, Alan G., III, 5,337,757, Cl. 128-779.000.

Vernon, Scott D., to Raytheon Company. Digital to analog converter switch circuit. 5,339,078, Cl. 341-136.000.

Veselka, Kenneth R.: *See—*
Young, Gary B.; Hanel, Albert L.; and Veselka, Kenneth R., 5,337,444, Cl. 15-352.000.

Vevert, Jean-Paul: *See—*
Fortin, Michel; Frechet, Daniel; Hamon, Gilles; Jouquey, Simone; and Vevert, Jean-Paul, 5,338,756, Cl. 514-394.000.

Vey, Alain J.: *See—*
McCoy, Clayton W.; Vey, Alain J.; and Mazet, Isabelle M., 5,338,675, Cl. 435-183.000.

Vezzoli, Annibale: *See—*
Lesca, Giuseppe; Romanini, Daniele; and Vezzoli, Annibale, 5,338,764, Cl. 521-60.000.

Vianello, Domenico; Benetton, Armando; Moro, Alessandro; Pippa, Roberto; and Longo, Aldo, to Montedipe s.r.l. Thermoplastic composition based on polyphenylene ether and polyamide. 5,338,796, Cl. 525-66.000.

Vidal, Claude: *See—*
Plyley, Alan K.; Barker, John M.; Vidal, Claude; and Redmond, Russell J., 5,338,305, Cl. 604-164.000.

Vigouroux, Didier: *See—*
Blanchard, Christian; Lauraire, Michel; and Vigouroux, Didier, 5,339,060, Cl. 335-132.000.

Vince, Michael R.: *See—*
Wysocki, Joseph A.; Vince, Michael R.; McCahon, Stephen W.; and Kenna, John T., 5,339,380, Cl. 385-136.000.

Vipond, Edward W.; and Chumsae, Mark S., to Tuthill Corporation. Apparatus for mounting a portable ventilation fan to an access port. 5,337,994, Cl. 248-289.100.

Virginia Polytechnic Institute & State University: *See—*
Murphy, Kent A.; Gunther, Michael F.; and Claus, Richard O., 5,339,374, Cl. 385-43.000.

Virginia Tech Intellectual Properties, Inc.: *See—*
Murphy, Kent A.; Gunther, Michael F.; and Claus, Richard O., 5,339,374, Cl. 385-43.000.

Visser, James T.: *See—*
Gentry, Charles B.; and Visser, James T., 5,337,768, Cl. 134-122.00R.

Visx, Incorported: *See—*
Shimmick, John; and Munnerlyn, Charles R., 5,339,121, Cl. 351-212.000.

Viuhko, Henry T.: *See—*
Brown, William J.; Cherek, Bogdan; and Viuhko, Henry T., 5,339,292, Cl. 367-176.000.

VLSI Technology, Inc.: *See—*
Jiang, Chun, 5,339,270, Cl. 365-185.000.

Vogt, Lothar; Bartels, Stefan; Arnold, Rainer; and Schwarz, Detlef, to Blaupunkt Werke GmbH. Radio receiver adjacent-channel interference suppression circuit. 5,339,455, Cl. 455-266.000.

Vogt, Siegfried; Krempel, Wolfgang; and Assenmacher, Ute, to Jacobs Suchard AG. Process for producing a soluble cocoa product. 5,338,554, Cl. 426-45.000.

Volkswagen AG: *See—*
Kastner, Michael, 5,337,852, Cl. 180-274.000.

Vollbert, Jurgen: *See—*
Bechtold, Dieter; and Vollbert, Jurgen, 5,338,596, Cl. 429-190.000.

Vollink, Dan H., to Dec-Kor, Inc. Post mounted hanger. 5,337,986, Cl. 248-218.400.

VonHoene, Robert M.; and Hasegawa, Ryusuke. Method of encoding and decoding a glassy alloy strip to be used as an identification marker. 5,338,373, Cl. 148-121.000.

Vora, Bipin V.; Imai, Tamotsu; and Pujado, Peter J., to UOP. Alkane rejection in C_4 etherification and isomerization process. 5,338,889, Cl. 568-697.000.

Vosbikian, Peter S.; and Vartanian, Haig, to Quickie Manufacturing Corporation. Tool head brace. 5,337,440, Cl. 15-143.100.

Voss, Harry A., to Rock City Box Company. Dadoed and V-grooved box. 5,337,916, Cl. 220-418.000.

Vrana, John J.; and Richart, Leland M., to MascoTech, Inc. Reinforced hollow upper control arm for vehicle suspension system. 5,338,056, Cl. 280-673.000.

Vreugdenhil, Willem: *See—*
Triplett, Kelly B.; Burk, Johst H.; Sherif, Fawzy G.; and Vreugdenhil, Willem, 5,338,716, Cl. 502-64.000.

Vtech Industries, Inc.: *See—*
Mazursky, Richard B.; Waskin, David M.; and Taylor, Steven N., 5,338,044, Cl. 273-402.000.

Vugts, Franciscus G.: *See—*
Soes, Lucas; and Vugts, Franciscus G., 5,338,220, Cl. 439-403.000.

W. Schlafhorst AG & Co.: *See—*
Grecksch, Hans; Heidtmann, Thomas; and Bohnen, Norbert, 5,337,551, Cl. 57-281.000.
Kohlen, Helmut; Hensen, Helmuth; and Floh, Karl-Heinz, 5,337,882, Cl. 198-452.000.

WABCO Standard GmbH: *See—*
Rothen, Johann; Zobirei, Bernd; and Schult, Manfred, 5,338,106, Cl. 303-9.690.

Wachman, Stanley L.; and Karlan, Sidney, to Cetylite Industries, Inc. Sterilant composition. 5,338,748, Cl. 514-358.000.

Wachter, Michael P.: *See—*
Wuest, Hans-Heiner; Janssen, Bernd; Murray, William V.; Wachter, Michael P.; and Bell, Stanley, 5,338,749, Cl. 514-364.000.

Wada, Katsutoshi: *See—*
Kasahara, Akihiro; Yamada, Akira; Yoshizawa, Takashi; Wada, Katsutoshi; and Yamasaki, Hideo, 5,337,865, Cl. 188-378.000.

Wada, Kunio: *See—*
Yoshioka, Takao; Nishi, Takahide; Kanai, Tsutomu; Aizawa, Yuichi; Wada, Kunio; Fujita, Takashi; and Horikoshi, Hiroyoshi, 5,338,855, Cl. 514-369.000.

Wada, Sayuri: *See—*
Kumagae, Yojiro; Fujita, Shigeo; Matsumoto, Mansuke; Wada, Sayuri; and Hashimoto, Shuuichi, 5,338,866, Cl. 549-226.000.

Waddington & Duval Limited: *See—*
Lane, Charles A.; Woodward, Ian D.; and Tyrrell, Derek L., 5,337,775, Cl. 137-68.100.

Wade, Malcolm V., to IVG Australia Pty. Ltd. Drive transmission couplings. 5,338,258, Cl. 464-6.000.

Wade, Richard P.: *See—*
Johnston, Robert E.; and Wade, Richard P., 5,337,680, Cl. 108-51.300.

Wagenaar, Jack. Building block. 5,337,527, Cl. 52-169.200.

Waggoner, John P., to Amcast Industrial Corporation. Methods and apparatus for forming tubular risers and manifolds including tubular risers. 5,337,477, Cl. 29-890.052.

Wagner, Harald, to Elecktro-Mechanik GmbH. Methods and apparatus for measuring the postion of an edge of a metal strip by electronic induction. 5,339,029, Cl. 324-207.170.

Wagnon, Jean; de Cointet, Paul; Nisato, Dino; Plouzane, Claude; Serradeil-Legal, Claudine; and Tonnerre, Bernard, to Elf Sanofi. N-sulfonylindoline derivatives, their preparation and the pharmaceutical compositions in which they are present. 5,338,755, Cl. 514-414.000.

Wahlig, Helmut: *See—*
Bauer, Hans-Jorg; Bauer, Gerd; Dingeldein, Elvira; and Wahlig, Helmut, 5,338,772, Cl. 523-115.000.

Waite, Timothy P.; and Allan, Richard D., to Mars, Inc. Coin validators. 5,337,877, Cl. 194-317.000.

Wake, Setsuo, to Mitsubishi Denki Kabushiki Kaisha. Electrically erasable and programmable semiconductor memory device with trench memory transistor and manufacturing method of the same 5,338,953, Cl. 267-316.000.

Walbro Corporation: *See—*
Tuckey, Charles H., 5,337,718, Cl. 123-464.000.

Waldorf Corporation: *See—*
Roccaforte, Harry I., 5,337,951, Cl. 229-186.000.

Walker, Donald C.: *See—*
McNaughton, James; and Walker, Donald C., 5,338,002, Cl 251-149.600.

Walker, Donald R.: *See—*
Whiteside, Dennis K.; Walker, Donald R.; and Denney, Norma L., 5,337,417, Cl. 2-2.000.

Walker, George F.: *See—*
Aoude, Farid Y.; Cooper, Emanuel I.; Duncombe, Peter R.; Farooq, Shaji; Giess, Edward A.; Kim, Young-Ho; Knickerbocker, Sarah H.; Muller-Landau, Friedel; Neisser, Mark O.; Park, Jae M.; Shaw, Robert R.; Rita, Robert A.; Shaw, Thomas M.; Vallabhaneni, Rao; Van Hise, Jon A.; Walker, George F.; Kim, Jungihl; and Brownlow, James M., deceased, 5,337,475, Cl. 29-852.000.

Walker, Loren H.: *See—*
Lezan, Georges R. E.; and Walker, Loren H., 5,338,994, Cl 307-86.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Walker, Theodore R., Jr.; Jackson, Winston J., Jr.; and Fleischer, Jean C., to Eastman Chemical Company. Process for preparing diketones. 5,338,881, Cl. 562-462.000.

Walloch, Richard A., to SpaceLabs Medical, Inc. Automatic blood pressure monitor employing artifact rejection method and apparatus. 5,337,750, Cl. 128-680.000.

Walsh, David C. Utility tool. 5,337,523, Cl. 51-370.000.

Walsh, Michael J.: *See*—
Breneman, William C.; Crane, William C.; Walsh, Michael J.; and Warren, Eric A., 5,338,352, Cl. 106-285.000.

Walsh, Thomas J.: *See*—
Bross, Arthur; and Walsh, Thomas J., 5,338,208, Cl. 439-66.000.

Waltenberg, Hans-Dieter: *See*—
Rossler, Andreas; Waltenberg, Hans-Dieter; and Tessarsch, Norbert, 5,337,463, Cl. 29-243.521.

Walters, Mark A.: *See*—
Eilenberg, Steven S.; Kirkland, W. Dean; and Walters, Mark A., 5,339,033, Cl. 324-309.000.

Walton, Colin R. G., to Apco International Limited. Insect killers. 5,339,007, Cl. 315-205.000.

Walz, Gerd: *See*—
Wehner, Susanne; Klima, Heinz; Hoenel, Michael; Ziegler, Peter; and Walz, Gerd, 5,338,419, Cl. 204-181.400.

Wamboldt, Leonard: *See*—
Belkind, Abraham I.; Wamboldt, Leonard; and Wolfe, Jesse D., 5,338,422, Cl. 204-192.120.

Wang, Bosco S.; Shieh, Hong-Ming; and Corbett, Martin J., to American Cyanamid Company. Biologically active porcine somatotropin polypeptides and methods of using the same. 5,338,836, Cl. 530-399.000.

Wang, C. David; Shultz, Jeffrey R.; and Chen, Hao A., to Mannington Mills, Inc. Decorative surface coverings having platey material. 5,338,504, Cl. 264-555.000.

Wang, Ching-Chen. Water bottle with a hidden suction straw. 5,337,918, Cl. 220-708.000.

Wang, George W.: *See*—
Elko, David A.; Isenberg, John F., Jr.; Moore, Brian B.; Strickland, Jimmy P.; Swanson, Michael D.; and Wang, George W., 5,339,427, Cl. 395-725.000.

Wang, Jui-Shang: *See*—
Chiu, Bernard; Gatchell, Stephen; and Wang, Jui-Shang, 5,338,324, Cl. 55-385.200.

Wang, Leao, to Greenmaster Industrial Corporation. Exerciser device for simulating mountain climbing and running. 5,338,271, Cl. 482-52.000.

Wang, Max S., to Kortenbach Verwaltungs-Und Beteiligungsgesellschaft mbH and Company. Collapsible umbrella. 5,337,770, Cl. 135-25.300.

Wang, Wen-Yuan: *See*—
Klaasen, William A.; and Wang, Wen-Yuan, 5,338,963, Cl. 257-376.000.

Wang, Yen-Seine; Lee, Frank; Kuo, Ching-Chi; and Baron, Ken, to Hexcel Corporation. Foam filled honeycomb and methods for their production. 5,338,594, Cl. 428-117.000.

Wanner, Karl: *See*—
Fehrle, Siegfried; Kabatnik, Wilfried; Buck, Manfred; Dietz, Klaus; Hoelzel, Martin; Kleyer, Klaus; Schmid, Wolfgang; and Wanner, Karl, 5,337,945, Cl. 227-109.000.

Wanngard, Johan: *See*—
Ullman, Anders; Wanngard, Johan; Tenfalt, Mikael; and Dalenius, Olov, 5,338,414, Cl. 204-95.000.

Warddrip, Riley: *See*—
Evanitsky, Eugene S.; Rauscher, Tomlinson G.; Filion, Joseph; Sundquist, Douglas; Warddrip, Riley; and Auman, Daniel, 5,339,168, Cl. 358-402.000.

Wardell, James R., to Roll-A-Cover Inc. Cover system for flatbed trailers and kit therefor. 5,338,084, Cl. 296-105.000.

Wardle, William F.: *See*—
Libuha, John J.; and Wardle, William F., 5,339,291, Cl. 367-165.000.

Warner, John C.: *See*—
Taylor, Lloyd D.; and Warner, John C., 5,338,644, Cl. 430-214.000.

Warner-Lambert Company: *See*—
Connor, David T.; and Kostlan, Catherine R., 5,338,737, Cl. 514-259.000.
Dudley, David T.; Hodges, John C.; Pugsley, Thomas A.; and Taylor, Michael D., 5,338,744, Cl. 514-303.000.

Warren, Eric A.: *See*—
Breneman, William C.; Crane, William C.; Walsh, Michael J.; and Warren, Eric A., 5,338,352, Cl. 106-285.000.

Warren, Tommy M.; and Winters, Warren J., to Amoco Corporation. Extending the lateral portion of a short-radius wellbore. 5,337,839, Cl. 175-62.000.

Washington University: *See*—
Boime, Irving, 5,338,835, Cl. 530-398.000.
Devadas, Balekudru; Gordon, Jeffrey I.; and Adams, Steven P., 5,338,858, Cl. 548-253.000.
Turner, Jonathan S., 5,339,311, Cl. 370-60.000.

Washizu, Katsushi; and Miyauchi, Yuuji, to Usui Kokusai Sangyo Kaisha Ltd. Slender pipe connecting connector. 5,338,073, Cl. 285-319.000.

Waskin, David M.: *See*—
Mazursky, Richard B.; Waskin, David M.; and Taylor, Steven N., 5,338,044, Cl. 273-402.000.

Watabe, Sumiko: *See*—
Nozomi, Mamoru; Watabe, Sumiko; and Aso, Ryoko, 5,338,633, Cl. 430-59.000.

Watanabe, Hirokazu: *See*—
Fukutomi, Masaaki; and Watanabe, Hirokazu, 5,337,458, Cl. 24-115.00H.

Watanabe, Isao, to Nec Corporation. Avalanche photodiode including a multiplication layer and a photoabsorption layer. 5,338,947, Cl. 257-186.000.

Watanabe, Kazumasa: *See*—
Kinoshita, Akira; Suzuki, Tomoko; and Watanabe, Kazumasa, 5,338,637, Cl. 430-83.000.

Watanabe, Kenjiro: *See*—
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,339,098, Cl. 347-5.000.

Watanabe, Masayuki: *See*—
Mouri, Hiroshi; and Watanabe, Masayuki, 5,337,850, Cl. 180-140.000.

Watanabe, Nobuo: *See*—
Kojima, Tetsuro; and Watanabe, Nobuo, 5,338,648, Cl. 430-393.000.

Watanabe, Toshio: *See*—
Nitta, Minoru; Kiyota, Yoshisato; Makiishi, Yukio; Ohtsubo, Hiroshi; Watanabe, Toshio; and Habu, Yasuhiro, 5,338,508, Cl. 420-120.000.

Watanabe, Tsutomu; and Shinonaga, Mitsuyoshi, to Kabushiki Kaisha Toshiba. Radar apparatus. 5,339,084, Cl. 342-160.000.

Watanabe, Yasutaka: *See*—
Imai, Keisuke; Yamamoto, Toshimasa; Numazawa, Akio; Iwata, Hitoshi; and Watanabe, Yasutaka, 5,337,970, Cl. 242-374.000.

Watanabe, Yuji: *See*—
Kakida, Takuya; Inoue, Noriyuki; Okada, Shoichi; Nakamura, Yoshiki; Ikeda, Wakaharu; Mikami, Akira; Kimura, Akiyoshi; Aihara, Masayuki; Fujiwara, Hisashi; and Watanabe, Yuji, 5,337,881, Cl. 198-409.000.

Watkins, Jeffrey T.: *See*—
Brandberg, Lawrence C.; Hanson, Denise E.; and Watkins, Jeffrey T., 5,338,911, Cl. 219-759.000.

Watson, David A.: *See*—
Speckman, Lori C.; and Watson, David A., 5,338,291, Cl. 604-9.000.

Watson, Randall A.: *See*—
Connor, Daniel S.; Scheibel, Jeffrey J.; Fu, Yi-Chang; Murch, Bruce P.; Watson, Randall A.; and McKillop, Kirsten L., 5,338,491, Cl. 252-548.000.

Weber Aircraft, Inc.: *See*—
Bales, Randy J.; Gilbert, Klay E.; and Bell, Steven R., 5,337,979, Cl. 244-118.100.

Weber, David P.: *See*—
Clement, Thomas P.; and Weber, David P., 5,338,292, Cl. 604-22.000.

Weber, Eckhart. Stirling engine with heat exchanger. 5,337,563, Cl. 60-520.000.

Weber, Eckhart: *See*—
Kleinwachter, Hans; Kleinwachter, Jurgen; and Weber, Eckhart, 5,337,562, Cl. 60-519.000.

Weber, Joseph C. Dental flask expander and method of use. 5,338,192, Cl. 433-34.000.

Weber, Markus: *See*—
Funk, Helmut; Allmendinger, Franz; and Weber, Markus, 5,338,022, Cl. 271-184.000.

Weber, Paul J., to Motorola, Inc. Radio frequency amplifier. 5,339,048, Cl. 330-302.000.

Weber, Paul J.: *See*—
Burke, Robert J.; and Weber, Paul J., 5,337,860, Cl. 184-3.200.

Weber, Richard: *See*—
Jain, Sanjeev; Vermette, John E.; Weber, Richard; Doub, Robert J.; Alon, Gad; and Day, Alan G., III, 5,337,757, Cl. 128-779.000.

Wegerer, William J., II: *See*—
Narendra, Patrenahalli M.; Braunling, Russell D.; Wegerer, William J., II; and Werder, Jonathan C., 5,339,281, Cl. 367-5.000.

Wehner, Susanne; Klima, Heinz; Hoenel, Michael; Ziegler, Peter; and Walz, Gerd, to Hoechst Aktiengesellschaft. Electrodeposition bath containing a urethane. 5,338,419, Cl. 204-181.400.

Weidman, David L.: *See*—
Miller, William J.; Nolan, Daniel A.; and Weidman, David L., 5,339,372, Cl. 385-29.000.

Weidmuller Interface GmbH & Co.: *See*—
Blanke, Uwe; Kern, Hans J.; Schmidt, Friedrich; Hanke, Thomas; Murray, Peter E.; Schnatwinkel, Michael; and Wilmes, Manfred, 5,338,224, Cl. 439-491.000.

Weigel, Joseph P.: *See*—
Eikill, Richard G.; Levenstein, Sheldon B.; McMahon, Lynn A.; and Weigel, Joseph P., 5,339,397, Cl. 395-400.000.

Weigl, Max: *See*—
Frank, Kurt; Attenni, Johann; Schmidt, Albert; and Weigl, Max, 5,338,163, Cl. 417-410.00R.

Weiland, Ana L.: *See*—
Kornfeld, Richard K.; Weiland, Ana L.; and Okazaki, Mitsunari, 5,339,046, Cl. 330-277.000.

Weiman, Carl: *See*—
Chu, Steven; Weiman, Carl; and Swann, William, 5,338,930, Cl. 250-251.000.

Weiner, David B.; Greene, Mark I.; and Williams, William V., to University of Pennsylvania, Trustees of the. Peptides derived from human immunodeficiency virus-1 GP160. 5,338,829, Cl. 530-324.000.

Weinstein, Stephen G. Inventory assembly work station table. 5,337,473, Cl. 29-720.000.

Weisend, Norbert A., Jr.: *See*—
Fahrner, Alan J.; and Weisend, Norbert A., Jr., 5,337,978, Cl. 244-134.00A.

Weisgerber, Robert H.: *See*—
Meade, Robert J.; Albrecht, Richard W.; and Weisgerber, Robert H., 5,338,154, Cl. 415-173.700.

Welch, Christopher J.: *See*—
Pirkle, William H.; and Welch, Christopher J., 5,338,529, Cl. 423-445.00B.

Welch, Joe K. Method for disposal of radioactive waste. 5,338,493, Cl. 588-16.000.

Welter, C. Joseph: *See*—
Fitzgerald, Gerald R.; and Welter, C. Joseph, 5,338,543, Cl. 424-264.100.

Wen, Michael Y.: *See*—
LeViness, Steve C.; Hsia, Steve J.; Wen, Michael Y.; Davis, Stephen M.; Culross, Claude C.; and Maa, Peter S., 5,338,441, Cl. 208-419.000.

Wengelski, Diane M.: *See*—
Strout, Robert E., II; Spix, George A.; Masamitsu, Jon A.; Cox, David M.; Gaertner, Gregory G.; Wengelski, Diane M.; and Thompson, Keith J., 5,339,415, Cl. 395-650.000.

Wentworth, Steven W.; Crane, Robert F.; Haas, Jon A.; and Reynolds, Payce, to Earth Tool Corporation. Dual-diameter pneumatic ground piercing tool. 5,337,837, Cl. 175-19.000.

Wepplo, Peter J.: *See*—
Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Dohner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., 5,338,883, Cl. 564-90.000.

Werder, Jonathan C.: *See*—
Narendra, Patrenahalli M.; Braunling, Russell D.; Wegerer, William J., II; and Werder, Jonathan C., 5,339,281, Cl. 367-5.000.

Werner & Pfleiderer GmbH: *See*—
Boden, Hellmut; Uhland, Eberhard; and Wobbe, Hans, 5,338,112, Cl. 366-75.000.

Wernet, Wolfgang: *See*—
Baumann, Marcus; Mayer, Carl W.; Wernet, Wolfgang; and Fischer, Walter, 5,338,863, Cl. 549-4.000.

Wernicke, Joachim: *See*—
Euer, Hartmut; Baues, Wilfried; and Wernicke, Joachim, 5,338,199, Cl. 434-14.000.

Wesdorp, Leendert H.; Madsen, Robert A.; Kasica, James; Kowblansky, Marie; and Morrison, Anthony, to Van den Bergh Foods Company, Division of Conopco, Inc. Edible plastic dispersion having a rapid gel-setting starch. 5,338,560, Cl. 426-573.000.

Wessendorf, Kurt O.: *See*—
Koehler, Dale R.; Sniegowski, Jeffry J.; Bivens, Hugh M.; and Wessendorf, Kurt O., 5,339,051, Cl. 331-65.000.

Wester, Ronald T.: *See*—
Carpino, Philip C.; Wester, Ronald T.; and Da Silva Jardine, Paul A., 5,338,740, Cl. 514-259.000.

Westfalia Becorit Industrietechnik GmbH: *See*—
Rassmann, Christoph, 5,338,103, Cl. 299-32.000.

Westinghouse Electric Corporation: *See*—
Boenning, Robert A.; Schoch, Karl F., Jr.; Stough, Daryl V.; and Navish, Francis W., Jr., 5,339,038, Cl. 324-539.000.
Cressman, Thomas E., 5,338,570, Cl. 427-240.000.
Gilmour, George A., 5,339,283, Cl. 367-89.000.

Westphal, John L., to Louisiana-Pacific Corporation. Apparatus and method for removing resinated wood particles from an air stream. 5,338,399, Cl. 95-282.000.

Westvaco Corporation: *See*—
Bower, Robert K., 5,337,950, Cl. 229-164.000.

Wettlaufer, David G.; and Nemoto, Peter A., to Hoechst-Roussel Pharmaceuticals Inc. (Pyrrolidinyl)phenyl carbamates, compositions and use. 5,338,739, Cl. 514-235.500.

Weverka, Robert T., to University of Colorado Foundation, Inc., The. Optical data packet compressor/decompressor. 5,339,186, Cl. 359-140.000.

Weyerhaeuser Company: *See*—
Johnston, Robert E.; and Wade, Richard P., 5,337,680, Cl. 108-51.300.

Weymouth, Brian M.: *See*—
Peake, Don A.; and Weymouth, Brian M., 5,337,597, Cl. 73-45.500.

Wheatly, John A.; and Motter, Gregg A., to Dow Chemical Company, The. All-polymeric cold mirror. 5,339,198, Cl. 359-359.000.

Whelan, Edward J., to Sequa Corporation. Apparatus and method utilizing continuous motion offset and direct printing techniques for decorating cylindrical containers. 5,337,659, Cl. 101-40.000.

Whitaker Corporation, The: *See*—
Brooks, Charles P.; Leahy, Donald J.; Fowler, Mark M.; and Everidge, Jackie K., Jr., 5,338,209, Cl. 439-66.000.
Egenolf, Bernhard, 5,338,229, Cl. 439-839.000.
Fleming, David F.; Raudenbush, James M.; and Carlisle, Raymond M., 5,339,022, Cl. 324-67.000.
Gloe, Karl-Heinz; Gerst, Michael; and Kreuzer, Helmuth, 5,337,589, Cl. 72-11.000.
Lineberry, Daniel C.; and Bates, Warren A., 5,338,207, Cl. 439-62.000.
Simmons, Randy G.; Barker, Riley K.; and Sizemore, Ronald D., 5,339,222, Cl. 361-818.000.
Soes, Lucas; and Vugts, Franciscus G., 5,338,220, Cl. 439-403.000.

White, Alan W.; Pearcy, Barry G.; Strand, Marc A.; and Carico, Joey C., to Eastman Chemical Company. Polyester compositions. 5,338,606, Cl. 428-458.000.

White, Donald J., Jr.; Cox, Edward R.; and Kasturi, Rama, to Procter & Gamble Company, The. Oral compositions. 5,338,537, Cl. 424-52.000.

White, Donald L., to AT&T Bell Laboratories. Device fabrication entailing plasma-derived x-ray delineation. 5,339,346, Cl. 378-34.000.

White, Jay P.; Thies, Wesley A.; Sweasy, William J., Jr.; and Goggin, Joseph P., to Foot Image Technology, Inc. Integrated system for foot measurement, last and footwear manufacture. 5,339,252, Cl. 364-468.000.

White, Stanley A., to Rockwell International Corporation. Combined decimation/interpolation filter for ADC and DAC. 5,339,263, Cl. 364-724.100.

Whitehead, Lorne A., to Minnesota Mining and Manufacturing Company. Prism light guide luminaire with efficient directional output. 5,339,382, Cl. 385-146.000.

Whitehead, Verlon E.: *See*—
Hunt, Ronald. E.; and Whitehead, Verlon E., 5,338,108, Cl. 312-9.170.

Whiteside, Dennis K.; Walker, Donald R.; and Denney, Norma L., to Figgie International Inc. Rib protector. 5,337,417, Cl. 2-2.000.

Whittle, Daniel J.: *See*—
Rudisill, Charles A.; and Whittle, Daniel J., 5,339,179, Cl. 359-49.000.

Widdig, Arno: *See*—
Baasner, Bernd; Fischer, Reiner; Widdig, Arno; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,338,860, Cl. 548-550.000.

Widmyer, Ronald L., to Federal Hill Farm, Inc. Fish feeding system. 5,337,698, Cl. 119-51.040.

Wieck, Andreas D.; and Ploog, Klaus, to Max-Planck-Gesellschaft Zur Forderung der Wissenschaften E.V. Method of generating active semiconductor structures by means of starting structures which have a 2D charge carrier layer parallel to the surface. 5,338,692, Cl. 437-24.000.

Wienick, Steven D.: *See*—
Mikulka, Thomas L.; Bennardo, Nicola T.; Wienick, Steven D.; and Trainor, Thomas M., 5,338,563, Cl. 426-604.000.

Wiggerman, Ron. Illuminated wand. 5,339,225, Cl. 362-61.000.

Wilber, William; Cadotte, Roland, Jr.; Rachlin, Adam; and Cummings, Michael, to United States of America, Army. Magnetic flux-enhanced control line for superconducting flux flow transistor. 5,338,943, Cl. 505-193.000.

Wilbrandt, Cynthia S.: *See*—
Saia, Louis P., III; and Wilbrandt, Cynthia S., 5,337,579, Cl. 62-239.000.

Wilcox, Wayne, to Snap-Tite, Inc. Hydraulic coupling. 5,337,782, Cl. 137-614.030.

Wilhite, Mathew, to Molex Incorporated. Electrical connector with contact anti-overstress means. 5,338,231, Cl. 439-660.000.

Wilhite, Mathew: *See*—
Bryce, Brian; and Wilhite, Mathew, 5,338,230, Cl. 439-629.000.

Wilk, Peter J. Method and apparatus for inhibiting catheter sepsis. 5,338,308, Cl. 604-180.000.

Wilkerson, Claude D.: *See*—
Thompson, Sidney L.; and Wilkerson, Claude D., 5,337,531, Cl. 52-640.000.

Williams, Ashley M., to Allelix Biopharmaceuticals Inc. Ultrapure human interleukin-6. 5,338,834, Cl. 530-351.000.

Williams Electronics Games, Inc.: *See*—
Patla, James A., Sr.; and Glass, James X., 5,338,031, Cl. 273-118.00R.

Williams, Joseph C.: *See*—
Glass, Mitchell; Williams, Joseph C.; and Stein, Ross L., 5,338,727, Cl. 514-19.000.

Williams, Randall S.: *See*—
Shindley, Richard P.; and Williams, Randall S., 5,339,074, Cl 340-825.310.

Williams, Tunney E. Ground rod installation tool. 5,337,836, Cl. 173-90.000.

Williams, William V.: *See*—
Weiner, David B.; Greene, Mark I.; and Williams, William V., 5,338,829, Cl. 530-324.000.

Williamson, James T.; and Jerbic, Michael J., to Rapid Cool Corporation. Pulsed gas parison cooling apparatus. 5,338,172, Cl. 425-143.000.

Willis, Harry G., Jr.; and Shuster, Mark M., to Dana Corporation. Composite powdered metal retaining ring. 5,338,046, Cl. 277-180.000.

Willitzer, Larry F.: *See*—
Finn, Peter W.; Willitzer, Larry F.; and Maurer, Karl-Heinz, 5,338,913, Cl. 219-121.160.

Wilmes, Manfred: *See*—
Blanke, Uwe; Kern, Hans J.; Schmidt, Friedrich; Hanke, Thomas; Murray, Peter E.; Schnatwinkel, Michael; and Wilmes, Manfred, 5,338,224, Cl. 439-491.000.

Wilms, Bernd: *See*—
Guckel, Martin; Schrader, Jurgen; and Wilms, Bernd, 5,338,085, Cl. 296-121.000.

Wilson, Daniel C.; and Klaber, Kenneth E., to Dowbrands Inc. Detachable receptacle and fitted pouches for refillable sprayer devices. 5,337,921, Cl. 222-105.000.

Wilson, George R., III: *See*—
Hundere, Alf; Wilson, George R., III; Dowda, Thomas; Dowda, James; and Anderson, David, 5,337,599, Cl. 73-61.620.

VOL 1165 ISS 3 AG 16 1994 UMI

Wilson, Larry R.: *See—*
Tomalia, Donald A.; Kaplan, Donald A.; Kruper, William J., Jr.; Cheng, Roberta C.; Tomlinson, Ian A.; Fazio, Michael J.; Hedstrand, David M.; and Wilson, Larry R., 5,338,532, Cl. 424-1.490.

Wilson, Merrill A.: *See—*
Nachlas, Jesse A.; Taylor, Dale M.; and Wilson, Merrill A., 5,338,623, Cl. 429-31.000.

Wilson, Neil D.: *See—*
Blundell, David W.; and Wilson, Neil D., 5,337,707, Cl. 123-65.0PE.

Wilson, Robert W.: *See—*
Glance, Bernard; and Wilson, Robert W., 5,339,157, Cl. 385-24.000.

Wiltron Company: *See—*
Bradley, Donald A., 5,339,049, Cl. 331-16.000.

Wiltsey, Ronald A.; and Dudash, Eugene S., to Lear Seating Corporation. Drawstring seat cover. 5,338,092, Cl. 297-228.110.

Wiltsey, Ronald A.: *See—*
Frelich, Jeffrey J.; Miotto, Ronald L.; and Wiltsey, Ronald A., 5,338,386, Cl. 156-290.000.

Winberg, James R., to Briggs & Stratton Corporation. Combination muffler and catalytic converter. 5,338,903, Cl. 181-231.000.

Winfree, William P.: *See—*
St. Clair, Anne K.; St. Clair, Terry L.; and Winfree, William P., 5,338,826, Cl. 528-353.000.

Winston, Anthony E.: *See—*
Yam, Benny S.; and Winston, Anthony E., 5,338,323, Cl. 51-307.000.

Winterland, Garry L.: *See—*
Jones, David R.; Winterland, Garry L.; and Cripe, David A., 5,338,041, Cl. 273-260.000.

Winters, Scott L.: *See—*
Koval, Michael J.; Lawton, William W.; Tyler, John G.; and Winters, Scott L., 5,339,413, Cl. 395-650.000.

Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, JD; and Berry, Gaylord, to Cardiopulmonics, Inc. Gas permeable thrombo-resistant coatings and methods of manufacture. 5,338,770, Cl. 523-112.000.

Winters, Warren J.: *See—*
Warren, Tommy M.; and Winters, Warren J., 5,337,829, Cl. 175-62.000.

Winzen, Peter S.: *See—*
Briggs, Edward R.; Daebelliehn, Gary H.; Winzen, Peter S.; and Bellgraph, Donald R., 5,338,993, Cl. 310-82.000.

Wirges, Ralf: *See—*
Korte, Hermann-Josef; Miletic, Anton; Neutzler, Hans U.; Schoengen, Anton; Schroeder, Johann H.; and Wirges, Ralf, 5,338,882, Cl. 562-483.000.

Wirth, William F.; and Schmidt, Jonathan R., to General Electric Company. X-ray tube rotor controller using the main high voltage inverters for acceleration. 5,339,348, Cl. 378-93.000.

Wirtz, Louis H.: *See—*
Schneider, Mark S.; Acocella, John; Herron, Lester W.; Kordus, Mark R.; and Wirtz, Louis H., 5,338,900, Cl. 174-250.000.

Wiseman, Raymond, to IDAB Incorporated. Signature stacker. 5,338,149, Cl. 414-792.700.

Wiseman, Russell B. TV snack table. 5,337,682, Cl. 108-94.000.

Wisherd, David S.; and Bartlow, Howard D., to Spectrian, Inc. RF power transistor package. 5,338,974, Cl. 257-691.000.

Wisner, Craig A.: *See—*
Liegel, Reinald D.; Ballard, James; Graham, James C.; Wisner, Craig A.; and Russell, Jeffrey V., 5,338,015, Cl. 269-71.000.

Wisniewski, Randy: *See—*
Krauska, Bernard J.; Wisniewski, Randy; and Peterson, Warren J., 5,337,428, Cl. 5-611.000.

Witco Corporation: *See—*
Olson, William D.; Muir, Ronald J.; and Eliades, Theo I., 5,338,467, Cl. 252-33.400.

Witek, Edward T.: *See—*
Hoffman, John P.; Nestler, Alvin M.; Witek, Edward T.; and Idstein, Donald J., 5,337,470, Cl. 29-426.500.

Wittmann, Heinz: *See—*
Freisinger, Henry; and Wittmann, Heinz, 5,338,052, Cl. 280-612.000.

Wobbe, Hans: *See—*
Boden, Hellmut; Uhland, Eberhard; and Wobbe, Hans, 5,338,112, Cl. 366-75.000.

Woehler, Gary B., to Hali-Brite, Inc. Airport beacon. 5,339,224, Cl. 362-35.000.

Woelders, Johan A.: *See—*
Hamelers, Bertus V. M.; and Woelders, Johan A., 5,337,898, Cl. 209-10.000.

Wohlberg, Alfred W.: *See—*
Shekhawat, Sampat; Eckenfelder, Robert C.; Tumpey, John J.; Wohlberg, Alfred W.; and Gandikota, Kapal, 5,339,235, Cl. 363-43.000.

Wohlhutter, Michael D.: *See—*
Swilley, Wilson H.; and Wohlhutter, Michael D., 5,338,250, Cl. 452-136.000.

Woith, Blake F.; Crumly, William R.; and Linder, Jacques F., to Hughes Aircraft Company. Rigid-flex circuits with raised features as IC test probes. 5,339,027, Cl. 324-754.000.

Wolcovitch, Brian; and Fumagalli, Frank. Display system. 5,337,903, Cl. 211-13.000.

Wolf, Andreas T. F.: *See—*
O'Neil, Virginia K.; and Wolf, Andreas T. F., 5,338,574, Cl. 427-387.000.

Wolf, Walter: *See—*
Damsohn, Herbert; and Wolf, Walter, 5,338,253, Cl. 454-158.000.

Wolfe, Jesse D.: *See—*
Belkind, Abraham I.; Wamboldt, Leonard; and Wolfe, Jesse D., 5,338,422, Cl. 204-192.120.

Wolfenbarger, James K.: *See—*
Jung, Dick Y.; Wolfenbarger, James K.; Brooker, Donald D.; Robin, Allen M.; and Kassman, Jerrold S., 5,338,489, Cl. 252-373.000.

Wong, Hilda C. Modular brush for user-selected hair streaking. 5,337,765, Cl. 132-120.000.

Wong, Yuen P.: *See—*
Lee, Shiuan E.; Wong, Yuen P.; and Brunker, David L., 5,338,215, Cl. 439-188.000.

Wood, Michael J. Hand held pneumatic powered ball thrower. 5,337,726, Cl. 124-61.000.

Woodard, Daniel L.: *See—*
Quante, J. Michael; Hoke, Randal A.; Mize, Patrick D.; Woodard, Daniel L.; and Millner, O. Elmo, deceased, 5,338,843, Cl. 540-222.000.

Woods, Harlan L.; Lewis, Richard C.; Nagy, Peter; and Kraus, Stephen A. Composite preform and method of manufacturing fiber reinforced composite. 5,337,940, Cl. 228-190.000.

Woods, Peter T.: *See—*
Partridge, Roger H.; Bradsell, Robert H.; and Woods, Peter T., 5,339,155, Cl. 356-419.000.

Woods, Randy J.; and Isley, Reggald E., to Risley Fluidic Power Ltd. Four-way levelling mechanism for off-road vehicle. 5,337,847, Cl. 180-9.520.

Woodward, Ian D.: *See—*
Lane, Charles A.; Woodward, Ian D.; and Tyrrell, Derek L., 5,337,775, Cl. 137-68.100.

Workinger, David M.; and Fraser, Robert D., to Motorola, Inc. Radio frequency absorbing shield and method. 5,338,617, Cl. 428-551.000.

Woulfe, Steven R.; and Rajagopalan, Raghavan, to Mallinckrodt Medical, Inc. Hexadentate ligands useful in radiographic imaging agents. 5,338,864, Cl. 549-207.000.

Wray, John C. R.: *See—*
Karger, Paul A.; Mason, Andrew H.; Wray, John C. R.; Robinson, Paul T.; Priborsky, Anthony L.; Kahn, Clifford E.; and Leonard, Timothy E., 5,339,449, Cl. 395-700.000.

Wrba, Peter: *See—*
Hildebrand, Peter; Eberl, Gunter; Neumaier, Josef; and Wrba, Peter, 5,338,915, Cl. 219-121.690.

Wright, Austin J., Jr.; and Pecukonis, Joseph P., to Amprobe Instrument. Fuse holder. 5,338,228, Cl. 439-621.000.

Wright, Gregory P.: *See—*
Stiles, Lorren, Jr.; Lappos, Nicholas D.; and Wright, Gregory P., 5,339,244, Cl. 364-424.060.

Wright, Stephen E. Process for producing a vaccine for a pathogenic RNA virus and product thereof. 5,338,674, Cl. 435-172.300.

Wright, Ward F.: *See—*
Serafini, Tito T.; Cheng, Paul G.; Ueda, Kenneth K.; and Wright, Ward F., 5,338,827, Cl. 528-353.000.

Wroblewski, David A.; Hill, William C.; and McCandless, Timothy P., to Microelectronics And Computer Technology Corporation. Computer display unit with attribute enhanced scroll bar. 5,339,391, Cl. 395-157.000.

Wu, Chi-San; Curry, James F.; and Cullen, James P., to ISP Investments Inc. Process for making narrow molecular weight distribution polyvinylpyrrolidone K-90 polymers. 5,338,814, Cl. 526-210.000.

Wu, Chuang-Jy; and Lavelle, Christopher L. B., to DACIM Laboratory Inc. Dental modeling simulator. 5,338,198, Cl. 433-213.000.

Wu, Louis L.: *See—*
Kuo, Han C.; Chi, Ignacio; Lin, LiFun; and Wu, Louis L., 5,339,024, Cl. 324-435.000.

Wu, Shin-Tson; Margerum, J. David; Meng, Hsiang-Hui B.; and Dalton, Larry R., to Hughes Aircraft Company; and University of Southern California (USC). Asymmetrical nonpolar diphenyl-diacetylene liquid crystals eutectic mixtures. 5,338,481, Cl. 252-299.010.

Wu, Yitah R.: *See—*
Murray, Allan D.; Tisack, Michael D.; and Wu, Yitah R., 5,338,497, Cl. 264-25.000.

Wuest, Hans-Heiner; Janssen, Bernd; Murray, William V.; Wachter, Michael P.; and Bell, Stanley, to BASF Aktiengesellschaft. Diarylsubstituted heterocyclic compounds, their preparation and drigs and cosmetics obtained therefrom. 5,338,749, Cl. 514-364.000.

Wullink-Schelvis, Annetta M.: *See—*
Bradford, Arleen M.; Van Leeuwen, Petrus W. N. M.; and Wullink-Schelvis, Annetta M., 5,338,825, Cl. 528-392.000.

Wyatt, Michael A., to Honeywell Inc. Serrodyne phase modulator having ramp generated by combining two oscillator signals. 5,339,055, Cl. 332-144.000.

Wykes, Katharine A.: *See—*
Perry, Michael R.; and Wykes, Katharine A., 5,337,776, Cl. 137-68.100.

Wynn's Climate Systems, Inc.: *See—*
Ptacek, Fred L.; Outlaw, George R.; and Smith, Charles R., 5,337,578, Cl. 62-195.000.

Wysocki, Joseph A.; Vince, Michael R.; McCahon, Stephen W.; and Kenna, John T., to Hughes Aircraft Company. Optical fiber laser fusion splicer. 5,339,380, Cl. 385-136.000.

X-Flow B.V.: *See—*
Koenhen, Dirk M.; and Tinnemans, Aloysius H. A., 5,338,455, Cl. 210-654.000.

Xavier, Lyndon C.: *See—*
DeCamp, Ann; Dolling, Ulf H.; Li, Yulan; Rieger, Dale L.; Yasuda, Nobuyoshi; and Xavier, Lyndon C., 5,338,875, Cl. 556-402.000.

Xeno, Millan Y. Portable X-ray unit. 5,339,349, Cl. 378-101.000.

Xerox Corporation: *See—*
Carlotta, Michael, 5,339,102, Cl. 347-32.000.
Edmunds, Cyril G.; and Lioy, Gerald T., 5,338,893, Cl. 118-647.000.
Evanitsky, Eugene S.; Rauscher, Tomlinson G.; Filion, Joseph; Sundquist, Douglas; Warddrip, Riley; and Auman, Daniel, 5,339,168, Cl. 358-402.000.
Fan, Zhigang, 5,339,170, Cl. 358-456.000.
Fullerton, Jack K.; Beck, Richard A.; Clark, Fred B.; Reid, Gordon B.; and Nau, Keith A., 5,339,139, Cl. 355-215.000.
Hays, Dan A., 5,339,142, Cl. 355-259.000.
Hubble, Fred F., III; Martin, James P.; and Folkins, Jeffrey J., 5,339,150, Cl. 355-326.00R.
Kunzmann, Brendan W., 5,339,143, Cl. 355-259.000.
Lindblad, Nero R.; Lundy, Douglas A.; and Jugle, Kip L., 5,339,149, Cl. 355-297.000.
Mammino, Joseph; Abramsohn, Dennis; Heeks, George J.; Henry, Arnold W.; Fratangelo, Louis D.; Pan, David H.; and Badesha, Santokh S., 5,338,587, Cl. 428-35.700.
Pai, Damodar M.; DeFeo, Paul J.; and Carmichael, Kathleen M., 5,338,635, Cl. 430-59.000.
Rawson, Eric G.; Hadimioglu, Babur B.; and Khuri-Yakub, Butrus T., 5,339,101, Cl. 347-46.000.
Robertson, George G.; Mackinlay, Jock; and Card, Stuart K., 5,339,390, Cl. 395-157.000.
Robinson, David C., 5,339,172, Cl. 358-462.000.
Scheuer, Mark A.; MacDonald, Daniel W.; Palumbo, Kenneth S.; Paolini, Anthony L.; Berman, Robin E.; and Hurwitch, Carl B., 5,339,135, Cl. 355-208.000.
Snelling, Christopher; and Mashtare, Dale R., 5,339,147, Cl. 355-285.000.
Stemmle, Denis J., 5,338,017, Cl. 270-53.000.

Xetron Corporation: *See—*
Dickerson, Roger W., 5,339,456, Cl. 455-303.000.

Xu, Shizhen: *See—*
Liu, Goudong; Zhang, Chuanli; Ma, Hongliang; Xu, Shizhen; Li, Jingbei; Li, Xuecai; and Ding, Lidong, 5,338,376, Cl. 148-304.000.

Yablans, Gerald. Sampler cartridge display case and unit sampler. 5,337,897, Cl. 206-581.000.

Yachigo, Shinichi: *See—*
Inoue, Kikumitsu; Sasaki, Nanji; and Yachigo, Shinichi, 5,338,869, Cl. 549-335.000.

Yad-Shalom, Itai: *See—*
Smilansky, Zeev; Melman, Haim Z.; Bresler, Yoav; Litvak, Matty J.; Kreitman, Haim; and Yad-Shalom, Itai, 5,339,176, Cl. 358-504.000.

Yagi, Sakai: *See—*
Saitoh, Hitoshi; Endo, Takayoshi; Yagi, Sakai; Abe, Kimihiro; and Koumatsu, Seiji, 5,338,217, Cl. 439-246.000.

Yagi, Toshiaki: *See—*
Nakai, Mitsuhisa; Maeda, Shiro; and Yagi, Toshiaki, 5,339,013, Cl. 318-254.000.

Yagita, Hideki: *See—*
Nakatsuka, Tadayoshi; and Yagita, Hideki, 5,339,458, Cl. 455-333.000.

Yalowitz, Jeffrey S.; Morrison, James M.; and Roberts, Hilary E., to SRS Technologies. Combined UV/IR flame detection system. 5,339,070, Cl. 340-578.000.

Yam, Benny S.; and Winston, Anthony E., to Church & Dwight Co., Inc. Blast media containing MGO. 5,338,323, Cl. 51-307.000.

Yamada, Akio: *See—*
Nishino, Hisayasu; Yamada, Akio; Oae, Yoshihisa; and Yasuda, Hiroshi, 5,338,939, Cl. 250-396.0ML.

Yamada, Akira: *See—*
Kasahara, Akihiro; Yamada, Akira; Yoshizawa, Takashi; Wada, Katsutoshi; and Yamasaki, Hideo, 5,337,865, Cl. 188-378.000.

Yamada, Hiroshi: *See—*
Kawamura, Shotaro; and Yamada, Hiroshi, 5,339,059, Cl. 335-78.000.

Yamada, Hisayoshi: *See—*
Yanagisawa, Tateo; Yamada, Hisayoshi; Sakamoto, Katsumi; Inagawa, Seiki; Umetsu, Yukihide; Uchida, Takeshi; Nakahara, Hideyo; and Fukumoto, Yoshiharu, 5,338,503, Cl. 264-516.000.

Yamada, Kunihiko: *See—*
Homma, Hideo; Kaneda, Kitahiro; and Yamada, Kunihiko, 5,339,163, Cl. 348-229.000.

Yamada, Noriko: *See—*
Yamamoto, Yukihiro; and Yamada, Noriko, 5,339,190, Cl. 359-332.000.

Yamada, Shuji: *See—*
Tsuji, Koji; Takegawa, Yoshinbou; Inada, Hayato; and Yamada, Shuji, 5,338,505, Cl. 419-10.000.

Yamada, Takeyoshi: *See—*
Umetani, Hiroyuki; and Yamada, Takeyoshi, 5,338,800, Cl. 525-126.000.

Yamaguchi, Takumi: *See—*
Takeuchi, Hiromasa; Iwatani, Toshihiko; and Yamaguchi, Takumi, 5,338,036, Cl. 273-187.200.

Yamaguchi, Tetsuhiko: *See—*
Aizawa, Toshiyuki; Nakamura, Hitoshi; and Yamaguchi, Tetsuhiko, 5,338,815, Cl. 526-307.600.

Yamaguchi, Tetsuo: *See—*
Kojima, Fumitoshi; and Yamaguchi, Tetsuo, 5,338,780, Cl. 523-453.000.

Yamaha: *See—*
Ohsumi, Hisayoshi; Matsumoto, Takeshi; Kato, Shinji; Ishizuka, Mitsuo; and Kaneko, Shoichi, 5,338,592, Cl. 428-106.000.

Yamaha Corporation: *See—*
Masubuchi, Takamichi; and Kouchi, Katutoshi, 5,338,891, Cl. 84-600.000.
Sekine, Satoshi; and Fujimori, Junichi, 5,338,892, Cl. 84-662.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Kurihara, Noriyuki; Iida, Yoshikatsu; and Matsumoto, Hiromatsu, 5,337,722, Cl. 123-527.000.

Yamamoto Chemicals, Inc.: *See—*
Kumagae, Yojiro; Fujita, Shigeo; Matsumoto, Mansuke; Wada, Sayuri; and Hashimoto, Shuuichi, 5,338,866, Cl. 549-226.000.

Yamamoto, Keisuke: *See—*
Kawasaki, Takehiko; Shinjo, Katsuhiko; Yamamoto, Keisuke; and Kaneko, Norio, 5,339,457, Cl. 455-333.000.

Yamamoto, Kyohei, to Mitsubishi Denki Kabushiki Kaisha. Armature core. 5,338,996, Cl. 310-217.000.

Yamamoto, Kyoichi: *See—*
Hanaki, Yoshimaro; and Yamamoto, Kyoichi, 5,339,015, Cl. 318-600.000.

Yamamoto, Susumu; Murai, Teruyuki; Kawabe, Nozomu; Awazu, Tomoyuki; Yazu, Shuji; and Jodai, Tetsuji, to Sumitomo Electric Industries, Ltd. Process for manufacturing a superconducting composite. 5,338,721, Cl. 505-230.000.

Yamamoto, Tadashi: *See—*
Inoue, Michio; Yamamoto, Tadashi; and Ogawa, Hiroshi, 5,338,059, Cl. 280-728.00B.

Yamamoto, Tetsu: *See—*
Yumura, Takashi; Funai, Kiyoshi; and Yamamoto, Tetsu, 5,339,208, Cl. 360-104.000.

Yamamoto, Toshimasa: *See—*
Imai, Keisuke; Yamamoto, Toshimasa; Numazawa, Akio; Iwata, Hitoshi; and Watanabe, Yasutaka, 5,337,970, Cl. 242-374.000.

Yamamoto, Yoshimi: *See—*
Tokuda, Shoji; Matsunaga, Takao; Shinmoto, Kazuhiro; Terada, Koichi; and Yamamoto, Yoshimi, 5,337,555, Cl. 60-276.000.

Yamamoto, Yukihiro; and Yamada, Noriko, to Nippon Steel Corporation. Optical waveguide second harmonic generating element and method of making the same. 5,339,190, Cl. 359-332.000.

Yamamura, Norihisa; and Okada, Kotaro, to Motorola, Inc. Voltage converting circuit with low consumption driver. 5,338,988, Cl. 307-578.000.

Yamane, Yuji; Kaku, Toshimitsu; Fukuda, Yasushi; Komatsu, Hitoshi; Matsumura, Nobuhiro; Okamine, Shigenori; Matsumoto, Kiyoshi; Isono, Soichi; and Kizaki, Kunihiko, to Hitachi, Ltd. Rotary type storage apparatus and control method thereof. 5,339,319, Cl. 371-10.200.

Yamanishi, Toru: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Haibara, Tadashi; and Matsumoto, Michito, 5,339,376, Cl. 385-71.000.

Yamarik, George J.: *See—*
Green, Dennis J.; Szela, Edward R.; Yamarik, George J.; and Martin, David R., 5,337,805, Cl. 164-369.000.

Yamasaki, Hideo: *See—*
Kasahara, Akihiro; Yamada, Akira; Yoshizawa, Takashi; Wada, Katsutoshi; and Yamasaki, Hideo, 5,337,865, Cl. 188-378.000.

Yamasaki, Takuma; and Saito, Yuuichi, to Kabushiki Kaisha Toshiba. Power supply and method for use in a computer system to confirm a save operation of the computer system and to stop a supply of power to the computer system after confirmation. 5,339,446, Cl. 395-750.000.

Yamashita, Michiya: *See—*
Ikegawa, Akihito; Aritomo, Kouichi; Tsukamoto, Kazuki; and Yamashita, Michiya, 5,338,895, Cl. 118-661.000.

Yamashita, Takahisa, to Texas Instruments Incorporated. Fuel supply control device for internal combustion engines. 5,337,723, Cl. 123-549.000.

Yamashita, Youko: *See—*
Kanazawa, Daisuke; Sasaki, Mitsuru; Urano, Toshiyuki; Yamashita, Youko; and Matsubara, Shinichi, 5,338,643, Cl. 430-190.000.

Yamauchi, Tatsumi: *See—*
Tanaka, Shigeya; Iwamura, Masahiro; Yamauchi, Tatsumi; Nojiri, Tatsuo; Tada, Hisashi; and Nakano, Tetsuo, 5,339,448, Cl. 395-775.000.

Yamauchi, Yoshihiko: *See—*
Sasaki, Masahiro; Ishii, Satoshi; Yamauchi, Yoshihiko; Kitamura, Katsushi; Toyoda, Shuji; and Ahiko, Kenkichi, 5,338,682, Cl. 435-253.400.

Yamauchi, Yoshimitsu, to Sharp Kabushiki Kaisha. Non-volatile memory. 5,338,952, Cl. 257-315.000.

Yamazaki, Shunpei; and Hamatani, Toshiji, to Semiconductor Energy Laboratory Co., Ltd. Paperless portable book. 5,339,091, Cl. 345-104.000.

Yamazaki, Yuichi: *See—*
Mori, Hideyasu; Yamazaki, Yuichi; Mano, Hiroshi; Ikehata, Norimitsu; Aoki, Takashi; and Sano, Yoshikazu, 5,339,355, Cl. 379-94.000.

Yan, Tsoung Y., to Mobil Oil Corporation. Wastewater treatment by catalytic oxidation. 5,338,463, Cl. 210-763.000.

Yanagida, Toshiharu, to Sony Corporation. Dry etching method. 5,338,399, Cl. 156-662.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Yanagisawa, Tateo; Yamada, Hisayoshi; Sakamoto, Katsumi; Inagawa, Seiki; Umetsu, Yukihide; Uchida, Takeshi; Nakahara, Hideyo; and Fukumoto, Yoshiharu, to Mitsubishi Plastics Industries Limited. Method of making a bottle with a handle. 5,338,503, Cl. 264-516.000.

Yang, Li H. Body building apparatus with a neck massager. 5,338,277, Cl. 482-130.000.

Yang, Roger. Lamp assembly. 5,339,233, Cl. 362-402.000.

Yang, Tai-Her. Device for application of mechanical and magnetic forces to a fixture. 5,338,045, Cl. 279-128.000.

Yang, Tai-Her. Battery charge monitor. 5,339,017, Cl. 320-13.000.

Yano, Osamu: *See—*
Fukazawa, Nobuyuki; Iizuka, Hajime; Yano, Osamu; and Miyama, Yukio, 5,338,745, Cl. 514-330.000.

Yano, Sadahide, to Yugen Kaisha Yano Engineering. Extrusion die and an extrusion method using same. 5,337,593, Cl. 72-269.000.

Yaqi, Shigeo: *See—*
Mitsushima, Kenji; Takimoto, Akio; Yaqi, Shigeo; and Sonoyama, Takayasu, 5,338,676, Cl. 435-197.000.

Yasuda, Hiroshi: *See—*
Nishino, Hisayasu; Yamada, Akio; Oae, Yoshihisa; and Yasuda, Hiroshi, 5,338,939, Cl. 250-396.0ML.

Yasuda, Nobuyoshi: *See—*
DeCamp, Ann; Dolling, Ulf H.; Li, Yulan; Rieger, Dale L.; Yasuda, Nobuyoshi; and Xavier, Lyndon C., 5,338,875, Cl. 556-402.000.

Yasui, Toshihiko, to Shimano Inc. Fishing rod stock and method of manufacturing same. 5,338,604, Cl. 428-36.300.

Yates, Robert, to RAM Optical Instrumentation, Inc. Power zoom optical unit with encoder. 5,339,194, Cl. 359-696.000.

Yatomi, Takeshi: *See—*
Iwasaki, Takeshi; Yatomi, Takeshi; Naka, Shigeaki; and Suzuki, Toshio, 5,338,912, Cl. 219-69.120.

Yazaki Corporation: *See—*
Endo, Mitsuo; and Asakura, Nobuyuki, 5,338,233, Cl. 439-877.000.
Kodama, Shinji; and Igarashi, Tsutomu, 5,338,211, Cl. 439-135.000.
Saitoh, Hitoshi; Endo, Takayoshi; Yagi, Sakai; Abe, Kimihiro; and Koumatsu, Seiji, 5,338,217, Cl. 439-246.000.

Yazawa, Minobu: *See—*
Kimura, Masatoshi; and Yazawa, Minobu, 5,339,344, Cl. 377-39.000.

Yazu, Shuji: *See—*
Yamamoto, Susumu; Murai, Teruyuki; Kawabe, Nozomu; Awazu, Tomoyuki; Yazu, Shuji; and Jodai, Tetsuji, 5,338,721, Cl. 505-230.000.

Yeda Research and Development Co. Ltd.: *See—*
Shechter, Yoram; Shanzer, Abraham; and Libman, Jacqueline, 5,338,759, Cl. 514-492.000.

Yee, Ying K.: *See—*
Bernstein, Peter R.; Brown, Frederick J.; Matassa, Victor G.; and Yee, Ying K., 5,338,734, Cl. 514-224.200.

Yen, Jeffrey H., to Elf Atochem North America, Inc. Sulfide precipitation of heavy metals from aqueous solutions. 5,338,460, Cl. 210-724.000.

Yen, Robert C.: *See—*
Higgins-Luthman, Michael J.; Kidd, Robert C.; Klein, Robert D.; Yen, Robert C.; and Zalinski, Charles M., 5,339,368, Cl. 382-56.000.

Yen, Wei S.: *See—*
Panzer, Hans P.; Giovanni, Lino; Cohen, Martin L.; and Yen, Wei S., 5,338,492, Cl. 252-582.000.

Yen, Yung-Tsai. Optical pellicle with controlled transmission peaking. 5,339,197, Cl. 359-359.000.

Yeon, Seung H.: *See—*
Jung, Il N.; Yeon, Seung H.; Lee, Bong W.; and Yoo, Bok R., 5,338,876, Cl. 556-431.000.

Yevich, Joseph P.: *See—*
Matson, Ronald J.; and Yevich, Joseph P., 5,338,738, Cl. 514-256.000.

Yissum, Research Development Company of the Hebrew University of Jerusalem: *See—*
Breuer, Eli; and Golomb, Gershon, 5,338,731, Cl. 514-108.000.

Yocum, Gene H., to Cedarapids, Inc. Radiant heat rotary volatilizer. 5,338,188, Cl. 432-114.000.

Yokogawa Electric Corporation: *See—*
Tairaku, Hirokazu; Inoue, Kenichi; Ito, Chiaki; Takimoto, Kenji; and Tanido, Shigetoshi, 5,339,436, Cl. 395-700.000.

Yokota, Hiroshi: *See—*
Ohga, Yuichi; Danzuka, Toshio; Saito, Masahide; Amemiya, Kouji; and Yokota, Hiroshi, 5,338,327, Cl. 65-414.000.
Tanaka, Tsutomu; and Yokota, Hiroshi, 5,339,314, Cl. 370-13.000.
Tanaka, Tsutomu; Yokota, Hiroshi; and Kubota, Kouji, 5,339,317, Cl. 370-85.150.

Yokota, Keishi, to Takata Corporation. Module cover of air bag system. 5,338,906, Cl. 200-61.540.

Yokoyama, Yutaka; Tsuji, Tatsunori; Ue, Makoto; and Sato, Tomohiro, to Nippon Chemi-Con Corporation; and Mitsubishi Petrochemical Co., Ltd. Electrolytic solution for electrolytic capacitor. 5,338,472, Cl. 252-62.200.

Yoneda, Tadahiro: *See—*
Uchino, Hiroyoshi; and Yoneda, Tadahiro, 5,338,353, Cl. 106-426.000.

Yoneyama, Masaru: *See—*
Aga, Hajime; Yoneyama, Masaru; and Sakai, Shuzo, 5,338,420, Cl. 204-182.600.

Yonezawa, Takahiro: *See—*
Fujiwara, Muneyoshi; Hirai, Wataru; Yonezawa, Takahiro; and Sakurai, Kunio, 5,339,248, Cl. 364-468.000.

Yoo, Bok R.: *See—*
Jung, Il N.; Yeon, Seung H.; Lee, Bong W.; and Yoo, Bok R., 5,338,876, Cl. 556-431.000.

Yoon, Euisik; Allison, Robert W., Jr.; and Kovacs, Ronald P., to National Semiconductor Corporation. Photolithography control system and method using latent image measurements. 5,338,630, Cl. 430-30.000.

Yoon, Hyung-Jin: *See—*
Kim, Ki-Hong; Lee, Chang-Seok; Park, Hyung-Moo; Yoon, Hyung-Jin; and Park, Sin-Chong, 5,338,981, Cl. 307-463.000.

Yoon, Suk K.: *See—*
Kishi, Yoshito; Fang, Francis G.; Forsyth, Craig J.; Scola, Paul M.; and Yoon, Suk K., 5,338,865, Cl. 549-214.000.

Yorita, Hiroshi; Igashira, Toshihiko; Moritsugu, Michiyasu; and Chujo, Yoshiki, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Oxygen concentration detecting apparatus. 5,338,431, Cl. 204-424.000.

Yoshida, Atsuya, to Kabushiki Kaisha Toshiba. X-ray imaging tube having a light-absorbing property. 5,338,926, Cl. 250-214.0VT.

Yoshida Kogyo K.K.: *See—*
Fukutomi, Masaaki; and Watanabe, Hirokazu, 5,337,458, Cl. 24-115.00H.

Yoshida, Kohichi: *See—*
Tomita, Hiroyuki; and Yoshida, Kohichi, 5,339,132, Cl. 355-200.000.

Yoshida, Takeshi: *See—*
Nagao, Tsuyoshi; Kakuta, Masayuki; Kida, Yasuhiko; Takeda, Yoshiyuki; and Yoshida, Takeshi, 5,338,018, Cl. 271-3.000.

Yoshigai, Akira, to Nec Corporation. Carrier for film carrier type semiconductor device. 5,338,973, Cl. 257-668.000.

Yoshihara, Ikuo: *See—*
Muramatsu, Akira; Yoshihara, Ikuo; Nakao, Kazuo; Hayashi, Takehisa; Tanaka, Teruo; and Nagashima, Shigeo, 5,339,396, Cl. 395-325.000.

Yoshihide Hagiwara: *See—*
Hagiwara, Yoshihide; and Hagiwara, Hideaki, 5,338,838, Cl. 536-8.000.

Yoshii Shigeo: *See—*
Tsujimura, Ayumu; Ohkawa, Kazuhiro; Yoshii Shigeo; and Mitsuyu, Tsuneo, 5,339,326, Cl. 372-49.000.

Yoshikawa, Masaaki; and Fukudome, Shin-ichi, to Nisshin Flour Milling Co., Ltd. Opioid peptides derived from wheat proteins. 5,338,668, Cl. 435-68.100.

Yoshimaru, Tomohisa, to Kabushiki Kaisha Toshiba. Apparatus for reproducing information from optical disk on which information in recorded by mark length recording. 5,339,303, Cl. 369-59.000.

Yoshimura, Kazuo, to Takata Corporation. Acceleration sensor. 5,338,905, Cl. 200-61.45M.

Yoshimura, Motomu: *See—*
Nishimura, Tetsuya; Yoshimura, Motomu; and Maeda, Mitsuo, 5,339,201, Cl. 359-891.000.

Yoshinaga, Kazuo; Oikawa, Katsuya; and Ohnishi, Toshikazu, to Canon Kabushiki Kaisha. Detecting interferential diffraction of a reflected beam from a polymer liquid crystal recording medium. 5,339,306, Cl. 369-275.100.

Yoshioka, Takao; Nishi, Takahide; Kanai, Tsutomu; Aizawa, Yuichi; Wada, Kunio; Fujita, Takashi; and Horikoshi, Hiroyoshi, to Sankyo Company, Limited. Thiazolidine compounds containing a quinone group, their preparation and their therapeutic uses. 5,338,855, Cl. 514-369.000.

Yoshizawa, Takashi: *See—*
Kasahara, Akihiro; Yamada, Akira; Yoshizawa, Takashi; Wada, Katsutoshi; and Yamasaki, Hideo, 5,337,865, Cl. 188-378.000.

Young, Bobbie L. Hair rinsing apparatus. 5,337,423, Cl. 4-518.000.

Young, Gary B.; Hanel, Albert L.; and Veselka, Kenneth R., to Tymco, Inc. Surface sweeping machine with over-the-cab hopper dumping. 5,337,444, Cl. 15-352.000.

Young, Howard L.; and Lowndes, Richard H. "In-vivo" oxygen tension measurement. 5,337,746, Cl. 128-635.000.

Young, Jack D.: *See—*
Gross, Michael G.; and Young, Jack D., 5,338,087, Cl. 296-146.150.

Young, Nathan W.; and Shafer, Russell P., Jr., to Prince Corporation. Removable floor-mounted console. 5,338,081, Cl. 296-37.140.

Young, Russell D. Low resonant frequency vibration isolation system. 5,337,991, Cl. 245-636.000.

Youngquist, Robert J.: *See—*
Heinz, John E.; Hamerly, Michael E.; Molstad, Richard W.; Schwarz, Theodore A.; and Youngquist, Robert J., 5,339,202, Cl. 360-46.000.

Yuen, Desmond, to Intel Corporation. Method and apparatus for saving a system image onto permanent storage that is operating system independently. 5,339,437, Cl. 395-700.000.

Yuen, Kai-Chung L.; and Arif, Basil, to Canada, Her Majesty the Queen in right of Canada, as represented by National Research Council Canada and Forestry. Vertebrate poxvoris expression vector under the control of entomopoxvirus spheroidin gene promoter. 5,338,679, Cl. 435-235.100.

Yugen Kaisha Yano Engineering: *See—*
Yano, Sadahide, 5,337,593, Cl. 72-269.000.

Yukawa, Shinya: *See—*
Tagashira, Fumiaki; Ota, Shigeo; Yukawa, Shinya; and Ooyama, Shingo, 5,338,919, Cl. 219-543.000.

Yumura, Takashi; Funai, Kiyoshi; and Yamamoto, Tetsu, to Mitsubishi Denki Kabushiki Kaisha. Assembly for supporting a magnetic head to float relative to a magnetic disk. 5,339,208, Cl. 360-104.000.

Yusa, Hiroshi: *See—*
Tsuchiya, Kiyoko; Tomiyama, Koichi; Kato, Masayoshi; Kukimoto, Tsutomu; and Yusa, Hiroshi, 5,338,638, Cl. 430-106.000.

Yutori, Toshiaki; Katsumata, Masaaki; Kato, Takehiko; and Hosogi, Yasuhiro, to Kabushiki Kaisha Kobe Seiko Sho. High strength low carbon steel wire rods and method of producing them. 5,338,380, Cl. 148-532.000.

Yuzaki, Yoshinori: *See—*
Miyamoto, Masaaki; Yuzaki, Yoshinori; and Fujihara, Kunihisa, 5,337,441, Cl. 15-318.100.

Yves, Lapierre; Josef, Dieter; Adam, Jean; and Greber-Widmer, Susanne, to Stiftung fur diagnostische Forschung. Method and card for detecting antigens and/or antibodies. 5,338,689, Cl. 436-518.000.

Zaccai, Gianfranco; Rousmaniere, Arthur S.; Dearborn, Timothy C.; Noble, Lynn; and Misage, Thomas J., to Herman Miller, Inc. Rail system. 5,337,525, Cl. 52-35.000.

Zaffina, Eugene J. Tackle box and assembly. 5,337,892, Cl. 206-315.110.

Zagata, Blair J.: *See—*
Harrison, Richard P.; Scarpati, Michael; Narayan, Thirumurti; and Zagata, Blair J., 5,338,820, Cl. 528-67.000.

Zahedi, Ahmad P.: *See—*
Jamieson, James R.; Zahedi, Ahmad P.; and Stegemiller, Heidi J., 5,338,928, Cl. 250-227.210.

Zahn, Erich M.: *See—*
Eltner, Bruno; and Zahn, Erich M., 5,338,020, Cl. 271-158.000.

Zahn, Irwin, to Autosplice, Inc. Continuous molded electronic component assembly. 5,337,468, Cl. 29-842.000.

Zahnradfabrik Friedrichshafen AG: *See—*
Haupt, Josef, 5,338,010, Cl. 267-64.160.

Zakai, Uzi: *See—*
Zehngut, Ilan; and Zakai, Uzi, 5,339,333, Cl. 375-88.000.

Zalinski, Charles M.: *See—*
Higgins-Luthman, Michael J.; Kidd, Robert C.; Klein, Robert D.; Yen, Robert C.; and Zalinski, Charles M., 5,339,368, Cl. 382-56.000.

Zawodny, rthur: *See—*
Fridman, Vladimir; and Zawodny, rthur, 5,339,125, Cl. 354-106.000.

Zehngut, Ilan; and Zakai, Uzi, to Motorola, Inc. FSK demodulator using signal transitions. 5,339,333, Cl. 375-88.000.

Zeman, Robert E.; and Hilbert, Thomas K., to Eastman Kodak Company. Method and apparatus for control of toner charge. 5,339,140, Cl. 355-246.000.

Zeneca Inc.: *See—*
Bernstein, Peter R.; Brown, Frederick J.; Matassa, Victor G.; and Yee, Ying K., 5,338,734, Cl. 514-224.200.

Zeng, Gengsheng L.: *See—*
Gullberg, Grant T.; Morgan, Hugh T.; Tung, Chi-Hua; Zeng, Gengsheng L.; and Christian, Paul E., 5,338,936, Cl. 250-363.040.

Zenisek, Karel: *See—*
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jifi; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,338,831, Cl. 530-334.000.

Zenith Electronics Corporation: *See—*
Hibbard, Robert A.; and Remec, Thomas M., 5,338,629, Cl. 430-23.000.

Zenker, Siegfried: *See—*
Thomsen, Svend E.; Christensen, Thorkild; and Zenker, Siegfried, 5,337,778, Cl. 137-117.000.

Zeotek LRC Corporation: *See—*
Abe, Naoki; Kawahara, Fumio; and Inoue, Noboru, 5,338,421, Cl. 204-186.000.

Zewert, Thomas; and Harrington, Michael G., to California Institute of Technology. Poly(N-Acylalkylenimine) electrophoresis support media. 5,338,428, Cl. 204-299.00R.

Zexel Corporation: *See—*
Takahashi, Satoshi; and Ishikawa, Isao, 5,338,267, Cl. 475-227.000.

Zexel Corporation Diahatsu-Nissan: *See—*
Kao, Wei-Wen, 5,339,246, Cl. 364-457.000.

Zhang, Chuanli: *See—*
Liu, Goudong; Zhang, Chuanli; Ma, Hongliang; Xu, Shizhen; Li, Jingbei; Li, Xuecai; and Ding, Lidong, 5,338,376, Cl. 148-304.000.

Zhang, Yan-Ling: *See—*
Sekura, Ronald D.; Zhang, Yan-Ling; and Shiloach, Joseph, 5,338,670, Cl. 435-71.300.

Zhang, Yunchang; and Cannon, James C., to Puritan-Bennett Corporation. Chemical oxygen generator. 5,338,516, Cl. 422-126.000.

Zhao, Guoquan; Amr, Yehia M.; Bushnell, Peter R.; Drucker, Alan S.; and Nash, Eric J., to Carrier Corporation. Room air conditioner. 5,337,580, Cl. 62-262.000.

Zhen, Yong S.; and Hrdina, Kenneth, to Institute of Gas Technology. Process for preparing submicron/nanosize ceramic powders from precursors incorporated within a polymeric foam. 5,338,334, Cl. 75-362.000.

Zhou, Bing: *See—*
Chuang, Karl T.; and Zhou, Bing, 5,338,531, Cl. 423-584.000.

Zhou, Yan: *See—*
Asghar, Safdar M.; and Zhou, Yan, 5,339,251, Cl. 364-724.060

Ziegler, Peter: *See—*
Wehner, Susanne; Klima, Heinz; Hoenel, Michael; Ziegler, Peter; and Walz, Gerd, 5,338,419, Cl. 204-181.400.

Zilog, Inc.: *See—*
Hindman, Gregory; and Berg, Jack, 5,338,423, Cl. 204-192.120.

Zimmermann, Joseph J.; Lewis, N. Tracey; and Heft, Robert A., to Ibex Technologies, Inc. Heparinase free of an anticoagulant component from *flavobacterium Heparinum*. 5,338,677, Cl. 435-200.000.

Zlotek, Thaddeus F., to Dana Corporation. Sprag retainer with rotational restraint. 5,337,869, Cl. 192-45.100

Zobirei, Bernd: *See—*
Rothen, Johann; Zobirei, Bernd; and Schult, Manfred, 5,338,106, Cl. 303-9.690.

Zoller, Mark J.: *See—*
Bennett, William F.; Keyt, Bruce A.; and Zoller, Mark J., 5,338,546, Cl. 424-94.640.

Ztek Corporation: *See—*
Hsu, Michael S.; and Hoag, Ethan D., 5,338,622, Cl. 429-26.000

Zuech, Romeo A. Cast aluminum alloy and tooling fixture therefrom. 5,338,510, Cl. 420-532.000.

Zuliani, Douglas J.: *See—*
MacMillan, John P.; Zuliani, Douglas J.; and Bray, Martin J., 5,338,712, Cl. 501-94.000.

Zumbragel, Michael; and Bach, Volker, to Passavant-Werke AG Module for a reactor for anaerobic waste water treatment. 5,338,445, Cl. 210-150.000.

Zuzich, Anne H.: *See—*
Blytas, George C.; Holloway, Eugene L.; and Zuzich, Anne H., 5,338,870, Cl. 549-378.000.

3V Inc.: *See—*
Raspanti, Giuseppe, 5,338,539, Cl. 424-59.000.

VOL 1165 ISS 3 AG 16 1994 UMI

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF AUGUST, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Advanced Cardiovascular Systems, Inc.: *See*—
Mar, Craig E.; Diettrich, Lambert J.; and Morrison, David W., Re. 34,695, Cl. 128-772.000.

Diettrich, Lambert J.: *See*—
Mar, Craig E.; Diettrich, Lambert J.; and Morrison, David W., Re. 34,695, Cl. 128-772.000.

Dynamic Engineering, Inc.: *See*—
Weinstein, Leonard M., Re. 34,694, Cl. 73-756.000.

Hara, Kaoru: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, Re. 34,698, Cl. 435-119.000.

Hara, Masayuki: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, Re. 34,698, Cl. 435-119.000.

Kadowaki, Takashi: *See*—
Takada, Shun; Onodera, Kaoru; and Kadowaki, Takashi, Re. 34,697, Cl. 430-549.000.

Kaken Chemical Company, Limited: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, Re. 34,698, Cl. 435-119.000.

Kasahara, Hiroko: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, Re. 34,698, Cl. 435-119.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Takada, Shun; Onodera, Kaoru; and Kadowaki, Takashi, Re. 34,697, Cl. 430-549.000.

Mar, Craig E.; Diettrich, Lambert J.; and Morrison, David W., to Advanced Cardiovascular Systems, Inc. Torsionally stabilized guide wire with outer jacket. Re. 34,695, Cl. 128-772.000.

Mitsubishi Denki Kabushiki: *See*—
Ohdate, Mituo, Re. 34,696, Cl. 257-689.000.

Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, to Kaken Chemical Company, Limited. Method of producing salinomycin antibiotics. Re. 34,698, Cl. 435-119.000.

Morrison, David W.: *See*—
Mar, Craig E.; Diettrich, Lambert J.; and Morrison, David W., Re. 34,695, Cl. 128-772.000.

Nakamura, Yuko: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, Re. 34,698, Cl. 435-119.000.

Ohdate, Mituo, to Mitsubishi Denki Kabushiki. Semiconductor device housing with electrodes in press contact with the opposite sides of chip. Re. 34,696, Cl. 257-689.000.

Onodera, Kaoru: *See*—
Takada, Shun; Onodera, Kaoru; and Kadowaki, Takashi, Re. 34,697, Cl. 430-549.000.

Shibata, Akira: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, Re. 34,698, Cl. 435-119.000.

Takada, Shun; Onodera, Kaoru; and Kadowaki, Takashi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material. Re. 34,697, Cl. 430-549.000.

Weinstein, Leonard M., to Dynamic Engineering, Inc. Automatic transducer selection system for pressure measurement. Re. 34,694, Cl. 73-756.000.

Yahagi, Tateo: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, Re. 34,698, Cl. 435-119.000.

Yoneda, Singo: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, Re. 34,698, Cl. 435-119.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Chang, Stanley, to Cornell Research Foundation, Inc. Method and apparatus for the treatment of complicated retinal detachments. B1 5,037,384, 8-16-94, Cl. 604-28.000.

Cornell Research Foundation, Inc.: *See*—
Chang, Stanley, B1 5,037,384, Cl. 604-28.000.

Leiner, Dennis C., to Monadnock Optics, Inc. Disposable rigid endoscope. B1 4,964,710, 8-16-94, Cl. 359-434.000.

Monadnock Optics, Inc.: *See*—
Leiner, Dennis C., B1 4,964,710, Cl. 359-434.000.

LIST OF DESIGN PATENTEES

Aaker, Steven R.; Frandsen, Jorgen; Korngiebel, Ronald W.; and Volan, Gregory D., to Storage Technology Corporation. Cabinet for robotics library system for handling data storage cartridges for a computer system. 349,695, 8-16-94, Cl. D14-107.000.

Abe, Shinichi: *See*—
Shinohara, Kazunori; and Abe, Shinichi, 349,675, Cl. D12-147.000.

Abfier, Melvin, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Pump spray bottle. 349,642, 8-16-94, Cl. D9-300.000.

Aiwa Co., Ltd.: *See*—
Kawamoto, Tetsuhisa, 349,703, Cl. D14-211.000.

Ajay Leisure Products, Inc.: *See*—
Wimberley, Robert J.; and Choi, Charles Y., 349,796, Cl. D34-15.000.

Akaike, M.; and Usui, H., to Hakuba Photo Industry Co., Ltd. Camera tripod. 349,717, 8-16-94, Cl. D16-244.000.

Algonquin Industries International, Inc.: *See*—
Waddington, Donald R.; and Boulard, Robert J., 349,678, Cl. D12-203.000.
Waddington, Donald R.; and Boulard, Robert J., 349,679, Cl. D12-203.000.

Allen, Margaret; Allen, Paul; and Wilson, T. Kevin. Motorized side rail for hospital beds. 349,622, 8-16-94, Cl. D6-503.000.

Allen, Paul: *See*—
Allen, Margaret; Allen, Paul; and Wilson, T. Kevin, 349,622, Cl. D6-503.000

Altman, Sydney. Faucet spout. 349,755, 8-16-94, Cl. D23-255.000.

Altman, Sydney. Faucet spout. 349,756, 8-16-94, Cl. D23-255.000.

Altman, Sydney. Faucet spout. 349,757, 8-16-94, Cl. D23-255.000.

Anderson, Richard N.: *See*—
Fraser, Donald E.; and Anderson, Richard N., 349,624, Cl. D6-580.000

Aqua-Leisure Industries, Inc.: *See*—
Wolfe, Henry, 349,744, Cl. D21-237.000.

Arens, Ulf, to Viking Autotronic, Inc. Spark plug extender. 349,683, 8-16-94, Cl. D13-127.000.

Armatron International, Inc.: *See*—
DeYoreo, Sal G., 349,746, Cl. D22-122.000.

Aronowitz, Robert J.; and Katzanek, Bernard D., to Robert Bernard Associates. Modular seating unit. 349,609, 8-16-94, Cl. D6-381.000.

Artime S.A.: *See*—
Giardiello, Barbara, 349,653, Cl. D10-30.000.
Giardiello, Barbara, 349,654, Cl. D10-39.000.

Atwood Industries, Inc.: *See*—
Chambers, James W., 349,800, Cl. D34-31.000.

Avitan, Isaac, to Raymond Corporation. Front face of an operator display panel for a material handling vehicle. 349,677, 8-16-94, Cl. D12-192.000.

Badger Meter, Inc.: *See*—
DeJarlais, George; and Slaugenhoup, Mark D., 349,661, Cl. D10-99.000.

Baig, Usman M. Sanitary water closet. 349,759, 8-16-94, Cl. D23-295.000.

Bang & Ollufsen Holding A/S: *See*—
Iseli, Martin; Emmert, Christine; and Reber, Hans-Rudolf, 349,700, Cl. D14-142.000.

Barfield, Jesse, to Sports Designs By Jesse Barfield, Inc. Coffee table. 349,618, 8-16-94, Cl. D6-482.000.

Bargagli-Stoffi, Carlo. Headboard. 349,623, 8-16-94, Cl. D6-505.000.

Barnett, James K.: *See*—
Torntore, Anthony J.; and Barnett, James K., 349,711, Cl. D15-13.000.

Bartling, Edward G. Toy cross bow. 349,737, 8-16-94, Cl. D21-145.000.

Bean, Andrew J.: *See*—
Dietz, Timothy J.; and Bean, Andrew J., 349,667, Cl. D12-111.000.

Beaumont, Thomas G.; Diaz, Jon N.; Clark, David J.; and Bullock, Michael K., to Motorola, Inc. Outer surface of a set of doors for an electronic equipment cabinet. 349,689, 8-16-94, Cl. D13-184.000.

Becker, James E.: *See*—
Naegele, Robert O., III; and Becker, James E., 349,738, Cl. D21-199.000.

Benedik, Marko: *See*—
Hude, Andrej; and Benedik, Marko, 349,798, Cl. D34-28.000.

Berfield, Robert C.; and Meland, Ronald F., to Shop-Vac Corporation. Wheeled type suction producing unit for vacuum cleaner. 349,791, 8-16-94, Cl. D32-31.000.

Berger, Michael L. Cat house for cats or other small animals. 349,783, 8-16-94, Cl. D30-108.000.

Berti, Enzo; and Libman, Robert J., to Libman Company, The. Tool handle connector. 349,635, 8-16-94, Cl. D8-14.000.

Bertolo, Mario G.: *See*—
Radmilovic, George C.; Bertolo, Peter F.; and Bertolo, Mario G., 349,726, Cl. D19-54.000.

Bertolo, Peter F.: *See*—
Radmilovic, George C.; Bertolo, Peter F.; and Bertolo, Mario G., 349,726, Cl. D19-54.000.

Bethel, James A. Football necktie. 349,597, 8-16-94, Cl. D2-608.000.

Beutler, Scott D.; Narea, Jaime M.; Nagele, Albert L.; Elekman, Daniel K.; and Blanco, Ricardo S., to Motorola, Inc. Housing for fixed cellular telephone. 349,701, 8-16-94, Cl. D14-149.000.

Black & Decker Inc.: *See*—
Bunyea, Roderick F., 349,789, Cl. D32-19.000.

Blanco, Ricardo S.: *See*—
Beutler, Scott D.; Narea, Jaime M.; Nagele, Albert L.; Elekman, Daniel K.; and Blanco, Ricardo S., 349,701, Cl. D14-149.000.

Bobrick Washroom Equipment, Inc.: *See*—
Hanna, Emmanuel A., 349,649, Cl. D9-448.000.

Boehret, Robert A.: *See*—
Caldwell, Donald A.; Heller, Rick J.; and Boehret, Robert A., 349,799, Cl. D34-26.000.

Bogaards, Petrus M. Advertising signholder for trolleys. 349,732, 8-16-94, Cl. D20-40.000.

Bogen Communications, Inc.: *See*—
Sacher, Ronen; Friedrich, Tamir T.; and Leibson, Abraham, 349,699, Cl. D14-141.000.

Boo, Moon H. Roller guide for a fishing rod. 349,750, 8-16-94, Cl. D22-143.000.

Booth, Roberta. Combined cap visor and hologram. 349,596, 8-16-94, Cl. D2-893.000.

Boulard, Robert J.: *See*—
Waddington, Donald R.; and Boulard, Robert J., 349,678, Cl. D12-203.000.
Waddington, Donald R.; and Boulard, Robert J., 349,679, Cl. D12-203.000.

Bounce, Inc.: *See*—
Markham, Joseph P., 349,786, Cl. D30-160.000.

Bridgestone Corporation: *See*—
Ichiki, Yasufumi, 349,670, Cl. D12-146.000.
Shinohara, Kazunori; and Abe, Shinichi, 349,675, Cl. D12-147.000.

Britains Petite Limited: *See*—
Richards, Martin J., 349,734, Cl. D21-59.000.

Britt, Randall W.: *See*—
Scott, Harry W., Jr.; Britt, Randall W.; and Renfroe, Kenneth L., 349,610, Cl. D6-336.000.

Brossardt, Ansgar, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Housing for enclosing a personal computer. 349,693, 8-16-94, Cl. D14-102.000

Brown, Neil H.: *See*—
Tirrell, Joseph V.; and Brown, Neil H., 349,648, Cl. D9-439.000.

Buck, Calvin M., IV, to Nike Inc. Shoe upper. 349,601, 8-16-94, Cl. D2-969.000.

Bullock, Michael K.: *See*—
Beaumont, Thomas G.; Diaz, Jon N.; Clark, David J.; and Bullock, Michael K., 349,689, Cl. D13-184.000.

Bunyea, Roderick F., to Black & Decker Inc. Housing for polisher. 349,789, 8-16-94, Cl. D32-19.000.

Burns, Jeffrey T.; and Kramer, Roman A., to RFG Outdoors. Combined wood duck box and nest bowl. 349,784, 8-16-94, Cl. D30-110.000.

Burns, Lisa L. Educational toy figure. 349,727, 8-16-94, Cl. D19-59.000.

Butcher, Angela R.: *See*—
Butcher, David L.; and Butcher, Angela R., 349,662, Cl. D10-104.000.

Butcher, David L.; and Butcher, Angela R. Combined transmitter and receiver for locating lost remote control units. 349,662, 8-16-94, Cl. D10-104.000.

Cacciola, Joseph C.; Knight, Elizabeth; and Martin, Jeffery G., to Little Tikes Company, The. Mobile for crib. 349,735, 8-16-94, Cl. D21-63.000.

Cal-Style Furniture Mfg. Co.: *See*—
Ward, Marshall B., 349,612, Cl. D6-370.000.

Caldwell, Donald A.; Heller, Rick J.; and Boehret, Robert A. Beach caddy. 349,799, 8-16-94, Cl. D34-26.000.

Canon Kabushiki Kaisha: *See*—
Ujita, Toshihiko, 349,723, Cl. D18-12.000.

Casablanca Fan Company: *See*—
Holbrook, Richard M., 349,688, Cl. D13-162.000.

Casio Computer Co., Ltd.: *See*—
Miyahara, Akihiro, 349,722, Cl. D18-7.000.

CCW Products, Inc.: *See*—
Saffer, Morton R., 349,651, Cl. D9-528.000.

Chambers, James W., to Atwood Industries, Inc. Trailer jack housing. 349,800, 8-16-94, Cl. D34-31.000.

Chaplin, James; Nielsen, John C.; Lazzeroni, Edward J., Sr.; and Zollers, Timothy E., to Racine Federated. Fluid flow meter. 349,660, 8-16-94, Cl. D10-96.000.

Cheever, Marjorie. Set of educational character puppets. 349,728, 8-16-94, Cl. D19-59.000.

Chen, Chien S. Tripod head. 349,718, 8-16-94, Cl. D16-245.000.

Chen, Jenn-Yuh, to Hocheng Pottery Mfg. Co., Ltd. Faucet. 349,753, 8-16-94, Cl. D23-241.000

Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See*—
Abfier, Melvin, 349,642, Cl. D9-300.000.

Chia, Huan S.: *See*—
Khoo, Bee L.; and Chia, Huan S., 349,687, Cl. D13-162.000.

Choi, Charles Y.: *See*—
Wimberley, Robert J.; and Choi, Charles Y., 349,796, Cl. D34-15.000.

Christen, Hans D., to Rain Bird Sprinkler Mfg. Corp. Rotating spinner irrigation sprinkler. 349,752, 8-16-94, Cl. D23-214.000.

Chromcraft Revington, Inc.: *See*—
Wilson, Robert L., 349,621, Cl. D6-501.000.

Cincinnati Milacron Inc.: *See*—
Hallbach, Raymond L.; Dreisig, Robert C.; and McDonald, David I., 349,758, Cl. D23-259.000.

City of St. Petersburg: *See*—
Schauer, Charles D.; Holihan, David H. M.; and Connors, Michael, 349,795, Cl. D34-5.000.

Clark, David J.: *See*—
Beaumont, Thomas G.; Diaz, Jon N.; Clark, David J.; and Bullock, Michael K., 349,689, Cl. D13-184.000.

Cliff Electronic Components Limited: *See*—
Yair, John, 349,684, Cl. D13-133.000.
Yair, John, 349,685, Cl. D13-133.000.

Close, Judith R., to Reebok International Ltd. Shoe upper. 349,600, 8-16-94, Cl. D2-969.000.

Cole, Henry. Respiratory protection scarf. 349,782, 8-16-94, Cl. D29-108.000.

Colgate-Palmolive Company: *See*—
Crawford, John C., 349,781, Cl. D28-8.100.

Colombo, Ralph S.: *See*—
O'Farrill, Dave; and Colombo, Ralph S., 349,716, Cl. D16-242.000.

Commercial Brains Limited: *See*—
Whitaker, Richard J., 349,640, Cl. D8-363.000.

Connors, Michael: *See*—
Schauer, Charles D.; Holihan, David H. M.; and Connors, Michael, 349,795, Cl. D34-5.000.

Contico International, Inc.: *See*—
Dickinson, Thomas, 349,646, Cl. D9-423.000.

Cooler Concepts, Inc.: *See*—
Redmon, Christopher L., 349,629, Cl. D7-606.000.
Redmon, Christopher L., 349,630, Cl. D7-606.000.
Redmon, Christopher L., 349,631, Cl. D7-606.000.

Courtet, Francois, to Etsthuasne & Cie. Retension belt. 349,767, 8-16-94, Cl. D24-190.000.

Crawford, John C., to Colgate-Palmolive Company. Soap bar. 349,781, 8-16-94, Cl. D28-8.100.

Cromer, Dean R. Roof-mounted smoke exhaust for use in removing cigarette smoke from the interior of an automobile. 349,763, 8-16-94, Cl. D23-371.000.

Cunning, Joseph M., to Holmes Products Corp. Housing for an electric heater. 349,761, 8-16-94, Cl. D23-337.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Curtis Manufacturing Company, Inc.: *See—*
Hames, Edward L., 349,696, Cl. D14-114.000.
Daichyo, Noriyuki, to Toa Kabushiki Kaisha. Amplifier. 349,702, 8-16-94, Cl. D14-198.000.
Dair, Thomas M.; Formosa, Daniel J.; and Lee, Stuart H., to V Band Corporation. Communications workstation. 349,709, 8-16-94, Cl. D14-241.000.
Daiwa Seiko, Inc.: *See—*
Yamamoto, Shigeru; and Kimura, Shuichi, 349,749, Cl. D22-143.000.
Dapalma, John. Combined beach towel and inflatable headrest. 349,625, 8-16-94, Cl. D6-596.000.
Darland, Michael E., to Minnesota Mining and Manufacturing Company. Transmissive type overhead projector. 349,715, 8-16-94, Cl. D16-232.000.
Date, Hiroshi: *See—*
Takeichi, Hiromi; and Date, Hiroshi, 349,691, Cl. D14-100.000.
Daugherty, Jonathan M., to Rubbermaid Commercial Products Inc. Wheelbarrow. 349,797, 8-16-94, Cl. D34-16.000.
DeJarlais, George; and Slaugenhoup, Mark D., to Badger Meter, Inc. Water meter housing. 349,661, 8-16-94, Cl. D10-99.000.
Denault, David P., to Investment, Development and Edifice Associates. Storage container for document protection. 349,602, 8-16-94, Cl. D3-227.000.
DeYoreo, Sal G., to Armatron International, Inc. Insect killer. 349,746, 8-16-94, Cl. D22-122.000.
Diaz, Jon N.: *See—*
Beaumont, Thomas G.; Diaz, Jon N.; Clark, David J.; and Bullock, Michael K., 349,689, Cl. D13-184.000.
Dickinson, Thomas, to Contico International, Inc. Storage container with hinged lid. 349,646, 8-16-94, Cl. D9-423.000.
Dietz, Timothy J.; and Bean, Andrew J., to Huffy Corporation. Bicycle. 349,667, 8-16-94, Cl. D12-111.000.
Doerksen, Alvin J. Tool holder. 349,603, 8-16-94, Cl. D3-228.000.
Down Under, L.C.: *See—*
Kahl, John T., Jr., 349,739, Cl. D21-206.000.
Drake, Aaron R. Mobile ground plane antenna. 349,707, 8-16-94, Cl. D14-233.000.
Dreisig, Robert C.: *See—*
Hallbach, Raymond L.; Dreisig, Robert C.; and McDonald, David I., 349,758, Cl. D23-259.000.
DX Antenna Company Limited: *See—*
Fujino, Yoshio, 349,697, Cl. D14-125.000.
Ekstrom Industries, Inc.: *See—*
Robinson, Darrell A.; and Pruehs, Allen V., 349,686, Cl. D13-146.000.
El-Assir, John O. Pine cone air freshener. 349,762, 8-16-94, Cl. D23-367.000.
Elekman, Daniel K.: *See—*
Beutler, Scott D.; Narea, Jaime M.; Nagele, Albert L.; Elekman, Daniel K.; and Blanco, Ricardo S., 349,701, Cl. D14-149.000.
Elmo Company Ltd.: *See—*
Hasegawa, Fumio, 349,713, Cl. D16-203.000.
Hasegawa, Fumio, 349,714, Cl. D16-203.000.
Emmert, Christine: *See—*
Iseli, Martin; Emmert, Christine; and Reber, Hans-Rudolf, 349,700, Cl. D14-142.000.
Etoh, Shuichi: *See—*
Shimoyama, Akira; Okano, Harumi; Yuki, Junji; Koshiishi, Mutsumi; Oda, Tatsuya; and Etoh, Shuichi, 349,666, Cl. D12-92.000.
Etsthuasne & Cie: *See—*
Courtet, Francois, 349,767, Cl. D24-190.000.
EZ Paintr Corporation: *See—*
O'Neil, Robert A., 349,606, Cl. D4-138.000.
Fasino, Victor. Square tube bird feeder. 349,785, 8-16-94, Cl. D30-127.000.
Ferguson, Darrell C., to Lineage Home Furnishings, Inc. Bed. 349,614, 8-16-94, Cl. D6-393.000.
Ferguson, Gordon: *See—*
Skinner, David B.; and Ferguson, Gordon, 349,634, Cl. D8-8.000.
Few, Jeffrey P.; and Rumler, Thomas, to Norco Industries, Inc. Stabilizer jack for vehicles. 349,801, 8-16-94, Cl. D34-31.000.
Filiz, Leonard A.: *See—*
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,650, Cl. D9-449.000.
Formosa, Daniel J.: *See—*
Dair, Thomas M.; Formosa, Daniel J.; and Lee, Stuart H., 349,709, Cl. D14-241.000.
Fouke, Herbert A.: *See—*
Kelly, Rick M.; and Fouke, Herbert A., 349,777, Cl. D26-63.000.
Frandsen, Jorgen: *See—*
Aaker, Steven R.; Frandsen, Jorgen; Korngiebel, Ronald W.; and Volan, Gregory D., 349,695, Cl. D14-107.000.
Frankel, Bruce. Hammer toe corrective pad. 349,766, 8-16-94, Cl. D24-189.000.
Franklin, Dana, to Samsonite Corporation. Buckle. 349,665, 8-16-94, Cl. D11-218.000.
Fraser, Donald E.; and Anderson, Richard N., to Hunter Douglas, Inc. Endcap. 349,624, 8-16-94, Cl. D6-580.000.
Friedrich, Tamir T.: *See—*
Sacher, Ronen; Friedrich, Tamir T.; and Leibson, Abraham, 349,699, Cl. D14-141.000.
Fujimoto, Shinichiro: *See—*
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 349,772, Cl. D24-215.000.
Fujino, Yoshio, to DX Antenna Company Limited. Satellite communication receiving demodulator. 349,697, 8-16-94, Cl. D14-125.000
Fung, Kwok K., to VTech Industries, Inc. Housing for electronic instructional game apparatus. 349,730, 8-16-94, Cl. D19-60.000.
Giardiello, Barbara, to Artime S.A. Watch case. 349,653, 8-16-94, Cl. D10-30.000.
Giardiello, Barbara, to Artime S.A. Watch. 349,654, 8-16-94, Cl. D10-39.000.
Gibson Guitar Corp.: *See—*
Riboloff, John T., 349,721, Cl. D17-20.000.
Gillette Canada Inc.: *See—*
Schneider, Peter; and Greubel, Juergen, 349,605, Cl. D4-104.000
Goldstar Co., Ltd.: *See—*
Kim, Tae B., 349,698, Cl. D14-126.000.
Grant, John, Jr. Combination clock and smoke detector. 349,652, 8-16-94, Cl. D10-2.000.
Green, Richard D. Protective cap for a baby bottle. 349,769, 8-16-94, Cl. D24-197.000.
Greene, Joseph S., to Universal Furniture Industries, Inc. Sofa. 349,613, 8-16-94, Cl. D6-381.000.
Greubel, Juergen: *See—*
Schneider, Peter; and Greubel, Juergen, 349,605, Cl. D4-104.000.
Gutierrez, Roberto S. Lock for pickup truck rear window. 349,638, 8-16-94, Cl. D8-331.000.
Hakuba Photo Industry Co., Ltd.: *See—*
Akaike, M.; and Usui, H., 349,717, Cl. D16-244.000.
Hallbach, Raymond L.; Dreisig, Robert C.; and McDonald, David I., to Cincinnati Milacron Inc. Collet. 349,758, 8-16-94, Cl. D23-259.000.
Hames, Edward L., to Curtis Manufacturing Company, Inc. Adjustable computer stand. 349,696, 8-16-94, Cl. D14-114.000.
Hanna, Emmanuel A., to Bobrick Washroom Equipment, Inc. Dispenser assembly. 349,649, 8-16-94, Cl. D9-448.000
Hare, Walter W., to Pacific Market, Inc. Towable watercraft. 349,743, 8-16-94, Cl. D21-237.000.
Hasegawa, Fumio, to Elmo Company Ltd. Surveillance camera. 349,713, 8-16-94, Cl. D16-203.000.
Hasegawa, Fumio, to Elmo Company Ltd. Surveillance camera. 349,714, 8-16-94, Cl. D16-203.000.
Hasegawa, Shigeru: *See—*
Ito, Masafumi; Suzuki, Koji; Hasegawa, Shigeru; and Takashima, Katsuhiro, 349,705, Cl. D14-217.000.
Ito, Masafumi; and Hasegawa, Shigeru, 349,706, Cl. D14-217.000.
Hatting, Jan, to Interlego, A.G. Toy gear wheel. 349,736, 8-16-94, Cl. D21-108.000.
Hayes, Alton L., Jr. Sponge. 349,794, 8-16-94, Cl. D32-40.000.
Healthilife Limited: *See—*
Szymanski, Christopher, 349,643, Cl. D9-329.000.
Heasley, Timothy: *See—*
Patrin, Eugene M., 349,747, Cl. D22-128.000.
Heiligenstein, Luc M. D.; Langmar, Peter S.; and Melamed, Stephen B., to Sunbeam Corporation. Massager. 349,771, 8-16-94, Cl. D24-211.000.
Heine, Randolph A., to New Tradition Pipe Company. Tobacco hookah. 349,780, 8-16-94, Cl. D27-162.000.
Heller, Rick J.: *See—*
Caldwell, Donald A.; Heller, Rick J.; and Boehret, Robert A., 349,799, Cl. D34-26.000.
Henson, Michael A. Sun screen for use with a television. 349,708, 8-16-94, Cl. D14-239.000.
Herman, Kenneth M., to Shoppers Food Warehouse Corporation. Salad bar with fan. 349,617, 8-16-94, Cl. D6-481.000.
Hocheng Pottery Mfg. Co., Ltd.: *See—*
Chen, Jenn-Yuh, 349,753, Cl. D23-241.000.
Holbrook, Richard M., to Casablanca Fan Company. Front panel of a remote control for a ceiling fan. 349,688, 8-16-94, Cl. D13-162.000.
Holihan, David H. M.: *See—*
Schauer, Charles D.; Holihan, David H. M.; and Connors, Michael, 349,795, Cl. D34-5.000.
Holmes Products Corp.: *See—*
Cunning, Joseph M., 349,761, Cl. D23-337.000.
Holophane Lighting, Inc.: *See—*
Kelly, Rick M.; and Fouke, Herbert A., 349,777, Cl. D26-63.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Shimoyama, Akira; Okano, Harumi; Yuki, Junji; Koshiishi, Mutsumi; Oda, Tatsuya; and Etoh, Shuichi, 349,666, Cl. D12-92.000.
Hoover, Robert E. Blast head for an abrasive cleaning machine. 349,790, 8-16-94, Cl. D32-25.000.
Hoshino, Kiyoshi; McCurry, Ronald C.; and McCracken, Robert, to Ryobi Motor Products Corp. Plunge router. 349,637, 8-16-94, Cl. D8-67.000.
Huang, Tien-Tsai. Tire pressure indicator. 349,659, 8-16-94, Cl. D10-86.000.
Huber, Oskar W.: *See—*
Malin, Patricia J.; and Huber, Oskar W., 349,773, Cl. D24-224.000.
Hude, Andrej; and Benedik, Marko, to Sava Kranj Industrija Gumijevih, Usnjenih in Kemicnih Izdelkov. Corded inserted piece for load lifting pads. 349,798, 8-16-94, Cl. D34-28.000.
Huffy Corporation: *See—*
Dietz, Timothy J.; and Bean, Andrew J., 349,667, Cl. D12-111.000.
Hunter Douglas, Inc.: *See—*
Fraser, Donald E.; and Anderson, Richard N., 349,624, Cl. D6-580.000.
Hunziker, Hansjuerg, to Melcher AG. Power converter casing. 349,682, 8-16-94, Cl. D13-110.000.
Hutt, Maria: *See—*
McDonald, Richard A.; and Hutt, Maria, 349,598, Cl. D2-910.000.

Ichiki, Yasufumi, to Bridgestone Corporation. Automobile tire. 349,670, 8-16-94, Cl. D12-146.000.
Ikadan System A/S: *See—*
Kongsgaard, Bjarne, 349,774, Cl. D25-156.000.
Ilaria, Peter V.; and Macowski, William, to Tropar Manufacturing Company, Inc. Rectangular frame with links. 349,607, 8-16-94, Cl D6-300.000.
In-Line Sport Systems, Inc.: *See—*
Naegele, Robert O., III; and Becker, James E., 349,738, Cl. D21-199.000.
Interlego, A.G.: *See—*
Hatting, Jan, 349,736, Cl. D21-108.000.
Investment, Development and Edifice Associates: *See—*
Denault, David P., 349,602, Cl. D3-227.000.
Iseli, Martin; Emmert, Christine; and Reber, Hans-Rudolf, to Bang & Ollufsen Holding A/S. Telephone with a holder. 349,700, 8-16-94, Cl. D14-142.000.
Isogai, Shunji, to Sugiyasu Industries Co., Ltd. Vehicle lift. 349,802, 8-16-94, Cl. D34-31.000.
Ito, Masafumi; Suzuki, Koji; Hasegawa, Shigeru; and Takashima, Katsuhiro, to Teac Corporation. Audio mixer. 349,705, 8-16-94, Cl. D14-217.000.
Ito, Masafumi; and Hasegawa, Shigeru, to Teac Corporation. Audio mixer. 349,706, 8-16-94, Cl. D14-217.000.
Ivenitsky, Victor: *See—*
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,650, Cl. D9-449.000.
Iwabuchi, Kohtaroh: *See—*
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,671, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,672, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,673, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,674, Cl. D12-147.000.
J. B. Goodhouse, Inc.: *See—*
Svee, Roy M., 349,733, Cl. D20-42.000.
Janczak, Jerzy, to Jonsered Power Products AB. Combustion engine driven wood splitting machine. 349,712, 8-16-94, Cl. D15-127.000.
Jarnagin, William R., to Madoski, Larry D., a part interest. Baby food dispenser. 349,770, 8-16-94, Cl. D24-198.000.
John Manufacturing Limited: *See—*
Yuen, Se K., 349,776, Cl. D26-37.000.
Johnson, Dennis E.; and Malmsten, Scott P., to SPI Lighting, Inc. Ceiling lighting fixture. 349,778, 8-16-94, Cl. D26-86.000.
Johnson, Dennis E.; and Malmsten, Scott P., to SPI Lighting, Inc. Lighting fixture mountable on an overhead support. 349,779, 8-16-94, Cl. D26-88.000.
Johnson & Johnson Consumer Products, Inc.: *See—*
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,650, Cl. D9-449.000.
Jonsered Power Products AB: *See—*
Janczak, Jerzy, 349,712, Cl. D15-127.000.
Kabushiki Kaisha Fuji Iryoki: *See—*
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 349,772, Cl. D24-215.000.
Kabushiki Kaisha Japan Health: *See—*
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 349,772, Cl. D24-215.000.
Kahl, John T., Jr., to Down Under, L.C. Golf ball retriever. 349,739, 8-16-94, Cl. D21-206.000.
Kahl, W. Henry; and Ross, Allan G., to Rubbermaid Specialty Products Inc. Pivot top cooler. 349,628, 8-16-94, Cl. D7-605.000.
Katzanek, Bernard D.: *See—*
Aronowitz, Robert J.; and Katzanek, Bernard D., 349,609, Cl. D6-381.000.
Kawamoto, Tetsuhisa, to Aiwa Co., Ltd. Speaker system. 349,703, 8-16-94, Cl. D14-211.000.
Keller, H. Thomas, to Vaughn Furniture Company, Inc. Cedar chest. 349,616, 8-16-94, Cl. D6-440.000.
Kelly, Rick M.; and Fouke, Herbert A., to Holophane Lighting, Inc. Flood light. 349,777, 8-16-94, Cl. D26-63.000.
Kennedy, Patricia A., to Rockport Company, Inc., The. Shoe sole. 349,599, 8-16-94, Cl. D2-953.000.
Khoo, Bee L.; and Chia, Huan S., to Motorola, Inc. Radio frequency switch box. 349,687, 8-16-94, Cl. D13-162.000.
Khyber Technologies Corporation: *See—*
Kumar, Rajendra; and Morrison, John W., II, 349,604, Cl. D14-100.000.
Kumar, Rajendra; and Morrison, John W., II, 349,692, Cl. D14-116.000.
Kim, Ki Y., to Young Chang Akki (Europe) GmbH. Guitar head stock. 349,720, 8-16-94, Cl. D17-20.000.
Kim, Tae B., to Goldstar Co., Ltd. Television receiver. 349,698, 8-16-94, Cl. D14-126.000
Kimbrell, James A. Mounting bracket for displaying firearms. 349,639, 8-16-94, Cl. D8-349.000.
Kimura, Shuichi: *See—*
Yamamoto, Shigeru; and Kimura, Shuichi, 349,749, Cl. D22-143.000.
Kipperman, Nathan. Furniture frame. 349,611, 8-16-94, Cl. D6-361.000.
Knight, Elizabeth: *See—*
Cacciola, Joseph C.; Knight, Elizabeth; and Martin, Jeffery G., 349,735, Cl. D21-63.000.
Kongsgaard, Bjarne, to Ikadan System A/S. Flooring grate. 349,774, 8-16-94, Cl. D25-156.000.
Korngiebel, Ronald W.: *See—*
Aaker, Steven R.; Frandsen, Jorgen; Korngiebel, Ronald W.; and Volan, Gregory D., 349,695, Cl. D14-107.000.
Koshiishi, Mutsumi: *See—*
Shimoyama, Akira; Okano, Harumi; Yuki, Junji; Koshiishi, Mutsumi; Oda, Tatsuya; and Etoh, Shuichi, 349,666, Cl. D12-92.000.
Kramer, Roman A.: *See—*
Burns, Jeffrey T.; and Kramer, Roman A., 349,784, Cl. D30-110.000.
Krupa, Calvin S., to Ultra Pac. Inc. Lunch box. 349,633, 8-16-94, Cl. D7-109.000.
Kumar, Rajendra; and Morrison, John W., II, to Khyber Technologies Corporation. Grip held data entry computer having a plurality of automatic identification readers. 349,604, 8-16-94, Cl. D14-100.000.
Kumar, Rajendra; and Morrison, John W., II, to Khyber Technologies Corporation. Grip held data entry computer having a plurality of automatic identification readers and modified display. 349,692, 8-16-94, Cl. D14-116.000.
Kuramochi, Izumi: *See—*
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,671, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,672, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,673, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,674, Cl. D12-147.000.
Lacey, Richard J.: *See—*
White, Valor P.; and Lacey, Richard J., 349,636, Cl. D8-52.000.
Laferriere, Colette; and Laferriere, Lise. Footwear dryer. 349,788, 8-16-94, Cl. D32-1.000.
Laferriere, Lise: *See—*
Laferriere, Colette; and Laferriere, Lise, 349,788, Cl. D32-1.000.
Langmar, Peter S.: *See—*
Heiligenstein, Luc M. D.; Langmar, Peter S.; and Melamed, Stephen B., 349,771, Cl. D24-211.000.
Lazzeroni, Edward J., Sr.: *See—*
Chaplin, James; Nielsen, John C.; Lazzeroni, Edward J., Sr.; and Zollers, Timothy E., 349,660, Cl. D10-96.000.
Lee, Stuart H.: *See—*
Dair, Thomas M.; Formosa, Daniel J.; and Lee, Stuart H., 349,709, Cl. D14-241.000.
Leibson, Abraham: *See—*
Sacher, Ronen; Friedrich, Tamir T.; and Leibson, Abraham, 349,699, Cl. D14-141.000.
Leveen, Lori G.: *See—*
Leveen, Steven; Leveen, Lori G.; Pycher, Israel; Roncone, Christopher; and McColskey, Laura, 349,731, Cl. D19-88.000.
Leveen, Steven; Leveen, Lori G.; Pycher, Israel; Roncone, Christopher; and McColskey, Laura, to Levenger Company. Clip board. 349,731, 8-16-94, Cl. D19-88.000.
Levenger Company: *See—*
Leveen, Steven; Leveen, Lori G.; Pycher, Israel; Roncone, Christopher; and McColskey, Laura, 349,731, Cl. D19-88.000.
Li, George K.-C. Table base. 349,619, 8-16-94, Cl. D6-499.000.
Libman Company, The: *See—*
Berti, Enzo; and Libman, Robert J., 349,635, Cl. D8-14.000.
Libman, Robert J.: *See—*
Berti, Enzo; and Libman, Robert J., 349,635, Cl. D8-14.000.
Lineage Home Furnishings, Inc.: *See—*
Ferguson, Darrell C., 349,614, Cl. D6-393.000.
Little Tikes Company, The: *See—*
Cacciola, Joseph C.; Knight, Elizabeth; and Martin, Jeffery G., 349,735, Cl. D21-63.000.
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, to Johnson & Johnson Consumer Products, Inc. Bottle cap. 349,650, 8-16-94, Cl. D9-449.000.
Lucero, Raymond A. Illuminated fishing pole. 349,748, 8-16-94, Cl. D22-139.000.
MacLeod, Allan. Straight edge coil cutter. 349,656, 8-16-94, Cl. D10-65.000.
Macowski, William: *See—*
Ilaria, Peter V.; and Macowski, William, 349,607, Cl. D6-300.000.
Madoski, Larry D.: *See—*
Jarnagin, William R., 349,770, Cl. D24-198.000.
Malin, Patricia J.; and Huber, Oskar W., to Oncotherapeutics. Lid for a cell culture tray. 349,773, 8-16-94, Cl. D24-224.000.
Malmsten, Scott P.: *See—*
Johnson, Dennis E.; and Malmsten, Scott P., 349,778, Cl. D26-86.000.
Johnson, Dennis E.; and Malmsten, Scott P., 349,779, Cl. D26-88.000.
Markham, Joseph P., to Bounce, Inc. Pet toy. 349,786, 8-16-94, Cl D30-160.000.
Martin, Jeffery G.: *See—*
Cacciola, Joseph C.; Knight, Elizabeth; and Martin, Jeffery G., 349,735, Cl. D21-63.000.
Mathews, Linton; Mathews, Teresa L.; and Stephens, Philip M. Change stroller with an accessory container. 349,668, 8-16-94, Cl. D12-129.000.
Mathews, Linton; Mathews, Teresa L.; and Stephens, Philip M. Change stroller accessory container. 349,669, 8-16-94, Cl. D12-133.000.

VOL 1165 ISS 3 AG 16 1994 UMI

Mathews, Teresa L.: *See—*
Mathews, Linton; Mathews, Teresa L.; and Stephens, Philip M., 349,668, Cl. D12-129.000.
Mathews, Linton; Mathews, Teresa L.; and Stephens, Philip M., 349,669, Cl. D12-133.000.
Matteson, William A. Portable footrest for chairlifts. 349,620, 8-16-94, Cl. D6-501.000.
McColskey, Laura: *See—*
Leveen, Steven; Leveen, Lori G.; Pycher, Israel; Roncone, Christopher; and McColskey, Laura, 349,731, Cl. D19-88.000.
McCracken, Robert: *See—*
Hoshino, Kiyoshi; McCurry, Ronald C.; and McCracken, Robert, 349,637, Cl. D8-67.000.
McCurry, Ronald C.: *See—*
Hoshino, Kiyoshi; McCurry, Ronald C.; and McCracken, Robert, 349,637, Cl. D8-67.000.
McDonald, David I.: *See—*
Hallbach, Raymond L.; Dreisig, Robert C.; and McDonald, David I., 349,758, Cl. D23-259.000.
McDonald, Richard A.; and Hutt, Maria. Lighted boot. 349,598, 8-16-94, Cl. D2-910.000.
McIntyre, Jonothon M. W. Body board. 349,741, 8-16-94, Cl. D21-228.000.
McLaughlin, Delvin D. Module used to form a holding tray for floral delivery. 349,615, 8-16-94, Cl. D6-403.000.
McMahon, Franklin, to Univer International Corp. Bed for pets. 349,787, 8-16-94, Cl. D30-118.000.
Melamed, Stephen B.: *See—*
Heiligenstein, Luc M. D.; Langmar, Peter S.; and Melamed, Stephen B., 349,771, Cl. D24-211.000.
Meland, Ronald F.: *See—*
Berfield, Robert C.; and Meland, Ronald F., 349,791, Cl. D32-31.000.
Melcher AG: *See—*
Hunziker, Hansjuerg, 349,682, Cl. D13-110.000.
Mercado, Gloria A.: *See—*
Pawar, Gurdeep S.; and Mercado, Gloria A., 349,754, Cl. D23-249.000.
Miltz, Albert, Jr. Disposable coverall. 349,595, 8-16-94, Cl. D2-714.000.
Minnesota Mining and Manufacturing Company: *See—*
Darland, Michael E., 349,715, Cl. D16-232.000.
Mr. Memo Products, Inc.: *See—*
Radmilovic, George C.; Bertolo, Peter F.; and Bertolo, Mario G., 349,726, Cl. D19-54.000.
Miyahara, Akihiro, to Casio Computer Co., Ltd. Electronic calculator. 349,722, 8-16-94, Cl. D18-7.000.
Miyairi, Hisakazu; Tamura, Masaru; and Shinozaki, Natsuo, to Miyarisan Pharmaceutical Co., Ltd.; and Yoshino Kogyosho Co., Ltd. Tablet dispensing container. 349,644, 8-16-94, Cl. D9-339.000.
Miyarisan Pharmaceutical Co., Ltd.: *See—*
Miyairi, Hisakazu; Tamura, Masaru; and Shinozaki, Natsuo, 349,644, Cl. D9-339.000.
Miyata, Yukari; and Yoshii, Hideaki, to Sony Corporation. Data input machine for a television monitor. 349,690, 8-16-94, Cl. D14-100.000.
Moffitt, Robert C., to Water Factory, The. Container cap. 349,647, 8-16-94, Cl. D9-435.000.
Moliner, Michael, to SportRack Canada Inc. Hook. 349,641, 8-16-94, Cl. D8-367.000.
Morishita, Hisaya: *See—*
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,671, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,672, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,673, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,674, Cl. D12-147.000.
Moro, Kazuo. Gear pump. 349,710, 8-16-94, Cl. D15-7.000.
Morrison, John W., II: *See—*
Kumar, Rajendra; and Morrison, John W., II, 349,604, Cl. D14-100.000.
Kumar, Rajendra; and Morrison, John W., II, 349,692, Cl. D14-116.000.
Mosler Inc.: *See—*
Vogel, Victor J., 349,724, Cl. D18-35.000.
Motgorola, Inc.: *See—*
Siddoway, Craig; and Tracy, James, 349,681, Cl. D13-103.000.
Motorola, Inc.: *See—*
Beaumont, Thomas G.; Diaz, Jon N.; Clark, David J.; and Bullock, Michael K., 349,689, Cl. D13-184.000
Beutler, Scott D.; Narea, Jaime M.; Nagele, Albert L.; Elekman, Daniel K.; and Blanco, Ricardo S., 349,701, Cl. D14-149.000.
Khoo, Bee L.; and Chia, Huan S., 349,687, Cl. D13-162.000.
Mulholland, John E. Cleaning tool for a meat grinder dye. 349,792, 8-16-94, Cl. D32-35.000.
Naegele, Robert O., III; and Becker, James E., to In-Line Sport Systems, Inc. Boundary barrier for a sports playing field. 349,738, 8-16-94, Cl. D21-199.000.
Nagele, Albert L.: *See—*
Beutler, Scott D.; Narea, Jaime M.; Nagele, Albert L.; Elekman, Daniel K.; and Blanco, Ricardo S., 349,701, Cl. D14-149.000.
Narea, Jaime M.: *See—*
Beutler, Scott D.; Narea, Jaime M.; Nagele, Albert L.; Elekman, Daniel K.; and Blanco, Ricardo S., 349,701, Cl. D14-149.000.
New Tradition Pipe Company: *See—*
Heine, Randolph A., 349,780, Cl. D27-162.000.
Nicholson, Linda; and Russell, Clarence. Collectible race car cookie jar. 349,632, 8-16-94, Cl. D7-613.000.
Nielsen, John C.: *See—*
Chaplin, James; Nielsen, John C.; Lazzeroni, Edward J., Sr.; and Zollers, Timothy E., 349,660, Cl. D10-96.000.
Nifco Inc.: *See—*
Ueno, Eiji, 349,664, Cl. D11-216.000.
Nike Inc.: *See—*
Buck, Calvin M., IV, 349,601, Cl. D2-969.000
Norco Industries, Inc.: *See—*
Few, Jeffrey P.; and Rumler, Thomas, 349,801, Cl. D34-31.000.
Oda, Tatsuya: *See—*
Shimoyama, Akira; Okano, Harumi; Yuki, Junji; Koshiishi, Mutsumi; Oda, Tatsuya; and Etoh, Shuichi, 349,666, Cl. D12-92.000.
O'Farrill, Dave; and Colombo, Ralph S. Foot pad for a mono pod camera support. 349,716, 8-16-94, Cl. D16-242.000.
Ohta, Kunio, to Yamaha Corporation. Electronic controller unit for a piano. 349,719, 8-16-94, Cl. D17-9.000.
Okano, Harumi: *See—*
Shimoyama, Akira; Okano, Harumi; Yuki, Junji; Koshiishi, Mutsumi; Oda, Tatsuya; and Etoh, Shuichi, 349,666, Cl. D12-92.000.
Oncotherapeutics: *See—*
Malin, Patricia J.; and Huber, Oskar W., 349,773, Cl. D24-224.000.
O'Neil, Robert A., to EZ Paintr Corporation. Paint roller hand grip. 349,606, 8-16-94, Cl. D4-138.000.
Pacific Market, Inc.: *See—*
Hare, Walter W., 349,743, Cl. D21-237.000.
Paradice, Paul. Transit. 349,657, 8-16-94, Cl. D10-66.000.
Patrin, Eugene M., to Heasley, Timothy, a part interest. Fishing lure. 349,747, 8-16-94, Cl. D22-128.000.
Pawar, Gurdeep S.; and Mercado, Gloria A. Insulated cover for a backflow prevention water valve. 349,754, 8-16-94, Cl. D23-249.000.
Peterson, Clarence: *See—*
Peterson, Willard; and Peterson, Clarence, 349,676, Cl. D12-183.000.
Peterson, Willard; and Peterson, Clarence. Auxiliary window for automobiles. 349,676, 8-16-94, Cl. D12-183.000.
Powell, Richard E. Truck bed tool box. 349,680, 8-16-94, Cl. D12-406.000.
Pruehs, Allen V.: *See—*
Robinson, Darrell A.; and Pruehs, Allen V., 349,686, Cl. D13-146.000.
Pycher, Israel: *See—*
Leveen, Steven; Leveen, Lori G.; Pycher, Israel; Roncone, Christopher; and McColskey, Laura, 349,731, Cl. D19-88.000
Rabe, Elizabeth. Hock joint brace. 349,768, 8-16-94, Cl. D24-190.000.
Racine Federated: *See—*
Chaplin, James; Nielsen, John C.; Lazzeroni, Edward J., Sr.; and Zollers, Timothy E., 349,660, Cl. D10-96.000.
Radmilovic, George C.; Bertolo, Peter F.; and Bertolo, Mario G., to Mr. Memo Products, Inc. Caricature portion for a writing instrument. 349,726, 8-16-94, Cl. D19-54.000.
Rain Bird Sprinkler Mfg. Corp.: *See—*
Christen, Hans D., 349,752, Cl. D23-214.000.
Raymond Corporation: *See—*
Avitan, Isaac, 349,677, Cl. D12-192.000.
Reber, Hans-Rudolf: *See—*
Iseli, Martin; Emmert, Christine; and Reber, Hans-Rudolf, 349,700, Cl. D14-142.000.
Redmon, Christopher L., to Cooler Concepts, Inc. Styrofoam ice chest. 349,629, 8-16-94, Cl. D7-606.000
Redmon, Christopher L., to Cooler Concepts, Inc. Styrofoam ice chest. 349,630, 8-16-94, Cl. D7-606.000.
Redmon, Christopher L., to Cooler Concepts, Inc. Styrofoam ice chest. 349,631, 8-16-94, Cl. D7-606.000
Reebok International Ltd.: *See—*
Close, Judith R., 349,600, Cl. D2-969.000.
Renfroe, Kenneth L.: *See—*
Scott, Harry W., Jr.; Britt, Randall W.; and Renfroe, Kenneth L., 349,610, Cl. D6-336.000.
RFG Outdoors: *See—*
Burns, Jeffrey T.; and Kramer, Roman A., 349,784, Cl. D30-110.000.
Riboloff, John T., to Gibson Guitar Corp. Guitar body. 349,721, 8-16-94, Cl. D17-20.000.
Richards, Martin J., to Britains Petite Limited. Activity toy. 349,734, 8-16-94, Cl. D21-59.000.
Rigsby, Kenneth D. Drinking glass. 349,626, 8-16-94, Cl. D7-515.000.
Rigsby, Kenneth D. Drinking glass. 349,627, 8-16-94, Cl. D7-515.000.
Rittal-Werk Rudolf Loh GmbH & Co. KG: *See—*
Brossardt, Ansgar, 349,693, Cl. D14-102.000.
Robert Bernard Associates: *See—*
Aronowitz, Robert J.; and Katzanek, Bernard D., 349,609, Cl. D6-381.000.
Robinson, Darrell A.; and Pruehs, Allen V., to Ekstrom Industries, Inc. Temporary metered electrical power watthour meter socket adapter. 349,686, 8-16-94, Cl. D13-146.000.
Rockport Company, Inc., The: *See—*
Kennedy, Patricia A., 349,599, Cl. D2-953.000.
Roncone, Christopher: *See—*
Leveen, Steven; Leveen, Lori G.; Pycher, Israel; Roncone, Christopher; and McColskey, Laura, 349,731, Cl. D19-88.000.
Ross, Allan G.: *See—*
Kahl, W. Henry; and Ross, Allan G., 349,628, Cl. D7-605.000.
Round, Stephen A., to S. Round's Inc. Combination finger and ring sizing device. 349,655, 8-16-94, Cl. D10-64.000.

Roy, Ron. Book cover with handles. 349,725, 8-16-94, Cl. D19-26.000.
Royal Appliance Mfg. Co.: *See—*
Zahuranec, Terry L.; and Saunders, Craig M., 349,793, Cl. D32-38.000.
Rubbermaid Commercial Products Inc.: *See—*
Daugherty, Jonathan M., 349,797, Cl. D34-16.000.
Rubbermaid Specialty Products Inc.: *See—*
Kahl, W. Henry; and Ross, Allan G., 349,628, Cl. D7-605.000.
Ruff, Dennis J. Fishing pole holder. 349,751, 8-16-94, Cl. D22-147.000.
Rumler, Thomas: *See—*
Few, Jeffrey P.; and Rumler, Thomas, 349,801, Cl. D34-31.000.
Russell, Clarence: *See—*
Nicholson, Linda; and Russell, Clarence, 349,632, Cl. D7-613.000.
Russo, Ronald D., to Sandoz Ltd. Feeding tube retainer. 349,765, 8-16-94, Cl. D24-128.000.
Ryobi Motor Products Corp.: *See—*
Hoshino, Kiyoshi; McCurry, Ronald C.; and McCracken, Robert, 349,637, Cl. D8-67.000.
S. Round's Inc.: *See—*
Round, Stephen A., 349,655, Cl. D10-64.000.
Sacher, Ronen; Friedrich, Tamir T.; and Leibson, Abraham, to Bogen Communications, Inc. Telephone answering and voice messaging machine. 349,699, 8-16-94, Cl. D14-141.000.
Saffer, Morton R., to CCW Products, Inc. Container. 349,651, 8-16-94, Cl. D9-528.000
Samsonite Corporation: *See—*
Franklin, Dana, 349,665, Cl. D11-218.000.
Sandoz Ltd.: *See—*
Russo, Ronald D., 349,765, Cl. D24-128.000.
Saunders, Craig M.: *See—*
Zahuranec, Terry L.; and Saunders, Craig M., 349,793, Cl. D32-38.000.
Sava Kranj Industrija Gumijevih, Usnjenih in Kemicnih Izdelkov: *See—*
Hude, Andrej; and Benedik, Marko, 349,798, Cl. D34-28.000.
Savoie, Gordon P., to Skyline Displays, Inc. Curved panel with counter. 349,608, 8-16-94, Cl. D6-332.000.
Schauer, Charles D.; Holihan, David H. M.; and Connors, Michael, to City of St. Petersburg. Waste container. 349,795, 8-16-94, Cl. D34-5.000.
Schlumpf, Zachrey. Combined heated and illuminated toilet seat. 349,760, 8-16-94, Cl. D23-311.000.
Schneider, Peter; and Greubel, Juergen, to Gillette Canada Inc. Transparent toothbrush handle. 349,605, 8-16-94, Cl. D4-104.000.
Scott, Harry W., Jr.; Britt, Randall W.; and Renfroe, Kenneth L., to Thompson Industries, Inc. Combined bench and decorative storage box. 349,610, 8-16-94, Cl. D6-336.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, to Yokohama Rubber Co., Ltd., The. Automobile tire. 349,671, 8-16-94, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, to Yokohama Rubber Co., Ltd., The. Automobile tire. 349,672, 8-16-94, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, to Yokohama Rubber Co., Ltd., The. Automobile tire. 349,673, 8-16-94, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, to Yokohama Rubber Co., Ltd., The. Automobile tire. 349,674, 8-16-94, Cl. D12-147.000.
Shakespeare Company: *See—*
Skinner, David B.; and Ferguson, Gordon, 349,634, Cl. D8-8.000.
Shalvi, Ram, to Solar Wide Industrial Ltd. Fluorescent lamp adapter base. 349,775, 8-16-94, Cl. D26-3.000.
Shimadzu Corporation: *See—*
Takimoto, Shingo, 349,694, Cl. D14-106.000.
Shimoyama, Akira; Okano, Harumi; Yuki, Junji; Koshiishi, Mutsumi; Oda, Tatsuya; and Etoh, Shuichi, to Honda Giken Kogyo Kabushiki Kaisha. Automobile. 349,666, 8-16-94, Cl. D12-92.000.
Shinohara, Kazunori; and Abe, Shinichi, to Bridgestone Corporation. Automobile tire. 349,675, 8-16-94, Cl. D12-147.000.
Shinozaki, Natsuo: *See—*
Miyairi, Hisakazu; Tamura, Masaru; and Shinozaki, Natsuo, 349,644, Cl. D9-339.000.
Shop-Vac Corporation: *See—*
Berfield, Robert C.; and Meland, Ronald F., 349,791, Cl. D32-31.000.
Shoppers Food Warehouse Corporation: *See—*
Herman, Kenneth M., 349,617, Cl. D6-481.000.
Siddoway, Craig; and Tracy, James, to Motgorola, Inc. Battery housing for a portable radio. 349,681, 8-16-94, Cl. D13-103.000.
Skinner, David B.; and Ferguson, Gordon, to Shakespeare Company. Cutting line for a rotating line trimmer. 349,634, 8-16-94, Cl. D8-8.000.
Skyline Displays, Inc.: *See—*
Savoie, Gordon P., 349,608, Cl. D6-332.000.
Slaugenhoup, Mark D.: *See—*
DeJarlais, George; and Slaugenhoup, Mark D., 349,661, Cl. D10-99.000.
Solar Wide Industrial Ltd.: *See—*
Shalvi, Ram, 349,775, Cl. D26-3.000.
Sony Corporation: *See—*
Miyata, Yukari; and Yoshii, Hideaki, 349,690, Cl. D14-100.000.
Takeichi, Hiromi; and Date, Hiroshi, 349,691, Cl. D14-100.000.
SPI Lighting, Inc.: *See—*
Johnson, Dennis E.; and Malmsten, Scott P., 349,778, Cl. D26-86.000.
Johnson, Dennis E.; and Malmsten, Scott P., 349,779, Cl. D26-88.000.
Spicer, Valerie L. Bouquet holder. 349,663, 8-16-94, Cl. D11-164.000.
SportRack Canada Inc.: *See—*
Moliner, Michael, 349,641, Cl. D8-367.000.
Sports Designs By Jesse Barfield, Inc.: *See—*
Barfield, Jesse, 349,618, Cl. D6-482.000.
Stadium Design B.V.: *See—*
van Loo, Brino A., 349,645, Cl. D9-422.000.
Stephens, Philip M.: *See—*
Mathews, Linton; Mathews, Teresa L.; and Stephens, Philip M., 349,668, Cl. D12-129.000.
Mathews, Linton; Mathews, Teresa L.; and Stephens, Philip M., 349,669, Cl. D12-133.000.
Sterling Winthrop Inc.: *See—*
Tirrell, Joseph V.; and Brown, Neil H., 349,648, Cl. D9-439.000.
Storage Technology Corporation: *See—*
Aaker, Steven R.; Frandsen, Jorgen; Korngiebel, Ronald W.; and Volan, Gregory D., 349,695, Cl. D14-107.000.
Sugiyasu Industries Co., Ltd.: *See—*
Isogai, Shunji, 349,802, Cl. D34-31.000.
Sunbeam Corporation: *See—*
Heiligenstein, Luc M. D.; Langmar, Peter S.; and Melamed, Stephen B., 349,771, Cl. D24-211.000.
Suzuki, Koji: *See—*
Ito, Masafumi; Suzuki, Koji; Hasegawa, Shigeru; and Takashima, Katsuhiro, 349,705, Cl. D14-217.000.
Svee, Roy M., to J. B. Goodhouse, Inc. Magnetic memo board. 349,733, 8-16-94, Cl. D20-42.000.
Szymanski, Christopher, to Healthilife Limited. Combined container and cap. 349,643, 8-16-94, Cl. D9-329.000.
Tabor, Charles J. Water ski vehicle. 349,740, 8-16-94, Cl. D21-228.000.
Takashima, Katsuhiro: *See—*
Ito, Masafumi; Suzuki, Koji; Hasegawa, Shigeru; and Takashima, Katsuhiro, 349,705, Cl. D14-217.000.
Takeichi, Hiromi; and Date, Hiroshi, to Sony Corporation. Data input machine for a television monitor. 349,691, 8-16-94, Cl. D14-100.000.
Takimoto, Shingo, to Shimadzu Corporation. Portable computer. 349,694, 8-16-94, Cl. D14-106.000.
Tamura, Masaru: *See—*
Miyairi, Hisakazu; Tamura, Masaru; and Shinozaki, Natsuo, 349,644, Cl. D9-339.000.
Teac Corporation: *See—*
Ito, Masafumi; Suzuki, Koji; Hasegawa, Shigeru; and Takashima, Katsuhiro, 349,705, Cl. D14-217.000.
Ito, Masafumi; and Hasegawa, Shigeru, 349,706, Cl. D14-217.000.
Thompson Industries, Inc.: *See—*
Scott, Harry W., Jr.; Britt, Randall W.; and Renfroe, Kenneth L., 349,610, Cl. D6-336.000.
Tirrell, Joseph V.; and Brown, Neil H., to Sterling Winthrop Inc. Closure for vials. 349,648, 8-16-94, Cl. D9-439.000.
Toa Kabushiki Kaisha: *See—*
Daichyo, Noriyuki, 349,702, Cl. D14-198.000.
Torntore, Anthony J.; and Barnett, James K., to Wagner Spray Tech Corporation. Cart for line striper. 349,711, 8-16-94, Cl. D15-13.000.
Tracy, James: *See—*
Siddoway, Craig; and Tracy, James, 349,681, Cl. D13-103.000.
Tropar Manufacturing Company, Inc.: *See—*
Ilaria, Peter V.; and Macowski, William, 349,607, Cl. D6-300.000.
Tsing, Tun S. Loud speaker enclosure. 349,704, 8-16-94, Cl. D14-216.000.
Tyne, Jeffrey C. Billiard table pocket. 349,742, 8-16-94, Cl. D21-232.000.
Ueno, Eiji, to Nifco Inc. Buckle. 349,664, 8-16-94, Cl. D11-216.000.
Ujita, Toshihiko, to Canon Kabushiki Kaisha. Ink cartridge. 349,723, 8-16-94, Cl. D18-12.000.
Ultra Pac. Inc.: *See—*
Krupa, Calvin S., 349,633, Cl. D7-109.000.
Univer International Corp.: *See—*
McMahon, Franklin, 349,787, Cl. D30-118.000.
Universal Furniture Industries, Inc.: *See—*
Greene, Joseph S., 349,613, Cl. D6-381.000.
Usui, H.: *See—*
Akaike, M.; and Usui, H., 349,717, Cl. D16-244.000.
V Band Corporation: *See—*
Dair, Thomas M.; Formosa, Daniel J.; and Lee, Stuart H., 349,709, Cl. D14-241.000.
van Loo, Brino A., to Stadium Design B.V. Carton with a sliding lid. 349,645, 8-16-94, Cl. D9-422.000.
Vaudry, Alan. Insect trap. 349,745, 8-16-94, Cl. D22-122.000.
Vaughn Furniture Company, Inc.: *See—*
Keller, H. Thomas, 349,616, Cl. D6-440.000.
Viking Autotronic, Inc.: *See—*
Arens, Ulf, 349,683, Cl. D13-127.000.
Vogel, Victor J., to Mosler Inc. Corner conduit for a pneumatically-propelled carrier system. 349,724, 8-16-94, Cl. D18-35.000
Volan, Gregory D.: *See—*
Aaker, Steven R.; Frandsen, Jorgen; Korngiebel, Ronald W.; and Volan, Gregory D., 349,695, Cl. D14-107.000.
VTech Industries, Inc.: *See—*
Fung, Kwok K., 349,730, Cl. D19-60.000.
Wong, Wai M., 349,729, Cl. D19-60.000.
Waddington, Donald R.; and Boulard, Robert J., to Algonquin Industries International, Inc. Vehicle running board. 349,678, 8-16-94, Cl. D12-203.000

VOL 1165 ISS 3 AG 16 1994 UMI

Waddington, Donald R.; and Boulard, Robert J., to Algonquin Industries International, Inc. Vehicle running board. 349,679, 8-16-94, Cl. D12-203.000.

Wagner Spray Tech Corporation: *See*—
Torntore, Anthony J.; and Barnett, James K., 349,711, Cl. D15-13.000.

Walsh, Kevin P. Electronic voltage tester. 349,658, 8-16-94, Cl. D10-78.000.

Ward, Marshall B., to Cal-Style Furniture Mfg. Co. Chair. 349,612, 8-16-94, Cl. D6-370.000.

Water Factory, The: *See*—
Moffitt, Robert C., 349,647, Cl. D9-435.000.

Whitaker, Richard J., to Commercial Brains Limited. Wall mountable support bracket. 349,640, 8-16-94, Cl. D8-363.000.

White, Valor P.; and Lacey, Richard J. Horseshoe nippers. 349,636, 8-16-94, Cl. D8-52.000.

Whitfield, Oliver J. Wood stove door with single window. 349,764, 8-16-94, Cl. D23-347.000.

Wilson, Robert L., to Chromcraft Revington, Inc. Chair arm. 349,621, 8-16-94, Cl. D6-501.000.

Wilson, T. Kevin: *See*—
Allen, Margaret; Allen, Paul; and Wilson, T. Kevin, 349,622, Cl. D6-503.000.

Wimberley, Robert J.; and Choi, Charles Y., to Ajay Leisure Products, Inc. Golf cart. 349,796, 8-16-94, Cl. D34-15.000.

Wolfe, Henry, to Aqua-Leisure Industries, Inc. Recreational flotation device for a plurality of users. 349,744, 8-16-94, Cl. D21-237.000.

Wong, Wai M., to Vtech Industries, Inc. Educational toy. 349,729, 8-16-94, Cl. D19-60.000.

Yair, John, to Cliff Electronic Components Limited. Electrical terminal. 349,684, 8-16-94, Cl. D13-133.000.

Yair, John, to Cliff Electronic Components Limited. Electrical fitting primarily in the form of a connector. 349,685, 8-16-94, Cl. D13-133.000.

Yamaha Corporation: *See*—
Ohta, Kunio, 349,719, Cl. D17-9.000.

Yamamoto, Shigeru; and Kimura, Shuichi, to Daiwa Seiko, Inc. Line guide for fishing rods. 349,749, 8-16-94, Cl. D22-143.000.

Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, to Kabushiki Kaisha Japan Health; and Kabushiki Kaisha Fuji Iryoki. Massager. 349,772, 8-16-94, Cl. D24-215.000.

Yan, Kin S.: *See*—
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,650, Cl. D9-449.000.

Yokohama Rubber Co., Ltd., The: *See*—
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,671, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,672, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,673, Cl. D12-147.000.
Seimiya, Shinzi; Kuramochi, Izumi; Iwabuchi, Kohtaroh; and Morishita, Hisaya, 349,674, Cl. D12-147.000.

Yoshii, Hideaki: *See*—
Miyata, Yukari; and Yoshii, Hideaki, 349,690, Cl. D14-100.000.

Yoshino Kogyosho Co., Ltd.: *See*—
Miyairi, Hisakazu; Tamura, Masaru; and Shinozaki, Natsuo, 349,644, Cl. D9-339.000.

Young Chang Akki (Europe) GmbH: *See*—
Kim, Ki Y., 349,720, Cl. D17-20.000.

Yuen, Se K., to John Manufacturing Limited. Combined fluorescent lamp and flashlight. 349,776, 8-16-94, Cl. D26-37.000.

Yuki, Junji: *See*—
Shimoyama, Akira; Okano, Harumi; Yuki, Junji; Koshishi, Mutsumi; Oda, Tatsuya; and Etoh, Shuichi, 349,666, Cl. D12-92.000.

Zahuranec, Terry L.; and Saunders, Craig M., to Royal Appliance Mfg Co. Carpet sweeper. 349,793, 8-16-94, Cl. D32-38.000.

Zollers, Timothy E.: *See*—
Chaplin, James; Nielsen, John C.; Lazzeroni, Edward J., Sr.; and Zollers, Timothy E., 349,660, Cl. D10-96.000.

LIST OF PLANT PATENTEES

Bear Creek Gardens, Inc.: *See*—
Starkl, Ludwig, 8,861, Cl. 16.000.

Chrysanthemum Breeders Association, N.V.: *See*—
Van Der Jagt, Martinus, 8,865, Cl. 82.300.

Conard-Pyle Company, The: *See*—
Olij, Huibert W., 8,862, Cl. 22.000.

Del Monte Fresh Produce N.A., Inc.: *See*—
Oda, Calvin H.; and Williams, David D. F., 8,863, Cl. 33.100

Fruehwirth, Franz, to Paul Ecke Ranch. Poinsettia plant '586'. 8,866, 8-16-94, Cl. 86.400.

Kamada, David K.: *See*—
Kamada, Leonard M.; and Sanchez, Ignacio, 8,864, Cl. 38.100.

Kamada, Leonard M.; and Sanchez, Ignacio, to Kamada, David K., a part interest. Melrose plum tree. 8,864, 8-16-94, Cl. 38.100.

Oda, Calvin H.; and Williams, David D. F., to Del Monte Fresh Produce N.A., Inc. Pineapple plant named 'CO-2'. 8,863, 8-16-94, Cl. 33.100.

Olij, Huibert W., to Conard-Pyle Company, The. Floribunda rose plant named 'Olytel'. 8,862, 8-16-94, Cl. 22.000.

Paul Ecke Ranch: *See*—
Fruehwirth, Franz, 8,866, Cl. 86.400.

Sanchez, Ignacio: *See*—
Kamada, Leonard M.; and Sanchez, Ignacio, 8,864, Cl. 38.100.

Starkl, Ludwig, to Bear Creek Gardens, Inc. Hybrid tea rose plant named 'Starqueli'. 8,861, 8-16-94, Cl. 16.000.

Van Der Jagt, Martinus, to Chrysanthemum Breeders Association, N.V. Chrysanthemum named Bronze Reagan. 8,865, 8-16-94, Cl. 82.300.

Williams, David D. F.: *See*—
Oda, Calvin H.; and Williams, David D. F., 8,863, Cl. 33.100

CLASSIFICATION OF PATENTS

ISSUED AUGUST 16, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2 5,337,417
5,337,418
9 5,337,419
410 5,337,420
425 5,337,421

CLASS 4

111.5 5,337,422
518 5,337,423
557 5,337,424
610 5,337,425
661 5,337,426

CLASS 5

602 5,337,427
611 5,337,428
643 5,337,429
662 5,337,430

CLASS 8

159 5,337,431
512 5,338,318
586 5,338,319

CLASS 12

115.2 5,337,432

CLASS 15

1.7 5,337,433
5,337,434
21.1 5,337,446
23 5,337,435
104.92 5,337,437
104.94 5,337,436
143.1 5,337,440
236.01 5,337,442
250.002 5,337,439
318.1 5,337,438
5,337,441
[illegible] 5,337,443
352 5,337,444
394 5,337,445

CLASS 16

2 5,337,447
53 5,337,448
111 R 5,337,449
114 R 5,337,450
354 5,337,451
367 5,337,452
380 5,337,453

CLASS 19

80 R 5,337,454
105 5,337,455
115 R 5,337,456

CLASS 24

49 R 5,337,457
115 H 5,337,458
136 A 5,337,459

CLASS 28

167 5,337,460

CLASS 29

25.35 5,337,461
33 P 5,337,462
243.521 5,337,463
401.1 5,337,464
402.12 5,337,469
426.5 5,337,470
432 5,337,471
607 5,337,472
623.1 5,338,320
720 5,337,473
740 5,337,465
[illegible] 5,337,466
840 5,337,467
842 5,337,468
846 5,337,474
[illegible] 5,337,475
[illegible] 5,337,476
[illegible] 5,337,477

CLASS 30

41.5 5,337,478
90.6 5,337,479
114 5,337,480
162 5,337,481
5,337,482
164.95 5,337,483

CLASS 33

41.2 5,337,484
550 5,337,485
617 5,337,486
760 5,337,487
784 5,337,488
832 5,337,489

CLASS 34

77 5,337,500
117 5,337,490
378 5,337,496
412 5,337,497
487 5,337,498
549 5,337,499

CLASS 36

7.1 R 5,337,491
28 5,337,492
54 5,337,493
61 5,337,494

CLASS 37

453 5,337,495

CLASS 40

621 5,337,501
624 5,337,502
665 5,337,503

CLASS 42

78 5,337,504
95 5,337,505
101 5,337,506

CLASS 43

23 5,337,507
42.03 5,337,508
42.74 5,337,509
43.12 5,337,510
57.1 5,337,511
82 5,337,512
124 5,337,513

CLASS 44

451 5,338,321
620 5,338,322

CLASS 47

44 5,337,514
62 5,337,515
65 5,337,516
71 5,337,517

CLASS 49

197 5,337,520
351 5,337,519

CLASS 51

105 VG 5,337,521
240 A 5,337,522
307 5,338,323
365 5,337,546
370 5,337,523
391 5,337,524

CLASS 52

35 5,337,525
[illegible] 5,337,526
169.2 5,337,527
[illegible] 5,337,528
389 5,337,529
[illegible] 5,337,530
[illegible] 5,337,531
687 5,337,532
741.1 5,337,533
745.21 5,337,534
748 5,337,535

CLASS 53

135.3 5,337,536
413 5,337,539
452 5,337,537
456 5,337,538
459 5,337,540
5,337,541
550 5,337,542

CLASS 55

213 5,338,325
5,338,326
385.2 5,338,324

CLASS 56

10.8 5,337,543
15.7 5,337,544
320.2 5,337,545

CLASS 57

22 5,337,547
23 5,337,548
236 5,337,549
263 5,337,550
281 5,337,551
[illegible] 5,337,552

CLASS 60

39.02 5,337,553
39.181 5,337,554
276 5,337,555
5,337,556
5,337,557
5,337,558
321 5,337,559
370 5,337,560
421 5,337,561
519 5,337,562
520 5,337,563
555 5,337,564
594 5,337,565
632 5,337,566
722 5,337,567
752 5,337,583
755 5,337,568

CLASS 62

22 5,337,569
25 5,337,570
39 5,337,571
51.2 5,337,572
63 5,337,573
89 5,337,574
126 5,337,575
127 5,337,576
173 5,337,577
195 5,337,578
239 5,337,579
262 5,337,580
264 5,337,581
311 5,337,582

CLASS 63

1.1 5,337,584

CLASS 65

391 5,337,585
414 5,338,327
521 5,338,329
530 5,338,328

CLASS 68

5 D 5,337,586

CLASS 70

233 5,337,587
278 5,337,588

CLASS 72

11 5,337,589
157 5,337,590
168 5,337,591
177 5,337,592
269 5,337,593
[illegible] 5,337,594

CLASS 73

23.31 5,337,595
[illegible] 5,337,596
45.5 5,337,597
49.8 5,337,598
61.62 5,337,599
117 5,337,600
155 5,337,601
182 5,337,602
202 5,337,603
204.22 5,337,604
325.02 5,337,605
517 R 5,337,606
599 5,337,610
[illegible] 5,337,611
[illegible] 5,337,612
756 Re.34,694
[illegible] 5,337,613
827 5,337,614
861.12 5,337,607
861.33 5,337,615
861.38 5,337,616
861.54 5,337,617
862.634 5,337,618
863.11 5,337,619
864.64 5,337,620
865 6 5,337,608

CLASS 74

335 5,337,624
5,337,625
445 5,337,626
459 5,337,627
502.4 5,337,621
551.3 5,337,609
813 R 5,337,622
5,337,623

CLASS 75

[illegible] 5,338,330
[illegible] 5,338,331
247 5,338,332
352 5,338,333
362 5,338,334
403 5,338,335
[illegible] 5,338,336
654 5,338,337
711 5,338,338

CLASS 76

107.1 5,337,631

CLASS 81

3.55 5,337,632
9.51 5,337,633
128 5,337,634
434 5,337,635
435 5,337,636
439 5,337,637
483 5,337,638

CLASS 83

111 5,337,639
444 5,337,640
468 5,337,641
687 5,337,642

CLASS 84

293 5,337,643
314 R 5,337,644
421 5,337,645
5,337,646
600 5,338,891
662 5,338,892

CLASS 87

31 5,337,647

CLASS [illegible]

1.704 5,337,648
14.05 5,337,649

CLASS 91

376 R 5,337,650

CLASS [illegible]

87 5,337,651

CLASS 95

282 5,338,339

CLASS [illegible]

135 5,338,340
[illegible] 5,338,341

CLASS 99

282 5,337,652
289 R 5,337,653
447 5,337,654

CLASS [illegible]

93 P 5,337,655
98 R 5,337,656
127 5,337,658

CLASS 101

[illegible] 5,337,659
91 5,337,660
5,337,661
126 5,337,662
127.1 5,337,663
218 5,337,664
235 5,337,665
415.1 5,337,666
424 5,337,667
[illegible] 5,337,668
[illegible] 5,337,669
[illegible] 5,337,670

CLASS [illegible]

334 5,337,671
481 5,337,672
491 5,337,673
530 5,337,674

CLASS 104

2 5,337,675
139 5,337,676

CLASS [illegible]

1.22 5,338,342
1.23 5,338,343
2 5,338,344
5,338,345
14.29 5,338,346
14.44 5,338,347
5,338,348
18.12 5,338,349
19 D 5,338,350
20 R 5,338,351
285 5,338,352
426 5,338,353
442 5,338,354
457 5,338,355
690 5,338,356
724 5,338,357

CLASS [illegible]

45 5,337,677
51.3 5,337,679
5,337,680
56.1 5,337,681
94 5,337,682
115 5,337,657
147 5,337,678

CLASS 110

346 5,337,683
5,337,684

CLASS 112

121.15 5,337,685
260 5,337,686
262.3 5,337,687
298 5,337,688
323 5,337,689

CLASS 114

39.1 5,337,690
39.2 5,337,691
61 5,337,692
69 5,337,693
144 R 5,337,694

CLASS 117

44 5,338,388
[illegible] 5,338,389

CLASS 118

[illegible] 5,338,358
412 5,338,359
602 5,338,360
647 5,338,893
653 5,338,894
[illegible] 5,338,895
[illegible] 5,338,361
719 5,338,362
725 5,338,363
729 5,338,364

CLASS 119

18 5,337,696
19 5,337,697
51.04 5,337,698
[illegible] 5,337,699
[illegible] 5,337,700
251 5,337,701
786 5,337,702

CLASS [illegible]

379 5,337,703

CLASS 123

41.1 5,337,704
41.33 5,337,705
52.3 5,337,706
65 PE 5,337,707
65 VC 5,337,709
73 C 5,337,710
90.17 5,337,711
[illegible] 5,337,712
179.3 5,337,713
198 A 5,337,708
279 5,337,714
325 5,337,715
425 5,337,716
426 5,337,717
[illegible] 5,337,718
478 5,337,719
481 5,337,720
519 5,337,721
527 5,337,722
[illegible] 5,337,723
563 5,337,724
571 5,337,725

CLASS [illegible]

61 5,337,726

CLASS 126

[illegible] 5,337,727
[illegible] 5,337,728
350 A 5,337,729

CLASS 127

2 5,338,365
37 5,338,366

CLASS [illegible]

4 5,337,730
5,337,731
5,337,732
5,337,733
5,337,734
11 5,337,735
20 5,337,736
203.12 5,337,738
5,337,740
205.27 5,337,739
633 5,337,743
5,337,744
5,337,745
635 5,337,746
5,337,747
640 5,337,748
653.3 5,337,749
[illegible] 5,337,750
[illegible] 5,337,751
[illegible] 5,337,752
[illegible] 5,337,753
749 5,337,754
763 5,337,756
772 Re.34,695
779 5,337,757
781 5,337,758
782 5,337,759
[illegible] 5,337,760

CLASS 131

84.1 5,337,761
108 5,337,762

CLASS 132

[illegible] 5,337,763
116 5,337,764
[illegible] 5,337,765
329 5,337,766

CLASS 134

3 5,338,367
40 5,338,368
104.1 5,337,767
122 R 5,337,768
138 5,337,769

CLASS [illegible]

25.3 5,337,770
25.4 5,337,771
104 5,337,772

CLASS 136

246 5,338,369
258 5,338,370

CLASS 137

1 5,337,773
5,337,774
[illegible] 5,337,775
5,337,776
78.2 5,337,777
117 5,337,778
[illegible] 5,337,779
[illegible] 5,337,780
[illegible] 5,337,781
614.03 5,337,782
625.27 5,337,783
[illegible] 5,337,784

VOL 1165 ISS 3 AG 16 1994 UMI

625.65 5,337,785
627.45 5,337,786
627.5 5,337,787
627.5 5,337,788
627.5 5,337,789

CLASS 139

30 5,337,791
96 R 5,337,792

CLASS 141

1 5,337,793
144 5,337,794
5,337,795
5,337,796
5,337,797
331 5,337,798

CLASS 144

193 A 5,337,810
208 B 5,337,811
230 5,337,812

CLASS 148

101 5,338,371
103 5,338,372
121 5,338,373
237 5,338,374
252 5,338,375
304 5,338,376
318 5,338,377
405 5,338,378
410 5,338,379
532 5,338,380

CLASS 150

147 5,337,813

CLASS 152

209 B 5,337,814
209 R 5,337,815
5,337,816

CLASS 156

5,338,381
72 5,338,382
80 5,338,383
212 5,338,384
252 5,338,385
290 5,338,386
441.5 5,338,387
627 5,338,390
5,338,391
634 5,338,392
5,338,393
5,338,394
5,338,395
647 5,338,400
655 5,338,396
5,338,398
659.1 5,338,397
662 5,338,399

CLASS 157

21 5,337,817

CLASS 160

66 5,337,818

CLASS 162

6 5,338,401
24 5,338,402
25 5,338,405
72 5,338,403
163 5,338,404
168.2 5,338,406
168.3 5,338,407
301 5,338,408

CLASS 164

4.1 5,337,799
72 5,337,800
98 5,337,801
5,337,803
287 5,337,804
369 5,337,805

CLASS 165

22 5,337,802
47 5,337,806
146 5,337,807

CLASS 166

191 5,337,808
208 5,337,809
222 5,337,819
246 5,337,820
250 5,337,821
264 5,337,822
277 5,337,823
293 5,337,824
307 5,337,825
319 5,337,826
321 5,337,827
372 5,337,828
377 5,337,829

CLASS 168

14 5,337,830

CLASS 172

22 5,337,831
504 5,337,832
520 5,337,833
810 5,337,834

CLASS 173

13 5,337,835
90 5,337,836

CLASS 174

35 R 5,338,896
5,338,897
5,338,899
138 F 5,338,898
250 5,338,900

CLASS 175

19 5,337,837
59 5,337,838
62 5,337,839
107 5,337,840
293 5,337,841
323 5,337,842
334 5,337,843
434 5,337,844

CLASS 177

16 5,338,901
255 5,338,902

CLASS 180

8.2 5,337,846
9.52 5,337,847
11 5,337,845
24.12 5,337,849
65.2 5,337,848
5,337,850
162 5,337,851
274 5,337,852
370 5,337,853

CLASS 181

231 5,338,903

CLASS 182

2 5,337,854
107 5,337,856
122 5,337,857
5,337,858
130 5,337,855

CLASS 186

3.2 5,337,860
6.21 5,337,859

CLASS 187

137 5,338,904

CLASS 188

24.17 5,337,861
158 5,337,862
299 5,337,863
378 5,337,864
5,337,865

CLASS 192

3.29 5,337,867
45.1 5,337,869
70.14 5,337,870
85 R 5,337,871
107 M 5,337,872
107 R 5,337,873
111 A 5,337,874

CLASS 193

35 R 5,337,875

CLASS 194

236 5,337,876
317 5,337,877

CLASS 198

323 5,337,878
333 5,337,879
347.3 5,337,880
5,337,881
452 5,337,882
465.4 5,337,883
5,337,884
502.4 5,337,885
728 5,337,886
803 5,337,887

CLASS 200

61.45 M 5,338,905
61.54 5,338,906
61.88 5,338,907
83 P 5,338,908
339 5,338,909
547 5,338,910

CLASS 202

205 5,338,409

CLASS 203

57 5,338,410
5,338,411

CLASS 204

59 R 5,338,412
5,338,413
95 5,338,414
129.2 5,338,415
129.3 5,338,416
147 5,338,417
158.21 5,338,418
181.4 5,338,419
182.6 5,338,420
5,338,421
192.12 5,338,422
5,338,423
298.11 5,338,424
298.12 5,338,425
299 R 5,338,426
5,338,427
5,338,428
5,338,435
412 5,338,430
415 5,338,429
424 5,338,431

CLASS 208

118 5,338,432
178 5,338,433
229 5,338,434

CLASS 204

5.1 5,337,888
215 5,337,889
235 5,337,890
315.11 5,337,892
316.2 5,337,891
329 5,337,893
370 5,337,894
416 5,337,895
456 5,337,896
581 5,337,897

CLASS 209

80 5,338,436
111 5,338,437
153 5,338,438
5,338,439
173 5,338,440
419 5,338,441
435 5,338,442

CLASS 209

10 5,337,898
257 5,337,900
315 5,337,901
539 5,337,902
728 5,337,899

CLASS 210

91 5,338,443
150 5,338,445
169 5,338,446
195.1 5,338,447
198.2 5,338,448
5,338,449
205 5,338,450
405 5,338,451
603 5,338,452
634 5,338,453
635 5,338,454
652 5,338,456
5,338,457
654 5,338,455
660 5,338,444
668 5,338,458
710 5,338,459
724 5,338,460
755 5,338,461
757 5,338,462
763 5,338,463
776 5,338,464

CLASS 211

13 5,337,903
5,337,904
87 5,337,905
88 5,337,906
5,337,907

CLASS 212

189 5,337,908

CLASS 215

1 C 5,337,909

CLASS 219

69.12 5,338,912
121.16 5,338,913
121.67 5,338,914
121.69 5,338,915
130.4 5,338,916
137.63 5,338,917
411 5,338,918
543 5,338,919
633 5,338,920
730 5,338,921
759 5,338,911
763 5,338,922

CLASS 220

203 5,337,910
254 5,337,911
306 5,337,912
326 5,337,913
403 5,337,914
5,337,915
418 5,337,916
5,337,917
5,337,918

CLASS 221

2 5,337,919
5 5,337,920

CLASS 222

105 5,337,921
129 5,337,922
5,337,923
212 5,337,924
214 5,337,925
5,337,926
321 5,337,927
383 5,337,928
402.18 5,337,929
525 5,337,931
630 5,337,930

CLASS 224

42.03 B 5,337,932
151 5,337,933
153 5,337,934
224 5,337,935
253 5,337,936

CLASS 226

108 5,337,944

CLASS 227

109 5,337,945
110 5,337,946
182 5,337,937

CLASS 228

102 5,337,938
124.1 5,337,939
190 5,337,940
205 5,337,941

CLASS 229

72 5,337,942
87.19 5,337,943
92.8 5,337,949
115 5,337,947
120.15 5,337,948
164 5,337,950
186 5,337,951

CLASS 232

17 5,337,953
38 5,337,954

CLASS 235

492 5,338,923

CLASS 236

10 5,337,952
91 F 5,337,955

CLASS 239

27 5,337,956
63 5,337,957
71 5,337,958
163 5,337,959
280.5 5,337,960
397.5 5,337,961
424.5 5,337,962
690 5,337,963

CLASS 241

17 5,337,964
19 5,337,965
46 06 5,337,966

CLASS 242

35.5 A 5,337,967
129.8 5,337,972
347 5,337,973
348 5,337,971
374 5,337,970
521 5,337,968
553 5,337,969

CLASS 244

49 5,337,974
53 B 5,337,975
102 A 5,337,976
118.1 5,337,979
129.5 5,337,977
134 A 5,337,978
158 R 5,337,980
164 5,337,981
186 5,337,982

CLASS 245

636 5,337,991

CLASS 248

74.3 5,337,983
125 5,337,992
146 5,337,984
156 5,337,993
174 5,337,985
218.4 5,337,986
231.8 5,337,987
289.1 5,337,994
429 5,337,995
460 5,337,996
477 5,337,988
519 5,337,989
526 5,337,990
551 5,337,999
596 5,337,997
634 5,337,998

CLASS 250

201.4 5,338,924
214 B 5,338,925
214 VT 5,338,926
5,338,927
223 B 5,338,000
227.21 5,338,928
231.1 5,338,929
251 5,338,930
287 5,338,931
306 5,338,932
334 5,338,933
336.2 5,338,934
339.06 5,338,935
363.04 5,338,936
368 5,338,937
377 5,338,938
396 ML 5,338,939
492.2 5,338,940
506.1 5,338,941

CLASS 251

58 5,338,001
129.21 5,337,790
149.6 5,338,002
172 5,338,003
214 5,338,004
5,338,005
327 5,338,006

CLASS 252

8.551 5,338,465
33.4 5,338,467
45 5,338,468
49.6 5,338,469
51.5 A 5,338,470
56 S 5,338,471
62.2 5,338,472
62.51 5,338,473
95 5,338,474
102 5,338,475
174.14 5,338,476
5,338,477
182.21 5,338,478
183.71 5,338,479
187.21 5,338,480
299.01 5,338,481
299.61 5,338,482
5,338,483
299.65 5,338,484
309 5,338,485
357 5,338,486
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373 5,338,488
5,338,489
500 5,338,490
548 5,338,491
582 5,338,492
700 5,338,494

CLASS 256

5,338,007

CLASS 257

17 5,338,942
76 5,338,944
77 5,338,945
186 5,338,947
223 5,338,946
249 5,338,948
269 5,338,949
277 5,338,950
295 5,338,951
306 5,338,955
315 5,338,952
316 5,338,956
5,338,957
326 5,338,954
330 5,338,958
331 5,338,959
335 5,338,960
342 5,338,961
376 5,338,963
476 5,338,964
492 5,338,965
597 5,338,966
620 5,338,967
647 5,338,968
659 5,338,969
5,338,970
666 5,338,971
5,338,972
668 5,338,973
689 Re.34,696
691 5,338,974
750 5,338,975

CLASS 261

28 5,338,495
78.2 5,338,496

CLASS 264

25 5,338,497
31 5,338,498
34 5,338,499
122 5,338,500
219 5,338,501
322 5,338,502
516 5,338,503
555 5,338,504

CLASS 266

105 5,338,008
229 5,338,009
271 5,338,013

CLASS 267

64.16 5,338,010
140.12 5,338,011
140.5 5,338,012
316 5,338,953

CLASS 269

47 5,338,014
71 5,338,015
97 5,338,016

CLASS 270

53 5,338,017

CLASS 271

3 5,338,018
139 5,338,019
158 5,338,020
160 5,338,021
184 5,338,022

CLASS 273

15 R 5,338,023
26 D 5,338,025
26 E 5,338,026
58 K 5,338,027
73 A 5,338,028
78 5,338,024
80.2 5,338,029
118 R 5,338,031
148 R 5,338,032
153 S 5,338,033
155 5,338,034
186.2 5,338,035
187.2 5,338,036
187.6 5,338,037
216 5,338,038
232 5,338,039
241 5,338,040
260 5,338,041
269 5,338,042
272 5,338,043
402 5,338,044

CLASS 277

180 5,338,046

CLASS 279

128 5,338,045

CLASS 280

3 5,338,047
5.22 5,338,048
47.19 5,338,049
476.1 5,338,050
607 5,338,051
612 5,338,052
615 5,338,053
655 5,338,054
5,338,055
673 5,338,056
675 5,338,057
707 5,338,058
728 B 5,338,059
5,338,060
729 5,338,061
735 5,338,062
5,338,063
775 5,338,064
5,338,065

CLASS 283

67 5,338,066
5,338,067
116 5,338,068

CLASS 285

38 5,338,069
177 5,338,070
233 5,338,071
286 5,338,072
319 5,338,073
334 5,338,074
368 5,338,075

CLASS 292

336.3 5,338,076

CLASS 293

120 5,338,077

CLASS 294

50.5 5,338,078

CLASS 296

15 5,338,079
29 5,338,080
37.14 5,338,081
97.1 5,338,082
97.9 5,338,083
105 5,338,084
121 5,338,085
138 5,338,086
146.15 5,338,087
180.1 5,338,088
180.5 5,338,089

CLASS 297

216.2 5,338,090
218 5,338,091
228.11 5,338,092
243 5,338,096
367 5,338,093
411.4 5,338,094
440.1 5,338,095
445 5,338,097
452.1 5,338,100
452.33 5,338,099
452.6 5,338,098

CLASS 298

17 R 5,338,101

CLASS 299

10 5,338,102
32 5,338,103
85 5,338,104

CLASS 301

29.2 5,338,105

CLASS 303

9.69 5,338,106
113.3 5,338,107

CLASS 307

86 5,338,994
270 5,338,977
303.2 5,338,986
443 5,338,978
5,338,979
455 5,338,980
463 5,338,981
465 5,338,982
5,338,983
465.1 5,338,984
494 5,338,985
570 5,338,987
571 5,338,989
578 5,338,988
603 5,338,990
632 5,338,991

CLASS 310

71 5,338,992
5,338,993
89 5,338,995
217 5,338,996
307 5,338,997
323 5,338,998
358 5,338,999

CLASS 312

9.17 5,338,108
222 5,338,109

CLASS 313

25 5,339,001
318 5,339,002
463 5,339,003

CLASS 315

58 5,339,006
94 5,338,110
205 5,339,007
244 5,339,004
5,339,005
248 5,339,008
291 5,339,009
368.17 5,339,010
383 5,339,011

CLASS 318

254 5,339,012
5,339,013
563 5,339,014
600 5,339,015
610 5,339,016

CLASS 320

13 5,339,017
35 5,339,018

CLASS 323

286 5,339,019
313 5,339,020
354 5,339,021

CLASS 324

67 5,339,022
5,339,023
71.6 5,339,025
96 5,339,026
158.1 5,339,028
207.17 5,339,029
207.23 5,339,030
219 5,339,031
309 5,339,033
5,339,034
5,339,035
318 5,339,032
338 5,339,036
366 5,339,037
435 5,339,024
539 5,339,038
655 5,339,039
754 5,339,027

CLASS 329

358 5,339,040

CLASS 330

10 5,339,041
56 5,339,043
252 5,339,044
253 5,339,045
255 5,339,042
277 5,339,046
286 5,339,047
302 5,339,048

CLASS 331

16 5,339,049
5,339,050
5,339,278
65 5,339,051
75 5,339,052
99 5,339,053

CLASS 332

100 5,339,054
144 5,339,055

CLASS 333

139 5,339,056
166 5,339,057
237 5,339,058

CLASS 335

78 5,339,059
132 5,339,060
216 5,339,061
260 5,339,063
282 5,339,064

CLASS 338

133 5,339,065
306 5,339,066
323 5,339,067
332 5,339,068

CLASS 340

454 5,339,069
578 5,339,070
665 5,339,071
693 5,339,072
825.31 5,339,073
5,339,074
903 5,339,075
932.2 5,339,000

CLASS 341

51 5,339,076
67 5,339,077
136 5,339,078
144 5,339,079

CLASS 342

22 5,339,080
28 5,339,081
5,339,082
157 5,339,083
160 5,339,084
180 5,339,085
371 5,339,086
375 5,339,087
459 5,339,088

CLASS 343

700 MS 5,339,089

CLASS 345

90 5,339,090
104 5,339,091
136 5,339,092
149 5,339,093
156 5,339,096
157 5,339,094
158 5,339,095
168 5,339,097

CLASS 346

76 PH 5,339,099
134 5,339,100
5,339,280

CLASS 347

5 5,339,098
32 5,339,102
46 5,339,101

CLASS 348

71 5,339,159
95 5,339,103
155 5,339,104
229 5,339,163
240 5,339,105
243 5,339,106
270 5,339,107
5,339,162
312 5,339,161
5,339,108
5,339,109
5,339,110
524 5,339,111
549 5,339,112
571 5,339,160
5,339,113
673 5,339,114
711 5,339,115
716 5,339,116
733 5,339,117
744 5,339,118
757 5,339,158

CLASS 351

158 5,339,119
211 5,339,120
212 5,339,121

CLASS 353

103 5,339,122

CLASS 354

64 5,339,124
106 5,339,123
5,339,125
195.12 5,339,126
288 5,339,127
317 5,339,128
318 5,339,129
319 5,339,130
324 5,339,131

CLASS 355

200 5,339,132
5,339,133
202 5,339,134
208 5,339,135
5,339,136
5,339,137
215 5,339,139
246 5,339,140
5,339,141
259 5,339,142
5,339,143
274 5,339,144
277 5,339,145
285 5,339,146
5,339,147
290 5,339,148
296 5,339,138
297 5,339,149
326 R 5,339,150

CLASS 356

328 5,339,151
347 5,339,152
376 5,339,154
394 5,339,153
419 5,339,155

CLASS 358

261.1 5,339,164
311 5,339,166
312 5,339,165
339 5,339,167
402 5,339,156
5,339,168
403 5,339,169
442 5,339,174
456 5,339,170
458 5,339,171
462 5,339,172
471 5,339,173
498 5,339,175
5,339,176

CLASS 359

35 5,339,177
42 5,339,178
49 5,339,179
58 5,339,180
59 5,339,181
112 5,339,182
123 5,339,183
124 5,339,184
140 5,339,186
158 5,339,185
182 5,339,187
5,339,188
326 5,339,189
332 5,339,190
352 5,339,441
359 5,339,197
5,339,198
434 B1 4,964,710
640 5,339,196
691 5,339,195
696 5,339,194
819 5,339,193
841 5,339,192
5,339,201

CLASS 360

24.2 5,339,200
35.1 5,339,199
39 5,339,203
5,339,202
51 5,339,204
53 5,339,205
75 5,339,206
77.05 5,339,207
104 5,339,208
105 5,339,209

CLASS 361

5,339,210
277 5,339,211
306.2 5,339,212
683 5,339,213
695 5,339,214
704 5,339,215
707 5,339,216
5,339,217
5,339,218
760 5,339,219
796 5,339,220
5,339,221
818 5,339,222

CLASS 362

32 5,339,223
35 5,339,224
61 5,339,225
5,339,226
5,339,227
109 5,339,228
146 5,339,229
5,339,230
226 5,339,231
391 5,339,232
402 5,339,233
419 5,339,234

CLASS 363

43 5,339,235
59 5,339,236

CLASS 364

184 5,339,237
401 5,339,239
419.01 5,338,976
419.14 5,339,240
424.02 5,339,241
424.05 5,339,242
5,339,243
424.06 5,339,244
431.08 5,339,245
457 5,339,246
5,339,247
5,339,248
474.18 5,339,249
479 5,339,250
5,339,253
499 5,339,254
500 5,339,255
506 5,339,256
552 5,339,257
558 5,339,258
559 5,339,259
560 5,339,260
570 5,339,261
578 5,339,262
724.06 5,339,251
724.1 5,339,263
724.16 5,339,264
725 5,339,265
748 5,339,266
761 5,339,267

CLASS 365

45 5,339,275
49 5,339,268
63 5,339,269
185 5,339,270
189.04 5,339,271
189.09 5,339,272
201 5,339,273
203 5,339,274
230.02 5,339,276
230.08 5,339,277

CLASS 366

75 5,338,112
177 5,338,113
205 5,338,111
216 5,338,114
263 5,338,115
286 5,338,116

CLASS 367

5,339,281
7 5,339,282
89 5,339,283
103 5,339,284
135 5,339,285
140 5,339,286
5,339,287
145 5,339,288
149 5,339,289
163 5,339,290
165 5,339,291
176 5,339,292

CLASS 368

21 5,339,293
67 5,339,294
5,339,296
108 5,339,295
321 5,339,297

CLASS 369

13 5,339,298
32 5,339,299
44.29 5,339,300
5,339,301
54 5,339,302
59 5,339,303
109 5,339,304
112 5,339,305
275.1 5,339,306

CLASS 370

13 5,339,314
13.1 5,339,307
17 5,339,308
29 5,339,309
60 5,339,310
5,339,311
85.1 5,339,312
5,339,315
85.13 5,339,313
5,339,316
85.15 5,339,317
110.1 5,339,318

CLASS 371

10.2 5,339,319
22.1 5,339,320
31 5,339,321
51.1 5,339,322

CLASS 372

25 5,339,323
29 5,339,324
45 5,339,325
49 5,339,326
56 5,339,327
70 5,339,328

CLASS 373

138 5,339,329

CLASS 375

1 5,339,330
5,339,331
10 5,339,332
5,339,333
100 5,339,334
103 5,339,335
114 5,339,337
118 5,339,338

CLASS 376

107 5,339,336
245 5,339,339
299 5,339,340
439 5,339,341
5,339,342

CLASS 377

29 5,339,343
39 5,339,344
48 5,339,345

CLASS 378

34 5,339,346
65 5,339,347
93 5,339,348
101 5,339,349
5,339,350

CLASS 379

45 5,339,351
58 5,339,352
59 5,339,353
67 5,339,354
5,339,355
234 5,339,356
355 5,339,357
368 5,339,358
5,339,360

CLASS 380

23 5,339,361

CLASS 381

5,339,362
97 5,339,363
173 5,339,364

CLASS 382

22 5,339,366
5,339,367
54 5,339,365
56 5,339,368

CLASS 383

9 5,338,117
10 5,338,118

CLASS 384

47 5,338,119

CLASS 385

2 5,339,369
5,339,370
24 5,339,157
5,339,371
29 5,339,372
31 5,339,373
43 5,339,374
53 5,339,375
71 5,339,376
5,339,377
100 5,339,378
135 5,339,379
136 5,339,380
138 5,339,381
146 5,339,382

CLASS 392

5,339,383

CLASS 395

2.2 5,339,384
2.55 5,339,385
122 5,339,386
131 5,339,387
153 5,339,388
5,339,389
157 5,339,390
5,339,391
161 5,339,392
5,339,393
275 5,339,439
325 5,339,394
5,339,395
5,339,396
5,339,440
400 5,339,397
5,339,398
425 5,339,399
5,339,400
5,339,402
5,339,403
575 5,339,404
5,339,405
5,339,406
5,339,407
5,339,408
500 5,339,409
5,339,410
5,339,411
5,339,412
5,339,423
5,339,413
5,339,414
5,339,415
5,339,416
5,339,417
5,339,418
5,339,424
700 5,339,238
5,339,419
5,339,420
5,339,421
5,339,422
5,339,425
5,339,426
5,339,428
5,339,429
5,339,430
5,339,431
5,339,432
5,339,433
5,339,434
5,339,435

VOL 1165 ISS 3 AG 16 1994 UMI

5,339,436
5,339,437
5,339,438
5,339,449
5,339,450
725 5,339,427
5,339,442
5,339,443
750 5,339,444
5,339,445
5,339,446
775 5,339,447
5,339,448
800 5,339,451

CLASS 368

322 5,338,121
613.2 5,338,122

CLASS 401

34 5,338,123
280 5,338,124

CLASS 402

46 5,338,125
64 5,338,126

CLASS 405

79 5,338,127
206 5,338,128
321 5,338,133

CLASS 406

9 5,338,129
33 5,338,130

CLASS 408

24 5,338,131
69 5,338,132

CLASS 407

26 5,338,134

CLASS 408

233 5,338,135

CLASS 410

100 5,338,136
146 5,338,137

CLASS 411

107 5,338,138
353 5,338,139
375 5,338,141
402 5,338,142

CLASS 414

142.1 5,338,143
152 5,338,144
254 5,338,145
346 5,338,140
462 5,338,146
542 5,338,147
667 5,338,148
792.7 5,338,149
799 5,338,150

CLASS 415

55.1 5,338,151
139 5,338,152
168.2 5,338,153
173.7 5,338,154
211.2 5,338,155

CLASS 416

132 A 5,338,156

CLASS 417

2 5,338,157
64 5,338,158
203 5,338,159
273 5,338,160
307 5,338,161
367 5,338,162
410 R 5,338,163
413 A 5,338,164
423.1 5,338,165
442 5,338,166

CLASS 418

104 5,338,167
179 5,338,168

CLASS 419

10 5,338,505
44 5,338,506

CLASS 420

120 5,338,508
463 5,338,509
532 5,338,510

CLASS 421

5 5,338,511
46 5,338,512
56 5,338,513
89 5,338,514
95 5,338,515
126 5,338,516
191 5,338,517
211 5,338,518
253 5,338,519

CLASS 423

21.1 5,338,520
210.5 5,338,521
5,338,778
265 5,338,522
289 5,338,523
309 5,338,524
326 5,338,525
328.2 5,338,526
332 5,338,527
333 5,338,528
445 B 5,338,529
551 5,338,530
5,338,531

CLASS 424

1.49 5,338,532
52 5,338,537
57 5,338,538
59 5,338,539
5,338,535
70 5,338,536
71 5,338,540
5,338,541
93.2 5,338,544
94.1 5,338,545
94.64 5,338,546
180.1 5,338,542
195.1 5,338,547
264.1 5,338,543
411 5,338,533
439 5,338,549
5,338,548
473 5,338,550
717 5,338,551

CLASS 428

82.1 5,338,169
92 5,338,170
138 5,338,171
143 5,338,172
150 5,338,173
5,338,174
185 5,338,175
374 5,338,176
384 5,338,177
385 5,338,178
447 5,338,179
5,338,180
526 5,338,181
562 5,338,182
564 5,338,183

CLASS 436

5 5,338,809
19 5,338,552
36 5,338,553
45 5,338,554
5,338,555
241 5,338,556
5,338,557
327 5,338,558
427 5,338,575
5,338,559
573 5,338,560
602 5,338,561
5,338,562
604 5,338,563
612 5,338,564

CLASS 427

2.25 5,338,565
5,338,566
5,338,567
136 5,338,568
212 5,338,569
240 5,338,570
279 5,338,571
309 5,338,572
331 5,338,573
387 5,338,574
430.1 5,338,576
453 5,338,577
470 5,338,578
539 5,338,579
575 5,338,580
5,338,581

CLASS 430

1 5,338,582
7 5,338,583
15 5,338,584
18 5,338,585
5,338,586
35.7 5,338,587
36.3 5,338,588
5,338,604
36.9 5,338,589
60 5,338,590
67 5,338,591
106 5,338,592
110 5,338,593
117 5,338,594
143 5,338,595
195 5,338,597
210 5,338,598
212 5,338,599
213 5,338,600
319.7 5,338,601
323 5,338,602
349 5,338,603
373 5,338,607
392 5,338,608
5,338,605
402 5,338,609
5,338,610
412 5,338,611
5,338,612
425.8 5,338,613
5,338,614
457 5,338,615
458 5,338,606
472 5,338,616
551 5,338,617
614 5,338,618
623 5,338,619
625 5,338,620

CLASS 429

18 5,338,621
26 5,338,622
31 5,338,623
120 5,338,624
190 5,338,596
193 5,338,625

CLASS 430

5 5,338,626
6 5,338,627
23 5,338,629
30 5,338,630
42 5,338,631
5,338,632
59 5,338,633
5,338,634
5,338,635
5,338,636
83 5,338,637
95 5,338,628
106 5,338,638
110 5,338,639
154 5,338,640
165 5,338,641
173 5,338,642
5,338,643
214 5,338,644
270 5,338,646
311 5,338,645
322 5,338,647
326 5,338,652
5,338,653
393 5,338,648
430 5,338,649
5,338,650
5,338,651
Re.34,697
557 5,338,654
569 5,338,655
577 5,338,656
584 5,338,657
598 5,338,658

CLASS 431

12 5,338,184
33 5,338,185
115 5,338,186
288 5,338,187

CLASS 432

114 5,338,188
124 5,338,189

CLASS 433

6 5,338,190
23 5,338,191
34 5,338,192
57 5,338,193
82 5,338,194
116 5,338,195
172 5,338,196
174 5,338,197
213 5,338,198

CLASS 434

14 5,338,199
43 5,338,200
127 5,338,202
178 5,338,201
208 5,338,203
247 5,338,204
253 5,338,205
305 5,338,206

CLASS 435

1 5,338,662
4 5,338,663
5,338,664
5,338,665
7.1 5,338,659
7.22 5,338,660
7.23 5,338,661
34 5,338,666
47 5,338,667
68.1 5,338,668
69.1 5,338,669
71.3 5,338,670
91.2 5,338,671
5,338,672
119 Re.34,698
134 5,338,673
172.3 5,338,674
183 5,338,675
197 5,338,676
200 5,338,677
227 5,338,678
235.1 5,338,679
240.2 5,338,680
252.1 5,338,681
253.4 5,338,682
320.1 5,338,683

CLASS 436

5,338,684
124 5,338,685
173 5,338,686
5,338,687
5,338,688
518 5,338,689

CLASS 437

3 5,338,690
5,338,691
24 5,338,692
29 5,338,693
31 5,338,694
5,338,695
34 5,338,696
40 5,338,697
5,338,698
52 5,338,699
5,338,700
5,338,701
70 5,338,750
192 5,338,702
203 5,338,703
209 5,338,704
217 5,338,705

CLASS 439

62 5,338,207
66 5,338,208
5,338,209
131 5,338,210
134 5,338,212
135 5,338,211
148 5,338,213
160 5,338,214
246 5,338,215
346 5,338,217
350 5,338,218
5,338,219
5,338,220
405 5,338,221
5,338,222
482 5,338,223
491 5,338,224
571 5,338,226
5,338,225
607 5,338,227
621 5,338,228
629 5,338,230
5,338,231
733 5,338,232
839 5,338,229
877 5,338,233

CLASS 440

38 5,338,234
77 5,338,236

CLASS 441

59 5,338,235
68 5,338,238
74 5,338,237
106 5,338,239

CLASS 442

24 5,338,240

CLASS 443

75 5,338,241
220 5,338,242
5,338,243
242 5,338,244
267 5,338,245
5,338,247
466 5,338,246

CLASS 452

136 5,338,250

CLASS 454

5,338,248
126 5,338,249
153 5,338,251
155 5,338,252
158 5,338,253
284 5,338,254
292 5,338,255
310 5,338,256

CLASS 455

212 5,339,452
213 5,339,463
239.1 5,339,453
247.1 5,339,454
266 5,339,455
303 5,339,456
330 5,339,462
333 5,339,457
5,339,458
5,339,459
343 5,339,460
351 5,339,461

CLASS 460

8 5,338,257

CLASS 464

5,338,258
93 5,338,259

CLASS 472

118 5,338,260

CLASS 473

1 5,338,261
2 5,338,262

CLASS 474

5,338,264
256 5,338,265

CLASS 475

5,338,266
227 5,338,267

CLASS 476

10 5,338,268

CLASS 477

5,337,628
52 5,337,629
74 5,337,868
131 5,337,630
175 5,337,866

CLASS 482

52 5,338,271
57 5,338,272
70 5,338,273
100 5,338,274
111 5,338,275
113 5,338,276
130 5,338,277
142 5,338,278

CLASS 491

7 5,338,279
36 5,338,280

CLASS 493

5,338,281
342 5,338,282

CLASS 494

10 5,338,283
28 5,338,284
55 5,338,285

CLASS 501

12 5,338,707
19 5,338,708
27 5,338,709
32 5,338,710
5,338,711
5,338,712
105 5,338,713
127 5,338,714

CLASS 502

5,338,715
5,338,716
211 5,338,717

CLASS 503

227 5,338,718

CLASS 504

224 5,338,719
273 5,338,720

CLASS 505

1 5,339,062
193 5,338,943
5,338,721
470 5,338,507
5,338,722

CLASS 514

11 5,338,723
12 5,338,724
13 5,338,725
17 5,338,726
19 5,338,727
27 5,338,728
5,338,729
5,338,730
5,338,731
178 5,338,732
210 5,338,733
224.2 5,338,734
233.5 5,338,735
235.5 5,338,739
256 5,338,738
259 5,338,736
5,338,737
5,338,740
262 5,338,741
277 5,338,742
5,338,743
303 5,338,744
330 5,338,745
358 5,338,748
364 5,338,749
369 5,338,746
5,338,855
373 5,338,747
382 5,338,752
394 5,338,756
414 5,338,755
422 5,338,754
454 5,338,753
461 5,338,757
5,338,758
492 5,338,759
539 5,338,760
772 5,338,761
788 5,338,762

CLASS 521

49.5 5,338,763
50.5 5,338,765
5,338,764
5,338,766
159 5,338,767
5,338,768

CLASS 522

88 5,338,769

CLASS 523

112 5,338,770
113 5,338,771
115 5,338,772
116 5,338,773
143 5,338,774
161 5,338,775
5,338,776
212 5,338,777
313 5,338,779
453 5,338,780
5,338,781
5,338,782

CLASS 524

3 5,338,783
31 5,338,784
39 5,338,785
83 5,338,786
100 5,338,787
197 5,338,788
314 5,338,789
5,338,790
401 5,338,791
477 5,338,792
571 5,338,793
792 5,338,794

CLASS 525

5,338,795
5,338,796
5,338,797
92 5,338,798
123 5,338,799
126 5,338,800
232 5,338,801
5,338,802
5,338,803
310 5,338,804
330.5 5,338,805
421 5,338,806
430 5,338,807
437 5,338,808

CLASS 526

75 5,338,810
130 5,338,812
5,338,813
210 5,338,814
307.6 5,338,815
312 5,338,816

CLASS 528

12 5,338,817
43 5,338,818
5,338,819
67 5,338,820
173 5,338,821
179 5,338,828
353 5,338,826
5,338,827
354 5,338,822
392 5,338,825

397 5,338,823
482 5,338,824

CLASS 530

324 5,338,829
326 5,338,830
334 5,338,831
350 5,338,832
351 5,338,833
5,338,834
398 5,338,835
399 5,338,836

CLASS 536

5 5,338,837
8 5,338,838
23.51 5,338,840
23.7 5,338,841
5,338,842
235 5,338,839

CLASS 540

222 5,338,843

CLASS 544

318 5,338,844
343 5,338,845
5,338,846

CLASS 546

5,338,847
112 5,338,848
113 5,338,849
122 5,338,850
141 5,338,851
5,338,852
224 5,338,853

CLASS 548

110 5,338,854
204 5,338,856
248 5,338,857
253 5,338,858
312.1 5,338,859
5,338,860
552 5,338,861

CLASS 548

4 5,338,863
207 5,338,864
214 5,338,865
226 5,338,866
5,338,867
323 5,338,868
335 5,338,869
378 5,338,870
492 5,338,871
510 5,338,872

CLASS 556

137 5,338,874
5,338,875
431 5,338,876
5,338,877

CLASS 558

277 5,338,878

CLASS 560

116 5,338,879

CLASS 562

5,338,881
483 5,338,882

CLASS 564

5,338,883
138 5,338,884
5,338,885

CLASS 568

5,338,886
5,338,887
5,338,888
697 5,338,889
5,338,890

CLASS 578

316.4 5,338,862

CLASS 580

16 5,338,493

CLASS 600

8 5,337,741
14 5,338,286
25 5,338,287
41 5,338,288

CLASS 601

33 5,337,737

CLASS 602

19 5,338,289
75 5,338,290

CLASS 604

5,338,291
22 5,338,292
B1 5,037,384
29 5,338,293
5,338,294
5,338,295
5,338,296
5,338,297
5,338,298
5,338,299
5,338,300
5,338,301
105 5,338,302
110 5,338,303
5,338,304
164 5,338,305
165 5,338,306
167 5,338,307
180 5,338,308
187 5,338,309
192 5,338,310
195 5,338,311
230 5,338,312
249 5,338,313
5,338,314
395 5,338,315

CLASS 606

5,338,317

CLASSIFICATION OF DESIGNS

D2— 608 349,597
714 349,595
893 349,596
910 349,598
953 349,599
5,339,600
349,601
D3— 227 349,602
228 349,603
D4— 104 349,605
138 349,606
D6— 300 349,607
332 349,608
336 349,610
361 349,611
370 349,612
381 349,609
349,613
393 349,614
403 349,615
5,339,616
481 349,617
5,339,618
499 349,619
501 349,620
349,621
503 349,622
5,339,623
5,339,624
5,339,625
D7— 109 349,633
515 349,626
349,627
349,628
5,339,629
349,630
349,631
613 349,632
D8— 8 349,634
14 349,635
52 349,636
67 349,637
331 349,638
349 349,639
363 349,640
367 349,641
D9— 300 349,642
329 349,643
339 349,644
422 349,645
423 349,646
435 349,647
439 349,648
5,339,649
5,339,650
5,339,651
D10— 2 349,652
5,339,653
39 349,654
65 349,656
349,657
78 349,658
5,339,659
96 349,660
99 349,661
104 349,662
D11— 164 349,663
216 349,664
218 349,665
D12— 92 349,666
111 349,667
129 349,668
133 349,669
5,339,670
147 349,671
349,672
349,673
349,674
349,675
183 349,676
192 349,677
203 349,678
349,679
5,339,680
D13— 103 349,681
110 349,682
127 349,683
133 349,684
349,685
5,339,686
162 349,687
349,688
D14— 100 349,604
349,690
349,691
102 349,693
106 349,694
107 349,695
114 349,696
116 349,692
125 349,697
126 349,698
141 349,699
142 349,700
149 349,701
198 349,702
211 349,703
216 349,704
217 349,705
349,706
233 349,707
239 349,708
241 349,709
D15— 7 349,710
13 349,711
127 349,712
D16— 203 349,713
349,714
232 349,715
242 349,716
244 349,717
245 349,718
D17— 5,339,719
20 349,720
349,721
D18— 7 349,722
12 349,723
35 349,724
D19— 26 349,725
54 349,726
59 349,727
60 349,729
5,339,731
D20— 5,339,732
42 349,733
D21— 59 349,734
63 349,735
5,339,736
145 349,737
5,339,738
206 349,739
228 349,740
349,741
232 349,742
237 349,743
349,744
D22— 122 349,745
349,746
128 349,747
139 349,748
143 349,749
349,750
147 349,751
D23— 214 349,752
241 349,753
249 349,754
255 349,755
349,756
349,757
259 349,758
295 349,759
311 349,760
337 349,761
347 349,764
367 349,762
371 349,763
D24— 128 349,765
189 349,766
349,767
349,768
197 349,769
198 349,770
211 349,771
215 349,772
224 349,773
D25— 156 349,774
D26— 3 349,775
37 349,776
5,339,777
86 349,778
88 349,779
D27— 162 349,780
D28— 8.1 349,781
D29— 108 349,782
D30— 349,783
110 349,784
118 349,787
127 349,785
5,339,786
D32— 1 349,788
5,339,789
25 349,790
31 349,791
35 349,792
5,339,793
5,339,794
D34— 5 349,795
15 349,796
5,339,797
26 349,799
28 349,798
31 349,800
349,801
349,802

CLASSIFICATION OF PLANTS

P.— 16 8,861
22 8,862
33.1 8,863
38.1 8,864
82.3 8,865
86.4 8,866

VOL
1165
ISS
3
AG
16
1994
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 5,337,419 5,337,531 5,337,694 5,338,136 5,338,159 5,338,183 5,338,433 5,339,070
02 : 5,337,729
04 : 5,337,478 5,337,606 5,337,626 5,337,900 5,337,982 5,338,035 5,338,225 5,338,289 5,338,290 5,338,397 5,338,617 5,338,645 5,338,932 5,338,948 5,338,977 5,339,039 5,339,092 5,339,362 5,339,459 5,339,462
05 : 5,337,901
06 : Re. 34,695 5,337,420 5,337,426 5,337,427 5,337,429 5,337,433 5,337,473 5,337,480 5,337,482 5,337,513 5,337,514 5,337,520 5,337,534 5,337,553 5,337,567 5,337,587 5,337,592 5,337,595 5,337,611 5,337,614 5,337,617 5,337,634 5,337,636
5,337,638 5,337,646 5,337,673 5,337,676 5,337,682 5,337,692 5,337,693 5,337,705 5,337,708 5,337,726 5,337,732 5,337,735 5,337,744 5,337,745 5,337,754 5,337,758 5,337,765 5,337,772 5,337,777 5,337,781 5,337,804 5,337,818 5,337,825 5,337,861 5,337,870 5,337,876 5,337,889 5,337,893 5,337,896 5,337,904 5,337,908 5,337,960 5,337,975 5,337,981 5,337,992 5,337,996 5,337,999 5,338,040 5,338,047 5,338,068 5,338,086 5,338,115 5,338,118 5,338,125 5,338,126 5,338,128 5,338,137 5,338,142 5,338,146 5,338,164 5,338,237 5,338,255 5,338,264
5,338,275 5,338,278 5,338,288 5,338,291 5,338,305 5,338,313 5,338,332 5,338,336 5,338,338 5,338,341 5,338,342 5,338,348 5,338,361 5,338,383 5,338,398 5,338,400 5,338,415 5,338,426 5,338,427 5,338,428 5,338,435 5,338,446 5,338,448 5,338,480 5,338,481 5,338,494 5,338,507 5,338,510 5,338,512 5,338,515 5,338,538 5,338,546 5,338,548 5,338,550 5,338,594 5,338,600 5,338,630 5,338,659 5,338,665 5,338,686 5,338,687 5,338,693 5,338,695 5,338,803 5,338,827 5,338,841 5,338,856 5,338,867 5,338,913 5,338,924 5,338,930 5,338,961 5,338,970
5,338,974 5,338,979 5,338,984 5,338,985 5,338,990 5,338,993 5,339,021 5,339,023 5,339,025 5,339,027 5,339,033 5,339,046 5,339,049 5,339,050 5,339,063 5,339,075 5,339,076 5,339,078 5,339,089 5,339,095 5,339,101 5,339,121 5,339,151 5,339,177 5,339,182 5,339,188 5,339,194 5,339,197 5,339,207 5,339,216 5,339,218 5,339,219 5,339,221 5,339,246 5,339,259 5,339,262 5,339,263 5,339,270 5,339,272 5,339,275 5,339,287 5,339,289 5,339,290 5,339,305 5,339,320 5,339,323 5,339,330 5,339,331 5,339,338 5,339,340 5,339,345 5,339,375 5,339,380
5,339,385 5,339,387 5,339,390 5,339,392 5,339,393 5,339,399 5,339,407 5,339,415 5,339,417 5,339,418 5,339,419 5,339,423 5,339,431 5,339,433 5,339,434 5,339,437 5,339,440 5,339,443 5,339,461
08 : 5,337,616 5,337,685 5,337,739 5,337,891 5,338,149 5,338,191 5,338,228 5,338,254 5,338,565 5,338,765 5,338,951 5,339,107 5,339,136 5,339,186 5,339,209
07 : 5,337,430 5,337,476 5,337,479 5,337,485 5,337,505 5,337,651 5,337,657 5,337,660 5,337,665 5,337,752 5,337,787 5,337,805 5,337,833 5,337,925 5,337,937 5,337,956 5,338,094 5,338,201 5,338,213
5,338,222 5,338,283 5,338,294 5,338,478 5,338,492 5,338,522 5,338,540 5,338,716 5,338,738 5,338,740 5,338,754 5,338,846 5,338,896 5,338,904 5,338,925 5,339,203 5,339,244 5,339,285 5,339,291 5,339,378 5,339,411
10 : 5,338,119 5,338,407 5,338,504 5,338,608 5,338,727 5,338,773 5,338,801 5,338,807
12 : 5,337,425 5,337,452 5,337,453 5,337,459 5,337,481 5,337,496 5,337,529 5,337,545 5,337,576 5,337,577 5,337,583 5,337,588 5,337,615 5,337,690 5,337,700 5,337,703 5,337,741 5,337,766 5,337,910 5,337,936 5,337,947 5,337,993 5,338,029 5,338,043

VOL 1165 ISS 3 AG 16 1994 UMI

5,338,196
5,338,239
5,338,274
5,338,301
5,338,303
5,338,384
5,338,391
5,338,396
5,338,590
5,338,675
5,338,680
5,338,872
5,338,960
5,339,055
5,339,080
5,339,178
5,339,413
13 : 5,337,523
5,337,581
5,337,793
5,337,811
5,337,907
5,338,318
5,338,408
5,338,461
5,338,577
5,339,296
15 : 5,337,855
5,338,218
16 : 5,338,395
5,338,423
5,338,700
5,339,077
5,339,096
17 : 5,337,442
5,337,462
5,337,528
5,337,538
5,337,663
5,337,664
5,337,680
5,337,701
5,337,709
5,337,717
5,337,832
5,337,946
5,337,951
5,337,958
5,337,969
5,337,988
5,338,027
5,338,031
5,338,041
5,338,044
5,338,046
5,338,079
5,338,153
5,338,166
5,338,221
5,338,236
5,338,241
5,338,273
5,338,302
5,338,311
5,338,317
5,338,334
5,338,440
5,338,495
5,338,527
5,338,529
5,338,571
5,338,629
5,338,684
5,338,726
5,338,779
5,338,816
5,338,878
5,338,889
5,338,901
5,338,909
5,339,048
5,339,153
5,339,225
5,339,250
5,339,254
5,339,337
18 : 5,337,477
5,337,699
5,337,763
5,337,845
5,337,912
5,337,952
5,338,009
5,338,011
5,338,107
5,338,129
5,338,192
5,338,195
5,338,292
5,338,578
5,338,732
5,338,742
5,338,851
5,339,114
5,339,115
5,339,249

5,339,257
5,339,395
19 : 5,337,590
5,337,714
5,338,088
5,338,117
5,338,250
5,338,543
5,339,040
5,339,425
20 : 5,337,834
5,337,871
5,337,911
5,337,919
5,338,019
5,338,101
5,338,257
5,338,516
5,338,783
5,338,917
21 : 5,337,535
5,337,784
5,337,831
5,337,887
22 : 5,337,437
5,337,548
5,337,579
5,337,829
5,337,859
5,337,966
5,338,203
5,338,441
5,338,717
23 : 5,338,978
24 : 5,337,508
5,337,647
5,337,757
5,337,991
5,338,091
5,338,188
5,338,394
5,338,558
5,338,560
5,338,666
5,338,670
5,338,777
5,338,832
5,338,931
5,339,031
5,339,038
5,339,097
5,339,223
5,339,265
5,339,283
5,339,284
25 : 5,337,450
5,337,471
5,337,525
5,337,607
5,337,644
5,337,734
5,337,740
5,337,751
5,337,857
5,337,940
5,337,962
5,337,994
5,338,298
5,338,324
5,338,416
5,338,496
5,338,610
5,338,622
5,338,644
5,338,663
5,338,669
5,338,753
5,338,793
5,338,797
5,338,839
5,338,842
5,338,865
5,338,908
5,339,005
5,339,008
5,339,018
5,339,024
5,339,065
5,339,066
5,339,119
5,339,164
5,339,184
5,339,240
5,339,307
5,339,334
5,339,383
5,339,406
5,339,408
5,339,428
5,339,449
26 : 5,337,443
5,337,490
5,337,501
5,337,509
5,337,597
5,337,632

5,337,681
5,337,704
5,337,711
5,337,715
5,337,718
5,337,764
5,337,768
5,337,867
5,337,868
5,337,869
5,337,880
5,337,894
5,337,909
5,337,921
5,337,932
5,337,983
5,337,984
5,337,986
5,338,002
5,338,024
5,338,042
5,338,056
5,338,057
5,338,080
5,338,081
5,338,082
5,338,083
5,338,092
5,338,100
5,338,114
5,338,138
5,338,165
5,338,247
5,338,248
5,338,280
5,338,340
5,338,386
5,338,497
5,338,506
5,338,514
5,338,532
5,338,574
5,338,585
5,338,588
5,338,737
5,338,744
5,338,819
5,338,820
5,338,862
5,338,887
5,339,009
5,339,198
5,339,211
5,339,242
5,339,368
5,339,454
27 : 5,337,521
5,337,608
5,337,645
5,337,654
5,337,736
5,337,791
5,337,799
5,337,902
5,337,943
5,337,957
5,338,102
5,338,157
5,338,190
5,338,243
5,338,295
5,338,299
5,338,300
5,338,314
5,338,351
5,338,430
5,338,452
5,338,473
5,338,479
5,338,490
5,338,556
5,338,595
5,338,822
5,338,852
5,338,911
5,339,016
5,339,074
5,339,103
5,339,187
5,339,202
5,339,224
5,339,281
5,339,389
5,339,397
28 : 5,338,004
5,338,161
5,339,058
29 : 5,337,417
5,337,511
5,337,560
5,337,780
5,337,809
5,337,905
5,337,915
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5,338,016
5,338,025
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5,338,858
5,338,864
5,339,311
30 : 5,338,410
5,338,411
31 : 5,338,023
32 : 5,337,488
5,337,892
5,338,605
5,339,108
33 : 5,337,788
5,338,132
5,338,272
5,338,530
5,338,921
5,339,238
5,339,422
5,339,435
4,964,710
34 : 5,337,434
5,337,440
5,337,472
5,337,483
5,337,620
5,337,659
5,337,760
5,338,109
5,338,296
5,338,304
5,338,310
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5,338,460
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5,338,551
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5,339,047
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5,339,124
5,339,157
5,339,234
5,339,235
5,339,346
5,339,384
5,339,442
35 : 5,337,917
5,338,999
37 : 5,339,051
36 : 5,337,468
5,337,475
5,337,484
5,337,487
5,337,506
5,337,539
5,337,570
5,337,580
5,337,602
5,337,633
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5,337,767
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5,337,906
5,337,916
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5,338,017
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5,338,124
5,338,176
5,338,208
5,338,226
5,338,281
5,338,286
5,338,297
5,338,308
5,338,359
5,338,366
5,338,382
5,338,385
5,338,390
5,338,404
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5,338,813
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5,338,900
5,338,937
5,338,946
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5,339,001
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5,339,102
5,339,125
5,339,130
5,339,131
5,339,135
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5,339,147
5,339,148
5,339,149
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5,339,152
5,339,168
5,339,170
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5,339,217
5,339,231
5,339,256
5,339,261
5,339,274
5,339,336
5,339,347
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5,339,398
5,339,404
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5,339,427
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5,037,384
5,338,050
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5,338,122
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5,338,204
5,338,207
5,338,209
5,338,312
5,338,702
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5,338,843
5,338,944
5,338,945
5,339,179
5,339,210
5,339,222
5,339,421
38 : 5,338,202
39 : 5,337,438
5,337,526
5,337,537
5,337,568
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5,337,679

5,337,743
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5,338,172
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5,338,776
5,338,916
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5,339,100
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5,339,329
5,339,335
5,339,456
40 : 5,337,807
5,337,820
5,337,826
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5,338,812
41 : 5,337,491
5,337,547
5,337,750
5,337,884
5,337,886
5,338,339
5,338,854
5,339,214
5,339,252
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42 : 5,337,435
5,337,446
5,337,470
5,337,494
5,337,572
5,337,573
5,337,624
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5,338,144
5,338,223
5,338,260
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5,338,401
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5,338,429
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5,338,458
5,338,463
5,338,469
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5,339,230
5,339,237
5,339,352
5,339,439
43 : 5,337,933
44 : 5,337,566
5,337,584
5,338,343
5,338,566
5,338,652
5,338,653
5,338,907
5,339,288
45 : 5,337,460
5,337,591
5,337,643
5,337,798
5,338,038
5,338,185
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5,339,229
47 : 5,337,445
5,337,451
5,337,469
5,337,516

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5,337,950
5,338,315
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48 : 5,337,422
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5,337,444
5,337,457
5,337,464
5,337,495
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5,339,277
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5,339,394
5,339,438
49 : 5,337,524
5,337,540
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5,337,844
5,338,060
5,338,210
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5,338,623
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5,338,770
5,338,936
5,339,213
5,339,282
5,339,312
5,339,363
50 : 5,337,730
5,337,810
5,338,169
5,338,935
5,338,963
5,339,212

5,339,253
51 : Re.34,694
5,337,515
5,337,582
5,337,610
5,337,803
5,337,836
5,337,856
5,337,948
5,338,212
5,338,245
5,338,344
5,338,806
5,338,826
5,338,950
5,338,994
5,339,057
5,339,174
5,339,227
5,339,341
5,339,374
53 : 5,337,510
5,337,512
5,337,561
5,337,702
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5,337,858
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5,338,006
5,338,012
5,338,238
5,338,545
5,338,564
5,338,662

5,338,678
5,338,694
5,338,696
5,339,041
5,339,082
5,339,351
5,339,354
5,339,379
5,339,386
5,339,432
54 : 5,337,698
5,338,352
55 : 5,337,428
5,337,449
5,337,517
5,337,598
5,337,605
5,337,622
5,337,641
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5,337,837
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5,338,015
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5,338,624
5,338,677
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5,339,348
56 : 5,337,601

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06 : 349,596
349,602
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349,626
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349,683
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08 : 349,651

349,665
349,695
349,786
09 : 349,619
349,642
12 : 349,681
349,704
349,731
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13 : 349,657
16 : 349,763
17 : 349,595
349,606
349,615
349,701
349,771
349,800
21 : 349,624
349,652
22 : 349,658
24 : 349,597
349,617

349,739
349,783
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25 : 349,599
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349,727
26 : 349,676
349,686
27 : 349,633
349,711
349,733
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29 : 349,646
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32 : 349,668
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33 : 349,696
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349,677
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37 : 349,612
349,613
349,616
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349,708

39 : 349,604
349,628
349,662
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349,692
349,726
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349,777
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349,793
349,707
349,601
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349,791
349,792
349,797
349,799
40 : 349,655
349,765
45 : 349,614
349,634
349,758

47 : 349,621
349,721
349,740
48 : 349,618
349,629
349,630
349,631
349,689
349,715
349,794
349,796
349,622
349,737
349,620
50 : 349,760
51 : 349,743
349,764
55 : 349,660
349,661
349,778
349,779
56 : 349,636
349,680

PLANT PATENTS

15 : 8,864
8,866
15 : 8,863

U.S. GOVERNMENT PRINTING OFFICE : 1994 O - 155-445 : QL 3

VOL
1165

ISS
3

AG
16

1994

UMI

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VOL
1165

ISS
3

AG
16

1994

UMI

VOL
1165

ISS
3

AG
16

1994

VOL
1165

ISS
4

AG
23

1994

UMI

Vol. 1165 Number 4

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Patent
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Office



VOL
1165
ISS
4
AG
23
1994
UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 23, 1994 Volume 1165 Number 4

		Page
Patent and Trademark Office Notices		
Patent Cooperation Treaty (PCT) Information	1165 OG	81
Patent Cooperation Treaty Update	1165 OG	81
Notice of Maintenance Fees Payable	1165 OG	81
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1165 OG	82
Reissue Applications Filed	1165 OG	[illegible]
Requests for Reexaminations Filed	1165 OG	88
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1165 OG	[illegible]
Erratum	1165 OG	90
Registration To Practice	1165 OG	90
Registration To Practice	1165 OG	91
Patent Certificates of Correction	1165 OG	91
Summary of Final Decisions Issued by the Trademark Trial and Appeal Board	1165 OG	92
Special Boxes for Mail	1165 OG	94
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1165 OG	95
Patent Examining Corps	1165 OG	97
Condition of Trademark Applications	1165 OG	98
Reexaminations		2201
Reissue Patents Granted (34,699)		2203
Plant Patents Granted (8,867)		2207
Patents Granted		
General and Mechanical (5,339,464)		2209
Chemical (5,340,365)		2523
Electrical (5,340,938)		2697
Design Patents Granted (349,803)		2905
Index of Patentees	PI	I
Indices of Reissue, Reexaminations, Design and Plant Patents	PI	90
Classification of		
Patents (Including Reissues and Reexaminations)	PI	97
Designs and Plants Applications	PI	101
Geographical Index of Residence of Inventors		
Patents (Including Reissues and Reexaminations)	PI	103
Designs and Plant Applications	PI	105
Change of Address Form	PI	107
Subscription Order Form	PI	109

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VOL
1165
ISS
4
AG
23
1994
UMI

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
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All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Patent Cooperation Treaty Update

The International Bureau of the World Intellectual Property Organization has informed the U. S. Patent and Trademark Office that, due to a change in the exchange rate of the U. S. dollar with regard to the German mark, the dollar amount of the international search fee charged by the European Patent Office for international applications filed in the United States Receiving Office will be $1537.00, effective October 1, 1994.

July 27, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed

VOL
1165
ISS
4
AG
23
1994
UMI

on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 20, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,040,243 through 5,042,086
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 18, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,686,710 through 4,688,268
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 16, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,398,305 through 4,399,566
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 15, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 34,507	07/873,502	01/11/94
(4,932,789)	(07/335,616)	(06/12/90)
4,334,464	06/224,833	06/15/82
4,334,526	06/218,580	06/15/82
4,334,576	06/276,962	06/15/82
4,334,583	06/225,998	06/15/82
4,334,630	06/228,291	06/15/82
4,334,669	06/266,185	06/15/82
4,334,750	06/220,909	06/15/82
4,334,825	06/229,538	06/15/82
4,334,868	06/234,457	06/15/82
4,334,881	06/223,661	06/15/82
4,334,887	06/228,524	06/15/82
4,334,888	06/250,646	06/15/82
4,334,924	06/216,655	06/15/82
4,334,925	06/216,680	06/15/82
4,334,934	06/257,341	06/15/82
4,334,936	06/234,401	06/15/82
4,334,941	06/286,993	06/15/82
4,334,948	06/237,414	06/15/82
4,334,961	06/288,954	06/15/82
4,334,964	06/273,171	06/15/82
4,334,976	06/224,778	06/15/82
4,334,984	06/230,313	06/15/82
4,334,986	06/238,114	06/15/82
4,335,008	06/267,900	06/15/82
4,335,011	06/268,464	06/15/82
4,335,016	06/237,297	06/15/82
4,335,019	06/225,079	06/15/82
4,335,020	06/222,848	06/15/82
4,335,022	06/219,279	06/15/82
4,335,024	06/243,431	06/15/82
4,335,027	06/257,532	06/15/82
4,335,030	06/279,162	06/15/82
4,335,037	06/247,689	06/15/82
4,335,053	06/256,321	06/15/82
4,335,054	06/262,000	06/15/82
4,335,055	06/262,002	06/15/82
4,335,073	06/260,238	06/15/82
4,335,074	06/219,492	06/15/82
4,335,084	06/275,096	06/15/82
4,335,090	06/240,339	06/15/82
4,335,097	06/225,361	06/15/82
4,593,579	06/657,088	06/10/86
4,593,580	06/745,374	06/10/86
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4,593,585	06/663,554	06/10/86
4,593,590	06/672,603	06/10/86
4,593,599	06/637,720	06/10/86
4,593,600	06/539,378	06/10/86
4,593,601	06/593,391	06/10/86
4,593,602	06/678,198	06/10/86
4,593,604	06/747,903	06/10/86
4,593,609	06/772,788	06/10/86
4,593,610	06/708,151	06/10/86
4,593,611	06/471,466	06/10/86
4,593,612	06/613,149	06/10/86
4,593,613	06/757,679	06/10/86
4,593,618	06/703,145	06/10/86
4,593,620	06/638,469	06/10/86
4,593,621	06/773,644	06/10/86
4,593,629	06/638,968	06/10/86
4,593,630	06/670,730	06/10/86
4,593,633	06/570,372	06/10/86
4,593,636	06/746,722	06/10/86
4,593,637	06/616,866	06/10/86
4,593,638	06/687,993	06/10/86
4,593,647	06/532,967	06/10/86
4,593,649	06/580,072	06/10/86
4,593,651	06/659,171	06/10/86
4,593,655	06/717,020	06/10/86
4,593,661	06/780,698	06/10/86
4,593,664	06/770,092	06/10/86
4,593,665	06/698,638	06/10/86
4,593,668	06/779,094	06/10/86
4,593,669	06/729,693	06/10/86
4,593,672	06/670,330	06/10/86
4,593,673	06/727,512	06/10/86
4,593,676	06/459,350	06/10/86
4,593,677	06/759,841	06/10/86
4,593,684	06/585,361	06/10/86
4,593,686	06/670,991	06/10/86
4,593,688	06/615,195	06/10/86
4,593,694	06/519,061	06/10/86
4,593,699	06/503,838	06/10/86
4,593,704	06/557,733	06/10/86
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4,593,718	06/713,407	06/10/86
4,593,724	06/740,989	06/10/86
4,593,737	06/562,531	06/10/86
4,593,738	06/695,065	06/10/86
4,593,741	06/598,721	06/10/86
4,593,744	06/602,943	06/10/86
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4,593,757	06/662,866	06/10/86
4,593,759	06/558,406	06/10/86
4,593,761	06/632,994	06/10/86
4,593,767	06/652,547	06/10/86
4,593,770	06/668,922	06/10/86
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4,593,786	06/443,487	06/10/86
4,593,787	06/562,839	06/10/86
4,593,789	06/784,952	06/10/86
4,593,791	06/601,255	06/10/86
4,593,793	06/568,958	06/10/86
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4,593,804	06/789,923	06/10/86
4,593,807	06/690,530	06/10/86
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4,593,810	06/502,015	06/10/86
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4,593,815	06/703,528	06/10/86
4,593,816	06/771,825	06/10/86
4,593,818	06/728,473	06/10/86
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4,593,830	06/697,007	06/10/86
4,593,835	06/604,002	06/10/86
4,593,836	06/608,727	06/10/86
4,593,841	06/701,551	06/10/86
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4,594,164	06/737,162	06/10/86
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4,594,185	06/624,322	06/10/86
4,594,191	06/725,885	06/10/86
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4,594,200	06/671,546	06/10/86
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4,594,213	06/654,217	06/10/86
4,594,214	06/626,714	06/10/86
4,594,215	06/549,124	06/10/86
4,594,216	06/425,966	06/10/86
4,594,217	06/709,102	06/10/86
4,594,224	06/597,818	06/10/86
4,594,225	06/775,709	06/10/86
4,594,229	06/238,234	06/10/86
4,594,232	06/767,923	06/10/86
4,594,238	06/568,903	06/10/86
4,594,241	06/669,035	06/10/86
4,594,242	06/689,892	06/10/86
4,594,243	06/634,479	06/10/86
4,594,244	06/579,117	06/10/86
4,594,247	06/574,442	06/10/86
4,594,249	06/745,019	06/10/86
4,594,280	06/576,271	06/10/86
4,594,284	06/612,786	06/10/86
4,594,287	06/760,271	06/10/86
4,594,288	06/636,549	06/10/86
4,594,293	06/716,381	06/10/86
4,594,295	06/611,857	06/10/86
4,594,297	06/566,844	06/10/86
4,594,301	06/742,146	06/10/86
4,594,306	06/641,424	06/10/86
4,594,318	06/403,771	06/10/86
4,594,319	06/590,712	06/10/86
4,594,320	06/479,980	06/10/86
4,594,321	06/479,979	06/10/86
4,594,322	06/608,837	06/10/86
4,594,324	06/453,825	06/10/86
4,594,331	06/744,750	06/10/86
4,594,337	06/705,953	06/10/86
4,594,338	06/702,533	06/10/86
4,594,340	06/676,121	06/10/86
4,594,341	06/728,132	06/10/86
4,594,343	06/662,583	06/10/86
4,594,347	06/573,409	06/10/86
4,594,354	06/307,040	06/10/86
4,594,355	06/517,393	06/10/86
4,594,356	06/689,765	06/10/86
4,594,368	06/625,179	06/10/86
4,594,369	06/749,751	06/10/86
4,594,370	06/717,930	06/10/86
4,594,371	06/729,529	06/10/86

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4,594,372	06/644,780	06/10/86
4,594,373	06/714,137	06/10/86
4,594,375	06/617,198	06/10/86
4,594,384	06/684,606	06/10/86
4,594,388	06/646,039	06/10/86
4,594,395	06/711,926	06/10/86
4,594,397	06/702,707	06/10/86
4,594,404	06/591,539	06/10/86
4,594,412	06/568,714	06/10/86
4,594,413	06/765,286	06/10/86
4,594,417	06/677,122	06/10/86
4,594,419	06/503,469	06/10/86
4,594,423	06/631,668	06/10/86
4,594,425	06/578,444	06/10/86
4,594,428	06/456,523	06/10/86
4,594,430	06/696,680	06/10/86
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4,594,432	06/566,103	06/10/86
4,594,435	06/706,824	06/10/86
4,594,440	06/516,968	06/10/86
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4,594,443	06/642,249	06/10/86
4,594,448	06/764,010	06/10/86
4,594,449	06/556,161	06/10/86
4,594,460	06/713,691	06/10/86
4,594,463	06/695,370	06/10/86
4,594,468	06/780,722	06/10/86
4,594,470	06/612,797	06/10/86
4,594,476	06/646,295	06/10/86
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4,594,631	06/618,785	06/10/86
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4,594,667	06/574,748	06/10/86
4,594,668	06/467,069	06/10/86
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4,594,681	06/415,602	06/10/86
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4,594,692	06/508,303	06/10/86
4,594,695	06/530,824	06/10/86
4,594,697	06/498,013	06/10/86
4,594,699	06/811,327	06/10/86
4,594,717	06/593,779	06/10/86
4,594,720	06/745,973	06/10/86
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4,594,730	06/601,661	06/10/86
4,594,731	06/670,475	06/10/86
4,932,076	07/279,706	06/12/90
4,932,083	07/364,877	06/12/90
4,932,086	07/353,607	06/12/90
4,932,089	07/388,589	06/12/90
4,932,090	07/336,732	06/12/90
4,932,094	07/289,614	06/12/90
4,932,096	07/265,893	06/12/90
4,932,098	07/237,037	06/12/90
4,932,102	07/331,968	06/12/90
4,932,106	06/873,110	06/12/90
4,932,108	06/881,497	06/12/90
4,932,112	07/304,027	06/12/90
4,932,113	07/387,294	06/12/90
4,932,115	07/211,363	06/12/90
4,932,116	07/402,240	06/12/90
4,932,124	07/357,166	06/12/90
4,932,130	07/275,336	06/12/90
4,932,131	07/264,970	06/12/90
4,932,132	07/317,444	06/12/90
4,932,133	07/361,636	06/12/90
4,932,134	07/260,858	06/12/90
4,932,135	07/350,393	06/12/90
4,932,140	07/358,362	06/12/90
4,932,141	07/255,448	06/12/90
4,932,142	07/307,717	06/12/90
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VOL
1165
ISS
4
AG
23
1994
UMI

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VOL 1165 ISS 4 AG 23 1994 UMI

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,967,545, Re. S.N. 08/214,131, Mar. 17, 1994, Cl. 56/12.9, HARVESTING APPARATUS FOR LEAFY VEGETABLES, Rich Fischer, et. al., Owner of Record: *Fresh Choice Produce, Inc., Salinas, Calif.*, Attorney or Agent: Matthew L. Schneider, Ex. Gp.: 3506

4,972,059, Re. S.N. 07/953,992, Sept. 29, 1992, Cl. 219/10, METHOD AND APPARATUS FOR ADJUSTING THE TEMPERATURE PROFILE OF FOOD PRODUCTS DURING MICROWAVE HEATING, Dan J. Wendt, et. al., Owner of Record: *The Pillsbury Company, Minneapolis, Minn.*, Attorney or Agent: Sydney Leach, Ex. Gp.: 2104

4,981,303, Re. S.N. 08/263,403, June 21, 1994, Cl. 277, SEALING DEVICE, Noboru Matsushima et al., Owner of Record: *NOK Corporation, Tokyo, Japan*, Attorney or Agent: James P. Welch, Ex. Gp.: 2406

5,027,968, Re. S.N. 08/263,392, June 20, 1994, Cl. 220, CONTAINER CONSTRUCTION, William J. Timson, Owner of Record: *Wellesley Research Associates Inc., Wellesley, Mass.*, Attorney or Agent: Paul J. Cook, Ex. Gp.: 2401

5,097,535, Re. S.N. 08/217,157, Mar. 24, 1994, Cl. 2/69, GARMENT FOR USE IN HEALTH CARE SITUATIONS, Betty J. Dye, et. al., Owner of Record: *Inventor*, Attorney or Agent: Larry W. McKenzie, Ex. Gp.: 2407

5,127,717, Re. S.N. 08/272,379, July 6, 1994, Cl. 312/111, INDEXABLE VERTICAL BOOKCASE FOR OVERSIZED BOOKS, Beatrice E. Martinez, Owner of Record: *Inventor*, Attorney or Agent: William P. Berridge, Ex. Gp.: 3507

5,189,219, Re. S.N. 08/255,954, June 7, 1994, Cl. 546/356, METHOD FOR THE PREPARATION OF ERYTHRO VICINAL AMINO ALCOHOLS, Johannes Brussee, et. al., Owner of Record: *Duphar International Research B.V., Weesp, Netherlands*, Attorney or Agent: Thomas P. Pavelko, Ex. Gp.: 1209.

5,269,905, Re. S.N. 08/231,596, Jan. 13, 1994, Cl. 205/10, APPARATUS AND PROCESS TO REGENERATE A TRIVALENT CHROMIUM BATH, Bradley D. Reynolds, Owner of Record: *Elf Atochem North America Inc., Philadelphia, Pa.*, Attorney or Agent: Robert B. Henn, Ex. Gp.: 1102

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,313,870, Reexam. No. 90/003,380, Mar. 30, 1994, Cl. 524/783, PROCESS FOR PRODUCING POLYCONDENSATES, Shozaburo, Imai, et. al., Owner of Record: *Sumitomo Chemical Co., Ltd., Tokyo, Japan*, Attorney or Agent: Stevens, Davis, Miller & Mosher, Alexandria, Va., Ex. Gp.: 1511, Requester: Amoco Corporation, Chicago, Ill.

4,888,023, Reexam. No. 90/003,379, Mar. 30, 1994, Cl. 623/022, FEMORAL PROSTHESIS WITH UNCOUPLED DISTAL TIP, Robert G. Averill, et. al., Owner of Record: *Osteonics Corp., Allendale, N.J.*, Attorney or Agent: Arthur Jacob, Samuelson & Jacob, Hackensack, N.J., Ex. Gp.: 3308, Requester: Intermedics Orthopedics, Inc., Austin, Tex.

5,117,623, Reexam. No. 90/003,467, June 27, 1994, Cl. 60/39.05, OPERATING FLEXIBILITY IN IGCC STATIONS, David C. Arundale, Owner of Record: *H & G Process Contracting Ltd., Croydon, Surrey, England*, Attorney or Agent: Charles R. Wolfe, Jr., Bacon & Thomas, Alexandria, Va., Ex. Gp.: 3403, Requester: Marvin A. Naigur, Foster Wheeler Corp., Clinton, N.J.

5,232,268, Reexam. No. 90/003,471, June 22, 1994, Cl. 299/013, METHOD OF BREAKING A FULL FACE OF ROCK FOR CONSTRUCTING SHAFTS AND TUNNELS, William R. Dengler, et. al., Owner of Record: *Dynatec International, Ltd., Richmond Hill, Canada*, Attorney or Agent: Bereskin and Parr, Toronto, Ontario, Canada, Ex. Gp.: 3506, Requester: Richard P. Bauer, Washington, D.C.

5,272,939, Reexam. No. 90/003,375, Mar. 28, 1994, Cl. 74/866, SHIFT ENABLE CONTROL METHOD/SYSTEM, Ronald K. Markyvech, et. al., Owner of Record: *Eaton Corp., Cleveland, Ohio*, Attorney or Agent: Howard D. Gordon, Cleveland, Ohio, Ex. Gp.: 3502, Requester: Owner is Requester.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
JUNE 27, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
41,130	70/041,130	09/22/1903
93,517	71/068,738	09/23/1913
306,368	71/337,044	09/19/1933
306,372	71/337,095	09/19/1933
306,373	71/337,089	09/19/1933
306,394	71/335,969	09/19/1933
306,403	71/333,711	09/19/1933
306,405	71/334,539	09/19/1933
306,408	71/333,713	09/19/1933
306,416	71/337,446	09/19/1933
306,418	71/337,465	09/19/1933
306,480	71/331,713	09/19/1933
306,484	71/332,882	09/19/1933
306,491	71/318,094	09/19/1933
306,515	71/338,049	09/19/1933
306,516	71/338,448	09/19/1933
306,523	71/338,352	09/19/1933
580,151	71/550,278	09/22/1953
580,163	71/594,460	09/22/1953
580,165	71/596,356	09/22/1953
580,169	71/601,997	09/22/1953
580,170	71/602,029	09/22/1953
580,171	71/602,030	09/22/1953
580,175	71/605,926	09/22/1953
580,185	71/613,391	09/22/1953
580,186	71/614,599	09/22/1953
580,189	71/615,719	09/22/1953
580,193	71/616,521	09/22/1953
580,194	71/616,524	09/22/1953
580,195	71/616,980	09/22/1953
580,199	71/617,684	09/22/1953
580,200	71/617,976	09/22/1953
580,202	71/618,228	09/22/1953
580,209	71/620,079	09/22/1953

Reg. No.	Serial Number	Reg. Date
580,212	71/622,405	09/22/1953
580,227	71/625,710	09/22/1953
580,228	71/625,999	09/22/1953
580,232	71/627,663	09/22/1953
580,244	71/629,342	09/22/1953
580,259	71/630,457	09/22/1953
580,260	71/630,539	09/22/1953
580,270	71/632,205	09/22/1953
580,280	71/633,546	09/22/1953
580,282	71/633,923	09/22/1953
580,287	71/634,553	09/22/1953
580,289	71/635,097	09/22/1953
580,291	71/635,326	09/22/1953
580,294	71/635,680	09/22/1953
580,295	71/636,218	09/22/1953
580,300	71/636,400	09/22/1953
580,301	71/636,414	09/22/1953
580,309	71/636,910	09/22/1953
580,312	71/637,268	09/22/1953
580,313	71/637,273	09/22/1953
580,315	71/637,374	09/22/1953
580,316	71/637,375	09/22/1953
580,317	71/637,528	09/22/1953
580,318	71/637,553	09/22/1953
580,324	71/637,993	09/22/1953
580,329	71/638,271	09/22/1953
580,331	71/638,334	09/22/1953
580,339	71/638,963	09/22/1953
580,341	71/639,171	09/22/1953
580,342	71/639,172	09/22/1953
580,343	71/639,177	09/22/1953
580,346	71/639,318	09/22/1953
580,347	71/639,389	09/22/1953
580,350	71/639,530	09/22/1953
580,351	71/639,594	09/22/1953
580,356	71/639,965	09/22/1953
580,365	71/640,732	09/22/1953
580,372	71/641,274	09/22/1953
580,378	71/641,735	09/22/1953
580,386	71/644,044	09/22/1953
580,392	71/597,699	09/22/1953
871,504	72/287,553	06/17/1969
968,388	72/380,840	09/18/1973
968,390	72/404,568	09/18/1973
968,402	72/428,324	09/18/1973
968,404	72/430,445	09/18/1973
968,405	72/431,609	09/18/1973
968,407	72/440,386	09/18/1973
968,410	72/441,728	09/18/1973
968,412	72/443,076	09/18/1973
968,413	72/443,154	09/18/1973
968,414	72/443,731	09/18/1973
968,415	72/443,753	09/18/1973
968,416	72/397,574	09/18/1973
968,417	72/397,576	09/18/1973
968,418	72/397,578	09/18/1973
968,419	72/397,579	09/18/1973
968,420	72/397,580	09/18/1973
968,423	72/437,617	09/18/1973
968,427	72/418,710	09/18/1973
968,429	72/431,081	09/18/1973
968,430	72/431,082	09/18/1973
968,431	72/399,059	09/18/1973
968,433	72/437,062	09/18/1973
968,437	72/411,593	09/18/1973
968,439	72/418,427	09/18/1973
968,445	72/424,569	09/18/1973
968,451	72/429,334	09/18/1973
968,455	72/432,078	09/18/1973
968,460	72/438,394	09/18/1973
968,462	72/438,402	09/18/1973
968,464	72/440,469	09/18/1973
968,465	72/440,959	09/18/1973
968,471	72/385,112	09/18/1973
968,472	72/412,987	09/18/1973
968,475	72/424,779	09/18/1973
968,477	72/425,148	09/18/1973
968,480	72/425,856	09/18/1973
968,483	72/428,242	09/18/1973
968,484	72/428,302	09/18/1973
968,485	72/428,866	09/18/1973
968,488	72/433,742	09/18/1973
968,492	72/435,067	09/18/1973
968,497	72/429,957	09/18/1973
968,498	72/432,345	09/18/1973
968,501	72/432,482	09/18/1973
968,505	72/433,787	09/18/1973
968,506	72/433,846	09/18/1973
968,507	72/436,735	09/18/1973
968,509	72/422,559	09/18/1973
968,513	72/435,620	09/18/1973
968,518	72/403,178	09/18/1973
968,524	72/418,210	09/18/1973
968,526	72/439,687	09/18/1973
968,528	72/440,311	09/18/1973
968,530	72/440,637	09/18/1973
968,534	72/444,082	09/18/1973
968,535	72/444,123	09/18/1973
968,537	72/444,510	09/18/1973
968,538	72/444,526	09/18/1973
968,539	72/444,595	09/18/1973
968,541	72/425,191	09/18/1973
968,546	72/432,865	09/18/1973
968,547	72/436,662	09/18/1973
968,548	72/436,666	09/18/1973
968,549	72/436,732	09/18/1973
968,550	72/436,736	09/18/1973
968,553	72/398,453	09/18/1973
968,561	72/422,371	09/18/1973
968,565	72/433,460	09/18/1973
968,580	72/438,088	09/18/1973
968,583	72/440,433	09/18/1973
968,586	72/440,923	09/18/1973
968,587	72/440,955	09/18/1973
968,590	72/441,855	09/18/1973
968,593	72/412,560	09/18/1973
968,595	72/422,457	09/18/1973
968,597	72/425,186	09/18/1973
968,598	72/425,967	09/18/1973
968,599	72/426,083	09/18/1973
968,601	72/426,241	09/18/1973
968,605	72/436,667	09/18/1973
968,606	72/436,742	09/18/1973
968,607	72/432,297	09/18/1973
968,608	72/436,739	09/18/1973
968,609	72/387,022	09/18/1973
968,612	72/416,626	09/18/1973
968,618	72/425,568	09/18/1973
968,619	72/431,114	09/18/1973
968,621	72/436,740	09/18/1973
968,622	72/414,142	09/18/1973
968,626	72/396,648	09/18/1973
968,627	72/409,248	09/18/1973
968,632	72/436,023	09/18/1973
968,633	72/438,842	09/18/1973
968,636	72/439,949	09/18/1973
968,637	72/427,890	09/18/1973
968,638	72/428,159	09/18/1973
968,639	72/428,736	09/18/1973
968,641	72/428,756	09/18/1973
968,644	72/428,058	09/18/1973
968,646	72/363,938	09/18/1973
968,647	72/394,485	09/18/1973
968,649	72/399,396	09/18/1973
968,651	72/419,331	09/18/1973
968,654	72/436,873	09/18/1973
968,661	72/406,789	09/18/1973
968,674	72/437,179	09/18/1973
968,679	72/441,643	09/18/1973
968,680	72/441,697	09/18/1973
968,681	72/442,075	09/18/1973
968,688	72/423,895	09/18/1973
968,693	72/431,147	09/18/1973
968,694	72/431,229	09/18/1973
968,698	72/435,951	09/18/1973
968,699	72/437,590	09/18/1973

VOL 1165 ISS 4 AG 23 1994 UMI

Reg. No.	Serial Number	Reg. Date
968,700	72/437,711	09/18/1973
968,701	72/437,819	09/18/1973
968,702	72/437,854	09/18/1973
968,703	72/438,222	09/18/1973
968,704	72/438,223	09/18/1973
968,711	72/410,422	09/18/1973
968,714	72/426,412	09/18/1973
968,715	72/429,935	09/18/1973
968,717	72/438,263	09/18/1973
968,720	72/421,745	09/18/1973
968,722	72/423,886	09/18/1973
968,726	72/428,097	09/18/1973
968,727	72/428,100	09/18/1973
968,728	72/428,218	09/18/1973
968,731	72/436,936	09/18/1973
968,741	72/417,586	09/18/1973
968,742	72/418,278	09/18/1973
968,743	72/419,402	09/18/1973
968,747	72/425,534	09/18/1973
968,748	72/426,281	09/18/1973
968,749	72/426,802	09/18/1973
968,750	72/427,360	09/18/1973
968,755	72/430,277	09/18/1973
968,756	72/430,749	09/18/1973
968,758	72/431,155	09/18/1973
968,760	72/431,948	09/18/1973
968,761	72/432,177	09/18/1973
968,763	72/432,710	09/18/1973
968,764	72/433,855	09/18/1973
968,765	72/433,857	09/18/1973
968,766	72/433,861	09/18/1973
968,767	72/433,863	09/18/1973
968,768	72/433,929	09/18/1973
968,769	72/434,082	09/18/1973
968,771	72/435,380	09/18/1973
968,773	72/436,274	09/18/1973
968,774	72/436,337	09/18/1973
968,777	72/436,459	09/18/1973
968,781	72/438,480	09/18/1973
968,782	72/438,570	09/18/1973
968,785	72/439,358	09/18/1973
968,790	72/446,062	09/18/1973
968,791	72/446,271	09/18/1973
968,792	72/446,357	09/18/1973
968,796	72/447,233	09/18/1973
968,797	72/447,647	09/18/1973
968,799	72/388,781	09/18/1973
968,800	72/402,316	09/18/1973
968,801	72/406,025	09/18/1973
968,802	72/408,005	09/18/1973
968,804	72/426,516	09/18/1973
968,805	72/442,610	09/18/1973
968,806	72/442,611	09/18/1973
968,809	72/402,927	09/18/1973
968,811	72/434,470	09/18/1973
968,816	72/433,599	09/18/1973
968,818	72/400,662	09/18/1973
968,819	72/407,659	09/18/1973
968,822	72/411,062	09/18/1973
968,824	72/413,185	09/18/1973
968,825	72/415,578	09/18/1973
968,828	72/426,670	09/18/1973
968,830	72/429,243	09/18/1973
968,833	72/435,170	09/18/1973
968,835	72/436,056	09/18/1973
968,836	72/436,172	09/18/1973
968,838	72/436,304	09/18/1973
968,839	72/436,538	09/18/1973
968,840	72/437,222	09/18/1973
968,843	72/439,321	09/18/1973
968,846	72/439,390	09/18/1973
968,849	72/399,170	09/18/1973
968,850	72/412,481	09/18/1973
968,852	72/416,375	09/18/1973
968,853	72/418,703	09/18/1973
968,859	72/389,460	09/18/1973
968,863	72/414,014	09/18/1973
968,866	72/417,414	09/18/1973
968,867	72/421,309	09/18/1973
968,871	72/429,724	09/18/1973
968,874	72/433,020	09/18/1973
968,882	72/410,629	09/18/1973
968,886	72/416,218	09/18/1973
968,891	72/421,744	09/18/1973
968,897	72/428,105	09/18/1973
968,898	72/429,033	09/18/1973
968,902	72/434,815	09/18/1973
968,904	72/406,505	09/18/1973
968,905	72/413,455	09/18/1973
968,907	72/430,771	09/18/1973
968,911	72/434,963	09/18/1973
968,914	72/427,777	09/18/1973
968,915	72/428,889	09/18/1973
968,916	72/428,996	09/18/1973
968,923	72/431,392	09/18/1973
968,935	72/430,672	09/18/1973
968,937	72/435,499	09/18/1973
968,940	72/391,363	09/18/1973
968,943	72/405,763	09/18/1973
968,944	72/404,714	09/18/1973
968,947	72/406,696	09/18/1973

Erratum

"All reference to Patent No. 5,333,258 to Louis A. Lippincott of New Jersey for 'VISUAL FRAME BUFFER ARCHITECTURE' appearing in the Official Gazette of July 26, 1994 should be deleted since no patent was granted."

"All reference to Patent No. 5,168,111 to Jo Ann M. Canich of Texas for 'OLEFIN POLYMERIZATION CATALYSTS' appearing in the Official Gazette of Dec. 1, 1992, should be deleted since no patent was granted."

Registration To Practice

The following person successfully passed the registration examination that was held April 13, 1994. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before October 7, 1994.

Stein, Kenneth L., 36 Fairmount Rd., New Providence, N.J. 07974

July 22, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held April 13, 1994. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before October 7, 1994.

Preston, David R., 3435 Valley Dr., Alexandria, Va. 22302

July 22, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before October 7, 1994.

Barrett, Glenn T., 2509 A South Walter Reed Dr., Arlington, Va. 22206
Emery, Stephen J., 915 S. 18th St., Arlington, Va. 22202
Hazel, Blondel, 6511 8th Pl., Hyattsville, Md. 20783
Laub, David W., 401 S. 12th St., #2107, Arlington, Va. 22202
Lee, Lester L., 13495 Carapace Ct., Manassas, Va. 22111

July 22, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held April 13, 1994. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before October 7, 1994.

Williams, Vernon Edric, 65 Emerson Dr., Berea, Ohio 44017

July 26, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Certificates of Correction For Week of August 23, 1994

D. 324,526	5,134,614	5,197,328	5,225,355
D. 343,599	5,139,490	5,199,471	5,225,761
D. 344,440	5,146,759	5,202,435	5,226,339
D. 344,591	5,147,249	5,204,662	5,227,943
D. 347,034	5,153,157	5,204,839	5,228,897
D. 347,519	5,157,182	5,205,173	5,228,909
D. 347,680	5,161,847	5,205,392	5,229,722
Re. 34,052	5,168,306	5,205,421	5,230,498
Re. 34,569	5,171,500	5,208,283	5,230,992
4,874,808	5,176,557	5,209,483	5,231,840
4,888,344	5,177,427	5,210,762	5,231,989
4,902,959	5,177,438	5,211,982	5,232,939
4,909,547	5,179,194	5,212,169	5,233,163
4,955,999	5,180,475	5,213,093	5,233,446
5,007,607	5,180,818	5,213,820	5,233,469
5,012,896	5,183,601	5,214,831	5,233,593
5,023,656	5,187,331	5,215,202	5,234,059
5,030,208	5,187,403	5,215,908	5,235,504
5,034,867	5,187,545	5,215,927	5,235,661
5,044,146	5,188,681	5,217,805	5,235,714
5,046,496	5,189,340	5,219,095	5,236,198
5,053,689	5,191,334	5,219,724	5,236,468
5,071,625	5,191,657	5,220,268	5,236,902
5,076,655	5,192,562	5,220,912	5,237,660
5,080,495	5,195,089	5,221,209	5,238,006
5,081,642	5,195,141	5,221,542	5,238,689
5,100,164	5,195,680	5,221,993	5,239,182
5,113,732	5,196,263	5,222,541	5,240,141
5,117,591	5,196,442	5,223,608	5,240,408
5,126,165	5,196,538	5,223,997	5,240,989
5,130,322	5,196,539	5,224,732	5,241,057
5,131,333	5,197,034	5,225,148	5,241,498
5,242,074	5,268,927	5,289,267	5,304,207
5,242,441	5,269,463	5,289,270	5,304,746
5,243,643	5,269,597	5,289,705	5,305,646
5,244,997	5,270,025	5,290,021	5,305,762
5,245,203	5,270,805	5,290,186	5,305,952
5,245,329	5,270,846	5,291,186	5,306,022
5,245,437	5,271,393	5,291,429	5,306,452
5,245,823	5,271,403	5,291,436	5,306,714
5,246,371	5,271,832	5,291,455	5,306,731
5,246,736	5,271,997	5,291,501	5,306,875
5,247,259	5,272,882	5,291,940	5,306,891
5,247,367	5,273,322	5,292,295	5,307,009
5,248,933	5,273,441	5,292,908	5,307,293
5,249,219	5,273,516	5,292,939	5,307,371
5,249,220	5,273,976	5,293,090	5,307,461
5,249,465	5,274,768	5,293,279	5,307,571
5,250,028	5,274,980	5,293,469	5,307,691
5,250,330	5,276,048	5,293,488	5,307,782
5,250,590	5,277,077	5,293,497	5,308,007
5,250,836	5,277,635	5,293,608	5,308,169
5,251,047	5,278,064	5,294,193	5,308,397
5,252,086	5,278,181	5,294,332	5,308,439
5,252,142	5,278,232	5,294,817	5,308,634
5,252,422	5,278,284	5,294,872	5,308,717
5,252,529	5,278,335	5,295,098	5,308,795
5,252,846	5,278,611	5,295,345	5,308,860
5,252,883	5,279,118	5,295,515	5,309,752
5,253,072	5,279,388	5,295,802	5,309,938
5,253,254	5,279,503	5,295,933	5,310,049
5,254,091	5,279,679	5,296,363	5,310,549
5,254,245	5,279,686	5,296,466	5,310,629
5,254,280	5,279,908	5,296,609	5,310,717
5,254,465	5,280,167	5,296,637	5,310,754
5,254,994	5,280,308	5,296,706	5,311,000
5,255,276	5,280,687	5,296,983	5,311,266
5,255,345	5,280,745	5,296,984	5,311,900
5,255,980	5,280,790	5,297,181	5,311,904
5,256,182	5,280,864	5,297,205	5,312,728
5,256,804	5,281,141	5,297,371	5,312,795
5,256,821	5,281,526	5,297,434	5,313,062
5,257,037	5,281,529	5,297,916	5,313,550
5,257,930	5,281,707	5,298,040	5,313,603
5,257,984	5,281,757	5,298,184	5,313,633
5,258,539	5,281,980	5,298,586	5,313,787
5,258,783	5,282,213	5,298,631	5,313,839
5,259,435	5,282,367	5,298,773	5,314,049
5,259,812	5,282,655	5,298,794	5,314,111
5,259,983	5,282,817	5,298,932	5,314,195
5,260,990	5,283,260	5,299,024	5,314,690
5,261,795	5,283,428	5,299,232	5,314,705
5,261,811	5,284,023	5,299,597	5,314,806
5,262,261	5,284,664	5,299,870	5,314,924
5,262,866	5,284,721	5,300,015	5,315,004
5,262,872	5,285,152	5,300,146	5,315,713
5,262,971	5,285,298	5,300,320	5,315,752
5,262,988	5,285,381	5,301,364	5,315,761
5,263,092	5,285,392	5,301,579	5,316,023
5,263,869	5,285,921	5,301,592	5,316,200
5,264,351	5,285,942	5,301,767	5,316,301
5,264,378	5,286,351	5,301,769	5,316,626
5,264,407	5,286,963	5,301,987	5,316,995
5,264,769	5,287,163	5,302,000	5,317,724
5,264,845	5,287,406	5,302,005	5,318,639
5,264,892	5,287,534	5,302,023	5,318,841
5,265,500	5,287,622	5,302,290	5,319,049
5,266,043	5,287,968	5,303,077	5,319,513
5,266,249	5,288,411	5,303,308	5,319,721
5,267,001	5,288,501	5,303,327	5,319,739
5,267,191	5,288,524	5,303,388	5,319,833
5,267,195	5,288,575	5,303,562	5,321,092
5,267,215	5,288,676	5,303,784	5,321,832
5,268,254	5,288,762	5,303,787	5,322,394
5,268,590	5,288,823	5,303,962	5,325,461
5,268,780	5,288,886	5,304,103	5,325,469
5,268,783	5,289,029	5,304,192	

VOL 1165 ISS 4 AG 23 1994 UMI

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

July 18-22, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
7-18	EX	74/092,273	Leatherman Tool Group, Inc.	whether matter presented for registration is registrable under Sec. 2(f)	Refusal Affirmed		"POCKET SURVIVAL TOOL" [compact folding tool comprising knife, pliers, etc.]		Yes
7-18	EX	74/180,673	Elizabeth Wen	whether mark can be amended to "GOOGLY GLOVES"	Refusal Affirmed		"GOOBLY GLOVES" [gloves]		No
7-19	EX	74/152,059	Northern Electrical Testing, Inc.	whether matter presented for registration is registrable under Sec. 2(f)	Refusal Affirmed		"POWER SYSTEM SPECIALISTS" [maintenance and/or repair and system start-up of electrical power distribution equipment, etc.]		No
7-20	OPP	86,945	Deutscher Weinfonds v. Vitalon Foods Co., Ltd.	2(d)	Opposition Dismissed	"RHEIN"; "RHEINHESSEN"; "RHEINGAU"; etc. [certification marks for wine]	"RHINE" [premixed coffee]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
7-22	EX	73/812,431	Gerich Fiberglass, Inc.	whether matter presented for registration is inherently distinctive, or if not, has acquired distinctiveness	Refusal Affirmed		[Product configuration [mobile commercial trailers]		No
7-22	OPP	84,483	Tricia Guild Associates Ltd. v. Crystal Clear Industries, Inc.	2(d)	Opposition Dismissed	"DESIGNER GUILD" [upholstery and furnishing fabrics; textile wall coverings and wall paper]	"THE DESIGN GUILD" [wholesale distributorship services in the field of decorative lighting and giftware]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

VOL
1165
ISS
4
AG
23
1994
UMI

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Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
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Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
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Box OED	Mail for the Office of Enrollment and Discipline
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Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
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Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
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VOL
1165
ISS
4
AG
23
1994
UMI

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	Columbus: Ohio State University Libraries	(614) 292-6175
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Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
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Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	09/06/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	07/01/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	11/15/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	09/13/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/05/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/06/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/25/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	08/03/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	08/08/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/03/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	01/13/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	11/10/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	08/16/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	07/26/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	09/02/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	03/12/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/29/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during July 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.....Numbers 4,032,989 to 4,038,696 inclusive
Plant Patents.....4,069 to 4,085

VOL 1165 ISS 4 AUG 23 1994 UMI

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/16/94	05/23/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/08/94	01/21/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	03/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/02/94	03/09/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	05/02/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/07/94	04/19/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/22/94	04/28/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/94	04/01/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/14/94	05/16/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	03/16/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/10/94	04/20/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/23/94	03/03/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500	03/01/94	-0-
Affidavits Under Sections 8 & 15 (All Classes)	03/24/94	-0-
Renewals (All Classes)	0—	—0—
Section 12(C) Publications (All Classes)		

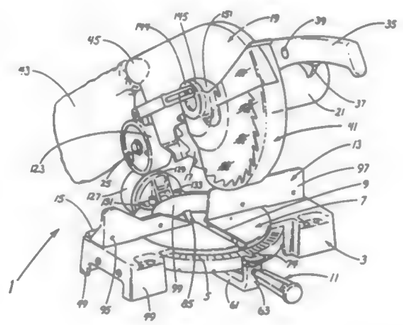
1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

AUGUST 23, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,934,233 (2359th)
COMPOUND MITER SAW
Richard B. Brundage, and Richard L. Mitchell, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Reexamination Request Nos. 90/002,522, Nov. 27, 1991 and 90/002,992, Feb. 23, 1993.
Reexamination Certificate for Patent No. 4,934,233, issued Jun. 19, 1990, Ser. No. 213,277, Jun. 29, 1988.
Reexamination Certificate B0 4,934,233, issued .
Int. Cl.[5] B23D *45/14;* B27B *5/20*
U.S. Cl. 83—397



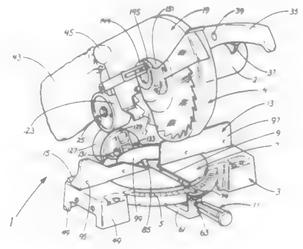
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–19** and **24–27** is confirmed.

Claims **20–23** and **28** are determined to be patentable as amended.

20. In a compound miter saw, a supporting frame, a turntable selectively rotatably mounted on said supporting frame for selective miter adjustment, a saw blade being pivotally mounted on said turntable for movement between an operational position, when lowered, and an at rest position, when raised, said saw blade also being pivotally mounted on said turntable for bevel pivot adjustment in a direction generally transverse to the pivotal movement of said saw blade between operational and at rest positions, the improvement comprising: first and second *vertically juxtaposed* closed cylinders extending transversely relative to one another and having transversely extending axes, said first and second transversely extending closed cylinders *being directly and integrally attached to one another along outer cylindrical marginal surfaces of said closed cylinders while also* being positioned between said supporting frame and said saw blade, the first closed cylinder including means for the pivot movement of said saw blade between operational and at rest positions, [and] said second closed cylinder *located immediately below said first closed cylinder and* including means for the bevel pivot adjustment of said saw blade relative to said turntable, *miter measuring means associated with said turntable, and bevel measuring means mounted on said means included in said second closed cylinder for the bevel pivot adjustment of said saw blade relative to said turntable.*

B1 5,042,348 (2360th)
COMPOUND MITER SAW
Richard B. Brundage, Richard L. Mitchell, both of St. Louis, Mo.
Reexamination Request Nos. 90/002,523, Nov. 27, 1991 and 90/002,993, Feb. 23, 1993.
Reexamination Certificate for Patent No. 5,042,348, issued Aug. 27, 1991, Ser. No. 519,873, May 7, 1990.
Continuation of Ser. No. 213,277, Jun. 29, 1988, Pat. No. 4,934,233
Int. Cl.[5] B27B *5/24*
U.S. Cl. 83—471.3



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–8** are determined to be patentable as amended.

1. A compound miter saw comprising: a supporting frame, a [turnable] *turntable* selectively rotatably mounted on said supporting frame for selective miter adjustment, a saw blade being pivotally mounted on said turntable for movement between an operational position when lowered, and an at rest position when raised, said saw blade also being pivotally mounted on said turntable for adjustment in a direction generally transverse to the pivotal movement of said saw blade between operational and at rest positions, first and second *circumferentially extending and enclosed* chambers [extending] *which are vertically juxtaposed and extend* transversely relative to one another [and having] *to provide* transversely extending axes, said first and second *vertically juxtaposed and* transversely extending chambers *being directly and integrally attached to one another along outer circumferential margins of said circumferentially extending and enclosed chambers while* being positioned between said supporting frame and said saw blade, the first chamber including *laterally extending* fixed and movable *side-by-side enclosed* chamber sections for pivotal movement of said saw blade between operational and at rest positions, and said second chamber *located immediately below said first chamber and* including *laterally extending* fixed and movable *side-by-side* chamber sections for *the bevel* pivot adjustment of said saw blade relative to said turntable, [and] said first and second tranvsersely extending chambers being [interconnected] *directly and integrally attached* to one another across one of the *laterally extending* fixed and movable *side-by-side enclosed* chamber sections *along the outer circumferential margins* between said first and second transversely extending chambers *miter measuring means associated with said turntable, and bevel measuring means mounted to the laterally extending fixed and movable side-by-side enclosed chamber sections of scid second chamber.*

VOL 1165 ISS 4 AUG 23 1994 UMI

B1 5,095,177 (2361st)
RF SEALED RADIO HOUSING
Martin L. Johnson, Yately, England, assignor to Nokia Mobile Phones (U.K.) Limited, Camberley, United Kingdom
Reexamination Request No. 90/003,081, Jun. 3, 1993.
Reexamination Certificate for Patent No. 5,095,177, issued Mar. 10, 1992, Ser. No. 585,882, Sep. 20, 1990.
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 R

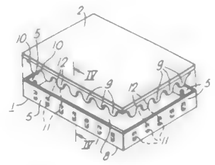
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

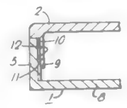
Claims **1** and **13** are determined to be patentable as amended.

Claims **2–12** and **14–19**, dependent on an amended claim, are determined to be patentable.

New claim **20** is added and determined to be patentable.

1. A housing for electronic circuitry, comprising an open-topped box having bottom and side walls made of electrically conductive material, and a separate electrically conductive lid for closing the box, wherein a plurality of projections depend from the lid and are integral therewith, the width of said projections gradually decreasing away from the lid, which projections are arranged to *inwardly deflect when the lid is connected to*





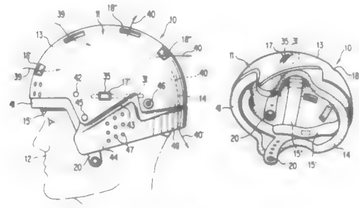
the box to thereby bear internally against the side walls of the box to prevent radio frequency radiation escaping from the housing.

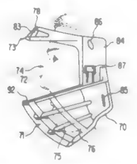
REISSUES

AUGUST 23, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

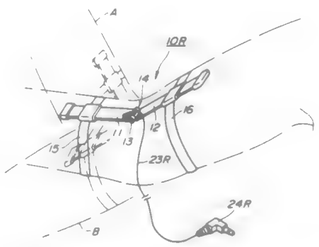
Re. 34,699
PROTECTIVE HEADGEAR AND DETACHABLE FACE PROTECTOR
Steve Copeland, Barrie, and Roger Ball, Toronto, both of Canada, assignors to Itech Sport Products Inc., Ville St-Laurent, Canada
Original No. 5,093,936, dated Mar. 10, 1992, Ser. No. 616,068, Nov. 20, 1990. Application for reissue Feb. 3, 1993, Ser. No. 12,645
Int. Cl.[5] A42B *1/22, 1/08*
U.S. Cl. 2—419 **54 Claims**





1. A protective headgear comprising a helmet member shaped to protect the top, rear, front and sides of a wearer's head; said helmet member having [a rigid] *an* outer shell with an inner protective lining of shock absorbing material, a sizing harness secured to said helmet and disposed inwardly thereof, said harness having a [height adjusting band and a] horizontal [contour-adjusting] *adjusting* band, and adjustable sizing means secured to said helmet and said adjusting [bands] *band* to fit said [bands] *band* on the head of a wearer and thereby spacing said head from said protective lining in at least some inner areas of said helmet member, said adjustable sizing means having [two] *an* adjustment [members] *member* secured to said outer shell and spaced from an inner surface of said protective lining and accessible outwardly of said shell, said sizing harness being a [one-piece] flexible [band having a] head [contour] band [section constituting said horizontal contour band], [and a transverse integral band section constituting said height adjusting band,] and connecting means secured to [each] *a displaceable attachment portion on said band* [sections] and [a respective one of] said [two] adjustment [members, each] *member, another portion of said band being immovably secured to said headgear,* said adjustment member having an attachment element securable to [a respective one of] said connecting means and an elongated flexible member having thread engaging means at least along a section thereof, and a thread engaging stationary adjustment knob secured to said outer shell and in threaded engagement with said elongated flexible member to pull said flexible member therethrough and displace [its associated] *said* band [section], said thread engaging stationary adjustment knob being located in a trough-like housing secured to said outer shell, said elongated flexible member extending across opposed end walls of said housing with said adjustment knob in threaded engagement therewith and retained between said opposed side walls by said elongated flexible member, and means to secure said helmet to a wearer's head.

Re. 34,700
ANGLE SENSOR FOR MUSICAL TONE CONTROL
Hideo Suzuki; Shunichi Matsushima; Masahiko Obata; Takamichi Masubuchi, and Masao Sakama, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Original No. 4,977,811, dated Dec. 18, 1990, Ser. No. 352,410, May 16, 1989. Application for reissue Dec. 17, 1992, Ser. No. 992,442
Claims priority, application Japan, May 18, 1988, 63-65706[U]
Int. Cl.[5] G10H *1/32;* **G01B** *7/30;* **A61B** *5/103;* **H01C** *10/32*
U.S. Cl. 84—600 **6 Claims**



5. An angle sensor for musical tone control comprising:
first member;
second member;
coupling means for coupling the first and second members so that the first and second members are pivotable on the coupling means;
attaching means for securing the first member to one side of an articulation of a performer, and the second member to the other side of the performer's articulation, wherein the surfaces of both sides of the articulation are substantially perpendicular to the pivoting axis of the articulation; and
detecting means for detecting an angle formed between the first and second members on the coupling means and generating a musical tone control signal in response to the detected angle.

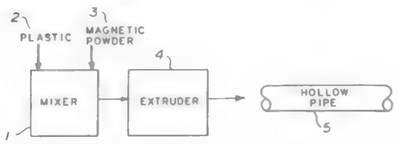
Re. 34,701
MAGNETICALLY DETECTABLE PLASTIC PIPE
William L. Goodman, Mountain View, Calif., assignor to Gas Research Institute, Chicago, Ill.
Original No. 5,036,210, dated Jul. 30, 1991, Ser. No. 553,239, Jul. 16, 1990. Division of Ser. No. 452,195, Dec. 18, 1989, Pat. No. 5,051,034. Application for reissue Mar. 8, 1993, Ser. No. 29,373
Int. Cl.[5] B32B *31/04*
U.S. Cl. 156—244.11 **15 Claims**

1. A method of producing magnetically detectable plastic pipe for underground use, comprising;
providing an organic plastic *consisting essentially of polyethylene or polyvinyl resin* for extrusion,
providing particles of magnetic material comprising electrically-nonconductive, highly-magnetizable iron oxide or barium ferrite,
mixing said particles of electrically-nonconductive, highly-magnetizable iron oxide or barium ferrite uniformly with said organic plastic, *at a concentration of about 8% by*

VOL 1165 ISS 4 AG 23 1994 UMI

weight of the plastic which concentration does not substantially decrease the tensile strength of the pipe produced,

heating and extruding said mixture of organic plastic and electrically-nonconductive, highly-magnetizable iron oxide or barium ferrite and highly magnetizing said particles, *after extrusion,* to produce a hollow tubular pipe having said highly magnetized particles distributed and proportioned such that the *magnetized* plastic pipe may be easily detected by magnetic detection apparatus on the surface when the plastic pipe is buried at three to five feet or more under the ground.



Re. 34,702

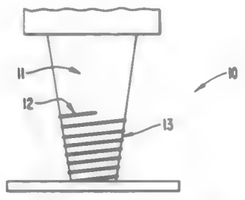
REINFORCED CERAMIC INVESTMENT CASTING SHELL MOLD AND METHOD OF MAKING SUCH MOLD

Jan M. Lane, Hampton; John Corrigan, Tabb, both of Va., and Philip D. Crouch, New Berlin, Wis., assignors to Howmet Corporation, Greenwich, Conn.

Original No. 4,998,581, dated Mar. 12, 1991, Ser. No. 285,412, Dec. 16, 1988. Application for reissue Feb. 25, 1993, Ser. No. 22,307

Int. Cl.[5] **B22C** *9/04*

U.S. Cl. 164—517 **17 Claims**



1. A method of making a ceramic investment casting shell mold, said method comprising the steps of:

providing a pattern having the shape of the desired casting;

dipping said pattern into a ceramic slurry to form a coating on said pattern;

applying a ceramic stucco on said coating;

repeating said dipping step and said applying step to build up said shell mold to an intermediate thickness, said intermediate thickness being less than the desired overall thickness of said shell mold;

[disposing] *winding a substantially continuous* fibrous reinforcing material around said shell mold;

building up said shell mold to the desired overall thickness by repeating said dipping step and said applying step over said reinforcing material; and

firing said shell mold, said fibrous reinforcing material having high tensile strength at elevated temperature such that said reinforcing material remains an integral part of said shell mold after firing and said fibrous reinforcing material having a coefficient of thermal expansion that is less than the coefficient of thermal expansion of the ceramic materials comprising said ceramic slurry and said ceramic stucco.

10. A ceramic investment casting shell mold, said shell mold comprising:

alternate, repeating layers of a ceramic material and a ceramic stucco defining an overall thickness of said shell mold; and

a *substantially continuous* fibrous reinforcing material [disposed] *wound around said shell mold* in said alternate, repeating layers at an intermediate thickness of said shell mold, said reinforcing material being comprised of an alumina-based or mullite-based ceramic composition having high tensile strength of at least 200,000 psi and having a coefficient of thermal expansion that is approximately one-half the coefficient of thermal expansion of said ceramic material and said ceramic stucco.

Re. 34,703

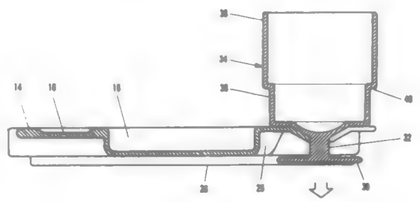
INTERLOCKING PLATE AND CUP SET

Kent B. Zilliox, 361 Halsey Ave., San Jose, Calif. 95128

Original No. 5,111,960, dated May 12, 1992, Ser. No. 684,995, Apr. 15, 1991. Application for reissue Sep. 11, 1992, Ser. No. 943,499

Int. Cl.[5] **B65D** *21/02*

U.S. Cl. 220—575 **23 Claims**



1. A mating plate and cup set comprising:

a plate having upper and lower major surfaces which face in opposite directions, said upper and lower surfaces being joined by [an] *a circumferential* edge,

said plate having a notch extending in from [an] *said* edge [thereof] for receiving [the] *a* stem of a cup, said notch [terminating] *having a termination* at a location on said plate spaced in from said edge,

[the] *a* portion *of said upper surface* of said plate surrounding [the] *said* termination of said notch, [when viewed from a direction orthogonal to said upper surface thereof, comprising] *having* a concavity which surrounds said termination of said notch, said concavity having a [predetermined] *concave* shape and a given dimension [when measured in a direction parellel to said upper surface of said plate], and

a mating cup having a body which is capable of carrying a quanity of liquid, a base which is below said [base] *body* and which is capable of supporting said cup in a stable manner on a flat, horizontal surface, and a stem [interconnecting] *having a lower end connected to said base and an upper end connected to a bottom surface of* said body [and said base], said stem having an axis and being narrower than said body and said base and [able] *dimensioned* to slide [in] *into* said notch of said plate,

[the] *said* bottom surface of said body having a peripheral area which is substantially flat and perpendicular to said axis of said stem, and a downwardly projecting convex portion which is surrounded by said peripheral area and surrounds and is adjacent to said stem,

said convex portion [extending down from said peripheral area and] having a [predetermined] *convex* shape which conformingly mates with said [concavity] *concave shape* when said cup is mated with said plate by inserting said stem into said notch and positioning said [inner] *convex* portion of said cup into said concavity of said plate,

[said peripheral and inner portions of] *said stem having a length and* said bottom surface of said plate [being dimensioned] *having an inner portion peripheral to and adjacent to said notch being shaped such that,* when said plate and cup are mated, [and when measured in said direction parallel to said upper surface of said plate, such that] said [peripheral] *inner* portion will [rest on] *conformingly mate* to an [area] *upper surface* of said [plate] *base* surrounding said [concavity thereof] *lower end of said stem,*

whereby said plate and cup will remain very stable and said cup will resist tipping when said cup and said plate are mated.

Re. 34,704

IMPROVED POLLUTION DETECTION APPARATUS

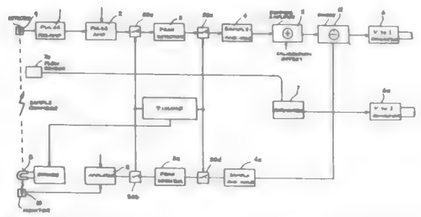
Martin T. Cole, 7 Loxwood Avenue, Keysborough, Victoria, 3173, Australia

Original No. 4,670,741, dated Jun. 2, 1987, Ser. No. 663,324, Oct. 22, 1984. Application for reissue Jun. 2, 1989, Ser. No. 360,268

Claims priority, application Australia, Oct. 22, 1984, PG1975/83

Int. Cl.[5] **G08B** *17/10*

U.S. Cl. 340—630 **12 Claims**



10. In pollution measurement apparatus having a sample chamber within which pollution is to be measured, and flashing light means for producing light flashes to illuminate the inside of said sample chamber, an improvement comprising: sensing means for detecting light scattered by said pollution and for producing electrical pulses that are proportional to the strength of light leaving the sample; peak detection means responsive to the sensing means for receiving the electrical pulses and for providing first output signals representing peaks of the electrical pulses; sample and hold means responsive to said first output signals for producing a steady output signal that is proportional to the peak amplitude of a most recently occurring one of said electrical pulses, said steady output signal comprising a signal that is adapted to indicate the amount of pollution within said sample chamber; and multiphase clock means for controlling each of said peak detection means, said sample and hole means, and said flashing light means synchronously controlling the production of light flashes, the provision of the first output signals, and the provision of the steady output signal.

Re. 34,705

NUCLEOTIDIC SEQUENCE CODING THE SURFACE ANTIGEN OF THE HEPATITIS B VIRUS, VECTOR CONTAINING SAID NUCLEOTIDIC SEQUENCE, PROCESS ALLOWING THE OBTENTION THEREOF AND ANTIGEN OBTAINED THEREBY

Francis Galibert, Saint Gratien; Pierre Tiollais, Paris, and Patrick Charnay, Bourg-La-Reine, all of France, assignors to Institut Pasteur and Institut National de la Sante et de la Recherche Medicale, both of Paris, France

Original No. 4,428,941, dated Jan. 31, 1984, Ser. No. 261,199, Aug. 29, 1980. Application for reissue Jan. 14, 1991, Ser. No. 640,494

Claims priority, application France, Aug. 30, 1979, 79 21811; Apr. 22, 1980, 80 09039

Int. Cl.[5] **C07K** *7/06, 13/00;* **A61K** *37/02*

U.S. Cl. 530—329 **3 Claims**

13. A portion of surface antigen protein of hepatitis B virus, wherein said portion consists essentially of a polypeptide having the sequence:

Threonine-Threonine-Alanine-Glutamine-Glycine-Threonine-Serine.

Re. 34,706

PROCESS FOR THE PREPARATION OF STYRENE DERIVATIVES EXTENDED AT THE DOUBLE BOND BY ETHYLENE AND HAVING A DOUBLE BOND REMAINING IN THE EXTENSION CHAIN FORMED AND NEW STYRENE DERIVATIVES EXTENDED WITH ETHYLENE

Karl-Heinz A. O. Starzewski, Bad Vilbel, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

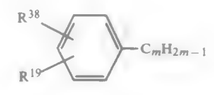
Original No. 5,180,872, dated Jan. 19, 1993, Ser. No. 704,751, May 23, 1991. Application for reissue Jun. 29, 1993, Ser. No. 84,379

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1990, 4018068

Int. Cl.[5] **C07C** *2/02, 2/46, 2/64, 2/66*

U.S. Cl. 58—435 **11 Claims**

1. A process for the preparation of styrene derivatives extended at the double bond with ethylene and having a double bond remaining in the extension chain formed, according to the formula



in which

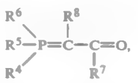
R^{19} denotes hydrogen, C_1-C_4-alkylvinyl or chlorine,

R^{38} denotes C_1-C_4-alkyl, C_2-C_4-alkenyl, C_2-C_7-acyl, fluorine chlorine or bromine, and

m has a value of 4 to 104, [

with the exception of compounds wherein R^{19} is hydrogen and R^{38} is isobutyl or benzyl and m has the value 4,]

wherein a styrene derivative is reacted with ethylene in the presence of a nickel catalyst which carries a phosphorous-oxygen chelate ligand, at a temperature of 20° to 160° C. and an ethylene pressure of 1 to 200 bar, wherein the nickel catalyst is obtained by reaction of a nickel (O) compound, or a compound which can be converted in situ to a nickel (O) compound, with a phosphorus compound of the formula


(I)

in which

R^4, R^5, R^6, R^7 and R^8 independently of one another denote straight-chain or branched C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_1-C_{20}-alkoxy, C_3-C_8-cycloalkyl, C_6-C_{12}-aryl, C_6-C_{12}-aryloxy, C_7-C_{15}-aralkyl or C_7-C_{15}-aralkoxy, where R^7 can additionally denote hydrogen and

R^8 can additionally denote hydrogen, acyl or sulphonate,

or a nickel catalyst which can be prepared by reaction of a nickel (O) compound, or a compound which can be converted in situ to a nickel (O) compound, with an adduct of a quinoid compound or maleic anhydride and a phosphine of the formula


(II)

in which

R^4, R^5 and R^6 have the meaning mentioned.

VOL
1165
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AG
23
1994
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PLANT PATENTS

GRANTED AUGUST 23, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,867

RUDBECKIA PLANT NAMED VIETTE'S LITTLE SUZY

Mark A. Viette, Rte. 1, Box. 25B, Fishersville, Va. 22939

Filed Aug. 3, 1993, Ser. No. 101,359
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 1 Claim

1. A new and distinct cultivar of Rudbeckia plant named Viette's Little Suzy, as illustrated and described.

8,868

CHRYSANTHEMUM PLANT NAMED HONEY MONTEREY

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Chualar, Calif.

Filed Jul. 30, 1993, Ser. No. 99,662
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.2 1 Claim

1. A new and distinct Chrysanthemum plant named Honey Monterey, as described and illustrated.

8,869

CHRYSANTHEMUM NAMED SALMON REAGAN

Martinus van der Jagt, CJ Langeraar, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Continuation of Ser. No. 780,304, Oct. 22, 1991, abandoned.
This application Aug. 2, 1993, Ser. No. 101,278
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.3 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Salmon Reagan, as described and illustrated.

8,870

NEW GUINEA IMPATIENS NAMED BSR-195 SALMON

Scott C. Trees, Arroyo Grande, Calif., assignor to George J. Ball, Inc., West Chicago, Ill.

Filed Oct. 14, 1993, Ser. No. 135,544
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 1 Claim

1. A new and distinct cultivar of New Guinea Impatiens named BSR-195 Salmon, substantially as herein shown and described, which:
(a) exhibits attractive large salmon blosoms,
(b) exhibits a good basal branching character,
(c) exhibits an upright mounded growth habit, and
(d) exhibits slightly variegated foliage under high light conditions.

VOL
1165

ISS
4

AG
23

1994

UMI

PATENTS

GRANTED AUG. 23, 1994

ERRATA

For CLASS	See PATENT NO.
052-545	5,339,608
477-145	5,339,709
601-002	5,339,804
251-038	5,339,857
164-418	5,339,877
185-039	5,339,923
277-206	5,340,009
237-012	5,340,020
236-010	5,340,028
303-007	5,340,212
452-182	5,340,351
606-142	5,340,360
607-024	5,340,361
623-023	5,340,362
117-021	5,340,434
428-283	5,340,463
420-483	5,340,529
435-069	5,340,576
504-117	5,340,578
427-437	5,340,654
530-350	5,340,726
514-018	5,340,798
523-526	5,340,871
347-086	5,341,160
347-087	5,341,161
347-092	5,341,162
347-023	5,341,163
347-088	5,341,164
335-016	5,341,191
348-001	5,341,216
348-529	5,341,217
348-695	5,341,218
348-217	5,341,219
348-296	5,341,220

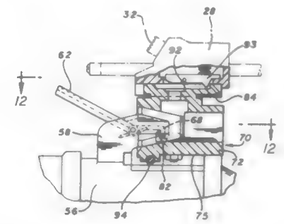
VOL
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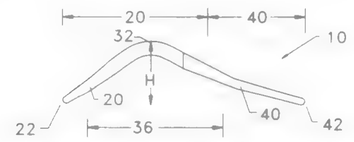
GENERAL AND MECHANICAL

5,339,464
UNIVERSAL ADAPTER FOR NIGHT VISION SYSTEM
Amotz Dor, Haifa, Israel, assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Jul. 13, 1992, Ser. No. 912,835
Int. Cl.[5] A42B *1/24*; G02B *7/00*; F16B *21/00*
U.S. Cl. 2—6.2 **17 Claims**



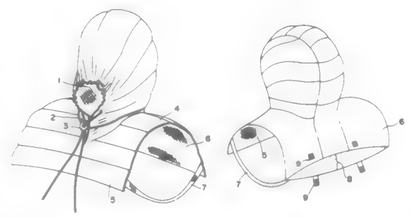
1. An adapter for enabling use of a night vision goggle having a plug-type mounting connector and a spring biased latch, with a head mounting assembly having a plate-type receiving carriage, said adapter comprising:
a housing having a plug-type receptacle configured to receive said plug-type mounting connector and a bar capable of engaging said latch; and
a plate-type mounting plate integrally formed to said housing and configured to engage said plate-type receiving carriage;
wherein said plug-type mounting connector is secured within said plug-type receptacle by engagement between said latch and said bar.

5,339,465
PALM GUARD FOR SPORTS
Ronald A. Kyewski, 234 Bonita La., Foster City, Calif. 94404
Filed Feb. 3, 1993, Ser. No. 13,002
Int. Cl.[5] A41D *13/00*; A47J *45/10*
U.S. Cl. 2—20 **10 Claims**



1. A palm guard for use with a sports glove comprising:
a molded, rigid, elongated unitary body with shock absorption properties, the body defining a wrist portion having an outer edge at a wrist area of a wearer and extending below the wrist to a contiguous arched palm portion, the arched palm portion defining a convex arch having an apex with a maximum thickness greater than a thickness of the wrist portion and a thickness of a remainder of the arched palm portion, the convex arch forming a space between the palm guard and a palm and a heel area of the hand, the arched palm portion extending to a second edge at least substantially at a mid-palm area of the hand, the shock absorption properties of the palm guard, together with the thickness of the apex and the space between the heel area and the palm guard, for absorbing and dissipating impact forces to the wrist, heel and palm of the hand caused by falls during sports activities.

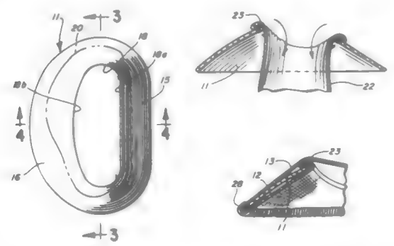
5,339,466
COLD WEATHER SLEEPING HOOD
Donald J. McMullen, Saint Mary's College - 1500, 700 Terrace Heights, Winona, Minn. 55987-1399
Filed Jan. 9, 1992, Ser. No. 819,105
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—203 **6 Claims**



1. A cold weather sleeping garment comprising;
a hood with front, back and neck areas with a deformable face opening in the front which hood is adapted to be used with or without an insulating liner;
a drawstring housing means surrounding the deformable face opening;
a drawstring means to close the deformable face opening of the hood which hood is of sufficient size to allow said drawstring means to deform the face opening into a position over the mouth and nose region of a wearer which when constricted allows the wearer to breathe with minimum exposure of the wearer's skin to the air outside the hood;
a drawstring lock to hold the drawstring in position;
a shoulder covering portion connected at the neck area of said hood which when used in combination with a sleeping bag forms a seal between the garment and the sleeping bag;
a chest portion which is a forward extension of the shoulder covering portion;
an upper back portion with a rear base portion which is a rearward extension of the shoulder covering portion adapted with a slit at the rear base which accommodates the insertion or removal of optional insulating material;
fasteners to secure the slit when closed;
optional insulating material adapted to the shape of the hood; and
underarm securing means which connect each side of the upper back to the chest portion said underarm securing means being sized to provide minimal restriction of movement of the wearer while securely maintaining the garment in a stable position in relation to the wearer when the wearer moves;
wherein each of said hood, shoulder covering portion, chest portion and upper back portion comprises an inner and an outer shell.

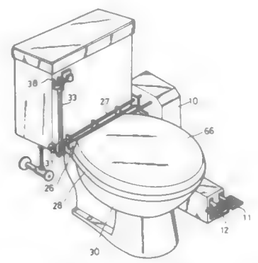
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,467
HANG-TYPE EARMUFF AND METHOD OF MANUFACTURE
Herman E. Brinkley, Lawrenceville, Ill., assignor to Nu-Life Inc. of Illinois, Lawrenceville, Ill.
Continuation-in-part of Ser. No. 219,224, Jul. 15, 1988, abandoned. This application Dec. 27, 1988, Ser. No. 289,697
Int. Cl.[5] A61F *11/00*
U.S. Cl. 2—209 24 Claims



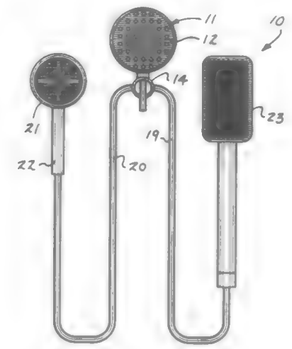
1. A hang-type earmuff, comprising:
a truncated conical unitary seamless core of flexible plastic having an irregular elliptical outline and a similar elliptical central opening through which the wearer's ear extends, with a generally straight forward portion which is generally parallel with the major axis of the core and lies in front of the wearer's ear and a generally arcuate rear portion which lies beneath the wearer's ear;
a liner of sheet material on the concave inner surface of the core; and
a cover of sheet material on the convex outer surface of the core.

5,339,468
HOPPER LID AND THE FLUSH MECHANISM OF A FLUSH TOILET
Shyh S. Lin, No. 676, Sec. 2, Chang Ts'ao Rd., Homei Town, Changhua Hsien, Taiwan
Filed Aug. 3, 1993, Ser. No. 101,409
Int. Cl.[5] A47K *13/10;* E03D *5/08*
U.S. Cl. 4—246.5 1 Claim



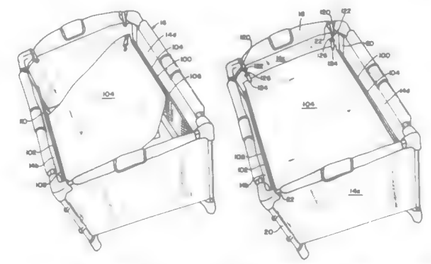
1. A hopper seat/lid and flush mechanism for a flush toilet characterized in that said hopper seat/lid and flush mechanism comprising:
a control box having lower front part, said lower front part having a flush pedal and a hopper seat/lid pedal; said flush pedal having a rear end connected with a horizontal rod, said horizontal rod being supported by a supporting post; said horizontal rod having a rear end which is connected with a vertical lower rod, said vertical lower rod being further connected with an upper rod through a connecting sleeve; said vertical lower rod and said upper rod having adjustable length thereof through said connecting sleeve;
said upper rod having an upper end connected with a link rod, said link rod having a front end fixedly connected with a pivot mounted on first and second sides of said control box; said pivot sliding up and down in two sliding slots on said first and second sides of said control box so as to facilitate adjustment of its height;
said control box having a left wall and said pivot having a portion thereof extended out of said left wall of said control box and connected with a transmission shaft mounted on a fixed seat; said hopper having upper rear side and said fixed seat adapted for being fastened with a screw bolt to said upper rear side of said hopper; said transmission shaft having a left end which is fastened with a coupling arm and connected with a lower end of a coupling rod; said coupling rod having an upper end, which has a connecting fork with a sliding block adapted to be connected to a flush handle and is capable of sliding up and down for adjusting the height of said flush pedal; whereby when said flush pedal is stepped down, said horizontal rod on said pivot will push said upper rod and said vertical lower rod upward to cause said link rod to rotate said pivot, and said pivot will drive said transmission shaft to pull said coupling rod and said connecting fork to start a flush;
said hopper seat/lid and flush mechanism further comprising a straight pipe with a spring which is mounted at said rear end of said horizontal rod near a connecting point between said horizontal rod and said vertical lower rod, said spring having a bottom end which is in contact with said horizontal rod so as to enable said horizontal rod and said flush pedal to return;
a rear end of said hopper seat/lid pedal being connected with a horizontal rod mounted on a pivot as a fulcrum; the rear end of said seat/lid horizontal rod being connected with a lower push rod which is connected with an upper push rod through a connecting sleeve; said upper push rod having an upper end which is connected with a connecting arm and a shaft, said shaft being mounted across two sliding slots on said first and second sides of said control box so as to provide an adjustable space for said upper and lower push rods; the rear end of said seat/lid horizontal rod being mounted with a straight pipe and a spring to enable said hopper seat/lid pedal to return; the rear end of said seat/lid horizontal rod also being mounted with a switch structure, which includes a sliding slot block fitted with a sliding rod, said sliding rod having a lower end fastened with a flat plate, and said seat/lid spring being mounted around said sliding rod so as to be able to cause said flat plate and said sliding rod to press said rear end of said seat/lid horizontal rod downward;
said flat plate having a top side which is engaged with a push plate mounted on said lower push rod; said sliding rod having an upper front side which has a control sliding slot with a stiff-and-slanting surface and a plurality of check points; said hopper seat/lid and flush mechanism further comprising a positioning rod having a rod end engaged with said control sliding slot and being able to slide counter-clockwise without returning; and when said hopper seat/lid pedal is pressed down, said rod end of said positioning rod being able to be positioned at a top point and a lower point;
whereby as soon as said hopper seat/lid pedal is pressed down, said horizontal rod will push said upper and lower push rods upward to cause said connecting arm and said shaft to rotate; said shaft adapted for being mounted with a square shaft behind the rear end of said toilet seat, and when said square shaft rotates, said toilet seat will be laid down; at the same time, when said hopper seat/lid pedal is pressed down said switch structure on the rear end of said horizontal rod will cause said toilet seat to fall slowly on said hopper.

5,339,469
SHOWER APPARATUS
Gregory S. Gilles, 2025 N. Lambert, Normal, Ill. 61761
Filed Oct. 4, 1993, Ser. No. 130,710
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—601 3 Claims



1. A shower apparatus, comprising,
a primary shower head, having an apertured face plate, a primary shower head conduit directed into the primary shower head to conduit fluid flow through the primary shower head conduit and into the primary shower head and through the apertured face plate, with a three-way valve housing mounted fixedly and in fluid communication to the primary shower head conduit, with the three-way valve housing including a first end spaced from a second end, the first end including an inlet for a water supply conduit to be connected thereto, and a valve shaft directed into the second end rotatably within the three-way valve housing, the valve shaft including an L-shaped conduit therewithin, and a first flexible conduit and a second flexible conduit mounted to the three-way valve housing the L-shaped conduit permitting selective fluid flow from the water supply conduit selectively to the first flexible conduit, the second flexible conduit, or to the primary shower head conduit, the second flexible conduit directed into and in fluid communication through a rigid handle conduit, with the rigid handle conduit having a pulse shower head in fluid communication with the rigid handle conduit, the first flexible conduit extending through a rigid tubular handledefining a reservoir therein with the first flexible conduit connected to a rigid delivery conduit coextensive with the reservoir in the rigid tubular handle, with the rigid conduit having a plurality of delivery conduit ports providing fluid communication between the reservoir and the rigid delivery conduit,
and
a brush shower head mounted on the rigid tubular handle, with the rigid delivery conduit extending into the brush shower head, with the brush shower head including a front wall and a plurality of tubular flexible bristles extending therefrom, and a plurality of openings extending through the front wall;
whereby with the three-way valve positioned to allow passage of supply water through the first flexible conduit, flow will continue into the delivery conduit where the supply water will entrain an additive solution from the reservoir through the ports before departing the delivery conduit into the brush shower head an subsequently through the plurality of openings.

5,339,470
COMBINATION FOLDABLE PLAYPEN AND DRESSING/CHANGING TABLE
Louis Shamie, 972 Dean St., Brooklyn, N.Y. 11212
Continuation-in-part of Ser. No. 868,452, Apr. 14, 1992, Pat. No. 5,243,718. This application Apr. 29, 1993, Ser. No. 54,881
Int. Cl.[5] A47D *7/00*
U.S. Cl. 5—98.1 6 Claims



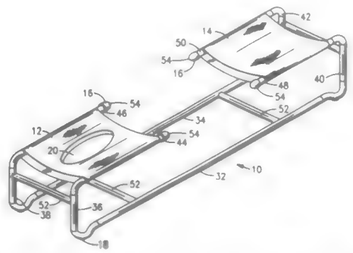
1. A combination playpen and dressing/changing table, comprising:
a) a frame including:
i) an upper frame assembly;
ii) a lower frame assembly,
iii) a plurality of corner legs, each leg having an upper end and a lower end, and
iv) connecting means for interconnecting said upper frame assembly to the upper ends of said corner legs and for interconnecting said lower frame assembly to the lower ends of said corner legs;
b) a fabric enclosure secured to said frame to define a bottom and sides of said playpen;
c) supporting surface means for supporting an infant thereon, said supporting surface means consisting essentially of a planar sheet having opposite sides with zipper means thereon; and
d) securing means for removably securing said supporting surface means between opposite sides of said playpen such that said supporting surface means is positioned above said bottom and below said upper frame assembly, said securing means including zipper means, secured on two inner opposite sides of said fabric enclosure at a position above said bottom and below said upper frame assembly, for interlockingly engaging with said zipper means of said supporting surface means to secure two opposite sides of said supporting surface means to said fabric enclosure such that said supporting surface means is positioned above said bottom and below said upper frame assembly.

5,339,471
BED FOR SUPPORTING A PRONE USER WITH A LARGE ABDOMEN
Ronald F. Lanzara, 340 Broad St., Nashua, N.H. 03063
Filed Jan. 7, 1993, Ser. No. 1,655
Int. Cl.[5] A47C *17/66*
U.S. Cl. 5—110 5 Claims

1. A resting bed for supporting a user, having a large abdomen, in a prone position, said bed comprising a frame having generally parallel top rails supported above the floor, and including an upper trunk support sling and lower body support

VOL 1165 ISS 4 AG 23 1994 UMI

sling, each sling being slidably mounted on the said top rails, and spaced from one another so as to leave an open, unsupported space between them, for accommodating users of different height and abdomen size and shape.



5,339,472

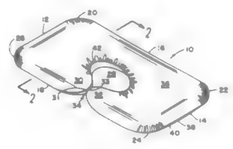
INFANT HEAD AND NECK SUPPORT PILLOW

Helen Yin, 755 Hamilton Dr., Oriando, Fla. 32833

Filed Jun. 18, 1993, Ser. No. 77,746

Int. Cl.[5] **A47C** *16/00*

U.S. Cl. 5—631 **8 Claims**





1. An infant head support pillow having a one-piece, finished-product construction, comprising:

a top half;

a bottom half connected to said top half, said top half and said bottom half forming the exterior of said infant head support pillow;

a filler-cushion material contacting said top half and said bottom half and positioned in the interior of said infant head support pillow between said top half and said bottom half;

a first longitudinal side formed by said top half and said bottom half;

a first latitudinal side and a second latitudinal side formed by said top half and bottom half;

a first keyhole wing having a curved configuration which projects in the direction of said second latitudinal side and curves inward in the direction of said first longitudinal side;

a second keyhole wing having a curved configuration which projects in the direction of said first latitudinal side and curves inward in the direction of said first longitudinal side, said curved configuration of said first keyhole wing and said curved configuration of said second keyhole wing come into substantial contact with each other and define an opening therebetween;

a second longitudinal side comprised of said first keyhole wing and said second keyhole wing and forming a keyhold region at the center of said infant head support pillow, said second longitudinal side being formed of said top half and said bottom half;

wherein said curved configuration of said first keyhole wing and said curved configuration of said second keyhole wing are separable due to the flexible nature of said infant head support pillow; and

said infant head support pillow is nine inches long and has a thickness of 1.2 inches with a tolerance of 15%.

5,339,473

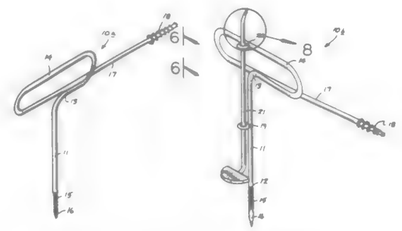
TAPPING CHIP EXTRACTOR TOOL

Timothy M. Crist, 1071 Ogden-Parma T.L. Rd., Spencerport, N.Y. 14559

Filed Mar. 8, 1993, Ser. No. 27,436

Int. Cl.[5] **B25F** *1/00*

U.S. Cl. 7—170 **3 Claims**



1. A tapping chip extractor tool, comprising,

an elongate longitudinally aligned tool shank, having a shank first end spaced from a shank second end, the shank first end having a helically wound extractor screw integrally mounted to the second end coaxially aligned therewith,

and

a handle loop extending orthogonally relative to the tool shank fixedly mounted to the tool shank second end, and

the extractor screw includes a barbed magnetic pointed projection extending longitudinally aligned relative to the extractor screw projecting therefrom for enhanced engagement of a tapping chip within a tapped bore.

5,339,474

APPARATUS FOR AND METHOD OF DETERMINING TWIST OF CLOTHES BEING WASHED IN WASHER

Jung H. Kim, Seoul; Hyung S. Kim, Kyungki-Do; Byeong H. Lee, Kyungki-Do; Young H. Roh, Kyungki-Do, and Hae Y. Chung, Seoul, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Rep. of Korea

Filed Oct. 6, 1993, Ser. No. 132,462

Claims priority, application Rep. of Korea, Jun. 19, 1993, 11229/1993

Int. Cl.[5] **D06F** *33/02*

U.S. Cl. 8—159 **9 Claims**

1. An apparatus for determining a twist of clothes being washed in a washer, comprising:

clothes twist sensing means for sensing a torque occurring at a drive shaft of said washer due to the twist of clothes, to sense the distribution of impact applied to an agitator of the washer by said clothes, and generating a clothes twist signal according to the sensed impact distribution;

correlation coefficient operating means for converting said clothes twist signal into a digital signal indicative of a state value of the clothes twist signal, analyzing said state value

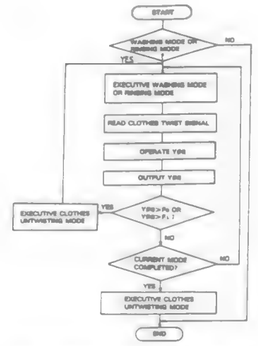
of the clothes twist signal, and operating a correlation coefficient to be used for determining whether the clothes twist signal is a meaningful signal or a noise, based on the analysis; and

a microprocessor for performing a control for executing a clothes untwisting mode, when the clothes twist signal is determined to be said meaningful signal, from said correlation coefficient outputted from said correlation coefficient operating means.

3. A method of determining a twist of clothes being washed in a washer, comprising the steps of:

(a) determining whether the current mode of said washer is a washing mode or a rinsing mode;

(b) agitating said clothes normally and reversely for a predetermined time by driving a motor and an agitator equipped



in the washer, sensing a torque occurring at a drive shaft of the washer due to an impact from the clothes, and generating a clothes twist signal according to the sensed torque;

(c) operating a correlation coefficient of said clothes twist signal outputted at said step (b), to determine whether the clothes twist signal is a meaningful signal or a noise; and

(d) comparing said correlation coefficient outputted at said step (c) with a predetermined reference value, executing a clothes untwisting mode when the correlation coefficient is higher than said reference value, determining whether the current mode has been completed when the correlation coefficient is not higher than the reference value, and reading a clothes twist signal inputted during an execution of said washing mode when the current mode has not been completed yet.

5,339,475

LOAD SUPPORTING STRUCTURE

Leslie G. Jaeger, Herring Cove; Aftab A. Mufti, Halifax, and Baidar Bakht, Scarborough, all of Canada, assignors to The Queen in Right of Ontario as represented by the Ministry of Transportation, Canada

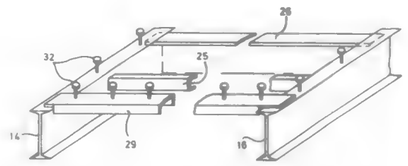
Filed May 27, 1992, Ser. No. 889,497

Claims priority, application United Kingdom, May 30, 1991, 9111649; May 22, 1992, 9211017

Int. Cl.[5] **E01D** *19/12, 7/00;* **E04B** *5/14*

U.S. Cl. 14—73 **19 Claims**

1. A load supporting structure to span a pair of spaced vertical supports, said structure comprising a pair of laterally spaced beams extending between the supports and each having an upwardly directed support surface, tension members extending between said beams and being secured thereto to inhibit relative lateral movement of said support surfaces, a pair of transverse structural members extending between said beams at longitudinally spaced locations and each having an upwardly directed support surface, a deck supported on said support surfaces of said beams and said structural members and having an upper load supporting surface and a lower load transfer surface supported on said support surfaces, and fastening means extending between said support surfaces and said deck about the periphery thereof to inhibit relative movement between said deck and said support surfaces, said deck being formed from concrete impregnated with non-metallic fibres



and being devoid of structural steel reinforcement between said support surfaces, said deck being dimensioned to transfer loads imposed on said upper surface of the deck to said support surfaces through arching action within said deck, said support surfaces providing sufficient stiffness to the periphery of said deck to sustain compressive forces within said deck upon application of a load thereto.

5,339,476

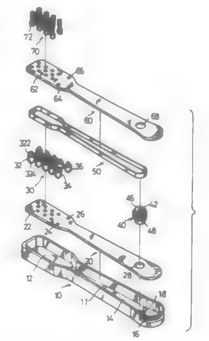
POWERED TOOTHBRUSH

Shun-Der Chang, 10th Fl., No. 38-2, Dah-Duen 16th St., Taichung, Taiwan

Filed Jun. 11, 1993, Ser. No. 75,736

Int. Cl.[5] **A61C** *17/30*

U.S. Cl. 15—28 **10 Claims**



1. A powered toothbrush, comprising:

an elongate main body (**10**) defining a cavity (**11**), said main body having a head portion (**12**) and a handle portion (**14**);

two bearing plates (**20, 60**) spaced with each other, wherein a first one is received within the cavity (**11**) of the main body, and, a second one is mounted over the cavity (**11**) and function as a cover therefor;

a driver (**40**), adapted to be powered by a power source, rotatably mounted in the handle portion (**14**) between said bearing plates (**20, 60**);

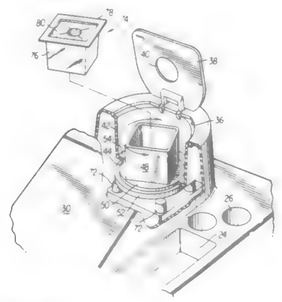
a plurality of driven rotors (**30**) arranged in at least three rows substantially along the longitudinal direction of the toothbrush and rotatably mounted in the head portion (**12**) between said bearing plates (**20, 60**), wherein the driven rotors in the same row are not in contact with each other;

a flexible rotation transmission means enclosing the driver

VOL 1165 ISS 4 AG 23 1994 UMI

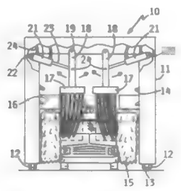
(40) and said driven rotors (30) and connecting the driver with some of the driven rotors to transmit rotation force from the driver to the driven rotors;
a bristle means (70) having an end (72) secured to each said driven rotors (30) to rotate therewith.

5,339,477
APPARATUS FOR REMOVING COATINGS FROM FINGERNAILS
Ronald C. Warner, Waleska, and Craig M. Warner, Alpharetta, both of Ga., assignors to Ron Warner Associates, Norcross, Ga.
Division of Ser. No. 638,334, Jan. 7, 1991, Pat. No. 5,185,900. This application Feb. 12, 1993, Ser. No. 17,247
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] A45D *29/17*
U.S. Cl. 15—97.1 9 Claims



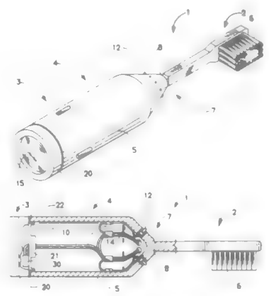
1. In an apparatus for removal of a coating from the nail of a user, the apparatus including at least one container having a nail-contacting material disposed therein and a solvent for said coating associated with said material, a finger of a user being inserted into the container to contact the material and the solvent, the improvement comprising:
abrasive means disposed over only certain portions of those nail-contacting material surfaces which function to contact the nail, said abrasive means being more abrasive to the coating than is the nail-contacting material.

5,339,478
ROLLOVER CAR WASH WITH RETRACTING CLOTH STRIPS
Keith M. Schleeter, 7301 Old Shakopee Rd. W., Bloomington, Minn. 55438
Filed Apr. 27, 1993, Ser. No. 54,748
Int. Cl.[5] B60S *3/04*
U.S. Cl. 15—97.3 2 Claims



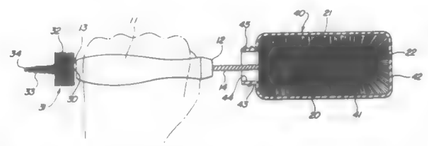
1. A rollover car wash machine for cleaning a stationary automotive vehicle, comprising
a mobile arch frame to travel along the stationary automobile,
a washing apparatus carried by the arch frame and comprising a pair of side-by-side arrays of oscillating cloth strips to scrub the vehicle body,
and cloth strip operating means oscillating the cloth strips across the automobile body during washing and swinging the cloth strips to the sides of the arch at the completion of a washing cycle, and said operating means comprising a pair of air cylinders each connected to one of said arrays of side-by-side arrays and first oscillating said one array during washing and then when the washing is completed moving said one array away from the other of the side-by-side arrays and toward the side of the arch frame and away from the windshield of the automobile.

5,339,479
MOTIVATIONAL TOOTHBRUSH
Mark Lyman, 16611 County Hwy. R, Maribel, Wis. 54227
Filed Oct. 27, 1993, Ser. No. 141,521
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—105 1 Claim



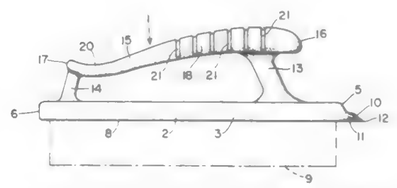
1. A toothbrush assembly comprising
1) a brush end and a handle end projecting from the brush end, and the brush end and the handle end are of a one-piece construction with each end made of the same material,
2) said handle end defining a three dimensional figure, which defines an intersection between the handle end and the brush end,
3) an electronics package receiving chamber, formed as a part of the handle end of the toothbrush;
4) an electronics package containing a sound synthesizer secured in the chamber so that an electronics initiation switch, which is a part of the electronics package, is accessible to a user, and whereby the sound synthesizer is actuatable by means of said actuation switch,
5) a multiplicity of lights attached to the figure and electrically connected to the electronics package, so that when the switch is engaged the electronics package will produce synthesized sounds and cause the lights to be activated in a preprogrammed sequence, and
6) the toothbrush is of a construction such that none of its parts are detachable during ordinary use,
7) the chamber is sealed against the entry of water during use and cleaning of the toothbrush, and
8) the intersection of the handle end and the brush end is provided with a groove about a substantial portion of its periphery to define a grooved detachment aid to facilitate the detachment of the brush end from the handle end so as to permit the handle end to be preserved and the brush end to be discarded.

5,339,480
TINT BOTTLE AND NOZZLE CLEANING BRUSH
Sandra D. Murg, 9281 Tritt Cir., Villa Park, Calif. 92667, and John S. Gerling, 4152 Paloverde, Lakewood, Calif. 90713
Filed Jul. 26, 1993, Ser. No. 96,295
Int. Cl.[5] A46B *5/02, 9/00*
U.S. Cl. 15—106 7 Claims



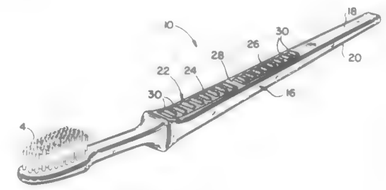
1. For use in cleaning a tint bottle having a generally cylindrical bottle and a tapered nozzle cap, a tint bottle brush comprising:
an elongated handle defining an elongated handle body having a major axis and opposed first and second ends;
a primary wire stem secured to said first end and extending outwardly therefrom in alignment with said handle major axis and having a first outer end;
a primary bristle array supported by said primary wire stem forming a first generally cylindrical bristle portion extending generally from said first end of said handle to said first outer end of said primary wire stem and a generally domed outer portion at said first outer end;
a secondary wire stem secured to said second end and extending outwardly therefrom in alignment with said handle major axis and having a second outer end; and
a secondary bristle array supported by said secondary wire stem forming a second generally cylindrical bristle portion proximate said second end defining a diameter and a tapered generally conical portion extending beyond said second generally cylindrical bristle portion having a maximum diameter proximate said second cylindrical bristle portion substantially less than said diameter of said second cylindrical portion and a minimum diameter at said second outer end.

5,339,481
SCRUB BRUSH
Mary M. Hoagland, Cincinnati, Ohio, assignor to Vining Industries, Inc., Springfield, Ohio
Filed Jan. 11, 1993, Ser. No. 2,616
Int. Cl.[5] A47L *13/12;* A46B *5/02*
U.S. Cl. 15—111 14 Claims



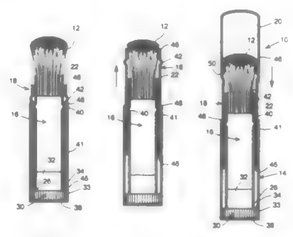
1. A scrub brush having a bristle block body with longitudinal sides, forward and rearward ends, and top and bottom surfaces, an array of scrubbing bristles extending downwardly from said bristle block bottom surface, a handle for said scrub brush comprising a grip having forward and rearward ends and extending longitudinally of said bristle block, together with a pair of supports extending between the bristle block top surface and the grip near said forward and rearward ends of said grip, said forward end of said grip overhanging said adjacent one of said supports thereabouts, said grip having a gentle S-curved longitudinal configuration, the distance between said forward end of said grip and said top surface of said bristle block being slightly greater than the distance between said rearward end of said grip and said top surface of said bristle block, said grip increasing slightly in width and thickness from said rearward end to said forward end thereof.

5,339,482
TOOTHBRUSH HAVING NON-SLIP SURFACE
Joseph A. Desimone, Bricktown, and Richard A. Goldinger, Princeton, both of N.J., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Filed Jul. 21, 1992, Ser. No. 918,717
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 11 Claims



1. A toothbrush comprising:
a handle having a first handle surface and an opposed handle surface;
a bristled head connected to said handle;
an aperture disposed through said handle, from said first handle surface to said opposed handle surface, said aperture being defined by an aperture peripheral wall generally transverse to said handle surfaces and having an insert therein;
said insert having a first non-slip insert surface forming a non-slip region on the first handle surface, an opposed insert surface being disposed essentially co-planar with the opposed handle surface, and an insert peripheral wall generally transverse to said insert surfaces;
said aperture wall having an aperture shoulder extending into the aperture;
said insert having an insert shoulder extending into the aperture;
said shoulders being in face-to-face relationship and bearing against each other to resist a force attempting to translate the insert out of the aperture.

5,339,483
HOLDER FOR COSMETIC OR HYGIENIC ITEM
Y. K. Byun, Buchon City, Rep. of Korea, assignor to Cosmetech International Inc., New York, N.Y., a part interest
Continuation of Ser. No. 733,725, Jul. 19, 1991, abandoned. This application May 11, 1993, Ser. No. 60,492
Int. Cl.[5] A46B *17/04*
U.S. Cl. 15—184 6 Claims



2. A holder for a cosmetic or hygienic item comprising:

VOL 1165 ISS 4 AG 23 1994 UMI

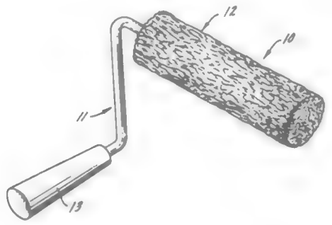
a base having an open top end;
a mounting element for a cosmetic or hygienic item mounted to said base with a space between said mounting element and said base;
said cosmetic or hygienic item mounted to said mounting element, said item extending through said open top end of said base;
a covering element sized to enclose said item and said mounting element, said covering element movably mounted to said base to move longitudinally with respect to said base in a telescoping fashion in the interior of said base in said space between said mounting element and said base from an advanced position where said covering element substantially encloses said item to a retracted position substantially in said base substantially covering said mounting element and substantially exposing said item, said covering element having an engaging structure formed adjacent a top end thereof;
means for restricting movement of said covering element at said advanced and retracted positions;
a removable cap having an open end adapted to fit onto said covering element and removably engage said engaging structure, said cap being sized such that it fully encloses that portion of said item exposed when said covering element is in its retracted position and said cap is engaged with said engaging structure.

5,339,484

CLOSED END PAINT ROLLER AND METHOD OF MANUFACTURE THEREOF

Bruce C. Polzin, Greendale; Kenneth L. Shehow, South Milwaukee, and Fredrick B. Burns, Greendale, all of Wis., assignors to EZ Paintr Corporation, Milwaukee, Wis.

Filed Mar. 2, 1993, Ser. No. 25,195
Int. Cl.[5] B44D *3/28*
U.S. Cl. 15—230.11 12 Claims



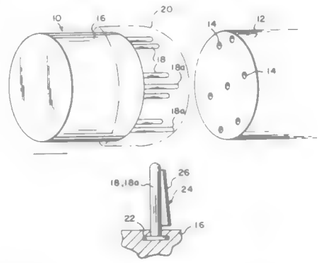
1. A paint roller cover for a paint roller frame, said paint roller cover comprising:
a unitary core having cylindrical configuration with a substantially closed end and an open end for fitting over the paint roller frame, the core also including an exterior roller surface and a longitudinal axis,
a pile fabric secured thereto along the exterior roller surface of the core, and
said pile fabric also being secured to the core at the substantially closed end of the core, the exterior surface of the substantially closed end of the core being disposed substantially perpendicularly to the longitudinal axis of the cover,
the pile fabric at the end of the cover being integral with the pile fabric secured to the roller surface,
the cover being removable from the paint roller frame.

5,339,485

CUTTING TORCH TIP CLEANER

Bill Ingram, Rt. 7, 11429 W. 20th, Odessa, Tex. 79763, and George Spector, 233 Broadway Rm. 702, New York, N.Y. 10279

Filed Aug. 20, 1993, Ser. No. 109,246
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—236.06 2 Claims



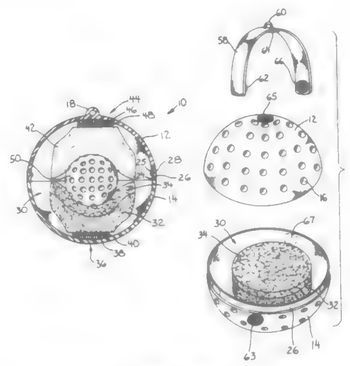
1. A cleaner for a cutting torch tip having a plurality of orifices with walls in a particular arrangement which comprises:
a) a cylindrical body;
b) a plurality of stainless steel wires extending from said body in the same said arrangement as said orifices in the cutting torch tip, so that said wires can be inserted within the orifices at the same time to simultaneously clean all of the orifices; wherein some of said wires are longer than the others, so that said wires can be properly lined up with said orifices to be inserted therein, further including a safety storage cap to be placed onto said body over said wires when not in use; wherein each said wire is rotatably mounted within said body and includes a flexible metal flap with a free edge and a relatively stiff tapered head for engaging said walls along said free edge for scraping, which will rotate when inserted into each said orifice to produce a better cleaning action therein.

5,339,486

GOLF BALL CLEANER

William V. Persic, Jr., 1726 Crabtree La., Elkhart, Ind. 46514

Filed Mar. 10, 1993, Ser. No. 29,149
Int. Cl.[5] A47L *25/00*
U.S. Cl. 15—244.1 7 Claims



1. A golf ball cleaner comprising:

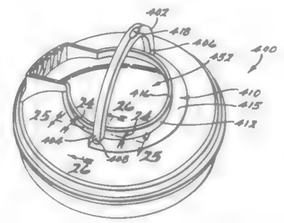
a housing having first and second separable hollow parts each having an open face defined by an annular edge, said parts releasably joined together in a said face to said face configuration at said annular edges, said annular edges thereof permitting relative rotation of said first and second hollow parts relative to one another when said first and second hollow parts are joined together; and
first and second pads respectively disposed within said first and second hollow parts, said first and second pads being in opposed facing relationship to each other for accommodating a golf ball therebetween when said first and second hollow parts are joined, whereby said pads are caused to wipe a said golf ball upon rotation of said first and second hollow parts relative to one another, means for separably joining said first and second hollow parts including a strap extending over an outer surface of one of said first and second hollow parts and releasably attached at opposite ends to an outer surface of the other of said first and second hollow parts.

5,339,487

FILTERING MEANS FOR A LIQUID PAN ASSEMBLY FOR A LIQUID BATH VACUUM CLEANER

Gary A. Kasper, Cadillac, Mich., assignor to Rexair, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 713,059, Jun. 10, 1991, Pat. No. 5,125,129, which is a continuation-in-part of Ser. No. 467,746, Jan. 19, 1990, Pat. No. 5,022,115. This application Jun. 5, 1992, Ser. No. 893,766
Int. Cl.[5] A47L *9/18*
U.S. Cl. 15—246.2 21 Claims



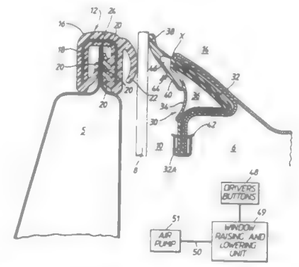
1. A liquid pan assembly for a liquid bath vacuum cleaner for containing a liquid filtering agent in an interior volume thereof, comprising;
a generally circular side surface;
a top surface having an upwardly extending mouth portion and an opening including a generally circular portion, said top surface including a recess defined by a vertical wall and a shoulder-like portion adjacent a substantial portion of the perimeter of the generally circular portion of the opening;
a semi-circular handle portion pivotably secured at first and second ends to said top surface such that said handle portion can be pivoted between a stored position below said opening and an extended position; and
means for releasably maintaining said handle portion in said stored and extended positions, said means for releasably maintaining said handle portion in said stored and extended positions including at least one spherical protrusion disposed on said vertical wall of said recess, a first substantially spherical recess formed in at least one end of said handle portion adapted to receive said spherical protrusion when said handle portion is in said extended position, and a second substantially spherical recess formed in at least one end of said handle portion adapted to receive said spherical protrusion when said handle portion is in said stored position.

5,339,488

SEALING AND WIPING ARRANGEMENT INCLUDING INFLATABLE CHAMBER

Klaus P. Maass, Viersen, Fed. Rep. of Germany, assignor to Draftex Industries Limited, Edinburgh, Scotland

Filed Nov. 13, 1991, Ser. No. 792,019
Claims priority, application United Kingdom, Nov. 13, 1990, 9024628; Dec. 5, 1990, 9026438; Feb. 16, 1991, 9103334
Int. Cl.[5] B60S *1/46, 1/56, 1/38*
U.S. Cl. 15—250.01 6 Claims



1. A sealing and wiping arrangement, for a slidable window glass, comprising
support means,
means mounted on the support means and defining a first hollow chamber for receiving a variable-pressure fluid therewithin, the first hollow chamber undergoing shape alteration in response to altering the pressure of the fluid, the chamber having at least one rigid wall and a first flexible wall which moves with the shape alteration of the hollow chamber, a sealing element,
flexible mounting means flexibly mounting the sealing element on the said rigid wall and positioning the sealing element for sealingly engaging a surface of the window glass, the flexible mounting means mounting the sealing element for movement between a sealing position in which it is in sealing engagement with the window glass and a non-sealing position in which it is out of sealing engagement with the window glass,
a second flexible wall mounted outside the first chamber and connected between the first flexible wall and the sealing element whereby movement of the firs flexible wall in response to shape alteration of the first chamber causes the second flexible wall to transmit a mechanical force to the sealing element so as to cause it to move on its flexible mounting means between the sealing and non-sealing positions,
the second flexible wall defining a portion of a second hollow chamber which is positioned on the outside of the first hollow chamber and which receives a variable-pressure fluid therewithin, the second hollow chamber undergoing shape alteration in response to alteration of the pressure of the fluid, wiping means,
means mounting the wiping means on the second flexible wall and outside the said chamber, the wiping means being mounted adjacent to the surface of the window glass and movable between a wiping position in which it is in wiping engagement with the window glass and a non-wiping position in which it is not in wiping engagement with the window glass, the shape alteration of the second chamber when the sealing element is in the non-sealing position causing the wiping means to move between the wiping and non-wiping positions,
sealing element control means selectively operable to move the sealing element between the sealing and non-sealing positions, the sealing element control means comprising means for altering the pressure of the fluid within the first chamber, and

VOL 1165 ISS 4 AG 23 1994 UMI

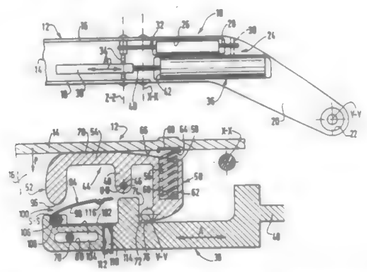
wiping means control means selectively operable to move the wiping means between the wiping and non-wiping positions, the wiping means control means comprising means for altering the pressure of the fluid within the second chamber.

5,339,489

SCREEN WIPING APPARATUS WITH ADJUSTABLE WIPER FORCE

Maurice Journee, Reilly, and Jean-Pierre Jehannet, Vernon, both of France, assignors to Paul Journee, S.A., Colombes, France

Filed Feb. 25, 1993, Ser. No. 22,550
Claims priority, application France, Feb. 28, 1992, 92 02337
Int. Cl.[5] B60S *1/32*
U.S. Cl. 15—250.2 25 Claims



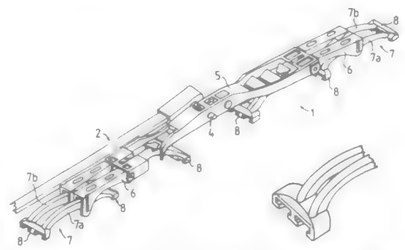
1. A screen wiping apparatus for a motor vehicle, said apparatus comprising: an elongated wiper arm; at least one wiper blade carried by the wiper arm; a driving head for the wiper arm; means articulating the wiper arm and driving head together and defining a first pivot axis for pivoting movement of the wiper arm with respect to the driving head; and wiping torque applying means mounted between and to the driving head and the wiper arm for applying a wiping torque to the wider arm about said first pivot axis, said wiping torque applying means comprising at least one first elastic loading means for applying to the wiper arm a substantially constant nominal wiping torque, together with complementary torque applying means, said complementary torque applying means comprising an elongated actuator and a connecting member, the actuator comprising a body coupled to the driving head and an output member movably mounted in the body for movement with respect to the body, said connecting member coupling the output member of the actuator to the wiper arm, wherein the complementary torque applying means further includes: a complementary torque transmitting member; said complementary torque transmitting member being pivotably mounted on the wiper arm for pivotal displacement with respect thereto about a second pivot axis which is laterally spaced from said first pivot axis; and second elastic loading means mounted between and to the complementary torque transmitting member and the wiper arm for biasing said complementary torque transmitting member about said second pivot axis, said connecting member defining a first working surface for engagement with the complementary torque transmitting member, such that said complementary torque transmitting member is displaceable with respect to the wiper arm, by said actuator against an elastic loading force exerted by said second loading means.

5,339,490

DUAL WIPER BLADE ASSEMBLY

Cedric S. K. Charng, Taipei, Taiwan, assignor to China Wiper Special Rubber Co., Ltd., Tamsui Taipei, Taiwan

Filed Jan. 15, 1991, Ser. No. 641,534
Claims priority, application United Kingdom, Mar. 6, 1990, 9004950
Int. Cl.[5] B60S *1/02, 1/28*
U.S. Cl. 15—250.41 14 Claims



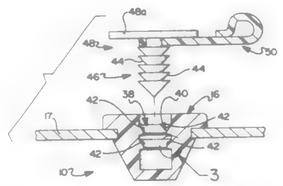
1. An elongate wiper blade assembly comprising backing means carrying two wiper blades, and a yoke structure having a plurality of yokes provided with claw members for supporting said backing means, wherein the backing means comprises two separate backing strips each carrying a different one of said two wiper blades, and wherein each claw member comprises a unitary member having a pair of claws, each claw of the pair having a pair of lip portions extending therefrom towards one another, each claw of the pair supporting a different one of said two back strips.

5,339,491

SEALED RETAINER GROMMET

Kenneth A. Sims, Romulus, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Nov. 6, 1992, Ser. No. 972,959
Int. Cl.[5] B65D *55/00;* F16B *21/00*
U.S. Cl. 16—2 3 Claims



1. A sealed retainer grommet apparatus for use with a standard Christmas tree type member, where said retainer member is adapted to be linearly inserted into said grommet apparatus without threadably engaging said apparatus, said apparatus comprising:

a frusto-conical portion having a first end portion having an upper surface and a second end portion, said second end portion including a closed bottom portion;

an intermediate portion extending from said first end portion;

a top portion extending from said intermediate portion, said top portion further including a lower edge surface extending generally parallel to said upper surface of said first end portion of said frusto-conical portion;

a bore extending generally coaxially through said top portion, said intermediate portion, and at least partially through said frusto-conical portion, said bore forming an opening into which said standard Christmas tree type

retainer member may be inserted, said bore further defining an interior sidewall portion; and

a plurality of independent interior locking shoulder portions protruding outwardly of said interior sidewall portion and spaced longitudinally apart along said interior sidewall portion for lockably engaging a plurality of mating locking shoulders of said retainer member to thereby secure said retainer member lockably within said bore while generally inhibiting the passage of fluids or corrosive elements through an opening in a panel member in which said apparatus is mounted;

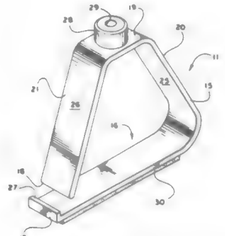
said interior locking shoulder portions each including a first wall portion extending from said interior sidewall portion at an angle relative to said interior sidewall portion, and a second wall portion extending from said interior sidewall portion at an acute angle relative to a plane extending transversely of said interior sidewall portion, said acute angle comprising an angle of about five degrees relative to a plane extending transeversely of said interior sidewall portion.

5,339,492

DOORSTOP

Dennis Billew, 43 Sandlewood Cir., Lawrenceville, Ga. 30245

Filed Jun. 21, 1993, Ser. No. 80,489
Int. Cl.[5] E05F *5/04*
U.S. Cl. 16—82 14 Claims



1. A doorstop comprising an elongated unitary strip of resilient material having first and second ends, said strip being bent to form a trapezoid having a short parallel side and an extended long parallel side that is terminated by said first end and one non-parallel side that is terminated by said second end, said second end being spaced apart from said extended long parallel side when said doorstop is in an unflexed condition; and

a pad secured to said short parallel side.

5,339,493

ADJUSTABLE HINGE

Robert J. MacIntyre, 1938 River Bend Ct., Mequon, Wis. 53092

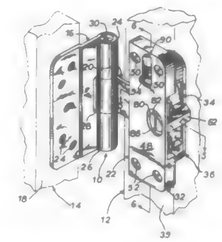
Filed Oct. 30, 1992, Ser. No. 969,098
Int. Cl.[5] E05D *7/04*
U.S. Cl. 16—238 29 Claims

1. An adjustable hinge for mounting a door to a frame, comprising:

a frame leaf for mounting the hinge to the frame;

a door leaf pivotably mounted to the frame leaf; and

an adjustable mounting arrangement for mounting the door leaf to the door, comprising a base member to which the door leaf is mounted, a cover member fixedly mounted to the door, wherein the base member and the cover member form a mounting assembly, and a vertically and horizontally adjustable mounting means for mounting the door leaf to the mounting assembly for providing vertical and leveraged horizontal adjustability in the vertical and horizontal position of the door relative to the frame, the base member being fixed with respect to the cover member when the door is to be horizontally adjusted and the base



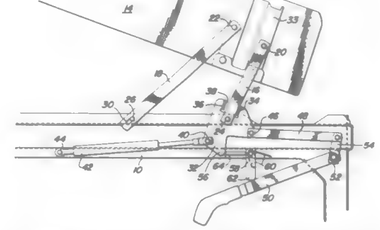
member being movable with respect to the cover member when the door is to be vertically adjusted.

5,339,494

VEHICLE HOOD WITH HINGE

Dierk Esau, Heidelberg, and Sinan Hosgoer, Worms, both of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Feb. 4, 1993, Ser. No. 13,886
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1992, 4203871
Int. Cl.[5] E05F *1/08, 9/00, 11/00*
U.S. Cl. 16—294 10 Claims



1. A hinge for a hood, the hinge having at least one hinge arm, the at least one hinge arm having one end pivotally coupled to the vehicle body and having another end pivotally coupled to the hood, characterized by:

a reversing plate pivotally coupled to the vehicle body by a first pivot pin and pivotally coupled to the at least one hinge arm by said first pivot pin means on, the reversing plate permitting relative pivotal motion between said reversing plate and said at least one hinge arm about said first pivot pin through a limited range from a neutral position to an open position and to a closed position;

an energy storage device coupled to the vehicle body and coupled to the reversing plate by a second pivot pin spaced apart from the first pivot pin, the energy storage device being biased to hold the reversing plate in the open position when an axis of the energy storage device is on one side of the first pivot pin and in the closed position when an axis of the energy storage device is on another side of the first pivot pin, movement of the reversing plate to its open position causing the at least one hinge arm and the hood to move to an open position, and movement of the reversing plate to its closed position causing the at least one hinge arm and the hood to move to a closed position; and

a manually-operated lever mechanism coupled to the reversing plate, the lever mechanism being operable to rotate the

VOL 1165 ISS 4 AG 23 1994 UMI

reversing plate about the first pivot pin to the neutral position against the bias of the energy storage device.

5,339,495

COILER AND AUTOLEVELLER

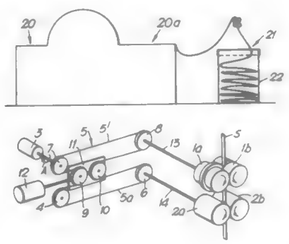
Walter Haworth, Rossendale; John Whiteley, Clitheroe; Alfred Wood, Greater Manchester, and Stephen W. Yates, Harwood, all of United Kingdom, assignors to Hollingsworth (U.K.) Ltd., Acrington, United Kingdom

Filed Nov. 24, 1992, Ser. No. 981,050

Claims priority, application United Kingdom, Nov. 26, 1991, 9125094.4; Mar. 10, 1992, 9205179.6

Int. Cl.[5] D04H *11/00*

U.S. Cl. 19—159 R **8 Claims**



5. A coiler for use in coiling sliver transported by a sliver machine into a can, the coiler comprising:

a tongue and groove roller pair defining a first conveying nip therebetween through which sliver being coiled in the can may pass;

guide means downstream from said conveying nip, for guiding the advancing sliver emerging from the conveying nip along a direction for discharging the sliver into said can;

said guide means including a pair of driven calender rollers downstream from said first conveying nip, for guiding the advancing sliver emerging from said first conveying nip along a direction towards the can, said calender rollers defining a second conveying nip therebetween;

drafting means for establishing a temporary drafting of the sliver between said first conveying nip and said second conveying nip for drafting sliver to the breaking point of the sliver; and said drafting means allowing for a reduction of drafting and for continuation of sliver feed through said first and second conveying nips; and

said drafting means including flexible element drive means for drivingly rotating said tongue and groove roller pair and said pair of driven calender rollers; said flexible element drive means including a displaceable carrier associated therewith for selectively varying, upon displacement of said displaceable carrier, the relative rotational speeds of said tongue and groove roller pair and said pair of driven calender rollers to establish said temporary drafting.

5,339,496

SELF-ALIGNING CLAMP STRUCTURE

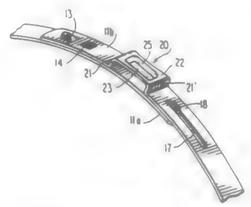
Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparate-fabrik, Switzerland

Continuation of Ser. No. 820,246, Jan. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 922,408, Oct. 23, 1986, abandoned, which is a continuation of Ser. No. 622,764, Jun. 20, 1984, abandoned. This application Nov. 17, 1993, Ser. No. 154,374

Int. Cl.[5] B65D *63/02*

U.S. Cl. 24—20 CW **25 Claims**

1. A self-aligning, cost-effective clamp structure, comprising clamping band means having inner and outer band portions of full band width and having center areas, connecting means for connecting overlapping inner and outer band portions, tightening means including at least one plastically deformable ear means for tightening the clamp about an object to be fastened thereby, and guide means for guiding overlapping inner and outer band portions during tightening of the clamp structure, said connecting means including only two hook means outwardly extending from the inner band portion and operable to engage in apertures provided therefor in the outer band portion, one of said hook means being a tab-like member pressed out of the clamping band in a transversely extending plane intersecting the clamping band in the transverse direction thereof, and the other hook means being a cold-deformed



support hook, the plastically deformable ear means including two generally outwardly extending leg portions interconnected by a bridging portion, and the guide means including a narrow longitudinal slot in the center area of the outer band portion and a tab-like member pressed out of the end area of the full band width inner band portion in such a manner that it extends outwardly in the longitudinal direction and can slidably extend within said slot whereby the presence of only two hook means and the location of the tab-like member permit a reduction in the clamping band material required for the clamp structure.

5,339,497

FASTENING DEVICE

Jarl F. Serlachius, Kavallvägen 1 E, Grankulla, Finland SF-02700

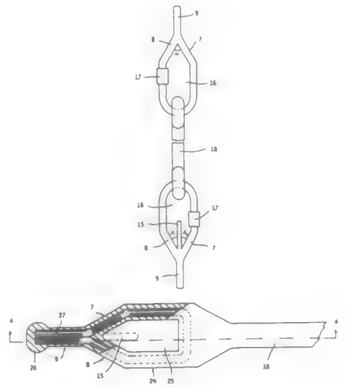
PCT No. PCT/FI91/00217, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO92/00684, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 12, 1991, Ser. No. 30,027

Claims priority, application Finland, Jul. 13, 1990, 903568

Int. Cl.[5] A44B *21/00*

U.S. Cl. 24—129 R **12 Claims**



1. A mooring or towing device, comprising:

a resilient flexible intermediate piece;

connecting means, attached to both opposite ends of the resilient flexible intermediate piece, for connecting said device, at said both opposite ends, along the extent of a flexible elongated pulling means, each of said connecting means, at said ends respectively, comprising:

an opening;

an essentially Y-shaped portion having:

first and second legs with first and second leg extensions surroundingly constituting said opening;

a third leg of said Y-shaped portion being defined by a tenon-like guiding protrusion extending generally in an opposite direction with respect to said opening; and

said first and second legs and said protrusion having a first, second, and third contact surfaces, respectively, the contact surfaces being frictionally contact with said pulling means.

5,339,498

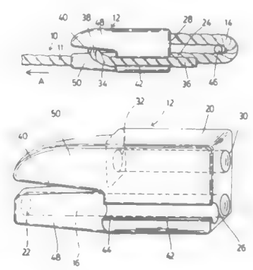
ADJUSTABLE TYER

Llewellyn B. Parsons, 113 Cook Street, Barrie, Ontario, Canada L4M 4G5

Filed Sep. 28, 1993, Ser. No. 127,607

Int. Cl.[5] F16G *11/00*

U.S. Cl. 24—129 R **7 Claims**



1. An adjustable tyer comprising

a flexible rope;

a slide adjustably positionable with respect to the rode to adjust the effective rope length;

the slide comprising a unitary body having a first tube portion through which the rope passes in one direction in a freely slidable manner, an upstream portion of the rope leading into an upstream end of the first tube portion and a downstream first bight emerging from a downstream end of the first tube whereby the length of the first bight is freely adjustable;

a clamp means acting on a returning length of said first bight;

a second tube portion rope guide parallel to the first tube portion, the returning downstream length of the first bight passing through the second tube portion in the opposite direction to said one direction upstream of the clamp means;

a quick release holding means for a downstream end portion of the rope downstream of the clamp means, the quick release holding means comprising a longitudinal channel parallel to the first and second tube portions and having a longitudinal channel parallel to the first and second tube portions and having a longitudinal mouth for removable insertion of an upstream length of said downstream end portion of the rope tightly thereinto; and

a second bight of rope between the rope guide and the holding means, the clamp means acting on the second bight of rope.

5,339,499

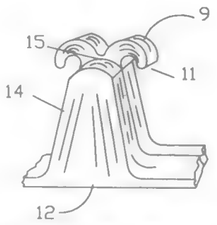
HOOK DESIGN FOR A HOOK AND LOOP FASTENER

William J. Kennedy, Charleston, S.C., and Gerald F. Rocha, Bedford, N.H., assignors to Velcro Industries B.V., Amsterdam, Netherlands

Filed Feb. 16, 1993, Ser. No. 17,749

Int. Cl.[5] A44B *13/00*

U.S. Cl. 24—452 **14 Claims**



12. An improved plastic molded hook for a hook and loop closure system comprising:

a substantially flat base;

a stem having a width and a lateral thickness, the stem connected to and projecting upwards from the base;

a neck portion connected to the stem,

a crook comprising two lobes, each lobe having a crook base, a crook tip, a lateral thickness and a vertical thickness, the crook projecting forward and rearward from the neck in a path generally parallel to the base, each lobe constructed in a continuously decreasing taper from the crook base to the crook tip; the stem having substantially greater lateral thickness than the crook, up to the neck; the neck positioned above the point on the stem where stress concentration occurs when a lobe of the crook is opened by a loop during separation of a loop from a hook; the stem tapered in a continuously decreasing width from its base to the neck; the neck having a width at least equal to two times the vertical thickness of a crook lobe at its thickest point whereby the hook can be easily withdrawn from its mold after the molding process wherein the thickened stem has its thickness greater than the thickness of the crook on only one side of the stem.

5,339,500

HOLDING CLAMP FOR CONNECTING SHEETS HAVING DIFFERENT EXPANSION CHARACTERISTICS

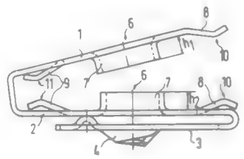
Klaus Muller, deceased, late of Weil-Haltingen, Fed. Rep. of Germany by Herta Muller, Legal representative , and Klaus Hullmann, Lorrach, Fed. Rep. of Germany, assignors to A. Raymond GmbH & Co. KG, Lorrach, Fed. Rep. of Germany

Filed Aug. 26, 1993, Ser. No. 111,850

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1992, 4228511

Int. Cl.[5] A44B *21/00*

U.S. Cl. 24—514 **4 Claims**



1. A holding clamp for connecting together two sheets of material, at least one of which is subject to expansion, said clamp comprising a thread leg having a thread portion for

VOL 1165 ISS 4 AUG 23 1994 UMI

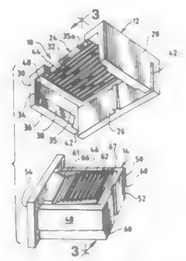
receipt of a threaded member, a pair of clamping legs integrally joined at one end of each to form a C-shaped member adapted to receive therebetween a sheet of expandable material, said thread leg being connected to an opposite end of one of said clamping legs, said clamping legs each having a through hole in line with said thread portion of the thread leg through which can pass the threaded member, a flange adjacent at least a portion of each said through hole extending inwardly from the inner surface each clamping leg that faces the other clamping leg and towards said other leg, said flanges abutting each other when the two clamping legs are brought together by said threaded member to keep the two clamping legs apart a distance greater than the thickness of the sheet of expandable material and at least one spring lobe projecting inwardly from the inner surface of each of said clamping legs that engage with opposite side surfaces of said sheet when said flanges abut to clamp the sheet while permitting the sheet to slide relative to the lobes due to expansion.

5,339,501

SNAP AND RATCHET PANEL FASTENER AND SUPPORT ASSEMBLY

James E. Gugle, Manhattan, Ill., and James S. Tisol, New Auburn, Wis., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 24, 1993, Ser. No. 21,882
Int. Cl.[5] A44B *21/00*; E04B *1/00*
U.S. Cl. 24—573.1 **26 Claims**



1. An adjustable fastener assembly which can be readily engaged and disengaged, comprising:

a receptacle member

a connecting member for disposition within said open space of said receptacle member in a first direction;

first engagement means defined between said receptacle and connecting members for connecting said connecting member to said receptacle member upon engagement of said first engagement means as a result of movement of said connecting member relative to said receptacle member in said first direction, for maintaining said connection of said connecting member to said receptacle member by preventing disconnection of said connecting member from said receptacle member in a direction opposite to said first direction, and for permitting relative movement between said receptacle member and said connecting member for a predetermined distance in a second direction, which is perpendicular to said first direction, while enabling disconnection of said connecting member from said receptacle member upon relative movement between said receptacle member and said connecting member in said second direction a distance amount beyond said predetermined distance; and

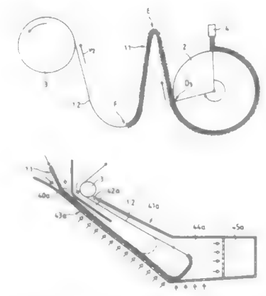
second engagement means defined between said receptacle member of said connecting member for permitting positional adjustment of said connecting member relative to said receptacle member in said second direction while preventing position adjustment of said connecting member relative to said receptacle member in a direction opposite to said second direction.

5,339,502

METHOD AND APPARATUS FOR PLUG LOOSENING AFTER TEXTURING

Peter Grossenbacher, Tosstalstrasse 99, CH-8400 Winterthur, and Werner Nabulon, Schneihalde 116, CH-8455 Rudlingen, both of Switzerland

Filed Nov. 27, 1991, Ser. No. 800,637
Claims priority, application Switzerland, Nov. 29, 1990, 03775/90
Int. Cl.[5] D02G *1/20*, *1/00*
U.S. Cl. 28—221 **21 Claims**



1. In a method of producing a textured thermoplastic yarn the steps of

forming a textured yarn plug in a texturing means;

moving the textured yarn plug in a first direction at a first speed; and

thereafter forming a free unguided loop of said yarn plug while changing the direction of movement of the yarn plug into a second direction and simultaneously increasing the speed of the yarn plug to a second speed sufficient to straighten the yarn plug.

5,339,503

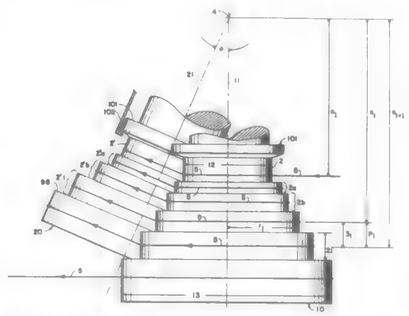
METHOD AND APPARATUS FOR INCREMENTALLY DRAWING FIBERS

Martin V. Sussman, 1361 Massachusetts Ave., Lexington, Mass. 02173

Division of Ser. No. 627,653, Dec. 14, 1990, abandoned, which is a division of Ser. No. 410,515, Sep. 19, 1989, Pat. No. 4,980,957, which is a division of Ser. No. 191,620, May 9, 1988, Pat. No. 4,891,872. This application Aug. 27, 1992, Ser. No. 937,059
Int. Cl.[5] D02J *1/22*; B29C *17/02*
U.S. Cl. 28—244 **8 Claims**

1. Apparatus for drawing fibers in small increments by passing said fiber with plural helical turns between first and second spaced-apart spindles, each of which is elongated about an axis that extends transversely to the helical turns of said fiber thereon and is canted relative to said axis of the other spindle, and each of said spindles having a rotating fiber-bearing outer surface, the radius of which changes along said axis thereof so as to be tapered, said fiber-bearing surface being formed of a plurality of discrete circumferential microterraces of different radii which are substantially parallel to said axis of rotation of said spindles, said fiber-bearing surface engages each helical turn of said fiber frictionally and supporting each said turn without imposing any substantial axially-directed restraint on said fiber, the improvement comprising:

the radius of each said fiber-bearing surface changes along said axis thereof by discrete generally positive increments of decreasing magnitude, said incremented magnitude being equal to said radius from which said fiber is departing multiplied by said generally positive draw increment being imposed on the fiber portion in interspindle passage to the portion of said spindle surface that is receiving said fiber portion; and



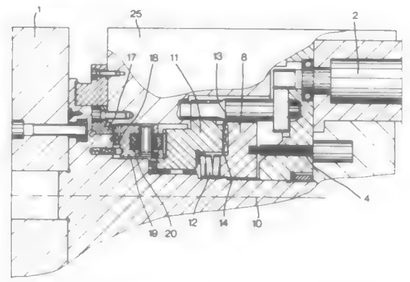
said fiber making at least one partial circumferential contact with each said microterrace of said fiber-bearing surface of each said spindle during drawing.

5,339,504

TOOL TURRET WITH REDUCED SWITCHING TIMES

Helmut Thumm, Metzingen, and Frieder Allgaier, Grafenberg, both of Fed. Rep. of Germany, assignors to Sauter Feinmechanik GmbH, Metzingen, Fed. Rep. of Germany

Filed Nov. 4, 1993, Ser. No. 145,516
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1992, 4238281
Int. Cl.[5] B23B *29/32*
U.S. Cl. 29—48.5 A **10 Claims**



1. A tool turret, comprising:

a turret housing having an annular surface with axially extending teeth and tooth spaces, having a contact surface, and defining a rotational axis perpendicular to said annular surface and said contact surface;

a turret head rotatably mounted in and relative to said turret housing to selectable angular positions about said rotational axis, said turret head having recesses for tools, axially extending teeth and tooth spaces, and an annular surface;

a preliminary indexing bolt for securing said turret head in one of said angular positions following a switching operation in which said turret head moves between angular positions;

a three-phase asynchronous motor forming a rotary drive for said turret head, said motor being pole reversible and having at least first and second sets of pole pairs, said first set providing a first indexing speed, said second set having a smaller number of pole pairs then said first set and providing a second indexing speed;

an interlocking device for securely interlocking said turret head in any of said angular positions, said interlocking device including an interlocking member with axially extending teeth concentrically mounted about said rotational axis and a contact surface perpendicular to said rotational axis, said interlocking member being axially slidable along said rotational axis between an interlocking position, in which said interlocking member teeth simultaneously engage said teeth and tooth spaces of said turret housing and said turret head, and a contact position in which said contact surfaces of said interlocking member and said turret housing engage precluding engagement of said teeth of said interlocking member and said turret housing in any position other than said selectable angular positions of said turret head;

a control member having a control cam rotatable relative to said interlocking member for controlling axial movement of said interlocking member, said control member being rotatably coupled to said motor;

gear means for coupling said motor to said turret head such that said turret head reaches an indexing speed limited by characteristics of said preliminary indexing bolt; and

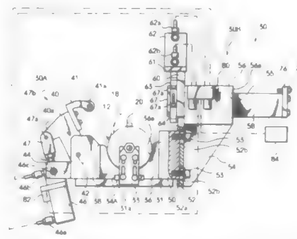
control means for regulating operation of said preliminary indexing bolt and said motor, said control means operating the motor with said first set of pole pairs at a time to ensure deceleration of said turret head to said first indexing speed before movement of said turret head is stopped by said preliminary indexing bolt.

5,339,505

BAND-CLAMPING APPARATUS

Taira Hama, Chino, and Tsugikichi Gomi, Nagano, both of Japan, assignors to Kabushiki Kaisha Mihama Seisakusho, Chino, Japan

Filed Jun. 8, 1993, Ser. No. 74,084
Claims priority, application Japan, Jun. 17, 1992, 4-183042
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—243.56 **10 Claims**



1. A band-clamping apparatus for clamping a clamping band, which has: a band section; a lever for reducing a diameter of said band section wound on a member to be clamped, said lever being capable of turning on one end as a fulcrum point so as to reduce the diameter of said band section and a pair of holding pieces for holding said lever on said band section so as to secure a diameter-reduced state of said band section, comprising:

a holding table **36** for holding said member to be clamped, which has been wound by said clamping band;

a stopper for preventing said clamping band on said member to be clamped, which has been held by said holding table, from moving, said stopper being capable of contacting said holding pieces from a side opposite said lever;

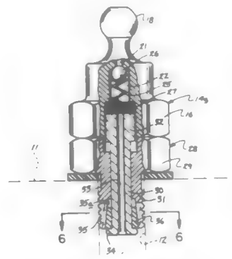
a pushing arm for turning said lever onto an outer face of said band section; and

a bending mechanism for inwardly bending said holding pieces so as to secure said lever onto the outer face of said

VOL 1165 ISS 4 AUG 23 1994 UMI

band section when said lever is located between said holding pieces.

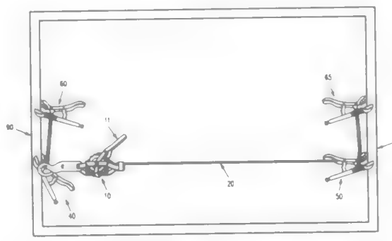
5,339,506
OVERHEAD CAM LIFTER REMOVAL TOOL
John A. Nusz, E. 2206 Parfreyville Rd., Waupaca, Wis. 54981
Filed Jul. 30, 1993, Ser. No. 99,467
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—252 2 Claims



1. An overhead cam lifter removal tool, comprising,
a body symmetrically oriented about an axis, with a plurality of wrench flats integral with the body symmetrical about the axis, and
the body having a body head, with the body head including a first bore directed therethrough, and a second bore in communication with the first bore, the second bore having a second diameter, the first bore having a first diameter, the second diameter greater than said first diameter, and
a spring member mounted within the second bore, and
a check ball mounted between the spring member and the first bore, and
a second body, the second body having second body wrench flats positioned in rotative adjacency to the wrench flats, with a second end body projecting shaft integral with the second body extending from the second body wrench flats coaxially aligned relative to the axis, with a central core received through the projecting shaft, with the central core having a fourth bore, and the body having a third bore, with the third bore internally threaded and the central core having a central core externally threaded head received within the third bore in a threaded interrelationship, with the spring member imposed upon the central core head, with the fourth bore directed coextensively throughout the central core, and the central core having a central floor flange, with a wedge member mounted upon the central core floor flange, with an externally threaded collet mounted surroundingly around about the wedge member, whereupon rotation of the wrench flats directs the central core head into the third bore and directs the wedge member into the collet to expand the collet.

5,339,507
WINDOW REMOVAL SYSTEM
Rick L. Cox, 919 Casa Nova, Monterey, Calif. 93940
Filed Nov. 13, 1991, Ser. No. 792,498
Int. Cl.[5] B23P *19/04;* B25B *25/00*
U.S. Cl. 29—267 2 Claims

1. A metal sash frame puller comprising:
first, second, third and fourth cam-locking pliers, each including a first handle having a fixed serrate jaw at one end and having a terminus thereon substantially near to said fixed serrate jaw, an opposing serrate jaw pivotally mounted on said first handle, a second handle pivotally mounted on said opposing jaw, a cam pivotally mounted between said first handle and said second handle for moving said serrate jaws into clamping engagement and locking said serrate jaws in said clamping engagement, an adjusting screw engaged in another end of said first handle for adjusting the distance between said first and said second serrate jaws in said clamping engagement, a releasing lever for unlocking said first and said second handles from said clamping engagement, and a ring-loop rotatably secured within said terminus;
a come-along for pulling said first and second cam-locking pliers substantially towards one another, said come-along having a frame, an axle mounted on said frame, a ratchet spool assembly rotatably mounted on said axle, an actuating arm pivotally mounted on said frame, said actuating arm having a first pawl for engaging and imparting rotary motion to said ratchet spool assembly when said actuating arm is manually oscillated, a second pawl for preventing counter-rotary motion of said ratchet spool assembly, a first hook mounted substantially at one end of said frame,

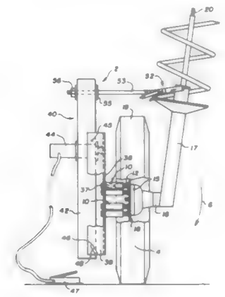


a cable assembly including a steel cable having a second hook affixed at one end thereof, said cable attached by a second end to said ratchet spool assembly, said frame having a fairlead mounted substantially at another end of said frame, said fairlead forming an aperture for guiding said cable therethrough as said cable is wound around said ratchet spool assembly in response to said actuating arm being manually oscillated;
first connecting means for connecting said ring-loop of said first cam-locking plier with said ring-loop of said third cam-locking plier;
second connecting means for connecting said ring-loop of said second cam-locking plier with said ring-loop of said fourth cam-locking plier; and
said first hook of said come-along engageable with said ring-loop of said first cam-locking plier and said second hook of said come-along engageable with said ring-loop of said second cam-locking plier.

5,339,508
APPARATUS FOR WHEEL ALIGNMENT
Ray Ventress, 19725 Telegraph Trail, Langley, B.C., Canada V3A 4P8
Continuation-in-part of Ser. No. 727,267, Jun. 26, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 968,956
Int. Cl.[5] B25B *27/14*
U.S. Cl. 29—273 32 Claims

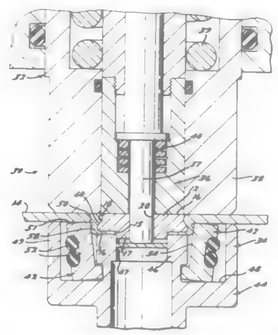
1. Apparatus for vehicle wheel alignment comprising:
a bearing surface;
means for mounting the bearing surface to the wheel comprising one or more threaded extensions to engage one or more studs of the wheel and removably secure the bearing surface to the wheel at a distance from the wheel to create a lever arm for applying a bending force said one or more threaded extensions positioned between the bearing surface and the wheel;
lever means having a movable fulcrum point mountable to said bearing surface for applying an appropriately directed force to said bearing surface to adjust the alignment of an engaged wheel; and

bracing means extendable from said lever means for attachment to an anchor surface, said bracing means providing a



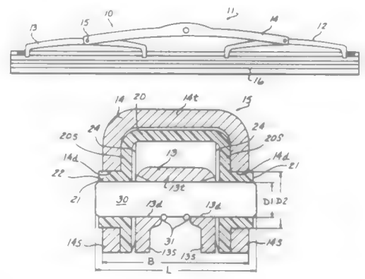
reaction force to ensure that the aligning force generated by said lever means is directed toward said engaged wheel.

5,339,509
METHOD FOR ATTACHMENT OF FASTENER TO SHEET MATERIAL
Stephen E. Sawdon, Marysville, and Edwin G. Sawdon, St. Clair, both of Mich., assignors to BTM Corporation, Marysville, Mich.
Division of Ser. No. 736,499, Jul. 26, 1991, Pat. No. 5,208,974, which is a continuation-in-part of Ser. No. 694,141, May 1, 1991, Pat. No. 5,150,513, which is a division of Ser. No. 468,579, Jan. 23, 1990, Pat. No. 5,027,503, which is a division of Ser. No. 175,941, Mar. 31, 1988, Pat. No. 4,910,853, which is a division of Ser. No. 853,130, Apr. 17, 1986, Pat. No. 4,757,609, which is a continuation-in-part of Ser. No. 607,948, May 7, 1984, abandoned, which is a division of Ser. No. 495,440, May 17, 1983, Pat. No. 4,459,735, which is a continuation of Ser. No. 184,951, Sep. 8, 1980, abandoned. This application Apr. 16, 1993, Ser. No. 48,907
Int. Cl.[5] B23P *11/00, 19/00*
U.S. Cl. 29—432 26 Claims



13. A method of forming an attachment of a fastener to a sheet material using punch means and die means longitudinally movable relative to one another, said die means having an opening therein, and a fixed anvil disposed within said opening to define the bottom thereof, said fastener having an attachment portion with a lateral face and a transverse edge thereon, said method comprising the steps of:
positioning said fastener attachment portion and said sheet material between said punch means and said die means;
forcibly moving said punch means and said die means toward one another in order to force said attachment portion and a portion of said sheet material into said opening; and
forcibly pressing said attachment portion and a first part of said sheet material portion longitudinally against said anvil with said first part of said sheet material being disposed between said lateral face of said attachment portion and said anvil to laterally deform at least said first part of said sheet material portion and said attachment portion generally laterally outwardly in order to longitudinally interlock said attachment portion with said sheet material, said punch means and said die means being forcibly moved toward one another to force said attachment portion and said portion of said sheet material into said opening without shearing said portion of said sheet material during said forming of said attachment.

5,339,510
METHOD FOR PRESS FITTING A PIVOT PIN FOR A WIPER ASSEMBLY
Christian Roth, Bietigheim-Bissinger, and Wolfgang Scholl, Gemmrigheim, both of Fed. Rep. of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt am Main, Fed. Rep. of Germany
Division of Ser. No. 901,912, Jun. 22, 1992, Pat. No. 5,271,122, which is a continuation of Ser. No. 585,149, Nov. 8, 1990, abandoned. This application Jul. 16, 1993, Ser. No. 92,517
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1989, 3904620
Int. Cl.[5] B23P *19/02;* B60S *1/38*
U.S. Cl. 29—436 7 Claims



1. A method of manufacturing a windshield wiper blade including a rubber wiping element and a multi-part carrier yoke system carrying said element, said yoke system including a secondary yoke pivotally mounted to a primary yoke at an attachment point, said method comprising the steps of:
forming each of said primary and secondary yokes with generally U-shaped cross-sections at said attachment point having generally parallel sidewalls and including laterally opposed apertures in said generally parallel sidewalls of said primary and secondary yokes
installing bushing means for positive non-rotatable retention within said primary yoke to define enlarged radially inwardly directed bearing surfaces within said laterally opposed apertures in said sidewalls of said primary yoke;
positioning said secondary yoke within said primary yoke to coaxially align said laterally Opposed apertures in said sidewalls of said primary and secondary yokes;
axially inserting a substantially uniform transverse cross-section pivot pin through said apertures for rotational slip fit with respect to both of said bearing surfaces and for non-

VOL 1165 ISS 4 AG 23 1994 UMI

rotatable press fit with respect to the apertures in said sidewalls of said secondary yoke; and

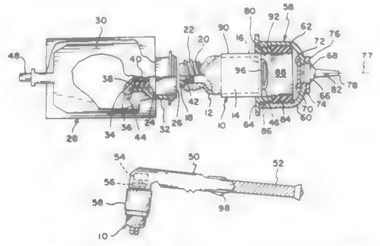
subsequently affixing said pin for positive axial retention with respect to said secondary yoke.

5,339,511

METHOD FOR SCREWING MEDICATION VIALS TO IV-BAGS

Margaret A. Bell, 1520 Mill Landing Rd., Virginia Beach, Va. 23454

Filed Apr. 20, 1993, Ser. No. 49,425
Int. Cl.[5] B23P *11/02*
U.S. Cl. 29—451 7 Claims



1. A method of screwing medication vials to IV-bags comprising the steps of:

providing a power tool having a rotatable socket movably attached thereto, said rotatable socket having a mouth at one end thereof dimensioned to frictionally receive therein and rotate a bottom end portion of a medication vial;

providing a medication vial having a bottom end portion and a threaded neck;

providing an IV-bag having a threaded mouth;

inserting the bottom-end portion of the medication vial into the mount of the rotatable socket;

inserting the threaded neck of the medication vial

rotating the socket containing the bottom portion of the medication vial therein with the power tool while holding the threaded mouth of the IV-bag stationary thereby threadingly connecting the medication vial to the IV-bag; and

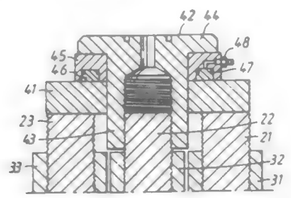
removing the rotatable socket from the bottom portion of the medication vial.

5,339,512

METHOD FOR PRESTRESSING CASINGBOLTS

Hans Odsberg, Listbyvägen, and Staffan Sundberg, Agatan, both of Sweden, assignors to Ovako Couplings AB, Sweden

Filed Mar. 10, 1993, Ser. No. 29,034
Claims priority, application Sweden, Apr. 15, 1992, 9201198
Int. Cl.[5] B21D *39/00*
U.S. Cl. 29—452 5 Claims



1. A method of prestressing parallel casing bolts, particularly casing bolts for steam and gas turbines and valves for such turbines, arranged in groups and in close proximity to each other, said method comprising:

positioning an essentially flat bridge element provided with a central through opening such that the under side of said bridge element is supported on end faces of a first and second of said casing bolts with a third of said casing bolts disposed between said first and second bolts, and with said through hole in centered superposition with the third bolt;

inserting a pulling sleeve operatively associated with an annular hydraulic means into said through opening of the bridge element, with said annular hydraulic means interposed between the upper side of said bridge element and a flange portion of said pulling sleeve;

screwing said sleeve onto said third bolt until said flange portion forces said annular hydraulic means into abutting relation with said upper side of said bridge element; and

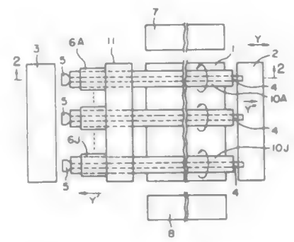
prestressing said third bolt by introducing pressurized fluid to said annular hydraulic means whereby the latter exerts a force in a first direction on said end faces of said first and second casing bolts through said bridge element and exerts a force in a second direction on said third bolt through said pulling sleeve, said second direction being opposite to said first direction.

5,339,513

METHOD OF MANUFACTURING THICK-WALLED SMALL DIAMETER PIPE

Yasuaki Hashimoto, Tagata, and Tadahiro Uematsu, Numazu, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed Nov. 30, 1992, Ser. No. 985,188
Claims priority, application Japan, Dec. 2, 1991, 3-343903
Int. Cl.[5] B23P *15/00;* B24B *1/00, 5/40*
U.S. Cl. 29—526.6 8 Claims



1. A method for machining at least one thick-walled small diameter pipe that has been manufactured by extension and heating processes, said pipe having a longitudinal axis and an inner circumferential surface approximately concentric with the longitudinal axis, said method for machining said pipe being operative to uniformly cut away portions of the inner circumferential surface of said pipe despite any eccentricity of the inner circumferential surface relative to the longitudinal axis for removing defects and achieving smoothness in said pipe, said method comprising the steps of:

providing a core bar having opposed first and second ends, a cutting tool being disposed on said first end thereof, portions of the core bar spaced from the cutting tool on the first end being dimensioned to fit into the pipe;

holding the core bar in proximity to the first end thereof;

inserting the second end of the core bar into and through the pipe;

holding the second end of the core bar;

releasing the first end of the core bar;

rotating the pipe about the longitudinal axis;

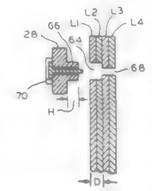
generating relative longitudinal movement between the pipe and the core bar such that the cutting tool of the core bar follows the inner circumferential surface through the pipe and uniformly cuts away the inner circumferential surface of the pipe.

5,339,514

METHOD OF MANUFACTURING LAMINATED STATOR WITH IMPROVED FLUX PATTERN

J. Warren Whitesel, Lincolnwood, Ill., assignor to Uppco Incorporated, Monticello, Ind.

Division of Ser. No. 870,274, Apr. 17, 1992, Pat. No. 5,248,911.
This application Mar. 1, 1993, Ser. No. 22,658
Int. Cl.[5] H02K *15/02*
U.S. Cl. 29—596 12 Claims



1. A method of manufacturing laminated stators, especially for fractional horsepower motors, said method comprising the steps of:

(a) stamping said laminates on a punch press, each of said laminates having a configuration which clinches them together when a stack of laminates are pressed together;

(b) counting said laminates as they are produced,

(c) altering the configuration of selected laminates in said stack in order to have large diameter bracket mounting holes on opposite sides of said stack of laminates and small diameter screw receiving holes in the remainder of said laminates;

(d) assembling a counted number of said laminates into said stack as they are produced; and

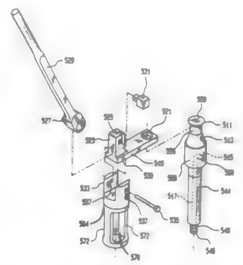
pressing the counted assembly of step (d) to clinch them together.

5,339,515

APPARATUS FOR REMOVING AND INSTALLING VALVE-SPRING RETAINER ASSEMBLIES AND FOR TESTING THE TENSION OF SPRINGS EMPLOYED THEREBY

Douglas C. Brackett, P.O. Box 306, and William H. Webster, P.O. Box 4850, both of Portland, Me. 04112

Continuation-in-part of Ser. No. 911,283, Jul. 9, 1992, Pat. No. 5,241,734. This application Sep. 30, 1992, Ser. No. 954,007
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—705 20 Claims



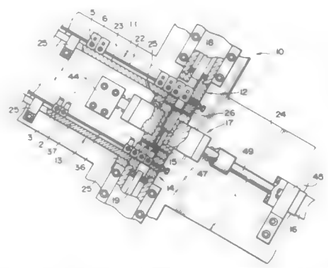
1. An apparatus for removing and/or installing valve-spring retainer assemblies from a cylinder head of an internal combustion engine, comprising depressing means for depressing a valve spring enough to disengage an associated valve-spring retainer assembly, whereby the valve spring and/or the valve-spring retainer assembly can be removed from the cylinder head of the engine; actuating means for actuating said depressing means, said actuating means including a first member positioned such that said depressing means is interposed between said first member and the valve-spring retainer assembly, said first member including receiving means for receiving a head of a wrench which functions as a handle for said first member; and mounting means for mounting said actuating means to a spark plug opening in the cylinder head, said mounting means including a second member fixedly positioned relative to the cylinder head and having an elongated body, one end of which is positioned externally of the cylinder head remote from the spark plug opening and an opposite end of which is removably received in the spark plug opening in spaced relation to a valve associated with the valve spring and the valve-spring retainer assembly, and attaching means adjacent to said one end of said body for attaching said second member to said first member such that said first member is movable toward and away from the cylinder head and such that said first member is rotatable about said one end of said body independently thereof, whereby said first member can be repositioned in preparation for the removal of additional valve springs and/or valve-spring retainer assemblies without removing or repositioning said second member.

5,339,516

APPARATUS FOR ASSEMBLING CORD FASTENERS

Kiichiro Ishikawa, Marietta, and Yasutaka Nishida, Macon, both of Ga., assignors to YKK Corporation, Lyndhurst, N.J.

Filed Aug. 11, 1993, Ser. No. 104,617
Int. Cl.[5] B23P *21/00*
U.S. Cl. 29—705 18 Claims



1. An apparatus for assembling cord fasteners, an assembled cord fastener being comprised of a male member composed of a head having a transverse cord insertion through-hole, and at least one resilient leg extending integrally from the head in a perpendicular direction of the transverse cord insertion through-hole and having an engagement portion, and a female member composed of a hollow body having an axial hole extending from an open end of the hollow body for receiving therein the at least one leg and head, a pair of diametrically opposite transverse cord insertion holes communicating with the axial hole, and at least one engagement portion projecting into the axial hole and interlocked with the engagement portion of the at least one resilient leg to couple the male member and the female member, the male member and the female member being relatively displaceable toward and away from each other, by and against a resilient force of the at least one leg acting on an inner surface of the axial hole, so that the transverse cord insertion through-hole is brought into and out of coaxial alignment with the transverse cord insertion holes, said apparatus comprises:

(a) a first inclined chute for delivering by gravity a succession of female members in a first direction, with the open

VOL 1165 ISS 4 AG 23 1994 UMI

ends of the respective female members facing toward a second direction which is perpendicular to said first direction;

(b) a first pocket disposed on a lower end of said first inclined chute for receiving a leading one of the successive female members from said first inclined chute and temporarily holding therein the leading female member, with the open end of the leading female member facing toward said second direction;

(c) a second inclined chute extending parallel to, and vertically spaced from, said first inclined chute for delivering by gravity a succession of male members in a third direction parallel to said first direction, with the at least one resilient leg of the respective male members directed toward a fourth direction which is opposite to said second direction;

(d) a second pocket disposed on a lower end of said second inclined chute for receiving a leading one of the successive male members from said second inclined chute and temporarily holding therein the leading male member, with the at least one resilient leg of the leading male member directed in said fourth direction, said second pocket being vertically spaced from said first pocket and aligned with said first pocket;

(e) an assembling block having an elongated assembling chamber for receiving therein the female member and the male member respectively from said first pocket and said second pocket, said assembling block being reciprocally movable between an assembling position in which said assembling chamber is disposed between and aligned with said first and second pockets, and a discharging position in which said assembling chamber is disposed out of alignment with said first and second pocket for enabling discharge of an assembled cord fastener from said assembling chamber;

(f) a first pusher reciprocally movable into and out of said first pocket for forcing said female member from said pocket into said assembling chamber of said assembling block; and

(g) a second pusher reciprocally movable, in timed relation to the reciprocating movement of said first pusher, into and out of said second pocket for forcing the male member from said second pocket into said assembling chamber so as to ensure that the engagement portion of the male member and the engagement portion of the female member are interlocked with each other to couple the male member and the female member within said assembling chamber.

5,339,517

PLANT TAGGING APPARATUS

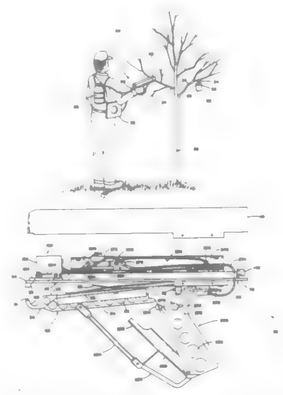
Gordon J. Diemer, Grand Ledge, Mich., assignor to The John Henry Company, Lansing, Mich.

Filed Apr. 12, 1993, Ser. No. 46,031
Int. Cl.[5] B23Q *7/10*; B31B *1/68*
U.S. Cl. 29—809 **26 Claims**

1. An apparatus for attaching a flexible strip to plants, comprising:

a frame member including a curvilinear surface adapted to receive a plant stem or branch and advance the flexible strip to form a loop around the plant stem or branch;

an advancing mechanism attached to said frame member for advancing the flexible strip of material slideably along a guiding channel formed in said curvilinear surface, said curvilinear surface being shaped to direct a leading end of the strip around the plant stem or branch and back onto a trailing portion of the strip to thus form a loop around the plant stem or branch as the strip is advanced so that the leading end and the trailing portion are positioned proximate each other; and



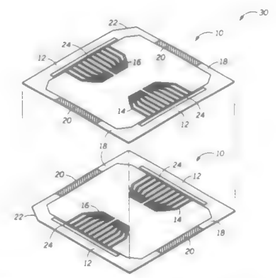
means attached to said frame member for securing the leading end and the trailing portion of the flexible strip together.

5,339,518

METHOD FOR MAKING A QUAD LEADFRAME FOR A SEMICONDUCTOR DEVICE

Truoc T. Tran, and Wilhelm Sterlin, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1993, Ser. No. 88,689
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—827 **18 Claims**



1. A method for making a quad leadframe for a semiconductor device, comprising the steps of:

providing a first and substantially similar second leadframe, each having a dual-in-line lead configuration, each leadframe having a first two opposing siderails and a plurality of leads connected to the first two siderails, the plurality of leads having a metal clad layer on lead tips which are distal to the first two opposing siderails, each leadframe having a second two opposing siderails which are not connected to any leads;

stacking the first and substantially similar second leadframe on top of one another;

rotating the first leadframe with respect to the substantially similar second leadframe by substantially 90° so that the plurality of leads of the first leadframe is substantially 90° out of phase with respect to the plurality of leads of the second leadframe;

aligning the first and substantially similar second leadframes to each other by aligning the first two opposing siderails of the first leadframe to the second two opposing siderails of the second leadframe, wherein the plurality of leads of the first leadframe and the plurality of leads of the second leadframe combine to form a quad-configuration; and

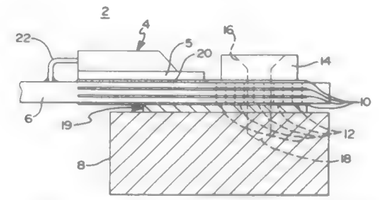
tack welding a portion of the first and second leadframes together after the step of aligning.

5,339,519

METHOD OF COOLING AN ELECTRICAL DEVICE USING A HEAT SINK ATTACHED TO A CIRCUIT BOARD CONTAINING HEAT CONDUCTIVE LAYERS AND CHANNELS

G. Clark Fortune, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 898,369, Jun. 15, 1992, Pat. No. 5,258,887.
This application May 18, 1993, Ser. No. 63,199
Int. Cl.[5] H05K *3/34, 7/20*
U.S. Cl. 29—840 **6 Claims**



1. A method of cooling an electrical device comprising:

providing a heat dissipation means;

providing a printed circuit board containing a plurality of heat conduction layers, a first layer located on a top surface of said printed circuit board and a second layer located on a bottom surface of said printed circuit board with the remaining heat conduction layers located between said top surface and said bottom surface and embedded within said printed circuit board, said heat conduction layers each having a planar surface substantially parallel to the top and bottom surfaces of said printed circuit board;

providing a plurality of heat conduction channels transverse to and passing through said heat conduction layers, said heat conduction channels extending from said first layer to said second layer;

providing a clamping means directly overlying said heat conduction layers and heat conduction channels and providing a clamping force between said printed circuit board and said heat dissipation means;

mounting said electrical device to said top surface of said printed circuit board; and

clamping said printed circuit board to said heat dissipation means with said clamping means where said heat dissipation means is mounted to said bottom surface of said printed circuit board.

5,339,520

BRAIDED HIGH-TEMPERATURE PACKING

Robert D. Leduc, 72 Nutting Rd., Westford, Mass. 01886

Division of Ser. No. 692,495, Apr. 29, 1991, Pat. No. 5,225,262.
This application May 13, 1993, Ser. No. 61,579
Int. Cl.[5] H01R *43/00*; B29D *28/00*; E21B *33/00*
U.S. Cl. 29—888.3 **7 Claims**

1. A method for making a packing comprising the steps of

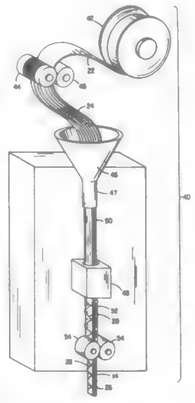
forming graphite strands, said forming step comprising

longitudinally corrugating a graphite tape,

forming said tape into at least two longitudinally extending layers integrally connected along a longitudinal edge thereof, said layers having at least a partially superimposed relationship to one another, and

overknitting said tape with a reinforcing wire;

braiding a plurality of said graphite strands to form a substantially rectangular core structure;



compressing said core to a density of 1.3–1.6 gm/cc; and

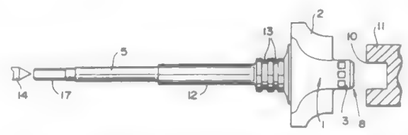
overbraiding said core with yarns forming a jacket disposed about said core.

5,339,521

MACHINING METHOD OF CERAMIC TURBINE ROTOR

Hiroyuki Kawase, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Mar. 18, 1993, Ser. No. 33,795
Claims priority, application Japan, Mar. 26, 1992, 4-101879
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—889.23 **2 Claims**



1. A machining method of a ceramic turbine rotor having a hub portion integrally formed with a plurality of radial blades, the hub portion having a front end to be centered during a finishing process of the radial blades and a rear end coaxially connected to a metallic support shaft, comprising the steps of:

grinding the front distal end of said hub portion to form a tapered surface thereon;

engaging the tapered surface of said hub portion with a corresponding tapered surface of an attachment mounted on a spindle of a headstock or a tailstock; and

finishing the radial blades of said rotor in a desired form.

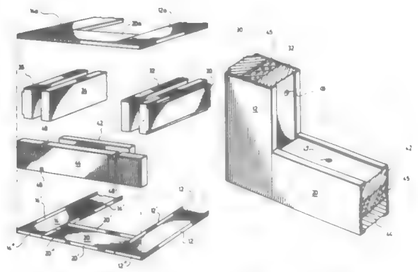
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,522

METHOD FOR CONSTRUCTING MODULAR DOORS

Georges A. Paquin, Brossard, and Claude Deroy, Quebec, both of Canada, assignors to Groupe Herve Pomerleau Inc., Montréal, Canada

Continuation of Ser. No. 712,715, Jun. 10, 1991, abandoned.
This application Apr. 8, 1993, Ser. No. 44,209
Int. Cl.[5] B23P *17/02;* E06B *3/16;* E04C *2/34*
U.S. Cl. 29—897.312 7 Claims



1. A method for constructing a modular door, said method comprising the following steps:

a) providing a first set of structural elements comprising a first upper crosspiece, a first lower crosspiece and two first stiles, each of said first crosspieces and first stiles of said first set being in the form of a sheet and having a back side,

b) placing the first stiles in spaced-apart position and securing said first stiles to the first lower crosspiece and to the second upper crosspiece in order to form a front surface member that is rectangular in shape and provided with at least one central open area;

c) securing reinforcing means in parallel, spaced apart relationship to and along the back side of each said first stiles and said first crosspieces forming said front surface member, said reinforcing means defining the thickness of the door;

d) providing a second set of structural elements identical in size to the elements of the first set, said second set comprising a second upper cross-piece, a second lower crosspiece and two second stiles, each of said second crosspieces and second stiles of said second set being in the form of a sheet and having a back side;

e) placing the second stiles in spaced apart position and securing said second stiles to the second lower crosspiece and to the second upper crosspiece in order to form a rear surface member identical in size and shape to said front surface member;

f) securing the back sides of said second stiles and said second cross-pieces forming said rear surface member to the reinforcing means so that said rear surface member is exactly opposite to the front surface member;

g) injecting an insulating foam into every closed space defined by the front and rear surface members and the reinforcing means of the door; and

h) fixing with a precise fitting, at least one element selected from a group consisting of windows, panels and screens into the open areas of the front and rear surface members so as to close said open areas.

5,339,523

METHOD OF MACHINING SLEEVE BEARING

Saburo Hasegawa, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 884,929, May 18, 1992, abandoned.
This application Sep. 30, 1993, Ser. No. 128,750
Claims priority, application Japan, May 24, 1991, 3-120041
Int. Cl.[5] B21D *17/00, 53/10*
U.S. Cl. 29—898.02 6 Claims



1. A method of machining a sleeve bearing comprising:

rotating a groove forming tool having a plurality of small-diameter balls securely fixed to a tool shaft along an inner peripheral surface of a cylindrical blank having an initial diameter so as to form grooves on said inner peripheral surface;

passing a ball along said inner peripheral surface so as to remove only raised deformations present on said surface as a result of forming said grooves, said ball having a selected diameter so as to make the diameter of said cylindrical blank substantially equal to said initial diameter;

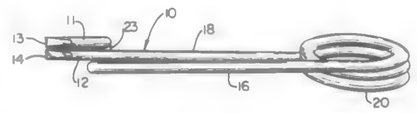
finishing said inner peripheral surface by rotating a finishing tool with respect to said inner surface, said finishing tool being provided with means for aligning said finishing tool with an axis of said inner peripheral surface and said finishing tool being provided at a distal end portion thereof with a plurality of rotatable tapered rollers.

5,339,524

PISTACHIO NUT OPENER

Kenneth C. Sawyer, III, 245 Dahlia St., Denver, Colo. 80220, and Mark C. Esbenson, 4349 Zenobia St., Denver, Colo. 80212

Filed Nov. 25, 1992, Ser. No. 981,547
Int. Cl.[5] A47J *25/00*
U.S. Cl. 30—113.2 9 Claims



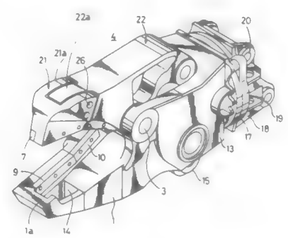
8. A hand-held opening device according to claim 7, each of said arm members being elongated, and said mounting means including a transversely bent portion on one of said lever arm members and an offset return portion at one end of said transversely bent portion engageable with the other of said lever arm members to retain said end members in juxtaposed relation to one another against the urging of said spring member.

5,339,525

REINFORCING STEEL SHEAR

Sumio Morikawa, Sakai, Japan, assignor to Oyodokomatsu Co., Ltd., Neyagawa, Japan

Filed May 17, 1993, Ser. No. 61,520
Claims priority, application Japan, Oct. 14, 1992, 4-078087[U]
Int. Cl.[5] E04G *23/08;* B23P *15/40*
U.S. Cl. 30—134 2 Claims



1. A reinforcing steel shear device mountable at the free end of a construction machine arm comprising:

a shear body having a lower stationary jaw extending forwardly therefrom and a pivotal shaft at a proximal end of the lower stationary jaw;

an upper movable jaw swingably connected to said pivotal shaft;

a hydraulic cylinder associated with said shear body for opening and closing said upper jaw relative to said lower jaw;

means for swingably and coaxially attaching said shear body to said construction machine arm;

said upper jaw and lower jaw having an opposed inner faces, extending forwardly from said pivotal shaft, cutting edges configured generally in a chevron and an inverted chevron, respectively, when viewed laterally,

said upper jaw including a distal end portion separate from the remainder of the upper jaw; and

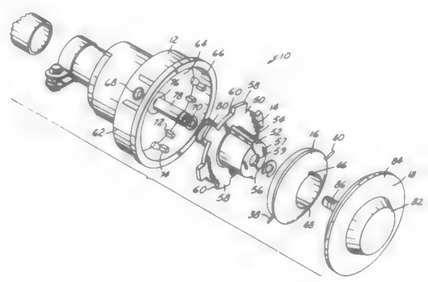
means for selectively fixing said distal end portion to the remainder of the upper jaw to define said chevron at a first angle and at a second angle greater than the first angle.

5,339,526

RESISTANCE SPOOL FOR A LINE TRIMMER HEAD

Robert G. Everts, Chandler, Ariz., assignor to Ryobi Outdoor Products, Chandler, Ariz.

Filed Apr. 22, 1993, Ser. No. 51,186
Int. Cl.[5] B26B *13/06, 13/16;* A01D *53/14*
U.S. Cl. 30—276 12 Claims



1. A resistance spool for holding line in a line trimmer head having a rotatable shaft, the spool comprising:

a rotatable main body for holding line wound thereon with the wound line having a free end radially extending from the main body;

the main body including a hub about which the line is wound and at least two axially disposed flanges extending radially outward from the hub, at least one flange having a free periphery which cooperates with the other flange to restrain the free end of the line so that the line cannot unwind from the spool when the main body is not rotating at a sufficient speed;

clamp means, on said main body, for restraining the free end of the line where the line extends from the main body; and

attachment means for mounting the main body relative to the rotatable shaft for rotation therewith;

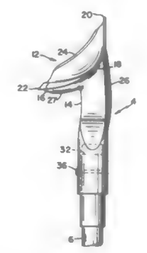
wherein the clamp means restrains the free end of the line so that line does not unwind from the spool when the main body is not rotating at a sufficient speed and wherein the clamp means allows the free end of the line to pay out from the spool when the main body is rotating at a sufficient speed.

5,339,527

WRECKING TOOL II

Richard W. Clemens, Jr., 7100 Westwind Dr., Bowie, Md. 20715

Filed Oct. 22, 1992, Ser. No. 964,968
Int. Cl.[5] B26B *3/00*
U.S. Cl. 30—299 7 Claims



1. A wrecking tool comprising

a pole,

a sleeve for receiving said pole,

a head member generally crescent shaped in side view,

a shank interconnecting said sleeve and said head member,

said head member lying at an acute angle relative to said shank such that the head member has upper and lower ends with respect to said shank held vertically,

an edge of said shank remote from said lower end of said head member having a sharp edge extending away from said lower end of said crescent shaped member,

said edge of said shank being bowed outwardly to provide an outwardly extending blade,

said pole secured in said sleeve by a cementing material, and

a rivet extending through one surface only of said sleeve into said pole.

5,339,528

TRANSPARENCY HOLDER FOR NAVIGATION AID

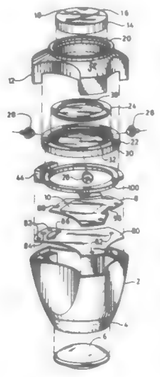
David C. Hill, Oakville, Ontario, Canada, assignor to Navimap Corporation

Continuation-in-part of Ser. No. 471,943, Jan. 29, 1990, Pat. No. 5,060,390. This application Aug. 24, 1990, Ser. No. 572,753
Int. Cl.[5] G01C *17/02, 21/00*
U.S. Cl. 33—1 SD 6 Claims

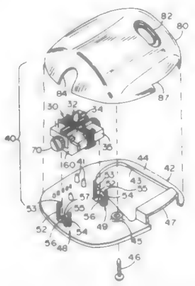
1. A map transparency holder for insertion in a navigational device of the type which required that the map transparency be correctly oriented in the navigational device, the map transparency holder having asymmetric alignment means that are positioned to engage complementary asymmetric alignment means on the navigational device as a precondition to insertion

VOL 1165 ISS 4 AG 23 1994 UMI

of the map transparency in the correct orientation and to prevent installation of the transparency holder in the navigational device until the asymmetric alignment means and the complementary asymmetric alignment means are complimentarily engaged.

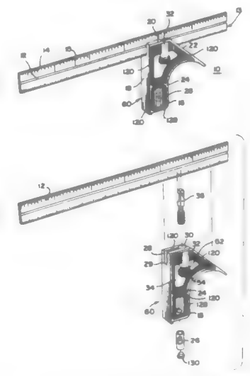


5,339,529
MAGNETIC SENSOR MOUNT
Kenneth M. Lindberg, Holland, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Dec. 14, 1992, Ser. No. 989,832
Int. Cl.[5] G01C *17/28*
U.S. Cl. 33—355 R **23 Claims**



1. A sensor mount for mounting a magnetic field sensor to a vehicle, said mount comprising:
- a base including a cradle means for receiving a sensor platform therein, said cradle means including means for lockably engaging the platform in a selectively adjustable position;
- a platform including means for attaching a magnetic field sensor thereto, said platform further including a pivot axle for pivotably mounting said platform to said cradle means for holding said platform and sensor thereon in an adjusted angular position; wherein said pivot axle includes a plurality of serrations and said means for lockably engaging said platform includes at least one resilient leg having a tang for engaging said serrations of said pivot axle; and
- a cover enclosing said platform.

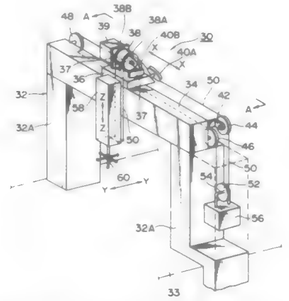
5,339,530
HAND LEVEL INSTRUMENT WITH COMPOSITE METAL AND PLASTIC BODY
Randall J. Wright, 2000 Moraine End, Delafield, Wis. 53018
Filed Feb. 9, 1993, Ser. No. 16,115
Int. Cl.[5] G01B *7/14*
U.S. Cl. 33—427 **8 Claims**



1. A hand tool with a cylindrical bubble vial mounted therein comprising:
- (a) a structurally rigid metal frame perimeter having a plurality of interconnected sides having a coplanar top face and a coplanar bottom face, and an open passageway therebetween, a face of one of said sides comprising a measuring surface;
- (b) an aperture bored through a face of one of the sides of said frame;
- (c) injection molded plastic mechanically trapped within at least a portion of said passageway defined by bottom faces of said frame, said injected plastic providing structural and dimensional surfaces extended into a portion of said passageway, and not extending beyond the top and bottom faces of the frame to create an integral vial mounting means oriented with respect to said aperture for retaining the vial;
- (d) said frame comprises the handle portion of a combination square;
- (e) said frame further comprises a groove recessed in a direction normal to a plurality of contiguous sides of said frame for accommodating the blade portion of a combination square, an aperture being bored through the bottom face of said groove to accept retaining means for securing the blade to the handle; and
- (f) wherein injection molded plastic is trapped by the interior lateral surfaces of said sides of said frame to provide structural and dimensional surfaces extending into a portion of said passageway to create an integral mounting for said retaining means for securing the blade to the handle.

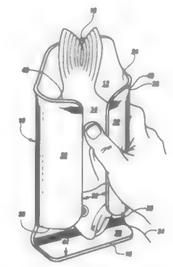
5,339,531
COORDINATE MEASURING MACHINE
Shinichiro Ogiwara, Mitaka, Japan, assignor to Tokyo Seimitsu, Co., Ltd., Tokyo, Japan
Filed Jan. 29, 1993, Ser. No. 10,873
Claims priority, application Japan, Jan. 30, 1992, 4-015251
Int. Cl.[5] G01B *5/03*
U.S. Cl. 33—503 **8 Claims**

1. A coordinate measuring machine wherein a Y carriage is provided movably in a Y-axis direction along a measuring table, an X carriage is provided movably in an X-axis direction along an X-axis guide of the Y carriage, a Z carriage is provided movably in a Z-axis direction on the X carriage, and a probe provided on the Z carriage is moved in directions X, Y and Z to measure a shape of an object to be measured which is rested on the measuring table, characterized in that said machine comprises: a driving roller rotatably provided on the X carriage; a pair of distributing rollers rotatably provided on the X carriage, for distributing a wire guided around the driving roller to directions of opposite end portions of the X-axis guide; a first roller rotatably provided on one end portion of the X-axis guide, for guiding therearound the wire distributed by one of the pair of distributing rollers in the direction of one end portion of the X-axis guide; a second roller rotatably provided on the other end portion of the X-axis guide, for



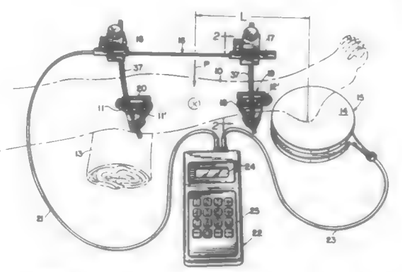
guiding therearound the wire distributed by other of the pair of distributing rollers in the direction of the other end portion of the X-axis guide; a third roller rotatably provided on one end portion of the X-axis guide, for guiding therearound the wire guided around the second roller; and a load means suspended from the wire through a suspending roller for balancing the weight of the Z carriage; whereby the wire is fixed at one end portion thereof to the Z carriage and guided around the driving roller, one of the distributing rollers, the first roller, the suspending roller, the third roller, the second roller, the other of the distributing rollers and the driving roller in the described order, and fixed at the other end portion thereof to the Z carriage.

5,339,532
FISH LENGTH MEASURING DEVICE
John G. O'Keefe, 5823 Marview, Dallas, Tex. 75227
Filed Mar. 29, 1993, Ser. No. 38,290
Int. Cl.[5] G01B *5/02*
U.S. Cl. 33—511 **20 Claims**



1. A fish measuring device comprising:
- a fish support surface having a widths, length and first and second ends;
- a stop at the first end to prevent movement of a fish beyond the first end;
- means for restraining a fish comprising at least two fish restraining members at least partially along the length of the fish support surface adapted to partially enclose an interior space with the fish support surface; and
- a passage means between the two fish restraining members for guiding a fish into the device while the fish is restrained by the fish restraining members.

5,339,533
SYSTEM FOR MEASURING STIFFNESS OF A FRACTURED BONE
James B. Richardson, 55 Glenfrith Close, Leicester LF3 900, United Kingdom
Continuation of Ser. No. 86,147, Jul. 1, 1993, abandoned. This application Dec. 8, 1993, Ser. No. 163,426
Int. Cl.[5] A61B *5/103*
U.S. Cl. 33—512 **45 Claims**



1. In combination, for use in duplicate in selective mounting of a bending-stress goniometer in an evaluation of the strength of a bone fracture which has been under external fixation for a period of bone-recovery time, wherein the external fixation has been between longitudinally spaced clamps each of which was fixed to externally projecting ends of at least two spaced bone screws, and wherein the external fixation and said spaced clamps have been removed for a goniometer evaluation of bone-strength; said combination comprising:
- (a) a bone-screw clamp having two jaw members and two bolts on spaced alignments through both jaw members, for fixing said jaw members in simultaneous squeezing engagement with two bone screws on one longitudinal side of the fracture;
- (b) a bracket having a flat base with bolt apertures spaced for registry with said bolts, whereby to clamp said base on one side of one of said jaw members upon securing said bone-screw clamp to the engaged two bone screws; said bracket having a headed body portion extending away from said base, said body portion having a bore inclined at an acute angle to the plane of said flat base;
- (c) a stiff arcuate arm member of radius at least twice the diameter of the fractured bone, said arm member being adjustably positionable in the bore of said headed part, and selectively operable means for securing said arm member to said bracket in an adjusted position thereof; and
- (d) a goniometer-end mount having a selectively lockable ball-joint connection to a base unit, wherein the base unit has an elongate bore for adjustable positioning of said base unit along said arm member, and selectively operable means for clamping said base unit to said arm member in an adjusted position thereof.

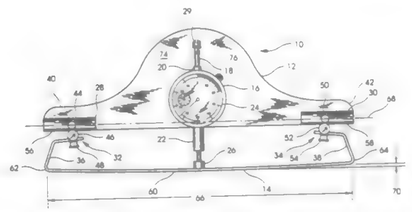
VOL 1165 ISS 4 AUG 23 1994 UMI

5,339,534

WARP MEASUREMENT DEVICE

Everett D. Krayenhagen, 1717 Capri La., Richmond, Ind. 47374-1503

Filed Nov. 17, 1992, Ser. No. 978,090
Int. Cl.[5] G01B 5/20
U.S. Cl. 33—533 16 Claims



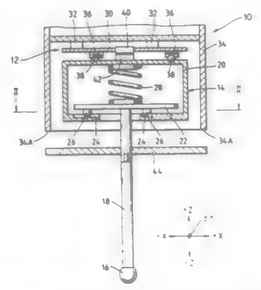
1. A device for use to measure warpage of a surface, comprising:
a rigid support having a longitudinal axis;
a resiliently flexible member including a resiliently flexible central portion having ends which define a predetermined length therebetween and which are located equidistant from said longitudinal axis, said central portion resiliently deflecting to conform to a concave or convex surface when placed thereagainst;
means for adjustably attaching said ends to said support so that said ends are maintained parallel to said longitudinal axis as said central portion of said flexible member deflects; and
means for measuring concave and convex deflection of said flexible member as a function of said predetermined length, said means for measuring including means for detecting and displaying deflection of said flexible member.

5,339,535

TOUCH PROBE

David R. McMurtry, Wotton-under-Edge; David Wilson, Stonehouse; Peter K. Hellier, North Nibley, and Peter Hajdukiewicz, Wotton-under-Edge, all of United Kingdom, assignors to Renishaw Metrology Limited, Gloucestershire, United Kingdom

Continuation-in-part of Ser. No. 768,433, Sep. 26, 1991, abandoned. This application Feb. 19, 1992, Ser. No. 836,729
Claims priority, application United Kingdom, Feb. 23, 1990, 9004117.9; Oct. 1, 1991, 9120818.1; Nov. 9, 1991, 9123853.5
Int. Cl.[5] G01B 5/03, 5/20
U.S. Cl. 33—561 13 Claims



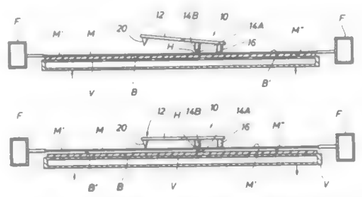
1. A touch probe for use on a coordinate positioning machine, the probe comprising:
a stylus module having a support structure and a stylus-supporting member for supporting a stylus, the stylus-supporting member being biased into a rest position with respect to the support structure, from which position the supporting member is displaceable relative to the support structure when a deflecting force acts on the stylus, and to which position it may return when said deflecting force is removed;
a sensing module for supporting the stylus module, the sensing module being securable to a movable arm of the machine;
means, acting on the support structure of said stylus module, for releasably retaining said stylus module on said sensing module;
wherein said sensing module comprises means for detecting contact between the stylus and a surface.

5,339,536

APPARATUS AND METHOD FOR SOLDER PASTE PRINTING PROCESS FOR PRINTED CIRCUIT BOARDS

Scott K. Buttars, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 924,851, Aug. 4, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 124,566
Int. Cl.[5] G01B 5/14
U.S. Cl. 33—613 21 Claims



17. Apparatus for indicating a predetermined distance between a first surface and a second surface having a hole therethrough, wherein said second surface is positioned directly above said first surface, said apparatus comprising
a one-piece plate having a thickness;
an elongated member disposed on said plate and extending a length away from said plate, said elongated member length and said plate thickness defining a given dimension, a portion of said elongated member sized for extending through the second surface hole to engage the first surface;
indicator means disposed on said plate and extending a length away from said plate for indicating the positioning of the first surface relative to the second surface wherein said given dimension is less than the distance x between said indicator means and said elongated member, said indicator means length and said plate thickness being less than said given dimension; and
two support members disposed on said plate wherein one of said support members is spaced apart from said elongated member a distance y that is less than the distance x between said indicator means and said elongated member.

5,339,537

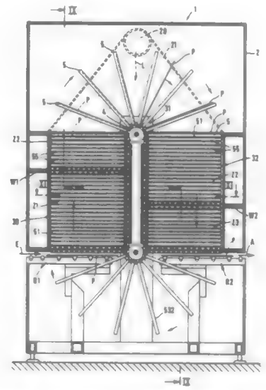
CONTINUOUS DRIER FOR FLAT PIECE MATERIAL

Kaspar Kuster, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 9, 1992, Ser. No. 973,469
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 91810881
Int. Cl.[5] F26B 13/00
U.S. Cl. 34—612 10 Claims

1. A continuous drier for flat piece material comprising:
a heatable drier housing and a transport path that ascends in said drier housing and, after passing an upper turning point, descends again,

said transport path comprising an endless chain that extends substantially vertically and to which are secured carriers for said piece material to be transported,
said carriers projecting outwards from said endless chain, wherein each of said carriers are secured to links of said chain, each of said carriers comprising two lateral bars, each of said bars having an upper and a lower side and a base end facing said chain, said bars being connected at said base ends by a connecting strip, and wherein there are secured to said lateral bars substantially V-shaped carrying members, of which the vertices point approximately in the direction of the other lateral bar, and, of the two ends of said V-shaped carrying members, one is secured to said upper side and the other is secured to said lower side of the associated lateral bar,
said drier further comprising a supply duct for drying air for said piece material to be dried, wherein said supply duct is so arranged that an airstream supplied by it flows over said piece material transversely to the direction in which said carriers project from said chain.

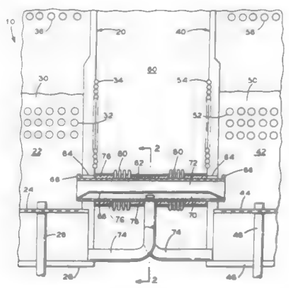


5,339,538

FLUID BED MATERIAL TRANSFER METHOD

Edward E. Pinske, Jr., Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 729,277, Jul. 12, 1991, Pat. No. 5,243,770. This application Aug. 9, 1993, Ser. No. 103,366
Int. Cl.[5] F26B 3/08
U.S. Cl. 34—370 4 Claims



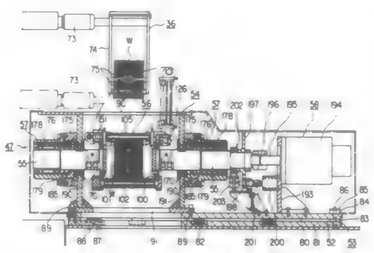
1. A method of equalizing material and pressure of a pair of separated fluid beds in a pair of separated fluid bed enclosures, each having distributor means for supporting its fluid bed, a sidewall extending above the distributor means, and means disposed below the distributor means for supplying fluidizing gas to the distributor means, comprising establishing communication between the fluid beds and through at least one equalizing duct extending above and adjacent to the distributor means for receiving material for movement between the fluid beds, fixing a midpoint of the equalizing duct and permitting opposite ends of the equalizing duct to slide with respect to the sidewalls of the fluid bed enclosures to accommodate expansion and contraction of the equalizing duct with the midpoint of the equalizing point acting as a zero expansion point.

5,339,539

SPINDRIER

Hirofumi Shiraishi, Kurume, and Yoshiyuki Honda, Kumamoto, both of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Saga Limited, Tosu, both of Japan

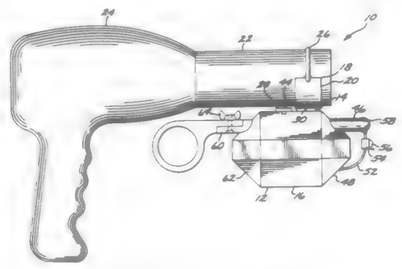
Filed Apr. 16, 1993, Ser. No. 46,986
Claims priority, application Japan, Apr. 16, 1992, 4-122718; Apr. 16, 1992, 4-122719; Sep. 22, 1992, 4-277811; Mar. 4, 1993, 5-44027; Mar. 4, 1993, 5-44028
Int. Cl.[5] F26B 17/24
U.S. Cl. 34—58 16 Claims



1. A spindrier for removing solution or drops of solution from a plurality of substrates by centrifugal force, comprising:
a box body enclosing the plurality of substrates
a pair of rotating shaft members opposed to each other and extending into the box body through both sides thereof;
a mechanism for rotating at least one of said rotating shaft members;
a rotor mechanism supported by the pair of rotating shaft members;
wherein said rotor mechanism has a plurality of first clamp members, one end of which is pivotally attached to said rotor, and another end of which is detachably attached to said rotor, and second clamp members, both ends of which are fixed to said rotor for clamping and holding the substrates face to face with their faces directed perpendicular to the rotating shaft members, said second clamp members are connected and fixed to the rotating shaft members to hold lower portions of the substrates thereon when the substrates are set in the rotor mechanism, and said first clamp members have base ends connected to one of said rotating shaft members so that said first clamp members can be swung erected and horizontal relative to one of the rotating shaft members, and wherein front ends are locked to the other of the rotating shaft members when said first clamp members are swung horizontal.
a mechanism for swinging said first clamp members,
a lock mechanism for locking said front ends to the one of rotating shaft members, and
an unlocking mechanism for unlocking said front ends from the other of the rotating shaft members.

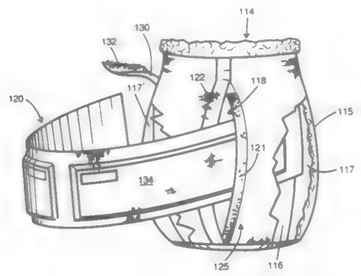
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,540
HAIR DRYER ACCESSORY DEVICE
Syd Edwards, 1225 Windsor Rd., Cardiff, Calif. 92007
Filed Jul. 21, 1992, Ser. No. 915,675
Int. Cl.[5] A45D *1/00*
U.S. Cl. 34—97 9 Claims



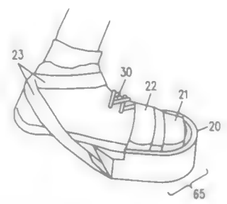
1. A hair dryer accessory device comprising:
a body member removably mountable on said dryer having a body portion formed with at least one reservoir for storing a liquid,
flexible strap means for releasably attaching said body member to a barrel of said hair dryer,
a spray device mounted on said body member, and
trigger means mounted on said body member for actuating said spray device to cause said spray device to discharge said liquid from said reservoir.

5,339,541
FOOTWEAR WITH THERAPEUTIC PAD
Byron C. Owens, Asheboro, N.C., assignor to Vesture Corporation, Randleman, N.C.
Continuation of Ser. No. 969,959, Dec. 3, 1992, which is a continuation-in-part of Ser. No. 871,826, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 643,344, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 486,806, Feb. 26, 1990, abandoned. This application Dec. 27, 1993, Ser. No. 173,869
Int. Cl.[5] A43B *7/02*
U.S. Cl. 36—2.6 8 Claims



1. Footwear and a therapeutic pad in combination comprising: a sole, an upper portion, said upper portion comprising an outside wall and an inside wall, said upper portion also comprising a heel area and a toe area, said upper portion defining a therapeutic pad compartment between said outside wall and said inside wall, said compartment extending substantially the entirety of both sides of the upper portion through said heel and said toe areas, and an elongated, flexible therapeutic pad, said upper portion defining a single opening for insertion and removal of said therapeutic pad, said opening located in said heel area of said upper portion, said pad releasably positionable within said compartment.

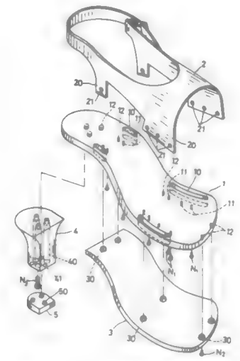
5,339,542
FRONTAL SOLE EXERCISE DEVICE
John Y. Kim, Mountain View, Calif., assignor to Metapro, Mountain View, Calif.
Filed May 20, 1993, Ser. No. 65,314
Int. Cl.[5] A43B *3/18*
U.S. Cl. 36—7.2 12 Claims



1. A frontal sole exercise device for removably attaching to a user's foot disposed in footwear, the footwear having a forward and a rearward portion, the exercise device comprising:
a platform element having an upper and a lower surface, the upper surface of the platform element for receiving the forward portion of the footwear, the lower surface including a tractive sole, the upper surface including a footbed for receiving the forward portion of the footwear, the footbed having a wall, the wall having an inner portion and an outer portion, the outer portion being thicker than the inner portion, the footbed being substantially horizontally level, the platform element having sufficient thickness for causing weight of the user to be borne by the forward portion of the footwear when removably attached to the exercise device, the platform element having a width wider than the widest width of the forward portion of the footwear, the platform element being approximately half to one-third the length of the footwear;
at least one front strap affixed to the platform element for removably attaching the forward portion of the footwear to the upper surface, the front strap including at least one fastening means in operative combination with the front strap for adjusting the length of the front strap for removably attaching the forward portion of the footwear to the platform element; and
at least one rear strap affixed to the platform element for removably attaching the rearward portion of the footwear to the platform element, the rear strap including at least one of the fastening means in operative combination with the rear strap for adjusting the length of the rear strap for removably attaching the rearward portion of the footwear to the platform element;
the footwear removably attached to the exercise device with the front strap and the rear strap for causing weight of the user to be borne by the forward portion of the footwear.

5,339,543
SHOE
Nan-Sun Lin, 1-47, Tu - Ku, Tu-Ku Tsuen, Ren-Te Shiang, Tainan Shien, Taiwan 717
Filed Oct. 12, 1993, Ser. No. 133,913
Int. Cl.[5] A43B *3/12, 3/24*
U.S. Cl. 36—101 1 Claim

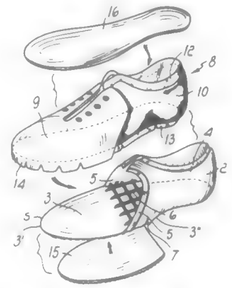
1. A shoe comprising:
An inner sole being rectangular in shape and gradually sloping down from a hind portion to a front portion, having a plurality of opposing long slots extending longitudinally in both sides of the front portion, a pair of opposing short slots extending longitudinally in an intermediate portion, a plurality of opposing locating holes beside said long and said short slots, a plurality of connecting holes in the hind portion, the front portion and an intermediate portion;
a vamp having a front portion curved down at both sides, a pair of opposing inserting sides formed at both lower ends of the front portion to insert through said slots of said inner sole, a pair of opposing inserting sides formed to extend down from the intermediate portion;
an outer sole being adhered to a bottom of the front and the intermediate portion of said inner sole having three pairs of screw holes to correspond to said connecting holes of said inner sole for screws to combine the outer sole with said inner sole;



a heel being adhered to a bottom of the hind portion of said inner sole, having three vertical through holes spaces apart for screws to move through for screwing with said inner sole, and three recesses in a bottom surface;
an auxiliary heel being adhered to the bottom of said heel, having three projections on an upper surface to engage said three recesses in said high heel, thereby providing alignment means for the auxiliary heel on the heel; and
wherein
all the components are tightly and stably combined together by means of screws and adhesive, thereby being prevented from loosening from each other.

5,339,544
FOOTGEAR STRUCTURE
Alberto Caberlotto, Montebelluna, Italy, assignor to Lotto S.p.A., Montebelluna, Italy
Continuation of Ser. No. 765,590, Sep. 25, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,957
Claims priority, application Italy, Oct. 4, 1990, 41705 A/90; Apr. 15, 1991, PD91 A 000071
Int. Cl.[5] A43B *5/02*
U.S. Cl. 36—102 26 Claims

1. Footgear structure having a toe region, a ball region, an arch region and a heel region, the structure including a prefabricated one piece first component of synthetic material and a prefabricated composite second component of pre-selected size, wherein:
said first component includes:
a sole comprising integral therewith a partial insole portion and a partial sole portion,
said partial insole portion extending from the toe region of the footgear over the ball region of the footgear up to the arch region thereof,
said partial sole portion extending from the arch region end of said partial insole portion up to the heel region of the footgear,
integral with said sole, a first upper portion longitudinally extending from the ball region of the footgear up to the heel region thereof and extending upwardly from said sole,
said partial insole portion being flexible and thinner than said partial sole portion and having a perimetric edge surface for cooperation with said second component and a lower surface defining surface means for connection with a tread sole,
said second component includes:
a second upper portion extending from the toe region of the footgear up to said first upper portion, said second



upper portion having upwardly extending perimetric surface means portions for connection with said first upper portion and lower surface means portions extending along said sole for connection with said means,
a lining for said second upper portion, said lining including a rear lining part protruding beyond said second upper portion towards the heel region of the footgear, said rear lining part being inserted in said first upper portion of said first component and having marginal surface means for connection with said first upper portion.

5,339,545
SKI BOOT LINER
Jean Paris, Sevrier, France, assignor to Salomon S.A.., Annecy Cedex, France
Filed Apr. 30, 1993, Ser. No. 54,296
Claims priority, application France, May 6, 1992, 92 05825
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—119 20 Claims



1. An internal liner of a sports boot, for insertion between a shell of the sports boot and the lower portion of the leg and foot inserted within the liner, said liner comprising:
a vamp for enveloping the foot;
an upper affixed to the vamp for enveloping the lower portion of the leg, said upper comprising a rear portion and a front portion, said front portion and said rear portion including a wall having a predeterminate thickness and being adapted to provide an adjustment for the sports boot

VOL 1165 ISS 4 AG 23 1994 UMI

between an internal surface of the sports boot and the lower portion of the leg;

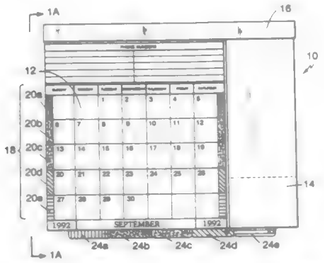
said upper comprising an elastic sock extending uniformly and continuously around the lower portion of the leg, said elastic sock not having a tongue, said sock having an external surface, said upper having a stretchable zone and a plurality of distinct and spaced apart wedging elements extending outwardly from said external surface of said sock, said wedging elements having a predeterminate thickness and a predeterminate compressibility wherein said stretchable zone consists of said upper; and no wedging elements are positioned on said vamp.

5,339,546

ORGANIZING AND SCHEDULING DEVICE

Michael Rahwan, 2 Marson La., Sharon, Mass. 02067

Filed May 14, 1992, Ser. No. 883,302
Int. Cl.[5] G09D *3/00*
U.S. Cl. 40—107 **17 Claims**



1. An organizing and scheduling device comprising

a calendar having indicia representing a plurality of weeks displayed on a face surface thereof;

a color coded scale including a plurality of colored regions of different colors, each colored region displayed adjacent a week on said calendar;

a plurality of flexible pocketed sheets disposed generally behind said calendar, each flexible pocketed sheet defining at least one pocket, and each said flexible pocketed sheet having a tab disposed on a lower edge, each said tab being of a color corresponding to one said colored region and horizontally offset from adjacent said tabs in a manner to avoid complete overlap;

means for mounting said calendar and said plurality of flexible pocketed sheets upon a display surface; and

means for releasable binding together of said calendar with said plurality of flexible pocketed sheets.

5,339,547

DISPLAY DEVICE

Allan Fogel, 8318 NW. 55th Ct., Coral Springs, Fla. 33067

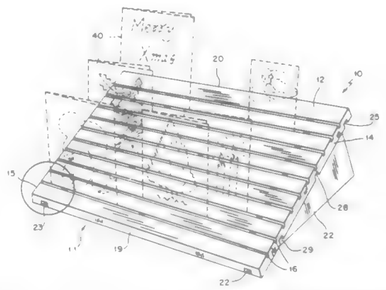
Filed Jan. 6, 1993, Ser. No. 1,305
Int. Cl.[5] G09F *1/10*
U.S. Cl. 40—124.4 **16 Claims**

1. A device for holding and displaying greeting cards, photographs, sports memorabilia and other self-supporting card shaped objects, comprising:

a display device including a solid object having predetermined dimensions, said solid object having at least one planar display surface;

said planar display surface having a plurality of slots extending fully across a width dimension of said planar display surface, said slots are open across an entire width dimension of the display device and having a width dimension and a depth dimension suitable for holding a substantially self-supporting flat object at a substantially vertical orientation with regard to gravity;

support means attached to a surface opposite said display surface for placing said planar display surface at an incline from the horizontal orientation with regard to gravity; and



wherein said slots are oriented at an angle from greater than 0° to about 5° towards a rear surface of said solid object measured from said vertical orientation with regard to gravity.

5,339,548

RECEPTACLE DISPLAY ACTIVATED AFTER THE SENSING OF THE CONDITION OF THE LIQUID

James M. Russell, 26 Brookview Ter., Bedford, N.H. 03110

Filed Aug. 26, 1992, Ser. No. 935,580
Int. Cl.[5] G09F *3/00*; **F21V** *33/00*
U.S. Cl. 40—324 **12 Claims**



1. A receptacle display comprising:

a receptacle having an outside an inside base and a bottom for holding a liquid;

display means mounted with said receptacle including means for selecting one of a number of images to be displayed;

sensing means sealingly mounted with said receptacle for sensing the condition of the liquid in the receptacle; and

a controller responsive to said sensing means for actuating said display means when a predetermined condition of the liquid is sensed and for turning said display means off after a predetermined time.

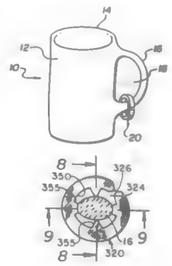
5,339,549

BEVERAGE IDENTIFICATION TAGS FOR CUP HANDLES

George David, and Rose H. David, both of 1822 Andoa La., Mt. Prospect, Ill. 60056

Filed Sep. 30, 1993, Ser. No. 129,466
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[5] G09F *3/00*
U.S. Cl. 40—324 **1 Claim**

1. A tag system comprised of groups of separate tags, all tags within any group being visually substantially identical to one another and the tags of each group being visually distinct from the tags of other groups; each tag of each of the groups having a thin planar split ring body shaped to extend over substantially a full 360 degrees and defining a substantially enclosed tag opening and presenting aligned end edges separated by a tag gap therebetween; each tag body having sufficient stiffness and shape memory axially of the tag opening to keep the tag generally in and return it to its unflexed planar configuration and having sufficient resiliency to allow manual flexing laterally out of the planar configuration to vary the tag gap; the tag system being suited for visual coded identification by specific tag groups of specific beverages held or to be held in containers of varied design and size but otherwise having a closed loop handle defining a finger opening and gripping cross-section, each tag gap being larger than the handle cross section when



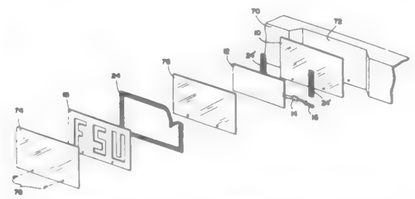
the tag is flexed allowing the tag to be fitted onto or removed from the container handle and the tag gap being smaller than the handle cross section when the tag is unflexed for trapping the tag on the container handle; and each tag being free from any connection to any bag of a type normally held in the container for forming the beverage, suited to remain trapped on the container handle when drinking from the container, each of the tags further including a plurality of foldable projections extending inwardly into the tag opening from an inner edge of the ring body, the foldable projections suited to be flexed transversely from the planar configuration, as needed to allow the tags to be used on different sized handles while providing a snug-handle fit.

5,339,550

ILLUMINATED SIGN AND METHOD OF ASSEMBLY

Peter Hoffman, 452 S. Congress Ave.,, W. Palm Beach, Fla. 33406

Filed Apr. 16, 1992, Ser. No. 868,931
Int. Cl.[5] G09F *13/22*
U.S. Cl. 40—544 **3 Claims**



1. An illuminated sign in combination with structure of a motor vehicle configured to receive a license plate, said structure having a shape and size, said sign comprising:

a planar electroluminescent lamp;

a planar indicia-bearing member;

a backing panel having a shape and size corresponding to said shape and size of said structure, said lamp being disposed over said backing panel;

means for assembling said indicia-bearing member over said lamp;

a transparent cover sheet for being assembled over said indicia-bearing member with said indicia-bearing member disposed between said lamp and said cover sheet and having a shape and size corresponding to said shape and size of said structure, said sizes of said backing panel and said transparent cover sheet each being substantially 6 inches high by 12 inches wide;

means for mounting said backing panel, lamp, indicia-bearing member and cover sheet to said structure; and

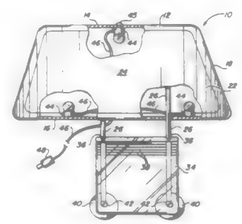
means for supplying power to said lamp to energize said lamp.

5,339,551

REMOVABLE VEHICLE MOUNTED ADVERTISING SIGNS AND METHOD

William A. Elmer, 1010 Temple Grove Ct., Winter Park, Fla. 32789

Division of Ser. No. 830,563, Jan. 31, 1992, Pat. No. 5,210,970, which is a continuation-in-part of Ser. No. 546,714, Jul. 2, 1990, Pat. No. 5,084,994. This application May 17, 1993, Ser. No. 62,594
The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.
Int. Cl.[5] G09F *21/04*
U.S. Cl. 40—591 **10 Claims**



8. An advertising sign for mounting generally vertically upon a side window of a motor vehicle, comprising:

a sign body formed of a hollow member enclosed by a top, a bottom and two generally flat sides, the two sides extending between the bottom and the top a sufficient dimension to allow an advertising sign along each side, and with the sides of the sign meeting forwardly at a leading edge and meeting rearwardly at a trailing edge, the member defining a longitudinal dimension between the leading and trailing edges and a plurality of lateral dimensions between the sides, with the longitudinal dimension being substantially greater than the lateral dimensions and with the lateral dimensions defining the shape of the sign body so that it is substantially aerodynamic with respect to air flow across the side surfaces between the leading edge and the trailing edge; and

means for mounting the sign body to a side window of a motor vehicle, the mounting means comprising:

a bracket member formed of a clear plastic sheet extending generally along a plane parallel to both sides of the sign body to a distal extremity;

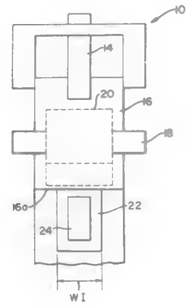
a window engaging member extending lateral to the clear plastic sheet and generally parallel with the bottom surface;

brace means extending from spaced points of the bottom surface of the sign body, through the window engaging member at points spaced from the clear plastic sheet and to the distal extremity of the clear plastic sheet; and

means for joining the brace means with the clear plastic sheet at spaced points along the distal extremity.

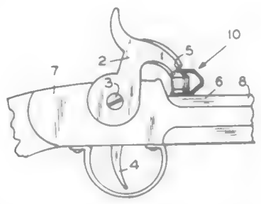
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,552
BELT AND INDICATOR ASSEMBLY AND METHOD FOR USE IN BELT MANUFACTURE
Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B&G Plastics, Inc., Newark, N.J.
Continuation-in-part of Ser. No. 817,750, Jan. 7, 1992. This application Oct. 14, 1992, Ser. No. 960,941
Int. Cl.[5] G09F *23/00*
U.S. Cl. 40—640 **5 Claims**



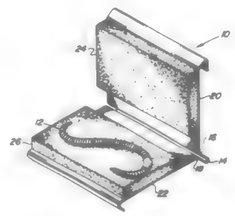
1. In combination:
(a) a belt blank having a prong-passage opening therethrough at a location distal from a first end of said belt blank, said belt blank being folded onto itself to have said belt blank first end upon said belt blank;
(b) a belt buckle having a prong pivotally supported on an open frame of said buckle, said belt buckle being within said fold of said belt blank, with said prong extending through said prong-passage opening of said belt blank;
(c) a belt-retaining loop member secured to said folded belt blank and in circumscribing relation thereto; and
(d) a marketing indicator having at least a portion thereof disposed retentively with respect to said belt blank at a location within said fold of said belt blank, said marketing indicator having opposed first and second ends, said marketing indicator being comprised of a material selected such that said marketing indicator does not take a permanent set upon coiling of said belt blank with said marketing indicator retained therewith.

5,339,553
SELF-REMOVING COVER FOR PERCUSSION TYPE FIREARMS
Robert M. Kearns, 5435 N. Hertford Way, Boise, Id. 83703
Filed Jun. 14, 1993, Ser. No. 76,216
Int. Cl.[5] F41C *9/08*
U.S. Cl. 42—83 **14 Claims**



1. A nipple guard for percussion firearms having a breech into which is mounted a nipple for receiving a percussion cap engagable by a firearm hammer, said guard comprising:
a nipple cover for covering the percussion cap held on the nipple;
guard connection means mountable on the nipple for securing the guard to the nipple; and
hinge means extending between and connecting said nipple cover to said guard connection means for pivotal placement and displacement of said nipple cover over the nipple and hence over the percussion cap.

5,339,554
CATFISH WORM DRYER
Philip S. Lippens, 310 S. Grove St., Kewanee, Ill. 61443
Filed Aug. 3, 1993, Ser. No. 101,116
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—4 **3 Claims**



1. An apparatus for drying artificial lures prior to the application of fishing lure scent wherein the apparatus comprises
a substantially Y-shaped shell having an integrally formed first and second generally flat rectangular panels, wherein each of said panels have an interior face and an exterior face;
a first enlarged generally flat rectangular water absorbent pad affixed to the interior face of said first panel, and a second enlarged generally flat rectangular water absorbent pad affixed to the interior face of said second panel; wherein, each of said pads occupies a substantial portion of the interior faces of the respective panels;
hinge means formed integrally with said first and second panels permitting relative movement between said panels from an open position to a closed portion; whereby, in the closed position the panels can be forcibly moved towards one another to expel liquid from the periphery of the compressed absorbent pads disposed intermediate said panels.

5,339,555
FISH HANDLER
Robert L. Miskimins, Alliance, Ohio, assignor to Ohio Electronics Machinery, Inc., Salem, Ohio
Filed Jul. 19, 1993, Ser. No. 92,989
Int. Cl.[5] A01K *97/14*
U.S. Cl. 43—5 **10 Claims**

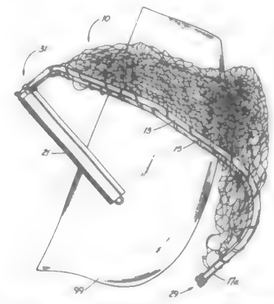
1. A device for handling fish including:
a rigid body forming a handle having an opening formed therein through which a portion of a user's hand extends for gripping the device; and
a rod formed integrally on said body in a fixed immovable position to form said device as a one-piece member, said rod extending in an upwardly outwardly inclined direction from a front portion of the body and substantially along the length of said front portion in an acute angular

spaced relationship therewith, and terminating in an extended free end, said rod being adapted to extend through



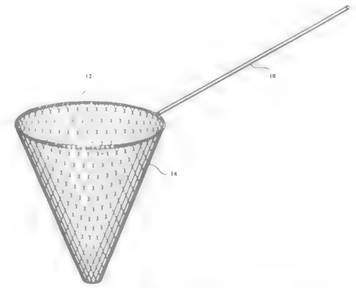
one of the gills and mouth of a fish for safe handling of the fish.

5,339,556
FOLDING FISH LANDING NET WITH IMPROVED HINGE MECHANISMS
George L. Boehm, P.O. Box 605, Ennis, Mont. 59729
Filed Jun. 7, 1993, Ser. No. 72,256
Int. Cl.[5] A01K *77/00*
U.S. Cl. 43—11 **13 Claims**



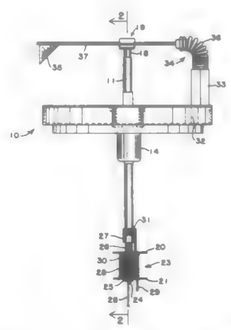
1. In a fish landing net having a handle extending along a handle axis and having elongate first and second frame members and wherein (a) each frame member has an outer end away from the handle and an inward end adjacent to the handle, and (b) the outer ends are joined by a hinge-like outer mechanism, the improvement wherein:
the frame members define a plane;.
the outer ends extend along an end axis which is substantially normal to the handle axis and coincident with the plane;
the outer mechanism is mounted for pivoting movement about the end axis; and,
pivoting movement is between a first position preventing folding the frame members and a second position permitting folding such members.

5,339,557
DIP NET APPARATUS FOR CATCHING FISH
David A. Brundage, 2604 Campden Dr., Austin, Tex. 78745, and Jerry E. Jones, 12502 Red Mesa Hollow, Austin, Tex. 78739
Filed Sep. 21, 1993, Ser. No. 124,910
Int. Cl.[5] A01K *77/00*
U.S. Cl. 43—11 **28 Claims**



1. A dip net apparatus for catching fish comprising:
a frame having a rim portion thereof;
a net attachable to the rim portion of the frame;
wherein the rim portion of the frame is constructed from substantially transparent material, thereby substantially rendering the rim portion of the frame visually undetectable, when underwater, to nearby fish.

5,339,558
ICE FISHING DEVICES
Arthur M. Monsen, Box 800, Banton Rd., Palermo, Me. 04354
Filed Mar. 22, 1993, Ser. No. 35,351
Int. Cl.[5] A01K *97/12*
U.S. Cl. 43—17 **6 Claims**

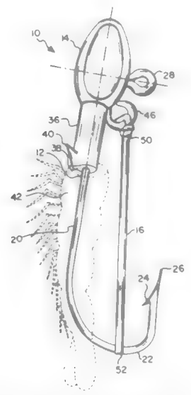


1. An ice fishing device, said device including a support dimensioned to overlie a hole through the ice of a predetermined maximum cross sectional area, a tubular post having first and second ends, the post held by the support with the first end thereof to be above ,and the second end to be below the support when the support is in a position for use, a shaft extending through and rotatably held by the post and having first and second ends with the first and second ends extending beyond the corresponding ends of the post, a resilient mast having first and second ends, the first end connected to the support so that the mast is normally erect at one side of the post when in said position of use, a holder to releasably hold the second end of the mast and connected to the first end of the shaft to turn therewith, the second end of the mast consisting

VOL 1165 ISS 4 AG 23 1994 UMI

of a rod, the holder comprising first and second interconnected walls, each wall of a length and width greater than the diameter of the rod, said walls disposed above the shaft in a position substantially normal with respect to the axis thereof, establishing the first wall as an end wall and the second wall as a retaining wall disposed to overlie the rod end of the mast when manually so positioned that the rod is resiliently held substantially at the junction of the walls, a reel axially connected to the second end of the shaft, said reel provided with a line wound thereon, and a line guide rotatably connected to the second end of the post whereby, when a wanted length of line is pulled from the reel and held by the guide and the resilient mast is manually tensioned and the rod end thereof held by the holder, a subsequent pull on the line is operable to turn the shaft and cause an end edge of the end wall of the holder to become a cam continually engaging the rod of the mast and forcing it away from the original position thereof until the other wall is positioned to permit the rod of the mast to escape from the holder.

5,339,559
FISHING JIG
Steven Strobbe, 4916 Caney Ct., Port Richey, Fla. 34668
Filed Dec. 20, 1993, Ser. No. 169,155
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.37 **11 Claims**



2. A fishing lure for improved securement of the bait to the hook comprising:

a hook of an essentially rigid material having a central linear portion and having a curved portion at an outboard end of said linear portion, said curved portion terminating in a barb, and having an upturned inboard portion terminating in a first eyelet, said inboard portion at an inboard end of said linear portion;

a head formed of a material having a specific gravity greater than water to allow, when coupled with the hook, the sinking thereof, the head comprising an exterior curved shaped configuration and covering that portion of the inboard and central portions of the hook where the inboard portion bends from the central portion;

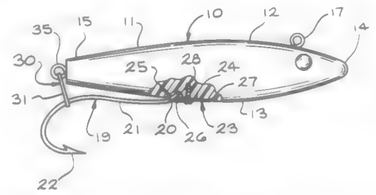
the first eyelet being located at the inboard end of the hook exterior of the head;

a generally cylindrical extension extending outboardly from the head along a minor extent of the central portion of the hook, the outboard end of the cylindrical extension terminating in a radial projection to assist in maintaining the bait on the hook in contact with the cylindrical extension of the head;

a supplemental eyelet secured with respect to the head between the first eyelet and the cylindrical extension; and

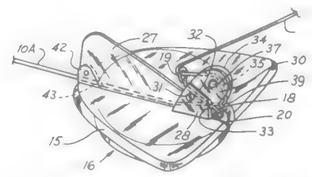
an elastic member coupling the second eyelet and the curved outboard portion of the hook, the elastic member extending in a line coupling the outboard most extent of the second eyelet and the outboard most extent of the curved portion of the hook.

5,339,560
FISHING LURE
William H. LeMaster, Clearwater, Fla., assignor to L & S Bait Company of Florida, Incorporated, Largo, Fla.
Filed Nov. 9, 1992, Ser. No. 973,641
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.44 **9 Claims**



1. A fishing lure comprising, in combination, a body having a top, a bottom, a front end and a rear end and a single fishing hook connected to said body at said bottom and at said rear end, wherein said hook is positioned generally parallel to said body, said single fishing hook comprising a shank, an eye at one end and a point at the other end, connector means attached to said fishing lure bottom between said front end and said rear end for pivotally mounting said eye of said single fishing hook, and toggle means comprising a toggle plate pivotally connected to said rear end of said body and said hook, whereby said single fishing hook can swing from side to side at said rear end and said toggle means limits the sideward movement of said point of said single fishing hook while maintaining said single fishing hook in its generally parallel position relative to said body.

5,339,561
DIRECTIONAL DIVING DEVICE FOR TROLLING
Russell W. Weber, 6120 W. Port Ave., Milwaukee, Wis. 53233
Filed Oct. 1, 1993, Ser. No. 131,071
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—43.13 **14 Claims**



1. A diver for use on a line for trolling a fish lure at the end of the line from a boat, the diver comprising:

a generally planar planing member and guide means for guiding the planing member to provide for the planing member being supported to slide on the trolling line between where the line originates on the boat and the lure,

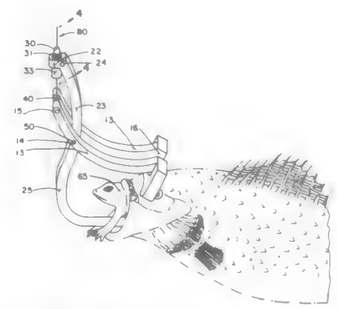
a latching arm having a free end containing an opening for the line to pass through and an opposite end adapted for pivoting the arm on the planing member between latched and unlatched positions,

latching means for releasably latching the latch arm in said latched position,

an element fixed relative to the planing member and having a planar surface fixed relative to the said planing member and an adjustably movable gripping plate having a planar surface arranged adjacent the fixed element with the planar surface of the gripping plate facing the planar surface of the fixed element to define a slot between them to provide for a length of the trolling line to be wedged in and frictionally gripped in the slot to prevent the diver from sliding on the line during trolling while said latch arm is latched,

said line when gripped in said slot and passing through said opening in the free end of the latch arm and supported by said guide means responding to a sudden increase in the tension in the trolling line by causing said latch arm to unlatch and pivot to allow said length of line to be released from said slot so the diver becomes supported on said guide means and on said opening in the latch arm for sliding on the line.

5,339,562
POINTLESS RELEASABLE FISH HOOK
Ricardo Guerra, 4455 N. Newcastle, Hardwood Heights, Ill. 60656, and Alfred Salazar, 17406 S. 92 E. Ave., Bixby, Okla. 74008
Filed May 6, 1993, Ser. No. 57,464
Int. Cl.[5] A01K *83/00*
U.S. Cl. 43—43.16 **1 Claim**



1. A pointless releasable fish hook comprising:

a. a lower hook which is L-shaped, which at one proximate end has an opening where fishing line passing through and into which a locking plug can be engaged, said end extending to a center shaft having a pivot pin, and said shaft extending to a distal end of said lower hook where a lure can be attached; and

b. a double lever comprising a pair of levers working in tandem, by the above-described pivot pin which acts as a fulcrum and said levers being also attached at one end of the levers by a double lever connecting rod; said levers at the other end having an upper clamp extending to connect the pair of levers together at the end opposite the connecting rod, thus allowing the levers and upper clamps to move as a single unit with the pivot pin as its axis;

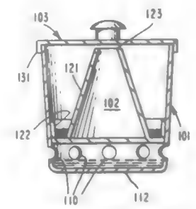
c. a locking plug which consists of a cylindrically shaped distal end tapering to a narrow constricted middle which extends onto a conical end; and at the tip of the conical end and at the tip of the cylindrical shaped distal end of the said plug there is attached fishing line, said fishing line which is attached to the conical end of the locking plug runs through the opening in the proximal end of the lower hook, the locking plug being engageable in the opening at the lower hook when the line is pulled, the fishing line being attached at the distal end of the locking plug and extends to the double lever connecting rod; and

d. wherein said upper clamp having a base that is curved so as to allow a fish to be held while following the contour of the fish's anatomy, and said upper clamp being located at one end of the double levers so that the levers can move simultaneously; and

e. wherein said pivot pin pivotally attaches the lower hook to the double lever and acts as a fulcrum around which the double lever rotates down upon the lower hook; and

f. wherein said double lever connecting rod is a rod or pin onto which fishing line from the distal end of the locking plug attaches and which also serves to connect the double lever allowing it to move simultaneously as a unit with the upper clamp.

5,339,563
NON-TOXIC INSECT CAPTURE AND KILLING APPARATUS
Frank Job, P.O. Box 144, Avalon, Calif. 90704
Filed Jan. 22, 1991, Ser. No. 643,861
Int. Cl.[5] A01M *1/02*
U.S. Cl. 43—122 **3 Claims**



1. An apparatus used as a non-toxic, killing insect trap comprising, in combination:

a base unitarily fabricated of a tapered cylinder closed at the small diameter end to form a bottom;

a plurality of entrance orifices formed at a preselected height above said bottom forming a chamber to hold attractant without spilling or leakage;

an insert fabricated as a hollow cone having a preselected outside diameter at its base and a preselected height, the top of said cone being truncated to form a transfer orifice at the top which is opposite to said base;

an apron fabricated as a vertical belt and mounted at the base of said cone to form a water tight trough; and,

a cover having a lip insertable over the open end of said base to inclose said insert within said base;

whereby the user may bait and assemble the apparatus by pouring a non-solid, non-toxic attractant into said base bottom, pouring a non-solid, non-toxic killing substance into said trough, installing said insert inside said base whereby said insert rests above said entrance orifices and below the top, open end of said base, snapping said cover onto said base and placing said apparatus in an area to attract and kill insects.

5,339,564
METHOD FOR CONTROL AND DESTRUCTION OF AGRICULTURAL PESTS BY COHERENT ELECTROMAGNETIC EXCITATION
Steve D. Wilson, P.O. Box 415, Soquel, Calif. 95073, and William L. Clarke, 124 De la Costa, Santa Cruz, Calif. 95060
Filed Nov. 16, 1993, Ser. No. 153,206
Int. Cl.[5] A01M *1/20, 17/00*
U.S. Cl. 43—124 **9 Claims**

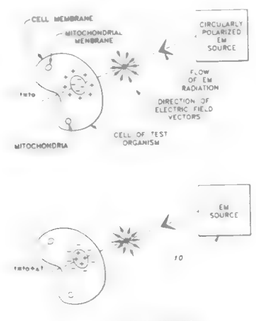
1. A method for the control and destruction of agricultural pest organisms, for specific coupling and destruction of spe-

VOL 1165 ISS 4 AG 23 1994 UMI

cific cellular organelles, organelle membranes, or cell membranes within the pest organism, comprising:

generating a narrow-band EM radiation at a plurality of different frequencies, pulse widths, and intensifies for application on said pest organism;

coupling said narrow-band EM radiation to said cellular organelles, organelle membranes, or cell membranes of the pest organism;



disrupting an ionic balance within said cellular organelles, organelle membranes, or cell membranes by said narrow-band EM radiation;

initiating an increase in cation concentration within the cellular organelles, organelle membranes, or cell membranes; and

sustaining said increase in cation concentration for a time sufficient to kill said pest organism.

5,339,565

APPARATUS AND METHOD USING AIR PRESSURE AND VACUUM TO FORM FLAT-PANELED FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

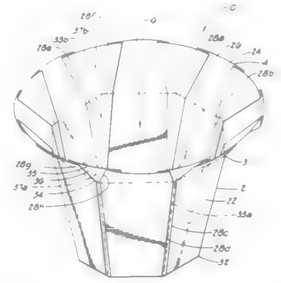
Continuation of Ser. No. 998,102, Dec. 29, 1992, which is a division of Ser. No. 805,412, Dec. 10, 1991, Pat. No. 5,176,609, which is a continuation-in-part of Ser. No. 736,348, Jul. 26, 1991, Pat. No. 5,127,817, which is a continuation-in-part of Ser. No. 422,653, Oct. 17, 1989, Pat. No. 5,073,161, which is a continuation-in-part of Ser. No. 397,114, Aug. 22, 1989, Pat. No. 5,029,412, which is a continuation-in-part of Ser. No. 366,588, Jun. 15, 1989, Pat. No. 5,111,613, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation-in-part of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, which is a continuation-in-part of Ser. No. 367,098, Jun. 15, 1989, Pat. No. Des. 318,030, which is a continuation-in-part of Ser. No. 283,014, Dec. 8, 1988, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224, said Ser. No. 805,412, is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Oct. 14, 1993, Ser. No. 136,498

Int. Cl.[5] A01G *9/02*

U.S. Cl. 47—72 **27 Claims**

1. A pot or pot cover, comprising:

a base having a top, a polygonal bottom, an opening extending through the top, the opening being shaped to receive objects and forming an inside, and a plurality of pairs of z-shaped folds being formed in the base, each z-shaped fold extending between the top and the bottom of the base and having an inside fold and an outside fold, the pairs of z-shaped folds being spaced a distance apart forming a flat panel between each adjacent pair of z-shaped folds;



wherein each of said flat panels intersecting a pair of adjacent flat panels and all of the outside folds are positioned at the intersection of two of the flat panels.

5,339,566

SEEDLING CONTAINER

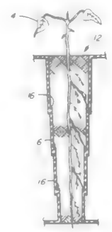
Mario R. Cormier, Surrey, Canada, assignor to First Choice Manufacturing Ltd., Surrey, Canada

Continuation of Ser. No. 539,136, Jun. 18, 1990, abandoned. This application Dec. 24, 1992, Ser. No. 997,105

Claims priority, application Canada, May 31, 1990, 2017945

Int. Cl.[5] A01G *9/02*

U.S. Cl. 47—87 **11 Claims**



4. A container for a seedling wherein the container defines an inner cavity and is provided with a circumferentially extending recess on the internal surface of the container in between and spaced from the top and the bottom thereof, said recess having a depth dimension in the vertical direction for trapping the end of a root therein and extending along said internal surface in a horizontal direction essentially encircling the inner cavity, said internal surface being non-perforated in the area adjacent said recess.

5,339,567

INTERIOR-MOUNTED SECURITY BARS

John M. Pierpont, and Pauline S. Pierpont, both of 3800 Birch St. NE., St. Petersburg, Fla. 33703

Filed Jun. 22, 1993, Ser. No. 80,895

Int. Cl.[5] E06B *3/68*

U.S. Cl. 49—55 **6 Claims**

1. A security bar assembly, comprising: a first and a second frame member, each of said frame members having an elongate, predetermined configuration;

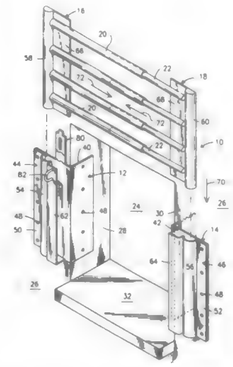
mounting means for substantially permanently attaching each of said frame members to a mounting surface;

a first and a second end piece adapted for slidingly engagement with said first and second frame members, respectively;

a first plurality of bars, each bar of said first plurality of bars having a first end fixedly secured to said first end piece and having a second free end;

a second plurality of bars, each bar of said second plurality of bars having a first end fixedly secured to said first end of said second end piece and having a second free end;

each free end of said first plurality of bars being adapted to telescopically engage a free end of an associated bar of said second plurality of bars; and



said first frame member and said first end piece having a common transverse cross section, said first end piece being captured by said first frame member and being slideable along the extent of said first frame member but being held against lateral displacement relative to said first frame member; and

said second frame member and said second end piece having a common transverse cross section, said second end piece being captured by said second frame member and being slideable along the extent of said second frame member but being held against lateral displacement relative to said second frame member.

5,339,568

AWNING WINDOW ASSEMBLY AND OPERATOR THEREFOR

Jacobus N. Hanemaayer, Kitchener, Canada, assignor to Hanmar Motor Corporation, Kitchener, Canada

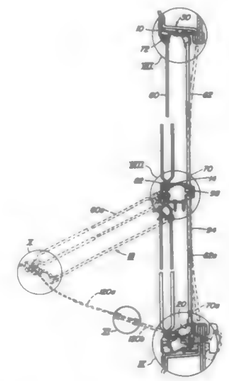
Filed Aug. 4, 1992, Ser. No. 924,896

The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.

Int. Cl.[5] E04F *11/00*

U.S. Cl. 49—324 **13 Claims**

1. A window operator for a window assembly including a pivotally mounted window having a movable window frame co-operable with a fixed window frame, said window operator including an operating mechanism mounted to said fixed window frame, wherein an elongated guide track extends along a portion of the movable window frame, the operating mechanism including elongated arm means and means for effecting pivotal motion of said arm means relative to the fixed window frame, the arm means having motion transmitting means mounted to distal free end portions of same, said motion transmitting means adapted to move therealong as the arm means are pivoted thereby to pivot the movable window frame between open and closed positions and wherein said motion transmitting means comprises a ball rotatably mounted to the distal end of the arm means, said ball adapted to be received and retained in said guide track and moving both longitudinally of the track and rotating relative to both the track and said arm when in use as the arm means is pivoted by the operating mechanism to move the window frame between the open and closed positions, said arm means including an inner rigid arm portion adjacent the operating mechanism and an outer flexible arm portion attached to and projecting outwardly of a distal end portion of the rigid arm portion, and said ball being rotatably mounted to the distal end of said flexible arm portion,



said flexible arm portion comprising a flat strip capable of flexing as the movable window frame opens and closes, and wherein said ball comprises two semi-spherical portions connected by a stem, said strip having an aperture receiving said stem at its distal end and said ball portions being disposed on opposing sides of said strip in slightly spaced relation thereto to ensure free rotation of the ball relative to the strip as the ball is moved by the arm means along the groove of the guide track.

5,339,569

SURFACE PROCESSING DEVICE

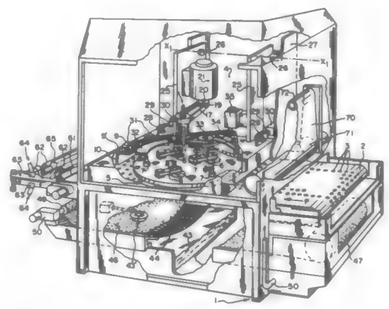
Wilhelmus A. J. Piggen, Oud-Gastel, Netherlands, assignor to Linden Machines B.V., Goes, Netherlands

Continuation of Ser. No. 835,697, Feb. 12, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,316

Claims priority, application Netherlands, Feb. 14, 1991, 9100264

Int. Cl.[5] B24B *7/00*

U.S. Cl. 51—109 R **27 Claims**



1. A device for processing the surface of objects comprising:

a frame; a transporting surface for receiving the objects for processing attached to the frame; and a grinding unit attached to the frame and arranged above the transporting

VOL 1165 ISS 4 AG 23 1994 UMI

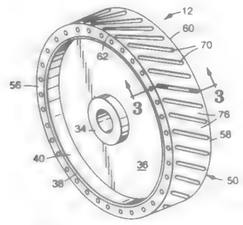
surface, said grinding unit including a grinding body extending parallel to the transporting surface, a carrier which supports the grinding body and which is driven rotatably by a motor about at least two standing crank shafts in a plane parallel to the transporting surface, a holder and a journal attached to the frame wherein the carrier attaches to the holder by the crank shafts, and the holder attaches to the journal so that the carrier is tiltable about a first axis (X_1) defined by the journal, wherein the carrier takes a circular form and the motor drives at least one of the crank shafts via a centrally located intermediate shaft, which rotatably drives the carrier in the holder about a central intermediate shaft, resulting in a rotating movement about a second central axis X_2 passing through the grinding body and said carrier and an oscillating movement about a third axis X_3 passing through the grinding body and one of said crank shafts.

5,339,570

CONTACT WHEEL

Steven E. Amundson, Hastings, and Arthur P. Luedeke, Marine on St. Croix, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 17, 1992, Ser. No. 931,016
Int. Cl.[5] B24B *21/14*
U.S. Cl. 51—141 **14 Claims**



1. A contact wheel for supporting an endless abrasive belt having a back face for contact with the contact wheel and a front abrasive face for rotatively abrading a workpiece, the contact wheel comprising:

(a) an annular support portion having external surfaces;

(b) a generally cylindrical peripheral surface for contact with the back face of the abrasive belt, said peripheral surface having spaced edges each adjoining an adjacent external surface, said peripheral surface having circumferentially spaced elongate grooves formed therein with land portions disposed between said grooves, said grooves spaced from the respective adjacent edges of said peripheral surface to provide annular land surfaces at each edge of said peripheral surface, said annular land surfaces coterminous with said land portions; and

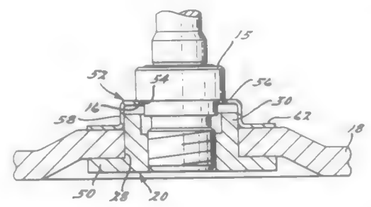
(c) at least one passageway formed in said contact wheel, said passageway having a first end and a second end, said passageway communicating at said first end with a groove, and at said second end with an external surface of said annular support portion, to reduce noise produced by the contact wheel as it is rotated with the abrasive belt entrained thereover.

5,339,571

TOOL ELEMENT SUBASSEMBLY

Russell M. Timmons, Lutherville, and Vladimir S. Karnicki, Baltimore, both of Md., assignors to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 978,127, Nov. 18, 1992, Pat. No. 5,287,659, which is a continuation-in-part of Ser. No. 832,147, Feb. 19, 1992, Pat. No. 5,207,028, which is a continuation-in-part of Ser. No. 702,274, May 19, 1991, abandoned. This application Oct. 29, 1993, Ser. No. 144,689
Int. Cl.[5] B24B *45/00;* **B24D** *13/20*
U.S. Cl. 51—168 **10 Claims**



1. An abrasive disc subassembly for a grinder having an externally threaded motor-driven spindle, comprising:

an abrasive disc defining a front working side and a backside and having a depressed center section relative to said front working side and a working section radially outward from said depressed center section, and a centrally located noncircular bore formed through said depressed center section;

a collar nut having a hub portion adapted to fit into said bore in said abrasive disc and configured so as to preclude relative rotation therebetween and an enlarged head portion engaging said front working side of said abrasive disc only in said depressed center section thereof, said collar nut having an internally threaded bore formed therethrough that is adapted for threadably engaging said spindle; and

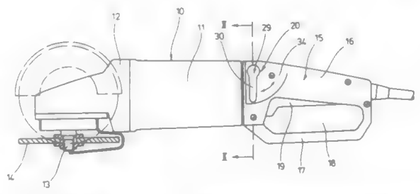
a flange member having an inner radial portion adapted to drivingly engage said spindle and an outer radial portion for supporting and engaging said backside of said abrasive disc only in said depressed center section thereof.

5,339,572

HAND TOOL

Bernhard Eicher, Filderstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00982, § 371 Date Jun. 16, 1993, § 102(e) Date Jun. 16, 1993, PCT Pub. No. WO92/12825, PCT Pub. Date Aug. 6, 1992
PCT Filed Dec. 14, 1991, Ser. No. 78,282
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1991, 4102483
Int. Cl.[5] B24B *23/02*
U.S. Cl. 51—170 PT **10 Claims**



1. Hand-held machine tool, particularly hand-operated angle grinder, with a device housing which is divided into a motor housing receiving an electric drive, a gear head arranged at

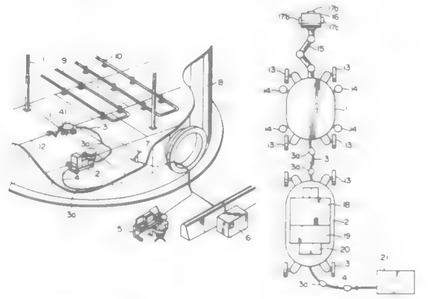
one end of the motor housing and having a projecting drive spindle for a tool, and a handle arranged at the other end of the motor housing and having a switch strip for switching the electric drive on and off, in which either the handle or the gear head is constructed from two shells as a rotatable housing part which is rotatable around its longitudinal axis relative to the motor housing, and with a manually actuated positioning device for fixing the rotatable housing part in different rotational positions relative to the motor housing, characterized in that a central bearing neck (22) is formed on the motor housing (11), in that one of the housing shells (151) of the rotatable housing part (15) formed by two shells is supported in an annular groove (23) in the bearing neck (22), in that the positioning device (20) has a tension band (27; 38) which lies in the annular groove (23), its ends being fastened to the housing shell (151) supported at the bearing neck (22), and clamps around the bearing neck (22) along a part of its circumference at the side located diametrically opposite the supporting point, and a clamping element (29) for applying tensile force to the tension band (27; 38), and in that the other housing shell (152) is fastened to the first housing shell (151), preferably by screws.

5,339,573

FLOOR SURFACE BLASTING APPARATUS

Kiyoshi Uchida; Yoshikazu Miyachi, both of Nagoya; Tomoyoshi Ibe, Takasago; Tsutomu Kurita, Takasago; Takeo Oomichi, Takasago; Kengo Hamanaka; Yoichiro Ban, both of Tokyo; Nagio Minami, Hiroshima, and Tadashi Nobushige, Hiroshima, all of Japan, assignors to Chubu Electric Power Co., Inc., Aichi and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,179
Claims priority, application Japan, Aug. 27, 1991, 3-068014[U]; Aug. 27, 1991, 3-214908; Sep. 18, 1991, 3-267257; Sep. 18, 1991, 3-267258; Mar. 18, 1992, 4-014575[U]
Int. Cl.[5] B24C *3/06*
U.S. Cl. 51—429 **19 Claims**



1. A floor surface blasting apparatus comprising:

a work carriage having a steerable traveling device which drives four wheel independently over the floor surface;

a work arm installed on said work carriage;

a blast head installed at an end of said work arm, the blast head having a front end, a rear end, and two sides, the work arm being connected to the rear end of the blast head, the blast head blasting the floor surface;

three weld line detecting sensors which are mounted on the front end and two sides, respectively, of said blast head, the weld line detecting sensors detect a weld line, the weld line detecting sensor on the front end of the blast head determining when a weld intersection is reached and the two weld line detecting sensors on the sides of the blast head determining when the blast head is over the weld intersection;

a position detecting device for detecting a position of said blast head; the position detecting device being detachably mounted on the floor surface;

a transfer carriage which has a blast device and a steerable traveling device for driving four wheels independently over the floor surface;

connecting means for connecting said transfer carriage to said work carriage; and

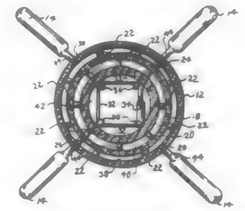
control means for controlling said blast head responsive to at least the weld line detecting sensors and the position detecting device, the control means selectively stopping blasting from the blast head when the weld line detecting sensors detect the blast head reaches a weld intersection and the control means selectively change direction of movement of at least the work carriage when the weld line detecting sensors detect the blast head is over the weld intersection and after blasting has been stopped, the control means positioning said blast head on the weld line on the floor surface in accordance with a detection signal from said weld line detecting sensors and a signal of the position detecting device for detecting the position of said blast head, the control means further controls said transfer carriage to follow said work carriage, the control means being mounted separately from the work carriage, the transfer carriage and the position detecting device.

5,339,574

INFLATABLE MOLD CONSTRUCTION

Brian B. Downing, 1522 Anita, Bossier City, La. 71112

Filed Aug. 20, 1992, Ser. No. 932,682
Int. Cl.[5] E04B *1/34;* **E04G** *11/04;* **B28B** *7/32*
U.S. Cl. 52—2.15 **9 Claims**



1. A flexible inflatable multi-walled mold comprising:

an innermost flexible wall layer surrounding an innermost cavity of said mold;

at least one outer cavity defined between each of said at least one outer flexible wall layer;

means for injecting pressurized gas into one of said at least one outer cavity so as to provide an expanded shape for said mold; and

means for injecting mold material into said innermost cavity once said one of said at least one outer cavity has pressurized gas injected therein.

5,339,575

RAIN GUTTER COVERS AND ROOF LINE PROTECTORS

Richard L. Kuhns, 210 Broad St., Red Bank, N.J. 07701

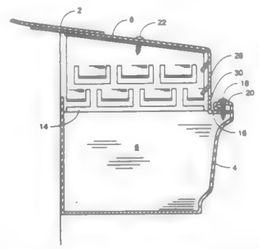
Continuation of Ser. No. 780,906, Oct. 23, 1991, Pat. No. 5,216,851. This application Mar. 17, 1993, Ser. No. 32,270
Int. Cl.[5] E04D *12/00*
U.S. Cl. 52—12 **13 Claims**

1. A rain gutter cover for being mounted above a rain gutter and for preventing entrance into the rain gutter of leaves and other debris which cause rain gutter clogging, where said rain gutter is an elongated trough defined by a front wall, a bottom portion and a rear wall, said rain gutter being attached to a building adjacent a bottom edge of a roof upon which rain falls, said rain gutter cover comprising:

a generally angular top portion, a substantially horizontal

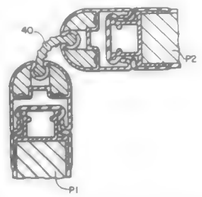
VOL 1165 ISS 4 AG 23 1994 UMI

flange, and a substantially vertical front portion intermediate and interconnecting said top portion and said flange;
said angular top portion mounts adjacent said bottom edge of said roof and transfers rain from said roof to said vertical front portion;
said vertical front portion provided with a plurality of apertures therein for receiving rain flowing downwardly across said front portion and for diverting rain into the rain gutter, wherein said apertures are of a predetermined size sufficiently small to generally prevent leaves and other debris from entering said rain gutter;



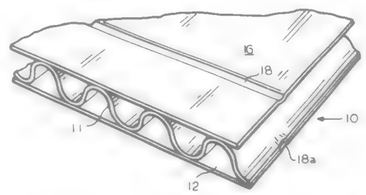
said horizontal flange extends from said substantially vertical front portion to said front wall of said rain gutter;
said front wall of said rain gutter contains a lip under which said flange portion extends; and
said flange is intermittently attached along a length of said rain gutter to said lip of said rain gutter by fastening means to form openings between said flange and said lip such that rain that is not directed into the rain gutter by said apertures flows into said rain gutter through said openings.

5,339,576
SYSTEM OF MODULABLE WALLS
Philippe Fuesler, Strasbourg, France, assignor to Steelcase Strafor (S.A.), Strasbourg, France
Filed Dec. 1, 1992, Ser. No. 983,726
Claims priority, application European Pat. Off., Aug. 10, 1992, 92440096.3
Int. Cl.[5] E04B *7/16*
U.S. Cl. 52—71 **11 Claims**



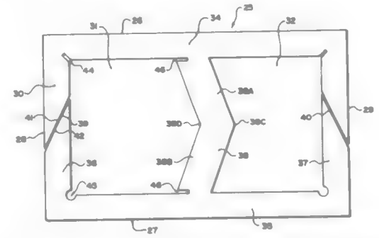
2. A panel for modulable walls of variable shape comprising:
a flat core of light material with a peripheral rigid portion;
a main frame hooked to said rigid portion, said main frame having vertical main frame sections for bringing successive panels together, and having upper and lower horizontal main frame sections wherein said lower horizontal main frame sections provide means for resting the panel upon the ground;
said flat core being made of an unique plate of agglomerated particles;
a cover made of a sheet of spongy material having an external decorative surface;
an additional frame comprising sections made of synthetic resin having a section in the shape of two opposed U's, the branches of a first U pinching edges of said panel and the branches of a second U including grooves parallel to edges of said panel for hooking to said main frame;
said cover being slipped downwardly over said panel and over said additional frame;
said second U portion of said additional frame having longitudinal rims extending inwardly from opposite inner surfaces on the branches of said second U; and
a longitudinal stem member pressed in between said longitudinal rims and securing lower edges of said cover between said stem member and said longitudinal rims.

5,339,577
LAMINATED NON-COMBUSTIBLE BOARD FOR FORMING DUCTWORK AND HEADERS
Darryl L. Snyder, 4520 N. Market St., Canton, Ohio 44714
Filed Dec. 8, 1992, Ser. No. 986,357
Int. Cl.[5] E04B *7/00*
U.S. Cl. 52—95 **27 Claims**



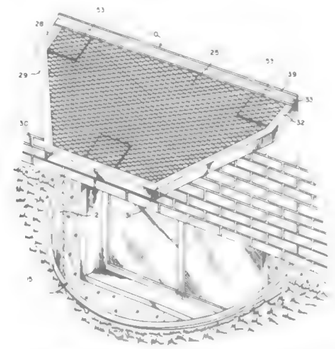
1. A structural laminated panning material for forming heating and cooling ducts between spaced-apart framing members of a structure, said material comprising a core portion of combined non-metallic paper corrugating medium and paper linerboard members fully co-extensive with said paper corrugating medium and thin metallic foil facing members adhesively attached to and fully co-extensive with said paper linerboard members, said panning material having an overall width greater than the spacing of said framing members, and a pair of parallel score lines formed adjacent at least two juxtaposed terminating edges of said panning material, said pair of score lines extending perpendicular to the corrugations of said paper corrugating medium for permanent attachment to said framing members in either planar or angled relationship.

5,339,578
SUPPORT FORM FOR A GRADE BEAM OR SLAB
Thomas C. Smerchanski, and Hans Boge, both of Winnipeg, Canada, assignors to Aerofoam Chemicals, Division of Border Chemical Company, Winnipeg, Canada
Filed Sep. 10, 1992, Ser. No. 942,797
Claims priority, application Canada, Oct. 9, 1991, 2053087
Int. Cl.[5] E04B *1/12*
U.S. Cl. 52—98 **20 Claims**



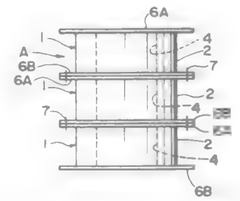
1. A method of forming a building construction on an upper surface of soil material on which the building construction is to stand, the method comprising providing a form body for supporting a building element relative to the upper surface of the soil material, forming the form body from a fracturable foamed plastics material, defining on the form body a top wall having an upper surface for receiving the building element thereon, the length and width of the upper surface being arranged to engage and support a bottom surface of the element thereon, a bottom wall defining a lower surface resting on the surface of the soil material, a plurality of interconnecting elements extending between and interconnecting the top wall and the bottom wall so as to support the top wall on the bottom wall, the interconnecting elements defining two spaced side surfaces defining a height of the body, the side surfaces being shaped to maintain the soil material out from the volume defined generally between the upper surface and the lower surface, the interconnecting elements being substantially continuous along the length of the upper surface and defining therebetween at least one void defined by the omission of the foamed plastics material extending along the elements, the interconnecting elements being shaped and arranged such that they provide sufficient strength in a vertical direction to maintain the upper and lower surfaces spaced by the height of the body up to a predetermined maximum load, applying the building element onto the upper surface so that weight therefrom is applied to and supported by the upper surface, and shaping and arranging the interconnecting elements such that they fracture on expansion of the soil material under the bottom surface of the building element generating a load greater from said predetermined maximum load to cause the body to collapse vertically to reduce the height of the body and absorb the expansion of the soil material.

5,339,579
SECURITY WELL COVERS
Bruce O. Woodyer, and Kimberly A. Woodyer, both of 1209 Spring Creek Rd., Elgin, Ill. 60120
Continuation-in-part of Ser. No. 954,270, Sep. 30, 1992, Continuation-in-part of Ser. No. 954,270, Sep. 30, 1992. This application Apr. 5, 1993, Ser. No. 42,546
Int. Cl.[5] E04F *17/06;* **E04C** *2/38*
U.S. Cl. 52—107 **29 Claims**



1. In combination, a window well cover structure mounted on a window well, the window well including an upright arcuate wall having a window well radius, the upright arcuate wall having a semi-circular bead, the window well cover structure including a cover, the cover having a five-sided angular flange structure with five upright sides all having a common cover radius slightly larger than the window well radius for seated engagement on top of said semi-circular window well bead, an elongated rear closure plate, means joining opposite ends of the elongated rear closure plate to opposite ends of said five-sided angular flange structure, a piece of wire mesh sized to act as a closure for said security well cover, means attaching outer margins of said mesh to said five-sided angular flange structure and to said elongated rear closure plate in unitary assembly therewith, the security well cover being sized to rest on top of the bead on the window well, and manually disengageable latchable bracket means secured to an underside accessible only from an underside of the window well cover securing the window well cover at circumferentially spaced intervals to the bead on the window well in locked assembly together.

5,339,580
LAMINATED RUBBER BUILDING SUPPORT AND VIBRATION DAMPING DEVICE
Norihide Koshika; Mitsuo Sakamoto; Isao Nishimura; Katsuyasu Sasaki, and Satoshi Oorui, all of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan
Filed Nov. 13, 1992, Ser. No. 976,496
Claims priority, application Japan, Nov. 15, 1991, 3-300409
Int. Cl.[5] E04B *1/98*
U.S. Cl. 52—167 E **27 Claims**



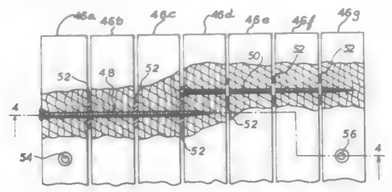
1. A damping device having a predetermined spring constant, and having interior and exterior walls, for protecting a structure from seismic vibration, comprising:
a plurality of dampers, each having a predetermined height and width, said dampers being vertically stacked and secured together, and each of said dampers including a plurality of rubber elastoplastic damper pads having hollow centers, said damper pads being vertically arrayed to define said exterior wall and to vertically align said hollow centers to define said interior wall;
steel plates interposed between said rubber pads;
an upper steel bearing plate positioned on top of the uppermost of said rubber pads;
a lower steel bearing plate positioned beneath the lowermost of said rubber pads;
means to secure said upper steel bearing plate of the first of said plurality of dampers to the lower steel bearing plate of the second of said plurality of dampers to form a vertical stack of dampers, said damping device being load bearing and positionable in load bearing relationship adjacent a vibrationable structure.

5,339,581
MODULAR DECK FLOORING SYSTEM
Glen A. Schlickenmeyer, 7502 W. Tuckaway Creek Dr., Franklin, Wis. 53132
Filed Mar. 31, 1992, Ser. No. 860,982
Int. Cl.[5] F16S *3/02*
U.S. Cl. 52—177 **14 Claims**

1. A deck floor for a deck including a series of spaced joists, comprising a series of elongated floor members each defining an upper surface and a lower surface adapted to be placed on the joists, wherein the floor members are secured together into individual floor modules each comprising a plurality of individual floor members, wherein the floor members in each module are spaced apart from each other when the members are secured together in the floor module, and wherein the modules are each secured as a unit to the spaced joists, wherein

VOL 1165 ISS 4 AG 23 1994 UMI

each module comprises first and second end members, a central member, and one or more intermediate members located between the central member and each end member, wherein the floor members in each module are secured together by means of threaded fasteners located at spaced locations along the length of the floor members, the threaded fasteners extending substantially transverse to the longitudinal axes of the floor members, wherein a pair of threaded fasteners are provided at



each location along the length of the floor members, wherein a first one of the threaded fasteners interconnects the central member with the first end member and extends through the intermediate members located between the first end member and the central end member, and wherein a second one of the threaded fasteners interconnects the central member with the second end member and extends through the intermediate members located between the second end member and the central member.

5,339,582

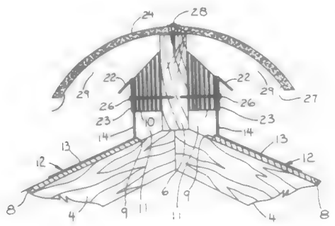
ROOF VENT

Gary L. Sells, 16250 Petro Dr., Mishawaka, Ind. 46544

Continuation of Ser. No. 48,572, Apr. 16, 1993, abandoned, and a continuation of Ser. No. 793,013, Nov. 15, 1991, abandoned. This application Aug. 24, 1992, Ser. No. 110,855

Int. Cl.[5] F24F *7/02*

U.S. Cl. 52—198 **20 Claims**



1. A vent for a roof having a ventilation opening, a vent part mounted over said ventilation opening, said vent part having passage means for exhausting air from under said roof, a covering mounted in a spaced relationship over and extending away from said vent part, flashing means contacting and extending upwardly along said vent part and outwardly toward said covering, said flashing means terminating spacedly from said covering and constituting means for forming a barrier against the ingress of wind driven moisture downwardly into said vent part passage means while providing an opening with said covering to allow air flow from under said roof to exhaust through said vent part passage means.

5,339,583

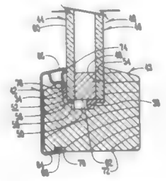
WINDOW SASH AND METHOD OF CONSTRUCTING SAME

Fred L. Hrdlicka, Pella; Gary R. Newman, Knoxville, and Mearl J. Minter, Oskaloosa, all of Iowa, assignors to Pella Corporation, Pella, Iowa

Filed Jan. 17, 1992, Ser. No. 822,157

Int. Cl.[5] E06B *1/04;* **B32B** *31/00*

U.S. Cl. 52—204.53 **19 Claims**



1. A window sash construction comprising

a closed frame, a substantially continuous groove for receiving the edges of glazing material herein, said glazing material having inside and outside faces, exterior and interior window stops unitary with said frame member defining rigid exterior and interior walls for said groove, said groove having a bottom wall between said interior and exterior walls, adhesive means in said groove engaging said bottom wall and the edges of said glazing material, and sealant material between said exterior window stop and said outside face of said glazing material adjacent said edges,

the inside face of said glazing material directly engaging said interior stop wall and said outside face of said glazing material being spaced from the outside stop wall with said space therebetween being substantially filled by said sealant, and said sealant being flexible to allow limited lateral movement of said glazing material in said groove and function as a cushion for said glazing material,

said edge of said glazing material having substantial width and said adhesive being positioned only along a portion of said edge adjacent said inner face of said glazing material, and

non adhesive spacer means being positioned in said groove adjacent said outer face of said glazing material and engaging only a portion of said edge adjacent said outer face of said glazing.

5,339,584

SYNTHETIC RESIN WINDOW FOR AUTOMOTIVE VEHICLES OR THE LIKE

Shinichi Ohtake; Tatsuya Tamura; Tetsuo Hotta, and Takeshi Kashiwagi, all of Yokohama, Japan, assignors to Hashimoto Forming Industry Co., Ltd., Japan

Continuation of Ser. No. 572,233, Aug. 24, 1990, abandoned. This application Aug. 11, 1993, Ser. No. 104,604

Claims priority, application Japan, Aug. 31, 1989, 1-225675

Int. Cl.[5] B06B *3/54;* **B60J** *1/00*

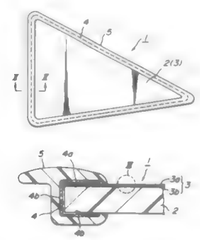
U.S. Cl. 52—208 **14 Claims**

1. A synthetic resin window assembly for an automotive vehicle or the like, comprising;

a window body member in the form of a sheet of transparent or semi-transparent synthetic resin having an inner surface, an outer surface and a peripheral edge of a predetermined shape;

a hard coated layer covering at least a substantial part of said outer surface of said window body member, said layer comprising a hard coated first sub-layer and a second sub-layer for tightly bonding said first sub-layer to said outer surface of window body member;

a frame member of a synthetic resin which is different from said synthetic resin of the window body member, said frame member being formed integrally with the window body member by an injection molding process to extend along said peripheral edge of the window body member, said frame member being more flexible as compared with said window body member; and



a positive connection means arranged between said frame member and said outer surface of the window body member for positively connecting said frame member and said outer surface with each other, said connection means comprising a reinforcement means for providing an improved rigidity of the window assembly.

5,339,585

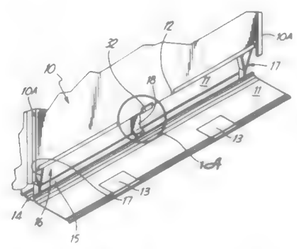
RACEWAY SWIVEL SPACER LEG ASSEMBLY

Lloyd C. Mollenkopf, Apple Valley, and Russell J. Rein, St. Louis Park, both of Minn., assignors to Rosemount Office Systems, Inc., Lakeville, Minn.

Filed Aug. 28, 1992, Ser. No. 938,010

Int. Cl.[5] E04H *1/00*

U.S. Cl. 52—220.7 **17 Claims**



1. An apparatus to support a portion of a wall defining a raceway associated with a divider wall panel, the apparatus comprising:

a stationary member adapted to be joined to a divider wall panel;

a spacing support structure rotationally connected to the stationary member about a central axis and being elongated along the central axis with a portion disposed in the raceway, the spacing structure having a wall portion laterally offset from the central axis to form a receptacle open to one side of the raceway and wherein the offset portion is within the raceway and rotatable at least partially about the central axis to permit moving the one open side of the offset portion to a desired location about the central axis after the stationary member is joined to a divider wall panel.

5,339,586

EDGING STRIPS FOR FLOORCOVERINGS

Antony R. Centa, Howe Green Lane, Little Berkhamsted, Hertfordshire SG13 8LH, England

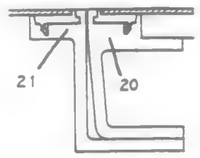
PCT No. PCT/GB91/02044, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO92/09769, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 19, 1991, Ser. No. 66,081

Claims priority, application United Kingdom, Dec. 1, 1990, 9026202

Int. Cl.[5] E04B *5/48;* **B32B** *3/10*

U.S. Cl. 52—220.5 **6 Claims**



1. A method of securing an edge of a floorcovering fitted to an underlying floor surface, characterised by providing an elongate edging strip comprising a housing strip (2) and an insert strip (3) which are interfitted together via co-operating locking means (6,11,7,13) formed on said strips, selecting the material of said insert strip (3) to be a plastic which will readily bond with the underside of the floorcovering, fixing said edging strip along said floor surface to define a line along which said edge of said floorcovering is to extend so that said housing and insert strips present respective upstanding edges (4, 12) which extend parallel and adjacent each other along said line flush with the surface of the floorcovering (5, 18) when fitted and the insert further presenting a support surface for said, edge of the floorcovering, cutting the floorcovering to present an edge which overlies the support surface of the insert strip and abuts said upstanding edge (12) of the insert strip, and bonding the underside of said floorcovering along said edge to said surface and upstanding edge of the insert strip.

5,339,587

INVISIBLE JOINT DEVICE, PARTICULARLY FOR STRETCHED CLOTHS

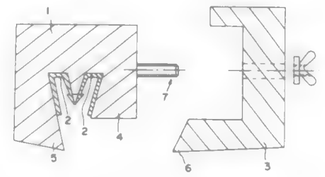
Rene P. Ruhlmann, Griesheim Sur Souffel, France, assignor to M P H I S.A., Sierentz, France

Filed Dec. 10, 1992, Ser. No. 989,783

Claims priority, application France, Dec. 13, 1991, 91 15687

Int. Cl.[5] F16B *7/04*

U.S. Cl. 52—287.1 **7 Claims**



1. Invisible junction device for the interconnection of two flexible sheets having thickened edges, said device comprising a support having a pair of recesses disposed side by side, each said recess being adapted to receive a said thickened edge of a said flexible sheet, the two recesses having a common outlet opening from which said recesses are spaced, and means for releasably closing only said common outlet opening while leaving said recesses undiminished in size, thereby to trap said thickened edge portions within said recesses with both sheets emerging from the closed common outlet opening.

VOL 1165 ISS 4 AUG 23 1994 UMI

5,339,588

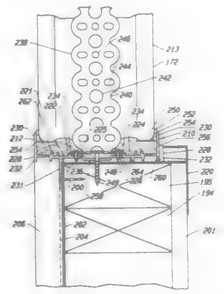
EXTRUDED FRAME MOLDING FOR GLASS BLOCK STRUCTURES

George Ballstadt, 4850 Richmond Ave., Fremont, Calif. 94536

Continuation-in-part of Ser. No. 502,848, Mar. 30, 1990. This application Aug. 21, 1992, Ser. No. 933,401

Int. Cl.[5] E04B *2/00*

U.S. Cl. 52—308 6 Claims



1. An extruded molding adapted to form a perimeter frame around wall structures of glass masonary block, in combination with a flat anchor strap having a bent tab end, the anchor strap being used for anchoring mortared block to this molding, the molding comprising a unitary, elongated extrusion formed with a wide flat base element having a seating side and a backing side, the base element having further, outside edges with flat side elements projecting from the seating side at the outside edges of the base element, perpendicular to the base element, wherein a single channel is formed in which a glass block structure having a standard width is adapted to be seated, wherein the base element has a flat flash means for preventing seepage of water behind the molding and for securing the molding to a building structure having an exterior facing material with a predefined thickness, wherein the flash means comprises a nailing flange arranged perpendicular to the base element projecting from the backing side of the base element, the nailing flange being arrangeable against a frame member of a building structure for attachment thereto by securing means when the molding is supported against the building structure, the nailing flange being displaced a distance from one of the side elements wherein the facing material when applied over the nailing flange is substantially flush with the side element, wherein the base element includes screw receptacle means for interconnecting mitered ends of the extruded molding in forming a molding frame, and wherein the base element has an anchor strap retaining means engaging and retaining the flat anchor strap, wherein the anchor strap retaining means comprises a pair of opposed, spaced bracket elements in the seating side of the base element wherein a slot is formed that engages the bent tab end of the anchor strap.

5,339,589

AGGREGATE FLOOR AND METHOD FOR FORMING SAME

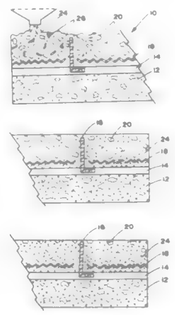
John H. Thrower, 1231 Belrose La., Charlotte, N.C. 28209

Filed Feb. 12, 1993, Ser. No. 17,147

Int. Cl.[5] E04F *15/12*

U.S. Cl. 52—318 26 Claims

1. A level aggregate floor comprising: a supporting surface; a layer of flexible compound applied to the supporting surface; a reinforcement mesh positioned adjacent the flexible compound; a layer of compacted aggregate applied to the mesh; and a mixture layer including compacted composite cement and water applied to the aggregate thereby seating and curing



the compacted composite cement and water with the aggregate.

5,339,590

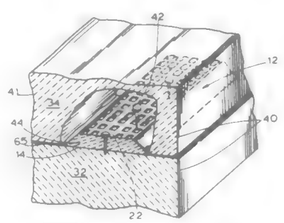
TRAPEZIUM-SHAPED AQUEOUSLY-SWELLING CONCRETE JOINT-SEALING METHOD

William W. Kangas, Mundelein, Ill., assignor to American Colloid Company, Arlington Heights, Ill.

Filed Jan. 25, 1993, Ser. No. 8,736

Int. Cl.[5] E04B *1/62;* F02D *29/16;* E04G *21/02*

U.S. Cl. 52—396.02 17 Claims



1. A plurality of water-sealed concrete sections comprising:
a first section of at least partially cured concrete;
a second section of substantially uncured concrete poured in-situ; and
an elongated strip of water-expandable material disposed between said first section and said second section, said strip of water-expandable material having a cross-section in the shape of a trapezium and having an upper corner surrounded by said second concrete section, said upper corner having an included angle of at least 100°.

5,339,591

SHUTTER WITH PIN-MOUNTED STATIONARY LOUVERS

Russell H. Underdahl, Arden Hills, Minn., assignor to Pinecrest, Inc., Minneapolis, Minn.

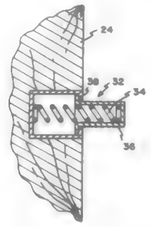
Filed Nov. 2, 1992, Ser. No. 969,999

Int. Cl.[5] E06B *7/08*

U.S. Cl. 52—473 10 Claims

1. A shutter, comprising:
a frame including means defining a frame opening, wherein said frame includes first and second side members;
a plurality of stationary louvers disposed within said opening, each of said plurality of louvers including first and second end portions;

mounting pins extending from each of said first and second louver end portions, wherein each of said side members include bores for receiving said mounting pins; and



means for removing and replacing said stationary louvers after said frame is assembled.

5,339,592

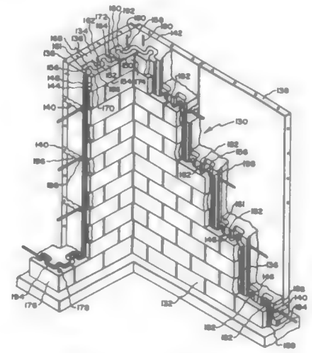
INSULATED BUILDING BLOCKS AND COMPOSITE WALLS HAVING STACKABLE HALF-BOND SYMMETRY

Donald T. Schmid, 10835 Park Ave., Clarence, N.Y. 14031-2242

Filed Aug. 14, 1992, Ser. No. 930,846

Int. Cl.[5] E04C *1/00*

U.S. Cl. 52—606 27 Claims



1. A building block having two opposite and parallel sidewalls, two opposite and parallel end walls, and parallel top and bottom walls, wherein a plane parallel to the end walls and midway therebetween defines a pair of block halves, the building block comprising two spaced block parts extending along the length of the block sidewalls, said block parts having facing spaced inner surfaces which are configured to define projections alternately of said block parts over the length of the block which overlap each other to thereby define a space between said block parts which, in a section parallel to the top and bottom walls, is in the shape of a serpentine pattern over the length of the block, an insulation portion positioned within and substantially filling the space between said block parts, said projections having enlarged end portions for interlocking said insulation portion to said block parts, the block further characterized by the portion of the serpentine pattern in one of the block halves being substantially a repeat of the portion of the serpentine pattern in the other of the block halves such that two of the block are stackable in a staggered half-bond relation with alignment between the serpentine-pattern portions in the stacked block halves, one of said block parts having one of said projections centrally of the length thereof and at least one of said projections in each of said block halves, and the other of said block parts having at least one of said projections in each of said block halves.

5,339,593

ARRANGEMENT FOR REINFORCING PARTS OF A WALL WITH A HARDENABLE MASS

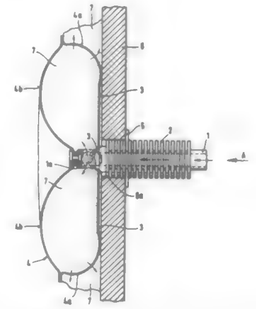
Wolfgang Ludwig, Schwabmünchen, and Armin Hoffmann, Landsberg/Lech, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum Liechtenstein, Fed. Rep. of Germany

Filed Nov. 10, 1992, Ser. No. 974,859

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 4136961

Int. Cl.[5] E04B *1/41;* E04G *21/00;* F16B *39/02*

U.S. Cl. 52—707 4 Claims



1. A device including a wall for using a hardenable or curable mass (7) to reinforce a portion of the wall (6), the wall (6) having a front surface side and an oppositely facing rear surface side, wherein the device comprises an axially extending tubular filling stub (1) arranged to extend through an opening (6*a*) in the wall (6) from the front surface side to the rear surface side, said filling stub having a first end arranged to be spaced outwardly from the front surface side and a second end arranged to be spaced outwardly from the rear surface side, a receiving bag (4) located on the second end of the filling stub for receiving the hardenable mass (7) through the filling stub (1) on the rear surface side, a depth stop (5) engageable on the filling stub (1) adjacent the front surface side of said wall (6), said receiving bag (4) is shaped to extend radially outwardly from and transversely of the axial direction of said filling stub (1) on the rear surface side of said wall, wherein the improvement comprises that said receiving bag (4) has a first surface (4*a*) arranged to face the rear surface side of said wall and a second surface (4*b*) arranged to face outwardly away from the rear surface side, said first surface is formed of a gauze permeable to the mass to be filled through the filling stub (1) into the receiving bag (4) and the second surface (4*b*) is formed of a foil impermeable to the mass to be filled into the receiving bag, and elastic webs (3) spaced angularly apart and connecting the first surface (4*a*) of the receiving bag to the filling stub, and said webs (3) being foldable from a first position extending radially outwardly from said filling stub (1) between and in contact with the first surface of said receiving bag and the rear surface side of said wall to a second position extending generally parallel to the axis of said filling stub whereby said webs extend generally in the axial direction of the filling stub for inserting the second end of the filling stub through the wall opening from the front surface side to the rear surface side thereof and then being displaceable into the first position extending radially outwardly from the filling stub with the receiving bag extending radially outwardly from the filling stub so that the bag is ready to receive the hardenable mass and reinforce the rear surface of an adjacent portion of said wall (6).

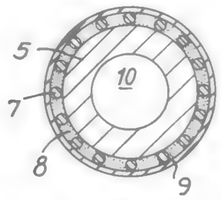
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,594

POST, ESPECIALLY FOR SUPPORTING ELECTRIC POWER SUPPLY CABLES

Miguel Ventura-Berti, Calle Lluis Sagnier, 64-66, 1°-2ª, E-08032 Barcelona, Spain

Filed Oct. 9, 1990, Ser. No. 594,338
Claims priority, application Spain, Feb. 15, 1989, 8900872
Int. Cl.[5] E04C *3/30*
U.S. Cl. 52—727 3 Claims



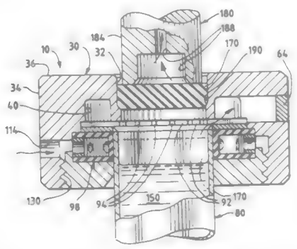
1. A post, especially for holding electric power supply cables, comprising:
an elongate body defined by a hollow core of ceramic material;
a strong reinforcement formed by iron rods surrounding said core;
said rods being embedded in a mass of a settable polymeric material of high resistance to compression; and,
a casing of rigid polymeric material, stable to light and to atmospheric agents, surrounding said mass of polymeric material.

5,339,595

HEAD FOR APPARATUS FOR FILLING A CONTAINER AND PLACING A STOPPER THEREIN

Daniel H. Rouse, Greenville; Thomas D. McClure, Rocky Mount, and Ralph E. Reese, Patterson, all of N.C., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 31, 1992, Ser. No. 999,037
Int. Cl.[5] B65B *39/02, 39/04*
U.S. Cl. 53—88 9 Claims



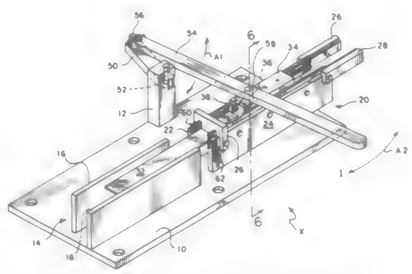
1. An improved head for an apparatus which places a stopper in the opening of a filled container, said head comprising:
a sleeve for receiving the end of said container and temporarily sealing the periphery of said container around said opening;
a housing over said sleeve, said housing defining an access passage which communicates with said sleeve and through which said stopper can be inserted, said housing defining a chamber around said access passage for communicating with the access passage and wherein said housing has a generally hollow, cylindrical configuration defining a generally cylindrical, exterior side surface; and
a conduit projecting from said housing in communication with said chamber through which vacuum can be drawn and wherein said conduit is a hollow, cylindrical tube mounted to said housing radially inward of said housing side surface.

5,339,596

TONER CARTRIDGE RECHARGING TOOL

Zev B. Cohen, 5624 Oak Pl., Bethesda, Md. 20814

Filed Nov. 4, 1992, Ser. No. 971,211
Int. Cl.[5] B65B *61/18*
U.S. Cl. 53—136.3 8 Claims



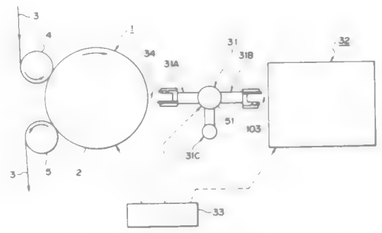
1. A toner cartridge recharging tool comprising:
a generally planar base including work holder means for holding a toner cartridge;
insertion means for inserting an adhesive strip into a slot in the toner cartridge; said insertion means comprises at least:
a guide element;
a removable insertion member engageable with said guide element and including an insertion tongue having an insertion tip and two dorsal edges, and a tongue guide shoe attached to said insertion tongue and having a pair of longitudinal dorsal fins engageable with and slidable in said guide element;
an operating element for moving said insertion means through an insertion member travel area;
stop means for adjustably limiting the movement of said insertion means.

5,339,597

WORK HEAD CHANGER FOR ROTARY VESSEL PROCESSING SYSTEM

Toshiaki Naka; Akira Motomura, and Hidefumi Akamaru, all of Ishikawa, Japan, assignors to Shibuya Kogyo Co., Ltd., Ishikawa, Japan

Filed Feb. 11, 1993, Ser. No. 16,799
Claims priority, application Japan, May 29, 1992, 4-163632
Int. Cl.[5] B65B *59/00, 3/10, 7/28*
U.S. Cl. 53—167 20 Claims



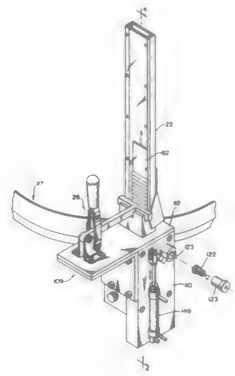
1. A rotary vessel processing system including a rotatable body for conveying vessels at a given interval, a plurality of work heads circumferentially spaced apart at an equal interval on the rotatable body for applying a processing operation to each of vessels which are conveyed by the rotatable body, and a connection provided between the rotatable body and each work head to permit an engagement and disengagement therebetween for detachably mounting each work head on the rotatable body; and
a work head changer including a controller for controlling the rotation of the rotatable body so that each work head is successively and intermittently stopped at a predetermined work head replacement position, and a work head delivery mechanism for removing a work head which comes to a stop at the work head replacement position from the connection and for attaching a work head of another variety to the connection at an emptied location where the work head has been removed.

5,339,598

APPARATUS FOR LAODING FASTENERS IN A CARTRIDGE

Philip A. Rink, Everett, and Peter B. Zieve, Seattle, both of Wash., assignors to Electroimpact, Inc., Mukilteo, Wash.

Division of Ser. No. 693,628, Apr. 30, 1991, Pat. No. 5,193,717.
This application Mar. 8, 1993, Ser. No. 27,834
Int. Cl.[5] B65B *1/10*
U.S. Cl. 53—236 11 Claims



1. An apparatus for loading fasteners in a cartridge, comprising:
means for supporting a cartridge which has an internal opening for storing fasteners, the cartridge being adapted to receive fasteners at a bottom end thereof, through an opening therein;
fastener insertion means which includes means receiving fasteners, means for moving a fastener into position beneath the bottom end of the cartridge, and means for moving the fastener up into the cartridge; and
means for feeding fasteners to the fastener insertion means in selected orientation.

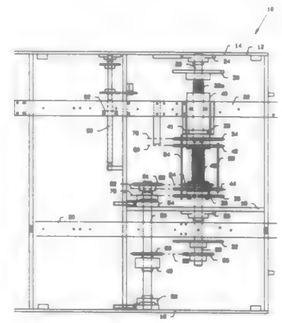
5,339,599

PACKAGING SYSTEM WITH A FLITE ADJUSTER MECHANISM

Scott C. Risnes, Minnetonka, Minn., assignor to Thiele Engineering Company, Minneapolis, Minn.

Filed Nov. 6, 1992, Ser. No. 972,927
Int. Cl.[5] B65B *65/02, 59/02*
U.S. Cl. 53—252 4 Claims

2. A packaging machine having flites for carrying product through the machine comprising:
a. a main drive shaft;
b. first and second sprockets mounted on the main drive shaft;
c. first and second chains driven by the first and second sprockets;
d. a first flite mounted transversely on the first and second chains;
e. a slave shaft parallel to and driven by the main drive shaft;
f. a hub rotatably mounted on the main drive shaft;
g. third and fourth sprockets mounted on the hub;



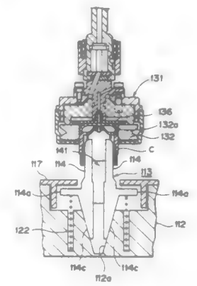
h. third and fourth chains driven by the third and fourth sprockets;
i. a second flite mounted transversely on the third and fourth chains;
j. drive means connecting the hub to the slave shaft for rotating the hub as the slave shaft rotates; and,
k. a phase adjuster mounted on the slave shaft for rotating the slave shaft and altering the rotational phase of the third and fourth sprockets relative to the rotation of the first and second sprockets, thereby altering the distance between the first and second flites.

5,339,600

CAP CONVEYING UNIT

Ichirou Hamano; Munetaka Honda; Tateki Takakuwa, all of Ishikawa; Toshiyuki Omori, and Yasuaki Kotani, both of Chiba, all of Japan, assignors to Shibuya Kogyo Co., Ltd., Ishikawa and Kao Corporation, Tokyo, both of Japan

Filed Mar. 22, 1993, Ser. No. 34,279
Claims priority, application Japan, Mar. 25, 1992, 4-98785; Mar. 25, 1992, 4-98786; Mar. 25, 1992, 4-98787; Mar. 25, 1992, 4-98791
Int. Cl.[5] B67B *3/064, 3/062;* B65B *7/28*
U.S. Cl. 53—306 36 Claims



1. A cap conveying unit comprising cap holder means for

VOL 1165 ISS 4 AG 23 1994 UMI

holding the inner peripheral surface of a cap, and conveying means for conveying the cap holder means along a circulating path, the cap holder means receiving a cap to be fed from a cap feeder and delivering it to a capping head where the cap delivered is applied to a vessel; characterized in that the cap holder means has an outer diameter which is variable between a shrunk condition in which the outer diameter is less than the diameter of the inner peripheral surface of the cap and an expanded condition in which the outer diameter is greater than the diameter of the inner peripheral surface of the cap.

5,339,601

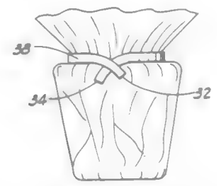
DECORATIVE COVER WITH BAND

Donald E. Weder, Highland; William F. Straeter, Breese, and Michael J. King, Staunton, all of Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, which is a continuation-in-part of Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 876,947, May 1, 1992. This application Sep. 22, 1992, Ser. No. 949,175

Int. Cl.[5] **B65B** *11/02, 51/06, 51/08;* **B21D** *35/00*

U.S. Cl. 53—397 **18 Claims**



1. A method for providing a decorative covering for use with a flower pot means having an upper end, a lower end, an outer peripheral surface and a flower pot means opening extending through the upper end thereof and extending into the flower pot means forming an inner peripheral surface, comprising:

providing a sheet of material having an upper surface, a lower surface and an outer periphery;

providing a band having a first end and a second end and a bonding material disposed on at least a portion thereof;

extending the sheet of material about at least a portion of the outer peripheral surface of the flower pot means with the upper surface of the sheet of material being disposed about adjacent the outer peripheral surface of the flower pot means and with a portion of the sheet of material extending above the upper end of the flower pot means; and

connecting the first end of the band to the sheet of material via the bonding material and extending the band about the portion of the sheet of material extending above the upper end of the flower pot means and pulling a portion of the sheet of material inwardly forming a crimped portion in the sheet of material at a position above the upper end of the flower pot means and connecting the second end of the band to either a portion of the band or a portion of the sheet of material via the bonding material for securing the band in the position extending about the portion of the sheet of material, the crimped portion being engageable with the upper end of the flower pot means for cooperating to hold the sheet of material in the position extending about the flower pot means to provide the decorative covering.

5,339,602

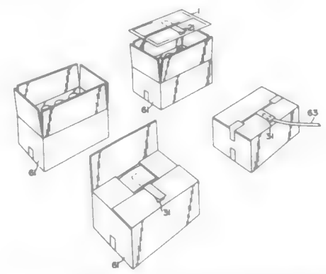
INFLATABLE PACKAGING BAG AND PROCESS FOR INFLATING THE BAG

James A. Landers, Madbury, N.H.; Gary O. Reid, Colorado Springs, Colo., and Steven J. Greenland, Stratham, N.H., assignors to Laminated Films & Packaging, Portsmouth, N.H.

Division of Ser. No. 791,086, Nov. 21, 1991, Pat. No. 5,254,074. This application Apr. 27, 1993, Ser. No. 53,632

Int. Cl.[5] **B65B** *61/00*

U.S. Cl. 53—410 **4 Claims**



1. A process for inflating a bag within a container, comprising:

placing at least one item to be packaged in a container;

providing an inflatable bag, not attached to said container, with an inflation port;

placing said inflatable bag inside said container and on top of said item;

closing said container while allowing said inflation port to be accessible to the exterior of said container;

injecting air into said inflation port such that said inflatable bag will inflate; and,

wherein said container is a rigid box having flaps and said step of closing said container comprises:

folding all said flaps over so as to create a cover for said box while allowing said inflation port to be accessible to the exterior of said box through a gap between said flaps.

5,339,603

METHOD FOR SETTING A FOLDING STATION INCLUDED IN AN APPARATUS FOR PREPARING ITEMS TO BE MAILED, AND APPARATUS FOR PREPARING ITEMS TO BE MAILED AND FOLDING STATION ADAPTED FOR CARRYING OUT SUCH METHOD

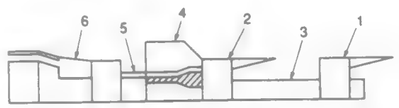
Jacobus F. Gombault, deceased, late of Drachten; Petronella A. Gombault, legal representative, Bloemendaal, and Gerhard Hidding, Heerenveen, all of Netherlands, assignors to Hadewe B.V., Drachten, Netherlands

Filed Feb. 5, 1992, Ser. No. 831,527

Claims priority, application Netherlands, Feb. 8, 1991, 9100228

Int. Cl.[5] **B65H** *45/12;* **B43M** *3/04*

U.S. Cl. 53—429 **31 Claims**



1. A method for setting a folding station included in an apparatus for preparing items to be mailed, said apparatus comprising a document-supply station, an envelope-inserter station, transport means interconnecting said stations and setting means for setting at least the folding machine, said method comprising the steps of:

inputting data into said setting means for setting the fold height of a fold to be formed in at least one document, said data representing at least the height of an envelope intended as a package for said at least one document; and

determining and setting said fold height by the setting means, at least partly depending on the inputted data representing the height of the envelope.

5,339,604

METHOD AND APPARATUS FOR MAKING A VACUUM PACKAGE FILLED WITH GRANULAR MATERIAL

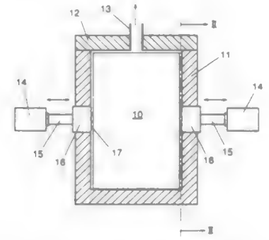
Mathias L. C. Aarts, Bilthoven, Netherlands, assignor to Sara Lee/DE N.V., Utrecht, Netherlands

Filed Jan. 8, 1993, Ser. No. 1,620

Claims priority, application Netherlands, Jan. 8, 1992, 9200022; Feb. 19, 1992, 9200314

Int. Cl.[5] **B65B** *31/00, 61/26*

U.S. Cl. 53—432 **13 Claims**



1. A method for making a vacuum package of a given shape filled with a granular material, said vacuum package being provided with a relief formed by an area with relatively raised and recessed formations, wherein the method comprises the steps of:

completely filling a package made from a thin-walled and flexible packaging foil with a granular material;

placing said filled package in a holder with sidewalls, and internally vacuumizing and closing said filled package;

pressing a relief element against said filled package, said holder supporting said relief element in at least one of said sidewalls and supporting portions of said filled package surrounding said relief element, thereby forming a relief in said filled package without changing the given shape of said filled package;

maintaining said relief element pressed against said filled package and increasing a first pressure difference between an exterior and an interior of said filled package; wherein,

said step of pressing occurs when said first pressure difference is less than a second pressure difference between said interior of said closed package and atmospheric pressure.

5,339,605

PRODUCT COMPRESSOR FOR SHRINK TUNNEL

Billy J. Simpson, Sr., and Terry F. Hinson, Sr., both of Oakboro, N.C., assignors to Signature Packaging Machinery, Inc., Locust, N.C.

Filed Mar. 11, 1993, Ser. No. 29,877

Int. Cl.[5] **B65B** *1/24, 53/02*

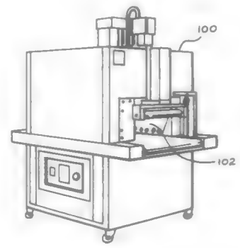
U.S. Cl. 53—439 **16 Claims**

1. A compression apparatus for a plastic film heat shrinking machine adapted for shrinking thermoplastic sheeting around a product, said shrinking machine having a substantially enclosed heating chamber having a housing provided with an entrance and exit, said shrinking machine having a main driven conveyor belt adapted to convey said product through said chamber, said main conveyor extending from in front of said entrance, through said heating chamber, beyond said exit, comprising:

a secondary conveyor having upper and lower stretches;

said conveyor having outside and inside rollers, with an endless belt mounted over said rollers;

said outside roller being positioned outside of said entrance to said heating chamber and above said main driven conveyor;



said inside roller being positioned within said heating chamber and above said main driven conveyor;

said inside roller being closer to said main driven conveyor belt than said outside roller; and

said belt having an outer surface adapted to compress said product and an inner surface in contact with said rollers;

whereby said product is compressed between said main driven conveyor and said secondary conveyor.

5,339,606

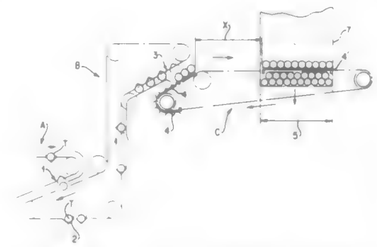
METHOD FOR ACCEPTING CONTINUOUSLY SUPPLIED PRODUCTS FROM A PRODUCTION FACILITY AND RESPECTIVELY DISCONTINUOUS DELIVERY OF A NUMBER OF THESE PRODUCTS AT A DELIVERY STATION

Gottlieb Benz, Flums, Switzerland, assignor to Pamag AG, Switzerland

Filed Nov. 17, 1992, Ser. No. 976,925

Int. Cl.[5] **B65B** *19/34*

U.S. Cl. 53—444 **7 Claims**



1. In a method for accepting continuously supplied products (T) from a production facility (A) and respectively discontinuous delivery of a number of the products (T) at a transfer station (1, 3), the improvement comprising: filling a first transport carriage (4) moving in steps with the products (T) at the transfer station (1, 3) where a second transport carriage (4') directly abuts the first transport carriage (4); moving the second transport carriage (4') in steps and filling the second transport carriage (4') with the products (T); during a period of time required for filling the second carriage (4') moving the first carriage (4) to a delivery station (5); stopping the first transport carriage (4) during an unloading process; pushing off the products (T) from the first transport carriage (4) which is stopped at the delivery station (5) with a pusher (6) which is moved

VOL 1165 ISS 4 AUG 23 1994 UMI

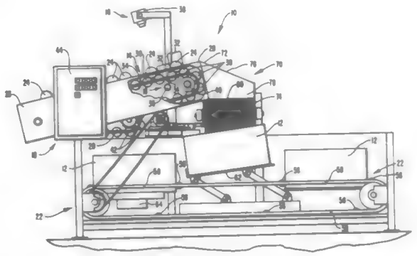
back and forth crosswise to an endless belt; and subsequently moving the first transport carriage (4) until the first carriage (4) abuts the second transport carriage (4') which is being filled.

5,339,607

APPARATUS AND METHOD FOR DISPENSING OBJECTS TO A COUNT AND/OR WEIGHT

Robert D. Regier, 25 Trout Lake Dr., Sanger, Calif. 93657

Filed Oct. 23, 1992, Ser. No. 965,873
Int. Cl.[5] B65B *1/34, 1/46, 57/20*
U.S. Cl. 53—501 34 Claims



21. A method for determining the average weight of the objects contained within each receptacle filled to a predetermined count, comprising the steps of:

(a) supplying objects to a conveyor having at least one grouping assembly capable of supporting more than one object during conveyance;

(b) positioning the receptacle in the proximity of the conveyor so that the receptacle receives objects discharged from the conveyor;

(c) capturing a group of objects for supported conveyance on one of the grouping assemblies and conveying that group of objects to discharge into the receptacle;

(d) detecting the presence of objects within the group of objects;

(e) relaying information relating to the number of objects within the group of objects to a controller;

(f) monitoring the number of objects in each group of objects conveyed for discharge into the receptacle;

(g) tracking the location of each group of objects from detection to discharge into the receptacle;

(h) counting the number of objects discharged into the receptacle;

(i) pausing further discharge of objects into the receptacle if the next group of objects to discharge objects into the receptacle contains a number of objects that would cause the count to exceed the predetermined count of objects;

(j) moving the receptacle from the proximity of the conveyor to the proximity of a trickle-feed conveyor so that the receptacle can receive objects discharged from the trickle-feed conveyor;

(k) conveying objects on the trickle-feed conveyor for discharge one at a time into the receptacle until the receptacle has received the predetermined count of objects;

(l) weighing the objects within the receptacle after the receptacle has received the predetermined count of objects; and

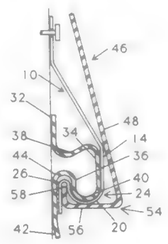
(m) dividing the weight determined from step (l) by the predetermined count of objects.

5,339,608

MOUNTING CLIP FOR VINYL SIDING

Tommy W. Hollis, Kingwood, and Hugh L. Morris, Woodlands, both of Tex., assignors to C & H Enterprises, Conroe, Tex.

Continuation of Ser. No. 808,186, Dec. 13, 1991. This application Nov. 2, 1992, Ser. No. 970,147
Int. Cl.[5] E04D *1/34*
U.S. Cl. 52—545 2 Claims



1. A mounting clip for attaching vinyl siding to a building structure, said clip comprising:

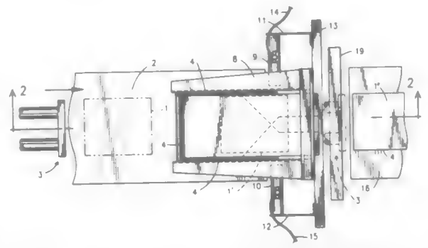
a continuous elongated metal strip having upper and lower ends with said lower end formed in a continuous curvature defining panel engaging means profiled to resiliently grip an upper butt of a next-to-top row panel and resiliently receive therein a lower butt of a top out panel, said panel engaging means terminating in an end portion extending outwardly beneath and supporting said top out panel, said upper and lower ends connected by an intermediate segment extending over said next-to-top row panel into abutting relationship with underlying building structure with said upper end lying flat thereagainst and extending away from said lower end, said upper end having a transverse nailing slot therein.

5,339,609

APPARATUS AND PROCESS FOR FILM WRAPPING PACKAGED PRODUCT

Alain A. Cerf, North Redington, Fla., assignor to Polycerf, Inc., Largo, Fla.

Continuation-in-part of Ser. No. 901,699, Jun. 22, 1992, abandoned. This application Jan. 28, 1993, Ser. No. 10,159
Int. Cl.[5] B65B *9/06*
U.S. Cl. 53—550 14 Claims



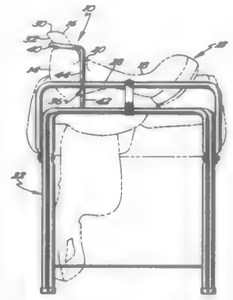
1. An apparatus for use in the operation of encasing a package in a plastic film, including a forming head onto which a plastic film is moved to form a generally tubular cavity into which the package is projected for the eventual encasement of said package, said forming head including opposite side members over which the film flows and means disposed on opposite sides of said members with the film disposed between said members and said means, whereby said means produce a static charge between said means and side members to impose a light load between said film and side members to effectively slightly impede the free movement of the film in its package encasing function.

5,339,610

ANTI-THEFT APPARATUS FOR RIDING SADDLES

James M. Mondry, 3263 N. Snelling Ave., Arden Hills, Minn. 55112

Filed Apr. 19, 1993, Ser. No. 47,926
Int. Cl.[5] B68C *1/20;* E05B *73/00*
U.S. Cl. 54—1 20 Claims



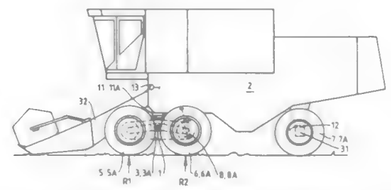
1. Anti-theft apparatus for riding saddles including a saddle body having a saddle horn with the saddle horn including a cap and a neck extending between the cap and the saddle body in a first direction, with the riding saddle being supported on a saddle rack, comprising, in combination: means movable relative to the saddle horn generally parallel to the first direction for abutment with the saddle body adjacent to the saddle horn when moved in the first direction towards the saddle horn and for abutment with the saddle horn when moved in a direction perpendicular to the first direction and removable from the saddle horn when moved relative to the saddle horn opposite and generally parallel to the first direction; an extension secured to and extending from the abutment means; and means for locking the extension to the saddle rack for preventing the abutment means from moving relative to the saddle horn opposite and generally parallel to the first direction.

5,339,611

TANDEM RUNNING GEAR ON A SELF-PROPELLED AGRICULTURAL MACHINE

Heinrich Roderfeld; Franz Heidjann, both of Harsewinkel; Norbert Diekhans, Gutersloh, and Willi Behnke, Steinhagen, all of Fed. Rep. of Germany, assignors to Claas oHG, Harsewinkel, Fed. Rep. of Germany

Filed Aug. 3, 1992, Ser. No. 923,428
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1991, 4125603
Int. Cl.[5] A01D *75/28;* B62D *61/10*
U.S. Cl. 56—10.2 13 Claims



1. In a running gear of a self-propelled agricultural machine having a chassis (2), with a rear steering axle (31) with two wheels (7, 7A) and with a front tandem running gear with a drive axle (1) pivotally supporting a swing arm (3, 3A) on each end, each swing arm carrying two drive wheels (5, 6; 5A, 6A) one disposed behind another, a double-acting hydraulic work cylinder (8, 8A) connected between each said swing arm and said chassis (2), so that by means of said cylinder the swing arm (3, 3A) can be pivoted in a controlled manner, the improvement comprising,

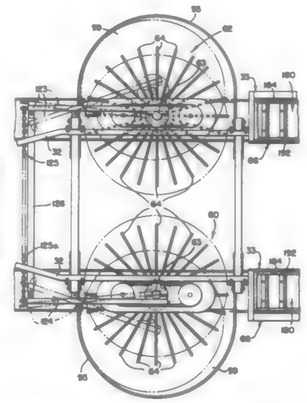
at least two measurement value transmitters (27, 27A; 29, 29A; 11, 11A; 91, 91A; 93, 93A) disposed on the tandem running gear (1, 3, 5, 6), and control means (10) for receiving values from said value transmitters and determining appropriate drive wheel load values (R1, R2) on the drive wheels (5, 6; 5A, 6A) directly or indirectly and comparing said load values with respectively predetermined set values and outputting control signals, which act in a regulating way, to at least one multi-way control valve (25, 25A) for charging each said work cylinder (3, 8A).

5,339,612

SELF-ADJUSTING FORCE BALANCE RADIAL GRAPE AND RAISIN HARVESTER

Phillip R. Scott, Madera, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Aug. 31, 1992, Ser. No. 937,087
Int. Cl.[5] A01D *46/00*
U.S. Cl. 56—330 14 Claims



1. A self-adjusting mobile force balanced crop harvester for harvesting crops from vines, comprising:

means defining a generally V-shaped mobile platform movable between rows of vines to be harvested;

means defining a pair of sub-frames pivotally mounted intermediate the ends thereof on opposite sides of said generally V-shaped mobile platform;

means defining a pair of oscillating power driven shaker heads pivotally mounted on one end portion of each of said sub-frames and having a plurality of shaker tines projecting radially outward therefrom; and

adjustable means interconnecting said sub-frames for maintaining a desired spacing between said tines.

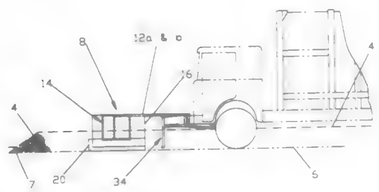
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,613

LEAF LOADING SYSTEMS FOR TRUCK MOUNTED COMPACTORS

Roger S. Wymore, 4612 F Ave. NE., Cedar Rapids, Iowa 52402

Filed Mar. 29, 1993, Ser. No. 39,586
Int. Cl.[5] A01D *85/00*
U.S. Cl. 56—344 13 Claims



1. A self-loading carrier of seasonally fallen leaves raked into a street comprising:

(a) a truck with a rear loading, hydraulic compactor mounted thereon, a platform attached for a person to ride while monitoring and operating said compactor and a loading means;

(b) a sweeping means clamped to a front bumper of said truck whereby a driver of said truck is capable of moving refuse from a curb under pressure of forward motion, whereupon said truck can straddle said refuse while continuing forward;

(c) controlling means for hydraulically lifting and lowering said sweeping means whereby said driver can operate said sweeping means coincident to driving said truck;

(d) said loading means located at the rear of said compactor and adjacent a rear loading hopper and in line with emerging refuse;

(e) an interface means between street surfaces and said loading means wedging refuse from said surfaces into said loading means under said pressure of said forward motion; and

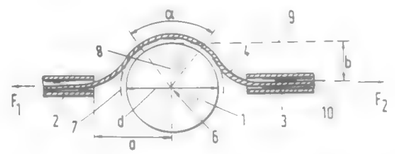
(f) a hitching means connecting said loading means to said hopper, said loading means pulled along on wheels rollingly attached, said hitching means including hydraulic means for raising and lowering said loading means, whereby raising allows said driver to proceed with ordinary traffic.

5,339,614

ROTATING DISC FOR SEPARATING AND PROCESSING THE END OF YARN

Martin Witschi, Schaffhausen, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Continuation-in-part of Ser. No. 919,876, Jul. 27, 1992, and a continuation-in-part of Ser. No. 728,555, Jul. 11, 1991, Pat. No. 5,313,775. This application Dec. 7, 1992, Ser. No. 986,595
Claims priority, application Switzerland, Dec. 6, 1991, 03599/91
Int. Cl.[5] D01H *13/18;* B65H *54/71*
U.S. Cl. 57—87 18 Claims



1. Apparatus for severing a yarn into separated yarn ends and processing at least one separated yarn end for piecing up, the apparatus comprising:

a disc mechanism having an abrasive circumferential surface and being controllably rotatable around an axis;

means for holding a selected length of the yarn under a predetermined tension in relationship to the abrasive surface of the disc such that at least a portion of the tensioned length of yarn is urged toward engagement with the abrasive surface of the disc by the tension;

the abrasive surface of the disc and the yarn holding means being mounted in relationship to each other such that the one separated yarn end is severed by a circumferential abrasive action and process for piecing up;

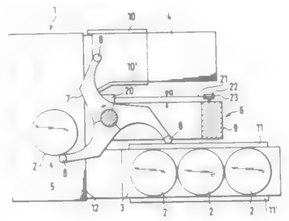
the yarn holding means being arranged relative to the abrasive surface of the disc such that the selected length of yarn extends around the abrasive surface of the disc at a predetermined angle of wrap selected for severing and processing the one separated yarn end.

5,339,615

DEVICE TO MOVE SPINNING CANS

Friedrich Hauner, Ingolstadt, Fed. Rep. of Germany, assignor to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

Filed Dec. 2, 1992, Ser. No. 984,875
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1991, 4141033
Int. Cl.[5] D01H *9/18*
U.S. Cl. 57—281 13 Claims



1. A safety device for use with a textile machine can conveying system having a movable traveller for conveying cans from a first position into a second position the can conveying system having any number of structural components defining vertical planes, the movable traveler intersecting any number of the vertical planes, said safety device comprising:

at least one switch device, said switch device operatively connectable to said textile machine can conveying system so as to substantially immediately stop travel of said movable traveller upon actuation thereof;

at least one deflection pulley disposed generally at the intersection of two of said structural components;

a pre-tensioned relatively flexible actuating device having one end thereof operatively connected to said switch device for actuating said switch device and the other end thereof anchored relative said textile machine, said actuating device disposed offset from and generally along the length of at least one of said structural components whose vertical plane is intersected by said movable traveller so as to be contacted at any point along said structural component by an object carried by said movable traveller thereby actuating said switch device to stop said movable traveller before the object contacts said structural component and;

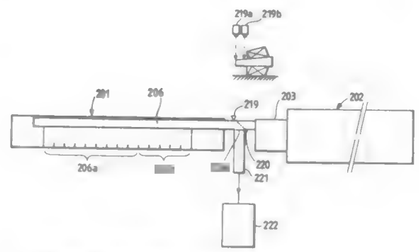
said switch device configured to also be actuated upon relief of the pre-tension condition of said actuating device.

5,339,616

WINDING METHOD

Masao Uehara, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 900,912, Jun. 18, 1992. This application Mar. 18, 1993, Ser. No. 32,378
Claims priority, application Japan, Aug. 27, 1991, 3-240502; Jun. 19, 1992, 3-176177
Int. Cl.[5] D01H *9/18*
U.S. Cl. 57—281 1 Claim



1. A system comprising:

an automatic winder comprising a first winding unit for producing winding packages having a first winding width and a second winding unit for producing winding packages having a second winding width, wherein the first winding width is different than the second winding width.

a twisting machine for doubling and twisting yarns from winding packages having the first winding width,

means for directing packages having the first winding width from the first winding unit to the twisting machine, and

a single yarn processing line connected to the automatic winder for carrying packages having the first winding width and packages having the second winding width,

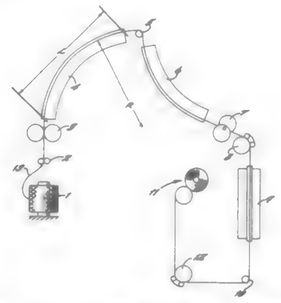
whereby packages having the first winding width and packages having the second winding width are carried in a mixed manner on the single yarn processing line and are directed to the twisting machine according to the winding width of the package.

5,339,617

FALSE TWIST YARN CRIMPING APPARATUS

Peter Dammann, Remscheid, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Jun. 29, 1990, Ser. No. 545,928
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1989, 3921758; Nov. 15, 1989, 3937975
Int. Cl.[5] D02G *1/02;* D02J *13/00*
U.S. Cl. 57—290 10 Claims



1. A false twist yarn crimping apparatus comprising yarn package mounting means, an elongate yarn heating plate, an elongate yarn cooling plate, yarn friction false twisting means, yarn take-up means, and yarn delivery means for advancing a yarn from a package on said mounting means and serially to said heating plate, said cooling plate, said false twisting means, and said take-up means,

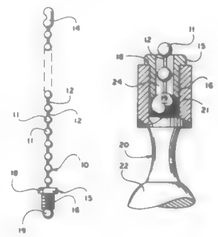
said heating plate having a length measured between the ends of said heating plate and along a chord extending between the ends of said heating plate, a radius of curvature R at each point along the lengthwise extent of the heating plate, wherein L is between about 0.8 and about 2.2 meters, wherein R is between about 1 and about 8 meters, and wherein both R and L are chosen such that the ratio R/L is between about 0.8 and about 4.6.

5,339,618

PULL CHAIN ADAPTER

Gerald F. Sawyer, 2862 Tree Top Rd., Dacula, Ga. 30211

Filed Sep. 29, 1993, Ser. No. 129,436
Int. Cl.[5] F16G *15/00*
U.S. Cl. 59—93 5 Claims



1. An adapter for attaching a decorative pull to a pull chain for a fan, said adapter comprising a length of bead chain, connecting means on one end of said length of bead chain for connecting said adapter to said pull cord, and a threaded member on the opposite end of said length of bead chain, said threaded member defining a bore therethrough of a size just sufficient to receive said bead chain and receiving said bead chain therethrough threads externally of said threaded member, and a terminal bead on said opposite end of said length of bead chain, said terminal bead having a diameter greater than the diameter of said bore and less than the diameter of said threads externally of said threaded member.

5,339,619

ACTIVE COOLING OF TURBINE ROTOR ASSEMBLY

Stephen M. Antonellis, Woodbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

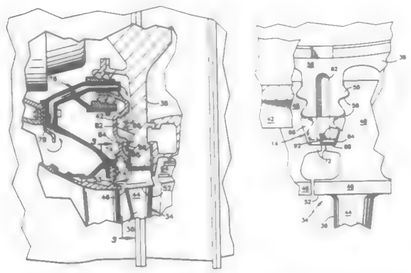
Filed Aug. 31, 1992, Ser. No. 937,927
Int. Cl.[5] B64C *11/00*
U.S. Cl. 60—39.02 15 Claims

1. A method of cooling a turbine disk, the turbine disk disposed about a longitudinal axis and including a blade attachment means adapted to attach a blade to the disk, the attachment means including an axially forward facing surface having a radially extending groove and a radially outer surface, and a heat shield, the heat shield disposed between the blade attachment means and a pair of circumferentially adjacent blades, the heat shield having a first portion extending radially and circumferentially over the forward surface and a second portion extending axially and laterally over the outer surface, and wherein the groove and the heat shield defines in part a radially extending cooling passage therebetween, the method including the steps of:

rotating the disk such that the heat shield seats against the pair of blades thereby producing a radial separation be-

VOL 1165 ISS 4 AG 23 1994 UMI

tween the heat shield and the outer surface of the attachment means, the separation defining an axially extending cooling passage in communication with the radially extending cooling passage;



conducting cooling fluid into the radially extending cooling passage; and

ejecting cooling fluid from the axially extending cooling passage.

5,339,620

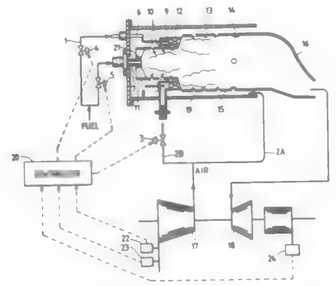
CONTROL APPARATUS AND A CONTROL METHOD OF A GAS TURBINE COMBUSTOR

Hiraku Ikeda, Katsuta; Tetsuo Sasada, Hitachi; Isao Sato, Hitachi; Yoshikazu Moritomo, Hitachi; Koji Takahashi, Hitachi, and Minoru Takabe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,139

Int. Cl.[5] F02C *9/50*

U.S. Cl. 60—39.03 **15 Claims**



1. A control apparatus of a gas turbine combustor for effecting a stable combustion with limited NOx emission through control of a fuel flow rate in accordance with a turbine output and control of a flow rate of intake air mixed with fuel of the gas turbine combustor, said control apparatus comprising:

means for detecting at least one condition of said intake air to be taken into said gas turbine combustor, combustion stability in and NOx emission from the combustor being a function of said condition of the intake air;

means for determining and storing, in advance of an operation of said gas turbine combustor, a stable combustion limit line of the gas turbine combustor between a stable combustion region of the gas turbine combustor and an unstable combustion region of the gas turbine combustor and a NOx emission limit line, on a plane of coordinates of a parameter which is a function of at least an intake air flow rate of the intake air and said condition of the intake air, on each turbine output;

means for detecting an instant operational point of said gas turbine combustor on said plane of coordinates; and

means for correcting a ratio of fuel flow rate to the intake air flow rate in accordance with a change in said detected condition of the intake air so that said instant operational point is kept between said stable combustion limit line and said NOx emission limit line.

5,339,621

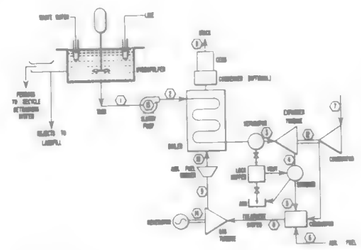
WASTE TREATMENT SYSTEM AND METHOD UTILIZING PRESSURIZED FLUID

Radon Tolman, Santa Fe, N. Mex., assignor to Environmental Energy Systems, Inc., Santa Fe, N. Mex.

Division of Ser. No. 939,480, Aug. 31, 1992, Pat. No. 5,280,701. This application Sep. 22, 1993, Ser. No. 125,649

Int. Cl.[5] F02G *3/00;* **F23G** *5/12*

U.S. Cl. 60—39.02 **32 Claims**



1. A method for waste treatment comprising the steps of:

a. forming a mixture of organic material, wastewater, lime and fuel;

b. bringing the mixture to a high pressure;

c. heating the mixture in a boiler so as to vaporize a portion of the mixture, thereby leaving solids and vapor;

d. utilizing the solids in the mixture to form a fluidized bed particle scrubber within the boiler so as to prevent corrosive deposits and fouling; and

e. producing net energy output from at least a portion of the vapor produced in the boiler.

5,339,622

GAS TURBINE ENGINE WITH IMPROVED WATER INGESTION PREVENTION

Xavier M. H. Bardey, Chartrettes; Michel A. A. Desaulty, Vert Saint Denis; Jérome E. R. Jolu, Pringy; Serge M. Meunier, Le Chatelet en Brie; Pierre C. Mouton, Grigny; Sylvie Poutonnet, Limeil Brevannes, and Jacques Renvier, Nogent, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.M.A.), Paris, France

Filed Aug. 17, 1993, Ser. No. 107,175

Claims priority, application France, Aug. 9, 1992, 92 10124

Int. Cl.[5] F02G *3/00*

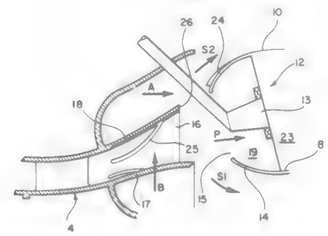
U.S. Cl. 60—39.092 **6 Claims**

1. A gas turbine engine having an air compressor and a generally annular combustion chamber, comprising:

a) a generally annular diffuser located between the air compressor and the combustion chamber so as to direct air exiting from the compressor toward the combustion chamber, the diffuser having inner and outer walls and defining an exit;

b) a dome cowl portion of the combustion chamber located adjacent to the exit of the generally annular diffuser, the dome cowl portion defining an opening and located so as to divide the air emanating from the diffuser exit into a primary air stream passing through the opening and at least one secondary air stream; and,

c) guide means located in the diffuser for guiding water in the air passing through the diffuser away from the opening defined by the dome cowl portion of the combustion chamber wherein the guide means comprises at least one



groove defined by an internal surface of the outer wall of the diffuser, the at least one groove extending into the diffuser from the diffuser exit.

5,339,623

SINGLY FUELED MULTIPLE THRUSTERS SIMULTANEOUSLY ENERGIZED BY A COMMON POWER SUPPLY

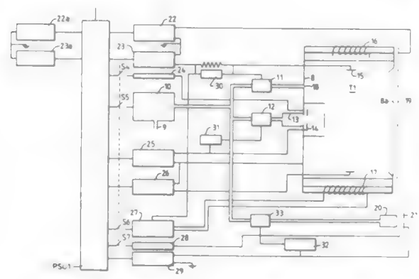
Peter Smith, Clanfield, United Kingdom, assignor to Matra Marconi Space UK Limited, Middlesex, United Kingdom

Filed Dec. 22, 1992, Ser. No. 993,769

Claims priority, application United Kingdom, Dec. 27, 1991, 9127433.2

Int. Cl.[5] F02K *1/00*

U.S. Cl. 60—203.1 **10 Claims**



1. A propulsion system for a spacecraft, comprising:

two or more thrusters, each thruster comprising a chamber, means for supplying gaseous propellant to the chamber, and electrodes arranged in the chamber so that, when the electrodes are energized, gaseous propellant is ionized to maintain a current flow path through the propellant between the electrodes thereby transferring energy into the propellant;

one power supply for energizing the electrodes of each of the thrusters simultaneously, and

switch means for supplying gaseous propellant to only one thruster thereby at a time for maintaining a current flow path through the propellant of the only one thruster thereby enabling thrust to be generated.

5,339,624

RAMJET PROPELLANTS

Staffan Calsson, and Hermann Schmid, both of Karlskoga, Sweden, assignors to Nobelkrut AB, Sweden

Filed Nov. 25, 1991, Ser. No. 796,806

Claims priority, application Sweden, Nov. 23, 1990, 9003723-5

Int. Cl.[5] C06B *21/00, 115/10*

U.S. Cl. 60—207 **6 Claims**

1. A method for fueling a ramjet comprising:

(a) providing at least one high energy explosive component selected from the group consisting of hexogen, octogen, hexanitrostilbene, pentaerythritoltetranitrate, trinitroaminotrinitrobenzene, 3-nitro-1,2,4-triazol-5-one, trinitrotoluene, triaminoguanidine nitrate, nitroguanidine, and mixtures thereof;

(b) providing cohesive granules containing a binder and at least two alloying components which are capable of forming an intermetallic alloy by an exothermic reaction, said granules having a size in the range of about 100 to about 200 μm, and said alloying components being selected to form an intermetallic alloy selected from the group consisting of:

zirconium-titanium, zirconium-tin, zirconium-nickel, barium-bismuth, barium-tin, barium-antimony, magnesium-tin, carbon plus at least one metal selected from beryllium, calcium, strontium, barium, aluminum, titanium, zirconium, chromium and manganese, silicon plus at least one element selected from calcium, carbon, titanium, zirconium, chromium, molybdenum and nickel, and aluminum plus at least one metal selected from calcium, strontium, beryllium, copper, titanium, zirconium, chromium, manganese, iron, cobalt, nickel, palladium and platinum, said at least two alloying components being incorporated in said explosive compound as fine particles in contact with each other;

(c) forming a combustible fuel mixture by mixing said explosive component with said granules, said explosive component and said granules being in amounts effective to produce a fuel suitable for ramjet combustion;

(d) loading the resulting fuel into a ramjet.

5,339,625

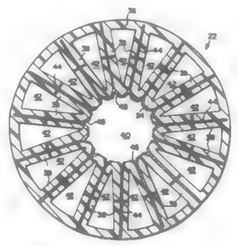
HYBRID ROCKET MOTOR SOLID FUEL GRAIN

Bevin C. McKinney, Oxnard, and Roy J. Kniffen, Jr., Ventura, both of Calif., assignors to American Rocket Company, Takoma Park, Md.

Filed Dec. 4, 1992, Ser. No. 986,087

Int. Cl.[5] F02K *9/00*

U.S. Cl. 60—219 **20 Claims**



1. A solid fuel grain component for a hybrid rocket comprising:

a) a central hub defining a center port, and an outer ring interconnected by a plurality of substantially radially extending spokes defining a plurality of wedge-shaped liquid fuel port passages, each spoke having an internal reinforcing web and an associated foam elements attached at a radially inner edge thereof, said web extending axially along at least a part of the axial length of the grain.

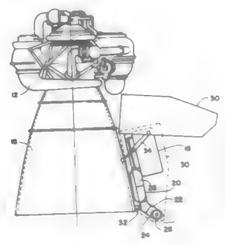
VOL 1165 ISS 4 AUG 23 1994 UMI

5,339,626

INFLATABLE ENGINE PROTECTION SYSTEM FOR RECOVERABLE ROCKET BOOSTER

Jaime R. Brusse, Silver Springs, Md., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Nov. 9, 1993, Ser. No. 149,396
Int. Cl.[5] B64G *1/62*
U.S. Cl. 60—271 30 Claims



1. In a liquid rocket booster for a space vehicle that has a turbopump driven rocket engine that has an annular exhaust nozzle and a parachute system which permits a controlled descent of the liquid rocket booster as it nears the earth for recovery in a salt water body after separation at a predetermined time from the space vehicle, which salt water body can cause impact damage and corrosion damage to the rocket engine, the improvement of an inflatable engine protection system which comprises:

inflatable water impermeable bladder means that is detachably stowed in a deflated state on the outer surface of the nozzle adjacent to the outlet end of the nozzle;

actuable means to deploy the deflated bladder means from its stowed position to an operative position within the nozzle prior to the booster landing in the salt water body;

said actuable means including a rotatable arm which is journalled at one end to the outer surface of the nozzle closely adjacent to the nozzle outlet end and carries said deflated bladder means at the other end;

said actuable means mounted for rotation in a plane that includes the nozzle centerline; and

means to inflate the bladder means so that it forms an inflatable water impermeable plug within the nozzle.

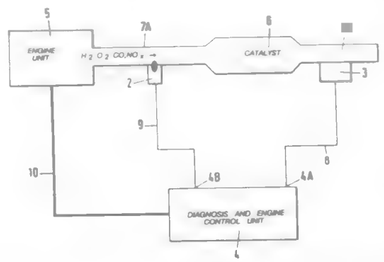
5,339,627

METHOD AND APPARATUS FOR REGULATING AND TESTING

Gunar Baier, Mannheim, Fed. Rep. of Germany, assignor to ABB Patent GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 938,893
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1991, 4128997
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 9 Claims

1. A method for regulating an Otto engine and for checking a catalyst connected downstream of the engine, which comprises measuring at least a quantity of one component of an exhaust gas leaving an Otto engine before the exhaust gas enters a catalyst connected downstream of the engine, and



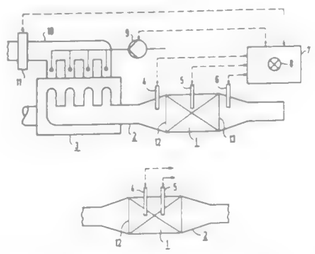
measuring a quantity of at least two components of the exhaust gas after the exhaust gas leaves the catalyst.

5,339,628

METHOD FOR MONITORING THE CATALYTIC ACTIVITY OF A CATALYTIC CONVERTER IN THE EXHAUST GAS SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Wolfgang Maus; Helmut Swars, and Rolf Brück, all of Bergisch Gladbach, Fed. Rep. of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbH, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,656
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1990, 4027207
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—277 16 Claims



1. A method for monitoring catalytic activity of a catalytic converter through which exhaust gas can flow in an exhaust system of an internal combustion engine, which comprises:

measuring a temperature at least at two temperature measuring sensors of which at least one is disposed in the catalytic converter and which sensors are spaced apart in flow direction;

periodically repeatedly determining a temperature measuring variable from signals issued by the sensors during operation of the engine with an engine monitoring system;

averaging the temperature measuring variable over a sufficiently long period of engine operation to form a mean temperature value which is substantially unaffected by short-term load conditions;

comparing the mean temperature value with a predetermined limit value; and

indicating if a mean temperature value does not correspond to the limit value and ascertaining a catalytic activity of the catalytic converter.

9. A method for monitoring catalytic activity of a catalytic converter through which exhaust gas can flow in an exhaust system of an internal combustion engine, which comprises:

measuring a temperature at least at two temperature measuring sensors of which at least one is disposed in close proximity of the catalytic converter for measuring the temperature of an exhaust gas flowing through the catalytic converter, and which at least two sensors are spaced apart in a flow direction of the exhaust gas;

periodically repeatedly determining a temperature measuring variable from signals issued by the sensors during operation of the engine with an engine monitoring system;

averaging the temperature measuring variable over a sufficiently long period of engine operation to form a mean temperature value which is substantially unaffected by short-term load conditions;

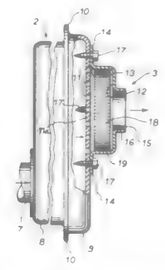
comparing the mean temperature value with a predetermined limit value; and indicating if a mean temperature value does not correspond to the limit value and ascertaining a catalytic activity of the catalytic converter.

5,339,629

EXTERNAL CATALYTIC CONVERTER FOR SMALL INTERNAL COMBUSTION ENGINES

James R. Winberg, Brookfield, and Keith O. Daby, Sussex, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Mar. 5, 1993, Ser. No. 26,858
Int. Cl.[5] F01N *3/10*
U.S. Cl. 60—299 53 Claims



1. A muffler assembly for an exhaust system of an internal combustion engine, comprising:

a hollow muffler body having an exhaust gas inlet and an exhaust gas outlet;

a catalytic converter including catalyzer means disposed exteriorly of said muffler body for oxidizing and reducing exhaust gas components subsequent to said components being discharged from said exhaust gas outlet; and

mounting means for mounting said catalytic converter on said muffler body at said exhaust gas outlet.

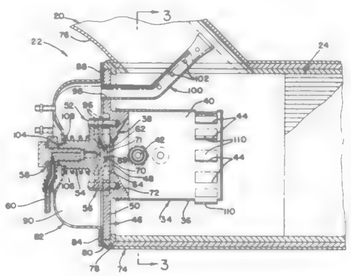
5,339,630

EXHAUST BURNER CATALYST PREHEATER

William H. Pettit, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1992, Ser. No. 936,463
Int. Cl.[5] F01N *3/02*
U.S. Cl. 60—303 3 Claims

1. A burner for heating an exhaust gas stream comprising a combustor head having a fuel/air charge preparation apparatus and a combustion chamber separated by a partition and operably connected through an opening in said partition, said charge preparation apparatus having means for the introduction of fuel and air and a dual vortex fuel/air mixing apparatus comprising a first vortex adjacent to and in communication with said fuel means having a series of vanes extending from the outer perimeter of said vortex to establish a series of orifices defining a centrally located vortex chamber, said series of vanes operable to direct pressurized air, from said air source through said series of orifices and into said vortex chamber to induce atomization of fuel introduced into said chamber by said fuel means, and a second vortex chamber, communicating with said first chamber through an opening extending therebetween and through which atomized fuel and air pass, said second vortex chamber having a series of vanes extending from the outer perimeter of said vortex to establish a series of orifices defining a centrally located vortex chamber, said series of vanes operable to direct pressurized air, from said air source through said series of orifices and into said vortex chamber to impart additional atomizing action to said fuel and air entering from said first vortex chamber through said opening, said second vortex chamber opening into said combustion chamber through said opening in said partition wherein said atomized fuel and air enter said combustion chamber, and ignition means in said combustion chamber operable to ignite said fuel and air entering said chamber through said opening in said partition, said combustion chamber having an outlet in communication with said exhaust stream for directing said burning fuel and air to mix therewith, said burner further comprising a burner



housing having an exhaust gas inlet and outlet, and an opening located intermediate thereof, said opening having a mounting flange extending about the perimeter thereof, a corresponding mounting flange extending about said partition and engageable with said burner housing mounting flange to support said combustor head within said housing, and a burner air supply housing configured to sealingly cover said fuel/air charge preparation apparatus for supply of air to said first and second vortex, and to said exhaust gas stream, said air supply housing having a sealing flange extending thereabout and configured to engage said burner housing mounting flange and said partition mounting flange to fix said combustor head and said burner housing relative to one another, said burner further comprising a dilution air manifold extending into said exhaust gas stream and having a series of openings for release of dilution air into said stream, said dilution air manifold having an inlet end in communication with a through-hole in said partition mounting flange to facilitate the flow of air from said air supply housing to said manifold.

5,339,631

AXLE DRIVING SYSTEM

Ryota Ohashi, Kobe, Japan, assignor to Kanzaki Kokyukoki Mfg. Co. Ltd., Amagasaki, Japan

Continuation of Ser. No. 747,706, Aug. 20, 1991, abandoned.
This application Feb. 24, 1993, Ser. No. 22,389
Claims priority, application Japan, Aug. 20, 1990, 2-87257[U]; May 2, 1991, 3-30833[U]
Int. Cl.[5] F16D *39/00*
U.S. Cl. 60—487 43 Claims

1. An axle driving apparatus comprising:

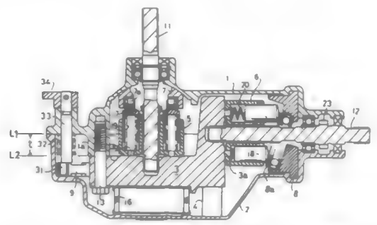
an axle casing including an upper casing joined to a lower casing forming a first junction surface which lies in a first plane;

axle disposed within said axle casing;

a center section disposed within said axle casing, said center section including a substantially horizontal portion and a

VOL 1165 ISS 4 AG 23 1994 UMI

substantially vertical portion, a pump mounting surface formed on an upper portion of said substantially horizontal portion and lying in a second plane parallel to said first plane and offset therefrom by a distance t, said substantially horizontal portion of said center section forming a second junction surface with said axle casing;



a hydraulic pump disposed within said axle casing on said pump mounting surface; and

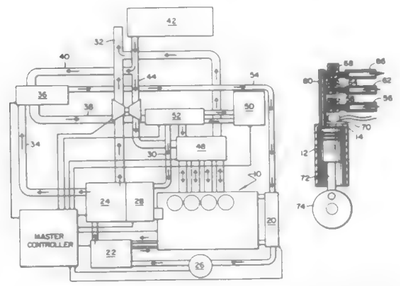
a hydraulic motor disposed within said axle casing on a motor mounting surface formed on said substantially vertical portion, said motor being drivingly connected to said axle.

5,339,632

METHOD AND APPARATUS FOR INCREASING THE EFFICIENCY OF INTERNAL COMBUSTION ENGINES

James McCrabb, 121 W. 3rd St., West Liberty, Iowa 52776, and Jerald R. Gregg, R.R. 2, Box 51, Holcombe, Wis. 54745

Filed Dec. 17, 1992, Ser. No. 991,958
Int. Cl.[5] F01K *23/10*
U.S. Cl. 60—618 19 Claims



1. An energy saving system for improving the efficiency and lowering the exhaust emissions of an internal combustion engine having a plurality of cycles, including an exhaust cycle, during which fuel introduction means and an air intake introduce fuel and air into a combustion chamber for combustion in the chamber after which the exhaust gases are discharged from the chamber during the exhaust cycle, the engine also having an exhaust system for receiving and discharging the exhaust gases from the combustion chamber, a lubricating system utilizing a lubricating oil, and a cooling system for removing heat from the engine produced by combustion in the combustion chamber, said energy saving system comprising:

a heat exchanger combined with the engine exhaust system for receiving the exhaust gases from the engine exhaust system;

a closed-loop circulating system for circulating a working liquid under pressure through the heat exchanger;

means for passing the working liquid in the circulating system under pressure through the heat exchanger so as to transfer heat from the exhaust gases into the working liquid and convert the working liquid into vapor;

an air compressor for receiving air from the air intake and producing high pressure air;

the circulating system including means to introduce the vapor produced in the heat exchanger into the air compressor so as to power the air compressor; and

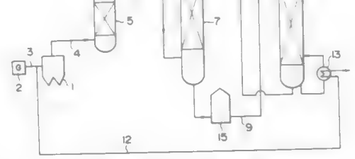
air control means for controllably introducing the high pressure air into the combustion chamber of the engine during the entire time of at least one of the cycles of the engine other than the exhaust cycle and for maintaining a predetermined minimum pressure in said chamber during the entire time of said one cycle by continuing the introduction of said high pressure air during the entire time of said cycle so as to increase the power produced by the engine.

5,339,633

RECOVERY OF CARBON DIOXIDE FROM COMBUSTION EXHAUST GAS

Masumi Fujii, Nara; Yoshitsugu Hotta, Kawachinagano; Taiichiro Suda, Nara; Kenji Kobayashi, Osaka; Kunihiko Yoshida, Nagaokakyo; Shigeru Shimojo, Sakai; Mutsunori Karasaki; Masaki Iijima, both of Tokyo; Toru Seto, and Shigeaki Mitsuoka, both of Hiroshima, all of Japan, assignors to The Kansai Electric Power Co., Ltd., Osaka and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Oct. 7, 1992, Ser. No. 957,185
Claims priority, application Japan, Oct. 9, 1991, 3-262296; Oct. 9, 1991, 3-262297; Oct. 14, 1991, 3-264336
Int. Cl.[5] F01K *13/00, 17/00*
U.S. Cl. 60—648 2 Claims



1. An electric generating power plant comprising:

a steam turbine-driven generator for generating electric power;

boiler means for producing steam operatively connected to said turbine-driven generator for supplying steam thereto for driving said turbine-driven generator;

absorber means having a daily processing capacity and containing carbon dioxide absorbing solution and operatively connected to said boiler means for passing combustion exhaust gas from said boiler means through said absorber means so that carbon dioxide in said exhaust gas is absorbed in said absorbing solution;

regenerator means having a daily processing capacity operatively connected to said absorber means for receiving absorbing solution having carbon dioxide absorbed therein from said absorber means and returning regenerated absorbing solution to said absorber means, said regenerator means regenerating said absorbing solution to remove said absorbed carbon dioxide therefrom for return to said absorber means;

means for supplying steam extracted from one of said boiler means and said turbine of said turbine-driven generator to said regenerator means for providing heat for operating said regenerator means;

a first storage unit operatively connected between said absorber means and said regenerator means for storing said absorbing solution containing carbon dioxide absorbed therein from said absorbing means during periods of high power demand on said power plant and supplying said stored absorbing solution to said regenerator means during periods of low power demand on said power plant, said first storage unit having a capacity for storing at least one-third of said daily processing capacity of said absorber means; and

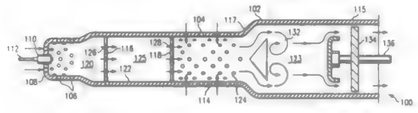
a second storage unit operatively connected between said regenerator means and said absorber means for storing said regenerated absorbing solution from said regenerator means during said periods of low power demand on said power plant and supplying said stored regenerated absorbing solution to said absorber means during said periods of high power demand, said second storage unit having a capacity for storing at least one-third of said daily processing capacity of said regenerator means.

5,339,634

FUEL SUPPLY SYSTEM FOR ENGINES AND COMBUSTION PROCESSES THEREFOR

Nigel F. Gale; David W. Naegeli; Thomas W. Ryan, III, and Steven R. King, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation of Ser. No. 846,025, Mar. 5, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,711
Int. Cl.[5] F02C *1/00*
U.S. Cl. 60—723 13 Claims



4. A fuel supply system for a gas turbine engine having first and second combustion chambers, that includes:

a first combustion chamber supplied with a rich hydrocarbon fuel generating exhaust gas containing carbon monoxide, oxides of nitrogen, unburned hydrocarbons, water vapor and hydrogen and having an exhaust opening;

a second combustion chamber supplied with a hydrocarbon lean and hydrogen enriched fuel and having an inlet opening;

conduit means connecting said exhaust opening with said inlet opening; and

water-gas shift catalyst means located in said conduit between said combustion chambers wherein said exhaust gas is converted to a mixture containing hydrogen and carbon dioxide and for supplying said mixture to said second combustion chamber wherein said mixture is mixed with additional air and burned for powering the engine and producing an exhaust gas containing reduced amounts of oxides of nitrogen and reduced amounts of unburned hydrocarbons.

5,339,635

GAS TURBINE COMBUSTOR OF THE COMPLETELY PREMIXED COMBUSTION TYPE

Yasuo Iwai, Katsuta; Shigeru Azuhata; Kenichi Sohma, both of Hitachi; Kiyoshi Narato, Taga; Hironobu Kobayashi, Katsuta; Tooru Inada, Hitachi; Tadayoshi Murakami, Hitachi; Norio Arashi, Hitachi; Yoji Ishibashi, Hitachi, and Michio Kuroda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 675,546, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 362,382, May 4, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 918,799
Claims priority, application Japan, Sep. 4, 1987, 62-220206
Int. Cl.[5] F23R *3/34*
U.S. Cl. 60—733 4 Claims

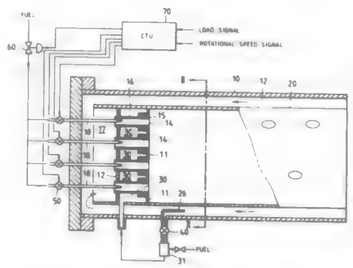
1. A gas turbine combustor of the completely premixed combustion type comprising a combustion chamber;

a plurality of spaced main nozzles provided in an end wall of said combustion chamber and defining an upstream side of said combustion chamber;

an annular auxiliary nozzle formed around each of said main nozzles, the main nozzles being grouped into at least first, second and third groups;

first means for supplying to the main nozzles of each of the groups of main nozzles a pre-mixed fuel-air gas mixture having a mixing ratio of the fuel and the air wherein the proportion of air is larger than a stoichiometric air requirement for combustion of the fuel in the mixture;

second means for supplying to said auxiliary nozzles a pre-mixed fuel-air gas mixture having a mixing ratio of the fuel and the air wherein the proportion of air is smaller than that supplied by said first means for supplying; and



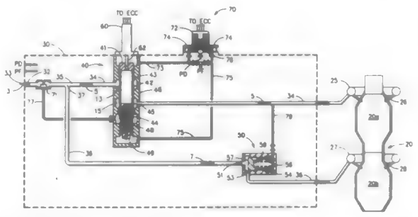
control means for controlling said first means for supplying for progressively increasing the number of said groups of main nozzles to which a pre-mixed fuel-air gas mixture is supplied with an increase of load on the gas turbine combustor, wherein said control means controls said first means for supplying such that initially a first air stoichiometric ratio of the pre-mixed fuel-air gas mixture is supplied to the first group of said main nozzles and when the ratio is approximately 1.25 said control means starts operation of the second group of the main nozzles by causing said first means for supplying to supply a pre-mixed fuel-air gas mixture to the main nozzles of the second group.

5,339,636

FUEL SPLITTER VALVE ASSEMBLY FOR GAS TURBINE

Brian G. Donnelly, Suffield; Gerald P. Dyer, Enfield, and Charles E. Wiesner, Glastonbury, all of Conn., assignors to United Technologies Corporation, Windsor Locks, Conn.

Filed Dec. 4, 1992, Ser. No. 985,769
Int. Cl.[5] F02C *1/00;* F02G *3/00*
U.S. Cl. 60—734 2 Claims



1. A fuel splitter valve assembly for a combustor of a gas turbine engine, said combustor having a first combustion chamber and at least a second combustion chamber, comprising:

VOL 1165 ISS 4 AG 23 1994 UMI

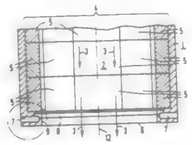
a first fuel passage having an inlet for receiving a flow of fuel, a first outlet and a second outlet;
a second fuel passage having an inlet opening to the first outlet of said first fuel passage for receiving a first portion of said fuel flow and an outlet opening in fluid flow communication with the first combustion chamber;
a third fuel passage having an inlet opening to the second outlet of said first fuel passage for receiving a second portion of said fuel flow and an outlet in fluid communication with the second combustion chamber,
a first valve disposed in said second fuel passage and having an inlet, an outlet, a selectively positionable first spool means disposed therebetween for controllably metering fuel flow through said first valve, the fuel flow passing through said first valve experiencing a pressure drop, and a self-positioning second spool means for controlling the area of the first valve outlet so as to regulate said pressure drop, the inlet of said first valve opening to an upstream portion of said second fuel passage and the outlet of said first valve opening to a downstream portion of said second fuel passage; and
a second valve having an inlet, an outlet, and selectively positionable piston means disposed therein, said piston means operative whenever said pressure drop across said first valve reaches a preselected desired set point pressure drop to direct an additional fuel flow for delivery to the second combustion chamber, said second valve disposed in said third fuel passage, the inlet of said second valve opening to an upstream portion of said third fuel passage and the outlet of said second valve opening to a downstream portion of said third fuel passage.

5,339,637

TUBE SEGMENT, IN PARTICULAR FLAME TUBE, WITH A COOLED SUPPORT FRAME FOR A HEATPROOF LINING

Bernhard Schetter, Mülheim a.d. Ruhr, Fed. Rep. of Germany, assignor to Siemens Atkiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 731,522, Jul. 17, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 4,664
Int. Cl.[5] F02C *1/00*
U.S. Cl. 60—752 **15 Claims**



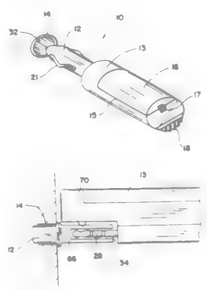
1. A flame tube for a gas turbine plant, comprising a tube segment having an axis and an inner region for guiding a hot gas in one flow direction substantially parallel to said axis, a heat shield facing toward said inner region and including a plurality of bricks being disposed side by side, and at least one metal support frame supporting said heat shield, said support frame being disposed adjacent said heat shield as seen along the flow direction, and said support frame having a plurality of conduits for supplying a cooling fluid and a lip disposed directly adjacent said inner region and surrounding said inner region, said lip being means for slowing a flow of the cooling fluid from said conduits and for causing a substantially uniform flow of the cooling fluid past said lip to said inner region.

5,339,638

THERMOELECTRIC COOLER CONTAINER WITH CIGARETTE LIGHTER SUPPORT JACK

Suzette C. Kessel, Hwy. 69 South, P.O. Box 634, Alto, Tex. 75925

Filed Jul. 16, 1993, Ser. No. 93,067
Int. Cl.[5] F25B *21/02*
U.S. Cl. 62—3.61 **10 Claims**



1. An air conditioned compartment for use in an automobile, comprising:
a container having insulated walls and an insulated cover to define an enclosed cavity therein accessible through said cover for storing temperature sensitive articles;
a support connected to said container;
a cigarette lighter jack extending from said support, said support and said jack defining means to support said container from a cigarette lighter socket in an automobile dashboard;
a heat sink disposed adjacent said container;
a plurality of thermoelectric cooling elements disposed on said heat sink and interfacing with said cavity to transfer heat between said cavity and said heat sink; and
a control mechanism for operating said thermoelectric cooling element to transfer heat between said cavity and said heat sink.

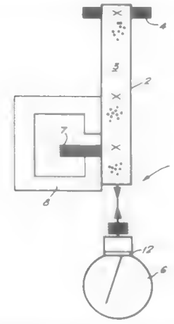
5,339,639

FREON FREE REFRIGERATOR

Michael E. Garrett, Woking, England, assignor to The BOC Group Plc., Windlesham, England

Filed Jul. 2, 1992, Ser. No. 908,661
Claims priority, application United Kingdom, Jul. 13, 1991, 9115140.7
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 **11 Claims**

1. A refrigerator comprising a chamber containing a bed of an adsorbent material and a compressible gas capable of being adsorbed under pressure by said adsorbent material and desorbed from said adsorbent material when said pressure is reduced, means for alternately compressing and decompressing the gas within the chamber thus creating a cold zone within the chamber and means for thermally connecting the cold zone to a compartment to be refrigerated, said thermally connecting means comprising a plurality of conductive plates located adjacent the chamber and in alignment with the cold zone and extending within the interior of the compartment to be refrigerated.

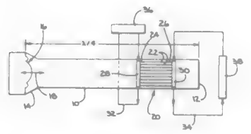


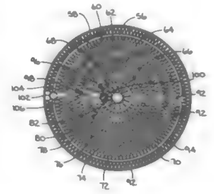
5,339,640

HEAT EXCHANGER FOR A THERMOACOUSTIC HEAT PUMP

Michael J. Reinke, Franklin, Wis., assignor to Modine Manufacturing Co., Racine, Wis.

Filed Dec. 23, 1992, Ser. No. 995,808
Int. Cl.[5] F25B *1/00*
U.S. Cl. 62—6 **11 Claims**





1. In a thermoacoustic device, the combination of:
gas filled elongated, resonator tube;
an acoustic driver in said tube for establishing a standing wave therein;
an elongated plate within said tube, said plate having opposite ends spaced from said driver;
first and second heat exchangers in proximity to said plate, one at each end thereof;
at least one of said heat exchangers comprising a tube bent into a plurality of spaced runs;
said tube having an inlet and an outlet spaced therefrom; and
fins bonded to said tube in the spaces between said runs;
said plate being in a plurality of spaced runs, the spacing between said plate runs defining a first-free flow area for said gas; and
the spacing between the tube runs with said fins in place defining a second free-flow area substantially equal to said first free-flow area.

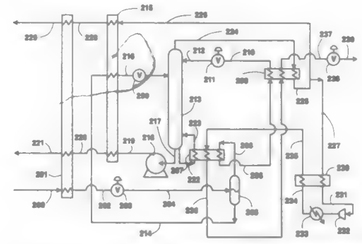
3. The thermoacoustic device of claim 1 wherein there are a plurality of said tubes defining a plurality of generally concentric runs, said inlet and said outlet being common to said plurality of tubes.

5,339,641

CRYOGENIC LIQUID NITROGEN PRODUCTION SYSTEM

Mary J. Mathis, Buffalo, and James J. Maloney, Tonawanda, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jul. 7, 1993, Ser. No. 88,499
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 **10 Claims**



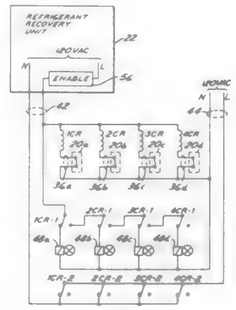
1. A method for producing liquid nitrogen comprising:
(A) passing a feed comprising nitrogen and methane into a column and separating the feed in the column into a nitrogen-enriched vapor and a methane-enriched liquid;
(B) withdrawing nitrogen-enriched vapor from the column and increasing the pressure of nitrogen-enriched vapor to produce pressurized nitrogen-enriched vapor;
(C) condensing the pressurized nitrogen-enriched vapor by indirect heat exchange with methane-enriched liquid to produce liquid nitrogen;
(D) subcooling the liquid nitrogen by indirect heat exchange with cold vapor; and
(E) recovering the resulting liquid nitrogen as product.

5,339,642

REFRIGERANT RECOVERY TO MULTIPLE REFRIGERANT STORAGE CONTAINERS

Gregg Laukhuf, Bryan, Ohio, assignor to SPX Corporation, Muskegon, Mich.

Filed Mar. 11, 1993, Ser. No. 29,531
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—77 **12 Claims**

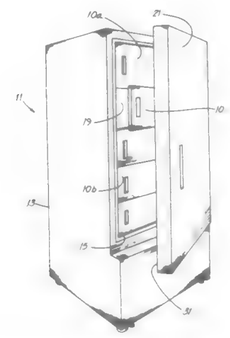


12. A method of recovering refrigerant from refrigeration equipment comprising the steps of:
(a) providing a plurality of refrigerant storage containers,

VOL 1165 ISS 4 AG 23 1994 UMI

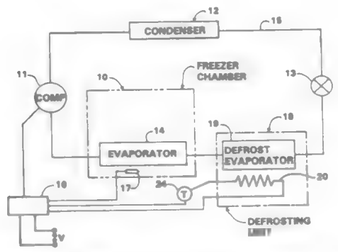
(b) generating a plurality of electronic signals indicative of amount of refrigerant in associated ones of said containers,
(c) recovering refrigerant from refrigeration equipment,
(d) responsive to said electronic signals, feeding recovered refrigerant to each of said containers automatically in sequence until each container is full, and
(e) terminating operation of said step (c) when said electronic signals indicate that all of the containers are full of refrigerant.

5,339,643
METHOD FOR DEFROSTING A LABORATORY FREEZER DOOR
Jeffrey A. Pikaart, Hamilton, Mich., assignor to Venturedyne Limited, Milwaukee, Wis.
Filed Jul. 12, 1993, Ser. No. 90,650
Int. Cl.[5] F25D *21/00*
U.S. Cl. 62—80 **12 Claims**



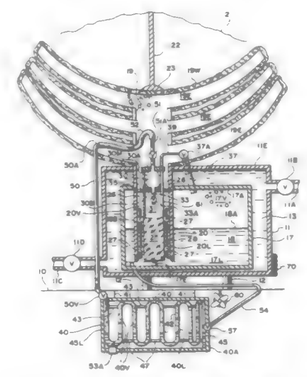
1. A method for defrosting an inner door of a laboratory freezer having (a) a plurality of inner doors, each closing a separate compartment, and (b) an outer door covering the inner doors, the method including the steps of:
opening the outer door;
removing at least one inner door;
closing the outer door; and,
defrosting the removed inner door,
whereby an inner door is defrosted without disturbing the contents of the freezer.

5,339,644
DEFROST SYSTEM FOR REFRIGERATION APPARATUS
Kanwal N. Singh, 2701 Indianola Ave., Columbus, Ohio 43202
Filed Apr. 29, 1993, Ser. No. 55,136
Int. Cl.[5] F25D *21/08*
U.S. Cl. 62—234 **13 Claims**



1. Refrigeration apparatus comprising
A) a refrigeration chamber for containing material that is to be maintained at a first predetermined temperature which is lower than the freezing point of the material;
B) a refrigeration system for maintaining the material in said chamber at the predetermined temperature, said system including
1) a refrigerant compressor;
2) a refrigerant condensor;
3) a first refrigerant evaporator disposed in heat transferring relationship to the interior of said refrigeration chamber; and
4) a refrigerant expansion control device; all of said compressor, condensor, first refrigerant evaporator and expansion control devices being interconnected in series flow relationship by a refrigerant conduit whereby a fluid refrigerant may be caused to flow therethrough for effecting operation of said refrigeration systems,
C) defrosting means operatively interconnected with said refrigeration system for effecting defrosting of said first refrigerant evaporator, said defrosting means including
1) defrosting evaporator interconnected in said refrigerant conduit in preceding refrigerant flow relationship to said first refrigerant evaporator and following said expansion control device, said defrosting evaporator disposed externally to said refrigeration chamber at a location where it is not in heat transferring relationship with air enclosed within said refrigeration chamber, and
2) heat generating means disposed in heat transferring relationship to said defrosting evaporator and selectively operable at predetermined intervals of time for transferring a sufficient quantity of heat to said defrosting evaporator to elevate the temperature of the refrigerant flowing therethrough and into said first evaporator to a magnitude that is above the freezing point of water to effect removal of ice accumulated on the exterior surfaces of said first evaporator.

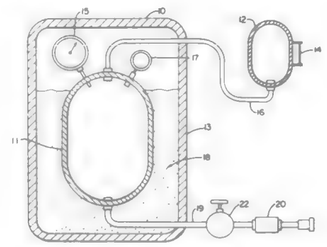
5,339,645
SOLAR HOT WATER COOLING SYSTEM
Israel Siegel, 2980 Point East Dr., Apt. D-612, N. Miami Beach, Fla. 33160
Filed Jun. 29, 1992, Ser. No. 905,669
Int. Cl.[5] F25B *1/02*
U.S. Cl. 62—235.1 **11 Claims**



1. A hot water cooling system, consisting of a chamber adapted to act as an evaporator chamber,
a low boiling point liquid in said evaporator chamber,
another chamber adapted to act as a condenser chamber,
means to obtain a temperature differential between the evaporator and condenser chambers, wherein the temperature

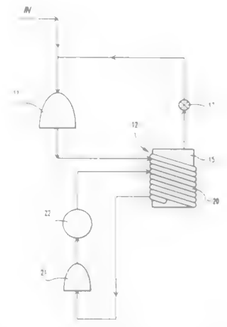
in said evaporator chamber exceeds the temperature in said condenser chamber,
said temperature differential between the chamber resulting in a vapor pressure differential between the chambers, wherein the vapor pressure in said evaporator chamber exceeds the vapor pressure in said condenser chamber,
a communication between said evaporator and said condenser chamber,
means to open and close said communication between the chambers to cyclically change the vapor pressure differential between said evaporator and said condenser chambers,
a moving member adapted to respond to said vapor pressure differential changes between the chambers,
pump means,
a linkage between said punp means and said moving member,
said linkage adapted to activate said pump during the movements of said moving member,
a heat exchange chamber containing a low boiling point liquid, wherein said liquid evaporates and absorbs heat from its environment,
said low boiling point liquid in said heat exchange chamber being of the same kind as said low boiling point liquid in said evaporator chamber,
said pump means adapted to transfer vapor from from said heat exchange chamber to said condenser chamber to combine the vapors of said condenser and heat exchange chambers,
means to re-condense said vapors into liquid through said temperature differential between said condenser and said evaporator chambers,
and means to return said re-condensed liquid to said heat exchange chamber.

5,339,646
APPARATUS FOR RECOVERY OF REFRIGERANT
Jerome M. Verlinden, 6980 W. Quarto Pl., Littleton, Colo. 80123, and David R. Marini, 2253 Braun Ct., Golden, Colo. 80401
Filed Oct. 19, 1992, Ser. No. 967,205
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 **16 Claims**



1. A portable refrigerant recovery apparatus for recovering refrigerant from a refrigerant source without the use of a motive power source, such as, a pump or compressor comprising:
holding vessel means for receiving and retaining refrigerant in a sealed environment;
refrigerant cooling means including a consumable heat sink for cooling said vessel means to a predetermined temperature and pressure level corresponding to the saturation temperature of the refrigerant to be recovered;
conduit means for releasably connecting said vessel means to said refrigerant source whereby to withdraw the refrigerant from said source in response to the reduction of temperature in said vessel means; and
expansion volume control means communicating with said holding vessel means to prevent overfilling of said holding vessel means.

5,339,647
PORTABLE APPARATUS FOR RECOVERY OF CHLOROFLUOROCARBON (CFC) REFRIGERANTS
Luther D. Albertson, III, New Albany; Walter R. Key, and Mark A. Stansbury, both of Indianapolis, all of Ind., assignors to Redi Controls, Inc., Greenwood, Ind.
Filed Sep. 10, 1993, Ser. No. 119,730
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 **14 Claims**



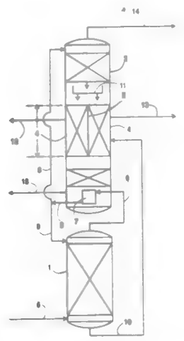
1. A portable refrigerant recovery apparatus for recovering high-pressure refrigerants in vapor form, comprising:
(a) a first refrigeration circuit, including:
(i) a removable tank for receiving and storing a refrigerant to be recovered, said removable tank functional as the evaporator of said first refrigeration circuit when the tank is sufficiently warm to vaporize liquid refrigerant contained therein;
(ii) a first condenser for condensing the refrigerant to be recovered, wherein said first condenser empties into said removable tank; and
(iii) a first compressor to compress vapors of the refrigerant to be recovered, wherein said first compressor has an input and attachment means for coupling to a source of refrigerant to be recovered;
(b) a second refrigeration circuit, including:
(i) a second evaporator, thermally integral with and fluidly isolated from, both the first condenser and the removable tank;
(ii) a second compressor;
(iii) a second condenser;
(c) one or more wheels to assist in moving the liquid refrigerant recovery apparatus; and
(d) one or more handles to assist in moving the liquid refrigerant recovery apparatus.

5,339,648
DISTILLATION SYSTEM WITH PARTITIONED COLUMN
Michael J. Lockett; Dante P. Bonaquist, and Richard A. Victor, all of Grand Island, N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.
Filed Aug. 5, 1993, Ser. No. 102,326
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 **16 Claims**

1. A distillation column system comprising a first column and a second column, said second column containing a longitudinally oriented partition extending through at least a part of the length of said second column to define a partitioned section, means for providing feed into the first column, means for

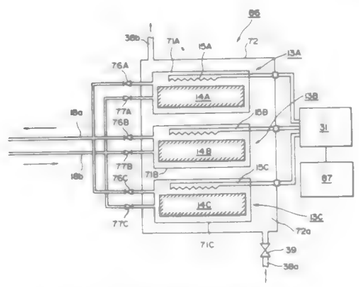
VOL 1165 ISS 4 AG 23 1994 UMI

passing reflux fluid taken from the first column into the second column, means for withdrawing waste from the partitioned



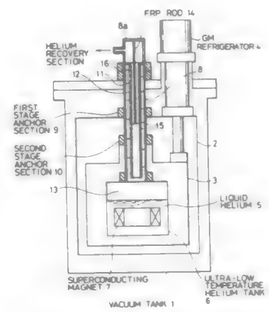
section of the second column, and means for withdrawing product from the partitioned section of the second column.

5,339,649
CRYOGENIC REFRIGERATOR
Masao Kawai, Aichi; Yoshihiro Kyotani, Chiba; Hideki Aruga, Aichi; Toshihiro Shiimado, Chiba; Yoshihisa Ito, and Koji Hori, both of Tokyo, all of Japan, assignors to Kabushikikaisha Equos Research, Japan
Filed Dec. 7, 1992, Ser. No. 986,586
Claims priority, application Japan, Dec. 9, 1991, 3-324145; Dec. 9, 1991, 3-324146
Int. Cl.[5] F25B *17/00*
U.S. Cl. 62—46.1 20 Claims



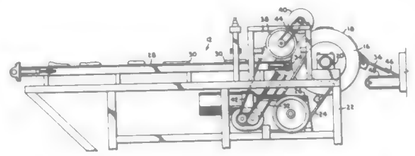
1. A cryogenic refrigerator comprising:
(a) an adsorbent body;
(b) heating means for heating said adsorbent body;
(c) an inner vessel containing said adsorbent body and means for heating said adsorbent body and forming a first coolant chamber;
(d) an outer vessel containing said inner vessel with a second coolant chamber formed between said inner vessel and said outer vessel;
(e) a one-way valve for discharging a first coolant from said first coolant chamber;
(f) a one-way valve for feeding the first coolant back to said first coolant chamber;
(g) means for continuously circulating a second coolant through said second coolant chamber; and
(h) means for intermittently actuating said heating means.

5,339,650
CRYOSTAT
Ryuichi Hakamada; Masahiko Takahashi; Toru Kuriyama, all of Kanagawa, and Hideki Nakagome, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 30, 1992, Ser. No. 998,915
Claims priority, application Japan, Jan. 7, 1992, 4-000858
Int. Cl.[5] F25B *19/00*
U.S. Cl. 62—51.1 28 Claims



1. A cryostat housing an ultra-low temperature medium, comprising:
a container for storing the ultra-low temperature medium;
a pipe connecting first and second sections of the container;
at least one tubular member interposedly arranged inside the pipe;
a heat anchor section for cooling the pipe; and
a plate-shaped member positioned inside the tubular member so that a gas layer of the ultra-low temperature medium inside the tubular member is divided along a longitudinal length of the tubular member.

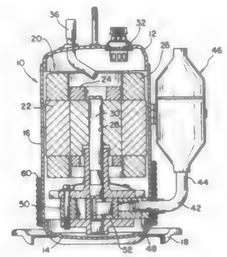
5,339,651
METHOD AND APPARATUS FOR SURFACE FREEZING FOLLOWED BY COMPLETE FREEZING OF MEAT PRODUCTS
Timothy A. Breunig, Hutchinson, and Gregory A. Roepke, S. Hutchinson, both of Kans., assignors to Mega Manufacturing, Inc., Hutchinson, Kans.
Filed Jan. 19, 1993, Ser. No. 5,596
Int. Cl.[5] F25C *1/00*
U.S. Cl. 62—65 9 Claims



1. A method for freezing a food product having a first exterior surface and a second exterior surface located opposite said first exterior surface, said method comprising the steps of:
freezing a first exterior surface of a food product by placing the first exterior surface in contact with a low temperature surface of a rotating wheel or drum type freezer;
removing the food product from the low temperature surface following the freezing of the first exterior surface and prior to the freezing of the second exterior surface;
supporting the food product on a conveyor belt with the frozen first exterior surface of the food product in contact with an upper surface of the conveyor belt; and

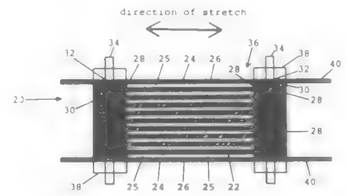
further freezing said food product while the food product is supported on the conveyor belt with the frozen first exterior surface in contact with the upper surface of the conveyor belt.

5,339,652
SOUND AND VIBRATION ABSORBING DAMPER
Nelik I. Dreiman, Tipton, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Sep. 17, 1993, Ser. No. 123,606
Int. Cl.[5] F25D *19/00*
U.S. Cl. 62—296 24 Claims



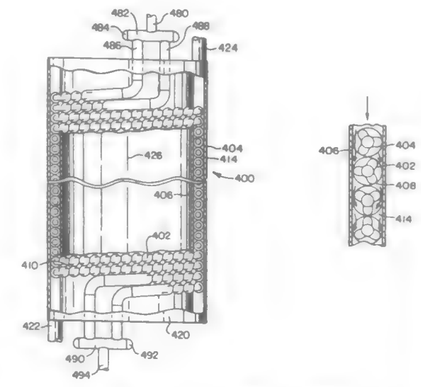
17. A compressor comprising:
a housing;
a motor-compressor unit disposed within said housing for compressing fluid; and
a first plurality of wire windings wrapped about said housing, said windings forming a layer of wire over a portion of said housing, each said wire winding in contact with an adjacent winding;
a second plurality of wire windings wrapped about said first plurality of wire windings whereby each said wire winding during compressor operation slides against an adjacent winding thereby dissipating vibration energy from the compressor.

5,339,653
ELASTOMER BED
Anthony J. DeGregoria, 2 Chippewa Ct., Madison, Wis. 53711
Filed Oct. 29, 1992, Ser. No. 968,341
Int. Cl.[5] F25B *23/00*; F28D *19/00*
U.S. Cl. 62—467 12 Claims



1. A heat exchanger bed, comprising:
layers of elastomer sheets and spacers between said sheets, defining substantially rectangular fluid flow channels therebetween, and
locking means for locking said sheets and spacers together.

5,339,654
HEAT TRANSFER APPARATUS
F. Bert Cook, Columbus; Stephen E. Petty, Dublin; Howard C. Meacham, Jr., Upper Arlington; Richard N. Christensen, Columbus, and Kevin R. McGahey, Hillard, all of Ohio, assignors to Columbia Gas System Service Corporation, Wilmington, Del.
Continuation-in-part of Ser. No. 478,269, Feb. 9, 1990, Pat. No. 5,067,330. This application Oct. 9, 1991, Ser. No. 768,772
Int. Cl.[5] F25B *15/00*
U.S. Cl. 62—476 20 Claims



8. A tube-in-cylinder heat exchanger comprising a first tube wherein said tube is divided into at least two first divided twisted fluted tubes having raised longitudinal helical crests on the exterior surface of said tubes with corresponding interior helical troughs on the interior surface of said tubes and longitudinal helical troughs adjacent to said exterior crests on said exterior surface of said tubes with corresponding interior raised helical crests on said interior surface of said tubes with each of said divided tubes formed as a set of a plurality of coils about a coil center-line in a generally annular cylindrical composite form with the coils contacting and juxtaposed one to the next and contained within an annular cylinder with the axes of said coils being coextensive with said annular cylinder center-line and through which said annular cylinder flows a fluid through voids formed by said exterior surface of said tubes and the interior annular cylinder walls, said voids existing 1) between contacting juxtaposed coils as a result of said troughs adjacent to said raises crests, said raised crests on one coil contacting the raised crests on an adjacent juxtaposed coil, 2) between said coils and said interior cylinder walls as a result of said troughs adjacent to said raised crests, said crests on said coils contacting said interior annular cylinder walls, and 3) between said coils and said interior cylinder walls as a result of the circular shape of said coil tubes, said coils in contact with each other and said interior cylinder walls, said voids allowing said fluid to flow in cross-flow 1) around and between said juxtaposed coils in said troughs and voids adjacent to said crests; 2) over said coils and between said coils and said interior cylinder walls in said troughs and voids adjacent to said cylinder-wall contacting crests, 3) between said coils and said interior cylinder walls in said voids formed as a result of the circular shape of said coil tubes in contact with each other and said interior cylinder walls, and in an overall direction generally perpendicular to said coils and parallel to said coil center-line.

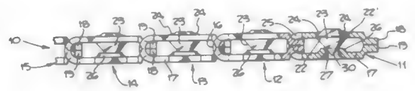
VOL 1165 ISS 4 AG 23 1994 UMI

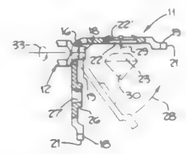
5,339,655

GEM SETTING AND METHOD FOR ASSEMBLING THE SAME

Stefano Grando, 1131 Alta Loma Rd., #501, Los Angeles, Calif. 90069

Filed Mar. 26, 1993, Ser. No. 37,906
Int. Cl.[5] A44C 5/00; F16G 13/00
U.S. Cl. 63—9 22 Claims





1. A gem stone setting comprised of a plurality of interconnected links, each of said links comprising:

a main planar body portion terminating at each end in a male connecting end; and

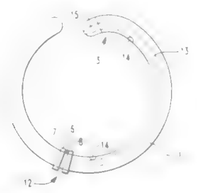
said body portion having an opening therethrough adjacent one male connecting end for receiving a gem stone therein, a raised portion having a centrally disposed hole adjacent the other of said male connecting ends, and a female opening through said main body portion between said first mentioned opening and said hole, said male connecting ends each having an overall length in a direction extending generally normal to the central longitudinal axis of said main body portion greater than the overall width of said female opening in a direction extending generally normal to the central longitudinal axis of said female opening with said male connecting ends of one link being brought together and disposed into the female opening of another link and interlocked therein thus interlocking one link to another with a gem stone adapted to be disposed within each of said interlocked links and retained in its respective link by abutting against both said first mentioned opening and said raised portion.

5,339,656

EARRING

Fritz Hieber, Gunzenbachstr. 33b, 7570 Baden-Baden, Fed. Rep. of Germany

Filed Jan. 6, 1993, Ser. No. 1,507
Int. Cl.[5] A44C 7/00; A61N 1/00
U.S. Cl. 63—14.1 9 Claims



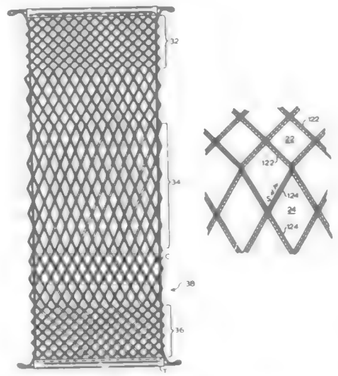
1. In an earring for the stimulation of acupuncture points and lines present in the outer ear consisting of an open-ended annular body having a front end adapted to be received in the outer ear cavity of a wearer while the other end abuts the rear wall of such outer ear, said earring body having areas in contact with the outer ear consisting of materials which provide for a potential and current flow thereacross, the improvement wherein said annular body consists of plastic provided at said areas of contact with the ear with sleeves mounted onto said open-ended annular body and consisting of materials which have different electrochemical potentials, said sleeves being electrically connected to one another via an electrically conductive coating of said annular body.

5,339,657

NET HAVING DIFFERENT SIZE OPENINGS AND METHOD OF MAKING

Brian L. McMurray, Aberdeen, N.C., assignor to McMurray Fabrics, Inc., Aberdeen, N.C.

Filed Sep. 1, 1992, Ser. No. 937,945
Int. Cl.[5] D04B 21/00
U.S. Cl. 66—195 6 Claims



1. A warp knit net, comprising:

(a) a plurality of warp knit cords extending in side-by-side relation between opposite ends of the net, each cord formed of a selected number of ends of yarn which number remains uniform throughout the length of the cord;

(b) warp knit joins formed at intervals along the length of each cord to successively join each cord to a first cord on one side of said each cord followed by being joined to a second cord on the opposite side of said each cord whereby to form between each pair of joins one leg of a net opening of a desired size with the length of each said leg being directly proportional to the number of warp knit stitches therein;

(c) the intervals at which said joins are formed in a first portion of the net being of one selected number of stitches and in a second portion of the net being of a different selected number of stitches whereby to vary the length of said legs and thereby vary the size of said openings in said second portion in contrast to the size of openings in said first portion; and

(d) the same number of openings being formed in each row widthwise in all portions of the net.

5,339,658

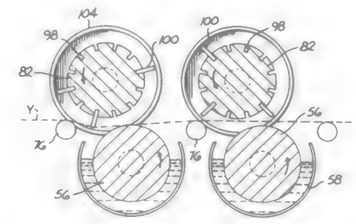
YARN DYEING APPARATUS

Jack G. Haselwander, Chattanooga, Tenn., assignor to Manufacturing Designs And Solutions, Inc., Chattanooga, Tenn.

Filed Jul. 14, 1993, Ser. No. 91,644
Int. Cl.[5] D06B 1/14
U.S. Cl. 68—203 9 Claims

1. Apparatus for space dyeing yarns comprising yarn support means over which a plurality of yarn strands may be fed in a horizontal path in a feed direction from a first end to a second end of said apparatus, a plurality of spaced apart dye

applicator rolls each having a peripheral surface, means for rotatably mounting each roll with at least a portion of the peripheral surface in a dye pan containing a liquid dye and with the peripheral surface disposed relative to said support means for contacting yarn fed over said support means, yarn deflecting means for deflecting selected portions of said yarn strands from said horizontal path for forcibly engaging said selected portions with the peripheral surface of selected dye applicator rolls to transfer dye to said selected portions, said yarn deflector means comprising a pattern roll corresponding to each applicator roll, means for rotatably mounting each pattern roll for rotation about an axis of rotation, drive means for rotating said dye applicator rolls and said pattern rolls at selected speeds, each pattern roll having a peripheral surface including a plurality of circumferentially spaced apart slots extending substantially parallel to said axis, a slat secured within selected slots in said pattern rolls for contacting and deflecting said selected portions of said yarn strands.

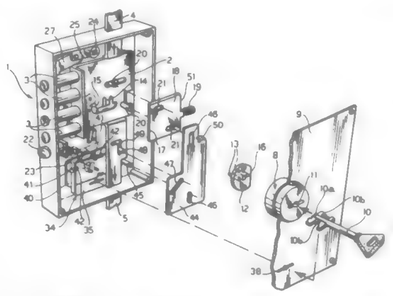


5,339,659

SECURITY LOCK WITH TWO LOCKING MECHANISMS, OF THE PUMP TYPE AND OF THE DOUBLE-BIT TYPE, RESPECTIVELY

Alberto Guzzinati, Sant'Ambrogio, Italy, assignor to Mottura Serrature Di Sicurezza SpA, Turin, Italy

Filed Oct. 22, 1992, Ser. No. 964,722
Claims priority, application Italy, Oct. 25, 1991, T091U000266
Int. Cl.[5] E05B 63/14
U.S. Cl. 70—120 10 Claims



5. A security lock comprising:

a case,

a bolt movable within the case between an unlocking position and a locking position,

a first locking mechanism which operates the bolt, the first locking mechanism having a locked position,

a second locking mechanism disposed inside the case which retains the first locking mechanism in the locked position, and

a key which operates both the first locking mechanism and the second locking mechanism,

wherein the first locking mechanism includes a rotatable D-shaped disc having a flat edge and a first sliding plate which engages the flat edge of the disc,

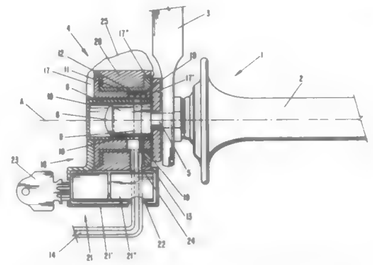
the second locking mechanism preventing the first sliding plate from moving away from the disc, so that the first locking mechanism is retained in the locked position.

5,339,660

QUICK RELEASE HUB

Holger Fell, Klarastr. 18, D-7800 Freiburg, Fed. Rep. of Germany

PCT No. PCT/DE92/00399, § 371 Date Jan. 28, 1993, § 102(e) Date Jan. 28, 1993, PCT Pub. No. WO92/21551, PCT Pub. Date Dec. 10, 1992
PCT Filed May 11, 1992, Ser. No. 974,577
Claims priority, application Fed. Rep. of Germany, May 28, 1991, 9106549; Dec. 21, 1991, 4142507
Int. Cl.[5] E05B 71/00
U.S. Cl. 70—233 9 Claims



1. A bicycle quick release mechanism for fastening a removable part to a frame of a bicycle, comprising:

a clamping element;

an eccentric bolt with an opening rotatably supported within said clamping element;

a lever engaging said opening of said eccentric bolt, said lever, upon turning said eccentric bolt within said clamping element, fastening and releasing the removable part from the frame;

a security device against theft comprising a look for unlocking and locking said opening of said eccentric bolt;

further comprising a sleeve fixedly connected to and coaxially enclosing said clamping element, said sleeve supporting said lock;

wherein said sleeve has a mantle surface with at least one opening into which opening one end of said eccentric bolt extends thereby fixing said sleeve to said clamping element; and

wherein said sleeve is essentially U-shaped and forms a circumferential grove, and further comprising a ring positioned within said circumferential groove and freely rotatable therein, said ring having a perforation, with said lock attached to said ring.

5,339,661

MAGNETIC CARD LOCK WITH KEY CARD

Armin Eisermann, Velbert, Fed. Rep. of Germany, assignor to Schulte-Schlagbaum Aktiengesellschaft, Velbert, Fed. Rep. of Germany

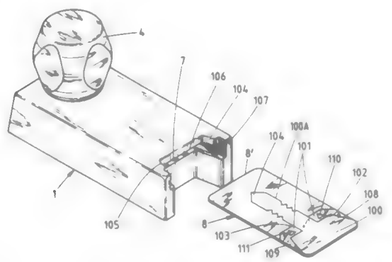
Filed Jul. 16, 1992, Ser. No. 910,026
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1990, 4001153
Int. Cl.[5] E05B 47/00
U.S. Cl. 70—276 5 Claims

1. A magnetic card lock with key card, the lock having a closing device and including a key insertion shaft for receiving the card, the insertion shaft broadening at an upper end thereof

VOL 1165 ISS 4 AG 23 1994 UMI

into a grip opening and having card insertion rails, the card having a broad side and a key code in the form of magnetized regions disposed on the broad side, the lock having a first stop for positioning the card for a reading of the key code upon insertion of the card into the shaft, the lock having a second stop to which the card is displacable from the first stop along an actuation distance for release of the closing device, termination of the release of the closing device occurring upon a retraction of the card along the shaft;

wherein the broad side of the key card has, at its end facing away from the insertion direction, a visibly set-off first partial surface and a visibly set-off second partial surface being arranged in front of the first partial surface in the insertion direction;



the second partial surface has a baseline which, upon insertion of the card to the position of the first stop, is aligned with a front edge of the grip opening;

the first partial surface has a lower edge which, upon insertion of the card to the position of the second stop, is aligned with the front edge of the grip opening;

the first partial surface substantially fills the grip opening upon insertion of the card to the second stop position; and

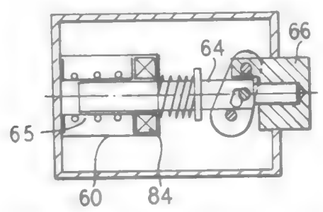
the second partial surface, upon insertion of the card to the first stop position, forms an insertion marking strip between the lower edge of the first partial surface and the front edge of the grip opening.

5,339,662

DOOR LOCKING SYSTEM

Ilan Goldman, Herzliya, Israel, assignor to Ilco Unican, Inc., Montreal, Canada

Filed Sep. 28, 1992, Ser. No. 951,785
Claims priority, application Israel, Oct. 11, 1991, 099716
Int. Cl.[5] E05B *49/00*
U.S. Cl. 70—278 **24 Claims**



1. A locking system for doors consisting of a door locking bolt unit installed on the inside and a control unit accessible from the outside of the door, the bolt unit comprising:

a casing enclosing a bolt displaceable between a projected, locking position wherein the bolt engages a receiving means and a withdrawn, unlocking position;

a solenoid device having an armature, the armature being displaceable between electromagnetically induced attracted and repelled positions; and

linkage means coupled between the armature and the bolt to drive the bolt between the unlocking position and the locking position, respectively in dependent response to actuation of the armature wherein the linkage means provides a geometric multiplying effect to the locking position such that the bolt moves a greater distance than the armature, and locks the bolt in the locking position; and

the control unit comprising:

an electric power source;

means for entering a pass-code;

means responsive to entering of the pass-code to actuate the solenoid device by a current pulse into the unlocking position of the bolt; and

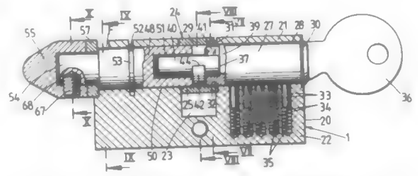
means for actuating the solenoid device by a reverse current pulse into the looking position of the bolt.

5,339,663

LOCK CYLINDER

Ralf Döring, Heiligenhaus, Fed. Rep. of Germany, assignor to Carl Fuhr GmbH & Co., Heiligenhaus, Fed. Rep. of Germany

Filed Jul. 29, 1992, Ser. No. 921,902
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4126792; May 12, 1992, 4215560
Int. Cl.[5] E05B *9/10, 17/04*
U.S. Cl. 70—379 R **5 Claims**



1. A lock cylinder which is actuatable from one side by means of a knob and from the other side by means of a key, the cylinder comprising

a knob, and a locking member hub disposed in a central region of the lock cylinder and connected, fixed for rotation, with the knob;

a cylinder core coaxial with the locking member hub and having tumblers adapted to be set by the key, and a coupling member encircled by the locking member hub;

wherein a free travel space is provided between the coupling member and the locking member hub allowing the coupling member to carry the locking member hub in an entrained position upon rotation of the coupling member only in one direction of rotation, the free space allowing the coupling member to turn back freely from the entrained position into a key-removal position of the cylinder core;

the coupling member is configured as a cylindrical pin, and extends between the cylinder core and the locking member hub to produce a connection, fixed in rotation, between the cylinder core and the locking member hub;

the coupling member comprises a semicircular annular collar having end surfaces; and

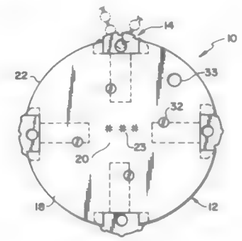
the lock cylinder further comprises a drive vane extending inwardly from the locking member hub and having stop surfaces for abutting the end surfaces of the semicircular annular collar, the drive vane extending into the free space of the locking member hub.

5,339,664

SYSTEM FOR IDENTIFYING, CARRYING AND STORING KEYS

H. Clay Mellor, R.D. 1, Box 356, Rochester, Vt. 05767

Filed Dec. 11, 1991, Ser. No. 804,931
Int. Cl.[5] A44B *15/00;* **A47G** *29/10*
U.S. Cl. 70—456 R **23 Claims**



1. A system for identifying, carrying and storing keys comprising:

a molded portable holder including a body having a front surface, back surface, central portion and outer peripheral edge, said body including a plurality of receptacles extending from said outer peripheral edge toward said central portion, each of said receptacles including a bore and means defining a rigid locking shoulder within said bore, said locking shoulder being defined so that a longitudinal axis thereof is disposed substantially perpendicular to a longitudinal axis of said bore;

a plurality of molded inserts, each of said inserts being configured to be insertable into and removable from a said receptacle, each of said inserts having a distal portion and a proximal portion, said distal portion including a flat portion disposed parallel to a longitudinal axis thereof and a part cylindrical portion, said flat portion permitting said insert to pass said locking shoulder when said insert is inserted into said receptacle, a groove being defined in said part cylindrical portion, said groove being aligned with said locking shoulder when said insert has been inserted into said receptacle to a predetermined extent, so that said insert can be rotated about said longitudinal axis thereof after said insert has been inserted to said predetermined extent thereby to engage said locking shoulder and said groove and lock said insert in said receptacle; and

means for coupling at least one key to each said insert.

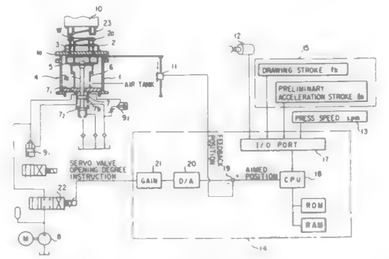
5,339,665

DIE-CUSHION APPARATUS OF PRESS MACHINE

Eiji Yoshikawa, Ishikawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

PCT No. PCT/JP91/01501, § 371 Date Apr. 23, 1993, § 102(e) Date Apr. 23, 1993, PCT Pub. No. WO92/07711, PCT Pub. Date May 14, 1992
PCT Filed Nov. 1, 1991, Ser. No. 39,318
Claims priority, application Japan, Nov. 2, 1990, 2-295448; Nov. 2, 1990, 2-295449
Int. Cl.[5] B21D *24/14*
U.S. Cl. 72—21 **2 Claims**

1. A die-cushion apparatus for a press machine including a pneumatic cylinder attaining a cushioning function and a hydraulic cylinder enabling and locking cushioning capability, the die-cushion apparatus comprising a pressurized oil makeup circuit for making up a pressurized oil to said hydraulic cylinder at a preliminary acceleration period of a die-cushion following a lowering motion of a slide, a servo valve disposed to said pressurized oil makeup circuit, and a control unit body for calculating a crank angle for preliminary acceleration starting and a crank angle for preliminary acceleration finishing in response to a preliminary acceleration stroke value, a drawing stroke value and a press operation speed value inputted through an operation panel, for comparing an aimed value of the stroke position of the die-cushion inputted into a comparator with respect to the respective crank angles outputted from a crank angle detector with data relating a die-cushion stroke



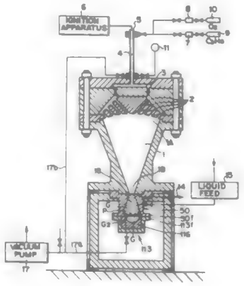
outputted from a die-cushion stroke position detector and for controlling said servo valve in a feed back mode so as to eliminate deviation when the deviation is caused between the aimed value and the data.

5,339,666

APPARATUS FOR GENERATING A DETONATION PRESSURE

Minoru Suzuki; Katsumi Ikusawa; Kenji Araki; Naotake Yoshihara, and Yoshio Murayama, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Division of Ser. No. 886,717, May 21, 1992, Pat. No. 5,256,430. This application May 18, 1993, Ser. No. 63,160
Claims priority, application Japan, May 29, 1991, 3-152278; Jun. 17, 1991, 3-170326; Jun. 17, 1991, 3-170327; Jun. 17, 1991, 3-170328; Aug. 30, 1991, 3-244081; Aug. 30, 1991, 3-244082; Aug. 30, 1991, 3-244083; Oct. 25, 1991, 3-305651
Int. Cl.[5] B21D *26/08;* **B21J** *5/04*
U.S. Cl. 72—56 **37 Claims**



1. An apparatus for generating an underelastomer shock pressure comprises:

a combustion chamber whose cross-sectional area decreases from one end of the chamber toward another end of the chamber:

an ignition chamber, to which fuel is fed and in which a spark producing means is positioned;

a plurality of guidance paths extending from said ignition chamber and communicating with one end of said combustion chamber, each of the guidance paths having substantially the same length; and

a pressure medium chamber which is connected to an opening of said another end of said combustion chamber and which contains an elastic rubber-like body.

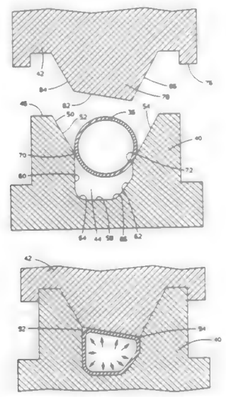
VOL 1165 ISS 4 AUG 23 1994 UMI

5,339,667

METHOD FOR PINCH FREE TUBE FORMING

Sanjay M. Shah, Rochester Hills, and Michael H. Lovell, Leonard, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 19, 1993, Ser. No. 48,016
Int. Cl.[5] B21D 26/02
U.S. Cl. 72—58 4 Claims



1. A method of forming an elongated quadrilateral box shape tubular frame member from a round tube, having a diameter greater than the width or the desired frame member comprising the steps of:

providing upper and lower dies having open positions to permit the placement of the round tube therebetween and closed positions defining therebetween the approximate quadrilateral cross sectional shape of the desired frame member,

said lower die having a die cavity with an overall depth greater than the desired height of the frame member, and including a lowermost forming cavity portion of width equal to the width of the desired frame member and depth equal to the depth of the desired frame member, and an uppermost entry cavity portion having walls spaced at a width greater than the width of the desired frame member and converging angularly to the width of the lowermost forming cavity portion so that the walls defining the uppermost cavity portion are engageable by the round tube during the lowering of the upper die onto the lower die and supportably guide the collapse of the round tube as the round tube is forced into the lowermost cavity,

and applying internal pressure to the tube with the dies in the closed position to cause the expansion of the tube to the cross sectional shape defined between the dies.

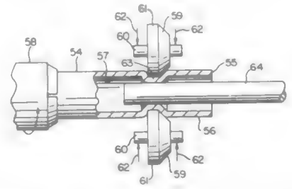
5,339,668

HOSE COUPLING, FERRULE THEREFOR AND METHODS OF MAKING THE SAME

Timothy J. Manning, Eldora, and Jerome P. Hoffman, New Providence, both of Iowa, assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 934,048, Aug. 21, 1992, Pat. No. 5,285,561.
This application Oct. 27, 1993, Ser. No. 144,086
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[5] B21H 1/06
U.S. Cl. 72—70 4 Claims

1. In a method of making a ferrule for a hose coupling that comprises said ferrule having opposed ends and an insert interconnected to one of said ends of said ferrule so that an end of a hose can be inserted into the other of said ends of said ferrule and over said insert to be subsequently clamped between said ferrule and said insert, the improvement comprising the steps of forming said ferrule from a length of tubular stock that has opposed ends by rotating said stock, inwardly swedging said stock at a predetermined location thereof that is spaced inwardly from said one end of said stock to define said one end



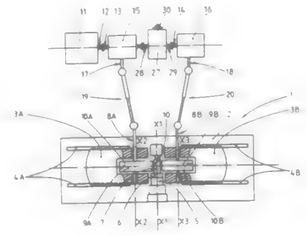
of said ferrule while said stock is rotating, then forming the internal peripheral surface of said ferrule to have a plurality of radially inwardly directed annular projections, and then cutting off a portion of said stock at a desired location thereon that is spaced inwardly from said one end of said stock to form said ferrule so as to permit said stock to have another ferrule formed therefrom in the same manner.

5,339,669

APPARATUS AND PROCESS PERMITTING THE COLD FORMING OF GROOVES ON THE WALL OF A REVOLVING PART

Michel Cretin, Etaule-Mellecey; Jean-Paul Lespour, Gigny, and Charles Marcon, Chagny, both of France, assignors to Escofier Technologie S.A., Chalon-Sur-Saone, France

PCT No. PCT/FR92/00452, § 371 Date Jan. 21, 1993, § 102(e) Date Jan. 21, 1993, PCT Pub. No. WO92/20474, PCT Pub. Date Nov. 26, 1992
PCT Filed May 21, 1992, Ser. No. 956,508
Claims priority, application France, May 23, 1991, 9106619
Int. Cl.[5] B21H 5/02
U.S. Cl. 72—108 17 Claims



1. An apparatus for cold forming grooves or teeth on a revolving wall of a part, comprising:

two forming milling wheels having identical teeth or grooves and a constant profile, said wheels being located on opposite sides of the part;

support shafts having keys and mounting said wheels such that axes of said wheels are symmetrical with respect to the revolving axis of the part;

carriages supporting each of said support shafts, each of said carriages being mounted for movement in a direction transverse to the axis of the part;

means for displacing said carriages in said transverse direction such that said wheels can be moved toward the part to penetrate the part to a predetermined depth;

synchronization means associated with said carriages for keeping said wheels equidistant from the part;

wheel drive means for driving said wheels at the same rotational position and speed, comprising:

a) at least one motor,

b) an adjustment differential receiving an output of said motor and having control means for adjusting an angular difference between the motor output and an output of the differential,

c) first and second articulated shafts respectively connecting each of said support shafts to one of the output of the motor and the output of the differential, wherein an angular difference between said articulated shafts can be adjusted by said differential,

d) means for braking each of said support shafts, and

e) means including meshing ring gears on each of said wheels and support shafts for precisely angularly fixing each of said wheels on the respective support shaft; and

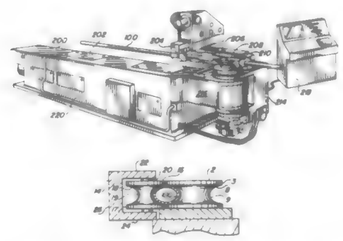
part drive means for driving said part at an instantaneous rotational speed VP such that $V_p = Vm \cdot N1/N2$, wherein Vm is the instantaneous rotational speed of each of said wheels, N1 is the number of teeth or grooves of each wheel and N2 is the number of grooves or teeth to be formed on the part.

5,339,670

APPARATUS AND METHOD FOR BENDING TUBING

Anthony Granelli, P.O. Box 1415, Lake Jackson, Tex. 77566

Filed May 24, 1993, Ser. No. 65,410
Int. Cl.[5] B21D 7/04
U.S. Cl. 72—152 11 Claims



1. In a tube bending machine including a support structure, a pressure die, a bend die, and a co-operating clamp die, an improvement comprising:

first forming means engaging a tube section prior to engagement of said tube section with said bend die and said clamp die, said first forming means forming said tube section into a first non-circular cross-sectional configuration prior to engagement of said tube section with said clamp die and said bend die;

said first forming means comprising a first roller die and a second roller die;

said first roller die and said second roller die having confronting faces, confronting roller die grooves provided in each of said roller die confronting faces for embracing opposed sides of the tube section;

said roller die grooves being formed in a determined configuration;

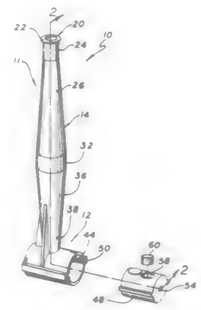
whereby pressure exerted by said first roller die and said second roller die imparts a first non-circular cross-sectional configuration to the tube section passing between said first roller die and said second roller die.

5,339,671

CALIBRATION CUVETTE

Jamil Ahmad, San Jose; Samuel D. Riccitelli, Carlsbad; Charles S. Bankert, Oceanside; Richard Hannah, Vista, and Christopher L. Davis, San Diego, all of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Continuation-in-part of Ser. No. 565,463, Aug. 10, 1990, Pat. No. 5,187,971. This application May 22, 1992, Ser. No. 888,549
Int. Cl.[5] G01D 18/00; G01N 21/03
U.S. Cl. 73—1 G 3 Claims



1. A calibration cuvette apparatus having a housing adapted to contain a calibration fluid and to receive a chemical sensor, said calibration cuvette apparatus comprising:

a generally tubular cuvette section having a longitudinal axis formed in said housing, said cuvette section having a hollow chamber with upper, middle and lower sections, said upper and lower portions having a relatively smaller inner diameter than said middle portion, said upper end portion having an opening for receiving said sensor;

a valve section formed in said housing integrally with said cuvette section for introducing gas into said cuvette chamber, said valve section having first and second longitudinal end portions, a gas communication port extending between said cuvette chamber and an inner valve chamber extending between said valve section end portions;

a valve plug slidable within said valve chamber between a first sealing position and a second gas communication position, said valve plug having first and second longitudinal ends and an outer circumference portion, and said valve plug having a gas communication channel with an inlet port at one of said valve plug ends and a gas outlet port at said outer circumference portion adapted to be aligned to be in communication with the cuvette gas communication port when said valve plug is in said gas communication position;

means for filtering said gas mixture, said means for filtering being disposed in said valve plug gas communication channel; and

means for sparging gas into said cuvette section, said means for sparging being disposed in said lower portion of said cuvette section adjacent to said gas communication port.

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MONITORING OF GAS DISSOLVED IN OIL

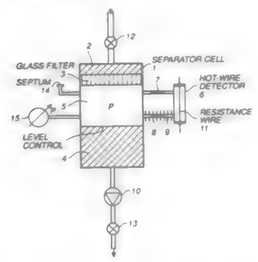
Erich Spicar, Ludvika, Sweden, assignor to Asea Brown Boveri AB, Västerås, Sweden

Filed Sep. 21, 1992, Ser. No. 947,449
Claims priority, application Sweden, Sep. 25, 1991, 9102770-6
Int. Cl.[5] G01N 7/00
U.S. Cl. 73—19.1 5 Claims

1. An apparatus for continuously monitoring the concentration of hydrogen and absolute quantity of gases dissolved in oil surrounding electrical components, said apparatus comprising

VOL 1165 ISS 4 AG 23 1994 UMI

a separator cell defining an upper portion and a lower portion,
an oil inlet conduit connected to said upper portion of said separator cell,
an oil outlet conduit connected to said lower portion of said separator cell,
a glass filter positioned within said separator cell to define an upper oil compartment between said glass filter and said oil inlet conduit and to define a lower oil compartment and a gas space between said glass filter and said oil outlet conduit, said gas space being above said lower oil compartment and containing a fraction of dissolved gases including hydrogen escaping from oil contained in said lower oil compartment



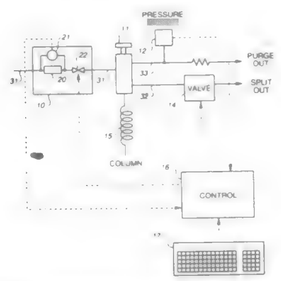
a gas sensor having upper and lower ends,
a first tube connected between said separator cell below said glass filter and said upper end of said gas sensor, and
a second tube connected between said separator cell above said lower oil compartment and said lower end of said gas sensor, said second tube including external cooling flanges and, due to a temperature differential with the first tube, causing gas to flow from said gas space through said first tube, through said gas sensor and through said second tube back to said gas space, said gas sensor determining the concentration of hydrogen and total pressure of gases flowing therethrough.

5,339,673

GAS CHROMATOGRAPH AND METHOD OF USING SAME

Kazuya Nakagawa; Satoru Miyoshi, and Toyoaki Fukushima, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 19, 1993, Ser. No. 34,676
Claims priority, application Japan, Apr. 6, 1992, 4-114159
Int. Cl.[5] G01N *30/10*
U.S. Cl. 73—23.36 9 Claims



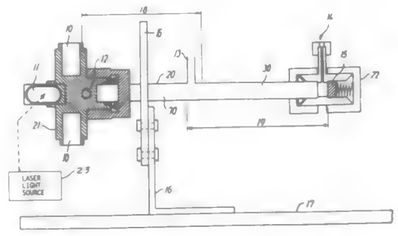
1. A gas chromatograph operable in a split mode, comprising:
a capillary column with an inlet;
a sample injection unit at said inlet of said column;
a carrier introducing line for introducing a carrier gas into said sample injection unit, said carrier introducing line containing a carrier flow rate controlling means for controlling the total flow rate U of said carrier gas flowing into said sample injection unit;
a split piping line with one end connected to said sample injection unit;
a split flow rate controlling means for controlling split flow rate U_s of a gas split out of said sample injection unit through said split piping line;
a pressure sensor for measuring pressure at said inlet of said column;
a column flow rate calculating means for calculating a column flow rate value representing column flow rate U_c of said gas inside said column corresponding at least to a specified pressure value P_0; and
a control means for adjusting said split flow rate U_s in said split piping line such that measured pressure value by said pressure sensor becomes equal to said specified pressure value P_0, and adjusting said total flow rate U in said carrier introducing line such that split ratio S, which is the ratio of said split flow rate U_s to said column flow rate U_c, becomes equal to a specified split ratio value S_0.

5,339,674

METHOD AND APPARATUS FOR THE TRANSMISION OF AN ACOUSTIC SIGNAL IN A PHOTOACOUSTIC CELL

Mads Hammerich, Hilleroed; Jes O. Henningsen, Stenloese, both of Denmark, and Ari Olafsson, Reykjavik, Iceland, assignors to FLS Airlog A/S, Denmark

PCT No. PCT/DK91/00061, § 371 Date Sep. 1, 1992, § 102(e) Date Sep. 1, 1992, PCT Pub. No. WO91/14176, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 4, 1991, Ser. No. 927,655
Claims priority, application Denmark, May 3, 1990, 562/90
Int. Cl.[5] G01N *21/00*
U.S. Cl. 73—24.02 8 Claims



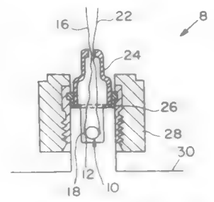
1. A method for transferring an acoustic signal to a microphone in a photoacoustic cell that is part of an apparatus for photoacoustic analysis of at least one gaseous substance and in which apparatus the microphone is protected against the harmful effects from the gaseous substance analyzed, comprising the steps of placing the microphone for receiving the acoustic signal from an excitation zone, which is located in an environment which is damaging to the microphone, outside of the damaging environment, sonically communicating the microphone with the excitation zone through a waveguide that is at least partly located within the excitation zone, supplying the gaseous substance to be analyzed to the excitation zone, in which zone an acoustic signal is generated by an acoustic frequency modulation of an optical signal directed into the gaseous substance in the excitation zone, preventing the gaseous substance from reaching the microphone by supplying a protecting gas to a portion of the waveguide proximate to the microphone, the waveguide being an acoustic resonator in which at least two antinodes of the acoustic signal are present in the waveguide, the resonator being excited in one antinode and the microphone being mounted in another antinode such that the waveguide transmits the generated acoustic signal from the gaseous substance through the protecting gas to the microphone without any significant weakening of the acoustic signal.

5,339,675

APPARATUS FOR MONITORING IMPURITIES IN A GAS STREAM

Anthony J. DiLeo, Westford, Mass.; James T. Snow, and Daniel A. Cote, both of Nashua, N.H., assignors to Millipore Corporation, Bedford, Mass.

Filed Oct. 8, 1992, Ser. No. 958,384
Int. Cl.[5] G01N *29/02*
U.S. Cl. 73—24.040 26 Claims



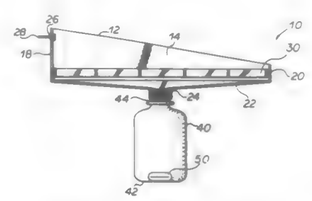
1. A sensing device for measuring a first composition selected from the group consisting of oxygen, water and mixtures thereof in a stream of purified gases which comprises:
a piezoelectric material having a surface with an effective mass of a coating applied to said surface of said piezoelectric material, said coating formed of a second composition selected from the group consisting of a pure metal, a metal hydride and mixtures thereof, said second composition being reactive with said first composition to form a product selected from the group consisting of an oxide, a hydroxide and mixtures thereof; said coating having a mass which permits said piezoelectric material to vibrate in response to electrical current,
means for applying an alternating electrical current to said piezoelectric material
and means for measuring frequency of vibration of said piezoelectric material.

5,339,676

WATER LEAK DETECTION, COLLECTION AND SUPPORT DEVICE

Del Johnson, 2532 Hambersham, Albany, Ga. 31705

Filed Jun. 2, 1993, Ser. No. 71,456
Int. Cl.[5] G01M *3/04*
U.S. Cl. 73—40 7 Claims



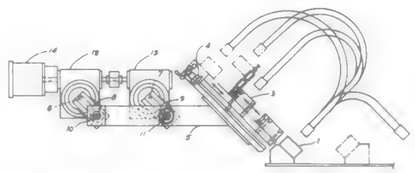
1. A water leak detection, collection and support device comprising
(a) a tray having a bottom for receiving water;
(b) a grid placed on top of said tray bottom for preventing water splash and for supporting items;
(c) a drain opening in said tray bottom;
(d) a collection means having a bottom and connected to said drain opening for collecting water; and
(e) an indicator means on said bottom of said collection means for indicating the presence of water in said collection means.

5,339,677

HYDRAULIC HOSE FLEX-IMPULSE TESTER

Thomas J. Haug, Manitowoc, Wis., assignor to HMF, Incorporated, Manitowoc, Wis.

Filed Sep. 9, 1993, Ser. No. 119,270
Int. Cl.[5] G01N *3/12, 3/32*
U.S. Cl. 73—49.5 10 Claims



1. A hydraulic hose tester comprising:
a first manifold with a plurality of outlets and at least one inlet;
a fluid pumping means for pumping fluid into the first manifold;
the fluid pumping means being connected to an inlet of the first manifold by a first connecting means for discharging fluid from the fluid pumping means into the first manifold;
a second manifold with at least one outlet and a plurality of inlets at predetermined angles from the plurality of outlets of the first manifold;
a third manifold with at least one outlet and a plurality of inlets;
the third manifold attached to a moving means for moving the third manifold in a predetermined path;
a plurality of hydraulic connecting means for connecting at least one outlet of the plurality of outlets of the first manifold to at least one inlet of the second manifold and at least one other outlet of the plurality of outlets of the first manifold to at least one inlet of the third manifold.

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TEST APPARATUS FOR SEAL MEMBERS IN A PRESSURIZED OXYGEN ENVIRONMENT

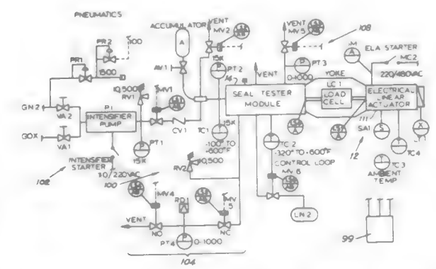
L. Haynes Haselmaier, Sr., Picayune, Miss., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 28, 1993, Ser. No. 10,117
Int. Cl.[5] G01M *3/02*
U.S. Cl. 73—49.8 20 Claims

1. A test apparatus for a seal member used in a selected sealing application in an oxygen-rich environment, comprising:
a hull, generally cylindrical in form, having a longitudinally extending interior portion formed therein;
fluid inlet means for providing a supply of oxygen-rich fluid at a selected elevated pressure to the interior portion of said hull;
actuator means for providing a source of reciprocal linear motion to said hull, including an actuator shaft extending into said interior portion of said hull;
a seal member testing portion, located in said interior portion of said hull and including
seal member carrying means for carrying a seal member on said actuator shaft, said seal member carrying means being adapted to provide said seal member with a selected retaining method, degree of encapsulation and sealing surface, designed to replicate the selected sealing application;

VOL 1165 ISS 4 AG 23 1994 UMI

first monitoring means for determining whether the sealing member forms an effective seal with said sealing surface; and



second monitoring means, for determining whether any harmful interaction occurs between the seal member and the oxygen-rich environment.

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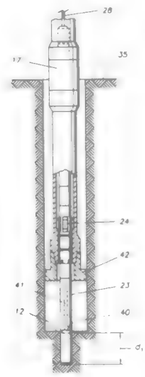
SELF-CONTAINED APPARATUS AND METHOD FOR DETERMINING THE STATIC AND DYNAMIC LOADING CHARACTERISTICS OF A SOIL BED

Wayne B. Ingram, Kingwood, and Byron W. Porter, Houston, both of Tex., assignors to Fugro-McClelland Leasing, Inc., Houston, Tex.

Continuation of Ser. No. 745,730, Aug. 16, 1991, Pat. No. 5,125,266. This application Mar. 5, 1992, Ser. No. 846,598

Int. Cl.[5] **G01N** *3/00;* **E21B** *49/02*

U.S. Cl. 73—84 **3 Claims**



1. A method for soil-sampling in a drilling string located in a well, comprising the steps of:

inserting into the drilling string a sampling device having a sample tube and a system for measuring one or more parameters in connection with the collection of a soil sample;

lowering the sampling device within the drilling string at an uncontrolled rate, thereby

penetrating soil located at a bottom of the well sufficiently to collect the soil sample with the sample tube;

simultaneously measuring, in conjunction with said penetrating step, real-time displacement of the soil sample within the sample tube and real-time force experienced by the sample tube;

removing the sampling device from the drilling string; and

retrieving the soil sample from the sampling device,

5,339,680

SYSTEM AND METHOD FOR SENSING TEMPERATURE

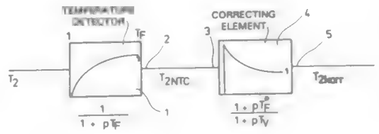
Bernhard Bronkal, Koengen; Wolfram Gerwing, Hessigheim; Hermann Grieshaber, Aichtal-Aich; Manfred Birk, Oberriexingen, and Gerhard Engel, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 3, 1992, Ser. No. 893,228

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4120388

Int. Cl.[5] **G01P** *5/12*

U.S. Cl. 73—118.2 **19 Claims**



1. A method of determining an amount of air flowing into an internal combustion engine, comprising the steps of:

detecting the temperature of the air flowing into the engine through the use of a temperature detector having a first transfer function, and generating a detected temperature value based thereon; and

applying a second transfer function to the detected temperature value for correcting the detected temperature value and for generating a corrected temperature value indicative of the amount of air flowing into the engine,

wherein the first transfer function includes a transfer function of a time-delay element and the second transfer function includes a substantially reciprocal function of the first transfer function.

5,339,681

METHOD FOR CALCULATING AIR FLOW RATE AT CYLINDER PORT AND THROTTLE VALVE OPENING ANGLE

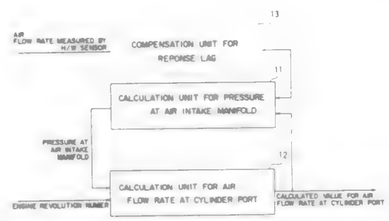
Teruji Sekozawa, Kawasaki; Shinsuke Takahashi, Yokohama, and Makoto Shioya, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 640,598, Jan. 10, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 98,235

Claims priority, application Japan, Jan. 11, 1990, 2-3918

Int. Cl.[5] **G01M** *15/00*

U.S. Cl. 73—118.2 **5 Claims**



1. A method for calculating an air flow rate at a cylinder port of an engine in an electronic engine control apparatus including means for detecting a revolution number of an engine at each of a plurality of measuring periods, air flow sensor means for directly measuring an air flow rate at a throttle valve

of the engine and means for calculating air flow rate at the cylinder port at each measuring period, said method comprising the steps of:

measuring the air flow rate at the throttle valve of the engine at each measuring period;

compensating measuring delay of the measured air flow rate;

calculating a pressure in an intake manifold of the engine on the basis of the compensated air flow rate at the throttle valve and the air flow rate at the cylinder port calculated by said calculating means before one of the measuring periods; and

calculating an air flow rate at the cylinder port at a present time on the basis of the previously calculated pressure in the intake manifold and the detected engine revolution number.

5,339,682

APPARATUS AND METHOD OF TESTING ANTI-LOCK BRAKE SYSTEM

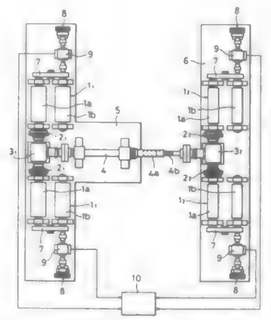
Shinichi Watanabe; Takao Shibayama, both of Sayama; Kimitake Uzuyama, Sayamashi; Kazuyuki Fukamachi, Sayama; Keiichiro Maekawa, Sayama, and Masaru Maruo, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,960

Claims priority, application Japan, Apr. 2, 1991, 3-069996; Apr. 2, 1991, 3-069997; May 16, 1991, 3-111946; Feb. 12, 1992, 3-025521

Int. Cl.[5] **G01L** *5/28*

U.S. Cl. 73—123 **8 Claims**



1. An apparatus for testing an anti-lock brake system on wheels of a motor car, said apparatus having rolls for supporting each of the wheels of the motorcar to be tested, means for detecting rotational changes of said rolls for each of said wheels after said motor car having an anti-lock brake system to be tested is mounted thereon with said wheels of said motor car placed on said rolls and said anti-lock brake system is actuated after a predetermined speed of said wheels on said rolls has been attained, and means for judging operating conditions of said anti-lock brake system from changes in rotational speed of each of said rolls at a time of braking, wherein:

a friction coefficient of each of said rolls is set to such a value that a frictional force acting between each of said rolls and each of said wheels at the time of braking exceeds an inertia force of each of said rolls;

an inertial of each of said rolls is set to such a value that deceleration of each of said wheels at the time of braking can be increased to above a predetermined level required to start an anti-lock control of said anti-lock brake system being tested and that each of said wheels does not stop before the completion of a first braking pressure reduction by said anti-lock control;

means for detecting deceleration of each of said rolls;

means, based on a detected deceleration, for obtaining a braking time required from a time of start of braking operation to a time of stop of each of said rolls;

means for obtaining a maximum value of deceleration that occurs within a time form the start of braking operation to the end of a predetermined set time; and

means for judging whether said braking time and said obtained maximum value are each within an allowable range.

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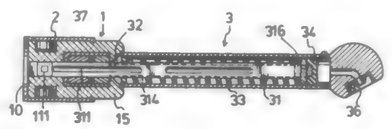
GAUGE WITH ALARM DEVICE

Tien-Tsai Huang, No. 4, Lane 30, Wu-Chang St., Pan-Chiao City, Taiwan

Filed Apr. 21, 1993, Ser. No. 49,329

Int. Cl.[5] **B60C** *23/02*

U.S. Cl. 73—146.8 **4 Claims**



1. A pressure gauge, comprising:

an elongated main casing having a first end for connection to an inflating valve of a tire and a second end, a piston member movably positioned inside said main casing and in tight contact with an interior wall surface of said main casing, an elongated pressure indicating stick having a first end portion disposed inside said main casing adjacent to said piston member and a second end portion wherein said pressure indicating stick has a first predetermined length such that said second end portion is positioned outside said second end of said main casing when a pressure reading for the tire is detected by the gauge, and a compression spring which is positioned around said pressure indicating stick between said piston member and said second end portion of said main casing;

an alarm generating device having a first press button switch for actuating said alarm generating device, said first press button switch being disposed adjacent to said second end of said main casing, said second end portion of said pressure indicating stick having a side face normally compressing said first press button switch, thereby normally deactivating said alarm generating device;

said pressure indicating stick further having a first longitudinal groove formed in said side face, said first longitudinal groove being parallel to an axis of said pressure indicating stick; and

a mechanism for guiding said pressure indicating stick so as to register said first longitudinal groove of said pressure indicating stick with said first press button switch, when said first end of said main casing is connected to said inflating valve of said tire, and when said pressure indicating stick moves in said main casing so as to expose a second predetermined length of said pressure indicating stick which is greater than said first predetermined length out of said main casing so as to correspondingly release said first press button switch from compression in order to activate said alarm generating device.

5,339,684

GRAVITY AIDED INERTIAL NAVIGATION SYSTEM

Albert Jircitano, Grand Island, and Daniel E. Dosch, Hamburg, both of N.Y., assignors to Textron Inc., Providence, R.I.

Filed Dec. 10, 1991, Ser. No. 805,544

Int. Cl.[5] **G01C** *21/20, 21/24;* **G06G** *7/78*

U.S. Cl. 73—178 R **10 Claims**

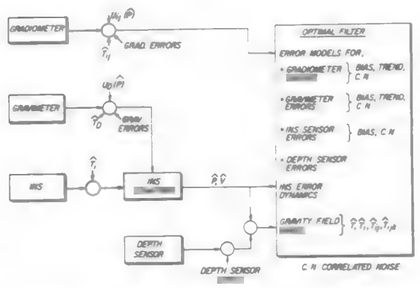
10. A navigation system, comprising:

a gradiometer means comprising from one to three gradiometers each comprising four rotating accelerometers

VOL 1165 ISS 4 AG 23 1994 UMI

mounted tangentially at cardinal points on a rotating means;

a three axis inertial position determining means including a gravimeter grade vertical accelerometer;



a depth sensor; and

an optimal filter means for integrating outputs from said gradiometer means; said three axis inertial position determining means and said depth sensor.

5,339,685

POSITIVE-DISPLACEMENT FLUID FLOW-MEASURING SYSTEM

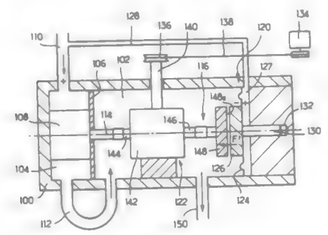
Sylvain Janssen, Neuilly; Jacques Fournier, Bretigy s/Orge, and Jean-Pierre Campain, Clamart, all of France, assignors to Schlumberger Industries, Paris, France

Filed Apr. 27, 1992, Ser. No. 874,292

Claims priority, application France, Apr. 26, 1991, 91 05211

Int. Cl.[5] G01F *15/02*

U.S. Cl. 73—199 **2 Claims**



1. A flow measuring system comprising:

a rotary mechanical positive-displacement meter with a shaft, and having an inlet and an outlet for fluid to be measured,

means including a differential pressure detector for deriving a signal representing a loss of head of the fluid between said inlet and said outlet, wherein said differential pressure detector comprises a deformable membrane responsive to a difference between pressures of the fluid at said inlet and said outlet,

motor means to provide power to said mechanical meter, and

control means responsive to said signal for controlling said motor means to cancel substantially said loss of head, including:

a differential gear system coupling said motor means to said meter shaft and having an input shaft, a first output shaft, and a second output shaft, said first output shaft being connected to the shaft of said meter, said input shaft being coupled to said motor means,

braking means engageable with said second output shaft in response to said loss of head, and

wherein said braking means responds to deformation of said membrane, when said difference is not zero, for braking said second output shaft and thereby causing an increase in the speed of rotation of said first output shaft.

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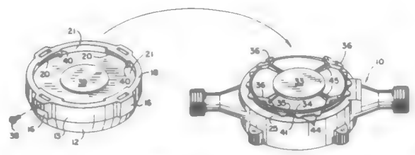
WATER METER HOUSING CONNECTION APPARATUS

George DeJarlais, Wauwatosa, and Mark D. Slaugenhoup, Kewaskum, both of Wis., assignors to Badger Meter, Inc., Milwaukee, Wis.

Filed Feb. 3, 1993, Ser. No. 13,520

Int. Cl.[5] G01F *15/14*

U.S. Cl. 73—201 **9 Claims**



1. A water meter housing with a plurality of lugs projecting from its top for insertion into, and connection with, a meter register housing having a plurality of arcuate spaces along an inner side of an annular bottom edge to receive said lugs, the water meter housing comprising:

a portion around the top of the water meter housing which fits just interior of the arcuate spaces of the register hosing when assembled to the water meter housing, the portion forming a wall upstanding from a top wall of the water meter housing;

wherein the plurality of lugs are spaced around the wall and project upwardly therefrom; and

further comprising a substantially flat annular ledge extending outwardly from the wall to provide a bearing surface for a bottom edge surface of the register housing during assembly of the water meter housing and the register housing;

further comprising a plurality of spaced apart projections extending laterally from the ledge and radially outward with respect to a radial center of the top of the water meter housing, the projections extending in spaces between the lugs to effectively extend the ledge radially at selected points; and

wherein the projections form an outer scalloped edge around the bearing surface.

5,339,687

FLOWMETER

Christopher Gimson, Westhoughton, and Mehran Pasdari, Sale, both of United Kingdom, assignors to Endress & Hauser Limited, United Kingdom

PCT No. PCT/GB90/00264, § 371 Date Sep. 20, 1991, § 102(e) Date Sep. 20, 1991, PCT Pub. No. WO90/09567, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 16, 1990, Ser. No. 752,442

Claims priority, application United Kingdom, Feb. 18, 1989, 8903744

Int. Cl.[5] G01F *1/00*

U.S. Cl. 73—204.19 **15 Claims**

1. A flow meter comprising:

a body located in thermal contact with a fluid the flow rate of which is to be measured;

a heater in thermal contact with the body;

a first temperature sensor for measuring the temperature of the body;

a second temperature sensor for measuring the temperature of the fluid;

means for calculating the differential temperature between the fluid and the body;

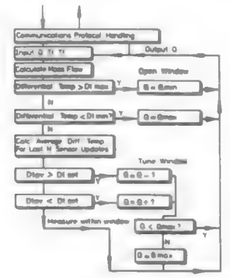
means for supplying power to the heater;

means for measuring the rate at which power is supplied to the heater;

means for setting a predetermined target differential temperature, and predetermined maximum and minimum differential temperatures;

means for comparing the calculated differential temperature with the predetermined target, maximum and minimum differential temperatures;

means for controlling the rate that power is supplied to the heater to increase the rate of supply at one predetermined rate if the calculated differential temperature is between



the target differential temperature and the minimum differential temperatures and at a higher predetermined rate if the calculated differential temperature is less than the minimum differential temperature, the controlling means also controlling the rate that power is supplied to the heater to decrease the rate of supply to a predetermined minimum rate of power if the calculated differential temperature is greater than the maximum differential temperature; and

means for calculating the flow rate from the measured rate of power supply and the difference between the temperatures of the body and the fluid.

5,339,688

DEVICE FOR MEASURING A GAS FLOW, AND METHOD FOR USING THE DEVICE

Anders Johansson, Hovmantorp, and Lennart Gustavsson, Växjö , both of Sweden, assignors to ABB Flakt AB, Nacka, Sweden

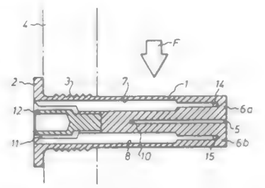
PCT No. PCT/SE92/00169, § 371 Date Aug. 13, 1993, § 102(e) Date Aug. 13, 1993, PCT Pub. No. WO92/16848, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 19, 1992, Ser. No. 98,404

Claims priority, application Sweden, Mar. 22, 1991, 9100867-2

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.22 **3 Claims**



1. A device designed for measuring a gas flow comprising a measuring body to be placed in the gas flow, heating means for heating the measuring body in relation to the environment, the measuring body in the form of a cylinder which is symmetrical with respect to a plane of symmetry extending through the axis of the cylinder, a slot containing said plane of symmetry and extending axially a certain distance into the cylinder from one end thereof, so as to divide a first portion of the cylinder into two halves which are symmetrical with respect to said slot the heating means at a distance from the bottom of the slot in a second portion of the cylinder which is not divided by the slot a temperature sensor in said second portion of the cylinder adjacent the bottom of the slot for measuring the temperature to which the measuring body is heated by the heating means, and that a temperature sensor in each of the symmetrical cylinder halves adjacent said one end of the cylinder for measuring the temperature in the respective half.

5,339,689

APPARATUS FOR DETECTING VARIATIONS IN HEAT TRANSFER FOR MEASURING THE FLUID LEVEL OR THE INTERFACE BETWEEN TWO FLUIDS WITHIN A CONTAINER

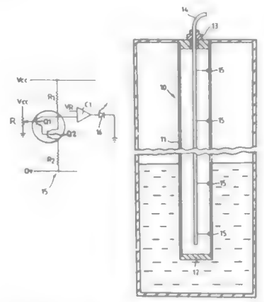
Kjell Hegge, Loganlea, Australia, assignor to Pyrozone Manufacturing Pty. Ltd., Australia

Filed May 20, 1993, Ser. No. 64,099

Claims priority, application Australia, Nov. 22, 1990, PK 3464

Int. Cl.[5] G01F *23/22*

U.S. Cl. 73—295 **9 Claims**



1. A level sensing apparatus for sensing the level of a fluid including an elongate housing with a plurality of spaced Darlington pair transistor configurations positioned therein, each one of said Darlington pair transistor configurations being so positioned in the elongate housing and biased with bias components such that the conductivity of each one of said Darlington pair configurations is dependent upon the cooling effects of the fluid, wherein a potential difference above a pre-determined threshold level is provided across each one of said Darlington pair transistor configurations due to the cooling effects of the fluid when in a liquid form, and a potential difference lower than the predetermined threshold level is provided due to the cooling effects of the fluid when in a gaseous form.

5,339,690

APPARATUS FOR MEASURING THE RATE OF ROTATION AND LINEAR ACCELLERATION OF A MOVING BODY IN TWO PERPENDICULAR AXES

Patrick Bar-Avi, St. Haifa, Israel, assignor to The State of Israel, Ministry of Defence, Rafael Armament Development Authority, Tel Aviv, Israel

Filed Feb. 3, 1993, Ser. No. 12,936

Claims priority, application Israel, Nov. 5, 1992, 103644

Int. Cl.[5] G01P *9/04*

U.S. Cl. 73—505 **8 Claims**

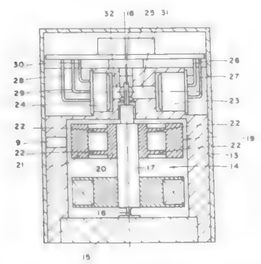
1. An apparatus for measuring angular velocity components about first and second orthogonal axes of a moving body rotating about an axis of rotation located in the plane of said first and second axes and when the body is accelerating along an axis of acceleration within the same plane, for optionally also

VOL 1165 ISS 4 AG 23 1994 UMI

measuring the linear acceleration components of the moving body along said first and second axes, which apparatus comprises:

(i) an integral flexing unit comprising a base, a central shaft in alignment with a third normal to said first and second axes and having a free end, an axisymmetric flexure zone with two degrees of flexing freedom interposed between said base and shaft, and a deflector member at the free end of said shaft;

(ii) a proof mass resiliently mounted on said shaft remote from said flexure zone with one degree of freedom of oscillation in parallel to said third axis;



(iii) electric means with associated control means for causing said proof mass to oscillate;

(iv) whereby upon either or both of any rotation of said body around said axis of rotation and any acceleration of said body along said axis of acceleration, said flexure unit flexes in an oscillating fashion at the flexure zone thereof;

(v) electro-optical means for detecting any deflection of said deflector member; and

(vi) processor means for calculating either or both of the angular velocity components about and the linear acceleration components along said first and second axes from the deflection of said deflector member.

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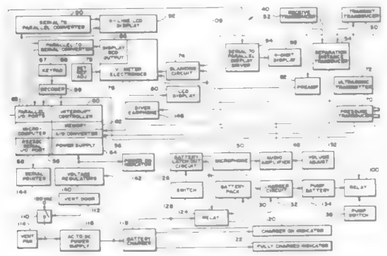
ULTRASONIC TEST SYSTEM

Anthony Smith, Oxnard; Dan Goff, Ventura; Roman Kruchowy, Somis, and Carl Rhoads, Ventura, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 860,744, Mar. 25, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 138,042

Int. Cl.[5] G01H *5/00;* **G01N** *29/18*

U.S. Cl. 73—597 **9 Claims**



1. A system for testing the quality of a solid concrete structure, comprising:

means for applying ultrasonic pulses to said solid concrete structure;

means for detecting the ultrasonic pulses and producing corresponding signals that are indicative of ultrasonic pulses that have passed through said solid concrete structure;

signal processing means for processing the signals to determine the transit time of the ultrasonic pulses through said solid concrete structure; and

means for disabling the signal processing means for a predetermined time after application of each ultrasonic pulse to the solid concrete structure to prevent noise produced by the means for applying ultrasonic pulses to said solid concrete structure from entering the signal processing means;

said means for disabling the signal processing means comprising:

a first Schmitt trigger circuit formed as a signal shaping circuit and connected to the means for applying ultrasonic pulses to the material;

a first monostable multivibrator connected to receive signals output from said first Schmitt trigger circuit;

a second monostable multivibrator connected to receive signals output from said first monostable multivibrator and configured to produce a pulsed signal output of predetermined duration;

a second Schmitt trigger circuit connected to receive signal inputs from said second monostable multivibrator and from said means for detecting the ultrasonic pulses, said second Schmitt trigger circuit being configured to output a signal indicative of the ultrasonic pulse that has traveled through said solid concrete structure only during time intervals when both the pulsed signal outputs from said second monostable multivibrator and said means for detecting the ultrasonic pulses are simultaneously input to said second Schmitt trigger circuit.

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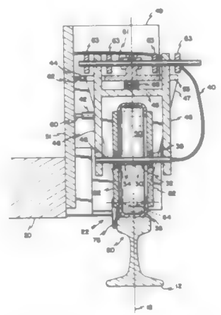
ULTRASONIC RAIL WEB CENTERLINE DETECTOR

John J. Shoenhair, New Hope, Minn., and Alex Ivachev, Marysville, Australia, assignors to Loram Maintenance of Way, Inc., Hamel, Minn.

Filed Jan. 3, 1992, Ser. No. 816,958

Int. Cl.[5] G01N *29/10*

U.S. Cl. 73—636 **6 Claims**



1. An apparatus for locating a web centerline of a longitudinal member having a head, a base, and a web therebetween, comprising:

a plurality of ultrasound means, including a center transceiver and a first and second side transceivers fixedly positioned symmetrically on opposite sides of said center transceiver, adapted for acoustical coupling to either the head or the base of said member for transmitting and receiving ultrasound energy through said member and for generating electrical signals corresponding to received reflected ultrasound energy, each of said ultrasound means transmitting and receiving ultrasound energy through said member and generating discrete electrical signals for each of said ultrasound means;

control means responsive to mutual relative strengths of said electrical discrete signals for generating control signals indicating a lateral displacement and a angular displacement of said ultrasound means from said web centerline; and

means for adjusting the position of said ultrasound means relative to said web centerline as a function of said control signals,

said control means comprising:

first means for comparing the electrical signals generated by said first side transceiver to the electrical signals generated by said second side transceiver whereby approximately equal amplitudes of the electrical signals generated by said first and said second transceiver indicate that the center transceiver is aligned directly with said web centerline;

first means for generating control signals representative of the lateral displacement of the plurality of ultrasound means from the web centerline as a function of the electrical signals generated from the center and side transceivers if the amplitudes of the electrical signals from said center transceiver are greater than the amplitudes of the electrical signals from either of the side transceivers; and

second means for generating control signals representative of the angular displacement of said plurality of ultrasound means from the web centerline as a function of the electrical signals generated from the center and side transceivers if the amplitudes of the electrical signals from the center transceiver are less than the amplitudes of the electrical signals from either of the side transceivers.

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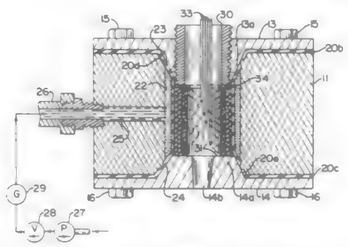
APPARATUS AND METHOD FOR TESTING TUBULAR PRODUCTS

Robert E. Rowlands, Madison, Wis.; Edmond P. Saliklis, Lemont, Ill.; John T. Wise, Hartsville, S.C., and Terry D. Gerhardt, Madison, Wis., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Dec. 28, 1992, Ser. No. 997,232

Int. Cl.[5] G01N *3/10*

U.S. Cl. 73—825 **17 Claims**



1. Apparatus for experimentally determining the compressive material strength of tubular products comprising

means defining a cylindrical cavity for receiving and supporting a tubular product during testing,

tubular bladder means mounted in said cylindrical cavity and defining an internal pressure chamber larger than the tubular product to be tested and an external-fluid receiving space between said bladder means and said cavity defining means,

a plurality of small balls substantially filling the internal space within said pressure chamber between said bladder means and the tubular product to be tested, and

means for supplying fluid under pressure to said fluid receiving space between said bladder means and said cavity defining means so that said bladder means applies pressure to said small balls which in turn apply uniform pressure over the entire external curved surface of the tubular product being tested.

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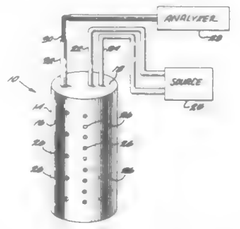
MONITORING PROBE FOR GROUNDWATER FLOW

Brian B. Looney, Aiken, S.C., and Sanford Ballard, Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 25, 1993, Ser. No. 66,236

Int. Cl.[5] G01F *1/56*

U.S. Cl. 73—861.07 **12 Claims**



1. Apparatus for monitoring the flow rate of groundwater, said apparatus for use with a fluid having an electrical conductivity different from that of said groundwater, said apparatus comprising:

means for releasing said fluid into said groundwater, said releasing means permeable to said fluid and having a first side and a second side, said fluid on said first side and said groundwater on said second side, said fluid permeating through said releasing means from said first side to said second side to form a mixture with said groundwater, said mixture having a mixture electrical conductivity, said mixture electrical conductivity being related to the relative concentration of said groundwater in said mixture, said concentration of said groundwater in said mixture being related to said rate of flow of groundwater proximate to said releasing means and related to the rate of said fluid permeating through said releasing means from said first side to said second side; and

means for measuring said mixture electrical conductivity, said measuring means carried by said releasing means.

5,339,695

FLUIDIC GAS FLOWMETER WITH LARGE FLOW METERING RANGE

Sukhvinder S. Kang, Rochester, Minn.; Bharatan R. Patel, Etna; William E. Nutt, Enfield, both of N.H., and Kirankumar K. Kothari, Hoffman Estates, Ill., assignors to Gas Research Institute, Chicago, Ill.

Filed May 1, 1992, Ser. No. 877,147

Int. Cl.[5] G01F *7/00, 1/20*

U.S. Cl. 73—861.19 **25 Claims**

1. A fluidic flowmeter comprising:

a body having flow passages with an inlet and an outlet;

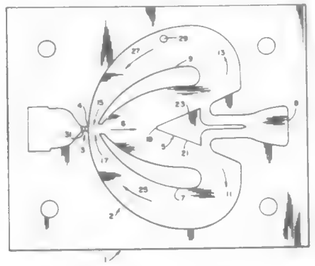
a target in a center main flow passage near the outlet, first and second opposite flow-directing feedback passage loops on opposite sides of the main flow passage, the loops having respectively first and second auxiliary inlets near the target and first and second auxiliary outlets near the inlet of the main flow passage for alternating flow back and forth in the main passage from one side to another;

frequency sensing means connected to the body for determining frequency of oscillations; and

flow indicating means connected to the frequency sensing means for indicating flow through the inlet and outlet,

VOL 1165 ISS 4 AG 23 1994 UMI

further comprising a nozzle connected to the inlet and a time-of-flight sensor connected to the nozzle for sensing



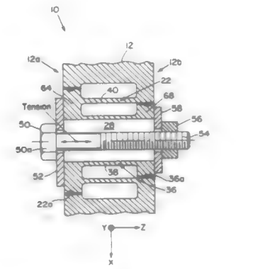
relatively low flow through the nozzle and through the inlet.

5,339,696

BOLT TORQUE AND TENSION TRANSDUCER

Forest J. Carignan, Bedford, Mass., assignor to Advanced Mechanical Technology, Inc., Watertown, Mass.

Filed Mar. 31, 1993, Ser. No. 40,631
Int. Cl.[5] G01L *5/10*
U.S. Cl. 73—862.041 **27 Claims**



1. A transducer for measuring torque and tension applied to a bolt comprising:
an inner cylindrical sensing element for measuring partial torque forces; and
an outer cylindrical sensing element for measuring applied torque forces, the partial torque forces being a component of the applied torque forces, the inner sensing element being nested within the outer sensing element, the inner and outer sensing elements being secured to each other only at one end.

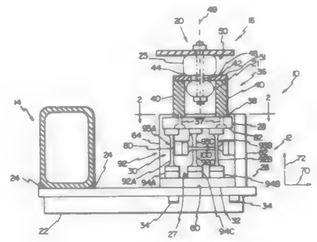
5,339,697

MULTI-AXIS LOAD CELL

Robert L. Mullin, Eden Prairie, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Sep. 11, 1992, Ser. No. 943,761
Int. Cl.[5] G01L *5/00*
U.S. Cl. 73—862.043 **19 Claims**

1. A load cell for measuring selected forces and moments with respect to a plurality of orthogonal axes, the assembly comprising:
a loading member having a loading member inner surface and a loading member outer surface substantially parallel and opposite the loading member inner surface;
a support base substantially parallel to the loading member having a support base inner surface facing the loading member inner surface;
orthogonal support means joined to the support base, the support means having a first support portion and a second support portion, wherein the first and second support portions are substantially orthogonal to the support base inner surface, and wherein the first support portion is substantially orthogonal to the second support portion; and
at least three substantially parallel vertical links joining the support base inner surface to the loading member inner surface;
at least two substantially parallel longitudinal links oriented perpendicularly to the vertical links joining the first support portion to the loading member;
a lateral link oriented perpendicularly to the vertical links joining the second support portion to the loading member; and



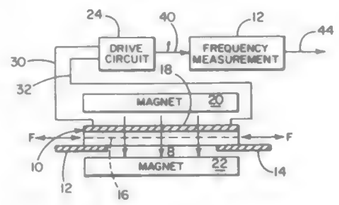
wherein each link is substantially rigid along a corresponding central longitudinal axis and comprises at least one flexure portion providing compliance about two axes orthogonal to the corresponding central axis; a bounded space is defined by the loading member outer surface, the support base inner surface and the central longitudinal axes of adjacent vertical links; and the longitudinal links are joined at ends to the loading member such that a plane defined by the central longitudinal axes of the longitudinal links intersects with the bounded space; and
force sensing means for sensing a force along one of the central longitudinal axes corresponding to at least one of the links and providing a representative force output signal.

5,339,698

VIBRATING BEAM FORCE TRANSDUCER WITH AUTOMATIC ADJUSTMENT OF ITS ELECTROMAGNETIC DRIVE

Michael J. Robinson, Mukilteo, and James R. Woodruff, Redmond, both of Wash., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jun. 7, 1993, Ser. No. 72,903
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.59 **10 Claims**



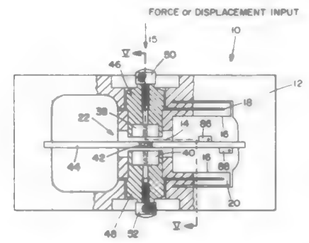
1. A force transducer comprising:
a double-ended tuning fork operating as an oscillating sensing element having a frequency output indicative of the force applied to the sensing element, said sensing element having a variable electrical resistance; and,
drive means electrically coupled to the sensing element for causing the sensing element to oscillate at a resonant frequency that is a function of the force applied to the sensing element, said drive means including resistance means having a resistance electrically in parallel with said sensing element, said drive means further including DC voltage means operating to vary the resistance of said resistance means in response to variations in said sensing element electrical resistance; and
said resistance means including a resistance element disposed electrically in parallel with said sensing element, a field-effect transistor disposed electrically in parallel with said resistance element, and said DC voltage means operating to vary the resistance of said field-effect transistor.

5,339,699

DISPLACEMENT/FORCE TRANSDUCERS UTILIZING HALL EFFECT SENSORS

Forest J. Carignan, Bedford, Mass., assignor to Advanced Mechanical Technology, Inc., Watertown, Mass.

Filed Mar. 2, 1992, Ser. No. 844,126
Int. Cl.[5] G01L *1/12*
U.S. Cl. 73—862.69 **26 Claims**



1. A displacement measuring apparatus comprising:
a first mass of material;
a second mass of material linked to the first mass of material via parallel means for allowing displacement between the masses in a direction transverse to the beams and providing return force against said displacement, each of said beams comprising arms displaced relative to each other in the direction transverse to the beams and joined end-to-end; and
a sensor for sensing the displacement of the second mass relative to the first mass.

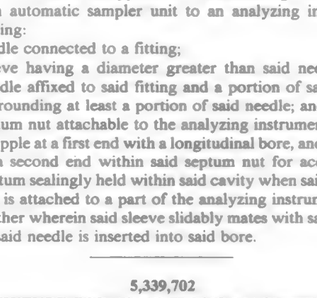
5,339,700

SAMPLE COLLECTOR

Paul G. Wright, Pleasant Dale, and Frederick A. Nabity, Lincoln, both of Nebr., assignors to Isco, Inc., Lincoln, Nebr.

Filed Dec. 16, 1991, Ser. No. 808,530
Int. Cl.[5] G01N *1/14*
U.S. Cl. 73—864.34 **20 Claims**

1. A sampler comprising:
an inlet port adapted to communicate with a source of water and an outlet port positioned so that water flows from the inlet port to the outlet port;
means for pumping fluid through the inlet port for collection;
means for initiating movement of a web of packaging material;
means for folding the web of packaging material and sealing it to form a pouch;
means for causing water from the inlet port to flow from the outlet port into the pouch;
means for sealing the pouch;
means for controlling the pumping means; and



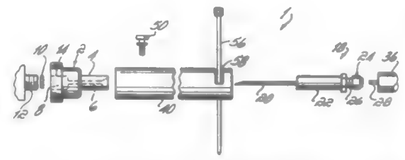
means for drawing the web so that the pouch corresponds in internal volume to the volume of water pumped into the pouch prior to sealing the pouch.

5,339,701

NEEDLE INTERFACE APPARATUS

Thomas B. Green, Batavia, Ohio, assignor to Tekmar Company, Cincinnati, Ohio

Continuation of Ser. No. 22,772, Feb. 23, 1993, abandoned, which is a continuation of Ser. No. 662,219, Feb. 28, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 100,699
Int. Cl.[5] G01N *30/18*
U.S. Cl. 73—864.86 **12 Claims**



1. A needle interface apparatus for maintaining a connection from an automatic sampler unit to an analyzing instrument comprising:
a needle connected to a fitting;
a sleeve having a diameter greater than said needle, said needle affixed to said fitting and a portion of said sleeve surrounding at least a portion of said needle; and
a septum nut attachable to the analyzing instrument having a nipple at a first end with a longitudinal bore, and a cavity at a second end within said septum nut for accepting a septum sealingly held within said cavity when said septum nut is attached to a part of the analyzing instrument, and further wherein said sleeve slidably mates with said nipple as said needle is inserted into said bore.

5,339,702

TEST FIXTURE FOR AIR BEARING MAGNETIC HEAD SUSPENSION ASSEMBLY

Ilya Viches, Sunnyvale, Calif., assignor to Read-Rite Corporation, Milpitas, Calif.

Filed Dec. 24, 1992, Ser. No. 996,615
Int. Cl.[5] G01M *19/00*; G11B *27/36*
U.S. Cl. 73—865.9 **7 Claims**

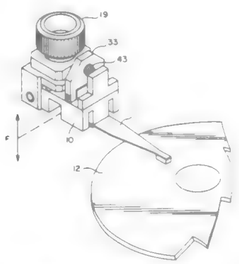
1. A fixture for testing an air bearing type magnetic recording head/gimbal assembly prior to installation into a disk file by loading and unloading said assembly onto and off of a rotating disk, said fixture being mounted in a predetermined

VOL 1165 ISS 4 AUG 23 1994 UMI

spatial relationship to said disk by a frame member and including,

A) a mounting block for attaching said fixture to said frame including adjusting means to permit said fixture to be moved to selected vertical positions relative to said disk,

B) a loading platform including a device for clamping a portion of said assembly in a fixed relationship to said platform, and



C) means for mounting said platform on said mounting block to permit said head to be moved in a plane normal to said disk about a pivotal axis disposed in a plane parallel to said disk surface and wherein said device for clamping includes,

D) a block attached to said platform and having a bottom surface to provide a mating engagement with a surface on said head/gimbal assembly; and

E) an element biased to clamp said head/gimbal assembly in mating engagement with said block.

5,339,703

TRANSMISSION FOR A VEHICLE

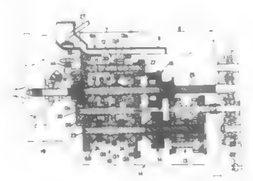
Tomio Tanaka, Osaka, Japan, assignor to Kubota Corporation, Osaka, Japan

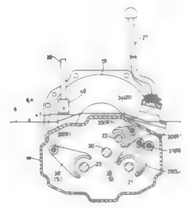
Continuation of Ser. No. 824,710, Jan. 21, 1992, which is a continuation of Ser. No. 563,429, Aug. 7, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 33,535

Claims priority, application Japan, Feb. 7, 1990, 2-27546; Feb. 7, 1990, 2-27547

Int. Cl.[5] F16H *37/00*

U.S. Cl. 74—15.4 **5 Claims**





1. A transmission for a vehicle, comprising:

an input main shaft mounted in a forward portion of said transmission case and extending in a fore and aft direction, said input main shaft having a first set of gears;

a propelling transmission shaft disposed a predetermined distance below said input main shaft and on one side thereof, said propelling transmission shaft having a set of propelling change speed gears engageable with said first set of gears;

a PTO transmission shaft also disposed a predetermined distance below and on an other side of said input main shaft opposite said propelling transmission shaft, said PTO transmission shaft having a set of PTO change speed gears also engageable with said first set of gears; and

shifter control rods for selectively operating said set of propelling change speed gears and said set of PTO change speed gears, said shifter control rods extending in a fore and aft direction and being positioned above and diagonally with respect to said propelling transmission shaft and said PTO transmission shaft;

wherein the offset positioning of said propelling transmission shaft and said PTO shaft with respect to said input main shaft results in said forward portion of said transmission case to have a transversely flat cross-sectional shape and a reduced vertical dimension.

5,339,704

SCREW LIFT

Ulf Lindberg, Skelleftea, Sweden, assignor to Alimkak AB, Skelleftea, Sweden

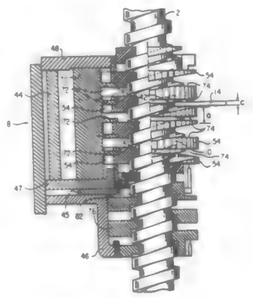
PCT No. PCT/SE89/00729, § 371 Date Dec. 8, 1992, § 102(e) Date Dec. 8, 1992, PCT Pub. No. WO90/06894, PCT Pub. Date Jun. 28, 1990

PCT Filed Dec. 13, 1989, Ser. No. 688,537

Claims priority, application Sweden, Dec. 21, 1988, 7794584.3

Int. Cl.[5] F16H *25/24;* **B66B** *11/04*

U.S. Cl. 74—89.15 **14 Claims**



1. An arrangement in a screw lift, in which a lift cage is carried by a drive nut rotatably provided on an essentially upright screw, the lift cage carrying a bearing means and a drive means for the nut, wherein the screw is supported by several supporting braces attached thereto along a length thereof, and the nut has the shape of a spiral having turns which have a pitch and an axial thickness which are adapted to a distance between the braces and a dimension of the braces in a length direction of the screw so as to enable the nut to pass freely past the braces and the braces to pass between the turns of the nut during the passage.

5,339,705

SHIFT DEVICE FOR AUTOMATIC TRANSMISSION

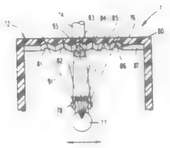
Katsunori Shirahama; Michihiro Okuda, both of Kanagawa, and Atsuo Ohno, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

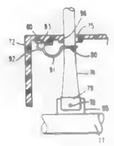
Filed Mar. 2, 1992, Ser. No. 843,057

Claims priority, application Japan, Mar. 7, 1991, 3-41933; Mar. 11, 1991, 3-44838

Int. Cl.[5] G05G *5/14;* **F16H** *59/02*

U.S. Cl. 74—475 **8 Claims**





1. A shift device for an automatic transmission of an automobile, comprising:

an indicator box fixed to a floor of the automobile, said indicator box including an upper portion having an undersurface provided with a wavy surface comprising a plurality of indents;

an axle extending horizontally across and rotatably supported by said indicator box;

a shift lever movable back and forth by pivoting around an axis of said axle as moved by an operator of the automobile; and

check ball means for positioning said shift lever with respect to the indicator box, supported by said axle and held resiliently in contact with said wavy surface of said indicator box, said check ball means moving back and forth by pivoting around said axis in correspondence with motions of said shift lever.

5,339,706

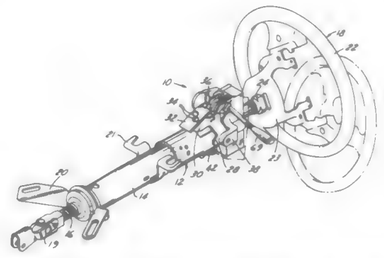
LATCHABLE STEERING COLUMN TILT MECHANISM

Hobart R. Freeman, Monroe, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 26, 1993, Ser. No. 38,206

Int. Cl.[5] B62D *1/18*

U.S. Cl. 74—493 **9 Claims**



1. A latchable tilt mechanism for a steering column comprising:

a first bracket attached to a sleeve of the steering column;

a second bracket pivotally attached to said first bracket and operatively connected to a rotatable steering wheel of the steering column;

a plurality of pawls pivotally attached to said second bracket, said pawls being rotatable between a first locking position and a second release position;

a spring operationally associated with each of said pawls for urging said pawls into said first locking position;

a release lever pivotally attached to said second bracket for engaging said pawls to move said pawls to said second release position; and

means between said first bracket and said pawls for engaging at least two of said pawls to restrain said second bracket from rotational movement when said pawls are in said first locking position, said means comprising each of said pawls having at least one locking slot and a latching member attached to said first bracket to engage said at least one locking slot, said latching member having an arm extending toward said pawls and being disposed in at least one locking slot in said first locking position.

5,339,707

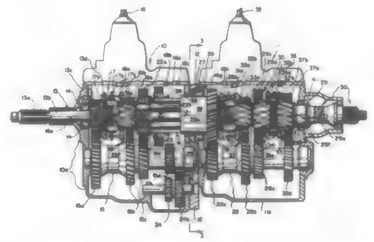
COMPOUND AUTOMOTIVE TRANSMISSION FOR LIGHT TRUCKS

William J. Arbus, 386 N. 560 West, American Fork, Utah 84003

Filed Dec. 31, 1992, Ser. No. 999,746

Int. Cl.[5] F16H *57/02*

U.S. Cl. 74—606 R **9 Claims**



7. A compound transmission adapted for use in lightweight, automotive trucks, comprising two "simple" transmission sections interconnected end-to-end as a main transmission section and an auxiliary transmission section, respectively, said main transmission section having mainshaft means, a portion of which extends into said auxiliary transmission section and carries within said auxiliary transmission section power input drive gears; and speed change drive gears provided by said auxiliary transmission section so as to operate within substantially the peak power range of any engine with which the compound transmission is used.

5,339,708

SPACE-SAVING INCHING DEVICE

Akira Nakamura, Neyagawa, Japan, assignor to Tsubakimoto Emerson Co., Daito, Japan

Filed Mar. 12, 1993, Ser. No. 30,835

Claims priority, application Japan, Apr. 3, 1992, 4-028223[U]

Int. Cl.[5] F16H *37/06*

U.S. Cl. 74—665 A **1 Claim**

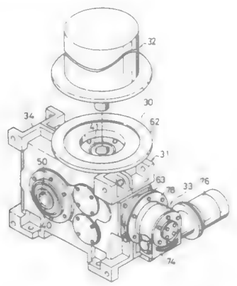
1. An inching device for operating a conveyor, machine tool or the like alternatively at a normal operating speed, and at a low speed for inspection or maintenance, comprising:

a first speed reducer comprising a frame having a base, a plurality of side walls extending upward from the base, and a top wall, two input shafts and a driving shaft, and bearing means for rotatably supporting each of said shafts, said bearing means being mounted in the frame;

VOL 1165 ISS 4 AG 23 1994 UMI

a driving motor connected to one of said input shafts of the first speed reducer; and

a second speed reducer comprising a low-speed motor, an output shaft, and means connecting said low-speed motor in driving relationship to said output shaft, said connecting means including one-way clutch means for transmitting torque from said low-speed motor to said output



shaft, and preventing the transmission of torque from said output shaft to said low-speed motor, and said output shaft of the second speed reducer being connected to the other input shaft of the first speed reducer;

wherein said driving motor and said second speed reducer are each mounted on one of said top and side walls of the frame of the first speed reducer, whereby the driving motor and second speed reducer are supported entirely by said frame.

5,339,709

CONTROL SYSTEM FOR A COMBINED SHIFT IN WHICH AN ACCUMULATOR IS DISCONNECTED IN AN AUTOMATIC TRANSMISSION

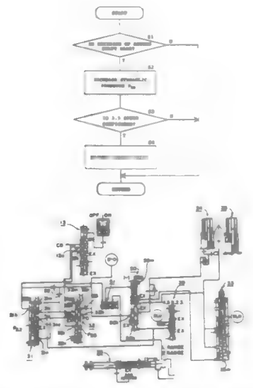
Akira Suzuki, Chiryu; Kazunori Ishikawa; Kunihiro Iwatsuki, both of Toyota; Hidehiro Oba, Aichi; Hiromachi Kimura, and Hideaki Otsubo, both of Toyota, all of Japan, assignors to Aisin AW Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of Japan

Filed Oct. 7, 1992, Ser. No. 957,188

Claims priority, application Japan, Oct. 9, 1991, 3-262383

Int. Cl.[5] B60K *41/06*

U.S. Cl. 477—145 **1 Claim**



1. A control system for an automatic transmission having a primary shifting unit and a secondary shifting unit connected to the primary shifting unit and capable of achieving multi-stage speed ranges for a vehicle by selective operation of frictional engagement elements contained in said shifting units, at least one of the frictional engagement elements providing for downshifting, comprising:

means for detecting running conditions of the vehicle and for generating signals representative of the detected running conditions;

decision means for deciding, on the basis of said running condition signals, whether or not a first shift is needed, for deciding whether or not a second shift is needed, for generating a first shift signal when need for the first shift is decided and for generating a second shift signal when need for the second shift is decided;

a hydraulic control circuit including hydraulic servomotors, accumulators respectively associated with said hydraulic servomotors and valve means for selectively feeding and draining hydraulic fluid to and from said plural hydraulic servomotors for the selective operation of the frictional engagement elements responsive to receipt of said shift signals from said decision means;

servomotor pressure control means for controlling pressure of the hydraulic fluid fed to said hydraulic servomotors; and

means for detecting speed of revolution of a rotating member in the automatic transmission;

wherein said servomotor pressure control means comprises:

means for hydraulically disconnecting one of said hydraulic servomotors from its associated accumulator, said one hydraulic servomotor controlling the one frictional engagement element provided for downshifting, and means for controlling hydraulic pressure in said one hydraulic servomotor responsive to a first electric signal indicative of a decision for a first shift in which the primary and secondary shifting units perform a combined shift with one of the primary and secondary shifting units performing a downshift and the other performing an upshift; and

means for controlling the hydraulic pressure in said one hydraulic servomotor, responsive to a second electrical signal generated responsive to a decision for a second shift in the course of the combined shift, to return said one frictional engagement element to its position before the combined shift to configure a particular speed stage.

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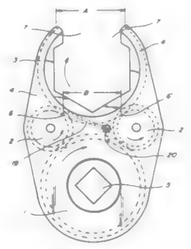
OFFSET LINE SOCKET

Bobby J. Deadmond, 909 Salem Pl., Fairview Heights, Ill. 62208, and James E. Duvall, Jr., 1032 Villa Ridge, Collinsville, Ill. 62234

Filed Jun. 21, 1993, Ser. No. 78,507

Int. Cl.[5] B25B *17/00*

U.S. Cl. 81—57.3 **2 Claims**



1. An offset line socket, comprising:

(a) a drive gear mechanically connected to at least two transfer gears;

(b) transfer gears mechanically connected to said drive gear and to an application gear;

(c) an application gear having an inner irregular configuration and a line access opening for allowing a line to pass through said opening;

(d) an outer casing encompassing said drive, transfer and application gears, said casing having a line access opening;

(e) at least one gear stop cylinder, attached to at least one side of said application gear, each stop cylinder having a cut-out located on the circumference of said stop cylinder, said cut-out adapted to receive a stop arm;

(f) an upwardly biased stop arm in mechanical contact with said stop cylinder such that said stop cylinder turns freely in a clockwise direction but locks in a set position when said stop cylinder is rotated in a counterclockwise direction, wherein said set position is such that the line access opening of said application gear aligns with the line access opening of said casing.

5,339,711

RATCHET SCREW DRIVER

Zu-Shung Shu, No. 11, Lane 11-1, Guo Chong Road, Da Lie Hsiang, Taichung, Taiwan

Filed Jul. 12, 1993, Ser. No. 89,939

Int. Cl.[5] B25B *13/46*

U.S. Cl. 81—63 **3 Claims**



1. A ratchet screw driver comprising a housing including a space formed in an inner and lower portion thereof, an opening formed in a middle portion of said housing and communicated with said space, a pinion rotatably supported in said opening, a sleeve rotatably engaged on said housing and engaged with said pinion in order to rotate said pinion, a plurality of first teeth formed in said space, a shaft rotatably received in said space and including a bore, a notch formed therein and communicated with said bore, a pawl rotatably supported in said notch of said shaft and including two ends each having at least one second teeth engageable with said first teeth of said housing, a rod including a lower portion rotatably engaged in said bore of said shaft and including a gear formed thereon for engaging with said pinion such that said rod is rotated when said sleeve is rotated, and a projection engaged in said lower portion of said rod and engaged with said pawl in order to rotate said pawl when said rod is rotated, whereby, either of said second teeth of said pawl is caused to engage with said first teeth when said rod is rotated.

5,339,712

HAND TOOL HAVING OFFSET WORK ELEMENTS

Daryoush Keyvani, 321 S. San Vicente, #302, Los Angeles, Calif. 90048

Filed Oct. 25, 1993, Ser. No. 143,343

Int. Cl.[5] B25B *7/00*

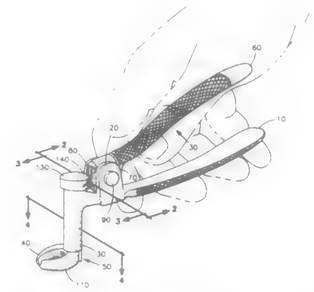
U.S. Cl. 81—416 **10 Claims**

1. A hand tool comprising:

a first handle providing at one end thereof, a first hinge joint extending away from the handle in a first direction, and a hollow tube extending away from the handle in opposition to the first hinge joint, a fixed work element being attached at a distal end of the tube;

a second handle aligned with the first handle, and providing a second hinge joint extending in rotational engagement with the first hinge joint and including a first set of gear teeth facing the tube; and;

a hinge pin pivotally engaged with the first and second hinge joints aligning same, the second handle rotatable alternately toward and away from the first handle about the pin;



a transfer rod rotatably held within the hollow tube and extending therethrough, a movable work element attached at a distal end thereof adjacent the fixed work element, a toothed gear segment fixed at a proximal end adjacent the second hinge joint and including a second set of gear teeth engaging the first set of gear teeth, whereby as the second handle is rotated about the hinge pin, the first set of gear teeth drive the toothed gear segment to cause the rod to rotate, the movable work element thereby being caused to approach, and alternately retreat, from the fixed work element.

5,339,713

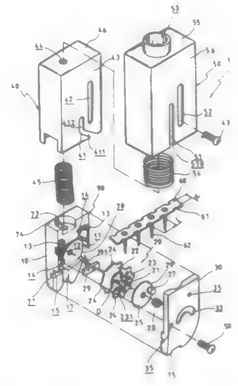
AUTOMATIC SCREW FEED-IN APPARATUS

Chih-Hsiang Hou, 4F, No. 4, Lane 46, Chang-An St., Lu-Chou Hsiang, Taipei Hsien, Taiwan

Filed May 3, 1993, Ser. No. 56,486

Int. Cl.[5] B25B *23/02*

U.S. Cl. 81—434 **7 Claims**



1. A screw feed-in apparatus for automatically advancing screws disposed along an elongated strip toward a pre-deter-

VOL 1165 ISS 4 AG 23 1994 UMI

mined ready-to-be-tightened position to be tightened by a tool, said apparatus comprising:

a body having a frame with a cover secured thereon to define therein a circular interior space which has a central axis extending from said frame to said cover, an inlet formed on a lateral side of said body and an outlet formed on an opposite lateral side with a channel large enough for the screw strip to pass connecting between said inlet and said outlet and partially extending through a lower portion of said circular interior space, said body further having a slit formed at a portion lower than said channel and extending from a portion of said circular interior space to a bottom surface of said body to define a passage for the screws to pass;

screw feeding means disposed within said circular interior space to be drivingly engageable with the screw strip so for advancing the strip in a forward direction along said channel, from said inlet to said outlet; said feeding means comprising a shaft which extends along and is rotatable about the central axis of said circular interior space, a pair of feeding wheels mounted in an axially-spaced manner, on said driving wheel, each of said feeding wheels having a periphery on which a plurality of teeth are formed in an angularly equally-spaced manner to engage with two opposite equally-spacedly notched longitudinal sides of the strip for advancing the strip in the forward direction as the feeding wheels are rotated in a first direction;

driving means in detent engagement with said feeding means so that when said driving means is forced to move from a first position to a second position, said feeding means remains un-moved, and when said driving means moves from the second position to the first position, said feeding means is actuated to make a precise movement to exactly advance one of the screws disposed along the screw strip to the ready-to-be-tightened position;

said driving means comprises a driving wheel rotatably mounted on said shaft and having a plurality of detents formed on one surface said driving wheel facing said feeding wheels, each of said detents comprising an elongated member mounted on said one surface of the driving wheel, extending along a radius of said driving wheel and having a substantially right-triangular cross section for being respectively received within a plurality of radially extending, right-triangular cross-sectional slots formed on a surface of one of said feeding wheels facing said driving wheel to form the detent engagement between said feeding wheels and said driving wheel, said right-triangular cross sections of said detents of said driving wheel and the slots of said feeding wheels comprising an inclined camming surface so that when said driving wheel is rotated from the first position thereof to the second position thereof, said camming surface of each of said detents received within said slots of said feeding wheels slides along said camming surfaces of said slots and thus moving out thereof to have said feeding wheels disengage from said driving wheel so as to maintain un-moved and when said driving wheel is rotated from the second position to the first position, said detents abuttingly engage said slots so as to have said feeding wheels to rotate in unison with said driving wheel;

paw means in engagement with said feeding means to prevent said feeding means from moving in a direction opposite to advancing the screw strip in the forward direction; and

actuation means in mechanical engagement with said driving means so that when said actuation means is moved from a rest position to a work position, said driving means is caused to move from the first position to the second position to allow the screw located at the ready-to-be-tightened position to be engaged and tightened by the tool, and when said actuation means is moved from the work position to the rest position, sad driving means is released to move from the second position back to the first position to allow said feeding means to make a precise advance of the screw strip in order to bring the screw which is next to the just-tightened one to the ready-to-be tightened position.

5,339,714

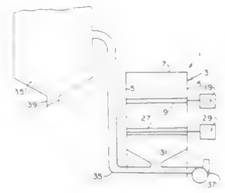
METHOD AND MACHINE FOR PRODUCING PACKAGING MATERIAL

Robert F. Sinclair, Sr., Des Peres, Mo., assignor to Sinclair Enterprises, Inc., St. Louis, Mo.

Continuation of Ser. No. 951,142, Sep. 25, 1992, abandoned. This application Nov. 17, 1993, Ser. No. 153,775

Int. Cl.[5] B26D *7/10*

U.S. Cl. 83—16 **11 Claims**



1. A method of producing loose irregularly shaped chips of packaging material from expanded polystyrene consisting of:

placing a piece of expanded polystyrene on a first stationary grid of wires;

heating the wires of the first stationary grid of wires to a temperature sufficient to melt the expanded polystyrene to cut the expanded polystyrene into strips;

dropping the expanded polystyrene strips onto a second stationary grid of wires;

heating the wires of the second stationary grid of wires to create an upward draft to enhance tumbling of the falling expanded polystyrene strips;;

further heating the wires of the second stationary grid of wires to a temperature sufficient to melt the expanded polystyrene strips to cut the expanded polystyrene strips into irregularly shaped chips of expanded polystyrene; and

collecting said irregularly shaped chips of expanded polystyrene.

5,339,715

PROGRAMMABLE PRESSURE CONTROL SYSTEM

Derek I. Coleman, Cobourg, Canada, assignor to Davidson Textron Inc., Dover, N.H.

Filed Sep. 2, 1993, Ser. No. 114,920

Int. Cl.[5] B26F *3/00*

U.S. Cl. 83—53 **11 Claims**

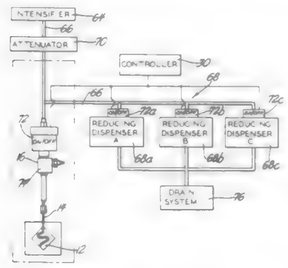
1. A liquid jet cutting apparatus for cutting workpieces by dispensing pressurized liquid, said apparatus comprising:

pressure pump means for receiving a liquid and pressurizing the liquid to a predetermined pressure producing a pressurized liquid at a pressure output thereof;

cutting dispenser means having a liquid input for receiving said pressurized liquid and an output for producing a selected pressurized water jet to cut the workpiece;

pressure reducing means connected between said pressure pump means and said cutting dispenser means for receiving and selectively reducing the pressure of said pressurized liquid communicated to said cutting dispenser means,

said pressure reducing means including a plurality of reducing dispensers for selectively reducing the pressure



of said pressurized liquid to one of a plurality of selective pressures based upon the combination of activated and deactivated reducing dispensers.

5,339,716

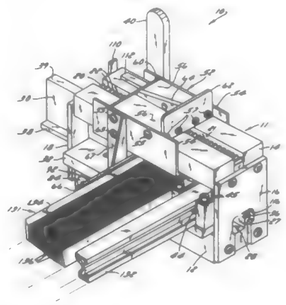
MINI BLIND CUTTER

Jeffrey L. Sands, Freeport; Robert J. Dagel, Ridott, and John A. Elsenheimer, Freeport, all of Ill., assignors to Newell Operating Co., Freeport, Ill.

Filed Feb. 22, 1993, Ser. No. 23,786

Int. Cl.[5] B23D *23/00;* **E06B** *9/266*

U.S. Cl. 83—452 **19 Claims**



1. A mini blind cutter for downsizing a mini blind by cutting off an end of the mini blind, the mini blind being of the type that includes a head rail having an interior surface and an exterior surface, a bottom rail, and a plurality of slats, the mini blind cutter comprising:

a framework;

a receiving area disposed within the framework for receiving the end of the mini blind;

a slide bar assembly slidably mounted in the framework, the slide bar assembly being oriented for sliding motion towards and away from the receiving area, wherein the slide bar assembly includes a rack having a plurality of teeth;

a cutter blade affixed to the slide bar and including a cutting edge disposed towards the receiving area;

a pinion gear rotatably mounted in the framework in mating engagement with the rack; and

a ratchet handle mechanically coupled to the pinion gear for rotating the pinion gear, wherein rotation of the pinion gear imparts sliding motion to the slide bar assembly, wherein the receiving area comprises a first receiving area for receiving the mini blind bottom rail and slats and a second receiving area for receiving the head rail, the first receiving area and second receiving area being separated by a shear plate against which the plurality of slats are disposed during cutting, the mini blind cutter further including an anvil disposed in the second receiving area at a location sufficiently spaced from the shear plate to receive at least a portion of the headrail therebetween.

5,339,717

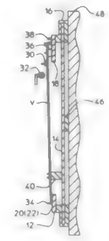
KEYBOARD INSTRUMENT HAVING SOUNDBOARD WITH UNCONSTRAINED EDGES

Ernest Vagias, 265 Prospect St., Baden, Pa. 15005

Filed Mar. 13, 1992, Ser. No. 851,066

Int. Cl.[5] G10C *3/06*

U.S. Cl. 84—192 **9 Claims**



1. A musical instrument having a plurality of individually tunable strings for producing sound by vibration thereof, means including a keyboard for selectively activating and damping said strings, a bridge means and sound board means operatively connected to said bridge means over which said plurality of strings pass and located adjacently to said plurality of strings for radiating sound in response to vibration of said plurality of strings,

said sounding board means having at least one pair of edges which are in major part unconfined and free to vibrate by said bridge means mounted on said sounding board in response to activation by string vibrations to a greater loudness and slower decay rate as a result of said unrestrained pair of edges, said sounding board means including means, centrally located with respect to said sounding board means, for mounting said sounding board means to a structural part of said instrument.

5,339,718

MUSICAL INSTRUMENTS HAVING BOWED OR PLUCKED STRINGS

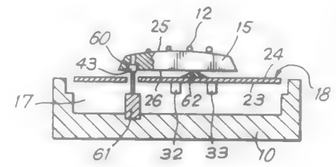
Christophe Leduc, 2 rue Neuve, 57100 Thionville, France

Filed May 29, 1992, Ser. No. 890,259

Claims priority, application France, May 29, 1991, 91 06467

Int. Cl.[5] G10D *3/00*

U.S. Cl. 84—291 **16 Claims**



1. A musical instrument having plucked strings, the instrument including a sound board resting freely on the body of the instrument and which is caused to vibrate in a plane normal to its surface by an asymmetrical bridge resting on said sound board, said bridge having a top portion, which receives said

VOL 1165 ISS 4 AG 23 1994 UMI

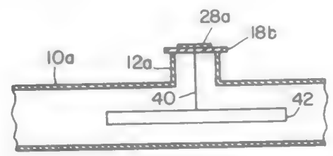
strings and defines a treble string end and a bass string end, and a bottom portion, said bridge being supported at its treble string end directly by means of a finger secured to said body and its bass string end by said sound board to which pressure and vibration are transmitted through a support piece, said bottom portion having a hole at said treble string end in which said finger is received, while the bass string end of said bridge rests on the sound board by means of a block positioned between said sound board and said bridge, said block being adjustable along said bridge.

5,339,719

PROCESS FOR SEATING A TONE HOLE PAD

Steven A. Wasser, Wellesley, Mass., assignor to Verne Q. Powell Flutes, Inc., Waltham, Mass.

Filed May 1, 1992, Ser. No. 877,906
Int. Cl.[5] G10D *7/08*
U.S. Cl. 84—385 P 30 Claims



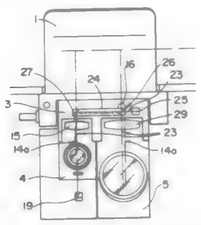
1. A process for evenly seating a woodwind instrument tone hole sealing pad in a pad cup, comprising:
placing the pad with a hole through the pad on the tone hole rim;
providing a hardened washer with the washer's hole aligned with the pad hole;
temporarily securing a weight to the washer to pull the pad down against the tone hole rim;
putting a solidifiable liquid in the cup;
contacting the cup to the pad until the liquid hardens to secure the pad in the cup; and
removing the weight from the pad to provide an even seating cup-pad assembly.

5,339,720

MODULAR AND RECONFIGURABLE EPISCOPIC SIGHT

Jean-François R. Pellarin, Saint Cyr L'Ecole, and Gilles M. Colin, Meudon, both of France, assignors to Giat Industries, France

Continuation of Ser. No. 628,012, Dec. 17, 1990, Pat. No. 5,204,489. This application Sep. 21, 1992, Ser. No. 947,927
Claims priority, application France, Dec. 20, 1989, 89 16888
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] F41G *1/40, 3/22*
U.S. Cl. 89—41.19 6 Claims



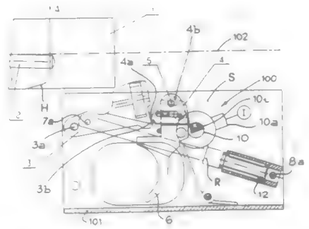
1. A modular episcopic sight for day and night observation and firing of a gun for a vehicle, said gun defining a firing axis, comprising:
a head module containing a head mirror adapted for rigid connection to said vehicle;
a module of separation adapted for rigid attachment to said vehicle for receiving visible light from said head mirror, wherein said module of separation comprises a sight reticule, means for generation of an image of said sight reticule, and means for separating said visible light into two light paths, a first light path for day observation and a second light path for night observation, wherein said means for generation of said sight reticule comprises a projection collimator and a rhombohedron to project said image of said sight reticule into said day and night modules; and
a detachable day module and a detachable night module cooperable with said module of separation such that said image of said sight reticule is projected into said day and night modules, wherein said day module receives a first visible light image from said first light path and said night module receives a second visible light image from said second light path.

5,339,721

TRIPPING MECHANISM FOR SEMIAUTOMATIC AND AUTOMATIC FIREARMS

Pier G. Beretta, Gardone V.T., Italy, assignor to Fabrica d'Armi P. Beretta S.p.A., Gardone V.T., Italy

Filed Nov. 23, 1992, Ser. No. 980,577
Claims priority, application Italy, Jan. 14, 1992, BS92 A [illegible]
Int. Cl.[5] F41A *19/46*
U.S. Cl. 89—142 7 Claims



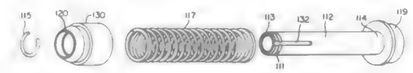
1. A tripping mechanism for semiautomatic and automatic firearms, the mechanism comprising:
a trip box;
a bolt carriage positioned adjacent said trip box, said bolt carriage being movable between a forward position of closure/percussion of ammunition and a backward position of aperture/arming, said bolt carriage defining a split and having a blocking plane with a portion that is beveled toward said split, said bolt carriage including a firing pin positioned in said split;
a hammer rotatably attached at one end to said trip box and pivotable toward said firing pin into a percussion position and away from said firing pin into an armed position, said hammer including a hammer spring biasing said hammer toward said percussion position, and said bolt carriage pivoting said hammer away from said percussion position when said bolt carriage moves toward said backward position, said hammer being slidable into said split of said bolt carriage when said hammer pivots towards said percussion position;
an automatic firing lever in a recessed portion of said hammer, said automatic firing lever pivotably attached to said hammer and having a head pivotable between a first position and a second position, said first position of said head extending said head outward from said hammer and contacting said blocking plane of said bolt carriage during movement of said bolt carriage to said forward position in an automatic firing mode, said head contacting said blocking plane to stop entry of said hammer into said split during movement of said bolt carriage into said forward position, said bevel of said blocking plane being positioned to move said head into said second position when said bolt carriage is adjacent said forward position, said second position of said head causing said hammer to enter said split and move toward said firing pin;
an automatic firing spring biasing said head in said first position.

5,339,722

APPLY AND RELIEF VALVE MECHANISM FOR A FLUID POWER APPARATUS

Daniel A. Mauro, South Bend, and Kevin B. Martin, Rochester, both of Ind., assignors to AlliedSignal Inc., Morristown, N.J.

Filed May 24, 1993, Ser. No. 66,458
Int. Cl.[5] F15B *9/10*
U.S. Cl. 91—376 R 9 Claims



1. An improved apply and relief valve mechanism in combination with a fluid power apparatus, the apparatus comprising a housing, an input rod, a first chamber and a work chamber divided by a power piston, a spring biasing said power piston, a fluid power inlet communicating with said work chamber, a fluid power outlet communicating with said first chamber, passage means through said power piston, and valve means connected to said input rod and controlling fluid flow through said passage means via a valve seat, characterized in that the valve means and input rod comprise an apply and relief valve mechanism wherein the input rod is a longitudinally extending valve rod having at a first end an enlarged diameter section comprising a spring retainer and at a second end a reaction piston connected thereto by attachment means, the second end of the valve rod including a plurality of longitudinally extending grooves located within the valve rod to provide a plurality of passageways between said valve rod and an interior diameter surface of said reaction piston located around the second end of the valve rod, spring means located between said spring retainer and reaction piston so that said reaction piston is biased into engagement with said attachment means, the apply and relief valve mechanism disposed within a longitudinal opening of said work piston so that a portion of said reaction piston controls fluid flow through said passage means, and the passageways of said valve rod providing improved straight fluid flow between said reaction piston and valve seat to preclude self actuation by said valve means.

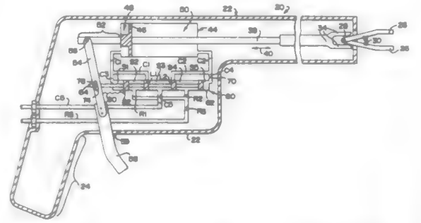
5,339,723

PRESSURIZED FLUID ACTUATION SYSTEM FOR AMPLIFYING OPERATOR INPUT FORCE IN A SURGICAL INSTRUMENT

Thomas W. Huitema, Cincinnati, Ohio, assignor to Ethicon, Inc., Cincinnati, Ohio

Filed Sep. 30, 1993, Ser. No. 129,649
Int. Cl.[5] F15B *13/16;* A61B *17/28*
U.S. Cl. 91—388 14 Claims

1. A pressurized fluid actuation system suitable for moving an endoscopic or open surgery procedure instrument component, said system comprising:
a double-acting fluid pressure actuator defining an extension chamber and a retraction chamber separated by a piston for engaging said component;
an operating lever pivotally mounted to said piston;
a servo valve that has a valve spool and that is pivotally connected on one end to said lever, said valve being connected to a source of pressurized fluid and having first and second return ports for venting said fluid;
said actuator extension and retraction chambers being connected with said valve for each communicating with said pressurized fluid source and with one of said return ports to control flow in response to the position of said valve spool; and



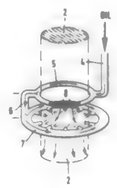
said system including a feedback line communicating between said extension chamber and said valve to apply a force to said valve spool in one direction in response to pressurization of said extension chamber and including a sensing line communicating between said retraction chamber and said valve to apply a force to said valve spool in the opposite direction in response to pressurization of said retraction chamber.

5,339,724

ARRANGEMENT FOR THE LUBRICATION OF THE PISTON MEMBER OF A FUEL INJECTION PUMP

Carl-Erik Rösgren, Vikby, and Ilmo Leino, Vaasa, both of Finland, assignors to Wartsila Diesel International Ltd. Oy, Helsinki, Finland

Continuation-in-part of Ser. No. 841,564, Feb. 25, 1992, abandoned. This application Feb. 24, 1993, Ser. No. 21,775
Claims priority, application Finland, Mar. 5, 1991, 911088
Int. Cl.[5] F01B *31/10;* F16N *1/00*
U.S. Cl. 92—153 15 Claims



1. An internal combustion engine comprising lubricant supply means for supplying lubricant under pressure, at least one injection nozzle for introducing fuel under pressure into a cylinder of the engine, a fuel injection pump connected to deliver fuel from a fuel source to the injection nozzle, said fuel injection pump comprising an elongate cylinder element and a piston member reciprocatingly movable in the cylinder element, the cylinder element being formed with at least one lubrication groove that encircles the piston member, a passage connected to the lubricant supply means for supplying lubricant under pressure to the lubrication groove, and a longitudinal channel connected to the lubrication groove and extending longitudinally of the cylinder element for leading lubricant continuously from the lubrication groove to a location that is spaced from the groove and at which the channel debouches from the cylinder element towards the piston member.

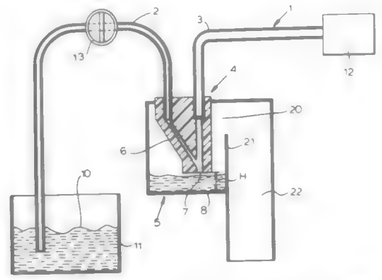
VOL 1165 ISS 4 AUG 23 1994 UMI

5,339,725

DEVICE FOR EMULSIFYING STEAM AND MILK PARTICULARLY FOR CAPPUCCINOS

Giuseppe De'Longhi, Treviso, Italy, assignor to Miralfin S.R.L., Treviso, Italy

Filed Jul. 2, 1993, Ser. No. 87,516
Claims priority, application Italy, Oct. 30, 1992, MI92 U 000947
Int. Cl.[5] A47J *31/40*
U.S. Cl. 99—293 12 Claims



1. A coffee machine, particularly for making cappuccino, comprising:

a steam duct for passing steam along a path formed with an outlet;

milk supplying means for carrying milk and including a milk duct;

a conveying element channeling milk along a milk path from said milk duct to said steam duct and having a downstream end mounted sealingly on said steam duct and opening thereinto upstream from said outlet, so that milk is drawn into said steam duct upon injecting steam; and

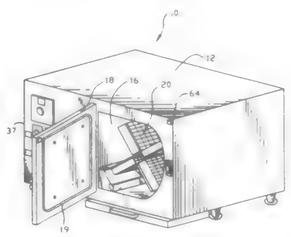
receptacle means for receiving a mixture of said milk and steam from said outlet and including a chamber, said chamber having a bottom spaced from said outlet at a preset distance and being in air communication with the atmosphere.

5,339,726

HOT AIR CIRCULATING OVEN AND FOOD HEATING APPARATUS

Larry Poulson, San Ramon, Calif., assignor to Cyclofur Company, L.P., San Francisco, Calif.

Continuation of Ser. No. 364,627, Jun. 19, 1989, Pat. No. 5,148,737. This application Oct. 30, 1992, Ser. No. 948,298
Int. Cl.[5] A47J *37/00*
U.S. Cl. 99—327 10 Claims



1. A food heating apparatus to heat for selected time cycles a plurality of food portions, said apparatus comprising:

a. a housing defining a heating chamber;

b. a carrying assembly located in said chamber comprising:

i. a plurality of basket means, each of which is arranged to contain a related food portion to be heated;

ii. a mounting structure having mounting means by which each of said basket means can be mounted at selected mounting locations;

iii. said carrying assembly comprising first identifying means which in turn comprises a plurality of first indicia each corresponding to and identifying a respective one of said basket means in said heating chamber;

c. a control system comprising:

i. timing means to provide a plurality of independent time indicators, each of which can be set for a predetermined timing cycle;

ii. second identifying means corresponding to said first identifying means and having second indicia associated with each of said time indicators by which each of said timing devices can be selectively associated with individual basket means at said mounting structure,

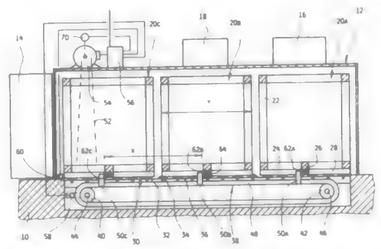
whereby each basket means can be inserted in said heating chamber and a related timing device identifiably related with that basket means can be set to a predetermined timing cycle so that a period of time during which that food product is heated in the oven chamber can be ascertained.

5,339,727

PRODUCT PROCESSING SYSTEM

Klaus-Dieter Fessmann, Winnenden, Fed. Rep. of Germany, assignor to GFRMOS-Fessmann GmbH & Co KG, Remshalden-Grunbach, Fed. Rep. of Germany

Filed Aug. 21, 1992, Ser. No. 933,214
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128890
Int. Cl.[5] A23B *4/044*
U.S. Cl. 99—482 12 Claims



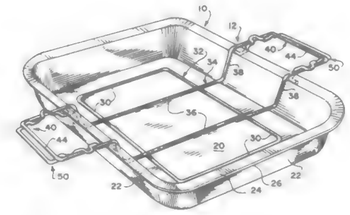
1. System for the processing of products which comprises at least one processing compartment (12) having at least one door (14) which can be tightly closed, stillages (20) of predetermined longitudinal dimension (y) for the products to be processed, a conveyor system (38, 66) for moving the stillages (20) into and out of said processing compartment (12), said stillages (20) having two lateral skids (28); tracking means including spaced apart parallel roller tracks (30) including a succession of rollers (34) arranged in each processing compartment (12), said roller tracks (30) extending in the longitudinal direction of said processing compartment (12) and cooperating with said skids (28) of said stillages (20), said conveyor system including a mobile floor conveyor (66) that can move stillages (20) up to the entrance area of said processing compartment (12) and a conveyor (38) limited to the interior of said processing compartment (12), said conveyor (38) comprising at least one flexible conveyor means (48) which carries dogs (50) spaced by a distance (x) that is at least equal to said longitudinal dimension (y) of said stillages (20), a drive motor (54) for driving said flexible conveyor means (48), driven dogs (62) mounted on said stillages (20) protruding into the path of said drive dogs (50); a rest position encoder (58) provided adjacent the door (14) of said processing compartment (12) and in the region of a return roller (40) of said conveyor (38) located in the vicinity of the door (14) of said processing compartment (12), said encoder (58) responding to opposition of one of said drive dogs (50) when one of said drive dogs (50) reaches a position below the floor of said processing compartment (12), and a control unit (56) energizing said drive motor (54) that is actuated in accordance with an output signal from said rest position encoder (58).

5,339,728

COOKING RACK FOR A PAN

Zbigniew Marchwiak, Chicago, and John Kapica, Cicero, both of Ill., assignors to Handi-Foil Corporation, Wheeling, Ill.

Filed May 11, 1993, Ser. No. 60,156
Int. Cl.[5] A47J *37/04, 43/00, 43/18*
U.S. Cl. 99—426 12 Claims



1. A cooking rack for supporting an item to be cooked thereon during cooking and for suspending by its rim a pan comprising a base, a side wall extending upwardly from the base and a peripheral rim extending outwardly from the side wall,

said cooking rack comprising

a plurality of wire segments for overlying a pan base and together defining a generally planar array for directly supporting an item to be cooked thereon,

a pair of handle means, each secured to said planar array at opposite sides of said array,

each said handle means comprising a hand grip portion and a clamping portion movable relative to said hand grip portion between a first position in which said hand grip portion and said clamping portion are adapted to grip a pan rim at said opposite sides, and a second position in which a pan rim is readily assemblable to said cooking rack, said clamping portion including a top portion overlying said hand grip portion and a bottom portion underlying said hand grip portion whereby said clamping portion and said hand grip portion are restrained against vertical separation.

5,339,729

FRUIT JUICE EXTRACTION PRESS

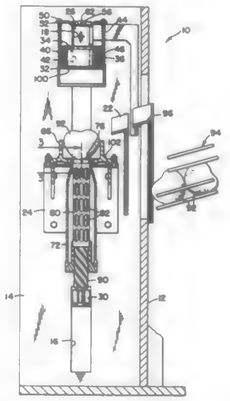
David N. Anderson, Lakeland, Fla., assignor to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 662,654, Mar. 1, 1991, abandoned. This application May 24, 1993, Ser. No. 65,787
Int. Cl.[5] A23N *1/02;* B30B *9/02*
U.S. Cl. 99—509 10 Claims

1. A juice press having a lower cup support means for use in extracting juice from fruits and vegetables, said juice press having an upper solid-walled cup, and upper cup drive arm, a strainer tube, an orifice tube and an orifice tube drive arm, said juice press comprising:

press plunger means, having an outside diameter, carried on said upper cup drive arm, said upper solid-walled cup surrounding the outside diameter of said press plunger;

a lower cup, having an inside diameter substantial equal to said outside diameter of said press plunger means, mounted to said lower cup support means, said lower cup aligned with said upper solid-walled cup and said press plunger means whereby said upper solid-walled cup engages said lower cup in a telescopic relationship when said upper cup drive arm drives said press plunger means into the cavity defined by said upper solid-walled cup and said lower cup whereby virtually all of said fruit or vegetable in the cavity is forced through said strainer tube as the press plunger means is driven into said lower cup;



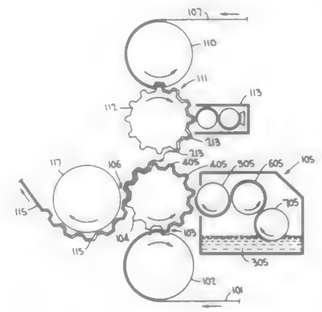
said orifice tube carried on said orifice tube drive arm in alignment with said upper solid-walled cup whereby said orifice tube is driven through said strainer tube by said orifice tube drive arm while said upper cup drive arm drives said press plunger means into said lower cup.

5,339,730

METHOD FOR PRINTING-EMBOSSING PAPER SHEETS

Rémy Ruppel, Durrenentzen; Joël Hungler, Urschenheim, and Pierre Laurent, Colmar, all of France, assignors to Kaysersberg, Kaysersberg, France

PCT No. PCT/FR92/00605, § 371 Date Feb. 23, 1993, § 102(e) Date Feb. 23, 1993, PCT Pub. No. WO93/00219, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 29, 1992, Ser. No. 975,945
Claims priority, application France, Jun. 28, 1991, 91 08029
Int. Cl.[5] B31F *1/07*
U.S. Cl. 101—32 1 Claim



1. A method for printing and embossing a paper sheet made of two or more plies comprising (1) embossing a first ply by means of a first embossing roller; (2) subsequently printing said first ply while said first ply is present on said first embossing

VOL 1165 ISS 4 AG 23 1994 UMI

roller by means of at least one printing means positioned in proximity to said first embossing roller; (3) embossing a second ply by means of a second embossing roller; (4) applying adhesive on said second ply; (5) joining said first ply to said second ply to form a sheet wherein said printing on said first ply is located on a side of said first ply which faces said second ply when said first ply is joined to said second ply to form said sheet.

5,339,731

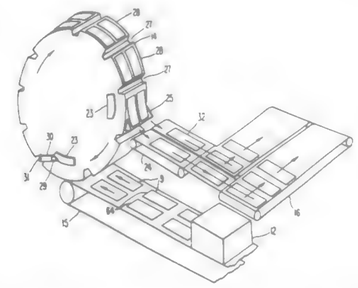
METHOD AND APPARATUS FOR PRINTING MULTICOLORED CONTAINER BODY BLANKS IN A SINGLE PASS

William R. Howard, Holland, Pa.; Oliver J. Tysver, Flossmoor, Ill.; Sheldon Osheff, Northbrook, Ill.; John G. McGrail, River Forest, Ill., and Robert J. Petrie, Oak Lawn, Ill., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Continuation of Ser. No. 801,063, Dec. 3, 1991, abandoned. This application Sep. 28, 1993, Ser. No. 128,057

Int. Cl.[5] B41F *17/08*

U.S. Cl. 101—35 **49 Claims**



1. A method of forming metal body blanks printed in a plurality of colors and suitable for being formed into container bodies, comprising the steps in the following sequence of:

a) a cutting a sheet of said metal into a plurality of said body blanks;

b) transporting said body blanks to an impression cylinder and sequentially securing each of said body blanks thereon with a magnet so that a plurality of body blanks are simultaneously secured to said impression cylinder;

c) applying a first color ink onto said body blanks by rotating said impression cylinder so as to carry said secured body blanks sequentially past a first inking unit;

d) at least partially curing said first color ink applied by said first inking unit by rotating said impression cylinder so as to carry said secured body blanks sequentially past a first curing device;

e) applying a second color ink onto said body blanks by rotating said impression cylinder so as to carry said secured body blanks sequentially from said first curing device to a second inking unit;

f) at least partially curing said second color ink applied by said inking unit by rotating said impression cylinder so as to carry said secured body blanks sequentially past a second curing device; and

g) sequentially releasing said body blanks from said impression cylinder and transporting said body blanks therefrom.

5,339,732

MACHINE FOR SILK-SCREEN PRINTING DECORATION OF THE OUTER SIDES OF CONTAINERS IN GENERAL

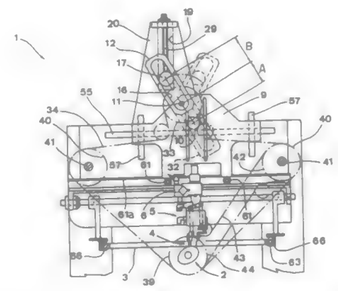
Franco Peterlini; Tiziano Schenetti, and Marco Minardi, all of Reggio Emilia, Italy, assignors to M.O.S.S.-S.r.l., Reggio Emilia, Italy

Continuation of Ser. No. 876,264, Apr. 30, 1992, abandoned. This application Sep. 3, 1993, Ser. No. 115,808

Claims priority, application Italy, May 3, 1991, 000062 A/91

Int. Cl.[5] B41F *17/08;* **B05C** *17/04*

U.S. Cl. 101—38.1 **13 Claims**



1. A silk screen printing machine for decorating an outer surface of a rotatable container having a curved outer surface and rotating around a longitudinal axis, comprising:

a machine frame;

a carriage movably mounted to the machine frame;

a screen having a screen frame supporting a horizontally disposed mesh, said screen being movably supported by said carriage to be disposed above the outer surface of the container, said outer surface having a first radius of curvature, the distance between said outer surface and said longitudinal axis being variable between a maximum value and a minimum value;

a vertically disposed squeegee movably supported by said carriage to be disposed above the screen, the squeegee having a lower edge that contacts and in use scraps an upper surface of the mesh for pressing an ink through the mesh;

driving means for moving the lower edge of the squeegee in an arcuate trajectory having a second radius of curvature;

means for adjusting the second radius of curvature to a value which equals a difference between said first radius of curvature and said minimum value of the distance between said outer surface and said longitudinal axis; and

means for adjusting a length of the arcuate trajectory of the squeegee.

5,339,733

APPARATUS FOR SENSING MAIL PIECE SURFACE CONTOUR

Richard A. Malin, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 8, 1993, Ser. No. 133,421

Int. Cl.[5] B41L *47/46*

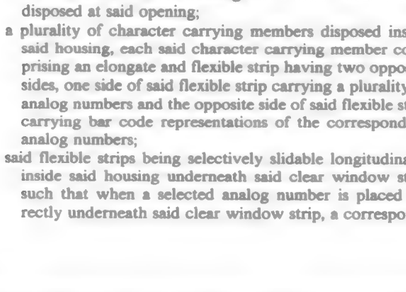
U.S. Cl. 101—91 **9 Claims**

1. In a mailing machine having means defining a feed path along which mail pieces are adapted to move, and means for printing postage indicia in a predetermined location on the mail pieces as they move along the feed path, apparatus for scanning the surface contour of the mail pieces as they move along the feed path prior to being engaged by the printing device of the postage means to determine whether the surface contour of the mail piece in the area where printing is to take place is suitable for printing and for actuating an instrumentality intended to prevent printing of the postage indicia in that area, said apparatus comprising:

A. sensing means disposed adjacent to the feed path of the mailing machine for contacting the surface of a mail piece as it moves along the feed path,

B. means mounting said sensing means for movement in a direction toward and away from the surface of the mail piece in response to variations in the contour of said surface,

C. electro-optical means operatively associated with said mounting means and responsive to movement of said mounting means for generating information indicative of the extent of movement of said sensing means,



D. controller means for receiving and interpreting said information to determine whether said information exceeds threshold limits for said information stored in memory in said controller means, said controller means including means for producing an output signal if said information received from said electro-optical means exceeds said threshold limits for said information, and

E. means responsive to said output signal from said controller means for actuating an instrumentality which prevents a printing operation from taking place on an unacceptable area of the surface the mail piece, by said printing means,

whereby the operator of the mailing machine is given appropriate indication that the surface area of the mail piece where the postage indicia is to be printed has a surface contour which is unacceptable for printing.

5,339,734

PERSONAL BARCODER

Reynaldo A. Mustafa, 697 Lloyd Rd., Aberdeen, N.J. 07747-1351 18, and James Kinstrey, 1036 Broadway, West Long Branch, N.J. 07764-1308

Continuation-in-part of Ser. No. 898,705, Jun. 15, 1992, Pat. No. 5,237,919. This application Jul. 13, 1993, Ser. No. 91,586

Int. Cl.[5] B41J *1/60*

U.S. Cl. 101—109 **1 Claim**

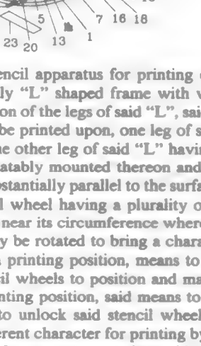
1. A personal barcoder, comprising:

a hand-held unit having a housing, said housing having a top, a bottom and side walls, said side walls having a plurality of slots disposed thereon; a longitudinal opening disposed at said bottom of said housing and a clear window strip disposed at said opening;

a plurality of character carrying members disposed inside said housing, each said character carrying member comprising an elongate and flexible strip having two opposite sides, one side of said flexible strip carrying a plurality of analog numbers and the opposite side of said flexible strip carrying bar code representations of the corresponding analog numbers;

said flexible strips being selectively slidable longitudinally inside said housing underneath said clear window strip such that when a selected analog number is placed directly underneath said clear window strip, a corresponding bar code representation of said selected analog number is displayed at said opening;

each said flexible strip having at least one tab disposed



thereon and projecting through said slot, said tabs being actuated to display a desired series of analog numbers and position their corresponding bar code representations at said opening for imprinting thereof.

5,339,735

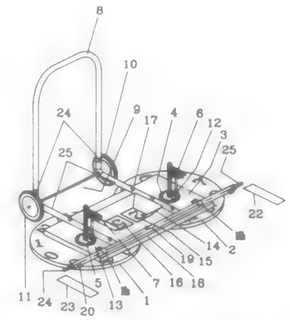
DIALAMATIC STENCIL NUMBERING MACHINE

Daniel D. Corderman, 425 N. Hough St., Barrington, Ill. 60010

Filed Apr. 13, 1993, Ser. No. 46,653

Int. Cl.[5] B41L *13/00*

U.S. Cl. 101—114 **1 Claim**



1. A mobile stencil apparatus for printing on a surface including a generally "L" shaped frame with wheels mounted near the intersection of the legs of said "L", said wheels rolling on the surface to be printed upon, one leg of said "L" serving as a handle and the other leg of said "L" having a plurality of stencil wheels rotatably mounted thereon and positioned in a plane which is substantially parallel to the surface to be printed upon, each stencil wheel having a plurality of characters arranged in a circle near its circumference whereby each of said stencil wheels may be rotated to bring a character which it is to be printed to a printing position, means to releasably lock each of said stencil wheels to position and maintain a desired character at a printing position, said means to releasably lock including means to unlock said stencil wheels to permit the selection of a different character for printing by rotation of the stencil wheels, and means connected to said other leg of said "L" to enable the centering of the printed characters in a desired space whereby successive desired spaces can be printed

VOL 1165 ISS 4 AG 23 1994 UMI

in by tilting said "L" shaped frame to lift said stencil wheels from said surface and rolling said stencil printing apparatus to the next space to be printed in and permitting said "L" shaped frame to pivot about said wheels to again position said stencil wheels on said surface.

5,339,736

ROLLER BEARING SUPPORT ASSEMBLY

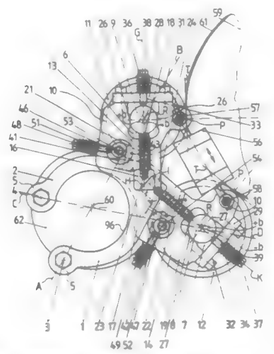
Willi R. L. Dörsam, Höchberg, and Christian M. M. Fischer, Marktheidenfeld, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 985,311

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1991, 4140219

Int. Cl.[5] **B41F** *31/32;* **B41L** *27/34*

U.S. Cl. 101—352 **19 Claims**



1. A roller bearing support assembly usable to support an axle trunnion of a roller in a rotary press, said roller bearing support assembly comprising:

at least a first support lever;

means for securing a first end of said support lever to the rotary press for pivotal movement;

an axle trunnion receiving seat at a second end of said support lever, said seat being generally U-shaped and having an open mouth;

a cross piece securable across said open mouth of said U-shaped seat;

means on said cross piece for adjusting the impression pressure of a roller supported in said roller bearing support assembly against a cylinder in the rotary press;

a resilient support means in a bottom portion of said axle trunnion receiving seat;

an opening in said lever intermediate said first and second ends of said lever, said opening being positionable about a frame fixed stop;

means to move said pivotal lever through a stroke for throwing-on or throwing-off a roller supported by said lever arm; and

means in said opening to limit a distance of said stroke.

5,339,737

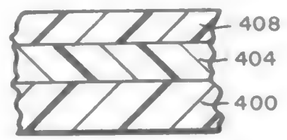
LITHOGRAPHIC PRINTING PLATES FOR USE WITH LASER-DISCHARGE IMAGING APPARATUS

Thomas E. Lewis, E. Hampstead; Michael T. Nowak, Leominster; Kenneth T. Robichaud, Fitchburg, all of Mass., and Kenneth R. Cassidy, Goffstown, N.H., assignors to Presstek, Inc., Hudson, N.H.

Continuation-in-part of Ser. No. 917,481, Jul. 20, 1992. This application May 13, 1993, Ser. No. 62,431

Int. Cl.[5] **B41N** *1/08*

U.S. Cl. 101—454 **36 Claims**



1. A lithographic printing member directly imageable by laser discharge, the member comprising:

a. a topmost first layer which is polymeric; and

b. a second layer underlying the first layer; and

c. a substrate underlying the second layer;

wherein

d. the second layer is formed of a material which is subject to ablative absorption of imaging infrared radiation and the first layer is not; and

e. the first layer and the substrate exhibit different affinities for at least one printing liquid selected from the group consisting of ink and an adhesive fluid for ink.

5,339,738

SHEET-FED OFFSET PRINTING MACHINE EQUIPPED FOR AUTOMATED CHANGING OF PRINTING PLATES

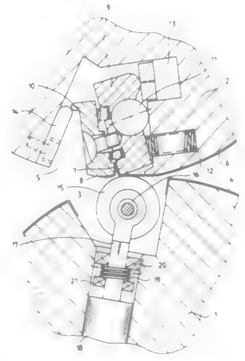
Peter T. Blaser, Dielheim; Karl-Hermann Miltner, Dossenheim, and Nikolaus Spiegel, Walldorf, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jul. 9, 1993, Ser. No. 89,665

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1992, 4222503; Aug. 21, 1992, 4227683

Int. Cl.[5] **B41F** *27/00*

U.S. Cl. 101—477 **18 Claims**



1. Sheet-fed offset printing machine for automated changing of a printing plate having a plate cylinder for carrying a printing plate, the plate cylinder being formed with a gap extending in axial direction thereof, a blanket cylinder formed with a gap

extending in axial direction thereof disposed in cooperative engagement with the plate cylinder, and a clamping device disposed in the plate-cylinder gap and including a pair of movably disposed clamping rails defining therebetween a clamping slot located within the cross-sectional contour of the blanket cylinder, and comprising an insertion device for inserting, into the clamping slot defined by the clamping rails, a bent edge of a a printing plate disposed on the plate cylinder, the bent edge being located at a trailing end of the printing plate, said insertion device being disposed in the gap formed in the blanket cylinder and having a thrust body formed with a thrust surface movable radially out of the cross-sectional contour of the blanket cylinder against the trailing end of the printing plate on the plate cylinder.

5,339,739

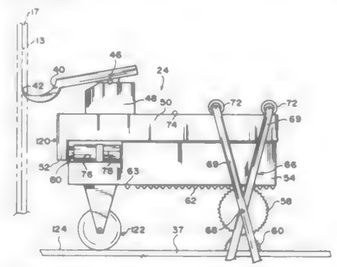
EMULSION COATING APPARATUS

Charles Di Pietro, 503 S. Van Buren St., Batavia, Ill. 60510

Filed Mar. 3, 1993, Ser. No. 25,868

Int. Cl.[5] **B41M** *1/12*

U.S. Cl. 101—129 **2 Claims**



2. A method for electromechanically applying a coating to a screen using an apparatus having no pneumatic or hydraulic components, the method including the steps of:

mechanically holding the screen in a vertical orientation;

mechanically bringing a tiltable trough containing a coating emulsion against each side surface of the screen at a lower edge thereof;

mechanically tilting a leading screen engaging end edge of each trough toward the screen;

mechanically setting the troughs relative to the screen to provide desired pressure therebetween;

mechanically moving the troughs upwardly along the screen;

mechanically and continuously sensing pressure between the leading edge of each trough and the screen; and

mechanically and continuously moving each trough horizontally in response to sensed pressure to maintain desired pressure.

5,339,740

Patent Not Issued For This Number

5,339,741

PRECISION FIREWORKS DISPLAY SYSTEM HAVING A DECREASED ENVIRONMENTAL IMPACT

B. Thomas Craven, Windermere; William G. Wiedefeld; Kyle W. Poor, both of Clermont, all of Fla.; Bruce S. Johnson, North Hollywood, Calif.; John W. Sogge, Orlando, Fla.; Michael H. Peterson, Glendale, Calif.; William G. Adamson, Pacoima, Calif., and Ronald W. Froelich, Covina, Calif., assignors to The Walt Disney Company, Burbank, Calif.

Filed Jan. 7, 1992, Ser. No. 817,591

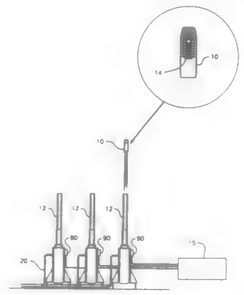
Int. Cl.[5] **F42B** *4/04*

U.S. Cl. 102—361 **46 Claims**

1. A system for creating a fireworks display, comprising:

(a) a fireworks projectile designed to explode into a fireworks display in the air, the fireworks projectile comprising a shell containing an explosive charge, wherein the shell is constructed from a composition that includes an additive such that upon detonation of the charge the shell is exploded along with the charge into small particles that are rapidly burned and consumed;

(b) an electronic fuse connected to the explosive charge in the fireworks projectile for detonating the explosive charge and exploding the fireworks projectile into the



fireworks display in the air at a predetermined time period after launch; and

(c) a launcher for launching the fireworks projectile into the air, in which a non-explosive launching medium comprising a compressed gas at a controlled pressure is used to propel the fireworks projectile from the launcher into the air.

5,339,742

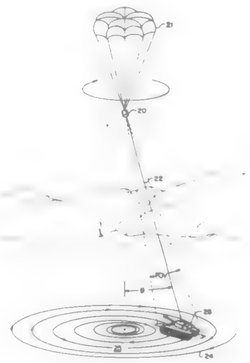
TARGET DETECTION AND FIRE CONTROL SYSTEM FOR PARACHUTE-SUSPENDED WEAPON

Garry N. Hulderman, Riverside, and Hugh L. Ord, Upland, both of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Nov. 13, 1981, Ser. No. 321,001

Int. Cl.[5] **F42B** *10/56;* **F42C** *13/02*

U.S. Cl. 102—387 **5 Claims**



1. A system for controlling the arming and firing of a weapon that is suspended from a parachute at an oblique angle and spun so as to be aimed over a rotational scanning pattern on the earth as the parachute descends toward the earth, comprising

a platform for supporting the weapon so that the weapon is aimed in a predetermined direction relative to the platform;

VOL 1165 ISS 4 AG 23 1994 UMI

detection means supported by the platform and aimed in the same direction as the weapon for detecting predetermined radiation characteristics from targets of opportunity;

ranging means supported by the platform and aimed in the same direction as the weapon for determining the range to the earth in said direction;

first means coupled to the ranging means for enabling the weapon to be armed in response to the ranging means determining that the range to the earth in the direction that the weapon is aimed is less than a first predetermined distance; and

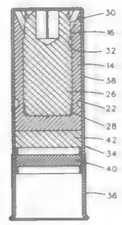
second means coupled to the detection means and the ranging means for enabling an armed weapon to be fired in response to either the detection means detecting said predetermined radiation characteristics or the ranging means determining that the range to the earth in the direction that the weapon is aimed is less than a second predetermined distance that is shorter than the first predetermined distance.

5,339,743

AMMUNITION SYSTEM COMPRISING SLUG HOLDING SABOT AND SLUG TYPE SHOT SHELL

Vincent F. Scarlata, Cabot, Ak., assignor to Remington Arms Company, Inc., Wilmington, Del.

Filed Jul. 12, 1993, Ser. No. 88,939
Int. Cl.[5] F42B *5/02, 14/06*
U.S. Cl. 102—439 **4 Claims**



1. A shot shell ammunition system including:

(a) a cylindrical sabot having a base portion with upwardly extending spaced flexible segments forming a cylindrical cavity, with the segments locking projections extending inwardly toward the cavity and being undercut in the base portion; and

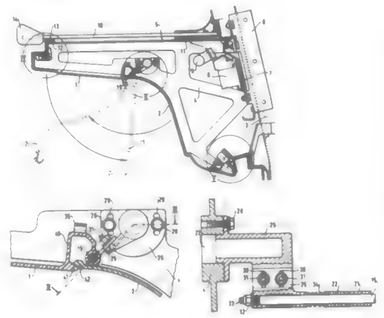
(b) a slug located within the cylindrical cavity of the sabot having a main cylindrical body portion terminating in an annular locking ledge having a surface substantially perpendicular to a longitudinal axis of the cylindrical body portion, the locking ledge being substantially the same distance from the base of the cylindrical body portion as the locking projections are from the interior base of the sabot to the locking projections, each locking projection having a surface substantially perpendicular to a longitudinal axis of the sabot to mate with the locking ledge, the locking projections on the sabot segments, when the slug is inserted into the sabot cavity, passing over the slug locking ledge to axially retain the slug in the sabot, the slug having a hollow point segmented nose portion.

5,339,744

BAGGAGE RACK UNDER FLAP FOR THE PASSENGER SPACE OF A RAIL VEHICLE

Patrick Ricaud, Perigny, and Bernard Mormede, La Jarne, both of France, assignors to GEC Alsthom Transport SA, Paris, France

Filed Feb. 12, 1993, Ser. No. 16,939
Claims priority, application France, Feb. 14, 1992, 92 01697
Int. Cl.[5] B61D *49/00*
U.S. Cl. 105—332 **8 Claims**



1. An apparatus including a baggage rack having an under flap for a longitudinally extending passenger space of a rail vehicle containing a plurality of such under flaps placed end to end, the baggage rack being supported by a bracket fixed to the vehicle, the flap being longitudinally hinged by a hinge to be capable of swinging down and to give access to an area situated beneath the baggage rack, the flap being held in a closed position by locking, said under flap comprising:

two longitudinal flap elements hinged about a common hinge pin of the hinge;

fixed hinge portions supporting said hinge pin and held by support pieces fixed to said bracket, said hinge pin and hinge portions defining said hinge;

first means for adjusting said support pieces on said bracket to enable angular displacement of said hinge pin in a plane transverse to the passenger space; and

second means for adjusting said fixed hinged portions on said support pieces by translation movement in a plane transverse to the passenger space.

5,339,745

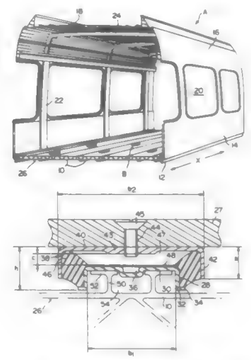
SOUND PROOFING AND VIBRATION DAMPENING ELASTIC CONNECTING ELEMENT

Antal Ritzl, Zürich, and Markus Wernli, Winterthur, both of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed Jun. 1, 1993, Ser. No. 69,786
Claims priority, application Switzerland, Jun. 24, 1992, 1987/92
Int. Cl.[5] B61D *17/00*
U.S. Cl. 105—452 **19 Claims**

1. Connecting element which comprises: a sound proofing and vibration dampening elastic connecting element for floating suspension of a floor deck on a structural load-bearing carriage floor of vehicles for passenger transport, having an elastic body with supporting surfaces for the carriage floor and the floor-deck, wherein the floor-deck is spaced above said carriage floor; a base section of said connecting element having free surfaces and a surface for contact with the carriage floor; a deck-supporting section of said connecting element having free surfaces spaced from the free surfaces of the base section and a surface for contact with the floor-deck spaced from the surface for contact with the carriage floor of the base section;

counterfacing surfaces of said base section and deck-supporting section spaced from each other running essentially perpendicular to the carriage floor and floor-deck; and an elastic mass



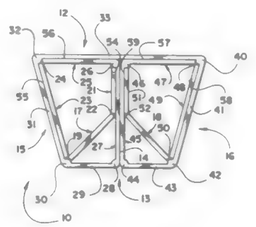
between the counterfacing surfaces and adhesively bonded thereto, wherein a sound proofing material is present on the free surfaces of at least one of the base section and deck-supporting section and is adhesively bonded thereto.

5,339,746

PALLET LEG ASSEMBLY

Truman J. Vannatta, Lynchburg, Va., assignor to Rock-Tenn Company, Norcross, Ga.

Filed Jun. 2, 1992, Ser. No. 892,257
Int. Cl.[5] B65D *19/12*
U.S. Cl. 108—56.3 **13 Claims**



1. A pallet leg assembly comprising:

a horizontal, load-contacting panel;

a horizontal bottom panel;

at least one side panel extending from said bottom panel to said load-contacting panel;

a vertical, load-bearing panel disposed between ends of said load-contacting panel and said bottom panel and extending substantially perpendicular to said bottom panel;

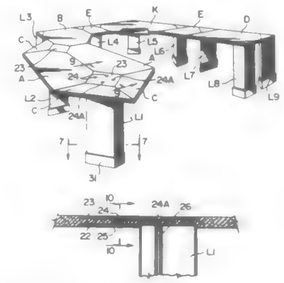
at least one diagonal support panel lying in a plane parallel to the line of intersection between said load-contacting panel and said vertical panel, and extending from one of said load-contacting and bottom panels to a location on said vertical panel intermediate said load-contacting panel and said bottom panel, said location being spaced apart from said load-contacting and bottom panels.

5,339,747

DETACHABLY INTERCONNECTED WORK TABLES USING PANEL SECTIONS OF VARIOUS GEOMETRIC SHAPES

Alan L. Epps, P.O. Box 226, Chelsea, Quebec, Canada J0X 1N0

Filed Jul. 27, 1992, Ser. No. 919,230
Int. Cl.[5] A47B *57/00*
U.S. Cl. 108—64 **24 Claims**



1. A table assembly comprising:

(a) a plurality of support legs;

(b) at least two right angular panel sections each having at least three corners, planar upper and lower main panel faces and panel edge sidewalls the latter of which intersect at 45°, 90° or 135° corners;

(c) recesses in at least said upper faces which extend inwardly from selected ones of said 90° corners, each recess being in the shape of a right angle isosceles triangle; and

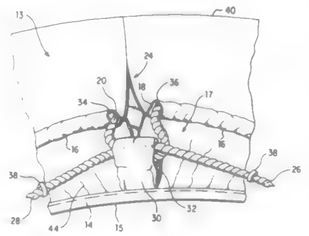
(d) means to join said panel sections together with selected sidewalls thereof in abutting relation and the upper panel faces aligned so as to provide a continuous table top surface extending from one said panel section to the other, said joining means comprising a flat connector plate in each of the recesses and adjacent adjoining recesses in the upper faces of said abutting panel sections, each said connector plate corresponding in shape to the recess associated therewith and overlapping abutting panels having adjoining recesses and bolt means connecting the support legs to a respective one of said connector plates associated therewith and clamping the panels associated therewith therebetween.

5,339,748

TABLE COVER

Alfred J. Bilotti, Huntington Beach, Calif., assignor to Dayva International, Inc., Huntington Beach, Calif.

Filed Aug. 9, 1993, Ser. No. 103,299
Int. Cl.[5] A47C *27/00*
U.S. Cl. 108—90 **8 Claims**



1. A table cover for use in covering a table top, comprising: a panel having a peripheral edge, the panel having a sleeve

VOL 1165 ISS 4 AG 23 1994 UMI

provided along the peripheral edge, the sleeve having an exposed section and a first opening and a second opening about the exposed section;

a drawstring held within the sleeve and having a first free end extending from the first opening and a second free end extending from the second opening; and

a tongue coupled to the panel about the exposed section of the sleeve between the first opening and the second opening, the tongue having a loop provided therethrough;

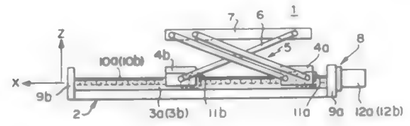
wherein the first free end of the drawstring passes through the loop in a first direction and the second free end of the drawstring passes through the loop in a second direction opposite the first direction.

5,339,749

TABLE POSITIONING MECHANISM

Kazuya Hirose, Tokyo, Japan, assignor to Hihasuto Seiko Co., Ltd., Kawagoe, Japan

Filed Jun. 23, 1992, Ser. No. 902,938
Int. Cl.[5] A47B *11/00*
U.S. Cl. 108—143 **5 Claims**



1. A table positioning device comprising;

a support base;

first and second linear guide rails on said support base;

a first sliding body and a second sliding body on said first and second linear guide rails;

means for moving said first sliding body and said second sliding body respectively on a first axis parallel to said linear guide rails;

said means for moving including first means for moving said first and second sliding bodies together and second means moving said first sliding body a different distance than said second sliding body;

linkage means connecting said table to said first and second sliding bodies;

said linkage means including means, responsive to said different distance, for moving said table relative along a second axis normal to said first axis;

said means for moving including a first screw shaft, a first female screw body, and a first driving motor;

said first screw shaft rotatably fixed on said support base parallel to said linear guide rails;

said first female screw body threaded on said first screw shaft;

said first female screw body being attached to said first sliding body;

said first driving motor connected to said first screw shaft for rotating said first screw shaft;

said means for moving further including a second screw shaft, a second female screw body, and a second driving motor;

said second screw shaft on said support base parallel to said linear guide rails;

said second female screw body threaded on said second screw shaft;

said second female screw body being attached to said second sliding body;

said second driving motor connected to said second screw shaft for rotating said second screw shaft; and

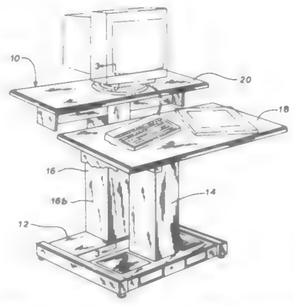
said first and second motors being independently driven, whereby said first and second sliding bodies are positionable together and also said different distances.

5,339,750

ADJUSTABLE WORK TABLE

Ronald J. Smies, Oostburg, Wis., assignor to Hamilton Industries, Sheboygan, Wis.

Continuation of Ser. No. 858,945, Mar. 27, 1992, abandoned.
This application Oct. 12, 1993, Ser. No. 135,132
Int. Cl.[5] A47B *9/00*
U.S. Cl. 108—147 **6 Claims**



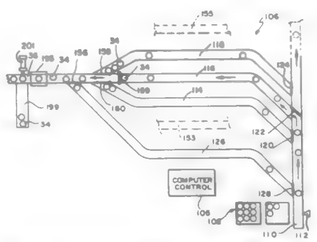
1. A raisable and lowerable table which comprises a base, a pair of extensible enclosed vertical columns attached to said base, each vertical column including means for supporting a table top for independent raising and lowering of each table top, and each supporting means including pivoting means for tilting each of said table tops on a horizontal axis through a range of pivoted positions from a horizontal position of said table top, each supporting means including a first independent motor-driven lead screw actuator for raising and lowering each of said vertical columns and a second independent motor-driven lead screw actuator for tilting said table top in any of said range of pivoted positions, said first and second actuators for each column being fully enclosed therein.

5,339,751

APPARATUS AND METHOD FOR CHARGING COMBUSTIBLE SOLIDS INTO A ROTARY KILN

James R. Tutt, Nash, Tex., assignor to Ash Grove Cement Company, Overland Park, Kans. and Cadence Environmental Energy, Inc., Michigan City, Ind.

Filed Sep. 1, 1992, Ser. No. 938,948
Int. Cl.[5] F23G *7/04*; F23N *5/18*
U.S. Cl. 110—186 **68 Claims**



1. A firing system for charging a plurality of incoming combustible fuel modules containing a known amount of a parameter of interest into a heated zone of a rotating kiln, the firing system comprising:

means for separating incoming fuel modules into a plurality of stages based on the parameter amount in each fuel module;

means for removing fuel modules from the plurality of stages in a selected order to maintain an average parameter amount for fuel modules charged into the kiln at substantially a preselected level; and

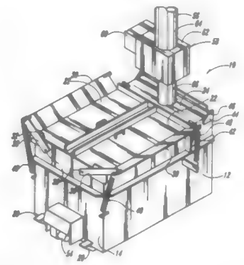
means for charging fuel modules into the kiln in the selected order.

5,339,752

LIVESTOCK INCINERATOR

Larry D. Lewis, P.O. Box 112, Cedar, Iowa 52543

Filed Jul. 19, 1993, Ser. No. 93,016
Int. Cl.[5] F23G *1/00*
U.S. Cl. 110—194 **12 Claims**



1. A livestock incinerator, comprising,

a compartment having opposite ends and opposite sides, and an open top;

a first lid pivotally secured to the open top adjacent one of the ends;

a smoke stack secured to and extending upwardly from the first lid;

a pair of second lids pivotally secured to the open to at the opposite sides and abutting each other and the first lid to close the open top; and

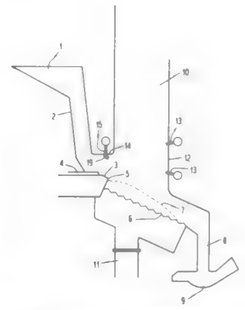
a burner in the compartment.

5,339,753

SECONDARY AIR NOZZLE FOR FURNACES

Walter J. Martin, Tegernsee, and Johannes J. E. Martin, Munich, both of Fed. Rep. of Germany, assignors to Martin GmbH fuer Umweltund Energietechnik, Munich, Fed. Rep. of Germany

Filed Sep. 27, 1993, Ser. No. 126,930
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1992, 4232488
Int. Cl.[5] F23L *13/00*
U.S. Cl. 110—313 **6 Claims**



1. A secondary air nozzle for furnaces comprising:

a curved base body which is provided with pins for holding a ceramic protective casing; and

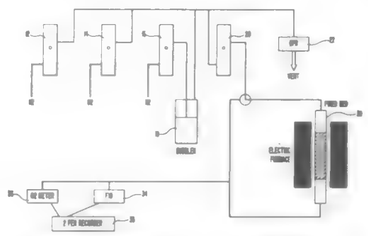
a protective strip projecting radially from said base body and being arranged along the longest line of curvature proceeding from an opening of said nozzle until beyond the curved part of said base body; said base body having a radial dimension corresponding at least to the thickness of the ceramic protective casing.

5,339,754

METHOD AND APPARATUS FOR PREVENTION OF PUFFING BY ROTARY KILN AND OTHER INCINERATORS AND COMBUSTION SYSTEMS

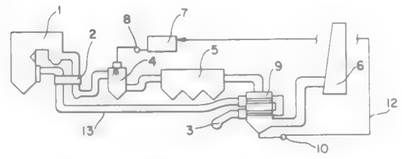
Richard K. Lyon, Pittstown, N.J., assignor to Energy and Environmental Research, Irvine, Calif.

Filed Dec. 11, 1992, Ser. No. 990,880
Int. Cl.[5] F23J *15/00*
U.S. Cl. 110—345 **41 Claims**


BOILER
ELECTRIC PRECIPITATOR
FEED PUMP
STACK
FEEDWATER HEATER
FEEDWATER HEATER
FEEDWATER HEATER

VOL 1165 ISS 4 AG 23 1994 UMI

collection means for recovering heat from the flue gas; and



condensate recycle means connected to the condensing heat exchanger and the slurry source.

5,339,756

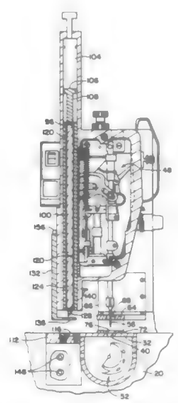
MATERIAL REMOVAL DEVICE USED WITH A SEWING MACHINE

Ralph Badillo, and Paul Badillo, both of Littleton, Colo., assignors to Ralph's Industrial Sewing Machine Company, Denver, Colo.

Continuation of Ser. No. 764,332, Sep. 23, 1991, Pat. No. 5,193,471, which is a continuation-in-part of Ser. No. 633,497, Dec. 26, 1990, Pat. No. 5,158,026. This application Mar. 1, 1993, Ser. No. 24,687

Int. Cl.[5] D05B *3/06*

U.S. Cl. 112—68 **22 Claims**



1. An apparatus attachable to a sewing machine for creating an opening in a stitchable material on which the sewing machine performs sewing operations, the sewing machine having a head, sewing needle, and cylinder bed, the head containing components for driving the sewing needle and the cylinder bed supporting the stitchable material during the sewing operations and containing additional sewing components required for performing the sewing operations, said apparatus comprising:

a kit separable from but connectable to the sewing machine, wherein said kit is removable from the sewing machine for performing a first sewing operation and wherein said kit is attachable to the sewing machine for performing a second sewing operation different from the first sewing operation, said kit comprising:

first means for supporting the stitchable material beyond the cylinder bed and having a receiving area, said first means being detachably connectable to the sewing machine and said receiving area being substantially isolated from the sewing components in the cylinder bed when said first means is connected to the sewing machine;

means for detachably connecting said first means to the sewing machine, said means for detachably connecting being movable between at least two positions, said first position establishing a connection between said first means and the sewing machine and said second position providing for a disengagement between said first means and the sewing machine such that the first means may be totally removed from the sewing machine;

second means for creating the opening in the stitchable material, said second means being detachably connectable to the sewing machine; and

third means, operatively connected to said second means, for driving said second means through the stitchable material and within said receiving area to cause said second means to create the opening in the stitchable material, wherein the second sewing operation is conducted in relation to the opening.

5,339,757

NEEDLE-BAR DRIVING DEVICE

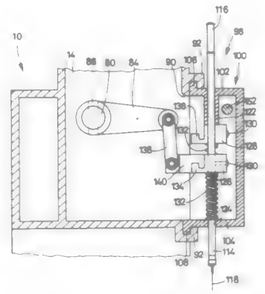
Motonari Nakano, and Syoichi Kunieda, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 27, 1992, Ser. No. 935,965

Claims priority, application Japan, Aug. 30, 1991, 3-246684

Int. Cl.[5] D05B *69/00, 1/08*

U.S. Cl. 112—221 **33 Claims**



1. A needle-bar driving device of a sewing machine, for oscillating a needle bar supporting at a lower end thereof a sewing needle, in the axial direction of the needle bar, comprising:

dead-position changing means for changing at least a lower dead position of said needle bar, wherein said dead-position changing means comprises amplitude reducing means for reducing an amplitude of the axial-direction oscillation of said needle bar, and thereby changing said lower dead position of the needle bar to a new lower dead position wherein said sewing needle cannot stock in a work piece; and

electric control means for electrically controlling, while the needle-bar driving device oscillates said needle bar and said sewing needle, said amplitude reducing means to reduce said amplitude of said axial-direction oscillation of said needle bar and thereby change said lower dead position of said needle bar to said new lower dead position.

5,339,758

REMAINING BOBBIN-THREAD AMOUNT MEASURING APPARATUS FOR SEWING MACHINE

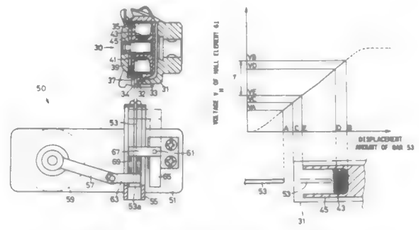
Tomoyuki Fujita, Tajimi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 3, 1993, Ser. No. 70,901

Claims priority, application Japan, Jun. 22, 1992, 4-163079

Int. Cl.[5] G01B *5/02, 7/02;* **D05B** *69/36*

U.S. Cl. 112—278 **22 Claims**



19. A bobbin-thread supplying apparatus for supplying a bobbin thread which cooperates with a needle thread carried by a sewing needle of a sewing machine to form stitches into a work sheet, comprising:

(A) a shuttle including

a bobbin around which said bobbin thread is wound,

a rotating hook which is rotatable for catching said needle thread, said rotating hook defining an outer limit of a locus of rotation of the shuttle,

a rotating-hook driver which rotates said rotating hook;

(B) a remaining bobbin-thread measuring device including

a measurement bar which is displaceable along a displacement path from outside of the shuttle toward an axis line of the bobbin inside of the shuttle,

a measurement-bar driver which displaces said measurement bar along said displacement path so that a free end of the measurement bar contacts an outer surface of a roll of the bobbin thread wound around the bobbin,

a displacement sensor which detects the displacement of said measurement bar, said sensor gathering a displacement signal having more than two values representative of a continuous change in displacement amount of the measurement bar,

remaining-amount determining means for determining a remaining amount of the bobbin thread wound around the bobbin, based on a value of said displacement signal when the free end of said displacement bar contacts the outer surface of the roll of the bobbin thread,

a display device which displays said remaining amount of the bobbin thread determined by said remaining-amount determining means; and

(C) a control device which controls operation of said rotating-hook driver and operation of said remaining bobbin-thread measuring device including said measurement-bar driver.

5,339,759

BOAT HATCH WIND SCOOP SYSTEM

Andrew L. Peabody, P.O. Box 2120, Natchez, Miss. 39121

Filed Dec. 9, 1993, Ser. No. 163,512

Int. Cl.[5] B63B *19/06*

U.S. Cl. 114—211 **6 Claims**

1. A wind scoop system for attachment to a marine craft deck hatch having a hinged hatch cover which opens to uncover the hatch opening whereby said system communicates through said opening with the below deck space of said craft that comprises:

a flexible entrance unit,

a pair of rigid triangular wedges,

a plurality of fastener tapes,

a zipper closure strip, and

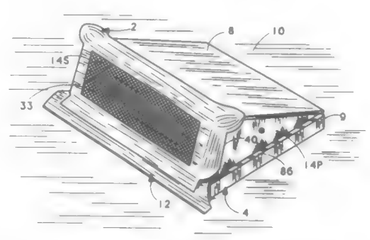
an elastic cord member,

said entrance unit comprising first and second fabric panels, each presenting a front surface and a rear surface,

said first panel being defined by an upper edge, a straight lower edge shorter in length than said upper edge, a first side edge and a second side edge that is the mirror image of said first side edge, wherein:

said upper edge is defined by a minor left segment, a mirror image right segment, a major central segment offset laterally from and parallel to said left and right segments and a pair of parallel segments normal to said left, central and right segments,

said side edges each defined by a major upper segment, a minor lower segment parallel and indented relative to said upper segment and an angled segment joining said upper segment to said lower segment, and



a screened rectangular opening in said first panel, said second panel being defined by a top edge, a straight bottom edge, a straight third side edge and a straight fourth side edge that is the mirror image of said third side edge,

said top edge defined by a major central portion parallel to said bottom edge, a left portion angled relative to said central portion

and a right portion the mirror image of said left portion, and

said zipper closure strip having a length about equal to said major central portion and being fastened to said rear surface of second panel longitudinally aligned with said major central portion,

said back surface of said first panel being fixed in line contact to said front surface of said second panel with said straight lower edge of said first panel being parallel and spaced apart a short distance from said straight bottom edge of said second panel.

5,339,760

APPARATUS FOR SECURING A VESSEL TO A SUBMERSIBLE MOORING BUOY

Jens Korsgaard, 318 N. Post Rd., Princeton Junction, N.J. 08550

Filed Sep. 20, 1993, Ser. No. 124,136

Int. Cl.[5] B63B *21/00*

U.S. Cl. 114—230 **9 Claims**

1. An ocean mooring system in[illegible]ding

a submersible buoyant moor[illegible] element having an upper part symmetrical about a vertical mooring axis of the mooring element;

a vessel having a downward-facing mooring part symmetrical about a mooring axis of the vessel and engageable with the upper part of the mooring element;

apparatus for securing the upper part of the mooring element to the mooring part of the vessel, wherein the securing apparatus comprises:

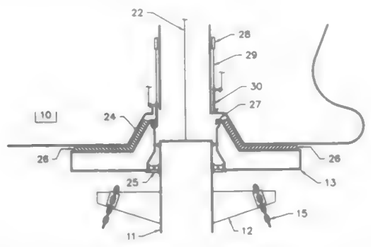
a downwardly-facing annular mooring surface on the upper part of the mooring element coaxial with the mooring axis of the mooring element;

VOL 1165 ISS 4 AG 23 1994 UMI

a multiplicity of actuators mounted in the vessel;

a multiplicity of hooks disposed concentrically with the mooring axis of the vessel, with means for connecting at least one hook to each actuator for movement by the actuator between a raised position and a lowered position; and

apparatus for radially shifting each hook in one direction to engage the mooring surface during a mooring operation



and in an opposite direction to disengage from the mooring surface during an unmooring operation, wherein the multiplicity of actuators, when actuated to move their respective hooks to the raised position when the hooks are engaged with the mooring surface, exert a total tension force that is greater than a predetermined maximum downward force exerted by the mooring element on the hooks.

5,339,761

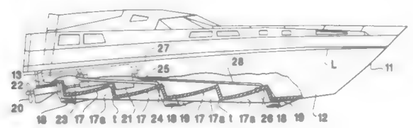
HYDROFOIL CRAFT

Wen-Chang Huang, 50-2, Lane 149, Lin Yun Road, Sec. 1, Wu Ku Hsiang, Taipei Hsien, Taiwan, assignor to Wen-Chang Huang and Te-Yaung Chu, Taiwan

Filed Feb. 23, 1993, Ser. No. 21,457

Int. Cl.[5] B63B *1/24*

U.S. Cl. 114—274 **13 Claims**



1. A hydrofoil craft comprising:

a hull having a bottom side;

at least one air cushion recess extending along the bottom side in a fore-and-aft direction, the air cushion recess being in the form of a hollow groove and being of greater depth toward a bow end of the air cushion recess and becoming shallower toward an aft end of the air cushion recess, the air cushion recess being substantially triangular in shape along a longitudinal section of the hull and substantially rectangular in plan view, the air cushion recess being disposed below an at-rest waterline of the hydrofoil craft;

at least one foil disposed on the bottom side and extending transversely across the air cushion recess; and

at least one jet means for ejecting pressurized gas into the air cushion recess, the jet means being disposed in a forward portion of the air cushion recess.

5,339,762

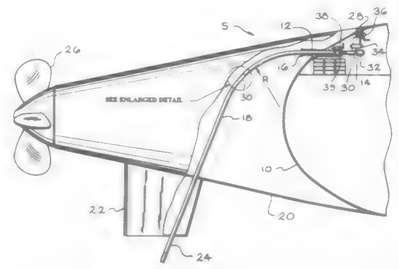
UNDERSEA LAUNCHER FOR A TETHERED DEVICE

Ronald E. Waciawik, Fairhaven, Mass.; George M. Duarte, Bristol, and Louis P. Dinola, Cranston, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1993, Ser. No. 79,766

Int. Cl.[5] B63G *8/00*

U.S. Cl. 114—312 **14 Claims**



1. A launch apparatus for a waterborne vessel comprising:

a launch tube extending through the hull of said vessel, said launch tube having a muzzle end exposed to environmental fluid external to said vessel's hull and a loading end internal to said vessel's hull;

an instrument package capable of sealing against the interior surface of said launch tube, said instrument package having a sliding fit through said launch tube to allow transportation of said instrument package through said launch tube;

a first valve joined to and in hydraulic communication with said loading end of said launch tube to allow selective interruption of the flow of fluid from said launch tube muzzle end while allowing transmission of said instrument package therethrough;

a breech valve means in communication with said first valve, said breech valve means allowing loading of said instrument package for launch from within said vessel's hull;

a hydraulic pump having a suction port and an output port in hydraulic communication with said breech valve means to allow a flow of pressurized fluid to be supplied to said breech valve means behind said instrument package to effect a launch of said instrument package; and

a second valve in hydraulic communication with said environmental fluid and said hydraulic pump suction port to allow selective interruption of the flow of fluid to said suction port of said hydraulic pump.

5,339,763

FASTENER FOR A BOAT COVER

Edward J. Erskine, Benson, N.Y., assignor to Nelson A. Taylor Co., Inc., Gloversville, N.Y.

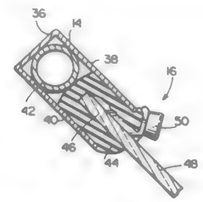
Filed Feb. 3, 1993, Ser. No. 13,091

Int. Cl.[5] B63B *17/00*

U.S. Cl. 114—361 **20 Claims**

1. A thermoplastic fastener clip for use with a windshield assembly which includes a transparent member, a trim piece extending along an edge of the transparent member, and a gasket secured within the trim piece and enclosing said edge of said transparent member, said fastener clip comprising a pair of leg portions arranged in a substantial V-shape, one of said pair of leg portions having a length greater than the other of said pair of leg portions, the other of said leg portions supporting a fastener component projecting away from said one of said leg portions, and wherein said one leg portion is formed with opposed interior and exterior surfaces, said exterior surface being substantially flat and said interior surface having a plurality of serrations formed thereon, said interior surface also

having a pair of inclined ramp surfaces adjacent said other of said pair of leg portions, said one leg portion adapted to be



inserted between said transparent member and said gasket such that said exterior surface engages said transparent member and said serrations engage said gasket.

5,339,764

DEVICE FOR OPTICALLY INDICATING THE PRESSURE OF A MEDIUM

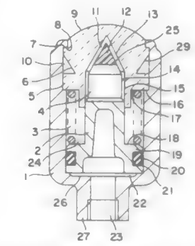
Günther Singbartl, Hanover, Fed. Rep. of Germany, assignor to WABCO Standard GmbH, Hanover, Fed. Rep. of Germany

Filed Apr. 21, 1993, Ser. No. 51,536

Claims priority, application Fed. Rep. of Germany, May 4, 1992, 4214804

Int. Cl.[5] G01L *17/00;* **B60C** *23/02;* **G08B** *5/00*

U.S. Cl. 116—266 **10 Claims**



1. Device for optically displaying the pressure of a medium, comprising

a housing,

a piston within said housing which is movable by the pressure exerted by said medium along a longitudinal axis from an initial position to an end position against a restoring force,

an optically transparent element within said housing, said optically transparent element having a display surface on a first side facing away from said piston, said display surface being visible from outside said housing,

said optically transparent element having a wall on a second side facing towards said piston, said wall delimiting a cavity which is open towards said piston,

a surface having a first color within said housing, said surface being movable by said piston and being received within said cavity as said piston is moved by the pressure of said medium,

said optically transparent element having a circumferential surface enveloping said longitudinal axis having a zone of a second color which is not directly visible from outside said housing through said display surface, said second colored zone being integral with said optically transparent element,

said wall of said optically transparent element delimiting said cavity being aligned so that light rays emanating from said second colored zone are reflected by an interface formed by said wall and an adjoining air layer towards said display surface so that said second color is visible from outside said housing when said piston is not in its end position,

said colored surface being moved by said piston to traverse said interface when the pressure of said medium is greater than a predetermined pressure level, so that light rays emanating from said colored surface are reflected at said interface within said housing before said piston reaches said end position, and said light rays emanating from said colored surface are transmitted through to said display position when said piston reaches said end position and said first color is visible from outside said housing.

5,339,765

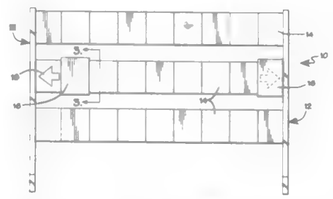
DIRECTION INDICATING TRAFFIC BARRICADE

James E. Ward, 4823 Marigold Cir., Bossier City, La. 71111

Filed Apr. 14, 1993, Ser. No. 46,199

Int. Cl.[5] E01F *13/00;* **G09F** *9/40*

U.S. Cl. 116—63 P **17 Claims**



1. A visual message indicating traffic barricade for removable placement adjacent to a road hazard, said traffic barricade comprising:

a portable support means adapted to hold said traffic barricade in a relatively upright position;

means for securing a plurality of bodies to said support means;

at least one member selectively movably connected to at least one said body; and

at least one visual message presented upon at least one said body corresponding to each said member, whereby said message can be selectively occluded by positioning said member over said message in a first concealing position, and whereby said message can be selectively visually discerned by positioning said member away from said message in a second revealing position.

5,339,766

METHOD OF INTRODUCING MATERIAL INTO EGGS DURING EARLY EMBRYONIC DEVELOPMENT

Patricia V. Phelps, Raleigh; Julius K. Tyczkowski, Cary; Toni O. O'Connell, Zebulon, and Ann B. Gore, Raleigh, all of N.C., assignors to Embrex, Inc., Research Triangle Park, N.C.

Filed Nov. 3, 1993, Ser. No. 147,162

Int. Cl.[5] A01K *67/00*

U.S. Cl. 119—6.8 **22 Claims**

1. A method of introducing a substance into a bird egg through the shell thereof, comprising the steps of:

applying a seal to the exterior of the shell;

inserting an injection device through said seal and into the egg;

injecting said substance through said injection device and into the interior of the egg; and

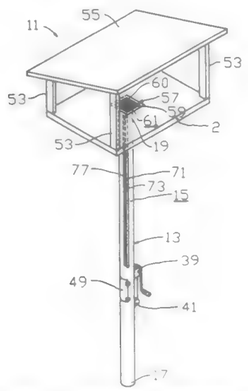
VOL 1165 ISS 4 AG 23 1994 UMI

withdrawing said injection device from the egg through said seal;



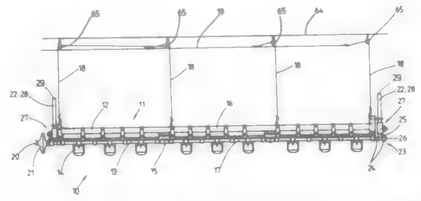
whereby said substance is deposited in the interior of the egg.

5,339,767
AUTOMATIC BIRD FEEDER
Jeffrey B. Krag, 215 DiNard Rd., Rossville, Tenn. 38066
Filed May 25, 1993, Ser. No. 66,209
Int. Cl.[5] A01K *39/01*
U.S. Cl. 119—57.8 **1 Claim**



1. A bird feeder for holding and dispensing bird feed; said bird feeder comprising:
(a) a pipe having a hollow interior for holding a supply of bird feed; said pipe including a lower end for embedding in the ground and having an open upper end;
(b) a coil spring positioned within said hollow interior of said pipe, said coil spring having a lower end and an upper end;
(c) support means for supporting said lower end of said coil spring within said hollow interior of said pipe;
(d) a plunger slidably positioned within said hollow interior of said pipe and positioned on said upper end of said coil spring;
(d) a cable having a first end attached to said plunger and having a second end;
(e) guide means for guiding said cable from said plunger to a point below said lower end of said coil spring;
(f) winch means coupled to said second end of said cable for pulling said plunger downwardly toward said lower end of said coil spring and for compressing said coil spring;
(g) a rigid platform attached to and encircling said open upper end of said pipe;
(h) cover means for coveting said open upper end of said pipe and for keeping the bird feed within said pipe under tension, said cover means having apertures therethrough sized to allow birds to pick bird feed therethrough while preventing bird feed from freely passing out said open upper end of said pipe; and
(i) indicator means for showing the level of bird feed within said pipe; said indicator means including a clear tube positioned on the exterior of said pipe, a magnetic piston slidably positioned within said clear robe, a coacting magnetic member attached to said plunger for moving up and down with said plunger, and measuring indicia positioned on the exterior of said pipe adjacent said clear tube for allowing actual measurements of the height of said magnetic piston within said clear tube to be noted whereby the level of the bird feed in said hollow interior of said pipe is indicated by the relative position of said magnetic piston and said measuring indicia;
whereby said plunger can be pulled downwardly within said pipe by said winch means to compress said coil spring and allow a supply of bird feed to be added to said hollow interior of said pipe through said open upper end thereof, and whereby when said second end of said cable is released, the bird feed in said hollow interior of said pipe will be constantly pushed against said cover means; and
whereby when birds pick bird feed from said hollow interior of said pipe through said cover means, new seeds will be pushed against said cover means.

5,339,768
FLOOR WATERING SYSTEM FOR FEEDING WATER TO ANIMALS
Egon Schumacher, Barnstorf, Fed. Rep. of Germany, assignor to Lubing Maschinenfabrik Ludwig Bening GmbH & Co., Barnstorf, Fed. Rep. of Germany
Filed Feb. 5, 1993, Ser. No. 14,390
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 9201575[U]; Jun. 2, 1992, 9207415[U]
Int. Cl.[5] A01K *39/02*
U.S. Cl. 119—72 **21 Claims**

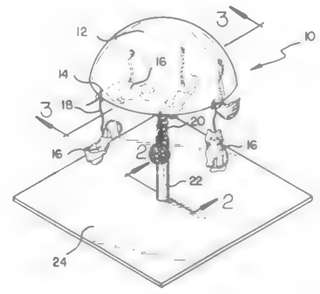


1. A floor-watering system for feeding water to animals, having a water supply line, several drinking points associated with the water supply line, and at least one venting means for venting the water supply line, the venting means being connected to the water supply line via a shut-off member, and the shut-off member being actuable by a movement of the at least one venting means.

5,339,769
PROCESS FOR MAKING AN ABSORBENT COMPOSITION
Cheryl A. Toth, and Paul J. Sheskey, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jul. 13, 1993, Ser. No. 90,729
Int. Cl.[5] A01K *1/015*
U.S. Cl. 119—173 **9 Claims**

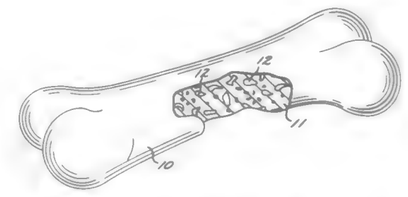
1. A process for preparation of a free flowing absorbent material that agglomerates upon contact with a liquid comprising:
distributing substantially uniformly over a dry blend of a porous inert solid substrate and a water-swellable clumping agent an effective amount of a liquid mixture of a clumping agent.

5,339,770
EXERCISE AND AMUSEMENT TOY FOR PETS
Roberta L. Haffner, 9225 Longrun Dr., Juneau, Ak. 99801
Filed Sep. 22, 1993, Ser. No. 124,595
Int. Cl.[5] A01K *15/02*
U.S. Cl. 119—708 **11 Claims**



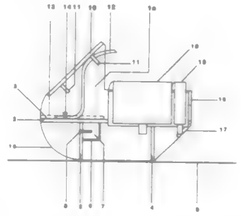
1. A new and improved pet toy for providing exercise and amusement for a dog or other pet comprising:
a semi-hemispherical dome having a plurality of apertures therethrough along periphery thereof, the apertures preferably six in number and spaced equally along said periphery;
a helical spring member adjacent an underneath side of the dome, the spring member allowing rotation of the dome and allowing slight bending motion of said spring member;
a coupling assembly positioned on the underneath side of the dome at a midpoint thereof comprising a cylindrical housing integral with the dome, the cylindrical housing having a downwardly facing recess pocket means for receiving an upper end of the helical spring member therein;
an elongated standard member comprising the upper helical spring member and a lower hollow stationary tubular member;
a joint assembly for securing the lower end of the spring member to the upper end of the tubular member in a rotative relationship, wherein the spring member comprises a cap member integral therewith and a hollow threaded portion extending downward to engage the upper end of the tubular member, wherein the upper end of the tubular member comprises a decreased diameter for receiving said threaded portion therein;
a portable base plate member having connective means at the midpoint thereof for receiving and securing a lower end of the elongated standard member;
a bolt extending through the base plate member and engaging the lower end of the tubular member to deter rotation of the tubular member relative to the base plate member;
a plurality of removably secured resilient lines, the resilient lines passing through and being attached to said dome through said apertures arranged along the periphery of the dome;
a plurality of removably secured toys suspended from said resilient lines.

5,339,771
ANIMAL CHEW TOY CONTAINING ANIMAL MEAL
Herbert R. Axelrod, 6 Marine Pl., Deal, N.J. 07753
Filed Sep. 15, 1993, Ser. No. 121,785
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—710 **1 Claim**



1. An animal chew toy, comprising a shaped article formed of
a. a molded synthetic thermoplastic matrix; and
b. unencapsulated particulate animal meal dispersed substantially uniformly throughout said matrix.

5,339,772
SMALL ANIMAL RESTRAINER
Petra Abell, 412 Hudson St., Redwood City, Calif. 94062
Filed Nov. 22, 1993, Ser. No. 156,056
Int. Cl.[5] A01K *13/00*
U.S. Cl. 119—724 **6 Claims**



1. A device for restraining and positioning a small animal, comprising:
(a) two rigid, parallel side walls, each of said side walls having a plurality of edges, including a first flat bottom edge for resting on a horizontal surface, including also a second flat edge joined to the first flat edge by a curved edge having an exterior arc of approximately 135 degrees;
(b) a floor plate secured between said side walls above said bottom edge;
(c) a counterweight below said floor plate
(d) an adjustable back plate between said side walls adapted for longitudinal movement along and above said floor plate;
(e) a means for securing the said adjustable back plate in a fixed position along said floor plate;
(f) a neck and paw plate opposite said adjustable back plate, mounted between said side walls and above said floor plate;
(g) a body and neck strap adapted to secure the small animal in the device.

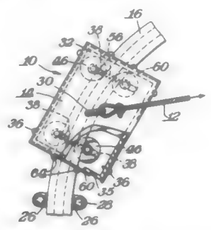
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,773

TRACK WITH MOVEABLE TROLLEY FOR TETHERING AND RESTRAINING AN ANIMAL

Benjamin Van Druff, 622 Oak Hill School Rd., Townsend, Del. 19734

Filed May 13, 1993, Ser. No. 61,490
Int. Cl.[5] A01K 1/06
U.S. Cl. 119—785 13 Claims



1. An apparatus for tethering and restraining an animal, comprising:

a track attached to a solid surface, wherein the track has a flange with an upper surface and side surfaces and the track has a pair of side webs;

a moveable trolley mounted on the track, adjacent to the flange of the track, wherein the moveable trolley has a housing defining a pair of slots, and a pair of wheels, each wheel mounted on an axle within the housing with one end of each axle held within one of the slots, means for biasing the wheels against the side webs of the track and swiveling the trolley housing; and

tether means for attaching the animal to the moveable trolley, wherein the trolley housing is swivelable from side to side of the track, but not releasable from the track, when the tether means is subjected to a force at an angle to the direction of travel of the trolley along the track;

so that when the animal tugs at the tether means in the direction of travel of the track or at an acute angle thereto, the trolley wheels travel at all times substantially in proximate contact with the side webs of the track, the housing swivels, but does not release from the track, and the tether means, trolley and track prevent the animal from roaming to a distance from the track beyond the length of the tether means.

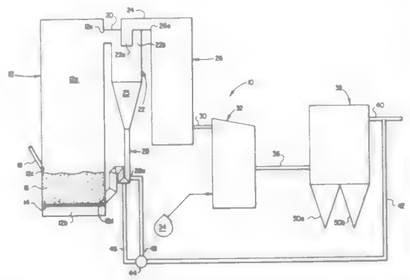
5,339,774

FLUIDIZED BED STEAM GENERATION SYSTEM AND METHOD OF USING RECYCLED FLUE GASES TO ASSIST IN PASSING LOOPSEAL SOLIDS

John T. Tang, Easton, Pa., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Jul. 6, 1993, Ser. No. 89,981
Int. Cl.[5] F22B 1/00
U.S. Cl. 122—4 D 15 Claims

1. A fluidized bed steam generation system comprising a furnace section for receiving a fluidized bed of particulate material including fuel and for combusting said fuel to form a mixture of entrained particulate material and gases, means for separating a first portion of said entrained particulate material from said gases, means for connecting said separating means with said furnace section to pass said first portion of separated particulate material from said separating means to said furnace section, a baghouse section for receiving said gases from said separating means and for separating a second portion of particulate material from said gases, and means for passing at least a portion of said separated gases back into said connecting means to assist in passing said first portion of separated particulate material through said connecting means, and back into said furnace section.

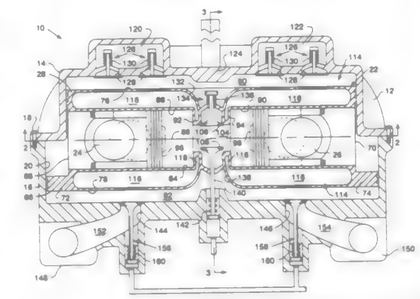


5,339,775

COOLING ARRANGEMENT FOR A PISTON ASSEMBLY

John M. Clarke, Chillicothe, Ill., and Padmanabhan R. Ranganathan, Fort Worth, Tex., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 3, 1994, Ser. No. 176,928
Int. Cl.[5] F07P 1/04
U.S. Cl. 123—41.35 7 Claims



1. A cooling arrangement for a piston assembly mounted for reciprocating movement within an operating chamber of an engine block, comprising:

a first piston member having a first bore defined therethrough;

at least one second piston member disposed within the first bore for reciprocating movement therein; and

a cavity defined in the first piston member and being positioned to substantially surround the first bore, said cavity containing a fluid.

5,339,776

LUBRICATION SYSTEM WITH AN OIL BYPASS VALVE

Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

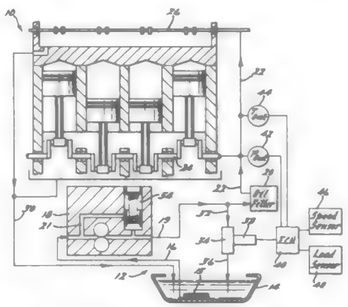
Filed Aug. 30, 1993, Ser. No. 112,929
Int. Cl.[5] F01M 1/16
U.S. Cl. 123—196 CP 26 Claims

1. In a lubrication system for an internal combustion engine having an oil pump, an oil pan constructed to contain a supply of oil, a supply passage operably connecting the oil pan to the oil pump, an oil gallery passage leading from the oil pump to lubrication locations in the internal combustion engine, and

return passages leading from the lubrication locations back to the oil pan; the improvement characterized by:

a bypass conduit leading from the oil pump back to the oil pan bypassing said lubrication locations in the internal combustion engine;

said bypass conduit including a valve that is operable between an open position and a closed position;



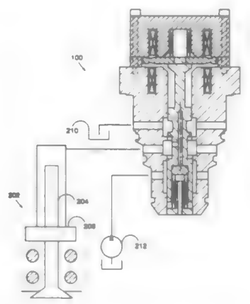
an electronic controller with inputs sensitive to oil pressure sensed in said oil passages and to temperature of said internal combustion engine, said controller controlling the opening and closing of said valve, in order to regulate oil flow through said bypass conduit.

5,339,777

ELECTROHYDRAULIC DEVICE FOR ACTUATING A CONTROL ELEMENT

Howard N. Cannon, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Aug. 16, 1993, Ser. No. 106,726
Int. Cl.[5] F01L 9.02
U.S. Cl. 123—90.12 7 Claims



1. An electrohydraulic assembly for actuating a moveable control element, comprising:

a valve body having two fluid ports and a central bore, the valve body defining a pole face at one end;

a core defining a pole face that is in spaced proximity from the valve body pole face;

an armature being disposed in the space between said core and valve body, said armature being rectilinearly translatable between first and second positions relative to said core, said armature and core pole face having cooperatively disposed surfaces that result in a substantially zero air gap in response to the first armature position, said armature and valve body pole face having cooperatively disposed surfaces that result in a substantially zero air gap in response to the second armature position, said valve body, core and armature being fabricated of a soft magnetic material;

first and second electromagnetic coils for producing respective electromagnetic forces in response to being energized, the electromagnetic forces causing rectilinear movement of said armature;

a linearly shiftable spool being disposed in the central bore of said valve body and rigidly connected to said armature, the movement of said armature causing displacement of said spool to control the fluid flow to the control element to actuate the control element between first and second positions; and

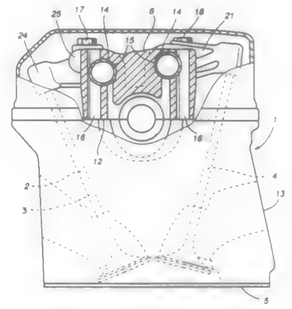
first and second springs for providing respective biasing forces to said armature, the biasing forces assisting the rectilinear movement of said armature upon the appropriate energization of either of said electromagnetic coils, wherein the retentivity of the magnetic material of said valve body, core and armature causes a high latching force to latch said armature at either of the armature positions in response to the respective electromagnetic coil being de-energized.

5,339,778

CYLINDER-HEAD-MOUNTED CAMSHAFT BEARING FOR AN INTERNAL COMBUSTION ENGINE

Christoph Reckziigel, Stuttgart; Mario Müirwald, Ebersbach; Gerhard Doll, Stuttgart; Jürgen Frey, Esslingen, and Ralf Ohlendorf, Weinstadt, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

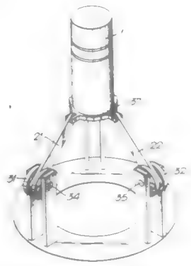
Filed Aug. 12, 1993, Ser. No. 105,141
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1992, 4227566
Int. Cl.[5] F01L 1/04; F02F 1/24
U.S. Cl. 123—193.5 3 Claims



1. A cylinder-head-mounted camshaft bearing structure for an internal combustion engine with an overhead camshaft and with bearing caps for the camshaft bearings supported directly on the cylinder head, said bearing caps being arranged at a distance from one another and in planes transverse to the longitudinal extension of the cylinder head, said bearing caps having mounting holes formed therein for the accommodation of at least one rocker-arm support shaft on which rocker arms are pivotally supported between the respective bearing caps, said structure further including longitudinal webs interconnecting said bearing caps so as to form an integral frame-like bridge unit, said bridge unit having further transverse webs disposed between said caps and interconnecting said longitudinal webs so as to define spaces for receiving the rocker arms between the transverse webs and the adjacent bearing caps.

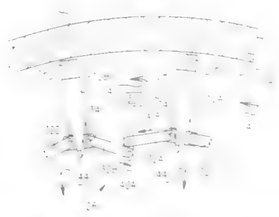
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,779
PISTON CONNECTION FOR A RECIPROCATING PISTON ENGINE
Michael L. Zettner, Neufriedenheim 9, D-8830 Treuchtlingen, Fed. Rep. of Germany
Filed May 20, 1993, Ser. No. 64,112
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1990, 4034162
Int. Cl.[5] F02B *75/32*
U.S. Cl. 123—197.4 5 Claims



1. A piston suspension for a reciprocating piston engine, the suspension comprising: at least three force transmission systems for a same piston held by the suspension, wherein each transmission system comprises a crank and connecting means for providing a drive connection between the crank and the piston, and wherein a rotational axis of the crank of a third one of said transmission systems is not congruent with rotational axes of the cranks of either first or second ones of said transmission systems.

5,339,780
CENTRIFUGAL DEVICE FOR ROTARY ENGINE
Orphey A. Lien, P.O. Box 2047, North Star Rt., Polar, Mont. 59133
Filed Aug. 11, 1993, Ser. No. 104,566
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—243 7 Claims



1. In a rotary engine having an eccentrically mounted rotor within a housing and multiple cross-vanes rotatably engaging a housing inner surface, a centrifugal device mounted between a pair of cross-vanes, the device comprising:

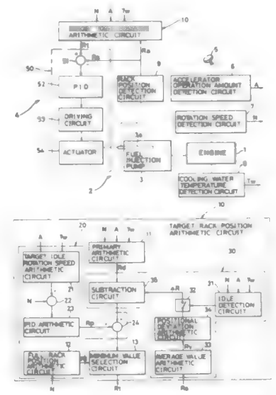
a. a weight arm having a weight on a first end and a pair of opposing and pivotally attached first and second clevis rods at separate pivot points on a second end of the weight arm;

b. said first clevis rod pivotally attached to a first cross-vane in a first direction; and

c. said second clevis rod pivotally attached by a clevis pin to a second cross-vane in an opposite second direction;

wherein a rotor centrifugal force during rotary engine operation causes opposing motion of the clevis rods thereby causing a restraining force on the cross-vanes at a 90° angle or greater with the clevis rod motion so as to reduce a cross-vane force against the housing inner surface.

5,339,781
ELECTRONIC GOVERNOR OF FUEL SUPPLYING DEVICE FOR ENGINE
Tomio Osawa, Saitama, Japan, assignor to Zexel Corporation, Tokyo, Japan
Filed Apr. 7, 1993, Ser. No. 43,859
Claims priority, application Japan, Apr. 15, 1992, 4-121287
Int. Cl.[5] F02D *31/00*
U.S. Cl. 123—357 7 Claims



1. An electronic governor of a fuel supplying device for an engine, said governor being operated to control an adjustment member for adjusting an amount of supply of fuel to said engine, comprising:

(a) position detection means for detecting a position of said adjustment member;

(b) rotational speed detection means for detecting a rotational speed of said engine;

(c) accelerator operation amount detection means for detecting an operation amount of an accelerator;

(d) target position arithmetic means for calculating a target position of said adjustment member in accordance with the detected operation amount of said accelerator and also with the detected rotational speed of said engine; and

(e) position control means for controlling the position of said adjustment member so that the position of said adjustment member detected by said position detection means is coincident with the target position calculated by said target position arithmetic means;

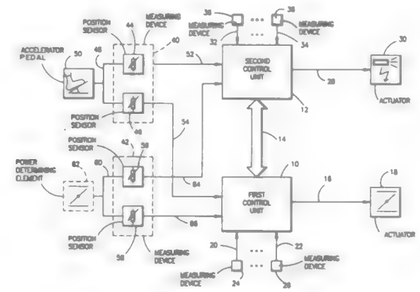
wherein said target position arithmetic means includes target idling position arithmetic means for calculating the target position of said adjustment member when the operation amount of said accelerator is zero, said target idling position arithmetic means comprising:

(i) primary arithmetic means for calculating a primary target position of said adjustment member in accordance with the detected rotational speed of said engine with reference to a predetermined relation between the rotational speed of said engine and the position of said adjustment member where the supply amount of fuel is reduced as the rotational speed of said engine is increased;

(ii) first correction means for correcting said primary target position by using a first position correction component in a fuel supply amount increasing direction, such that the rotational speed of said engine detected by said rotational speed detection means is coincident with a target idling rotational speed; and

(iii) second correction means for correcting said primary target position by using a second position correction component in a fuel supply amount reducing direction in such a manner as to correspond to the position of said adjustment member detected by said position detection means when an idling control is undergoing.

5,339,782
ARRANGEMENT FOR CONTROLLING THE DRIVE POWER OF A MOTOR VEHICLE
Thomas Gölzer, Schwieberdingen, and Martin Streib, Vaihingen/Enz, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart
Filed Oct. 8, 1992, Ser. No. 958,309
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1991, 4133268
Int. Cl.[5] F02D *11/10, 41/04, 41/22;* F02P *5/15*
U.S. Cl. 123—399 11 Claims



1. An arrangement for controlling the drive power of a motor vehicle, the arrangement comprising:

a drive unit for driving the motor vehicle and having at least first and second variables related to the power output developed by said drive unit;

a first control unit for controlling at least said first variable;

a second control unit for controlling at least said second variable;

a measuring device having at least first and second sensors for detecting an operating parameter of at least one of the said drive unit and said motor vehicle;

said first and second sensors being mutually redundant and having first and second output signals, respectively;

said first control unit being connected to one of said sensors for receiving the output signal thereof;

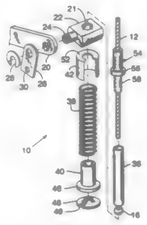
said second control unit being connected to the other one of said sensors for receiving the output signal thereof;

a bus system interconnecting said first and second control units to facilitate the exchange of data therebetween;

each of said control units including means for processing the output signal supplied thereto to provide a processing result which is transmitted over said bus system to the other control unit; and

each one of said control units including means for utilizing the processing result received from the other control unit when controlling the one of said first and second variables corresponding to said one control unit.

5,339,783
THROTTLE BREAKOVER APPARATUS
Ulrich J. Teichert, Portland, Oreg., assignor to Freightliner Corporation, Portland, Oreg.
Filed Jul. 7, 1993, Ser. No. 88,860
Int. Cl.[5] F02D *11/04*
U.S. Cl. 123—400 17 Claims



17. A throttle breakover apparatus for limiting the force applied by a throttle cable to an engine throttle upon the movement of the throttle to a first or full throttle position, the cable being slidably coupled to the throttle at a first end portion and coupled to an accelerator at a second end portion, the movement of the throttle being in response to the movement of the cable by the accelerator, the apparatus comprising:

a cable stop on the first end portion of the cable at a location spaced from the throttle and with the throttle positioned between the cable stop and the accelerator;

a cable sleeve surrounding the cable and extending from the first end portion of the cable toward the throttle, the cable sleeve providing a bearing surface which separates the cable from the throttle;

a coil spring having first and second ends and positioned outside of the cable sleeve and coupled to the cable stop and the throttle to apply a biasing force to limit movement of the cable stop toward the throttle until the throttle is in the first position;

a disk positioned to provide a seat for the cable stop, said seat allowing the cable stop to rotatably slip to relieve stress in the cable, said disk further having a slot so as to allow the disk to be removed from the cable to enable disassembly of the throttle breakover apparatus;

a precompression stop on the cable between the throttle and the accelerator at a position which precompresses the coil spring between the cable stop and the throttle; and

a spring guide comprising an inner guide disposed within the spring adjacent the disk, and bearing on the sleeve, the inner guide having an outwardly projecting flange which engages the first end of the spring and provides a seat for the disk, the spring guide also including an outer guide surrounding a portion of the spring, the outer guide having a inwardly projecting flange bearing upon the sleeve and engaging the second end of the spring, the spring guide reinforcing the spring against buckling.

5,339,784
CONTROL APPARATUS FOR A MARINE ENGINE
Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 20, 1992, Ser. No. 870,913
Claims priority, application Japan, Apr. 22, 1991, 3-090320; Apr. 22, 1991, 3-090321; Apr. 25, 1991, 3-095195
Int. Cl.[5] F02D *41/02;* F02P *5/15*
U.S. Cl. 123—417 3 Claims

1. A control apparatus for an engine comprising:

a first sensor for sensing an intake air pressure in an intake manifold of the engine and generating a corresponding first output signal;

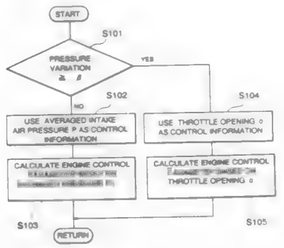
a second sensor for sensing an engine operating condition indicative of an engine load other than the intake air

VOL 1165 ISS 4 AG 23 1994 UMI

pressure and generating a corresponding second output signal;

actuator means for controlling engine control parameters to control said engine; and

a controller for controlling said actuator means in accordance with the intake air pressure as indicated by said first output signal when said controller determines, based on said first output signal, that a variation in the intake air pressure is less than a predetermined value irrespective of how much lower than the predetermined value said variation is, and for controlling said actuator means in accordance with the engine operating condition as indicated by said second output signal when said controller determines, based on said second output signal, that the intake air pressure variation is one of equal to and greater than the predetermined value.



5,339,785

AUTOMOTIVE FUEL SUPPLY APPARATUS AND CONTROL VALVE

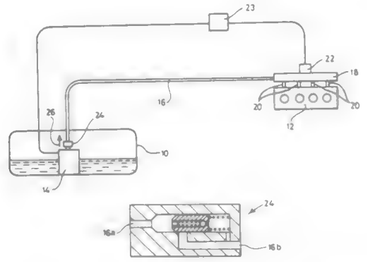
Mark Wilksch, Buckingham, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1993, Ser. No. 72,011

Claims priority, application United Kingdom, Jun. 29, 1992, 9213746.2

Int. Cl.[5] **F02M** *37/04*

U.S. Cl. 123—457 **7 Claims**



1. A fuel delivery apparatus for an internal combustion engine, said apparatus comprising:

a fuel reservoir;

a pump;

a fuel line along which fuel from said reservoir is pumped by said pump to said engine; and

a check valve in said fuel line, comprising a valve body having a piston able to travel relative thereto in a cylindrical chamber formed therein to open and close a valve opening located intermediate between ends of said chamber so that a first end of said piston closes said valve before reaching an end of travel in said chamber, said check valve having an inlet in communication with said reservoir and said pump through said fuel line, and an outlet in communication with said engine through said fuel line, said valve being arranged to open to permit fuel flow to said engine when pressure in said inlet of said valve is greater than pressure in said outlet, and to close when the pressure differential is reversed, and wherein said said valve member is able to continue to move after having closed said valve opening in order to maintain the pressure of a fuel volume enclosed by a second end of said piston and an end of said chamber.

5,339,786

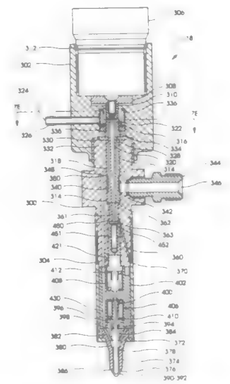
HIGH PRESSURE ELECTRONIC COMMON-RAIL FUEL INJECTION SYSTEM FOR DIESEL ENGINES

Tiby M. Martin, 3836 Holly La., Waterloo, Iowa 50702

Division of Ser. No. 695,221, May 3, 1991, which is a continuation-in-part of Ser. No. 508,068, Apr. 11, 1990, Pat. No. 5,035,221, which is a division of Ser. No. 295,588, Jan. 11, 1989, abandoned. This application Nov. 23, 1993, Ser. No. 156,006

Int. Cl.[5] **F02M** *55/02, 47/02*

U.S. Cl. 123—467 **1 Claim**



1. An electromagnetic injector for supplying fuel to an internal combustion engine, comprising:

an injector body having an upper portion and a lower portion, and having an internal passage means with a first end in said upper portion for passing pressurized fuel to the lower portion;

a solenoid actuated shuttle plunger slideably mounted at the upper end of said passage means having a pressure balanced annulus operable between a solenoid de-energized position in which the high pressure fuel is blocked from passing to said passage means, and a solenoid energized position in which the high pressure fuel is delivered to said passage means;

a needle valve movable in the body to control the flow of pressurized fuel through the second end of said passage means, said needle valve being movable in a first direction toward an open position for passing pressurized fuel through the lower end of said passage means when said solenoid actuated shuttle plunger is in said solenoid energized positions, and an opposite, second direction toward a closed position for blocking pressurized fuel from passing through the lower end of said passage means when said solenoid actuated shuttle plunger is in said solenoid de-energized position;

a spring cage having an upper chamber and a lower chamber, and a first sized orifice therebetween;

an adjustable second valve slidable mounted in said lower portion of said body and having means to communicate into said spring cage the remaining pressurized fuel in said passage means after said first solenoid actuated shuttle plunger moves into solenoid de-energized position and blocks the high pressurized fuel from passing to said passage means;

said spring cage having the high pressurized fuel coming from the upper chamber to the lower chamber of said spring cage and acting on the top of said spring seat to further bias said needle valve to a closed position when said solenoid actuated shuttle plunger is in said solenoid de-energized position to thereby obtain a sharp end of injection; and

a second sized orifice in said spring cage in fluid communication with means to maintain a residual fuel pressure within said spring cage when said solenoid actuated shuttle plunger is in said solenoid de-energized position to thereby slow the movement of said needle valve in said first direction toward an open position when said solenoid actuated shuttle plunger is next in said solenoid energized position.

5,339,787

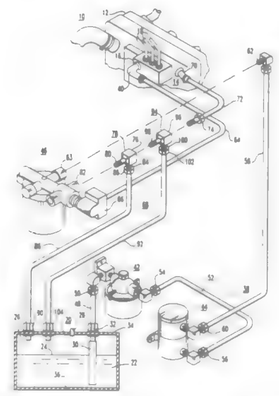
METHOD AND APPARATUS FOR DISTRIBUTING FUEL IN A DIESEL ENGINE

Bruce E. Jungquist, Aurora, Ohio; Michael E. McBroom, Rochester, N.Y.; Curtis G. Yaeger, Prior Lake, Minn.; Donald G. Knauff, Lakeville, Minn., and Thomas R. Sem, Plymouth, Minn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1993, Ser. No. 23,275

Int. Cl.[5] **F02M** *37/04*

U.S. Cl. 123—514 **15 Claims**



1. A method of distributing fuel in a diesel engine system in which fuel in a fuel tank having an air space above a fuel level is pumped, during operation of the engine, to a fuel injection system disposed in spaced relation above the fuel tank via a fuel supply line, and excess fuel is returned to the fuel tank, comprising the steps of:

providing fuel return line means which divides into first and second fuel flow paths at a predetermined dividing point, with the first fuel flow path returning fuel to the fuel supply line, and with the second fuel flow path defining an uninterrupted, gravity driven, fluid flow path between the predetermined dividing point of the fuel return line means and the air space of the fuel tank,

returning fuel to the air space of the fuel tank via the second fuel flow path of the fuel return line means,

and sizing the cross sectional area of the second fuel flow path of the fuel return line means such that, during non-operation of the diesel engine, air from the fuel tank air space flows counter to fuel returning to the fuel tank by gravity, to maintain the space vacated by returning fuel near atmospheric pressure.

5,339,788

METHOD AND ARRANGEMENT FOR CONDUCTING A TANK-VENTING DIAGNOSIS IN A MOTOR VEHICLE

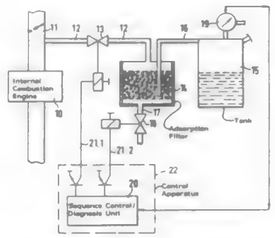
Andreas Blumenstock, Ludwigsburg, and Helmut Denz, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart

Filed May 11, 1993, Ser. No. 60,036

Claims priority, application Fed. Rep. of Germany, May 15, 1992, 4216067

Int. Cl.[5] **F02M** *33/02;* **F02B** *77/00*

U.S. Cl. 123—520 **5 Claims**



1. An arrangement for conducting a tank-venting diagnosis for a motor vehicle equipped with a tank-venting apparatus having a tank-venting valve actuated by an actuator between an open position and a closed position, the arrangement comprising:

pressure-difference sensor means for measuring the underpressure in the tank-venting apparatus;

control means including a sequence control/diagnosis unit connected to said pressure-difference sensor for receiving a signal indicative of the measured underpressure;

said sequence control/diagnosis unit being adapted to determine when said measured underpressure exceeds a threshold underpressure and to emit a signal to said actuator for closing said tank-venting valve and maintaining said tank-venting valve closed when said measured underpressure exceeds said threshold underpressure during a tank-venting phase thereby protecting said tank-venting apparatus against damage from an underpressure greater than said threshold underpressure.

5,339,789

LOW-RECOIL FIREARM

Walter Heitz, Rastatt, Fed. Rep. of Germany, assignor to Mayer & Grammelspacher Dianawerk GmbH & Co KG, Rastatt, Fed. Rep. of Germany

Filed Jul. 10, 1992, Ser. No. 912,150

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1991, 4122835

Int. Cl.[5] **F41B** *11/00*

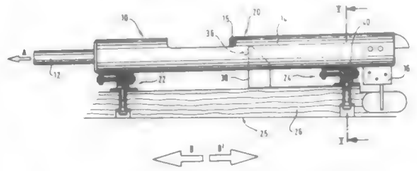
U.S. Cl. 124—56 **38 Claims**

38. Low-recoil gun, in particular a compressed-air gun or a firearm, comprising a stock assembly (25) and a barrel assembly (20) displaceable in longitudinal direction (B) of the gun relative to the stock assembly (25), the barrel assembly (20) being movable contrary to direction of fire (A), on the occasion of a discharge, out of a position of readiness to fire, and a movement of the barrel assembly (20) contrary to direction of fire (A) due to the discharge being restrained by a locking means (40) capable of being overcome by recoil energy of the barrel assembly (20),

the barrel assembly (20) being guided on the stock assembly (25) by a slide bearing guide (22, 24),

VOL 1165 ISS 4 AG 23 1994 UMI

the slide bearing guide being configured as a slide pin guide having a double-pin guide (24; 124) and a single-pin guide



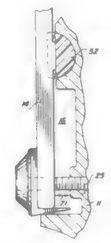
(22; 222; 322) at a distance from each other in the longitudinal direction (B) of the gun.

5,339,790

LIMB ATTACHMENT FOR ARCHERY BOW

Allan F. Smith, Tucson, Ariz., assignor to Precision Shooting Equipment, Inc., Tucson, Ariz.

Filed Mar. 29, 1993, Ser. No. 38,855
Int. Cl.[5] F41B *5/10, 5/00*
U.S. Cl. 124—25.6 11 Claims



1. In a compound archery bow including a handle having a limb pocket at each end; first and second pivots in respective limb pockets; first and second limbs each having an inside surface and an outside surface, a first end connected to said handle, an axle connected to a second end, and a wheel mounted on said axle; and lacing connecting said wheels with said first and second limbs; the improvement comprising:

a pair of tabs on each of said first and second pivots, said tabs extending between the sides of the respective limb and the respective pocket to locate the limb in the pocket.

9. In a compound archery bow including a handle having a limb pocket at each end; first and second pivots in respective limb pockets; first and second limbs each having an inside surface and an outside surface, a first end connected to said handle, an axle connected to a second end, and a wheel mounted on said axle; and lacing connecting said wheels with said first and second limbs; the improvement comprising:

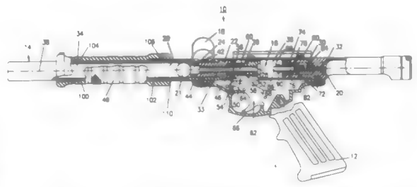
first and second caps on respective first ends of said first and second limbs, each of said caps having a first portion overlying the outside surface of its respective limb and a flange extending across the end of said limb into the respective limb pocket.

5,339,791

GAS POWERED GUN

Brian Sullivan, 517 N. Mountain Ave., Upland, Calif. 91786

Continuation-in-part of Ser. No. 916,527, Jul. 20, 1992, Pat. No. 5,257,614. This application Apr. 30, 1993, Ser. No. 55,640
Int. Cl.[5] F41B *11/06*
U.S. Cl. 124—73 1 Claim



1. An improved gas powered gun suitable for projecting light weight projectiles such as paint balls, the gun comprising:

(I) a handle;

(II) a barrel attached to the handle, the barrel having an external surface and a central bore with a forward end which is in communication with the exterior of the gun, a rearward end and a longitudinal axis;

(III) a projectile repository attached to the barrel;

(IV) a projectile chamber disposed within the central bore of the barrel and in communication with the forward end of the central bore of the barrel;

(V) projectile insertion means for removing a projectile from the projectile repository and placing it into the projectile chamber;

(VI) a bolt disposed within the central bore of the barrel rearward of the projectile chamber, the bolt having a forward end and a rearward end central bore which is in communication with the projectile chamber and which has a longitudinal axis which is coaxial with the longitudinal axis of the barrel;

(VII) a hammer slidably disposed within the central bore of the barrel immediately rearward of the bolt, the hammer having a forward end, a rearward end and a central bore, the central bore having a longitudinal axis which is coaxial with the central bore of the barrel;

(VIII) cocking means for attaching the hammer to the bolt;

(IX) trigger means for detaching the hammer from the bolt;

(X) a pressure chamber affixed within the rearward end of the central bore of the barrel, the pressure chamber being in communication with a source of pressurized gas;

(XI) valve means affixed immediately forward of the pressure chamber for releasing a discrete quantity of pressurized gas from the pressure chamber into the central bore of the barrel;

(XII) gas release actuation means for actuating the valve means and releasing the discrete quantity of gas; and

(XIII) spring means for urging the hammer away from the bolt and into contact with the valve means;

wherein the barrel has a longitudinal groove defined within the external surface of the barrel parallel with the longitudinal axis of the barrel;

wherein the barrel has a forward stroke limiter and a rearward stroke limiter, the two stroke limiters being spaced apart from one another; and

wherein the cocking means comprises:

(a) a pump handle slidably attached around the barrel, the pump handle being made from a resilient non-metallic material and having an interior surface with a forward lip and a rearward lip, the pump handle being slidable along the barrel between a first pump handle position wherein the forward lip engages the forward stroke limiter and a second pump handle position wherein the rearward lip engages the rearward stroke limiter; and

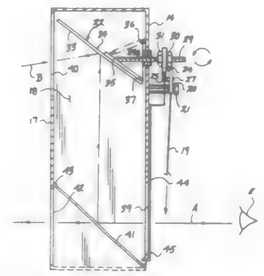
(b) a bolt link slidably disposed in the groove in the external surface of the barrel, the bolt link having opposite ends, the first end being attached to the pump handle and the second end being attached to the bolt.

5,339,792

ARCHERY SIGHTING APPARATUS

Robert F. McCain, 1705 Linda La., Rossville, Ga. 30741

Filed Mar. 15, 1993, Ser. No. 31,704
Int. Cl.[5] F41G *1/467*
U.S. Cl. 124—87 3 Claims



1. An archery sighting apparatus arranged for securement to an archery bow, with the archery bow having a bow hand grip and a bow riser, and the apparatus mounted to the bow riser, with the apparatus comprising,

a sight housing, the sight housing including a rear wall spaced from a front wall, and a first side wall spaced from a second side wall, the second side wall having a plurality of second side wall fasteners arranged for securement to the bow riser, and

the sight housing having a longitudinally aligned cavity directed through the sight housing, and

a trigger lever mounted pivotally below the sight housing, the sight housing including a first link, the first link having a first link first end and a first link second end, and the first link first end including a first link pivot axle, with the pivot axle orthogonally mounted to the sight housing rear wall, the first link including a slot, and

an L-shaped second 1 ink, with the L-shaped second link positioned above the first link and the second L-shaped second link including a second link first end and a second link second end, with the second link first end having a second link first pivot axle pivotally mounting the first link to the second link with the slot, and the second link first pivot axle positioned between the first link first end and the first link second end, and

a first link second pivot axle directed orthogonally through the second link and threadedly received through the housing rear wall to pivotally mount the second link relative to the rear wall, and a second link second end having a row of apertures between the second link second pivot axle and the second link second end, and

an actuator rod, and the actuator rod including an actuator rod first end received through one of said apertures, and the actuator rod second end pivotally mounted to the trigger lever, and mirror means mounted within the sight housing for optical alignment of a target relative to an archery shooter, and

the mirror means includes a first mirror plate, wherein the first mirror plate includes a first mirror plate reflective surface and a first mirror plate opaque surface, with the first mirror plate opaque surface in confronting relationship relative to the rear wall within the cavity, and the second pivot axle having an inner end, with the inner end arranged in abutment with the first mirror plate opaque surface, and the housing front wall including a front wall opening, and the front wall opening positioned in adjacency relative to the first mirror plate, and the first mirror plate inclined at a first acute included angle relative to the rear wall, and the first mirror plate having a first mirror plate pivot hinge mounted to the first mirror plate and to the rear wall within the cavity, with a spring to bias abutment of the first mirror plate to the second link's pivot axle inner end, and

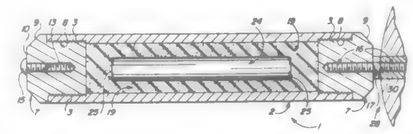
the mirror means further includes a second mirror plate mounted within the cavity below the first mirror plate, and the second mirror plate includes a second mirror plate reflective surface arranged in confronting relationship relative to the rear wall within the cavity, the front wall having a further front wall opening below the front wall opening in adjacency to the second mirror plate, the rear wall having a rear wall opening in alignment with the further front wall opening, with the rear wall opening providing a first line of sight through the further front wall opening, and a second line of sight directed through the rear wall opening reflected from the second mirror plate to the first mirror plate and through the front wall opening, with the second mirror plate defining a second acute included angle between the second mirror plate and the front wall within the cavity.

5,339,793

BOW STABILIZER

Alan T. Findley, Rte. 5, Box 796 W, Marshall, Tex. 75670

Filed May 13, 1993, Ser. No. 59,573
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—89 9 Claims



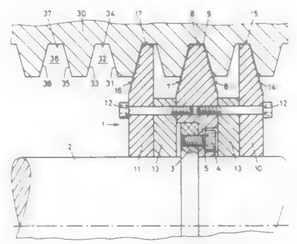
1. A stabilizer for dampening forces acting on a bow from release of an arrow from the bow, comprising a closed housing carried by the bow a single foam rubber suppressor disposed in said housing and an elongated core encapsulated in said suppressor, said core having a density greater than the density of said supressor whereby the forces acting on the bow in any direction are at least partially omnidirectionally dampened responsive to resilient deformation of said suppressor by said core in an opposite direction.

5,339,794

TOOL FOR DRESSING DOUBLE-LEAD, CYLINDRICAL GRINDING WORMS

Wolfgang Thyssen, Bad Säckingen, Fed. Rep. of Germany, assignor to Reishauer AG, Wallisellen, Switzerland

Filed Nov. 26, 1993, Ser. No. 157,426
Claims priority, application Switzerland, Dec. 10, 1992, 3774/92
Int. Cl.[5] B24B *53/075*
U.S. Cl. 125—11.04 4 Claims



1. A dressing tool for dressing double-lead, cylindrical grinding worms (30) for the roll grinding of spur gears, comprising:

VOL 1165 ISS 4 AUG 23 1994 UMI

a) a first dressing roll (5) having two opposite, conical first and second flanks (6, 7) coated with hard material grains (9) for simultaneously dressing opposing flanks (31, 33) of a first start (32) of the grinding worm, and

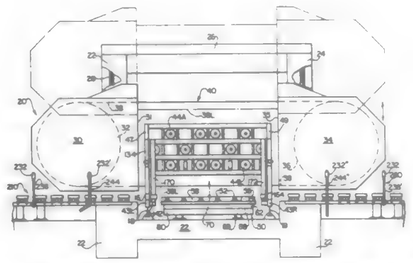
b) coaxial second and third dressing rolls (10, 11), the second dressing roll having a conical third flank (14) coated with said hard material grains and facing one side in order to dress a flank (35) of a second start (36) of the grinding worm, and the third dressing roll having a conical fourth flank (16) and facing an opposite side in order to dress another, opposite flank (38) of the second start of the grinding worm.

5,339,795

METHOD FOR CUTTING STONE LAMINATE PANELS

Peter R. W. Myles, Highland Village, Tex., assignor to Stone Panels, Inc., Carrollton, Tex.

Division of Ser. No. 815,022, Dec. 31, 1991, Pat. No. 5,243,960.
This application Apr. 26, 1993, Ser. No. 51,770
Int. Cl.[5] B28D *1/04*
U.S. Cl. 125—21 8 Claims



1. A method of providing first and second stone-honeycomb laminae from a workpiece comprising a honeycomb-stone-honeycomb sandwich laminate of the type comprising a stone slab having first and second parallel opposite sides to each of which a honeycomb body is adhesively secured with air impervious outer sheets of material being respectively provided on the outer surface of each honeycomb body, said method comprising the steps of:

(a) feeding said sandwich laminate workpiece in a first direction lengthwise at a lower level horizontally to a position vertically aligned with a movable closed loop cutter wire flight of a length greater than the length of said stone slab, and then lifting said sandwich laminate workpiece to a higher level defining a work position in a vertical plane so that the center of said stone slab is generally aligned with and has a first edge surface facing the cutter wire flight;

(b) supporting said sandwich laminate workpiece in said position in said vertical plane by the action of vacuum in a first group of vacuum pads engaging one of said air impervious sheets and the action of vacuum in a second group of vacuum pads engaging the other of said air impervious sheets while simultaneously causing said movable cutter wire flight to move at a desired velocity relative to said stone slab; and

(c) effecting relative movement of said sandwich laminate workpiece and said cutter wire flight in a direction perpendicular to said cutter wire flight by lowering said cutter wire flight toward said sandwich laminate workpiece so that said cutter wire flight cuts through the stone slab from said first edge surface to an opposite second edge surface while the sandwich laminate workpiece is uninterruptedly supported in the manner recited in paragraph (b) to provide a first stone-honeycomb laminate and a second stone-honeycomb laminate.

5,339,796

REUSABLE WARMERS OF THE TYPE EMPLOYING A SUPER-COOLED SOLUTION AND AN ACTIVATOR

Charles F. Manker, Lake Forest, Ill., assignor to Prism Technologies, Inc., Chicago, Ill.

PCT No. PCT/US91/04259, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO85/05440, PCT Pub. Date Dec. 5, 1985
Continuation-in-part of Ser. No. 538,838, Jun. 15, 1990, Pat. No. 5,058,563. This PCT application Jun. 14, 1991, Ser. No. 956,762
Int. Cl.[5] F24J *1/00*
U.S. Cl. 126—263 B 13 Claims

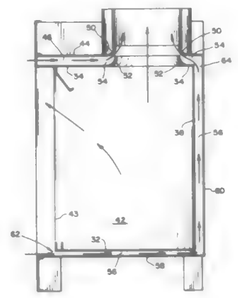
1. A reusable warmer comprising a flexible container, and located within said container, a supercooled salt solution of sodium acetate, an activator for initiating crystallization of said supercooled salt solution of sodium acetate, and a gelling agent, said gelling agent being present in sufficient quantity to convert said salt solution to a gel which remains deformable after crystallization of said salt solution.

5,339,797

FIREPLACE AND METHOD FOR COOLING SAME

Kenneth R. Maitland, Huntington, Ind., assignor to Majco Building Specialties, L.P., Huntington, Ind.

Filed Feb. 16, 1993, Ser. No. 18,039
Int. Cl.[5] F24B *1/188*
U.S. Cl. 126—528 21 Claims



1. A fireplace, comprising:

a bottom wall, inner top wall, two side walls and rear wall defining a combustion chamber having a front opening;

an outer top wall disposed above said inner top wall, said outer top wall and said inner top wall disposed in spaced apart relationship relative to each other and defining an air flow channel therebetween having an inlet, said outer top wall comprising an upper exterior surface of said fireplace and including a first nozzle member, said inner top wall comprising an upper interior surface of said combustion chamber and including a second nozzle member; and

a chimney flue attached to said outer top wall;

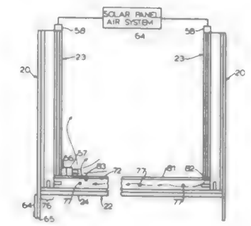
said first and second nozzle members in fluid communication with said chimney flue and defining a converging nozzle therebetween inducing a flow of cooling air in said air flow channel.

5,339,798

MODULAR HOME SYSTEM

William D. Christian, P.O. Box 338, Moncure, N.C. 27559

Continuation-in-part of Ser. No. 653,889, Feb. 11, 1991, Pat. No. 5,161,519, which is a continuation-in-part of Ser. No. 623,354, Dec. 7, 1990, Pat. No. 5,060,432. This application Jan. 4, 1993, Ser. No. 276
Int. Cl.[5] E04D *13/18;* E04B *2/36;* E02D *27/00*
U.S. Cl. 126—629 10 Claims



1. A modular home panel system for air transfer and heat collection comprising:

(a) panels, each panel being fastenable to other panels and to a roofing assembly,

wherein each of said panels comprises a plurality of columns, each of said columns comprising:

(i) a flat first side;

(ii) a second side opposite said first side;

(iii) a third side, a portion of which third side is perpendicular to said first side, said third side having a receptacle adjacent said first side and a protrusion adjacent said second side; and

(iv) a fourth side, a portion of which fourth side is perpendicular to said first side, said fourth side having a protrusion adjacent said first side and a receptacle adjacent said second side; wherein said third and fourth sides of two adjacent columns are connected together by insertion of said protrusion on said third side of a first column into said receptacle on said fourth side of a second column, and insertion of said protrusion on said fourth side of said second column into said receptacle on said third side of said first column, and wherein a plurality of adjacent columns are joined together by said protrusions and receptacles to form sets of columns;

and wherein each of said panels comprises:

(i) a flat face formed by said first side of each column of a first set of columns, and

(ii) a ribbed face formed by said second side of each column of said first set of columns;

(b) a covering piece placed on said panels, wherein said covering piece and some of said panels form channels for transferring air;

(c) a means for admitting forced air into said channels at a first end of a first panel through said channels to a second end of said first panel;

(d) an air heating source;

(e) a means for transferring air from said second end of said first panel into said air heating source;

(f) a means for transferring air from said heating source into the channels at a first end of a second panel and through said channels to a second end of said second panel;

(g) a heat collecting and storing floor panel;

(h) a means for expelling air from said channels of said second panel at said second end into said heat collecting and storing floor panel;

(i) a means for transferring air through said heat collecting floor panel;

(j) a means for transferring air from said heat collecting and storing floor panel; said means also useful for directing heated air from said floor panel into said channels at said first end of said floor panel; and

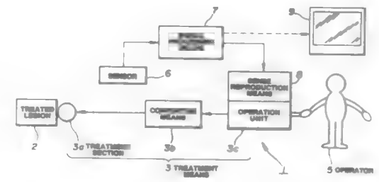
wherein said air makes a complete cycle through the modular home panel system.

5,339,799

MEDICAL SYSTEM FOR REPRODUCING A STATE OF CONTACT OF THE TREATMENT SECTION IN THE OPERATION UNIT

Kuniaki Kami; Hideyuki Adachi, both of Hachioji; Koichi Umeyama, Kasukabe; Yoshihiro Kosaka, Hachioji; Seiji Yamaguchi, Hachioji; Eiichi Fuse, Hachioji; Michio Sato, Hino; Masakazu Nakamura, Hachioji; Yasundo Tanaka, Urawa; Takashi Fukaya, Hachioji; Kiyotaka Matsuno, Hachioji, and Katsuya Suzuki, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,338
Claims priority, application Japan, Apr. 23, 1991, 3-092236; Apr. 24, 1991, 3-094455; Jul. 24, 1991, 3-184897
Int. Cl.[5] A61B *1/00, 10/00*
U.S. Cl. 128—4 15 Claims



1. A medical system, comprising:

a medical apparatus for applying medical care to a subject and including an operation unit that a surgeon manipulates and a treatment section located away from and operably connected to said operation unit to treat the subject in association with the manipulation of said operation unit, wherein said treatment section includes a treatment adapting means for grasping or resecting an examined region of the subject; an observation means for observing at least a state of contact between said treatment section formed in the distal portion of said medical apparatus and the examined region of the subject to be treated with said treatment section, wherein said observation means includes an endoscope having an objective optical system in the distal portion of an elongated insertion tube;

a detecting means operably connected to said treatment adapting means for detecting a state of contact between said treatment section and the subject; and

a reproducing means operably connected to said operation unit for reproducing the state of contact according to an output of said detecting means so that the surgeon can tactilely perceive the state of contact.

5,339,800

LENS CLEANING MEANS FOR INVASIVE VIEWING MEDICAL INSTRUMENTS WITH ANTI-CONTAMINATION MEANS

Bruce E. Wiita, Palm Beach Gardens; J. Michael Teets, Hobe Sound, and Gregory D. Wiita, Palm Beach Gardens, all of Fla., assignors to Devmed Group Inc., Palm Beach Gardens, Fla.

Continuation-in-part of Ser. No. 943,315, Sep. 10, 1992. This application Feb. 5, 1993, Ser. No. 14,436
The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 2 Claims

1. Apparatus for cleansing the lens of a viewing camera used in biological observation by penetration into the cavity of

VOL 1165 ISS 4 AG 23 1994 UMI

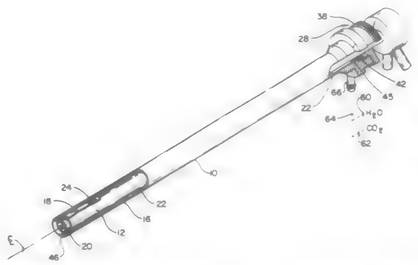
living beings, the camera having an elongated tube housing fibre optics for producing a lighted area from a light source and a image relay for a television camera the improvement comprising:

a double walled tubular member concentrically mounted around said elongated tube and including a longitudinal passageway defined between the inner wall and outer wall of said double walled tubular member,

a lens extending laterally in said elongated tube disposed at the distal end to prevent the backflow of blood, body fluids and contaminants from reaching said fiber optics and said camera,

a cuff portion extending beyond the distal end of said elongated tube to reduce lens contact with body parts to inhibit opaque fluids from obscuring visibility, said cuff portion including fluid passage means in fluid communication with said longitudinal passageway and defining at least one discharge port at the end of said elongated tube, said cuff portion including a bottom wall surface to redirecting the flow of fluid in said passage means to flow into said discharge port and flow laterally in a direction to scrub the surface of the lens mounted at the distal end of said elongated tube,

said discharge port being sized to coalesce and direct the flow of fluid to form a sheet of fluid,



means for admitting fluid into said elongated passage whereby the flow of fluid formed into a sheet is directed over the lens on demand of the operator; and

bag means attached to the proximal end of said elongated tubular member to encapsulate said camera and fiber optics,

means for generating a vortex of said fluid disposed at the end of said discharge port,

said means for generating a vortex including a plurality of spaced vanes circumferentially spaced about an axis that is disposed coaxially relative to the longitudinal axis of said lens, and,

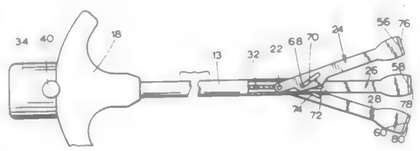
cap means having an upper member and a lower member being in rotatable relationship, said lower member being affixed to the proximal end of said tubular member, a cam member having radially extending lobes and having a central passage adapted to fit over the proximal end of said elongated tube supported internally of said upper member, said lower member having a central opening in cooperating relationship relative to said cam and having detentes for receiving said lobes, said upper member and said lower member defining handle means so that engagement by an operator causes said upper member to rotate relative to said lower member for placing said lobes into said detentes for locking said elongated tube to said tubular member.

5,339,801

SURGICAL RETRACTOR AND SURGICAL METHOD

Alexander Poloyko, Morton Grove, Ill.; Mark C. Goldberg, Boston, Mass.; Edward M. Goldberg, Glencoe, Ill.; Lev A. Melinyshyn, Buffalo Grove, Ill., and David E. Schucart, Homewood, Ill., assignors to UreSil Corporation, Skokie, Ill.

Filed Mar. 12, 1992, Ser. No. 850,652
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **14 Claims**



2. A surgical retractor comprising:

an elongate guide member having proximal and distal ends, a longitudinal axis, and a pin adjacent to the distal end;

an actuator in proximity to the proximal end of the guide member;

a rod attached to the actuator, axially movable with respect to the guide member upon actuation of the actuator, and having a distal end in proximity to the pin; and

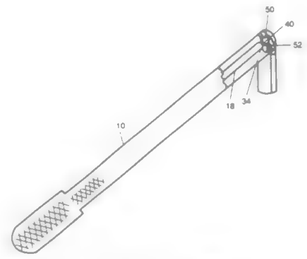
at least two retractor blades pivotally attached to the rod at a common pivot point adjacent to the distal end of the rod and spaced from the pin adjacent to the distal end of the guide member, each blade having elongated slot means engaging the pin for rotating one of the blades in one direction with respect to the guide member and rotating another of the blades in another direction with respect to the guide member in response to axial movement of the rod.

5,339,802

ENDOSCOPIC RETRACTOR

Richard G. Cook, 9217 Berkshire Cir., Chattanooga, Tenn. 37241

Filed Oct. 19, 1992, Ser. No. 963,895
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **4 Claims**



1. An endoscopic retractor comprising:

a. an elongated cylinder having a cavity extending from an upper end through a lower end of said cylinder and a first aperture formed in the surface of said cylinder at said lower end;

b. a pivot pin mounted transversely across said cavity at said lower end of said cylinder, said pivot pin substantially aligned with said first aperture;

c. a blade pivotally attached to said pivot pin, said blade freely moveable by gravity to an open position extending from and longitudinally aligned with said cylinder and to a closed position extending laterally from said cylinder through said first aperture; and

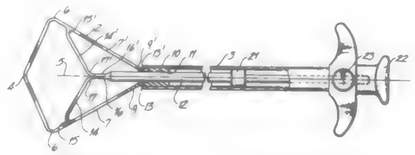
d. an elongated shaft slidably and rotatably received by said cavity, said elongated shaft including a handle and a lock end for locking said blade in said open and closed positions by moving said lock end of said shaft against said blade.

5,339,803

SELF-HINGING DISPOSABLE RETRACTOR INSTRUMENT FOR ENDOSCOPIC SURGERY

Ilya Mayzels, 2451 Coldwater Cyn. Dr., Beverly Hills, Calif. 90210, and Joseph Shvager, 10847 Wystone Ave., Northridge, Calif. 91326

Filed Apr. 13, 1993, Ser. No. 46,666
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **17 Claims**



1. An endoscopic surgical retractor instrument for supporting internal organs comprising:

a) a housing having an inner and outer surface, a longitudinal axis, and a proximate and distal end, said housing having a first opening at said distal end and a second opening at said proximate end and an axially extending cavity bounded by said inner surface where said cavity communicates with said first and second openings forming a passageway through said housing;

b) an extension member slideably carried by said housing and extending at least in part in said cavity for axial displacement relative to said housing such that said extension member may upon sufficient distal axial displacement relative to said housing extend in part distally from said distal end of said housing and upon sufficient proximate axial displacement said extension member may be retracted proximately of said distal end of said housing;

c) a sleeve having an axially extending conduit forming a passageway therethrough for receiving said extension member where said sleeve is so mounted in concentric relationship to said extension member to permit slideable extensible axial displacement of said extension member relative to said sleeve and a distal barrier extending from said housing in a radial direction adjacent said distal end of said housing and defining a limit to the distal axial displacement of said sleeve such that upon engagement of said sleeve with said barrier said extension member is distally extensible relative to said sleeve; and

d) a laterally collapsible and expandable self-hinging truss platform so carried by said sleeve and said extension member such that upon axial extension of said extension member sufficiently distal of said distal end of said housing said self-hinging support platform may be opened and upon sufficient retraction of said extension member proximally within said housing said self-hinging truss support platform may be laterally collapsed.

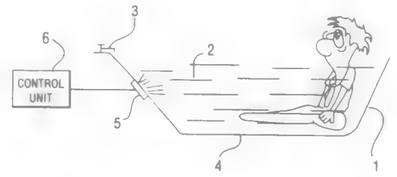
5,339,804

ULTRASONIC BATHING SYSTEM

William H. Kemp, Carleton Place, Canada, assignor to Amada Technologies Inc., Mississauga, Canada

Filed Aug. 13, 1993, Ser. No. 105,676
Int. Cl.[5] A61H *1/00*
U.S. Cl. 601—2 **5 Claims**

1. An ultrasonic bathing system comprising a bathtub for containing a bathing fluid, an ultrasonic transducer mounted on said bathtub for supplying ultrasonic energy to the bathing fluid, means for energizing said transducer to generate ultrasonic waves in the bathing fluid at a power level and frequency for providing a mechanical cleaning action, and means for



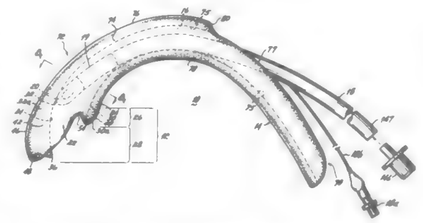
pulsing said energizing means to provide bursts of substantially constant amplitude waves at a set mark-space ratio, and a device for varying said mark-space ratio to vary the power level of ultrasonic energy supplied to said bathing fluid.

5,339,805

BLIND OROLARYNGEAL AND OROESOPHAGEAL GUIDING AND AIMING DEVICE

Jeffrey D. Parker, 2219 Grandin Rd., Cincinnati, Ohio 45208

Continuation of Ser. No. 879,873, May 7, 1992, Pat. No. 5,174,283, which is a continuation-in-part of Ser. No. 433,687, Nov. 8, 1989, Pat. No. 5,038,766. This application Dec. 23, 1992, Ser. No. 995,965
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.26 **20 Claims**



1. A method for blindly intubating a patient's trachea comprising:

inserting into the patient's throat an element having a tube guiding surface and an associated supporting edge, the element being sized to be received in the throat in the vicinity of the larynx and contoured to mate against reciprocal anatomical contours of and adjacent the larynx;

advancing the element into the throat until the reciprocal contours of the element and adjacent anatomy are mated together with the supporting edge of the tube guiding surface contiguous with at least the posterior edge of the larynx to effectively define an upward extension thereof such that the tube guiding surface is aimed into the larynx over the posterior edge thereof so that an intubation tube sliding along the tube guiding surface will be directed into the larynx and trachea; and

advancing an intubation tube along the tube guiding surface and into the larynx and trachea.

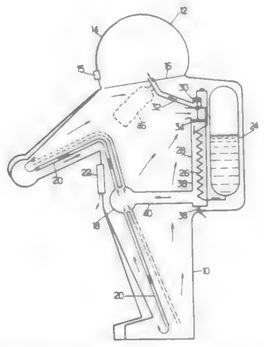
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,806

PROTECTIVE EQUIPMENT INCLUDING A CLOSED SUIT

Raymond Beaussant, Bretigny; Jacques Frison, Bourgoin Jallieu, and Robert Schegerin, Jouy en Josas, all of France, assignors to Intertechnique, Plaisir, France

Filed Nov. 26, 1991, Ser. No. 798,318
Claims priority, application France, Nov. 27, 1990, 90 14811
Int. Cl.[5] A62B 7/06
U.S. Cl. 128—201.21 7 Claims



1. An individual protective equipment for use in a hostile environment, comprising

a closed suit including a flexible gas-tight garment and a helmet having a transparent visor and having a gas-tight connection with said garment,

sealing means in said helmet for separating a respiratory volume in communication with the mouth and nose of a wearer of said suit from the remainder of an inner volume of said suit,

an exhalation valve in said helmet maintaining a predetermined overpressure in said respiratory volume,

a storage tank for storage of liquefied breathing gas,

a heat exchanger including a primary circuit having an inlet connected to an outlet of said storage tank and having an outlet, and

a gas motor-blower unit having a gas motor connected to receive from said primary circuit outlet a flow of said breathing gas evaporated in said primary circuit and to deliver said flow to said respiratory volume and having a blower drivably connected to said motor and inserted in a closed loop garment ventilation circuit including a secondary circuit of said heat exchanger, said garment ventilation circuit being separate from a breathing circuit including said storage tank, said primary circuit and said respiratory volume; said individual protective equipment further includes means for separating said secondary circuit from said blower unit and drawing gas from said remainder of the inner volume of the suit.

5,339,807

EXHALATION VALVE STABILIZING APPARATUS

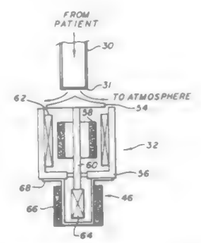
Danis Carter, Escondido, Calif., assignor to Puritan-Bennett Corporation, Carlsbad, Calif.

Filed Sep. 22, 1992, Ser. No. 949,073
Int. Cl.[5] A62B 9/02
U.S. Cl. 128—205.24 19 Claims

1. A lung ventilation system employing a variably positionable exhalation valve wherein the position of said valve is determinative of the rate of venting of respiratory gases from said system, comprising:

means for repositioning said valve to compensate for deviations of system pressure from a preselected value; and

means for damping the rate of such repositioning at a variable rate,



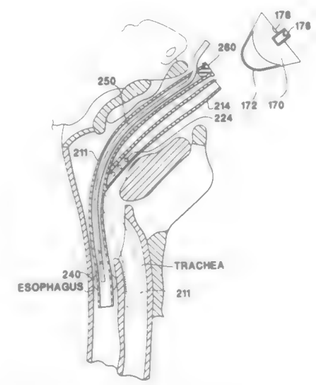
wherein the repositioning of said valve is damped as a function of the product of a signal representative of the rate of repositioning and of a signal related to the instantaneous value of a pneumatic variable.

5,339,808

ENDOTRACHEAL-ESOPHAGEAL INTUBATION DEVICES

T. Anthony Don Michael, 309 Panorama Dr., Bakersfield, Calif. 93305

Continuation-in-part of Ser. No. 679,197, Apr. 2, 1991, abandoned. This application May 5, 1992, Ser. No. 878,492
Int. Cl.[5] A61M 16/00, 29/00; A62B 9/02, 9/06
U.S. Cl. 128—207.15 19 Claims



15. Intubation apparatus comprising:

a first hollow tube having an imperforate wall, a proximal end and a distal end, an inner diameter, an outer diameter, and passage sealing means extending circumferentially about the outer diameter, said first hollow tube being inserted, via its distal end, into a patient's mouth and into one of two positions, a first position wherein said distal end of said first hollow tube is inserted into the esophagus of a patient, and a second position wherein said distal end of said first hollow tube is inserted into the trachea of a patient, in both said first and said second positions, said proximal end of said first hollow tube extending out of the patient's mouth;

a second hollow tube having an inner diameter, a wall provided with an opening, a proximal end and a distal end, said distal end of said second hollow tube being secured to the outer surface of said wall of said first hollow tube, said distal end of said second hollow tube being closed by said imperforate wall of said first hollow tube, said proximal end of said second hollow tube being open and offset from said proximal end of said first hollow tube, and said proximal end of said second hollow tube in both said first and said second positions of said distal end of said first hollow tube, extending out of the patient's mouth;

said distal end of said first hollow tube in said first position inserted into the esophagus of a patient, having said proximal end of said second hollow tube comprising the sole means for introducing air into the patient's lungs via air entering said proximal end of said second hollow tube and flowing through said opening in said wall of said second hollow tube, said opening in said wall of said second hollow tube being in fluid flow communication with the patient's trachea; and

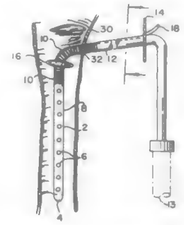
said distal end of said first hollow tube in said second position inserted into the trachea of a patient, having said passage sealing means preventing airflow between said second hollow tube and the patient's trachea, said proximal end of said first hollow tube comprising the sole means for introducing air into the patient's lungs via air flow entering said proximal end of said first hollow tube, flowing through said inner diameter of said first hollow tube, exiting the distal end of said first hollow tube, and entering the patient's lungs.

5,339,809

METHOD OF INSERTING A CRICOTHYROIDAL ENDOTRACHEAL DEVICE BETWEEN THE CRICOID AND THYROID CARTILAGES FOR TREATMENT OF CHRONIC RESPIRATORY DISORDERS

Charles A. Beck, Jr., 2922 Imperial Ct., and Natan Scher, 2923 Mack Heath Crescent, both of Flossmoor, Ill. 60422

Continuation of Ser. No. 802,355, Dec. 4, 1991, abandoned. This application May 6, 1993, Ser. No. 59,187
Int. Cl.[5] A61M 5/178, 25/00, 16/00
U.S. Cl. 128—207.29 5 Claims



1. A method for providing continuous oxygen therapy to a patient having chronic breathing problems, said method comprising the steps of:

A) providing a cricothyroidal endotracheal apparatus including:

a first elongated and hollow tube portion formed of semi-rigid material and having an outer diameter between approximately 5 and 9 mm, and substantially less than the inside diameter of the trachea, means to prevent damage to the trachea during insertion comprising a closed distal end which tapers downwardly towards said distal end, a plurality of vertically spaced apertures extending away from said distal end, said vertically spaced apertures allowing fluid to flow between an interior and an exterior of said first tube portion;

a second hollow and elongated tube portion having an outer diameter between approximately 5 and 9 mm and substantially less than the inside diameter of the trachea to prevent damage to the trachea during insertion of said second hollow and elongated tube portion, said second hollow and elongated tube portion having a proximal end, a distal end, and an intermediate portion, said intermediate portion of said second hollow and elongated tube portion having a structure permitting angular displacement between an angle of 90 and 130 degrees;

a third hollow tube portion including a flange for maintaining at least a proximal end of said third hollow tube portion outside of a patient, and a distal end having an outer diameter between approximately 5 and 9 mm;

B) providing an oxygen source;

C) connecting said proximal end of said first hollow elongated tube portion to the distal end of said second hollow elongated tube portion, and the proximal end of said second hollow elongated tube portion to the distal end of said third hollow tube portion;

D) creating a surgical opening between an upper margin of the cricoid cartilage and a lower margin of the thyroid cartilage sized according to the outer diameter of said first, second, and third hollow tube portions, between approximately 5 and 9 mm;

E) in a single step, without the use of a needle-mounted catheters and intermediate dilators, inserting said closed distal end of said first hollow and elongated tube portion, and the distal and intermediate portion of said second hollow and elongated tube portion through said surgical opening;

F) positioning said first hollow and elongated tube portion at an angle of 90 to 130 degrees to said surgical opening by angularly displacing said intermediate portion of said second hollow and elongated tube portion, and thereby:

preventing said closed distal end of said first hollow and elongated tube portion from touching the tracheal walls;

maintaining said first hollow and elongated tube portion such that it hangs freely in the trachea; and

substantially eliminating disruption of normal ventilation of the patient by allowing flow around said cricothyroidal endotracheal apparatus;

G) connecting said proximal end of said third hollow tube portion to said oxygen supply;

H) delivering a low pressure oxygen flow through said cricothyroidal endotracheal apparatus through said third hollow tube portion, said second hollow tube portion, said first hollow tube portion and said vertically spaced apertures to the trachea of the patient at a flow rate promoting oxygen enrichment at the closed distal end of said third hollow tube portion; and

I) leaving said cricothyroidal endotracheal apparatus in place in said surgical opening for an extended period of time for treatment of the chronic patient.

5,339,810

PULSE OXIMETRY SENSOR

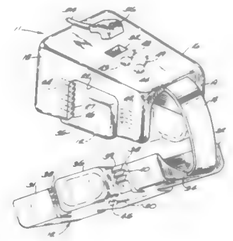
David L. Ivers, Jupiter, and Stanley R. Mach, Palm Beach Gardens, both of Fla., assignors to Marquette Electronics, Inc., Milwaukee, Wis.

Filed May 3, 1993, Ser. No. 56,512
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—633 20 Claims

1. A non-invasive, disposable oximetry sensor including first and second shell members, first coupling means for coupling said first and second shell members and including guide means on said first and second shell members for guiding said first and second shell members for linear movement toward and away from each other, said shell members being constructed and arranged to receive a patient's tissue therebetween and for being supported by the patient's tissue, said sensor including light emitting means mounted on said first shell member for projecting light into the patient's tissue, light detecting means mounted on said second shell member in a predetermined alignment with said light emitting means for detecting light projecting through the tissue so that the level of oxygen saturation in the patient blood can be determined, and second coupling means for releasably mounting said light emitting means

VOL 1165 ISS 4 AG 23 1994 UMI

on said first shell member in the predetermined alignment position relative to said light detecting means whereby said light emitting means may be reused in another sensor when said sensor is discarded, the linear movement of said first and



second shell member maintaining the alignment of said light detecting means and said light emitting means as said first and second shell member are moved toward and away from each other and for preventing misalignment thereof.

5,339,811

MAGNETOENCEPHALOGRAPH

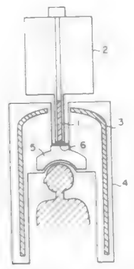
Hiroshi Ohta, Tokyo, and Kazutomo Hoshino, Ageo, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo and The Institute of Physical and Chemical Research (Riken), Saitama, both of Japan

Filed Oct. 30, 1992, Ser. No. 969,489

Claims priority, application Japan, Nov. 6, 1991, 3-318354

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—653.1 **9 Claims**



1. A magnetoencephalograph comprising an oxide superconductor magnetic shielded vessel, a cryostat housing the vessel for cooling the magnetic shielded vessel, a multichannel SQUID, a cryostat housing the SQUID for cooling the SQUID, a magnetic field detection unit and a coupling portion indirectly coupling the SQUID and the magnetic field detection unit, the SQUID, a portion of the cryostat for cooling the SQUID, the magnetic field detection unit and the coupling portion being contained in the magnetic shielded vessel, the SQUID and a portion of the cryostat for cooling the SQUID being inserted together in the magnetic shielded vessel through a top end thereof and the SQUID and the magnetic field detection unit being detachable from each other.

5,339,812

THREE-DIMENSIONAL COMPUTER GRAPHICS SIMULATION AND COMPUTERIZED NUMERICAL OPTIMIZATION FOR DOSE DELIVERY AND TREATMENT PLANNING

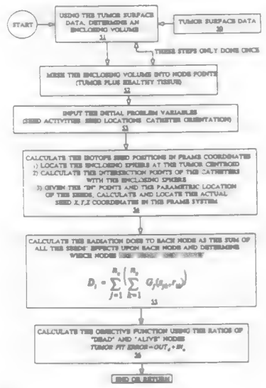
Tyrone L. Hardy, 13433 Camino Carmel, Del Mar, Calif. 92014; Gary W. Glover, Huntington Beach, Calif., and Laura D. Brynildson, Albuquerque, N. Mex., assignors to Medical Instrumentation and Diagnostic Corporation and Tyrone L. Hardy, San Diego, Calif.

Continuation of Ser. No. 534,975, Jun. 8, 1990, Pat. No. 5,205,289, which is a continuation-in-part of Ser. No. 500,788, Mar. 28, 1990, which is a continuation-in-part of Ser. No. 290,316, Dec. 23, 1988, Pat. No. 5,099,846. This application Dec. 14, 1992, Ser. No. 989,702

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—653.1 **18 Claims**



1. A method of optimizing dose delivery involving stereotactic computer techniques comprising the steps of:

1) generating and displaying graphic simulation of a predetermined volume to be dosed from image data obtained from at least one of a plurality of imaging scanners;
2) providing a stereotactic device and thereby establishing three-dimensional coordinates about the predetermined volume to be dosed;
3) determining an enclosing volume circumscribing said predetermined volume to be dosed;
4) meshing said enclosing volume with node points;
5) providing problem variables relating to dosage;
6) calculating the dose to be delivered to each of said node points;
7) formulating an objective function for evaluating the dosage;
8) solving a numerical optimization algorithm optimizing the objective function;
9) repeating steps 7 and 8 until said problem variables are optimized; and

wherein the step of determining an enclosing volume circumscribing the predetermined volume to be dosed further comprises the steps of:

1) graphically simulating a calculated volume as said predetermined volume;
2) calculating the centroid of said calculated volume; and
3) calculating and providing an enclosing volume with said centroid of said calculated volume at the center of the enclosing volume, said enclosing volume enclosing said calculated volume.

5,339,813

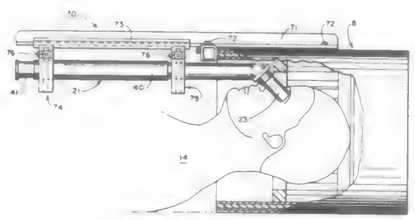
PATIENT VIDEO SYSTEM FOR MEDICAL IMAGING EQUIPMENT

Edgar A. DeYoe, Delafield, and John F. Neitz, New Berlin, both of Wis., assignors to The MCW Research Foundation, Inc., Milwaukee, Wis.

Filed Aug. 6, 1993, Ser. No. 103,937

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—653.1 **9 Claims**



1. In a medical imaging system having a bore for receiving a patient while acquiring data from which an image of the patient can be produced, a video system which comprises:

a scope mounted within the bore of the medical imaging system and having a barrel assembly with an objective lens at one end and an eyepiece at the other end, the eyepiece including a lens which focuses light passing through the objective lens and the barrel assembly on the eye of the patient to enable the patient to look at a remote target area while the data are being acquired by the medical imaging system;

a display system located remotely from the medical imaging system and including means for producing an image in the target area for the patient to observe through the scope.

5,339,814

PROCESS FOR VISUALIZING TISSUE METABOLISM USING OXYGEN-17

Sigmund E. Lasker, 531 Main St., New York, N.Y. 10044

Filed Apr. 14, 1992, Ser. No. 869,547

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.4 **7 Claims**

1. A process of visualizing tissue metabolism in a subject comprising the steps of:

a) injecting a gas containing an effective imaging amount of $^{17}O_2$ into the peritoneal cavity of said subject;
b) maintaining said subject for a time period sufficient for said $^{17}O_2$ to be (i) absorbed into the blood stream of said subject, (ii) distributed throughout the tissues of said subject, and (iii) converted to $H_2{}^{17}O$; and
c) detecting said $H_2{}^{17}O$ with a magnetic resonance imaging system thereby visualizing said tissue metabolism.

5,339,815

METHODS AND APPARATUS FOR ANALYZING AN ULTRASONIC IMAGE OF AN ANIMAL OR CARCASS

Yujun Liu, and James R. Stouffer, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

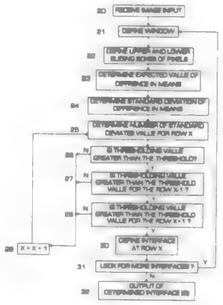
Filed Dec. 22, 1992, Ser. No. 995,189

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.01 **17 Claims**

1. A method of automatically recognizing muscle interfaces of an animal or carcass from an ultrasonic image of a muscle area, comprising the following steps:

a) providing an input of an ultrasonic scan image of said muscle and fat area of said animal or carcass comprising rows and columns of pixel data;
b) selecting a window of rows and columns of pixels within said image input;
c) scanning upward through said window, starting at a point in the bottom row of pixels within said window, until an interface is determined by the following steps:
i) defining a sliding lower box of pixels and an adjacent sliding upper box of pixels wherein said sliding boxes are redefined to move up through said window one row at a time at least until said interface is determined,
ii) computing the expected value and the standard deviation of the difference between the means of the gray levels of the pixels within said sliding lower box and said sliding upper box,
iii) computing a number of normal deviates value for each



row of pixels moving upwards through said window, wherein said number of normal deviates value is computed from the values determined in step ii by dividing the absolute value of the difference of the means of the gray levels of the pixels within said sliding lower box and said upper box less said computed expected value, by said computed standard deviation, and

iv) defining said interface at a specified row of pixels when said number of normal deviates value for said specified row of pixels is greater than both a predefined interface threshold and is greater than said number of normal deviates value calculated for the row of pixels one row lower and one row higher than said specified row of pixels; and

d) providing an output of said determined interface.

5,339,816

ULTRASONIC DOPPLER BLOOD FLOW MONITORING SYSTEM

Shigeru Akamatsu, Gifu, and Yuji Kondo, Mitaka, both of Japan, assignors to Aloka Co., Ltd. and Shigeru Akamatsu, Japan

Filed Oct. 21, 1992, Ser. No. 964,549

Claims priority, application Japan, Oct. 23, 1991, 3-275132; Nov. 18, 1991, 3-301963

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—661.09 **34 Claims**

1. An ultrasonic Doppler blood flow monitoring system, comprising;

blood flow amount measuring means for measuring an amount of flowing blood in accordance with a thermodilution measurement method;

ultrasonic transducer means to be inserted into a blood vessel for transmitting ultrasonic waves toward blood flow in the blood vessel and receiving the waves reflected therefrom, said ultrasonic transducer means adapted to be able to obtain ultrasonic Doppler shift frequency signals due to blood flow based on the ultrasonic waves;

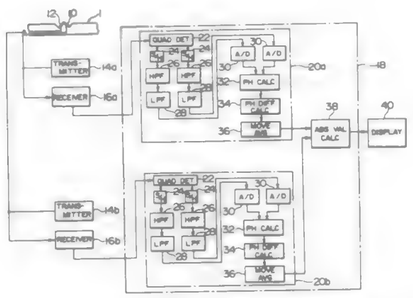
ultrasonic Doppler information measuring means for measuring blood flow information continuously on the basis of

VOL 1165 ISS 4 AUG 23 1994 UMI

the ultrasonic Doppler shift frequency signals obtained by said ultrasonic transducer means; and

blood flow amount calculating means for calculating an amount of flowing blood on the basis of the amount of flowing blood measured in accordance with a thermodilution measurement method and the blood flow information measured on the basis of the ultrasonic Doppler shift frequency signals;

wherein said ultrasonic Doppler information measuring means comprises ultrasonic Doppler blood flow amount measuring means for measuring an amount of flowing blood continuously on the basis of the ultrasonic Doppler



shift frequency signals; and said blood flow amount calculating means comprises blood flow amount correcting means for continuously calculating an amount of flowing blood equivalent to that measured in accordance with the thermodilution measurement method, by calibrating the amount of flowing blood measured on the basis of the ultrasonic Doppler shift frequency signals with that measured in accordance with the thermodilution measurement method and by comparing the calibrated reference amount of flowing blood with the amount of flowing blood measured continuously on the basis of the ultrasonic Doppler shift frequency signals.

5,339,817

SYSTEM AND A METHOD FOR MEASUREMENT AND PRESENTATION OF FLUID FLOW MOVEMENTS, PARTICULARLY THE FLOW OF BLOOD THROUGH A BODY ORGAN

Gert Nilsson, Lövsbergsvägen 13, S-582 69 Linköping, Sweden

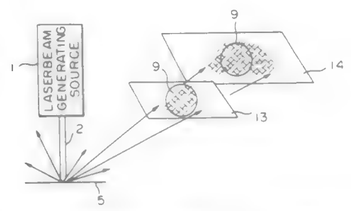
PCT No. PCT/SE90/00705, § 371 Date Apr. 30, 1992, § 102(e) Date Apr. 30, 1992, PCT Pub. No. WO91/06244, PCT Pub. Date May 16, 1991

PCT Filed Oct. 30, 1990, Ser. No. 852,145

Claims priority, application Sweden, Oct. 31, 1989, 8903641-2; Jul. 19, 1990, 9002467-0

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—664 **14 Claims**



1. A system for the measurement and presentation of flow movements in a fluid to determine blood perfusion in superficial blood vessels of a body organ, said system comprising:

a laser light source (1) generating a laser beam (2), means (3, 6) for directing said laser beam (2) onto a body part to be examined and for guided and stepwise movement of said laser beam over said body part (5) in accordance with a predetermined scanning pattern (8), wherein said means for directing said laser beam halts said laser beam at scanned points along said scanning pattern for a given time interval, means (9) for receiving part of said laser beam reflected from said body part, means (10, 7) for detecting over a large number of said scanned points broadening of a frequency of a received reflected light beam caused by a Doppler effect, wherein, said means for detecting measures the magnitude of superficial blood circulation in said body part (5) at said scanned points.

5,339,818

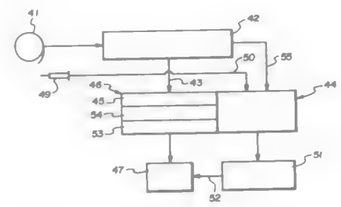
METHOD FOR DETERMINING BLOOD PRESSURE UTILIZING A NEURAL NETWORK

Phillip D. Baker; Joseph A. Orr; Dwayne R. Westenskow, and Timothy P. Egbert, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation of Ser. No. 961,031, Oct. 14, 1992, abandoned, which is a continuation of Ser. No. 575,947, Aug. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,115, Sep. 20, 1989, abandoned. This application Sep. 9, 1993, Ser. No. 119,451

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—677 **13 Claims**



1. A method for on-line calculation of a variable physiological parameter of a patient, said method comprising the steps of:

(1.1) identifying the physiological parameter to be quantitatively monitored and estimated;

(1.2) coupling at least one sensor to the patient, said sensor being responsive to register changes in the physiological parameter, which changes are quantitatively dependent on a particular value for the parameter;

(1.3) activating the sensor to generate a sequence of on-line signals which register changes in the physiological parameter;

(1.4) transmitting the on-line signals as input signals to a computer system, including input nodes of a neural network supported by the computer system, which neural network is capable of calculating an output signal corresponding to a parameter value from the on-line, input signals;

(1.5) processing the input signals within the neural network to convert the sequence of input signals to an on-line output signal corresponding to a parameter value by applying fixed weighting factors to the input signals;

(1.6) generating said fixed weighting factors by retrieving weighting factors which were previously generated by applying a training algorithm with respect to previously collected training data comprising neural network input signals and corresponding known parameter values.

5,339,819

PULSE DETECTING APPARATUS

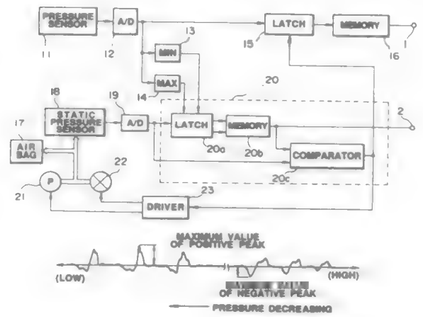
Mitsuru Takashima, Tokyo, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 740,595, Aug. 5, 1991, abandoned. This application Nov. 10, 1993, Ser. No. 150,270

Claims priority, application Japan, Aug. 22, 1990, 2-218956

Int. Cl.[5] A61B *5/022*

U.S. Cl. 128—681 **3 Claims**



1. A pulse detecting apparatus, comprising:

a first pressure sensor;

a minimum value detecting means for detecting a minimum value of the output of said first pressure sensor;

a maximum value detecting means for detecting a maximum value of the output of said first pressure sensor;

pressure applying means for biasing said first pressure sensor upon an artery;

a second pressure sensor for detecting a static biasing pressure to bias said first pressure sensor of said pressure applying means upon the artery; and

measured pressure detecting means for detecting, based upon the output of said second pressure sensor, the biasing pressures of said pressure applying means corresponding to the minimum and maximum values detected by said minimum and maximum value detecting means, respectively, when the biasing pressure of the pressure applying means is decreased from a given value, said measured pressure detecting means including means for storing output values of said second pressure sensor representative of the biasing pressures of said pressure applying means obtained at a first time period when minimum and maximum values are detected by said minimum and maximum value detecting means, respectively, and further including comparing means for comparing the respective values stored in said storing means at said first time with the outputs from said second pressure sensor obtained at a second time period, said second time period corresponding to a period occurring when the biasing pressure of said pressure applying means is decreased again from the given value increased by said pressure applying means and after the output values of said second pressure sensor obtained during said first time period have been stored in said storing means of said measured pressure detecting means; and

pulse data recording means for storing detected outputs of said first pressure sensor corresponding to one heart beat, said detected outputs stored in said data recording means indicating values at a period at which the comparing means determines that an output value of said second pressure sensor at said first time period is equal to the corresponding output value of said second pressure sensor at said second time period.

5,339,820

IMPLANTABLE CARDIAC MONITORING AND/OR CONTROL DEVICES HAVING AUTOMATIC SENSITIVITY CONTROL, APPARATUS AND METHODS THEREFOR

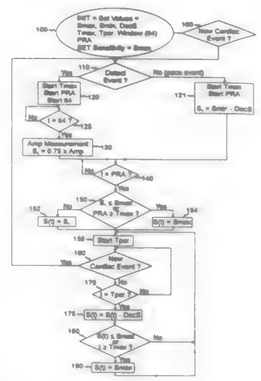
Christine Henry, Paris, and Remy Nitzsche, Gambais, both of France, assignors to ELA Medical, Montrouge, France

Filed Dec. 22, 1992, Ser. No. 994,725

Claims priority, application France, Dec. 23, 1991, 91 15980

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—696 **32 Claims**



1. A method for automatic control of sensitivity for a cardiac signal monitoring device, characterized by the following stages:

(a) initially setting the sensitivity threshold (S) to a low value (Smax) so as to have maximum sensitivity; and thereafter

(b) detecting a ventricular complex as the beginning of a cardiac cycle, measuring the amplitude (Amp) of the detected ventricular complex, and computing the sensitivity threshold (S) as a function of that sole measured amplitude (Amp);

(c) subsequently decreasing the sensitivity threshold in stages during said same cardiac cycle until the sensitivity threshold (S) is at said low value; and

(d) repeating stages (b) and (c) in response to each new cardiac cycle.

5,339,821

HOME MEDICAL SYSTEM AND MEDICAL APPARATUS FOR USE THEREWITH

Jun Fujimoto, Tokyo, Japan, assignor to Seta Co., Ltd. and NASA Corporation Co., Ltd., both of Tokyo, Japan

Filed Oct. 26, 1992, Ser. No. 966,726

Claims priority, application Japan, Feb. 13, 1992, 4-059477

Int. Cl.[5] A61N *5/04*

U.S. Cl. 128—700 **9 Claims**

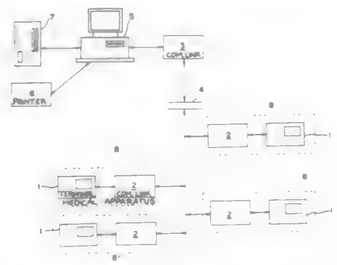
1. A medical system for measuring a user's blood pressure, pulse and electrocardiogram at home, and for communication between the user and a medical institution; the system comprising:

a home medical terminal for use by the user, the terminal including an arm band for measuring the user's blood pressure and pulse; a pair of measuring electrodes for measuring the user's electrocardiogram; explaining means for questioning a user with on-line and with preselected questions, and for presenting and explaining a measurement procedure to the user for use by the user to take measurements using said arm band and said measuring electrodes; a plurality of operation buttons operable by the user and operatively connected to the explaining means

VOL 1165 ISS 4 AUG 23 1994 UMI

for inputting responses to the questions and for interacting with the explaining means to proceed through a measurement procedure; the home medical terminal also including display means for displaying a measurement by said arm band and a measurement by said electrodes, said display means also being operatively connected to said explaining means for displaying the questions and for presenting and explaining the measurement procedures; the home medical terminal further included a memory for storing the results of the measurements, and the answers to the questions; and a home central processing unit operatively connected to said display means, to said operation buttons, to said arm band, to said electrodes, to said explaining means and to said memory, for operating said arm band and electrodes to make the measurements, to operate said explaining means to question the user and present and explain measurement procedures to the user, and to receive signals from the operation buttons and to drive the display means and memory;

home communication means operatively connected to said home central processing unit for transmitting and receiving signals including the on-line questions for the user, responses to and from the user to those questions, and the measurements taken by the user;



institute communication means;

a communication line operatively connected between the home communication means and the institute communication means for transmitting and receiving signals therebetween;

a host computer operatively connected to the institution communication means and at the medical institution;

question means operatively connected to the host computer for initiating on-line and preselected questions for diagnosis inquiry to the host computer which are transmitted between the home and institution communication means over the communication line to the explaining means for providing questioning of the user; and

attachment means operatively connected to the host computer for storing and displaying information from the host computer, received through the home and institution communication means over the communication line, and including the results of the measurements taken by the user and stored in the memory.

5,339,822

METHOD OF VALIDATING PHYSIOLOGIC EVENTS RESULTING FROM A HEARTBEAT

Lee A. Taylor, Portland; Ronald G. Bennett, Gladstone, and Herbert R. Salisbury, Beaverton, all of Oreg., assignors to Protocol Systems, Inc., Beaverton, Oreg.

Continuation of Ser. No. 696,513, May 7, 1991, abandoned. This application Jun. 4, 1993, Ser. No. 72,864

Int. Cl.[5] A61B *5/04*

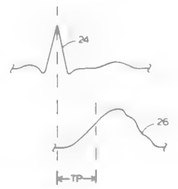
U.S. Cl. 128—700 **6 Claims**

1. An improved method of validating whether pulse-like, physiologic events monitored by vital signs monitoring apparatus connected to a living subject are heartbeat-induced, with such apparatus being capable of monitoring successively, both the pulses of such events and event-validating R-wave information, and being capable of providing other event-validating criteria which criteria are independent of R-wave-related information, comprising:

monitoring the occurrence of an R-wave and the occurrence of a pulse of such an event;

providing at least one of such other criteria;

analyzing, along with such provided criteria, time relationships extant between the R-wave and the pulse, wherein the analyzing step includes analyzing such time relationships by the substeps of detecting selected points of the two occurrences, noting the time period between those



selected points, preselecting timing standards, labeling the time period based upon the preselected timing standards, and using the label with such other criteria to validate the event;

validating such event based upon the analyzing;

choosing for additional validation a number of additional, successive pairs of R-waves and pulses;

repeating the monitoring, providing, detecting, noting, labeling, using and validating steps for the chosen number of additional, successive pairs;

based upon the repeating, adapting the preselected timing standards based upon the already analyzed time relationships; and

using validated events to determine vital signs of the subject.

5,339,823

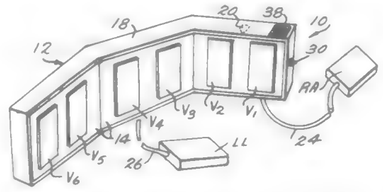
TWELVE-LEAD PORTABLE HEART MONITOR AND METHOD

Herbert E. Reinhold, Jr., Rockville, Md., assignor to Survival Technology, Inc., Rockville, Md.

Filed Aug. 7, 1992, Ser. No. 925,912

Int. Cl.[5] A61B *5/0404*

U.S. Cl. 128—710 **33 Claims**



1. A method of obtaining electrical heart activity of an individual in a form capable of producing a twelve-lead electrocardiogram of an individual with the use of a device including a portable electrode support having an array of six non-adhesive precordial electrodes fixed thereon at predetermined positions within the array which correspond with the Wilson precordial leads for the individual, a right arm electrode, a left arm electrode, a left leg electrode and circuitry for converting the electrical heart activity of the individual obtained by said electrodes into a form capable of producing a twelve-lead electrocardiogram, the method comprising

applying the right arm electrode, the left arm electrode and the left leg electrode the skin of the individual at locations such that the circuitry can be electrically operable to obtain respective leads I, II, III, AVR, AVL, and AVF therefrom,

utilizing an arm of the individual including at least the forearm and upper arm to engage the array of six precordial electrodes with the skin of the chest of the individual in an operative relation such that the circuitry can be electrically operable to obtain leads V_1, V_2, V_3, V_4, V_5, and V_6 therefrom, and

operating the circuitry of said device for a time sufficient to obtain electrical heart activity of the individual in a form capable of producing an electrocardiogram representative of leads I, II, III, AVR, AVL, AVF, V_1, V_2, V_3, V_4, V_5, and V_6, while said six precordial electrodes are retained in skin-engagement by applying human pressure to the support sufficient to retain said operative relation and while said left arm electrode, said right arm electrode and said left leg electrode are applied as aforesaid.

5,339,824

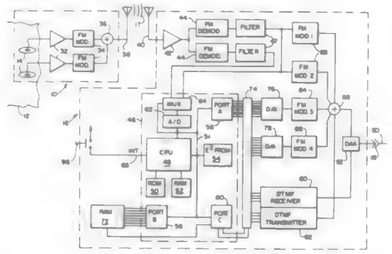
MEMORY LOOP ECG RECORDER WITH LIFO DATA TRANSMISSION

Ram M. Engira, Milwaukee, Wis., assignor to Cardiac Evaluation Center, Inc., Madison, Wis.

Filed Oct. 6, 1992, Ser. No. 957,545

Int. Cl.[5] A61B *5/0432*

U.S. Cl. 128—712 **15 Claims**



1. An apparatus for monitoring and transmitting electrocardiographic data from a patient to a remote display terminal comprising:

an acquisition means for communication at least one electrocardiographic signal having a time-varying amplitude providing the electrocardiographic data from the patient to the apparatus;

a digitizing means communication with the acquisition means for receiving and sampling the electrocardiographic signal at a plurality of instants in time to produce samples and further digitizing the samples of the electrocardiographic signal to produce a set of time-ordered digital words indicating the amplitude of the electrocardiographic signal at the plurality of instants;

a storage means communicating with the digitizing means for receiving and storing the digital words according to their associated sampling instants in time;

an episode marker means, communicating with the storage means, for designating one instant as a transmit instant; and

a transmission means communicating with the storage means for reading the digital words in sequence from the transmit instant in reverse time-order and transmitting the read digital words to the remote display terminal.

5,339,825

APPARATUS TO MEASURE AND RECORD PEAK AIR PASSAGE PRESSURE

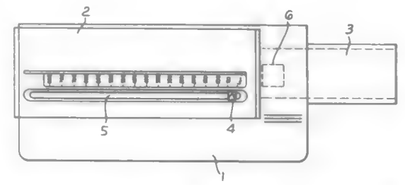
John McNaughton, and Derek P. Hutchison, both of Harlow, England, assignors to Clement Clarke International Ltd., Essex, England

Filed Apr. 15, 1992, Ser. No. 868,707

Claims priority, application United Kingdom, Apr. 18, 1991, 9108370.9

Int. Cl.[5] A61B *5/08*

U.S. Cl. 128—725 **10 Claims**



1. An apparatus for measuring lung function of a subject, comprising:

air passage means for receiving an exhalation of the subject;

pressure sensing means for producing signals of the pressure in said air passage means during said exhalation;

means for processing said signals to derive a peak value of the signal;

means for comparing a plurality of peak values from the respective signals from a succession of exhalations within a predetermined time period;

means responsive to said means for comparing for selecting a plurality of the highest peak values from the compared plurality of peak values;

means for storing said selected peak values; and

means for reading said stored peak values from said storing

5,339,826

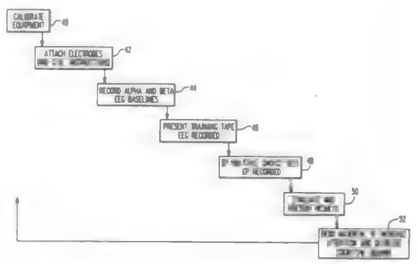
METHOD FOR TRAINING MATERIAL EVALUATION WITH METHOD OF EEG SPECTRAL ESTIMATION

Albert L. Schmidt, Murrysville; Ellen K. McKinley, Monroeville; Lewis F. Hanes, Pittsburgh, all of Pa.; Michael R. Morris, Finksburg; Patrick J. McKenzie, Sykesville, both of Md., and Paul H. Haley, Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 9, 1991, Ser. No. 810,097

Int. Cl.[5] A61B *5/0484*

U.S. Cl. 128—731 **7 Claims**



1. A method of evaluating training material, comprising the steps of:

(a) measuring nonattention and cognitive baselines;

(b) presenting the training material to a subject and record-

VOL 1165 ISS 4 AG 23 1994 UMI

ing the electroencephalographic (EEG) activity of the subject; and

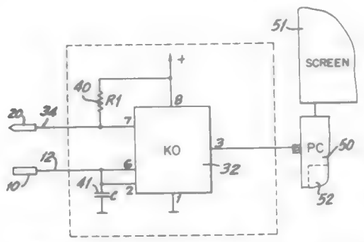
(c) measuring one of an attentive level and a cognitive level of the subject using the EEG activity by comparing the attention level and the cognitive level to attention and cognitive thresholds, where one of high attention levels and low cognitive levels indicate effective training material, where one of the attention level above the attention threshold and the cognitive level below the cognitive threshold indicates effective training material and where the attention threshold is 0.10 of the nonattention baseline and the cognitive threshold is 0.244 of the cognitive baseline.

5,339,827

ACUPUNCTURE SYSTEM AND METHOD

Jiri Masopust, Rodinna, Czechoslovakia, assignor to Intech Scientific, Inc., Closter, N.J.

Filed Feb. 11, 1993, Ser. No. 16,745
Int. Cl.[5] A61H *39/02*
U.S. Cl. 128—735 **8 Claims**



1. A system for helping find acupuncture points on a human patient and the recording, storage and analysis of the electrical impedance of the points after they are found, including

(i) a probe electrode having a conductive end, the size of the end being less than about 1 mm square;

(ii) a reference electrode having a conductive surface area at least 25 times larger than the probe conductive end;

(iii) oscillator means to generate an oscillatory waveform with a high content of harmonic components, the oscillator means being electrically connected to the probe conductive end;

(iv) an impedance-to-frequency converter means connected to the probe electrode and reference electrode to convert the impedance measured at the probe conductive end to an electrical frequency;

(v) a computer system means electrically connected to the impedance-to-frequency converter means to display the impedances as they are being measured by the probe electrode on a screen; the computer system means having a display screen, digital memory and programmed software means to analyze the impedances at the found acupuncture points.

5,339,828

APPARATUS AND METHOD FOR TAKING CULTURES ENDOSCOPICALLY

Daniel J. Keating, 231 Berteau, Elmhurst, Ill. 60126, and Natalie R. Siska, 1255 Elder Rd., Homewood, Ill. 60430

Filed Jan. 25, 1993, Ser. No. 8,709
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—759 **33 Claims**

1. In combination:

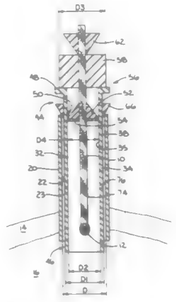
a cannula having an opening therethrough; and

an apparatus to take a culture sample from within a body cavity through the cannula opening, said apparatus comprising:

means for collecting and transferring a culture sample from within a body cavity, said collecting and transferring means including an elongate extension with a swab thereon,

said elongate extension facilitating introduction of the swab into a body cavity;

means for shielding the swab to facilitate introduction thereof into a body cavity, said shielding means being movable into said cannula opening; and



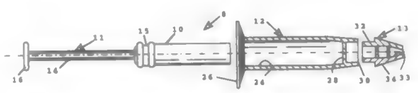
cooperating means on the shielding means and at least one of the elongate extension and swab for guiding relative movement thereof between a) a shielded position wherein transportation of the swab into and out of a body cavity is facilitated and b) an exposed position wherein the swab is exposed sufficiently to allow it to access a body cavity from which a culture sample is to be taken.

5,339,829

ORAL COLLECTION DEVICE

Thomas R. Thieme, Independence; Andrew S. Goldstein; Stephen C. Piacentini, both of Portland, and Nanette M. Klimkow, Beaverton, all of Oreg., assignors to Epitope, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 865,054, Apr. 8, 1992, abandoned, which is a continuation of Ser. No. 641,739, Jan. 15, 1991, Pat. No. 5,103,836, which is a continuation-in-part of Ser. No. 486,415, Feb. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,401, Sep. 21, 1989, Pat. No. 5,022,409. This application Aug. 25, 1992, Ser. No. 935,845
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—760 **9 Claims**



1. A device for obtaining oral fluid containing substances for testing comprising:

an absorbent pad impregnated with the salts of a hypertonic solution, said salts being present in the pad in an amount effective to recover a high concentration of such substances from oral fluid, and

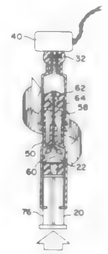
means for extracting from the pad oral fluid that has been absorbed into the pad.

5,339,830

BLOOD COAGULATION TEST SYSTEM

Joseph W. Blake, III, 9 Taylor Ave., Norwalk, Conn. 06854

Filed Jan. 21, 1992, Ser. No. 822,724
Int. Cl.[5] A61B *5/00*; **G01N** *33/00*
U.S. Cl. 128—771 **36 Claims**



28. A cartridge for blood coagulation tests comprising a cylinder defining a collection chamber, a nozzle at one end of the cylinder for accommodating a fill connection for the flow of blood into the collection chamber, a second opening through the other end of the cylinder, a plunger telescoped into the cylinder through the second opening for drawing a blood sample into the chamber, the plunger being of tubular form and divided longitudinally by a lateral bulkhead into a bleeding receptacle and a waste compartment, the bleeding receptacle defined by a front plunger wall, a forward portion of the plunger, and the lateral bulkhead, the waste compartment defined by the lateral bulkhead, an aft portion of the plunger and an open read end, a capillary tube projecting forwardly from the front plunger wall into the collection chamber and extending through the plunger and forming a blood flow path from the collection chamber past the bleeding receptacle and into the waste compartment, a sealing ring about the forward projection of the capillary tube for forming a fluid tight seal with the collection chamber, an aperture in the capillary tube for bleeding the blood sample into the bleeding receptacle, the forward portion of the plunger having a threaded exterior surface, a drive ring rotatably affixed to the collection chamber near the second opening in engagement with the threaded exterior surface of the plunger for moving the plunger at a steady rate for drawing a blood sample into the collection chamber and for expelling the sample from the chamber to establish blood flow through the capillary tube, a pressure diaphragm closing the nozzle, a pressure piston telescoped into the waste compartment through the open end thereof for applying a constant back pressure on blood entering the waste compartment so that blood flows through the capillary tube at a steady flow rate, and a seal fitted to the pressure piston for forming a fluid tight seal between the piston and the waste compartment.

5,339,831

POUCH WITHIN A POUCH DESIGN

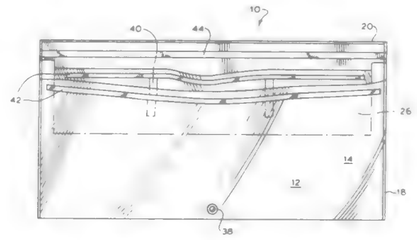
Joseph F. Thompson, Lindenhurst, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Filed Jan. 30, 1992, Ser. No. 828,378
Int. Cl.[5] A61F *13/00*
U.S. Cl. 128—852 **19 Claims**

1. A device for covering a patient's appendage during a surgical procedure, comprising:

a big pouch having an upper sheet and a lower sheet, said upper and lower sheets each having at least a first and a second peripheral section, said first peripheral sections of each sheet being generally attached to one another about their periphery, and said second peripheral sections of each sheet being generally unattached to one another to define a big opening and to allow a patient's appendage to be inserted into said big pouch between said second peripheral sections, said big pouch being large enough to accommodate a patient's appendage;

a smaller pouch also having an upper sheet and a lower sheet, said upper and lower sheets of said smaller pouch each having at least a first and a second peripheral section, said first peripheral sections of each sheet of said smaller pouch being generally attached to one another about their periphery, and said second peripheral sections of each sheet of said smaller pouch being generally unattached to one another to define a smaller opening relative to said big opening of said big pouch;



said second peripheral section of said lower sheet of each of said big and smaller pouches being connected to one another,

said smaller pouch being movable from a first position to a second position in which

in said first position, said smaller opening of said smaller pouch is located immediately within said big opening of said big pouch and said smaller pouch is generally located within said big pouch, and

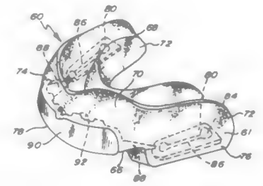
in said second position, said second peripheral section of said lower sheet of said smaller pouch overlies said big opening, and said smaller pouch is generally located outside of said big pouch.

5,339,832

THERMOPLASTIC MOUTHGUARD WITH INTEGRAL SHOCK ABSORBING FRAMEWORK

Jon D. Kittelsen, Fridley, and Paul C. Belvedere, Edina, both of Minn., assignors to E-Z Gard Industries, Inc., Minneapolis, Minn.

Filed May 24, 1993, Ser. No. 66,469
Int. Cl.[5] A61F *5/14*
U.S. Cl. 128—862 **23 Claims**



1. A composite mouthguard for a user having an upper jaw with anterior teeth, posterior teeth with occlusal surfaces, and fossae with cartilage forming sockets, and a movable lower jaw with anterior teeth, posterior teeth with occlusal surfaces and condyles movably fitted within the sockets forming the temporomandibular joints through which the auriculo-temporalis nerves and supra-temporal arteries pass, the mouthguard comprising:

(a) a flexible and tough mouthguard portion made of a first material of a softenable thermoplastic having an U-shaped

VOL 1165 ISS 4 AG 23 1994 UMI

base with top and bottom sides with upward inner lingual and outer labial walls and further having posterior and anterior portions; and

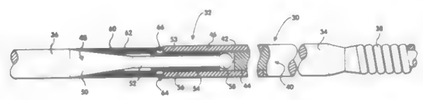
(b) a shock absorbing and attenuating framework made of a second material of a nonsoftening, resilient, low compression elastomer which is embedded in the mouthguard posterior portions of the mouthguard base comprised of a posterior cushion pad in each posterior portion wherein the elastomeric framework extends forwardly from the posterior cushion pads to form an anterior impact brace on the anterior portion of the upward outer labial wall and at least partially extends through the labial wall to form anterior cushion pads to touch the anterior teeth of the upper jaw to absorb, attenuate and dissipate shock forces exerted on the mouthguard during athletic activity.

5,339,833

SWIVEL EXCHANGE GUIDEWIRE

William A. Berthiaume, Hudson, and Michel J. LeBlanc, Waltham, both of Mass., assignors to C.R. Bard, Inc., Murray Hill, N.J.

Filed Aug. 21, 1991, Ser. No. 748,037
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **8 Claims**



1. An exchange guidewire for use with a catheter in a percutaneous transluminal coronary angioplasty procedure comprising:

an elongate, flexible, proximal, trailing guidewire section having proximal and distal ends;

an elongate, flexible, distal, steerable guidewire section having proximal and distal ends, said steerable guidewire section having a length substantially similar to that of a conventional length guidewire;

the proximal end of the distal section being rotatably connected to the distal end of the proximal section, wherein the distal end of the trailing guidewire rotatably connected to the proximal end of the steerable section includes an end segment having a substantially smaller outer diameter than more proximal disposed portions of the guidewire, the proximal end of the steerable guidewire section including a longitudinally disposed hollow socket for accepting the smaller Outer diameter end segment of the distal end, and

a bridging tube disposed at the joint between the trailing guidewire and the steerable guidewire, and having an outer diameter smaller than or substantially equal to the outer diameter of the trailing guidewire to cover the end segment longitudinally between the trailing guidewire and the proximal end of the steerable guidewire;

said trailing guidewire section being of such length that the combined length of proximal and distal guidewire sections is that of an exchange wire for facilitating exchange of catheters, and

means for removably storing the trailing guidewire section in a coiled, stored configuration,

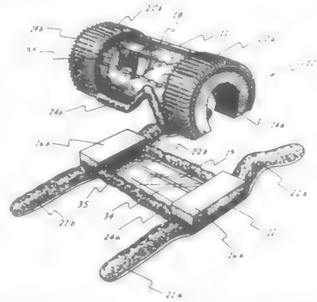
whereby the distal guidewire section may be rotated and manipulated while within a patient without rotating the stored proximal trailing guidewire section which may later be unstored to allow a catheter exchange.

5,339,834

INFUSION SITE COVER AND IMMOBILIZER

Eileen Marcelli, 25 DuBois Ave., Sea Cliff, N.Y. 11579

Filed Aug. 6, 1993, Ser. No. 103,329
Int. Cl.[5] A61F *5/37, 13/00*
U.S. Cl. 128—877 **8 Claims**



1. A device with an exterior and an interior for covering, protecting and providing ready access to a site on a patient's limb, the device comprising:

a first longitudinally extending transparent planar cover with two spaced opposite ends and including first cushioning means disposed at each end thereof for supporting the patient's limb and soft material lining extending between said two spaced opposite ends;

a second semi-cylindrical transparent cover having two spaced opposite ends with two edges defining an opening that extends between said two spaced opposite ends, said two edges being lined with a soft material and including at least one cushioned thumb hole, said two ends including second cushioning means for resiliently contacting said first cushioning means;

decals placed on said transparent covers to distract the patient and a patient identification sticker placed on one of said covers; and

connecting means comprising two straps encircling the exterior of the device and overlying said first and second cushioning means disposed on the interior of the device for movably and removably connecting said first and second covers together to protect the site, permit ready access to the site, and allow visual inspection of the site while said covers are connected together.

5,339,835

Patent Not Issued For This Number

5,339,836

CIGARETTE-MAKING MACHINE WITH TRANSFER DEVICE

Michael Lauenstein, Cormondrèche, and Bernard Tallier, Gorgier, both of Switzerland, assignors to Fabriques de Tabac Réunies SA, Neuchatel-Serrieres, Switzerland

Continuation of Ser. No. 821,167, Jan. 16, 1992, abandoned. This application Aug. 10, 1993, Ser. No. 104,806
Claims priority, application Switzerland, Jan. 31, 1991, 00292/91-9
Int. Cl.[5] A24C *5/18*
U.S. Cl. 131—84.1 **6 Claims**

1. A cigarette-making machine of the type having:

(1) conveying means for a rod of tobacco, said conveying means having:

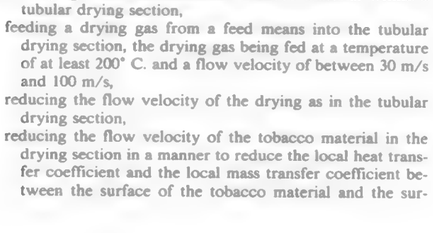
(a) a suction rod conveyor including suction means and a porous first band adapted to move longitudinally, the rod of tobacco being formed with a substantially rectangular cross section and being held against the underside of said first band by said suction means for formation and advancing thereby; and

(b) means for advancing the rod of tobacco beyond said suction rod conveyor; and

(2) means for disposing a strip of paper about the rod of tobacco, including means for imparting a substantially circular cross section to the rod, said cross section having a diameter; wherein the improvement comprises:

said means for imparting a substantially circular cross section to the rod comprising a transfer device for transferring the rod of tobacco, said transfer device being disposed along a predetermined initial portion opposite said porous first band at the beginning of said means for disposing a strip of paper; and

said means for advancing the rod of tobacco beyond said suction rod conveyor comprising a second band for



driving the strip of paper, said porous first band and the strip of paper being arranged to advance the rod of tobacco over the predetermined initial portion of said transfer device; and

said means for imparting a substantially circular cross section to the rod imparting said substantially circular cross section to the rod only after the rod is out of contact with said porous first band, said porous first band and said second band being disposed in an initial inclined relationship such that the paper strip is gradually brought into contact with the rod and then being disposed in parallel planes with the rod between them until the rod is out of contact with said porous first band.

5,339,837

DRYING PROCESS FOR INCREASING THE FILLING POWER OF TOBACCO MATERIAL

Werner Hirsch, Hamburg; Arno Weiss, Norderstedt; Erhard Rittershaus, Hamburg; Gitta Jünemann, Hamburg; Caspar H. Koene, Hamburg; Ingo Pautke, Hamburg; Fritz Scheiborn, Bayreuth; Herbert Sommer, Hamburg, all of Fed. Rep. of Germany, and William J. Stone, Calmore, United Kingdom, assignors to B.A.T. Cigarettenfabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed May 14, 1992, Ser. No. 882,866
Claims priority, application Fed. Rep. of Germany, May 27, 1991, 4117329
Int. Cl.[5] A24B *3/18*
U.S. Cl. 131—296 **20 Claims**

1. A drying process for increasing the filling power of tobacco material, comprising the steps of:

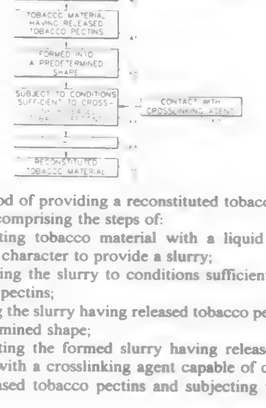
conveying a cut and moistened tobacco material within a tubular drying section,

feeding a drying gas from a feed means into the tubular drying section, the drying gas being fed at a temperature of at least 200° C. and a flow velocity of between 30 m/s and 100 m/s,

reducing the flow velocity of the drying as in the tubular drying section,

reducing the flow velocity of the tobacco material in the drying section in a manner to reduce the local heat transfer coefficient and the local mass transfer coefficient between the surface of the tobacco material and the surrounding drying gas with the reduction of the flow velocity of the drying gas,

the flow velocity of the drying gas at the end of the drying section being brought to a value which is at the most 15 m/s,



the drying gas at the end of the drying section being brought to a temperature of at the most 130° C., and

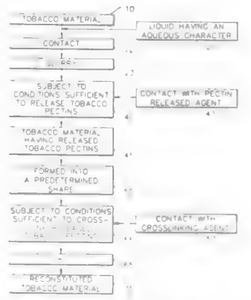
separating the tobacco material from the drying gas after the tobacco material has exited the tubular drying section.

5,339,838

METHOD FOR PROVIDING A RECONSTITUTED TOBACCO MATERIAL

Harvey J. Young, Advance; Edward Bernasek, Winston-Salem; Aju N. Lekwauwa, Winston-Salem, and Walter R. D. Young, Jr., Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 17, 1992, Ser. No. 931,248
Int. Cl.[5] A24B *15/12*
U.S. Cl. 131—372 **24 Claims**



1. A method of providing a reconstituted tobacco material, the method comprising the steps of:

(a) contacting tobacco material with a liquid having an aqueous character to provide a slurry;

(b) subjecting the slurry to conditions sufficient to release tobacco pectins;

(c) forming the slurry having released tobacco pectins into a predetermined shape;

(d) contacting the formed slurry having released tobacco pectins with a crosslinking agent capable of crosslinking the released tobacco pectins and subjecting the formed

VOL 1165 ISS 4 AUG 23 1994 UMI

slurry to conditions sufficient to crosslink the released tobacco pectins; and

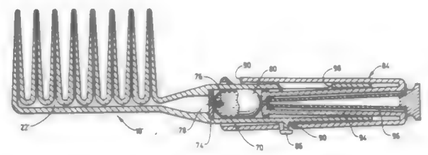
(e) drying the formed slurry having crosslinked tobacco pectins to provide a reconstituted tobacco material.

5,339,839

COMB WITH FLUID APPLICATOR

Jack L. Forcelledo, 9255 Doheny Rd., Suite 2504, Los Angeles, Calif. 90069, and Steven D. Kimmell, 12754 Deon Pl., Granada Hills, Calif. 91344, assignors to Jack L. Forcelledo, Los Angeles, Calif.

Filed Apr. 28, 1993, Ser. No. 54,443
Int. Cl.[5] A45D *24/22*
U.S. Cl. 132—114 **1 Claim**



1. A device for applying a liquid to the hair of an individual, said device comprising a comb member and a handle, wherein:

said comb member has

an elongate tubular main body with opposed axial ends and a longitudinal axis extending between said ends, and said main body encloses a longitudinal passage which extends along said longitudinal axis, is open at one of said axial ends and is closed at the other one of said axial ends, and

a plurality of elongate teeth carried by said tubular main body and extending parallel to one another from said main body in a direction transverse to said longitudinal axis, each of said teeth having a base connected to said main body, a tip remote from said base, and a linear passage extending in a straight line from said base to said tip, said linear passage being open at said base to communicate with said longitudinal passage in said main body and being open at said tip, and each of said teeth having a frustoconic form which tapers from said base to said tip, and

said handle comprises:

a handle piece integral with said main body and extending from said open axial end of said main body, said handle piece having a longitudinal axis and an open tubular passage extending along said longitudinal axis;

a plate member having a perforation device for perforating a capsule containing a liquid to be applied upon insertion of the capsule into said tubular passage, said plate member being disposed in said tubular passage adjacent said comb member and having an orifice which places said longitudinal passage in communication with said tubular passage; and

a bolt assembly insertable into said tubular passage for pressing the capsule against said perforation device and then compressing the capsule to force liquid from the capsule into said orifice.

5,339,840

ADJUSTABLE COMB

Bernard Koppel, Plantation, Fla., assignor to Sunbelt Precision Products Inc., Fort Lauderdale, Fla.

Filed Apr. 26, 1993, Ser. No. 53,159
Int. Cl.[5] A45D *24/34;* **A01K** *13/00*
U.S. Cl. 132—151 **17 Claims**

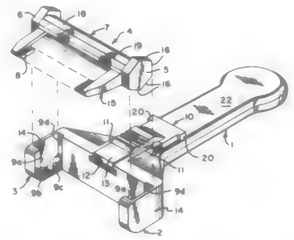
1. An adjustable comb comprising:

a handle having proximal and distal ends;

first and second arms attached to said distal end of said handle, each of said arms having walls defining a polygonal recess in each of said arms;

a grip section at said proximal end of said handle;

a head piece having a body and a comb portion containing teeth, said comb portion being attached to said body, said head piece is rotatably attached to said distal end of said handle at said arms;



said body is a shaft having two ends;

an end piece attached to each of said two ends of said body, said end pieces having polygonal cross section, said polygonal cross section defining faces of said end pieces; and

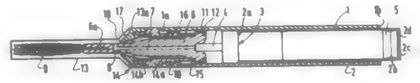
each of said walls of said arms abuttably contacting one of said faces of each of said end pieces.

5,339,841

MAKEUP DEVICE

Jean-Louis Gueret, Paris, France, assignor to l'Oreal, Paris, France

Filed Jan. 25, 1993, Ser. No. 8,546
Claims priority, application France, Jan. 24, 1992, 92 00773
Int. Cl.[5] A45D *40/26*
U.S. Cl. 132—218 **19 Claims**



1. Makeup device, comprising:

a cylindrical body having a front end and accommodating a sealed reservoir which contains a makeup product, said reservoir having a front opening with a nozzle in said front opening;

an applicator mounted permanently on said cylindrical body in the vicinity of said front end of said body, said applicator comprising a shaft at whose end is mounted an applying element, said shaft being provided with an internal passage terminating by at least one orifice at a periphery of said shaft, and said passage being located such as to be in fluid communication with said nozzle of said reservoir, so that an inside of said reservoir can communicate with an outside only through said shaft of said applicator; and

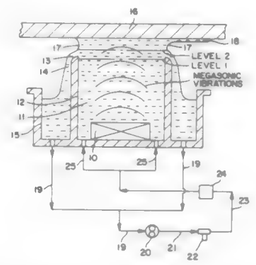
a cap having an open end capable of covering said applicator with slight play and said cap having a plug, said cap being capable of separably attaching at said open end by screwing to said body in the vicinity of said front end of said body via said plug, said plug being provided with an external thread capable of meshing with an internal thread made on said body in the vicinity of said front end, said plug having opposite said body at least one extension forming a surface for spreading said product from said at least one orifice onto said applying element of said applicator during removal of said cap.

5,339,842

METHODS AND APPARATUS FOR CLEANING OBJECTS

Hendrik F. Bok, Fairhaven, Mass., assignor to Specialty Coating Systems, Inc., Indianapolis, Ind.

Filed Dec. 18, 1992, Ser. No. 993,098
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—1 **20 Claims**



1. A method for cleaning an object, comprising:

a) introducing megasonic vibrations into a volume of liquid cleaning fluid having an upper liquid level, said fluid being contained in a first reservoir having a weir, said vibrations being effective to cause the upper level of said fluid to rise above the weir at a distance of at least 0.5 millimeter and said fluid to flow over the weir into a second reservoir; and

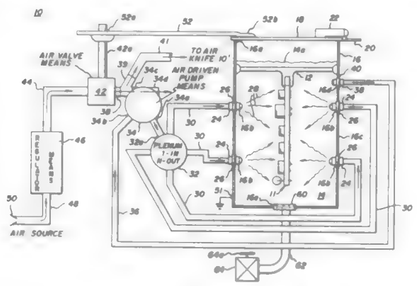
b) contacting the upper level of said fluid above the weir with a surface of the object sufficient to form a menisci of said fluid between said surface of the object and the weir, said surface being disposed above the weir such that at least a portion of said fluid contacts said surface prior to flowing over the weir into the second reservoir.

5,339,843

CONTROLLED AGITATION CLEANING SYSTEM

David R. Benedict, Susquehanna, Pa., and James F. Burke, Endwell, N.Y., assignors to Martin Marietta Corporation, Philadelphia, Pa.

Filed Apr. 16, 1993, Ser. No. 47,080
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—56 R **20 Claims**



1. A controlled agitation cleaning system, comprising:

a quantity of a cleaning liquid;

a container having an interior volume in which the cleaning liquid is contained, and an opening through which at least that portion of an item to be cleaned can be placed in the cleaning liquid and immersed below a surface thereof;

lid means for closing the container opening;

a plurality of agitation nozzles extending in liquid-tight manner through a wall of said container and each immersed in the liquid, below the surface thereof, and arranged to direct any cleaning liquid flowing through that nozzle to enter and agitate an associated portion of said liquid below said surface; and

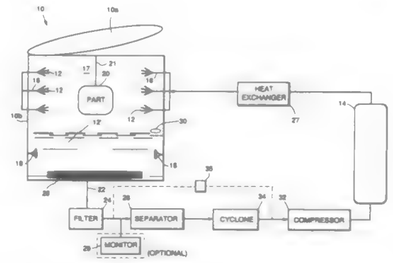
pump means for moving said cleaning fluid through said nozzles only when said lid means has closed said container opening.

5,339,844

LOW COST EQUIPMENT FOR CLEANING USING LIQUEFIABLE GASES

Thomas B. Stanford,Jr., San Pedro, and Sidney C. Chao, Manhattan Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 927,443, Aug. 10, 1992. This application Sep. 7, 1993, Ser. No. 82,866
Int. Cl.[5] B08B *3/02, 13/00*
U.S. Cl. 134—107 **16 Claims**



1. Apparatus for removing undesired particulates and contaminants from a major surface of a chosen substrate comprising:

(a) an enclosed cleaning chamber in a walled vessel for containing a liquid derived from a liquefiable gas and said substrate containing said undesired particulates and contaminants, said walled vessel adapted to withstand a maximum pressure of about 1,500 pounds per square inch (105.4 kg/cm^2) at ambient temperature;

(b) means for supporting said substrate in said cleaning chamber;

(c) ultrasonic energy-producing transducer means attached to said walled vessel within said cleaning chamber;

(d) inlet means attached to said walled vessel for introducing said liquefiable gas into said cleaning chamber under a pressure less than about 900 pounds per square inch (63.3 kg/cm^2);

(e) temperature control means connected to said cleaning chamber for controlling the temperature within said chamber up to about 50° C.;

(f) reservoir means for providing said liquefiable gas to said inlet means;

(g) means for changing said liquefiable gas to said liquid; and

(h) outlet means in said cleaning chamber for removing said liquid from said cleaning chamber.

5,339,845

CLEANING APPARATUS AND METHOD FOR FUEL AND OTHER PASSAGES

Richard V. Huddas, Grand Haven, Mich., assignor to Fuel Systems Textron, Inc., Zeeland, Mich.

Filed Jul. 26, 1993, Ser. No. 97,456
Int. Cl.[5] B08B *3/04, 9/00*
U.S. Cl. 134—169 A **15 Claims**

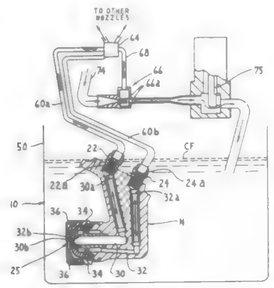
1. Apparatus for cleaning an internal passage of an article, comprising:

a) a container for cleaning fluid,

VOL 1165 ISS 4 AG 23 1994 UMI

b) means for communicating a first end of the passage to said cleaning fluid,

c) cleaning fluid conduit means communicated to a second end of said passage in a manner to draw cleaning fluid from said container into said passage through said first end and into said conduit means through said second end in response to flow of cleaning fluid through said conduit means,



d) means for supplying cleaning fluid to said conduit means, and

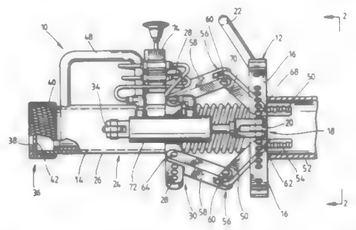
e) means for blocking flow of cleaning fluid through said conduit means so as to direct the cleaning fluid therein to flow into said passage through said second end and into said container through said first end.

5,339,846

LINE MOLE TRAP

Robert Q. Shelton, Duncan, and James V. Pratt, Jr., Pauls Valley, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 30, 1992, Ser. No. 968,727
Int. Cl.[5] B08B *9/02*; **F16L** *39/04*
U.S. Cl. 134—201 **10 Claims**



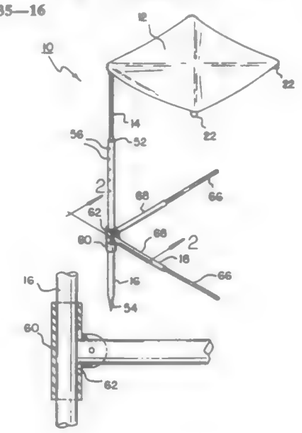
1. A line mole trap for use in the cleaning of a tubular target by water blasting techniques comprising: a tubular housing having forward and rear ends; a tubular sleeve at least partially disposed within and movable relative to the housing, having forward and rear ends, the forward end of the sleeve adapted to bear against the end of the tubular target; and a plurality of linkages coupling the housing and sleeve to permit the telescopic movement of the housing and sleeve relative to each other, each linkage containing a gripping member adapted to engage a surface of the tubular target in response to the relative movement of the housing and sleeve.

5,339,847

BEACH UMBRELLA

David J. Kanter, 5699 Torrey Pine Ct., Richmond, Calif. 94803, and Milo F. Basker, Jr., 1461 Dewing La., Walnut Creek, Calif. 94595

Filed Dec. 6, 1993, Ser. No. 161,585
Int. Cl.[5] A45B *11/00*
U.S. Cl. 135—16 **4 Claims**



2. A beach umbrella with increased stability and wind resistance comprising.

an umbrella fabric having a top surface and a bottom surface, a fabric loop integral with the bottom of each of the four corners of the fabric umbrella;

an umbrella support having a lower vertical extent, the lower vertical extent having an upper portion and a lower portion, the umbrella support further having an upper horizontal extent, the upper horizontal extent having a forward portion and a rearward portion, a first arm pivotally connected to the horizontal extent intermediate the forward and rearward portions, a second arm pivotally connected to the horizontal extent opposite the first arm with the forward portion of the horizontal extent, the rearward portion of the horizontal extent, the end of the first arm and the end of the second arm all adapted to be received within one of the fabric loops of the umbrella;

a hollow spike having an upper opened portion and a lower closed pointed portion, the pointed portion adapted to be inserted into the ground, the hollow spike adapted to receive the lower portion of the lower vertical extent of the umbrella support;

a tubular collar having an inner surface and an outer surface, the tubular collar adapted to receive and slide upon the hollow spike; and

horizontal bracing poles, each pole having a first pole component telescoping received within a second pole component, each of the bracing poles being pivotally connected to the tubular collar.

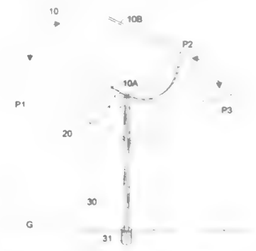
5,339,848

MOTORIZED SUNSHADE

Henry Richmond, The Crossing At Blindbrook, Purchase, N.Y. 10577

Filed Jan. 18, 1994, Ser. No. 181,327
Int. Cl.[5] A45B *11/00*
U.S. Cl. 135—20.1 **26 Claims**

1. A sunshade for providing protection from the sun comprising: an upright support member; a sunshield comprising a semicircular member having an arcuate edge and a straight edge and wherein the semicircular member comprises a hollow body and two side members slidably received in the hollow body for movement toward and away from each other to adjust the width thereof; means pivotally mounting the sunshield to the support member for movement between a first angular position and a second angular position; and energizable means for incrementally moving the sunshield between the first and second angular positions to dispose the sunshield in a desired position relative to the position of the sun.

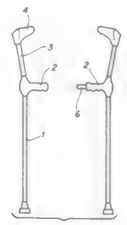


5,339,849

DEVICE FOR REMOVEABLY JOINING TWO CRUTCHES

Joseph Stutz, Chatel-Dessous, Givrins, Switzerland 1261

Division of Ser. No. 904,901, Jun. 25, 1992, Pat. No. 5,295,499, which is a continuation of Ser. No. 731,877, Jul. 18, 1991, abandoned. This application Dec. 9, 1993, Ser. No. 163,706
Claims priority, application Switzerland, Jul. 20, 1990, 02409/90; Feb. 1, 1991, 00324/91
Int. Cl.[5] A45B *3/00*
U.S. Cl. 135—66 **5 Claims**



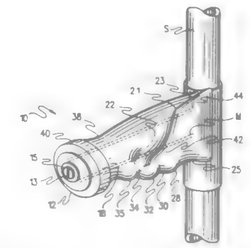
1. In a device for removably spacedly joining two crutches in symmetrical positions relative to one another with respect to a symmetrical plane and having a centre of gravity when joined, in such a manner that the joined crutches are stable in an upright position when they are placed against an upper point of support situated above the centre of gravity and have lower ends spaced from one another and engageable with a lower support to afford two lower spaced points of support, which device comprises two complementary male and female coupling elements respectively provided one on each of the said crutches and mutually interfittable along respective axes extending laterally with respect to the crutches, said elements being situated at a like elevation along the two crutches, the improvement wherein the said male and female elements have respective cylindrical interfittable surfaces and cross-sections circular about said respective axes, said crutches when joined with said male element received in said female element being rotatable relative to one another while guided about said axes such that said centre of gravity lies within lateral confines of the upper and lower points of support when projected onto a horizontal plane to afford stability to the crutches when joined to one another in the upright position, said axes being colinear and perpendicular to said symmetrical plane when the crutches are joined to one another.

5,339,850

ORTHOPEDIC HAND GRIP FOR AMBULATION AIDS, TOOLS AND OTHER IMPLEMENTS

Steven H. Mertz, Denver, Colo., assignor to Guardian Products, Inc., Arleta, Calif.

Continuation-in-part of Ser. No. 706,098, May 28, 1991, Pat. No. Des. 339,468. This application Jan. 14, 1992, Ser. No. 820,537
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—72 **10 Claims**



1. In combination with an ambulation aid including an elongated support member possessing an upper proximal end and terminating at a lower distal end in a ground engaging member, a hand grip comprising:

an elongated body possessing a circumference, a longitudinal axis, an axially outer first end and an axially inner second end, an upper side, a front portion, and a lower front portion;

means securing said hand grip to said elongated support member intermediate said upper proximal and lower distal ends in a substantially transverse orientation to said support member;

said body possessing an obliquely forwardly and downwardly inclined non-concave platform disposed adjacent said second end and extending axially outwardly along said body toward said first end, said platform substantially disposed on said upper side of said body and forming an uppermost surface of said hand grip directed toward said upper proximal end of said elongated support member, said platform forming a load bearing surface dimensioned and disposed for engagement with hypothenar muscles of a hand of a user; and

said platform terminating at an axially outer end in an depression extending from said platform axially outwardly toward said first end of said body, said depression forming a downwardly and axially outwardly curving concave load bearing surface substantially disposed on said upper side of said body radially inwardly from said platform and directed toward said upper proximal end of said elongated support member, said concave load bearing surface dimensioned and disposed for engagement with thenar muscles of a hand of a user such that a thumb of a user's hand is maintained in a palmar abducted orientation and a user's hand, wrist, and arm are maintained substantially in alignment with said elongated support member.

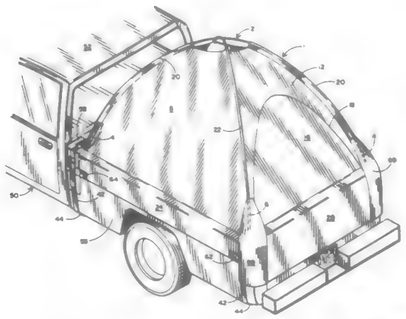
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,851

ASSEMBLY FOR ATTACHING A REMOVABLE TENT TO A MOTOR VEHICLE

Mark W. Miller, 32961 Pinnacle Dr., Trabuco Canyon, Calif. 92679, and Sean A. Cheatham, 11851 Mac St., Garden Grove, Calif. 92641

Filed Dec. 30, 1992, Ser. No. 998,799
Int. Cl.[5] E04H *15/06*
U.S. Cl. 135—88 20 Claims



1. The combination of a motor vehicle having a substantially flat bed and a tent to be suspended above the bed of the vehicle, said tent comprising:

front, back and side panels joined together to form a tent enclosure;

a tent frame including at least one pole projecting above the bed of the vehicle and communicating with said front, back and side panels to position said tent above said bed; and

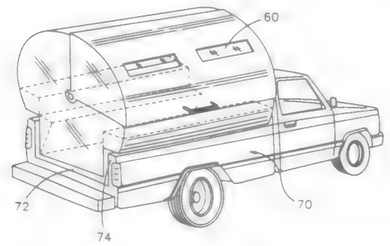
receptacle means interconnected with and movable along at least one of said front, back and side panels of said tent so that the position of said receptacle means is adjustable relative to the bed of said truck to enable said receptacle means to receive and support one end of said pole of said tent frame.

5,339,852

PERMANENT PORTABLE WEATHERPROOF BLIND

Danny C. Bull, Box 329, Elhorn, Nebr. 68022

Filed Nov. 6, 1992, Ser. No. 973,969
Int. Cl.[5] E04H *15/00*
U.S. Cl. 135—87 7 Claims



1. A permanent portable weatherproof blind comprising;

generally cylindrical, substantially rigid shell sized to resemble a bale of hay;

said shell comprising an upper section having a curved outer wall including lower edges, said curved outer wall substantially conforming to a cylindrical shape and a lower section adapted to fit within and be supported by the bed of a standard pickup truck;

said shell further comprising the side walls on both said upper and lower sections and front and rear walls each having a top edge, on said lower section;

at least one game sighting and shooting opening formed in said curved outer wall of said upper section;

movably mounted means for covering said game sighting and shooting openings;

said lower section further comprising a rectangular open-topped box having a bottom section and forwardly and rearwardly extending substantially horizontal front and rear connecting walls, said front connecting wall extending between and connected to the top edge of said front wall and said lower edge of said curved outer wall and said rear connecting wall extending between and connected to the top edge of said rear wall and the adjacent lower edge of said curved outer wall;

said game sighting and shooting opening further comprising a generally quarter-cylindrical section removed from said curved outer wall such that a generally quarter-cylindrical opening having lower edges is formed in said upper section; and

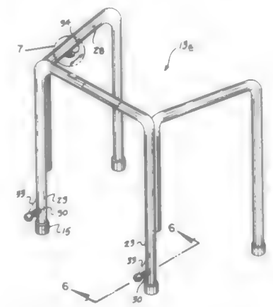
said movably mounted means for covering said game sighting and shooting openings further comprising a generally quarter-cylindrical pivoting hatch door having top and vertical side edges, said hatch door pivoting about an axis collinear with the center longitudinal axis of said upper section whereby said generally quarter-cylindrical opening may be covered.

5,339,853

WALKING ASSISTANCE NIGHT LIGHT APPARATUS

Herman G. Sokolis, and Linda L. Sokolis, both of R.R. 1 Box 116B, Franklin, Ill. 62638

Filed Jun. 14, 1993, Ser. No. 75,608
Int. Cl.[5] A61H *3/00;* A45B *3/02*
U.S. Cl. 135—67 1 Claim



1. A walking assistance night light apparatus comprising:

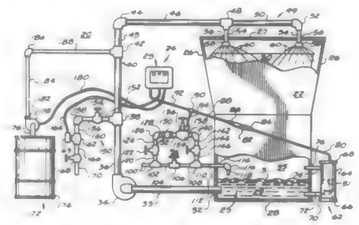
a first and second support leg having a handle defining a primary U-shaped frame, said support legs including a lowermost distal end spaced from said handle wherein said lowermost distal end includes a resilient tip secured thereto, illumination means mounted to said support legs in adjacency to said resilient tip, a first U-shaped support frame mounted to said first support leg and a second U-shaped support frame mounted to said second support leg wherein the first and second U-shaped support frames are arranged in a sprayed orientation relative to one another, the illumination means including an illumination bulb and a coil spring mount mounted to said support legs, said coil spring mount each including a spherical reflector housing, said spherical reflector housing including an opening, said illumination bulb being mounted within said spherical reflector housing, said apparatus further including a pull cable, the pull cable having a first and a second end, the first end being secured to said spherical reflector housing with the pull cable being directed through the primary U-shaped frame, the first U-shaped support frame having a receiving slot, said apparatus further including a pull ring, the pull ring including a first U-shaped guide track and a second U-shaped guide track received within said receiving slot oriented for sliding along said receiving slot, wherein the pull ring includes a connecting leg extending into said first U-shaped support frame, the pull cable second end being secured to said connecting leg whereupon displacement of said pull ring within said receiving slot effects displacement of said spherical reflector housing relative to said coil spring mount.

5,339,854

CONSERVATION SYSTEM AND METHOD

Charles D. Leith, 8011 N. 7th St., Apt. 2135, Phoenix, Ariz. 85020

Filed Jul. 19, 1993, Ser. No. 95,895
Int. Cl.[5] G05D *11/13*
U.S. Cl. 137—2 29 Claims



23. A method for coordinating regulation and operation of a supply valve and a bleed valve, said method comprising steps of:

sending a first signal from a level sensing assembly when a cooling water level in a reservoir is less than a first predetermined limit;

receiving said first signal by a controller;

providing a first control signal from said controller in response to said first signal;

opening said bleed valve to bleed water from said reservoir in response to said first control signal;

providing a second control signal from said controller in response to said first signal; and

opening said supply valve to supply water to said reservoir in response to said second control signal.

5,339,855

USE OF ALKOXYLATED ALKANOLAMIDE AS FRICTION-REDUCING AGENT

Martin Hellsten, Ödsmal, and Ian Harwigsson, Malmö , both of Sweden, assignors to Berol Nobel AB, Stenungsund, Sweden

Filed Jul. 1, 1993, Ser. No. 91,760
Claims priority, application Sweden, Jan. 31, 1991, 9100306-1
Int. Cl.[5] F17D *1/16, 1/18;* C10M *133/16*
U.S. Cl. 137—13 11 Claims

1. A method for reducing flow resistance between a solid surface and a flowing, water-base liquid in a water-base liquid system comprising the step of adding at least one alkoxylated alkanolamide having the general formula

$$RCNH(A)_nH$$
$$\|$$
$$O$$

wherein

R is a hydrocarbon group having 7–35 carbon atoms,

A is an alkyleneoxy group having 2–4 carbon atoms, and

n is 2–20

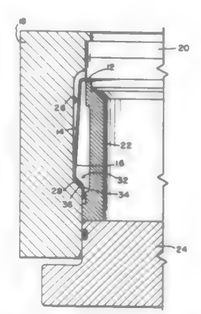
to said water-base liquid system.

5,339,856

VALVE RETAINER MEANS, A METHOD OF FORMING THE SAME, AND A METHOD OF VALVE INSERTION THEREWITH

Gary A. Templar, Beaver Dams, N.Y., assignor to Dresser-Rand Company, Corning, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,873
Int. Cl.[5] F16K *43/00*
U.S. Cl. 137—15 7 Claims



5. A method of installing a valve into a cylinder which has an internal, recessed land, comprising the steps of:

setting the valve into the cylinder; and

inserting into the cylinder, and against an underlying surface of the valve, a valve retainer which has (a) first means for upholding said valve within said cylinder, and (b) second means, integral with said first means, for latchingly engaging the recessed land in said cylinder with a snap-action engagement, and retaining said first means against said underlying surface of the valve in said cylinder.

5,339,857

MEDIA ASSISTED VALVES

David J. Scallan, Pineville, and George W. Parker, Dry Prong, both of La., assignors to Dresser Industries Inc., Dallas, Tex.

Filed Nov. 6, 1992, Ser. No. 972,616
Int. Cl.[5] F16K *31/383*
U.S. Cl. 251—38 9 Claims

1. A media assisted flow control valve comprising:

a main valve body having a flow inlet, a flow outlet, a chamber defining a flow passage connecting the inlet and outlet, and a main valve seat around the flow passage between the inlet and outlet;

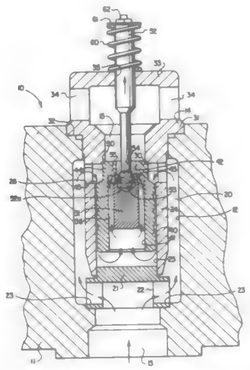
a main valve member slidably mounted in the chamber for movement relative to the main valve seat to engage and disengage from the main valve seat to open and close the valve, a portion of the main valve member extending radially outwardly beyond the main valve seat upstream of the main valve seat to provide a first portion of the main valve member exposed to media pressure in the flow passage upstream of the main valve seat to apply a valve opening force to the main valve away from the main valve seat, a second portion of the main valve being in restricted communication with the flow passage upstream of the main valve seat to apply a valve closing force to the main valve, the main valve having an opening defined by a pilot valve seat into the flow passage downstream of the main valve;

an inner valve body mounted in the chamber of the main valve body forming a valve guide around the main valve

VOL 1165 ISS 4 AG 23 1994 UMI

member, the inner valve body being spaced in the chamber dividing the chamber into an annular flow passage portion and a central flow passage portion, the annular portion extending from the flow inlet to port means formed in the inner body opening to apply media pressure to the first portion of the main valve member upstream of the main valve seat, the main valve member being spaced in the inner body to provide the restrictive communication to the second portion of the main valve member, the main valve seat being formed in the inner body, and the central portion of the flow passage downstream of the main valve seat opening into the flow outlet;

a pilot valve member disposed in the central flow passage upstream of the pilot valve seat in the main valve member and engageable with and disengageable from the pilot valve seat to open and close the pilot valve;



a pilot valve stem secured at a first end into the pilot valve to positively move the pilot valve relative to the pilot valve seat for opening and closing the pilot valve, a second end of the pilot valve stem extending exterior of the main valve body; and

a spring on the pilot valve stem external of the valve body and compressed to urge the stem in a direction to engage the pilot valve with the pilot valve seat in the main valve member to close the pilot valve, the spring being further compressible to disengage the pilot valve from the pilot valve seat to open the pilot valve reducing the media pressure upstream of the pilot valve seat on the second portion of the main valve member whereby media pressure on the first portion of the main valve member opens the main valve member.

5,339,858

DEVICE FOR RESTORING A FLUID LEVEL IN A FLUID RECEPTACLE

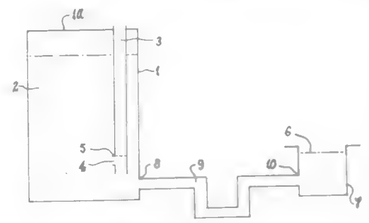
Alan B. Giles, Laurel, Md., assignor to Spurion Technology Pty. Ltd., Cambridge, Australia

Filed Jul. 23, 1993, Ser. No. 96,691
Claims priority, application Australia, Aug. 4, 1992, PL3915
Int. Cl.[5] F04F *10/02*
U.S. Cl. 137—130 **8 Claims**

1. A device for restoring a fluid level in a fluid receptable to a predetermined level when said fluid level falls below said predetermined level, said device comprising:

a closed vessel for containing a fluid supply, said vessel having an aperture allowing said fluid supply to be in communication with fluid in said fluid receptacle, and

an air inlet tube extending into said vessel having an inlet open to the atmosphere outside the vessel and an outlet open to the inside of the vessel, wherein in use, the device is positioned relative to the receptacle so that an uppermost portion of the outlet is at said predetermined level such that air is drawn into the vessel when said level in the



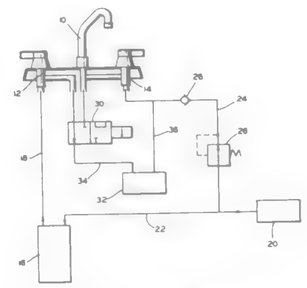
fluid receptacle falls below said predetermined level thereby allowing fluid to pass through the aperture into the fluid receptacle until the fluid level is restored.

5,339,859

WATER CONSERVATION SYSTEM

Gerald E. Bowman, 179 Plumosa Dr., Largo, Fla. 34641

Filed Dec. 16, 1993, Ser. No. 168,529
Int. Cl.[5] F16K *11/20*
U.S. Cl. 137—337 **2 Claims**



1. A water conservation system comprising:

a source of pressurized water;

a water heating means having an inlet and an outlet;

first conduit means providing communication between said source and the inlet of said water heating means;

an outlet faucet means having a hot water control valve and a cold water control valve;

a water storage tank;

second conduit means providing communication between the outlet of said water heating means and said water storage tank, said second conduit means including temperature sensitive control valve for selectively providing communication between the outlet of said water heating means and the hot water control valve of said outlet faucet means and simultaneously blocking the communication with said water storage tank;

third conduit means providing communication between said source and the cold water control valve of said outlet faucet means, said third conduit means including means for reducing the pressure of the water flowing therein; and

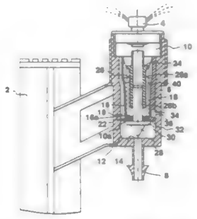
fourth conduit means providing communication between said third conduit means and the interior of said water storage tank; whereby actuation of the hot water control valve of said outlet faucet means initially establishes communication between the outlet of said water heating means and said water storage tank through said second conduit means, and subsequently establishes communication between the outlet of said water heating means and the hot water control valve of said outlet faucet where the temperature sensitive control valve in said second conduit senses heated water.

5,339,860

FLUID PRESSURE REGULATOR

Peretz Rosenberg, 30 046, Moshav Beit Shearim, Israel

Filed Dec. 8, 1993, Ser. No. 162,929
Claims priority, application Israel, Dec. 25, 1992, 104232
Int. Cl.[5] G05D *16/10*
U.S. Cl. 137—343 **16 Claims**



1. A fluid pressure regulator, comprising:

a housing having an inlet at one end, an outlet at another end, and a connecting passageway including a cavity and a flow-control opening connecting said inlet to said outlet;

a cylinder fixed within said cavity and closed at an end thereof facing the fluid control opening, the opposite end of the cylinder being open to said housing outlet;

a sealing disc carried at said closed end of the cylinder;

a piston displaceable within said cylinder adjacent said open end so as to be exposed to the pressure at said housing outlet;

the interior of the cylinder being vented to the atmosphere;

said piston being of larger cross-sectional area than said sealing disc and having a stem of smaller crosssectional area than, and passing through, said sealing disc;

said stem carrying a valve member movable by the displacement of said piston, from a fully open position towards and away from said flow control opening to control the flow therethrough to said housing outlet;

said piston stem further including an enlarged annular surface which engages said sealing disc in the fully open position of the valve member with respect to the flow control opening;

and a spring urging said piston towards said fully open position of the valve member.

5,339,861

HYDRAULIC COUPLING WITH HOLLOW METAL O-RING SEAL

Robert E. Smith, III, Missouri City, Tex., assignor to National Coupling Company, Inc., Stafford, Tex.

Filed Mar. 24, 1993, Ser. No. 36,464
Int. Cl.[5] F16L *29/00*
U.S. Cl. 137—614.04 **13 Claims**

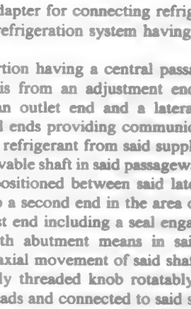
1. An undersea hydraulic coupling comprising:

a female member having a longitudinal bore, an annular shoulder in the bore, and a slidable valve for controlling fluid flow therethrough;

a male member insertable into the female member bore, having a slidable valve for controlling fluid flow therethrough, and an annular shoulder on the outer surface thereof;

a hollow metal o-ring seal positionable on the annular shoulder in the female member bore, the metal o-ring seal being axially compressible to sealingly engage the male member and the female member bore; and

a seal retainer insertable into the bore, having a first end and a second end, the first end configured to contact the annular shoulder of the male member and the second end



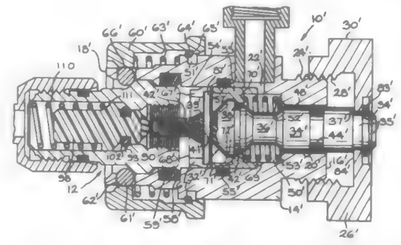
configured to contact the hollow metal o-ring seal to compress the seal axially.

5,339,862

REFRIGERATION SYSTEM SERVICE ADAPTER

Gregory A. Haunhorst, Perrysburg, Ohio, assignor to Aeroquip Corporation, Maumee, Ohio

Filed Jul. 29, 1993, Ser. No. 98,839
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—614.05 **11 Claims**



1. A service adapter for connecting refrigerant from a supply source to a refrigeration system having an inlet coupling comprising:

(a) a body portion having a central passageway extending along an axis from an adjustment end having external threads to an outlet end and a lateral port positioned between said ends providing communication to said passageway for refrigerant from said supply source;

(b) an axial movable shaft in said passageway extending from a first end positioned between said lateral port and said outlet end to a second end in the area of said adjustment end, said first end including a seal engageable and disengageable with abutment means in said passageway in response to axial movement of said shaft;

(c) an internally threaded knob rotatably engaged to said external threads and connected to said shaft to move said shaft axially upon rotation of said knob to engage and disengage said seal to and from said abutment; and

(d) a pin engaged to and extending laterally from said shaft, said pin (i) having an end portion engaged in a slot positioned in said body, said slot permitting axial movement of said pin therein while preventing rotational movement and (ii) positioned to engage said inlet coupling upon connecting of said service adapter thereto to limit the extent to which said shaft may enter said coupling.

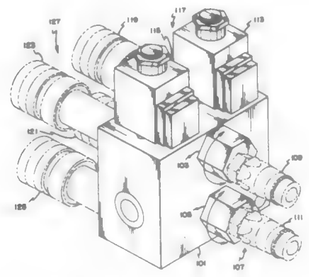
VOL 1165 ISS 4 AUG 23 1994 UMI

5,339,863

PORT MOUNTED IMPLEMENT SELECTOR

David Van Wie, Prior Lake, Minn., assignor to Mid-America Power Drives Manufacturing & Distributing, Inc., Burnsville, Minn.

Filed Dec. 18, 1992, Ser. No. 992,599
Int. Cl.[5] F15B *13/06*
U.S. Cl. 137—798 10 Claims



1. An implement selector apparatus for converting a single outlet hydraulic system to a multiple outlet hydraulic system, the apparatus comprising:

(a) a valve housing comprising a plurality of valves, each of the plurality of valves being activated by its own valve actuator, each of the plurality of valves comprising a valve outlet having two outlet ports, the valve housing comprising a valve inlet having two inlet ports coupled to the plurality of valves; and

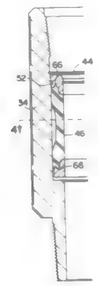
(b) external connection means for connecting the valve inlet to the single outlet hydraulic system, the connection means having at least one rotatable member substantially contained within the valve housing, the at least one rotatable member having an off-center inlet port, wherein the at least one rotatable member may be freely rotated about the longitudinal axis of the at least one rotatable member while maintaining a constant axial displacement from the valve housing to adjust the lateral position of the two inlet ports.

5,339,864

SAFETY SUB FOR RETAINING DRILLING FLUIDS

William L. Carbaugh, Humble, and Douglas W. Carlson, Kingwood, both of Tex., assignors to Hydril Company, Houston, Tex.

Filed Jul. 20, 1993, Ser. No. 94,513
Int. Cl.[5] F16K *15/14*
U.S. Cl. 137—844 26 Claims



1. A safety sub for retaining drilling fluid in the external fluid supply above a drill string in the event of reduction or loss in operating fluid pressure in the drill string, comprising

an elastomeric cartridge having a longitudinal axis, including

a molded elastomeric central closure and

two metallic end pieces longitudinally fixedly connected to the respective ends of said molded closure,

said elastomeric cartridge having a central bore sized consistently in internal diameter with the size of the internal bore of the drill string,

a receiving drill stem sub connectable at its upper end to the external fluid supply and at its lower end to the pressurized drill string,

said drill stem sub having an internal central bore sized consistently with the size of the internal bore of the drill string, the drill stem sub central bore including an enlarged portion suitable for receiving in a fixed location therein said elastomeric cartridge,

said elastomeric closure having multiple external side depressions in communication with each other for receiving a pneumatic pre-charge to exert radial closing pressure on said central closure at multiple locations, and

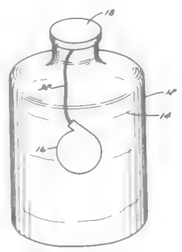
a charge valve in the side of said drill stem sub for pneumatically pre-charging said elastomeric cartridge at a level less than the operating fluid pressure in the drill string so that normal operating fluid pressure maintains open the central bore of said elastomeric cartridge and fluid pressure less than normal operating fluid pressure results in the pneumatic pre-charge closing said elastomeric cartridge to prevent further drill fluid flow from the external fluid supply until normal operating fluid pressure is restored in the drill string.

5,339,865

APPARATUS FOR COMPENSATING FOR VARIATIONS IN PRESSURE EXERTED BY A FLUID WITHIN A CONTAINER AGAINST THE CONTAINER

Jonathan E. Asghar, and Janet A. Asghar, both of 7010 Quill Leaf Cove, Austin, Tex. 78750

Filed Jan. 21, 1993, Ser. No. 6,635
Int. Cl.[5] E03B *7/12*
U.S. Cl. 138—26 4 Claims



1. An apparatus for compensating for variations in pressure exerted by a fluid within a container against said container, said compensating maintaining said pressure below a pressure limit within a predetermined pressure range, said pressure range having an upper range limit above said pressure limit; the apparatus comprising:

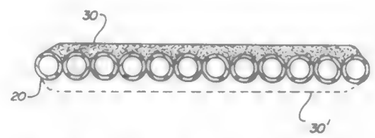
an insert member; said insert member being substantially non-absorbent with respect to said fluid and being at least substantially immersed in said fluid; said insert member being compressible over a volumetric range, said volumetric range being established to permit sufficient compression of said insert member to relieve said pressure against said container by a pressure difference, said pressure difference being at least equal to the difference between said upper range limit and said pressure limit; said insert member having a net negative buoyancy.

5,339,866

MULTIPLE HOSE ASSEMBLY

Earl R. Holt, Rochester Hills, Mich., assignor to Hose Specialties/Capri, Inc., Highland Park, Mich.

Continuation of Ser. No. 780,878, Oct. 18, 1991, abandoned.
This application Sep. 7, 1993, Ser. No. 117,631
Int. Cl.[5] F16L *9/18*
U.S. Cl. 138—111 9 Claims



1. A multiple hose assembly of the type adapted for delivery of a plurality of separated fluids, the assembly comprising:

a plurality of flexible hose members disposed in a substantially parallel and a substantially planar arrangement, adjacent hose members being in axial contact with each other at an axial contact point, each of said plurality of flexible hose members having an exterior surface on a first side of a line extending through said axial contact points, and said hose members being disposed in a first direction; and

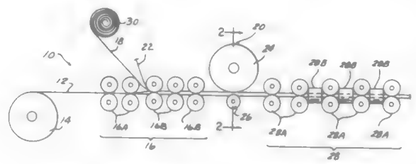
means for securing said plurality of flexible hose members in a substantially parallel and axially adjacent arrangement, said means for securing said plurality of flexible hose members forming a continuous bond across said exterior surface of each of said plurality of flexible hose members, said bond extending substantially adjacent to each of said axial contact points and being further adapted to retain said plurality of flexible hose members in a substantially planar arrangement in close proximity thereto.

5,339,867

COMPOSITE METAL TUBE AND METHOD OF MAKING THE SAME

Ralph A. Iorio, Bloomfield Hills, and Glen A. Gibbs, Warren, both of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 12, 1991, Ser. No. 806,173
Int. Cl.[5] B23K *11/00*
U.S. Cl. 138—140 4 Claims



1. A method for manufacturing a metal tube having an interior surface resistant to interaction with materials to be conveyed therethrough, the method comprising:

positioning a length of non-reactive tubing having a predetermined outer diameter within an inner diameter of metal tubing of essentially corresponding length having an unsealed side seam, wherein said inner diameter of said unsealed metal tube is at least 30% greater than said outer diameter of said polymeric tubing and wherein said non-reactive tubing is a flexible polymeric material which is essentially non-reactive when brought into contact with materials which are interactive with metal surfaces;

forming a suitable sealed side seam in said outer metal tube while maintaining said non-reactive tubing at a position opposed to said side seam during said formation step, wherein said side seam formation step comprises:

welding said side seam while maintaining said non-reactive tubing at a location within said metal tubing opposed to said side seam;

reducing said outer metal tubing to an outer diameter essentially equal to said predetermined outer diameter of said non-reactive interior tubing; and

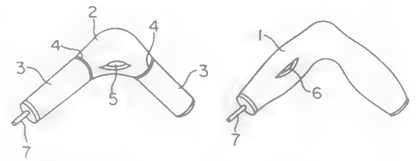
introducing a stream of gaseous material into said metal tubing at a localized area immediately adjacent to said welding point of said side seam, said stream of sufficient volume to transfer heat generated in said sealing step away from said seam in a dissipative manner, said introduced stream passing between said seam and said non-reactive tubing.

5,339,868

BENT PIPE HAVING SECTIONAL FORM OF HIGH STRENGTH

Hisashi Naoi; Yasusuke Inoue, both of Sagamihara; Tetsuo Nagasaka, Tokyo; Yoichi Matsubara; Masaaki Takagishi, both of Kawasaki, and Seiichi Akizawa, Yokohama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 727,342, Jul. 8, 1991, abandoned, which is a continuation of Ser. No. 483,301, Feb. 21, 1990, abandoned, which is a continuation of Ser. No. 196,195, Apr. 20, 1988, abandoned. This application Nov. 24, 1992, Ser. No. 982,038
Claims priority, application Japan, May 26, 1987, 62-129435; Jan. 6, 1988, 62-1421
Int. Cl.[5] F16L *09/02*
U.S. Cl. 138—172 3 Claims



1. A bent pipe to which an internal pressure is to be applied and having a high strength for resisting internal pressure of a fluid flowing therethrough, said bent pipe having a straight part with an outside diameter and a uniform wall thickness, and a bent part extending from at least one end of said straight part and having an outside diameter and a wall thickness and having a maximum outside diameter, a minimum outside diameter, a radius of bending curvature, and a wall thickness at the radially outermost part of the circumference of the cross-section thereof, said bent pipe having a ratio of the wall thickness of the straight part to the outside diameter thereof in the range as defined by the following equation (5) and the radius of bending curvature in the range defined by the following equation (6), and a degree of flattening of the outside diameter of the bent part as defined by the following equation (7) and which is in a range as defined by the following equation (4), and said wall thickness at the radially outermost part of the circumference of the bend being in the range as defined by the following equation (3):

$$\frac{D_0 - T_0}{2T_0} \cong \frac{(D-t)\{4R + (D-t)\sin\phi\}}{4 \times t\{2R + (D-t)\sin\phi\}} \quad (1)$$

$$3T_0 \cong t \quad (2)$$

$$O \leqq \{(T_0 - T_1)/T_0\} * (R/D_0) \cong 0.20 \quad (3)$$

$$O \leqq U \leqq 0.03 \quad (4)$$

$$0.04 \leqq T_0/D_0 \leqq 0.10 \quad (5)$$

$$1 \leqq R/D_0 \leqq 5 \quad (6)$$

VOL 1165 ISS 4 AG 23 1994 UMI

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$$U = 2 * (D_1 - D_2)/(D_1 + D_2) \quad (7)$$

wherein

D_0 is the outside diameter of the straight part;

T_0 is the wall thickness of the straight part;

D is the outside diameter of the bent part at a given angle ϕ;

t is the wall thickness of the bent part at a given angle ϕ;

R is the radius curvature of the bent part; ϕ is an angle in a plane perpendicular to the central longitudinal axis of the bent part and measured from a diametral line in said plane perpendicular to a further diametral line in said plane and extending on the radius of curvature of the bent part, ϕ being equal to $-90°$ at a point where said further diametral line crosses the bent part at the inside of the curvature thereof and being equal to $+90°$ at a point where said further diametral line crosses the bent part at the outside of the curvature thereof;

T_1 is the wall thickness at $\phi = +90°$;

U is the degree of flattening of the outside diameter of the bent part;

D_1 is the minimum outside diameter of the bent part;

D_2 is the maximum outside diameter of the bent part; and

$T_0 - 0.5mm > T_1$;

the tensile strength TS_0 of the wall thickness T_0 of the straight pipe part and the tensile strength TS_1 of the wall thickness t of the bent part throughout all said bent part satisfying the condition:

$$TS_0 \leqq TS_1.$$

5,339,869

STRANDED WIRE BINDER

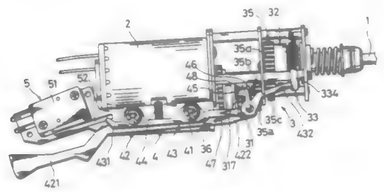
Toshio Hayakawa, 1-go,50-ban,Yamanoue 5-chome, Hirakata-shi, Osaka-fu, Japan

Filed May 11, 1992, Ser. No. 880,846

Claims priority, application Japan, May 11, 1991, 3-167356

Int. Cl.[5] B21F *15/04*

U.S. Cl. 140—119 **14 Claims**



1. A stranded wire binder comprising:

a bit that rotates in engagement with a stranded wire,

a motor,

a transmission mechanism for operatively connecting the motor to the bit, said transmission mechanism being provided with a torque limiter and a position determining mechanism for controlling a stop position of the bit,

an operation mechanism for releasing a position determining function of the position determining mechanism,

a rotary plate having ball receiving holes,

a ball holding plate mounted rotatably and coaxially with respect to the rotary plate,

balls held by the ball holding plate which are movable in directions of an axis of rotation and engaged or disengaged with the ball receiving holes, and

spring means for urging the balls against the rotary plate, wherein each of the ball receiving holes comprises a round hole having a diameter smaller than the ball and a countersink continuing the round hole and having a diameter that increases as the round hole becomes close to a surface of the rotary plate, so as to be larger than the ball at the surface of the rotary plate.

5,339,870

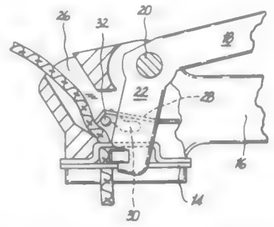
STERNUM BUCKLE AND APPLIER

David T. Green, Westport; Thomas W. Alesi, Jr., New Fairfield; Henry Bolanos, East Norwalk, all of Conn., and Kenneth E. Toso, Portchester, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,325

Int. Cl.[5] B25B *25/00*

U.S. Cl. 140—123.5 **15 Claims**



1. An apparatus for applying a strap assembly about split portions of tissue, the strap assembly including a buckle member and an elongated strap, the buckle member being of the type having a base member with an opening extending generally transversely therethrough adapted for reception of a first strap end portion and a clamp member slidably housed within a channel formed in the base member, the apparatus comprising:

frame means;

means disposed in a lower portion of said frame means adapted for releasably supporting the buckle member; and

means associated with said frame means adapted for advancing the clamp member within the channel of the buckle member to a strap securing position whereby the strap member may be secured within the buckle member.

5,339,871

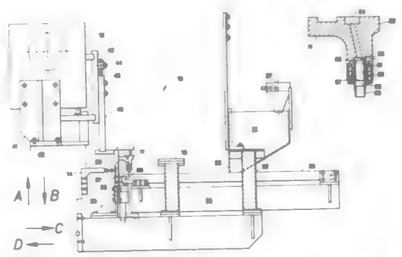
APPARATUS AND METHODS FOR TRANSFERRING AND METERING GRANULAR MATERIAL

Alfred L. Collins; Edwin L. Cutright, both of Powhatan; James A. DeBlasio, Midlothian; Richard H. Dickerson, Powhatan; Billy J. Kean, Jr., Chesterfield; Renzer R. Ritt, Sr., Richmond, and George R. Scott, Midlothian, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed May 4, 1993, Ser. No. 57,340

Int. Cl.[5] B65B *43/50*

U.S. Cl. 141—1 **9 Claims**



1. A method of the transferring granular material from a bulk reservoir to a receptacle comprising the steps of:

a) providing a nozzle having suction and positive ports, and an air permeable screen disposed within the nozzle;

b) providing means for creating a bed of granular material from a bulk reservoir of granular material;

c) translating the nozzle so that it enters into the bed of granular material;

d) creating an airflow through the suction port, screen and nozzle by suction, the airflow entraining a charge of granular material from the bed into the nozzle and trapping the charge of granular material against the air permeable screen;

e) displacing the nozzle through a series of translations from the bed of granular material to a position located adjacent the receptacle, while maintaining the airflow through the suction port, screen and nozzle; and

f) admitting a pulse of low positive pressure into the positive pressure port and nozzle while simultaneously ceasing the airflow through the suction port, screen and nozzle, so that the pulse of positive pressure expels the charge of granular material from the nozzle into the receptacle.

5,339,872

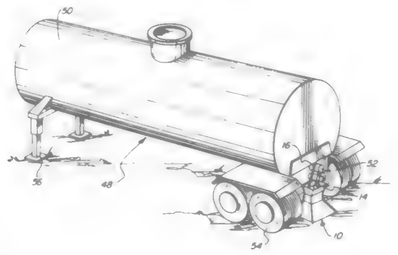
SPILL CONTAINMENT BAG

Thomas F. Marino, 26 Hydelor Ave., Prospect, Conn. 06712

Filed Oct. 6, 1993, Ser. No. 132,463

Int. Cl.[5] B67D *5/00*

U.S. Cl. 141—001 **13 Claims**



1. In a method for containing a spill from a container having a leak, the steps comprising:

(a) providing a spill containment bag including a flexible bag member defining an enclosure having a lower section with a bottom wall and a sidewall extending upwardly and inwardly from the periphery of said bottom wall to a reduced cross section at its upper end intermediate the height of said bag member, and said bag member also having an upper section with a sidewall extending upwardly from the periphery of said sidewall of said lower section , said sidewall having at least its upper portion flaring upwardly and outwardly to provide a funnel shaped opening of enlarged cross section at the upper end of said bag, and means for securing said upper section of said bag to a leaking container;

(b) engaging said securing means of said spill containment bag to a portion of a leaking container;

(c) orienting said containment bag and adjusting said securing means so that said opening in said bag is disposed below and adjacent the point of the leak; and

(d) allowing the spill from the point of the leak from the container to flow through said opening and to collect in said enclosure.

5,339,873

CORED BATTERY PLATES FOR LEAD/ACID BATTERIES

Robert S. Feldstein, Pelham, N.Y., assignor to Derafe, Ltd., Buffalo, N.Y.

Filed Jun. 10, 1993, Ser. No. 74,363

Int. Cl.[5] H01M *4/22*

U.S. Cl. 141—1.001 **11 Claims**

1. A method of fabricating a cored battery plate for use in lead/acid batteries, where said cored battery plate comprises a core element having two sides, and with an active surface having a principal active constituent therein being placed at each side of said core element;

wherein the principal active constituent of said active surface is elemental lead or lead oxide; and where said method comprises the steps of:

(a) producing a pre-formed core element;

(b) producing a thin layer of lead at each side of said pre-formed core element;

(c) forming a discrete plate unit having said thin layers of lead at each side thereof; and

(d) surface treating said thin layers of lead;

wherein said pre-formed core element comprises titanium at each surface thereof, facing said thin layer of lead at each surface.

5,339,874

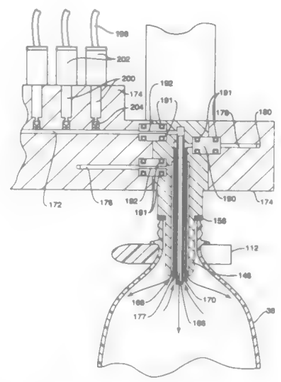
BEVERAGE DISPENSING APPARATUS AND PROCESS

E. Brent Cragun, Mountain Green, Utah, assignor to Fountain Fresh International, Salt Lake City, Utah

Filed Jul. 23, 1992, Ser. No. 919,404

Int. Cl.[5] B65B *3/04*

U.S. Cl. 141—9 **31 Claims**



1. A process for filling a container with a foamable beverage, the beverage comprising a non-foamable component which includes a carbonated liquid and a foamable component, comprising the steps of:

positioning a beverage dispensing nozzle into fluid communication with an opening of the container;

directing a flow of the non-foamable component of the beverage through the nozzle and onto an interior sidewall of the container; and

directing a flow of the foamable component of the beverage through the nozzle into the container and away from the flow of the non-foamable component of the beverage.

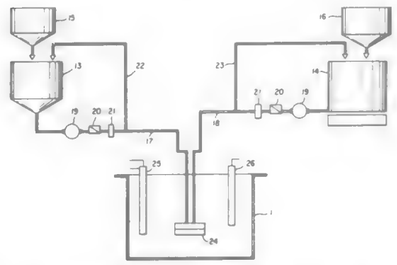
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,875

LIQUID PREPARATION METHOD

David G. N. English, Rickmansworth, United Kingdom, and Raymond H. Glabach, Fort Collins, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1993, Ser. No. 84
Claims priority, application United Kingdom, Feb. 8, 1992, 9202702
Int. Cl.[5] B65B *3/28*
U.S. Cl. 141—9 27 Claims



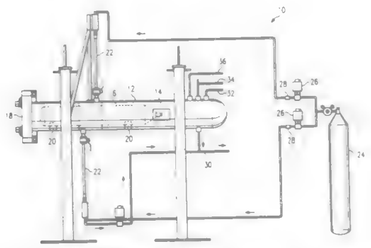
1. A method for supplying liquid to one or more pieces of apparatus characterized in that one or a plurality of vessels visit one or more preparation stations until the liquid is prepared and the liquid when prepared is continually supplied to the apparatus in batches by said one or a plurality of vessels, the rate of liquid preparation and the vessel movements being matched to the requirements of each preparation station.

5,339,876

APPARATUS AND METHODS FOR REMOVING HAZARDOUS CONTENTS FROM COMPRESSED GAS CYLINDERS

Charles C. Mattern, Clermont, Fla., assignor to Earth Resources Corporation, Ocoee, Fla.

Filed Apr. 30, 1993, Ser. No. 55,852
Int. Cl.[5] B65B *31/00*
U.S. Cl. 141—51 12 Claims



1. A containment vessel for use in piercing a container disposed within the containment vessel comprising:

an enclosed chamber with means for gaining access to the interior of the chamber and means for sealing the chamber;

a pair of pneumatic guns with each pneumatic gun having a barrel communicating with the enclosed chamber;

means for positioning the container within the enclosed chamber with a selected portion of the container aligned with the barrel of each pneumatic gun; and

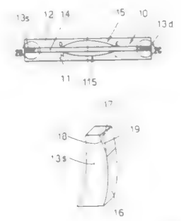
means for loading a projectile into each pneumatic gun, whereby at least one of said pneumatic guns projects a projectile into the container, the projectile thereby piercing the container.

5,339,877

CRYSTALLIZER, OR INNER PORTION, OF A MOULD HAVING A LENGTHWISE CURVATURE FOR CONTINUOUS CURVED CASTING OF THIN SLABS

Guido Marchesan, and Wogler Ruzza, both of Udine, Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Oct. 30, 1992, Ser. No. 968,677
Claims priority, application Italy, Oct. 31, 1991, UD91A000181
Int. Cl.[5] B22D *11/00*
U.S. Cl. 164—418 2 Claims



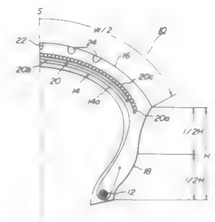
1. A crystallizer of a mold having a lengthwise curvature for continuous curved casting of thin slabs comprising an outer, extrados plate, an inner, intrados plate and lateral narrow plates having inner faces defining a downflow channel having a casting section through which thin slabs are fed, the lateral narrow plates having their inner faces inclined in such a way as to impart to the downflow channel a tapered conformation which reduces the width of the casting section in the direction of feed of the thin slabs, wherein the extrados and intrados plates are curved lengthwise and contain in their inner upper central portion respective frontal extrados and intrados hollows, and wherein an upper part of the inner face of the lateral narrow plates comprises a bevelled surface bevelled with respect to inner faces of said extrados and intrados plates wherein said bevelled surface faces towards the intrados plate and is progressively reduced to zero in the vicinity of the level of the lower end of the extrados and intrados hollows.

5,339,878

PNEUMATIC TIRES FOR MOTORCYCLES INCLUDING A SPIRALLY WOUND BELT CORD LAYER

Kiyoshi Takase, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 607,180, Oct. 31, 1990, abandoned.
This application Sep. 21, 1992, Ser. No. 947,908
Claims priority, application Japan, May 18, 1990, 2-126892
Int. Cl.[5] B60C *9/18, 9/20, 9/28*
U.S. Cl. 152—527 6 Claims



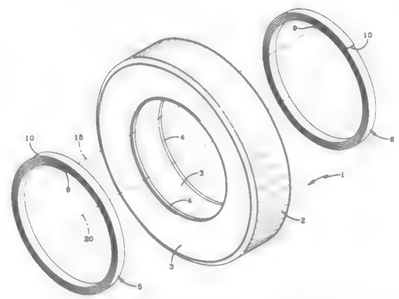
1. A pneumatic motorcycle tire comprising; a tread extending to substantially a maximum width of said motorcycle tire, a pair of sidewalls each toroidally extending from each side end of the tread, a carcass comprised of at least one ply containing organic fiber cords arranged at a cord angle of 75°–90° with respect to an equator of the motorcycle tire and turned around a bead ring embedded in an inward portion in radial direction of the sidewall from inside of the motorcycle tire toward outside thereof, a belt arranged between the tread and the carcass and comprised of at least two cord layers, at least an innermost cord layer on the belt located at a carcass side contains nylon fiber cords arranged at a cord angle of 60°–90° with respect to the equator of the tire, and at least one cord layer located at said tread side containing a cord having a modulus of elasticity of not less than 600 kg/mm^2 which is selected from the group consisting of high-modulus polyester fiber cord, polyvinyl alcohol fiber cord, rayon fiber cord and aromatic polyamide fiber cord, said at least one cord layer located at said tread side being spirally wound in the circumferential direction of the motorcycle tire and extending in the widthwise direction of the tire over substantially a full width of the tread to control outward expansion of the tire in the radial direction, and a widthwise end of at least one cord layer inclusive of the innermost cord layer located at the carcass side is located within a region ranging from a position corresponding to approximately 70% of a tread width to a position extending from a tread end to ½ of a sidewall height.

5,339,879

PNEUMATIC TIRE HAVING OPPOSITE SPIRAL ORIENTED BEADS

Stephen M. Vossberg, Uniontown; John D. Clothiaux, Hudson; Gregory D. Chaplin, Chippawa; Dale R. Harrigle, Jr., Akron, all of Ohio; Allen C. Kearney, Snow Hill; James A. Williams, Jr., Wilson, both of N.C., and Thomas S. Fleishchman, North Canton, Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Sep. 14, 1993, Ser. No. 121,120
Int. Cl.[5] B60C *15/04;* B29D *30/48*
U.S. Cl. 152—540 5 Claims



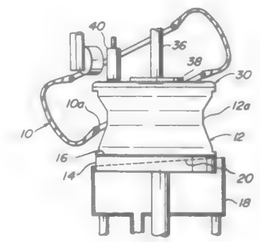
1. In a pneumatic tire construction comprising a tread, a pair of sidewalls, each terminating in an annular bead area for mounting the tire on a rim, and first and second annular beads, each contained within a respective one of the bead areas and being coaxially spaced with respect to an axial centerline of said tire, each of said beads including at least a single strand of metallic wire wound upon itself into a spiral and terminating in an outer end located on an outer circumference of the spiral and an inner end located on an inner circumference of spiral; said inner and outer ends of each strand terminating in a circumferential overlapped relationship, with the inner end of the first bead being in substantial axial alignment with the inner end of the second bead, and with the spiral orientation of the first bead being opposite to the spiral orientation of the second bead.

5,339,880

APPARATUS FOR ASSEMBLING TIRE AND RIM AND FILLING INNER PRESSURE

Hiroshi Kawabe; Toshiyuki Watanabe, and Naotaka Tomita, all of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 811,234, Dec. 20, 1991. This application Mar. 17, 1993, Ser. No. 32,106
Int. Cl.[5] B60C *25/06*
U.S. Cl. 157—1 4 Claims



1. An apparatus for assembling a tire and a wheel and filling inner pressure into the tire, the wheel having a rim for mounting and holding the tire thereon and a disc formed with a plurality of bolt-through apertures, comprising:

an inner cylindrical member vertically movable and having a support surface engageable with a first end of the rim in an air-tight manner and supporting thereon the wheel whose rotating axis is perpendicular to the support surface;

an outer cylindrical member vertically movable and telescopically arranged on the outer side of the inner cylindrical member and having an annular end surface inclined to the rotating axis of the wheel and engageable with a side surface of the tire in an air-tight manner;

a wheel cap-shaped jig, disposed in opposition to said cylindrical members and engageable with a second end of the rim for tire and rim assembly and being substantially in the form of a disc having a diameter which gets progressively smaller in a direction along the rotational axis of the wheel going away from the support surface;

holding means for holding the wheel together with the wheel cap-shaped jig such that the rotating axis of the wheel is coaxial to the holding means on the second end;

a pair of arm members, disposed on said holding means and being rotatable about the rotating axis of the wheel in opposite directions;

rotating means for rotating said arm member a pair of guide rollers, each of said guide rollers being secured to one of said arm members for radially outwardly expanding bead portions of the tire, respectively;

moving means for moving said outer cylindrical member in a vertical direction;

a pair of restraining rollers, each of said restraining rollers being secured to one of said arm members movably up and down along the rotating axis of the wheel for urging the side portion of the tire toward the inner cylindrical member;

air pressure means for applying air pressure to the tire, wherein when the arm members are rotated the restraining rollers press along the circumference of the tire to thereby push the tire onto the wheel, and as inner pressure is applied into the tire through a clearance between the bead portion and the rim, the outer cylindrical member is lowered, thereby progressively fitting the bead portions onto the rim and filling the inner pressure into the tire.

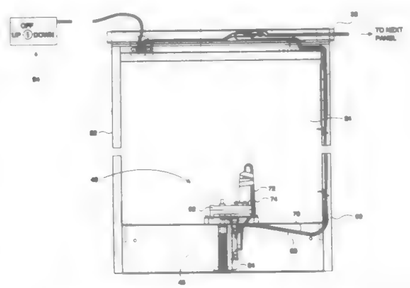
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,881

ELECTRICALLY OPERATED DROP SEAL FOR OPERABLE WALLS

N. Douglas Owens, Lynn, Ind., assignor to Modernfold, Inc., New Castle, Ind.

Filed Mar. 8, 1993, Ser. No. 27,376
Int. Cl.[5] E06B 7/16
U.S. Cl. 160—40 21 Claims



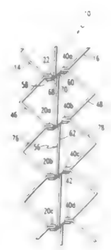
1. A drop seal assembly for a movable wall panel, the wall panel being situated in a room having a ceiling and a floor such that the wall panel is supported from the ceiling and is suspended above the floor, the drop seal assembly comprising:
a motor;
an actuator operatively connected to the motor, the actuator being selectively movable responsive to operation of the motor between a first position and a second position;
retractable sealing means for providing a seal between the wall panel and the floor, the sealing means being movable between a retracted position above the floor and a sealed position in sealing engagement with the floor; and
means for translating movement of the actuator from the first position to the second position into movement of the retractable sealing means from the retracted position to the sealed position.

5,339,882

VENETIAN-TYPE WINDOW COVERING

Ren Judkins, County of Allegheny, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 624,312, Dec. 4, 1990, Pat. No. 5,176,192, which is a continuation-in-part of Ser. No. 340,301, Apr. 19, 1989, Pat. No. 4,974,656, which is a continuation-in-part of Ser. No. 30,167, Mar. 25, 1987, abandoned. This application Sep. 28, 1992, Ser. No. 952,645
Int. Cl.[5] A47H 5/00
U.S. Cl. 160—84.1 D 11 Claims



1. A window covering structure comprising:
an elongated sheet of first pleated material having a selected length and having a plurality of transverse pleats, the pleats being alternatingly directed in opposite directions to one another so as to have a series of inward pleats disposed on one side of the first sheet of material and having a series of outward pleats disposed on an opposite side thereof;
an elongated sheet of second pleated material having a selected length and having a plurality of transverse pleats, the pleats being alternatingly directed in opposite directions to one another so as to have a series of inward pleats disposed on one side of the second sheet of material facing the inward pleats of the first sheet of material and having a series of outward pleats disposed on an opposite side of the second sheet of material;
a plurality of elongated slats, each slat having opposite face surfaces, a first end and a second end, each slat being positioned between the sheet of first material and the sheet of second material;
a plurality of first and second connecting portions to which the first sheet and the second sheet are respectively attached, each first connecting portion being connected to the first end of each slat, and each second connecting portion being connected to the second end of each slat; and
a plurality of first and second hinges, each pair of first and second hinges pivotably connecting each slat to the first and second connecting portions, respectively, each first hinge being disposed between each first connecting portion and each slat, and each second hinge being disposed between each second connecting portion and each slat;
wherein when the sheet of first material and the sheet of second material are positioned relative to one another such that when the structure is in an open position, the slats are spaced apart and the face surfaces of each slat are substantially parallel to one another and substantially perpendicular to the length of the first material and the second material, and when the structure is moved to a closed position, the slats move so as to have the face surfaces of each slat being generally aligned with one another on a common plane that is substantially parallel to the length of the first material and the second material and the connecting portions are substantially perpendicular to the place of the slats, and wherein the structure retains a cellular configuration in both the open and closed positions.

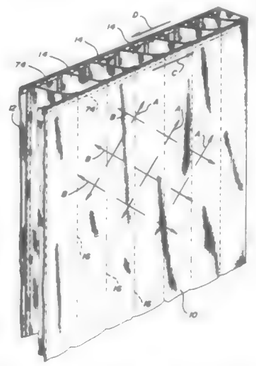
5,339,883

COVERING ASSEMBLY FOR ARCHITECTURAL OPENINGS

Wendell B. Colson, Boulder; James M. Anthony, Denver; Brad H. Oberg, Littleton, all of Colo., and Cornelis M. Jansen, Woudrichem, Netherlands, assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

Continuation-in-part of Ser. No. 810,331, Dec. 19, 1991. This application Oct. 20, 1992, Ser. No. 963,359
Int. Cl.[5] E06B 3/94
U.S. Cl. 160—84.1 D 21 Claims

1. A light control covering assembly for an architectural opening comprising in combination:
a) a covering comprising:
i) first and second generally parallel spaced apart, longitudinally extending, sheer fabrics, each having a top edge portion and a bottom edge portion;
ii) a plurality of longitudinally spaced, generally parallel, vertically extending vanes, fixedly secured to said first and second sheer fabrics to extend therebetween; and
iii) said fabrics and said vanes defining a series of panels composed of a vane and the associated portions of the fabrics,
b) a track, and
c) carrier means riding in said track between a spread condition and a stacked condition and being connected to said top edge portions of said panels for extending said panels to a vertically planar orientation in which said covering covers an opening when the carrier means are in the spread condition, and in which spread condition the panels can be manipulated to tilt the vanes between a closed position parallel to said fabrics and an open position generally normal to said fabrics to obtain light control and for



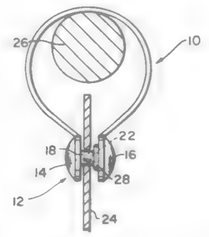
imposing a force on said series of panels in the closed position such that when said carrier means are moved from the spread condition toward the stacked condition, the imposed force is relieved and the panels fold up upon themselves.

5,339,884

SHOWER CURTAIN RING

Irving Angerman, 16 Easthaven La., White Plains, N.Y. 10605

Filed Jul. 6, 1993, Ser. No. 86,126
Int. Cl.[5] E06B 9/56
U.S. Cl. 160—330 24 Claims



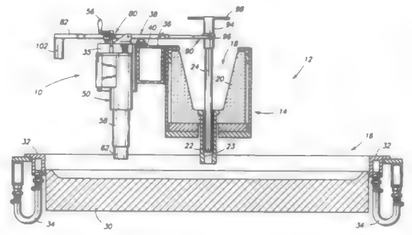
1. In a device for hanging a shower curtain on a shower curtain rod, the shower curtain having a top edge with an opening extending completely through said top edge, the device being of the type which includes a body portion for encircling the rod and having first and second ends, a substantially rigid elongated part extending from said first end and adapted to be removably received in the shower curtain opening and means, comprising a protrusion and a recess, for detachably engaging said elongated part and said second end to close the body portion around the rod, the improvement comprising means on said elongated part for retaining the shower curtain when said second end and said elongated part are not engaged.

5,339,885

INTEGRATED NON-CONTACT MOLTEN METAL LEVEL SENSOR AND CONTROLLER

A. David Sinden, Spokane; Hans Fischer, Mead, and Roy V. Twining, Liberty Lake, all of Wash., assignors to Wagstaff Inc., Spokane, Wash.

Filed May 7, 1993, Ser. No. 58,909
Int. Cl.[5] B22D 37/00, 41/20
U.S. Cl. 164—450.4 61 Claims



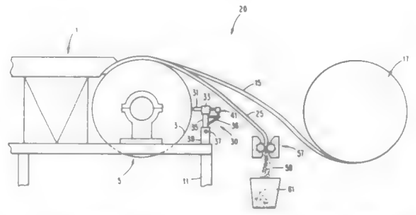
1. A non-contact molten metal level sensing device for measuring molten metal surface elevation in an underlying metal casting station, the metal level sensing device comprising:
a sensor base;
a proximity sensor which produces a proximity signal as a function of vertical distance between the proximity sensor and the surface of molten metal in an underlying casting station;
a sensor actuator operably connected between the proximity sensor and the sensor base to control the height of the proximity sensor;
a position sensor which produces a sensor height signal as a function of the height of the proximity sensor relative to the sensor base; and
a signal processing device which receives the proximity signal and the sensor height signal and produces a molten metal surface elevation signal as a function of both the proximity signal and the sensor height signal.

5,339,886

METHOD AND APPARATUS FOR TRIMMING EDGE SCRAP FROM CONTINUOUSLY CAST METAL STRIP

James C. Key, and George A. Sloan, both of Garland County, Ark., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jan. 11, 1993, Ser. No. 3,069
Int. Cl.[5] B22D 11/06
U.S. Cl. 164—463 13 Claims



1. In a continuous casting apparatus comprising a tundish for receiving molten metal and for delivering the molten metal to a single rotating casting wheel having a chill casting surface of a selected width, wherein molten metal contacts said single rotating casting wheel and is cast as a continuous cast strip; the improvement comprising:
means for separating said cast strip into at least longitudinal

VOL 1165 ISS 4 AG 23 1994 UMI

two portions by disrupting the solidification rate of said molten metal at said chill surface, said means for separating further comprising:

i) a coating material capable of disrupting the solidification rate of said molten metal at said casting surface to cause a longitudinal separation in said cast strip;

ii) means for applying said coating material to said chill surface at at least one selected location along the width of said chill surface during rotation of said casting wheel to form said longitudinal separation; and

means for recovering said at least two longitudinal portions, wherein said means for applying is adjustably located across the width of said chill surface so that a width of each recovered portion can be varied depending on a selected location for applying said coating material.

5. A method of continuously drag casting molten metal into a cast strip comprising the steps of:

a) providing a coating material capable of disrupting the solidification rate of said molten metal at said casting surface to cause a longitudinal separation in said cast strip and means for applying said coating material to said chill surface at at least one selected location along the width of said chill surface during rotation of said casting wheel to form said longitudinal separation; wherein said means for applying is adjustably located across the width of said chill surface,

b) flowing a molten metal through a tundish onto a single rotating chill surface to solidify said molten metal into a cast strip;

c) disrupting solidification of said molten metal along at least one circumferential line on said single rotating chill surface by applying said coating material during rotation of said chill surface to form a longitudinal split in said cast strip, said longitudinal split separating said cast strip into at least two longitudinal portions; and

d) recovering said longitudinal portions.

5,339,887

PROCESS FOR PRODUCTION OF STEEL STRIP

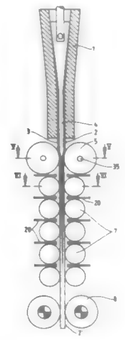
Gunter Flemming; Hans Streubel, both of Erkrath, and Wolfgang Rohde, Dormagen, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,708

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131116; Oct. 25, 1991, 4135214

Int. Cl.[5] B22D *11/12*

U.S. Cl. 164—476 **11 Claims**



1. A process for the production of steel strip comprising:

continuously casting a steel strip billet having a thickness of 40–80 mm, the continuously casting including forming a solidified outer casting shell on the billet and a liquid core;

roll deforming the steel strip billet, subsequent to casting, to a reduced thickness of 15–40 mm, wherein the steel strip billet includes a residual liquid core of 2–15 mm, and wherein the roll deforming comprises directing the steel strip billet through at least one group and no more than three groups of discrete opposing deformation rolls, each group being spaced to form a predetermined reduced thickness on the steel strip billet, the steel strip billet having a residual core as the steel strip billet exits the deformation rolls; and

guiding and supporting, subsequent to the step of roll deforming, the steel strip billet at a location remote from the deformation rolls along a distance whereby the residual liquid core of the steel strip billet becomes substantially solidified.

5,339,888

METHOD FOR OBTAINING NEAR NET SHAPE CASTINGS BY POST INJECTION FORMING OF WAX PATTERNS

Roy E. Tanner, Jr., Albuquerque, N. Mex., assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 15, 1993, Ser. No. 91,947

Int. Cl.[5] B22C *9/04, 7/02*

U.S. Cl. 164—516 **15 Claims**

1. A method for producing a hollow ceramic mold comprising the steps of:

(a) forming a wax pattern by injection molding; then

(b) machining said wax pattern to a predetermined size; and

(c) dipping said wax pattern in a slurry mixture to coat said wax pattern with said slurry mixture; then

(d) removing said slurry coated wax pattern from said slurry mixture;

(e) allowing said slurry coated wax pattern to dry by evaporating the liquid; then

(f) dipping said slurry coated wax pattern into said slurry mixture; then

(g) removing said slurry coated wax pattern from said slurry mixture; then

(h) allowing said slurry coated wax pattern to dry by evaporating the liquid;

(i) repeating the steps of (f), (g), and (h) until a predetermined thickness of said slurry coating on the wax pattern has been obtained; then

(j) heating said slurry coated wax pattern to a temperature sufficient to remove said wax leaving a hollow, soft, unbonded ceramic mold; then

(k) placing said hollow ceramic mold in a heating device and heating to a temperature sufficient to harden and bond said ceramic mold forming a hardened mold.

5,339,889

CONTROLLED BIOCIDE FEEDER FOR COOLING WATER SYSTEMS

Fred L. Bigham, 4206 SE. 11th Ave., Portland, Oreg. 97202

Filed Aug. 19, 1992, Ser. No. 933,356

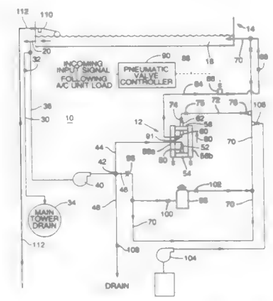
Int. Cl.[5] E03B *11/00*

U.S. Cl. 165—1 **12 Claims**

1. A method of controlling bacteria in an aqueous air conditioning heat transfer system, comprising the steps of:

generating a heat transfer control signal corresponding to an amount of water used in the heat transfer system;

directing a flow of heat transfer water across a source of biocidal material in accordance with the heat transfer control signal to form a biocidal solution;



applying the biocidal solution to the heat transfer system to provide a biocidal material concentration of within a predetermined range of concentrations.

5,339,890

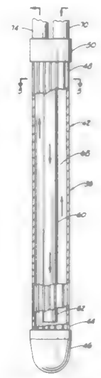
GROUND SOURCE HEAT PUMP SYSTEM COMPRISING MODULAR SUBTERRANEAN HEAT EXCHANGE UNITS WITH CONCENTRIC CONDUITS

John P. Rawlings, Oklahoma City, Okla., assignor to Climate Master, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 14,988, Feb. 8, 1993. This application Nov. 29, 1993, Ser. No. 159,027

Int. Cl.[5] F24J *3/06*

U.S. Cl. 165—45 **10 Claims**



1. A ground source heat pump system for a structure, the system comprising:

a ground source heat pump assembly in the structure for adjusting the temperature of a fluid in the structure;

a subterranean heat exchanger;

a conduit system for circulating a heat transfer fluid between the ground source heat pump assembly in the structure and the subterranean heat exchanger;

a pump adapted to pump heat transfer fluid through the conduit system; and

wherein the subterranean heat exchanger comprises a supply and return header and a plurality of modular heat exchange units connected in parallel arrangement between the supply and return headers; and

wherein each of the modular heat exchange units comprises:

an external tube having an expanded external surface and having an upper end and a lower end;

an internal tube disposed concentrically within the external tube, such internal tube having an upper end and a lower end and having a length about the same as the length of the external tube;

a layer of insulation around the internal tube; an end cap for sealing the lower end of the external tube;

a manifold for sealing the upper end of the external tube and for supporting the internal tube within the external tube, the manifold adapted to connect the internal tube to the supply header of the subterranean heat exchanger and to connect the external tube to the return header of the subterranean heat exchanger; and

wherein the internal tube, the external tube, the end cap and the manifold are integrally formed of flexible plastic material.

5,339,891

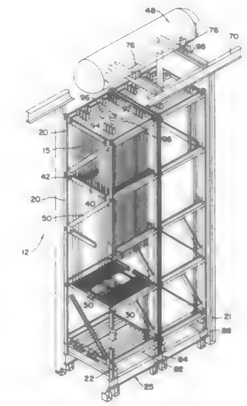
MODULAR ARRANGEMENT FOR HEAT EXCHANGER UNITS

Raymond G. Kidaloski, Canal Fulton; Roger A. Detzel, Norton, and Donald E. Byan, Mogadore, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 15, 1993, Ser. No. 92,156

Int. Cl.[5] F22B *37/24*

U.S. Cl. 165—67 **14 Claims**



1. A modular arrangement for containing a heat exchanger unit therein, the arrangement comprising:

a base frame;

four vertical truss members slidably mounted to the base frame at one end of the members, each vertical truss member positioned a distance apart from another vertical truss member across the base frame to define a front, a back, and two sides, the heat exchanger unit contained within the base frame and the vertical truss members;

at least one level of intermediate tie steel supported by the four vertical truss members;

at least two different levels, each level having a junction fixed to each vertical truss member, and a horizontal side truss member rotatably attached to the junctions of adjacent vertical truss members; and

a diagonal truss member extending between and removably attached to the junctions between adjacent levels, the base frame, the intermediate tie steel, the vertical truss members, and the heat exchanger unit defining a module.

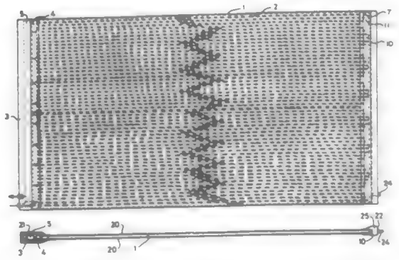
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,892

HEAT EXCHANGE DEVICE

Brian Clifton, Cleethorpes, Great Britain, assignor to APV Corporation Limited, England

Filed Dec. 17, 1992, Ser. No. 992,081
Claims priority, application United Kingdom, Dec. 17, 1991, 9125796
Int. Cl.[5] F28F *3/12*
U.S. Cl. 165—82 8 Claims



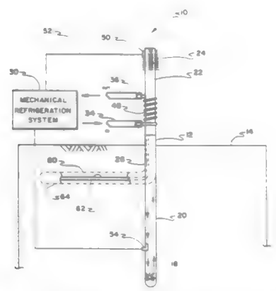
1. A cooling member adapted to cool a foodstuff, which member comprises:
a. a substantially solid core member having bores therethrough through which a cooling medium can flow; and
b. an outer cladding of stainless steel extending over at least those areas of the cooling member which are to be in direct contact with the foodstuff, which caldding is adapted to be subjected to an internal vacuum whereby the cladding is caused to conform closely to the outer face of the core member and the cladding can move in sliding engagement relative to the core member whereby differences in thermal expansion or contraction between the cladding and the core member can be accommodated.

5,339,893

APPARATUS FOR CONTAINING TOXIC SPILLS EMPLOYING HYBRID THERMOSYPHONS

Francis D. Haynes, Etna, N.H.; John P. Zarling, Fairbanks, Ak., and William F. Quinn, Hanover, N.H., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 8, 1992, Ser. No. 880,262
Int. Cl.[5] E02D *19/14*
U.S. Cl. 165—45 2 Claims



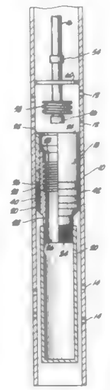
1. Apparatus for containing a toxic spill on the soil within a defined area comprising a plurality of thermosyphons for freezing the soil around and under the defined area, each of said thermosyphons containing a working fluid in a closed refrigeration cycle, each thermosyphon comprising a closed pipe for containing the working fluid having an evaporator section for contact with the soil for removing heat therefrom by evaporation of the working fluid and a passive condenser section in flow communication with the evaporator section remote from the soil for transferring heat from the working fluid to ambient by heat exchange and consequent condensation thereof when the ambient temperature is below the temperature of the soil;
and an active refrigerant stage in heat exchange relation with at least a portion of the condenser section for removing heat from the working fluid by heat exchange therewith when the temperature of the condenser section is above the temperature of the soil;
wherein the condenser section comprises at least a plurality of finned heat exchange surfaces attached to a portion of the pipe above the ground surface layer;
wherein the active refrigeration section comprises a coil in heat exchange relation with a portion of said condenser section.

5,339,894

RUBBER SEAL ADAPTOR

William R. Stotler, 2520 Corto St., Bakersfield, Calif. 93306

Filed Apr. 1, 1992, Ser. No. 862,637
Int. Cl.[5] E21B *33/128*
U.S. Cl. 166—182 7 Claims



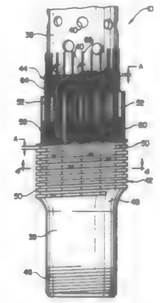
1. A rubber seal adaptor for a well, comprising
a pipe fitting having a first end with an exterior thread, a second end with an interior thread, a first bore therethrough from said first end to said second end and an annular flange about the periphery thereof;
a compression sleeve having a second bore therethrough slidable extending over said pipe fitting;
a rubber seal ring positioned between said annular flange and said compression sleeve;
a first circular groove in one of said second bore of said compression sleeve or the periphery of said pipe fitting with a first, shallower portion and a second, deeper portion;
a plurality of adjacent second circular grooves in the other of said second bore of said compression sleeve or the periphery of said pipe fitting of substantially equal depth;
a plurality of hard elements positioned in said first circular groove, said elements fitting closely within a said second circular groove and said shallower portion of said first circular groove to retain said compression sleeve from sliding on said pipe fitting and fitting within said deeper portion without extending into a said second circular groove to allow sliding of said compression sleeve on said pipe fitting.

5,339,895

SINTERED SPHERICAL PLASTIC BEAD PREPACK SCREEN AGGREGATE

Bryant A. Arterbury, Houston, Tex., and James E. Spangler, Spring, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Mar. 22, 1993, Ser. No. 34,980
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—227 30 Claims



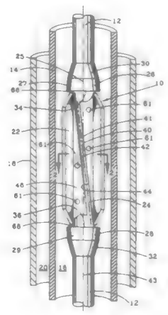
1. A well screen for separating particulate material from formation fluid, comprising:
a tubular mandrel having a bore defining a production flow passage, said mandrel being radially intersected by at least one flow aperture connecting with said flow passage; and
a plurality of sintered, substantially spherical plastic members along at least a portion of said mandrel covering said flow aperture.

5,339,896

FIELD INSTALLABLE ROD GUIDE AND METHOD

Charles M. Hart, Stinnett; H. Milton Hoff, Jr., Tomball; John L. Tillman, Jr., The Woodlands; Lindell R. Trout, The Woodlands, and Stephen L. Witte, Sr., The Woodlands, all of Tex., assignors to J. M. Huber Corp., Tomball, Tex.

Filed May 6, 1993, Ser. No. 58,106
Int. Cl.[5] E21B *17/10*
U.S. Cl. 166—241.1 40 Claims



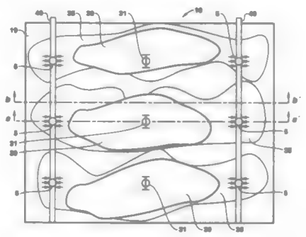
1. A rod guide for centering within a tubular string a sucker rod which transmits power to a pump within a well bore, the rod guide comprising:
a spool securable to the sucker rod, the spool having upper and lower end members with respective upper and lower stop surfaces thereon, and a sleeve portion for securing about the sucker rod and having a sleeve outer diameter, the sleeve portion extending at least substantially between the upper and lower spool end members;
a guide body having an elongate slot therein extending along the length of the guide body, the guide body having a generally cylindrical inner surface, the guide body slot having a nominal selected width for positioning the guide body on and removing the guide body from the sleeve portion of the spool; and
the guide body being selected from a plastic material having at least 10% by weight UHMW polyethylene, and including a radially inward portion having C-shaped cross-sectional configuration and a plurality of fins extending radially outward from the radially inward portion for engagement with the tubular string.

5,339,897

RECOVERY AND UPGRADING OF HYDROCARBON UTILIZING IN SITU COMBUSTION AND HORIZONTAL WELLS

Roland P. Leaute, Baton Rouge, La., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 11, 1992, Ser. No. 989,257
Claims priority, application Canada, Dec. 20, 1991, 2058255
Int. Cl.[5] E21B *43/24, 43/243, 43/30*
U.S. Cl. 166—245 23 Claims



1. A process for recovering hydrocarbons from a formation of tar sand deposits in which there is at least one horizontal production well and at least one vertical production well positioned over the horizontal well such that fluids can be circulated between the two wells, and at least one vertical injection well offset from the vertical production well, said process comprising:
(a) establishing communication between the vertical production and vertical injection wells by injection of a heated fluid through at least one of the vertical wells towards the other vertical well;
(b) injecting an oxidant into the tar sand deposit through the injection well for in situ combustion of the tar sand deposit that either spontaneously ignites or is ignited; and
(c) recovering in situ combustion gases from the vertical production well and hydrocarbons from the horizontal production well.

23. An apparatus for recovering and upgrading hydrocarbons from tar sand deposits comprising:
(a) a first vertical well positioned in the deposit comprising means for injecting an oxidant into the deposit for in situ combustion;
(b) a second vertical well, offset from the first vertical well, comprising means for venting in situ combustion gases from the deposit and means for injecting an upgrading medium into the deposit;
(c) a horizontal well, positioned beneath the second vertical well such that fluids can be circulated between the two wells, comprising means for producing hydrocarbons.

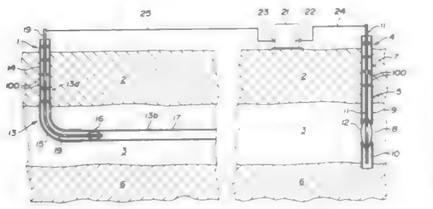
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,898

ELECTROMAGNETIC RESERVOIR HEATING WITH VERTICAL WELL SUPPLY AND HORIZONTAL WELL RETURN ELECTRODES

C. Lawrence Yu, Calgary; Bruce C. W. McGee, Edmonton; Frederick S. Chute, Edmonton, and Fred E. Vermeulen, Edmonton, all of Canada, assignors to Texaco Canada Petroleum, Inc., Calgary, Canada

Filed Jul. 13, 1993, Ser. No. 90,973
Int. Cl.[5] E21B *43/24*
U.S. Cl. 166—248 4 Claims



3. A method for electromagnetically heating a subterranean, oil-containing reservoir penetrated by a plurality of vertical wells, each having conductive means adapted to supply alternating current to a relatively short electrode in electrical contact with to the reservoir, and a horizontal well having conductive means adapted to return current to ground from a relatively long electrode disposed in the horizontal leg of the well, comprising:

simultaneously supplying alternating current, through the electrodes of the vertical wells, to the reservoir;

returning the current supplied from the vertical wells to ground through the long electrode and conductive means of the horizontal well; and

simultaneously producing oil through all of the wells.

5,339,899

DRILLING FLUID REMOVAL IN PRIMARY WELL CEMENTING

Kris M. Ravi, Duncan, Okla., and Fred L. Sabins, Missouri City, Tex., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 939,197, Sep. 2, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 127,843
Int. Cl.[5] E21B *47/00*
U.S. Cl. 166—250 20 Claims

1. A method of determining the circulating volume of gelled drilling fluid in a well bore excluding gelled drilling fluid and filter cake deposited on the walls of the well bore comprising the steps of:

(a) circulating said drilling fluid through said well bore at a selected constant volume flow rate and maintaining said flow rate for a time period whereby the well bore inlet pressure of said drilling fluid stabilizes while monitoring said well bore inlet pressure, said flow rate, the viscosity of said drilling fluid, the temperature of said drilling fluid and the density of said drilling fluid; and

(b) calculating the circulating volume of said drilling fluid in said well bore based on said stabilized well bore inlet pressure, said flow rate, said viscosity, said temperature and said density.

5,339,900

PROCESS FOR RECOVERING HYDROCARBON

Thomas J. Clough, Santa Monica, Calif., assignor to Ensci, Inc., Pismo Beach, Calif.

Filed Nov. 24, 1992, Ser. No. 981,185
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—274 20 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing reservoir comprising:

contacting said reservoir with at least one added plant derived aromatic component having ortho-quinone functionality wherein the ortho-quinone functionality is present in the component in the range of from at least about 1 weight percent to about 40 weight percent of the total weight of the plant derived aromatic component and mixtures thereof, said contacting occuring at conditions effective to chemically modify components of said hydrocarbons in said reservoir; and

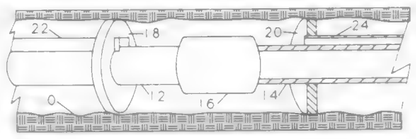
recovering hydrocarbons from said reservoir.

5,339,901

METHOD OF ACHIEVE ZONAL ISOLATION

Howard L. McKinzie, Sugar Land, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 26, 1993, Ser. No. 52,597
Int. Cl.[5] E21B *43/114*
U.S. Cl. 166—289 9 Claims



1. Means for selectively isolating ay number of zones spaced along a completed open hole type well comprising:

a well liner extending at least through the zones to be isolated;

pairs of isolation means mounted on said liner spaced apart at respective opposite ends of each zone to be isolated; and

bypass means passing through said pairs of isolation means to interconnect the volumes defined thereby whereby consolidation material can be sent downhole to fill and isolate each successive zone defined by said pairs of isolation means.

5,339,902

WELL CEMENTING USING PERMEABLE CEMENT

Kirk L. Harris, Aberdeen, United Kingdom; Robert B. Carpenter, Allen, Tex.; Ronald E. Himes, Duncan, Okla.; E. Dwyann Dalrymple, Duncan, Okla.; Jeffrey A. Dahl, Duncan, Okla., and Bruce D. Thomas, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 2, 1993, Ser. No. 42,368
Int. Cl.[5] F21B *33/14*
U.S. Cl. 166—293 12 Claims

1. A method of cementing a conduit in a high deviation well bore having an annulus around the exterior of said conduit, said method comprising the steps of placing a foamed cement slurry composition in said annulus and permitting said composition to harden in said annulus;

wherein, when hardened, said cement composition has a permeability of at least 0.3 darcies.

12. A method of treating a targeted portion of a subterranean formation, said subterranean formation having a well bore extending thereinto, said well bore having a conduit placed therein such that an annulus exists around the exterior of said conduit, said conduit and said annulus extending into both said targeted portion of said formation and a nontargeted portion of said formation, and said conduit having fluid flow means provided therein for allowing fluid flow through the wall of said conduit, wherein said method comprises the steps of:

(a) placing a foamed cement slurry composition in the portions of said annulus extending into said targeted and said nontargeted portions of said formation, said cement composition having a permeability, when hardened, of at least 0.3 darcies;

(b) permitting said cement composition to harden;

(c) injecting a diverting agent into the portion of said hardened cement composition extending into said nontargeted portion of said formation such that the permeability of the portion of said hardened cement composition extending into said nontargeted portion of said formation is at least partially reduced; and

(d) injecting a formation treating fluid through the portion of said hardened cement composition extending into said targeted portion of said formation.

5,339,903

METHOD FOR CONTROL OF GAS MIGRATION IN WELL CEMENTING

Larry S. Eoff, and Bill W. Loughridge, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 12, 1993, Ser. No. 151,311
Int. Cl.[5] E21B *33/13*
U.S. Cl. 166—293 5 Claims

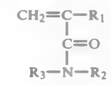
1. A method of cementing a borehole which penetrates a subterranean gas-containing formation whereby migration of gas from said formation into said borehole is reduced, said method being comprised of the steps of:

forming a slurry of hydraulic cement in water;

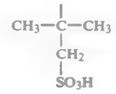
placing said slurry in said borehole adjacent said formation;

permitting said slurry to set in said borehole whereby a hardened mass of cement is produced;

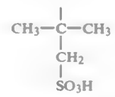
wherein said slurry is comprised of water, hydraulic cement and an additive consisting of a tannin backbone portion having grafted thereto a graft portion consisting of at least a first vinylamide derivative and a second vinylamide derivative selected from compounds represented by the general formula



wherein R_1 is —H or —CH_3, R_2 is —H or —CH_3, and R_3 is —H, —CH_3 or



said first and said second vinylamide derivatives are different wherein R_3 in said first derivative is



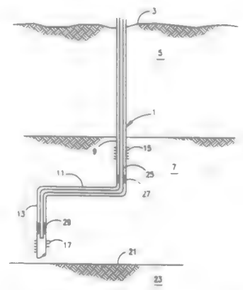
and R_2 and R_3 in said second derivatives are both —CH_3.

5,339,904

OIL RECOVERY OPTIMIZATION USING A WELL HAVING BOTH HORIZONTAL AND VERTICAL SECTIONS

Alfred R. Jennings, Jr., and Ibrahim S. Abou-Sayed, both of Plano, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 10, 1992, Ser. No. 988,498
Int. Cl.[5] E21B *43/24*
U.S. Cl. 166—303 16 Claims



1. A method of producing oil from a subterranean oil-hearing formation comprising:

a) providing a cased wellbore that extends from the surface of the earth into said oil-bearing formation, said wellbore having a first section that extends vertically from the upper part of said formation into said formation, a second section that extends from the lower end of said first section horizontally into said formation in a direction to maximize oil production from said formation, and a third section that extends vertically from the end of said second section that is opposed to said first section toward the lower part of said formation, whereby said first and third vertical sections are horizontally spaced from one another;

b) providing tubing in said cased wellbore that extends toward and near the lower part of said formation;

c) providing a first packer about said tubing near the lower end of said tubing;

d) providing a second packer about said buting near the lower end of said first section;

e) providing a first set of perforations through said cased wellbore below said first packer and providing a second set of perforations through said cased wellbore above said second packer;

f) injecting a fluid dow said tubing through said first set of performations and into said formation to enhance the production of oil from said formation; and

g) producing oil from said formation through said second set of perforations into the annulus formed about the tubing and inside the casing and upward to the surface of the earth for recovery.

5,339,905

GAS INJECTION DEWATERING PROCESS AND APPARATUS

Clark A. Dowker, Johannesburg, Mich., assignor to Subzone Lift Systems, Johannesburg, Mich.

Filed Nov. 25, 1992, Ser. No. 981,503
Int. Cl.[5] E21B *43/12*
U.S. Cl. 166—369 25 Claims

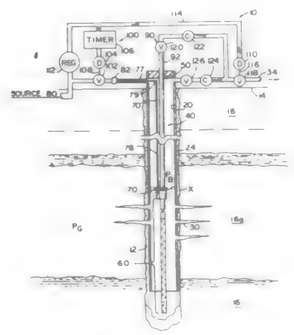
1. A unique method for economically producing natural gas from a well of the type in which gas production has been substantially reduced or ceased because of formation water infiltration into a casing portion of the well, comprising the steps of:

VOL 1165 ISS 4 AG 23 1994 UMI

providing a gas transmission line to the well in which pressurized and dried natural gas is transported to the well;

selecting a dewatering conduit shaped to fit within the casing portion of the well, and adapting a lower end thereof for communication with a valve for selectively flowing the formation water into the lower end of the dewatering conduit, and an upper end thereof for communication with a water exhaust line;

positioning the dewatering conduit in the casing portion of the well such that the lower end thereof is submersed in the formation water infiltrated into the casing portion of the well, and the upper end thereof is located near the well surface, the valve including a water inlet disposed operably downstream from a gas inlet;



selectively opening the valve to permit the ground water in the casing portion of the well to flow in a single direction through the water inlet into the lower end of the dewatering conduit to a predetermined elevation to define a slug of water therein;

selectively closing the valve to prevent the slug of water in the lower end of the conduit from escaping therefrom; and

communicating said pressurized and dried natural gas in the gas transmission line directly to said gas inlet in the valve through a length of tubing, and thereby injecting a predetermined volume of pressurized natural gas uniformly therein so as to create a low pressure and lift said slug of water contained in said lower end of said dewatering conduit to said water exhaust line.

5,339,906

POSITON FEEDBACK MECHANISM FOR AN IMPLEMENT

Robert E. Fox; William L. Smith, Jr., both of Des Moines, and Donald R. Flugrad, Jr., Ames, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 8, 1993, Ser. No. 1,975

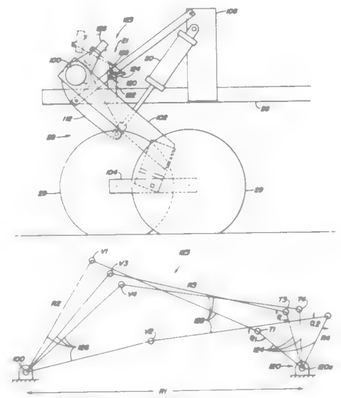
Int. Cl.[5] A01B *63/111*

U.S. Cl. 172—4 **15 Claims**

1. In a hydraulic system for an implement having a hydraulically activated rockshaft, and a lift wheel assembly including a lift arm connected to the rockshaft, the implement towed by a tractor having a source of hydraulic fluid under pressure, a control connected between the source and the rockshaft for rotating the rockshaft and moving the implement vertically over a range of raised transport positions and a range of lowered field-working positions including a lowermost field-working position, wherein the range of lowered field-working positions is typically smaller than the range of transport positions, a remote position device for providing a signal dependent on the vertical position of the implement, comprising:

a rockshaft lever connected to the rockshaft for rotation with the rockshaft and the lift arm over first and second ranges of angles corresponding respectively to the range of raised transport positions and the range of field-working positions of the implement, the first range of angles being greater than the second range of angles;

a position transducer having a movable member for providing a varying signal dependent on the position of the member; and



means connecting the rockshaft lever and the movable member for amplifying rotational movement of the rockshaft in the second range of angles and thereby provide greater variance of the signal for movement of the rockshaft in the second range than for movement of the rockshaft in the first range.

5,339,907

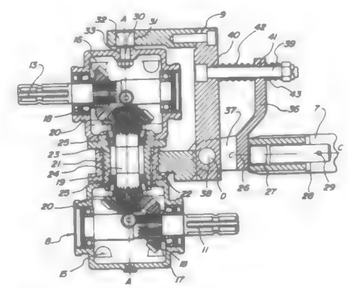
DEVICE FOR CONNECTING AN AGRICULTURAL IMPLEMENT TO A TRACTOR

Andreas Roth, Neunkirchen-Seelscheid, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 974,715

Int. Cl.[5] A01B *59/00, 33/00*

U.S. Cl. 172—678 **7 Claims**



1. A device for connecting an agricultural implement to a tractor comprising:

a double drive having two angle drives arranged one above the other, said drives being pivotable relative to one another via a bearing around a first axis and rotationally connected to one another, at least one angle drive including an input journal for providing a connection with a power take-off shaft of the tractor and the other angle drive including an output end arranged parallel to said input journal for passing on rotational movement to an implement;

a transverse bar coupled with the double drive, said bar pivotably connecting the double drive to lower steering arms of the tractor around a second axis intersecting the first axis at a distance at right angles;

means for connecting the double drive to the implement;

means for enabling an implement to pivot around a third axis intersecting each of the two other axes, said pivot means including a spring position on an axis intersecting the first axis at a distance and at right angles such that the double drive is pivotally connected to the transverse bar so as to be pivotable to a limited extent against the force of the spring.

5,339,908

POWER TOOL

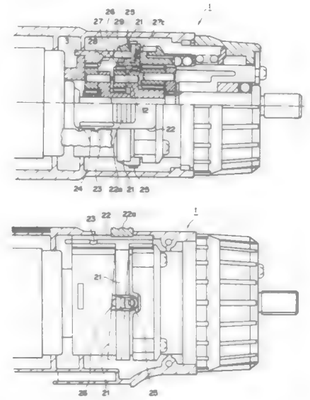
Takao Yokota; Juzaburo Monobe, and Nobuhiro Sano, all of Fuchu, Japan, assignors to Ryobi Limited, Hiroshima, Japan

Continuation of Ser. No. 972,887, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 771,365, Oct. 1, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 84,317

Claims priority, application Japan, Oct. 2, 1990, 2-103825[U]

Int. Cl.[5] F16H *3/44*

U.S. Cl. 173—216 **15 Claims**



1. A power tool for driving a tool implement comprising:

a tool body;

a driving motor incorporated in the tool body and having an output shaft;

means incorporated in the tool body for operating the driving motor;

a speed reduction gear mechanism including a plurality of stages of planetary gear sets for transmitting a driving force of the driving motor through the planetary gear sets to a tool implement to drive the same, wherein said planetary gear sets include a slide gear member axially movable between a forward position and a rearward position, said slide gear member being provided with an internal gear to be meshed with one of the gears constituting the planetary gear sets to change rotating speed of the tool implement;

a resilient support ring in the shape of a circular ring, integrally formed with a slide lever, to rotatably support said slide gear member, said slide lever being disposed axially movably relative to the tool body;

engaging means disposed between the slide lever and the tool body for selectively holding the slide lever at either one of a forward position or a rearward position against the tool body for changing a rotating speed of the tool implement;

said resilience support ring being sufficiently resiliently deformed in an axial direction of said tool body when said slider lever is held by the engaging means at the forward position and the slide gear member is not meshed with the one of gears constituting the planetary gear sets such that the slide gear is automatically shifted in a direction opposite to a deformed direction to engage with said one of the gears constituting the planetary gear sets when the driving motor is started to drive; and

said resilience support ring being sufficiently resiliently deformed in an axial direction of said tool body when said slider lever is held by the engaging means at the rearward position and the slide gear member is not meshed with the tool body such that the slide gear member is automatically shifted in a direction opposite to a deformed direction to engage the slide gear member with the tool body when the driving motor is started to drive.

5,339,909

APPARATUS FOR MAKING EARTH BORES

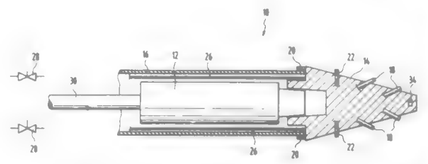
Gustav Jenne, Essen, Fed. Rep. of Germany, and Dietmar Jeane, Strengelbach, Switzerland, assignors to Terra AG Fuer Tiefbautechnik, Strengelbach, Switzerland

Filed Dec. 1, 1992, Ser. No. 983,656

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142343

Int. Cl.[5] E21B *11/02*

U.S. Cl. 175—22 **15 Claims**



1. An apparatus for making earth bores with simultaneous emplacement of a pipe having a front end, inside and outside diameters and a longitudinal axis, especially for the making of well bores, said apparatus comprising a dynamic ram earth boring device (**10**) with a drive device (**12**) and a displacement head (**14**) arranged coaxial to the drive device (**12**), said displacement head having a longitudinal axis and being adapted to be placed on said front end of said pipe with its longitudinal axis collinear with said longitudinal axis of said pipe and with a portion thereof extending forwardly in the longitudinal direction of said pipe, said forwardly extending portion of said displacement head having a maximum diameter greater than said outside diameter of said pipe, and said drive device having a maximum outside diameter less than said internal diameter of said drive so as to be adapted to be receivable within said front end of said pipe and to be releasably engageable with said displacement head to exert a forward driving force on said displacement head, and a pressure fluid jet nozzle (**18**) carried by said displacement head (**14**) and pointed nearly forwardly in the longitudinal direction of said head, which fluid jet nozzle is connectable to a pressure fluid source providing pressurized fluid for said nozzle.

5,339,910

DRILLING TORSIONAL FRICTION REDUCER

Mark D. Mueller, Bakersfield, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 14, 1993, Ser. No. 47,228

Int. Cl.[5] E21B *10/46*

U.S. Cl. 175—61 **20 Claims**

1. An apparatus for drilling a wellbore extending from near a surface location to an underground drilling face which comprises:

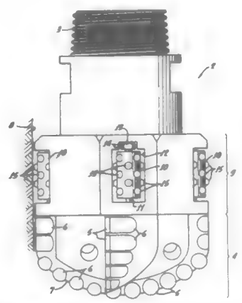
a tubular string extending from a first end near said surface

VOL 1165 ISS 4 AG 23 1994 UMI

location to a second end near said drilling face when said tubular string is inserted into said wellbore;

a drill bit attached to said tubing string proximate to said second end and having rotatable cutters and a drill bit axis substantially perpendicular to said drilling face, said drill bit capable of removing materials from said drilling face when rotatably contacting said drilling face;

a plurality of rollers attached to the periphery of said drill bit and each rotatable around a roller axis substantially parallel to said drill bit axis, said rollers capable of rotating separately from said rotating cutters and bearing forces between said wellbore and said drill bit, wherein said forces are transmitted substantially perpendicular to said drill bit axis when said drill bit is rotating, wherein said separately rotatable cutters produce a cut wellbore diame-



ter and said rollers compact said formation to increase said cut wellbore diameter to a larger compacted diameter by not more than about 0.021 inches larger when said apparatus is drilling said wellbore;

a first roller bearing assembly attached to the periphery of said tubular string; and

a second roller bearing assembly attached to the periphery of said tubular string and spaced apart from said first roller bearing assembly,

wherein said tubular string also comprises:

a first tubular string portion extending downward from said first end when located within said wellbore;

a second tubular string portion extending upward from said second end when located within said wellbore; and

a thrust bearing-like assembly connecting said first and second tubular string portions.

5,339,911

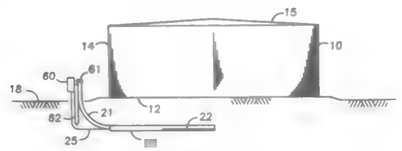
CATHODIC PROTECTION AND LEAK DETECTION PROCESS AND APPARATUS

Timothy A. Whited, Nederland; Jack L. Leatherman, Littleton, and John L. Markham, Nederland, all of Colo., assignors to Corrocoa, Inc., Nederland, Colo.

Division of Ser. No. 899,432, Jun. 16, 1992. This application Jan. 6, 1993, Ser. No. 1,022

Int. Cl.[5] E21B *7/04*

U.S. Cl. 175—62 **24 Claims**



1. A process for forming a subterranean bore comprising:

positioning a drill rod having a bit secured to one end thereof within a first length of casing having an expander cap secured to one end thereof such that the bit extends through said cap;

driving said bit and said cap into the ground so as to form a subterranean bore while simultaneously advancing said first length of casing within said bore;

monitoring an elevation of said bit by measuring a position of said bit relative to a point of origin of said bore during the driving step; and

changing an orientation of said bit responsive to the monitoring step.

5,339,912

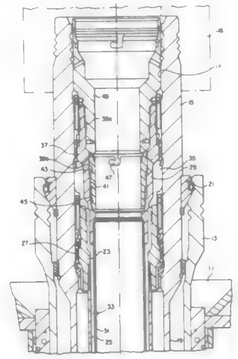
CUTTINGS DISPOSAL SYSTEM

Stanley Hosie, and Callum J. B. Dinnes, both of Aberdeen, Scotland, assignors to ABB Vetco Gray Inc., Houston, Tex.

Filed Mar. 26, 1993, Ser. No. 37,781

Int. Cl.[5] E21B *21/06*

U.S. Cl. 175—66 **29 Claims**



1. In an injection well having an outer wellhead housing, an inner wellhead housing landed in the outer wellhead housing, at least one casing hanger landed in the inner wellhead housing, the casing hanger having an axial bore and being secured to a string of casing, pump means for delivering a slurry of well cuttings produced from the drilling of another well, the improvement comprising in combination:

a port extending through the casing hanger to an annulus surrounding the casing;

an injection adapted which removably lands in the bore of the casing hanger, the injection adapter having a passage therethrough which is adapted to communicate with the port;

lower seal means for sealing the injection adapter in the bore of the casing hanger; and

connection means for connecting the passage of the injection adapted to the pump means for delivering the slurry through the passage and port into the annulus.

5,339,913

WELL ORIENTING TOOL AND METHOD OF USE

Allen K. Rives, 11831 Pebbleton, Houston, Tex. 77383

PCT No. PCT/US91/07222, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992

PCT Filed Oct. 9, 1991, Ser. No. 927,290

Int. Cl.[5] E21B *17/07*

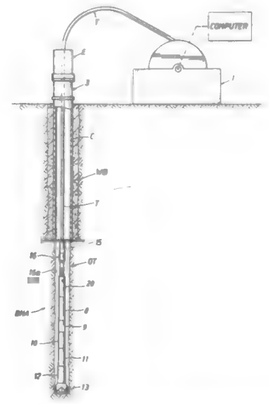
U.S. Cl. 175—73 **76 Claims**

1. A well tool operable by a non rotatable, longitudinally movable well string extending into a well bore for rotating a down hole device, said well tool comprising:

a rotator for connection with the non rotatable well string to move longitudinally in the well bore in response to longitudinal movement of the non rotatable well string;

a rotatable member for telescopically receiving said rotator;

cooperating means on said rotator and said rotatable member for imparting rotation to said rotatable member and



the down hole device upon longitudinal movement of the non rotatable well string and said rotator to telescope said rotator into said rotatable member: and

a releasable lock to lock said rotator, said non rotatable well string and said rotatable member in a telescoped position to lock the device in a rotated position.

5,339,914

ADJUSTABLE DRILLING MECHANISM

Paul Lee, Calgary, Canada, assignor to PBL Drilling Tools Ltd.; PBL Machinery Ltd. and Bernard J. Lee, Calgary, Canada

Filed Jan. 13, 1993, Ser. No. 3,560

Claims priority, application Canada, Jan. 23, 1992, 2059910

Int. Cl.[5] E21B *7/08*

U.S. Cl. 175—73 **8 Claims**



1. A down hole drilling tool activating mechanism comprising;

a drill sub connectable between adjacent lengths of drill pipe having a main body;

tool elements mounted in said body to be activated and deactivated;

a mandrel located within said main body capable of vertical movement relative to said main body and having cam surfaces bearing against said tool elements to activate and deactivate same upon vertical movement of the mandrel;

a series of flexible fingers extending from one end of said mandrel and vertically fixed thereto, said fingers having engaging teeth thereon;

teeth engaging means mounted to said main body and vertically fixed relative thereto;

a male spline member rotatably locked to said main body and capable of vertical movement relative to said main body;

a portion of said male spline member being moveable vertically within said main body between a locking position in which said male spline member engages said flexible fingers forcing them to engage said tooth engaging member and an unlocked position in which said male spline member is removed from said flexible fingers to allow them to disengage said teeth engaging member;

bias means urging said mandrel in one vertical direction;

seal means on said mandrel located such that mud pump pressure exerted through the bore of said drill string will act on an end of said mandrel in a direction opposite to said bias means;

means to equalize pressure between the interior and exterior of said male spline member.

5,339,915

DRILLING APPARATUS, PARTICULARLY WIRE LINE CORE DRILLING APPARATUS

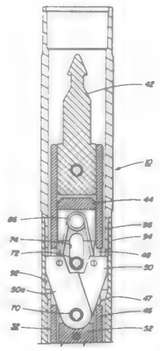
Irwin J. Laporte, and Amos J. Watkins, both of North Bay, Canada, assignors to JKS Boyles International, Inc., Orillia, Canada

Filed Oct. 16, 1992, Ser. No. 962,408

Claims priority, application Canada, Oct. 18, 1991, 2503719

Int. Cl.[5] E21B *10/64*

U.S. Cl. 175—244 **18 Claims**



1. A wire line core barrel inner tube assembly capable of travelling longitudinally within a drill string toward and away from a drill bit carried on the lower end of the string, the drill string having an annular landing shoulder therein; said inner tube assembly comprising an elongated body having an annular landing shoulder adapted to co-operate with and seat on the landing shoulder of the drill string when in use, said body having a valve chamber defined therein and inlet and outlet ports leading from the valve chamber to the exterior of the body on opposite sides of said landing shoulder to define a by-pass passage through which drilling liquid passing along the drill string must flow on its way toward the bit in operation when the landing shoulder of said body is seated on the landing shoulder of the drill string, said valve chamber having a valve seat therein, a valve closure within the valve chamber and a biasing device urging the valve closure against the valve seat

VOL 1165 ISS 4 AG 23 1994 UMI

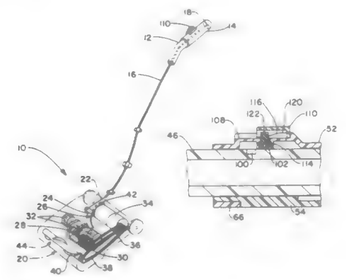
with a selected pre-loading force as to prevent flow of drilling liquid through the by-pass passage and toward the drill bit until the pressure differential across the valve closure is increased to a level sufficient to overcome the preloading force applied by the biasing device.

5,339,916

SELF SEEKING NEUTRALLING ARRANGEMENT FOR A POWER ASSISTED CLEANER

Jeffrey S. Louis, Akron, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Apr. 5, 1993, Ser. No. 54,420
Int. Cl.[5] A47L *9/00*; B62D *51/04*
U.S. Cl. 180—19.3 **8 Claims**



1. A neutralling positioning arrangement for a power assisted cleaner including:

a) an axially reciprocating hand grip;

b) a clutching arrangement for said power assisted cleaner;

c) a motor and motor drive for said power assisted cleaner;

d) said clutching arrangement providing clutching for said motor drive;

e) said reciprocating hand grip remotely attached to said clutching arrangement for actuation of said clutching arrangement;

f) a neutralling pin movably mounted on said hand grip for placing said hand grip in a neutral position; and

g) a spring mounted with said hand grip and disposed to continuously urge said pin inwardly of said hand grip towards said neutralling position.

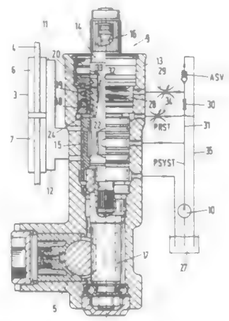
5,339,917

POWER STEERING DEVICE

Eugen Eberhart, Düsseldorf, Fed. Rep. of Germany, assignor to TRW Fahrwerksysteme GmbH & Co. KG, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 8, 1993, Ser. No. 1,846
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1992, 4201311
Int. Cl.[5] B62D *5/083*; F15B *13/043*
U.S. Cl. 180—143 **6 Claims**

1. Power steering device to supply hydraulic oil to a left chamber (6) of a servo cylinder (3) and a right chamber (7) of the servo cylinder (3) by means of a pump (10) via a rotary slide valve (9), whereby a reaction piston (18) that is stressed by a pressure spring (19) is arranged between an input shaft (14) and a control sleeve (15) of the rotary slide valve (9), and whereby the reaction piston that is movable in an axial direction and supported rotationally fixed on the input shaft (14) is connected with the control sleeve (15) via an elastic rotary slaving, characterized by a ratio pressure control valve (VDRV) (30) to reduce a system pressure (p1) a lower reaction pressure (p2) and a variable stop (29) to control a hydraulic retroactive moments in dependence of a speed are arranged in a line (31) between the pump (10) and a rear side of the reaction piston (18) that is stressed by the pressure spring (19), and that a variable stop (34) to control a return pressure (PR) as a



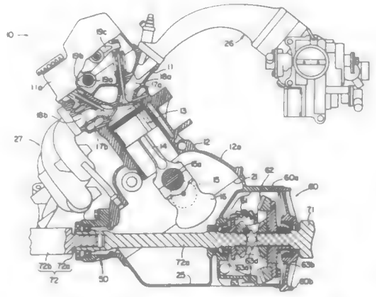
function of the speed is arranged in a line (35) between a front side of the reaction piston (18) and a tank (27).

5,339,918

DRIVE SYSTEM FOR AUTOMOBILE

Hiroshi Nakayama; Tomokazu Takeda; Toshiyuki Yomoto; Mitsuo Kitada; Shoji Ohta, and Masatoshi Chosa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 720,906, Jun. 25, 1991, abandoned, which is a division of Ser. No. 282,476, Dec. 9, 1988, Pat. No. 5,046,578. This application Dec. 3, 1992, Ser. No. 986,887
Claims priority, application Japan, Dec. 11, 1987, 62-313827; Dec. 11, 1987, 62-313828; Dec. 11, 1987, 62-313829; Dec. 11, 1987, 62-313830; Apr. 18, 1988, 63-95283
Int. Cl.[5] B60K *5/02*
U.S. Cl. 180—292 **3 Claims**



1. A transmission in an automobile having an engine including a crankshaft, comprising:

an input shaft disposed coaxially with said crankshaft of the engine for receiving a drive force from said engine;

a countershaft disposed adjacent to and generally vertically downwardly of and parallel to said input shaft;

a transmission mechanism operatively coupled to and disposed between said input shaft and said countershaft;

an output shaft disposed laterally of said countershaft and said input shaft, wherein said output shaft is vertically positioned at least at the same height as said countershaft; and

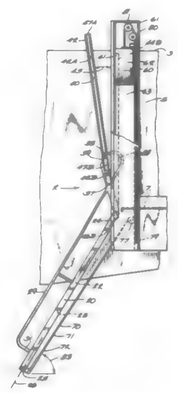
an idler shaft disposed laterally of said input shaft and said countershaft on a side of said input shaft and said countershaft opposite to said output shaft.

5,339,919

BOARDING LADDER ASSEMBLY HAVING A VARIABLE COUNTERWEIGHT LIFTING FORCE

James W. Boyd, New Berlin, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Feb. 5, 1993, Ser. No. 14,323
Int. Cl.[5] E06C *5/04*
U.S. Cl. 182—85 **12 Claims**



1. A boarding ladder assembly comprising:

a support;

a boarding ladder having a fixed weight and a longitudinal axis;

a guide means for mounting said ladder on said support for movement between raised and lowered positions, said guide means comprising first and second guide track means mounted in spaced diverging side-by-side orientation relative to each other and defining an acute angle therebetween, and first and second guide follower means located on said ladder and mounted on said first and second guide track means respectively for following said guide track means as said ladder is raised and lowered;

a counterweight having an actual weight greater than said fixed weight of said ladder; and

a linkage means for connecting said counterweight to said ladder to cause said counterweight to exert on said ladder an actual lifting force component that varies between a first magnitude when said ladder is in said raised position and a second magnitude when said ladder is in said lowered position, said first magnitude being sufficient to overcome said ladder fixed weight to maintain said ladder in said raised position, and said second magnitude being less than said ladder fixed weight to maintain said ladder in said lowered position.

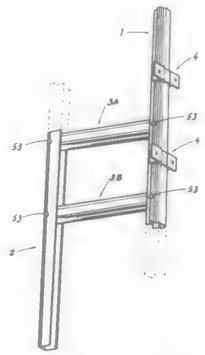
5,339,920

FOLDABLE FIRE-ESCAPE LADDER

Göran Eriksson, Karlstad, Sweden, assignor to Scandsam AB, Karlstad, Sweden

PCT No. PCT/EP89/01282, § 371 Date Apr. 24, 1991, § 102(e) Date Apr. 24, 1991, PCT Pub. No. WO90/05234, PCT Pub. Date May 17, 1990
PCT Filed Oct. 23, 1989, Ser. No. 678,354
Claims priority, application Sweden, Oct. 31, 1988, 88039540; Oct. 31, 1988, 88039557
Int. Cl.[5] E06C *9/12*
U.S. Cl. 182—96 **9 Claims**

1. In a metal fire escape ladder comprising at least an inner string and an outer string, which strings are parallel and interconnected by means of a plurality of parallel rungs having ends pivotally connected to the respective strings; said inner string being substantially channel shaped and having an intermediate portion co-joining two substantially parallel portions having interacting means for interaction with mounting means of said ladder; said outer string being channel shaped and having an intermediate portion co-joining two substantially parallel portions; each said rungs having a hollow, substantially rectangular cross-section, a varying cross-sectional wall-thickness and further having pivoting points, chamfered abutting end portions; wherein in a folded state at least a major part of the rungs are received within a space defined by said strings and wherein in an unfolded state each said abutting end portion interacts with an inner surface of said intermediate portion of each respective string in such manner that the rungs are kept substantially perpendicular to the strings, the improvement



wherein said pivoting-points of each rung are arranged in off-centered positions in relation to a plane parallel to pivoting axis of each, which plane extends centrally along each respective rung, and each rung having the pivoting-points disposed on each side of said plane, and wherein each sections of each rung near said abutting end portions having the pivoting-points therein generally has a greater cross-sectional wall-thickness than the a wall-thickness of an intermediate section between the end sections, which intermediate section is substantially centrally located along each rung, and wherein said interacting means, at the same level on each side of the inner string, has an outwardly protruding longitudinally extending portion with a U-shaped cross-section such that an inner groove is formed therein.

5,339,921

LADDER LEVELING DEVICE

Dana C. Faupel, R.D. 2, Box 102, Buffalo Mills, Pa. 15534

Filed Jul. 12, 1993, Ser. No. 91,956
Int. Cl.[5] E06C *7/00*
U.S. Cl. 182—111 **8 Claims**

1. In combination with a ladder or like device, a ladder leveling device positionable on a sloping surface and adapted to provide a resting surface for a ladder leg comprising in combination:

a horizontal support unit adapted to support a ladder or like device;

a vertical support unit attached to said horizontal support unit and extending outwardly therefrom;

an adjustment unit attached to said vertical support unit adapted to adjust the height of said adjustment unit;

a swivel anti-skid unit attached to said adjustment unit

said swivel anti-skid unit is comprised of a hinge attached to said adjustment unit, an anti-skid plate attached to said hinge, and an anti-skid mat attached to said anti-skid plate;

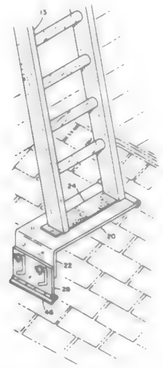
said horizontal support unit is comprised of a support ele-

VOL 1165 ISS 4 AG 23 1994 UMI

ment positioned approximately horizontally, an anti-skid mat integrally attached to said support element, and a friction element connected to the end portion of said support element;

said vertical support unit is comprised of a support plate integrally connected to said support element, said support plate having an adjustment hole therethrough;

said adjustment unit is comprised of an adjustment plate adjacent to said support plate, said adjustment plate having an adjustment groove therethrough positioned adjacent to said adjustment hole, and a clamping unit extending through said adjustment groove and said adjustment hole;



wherein said adjustment groove extends approximately vertical and has a locking groove extending downwardly and outwardly from an end portion of said adjustment groove, said locking groove extending through said adjustment plate;

whereby the load upon said horizontal support plate is transmitted to said clamping unit which is positioned against an end portion of said locking groove thereby securing said clamping unit thereto.

5,339,922

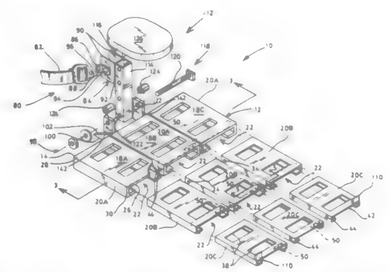
TREE STAND FOR HUNTERS

Robert C. Beechler, Midlesboro, Ky., assignor to Richard Benante, Cumberland Gap, Tenn.

Filed Nov. 15, 1993, Ser. No. 152,187

Int. Cl.[5] A01M *31/02*

U.S. Cl. 182—188 **9 Claims**



1. A tree stand for supporting a user at a selected elevation above the ground in a tree, said tree stand comprising:

a platform, said platform including a plurality of extendable panels, said plurality of extendable panels being positioned one next to another and secured one to another in a pivoting fashion;

a seat assembly pivotally connected to said platform; and

a securement assembly carried by said platform and said seat assembly for securing said tree stand to a tree.

5,339,923

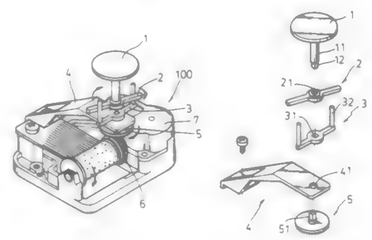
ROTATING MECHANISM FOR A CRYSTAL BALL

Joseph Chen, P.O. Box 82-144, Taipei, Taiwan

Filed Mar. 29, 1993, Ser. No. 38,260

Int. Cl.[5] F03G *1/00*; G09F *19/08*

U.S. Cl. 185—39 **1 Claim**



1. A rotating mechanism for a crystal ball comprising:

a spring means;

a vertically disposed driving gear connected with said spring means;

a horizontally disposed driving gear engaged with said vertically disposed driving gear and having a rectangular protuberance of said driven gear;

a supporting frame mounted on said driven gear and having a hole for receiving the rectangular protuberance of said driven gear;

a turning member arranged on said supporting frame and formed with a rectangular hole adapted to receive the rectangular protuberance of said driven gear and two arms extending upwardly from two ends thereof;

a rod installed on said turning member and having a rectangular hole; and

a disc having a downwardly depending portion with a rectangular end adapted to be received in the rectangular hole of said rod.

5,339,924

LUBRICATING MECHANISM INCLUDING A DOSING DEVICE FOR LUBRICANT, ESPECIALLY FOR AN AIRCRAFT

Wilhelm Martens, Delmenhorst, Fed. Rep. of Germany, assignor to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

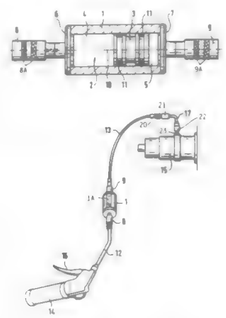
Filed Apr. 7, 1993, Ser. No. 44,220

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1992, 9204930

Int. Cl.[5] F16N *11/10*

U.S. Cl. 184—40 **12 Claims**

1. A dosing device for a lubricating mechanism for discharging a measured volume of lubricant into a component to be lubricated, comprising a housing for holding lubricant, a piston slidably mounted for an axial movement in said housing and dividing said housing into first and second chambers, and a seal closing off said first and second chambers from each other, each chamber having a variable volume that increases in one chamber when the volume in the other chamber decreases and vice versa depending on the movement of said piston in said housing, wherein pressing lubricant into one chamber empties lubricant out of the other chamber and vice versa, a first quick coupling connector secured to one end of said housing for communicating with said first chamber, a second quick coupling connector secured to the other end of said housing for communicating with said second chamber, and wherein said first and second quick coupling connectors are of the same construction so that each is adapted to be connected to a supply source of lubricant and to said component to be lubricated



and vice versa, so that one of said chambers is being filled with a determined volume of lubricant when said one chamber is connected to a source of lubricant under pressure while the other chamber is being emptied into said component to be lubricated and vice versa, whereby each quick coupling connector functions sequentially as inlet and outlet for lubricant.

5,339,925

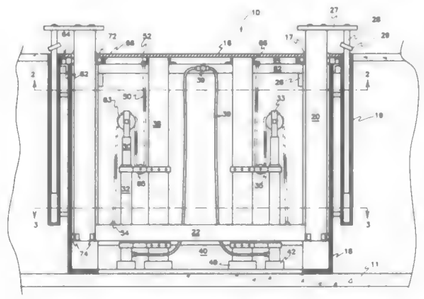
HYDRAULIC CHAIN LIFT

Raymond D. Price, 367 Dade Dr., Nashville, Tenn. 37211

Filed Nov. 23, 1993, Ser. No. 155,777

Int. Cl.[5] B60S *13/00*

U.S. Cl. 187—8.41 **14 Claims**



1. A lifting apparatus for raising an object, comprising:

an upper section;

at least one piston for lifting the object above said upper section;

at least one lifting cylinder support mount connected to said upper section;

at least one lifting cylinder for moving at least one said piston mounted on said lifting cylinder support mount;

pulley means for transferring force from said lifting cylinder to each said piston, said pulley means including

a chain for connecting said upper section to a lower end of said piston;

a first pulley attached to an upper end of said lifting cylinder for coupling said chain to said lifting cylinder;

a second pulley attached to said lifting cylinder support mount and located below said first pulley;

wherein said chain follows along a path from said upper section to said second pulley, to said first pulley, to said lower end of said piston;

wherein said piston is lifted when said lifting cylinder is raised.

5,339,926

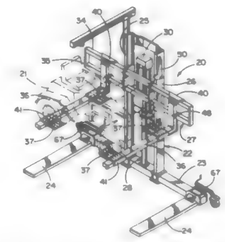
VEHICLE SERVICE LIFT

James E. McCanse; Richard L. McCanse, both of Oregon, and Timothy K. Fulmer, Dixon, all of Ill., assignors to McCanse Engineering, Incorporated, Oregon, Ill.

Filed Jun. 1, 1993, Ser. No. 69,406

Int. Cl.[5] B60S *13/00*

U.S. Cl. 187—8.47 **20 Claims**



1. A service lift for a wheeled vehicle, said lift comprising an upright supporting stand, a carriage extending generally longitudinally of the vehicle and mounted on said stand for generally vertical movement, selectively operable power-actuating means for moving said carriage upwardly and downwardly on said stand, a pair of generally horizontal lift forks supported by said carriage and spaced from one another longitudinally of the vehicle, a pair of wheel-supporting cups supported by each of said forks and spaced from one another transversely of the vehicle, said cups being selectively adjustable along said forks to accommodate vehicles with different transverse wheelbases, each of said cups including a tubular mounting bracket telescoped slidably onto the respective fork and further including a wheel-supporting plate joined to said bracket, each wheel-supporting plate extending from the respective bracket and fork in one direction longitudinally of the vehicle, and in one direction only, whereby the space in the opposite direction from the bracket and fork is open and unencumbered so as to provide free access to the underside of the vehicle, and said forks being selectively adjustable along said carriage to enable said cups to accommodate vehicles with different longitudinal wheelbases.

5,339,927

AUXILIARY SUPPORT MECHANISM FOR AN AUTOMOTIVE HOIST

Alfred Truax, 38530 Orangelawn, Livonia, Mich. 48150

Filed Oct. 26, 1992, Ser. No. 966,409

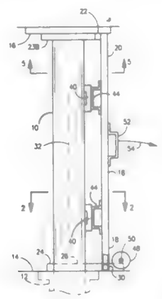
Int. Cl.[5] B60S *13/00*

U.S. Cl. 187—8.49 **8 Claims**

4. An auxiliary support mechanism for a piston actuated automotive hoist, wherein the piston has a vertical axis and a cylindrical side surface; said support mechanism comprising a portable support post having a longitudinal axis, a lower end, and an upper end; an upper magnet carried by said post near its upper end; a lower magnet carried by said post near its lower end; each magnet being located equidistant from the post axis, whereby the support mechanism can be magnetically releasibly connected to the piston side surface so that the post axis is vertical and parallel to the piston axis; and

VOL 1165 ISS 4 AG 23 1994 UMI

two spaced members extending from said post on opposite sides of the piston side surface, such that the magnet poles



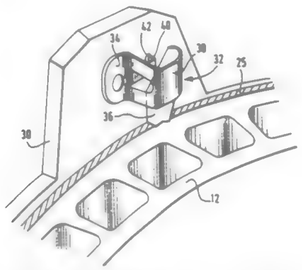
are substantially located in a vertical plane passing through the piston axis.

5,339,928

FRICTION MEMBER PROVIDED WITH A WEAR INDICATOR DEVICE AND DISK-BRAKE FITTED WITH SUCH MEMBER

Gérard L. Deit, Courtry, and Jean L. Gerard, Bagnolet, both of France, assignors to Bendix Europe Services Techniques, Drancy, France

Filed Sep. 21, 1992, Ser. No. 947,875
Claims priority, application France, Sep. 30, 1991, 91 11983
Int. Cl.[5] F16D *65/092*
U.S. Cl. 188—1.11 **5 Claims**



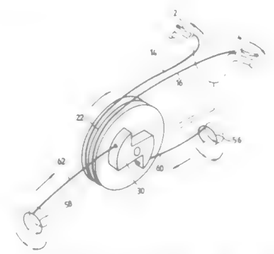
1. A friction member comprising a support plate and a friction element arranged on one side of the support plate, the friction element adapted to engage one face of a rotating member, and at least one wear indicator associated with the support plate so as to generate an audible signal when the friction element has, on account of wear, a predetermined thickness, the wear indicator formed by a spring comprising an intermediate part fixing the wear indicator to the support plate on a side of the plate which bears the friction element, a first end part for emission of the audible signal and a second end part locking nonrotatably the wear indicator with respect to the support plate, the first end part extending, by distances greater than the thickness of the first end part, in a plane substantially perpendicular to a plane of the support plate and to a plane of one face of the friction element which does not come to engage the rotating member during braking and bearing simultaneously against a face of the support plate which bears the friction element and against the one face of the friction element which does not come to engage the rotating member during braking, the first end part bearing against the one face over a length of the first part corresponding to the predetermined thickness, the rotating member comprising a disc, and the wear indicator cooperating with a cylindrical surface forming the axial periphery of the disk in order to generate the audible signal.

5,339,929

BRAKE ASSEMBLY FOR A BICYCLE

Tsoung Ren Chern, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jul. 2, 1993, Ser. No. 86,650
Int. Cl.[5] B62L *1/06, 3/00*
U.S. Cl. 188—24.16 **4 Claims**



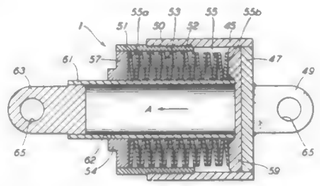
1. A brake assembly for simultaneously braking two wheels of a bicycle comprising a pair of braking mechanisms for securing to said bicycle for braking said wheels respectively, a first disc rotatably for securing to said bicycle, means for rotating said first disc, and means coupling said brake mechanisms to said first disc, said coupling means comprising a second disc secured to said first disc and including an outer peripheral portion, and a pair of strings each including a first end coupled to said brake mechanisms respectively and a second end secured to said outer peripheral portion of said second disc, said strings being wound on said second disc when said first disc is rotated, whereby, said brake mechanism are actuated to brake said wheels simultaneously when said first disc is rotated.

5,339,930

CONSTANT TENSION DEVICE FOR RAILWAY CAR HANDBRAKE

Gary M. Sich, Irwin, Pa., and Wajih Kanjo, Lockport, Ill., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed May 26, 1992, Ser. No. 888,090
Int. Cl.[5] F16D *65/18*
U.S. Cl. 188—210 **9 Claims**



1. A handbrake system for railway car brake apparatus in which at least one member of said brake apparatus is mounted on the truck of said railway car comprising:

(a) a handbrake lever operably connected to said brake apparatus for effecting a brake application on said railway car;

(b) actuating means mounted on the body of said railway car for applying a handbrake force to said handbrake lever to effect said handbrake application; and

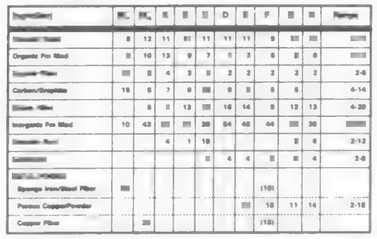
(c) tensioning means between said handbrake lever and said actuating means via which said handbrake force is transmitted to said handbrake lever including at least one disc spring for maintaining said handbrake force substantially constant during shifting of said railway car body relative to the truck thereof, said at least one disc spring being characterized by a non-linear load versus deflection curve predicted on a predetermined height to thickness ratio of said at least one disk spring, said non-linear load versus deflection curve having a substantially constant load region in which said substantially constant handbrake force is established through a range of deflection of said at least one disc spring between 65%–85%.

5,339,931

POROUS COPPER POWDER MODIFIED FRICTION MATERIAL

Michael G. Jacko, Southfield; Peter H. Tsang, West Bloomfield, and Seong K. Rhee, Northville, all of Mich., assignors to Allied-Signal Inc., Morristown, N.J.

Filed May 7, 1993, Ser. No. 57,932
Int. Cl.[5] F16D *69/00*
U.S. Cl. 188—251 M **7 Claims**



Ingredient	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Range
Phenolic Resin	8	12	11	11	11	11	9	11	11		
Organic Fric Mod	11	10	13	9	7	11	3	6	11	6	
Aramid Fiber		11	4	3	11	2	2	2	2	2	2-6
Carbon/Graphite	15	9	7	0		6	11	9	6		4-14
Glass Fiber		9	11	13		16	14	9	13	13	4-20
Inorganic Fric Mod	10	43			39	54	46	44		39	
Abrasive Particle			4	1	10				11	6	2-12
Lubricant					11	4	4	11	11	4	2-8
Sponge Iron/Steel Fiber								(10)			
Porous Copper/Powder								10	11	14	2-18
Copper Fiber		20						(10)			

1. In a brake system including an aluminum-metal matrix composite rotor, an actuation member, and friction pads wherein the actuation member in response to an operational input moves the friction pads into engagement with the aluminum-metal matrix composite rotor to effect a brake application, the improvement in the formulation of said friction pads to prevent degradation of the aluminum-metal matrix composite rotor while providing an average coefficient of friction of from 0.38–0.42 when an operational temperature of −40° to 450° C. is generated during a brake application, said composition comprising:

8–15 percent by weight of phenolic resin for said friction pads;

5–12 percent by weight of an organic friction modifier selected from a group consisting of rubber scrap, cellulose, latex, cork, and cashew particles to provide friction stability in the friction pads through the development of a glaze on the surface of the aluminum-metal matrix composite rotor during a brake application;

1–5 percent by weight of aramid fiber to aid in the initial processing the composition and to provide resistance to wear for the friction pads;

4–14 percent by weight of a carbonaceous material selected from a group consisting of natural graphite, synthetic graphite, carbon and coke;

4–20 percent by weight of glass fiber to provide strength for the friction pads;

36–60 percent by weight of inorganic friction modifiers selected from a group consisting of barytes, whiting, talc, rottenstone, verrniculite and suzorite mica to provide strength and friction stability for the friction pads;

2–12 percent by weight of an abrasive particle selected from a group consisting of silica, magnesia, zircon, zirconia, mullite, alumina, and iron oxides for developing a desired level for the coefficient of friction and a degree of friction stability necessary for the friction pads;

2–8 percent by weight of a lubricant material selected from a group consisting of molybdenum sulfide, calcium fluoride, antimony trisulfide, and cryolite; and

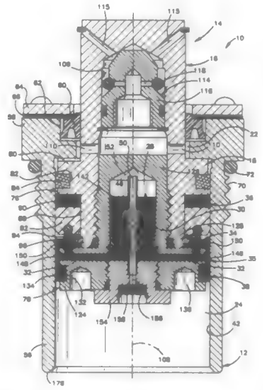
2–18 percent by weight of porous copper powder, said porous copper powder assisting in the formation of the glaze to reduce wear between the aluminum rotor and friction pads during a brake application.

5,339,932

APPARATUS AND METHOD TO CUSHION MOVEMENT OF A MEMBER

Harold L. Lanterman, Stow, Ohio, assignor to Teledyne Hyson, Cleveland, Ohio

Filed Aug. 2, 1993, Ser. No. 100,766
Int. Cl.[5] F16F *9/02*
U.S. Cl. 188—316 **39 Claims**



1. An apparatus to cushion movement of a member in a machine, said apparatus comprising a cylinder, a piston disposed in said cylinder and dividing said cylinder into first and second variable volume chambers, a first annular seal connected with said piston and disposed between said piston and cylinder, a second annular seal connected with said piston and disposed between said piston and cylinder, said piston, cylinder and first and second seals cooperating to at least partially define a space between said first and second seals, surface means disposed in said piston for at least partially defining a piston chamber, means for at least partially defining a passage extending from said piston chamber to the space between said first and second seals, a first body of lubricating liquid being disposed in said piston chamber, and a second body of lubricating liquid being disposed in the space between said first and second seals, said second body of lubricating liquid being disposed in engagement with said cylinder and being movable relative to said cylinder with said piston to apply lubricating liquid to said cylinder.

VOL 1165 ISS 4 AG 23 1994 UMI

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LENGTH-ADJUSTABLE CRASH DAMPER FOR VEHICLES

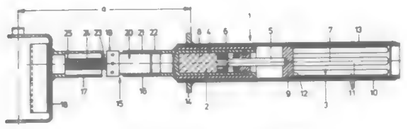
Hans J. Bauer, Altdorf; Wolfgang Würl, Heilsbronn; Ludwig Haas, Altdorf, and Otmar Hein, Winkelhaid, all of Fed. Rep. of Germany, assignors to Suspa Compart AG, Altdorf, Fed. Rep. of Germany

Filed Jan. 22, 1993, Ser. No. 8,570

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1992, 4202046

Int. Cl.[5] F16F *9/32*; B60R *19/26*

U.S. Cl. 188—371 15 Claims



1. A crash damper for vehicles, comprising

at least one damper of an impact damper (2) and a deformation damper (3) for taking up crash energy;

a first securing element (14) connected with said at least one damper and securable to a vehicle;

a second securing element (18) connected with said at least one damper and securable to a bumper of said vehicle,

wherein an adjustment device 15 for adjusting a distance (a) between said first and second securing element (14, 18) is secured between said at least one damper (2, 3) and one of said first and second securing element (18),

wherein said adjustment device (15) comprises an adjustment bolt (19, 19', 19'', 19''') having a central longitudinal axis (7), said bolt being rotatable between a first position and a second position on one of said first securing element and second securing element around said central longitudinal axis while said first securing element and said second securing element remain stationary,

wherein when in said first position said bolt is fixed in relation to said first securing element and said second securing element in the direction of said central longitudinal axis, and

when in said second position said bolt is released in relation to one of said first securing element and said second securing element in the direction of said central longitudinal axis to permit displacement of said bolt in relation to said one of said first securing element and said second securing element in the direction of said central longitudinal axis between a plurality of axial positions before being rotated back to said first position.

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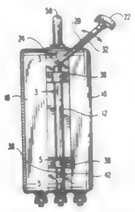
LUGGAGE STEERING DEVICE

Joseph Liang, P.O. Box 1060, Alpine, N.J. 07620

Filed Jan. 25, 1993, Ser. No. 8,677

Int. Cl.[5] A45C *5/14*, *13/26*

U.S. Cl. 190—18 A 13 Claims



1. An apparatus for steering an article of luggage as the article is pulled on and along an underlying support surface in a desired direction, the apparatus comprising:

a first elongated tube having a longitudinal axis and fixedly supported on a front side of the article facing the desired direction of travel, said first tube being oriented such that said longitudinal axis is in substantially perpendicular orientation to the support surface;

a second elongated tube disposed coaxially within and extending along said first tube for axial rotation of said second tube relative to the first tube;

a third elongated tube longitudinally movable in a first direction between a first position in which the third tube is coaxially disposed substantially within said second tube and a second position in which the third tube is disposed outside of said second tube, said third tube having a distal end disposed, in said second position of the third tube, remote from the article front side;

an anchor member disposed within said second tube and slidable longitudinally along said second tube, said anchor member being pivotally connected to said third tube;

first means on at least one of said anchor member and said second tube for retaining said anchor member within said second tube when said third tube is moved from said first to said second position; and

second means on at least one of said anchor member and said second tube for maintaining axial registration between said anchor means and said second tube when said third tube is in said second position for concomitant rotative movement of said anchor member and said second tube relative to said first tube and axially about said longitudinal axis;

said third tube, when in said second position, being pivotable relative to said anchor member via said pivotal connection, and being concurrently rotatable with said anchor member axially about said longitudinal axis and relative to said second tube, so that as said distal end of said third tube is pulled in a selectively-variable desired direction by a user, said third tube imparts a motive force to said front side of the article in the desired direction so as to directedly steer the article in the desired direction.

5,339,935

CONTROL SYSTEM FOR TORQUE CONVERTER

Kozo Ishii; Kazuo Takemoto; Takuji Fujiwara; Tatsutoshi Mizobe, all of Hiroshima; Fumiaki Baba, Higashi-Hiroshima; Shigeru Nagayama; Osamu Watanabe, both of Hiroshima, and Koichiro Takeuchi, Hatsuaichi, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 685,812, Apr. 16, 1991, abandoned. This application Aug. 13, 1992, Ser. No. 928,165

Claims priority, application Japan, Apr. 18, 1990, 2-103995; Apr. 19, 1990, 2-104216; Sep. 28, 1990, 2-261396

Int. Cl.[5] F16H *45/02*

U.S. Cl. 192—3.3 29 Claims

1. A control system for a torque converter comprising:

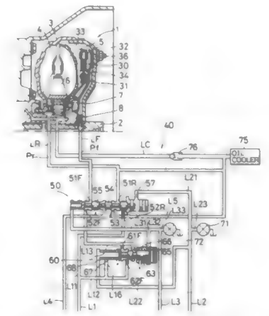
lock-up clutch means provided in said torque converter for connecting input and output members of the torque converter directly,

means for generating a regulated line pressure,

shift valve means having first and second spools disposed in series in a sleeve for shifting introduction of said regulated line pressure to provide engaging and releasing pressures acting on the lock-up clutch means in accordance with positions of the first and second spools, said first spool being subjected to a first hydraulic pressure at one end thereof so that the engaging pressure is regulated according to introduction of said first hydraulic pressure, said second spool being subjected to a second hydraulic pressure at one end thereof opposite to said one end of the first spool so that the releasing pressure is regulated according to introduction of said second hydraulic pressure, said first and second spools being subjected to a third hydraulic pressure therebetween,

first control means for controlling said first hydraulic pressure, and

adjusting valve means for controlling said releasing pressure of the lock-up clutch means, said shift valve means providing the first and second spools with first, second and third positions corresponding to a converter condition, lock-up



condition and slip condition, respectively, said adjusting valve means controlling the releasing pressure so that it gradually increases as the second hydraulic pressure decreases during a transition from the lock-up condition to the converter condition, in which the second hydraulic pressure is interrupted and the releasing pressure reaches a value approximately equal to said regulated line pressure.

5,339,936

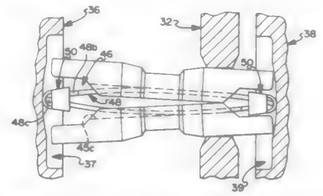
SYNCHRONIZER PRE-ENERGIZER SPRING SYSTEM

Ernst H. Lauer, Kalamazoo, and James L. Martin, Galesburg, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 24, 1993, Ser. No. 65,789

Int. Cl.[5] F16D *23/08*

U.S. Cl. 192—53 E 20 Claims



1. A double acting synchronizer clutch assembly including two axially movable friction rings rigidly connected together about a rotational axis in axially spaced relation on opposite sides of an axially movable, radially extending flange; a plurality of circumferentially spaced apart openings extending axially through the flange; a split pin assembly including a pair of members and a spring assembly extending axially through each opening and between the friction rings for effecting axial movement of the friction rings in response to initial axial movement of the flange from a neutral position, each pair of members defining a generally cylindrical outer surface with a radially outwardly open annular detent groove for receiving a peripheral surface of one of the openings, the members of each pair of members each having first and second ends respectively disposed to abut one of the friction rings; each spring assembly including at least first and second opposed leaf springs each having a bowed length in the axial direction of the opening and a width corresponding to a transverse direction, the leaf springs sandwiched between mutually facing surfaces of each pair of members, the leaf springs each having first and second end portions with the first and second end portions of the first and second leaf springs respectively in contact with each other and with the second and first end portions of the first and second leaf springs respectively in contact with each other and with each first end portion axially overlapping the associated second end portion, characterized by:

retainer means disposed at the leaf spring first and second end portions of each spring assembly, each retainer means allowing the leaf spring ends in contact with each other to move axially relative to each other and for including means reacting roll forces tending to roll the springs relative to each other.

5,339,937

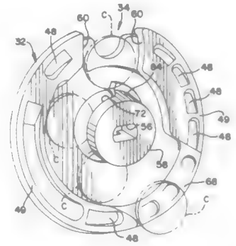
COIN MECHANISM FOR BULK VENDING MACHINE

Richard K. Bolen, Champaign, Ill., assignor to The Northwestern Corporation, Morris, Ill.

Filed Aug. 23, 1991, Ser. No. 749,437

Int. Cl.[5] G07F *11/44*

U.S. Cl. 194—292 20 Claims



1. A coin wheel for use in a vending machine mechanism comprising:

a raised cylindrical portion having a top surface and a side surface, said top surface having formed therein a first opening to allow a handle stem to pass through the coin wheel, and a second opening formed in said side surface with a portion of said raised cylindrical portion overlaying the second opening to allow a disk with a smaller diameter than a required coin to fall through the mechanism;

a raised perimeter area having a disk exit area formed therein.

5,339,938

VARIABLE-SPEED CONVEYOR ELEMENT, PARTICULARLY FOR ACCELERATED TRANSPORTERS

Pierre Patin, 15, rue Buffon, 75005 Paris, France

Filed Jun. 21, 1993, Ser. No. 79,280

Claims priority, application France, Jun. 24, 1992, 92 07709

Int. Cl.[5] B65G *23/00*

U.S. Cl. 198—334 5 Claims

1. A variable-length conveyor element applicable to a handrail for a device for transporting people at variable speed, said conveyor element comprising:

(a) a flexible link stretched between two attachment points and passing around two guide pulleys spaced apart from each other which, together with the two attachment points, form a quadrilateral that deforms as a function of a speed of conveyance;

(b) said link being equipped with a series of adjacent blocks, each comprising a lower face for fixing the block onto said link, an upper face on which hands can rest, and two

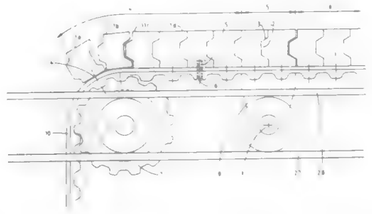
VOL 1165 ISS 4 AG 23 1994 UMI

frontal faces, respectively front and rear, perpendicular to a direction of said link;

(c) said frontal faces of a block in a rectilinear section of said link stretched between said two pulleys being in contact over their entire height with corresponding frontal faces of adjacent blocks;

(d) said blocks in convex sections of said link turning on the pulleys being adapted to separate in angular fashion;

(e) said two frontal faces, respectively front and rear, of each block having angular profiles deduced one from the other



by translation parallel to said direction of said link, each front face of a block comprising at least one projection, and each rear face comprising at least one recess having a profile complementary to a profile of said projection, such that in the rectilinear section of said link between said two pulleys, each projection on a front face of a block fits into a complementary recess in a facing rear face of an adjacent block so as to form a mortise and tenon joint that is able to resist shearing forces applied on said link, said projections separating from said recesses in convex sections of said link.

5,339,939

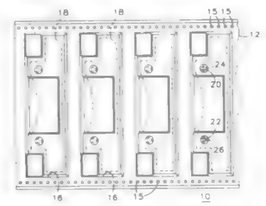
POCKET TAPE FEEDER SYSTEM

Jeffrey R. Gueble, Seattle, and Mark S. Soderberg, Issaquah, both of Wash., assignors to CNA Manufacturing Systems, Inc., Redmond, Wash.

Filed Aug. 31, 1992, Ser. No. 938,875

Int. Cl.[5] B65G *15/64*

U.S. Cl. 198—345.2 **16 Claims**



1. Apparatus for automated feeding of components wherein the components are supplied in a continuous strip of component pocket tape, wherein said component pocket tape has at least one aperture therein, the apparatus comprising:

means for advancing the continuous strip of component pocket tape to position an individual pocket of the component pocket tape in the vicinity of a component pickup area; and

registration means adapted to align a component within a pocket to a predetermined position at said component pickup area, where said registration means comprises positioning means operative to pass through the component tape aperture to engage the component for aligning the component at the known position.

5,339,940

EQUIPMENT ALIGNMENT DOCKING SYSTEM

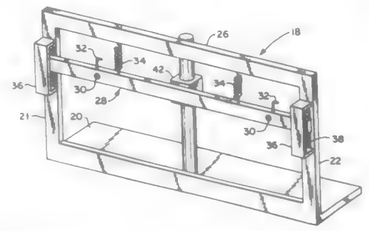
Alan Simms, Guildford, Great Britain, assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Feb. 12, 1993, Ser. No. 17,097

Claims priority, application United Kingdom, Feb. 14, 1992, 9203211.9

Int. Cl.[5] B65G *47/00*

U.S. Cl. 198—345.3 **16 Claims**



1. Docking system for docking two pieces of equipment, comprising:

a first docking bar fitted to a first piece of equipment;

a second docking bar fitted to a second piece of equipment and having a degree of freedom to move along a first axis in a first plane;

mating means on said first and second docking bars for mating the first docking bar to the second docking bar;

means for allowing movement of the first piece of equipment in the first axis when the first and second docking bars are mated, and for restraining movement of the second docking bar in a second axis different from said first axis; and

support means for supporting the second docking bar;

wherein the support means comprises:

two spaced-apart upright elements engaging two ends of the second docking bar,

the two spaced-apart upright elements including linear ball bearings allowing movement of the ends of the second docking bar in the first axis,

a third upright element disposed between the two spaced-apart upright elements and engaging a central portion of the second docking bar,

means joining free ends of the two spaced-apart upright elements and a free end of the third upright element, and

means for resiliently urging the second docking bar to an initial position towards the means for joining the free ends of the upright elements.

5,339,941

PROCESS AND DEVICE FOR ALIGNING AND CO-PROCESSING FLACCID WORKPIECE LAYERS

Philipp Moll, Königsberger Strasse 74, 5100 Aachen, Fed. Rep. of Germany

PCT No. PCT/EP90/01588, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO91/03958, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 18, 1990, Ser. No. 838,786

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1989, 3931662

Int. Cl.[5] B65G *47/00*

U.S. Cl. 198—345.3 **14 Claims**

1. A process for aligning first and second flaccid workpiece layers, the process comprising the steps of:

transporting the first workpiece in a substantially flat hanging position from a first transport means;

transporting the second workpiece in a substantially flat hanging position from a second transport means;

detaching one of said first and second workpieces from said respective transporting means;

aligning said detached workpiece with the other workpiece in one of substantially horizontal and vertical directions;

reattaching said detached workpiece to said respective transport means; and

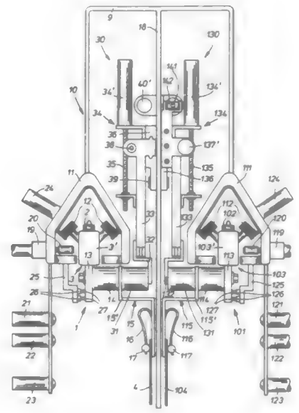
transporting said aligned first and second workpieces together in a substantially aligned manner for further processing.

5. A device for aligning first and second flaccid workpiece layers, the device comprising:

a first conveying means for transporting the first workpiece along a first path, said first conveying means having carriage means for connecting the first workpiece to said first conveying means, said carriage means having a carriage magnet;

first clamp means for holding the first workpiece in a substantially flat hanging portion, said clamp means having a magnetizable support means for attaching to said carriage magnet;

a second conveying means for transporting the second workpiece along a second path, said second path having a portion adjacent said first path, said second conveying means having carriage means for connecting the second workpiece to said second conveying means, said carriage means having a carriage magnet;



second clamp means for holding the second workpiece in a substantially flat hanging position, said clamp means having a magnetizable support means for attaching to said carriage magnet;

a scanning and aligning station positioned in said first and second path at said portion where said first path is adjacent said second path, said scanning and aligning station having scanning means for determining the relative position of the first and second workpieces, said scanning and aligning station also having an alignment device movably connected to said scanning and alignment station, said aligning device having an aligning magnet means for magneticly transferring one of said first and second clamp means from said carriage means to said aligning device, said aligning magnet attaching to said magnetizable support, said aligning magnetic means having a magnetic field intensity alternatingly switchable with a field intensity of said carriage magnet to transfer said one of said first and second clamp means to said aligning device, said aligning device having adjusting means for adjusting a position of one of the first and second workpieces relative to the other of the first and second workpieces.

5,339,942

APPARATUS FOR INTRODUCING ARTICLES INTO A STORAGE DEVICE

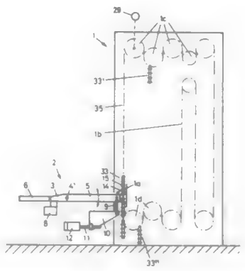
Markus Gasser, Gächlingen, Switzerland, and Hauke Schneider, Lottstetten, Fed. Rep. of Germany, assignors to Sig Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Continuation of Ser. No. 950,319, Sep. 24, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 167,124

Claims priority, application Switzerland, Sep. 24, 1991, 2836/91-0

Int. Cl.[5] B65G *1/00*

U.S. Cl. 198—347.1 **14 Claims**



1. An apparatus for storing articles, comprising

(a) a storage device including

(1) an inlet through which articles are received for storage;

(2) a plurality of article-supporting elements each having an article-supporting surface;

(3) first support means for holding the article-supporting elements in a movable series and for sequentially presenting the article-supporting elements at said inlet to receive articles; and

(4) means for driving said first support means for moving said series;

(b) an article-introducing device situated adjacent said storage device for transferring articles to said article-supporting elements of said storage device; said article-introducing device including

(1) a feeder conveyor for advancing articles toward the storage device in a direction of advance; said feeder conveyor having a discharge end through which the articles pass upon their transfer to the storage device;

(2) second support means for movably supporting said feeder conveyor such that said discharge end is movable in a direction transverse to said direction of advance and generally parallel to a direction of motion of said article-supporting elements at said inlet of the storage device;

(3) means for driving said feeder conveyor in said direction of advance; and

(4) means for driving said second support means for moving said discharge end; and

(c) means for synchronizing the motion of said discharge end of said feeder conveyor with the motion of a selected one of said article-supporting elements for transferring articles from said feeder conveyor to said selected article-supporting element during simultaneous motions of said article-supporting elements, of said feeder conveyor in said direction of advance, and of said discharge end in a direction transverse to said direction of advance; said means for synchronizing comprising

(1) sensor means for generating signals for determining a relative position between said discharge end and an article-supporting element; and

(2) a control unit for controlling said means for driving said feeder conveyor and said means for driving said

VOL 1165 ISS 4 AUG 23 1994 UMI

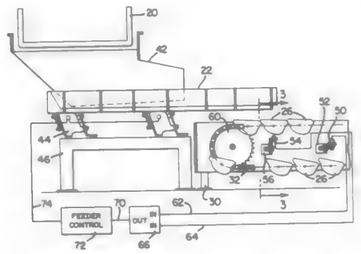
second support means as a function of said signals; said means for driving said feed conveyor, said means for driving said second support means, and said sensor means being connected to said control unit.

5,339,943

BUCKET LIFT DISTRIBUTION SYSTEM

Randy K. Baird, Bolivar, and Sydney Hilton, Indiana, both of Pa., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 22, 1993, Ser. No. 139,656
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—365 5 Claims



1. In a bulk material handling conveyor system having a set of buckets transportably carried in a continuous manner from an infeed zone where said buckets are filled with product by means of a metering vibratory feeder having a product outlet to an unloading zone and back to the infeed zone, said buckets capable of being selectively at least partially emptied in said unloading zone; the improvement comprising:

a proximity trigger for sensing the presence of a bucket;

a processing unit electrically connected to said proximity trigger for receiving and storing the output of said proximity trigger;

a fill determining sensor mounted proximate to said buckets between said unloading zone and said metering vibratory feeder, said fill determining sensor electrically connected to said processing unit whereby said processor receives and stores the fill status of said buckets prior to said buckets traveling in said conveyor system to said metering vibratory conveyor;

a feeder control electrically connected to said processor for cycling said metering vibratory feeder on and off responsive to signals from said processor, said processor signaling said feeder control to cycle on when a bucket of said set of buckets having been sensed by said fill determining sensor to be less than full is proximate the outlet of said metering vibratory feeder.

5,339,944

DEVICE FOR DISPLACING ARTICLES FROM A MOVING TRANSPORT PATH

Rüdiger Ostholt, Wetter, and Klaus Aichholz, Bissersheim, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft A Corporation of Germany, Dusseldorf, Fed. Rep. of Germany

Filed May 18, 1992, Ser. No. 883,980
Claims priority, application Fed. Rep. of Germany, May 16, 1991, 4116323
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—430 11 Claims

1. A device operable for displacing an article from a moving transport path along which the article is conveyed in a transport direction to a discharge path, comprising:

an elongated push-off ledge oriented in predetermined relation to the transport path and having opposed ends;

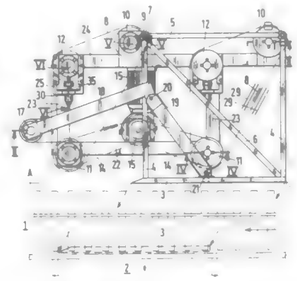
a plurality of deflection rollers disposed in predetermined substantially fixed relation to the transport path;

means operable for rotatably driving at least one of said deflection rollers;

endless pull means trained about said plural deflection rollers for rotation about said rollers;

means connecting said opposed ends of the push-off ledge to said endless pull means for causing said ledge, as said pull means rotates about said rollers, to be advanced transversely across the transport path at an angle oblique to the transport direction for displacing an article from the transport path onto the discharge path, and to be subsequentially retracted substantially perpendicular to the transport direction, all while maintaining said predetermined orientation of the push-off ledge;

a machine frame including a flanged girder, a longitudinal girder and two transverse girders connecting the flanged



and longitudinal girders, each of said plural deflection rollers including a roller shaft supported by said machine frame, said plurality of deflection rollers including a guide roller; and

tensioning means connecting said transverse girder and said guide roller for bias-tensioning said endless pull means about said plurality of deflection rollers, said tensioning means including a tube, a threaded rod, a coil-spring disposed in said tube abuttingly captured between said threaded rod and a surface of said tube, a bearing bushing for the roller shaft of said guide roller, and a guide plate for said bearing bushing and engageable with said threaded rod for outwardly biasing the roller shaft of said guide roller and thereby tensioning said endless pull means.

5,339,945

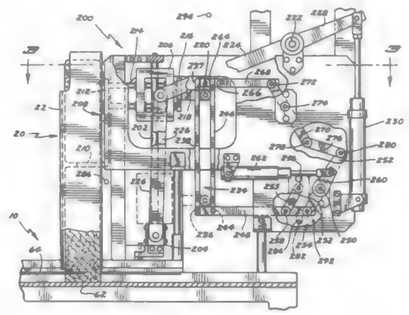
INDEXING DEVICE FOR A GRAVITY LOG-FEEDING SYSTEM

Douglas J. Brash, Ramsey; Daniel S. Berkholz, Plymouth, both of Minn.; R. Ken Ericson, and Anthony J. Ciaramitaro, both of Gloucester, Mass., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Dec. 24, 1992, Ser. No. 996,442
Int. Cl.[5] B26D *7/06*
U.S. Cl. 198—468.8 21 Claims

1. Device for indexing an indexed log in a magazine of a feeding system from a prior log and a succeeding log, with the magazine slideably receiving the logs stacked in a feeding direction and including an elongated slot extending in the feeding direction, comprising, in combination: a fixture; means for moving the fixture in a direction parallel to the feeding direction between a first position and a second position; and means for abutting with a back of the prior log and in front of the indexed log in the magazine for abutting with and separating the indexed log from the prior log in the magazine in the first position and for abutting with a back of the indexed log and in front of the succeeding log in the magazine for separating the indexed log from the succeeding log in the magazine in

the second position comprising a leg of a size insertable through the slot and into the magazine for placement between



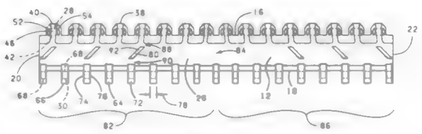
the logs in the stacked arrangement, with the fixture including the leg.

5,339,946

CONVEYOR BELT HAVING LINK ASSEMBLIES WITH LEADING AND TRAILING SHAFT PROJECTIONS

William G. Faulkner, and Marie-Francoise B. Faulkner, both of 6701 Newman Dr., Oklahoma City, Okla. 73162, assignors to William G. Faulkner and Marie-Francoise Bigot Faulkner, Oklahoma City, Okla.

Filed Nov. 16, 1992, Ser. No. 976,613
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—494 16 Claims



1. A conveyor belt comprising:

a plurality of link assemblies, each link assembly having a leading end, a trailing end, an upper surface, a lower surface, a first side and a second side, the leading end of each link assembly being connectable to the trailing end of one of the link assemblies for forming the conveyor belt;

a plurality of spaced apart leading shaft projections being formed near the leading end of each link assembly and spaced apart along the leading end of each of the link assemblies with each leading shaft projection having a link opening formed therethrough, the link openings in the leading shaft projections being aligned to form a first shaft opening, each leading shaft projection extending a distance outwardly from the leading end of the link assembly terminating with an outward end, each leading shaft projection having an upper surface about coplanar with the upper surface of the link assembly, a lower surface spaced a distance from the lower surface of the link assembly, a first side wall and a second side wall, and each leading shaft projection having a leading thickness near the upper surface thereof extending between the first and the second side walls of the leading shaft projection, the first and the second side walls each being curved inwardly from the upper surface toward the lower surface of each leading shaft projection forming a lower thickness of each leading shaft projection near the lower surface thereof and extending between the first and the second side walls, with the lower thickness of each leading shaft projection being less than the leading thickness of each leading shaft projection;

a plurality of trailing shaft projections formed generally near the trailing end of each link assembly and spaced generally along the trailing end of each link assembly with each trailing shaft projection having a link opening formed therethrough with the link openings in each of the trailing shaft projections being aligned to form a second shaft opening; and

a plurality of link shafts, each link shaft being disposed through the aligned first and second shaft openings formed by two of the link assemblies for connecting the two link assemblies; and

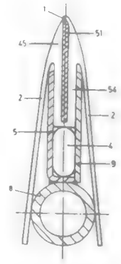
wherein the curved first and second side walls of each of the leading shaft projections cooperates to provide a space between each leading shaft projection in one of the link assemblies and the adjacent trailing shaft projection in an adjacent link assembly for exposing a substantial portion of the link shafts.

5,339,947

SCRAPING DEVICE FOR BELT CONVEYORS

Luigi Campanile, Via Manganario No. 51, 84100 Salerno, Italy

Filed Jul. 21, 1993, Ser. No. 95,756
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—499 12 Claims



1. A scraping device for belt conveyors, comprising at least one scraping unit including a rotating positioning shaft; a housing pocket rigidly connected to said shaft; and a one-piece block of elastomeric material selected from the group consisting of polyurethane, rubber or other elastomeric material, a plurality of metal cores embedded inside said block and being located therein in parallel with each other but without being in contact with each other, said cores having tops carrying hard metal scraper bits, said cores extending along the length of the block with two end cores spaced from two respective ends of the block so that said two ends consist only of said elastomeric material; the block including a top portion having an ogival shape, a central body extending downwardly from said top portion, and two laterally extending protecting portions merging into said top portion, said central portion being provided at each end thereof with a hole for securing the block to a side frame of said housing pocket, a resilient pad of elastomeric material positioned in said housing pocket so that a lower edge of said central portion presses thereon, said pad having an upwardly curved upper profile; and means for adjusting a position of said unit with respect to a belt to be scraped, said means including bushes having recesses for supporting said rotating positioning shaft, locking means for locking the ends of the shaft in said bushes, and two support members, said bushes being elastically suspended through elastomeric springs with respect to said support members.

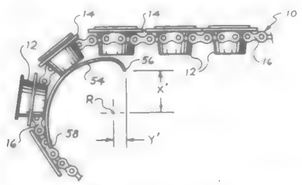
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,948

CONVEYOR APPARATUS WITH UNLOADER

Gary B. Cox, Philo; Dennis R. Reifsteck, Pesotum; Gregg A. Hills, Rantoul, and Lynn R. Fenter, Urbana, all of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Dec. 18, 1992, Ser. No. 992,720
Int. Cl.[5] B65G 47/74
U.S. Cl. 198—635 3 Claims



1. Conveyor apparatus for use with articles having upper and lower portions, the apparatus comprising:

a conveyor belt with a vertically inclined discharge end located between a generally horizontal support run portion and a return run portion, the conveyor belt defining a plurality of openings for receiving at least the lower portions of said articles;

means for mounting the conveyor belt for travel in a downstream direction toward said discharge end; and

a deflector member extending in the direction of conveyor belt travel and having upstream and downstream curved ends, with the upstream end of said deflector member having a smaller, more rapidly increasing radius of curvature followed by a more gradually increasing radius portion, said deflector member positioned beneath at least a part of the support run portion and at least a part of the discharge end of the conveyor belt so as to slidably contact the lower portions of the articles carried on the conveyor belt, said deflector member further having a curvature which gradually urges said articles out of said openings so as to remove the articles from the conveyor belt as the articles pass from the support run portion of the conveyor belt along the vertically inclined discharge end of the conveyor belt.

5,339,949

DEVICE FOR CONVEYING ITEMS OF HOUSEHOLD LINEN

Jorn M. Jensen, Burgdorf, Switzerland, assignor to Jensen AG Burgdorf, Burgdorf, Switzerland

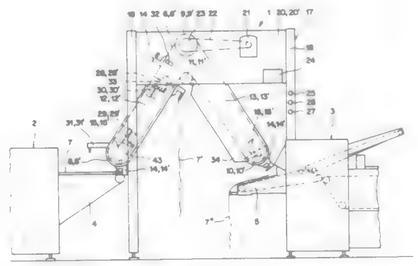
PCT No. PCT/CH92/00070, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO92/18682, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 14, 1992, Ser. No. 955,857
Claims priority, application Switzerland, Apr. 15, 1991, 01119/91
Int. Cl.[5] B65G 47/36
U.S. Cl. 198—803.9 9 Claims

1. A device for conveying items of household linen from a first processing machine to a subsequent processing machine of a textile or laundry article processing line, which comprises:

two belt-shaped mechanisms, spaced apart from each other transversely to the conveying direction, each rotating along a guideway running essentially in the conveying direction, wherein each of the guideways comprises at least one lifting segment and at least one lowering segment, wherein each of the belt-shaped mechanisms has at least one element for holding one of the items of household linen;

a first control mechanism for the holding elements which is provided in the area of the lower end of the lifting segment adjacent to the first processing machine in such a way that said one of the items of household linen leaving the first processing machine is grasped and held by the holding elements, wherein one of the grasped items of household linen is essentially free hanging during passage through the lifting segment, and, during passage through the subordinate lowering segment, is lowered to a predetermined height of the second processing machine;

a second control mechanism for opening the holding elements which is provided approximately at the lower end of the lowering segment adjacent to the second processing machine; and



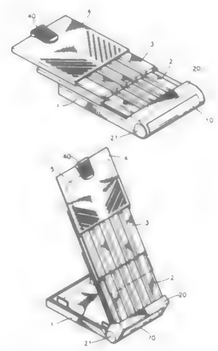
a third control mechanism for opening the holding elements which is disposed along the guideways before the second control mechanism in the conveying direction of said one of the items of household linen, the second control mechanism serving to forcibly permit release of said one of the items of household linen and the third control mechanism serving to release as desired said one of the items of household linen.

5,339,950

COMPUTER DISK STORAGE BOX WITH A COLLAPSIBLE COPY HOLDING MEANS

Chin-Chu Li, No. 1-4, Wu Nan Road, Wu Hai Taichung, Taiwan

Filed Dec. 20, 1993, Ser. No. 169,241
Int. Cl.[5] B65D 85/30
U.S. Cl. 206—45.23 2 Claims



1. A computer disk storage box comprising a rectangular casing having a top opening, a top cover assembly pivotally mounted on an end of said casing wherein said top cover assembly is pivotable between a first position in which it substantially covers and closes said top opening, and a second position in which said top opening is substantially unobstructed by said cover, and means for permitting said top cover assembly to be removably retained of a series of angular positions on said casing between said first and second positions, wherein said top cover assembly is comprised of a top cover board, a first extension board, and a second extension board that slide one within another, said second extension board comprising two longitudinal slide ways on two opposite sides thereof and two stop blocks spaced on a front end thereof, said first extension board comprising two longitudinal side flanges on two opposite sides thereof moved to slide in the longitudinal slide ways of said second extension board, and two stop springs spaced on a rear end thereof which stop against the stop blocks on said second extension board to retain said second extension board to said first extension board in an extended position as said second extension board is extended out of said first extension board, said first extension board further comprising two longitudinal slide ways on the two opposite sides thereof and two stop blocks spaced on a front end thereof, said top cover board comprising two longitudinal side flanges on two opposite sides thereof moved to slide in the longitudinal slide ways of said first extension board, two stop springs spaced on a rear end of the top cover board which stop against the stop blocks on said first extension board to retain said first extension board to said top cover board in an extended position as said first extension board is extended out of said top cover board, and a mounting block on a front end of the top cover board pivotally mounted to said end of said casing by said means.

5,339,951

FOLDING GOLF BAG STAND MOUNTING HARDWARE

Cheng-Tung Chen, No. 631, Sec. 1, Chung Shan Rd., Tai Chia Chen, Taichung Hsien, Taiwan

Filed Jan. 24, 1994, Ser. No. 185,019
Int. Cl.[5] A63B 55/00
U.S. Cl. 206—315.7 2 Claims



1. Folding golf bag stand mounting hardware comprising:

a golf bag body having a top cuff around a top opening thereof and a blocked up;

a top bottom mounting frame fastened to said golf bag body near the top cuff and having two sockets spaced at the same elevation, each socket having a bottom opening and a horizontal pivot hole across the bottom opening;

two legs respectively pivoted to either socket to support said golf bag body on the ground in a sloping position, each leg having a top end inserted into the bottom opening on either socket and pivoted to the respective pivot hole by a respective pivot pin and a bottom end mounted with a cushion;

a bottom mounting frame mounted on said golf bag body near the bottom thereof, said bottom mounting frame comprising a vertical mounting plate fastened to said golf bag body by screws, a smoothly curved supporting plate having one end pivoted to said vertical mounting plate in the middle, said supporting plate comprising a stop bar at one end, which stops at said vertical mounting plate when said supporting plate is extended outwards from said vertical mounting plate, a loop at an opposite end, and a shoe and a friction block spaced on a bottom wall thereof, which stop on the ground to support the supporting plate in position when said supporting plate is extended out;

a constraint member fastened to said golf bag body and aligned between said top mounting frame and said bottom mounting frame, said constraint member having a constrain hole;

two locating frames respectively mounted on said legs and spaced below said top mounting frame, each locating frame comprising a longitudinal through hole, which receives either leg, a spring mounting notch at one side, a loop at an opposite side, a hanging hole below said spring mounting notch;

a compression spring supported between said legs, having two opposite ends respectively fastened to the spring mounting notch on either locating frame;

an adjustable fastening strap inserted through the loop on either locating frame and having two opposite ends respectively fastened to said golf bag body; and

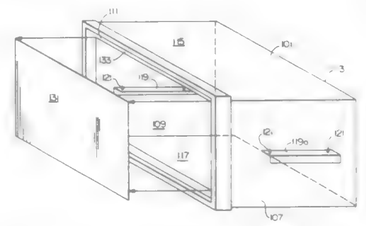
a connecting rod inserted through the constraint hole on said constraint member and having a bend in the middle hung on the loop on said supporting plate of said bottom mounting frame and two opposite ends respective hung on the hanging hole on either locating frame.

5,339,952

TRANSFER CONTAINER FOR TRANSFERRING FLIMSY CIRCUIT PANELS UNDER CLEAN ROOM CONDITIONS

Lewis C. Hecht, Vestal, N.Y.; Merritt P. Sulger, deceased, late of Brackney, Pa. by Ellen Sulger, executrix ; Ernst E. Thiele, Endicott, N.Y.; Mark V. Pierson, and Lawrence E. Williams, both of Binghamton, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 19, 1992, Ser. No. 901,479
Int. Cl.[5] B65D 73/02, 85/42
U.S. Cl. 206—334 5 Claims



1. A transfer container for carrying circuit panels in and between substantially contaminant free environments, comprising:

a. a walled container having a facing pair of parallel side walls, a facing pair of parallel end walls, a top, and a bottom, comprising a substantially particulate free, unfilled, polycarbonate;

b. one of said end walls being an access wall having an opening surrounded by a ferromagnetic gasket and adapted to receive a ferromagnetic door panel; and

c. each of said side walls having co-planar bracket pairs for holding circuit panels.

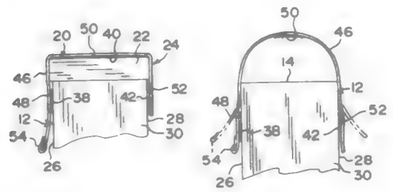
VOL 1165 ISS 4 AG 23 1994 UMI

5,339,953

STAPLE BOX PROTECTOR

James W. Alex, 1234 Dedi Ave., Southlake Tahoe, Calif. 96150; Jeffrey S. Alex, 5225 W. Evans Rd., Rogue River, Oreg. 97537, and Rick R. Gates, P.O. Box 777, Lawndale, Calif. 90260

Filed Apr. 12, 1993, Ser. No. 46,601
Int. Cl.[5] B65D *85/24*
U.S. Cl. 206—340 3 Claims



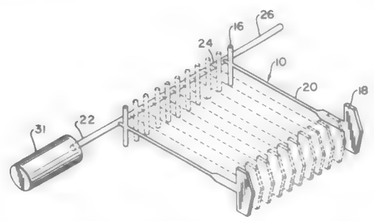
1. A staple box protector which comprises:
a) a receptacle having an open top to receive a staple box with a plurality of staple strips therein and includes a front wall, a rear wall, a pair of side walls and a bottom wall, so that the staple box can fit snugly therein;
b) a lid having a flange thereabout to fit over and cover said open top of said receptacle; and
c) means for removably attaching said lid to said receptacle, so that said receptacle with said lid will protect the plurality of staple strips from breakage, thereby allowing the intact staple strips to be readily available for use, wherein said means for removably attaching said lid to said receptacle includes:
i) three hook pile fastener material tabs, in which a first tab is affixed to an upper exterior surface of said front wall of said receptacle, a second tab is affixed to an exterior surface of said lid and a third tab is affixed to an upper exterior surface of said rear wall of said receptacle; and
ii) a strap having three spaced apart loop pile fastener material pads thereon, in which a first pad will mate with said first tab, a second pad will mate with said second tab and a third pad will mate with said third tab, said strap further including a forward end formed into a flap, so that said flap can be pulled to an intial extent so that the lid is flipped back and to a further extent to release said lid from said receptacle and said strap in which when said strap is reattached to said receptacle without said lid it can be utilized as a carrying handle.

5,339,954

CLIP OF ATTACHMENTS

Steven Kunreuther, 285 Central Park West, New York, N.Y. 10014

Filed Jan. 29, 1993, Ser. No. 10,836
Int. Cl.[5] A44B *9/00*; B65D *85/24*; G09F *3/12*
U.S. Cl. 206—346 9 Claims



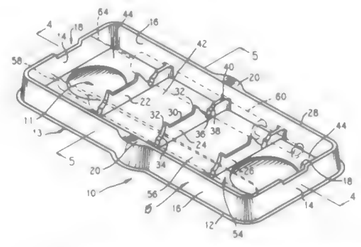
1. A clip of attachments comprising a plurality of attachments situated in spaced substantially parallel relation along a connector bar, each of said attachments comprising a "T" bar end and a second end, said ends being connected by a filament, the clip being insertable into an apparatus for dispensing attachments through a hollow needle mounted on a housing, the housing having an exterior surface and a channel along which the clip is advanced as attachments are dispensed, said connector bar comprising means on said connecting bar for cooperating with the exterior housing surface to limit the advancement of said connector bar beyond a given point along the channel.

5,339,955

INSTRUMENT TRAY WITH INSTRUMENT SUPPORTS

Robert Horan, Northridge, and A. H. Lynn Valentine, La Granada Hills, both of Calif., assignors to Devon Industries, Inc., Chatsworth, Calif.

Filed Dec. 18, 1992, Ser. No. 992,616
Int. Cl.[5] B65D *1/36*
U.S. Cl. 206—370 9 Claims



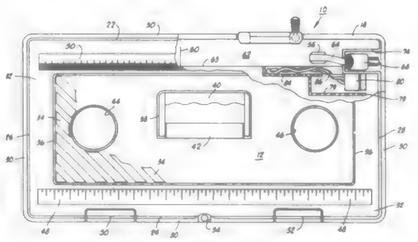
1. A tray for handling medical instruments comprising:
a rectangular frame having inner and outer frame walls joined at a top frame rim, the frame including opposing sides and ends;
a plurality of instrument supports extending laterally across the frame and adjoining the inner frame walls at the opposing sides, each instrument support including:
a pair of pegs spaced apart by a generally flat central rib;
an inner radius section adjoining each peg; and
an outer radius section spaced apart from the inner radius section by a slot;
a frame floor adjoining the instrument supports and the inner frame walls; and
a pair of finger slots in the opposing sides in between the inner and outer frame walls for grasping the tray.
9. A medical instrument tray comprising:
a generally rectangular frame having an inner frame wall and an outer frame wall joined at a top frame rim, the frame including a first side and a second side and a first end and a second end;
a plurality of instrument supports extending laterally across the frame, each instrument support comprising:
a first ledge joined to the inner frame wall at the first side;
a first slot extending through a first radius section;
a first peg joined to the first radius section;
a generally flat central plateau joined to the first peg;
a second peg joined to the central plateau and spaced apart from the first peg;
a second radius section joined to the second peg;
a second slot extending through the second radius section;
a second ledge joined to the second radius section and to the inner frame wall at the second side;
a frame floor joined to the instrument supports and the inner frame walls; and
finger slots in the first side and the second side in between the inner and outer frame walls, for grasping the underside of the tray.

5,339,956

TOOL BOX WITH COMBINED ELEMENTS

Raymon Thomason, 3415 Danbury, Amarillo, Tex. 79109

Filed Jun. 28, 1993, Ser. No. 83,342
Int. Cl.[5] B65D *85/28*
U.S. Cl. 206—372 9 Claims



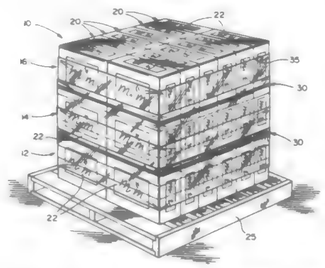
1. A tool box for transport and storage of hand tools, comprising:
a bottom portion of rectangular shape having front and back long walls, bottom, and first and second side walls;
a lid of rectangular shape hingedly affixed to close over said bottom portion;
a reel compartment formed in one corner of said bottom portion and consisting of a vertical panel formed adjacent and parallel to one of said long walls and perpendicular to an adjoining side wall;
a rotary hub secured in the reel compartment between said vertical panel and the adjacent long wall;
an A-C receptacle secured in said adjoining side wall; and
an electrical cord with plug connected to said A-C receptacle and stored around said rotary hub to allow withdrawal of the electrical cord and plug to a selected length.

5,339,957

HIGH FRICTION PACKAGE RETAINER

Ronald Carstens, Anacortes, Wash., assignor to Key Tech Corporation, Mukilteo, Wash.

Filed Mar. 8, 1993, Ser. No. 27,806
Int. Cl.[5] B65D *19/44*
U.S. Cl. 206—386 16 Claims



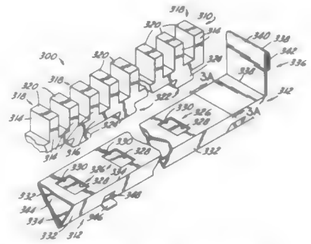
1. A stack of cartons each having a glossy printed outer surface with a slip angle relative to a same surface of less than of about 18°, the stack comprising at least first and second superimposed layers of said cartons, and a tie sheet interposed between the cartons in each adjacent layer to minimize sliding therebetween, said tie sheets each having upper and lower surfaces each having a coefficient of friction of at least 0.8 relative to a same surface, the slip angle between the outer surface of said cartons and its juxtaposed tie sheet surface being in excess of 18°.
9. A stack of cartons each having a glossy printed outer surface with a slip angle relative to a same surface of less than or about 18°, the stack comprising at least first and second superimposed layers of said cartons, and a tie sheet interposed between the cartons in each adjacent layer to minimize sliding therebetween, said tie sheets each having upper and lower surfaces each having a coefficient of friction of about 0.8 relative to a same surface, the slip angle between the outer surface of said cartons and its juxtaposed tie sheet surface being in excess of 18°.

5,339,958

TWO-PIECE DUNNAGE DEVICE FOR DUNNAGE SEPARATION

Philip Taravella, Grosse Pointe Shores, and Ronald S. Domanski, St. Clair Shores, both of Mich., assignors to Anchor Bay Packaging Corporation, St. Clair Shores, Mich.

Filed Jan. 13, 1994, Ser. No. 180,736
Int. Cl.[5] B65D *81/02, 85/30*
U.S. Cl. 206—521 8 Claims



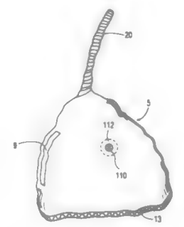
1. A two-piece dunnage device comprising:
a cushioning piece having an extended web wall provided with two opposing sides, a plurality of spaced apart cushioning elements extending from one of said sides of said web wall, and at least one locking tab extending from the other of said opposing sides of said web wall; and
a supporting piece having at least one opening for receiving said locking tab of said web wall to hold said cushioning piece in locked engagement with said supporting piece.

5,339,959

DISPOSABLE MEDICAL WASTE BAG

James T. Cornwell, Cleveland, Tenn., assignor to QCI, Inc., Crossett, Ark.

Continuation-in-part of Ser. No. 844,177, Mar. 2, 1992, Pat. No. 5,203,458. This application Nov. 25, 1992, Ser. No. 981,548
Int. Cl.[5] B65D *33/01, 85/00*
U.S. Cl. 206—524.8 18 Claims



1. A bag for medical waste and for use in combination with a central vacuum system of a medical facility, the bag comprising:
a body of water-tight material having an opening for receiving medical waste into an interior of the body, the opening

VOL 1165 ISS 4 AG 23 1994 UMI

being in an opening area of the body, the body being closed by a structure comprising a twisting of the opening area of the body near the opening to form a twist, and a bending of the twist onto itself to form a bend;

a normally-closed valve secured to the body for releasing air entrapped within the interior of the body;

coupling means removably engagable with the normally-closed valve for opening the valve and releasing entrapped air within the interior of the body, the coupling means adapted to be connected with a central vacuum system of a medical facility for drawing the entrapped air from the bag; and

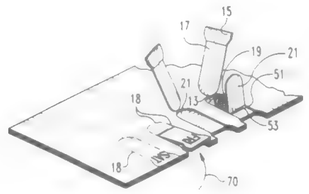
adhesive tape closure means detachably adhered to the surface of the body of the bag and removable for sealing the opening of the bag by adhesively wrapping the bend.

5,339,960

CHILD RESISTANT PACKAGE AND METHOD FOR MAKING SAME

Jerry D. Price, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 24, 1992, Ser. No. 934,783
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—531 **17 Claims**



1. A child resistant package, comprising:

at least one bubble chamber for holding a product;

a rupturable barrier bonded to said bubble chamber to seal the product in said bubble chamber;

a top layer covering said rupturable barrier and including first score lines defining an access panel aligned over said bubble chamber and which may be peeled away along first score lines; and

an intermediate layer sandwiched between said rupturable layer and said top layer and having second score lines which define a breakaway panel aligned with said bubble chamber;

a first access position including the access panel being peeled up and away to create a first access opening and to expose the underlying breakaway panel, and further including said breakaway panel remaining intact when said access panel is peeled away;

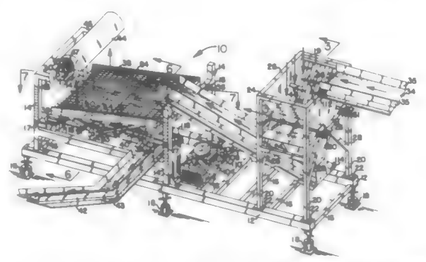
wherein said bubble chamber, access panel and breakaway panel are interoperable to permit a tablet in said bubble chamber to be extricated by first peeling back said access panel to the first access position to create a first access opening revealing said breakaway panel and then by pushing against said bubble chamber to force the tablet against said rupturable layer until said rupturable layer ruptures and said breakaway panel breaks away to expose the tablet through the access opening.

5,339,961

DEBAGGER SORTER MACHINE

Richard L. Mayhak, Apple Valley, Minn., assignor to Recycling Specialists, Inc., Northfield, Minn.

Continuation of Ser. No. 817,775, Jan. 8, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,426
Int. Cl.[5] B03B *1/00;* **B65B** *69/00*
U.S. Cl. 209—3 **12 Claims**



1. An apparatus for processing yard waste contained in trash bags, the apparatus comprising:

(a) a frame;

(b) hopper means for receiving filled, closed bags of yard waste, said hopper means mounted to said frame and having two opposing end walls and two opposing side walls;

(c) rotary cutting means including a plurality of blades flexibly coupled on respective rotatable first and second parallel shafts disposed parallel with the side walls and disposed within the hopper means, said shafts extending between the end walls of the hopper means and rotatably journaled on said frame;

(d) first guard means covering the first parallel shaft and second guard means covering the second parallel shaft, each of said guard means comprising a wall structure having a plurality of respective longitudinal slots each having opposing sides and each situated to accommodate the passage therethrough of one respective blade of the rotary cutting means; and

(e) flexible wiper means affixed to each of said guard means and disposed along each opposing side of each longitudinal slot and extending into said slot to thereby wipe against the respective blade of the rotary cutting means passing therethrough and prohibit passage of slashed bag material.

5,339,962

METHOD AND APPARATUS FOR SORTING MATERIALS USING ELECTROMAGNETIC SENSING

Edward J. Sommer, Jr., Nashville; Michael A. Kittel, Unionville, and James R. Peatman, Nashville, all of Tenn., assignors to National Recovery Technologies, Inc., Nashville, Tenn.

Continuation-in-part of Ser. No. 605,993, Oct. 29, 1990, Pat. No. 5,260,576. This application Oct. 21, 1991, Ser. No. 777,718
Int. Cl.[5] B07C *5/00;* **G01N** *21/00*
U.S. Cl. 209—576 **35 Claims**

19. An apparatus for separating materials having different electromagnetic radiation absorption and penetration characteristics, the apparatus comprising:

a) a conveyor arranged to convey materials to be separated from at least one inlet toward at least one outlet;

b) an electromagnetic radiation source arranged along said conveyor to irradiate portions of the materials conveyed;

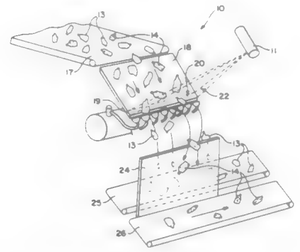
c) a plurality of detectors, the detectors corresponding to channels, the detectors measuring electromagnetic absorption and penetration characteristics of the material portions radiated;

d) means for periodically polling a sequence of detectors, said polling means including a sampler arranged to sample the detectors for a sample time;

e) a plurality of ejection mechanisms, at least one ejection mechanism corresponding to each outlet;

f) means for activating the material ejection mechanisms at different times as the materials are conveyed, in response to electromagnetic radiation absorption and penetration characteristics measured by the detectors, so that materials having different electromagnetic radiation and penetration characteristics are ejected at different times and locations on the conveyor into different sorting bins; and

g) means for verifying operation of the material ejection mechanisms during time period when the detectors are measuring electromagnetic absorption and penetration characteristics of the material portions radiated.

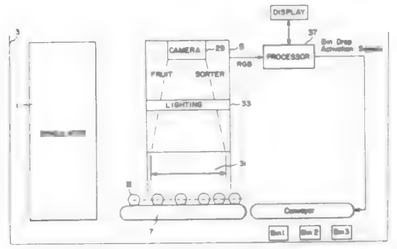


5,339,963

METHOD AND APPARATUS FOR SORTING OBJECTS BY COLOR

Yang Tao, Woodstock, Va., assignor to Agri-Tech, Incorporated, Woodstock, Va.

Filed Mar. 6, 1992, Ser. No. 846,236
Int. Cl.[5] B07C *5/342*
U.S. Cl. 209—581 **8 Claims**



1. An apparatus for sorting objects by color comprising:

a singulation section;

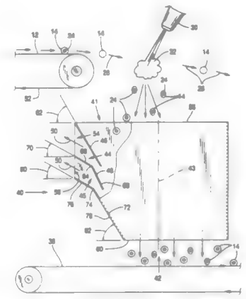
a color sorting section having wheels receiving objects from said singulation section, said color sorting section having means for determining a hue value of each object received and for sorting said received objects according to said hue value, said hue value being a quantized measure extracted from a transformation to provide a predetermined continuous range of hue values in said object.

5,339,964

METHOD AND APPARATUS FOR USING PASSIVE EXHAUST FOR PNEUMATIC SORTING SYSTEM

Calvin G. Gray, Medford, and Frank B. Thomason, Grants Pass, both of Oreg., assignors to SIMCO/Ramic Corporation, Medford, Oreg.

Filed Sep. 20, 1993, Ser. No. 124,404
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—587 **20 Claims**



1. In a sorting system in which acceptable and unacceptable articles are conveyed past a video scanning camera that sends video data to a video signal processor for actuating selected combinations of multiple pneumatic ejection modules to deflect with an ejection gas unacceptable articles toward a reject collection area, an improvement comprising:

a generally tubular chute having open input and output ends through which a substantially vertical longitudinal axis extends and the deflected unacceptable articles fall while entrained in the ejection gas, the chute defined by opposed walls at least one of which includes a vent opening; and

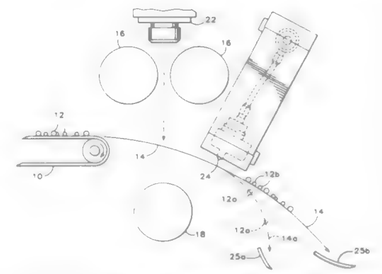
a first vent formed by vent-forming panels positioned in the vent opening and angled outwardly from the longitudinal axis to form a flared open vent passageway through which the ejection gas is exhausted at a velocity that diminishes toward an outer end thereof such that unacceptable articles are not exhausted together with the ejection gas.

5,339,965

GRANULAR ARTICLE SORTER HAVING IMPROVED FLUID NOZZLE SEPARATING SYSTEM

Edward L. Klukis, Salem, and Avi P. Cohn, Lake Oswego, both of Oreg., assignors to Allen Fruit Co., Inc., Newberg, Oreg.

Filed Aug. 6, 1993, Ser. No. 103,435
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—639 **9 Claims**



1. A sorter for detecting differences in physical characteristics of individual articles moving along a direction of travel while spaced transversely to said direction of travel, said sorter

VOL 1165 ISS 4 AG 23 1994 UMI

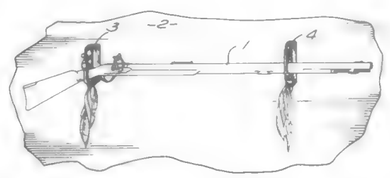
including an array of fluid nozzles distributed transversely to said direction of travel for separating some of said articles from others of said articles according to said differences in physical characteristics by selectively directing respective streams of fluid toward said some of said articles to deflect them from said direction of travel, at least a mutually adjacent group of said nozzles being aligned substantially linearly in a transverse direction of alignment relative to said direction of travel, each nozzle of said group being connected operatively to a respective fluid supply valve of a group of valves for selectively supplying or interrupting the supply of fluid to the respective nozzles in response to said differences in physical characteristics of said articles, said group of valves being arranged in a nonlinear array in a common plate extending generally in said transverse direction of alignment of said group of nozzles, and a group of flexible tubes, each interconnecting one of said valves with one of said nozzles, wherein said flexible tubes are embedded as a group in a mass of hardened polymeric material.

5,339,966

DEVICE FOR LOCKING AND MOUNTING A FIRE ARM

Richard G. Bastiaans, Saugus, Calif., assignor to R L Industries Inc., Valencia, Calif.

Filed Oct. 27, 1993, Ser. No. 144,977
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—4 18 Claims



1. A device for securing a fire arm, comprising:
a base having a floor and two upstanding sidewalls, the floor having at least one hole for passage of a fastener for mounting the device to a mounting surface, each of the sidewalls defining a groove adjacent the floor;
a holding member for holding the fire arm, having means adapted to be slidable between the upstanding sidewalls and having a pair of outwardly-directed flanges slidable in the grooves;
means for fastening the holding member to the base; and
wherein each said fastener for mounting the device and said fastening means are inaccessible when the device is in use.

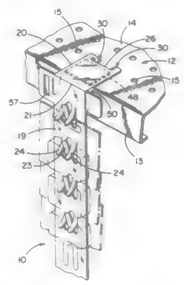
5,339,967

STRIP MERCHANDISER

Stanley C. Valiulis, Rockford, Ill., assignor to Southern Imperial, Inc., Rockford, Ill.

Filed Jul. 19, 1993, Ser. No. 93,479
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—57.1 7 Claims

1. A device for suspending items forwardly of a generally horizontal display shelf having a plurality of transversely spaced and vertically extending holes formed therein, said device comprising an integrally formed elongated plastic strip subdivided into a mounting portion and an item-supporting portion by a transversely extending fold line extending entirely across the width of the strip to permit said mounting portion to be disposed horizontally on the shelf and said item-supporting portion to be suspended vertically from the shelf, said item-supporting portion including vertically spaced means for supporting items, said mounting portion having a transversely extending edge remote from said fold line, and first and second anchors integral with and depending from said mounting portion adjacent said edge and shaped to project downwardly into



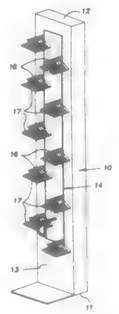
and releasably interlock with first and second ones of said holes thereby to secure said device to said shelf.

5,339,968

VERTICAL MERCHANDISE DISPLAY CAROUSEL

Dale Voelz, St. Charles, Ill., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Nov. 12, 1992, Ser. No. 975,267
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—121 12 Claims



1. A carousel comprising a powered closed loop conveyor chain, a planar guide panel mounted adjacent said chain providing a groove substantially aligned with said chain, said guide panel providing opposed bearing faces, and a plurality of cantilever mounted display rack means connected to said chain at intervals along the length thereof, said display rack means providing a pair of opposed bearing plates with one adjacent to and engaging each of said opposed bearing faces, said bearing faces and bearing plates cooperating to maintain said display rack means perpendicular to said guide panel as said display rack means are moved by said chain about said closed loop.

5,339,969

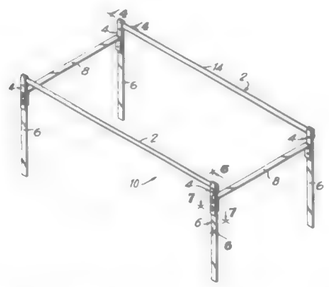
QUICK ASSEMBLY HANGING FILE FOLDER FRAME

George H. Filipowski, 445 E. 65th St., New York, N.Y. 10021

Filed May 6, 1993, Ser. No. 62,063
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—189 9 Claims

1. A quick assembly hanging file frame, comprising:
a plurality of elongate rails;
a plurality of rail supports, each rail support having a rail housing that accommodates an end of a respective rail;
a plurality of locking bars, each locking bar having a cam

head that pivots within said rail housing of a respective rail support to hold a respective rail in position within said rail housing; and



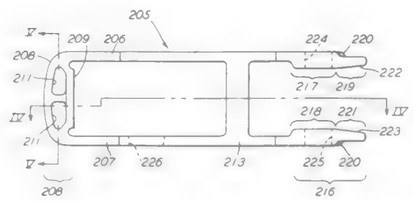
a plurality of support bars with means to removeably connect said support bar to respective rail supports and locking bars.

5,339,970

SLACKLESS DRAWBAR ASSEMBLY EMPLOYING ADJUSTABLE BLOCKOUT APPARATUS

Peter S. Mautino, Verona, and Douglas M. Hanes, Pittsburgh, both of Pa., assignors to McConway & Torley Corporation, Pittsburgh, Pa.

Filed Dec. 7, 1992, Ser. No. 986,530
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[5] B61G 9/00
U.S. Cl. 213—67 R 19 Claims



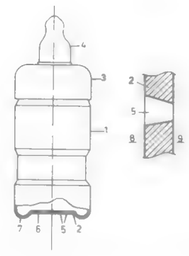
5. In a slackless drawbar assembly for connecting adjacent ends of a pair of railway cars together in a substantially semi-permanent manner, which assembly includes a yoke and an axially adjustable blockout apparatus, the improvement comprising said yoke having:
a body portion including a pair of substantially parallel upper and lower straps having at least two tapered portions and a pair of vertical side post members interconnecting said upper end lower straps, a rear end portions spaced rearwardly of said vertical side posts in a direction of a longitudinal centerline of said yoke and connected to rearward extremites of said upper and lower straps and having a rear draft blockout seat, and forwardly extending portions of said upper and lower straps providing an upper forward portion of said yoke and a lower forward portion of said yoke, each of said upper forward portion and said lower forward portion having an apertured thickened portion and a nose extending forwardly of said apertured thickened portion and wherein an inner surface of said nose is inclined outwardly of said longitudinal centerline of said yoke, said lower strap in said body portion of said yoke having an elongated slot formed therein intermediate said side post members and said rear draft blockout seat, said yoke having a pocket defined by said rear draft blockout seat, said upper and said lower straps and said side post members, said axially adjustable blockout apparatus including an elongated adjusting means for adjusting an axial length of said axially adjustable blockout apparatus and being adapted for mounting within said pocket of said yoke and said slot being registrable with and adapted for providing access to said elongated adjusting means when said axially adjustable blockout apparatus is mounted within said pocket of said yoke.

5,339,971

FEEDING BOTTLE

Peter Röhrig, Vienna, Austria, assignor to Mam Babyartikel Gesellschaft M.b.H., Vienna, Austria

PCT No. PCT/AT91/00016, § 371 Date Oct. 20, 1992, § 102(e) Date Oct. 20, 1992, PCT Pub. No. WO91/12791, PCT Pub. Date Sep. 5, 1991
PCT Filed Jan. 31, 1991, Ser. No. 923,887
Claims priority, application Austria, Feb. 22, 1990, 422/90
Int. Cl.[5] A61J 9/04
U.S. Cl. 215—11.5 6 Claims



1. A feeding bottle for administering liquids to babies and infants, said feeding bottle comprising a bottle body formed in one piece and having a generally cylindrical side wall and a bottom wall integral with the side wall of the bottle body, a nipple fastened to the bottle top, and a plurality of micropores provided in a region of the body near and in said bottom wall, said micropores each having a substantially tapered conical configuration, with the largest diameter between about 50 μm to 100 μm formed in the external side of the bottle wall and the smallest diameter of between about 3 μm to 7 μm formed in the internal side of the bottle wall to facilitate an inflow of ambient air while impeding leakage of the liquid contents from the bottle.

5,339,972

DEVICE FOR TOTAL AND IMMEDIATE CLOSURE OF BOTTLE-LIKE CONTAINERS

Daniel Crosnier, 14 rue Jacques Lanty, 76550 Offranville, France, and Jean-Marie Dulery, 53 avenue Pierre Semard, 94210 La Varenne, France

Continuation of Ser. No. 816,752, Jan. 2, 1992, Pat. No. 5,271,513. This application May 21, 1993, Ser. No. 65,803
Claims priority, application France, Oct. 17, 1991, 91 12998
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[5] B65D 41/58
U.S. Cl. 215—320 12 Claims

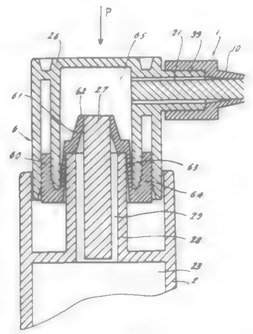
1. Closure means for an outlet passage that extends axially through an elongated tubular neck for a container, said closure means comprising:
first, second and third sections;
said first section including an elastically deformable rim unit operatively constructed to be fitted around said neck at its free downstream end through which flowable contents exit from said container, said rim unit including portions

VOL 1165 ISS 4 AG 23 1994 UMI

that define an opening aligned with said passage, and a cylindrical body having a diameter smaller than that of said outlet passage, said body being tightly fitted in said outlet passage in axial alignment therewith and with said portions of said rim unit normally being sealed against said body and closing said outlet passage;

said second section being depressible and including an annular portion of substantial depth having an open upstream end entered into an annular groove defined by said rim unit and surrounding said neck, said annular portion defining a dosaging chamber downstream of said neck for receiving said flowable contents as it exits through said outlet passage, an exit extension remote from said open upstream end, and an exit passage extending downstream from said chamber and axially through said exit extension;

said third section including a hood of elastically deformable material fitted on said exit extension at its downstream end on the outside thereof, said hood having an opening of substantial axial depth, another cylindrical body normally



tightly fitted in said opening of said hood in axial alignment therewith and with portions of said hood which define said opening in said hood normally being sealed against said another cylindrical body and closing said exit passage, said another cylindrical body having an end that extends upstream of said opening of said hood and penetrates into said exit passage and is firmly attached to said second section;

said second section when depressed moving upstream along said neck and urging said rim unit to seal against said body to close said passage, while at this time said rim unit is caused to stretch, volume of said chamber decreases and flowable contents of said chamber are forced therefrom through said exit passage; and

upon release of said second section after depressing same, said rim unit contracting from its stretched condition to expand said chamber, cause said hood to seal against said another body and cause flowable contents of said container to aspirate through said passage into said chamber.

5,339,973

LATCH FOR A CONTAINER

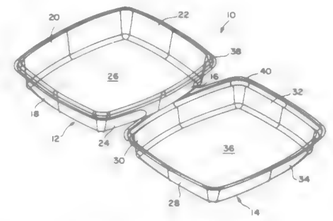
Richard T. Edwards, Dublin, Ohio; Edward W. Rider, Jr., Slate Hill, N.Y.; Stephen J. Susta, Jr., Walden, N.Y., and William R. Crawford, Port Jervis, N.Y., assognors to Genpak Corp., Middletown, N.Y.

Filed May 14, 1992, Ser. No. 883,151
Int. Cl.[5] B65D *43/00*
U.S. Cl. 220—4.23 **6 Claims**

1. A container comprising:

a) a tray including a bottom and side walls upwardly extending from said bottom, said upwardly extending side walls include a first rim extending radially outwardly from said upwardly extending side walls, in the form of an upwardly extending protrusion and wherein said first rim is continuous around the periphery of said tray; and

b) a cover hingedly connected to said tray wherein said tray, said cover, and said hinged connection are molded as a single unitary structure, wherein said cover is adapted for moving from an open position to a closed position, and wherein said container is nestable with an identical container when said cover is in said open position, said cover including a top and side walls downwardly extending from said top, said downwardly extending side walls include a second rim extending radially outwardly from



said downwardly extending side walls in the form of a downwardly opened substantially arcuate channel, and wherein said second rim is continuous around the periphery of said cover,

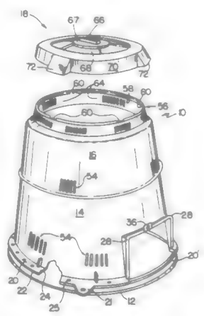
said hinged connection comprising a hinge joined to said cover and said tray radially outwardly of said first and second rim, wherein said first rim has a first radius and said second rim has a second radius, and wherein said first rim is interlockable with said second rim over a substantially curved arc having continuous contact over more than 180°, thereby securing said tray with said cover around the entire periphery of the container.

5,339,974

DOMESTIC COMPOSTERS

Narayan Raghunathan, Bolton, Canada, assignor to Norseman Plastics Limited, Rexdale, Canada

Filed Sep. 28, 1992, Ser. No. 952,610
Claims priority, application Canada, Aug. 28, 1992, 2077183
Int. Cl.[5] F24J *2/00*
U.S. Cl. 220—4.26 **12 Claims**



1. A domestic composter structure for composting organic waste, having an upwardly tapered lower portion, an upwardly tapered upper portion sized, when reversed to fit within said lower portion to enable shipment of the composter within a passenger car when dis-assembled, said lower portion having an upper edge joint portion and said upper portion having a lower edge joint portion, said joint portions when

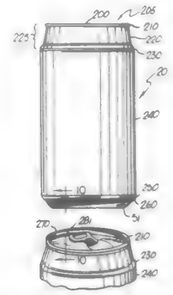
solely manually assembled forming a locked joint composter construction.

5,339,975

INTERLOCKING CONTAINER STRUCTURES

Theodore A. Stoner, 2375 E. Evans Ave. #17, Denver, Colo. 80210

Continuation-in-part of Ser. No. 612,186, Nov. 13, 1990, Pat. No. 5,154,295. This application Jul. 1, 1992, Ser. No. 907,227
Int. Cl.[5] B65D *65/00*
U.S. Cl. 220—4.27 **4 Claims**



1. A beverage container having a hollow cylindrical body comprising a top portion, a bottom portion, and a main body having a longitudinal axis, said top portion further comprising a perimeter flange having an outer wall facing outward of said container, a top rim, and an inner wall facing inward of said container toward said longitudinal axis, said inner and outer walls being connected to said top rim, said top portion further comprising a first integral interlocking means located on said top portion between said longitudinal axis and said top rim, and movable means fixed to said top portion for accessing the interior of the beverage container and wherein said first interlocking means is on said movable accessing means, said bottom portion comprising second integral interlocking means for mating and locking with said first interlocking means of the top portion of a similar container wherein adjacent containers can be stacked along the longitudinal axis of the main body portion with said first interlocking means mating and locking with said second interlocking means to securely fasten, attach and lock together the containers in a vertical arrangement to prevent tipping and separation of the interlocked containers.

5,339,976

MATING SEPARABLE CONTAINERS

Danny M. Thornton, 7509 Clyde Rd., Chattanooga, Tenn. 37421

Filed Nov. 22, 1993, Ser. No. 155,555
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—23.4 **13 Claims**

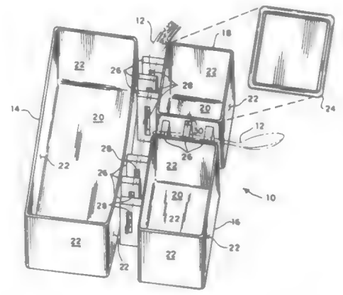
1. Mating separable containers, comprising:

a plurality of cooperating containers, each including at least a bottom surface and a plurality of side walls;

at least one of said side walls of at least one of said cooperating containers including at least one attachment ear extending therefrom and at least one of said side walls of at least one other of said cooperating containers including at least two attachment ears extending therefrom, with said at least one attachment ear of said at least one of said cooperating containers being positioned between said at least two attachment ears of said at least one other of said cooperating containers when said cooperating containers are assembled together;

said attachment ears each including an attachment pin passage therethrough, with each said attachment pin passage including an attachment pin axis therethrough, and;

at least one rigid attachment pin removably insertable through said attachment pin passage of at least one attachment ear of said at least one of said cooperating containers and each said attachment pin passage of said at least two attachment ears of said at least one other of said cooperating containers, said attachment pin comprises a handle of an eating utensil, whereby;



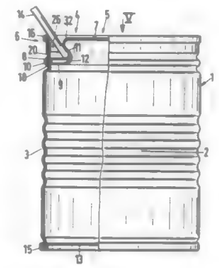
said cooperating containers are joinable by aligning said attachment pin passages of said at least one attachment ear of said at least one of said cooperating containers and said at least two attachment ears of said at least one other of said cooperating containers and inserting said attachment pin therethrough, with said cooperating containers being separable by removing said attachment pin.

5,339,977

PRESSURE LID CAN

Eckhart Schormair, Otersen; Jurgen Ponisch, Bruhl, and Rainer Laaf, Hellenthal, all of Fed. Rep. of Germany, assignors to EFFEM GmbH, Verden/Aller, Fed. Rep. of Germany

PCT No. PCT/DE91/00699, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO92/04247, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 3, 1991, Ser. No. 856,057
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1990, 4029146
Int. Cl.[5] B65D *43/04*
U.S. Cl. 220—307 **6 Claims**



1. A pressure lid can comprising

a body member with a closure-side end having a radially outwardly bowed closure corrugation for interfittingly engaging an engagement lip and

a lid member with a lid top and a closure border including an all-round resilient engagement lip, a ring flange and a resilient leg,

said resilient leg passing from said lid top into said ring flange, said ring flange projecting substantially horizontally and radially outward from said resilient leg,

said engagement lip being connected to said resilient leg via

VOL 1165 ISS 4 AG 23 1994 UMI

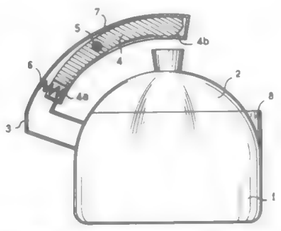
said ring flange and provided on said closure border radially outward of said ring flange and said lid top for interfittingly engaging into said closure corrugation under pretension from inside of said body member to form a tight closure while leaving an exposed lever gap between said body member and said lid member to permit engagement of a lever by means of which the lid member can be levered up, said lever gap being bordered by said resilient leg, said ring flange and at least a part of said closure-side end of said body member.

5,339,978

DEVICE FOR LOCKING THE COVER OF A KETTLE DURING POURING AND KETTLE COMPRISING SUCH A DEVICE

Michel Coppier, Eterey, France, assignor to Seb S.A., Selongey, France

Filed Jun. 7, 1993, Ser. No. 72,993
Claims priority, application France, Jun. 5, 1992, 92 06870
Int. Cl.[5] B65D *45/02*
U.S. Cl. 220—318 **8 Claims**



1. A kettle having a device for locking a cover of the kettle, the kettle comprising a pot (1), a removable cover (2) and a fixed handle (3), the device comprising a lever disposed in the handle (3) and manually movable between a first position maintaining the cover (2) closed and movable under the action of return means to a second position permitting the cover to open; wherein the handle (3) comprises a recess (7) in which said lever is pivotally mounted, said lever (4) comprising one end that projects outside the recess (7) in said second position and another end (*4b*) adapted to bear against the cover (2) in said first position to maintain said cover closed when the user presses manually on said one end (*4a*) of the lever (4).

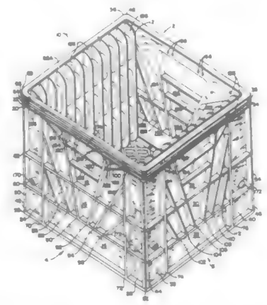
5,339,979

ALL-PURPOSE UTILITY CRATE

Thomas Box, Shrewsbury, N.J., assignor to Spectrum International, Inc., Tinton Fall, N.J.

Continuation of Ser. No. 190,776, May 6, 1988, Pat. No. 4,901,876. This application May 26, 1989, Ser. No. 358,137
Int. Cl.[5] B65D *1/24*
U.S. Cl. 220—529 **2 Claims**

1. A crate for storing file folders and combinations of records, cassettes or compact discs, comprising:
four sides;
a bottom;
an array of attachment holes strategically located on the interior surface of the crate;
an insert divider for partitioning the crate into a plurality of storage areas comprised of a base; a plurality of substantially parallel segments extending from one side of the base and a centrally disposed dividing strip with a score line at its center; and



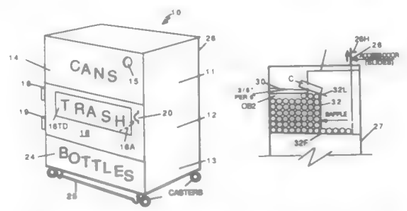
pins located on the insert divider for selective insertion into the attachment holes on the interior surfaces of the crate.

5,339,980

TRASH COLLECTION AND SORTING SYSTEM

Mark Stutler, Rt. 3, Box 150E, Hurricane, W. Va. 25526

Division of Ser. No. 669,087, Mar. 15, 1991, Pat. No. 5,172,824. This application Oct. 28, 1992, Ser. No. 967,337
Int. Cl.[5] B65F *1/00*
U.S. Cl. 220—571 **6 Claims**



1. A trash collection and sorting system having a vertically extending main housing and a plurality of individual vertically stacked storage volumes in said main housing, each of said individual storage volumes receiving a particular category of trash including glass, metal cans and miscellaneous trash, said metal cans having a longitudinal axis and the individual storage volume for metal cans having one or more bins therein and a foraminous floor and being above the miscellaneous trash storage volume, and includes a cover means having a hole therein of a predetermined size for receiving and orienting a metal can in the direction of said longitudinal axis, ramp guide means in said individual storage volume for metal cans for guiding cans to said one or more bins and a trash bag in said miscellaneous trash storage volume, and means maintaining said trash bag open so that any fluid from said metal cans draining through said foraminous floor drains into said metal trash bag.

5,339,981

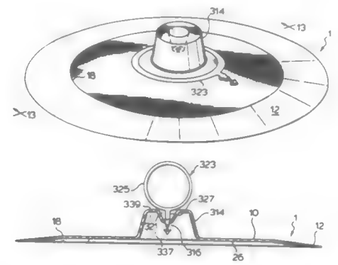
PAINT CAN SEALER

Dean C. Kral, 419 Pentilly, St. Clair Beach, Ontario, Canada N8N 4L6

Continuation-in-part of Ser. No. 910,965, Jul. 9, 1992, Pat. No. 5,213,230. This application Feb. 2, 1993, Ser. No. 12,208
Int. Cl.[5] B65D *81/24, 51/16*
U.S. Cl. 220—580 **7 Claims**

1. A sealing device for sealing a container having a bottom, an interior plan and a closable top, and said container fillable

with a liquid content to present an upper surface, said device comprising:
a disc-like member integrally having a central portion, a flexible perimeter and a centrally located upstanding hollow handle, said hollow handle having a purge valve, said purge valve having a closed position for preventing egress of air through said hollow handle and an open position to permit free passage of air therethrough, said disc-like member is contoured to correspond with said interior plan of said container, said purge valve comprising:
an aperture in the handle,
a stopper for slideably inserting through the aperture for moving said purge valve between the open position and the closed position said stopper having a stem portion



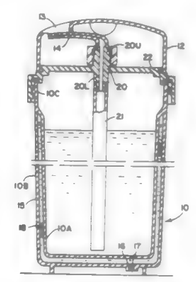
having a frusto-conical seal region for sealingly engaging said aperture when said purge valve is in said closed condition,
a tab formation at a first end of said stem, said tab formation biased to permit insertion of said stopper into said aperture and to retain the stopper therein, said tab formation sized to partially close said aperture when said valve is in said open position, and
a gripping means opposite said first end, said gripping means for gripping said stopper to facilitate pulling of said stopper moving the purge valve from the closed position to the open position, urging the tab formation against the handle for removing said device from contact with said upper surface.

5,339,982

CANTEEN FOR CHILDREN

Pierre Tardie, Longueuil, Canada, assignor to Genin Trudeau, Quebec, Canada

Filed Mar. 8, 1993, Ser. No. 28,537
Int. Cl.[5] B67D *3/00*
U.S. Cl. 220—708 **9 Claims**



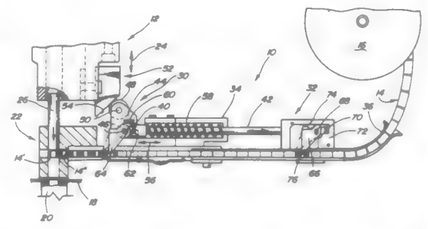
1. A can teen that incorporates in its structure a straw that in a drinking mode of the canteen serves to siphon a drinkable liquid therefrom, and in a sealing mode serves as a stopper, said canteen comprising:
(a) a container for the liquid having a circular rim;
(b) a circular cover removably attached to the rim of the container, said cover being provided with an off-center coupler, said coupler having one end which projects from the underside of the cover having one end which projects from the underside of the cover to form a lower nipple, said coupler having another end projecting from the top of the cover to form an upper nipple;
(c) a long dip tube secured to the lower nipple and extending into the container;
(d) a short, flexible mouth tube secured to the upper nipple and forming in combination with the drip tube said straw; and
(e) a dome mounted above the cover and provided with an off-center slot, said dome being turnable with respect to said cover from a drinking mode position in which the slot is in registration with the upper nipple and the mouth tube then extends upwardly through said slot, to a sealing mode position in which the mouth tube is bent under the dome and is pinched at its bend to serve as a stopper, said cover having anchored on its top a shutter element which when the dome is in said sealing mode position then blocks the slot in the dome.

5,339,983

DUAL PAWL SPOOL FEEDER

Richard F. Caple, Janesville, Wis., assignor to Multifastener Corporation, Detroit, Mich.

Filed May 18, 1993, Ser. No. 64,289
Int. Cl.[5] G07F *11/66*
U.S. Cl. 221—25 **6 Claims**



1. A feed apparatus for feeding linear strips of fasteners to a fastener installation head, said strips of fasteners each comprising a plurality of interconnected fasteners, said feed apparatus adapted to feed a second strip of fasteners to said installation head as a first strip of fasteners received in said installation head is nearly exhausted, said feed apparatus comprising:
a feed passage supporting and guiding said strips of fasteners from an inlet to said installation head;
a reciprocating rod member located above and reciprocably supported generally parallel to said feed passage;
a first feed pawl pivotally supported on said rod member, adjacent said installation head, having a free end adapted to engage at least one fastener of said first strip of fasteners in said feed passage, and spring means normally biasing said first feed pawl free end into engagement with said first strip of fasteners;
a second feed pawl pivotally supported on said rod member, spaced from said first feed pawl a distance equal to the length of several of said fasteners in said feed passage, said second feed pawl having a free end adapted to engage at least one fastener of a strip of fasteners in said feed passage and spring means independently biasing said second pawl free end into engagement with said strip of fasteners, said second feed pawl adapted to receive said second strip of fasteners as said first strip of fasteners is exhausted; and

VOL 1165 ISS 4 AG 23 1994 UMI

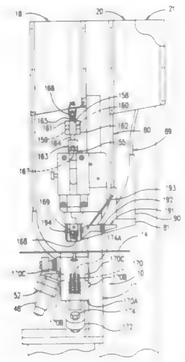
drive means reciprocating said rod member and causing said first and second feed pawls to reciprocate along said feed passage to feed said strips of fasteners to said installation head.

5,339,984

FASTENER ATTACHING APPARATUS HAVING MULTIPLE SOURCES OF FASTENER HARDWARE

Volker Schmidt, 4638 Todds Rd., and Erich A. Schmidt, 2415 Liberty Rd., both of Lexington, Ky. 40509

Filed Sep. 29, 1993, Ser. No. 128,636
Int. Cl.[5] B65G 59/00
U.S. Cl. 221—124 20 Claims



1. A cyclically operated attaching apparatus for attaching complementary first and second articles of hardware to each other at a single attaching station including:

a plurality of first sources, each of said first sources having a different type of first articles;

a plurality of second sources, each of said second sources having a different type of second articles, each type of the second articles being complementary to a particular type of the first articles;

first transport means for transporting each of the first articles of one type from one of said first sources;

second transport means for transporting each of the first articles of another type from another of said first sources;

first receiving means for receiving each of the first articles from said first transport means and for receiving each of the first articles from said second transport means;

first article selecting means for selecting the next of the first articles from one of said first sources for supply to said first receiving means;

third transport means for transporting each of the second articles of one type from one of said second sources;

fourth transport means for transporting each of the second articles of another type from another of said second sources;

second receiving means for receiving each of the second articles from said third transport means and for receiving each of the second articles from said fourth transport means;

second article selecting means for selecting the next of the second articles from one of said second sources for supply to said second receiving means;

said first article selecting means and said second selecting means selecting complementary types of first and second articles;

first feed means for feeding each of the selected first articles at said first receiving means to the single attaching station by advancing each of the selected first articles from said first receiving means along a first path to the single attaching station;

said first feed means including reciprocating means movable along the first path for engaging the selected first article at said first receiving means during advancement of said reciprocating means towards the single attaching station, said reciprocating means being retracted from the single attaching station along a second path, different from the first path, so that said reciprocating means does not engage the next selected first article at said first receiving means during its retraction;

said first article selecting means being effective after said reciprocating means of said first feed means has advanced the selected first article from said first receiving means to enable the next selected first article to be received at said first receiving means from one of said first transport means and said second transport means;

second feed means for feeding each of the selected second articles at said second receiving means to the single attaching station by advancing the selected second article from said second receiving means along a third path to the single attaching station;

said second feed means including reciprocating means movable along the third path for engaging the selected second article at said second receiving means during advancement of said reciprocating means along the third path towards the single attaching station;

said second article selecting means being effective after said reciprocating means of said second feed means has advanced the selected second article from said second receiving means to enable the next selected second article to be received at said second receiving means from one of said third transport means and said fourth transport means;

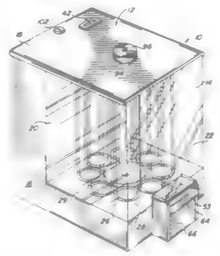
and preventing means for preventing movement of the next selected second article by said reciprocating means of said second feed means during its retraction when said second article selecting means is effective at a time to cause the next selected second article to be engaged by said reciprocating means of said second feed means during its retraction so that said reciprocating means of said second feed means moves along a fourth path, different from the third path, during at least the portion of its retraction in which the next selected second article is engaged by said reciprocating means of said second feed means during its retraction.

5,339,985

COIN OPERATED DISPENSING MACHINE

Hector Perez, 1946 NW. 93 Ave., Miami, Fla. 33172

Filed Oct. 22, 1993, Ser. No. 139,853
Int. Cl.[5] B65G 59/00
U.S. Cl. 221—151 7 Claims



1. A coin operated dispensing apparatus for dispensing individual units of a select product, said apparatus comprising:

a housing including a front wall, a rear wall, opposite side walls, a top lid and a base, said housing further including a vertical interior dividing wall extending transversely between said opposite side walls and defining a main display compartment in a forward portion of said housing and a coin receiving compartment in a rear portion of said housing,

a floor in said main display compartment horizontally disposed in parallel relation to said base, and including a longitudinal, recessed channel therein,

an elongate slide plate movably fitted to said housing and including a first free end zone extending outwardly from said front wall defining a pull handle, and an opposite second end zone disposed within said housing, said slide plate attached to said housing with a biasing element and extending horizontally through said housing within said recessed channel and including a mid portion disposed within said recessed channel and coplanar with said floor, said mid portion including a drop hole formed therethrough, said slide plate being movable between a relaxed position and an extended position causing said drop hole to move relative to said floor, said extended position defined by said drop hole being disposed exteriorly of said main display compartment,

a carousel rotatably supported within said main display compartment and including a plurality of vertically oriented chambers structured and disposed to hold the individual product units in a vertically stacked array, said chambers being selectively rotatable about a common central axis, each of said chambers being structured and disposed for individual alignment over said drop hole upon rotation of said carousel causing a lower most one of the individual product units in the respective, vertically aligned chamber to fall into a dispensing position within said drop hole of said slide plate,

coin receipt means including a cradle on said slide plate and a coin track extending within said coin receiving compartment between a coin slot in said top lid of said housing and said cradle,

said coin track being structured and disposed to guide a coin deposited through said coin slot downwardly into said cradle,

slide plate lock means structured to lockingly engage said slide plate in said relaxed position preventing outward sliding movement thereof to said extended position, said slide plate lock means cooperating with said cradle to capture a predetermined size coin within said cradle and permitting other size coins to pass therethrough,

said slide plate lock means being further structured to release said slide plate upon outward movement of said slide plate causing forced engagement of said slide plate lock means with said predetermined size coin captured in said cradle and subsequent movement of said slide plate lock means out of locked engagement with said slide plate upon continued outward movement of said slide plate,

said slide plate lock means being structured to release said coin from said cradle upon disengagement with said slide plate and continued outward movement thereof to said extended position,

said slide plate lock means being further structured to reengage said slide plate in locked engagement upon return of said slide plate to said relaxed position,

a dispensing chute extending from said front wall, exteriorly of said display chamber and below said slide plate and structured to deliver the individual product units dropped thereon, and

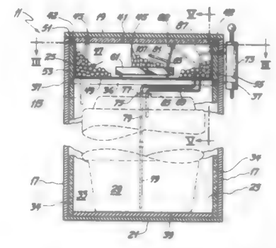
whereby movement of said slide plate to said extended position causes said product unit in said drop hole to be dropped onto said dispensing chute for delivery to the user.

5,339,986

METHOD OF DISPENSING BEVERAGE

Herman Mihalich, 1134 Knox Ave., Monessen, Pa. 15062

Division of Ser. No. 303,937, Mar. 27, 1989, Pat. No. 5,282,561, which is a continuation of Ser. No. 76,940, Jul. 13, 1987, abandoned. This application Dec. 16, 1993, Ser. No. 167,186
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[5] B67D 5/62
U.S. Cl. 222—1 3 Claims



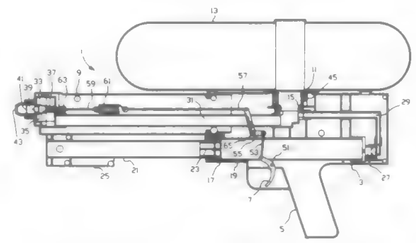
1. The method of dispensing beverage from a container with apparatus including an ice tray, the said method comprising: by common cooling means cooling the ice tray and precooling the beverage in the container and conducting the beverage cooled in the container to dispensing means from the container through the ice tray, the precooling of the beverage in the container being to a sufficiently low temperature to suppress the formation predominantly of foam in the dispensed beverage.

5,339,987

CONTROLLED FLOW, BURSTING WATER GUN RELEASE MECHANISM

Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889

Filed Jun. 28, 1993, Ser. No. 82,735
Int. Cl.[5] A63H 33/18
U.S. Cl. 222—79 20 Claims



1. In a water gun having a housing, a barrel, at least one pressurizable air/water storage tank, a pressurizing mechanism, a channel of release for shooting water, and a release mechanism, the improvement which comprises:

a controlled flow, bursting water gun release mechanism, including:

(a) a velve located within said channel of release and having a first, closed position which prevents flow of water out of said channel of release and having a second, opened position which permits flow of water out of said channel of release;

(b) a first spring connected to said valve and biasing said valve to its first, closed position;

VOL 1165 ISS 4 AG 23 1994 UMI

(c) a trigger connected to said housing, and having a portion extending from the housing to permit manual activation thereof;

(d) linkage connected to said trigger and to said valve such that activation of said trigger moves said linkage so as to move said valve from said first, closed position to said second, opened position and release of said trigger permits said first spring to bias said valve back to its first, closed position;

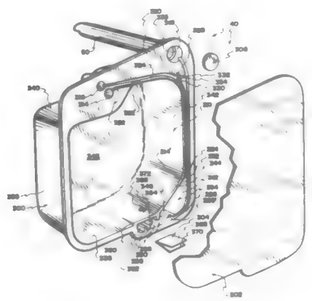
(e) a delay spring functioning as part of said linkage and located on said linkage between said valve and said trigger whereby when said trigger is activated, the force of the delay spring must be overcome before said valve will open causing a bursting of water to exit said water gun.

5,339,988

DISPOSABLE TRAY SUMP FOAMER, ASSEMBLY AND METHODS

Darrel Palmer, and Robert P. Cook, both of Sandy, Utah, assignors to Ballard Medical Products, Draper, Utah

Filed Oct. 19, 1992, Ser. No. 963,152
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—82 72 Claims



2. A foam dispensing device comprising:

a disposable foamable-liquid transport and foaming container comprising:

an integrally molded three dimensional tray having a plurality of open faced chambers, channels and ports on one side thereof and a predetermined orientation of use, said tray comprising:

a first open faced chamber comprising a relatively large liquid capacity;

a second open faced chamber inferiorly disposed in use orientation to said first chamber and comprising a relatively small liquid capacity;

a first open faced, but otherwise sealed, frangibly openable inlet port superiorly disposed in use orientation relative to said first chamber;

a first open faced molded fluid communicating channel disposed between said first inlet port and said second chamber;

a second open faced but otherwise sealed, frangibly openable inlet port also superiorly disposed in use orientation relative to said first chamber;

a second molded open faced fluid communicating channel between said second inlet port and said first chamber;

open faced foam communicating outlet port means in use orientation superiorly disposed relative to said first chamber, said outlet port means comprising an outlet spout wherethrough foam is dispensed;

a third open faced fluid communicating channel between an inferior portion of said second chamber and said outlet port means;

a fourth open faced fluid communicating channel in use orientation relatively dispose superiorly to said first chamber and inferiorly to said outlet port means between said first channel and said third channel, said fourth channel comprising a length having a cross section which is smaller and of higher fluidic resistance than said first and third channels;

a planar sheet of fluid impervious material sealingly applied to said tray across said open faced chambers, ports and channels to form enclosed containing chambers, ports and channels;

foamable-liquid disposed in said first chamber;

said tray further comprising one-way valve means disposed between said first and second chambers allows for flow from said first chamber to said second chamber for filling and refilling said second chamber with the liquid when gravitational pressure upon the liquid in said first chamber is greater than a pressure imposed through said first inlet port;

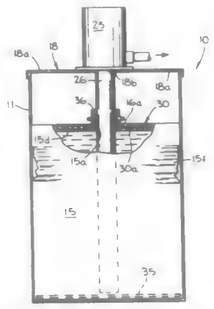
pump means for frangibly interconnecting to said inlet ports and for delivering a gas into at least said first inlet port to pump liquid from said second chamber through said third channel and to concurrently deliver gas into said third channel from said first channel through said fourth channel to thereby produce and transfer foamed liquid to said outlet port means.

5,339,989

BULK MATERIAL CONTAINING HAVING A FLEXIBLE LINER WITH A FOLLOWER

Clarance B. Coleman, Oakland, Calif., assignor to Fabricated Metals, Inc., San Leandro, Calif.

Continuation of Ser. No. 519,784, May 7, 1990, Pat. No. 5,076,471. This application Sep. 23, 1991, Ser. No. 763,627
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] B65D *35/56*
U.S. Cl. 222—105 12 Claims



1. A flexible liner for a bulk material container adapted to store bulk material comprising:

(a) a dispensing wall;

(b) a collapsible wall forming a fluid tight relationship with said dispensing wall for enclosing bulk material stored in said flexible liner;

(c) a wall opposite to said dispensing wall forming a fluid tight relationship with said collapsible wall; and

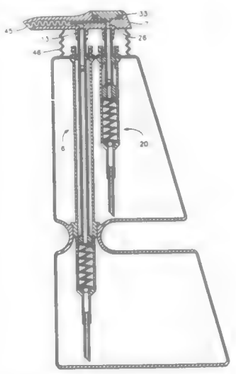
(d) a rigid follower attached to said dispensing wall for moving said dispensing wall to the level of bulk material stored in said flexible liner during the removal of bulk material from said flexible liner for applying a uniform force to said bulk material stored in said flexible liner.

5,339,990

ADJUSTABLE PUMP DISPENSER

Robert E. Wilder, 605 N. Tazewell St., Arlington, Va. 22203

Filed Nov. 10, 1992, Ser. No. 974,299
Int. Cl.[5] B65D *88/54*; B67D *5/52*
U.S. Cl. 222—135 19 Claims



1. A dispenser apparatus comprising:

at least two container chambers, each of said at least two container chambers including a reservoir of fluid,

at least two pumps for removing fluid from said at least two container chambers and mixing fluid together from said at least two container chambers prior to dispensing the mixed fluid, and

one of said at least two pumps being mounted in one of said at least two container chambers and another of said at least two pumps being mounted in another of said at least two container chambers,

said one pump including a casing having an inlet for removing fluid from the reservoir and moving the fluid removed from the reservoir up into the casing,

said casing including an external fluid outlet for return to the reservoir of a controllable amount of fluid removed from the reservoir through said inlet,

a piston slidably mounted in said casing,

a piston rod, said piston being mounted at one end of said piston rod,

said piston rod including an internal fluid outlet for passage of fluid in said piston rod to said external fluid outlet,

adjustment means associated with said piston rod for varying a proportion of fluid between fluid entering said inlet and passing through said piston rod to outside of the container to fluid entering said inlet and passing through said internal fluid outlet and said external fluid outlet, back to the reservoir,

said adjustment means being operable independently of a length of a stroke of the piston within the casing and effective immediately at any point of adjustment to vary the proportion of fluid between fluid passing outside the container to fluid passing back to the reservoir regardless of the position of the piston in the length of the stroke of the piston.

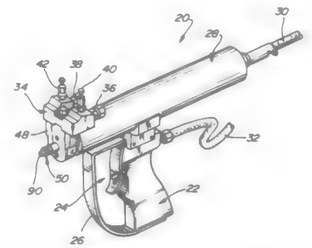
5,339,991

APPARATUS FOR APPLYING A FOAMABLE RESIN

Robert D. Snyder, Metamora, Mich., assignor to Foamseal, Inc., Oxford, Mich.

Filed Dec. 15, 1992, Ser. No. 991,049
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—136 11 Claims

1. An apparatus for applying a two-component foamable fluid plastic resin, said apparatus including a cylindrical mixing chamber, two inlet passages communicating with said mixing chamber each receiving one of said components of said foamable resin, an outlet passage communicating with said chamber through which mixed foamable resin is discharged from said apparatus under pressure, and a cylindrical valve rod having a free end reciprocal in said cylindrical mixing chamber, said valve rod reciprocable in said chamber from an off position, wherein said valve rod free end blocks said inlet passage, to an on position, wherein said rod is retracted and said chamber



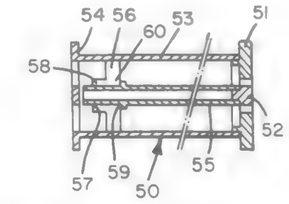
communicates with said outlet passage without restriction, said valve rod having an outside diameter nearly equal to an inside diameter of said cylindrical mixing chamber providing a close fit, and said valve rod having a pair of relatively closely spaced radial grooves adjacent said free end, said grooves receiving said foamable fluid plastic resin and forming in situ resin seals in said grooves preventing fluid resin from flowing around said rod to said outlet when said rod free end is located in said off position, and said seals replenishing as said rod is reciprocated in said chamber.

5,339,992

TUBULAR CARTRIDGE FOR STORING AND APPLYING A NON-SOLID PRODUCT, AND A DRIVE AND THRUST ASSEMBLY FOR THE CARTRIDGE

Jean-Paul Barthomeuf, Bourg de Péage, and Alain Gauthier, Tournon, both of France, assignors to Societe de Prospection et d'Inventions Techniques (S.P.I.T., Bourg les Valence, France

Division of Ser. No. 910,795, Jul. 9, 1992, Pat. No. 5,295,613.
This application Aug. 11, 1993, Ser. No. 104,683
Claims priority, application France, Jul. 10, 1991, 91 08689
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—137 14 Claims



1. An assembly for use within a material dispensing gun and with a multiple-casing tubular cartridge, which stores a plurality of materials within an outer casing and an inner casing and from which said plurality of materials are dispensed by means of a first annular plunger disposed within said outer casing and a second disc-shaped plunger disposed within said inner casing, so as to drivably move said annular and disc-shaped plungers in a forward direction from a first rear end of said multiple-casing tubular cartridge toward a second opposite forward end of said multiple-casing tubular cartridge in order to dispense said plurality of materials from said multiple-casing tubular car-

VOL 1165 ISS 4 AG 23 1994 UMI

tridge when a drive piston of said material dispensing gun is driven in said forward direction from a rearward position toward a forward position, comprising:

a first outer transmission tube;

a first annular piston fixedly mounted upon a first forward end of said first outer transmission tube for engagement with said first annular plunger of said outer casing so as to dispense a first one of said plurality of materials disposed within said multiple-casing tubular cartridge;

a second inner transmission tube disposed within said first outer transmission tube;

a second disc-shaped piston fixedly mounted upon a first forward end of said second inner transmission tube for engagement with said second disc-shaped plunger of said inner casing so as to dispense a second one of said plurality of materials disposed within said multiple-casing tubular cartridge;

means fixedly interconnecting said first outer and second inner transmission tubes at an axial position disposed rearwardly of said first and second pistons of said first and second transmission tubes such that said first and second outer and inner transmission tubes are movable conjointly;

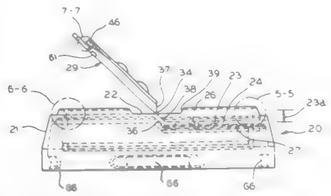
flange means, fixedly disposed upon a second rear end of said first outer transmission tube, for disposition within said gun so as to be engaged by said drive piston of said material dispensing gun such that said fixedly interconnected first and second transmission tubes are simultaneously moved by said drive piston of said material dispensing gun so as to simultaneously move said first and second pistons of said assembly for correspondingly movably driving said first and second plungers of said outer and inner casings of said multiple-casing tubular cartridge so as to dispense said plurality of materials from said multiple-casing tubular cartridge.

5,339,993

SHAKER CLOSURE

Robert J. Groya, Norridge, and Richard W. Hofmann, Chicago, both of Ill., assignors to Magenta Corporation, Chicago, Ill.

Filed Mar. 13, 1992, Ser. No. 851,172
Int. Cl.[5] B65D 47/00
U.S. Cl. 222—153 17 Claims



1. A shaker closure for a container comprising:

a skirt, said skirt having an open skirt bottom end and a top end, said bottom end adapted to attach said closure to the container;

a shaker top end having a non-perforated portion, a shaker portion, and a pivotable lid to open and close said shaker portion, said skirt top end surrounding said shaker top end;

said shaker portion having a plurality of orifices;

said pivotable lid hingedly connected to said non-perforated portion and adapted to pivot from a closed position covering said orifices to an open dispensing position exposing said orifices;

means for sealing said orifices when said pivotable lid is in its closed position; and

means for releasably locking said lid in a closed position;

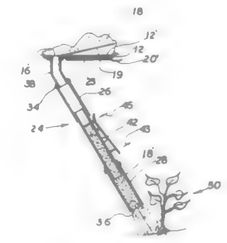
wherein said sealing means comprise a plurality of counter bores formed on a bottom surface of said shaker portion and surrounding said orifices defining a plurality of flexible membranes surrounding said orifices, and a plurality of protuberances extending from an inner surface of said lid and being larger than said orifices, said protuberances flex said membranes and thereby seal said orifices when said pivotable lid is in the closed position.

5,339,994

FERTILIZER OR LIKE DRY MATERIAL DISPENSING ASSEMBLY

Jorge A. Nuila, 444 Brickell Ave., Suite 51-373, Miami, Fla. 33131

Continuation-in-part of Ser. No. 659,615, Feb. 25, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,687
Int. Cl.[5] B67D 5/64
U.S. Cl. 222—175 12 Claims



7. A dispenser assembly for dispensing predetermined amounts of dry material, said assembly comprising:

a container having a hollow interior and structurally adapted to hold the dry material to be dispensed therein and including an outlet formed in a lower end of the container;

mounting means connected to said container on an exterior portion thereof and structured for supporting said container in an operative position on a carrier;

an elongate dispensing hose connected to said outlet;

a valve means in line with said hose and having a handle extending perpendicularly from said hose and a trigger lever extending adjacent said handle, said handle and said trigger lever sized and adapted to be gripped together by the carrier's hand, squeezing of said trigger lever to said handle activates said valve means for dispensing a predetermined volume of material through said elongate hose;

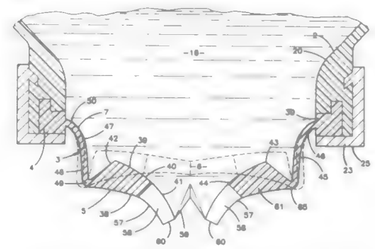
wherein said valve means comprises a bar connected to an inlet disk and an outlet disc, said inlet disk arranged and adapted to be insertable into said hose, said outlet disk arranged and adapted to be protrudable out of said hose, said bar biased away from said hose to hold said inlet disk out of said hose and said outlet disk inside said hose, open for flow and blocking for flow respectively, and said trigger lever comprises a pivotable cam portion abuttable against said bar, squeezing of said trigger lever causing said cam portion to thrust said bar against said bias to insert said inlet disk into said hose and to protrude said outlet disk out of said hose.

5,339,995

DISPENSING VALVE FOR PACKAGING

Paul E. Brown, Midland, and Timothy R. Socier, Essexville, both of Mich., assignors to Liquid Molding Systems, Inc., Midland, Mich.

Continuation of Ser. No. 804,086, Dec. 6, 1991, Pat. No. 5,213,236. This application Mar. 30, 1993, Ser. No. 39,896
The portion of the term of this patent subsequent to Dec. 6, 2008, has been disclaimed.
Int. Cl.[5] B67D 5/06
U.S. Cl. 222—185 71 Claims



1. A dispensing package for fluid products, comprising:

a container shaped to retain a selected fluid product therein, and having a discharge opening; and

a dispensing valve for controlling the flow of the fluid product from said container, having an interior surface interfacing with the fluid product in said container, and an oppositely oriented exterior surface interfacing with ambient environment; said valve including a marginal valve portion sealing about the discharge opening of said container, and retained in a generally fixed relationship therewith; a valve head portion having an orifice which opens to permit fluid flow therethrough in response to a predetermined discharge pressure within said container, and closes to shut off fluid flow therethrough upon removal of the predetermined discharge pressure, wherein said valve head portion is shaped for shifting generally centrally with respect to said marginal valve portion; and a connector sleeve portion having a resiliently flexible construction, with one marginal end area thereof connected with said marginal valve portion, and an opposite head end area thereof connected with said valve head portion; said connector sleeve portion being doubled over in an outwardly protruding direction between said marginal valve portion and said valve head portion when pressure within said container is raised above the predetermined discharge pressure, thereby defining a rim area on the exterior surface of said valve which moves rollingly outwardly toward said valve head portion as the same shifts to a fully extended position where the head end area of said connector sleeve is bent back toward said valve head portion and applies torque to said valve head portion which assists in opening said orifice.

5,339,996

PORTABLE MINI SILO SYSTEM

Patrick C. Dubbert, Cole County; Nathan R. Neely, Callaway County; Daniel L. Albertson, Maries County, and Norbert A. Luebbert, Osage County, all of Mo., assignors to Midwest Pre-Mix, Inc., Jefferson City, Mo.

Filed Apr. 26, 1993, Ser. No. 52,590
Int. Cl.[5] G01F 11/24
U.S. Cl. 222—185 12 Claims

1. A portable mini silo system for delivering dry mortar blends to batch mixers, comprising:

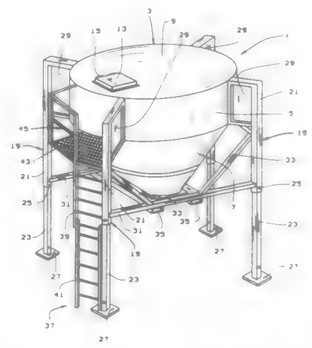
a silo having a peripherally continuous side wall which terminates at an upper end in a closed upper wall, said side wall having a lower area which tapers downwardly and terminates at a lower end in a restricted opening;

loading means associated with said closed upper wall for loading dry mortar blend into said silo;

unloading means associated with said restricted opening for unloading dry mortar blend from said silo into a batch mixer; and

telescopic leg elements peripherally spaced about the silo for supporting the silo in an upright position, said leg elements being constructed for telescopic collapse enabling portable movement of the silo and telescopic extension for supporting said silo a predetermined distance above a supporting surface;

a collapsible ladder attached to one of the telescopic leg elements for collapse and extension as said one telescopic leg element is collapsed and extended, said collapsible ladder extending upwardly a sufficient distance to enable a user to load dry mortar blends into said silo through said loading means.

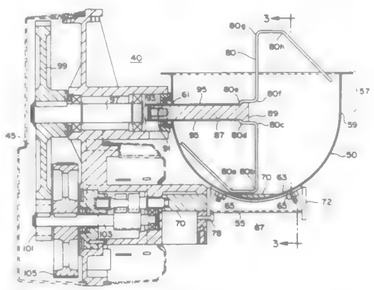


5,339,997

MECHANICAL FEEDER HAVING A HEMISPHERICAL HOPPER

Kenneth W. Billivant, Chadds Ford, Pa., and Friedrich Preiser, Sewell, N.J., assignors to K-Tron Technologies, Inc., Wilmington, Del.

Filed Oct. 28, 1992, Ser. No. 967,989
Int. Cl.[5] G01F 11/20
U.S. Cl. 222—238 24 Claims



1. A feeder for controllably discharging a flowable substance comprising:

a hemispherically shaped hopper for holding said flowable substance, said hopper having an elongated discharge

VOL 1165 ISS 4 AUG 23 1994 UMI

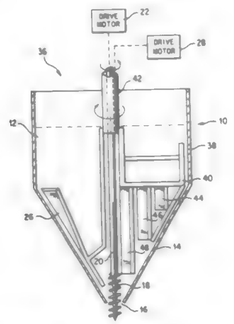
opening at the bottom thereof for discharging said flowable substance;
a rotatable agitator for disturbing said flowable substance within said hopper and said flowable substance tending to cling to the sides of said hopper;
an elongated trough having an inlet opening for receiving said flowable substance from said hopper;
a rotatable screw for moving said flowable substance through said trough and controllably discharging said flowable substance from said feeder; and
means for driving said rotatable screw and agitator.

5,339,998

AUGER FEEDING AGITATOR

Timothy C. Warren, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 26, 1993, Ser. No. 140,999
Int. Cl.[5] G01F *11/20*
U.S. Cl. 222—241 13 Claims



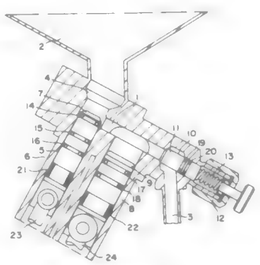
1. A volumetric material dispensing apparatus, comprising:
a supply hopper for housing a supply of material to be dispensed, the hopper having a cylindrical top portion of a predetermined diameter and a tapering lower portion;
a cylindrical feed aperture located at a bottom end of the tapering lower portion of the hopper;
a metering auger located within the feed aperture along a longitudinal axis of the hopper;
a driving motor for rotatably driving the metering auger about the longitudinal axis at a predetermined rotational speed during metering;
a control means for controlling the rotation of the metering auger;
an agitator rotatably mounted within the hopper for rotation about the longitudinal axis, the agitator including at least three vertically oriented angled stirring and feeding blades laterally spaced along a vertical plane extending through the longitudinal axis between the longitudinal axis and one side of the supply hopper, the blades being angled with respect to the vertical plane and having differing lengths of extension into the lower portion of the supply hopper, the longest length of extension being the blade nearest the longitudinal axis and the shortest length of extension being the blade nearest the one side of the supply hopper, the agitator further including an angled blade substantially parallel with and closely adjacent to the tapering lower portion of the hopper on an opposite side of the longitudinal axis as said at least three blades; and
a driving mechanism for driving the agitator at a rotational speed substantially slower than the rotational speed of the metering auger.

5,339,999

EASY CLEANING METERING DEVICE

Giancarlo Montesissa, Robbio, Italy, assignor to Nestec S.A., Vevey, Switzerland

Filed Jun. 18, 1991, Ser. No. 717,276
Claims priority, application European Pat. Off., Jul. 7, 1990, 90113010.4
Int. Cl.[5] B67D *5/37*
U.S. Cl. 222—380 5 Claims



1. A metering device comprising:
a body defining an interior wall portion which extends longitudinally to define a chamber which extends to a chamber end opening in the body, product inlet and product outlet portions, each having an opening into the chamber at a position displaced longitudinally one from another, an intake valve portion having an opening into the chamber at a position which opposes the product inlet opening, a metering valve portion having an opening into the chamber at a position between the intake valve opening and the product outlet opening, an a tube portion which extends from the product outlet opening;
a reciprocative chamber and product outlet closure piston configured and positioned within the interior wall portion for closing the chamber end opening, for sealing the product outlet opening and for being moved in a direction away from the product outlet opening and towards the chamber end to open the product outlet opening and then reciprocating to seal the product outlet opening;
a reciprocative intake valve portion piston positioned within the intake valve portion and configured for, upon reciprocation in a direction towards and then away from the product inlet opening, extending through the intake valve opening to the product inlet opening for sealing the product inlet opening from the chamber and then opening the product inlet opening for drawing product into the chamber; and
a reciprocative metering valve portion piston positioned within the metering valve portion and configured for, upon movement in a direction away from the chamber, for drawing product into the chamber and for, when the product inlet opening is sealed and upon movement towards the chamber, extending through the metering valve opening and forcing product in the chamber to move the chamber wall closure piston to open the product outlet opening to expel the product from the chamber through the product outlet opening.

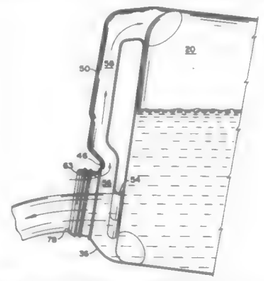
5,340,000

VENTED PLASTIC BOTTLE

Carl D. Ring, Oakland, Tenn., assignor to Ring Can Corporation, Oakland, Tenn.

Filed Jul. 13, 1993, Ser. No. 90,760
Int. Cl.[5] A47G *19/00*
U.S. Cl. 222—468 8 Claims

1. A plastic container comprising a bottom wall, front, rear, and side walls extending vertically from said bottom wall defining a chamber having a generally rectangular cross-section, a top wall covering a substantially portion of said chamber, a neck platform extending upwardly from said top wall adjacent said front wall and having a circular pouring spout with an open end, means connected to said platform defining an air passageway from said spout to said chamber, said platform including a guiding neck portion connected to said top wall below said spout and having a generally U-shaped horizontal ledge as viewed from the open end of said spout and opening toward said front wall, said U-shaped ledge having a



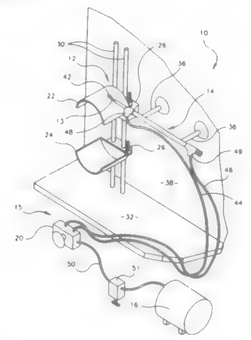
rear edge which is generally parallel to said front wall and side edges extending from said rear edge toward said front wall, said rear edge and said side edges being spaced inwardly from the rear edge and side edges, respectively, of said spout, whereby during a pouring operation said U-shaped ledge directs liquid from said chamber over the front edge of said spout away from the rear edge of said spout thereby permitting air to enter the rear of said spout into said air passageway and said chamber.

5,340,001

APPARATUS FOR THREADING A DRAWSTRING THROUGH A GARMENT SLEEVE

Terry S. Ard, Rte. 3, Box 299, Bladenboro, N.C. 28320

Filed Jan. 11, 1993, Ser. No. 2,639
Int. Cl.[5] A41H *43/00*
U.S. Cl. 223—50 21 Claims



1. A drawstring threading apparatus for threading a drawstring through a drawstring sleeve in a garment comprising:
(a) a garment mounting assembly;
(b) an elongated cylinder mounted adjacent to the garment mounting assembly and having a first open end;
(c) a piston movably mounted in the cylinder;
(d) a drawstring threader connected to the piston and extending therefrom, the drawstring threader having a first end portion with a drawstring fastener attached thereto and a second end portion connected to the piston, and wherein the elongated member is flexible and includes an intermediate section that is positionable into an encircling position; and
(e) a fluid actuator assembly for driving the piston between an extended position where the intermediate section of the drawstring threader extends from the first open end of the cylinder and a retracted position where the intermediate section is at least partially housed within the cylinder, wherein as the piston is driven from the retracted position to the extended position the drawstring fastener is driveable through a drawstring sleeve formed in the garment such that the intermediate section of the drawstring threaded is positioned into its encircling position with the drawstring fastener extending from the drawstring sleeve, and wherein when the drawstring fastener extends from the drawstring opening a drawstring is attachable to the fastener and threadable through the drawstring sleeve as the piston is driven from the extended position to the retracted position.

5,340,002

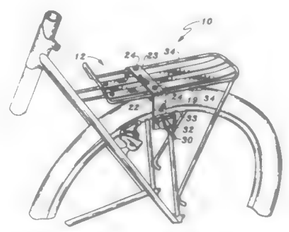
Patent Not Issued For This Number

5,340,003

BICYCLE CARRIER RACK ADAPTER

Mark S. Wilson, 1731 Foster Ct., Santa Cruz, Calif. 95062

Filed May 5, 1993, Ser. No. 58,970
Int. Cl.[5] B62J *7/04*
U.S. Cl. 224—39 20 Claims



1. A multi-use bicycle carrier rack adapter, comprising:
a bracket member having a first arm, a second arm, and a connecting element joining said first and said second arm; the first arm includes at least one aperture therein, the second arm includes at least one aperture therein, and the connecting element includes at least one aperture therein;
means for securing a fastening member to said connecting element;
a pair of adjustable clamp members, each of said pair of adjustable clamp members having a first aperture and a second aperture; said first aperture of each of said pair of adjustable clamp members is adapted to receive and secure a fastening element allowing attachment to either the first arm or the second arm of the bracket member;
a coupling member for securing a bicycle carrier rack to said bracket member, said coupling member including a pair of legs and a joining member; each of said pair of legs are respectively adapted to be adjustably received and secure within said second aperture of one member of the pair of adjustable clamp members.

5,340,004

AUTOMOTIVE STORAGE NET

Donal Moore, Birmingham, Mich., assignor to Polytech Netting Industries, Inc., Ontario, Canada

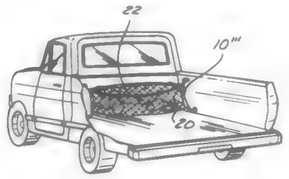
Filed Apr. 27, 1992, Ser. No. 874,636
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—42.46 R 51 Claims

1. A storage net, comprising:
a storage area having a front, a back and two sides, the front and back being pivotally connected at one end and each

VOL 1165 ISS 4 AUG 23 1994 UMI

having edges distal from the one end, and each of the front and back edges having a length extending between the two sides;

means for providing a predetermined amount of longitudinal elasticity to the storage area, comprising two elastic members, one member being attached to the front edge and the other member being attached to the back edge, wherein one of the elastic members extends the length of one of the front and back edges, wherein the elastic member extending the length comprises elastic cord, and wherein the



other elastic member comprises an elastic band attached to and spaced from a flexible, substantially inelastic strap, and wherein the front and back edges draw together firmly enough as to prevent the stowed items from inadvertently escaping therebetween; and

means for removably attaching the storage area to a desired surface;

wherein items stowed in the storage area are prevented from moving more than a predetermined distance in any direction.

5,340,005

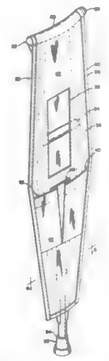
FABRIC ACCESSORIES FOR CRUTCHES AND WALKERS, PROVIDING CARRYING EXPANDABLE VOLUMES FOR PERSONAL USE ITEMS AND SHOPPING ITEMS, AND PRESENTING REFLECTIVE FABRIC PORTIONS THEREOF FOR OBSERVATION BY OTHERS

Robert D. Woods, 231 Park Ave. S., North Bend, Wash. 98045, and Sandra E. Radcliffe, 19119 68th Pl. W., Lynnwood, Wash. 98036

Filed May 21, 1992, Ser. No. 888,353

Int. Cl.[5] B60R *11/00*

U.S. Cl. 224—42.46 R **6 Claims**



1. A fabric accessory for a crutch providing carrying expandable volumes for personal use items and shopping items, comprising:

a. fabric materials sewn: to telescopically receive a crutch inserted first by the entry of a foot end of a crutch into a top opening of these fabric materials of the fabric accessory; to almost completely enclose a crutch, leaving an opening at the bottom for a foot end portion of a crutch, and leaving a limited opening, accessible from one side only, by a crutch handle, so a crutch handle may be gripped; to provide pockets serving as carrying expandable volumes for personal use items and shopping items; and to provide a fold over tab portion for folding over the top of the crutch; and

b. a fastener assembly to keep the fold over tab portion in position over the top of the crutch, and thereby keep this fabric accessory in position around a crutch.

5,340,006

HEAD-SUPPORTED CUP HOLDER

Tianhou Li, Lafitte Village, Apt. B101, New Orleans, La. 70148

Filed Mar. 4, 1993, Ser. No. 26,357

Int. Cl.[5] A45F *3/18*

U.S. Cl. 224—148 **8 Claims**



1. A head-supported drink holder apparatus for supporting a beverage receptacle at a selected generally horizontal distance from a user's mouth; wherein, the apparatus comprises:

a pair of head engaging support units wherein each support unit comprises a support member having a generally rigid L-shaped lower portion, including a leg element and a foot element; wherein, each foot element is provided with an elongated aperture provided with a plurality of recesses,

strap means for securing the support members to the user's head; and,

a beverage receptacle holder unit including an inner ring element dimensioned to receive a beverage receptacle and having a first axle element; and, an outer ring element dimensioned to receive said first axle element of the inner ring element and provided with a second axle element disposed generally perpendicular to said first axle element; wherein, said second axle element is dimensioned to be received in opposed recesses in said support members.

5,340,007

MOTOR VEHICLE ROOF-RACK

Jean-Marie Jeuffray, Bressuire, and Michel Memeteau, St-Varent, both of France, assignors to Farnier & Penin, Bressuire, France

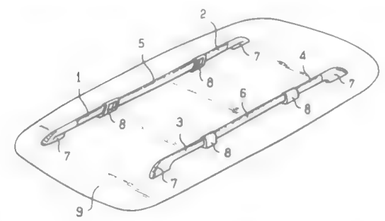
Filed May 5, 1993, Ser. No. 56,901

Claims priority, application France, May 6, 1992, 92 05580

Int. Cl.[5] B60R *9/04*

U.S. Cl. 224—321 **8 Claims**

1. A roof-rack device for a motor vehicle roof comprising at least two longitudinal elements couplable to the roof of the vehicle and each longitudinal element having two end legs and at least one additional leg between the two end legs, subdividing each longitudinal element into at least two bars, a releasable link means movably connecting at least one of said bars of each longitudinal element to a said end leg and to an additional leg such that at least one of said bars is a movable bar and the movable bar is positionable between the two end legs of the same longitudinal element, or between two additional legs or



two end legs of two different longitudinal elements situated at the same longitudinal position along the roof of the vehicle.

5,340,008

FABRIC CONVEYOR SYSTEM

Johannes Freermann, and Dieter Malcherek, both of Ochtrup, Fed. Rep. of Germany, assignors to Carl Schmale GmbH & Co. KG, Ochtrup, Fed. Rep. of Germany

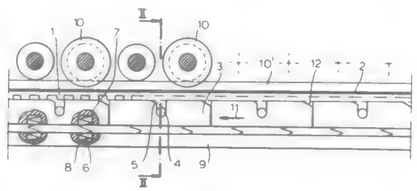
PCT No. PCT/DE91/00150, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO91/13016, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 22, 1991, Ser. No. 924,024

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1990, 9002430

Int. Cl.[5] B65H *20/06*

U.S. Cl. 226—171 **6 Claims**



1. A fabric conveyor, comprising:

a support surface against which a web can be pressed at an edge of said web on one side thereof, and extending along a transport path for said web;

an endless belt bearing with an outer surface against another side of said web opposite said one side and running along said transport path, said belt being formed on an inner side thereof turned away from said other side of the web with uniformly spaced apart teeth;

a succession of pressure pads extending over substantially an entire effective length of the belt engaging said web along said transport path, said pressure pads having downstream flanks with respect to a direction of travel of the belt and the web along said transport path;

support means for individually supporting said pressure pads, said pads having portions adjacent said flanks inclined toward said belt in said direction of travel and providing an unsupported run of the belt and dimensioned such that no more than one tooth of the teeth of the belt is located at the respective portion of each pressure pad; and

spring means individually bearing upon said pads and urging same against said teeth to support said belt over said effective length for yieldable movement of said pads and said belts toward and away from said support surface.

5,340,009

PACKING

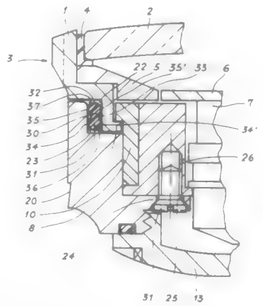
Alfred Vollert, La Chaux-de-Fonds, Switzerland, and Roger Ecoffet, Villers-le-Lac, France, assignors to Werthanor S.A., Le Locle, Switzerland

Filed Sep. 11, 1992, Ser. No. 943,872

Claims priority, application Switzerland, Oct. 4, 1991, 02 934/91

Int. Cl.[5] F16J *15/32*

U.S. Cl. 277—206 A **4 Claims**



1. An annular packing for preventing leakage of fluid and dust past two annular members having mating cylindrical surfaces separated by a distance,

said annular packing defining a central axis and being capable of assuming a free state and an operative state, said operative state being assumed when said packing is in place between said mating surfaces,

said packing having a cross-section in a plane containing said central axis, which comprises a neck portion and two enlargements connected together by said neck portion,

said cross-section being symmetrical with respect to a straight line which is inclined to said central axis in said free state of said packing and which is substantially parallel to said axis in the operative state of said packing,

said neck portion being smaller than said distance and said enlargements being larger than said distance wherein, in said operative state, each of said enlargements defines annular contact faces in contact with both of said mating surfaces and said neck portion is maintained substantially remote from said mating surfaces.

5,340,010

BONDING APPARATUS

Minoru Torihata, and Osamu Nakamura, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 869,486

Claims priority, application Japan, Apr. 16, 1991, 3-109689

Int. Cl.[5] H01C *21/607;* **B23K** *20/10*

U.S. Cl. 228—1.1 **2 Claims**

1. A bonding apparatus for semiconductors comprising:

an XY table;

an elongated hole formed in an X table of said XY table, said elongated hole extending along a Y direction;

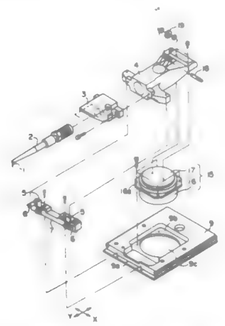
a mounting hole provided in a Y table of said XY table;

a linear motor wherein a magnet section of said linear motor is mounted in said mounting hole and extends into said elongated hole;

VOL 1165 ISS 4 AG 23 1994 UMI

a lifter arm provided on a coil section of said linear motor; and

a horn provided on said lifter arm;



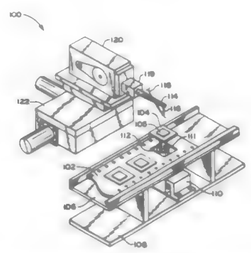
whereby said Y table is used as a bottom plate of a bonding head and the size of said bonding apparatus is reduced.

5,340,011

ADJUSTABLE HEIGHT WORK HOLDER FOR BONDING SEMICONDUCTOR DIES

Antonio Sanchez, Ripon, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Dec. 9, 1992, Ser. No. 988,299
Int. Cl.[5] B23K *37/04*
U.S. Cl. 228—4.5 16 Claims



1. Apparatus for bonding a pad of a semiconductor die to a terminal of a semiconductor package, comprising:

a carrier for holding a semiconductor die and a semiconductor package, said die having pads and said package having terminals;

a rotary table having a movable member and a stationary member, said movable member having a chuck mounted thereon for coarsely lifting the die and package a maximum distance "h" above the carrier;

a height adjustment mechanism for finely adjusting the maximum vertical displacement of said chuck;

a bonding tool;

means for positioning said bonding tool such that a wire may be bonded between a selected die pad and a selected package terminal; and

a camera and monitor for viewing the die pad and package terminal;

wherein the height adjustment mechanism includes:

a first bracket, fixed with respect to the movable member and having a first leg extending towards the movable member;

a second bracket, fixed to the movable member, and having a second leg extending towards the first bracket; and

a set screw extending through the first leg, towards the second leg, and limiting the maximum upward vertical travel of the movable member.

5,340,012

TITANIUM HYDRIDE COATED BRAZING PRODUCT

Dennis Beeferman, Brookfield, and William F. Lucas, Oak Creek, both of Wis., assignors to Handy & Harman, New York, N.Y.

Continuation-in-part of Ser. No. 746,266, Aug. 15, 1991, Pat. No. 5,186,380. This application Apr. 15, 1993, Ser. No. 39,309
Int. Cl.[5] B23K *35/24, 35/34*
U.S. Cl. 228—56.3 18 Claims

1. A brazing product comprising:

a metal or alloy article of a filler material for forming a braze joint when heated to an appropriate brazing temperature; and

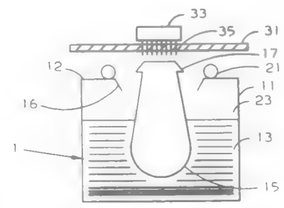
a coating upon at least a portion of the article and comprising a Group IVb transition metal or transition metal hydride and a binder for retaining the transition metal or transition metal hydride upon the article when the coating is applied thereto.

5,340,013

REWORK PROCESS FOR PRINTED CIRCUIT CARDS AND SOLDER FOUNTAIN HAVING GAS BLANKET FOR CARRYING OUT THE PROCESS

Joseph D. Poole, Troutman, and Frank P. Zickefoose, Charlotte, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1993, Ser. No. 165,780
Int. Cl.[5] H05K *3/34;* B23K *3/00, 31/02*
U.S. Cl. 228—119 10 Claims



1. A solder tool for reworking a pin-in-hole printed circuit board, said solder tool comprising:

a. a solder pot for containing molten solder, said solder pot having a top surface with an opening in a top surface thereof for the upward flow of solder;

b. a solder pump for pumping the molten solder upward from the solder pot through the opening in the top surface of the solder pot to the pin-in-hole printed circuit board;

c. a solder nozzle extending upwardly from the solder pump through the opening in the top surface of the solder pot for carrying the molten solder into proximity with the pin-in-hole printed circuit board; and

d. a circumferential conduit surrounding the solder nozzle and the opening in the top surface of the solder pot, said conduit having outlets for providing a blanket gas blanket in proximity to the solder nozzle, the opening in the top surface of the solder pot, and the pin-in-hole printed circuit board.

5,340,014

COMBUSTIBLE SLURRY FOR JOINING METALLIC OR CERAMIC SURFACES OR FOR COATING METALLIC, CERAMIC AND REFRACTORY SURFACES

Jainagesh A. Sekhar; V. Subramanian, and Necip S. Canarslan, all of Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Division of Ser. No. 787,091, Nov. 4, 1991, which is a continuation-in-part of Ser. No. 753,216, Aug. 30, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 981,792
Int. Cl.[5] B23K *23/00*
U.S. Cl. 228—198 8 Claims

1. A method of joining metallic or ceramic surfaces, which comprises the steps of:

providing a slurry having a liquid suspending medium and particulate constituents suspended in said medium capable of undergoing exothermic reaction by combustion synthesis when ignited, said constituents being selected from the group consisting of titanium dioxide, boron oxide, aluminum, titanium, boron, nickel and phosphorus; titanium and boron; titanium, boron, nickel and phosphorus; chromic oxide, carbon and aluminum; and mixtures thereof;

applying said slurry to metallic or ceramic surfaces to be joined;

placing said metallic or ceramic surfaces in abutting relation with said applied slurry therebetween; and

igniting said slurry by wave propagation using a torch, to cause combustion synthesis thereof at a temperature sufficient to fuse said metallic or ceramic surfaces together.

5,340,015

METHOD FOR APPLYING BRAZING FILLER METALS

Govind L. Hira, Columbia; Richard L. Hall, West Friendship, and Gary I. Segal, Randallstown, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 22, 1993, Ser. No. 34,987
Int. Cl.[5] B23K *1/20*
U.S. Cl. 228—205 7 Claims

1. A method of joining two metal surfaces by brazing, comprising the steps of:

providing first and second metal surfaces to be joined;

cleaning said surfaces by impinging a high velocity plasma spray on said surfaces, said plasma spray being directed generally orthogonal to said surfaces;

limiting the application of a brazing filler metal to a desired location on said first surface;

applying said brazing filler metal to at least said first surface by plasma spraying said filler metal on said first surface to form a first coated surface;

abutting said first coated surface to said second surface;

heating said brazing filler metal above its melting point while maintaining said first coated surface and said second surface in an abutting relationship; and

cooling said brazing filler metal below its melting point while maintaining said first coated surface and said second surface in an abutting relationship.

5,340,016

SOLDERING METHOD AND APPARATUS

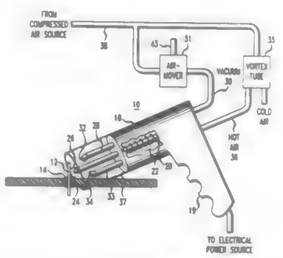
Linda M. Fletcher, Yardley; Leslie A. Guth, and Douglas W. Monroe, both of Newtown, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 970,409, Nov. 2, 1992, Pat. No. 5,234,157. This application Jun. 16, 1993, Ser. No. 78,666
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[5] B23K *1/00, 1/012*
U.S. Cl. 228—219 3 Claims

1. A method for soldering an object to an article in contact therewith, using a low-solids, flux-containing solder, so as to achieve a reduced amount of flux residues, comprising the steps of:

manually applying heat to an article and an object in contact therewith;

applying a low-solids, flux-containing solder to the article and the object so that the solder reflows and coats at least



a portion of the article and object to bond them together; and

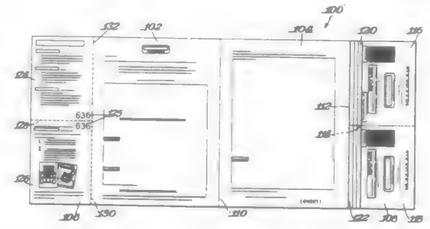
simultaneously directing hot air into the region where the solder is applied to the article and the object to maintain the flux vapors in their vaporous state.

5,340,017

RETURN MAILING UNIT

John F. Tighe, P.O. Box 1086, Truro, Mass. 02666

Continuation-in-part of Ser. No. 692,668, Apr. 29, 1991, Pat. No. 5,169,060. This application Dec. 4, 1992, Ser. No. 986,853
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—300 15 Claims



1. A return mailing unit comprising a unitary sheet having two opposite longitudinal edges interconnected by two transverse edges, said sheet two end panels and at least two intermediate panels between said panels being connected to each other by a fold line parallel to said transverse edges, said intermediate panels being of generally the same size as each other, an end panel connecting line parallel to said transverse edges connecting each of said end panels to its adjacent intermediate panel, at least a portion of each of said end panel connecting lines being perforated to form a perforated connecting line, each of said end panels being of lesser length along said longitudinal edges than the length of each of said intermediate panels, at least one of said end panels being of multi-layer extra thickness when said sheet is in its unfolded condition with the layers spaced from each other to form at least one envelope having joined edges and a sealing flap, said envelope being readily detachable from its adjacent intermediate panel by tearing said sheet at said perforated connecting line of said envelope, said intermediate panels being at least as wide from one longitudinal edge to the other longitudinal edge as said envelope when said envelope is detached and is in a condition for return mailing, and the other of said end panels being readily detachable from its adjacent intermediate panel at said perforated portion of said connecting line for said other of said end panels whereby

VOL 1165 ISS 4 AG 23 1994 UMI

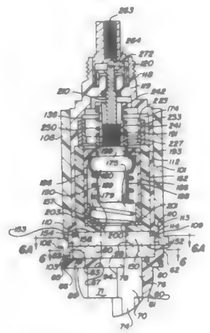
at least a portion of said other of said end panels may be detached and be an insert into said envelope to include reply information when said envelope is used for return mailing.

5,340,018

THERMOSTATICALLY CONTROLLED MIXING VALVE

Robert MacDonald, Scottsdale, Ariz., assignor to Masco Corporation of Indiana, Greenburg, Ind.

Continuation of Ser. No. 669,697, Mar. 14, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 107,429
Int. Cl.[5] G05D *23/13*
U.S. Cl. 236—12.2 27 Claims



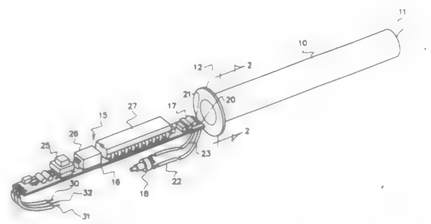
1. A mixing valve comprising:
a housing having a cavity with a hot water supply port, a cold water supply port and a mixed water discharge port in communication with said cavity;
a cartridge removably mounted in said cavity of said housing, said cartridge containing
valving means containing hot water inlet aperture in communication with said hot water supply port, cold water inlet aperture in communication with said cold water supply port, and mixed water outlet aperture in communication with said mixed water discharge port for controlling volume flow to said cartridge;
a hot water passageway having an upstream end and a downstream end in communication with said hot water inlet aperture of said valving means at the upstream end thereof, a cold water passageway having an upstream end and a downstream end in communication with said cold water inlet aperture of said valving means at the upstream end thereof, and a mixed water discharge passageway in communication with said mixed water outlet aperture of said valving means at the upstream end thereof, said hot water passageway and said cold water passageway being in communication with said mixed water discharge passageway at the downstream end thereof;
water temperature control valve means interposed between said mixed water discharge passageway and said hot water passageway and said cold water passageway at the downstream ends thereof for controlling the amount of hot water flow from the hot water passageway into the mixed water discharge passageway and the amount of cold water flow from the cold water passageway into said mixed water discharge passageway;
said water temperature control valve means comprising a cylinder and a piston axially movably mounted in said cylinder wherein movement of said piston in said cylinder in a first axial direction increases the degree of communication between the hot water passageway and the mixed water discharge passageway thereby increasing the volume of hot water flowing into said mixed water discharge passageway and decreases or seals off communication between said cold water passageway and said mixed water discharge passageway thereby decreasing or shutting off the cold water flow into the mixed water discharge passageway, while movement of said piston in said cylinder in the opposite axial direction increases the degree of communication between the cold water passageway and the mixed water discharge passageway thereby increasing the volume of cold water flowing into said mixed water discharge passageway and decreases or seals off communication between said hot water passageway and said mixed water discharge passageway thereby decreasing or shutting off the hot water flow into the mixed water discharge passageway;
a thermostat element axially movably disposed within said mixed water discharge passageway operably connected to said piston to move said piston axially within said cylinder in response to the axial movement of said thermostat element within said mixed water discharge passageway, the thermostat element lying in the flow path of the mixed water and being arranged to move the piston relative to the cylinder in dependence upon the temperature of the mixed water passing through the mixed water discharge passageway.

5,340,019

ELECTRONIC AQUASTAT IN IMMERSIBLE CAPSULE

John E. Bohan, Jr., Edina; Frank S. Mills, Bloomington, and Scott A. Ward, Golden Valley, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 30, 1993, Ser. No. 86,270
Int. Cl.[5] G01K *1/00*
U.S. Cl. 236—20 R 5 Claims



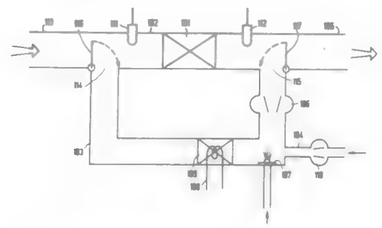
1. Liquid immersible electronic temperature responsive apparatus, comprising:
A tubular capsule of liquid impervious material closed at one end and having predetermined internal and external diameters;
and elongated circuit board dimensioned to fit within said tubular capsule;
a sensor element having a temperature responsive electrical characteristic carried on said elongated circuit board;
an electronic circuit arranged on said elongated circuit board and electrically connected to said sensor element, said electronic circuit including switching means operable to control supply of electric current to a load in response to the temperature sensed by said sensor element; and
means retaining said circuit board in said capsule.

5,340,020

METHOD AND APPARATUS FOR GENERATING HEAT BY FLAMELESS COMBUSTION OF A FUEL IN A GAS FLOW

Wolfgang Maus; Helmut Swars, both of Bergisch Gladbach; Heinrich Pütz, Much, and Walter Jäger, Engelskirchen, all of Fed. Rep. of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Filed Dec. 13, 1991, Ser. No. 807,169
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1989, 3920159; Nov. 7, 1989, 8913184[U]; Mar. 8, 1990, 9002743[U]
Int. Cl.[5] B60H *1/02*
U.S. Cl. 237—12.3 C 33 Claims



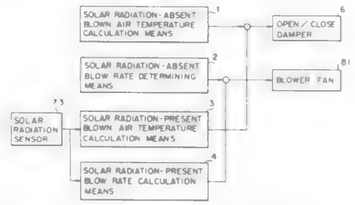
1. A method for generating heat by flameless combustion of a fuel in a gas flow having an oxygen content, which comprises:
a) passing a gas flow through at least one heating device, along at least one delivery device for fuel, and along at least one catalytically active element;
b) during a maintained operation of the heating device, passing a predominant part of the gas flow through a loop while passing through a feed apparatus and along the at least one catalytically active element for maintaining an adequate operating temperature during operation;
c) feeding a gas having an oxygen content into the loop, and discharging some of the gas flow from the loop; and
d) admixing fuel with the gas flow only to such an extent that a resultant fuel-gas mixture is not itself ignitable during operation of the heating device.

5,340,021

AIR CONDITIONING DEVICE FOR VEHICLES

Yuuichi Kajino; Hikaru Sugi, both of Nagoya; Koichi Ban, Tokai; Yuuji Honda; Katsuhiko Samukawa, Qoth of Kariya, and Takayoshi Kawai, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 7, 1992, Ser. No. 957,189
Claims priority, application Japan, Oct. 8, 1991, 3-289198
Int. Cl.[5] B60H *1/00*
U.S. Cl. 236—49.3 13 Claims



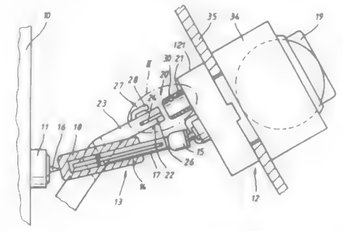
1. A method of air conditioning a vehicle which adjusts the number of revolutions of a blower fan to set the rate of blowing an amount of blown air to a desired value and adjusts the opening degree of an open/close damper to set the temperature of said blown air to a desired value comprising the steps of:
detecting an amount of solar radiation;
calculating a solar radiation-absent blow out air temperature by calculating the temperature of an amount of blown air in the absence of solar radiation based on a setpoint temperature and an inside and an outside temperature relative to said vehicle;
calculating a solar radiation-absent blowing rate by calculating the rate of blowing air based on said temperature of said blown air in the absence of solar radiation;
calculating a solar radiation-present blow-out air temperature by calculating the temperature of said blown air in the presence of solar radiation by adjusting said temperature of said blown air in the absence of solar radiation based on said amount of solar radiation detected, said setpoint temperature and said inside and said outside temperatures;
calculating a solar radiation-present blowing rate by calculating the rate of blowing said blown air in the presence of solar radiation by calculating a blowing rate adjustment value in compliance with a thermal equilibrium equation of said temperature of blown air in the presence of solar radiation, and correcting said blowing rate in the absence of solar radiation using said blowing rate adjustment value;
controlling said number of revolutions of said blower fan and said opening degree of said open/close damper based on the results calculated by each of said calculating steps;
calculating a difference between a temperature of an amount of air blown out from a face blow port in the absence of solar radiation from said solar radiation-absent blowing rate calculation step, and said setpoint temperature;
setting an increment in the amount of the air blown from said face blow port to zero when said temperature difference is smaller than a predetermined value; and
setting a value found from said thermal equilibrium equation of said temperature of blown air in the presence of solar radiation as said increment of the amount of said air blown from said face blow port when said temperature difference is greater than said predetermined value.

5,340,022

ASSEMBLY ARRANGEMENT FOR A VEHICLE HEATING SYSTEM OR AIR CONDITIONING SYSTEM

Klaus Arold, and Otto Player, both of Sindelfingen, Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Dec. 17, 1992, Ser. No. 992,109
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141834
Int. Cl.[5] B60H *1/02*
U.S. Cl. 237—12.3 A 16 Claims



1. Heating system or air conditioning system for motor vehicles having an air box and an operator unit for at least one control unit, which operator unit has to be arranged separately from the air box in the passenger compartment, the operator unit being connected to the air box by means of a control line leading to the control unit, and having a two-part assembly aid element of which one part is firmly connected to the air box

VOL 1165 ISS 4 AG 23 1994 UMI

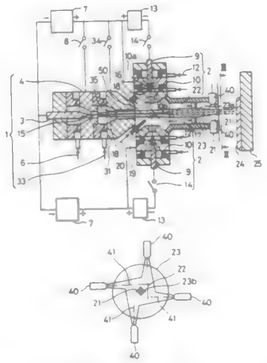
and the other part is firmly connected to the operator unit, the two parts being put together in the pre-assembly condition to hold the operator unit on the air box and being pulled apart after installation of the air box for the purpose of placing the operator unit at the installation location, wherein the two parts of the assembly aid element are formed by two plug-in parts of a plug-in connection which can be plugged one into the other and wherein a clip-type interlock is attached to the plug-in connection, which clip-type interlock is engaged by axial pressure on the plug-in parts and can be released by axial tension on one of the plug-in parts.

5,340,023

PLASMA SPRAYING METHOD AND APPARATUS

Tsutomu Itoh, Tokyo; Shinji Fukami, Tokorozawa, and Masayuki Kitoh, Tokyo, all of Japan, assignors to Onoda Cement Company, Ltd., Yamaguchi, Japan

Filed Aug. 25, 1992, Ser. No. 934,929
Claims priority, application Japan, Aug. 26, 1991, 3-238648
Int. Cl.[5] C23C *4/00*
U.S. Cl. 239—13 **9 Claims**



1. A method of plasma spraying comprising the step of spraying a liquid refrigerant through spray nozzles onto a plasma spray including a plasma flame flowing around a beam of melt droplets of a spraying material said liquid refrigerant spray from said nozzles being directed toward the peripheral portion of the plasma spray such that said liquid refrigerant spray is deviated form the central portion of the plasma spray, allowing the passage of said beam of melt droplets, said plasma flame being generated between a spraying material supply portion of a plasma torch and a substrate placed in front of said plasma torch, so that said liquid refrigerant contacts the periphery of said plasma spray surrounding said beam of said melt droplets before said plasma spray contacts said substrate.

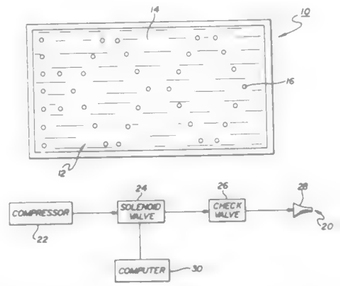
5,340,024

NUMERICALLY CONTROLLED WATER JET DISPLAY POOL

Mark Fuller, 10711 Bluffside Dr. #101, Studio City, Calif. 91604, and Alan Robinson, 5349 C N. Peck Rd., El Monte, Calif. 91732

Filed Oct. 27, 1993, Ser. No. 144,840
Int. Cl.[5] B05B *17/08*
U.S. Cl. 239—17 **17 Claims**

1. A water display that creates visual images, comprising:
a pool of water having a bottom beneath said water;
a plurality of apertures spaced apart a predetermined distance throughout said pool bottom;
air means for providing air to said apertures;
a plurality of air valves each operably connected to said air means and to a corresponding aperture, said air valves being constructed to introduce air into said pool of water through said corresponding apertures when said air valves are in an open position;



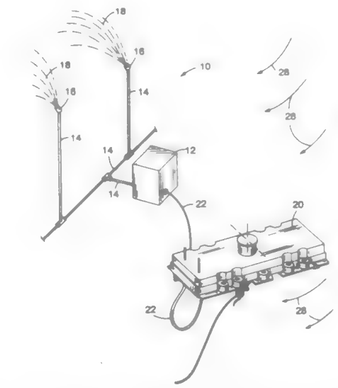
control means for providing input signals to said air valves to open a predetermined number of said air valves such that said opened air valves introduce air into said pool of water, wherein said air creates a predetermined pattern in said pool of water.

5,340,025

WIND CONTROLLED SPRAYING

George W. Pearce, P.O. Box 2, 32 Mounument St., Wenham, Mass. 01984

Continuation of Ser. No. 516,278, Apr. 30, 1990, abandoned, which is a continuation of Ser. No. 341,578, Apr. 21, 1989, abandoned. This application Nov. 22, 1991, Ser. No. 796,620
Int. Cl.[5] A01G *27/00*
U.S. Cl. 239—70 **59 Claims**



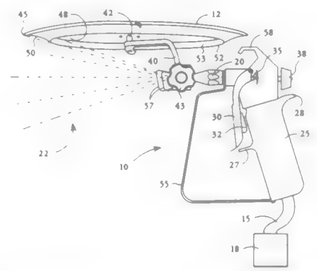
16. A method of controlled spraying into air in all directions about a predetermined location to chemically treat the region around said predetermined location, said air being subject to movement when wind occurs comprising,
sensing each occurrence of the wind exceeding a predetermined velocity from a predetermined plurality of directions at said predetermined location,
intermittently providing a chemical spray into said air for a predetermined time interval from said predetermined location upon sensing only predetermined ones of said occurrences for at least a predetermined time interval to chemically treat said region.

5,340,026

FLUID SPRAYING APPARATUS

Byron J. Woodruff, Santa Clara, Calif., assignor to Paint Trix Inc., Sunnyvale, Calif.

Filed Nov. 15, 1993, Ser. No. 152,979
Int. Cl.[5] B05B *1/28*
U.S. Cl. 239—104 **20 Claims**



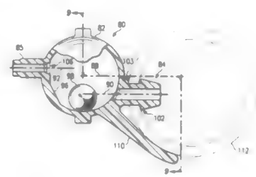
10. In a fluid spraying apparatus having a gun supplied with a pressurized fluid that shoots from an orifice in said gun in a divergent spray generally centered about a spray axis, an improvement comprising:
a generally disk shaped shield rotatable about a central shield axis, said shield disposed adjacent to said spray, whereby said shield intercepts said spray to define a border of said spray, and
a shaft having a first end and a second end, said first end connected to said shield axis and said second end pivotally connected to said gun by a pivot pin with a major axis oriented generally normal to said shield axis and disposed near said orifice, said shaft having a free state with the shaft pivoting about said pin and said shaft having a fixed state relative to said pin.

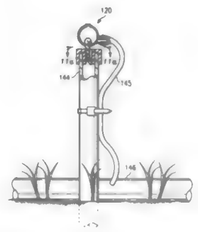
5,340,027

PRESSURE-COMPENSATED SELF-FLUSHING DRIPPER

Michael Yu, 1270 Shakespeare Dr., Concord, Calif. 94521

Continuation-in-part of Ser. No. 905,022, Jun. 26, 1992, Pat. No. 5,279,460. This application Jun. 21, 1993, Ser. No. 81,782
Int. Cl.[5] A01G *25/02*; B05B *15/02*
U.S. Cl. 239—106 **21 Claims**





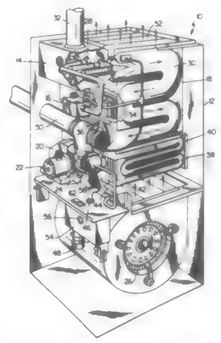
1. An irrigation dripper, comprising:
an inlet for insertion substantially horizontally into an irrigation line and defining a passageway having a centerline lying substantially horizontally and at a right angle from said irrigation line;
a housing defining a generally cylindrical chamber having a center axis, said inlet passageway leading into said chamber and being substantially offset from and below said center axis;
an outlet defining a passageway leading from said chamber, said outlet passageway having a centerline lying substantially horizontally and being substantially parallel with said inlet passageway centerline, said outlet passageway lying in a same plane as said inlet passageway, and being substantially offset from and above said center axis of said chamber; and
a ball being free to roll about said chamber and adapted for substantially obstructing said outlet passageway after a whirlpool is created within said chamber for a predetermined time.

5,340,028

ADAPTIVE MICROPROCESSOR CONTROL SYSTEM AND METHOD FOR PROVIDING HIGH AND LOW HEATING MODES IN A FURNACE

Kevin D. Thompson, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 12, 1993, Ser. No. 90,340
Int. Cl.[5] F24D *5/00*
U.S. Cl. 236—10 **14 Claims**



1. A method for providing a low fire mode and a high fire mode of a heating cycle in a current cycle of a furnace as a function of the previous heating cycle wherein the current heating cycle is a function exclusively of time run in the low fire mode and time run in the high fire mode of said previous heating cycle, comprising the steps of:
determining an existence of a heating load to be satisfied;
running burners in said low fire mode for a first time interval that does not exceed a predetermined limit, L_{des};
running the burners in said high fire mode for a second time interval until the heating load is satisfied;
calculating a Btu load requirement, as a function of said first time interval and said second time interval; and
predetermining the low fire mode time limit, L_{des}, for a next cycle from the calculated Btu load requirement.

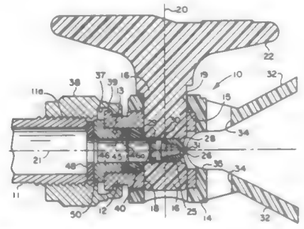
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,029

ROTARY SPRAY TIP ASSEMBLY WITH IMPROVED ROTOR SEALING MEANS

Robert J. Adams, Carol Stream, Ill., assignor to Spraying Systems Co., Wheaton, Ill.

Filed Apr. 5, 1993, Ser. No. 42,556
Int. Cl.[5] B05B *15/02*
U.S. Cl. 239—119 14 Claims



1. A spray tip assembly for mounting on the end of a liquid supply line for receiving pressurized liquid from said supply line and for discharging a liquid spray comprising

a housing having a longitudinal bore and a transverse bore intersecting said longitudinal bore;

a threaded coupling for releasably securing said housing to a threaded end of said supply line for permitting communication of liquid from said supply line to said longitudinal housing bore;

a cylindrical turret rotatably and removably supported in said transverse bore and having a through bore that is positionable into aligned relation with said longitudinal housing bore;

means in said turret through bore defining a spray orifice from which a liquid spray discharges;

an annular floating seal slidably positioned in said longitudinal housing bore and having a cylindrically concave sealing face adapted for sealing engagement with said turret about an upstream side of said turret through bore;

means responsive to screwing said threaded coupling onto the threaded end of said supply line for effecting a predetermined initial biasing of said floating seal into sealing contact with said turret with a force that permits rotation of said turret relative to said housing and removal and replacement thereof regardless of how tightly the coupling is screwed onto the supply line; and

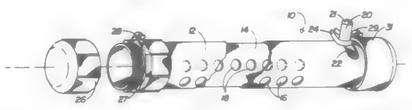
said housing being formed with an annular lip extending inwardly into said longitudinal bore adjacent an upstream side of said transverse bore for limiting downstream longitudinal positioning of said seal in said longitudinal bore.

5,340,030

SELECTIVE DISPENSING OF SUBSTANCES IN GRANULAR OR POWDER FORM

Raymond F. Siegrist, Jr., 107 Wild Elm Ct., Sanford, Fla. 32773

Filed Mar. 1, 1993, Ser. No. 24,287
Int. Cl.[5] B05B *17/00*
U.S. Cl. 239—289 19 Claims



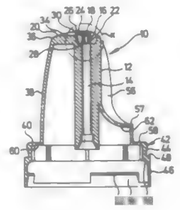
19. A device for selectively dispensing granular material at the behest of a user, said device comprising inner and outer elongate tubular members, with said inner member closely fitted inside said outer member and serving as a repository for granular material to be dispensed, one of said members being selectively rotatable for a limited number of degrees with respect to the other member, a set of holes disposed in a spaced, aligned relationship in each of said members, which holes may be moved into alignment at the time of rotation of said one member relative to the other member, bias means for normally biasing said members into a relationship in which the set of holes in said one member is out of alignment with the set of holes in said other member, and rotation producing means attached to said one member for selectively bringing about the rotation of said one member with respect to said other member, against the bias of said bias means, such set of holes, when brought into an aligned relationship by such relative rotation, permitting the dispensing of the granular material from said inner member, out through the holes of said outer member, said bias means serving, upon said rotation producing means being operated in the opposite direction, to cause rotation of said one member to a rotational position in which such sets of holes are returned to a non-aligned relationship, therefore causing the dispensing of material to cease.

5,340,031

FOAMING HEAD

Reinhard Neuhaus, Hemer; Jens-Heinrich Kersten, Kamen-Heeren, and Detlef Schmitz, Lunen, all of Fed. Rep. of Germany, assignors to Perfect-Valois Ventil GmbH, Dortmund-Wickede, Fed. Rep. of Germany

Filed Jul. 27, 1993, Ser. No. 98,456
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1992, 4224910
Int. Cl.[5] B05B *1/14*
U.S. Cl. 239—343 11 Claims



1. A foaming head (10) for a manually operated pressure container having a discharge valve including a tubular discharge nozzle (12) adapted to operate the discharge valve, a discharge channel (14) extending through the discharge nozzle (12) and being connected to a plurality of discharge openings defined by the foaming head and adapted to be connected to the pressure container when the discharge valve is open, wherein

a) the discharge channel (14) is designed at its upper end as a thin-walled tubular section (16),

b) the tubular section (16) is closed at its upper end by a deflecting plate (18) which forms part of a head wall (20) of the foaming head (10) and having a diameter which corresponds to that of the tubular section (16),

c) the tubular section (16) is provided around its circumference with passage slits (22) which are parallel to the discharge channel (14) and are separated from one another by an angle at said circumference and in each case opens out radially into an outlet slit (24) in the head wall (20), which slits form a portion of said discharge openings,

d) an inner base (26) of each of said outlet slits (24) extends radially outwardly from the lower end (28) of the associated passage slit (22) as far as the base of a deflecting wall (30) which together with the discharge channel (14) forms an acute angle which opens towards the head wall (20),

e) an upper end (32) of said deflecting wall (30) is arranged at a level which is approximately two-thirds of the height of the tubular section (16),

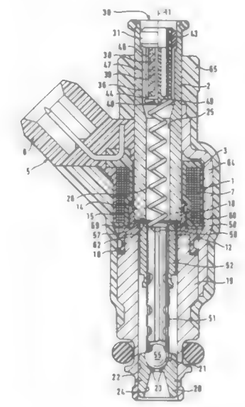
f) an outer base (34) of each outlet slit (24) extends radially outwardly from the upper end (32) of the deflecting wall (30) as far as the vicinity of an outer edge (36) of the head wall (20).

5,340,032

ELECTROMAGNETICALLY OPERATED INJECTION VALVE WITH A FUEL FILTER THAT SETS A SPRING FORCE

Alwin Stegmaier, and Kenneth Tanski, both of North Charleston, S.C., assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00726, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO93/06359, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 2, 1992, Ser. No. 64,028
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131535
Int. Cl.[5] F02M *51/06, 57/00, 61/20, 37/22*
U.S. Cl. 239—575 9 Claims



1. An electromagnetically operated injection valve for fuel injection units of internal combustion engines, comprising a metal core extending along a longitudinal axis of a valve, and a flow hole in the metal core in which a fuel filter is press-fitted, a magnetic coil and an armature, through which a valve closing body, acting in conjunction with a fixed valve seat is operated, a return spring arranged concentrically in relation to the longitudinal axis of the valve and which acts on the valve closing body, the return spring (26) is supported at one end by and at an end of the fuel filter (30) which faces toward the valve closing body (55) so that the depth to which the fuel filter is pressed into said flow hole determines the force of the return spring.

5,340,033

GRANULAR MATERIAL SPREADER

David Whitell, 63 Bedridge Way NE., Calgary, Alberta, Canada T3K 1M2

Filed Dec. 9, 1991, Ser. No. 805,991
Int. Cl.[5] A01C *19/00*
U.S. Cl. 239—676 8 Claims

1. A granular material spreader, comprising:

a frame;

means supporting said frame for movement across a ground surface;

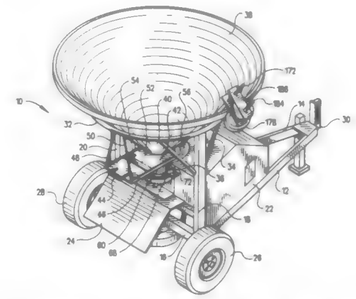
a subbstantially frusto-conical supply bin on said frame having a feed opening;

a spreader housing communicating with said feed opening and having a discharge opening;

a rotary impeller in said spreader housing for discharging granular material through said discharge opening;

a rotary and orbital elongated sweep arm in said bin;

a roller on a free end of said sweep arm engaging an inner surface of said bin;



a tire mounted for rotation with an idler shaft extending substantially parallel with said sweep arm, said tire frictionally engaging an outer surface of said bin;

means connecting said idler shaft and said sweep arm such that frictional engagement of said tire with said bin effects positive rotation of said sweep arm about its longitudinal axis; and

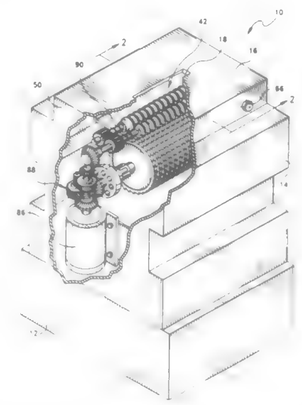
common drive means including a pair of coaxial drive shafts connected respectively for driving said impeller in rotation and for driving said sweep arm rotationally and orbitally.

5,340,034

PAPER GRINDER

Seong J. Jang, 120 Hedley Ave., Central Falls, R.I. 02863

Filed Jun. 18, 1993, Ser. No. 77,666
Int. Cl.[5] B02C *18/22*
U.S. Cl. 241—3 6 Claims



1. The method of grinding paper and paper-like products including paperboard and cardboard which are in the form of generally planar sheets having a leading edge comprising feed-

VOL 1165 ISS 4 AG 23 1994 UMI

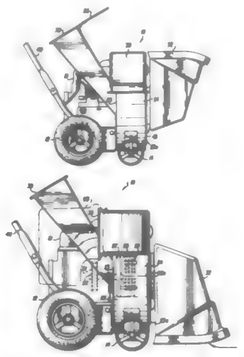
ing such sheet-like material to a corrugating station in which said leading edge of said sheet material is longitudinally corrugated in a direction normal to its planar extent so as to stiffen such sheet material and thereafter immediately feeding such stiffened sheet material to an impact station wherein said stiffened sheet is repeatedly impacted in said normal direction so as to pulverize portions of said sheet adjacent said leading edge into paper powder wherein said corrugating station includes a pair of opposed rolls each having undulating surfaces, which undulating surfaces in turn interdigitate with respect to each other and contact opposed surfaces of said sheet material so as to longitudinally corrugate said sheet and maintaining said corrugating contact on said sheet material while impacting said sheet leading edge.

5,340,035

COMBINATION CHIPPER AND SHREDDER APPARATUS AND LAWN VACUUM MACHINE

Stuart N. Ford, 998 Manakin Rd., Manakin, Va. 23103

Filed Apr. 13, 1992, Ser. No. 856,409
Int. Cl.[5] B02C *13/10*
U.S. Cl. 241—55 **14 Claims**



1. A combination chipper and shredder apparatus and vacuum machine comprising:

a) a housing having a first wall and a second wall defining a chipping and shredding chamber for housing a chipper and shredder assembly, said housing including an inlet port and an outlet port;

b) a drive means coupled to said chipper and shredder assembly by a drive assembly, said drive assembly including a drive shaft, part of which extends into said chipping and shredding chamber and is coupled to said chipper and shredder assembly for driving said chipper and shredder assembly;

c) a chute means having an input end and an output end, said chute means for directing matter introduced into said chute means via said input end thereof, to said chipping and shredding chamber via said inlet port; and,

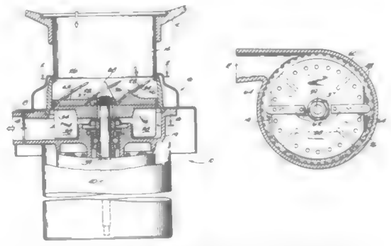
d) a coupling means for coupling said chute means to said first wall of said housing so that said output end of said chute means is in communication with said inlet port of said housing, said coupling means for permitting rotational movement by said chute means on said first wall for rotating said chute means about said inlet port from a first position, relative to said housing to a second position relative to said housing.

5,340,036

DRY WASTE GRINDER

Wayne C. Riley, Sturtevant, Wis., assignor to Emerson Electric Co., Racine, Wis.

Filed May 19, 1993, Ser. No. 64,490
Int. Cl.[5] B02C *18/40, 18/42*
U.S. Cl. 241—56 **8 Claims**



1. A grinder for dry waste materials comprising:

a vertically-oriented, cylindrically-shaped housing having an opening at its upper end for receiving materials to be comminuted,

said housing being divided into upper and lower chambers by means of a rotatable, disk-shaped shredder element,

said shredder element having upwardly-extending impeller blades disposed on its upper surface, the outer perimeter of said shredder element being separated from the inner wall of said housing sufficiently to provide a gap through which comminuted materials can drop into said lower chamber,

diverter bladed uniformly spaced around the inner perimeter of said upper portion of said housing and being angled downwardly in the direction of rotation of said disk-shaped shredder element,

said lower chamber having a closed bottom and a discharge outlet for discharge therefrom of comminuted materials, said discharge outlet being tangentially oriented relative to the circumference of said cylindrically-shaped lower chamber,

said shredder element having downwardly extending blades on its lower surface, said blades having an area adapted to sweep said lower chamber and expel comminuted materials therefrom outwardly through said tangential opening,

said shredder element being connected by a central shaft to a means to rotate said element.

5,340,037

METHOD AND APPARATUS FOR GRINDING HOT MATERIAL AND RECOVERING GASSES EMITTED THEREFROM

Paul S. Wallace, Katy, and Henry C. Chan, Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 18, 1992, Ser. No. 884,821
Int. Cl.[5] F23K *1/02;* **B02C** *15/00*
U.S. Cl. 241—62 **6 Claims**

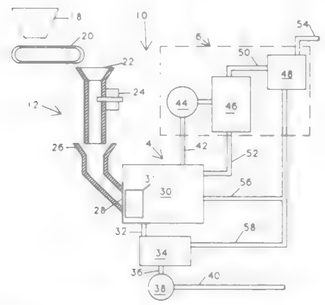
1. An apparatus for preparing hot coke for gasification comprising:

coke grinding means having a closed housing defining a grinding chamber with grinding means within said chamber, inlet port means, slurry exit means, and vapor exit port means;

constant rate, hot coke feed means connected to said inlet port means, said feed means having a top and a bottom;

means to add water to said hot coke in said feed means prior to entering said inlet port means;

vapor recovery means connected to said vapor exit port and comprising vacuum source means to maintain said grinding means under slight vacuum, so that gases with particulate matter entrained therein released during said grinding operation will be drawn off into said vapor recovery means, and liquid-vapor separator means to effect liquid/-solid separation and recovery of said gases; and



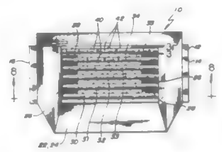
slurry holding means receiving slurry from said slurry exit means and feeding it as a fuel feed stock.

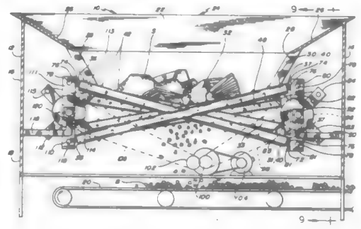
5,340,038

MATERIAL REDUCTION APPARATUS

Lawrence F. Omann, 39947 - 95th Ave., St. Joseph, Minn. 56374

Filed Oct. 27, 1992, Ser. No. 967,159
Int. Cl.[5] B02C *18/02, 18/28*
U.S. Cl. 241—84 **36 Claims**





1. A material reduction apparatus for reducing in size petroleum impregnated materials, wood materials and frangible materials for recycling, further processing and conservational disposal, comprising:

a) a material loading pin for receiving the material to be reduced;

b) a plurality of substantially parallel side by side cutter bars with upwardly directed cutting tips supported below the bin wherein the cutter bars each have opposing ends; and

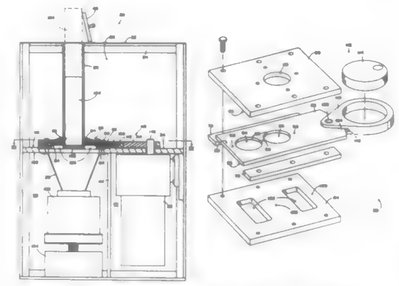
c) means connected to at least one end of each cutter bar for alternatingly moving each cutter bar upward and downward as well as parallel in line left to right unlike the movement of the adjacent cutter bar and wherein one end of each cutter bar moves in opposite direction as the other end of the same cutter bar to kick, toss and cut the material as to reduce the material from below.

5,340,039

MEDICAL WASTE DISPOSAL APPARATUS

Mark S. Lefevre, Lansing, Mich., assignor to Lefevre Corporation, Lansing, Mich.

Filed Oct. 12, 1993, Ser. No. 134,279
Int. Cl.[5] B02C *1/06, 19/12*
U.S. Cl. 241—84 **45 Claims**



1. A medical waste disposal apparatus comprising:

a frame;

a receiving chamber connected with said frame, said receiving chamber having a discharge port;

an anvil connected with said receiving chamber and positioned adjacent said discharge port, said anvil having a generally planar anvil surface on a side of said anvil positioned away from said receiving chamber, said anvil having a cooperating anvil aperture extending through said anvil and aligned with said discharge port;

a knife having two opposing, generally planar knife surfaces and positioned with a first knife surface of said two opposing knife surfaces abutting said anvil surface in sliding engagement, said knife sliding along an axis, said knife having a knife hole extending through said knife;

an assembly plate having a generally planar surface abutting a second knife surface of said two opposing knife surfaces in sliding engagement to sandwich said knife between said anvil and said assembly plate, said assembly plate having an opening extending through said assembly plate; and

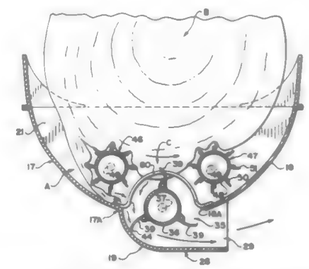
a drive operatively connected with said knife to slide said knife.

5,340,040

DISINTEGRATION OF BALED CROP MATERIALS

Raymond Bussiere, and Gilbert Topping, both of Vonda, Canada, assignors to High Line Manufacturing Inc., Vonda, Canada

Filed Dec. 31, 1992, Ser. No. 999,762
Int. Cl.[5] A01F *29/00*
U.S. Cl. 241—101.7 **24 Claims**



1. Apparatus for disintegrating baled crop materials comprising a hopper for receiving and containing the baled crop

VOL
1165
ISS
4
AG
23
1994
UMI

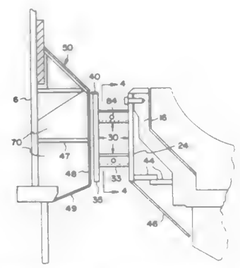
materials, the hopper having two side walls which converge downwardly and inwardly toward a base portion extending along a longitudinal direction of the hopper, a disintegration member mounted in the hopper at the base portion for rotation about an axis longitudinal of the hopper and carrying a plurality of radially extending crop material grasping members for engaging and grasping the crop material as the disintegration member rotates elongate exit means in the hopper at the base portion arranged longitudinally of the disintegration member for expulsion of the grasped crop material from the hopper, and two support members for the baled crop material, mounting means mounting each of said support members in the hopper so as to extend generally longitudinally of the hopper and so as to have a support surface thereof raised from the disintegration member and on a respective side thereof so as to define an opening between the support members through which the baled crop material can be presented to the disintegration member for engagement therewith, each support member defining said support surface which is rotatable about an axis longitudinal of the hopper whereby the baled crop material can be rotated within the hopper to pass across said opening for engagement of different parts of the baled crop material with the disintegration member, each side wall of the hopper including a wall portion thereof extending underneath a respective one of the support members to a position adjacent the disintegration member so as to guide crop material passing under the support member to the disintegration members at a position thereon for engagement by said grasping members, said elongate exit means communicating with the disintegration member at a height thereon below said wall portions of said side walls.

5,340,041

WELDED ROTATING ANNULAR PASSAGE SEGMENT FOR COAL PULVERIZERS WITH REPLACEABLE VANES AND ADJUSTABLE PASSAGE PORT AREA

Thomas L. Henning, Massillon, and Robert J. Giammaruti, North Canton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 25, 1992, Ser. No. 981,569
Int. Cl.[5] B02C *19/00*
U.S. Cl. 241—119 **14 Claims**



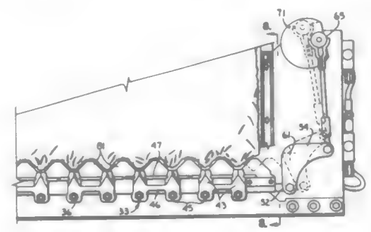
1. A replaceable passage arrangement for a pulverizer, the passage arrangement comprising:
- a fixed housing having an axis and defining an inlet plenum for air into a pulverizer and a grinding zone where air picks up and conveys particles pulverized in the pulverizer;
- a grinding table mounted for rotation about the axis in the housing;
- a plurality of passage segments connected to the grinding table and positioned in the housing, each of said passage segments having an inner rail and secured in position by at least one rib connected thereto;
- an outer wall mounted to the housing between the grinding table and the housing, the outer wall being spaced outwardly of the grinding table and defining a passage space therebetween;
- an inner wall inlet contour plate inclined and mounted to the inner rail, and an outer wall inlet contour plate inclined and mounted to the outer wall and housing, the inner wall and the outer wall inlet contouring plates acting as a channeling inlet plenum into the passage space;
- a ledge cover assembly mounted between the outer wall and the housing for protecting the passage segment; and
- a plurality of vanes detachably mounted to the passage segments and extending radially from the inner rail for dividing the passage space into a plurality of circumferentially spaced passage ports between the inner and outer rails.

5,340,042

RECIPROCATING BLADE BALE CUTTER

Alan Bergkamp, Murdock, and Kenneth W. Sowers, Kingman, both of Kans., assignors to DewEze Manufacturing, Inc., Harper, Kans.

Filed Jun. 1, 1993, Ser. No. 68,771
Int. Cl.[5] B02C *1/00*
U.S. Cl. 241—283 **13 Claims**



1. A reciprocating blade cutter comprising:
(a) a cutter bar driven in a reciprocating motion;
(b) a cutter blade attached to said cutter bar and adapted to move therewith in said reciprocating motion, said cutter blade comprising a plurality of cutting teeth, each tooth extending outward from said cutter bar and including a pair of cutting edges, said cutting edges extending toward each other at an angle from said cutter bar such that a cutting gap is formed between adjacent teeth;
(c) a stationary blade guide means positioned on at least one side of said cutter blade, said blade guide means encompassing a gap through which said bar reciprocates, said guide means comprising a plurality of stationary guide teeth arrayed on both sides of said cutter blade and extending outward in the same direction as said cutting teeth, said cutting teeth reciprocating across corresponding ones of said guide teeth, and wherein at least a portion of said guide teeth on each side of said cutter blade are of a length at which they do not substantially enter said cutting gaps as said cutting teeth reciprocate.

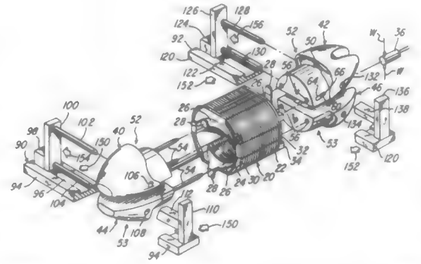
5,340,043

STATOR WINDING APPARATUS INCLUDING WINDING FORM ASSEMBLIES

John M. Beakes, Fairborn, and Lawrence E. Newman, Tipp City, both of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Filed Jun. 16, 1992, Ser. No. 899,428
Int. Cl.[5] B65H *81/06*; B25G *3/18*; H02K *15/14*
U.S. Cl. 242—1.1 R **14 Claims**

1. In a stator winding apparatus for winding a field coil onto a stator core said apparatus comprising a winding head assembly that reciprocates and oscillates to draw wire from a source of wire under tension to wind coils and at least on pair of interfitting winding forms located on opposite sides of the stator core for guiding the wire onto said stator core, said pair of winding forms comprising a male winding form having a pair of connecting rods and a female winding form having sockets that slidably receive said connecting rods when the winding forms are assembled together, the improvement wherein a clamp mechanism is integrated into said female winding form, said clamp mechanism comprising a movable clamp member, wherein said female winding form has sloping surfaces that guide said clamp member for movement along an imaginary inclined plane that intersects said sockets and that slopes rearwardly away from the stator core to which the winding forms are to be connected and outwardly from said sockets, said clamp member having a forward end which is



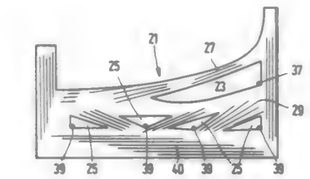
engageable with said connecting rods when said winding forms are assembled together, a bias member that biases said clamp member forwardly along said guide surfaces toward said sockets into clamping engagement with said portions of said connecting rods, whereupon any pressures acting to withdraw said connecting rods from said sockets causes said clamp member to be more tightly clamped by wedging action to said connecting rods, and a release member confined within said female winding form actuatable to move said clamp member rearwardly along said inclined plane away from said connecting rods to relieve the clamping pressure on said connecting rods and thereby permit said winding forms to be separated from one another.

5,340,044

METHOD OF MANUFACTURING A SADDLE-SHAPED DEFLECTION COIL FOR A PICTURE DISPLAY TUBE

Franciscus M. P. P. Doomernik; Franciscus C. A. J. Jacobs, and Nicolaas G. Vink, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 573,928, Aug. 23, 1990, abandoned.
This application Apr. 26, 1993, Ser. No. 53,977
Claims priority, application Netherlands, Jan. 9, 1990, 9000047
Int. Cl.[5] H01F *5/00*
U.S. Cl. 242—7.03 **7 Claims**



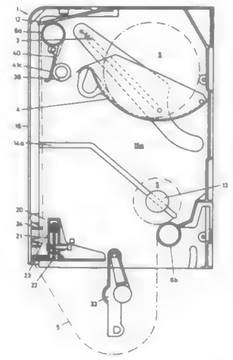
1. A method of manufacturing a saddle-shaped deflection coil which flares out from a rear end towards a front end and is of the type having an arcuate connection portion at the front end, an arcuate connection portion at the rear end, and first and second longitudinally-extending interposed coil flanks, said method comprising the steps of:
- a. providing a jig having first and second sections forming a recess for taking up continuously fed winding wire, said recess having a shape corresponding to a predefined shape of the coil; and
- b. continuously feeding winding wire into the recess for forming a plurality of coil turns;
- characterized in that, during step b, at least three substantially evenly distributed projections are inserted into the recess at predetermined locations along the length of each coil flank, after a predetermined plurality of coil turns has been formed, to provide reset points for subsequent coil turns.

5,340,045

METHOD FOR THE SEQUENTIAL PROVISION OF PORTIONS OF A TOWEL WEB

Sandro Arabian, Vaduz, and Manfred Baumann, Diepoldsau, both of Switzerland, assignors to CWS International AG, Baar, Switzerland

PCT No. PCT/CH91/00106, § 371 Date Mar. 16, 1992, § 102(e) Date Mar. 16, 1992, PCT Pub. No. WO91/17692, PCT Pub. Date Nov. 28, 1991
PCT Filed May 3, 1991, Ser. No. 820,663
Claims priority, application Switzerland, May 15, 1990, 1681/90
Int. Cl.[5] B65H *16/00*
U.S. Cl. 242—535.2 **10 Claims**



1. Method for the sequential provision of portions of a towel web by means of a towel dispenser, in which, starting from a state of rest in which only a towel residue is accessible, a portion of unused towel is released in response to a trip, to form or enlarge a loop hanging from a housing, and subsequently used towel is drawn into the housing and, at least when a further trip has not occurred in the meantime, the state of rest is resumed, characterised in that a selection becomes possible at least between a standard program, in which used towel as well as unused towel is released to form or enlarge the loop, the released portion of used towel being shorter than the released portion of unused towel, and a hygiene program, in which only unused towel is released to form or enlarge the loop and the towel residue is drawn in.

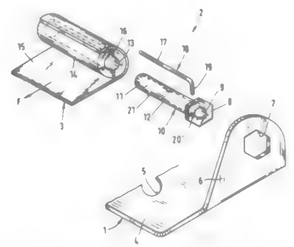
VOL 1165 ISS 4 AUG 23 1994 UMI

5,340,046

ENERGY CONVERTER FOR A SAFETY BELT

Karl-Jürgen Schroth, Soest; Rolf Jeche, Arnsberg, and Stefan Meier-Arndt, Kamen, all of Fed. Rep. of Germany, assignors to Carl F. Schroth GmbH

Filed Oct. 19, 1992, Ser. No. 962,760
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1991, 4135111
Int. Cl.[5] B65H 75/48
U.S. Cl. 242—407 16 Claims



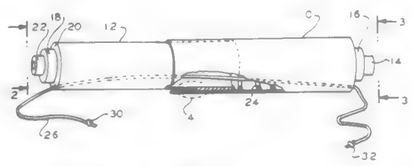
1. An energy converter for a safety belt, the energy converter comprising a sleeve having an interior defined by an interior surface, a belt band of the safety belt being attached to the sleeve, a bolt having a bolt shank extending into the interior of the sleeve, the bolt having an end mounted so as to be non-rotatable in a stationarily attached belt fitting, at least one deformation member comprising a wire section having a sleeve leg and an arresting leg, the sleeve leg and the arresting leg extending at angle relative to each other, the sleeve having an end face, the arresting leg being fixedly attached to the bolt shank at the end face of the sleeve, the bolt shank having an axis, the interior surface of the sleeve defining a groove extending in an axial direction, the sleeve leg extending in the axial direction and being slidably supported in the groove of the sleeve, wherein the groove has a cross-section which coincides with the cross-section of the sleeve leg, and wherein the arresting leg contacts the bolt shank.

5,340,047

TETHERED TELESCOPIC PAPER HOLDER

Eugene Heller, 18 Peachcroft Rd., Morristown, N.J. 07960

Filed Oct. 29, 1990, Ser. No. 604,636
Int. Cl.[5] A47K 10/22
U.S. Cl. 242—599.1 11 Claims



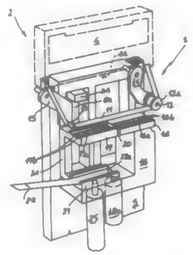
1. A telescopic paper holder comprising:
a first cylindrical member having an inside and an outside end;
a second cylindrical member having an inside and an outside end and being telescopically and slidably nested in said first cylindrical member;
extension means for urging said first and second cylindrical members to extend axially;
a flexible tether strung about said first and second cylindrical members to emerge from their outside ends, said tether being exposed an amount to allow manual grasping of said tether about the outside ends of said first and second cylindrical members, so that said first and second cylindrical members can be compressed together by pulling said tether in opposing directions parallel to said first and second cylindrical members.

5,340,048

METHOD AND APPARATUS FOR CUTTING AND SPLICING TAPE IN AUTOMATIC CASSETTE LOADING MACHINES

Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A., Inc., Orlando, Fla.

Filed Apr. 29, 1993, Ser. No. 55,148
Claims priority, application Italy, Apr. 29, 1992, MI92A1019; MI92A2026
Int. Cl.[5] B65H 19/22
U.S. Cl. 242—527 22 Claims



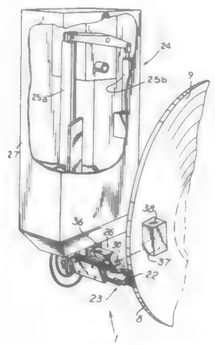
1. A cutting and splicing unit for automatic cassette loading machines comprising:
extractor means arranged to operatively engage a leader having its ends engaged to first and second winding hubs respectively, in order to bring the leader from a rest condition in which it extends along an access opening provided in the cassette to an extraction position in which it is extended above the access opening outside the cassette;
cutting means for severing the leader, held in said extracted position, into a leading portion connected to the first winding hub, and a trailing portion connected to the second winding hub;
a first block arranged to hold the leading portion of the leader on a first supporting surface;
a second block arranged to hold the trailing portion of the leader on a second supporting surface, said second block being movable between a first position in which the second supporting surface is aligned substantially the first supporting surface, in coplanar relation therewith, and a second position in which the second block is spaced apart from the first block;
a third block disposed to hold an end of magnetic tape from a supply reel on a third supporting surface, said third block being movable between a first position in which it is spaced apart from the first block and a second position in which the third supporting surface is substantially aligned with the first supporting surface, in coplanar relation therewith;
an adhesive tape supply unit arranged to supply and cut an adhesive tape into pieces of predetermined length;
adhesive tape applying means for individually picking up the pieces of adhesive tape supplied by the supply unit and applying them to a junction area between the magnetic tape and the leader held on said first, second and third blocks;
a slider carrying said second and third blocks, wherein said second and third supporting surfaces are disposed parallelly to the first supporting surface and consecutively offset from the cassette access opening in a direction parallel to a front panel and substantially perpendicular to the access opening;
a support frame slidably engaging the slider in a direction substantially perpendicular to the cassette access opening; and
a changeover actuator acting between the support frame and the slider to carry out the displacement of the second and third blocks between the first and second positions.

5,340,049

METHOD AND APPARATUS FOR FINDING ONE END OF TAPE WOUND ONTO A REEL

Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A., Inc., Orlando, Fla.

Continuation-in-part of Ser. No. 585,595, Sep. 20, 1990, Pat. No. 5,121,886. This application Jun. 15, 1992, Ser. No. 898,805
Claims priority, application Italy, Aug. 6, 1990, 21226A/90
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[5] B65H 23/00
U.S. Cl. 242—332.2 17 Claims



1. A method to locate an end of magnetic tape wound onto a reel comprising the following steps:
mounting a reel of tape on a support hub driven by a motor;
positioning a reading member at a location in front of the reel;
automatically moving the reading member across the reel, detecting the peripheral edge of the reel and stopping the reading member a predetermined distance beyond the detected peripheral edge of the reel;
automatically moving the reading member a predetermined distance back, towards the peripheral edge of the reel;
rotating the reel;
automatically detecting a projecting end of the magnetic tape extending outwardly from the reel; and
automatically stopping the reel rotation when the reading member detects said projecting end.

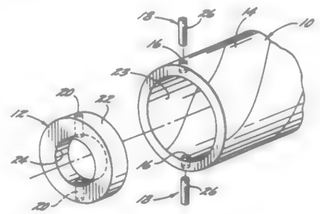
5,340,050

TUBULAR CORE ASSEMBLY HAVING INSIDE-DIAMETER REDUCING END MEMBERS SECURED BY MECHANICAL INTERLOCKING MEMBER

Lawrence E. Renck, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Apr. 20, 1993, Ser. No. 49,711
Int. Cl.[5] B65H 75/10, 75/30
U.S. Cl. 242—609.1 18 Claims

1. A tubular core assembly for a roll of paper or other sheet material comprising:
an elongate hollow cylindrical central core body member comprising a bodywall having opposed ends, a predetermined outside diameter, and a predetermined inside diameter;
inside diameter-reducing annular core insert members each having at least a portion of its outside diameter substantially the same as the inside diameter of said central core body member;
each of said annular core insert members being secured to the inside periphery of one of said opposed ends of said central core body member in coaxial relation therewith by mechanical interlocking means comprising at least one radially interlocking member secured to and extending at least partially, radially through said bodywall of said central core member and at least partially through said annular core insert member;
whereby said inside diameter-reducing annual core insert members are secured to said central core body in positive locking relation.

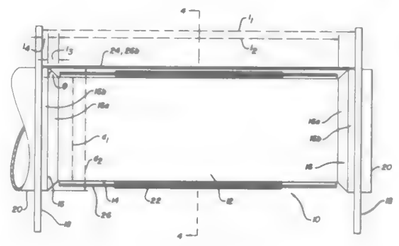


5,340,051

WOUND SPOOL OF WEB MATERIAL

Alan G. Goodfellow, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 12, 1992, Ser. No. 897,679
Int. Cl.[5] B65H 75/18
U.S. Cl. 242—348.1 3 Claims



1. A wound spool of film, comprising:
a film strip having a full width portion with longitudinally extending edges, a reduced width lead end portion and a transition portion extending between said full width portion and said reduced width portion, said transition portion having edges extended between said lead end portion and said full width portion at acute angles to said longitudinally extending edges of said full width portion; and
a spool comprising:
a core to which said lead end portion is attached;
a pair of radially extended end flanges at respective opposite ends of said core;
a pair of circumferentially and axially extended shoulders between said end flanges and said core for supporting said longitudinally extending edges of said full width portion, said strip being wound about said core;
an axially extended frusto-conical portion extended from

VOL 1165 ISS 4 AG 23 1994 UMI

each said shoulder toward said core for supporting said edges of said transition portion;

the length of said core between said frusto-conical portions and the diameter of said core being sufficient for winding said lead end portion about said core between said frusto-conical portions; and

the axial length and cone angle of said frusto-conical portions being sufficient for winding said transition portion about and supporting said edges of said transition portion upon said frusto-conical portions and for radially spacing said full width portion from contact with said lead end portion.

5,340,052

SELF-SENSING CLAMPING DEVICE FOR A SAFETYBELT SYSTEM

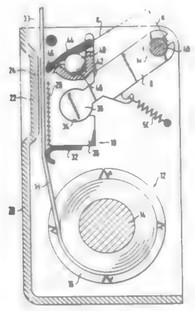
Hans-Hellmut Ernst, Ahrensburg, Fed. Rep. of Germany, assignor to Autoliv Development AB, Vargarda

Filed Dec. 20, 1985, Ser. No. 811,527

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1984, 3446981

Int. Cl.[5] **B60R** *22/42*

U.S. Cl. 242—381.1 **28 Claims**



1. A self-sensing clamping device for clamping a vehicle safety belt to limit belt extension draw off from a belt winder means upon the occurrence of predetermined acceleration and deceleration forces and without reliance on any sensor initiated locking of the winder means, said device comprising

a movably-mounted clamping member, the belt normally being constrained in non-contacting relation with the clamping member, and

sensor means having an inertia mass and being actuatable responsive to said predetermined acceleration and deceleration forces for movement between normally idle and occurrence positions, said sensor means being coupled with a belt engageable precontrol element that is moveable responsive to sensor means movement, the movement of said precontrol element associated with sensor means movement to occurrence position operating to effect contact of said belt with said clamping member by the precontrol element engaging the belt and thereby transmitting force to the clamping member to move it into contact with the belt, said sensor means including means actuatable in response to the occurrence of belt acceleration forces.

5,340,053

CLUTCH MECHANISM OF DOUBLE-BEARING REEL

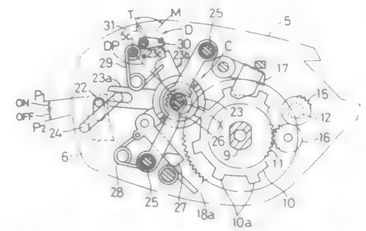
Shinichi Morimoto, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Continuation of Ser. No. 664,821, Mar. 5, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 35,487

Claims priority, application Japan, Mar. 19, 1990, 2-28781[U]

Int. Cl.[5] **A01K** *89/033*

U.S. Cl. 242—261 **5 Claims**



1. A double-bearing type fishing reel comprising:

a side case;

a spool having an axis;

a handle coupled to a drive mechanism, said drive mechanism rotating said spool in response to rotation of said handle;

a clutch mechanism connected between said drive mechanism and said spool and including a swivel member pivotable about said spool axis, a toggle means, a shifter and an input gear,

said swivel member being pivotable in a first pivotal direction for switching said clutch mechanism from a clutch engaging range to a clutch disengaging range and also in a second pivotal direction for switching said clutch mechanism from said clutch disengaging range to said clutch engaging range, said swivel member including a cam disc for switching said clutch mechanism,

one end of said toggle means being supported by a projection defined on said side case, the other end of said toggle means being engaged with a projection defined on said swivel member,

said toggle means being capable of providing an urging force in a reversible manner either in a direction for urging said swivel member in said first pivotal direction or in a further direction for urging said swivel member in said second pivotal direction,

said projection defined in the side case and said axis of the spool defining a virtual straight line connected therebetween, said straight line acting as a dead point of said toggle means across which the direction of the urging force of the toggle means is reversed,

a control member coupled with said swivel member and operable to move between a first position where said swivel member is moved to said clutch engaging range and a second position where said swivel member is moved to said clutch disengaging range; and

a selector mechanism including a limiting member and a lever, said selector mechanism being operable between a toggle mode in which said limiting member is incapable of engaging with said projection of said swivel member, and a momentary mode in which said limiting member is engageable with said projection of said swivel member, said limiting member being operable independently of said toggle means;

(1) wherein, in said toggle mode, as said control member is moved with application of an operating force thereto from said first position to said second position, said swivel member is pivoted in said first pivotal direction to switch the clutch mechanism from said clutch engaging range to said clutch disengaging range, and said toggle means is moved beyond said dead point to switch over the direction of the urging force thereof so as to urge said swivel member in said first pivotal direction thereby to maintain the swivel member at said clutch disengaging range;

(2) wherein, in said momentary mode, as said control member is moved with application of an operating force thereto from said first position to said second position, said swivel member is pivoted in said first pivotal direction to switch the clutch mechanism from said clutch engaging range to said clutch disengaging range, and said toggle means is prevented from moving beyond said dead point with said limiting member limiting a limiting projection of said swivel member; and with release of said operating force to the control member, said toggle means pivots said swivel member in said second pivotal direction thereby to restore said swivel member from said clutch disengaging range to said clutch engaging range.

5,340,054

SUPPRESSOR OF OSCILLATIONS IN AIRFRAME CAVITIES

Robert A. Smith; Ephraim Gutmark; Klaus C. Schadow, and Kenneth J. Wilson, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 658,274, Feb. 20, 1991, abandoned. This application Feb. 14, 1992, Ser. No. 839,721

Int. Cl.[5] **B64C** *21/00*

U.S. Cl. 244—1 N **12 Claims**

1. A method for reducing acoustic oscillations generated in a cavity of a vehicle moving through a fluid medium, comprising the steps of:

adjusting the arrangement and heights of a plurality of perturbation pins relative to the cavity dimensions and location as well as to other perturbation pins present to reduce the acoustic oscillations to a minimum;

installing the perturbation pins rigidly into the vehicle in said adjusted arrangement ahead of the cavity to disrupt generated vortices; and

reflecting any remaining acoustic oscillations out of the cavity as the vehicle moves through the fluid medium.

5,340,055

AIRCRAFT WING COVER AND METHOD OF ATTACHMENT

Michael Rodyniuk, and Keevin Berg, both of Calgary, Canada, assignors to Air Cover Corporation, Calgary, Canada

Continuation-in-part of Ser. No. 984,995, Dec. 2, 1992, Pat. No. 5,282,587. This application Oct. 6, 1993, Ser. No. 132,635

Int. Cl.[5] **B65D** *85/68*

U.S. Cl. 244—1 R **2 Claims**

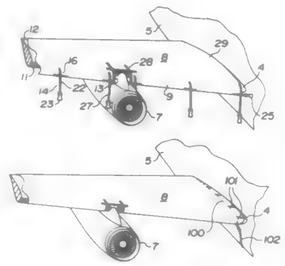
1. A protective cover for covering the wing of an aircraft having a fuselage, said wing having an upper surface and leading and trailing edges and laterally extending a substantial length from the side of said fuselage, comprising:

a substantially wing-shaped panel, having a root portion and leading, trailing and root edges, said panel being adapted to cover the upper surface of the wing along part of its length and having sufficient width so that a portion overhangs the leading edge of the wing;

said panel being formed of lightweight, ultraviolet-stabilized material which does not absorb water;

said leading overhang portion being cut-out so as to form-fit around edge protuberances of the wing; and

an array of strap means, being positioned along the length of the cover in spaced apart relation along the panel's leading and trailing edges, for extending beneath the wing to secure the leading and trailing edges of the panel and to cinch the panel to the wing;



second strap means, secured to the panel substantially along a path of shortest distance extending from the panel's trailing edge, adjacent the fuselage, to the panel's leading edge, said second strap means having means for connection with an anchoring strap; and

one or more rib means being secured to the panel and extending along the cover from the second strap means toward the panel's root edge.

5,340,056

ACTIVE DEFENSE SYSTEM AGAINST TACTICAL BALLISTIC MISSILES

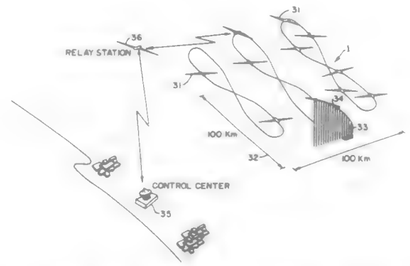
Moshe Guelman, Haifa, and Arie Yavnai, Kiryat Bialik, both of Israel, assignors to The State of Israel, Ministry of Defence, Rafael Armament Development Authority, Tel Aviv, Israel

Filed Feb. 24, 1993, Ser. No. 21,871

Claims priority, application Israel, Feb. 27, 1992, 101075

Int. Cl.[5] **F41G** *7/22*

U.S. Cl. 244—3.16 **26 Claims**



1. An active defence system against tactical ballistic missiles, characterized by a capability of detecting and intercepting launched tactical ballistic missiles and comprising in combination:

i) a ground control station located in a friendly area;

ii) a fleet including a plurality of airborne units with missile interception capability comprising each a programmable, self-propelled air vehicle carrying at least one interceptor missile fitted with electro-optical seeker means with searching and tracking capability during captive flight and homing capability during free flight;

iii) connector means in each air vehicle for connection to each of its carried interceptor missiles;

VOL 1165 ISS 4 AG 23 1994 UMI

iv) data link means in each air vehicle for communication with other air vehicles of the fleet and

v) processor means in the air vehicle of each airborne unit for autonomous decision on the transmission of commands on the basis of data from own sensors and own data bases and from other air vehicles of the fleet and from the autonomous detection of a ground launched hostile ballistic missile.

5,340,057

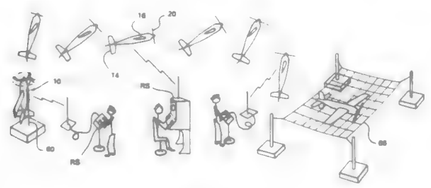
THRUST VECTORING FREE WING AIRCRAFT

Hugh Schmittle, Westminster, Md., assignor to Freewing Aerial Robotics Corporation, College Park, Md.

Continuation-in-part of Ser. No. 795,329, Nov. 21, 1991. This application Mar. 13, 1992, Ser. No. 850,913

Int. Cl.[5] B64C *3/38*

U.S. Cl. 244—48 **18 Claims**



1. Aerodynamic apparatus comprising:

an aircraft having a fuselage, a wing on each side of said fuselage having an aerodynamic center, means for connecting said wings one to the other and to said fuselage for free pivotal movement relative to said fuselage about a spanwise axis forwardly of said aerodynamic center for flight in a first free wing flight made with the fuselage generally horizontal relative to a predetermined direction of flight and in a second free wing flight mode with the fuselage inclined relative to the predetermined direction of flight;

means for differentially altering the angle of attack of said wings relative to one another while maintaining free pivotal movement of said wings relative to said fuselage to enable roll control;

means for controlling the fuselage in pitch independently of said wings to vector said fuselage relative to said predetermined direction of flight thereby to establish a predetermined angle of incidence of said fuselage relative to said direction of flight; and

a common propulsion system for propelling the aircraft in said first and second flight modes.

5,340,058

PROJECTILE WITH COOLED NOSE CONE

Rolf Holl, Düsseldorf; Rudolf Rombach, Mönchengladbach, and Karl-Heinz Roosmann, Ratingen, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

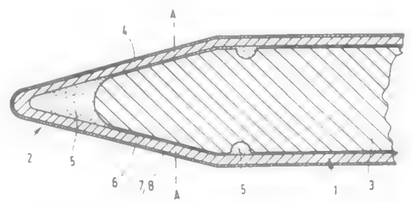
Filed Sep. 28, 1992, Ser. No. 950,603

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1991, 4132234

Int. Cl.[5] B64C *1/38*

U.S. Cl. 244—117 A **13 Claims**

1. A projectile comprising: a projectile body having a cooled hollow nose cone, with said nose cone including a thin-walled metal hood, a thermal insulation layer provided on the exterior surface of said metal hood, and an outer ablation layer disposed on said thermal insulation layer; a payload disposed in said projectile body and extending into but spaced from the interior surface of said nose cone; and, a heat transfer medium, which is a highly thermally conductive metal paste, filling the space between, and being in contact with, said interior surface of said



hood and said payload, whereby heat penetrating said thermal insulation layer from said hood is dissipated into said payload.

5,340,059

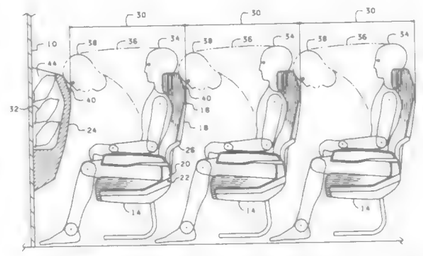
ENERGY ABSORBING CABINET FOR AIRCRAFT BULKHEADS

Andrew S. Kanigowski, La Crescenta, Calif., assignor to Futureflite Corporation, Carson City, Nev.

Continuation of Ser. No. 840,469, Feb. 24, 1992, abandoned. This application Mar. 8, 1993, Ser. No. 28,732

Int. Cl.[5] B64C *1/10*

U.S. Cl. 244—121 **6 Claims**



1. An energy absorbing cabinet assembly as a protection device for airline passengers sitting in front-row seats, achieved from a combination of a storage box unit with an airline-type food table, adapted for attachment to a rear wall of bulkheads of an aircraft cabin and positioned directly in front of said front-row seats to form a seat-back duplication, wherein said cabinet assembly comprises a plurality of sections arranged side-by-side, one such section provided for each passenger sitting immediately behind, and each said section comprising:

(a) a structure support shell assembly made from energy absorbing material, said structure support externally encapsulating an internal storage cavity volume, with a local access cutout, said structure support shell further including a main rear wall panel element facing the head and chest of said airline passenger sitting immediately behind said cabinet assembly;

(b) a deployable food table system including a board of sufficient size to support an airline meal tray;

wherein said energy absorbing structure support shell assembly and said deployable food table system have sufficient combined capability to yield and deform forwardly under an impact caused by a head strike from said passenger during a crash.

5,340,060

RENDEZVOUS DOCKING OPTICAL SENSOR SYSTEM

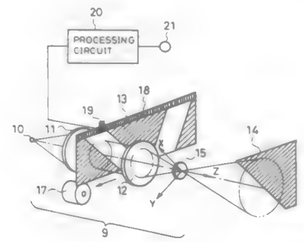
Osamu Shindo, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1992, Ser. No. 957,706

Claims priority, application Japan, Oct. 14, 1991, 3-264687

Int. Cl.[5] B64G *1/64*; G01C *1/06*

U.S. Cl. 244—161 **12 Claims**



1. A rendezvous docking optical sensor system comprising:

a light source optical system provided in one of two satellites existing on an orbit in a space, said light source optical system having a function to perform a scanning operation at a constant speed to project a scanned image in said space;

a transmitter provided in the one satellite for transmitting the scanning speed of said light source optical system to the other satellite;

four detectors provided in the other satellite so as to be disposed at an interval of 90° on a circumference having a radius;

a receiver for receiving said scanning speed;

a pretreatment section provided in one other satellite for waveshaping output signals of said detectors into gate pulses and counting clock pulses;

a computer provided in the other satellite for performing a calculation process on the basis of count data of said pretreatment section so as to calculate a relative coordinate position and attitude; and

a control section provided in the other satellite for correcting a coordinate position and attitude of said satellites on the basis of a calculation result of said computer to adjust the relative attitude of said satellites during docking between said satellites.

5,340,061

METHOD AND DEVICE FOR REVISING THE LATERAL FLIGHT PLAN OF AN AIRCRAFT

Mariannick Vaquier, Limours, and Hugues de Beco, Tollouse, both of France, assignors to Sextant Avionique, Meudon La Foret, France

Filed May 26, 1992, Ser. No. 888,069

Claims priority, application France, May 27, 1991, 91 06621

Int. Cl.[5] B64C *13/18*

U.S. Cl. 244—175 **9 Claims**

1. Method for revising an initial flight plan of an aircraft provided with a flight management system coupled to a navigation display screen having a plurality of points, each associated with a corresponding sensitive area, said method using a designator and validator device connected to the flight management system so as to generate on said navigation display screen, in addition to a geographical representation of the flight plan which comprises a plurality of way points:

function areas used to construct menus, each function area having a variable function which varies from one menu to another and which is shown on the screen in corresponding relationship to that function area, and

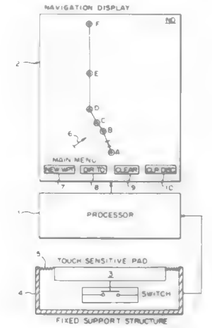
a cursor moved on the navigation display screen by effecting a displacement of a finger on a sensitive surface of the designator and validator device so as to designate one of said function areas as well as one of said points,

the function represented by the function area which is designated by the cursor as well as the coordinates of the point which is designated by the cursor being validated by exerting a pressure on said surface by means of said finger,

which method comprises the following successive phases:

a first phase of selecting a particular revision mode from various revision modes offered by a main menu by moving said cursor to the corresponding function area and validating, this action clearing said main menu and replacing it with a secondary menu specific to the selected revision mode,

a second phase of selecting required way points on the navi-



gation display screen to create a temporary revised flight plan, said second phase comprising, depending on the revision mode selected, at least a step of designating by means of the designation device a first way point of the flight plan from which the revision is to be made and a second way point of the flight plan at which the revision is to terminate, a step of validating the said first and second way points and a step of assigning to the chosen way points once validated a temporary identifying pattern, and

a third phase for confirming or cancelling the revision by moving said cursor onto a confirm function area or a cancel function area and then operating said validator device, the system then displaying the revised flight plan when the confirm function area is validated or the initial flight plan when the cancelled function is validated.

5,340,062

TRAIN CONTROL SYSTEM INTEGRATING DYNAMIC AND FIXED DATA

Robert E. Heggestad, Raytown, Mo., assignor to Harmon Industries, Inc., Blue Springs, Mo.

Filed Aug. 13, 1992, Ser. No. 929,790

Int. Cl.[5] B61L *3/20/3/06*

U.S. Cl. 246—5 **21 Claims**

1. In a system for controlling the movement of a train along a railroad track, the combination comprising:

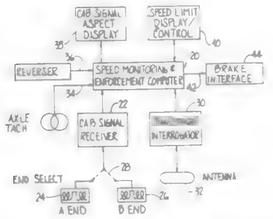
means for continuously transmitting in an uninterrupted fashion, unsolicited dynamic data concerning track availability and routing, said dynamic data defining a cab signal aspect;

a plurality of localized transmitting units spaced along said track at preselected locations and each having means for transmitting fixed data appropriate to the respective location including a timetable speed limit to be observed by a train; and

data processing means adapted to be carried by a train for continuously receiving said dynamic data, intermittently receiving said fixed data as the train successively passes said locations, and continuously integrating the fixed data

VOL 1165 ISS 4 AG 23 1994 UMI

with the continuously received dynamic data and determining train control instructions therefrom, such that the



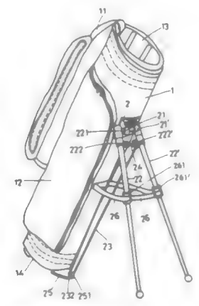
timetable speed limit of said fixed data is observed if more restrictive than the received cab signal aspect of said dynamic data.

5,340,063

FOLDING GOLF BAG STAND

Chi-Chung Hsieh, 6F-2, No. 67, Sung Chiang Road, Taipei, Taiwan

Filed May 21, 1993, Ser. No. 64,237
Int. Cl.[5] A63B *55/00*
U.S. Cl. 248—96 **4 Claims**



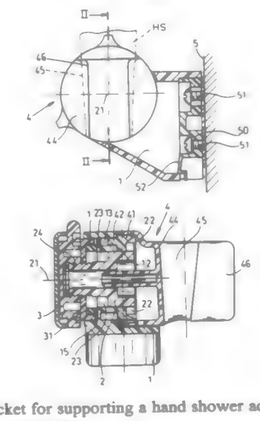
1. A golf bag stand comprising:
a golf bag having bumper rods spaced on a bottom edge thereof;
a mount fastened to said golf bag on the outside at a higher elevation, said mount having two knuckles;
two legs respectively and pivotably connected to said knuckles, each leg comprising a pivot pin perpendicularly disposed near the respective topmost edge and respectively fastened to either knuckle, and a bearing frame connected to each other by spring means;
a link frame having a top end pivotably fastened to the bearing frame of each leg;
a base plate having one end coupled to a bottom end of said link frame and an opposite end fastened to said golf bag for supporting said golf bag on the ground; and
a locating strap having two opposite ends respectively fastened to said golf bag to limit the angle of oscillation of said legs on said mount;
whereby said legs are forced by said link frame to extend outwards from said golf bag for supporting said golf bag in a sloping position as said golf bag is placed on the ground to depress said base plate.

5,340,064

WALL-MOUNT BRACKET FOR HAND SHOWER

Bruno Heimann, Frondenberg-Ardey, and Christian Frankholz, Schwerte, both of Fed. Rep. of Germany, assignors to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany

Filed Aug. 27, 1992, Ser. No. 936,613
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128831
Int. Cl.[5] E03C *1/06*; **B05B** *15/06*
U.S. Cl. 248—75 **7 Claims**



1. A bracket for supporting a hand shower adjacent a wall, the bracket comprising:
a base part adapted to be fixed to the wall, formed with a throughgoing passage extending along a horizontal axis generally parallel to the wall, and having axially oppositely directed sides;
a holder part pivotally mounted on the base part about the axis on one of the axial sides of the base part and with an upwardly open seat centered on the axis and adapted to receive the hand shower, one of the parts being formed centered on the axis with an angularly limited arcuate slot open axially toward the other part, the other part being formed with a lug projecting axially toward the one part and fitting in the slot, whereby the slot and lug limit the relative angular displaceability of the parts;
a bolt extending axially through the passage and having on the other axial side of the base part a threaded end and on the one axial side of the base part a radially projecting flange that bears axially toward the base part on the holder part;
interengaging formations on the bolt and on the base part fixing the bolt in the base part against rotation relative to the base part; and
a nut threaded on the threaded end of the bolt and bearing axially on the other axial side of the base part.

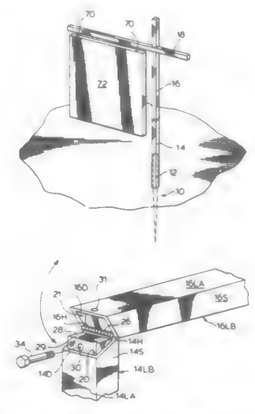
5,340,065

SUPPORT POST

John E. Thomas, 50 Mary Street West, Lindsay, Ontario, Canada K9V 4S7

Filed Jul. 20, 1993, Ser. No. 93,660
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—150 **15 Claims**

1. Support post comprising:
lower extent defining a longitudinal extension direction adapted for mounting on a mounting member with said direction vertical,
upper section defining a longitudinal extension direction,
means swingably connecting said upper and lower extends allowing swingable movement of said upper section relative to the lower between:
an erected position where said upper section extends from said lower section with its direction aligned with that of said lower section, and
a collapsed position where said lower section it beside said upper section,
means for releasably fixing said extents in said erected position,
a cross-bar defining a longitudinal direction,



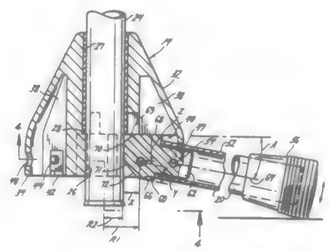
means pivotally connecting said cross-bar with said upper extent at a location spaced from said swingable connection means,
said pivotal connection means allowing rotation of said cross-bar between an orientation perpendicular to said upper extent and an orientation parallel to said upper extent,
wherein said upper extent and said cross-bar are shaped to interlock and to key against relative rotation when in said perpendicular orientation.

5,340,066

STAND FOR ARTICLE

Kevin J. Ditch, Melville, Mo., assignor to American Trading and Production Corporation, Baltimore, Md.

Filed Jan. 12, 1993, Ser. No. 3,416
Int. Cl.[5] F16M *11/38*
U.S. Cl. 248—170 **15 Claims**



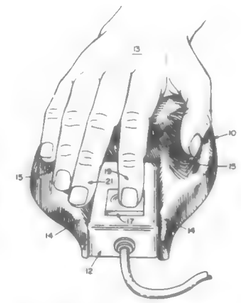
1. A support stand for holding an article in an elevated position, the stand comprising:
(a) an elongate member including an article-attachable upper portion and a lower portion,
(b) a single base member including a portion receiving the lower portion of the elongate member in sliding relation and a plurality of leg-receiving portions, and
(c) a plurality of leg members mounted to the base member for movement between a support position and a collapsed position, each leg member including an inner end, received in pivoted relation within an associated leg- receiving portion, and an outer ground-supporting end,
(d) each inner end including a first cam face directly engageable with the elongate member in friction relation in the support position.

5,340,067

HAND AND WRIST SUPPORT FOR COMPUTER MOUSE

Teresa A. Martin, P.O. Box 18810, Boulder, Colo. 80308-1810, and Beth M. Donovan, 101 Waltham St., #201, Watertown, Mass. 02172

Filed Mar. 27, 1992, Ser. No. 859,106
Int. Cl.[5] B43L *15/00*
U.S. Cl. 248—118.5 **20 Claims**



1. A computer mouse accessory comprising:
a support block for supporting the fingers and hand of a user of a computer mouse, a bottom portion of the computer mouse contacting a surface such that the user interfaces with a computer by moving the bottom portion of the computer mouse relative to the surface, the support block comprising finger supports extending from the support block to extend along opposite sides of the computer mouse and to support the user's fingers along the sides of the computer mouse, an opening between the finger supports allowing the bottom portion of the computer mouse to contact the surface; and
a retainer for retaining the computer mouse in fixed relation to the support block as the support block and the computer mouse are moved relative to the surface such that the bottom portion of the computer mouse moves relative to the surface to interface with the computer.

5,340,068

RELEASE MECHANISM FOR LOCKING PIVOTABLE LEG

Robert Sarkisian, Southfield; James J. Mason, Wixom, and David J. Muir, Farmington Hills, all of Mich., assignors to Marketing Displays, Inc., Farmington Hills, Mich.

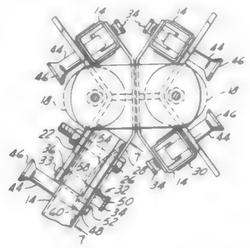
Filed Aug. 5, 1992, Ser. No. 925,502
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—188.6 **17 Claims**

1. An assembly comprising:
a base for supporting said assembly, said base having at least one locking pin hole;
at least one leg pivotably attached to said base, said leg capable of being locked into at least one position relative to said base;
a locking element for locking said leg into said one position,

VOL 1165 ISS 4 AG 23 1994 UMI

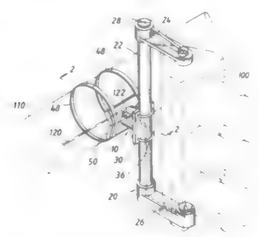
said locking element having a locking pin adapted for operative engagement with said locking pin hole; and

release means for releasing said locking element from its operative engagement and unlocking said leg from said one position, said release means comprising a movable



release pin and transmission means for transmitting movement of said release pin to said locking pin, said transmission means comprising a linkage affixed to said locking pin and to said release pin, wehreby said locking pin is released from operative engagement within said locking pin hole.

5,340,069
BRACKET FOR TRAFFIC CONTROL DEVICE
Thomas L. Niemeyer, Woodlands, Tex., assignor to Nelok, Inc., The Woodlands, Tex.
Filed Oct. 2, 1992, Ser. No. 955,985
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—214 **23 Claims**



1. A bracket for securing a traffic control device to a mast arm, comprising:

a bracket clamp plate having one face shaped to mate with a side of an elongated member for holding said traffic control device, having an opposite face with a first tubular section extending therefrom and having an opening therethrough aligned with said first tubular section;

means for adjustably securing said clamp plate to said elongated member;

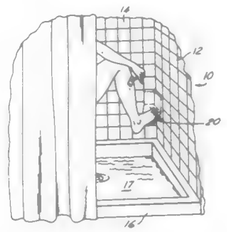
a mast arm anchor plate having one face shaped to mate with said mast arm, having a second tubular section extending therefrom and sized to be telescoped over said first tubular section of said clamp plate, having an opening therethrough aligned with said second tubular section and having an aperture through said second tubular section;

means for adjustably securing said anchor plate to said mast arm;

means for axially securing said tubular sections together in telescopic configuration while permitting relative rotation about the coincident longitudinal axes of said telescoped tubular sections, comprising an annular shoulder around the interior of said second tubular section, a radial bore through said first tubular section and alignable with said aperture of said second tubular section of said telescoped tubular sections and an axial securing pin insertable into and removable from said bore through said aperture of said second tubular section when said bore and said aperture are aligned for axially securing said telescoped tubular sections by cooperation of said securing pin with said shoulder; and

means for rotationally securing said clamp plate and said anchor plate to prevent relative rotation about the axes of said telescoped tubular sections.

5,340,070
LEG SHAVE PLATE
Betsy A. Soma, 896 Tartan Trail, Bloomfield Hills, Mich. 48304
Filed Jul. 21, 1993, Ser. No. 95,896
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—220.1 **22 Claims**

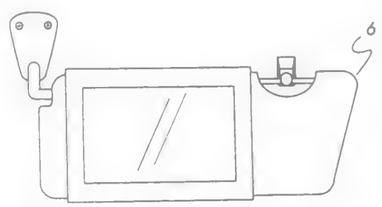


1. A leg shave place comprising:

a unitary body having a vertically extending mount portion and a forwardly extending, downwardly inclined foot portion integral with said mount portion;

said foot portion having upper and lower surfaces, with said upper surface providing an area configured to receive the ball of a user's foot to permit the user to maintain balance while shaving the leg.

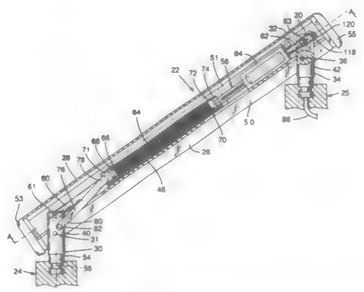
5,340,071
SHADE SAVER
Douglas O. Fox, II, 1059D Circle Dr., Dover, Del. 19901
Filed Jul. 23, 1992, Ser. No. 917,393
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—231.8 **4 Claims**



1. A windshield sunscreen storage apparatus for the protective confinement of sunshades to an automobile windshield sunvisor comprising: planar shaped member of plastic construction and folded along two parallel fold lines in order to divide said member into front, middle, and rear surfaces, said front and rear surfaces on either side of said middle surface and said front and rear surfaces having edges, said front, middle and said rear surfaces being about parallel to one another so as to define a space between said middle and said rear walls and another space between said middle and said front walls, said spaces of a size adapted to fit relatively firmly around said sunvisor and said sunshade, said front and middle surfaces

having notches in said surface in order to provide for frictional fit with said sunshade.

5,340,072
LINKAGE ASSEMBLY FOR MECHANICAL ARM
J. Rick Halbirt, Hubbard, Oreg., assignor to A-Dec, Inc., Newberg, Oreg.
Filed Feb. 2, 1993, Ser. No. 12,554
Int. Cl.[5] E04G *3/00*
U.S. Cl. 248—279 **13 Claims**



1. A linkage assembly for a mechanical arm system, comprising:

a first post member;

a second post member;

an elongated arm member pivotally attached to the first post member and pivotally attached to the second post member;

an elongated rod member having a first end pivotally attached to the first post member and a second end pivotally attached to the second post member, the rod member having a support length extending between the first and second post members, the first and second post members and the arm member and rod member defining a linkage arranged such that the arm member and rod member remain substantially parallel throughout the pivotal motion of the arm member and rod member; and

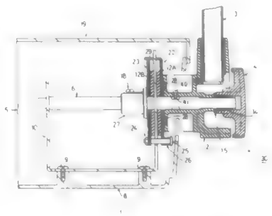
an adjustment mechanism connected to the rod member for moving the second end of the rod member relative to the second post thereby changing the support length of the rod member between the first and second post members.

5,340,073
DISPLAY SUPPORTING DEVICE
Kuki Masakazu, Ichinomiya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Feb. 17, 1993, Ser. No. 18,555
Claims priority, application Japan, Apr. 28, 1992, 4-110388
Int. Cl.[5] E04G *3/00*
U.S. Cl. 248—291 **12 Claims**

1. A display supporting device for movably supporting a display on a body of equipment, comprising:

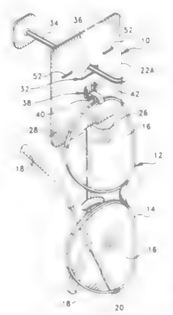
a frictional force generating portion for generating frictional force in a direction opposite to a moving direction of the display when moving the display relative to the body; and

biasing means for applying biasing force not less than a predetermined value to said frictional force generating portion in a direction perpendicular to the moving direction to make a magnitude of the frictional force to be



generated in said frictional force generating portion become at least not less than a predetermined value.

5,340,074
EYEGLASS DISPLAY HANGER
Felix A. Porcaro, Lincoln; Jeffrey A. Feibelman, East Greenwich, and Daniel A. Triangolo, Cranston, all of R.I., assignors to Accessories Associates, Inc., North Providence, R.I.
Filed Dec. 15, 1993, Ser. No. 168,027
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—309.1 **9 Claims**



1. An eyeglass and display hanger combination comprising:

a planar body having a lateral crease line which divides said body into first and second body portions, said planar body further having a slot on said crease line;

said first body portion having first and second opposing surfaces, and an aperture therein,

said second body portion having first and second opposing surfaces,

said body being folded over along said crease line so that said second surface of said second body portion is adjacent said second surface of said first body portion,

a pair of eyeglasses assembled with said body, wherein a temple bar of said eyeglasses is inserted through said aperture in said first body portion and through said slot on said crease line so that said temple bar is positioned adjacent said second surface of said first body portion;

means for securing said second body portion to said first

VOL 1165 ISS 4 AG 23 1994 UMI

body portion so that said temple bar is received therebetween; and

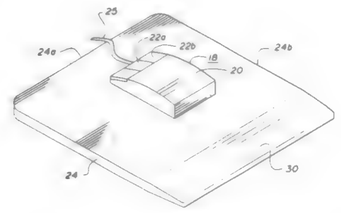
means for mounting said body on a cantilever display bar.

5,340,075

ERGONOMIC MOUSE PAD

Michael J. Schriner, Bay Village, Ohio, assignor to Hunt Holdings, Inc., Wilmington, Del.

Filed Aug. 5, 1992, Ser. No. 925,729
Int. Cl.[5] A47B *91/00*
U.S. Cl. 248—346 3 Claims



1. An ergonomic mouse pad comprising:

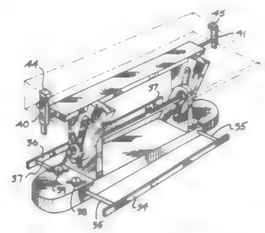
a pad having a front edge and a rear edge, and a first substantially flat and horizontal top surface region extending from said rear edge toward said front edge for supporting a computer mouse during its use, and having a second top surface region merging smoothly and sloping downwardly from said first top surface region to said front edge of said pad to provide support and comfort for the hand and wrist of a user of the mouse.

5,340,076

COMPUTER KEYBOARD SUPPORT STAND

Joseph F. Dockwiller, III, 124 Meyers Rd., Liverpool, N.Y. 13088

Filed Apr. 19, 1993, Ser. No. 48,315
Int. Cl.[5] A47G *29/00*
U.S. Cl. 248—371 3 Claims



1. A computer keyboard support stand, comprising,

a base plate, the base plate including a base plate top wall, a base plate bottom wall, a base plate first side wall, and a base plate second side wall, with the base plate top wall having respective first and second support plates fixedly and orthogonally mounted relative to the base plate top wall, with the first and second support plates arranged in a parallel coextensive relationship, and having respective first and second support plate slots arranged in a parallel coextensive relationship, and

a support axle orthogonally directed through the first and second support slots, and

a first and second mounting plate mounted in pivotal adjacency to the respective first and second support plate, with the first mounting plate having a first mounting plate slot, and the second mounting plate having a second mounting plate slot, with the first mounting plate slot and the second mounting plate slot orthogonally receiving the support axle therethrough, and the support axle including first and second fasteners secured to respective axle first and second ends for securing in a predetermined angular orientation the first and second mounting plates relative to the first and second support plates, with the first mounting plate including a first mounting plate top wall, the second mounting plate including a second mounting plate top wall, and

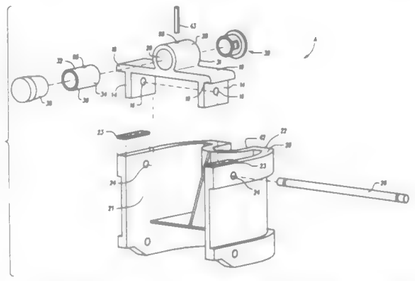
a bridge plate orthogonally and fixedly mounted extending between the first mounting plate top wall and the second mounting plate top wall coplanar with the first mounting plate top wall and the second mounting top wall, wherein the bridge plate and the first mounting plate top wall and the second mounting plate top wall are arranged to accommodate a keyboard member thereon.

5,340,077

TROLLING MOTOR ANTI-BOUNCE MECHANISM

William C. Tyler, Columbus, Miss., assignor to Zebco Corporation, Tulsa, Okla.

Filed Sep. 27, 1993, Ser. No. 127,166
Int. Cl.[5] F16M *1/00*
U.S. Cl. 248—642 10 Claims



1. An apparatus for reducing stress in a boat gunwale or deck-mounted trolling motor support assembly, operable in two positions for use and for stowing trolling motor, comprising:

a base;

at least one movable link, having a first end and a second end, said link connected at its first end to said base, said link movable into a first and second position about a connection point to said base for use of a trolling motor in said first position and stowing a trolling motor in said second position; and

a support member extending from adjacent of said link to support said link out of substantial load-carrying contact with said base other than at said connection point.

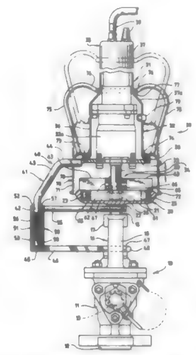
5,340,078

ACTUATOR FOR VALVE

Robert H. Dean, Evanston, Ill., assignor to Midland Manufacturing Corp., Skokie, Ill.

Filed Dec. 13, 1993, Ser. No. 165,320
Int. Cl.[5] F16K *31/14*
U.S. Cl. 251—59 20 Claims

1. Coupling apparatus for coupling a drive motor to a valve, wherein the motor has a housing and a rotary output shaft and the valve has a body with a rotary valve stem and a handwheel for operating the valve stem, said apparatus comprising: an anchor bracket having a motor portion adapted to be fixedly secured to the motor housing and a valve portion shaped and dimensioned to be freely fitted around a portion of the valve body in coupling relationship therewith substantially non-rotatable relative thereto about the axis of the valve stem, actuator mechanism adapted to be fixedly secured to the motor output shaft and freely movable into driving engagement with the handwheel simultaneously with movement of said anchor bracket into coupling relationship with the valve body for effecting rotation of the handwheel in response to rotation of



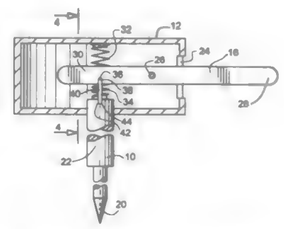
the motor output shaft, and retaining mechanism carried by said anchor bracket and movable between a release position accommodating free movement of said actuator mechanism to and from driving engagement with the handwheel and a retaining position engageable with the valve for cooperation with said actuator mechanism to prevent movement thereof from driving engagement with the handwheel.

5,340,079

HAND CONTROL VALVE

John W. Hutchison, and Margaret B. Hutchison, both of 31 Columbia Ct., Walnut Creek, Calif. 94598

Filed Nov. 1, 1993, Ser. No. 144,340
Int. Cl.[5] F16K *25/00, 31/60*
U.S. Cl. 251—85 4 Claims



1. A hand operated control valve comprising

a valve body being adapted to connected in fluid communication with a fluid conduit,

means forming an orifice for venting fluid pressure from valve body,

a needle valve operatively connected to said means forming an orifice, said needle valve having a needle valve tip being movable from a closed seated position to an open position, said needle valve tip forming a variable flow opening between said closed and said open position for selectively controlling rate of venting of fluid pressure from said housing,

an actuator operatively connected to said needle valve at an external position from said valve body, said actuator being manually operable to cause said movement,

connection means coupling said lever to said elongated valve stem,

said connection means having a first portion thereof above said actuator for causing said needle valve tip to be automatically seated in absence of any manual force being applied to said actuator,

said connection means includes alignment means for maintaining alignment between said needle valve tip and said orifice during movement,

said alignment means includes a lift rod connecting said actuator and said needle valve,

said lift rod is pivotally connected to said actuator and said needle valve, and

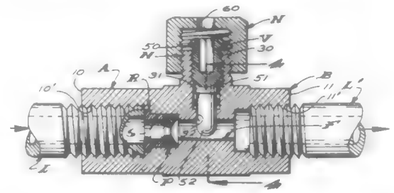
said lift rod is a closed loop having portions extending through a portion of said needle valve and said actuator and a second portion of said connection means being disposed between said closed loop and said valve stem for maintaining said alignment between said needle valve tip and said orifice during movement.

5,340,080

FLOW CONTROL DEVICE

Robert K. Cleland, 11051 Via El Mercado, Los Alamitos, Calif. 90720

Continuation-in-part of Ser. No. 841,093, Feb. 25, 1992, Pat. No. 5,316,180. This application Feb. 2, 1993, Ser. No. 13,014
Int. Cl.[5] G05D *7/01*
U.S. Cl. 251—120 6 Claims



1. A flow metering device including an elongate body with upstream and downstream ends, a central longitudinally extending flow passage, coupling means at the upstream and downstream ends of the body to couple the body with upstream and downstream liquid conducting parts in communication with the flow passage, an annular plate seat in the passage; a disk-shaped elastic orifice plate with radially extending upstream and downstream surfaces and a central orifice engaged in the seat and extending radially across the passage to meter the flow of liquid from the passage upstream of the plate into the passage downstream of the plate and through which a pressure drop occurs that creates a primary minus pressure at the downstream surface of the plate with respect to the fluid pressure at the upstream surface of the plate; and, a diffusion part supported by the body and extending radially into and intersecting the central axis of the passage, the diffuser part is positioned in that proximity to the downstream surface of the plate where it is impinged upon by and diffuses a jet of liquid issuing from the orifice in the plate and prevents the jet from generating a secondary minus pressure that adversely increases the minus pressure acting upon the downstream surface of the plate; the body has an elongate radially outwardly opening bore on an axis that intersects the central axis of the body, the diffusion part has an outer portion threadedly engaged in the bore and an inner portion projecting into the passage.

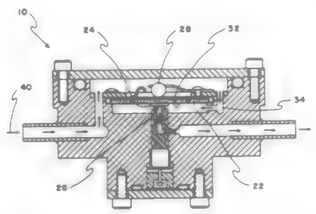
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,081

MEANS FOR POSITIVELY SEATING A PIEZOCERAMIC ELEMENT IN A PIEZOELECTRIC VALVE DURING INLET GAS INJECTION

Kenneth E. Wright, Yardley, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 7, 1993, Ser. No. 72,371
Int. Cl.[5] F16K *31/04*
U.S. Cl. 251—129.06 2 Claims



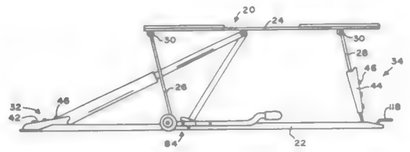
1. A piezoelectric valve in a gas delivery system comprising:
a piezoceramic element bonded to a valve seal and disposed over a valve seat, and retained in position by an O-ring and a retainer;
an insulating ball normally biased by a preload spring against the piezoceramic element;
an inlet gas port located only on the side of the piezoceramic element opposite the seal such that upon admission of inlet gas into the valve, the piezoceramic element and seal is positively seated.

5,340,082

PORTABLE SURFACE LIFT FOR A VEHICLE

James A. Holloway, Olive Branch, Miss., assignor to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Mar. 30, 1992, Ser. No. 860,187
Int. Cl.[5] B66F *7/22*
U.S. Cl. 254—88 2 Claims



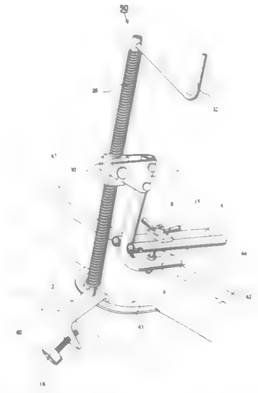
1. In combination, a portable surface lift for a vehicle and a pair of manually retractable wheel means respectively attached to a mid-portion of opposite sides of said lift for rolling movement of said lift over a surface, each said wheel means comprising:
(a) an arm having a first end and a second end, said arm being pivotally attached to its respective said side of said lift between said first and said second ends, and said arm having a handgrip portion adjacent said second end; and
(b) a wheel rotatably attached to said first end;
said arm having a wheel-retracted position in which said lift rests on said surface and having a wheel-extended position in which said wheel is in contact with said surface and said wheel means supportingly raises said lift from said surface for said rolling movement thereover; when said arm is in said wheel-retracted position, said handgrip portion of each said arm being vertically offset from said surface by a first bended region in said arm between said handgrip portion and said pivotal attachment of said arm to its respective said side of said lift, and the handgrip portion of each said arm being horizontally offset from said lift by a second bended region in said arm between said handgrip portion and said pivotal attachment of said arm to its respective said side of said lift.

5,340,083

POOL TABLE SLATE LIFTER

David R. Suhy, 22122 Covello St., Canoga Park, Calif. 91303; David J. Suhy, 7601 Kelvin Ave., Canoga Park, Calif. 91306, and Richard C. Suhy, 22122 Covello St., Canoga Park, Calif. 91303

Filed May 4, 1993, Ser. No. 58,516
Int. Cl.[5] B66F *3/36*
U.S. Cl. 254—100 1 Claim



1. In combination with a billiard table having a generally rectangular frame with four corners and four side walls, each of said side walls including an outside surface and an inside surface, a playing surface with an upper side and a lower side and four edges, and a plurality of pocket holes, including corner pocket holes located at the corners of the playing surface and at least one side pocket hole located along each of said side walls situated in spaced apart opposed relation to one another at approximately the mid point thereof, a device for lifting and lowering one edge of said playing surface in a generally vertical direction to gain access thereunder, comprising,
an L-shape arm member adapted toe inserted into one of said side pocket holes to engage and support the lower side of said playing surface, said L-shape arm member including a vertical member, a horizontal member and a pivot point located generally along said vertical member,
a pair of arms pivotally attached in spaced apart relation to said L-shape arm member at the site of said pivot point, said pair of arms adapted to engage the upper side of the playing surface and, in combination with said L-shape arm member, form a clamping assembly for tightly grasping the playing surface,
a pair of support plate members fixedly attached to said vertical member on opposite sides thereof in parallel relation, each of said plate members having a slot-like opening formed at one end,
an elongated threaded shaft member having a top end and a bottom end with a handle means attached at the top end and a pivot pin means formed at the bottom end,
a clamp member adapted for attachment to the side-wall of said billiard table at the site of one of said side pocket holes, said clamp member having an upper surface with a pivot area formed therein for pivotally and rotatably supporting the pivot pin means,
a trunnion member having a threaded aperture for receiving said threaded shaft member in rotating relation and at least two projecting support pins for engaging the respective said slot-like openings formed in each of said support plate members, and
said threaded shaft member being rotatable in either a clockwise or counter-clockwise direction to engage the threaded aperture in said trunnion member for raising or lowering said clamping assembly and controlling the elevation of the playing surface, said threaded shaft member in association with said pivot area and said trunnion member in rotating engagement with said support plate members adapted to adjust their rotation to compensate for the changes in the angle of the playing surface as it is raised and lowered.

5,340,084

FISH TAPE REEL AND REEL ASSEMBLY WITH DETACHABLE ACCESSORY STORAGE COMPARTMENT

Thomas B. Crates, Clover, S.C., and Donald N. Hesprich, Gastonia, N.C., assignors to Jameson Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 870,409, Apr. 17, 1992, Pat. No. 5,201,495, which is a continuation of Ser. No. 703,798, May 21, 1991, Pat. No. 5,106,056. This application Jan. 15, 1993, Ser. No. 5,480
Int. Cl.[5] H02G *1/08*
U.S. Cl. 254—134.3 FT 13 Claims

1. A fish tape reel, comprising:
(a) first and second hollow reel segments mated together to define a fish tape enclosure for receiving a length of fish tape with a fitting on one end thereof;
(b) fish tape access means in at least one of said reel segments for permitting extension and retraction therethrough of a length of fish tape contained in said fish tape enclosure;
(c) a detachable storage compartment for containing tools, accessories, and fittings, said detachable storage compartment comprising a body and a lid attached to said body and detachable there with from the fish tape reel; and
(d) attachment means for releasably attaching said storage compartment to said fish tape reel.

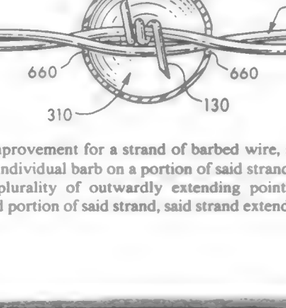
5,340,085

LOG LIFTING AND SUPPORTING DEVICE

Howard M. Keibler, R.D. #2, Box 133-A, Saltsburg, Pa. 15681

Filed Oct. 7, 1992, Ser. No. 957,717
Int. Cl.[5] B66D *1/00, 5/02*
U.S. Cl. 254—266 15 Claims

1. A collapsible portable one person log lifting and supporting device for use as a sawing aid to raise and support one end of a log for ease in sawing said log, said log lifting and supporting device comprising:
an inverted substantially U-shaped frame, said frame consisting of a central horizontal cross member, a first vertical support member affixed at the upper end thereof perpendicularly to one end of said horizontal cross member and a second vertical support member affixed at the upper end thereof perpendicularly to the other end of said horizontal cross member, said frame sized to compass the diameter of a log to be sawed;
removable horizontal stabilizer bar means for providing stability for said frame when raising and supporting one end of a log to be sawed, stabilizer bracket means for receiving said stabilizer bar means, said stabilizer bracket means affixed to said first vertical support member proximate the lower end thereof, and to said second vertical support member proximate the lower end thereof, said



horizontal stabilizer bar means consisting of a pair of horizontal stabilizer bars, each of said horizontal bars is slidable within said stabilizer bracket means, one of said stabilizer bars positioned perpendicular to said first vertical support member and substantially intersected thereby and the other of said stabilizer bars positioned perpendicular to said second vertical support member and substantially intersected thereby, each of said horizontal stabilizer bars positioned transversely to said central horizontal cross member;
cable means for lifting and supporting said log to be sawed;
reel means affixed to said central horizontal cross member and operably attached to one end of said cable means so that said reel means when operated, lowers and raises said log to be sawed suspended by said cable means.

5,340,086

PROTECTIVE BARB COVERINGS FOR BARBED WIRE

Sandra L. Dorr, 1755 S. Highway 83, Franktown, Colo. 80116

Filed Mar. 12, 1993, Ser. No. 30,836
Int. Cl.[5] E04H *17/04*
U.S. Cl. 256—3 10 Claims

1. An improvement for a strand of barbed wire, said strand having an individual barb on a portion of said strand, said barb having a plurality of outwardly extending points disposed around said portion of said strand, said strand extending axially

VOL 1165 ISS 4 AUG 23 1994 UMI

outwardly from opposing sides of said individual barb, wherein said improvement comprises in combination:

means over said individual barb for providing a protective covering over each of said plurality of outwardly extending points of said individual barb, each of said plurality of outwardly extending points of said individual barb being fully enclosed within said protective covering, and

means cooperative with said providing means for permitting passage of said strand through said providing means, said providing means only covering said individual barb and said portion of said strand.

5,340,087

BALUSTRADES

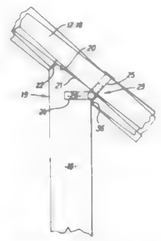
Jack Turner, Rochdale, England, assignor to The Northern Joinery Limited, Rochdale, United Kingdom

Filed Jan. 13, 1992, Ser. No. 819,787

Claims priority, application United Kingdom, Jan. 12, 1991, 9100724; Jun. 26, 1991, 9113785

Int. Cl.[5] E04H *17/14*

U.S. Cl. 256—67 **13 Claims**



1. A balustrade including a hand rail and a base rail interconnected by a plurality of parallel balusters, one end of each baluster being pivotally attached to the hand rail by a pivot arrangement, the other end of each baluster being pivotally attached to the base rail by a pivot arrangement, each of said pivot arrangements including a socket in the respective rail thereof adapted closely to surround and receive an end portion of the baluster and a hinge means connecting the baluster end portion to the respective rail thereof and constructed and arranged to allow relative pivotal movement therebetween about an axis extending transversely of the respective rail and baluster thereof and translational motion of same end portion of the baluster into and out of said socket.

5,340,088

METALLURGICAL VESSEL AND METHOD OF MAKING THE REFRACTORY LINING OF SUCH VESSELS

Gerhard Madritsch, Vienna; Bruno Hirschberg, Vienna; Friedrich Kassegger, Vienna; Heinz Maslo, Baden, and Paul Weitzer, Vienna, all of Austria, assignors to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

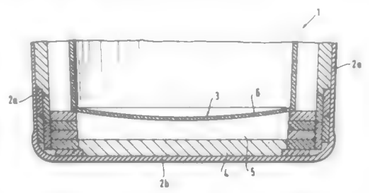
Continuation of Ser. No. 778,119, Dec. 9, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 113,735

Claims priority, application Austria, Apr. 12, 1990, 881/90

Int. Cl.[5] C21C *5/44*

U.S. Cl. 266—44 **15 Claims**

1. Bottom for a metallurgical vessel for the production of steel having a refractory lining with a basic working layer comprising at least in part of a granular, nonmonolithic dry basic bulk material before a first charging of molten metal occurs, the upper side of the working layer being covered by a chemically hardened protective layer, and, after the vessel has been filled with molten metal, the working layer being



partly present as a monolithic layer formed from the bulk material.

5,340,089

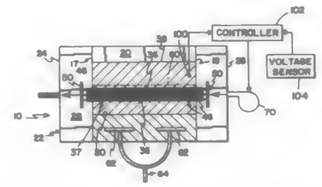
COOLANT CONTROLLED IR HEAT TREAT APPARATUS

James E. Heath, Fridley, and John R. Eppeland, St. James, both of Minn., assignors to BGK Finishing Systems, Inc., Blaine, Minn.

Continuation of Ser. No. 598,391, Oct. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 535,468, Jun. 8, 1990, abandoned. This application Oct. 15, 1992, Ser. No. 962,026

Int. Cl.[5] F27B *15/14;* **H05B** *3/00*

U.S. Cl. 266—87 **12 Claims**



1. An infrared heat treating apparatus comprising:

an infrared radiation emitting infrared lamp extending along a longitudinal dimension from a first lamp end at one end of said dimension to a second lamp end at an opposite end of said dimension;

an infrared transparent conduit extending from a first conduit end to a second conduit end and having wall means for defining a conduit interior, said lamp disposed within said interior in spaced relation to said wall means;

said conduit open at both said first and second conduit ends;

means for admitting a cooling fluid to said interior by admission of said fluid into said first conduit end at a flow rate controlled in response to measured parameters with said fluid flowing through said conduit between said lamp and said wall means and discharged from said conduit at said second conduit end.

5,340,090

METHOD AND APPARATUS FOR DROPLET STREAM MANUFACTURING

Melissa E. Orme, Los Angeles, and Eric P. Muntz, Pasadena, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Division of Ser. No. 887,477, May 22, 1992, Pat. No. 5,226,948, and Ser. No. 575,271, Aug. 30, 1990, Pat. No. 5,171,360. This application Mar. 19, 1993, Ser. No. 35,112

Int. Cl.[5] B22F *9/00*

U.S. Cl. 266—202 **21 Claims**

1. In an apparatus for manufacturing a net form product, the combination of:

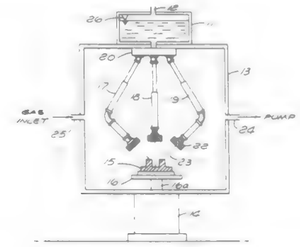
a source of liquid material under pressure;

a chamber;

a support for positioning a product collector in said chamber, said collector defining the shape of a desired product;

liquid droplet stream generator means positioned within said chamber for generating an aligned stream of droplets, said generator means including a nozzle;

conduit means for conducting molten material from said material source to said generator nozzle;



disturbance means for providing an amplitude and time dependent modulated disturbance to said stream at said nozzle to produce a stream of liquid droplets monodispersed in a single line; and

drive means for relative movement of said nozzle and said support for impacting liquid droplets of said stream onto said product collector in a predetermined pattern.

5,340,091

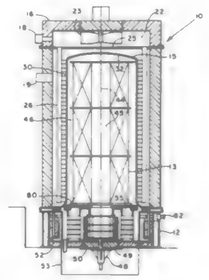
BATCH COIL ANNEALING FURNACE

Klaus H. Hemsath, Toledo, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Apr. 21, 1993, Ser. No. 49,369

Int. Cl.[5] F27D *17/00*

U.S. Cl. 266—256 **26 Claims**



1. In a bell shaped, batch furnace for annealing a plurality of coils of wound metal strip, said coils being vertically stacked on a base and covered by an inner cover removably sealed to said base; said inner cover, in turn, being covered by an outer cover removably sealed to said base; said outer cover having burners for heating said inner cover in turn heating said coils contained therein; said base including i) support means for supporting said coils at a fixed elevation within said inner cover; ii) a recirculating fan for drawing furnace atmosphere from said inner cover into said base and pumping said furnace atmosphere back into said inner cover; iii) a generally cylindrical containment wall spaced radially outwardly from said recirculating fan for preventing escape of furnace atmosphere from said base, and a iv) diffuser for directing said furnace atmosphere from said inner cover into said base, the improvement comprising:

auxiliary heating means including burners for heating said containment wall, and said diffuser effective to direct said withdrawn furnace atmosphere into heat transfer contact with said containment wall whereby said furnace atmosphere is further heated prior to being admitted to said inner cover for additionally heating the bottom most edge portion of the bottom coil thereby uniformly heating the top coil and the bottom coil.

5,340,092

TRANSFER STATION FOR FOUNDRY LADLES

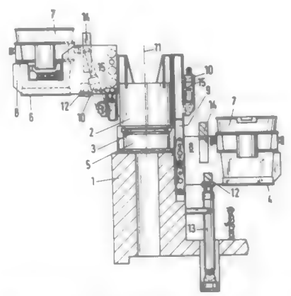
Hans J. Hecken, Schuld; Rüdiger Heine, Duisburg; Dietmar Lohse, Wesel, and Heinz Möser, Duisburg, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 27, 1993, Ser. No. 112,388

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1992, 4228432

Int. Cl.[5] B22D *11/10*

U.S. Cl. 266—276 **3 Claims**



1. A transfer station for transferring a foundry ladle from a take-over position situated on a shop floor level to a higher pouring position of a curved continuous-casting installation, comprising:

a foundation projecting above the floor level;

a column;

a rotating ring arranged so as to rotatably support the column on the foundation, the rotating ring lying in a horizontal plane and the take-over position being located below the plane of the rotating ring;

vertically movable supporting arms provided at the column so as to receive the foundry ladle;

pairs of vertical guide paths provided diametrically opposite one another on the column so as to vertically guide the supporting arms, said pairs of vertical guide paths extending down to the horizontal plane of the rotating ring;

an additional pair of guide paths provided on a take-over position side of the foundation so as to extend up to the horizontal plane of the rotating ring, the additional pair of guide paths provided at the foundation being alignable with any of the pairs of guide paths provided on the column by rotation of the column;

a hydraulic cylinder arranged below the plane of the rotating ring on the take-over position side of the foundation for vertically moving the supporting arms in the guide paths; and,

a supporting member connected to the column so as to be movable laterally outward for supporting the supporting arms, the supporting member being arranged above the plane of the rotating ring and between the paths on the column which guide the supporting arms.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,093

HYDRAULICALLY DAMPED RUBBER BEARING

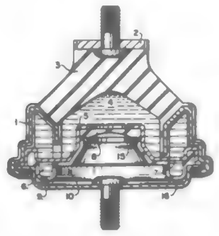
Axel Rudolph, Bensheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim/Bergstrasse, Fed. Rep. of Germany

Filed Jul. 20, 1992, Ser. No. 916,563

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1991, 4126673

Int. Cl.[5] **F16F** *9/10*

U.S. Cl. 267—219 **2 Claims**



1. In a hydraulically damped rubber bearing with a supported component attached to a supporting component by an element made of a resilient material, wherein the supported and supporting components enclose an activating chamber and a compensation chamber, the activating chamber being defined by a chamber wall which is delineated in part by a substantially rigid section of a partition having a least one port, said activating chamber and compensating chamber being occupied by a fluid which can flow between them through said port, and wherein the compensation chamber is sealed off from outside by a diaphragm secured to the supporting component, the improvement wherein a section of the partition delineating the wall of the activation chamber is flexible, wherein both the flexible section of the partition and the diaphragm are formed by a single one piece molding; and wherein the molding is fastened to the partition essentially fluid-tight in an intermediate zone which surrounds the flexible section between the flexible section and the diaphragm whereby the intermediate zone prevents the passage of fluid through the flexible section to the compensation chamber.

5,340,094

HYDRAULIC DAMPING ELASTOMERIC BEARING

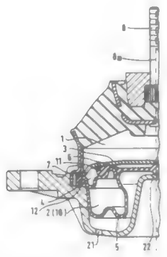
Georg Schyboll, Sinzig-Westum, and Heinrich Mayerböck, Kirchdaun, both of Fed. Rep. of Germany, assignors to Boge AG, Eitorf, Fed. Rep. of Germany

Filed Apr. 9, 1993, Ser. No. 46,049

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1992, 4212311; Jun. 2, 1992, 4218110

Int. Cl.[5] **F16M** *5/00*

U.S. Cl. 267—219 **11 Claims**



1. A hydraulic damping elastomeric bearing for being mounted between and reducing transmission of vibration between at least two objects, said bearing having a longitudinal axis, said bearing comprising:

first means for attaching said bearing to one of said at least two objects;

second means for attaching said bearing to another of said at least two objects;

means for connecting said first means for attaching to said second means for attaching, said connecting means comprising:

cavity means disposed within said connecting means, said cavity means including at least two chambers, said at least two chambers comprising damping fluid therein, and said at least two chambers comprising a first chamber disposed adjacent said first means for attaching and a second chamber disposed adjacent said second means for attaching;

a resilient member disposed between said first means for attaching and said second means for attaching, said resilient member having an interior surface forming at least part of said first chamber;

means for separating said at least two chambers, said means for separating comprising:

a throttle passage connecting said at least two chambers for passage of fluid between said at least two chambers;

a first surface disposed towards said first chamber;

a second surface disposed towards said second chamber;

a first member disposed between said at least two chambers; and

a second member disposed adjacent said first member, said throttle passage being formed between at least a portion of said first member and at least a portion of said second member; and

a one-piece component forming at least a part of each of: said means for separating said at least two chambers, at least one of said at least two chambers, and the throttle passage, said one-piece component comprising:

an elastomeric material;

a first portion for forming said at least a part of said means for separating said at least two chambers; and

a second portion for forming at least a part of said second chamber, said second portion of said one-piece component comprises an expandable bellows for forming said at least a part of said second chamber;

said first means for attaching, said at least two chambers and said second means for attaching are substantially aligned along the longitudinal axis of said bearing;

said first member and said second member of said means for separating comprise disc-shaped members;

said disc-shaped members define an outer periphery;

said throttle passage is ring-shaped;

said throttle passage is disposed between said first disc-shaped member and said second disc-shaped member in the vicinity of the outer periphery of the disc-shaped members; and

said first portion of said one-piece component forming a seal between said first member and said second member to seal said throttle passage between said first member and said second member.

5,340,095

ADJUSTABLE DOOR BUCK SPREADER

Charles W. Eicher, III, P.O. Box 160, South Point, Ohio 45680-0160

Filed Jun. 25, 1993, Ser. No. 81,098

Int. Cl.[5] **E04F** *21/04;* **B23Q** *3/15*

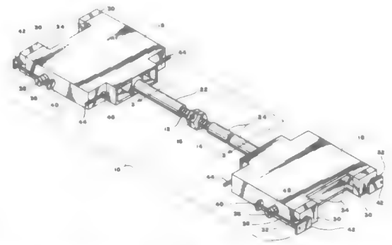
U.S. Cl. 269—43 **14 Claims**

1. An adjustable door buck spreader for use in assembling, transporting and installing door frames of varying dimensions comprising:

a spacer assembly including first and second elongated elements having inner ends and axially aligned with intermediate adjustment means,

said first ad second elongated elements having outer ends each affixed to a first and second frame mount, respectively,

said first and second frame mounts each including an outer face provided with two outside pillars bounding a central door stop cavity to define a profile mating with that of a conventional door frame having a central door stop section bounded by substantially symmetrical lateral sections.



spacer means carried by at least one said pillar and adjustably attached thereto to adapt said frame mount outer face to accommodate the profile of an offset door frame wherein a central door stop section is bounded by asymmetrical lateral sections,

each said frame mount having a pair of side walls respectfully extending rearwardly of one said frame mount pillar,

a frame clamp assembly connected relative each said side wall and including laterally adjustable means attaching said clamp assembly to each said frame mount side wall, and a longitudinally displaceable rod carried by said laterally adjustable means and having a grip foot at a forward end and manipulating means at an opposite end.

5,340,096

FEEDING APPARATUS

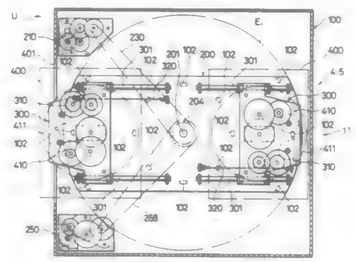
Hirotaka Toki, Kashihara; Osamu Wakuda, Yamatotakada; Hiranaga Yamamoto, and Hiroyuki Nagao, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 23, 1992, Ser. No. 872,769

Claims priority, application Japan, Apr. 23, 1991, 3-92131

Int. Cl.[5] **B65H** *1/22*

U.S. Cl. 271—9 **8 Claims**



1. A feeding apparatus comprising:

carrying member installed rotatably on a base member;

a plurality of storing means installed rotatably on said carrying member, for storing paper on which an image on a document is to be copied and for feeding the paper from a predetermined feed position;

first rotation driving means installed in a position on said base member outside of the turning space of said carrying member, for rotating said carrying member;

second rotation driving means for rotating said storing means on said carrying member;

first controller means which controls said first rotation driving means to interchange said storing means on a feeding side and said storing means on a non-feeding side with each other;

second controller means which controls said first rotation driving means to align a paper center line of the paper stored in said storing means on the feeding side with a feeding center line;

third controller means which controls said second rotation driving means to position the paper in said storing means on the feeding side at right angles to a feeding direction;

wherein said first rotation driving means includes:

driving means for producing a driving force for rotation said carrying member;

transmitting means for transmitting the driving force of said driving means to said carrying member;

wherein said driving means is a motor, and

wherein said transmitting means includes:

a series of gears for transmitting a rotation of said motor;

a pulley which rotates as said series of gears rotate; and

a connecting belt attached around said pulley and a rotation shaft of said carrying member.

5,340,097

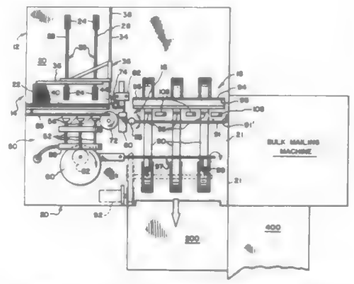
AUTOMATIC MAILING MACHINE

Richard Yankloski, Webster, N.Y., assignor to Data Pac Mailing Systems Corp., Rochester, N.Y.

Filed Apr. 2, 1993, Ser. No. 42,372

Int. Cl.[5] **B65H** *5/00*

U.S. Cl. 271—10 **23 Claims**



1. A mailing machine for automatic processing of pieces of mail of varying sizes, shapes and weights supplied from a mail bundle, comprising:

a. first means for receiving and vertically supporting mail bundle above a horizontal surface defined on said first means, said first means including transport means for engaging and incrementally moving said bundle along said horizontal surface defined on said first means;

b. second means for engaging and transferring individual pieces of mail vertically from said bundle to an apparatus for weighing said individual pieces of mail;

c. third means for weighing individual pieces of mail received from said second means; and

d. fourth means for moving said individual pieces of mail from said mail weighing means after weighing thereof to apparatus for selectively directing said pieces of mail to a further mail handling apparatus; said moving means including means for transferring said mail piece from a vertical position to a horizontal position and means for transporting said mail piece once horizontally positioned

VOL 1165 ISS 4 AG 23 1994 UMI

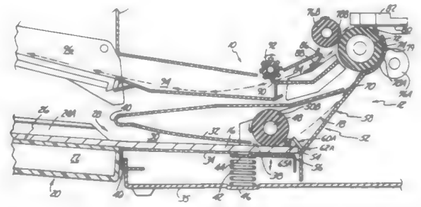
to either said bulk mailer or to said sorting and storing apparatus.

5,340,098

SINGLE SHEET SUPPLIER

Ernest M. Gunderson, Minneapolis, Minn., assignor to Fargo Electronics, Inc., Eden Prairie, Minn.

Filed Sep. 14, 1993, Ser. No. 121,755
Int. Cl.[5] B65H *3/30*
U.S. Cl. 271—21 **10 Claims**



1. A paper sheet supplier for selecting single sheets of paper from a corresponding stack of cut-sheet paper provided therein and transferring each such sheet after selection thereof along an output path, said paper sheet supplier comprising:

a variable passageway means having an input port through which a stack of cut-sheet paper can be inserted and further having a guide side extending between a pair of confinement sides that is positioned across from a forcing side to surround at least in part a substantially closeable paper passageway such that said forcing side resiliently opposes increased separation from said guide side caused by insertion through said input port of a stack of cut-sheet paper therebetween;

a rotatable transfer roller means separated from said input port by at least a portion of said guide side and extending past said guide side to be across at least a portion of said paper passageway adjacent said guide side when said paper passageway is opened as a result of said forcing side being separated from said guide side;

a pair of corner structures each at least partially located on a side of said transfer roller means opposite that side on which said input port is located and each extending past said guide side to be across at least a portion of said paper passageway adjacent both said guide side and a corresponding one of said confinement sides when said paper passageway is opened as a result of said forcing side being separated from said guide side, said pair of corner structures each having a surface portion facing said transfer roller means which is inclined with respect to said guide side; and

an output guide means capable of directing a sheet of paper forced to pass said pair of corner structures by said rotatable transfer roller means along said output path.

5,340,099

ORIENTATION CHUTE FOR SORTING MACHINE

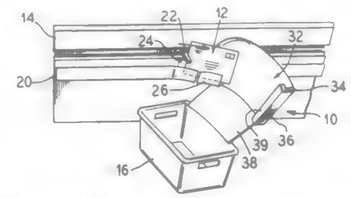
Michael Romanenko, South Elgin; Robert E. Sadler, Jr., and John M. Buday, Jr., both of Des Plaines, all of Ill., assignors to ElectroCom GARD Ltd., Niles, Ill.

Filed Nov. 20, 1992, Ser. No. 983,090
Int. Cl.[5] B65H *39/10;* **B07C** *9/00*
U.S. Cl. 271—303 **14 Claims**

1. An orientation chute for a sorting machine having a horizontal conveyor for transporting objects with substantially linear bottom and leading perimeter edges along a feed path, said orientation chute comprising:

a horizontal support adjacent to said conveyor to vertically support said bottom edge of said objects as they are moved off said conveyor to prevent rotation of said objects;

a curved and sloped panel downstream of said support to vertically and laterally support said objects as they move farther away from said conveyor, said panel being without a surface to engage said bottom edge of said objects, said panel being provided with means for arresting the horizontal movement of said objects and a slide section to direct said objects further downwardly and laterally to a point of collection;



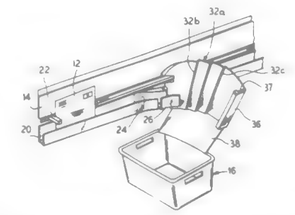
wherein the orientation of each object diverted from said conveyor is manipulated identically between its diversion from said conveyor and its deposit at said point of collection such that all objects will arrive at said point of collection with the same orientation.

5,340,100

ORIENTATION CHUTE FOR SORTING MACHINE

Michael Romanenko, Elgin, Ill., assignor to ElectroCom GARD Ltd., Niles, Ill.

Continuation-in-part of Ser. No. 983,090, Nov. 20, 1992. This application Jan. 25, 1993, Ser. No. 8,286
Int. Cl.[5] B65H *39/10;* **B07C** *9/00*
U.S. Cl. 271—303 **5 Claims**



1. An orientation chute for a sorting machine having a horizontal conveyor for transporting objects with substantially linear bottom and leading perimeter edges along a feed path, said orientation chute comprising:

a horizontal support adjacent to said conveyor to vertically support said bottom edge of said objects as they are moved off said conveyor to prevent rotation of said objects;

a curved and sloped panel downstream of said support to vertically and laterally support objects as they move farther away from said conveyor, said panel being provided with means for arresting the horizontal movement of said objects and a slide section to direct said objects further downwardly and laterally to a point of collection, said panel being without a surface to engage said bottom edge of said objects;

said panel having at least one vertical wall oriented perpendicularly to a direction of travel of said objects along said panel and positioned along its width engageable by said objects only when said objects are moving along said panel toward said horizontal support;

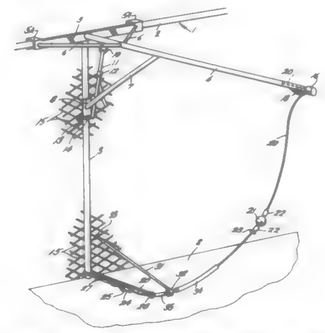
wherein the orientation of each object diverted from said conveyor is manipulated identically between its diversion from said conveyor and its deposit at said point of collection such that all objects will arrive at said point of collection with the same orientation.

5,340,101

TRAINING APPARATUS FOR BATTERS

Steven R. Lawson, 225 S. Harvey, and Raymond J. Lawson, S.R. 2 - 1852 - La. 2, both of Burns, Oreg. 97220

Continuation-in-part of Ser. No. 16,158, Feb. 9, 1993, abandoned. This application Oct. 4, 1993, Ser. No. 131,773
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 **7 Claims**



1. A baseball batting training apparatus for placement on an upright elevated support comprising,

an arm asembly including an elongate arm, a bracket at one end of said arm for engagement with said support, a brace on said arm and engageable with the support to support the arm in a substantially horizontal position, tether attachment means at the other end of same arm,

tensionable means for coupling said arm and said brace to said support and tensionable to bias the brace toward engagement with said support,

a flexible tether terminating at one end of said attachment means and having a ball affixed at a point therealong, and

retention means attachable to the support and receiving the remaining end of said tether to limit travel of the remaining end of the tether and the ball on the tether upon the batter hitting the ball.

5,340,102

RACKET ATTACHMENT WHISTLE

Kenneth P. Adamson, P.O. Box 334, Tortola, British Virgin Islands, British Virgin Isls., and George Spector, 233 Broadway Rm. 702, New York, N.Y. 10279

Filed Apr. 19, 1993, Ser. No. 47,956
Int. Cl.[5] A63B *69/38*
U.S. Cl. 273—29 A **3 Claims**

1. A training device in combination with a tennis racket having a throat wherein said device comprises:

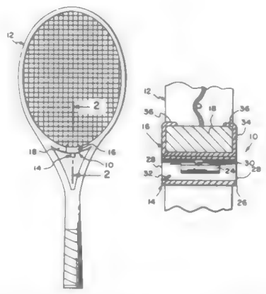
a) whistle means for producing two different pitched whistle sounds;

b) means for attaching said whistle means transversely to said throat of the tennis racket, so that a first whistle sound will be made by said whistle means when a tennis player swings the tennis racket in a slice position and a second sound will be made by said whistle means when a tennis player swings the tennis racket in a top spin position; wherein said whistle means includes:

c) a vibration member;

d) a cylindrical hollow housing having forward and rearward open ends;

e) a ball pivot bracket pivotally connection said vibration member within said cylindrical housing, so that said vibration member will always maintained a substantially horizontal orientation with respect to said cylindrical housing; and



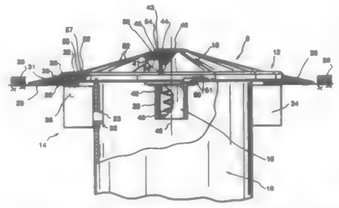
f) a deflector located to said forward open end of said cylindrical housing, so as to deflect the air flow into said vibration member at different angles to produce the two different pitched whistle sounds, in accordance with the racket orientation in a slice or top spin position.

5,340,103

COLLAPSIBLE GOLF FAIRWAY DISTANCE MARKER

Jack E. Kirby, 8012 River Pl., Carmel, Calif. 93923, and Lyle F. Shabram, Jr., Salinas, Calif., assignors to Jack E. Kirby, Carmel, Calif.

Continuation-in-part of Ser. No. 772,566, Oct. 7, 1991, Pat. No. 5,219,171. This application Dec. 3, 1992, Ser. No. 987,115
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—32 H **22 Claims**



1. An improved golf fairway distance marker comprising:

anchor means;

base support means having a circular outer perimeter;

fastening means for securing said anchor means to said support means;

means forming a central riser disposed in the center of said base support means and movable between an upper position and a lower position and including means resiliently biasing said riser in the direction toward the upper position;

a plurality of elongated plates each having one extremity pivotally engaging said base support means and an opposite extremity pivotally engaging said central riser, such that, when said riser is in said upper position, said plates are in an inclined position, and when said riser is in said lower position, said plates are in a generally horizontal position;

means associated with at least some of said elongated plates serving as a visual indicator of fairway distance; and

skirt means associated with said base support means and

VOL 1165 ISS 4 AG 23 1994 UMI

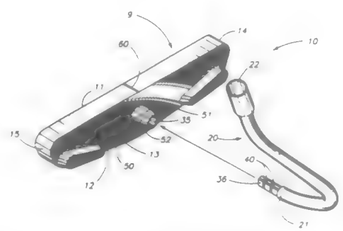
extending outwardly therefrom a predetermined distance to keep grass from growing too near the marker, said skirt means being in the form of an annular ring having a recessed inner periphery for receiving the outer periphery of said base support means.

5,340,104

GOLF PUTTER HEAD WITH ADJUSTABLE HOSEL

Ronald D. Griffin, 1413 Agnes, Richland, Wash. 99352

Filed Jul. 8, 1993, Ser. No. 89,886
Int. Cl.[5] A63B *53/02*
U.S. Cl. 273—80.2 11 Claims



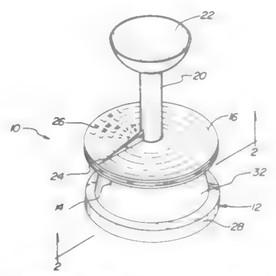
1. An adjustable golf putter head assembly, comprising:
a putter head including a forward ball striking surface formed substantially along a ball striking plane, a bottom sole surface, and a rearwardly facing back surface;
wherein the putter head further includes opposed toe and heel ends between which said forward ball striking surface, bottom sole surface and back surface extend;
a hosel including a first end for attachment to the putter head, and a second end for attachment to a club shaft;
a pivot connection including a substantially cylindrical mortise and tenon on the putter head back surface and the first end of the hosel interconnecting the hosel and putter head at a location on the putter head substantially midway between the toe and heel ends, for selective pivot adjustment of the hosel relative to the putter head about a first axis substantially normal to the ball striking plane; and
an interlock component joining the first end of the hosel and putter head at the pivot connection to affix the putter head and hosel together in a selected angular relationship about said first axis.

5,340,105

COUNTER ROTATING POINTER AND DISC CHANCE DEVICE

Bernie J. Gostyla, 51 W. St., Bloomfield, Conn. 06002

Filed Sep. 22, 1993, Ser. No. 124,593
Int. Cl.[5] A63F *5/04*
U.S. Cl. 273—142 R 10 Claims



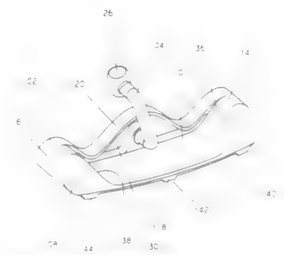
1. A new rotatable gaming device comprising:
a base positionable upon a surface;
a stationary platform secured to said base in a parallel relationship to said surface, said stationary platform having a through-extending aperture in a center area thereof;
a plurality of ball bearings;
a rotatable platform positioned in a spaced, parallel relationship to said stationary platform and supported thereon by said plurality of ball bearings, said rotatable platform having a through-extending aperture in a center area thereof;
indicia positioned upon said rotatable platform;
a center shaft projecting through said apertures and rotatably supported by said base orthogonal to said surface, said center shaft having a top end;
a pointer fixedly secured to said center shaft and extending outwardly therefrom in a plane parallel to said rotatable platform;
and,
a cup member supported upon said top end of said center shaft.

5,340,106

MOMENT OF INERTIA GOLF PUTTER

Paul A. Ravaris, 5301 Overton Ridge Blvd., Apt. 111, Fort Worth, Tex. 76132

Filed May 21, 1993, Ser. No. 65,940
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—164.1 10 Claims



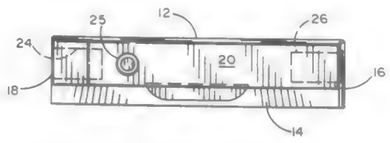
9. A golf club head, comprising:
a) a face having a center portion;
b) a toe and a heel coupled to said face and located peripherally of said face;
c) a sole located along a bottom portion of said face;
d) a top surface located along a top portion of said face, said top surface having first and second notches therein, said first notch being located between said face center portion and said heel and said second notch being located between said face center portion and said toe;
e) plural runners located on said sole, with each runner having flat first and second surface portions, said first surface portion being oriented with respect to said face at an obtuse angle and merging with said sole at said bottom portion of said face, said first surface portion extending from said face towards a rear of said club head where said first surface portion merges with said second surface portion, said second surface portion being raised relative to said sole.

5,340,107

MONOLITHIC CERAMIC GOLF CLUB PUTTER HEAD AND METHOD OF MANUFACTURE THEREOF

Robert R. Baker, Irvine, and Robin A. Carden, Costa Mesa, both of Calif., assignors to Ceradyne, Inc., Costa Mesa, Calif.

Filed Mar. 19, 1993, Ser. No. 34,476
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 R 11 Claims



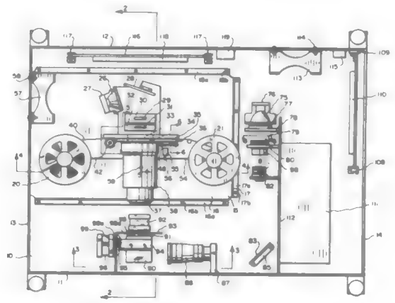
1. A golf club putter head formed entirely of
a monolithic, dry-pressed silicon nitride of which the hitting surface and other surfaces have a uniform polished appearance.

5,340,108

APPARATUS FOR PROJECTING AND MOVING A SPOT OF LIGHT IN A SCENE PROJECTED ON A SCREEN AND FOR CONTROLLING OPERATION OF A STEPPER MOTOR USED THEREWITH

George E. Gerpheide, Salt Lake City, Utah; Donald A. Wilson, 7638 Mary Esther Cir., Salt Lake City, Utah 84093, and Sidney L. King, Salt Lake City, Utah, assignors to Donald A. Wilson, Salt Lake City, Utah

Filed Nov. 22, 1991, Ser. No. 797,420
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—185 A 18 Claims



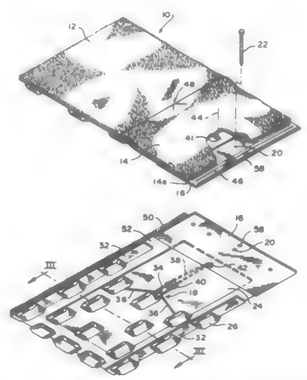
1. As part of a system for simulating a game of golf wherein a scene of a golf course looking from the position of a ball toward a green is projected onto a screen and the ball is hit by a player toward the screen, apparatus for projecting selected images of a scene representing a scene of a golf course looking toward the green onto a screen and for projecting and moving a spot of light on the screen superimposed on the scene representing a golf ball moving in the scene after being hit by a golfer, comprising:
a housing;
a projector adapted to project selected individual frames of a film strip mounted in the projector, said projector including a focusing lens;
means for moving the focusing lens to automatically focus the scene on the screen;
means associated with the projector for generating an infrared probe beam directed at an angle to the portion of the film being projected so that the probe beam will reflect from the film, the position of the reflected probe beam being indicative of the film position;
detector means for detecting the position of the reflected probe beam thereby determining if the film is in an "in-focus" position and if not, which direction the lens must move to provide an "in-focus" position, said detector means providing output signals indicative of the needed movement;
means for modulating the probe beam;
means for demodulating the detector output;
control means responsive to the detector output for causing operation of the means for moving the lens to maintain the focus of the scene;
sport projecting means secured in the housing in predetermined position with respect to the scene projecting means and adapted to project a light spot onto the screen superimposed on the scene and to move the light spot within the scene; and
means for controlling operation of the scene projecting means and spot projecting means in response to instruction signals received from outside the apparatus.

5,340,109

PIVOTING GOLF MAT

Omer E. Miller, 416 Wildwood Dunes Trail, Myrtle Beach, S.C. 29572

Filed Nov. 23, 1993, Ser. No. 155,821
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.1 21 Claims



1. A golf mat assembly to provide a visual indication of the path of a golfers swing comprising:
a) anchor means;
b) a golf mat having a hitting surface from which a golf ball can be hit with a golf club;
c) support means to slidably support the golf mat; and,
d) pivot attaching means to pivotally attach the golf mat to the anchor means such that contact between the golf mat and a golf club while hitting a golf ball off the hitting surface will cause the golf mat to align itself with the path of the golf club during the swing.

5,340,110

FIRM-GRIP SWING TRAINER

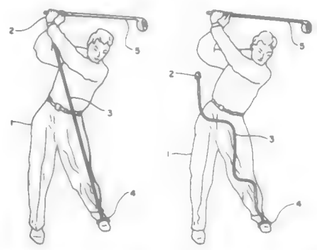
Michael Mollis, 1375 Jamaica Rd., Marco Island, Naples, Fla. 33937

Filed Jun. 7, 1993, Ser. No. 72,113
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.2 10 Claims

1. A firm-grip training device for golfers consisting essen-

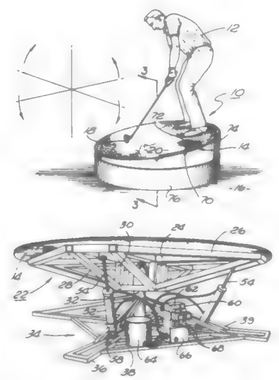
VOL 1165 ISS 4 AUG 23 1994 UMI

tially of an elastic cord having a predetermined length including first and second ends, means for forming a loop connected to said first end of said cord for receiving a golfer's leading foot while in a proper stance holding a golf club and addressing a golf ball, a strip of material connected to said second end of said cord for fitting comfortably between the heel of the leading hand of the golfer and the grip of said golf club without interfering with the proper gripping of said grip, the length of said cord being such that when a golfer is in the golf ball



address position, with said strip of material located between the leading hand and the club grip, and the golfer's leading foot is in said loop, said length provides a slight tension in said cord, and as the golfer turns his body during the backswing, such tension increases in the elastic cord and, if the golfer fails to maintain an adequately firm grip which prevents the club from moving relative said leading hand, said strip will be pulled from between the golfer's hand and the club grip whereby the golfer will become aware of the exact point where the gripping pressure on said strip is being relaxed.

5,340,111
GOLF DRIVING RANGE PLATFORM
David S. Froelich, 14455 Broadmoor St., Panorama City, Calif. 91402
Filed Jun. 10, 1993, Ser. No. 75,031
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—195 B **7 Claims**

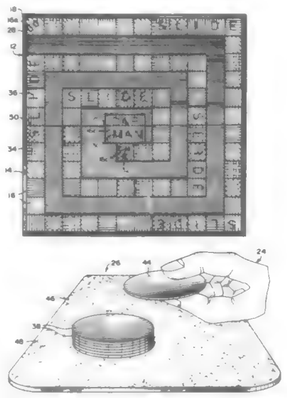


1. A golf practice apparatus, comprising:
a base structure;
a platform having an outer edge and being defined by first, second, third and fourth quadrants;
a post that extends from said base structure;
a universal joint that couples said platform to said post;
a first actuator that has a first piston coupled to said platform in said first quadrant;
a second actuator that has a second piston coupled to said platform in said second quadrant;
control means for moving said first and second pistons relative to said base structure, wherein said platform pivots about said universal joint;
a cylindrical shroud attached to said base structure; and,
a spherical cowling attached to said outer edge of said platform, said cowling cooperating with said shroud to enclose said universal joint and said actuators.

5,340,112
THREAD WOUND GOLF BALL
Akihiko Hamada, Kakogawa, and Tadahiro Ebisuno, Nishinomiya, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Apr. 28, 1993, Ser. No. 53,236
Claims priority, application Japan, Apr. 28, 1992, 4-135774
Int. Cl.[5] A63B *37/00*; **C08L** *9/00, 7/00*
U.S. Cl. 273—226 **11 Claims**

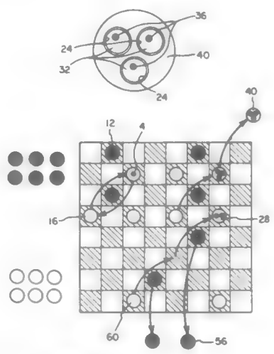
1. A thread wound golf ball comprising a core, a thread rubber layer formed on said core and a cover covering said thread rubber layer, wherein the thread rubber constituting said thread rubber layer is obtained by vulcanizing a rubber compound comprising:
(a) a solid rubber comprising a high-cis polyisoprene rubber, and
(b) a liquid polybutadiene rubber and/or liquid butadiene-isoprene copolymer rubber.

5,340,113
METHOD OF PLAYING A BOARD GAME
Fred E. Respicio, 95-1123 Lalai St., Mililani, Hi. 96789
Filed Sep. 22, 1993, Ser. No. 124,579
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—249 **13 Claims**



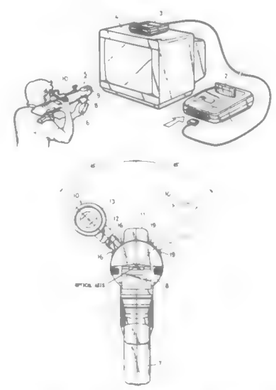
1. A method of playing a board game comprising the steps of:
a) providing a game board having a generally spiraled type path of travel in a clockwise direction divided into consecutive playing position spaces, substantially covering said entire playing board, wherein said path of travel starts from a first playing position space at a corner of said game board and ends at a last playing position space in the center of said game board;
b) a plurality providing of playing pieces, one for each of the game players, each said playing piece being of a size to fit within said playing position spaces and differently identifiable to represent one of the game players;
c) providing a chance determining means f or producing a random output count representing a number of said playing position spaces to be moved by each said playing piece, said chance determining means includes a plurality of disks, each having identifiable indicia on one face, and a hitter disk;
d) placing each players' playing piece on said first playing position space;
e) determining the order of play;
f) stacking said disks with said identifiable indicia on each disk turned face down;
g) a first player attempting to flip over, identifiable indicia face up, as many disks as possible by throwing said hitter disk toward said stack of disks, wherein when said stack of disks is hit by said hitter disk said stack is knocked down toppling over each of said disks;
h) said player moving his/her respective playing piece the number of said playing position spaces equal to the number of said toppled over disks that are flipped over with their said identifiable indicia face up; and
i) repeating steps f)-h) for the next player.

5,340,114
CHECKER BOTTOM SINGLE, DUAL, OR TRIPLE INDICATOR
Dan Wester, 2251 Fort Worth Hwy., Weatherford, Tex. 76087
Filed May 3, 1993, Ser. No. 56,182
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—260 **7 Claims**



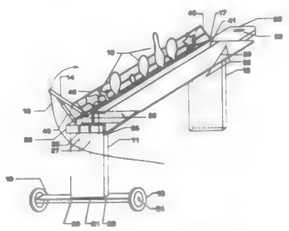
1. A game, comprising:
a playing surface;
a plurality of playing pieces, each of said playing pieces having a first face and a second face, said second faces being structured and arranged to contact said playing surface; and
at least some of said playing pieces having one or more eyes located within said respective second face, with each of said eyes comprising a dome eyeball with a movable pupil located within said dome eyeball.

5,340,115
SHOOTING SCOPE USED IN SHOOTING GAME SYSTEM
Ichiro Shirai, and Kenichi Sugino, both of Kyoto, Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 984,442, Dec. 2, 1992, abandoned. This application Sep. 17, 1993, Ser. No. 122,177
Claims priority, application Japan, Dec. 28, 1991, 3-358481
Int. Cl.[5] F41J *5/02, 9/14*
U.S. Cl. 273—310 **18 Claims**



16. A shooting scope for a television monitor based video game system for shooting targets displayed on said television monitor comprising:
a barrel,
a gunsight detachably mounted on said barrel for sighting the target displayed on the television screen;
said gunsight having a locking groove formed in a mounting portion thereof; and
first and second gunsight holding mechanisms disposed, in use, on the left and right portions of said barrel; each of said first and second gunsight holding mechanisms including a resilient locking member for cooperating with said locking groove to stably hold said gunsight when in a locked position and for releasing said gunsight when moved to an unlocked position.

5,340,116
MOBILE SILHOUETTE TARGET DEVICE WITH REMOTE RESETTING MEANS
David J. Reinart, 29238 Schwartz Rd., Westlake, Ohio 44145
Filed Nov. 19, 1992, Ser. No. 979,622
Int. Cl.[5] F41J *7/00*
U.S. Cl. 273—391 **7 Claims**



1. A mobile target base device comprising;

VOL 1165 ISS 4 AG 23 1994 UMI

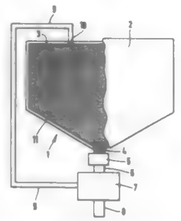
A. a housing with an open front, back and sides, capable of withstanding the impact of a projectile,
B. a horizonal pivot bar extending through the housing,
C. a plurality of targets positioned in a normally upright position on said pivot bar at spaced intervals, said targets each comprised of a target face, a base, and pivot means mounted off-center of the target face and which permits the target to pivot to a knock-down position when hit by a projectile,
D. the target bases being supported by the housing when the target is in the normal upright position,
E. return means for resetting the targets from the knock-down position to the normally upright position, said return means comprising;
1. a plurality of reset bars positioned behind and attached to the pivot bar by connecting means, and normally in a reset position,
2. an arm attached at one end to the connecting means,
3. a cord attached to the other end of said arm and then to a remote location, whereby a pull on the cord will cause the reset bars to move from their reset position and lift the targets back to their normally upright position,
4. and a spring attached to the outermost part of the arm to return the reset bars to their rest position when the pull on the cord is removed.

5,340,117

GRANULATE - BACKSTOP ASSEMBLY

Allan S. Wojcinski, Bonifatiusstrasse 88, D-4000 Duesseldorf 11, Fed. Rep. of Germany

Continuation of Ser. No. 643,539, Jan. 18, 1991, Pat. No. 5,171,020. This application Oct. 23, 1992, Ser. No. 965,749
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1990, 4001527; Feb. 8, 1990, 4003837; Apr. 27, 1990, 4013652
Int. Cl.[5] F41J *1/12*
U.S. Cl. 273—410 **14 Claims**



1. A backstop assembly for projectiles and projectile fragments, comprised of a box-shaped container having therein an opening covered by a medium for permitting projectiles and projectile fragments to enter said container, granulate means having a particle size between 3 and 9 mm, located within said container for slowing down and capturing projectiles and projectile fragments after they have entered said container; said container having a sloped bottom wall; said container having a discharge opening for granulate, projectiles and projectile fragments proximate the lowermost portion of said bottom wall.

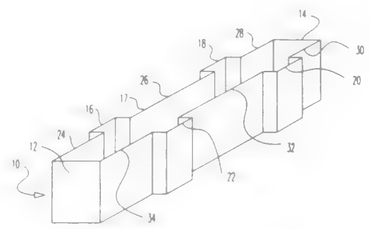
5,340,118

PLAYING COURT

Richard B. Jacobson, and Michael Abrams, both of 31-31 138 St., Flushing, N.Y. 11354

Filed Jun. 2, 1993, Ser. No. 70,269
Int. Cl.[5] A63B *71/04;* **A63C** *19/00*
U.S. Cl. 273—411 **7 Claims**

1. A playing court for a ball game, comprising:
a horizontal floor;
first and second vertical end walls substantially perpendicular to said horizontal floor,
a first side wall substantially perpendicular to said horizontal floor, said first side wall having first and second
alcoves spaced along said first side wall, each of said first and second alcoves being respective first and second trap means for preventing a ball entering each said alcove from a normal rebound from said first side wall, each of said trap means forming an entrance area extending substantially from said horizontal floor to the top of said first side wall; and



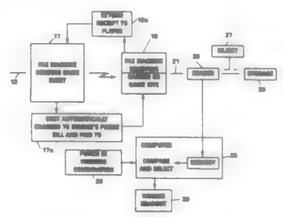
a second side wall substantially perpendicular to said horizontal floor and substantially parallel to said first side wall, said second side wall having third and fourth alcoves along said second side wall, each of said third and fourth alcoves being respective third and fourth trap means for preventing a ball entering each said alcove from a normal rebound from said second side wall, each of said trap means forming an entrance area extending substantially from said horizontal floor to the top of said second side wall.

5,340,119

METHOD OF PLAYING A GAME OF CHANCE AT LOCATIONS REMOTE FROM THE GAME SITE

Simon Goldfarb, 525 S. Ardmore Ave. #254, Los Angeles, Calif. 90020

Filed Feb. 1, 1993, Ser. No. 11,725
Int. Cl.[5] H04M *11/00*
U.S. Cl. 273—439 **6 Claims**



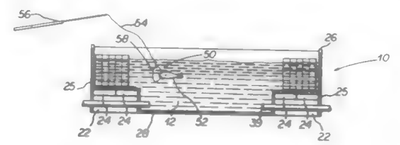
1. A method of participation in playing a game of chance prediction of a winning combination, wherein the game players are in various locations remote from the game site, said method comprising the steps of:
a. each game player manually completing a game sheet so that the sheet includes, in machine readable form, at least the game player's identity, fax phone number where the player is located, and predicted winning combination;
b. each game player inserting the respective completed game sheet into a facsimile phone machine at a located remote from the game site, whereby the game sheet information is transmitted over the phone line to a specially designated telephone number having a "900" prefix at the game site, such that the cost of playing the game is charged to the phone number of the game player;
c. the game site operator removing a facsimile of the game sheet from a receiving phone machine located at the game site;
d. the game site operator generating a confirmation copy of the facsimile, and transmitting the confirmation copy back to each game player's phone number via a fax phone transmission process, whereby each game player has a receipt confirming the details of the player's participation in the game;
e. The game site operator sending the facsimile of each player's game sheet through an electronic reader that is connected to a computer memory, whereby the player's predicted winning combination is stored in the memory; and
f. the game site operator generating a random number winning combination, and using a computer to compare the winning combination with stored predicted combinations in the computer memory.

5,340,120

FISH RODEO GAME AND METHOD HAVING A LASSO APPARATUS AND METHOD

Hugh K. Holyoak, Highway 29 North, Alapaha, Ga. 31622

Filed Nov. 3, 1992, Ser. No. 970,575
Int. Cl.[5] A63B *71/02;* **A01K** *74/00, 29/00*
U.S. Cl. 273—447 **14 Claims**



1. A fish rodeo method for recreation and amusement, comprising the steps of:
providing a body of water having a fish;
inserting a lasso in said water, said lasso comprising a noose cord with a pulling end and a sliding end, said sliding end having a cord eyelet, said lasso further comprising a swivel having a first swivel eyelet connected to said noose cord eyelet and a second swivel eyelet surrounding said cord and permitting said core to slide therethrough to thereby form a noose for catching fish, and said noose cord being of sufficient resiliency to maintain said noose in an open position when no pulling tension is exerted on said noose cord at said pulling end, said lasso further comprising a weight having a volume with a central aperture for permitting said noose cord to slide therethrough, said weight for engaging said second swivel eyelet and for urging said noose to a closed position upon exerting said pulling tension at said pulling end; and
catching said fish with said lasso.

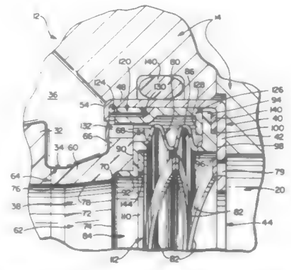
11. A lasso apparatus for catching fish in water, comprising:
a cord having a cord eyelet at an end;
a swivel having a first swivel eyelet connected to said cord eyelet and a second swivel eyelet surrounding said cord and permitting said cord to slide therethrough to thereby form a noose for catching fish;
a weight slidable along said cord and configured to engage said second swivel eyelet; and
said cord being of sufficient resiliency to maintain said noose in an open position.

5,340,121

FACE SEAL WITH INTEGRAL FLUOROCARBON POLYMER BELLOWS

Terry M. Lewis, Lake Forest; John W. Kosty, Fountain Valley; James R. Goodman, Corona; Mark A. Krzemein, Irvine; Jon M. Lenhert, Brea, and Jeffrey H. Arbogast, Newport Beach, all of Calif., assignors to Furon Company, Laguna Niguel, Calif.

Filed Oct. 15, 1992, Ser. No. 961,429
Int. Cl.[5] F16J *15/36*
U.S. Cl. 277—43 **23 Claims**



1. A mechanical seal assembly for inhibiting a fluid located in a relatively higher pressure region from flowing to a relatively lower pressure region, the seal assembly configured for cooperation with a radially extending annular sealing face of a seal ring which is mounted on a rotatable cylindrical shaft for rotation with the shaft, the seal assembly comprising:
(a) an outer casing having sides and an end wall with an opening through the center of its end wall through which the rotatable cylindrical shaft extends;
(b) a non-rotatable seal ring mounted in the outer casing and encircling the shaft for limited axial movement toward and away from the shaft seal ring, the non-rotatable seal ring having:
(i) on its end distal the casing end wall, a radially extending annular sealing face for mating with the opposing annular sealing face of the shaft seal ring; and
(ii) on its end proximal the casing end wall, a radially extending annular face;
(c) means mounted in the outer casing for urging the non-rotatable seal ring axially for mating engagement of its radially extending annular sealing face with the radially extending annular sealing face of the rotatable shaft seal ring, said urging means comprising:
(i) a cylindrical bellows encircling the shaft and aligned with its longitudinal axis coincident with the longitudinal axis of the shaft, the bellows comprising:
an annular collapsible outer wall with a first end of the outer wall proximal the non-rotatable seal ring and a second end of the outer wall distal the non-rotatable seal ring;
a first skirt is connected to and extends radially around the periphery of the first end of the collapsible outer wall in a direction toward the shaft centerline; and
a second skirt is connected to and extends radially around the periphery of the second end of the collapsible outer wall in a direction away from the shaft centerline, the second skirt having a radially extending annular front surface facing toward the non-rotatable seal ring and a radially extending annular rear surface facing away from the non-rotatable seal ring;
wherein the annular face on the end of the non-rotatable seal ring proximal the outer casing end wall has an annular recess around the center opening, and wherein a flange extends around the inner circumference of the first bellows skirt in a direction away from the outer casing end wall, a bond being between the

VOL 1165 ISS 4 AUG 23 1994 UMI

first bellows skirt and the radially extending annular face of the non-rotatable seal ring with the first skirt flange located in the non-rotatable seal ring annular recess, and wherein the second bellows skirt is clamped axially against the outer casing end wall; and

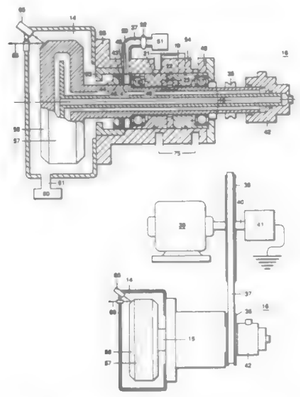
(ii) an annular spring encircling the shaft and extending between the end wall of the outer casing and the first bellows skirt for biasing the non-rotatable seal ring axially for mating engagement of its radially extending annular sealing face with the radially extending annular sealing face of the rotatable shaft seal ring.

5,340,122

DIFFERENTIALLY-PUMPED FERROFLUIDIC SEAL

James C. Tobani, Bedford, and Thomas J. Black, Jr., Merrimack, both of N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.

Filed Jun. 22, 1992, Ser. No. 901,884
Int. Cl.[5] F16J *15/40*
U.S. Cl. 277—59 **26 Claims**



1. Ferrofluid seal apparatus for forming a seal between a housing and a shaft passing between a first environment at a first pressure and a second environment at a second pressure less than the first pressure by a pressure difference, the apparatus comprising:

a first ferrofluid seal comprising magnetic means with contiguous pole piece means for forming a seal on the shaft between the shaft and the housing to separate the first environment from the second environment, the first ferrofluid seal being designed and constructed to have sufficient pressure capacity to withstand the pressure difference;

a second ferrofluid seal comprising magnetic means with contiguous pole piece means for forming a seal on the shaft between the shaft and the housing, the second ferrofluid seal being located between the first ferrofluid seal and the second environment and being designed and constructed to minimize bursting of the second ferrofluid seal;

means for maintaining an interstage region bounded by the shaft, the housing and the first and second ferrofluid seals at a pressure near, but greater than the second pressure, and

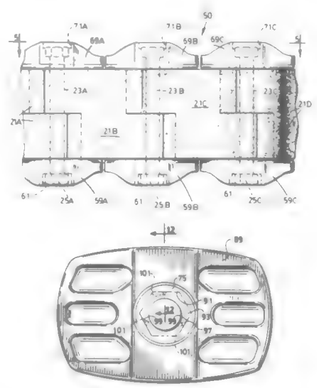
at least one bearing supporting the shaft in the housing, the bearing being located in the interstage region.

5,340,123

PRESSURE HARDWARE FOR A MODULAR INTER-WALL ELASTOMER SEAL

Carl R. Griffiths, Lansing, Mich., assignor to Thunderline Corporation, Belleville, Mich.

Continuation-in-part of Ser. No. 759,536, Sep. 13, 1991, Pat. No. 5,213,341. This application Apr. 14, 1993, Ser. No. 46,580
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] F16J *15/10*
U.S. Cl. 277—104 **10 Claims**



1. In a seal block assembly for forming a modular, annular conduit-to-wall-opening seal of the kind comprising a plurality of elastomer seal blocks joined to each other in an annulus around a conduit, each seal block having at least one pressure bolt aperture therethrough parallel to the conduit axis, the seal blocks being axially compressed and radially expanded to form a seal between the conduit and an external encompassing wall, the improvement in pressure hardware comprising:

a plurality of molded resin pressure plates each having a plural-facet nut socket facing outwardly of the pressure plate;

and a corresponding plurality of plural-facet nuts, one for each nut socket, the size and configuration of each nut matching the nut sockets in the pressure plates;

each nut socket having a plurality of integral ribs protruding into the socket for engagement with the nut;

whereby full insertion of a nut into a nut socket distorts the rib to afford a firm mechanical connection between the pressure plate and the nut, retaining the nut in the socket;

the pressure plate further having a bolt-receiving aperture therethrough, smaller than the nut, aligned with the socket to admit the thread end of a pressure bolt rod into engagement with the nut.

5,340,124

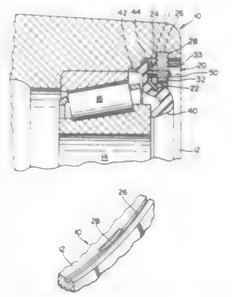
SEAL RETENTION AND ANTI-ROTATION LOCKING ASSEMBLY

Richard B. Jankowski, South Bend, and Robert F. Zvonar, Granger, both of Ind., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Aug. 14, 1992, Ser. No. 930,135
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—136 **9 Claims**

1. A seal retention and anti-rotation locking assembly in combination with a wheel, comprising a wheel hub of the wheel having a wheel opening, a groove disposed about the periphery of the opening and including an enlarged axial portion, a single retaining ring disposed within the groove and including reception means at an end thereof and the end having

an increased axial width portion along a predetermined length thereof, the increased axial width portion received in the groove and enlarged axial portion, sealing means disposed within the opening and extending radially between the periphery of said opening and a non-rotating axle member, the sealing means having a reinforcing member which includes receiving means, and anchoring means received fixedly within the receiving means and extending axially to the reception means of the retaining ring, so that the enlarged axial portion of the



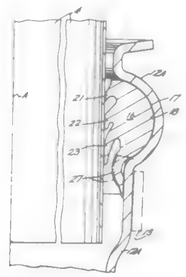
groove anchors circumferentially the retaining ring which, by means of the reception means and anchoring means, anchors circumferentially the sealing means, the reception means comprising a recess disposed within said end, the recess extending at an angle relative to a radius of said wheel opening, the anchoring means being received and captured within said recess, and one side of the recess defined by a finger of the increased axial width portion and said recess extending at an acute angle relative to said radius.

5,340,125

GASKET FOR RADIALLY SPACED PIPES

Richard C. Brown, 336 Carthage Ave., Eugene, Oreg. 97404, and Gary J. Oldham, 86466 Lorane Hwy., Eugene, Oreg. 97405

Filed Oct. 16, 1992, Ser. No. 962,973
Int. Cl.[5] F16J *15/16*
U.S. Cl. 277—169 **5 Claims**



1. A gasket for installation between radially spaced inner and outer pipes in fluid communication between which rotational movement occurs, said gasket including,

a main body of semi-circular cross-sectional shape and of elastomeric material for installation in said outer pipe,

inner lip means on said main body including multiple lips projecting toward the axis of said main body for contact with the inner pipe of said pipes, each of said lips having convergent surfaces defining an included angle, one of said lips defining an included angle of lesser magnitude and having a greater radial component than the remaining multiple lips to provide a greater pipe contacting surface than the pipe contacting surfaces of the remaining multiple lips,

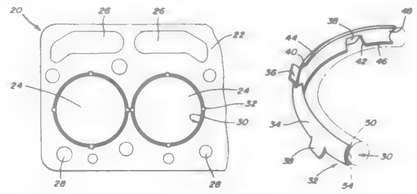
said main body having an upstream end and a downstream end, and an outwardly flared lip at all times spaced from said multiple lips and carried by the upstream end of said main body, said flared lip extending in an axial direction from said main body and having a distal end portion for contact with the outer pipe of said pipes to prevent fluid passage between said main body and said outer pipe.

5,340,126

FLANGELESS FIRE RING HOLDER

Joseph Antonini, Chicago, and Ronald T. Budovec, Oakbrook, both of Ill., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 21, 1992, Ser. No. 994,394
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—181 **11 Claims**



1. A cylinder head gasket comprising:

a gasket body having at least one cylinder bore opening, said opening having a generally annular boundary;

a fire ring holder disposed within said boundary, said holder having an annular body with a radially inner surface disposed between an upper edge of said holder and a lower edge of said holder, a plurality of spaced tabs extending radially away from said body, at least one of said tabs extending radially outwardly from said upper edge for mechanical engagement with an upper surface of said gasket body, and at least one of said tabs extending radially outwardly from said lower edge for mechanical engagement with a lower surface of said gasket body; and

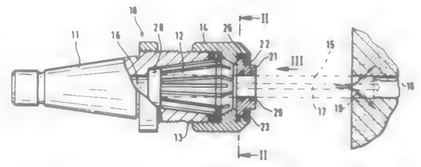
a fire ring having an outer peripheral surface, a radially outer portion of said peripheral surface of said fire ring being received in said body of said fire ring holder to retain said fire ring within said holder, a radially inner portion of said peripheral surface of said fire ring being free of contact with said gasket body and said fire ring holder.

5,340,127

CHUCK FOR TOOL

Zollmann Martin, Sonnenbühl-Undingen, Fed. Rep. of Germany, assignor to Zollmann GmbH, Sonnenbühl-Undingen, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 40,136
Int. Cl.[5] B23B *51/08*
U.S. Cl. 279—20 **5 Claims**



1. A chuck for a tool with an inner cooling medium supply, comprising a clamp holder having a cooling medium supply

VOL 1165 ISS 4 AG 23 1994 UMI

passage, a clamping nut anchorable in said clamp holder; and a ring-shaped sealing member which is carried by said clamping nut so as to abut against a clamped tool, said clamping nut having an outer concentric recess which surrounds the inserted tool and is formed so that said sealing member being is arranged in said recess exchangeably insertable from outside without releasing said clamping nut.

5,340,128

WEAR-RESISTANT CHUCK FOR DRIVING HARD-SHANK BITS

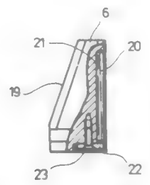
Rolf Weiss, Aichwald, and Werner Schniepp, Lorch-Waldhausen, both of Fed. Rep. of Germany, assignors to Josef Albrecht Bohrfutterfabrik GmbH & Co., Wernau, Fed. Rep. of Germany

Filed Mar. 18, 1993, Ser. No. 33,126

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1992, 4209307

Int. Cl.[5] B23B *31/12*

U.S. Cl. 279—60 **18 Claims**



1. A chuck having:

a base body for affixation to a drive spindle, said base body defining an axis of rotation;

radially movable clamping jaws carrie din said base body, situated for engaging and clamping a shift of a bit,

each said clamping jaws, or a clamping part affixed to a respective jaw having at least one clamping surface for engaging said shaft of a bit,

means rotatably mounted on said base body for positioning said clamping jaws,

wherein said clamping surfaces in said clamping jaws or clamping parts are directed exactly parallel to said axis of rotation and have a shape resulting, when engaging said shaft of a bit, in an essentially linear or stripleike contact with said shaft; and

wherein said clamping jaws or said clamping parts affixed thereto, at last in the region of their clamping surfaces, are coated with a layer of grains of diamond dust, and the material of said clamping jaws or said clamping parts affixed thereto in said regions is softer than said diamond dust, to permit grains of said diamond dust to embed themselves and to bury themselves in said material, whereby, at least in said regions, said clamping surfaces have the property of greater resistance to abrasion than hardened steel.

5,340,129

SAW BLADE RETENTION SYSTEM

David W. Wright, Novi, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 21, 1993, Ser. No. 6,814

Int. Cl.[5] B26D *1/08;* **B27B** *19/09*

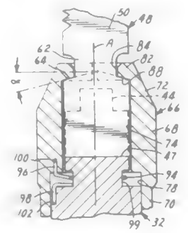
U.S. Cl. 279—90 **22 Claims**

1. A saw blade retention system for retaining a saw blade to a reciprocating saw, the saw blade being elongate and having a longitudinal axis, opposite side edges, a generally planar end edge generally perpendicular to the longitudinal axis of the saw blade, and two generally inclined edges adjacent opposite side edges of the blade and sloped in the direction away from the planar end edge, the saw blade retention system comprising:

a shaft connected to a saw for reciprocation along an axis of reciprocation, and having receiving means for receiving a saw blade, the receiving means having a generally flat surface generally perpendicular to the axis of reciprocation for abutting the generally planar end edge of the saw blade;

a chuck disposed about the shaft and having alignment means aligned with the receiving means in an unlocked position for allowing the saw blade to be disposed in the receiving means; and

rotation means for allowing the chuck to rotate angularly



relative to the saw blade and the shaft to a locked position to prevent the saw blade from exiting the receiving means and for allowing the chuck to move axially relative to the shaft to prevent axial movement of the saw blade between the chuck and the shaft;

the chuck having a generally frustoconical, annular, internal ledge at an inclined angle relative to the generally flat surface of the receiving means, the ledge and the generally flat surface of the saw blade retention system constituting centering means for centering a saw blade inserted in the saw blade retention system by interacting with the planar end edge and inclined edges of the saw blade to bring the saw blade into longitudinal alignment with the axis of reciprocation.

5,340,130

POLYVALENT CLAMP CHUCK FOR MACHINE TOOLS

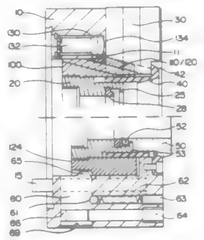
Gérard Gorse, Lons-Le-Saunier, France, assignor to Gerard Gorse Equipements de Machines-Outils S.A., Perrigny, France

Filed Aug. 12, 1992, Ser. No. 929,692

Claims priority, application France, Aug. 12, 1991, 91 10386

Int. Cl.[5] B23B *31/14, 31/16, 31/42*

U.S. Cl. 279—110 **20 Claims**



1. A polyvalent clamp chuck for machine-tools, comprising:

a cylindrical chuck body having a coaxial front opening in a front face;

at least two movable, radially guided gripping jaws positioned in said front opening;

an internal control cylinder concentrically arranged with said chuck body, and positioned to be axially movable to move said at least two movable gripping jaws towards or away from each other, said control cylinder comprising, at a front end, a connector member;

drive means for axially moving said control cylinder;

a sleeve having a conical portion, said sleeve being associated with said front opening so that said conical portion is outwardly sloping forming an opening which widens in a direction from inside said cylindrical chuck body towards the front face;

fitted support means for coacting with said conical portion and said connector member; and

means for selecting maximum amplitude of displacement of said control cylinder.

5,340,131

HYDRAULIC BRAKING SYSTEM FOR IN-LINE ROLLER SKATES

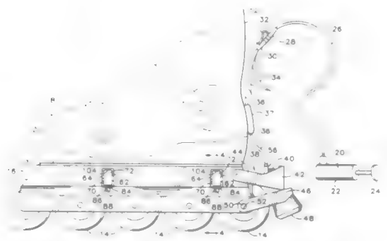
David R. Smathers, 200 W. Arlington, Gladstone, Oreg. 97027, and Jeffrey J. Smathers, San Jose, Calif., assignors to David R. Smathers, Gladstone, Oreg.

Continuation-in-part of Ser. No. 934,023, Aug. 21, 1992, Pat. No. 5,280,930. This application May 20, 1993, Ser. No. 63,647

The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.

Int. Cl.[5] A63G *17/14*

U.S. Cl. 280—112 **9 Claims**



1. A braking system for a pair of in-line roller skates, each roller skate including a plurality of rollers situated one behind the other along a line of directional travel of the skate, comprising:

(a) a single hand-operated hydraulic actuator;

(b) a hydraulic conduit system coupling the hydraulic actuator to each of said pair of roller skates, said conduit system having a coupling comprising an input from said actuator and two output lines; and

(c) a hydraulic brake assembly located on each of said roller skates for applying braking force simultaneously to generally opposite sides of at least one of said rollers on each of said roller skates.

5,340,132

TORSIONALLY STIFFENED IN-LINE ROLLER SKATE FRAME WITH DUAL SIDE WALLS

Andrzej M. Malewicz, Minneapolis, Minn., assignor to Rollerblade, Inc., Minneapolis, Minn.

Continuation of Ser. No. 714,837, Jun. 13, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 23,136

Int. Cl.[5] A63C *17/14*

U.S. Cl. 280—11.22 **55 Claims**

1. An in-line roller skate usable by a skater on a riding surface comprising:

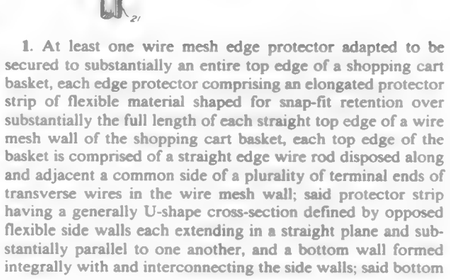
a plurality of wheels mounted for rotation in a common plane, each wheel being rotatably mounted by a wheel axle;

a boot including a boot sole;

a frame attached to said boot and carrying said wheel axles, said frame having top and bottom edges and including:

first and second substantially parallel side rails having a plurality of pairs of axle apertures passing therethrough to mount said axles therein; and

means for providing torsional stiffness extending between said side rails at predetermined locations, said means comprising a plurality of cross-ribbing members each having a top and bottom and extending between said side rails to resist twisting of said rails by skating generated twisting forces and distribute such forces throughout said frame;



wherein at least one of said cross-ribbing members includes:

a first pair of riblets extending toward said first rail from said second rail, said first pair of riblets converging to a first vertex;

a second pair of riblets extending toward said second rail from said first rail, said second pair of riblets converging to a second vertex; and

at least one connective riblet extending between said first and second vertices to connect said first and second vertices to each other.

5,340,133

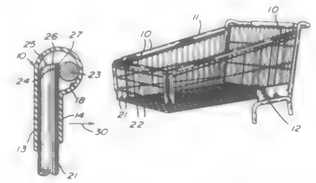
WIRE MESH EDGE PROTECTOR

Antoine Trubiano, Montreal, Canada, assignor to Cari-All, Inc., Montreal East, Canada

Filed Nov. 4, 1992, Ser. No. 971,475

Int. Cl.[5] B62B *5/00*

U.S. Cl. 280—33.992 **6 Claims**

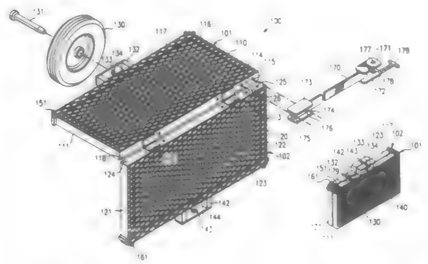


1. At least one wire mesh edge protector adapted to be secured to substantially an entire top edge of a shopping cart basket, each edge protector comprising an elongated protector strip of flexible material shaped for snap-fit retention over substantially the full length of each straight top edge of a wire mesh wall of the shopping cart basket, each top edge of the basket is comprised of a straight edge wire rod disposed along and adjacent a common side of a plurality of terminal ends of transverse wires in the wire mesh wall; said protector strip having a generally U-shape cross-section defined by opposed flexible side walls each extending in a straight plane and substantially parallel to one another, and a bottom wall formed integrally with and interconnecting the side walls; said bottom

VOL 1165 ISS 4 AG 23 1994 UMI

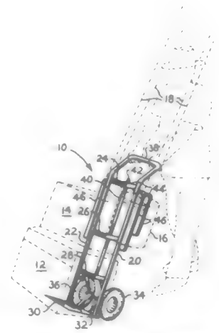
wall forming a smooth uninterrupted protective wall for the top edge, a generally circular trough having an asymmetrical portion integrally formed with said flexible side walls and bottom wall, said trough having a narrow mouth opening which is narrower than the thickness of said transverse wires, an enlargement defining said asymmetrical portion is formed in said trough adjacent said bottom wall, said trough receiving said straight edge wire rod and terminal ends of said transverse wires and being in clamping fit thereover.

5,340,134
COLLAPSIBLE AND HAND PORTABLE TRAILER
Thomas L. Dodson, 730 Bush Dr., Allen, Tex. 75002
Filed Aug. 25, 1993, Ser. No. 112,577
Int. Cl.[5] B62D *63/08*
U.S. Cl. 280—37 **22 Claims**



1. A trailer, comprising:
a detachable first wheel assembly;
a first bed member having a first upper surface, a first lower surface, a first front edge, a first inner edge, a first outer edge and first means for joining said first wheel assembly to said first bed member, said first joining means located proximate said first outer edge;
a second bed member having a second upper surface, a second lower surface, a second inner edge and a second outer edge;
means for pivotally coupling said first bed member to said second bed member, said coupling means located proximate said first and second inner edges, said first and second bed members thereby capable of assuming (1) an open position wherein said first outer edge is distal from said second outer edge and said first and second upper surfaces are substantially co-planar and (2) a closed position wherein said first outer edge is proximate said second outer edge and said first lower surface and said second lower surface cooperate to form interior walls of a storage cavity, said storage cavity for receiving said first wheel assembly for transportation therein, said first joining means comprising a first wheel assembly support joined to and protruding outwardly from said first outer edge, said first wheel assembly support including a bore therein adapted to receive an axle therethough when said first and second bed members are in said open position, said first wheel assembly support providing a gripping portion forming a handle for manual carriage of said trailer when said first and second bed members are in said closed position.

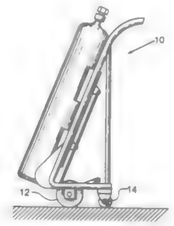
5,340,135
HAND TRUCK FOR FISHING EQUIPMENT
Johnnie V. Womberly, 1704 Carlisle Dr., East, Mobile, Ala. 36618
Filed Dec. 21, 1993, Ser. No. 170,733
Int. Cl.[5] B62B *1/14*
U.S. Cl. 280—47.19 **7 Claims**



1. A hand truck for the carriage of fishing equipment, comprising:
a frame formed of a laterally spaced apart elongate left, central and right upright frame member, with each said left, central and right upright frame member secured together by a spaced apart first, second and third lateral crossmember;
said left and said right upright frame member each having an upper end and a lower end, with said lower ends of said left and said right upright frame member having a load support platform extending therefrom and therebetween, and said upper ends of said left and said right upright frame member having a truck handle extending therebetween;
said hand truck further including an axle disposed behind said upright frame members and adjacent said left and said right frame member lower ends, with said axle having a spaced apart left and right wheel thereon, said central upright frame member including an upper end with a hook extending therefrom, said hook being disposed above said first lateral crossmember to provide support for fishing equipment suspended therefrom;
said left and said right upright frame member each including at least one elongate fishing rod support tube attached thereto, with each said elongate fishing rod support tube being parallel to said left and said right elongate upright frame member, whereby;
fishing equipment is secured to said hand truck by means of said load support platform, said upright frame members, said hook, and each said fishing rod support tube, and said hand truck is manually transported to a fishing site where the fishing equipment is unloaded from said hand truck as required for fishing.

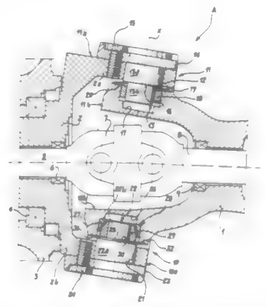
5,340,136
CYLINDER CART WITH MAGNETICS
Ralph M. MacNeil, Dieppe; Samir F. Coutya, Pte Claire, and Mohand Abdelli, Montreal, all of Canada, assignors to Canadian Liquid Air Ltd., Montreal, Canada
Filed Sep. 4, 1992, Ser. No. 940,999
Int. Cl.[5] B62B *3/04*
U.S. Cl. 280—472 **2 Claims**

1. A cylinder handling cart for transporting ferrous gas cylinders, said cart having a frame, support means to facilitate movement of the cart across a supporting surface, at least one upwardly extending magnetic bed having a lateral extent less than the diameter of said cylinder and mounted on said cart, in use to make adhering contact of said magnetic bed with an outer minor arc portion of the adjacent cylindrical surface of said cylinder, to secure said cylinder to said cart, means for



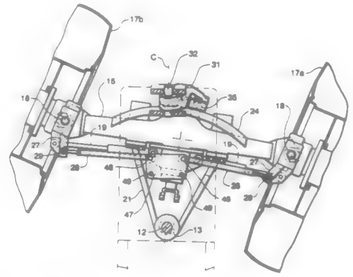
propelling said cart when loaded with said cylinder, and displacement means including cam means to provide relative displacement between said magnetic bed and said cylinder, to release said cylinder from adhering contact with said magnetic bed.

5,340,137
STEERING AXLE
Timante Carraro, Campodarsego, and Raimondo Perin, Borgoricco, both of Italy, assignors to Carraro S.p.A., Campodarsego, Italy
Filed Jun. 19, 1992, Ser. No. 901,016
Claims priority, application European Pat. Off., Jun. 25, 1991, 91830279.5
Int. Cl.[5] B62D *7/18*
U.S. Cl. 280—96.1 **4 Claims**



1. A steering axle comprising a girder to the opposed ends whereof a respective spindle of a wheel hub is attached hingedly by means of first and second hinges which are coaxial with the first hinge being subjected in use to mixed axial and radial loads and with the second hinge being subject in use to substantially radial loads, said first and second hinges comprising respective hinge elements formed on said girder and the corresponding spindle, between the elements of at least said second hinge there being interposed a means of adjusting assembly backlash wherein said second hinge includes a first element having a socket for seating a bearing therein and a second element having a hinge pin engaged in said bearing and wherein said means of adjusting the backlash comprises a Belleville washer placed between said socket and a shoulder on said hinge pin with a selected amount of pre-load and to form a seal between said socket and said hinge pin.

5,340,138
OVERSTEER CORRECTION FOR COMPOUND STEERING APPARATUS
Joseph C. Hurlburt, Lancaster, Pa., assignor to Ford-New Holland, Inc., New Holland, Pa.
Filed Nov. 12, 1992, Ser. No. 974,440
Int. Cl.[5] B62D *5/26*
U.S. Cl. 280—97 **5 Claims**



1. A vehicle comprising:
a chassis having a generally longitudinally extending centerline;
a transversely extending steerable axle pivotally mounted to said chassis for lateral movement relative to said chassis about a generally vertically extending axis;
a pair of opposing steerable wheels pivotally connected to the respective transverse ends of said steerable axle for pivotal movement relative thereto about respective wheel pivot axes;
steering means operatively connected to said steerable wheels to control the pivotal movement thereof relative to said steerable axle;
a detachable plate affixed to said chassis along said longitudinally extending centerline; and
a pair of tie rods, each tie rod interconnecting one of said steerable wheels at a steering arm connection point spaced remotely from the corresponding said wheel pivot axis and said detachable plate at respective chassis pivot points carried by said detachable plate at locations spaced on opposing sides of said chassis centerline for effecting a lateral shifting of said chassis relative to said steerable axle upon the pivotal movement of said steerable wheels relative to said steerable axle and for effecting a difference in the pivotal movement of one steerable wheel relative to the other steerable wheel, said detachable plate and said tie rods being removable from said chassis as a unit.

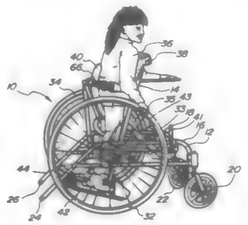
5,340,139
AMBULATORY WHEELSTAND WITH TORSO AND LEG SUPPORT
Daniel W. Davis, 1367 Merle Ave., Burton, Mich. 48509
Filed Jan. 11, 1993, Ser. No. 2,146
Int. Cl.[5] B62H *1/00*
U.S. Cl. 280—304.1 **15 Claims**

1. An ambulatory wheelstand for a user having a center of gravity, said wheelstand comprising:
a frame;
means for movably supporting said frame above a ground surface;
means attached to said frame for bearing a front side of the user;
means for aligning the user's legs, said means for aligning comprising a pair of knee pads, said knee pads being attached to said bearing means;
a foot plate for supporting the user's feet, said foot plate being attached to said bearing means; and

VOL 1165 ISS 4 AG 23 1994 UMI

means for engaging the pelvis of a user and for stabilizing the user against the bearing means;

said means for engaging comprising a stabilizing saddle and a bar, said bar being disposed between said stabilizing saddle and said bearing means, said saddle being elongated and having a first end and a second end, said saddle further having an upper user-contacting surface, said user-contacting surface being curved between said first end and said second end such that said surface is contoured to fit a



user's buttocks, said first end being positioned between and abducting the user's thighs;

whereby said saddle urges the user's pelvis against said bearing means and whereby the combination of said saddle urging the user's pelvis against said bearing means, said knee pads, and said foot plate allows for even weight bearing through the lower extremity of said user on said wheelstand and stabilization of the user's pelvis while allowing unrestricted range of motion of the user's upper torso.

5,340,140

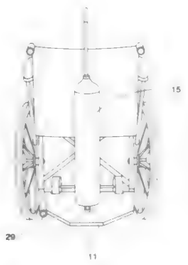
FOLDABLE OXYGEN TANK PLATFORM FOR A WHEELCHAIR

Johnnie J. Bynum, 7314 Bridges, Fort Worth, Tex. 76118

Filed Jul. 19, 1993, Ser. No. 94,606

Int. Cl.[5] B60R *9/00;* **A47C** *7/62*

U.S. Cl. 280—304.1 **6 Claims**



1. A foldable wheel chair apparatus capable of carrying a tank carrier and an oxygen tank comprising:

a collapsible frame, a seat, a back upright, at least one pair of rear wheels, at least one pair of front wheels, and two tipping levers, wherein said seat, back upright, rear wheels, front wheels, and tipping levers are coupled to said frame, and said collapsible frame may assume an unfolded operative position and a foldable storage position;

a platform capable of securing and holding a tank carrier and an oxygen tank;

in said unfolded operative position of said wheelchair said rear wheels, front wheels, tipping levers, seat, and back upright are located in position to allow said seat and said back upright to form a chair with a space located between said tipping levers, said tipping levers being located between said rear wheels below and behind said seat and extending rearward;

in said folded storage position of said wheelchair said tipping levers are located adjacent to each other, said rear wheels and said front wheels are located in contracted positions, and said seat and said back upright are located in collapsed, folded positions;

coupling means for coupling said platform to at least one of said tipping levers of said wheelchair below and behind said seat, said platform being coupled to said wheelchair bridging said space between said tipping levers when said wheelchair is in said unfolded operative position so that said platform may support a tank carrier and an oxygen tank, and, when said tank and carrier are removed from said platform, said platform being coupled to said wheelchair in a folded position when said wheelchair is in said folded storage position, said coupling means allowing said platform to be moved between bridging said space between said tipping levers and said folded position.

5,340,141

LIFT SYSTEMS FOR ELEVATING THE LOAD BED OF A VEHICLE

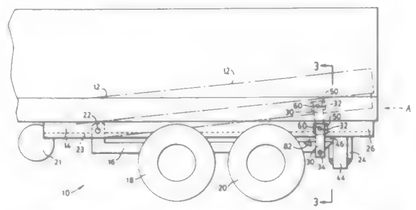
Robert J. Thorndyke, 846 Fernhill Boulevard, Oshawa, Ontario, Canada L1J 5K4

Continuation-in-part of Ser. No. 850,204, Mar. 12, 1992, abandoned, which is a continuation of Ser. No. 731,388, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 466,002, Jan. 16, 1990, abandoned. This application Jun. 17, 1993, Ser. No. 77,515

Claims priority, application Canada, Jan. 5, 1990, 2007251

Int. Cl.[5] B62D *27/02*

U.S. Cl. 280—423.1 **5 Claims**



1. A lift system for elevating a load bed of a vehicle, the load bed being mounted on a chassis which has a back end that is supported by a wheel set frame that is pivotally mounted at the front end thereof to the chassis, comprising;

(a) extensible air bag means disposed between the back end of the chassis and the frame, the extensible air bag means extending substantially across the back end of the frame and chassis, said extensible air bag means being connected to a source of air pressure for receiving air for extending to raise said chassis back end to a raised position with respect to the wheel set frame and being retractable to lower the chassis back end to a lowered position; and

(b) non-compliant leg means securely mounted to the chassis and extending therefrom to a position adjacent said frame, and releasable locking means operably coupled to the frame, the locking means operable to lock the leg means and therefore the chassis with respect to the frame in a first locked position corresponding to said chassis being in the raised position, said locking means operable to lock the leg means and therefore the chassis with respect to the frame in a position corresponding to the chassis being in the lowered position.

5,340,142

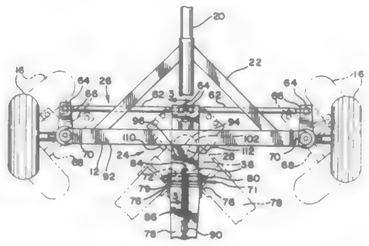
TOWING TONGUE ASSEMBLY

Abe B. Kuhns, Arthur, Ill., assignor to E-Z Trail, Inc., Arthur, Ill.

Filed Mar. 10, 1993, Ser. No. 31,832

Int. Cl.[5] B62D *13/02*

U.S. Cl. 280—444 **28 Claims**



1. A towing assembly for towing a steerable vehicle chassis in a forward direction, said assembly comprising:

an elongate front chassis rail having a front face and adapted to receive steerable wheels adjacent its ends;

an elongate pin having a flat side rigidly fixed directly to the front face of said front chassis rail and having a substantially vertical axis;

an elongate steering frame extending at an angle to said front chassis rail, said elongate steering frame including tie rod mounting means thereon for mounting tie rods thereto which are adapted to extend to the steerable wheels to steer them as the chassis is being towed, and also including hitching means adjacent the forward end thereof for hitching the elongate steering frame to a towing vehicle; and

mounting means forward of said front chassis rail for mounting said elongate steering frame for rotation about said pin in a plane substantially perpendicular to the vertical axis of said pin; whereby rotation of said elongate steering frame about said pin when the chassis is being towed steers the steerable wheels.

5,340,143

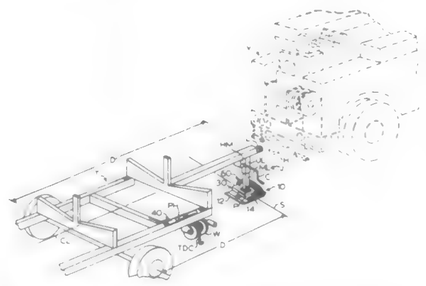
SLIDABLE SUPPORT FOR HEAVILY LOADED TRAILER JACK POST

Thomas M. Williams, Jr., 2310 Old Oxford Hwy., Durham, N.C. 27704

Filed Feb. 3, 1994, Ser. No. 191,409

Int. Cl.[5] B60S *9/00*

U.S. Cl. 280—475 **10 Claims**



1. A sliding jack post support assembly for use with a typically heavily loaded trailer having a forward tow structure and a metal formed trailer jack on the tow structure fitted with a vertically adjustable jack post having a lower leg, said assembly being adapted when supporting the jack post lower leg to adjust the trailer tow structure with respect to a towing vehicle to be hitched thereto, said sliding jack post support assembly comprising:

(a) a metal formed base support having a ground engaging support portion and a first elevated flat horizontal substantially rectangular wall;

(b) a metal formed upper support having a second elevated flat horizontal substantially rectangular wall positioned for being supported by and for moving longitudinally of said first wall in a plane parallel thereto, said second wall being fixedly secured in a central upper surface portion thereof to the lower end of the lower leg forming part of the jack post being supported by said assembly;

(c) first means for limiting widthwise movement of said second wall on said first wall;

(d) second means for limiting longitudinal movement of said second wall on said first wall;

(e) third means interposed between said first and second walls providing a low friction support for said second wall on said first wall;

(f) said base support, upper support, first, second and third means and jack post lower leg being assembled in a manner which enables the entire said assembly to be raised and lowered as a unitary structure in correspondence with raising and lowering of said jack post lower leg at times when the trailer tow structure is being supported by a towing vehicle and to travel affixed to the tow structure when said trailer is in transit;

(g) a metal formed fulcrum structure laterally offset and spaced outwardly from said jack post lower leg and mounted on, along one side of and extending above said upper support and mounting a fulcrum member located above, extending outwardly of and residing generally parallel to the plane of said second wall and providing a fulcrum bearing surface against which an intermediate portion of a lever can be rocked;

(h) the lever having a handle end, and a base end adapted for engaging a selected base support bearing surface formed on said base support and residing below said fulcrum; and

(i) base support stop moans providing a series of longitudinally aligned rigidly located stop holes located directly below said fulcrum structure each providing the base support bearing surface against which said lever base end can be pressed enabling said intermediate portion of said lever by lever action against said fulcrum bearing surface to force longitudinal movement of said upper support on said base support and corresponding longitudinal movement of said jack post lower leg when bearing the load of said trailer tow structure.

5,340,144

DYNAMIC FLUID ENGAGING SURFACE FOR VEHICLES

Charles L. Eleneke, 617 S. Sweetzer Ave., Los Angeles, Calif. 90048

Filed Oct. 8, 1992, Ser. No. 958,498

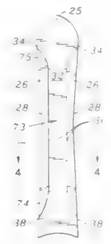
Int. Cl.[5] B62B *13/06*

U.S. Cl. 280—609 **18 Claims**

1. A vehicle for at least partly sliding travel on a fluid comprising an elongated member having a bottom surface and a front end and rear end and opposed sides, a pair of spaced runners extending at least partly along the length of opposed sides of the surface, said runners depending downwardly from the opposed sides below the bottom surface and being constructed and arranged relative to the bottom surface to define a venturi section between the front and rear of the member, the runners each having an outer wall extending between a leading end and a rear end, the outer wall being relatively concave between the leading end and the rear end, such concavity being directed towards the venturi section, and an inner wall configured to form a venturi passage having a converging forward section, a main section with substantially parallel

VOL 1165 ISS 4 AG 23 1994 UMI

inclined wall portions, and a diverging rearward section, a relatively pointed forward end to the elongated member, and



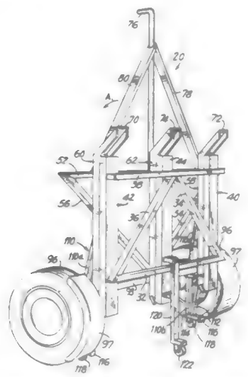
the bottom surface of the elongated member being concave, such that during travel, essentially all of the bottom surface slidingly engages the fluid.

5,340,145

COLLAPSIBLE TRAILER

Donald Leib, 25052 Silver Leaf La., Laguna Hills, Calif. 92653, and Kenneth Thurm, 2348 N. Rockridge Cir., Orange, Calif. 92667

Filed Jul. 29, 1992, Ser. No. 922,106
Int. Cl.[5] B62B *1/04*
U.S. Cl. 280—656 **8 Claims**



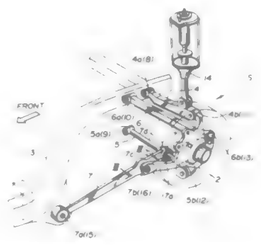
1. A collapsible trailer comprising a first platform, a second platform pivotably mounted on said first platform so that said second platform pivots between an open position and a closed position, and load sharing means mounted on said first platform and contacting said second platform when said collapsible trailer is in said open position for sharing a load applied to said second platform between said first platform and said second platform; said load sharing means further supporting said collapsible trailer above the ground when said second platform is in the closed position; said load sharing means including a support arm extending from said first platform to said second platform, said support arm having a first end and a second end, a support pad mounted at said second end for supporting said second platform when said collapsible trailer is in the open position, and a support leg mounted on said second platform so that said first leg and support arm are disposed across a gap when said second platform is in the closed position.

5,340,146

WHEEL INDEPENDENT SUSPENSION SYSTEM

Yoichiro Kato, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 28, 1992, Ser. No. 889,437
Claims priority, application Japan, Jun. 3, 1991, 3-157419
Int. Cl.[5] B60G *3/20*
U.S. Cl. 280—673 **17 Claims**



1. A wheel independent suspension system for a vehicle, comprising:

a wheel carrier for rotatably supporting a wheel;

first, second and third lateral links through which said wheel carrier is movably connected with a vehicle body, said lateral links extending generally transversely with respect to a longitudinal direction of the vehicle body;

a longitudinal link through which said wheel carrier is movably connected to the vehicle body, said longitudinal link extending generally along the longitudinal direction of the vehicle body, said longitudinal link having a first section defined by a first end connected to the vehicle body and an intermediate point directly connected to a portion of said wheel carrier;

means for allowing the wheel carrier to make its vertical stroke movement with respect to the vehicle body, in cooperation with said lateral and longitudinal links; and

a second section of the longitudinal link, defined by the intermediate point and a second end, the second section being integral with and extended from said longitudinal link intermediate point in a direction away from said first end of said longitudinal link, the second section being connected with one of said first, second and third lateral links, the second end being separated a distance from the intermediate point of said longitudinal link in the vehicle body longitudinal direction, said portion of said wheel carrier being located between said first end of said longitudinal link and said second end in the vehicle longitudinal direction, said second section being shorter in length than said first section.

5,340,147

AIR BAG INFLATOR ASSEMBLY

Robert P. Fontecchio, Rochester Hills; Thomas A. Ennis, Mt. Clemens; John A. Musiol, Southfield; Douglas E. Medvedik, Lake Orion, and Nicola F. Paglia, Shelby Township, Morris County, all of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 19, 1991, Ser. No. 810,223
Int. Cl.[5] B60R *21/24*
U.S. Cl. 280—728 A **7 Claims**

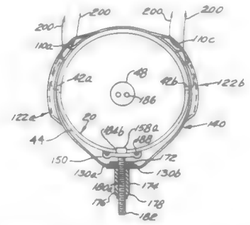
1. An apparatus comprising:

inflation means for providing inflation gas, including at least one exhaust port located on a wall thereof through which a stream of inflation gas exits,

retainer means for securing the inflation means, including a hollow retainer body and fastener means for securing the inflation means thereto;

wherein each fastener means comprises a head positioned interior the retainer body about a designated opening, a

stud extending through such opening, an exterior thread for attachment to a cooperation structure to secure the retainer means thereto, a bore extending through the stud and head and internal threads within the bore and a set



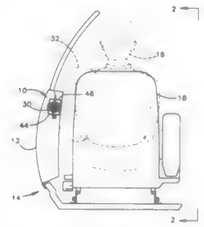
screw received in the internal threads such that when the set screw is inserted therein an end of the set screw extends beyond the head to force the inflator means into a portion of the retainer means.

5,340,148

AIR BAG INFLATOR WITH COMPOSITE STORED GAS CONTAINER

Ernst M. Faigle, Imlay City; Tracy S. Sparks, Lapeer; Richard J. Thompson, Imlay City, and Brian K. Blackburn, Rochester, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Nov. 3, 1993, Ser. No. 147,669
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—730 A **19 Claims**



1. An apparatus for inflating a vehicle occupant restraint such as an air bag, said apparatus comprising:

containing means for containing an inflation fluid under pressure, said containing means comprising a liner and a composite material encasing said liner;

an inflation fluid under pressure in said containing means for, when released from said containing means, inflating the vehicle occupant restraint;

directing means for directing said inflation fluid, when released from said containing means, to the vehicle occupant restraint to inflate the vehicle occupant restraint; and

opener means for opening said containing means by rupturing said composite material and said liner to release said inflation fluid from said containing means, said opener means producing liner fragments;

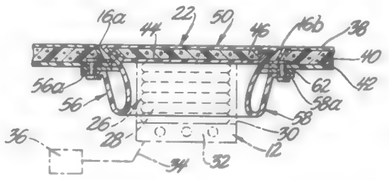
said composite material comprising means for inhibiting separation of the liner fragments from said containing means.

5,340,149

DOOR ASSEMBLY WITH INTEGRAL TETHER

Gerard H. Gajewski, Dover, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Dec. 27, 1993, Ser. No. 173,126
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—732 **8 Claims**



1. A preformed, separate door assembly for closing an opening in an interior trim structure of a vehicle in which an inflatable air bag assembly is housed for deployment of an inflated air bag into the passenger compartment upon vehicle impact comprising:

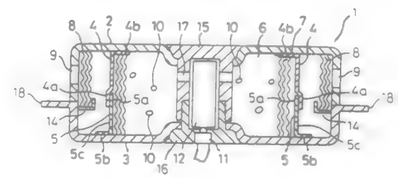
said separate preformed door assembly including a thin plastic shell that is backed by a layer of foam material; a rigid insert or substrate connected to said thin plastic shell, said thin plastic shell having integral tethers formed on two sides thereof that are located inwardly of the interior trim structure wherein said tethers form loops which extend to form flaps that are tensioned when the preformed door assembly is fully opened so as to cause said thin plastic shell to press against said backing layer and said rigid insert so as to prevent delamination of the thin plastic shell therefrom.

5,340,150

INFLATOR FOR AIR BAG

Tadamasa Harada; Midori Sakamoto, and Noriaki Nakashima, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

PCT No. PCT/JP91/00944, § 371 Date Jan. 28, 1992, § 102(e) Date Jan. 28, 1992, PCT Pub. No. WO92/01589, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 16, 1991, Ser. No. 820,609
Claims priority, application Japan, Jul. 16, 1990, 2-185334
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—740 **4 Claims**



1. An inflator for an air bag which comprises:

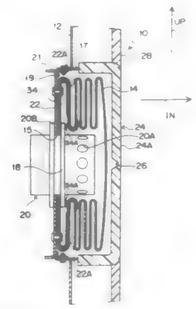
a pressure vessel including an upper vessel body formed by a mirror plate and a cylindrical section extending downward from the peripheral edge of said mirror plate, a lower vessel body formed by a mirror plate and a cylindrical section extending upward from the peripheral edge of said mirror plate, the ends of said cylindrical sections of said upper and lower vessel bodies being welded to each other, and

an essentially cylindrical partitioning wall provided within said pressure vessel for defining a gas generating chamber

VOL 1165 ISS 4 AG 23 1994 UMI

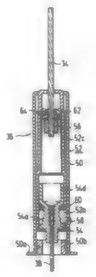
wherein high pressure gas is generated to inflate said air bag,
a plurality of gas discharge paths defined through said partitioning wall for allowing a flow of generated gas, and
at least one through opening defined in one of said upper and lower vessel bodies for externally discharging the gas flowing through said gas discharge paths,
wherein said partitioning wall is formed by an upper partitioning wall having a proximal end tightly fitted to said mirror plate of said upper vessel body and a lower partitioning wall having a proximal end tightly fitted to said mirror plate of said lower vessel body, and
said upper and lower partitioning walls each having a distal end, one of said distal ends being formed with a diameter slightly larger than the diameter of the other distal end such that the upper and lower partitioning walls mate with one another at said distal ends and slidably move relative to one another upon being subjected to the pressure created by generation of said high pressure gas, said mating distal ends not being physically connected to one another and having a clearance therebetween to facilitate said sliding movement.

5,340,151
AIR BAG APPARATUS
Koki Sato, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan
Filed Nov. 18, 1992, Ser. No. 978,377
Claims priority, application Japan, Nov. 25, 1991, 3-096443
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—743 R **19 Claims**



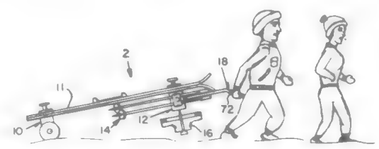
1. An air bag apparatus comprising:
a gas generating means for generating a gas when a vehicle rapidly decelerates;
a bag body having a bag body opening portion which communicates with said gas generating means to be operatively expanded by said gas generated from said gas generating means;
a base member for holding a peripheral edge of said bag body opening portion; and
a plurality of reinforcing materials having respectively different sizes and being superposed in a layer fashion on said peripheral edge of said bag body opening portion to reinforce said bag body, respective inner end portions of said bag body and of said plurality of reinforcing materials being held by said base member, said plurality of reinforcing materials being respectively and sequentially sewn onto said bag body at different portions in order of shorter length with said reinforcing materials in a state of contact with said bag body, each of said reinforcing materials being respectively and independently sewn only at a portion in the vicinity of an outer end thereof to said bag body opening portion, and none of said reinforcing materials being sewn to each other.

5,340,152
SAFETY BELT RESTRAINING SYSTEM WITH BELT TENSIONER
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany
Filed Jul. 19, 1993, Ser. No. 93,403
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1992, 4224924
Int. Cl.[5] B60R *22/28, 22/46*
U.S. Cl. 280—805 **8 Claims**



1. A vehicle safety belt restraining system with a belt tensioner device, comprising:
an engagement member forming part of said belt tensioner device;
a first cable section having one end connected to said engagement member;
a second cable section connected to a vehicle member which under impact conditions moves relative to a vehicle body portion;
and a coupling device interconnecting said first and second cable sections;
said coupling device comprising a first coupling member connected to said first cable section and a second coupling member connected to said second cable section,
said first and second coupling members being connected with each other by connecting means which yield under load to permit a limited movement of said first and second coupling members away from each other,
said second coupling member being guided in a guiding member supported on a vehicle body part,
and said guiding member having a stop to limit movement of said second coupling member under tensile load in said second cable section.

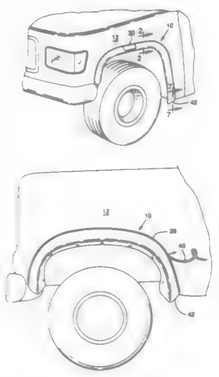
5,340,153
SKI TRANSPORT DOLLY
Stephen J. Parker, 2319 Fawnwood La., Spring, Tex. 77386
Filed Jun. 25, 1993, Ser. No. 82,443
Int. Cl.[5] A63C *11/02*
U.S. Cl. 280—814 **10 Claims**



1. A ski carrier for transporting ski equipment, comprising:
a) a wheel component, capable of being attached to at least two skis at a first end of the skis, said wheel component having two wheels and further comprising:

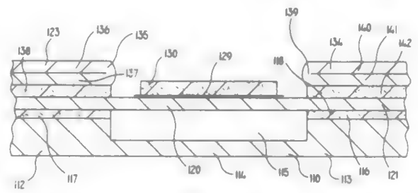
a wheel component frame, on which the wheels are mounted;
a clamp plate; and
a fastening means for attaching the wheel component frame to the clamp plate; and
b) a handle component having a means for holding ski poles and ski boots, and capable of being attached to said at least said two skis at a second end, so that the skis can be pulled on the wheels, the handle component further comprising:
a handle component frame;
a handle clamp plate; and
a fastening means for attaching the handle component frame to the handle clamp plate.

5,340,154
FENDER FLARE FOR A VEHICLE
Gary M. Scott, Milwaukie, Oreg., assignor to Warn Industries, Inc., Milwaukie, Oreg.
Continuation of Ser. No. 660,439, Feb. 22, 1991, abandoned. This application Apr. 1, 1992, Ser. No. 871,568
Int. Cl.[5] B62D *25/16*
U.S. Cl. 280—848 **5 Claims**



1. A vehicle having fenders that overlie wheels mounted on the vehicle and which fenders have side walls and side wall fender surfaces with side openings that define a configured edge through which the wheels are exposed, said configured edge having an inturned flange and leading and trailing ends;
a fender flare of substantially rigid material removably mounted to one of said fenders, said fender flare configured to have an upper edge portion adjacent the fender surface of the side wall above said configured edge thereof and a upper leg extending from said upper edge portion outwardly from the fender surface forming a cavity therebetween, and a lower edge extending back toward the configured edge of said one of said fenders and terminating at an end portion defining a flange that underlies the inturned flange of the fender, and the improvement which comprises;
said upper edge portion of said fender flare having an extreme outer edge defined by the thickness of said flare, said upper edge portion provided with a lip including a side surface that is presented to the fender surface, and said side surface having a length substantially greater than the extreme outer edge;
fastening means for fastening the flange of the fender flare to the flange of the fender, said fastening means being sufficient to accomplish such fastening independent of other fasteners applied thereto, said fender flare further configured to substantially produce a net fit when fastened to the flange of the fender whereby the lip is positioned in face-to-face adjacency with the fender surface, a bonding strip applied continuously along said side surface of said lip provided at said upper edge portion of the flare and bonded to said side surface and interposed between said side surface and the surface of the fender, said bonding strip bonded to said fender surface, said bonding strip additionally having sufficient thickness, resiliency, and sealing properties to prevent frictional rubbing of the flare's upper edge portion on the fender surface, and to seal the juncture between said upper edge portion and the fender surface.

5,340,155
CASE-BOUND HOT-MELT BINDING SYSTEM
Edward Podosek, Wilbraham, Mass., assignor to Avery Dennison Corporation, Pasadena, Calif.
Filed Nov. 20, 1992, Ser. No. 979,206
Int. Cl.[5] B42C *9/00;* **B42D** *3/00*
U.S. Cl. 281—29 **5 Claims**



1. A case-bound hot-melt binding system, for desktop binding a book block of individual non-folded pages into a case, comprising:
(a) a case comprising (i) a spine, (ii) a front cover having an inner surface and hingedly mounted to the spine, (iii) a back cover having an inner surface and hingedly mounted to the spine,
(b) a liner adhesively bound to the inside surface of the front cover and to the inside surface of the back cover, across the spine and free to move with respect to the spine,
(c) a strip of hot melt adhesive mounted, at least indirectly, to the liner and opposite the spine, having two side edges that face the front and the back covers, and the adhesive being adapted to be softened and to adhere to all of the pages of the book block, said strip having the property that excess adhesive is sometimes expressed outwardly of the side edges of the strip, and
(d) means, distinct from the pages, for diverting the excess adhesive so that the excess adhesive flows in such a way that the liner and covers hingedly move freely with respect to the pages, without damaging the liner or the pages, the diverting means comprising a folded end leaf having a first portion, a second portion and a folded edge, the folded edge separating the first portion from the second portion, the first portion being mounted on the liner, the folded edge being spaced apart from one of the sides of the strip of hot melt adhesive so that the second portion forms one side of a channel for the flow of excess adhesive.

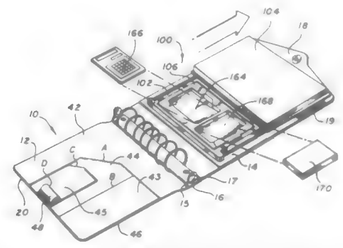
5,340,156
NOTEBOOK BINDER HAVING A TRAY WITH SLIDING LID
Ronald M. Bianco, Irvine, Calif., assignor to Day Runner, Inc., Fullerton, Calif.
Filed Feb. 9, 1994, Ser. No. 196,600
Int. Cl.[5] B42F *3/00*
U.S. Cl. 281—37 **20 Claims**

1. A notebook binder for holding articles, comprising:
a binder cover;

VOL 1165 ISS 4 AG 23 1994 UMI

a tray fixed to the binder cover and having a peripheral ridge projecting above the binder cover defining a tray opening for receiving articles; and

a tray lid having a first portion forming a flat working surface and a second portion in sliding engagement with the tray for permitting sliding movement of the tray lid between a closed position wherein the tray lid covers the



tray opening and an extended position wherein the tray lid is adjacent the tray opening with the tray opening uncovered, the second portion further having a support ridge projecting below the flat working surface a sufficient depth to support the flat working surface in a substantially level orientation relative to the binder cover when the tray lid is in the extended position.

5,340,157

BUSINESS FORM ADAPTED FOR FACSIMILE TRANSMISSION

David Perelman, 8214 Marion Rd., Elkins Park, Pa. 19117

Filed Aug. 6, 1992, Ser. No. 926,858

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—62 **9 Claims**



1. A business form which comprises an opaque sheet having indicia for separating the sheet into plural data-receiving portions, for transmission by a conventional facsimile machine having a direction of feed for receiving the sheet and for directing the sheet through the facsimile machine, wherein the business form includes indicia extending in a first direction substantially parallel to the direction of feed through the conventional facsimile machine, and wherein the indicia extending in the first direction are truncated in the first direction, leaving blank regions extending fully across the business form in a second direction substantially perpendicular to the first direction, whereby the business form is capable of being fed into the facsimile machine for transmission at an increased rate.

5,340,158

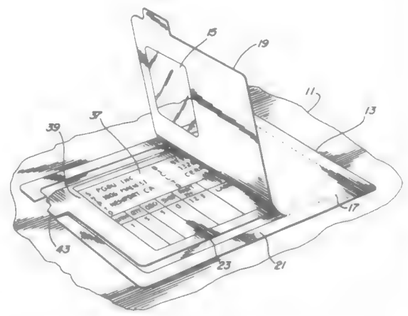
PACKING LIST AND SHIPPING LABEL COMBINATION

James C. Bartl, Chino Hills, Calif., assignor to Best Label Co., Inc., Cerritos, Calif.

Continuation of Ser. No. 939,034, Sep. 2, 1992, abandoned, which is a continuation of Ser. No. 827,869, Jan. 30, 1992, abandoned, which is a continuation of Ser. No. 607,900, Nov. 1, 1990, abandoned. This application Oct. 12, 1993, Ser. No. 135,457

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—81 **6 Claims**



5. A label structure attached to a package which is to be sent through the mail, said label structure functioning both as a shipping label and packing slip, said label structure comprising:

a multilayer composite with an adhesive bottom layer permanently attached to said package, a top layer of printable material containing thereon printed indicia of at least the destination of the package and a description of its contents in separate sections thereof, and first and second clear film layers disposed between said top layer and said bottom layer and separated by a layer of dry contact release adhesive, said multilayer composite separating between its first and second clear film layers when said top printed layer is pulled away from said package to leave the adhesive bottom layer and the second clear film layer permanently on the package and allowing removal of the top printed layer without any adhesive residue thereon, said multilayer composite further including a tab portion without an adhesive backing projecting from a side of said multilayer composite, whereby said top printed layer functions as a shipping label when attached to said package and functions as a packing slip when removed from said package; and

an opaque covering layer overlaying and extending beyond the edges of said multilayer composite, said covering layer having an adhesive backing permanently attached to said package around the periphery of said multilayer composite, and further including a window therein which is aligned with the destination address on the top layer of said multilayer composite to allow a clear view of the destination address through said window, said covering layer being perforated along a circumference that outlines said periphery of said multilayer composite to permit detachment of the portion of said covering layer within said circumference and subsequent removal of said top printed layer, said perforated circumference being positioned on said opaque covering layer such that said tab portion of said multilayer composite is accessible when said covering layer portion defined by said perforated circumference is detached, said perforated circumference including a tab portion which is in overlapping alignment with said tab portion of said multilayer composite.

5,340,159

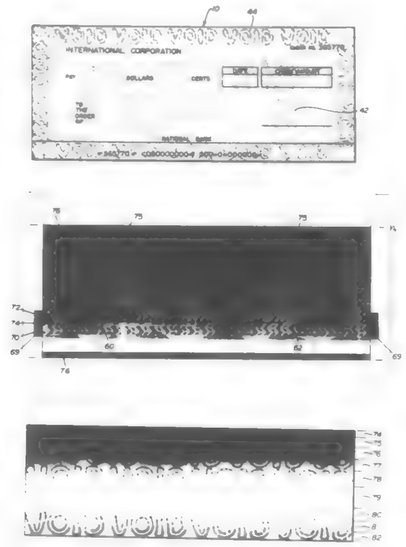
VARYING TONE SECURITY DOCUMENT

William H. Mowry, Jr., Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 729,363, Jul. 12, 1991, Pat. No. 5,197,765. This application Mar. 1, 1993, Ser. No. 24,666

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—93 **48 Claims**



1. An improved security document, comprising:

a substrate having a surface for carrying indicia;

background printed matter on said surface, said background printed matter consisting of a pattern of elements of a first size and a first frequency such that said background printed matter is printed at a first density perceived by an observer as a first tone; and

a cancellation term printed on said surface, said cancellation term consisting of a pattern of elements of a second size and a second frequency such that said cancellation term is printed at a second density perceived by an observer as a second tone, elements of one of said first size or said second size being sufficiently small such that they are not reproduced by a color copier at a particular copier setting, and elements of the other of said first size or said second size being sufficiently large such that they are reproduced by said color copier at said particular copier setting, so that a copy of said security document made on a color copier displays said cancellation term, at least a portion of said security document surface being divisible into a plurality of bands extending across said surface, the sizes of said elements of said first and second sizes varying across each of said bands and the frequencies of said elements of said first and second frequency varying across each of said bands such that the density of said background printed matter and the density of said cancellation term vary together across each of said bands on said surface, thereby impeding copying said security document without said cancellation term being apparent on at least some portion of the copy of said security document.

5,340,160

THERMOPLASTIC SADDLE IN TWO PARTS FOR REPAIRING OR RENOVATING A PIPE LINE WITH BRANCH PIPE AND REPAIRED OR RENOVATED PIPE WITH A SADDLE

Augustinus G. H. Meijers, Zwolle, and Karin M. M. van Beurden, Hellendoorn, both of Netherlands, assignors to Wavin B.V., Netherlands

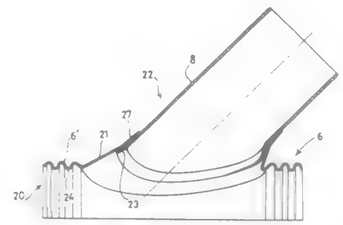
PCT No. PCT/NL90/00174, § 371 Date May 21, 1992, § 102(e) Date May 21, 1992, PCT Pub. No. WO91/07619, PCT Pub. Date May 30, 1991

PCT Filed Nov. 21, 1990, Ser. No. 856,962

Claims priority, application Netherlands, Nov. 21, 1989, 8902881; Jul. 17, 1990, 9001624

Int. Cl.[5] F16L *55/165*

U.S. Cl. 285—15 **7 Claims**



1. In a pipeline to be repaired or renovated, the pipeline having at least one branch pipe connected therewith and communicating with the interior of the pipeline through a branch opening in the pipeline, a branch saddle (**6**) of thermoplastic material comprising:

a branch saddle plate (**6'**) and

a branch saddle portion, said saddle portion being divided into a first saddle part (**20**) and a second saddle part (**22**), said branch saddle plate (**6'**) being integral with said first saddle part (**20**), said first and second saddle parts (**20, 22**) being movable with respect to each other and said movable first and second saddle parts (**20, 22**) forming a projecting length of said branch saddle, said movability of the first and second saddle parts (**20, 22**) allowing transport of said saddle comprising said first and second saddle parts through the pipeline with a decreased projecting length of said branch saddle in comparison with the projecting length of said branch saddle in its final accommodated state and the combination of said first and second saddle parts (**20, 22**) to be accommodated from the inner side of the pipeline through the branch opening into the branch pipe.

5,340,161

COUPLING FOR PIPELINES AND THE LIKE

Luigi Bagnulo, Milan, Italy, assignor to Prochind S.p.A., Muggio, Italy

Filed Apr. 15, 1992, Ser. No. 869,235

Claims priority, application Italy, Apr. 15, 1991, MI91A001031

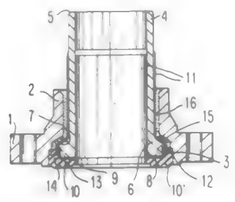
Int. Cl.[5] F16L *59/16*

U.S. Cl. 285—50 **3 Claims**

1. A tubular coupling for metal pipes, comprising a flange composed of metal and having a flange part, an axially extending collar and a recess; a tubular element composed of metal and inserted in said flange so as to extend through said collar of said flange and having one end extending axially outwardly beyond said collar and connectable to a pipeline and another end provided with a peripheral expansion inserted in said recess of said flange, said flange and said tubular element being the only components of the tubular coupling which are composed of metal and each being formed as a one piece metal

VOL 1165 ISS 4 AG 23 1994 UMI

component; and an electrically insulating element arranged between said metal flange and said metal tubular element so as to be located between said recess of said flange and said expansion of said tubular element and extending over a radial outer surface of said expansion so as to electrically insulate said metal



tubular element from said metal flange, said electrically insulating element extending over an outer surface of said expansion of said tubular element, said peripheral expansion having also an inner surface formed as a truncated cone and a short circular projection.

5,340,162

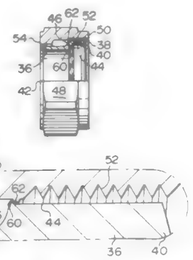
INTERFERENCE NUT RETENTION SYSTEM

Troy A. Prendel, and Leo Meredith, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Aug. 2, 1993, Ser. No. 100,450

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—81 **4 Claims**



2. In combination, a tubular end fitting having an axis, an outer axial end, a circumference defined by a circumferential outer surface and a radially extending shoulder axially spaced from said outer axial end, a seal defined on said outer axial end, a compression nut circumscribing said end fitting and axially displaceable thereon having an axis, a threaded outer axial end and a radially extending shoulder axially spaced from said threaded outer axial end adapted to engage the end fitting shoulder, said nut being axially displaceable on said end fitting between a retracted uncoupled position and an extended coupled position limited by engagement of said shoulders, an annular outwardly extending first rib defined on said end fitting circumference having an outer diameter, an annular inwardly extending second rib defined on said nut having an inner diameter, said first rib outer diameter being slightly greater than said second rib inner diameter whereby said second rib may be axially forced over said first rib with an interference fit, the axial distance from said first rib to the outer axial end of said end fitting being less than the axial distance from said second rib to said nut outer axial end whereby said ribs engage to limit axial displacement of said nut upon said end fitting when in said nut fully retracted uncoupled position and said nut outer axial end axially extends beyond said end fitting outer axial end to protect said end fitting outer axial end.

5,340,163

SAFETY SEALING CONDUIT CONNECTOR

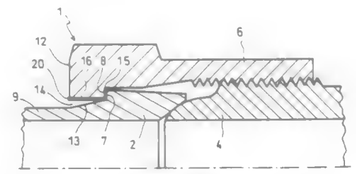
Emile Merrer, Le Plessis Robinson, and Michel M. J. Morel, Dammarie les Lys, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Paris, France

Filed Dec. 22, 1993, Ser. No. 171,706

Claims priority, application France, Dec. 23, 1992, 92 15540

Int. Cl.[5] F16L *19/02*

U.S. Cl. 285—93 **10 Claims**



1. A sealing connector for joining ends of two conduits having mating surfaces thereon, comprising:

a) means defining first threads on a first one of the two conduits;

b) a collar retained on the second one of the two conduits and comprising a threaded portion having second threads engageable with the first threads such threaded engagement urging the mating surfaces of the two conduits into sealing engagement the collar having an end face and a shoulder facing away from the end face;

c) a resilient ring member located between the shoulder of the collar and the second of the conduits on which the collar is retained, the resilient ring member having a generally annular, non-planar configuration, the resiliency being such that the ring member is deformed into a substantially planar configuration between the shoulder and the second of the two conduits when the mating surfaces are in sealing contact; and,

d) at least one leg extending from the resilient ring member, the at least one leg extending beyond the end face at least when the ring member is deformed into its substantially planar configuration.

5,340,164

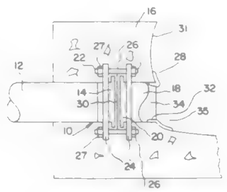
PIPE TO CONCRETE TRANSITION

Jeffrey H. Stultz, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 29, 1993, Ser. No. 55,153

Int. Cl.[5] F16L *41/06*

U.S. Cl. 285—158 **18 Claims**



1. A pipe-to-concrete transition comprising

a hollow first pipe having a first pipe end and a second pipe end, the first pipe end having a pipe flange,

a hollow transition pipe having a first transition end and a second transition end, the first transition end having a transition flange for mating with the pipe flange,

a connection assembly disposed about and securing together the pipe flange and the transition flange, the first pipe in fluid communication with the transition pipe,

a concrete mass enclosing and disposed about the first pipe end, the first transition end, and the connection assembly, and

the second transition end in fluid communication with a space within the concrete mass and the second pipe end disposed outside of the concrete mass.

5,340,165

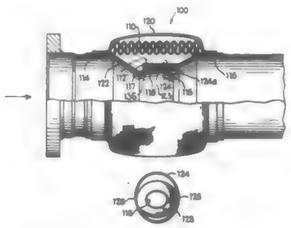
FLEXIBLE CONNECTOR

Michael W. Sheppard, Batavia, Ill., assignor to Senior Engineering Investments, B.V., Amsterdam, Netherlands

Continuation-in-part of Ser. No. 476,838, Feb. 8, 1990, Pat. No. 5,069,487. This application Jun. 21, 1901, Ser. No. 720,223

Int. Cl.[5] F16L *27/00*

U.S. Cl. 285—226 **6 Claims**



1. A flexible connector for sealably connecting adjacent ends of a first pipe having a first longitudinal axis in a substantially successive relationship with a second pipe having a second longitudinal axis in an exhaust system, in either a colinear, angled, offset-parallel or skewed successive orientation, to direct fluid flow from one of said pipes to the other of said first and second pipes, while precluding transmission of vibration between said pipes, said flexible connector comprising:

an input coupler member, connectable to one of said adjacent ends of said first of said successive pipes;

an output coupler member connectable to the other of said adjacent ends of said second of said successive pipes;

at least one articulated joint means arranged between said input coupler member and said output coupler member, said at least one articulated joint means being configured to enable substantially unrestricted angular movement of said input and output coupler members relative to each other, said at least one articulated joint means being configured to enable a range of axial movement of the coupler members relative to each other, said at least one articulated joint means including mating portions;

flexible tubular bellows means, having two ends, with bellows portions arranged adjacent to at least said two ends, said tubular bellows means substantially surrounding said at least one articulated joint means, said ends of said tubular bellows means also substantially surrounding at least portions of said input and output coupler members, respectively, to maintain said first and second successive pipes in flexibly secured, sealed, joined relation to each other regardless of said successive orientation, to accommodate ranges of axial and angular movement of the input and output coupler members relative to each other; and

means for accommodating lateral offsetting of said input and output coupler members, operably arranged in one or more of said at least one articulated joint means, so as to enable said one or more of said at least one articulated joint means to accommodate angular and axial movement, and lateral offsetting, to, in turn, be capable of operably and successively connecting said first and second successive pipes when said first and second longitudinal axes are in a non-intersecting orientation,

said means for accommodating lateral offsetting of said input and output coupler members including said mating portions of said at least one articulated joint means being resiliently fabricated so as to undergo elastic deformation during the application of stress transversely to said at least one articulated joint means,

said at least one articulated joint means being fabricated from tubular elements, each tubular element having a predetermined wall thickness, and the at least one articulated joint means having an overall diameter, such that the ratio of the overall diameter to the wall thickness of each said tubular element is at least 50 to 1.

5,340,166

CONDUIT COLLAR AND METHOD OF INSTALLING THE COLLAR

Martti Puttonen, Huutjärvi; Vesa Juusti, Metsäkulma, and Pekka Juusti, Karhula, all of Finland, assignors to RP Oy Teollisuuden ja Rakentajain Palvelukeskus, Sunila, Finland

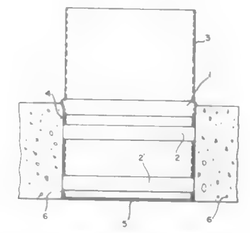
PCT No. PCT/FI91/00012, § 371 Date Jul. 10, 1992, § 102(e) Date Jul. 10, 1992, PCT Pub. No. WO91/10857, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 11, 1991, Ser. No. 910,106

Claims priority, application Finland, Jan. 12, 1990, 900171; Nov. 30, 1990, 905927

Int. Cl.[5] F16L *5/00, 13/14*

U.S. Cl. 285—189 **12 Claims**



3. A conduit collar adapted to be mounted in a circular hole through a concrete or stone structure; said collar having a central axis and being made from steel plate approximately 1.5 mm thick; said collar having an external diameter approximately 2 mm smaller than the diameter of the hole; said collar having a first circumferential rib, wherein said first circumferential rib has an outer perimeter lying on a plane perpendicular to the central axis of the collar and wherein said outer perimeter has a first diameter approximately 2 mm larger than the diameter of the hole before the collar is mounted in the hole and said outer perimeter conforms to assume the diameter of the hole when the collar is mounted in the hole.

5,340,167

HEAT SHRINKABLE POLYMER HOSE AND TUBING CLAMP

George E. Morse, Englewood, Colo., assignor to The Gates Rubber COmpany, Denver, Colo.

Filed Feb. 26, 1992, Ser. No. 841,951

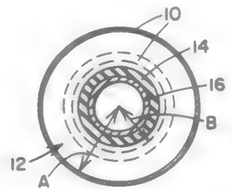
Int. Cl.[5] F16L *25/00*

U.S. Cl. 285—243 **31 Claims**

1. A device for providing a clamping force about a connection end of an elastomeric hose and tubing comprising a heat shrinkable polymer having a diameter reducing release temperature and formed into a band, said band adapted to compress said connection end of said elastomeric hose and tubing about a stem, urging said hose and tubing into sealing contact with said stem and limiting axial movement of said hose and tubing relative to said stem, said band of polymer having a first nominal inside diameter defined as the diameter said band assumes upon being shrunk in free space and being smaller than the outside diameter of said hose connection end, a second nominal inside diameter defined as the diameter said band assumes upon being shrunk about said hose connection end, and a third nomi-

VOL 1165 ISS 4 AG 23 1994 UMI

nal inside diameter defined as the diameter of said band after polymer orientation and before shrinkage, said third diameter being greater than the outside diameter of said hose connection end, said first inside diameter being no greater than about 80 percent of said third inside diameter wherein said polymer



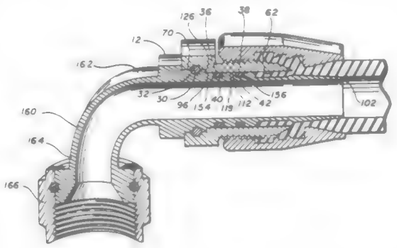
band constricts when said polymer reaches said diameter reducing release temperature and shrinks until achieving said first inside diameter, and wherein said polymer has a coefficient of expansion greater than 0.2 millimeters per meter per degree Celsius, so as to cause said band to self-adjust about said connection end.

5,340,168

PILOTED SWIVEL SEAL FITTING

David A. Barker, 5630 Imperial Hwy., South Gate, Calif. 90280

Continuation of Ser. No. 725,055, Jul. 5, 1991, abandoned. This application Jul. 2, 1993, Ser. No. 89,072
Int. Cl.[5] F16L *39/02*
U.S. Cl. 285—276 10 Claims



1. A swivel fitting for use in combination with a fluid conduit, said swivel fitting comprising:

a female member having a first female end, a second female end, means for engaging a fluid conduit and an interior extended neck portion intermediate said first and second female ends;

a hose coupling member to cooperate with said female member to engage said fluid conduit;

a male member for receipt within said female receiving bore, said male member having a first male end, a second male end, a central longitudinal axis and an exterior surface defining an extended annular shoulder portion dimensioned to slidably abut said female member interior extended neck portion for slidably engaging said male member with said female member;

locking means for maintaining said male member within said female member and preventing relative axial movement between said male and female members, said locking means including a locking wire, said male and female members together defining an annular locking groove for receipt of said locking wire;

sealing means for maintaining a fluid seal between said female member and said male member, said sealing means including an elastomeric O-ring, said male and female members together defining a first sealing cavity for compressed receipt of said O-ring therein; and

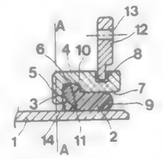
said male member including an annular connector portion at said first male end, a male annular locking ridge adjacent to said annular connector portion extending radially outward from said male member exterior surface, and said female member including a female annular portion extending radially inward into said receiving bore to slidably engage with said male member exterior surface, said male annular locking ridge and said female annular portion axially spaced apart from each other to define said sealing cavity axially therebetween.

5,340,169

LOCKING DEVICE FOR LAID PIPES WITH EMBEDDED INSERT

Klaus Hoffmann, Kuemmerbruck, Fed. Rep. of Germany, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Oct. 13, 1992, Ser. No. 959,407
Claims priority, application France, Oct. 14, 1991, 91 12787
Int. Cl.[5] F16L *17/02*
U.S. Cl. 285—337 10 Claims



1. A locking device for coupling together a system of unthreaded pipes (1) or associated components previously laid in place at a worksite, said device comprising: at least one annular gasket (2), and a hollow cylinder (4) surrounding and housing said gasket, the hollow cylinder defining, along an inner surface thereof, an annular, generally radially oriented end piece (5), followed by a recessed groove (6), followed by a surface (7) having a substantially uniform diameter smaller than a diameter of the groove, the hollow cylinder comprising anchoring means (8), and said gasket comprising a solid body (9), an integral annular heel member (10) disposed in the recessed groove, and a locking structure (3) for retentive engagement with an outer surface of a pipe, wherein the annular heel member is made of an elastic material, and the locking structure (3) comprises at least one insert made of a hard material and embedded in the heel member.

5,340,170

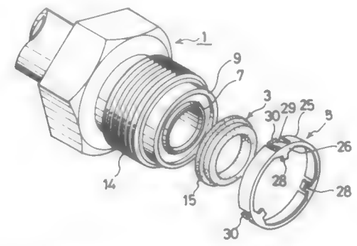
PIPE JOINT AND GASKET RETAINER FOR USE IN PIPE JOINT

Tsutomu Shinohara; Michio Yamaji; Kazuhiro Yoshikawa, and Kenji Yamamoto, all of Osaka, Japan, assignors to Fujikin Incorporated, Osaka, Japan

Filed Apr. 14, 1993, Ser. No. 46,885
Claims priority, application Japan, Apr. 20, 1992, 4-099309
Int. Cl.[5] F16L *19/00*
U.S. Cl. 285—379 8 Claims

1. A retainer for use in pipe joints for causing one of a pair of tubular joint members to hold an annular gasket thereto as interposed between butting end faces of the joint members, the retainer comprising an annular portion having a radially rigid end, a gasket holding portion having a plurality of claws radially inwardly projecting from the end of the annular portion

for holding the outer periphery of the gasket, and a joint member holding portion axially extending from the end of the



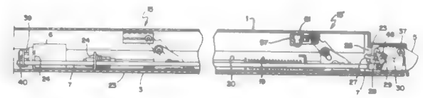
annular portion and engageable with the end face of one of the joint members.

5,340,171

DOOR LATCH CONTROL APPARATUS WITH INDEPENDENT ACTUATORS

Loren E. Slaybuagh, Milwaukee, and James M. Huffman, Greendale, both of Wis., assignors to Republic Industries, Inc., Chicago, Ill.

Filed Jan. 22, 1992, Ser. No. 827,084
Int. Cl.[5] E05C *3/16*
U.S. Cl. 292—21 13 Claims



1. A latch control apparatus for a door comprising:

a latch movable between a latched position and an unlatched position;

a first latch actuator comprising a solenoid having an armature and movable from a first position wherein the latch is latched to a second position wherein the latch is unlatched;

a second latch actuator movable from a first position wherein the latch is latched to a second position wherein the latch is unlatched;

a linkage system for operatively connecting the first latch actuator to the latch and the second latch actuator to the latch so that movement of the first latch actuator from the first position to the second position will move the latch to the unlatched position independent of movement by the second latch actuator, and movement of the second latch actuator from the first position to the second position will move the latch to the unlatched position independent of movement by the first latch actuator;

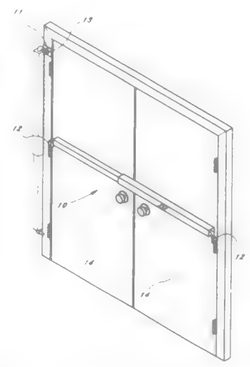
wherein the linkage system comprises a drive link engaging the first latch actuator and movable between a first position and a second position, a pivot lever movable between a latched position and an unlatched position and engaging the second latch actuator and the latch, the pivot lever having a midspur pin positioned to engage the drive link and transfer movement of the drive link to the pivot lever and move the pivot lever from the latched position to the unlatched position and unlatch the latch.

5,340,172

DOOR SECURITY SYSTEM

Lloyd Sweet, 14400 SW. 84th Ct., Miami, Fla. 33158

Filed Sep. 17, 1993, Ser. No. 122,926
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—259 R 6 Claims



1. A security bar system for preventing undesired forcible opening of hinged, inward opening doors comprising:

an elongated telescoping security bar having a first end and a second end, and comprised of at least two members, one member being longitudinally movable with respect to the other;

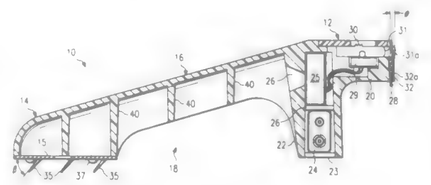
a pair of docking ferrules secured to by hinge pins to interior hinges on opposing sides of said doors, said docking ferrules each incorporating an aperture of sufficient dimension as to receive mounting dowels existing at each end of said security bar disposed therein thereby demountable coupling said security bar to said hinges such that said security bar remains fixed, extending horizontally across the doorway adjacent to said doors, thus securing the doors closed and preventing undesired forcible entry.

5,340,173

DOOR SECURITY DEVICE

Stanley C. Bethel, 1912 W. 11th St., Irving, Tex. 75060

Filed Jul. 28, 1993, Ser. No. 98,527
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—288 23 Claims



1. A door security device for preventing the intrusive opening of a door, the combination comprising:

(a) an elongated body member having a head section adapted for employment in proximity to a door, a gripping section longitudinally spaced from said head section and a reduced intermediate portion extending between said head section and said gripping section;

(b) said head section comprising a longitudinally projecting ledge portion a terminus and a pedestal portion displaced inwardly from said terminus and extending downwardly

VOL 1165 ISS 4 AG 23 1994 UMI

from said ledge portion to a pedestal face adapted to engage a floor;

(c) a bottom facing on said gripping section;

(d) stop secured to said gripping section and depending downwardly from said bottom facing for engaging a horizontal floor surface in a gripping action to limit movement of said body member upon the application of a horizontal force component to said head section in the direction of said gripping section; and

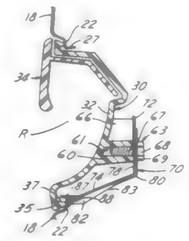
(e) a generally vertical bumper face on the terminus of said head section adapted to engage the door and angularly displaced vertically from said stop means on said bottom facing by an angle from the horizontal.

5,340,174

MOUNTING ARRANGEMENT FOR VEHICLE DOOR HANDLE

Frederick F. Bender, South Lyon, and Earl L. Watson, Walled Lake, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 12, 1993, Ser. No. 44,686
Int. Cl.[5] E05B *5/00*
U.S. Cl. 292—336.3 **10 Claims**



1. A handle assembly adapted for mounting on a vehicle panel aperture, said handle assembly comprising:

a handle housing having a central body portion formed with a terminal flange presenting a backside thereof, the panel having an aperture formed with a flanged border, said housing adapted for mounting within the panel aperture with said flange backside adapted to seat on the panel flanged border;

fastener means on said housing adapted for securing an upper portion of said housing terminal flange on the panel aperture flanged border;

said housing body portion having central clip support means projecting inboard therefrom adapted to guide a retaining clip thereon between a first pre-installed position, a second installation induced elevated position and a third gravity induced installed position;

said clip having a generally L-shaped configuration in vertical section comprising an upstanding head panel and a base panel extending outboard toward a lower portion of said terminal flange, screw fastener means cooperating with said housing support means having an initial clip setting attaching said clip on said housing in said first position;

said housing, upon being partially inserted in the panel aperture, establishing an installation pivot with the panel enabling said housing to be rocked about the pivot along a predetermined swingline whereby said backside of said housing terminal flange is seated on said flanged border;

cam means on said clip base panel adapted to slidably contact a lower free edge of the panel aperture flanged border during insertion of said housing therein causing said clip to be raised in a predetermined manner whereby tab means on said clip base panel clear the aperture lower edge;

said cam means being configured such that just prior to said housing terminal flange backside being seated on the aperture flanged border said cam means being disengaged therefrom permitting said clip tab means to clear the aperture lower edge during installation;

ramp means on said housing operative to move said clip inboard as said clip is being raised such that, upon the gravity induced travel .of said clip to its third position, said tab means are located juxtaposed interior surface portions of said flanged border;

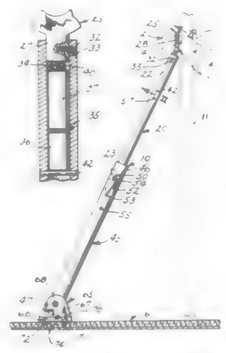
whereby upon said first mentioned fastener means being secured and said screw fastener means being tightened to a final setting resulting in said tab means being clamped against said flanged border interior surface releasably locking said handle assembly in the panel aperture.

5,340,175

PORTABLE SECURITY DOOR STOP

Clifford C. Wood, 2520 Terrella Pl., Escondido, Calif. 92025

Filed Oct. 4, 1993, Ser. No. 90,717
Int. Cl.[5] E05C *17/54*
U.S. Cl. 292—339 **9 Claims**



1. A portable security door stop, for doors having a handle normally to manipulate such a door between predetermined open and closed positions, comprising;

an elongated hollow brace having an upper door handle engaging end, and an opposite lower floor engaging end telescopically receiving said upper door handle engaging end and adapted to be angularly propped against the door in its closed position to preclude movement of the door toward its open position;

said upper door handle engaging end of the brace providing a substantially flat plate-like yoke obtusely angularly extended from said upper end of the brace and having oppositely spaced fingers for releasably receiving said door handle embraceably therebetween;

a battery powered alarm unit disposed within said upper door handle engaging end of the brace for energization by movement of the door toward its open position; and

said yoke being longitudinally slidably mounted within said upper end of the hollow brace for inward sliding contact with said alarm unit during said movement of the door against said brace.

5,340,176

WINDOW WEDGE

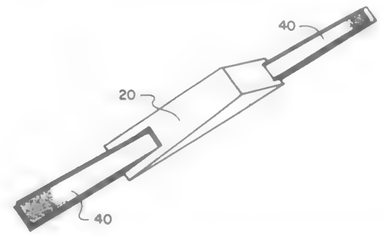
Randolph J. Cresci, 66 Hilliard Ave., Central Islip, N.Y. 11722-2216

Filed Jun. 7, 1993, Ser. No. 72,446
Int. Cl.[5] E05C *17/54*
U.S. Cl. 292—343 **2 Claims**

1. A stop assembly for holding a window in an open position wherein the window comprises a first member and a second member and said first member is adapted to slide along a linear path relative to and parallel to said second member, said stop assembly comprising:

a wedge member, said wedge member having a base, a first stop surface extending at an angle to said base and a second rear surface extending between said first surface and said base, and

means for adjustably fastening said wedge member to said first member along said linear path wherein said first stop surface is adapted to engage said second member in one of a plurality of selectable positions along said linear path;



wherein said wedge member further includes a recess in said base extending longitudinally therein such that said recess intercepts said first stop surface at one end of said base and intercepts said second rear surface at another opposed end of said base, said recess defining a mounting surface therein, and complimentary fastening means being affixed to said mounting surface for engaging said means for adjustably fastening said wedge member to said first member,

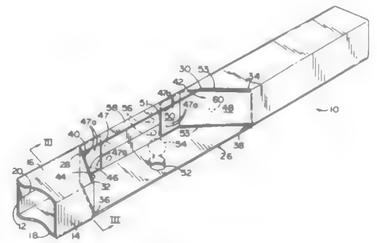
wherein said means for adjustably fastening comprises a first element of hook and loop fastening material receivable in said recess and said complimentary fastening means comprises a second element of hook and loop fastening material affixed to said mounting surface.

5,340,177

VEHICLE BUMPER WITH STEP

V. Dale Maxam, Spring Lake, Mich., assignor to Shape Corporation, Grand Haven, Mich.

Filed Aug. 25, 1993, Ser. No. 111,621
Int. Cl.[5] B60R *19/48*
U.S. Cl. 293—117 **16 Claims**



1. A bumper for a vehicle comprising:

an elongated tubular member constructed from a single elongated sheet formed into an integral cross-sectional shape defining a top wall, a bottom wall, an inner wall and an outer wall, said tubular member having two ends and an intermediate section;

said top wall and said outer wall in said intermediate section being cut to form an opening;

said outer wall in said intermediate section being separated from said top wall by said opening and also being separated from said bottom wall by a severed juncture to thus form top and bottom edges, respectively, said outer wall in said intermediate section being further cut between said top and bottom edges to define opposing panels, said opposing panels each being integrally connected in one piece to said outer wall at one end and being formed toward said inner wall at another end to reveal an inside surface of said bottom wall in said intermediate section, said opposing panels each further including a flange engaging said inner wall; and

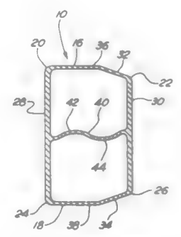
means for securing each said flange to said inner wall, whereby said bottom wall in said intermediate section forms a step and the opposing panels reinforce the bumper in the intermediate section.

5,340,178

VEHICLE BUMPER BEAM

Robert L. Stewart, Rochester Hills; Alan J. Osterman, Bloomfield Hills; Dennis W. Jalbert, Mt. Clemens, and John D. Nulty, South Lyon, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 12, 1993, Ser. No. 150,316
Int. Cl.[5] B60R *19/02*
U.S. Cl. 293—122 **1 Claim**



1. An elongated tubular vehicle bumper beam, the bumper beam having a cross-sectional configuration comprising an upper wall and a lower wall, each of the upper wall and lower wall having an outer edge and an inner edge, an outer wall interconnecting the outer edges of the upper and lower walls, and an inner wall interconnecting the inner edges of the upper and lower walls, an inner portion of the upper wall being angled downwardly into connection with the inner wall and an inner portion of the lower wall being angled upwardly into connection with the inner wall, said upper wall having a substantially horizontally oriented portion extending between said downwardly angled inner portion and the outer wall, and said lower wall having a substantially horizontally oriented portion extending between said upwardly angled inner portion and the outer wall, the inner wall being of less height than the outer wall, and reinforcement means interconnecting said outer and inner walls to resist collapse of said bumper beam when the outer wall is subject to impact, said reinforcement means comprising an elongated web extending the full length of said bumper beam, said web having an outer edge integrally connected to said outer wall midway of the height of said outer wall, said web having an inner edge integrally connected to said inner wall midway of the height of said inner wall, said web throughout its length being S-shaped in section taken transversely of said bumper beam such that for one half of its width said web is arched upwardly and for the other half of its width said web is arched downwardly in a smooth continuous arcuate formation, said bumper beam being formed of a lightweight material selected from the group consisting of aluminum, magnesium and plastic.

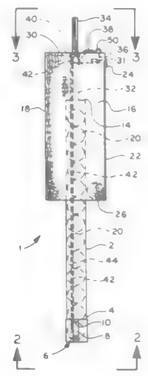
VOL 1165 ISS 4 AUG 23 1994 UMI

5,340,179

BALL RETRIEVER HAVING A COUNTER

Robert M. Rubin, 1150 W. Prince Rd., No. 2C, Tucson, Ariz. 85705

Filed Nov. 29, 1993, Ser. No. 159,790
Int. Cl.[5] A63B 47/02
U.S. Cl. 294—19.2 15 Claims



1. A ball retrieval device comprising:
an upstanding ball receiving tube, said tube having a bottom end, a top end, an inlet proximate said bottom end and an outlet proximate said top end;
a ball checking means located proximate the inlet of said ball receiving tube, said checking means functioning to allow one-way passage of balls into said tube;
a ball receiving compartment located proximate the top end of said tube, said compartment having an interior space that is in communication with the tube's outlet;
a handle located at least partially above said compartment and wherein said handle is operatively connected to said tube; and
a numerical counter unit mounted to said device, said counter unit being capable of counting any balls collected using the retrieval device and wherein said counter unit has a multi-digit display proximate said handle and wherein said display is clearly visible from a location above said handle.

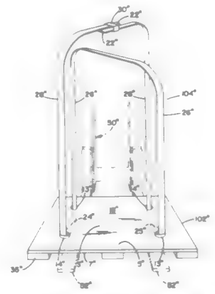
5,340,180

APPARATUS FOR SECURING CONTAINED MATERIAL

William L. Chase, Des Moines, and David W. Perkins, Hiawatha, both of Iowa, assignors to Paper Systems, Inc., Des Moines, Iowa

Filed Aug. 1, 1991, Ser. No. 739,497
Int. Cl.[5] B65D 19/26
U.S. Cl. 294—68.1 1 Claim

1. Apparatus for maintaining contained material secure when engaged by means for moving said apparatus, said moving means having a chisel element for inserting under said apparatus, said apparatus comprising:
a container with a bottom, sidewalls and a cover;
means for buffering said container from said chisel element, said buffering means including a platform member and runners, said platform member including apertures therein; and
means for banding said buffering means to said container so that said buffering means and said cover form opposite ends of said apparatus and are held securely in place when said apparatus is engaged by said moving means said banding means including a banding member; said banding member having opposite ends and means for connecting said ends together, said banding member being threadably engaged through said apertures to provide a pair of lower horizontal band segments and first and second pairs of vertical band segments, said lower horizontal band segments being continuous and unitary with said first and second pairs of vertical band segments which extend upwardly from said apertures, each segment of said first pair and each segment of said second pair of vertical band segments being at diagonally opposite positions along said container with respect to the other segment of said respective pair, said first pair of vertical band segments being continuous and unitary with one another via a first upper segment extending over the top of said container, said second pair of vertical band segments having said ends secured by said connecting means along a second upper segment extending over the top of said container.

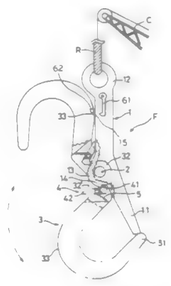


5,340,181

HOOK APPARATUS FOR LIFTING A HEAVY OBJECT

Sumiko Matsuyama, 3-2-713 Higashisuma 1-chome, Koto-ku, Tokyo, 135, Japan

Filed Aug. 30, 1993, Ser. No. 112,996
Claims priority, application Japan, Sep. 11, 1992, 4-267923
Int. Cl.[5] B66C 1/36
U.S. Cl. 294—82.33 6 Claims



1. A hook apparatus (F) adapted to be attached to a distal end of a wire of a lifting machine to lift a heavy object, said hook apparatus (F) comprising:
(i) a hook support (1) having a fall preventing portion (11) at a distal end thereof and a wire securing portion (12) at a proximal end thereof;
(ii) a hook (3) having a proximal end portion which has a bifurcated structure including a pair of branched end portions (32 and 32'), said hook (3) being pivotably attached to said hook support (1) through a connecting pin (2) which extends between said branched end portions (32 and 32') and through a central portion (13) of said hook

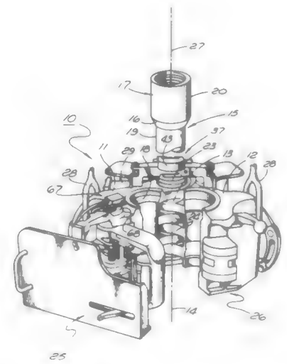
support (1) which is disposed in a space defined between said branched end portions (32 and 32');
(iii) a lock (4) adapted to lock said hook support (1) and said hook (3) to each other when said fall preventing portion (11) of said hook support (1) and a distal end portion (31) of said hook (3) are placed substantially in contact with each other, said lock (4) being disposed in the space defined between said branched end portions (32 and 32') and being engageable with a locking surface which is radially outwardly spaced from the connecting pin;
(iv) said hook (3) being pivotable through approximately 180° relative to said hook support (1) so that said hook support (1) and said hook (3) have a positional relationship to each other in which a back portion (33) of said hook (3) can abut on a side (15) of said hook support (1) when said hook support (1) and said hook (3) are unlocked from each other by disengaging said lock (4); and
(v) a removal assisting lock (6) for assisting removal of said hook apparatus (F) from the heavy object by maintaining said positional relationship, in which said back portion (33) of said hook (3) can abut on said side (15) of said hook support (1), said removal assisting lock (6) including a lock body (61) disposed on said hook support (1), and an engagement portion (62) disposed on said hook (3) to engage said lock body (61).

5,340,182

SAFETY ELEVATOR

Cornelis L. Busink, Breda; Johannes W. H. van Rijzingen, Oosterhout, and David B. Mason, Eindhoven, all of Netherlands, assignors to Varco International, Inc., Orange, Calif.

Filed Sep. 4, 1992, Ser. No. 941,233
Int. Cl.[5] E21B 19/06
U.S. Cl. 294—88 16 Claims



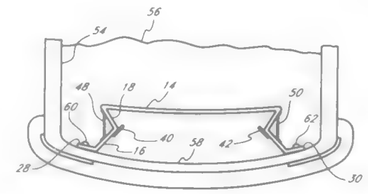
1. An elevator, comprising:
a plurality of elevator sections relatively movable between a closed condition for supporting a pipe and an open condition for movement onto and off of the pipe;
means for power actuating said sections between closed and open conditions; and
means automatically responsive to the presence of a pipe at a location to be supported by said sections to prevent accidental opening of the sections by said actuating means;
said actuating means being operable by pressure fluid to move the elevator sections relatively between closed and open positions;
said automatically responsive means including a valve body through which pressure fluid is delivered to said actuating means and having a fluid inlet and an outlet leading to said actuating means, and a valve piston movable slidably within said valve body from a first position to a second position by pressure fluid delivered to a predetermined side of the piston through said inlet;
said piston in said first position preventing flow of pressure fluid from said side of the piston to said outlet, and in said second position passing fluid to the outlet and said actuating means;
said automatically responsive means including a sensing element movable with the valve piston and operable to sense the presence of a pipe at a location for support by said sections and acting to prevent movement of the valve piston to said second position when a pipe is so located.

5,340,183

CARGO PARTITION

Richard C. Horian, 555 Esplanade Ave. #517, Redondo Beach, Calif. 90277

Filed May 19, 1993, Ser. No. 64,516
Int. Cl.[5] B60R 5/04
U.S. Cl. 296—24.1 18 Claims



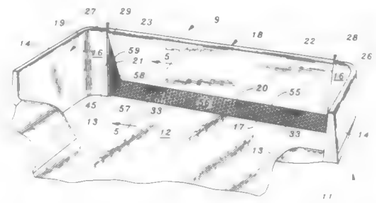
1. A partition for a vehicle, comprising
a front panel having first and second hinges at opposite ends thereof, respectively;
a first side panel coupled at one end with said front panel by said first hinge, said first side panel being comprised of first multiple sections hinged together;
a second side panel coupled at one end with said front panel by said second hinge, said second side panel being comprised of second multiple sections hinged together;
attachments hinged at the other ends of said first side panel and said second side panel, respectively, said attachments each including a body and a fastening point in said body, said bodies being flexible between said fastening points and said first and second side panels, respectively to allow lifting of said front panel with said fastening points attached to the vehicle.

5,340,184

AERODYNAMICALLY IMPROVED TAILGATE CONSTRUCTION FOR PICKUP TRUCK

Edward Conrado, 280 Hillcrest Dr., Lakeport, Calif. 95453

Filed Sep. 27, 1993, Ser. No. 126,857
Int. Cl.[5] B62D 25/00
U.S. Cl. 296—50 10 Claims



1. An aerodynamically improved tailgate construction for use on a pickup truck having a fore and aft elongated cargo bed

VOL 1165 ISS 4 AG 23 1994 UMI

terminating at an after end, a pair of upstanding side walls extending in a fore and aft direction on opposite lateral sides of the cargo bed and a tailgate transversely spanning the after ends of the side walls, the tailgate having a hinged bottom for removable connection to the after end of the cargo bed and upper corner portions adapted for both a holding and a pivotable connection to the adjacent side walls, said tailgate construction comprising:

a. at least one pair of T-shaped hinge leaves each including a transverse mounting plate carrying at least one knuckle and an elongated longitudinal tongue having an axis at right angles to the axis of said knuckle, said T-shaped hinge leaves being movable between a forward location in which the after end portion of said tongue is substantially coextensive with the after end of the cargo bed and an after location in which the forward end portion of said tongue is substantially coextensive with the after end of the cargo bed;

b. latch means on the after end of the cargo bed for selectively securing said T-shaped hinge leaves either in said forward location or in said after location;

c. pin means for connecting said T-shaped hinge leaves to the hinged bottom of the tailgate so that in said forward location of said T-shaped hinge leaves the tailgate can be moved between an open horizontal attitude and a closed vertical attitude and in said after location of said T-shaped hinge leaves the tailgate is inclined downwardly and rearwardly from the top of the tailgate so that the bottom of the tailgate is separated from the after end of the cargo bed by a gap and the opposite ends of the tailgate are each separated from the respective adjacent after ends of the side walls by a space; and,

d. a panel of porous material sized and shaped to span the gap and provide airflow therethrough.

5,340,185

VEHICLE SAFETY SEAT HAVING A RAISABLE FRONT EDGE

Elmar Vollmer, Wettstetten, Fed. Rep. of Germany, assignor to Audi Ag, Ingolstodt, Fed. Rep. of Germany

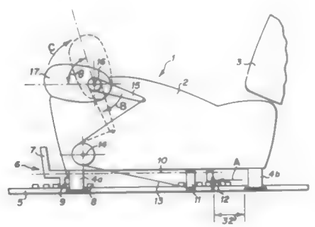
PCT No. PCT/EP91/01401, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO92/06861, PCT Pub. Date Apr. 30, 1992

PCT Filed Jul. 26, 1991, Ser. No. 983,529

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1990, 4032385

Int. Cl.[5] B60N *2/42*

U.S. Cl. 296—68.1 **11 Claims**



1. An improved safety system in a vehicle including a least one seat for the occupant, wherein said seat is slide adjustable along a pair of seat rials, said safety system comprising in operative combination:

a) at least one vehicle seat having a front edge portion adapted for pivot movement between a first lowered position and a second pivoted upward position, said front edge portion when pivoted upward creating an enlarged effective wedge angle to prevent the occupant from submarining from the vehicle seat;

b) mean for lifting said front edge portion of said seat to said second pivoted upward position;

c) a load-dependent release element for restraining the slide adjustment of the slide adjustable seat at a plurality of present positions, said release element adapted to release said seat and permit forward travel thereof in the event of an acceleration in excess of a predetermined severity level; and

d) means for transmitting forward inertial motion of said seat to the pivot motion of said front edge portion lifting means.

5,340,186

ATTACHMENT DEVICE FOR SUNVISOR VANITY MIRRORS

José Aymerich, and Jesûs Prat, both of Rubi, Spain, assignors to Fico I.T.M. S.A., Rubi, Spain

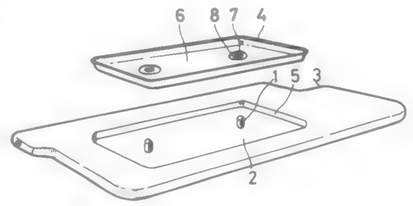
PCT No. PCT/ES92/00041, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO92/21527, PCT Pub. Date Dec. 10, 1992

PCT Filed May 21, 1992, Ser. No. 969,822

Claims priority, application Spain, Jun. 4, 1991, 9101336

Int. Cl.[5] B60J *3/02*

U.S. Cl. 296—97.1 **8 Claims**



1. Attachment device for a sunvisor vanity mirror, said attachment device comprising:

a plastic blow molded one-piece casing provided with a cavity having a rear surface and a plurality of essentially cylindrical attachment projections, each of said essentially cylindrical attachment projections extending perpendicularly from the rear surface of said cavity, each of said attachment projections having a free end;

a vanity mirror box-like shell dimensioned to fit in said cavity, received in said cavity and provided with through holes positioned so that said attachment projections extend through said through holes; and

retaining means secured on each of said attachment projections for fixing said box-like shell in said one-piece casing so as to hold said box-like shell in said cavity without adhesive means; and

wherein said retaining means comprises a plastic deformed portion at the free end of the attachment projection having said retaining means, said deformed portion being made by one of ultrasonic methods, heating and mechanical impact, so that said boxlike shell is compressed between the deformed portion and the rear surface of the cavity in the one-piece casing.

5,340,187

FRONT MOUNT TELESCOPIC ARM TRUCK COVER SYSTEM

Edward N. Haddad, Jr., Worcester, Mass., assignor to Pioneer Consolidated Corporation, North Oxford, Mass.

Continuation-in-part of Ser. No. 931,030, Aug. 14, 1992, Pat. No. 5,238,287. This application Feb. 10, 1993, Ser. No. 16,169

Int. Cl.[5] B60P *7/04*

U.S. Cl. 296—98 **12 Claims**

1. A self-contained, compact cover assembly, including,

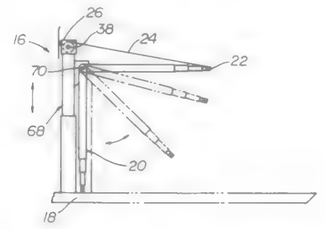
a flexible cover having a first end and a second end;

a winding device attached to said first end of said flexible cover facilitating smooth extraction and retraction of said cover from said winding device;

a gantry having a base for securing said gantry to a truck frame, said gantry supporting said winding device and including,

a first and a second pivot point subjacent said winding device, and

at least one telescopic support column adapted to raise and lower said winding device along a plane orthogonal to said base;



a first and a second telescopic arm each having a first end and a second end, each said second end attached to said second end of said flexible cover, said first and second telescopic arms pivotally attached at said first end to said first and second pivot points, respectively; and

a rotation actuator movable in a first and a second direction and coupled to said first and second telescopic arms, said rotation actuator moving said first and second telescopic arms from a first position parallel to said plane to a second position orthogonal to said plane, said first and said second telescopic arms in said second position extendable in unison to deploy said flexible cover and contractible in unison to retract said flexible cover attached thereto.

5,340,188

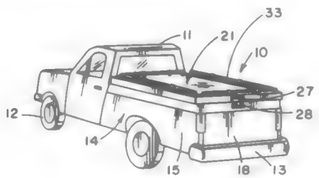
TRUCK ATTACHMENT

Rowland H. Goble, P.O. Box 423, Lake Mary, Fla. 32795-0423

Filed Feb. 19, 1992, Ser. No. 836,881

Int. Cl.[5] B60P *7/02*

U.S. Cl. 296—100 **10 Claims**



1. A pickup truck attachment for a pickup truck having a cab and a truck bed having a pair of sidewalls and an endwall and a tailgate comprising:

a rigid covering platform for said pickup truck bed shaped to fit over the sidewalls thereof and having a frame supporting a flat panel member attached thereto and having a top and bottom and two sides and two ends;

a plurality of hinges attached to the truck bed endwall and removably attached to said one end of said rigid covering platform and adapted for said rigid cover to rotate on said hinge whereby said rigid covering platform can have the other end thereof raised and lowered and can be disconnected and removed from said pickup truck, each said hinge being a quick removing hinge pin connecting a pair of hinge leafs and each hinge pin having a handle on one end thereof for removing and replacing said hinge pin;

at least one support member for supporting said rigid covering platform other end in a raised position lifted on said hinge to a position above said pickup truck sidewalls;

a plurality of fastener portions attached to said rigid covering platform and a flexible covering attached over said rigid covering platform and to said fastener portions;

latch means for latching said rigid covering platform in a lowered generally horizontal position; and

at least one attachment member attached to said rigid covering platform for attaching accessories to said rigid covering platform whereby a rigid covering platform covers a pickup truck bed and supports attachments thereto over the truck bed and is easily removed from the truck and supported on another surface.

5,340,189

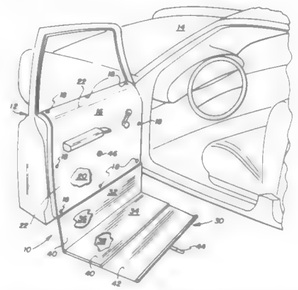
BULLETPROOF LEG PROTECTION DEVICE FOR A VEHICLE DOOR

R. Anthony Goodman, 1200 W. Taylor, No. 232, Sherman, Tex. 75090

Filed Jul. 19, 1993, Ser. No. 94,246

Int. Cl.[5] F41H *7/00;* **B60J** *11/00*

U.S. Cl. 296—152 **2 Claims**



1. A protective panel for a vehicle door having a bottom, the panel comprising:

bullet resistance material having first and second portions, said first portion adapted to be attached to the interior of a vehicle door;

said second portion interconnected to said first portion and being operable between a folded and an extended position below the bottom of a vehicle door; and

such that in said folded position, said second portion is disposed adjacent to a door in said extended position, said second portion extends below the bottom of a door when a door is in an open position with respect to a vehicle, thereby providing leg protection to a person standing behind a door when a door is open.

5,340,190

AIR-FLOW MANAGEMENT DEVICE

Don J. Engel, Sarepta, La., assignor to R.O.A.D. Industries, Inc., Sarepta, La.

Continuation-in-part of Ser. No. 824,062, Jan. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 643,830, Jan. 22, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 987,013

Int. Cl.[5] B62D *35/00*

U.S. Cl. 296—180.1 **10 Claims**

1. An air-flow management device mountable on an upper, forward portion of a vehicle, comprising in combination:

means defining an entrance opening at the forward portion of the vehicle through which entering air flow can be received;

a first substantially imperforate and generally upright airfoil means located at said entrance on the right half of the

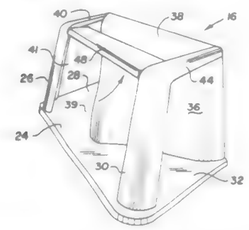
VOL 1165 ISS 4 AG 23 1994 UMI

forward portion of the vehicle and standing substantially isolated in the flow path of the received air thereat for causing a vortex of received air flow to be generated thereabout;

a second substantially imperforate and generally upright airfoil means positioned on the left half of the forward portion of the vehicle and standing substantially isolated in the flow path of the received air thereat causing a vortex of received air flow to be generated thereabout;

means defining a plurality of exit openings in communication with said entrance and through which air flow exits the device;

first surface means providing a selectively warped surface positioned behind the first airfoil means and cooperating with said first airfoil means to define a first intervening



flow passage in communication with said entrance for providing a venturi effect while deflecting entering air-flow received at said entrance to an exit opening on the right of the vehicle; and

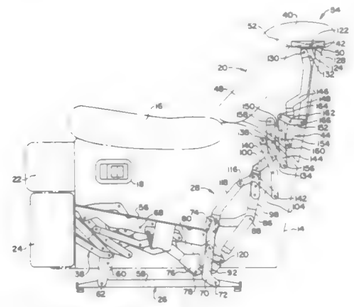
second surface means providing a selectively warped surface positioned behind the second airfoil means and cooperating with said second airfoil means to define a second intervening flow passage in communication with said entrance for producing a venturi effect while deflecting air-flow received at said entrance to an exit opening on the left of the vehicle, wherein the first and second airfoil means in cooperation with said first and second surface means cause the air-flow to exit the device through said exit openings at a substantially greater velocity than the velocity of the received air-flow entering the device through said entrance.

5,340,191

RECLINING CHAIR HAVING POP-UP HEADREST

Teddy J. May, Tupelo, Miss., assignor to The Lane Company, Inc., Altavista, Va.

Filed Apr. 7, 1993, Ser. No. 43,561
Int. Cl.[5] A47C *1/036*
U.S. Cl. 297—61 **4 Claims**



1. In a reclining chair having:

a base arranged to be supported on a floor;

a seat and arm frame unit including at least one arm rest and a seat cushion for supporting a user when seated thereon;

a legrest for supporting the user's legs when said legrest is in an extended position;

a backrest for supporting the user's back; and

a reclining chair mechanism which includes left and right side linkages of interpivoted links, said left and right side linkages being interconnected for coordinated movement by laterally connecting elements and by being secured at respective sites to transversally spaced sites on said base, said seat and arm frame unit, said legrest and said backrest, so as to support said seat and arm frame unit, said legrest and said backrest on said base, for progressive movement between:

a fully erect position, in which the legrest is stowed beneath a front portion of the seat cushion, the seat and arm frame unit are located relatively rearwards over said base, at a relatively elevated level and in which the seat cushion is positioned for the user's sitting and the backrest is relatively erect, and

a TV position in which the legrest is raised and extended forwardly of the front portion of the seat, for supporting the user's legs off of the floor, and the seat and arm frame unit are lowered at the rear of the seat cushion and located relatively forwardly of its location over said base when in said fully erect position, each said side linkage of the mechanism including an upper longitudinal mounting flange to which a respective side of the seat and arm frame unit is mounted for support;

one of the base and each side linkage further including a lower longitudinal mounting flange;

the seat and arm frame unit being suspended above the base by front and rear support linkages of each of said side linkages, each of said rear support linkages including a generally vertical rear support strut which is pivoted at a lower end thereof to the respective said lower longitudinal mounting flange, for forward rotation about such lower end as said chair moves from said fully erect position to said TV position and for rearward rotation about such lower end as said chair moves from said TV position back to said fully erect position;

the legrest being suspended relative to the base on left and right front pantographic link assemblies forming respective portions of said side linkages, which front pantographic link assemblies extend forwardly from and retract rearwardly towards said base for extending and retracting said legrest; and

the backrest being suspended relative to the base by being mounted at laterally opposite sides thereof, to backrest mounting links which form respective portions of said side linkages, each said backrest mounting link including an upwardly, rearwardly projecting leg;

the backrest including a frame having two laterally spaced longitudinally extending framing elements having upper ends, said framing elements being secured to respective ones of said legs of said backrest mounting links;

said backrest further including upholstered padding disposed and supported frontally on said framing elements,

the improvement wherein said reclining chair further includes a pop-up headrest comprising:

said upholstered padding having a portion which extends above said upper ends of said framing elements and is movable between a folded-down position in which said upholstered padding portion extends generally horizontally, rearwardly over said upper ends of said framing elements, and a raised, or popped-up, position in which said padding portion extends generally vertically, frontally of said upper ends of said framing elements;

a laterally extending stiffener element secured to said upholstered padding portion so as to be effectively located on a rear face thereof when said headrest is in said popped-up position;

said side linkages each including a rear pantographic linkage

assembly each effectively pivotally connected at an upper end thereof at respective forward and rear sites to said stiffener element at respective ends of said stiffener element;

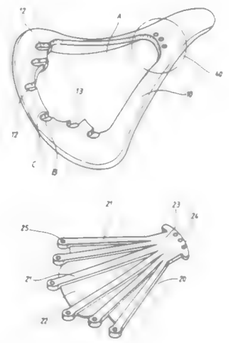
said rear pantographic linkage assemblies each having two lower end links one of which effectively extends said upwardly projecting leg of the respective said backrest mounting link, and the other of which is pivotally effectively connected by a respective operator link to an intermediate-height location on the respective said rear support strut, whereby as said rear support struts rotate forwards about said lower ends thereof as said chair moves from said fully erect position to said TV position, such rotation is propagated along said rear pantographic linkage assemblies and thereby causes elevation of said rear sites of said upper ends of said rear pantographic linkage assemblies relative to said forward sites thereof, thereby erecting said headrest to said popped-up position.

5,340,192

BICYCLE SEAT STRUCTURE

Ah-Yeh Hsh, No. 22, Lane 245, San Min Rd., Sec. 2, Pu Chien, Pan Chiao City, Taipei Hsien, Taiwan

Filed Aug. 31, 1993, Ser. No. 114,077
Int. Cl.[5] B62J *1/24*
U.S. Cl. 297—197 **2 Claims**



1. A bicycle seat structure comprising a seat frame and a resilient element secured to said seat frame,

said seat frame having a central area provided with a cut-out buttock contact area, said contact area having a front and a rear, a plurality of protrusions extending downwards are provided on an underside of said front, and a plurality of upward opening cavities are arranged in said rear,

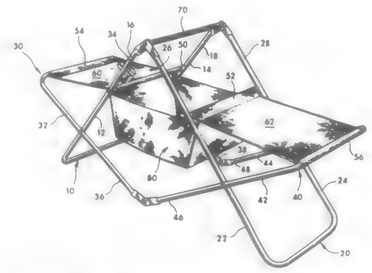
said resilient element having a plurality of resilient strips connected together by web portions; said resilient strips respectively having front and rear end portions, said front end portion converging to form a common stretching portion, said stretching portion having holes receiving said protrusions of said seat frame, said rear end portion being widened to form an enlarged head portion, said cavities of said seat frame tightly receiving said enlarged head portions.

5,340,193

FOLDABLE DUAL SEAT

Henry W. Wolf, 649 Xenon Ct., Lakewood, Colo. 80228

Continuation-in-part of Ser. No. 751,688, Aug. 29, 1991, Pat. No. D. 343,959. This application Sep. 8, 1993, Ser. No. 118,446
Int. Cl.[5] A47C *4/42, 9/10*
U.S. Cl. 297—232 **15 Claims**



1. A foldable seat comprising:

(a) a first support member having an upper end;

(b) a second support member having an upper end, said second support member hingeably attached to said first support member near said upper ends;

(c) a third support member having a lower end, said third support member pivotally attached to said first support member;

(d) a fourth support member having a lower end, said fourth support member hingeably attached to said third support member near said lower ends and pivotally attached to said second support member;

(e) a first seat member extending between said first support member and ad third support member,

(f) a second seat member extending between said second support member and said fourth support member; and

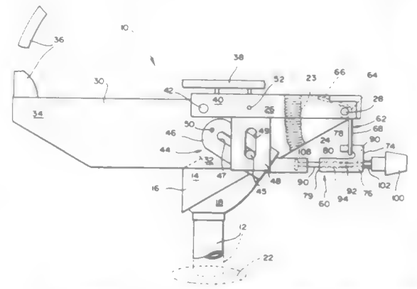
(g) a storage compartment suspended between said first and said second seat members.

5,340,194

DEVICE FOR ADJUSTING SEAT FRAME AND BACK REST OF CHAIR OF SWIVEL TYPE CHAIR

Konrad Neumuller, Burgthann, Fed. Rep. of Germany, assignor to Sifa Sitzfabrabrik GmbH, Sulzbach-Rosenberg, Fed. Rep. of Germany

Filed Oct. 15, 1992, Ser. No. 961,420
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1991, 9112861[U]
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—304 **5 Claims**



1. In combination with a chair frame which includes a base member fixed in an upright position at a rear end thereof to a

VOL 1165 ISS 4 AG 23 1994 UMI

vertical mounting pedestal, the base member having a front tip end in which a first end of an elongated seat plate carrier is pivoted, an opposite second end of the seat plate carrier locating proximal the base member rear end, there being bias means engaged with the base member and with the seat plate carrier urging the seat plate carrier upwardly of the base member to a normally generally horizontal dispositioning of the seat plate member, a back rest carrier having first and second opposite ends, the first end of the back rest carrier being connected to the second end of the seat plate carrier such as to be pivotable about an axis parallel to that about which the seat plate carrier can pivot, the second end of the back rest carrier mounting a chair back rest, and locking means comprising cooperating components carried on the seat plate carrier and the back rest carrier and operable in a locked condition thereof to lock the seat plate carrier to the back rest carrier whereby relative positioning between the back rest and a seat element carried on the seat plate carrier is a set relationship, relative positioning between the back rest and seat element being alterable with the locking means in unlocked condition by pivoting the back rest carrier relative to the seat plate carrier and the seat plate carrier relative to the base member with a user imposed weight load presence acting on the seat element,

an adjustment device for compensating for a difference in pivoting effect produced on the seat plate carrier by different ones of user weights in a range of such so that relative positioning between the back rest carrier and seat plate carrier can be effected to particular user comfort defined by the particular seat plate carrier and back rest carrier pivoting produced incident the particular user weight impositioned presence on the seat element, the adjustment device comprising

a torsion spring having at least one winding about a shaft and at least one pair of oppositely directed legs connected to the winding, one leg of the pair being engaged with the seat plate carrier and acting in opposition to pivoting of the seat plate carrier toward the base member and a second leg of the pair being connected to a holder, the holder being mounted on a shaft passing therethrough, the shaft being rotatable in the holder with the holder and the shaft embodying cooperating means for moving the holder toward and away from the base member when the shaft is rotated in respective ones of two opposite directions thereby to correspondingly move the second leg in directions that produce respective greater or lesser tightening of the winding of the torsion spring whereby the said one leg of the torsion spring opposes seat plate holder pivoting toward the base member responsive to winding tightened condition, a rotary handle being fixed to an end of said shaft located remote from the base member, and a compression spring mounted on the shaft and interposed between the rotary handle and a main body part of the holder and engaging an end face of the rotary handle and an end face of the holder main body part.

5,340,195

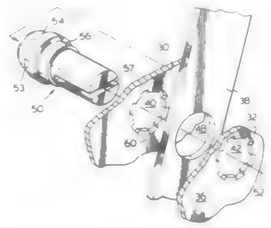
VEHICLE SEAT ASSEMBLY HINGE AND METHOD OF ASSEMBLY

Adolf Notta, Toronto, Canada, assignor to Bertrand Faure Ltd., Mississauga, Canada

Filed Sep. 17, 1992, Ser. No. 946,127
Claims priority, application Canada, Apr. 3, 1992, 2065126
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—354.1 **11 Claims**

1. In an improved vehicle seat assembly hinge having first and second generally opposed and parallel hinge plates rigidly connected in spaced relation to one another, said first and second hinge plates having respective outer surfaces, and a central third hinge plate partially sandwiched between said first and second hinge plates, said first, second and third hinge plate having respective first, second and third openings therein, said third hinge plate connected in hinged relation to said first and second hinge plates by a pivot pin, said pivot pin having a longitudinal axis and axially opposed first and second ends, a centrally disposed annular hub portion, first and second shoulder portions extending in opposite axial directions from said hub portion toward but not extending to said first and second ends, said first, third and second openings being aligned with one another so as to respectively receive in close-fitting operative engagement one each of said first shoulder portion, said annular hub portion and said second shoulder portion, wherein the improvement comprises:

said first and second openings each defining at least one keyway slot extending generally outwardly beyond the perimeter of said opening; and,



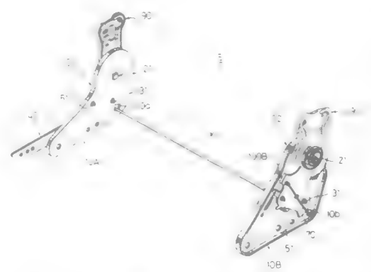
each of said shoulder portions having an amount of plastically deformable shoulder material adjacent the respective one of said openings, with a portion of said amount of plastically deformable shoulder material, only, being plastically deformed into the respective ones of said at least one keyway slot in intimate and rotationally interfering relation between said pivot pin and said opening, whereby said pivot pin is rotationally fixed relative to said first and second hinge plates and said pivot pin is axially fixed relative to said first and second hinge plates.

5,340,196

SEAT RECLINING APPARATUS

Isao Ikegaya, and Mituji Yamamura, both of Washizu, Japan, assignors to Fujikiko Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP91/01475, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO92/07491, PCT Pub. Date May 14, 1992
PCT Filed Oct. 29, 1991, Ser. No. 859,506
Claims priority, application Japan, Oct. 31, 1990, 2-113433[U]; Mar. 29, 1991, 3-20125[U]; Oct. 31, 1991, 3-113431[U]; Oct. 31, 1991, 3-113432[U]; Oct. 31, 1991, 3-292182
Int. Cl.[5] B60N *2/20*
U.S. Cl. 297—367 **13 Claims**



1. A seat reclining apparatus for adjusting the inclined angle of a seat, comprising:

a seat cushion having a right hand side and a left hand side;

a seat back having a right hand side and a left hand side;

a pair of base plates mounted one each on the right and left hand sides of said seat cushion;

a pair of arms mounted one each on the right and left hand sides of said seat back, wherein said arms are supported by said base plates so as to be angularly movable relative thereto;

a pair of upper teeth supported one each by each of said arms, and where at least one of said pair of upper teeth supported by one of said arms is angularly movable through only a predetermined angle with respect to said arm;

a pair of lower teeth supported one each by each of said base plates so as to be angularly movable relative thereto, whereby said lower teeth can be engaged with and disengaged from said upper teeth, respectively;

a pair of cam members supported one each by each of said base plates so as to be angularly movable relative thereto, and for engaging said lower teeth with and disengaging said lower teeth from said upper teeth, respectively; and

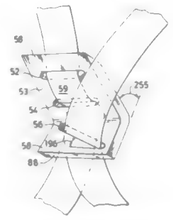
an operating lever for operating said pair of cam members.

5,340,198

SEAT BELT ADJUSTMENT DEVICE

Joseph F. Murphy, 39 Washington St., Apt 6, Concord, N.H. 03301-4209; Michael J. McGeehan, 309 Pegasus Rd., Piscataway, N.J. 08854; Gregory A. Benske, 4728 Amber Cir., Hoffman Estates, Ill. 60195, and Juan Gaudiano, P.O. Box 1912 Zone 1, Panama, Panama

Filed Sep. 5, 1991, Ser. No. 754,920
Int. Cl.[5] B60R *22/10*
U.S. Cl. 297—483 **11 Claims**



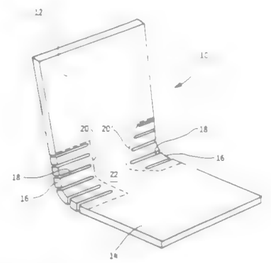
1. A device for adjusting a shoulder belt portion of a seat belt having an upwardly extending vertical belt portion and downwardly extending shoulder belt portion which forms a loop at a vertical transition member, which device comprises a body having a plurality of channels for receiving the seat belt, at least a pair of which are for threadably receiving the vertical belt portion therethrough for adjustably positioning said body at a desired vertical position with respect to an occupant seated on a seat adjacent to a side of which the vertical belt portion is disposed; another of said channels being spaced from said pair of channels for threadably receiving the shoulder section after it passes around the loop formed at the vertical transition member, said other of said channels for deflecting the shoulder belt portion to define an angle having a vertex on the body which extends across the center of the chest region of the occupant seated on the seat, wherein said pair of channels is substantially horizontal and the other of said apertures is tilted with respect to said pair of channels, and wherein said pair of channels extend through said body and are inclined toward each other inside the body.

5,340,197

ONE-PIECE SEAT SHELL

Burkhard Vogtherr, Kandern-Holzen, Fed. Rep. of Germany, assignor to Fritz Hansen A/S, Allerod, Denmark

PCT No. PCT/EP91/02491, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO92/12654, PCT Pub. Date Aug. 6, 1992
PCT Filed Dec. 22, 1991, Ser. No. 927,264
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1991, G9100572
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.12 **1 Claim**



1. A one piece seat shell (10) comprising

(a) a backrest (12),

(b) a seat (14),

(c) a curved transition section (16) smoothly and arcuately interconnecting the backrest (12) and the seat (14),

(d) two groups of parallel slots (18'), each group extending inwardly from a laterally exterior edge of said transition section (16), the slots (18') in each group

(i) extending in a transverse direction,

(ii) being of different lengths,

(iii) having outer open ends and closed inner ends,

(iv) the closed inner ends of said two groups of slots (18') defining between them an intermediate transition region (22) of the seat shell (10)

which transition region (22) is effective to provide a spring action, and

which transition region (22) diverges from a transverse center line of said transition region (22) both outwardly towards said backrest (12) and outwardly towards said seat (14).

5,340,199

METHOD AND MACHINE FOR EXCAVATING DRIFTS, TUNNELS, STOPES, CAVERNS OR THE LIKE

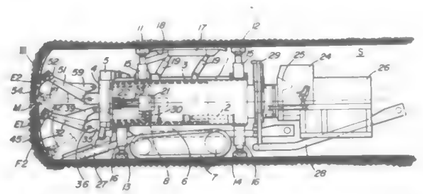
Wilfried Piefenbrink, Erkelenz; Walter Weber, Aachen, both of Fed. Rep. of Germany, and Hermann Hamburger, Geneva, Ill., assignors to HDRK Mining Research Limited, Oakville, Canada and Wirth Maschinen-und Bohrgerate-Fabrik GmbH, Erkelenz, Fed. Rep. of Germany

PCT No. PCT/EP91/00814, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/18185, PCT Pub. Date Nov. 28, 1991
PCT Filed Apr. 29, 1991, Ser. No. 946,338
Int. Cl.[5] E21C *25/16;* **E21D** *9/10*
U.S. Cl. 299—10 **22 Claims**

1. Method for excavating drifts, tunnels, stopes, caverns or the like, with tools capable of operating in an undercutting manner on a rock face, mounted on tool arms, said tool arms being mounted on a head rotating about a reference axis, in the direction of excavation, so as to pivot radially relative to said reference axis, comprising cutting in an undercutting manner, with at least one tool on a tool arm, a central region of the rock face by pivoting said tool arm radially from the outside in-

VOL 1165 ISS 4 AG 23 1994 UMI

wards, and cutting, also in an undercutting manner, with at least one other tool on another tool arm, an outer region sur-



rounding the central region of the rock face by pivoting said other tool arm radially from the inside outwards.

5,340,200

BRUSH RECYCLING APPARATUS

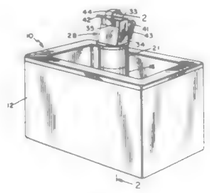
Kenneth R. Erickson, 12827 Camino Ramillette, San Diego, Calif. 92128

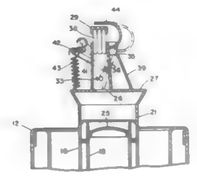
Continuation-in-part of Ser. No. 819,996, Jan. 13, 1992, Pat. No. 5,253,927. This application Jan. 25, 1993, Ser. No. 8,144

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[5] **A46D** *1/045, 1/08*

U.S. Cl. 300—2 **12 Claims**





1. A recycling apparatus for brushes having moldable bristles, comprising:

a housing having an inner chamber for receiving water;

heater means for heating water in the chamber to produce steam;

the chamber having at least one outlet for allowing steam to escape from the chamber; and

a restraining holder mounted over said outlet, the holder having a mold cavity communicating with said outlet, the cavity having an opening for at least partial insertion of the bristle part of a brush head into the cavity, the mold cavity having a cross-sectional periphery of shape and dimensions substantially matching the cross-sectional periphery of the bristle part of a brush head.

5,340,201

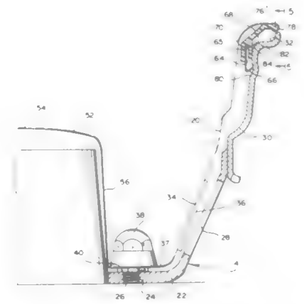
SNAP-ON DRESS WHEEL SIMULATOR

Gary Weirs, McKenzie, Tenn., assignor to Del-Met Corporation, Hendersonville, Tenn.

Filed Jun. 30, 1993, Ser. No. 85,026

Int. Cl.[5] **B60B** *7/12*

U.S. Cl. 301—37.26 **10 Claims**



1. A unitary assembly snap-on dress wheel simulator for utility vehicle wheels, the simulator comprising a sheet metal shell having a circular periphery, the shell being contoured to generally conform to the shape of a utility vehicle wheel, the shell including a first portion extending from the circular periphery toward the center of the shell, the first portion having a central opening of a dimension suitable to accommodate a utility vehicle axle hub, the shell including a second portion comprising a hub cover, the hub cover projecting axially through the opening, the shell further including means for permanently securing the first portion to the second portion, the wheel being mounted to a utility vehicle by a plurality of lugs and a like plurality of lug nuts, the shell including a like plurality of apertures, each aperture being registered with a lug nut of the wheel, the snap-on dress wheel simulator further including a plurality of lug nut covers and means fastening each lug nut cover to the shell in registration with one of the apertures, the simulator further including means for mounting the shell on the wheel, the means for mounting including retention means for gripping and engaging the utility vehicle wheel free of retentive engagement with vehicle lug nuts.

5,340,202

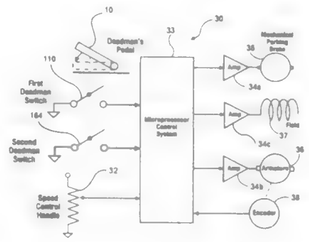
SERVICE BRAKING TECHNIQUE FOR MATERIAL HANDLING VEHICLES

Richard M. Day, Binghamtpon, N.Y., assignor to Raymond Corporation, Greene, N.Y.

Continuation-in-part of Ser. No. 785,954, Oct. 30, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 968,777

Int. Cl.[5] **B60T** *7/14*

U.S. Cl. 303—19 **27 Claims**



1. A process for slowing and stopping a vehicle having an electric service motor, a mechanical parking brake, and a deadman's switch, comprising the steps of:

a) determining whether said deadman's switch is engaged;

b) when said deadman's switch is disengaged, plugging said electric service motor at a predetermined plug rate;

c) monitoring deceleration and speed of said vehicle and comparing the rate of vehicle deceleration and the vehicle speed, respectively, with a predetermined deceleration rate and a predetermined vehicle speed;

d) ceasing said plugging when said rate of vehicle deceleration is less than said predetermined deceleration rate or when said vehicle speed is less than said predetermined vehicle speed; and

e) engaging said mechanical brake causing said vehicle to come to a stop.

5,340,203

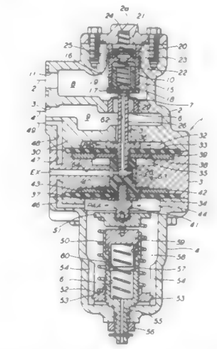
VARIABLE LOAD CONTROL VALVE WITH DUAL DIAPHRAGMS REINFORCED BY WASHERS AND SPACER MEMBERS

Padmanab L. Gowda, Greer, S.C., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jun. 11, 1993, Ser. No. 74,526

Int. Cl.[5] **B60T** *8/18, 15/02*

U.S. Cl. 303—22.5 **15 Claims**



1. A diaphragm-type of variable load control valve device comprising, an upper casing section, an intermediate casing section, and a lower casing section, a supply chamber and a delivery chamber located within said upper casing section, a release and check valve located within said supply chamber, a piston diaphragm assembly disposed in said intermediate casing section, said piston diaphragm assembly including an upper flexible diaphragm having its inner periphery clamped between one washer member and a piston stem which is connected to a piston member and having its outer periphery clamped between said upper casing section and said intermediate casing section, said piston diaphragm assembly including a lower flexible diaphragm having its inner periphery clamped between another washer and a shoulder portion of said piston member and having its outer periphery clamped between said intermediate casing section and said lower casing section, a delivery control chamber located between the under side of said upper casing section and the upper side of said upper flexible diaphragm, a load control chamber located in said lower casing chamber below said lower flexible diaphragm whereby fluid under pressure is conveyed from said supply chamber to said delivery chamber and fluid under pressure in said delivery chamber is limited to a maximum value in accordance with the pressure in said load control chamber.

5,340,204

VEHICLE SLIP CONTROL SYSTEM

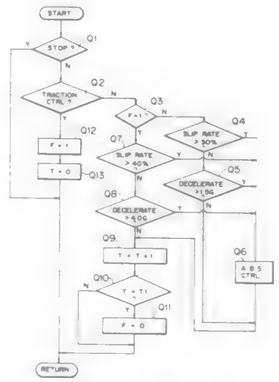
Haruki Okazaki; Makoto Kawamura; Kazutoshi Nobumoto, and Fumio Kageyama, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 753,439, Aug. 30, 1991, abandoned. This application Oct. 18, 1993, Ser. No. 137,385

Claims priority, application Japan, Aug. 31, 1990, 2-230157; Jan. 28, 1991, 3-008632

Int. Cl.[5] **B60T** *8/32;* **B60K** *28/16*

U.S. Cl. 303—111 **26 Claims**



1. A slip control system for a vehicle having at least right ad left drive wheels comprising:

traction control means for controlling a slip rate of a wheel by controlling a braking hydraulic pressure for the wheel under a non-braking condition during a traction control of the slip rate, the traction control of the slip rate by the traction control means being applied independently on the right and left drive wheels,

anti-skid control means for controlling the slip rate of a wheel by controlling the braking hydraulic pressure for the wheel under a braking condition during an anti-skid control of the slip rate, the anti-skid control of the slip rate by the anti-skid control means being applied commonly on the right and left drive wheels, and

restriction means for restricting an onset timing of the anti-skid control of the slip rate of the right and left drive wheels by the anti-skid control means so that the onset timing of the anti-skid control is delayed when the anti-skid control is carried out within a relatively short time after the traction control is made by the traction control means as compared with a situation in which the anti-skid control is carried out a relatively long time after the traction control is made by the traction control means.

5,340,205

SUSPENSION SYSTEM FOR A TRACKED VEHICLE

James A. Nagorcka, Tarrington, Australia, assignor to Deere & Company, Moline, Ill.

Continuation-in-part of Ser. No. 976,090, Nov. 13, 1992. This application Jun. 30, 1993, Ser. No. 85,212

Int. Cl.[5] **B62D** *55/14, 55/30*

U.S. Cl. 305—22 **10 Claims**

1. An undercarriage for a tracked vehicle comprising:

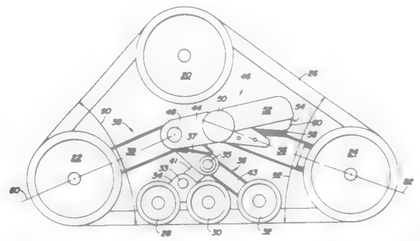
a rigid frame;

a main drive wheel mounted to and extending outward from the rigid frame, the main drive wheel having a main drive wheel axis;

a walking beam having a first section and a second section is

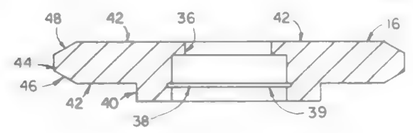
VOL 1165 ISS 4 AG 23 1994 UMI

pivotally coupled to the rigid frame by a walking beam pivot which defines a walking beam pivot axis;
an angled first arm is pivotally coupled to the first section of the walking beam by an angled arm pivot which defines a angled arm pivot axis, the angled arm is provided with a first portion and a second portion with the angled pivot arm pivot being located between these two portions;
a first idler is rotatably mounted to the first portion of the angled arm, the first idler defining a first idler axis;



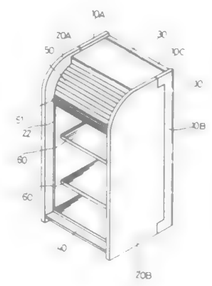
a second arm is pivotally coupled to the rigid frame at the walking beam pivot;
a second idler is rotatably mounted to the second arm, the second idler defining a second idler axis;
a spring is located between the second section of the walking beam and the second arm; and
a track surrounds the main drive wheel, the first idler and the second idler.

5,340,206
PLASTIC WHEEL
James R. Young, 2321 E. Gore Rd., Erie, Pa. 16510
Continuation-in-part of Ser. No. 609,729, Nov. 6, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 836,548
Int. Cl.[5] B60B *5/00*
U.S. Cl. 305—24 **2 Claims**



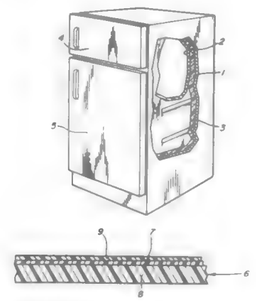
1. In combination a snowmobile and idler wheels;
said snowmobile having a continuous track;
said idler wheels supporting said continuous track on said snowmobile;
drive means on said snowmobile connected to said continuous track;
said continuous track having an external ground engaging surface and a flat bottom internal surface with a central V-shaped groove extending continuously around said continuous track;
said idler wheels having a continuous outside peripheral surface received in said central V-shaped groove and a central bore;
said central bore being adapted to receive an axle of said snowmobile;
each said idler wheel comprising a single integral piece of thermoplastic material having said outside peripheral surface, a first inclined side and a second inclined side;
said first inclined side and said second inclined side extending from said outside peripheral surface inwardly toward said central bore defining a V-shaped rim adjacent said outside peripheral surface;
said V-shaped rim being received in said central V-shaped groove;
said central bore having a counterbore terminating at an inwardly extending flange for receiving a bearing assembly;
said flange terminates at said central bore to retain a bearing assembly whereby said idler wheels can be positively supported on said bearing assembly for rotation thereon;
an annular internal groove extending outwardly radially from said counterbore adjacent side surfaces of said idler wheels to receive a retaining ring; and,
said idler wheels having notches formed in the sides thereof to save material, reduce weight and thereby reduce cost.

5,340,207
FOLDABLE ASSEMBLY CABINET
Shun-Teng Chen, Tao Yuan Hsien, Taiwan, assignor to Shern Diau Enterprise Co., Ltd., Tao Yuan Hsien, Taiwan
Filed Feb. 18, 1993, Ser. No. 19,629
Int. Cl.[5] A47B *87/00, 43/00, 47/00*
U.S. Cl. 312—262 **7 Claims**



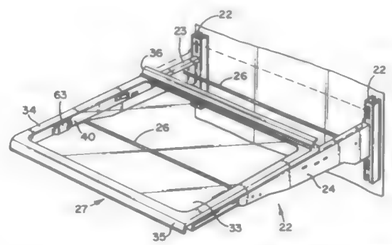
1. A foldable assembly cabinet, comprising:
a case body having a left side plate and a right side plate and a back wall having a front plate and a rear plate;
a top lid pivotally associated with said case body;
a left side board pivotally secured to said case body;
a right side board pivotally secured to said case body; said left side board and said right side board being provided with a plurality of fixing cavities arranged in order all thereover;
a number of partition boards removably disposed between said left side and right side board and said top lid and bottom board;
said front plate of the back wall of said case body being provided with a plurality of fixing cavities arranged in order all thereover;
a plurality of supporting units removably engaged with said fixing cavities disposed on said side boards and said back wall respectively so as to retain said partition boards in place;
said right side board being larger than said left side board so as to permit said right side board to be pivoted against said case body first then said left side board being pivoted next toward the folded right side board and in abutment against the same;
whereby said cabinet can be folded into compact size without disassembly by first pivoting said top lid and said bottom board toward said case body and then pivoting said right side board toward and in abutment against said folded top lid and bottom board, and said left side board being pivoted toward and in abutment against said folded right side board in a consecutive order.

5,340,208
REFRIGERATOR LINER STRUCTURES
Steven M. Hauck, Piscataway, and Jeffrey P. Viola, Manalapan, both of N.J., assignors to BASF Corporation, Parsippany, N.J.
Continuation-in-part of Ser. No. 758,641, Sep. 12, 1991, Pat. No. 5,221,136. This application Jun. 16, 1993, Ser. No. 77,309
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—406 **32 Claims**



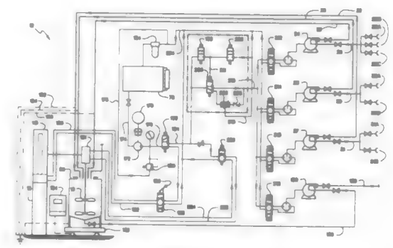
23. A thermoformable composite comprising:
a) a core layer comprising high impact polystyrene or an acrylonitrile-butadiene-styrene copolymer, said core layer containing 5 to 35 weight percent rubber, based on the weight of the core layer, in the form of particles having average diameters of at least 2 microns, said core layer having two surfaces;
b) a high gloss layer on a first of said two surfaces;
c) a barrier material on a second of said two surfaces, said barrier material comprising a polymer or copolymer of ethylene or propylene containing 0 to 40 percent of a block copolymer rubber;
wherein the core layer comprises 50 to 96 weight percent of the composite and said barrier material comprises 3.5 to 50 percent by weight of the composite.

5,340,209
SLIDE-OUT SHELF ASSEMBLY FOR REFRIGERATORS
Kenneth W. Kolbe, Ellettsville, Ind., and Scott A. Calvert, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Dec. 28, 1992, Ser. No. 997,578
Int. Cl.[5] A47B *71/00*
U.S. Cl. 312—408 **17 Claims**



11. A slide-out shelf assembly for a refrigerator compartment, including:
a pair of supports mounted in said refrigerator compartment in spaced apart relationship;
each of said supports having a generally horizontal top wall and spaced apart inner and outer, depending side walls forming an inverted-U shaped cavity;
a shelf structure including a shelf plate having opposed lateral edges and a molded rim encapsulating the edge of said plate, said rim including spaced apart side portions having generally horizontal runners resting on said support top walls and depending flanges projecting downwardly adjacent said inner side walls of said supports to support said shelf structure for sliding movement on said supports between a retracted position fully contained within the refrigerator compartment and an extended position projecting at least partially out of the refrigerator compartment; and
an unitary plastic latch member mounted within said inverted-U cavity of one of said supports and including a resilient finger having a rest configuration with a first portion of said finger projecting through an opening in said inner side wall of said one support;
the corresponding depending flange of said shelf rim including a slot which registers with said first finger portion when said shelf structure is in its extended position for releasably positioning said shelf structure.

5,340,210
APPARATUS FOR BLENDING CHEMICALS WITH A REVERSIBLE MULTI-SPEED PUMP
Mayur Patel, Sugar Land; Michael T. Phillips, Houston; Gary L. Cooper, Missouri City, and Daniel Emmons, Rosenberg, all of Tex., assignors to Nalco Chemical Company, Naperville, Ill.
Filed Feb. 25, 1992, Ser. No. 841,977
Int. Cl.[5] B01F *15/02, 15/04*
U.S. Cl. 366—132 **10 Claims**



1. An apparatus for blending chemicals, said apparatus comprising:
a blending vat;
a mixer for blending chemicals in said blending vat;
a pump being coupled to said blending vat by an output line, said pump having an input line being adapted to couple to each of a plurality of sources of chemicals, said pump being operable in a forward direction and a reverse direction and having a high speed and a low speed in said forward direction; and
a control system being coupled to said pump for activating said pump in said low speed and said high speed in said forward direction and in said reverse direction.

VOL 1165 ISS 4 AUG 23 1994 UMI

5,340,211

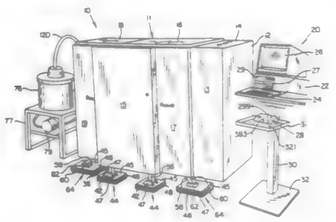
PROGRAMMABLE APPARATUS AND METHOD FOR DELIVERING MICROINGREDIENT FEED ADDITIVES BY WEIGHT

William C. Pratt, Canyon, Tex., assignor to Micro Chemical, Inc., Amarillo, Tex.

Continuation of Ser. No. 57,423, May 4, 1993, abandoned, which is a continuation of Ser. No. 835,037, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 455,242, Dec. 22, 1989, abandoned, which is a division of Ser. No. 311,336, Feb. 16, 1989, Pat. No. 4,889,433, which is a division of Ser. No. 137,501, Dec. 22, 1987, Pat. No. 4,815,042, which is a continuation-in-part of Ser. No. 833,904, Feb. 26, 1986, Pat. No. 4,733,971. This application Nov. 17, 1993, Ser. No. 154,636

Int. Cl.[5] B01F *15/04*

U.S. Cl. 366—141 **53 Claims**



1. A method of dispensing and delivering microingredient feed additives into a livestock feed ration shortly before delivering the feed ration to the livestock for consumption, comprising the steps:

storing separately multiple said additives in concentrate form, including multiple additives in liquid concentrate form and at least one of said multiple additives in solid particulate concentrate form;

dispensing a predetermined amount of said solid particulate concentrate by weight into a liquid carrier;

dispensing predetermined amounts of at least two selected said liquid additive concentrates into a liquid carrier by volume;

intermixing the additive concentrates in the liquid carrier, including both the solid particulate additive concentrate and the liquid additive concentrates, to dilute, disperse, and suspend them and form a liquid carrier-additive slurry;

after forming the slurry, directing the slurry to a receiving station while maintaining the suspension and dispersion of the additives until delivered into a feed ration.

5,340,212

PROPORTIONING RELAY VALVE DISABLED BY FAILED FRONT BRAKING CIRCUIT

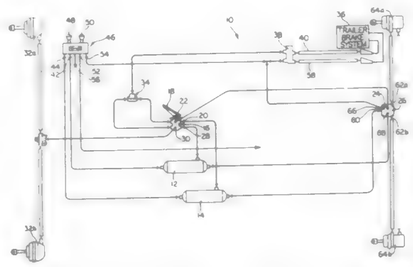
Bruce E. Latvala, Grafton, Ohio, assignor to Allied-Signal Inc., Morristown, N.J.

Filed Mar. 24, 1993, Ser. No. 36,586

Int. Cl.[5] B60T *11/12*

U.S. Cl. 303—7 **16 Claims**

1. Fluid pressure braking system for a tractor-trailer combination vehicle comprising a tractor braking system, a trailer braking systems, and a pressure line communicating the tractor braking system with the trailer braking system, said tractor braking system including separate front wheel and rear wheel braking circuits, an operator-actuated brake valve for simultaneously providing service brake application effecting signals to establish a corresponding pressure level in said braking circuits, a relay valve responsive to the service brake application effecting signal provided by said operator-actuated brake valve for effecting a service brake application in said rear wheel braking circuit, said relay valve including proportioning means responsive to a predetermined pressure condition in said pressure line for establishing a proportioned fluid pressure level in said rear wheel braking circuit upon generation of said brake application effecting signal in the rear wheel braking circuit, and disabling means for disabling said proportioning means, means for communicating the pressure level in said front wheel braking circuit to said disabling means said disabling means being responsive to a decrease in the pressure level in the front wheel braking circuit below a predetermined level to disable said proportioning means to thereby assure that full braking pressure is communicated in the rear wheel braking circuit when the pressure level in the front wheel braking circuit is below the predetermined level.



5,340,213

AGITATION SYSTEM

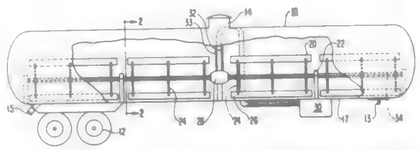
Robert M. Rumph, Sumter, S.C., assignor to Sumter Transport, Inc., Sumter, S.C.

Continuation of Ser. No. 939,424, Sep. 4, 1992, Pat. No. 5,275,487, which is a continuation of Ser. No. 622,104, Dec. 4, 1990, abandoned. This application Dec. 30, 1993, Ser. No. 175,726

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.[5] B01F *15/02, 7/04*

U.S. Cl. 366—196 **22 Claims**



18. An apparatus for transporting a substance, the apparatus comprising:

an elongated tank having a tubular outer wall with opposing distal ends;

a pair of opposing imperforate side walls, each side wall being located on an opposing distal end of the tubular tank wall, the side walls being continuous;

elongated agitation means mounted within the tank, having distal ends, and extending substantially along the entire length of the elongated tank between the side walls for agitating substances within the tank, each of the distal ends of the agitation means being spaced from an adjacent side wall of the tank;

a non-sparking motor for rotating the agitation means, the motor being located within the tank and being at least partially submerged in the substance when the tank is loaded; and

means for transmitting power to the non-sparking motor.

5,340,214

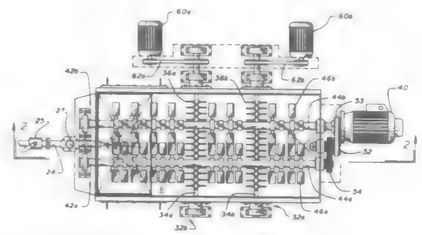
PUG MILL MIXER

John H. Juzwiak, Ivyland, Pa., assignor to Conversion Systems, Inc., Horsham, Pa.

Filed Dec. 2, 1992, Ser. No. 984,907

Int. Cl.[5] B01F *7/04*

U.S. Cl. 366—292 **17 Claims**



1. A mixer comprising:

a container for containing a mixture and having a feed port through which components of said mixture are fed to said container;

at least one pug mill shaft contained within said container and extending in a first direction;

a plurality of pug mill paddles coupled to and radially protruding from said at least one pug mill shaft for mixing said mixture and transporting said mixture in said first direction through a region, defined by the outer periphery of said plurality of pug mill paddles, as said mixture is mixed;

at least one homogenizer shaft contained within said container below said at least one pug mill shaft, disposed within said region, and extending in a second direction transverse to said first direction; and

a plurality of homogenizer mixing elements coupled to and radially protruding from said at least one homogenizer shaft.

5,340,215

RADIANT-ENERGY CLINICAL THERMOMETER

Shigeru Makita; Yoshihiko Sano; Hiroyuki Ota, all of Kyoto, Japan, and Yasushi Nakamura, Irvine, Calif., assignors to OMRON Corporation, Kyoto, Japan

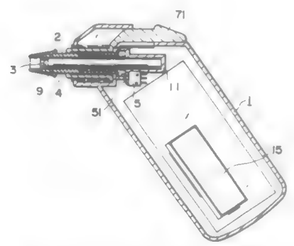
PCT No. PCT/JP91/01775, § 371 Date Jun. 28, 1993, § 102(e) Date Jun. 28, 1993, PCT Pub. No. WO92/11800, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 26, 1991, Ser. No. 78,320

Claims priority, application Japan, Dec. 29, 1990, 2-416036

Int. Cl.[5] G01K *1/08, 1/14;* **A61B** *5/00;* **G01J** *5/02*

U.S. Cl. 374—121 **12 Claims**



7. A radiant-energy clinical thermometer for measuring body temperature comprising:

a support member having a portion projecting outwardly from a case body;

a radiant-temperature sensor attached to a tip of the outwardly projecting portion of said support member;

a cylindrical probe held by said support member in a freely extendible and retractable manner and having an open tip;

a biasing means for biasing said cylindrical probe outwardly and holding the tip of said cylindrical probe at a position at which it covers the periphery of said temperature sensor; and

switch means for sensing that said cylindrical probe has been retracted against a biasing force of said biasing means and generating a trigger signal that starts the measurement of body temperature.

5,340,216

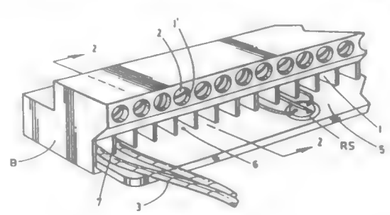
UNIFORM TEMPERATURE REFERENCE APPARATUS FOR USE WITH MODULAR SCREW-TERMINAL BLOCK

Robert E. Goldschmidt, Needham, Mass., assignor to Kaye Instruments, Inc., Bedford, Mass.

Filed Dec. 29, 1992, Ser. No. 997,838

Int. Cl.[5] G01K *7/12;* **H01R** *4/50*

U.S. Cl. 374—182 **10 Claims**



1. A uniform temperature reference block system for connection with input reference wires of a plurality of thermocouples and forming cold junctions therewith, said system comprising:

a metallic modular connector block having a plurality of insulated termination cavities formed therein;

a pair of openings communicating with each said cavity, one of said pair of openings receiving a terminal screw and a second of said pair of openings receiving a bared end of an input reference wire;

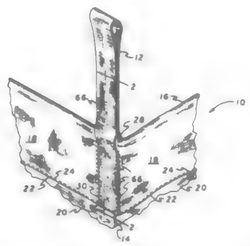
a termination conductor within each said cavity engageable with a corresponding terminal screw at one end and the bared end of and input reference wire at a second end;

an electrically insulated but thermally conductive thermal bridging bar externally extending along the openings of the cavities of said block and having a plurality of projections corresponding to the plurality of pairs of openings, said projections being insertable into said cavities through said second openings, each projection being positioned between one wall of a corresponding cavity and the bared end of an input reference wire;

whereby turning of the termination screw presses the corresponding termination conductor against one side of the bared end of a reference wire to establish compressional electrical connection thereto and to compress an opposite side of the bared end into compressional thermal contact with the corresponding projection of the thermal bridging bar.

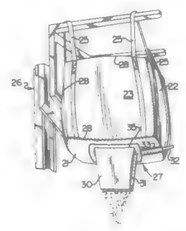
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,217
FLEXIBLE BULK CONTAINER LIFTING MEANS CONSTRUCTION
Herbert B. Rothman, 5965 Hickory Hill Square, Memphis, Tenn. 38115
Continuation-in-part of Ser. No. 693,588, Apr. 30, 1991, abandoned. This application Dec. 31, 1992, Ser. No. 999,714
Int. Cl.[5] B65D *33/10*
U.S. Cl. 383—17 **17 Claims**



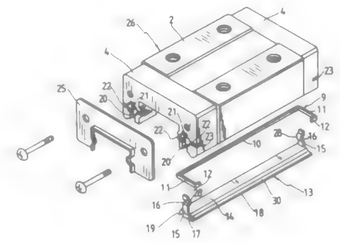
1. A construction for a flexible intermediate bulk container substantially formed of sheet material, said container having an upper peripheral edge with a plurality of lifting loops having first and second legs secured thereto, with said construction consisting essentially of:
said upper peripheral edge of said container folded over upon itself to provide a first layer and a second layer of said sheet material in said upper peripheral edge, and an upper rim defined by said fold; and
said first and second legs of each said lifting loops sandwiching and capturing said first and second layers of said sheet material in said upper peripheral edge therebetween and secured therethrough; whereby
said construction provides sufficient strength for said container to be fully loaded and lifted by a single one of said lifting loops without damage to said material of said container.

5,340,218
BULK STORAGE BAG WITH REMOTELY OPENABLE DISCHARGE SPOUT
Bruce Cuthbertson, Macon, Ga., assignor to Transac, Inc., Macon, Ga.
Filed Mar. 19, 1993, Ser. No. 34,736
Int. Cl.[5] B65D *88/26*
U.S. Cl. 383—67 **33 Claims**



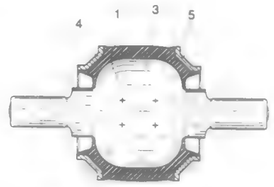
1. A flexible bulk storage bag useful for transporting flowable or friable materials, said bulk storage bag comprising:
a bottom surface panel and side panels;
a discharge opening in said bottom surface panel, said discharge opening being defined by surrounding portions of said bottom surface panel;
a discharge spout connected to said surrounding portions of said bottom surface panel, and normally positioned in a folded closed configuration;
a closure flap normally positioned in a closed position over said discharge opening and across said folded discharge spout, said closure flap being mounted for movement to an open position away from the discharge opening to allow said spout to unfold under the weight of the contents of the bag and permit those contents to discharge;
a pull strap having one end portion connected to said closure flap and having a distal end portion located outwardly away from said discharge opening; and
means carried by the bag for supporting and positioning said distal end portion of said pull strap at a position remote from said discharge opening so that the strap can be grasped and the bag opened from alongside the bag rather than from underneath the bag.

5,340,219
LINEAR MOTION ROLLING GUIDE UNIT
Norimasa Agari, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1993, Ser. No. 170,857
Claims priority, application Japan, Dec. 28, 1992, 4-092955[U]
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—15 **8 Claims**



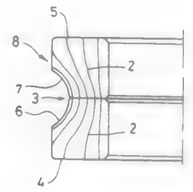
1. A linear motion rolling guide unit comprising:
a track rail having first raceway grooves formed on longitudinally extending side wall surfaces thereof;
a casing slidable relative to the track rail and having second raceway grooves formed at positions facing the first raceway grooves;
end caps mounted to the longitudinal ends of the casing;
rolling elements running through raceways formed between the first raceway grooves and the second raceway grooves;
retainer bands having at both ends thereof locking detents engaging with the end caps, the retainer bands keeping the rolling elements from coming off the raceways; and
under seals arranged on the undersides of the casing and the end caps, the under seals including seal members for sealing between the track rail and the casing and end caps and core members secured to the sealing members;
wherein the end caps are formed with laterally extending first engagement grooves for receiving the retainer bands, with locking grooves for receiving locking detents of the retainer bands, and with vertically extending second engagement grooves intersecting the first engagement grooves;
wherein the core members of the under seals have brackets which extend upwardly at both longitudinal ends of the core members to fit into the second engagement grooves; and
wherein at positions where the retainer bands cross the brackets, the brackets are formed with depressed portions and with raised portions at the back of the depressed portions, and the retainer bands fit in and intersect the depressed portions of the brackets.

5,340,220
PIVOTING BEARING FOR MOUNTING PULL RODS IN MOTOR VEHICLES
Ruediger Sprang, Ostercappeln; Andreas Vossel, Osnabrück; Werner Schmudde, Bersenbrück, and Reinhard Buhl, Bohmte, all of Fed. Rep. of Germany, assignors to Lemforder Metallwaren AG, Lemforde, Fed. Rep. of Germany
Filed Nov. 12, 1992, Ser. No. 975,431
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1991, 4138582
Int. Cl.[5] F16F *1/42*
U.S. Cl. 384—125 **12 Claims**



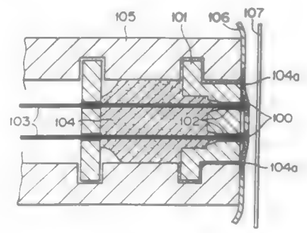
1. A pivot bearing for mounting pull rods in motor vehicles, the pivot bearing comprising:
an inner part;
a housing surrounding said inner part, said housing having a cylindrical inner jacket;
an elastomer body positioned between said inner part and said housing, said elastomer body being connected to said inner part, said elastomer body having an outer circumference defining groove means for forming a sliding surface on said outer circumference when said elastomer body is in an axially compressed state, said sliding surface slidably contacting said cylindrical inner jacket for rotary movement between said inner part and said housing;
first and second plate rings positioned on substantially opposite axial sides of said elastomer body; and
compression means for rotatably connecting said first and second plate rings to said housing and holding said elastomer body in said axially compressed state.

5,340,221
BEARING RING WITH PARALLEL FLOW INTERNAL STRUCTURE
Yoshinobu Yasuda, Kuwana; Fukuhiro Tsushi, Kobe, and Tohru Mayumi, Tsu, all of Japan, assignors to NTN Corporation, Osaka, Japan
Division of Ser. No. 934,850, Aug. 25, 1992, Pat. No. 5,261,159. This application Aug. 10, 1993, Ser. No. 104,448
Claims priority, application Japan, May 25, 1992, 4-132542
Int. Cl.[5] F16C *33/64, 33/60*
U.S. Cl. 384—499 **7 Claims**



1. A bearing ring, having an axis, comprising first and second substantially half bearing ring sub-members joined together along surfaces which are substantially transverse to said axis; wherein each of said sub-members comprises, respectively:
a first and a second inner circumference surface portion on each sub-member, respectively, which together form an inner circumference surface of said bearing ring;
a first and a second outer circumference surface portion on each sub-member, respectively, which together form an outer circumference surface of said bearing ring;
juxtaposed first and second lands on said first and second sub-members, respectively, each being between said first and said second inner circumference surface portions, respectively, and said first and said second outer circumference surface portions respectively;
a first arcuate surface disposed at an intersection between said first land and a first circumference surface portion;
a second arcuate surface disposed at an intersection between said second land and a second circumference portion corresponding to said first circumference surface portion, which arcuate surfaces taken together form a substantially continuous arcuate raceway in said circumference surface of said bearing ring;
a third land on said first sub-member disposed between, and in contact with, said inner circumference surface portion and said outer circumference surface portion of said first sub-member, respectively, which third land is exposed on said bearing ring; and
a fourth land on said second sub-member disposed between, and in contact with, said inner circumference surface and said outer circumference surface portion of said second submember, respectively, which fourth land is exposed on said bearing ring;
wherein the material of said bearing ring comprises an internal structure which, proximate to said outer circumference surfaces, flows in a convex direction relative to the axial direction of said bearing ring, and which, proximate to said arcuate surfaces, flows substantially parallel thereto.

5,340,222
INK RIBBON WITH WIRE LUBRICANT IN A WIRE IMPACT PRINTER
Minoru Tanaka; Shigeki Mizuno, and Masaki Shimomura, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 981,744
Claims priority, application Japan, Nov. 25, 1991, 3-096513; May 21, 1992, 4-128806
Int. Cl.[5] B41J *2/265;* **B41M** *5/00*
U.S. Cl. 400—124.25 **11 Claims**



1. An impact dot printer for recording dots on a recording medium, comprising:
a printing wire having a printing end;
a guide member for supporting the printing wire, the guide member having a lubricant containing an oil component for permitting the printing wire to be easily moved;
an ink ribbon positioned between the printing end of the printing wire and the recording medium, the ink ribbon containing an ink composition comprising a dye and a solvent for the dye; and
a drive means for driving the printing wire in response to a printing signal so that the printing end of the wire impacts

VOL 1165 ISS 4 AG 23 1994 UMI

the ink ribbon to the recording medium thereby recording a dot on the medium,

wherein the solubility of the solvent for the dye in the component of the lubricant is not more than 400 g/100 g of oil.

5,340,223

MULTI-STRIKE INK RIBBON FEED CONTROL

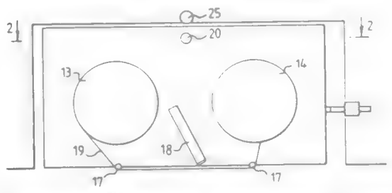
Raymond J. Herbert, Leigh-on-Sea, United Kingdom, assignor to Neopost Limited, Essex, United Kingdom

Filed Dec. 21, 1992, Ser. No. 994,525

Claims priority, application United Kingdom, Dec. 30, 1991, 9127478.7

Int. Cl.[5] B41J *35/28*

U.S. Cl. 400—208 **6 Claims**



1. Multi-strike ink ribbon feed control apparatus including a cassette housing; a supply spool located in said cassette housing; a multi-strike ink ribbon wound on said supply spool; a take-up spool located in said cassette housing to receive multi-strike ink ribbon drawn from the supply spool during printing operations; a magnetized element carried by said cassette housing; printing apparatus receiving said cassette housing and operable to effect the printing operations in which ink is transferred from said multi-strike ink ribbon to articles receiving a print impression; said printing apparatus including sensor means responsive to polarity of magnetization of said magnetized element to generate a first signal in response to said cassette housing and magnetized element having a first orientation relative to said printing apparatus and a second signal in response to said cassette housing and magnetized element having a second reversed orientation with respect to said printing apparatus and including control means operative in response to said first signal to permit operation of said printing apparatus and operative in response to said second signal to inhibit operation of said printing apparatus; said printing apparatus including magnetization means operable to reverse the polarity of magnetization of the magnetized element; and wherein said control means is operative in response to the multi-strike ink ribbon being substantially unwound from the supply spool and wound onto the take-up spool to operate said magnetization means to reverse the polarity of magnetization of said magnetized element.

5,340,224

PUSH-TYPE WRITING INSTRUMENT

Wen-Kuei Chao, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei (10477), Taiwan

Filed Jul. 30, 1993, Ser. No. 99,457

Int. Cl.[5] B43K *21/16, 21/22*

U.S. Cl. 401—65 **1 Claim**

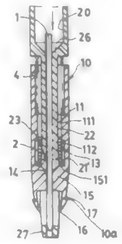
1. A push-type writing instrument comprising in combination:

an outer body comprising a sleeve having an open rearward portion and a tapered forward portion, the outer body having an inner wall provided with an internal annular seat formed therein substantially adjacent to the forward portion of the body; an inner sleeve having a forward section and a rearward section, each section having an outer diameter, the outer diameter of the forward section being reduced with respect to the outer diameter of the rearward section of the inner sleeve, such that the respective sections of the inner sleeve are joined by an intermediate section, the forward section of the inner sleeve further having an inner diameter in which a length of lead is slidably guided therein, the rearward section of the inner sleeve further has an inner diameter adapted for storing a plurality of leads, the intermediate section of the inner sleeve further having a conical opening communicating with the inner diameter of the forward section and the inner diameter of the rearward section of the inner sleeve;

a spring retained within the outer body axially between the internal annular seat thereof and the intermediate section of the inner sleeve, encircling a portion of the forward section of the inner sleeve, and thereby constantly urging the inner sleeve rearwardly of the body;

a cap means for closing the rearward open portion of the outer body and for engaging the rearward section of the inner sleeve; the inner wall of the outer body at the tapered forward portion thereof having a pair of radially opposed, axially extended fingers for frictional engagement with the lead;

the forward section of the inner sleeve having a forwardmost portion formed with a tapering diameter and provided with two opposed longitudinal slots, thereby rendering the forwardmost portion of the forward section of the inner sleeve radially contractable, the radially opposed, axially extended fingers on the tapered forward portion of the inner wall of the outer body extending through the opposed longitudinal slots on the front-most portion of the inner sleeve thereby engaging the lead, the fingers further engaging the inner sleeve thereby stopping



the urging rearwardly by the spring such that the inner sleeve is retained within the outer body;

a resilient tightening ring retained within the tapered forward portion of the outer body, the resilient ring having an inner diameter, the inner diameter being reduced with respect to the tapering diameter of the forwardmost portion of the forward section of the inner sleeve, and the resilient ring being slidably guided over the tapering diameter thereby cooperating with the forwardmost radially contractable position of the inner sleeve to clamp the lead therein;

the tapered forward portion of the outer body having a slit formed between said two fingers, the forward portion of the outer body further having a window formed therein rearwardly of the slit and communicating with the slit whereby the slit provides a contractility to the forward portion of the outer body and facilitates the insertion of the resilient tightening ring through the window whereby the resilient ring may be disposed within the outer body and whereby the inner sleeve may be slidably inserted through the open rearward portion of the outer body and axially within the body such that the forwardmost portion of the inner sleeve formed with a tapering diameter is received and retained within the resilient ring; the improvement which comprises:

said pair of radially opposed fingers having a retaining collar protruding forwardly from said two opposed fingers having a central collar hole for free passing a forwardmost end portion of said inner sleeve through said central collar hole of said retaining collar, each said finger having an arm member protruding forwardly from said finger for connecting said retaining collar to each said finger to forwardly suspend said retaining collar from said two fingers, thereby limiting a lateral separation of the two said fingers for preventing a loss of resilience of the two fingers frictionally holding a lead passing therebetween due to fatigue failure.

5,340,225

CASE FOR STICKS OF PASTY COSMETIC, PHARMACEUTICAL OR LIKE PRODUCTS

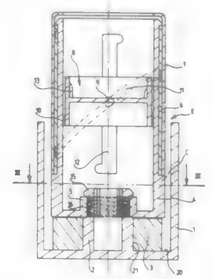
Alain Chevassus, Sceaux, France, assignor to Techpack International - TPI, France

Filed Nov. 30, 1992, Ser. No. 982,866

Claims priority, application France, Nov. 29, 1991, 91 14838

Int. Cl.[5] A45D *40/06*

U.S. Cl. 401—78 **12 Claims**



1. A case for sticks of pasty cosmetic, pharmaceutical or like products, comprising

a mechanism having an outer casing and an inner casing mounted coaxially and relatively rotatably with one another,

a cup carrying said stick of pasty products and mounted axially movably in the inner casing through means co-operating with the outer casing when said outer casing is rotated,

a tubular base having an open end and an end opposite thereto which is closed by a bottom wall,

a tubular coaxial element being provided on said bottom wall extending towards said open end and an annular space being formed between said base and said coaxial tubular element,

said inner casing having a tubular outer wall, a coaxial inner skirt and a perpendicular annular bottom wall connecting one end of said outer wall and one end of said skirt, said inner casing being adapted to be coaxially assembled to said base by axially engaging said skirt around said tubular coaxial element, cogging means being provided which are carried by the free end opposite to said annular bottom wall of said tubular coaxial element and comprising a plurality of elements each formed by a dog protruding radially towards the wall of the base and adapted to be engaged in abutment relationship on the upper face of said skirt to axially lock said inner casing in its position mounted around said tubular coaxial element when engaged in said annular space,

said cogging means comprising a plurality of cogging elements each consisting of a resiliently perpendicularly flexible lug extending axially from said free tubular element end angularly located around the axis thereof and carrying at its end one of said dogs extending radially beyond the outer surface of the lug, and that the inner face of said skirt and the outer face of said tubular element comprise means co-operating with one another and adapted to rotatively secure said tubular end and said skirt, when the latter is axially engaged around said tubular element.

5,340,226

PROCESS FOR THE PRODUCTION OF A PENCIL STICK, A STICK PRODUCED BY THE PROCESS AND A PENCIL HAVING SUCH A STICK

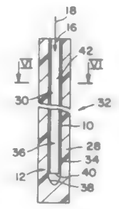
Ulrich Griebel, Altdorf; Claudia Kraska, and Peter Schielein, both of Nuernberg, all of Fed. Rep. of Germany, assignors to Schwan-Stabilo Schwanhäusser GmbH & Co., Nuernberg, Fed. Rep. of Germany

Filed May 21, 1993, Ser. No. 64,452

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1993, 4305369

Int. Cl.[5] B43K *19/00*

U.S. Cl. 401—96 **9 Claims**



1. A process for the production of a pencil comprising the steps: disposing a thin-walled tube portion having first and second opposed open ends into a blind hole of a casing to provide said first open end adjacent said blind hole and said second open end as a free end thereof, pouring a hot liquified stick material within said second open end wherein the stick material solidifies in the tube portion, and wherein the tube portion is made from a sharpenable plastic material which softens when the hot stick material is poured into same and which bears snugly against the inside surface of the casing portion, including the step of introducing the tube portion into the casing portion only to such a degree that an end face of the tube portion which is towards the bottom of the blind hole is at a spacing from the bottom of the blind hole so that said end face of the tube portion forms a retaining shoulder for the stick material.

5,340,227

WATER PROJECTING PUMP ACTION PEN

Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889

Filed Jul. 26, 1993, Ser. No. 97,275

Int. Cl.[5] B43K *29/00*

U.S. Cl. 401—195 **10 Claims**

1. A toy pen capable of projecting a liquid such as water therefrom, which comprises:

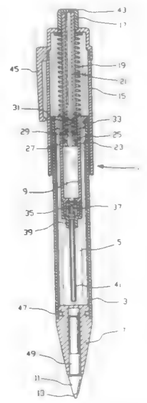
(a) a hollow main housing having an open top and at least one sidewall and an open bottom, and having a general external appearance of a lower portion of a pen, said main housing having a liquid storage reservoir therein;

(b) a hollow upper section connected to the top of said main body and being axially movable relative thereto, said upper section having the general external appearance of an upper portion of a pen, said upper section having a nozzle therein;

(c) a cylinder, and a piston movably located within said cylinder, said cylinder being located within said pen and having an inlet connected to said liquid storage reservoir and an outlet connected to said nozzle, said piston being biased upwardly to a first, rest position which is an upward position, and being movable within said cylinder to a second, downward position, and thus having a down-

VOL 1165 ISS 4 AG 23 1994 UMI

stroke followed by an upstroke, said piston being fixably connected to said upper section such that when said upper section is reciprocated manually relative to said main housing, said piston is similarly reciprocated within said cylinder and when liquid is contained within said liquid storage reservoir, reciprocation of said upper section will result in said piston pumping liquid from said liquid storage reservoir to said cylinder and also from said cylinder through said cylinder outlet so as to project liquid through said nozzle; and,



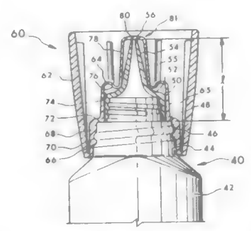
(d) a vent port located on said cylinder and extending from said cylinder to said liquid storage reservoir and being located adjacent to said piston when said piston is positioned in its upward position such that said piston closes said vent, and further when said piston is not in its upward position, said vent port permits air to enter said liquid storage reservoir to reduce resistive suction forces otherwise being created therein when said piston is reciprocated.

5,340,228

SELF-ADJUSTING SOFT SEAL CAP FOR FINE POINT CRAFT PAINT APPLICATORS

Reed N. Wilcox, Littleton; Richard L. George, Englewood, both of Colo., and William H. Lichfield, Corinne, Utah, assignors to The Flagship Group II, Inc., Englewood, Colo.

Filed May 22, 1992, Ser. No. 888,059
Int. Cl.[5] B65D *41/00*
U.S. Cl. 401—262 **1 Claim**



1. A fine tip applicator system for dispensing craft paint, said fine tip applicator system comprises:
a container for holding craft paint, said container including:
(a) attaching means formed on said container; and
(b) a container abutment shoulder formed on said container;
an applicator tip affixed on said container for dispensing said craft paint; said applicator tip including:
(a) an elongated portion spaced from said container abutment shoulder; and
(b) a dispensing end formed on the end of said elongated portion of said applicator tip, said dispensing end having an outside diameter less than 0.060 inches with a thin sidewall having a thickness of less than about 0.015 inches through which the craft paint is dispensed from said container; and
a cap for attachment over said applicator tip onto said container for sealing said applicator tip to minimize air circulation around said applicator tip and to prevent drainage of the craft paint out of said dispensing end; said cap including:
(a) means on said cap for securing said cap to said attaching means of said container;
(b) an interior cavity;
(c) a reduced diametrical portion forming a cap abutment shoulder in said interior cavity for engaging said container abutment shoulder to form a first seal between said cap and said applicator tip when said cap is fully attached over said applicator tip;
(d) an end wall formed in said interior cavity for engaging said dispensing end to form a second seal between said applicator tip and said cap when said cap is fully attached over said applicator tip; and
(e) flexible means formed in said interior cavity between said cap abutment shoulder and said end wall for resiliently yielding, in the range of about 0.005 to 0.015 inches, as said dispensing end of said applicator tip engages said end wall until said container shoulder engages said cap abutment shoulder to form said first seal and said second seal when said cap is attached to said applicator tip; said flexible means compensating for dimensional variations of said cap and said applicator tip so as to form said second seal with minimal damage to said dispensing end,
said flexible means including a second reduced diametrical portion formed in said interior cavity between said cap abutment shoulder and said end wall forming a flexible shoulder which allows said interior cavity to elongate (1) as said dispensing end of said applicator tip engages said cap end wall and (2) as a side surface on said applicator tip engages said flexible shoulder to compensate for dimensional variations in the length of said applicator tip to ensure said container abutment shoulder engages said cap abutment shoulder without damaging said dispensing end, said side surface
forming a third seal with said flexible shoulder;
said means for securing on said cap comprises a threaded portion and said attaching means on said container comprises a threaded portion for mating engagement so as to form a fourth seal.

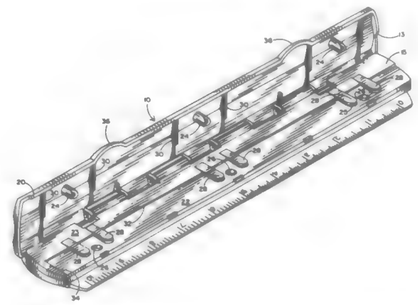
5,340,229

COMBINED MULTI-HOLE PUNCH AND RULER

Wayne Schwartzman, Chicago, Ill., assignor to McGill Incorporated, Marengo, Ill.

Filed Mar. 19, 1993, Ser. No. 34,405
Int. Cl.[5] B26F *1/34*
U.S. Cl. 402—4 **10 Claims**

1. A combined paper punch and ruler comprising:
a ruler having a receptacle for receiving a lower portion of a punch and for collecting punched waste paper;
a punch having a unitary upper portion having a plurality of integral punch members, said punch also having a unitary lower portion having a plurality of integral punch holes positioned for receiving respective said punch members;
said lower portion and said ruler having means for releasably securing said punch to said receptacle of said ruler for selective emptying of said receptacle of said punched waste paper;
said upper and lower portions being hingedly attached to one another for insertion of at least one paper sheet there-



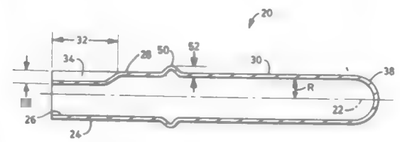
between for being punched and for removal of said sheet thereafter;
said ruler having at least one hole for being attached to a ring of a ring binder.

5,340,230

SEAMLESS WIRE CONNECTOR

John R. Anderson, Sandy Hook, Conn., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Dec. 30, 1992, Ser. No. 998,693
Int. Cl.[5] H01R *4/00*
U.S. Cl. 403—300 **19 Claims**



1. A connector comprising an elongated seamless tubular member extending along a longitudinal axis and having an outer surface and an inner surface and a first segment and an opposite second segment, said first segment having a length which is deformable and comprises a first groove which extends in the direction of said longitudinal axis, said first groove being indented in said outer surface a distance towards said longitudinal axis.

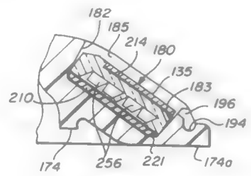
5,340,231

PAVEMENT MARKER

Richard M. Steere, Itasca, and Sidney A. Heenan, Park Ridge, both of Ill., assignors to Stimsonite Corporation, Niles, Ill.

Filed Dec. 10, 1991, Ser. No. 809,645
Int. Cl.[5] E01F *9/06*
U.S. Cl. 404—14 **17 Claims**

1. A retroreflective pavement marker comprising:
a generally hollow housing formed of a thermoplastic material and including a peripheral bottom wall surface adapted to adhesively engage an associated roadway surface;
said housing having at least one inclined wall;
said inclined wall having at least one recess formed therein;
retroreflective lens means fixedly secured to said inclined wall within said recess, said lens means comprising
(a) a lens element having a relatively planar front face, a rear face, and a plurality of cube corner retroreflective elements protruding from said rear face, said retroreflective cube corner elements being adapted to provide a signal visible to an oncoming vehicle; and
(b) wall means disposed rearwardly of said rear face of said lens element, said wall means being adapted to define a plurality of independent cells, with each aid cell having at least one said retroreflective cube corner element therein, said wall means comprising a plurality of walls contained within the periphery of said inclined wall and dividing said rear face of said lens element into said plurality of cells;



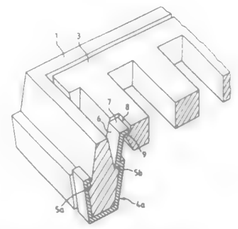
support means on said housing adapted to provide structural support to said housing and to said lens means, so as to minimize damage thereto caused by the impact of vehicle tires on the marker; and
means associated with said support means for defining a relatively continuous bottom surface for said housing thereby to facilitate securement and retention of said marker to the associated roadway surface.

5,340,232

MANHOLE COVER

Hansruedi Spiess, Delémont, and Francois Galvanetto, Alle, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

PCT No. PCT/CH90/00148, § 371 Date Apr. 17, 1991, § 102(e) Date Apr. 17, 1991, PCT Pub. No. WO91/00942, PCT Pub. Date Jan. 24, 1991
PCT Filed Jun. 18, 1990, Ser. No. 651,400
Claims priority, application Switzerland, Jul. 11, 1989, 2584/89-9
Int. Cl.[5] E05C *19/06*
U.S. Cl. 404—25 **21 Claims**



1. A manhole cover which comprises:
(a) a frame having a lower-lying supporting shoulder at least partially surrounding the frame;
(b) a cover dimensioned and configured to receive into the frame; and
(c) a securing element dimensioned and configured to maintain the cover with the frame, the securing element including:
(i) a resilient portion extending from the frame; and
(ii) an engaging portion depending from the resilient portion for releasibly engaging the cover to inhibit relative movement of the cover from the frame.

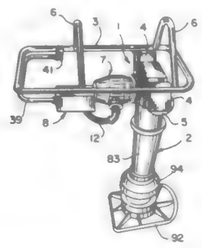
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,233

PNEUMATICALLY OPERATED RAMMER

Robert M. Motl, West Bend, Wis., assignor to M-B-W Inc., Slinger, Wis.

Filed Oct. 7, 1992, Ser. No. 957,729
Int. Cl.[5] E01C *19/34*
U.S. Cl. 404—133.05 12 Claims



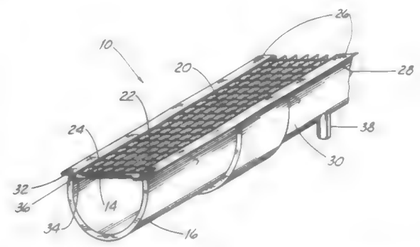
1. A pneumatically operated percussion apparatus for compacting soil and other materials, comprising a supporting structure, a percussion unit mounted on the supporting structure and including a percussion member disposed to engage the soil, a pneumatic motor mounted on the supporting structure and having an output shaft, air supply conduit means for supplying air under pressure to said motor, manually operated valve means mounted on the supporting structure and disposed to open and close said air supply conduit means, centrifugal clutch means interconnecting said output shaft and said percussion unit, and speed governing means interconnecting said valve means and said motor for controlling the supply of air to said motor to obtain a substantially constant speed of rotation for said output shaft.

5,340,234

TRENCH DRAIN SYSTEM AND INSTALLATION METHOD

Anthony P. Rossi, 3331 Green Meadows La., Racine, Wis. 53405, and Daniel W. Rosenberg, 5904 Middle Rd., Racine, Wis. 53402

Filed Jul. 30, 1992, Ser. No. 923,778
Int. Cl.[5] E02B *5/00*
U.S. Cl. 405—48 20 Claims



1. In a trench drain system of the type for non-molding installation in a trench in and below the level of a floor and having removable floor-level grate members for admitting liquids to the system, the improvement comprising:

a plurality of preformed substantially rigid partially-circumferenced open-top homogeneous polymeric pipe members, each adjacent pair of such pipe members having an adjoining pair of partially-circumferenced end edges fused together to form a continuous integral fluid-tight drain pipe channel with a top opening having two opposed elongate edges extending along the length of such drain pipe channel to define a substantially open channel; and

support/anchor means secured along each of the edges to support the grate members and anchor the pipe members with respect to the floor;

whereby drain system form and integrity are enhanced and ease of installation and system adaptability provided.

5,340,235

PROCESS FOR MAKING CEMENTITIOUS MINE BACKFILL IN A SALT ENVIRONMENT USING SOLID WASTE MATERIALS

Larry D. Milliken, Factoryville, Pa., assignor to Akzo Nobel, Inc., Netherlands

Filed Jul. 31, 1992, Ser. No. 923,038
Int. Cl.[5] C04B *7/02*
U.S. Cl. 405—128 18 Claims

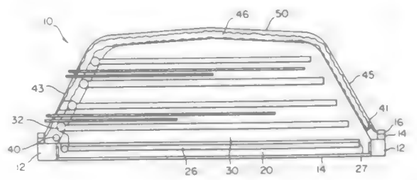
1. A method of hydraulically backfilling an empty mined salt cavity which comprises combining at least one pozzolanically active waste material with a uniform grain size reduced to less than about 65 mesh, with an effective amount of a cementing agent which comprises an alkaline earth metal hydroxide or alkaline earth metal oxide and brine to form a pozzolanic mixture, wherein the reactive proportions of said pozzolanically active waste material, cementing agent, and brine are sufficient for reaction under atmospheric conditions in said salt cavity to form a stable, low porosity, load bearing pozzolanic cement, with the proviso that said pozzolanic mixture does not contain a setting-retarder; and hydraulically depositing said pozzolanic mixture in the empty salt cavity.

5,340,236

BURN CHAMBER FOR USE IN A SYSTEM FOR HEATED AIR EXTRACTION OF CONTAMINANTS FROM A SOIL STACK

Maynard D. Ikenberry, Olympia, Wash., assignor to HAVE Limited Partnership, Tumwater, Wash.

Contribution-in-part of Ser. No. 766,044, Sep. 26, 1991, Pat. No. 5,213,455. This application Mar. 11, 1993, Ser. No. 29,687
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] B09B *3/00*
U.S. Cl. 405—128 7 Claims



1. A burn chamber for use in a system for remediation of contaminated soil which has been removed from a soil site, the remediation system including a recirculating system for heating air and destroying contaminants present in contaminated vapors which have been released from a soil stack formed from the removed soil, in response to the heated air being moved into the soil stack, the burn chamber comprising:

a burn chamber housing;

an inlet for contaminate-containing vapors at a rear portion of the burn chamber housing;

an outlet at a front portion of the burn chamber housing;

a pair of burners positioned in sidewalls of the burn chamber housing on opposite sides of the inlet, each burner producing flame areas which extend into the interior of the burn chamber;

a first pair of grill members extending interiorly of the burn chamber housing on both sides of the inlet, angled toward each other such that the vapors from the inlet are directed through the first pair of grill members into the flame areas;

a baffle element extending across a substantial portion of the burn chamber housing near a front end thereof;

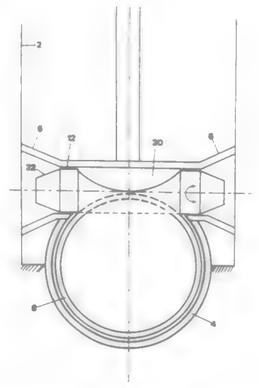
a second pair of grill members extending in the burn chamber housing between the flame areas, respectively, and the baffle element, such that vapors moving through the flame areas are directed by the baffle slightly rearwardly through the second pair of grill members and then around opposing ends of the baffle member and out said outlet.

5,340,237

GUIDE-POST INTERCHANGEABILITY MECHANISM OPERATED BY REMOTELY CONTROLLED VEHICLE

Ney Robinson S. d. Reis, and Fábio K. P. Conti, both of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A., Rio de Janeiro, Brazil

Filed Nov. 4, 1992, Ser. No. 971,240
Claims priority, application Brazil, Nov. 5, 1991, PI 9104817
Int. Cl.[5] E02D *5/62;* B63C *11/10*
U.S. Cl. 405—169 7 Claims



1. A remotely operated mechanism for the interchanging of guide posts by a remotely operated vehicle, said mechanism comprising base beam axially supporting a guide post socket, a guide cone laterally fixed in the side of the base beam and tangential to and entering said guide post socket and creating an operating channel inside the guide post socket, said guide post being provided with a peripheral channel proximate to a bottom of the guide post and said channel axially receiving a locking pin thereby locking the guide post axially within said guide post socket, wherein said guide post socket is provided with two guide cones on opposite sides thereof tangential to the socket and to the guide post when received therein and wherein said guide cones are arranged on opposite sides of said base beam.

5,340,238

METHOD AND APPARATUS FOR TESTING ABOVE GROUND LIQUID STORAGE TANKS FOR LEAKS

John E. Tuma, Friendswood, Tex., assignor to Tanknology Corporation International, Houston, Tex.

Continuation-in-part of Ser. No. 925,372, Aug. 4, 1992. This application Dec. 17, 1992, Ser. No. 992,422
Int. Cl.[5] F16L *1/00;* E21B *7/04;* B09B *1/00*
U.S. Cl. 405—184 8 Claims

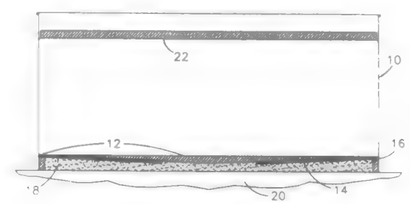
1. A method for creating a horizontal bore under a liquid storage tank comprising the steps of:

(a) attaching a section of pipe to a pilot to form a pipe and pilot assembly to be forced into the strata under the tank;

(b) forcing the pipe and pilot assembly into the strata under the tank by applying an axial force to the end of the pipe and pilot assembly opposite the pilot;

(c) causing the pipe and pilot assembly to tend upwardly as the pipe and pilot assembly is driven into the strata under the tank so as to position the pipe in close proximity to the underside of the bottom of the tank; and

(d) protecting the bottom of the tank from punctures while the pipe and pilot assembly is being driven into the strata.

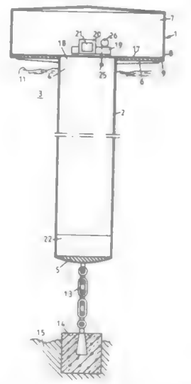


5,340,239

INSTALLATION FOR CARRYING OUT EXPERIMENTS UNDER THE CONDITION OF WEIGHTLESSNESS OR MICROGRAVITY

Berk van den, Rychenbergstrasse 203, CH 8404-Winterthur, Switzerland

Filed Sep. 21, 1992, Ser. No. 948,085
Claims priority, application Switzerland, Sep. 26, 1991, 2848/91
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—224 14 Claims



1. An installation for carrying out experiments under the condition of weightlessness or microgravity, comprising:

a drop tube having an open end and an end closed by a bottom;

said drop tube being immersed in an earth water its bottom being in the water;

said drop tube being anchored to the floor of said earth water to keep said drop tube in a perpendicular position;

supporting means to support a drop capsule containing an experimental set-up destined to be exposed to the condition of weightlessness;

means to release said drop capsule from said supporting means to start its free fall down said drop tube;

catching means in said drop tube to catch said drop capsule at the end of its free fall; and

VOL 1165 ISS 4 AG 23 1994 UMI

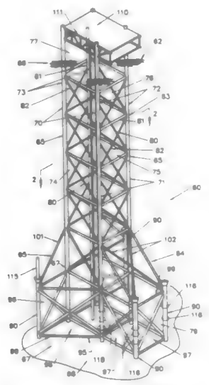
lifting means adapted to lift said drop capsule back to said open end of said drop tube.

5,340,240

OFFSHORE SUPPORT STRUCTURE

Samuel C. Carruba, Houston, Tex., assignor to CBS Engineering, Inc., Houston, Tex.

Filed Apr. 7, 1993, Ser. No. 44,216
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] E02B *17/02*
U.S. Cl. 405—227 **9 Claims**



1. An offshore support structure for use with at least one well located in a body of water, comprising:

a central support structure having four tubular legs, each leg having upper and lower ends, the legs all having a length greater than the depth of the body of water, and the upper ends of each of the legs are adapted to be disposed above the surface of the body of water, each of the legs being disposed substantially parallel with each other; each leg and each leg adjacent thereto forming a set of legs, each set of legs defining an outer wall surface of the central support structure, the central support structure having four outer wall surfaces, all of the outer wall surfaces lying in planes which have longitudinal axes which are all substantially parallel with each other; and a first set of brace members interconnecting the four legs;

three outrigger support structures, each outrigger support structure having at least one tubular leg disposed substantially parallel to the tubular legs of the central support structure, each leg of each outrigger support structure having a length which is substantially less than the depth of the body of water; a second set of brace members connecting the at least one leg of each outrigger support structure in a spaced relationship from the lower ends of a set of tubular legs of the central support structure; at least one pile associated with each of the legs of each outrigger support structure; the legs of each outrigger support structure and a set of legs of the central support structure associated therewith defining a plurality of outrigger support structure outer wall surfaces;

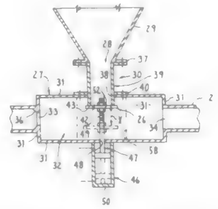
a platform structure secured to the upper ends of each leg of the central support structure; and the central support structure having a base area defined by the area bounded by the four outer wall surfaces of the central support structure, each of the three outrigger support structures having a base area defined by the area disposed within the outrigger support structure outer wall surfaces, the total base area of the three outrigger support structures being substantially greater than the base area of the central support structure.

5,340,241

DEVICE FOR METERING AND ENTRAINING A PRODUCT INTO A GAS STREAM

Charles W. Thiele, Kalamazoo; Tunis J. Willemstyn, Richland; Douglas J. Arndt, and John J. McMullen, both of Kalamazoo, all of Mich., assignors to Motan, Inc., Plainwell, Mich.

Continuation-in-part of Ser. No. 830,415, Feb. 4, 1992, abandoned. This application Sep. 29, 1992, Ser. No. 953,309
Int. Cl.[5] B65G *53/46*
U.S. Cl. 406—132 **17 Claims**



1. In a conveying system for intermittently conveying a dry, solid particulate product through a conduit system interconnecting a product supply container to a desired destination, the conduit system having a gas inlet end for facilitating the entry of a gas stream into the conduit system and a gas outlet end for facilitating the exit of the gas stream from the conduit system, and a gas pumping means for pumping the gas stream through the conduit system, the improvement comprising an intermittently operated device for metering and entraining a measured quantity of the product with a gas stream moving in the conduit system, said device including:

a hollow housing having first means defining a gas inlet opening to an interior of said housing and connected in fluid communication with the gas inlet end, and second means defining a gas and product outlet opening from the interior of said housing, said gas inlet opening and said gas product outlet opening being series connected to the conduit system so that a gas stream enters the housing through said gas inlet opening from the gas inlet end and exits through said gas and product outlet opening, said gas inlet opening including inlet means of an appropriate size for causing the gas stream to move between said gas inlet opening and said gas and product outlet opening through said interior of said housing at a sufficient pick-up velocity to pick up and entrain product in said interior of said housing in the gas stream;

third means defining a product receiving opening into said interior of said housing intermediate said gas inlet opening and said gas and product outlet opening;

connection means for facilitating a connection of said product receiving opening to the product supply container to facilitate a supply of the product to said interior of said housing through said product receiving opening;

normally closed gate means oriented within said housing so as to directly intersect a path of the gas stream, and drive means for moving said gate means between a closed position blocking said product receiving opening to the interior of said housing and an opened position spaced from said product receiving opening for allowing the product to enter the interior of said housing and a flow of the gas stream between said product receiving opening and said gate means to thereby cause the gas stream to pick up and entrain product oriented between said product receiving opening and said gate means and move the product toward and out of said gas and product outlet opening;

control means for intermittently operating said drive means and said gate means to said opened position for a selected interval of time; and

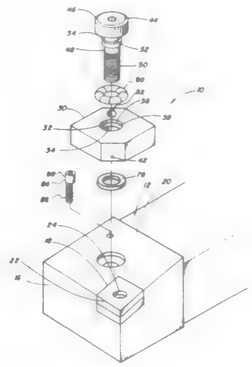
adjustment means for facilitating an adjustment of the spacing between said gate means and said product receiving opening to a set dimension that said gate means always moves to when said gate means is in said opened position to facilitate a controlled metering of the volume of product entering the interior of said housing and assuring a removing of product from a region between said product receiving opening and said gate means by the gas stream, whereby the gas stream entering said gas inlet opening picks up and entrains the product in said region and exits said housing through said gas and product outlet opening, said control means effecting a movement of said gate means to said closed position thereof at an end of said selected interval of time to halt the supply of product to said interior of said housing while said gas pumping means continues operating to enable the gas stream to purge the housing and the conduit system of product between said housing and the desired location.

5,340,242

CHIP-BREAKING TOOLHOLDER WITH ADJUSTABLE ORIFICE CAP

William D. Armbrust, Cary, and Randall E. Deemer, Wake Forest, both of N.C., assignors to Kennametal Inc., Latrobe, Pa.

Filed Sep. 25, 1992, Ser. No. 766,499
Int. Cl.[5] B23B *27/10, 27/22*
U.S. Cl. 407—11 **13 Claims**



1. A toolholder comprising:

a) a support bar having an insert seat for receiving a cutting insert, said insert including a cutting edge for engaging a workpiece and removing a chip therefrom;

b) fluid chip-breaking means for directing a high velocity, fluid stream at the chip being removed from the workpiece to break the chip into small segments, wherein chip breaking means includes an orifice cap mounted on the support bar and including a discharge orifice for directing the fluid stream; and

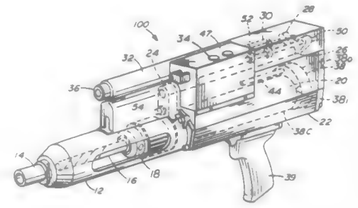
c) adjusting means for adjusting the direction of the fluid stream, wherein said adjusting means includes a pivot member having an axis therethrough about which the orifice cap rotates and includes means for rotating the orifice cap about the pivot member, said means for rotating being in spaced relation to said pivot member axis.

5,340,243

AIRFEED PECK DRILL CONFIGURATION

Edwin J. Deremo, Lexington, S.C., assignor to Cooper Industries, Inc., Houston, Tex.

Division of Ser. No. 873,639, Apr. 23, 1992, abandoned, which is a continuation of Ser. No. 114,954, Oct. 30, 1987, abandoned. This application Jul. 2, 1992, Ser. No. 907,603
Int. Cl.[5] B23B *47/22*
U.S. Cl. 408—17 **4 Claims**



1. A quill for an air feed peck drill, comprising:

a cylindrical body having a first end and a second end;

a piston disposed on said first end, said piston having a greater circumference than said body;

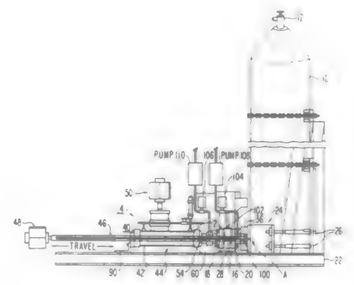
said body interconnected to said piston in an offset position, whereby a portion of the outer circumferential surface of said body is closer to the outer circumferential surface of said piston than other portions of said outer circumferential surface of said body.

5,340,244

TAPPING ASSEMBLY

Alan M. Hawley, Ocklawaha, and Charles C. Mattern, Winter Garden, both of Fla., assignors to Earth Resources Corporation, Ocoee, Fla.

Filed Sep. 30, 1992, Ser. No. 953,931
Int. Cl.[5] B23B *41/08*
U.S. Cl. 408—87 **12 Claims**



1. A tapping assembly comprising:

(a) a main valve having open and closed positions, said valve being configured to permit a drill bit to pass through said valve with said valve in said open position;

(b) a support adapted to hold said valve adjacent a unit to be tapped with said valve aligned to permit a drill bit passed through said valve to engage said unit;

(c) a drill, including a housing and a chuck for holding a drill bit in a position extending from said housing; and

(d) a coupler, including a drill bit passageway and including both left-hand threads and right-hand threads to provide, by rotation of said coupler in one direction, connection of said drill housing to said main valve with said drill bit passageway aligned to permit a drill bit extending from

VOL 1165 ISS 4 AG 23 1994 UMI

said housing to pass through said valve and engage said unit and to provide, by rotation of said coupler in the opposite direction, disconnection of said drill housing from said valve to permit replacement of said drill bit.

5,340,245

DEVICE ON PORTABLE MACHINE TOOLS

Hans Bloechle, Stuttgart, and Karl Wanner, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

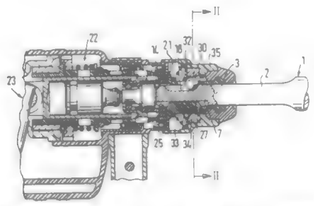
PCT No. PCT/DE91/00787, § 371 Date Apr. 7, 1993, § 102(e) Date Apr. 7, 1993, PCT Pub. No. WO92/06823, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 8, 1991, Ser. No. 39,227

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1990, 4032739; Oct. 16, 1990, 4032796

Int. Cl.[5] B23B *45/16, 51/02*

U.S. Cl. 408—226 **17 Claims**



1. A portable machine tool for drilling or percussive appliances, comprising a tool performing at least one of a rotary movement and a percussive movement and having a shank and three rotary driving grooves which are open toward an end of said shank; means forming a location hole with inwardly projecting rotary driving elements having substantially flat flanks and engaging in said grooves of said tool, said rotary driving elements being arranged in a rotationally symmetrical fashion, having equal width and being provided with flanks which extend substantially parallel to one another, said rotary driving elements being fixed immovably in said location hole.

5,340,246

INDEXABLE INSERT DRILL AND AN INSERT WITH A SYMMETRICAL DRILL POINT AND CUTTING EDGES OF DIFFERENT LENGTHS

Tommy Tukala, Sandviken, Sweden, assignor to Sandvik AB, Sandviken, Sweden

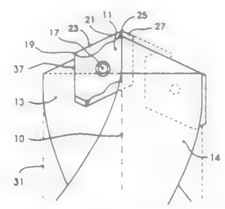
PCT No. PCT/SE92/00013, § 371 Date Sep. 10, 1993, § 102(e) Date Sep. 10, 1993, PCT Pub. No. WO92/12817, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 13, 1992, Ser. No. 94,156

Claims priority, application Sweden, Jan. 28, 1991, 9100246

Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—233 **10 Claims**



1. Drill with at least two indexable cutting inserts, comprising one center insert and one peripheral insert, wherein the center insert has a drill point on the axis of the drill, said drill point being symmetric with respect to the flat sides of the insert and has a transverse edge with is continuous with one short edge at a side of the insert and one long edge at another side of the insert.

5,340,247

WORKCENTRE AND SUPPORTS

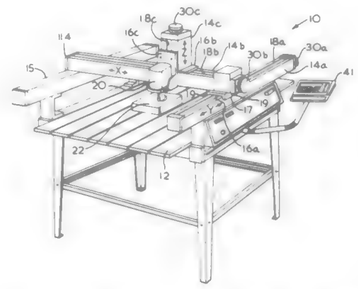
Giuseppe Cuneo, Calolzio Corte, and Sergio Bonacina, Galbiate, both of Italy, assignors to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 26,349, Mar. 4, 1993. This application Oct. 18, 1993, Ser. No. 136,886

Claims priority, application United Kingdom, Mar. 5, 1992, 9204769

Int. Cl.[5] B23B *3/00;* **B27B** *1/00;* **B23Q** *1/00*

U.S. Cl. 409—202 **13 Claims**



1. A workcentre comprising first, second and third linear elements each arranged in substantially orthoganol first, second and third directions respectively, each element mounting a carriage for movement along said element, a worktable lying in a plane parallel to said first and second directions, the first element being fixed with respect to said worktable, the second element being fixed to the carriage of the first element, one end of said second element being supported against movement in said third direction, said third element being mounted on the carriage of said second element and the carriage of said third element carrying a tool for performing cutting operations on a workpiece supported on said worktable, said second element being adapted to be mounted on its carriage in one of two positions, in a first of which positions said carriage of the second element is between said one end and said carriage of the first element and in the second of which positions said carriage of the first element is between said one end and said carriage of the second element.

5,340,248

MECHANICAL CHUCK WITH CLAMP FOR PULLING TOOL SHANK TO TIGHTLY CLAMPED POSITION

Bernhard Enbergs, Dorsten, Fed. Rep. of Germany, assignor to Sandvik AB, Sandviken, Sweden

Filed Aug. 21, 1992, Ser. No. 933,103

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1991, 4127661; Jul. 23, 1992, 4224296

Int. Cl.[5] B23C *9/00;* **B23B** *31/04*

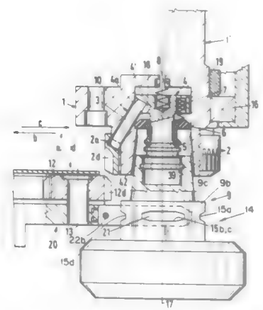
U.S. Cl. 409—233 **25 Claims**

1. A mechanical chuck for a shank of a tool or toolholder, comprising:

a receiver having a hollow portion terminating in a axially forwardly open socket in which the shank is positionable, and an external screw thread surrounding said socket,

a pull rod mounted to said receiver for longitudinal front-to-rear reciprocation along said axis in said hollow portion, a front portion of said pull rod including connector means connectible with the shank,

a plurality of pins slidably mounted for front-to-rear movement in borings of said receiver, rear ends of said pins being engageable with a rear portion of said pull rod so that rearward movement of said pins is transmitted to said pull rod, and a nut threadably mounted on said external screw thread and being engageable with front ends of said



pins such that rotation of said nut in one direction produces rearward movement of said nut which is transmitted to said pull rod by said pins so that said pull rod pulls the tool shank tightly into said socket.

5,340,249

WORK TRANSPORTATION APPARATUS AND WORK TRANSPORTATION METHOD

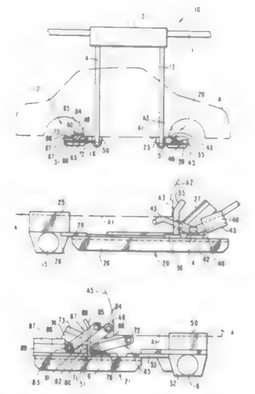
Yoshiki Nakamura, Kurashiki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 953,465

Claims priority, application Japan, Oct. 3, 1991, 3-080563[U]

Int. Cl.[5] B60P *1/00*

U.S. Cl. 410—78 **13 Claims**



1. An apparatus for use in transporting workpieces of varied sizes, comprising:

a horizontally arranged first base member;

a first fixed stop mounted on said first base member and permanently extending upwardly from said first base member;

a first retractable stop member mounted on said first base member and including means allowing the first retractable stop member to move between a first position in which said first retractable stop member extends upwardly from said first base member, and a second retracted position in which said first retractable stop member is retracted downwardly towards said first base member;

means biasing said first retractable stop member towards said extended first position;

said first retractable stop member providing an abutment for a workpiece of an appropriate size, and automatically being moved to said retracted second position by the placement of a workpiece of a larger size on said first base member; and

said first fixed stop and said first retractable stop member being disposed in juxtaposition, on said first base member.

5,340,250

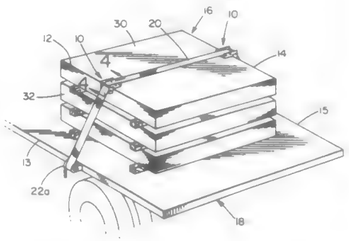
APPARATUS FOR SECURING A LOAD TO A VEHICLE

Jon D. Meriwether, Follansbee, W. Va., and Milton J. Gelder, Richmond, Ohio, assignors to The Louis Berkman Company, Steubenville, Ohio

Continuation of Ser. No. 870,931, Apr. 20, 1992, Pat. No. 5,226,764. This application Jun. 28, 1993, Ser. No. 82,395

Int. Cl.[5] B60P *7/10, 7/12;* **B61D** *45/00*

U.S. Cl. 410—99 **5 Claims**



1. A strap corner for tying a load by strap means comprising:

a lower support means for contacting said load, and opposed channel means for retaining said strap means, and retaining means for holding said strap means within said channel means, said retaining means forming an opening between said channel means and said retaining means, and including means for adjusting said opening size for accommodating different size strap means, said means for adjusting said opening size including elongated retainer slots for slidably mounting said retaining means.

5,340,251

SELF-ATTACHING FASTENER AND INSTALLATION DIE

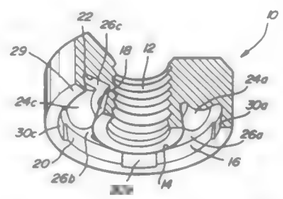
Takao Takahashi, Machida, and Hiroshi Takehara, Hachioji, both of Japan, assignors to Multifastener Corporation, Detroit, Mich.

Filed Jan. 29, 1993, Ser. No. 11,439

Claims priority, application Japan, Jan. 31, 1992, 4-045997; Jan. 31, 1992, 4-045998

Int. Cl.[5] F16B *37/04;* **B23P** *11/00*

U.S. Cl. 411—179 **34 Claims**



1. A self-clinching nut fastener for attachment to a plasti-

VOL 1165 ISS 4 AG 23 1994 UMI

cally deformable metal panel, said fastener having a central pilot portion, a flange portion surrounding said pilot portion having a generally flat annular panel-supporting end face, and an annular groove defined in said flange end face surrounding said pilot, said groove having opposed side walls and a bottom wall, at least one of said groove side walls inclined toward said opposed side wall defining a restricted opening to said groove adjacent said flange end face, and said groove bottom wall having a plurality of spaced convex annular protuberances extending at least partially around said pilot spaced from said inclined groove side wall, said protuberances directing panel metal beneath said inclined groove side wall as said panel is deformed in said groove against said bottom wall as said nut fastener is attached to said panel.

5,340,252

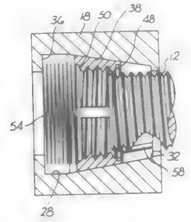
QUICK CONNECT FASTENER

Bruce Weddendorf, Decatur, Ala., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 1, 1993, Ser. No. 69,481

Int. Cl.[5] F16B *39/36*

U.S. Cl. 411—267 **20 Claims**



1. A quick connect fastener for attachment to an axially elongated externally threaded member by axially thrusting the fastener thereon, said fastener comprising a casing having a passageway extending therethrough along an axis from a first end to a second end, said passageway including a frusto-conical surface disposed about said axis spaced intermediate said ends, said surface having a small diameter end adjacent said first end and a larger diameter end adjacent said second end, a stop formed in said casing transversely to said axis intermediate said first end and said small diameter end, a cavity formed in said passageway intermediate said second end and said larger diameter end, a core comprising a plurality of shells having an axially shorter length than said frusto-conical surface disposed within said passageway, said shells each forming a circumferential portion of said core, said shells having a threaded passageway for receiving said externally threaded member and having an outer surface corresponding to said frusto-conical surface, means within said threaded passageway for resiliently urging said shells radially outwardly tending to separate said shells and force said shells into engagement with said frusto-conical surface and toward the larger diameter end, resilient means disposed within said cavity for urging said shells toward said small diameter end and into abutment with said stop, whereby said externally threaded member may be inserted through said first end into said threaded passageway against the urging of said resilient means to force said shells toward the larger diameter end of said passageway and permit said member and said shells to threadedly engage, and means for rotatably coupling said shells and said casing, whereby rotation of said casing may tighten and secure said shells to said member and force said shells against said stop.

5,340,253

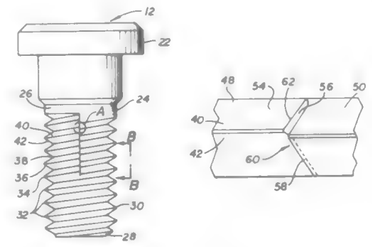
FASTENER WITH THREAD LOCK

Edgar L. Stencel, Alta Loma, Calif., assignor to Monogram Aerospace Fasteners, Los Angeles, Calif.

Filed Dec. 14, 1992, Ser. No. 990,040

Int. Cl.[5] F16B *39/30*

U.S. Cl. 411—310 **20 Claims**



1. A threaded fastener, comprising:

a shank having a bearing end and a lad end, the lead end being the end of the shank that is threaded first;

a helical thread extending between said ends, the thread having a crest and a root, the roots of axially adjacent revolutions of the thread forming a thread groove; and

said helical thread having a portion that, before installing the fastener, is shifted toward the bearing end of the shank resulting in a discontinuity of the thread, the shifted portion of thread having a buttress end that is fully formed from crest to root at the discontinuity.

5,340,254

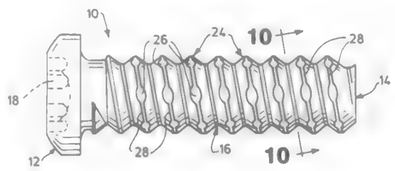
THREAD FORMING SCREW FOR FORMING AN INTERNAL THREAD IN A LOW DUCTILITY MATERIAL

Paul E. Hertel, Beloit, Wis., and James R. Schneider, Belvidere, Ill., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 829,701, Jan. 31, 1992, abandoned. This application Dec. 8, 1992, Ser. No. 986,909

Int. Cl.[5] F16B *39/30*

U.S. Cl. 411—311 **16 Claims**



1. A self tapping thread forming screw for cold forming internal threads in a workplace composed of a low ductility material, said thread forming screw comprising:

a shank;

an external thread on said shank;

an entering end portion of said thread;

a pair of flank surfaces extending away from said shank, said pair of flank surfaces defining a flank angle therebetween substantially within the range of 90° to 120°;

a crest flat extending between said pair of flank surfaces;

a crest area of said thread being defined by a perpendicularly bounded area between said crest flat and said shank;

a flank area of said thread associated with each of said pair of flank surfaces, each of said flank areas being defined by a corresponding one of said flank surfaces, said shank, and said crest area abutting said flank area; and

a height dimension of said thread perpendicularly measured between said shank and said crest flat for providing a combined flank area which is greater than said crest area for a given thread engagement substantially within the range of 17% to 100% of the height dimension of said thread in said workpiece material to minimize radial crushing and shearing forces by said flank surfaces on said workpiece material and to displace a greater portion of material perpendicular to said flank surfaces with lower contact pressure between said crest flat and said workpiece material.

5,340,255

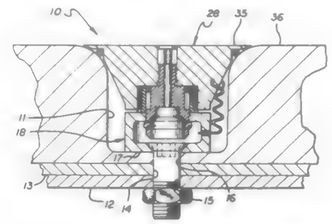
PLUG LOCKING ASSEMBLY

John A. Duran, Glendora, Calif., assignor to Avibank Mfg., Inc., Burbank, Calif.

Filed Apr. 26, 1993, Ser. No. 53,184

Int. Cl.[5] F16B *19/00, 33/00, 37/14*

U.S. Cl. 411—373 **25 Claims**



1. An assembly for closing off a cavity in a panel having an inner configuration with an opening leading therein and an opening at bottom through said panel comprising:

a plug assembly having a main body portion having an outer configuration generally related to the configuration of at least the opening leading into said cavity;

a receptacle having a top, a bottom, and an inner hollow chamber therein with an opening at top leading into said chamber, said receptacle also having an opening at bottom aligned with both the opening at top of said receptacle and an opening at the bottom of said cavity through said panel;

a fastener extending through the opening at bottom of said receptacle and the opening at bottom of said cavity through said panel thereby holding said receptacle to said panel;

first locking means mounted in said plug assembly releasably locking to said receptacle; and

including second locking means fixedly locking said plug assembly to said receptacle.

5,340,256

SECURITY NUTS

Jack L. Morgan, Halesowen, United Kingdom, assignor to Kinnings Marlow Limited, Wednesbury, United Kingdom

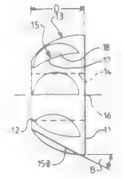
Filed Aug. 2, 1993, Ser. No. 100,776

Claims priority, application United Kingdom, Aug. 14, 1992, 9217268.3

Int. Cl.[5] F16B *23/00, 35/06*

U.S. Cl. 411—405 **9 Claims**

1. A security nut comprising a body having opposite ends of greater and lesser diameter respectively and an external surface of generally domed shape between said ends, a threaded bore extending between said ends, and a plurality of grooves in said domed surface and extending substantially between said ends, each groove having a base and two walls, one of said walls of each groove lying in a plane generally radial to the longitudinal axis of the bore and the other of said walls diverging, in a direction away from the base of the groove, from the one wall, the groove walls being so arranged that the nut can be rotated in a tightening sense with respect to the hand of the thread in the bore by torque applied to the nut by engagement of said one walls by driving faces on a suitable tool but so that said inclination of said other walls prevents torque being applied to



the nut by engagement of said other walls to rotate the nut in a slackening sense with respect to the hand of the thread in the bore.

5,340,257

ACCESSORY SPACING ELEMENT FOR DOWEL ANCHORING DEVICES FOR WALL COVERING SLABS

Paolo Morassutti, Padua, Italy, assignor to Fischer Italia S.a.s. di Paolo Morassutti & C., Padua, Italy

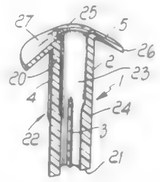
PCT No. PCT/EP92/00074, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO92/13154, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 15, 1992, Ser. No. 934,433

Claims priority, application Italy, Jan. 18, 1991, PD91U000004

Int. Cl.[5] F16B *21/00*

U.S. Cl. 411—512 **7 Claims**



1. Spacing element for dowel anchoring devices for fixing covering slabs to walls, said spacing element comprising;

a tubular cylindrical body made of plastic material and defining one end, an opposite end, a median region, an internal annular cylinder surface and an external annular cylinder surface;

external longitudinal wings connected to said external annular cylinder surface and extending from said median region to said one end;

internal longitudinal wings connected to said internal annular cylinder surface and extending from said median region to said opposite end;

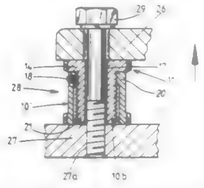
a frustum-shaped annular flange extending outwardly from said one end at an acute angle with respect to said cylindrical body, said frustum-shaped annular flange including an inner annular edge connected to said one end of said cylindrical body, an outer annular edge surrounding a portion of said tubular cylindrical body and said external longitudinal wings, and a substantially planar face extending between said inner annular edge and said outer annular edge.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,258
VARIABLE-LENGTH DISTANCING UNIT

Werner Simon, Weidenstr. 5, D-5883 Kierspe 3, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 975,012
Claims priority, application European Pat. Off., Nov. 22, 1991, 91119915.6
Int. Cl.[5] F16B *43/00, 43/02*
U.S. Cl. 411—535 **17 Claims**

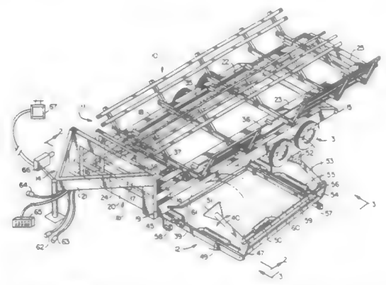


1. A variable-length distancing unit comprising an internally threaded sleeve-like female component having at least one first external head; an externally threaded tubular male component coaxial and mating with said female component and having at least one second external head; and means for releasably locking said components to each other, said female component having an associated internally threaded collar meshing with said male component, said male component carrying an associated external stop, said components being rotatable relative to each other so that said components displace axially with respect to each other, said collar and said stop being movable with the associated one of said components axially toward or away from each other.

5,340,259
ROUND BALE HANDLING TRAILER APPARATUS

David L. Flaskey, P.O. Box 113, 122 Carbon Ave., Roberts, Mont. 59070

Filed Nov. 24, 1992, Ser. No. 981,057
Int. Cl.[5] B60P *1/48*
U.S. Cl. 414—24.5 **18 Claims**



1. Bale handling trailer apparatus for use with motor vehicles to load, position, transport, and unload round bales, comprising:

first frame assembly means formed of a predetermined width and length;

second frame assembly means supported pivotally by said first frame assembly means;

conveyor means supported by said second frame assembly means to move bales in a predetermined manner with respect to said second frame assembly means;

bale engaging assembly means for supporting and conveying a bale with respect to said first frame assembly means, said bale engaging assembly means including a first section and a second section, said first section including a first lift arm having a first end and a second end and a second lift arm having a first end and a second end, said first left arm supported pivotally by said first frame assembly means at a first pivot location in close proximity to said first end of said first lift arm to pivot about said first pivot location, said second lift arm supported pivotally by said first frame assembly means at a second pivot location in close proximity to said first end of said second lift arm to pivot about said second pivot location, wherein said first pivot location and said second pivot location are disposed on a first pivotal axis for said bale engaging assembly, said first pivotal axis being disposed in parallel alignment with a longitudinal length of said first frame assembly means, said second lift arm being disposed a predetermined distance from said first lift arm sufficient to accommodate said bale therebetween and in substantially parallel alignment with respect to said first lift arm, said second section pivotally attached to said second end of said first lift arm and to said second end of said second lift arm and disposed to pivot about a second pivotal axis, said second pivotal axis being in parallel alignment with said first frame assembly means;

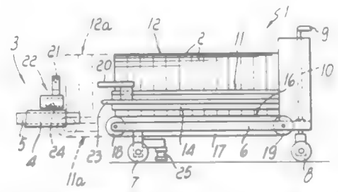
means for squeezing a bale, said means for squeezing a bale pivotally attached to said second section and disposed to pivot about a third pivotal axis, said third pivotal axis disposed perpendicular with respect to said second pivotal axis wherein said means for squeezing a bale is urged to prescribe an arc, the displacement of which is substantially in alignment with the longitudinal axis of said first frame assembly means; and

power means to adjust the pivotal position of said bale engaging assembly means with respect to said first frame assembly means.

5,340,260
TROLLEY FOR LOADING ROLLS IN A DEVICE FOR FEEDING A PACKAGING MACHINE

Mario Turra, Casalecchio di Reno, and Armando Neri, Bologna, both of Italy, assignors to G.D. S.p.A., Bologna, Italy

Filed Dec. 14, 1992, Ser. No. 990,489
Claims priority, application Italy, Dec. 20, 1991, BO91A000457
Int. Cl.[5] B65H *67/00*
U.S. Cl. 414—27 **24 Claims**



1. Trolley for loading rolls into a device for feeding a packaging machine, said trolley comprising:

a chassis having a front end, a rear end and parallel longitudinal sides and being movable in at least a longitudinal direction thereof;

means for steering said chassis provided at said rear end thereof;

means for raising said chassis provided at said front end thereof;

means for supporting a plurality of rolls arranged side by side so as to form a row of rolls with a substantially cylindrical configuration, said row of rolls having an axis extending parallel to said longitudinal sides of said chassis, said supporting means being mounted on said chassis and extending from said front end to said rear end thereof;

transfer means adapted for moving said row of rolls along said axis thereof, said transfer means being mounted on said chassis and extending from said front end to said rear end thereof;

means for centering and locking said trolley with respect to said device for feeding a packaging machine, said means being provided at said front end of said chassis and at said sides thereof;

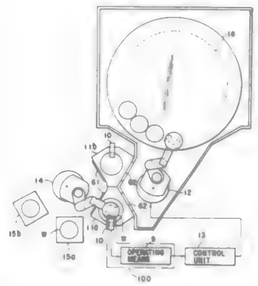
electrical connection means being provided at said front end of said chassis and adapted to engage corresponding seats provided on said feeding device for drawing electric power for actuating said transfer means;

wherein said raising means and said means for centering and locking said trolley with centering thereby securing a correct axial datum line between said trolley and said feeding device.

5,340,261
LOAD-LOCK UNIT AND WAFER TRANSFER SYSTEM

Tetsu Oosawa, Sagamihara; Teruo Asakawa, Nakakoma; Kenji Nebuka, Nirasaki, and Hiroo Ono, Yamanashi, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,832
Claims priority, application Japan, Mar. 26, 1991, 3-87527
Int. Cl.[5] B65G *1/06*
U.S. Cl. 414—217 **20 Claims**



1. A load-lock unit which is disposed between first and second atmospheres, for storing a wafer transferred from the first atmosphere, and which is blocked off from the first atmosphere, thereafter being set in an atmosphere at least substantially similar to the second atmosphere, and opened so as to communicate with the second atmosphere in order to transfer the wafer to the second atmosphere, said wafer having a shape bounded by a circular segment and a linear segment wherein said unit comprises:

a load-lock chamber having a wall and a floor;

a holding mechanism, disposed in said load-lock chamber, for holding the wafer;

a rotating mechanism for rotating the wafer held by said holding mechanism;

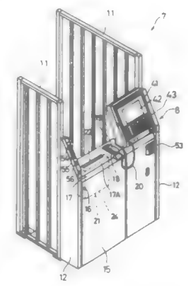
an exhausting mechanism for evacuating the load-lock chamber; and

an error detecting mechanism for detecting a positional error of a center of the wafer and an orientation error of the wafer while evacuating the load-lock chamber, based on data obtained by radiating light on the wafer when the wafer is rotating.

5,340,262
AUTOMATIC WAREHOUSING SYSTEM AND OPERATING FILE THEREFOR

Kazushi Tsujimoto; Yukihiro Goto, and Katsuji Ohnishi, all of Komaki, Japan, assignors to Daifuku Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/00636, § 371 Date Jan. 13, 1992, § 102(e) Date Jan. 13, 1992, PCT Pub. No. WO91/17936, PCT Pub. Date Nov. 28, 1991
PCT Filed May 14, 1992, Ser. No. 793,405
Claims priority, application Japan, May 17, 1990, 2-128532; Nov. 26, 1990, 2-324416; Jan. 11, 1991, 3-001762; Feb. 14, 1991, 3-020219; Feb. 14, 1991, 3-020220; Feb. 18, 1991, 3-022451; Mar. 15, 1991, 3-050077; Mar. 15, 1991, 3-050078; Mar. 15, 1991, 3-050079; Mar. 29, 1991, 3-065858
Int. Cl.[5] B65G *1/00*
U.S. Cl. 414—273 **6 Claims**



1. An automatic warehousing system characterized by racks (**2**) having a plurality of load storing spaces (**1**), a place (**9**) for the acceptance and delivery of the load (**4**), means (**6**) movable on a predetermined path (**10**) extending between said racks (**2**) and along a boundary line of said place (**9**) for taking the load (**4**) in and out of any one of said spaces (**1**), and safety fences (**7**) disposed in both end portions of said predetermined path (**10**), one of said safety fences (**7**) being equipped with a control unit (**8**) to which a code reading (**19**) is removably connected and with an openably closed door structure (**15**), said door structure (**15**) being equipped with a holding portion (**24**) for a file formed with codes corresponding to goods (**4**).

5,340,263
APPARATUS FOR FEEDING PACKAGING MACHINES WITH STACKS OF SHEET MATERIAL

Armando Neri, Bologna, and Mario Turra, Casalecchio di Reno, both of Italy, assignors to G.D. S.p.A., Bologna, Italy

Division of Ser. No. 558,550, Jul. 27, 1990, Pat. No. 5,190,430.
This application Dec. 2, 1992, Ser. No. 984,667
Claims priority, application Italy, Aug. 1, 1989, 3575 A/89; May 8, 1990, 3484 A/90
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] B65B *69/00*
U.S. Cl. 414—412 **18 Claims**

1. Apparatus for feeding stacks of sheet material to packaging machines, comprising:

means for supporting the stacks arranged side by side, said stacks being individually wrapped by respective wrapping bands;

a fixed framework;

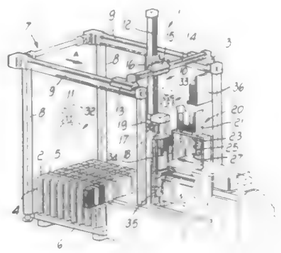
a unit for removing and transferring said stacks, said unit being mounted on said framework for movement relative thereto;

a head mounted on said unit for gripping said stacks, said head being movable along three orthogonal axes, said head being transferable along a path, said stacks being thereby transferable along said path;

VOL 1165 ISS 4 AG 23 1994 UMI

a cutting station comprising means for cutting said wrapping bands; and

a feeding station for guiding and feeding said stacks to said packaging machines, said path along which said head is



transferable extending from said means for supporting said stacks to said cutting station and then to said feeding station, said means for supporting said stacks, said cutting station, and said feeding station being located within an area defined by said fixed framework.

5,340,264

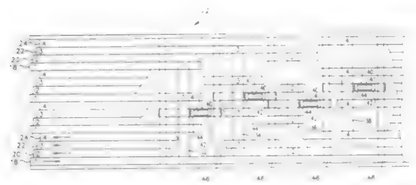
RECIPROCATING FLOOR CONVEYOR

Manfred W. Quaeck, 1515-210th Ave. NE., Redmond, Wash. [redacted]

Continuation-in-part of Ser. No. 885,231, May 18, 1992, which is a continuation-in-part of Ser. No. 874,372, Apr. 27, 1992, abandoned. This application Nov. 20, 1992, Ser. No. 979,666

Int. Cl.[5] B65G *25/04*

U.S. Cl. 414—525.9 **19 Claims**



1. A reciprocating conveyor comprising:

at least three groups of at least one slat member each, each of said slat members being individually reciprocatable; and

drive means engaging each slat member and operable to move more than half of said slat members simultaneously in a conveying direction and to move a remainder of said slat members in an opposite direction, said drive means comprising:

a fluid pressure source providing a plurality of fluid flows having substantially equal and constant flow rates;

an extensible fluid driven cylinder for reciprocation of each slat group connected to one of said plurality of fluid flows having substantially equal and constant flow rates from said fluid pressure source, each of said fluid driven cylinders being divided into a piston side and a rod side, said rod side of each of said fluid driven cylinders connected to a rod side of said fluid driven cylinder adjacent thereto;

a direction valve means for each fluid driven cylinder, each of said direction valve means having a first position in which said piston side of said fluid driven cylinder is connected to one of said plurality of fluid flows having substantially equal and constant flow rates from said fluid pressure source, such that said fluid driven cylinder and said engaged slat member extend, and a second position in which said rod side of said fluid driven cylinder is connected to one of said plurality of fluid flows having substantially equal and constant flow rates from said fluid pressure source, such that said fluid driven cylinder and said engaged slat member retract;

unloading valve means having a first closed position in which flow from said fluid driven cylinders that are extending is directed to said rod side of said fluid driven cylinder that is retracting and a second open position in which flow from said fluid driven cylinders that are extending is directed to said fluid pressure source;

means for controlling said direction valve means such that said direction valve means is moved from its first position to its second position when one of said fluid driven cylinders has partially extended a predetermined distance, and said direction valve means is moved from its second position to its first position when a different one of said fluid driven cylinders has partially extended a predetermined distance; and

means for controlling said unloading valve means such that said unloading valve means is moved from its first closed position to its second open position when one of said fluid driven cylinders completes retracting, and said unloading valve means is moved from its second open position to its first closed position when said one of said fluid driven cylinders begins extending whereby said one of said fluid driven cylinders remains stationary and does not begin extending until after another of said fluid driven cylinders partially extends a predetermined distance.

5,340,265

GRAIN WAGON WITH UNLOAD MECHANISM

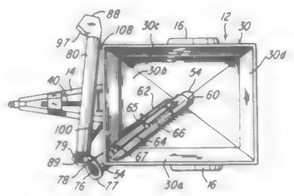
Maurice Grieshop, Ft. Recovery, Ohio, assignor to J. & M. Manufacturing Co., Inc., Ft. Recovery, Ohio

Continuation of Ser. No. 678,203, Apr. 1, 1991, Pat. No. 5,100,281, which is a continuation of Ser. No. 385,440, Jul. 26, 1989, Pat. No. 5,013,208. This application Mar. 27, 1992, Ser. No. 859,125

The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.

Int. Cl.[5] B60P *1/40*

U.S. Cl. 414—526 **6 Claims**



1. A grain wagon adapted to be pulled by a tow vehicle, said grain wagon comprising a wheel supported frame including means for connecting said frame to the tow vehicle, a container supported by said frame and including front and rear walls connected by left and right side walls to define a chamber having a generally rectangular configuration in horizontal cross section, said front and rear walls and said side walls including converging and sloping lower portions to provide said chamber with a lower grain collecting portion, an elongated auger unit including a lower base portion and an upper extension portion, power operated means for rotating said auger unit, said base portion of said auger unit extending upwardly and forwardly and laterally on an incline from said collecting portion adjacent a left front corner portion of said container where said front wall connects with said left side wall, pivot means adjacent said left front corner portion and pivotally connecting said extension portion of said auger unit to said base portion, said pivot means supporting said extension portion of said auger unit for tilting movement between a grain position and a retracted stow position, said extension portion in said grain discharge position projecting upwardly and substantially forwardly from said container and laterally outwardly from said left side wall of said container to form an inclined continuation of said base portion, said extension portion in said retracted stow position projecting laterally and generally horizontally toward said right side wall and adjacent said front wall of said container, power operated means for moving said extension portion of said auger unit between said discharge and stow positions, and said pivot means providing for observing from the tow vehicle the entire said extension portion throughout movement between said discharge and stow positions.

5,340,266

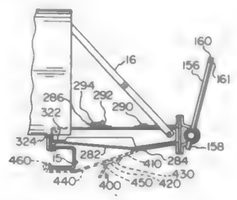
PICKUP TRUCK UNLOADER

Graham L. Hodgetts, Baden, Pa., assignor to Loadhandler Industries, Inc., Pittsburgh, Pa.

Filed Jan. 15, 1993, Ser. No. 4,965

Int. Cl.[5] B65G *67/24*

U.S. Cl. 414—527 **21 Claims**



1. An apparatus for conveying materials from a vehicle flat bed having a back end, opposite sides spaced a distance apart and a tailgate hinged to the bed for movement between an open position and a closed position, the tailgate having a length, a width, an upper end and a lower end, the lower end spaced a distance from the bed, and two outer surfaces, said apparatus comprising:

a roller having a length substantially equal to the length of the tailgate, said roller having a first end and a second end;

a flat flexible belt having an underside adapted to slide along a sliding surface in the bed, said flat flexible belt attached to said roller and having a length sufficient for extending from said roller into at least a portion of said flat bed, said belt adapted to be wound onto said roller;

means for attaching said roller to the tailgate and positioning said roller adjacent the tailgate upper end, including an attaching bracket pivotally attached to said first end of said roller, and a flexible strap member, said strap member attached to said attaching bracket and including a buckling end and a buckle end, said buckle end having a buckle attached thereto, said strap member adapted to pass under the lower end of the tailgate through the space between the tailgate and the bed, so that said roller can be attached to the tailgate and positioned adjacent the upper end of the tailgate by buckling said buckling end to said buckle; and

means for rotating said roller, whereby an object or material placed upon the flexible belt when extended into the flat bed area can be moved toward said roller when said roller is rotated, rotation of said roller causing said belt to be wound onto said roller.

5,340,267

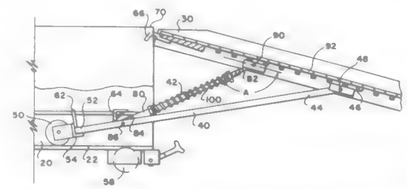
RETRACTABLE VEHICLE RAMP WITH LIFT ASSIST

Donald E. Stoll, Berkey, and Alfred T. Dietrich, Marion, both of Ohio, assignors to Overhead Door Corporation, Dallas, Tex.

Filed Dec. 17, 1991, Ser. No. 809,734

Int. Cl.[5] B60P *1/43*

U.S. Cl. 414—537 **2 Claims**



1. A ramp mechanism for a vehicle, comprising:

frame means mounted to the vehicle beneath a vehicle work surface;

a ramp interconnected with the frame by way of a toggle linkage for movement between stowed and extended positions with respect to the frame, said ramp having an outer end which, when in its extended position, engages the ground and having in inner end pivotally positionable between a lower position adjacent the frame and an upper position for engagement with said work surface of the vehicle;

stop means for inhibiting disengagement of the toggle linkage from the frame;

said toggle linkage comprising (i) fixed link means having its outer end pivotally connected to said ramp and its inner end interconnected with said frame and (ii) a telescoping link having its inner end pivotally connected to said fixed link and its outer end pivotally connected to said ramp;

the ramp, fixed link and telescoping link defining a triangular configuration with a first angle definable between the telescoping link and the ramp;

said linkage further comprising (iii) biasing means for biasing said inner end of the ramp from its lower position toward its upper position;

said biasing means being inoperative when said ramp and said telescoping link are parallel and said first angle is 180°, said biasing means being effective in of itself to impart a pivoting force to pivot the inner end of said ramp from its lower position toward its upper position without requirement of any additional force, once said first angle is less than 180°, the pivoting force imparted to the inner end of said ramp increasing as said first angle decreases.

5,340,268

ARTICLE HANDLING MECHANISM FOR ATTACHMENT TO WAREHOUSE TRUCKS

Alvis E. Dowty, 4117 Renee, Jonesboro, Ark. 72401

Filed Feb. 20, 1992, Ser. No. 837,947

Int. Cl.[5] B66F *9/12*

U.S. Cl. 414—622 **17 Claims**

1. An article handling mechanism for attachment to warehouse trucks, said article handling mechanism comprising:

a) an article loading platform;

b) a frame secured to said article loading platform, said frame defining a rack, and said frame having a front and a rear and including a pair of sides;

c) each side being a vertical side extending substantially perpendicular to said article loading platform, and each side having a length sufficiently long to retain a plurality of articles stacked up on said article loading platform;

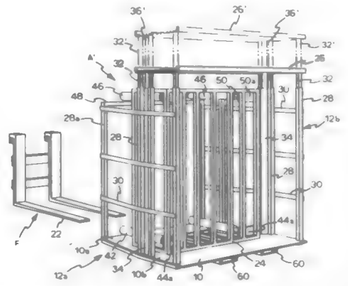
d) a generally horizontal member movably mounted for vertical movement with respect to said sides and with respect to said article loading platform;

e) said horizontal member being movable toward said article

VOL 1165 ISS 4 AG 23 1994 UMI

loading platform to a lowered position to compress articles loaded on said platform and away from said platform to a raised position to increase the loading area of said rack;

f) said vertical sides extending a substantial portion of the



distance from said article loading platform to said generally horizontal member when said horizontal member is in its raised position away from said platform; and

g) a horizontally movable ram movable in said frame from said rear to said front for ejecting articles under compression in said frame.

5,340,269

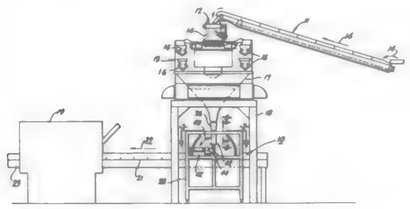
METHOD FOR HANDLING ELONGATE PRODUCTS

Anthony A. Caridis, Belmont; John Cranfield, San Bruno, and Kyle C. Vine, Burlingame, all of Calif., assignors to Heat and Control, Inc., South San Francisco, Calif.

Division of Ser. No. 823,829, Jan. 22, 1992. This application Apr. 21, 1993, Ser. No. 51,064

Int. Cl.[5] B65G *69/00*; G01G *13/00*

U.S. Cl. 414—786 1 Claim



1. A process for handling elongated elements and transferring them in weighed batches between a weighing machine and a packaging machine , comprising the following steps:

a) collecting at a first location, a first weighed batch of elongated elements in a generally vertical co-parallel orientation and supporting the bottom ends of the elements in a generally co-planar position,

b) maintaining the elements momentarily in such orientation while subjecting them to a vibratory force,

c) providing a first receiver for said first weighed batch,

d) dropping the elements into the first receiver,

e) moving the first receiver and batch of elements in a substantially vertical plane along an arcuate path in a first direction into a substantially horizontal position while maintaining the elements parallel within the batch,

f) holding the first batch of elements in such substantially horizontal position,

g) providing a receiving pocket for the first batch,

h) collecting, at said location, a second weighed batch of the elements as mentioned in step a) above and maintaining them as mentioned in step b) above,

i) dropping the first batch of elements into the receiving pocket,

j) providing a second receiver for said second weighed batch,

k) dropping the second batch of elements into the second receiver,

l) moving the second receiver and batch of elements in said substantially vertical plane along an arcuate path in a second direction opposite to said first direction into a generally horizontal position,

m) holding the second batch of elements in such horizontal position,

n) providing a receiving pocket for the second batch,

o) dropping the second batch of elements into the receiving pocket, and

p) transferring the weighed batches to a packaging machine.

5,340,270

PACKING METHOD AND BAR PACKER WITH HANGING TRANSFER

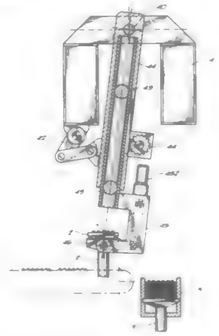
Federico Castellani, Tarcento, Italy, assignor to S.I.M.A.C. S.P.A., Italy

Filed Mar. 3, 1992, Ser. No. 845,246

Claims priority, application Italy, Mar. 6, 1991, UD91A000030; Mar. 6, 1991, UD91A000031

Int. Cl.[5] B65G *57/04*

U.S. Cl. 414—793.2 10 Claims



1. A bars packer plant with hung transfer magnets for packing bar layers differentiated in number (e.g. n, n−1) which are superposed upright and in reverse from a layers supply line in differentiated number, said plant comprising:

a single linear system of rotating hung transfer magnets, said hung transfer magnets movable between a first position above the supply line in a pick-up area of the supply line to a second position above an adjacent pack formation pocket for a laying down and formation of the pack, said rotating hung transfer magnets rotate by turning upside down; and

a lifter means positioned below the supply line and below said hung transfer magnets in said pick-up area, said lifter means for lifting one bar layer and attaching said bar layer to a magnetic pick-up surface either above or below said hung transfer magnets depending upon the rotation of said magnetic pickup surface, said hung transfer magnets are hung by a pendulum structure, an arm of the pendulum structure being extendable and shortenable during an operative cycle.

5,340,271

FLOW CONTROL METHOD AND MEANS

Christopher Freeman, Farnsfield; Ivor J. Day, Toft, and William B. Wright, Kegworth, all of England, assignors to Rolls-Royce plc, London, United Kingdom

PCT No. PCT/GB91/01407, § 371 Date Jan. 14, 1949, § 102(e) Date Jan. 14, 1993, PCT Pub. No. WO92/03661, PCT Pub. Date Mar. 5, 1992

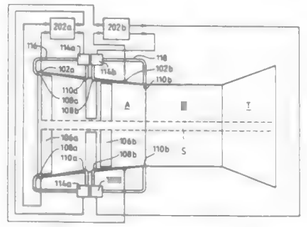
Continuation-in-part of Ser. No. 573,821, Aug. 28, 1990. This PCT application Aug. 19, 1991, Ser. No. 960,367

Claims priority, application United Kingdom, Aug. 18, 1990, 9018188.4

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.[5] F01D *17/08*

U.S. Cl. 415—1 33 Claims



1. A method of controlling gas flow in a compressor comprising the steps of sensing the flow at a series of circumferentially spaced positions at a chosen axial station in a direction of flow through the compressor to detect variations in the flow above a predetermined limit of variation and, upon at least one of the variations being detected, injecting higher-pressure gas from a region downstream of said chosen station into the flow through the compressor upstream of said region generally in said direction of flow and in a circumferentially selective manner dependent upon the circumferential origins of said variations, to act against flow disturbances indicated by said variations.

5,340,272

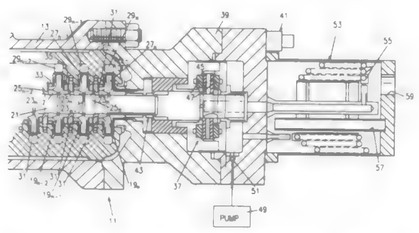
MULTI-STAGE CENTRIFUGAL PUMP INCORPORATING A SEALED THRUST BEARING

Rudolf Fehlau, Downey, Calif., assignor to BW/IP International, Inc., Long Beach, Calif.

Filed Aug. 19, 1992, Ser. No. 932,069

Int. Cl.[5] F01D *11/04*

U.S. Cl. 415—110 9 Claims



1. A multi-stage centrifugal pump suitable for pumping an abrasive fluid, comprising:

a casing having an inlet port and an outlet port;

a shaft mounted for rotation within the casing;

a plurality of impellers mounted on the shaft, each impeller operable to increase the pressure of a pumped fluid passing through it, from a suction inlet to a discharge outlet, wherein a first-stage impeller is mounted with its suction inlet in fluid communication with the inlet port and a final-stage impeller is mounted with its discharge outlet in fluid communication with the outlet port, and wherein the plurality of impellers are mounted in a predetermined sequence on the shaft, with the first-stage impeller at one end and the final stage impeller at the other end, and with the discharge outlet of all but the final stage impeller in fluid communication with the suction inlet of the next succeeding impeller;

a sealed thrust bearing assembly operatively connected to the shaft, adjacent to the final-stage impeller;

a fluid source for supplying to the thrust bearing assembly a lubricating fluid having a pressure that is a predetermined amount higher than the pressure of the pumpage fluid present at the discharge outlet of the final-stage impeller; and

a first mechanical seal located between the final-stage impeller and the thrust bearing assembly such that the lubricating fluid flows through the first mechanical seal from the thrust bearing assembly to the final-stage impeller.

5,340,273

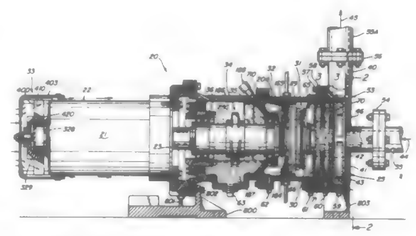
SEALING AND PUMPING MEANS AND METHODS ENVIRONMENTALLY LEAK-PROOF PUMP WITH MISTING CHAMBER DEFINED THEREIN

Robert E. Rockwood, Windham, N.H., assignor to Environamics Corporation, Hudson, N.H.

Division of Ser. No. 803,007, Dec. 4, 1991. This application Aug. 4, 1993, Ser. No. 101,940

Int. Cl.[5] F04D *29/14*

U.S. Cl. 415—113 6 Claims



1. A motor driven pump comprising:

an environmentally leak-proof, motor housing having located therein a motor for rotatably driving a rotating shaft, said shaft extending from said motor and being sealed within a pump housing;

said pump housing being sealably connected to said motor housing, said pump housing including a pump chamber in which fluid is pumped between a fluid inlet and a fluid outlet;

a fluid impeller disposed within said pump chamber, said impeller for pumping a fluid from said fluid inlet to said fluid outlet, said impeller being affixed to said rotating shaft;

a fluid passageway disposed between and communicating with said pump chamber and a fluid chamber, said fluid chamber circumferentially surrounding said rotating shaft;

a fluid sealing device disposed axially along said shaft between said fluid chamber and said pump chamber, said fluid sealing device for inhibiting the flow of fluid from said pump chamber toward said fluid chamber, and wherein said sealing device circumferentially surrounds said rotating shaft;

a drainage orifice defined in said pump housing, said drainage orifice being defined within the bottom portion of said

VOL 1165 ISS 4 AG 23 1994 UMI

fluid chamber so as to allow fluid passing into said fluid chamber to flow from said chamber by way of gravity through said drainage orifice, thereby preventing said fluid from making its way into said motor housing;

an annular fluid seal disposed axially along said shaft between said motor and said fluid chamber, said annular fluid seal including a rotating flange affixed to said shaft so as to rotate therewith and a stationary annular engaging member, said stationary annular engaging member having an engagement surface for sealingly engaging a radially extending rotatable sealing surface of said rotating flange; and

annular bearing means disposed axially between said motor and said annular fluid seal, said bearing means for rotatably supporting said shaft.

2. A pump bearing lubricating mechanism disposed within a pump lubricating chamber for simultaneously providing lubrication to two coaxially located spaced apart, substantially coaxial rotary pump shaft bearings, said mechanism comprising:

a dispenser mounted coaxially with said coaxially aligned rotating bearings,

said dispenser being mounted for rotation in a liquid reservoir,

said dispenser being operably engaged with a central shaft mounted for rotation between said rotary bearings,

plural nozzle means mounted in a pathway defined by said dispenser, with at least one nozzle means directed to one of said rotary bearings and a second nozzle means directed to a second of said rotary bearings,

said dispenser having means for entraining a liquid within said liquid reservoir and bringing said liquid to said nozzles to dispense said liquid from said nozzles directly to each of said rotary bearings.

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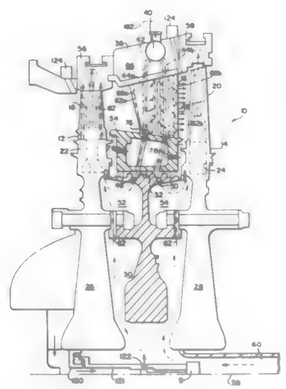
INTEGRATED STEAM/AIR COOLING SYSTEM FOR GAS TURBINES

Francisco J. Cunha, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 794,032, Nov. 19, 1991. This application Mar. 20, 1992, Ser. No. 854,580

Int. Cl.[5] F01D *5/18*

U.S. Cl. 415—115 19 Claims



1. An integrated steam and air cooling system for a gas turbine comprising:

a pair of axially spaced, rotatable turbine stages, each having a plurality of turbine blades for disposition in a gas flow through said turbine;

a nozzle stage between said turbine stages and including a plurality of nozzle vanes for disposition in the gas flow through said turbine;

means for supplying cooling air to and for passage through said blades and vanes to air cool said turbine;

means for supplying steam to and for passage through said blades and vanes to steam cool said turbine;

means cooperable with said cooling air supply means and said steam supply means for effecting a transition between air cooling said turbine and steam cooling said turbine;

a turbine shaft, said blades and said vanes having interior passages, a spacer between said turbine stages and rotatable therewith, wheels about said shaft mounting said turbine blades and spaced axially from and on opposite sides of said spacer to define chambers on axially opposite sides of said spacer, said steam supplying means including first and second steam supply circuits, said first circuit including a steam supply, a channel adjacent said shaft and in communication with said steam supply for suppling steam to said chamber and said interior passages of said turbine blades, said second steam supply circuit including said steam supply, a manifold about said nozzle vanes for supplying steam from said steam supply to said interior passages of said nozzle vanes, means in communication between said interior passages of said nozzle vanes and said chambers for combining steam from said first circuit in said chambers with steam of said second circuit in said chambers, whereby the combined steam of said first and second circuits flows through the interior passages of said turbine blades.

5,340,275

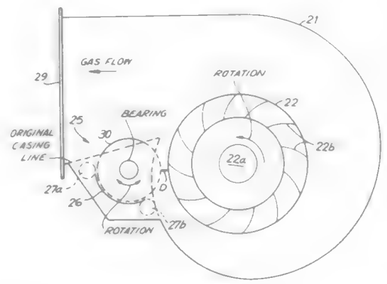
ROTARY THROAT CUTOFF DEVICE AND METHOD FOR REDUCING CENTRIFUGAL FAN NOISE

Frantisek L. Eisinger, Demarest, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Aug. 2, 1993, Ser. No. 100,787

Int. Cl.[5] F01D *5/10*

U.S. Cl. 415—119 17 Claims



1. A centrifugal fan assembly including a rotary resonator cutoff device adapted for achieving noise reduction from the fan, comprising:

(a) a housing having an inlet and a discharge opening and containing a rotatable bladed impeller attached to a drive means;

(b) a casing attached onto said housing of the centrifugal fan at a location near its discharge opening;

(c) a cylindrical-shaped rotor rotatably supported within said casing, said rotor having a plurality of resonator cavities of varying depth provided transfer to the rotor for absorption of sound pulses generated by rotation of the fan impeller, said cavities each having a length/diameter ratio in the range of 8/1–16/1; and

(d) drive means connected to said rotor for rotating the rotor within said casing at a speed relative to the rotary blade cutoff speed of the centrifugal fan impeller, whereby noise generated by operation of the centrifugal fan is significantly reduced by being absorbed within the resonator cavities of said rotor.

15. A method for reducing noise produced by operation of centrifugal fans, comprising:

(a) attaching a rotary cut off device onto a centrifugal fan housing at a location near the housing discharge opening, said device including a rotor which is rotatable in a casing and contains a plurality of resonator cavities sized for absorption of sound pulses generated during rotation of the fan impeller;

(b) operating the centrifugal fan impeller at a rotary speed selected to provide a desired gas flow rate and discharge pressure from the fan; and

(c) rotating said rotor at a surface speed equal to 30–100% that of the fan bladed impeller so as absorb noise in the rotor resonator cavities and provide reduced noise from the centrifugal fan.

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housing connected thereto for permitting a central shaft to pass outwardly of said housing for the transmission of power by a shaft;

the flow enhancement system within said collector housing comprising in combination:

at least a first flow deflector mounted adjacent said bottom of said collector housing;

said first deflector being positioned at said bottom of said collector housing on the opposite side of said central shaft housing from said collector outlet, said flow deflector defining a concave side and a convex side;

said flow deflector extending at least partially around said central shaft housing and having a surface extending arcuately to and toward said collector box outlet, said surface passing around said shaft to deflect gases on a concave side of said deflector to said outlet along a rear wall of said collector housing;

said first flow deflector defining a gas dividing lip, said lip for intersecting and dividing around said discharge duct gas flowing from said discharge end to distribute gas between said convex and concave sides of said flow deflector;

at least a second flow deflector generally defined above said first flow deflector, said second flow deflector generally overlying said central shaft housing along an interval adjacent to said collector outlet;

said second flow deflector extending at least partially around said central shaft housing and having a surface extending arcuately to and toward said collector box side walls, said surface passing above and away from said shaft to deflect gases on a first concave side of said deflector between said collector box front and said discharge end and to deflect gases on a second convex side of said deflector to said outlet in a common stream with flow at least from said concave side of said first flow deflector along said collector housing rear.

5,340,276

METHOD AND APPARATUS FOR ENHANCING GAS TURBO MACHINERY FLOW

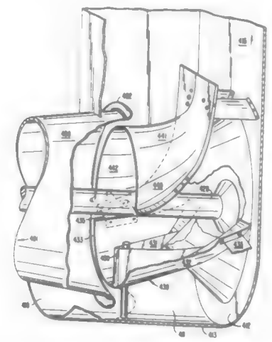
Thomas R. Norris, Orinda; Hanford N. Lockwood, San Mateo, both of Calif., and J. Alan Watts, Wakefield, R.I., assignors to Norlock Technologies, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 616,027, Nov. 21, 1990, Pat. No. 5,188,510. This application Feb. 22, 1993, Ser. No. 23,816

The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.[5] F01D *9/04*

U.S. Cl. 415—208.1 23 Claims



1. A flow enhancement system for the axial flow system of a turbomachine in the combination:

a generally tubular sectioned discharge duct having a smaller forward end for receiving gas flow from said axial flow section and a larger discharge end for discharging said gas received from said axial flow section;

a central shaft housing disposed approximately concentrically on the central axis of said generally tubular discharge duct extending through the discharge end of said duct;

a collector housing having a front, side, rear, and a bottom therebetween, and a collector outlet overlying said bottom;

a collector inlet defined in said front about said discharge end of said discharge duct whereby gas discharged from said discharge duct enters said housing;

said collector outlet defined by said front, side, and rear, said collector outlet requiring a substantially 90° turn in fluid flow from said collector inlet to outlet to permit the discharge of said gas from said collector housing away from said shaft housing;

said rear of said collector housing having said central shaft

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5,340,277

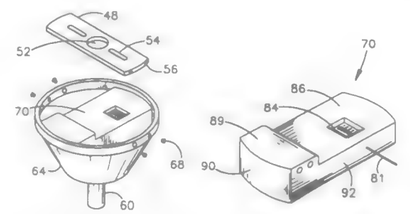
CONTROLLER FOR REMOTE CONTROL CEILING FAN

Louis G. Whitaker, Alliance, Ohio, assignor to The Genie Company, Alliance, Ohio

Filed May 3, 1993, Ser. No. 56,196

Int. Cl.[5] F03D *11/00*

U.S. Cl. 416—5 10 Claims



1. A ceiling fan controller for mounting in a ceiling-mounted canopy of a fan assembly, comprising:

an enclosure of a generally rectangular parallelpiped shape having generally rectangular top and bottom walls, the bottom wall providing means for resting the enclosure above a central support conduit of the fan assembly and the top wall providing means for positioning the enclosure below an overhead support mounting plate of the fan assembly, the enclosure having curved end walls on both ends to conform to the shape of the canopy; and

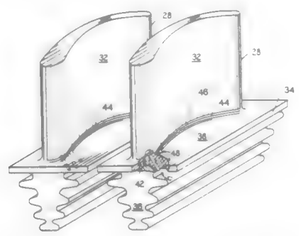
means to admit electrical conductors from the enclosure through a central support conduit.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,278
ROTOR BLADE WITH INTEGRAL PLATFORM AND A FILLET COOLING PASSAGE

John W. Magowan, Longmeadow, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 24, 1992, Ser. No. 980,826
Int. Cl.[5] F01D *5/04*
U.S. Cl. 416—96 R **8 Claims**



1. A rotor blade for an axial flow turbine engine, the turbine engine having an annular flow path disposed about a longitudinal axis, the rotor blade including:
- an airfoil portion extending through the flow path, the airfoil portion including a core passage defining a flow path for flowing cooling fluid through the blade;
- a platform extending laterally outward from a junction with the blade and disposed radially inward of the airfoil portion, the platform including a radially inward facing surface defining in part an under platform cavity and a radially outward facing surface defining a flow surface for the annular flow path;
- a fillet extending about the junction between the platform and the airfoil portion, the fillet including a flow surface facing the flow path, the flow surface having a cross-sectional midpoint; and
- a cooling passage extending between the core passage and the under platform cavity, the cooling passage having an inlet permitting fluid communication between the core passage and the cooling passage, and an outlet disposed in the radially inward facing surface, wherein the cooling passage defines a flowpath for cooling fluid to flow from the core passage to the under platform cavity, and wherein heat is connectively exchanged between the fillet and the cooling fluid flowing through the cooling passage.

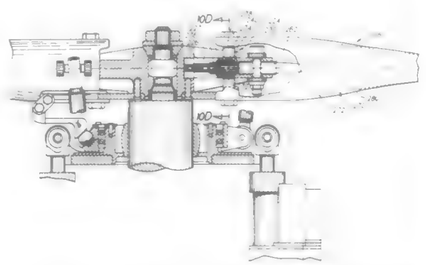
5,340,279
SNUBBER ASSEMBLY FOR A ROTOR ASSEMBLY HAVING DUCTED, COAXIAL COUNTER-ROTATING ROTORS

James P. Cycon, Orange; David H. Hunter, Cheshire, and Timothy A. Krauss, Harwinton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 22, 1992, Ser. No. 903,063
Int. Cl.[5] B64C *27/38*
U.S. Cl. 416—134 A **11 Claims**

1. A snubber assembly for a rotor assembly, the rotor assembly including a rotor shaft, a torque tube having an inboard end, and a flexbeam having an inboard end, comprising:
- a bracket configured to be secured in combination with the inboard end of the torque tube;
- a bearing secured in combination with said bracket; and
- a rotor hub, configured for securement in interlocked, engaged combination with the rotor shaft, having a plurality of radially extending arms, each said radially extending arm having an outboard end configured for securing the inboard end of the flexbeam in combination with said rotor hub, each said radially extending arm of said rotor hub including means for rotatably mounting said bearing, bracket combination internally in said rotor hub;

said internally rotatably mounted bearing, bracket combination being positioned inboard of said outboard end of said

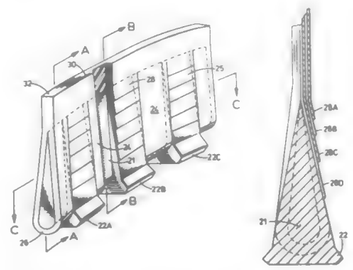


radially extending arm and inboard of the inboard end of the flexbeam.

5,340,280
DOVETAIL ATTACHMENT FOR COMPOSITE BLADE AND METHOD FOR MAKING

Jan C. Schilling, Middletown, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 55,942, Apr. 30, 1993, abandoned, which is a continuation of Ser. No. 767,336, Sep. 30, 1991, abandoned. This application Nov. 17, 1993, Ser. No. 154,145
Int. Cl.[5] F01D *5/14*
U.S. Cl. 416—229 A **4 Claims**



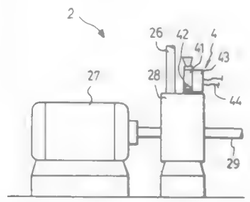
1. A composite blade having an airfoil, said blade comprising:
- a dovetail former having a plurality of metallic dovetail sections, said plurality of dovetail sections forming at least one cutout area:
- a composite unidirectional fiber material laid from a convex side to a concave side of the airfoil and filling in said at least one cutout;
- a plurality of layers of non-wrapped composite plies which are cut and tapered and connected to said plurality of dovetail sections; and

said plurality of layers of non-wrapped composite plies being arranged such that said tapered layers are formed by cutting fibers in respective layers such that said layers of composite plies are thicker at the top of said dovetail section, layers closer to said former being longer than layers away from said former.

5,340,281
PROTECTIVE DEVICE FOR A WATER-PUMP APPARATUS

Pai-Tzeng Su, No. 43, Lane 15, Pin-Shan St., Feng-Shan City, Kaohsiung Hsien, Taiwan

Filed Feb. 2, 1993, Ser. No. 12,335
Int. Cl.[5] F04B *49/04*
U.S. Cl. 417—12 **5 Claims**

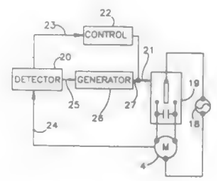


1. A protective device for a water-pump apparatus, said water-pump apparatus including a motor unit and a pump unit having a port on a top end thereof, and being driven by said motor unit so as to convey water from a ground storage reservoir to an elevated tank, said protective device comprising:
- an upright hollow tubular member coupled to said port on said top end of said pump unit and in fluid communication with an interior of said pump unit through said port;
- a floating switch actuator provided movably inside said tubular member, said switch actuator floating inside said tubular member in response to water level therein, said switch actuator being provided with a permanent magnet; and
- a control unit mounted on an outer surface of said tubular member and connected electrically to said motor unit, said control unit including a magnetically actuated switch which is activated by said switch actuator when said switch actuator is at a predetermined position inside said tubular member, said control unit cutting off power supply to said motor unit when said switch actuator ceases to float inside said tubular member.

5,340,282
DRIVE SYSTEM FOR A WATER PUMP WITH ROTATABLE SEALING ARRANGEMENT

Claudio Milocco, Pordenone, Italy, assignor to Zanussi Elettrodomestici S.p.A., Italy

Filed Nov. 27, 1991, Ser. No. 800,603
Claims priority, application Italy, Dec. 5, 1990, 45775/A90
Int. Cl.[5] F04D *15/00*
U.S. Cl. 417—18 **7 Claims**

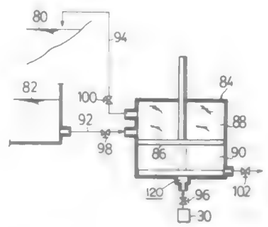


1. A drive system for a water pump, said water pump being driven by a shaft of a reversible electric motor which extends through a partition wall, about said shaft being mounted a first sealing ring which is fixed to said wall and a second sealing ring capable of being rotated by the shaft and forming a rotatable water-tight sealing arrangement with the first ring, said motor being supplied through inverter means having a control input arranged to be driven by a first control signal to actuate said motor in a first or a second direction of rotation according to a preset program, said first control signal being generated by a control device when the latter receives an enabling signal, wherein said control input (21) of the inverter means (19) is further arranged to be driven by a second control signal having a predetermined frequency to cause said motor (4) to oscillate at said predetermined frequency with a sequence of rotations in alternate directions, said second control signal being generated by a generator device (26), for a given time period (T1), when said enabling signal is applied to the generator device, detector means (20) being provided to monitor a quantity which is proportional to the current absorbed by said motor (4) and to supply said enabling signal to either said control device (22) or said generator device (26) when said quantity is, respectively, lower or higher than a predetermined threshold value.

5,340,283
WATER PUMPING APPARATUS UTILIZING PRODUCED COMPRESSED AIR

Tsugio Nagata, 16-6, Kohenjiminami 4-chome, Suginami-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 969,322, Oct. 30, 1992, abandoned, which is a division of Ser. No. 725,662, Jul. 3, 1991, Pat. No. 5,205,720. This application Sep. 30, 1993, Ser. No. 129,577
Claims priority, application Japan, Jul. 3, 1990, 2-174532
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—118 **10 Claims**



1. A water pumping apparatus, comprising:
- a container disposed between a downstream water reservoir and an upstream water reservoir of a hydroelectric power generating apparatus, said container having a water tank chamber, an air expansion chamber and an air diffusing space communicating with said air expansion chamber;
- a water inlet tube fluidly connecting said water tank chamber to the downstream reservoir, said water inlet tube having a first control valve regulating the flow rate of water from the outstream water reservoir into said water tank chamber;
- a water feed pipe fluidly connecting said water tank chamber and the upstream water reservoir, said water feed pipe having a second control valve regulating the flow rate of water fed under pressure from said water tank chamber to the upstream water reservoir; and
- a recovery vessel containing highly compressed air therein connected to said air diffusing space of said container through a flow regulating valve and a nozzle exit for jetting from said nozzle exit said highly compressed air into said air diffusing space in which the jetted air increases its specific volume and decreases its pressure and is consequently discharged to said air expansion chamber.

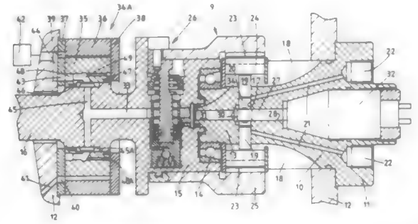
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,284

TWO STAGE FUEL PUMP WITH PRESSURE PASSAGE IN THE FIRST STAGE ROTOR

Stuart W. Nicol, London, England, assignor to Lucas Industries Public Limited Company, West Midlands, England

Filed Mar. 10, 1993, Ser. No. 29,320
Claims priority, application United Kingdom, Mar. 20, 1992, [illegible]
Int. Cl.[5] F04B *23/12;* F04C *15/00*
U.S. Cl. 417—206 6 Claims



1. A fuel pumping apparatus for supplying fuel to an internal combustion engine comprising a housing, a drive shaft extending from the housing for connection in use to a rotary part of an associated engine, a high pressure fuel pump mounted within the housing and having a rotary part which is coupled to the drive shaft and a low pressure fuel supply pump for supplying fuel to the high pressure fuel pump, said low pressure pump comprising a vane type pump having a rotor which is non rotatably located about the drive shaft, the rotor carrying vanes for engagement with an internal surface of a stator ring, a pair of end plates mounted at opposite ends of the stator ring, an arcuate outlet port formed in one of said pair of end plates, a transfer port formed in the same one of said pair of end plates inwardly, with respect to the drive shaft, of said outlet port, passage means connecting said ports, a supply passage in the drive shaft through which fuel can flow to the high pressure pump, and further passage means in the rotor which is in constant communication with said supply passage and said transfer port.

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MOTOR PUMP ASSEMBLY WITH VARIABLY SET ECCENTRIC

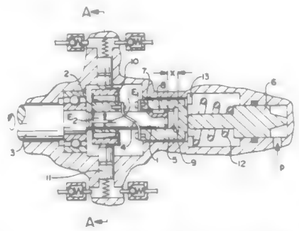
Hans-Dieter Reinartz, Frankfurt am Main, and Helmut Steffes, Hattersheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Fed. Rep. of Germany

PCT No. PCT/EP92/01487, § 371 Date Mar. 8, 1993, § 102(e) Date Mar. 8, 1993, PCT Pub. No. WO93/01073, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 1, 1992, Ser. No. 984,581
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1991, 4122486
Int. Cl.[5] F04B *1/06;* G05G *1/00;* F16H *35/08*
U.S. Cl. 417—221 7 Claims

1. A motor pump drive assembly for slip-controlled brake systems, with device for transforming rotatory into translatory movements; with, a drive shaft which is movably guided in a housing; comprising:

an eccentric device which is associated with said drive shaft, said eccentric device being formed of a first and second eccentric, said first and second eccentric being turnable relative to each other and in mesh with each other, so that at least an eccentric sum dimension formed form this individual eccentric dimensions of said eccentrics can be set variably, wherein said eccentric is directly attached to said drive shaft and said second eccentric is turnably attached to said first eccentric;

an actuating element that connects said second eccentric with a control slide which can be acted upon axially; and



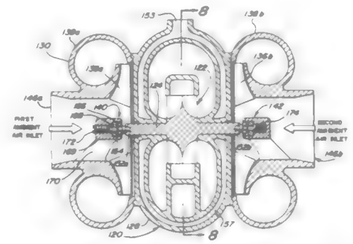
a control piston which is acted upon by the pressure from the pump drive assembly, said control piston being lengthwise associated with the control slide in the form of a series mounting.

5,340,286

BALANCED TURBOCHARGER

Wojceich Kanigowski, 13782 Phyllis Pl., Garden Grove, Calif. 92641

Filed Oct. 29, 1990, Ser. No. 607,557
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—407 12 Claims



1. A combination turbine and air compressor apparatus, said apparatus comprising:

a. a turbine-air compressor housing, said housing having at least one air inlet, at least one pressurized air outlet, at least one operating gas inlet, and at least one operating gas outlet;

b. a turbine-air compressor shaft journaled for rotation in said housing about a longitudinal shaft axis;

c. a turbine wheel fixed to said turbine-air compressor shaft for causing the rotation thereof about said shaft axis, said turbine wheel being disposed within said housing intermediate said at least one operating gas inlet and at least one operating gas outlet;

d. air compressor means fixed to said turbine-air compressor shaft for rotation with said turbine wheel and shaft about said shaft axis, said air compressor means being disposed within said housing for receiving air from said at least one housing air inlet and for providing pressurized air to said at least one compressed air outlet; and

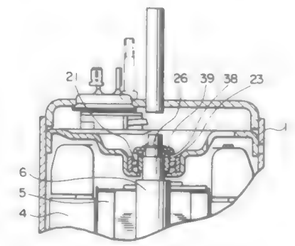
e. operating gas flow means for directing a first flow of operating gas to one peripheral edge region of said turbine wheel and for directing a second flow of operating gas to the opposite peripheral region of said turbine wheel such that the two flows of operating gas impinge upon different peripheral edge regions of said turbine wheel, said operating gas flow means causing said first and second flows of operating gas to impinge on the turbine wheel in a manner causing the turbine wheel to rotate in the rotational direction which causes air flowing into said at least one housing air inlet to be compressed by said air compressor means and to be delivered thereby to said at least one housing compressed air outlet.

5,340,287

SCROLL-TYPE COMPRESSOR HAVING A PLATE PREVENTING EXCESS LIFT OF THE CRANKSHAFT

Sadao Kawahara, Otsu; Yoshinori Kojima, and Osamu Aiba, both of Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/01417, § 371 Date Sep. 3, 1991, § 102(e) Date Sep. 3, 1991, PCT Pub. No. WO91/06769, PCT Pub. Date May 16, 1991
PCT Filed Jun. 26, 1990, Ser. No. 688,557
Claims priority, application Japan, Nov. 2, 1989, 1-287015
Int. Cl.[5] F04B *35/04;* F04C *18/04;* H02K *1/06;* F16C *19/52*
U.S. Cl. 417—410 D 7 Claims



1. A scroll-type compressor comprising: a hermetic container;

an electric motor having a rotor and disposed in an upper portion of said hermetic container;

a compression mechanism disposed in a lower portion of said hermetic container and driven by said electric motor, said compression mechanism including a stationary scroll member having a stationary frame and a stationary scroll wrap formed on said stationary frame, an orbiting scroll member having an orbiting end plate and an orbiting scroll wrap formed on said orbiting end plate and meshing with said stationary scroll wrap to define a plurality of compression working chambers, and a rotation prevention member which prevents said orbiting scroll member from rotating about an axis of said orbiting scroll member thereby to ensure that said orbiting scroll member thereby to ensure that said orbiting scroll member makes only an orbiting motion;

a crankshaft connected to said rotor of said electric motor for causing the orbiting motion of said orbiting scroll member and having a main shaft formed at one end of said crankshaft;

an eccentric bearing disposed at an eccentric location in said main shaft;

a main bearing supporting said main shaft;

an orbiting drive shaft formed on a side of said orbiting end plate opposite to said orbiting scroll wrap and received in said eccentric bearing;

a rolling type upper bearing supporting an end of said crankshaft opposite to said main shaft;

a step formed on said crankshaft between a first portion of a greater diameter at which said crankshaft is connected to said rotor and a second portion of a smaller diameter at which said crankshaft is received in said upper bearing to provide an upwardly directed surface;

a lift limiting plate fixed to a lower surface of said upper bearing and disposed above said upwardly directed surface so as to prevent a lift of said crankshaft from exceeding a predetermined value;

a support member resting on an inner race of said upper bearing; and

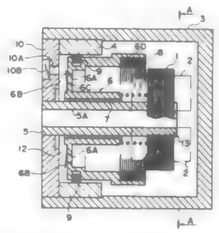
a fixing member by which said crankshaft is suspended and supported from said support member such that a clearance is left between said upwardly directed surface of said step and said lift limiting plate.

5,340,288

ELECTROMAGNETIC PUMP

Toshio Mikiya, and Toshio Osada, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1992, Ser. No. 998,428
Claims priority, application Japan, Jan. 10, 1992, 4-004169[U]
Int. Cl.[5] F04B *17/04*
U.S. Cl. 417—417 13 Claims



1. An electromagnetic pump comprising:

a casing having a cylinder and a cylinder head,

a piston placed for sliding in said cylinder and having on one end thereof a piston head which forms a compression chamber in cooperation with said cylinder and cylinder head the compression chamber having a suction inlet port and valve and a discharge port,

an annular armature fixedly held on said piston and having a central axis in the reciprocation direction of said piston,

spring means for biasing said piston in one direction,

a field core having a plurality of magnetic poles adapted to be opposed to an inner peripheral surface of said armature, having an outer diameter smaller than an inner diameter of said armature, and fixedly placed in said casing so that a central axis of said field core coincides with that of said armature, and

one or more coils wound around said field core for magnetizing said plurality of magnetic poles,

said armature and piston being attracted by the magnetic force generated when said coil is energized, toward said magnetic poles against a biasing force by spring, and said piston being returned in said one direction by said spring means when the coil is de-energized, whereby said piston reciprocates in said cylinder to cause a fluid sucked into said compression chamber from the suction port to be discharged from the discharge port.

5,340,289

APPARATUS FOR ELECTROSTATICALLY ISOLATING AND PUMPING CONDUCTIVE COATING MATERIALS

Ronald D. Konieczynski, North Royalton; Kenneth J. Coeling, Westlake, and Ronald J. Hartle, Amherst, all of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Continuation of Ser. No. 618,089, Nov. 26, 1990, Pat. No. 5,221,194, which is a continuation-in-part of Ser. No. 554,795, Jul. 18, 1990, Pat. No. 5,078,168. This application Mar. 22, 1993, Ser. No. 34,031
Int. Cl.[5] F04B *21/04*
U.S. Cl. 417—430 7 Claims

1. Apparatus for transferring coating material from an electrically grounded source to at least one electrostatic dispensing device, comprising:

a filling station which receives coating material from the source;

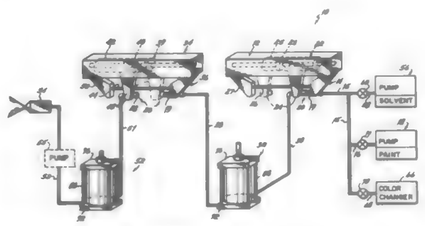
VOL 1165 ISS 4 AG 23 1994 UMI

transfer means for transferring coating material to the at least one dispensing device, said transfer means including:

(i) first means for receiving coating material from said filling station, said first means being movable between a transfer position coupled to said filling station and a neutral position uncoupled from said filling station;

(ii) second means, communicating with said first means, for transmitting coating material to the at least one dispensing device;

a coupling device including a first coupling member having a first one-way valve and a second coupling member formed with a suction chamber and having a second one-way valve, one of said first and second coupling members being carried by said filling station and the other of said



first and second coupling members being carried by said first means of said transfer means, said first and second coupling members engaging one another upon movement of said first means to said transfer position and disengaging one another upon movement of said first means to said neutral position, one of said first and second coupling members having an actuator means which engages said one-way valve of the other of said first and second coupling members at said transfer position to permit the transfer of coating material from said filling station to said transfer means, a suction being created within the suction chamber in the course of movement of said first and second coupling members to said neutral position which substantially prevents drippage of coating material from said first and second coupling members.

5,340,290

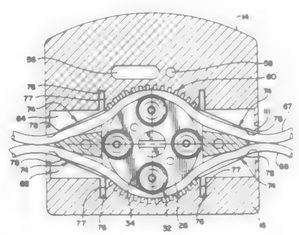
DOUBLE FEED PERISTALTIC PUMP

Anton H. Clemens, Madison, Wis., assignor to Scilog, Inc., Verona, Wis.

Continuation of Ser. No. 994,148, Dec. 21, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 164,429

Int. Cl.[5] F04B *43/12*

U.S. Cl. 417—477 R **29 Claims**



25. A peristaltic pump comprising:

a housing;

roller means mounted for rotation with respect to said housing for engaging and compressing first and second portions of flexible tubing;

a cam assembly mounted with respect to said housing;

first and second shoe means for respectively holding the first and second portions of flexible tubing in contact with said roller means, said first shoe means movably mounted with respect to said housing and moveable in a first direction by said cam assembly to engage the first portion of flexible tubing with said roller means and in a second direction generally opposite said first direction to disengage the first portion of flexible tubing from said roller means and permit removal of the first portion of flexible tubing from said pump, said second shoe means moveable in said second direction by said cam assembly to engage the second portion of flexible tubing with said roller means and in said first direction to disengage the second portion of flexible tubing from said roller means and permit removal of the second portion of flexible tubing from said pump; and

a biasing member disposed on one of said first and second shoe means, said biasing member respectively substantially resilient one of said first and second portions of flexible tubing against a generally rigid member of the pump.

5,340,291

FLOW RESTRAINING DEVICE FOR A THICK MATTER CONVEYING APPARATUS

Hartmut Benckert, Filderstadt, and Helmut Hurr, Reutlingen, both of Fed. Rep. of Germany, assignors to Putzmeister-Werk Maschinenfabrik GmbH, Aichtal, Fed. Rep. of Germany

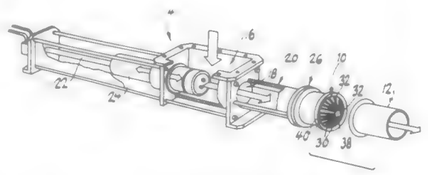
PCT No. PCT/EP91/00304, § 371 Date Jan. 13, 1993, § 102(e) Date Jan. 13, 1993, PCT Pub. No. WO92/01158, PCT Pub. Date Jan. 23, 1992

PCT Filed Feb. 16, 1991, Ser. No. 961,918

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1990, 4022357

Int. Cl.[5] F04B *15/02, 21/02*

U.S. Cl. 417—569 **20 Claims**



1. An apparatus for conveying thick matter, comprising:

a delivery line having an inner surface;

a thick matter pump connected to the delivery line for conveying thick matter from the pump through the delivery line in an output direction; and

a restraining member positioned in the delivery line, said restraining member including a first group of finger lamellae wherein said finger lamellae are radially arranged with respect to a point within the delivery line and said lamellae have slit type openings therebetween, said finger lamellae of the first group each including an end secured on the inner surface of the delivery line and an unattached end extending diagonally in the output direction and toward the inside of the delivery line, said finger lamellae of the first group thereby defining a pass-through opening therein, wherein said pass-through opening increases in size when thick matter flows in the output direction and wherein said pass-through opening decreases in size when there is no flow of thick matter or when thick matter moves in a direction opposite to the output direction, said restraining member also including a second group of finger lamellae, said finger lamellae of said second group having slit type openings therebetween and being arranged relative to said lamellae of said first group such that the finger lamellae of one of said first and second

groups at least partially cover the slit type openings between the finger lamellae of the other group.

5,340,292

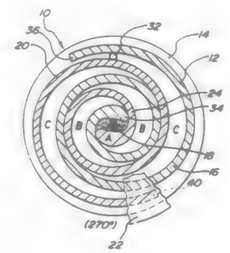
SCROLL COMPRESSOR WITH RELIEF PORT FOR REDUCTION OF VIBRATION AND NOISE

Duane F. Steele, Onsted, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 826,111, Jan. 27, 1992, abandoned. This application Mar. 11, 1993, Ser. No. 29,867

Int. Cl.[5] F04C *18/04*

U.S. Cl. 418—55.1 **17 Claims**



1. A scroll compressor comprising:

a stationary scroll member including an end plate, a stationary involute wrap extending from the end plate, and a discharge port defined within the end plate;

an orbiting scroll member including an end plate, and an orbiting involute wrap extending therefrom, the orbiting involute wrap being movable in cooperative relationship with the stationary involute wrap of the stationary scroll member so that a pair of sealed pockets is formed therebetween, the volume of the pair of sealed pockets being reduced as orbital motion progresses;

a suction chamber in communication with said pair of sealed pockets;

a gas inlet for introducing a gas into said suction chamber; and

a relief port in communication with one of the pockets in the pair thereof and said suction chamber so that there is produced a pressure imbalance between pockets in the pair and a diminution in noise and vibration of the scroll compressor.

5,340,293

GEAR-TYPE PUMP HAVING PRESSURE BALANCED SUPPORT

Minoru Yasuda, Chiryu; Takahiko Kato, Kariya, and Motoya Ito, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 29, 1992, Ser. No. 968,499

Claims priority, application Japan, Oct. 30, 1991, 3-284821; Sep. 14, 1992, 4-244677

Int. Cl.[5] F01C *1/10*

U.S. Cl. 418—171 **20 Claims**

1. A gear-type pump comprising:

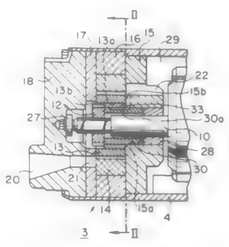
a disk-like inner rotor having external teeth formed on an outer periphery thereof, said inner rotor having a hole disposed generally at an axis of rotation thereof;

a disk-like annular outer rotor receiving said inner rotor therein, said outer rotor having internal teeth formed on an inner periphery thereof, said internal teeth meshing with said external teeth of said inner rotor to define therebetween a plurality of movable pump chambers, which change in volume to draw and discharge a fluid as said inner and outer rotors rotate;

a casing including a cylindrical wall rotatably receiving said outer rotor, walls forming side confinements for said plurality of pump chambers defined between said inner and outer rotors, an intake port positioned along a path of movement of said pump chambers so as to enable the pump chambers to draw the fluid therethrough, and a discharge port positioned along the path of movement of said pump chambers so as to enable the pump chambers to discharge the fluid therethrough, said fluid discharged through the discharge port being at a higher pressure than the fluid drawn through the intake port;

drive means for rotating said inner and outer rotors; and

a support member provided in said hole in said inner rotor for rotatably supporting said inner rotor in eccentric relation to said outer rotor;



said inner rotor and said support member having an inner pressure introduction passage formed therebetween at a position adjacent a mouth of said discharge port so as to be in fluid communication therewith and permit said higher pressure fluid discharged through the discharge port to be introduced between said inner rotor and said support member so that pressure created between said inner rotor and said support member during operation thereof is substantially equal to said higher pressure of the fluid discharged through said discharge port.

5,340,294

CIRCUMFERENTIALLY ALIGNED DETACHABLE SEGMENTED CURING MOLD FOR PNEUMATIC TIRES AND METHOD OF MANUFACTURING SAME

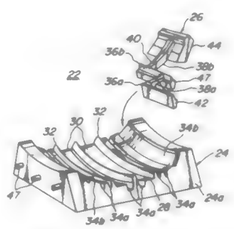
Takehiro Kata, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,585

Claims priority, application Japan, Jul. 15, 1991, 3-198350

Int. Cl.[5] B29C *35/00, 33/38*

U.S. Cl. 425—32 **5 Claims**



1. A method of manufacturing a curing mold for pneumatic tires, comprising a plurality of segments which are detachably aligned with each other in a direction of the mold corresponding to a circumferential direction of a product tire, each segment having an inner circumferential surface portion which is complementary in shape to land and groove portions in a tread region of the tire, wherein said method comprises the steps of:

preparing a plurality of fitting pieces, each having a projection which is complementary in shape to part of said groove portion of the tire and fixing portions at both ends

VOL 1165 ISS 4 AG 23 1994 UMI

of the projection at least one of which is complementary in shape to part of said land portion of the tire;

preparing a supporting block having fitting grooves corresponding to the fixing portions of the fitting pieces in that side of the supporting block which forms part of said inner circumferential surface portion of the mold; and

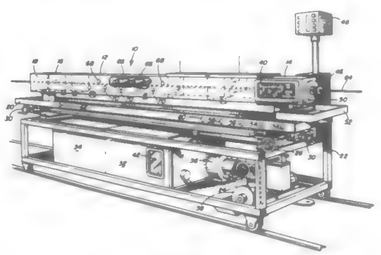
successively securing the fitting pieces to the supporting block by engaging the fixing portions of the fitting pieces into the fitting grooves of the supporting block, so as to form said segment.

5,340,295

VACUUM SIZING APPARATUS WITH CONTROLLED VACUUM

Ernest J. Preiato, Southampton, N.Y.; Marion M. Meetze; Hoopes, Mark S., both of Bay City, Mich., and Robert H. Bessemer, York, Pa., assignors to The Conair Group, Inc., Pittsburgh, Pa.

Filed Jul. 19, 1993, Ser. No. 93,366
Int. Cl.[5] B29C *35/00*
U.S. Cl. 425—71 **20 Claims**



1. Apparatus for cooling and sizing a molten plastic extrudate comprising:

a vacuum chamber containing water;

an entry passage into said vacuum chamber for said plastic extrudate;

an exit passage from said vacuum chamber for said plastic extrudate;

seal means sealing said entry passage and said exit passage while said plastic extrudate is passing through said passages;

a variable speed motor driven vacuum pump to reduce the atmospheric pressure within said vacuum chamber;

an adjustable vent valve to admit atmospheric pressure to said vacuum chamber in varying amounts depending upon the amount said vent valve is open;

a pressure transducer to sense the level of pressure within said vacuum chamber; and

an electrical circuit that controls the speed of said vacuum pump motor and the position of said adjustable vent valve to control the level of pressure within said vacuum chamber in response to signals from said pressure transducer.

5,340,296

RESILIENT INTERCONNECTION BRIDGE

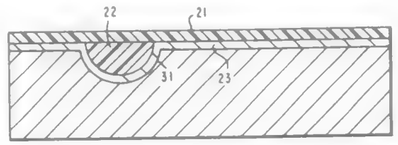
Christopher M. Schreiber, Newport Beach, and William R. Crumly, Anaheim, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 919,472, Jul. 24, 1992, Pat. No. 5,261,158, which is a division of Ser. No. 643,310, Jan. 22, 1991, Pat. No. 5,180,311. This application Aug. 18, 1993, Ser. No. 108,870
Int. Cl.[5] B29C *33/56, 39/10, 39/26, 41/42*
U.S. Cl. 425—123 **2 Claims**

1. Apparatus for use in manufacture of a resilient interconnection bridge comprising:

a mandrel including a mandrel substrate having a surface formed of a material that accepts electroforming of electrically-conductive circuit traces;

a protective coating of a material resistant to electroforming formed on said mandrel substrate, a pattern of grooves formed in said coating extending through said coating to said mandrel, said grooves having walls that are substantially perpendicular to said mandrel substrate, whereby a pattern of electrical conductors is electroformed upon said



mandrel substrate in said grooves, and whereby a dielectric substrate is laminated upon said coating and conductors to enable removal of the dielectric substrate and conductors from the mandrel substrate and its coating; and

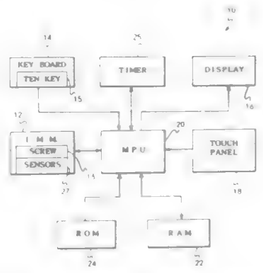
an elongated curved depression disposed across said mandrel in a predetermined region where a resilient interconnection bridge is to be formed in which a compliant elastomeric member is formed.

5,340,297

MOLDING MACHINE HAVING CONTROLLED INJECTION SCREW SPEED AND RESIN PRESSURE

Michiaki Takizawa, and Takashi Hakoda, both of Sakaki, Japan, assignors to Nissei Jushi Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Dec. 16, 1992, Ser. No. 991,319
Claims priority, application Japan, Dec. 19, 1991, 3-354667
Int. Cl.[5] B29C *45/77*
U.S. Cl. 425—145 **10 Claims**



1. A controller for a molding machine, comprising:

input means for inputting speed of a movable section of a resin-pressurizing mechanism of said molding machine with respect to positions thereof and time, and resin pressure;

memory means for storing data, which include the positions and time for the speed of said movable section and the resin pressure inputted;

control means for controlling the speed of said movable section and the resin pressure on the basis of the data stored in said memory means including the positions and time of the movable section;

a display unit for displaying a graph, which shows the relationship between the speed of said movable section and the resin pressure; and

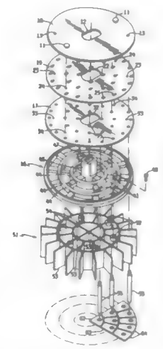
assigning means for changing the graph displayed on the display unit to thereby change the relationship between the speed of the movable section and the resin pressure, the assigning means being on the display of the display unit.

5,340,298

DIVIDER ASSEMBLY

David E. Beatty, Wrenshall, Minn.; Jeffery A. Nyquist, and Kenneth Ropp, both of Superior, Wis., assignors to Dutchess Bakers' Machinery Co., Inc., Superior, Wis.

Filed Sep. 28, 1993, Ser. No. 127,953
Int. Cl.[5] A21C *3/10, 5/08*
U.S. Cl. 425—183 **10 Claims**



1. A divider assembly for removable attachment to a dividing and rounding machine, comprising:

a) a divider blade having a plurality of segments formed into a circular geometric pattern with respective open areas therebetween;

b) a circular divider plate affixed to said divider blade, said divider plate having a neck projecting from its center, with means for attachment to said dividing and rounding machine, said divider plate further having openings therethrough generally aligned with said divider blade open areas;

c) a plurality of plugs shaped to fit within the respective open areas in said divider blade, each of said plugs having a stem affixed thereto, each stem having an upper end having a groove therein, whereby said stem upper ends project through said divider plate openings;

d) a plug plate overlaying said divider plate, said plug plate having a central opening for the passage of said divider plate neck, said plug plate further having a plurality of openings respectively alignable with said plurality of stems, whereby said stem upper end grooves project above said plug plate; and

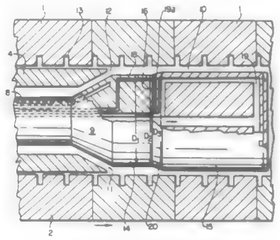
e) a lock plate overlaying said plug plate, said lock plate having a plurality of keyhole-shaped openings therethrough respectively alignable with the upper ends of said stems, whereby the lock plate is slidably engageable with the respective grooves in the upper ends of said stems.

5,340,299

APPARATUS FOR MANUFACTURING RIBBED PIPES

Jyri Jarvenkyla, Saipakangas, Finland, and Eino Holso, Viskafors, Sweden, assignors to Uponor, N.V., Philipsburg, Netherlands Antilles

PCT No. PCT/FI90/00178, § 371 Date Mar. 12, 1992, § 102(e) Date Mar. 12, 1992, PCT Pub. No. WO91/00797, PCT Pub. Date Jan. 24, 1991
PCT Filed Jul. 5, 1990, Ser. No. 778,171
Claims priority, application Finland, Jul. 12, 1989, 893383
Int. Cl.[5] B29C *47/86*
U.S. Cl. 425—326.1 **18 Claims**



1. In an apparatus for manufacturing from a mouldable material a pipe having ribs on its outer surface and a smooth inner surface, the apparatus comprising: a core including a shaft (**8**), a conically widening mandrel (**9**) located downstream of the shaft in a direction of production and a kernel (**10**) having an initial zone (**14**) and an end zone (**15**) respectively of substantially uniform diameters successively disposed downstream of the mandrel; an extrusion sleeve (**4**) surrounding the core and forming with the core a nozzle (**11**) for the material, the extrusion sleeve having a first end face located upstream of the kernel (**10**); and moulds (**1, 2**) encasing the extrusion sleeve and the core, the moulds being movable along endless paths and having grooves (**13**) on inner surfaces for forming the ribs on the pipe (**7**), the improvements further comprising:

heating means (**18**) for heating the initial zone of the kernel, the initial zone of the kernel being cylindrical;

first cooling means (**19**) for cooling the end zone of the kernel; and

a second end face (**20**) of an upstream outset of the end zone of the kernel, the second end face conically widening in the direction of production from a smallest widening in the direction of production from the smallest diameter substantially corresponding to the diameter of the initial zone to a largest diameter.

5,340,300

AN APPARATUS FOR CONTINUOUSLY MANUFACTURING A FIBER REINFORCED RESIN

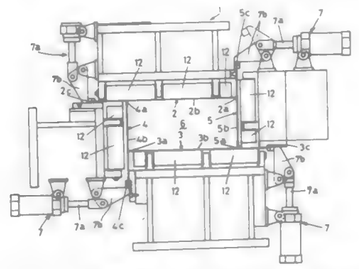
Noriyasu Saeki; Koichi Watanabe, both of Osaka; Hideo Iwai, Shiga; Eiichi Yasuda, Shiga, and Ryuji Inoue, Shiga, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 21, 1992, Ser. No. 946,837
Claims priority, application Japan, Sep. 21, 1991, 3-242162
Int. Cl.[5] B29C *67/00*
U.S. Cl. 425—329 **15 Claims**

1. An apparatus for continuously manufacturing a fiber reinforced formed resin which comprises first (2), second (3), third (4), and fourth (5) endless belts, said first and second endless belts are oppositely disposed and parallel with each other, said third and fourth endless belts are oppositely disposed and parallel with each other, said first endless belt includes a belt end (*2a*) which is in slidable contact with an inner surface (*5b*) of said fourth endless belt with an opposite end extending beyond said third belt, said second endless belt includes an end (*3a*) which is in slidable contact with an inner

VOL 1165 ISS 4 AG 23 1994 UMI

surface of said third endless belt with an opposite end extending beyond said fourth endless belt, said third endless belt includes one end (4*a*) which is in slidable contact with an inner surface of said first endless belt with an opposite end extending beyond said second endless belt, said fourth endless belt includes one end (5*a*) which is in slidable contact with an inner surface of said second endless belt with an opposite end extending beyond said first endless belt, adjusting means for adjusting



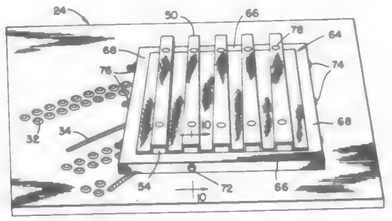
the belts to form a different sized passage between the belts, at least three of the endless belts are movably supported by said adjusting means, and a sectional shape of the forming passage is freely controlled by arbitrarily movably adjusting at least two endless belts relative to two other belts, and a belt constraining jig disposed at an opposite end of each endless belt so that each endless belt is pressed against the inner surface of another endless belt.

5,340,301

CORRUGATED SUBSTRUCTURE FORMING TOOL

Victor N. Saffire, Westlake Village; John H. Masters, Newhall; Robert L. Hartman, Lennox, and Robert B. Taaffe, Manhattan Beach, all of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Aug. 5, 1988, Ser. No. 762,653
Int. Cl.[5] A21C *3/02*; B32B *5/12*
U.S. Cl. 425—336 **15 Claims**



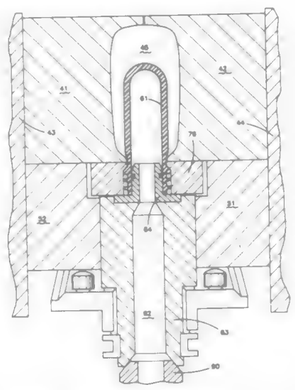
1. Kinematic tooling apparatus for forming a corrugated substructure fashioned from composite materials comprising:
- a base plate having a substantially planar primary surface and at least one secondary surface extending beyond said primary surface;
- a plurality of movable elongated rib elements positioned on said base plate in a predetermined side by side relationship beginning with a first rib element and continuing to a last rib element, each of said rib elements including a lower region defining a longitudinally extending space member and a bottom surface resting upon said secondary surface such that a space is formed between said primary surface and said bottom surface, each of said rib elements including an upper region having outer surfaces which are adapted to receive thereon a pre-cut sheet of composite prepreg material which is generally coextensive with said rib elements;
- said rib elements being laterally movable between open, mutually spaced apart positions and closed, mutually adjoining positions whereat said spacer member of one of said rib elements is engaged with an adjacent one of said rib elements, said outer surfaces of an adjoining pair of said rib elements defining a longitudinally extending channel;
- a plurality of elongated bar members adapted for reception on a surface of the sheet material which faces away from said rib elements, successive ones of said bar members respectively aligned with successive channels;
- retention means for holding at least said last rib element stationary relative to said base plate; and
- operative means for moving said first rib element in a lateral direction toward said last rib element until all of said rib elements are in the closed position;
- each of said bar members being drawn by reason of its weight into an associated one of the channels, thereby forcing the sheet material into a contiguous relationship with said outer surfaces as said rib elements are moved collectively to the closed position;
- whereby said rib elements collectively serve as a mold to define the shape of a substructure to be formed out of the sheet material.

5,340,302

APPARATUS FOR PREPARING HOLLOW PLASTIC ARTICLE

Ronald W. Ingram, Toronto, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Jul. 6, 1993, Ser. No. 86,656
Int. Cl.[5] B29C *49/56*
U.S. Cl. 425—528 **15 Claims**



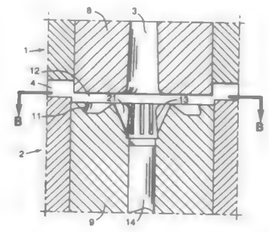
1. Apparatus for forming hollow plastic articles which comprises: a blow mold for forming a hollow plastic article from a parison including at least two relatively reciprocable mold portions movable from an open position to a closed position; holding means for holding the parison within the blow mold including channel means within the holding means communicating with the parison permitting the introduction of high pressure fluid into the parison to expand the parison into conformance with the blow mold, said holding means also including a mandrel supporting the parison and engageable with the parison; first alignment means to align the holding means with the blow mold; second alignment means in fixed relationship to the blow mold in the mold closed position to align the parison with the mandrel and the blow mold; a blow nozzle engageable with the holding means in the mold closed position for the introduction of high pressure fluid into the parison; and wherein the second alignment means contacts the holding means and clamps the holding means to the second alignment means upon engagement of the blow nozzle with the holding means.

5,340,303

FASTER CYCLING SPRUE FOR CENTERHOLE - TEAROUT OPTICAL DISK INJECTION MOLDS

Steven M. Maus, Osseo, and George J. Galic, Columbia Heights, both of Minn., assignors to Galic Maus Ventures, Columbia Heights, Minn.

Filed Jul. 20, 1993, Ser. No. 94,830
Int. Cl.[5] B29C *45/40*
U.S. Cl. 425—549 **9 Claims**



1. An injection mold apparatus for molding optical disks comprising:
- a stationary half partially defining an optical disk mold cavity;
- a bushing exhibiting an axial extension beyond said stationary half, said bushing defining a sprue funnel and said extension exhibiting an external diameter corresponding to and partially defining an internal aperture in said optical disk mold cavity;
- a displaceable half partially defining said optical disk mold cavity and exhibiting an internal diameter defining, circumferentially, a sprue flange cavity;
- an axially displaceable sleeve within said displaceable half partially defining a sprue cavity exhibiting a sprue flange undercut means for retaining a sprue flange and an axial conical narrowing means for retaining a sprue, and
- said partially defined sprue cavity within said displaceable half also exhibiting a further narrowing member extending axially from a displaceable half surface plane of said sprue flange to a surface juncture with an axially displaceable means for ejecting said sprue, said member having a plurality of molded-in rigidifying ribs formed within a mating plurality of female rib cavities cut into said axially displaceable sleeve, said plurality of ribs being substantially uniformly spaced circumferentially about said member and substantially extending axially from said surface plane of said sprue flange to said surface juncture with said axially displaceable means for ejecting said sprue; and,
- said axially displaceable means for ejecting said sprue guided in said sleeve.

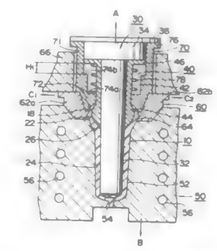
5,340,304

MOLD FOR INJECTION MOLDING PREFORM WITH UNDERCUT LIP

Yoshinori Nakamura, Ueda, Japan, assignor to Nissei ASB Machine Co., Ltd., Nagano, Japan

Filed Apr. 8, 1992, Ser. No. 865,207
Claims priority, application Japan, Apr. 26, 1991, 3-125016
Int. Cl.[5] B29C *45/44*
U.S. Cl. 425—577 **4 Claims**

1. An injection mold for injection molding a preform having a cylindrical closed-end barrel portion and a lip portion formed on said barrel portion at an open end thereof, the lip portion including an undercut formed to extend inwardly, proceeding in a direction toward the open end of the barrel portion, said injection mold comprising:
- an injection core mold having an outer surface defining inner walls of said lip and barrel portions, said injection core mold being movable along a longitudinal axis relative to said preform;
- an injection cavity mold having a cavity surface defining an outer wall of said barrel portion, said injection cavity mold being movable along the longitudinal axis relative to said preform;
- a first lip cavity mold positioned adjacent to said injection cavity mold on mold closure and having a cavity surface defining an outer wall of a non-undercut area of said lip portion, said first lip cavity mold including a pair of lip cavity mold halves movable toward and away from each other in a transverse direction;
- a second lip cavity mold positioned adjacent to said first lip cavity mold on mold closure and having a cavity surface defining an outer wall of the undercut of said lip portion, said second lip cavity mold being movable along the longitudinal axis relative to said preform;
- a mold driving mechanism comprising means for effecting an initial release movement of said second lip cavity mold



relative to the preform in the longitudinal direction by an initial amount of movement required to secure a space around said undercut area and means for thereafter causing said injection core mold to move relative to said preform in the longitudinal direction while resiliently deforming said undercut area outwardly;
- wherein said injection core mold includes a core pin for defining the inner walls of said lip and barrel portions and a proximal end portion having an external diameter larger than that of said core pin, and wherein said second lip cavity mold includes a cylindrical portion surrounding a portion of said proximal end portion and having an inner bottom wall formed therein at a position opposite to the proximal end portion of said injection core mold and wherein said mold driving mechanism includes means for driving said second lip cavity mold in the direction of said longitudinal axis; and
- wherein a side wall of the cylindrical portion of said second lip cavity mold includes an inner stepped wall formed therein to engage the proximal end portion of said injection core mold after said initial release movement and wherein a spring is disposed between said proximal end portion and said inner bottom wall.

5,340,305

LOW NOX GAS BURNER

John V. Joyce, 19 Minkara Road, Bayview, N.S.W., Australia 2104

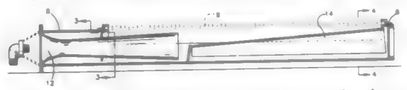
Division of Ser. No. 598,021, Oct. 16, 1990, abandoned. This application May 28, 1992, Ser. No. 891,155
Claims priority, application Australia, Oct. 20, 1989, PJ7000
Int. Cl.[5] F23D *14/14*
U.S. Cl. 431—7 **12 Claims**

1. A method of operating a gas burner to provide substan-

VOL 1165 ISS 4 AG 23 1994 UMI

tially convective heat transfer, said burner including a plenum chamber having a combustion surface formed from a conductive porous heat resistant material, a fuel supply, an air/fuel mixing and delivery device utilizing natural aspiration for combining a flow of fuel with an air component flow to form an air/fuel mixture, comprising the steps of:

delivering said air/fuel mixture to said combustion surface at a flow providing a combustion loading of said combustion surface in the range of from about 200 to about 650 MJoules/m^2/hr and with an air component greater than 110%



of that required for theoretical complete combustion and combusting said air/fuel mixture at a combustion temperature to form hot combustion products,

selecting said air component flow in combination with said combustion loading to suppress said combustion temperature to between about 680 to about 850° C. so as to reduce the formation of oxides of nitrogen to an NO_2 component concentration in the range of from about 1.0 to about 5.0 ng/Joule in the combustion products, and

transferring heat from said burner by substantially convective heat transfer with said combustion products.

5,340,306

DEVICE FOR MIXING TWO GASEOUS COMPONENTS AND BURNER IN WHICH THIS DEVICE IS EMPLOYED

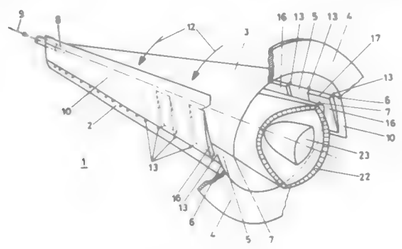
Jakob Keller, Redmond, and Robert E. Breidenthal, Seattle, both of Wash., assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Dec. 4, 1992, Ser. No. 985,316

Claims priority, application European Pat. Off., Dec. 23, 1991, 91122141.4

Int. Cl.[5] F23C *5/00*

U.S. Cl. 431—351 **16 Claims**



1. A device for mixing two gaseous components, having a tangential inlet flow duct which opens into a first inlet flow gap of a pair of inlet flow gaps through which the first of the two components enters, said pair of inlet flow gaps defined by at least two hollow partial conical bodies having central axes which are offset relative to one another, the device further including inlet flow nozzles in the region of the inlet flow gap, through which nozzles the second of the two components is supplied wherein:

in the region of the inlet flow duct, individual ramps are provided, said individual ramps having a thickness which increases in a first direction, with said first direction extending along said inlet flow duct and toward said first inlet flow gap such that said ramps become thicker toward the inlet flow gap and wherein said ramps end in the first inlet flow gap at a separation edge; and

the inlet flow nozzles are located in a region near the separation edge of the ramps.

5,340,307

Patent Not Issued For This Number

5,340,308

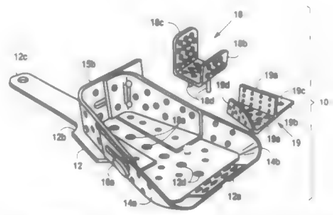
ADJUSTABLE DENTAL TRAY

Joseph F. Cukjati, 1916 Wendy St., Irving, Tex. 75060

Filed Jun. 29, 1993, Ser. No. 84,430

Int. Cl.[5] A61C *9/00*; **A61D** *5/00*

U.S. Cl. 433—41 **9 Claims**



1. An adjustable dental impression tray for applying an impression paste around the teeth of mammalian mouth, comprising, in combination:

an elongated flat base element having a distal end portion insertable into the mouth of the mammalian and a proximal end portion extending out of the mouth;

a handle formed on said proximal end portion;

said flat base element having a flat top surface and a flat bottom surface;

a pair of forward paste retaining elements respectively secured to the distal portions of said flat bottom surface in any selected one of a plurality of lateral spacings;

a pair of rear paste retaining elements having forward end portions respectively secured to the rear end portions of said forward retaining elements in any selected one of a plurality of longitudinal positions relative to said base plate;

said rear paste retaining elements having overlapping wall portions positionably adjacent to but exteriorly spaced from, the front teeth of the mammalian's mouth; and

said distal end of said flat base plate being angularly bent upwardly to abbutingly engage the distal end of said forward paste retaining elements forming a paste retaining barrier element to the flow of said paste into the mammalian's throat.

5,340,309

APPARATUS AND METHOD FOR RECORDING JAW MOTION

James G. Robertson, 601 Van Ness Ave., #424, San Francisco, Calif. 94102

Filed Sep. 6, 1990, Ser. No. 579,330

Int. Cl.[5] A61C *19/04*, *5/00*

U.S. Cl. 433—69 **7 Claims**

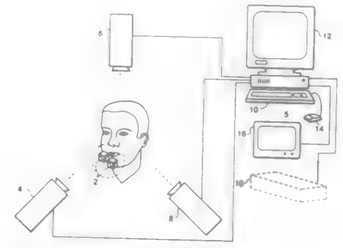
1. An apparatus for tracking and recording a subject's jaw motion, comprising:

at least two targets, each target having at least one cross-hair disposed on a face of the target;

means for non-intrusively attaching a first target to said subject in a fixed relationship relative to the subject's upper jaw, and means for non-intrusively attaching a second target to said subject in a fixed relationship relative to said subject's lower jaw, said targets being initially located near the origin (0,0,0) of a three dimensional subject coordinate system which coordinate system is fixed relative to said subject's upper jaw;

three video cameras disposed about said subject's head, and disposed along camera coordinates X,Y and Z, each of said video cameras being positioned so that its lens is focused on said targets' cross-hairs, each of said cameras having a charge control device chip which includes an array of light sensitive pixels defining a two dimensional image coordinate system for converting a light image indicative of a target's cross-hair position into a series of amplitude signals;

wherein each of said targets is approximately cuboidal with at least three differently colored faces oriented toward said cameras along camera coordinates X, Y and Z, each



of said colored faces having a cross-hair of high optical contrast relative to its background; and

computer means for receiving and processing said camera chip amplitude signals, said computer means having a pre-processor board for timing, synchronizing and transforming said camera chip amplitude signals into an address record representing said targets' relative positions as a function of time, said computer means further including a mass storage unit for storing the address record information.

5,340,310

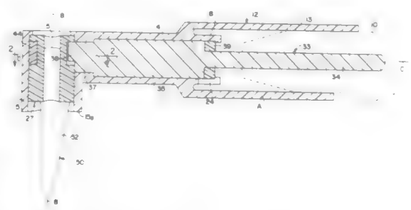
DENTAL PROPHY ANGLE

Edward J. Bifulk, 1948 E. Kenwood Dr., St. Paul, Minn. 55117

Filed Oct. 12, 1993, Ser. No. 134,397

Int. Cl.[5] A61C *3/03*

U.S. Cl. 433—123 **12 Claims**



1. A dental prophy angle attachment adapted to reciprocally mount a dental tool which has a tooth engaging surface and be driven by a handpiece for carrying out a dental operation on teeth, comprising a first housing having a head that has a first surface and a longitudinal axial bore opening through the first surface, a neck extending transversely away from the head and having a first end joined to the head and an axial opposite end and a sleeve having a first end joined to the opposite end of the neck and an axial opposite terminal end, the neck and sleeve having a transverse second bore extending axially therethrough to open though the opposite terminal end and to the head bore to extend at an angle of less than 180 degrees relative thereto, and a socket mounted in the head bore for longitudinal reciprocal and rotary movement relative to the head and being adapted for removably retaining a tool in substantially fixed angular relationship relative thereto, the socket having an axially intermediate, circumferential groove opening radially toward the second bore, a drive shaft rotatably mounted in the second bore and having a first end portion adapted for being rotatably driven by a handpiece and an axially opposite eccentric pin extending into the socket groove for reciprocating the socket as the shaft is rotated, and a rotational restrainer mounted in said groove in abutting relationship to each of the head and socket to retain the socket in fixed angular relationship relative to the head, including as the socket is reciprocated, until the tool encounters external resistance to reciprocation and thence permitting the socket rotating relative to the head until the tool is in a normal dental treating angular relationship relative to at least one of a tooth and the gum.

5,340,311

DENTAL HANDPIECE

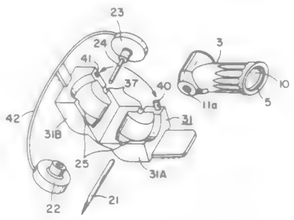
Masatoshi Sakurai, Sakado, Japan, assignor to Promident Manufacturing, Limited, Saitama, Japan

Division of Ser. No. 75,666, Jun. 11, 1993. This application Nov. 16, 1993, Ser. No. 153,585

Claims priority, application Japan, Apr. 19, 1993, 5-91460

Int. Cl.[5] A61C *1/08*

U.S. Cl. 433—126 **1 Claim**



1. A burr exchanging device for a dental handpiece comprising hinged first and second sections which are respectively provided with a cavity that form a receptacle when said two sections are closed, said receptacle having a configuration corresponding to a cylindrical frame of a head section, of a dental handpiece and each one of said two sections having a burr guide and a pushing pin guide, and one of said two sections further having a burr remover and a burr presser which are provided on a supporting cord extending from said one of said two sections, said burr remover having a pushing pin and said burr presser having a tapered inner surface.

5,340,312

ANTI-CONTAMINATION TYPE ELONGATED HAND PIECE OF A DENTAL INSTRUMENT

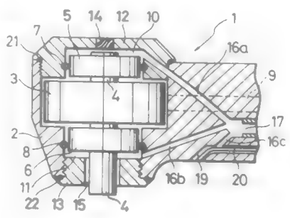
Masahiro Murase, 27-4, Nishi-Kamata 6-chome, Ohta-ku, Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,287

Claims priority, application Japan, Jun. 9, 1992, 4-173690

Int. Cl.[5] A61C *1/05*

U.S. Cl. 433—132 **4 Claims**

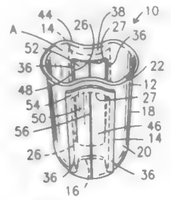


1. An anti-contamination type elongated hand piece of a

VOL 1165 ISS 4 AG 23 1994 UMI

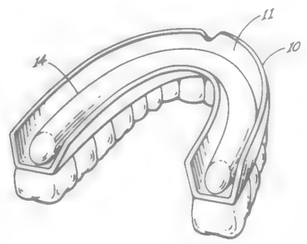
dental instrument comprising: a head housing having upper and lower lids, and a tool drive to permit the detachable mounting of a tool, said tool drive being fixed in said head housing with its drive shaft rotatably supported by upper and lower bearing means, characterized in that: upper and lower air cells are defined by said upper lid and said upper bearing means and by said lower lid and said lower bearing means; said upper and lower air cells communicating with air supply passages; and said upper and lower lids have airholes to permit air to flow out from said air cells, said air holes having rectilinear means for ensuring rectilinear flow to rectify the airflow therethrough.

5,340,313
TOOTH ISOLATION DEVICE
Gregory J. Hussin, P.O. Box 1111, Crystal Beach, Fla. 34681
Filed May 21, 1993, Ser. No. 65,615
Int. Cl.[5] A61C *5/14, 5/00*
U.S. Cl. 433—136 **11 Claims**



1. A tooth isolation device, particularly adapted for use with upper and lower molars, comprising:
a cup-shaped member comprising a bottom portion and at least one side extending outwardly therefrom to define an open end, said member comprising at least one aperture formed therethrough, said aperture extending from said bottom portion along said side to a point proximal to said open end; and
a flexible sealing element attached to said member in covering and sealing relation to said aperture, said sealing element comprising a slit formed therethrough in communication with said aperture, whereby said member is adapted to receive at least one molar projecting into said member through said slit and said aperture.

5,340,314
METHOD OF BONDING AND RELINING DENTURES
Jo-Ellen Tarvis, 80 Jamie La., Teaticket, Mass. 02536
Filed Nov. 27, 1992, Ser. No. 982,630
Int. Cl.[5] A61C *13/02*
U.S. Cl. 433—168.1 **4 Claims**



1. A method for holding a denture in place on a wearer's gum comprising the steps of:
a) providing a denture plate means for supplying substitute teeth comprising an elongated channel adapted to receive a wearer's gum, said channel being concave;
b) providing orthodontal wax based on paraffin;
c) preparing a strip of said wax;
d) rolling the strip with the wearer's fingers to extend the length of the strip to the length of the denture plate;
e) pressing the wax into the channel such that the channel is filled to a level of no more than half full;
f) placing the denture plate means in the wearer's mouth;
g) biting down lightly on the denture plate means; and
h) molding the wax with the heat of the residual heat of the mouth, wherein a complete bond is established between the wearer's gum and the denture plate means.

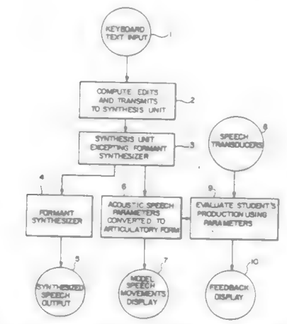
5,340,315
METHOD OF TREATING OBESITY
Gail L. Kaye, Columbus, Ohio, assignor to Abbott Laboratories, Abbott Park, Ill.
Filed Jun. 27, 1991, Ser. No. 722,438
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—127 **18 Claims**

1. A method of treating obesity comprising the steps of:
(a) subjecting an obese person to medical, exercise, and psychosocial evaluations, and establishing a goal weight for said obese person;
(b) thereafter instructing said obese person regarding nutrition, exercise and personal effectiveness, and instructing said obese person to consume a weight control beverage and only one meal per day until said goal weight has been attained, one serving of the weight control beverage acting as a meal replacement and providing at least one-third of the U.S. RDA for protein, minerals and vitamins, one-third of the recommended daily intake for fiber, and about 240 calories, said weight control beverage containing a blend of dietary fibers containing oat hull fiber, gum arabic and sodium carboxymethylcellulose, said blend of dietary fibers providing both soluble and insoluble and both fermentable and non-fermentable fiber, the ratio of soluble to insoluble dietary fiber being approximately 50/50, said weight control beverage being integratable into a food exchange as one bread exchange, two lean meat exchanges and one fruit exchange;
(c) determining that the person being treated for obesity has reached the goal weight established in step (a), and thereafter instructing the person being treated for obesity to alter food consumption to be two meals a day plus the weight control beverage for a period of about two weeks, and after the two week period instructing the person being treated for obesity to alter food consumption to be three meals per day while continuing to monitor caloric intake and body weight to establish a caloric intake for maintaining the goal weight established in step (a); and
(d) thereafter monitoring the weight of the person being treated for obesity less frequently while the person practices the skills relating to weight maintenance which were taught to the person being treated for obesity during in steps (b) and (c).

5,340,316
SYNTHESIS-BASED SPEECH TRAINING SYSTEM
Hector R. Javkin; Elizabeth G. Keate, both of Goleta; Norma Antonanzas-Barroso, Los Angeles, and Brian A. Hanson, Goleta, all of Calif., assignors to Panasonic Technologies, Inc., Secaucus, N.J.
Filed May 28, 1993, Ser. No. 68,390
Int. Cl.[5] G09B *9/00, 23/00, 25/00;* **G06K** *9/00*
U.S. Cl. 434—185 **17 Claims**

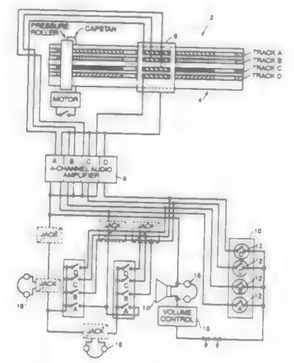
2. A synthesis-based speech training apparatus, which comprises:
input means for entering an utterance to be demonstrated;
editing means for converting the utterance to be demonstrated into a set of phonemes;

synthesizer means for converting the set of phonemes into a set of acoustic parameters which specify the acoustic characteristics of the utterance to be demonstrated;



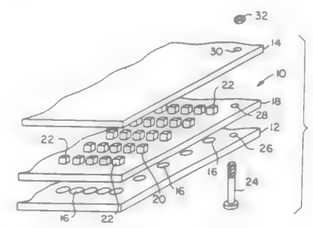
means for converting the set of acoustic parameters into a set of articulatory parameters; and
means for displaying the set of articulatory parameters.

5,340,317
REAL-TIME INTERACTIVE CONVERSATIONAL APPARATUS
Michael J. Freeman, Suite 2401, 1270 Avenue of the Americas, New York, N.Y. 10020
Continuation-in-part of Ser. No. 727,836, Jul. 9, 1991, Pat. No. 5,313,510. This application Aug. 7, 1992, Ser. No. 927,113
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] G09B *7/06*
U.S. Cl. 434—321 **18 Claims**



1. A real-time interactive conversational apparatus which comprises:
means for removably receiving and selectively playing at least one of a plurality of storage media at a given time, each of said plurality of removably receivable and selectively playable storage media containing a different interactive conversational content and comprising a plurality of temporally related data storage tracks containing information, said means for selectively playing a removably received storage media at said given time comprising means for substantially simultaneously retrieving the information from each of said data storage tracks; and
multiple choice selection means for randomly accessing one of said tracks of said removably received storage media for retrieving the information stored thereon for enabling said selective playing of said retrieved information, the information being stored on each track in a plurality of information segments, each of said segments comprising a complete message reproducible by said retrieval means directly in response to the selection of the track upon which said segments are stored, each of said information segments comprising interrogatories having multiple choice selectable responses, responsive messages, informational messages, or combinations thereof related in real-time and content to information contained in at least one information segment of at least one track at a prior time, said information stored on said tracks in a predetermined timed sequence according to a decision-tree for providing different interactive pathways through said tracks comprising a continuous flow of interactive conversations across said tracks dependent on said multiple choice selectable responses, each of at least one information segment on each of at least two of said plurality of tracks comprising an interrogatory having multiple choice selectable responses corresponding with associated information segments, said associated information segments comprising responsive messages related in real-time and content to said interrogatory, said correspondence determinable according to said decision-tree, said selecting playing means selectively playing an information segment from said accessed one of said tracks.

5,340,318
CONDUCTIVE ELASTOMERIC ELEMENT ELECTRONIC CONNECTOR ASSEMBLY
James J. Kunihiro, Perkasie, Pa., assignor to Elastomeric Technologies, Inc., Hatboro, Pa.
Continuation of Ser. No. 865,780, Apr. 7, 1992, abandoned, which is a continuation of Ser. No. 702,914, May 20, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 988,411
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 **8 Claims**



1. A conductive elastomeric element electronic connector assembly comprising.
a pair of spaced substrates disposed parallel to each other with each having an array of contact pads on a surface thereof facing the surface of the other of said substrates having said contact pads, selected contact pads on one of said substrates associated with selected contact pads on the other of said substrates and aligned on lines perpendicular to said substrates;
a connector element carrier positioned between said substrates and having an array of openings extending through the thickness thereof corresponding to said arrays of said contact pads on said substrates;
a plurality of conductive elastomeric connector elements extending individually along said lines perpendicular to said substrates through, projecting beyond, and held in said openings in said connector element carrier, each of said conductive elastomeric connector elements electrically connecting associated contact pads on said substrates and having a volume within the confines of the opening in

VOL 1165 ISS 4 AG 23 1994 UMI

which it is held which is sufficiently less than the volume of the opening to permit expansion of said conductive elastomeric connector element as said conductive elastomeric connector element is compressed axially;

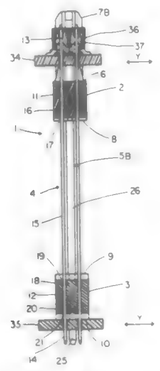
and means for applying an axially compressive force to said conductive elastomeric connector elements and fastening together said pair of substrates and said connector element carrier and maintaining said axially compressive force on said conductive elastomeric connector elements.

5,340,319

ELECTRIC CONNECTOR FOR PRINTED CIRCUIT BOARDS

Masahiro Enomoto, Tokyo, and Minoru Fukushima, Yokohama, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Aug. 2, 1993, Ser. No. 100,819
Claims priority, application Japan, Aug. 7, 1992, 4-061503[U]
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—75 5 Claims



1. An arrangement including a connector interconnecting two spaced apart, parallel printed circuit boards, said connector including:

a pair of dielectric wafers, each wafer having a plurality of pin receiving openings therein alignable with each other, one wafer mounted adjacent one board and the second wafer mounted adjacent the other board,

a plurality of conductive pin terminals, each adapted to be received in corresponding openings of both wafers such that the ends of the terminals extend beyond their respective wafer into the printed circuit boards and the wafers are axially spaced-apart along the terminals, the improvement comprising:

at least two support rods mounted between the two wafers, each support rod press fit into an aperture in both wafers and each support rod being stiffer than said terminals,

whereby the support rods add rigidity and stability in the arrangement so that the boards will not move relative to one another beyond a predetermined amount thereby preventing over stressing of the terminals,

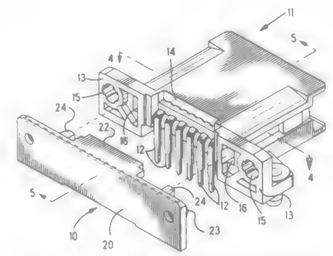
the terminal receiving openings of at least one wafer being greater than or equal to the cross section of the terminals to allow the terminals to slide within the openings when the boards move relative to one another.

5,340,320

SHIELD FOR A HEADER HAVING RIGHT ANGLE ELECTRICAL TERMINALS

Dean A. Puerner, Maracopa, Ariz., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 25, 1993, Ser. No. 83,159
Int. Cl.[5] H05K *1/00*
U.S. Cl. 439—79 4 Claims



1. A safety shield for a header, wherein a plurality of electrical terminals extend from an end of the header, the electrical terminals bent at an angle of approximately 90° from the end of the header, the shield protecting the electrical terminals from inadvertent access, the end of the header having a lateral notch formed therein, the notch extending over the electrical terminals, the end of the header further having a pair of spaced-apart openings formed therein:

the safety shield comprising an insulated body having a center portion, a ledge formed at approximately the center portion of the body, and the ledge extending outwardly at approximately a right angle to the body, the body of the safety shield having a pair of spaced-apart pins formed therein, said pins being adapted to be received in and cooperate with said openings of said header when said safety shield is connected to the end of the header, whereby

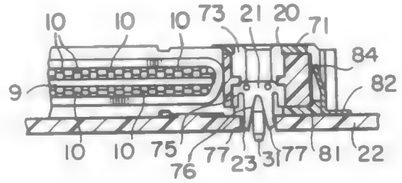
when the safety shield is secured to the header, the body of the shield extends laterally across the end of the header, and the ledge on the body is received in the notch in the header such that the electrical terminals extending from the end of the header are covered.

5,340,321

ELECTRICAL CONNECTOR WITH A SHIELDING SHELL

Osamu Hashiguchi, and Hiroaki Kinoshita, both of Tokyo, Japan, assignors to Japan Aviation Electronics, Japan

Division of Ser. No. 911,889, Jul. 10, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 29,976
Claims priority, application Japan, Jul. 11, 1991, 3-61736[U]; Aug. 6, 1991, 3-69252[U]
Int. Cl.[5] H01R *13/658, 13/73*
U.S. Cl. 439—108 3 Claims



1. An electrical connector, comprising an insulator having a base portion with a main surface and a mating portion formed

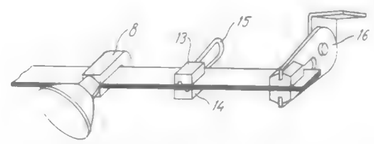
on said main surface of said base portion, a pair of blocks formed at opposite ends of said base portion, each of said blocks having a receiving surface parallel to said main surface and an installation surface perpendicular to said main surface, said installation surface making contact with a surface of a printed circuit board when said electrical connector is mounted on the printed circuit board, a plurality of electroconductive contacts disposed on said mating portion, an electroconductive shell attached to said base portion for surrounding said mating portion, a pair of flanges formed at opposite ends of said shell and received by said receiving surfaces of said blocks, a pair of electroconductive hook lugs attached to said blocks, a pair of electroconductive holding members which are mounted on side surfaces of said blocks and which have portions extending in a plane including said installation surfaces, a pair of connecting members for electrically connecting said hook lugs and said flanges, and connecting means for electrically connecting said holding members and side surfaces of said hook lugs.

5,340,322

LOW VOLTAGE CABLE LIGHTING SYSTEM

Peder U. Poulsen, Huntington Rd. Box 197, Stratford, Conn. 06497

Filed Apr. 22, 1993, Ser. No. 51,730
Int. Cl.[5] H01R *25/14*
U.S. Cl. 439—111 4 Claims



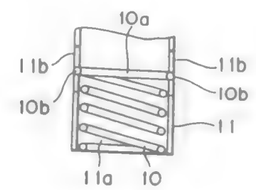
1. A low voltage lighting system comprising two bare, ribbon shaped conductors which are placed on each side of and bonded to an insulating inter-layer, and at least one low voltage bi-pin lamp, each lamp having respective contact pins resting against respective outwardly facing surfaces of the conductors.

5,340,323

COIL SPRING ENGAGEMENT CONSTRUCTION OF A HIGH TENSION TERMINAL IN AN ENGINE IGNITION APPARATUS

Hisao Imanishi, and Keiichi Nakajima, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jan. 21, 1993, Ser. No. 6,989
Claims priority, application Japan, Jan. 29, 1992, 4-014018; Feb. 14, 1992, 4-005911[U]
Int. Cl.[5] H01R *4/48*
U.S. Cl. 439—125 5 Claims



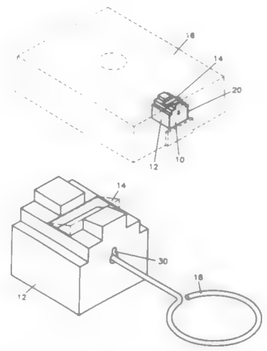
1. A coil spring engagement construction of a high tension terminal in an engine ignition apparatus including a conductive coil spring for electrically connecting a top terminal of an ignition plug with a high tension terminal, said coil spring being inserted within the high tension terminal upon which the high tension is applied, said coil spring including an insertion end portion, said coil spring engagement construction comprising engagement portions on said high tension terminal including at least one of holes and concave grooves in a wall thereof for engaging an insertion end portion of the coil spring on a cylindrical peripheral wall of the high tension terminal, projection portions of said insertion end portion projecting outwardly to a diameter larger than the coil spring outer diameter to be engaged by the engagement portions of the high tension terminal, said projection portions being located on both sides of the insertion end portion of the coil spring.

5,340,324

PHONE JACK LOCK

James H. Fields, 207 Verbena Dr., Palo Alto, Calif. 94303; Roberta B. Williams, 427 Grand Blvd., Half Moon Bay, Calif. 94019, and C. L. McKinney, 1450 Maple St., Redwood City, Calif. 94063

Filed Mar. 23, 1993, Ser. No. 36,190
Int. Cl.[5] E05B *73/00;* H01R *13/44*
U.S. Cl. 439—133 4 Claims



1. A phone jack lock comprising:

a plug body, a locking element, means to apply a constant force to the locking element which force urges the locking element to remain in the locked position, and means to lock and unlock the phone jack lock; wherein

the lock may be inserted into a phone jack without use of the locking/unlocking means, the constant force on the locking element being overcome by contact with the phone jack, thus depressing the locking element; and

once inserted into a phone jack in the locked position, the locking element protrudes such that the lock may not be removed from the jack without use of the locking/unlocking means,

wherein the entire locking device, when inserted into a phone jack, is completely contained within the contours of the phone jack.

5,340,325

CAPACITIVE COUPLED BNC TYPE SELF-TERMINATING COAXIAL CONNECTOR

Tien-Fa Pai, No. 7, Alley 28, Lane 281, Hwa Cheng Road, Hsin Chuang City, Taipei Hsien, Taiwan

Filed Aug. 26, 1993, Ser. No. 112,591
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—188 3 Claims

1. A capacitive coupled BNC type self-terminating coaxial connector comprising:

an insulative outer shell having a center through hole and

VOL 1165 ISS 4 AG 23 1994 UMI

two opposite longitudinal grooves within the center through hole;

an insulative inner shell having one end fitted into the center through hole on said insulative outer shell, said insulative inner shell having a center through hole;

a contact metal spring mounted around said insulative inner shell and retained between said insulative outer shell and said insulative inner shell;

a stepped contact metal cylinder received within said insulative inner shell, said stepped contact metal cylinder having capacitor mounting holes and a resistor mounting hole respectively communicated with a stepped center through hole thereof;

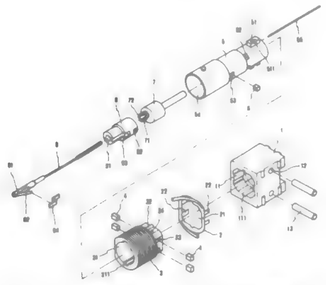
a plurality of capacitor elements respectively inserted in said capacitor mounting holes for eliminating noises;

a resistor element received in said resistor mounting hole;

an insulative hollow insert fabricated by molding and fitted into the stepped center through hole of said stepped contact metal cylinder, said insulative hollow insert having an axial center through hole;

an insulative hollow core connected to insulative hollow insert and received within said stepped contact metal cylinder, said insulative hollow core having an axial center through hole and a side hole aligned with said resistor mounting hole; and

a central contact made of an elongated metal rod inserted through the axial center through hole on said insulative



hollow core and the axial center through hole on said insulative hollow insert and disposed in contact with said capacitor elements;

wherein said insulative outer shell comprises two earth contact pins respectively inserted in two vertically spaced side holes on one lateral side thereof; said stepped contact metal cylinder comprises two opposite guide blocks respectively inserted into the longitudinal grooves on said insulative outer shell, each guide block having a recess which receives either earth contact pin; said contact metal spring comprises a plurality of contact pegs respectively disposed in contact with said capacitor elements; said insulative inner shell comprises a plurality of side holes respectively aligned with said capacitor mounting holes through which said capacitor elements are inserted into said capacitor mounting holes to contact said central contact; said insulative hollow core comprises a contact metal strip disposed in contact with said resistor element, said central contact comprises a projecting spring strip extended from a front end thereof and disposed in contact with said contact metal strip of said insulative hollow core as the capacitive coupled BNC type self-terminating coaxial connector does not work, said projecting spring strip of said central contact being separated from said contact metal strip of said insulative hollow core as the capacitive coupled BNC type self-terminating coaxial connector is connected with a matching connector.

5,340,326

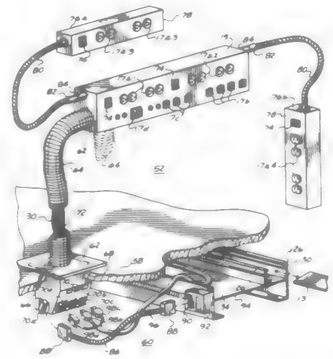
CONNECTIVITY MANAGEMENT SYSTEM

Dolan M. LeMaster, 2536 E. Inglewood, Mesa, Ariz. 85283

Continuation of Ser. No. 466,249, Jan. 17, 1990, which is a continuation-in-part of Ser. No. 220,313, Jul. 18, 1988, abandoned. This application Apr. 24, 1992, Ser. No. 874,124

Int. Cl.[5] H01R *4/60*

U.S. Cl. 439—207 **3 Claims**



1. A communication connector appearance for use in a connectivity management system to terminate first, second, third, and fourth pairs of wires, said connector appearance comprising:

a first socket having a predetermined physical shape and contacts positioned at first, second, third, fourth, fifth, sixth, seventh, and eighth predetermined positions relative to said predetermined shape, wherein:

said first pair couples to contacts in said fourth and fifth positions,

said second pair couples to contacts in said first and second positions,

said third pair couples to contacts in said third and sixth positions, and

said fourth pair couples to contacts in said seventh and eighth positions; and

a second socket having substantially said predetermined physical shape and contacts positioned substantially at said second, third, fourth, fifth, sixth, and seventh positions relative to said shape, wherein:

said first pair couples to contacts in said second and seventh positions,

said second pair couples to contacts in said fourth and fifth positions, and

said fourth pair couples to contacts in said third and sixth positions.

5,340,327

SOCKETS FOR DISCHARGE LAMP

Yoshiharu Koda, Tokyo, Japan, assignor to Kabushiki Kaisha Denkosha, Tokyo, Japan

Continuation of Ser. No. 757,441, Sep. 10, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,255

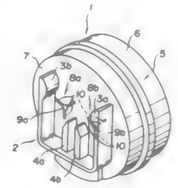
Claims priority, application Japan, Apr. 23, 1991, 3-28137

Int. Cl.[5] H01R *33/08*

U.S. Cl. 439—239 **3 Claims**

1. In a socket for a discharge lamp having electrode pins of a selected diameter protruding from a base thereof, the socket including a base receiving element for receiving the base of the discharge lamp and a flat surface wall of insulating material having a first exposed surface having insertion apertures therein of selected diameters for receiving said electrode pins therethrough, the improvement comprising:

said socket being of unitary construction and receiving the base of the discharge lamp in direct juxtaposition with the flat surface wall with the electrode pins being in direct contact with the walls of the insertion apertures, the insertion apertures, being in the form of open holes when undeformed each including insertion-aperture-enlarging notches defined by spaced, opposed surfaces in the insulating material extending from said insertion apertures, the diameter of the apertures, when undeformed, being less



than the diameter of the pins and the notches facilitating enlargement of the diameter of the insertion apertures upon slight deflection of portions of the flat surface wall proximate the insertion apertures in the direction of insertion during insertion of the electrode pins through the insertion apertures when the base of the lamp is inserted in the socket, wherein the notches are three in number and extend radially from the holes when the pins are inserted in the holes.

5,340,328

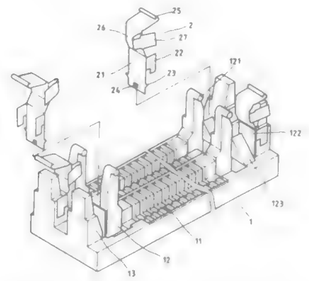
PC BOARD CONNECTOR

Roger Lee, 8F-6, No. 100, Sec. 2, Hoping E. Rd., Taipei, Taiwan

Filed Dec. 20, 1993, Ser. No. 169,076

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—326 **1 Claim**



1. A printed circuit board connector comprising:

an insulative connector body which comprises at least one longitudinal printed circuit board mounting slot, at least one pair of mounting posts respectively disposed at two opposite ends of said printed circuit board mounting slot, at least one pair of locating posts respectively disposed between said at least one longitudinal printed circuit board mounting slot and said at least one pair of mounting posts, at least one triangular block respectively disposed at one side of either locating post at one end of either longitudinal printed circuit board mounting slot, at least one pair of angle plates respectively extended from either locating post at one end of said printed circuit board mounting slot, and a plurality of clip mounting holes respectively disposed between said at least one pair of locating posts and said at least one pair of mounting posts, said at least one pair of locating posts having each a horizontal extension rod at the top for pluggable receipt into a respective locating hole on a printed circuit board being mounted in said at least one longitudinal printed circuit board mounting slot; and

at least one pair of clips respectively fastened to said clip mounting holes to hold down each printed circuit board being mounted in said at least one longitudinal printed circuit board mounting slot, each clip comprising a flat mounting portion inserted into either clip mounting hole and retained between either mounting post and the angle plate of the respective locating post, a handle portion at the top, a curved spring portion connected between said flat mounting portion and said handle portion, a unitary stop arm extended forwards from one lateral side of said curved spring portion and stopped at one side of the printed circuit board in said at least one printed circuit board mounting slot, said stop arm giving a pressure to either of said at least one printed circuit board in direction against the horizontal extension rod of the respective locating post, two opposite pointed projections bilaterally extended from two opposite lateral sides of said flat mounting portion and hooked in either clip mounting hole, a hook raised from a front surface of said flat mounting portion and disposed between said pointed projections and hooked on either angle plate at the bottom, and two backward clamping arms bilaterally extended backwards from the two opposite lateral sides of said flat mounting portion at right angles and spaced above said pointed projections and clamped on two opposite sides of either mounting post.

5,340,329

CONNECTOR COMBINATION

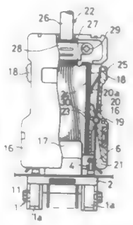
Yuji Hirai, Tokyo, Japan, assignor to Honda Tsushin Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 868,177, Apr. 14, 1992, abandoned. This application Apr. 1, 1993, Ser. No. 42,277

Claims priority, application Japan, Feb. 28, 1992, 4-9929[U]

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—357 **7 Claims**



1. A connector combination, comprising:

mating connector means comprising:

an electrically insulating cover,

a mating connector to which a cable is connected,

an electrically conductive metallic shell with which a cable shield braiding wire is brought into electrically conductive contact and which encloses a core wire of the cable, and

a pair of right and left lock pieces,

said mating connector, said electrically conductive metallic shell and said lock pieces being contained inside said electrically insulating cover,

each of said lock pieces comprising an electrically conductive elastic metallic thin plate, and having on one end thereof an engaging window and on an opposite end thereof a pressed portion having a lock spring, said lock spring being arranged to be urgingly contacted with said electrically conductive metallic shell;

a connector means comprising a connector main body provided with a pair of right and left mounting portions, and

VOL 1165 ISS 4 AG 23 1994 UMI

an electrically conductive lock piece engaging means which is provided at each of said mounting portions and which engages with each of said lock pieces of the mating connector when said mating connector is fitted into said connector, each of said lock pieces engaging means comprising:

a mount-piece main body provided with a small-diameter portion at an intermediate position of the mount-piece main body and a large-diameter engaging portion at one end of the mount-piece main body, said large-diameter portion engaging with said engaging window of said each lock piece when said mating connector is fitted into said connector;

a fastening thread which is provided on the other end of said mount-piece main body and extends in an axial direction thereof; and

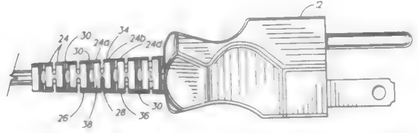
tightening means which is formed at an end of said engaging portion, such that said lock piece engaging means is screwed by said fastening thread into said connector main body.

5,340,330

ANTI-KINK CONTROL FOR ELECTRICAL CORDS

Michael D. Dolson, Brockville, and Tibor Maknyik, Richmond Hill, both of Canada, assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 26, 1993, Ser. No. 112,026
Int. Cl.[5] H01R *13/56*
U.S. Cl. 439—447 **9 Claims**



1. An anti-kink control for an electric cord having relatively flat top and bottom surfaces and relatively round side surfaces and a plug at one end, said anti-kink control comprising:

a series of washers assembled on said cord in closely spaced co-axial relation, a first pair of adjacent washers being joined by a first axially extending finger along each side of said cord and a next washer adjacent to one of the pair of washers being joined to the one of the pair of washers by a second axially extending finger along the top and bottom surfaces of said cord, said assembled washers together forming a sleeve about said cord, the space along the side surfaces between adjacent washers joined along the top and bottom surfaces is relatively larger than the space along the top and bottom surfaces between adjacent washers joined along the side surfaces.

5,340,331

CABLING ARRANGEMENT

Hans-Dieter Bohlen, Hauptstrasse 39 a, 3171 Osloss, and Manfred Starchikow, Rosenweg 8, 3178 Calberlah, both of Fed. Rep. of Germany

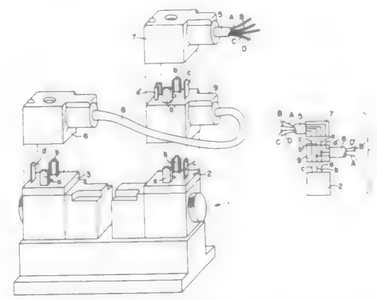
Filed Dec. 12, 1991, Ser. No. 806,868
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1990, 4040610
Int. Cl.[5] H01R *11/00*
U.S. Cl. 439—502 **5 Claims**

1. A cabling configuration for delivering at least one shared electrical signal and a plurality of independent electrical control signals from a remote central terminal station to a plurality of electrically controlled actuators, comprising,

a plurality of adjoining contact units each of which is associated with a different one of said actuators, each of said contact units including at least one shared contact and at least one control contact,

a multilead lead main cable leading away from said central terminal station, said main cable including at least one shared conductor carrying a corresponding shared electrical signal and a plurality of control conductors, including a first group of at least one control conductor and at least one remaining control conductor, each of said control conductors carrying one of said independent electrical control signals,

first connecting means attached to said main cable for connecting each at least one shared conductor of said main cable to a corresponding shared contact of a first contact unit, and for connecting each control conductor of said first group of at least one control conductor of said main cable to a corresponding control contact of said first contact unit,



a multilead distributor cable leading from said first connecting means towards one of said adjoining contact units, said distributor cable including only conductors corresponding to each at least one shared conductor for carrying a corresponding shared electrical signal and said at least one remaining control conductor carrying a separate control signal intended for said adjoining contact unit,

adjoining connecting means attached to said distributor cable for connecting each at least one shared conductor of said distributor cable to a corresponding shared contact of said adjoining contact unit and for connecting said at least one remaining control conductor of said distributor cable to a corresponding control contact of said adjoining contact unit, and

a plurality of adjoining connecting means, each of which connects one of said adjoining contact units to said first connecting means by a plurality of distributor cables in a branch-like fashion.

5,340,332

COAXIAL CABLE CONNECTOR

Yoshikatsu Nakajima, and Keigo Tatsumi, both of Tokyo, Japan, assignors to Nakajima Tsushinki Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 988,098
Int. Cl.[5] H01R *17/04*
U.S. Cl. 439—584 **11 Claims**

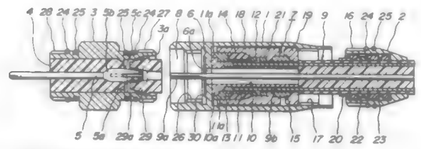
1. A coaxial cable connector comprising:

a connector body having a first and a second end and adapted to receive into said first end of the connector body an end of a coaxial cable with insulation cover removed,

a terminal member connectable to the second end of the connector body and including a terminal pin having a connection adapted to receive a core of the coaxial cable mounted to said connector body,

cable fixing means connectable to the first end of the connector body and clamping and sealing the inserted coaxial cable when the cable fixing means is connected to the connector body,

a reinforcing sleeve adapted to be fitted in the tubular external conductor of the coaxial cable to reinforce the tubular external conductor when the coaxial cable is clamped, the connector body having a partition wall having a center bore to permit the core of the coaxial cable to pass therethrough, said partition wall and the first end of the connector body defining a cable receiving chamber for receiving the end of the coaxial cable with insulation cover removed, said reinforcing sleeve having a base portion fixed to said partition wall and a tubular portion extending from the base portion coaxially to the core of the coaxial cable and having an outer diameter slightly smaller than the inner diameter of the tubular external conductor of the coaxial cable,



a third deformable sleeve having a base portion connected to the base portion of the reinforcing sleeve, and a tubular portion extending from the base portion of said thin deformable sleeve across a first part of the reinforcing sleeve to form an annular space for receiving the tubular conductor of the coaxial cable between the tubular portions of the thin deformable sleeve and the reinforcing sleeve,

an elastic ring surrounding the tubular portion of the thin deformable sleeve,

a contractible holding ring spaced from the tubular portion of the thin deformable sleeve and surrounding the outer circumference of a second part of the reinforcing sleeve to form therebetween an annular space to permit the external conductor of the coaxial cable to pass therethrough, and

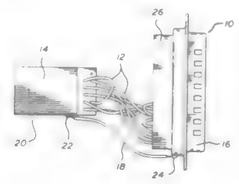
urging means positioned in the connector body to urge the elastic ring and the contractible holding ring when the cable fixing means is connected to the first end of the connector body.

5,340,333

SHIELDED MODULAR ADAPTER

Walter D. Schroth, Chester Springs, Pa., assignor to Interconnect Systems Group Inc., Exton, Pa.

Filed Jan. 15, 1993, Ser. No. 5,895
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—607 **19 Claims**



1. A modular adapter for coupling a modular plug to a D-subminiature serial port, comprising:

a modular jack including a plug-receiving cavity and a plurality of side-by-side spring contacts disposed therein for engaging with similarly spaced contact terminals of said modular plug, said modular jack comprising a first surrounding stamped metal electromagnetic shield;

a D-subminiature connector having a plurality of contact pins disposed therein for engaging with similarly spaced contact sleeves of said D-subminiature serial port, said D-subminiature connector comprising a second surrounding stamped metal electromagnetic shield; and

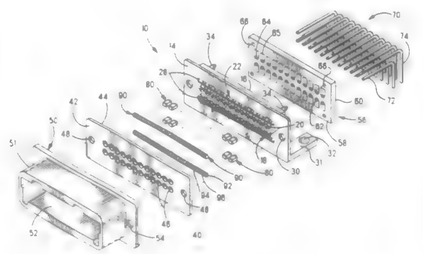
a plurality of conductor wire means joining at least a portion of said contact pins with said spring contacts, at least one of said conductor wire means being electrically connected with said first and second electromagnetic shields to provide a reference voltage or ground during the use of said modular adapter.

5,340,334

FILTERED ELECTRICAL CONNECTOR

Hung T. Nguyen, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 19, 1993, Ser. No. 93,832
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620 **11 Claims**



1. A filtered connector comprising:

a dielectric housing member having a plurality of terminal receiving passageways extending between a forward face and a rearward face thereof, said housing member further including a like plurality of component receiving passageways extending between said forward and rearward faces, each of said component receiving passageways being associated with a respective one of said terminal receiving passageways and being spaced therefrom;

a plurality of terminal members, each disposed in a respective terminal receiving passageway of said housing member, said terminal members having a forward contact section and a rearward contact section;

ground means including a plate-like portion disposed adjacent said forward face of said housing member, said plate-like portion including a plurality of terminal receiving apertures extending therethrough aligned with respective ones of said terminal receiving passageways of said housing member and through which extend respective forward contact sections of said terminal members, said ground portion apertures having a diameter greater than the diameter of said respective passageway such that edges of said ground portion apertures are spaced from said forward contact sections, said ground portion further defining a forward stop surface for each of said component receiving passageways;

a rear plate disposed adjacent said rearward face of said housing member having a plurality of terminal receiving bores extending therethrough aligned with respective ones of said terminal receiving passageways of said housing member and having respective ones of said second contact section of said terminal members extending therethrough, a forward face of said plate defining a rear stop surface for each of said component receiving passageways and including conductive paths extending from respective said component receiving passageways to respective said terminal receiving bores and in electrical engagement with respective said terminal members disposed therein;

resilient conductive means disposed in a portion of each said

VOL 1165 ISS 4 AG 23 1994 UMI

component receiving passageways adjacent one of said ground portion and said rear plate at a respective one of said conductive paths, said means being under compression; and

a plurality of electrical components of the type having a pair of spaced external electrodes, one of each said components being disposed in a respective said component receiving passageway with one of said pair of electrodes being in engagement with said resilient conductive means;

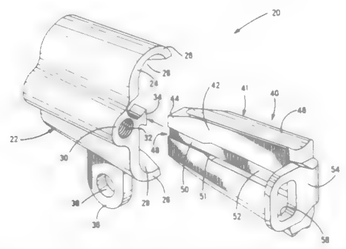
whereby upon assembly said compressed resilient conductive means for each said component electrically engages said one of said ground portion and a said rear plate conductive path and a respective component electrode and biases said component against the other of said ground portion and a said rear plate conductive path for the other said component electrode to be biased into electrical engagement with said other of said ground portion and a said rear plate conductive path thereby completing an electrical path from each said terminal member to a said component to ground.

5,340,335

ELECTRICAL TAP CONNECTOR

Christopher Haus, Willowdale, Canada, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 26, 1993, Ser. No. 38,726
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—783 **9 Claims**



8. An improved electrical wire connector of the type having a C-shaped body member having laterally opposing arcuate ears extending laterally therealong and converging from a wide end to a narrow end, said wide end of said body member being adapted to receive a wedge member having opposed converging side surfaces concave therealong defining wire-receiving channels in cooperation with corresponding ones of said arcuate ears opposed therefrom, all for receipt thereinto of respective uninsulated wire conductors therealong to be interconnected upon compression between said wedge member and said C-shaped member by actuation of a drive bolt causing said wedge member to be driven in an axial direction into the wide end of said C-shaped body from a first preassembled position to a second final position and held therein, where said drive bolt is of the type having a threaded shank threadedly engageable with said C-shaped body member and at least an outer head adapted to be rotated by a tool whereby the bolt is adapted to be engaged by a work end of a tool having an appropriate configuration for rotation of the bolt, the improvement comprising:

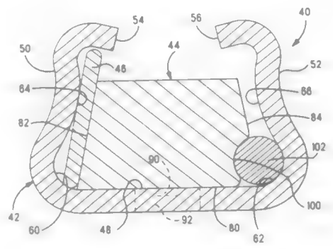
a wedge-engaging tab extending from said C-shaped body member at the wide end thereof, said tab being configured to be slidingly received and slidingly secured in a complimentary channel at a forward end of said wedge member, said channel having undercut surfaces and said tab being shaped and adapted to cooperate with said undercut surfaces, said channel being adapted to slidingly hold said forward end of said wedge in a selected position prior to mounting said connector to said conductors and driving said wedge into said C-shaped body member whereby remotely actuated movement of said wedge member from said first position to said second position is stabilized.

5,340,336

ELECTRICAL CONNECTOR

Gino Menechella, Richmond Hill, Canada, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 29, 1993, Ser. No. 99,279
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—783 **12 Claims**



1. A connector to electrically interconnect two electrical conductors and to mechanically secure them together, wherein one of said electrical conductors is relatively flat having a substantially elongated cross-sectional shape, comprising:

(a) a clamping member having a base and two spaced walls extending upwardly from said base that terminate in mutually opposed edges, said walls converging from a first end of said base toward a second end thereof, each said wall having a contact surface of which a first portion is concave and adjacent said base and a second portion is between said first portion and its respective said opposing edge, said second portions of said two walls being mutually opposed; and

(b) a wedge, adapted to be conformably received within said clamping member, having first and second opposite side surfaces which converge from a first end of said wedge toward a second end thereof,

so that when said wedge is inserted into said clamping member said side surface of said wedge urges said one flat conductor into electrical engagement with said second portion of said contact surface of one of said walls, wherein one of said side surface and said second portion of said contact surface is convex,

and said second side surface urges the other of said conductors into electrical engagement with said contact surface of the other of said walls of said clamping member.

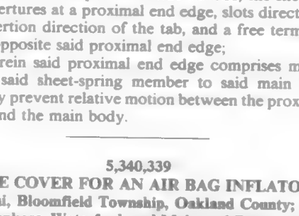
5,340,337

PROTECTIVE SLEEVE FOR CANTILEVERED SPRING CONTACTS AND METHOD OF MAKING THE SAME

Edward L. Pentz, Greensboro, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 4, 1993, Ser. No. 73,013
Int. Cl.[5] H01R *13/187*
U.S. Cl. 439—843 **9 Claims**

1. In an electrical contact including a pair of cantilevered spring contacts, wherein a pin is slidably received between the spring contacts, and wherein the pin has an outer diameter, the improvement comprising the contact has an opening formed thereon rearwardly of the pair of spring contacts, a protective sleeve for the spring contacts has a hollow main body having respective end portions, the hollow main body has a lanced-out inwardly-extending ear formed thereon, the ear being received within the opening in the contact to mount the sleeve to the contact, a wall formed integrally with one of the end portions of the hollow main body, transversely thereof, the wall having a hole formed therein for receiving the pin, and the hole being only slightly larger than the outer diameter of the pin, such that the hole accommodates the pin but prevents an oversized



pin from being inserted between the spring contacts, thereby protecting the spring contacts from inadvertent damage.

5,340,338

FEMALE ELECTRICAL TERMINAL

Noriaki Sai, Yokohama, and Yoshiji Kinoshita, Kawasaki, both of Japan, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 9, 1993, Ser. No. 89,008
Claims priority, application Japan, Aug. 18, 1992, 4-057905[U]
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—845 **11 Claims**

1. A female electrical connector for use with a tab contact comprising:

a main body portion having a crimpable termination portion and a tab contact mating portion;

said tab contact mating portion includes a top wall and a bottom wall, each of said walls includes an inside surface which faces the tab contact when the contact is in an inserted position;

at least one of said walls includes a sheet-spring member disposed on its respective inside surface, the sheet-spring has apertures at a proximal end edge, slots directed along an insertion direction of the tab, and a free terminal end edge opposite said proximal end edge;

and wherein said proximal end edge comprises means for fixing said sheet-spring member to said main body to thereby prevent relative motion between the proximal end edge and the main body.

5,340,339

WIRE COVER FOR AN AIR BAG INFLATOR

Trilok Desai, Bloomfield Township, Oakland County; Gregory N. Goestenkors, Waterford, and Mohamed Boumarafi, Rochester Hills, all of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

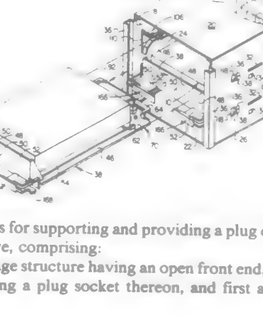
Filed Feb. 19, 1993, Ser. No. 19,722
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—892 **10 Claims**

1. A cover (50;200) for matingly engaging one end of a gas inflator and for protecting at least one wire extending from the inflator, the at least one wire terminating in at a fist electrical connector, the inflator having a cylindrical body terminating in an end portion (24), the end portion having a diameter greater than the diameter of the body to define and edge, lip or ledge (26) extending about the body; the cover comprising:

first means for enclosing a portion of the wire to inhibit the inflator from being carried by the wire, the first means including:

a top (52);

a first wall (58) extending downwardly from the first portion, an inner surface (66) of the first wall having a diameter smaller than the diameter of the end portion (24); the



top, first wall and end of the inflator defining a volume for receiving the at least one wire;

a second wall (70) extending downwardly from the first wall, having an inner (72) surface, a groove (74) formed within the inner surface, to receive an edge of the end portion (24);

and means for permitting the second all to flex as it is seated upon the inflator.

5,340,340

APPARATUS FOR REMOVABLY SUPPORTING A PLURALITY OF HOT PLUG-CONNECTED HARD DISK DRIVES

Robert J. Hastings, Houston; Paily T. Varghese, Tomball; Dennis J. Alexander, Spring; James F. Babb, Houston, and John R. Bradshaw, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 950,598, Sep. 24, 1992, Pat. No. 5,277,615. This application Jan. 14, 1993, Ser. No. 4,696
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] H05K *7/00;* **A47B** *88/00*
U.S. Cl. 439—64 **18 Claims**

1. Apparatus for supporting and providing a plug connection for a disk drive, comprising:

a housing cage structure having an open front end, a rear end wall having a plug socket thereon, and first and second

VOL 1165 ISS 4 AG 23 1994 UMI

opposite side walls extending between said open front and said rear and wall and having facing surfaces,

said plug socket having a spaced series of connectors therein including a grounding connector, a resistored pre-charge connector connectable to a voltage source, a voltage connector connectable to said voltage source, and a plurality of signal connectors;

first and second elongated guide channel members having open side portions, interiors, and generally U-shaped cross-sections along their lengths;

means for mounting said guide channel members on the facing surfaces of said first and second side walls in a parallel relationship in which said open side portions of the mounted first and second guide channel members face one another and said first and second guide channel members longitudinally extend towards said plug socket in a generally laterally aligned relationship therewith;

a support tray member having opposite side edge portions slidably and supportingly receivable in the interiors of said first and second guide channel members in a manner permitting said support tray member to be slid rearwardly along said first and second guide channel members to bring said support tray member to an operating position within said cage structure, said support tray member having a rear end portion and a top side portion disposed forwardly of said rear end portion;

a printed circuit board having a plug portion with a wide surface and a rear edge, said printed circuit board being removably mounted on said rear end portion of said support tray member in a manner such that when said support tray member is rearwardly moved through said cage structure to said operating position said plug portion of said printed circuit board is removably received within said plug socket, said plug portion side surface having formed thereon a series of electrically conductive traces mutually spaced apart in a direction parallel to said plug portion rear edge and including:

a grounding trace engageable with said grounding connector and having a rear end,

a pre-charge trace engageable with said pre-charge connector and having a rear end forwardly offset from said rear end of said grounding trace,

a voltage trace engageable with said voltage connector and connector to said pre-charge trace, said voltage trace having a rear end forwardly offset from said rear end of said pre-charge trace, and

a plurality of signal traces engageable with said signal connectors, said signal traces having rear ends forwardly offset from said rear end of said voltage trace;

means for removably securing a disk drive to said top side portion of said support tray member for movement therewith; and

means for electrically coupling said printed circuit board to the disk drive.

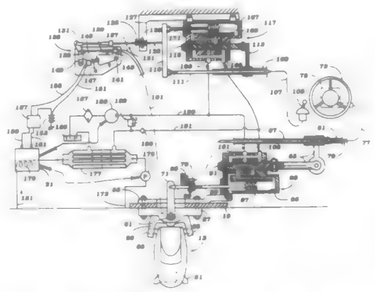
5,340,341

POWER ASSISTING MECHANISM FOR MARINE PROPULSION UNIT

Tsuyoshi Yoshimura, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 21, 1991, Ser. No. 672,887
Claims priority, application Japan, Mar. 23, 1990, 2-75249
Int. Cl.[5] B63H *5/12*
U.S. Cl. 440—61 **9 Claims**

1. A vehicle having an internal combustion engine operable over a speed range for operating said vehicle, a first vehicle control system, a first hydraulic assist device operating said first vehicle control system, a second vehicle control system, a second hydraulic power assist device for operating said second vehicle control system, a fluid pump driven by said engine and providing a substantially constant output of fluid under pressure over the speed of range of operating of said engine, means for supplying said first and said second hydraulic power assist devices with fluid from said fluid pump, said first vehicle control system being operated only at low speeds and said



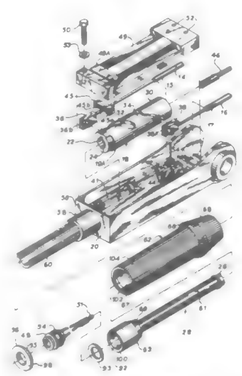
second vehicle control system requiring a power for its operation that increases with vehicle speed.

5,340,342

UNIVERSAL TILLER HANDLE WITH SHIFT AND THROTTLE

James C. Boda, Winneconne, and Kenneth G. Appleby, Van Dyne, both of, assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Jun. 2, 1993, Ser. No. 71,232
Int. Cl.[5] B63H *21/21*
U.S. Cl. 440—86 **27 Claims**



1. A tiller handle for use with a plurality of push-pull cables interconnected to the shift and the throttle mechanisms of an outboard marine propulsion system having an engine, to control the shift and the throttle operations of the engine, comprising:

a rotatable member secured within the tiller handle, the member having an inner surface and an outer surface;

a plurality of cam tracks located on the outer surface of the rotatable member, including at least a first throttle cam track and a second shift cam track;

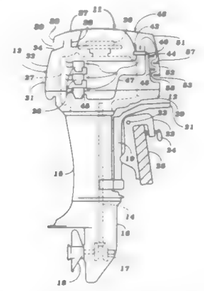
means for maintaining each push-pull cable in a slidable relation with one of the cam tracks such that rotating the rotatable member results in rotational movement of the cam tracks and axial movement of the push-pull cables thereby controlling the operation of the shift mechanism and the throttle mechanism of the engine.

5,340,343

MARINE PROPULSION UNIT

Kenji Kawamukai, and Yasunori Furuta, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 13, 1993, Ser. No. 47,096
Claims priority, application Japan, Apr. 14, 1992, 4-120046
Int. Cl.[5] B63H *21/10*
U.S. Cl. 440—88 **22 Claims**



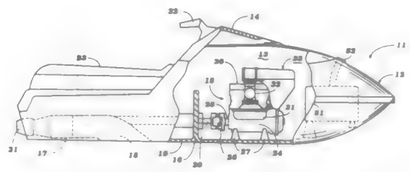
1. A protective cowling for the power head of an outboard motor adapted to be affixed to the transom of an associated watercraft and having a forwardly facing portion and rearwardly facing portion, said power head comprising an internal combustion engine and a surrounding protective cowling, said protective cowling being comprised of a member forming an upwardly facing opening at one side thereof communicating the atmosphere with the interior of said protective cowling, means defining an atmosphere air inlet at a lower portion of said outer cowling on the side and adjacent said upwardly facing opening, and means defining an upwardly extending labyrinthine air flow path between said atmospheric air inlet and an area at the top of said protective cowling communicating with said upwardly facing opening.

5,340,344

AIR INTAKE SYSTEM

Shigeharu Mineo, and Kazuhiro Okuzawa, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 16, 1993, Ser. No. 48,476
Claims priority, application Japan, Apr. 30, 1992, 4-137796
Int. Cl.[5] B63H *21/10*
U.S. Cl. 440—88 **14 Claims**



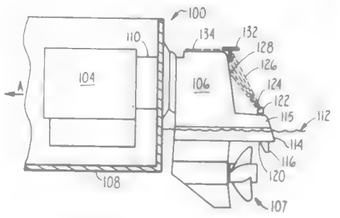
1. An air induction system for the air intake of an internal combustion engine for powering a watercraft having a hull in which said engine is positioned, said air intake extending in a generally vertical direction and having an upper opening, said induction system comprising an air intake device having a plenum chamber formed of substantial volume and displaced from said air intake and depending a substantial distance below said upper opening and within said hull, an atmospheric air inlet entering said plenum chamber at the top thereof and directed to cause the atmospheric air to flow toward the lower end of said plenum chamber, and a discharge communicating said plenum chamber with said upper opening.

5,340,345

WATER PICKUP AND COOLING APPARATUS FOR BOAT DRIVE SYSTEMS

John W. Brodbeck, and William J. Brunsting, both of Lake Havasu City, Ariz., assignors to K & B Mfg, Inc., Lake Havasu City, Ariz.

Filed Jul. 26, 1993, Ser. No. 98,413
Int. Cl.[5] B63H *5/12*
U.S. Cl. 440—88 **18 Claims**



1. An apparatus for cooling a drive assembly linking the drive shaft of a motor to the propshaft driving the propeller of a boat comprising:

a water intake positioned to collect water when the boat is moving through a body of water;

a spray nozzle in fluid communication with said water intake, said spray nozzle receiving said collected water from said water intake and forming same into a stream directed towards a first surface of a housing containing said drive assembly; and

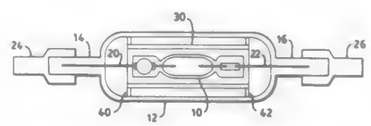
a spray direction member positioned adjacent said housing and configured to direct a portion of said stream toward a second surface of said housing.

5,340,346

DOUBLE-ENDED METAL HALIDE ARC DISCHARGE LAMP WITH ELECTRICALLY ISOLATED CONTAINMENT SHROUD

Martin M. Muzeroll, Merrimack, N.H., assignor to Osram Sylvania Inc., Danvers, Mass.

Division of Ser. No. 866,381, Apr. 10, 1992, Pat. No. 5,296,779.
This application Dec. 20, 1993, Ser. No. 169,698
Int. Cl.[5] H01J *9/26*
U.S. Cl. 445—26 **2 Claims**



1. A method of making a double ended arc discharge lamp comprising the steps of:

forming a hollow, light transmissive outer jacket;

forming a hollow, light transmissive shroud of a given material having a pair of annuli, one annulus being formed at each end of said shroud, said annuli being formed of said given material;

positioning said shroud within said outer jacket;

attaching the peripheral edge of each of said annuli to said jacket to form an envelope assembly;

positioning an arc discharge tube within said envelope assembly; and sealing said envelope assembly.

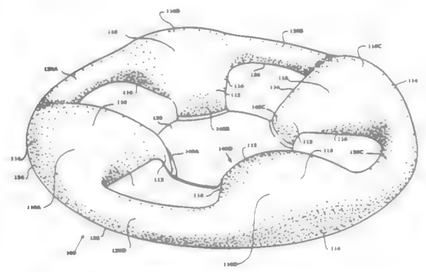
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,347

FLYING TOY

Philip C. Yenerich, 37762 Los Arboles Dr., Fremont, Calif. 94536

Continuation-in-part of Ser. No. 210,832, Jun. 24, 1988, abandoned. This application May 31, 1990, Ser. No. 532,118
Int. Cl.[5] A63H *27/00*
U.S. Cl. 446—48 13 Claims



1. A flying toy comprising

a plurality of rotational airfoils having an outside edge and an inside edge, each of said airfoils being wider at its outside edge than at its inside edge and tapering from the outside edge to the inside edge,

a plurality of arcuate segments extending between the outside edges of adjacent ones of the plurality of rotational airfoils, the arcuate segments being of a size to cause the inside edges of the rotational airfoils to be disposed apart from each other,

a central disk disposed below the inside edges of the rotational airfoils, and

a plurality of attachment portions, one attachment portion extending between the inside edge of one of the rotational airfoils and a portion of the central disk to cause the central disk to be fixedly connected to the rotational airfoils in a plane below the inside edges of the rotational airfoils,

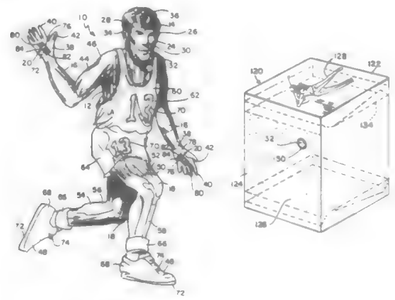
the rotational airfoils being configured as airfoils capable of providing lift both radially and rotationally.

5,340,348

DOLL WITH PATCH AND COVER FOR RELEASABLY ENGAGING A REMOVABLE ITEM

Eric J. Schroeder, 415 W. Gilmore, Angola, Ind. 46703

Filed Jun. 29, 1993, Ser. No. 84,012
Int. Cl.[5] A63H *3/50, 3/52;* B65D *5/00, 73/00*
U.S. Cl. 446—73 25 Claims



1. A doll comprising

a body,

a removable item sized to be attached temporarily to the body and including an attachment portion,

means on the body for releasably engaging the attachment portion so that the removable item is attached to the body until it is removed by a person handling the doll, and

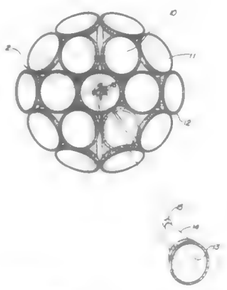
means tethered to the body for covering the engaging means to block engagement of the attachment portion and the engaging means so that the engaging means is disabled until it is desired to attach the removable item to the engaging means.

5,340,349

SPHERICAL TOY

Rosemary Berg-Fernstrum, W6366 W. 38th Ave., R.D. #1.25, Menominee, Mich. 49858

Filed Dec. 2, 1992, Ser. No. 984,497
Int. Cl.[5] A63H *33/08, 33/04, 33/06*
U.S. Cl. 446—126 4 Claims



1. A playtoy assemblable into a generally spherically shaped structure comprising a multiplicity of elements, each element being of a conical shape with a circular base adapted to form part of the outer surface of said structure and an apex adapted to form part of the central core of said structure when said multiplicity of elements are assembled together to form said structure, each of said elements having an annular fastening member proximal to said circular base and a second core member fastening member at the terminus of said conical element defined by the apex thereof such that said multiplicity of conically shaped elements may be fastened to each other with the axes of said conical elements forming radii of said spherically shaped structure, the annular fastening members of adjacent elements engaging each other, the circular bases of said multiplicity of conical elements forming the outer surface of said spherical structure, and with the core member fastening members of adjacent elements confronting each other centrally of said spherical structure.

5,340,350

MULTI-POSITIONAL INFLATABLE AUTO DECOY

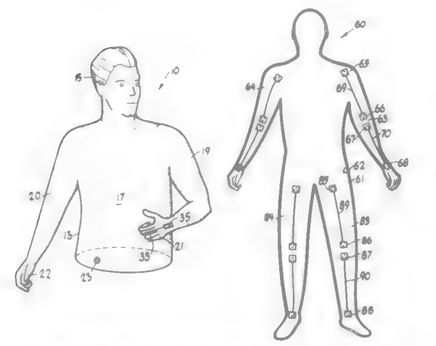
Steven R. Fink, and Floyd J. Herman, both of Landsdale Township, Montgomery County, Pa., assignors to Sterman Enterprises, Inc., Landsdale, Pa.

Filed May 4, 1993, Ser. No. 57,681
Int. Cl.[5] A63H *3/06*
U.S. Cl. 446—226 19 Claims

1. An inflatable multi-positional auto decoy representative of the upper portion of a human form adapted to be buckled into place by a car seat belt comprising:

a) a plastic inflatable exoskeleton with an inner side and an outer side molded to represent a torso, a head and two arms;

b) upper inserting means and lower inserting means located on said plastic exoskeleton in the region of at least one of said arms for receiving an upper end and a lower end of elongated inserts recited below; and,



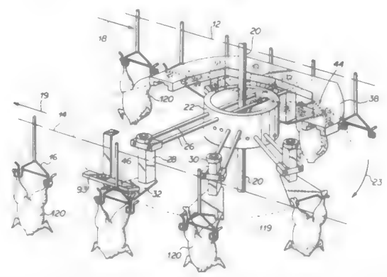
c) elongated inserts each having an upper end and a lower end, said upper end inserted into said upper inserting means and said lower end inserted into said lower inserting means of at least one of said arms.

5,340,351

POULTRY CONVEYOR LINE TRANSFER SYSTEM

Walter Minderman, Rotterdam, and Arend Hobbel, Numansdorp, both of Netherlands, assignors to Systemate Holland B.V., Numansdorp, Netherlands

Filed Jan. 21, 1993, Ser. No. 6,389
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—182 14 Claims



1. A method of transferring birds from a first conveyor line on which the birds are suspended by their legs on a series of shackles substantially equally spaced at a first predetermined distance to a second suspended conveyor line having a series of shackles substantially equally spaced at a second predetermined distance that is different than the first predetermined distance, comprising the steps of:

revolving a series of transfer means, each having spaced leg receiving recesses formed therein, along a processing path adjacent the first and second conveyor lines and as the transfer means revolve, moving the leg receiving recesses of the transfer means into registration with the legs of the birds suspended from the shackles of the first conveyor line,

as the transfer means revolve along their processing path, moving the transfer means closer together to register with the shackles that are close together on one conveyor line and moving the transfer means further apart to register with the shackles that are further apart on the other conveyor line, and

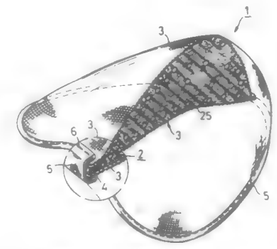
as the transfer means register with the shackles, transferring the legs of the birds from the shackles of the first conveyor line to the transfer means, and transferring the legs of the birds from the transfer means to the shackles of the second conveyor line.

5,340,352

FIGURE ADJUSTING PAD AND PROCESS FOR MANUFACTURING SAME

Motoyasu Nakanishi, and Masaaki Amano, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Sigel, Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,371
Claims priority, application Japan, May 30, 1991, 3-228132; Apr. 17, 1992, 4-125731
Int. Cl.[5] A41C *3/14*
U.S. Cl. 450—57 26 Claims



1. A figure adjusting pad comprising

a silicone gel element having a predetermined shape including an inner portion and an outer peripheral portion about a periphery of said inner portion;

a stretchable fabric covering said silicone gel element in such a manner that an outermost edge of said outer peripheral portion of said silicone gel element is exposed outwardly from said stretchable fabric;

wherein said silicone gel element has perforations formed therein which comprise traces formed by elution of particles incorporated in a silicone gel stock solution for said silicone gel element;

wherein said inner portion of said silicone gel element varies in thickness depending on location;

wherein said stretchable fabric and said outer peripheral portion of said silicone gel element are double-sewn at a predetermined location inwardly of said outermost edge of said outer peripheral portion in such a manner as to compress a portion of said outer peripheral portion of said silicone gel element and form an expanded portion outwardly of said predetermined location, said expanded portion having a thickness less than that of said inner portion of said silicone gel element; and

wherein said silicone gel element has a penetration of 40 to 60 measured according to JIS K2207-1980 (load: 50 g) and a void volume of 50 to 65% defined by said traces of elution of said particles.

5,340,353

APPARATUS FOR THE EXTRACTION OF MEAT FROM THE TAILS OF CRUSTACEA

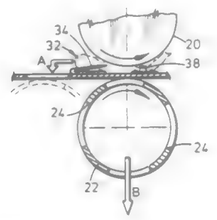
Graham F. Barlow, Glasgow, Scotland, assignor to Offshell Trading Limited, Glasgow, Scotland

Filed May 3, 1993, Ser. No. 50,138
Claims priority, application United Kingdom, Nov. 6, 1990, 9024057.3
Int. Cl.[5] A22C *29/02*
U.S. Cl. 452—9 9 Claims

1. Apparatus for extracting meat from tail portions of crustacea, comprising an apertured support element for supporting a plurality of tail portions in an extended condition in which the meat can be extracted therefrom, rotary pressure-applying

VOL 1165 ISS 4 AUG 23 1994 UMI

means adapted to contact a plurality of tail portions supported on said support means, said rotary pressure-applying means including a roller adapted to contact an underside of said support means as the latter is presented to the rotary pressure applying means, said support means being provided with attachments to maintain the tail portions in an orientation aligned



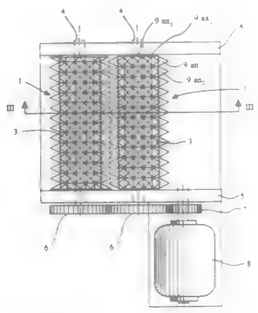
with the direction of the presentation of the support means and with the tail portions rearward end first in said extended condition, said roller being provided with orifices adapted to coincide with apertures of said support means when in contact therewith, relative movement between said pressure applying means and said support means causing meat to be extracted from the tail portions.

5,340,354

MEAT TENDERIZING APPARATUS AND PROCESS FOR TENDERIZING MEAT

Thomas Anderson, 1108 Trenton Ave., Point Pleasant, N.J. 08742, and Julius Hanewald, 4612 SE. Cottonwood Ter., Stewart, Fla. 34997, assignors to Thomas Anderson, Point Pleasant, N.J.; Julius Hanewald, Stewart, Fla. and Avery B. Juhring, West Newbury, Vt.

Filed Feb. 24, 1993, Ser. No. 21,553
Int. Cl.[5] A22C *9/00*
U.S. Cl. 452—142 **30 Claims**



1. A meat tenderizing apparatus, comprising:

a pair of opposed longitudinal, rotatable rollers having parallel axes of rotation, said axes being fixed to maintain a spacing between said rollers, said spacing being minimum within a plane extending through said axes of rotation;

each roller comprising a plurality of pyramidal points each extending radially outwardly a distance h from the entire outer surface of the roller, said pyramidal points being arranged in a grid defined by a plurality of adjacent substantially annular rows and a plurality of adjacent substantially axial rows;

said rollers being axially rotationally offset such that at all times during rotation, at least within said plane extending through said axes of rotation, (i) each annular row of pyramidal points on one roller extends between two adjacent annular rows of pyramidal points on the other, opposed roller, and (ii) each axial row of pyramidal points on said one roller extends between two adjacent axial rows of pyramidal points on said other, opposed roller

means for maintaining spacing of about ⅓ h between said rollers to thereby enhance the tenderizing effect of said apparatus, said spacing being measured, within said plane extending through said axes of rotation, from vertexes of pyramidal points arranged in one axial row on said one roller to a lowermost point of a valley formed between two adjacent axial rows on said other, opposed roller; and

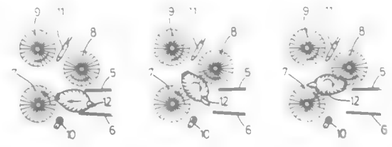
means for providing synchronous, cooperative rotation of said rollers in opposite directions.

5,340,355

APPARATUS FOR ORIENTING BIRDS, WHICH ARE SUPPLIED BY A BELT CONVEYOR, WITH THEIR HEADS IN THE DIRECTION OF CONVEYANCE

Cornelis Meyn, Oostzaan, Netherlands, assignor to Machinefabriek Meyn B.V., Oostzaan, Netherlands

Continuation of Ser. No. 78,400, Jun. 17, 1993, abandoned. This application Nov. 19, 1993, Ser. No. 155,901
Claims priority, application Netherlands, Jun. 23, 1992, 9201103
Int. Cl.[5] A22C *21/00*; **A23C** *7/02*
U.S. Cl. 452—179 **18 Claims**



1. An apparatus for orienting birds supplied by a conveyor device so that the birds are oriented with their heads in the direction of conveyance, said apparatus comprising:

two positioning members configured to rotate about vertical axes, said positioning members defining a passage therebetween for the birds to be oriented, said positioning members configured to rotate so that one positioning member has a circumferential velocity directed in the direction of conveyance and said other positioning member has a circumferential velocity directed opposite the direction of conveyance; and

an auxiliary device configured to supply the birds to said positioning members with their head or tail facing in the direction of conveyance.

5,340,356

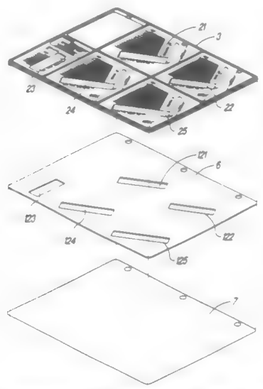
COIN COUNTING DEVICE

Donald Cole, 35 Colguhoun Crescent, Hamilton, Ontario, Canada L9C 4W7

Filed Mar. 11, 1992, Ser. No. 849,200
Int. Cl.[5] G07D *9/02, 9/06*
U.S. Cl. 453—59 **20 Claims**

1. A coin counting device having an upper section presenting an upper planar surface, at least one depression having a cross section adapted to receive coins, each said at least one depression having a first abutment wall at one end thereof and a second abutment wall at an opposite end thereof, marking scale means adjacent each said at least one observable from said upper surface, and a rail projecting upwardly and along said upper surface, said rail merging with said second abutment wall so that said rail and second abutment wall define a planar abutment surface whereby said coins may be measured when bearing against said planar abutment surface inside or outside

of said depression, by viewing said marking scale means, a backboard, wherein said upper section is secured to said back-



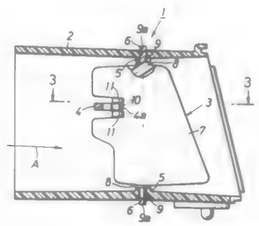
board, and a filler disposed between said upper section and said backboard.

5,340,357

AIR-CONDITIONING BLOW-OUT PORT UNIT AND PROCESS FOR MANUFACTURING THE SAME

Yoshiyuki Nagai, Niiza, and Hiroyuki Okamoto, Yokkaichi, both of Japan, assignors to Moriroku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,920
Int. Cl.[5] B60H *1/34*
U.S. Cl. 454—155 **15 Claims**



1. An air-conditioning blow-out port unit, comprising:

a housing formed by a primary injection molding of synthetic resin;

said housing having a plurality of pairs of coaxially arranged shaft holes provided in opposed sidewalls;

a plurality of blades formed in the housing by a secondary injection molding of synthetic resin;

each of said blades having a blade body and a pair of support shafts projectingly provided at opposite sides of said blade body and turnably fitted in each pair of the shaft holes;

the diameter of each said support shaft being substantially constant along a length thereof and being substantially equal to and in moderate frictional contact with the inside diameter of the respective said shaft hole in a manner that a sufficient friction torque is generated between opposed peripheral surfaces of the support shaft and the shaft hole for retaining the support shaft at a turned position;

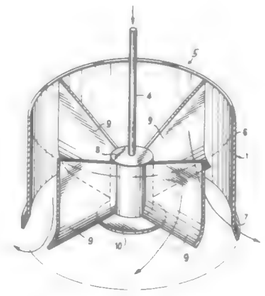
an extra shaft portion consecutively formed on each of the support shafts and projecting outwardly from the housing with the same diameter as the support shaft such that a substantially constant area of surface contact between said diameter of the support shaft and said inside diameter of the shaft hole is maintained during variations in temperature sufficient to cause said support shafts to move axially relative to said shaft holes.

5,340,358

AIR VENT

Johann Halupczok, Aachen, and Franc Sodec, Wurselen, both of Fed. Rep. of Germany, assignors to H. Krantz-TKT GmbH, Berisch Gladbach, Fed. Rep. of Germany

Filed May 14, 1993, Ser. No. 61,586
Int. Cl.[5] F24F *13/06*
U.S. Cl. 454—299 **7 Claims**



1. An air vent comprising a casing having a generally cylindrical body portion terminating in a radially outwardly flared mouth, a deflector plate mounted to said casing in coplanar alignment with said mouth, said plate and mouth defining an annular opening therebetween, an air guide member coaxially mounted within said casing and including a cylindrical skirt having an outwardly flared terminal deflector portion disposed in proximate relation to said mouth, a central hub on said guide member, and a plurality of air twist fins extending radially between said hub and skirt.

5,340,359

DISINFECTING CONNECTION FOR CATHETERS

Marcelo Segura Badia, Barcelona, Spain, assignor to L'Institut Municipal D'Assistencia Sanitaria, Barcelona, Spain

Continuation of Ser. No. 827,324, Jan. 29, 1992, abandoned. This application Mar. 18, 1993, Ser. No. 33,464
Claims priority, application Spain, Jan. 30, 1991, 9100239
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—283 **11 Claims**

1. A disinfecting connection for catheters and the like comprising:

a central body, the central body comprising:

a first central part having a longitudinal axis, a first terminal engaging portion at one end thereof, and a tubular portion at another end thereof;

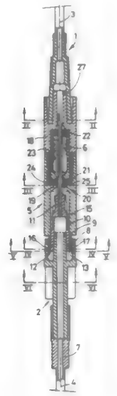
a second central part having a longitudinal axis, a second terminal engaging portion at one end thereof, and a tubular portion at another end thereof, the tubular portion of the second central part being connected to the tubular portion of the first central part, the tubular portions together defining a disinfecting element receptacle; and

a disinfecting element disposed within the disinfecting element receptacle, said disinfecting element comprising a central disinfecting portion containing a disinfecting material and two penetrable end closures, said tubular portion of said first central part and said tubular portion of said second central part each having an internal diameter at least as great as an outer diameter of said disinfecting element;

a first terminal part having a longitudinal axis and a hollow

VOL 1165 ISS 4 AG 23 1994 UMI

needle attached to a first end thereof, the first terminal part being coupled at a second end thereof to a fluid conduit, the first end of the first terminal part being coupled to the first engaging portion of the firs central part such that the needle extends through the first central part along the longitudinal axis thereof, through a first of the penetrable end closures of the disinfecting element, traverses the central disinfecting portion and through a second of the penetrable end closures; and



a second terminal part having a longitudinal axis and coupled at one end thereof to a fluid conduit, and coupled at a second end thereof to the second terminal engaging portion of the second central part,

such that needle of the first terminal part is removably inserted through the disinfecting element and becomes disinfected when the first terminal part is connected to the central body to form a fluid passage therethrough.

5,340,360

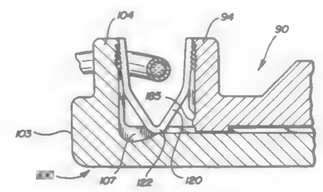
LIGATING CLIP APPLIER

David Stefanchik, Mason, Ohio, assignor to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 847,469, Mar. 6, 1992, abandoned. This application Jul. 23, 1993, Ser. No. 96,757

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—142 **38 Claims**



1. An endoscopic clip applier for forming ligating clips wherein the clips have an apex, the clip applier comprising:

an actuating mechanism;

an elongated shaft connected to said actuating mechanism and defining a longitudinal axis; and

a pair of jaws connected to said elongated shaft,

said jaws remotely actuated by said actuating mechanism, and said jaws maintained at substantially perpendicular angles to said longitudinal axis, wherein the jaws comprise at least one rearward retention groove having a longitudinal axis, the groove sufficiently long and deep to effectively retain the apex of a ligating clip during at least part of the forming process, wherein the longitudinal axis of said rearward retention groove is substantially parallel to said longitudinal axis.

5,340,361

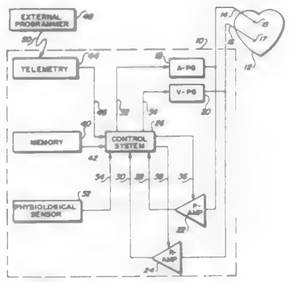
IMPLANTABLE PACEMAKER HAVING ADAPTIVE AV INTERVAL ADOPTIVELY SHORTENED TO ASSURE VENTRICULAR PACING

Jason A. Sholder, Northridge, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 13, 1992, Ser. No. 975,747

Int. Cl.[5] A61N *1/36*

U.S. Cl. 607—24 **34 Claims**



1. A dual-chamber pacemaker providing atrioventricular pacing in order to increase cardiac output in a patient suffering from a cardiomyopathy, comprising:

an atrial channel and a ventricular channel;

an atrial sense amplifier that senses a P-wave in the atrial channel, said P-wave representing natural atrial activity;

a ventricular sense amplifier that senses an R-wave in the ventricular channel, said R-wave representing natural ventricular activity;

pulse generator means for generating an atrial stimulation pulse (A-pulse) in the atrial channel in the absence of a sensed P-wave by said atrial sense amplifier within an atrial escape interval, and a ventricular stimulation pulse (V-Pulse) in the ventricular channel in the absence of a sensed R-wave by said ventricular sense amplifier within an AV time interval;

a control system that defines said AV time interval and said atrial escape interval, said AV time interval beginning upon the sensing of a P-wave or the generation of an A-pulse, whichever event occurs first in the atrial channel, and said atrial escape interval beginning upon the sensing of an R-wave or the generation of a V-pulse, whichever event occurs first in the ventricular channel; and

timing means as part of said control system for measuring a conduction time interval as the time period between atrial activity in the atrial channel and the sensing of an R-wave in the ventricular channel, and for automatically setting said AV time interval to a value that for ventricular pacing is always less than the measured conduction time interval by a prescribed amount, said atrial activity comprising the generation of an A-pulse or the sensing of a P-wave, whichever event occurs first, in the atrial channel;

whereby, in the absence of a decreasing conduction time interval, said pulse generator means generates said V-pulse in the ventricular channel prior to the occurrence of an R-wave, thereby providing ventricular pacing for increasing cardiac output; and further

whereby, in the presence of a decreasing conduction time interval, said AV time interval is automatically adjusted to a value less than the shortest conduction time interval.

5,340,362

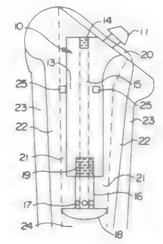
METHOD AND APPARATUS FOR CEMENTING INTRAMEDULLARY BONE PROSTHESIS

John J. Carbone, 7300 Old Harford Rd., Baltimore, Md. 21234

Filed Oct. 16, 1991, Ser. No. 777,726

Int. Cl.[5] A61F *2/36*

U.S. Cl. 623—23 **8 Claims**



1. A femoral intramedullary bone prosthesis to be rigidly cemented into position, comprising:

a femoral head base and a femoral head post, both located at a proximal end of said prosthesis;

an elongate femoral stem having a top portion and a bottom portion and a cement canal extending longitudinally therein for directing bone cement;

a separate spacer having a plurality of apertures for passage of said cement; and

a distal restrictor plug affixed to said spacer;

wherein said bottom portion includes means for fixedly receiving said spacer therewith so as to place said plurality of apertures in communication with said canal.

5,340,363

WOUND DRESSING

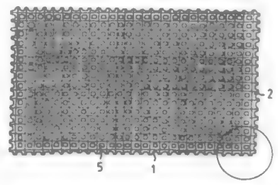
Tomas Fabo, Mölnlycke, Sweden, assignor to Molnlycke AB, Goteborg, Sweden

Division of Ser. No. 313,363, Feb. 19, 1989, Pat. No. 4,921,704, which is a continuation of Ser. No. 126,141, Nov. 3, 1987, abandoned. This application Mar. 12, 1990, Ser. No. 491,936

Claims priority, application Sweden, Mar. 10, 1986, 8601098

Int. Cl.[5] A61F *13/00, 15/00;* **A61L** *15/00*

U.S. Cl. 604—304 **6 Claims**



1. A liquid permeable wound dressing which is non-adherent to wounds comprising one or more sheets of apertured liquid permeable material coated with a sufficient amount of cross-linked tacky silicone gel to effectively encapsulate the one or more sheets of apertured liquid permeable material but insufficient to occlude the apertures therein.

5,340,364

DEVICE FOR SELECTIVELY DRAWING SAMPLES OF BLOOD FROM TWO SECTIONS OF A LINE AND FOR INJECTING BLOOD INTO SAID LINE

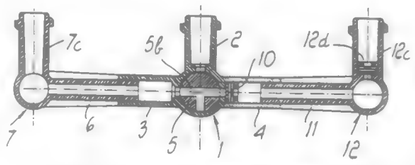
Nicola Ghelli, San Pietro in Casale, and Ivo Panzani, Mirandola, both of Italy, assignors to Dideco S.r.l., Mirandola, Italy

Continuation of Ser. No. 819,437, Jan. 10, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,499

Claims priority, application Italy, Jan. 14, 1991, MI 91A-000077

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—32 **7 Claims**



1. A device for selectively drawing samples of arterial and venous blood and for injecting drugs into the blood, comprising:

(a) a seat having a first, second, and third connection port;

(b) the first connection port in fluid communication with an arterial blood source for receiving arterial blood;

(c) the second connection port in fluid communication with a first trap;

(d) the first trap in fluid communication with a venous blood source, the first trap including means for selectively injecting drugs into the first trap;

(e) first means for one-way fluid flow interposed between the third connection port and a second trap, wherein blood may flow only in the direction of the second trap;

(f) second means for one-way fluid flow interposed between the second trap and a drain, wherein blood may flow only in the direction of the drain, the second trap including means for selectively drawing blood samples from the second trap; and

(g) selection control means operably connected to the seat for selectively directing the flow of blood between any two of the first, second, and third connection ports, wherein the selection control means has (i) a first position where arterial blood flows from the first connection port, through the second connection port, through the first trap, and to the venous blood source, (ii) a second position where venous blood from the venous blood source flows through the first trap, through the second connection port, through the third connection port, to the second trap, and (iii) a third position where arterial blood flows through the first connection port, through the third connection port, to the second trap.

VOL
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5,340,365

PROCESS FOR PRODUCING CHROME LEATHER

Bernhard Wehling; Franz Schade, both of Bergisch Gladbach; Joachim Kochta, Bonn; Herbert Burkhardt, Hemsbach, and Peter Schindlmayr, Rheinbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 9, 1992, Ser. No. 942,651
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131202
Int. Cl.[5] C14C *1/00, 1/08*
U.S. Cl. 8—94.18 3 Claims

1. A process for producing chrome leather from an animal hide comprising deliming, bathing and pickling the hide, pretreating the hide with an aqueous liquor containing a condensation product not capable of tanning comprising the reaction product of a sulphonated aromatic compound with formaldehyde, mechanically dewatering, splitting said hide if not previously split, shaving the hide, and then chrome-tanning the hide.

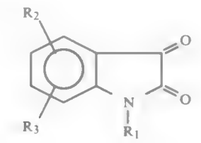
5,340,366

HAIR DYE COMPOSITIONS AND PROCESS COMPRISING AND UTILIZING A COMBINATION OF ISATIN AND AMINOPYRIMIDINE DERIVATIVES

Gerard Lang, Saint-Gratien, and Jean Cotteret, Verneuil-sur-Seine, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 845,587, Mar. 4, 1992, Pat. No. 5,279,616. This application Oct. 15, 1993, Ser. No. 136,125
Claims priority, application France, Mar. 5, 1991, 91 02614
Int. Cl.[5] A61K *7/13*
U.S. Cl. 8—406 13 Claims

1. A process for dyeing keratinous fibers comprising applying to said fibers a component (A) comprising a composition containing, in a medium suitable for dyeing said fibers, at least one compound of formula (I)

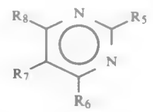


(I)

wherein

R_1 represents hydrogen, C_1–C_6 alkyl, acetyl, benzoyl, phenyl or C_1–C_4 carboxyalkyl,

R_2 and R_3, each independently, represent hydrogen, C_1–C_6 alkyl, hydroxyl, halogen, nitro, (C_1–C_6 alkyl) phenyl, phenyl or C_1–C_4 alkoxy, and a component (B) comprising a composition containing, in a medium suitable for dyeing said fibers, at least one aminopyrimidine of formula (III),



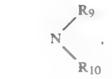
(III)

wherein

R_5 represents hydrogen, hydroxyl or

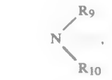


R_6 represents hydroxyl or



R_7 represents H or NH_2,

R_8 represents



R_9 and R_{10}, each independently, represent hydrogen, C_1–C_4 alkyl, $(CH_2)_p$-Z wherein p = 1 to 4 and Z represents OH, halogen, NH_2, NHR′ or NHR′R″ wherein R′ and R″ represent C_1–C_4 alkyl or together with the nitrogen atom to which they are attached form a heterocycle,

said compound of formula (I) being present in said component (A) in an amount ranging from 0.01 to 5 percent by weight based on the total weight of said component (A) or to the total weight of component (A) plus component (B), and

said compound of formula (III) being present in said component (B) in an amount ranging from 0.01 to 5 percent by weight based on the total weight of said component (B) or to the total weight of component (A) plus component (B), with the proviso that one of R_5 to R_8 represents NH_2; and the cosmetically acceptable salts thereof.

5,340,367

PERMANENT WAVING AND COLOR ENHANCING COMPOSITION AND METHOD

Thomas M. Schultz, Ridgefield, and Lana Hochman, Sandy Hook, both of Conn., assignors to Shiseido Co. Ltd., Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,568
Int. Cl.[5] A61K *7/13*
U.S. Cl. 8—432 22 Claims

1. A system for simultaneously permanently waving and coloring hair, said system comprising:

A. a permanent wave lotion for application to the hair for breaking the disulfide linkages in the hair, said lotion comprising

a. between about 6% and 25% by weight of a reducing agent selected from the group consisting of thioglycolate salts and esters of thioglycolate salts,

b. between about 0.001% and 2.0% by weight of a silk amino acid,

c. between about 0.001% and 5.0% by weight of a water soluble or emulsifiable silicone based compound, and

d. water forming the balance; and

B. a dyeing and neutralizing composition for application to the hair after the removal of the permanent waving lotion, said dyeing and neutralizing composition being formed by intermixing

a. a dye additive composition comprising

1. between about 0.001% and 5% by weight of one or more dyestuffs for providing the desired color to the hair,

2. between about 0.001% and 2.5% by weight of a lipotropic material comprising vegetable-derived amino acids amidified with and containing one or more moieties selected from the group consisting of cocoylo-methylamine, lauryl, and stearoxyl,

3. an alkali for maintaining the pH of the dyeing and neutralizing composition to between about 7 and 9, and

4. water forming the balance; and

b. a neutralizing composition comprising

VOL 1165 ISS 4 AG 23 1994 UMI

1. between about 1.0% and 3.0% by weight of hydrogen peroxide, and
2. water forming the balance;

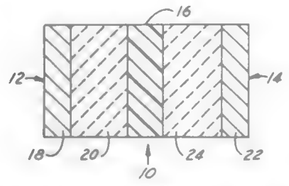
whereby the serial application of the permanent waving lotion and the dyeing and neutralizing composition provides permanent waving of the hair and simultaneous dyeing thereof with a durable, long-lasting, semi-permanent coloring being imparted thereto.

5,340,368

METHOD FOR IN SITU PREPARATION OF AN ELECTRODE COMPOSITION

Rene Koksbang, and Ib I. Olsen, both of San Jose, Calif., assignors to Valence Technology, Inc., San Jose, Calif.

Filed Aug. 4, 1993, Ser. No. 102,026
Int. Cl.[5] H01M *4/04, 6/18*
U.S. Cl. 29—623.5 **17 Claims**



1. A process for in situ preparation of an electrode composition comprising:

a. forming a mixture comprising:
   i) monomers polymerizable to an electrically conductive polymer;
   ii) an alkali metal salt;
   iii) an aprotic liquid solvent for the salt, the salt and the solvent each being in an amount sufficient to provide an electrically conductive solution having ionic species; and
   iv) a material polymerizable to an ionically conductive polymer;
b. applying the mixture of step (a) onto a positive electrode element;
c. curing the polymerizable material of step (a)(iv);
d. forming a lithium-containing negative electrode element carrying an electrolyte composition;
e. placing the negative electrode element of step (d) in such relation to the positive electrode element of step (b) that the electrolyte composition is in contact with the mixture carried on the positive electrode element of step (b); and
f. curing the polymerizable polymer of step (a)(i) by electrochemically reacting the monomers in the presence of the ionic species to provide the electrically conductive polymer.

5,340,369

DIESEL FUELS CONTAINING ORGANOMETALLIC COMPLEXES

Frederick W. Koch, Willoughby Hills; Daniel T. Daly, Shaker Hts.; Nai Z. Huang, Mayfield Hts.; Scott T. Jolley, Mentor; Christopher J. Kolp, Euclid; Stephen H. Stoldt, Concord Township, Lake County, and Richard A. Denis, Auburn Township, Cuyahoga County, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed May 13, 1991, Ser. No. 699,409
Int. Cl.[5] C10L *1/14, 1/30*
U.S. Cl. 44—366 **100 Claims**

1. A diesel fuel composition for use with a diesel engine equipped with an exhaust system particulate trap comprising: a major amount of a diesel fuel; and a minor amount effective to lower the ignition temperature of exhaust particles collected in said trap of at least one non-borated, non-heterocyclic organometallic complex, said complex being derived from

(i) at least one organic compound containing a hydrocarbon linkage and at least two functional groups, each of said functional groups being independently =X, —XR, —NR_2, —NO_2, =NR, =NXR,

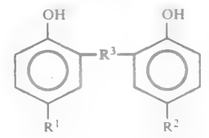
$$=N-R^*-XR,\quad -N(-R^*N)_a-R,\quad -P(X)XR,$$
(R, R, R)

$$-P(X)XR,\quad -N=CR_2,\quad -CN \text{ or } -N=NR,$$
(XR)

wherein
X is O or S,
R is H or hydrocarbyl,
R* is hydrocarbylene or hydrocarbylidene,
a is a number ranging from zero to about 10; and

(ii) at least one metal reactant, said metal being capable of forming a complex with component (i), said metal being capable of reducing the ignition temperature of said exhaust particles and being selected from the group consisting of Mg, Sr, V, Cr, Mo, Fe, Cu, Zn, Pb, Sb, and mixtures of two or more thereof; with the proviso that:

(1) component (i) is other than a linked phenolic compound represented by the formula



wherein R^1 and R^2 are independently hydrocarbyl groups and R^3 is S;

(2) said organometallic complex is other than a transition metal complex derived from an aromatic Mannich in combination with an oxime or a Schiff base, wherein said aromatic Mannich is prepared from a substituted hydroxyl- and/or thiol-containing aromatic compound, an aldehyde or ketone, and a hydroxyl- and/or thiol-containing amine;

(3) said organometallic complex is other than the metal chelate of a high temperature product prepared from a phenol, an aldehyde, and a polyamine at a temperature above about 130° C.;

(4) when said metal is Fe or Cu in combination with Pb, Zn, Cr or Sb, component (i) is other than a salicylaldehyde;

(5) when said metal is Cu, component (i) is other than a salicylaldehyde-nitroanil;

(6) when said metal is Cu, component (i) is other than a malonaldehyde-di-nitroanil; and

(7) component (i) is other than a β-diketone, carboxylic acid ester, acylated amine, or hydroxyaromatic Schiff base.

5,340,370

SLURRIES FOR CHEMICAL MECHANICAL POLISHING

Kenneth C. Cadien, and Daniel A. Feller, both of Portland, Oreg., assignors to Intel Corporation

Filed Nov. 3, 1993, Ser. No. 146,923
Int. Cl.[5] C23F *1/44;* **B44C** *1/22*
U.S. Cl. 51—308 **20 Claims**

9. A slurry for chemically mechanically polishing a film selected from the group consisting of tungsten and titanium nitride;

potassium ferricyanide;
silica; and
water;

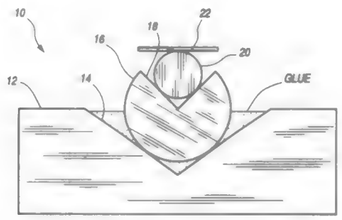
wherein said slurry has a pH greater than two and less than four.

5,340,371

OPTICAL FIBER SPLICING CHUCK

Richard B. Dyott, Oak Lawn, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed Mar. 31, 1993, Ser. No. 40,473
Int. Cl.[5] C03B *23/207*
U.S. Cl. 65—501 **14 Claims**



1. A fiber holding chuck for use with a fiber positioning mechanism, comprising:

a chuck mounting fixture having a chuck groove;
a rod mounted in said chuck groove of said chuck mounting fixture such that a length of said rod in said chuck groove, said rod having a fiber groove along the length of said rod, said rod further having a desired cross-sectional shape;
a fiber positioned in said fiber groove such that a length of said fiber rests in said fiber groove; and
a clamping mechanism holding said fiber in said fiber groove when said clamping mechanism is acting on said fiber.

5,340,372

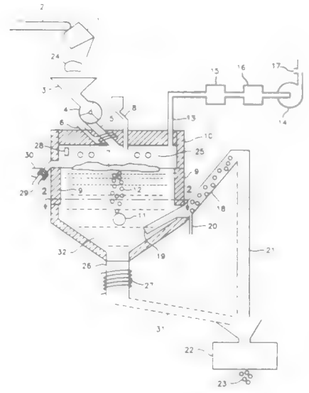
PROCESS FOR VITRIFYING ASBESTOS CONTAINING WASTE, INFECTIOUS WASTE, TOXIC MATERIALS AND RADIOACTIVE WASTE

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20817, and Robert K. Mohr, Washington, D.C., assignors to Pedro Buarque de Macedo, Bethesda and Theodore Aaron Litovitz, Annapolis, both of Md.

Continuation-in-part of Ser. No. 741,301, Aug. 7, 1991, Pat. No. 5,188,649. This application Jun. 29, 1992, Ser. No. 906,306
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] C03B *19/10, 17/00, 5/16*
U.S. Cl. 65—21.1 **22 Claims**

1. A process for converting waste materials into a silicate, said process comprising:

heating a silicate melt within an electrical glass melting furnace by passing an electric current through the melt between at least two electrodes so as to maintain the melt at a temperature above a decomposition temperature of waste materials;
generating a curtain of gas bubbles across a substantial portion of the current path between the at least two electrodes to increase the power density of the melt in the region of the curtain of gas bubbles;
supplying waste materials to the furnace above the melt so that the waste materials fall onto the melt and the waste materials are melted into silicates;
withdrawing molten silicate from the furnace in a molten glass stream at a temperature of at least 900° C.;
cutting the molten glass stream into a set of gobs by interrupting the molten glass stream; and



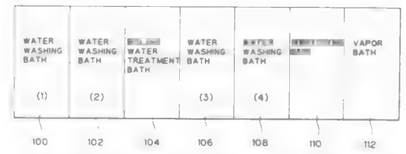
contacting said gobs with a cold surface to form gems having at least one flattened surface.

5,340,373

METHOD FOR PRODUCING OPTICAL ELEMENT BY PRESS MOLDING A BLANK HAVING A COMPONENT REMOVED LAYER AND A HYDROCARBON COATING

Sunao Miyazaki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 14,224
Claims priority, application Japan, Feb. 18, 1992, 4-60960
Int. Cl.[5] C03B *23/00*
U.S. Cl. 65—24 **2 Claims**



1. A method of manufacturing an optical element, including the performance of press-molding a glass blank, said method comprising the steps of:

forming a water-soluble component-removed layer on a surface of the glass blank by immersing the glass blank in boiling water;
forming a hydrocarbon coating layer on a surface of the water-soluble component-removed layer; and
molding the optical element by pressing the glass blank with mold members after the water-soluble component-removed layer and the hydrocarbon coating layer are formed, wherein the mold members have a predetermined shape of the optical element.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,374

METHOD FOR MOLDING OPTICAL GLASS ELEMENTS

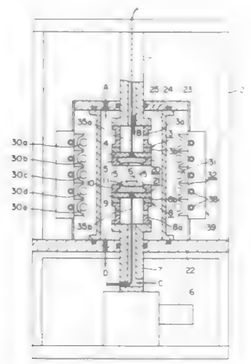
Yoshizo Komiyama, Gotenba; Fumio Arai, Numazu; Yoshiyasu Toyama, Numazu; Yutaka Hasegawa, Numazu, and Tetsuya Tanioka, Namazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 875,256, Apr. 27, 1992, Pat. No. 5,282,878. This application Nov. 24, 1993, Ser. No. 156,825

Claims priority, application Japan, Apr. 30, 1991, 3-126786

Int. Cl.[5] **C03B** *23/00*

U.S. Cl. 65—29.12 **3 Claims**



1. A method of molding an optical glass element comprising the steps of:

disposing a glass blank between upper and lower mold;

heating said molds and said glass blank with infrared ray lamps; and

press molding said glass blank,

wherein said improvement method comprises the steps of:

detecting a temperature of said upper and lower molds and outputting a signal based on said temperature; and

independently controlling electrical inputs to said infrared ray lamps respectively corresponding to said upper and lower molds so that said temperatures of said upper and lower molds remain at a predetermined temperature.

5,340,375

METHOD AND APPARATUS FOR BENDING AND TEMPERING A GLASS SHEET

Kalevi K. Anttonen, Tampere, Finland, assignor to Tamglass Engineering Oy, Finland

Filed Sep. 3, 1992, Ser. No. 940,308

Claims priority, application Finland, Sep. 27, 1991, 914551

Int. Cl.[5] **C03B** *23/03, 23/035*

U.S. Cl. 65—104 **8 Claims**

1. A method for bending and tempering a glass sheet, comprising: heating a glass sheet in a furnace station close to a bending temperature; transferring the heated glass sheet into a positioning and bending station;

supporting the glass sheet during a transfer period between the furnace station and the positioning and bending station upon a gas bed located between the furnace and the positioning and bending station;

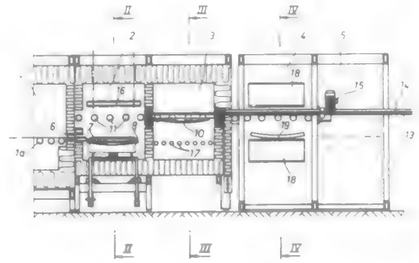
supporting the glass sheet at least initially in the positioning and bending station by the pressure of an underneath gas bed;

positioning the glass sheet in the positioning and bending station relative to a ring mould surrounding the underneath gas bed by bringing a leading edge of the glass sheet gliding on the underneath gas bed to collide with a positioning abutment cooperating with the ring mould and lifting up an additional positioning abutment cooperating with the ring mould for at least one of a trailing edge and side edges of the glass sheet, and raising the ring mould and supporting the glass sheet at least partially by the ring mould;

heating the supported glass sheet and allowing the supported glass sheet to bend gravitationally close to a final bending shape;

carrying a vacuum-fitted press plate, the shape of whose surface matches a desired bending profile, from a heating station to the positioning and bending station to a position above the gravitationally bent glass sheet;

causing relative vertical movement between the press plate



and the ring mould to approach each other for effecting final bending of the glass sheet as a press bending operation between the press plate and the ring mould;

switching on the vacuum of the press plate and by relative vertical movement drawing the ring mould away from the glass sheet, whereby the glass sheet is supported by the press plate;

carrying said press plate, along with the supported glass sheet into the heating station;

effecting the heating for tempering of the bent glass sheet vacuum-supported by the press plate; and

carrying the heat, bent glass sheet to a quenching station.

5,340,376

CONTROLLED-RELEASE MICROBE NUTRIENTS AND METHOD FOR BIOREMEDIATION

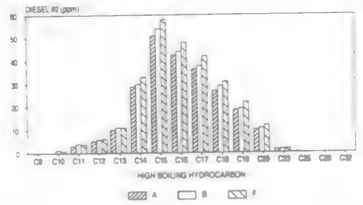
John Cunningham, Tracy, Calif., assignor to The Sierra Horticultural Products Company, Milpitas, Calif.

PCT No. PCT/US91/03986, § 371 Date Jan. 8, 1992, § 102(e) Date Jan. 8, 1992, PCT Pub. No. WO92/19544, PCT Pub. Date Nov. 12, 1992

Continuation-in-part of Ser. No. 535,393, Jun. 8, 1990, abandoned. This PCT application Jun. 6, 1991, Ser. No. 793,355

Int. Cl.[5] **C05F** *11/08, 3/00*

U.S. Cl. 71—6 **19 Claims**



1. In a biological remediation process wherein microorganisms are employed to degrade contaminating organic compounds present within an environment over an extended period of time, the improvement which comprises applying to said environment a low-level of controlled-release source of microorganisms nutrients capable of continuously supplying an effective microorganism growth-and activity-promoting level of nutrients to the microorganisms over a period of time of at least about two months, said controlled-release source of microorganism nutrients being in the form of coated solid particles each having a core of water soluble microorganism nutrients encapsulated in a release rate-controlling coating and where said particles are admixed in the environment at a level of 0.25 to 3 pounds per cubic yard of environment.

5,340,377

METHOD AND APPARATUS FOR PRODUCING POWDERS

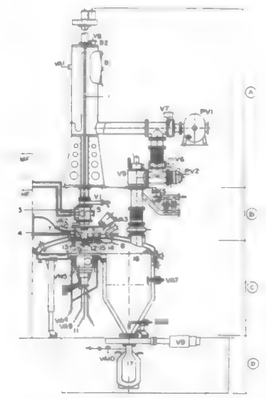
Andre Accary, Paris; Jean Coutiere, St. Georges de Mons, and Andre Lacour, Royat, all of France, assignors to Aubert & Duval, Neuilly sur Seine, France

Filed Jul. 23, 1992, Ser. No. 919,028

Claims priority, application France, Jul. 25, 1991, 91 09462

Int. Cl.[5] **B22F** *9/10*

U.S. Cl. 75—334 **20 Claims**



1. A method of manufacturing metal powders by atomization, comprising the steps of: continuously melting metal material to be atomized, which material flows vertically and generally coaxially with respect to a plasma furnace down towards a dispersion head rotating at high speed within a range of between 30,000 rpm and 125,000 rpm for the purpose of dispersing molten material thereby created in atomized form into an envelope of plasma-generating gases, then quenching the atomized material, and collecting cooled powder material thereby obtained, wherein the molten material is atomized by being dispersed by friction along a top surface of the dispersion head and is quenched by said atomized material passing through a cooling vortex situated at the periphery of the envelope of plasma-generating gases.

5,340,378

METHOD AND APPARATUS FOR PRODUCING LOW SULFUR METALLIZED PELLETS

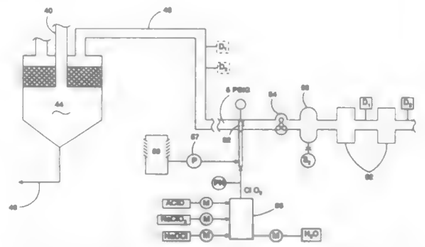
Allan C. Huestis, Georgetown, S.C., assignor to Georgetown Steel Corporation, Georgetown, S.C.

Filed May 28, 1993, Ser. No. 69,028

Int. Cl.[5] **C21B** *13/02*

U.S. Cl. 75—414 **15 Claims**

1. In a process for producing metallized pellets by direct reduction of metal oxide, the method including the steps of passing a reducing gas through a furnace having an upper reducing zone and a lower discharge zone, and containing sulfur-containing metal oxide material therein, reacting said reducing gas with said metal oxide material to produce metallized pellets and a sulfur-containing spent reducing gas, removing said spent reducing gas containing sulfur from said furnace, cooling and scrubbing said spent reducing gas to form cooled spent reducing gas, reforming said spent reducing gas into an effective reducing gas, and introducing said reducing gas into said reducing zone;



the improvement comprising the additional steps of introducing chlorine dioxide into said cooled and scrubbed reducing gas, reacting the sulfur containing components of said spent reducing gas with chlorine dioxide, thereby reducing the sulfur content of said reducing gas, removing the sulfur-containing reaction products, and producing a cooled sulfur free gas stream.

5,340,379

JET FLOW DEVICE FOR INJECTING GAS INTO MOLTEN METAL AND PROCESS

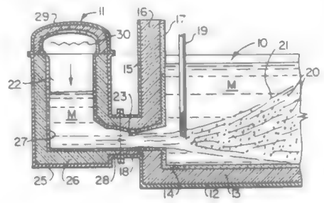
Francois Tremblay, St-Fulgence, and Ghyslain Dubé, Chicoutimi, both of Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Apr. 9, 1993, Ser. No. 39,099

Claims priority, application Canada, Nov. 9, 1990, 2029680

Int. Cl.[5] **C22B** *9/04*

U.S. Cl. 75—680 **17 Claims**



1. A device for injecting gas into molten metal in a furnace chamber comprising:

(a) a stirring apparatus having a reservoir chamber separate from the furnace chamber, a connector portion with an orifice connecting the interior of the furnace and the reservoir for the passage of the molten metal between them through the connector portion, vacuum/pressure generating means connected to the reservoir chamber interior for alternatively and successively producing therein a vacuum for drawing molten metal into its interior from the furnace chamber and a positive pressure for expelling the molten metal therefrom into the furnace chamber through the orifice in the form of a high velocity stirring jet, and

(b) gas injector tube adapted to inject gas into the high velocity stirring jet emerging from the orifice in an axial core region thereof of maximum velocity such that the gas is broken down into a large number of small bubbles which are circulated throughout the furnace chamber with the stirring jet.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,380

RECOVERY OF PRECIOUS METAL

Michael J. Virnig, Santa Rosa, Calif., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 853,197, Mar. 18, 1992, Pat. No. 5,198,021. This application Mar. 3, 1993, Ser. No. 25,478
Int. Cl.[5] C22B *11/00*
U.S. Cl. 75—744 28 Claims

1. A process for the recovery of a precious metal from aqueous alkaline cyanide solutions containing said metal comprising:

(A) contacting said aqueous solution containing said precious metal with an ion exchange resin carrying guanidine functionality of a guanidine compound wherein said precious metal value is extracted from said aqueous solution;

(B) separating said aqueous solution from said ion exchange resin carrying said guanidyl functionality; and

(C) eluting said precious metal from said ion exchange resin with an aqueous, alkaline, eluant solution having a pH above about 12, and containing an eluant modifier selected from the group consisting of

(a) an alkali metal salt of a branched chain aliphatic or a branched chain aliphatic substituted aromatic carboxylic acid having from about 3 to about 14 carbon atoms in the branched chain, and

(b) an alkali metal salt of an aliphatic or aromatic sulfonic acid; and

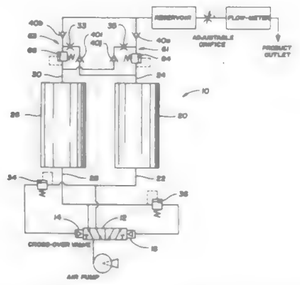
(D) recovering said precious metal from said eluant solution.

5,340,381

OPERATING SYSTEM FOR DUAL-SIEVE OXYGEN CONCENTRATORS

Marc L. Vorih, 5635 Heads Creek Rd., House Springs, Mo. 63051

Filed May 17, 1993, Ser. No. 62,238
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—21 21 Claims



1. In that type of oxygen concentrator having a product reservoir and first and second columns for adsorbing nitrogen, the process comprising the steps of:

(a) pumping air into the inlet of such first column while restricting outflow therefrom until a first pre-set pressure is reached;

(b) then, while continuing pumping, releasing the unadsorbed gas, partly to such product reservoir and partly to the outlet of such second column, at such rate that build-up of pressure continues in such first column until a second pre-set pressure is reached;

(c) then, switching the pumping of air from the inlet of such first column to the inlet of such second column and opening the inlet of such first column, whereby to vent the nitrogen theretofore collected therein; and

(d) repeating as to such second column the steps set forth in (a) to (c) above,

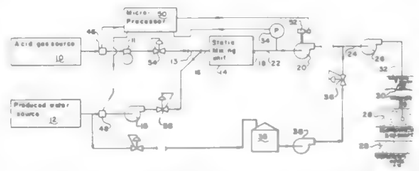
whereby to avoid releasing gas from such first column until such gas has been retained in such first column under at least said first pressure pre-set for release.

5,340,382

ACID GAS ABSORPTION PROCESS

Thomas L. Beard, P.O. Box 60306, Midland, Tex. 79711

Filed Jul. 8, 1993, Ser. No. 88,890
Int. Cl.[5] B01D *47/00, 53/14*
U.S. Cl. 95—151 16 Claims



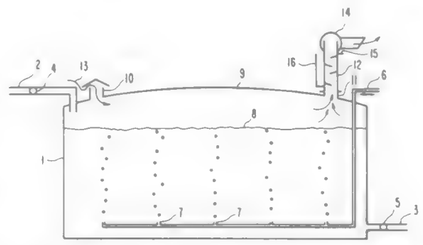
1. The process of disposing of acid gas produced from hydrocarbon producing strata, said strata located far below the surface of the earth, including a) absorbing the gas in water, and after absorbing said gas b) pumping said water into a disposal strata, c) wherein the improved method of absorbing the gas into the water in combination with the limitations previously recited comprises: d) flowing the water and gas through a static mixer.

5,340,383

REDUCTION OF PARTICULATE SULFUR EMISSIONS FROM LIQUID SULFUR STORAGE TANKS

James T. Womack, Belle Chasse, La., assignor to Freeport-McMoran Inc., New Orleans, La.

Filed Nov. 12, 1993, Ser. No. 150,991
Int. Cl.[5] B01D *50/00*
U.S. Cl. 295—243 21 Claims



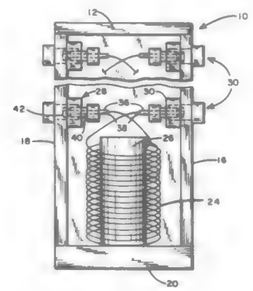
1. A method for reducing particulate sulfur emissions from a liquid sulfur storage tank having a roof and from which a gas stream containing elemental sulfur in vapor form, liquid droplet form, solid particulate form or any two or three such forms is vented, comprising passing said gas stream into contact with the internal walls and baffles of a baffled scrubber-condenser to impinge said elemental sulfur on said internal walls and baffles, and cooling said internal walls and baffles to condense, solidify and collect said elemental sulfur in said gas stream impinging on said internal walls and baffles.

5,340,384

VACUUM DEGASSING

Carl W. Sims, St. Paul, Minn., assignor to Systec, Inc., Minneapolis, Minn.

Filed Mar. 5, 1993, Ser. No. 26,730
Int. Cl.[5] B01D *19/00, 63/06*
U.S. Cl. 96—6 18 Claims



1. A flow-through vacuum degassing unit for degassing one or more liquids comprising:

(a) a vacuum chamber adapted to be connected to a source for creating a vacuum in the chamber;

(b) inlet and outlet connections for admitting and discharging liquid to be degassed;

(c) one or more continuous tubes for conducting the liquid through the chamber, each such tube being connected between one of said inlet and one of said outlet connections and each such tube being formed in a predetermined, memoried configuration having an outer surface and being capable of self-supported containment in an unreinforced state in the vacuum chamber, such that the outer surface of such continuous tube is essentially totally exposed to the vacuum, each such tube being a thin-walled polymeric resin material permeable to pass dissolved atmospheric gases therethrough but liquid impermeable.

5,340,385

HYDRAULIC CEMENT SET-ACCELERATING ADMIXTURES INCORPORATING GLYCOLS

Ahmad Arfaei, Milford; Neal S. Berke, and Ara A. Jeknavorian, both of Chelmsford, all of Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 827,196, Jan. 28, 1992, abandoned. This application Apr. 9, 1993, Ser. No. 46,110
Int. Cl.[5] C04B *24/02, 9/02*
U.S. Cl. 106—14.05 14 Claims

1. An admixture for reducing the set time of a cement composition which contains a hydraulic cement binder, said admixture comprising

a) a set accelerating amount of a set-accelerator component selected from the group consisting of alkali or alkaline earth metal nitrate, nitrite, and formate; alkali or alkaline earth metal salts of Group VII halogen and pseudohalogen acids; alkali or alkaline earth metal aluminates, silicates, and hydroxides; and mixtures thereof; and

b) a C_2 to C_6 glycol component which is defined as a two to six carbon aliphatic di- and trihydric alcohol, present in an amount effective to increase the set acceleration properties of the set-accelerator component.

5,340,386

SILICONE CONTAINING ARTISTS' MEDIA

Judith M. Vincent, Midland, and Andrew H. Ward, Sanford, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 6, 1993, Ser. No. 161,564
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—19 B 10 Claims

1. A method of making a drawing media which can be applied to a substrate comprising (i) preparing a drawing media by mixing together a pigment, a binder, and a volatile low viscosity methylsilicone fluid having a formula selected from the group consisting of $[(CH_3)_2SiO]_x$ and $(CH_3)_3SiO[(CH_3)_2SiO]_ySi(CH_3)_3$ in which x is an integer having a value of from three to ten, and y is an integer having a value of from zero to about four: (ii) applying the methylsilicone fluid containing drawing media to a substrate; and (iii) allowing the drawing media to dry on the substrate.

5,340,387

COLOR TRANSFORMING ART MEDIUM COMPOSITIONS

Donald A. Smith, 1773 14th Ave. S., Seattle, Wash. 98144-4201

Filed Feb. 24, 1992, Ser. No. 840,794
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 A 2 Claims

1. An art medium composition, comprising:

a. a lithographic ink vehicle, said lithographic ink vehicle containing at least one pigment from the following group consisting of phthalocyanine blue (pigment blue 15); lamp black (pigment black 6 and 7); quinacridone magenta (pigment violet 19); mars black (pigment black 11); ivory black, (pigment black 9); prussian blue (pigment blue 27); cobalt blue (pigment blue number 28); ultramarine blue (pigment blue 29); manganese blue (pigment blue 33); cerulean blue (pigment blue 35); indanthrone blue (pigment blue 60); chromium oxide (pigment green 17); viridian (pigment green 18); cobalt green (pigment green 19); terre verte (pigment green 23); nickel azo yellow (pigment green 10); light green oxide (pigment green 50); phthalocyanine green-chlorinated copper phthocyanine (pigment green 7); burnt sienna (pigment brown 7); perinone orange (pigment orange 43); irgazin orange (pigment orange 66); quinacridone magenta (pigment violet 19); cobalt violet (pigment violet 14); ultramarine violet (pigment violet 15); manganese violet (pigment violet 16); dioxazine violet (pigment violet 23); zinc white (pigment white 4); titanium white (pigment white 6); flake white (pigment white 1); aluminum hydrate (pigment white 24); blanc fixe (pigment white 21); china clay (pigment white 18); lithophone (pigment white 5); arylide yellow G (pigment yellow 1); arylide yellow 10G (pigment yellow 3); barium chromate (pigment yellow 31); chrome yellow (pigment yellow 34); chrome lemon (pigment yellow 34); zinc yellow (pigment yellow 36); cadmium yellow (pigment yellow 37); aureolin (pigment yellow 40); naples yellow (pigment yellow 41); nickel titanate (pigment yellow 53); arylide yellow GX (pigment yellow 73); isoindolinone yellow, (pigment yellow 109/110); flavanthrone yellow, (pigment yellow 112); yellow ochre (pigment yellow 43); chromophytal yellow 8GN (pigment yellow 128); toluidine red (pigment red 3); quinacridone red (pigment violet 19); permanent crimson (pigment red 7); rose madder (pigment red 9); alizarin crimson (pigment red 83); vermillion (pigment red 106); cadmium red (pigment red 108); permanent red FRG (pigment red 112); brominated anthranthrone (pigment red 168); naphthol carbamide (pigment red 177); perylene red (pigment red 190); quinacridone red (pigment red 207/209); chromophthal red BRN (pigment red 144); and chromophthal scarlet R (pigment red 166), and;

b. one or more spectral elements selected from the group consisting of aluminum oxide, barium oxide, bismuth oxide, boric oxide, cadmium oxide, calcium oxide, cerium

VOL 1165 ISS 4 AG 23 1994 UMI

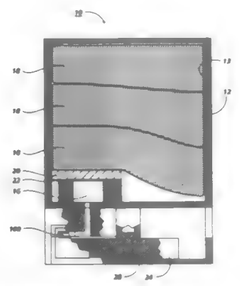
oxide, chromium oxide, cobalt oxide, copper oxide, iridium oxide, lead oxide, magnesium oxide, managanese oxide, nickel oxide, phosphorus oxide, potassium oxide, rutile, silicon oxide, silver oxide, sodium oxide, strontium oxide, tin oxide, titanium dioxide, titanium oxide, vanadium oxide, zinc oxide and zirconium oxide being mixed with said lithographic ink vehicle in a 3:97 to 50:50 ratio by volume, said spectral elements being capable of being oxidized with heat to produce a second color.

5,340,388

INK COMPOSITIONS TREATED WITH ZEOLITES

Marcel P. Breton, Mississauga, and Bärbel McGibbon, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 16, 1993, Ser. No. 107,107
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 B **20 Claims**



1. A process which comprises treating a dye with a zeolite, followed by admixing the treated dye with an aqueous liquid vehicle to form an ink composition.

5,340,389

WATER BASED MULTICOLOR COATING COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Germano Bollini, San Marino, San Marino, assignor to Brymore Enterprises S.A., San Marino

Filed Jun. 18, 1993, Ser. No. 80,082
Int. Cl.[5] C08L *1/00, 5/00*
U.S. Cl. 106—197.2 **27 Claims**

1. An aqueous coating composition comprising an aqueous dispersing medium containing at least one first film forming materials and a plurality of hydrated discrete colored globules dispersed within said aqueous dispersing medium, wherein said colored globules are from 60 to 90% by weight of said composition and said dispersing medium is from 40 to 10% by weight of said composition, said globules being the reaction product of a base medium comprising a mixture of at least two hydrophilic anionic colloids selected from the group consisting of carboxylated cellulose colloids, polysaccaride gums and acrylic polymers, and a reactive medium comprising a mixture of at least two metal cations selected from the group consisting of Fe^{3+}, Al^{3+}, Ca^{2+}, and Mg^{2+}; said base medium further comprising from 2.5 to 20.0% by weight of at least one pigment, filler, or a mixture thereof, and from 10 to 40% by weight of a second film forming material.

5,340,390

RHEOLOGICAL ADDITIVE COMPRISING DERIVATIVES OF CASTOR OIL

Edward D. Magauran, Westampton; William Reynolds, Barnegat; Lawrence DiCarlo, Hamilton Sq.; Charles A. Cody, Robbinsville; Araxi Chiavoni, Trenton, and Modasser El-Shoubary, Robbinsville, all of N.J., assignors to Rheox, Inc., Hightstown, N.J.

Filed Oct. 29, 1992, Ser. No. 968,945
Int. Cl.[5] C08L *91/00*
U.S. Cl. 106—244 **9 Claims**

1. A rheological additive with improved anti-seeding properties comprising a hydrogenated castor oil derivative produced from castor oil having a hydroxyl value of 160 to 168 by a process comprising the steps performed in either order or simultaneously of

a) hydrogenating said castor oil, and

b) dehydrating said castor oil so that it has a lowered hydroxyl value.

5,340,391

PERFORMANCE-MODIFIED COLD-APPLIED ASPHALT COMPOSITIONS

Ken F. Grzybowski, Temple Terrace, Fla., assignor to ReClaim, Inc., Tampa, Fla.

Filed Mar. 11, 1993, Ser. No. 29,764
Int. Cl.[5] C08L *95/00*
U.S. Cl. 106—281.1 **16 Claims**

1. In a cold-applied composition including asphalt and asbestos, the improvement wherein:

the amount of asphalt in the composition is about 20.0–90.0 parts by weight;

and the composition further includes:

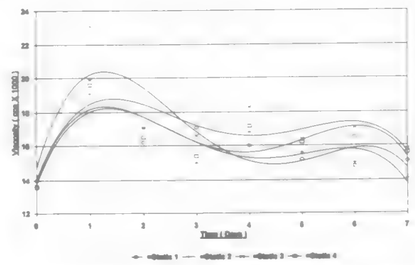
about 0.10–30.0 parts by weight recycled asphalt roofing waste, said waste including temperature-stable asphalt, stabilizing filler, and reinforcing fiber.

5,340,392

METHOD AND PRODUCT OF CALCIUM SULFATE DIHYDRATE AS FILLER IN AQUEOUS POLYMER DISPERSIONS

C. Eric Westbrook, Dalton, Ga., and Nelson Severinghaus, Nashville, Tenn., assignors to Franklin Industries, Inc., Nashville, Tenn.

Continuation-in-part of Ser. No. 690,826, Apr. 26, 1991, abandoned. This application Apr. 24, 1992, Ser. No. 911,631
Int. Cl.[5] C09C *1/02*
U.S. Cl. 106—471 **35 Claims**



1. A composition which allows for calcium sulfate dihydrate to be maintained in an aqueous solution comprising calcium sulfate dihydrate, water, and a detergent blend, said detergent blend being selected in part from the group consisting of lauryl sulfate and laureth sulfate.

5,340,393

PROCESS FOR PREPARING SILICA COATED INORGANIC PARTICLES

Howard W. Jacobson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 874,878, Apr. 28, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 137,903
Int. Cl.[5] C09C *1/36*
U.S. Cl. 106—492 **8 Claims**

1. A method for preparing dense amorphous silica coated inorganic particles comprising the steps of:

(a) preparing an aqueous suspension of water insoluble core particles selected from the group consisting of mica, cordierite, enorthite, pyrophyllite; and oxides of magnesium, calcium, barium, strontium, zinc, tin, nickel and iron; and carbonates and sulfates of calcium, barium and strontium, with an optional surfactant, and 0.05 to 2 wt % based on the core particles of a dispersion aid comprising a steric stabilizer at a temperature of 60° C. to 100° C.;

(b) adding an alkali silicate and a mineral acid and maintaining the pH in the range of 7 to 11 while depositing 0.5 to 50 wt % of amorphous silica on the surface of the core particles;

(c) separating and washing the silica coated inorganic particles to remove water soluble species; and

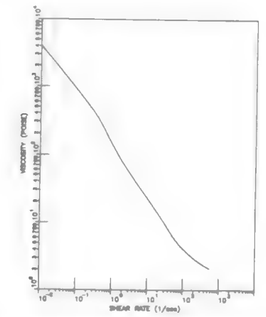
(d) drying and recovering dense amorphous silica coated inorganic particles.

5,340,394

ZERO VOC TINTING CONCENTRATES FOR DECORATIVE PAINTS

Ahmed A. Elsamanoudi, Strongsville, Ohio, assignor to The Glidden Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 917,398, Jul. 23, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 79,260
Int. Cl.[5] C09D *101/28*
U.S. Cl. 106—500 **29 Claims**



1. An aqueous dispersed pigment concentrate tinting composition for tinting paint products, where the tinting composition contains tinting pigments and an organic vehicle for the tinting pigments, the improvement comprising:

the organic vehicle consisting of a linear polyethylene glycol polyether having a number average molecular weight between about 190 and 700, where the vehicle is essentially free of volatile organic compounds, and where the aqueous dispersed pigment tinting composition contains at least about 2% of non-ionic alkyl glycoside surfactant based on the total weight of pigment, where the PVC (pigment-volume-content) of the tinting composition is between about 20% and 70%.

5,340,395

MATERIAL FOR EFFICIENT MASKING IN THE INFRARED REGION

Daniel Larmignat, Plaimpied; Phillippe C. Morand, Allouis; Christian H. Prieur, Somme, and Gilles F. Lacreuse, Saint-Etienne, all of France, assignors to Giat Industries, Cedex, France

Filed Jul. 1, 1992, Ser. No. 877,182
Claims priority, application France, Nov. 22, 1990, 90 14561
Int. Cl.[5] C09C *1/00;* **F42B** *12/48;* **C06D** *3/00*
U.S. Cl. 106—504 **21 Claims**

1. A material for producing an infrared-masking camouflaging cloud, comprising:

a carrier liquid comprising a mineral oil; and

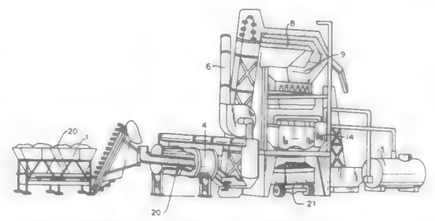
a coated powder suspended in said carrier liquid, said coated powder having a mean particle size of 0.8 μm to 15 μm and comprising infrared-opaque grains provided with a coating that is chemically inert with respect to the grains, is resistant to temperatures up to 400° C., and does not oxidize in said carrier liquid at temperatures up to 400° C.

5,340,396

PREPARATION OF ASPHALT CONCRETE WITH ORGANIC CONTAMINATED SOIL

Namunu J. Meegoda, Orange, N.J., assignor to New Jersey Institute of Technology, Newark, N.J.

Filed Oct. 15, 1992, Ser. No. 961,438
Int. Cl.[5] C04B *26/26*
U.S. Cl. 106—669 **10 Claims**



1. A method for the batch mix processing of an asphalt aggregate, containing organic contaminated soil, into asphalt concrete, comprising the steps of:

a) heating non-contaminated asphalt aggregate to a temperature of at least about 380° F. (193° C.);

b) placing the heated asphalt aggregate into a mixer;

c) adding organic contaminated soil, in amounts about 5 to 25% by weight of total asphalt aggregate, as a cold wet non-heated aqueous mix directly into the mixer and into contact with the heated non-contaminated asphalt aggregate;

d) mixing the heated asphalt aggregate and contaminated soil for a time sufficient to reach an equilibrium temperature of at least 300° F. (149° C.); and

e) adding and mixing a binder to the mixture of asphalt aggregate and contaminated soil, to form the asphalt concrete.

5,340,397

SET RETARDED ULTRA FINE CEMENT COMPOSITIONS AND METHODS

Lance E. Brothers, Ninnekah, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 889,226, May 27, 1992, Pat. No. 5,263,542. This application Aug. 30, 1993, Ser. No. 113,876
Int. Cl.[5] C04B *24/12, 24/16*
U.S. Cl. 106—727 **15 Claims**

1. A set retarded ultra fine cement composition which remains pumpable for a predictable period of time within a range

VOL 1165 ISS 4 AG 23 1994 UMI

of from about 1 to about 16 hours up to about 245° F. comprising:

an ultra fine hydraulic cement having a particle size no greater than about 30 microns and a Blaine Fineness no less than about 6000 square centimeters per gram;

sufficient water to form a pumpable slurry; and

a set retarder consisting essentially of a methylenephosphonic acid derivative present in said slurry in an amount in the range of from about 0.05% to about 2.5% by weight of dry cement therein; said methylenephosphonic acid derivative being selected from the group consisting of: compounds having the general formula:



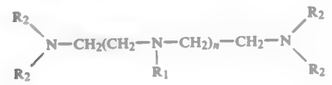
wherein:

R_1, R_2 and R_3 are independently hydrogen, $—CH_2PO_3(X)_2$ or $—CH_2CH_2—O—PO_3(X)_2$ with the limitation that one of R_1, R_2 and R_3 is always $—CH_2PO_3(X)_2$ or $—CH_2CH_2—O—PO_3(X)_2$;

X is hydrogen, an alkali metal cation, ammonium, a protonated amine or an alkaline earth metal cation in which case there is only one X per methylenephosphonate group; and

at least one X is hydrogen which is associated with the nitrogen atom by way of an intramolecular hydrogen bond between the nitrogen atom and an oxygen atom attached to a phosphorous atom;

compounds having the general formula:



wherein:

n is an integer from 1 to 4;

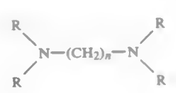
R_1 is hydrogen or $—CH_2PO_3(X)_2$;

R_2 is hydrogen, $—CH_2PO_3(X)_2$ or $—CH_2CH_2—N(R_3)_2$ wherein R_3 is hydrogen or $—CH_2PO_3(X)_2$;

X is hydrogen, an alkali metal cation, ammonium, a protonated amine or an alkaline earth metal cation in which case there is only one X per methylene phosphonate group; and

at least one of R_1, R_2 or R_3 is $—CH_2PO_3(X)_2$ and one X is hydrogen which is associated with a nitrogen atom by way of an intramolecular hydrogen bond between the nitrogen atom and an oxygen atom attached to a phosphorous atom;

compounds having the general formula:



wherein:

n is an integer from 2 to 6;

R is hydrogen or $—CH_2PO_3(X)_2$ or $—CH_2CH_2N(R_1)_2$ wherein R_1 is hydrogen or $—CH_2PO_3(X)_2$;

X is hydrogen, an alkali metal cation, ammonium, a protonated amine or an alkaline earth metal cation in which case there is only one X per methylene phosphonate group; and

at least one of R is $—CH_2PO_3(X)_2$ and one X is hydrogen which is associated with a nitrogen atom by way of an intramolecular hydrogen bond between the nitrogen atom and an oxygen atom attached to a phosphorous atom; and

compounds having the general formula:



wherein:

R_1 is hydrogen or $—CH_3$;

R_2 is $—PO_3(X)_2$ or $—CH_2PO_3(X)_2$;

X is hydrogen, an alkali metal cation, ammonium, a protonated amine or an alkaline earth metal cation in which case there is only one X per methylene phosphonate group; and

when nitrogen is present, at least one X is hydrogen which is associated with the nitrogen atom by way of an intramolecular hydrogen bond between the nitrogen atom and an oxygen atom attached to a phosphorous atom.

5,340,398

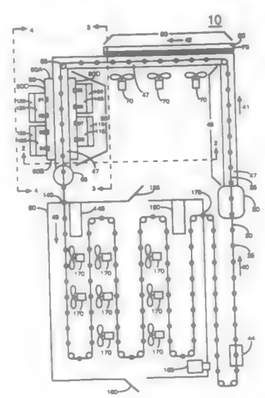
FOLIAGE COATING METHOD AND APPARATUS

Jack L. Wayne, Sr., and Jack L. Wayne, Jr., both of 421 Prairie Lake Cove, Altamonte Springs, Fla. 32701

Filed Apr. 8, 1993, Ser. No. 45,327

Int. Cl.[5] B05C *3/00*

U.S. Cl. 118—58 **2 Claims**



1. A foliage coating and treating apparatus including a plurality of stages in which plants are processed, said apparatus comprising:

a conveyor for transporting plants from stage to stage through said apparatus;

a coating stage including a coating tank wherein said plants are coated with a coating;

a hanging stage including means for hanging said plants on said conveyor;

a blowing stage including means for blowing said plants with air to promote drying and removal of excess coating;

a coating removal stage including

a booth having an entrance and an exit with said conveyor passing therethrough, said booth having first and second opposed side surfaces between which said plants pass on said conveyor;

a plurality of first air vents situated on said first side surface and a plurality of second air vents situated on said second side surface, each of said first air vents being laterally staggered with respect to said second air vents;

air supply means, coupled to said first air vents and said second air vents, for forcibly supplying air therethrough, such that air exiting said first air vents and said second air vents causes said plants passing through said booth on said conveyor to shake to remove excess coating therefrom, and

a drying stage including means for drying said plants wherein said plants are heated and blown to dry the coating on said plants.

5,340,399

APPARATUS FOR THE HEAT TREATMENT OF OPHTHALMIC LENSES, ESPECIALLY CONTACT LENSES

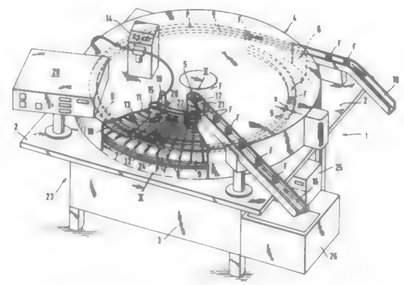
Winfried Uftring, Alezau; Theo Bachmann, Heigenbrücken; Helmut Geis, Kleinostheim, and Lothar Haase, Morsbach-/Sieg, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 17, 1993, Ser. No. 32,232

Claims priority, application European Pat. Off., Mar. 18, 1992, 92810196.3

Int. Cl.[5] F27B *9/16*

U.S. Cl. 118—59 **19 Claims**



1. An apparatus for heating ophthalmic lenses, which comprises an approximately cylindrical housing having an inlet opening and an outlet opening capable of being connected with feeding and removing means for moulds containing ophthalmic lenses, said apparatus further comprising:

an upper and a lower plate of approximately circular shape, which two plates are spaced apart from each other by a distance of about 40 mm to about 60 mm in a fixed position within said housing;

a rotatable turntable for transporting said moulds containing opthalmic lenses from said inlet opening to said outlet opening, said rotatable turntable being disposed between said upper and lower plates;

a spiral guide member which extends downwardly from said upper plate and determines a spirally-shaped transport path from said inlet opening to said outlet opening for said moulds containing said opthalmic lenses; and

heating tubes which are arranged spirally above and below said rotatable turntable such that said tubes are substantially congruent with said transport path, said heating means being connected to a thermostatically-controllable liquid bath and is capable of transporting a heating liquid.

5,340,400

LINEAR MOTOR SURFACE COATING SYSTEM

Thomas D. Schmidt, Berwyn, and Peter Smit, Newtown, both of Pa., assignors to Megamation Incorporated, Lawrenceville, N.J.

Filed Feb. 4, 1993, Ser. No. 13,294

Int. Cl.[5] B05B *3/18*

U.S. Cl. 118—313 **13 Claims**

1. A system for moving and orienting a treatment element for treating a workpiece, said system comprising:

a treatment element;

a mounting member for mounting said treatment element;

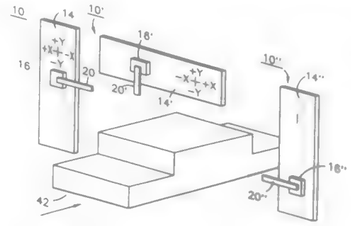
a pair of linkage arms, each linkage arm having a first end and a second end, said first ends being pivotally coupled to said mounting member with pivotal couplings, said pivotal couplings being a spaced distance apart;

a pair of linear motors;

a common platen along which said linear motors are movable upon application of operating signals applied to said linear motors for activating a forcer of each linear motor, which forcers interact with said platen to selectively move said linear motors therealong;

the second end of each of said linkage arms being pivotally coupled to one of said linear motors, whereby movement of said treatment element in first and second opposing directions along two mutually perpendicular axes, and rotation about a third axis mutually perpendicular with said first and second axis is obtained by selective movement of said linear motors.

11. A coating system for coating a workpiece comprising a plurality of spray assemblies for respectively coating selected



surfaces of said workpiece each of said assemblies being comprised of:

a treatment element;

a mounting member for mounting said treatment element;

a linkage arm having first and second ends, said first end being coupled to said mounting member;

a linear motor;

a platen along which said linear motor is movable upon application of operating signals applied to said linear motor for activating a forcer of each linear motor, which forcer interacts with said platen to selectively move said linear motor therealong;

the second end of the linkage arm being coupled to said linear motor, for moving said treatment element in first and second opposing directions along each of two mutually perpendicular axes, under control of said linear motor;

said treatment element being a spray element for spraying a liquid coating upon a work piece.

5,340,401

DIAMOND DEPOSITION CELL

Gordon L. Cann, Laguna Beach, Calif., assignor to Celestech Inc., Irvine, Calif.

Division of Ser. No. 462,496, Jan. 8, 1990, Pat. No. 5,182,093, which is a continuation-in-part of Ser. No. 293,968, Jan. 6, 1989, abandoned. This application Jan. 25, 1993, Ser. No. 8,901

Int. Cl.[5] C23C *14/00*

U.S. Cl. 118—725 **18 Claims**

1. Apparatus for depositing diamond on a surface of a substrate comprising:

a heating element,

means for positioning the substrate such that the entire portion of the surface of the substrate on which diamond is to be deposited is within a gap width of not more than about 50 mils from a surface of the heating element,

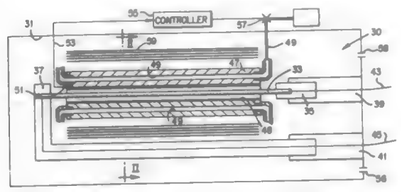
means for providing gaseous carbon containing molecules and hydrogen in the gap between said surfaces,

means for controlling the pressure of the gasses in the gap

VOL 1165 ISS 4 AG 23 1994 UMI

capable of maintaining such pressure at a selected level between 10^{-10} and 1400 Torr, and

temperature control means capable of maintaining said surface of said heating element at a selected temperature above 1800° K. and of maintaining said surface of said substrate at a selected temperature below 1500° K., such



temperature control maintaining means and said pressure controlling means being capable of maintaining said temperatures and pressure such that the gas at the surface of the substrate is supersaturated with carbon and the emission rate for carbon atoms from said surface of the heating element is higher than from said surface of said substrate, for depositing diamond on said substrate.

5,340,402

NOZZLE APPLICATOR FOR APPLICATION OF COATING COLOR ON A PAPER WEB

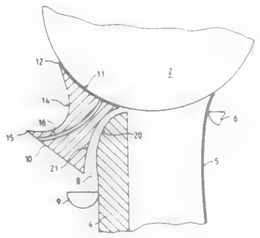
Rudolf Beisswanger, Steinheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Feb. 17, 1993, Ser. No. 18,737

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1992, 4205313

Int. Cl.[5] **B05C** *3/18*

U.S. Cl. 118—410 **6 Claims**



1. A coater for applying a color coating onto the surface of a travelling paper web, wherein the paper web wraps around a roll and has a direction of travel, said coater comprising:

a nozzle extending across the width of the web for feeding the color coating to the paper web, said nozzle including an overflow slat, a dosing slat, and an application zone enclosed between said overflow slat and said dosing slat, said overflow slat positioned on an entrance side of the nozzle wherein the web enters said application zone, and said dosing slat positioned on an exit side of the nozzle wherein the web exits said application zone; and

an air slat preceding said application zone along the direction of web travel, said air slat extending across the web width and defining with said web a gap space extending in said direction of web travel, said air slat including an edge located at an entrance of said paper web to said gap space in the direction of travel of the web, said air slat further including an air guide surface which viewed in side elevation starts at said edge and is structured and arranged to scrape an air film from said web and deflect said film away from the web, said air slat further including at least one air guide channel, said air guide channel originating at said gap space and ending downstream of said edge at said air guide surface or in closely spaced relationship thereto.

5,340,403

PROCESS FOR THE PRODUCTION OF XYLOSE

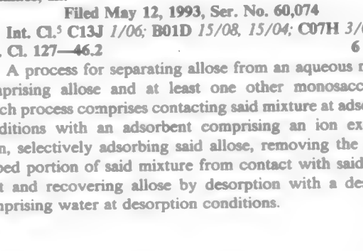
Peter R. Fields, and Robin J. Wilson, both of Stockton-on-Tees, United Kingdom, assignors to Zeneca Limited, London, United Kingdom

Continuation of Ser. No. 432,352, Nov. 6, 1989, abandoned, which is a continuation of Ser. No. 110,661, Oct. 20, 1987, abandoned. This application Mar. 15, 1991, Ser. No. 670,386

Claims priority, application United Kingdom, Oct. 20, 1986, [illegible]

Int. Cl.[5] **C13K** *1/02, 1/04*

U.S. Cl. 127—37 **12 Claims**



1. In a process for the production of xylose from a ligno-cellulosic material comprising an xylan-containing hemicellulose by the steps of:

(1) hydrolysing the ligno-cellulosic material with an aqueous acid to produce an aqueous xylose-containing medium and an insoluble residue comprising lignin;

(2) separating the insoluble residue from the xylose-containing medium;

(3) treating the xylose-containing medium to remove organic and/or ionic contaminants therefrom;

(4) concentrating the xylose-containing medium to a syrup; and

(5) mixing the syrup with an alcohol to form an alcoholic solution and crystallizing xylose from the alcoholic solution;

the improvement, whereby ethanol is used as said alcohol in step 5,

which comprises:

(a) controlling hydrolysis step (1) to limit hydrolysis of cellulose, whereby said insoluble residue contains also cellulose;

(b) in step (4) concentrating to a water content in the range 20 to 40% by weight; and

(c) in step (5) crystallizing at ambient temperature.

5,340,404

PROCESS FOR SEPARATING ALLOSE FROM OTHER SUGARS

Beth McCulloch, Clarendon Hills, Ill., assignor to UOP, Des Plaines, Ill.

Filed May 12, 1993, Ser. No. 60,074

Int. Cl.[5] **C13J** *1/06;* **B01D** *15/08, 15/04;* **C07H** *3/02*

U.S. Cl. 127—46.2 **6 Claims**

1. A process for separating allose from an aqueous mixture comprising allose and at least one other monosaccharide, which process comprises contacting said mixture at adsorption conditions with an adsorbent comprising an ion exchange resin, selectively adsorbing said allose, removing the nonadsorbed portion of said mixture from contact with said adsorbent and recovering allose by desorption with a desorbent comprising water at desorption conditions.

5,340,405

HIGH SOLIDS LIQUID STARCH PREPARED BY BATCH COOKING

Walter Maliczyszyn, Somerville; Leroy Peek, Milford, and Paul Gregory, Flanders, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jun. 14, 1993, Ser. No. 77,223

Int. Cl.[5] **C08B** *30/00*

U.S. Cl. 127—65 **19 Claims**

1. A method of preparing a high solids of 15% or more, predispersed liquid starch in a batch process comprising:

a) heating an aqueous slurry of a waxy starch having an amylopectin content of 95% or more and a solid content of about 0 to 25% by weight and maintained at a pH of at least about 4.0 until such starch is thoroughly cooked and dispersed, and

b) slowing adding an aqueous slurry of waxy starch having an amylopectin content of 95% or more and a solids content of about 30 to 50% at a rate which maintains the temperature at least as high as the gelatinized temperature of the starch until the starch is thoroughly cooked and dispersed and the desired solids content is reached.

5,340,406

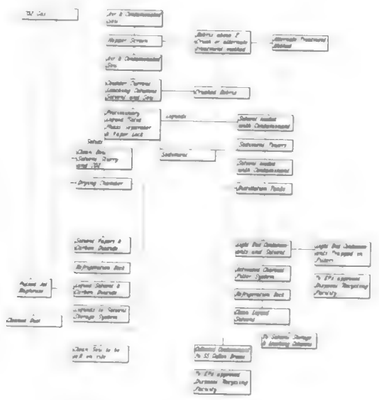
METHOD FOR REMOVING CONTAMINANTS FROM SOIL

Lee C. Fearon, P.O. Box 514, Manchester, Wash. 98353-0514

Continuation of Ser. No. 879,622, May 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 625,377, Jan. 28, 1991, abandoned, which is a continuation of Ser. No. 237,053, Aug. 29, 1988, abandoned. This application Apr. 22, 1993, Ser. No. 52,038

Int. Cl.[5] **B08B** *3/00, 3/04, 3/08, 3/10*

U.S. Cl. 134—10 **9 Claims**



1. A process for removing substituted and non-substituted aliphatic, aromatic, and alkylaromatic contaminants from a wet soil, comprising:

(a) removing water from the wet soil to yield a dry contaminated soil;

(b) mixing the dry contaminated soil with an amount of clean extraction solvent sufficient to form a slurry, wherein the extraction solvent comprises 2-methyl-2-propanol;

(c) introducing the slurry into an extraction vessel having a first end and a second end, the slurry being added to the extraction vessel at the first end and being transported through the extraction vessel in a direction toward the second end;

(d) simultaneously introducing additional clean extraction solvent into the extraction vessel, the additional clean extraction solvent being added to the extraction vessel near the second end and being transported through the extraction vessel in a direction toward the first end, the transportation of the slurry and the additional clean extraction solvent through the extraction vessel in opposite directions serving to separate the contaminants from the soil to yield a decontaminated soil and a contaminated extraction solvent, wherein a slurry sample is removed from the extraction vessel at a location between the first and second ends thereof and monitored for a contaminant, and wherein the rate at which the slurry passes from the first end to the second end, the rate at which the extraction solvent passes from the second end to the first end, or both, are controlled such that the contaminant does not exit the second end of the extraction vessel;

(e) collecting the contaminated extraction solvent at the first end of the extraction vessel;

(f) distilling or filtering the collected contaminated extraction solvent to yield clean extraction solvent and a first contaminate residue, and utilizing the clean extraction solvent as the clean extraction solvent of steps (b) or (d);

(g) collecting the decontaminated soil at the second end of the extraction vessel;

(h) drying the collected decontaminated soil to yield a dry solid and an extraction solvent vapor;

(i) collecting the extraction solvent vapor and condensing it to form an extraction solvent condensate; and

(j) distilling or filtering the collected extraction solvent condensate to yield clean extraction solvent and a second contaminate residue, and utilizing the clean extraction solvent as the clean extraction solvent of steps (b) or (d).

5,340,407

PROCESS OF REMOVING SOLDERING FLUX AND/OR ADHESIVE TAPE RESIDUE FROM A SUBSTRATE

Paul L. Bolden, and Michael E. Hayes, both of Fernandina Beach, Fla., assignors to Petroferm Inc., Fernandina Beach, Fla.

Continuation of Ser. No. 620,500, Nov. 29, 1990, Pat. No. 5,120,371, and a continuation-in-part of Ser. No. 852,488, Mar. 16, 1992, which is a continuation of Ser. No. 516,417, Apr. 30, 1990, abandoned, which is a division of Ser. No. 305,897, Feb. 2, 1989, Pat. No. 4,934,391, which is a continuation-in-part of Ser. No. 153,637, Feb. 8, 1988, abandoned. This application Jun. 9, 1992, Ser. No. 896,051

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] **B08B** *3/08*

U.S. Cl. 134—26 **10 Claims**

1. An industrial cleaning process in which a contaminant comprising soldering flux and/or adhesive tape residue is removed from a substrate contaminated therewith consisting essentially of:

(A) contacting the substrate with a terpene-based cleaning composition which is substantially free of water-soluble organic material for a period of time sufficient to solubilize the contaminant;

(B) removing the composition and solubilized contaminant from the substrate by contact with water having a temperature of about 70° F. to about 140° F. for a period of time of no longer than about 10 minutes to provide a substrate having a contamination rating of no greater than about 14 micrograms NaGl equivalent/square inch (MIL-P-28809A), and to thereby form a mixture comprising the composition, contaminant and water; and

(C) separating the water from said mixture, the separated water being substantially free of water-soluble organic material and having a chemical oxygen demand of no greater than about 1,000 ppm.

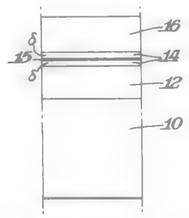
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,408

INVERSE DELTA-DOPING FOR IMPROVED OPEN CIRCUIT VOLTAGE OF SOLAR CELLS OR PHOTO DIODES

Karl W. Böer, Kennett Square, Pa., assignor to The University of Delaware, Newark, Del.

Filed Apr. 19, 1993, Ser. No. 49,101
Int. Cl.[5] H01L *31/06*
U.S. Cl. 136—255 18 Claims



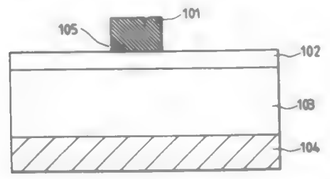
1. In a solar cell or photo diode device having an n-type semiconductor layer and a p-type semiconductor layer forming a pn-junction at the metallurgical interface of said layers, the improvement being in that a thin sheet with reduced density of recombination centers is inserted into a lesser doped region of said layers, said thin sheet being an inverse delta-doped sheet, said sheet having less recombination centers than its adjacent regions, to increase the open circuit voltage and fill-factor of said device.

5,340,409

PHOTOVOLTAIC ELEMENT AND METHOD FOR FORMING THE SAME

Koji Tsuzuki, and Nobuyoshi Takehara, both of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 46,131
Claims priority, application Japan, Apr. 23, 1992, 4-130066
Int. Cl.[5] H01L *31/0224, 31/04, 31/18*
U.S. Cl. 136—256 7 Claims



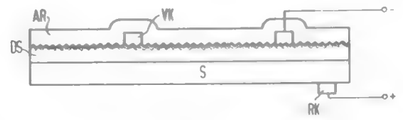
1. A photovoltaic element having a photoelectric conversion layer and a collecting electrode formed thereon by curing a paste having at least an electroconductive base substance and a curable resin formed on said photoelectric conversion layer, characterized in that the number average molecular weight of said curable resin is 3000 or less.

5,340,410

METHOD FOR MANUFACTURING POLYCRYSTALLINE SILICON THIN-FILM SOLAR CELLS

Arthur Endroes, Munich; Wolfgang Kruehler, Unterhaching; Richard Einzinger, Steinhoering, and Rolf Plaettner, Riemerling, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft and Siemens Solar GmbH, both of Munich, Fed. Rep. of Germany

Filed Nov. 3, 1992, Ser. No. 970,836
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1991, 4136815
Int. Cl.[5] H01L *31/0392, 31/0368, 31/18*
U.S. Cl. 136—258 9 Claims



9. A polycrystalline thin-film cell comprising:
a graphite substrate,
an approximately 10 to 50 μm thick polycrystalline silicon thin-film layer with <111> orientation of the crystallites disposed on said substrate, the silicon thin-film layer having a pyramid like surface, the crystallites having an average grain size of about 10 to 50 micrometers,
a pn junction in the silicon thin-film layer, and
a finger electrode forming an electrical contact on a front-side surface of the silicon thin-film layer.

5,340,411

SURFACE TREATMENT METHOD FOR FATIGUE-RESISTANT SOLDER

Clifford A. Megerle, Thousand Oaks, and Boon Wong, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 12, 1993, Ser. No. 134,720
Int. Cl.[5] B23K *35/34*
U.S. Cl. 148—26 13 Claims

1. A method for treating a eutectic tin-lead solder doped with about 0.1 to 1 wt% of at least one dopant selected from the group consisting of cadmium, indium, and antimony prior to exposure of said solder to solder flux, comprising immersing said solder in an etching solution consisting essentially of an aqueous solution of an acidic chloride or an acidic nitrate for a period of time sufficient to at least substantially reduce the presence of any cadmium, indium, or antimony, as well as the oxides of tin and lead, leaving a surface that is substantially tin and lead.

5,340,412

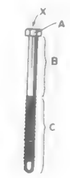
METHOD OF FLUORINATED NITRIDING OF AUSTENITIC STAINLESS STEEL SCREW

Akira Yoshino, Osakasayama; Masaaki Tahara, Takatsuki; Haruo Senbokuya, Tondabayashi; Kenzo Kitano, Kawachinagano, and Teruo Minato, Hashimoto, all of Japan, assignors to Daidousanso Co., Ltd., Osaka, Japan

Division of Ser. No. 758,829, Sep. 12, 1991. This application May 6, 1993, Ser. No. 57,497
Claims priority, application Japan, Aug. 31, 1991, 3-246790
Int. Cl.[5] C21D *9/00*
U.S. Cl. 148—208 4 Claims

1. A method for manufacturing a hard austenitic stainless steel screw comprising steps of heating an austenitic stainless steel screw having a surface in a gaseous atmosphere containing nitrogen to form a nitrided surface layer on the surface over a core of austenitic stainless steel, the nitrided surface

layer having a thickness of 18–140 μm and a hardness of 750–1400 Hv, and removing the nitrided layer on a portion of



the austenitic stainless steel screw to expose the core of austenitic stainless steel.

5,340,413

FE-NI BASED SOFT MAGNETIC ALLOYS HAVING NANOCRYSTALLINE STRUCTURE

Ronald Martis, East Hanover, N.J., assignor to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 665,396, Mar. 6, 1991, abandoned. This application Jun. 2, 1992, Ser. No. 896,505
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—305 11 Claims

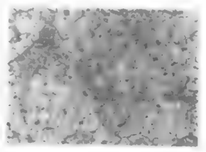
1. A metallic alloy having nanocrystalline particles distributed in a matrix, the alloy consisting of:
about 6 to about 72 atomic % Fe;
about 12 to about 81 atomic % Ni; where the sum of the atomic percentages of Fe and Ni is about 60 to about 90%;
about 0 1 to about 10 atomic % of at least one element selected from a group consisting of Cr, Mo, W, Nb, Ta, Ti, Zr and Hf;
about 0.1 to about 30 atomic percent B;
0 to about 15 atomic % Si; where the sum of the atomic % of B and Si is about 0.1 to about 30 atomic %;
where the sum of the above elements plus impurities is 100; and
said nanocrystalline particles have an effective particle size no larger than about 100 nm.

5,340,414

HEAT-RESISTANT FERRITIC CAST STEEL MEMBER

Hiroshi Asai; Nobuhide Takeshige; Yasuo Uosaki; Masahiko Shibahara; Motofumi Omori, and Shigenori Morimoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 9, 1992, Ser. No. 973,284
Claims priority, application Japan, Nov. 15, 1991, 3-328136
Int. Cl.[5] C22C *38/32*
U.S. Cl. 148—325 3 Claims



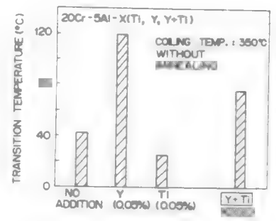
1. A heat-resistant ferritic cast steel member composed of 0.05 to 0.25 wt % of C, 0.3 to 2.0 wt % of Si, 0.2 to 2.0 wt % of Mn, not more than 0.05 wt % of P, not more than 0.05 wt % of S, 16 to 20 wt % of Cr, 0.5 to 1.5 wt % of Nb, 0.02 to 0.15 wt % of B and balance to 100 of Fe, fine niobium carbide particles being dispersed wherein a mean area of Cr carbide particles is not larger than 1000 μm^2.

5,340,415

FERRITIC STAINLESS STEEL PLATES AND FOILS AND METHOD FOR THEIR PRODUCTION

Masao Koike, Ibaraki; Akihito Yamagishi, Amagasaki; Katsuhiko Maruyama, Muika, and Shusuke Kakuchi, Amagasaki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jun. 1, 1993, Ser. No. 69,731
Claims priority, application Japan, Jun. 1, 1992, 4-140637; Sep. 30, 1992, 4-261818
Int. Cl.[5] C22C *38/28, 38/06;* C21D *8/00*
U.S. Cl. 148—325 19 Claims



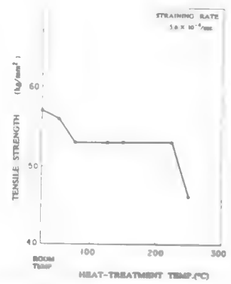
1. A hot-rolled plate of a ferritic stainless steel having improved toughness as well as workability, which consists essentially of:
C: not larger than 0.020%,
N: not larger than 0.020%,
C(%)+N(%): not larger than 0.030%,
Cr: 9.0–35.0%,
Al: 3.0–8.0%,
Y: 0.010–0.10%, Ti: 0.010–0.10%,
one or more of Si: larger than 1.0% but not larger than 5.0%, and Mn: larger than 1.0% but not larger than 2.0%,
Mo: 0–5.0%,
Fe and incidental impurities: balance.

5,340,416

HIGH-STRENGTH MAGNESIUM-BASED ALLOY

Toshisuke Shibata, Kawasaki; Akihisa Inoue, 11-806, Kawauchijutaku, Mubanchi, Kawauchi, Aoba-ku, Sendai-shi, Miyagi-ken, and Tsuyoshi Masumoto, Sendai, all of Japan, assignors to Tsuyoshi Masumoto; Yoshida Kogyo K.K. and Akihisa Inoue, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,780
Claims priority, application Japan, Dec. 26, 1991, 3-345469
Int. Cl.[5] C22C *23/02*
U.S. Cl. 148—420 9 Claims



1. A high-strength magnesium-based alloy consisting essentially of a composition represented by the general formula: $Mg_aAl_bM_c$ wherein M stands for at least one element selected from the group consisting of Ga and Ba, and a, b, and c stand

VOL 1165 ISS 4 AG 23 1994 UMI

for atomic % respectively in the ranges of $78 \leq a \leq 94$, $2 \leq b \leq 12$, and $1 \leq c \leq 10$, said alloy having a substantially microcrystalline structure comprising a matrix of microcrystalline magnesium and an intermetallic compound containing at least magnesium as one of the components thereof and uniformly dispersed in said matrix.

5,340,417

PROCESS FOR PREPARING SILICON CARBIDE BY CARBOTHERMAL REDUCTION

Alan W. Weimer; William G. Moore; William Rafaniello, and Raymond P. Roach, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US90/00276, § 371 Date Jun. 28, 1991, § 102(e) Date Jun. 28, 1991, PCT Pub. No. WO90/08105, PCT Pub. Date Jul. 26, 1990

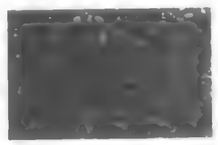
PCT Filed Jan. 11, 1990, Ser. No. 720,759

Claims priority, application PCT Int'l Appl., Nov. 1, 1989, PCT/US89/00114

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] C01B *31/36*

U.S. Cl. 148—513 32 Claims



1. A process for preparing silicon carbide by carbothermal reduction which comprises passing a particulate reactive mixture of a silica source and a carbon source through a heating zone such that substantially all of the particles of the reactive mixture are individually heated at a heating rate of at least about 100° C./second to a temperature within a range of from 1400° C. to 2400° C. and maintained within that range for a time period of from 0.2 to 10 seconds to form a product which, after removal of at least a portion of excess carbon and oxygen, is at least 80 weight percent silicon carbide crystals which have a size distribution such that at least 50 weight percent of the silicon carbide crystals is from 0.4 to 1.6 times the median crystal size.

5,340,418

METHOD FOR PRODUCING A CAST ALUMINUM VEHICLE WHEEL

Daniel C. Wei, Ann Arbor, Mich., assignor to Hayes Wheels International, Inc., Romulus, Mich.

Continuation-in-part of Ser. No. 842,942, Feb. 27, 1992, abandoned. This application Feb. 26, 1993, Ser. No. 23,294

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—549 11 Claims

1. A method for heat treating an alloy vehicle wheel comprising the steps of:

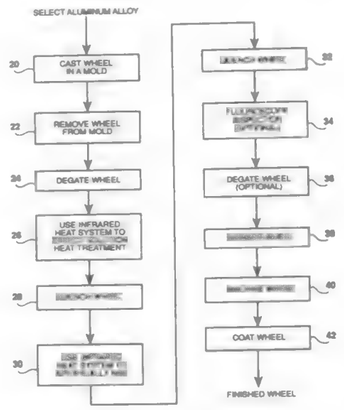
(a) providing a solution heat treatment apparatus, the apparatus including a first portion having a plurality of infrared emitters for rapidly heating the wheel to a temperature within a solution heat treatment temperature range and a second portion for maintaining the wheel temperature within the solution heat treatment temperature range;

(b) loading a vehicle wheel formed from a selected alloy into the first portion of the apparatus;

(c) supplying heat energy to the wheel from the infrared emitters at a level to rapidly heat the wheel to the temperature within the solution heat treatment temperature range;

(d) moving the wheel from the first portion of the apparatus to the second portion of the apparatus;

(e) supplying heat energy to the wheel in the second portion of the apparatus to maintain the wheel temperature within



the solution heat treatment temperature range for a solution heat treatment time period;

(f) immediately following the solution heat treatment time period, quenching the wheel; and

(g) aging the wheel.

5,340,419

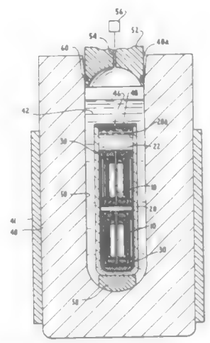
METHOD AND APPARATUS FOR DENSIFYING AN ARTICLE

George D. Chandley, Amherst, N.H., assignor to Metal Casting Technology, Inc., Milford, N.H.

Filed Dec. 21, 1992, Ser. No. 994,878

Int. Cl.[5] B22F *3/00*

U.S. Cl. 148—631 25 Claims



1. A method of densifying an article, comprising:

a) disposing a first molten salt pressure transmission medium about said article in a container, said first medium being at a first elevated temperature for densifying said article under pressure,

b) disposing a second molten salt pressure transmission medium at a second temperature lower than said first temperature about said container such that said first medium and said second medium are communicated so that pressure

applied to said second medium is transmitted to said first medium, and

c) applying pressure to said second medium sufficient to densify said article disposed in said first medium.

5,340,420

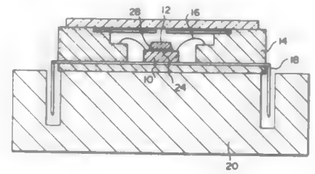
METHOD FOR BONDING A COLOR SEPARATION FILTER TO AN IMAGE SENSOR

Edward J. Ozimek, Penfield, and Terry Tarn, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 28, 1993, Ser. No. 10,121

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—64 5 Claims



1. A method for bonding a color separation filter to an image sensor, the method comprising the steps of:

1) dispensing an optical coupling composition that is not cross-linked by heat or ultraviolet (UV) radiation on a preselected surface of at least one of the filter and sensor;

2) placing the filter on the sensor so as to induce a uniform spreading of the optical coupling composition between the filter and sensor;

3) staking the filter to the sensor by placing a predetermined amount of UV curable adhesive at a discrete point at an interface of the filter and sensor; and

4) dispensing an epoxy along a periphery of the interface of the filter end the sensor, thereby bonding the filter to the sensor and encapsulating the optical coupling composition at the interface of the filter and sensor.

5. A method for bonding a color separation filter to an image sensor, the method comprising the steps of:

1) securing the sensor in a holder;

2) uniformly coating a surface of the sensor with an optical coupling composition that cross-linked by heat or ultraviolet (UV) radiation;

3) positioning the filter over the sensor using a vacuum chuck;

4) optically aligning the filter to the sensor and placing the filter on the sensor;

5) staking the filter to the sensor by using a predetermined amount of UV curable adhesive at either end of an interface of the filter and sensor;

6) dispensing an epoxy along a periphery of the interface of the filter and sensor to bond the filter and the sensor together and encapsulate the optical coupling composition at the interface of the filter and sensor.

5,340,421

METHOD USING A CAM FOR FOLDING A SEAL REMOVAL TAB ON A COLLAPSIBLE TUBE

Patrick P. Shea, Mullica Hill, N.J., and Henry S. Darlington, Aston, Pa., assignors to Teledyne Industries, Inc., Chester, Pa.

Filed Nov. 18, 1993, Ser. No. 128,180

Int. Cl.[5] B65B *7/28*

U.S. Cl. 156—69 1 Claim

1. The method of forming a tab on a seal of a laminate of plastic and metal across the dispensing orifice of a collapsible tube having

(a) a separately made rigid plastic head portion with a neck and a dispensing opening therein, and

(b) a separately made tube body of a laminate of plastic and metal foil,

the head and tube body being welded together with radio frequency waves;

wherein the seal was formed by

(1) applying the seal to the dispensing orifice of the head before the head is welded to the tube body by

(a) moving a file of heads past a first station;

(b) stopping each head intermittently at the first station;

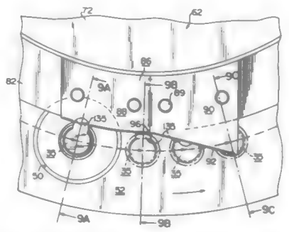
(c) continuously applying a vacuum to the head and dispensing orifice from below the head at the first station;

(d) passing a web of laminate over the head adjacent the dispensing orifice at the first station;

(e) cutting a seal from the web of laminate adjacent the dispensing orifice;

(f) keeping the seal of laminate positioned on the head over the dispensing orifice by means of the vacuum;

(g) applying a hot press to the seal, by reciprocating upward and downward motion, to fuse the seal to the head; and



(h) terminating the vacuum below the head to the dispensing orifice, and

(2) inserting a heat sink adjacent the seal during the welding by radio frequency waves of the head to the tube body, whereby any buildup of heat in the laminate seal is dissipated away from the seal to prevent damage to the seal;

the improvement comprising:

1. cutting a tab that is integral with and extends radially beyond the seal, when cutting the seal from the web of laminate adjacent the dispensing orifice, as set forth in step (e) above; and

2. bending said radially extending tab back and over against the top of the seal so that it extends substantially parallel to the plane of the seal, wherein the bending

(a) occurs after the seal is fused to the head, and

(b) is accomplished by relative motion between a pocket wheel and a cam having a first and second cam surface, the first surface lifting the tab to a vertically upward position from the seal, and the second cam surface bending the tab to a horizontal flat position over and against the seal.

5,340,422

METHOD FOR MAKING FERRITE CHIP BEAD ARRAY

Dong S. Chang, Kyonggi-Do, and Sang S. Lee, Seoul, both of Rep. of Korea, assignors to Boam R&D Co., Ltd., Rep. of Korea

Filed Feb. 11, 1993, Ser. No. 16,614

Int. Cl.[5] C03C *8/00*

U.S. Cl. 156—89 5 Claims

1. A method for making a chip bead array comprising the steps of:

a. preparing upper and lower ferrite substrate sheets;

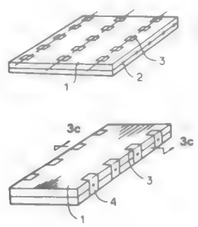
b. pressing and bonding the ferrite substrate sheets under conditions such that a plurality of uniformly spaced conductive leads fixed to a support frame are interposed between the ferrite substrate sheets and extended transversely;

c. forming a plurality of reinforcing outer electrodes ar-

VOL 1165 ISS 4 AG 23 1994 UMI

ranged in spaced lines crossing the conductive leads at the upper and lower surfaces of the ferrite substrate structure;

d. cutting the ferrite substrate structure along a central line of each reinforcing outer electrode line and in a direction crossing the leads to divide the ferrite substrate structure into a plurality of ferrite substrate modules each having



opposite side surfaces at which opposite cut ends of each conductive lead are exposed to the exterior; and

e. forming a plurality of outer electrodes at the opposite side surfaces of each ferrite substrate module so that each of the outer electrodes is in contact with the corresponding reinforcing outer electrodes as well as the corresponding cut end of the corresponding conductive lead.

5,340,423

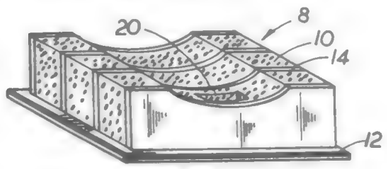
METHOD FOR FABRICATING A COMPOSITE STRUCTURE

Gary J. Jacaruso, and Philip J. Ramey, both of Milford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 727,259, Jul. 1, 1991, abandoned. This application Aug. 21, 1992, Ser. No. 933,612

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—158 **17 Claims**



1. A method of fabricating a composite forming tool having a surface contour that defines a composite article to be molded utilizing said composite forming tool, said fabricating method comprising the steps of:

(a) fabricating individual support headers from suitably rigid, non-heat sensitive free standing sheets of composite material by shaping each sheet of composite material to form a contoured edge which conforms to the surface contour of a section of the composite forming tool;

(b) arranging the individual support headers to form a ribbed support structure wherein each individual support header is spaced apart from adjacent individual support headers so that the contoured edges of the arranged individual support headers corresponds to the surface contour of the composite forming tool;

(c) mounting individual filler blocks of shapeable material that is dissolvable between adjacent individual support headers such that adjacent individual filler blocks are spaced apart from one another by means of the interposed individual support headers, each individual filler block extending between adjacent individual support headers;

(d) shaping the individual filler blocks to conform to the contoured edges of the adjacent individual support headers, whereby the contoured edges of the individual support headers and the individual filler blocks in combination form a continuous support structure surface that defines the surface contour of the composite forming tool;

(e) laying up laminates of uncured composite material over the continuous support structure surface; and

(f) curing the laminates to fabricate the composite forming tool.

5,340,424

METHOD FOR MAKING DISPOSABLE PANTS

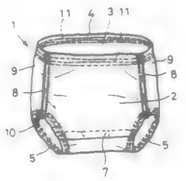
Michiko Matsushita, Iyomishima, Japan, assignor to Uni-Charm Corporation, Ehime, Japan

Division of Ser. No. 903,163, Jun. 24, 1992. This application Dec. 11, 1992, Ser. No. 989,386

Claims priority, application Japan, Jul. 10, 1991, 3-195702

Int. Cl.[5] A61F *13/15;* **B32B** *31/08*

U.S. Cl. 156—164 **3 Claims**



1. A method for forming disposable pants, said method comprising the steps of:

(a) moving an elongated first web (22) along a first path, said first web (22) having spaced apart longitudinal side edges,

(b) moving an elongated second web (23) along a parallel second path, said second web (23) also having spaced apart longitudinal side edges,

(c) said first web (22) having elastic stretchability and being maintained in a stretched condition while moving along said first path,

(d) said second web (23) having substantially no elastic stretchability,

(e) overlapping one longitudinal side edge of said first web (22) with one longitudinal edge of said second web and bonding said overlapping longitudinal side edges together along a first seal line (7) while maintaining said first web (22) in a stretched condition to thereby form an enlarged third web (30) that is larger than either said first web (22) or said second web (23),

(f) folding said enlarged third web (30) in two along a longitudinal imaginary center line (15) and then sealing this folded web (33) transversely thereof at regular intervals to form a folded web (33) with a plurality of spaced apart second seals (8),

(g) cutting said folded web (33) along a plurality of cut lines (14) that are parallel to each of said second seals (8) to thereby obtain individual pants with portions of said second seals (8) remaining along the laterally opposite sides thereof; and

(h) partially cutting off folded web (33) along spaced apart portions of said longitudinal imaginary center line (15) to thereby form leg-openings (5) immediately after the formation of said folded web (33) or during the step of cutting said folded web (33) into individual pants, the individual pants resulting from the method having a front body (2) formed from said first web (22) and a rear body (3) formed from said second web (23), said front body being smaller in area than said rear body (3) because said first web (22) has resumed an unstretched state.

5,340,425

METHOD FOR FORMING PLASTIC MOLDED PANELS WITH INSERTS

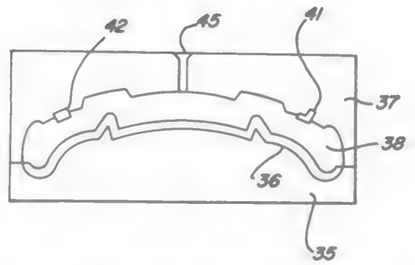
Vittorio Strapazzini, c/o Duotec Products Associates, 5501 Enterprise Ct., Warren, Mich. 48092

Continuation of Ser. No. 517,928, May 2, 1990, Pat. No. 5,091,031. This application Nov. 26, 1991, Ser. No. 798,576

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] B29C *51/10, 51/12*

U.S. Cl. 156—211 **13 Claims**



1. A method for forming molded panels, having inserts, for use as trim panels or interior door panels, comprising the steps of:

(a) forming a thin, flexible, sheet to a predetermined size and shape to provide a blank having an outer surface and an inner surface;

(b) positioning at least one, initially separate, insert upon the inner surface of the blank and bonding at least a substantially continuous narrow edge band portion, which defines a peripheral edge of the insert, to the blank portion which said edge band portion overlaps to form a laminated narrow border strip;

(c) positioning the blank with the insert within a mold with the outer surface of the blank and the insert each positioned against a wall of the mold while the mold is open and with said border strip overlying a substantially continuous frame means formed on said mold wall, and folding the border strip into a narrow continuous channel with the insert edge band portion arranged within and forming part of the interior of said channel,

(d) applying and bonding a relatively thick plastic substrate against the inner surface of the blank after positioning the blank against the mold for bonding together the overlapping surfaces of the blank and substrate wherein the portion of the blank that overlaps the insert within the laminated border strip is removed before bonding the substrate to the blank so as to simultaneously bond the inner face of the insert directly to the substrate, and applying the substrate by molding the plastic, which forms the substrate, in situ within the mold against the inner surface of the blank;

(e) thereafter, removing the molded panel from the mold to provide a composition panel having an exposed exterior surface formed of outer surfaces of the blank and the insert and with the peripheral edges of the insert visually concealed within the channel that opens outwardly of the channel and which channel surrounds the insert and forms a border for the insert.

5,340,426

APPARATUS AND METHOD FOR ADHERING LIGHT SHIELDING RIBBONS TO A PHOTOGRAPHIC FILM

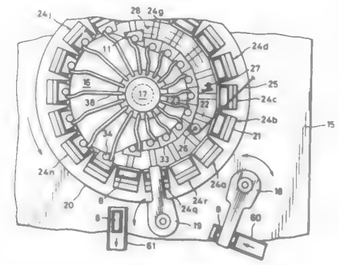
Koichi Takahashi, and Haruo Ichikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 17, 1992, Ser. No. 870,685

Claims priority, application Japan, Apr. 17, 1991, 3-112417

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—264 **4 Claims**



1. A method for adhering a ribbon to an inner portion of a photographic film cassette shell, comprising the steps of:

rotating a turntable on which N holders are fixed at a regular pitch, and N slidable supporters are mounted on said turntable, N is an integer;

setting said cassette shell on an empty holder which is at a position of feeding;

supplying ribbon web onto circumferential surfaces of supporters arranged adjacently;

cutting said ribbon web between said respective arranged supporters to separate said ribbon;

holding said ribbon on said supporter;

heating said ribbon to activate hot-melt adhesive agent coated on said ribbon;

pressing said ribbon against said inner portion of a cassette shell via said adhesive agent by advancing said supporter to a holder corresponding thereto;

releasing said supporter from said holding of said ribbon;

withdrawing said supporter after cooling said adhesive agent; and

removing said cassette shell from a processed holder which is at a position of removal.

5,340,427

METHOD OF MAKING AN INDEX TAB LABEL ASSEMBLY

Joyce M. Cusack, Chicago, Ill.; Allison S. Phillips, Pasadena, Calif.; Anahit Tataryan, Temple City, Calif., and Astgik Sinanyan, North Hollywood, Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 668,991, Mar. 12, 1991, Pat. No. 5,135,261. This application Apr. 24, 1992, Ser. No. 874,067

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—268 **9 Claims**

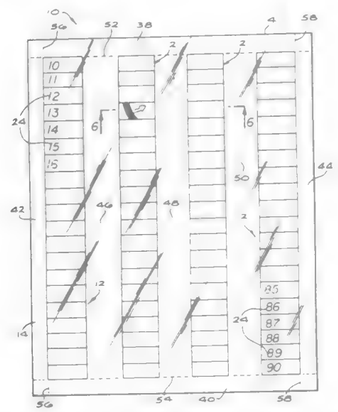
1. A method for labelling file folder tabs, comprising the steps of:

forming a fully flexible sheet having two layers including a backing sheet layer which has a release coating thereon, and a transparent upper label sheet layer, said upper layer having a top coating to facilitate printing on the upper surface thereof and a pressure sensitive adhesive on the lower surface thereof facing the backing sheet, said pressure sensitive adhesive being stable in the presence of temperatures up to 200 degrees Fahrenheit;

die cutting a plurality of labels and strips in the upper label sheet layer so that the upper layer is substantially continuous around the edges thereof;

VOL 1165 ISS 4 AUG 23 1994 UMI

said step of die cutting a plurality of labels and strips including cutting the labels into a pattern of columns and rows;
cutting perforations in said upper layer for facilitating removal of said strips;
printing indicia onto the labels by feeding the sheet through a printing device, with the continuous edges and flexibility of the sheet preventing jamming of the printing device and the temperature stability of the adhesive avoiding contamination of the printing device;



said printing being accomplished by sending said thin film labels and backing sheet selectively through laser and electrostatic printers;
providing an index divider having an integral outwardly extending tab, said tab having unique identification thereon; and
applying one of the printed labels to the tab;
whereby the assembled index divider and transparent label may have visible identification from both the printed label and from the unique identification on the tab.

5,340,428

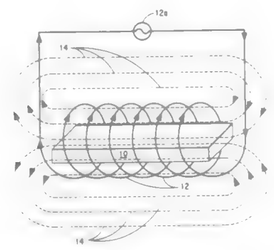
METHOD FOR INDUCTION HEATING OF COMPOSITE MATERIAL

George R. Kodokian, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 774,787, Oct. 10, 1991, abandoned, which is a division of Ser. No. 738,220, Jul. 30, 1991, Pat. No. 5,248,864. This application Nov. 20, 1992, Ser. No. 980,318

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—272.2 **11 Claims**



1. A method comprising:
providing at least two structures comprising a resin incapable of being melted or cured in an induced magnetic field, said structures being reinforced with a substantially planar two dimensional array of electrically conductive fibers within the resin, said array being capable of being heated by an induced magnetic field so as to melt or cure said resin;
applying a preferential heating material to said structures, said material being capable of coupling with or responding as a susceptor to said magnetic field and being substantially heated thereby;
overlapping said structures to which the preferential heating material has been applied;
orienting said structures within said magnetic field such that but for the application of said preferential heating material, the resin of said structures would not be sufficiently heated by said magnetic field as to be melted or cured; and
simultaneously applying pressure to said overlapping structures and heating the preferential heating material applied thereto by said magnetic field thereby melting or curing said resin and joining the overlapping the structures together.

5,340,429

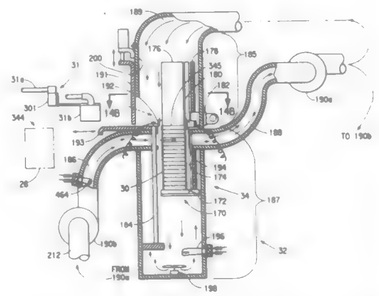
APPARATUS AND PROCESS FOR STACKING SHEETS OF HALF-CELL STRUCTURE TO MAKE A HONEYCOMB CORE

Joseph J. Duffy, Newark; Birol Kirayoglu, Wilmington; Pui-Yan Lin; Robert A. Marin, both of Hockessin, all of Del., and Robert J. Santucci, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 25, 1991, Ser. No. 797,329

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—288 **12 Claims**



9. A process of making a hexagonal-cell honeycomb core from a half-cell structure, the half-cell structure having a plurality of peaks and valleys and a diagonal surface between each consecutive peak and valley, comprising the steps of:
(a) stacking the half-cell structure so that as one sheet is placed on the top of a stack comprising at least one sheet, the peaks of one sheet contact the peaks of an adjacent sheet to form a plurality of hexagonal cells; and
(b) applying a differential pressure force to the sheets by reducing the air pressure surrounding the stack to a pressure below the air pressure on the top of the stack during step (a) to press the sheets together, thereby forming the core.

5,340,430

SYSTEM FOR HANDLING A WASTE WEB OF A WEB LAMINATE

Reiner Pfuhl, Dieburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Goebel GmbH, Darmstadt, Fed. Rep. of Germany

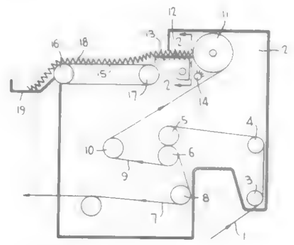
PCT No. PCT/DE91/00764, § 371 Date May 13, 1992, § 102(e) Date May 13, 1992, PCT Pub. No. WO92/06839, PCT Pub. Date Apr. 30, 1992

PCT Filed Sep. 26, 1991, Ser. No. 856,202

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1990, 4032394

Int. Cl.[5] B32B *35/00*

U.S. Cl. 156—344 **3 Claims**



1. A system for handling a waste web initially forming a label web adhesively bonded to a carrier web and together comprising a web laminate, the waste web, having its undersurface adhesively coated, resulting upon the formation of labels from the label web such that the carrier web supports the labels, the system comprising a machine including a separating roll about which the laminate travels for causing the carrier web with the labels supported thereon to travel along one predetermined path and for causing the waste web to travel along a second predetermined path, a web treating roll mounted on the machine about which only the waste web partially passes without being rolled up thereon so that a portion of said treating roll always remains free of the waste web, the coated undersurface of the waste web being in contact with said treating roll when partially passing thereabout, doctor blade means on the machine in said second path for removing the waste web from the treating roll as waste material and for directing the removed waste web out of the machine, and means on the machine for liquid spraying only said portion of the treating roll without spraying the waste web for assisting in freeing the waste web from the treating roll to thereby aid in the removal of the waste web by said doctor blade means.

5,340,431

ELASTIC BAND HEAT ACTIVATION SYSTEM

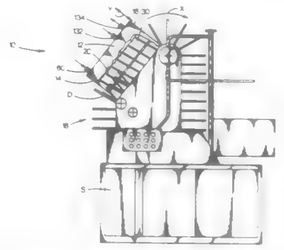
Stanley A. Terada, Seattle, Wash., assignor to Paragon Trade Brands, Inc., Kent, Wash.

Continuation of Ser. No. 896,332, Jun. 10, 1992, abandoned, which is a division of Ser. No. 595,048, Oct. 9, 1990, Pat. No. 5,140,757. This application Oct. 1, 1993, Ser. No. 130,531

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—359 **11 Claims**

1. An elastic band heat activation apparatus for activating a first heat-sensitive thermal film attached to a first edge of a body of an article to form a first elastic band along the first edge o the article, the apparatus comprising:
at least one chamber;
the chamber having a heating zone with an atmosphere at a first temperature sufficiently elevated to activate the first heat-sensitive thermal film to shrink the first film to form the first elastic band;
an article transporter for transporting the article through the heating zone to activate the first heat-sensitive thermal film; and



lateral compression means within the chamber for laterally compressing the body in a direction generally parallel to the first edge of the article while the article is transported by the article transporter through the heating zone to aid in formation of the first elastic band.

5,340,432

SINGLE-FACE STATION FOR A MACHINE THAT PRODUCES CORRUGATED CARDBOARD

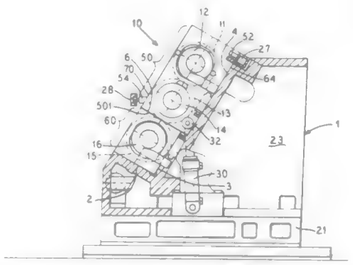
Jens Schulz, Hamburg; Martin Hoffmann, Tangstedt, both of Fed. Rep. of Germany, and Jean-Claude Rebeaud, Le Mont, Switzerland, assignors to Peters Maschinenfabrik, Hamburg, Fed. Rep. of Germany

Filed Jun. 18, 1993, Ser. No. 78,045

Claims priority, application Switzerland, Jun. 19, 1992, 01936/92

Int. Cl.[5] B31F *1/28*

U.S. Cl. 156—472 **7 Claims**



1. In a single-face station for a machine for producing corrugated cardboard, said station including a frame, which includes a stand with two lateral wall members, a lower pressure roll being mounted in said frame between the wall members and an upper cassette carrying a pair of superimposed corrugating rolls, the improvements comprising the lower pressure roll being installed in a lower cassette, said lateral wall members of the frame having a resting surface and a supporting surface adjacent a front edge of each wall member, said supporting surface being orientated obliquely with regard to the horizontal plane, and the resting surface and supporting surface extending at right angles to each other, said lower cassette lying on the resting surface and engaging the supporting surface, said wall members of the frame having guiding surfaces extending parallel to the supporting surfaces, said upper cassette lying on upper side edges of the lower cassette and on the guiding surfaces, said upper cassette having anchoring points situated adjacent a rear side edge of the upper cassette, said

VOL 1165 ISS 4 AG 23 1994 UMI

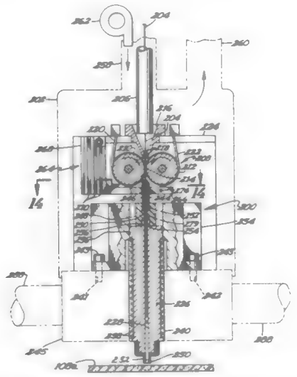
frame and upper cassette having extracting means to enable removing the upper cassette laterally from the frame, and holding means engaging the anchoring points of the upper cassette and exerting a downward force on the upper cassette to keep the lower cassette and upper cassette on their respective resting, supporting and guiding surfaces.

5,340,433

MODELING APPARATUS FOR THREE-DIMENSIONAL OBJECTS

S. Scott Crump, Minnetonka, Minn., assignor to Stratasys, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 429,012, Oct. 30, 1989, Pat. No. 5,121,329. This application Jun. 8, 1992, Ser. No. 894,248
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] B65C *11/04*
U.S. Cl. 156—578 16 Claims



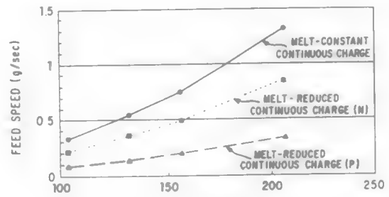
1. Apparatus for making three-dimensional physical objects of a predetermined shape by sequentially depositing multiple layers of solidifying material on a base member in a desired pattern, comprising:
a moveable dispensing head having an elongated material passage therein connected to a dispensing outlet at one end thereof, and having an oppositely disposed material receiving end;
a supply of material comprising a continuous flexible strand which solidifies at a predetermined temperature, and a material advance mechanism positioned to advance the strand into the elongated material passage on the head;
a base member disposed in close, working proximity to said dispensing outlet of said dispensing head;
mechanical means for moving said dispensing head and said base member relative to each other in multiple dimensions in a predetermined sequence and pattern;
means for metering the discharge of said material in a fluid state from said dispensing outlet at a predetermined rate onto said base member to form a three-dimensional object as said dispensing head and base member are moved relative to each other;
heating means in heat exchange relation to said dispensing head for heating said strand material to a temperature above its solidification temperature in said material passage wherein said material is in a fluid state; and
a heat insulating seal ring positioned on said dispensing head in surrounding, sealing relation to the material receiving end of said material passage, said seal ring having an aperture therethrough in alignment with the material passage in the head, said aperture and said material passage being of a predetermined diameter to provide an annular clearance space around a strand of supply material directed therethrough by the material advance mechanism, whereby the seal ring will be at a lower temperature than the heated head, and fluid supply material flowing into the annual clearance space around the advancing strand of material will cool and solidify within the seal ring annular clearance space to form a fluid seal therein.

5,340,434

PROCESS FOR PRODUCING SILICON SINGLE CRYSTAL

Kiyotaka Takano; Izumi Fusegawa, and Hirotoshi Yamagishi, all of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1993, Ser. No. 11,744
Claims priority, application Japan, Jan. 30, 1992, 4-038394
Int. Cl.[5] C30B *29/06*
U.S. Cl. 117—21 2 Claims



1. A process for producing a silicon single crystal, comprising the steps of:
providing a silicon melt in a crucible;
feeding grains of silicon polycrystal to the silicon melt, the concentration of residual hydrogen in the grains of silicon polycrystal being more than 10 ppmwt and less than 100 ppmwt; and
pulling up a silicon single crystal from the silicon melt.

5,340,435

BONDED WAFER AND METHOD OF MANUFACTURING IT

Yatsuo Ito, Sanai-cho 7, Jyouetsu-shi Niigata-ken; Takao Abe, 477-19, Yanase, Annaka-shi, Gunma-ken; Tokio Takei, Hara219-5, Kawanakajima-machi, Nagano-shi, Nagano-ken; Susumu Nakamura, 1822-1, Higashijou-machi, Nagano-shi, Nagano-ken, and Hiroko Ota, 1011-5, Ooaza-awasa, Kosyoku-shi, Nagano-ken, all of Japan

Division of Ser. No. 659,952, Feb. 26, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 944
Claims priority, application Japan, Feb. 28, 1990, 2-045777
Int. Cl.[5] H01L *21/02, 21/027*
U.S. Cl. 156—632 7 Claims

1. A method for manufacturing a bonded wafer comprising the sequential steps of:

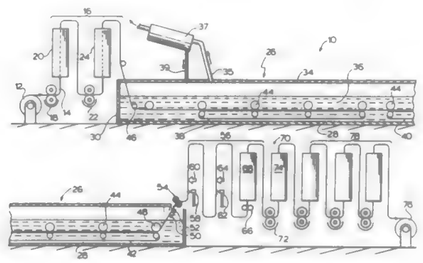
subjecting a first mirror wafer to an oxidation treatment to thereby form an oxide film over a mirror face of the first mirror wafer;
joining the first mirror wafer with a second mirror wafer in a manner such that said oxide film-covered face of said first mirror wafer is put on a mirror face of said second mirror wafer to thereby sandwich said oxide film between the two wafers;
heating the combined wafers at a predetermined temperature to thereby create a bond between the two wafers to form combined wafers whereby the first and second mirror wafers each have an exposed face on opposite sides of the combined wafers;
grinding the exposed face of said first mirror wafer;
masking all the exposed face of said first wafer except for a periphery portion thereof and at least the exposed face of said second wafer with a corrosion resistant film;
steeping the combined wafers in an etching liquid for a predetermined period of time to thereby etch and remove the periphery portion of the first mirror wafer which is not masked;
removing said corrosion resistant film and;
polishing said exposed face of said first mirror wafer to thereby reduce the first mirror wafer to a thin film.

5,340,436

DEMETALLIZING PROCEDURE

D. Gregory Beckett, Oakville, Canada, assignor to Beckett Industries Inc., Oakville, Canada

Continuation-in-part of Ser. No. 655,022, Feb. 14, 1991, abandoned. This application Jan. 31, 1992, Ser. No. 828,496
Int. Cl.[5] B05D *5/00*
U.S. Cl. 156—639 19 Claims



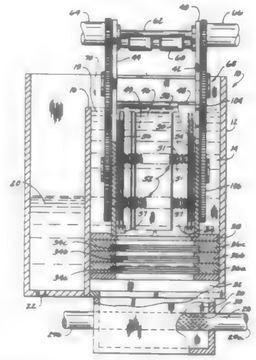
1. A continuous method of effecting selective demetallization of a layer of aluminum having a thickness of at least about 1 micron supported on a web of flexible polymeric material, which comprises:
continuously applying a pattern of sodium hydroxide-resistant material to said aluminum corresponding to a desired pattern of non-etched aluminum,
continuously passing said patterned web in an immersed condition through a bath of aqueous sodium hydroxide solution having a temperature of about 10° to about 98° C. and a strength of about 0.1 to about 1 normal for a time of at least 0.5 secs. per micron thickness of said aluminum layer to effect complete removal of aluminum from areas of the web not covered and protected by said pattern,
continuously washing said web free from spent sodium hydroxide solution, and
drying said washed web.

5,340,437

PROCESS AND APPARATUS FOR ETCHING SEMICONDUCTOR WAFERS

Henry F. Erk, St. Louis, and Roland R. Vandamme, St. Charles, both of Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed Oct. 8, 1993, Ser. No. 133,980
Int. Cl.[5] H01L *21/306;* B44C *1/22*
U.S. Cl. 156—639 21 Claims



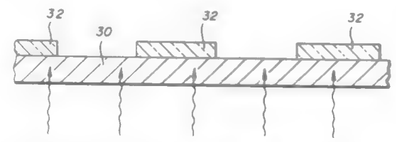
1. A process for etching a semiconductor wafer comprising the steps of:
rotating the wafer, and
contacting the rotating wafer with a flowing froth, the froth comprising bubbles formed by the effervescence of an etchant containing a dissolved gas.

5,340,438

LOW TEMPERATURE INSITU IMAGE REVERSAL PROCESS FOR MICROELECTRIC FABRICATION

Paul L. Roselle, Webster, and Stephen L. Kosman, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 7, 1993, Ser. No. 73,211
Int. Cl.[5] H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—643 1 Claim



1. An insitu microelectronic image reversal process comprising the steps of:
a) forming a patterned deposited layer of indium tin oxide (ITO) on a coating to be patterned provided on a substrate;
b) simultaneously depositing amorphous carbon on the coat-

VOL 1165 ISS 4 AG 23 1994 UMI

ing in the patterned ITO while removing the deposited ITO to expose the coating under the ITO; and

c) etching the exposed portions of the coating with an etch that is selective to the amorphous carbon to thereby complete the reversal process.

5,340,439

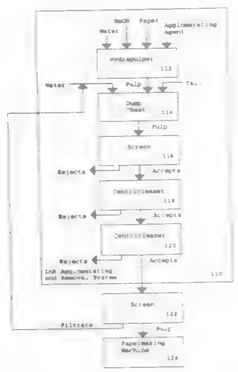
METHOD FOR REMOVING INK FROM PRINTED PAPER USING AGGLOMERATING AGENT, FOLLOWED BY ADDITION OF TALC

Larry D. Markham, Mobile, Ala., and Narendta R. Srivatsa, Tuxedo, N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Aug. 6, 1992, Ser. No. 926,841

Int. Cl.[5] D21C *5/02*

U.S. Cl. 162—5 **10 Claims**



1. A method for removing ink from printed paper to be recycled, the method consisting essentially of the sequential steps of:

pulping the printed paper to be recycled with water to produce a paper pulp slurry with a consistency of between about 1% and about 20%;

adjusting the pH of the paper pulp slurry to between about 6 and about 13;

maintaining the paper pulp slurry at a temperature of between about 30° C. and about 100° C.;

adding between about 0.05 wt. % and about 3.0 wt. %, based on the dry weight of the pulp, of an agglomerating agent to the paper pulp slurry;

pulping the paper pulp slurry for a period of time of between about 5 min. and about 90 min., such that the ink particles agglomerate;

thereafter, adding between about 0.2 wt. % and about 2.0 wt. %, based on the dry weight of the pulp, of talc to the paper pulp slurry; and

thereafter, removing the agglomerated ink particles from the paper pulp slurry.

5,340,440

METHOD FOR RECOVERING CHEMICALS USING RECOVERY BOILER HAVING AT LEAST 2 DIFFERENT MELT SECTIONS

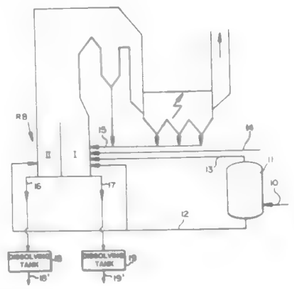
Kaj Henricson, Kotka, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Jul. 20, 1992, Ser. No. 915,235

Claims priority, application Finland, Sep. 9, 1991, 914252; Nov. 21, 1991, 915482

Int. Cl.[5] D21C *11/12*

U.S. Cl. 162—31 **17 Claims**



1. A method of recovering chemicals during the production of cellulose pulp using sulfur containing chemicals, comprising the steps of:

(a) providing a first fluid waste stream of sulfur containing chemicals from the production of cellulose pulp, having a first sulfur content;

(b) providing a second fluid waste stream of sulfur-containing chemicals from the production of cellulose pulp having a second sulfur content, greater than the first sulfur content;

the first and second fluid waste streams being formed by heating a waste liquor to drive off sulfur-containing gases, recovering the sulfur from the sulfur-containing gases, and splitting the heated waste liquor into the first and second different waste streams; then

(c) combusting the first and second fluid waste streams separately to produce first and second melts, the second melt having the second sulfur content, and the first melt the first sulfur content;

(d) prior to, or coincident with, step (c) adding the recovered sulfur only to the second of the split streams;

(e) dissolving the first and second melts to produce first and second liquors, the first liquor having the first sulfur content, and the second sulfur having the second sulfur content;

and wherein step (c) is practices by providing a soda recovery boiler having at least two different melt sections, and wherein the first waste stream is led to one melt section, and the second waste stream is led to another melt section.

5,340,441

CATIONIC COPOLYMERS WHICH ARE INSOLUBLE IN WATER, NEW DISPERSIONS AND THEIR USE IN THE COATINGS OF PAPERS

Claude Trouve, Yerres; Michel Richard, L'Isle Adam; Paul Mallo, Chatou, and Jean-Yves Anquetil, Saint Denis, all of France, assignors to Societe Francaise Hoechst, Puteaux, France

Division of Ser. No. 987,809, Dec. 9, 1992, Pat. No. 5,262,238. This application Aug. 31, 1993, Ser. No. 113,673

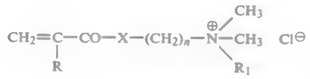
Claims priority, application France, Dec. 9, 1991, 91 15221

Int. Cl.[5] D21H *21/16, 19/20*

U.S. Cl. 162—135 **10 Claims**

1. In a method of improving the smoothness of paper or

cardboard comprising coating said paper or cardboard with a coating composition, the improvement wherein said coating composition contains a cationic copolymer which is insoluble in water and constituting a reaction product of acrylamide and a cationic monomer of the formula (I):



(I)

in which R and R_1, identical or different, represent a hydrogen atom or a methyl group, X represents an oxygen atom or an NH radical and n represents the number 2 or 3, containing in molar proportions 5 to 30% of cation units and cross-linked with 0.01% to 0.4% in molar proportions, relative to said monomers, of bisacrylamidoacetic acid.

5,340,442

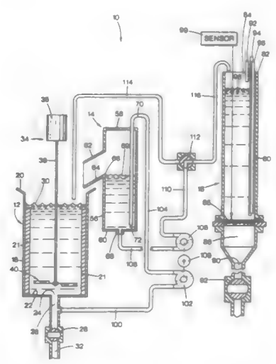
EVALUATING FURNISH BEHAVIOR

Jerome M. Gess, Bellevue; Dennis E. Petersen, Puyallup; Terry N. Adams, Tacoma, and Russell J. Martz, Puyallup, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Sep. 24, 1991, Ser. No. 765,906

Int. Cl.[5] G01N *11/00*

U.S. Cl. 162—198 **22 Claims**



1. A method for evaluating a reaction pattern of a paper pulp furnish, the method comprising the steps of:

placing the furnish in a holding container;

combining an additive with the furnish in the holding container and mixing the additive and furnish to form a mixture thereof;

transferring the mixture through a transfer line from the holding container to an intermediate container that maintains a substantially constant hydrostatic head on the mixture in the intermediate container by maintaining a substantially constant depth of the mixture in the intermediate container;

transferring at preselected intervals of time an equal volume sample of the mixture from the intermediate container to a test container having a screen bottom for separating furnish solids from slurry water;

dewatering each said equal volume sample in the test container to form a sheet therefrom by subjecting each said equal volume sample to a pressure differential created by providing a reduced pressure beneath the test container screen; and

determining one or more properties of each said sheet that is related to the function of the additive that was added to the furnish to thereby determine the effect of the additive on the equal volume sample of furnish at each preselected interval of time wherein the one or more properties of said sheet is chosen from the group consisting of pigment retention, fines retention, drainage time and visual appearance.

5,340,443

DISTILLATION APPARATUS WITH PAIRED MEMBRANE UNITS

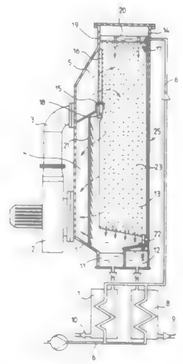
Tapio M. Heiniö, Uusikaupunki, and Mauri Kontu, Kalanti, both of Finland, assignors to Aquamax Oy, Uusikaupunki, Finland

Continuation of Ser. No. 873,331, Apr. 9, 1992, abandoned, which is a continuation of Ser. No. 640,300, Feb. 26, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 113,501

Claims priority, application Finland, Aug. 26, 1988, 883947; Aug. 17, 1989, 893884

Int. Cl.[5] B01D *1/28, 3/10*

U.S. Cl. 202—182 **7 Claims**



1. A distillation apparatus comprising:

a housing;

a plurality of membrane units placed within said housing, each unit being defined by a pair of plastic membranes seamed together from their edges and having a support for hanging of the unit and an opening communicating with the inside of the unit, and each unit having an expandable structure with the pair of membranes joined together by a plurality of spot welds;

means for clamping each of said membrane units together from said support to form a pack of membrane units, wherein the spaces between the adjacent units form an evaporator part of the apparatus and the spaces inside the units form a condenser part of the apparatus, said units being spaced so that on expansion the membranes of adjacent units make contact with each other at a number of points to form evaporator passages therebetween, and said clamping means being detachable to enable individual replacement of said units;

means for generating a vacuum within said housing;

means for feeding liquid to be distilled into said evaporator part;

a blower for conveying vapor generated in the evaporator part via said openings into said condenser part;

means for discharging residual liquid from the evaporator part; and

means for discharging distillate from the condenser part.

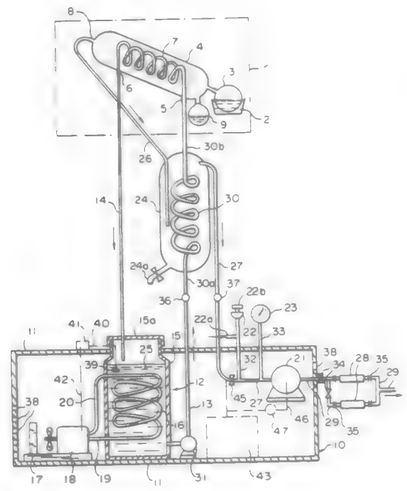
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,444

CIRCULATION COOLER FOR VACUUM DISTILLATION APPARATUS

Peter W. D. van der Heijden, Doerentrup, Fed. Rep. of Germany, assignor to Peter W. D. van der Heijden Laborbedarf, Doerentrup, Fed. Rep. of Germany

Filed Jun. 22, 1993, Ser. No. 79,600
Int. Cl.[5] B01D *3/10, 3/42*
U.S. Cl. 202—186 **10 Claims**



1. A circulation cooler and condenser for a vacuum distillation apparatus, comprising a vacuum distillation apparatus (**1**);
a circulation cooler (**10**) including a circulation cooler housing (**11**) having disposed therein:
(a) a heat exchanger (**12**) having a reservoir (**15**) for containing a cooling liquid (**25**), said reservoir having an inlet line (**13**) and a return line (**14**), and a cooling coil (**16**) disposed therein;
(b) a cooling unit (**17, 18**) connected by a forward flow (**19**) and a return (**20**) to said cooling coil (**16**) of said reservoir (**15**); and
(c) a vacuum pump (**21**), and a vacuum adjustment device (**22**) and a vacuum measurement device (**23**) provided outside of said circulation cooler housing (**11**),
a secondary condenser means (**24**) disposed outside said circulation cooler housing (**11**) for after-condensation of vapors passing from the vacuum distillation apparatus, a vacuum line means (**26**) for passing vapors to said secondary condenser means, said secondary condenser means having a cooling coil (**30**) therewithin located along said inlet line (**13**) for the passage of cooling liquid (**25**) from said heat exchanger (**12**) through said cooling coil (**30**) and then to the vacuum distillation apparatus, said secondary condenser means (**24**) being detachably connectable to the vacuum distillation apparatus via said vacuum line means (**26**) and being detachably connected through a second line means (**26**) and being detachably connected through a second vacuum line (**27**) to said vacuum pump (**21**); and
an absorber (**28**) detachably connected to said vacuum pump (**21**) through a blow line (**29**) disposed outside said circulation cooler housing (**11**).

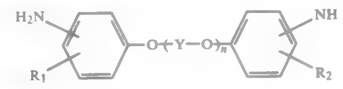
5,340,445

PROCESS FOR THE PURIFICATION OF DIAMINODIPHENYL COMPOUNDS

Joshua Hermolin, Ramat Hasharon; Hugo Keselman, Karmiel, and Jacob Oren, Qiryat Bialik, all of Israel, assignors to Bromine Compounds Ltd., Beer-Sheva, Israel

Filed Jun. 11, 1992, Ser. No. 896,833
Claims priority, application Israel, Jun. 16, 1991, 98520
Int. Cl.[5] B01D *3/10, 3/34*
U.S. Cl. 203—33 **9 Claims**

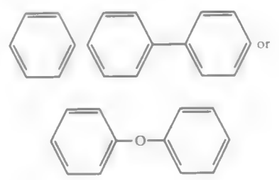
1. A process for the purification of a crude diaminodiphenyl compound of the structure:



wherein:
R_1 and R_2 are H, CH_3, C_2H_5, C_3H_7, C_4H_9 or



Y is $C(CH_3)_2$,



and n=0 or 1
in which the crude product is distilled under vacuum in one step in the presence of at least one alkaline metal base, wherein the distillation temperature is in the range between the melting point of the respective diaminodiphenyl-compound and about 400° C., the pressure is in the range 0.1–400 mm Hg and is maintained at a level at which sublimation of the diaminodiphenyl compound does not occur, and wherein distillation is carried out in the substantial absence of oxygen or ambient air.

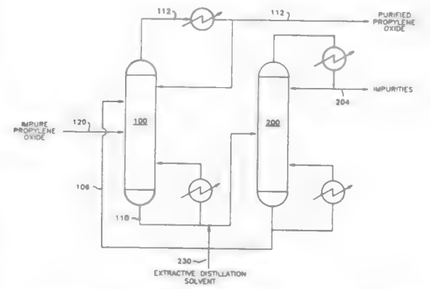
5,340,446

PURIFICATION OF PROPYLENE OXIDE BY COSOLVENT EXTRACTIVE DISTILLATION

William P. Nelson, Nederland, and William A. Smith, Houston, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Oct. 23, 1992, Ser. No. 966,001
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] B01D *3/40;* **C07D** *301/32*
U.S. Cl. 203—56 **8 Claims**

1. An extractive distillation process for the distillation of an impure propylene oxide feedstock in a distillation column to remove oxygenated contaminants, including water, methanol, and acetone from the impure propylene oxide feedstock which comprises the steps of:
introducing said impure propylene oxide feedstock into the lower half of a distillation column, said impure propylene oxide feedstock comprising propylene oxide contaminated with from about 0.01 to about 2 wt. % of water, from about 50 to about 4000 ppm of methanol and from about 0.01 to about 2 wt. % of acetone,
introducing an extractive distillation agent consisting essentially of a mixture of triethylene glycol with a lower boiling solvent selected from the group consisting of 2-methyl-2,4-pentanediol, tertiary butyl alcohol and ethylene glycol above the said impure propylene oxide feedstock feed point, said extractive distillation agent being introduced into said distillation column in the ratio of said



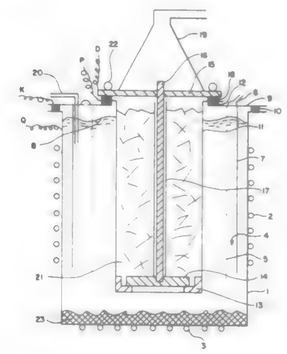
feedstock to said extractive distillation agent of from about 1:1 to about 20: 1,
withdrawing an overhead distillate fraction from said distillation column consisting essentially of essentially anhydrous propylene oxide contaminated with reduced quantities of acetone and methanol,
withdrawing a bottoms distillation fraction from said distillation column containing substantially all of the extractive distillation agent, water and acetone and a portion of the methanol introduced into said distillation column.

5,340,447

PROCESS FOR THE SELECTIVE ELECTROFLUORINATION OF ALLOYS OR METALLIC MIXTURES BASED ON URANIUM

Yves Bertaud, Voiron; Sylvie Bouvet, Vinay, and Airy-Pierre Lamaze, Grenoble, all of France, assignors to Uranium Pechiney, Courbevoie, France

Filed Jun. 21, 1993, Ser. No. 79,287
Claims priority, application France, Jun. 29, 1992, 92 08333
Int. Cl.[5] C25C *1/22*
U.S. Cl. 204—1.5 **13 Claims**



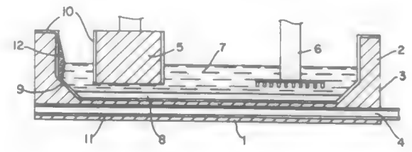
1. A process for the selective electrofluorination of an alloy or a metallic mixture based on uranium comprising effecting a selective anodic reaction on at least one of the components of the alloy by means of a controlled anodic voltage applied to the alloy in a bath of molten fluorides.

5,340,448

ALUMINUM ELECTROLYTIC CELL METHOD WITH APPLICATION OF REFRACTORY PROTECTIVE COATINGS ON CELLO COMPONENTS

Jainagesh Sekhar, Cincinnati, Ohio, and Vittorio de Nora, Nassau, The Bahamas, assignors to Moltech Invent S.A., Luxembourg

Division of Ser. No. 861,513, Apr. 1, 1992, Pat. No. 5,310,476. This application Oct. 26, 1993, Ser. No. 143,177
Int. Cl.[5] C25C *3/06;* **C25D** *3/66*
U.S. Cl. 204—67 **24 Claims**



1. A method of operating an aluminium production cell wherein aluminium is produced by the electrolysis of alumina dissolved in a molten halide electrolyte at a cathode and oxygen-containing gas is released at an anode, which method comprises:
a) producing a component of the cell which component comprises a substrate of carbonaceous or refractory material or a metallic alloy and a protective coating of refractory material, by applying to the substrate a micropyretic reaction layer from a slurry containing particulate reactants in a colloidal carrier, and initiating a micropyretic reaction;
b) placing the coating component in the cell whereby in operation said coating of refractory material is in contact with at least one of the cathodically produced aluminium, the molten electrolyte, and the anodically-released oxygen-containing gas; and
c) operating the cell with said coating protecting the substrate from attack by the cathodically-produced aluminium, by the molten electrolyte and by the anodically-released oxygen-containing gas with which it is in contact.

5,340,449

APPARATUS FOR ELECTROELUTION

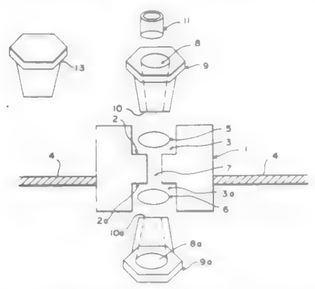
Ashok K. Shukla, 4676 Smokey Wreath Way, Ellicott City, Md. 21043

Continuation-in-part of Ser. No. 623,875, Dec. 7, 1990, abandoned. This application Oct. 23, 1992, Ser. No. 965,862
Int. Cl.[5] B01D *57/02, 61/42*
U.S. Cl. 204—180.1 **17 Claims**

1. An electroelution device for the electroelution of macromolecules from a support, comprising a chamber and upper and lower releasably securable membrane retaining members, said chamber, and at least one of said upper and lower membrane retaining members having a through-hole for passage of a fluid, said chamber through-hole terminating at a membrane well at each of its ends and having a diameter less than that of said membrane wells, each of said membrane wells having a sidewall that is provided with a shoulder for receiving a membrane of a prescribed molecular weight porosity and a corresponding one of said membrane retaining members along a common axis such that the membrane is interposed between said shoulder and said membrane retaining member, said side-

VOL 1165 ISS 4 AG 23 1994 UMI

walls and said membrane retaining members each having complementary-configured engagement surfaces for effecting engagement and retention of the respective membrane retaining members received therein.



5,340,450

REMOVAL OF ORGANIC MATERIALS FROM A GAS

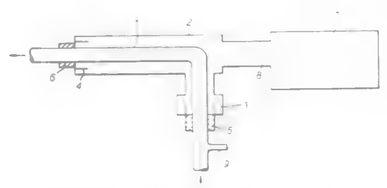
Christopher N. Griffiths, Abingdon; David Raybone, Stow on the Wold, and Keith H. Bayliss, Bridgnorth, all of United Kingdom, assignors to United Kingdom Atomic Energy Authority, Harwell, United Kingdom

Filed Nov. 16, 1992, Ser. No. 977,045

Claims priority, application United Kingdom, Dec. 10, 1991, 9126179.2

Int. Cl.[5] B01D *53/00*

U.S. Cl. 204—157.3 9 Claims



1. A method of treating a process gas to remove a volatile organic contaminant therefrom, including providing a supply of process gas containing a volatile organic contaminant which is to be removed, passing the process gas through a reactor chamber, and establishing within the reactor chamber a pulsed, circularly polarized microwave electric field of a magnitude such as to excite the process gas to a plasma state thereby to decompose the organic contaminant of the process stream.

5,340,451

PROCESS FOR PRODUCING A METAL ORGANIC POLYMER COMBINATION

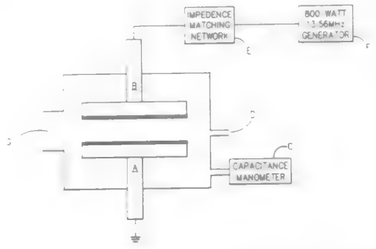
Leena P. Buchwalter; Stephen L. Buchwalter, both of Wappingers Falls; Charles R. Davis, Endicott; Ronald D. Goldblatt, Rye Brook; John E. Heidenreich, III, Yorktown Heights; Sharon L. Nunes, Hopewell Junction; Jae M. Park, Somers; Richard R. Thomas, Fishkill; Domenico Tortorella, Yonkers, and Luis M. Ferreiro, deceased, late of Bartonia, all of N.Y. by Mitchell Annette, Legal Representative , assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 917,802, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 592,754, Oct. 4, 1990, abandoned. This application May 13, 1993, Ser. No. 61,815

Int. Cl.[5] B01D *3/00*

U.S. Cl. 204—165 35 Claims

1. A process for producing a metal-organic polymer combination in which the metal is present in cationic form, comprising contacting said polymer with a plasma to obtain a treated polymer and contacting said treated polymer with a compound



containing cations of said metal to obtain said metal-organic polymer combination in which the metal is present in cationic form, and then recovering said combination.

5,340,452

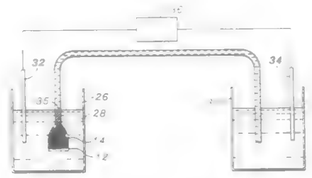
ON-COLUMN PRECONCENTRATION OF SAMPLES IN CAPILLARY ELECTROPHORESIS

Nathaniel Brenner, Irvine, and Richard H. Palmieri, Cupertino, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 1, 1991, Ser. No. 649,385

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—180.1 21 Claims



1. An electrophoresis column for carrying out capillary electrophoresis in an electrophoresis apparatus, said column flow communicating with a buffer solution provided in the apparatus, the column comprising:

a first section defining a capillary region for electrophoretic separation; and

a second section defining a region upstream of the first section having means for concentrating analytes of interest in a sample carried in a buffer solution; said concentrating means includes a particulate material for releasibly immobilizing the analytes of interest which, upon subsequent release, are to be electrophoretically separated in the first section.

5,340,453

ANALYSIS OF CARBOHYDRATES

Peter Jackson, Cambridge, Great Britain, assignor to Astroscan, Ltd., Braddan, Great Britain

PCT No. PCT/GB90/01448, § 371 Date Mar. 27, 1992, § 102(e) Date Mar. 27, 1992, PCT Pub. No. WO91/05256, PCT Pub. Date Apr. 18, 1991

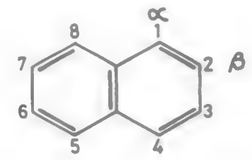
PCT Filed Sep. 20, 1990, Ser. No. 844,573

Claims priority, application United Kingdom, Sep. 27, 1989, 8921817.6; Jun. 26, 1990, 9014158.1

Int. Cl.[5] C25B *7/00*

U.S. Cl. 204—182.8 14 Claims

1. A method of separating or distinguishing analyzing carbohydrate substance mixtures, comprising labelling carbohydrate substances with a labelling reagent comprising a fluorescent naphthalene ring structure having as a substituent a reactive group capable of reacting with a reducing sugar to bind thereto and also having at least one substituent group capable of carrying a charge but which does not react with reducing sugars and



does not extinguish fluorescence of the labelling reagent; applying the labelled substances to an electrophoretic gel; and running the gel to cause differential migration of different substances.

5,340,454

METHOD AND APPARATUS FOR THE COATING OF SUBSTRATES

Christian Schaefer, Hanau am Main, and Klaus Hartig, Ronneburg, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 726,932, Nov. 7, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 98,751

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1991, 4111384

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.12 1 Claim



1. Method for coating curved substrates by cathode sputtering in a vacuum apparatus having different chambers with at least one sputtering chamber, which is subdivided into several divisions which are provided each with a sputtering cathode, uncoated curved substrates being moved through the vacuum apparatus by means of a transport system including carriers, in a forward direction of movement, the method comprising: passing curved substrates in an in-line translation through the sputtering chamber repeatedly in a forward direction of movement as well as in an opposite direction in a multipass mode with the sputtering chamber empty of substrates between translations in the forward direction and in the opposite direction, passing the substrates through a lock individually into a transfer chamber disposed ahead of the sputtering chamber in the forced direction of movement and then combining sequentially the substrates to be coated prior to entrance into the spurring chamber in groups of several substrates, and running each group of substrates simultaneously through the sputtering chamber in an in-line translation.

5,340,455

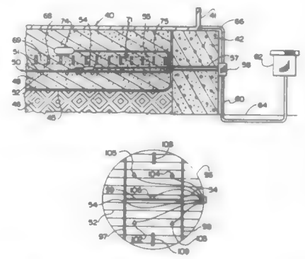
CATHODIC PROTECTION SYSTEM FOR ABOVE-GROUND STORAGE TANK BOTTOMS AND METHOD OF INSTALLING

David H. Kroon, Spring, Tex., and Michael K. Basch, Parma, Ohio, assignors to Corrpro Companies, Inc., Medina, Ohio

Filed Jan. 22, 1993, Ser. No. 7,537

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—196 30 Claims



1. In combination, an above-ground storage tank having a metal bottom, a leak containing dielectric safety membrane spaced a short distance below and extending beneath the tank bottom generally parallel thereto, a compacted electrolytic backfill positioned between the membrane and the tank bottom supporting the tank bottom, a horizontally disposed cathodic protection anode between the membrane and tank bottom, said anode being in the form of a wire grid or maze, and a mesh dielectric insulator embedded in the electrolytic backfill and positioned between the anode and tank bottom operable to keep any portion of the anode from contacting the tank bottom and to maintain a generally uniform spacing between the anode and tank bottom, said wire being round in transverse section, laterally formable, and being 0.50" or less in diameter.

5,340,456

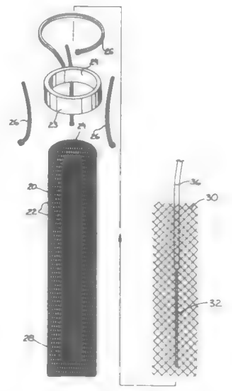
ANODE BASKET

Vern A. Mehler, 18030 Bariger, South Bend, Ind. 46637

Filed Mar. 26, 1993, Ser. No. 37,337

Int. Cl.[5] C25D *17/00*

U.S. Cl. 204—242 12 Claims

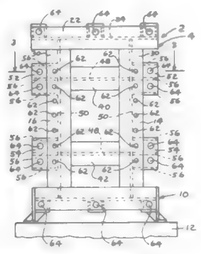


1. In an apparatus for electroplating metal including a solution tank filled with electroplating solution, and an anode

VOL 1165 ISS 4 AG 23 1994 UMI

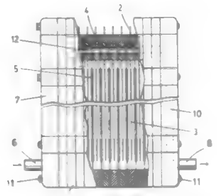
basket having an anode therein is suspended from said tank and submerged in said solution, the improvement wherein said anode includes a conductive corrosion resistant member housed inside said anode basket, means for connecting said member directly to an electric power source, a conductive grid housed in said anode basket and in direct contact with said anode and submerged in said solution, means for connecting said member to said grid.

5,340,457
ELECTROLYTIC CELL
James M. Ford, and David W. Cawlfield, both of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.
Filed Apr. 29, 1993, Ser. No. 53,743
Int. Cl.[5] C25B 9/00
U.S. Cl. 204—252 17 Claims



1. An electrolytic cell comprising:
a. spaced frame units;
b. cell components including an anode, a cathode, and separator positioned between said frame units, said anode and cathode each having a connector plate engaging portion for engagement with an electrical connector plate;
c. an electrical connector plate associated with each anode and cathode,
d. spring means for biasing one of either said electrical connector plate or said connector plate engaging portion of an associated anode or cathode into engagement with the other,
e. clamping means for clamping the frame units together to exert a compressive force on the cell components while simultaneously compressing said spring means so said spring means forces said connector plate engaging portion and an associated electrical connector plate into electrical engagement.

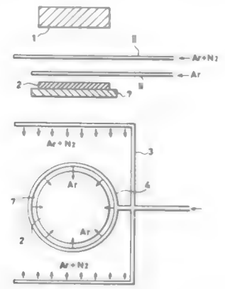
5,340,458
ELECTROLYTIC ION WATER GENERATOR
Haruhiko Koizumi, Chigasaki, Japan, assignor to Toho Technical Service Co., Ltd., Kanagawa, Japan
Filed Aug. 11, 1993, Ser. No. 104,798
Claims priority, application Japan, Dec. 8, 1992, 4-351679
Int. Cl.[5] C02F 1/461
U.S. Cl. 204—253 6 Claims



1. An electrolytic ion water generator for generating both alkali ion water containing alkali ions and acid ion water containing acid ions by introducing water into an electrolytic cell comprising electrodes and ion exchange membranes arranged alternately to electrolyze the electrolytes contained in the water, said electrolytic ion water generator comprising layered electrolytic cell unit panels, a water-inlet external cover located on one side of the layered electrolytic cell unit panels, and a water-outlet external cover located on the other side thereof, an electrolytic cell unit panel comprising a synthetic resin frame, an electrode plate, and an ion exchange membrane, and the synthetic resin frame having holes at specified points on its periphery thereof to accept metal fixtures to fasten the layered frames, a groove for O-rings at the inner periphery of the row of holes, a recessed face zone on each front side and rear side of the frame for the ion exchange membrane, and two water flow holes across the frame at the specified points between the groove for the O-rings and the recessed face zone, one of the water flow holes opening to the inside of the electrolytic cell, the electrode plate being located in the electrolytic cell unit panel within the thickness of the synthetic resin frame and provided with an electrode terminal at the top thereof which projects from the synthetic resin frame, the ion exchange membranes being set into the recessed face zones formed on both the front and rear sides of the synthetic resin frame and arranged so that they face the electrode plates and sandwich them, while maintaining a distance therebetween, the water-inlet external cover being provided with a water inlet opening connected with the electrolytic cell formed by the electrolytic cell unit panels, the water-outlet external cover being provided with an alkali ion water-outlet opening connected with one of the two water flow holes for discharging the generated alkali ion water, an acid ion water-outlet opening connected with the other water flow hole to discharge the generated acid ion water, an electrolytic cell cleaning device comprising a pair of bypasses housed within the water-outlet external cover or within a separate panel installed between the water-outlet external cover and an adjacent electrolytic cell unit panel, the bypasses allowing water to flow between one of the two water flow holes and the alkali ion water-outlet opening and the other water flow hole and the acid ion water-outlet opening independently, and a flow-path switching valve, which is activated in response to changes of polarity, mounted in a flow-path connecting the alkali ion water-outlet opening and one of the bypasses, and a flow-path connecting the acid ion water-outlet opening and the other bypass, the electrolytic cell unit being assembled by layering the electrolytic cell unit panels in a water-tight manner while facing the front sides to front sides and the rear sides to rear sides via the O-rings fitted in the grooves for the O-rings on the electrolytic cell unit panels, attaching the water-inlet external cover and the water-outlet external cover in a water-tight manner, and fastening by passing metal fixtures through holes in the synthetic resin frame and tightening.

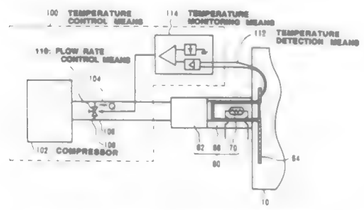
5,340,459
REACTIVE SPUTTERING SYSTEM
Kei Takehara, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Nov. 19, 1992, Ser. No. 978,982
Claims priority, application Japan, Nov. 22, 1991, 3-334375
Int. Cl.[5] C23C 14/34
U.S. Cl. 204—298.07 10 Claims

1. A reactive sputtering system, comprising a plurality of gas distribution pipes adapted to introduce a reactive gas during sputtering to react with a target material, the reacted target material being deposited on a surface of a substrate to be processed, said plurality of gas distribution pipes comprising a side gas distribution pipe which is disposed on both sides of said target and is adapted to flow a gaseous mixture containing said reactive gas and a sputtering gas against said target, and a ring-shaped gas distribution pipe which is disposed surrounding said target and between said target and the surface of said substrate and is adapted to flow said sputtering gas or reactive gas or a mixture thereof against said target, the amount of each



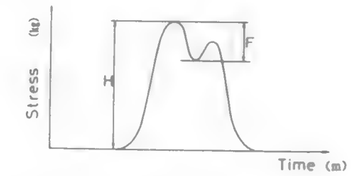
gas to be introduced through said pipes being individually controllable.

5,340,460
VACUUM PROCESSING EQUIPMENT
Masahiko Kobayashi; Hirobumi Takemura; Tetsuo Ishida, and Nobuyuki Takahashi, all of Fuchu, Japan, assignors to Anelva Corporation, Tokyo, Japan
Filed Aug. 19, 1991, Ser. No. 746,920
Claims priority, application Japan, Aug. 22, 1990, 2-220416; Jun. 28, 1991, 3-157278
Int. Cl.[5] C23C 14/34
U.S. Cl. 204—298.09 14 Claims



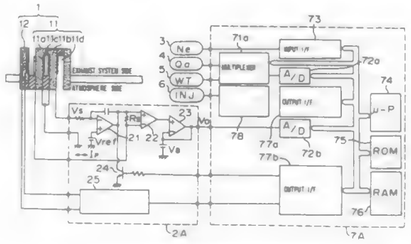
1. A vacuum processing equipment comprising a vacuum chamber and main and fore vacuum pumping mechanisms for pumping down said vacuum chamber;
said fore vacuum pumping mechanism including:
(a) trapping means disposed in said vacuum chamber for trapping residual gas;
(b) a heat exchanger disposed outside said vacuum chamber and coupled to said trapping means for cooling the trapping means; and
(c) a temperature control means for controlling the cooling temperature of the trapping means, including a compressor for circulating a cooling medium in said heat exchanger, an in-flow duct for introducing said cooling medium into said heat exchanger, an out-flow duct for introducing said cooling medium from the heat exchanger into a conveying means, a bypass duct provided between said in-flow and out-flow ducts and a flow rate control means provided on said bypass duct for directly controlling the flow of said cooling medium.

5,340,461
ELECTROPHORETIC MEDIUM FOR ELECTROPHORETIC SEPARATION, GEL HOLDER FOR HOLDING THE SAME MEDIUM, SLAB TYPE ELECTROPHORETIC APPARATUS USING THE SAME MEDIUM AND GEL HOLDER, AND ELECTROPHORETIC GEL CUTTER
Tomoaki Fukushige; Hiroko Toda; Hirofumi Akano; Emiko Ito; Tomohiko Fukuta; Masahiro Fujimori, and Yoshiya Kawamura, all of Aichi, Japan, assignors to Nakano Vinegar Co., Ltd., Aichi, Japan
Filed Feb. 2, 1993, Ser. No. 12,194
Claims priority, application Japan, Feb. 3, 1992, 4-062781; Feb. 10, 1992, 4-069919; Nov. 30, 1992, 4-340967; Nov. 30, 1992, 4-340968
Int. Cl.[5] C25B 9/00
U.S. Cl. 204—299 R 22 Claims



11. An electrophoretic apparatus for separation comprising an electrophoretic medium obtained through cross-linking polymerization of an acrylamide compound and containing a water-soluble poisoner, a gel holder comprising a gel accommodation space formed between paired plates for sandwiching said electrophoretic medium therebetween, and a stopper detachably disposed in a lower portion of said gel accommodation space, said stopper having a plurality of small holes or slits, and a slab electrophoretic apparatus having an end point detection means for optically detecting the end point of an electrophoretic marker, means for stopping the supply of current to gel electrophoresis means according to information from said end point detection means, and means for detecting the temperature of a buffer solution in an electrophoretic trough, said gel holder being dipped in said buffer solution, and automatically recording detected temperature changes.

5,340,462
AIR-FUEL RATIO SENSOR
Hiroyoshi Suzuki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 9, 1993, Ser. No. 74,295
Claims priority, application Japan, Jun. 25, 1992, 4-167354
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[5] G01N 27/26; F02D 41/14
U.S. Cl. 204—425 6 Claims



1. An air-fuel ratio sensor which comprises:

VOL 1165 ISS 4 AG 23 1994 UMI

an oxygen concentration cell device and an oxygen pump device which are disposed interposing therebetween a diffusion chamber into which exhaust gas from an engine is introduced, said oxygen concentration cell device and oxygen pump device being arranged in an exhaust system for the engine and made of an oxygen ion conducting solid electrolyte each attached with an electrode,

a heater for heating the oxygen concentration cell device and the oxygen pump device,

a pump current control means for controlling a pump current flowing into the oxygen pump device so that the voltage of the oxygen concentration cell device becomes a set value,

a pump current detection means for detecting the pump current,

a pump current cut means for stopping the supply of the pump current,

a power supplying means for supplying power to the heater,

first and second timer means for controlling the condition of stopping the pump current, and

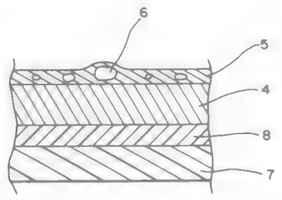
a control means for starting the supply of power from the power supplying means to the heater under the condition of stopping the pump current, and for removing the condition of the stopping of the pump current for a set time at predetermined intervals from the starting of the supplying of power to the heater, by means of the first timer means.

5,340,463

PROCESS FOR OBTAINING MULTILAYER MATERIALS SUITABLE FOR TRANSFORMATION INTO HOLLOW BODIES BY DRAWING OR DRAWING AND IRONING

René Layre, Brignoud, and Richard Bosc, Voreppe, both of, assignors to Cegedur Pechiney Rhenalu, Paris, France

Continuation of Ser. No. 541,513, Jun. 21, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 985,505
Claims priority, application France, Jul. 6, 1989, 89 09452
Int. Cl.[5] B21D *22/28, 51/26*
U.S. Cl. 205—201 **22 Claims**



1. In a process for obtaining a multilayer material suitable for transformation by drawing or drawing and ironing into a hollow body having a height to diameter ratio greater than 2.5, and comprising subjecting an aluminum alloy substrate having first and second surfaces to an anodizing or chemical conversion surface treatment for improving adherence thereto, covering one of the surfaces by adhering a plastic material film thereto, and covering the other of said surfaces with a coating of varnish of known thickness,

the improvement comprising incorporating into said varnish a solid lubricant in the form of particles of known mean diameter which are harder than said varnish, the ratio of said mean diameter to said thickness being at least about 4, with said particles thereby forming protuberances in said coating of varnish.

5,340,464

METHOD AND APPARATUS FOR DISPOSAL OF FILTER MEDIA

Anthony Mickas, Bellingham, Wash., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 8, 1992, Ser. No. 941,499
Int. Cl.[5] C10G *9/14*
U.S. Cl. 208—131 **10 Claims**

1. A process for disposing of contaminated filter media comprising a hydrocarbon-based polymer or a natural cellulose or synthetic cellulose base, wherein a hydrocarbonaceous contaminant is deposited upon or entrained by said filter media, said process comprising:

a. mixing said filter media with a hydrocarbonaceous mixing fluid to form a media-hydrocarbon mixture; and

b. feeding said media-hydrocarbon mixture to a coking vessel for said mixture to be treated at high temperatures of coking vessel operations utilizing coking conditions to vaporize, carbonize, coke or polymerize said filter media.

5,340,465

USE OF A METAL OXIDE SOLID SOLUTION FOR SWEETENING A SOUR HYDROCARBON FRACTION

Ralph D. Gillespie, Elgin, and Jennifer S. Holmgren, Bloomingdale, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Oct. 14, 1993, Ser. No. 136,056
Int. Cl.[5] C10G *27/04, 19/073, 29/16*
U.S. Cl. 208—191 **9 Claims**

1. A process for treating a sour hydrocarbon fraction containing mercaptans consisting of contacting the hydrocarbon fraction with a catalyst effective in oxidizing mercaptans in the presence of an oxidizing agent under treating conditions thereby oxidizing the mercaptans to disulfides, the catalyst characterized in that it comprises a solid solution having the formula

$$M_a(II)M_b(III)O_{(a+b)}(OH)_b$$

where M(II) is at least one metal having a +2 oxidation state and selected from the group consisting of magnesium, nickel, zinc, copper, iron, cobalt, calcium and mixtures thereof, M(III) is at least one metal having a +3 oxidation state and is selected from the group consisting of aluminum, chromium, gallium, scandium, iron, lanthanum, cerium, yttrium, boron and mixtures thereof, and the ratio of a:b is greater than 1 to about 15.

5,340,466

HYDRODESULFURIZATION OF CRACKED NAPHTHA WITH HYDROTALCITE-CONTAINING CATALYST

Pei-Shing E. Dai, Port Arthur; David E. Sherwood, Jr., Beaumont, and Randall Hughes Petty, Port Neches, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 19, 1993, Ser. No. 47,900
Int. Cl.[5] C10G *45/60, 45/08*
U.S. Cl. 208—216 PP **17 Claims**

1. The process for selective hydrodesulfurization of a cracked naphtha containing paraffins, isoparaffins, aromatics, naphthenes, and olefins which comprises

maintaining in a reaction zone a bed of catalyst containing an alkali metal, a non-noble Group VIII metal, and a metal of Group VI-B on an inert support containing a hydrotalcite-like composition;

passing said cracked naphtha containing paraffins, isoparaffins, aromatics, naphthenes, and olefins to said reaction zone and into contact with said bed of catalyst;

maintaining said bed of catalyst of hydrodesulfurizing conditions thereby producing a product stream of hydrodesulfurized cracked naphtha; and

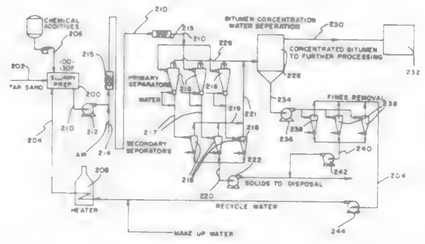
recovering said product stream of hydrode-sulfurized cracked naphtha.

5,340,467

PROCESS FOR RECOVERY OF HYDROCARBONS AND REJECTION OF SAND

Armand A. Gregoli, Tulsa; John A. Hamshar, 3rd, Owasso; Daniel P. Rimmer, Broken Arrow, all of Okla.; Erdal Yildirim, Calgary, Canada, and Andrew M. Olah, Spencer, Ohio, assignors to Canadian Occidental Petroleum Ltd., Calgary, Canada

Continuation-in-part of Ser. No. 341,772, Apr. 21, 1988, Pat. No. 5,083,613, which is a continuation of Ser. No. 311,133, Feb. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 218,840, Jul. 14, 1988, Pat. No. 5,000,872, which is a continuation-in-part of Ser. No. 114,204, Oct. 27, 1987, Pat. No. 4,978,365, which is a continuation-in-part of Ser. No. 934,683, Nov. 24, 1986, Pat. No. 4,725,287. This application Oct. 24, 1991, Ser. No. 782,106
Int. Cl.[5] C10G *1/04*
U.S. Cl. 208—390 **42 Claims**



14. A process for the extraction and recovery of a hydrocarbon from water wet tar sands comprising:

(a) introducing a water wet tar sand and water into a conditioning zone to form a tar sand slurry;

(b) agitating the formed tar sand slurry of step (a) to form an agitated tar sand slurry;

(c) aerating the formed agitated tar sand slurry to form an aerated tar sand slurry comprising water, hydrocarbon and solids; and

(d) separating in less than about five seconds essentially all of the solids from the hydrocarbon and water of the aerated tar sand slurry to produce a hydrocarbon and water mixture comprising residual solids; and

(e) separating essentially all of the hydrocarbon and residual solids from the hydrocarbon and water mixture of step (d); and

(f) introducing said produced hydrocarbon and residual solids of step (e) into an upgrading unit.

5,340,468

SYSTEM FOR CONTROLLING ADDITION OF LIME TO REDUCE WATER ALKALINITY

William H. Hawthorne, and Gary J. Herbert, both of Thornton, Colo., assignors to Hawthorne Treatment Systems, Inc., Thornton, Colo.

Filed Mar. 31, 1993, Ser. No. 40,661
Int. Cl.[5] B01D *17/12*
U.S. Cl. 210—96.1 **10 Claims**

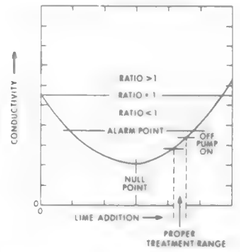
1. A system adapted for regulating the addition of lime to reduce water alkalinity comprising:

a first sensor operable for measuring the conductivity of said water prior to addition of said lime;

a second sensor operable for measuring the conductivity of said water after addition of said lime;

pump means for adding said lime to said water; and

a controller operable for regulating said pump means by periodically sampling said conductivities measured by said first sensor and said second sensor, computing the ratio of said conductivities for each sample, and computing the slope of said ratio; said controller further being operable for turning said pump means off when said ratio exceeds a predetermined maximum set point and said slope is positive, and turning said pump means on when said ratio falls



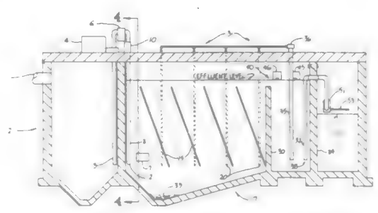
below a predetermined minimum set point and said slope is negative.

5,340,469

APPARATUS FOR REMOVAL OF FAT, OIL AND GREASE FROM LAUNDRY WASH WATER

Stephen M. Montgomery, Gladstone, Mo., assignor to Unitog Rental Services, Inc., Kansas City, Mo.

Continuation of Ser. No. 739,521, Aug. 2, 1991, abandoned, which is a division of Ser. No. 558,677, Jul. 26, 1990, Pat. No. 5,076,937. This application Oct. 25, 1993, Ser. No. 142,235
Int. Cl.[5] C02F *1/24;* **B01D** *17/035*
U.S. Cl. 210—96.1 **4 Claims**



1. An apparatus for removing impurities, including oil and grease droplets, held in association with a pH activated surfactant in an aqueous wash solution comprising:

a surge basin adapted to receiving the aqueous wash solution;

means for acidifying the wash solution to deactivate the surfactant and cause release of the impurities held in association with the surfactant, said acidifying means being operable in response to the pH of the wash solution;

means for discharging the acidified wash solution into a second basin at a location adjacent the bottom of said basin, said bottom discharge enhancing quiescence of a top surface of the solution in said second basin;

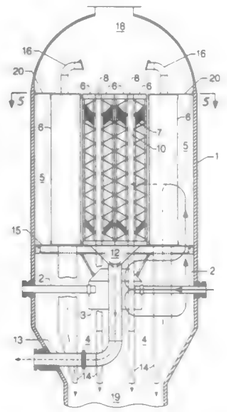
at least one submerged baffle plate extending at an angle from said discharge location and towards the top of said wash solution surface and across said discharge location, said at least one plate positioned to enhance capture of released oil and grease droplets on a lower surface of said at least one plate and coalescence of droplets thereon into a droplet size sufficient for buoyancy, said coalesced droplets forming a layer atop said wash solution;

injector means in said second basin for infusing a gas into said acidified wash solution adjacent said second basin bottom to provide rising effervescent gas bubbles, said bubbles further coalescing with said coalesced droplets to increase droplet buoyancy and urge the same towards the layer atop said wash solution surface;

VOL 1165 ISS 4 AUG 23 1994 UMI

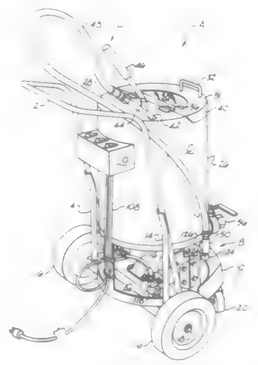
means for skimming the oil and grease droplet layer from the surface of the wash solution;
means for adjusting the pH of the wash solution to a relatively neutral pH; and
means for discharge of the wash solution from said second basin.

5,340,470
PHASE SEPARATOR APPARATUS
Brian W. Hedrick, Rolling Meadows; Frank T. Micklich, Joliet; Brian H. Johnson, Long Grove, all of Ill.; Daniel G. Meier, Kenosha, Wis.; Frank R. Whitsura, and Bill R. Engelman, both of Schaumburg, Ill., assignors to UOP, Des Plaines, Ill.
Filed Sep. 29, 1993, Ser. No. 128,167
Int. Cl.[5] B01D *21/02*
U.S. Cl. 210—130 **11 Claims**



1. An improved separation apparatus for the separation of mixtures of liquids and finely divided suspended particles which comprises a separator vessel having at least one inlet for the introduction of the liquid containing the mixture being separated, outlets for the separated components of the liquid and an interceptor separation means having parallel interceptor plates in the flow of the liquid-containing mixture to be separated wherein the improvement comprises:
(a) a generally vertical separator vessel having an upper locus and a lower locus;
(b) a feed inlet distributor located in the lower locus of said separator vessel which initially directs at least a majority of a feed mixture in a generally downwardly direction to a course separation zone;
(c) an arrangement of a multiplicity of parallel angled interceptor plates in an upper locus of said separator vessel which arrangement defines at least in part an annular space between said arrangement and the vertical wall of said separator vessel to provide an inlet flow manifold in communication with said course separation zone which directs the feed mixture towards said parallel interceptor plates;
(d) a central flow manifold which is located along the center line of said separator vessel and is defined at least in part by said arrangement of a multiplicity of parallel interceptor plates and which central manifold transports a liquid stream having a reduced concentration of finely divided particles to an outlet conduits in said lower locus of said vertical separator vessel; and
(e) a multiplicity of conduits located in communication with and adjacent to lower ends of said parallel interceptor plates which conduits transport finely divided particles which have been removed from said feed mixture to said lower locus of said vertical separator vessel.

5,340,471
PORTABLE COOKING OIL FILTER APPARATUS
Mark L. Wilson, P.O. Box 7, Pac 1 t, S.C. 29372, and J. Michael Williams, 104 Glasgow Ct., Greenville, S.C. 29607
Filed Jan. 25, 1993, Ser. No. 8,154
Int. Cl.[5] B01D *29/66*
U.S. Cl. 210—167 **21 Claims**

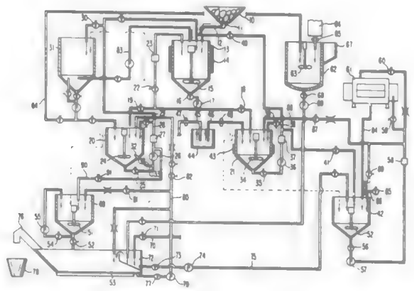


1. A portable cooking oil filtering apparatus for cleaning cooking oil contained in a cooking container, said portable cleaning apparatus including;
a reservoir tank including a top, a side wall and a bottom for receiving soiled cooking oil;
an opening formed in one of said side wall and said bottom;
a pump assembly including a pump, piping, and a directional valve connecting with said tank through said opening;
said pump having a first operating direction in which cooking oil is pumped into said tank through said opening and a second operating direction in which said cooking oil is pumped from said tank through said opening;
a frame supporting said tank, said frame including wheels which facilitate portability of said oil filtering apparatus;
a primary filter arranged within said tank and connected with said piping;
said directional valve being operative to divert the flow of said cooking oil away from aid primary filter during operation of said pump in said first direction; whereby,
said primary filter is operative to receive and filter cooking oil being pumped in only said second direction by said pump.

5,340,472
APPARATUS FOR PROCESSING WASTES FROM THE MACHINING OF FERROMAGNETIC MATERIALS
Alfred Heck, deceased, Late of Eupen, Belgium Brigitte Heck and Pierre Heck legal representatives , assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany
Filed Dec. 18, 1992, Ser. No. 992,631
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141676
Int. Cl.[5] B01D *35/06*
U.S. Cl. 210—173 **7 Claims**

5. An apparatus for processing wastes from machining of ferromagnetic materials, said apparatus comprising
a first tank
means for introducing a controlled amount of machining waste into said first tank;

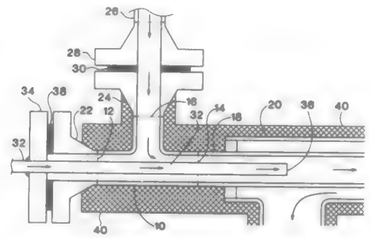
means for introducing a washing solution into said first tank;
means for applying a magnetic field to said first tank, whereby magnetic components of machining waste in said first tank will be attracted to a wall of the tank;
a second tank;
a third tank;
means for transferring a wash solution form said first tank selectively to one of said second and third tanks;
a first filter unit for filtering magnetic components from a washing solution;
a second filter unit for filtering non-magnetic components form a washing solution;



means for transferring a washing solution from said third washing tank to said first filter unit;
means for transferring a washing solution form said second washing tank to said second filter unit, and
circulating means comprising a recirculation line and recirculating pump operatively associated with each said tank for circulating solution therein.

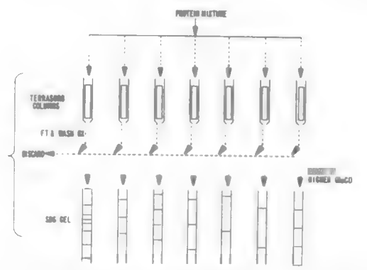
6. An apparatus according to claim 5, further comprising disintegrating means on said recirculation lines for breaking up lumps of material in solutions circulated therethrough.

5,340,473
GAS/LIQUID MIXING APPARATUS
Russell D. Roberts, Easton; Bruce L. Brandenburg, Rib Mountain, both of Wis., and Claude E. Ellis, Walnut, Calif., assignors to Zimpro Environmental, Inc., Rothschild, Wis.
Filed Dec. 14, 1993, Ser. No. 166,064
Int. Cl.[5] B01D *35/18*
U.S. Cl. 210—177 **5 Claims**



1. An apparatus for adding an oxygen-containing gas to a liquor entering a tube and shell heat exchanger device comprising;
a T-shaped piping member of selected interior diameter, with inline first inlet and outlet and a second inlet oriented at about a right angle to said inline first inlet, said piping member outlet connected inline to an inlet tube of a tube and shell heat exchanger;
first and second sealing means attached to said first and second inlets respectively, said second sealing means forming a fluid-tight seal with a conduit supplying a pressurized waste liquor stream to said piping member through said second inlet;
an oxygen-containing gas supply conduit having a selected exterior diameter less than said selected interior diameter of said T-shaped piping member, said gas supply conduit having a circumferential sealing means therearound, said gas supply conduit extending from exterior said T-shaped member, through said inline first inlet and terminating at a point beyond the intersection of said first and second inlets, said circumferential sealing means forming a fluid-tight seal with said first sealing means of said first inlet, whereby said liquor entering said T-shaped member is heated to a selected elevated temperature prior to contacting a pressurized oxygen-containing gas supplied from said gas supply conduit therein.

5,340,474
PANELS OF ANALYTE-BINDING LIGANDS
Lawrence M. Kauvar, San Francisco, Calif., assignor to Terrapin Technologies, Inc., San Francisco, Calif.
Continuation of Ser. No. 607,875, Nov. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 429,721, Oct. 31, 1989, Pat. No. 5,133,866, which is a continuation-in-part of Ser. No. 355,042, May 16, 1989, Pat. No. 4,963,263, which is a continuation of Ser. No. 172,626, Mar. 24, 1988, abandoned, which is a continuation-in-part of Ser. No. 255,906, Oct. 11, 1988, Pat. No. 5,217,869. This application Apr. 9, 1993, Ser. No. 49,642
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 **19 Claims**



18. A chromatographic support gradient containing paralogs which comprises a solid support having distributed thereon in a predetermined pattern at least a portion of the individual paralogs of a panel of individual paralogs wherein said individual paralogs have systematically varied values of at least two parameters over maximal range so as to obtain maximal diversity in binding ability over the panel, each of which parameters determines the ability of a paralog to bind to other substances and/or wherein the combination of said parameters determines the ability of the paralog to bind to other substances.

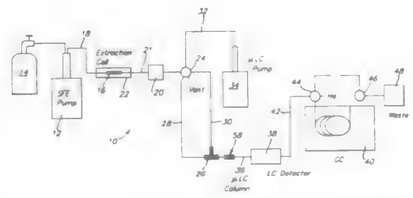
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,475

ON-LINE SUPERCRITICAL FLUID EXTRACTION MULTIDIMENSIONAL CHROMATOGRAPHIC SYSTEM

Hernan J. Cortes, and Robert M. Campbell, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US91/07262, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO92/05851, PCT Pub. Date Apr. 16, 1992
Continuation of Ser. No. 594,106, Oct. 9, 1990, abandoned. This PCT application Oct. 8, 1991, Ser. No. 988,950
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 7 Claims



2. An on-line supercritical fluid extraction multidimensional chromatographic system, comprising:

a first conveying means for providing supercritical fluid flow at a controlled pressure;

an extraction cell means, in fluid communication with said first conveying means, for holding a sample having target components that are soluble in said supercritical fluid, and for enabling said target components to be extracted from said sample in said supercritical fluid flow;

a second conveying means for providing solvent fluid flow for liquid chromatographic separation and detection;

a first valve means for controlling the direction of fluid flow from said extraction cell means and said second conveying means;

an interface means, in fluid communication with said first valve means, for trapping said extracted target component while decompressing said supercritical fluid, said interface means comprising:

a first passage means for receiving said extracted target compound in said supercritical fluid flow;

an impactor means associated with an output end of said first passage means for trapping said target compound concomitantly with a decompression of said supercritical fluid; and

a second passage means in fluid communication with said output end of said first passage means for permitting said supercritical fluid to decompress and to be vented from said interface;

a liquid chromatographic means in fluid communication with said interface means for providing separation and detection of constituents of interest from said extracted target components via solvent fluid flow from said second conveying means, said first valve means being operative to direct said solvent fluid flow through said impactor means after said extracted target component has been trapped;

a second valve means for controlling the direction of fluid flow from said liquid chromatographic means; and

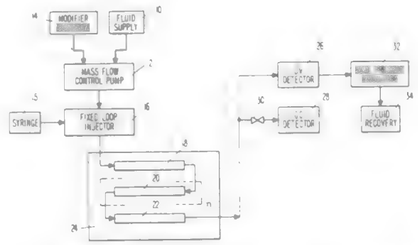
a gas chromatographic means, in fluid communication with said second valve means, for analyzing said constituent of interest detected by said liquid chromatographic means.

5,340,476

HIGH EFFICIENCY PACKED COLUMN SUPERCRITICAL FLUID CHROMATOGRAPHY

Terry A. Berger, and William H. Wilson, both of Newark, Del., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 819,041, Jan. 10, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 78,802
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 3 Claims



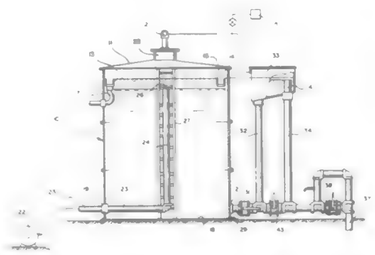
1. A device for the separation of material by supercritical fluid chromatography which comprises a packed chromatographic column structure of a plurality of individual columns connected in series and packed with packing between about 0.5 micron and 50 microns in diameter, a mass flow control pump for introducing fluid into said column structure, the diameter of said columns being between about 0.5 millimeters and about 20 centimeters, said column structure having an inlet and an outlet and a column length therebetween sufficient to provide for about 100,000 to about 500,000 theoretical plates and a rate of separation of at least 100 plates per second, said device having a back pressure regulator at said outlet to control the outlet pressure and to maintain the pressure drop between said inlet to between about 50 bar and 400 bar and to maintain said fluid at said outlet near its critical point, the total length of said column structure being at least equal to two times the average packing diameter times the number of theoretical plates.

5,340,477

PRODUCED WATER-OIL SEPARATION TANK FOR EMULSIONS

Robert L. Simon, Marrero, La., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 3, 1992, Ser. No. 984,761
Int. Cl.[5] B01D *17/025*
U.S. Cl. 210—218 4 Claims



1. An apparatus for separating components of an emulsion comprised of at least a liquid hydrocarbon component and an aqueous component having a density greater than said hydrocarbon component, said apparatus comprising:

an upright main tank having a cylindrical wall and an integral roof thereon, defining a closed chamber;

inlet means opening into a lower portion of said tank for introducing said emulsion thereto;

an overflow trough fixed in said tank spaced beneath said roof at a constant level;

a skimming weir forming at least a portion of a wall of said overflow trough, said weir being positioned at an elevation to receive hydrocarbon liquid which has risen to the surface of said emulsion;

pipe means depending from said overflow trough for conducting liquid hydrocarbon therefrom to outside said tank;

means to vent gases from said chamber;

means to supply said chamber with inert gas through said means to vent;

discharge means in a lower portion of said tank and spaced from said inlet means for conducting the hydrocarbon-free aqueous component from the tank; and

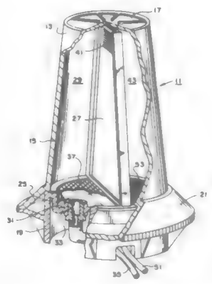
fluid level control means for regulating the flow of emulsion through said tank, said fluid level means having a first leg in communication with said discharge means and extending generally vertically on the outside of said tank, a weir box vertically mounted on and in communication with said first leg having an adjustable weir to receive therein the hydrocarbon free portion of said emulsion from said discharge means, and a downcomer leg connected between said weir box and said discharge means for draining aqueous emulsion therefrom, whereby vertical adjustment of said weir box controls the level of fluid in said tank with respect to said skimming weir.

5,340,478

DUAL CHAMBER WATER FILTER

Charles D. Strand, Arlington, and Anthony B. Meehon, Mansfield, both of Tex., assignors to International Purity Corp., Arlington, Tex.

Continuation-in-part of Ser. No. 917,006, Aug. 7, 1992, abandoned. This application Aug. 26, 1992, Ser. No. 936,095
The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.
Int. Cl.[5] B01D *24/18*
U.S. Cl. 210—284 8 Claims



1. A liquid filter, comprising, in combination:

a housing having a bottom and a top;

a substantially vertical partition located in said housing, dividing said housing into an inlet chamber and an outlet chamber;

first filtration media located in said inlet chamber;

second filtration media located in said outlet chamber;

inlet means located in said bottom of said housing in said inlet chamber for receiving liquid to be filtered and for causing the liquid to flow upwardly through said first filtration media so as to reduce compaction thereof;

port means adjacent said top of said housing, for causing the liquid flowing upwardly through said inlet chamber to flow from said inlet chamber into said outlet chamber; and

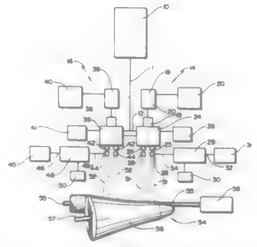
outlet means located in said bottom of said housing in said outlet chamber, for causing liquid flowing into said outlet chamber from said inlet chamber to flow downwardly through said second filtration media so as to increase compaction of said second filtration media and out of said housing.

5,340,479

DEPTH FILTER CARTRIDGE AND METHOD AND APPARATUS FOR MAKING SAME

Joseph T. Szczepanski, Waconia; Thomas M. Aune, Mound, both of Minn., and Henry J. Schneider, Chino, Calif., assignors to Osmonics, Inc., Minnetonka, Minn.

Filed Aug. 20, 1992, Ser. No. 932,620
Int. Cl.[5] B01D *27/07*
U.S. Cl. 210—497.1 40 Claims



1. A non-woven, continuously formed depth filter element of indefinite length comprising:

a generally tubular member having a hollow interior extending in an axial direction throughout the length of said member and a filter portion, said filter portion including a central support zone and a filtering zone, said central support zone having an interior surface defining said hollow interior and comprised of a plurality of substantially continuous interwined and thermally bound support zone filaments of synthetic resinous material having a diameter sufficiently large to provide support for said filtering zone, said filtering zone positioned radially outward of said central support zone and comprised of at least one filtering level constructed of a plurality of substantially continuous intertwined filtration zone filaments, said support zone filaments and said filtration filaments being discrete relative to one another and being of different diameters or different materials.

5,340,480

POLYSULFONE-BASED HOLLOW FIBER MEMBRANE AND PROCESS FOR MANUFACTURING THE SAME

Ichiro Kawata; Takehiko Okamoto; Hiroyuki Akasu, and Kensaku Komatsu, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Apr. 26, 1993, Ser. No. 53,074
Claims priority, application Japan, Apr. 29, 1992, 4-137929
Int. Cl.[5] B01D *71/68*
U.S. Cl. 210—500.23 11 Claims



1. A polysulfone-based hollow fiber membrane having an asymmetric structure comprising a skin layer on its inner sur-

VOL 1165 ISS 4 AG 23 1994 UMI

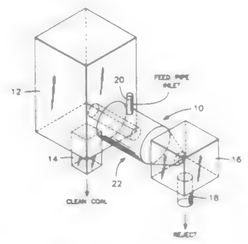
face and an outer surface layer, said membrane comprising predominantly a polysulfone-based polymer, at least 1% by weight of polyglycol, and 1–8% by weight of a vinylpyrrolidone-based polymer, said skin layer comprising a polysulfone-based polymer and a vinylpyrrolidone-based polymer in a weight ratio of the former to the latter of between 90/10 and 60/40, and a ratio of the weight percent vinylpyrrolidone-based polymer in said skin layer to the weight percent vinylpyrrolidone-based polymer in an outer surface layer of the membrane of at least 1.1.

5,340,481

DENSE MEDIA PROCESSING CYCLONE

Norman B. Mullins, Cedar Bluff, Va., assignor to PV Enterprises, Inc., Altoona, Pa.

Filed Feb. 26, 1993, Ser. No. 22,907
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—512.1 **18 Claims**



1. A dense media cyclone separator comprising:
a substantially horizontally oriented body,
said body having a cylindrical portion and a frustoconical portion tapering inwardly at an angle from said cylindrical portion,
a vortex finder in an end wall of said cylindrical portion location concentrically with respect to said cylindrical portion,
an apex insert mounted at a free end of said frustoconical portion of said body,
said apex insert consisting of a channel having an inclined portion tapering inwardly at an angle equal to the angle of said frustoconical portion and extending continuously with said frustoconical portion,
said inclined portion of said apex insert terminating at a cylindrical outlet opening of said channel having a diameter equal to a diameter of said inclined portion at said cylindrical outlet opening for receipt by said cylindrical outlet opening of waste material separated from a slurry introduced into the body while useful material separated from the slurry is transmitted through said vortex finder in a direction opposite to the direction of travel of the waste material passing through the cylindrical outlet opening.

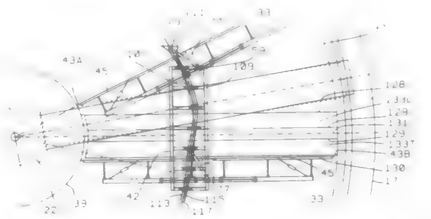
5,340,482

SURFACE SKIMMING APPARATUS

Robert L. Eastman, Burburnett, Tex., assignor to B-W Fabricators, Inc., Wichita Falls, Tex.

Filed Aug. 23, 1993, Ser. No. 110,386
Int. Cl.[5] B01D *21/18*
U.S. Cl. 210—525 **10 Claims**

1. A clarifying water treatment apparatus, comprising:
a tank with a cylindrical wall means having a vertical axis, and a bottom wall;
a support structure extending from said outer cylindrical wall means to said vertical axis of said tank;
a support pier extending from said bottom wall of said tank upward at said vertical axis of said outer wall means;
a skimmer truss extending from an upper end of said support pier outward for rotation;
means supported by said support pier for rotating said skimmer truss;
a cylindrical retaining wall located inwardly of said cylindrical wall means;
a scum trough extending between said cylindrical wall means and said retaining wall generally along a radial line from said vertical axis and located below said skimmer truss, where said scum trough has two generally parallel side walls and ramps having leading and trailing edges generally parallel to said scum trough walls;



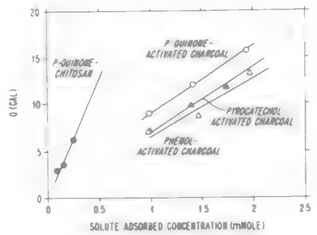
an elongated skimmer supported by said skimmer truss for rotation with said skimmer truss;
a guide supported by said support structure and located above said scum trough and said skimmer truss;
an arm supported by said skimmer truss for pivotal movement relative to said skimmer truss, said arm having two ends where one end of said arm extends downward and is connected to said skimmer, and the other end of said arm is located to enter said guide and to position said skimmer generally parallel with said leading edge of said scum trough as said skimmer approaches and crosses said scum trough.

5,340,483

TWO STEP PROCESS FOR CONVERSION OF A WEAKLY ADSORBABLE COMPOUND TO A STRONGLY ADSORBABLE COMPOUND AND SELECTIVE REMOVAL THEREOF

Gregory F. Payne, Hunt Valley; Jennifer Chu, Bowie; Kimberlee K. Wallace, Jessup, and Wei-Qiang Sun, Lutherville, all of Md., assignors to University of Maryland at College Park, College Park, Md.

Filed Jun. 11, 1993, Ser. No. 75,283
Int. Cl.[5] C02F *1/28;* **B01D** *15/00*
U.S. Cl. 210—632 **20 Claims**



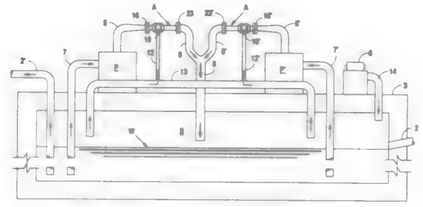
1. A two-step method for the selective removal of a phenolic compound from a mixture of compounds, comprising:
a) enzymatically converting said phenolic compound with tyrosinas to a converted compound adsorbable by a chitosan sorbent; and
b) adsorbing said converted compound to a chitosan sorbent to selectively remove said converted compound from said mixture.

5,340,484

AIR SCRUBBING SYSTEM FOR WASTE WATER TREATMENT

Jack E. Prince, P.O. Box 1922, Kerrville, Tex. 78029, and William H. Mullins, 230 W. Kings Hwy., San Antonio, Tex. 78212

Continuation of Ser. No. 818,546, Jan. 9, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 170,395
Int. Cl.[5] C01B *17/05*
U.S. Cl. 210—712 **2 Claims**



1. A method of pretreating waste water sewage contained in a wetwell of a lift station by eliminating hydrogen sulfide gas to remove its noxious odor and prevent it from forming sulfuric acid on the walls of the wetwell, comprising the steps of:
providing a flow of waste water sewage to the wetwell;
collecting hydrogen sulfide gas, a byproduct of the waste water sewage, in an air space above the waste water in the the wetwell;
transporting the waste water sewage from the wetwell to an aerator that includes an aspirator;
transporting the hydrogen sulfide gas to the aerator;
mixing and aspirating quantities of hydrogen sulfide gas with said waste water sewage gas in the aerator to eliminate the hydrogen sulfide gas by oxygenating it to convert it into water and elemental sulphur; and
returning the water, elemental sulphur, and waste water sewage to the wetwell.

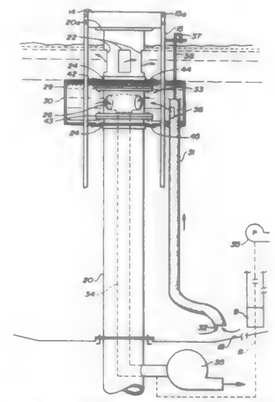
5,340,485

APPARATUS AND METHOD FOR CLARIFIER SLUDGE COLLECTION

Bruce D. Bradley, Salt Lake City, and Steven G. Coombs, Layton, both of Utah, assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 758,912, Sep. 10, 1991, Pat. No. 5,219,470. This application Jun. 14, 1993, Ser. No. 77,008
Int. Cl.[5] B01D *37/00*
U.S. Cl. 210—767 **24 Claims**

22. A method of collecting sludge which has settled on a bottom of a clarifier/thickener tank comprising:
providing a submerged sealed closed-top sludge collection box in said tank, said collection box having a sludge inlet;
rotating said collection box in said tank;



conveying settled sludge from the tank bottom to said collection box sludge inlet; and
withdrawing sludge from said collection box.

5,340,486

LUBRICANT COMPOSITIONS FOR USE IN DIECASTING OF METALS AND PROCESS

Anthony P. Willoughby, Plymouth, United Kingdom, assignor to Acheson Industries, Inc., Port Huron, Mich.

Continuation-in-part of Ser. No. 936,581, Aug. 27, 1992, abandoned. This application Jul. 14, 1993, Ser. No. 91,326
Int. Cl.[5] C10M *173/00, 143/04;* **B28B** *7/36;* **C04B** *35/68*
U.S. Cl. 252—43 **34 Claims**

1. A liquid carrier based diecasting lubricant and release agent composition, comprising in percent by weight:
(a) about 0.01% to about 40% polypropylene in solids form having an average molecular weight between about 500 and about 300,000, said polypropylene being substantially pure and being in the form of propylene polymers or propylene co-polymers,
(b) about 0.1% to about 50% silicone oil,
(c) about 0.01% to about 8% of emulsifying agent to assist in maintaining materials of the composition in an emulsified form,
(d) about 0.01% to about 5% of an anti-corrosion agent, and the balance of a liquid carrier.

5,340,487

DISPERSANT ADDUCTS COMPRISING ALCOHOL ADDUCTS OF DICARBOXYLIC ACID MONOEPOXY THIOL REACTION PRODUCTS

Jacob Emert, Brooklyn, N.Y., and Robert D. Lundberg, Bridgewater, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 974,010, Nov. 10, 1992, abandoned, which is a division of Ser. No. 722,064, Jun. 27, 1991, Pat. No. 5,205,947, which is a division of Ser. No. 268,400, Nov. 7, 1988, Pat. No. 5,057,617. This application Aug. 19, 1993, Ser. No. 109,204
Int. Cl.[5] C10M *135/12, 159/12;* **C07C** *327/00;* **C07D** *305/00*
U.S. Cl. 252—46.3 **27 Claims**

1. An oil soluble dispersant adduct useful as a lubricating oil dispersant prepared by a process which comprises:
(a) contacting (i) a long chain hydrocarbyl polymer-substituted C_4 to C_{10} dicarboxylic acid producing material

VOL 1165 ISS 4 AG 23 1994 UMI

formed by reacting an olefin polymer of C_2 to C_{10} monoolefin having a number average molecular weight of about 700 to 5,000 and a C_4 to C_{10} monounsaturated dicarboxylic acid material, said acid producing material having an average of at least about 0.7 dicarboxylic acid producing moieties, per molecule of said olefin polymer present in the reaction mixture used to form said acid producing material; and (ii) a monoepoxy thiol, for a time and under conditions sufficient to form a first adduct monoepoxy hemi-thioester of said dicarboxylic acid producing material, and

(b) contacting said first adduct with at least one alcohol nucleophilic reagent for a time and under conditions sufficient to form said dispersant adduct.

5,340,488

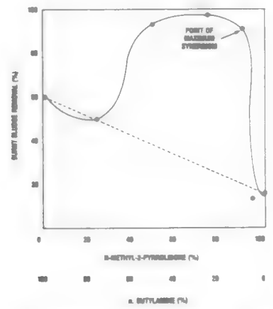
COMPOSITION FOR CLEANING AN INTERNAL COMBUSTION ENGINE

Lawrence J. Adams, Ponte Verda Beach; Thomas R. Fruda, St. Augustine, and Paul D. Hughett, Jacksonville, all of Fla., assignors to Petro Chemical Products, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 436,662, Nov. 15, 1989, Pat. No. 4,992,187. This application Oct. 11, 1990, Ser. No. 595,584

Int. Cl.[5] C10M *133/46, 133/26*

U.S. Cl. 252—47.5 **24 Claims**



1. A method of dissolving organic matter which comprises contacting the organic matter with a composition containing:

(a) a primary, secondary or tertiary aliphatic amine selected from the group consisting of primary amines having a C_{1-7} chain attached to the nitrogen atom, secondary amines having C_{1-6} chains attached to the nitrogen atom, and tertiary amines having C_{1-5} chains attached to the nitrogen atom; and

(b) a hydrocarbon or substituted hydrocarbon compound selected from the group consisting of N-methyl-2-pyrrolidone, 2-pyrrolidone-1-hydrate, 1-vinyl-2-pyrrolidone, furfurylamine, furfuryl alcohol, 2-methylimidazole, 3-methyl-2-oxazolidinone, 2-methyl-2-oxazoline, 2-methylaziridine, tetramethylene sulfone, tetrahydrofuran and 4-butyrolactone;

the compound and the amine being compatible with each other, capable of forming a homogeneous mixture, and present in synergistic amounts.

5,340,489

ARYL ARENESULFONATES AND A METHOD OF LUBRICATION USING THE ARYL ARENESULFONATES

Bassam S. Nader, Midland, and Chester E. Pawloski, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 894,495, Jun. 5, 1992, abandoned. This application Dec. 24, 1992, Ser. No. 996,548

Int. Cl.[5] C10M *135/10*

U.S. Cl. 252—48.6 **17 Claims**

1. A method for lubricating inorganic surfaces which comprises applying an aryl arenesulfonate between two inorganic surfaces in an amount sufficient to decrease the friction between the two surfaces, and moving the surfaces while the surfaces are in contact whereby friction between the surfaces is reduced relative to the friction between the surfaces in the absence of aryl arenesulfonate, wherein the aryl arenesulfonate is of the formula ASO_3A, ASO_3BSO3A, or $(ASO_3)_3B$ wherein A is independently in each occurrence phenyl or substituted phenyl, wherein when A is substituted phenyl the phenyl can be substituted by halo, a ketone substituted by an aromatic group containing up to 12 carbon atoms or alkyl group containing up to 10 carbons atoms, alkyl containing up to 10 carbon atoms, polyhaloalkyl containing up to 10 carbon atoms, alkoxy containing up to 10 carbon atoms polyhaloalkoxy containing up to 10 carbon atoms, aryl containing up to 12 carbons, aralkyl wherein the aryl group contains up to 12 carbon atoms and the alkyl group contains up to 10 carbon atoms, haloaryl containing up to 12 carbons and substituted by up to 10 halo groups, aryloxy containing up to 12 carbons, polyhaloaryloxy containing up to 12 carbons, polyhaloalkylaryl wherein the aryl group contains up to 12 carbon atoms and wherein the alkyl group contains up to 10 carbon atoms, or polyhaloalkylaryloxy wherein the aryl group contains up to 12 carbon atoms and wherein the alkyl group contains up to 10 carbon atoms, and wherein B is benzene or two benzene rings connected by a divalent bridging group selected from the group consisting of $C(CH_3)_2$, O, OCH_2, OCH_2CH_2, OCH_2CH_2O, $C(CF_3)_2$, S, SO_2, CO, and 9,9'-fluorene.

5,340,490

AZEOTROPE-LIKE COMPOSITIONS OF TRIFLUOROMETHANE AND CARBON DIOXIDE OR HEXAFLUOROETHANE AND CARBON DIOXIDE

Barbara R. Decaire, West Amherst; Peter B. Logsdon, North Tonawanda; Earl A. E. Lund, West Seneca; Ian R. Shankland, Williamsville; Rajiv R. Singh, Getzville; David P. Wilson, East Amherst, and Raymond H. P. Thomas, Amherst, all of N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jul. 14, 1993, Ser. No. 92,317

Int. Cl.[5] A62D *1/00, 1/08;* **C09K** *5/04*

U.S. Cl. 252—67 **20 Claims**

1. Azeotrope-like compositions consisting essentially of

about 35 to about 85 weight percent trifluoromethane and about 15 to about 65 weight percent carbon dioxide which have a vapor pressure of about 15 psia at about 85° C.±1° C. wherein the azeotrope-like components consist of trifluoromethane and carbon dioxide; or

about 30 to about 43 weight percent trifluoromethane, about 33 to about 43 weight percent hexafluoroethane and about 24 to about 37 weight percent carbon dioxide which have a vapor pressure of about 15 psia at about −87° C.±1° C. when the azeotrope-like components consist of trifluoromethane, hexafluoroethane and carbon dioxide.

5,340,491

ETCHANT FOR PRODUCTION OF ELECTRODE PLATE STRUCTURE FOR LIQUID CRYSTAL DISPLAY DEVICE

Takashi Enomoto, Zama; Masayuki Shimamune, Tokyo, and Keishi Danjo, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 743,020, Aug. 9, 1991, Pat. No. 5,296,096. This application Apr. 16, 1993, Ser. No. 47,835

Claims priority, application Japan, Aug. 13, 1990, 2-211626; Aug. 5, 1991, 3-218071

Int. Cl.[5] H01L *21/00*

U.S. Cl. 252—79.1 **6 Claims**



1. An etchant, comprising: an aqueous solution containing hydrogen iodide and ferric chloride, wherein the hydrogen iodide is contained at a concentration of 19–52 wt. %, and the ferric chloride is contained at a concentration of 3–21 wt. %.

5,340,492

SHAPED SOLID MADE WITH A RIGID, INTERLOCKING MESH OF NEUTRALIZED CARBOXYLIC ACID

Mark L. Kacher, Mason; James E. Taneri, West Chester; James B. Camden, Cincinnati; Paul E. Vest, Cincinnati, and Sylvia J. Bowles, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 617,827, Nov. 26, 1990, abandoned. This application Nov. 1, 1991, Ser. No. 782,956

The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[5] C11D *9/48, 10/04, 13/12, 13/16*

U.S. Cl. 252—112 **21 Claims**

2. A cleansing bar composition comprising at least two phases;

an aqueous phase having a penetration value of 12 mm for a 12 mm deep sample, said aqueous phase being soft or flowable at 25° C.;

a rigid crystalline phase skeleton structure comprising an interlocking, open three-dimensional mesh of neutralized mono- and/or di-carboxylic acid elongated crystals;

wherein said cleansing bar comprising said rigid crystalline phase skeleton structure and said aqueous phase has a penetration value of from zero to about 12 mm for a 25 mm deep sample of said cleansing bar;

wherein said penetration values are measured as 25° C. using a 247 gram Standard Weighted Penetrometer Probe having a conical needle attached to a 9 inch (22.9 cm) shaft, weighing 47 grams with 200 grams on top of said shaft for a total of said 247 grams, said conical needle having a 19/32 inch (1.51 cm) top and a 1/32 inch (0.08 cm) point; and

wherein said neutralized carboxylic acid is selected from the group consisting of lithium and/or sodium neutralized; monocarboxylic acid and/or dicarboxylic acid; and mixtures thereof;

wherein said monocarboxylic acid has a fatty alkyl chain of from about 12 to about 24 carbon atoms;

wherein at least about 80% of said carboxylic acid has saturated alkyl chains;

wherein said rigid crystalline phase skeleton structure occupies from about 3% to about 75% of said cleansing bar by volume; and

wherein said neutralized carboxylic acid comprises from over 5% to about 75% by weight of said cleansing bar; and

wherein said cleansing bar contains from about 15% to about 94% water.

5,340,493

LOW-VOLATILITY CLEANING COMPOSITIONS FOR PRINTING INKS

Richard J. Principato, 1632 Arrowwood Dr., Easton, Pa. 18042

Filed Aug. 20, 1992, Ser. No. 932,764

Int. Cl.[5] C09D *9/00, 9/04;* **C11D** *7/50*

U.S. Cl. 252—462 **16 Claims**

1. A cleaning composition for cleaning printing inks, comprising a mixture of:

a. from about 20 to 95% by weight of a tall oil fatty ester comprising at least one C_1 alkyl ester of a C_{18} aliphatic carboxylic tall oil fatty acid;

b. from about 4 to 55% by weight of an organic solvent; and

c. from about 1 to 10% by weight of a surfactant.

5,340,494

Patent Not Issued For This Number

5,340,495

COMPOSITIONS FOR CLEANING INK FROM A PRINTING PRESS AND METHODS THEREOF

James P. Mulcahy, Willow Springs, Ill., and Raymond P. Jadrich, Twin Lakes, Wis., assignors to Siebert, Inc., Lyons, Ill.

Filed Apr. 30, 1993, Ser. No. 55,816

Int. Cl.[5] C09D *9/00*

U.S. Cl. 252—162 **24 Claims**

1. A liquid ink cleaner composition for removing ink from parts of a printing press, said composition comprising:

60%–95% by weight of a methyl ester of a C_8–C_{22} fatty acid; and

5%–40% by weight of a nonionic surfactant which is an ethoxylated C_4–C_{10} alcohol having a molar ratio of ethylene oxide to alcohol of between about 2:1 to about 8:1;

wherein the ink cleaner is miscible with a printing ink composition at dilutions up to at least 2:1 by volume (ink:cleaner) without significantly reducing the tack of the ink.

5,340,496

STABILIZED SODIUM PERCARBONATE COMPOSITION

Kanji Sato, and Tomomasa Kondo, both of Fuji, Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 549,442, Jul. 6, 1990, abandoned. This application Mar. 12, 1993, Ser. No. 29,987

Claims priority, application Japan, Jul. 6, 1989, 1-173063

Int. Cl.[5] C01B *15/043, 31/00*

U.S. Cl. 252—186.27 **29 Claims**

1. Stable sodium percarbonate crystals or granules consisting essentially of sodium percarbonate and the following components (A) and (B) uniformly incorporated therein:

(A) at least one compound selected from the group consisting of mono- and dicarboxylic acids having not less than four carbon atoms and salts thereof; and

(B) at least one compound selected from the group consisting of sulfates, nitrates and silicates of alkali metals and alkaline earth metals, said component (A) and said component (B) each being present in an amount which is effective, in combination with the other component, to provide a stabilization effect to the sodium percarbonate.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,497

FLUOROPHENYLPYRIMIDINES

Andreas Wächtler, Griesheim; Hans-Michael Kompter, Weiterstadt; Eike Poetsch, Möhltal; Thomas Geelhaar, Mainz; Reinhard Hittich, Modautal, and Joachim Krause, Dieburg, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

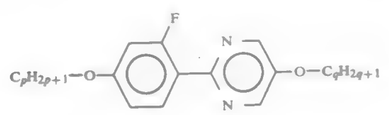
Continuation of Ser. No. 572,980, Aug. 2, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 26,243

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1989, 3919104

Int. Cl.[5] C09K *19/34;* C07D *239/02*

U.S. Cl. 252—299.61 9 Claims

1. A fluorophenylpyrimidine of formula Ib



Ib

wherein

the radicals C_pH_{2p+1} and C_qH_{2q+1} are straight-chain,

p is 5 to 14, and

q is 3 to 12,

and whereby the fluorophenylpyrimidine has a smectic mesophase.

5,340,498

ANTI-FERROELECTRIC LIQUID CRYSTAL AND LIQUID CRYSTAL DISPLAY DEVICE

Yoshihisa Arai, Tsukuba; Tomoyuki Yui, Nagareyama, and Yoshihiro Gocho, Tsukuba, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

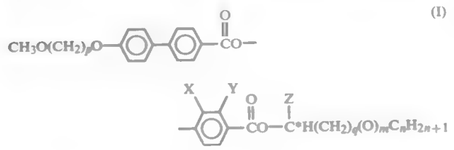
Filed Aug. 19, 1993, Ser. No. 108,448

Claims priority, application Japan, Aug. 19, 1992, 4-220175

Int. Cl.[5] C09K *19/12;* C07C *69/72, 43/13;* G02F *1/13*

U.S. Cl. 252—299.65 24 Claims

1. An anti-ferroelectric liquid crystal of the formula (I),



(I)

wherein

is an integer of 3 to 8,

each of X and Y is independently a hydrogen atom or a fluorine atom,

Z is $—CF_3$, $—CH_3$ or $—C_2H_5$,

q is 0 or 5,

m is 0 or 1,

n is an integer of 2 to 8, and

C* is an asymmetric carbon. provided that when m is 0, q is 0 and n is an integer of 4 to 8 and that when m is 1, q is 5 and z is $—CF_3$.

5,340,499

ELECTRICALLY CONDUCTIVE COMPOSITIONS AND METHODS FOR THEIR PREPARATION

Toivo Kärnä, Porvoo; Jukka Laakso, Helsinki; Timo Niemi, Jyväskylä ; Heikki Ruohonen, Helsinki; Esko Savolainen, Hollola; Helge Lindström, Hamari; Esa Virtanen, Porvoo; Olli Ikkala, Helsinki, all of Finland, and Alejandro Andreatta, Santa Barbara, Calif., assignors to Neste Oy, Kulloo, Finland

Filed Aug. 11, 1992, Ser. No. 927,858

Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—500 36 Claims

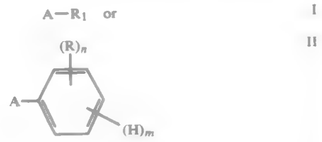
1. An electrically conductive polymer composition, comprising an admixture of:

(a) a complex having an electrical conductivity of at least about 10^{-6} S/cm, of:

(i) a conjugated polymer, having substituted or unsubstituted aniline repeating units and being selected from the group consisting of polyaniline, substituted polyanilines, or copolymers thereof; and

(ii) a first protonic acid, the first protonic acid being selected to impart said electrical conductivity to said conjugated polymer;

(b) a reaction product having a softening temperature of below about 300° C., of (1) a metal compound MX wherein M is selected from the group consisting of Zn, Cu, Mg, Ba, Al, Ca, Ti, Fe, Zr, Cd, Pb and Sn, and X is selected from the group consisting of oxides, hydroxides, halides, stearates, carbonates, palmitates, octoates, laurates, phenolates, maleates, and octylthioglycolates, and (2) a second protonic acid, which may be the same or different from the first protonic acid, having a structural formula I–II:



I

II

wherein:

"A" is sulfonic acid, selenic acid, phosphonic acid, boric acid or a carboxylic acid group; or hydrogen sulphate, hydrogen selenate or hydrogen phosphate;

"n" is an integer in the range of 0–5 inclusive;

"m" is an integer in the range of 0–4 inclusive, with the proviso that the sun of n+m is 5;

"R_1" is an alkyl, alkenyl, alkoxy, alkanoyl, alkylthio, alkylthioalkyl containing 1–20 carbon atoms; or alkylaryl, arylalkyl, alkylsulphinyl, alkoxyalkyl, alkylsulphonyl, alkoxycarbonyl, carboxylic acid, where the alkyl or alkoxy has from 0 to about 20 carbon atoms; or alkyl having from 3–20 carbon atoms substituted with one or more sulfonic acid, carboxylic acid, halogen, nitro, cyano, diazo or epoxy moieties; or a substituted or unsubstituted 3, 4, 5, 6, or 7 membered alicyclic carbon ring, which ring may include one or more divalent heteroatoms of nitrogen, sulfur, sulfinyl, sulfonyl or oxygen such as thiophenyl, pyrolyl, furanyl, pyridinyl; or a polymeric backbone to which A units are attached;

R is the same or different at each occurrence and is an alkyl, alkenyl, alkoxy, cycloalkyl, cycloalkenyl, alkanoyl, alkylthio, aryloxy, alkylthioalkyl, alkylaryl, arylalkyl, alkylsulphinyl, alkoxyalkyl, alkylsulphonyl, aryl, arylthio, arylsulphinyl, alkoxycarbonyl, arylsulphonyl, carboxylic acid, halogen, cyano, or alkyl which has been substituted with one or more sulfonic acid, carboxylic acid, halogen, nitro, cyano, diazo or epoxy moieties; or any two R substituents taken together are an alkylene or alkenylene group completing a 3, 4, 5, 6 or 7 membered aromatic or alicyclic carbon ring or multiples thereof, which ring or rings may include one or more divalent heteroatoms of nitrogen,

sulfur, sulfinyl, sulfonyl or oxygen, with R typically having from 1 to about 20 carbons;

said electrically conductive polymer composition being processable and having a pH of 3 to 8.

5,340,500

CONDUCTING PAN-LAYERED INORGANIC COMPOSITE AND PREPARATION OF THE SAME

Kuei-Jung Chao; Shih-Yeng Ho, both of Hsinchu, and Te-Chung Chang, Tao-Yuan, all of Taiwan, assignors to National Science Council, Taiwan

Filed Feb. 26, 1993, Ser. No. 23,097

Int. Cl.[5] H01B *1/00;* B32B *9/00, 15/04;* C08G *73/06*

U.S. Cl. 252—500 11 Claims

1. A conducting PAN composite comprising an inorganic insulating layered compound with a general formula of $MA_2(XO_4)_2{\cdot}nH_2O$ as a host and polyaniline obtained by polymerizing an intercaluted aniline monomer wherein

M is Ti, Zr, Sn, or Ge;

A is H or Na;

X is P or As; and

n is 1 or 2.

5,340,501

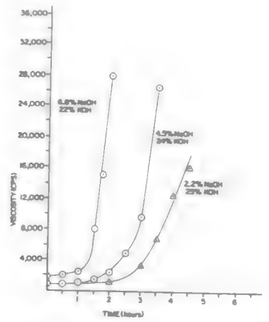
SOLID HIGHLY CHELATED WAREWASHING DETERGENT COMPOSITION CONTAINING ALKALINE DETERSIVES AND AMINOCARBOXYLIC ACID SEQUESTRANTS

Richard E. Steindorf, West St. Paul, Minn., assignor to Ecolab Inc., St. Paul, Minn.

Filed Nov. 1, 1990, Ser. No. 608,009

Int. Cl.[5] C11D *3/04, 3/33, 17/00*

U.S. Cl. 252—546 6 Claims



1. A solid cast detergent composition, comprising a substantially homogenous solid cast product which includes at least:

(a) an effective hard surface cleansing proportion of a sodium alkaline source and a potassium alkaline source said source being present in a mole ratio of sodium alkaline source to potassium alkaline source of 1:0.1 to about 1:6, wherein the sodium alkaline source is selected from the group consisting of sodium hydroxide, sodium silicate, and mixtures thereof, and the potassium alkaline source is selected from the group consisting of potassium oxide, potassium hydroxide, potassium silicate, and mixtures thereof and

(b) an effective chelating proportion of a mixture of sodium salt of aminocarboxylic acid sequestrant and a potassium salt of aminocarboxylic acid sequestrant in a mole ratio of sodium salt of aminocarboxylic acid sequestrant to potassium salt of aminocarboxylic acid sequestrant of about 1:0.1 to 1:12, wherein the ratio of sodium salt of aminocarboxylic acid sequestrant to potassium salt of aminocarboxylic acid sequestrant and the ratio of sodium alkaline source to potassium alkaline source are effective to delay solidification and to maintain the viscosity of the composition below 4,000 cps for at least 2 hours under constant agitation at a temperature of 40° C. while resulting in the solid cast final product.

5,340,502

LIQUID DISHWASHING COMPOSITIONS COMPRISING ANIONIC TENSIDE AND THREE AMPHOTERIC COMPOUNDS

Jadwiga Palicka, Lidingo, Sweden, assignor to Berol Novel AB, Stenungsund, Sweden

Filed Nov. 16, 1992, Ser. No. 977,153

Claims priority, application Sweden, Nov. 21, 1991, 9103453-8

Int. Cl.[5] C11D *1/88, 1/90, 1/94*

U.S. Cl. 252—546 2 Claims

1. A liquid dishwashing composition comprising a combination of

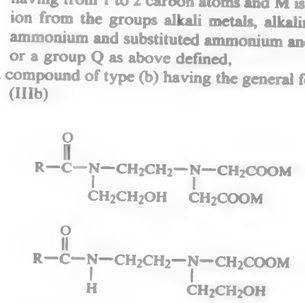
an amphoteric surface active compound of type (a) having the general formula



(II)

wherein R is a hydrocarbon group having from 7 to 22 carbon atoms, R_1 is hydrogen or a lower alkyl group of 1 to 6 carbon atoms, x is 2 or 3, y is an integer of 0 to 4, Q is the group R_2COOM wherein R_2 is an alkylene group having from 1 to 2 carbon atoms and M is hydrogen or an ion from the groups alkali metals, alkaline earth metals, ammonium and substituted ammonium and B is hydrogen or a group Q as above defined,

a compound of type (b) having the general formula (IIIa) or (IIIb)

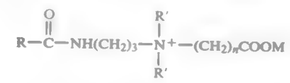


(IIIa)

(IIIb)

wherein R and M have the same meanings as set forth above

a compound of type (c) having the general formula



(IV)

wherein R is a longer hydrophobic hydrocarbon group having from 7 to 21 carbon atoms, R' is an alkyl- or hydroxyalkyl group having from 1 to 4 carbon atoms, n is 1 or 2 and M is hydrogen or a sodium ion, and

an anionic tenside consisting of a water-soluble sulfate or sulfonate tenside selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, and alkylaryl sulfonates, wherein the alkyl group contains from 8 to 22 carbon atoms,

whereby the weight ratio between amphoteric compounds of type (c) and the total amount of amphoteric compounds of type (a) and type (b) is within the range of from 1:3 to 1:1.5 and whereby the total amount of amphoteric compounds of type (a), (b) and (c) is between 15 and 25 percent by weight based on the total amount of these and the

VOL 1165 ISS 4 AG 23 1994 UMI

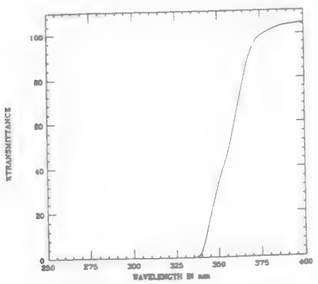
anionic tenside, and the weight ratio between compound (a) and (b) is between 1:1.5 and 1:0.5.

5,340,503

HIGH PERFORMANCE ELECTROCHEMICHROMIC SOLUTIONS AND DEVICES THEREOF

Desaraju V. Varaprasad; Niall R. Lynam; Hamid R. Habibi, and Padma Desaraju, all of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Division of Ser. No. 443,113, Nov. 29, 1989, Pat. No. 5,140,455.
This application May 4, 1992, Ser. No. 878,176
Int. Cl.[5] G02F *1/00, 1/13*
U.S. Cl. 252—583 54 Claims



1. An electrochemichromic solution comprising:

solvent;

a redox chemical pair in solution in said solvent which colors in the presence of an applied voltage and which bleaches to a colorless condition in the absence of an applied voltage;

said solvent including at least 25% by volume of a solvent selected from the group consisting of: 3-hydroxypropionitrile (HPN), 3,3'-oxydipropionitrile (ODPN), 2-acetylbutyrolactone (ABL), 2-methylglutaronitrile (MGNT) 3-methylsulfolane (MS) and mixtures thereof.

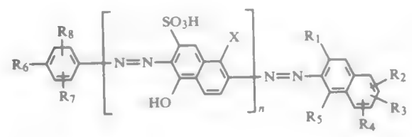
5,340,504

LIGHT-POLARIZING FILMS CONTAINING DICHROIC DYES

Uwe Claussen, Leverkusen, Fed. Rep. of Germany, assignor to Bayer AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 825,125, Jan. 24, 1992, abandoned. This application Feb. 23, 1993, Ser. No. 21,728
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1991, 4103346
Int. Cl.[5] G02B *1/04;* C08K *5/23;* C09B *31/22, 33/26, 35/56, 56/04*
U.S. Cl. 252—585 7 Claims

1. Light-polarizing film containing at least one organic water-soluble polymer and one or more dichroic dyes which, in the form of the free acid, correspond to the following formula I



(I)

in which

n is the number 1 or 2

R is C_{1-14} alkyl

R_1 and R_3 independently of one another represent H or SO_3H,

R_2 is selected from the group consisting of H, NH_2, NH-acetyl, NH-benzoyl, NH-alkyl and NH-aryl,

R_4 is selected from the group consisting of H, OH, OR, SO_3H and Cl,

R_5 i OH or NH_2,

R_6 is selected from the group consisting of NO_2, CN, CF_3, H, NH_2, NH-acetyl, NH-benzoyl, NH-alkyl, NH-aryl, OH, OR, SO_3H and Cl,

R_7 is selected from the group consisting of COOH, COOR, CN, NO_2, halogen, OH, OR, R, SO_3H, H, NH_2, NH-acetyl, NH-benzoyl, NH-alkyl and NH-aryl,

R_8 is H, R or OR and

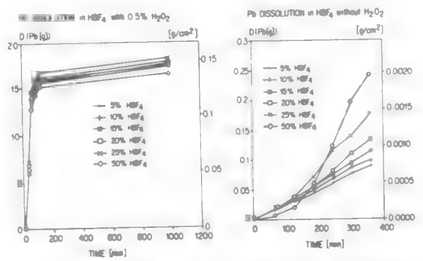
X is Cl, SO_3H or H.

5,340,505

METHOD FOR DISSOLVING RADIOACTIVELY CONTAMINATED SURFACES FROM METAL ARTICLES

Jozef Hanulik, Zurich, and Jean-Francois Equey, St. Prex, both of Switzerland, assignors to Recytec SA, Switzerland

Filed Aug. 16, 1991, Ser. No. 746,027
Claims priority, application Switzerland, Oct. 26, 1990, 03429/90
Int. Cl.[5] G21F *9/10;* C23G *1/02, 1/14, 1/36*
U.S. Cl. 588—18 22 Claims



1. In a method for dissolving radioactively contaminated surfaces of articles made of metal, according to which the articles to be decontaminated are contacted with a decontamination agent comprising fluoboric acid in an aqueous solution with a strength of about 0.05 to about 50 mol/liter and where the surfaces of said contaminated articles are dissolved by said decontamination agent, the improvement comprising: changing said radioactively contaminated surfaces into an oxidized state providing an increased and quicker solubility of said radioactively contaminated surfaces in fluoboric acid by contacting said radioactively contaminated surfaces with a single aqueous solution of an oxidizing agent containing less than about 20 percent by volume and said fluoboric acid.

5,340,506

METHOD TO SYNTHESIZE DENSE CRYSTALLIZED SODALITE PELLET FOR IMMOBILIZING HALIDE SALT RADIOACTIVE WASTE

Tadafumi Koyama, Tokyo, Japan, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 11, 1992, Ser. No. 943,624
Int. Cl.[5] G21F *9/16*
U.S. Cl. 588—14 9 Claims

1. A method for immobilizing waste chloride salts containing radionuclides and hazardous material for permanent disposal comprising:

forming a mixture of an effective amount of alumina, silica and sodium hydroxide with respect to the formation of a sodalite,

heating the mixture to a temperature sufficient to partially react the mixture to form water and a sodalite intermediate,

maintaining the temperature for a period of time sufficient to drive off the water and form a water-free sodalite intermediate,

mixing the water-free sodalite intermediate with the mixed chloride salt containing radionuclides and hazardous material to form a waste mixture, the waste mixture containing about 5 to 13 wt % chloride salt,

heating the waste mixture under pressure, to a temperature sufficient to form sodalite, and

maintaining the temperature and pressure for a period of time sufficient to react the sodalite intermediate to form sodalite, the waste chloride salt containing the radionuclides and hazardous material being contained within the sodalite, thereby immobilizing the waste chloride wait containing radionuclides and hazardous material for permanent disposal.

5,340,507

CATALYZED HYDROCARBYLLITHIUM PROCESS

Robert C. Morrison, Gastonia; Randy W. Hall, Kings Mountain; James A. Schwindeman, Charlotte; Conrad W. Kamienski, Gastonia, and John F. Engel, Belmont, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 842,944, Feb. 27, 1992, Pat. No. 5,211,888, Continuation-in-part of Ser. No. 736,660, Jul. 26, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 35,998
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] C07F *1/02, 1/04, 1/06*
U.S. Cl. 260—665 R 9 Claims

1. A process for alkylating an alkali metal selected from lithium, sodium and potassium with an alkyl halide containing 3 to 20 carbon atoms in which the improvement comprises conducting the reaction in a hydrocarbon solvent in the presence of a catalytic compound represented by the formula

$$(RR^1R^2M^a)_yA(R^3)_x$$

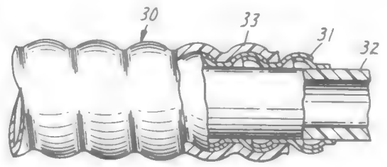
wherein R, R^1 and R^2 are independently selected from hydrogen, halogen, alkyl and alkenyl groups containing 1 to 13 carbon atoms, cycloalkyl groups containing 3 to 10 carbon atoms, aryl groups containing 6 to 18 carbon atoms, R^3 is independently selected from alkyl groups containing 1 to 10 carbon atoms, alkylene groups containing 2 to 5 carbon atoms, M^a is selected from silicon, carbon, germanium, and tin, A is selected from oxygen, sulfur, nitrogen and phosphorus, and x and y independently have values from zero to three.

5,340,508

AERATION SYSTEM AND METHOD

Creighton R. Thompson, Mankato, Minn., assignor to Clean-Flo Laboratories, Inc., Plymouth, Minn.

Continuation-in-part of Ser. No. 979,929, Nov. 23, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 140,889
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—122.1 7 Claims



1. In an aeration system for use in rejuvenating eutrophic lakes, comprising a compressor, a diffuser located on the floor of the lake, and a hose connecting the two, the improvement wherein the hose is an imperforate polymeric tube that, when filled with air, is lighter than water, said tube being protectively surrounded by a flexible metal member that is formed from a spirally wound interlocking flexible strip, whereby the interior of the hose has a low coefficient of friction with respect to transported air and the hose is rendered heavy enough to remain on a lake bottom, strong enough to resist high pressures, resistant to rodent attack, and heavy enough to remain on a lake bottom, even when filled with air.

5,340,509

PROCESS FOR PELLETIZING ULTRA HIGH MELT FLOW CRYSTALLINE POLYMERS AND PRODUCTS THEREFROM

David S. Chang, Houston, Tex.; Aaron S. Rhee, Belle Mead, N.J.; Ronald K. Crossland, Houston, Tex., and Jorge O. Bühler-Vidal, North Brunswick, N.J., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 30, 1992, Ser. No. 906,328
Int. Cl.[5] B29B *9/10*
U.S. Cl. 264—5 5 Claims

1. A continuous process for forming dust-free, semi-spherical pellets from ultra high melt flow crystalline thermoplastic polymers comprising the steps of:

feeding the polymer into melting/mixer means

melting the crystalline polymer in the melting/mixer means to provide a molten ultra high melt flow crystalline polymer material;

transferring the molten ultra high melt flow polymer material under a positive pressure and at a temperature in the range from about 360° F. to about 600° F. to droplet forming means comprising coaxial inner and outer cylindrical containers wherein the outer container which has orifices align cyclically with the inner container, rotates around the inner container;

forming droplets of the molten polymer with the droplet forming means wherein the outer container having orifices rotates around the inner container to allow a uniform amount of molten ultra high melt flow polymer material emerge as droplets which are collected onto a cooling conveyer, wherein the ratio of the velocity of the cooling conveyer to the rotational velocity of the outer container of the droplet forming means is from about 0.5 to about 3; and

cooling the droplets for a time sufficient to solidify the droplets and form dust-free, semi-spherical pellets.

5,340,510

METHOD FOR MAKING PIEZOELECTRIC CERAMIC/POLYMER COMPOSITE TRANSDUCERS

Leslie J. Bowen, Concord, Mass., assignor to Materials Systems Incorporated, Concord, Mass.

Filed Apr. 5, 1993, Ser. No. 42,878
Int. Cl.[5] C04B *41/83*
U.S. Cl. 264—22 14 Claims

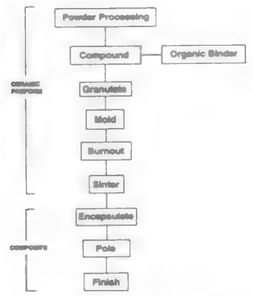
1. A net-shape process for fabricating a fully dense ceramic preform for a piezoelectric or electrostrictive composite transducer exhibiting 1–3 or 2—2 connectivity, said process comprising the steps of:

preparing a homogeneous, granulated, thermoplastic powder/binder mixture comprising ceramic powder selected from the group consisting of strongly piezoelectric or electrostrictive ceramic materials and sufficient thermoplastic organic binder to render said mixture moldable by injection molding, said binder being selected to render said mixture thermoplastic during injection molding and to be nondestructively removed from said mixture by heating;

forming a green body of said preform by injection molding said mixture in an injection molding apparatus comprising

VOL 1165 ISS 4 AG 23 1994 UMI

a preform mold which is a negative of said preform green body and cooling said green body in said preform mold sufficiently to be releasable from said preform mold as a self-supporting green body, wherein said green body comprises a planar ceramic base and a plurality of parallel ceramic elements integral with and extending perpendicularly from said base in a preselected array and fixedly supported in said array by said base, each of said elements having a shape selected from the group consisting of rod-like and lamellar;



releasing said self-supporting green body from said preform mold;

heating said released green body to a temperature of 300°–700° C. for a time sufficient to completely remove said binder from said green body; and

sintering said binder-removed body at a temperature and for a time sufficient to densify said binder-removed body to at least about 95% of theoretical density to produce a fully dense preform.

5,340,511

PRODUCTION OF CARBON FIBRE

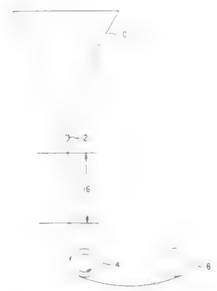
David L. Morgan; Vladimir Cakan, and Klaus Frielingsdorf, all of Transvaal, South Africa, assignors to Enerkom (Proprietary Limited, Sandton, South Africa

Filed Aug. 16, 1993, Ser. No. 106,639

Claims priority, application South Africa, Aug. 17, 1992, 92/6177

Int. Cl.[5] D01F *9/12*

U.S. Cl. 264—29.2 23 Claims



1. A method of producing carbon fiber comprising the steps of providing a solution of a coal-derived material in a solvent, the coal-derived material having a composition, free of solvent, of 70 to 91 percent by mass of carbon, 2 to 6 percent by mass of hydrogen, and 3 to 20 percent by mass of oxygen, adding polyethylene oxide having a molecular weight of at least 3×10^6 daltons to the solution to provide a spinning solution, spinning said spinning solution to form a fiber and allowing the fiber to gel.

5,340,512

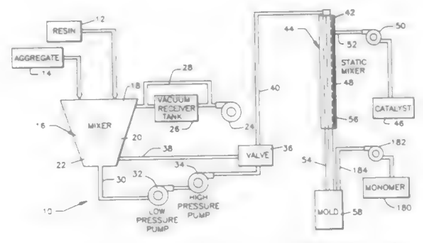
POLYMER CONCRETE ELECTRICAL INSULATOR AND METHOD AND APPARATUS FOR MAKING

John Slocum; Peter N. Kiproff, both of Germantown; Daryl Gibson, Memphis, and Will Merritt, Collierville, all of Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Jan. 29, 1993, Ser. No. 11,437

Int. Cl.[5] B29C *31/04, 39/42*

U.S. Cl. 264—37 34 Claims



1. Apparatus for molding a mixture of constituents to form a substantially degassed molded product, comprising:

mixing means for uniformly combining the constituents comprising said mixture;

means for selectively evacuating said mixing means, thereby degassing said mixture;

a mold, maintained under ambient pressure;

means for pumping said mixture from said mixing means to said mold; and

means for filling said mold with said degassed mixture without introducing air into said degassed mixture, said filling means comprising:

a fill tube for directing said mixture into said mold, having first and second longitudinally opposed ends with said first end communicating with said pumping means and said second end removably insertable into said mold; and

driving means for withdrawing said fill tube from said mold in a controlled manner, said second end of said fill tube being selectively moveable between fully inserted and fully retracted positions.

9. A method of forming a substantially degassed product from moldable constituents, comprising the steps of:

combining said constituents within a mixer to form a uniform mixture;

reducing the air pressure within said mixer by an amount sufficient to substantially degas said mixture;

providing a moveable fill tube injector in communication with said mixer, adapted to selectively discharge said mixture, said fill tube having a distal end;

providing a mold having longitudinally opposed top and bottom ends and maintained at normal ambient pressure;

moving said distal end of said fill tube into said mold;

pumping said mixture from said mixer to said fill tube without adding air to said mixture;

discharging said mixture through said distal end of said fill tube into said mold while gradually withdrawing said fill tube in a controlled manner to avoid entrainment of air into said mixture.

5,340,513

PROCESS FOR THE PRODUCTION OF CALCIUM HYDROSILICATE BONDED SHAPED ARTICLES

Thomas Koslowski, Aachen; Klaus-Michael Hessler, Herzogenrath, and Olaf Musebrink, Ubach-Palenberg, all of Fed. Rep. of Germany, assignors to SICOWA Verfahrenstechnik fur Baustoffe GmbH & Co., KG, Aachen, Fed. Rep. of Germany

Filed Dec. 14, 1992, Ser. No. 988,261

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141271

Int. Cl.[5] B29C *67/20, 39/02, 47/00;* C04B *14/04*

U.S. Cl. 264—42 9 Claims

1. A method for producing calcium hydrosilicate bonded articles comprising the steps of:

(a) forming a mixture containing:

a quartz containing powder;

calcium hydroxide;

a pulper digested paper slurry containing cellulose fiber fragments and short cellulose fibers in a swelled state as a pore forming agent; and

a cementitious agent;

(b) shaping the resulting mixture of step (a) into blanks; and

(c) steam hardening the shaped blanks by autoclaving.

5,340,514

METHOD FOR PREPARING POTTERY PRODUCTS CONTAINING SHIRASU BALLOONS

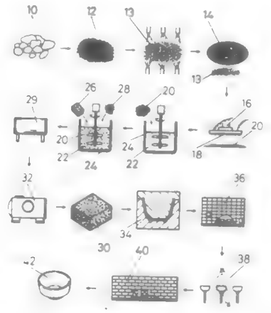
Ryoziro Taniguchi, Aichi; Takao Yamaguchi, and Osamu Saito, both of Kanagawa, all of Japan, assignors to Setoseido Kabushiki Kaisha, Aichi; Iwaki Glass Co., Ltd. and Tokai Kogyo Kabushiki Kaisha, both of Tokyo, all of Japan

Filed Sep. 29, 1992, Ser. No. 952,993

Claims priority, application Japan, Sep. 30, 1991, 3-278868; Aug. 25, 1992, 4-248684

Int. Cl.[5] C04B *38/08*

U.S. Cl. 264—62 2 Claims



1. A method for preparing a white pottery product containing shirasu balloon powder comprising:

sieving shirasu balloon powder to obtain a fine powder of shirasu balloons;

removing darkening impurities from the fine powder by means of a magnetic filter in order to obtain selected shirasu balloon powder, said darkening impurities including iron and titanium;

uniformly mixing the selected shirasu balloon powder in water to form a first mixture;

mixing a pottery material which constitutes the body of the white pottery product with at least one reinforcement material selected from the group consisting of alumina, zircon, cristoballite, magnesium oxide and magnesium silicate, to form a second mixture;

adding the second mixture to the first mixture and thoroughly mixing to form a third mixture;

dewatering the third mixture to obtain a pre-fired product in which the selected shirasu balloon powder is uniformly dispersed;

molding the pre-fired product into a desired shape, and drying it; and

glazing the thus-molded pre-fired product with a transparent glaze, and firing it to form the white pottery product.

5,340,515

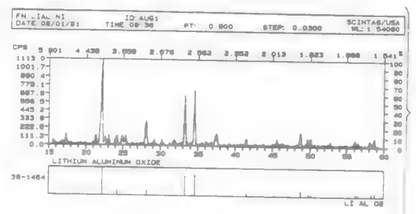
POLYCRYSTALLINE γ-LITHIUM ALUMINATE FIBERS AND PROCESS OF MANUFACTURE

Charles C. Fain, Seneca, S.C.; Gregory M. Lowe, Tonawanda, N.Y.; Teresita N. C. Frianeza-Kullberg, Gastonia, and Daniel P. McDonald, Belmont, both of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Filed Aug. 10, 1992, Ser. No. 927,756

Int. Cl.[5] C04B *35/44*

U.S. Cl. 264—63 9 Claims



1. A method for preparing polycrystalline γ-lithium aluminate fibers by filling micromold fibers having an inner diameter of at least five microns and a length up to 2 cm; with a dispersion of lithium and aluminum salts or lithium aluminate powder, having particle sizes of one millimicron to one micron, solvents, binders, plasticizers and deflocculants; placing the filled micromold fibers in a graphite cylinder containing lithium hydroxide or lithium oxide powder; first firing the filled micromold fibers at elevated temperatures above temperatures of lithium oxide volatilization for at least 5 minutes under an inert atmosphere followed by a second firing in air at temperatures from 500°–1000° C. for at least one hour to burn off the micromold and yield microcrystalline γ-lithium aluminate fibers.

5,340,516

THERMAL SHOCK AND CREEP RESISTANT POROUS MULLITE ARTICLES PREPARED FROM TOPAZ AND PROCESS FOR MANUFACTURE

Bulent O. Yavuz, Plainfield; Matthew P. Larkin, Phillipsburg; Gary W. Rice, Scotch Plains, and Kenneth E. Voss, Somerville, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 727,207, Jul. 9, 1991, Pat. No. 5,252,272, which is a continuation-in-part of Ser. No. 386,186, Jul. 28, 1989, abandoned, and a continuation-in-part of Ser. No. 567,995, Aug. 16, 1990, Pat. No. 5,173,349. This application Jul. 16, 1993, Ser. No. 93,104

The portion of the term of this patent subsequent to Jul. 16, 2010, has been disclaimed.

Int. Cl.[5] B32B *3/12;* C04B *35/10*

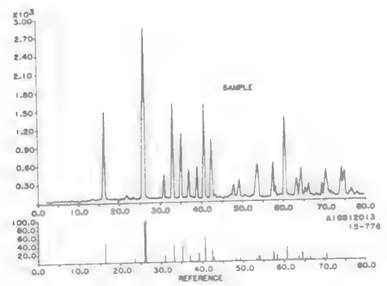
U.S. Cl. 264—63 1 Claim

1. A process for forming a honeycomb-shaped article comprising interconnected mullite whiskers comprising the steps of:

a. preparing a mixture of a fugitive binder, hydrated aluminum fluoride and silicon dioxide, the proportions of hydrated aluminum fluoride and silicon dioxide being approximately stoichiometric to form topaz;

VOL 1165 ISS 4 AG 23 1994 UMI

b. forming said mixture from Step (a) into a coherent green body;
c. firing said body from Step (b) until said body is converted substantially completely into interconnected bar-like topaz crystals;
d. recovering said bar-like topaz crystals and mixing them with a material capable of forming mullite by reaction with topaz, said material being selected from the group consisting of silicon dioxide, a mixture of silicon dioxide and hydrated aluminum fluoride, and a mixture of silicon dioxide, hydrated aluminum fluoride and alumina, together with a fugitive binder;



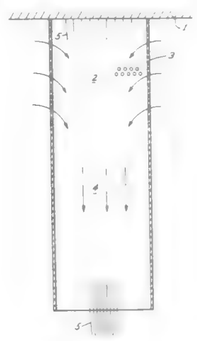
e. forming the mixture from Step (d) into a honeycomb; and
f. firing said honeycomb at elevated temperature while removing volatiles as they are formed until substantially complete conversion of said honeycomb to mullite whiskers occurs, the firing in Steps (c) and (f) being carried out in a furnace provided with an external peristaltic pumping system which continuously sucks gases formed during the reaction from inside the furnace to outside the furnace, and gases sucked from the furnace are charged to a scrubber unit.

5,340,517

PROCESS FOR PRODUCING SYNTHETIC FILAMENTS

Günter Koschinek, Dietzenbach, and Dietmar Wandel, Hanau, both of Fed. Rep. of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 7, 1993, Ser. No. 73,170
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1992, 4220915
Int. Cl.[5] B29C *35/16;* **D01D** *5/12*
U.S. Cl. 264—103 **4 Claims**



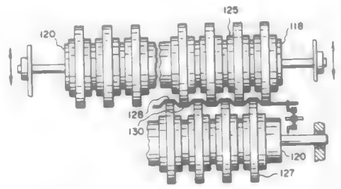
1. A method for producing spin oriented filaments comprising providing a spinning head connecting directly to a cooling shaft having perforated walls immediately adjacent said head, defining a first zone, and imperforate walls spaced from said head defining a second zone adjacent said first zone,
extruding filaments from said head into said shaft,
cooling said filaments in said first zone by ambient air drawn into said shaft through said perforations solely by the frictional entrainment of the air by said filaments, and
drawing said cooled filaments at a velocity in excess of 2400 m/min to orient said filaments in said second zone solely in the presence of entrained air from said first zone flowing along the length and in the direction of the moving filaments.

5,340,518

METHOD FOR CORRUGATING SHEET MATERIAL

William C. Paul, Mt. Vernon, Ind., assignor to General Electric Co., Pittsfield, Mass.

Filed Oct. 13, 1992, Ser. No. 960,489
Int. Cl.[5] B29C *53/24*
U.S. Cl. 264—154 **29 Claims**



1. A method of continuously producing corrugated sheet from a supply of a material having low melt strength at the forming temperature comprising:
gradually heating the sheet material to a forming temperature above the glass transition temperature;
thermo-forming corrugations in the sheet material with rollers while the sheet material is above the glass transition temperature;
capturing the corrugated sheet for calibration while above the glass transition temperature; and calibrating and cooling the material to below the glass transition temperature immediately subsequent to thermo-forming the corrugations in the sheet while simultaneously maintaining lateral tension on the sheet material during the heating, thermo-forming, and calibration steps.

5,340,519

PREPARATION OF POLY(M-PHENYLENE ISOPHTHALAMIDE) FILAMENTS

Richard A. Pease, Bear, Del., and David J. Rodini, Midlothian, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1993, Ser. No. 39,564
Int. Cl.[5] B01J *43/00;* **D01F** *6/60*
U.S. Cl. 264—169 **6 Claims**

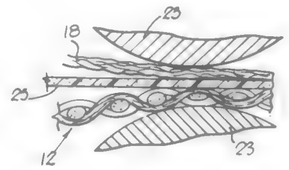
1. A process for preparing poly(m-phenylene isophthalamide) filaments comprising:
a) reacting m-phenylene diamine with isophthaloyl chloride in an amide solvent to produce poly(m-phenylene isophthalamide) in an HCl-containing amide solution;
b) passing the polymer solution through a bed of ion exchange resin in base form to remove HCl and collecting an amide solution of the polymer as effluent;
c) removing amide solvent from the effluent as necessary to attain suitable viscosity and concentration of the solution for spinning; and
d) spinning the solution to form filaments.

5,340,520

NON-WOVEN MAT SURFACE PLY FOR WOVEN FABRIC

Louis M. Strunk, Colwich, Kans.; Anthony Bosch, El Toro, Calif., and Ted Kruhmin, San Clemente, Calif., assignors to Beech Aircraft Corp., Wichita, Kans. and BP Chemicals (HITCO), Inc., Gardena, Calif.

Filed Jun. 10, 1992, Ser. No. 896,184
Int. Cl.[5] D01D *5/00*
U.S. Cl. 264—174 **16 Claims**



1. A process for manufacturing the material for the outermost layer of a woven composite structure comprising the steps of:
creating a layered sandwich structure of a continuous fiber woven material, resin films and a mat of randomly oriented discontinuous fibers, and
integrating the sandwiched layers into a single sheet of resin impregnated material by application of pressure and heat.

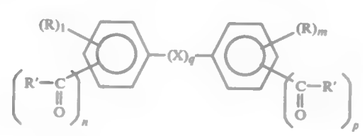
5,340,521

MELT VISCOSITY DEPRESSANT FOR POLYESTER RESIN AND POLYESTER RESIN COMPOSITION COMPRISING THE SAME

Akito Itoi; Isao Nishi, and Yasuo Ishii, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 917,378
Claims priority, application Japan, Jul. 24, 1991, 3-184513; Dec. 16, 1991, 3-331998; Mar. 4, 1992, 4-46880
Int. Cl.[5] B27C *47/00;* **C08F** *20/00*
U.S. Cl. 264—176.1 **11 Claims**

1. A polyester resin composition comprising a polyester resin, and
a melt viscosity depressant for a polyester resin
wherein said melt viscosity depressant comprises:
an aromatic carbonyl compound represented by formula (I) or (II):

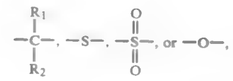


(I)

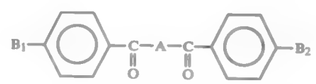
wherein
R represents an alkyl group or an alkoxy group,
R′ represents a hydrocarbon group,
wherein the total number of carbon atoms of R and R′ in a molecule is selected from the range determined by the following equation:

$$9 \leqq R \times (l+m) + R' \times (n+p) \leqq 56,$$

l and m each represent such an integer than l+m is 0 to 3,
n and p each represent such an integer that n+p is 1 or 2,
X represents



wherein
R_1 and R_2 each represent a hydrogen atom or an alkyl group having 4 or less carbon atoms, and



(II)

wherein B_1 and B_2 each represent an alkyl group, an alkenyl group, an acyl group or an alkoxy group having 3 to 18 carbon atoms,
A represents a divalent aliphatic hydrocarbon group, a divalent alicyclic hydrocarbon group or a divalent aromatic hydrocarbon group.

5,340,522

PROCESS FOR PRODUCING POLYVINYL ALCOHOL MULTIFILAMENT YARN

Atsushi Taniguchi, Ehime; Masaharu Mizuno, Matsuyama, and Mitsuo Suzuki, Ehime, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 21,179, Feb. 22, 1993, Pat. No. 5,283,281, which is a continuation of Ser. No. 829,551, Feb. 4, 1992, abandoned, which is a continuation of Ser. No. 360,695, Jun. 2, 1989, abandoned. This application Oct. 29, 1993, Ser. No. 142,924
Claims priority, application Japan, Jun. 2, 1988, 63-136285; Aug. 3, 1988, 63-194243
Int. Cl.[5] D01F *6/14;* **C08F** *16/06, 8/00;* **C08G** *63/48*
U.S. Cl. 264—185 **8 Claims**

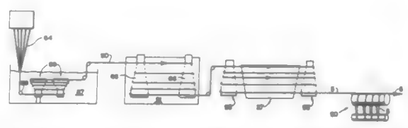
1. A process for producing a polyvinyl alcohol multifilament yarn which comprises the steps of spinning a solution of polyvinyl alcohol having a degree of polymerization of at least 1500 blended with an acrylic acid polymeric compound by a spinning process selected from a wet spinning, a dry-jet wet spinning and a gel spinning, and drawing the resultant spun filament yarn at a total draw ratio of at least 12 times by a multi-step drawing process.

5,340,523

IMPROVED METHOD OF INCREMENTALLY DRAWING FIBERS

Martin V. Sussman, 1361 Massachusetts Ave., Lexington, Mass. 02173

Division of Ser. No. 410,515, Sep. 21, 1989, Pat. No. 4,980,957, which is a division of Ser. No. 191,620, May 9, 1988, Pat. No. 4,891,872. This application Dec. 14, 1990, Ser. No. 627,653
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] D01D *5/16;* **D02J** *1/22*
U.S. Cl. 264—205 **7 Claims**



1. In the process of drawing fibers in small increments by passing said fiber with plural helical turns between a plurality

VOL 1165 ISS 4 AG 23 1994 UMI

of spaced-apart spindles, each of which is elongated about an axis that extends transversely to the helical turns of said fiber thereon and is canted relative to said axis of the other spindle, and each of said spindles having a rotating fiber-bearing outer surface, the radius of which changes along said axis thereof so as to be tapered, said fiber-bearing surface being formed of a plurality of discrete circumferential microterraces of different radii which are substantially parallel to said axis of rotation of said spindles, said fiber-bearing surface engages each helical turn of said fiber frictionally and supporting each said turn without imposing any substantial axially-directed restraint on said fiber, the improvement comprising:

forming said fiber from solutions of gelled polymers and drawing said fibers in said small increments while the solvent is simultaneously being removed therefrom.

5,340,524

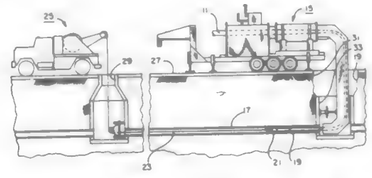
VARIABLE ANGULAR INSERTION METHOD FOR LINING TUBULAR MEMBERS

Jim S. McMillan, Benbrook, and Simon Tarsha, Fort Worth, both of Tex., assignors to Pipe Rehab International, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 643,950, Jan. 22, 1991, abandoned. This application Mar. 27, 1992, Ser. No. 858,545

Int. Cl.[5] B29C *63/42*

U.S. Cl. 264—229 **15 Claims**



1. A method of lining a tubular member with a generally cylindrical, elastomeric liner having an outside diameter which is adapted to be received within the inside diameter of the tubular member, the elastomeric liner having a central opening with a midpoint located on a central axis thereof, the method comprising the steps of:

feeding a length of the liner along a first axis which defines a first path of travel, the midpoint of the elastomeric liner being located on the first axis;

shaping the liner from a generally cylindrical shape into an elliptical shape by passing the length of generally cylindrical liner through a set of shaping rollers having a liner receiving opening between the rollers with a midpoint of the liner receiving opening located on the first axis which defines the first path of travel, after shaping the liner into an elliptical shape with the shaping rollers, passing the elliptically shaped liner along the first axis and then

feeding the elliptically shaped liner through an orienting means which turns the elliptically shaped liner and guides the elliptically shaped liner along a second path of travel, wherein the second path of travel is oriented along a different axle from the axis of the first path of travel;

thereafter, passing the elliptically shaped liner through a set of reshaping rollers to reshape the elliptically shaped liner into a generally cylindrical shape; and

inserting the reshaped liner into the tubular member to be lined.

5,340,525

METHOD OF FORMING A SEALING BEAD ON A GASKET

Daniel E. Czernik, Hinsdale, Ill., assignor to Fel-Pro Incorporated, Skokie, Ill.

Filed Sep. 9, 1992, Ser. No. 942,310

Int. Cl.[5] B29C *43/18, 43/20*

U.S. Cl. 264—266 **6 Claims**

1. A method of manufacturing a gasket having an elastomeric sealing bead projecting outwardly from a major surface of a gasket body comprising the steps of:

providing an expansive, thin gasket body having a first major surface and a second major surface with an embossment, said embossment defining a projection extending outwardly of said first major surface and defining a concave recess having a first cross-sectional area opening outwardly of said second major surface of said gasket body, said concave recess being filled with a substantially incompressible elastomer;

positioning said gasket body in a press;

squeezing the embossment to substantially reduce said first cross-sectional area of the concave recess until the elastomer filled therein forms a sealing bead projecting outwardly of said concave recess and beyond said second major surface;

removing said gasket body from said press prior to use, and then providing said manufactured gasket for use.

5,340,526

TEMPERATURE CONDITIONING

Torsten Nilsson, Löddeköpinge, Sweden, assignor to PLM AB, Malmo, Sweden

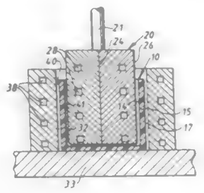
Continuation of Ser. No. 536,585, Jul. 3, 1990, Pat. No. 5,145,629. This application Jun. 16, 1992, Ser. No. 899,438

Claims priority, application Sweden, Nov. 14, 1988, 8804102-5

The portion of the term of this patent subsequent to Sep. 8, 2002, has been disclaimed.

Int. Cl.[5] B29C *35/02, 55/22, 49/64*

U.S. Cl. 264—292 **16 Claims**



1. A method of adjusting the temperature of a tubular body of plastic material and shaping said tubular body, comprising:

inserting an expandable first mechanical device into a tubular body of plastic material positioned, in a second mechanical device which at least partially surrounds the tubular body with clearance,

dimensioning the first mechanical device in relation to said tubular body so that a gap is formed between the first mechanical device and said tubular body when the first mechanical device is inserted into said tubular body so that the first mechanical device does not come into contact with said tubular body,

expanding the first mechanical device after its insertion into said tubular body so that the first mechanical device abuts against the tubular body and expands the tubular body into reliable contact with the second mechanical device,

effecting heat exchange between the first mechanical device and the tubular body to adjust the temperature of the tubular body, while maintaining the temperature of the second mechanical device at a value to effect temperature control of the tubular body,

supporting the thus expanded tubular body in a holder with a bottom of the tubular body facing an aperture in said holder,

positioning a draw ring around said aperture, and

axially displacing the bottom of said tubular body through said aperture and past said draw ring to produce elongation of the wall of said tubular body and reduction of its thickness to effect monoaxial orientation of the material of the wall of the temperature controlled tubular body.

5,340,527

SHAPING PANELS OF MICROPOROUS THERMAL INSULATION

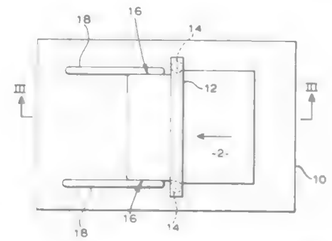
Barry Gibson, Birkenhead, and James A. McLoughlin, Wirral, both of United Kingdom, assignors to Micropore International Limited, Great Britain

Filed Dec. 18, 1992, Ser. No. 992,710

Claims priority, application United Kingdom, Dec. 20, 1991, 9127068.6

Int. Cl.[5] B29C *53/18*

U.S. Cl. 264—320 **9 Claims**



1. A method of shaping at least one rounded edge of a substantially planar panel of microporous thermal insulation material comprising a porous envelope containing a block of dry particulate microporous thermal insulation material, which method comprises the steps of:

applying restraining means to the substantially planar faces of the panel for resisting deformation of the faces of the panel at least in a region thereof adjacent to at least a portion of the at least one edge of the panel to be shaped;

urging a forming member against the at least one rounded edge of the panel so as to shape the edge thereof, the forming member being profiled such as to cause the edge of the panel to be recessed; and

removing the forming member from the edge of the panel so as to permit the panel to adopt a relatively square edge, and removing the restraining means from the faces of the panel.

5,340,528

INJECTION/COMPRESSION MOLDING METHOD, A DIE FOR INJECTION/COMPRESSION MOLDING AND AN INJECTION/COMPRESSION MOLDING MACHINE

Tetsuo Machida; Hiroyuki Kiso; Nobuyuki Sasaki, and Hiroshi Kondo, all of Miyagi, Japan, assignors to Sony Corporation, Japan

Filed Feb. 16, 1993, Ser. No. 18,305

Claims priority, application Japan, Feb. 21, 1992, 4-035173

Int. Cl.[5] B29C *45/40, 45/56*

U.S. Cl. 264—328.7 **5 Claims**

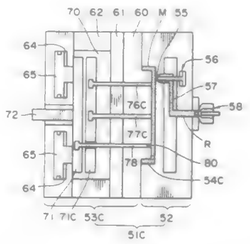
1. An injection molding die comprising:

a fixed half die;

a movable half die having a core surface for forming a surface of a molding to be formed, said movable half die being joined to the fixed half die to form a cavity in the injection molding die;

ejector pins axially movably supported on the movable half die; and

a compressing mechanism which holds some of the ejector pins respectively at positions where the extremities of said some of the ejector pins are retracted from the core surface of the movable half die to form recesses corresponding to compression allowances int he core surface, said compressing mechanism advancing the ejector pins toward the cavity after a molten resin has been injected into the injection molding die and fills the cavity and the recesses,



wherein said some of said ejector pins are fixed to a first ejector plate, ad the rest of the ejector pins are fixed to a second ejector plate, and wherein said compressing mechanism controls the first ejector plate to compress the resin in the recesses corresponding to the compression allowances with said some of sad ejector pins and subsequently both ejector plates to advance the ejector pins thereon to eject the molding from said cavity.

5,340,529

GOLD JEWELRY ALLOY

Troy C. DeWitt, and Vicki A. DeWitt, both of 945 Grand Ave., St. Paul, Minn. 55105

Filed Jul. 1, 1993, Ser. No. 85,763

Int. Cl.[5] C22C *5/02, 9/00*

U.S. Cl. 420—483 **12 Claims**

1. A 10 karat gold jewelry alloy comprising:

(a) 40 weight % to 42 weight % gold;

(b) 47 weight % to 52 weight % copper; and

(c) 6.4 weight % to 11.5 weight % of a white metal selected from the group consisting of zinc, silver, indium and mixtures thereof.

5,340,530

METHOD OF FORMING AN INSERT ON A PART TO BE CLAD THAT IS MADE OF STEEL OR OF TITANIUM ALLOY

André Coulon, Bessoncourt, France, assignor to GEC Alsthom Electromecanique SA, Paris, France

Filed Jun. 4, 1993, Ser. No. 70,924

Claims priority, application France, Jun. 5, 1992, 92 06861

Int. Cl.[5] B22F *7/08*

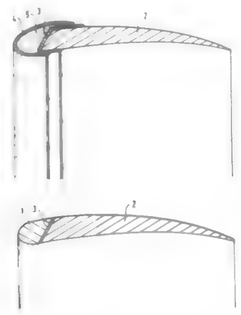
U.S. Cl. 419—5 **7 Claims**

1. A method of manufacturing a protective insert (1) on a metal part (2) made of martensitic steel or of titanium alloy, by using a metal capsule (4) in which the space (5) between the capsule (4) and the part (2) is filled with a metal or ceramic powder whose composition corresponds to the composition desired for the insert (1), the ends of the space (5) are closed, the part (2) together with the filled capsule (4) are inserted in an isostatic pressing oven under a controlled atmosphere, the pressure and the temperature being selected so that the powder is pressed in situ, the part (2) is cooled and then the capsule (4) is removed before final shaping of the part (2) fitted with the insert (1),

characterized in that an overlapping metal foil (3) is mechanically fixed on the portion of the part (2) that is to be clad, said foil (3) having a thickness lying in the range 0.1 mm

VOL 1165 ISS 4 AG 23 1994 UMI

to 0.3 mm and being constituted by elements that are compatible with the part (2) and that are suitable during the pressing operation for generating intermetallic phase compounds that form a barrier between the insert (1) and



the part (2), the foil having a melting point that is 20° C. to 50° C. greater than the pressing temperature used; and in that the edges of the capsule (4) are subsequently fixed to the edges of the foil (3).

5,340,531

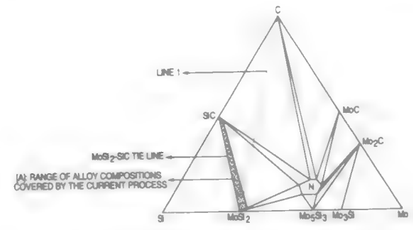
REFRACTORY METAL REINFORCED $MoSi_2$/SIC COMPOSITE WITH MATCHED THERMAL COEFFICIENTS OF EXPANSION

S. Jayashankar, and Michael J. Kaufman, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed Jun. 1, 1993, Ser. No. 69,706

Int. Cl.[5] B22F *3/12*

U.S. Cl. 419—10 **7 Claims**



1. A method for producing a substantially silica-free composition of matter comprising a matrix of $MoSi_2$ having SiC dispersed therein, said matrix being reinforced with a particulate ductile refractory metal, said method comprising providing a composite of said particulate ductile refractory metal and a substantially silica-free composite mechanical alloy powder comprising $MoSi_2$ and SiC having a composition in that segment of the ternary diagram of FIG. 1 designated A, and consolidating said composite of ductile refractory metal and mechanical alloy powder; the coefficient of thermal expansion of said $MoSi_2$ matrix having SiC dispersed therein being substantially equivalent to that of said ductile refractory metal.

6. The composition of matter formed by the method of claim **1**.

5,340,532

METHOD FOR FORMING CERAMIC POWDERS BY TEMPERATURE INDUCED FLOCCULATION

Lennart Bergström, Farsta, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Apr. 23, 1993, Ser. No. 51,357

Claims priority, application Sweden, Apr. 30, 1992, 9201376-2

Int. Cl.[5] B22F *3/12, 3/22*

U.S. Cl. 419—38 **13 Claims**

1. A method for manufacturing a sintered body, comprising steps of:

a) forming a slurry comprising a powder mixture, a dispersant providing steric stabilization for said powders and an organic solvent with or without one or more soluble polymers;

b) transferring said slurry into a mold;

c) effecting temperature controlled gelation of the sterically stabilized suspension to form a green body, said gelation being effected by reducing solvency of said dispersant due to a change in the temperature of said slurry and said gelation being reversible by changing the temperature of said slurry;

d) removing said body from said mold;

e) transferring said body to a chamber where the gelation temperature can be maintained and the pressure decreased to facilitate removal of the solvent to form a dried body;

f) heating said body for a time sufficient to substantially remove said dispersant from said body; and

g) sintering said body.

5,340,533

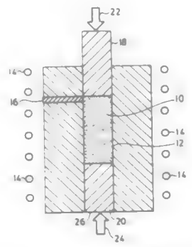
COMBUSTION SYNTHESIS PROCESS UTILIZING AN IGNITABLE PRIMER WHICH IS IGNITED AFTER APPLICATION OF PRESSURE

Gregory C. Stangle, Alfred; Scott E. Niedzialek, Rochester, and William C. Williams, Wellsville, all of N.Y., assignors to Alfred University, Alfred, N.Y.

Filed Apr. 27, 1993, Ser. No. 54,753

Int. Cl.[5] B22F *1/00*

U.S. Cl. 419—45 **7 Claims**



1. A process for producing a dense composite material by combustion synthesis, comprising the steps of:

(a) selecting at least one elemental material from at least one of the following groups:

1. a group consisting of titanium, zirconium, hafnium, tantalum, niobium, silicon, and boron,
2. a group consisting of carbon and boron,
3. a group consisting of nickel, titanium, and copper, and
4. a group consisting of aluminum, titanium, iron, and cobalt;

(b) charging said elemental material to a die;

(c) charging an ignitable primer into said die;

(d) applying a uniaxial pressure of from about 500 to about 5,000 pounds per square to said elemental material within said die; and

(e) heating said elemental material within said die to a temperature of from about 250 to about 600 degrees Centigrade, thereafter igniting said ignitable primer within said die, and thereafter igniting said elemental material within said die, wherein, prior to, during, and subsequent to the time said elemental material has been ignited, said uniaxial pressure of from about 500 to about 5,000 pounds per square inch is applied to said elemental material within said die.

5,340,534

CORROSION RESISTANT AUSTENITIC STAINLESS STEEL WITH IMPROVED GALLING RESISTANCE

John H. Magee, Reading, Pa., assignor to CRS Holdings, Inc., Wilmington, Del.

Filed Aug. 24, 1992, Ser. No. 934,565

Int. Cl.[5] C22C *35/00*

U.S. Cl. 420—35 **26 Claims**

1. An austenitic stainless steel alloy having a unique combination of galling resistance, corrosion resistance, and resistance to formation of deformation-induced martensite, said alloy consisting essentially of, in weight percent, about

	%
Carbon	0.25 max.
Manganese	4–10
Silicon	2.25–5
Chromium	16.5–23
Nickel	6–12
Molybdenum	0.5–4
Nitrogen	0.35 max.
Copper	3.0 max.
Cobalt	5.0 max.
Boron	0.01 max.
Sulfur	0.3 max.

and the balance is essentially iron, wherein (%C+%N) is at least about 0.25% when the amount of silicon present in the alloy is less than about 3%.

5,340,535

VANADIUM-NICKEL-CHROMIUM MASTER ALLOY

Robert G. Antrim, Albany; Edward G. Dirrett, Jefferson, and Steven M. Tuominen, Albany, all of Oreg., assignors to Teledyne Industries, Inc., Albany, Oreg.

Division of Ser. No. 828,212, Jan. 30, 1992, Pat. No. 5,196,048. This application Oct. 20, 1992, Ser. No. 963,665

Int. Cl.[5] C22C *30/00*

U.S. Cl. 420—588 **1 Claim**

1. A master alloy comprising vanadium, nickel, and chromium substantially free of unalloyed chromium inclusions consisting essentially of a vanadium, nickel alloy, alloyed with chromium wherein approximately equal weight percentages of vanadium and nickel are alloyed together and then alloyed with from between 4% by weight to about 17% by weight of chromium, such percentages being of the total resultant alloy weight and wherein the resultant alloy contains from more than about 40% by weight to about 48% by weight of vanadium and from more than about 40% by weight to about 48% by weight of nickel.

5,340,536

METHOD AND APPARATUS FOR NEUTRALIZATION OF BIOHAZARDOUS WASTE

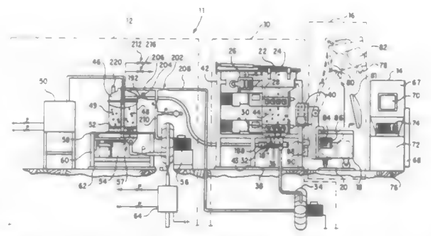
Rajiv V. Datar, Glen Cove, and Luis G. Rios, Holtsville, both of N.Y., assignors to 3-I Systems, Plainsboro, N.J.

Filed Dec. 18, 1992, Ser. No. 993,944

Int. Cl.[5] A61L *2/08;* **B01J** *3/04*

U.S. Cl. 422—23 **31 Claims**

1. A method for neutralizing biohazardous waste comprising subjecting said waste to steam while maintaining said waste under superatmospheric pressure to generate water in said waste, and maintaining said pressure while subjecting said waste having said water therein to electromagnetic radiation to



generate water at a temperature of about 132°–171° C. and pressure of about 15–18 psig to neutralize said waste.

5,340,537

TEMPERATURE INDICATING COMPOSITIONS

Richard B. Barrett, Chatham, N.J., assignor to Big Three Industries, Inc., South Planfield, N.J.

Filed Apr. 16, 1993, Ser. No. 48,777

Int. Cl.[5] A61L *2/04;* **B41M** *5/18*

U.S. Cl. 422—26 **18 Claims**

16. A method for recording exposure to saturated steam at 250° F. and 15 psi for a minimum of twenty minutes comprising the steps of:

providing a temperature indicating material comprising a support coated on at least one surface with a composition comprising a dispersion in an aqueous binder of a color changing electron donating compound having a melting point greater than 300° F. and a polymeric electron accepting phenolic resin reactive with said electron donating compound to produce a visible and permanent color change and having a T_g greater than 270° F. and nonvolatility such that coatings containing said composition are stable upon exposure to dry heat at 284° F. for thirty minutes yet produce a fully developed visible and permanent color change when subjected to saturated steam at 250° F. for twenty minutes;

exposing said material to an elevated temperature condition; and

evaluating the color of said composition coated on said support to determine whether said composition was exposed to saturated steam at 15 psi or greater and temperatures of 250° F. and higher for twenty or more minutes.

5,340,538

STERILIZING GAS DELIVERY METHOD

Todd A. Zaicow, Griffith, Ind.; Scott A. Farber, and Daniel F. Bartel, both of Chicago, Ill., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Sep. 27, 1993, Ser. No. 127,434

Int. Cl.[5] A61L *2/16*

U.S. Cl. 422—33 **7 Claims**

1. A method for dispensing a sterilizing gas, comprising:

(a) providing a liquid mixture of ethylene oxide and carbon dioxide;

(b) partially filling a cylinder with said mixture;

(c) pressurizing the head space of said cylinder with an inert gas; and

(d) dispensing said mixture as a liquid from said container under conditions whereby the head space pressure is greater than the vapor pressure of said mixture.

VOL 1165 ISS 4 AUG 23 1994 UMI

5,340,539

NON-INSTRUMENTED CHOLESTEROL ASSAY

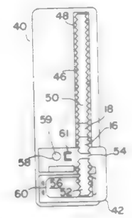
Michael P. Allen, Sunnyvale, and Henry J. Jeong, Palo Alto, both of Calif., assignors to ChemTrak, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 789,059, Nov. 7, 1991, abandoned, which is a continuation of Ser. No. 474,991, Feb. 6, 1990, Pat. No. 5,132,086, which is a continuation-in-part of Ser. No. 357,045, May 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 324,407, Mar. 16, 1989, Pat. No. 4,987,085, which is a continuation-in-part of Ser. No. 195,881, May 19, 1988, Pat. No. 4,999,287, and a continuation-in-part of Ser. No. 64,883, Jun. 22, 1987, Pat. No. 4,973,549. This application Oct. 8, 1992, Ser. No. 958,519

The portion of the term of this patent subsequent to Nov. 25, 2007, has been disclaimed.

Int. Cl.[5] G01N *21/00*

U.S. Cl. 422—56 **16 Claims**



1. A device for determining the cholesterol or cholesterol ester level in a sample, said device comprising:

(a) a first bibulous strip comprising a transfer region for transporting a transport medium from a transport medium source,

(b) a bibulous member comprising a sample receiving region;

(c) a second bibulous strip comprising a conversion reagent region,

(d) a third bibulous strip comprising a measurement region;

wherein said sample receiving region is in fluid communication with said transfer, conversion, and measurement regions, or can be moved into fluid transfer relationship with said transfer, conversion, and measurement regions; such that when said sample receiving region is moved into fluid transfer relationship with said transfer, conversion, and measurement regions, said device further comprises;

(e) means for moving said sample receiving region from a first site for receiving said sample to fluid transfer relationship with said transfer, conversion, and measurement regions;

(f) conversion reagent capable of reacting with cholesterol and cholesterol ester to form an intermediate product, said conversion reagent present on said second strip upstream from said measurement region, any additional conversion reagent being present on the sample receiving region, on the transfer region, or in said transport medium, such that movement of the transport medium through said second strip will bring the conversion reagent and cholesterol together to react to form said intermediate product; and

(g) non-diffusively bound reagent in the measurement region which reacts in the presence of said intermediate product to produce a detectable border related to the cholesterol or cholesterol ester level in said sample.

5,340,540

CAP RAISING MECHANISM FOR AN INCUBATOR

James G. Miller, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

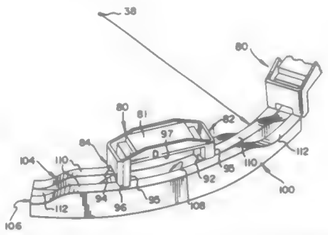
Filed May 3, 1993, Ser. No. 56,637

Int. Cl.[5] G01N *31/00*; B01L *11/00*

U.S. Cl. 422—64 **5 Claims**

1. In an incubator comprising a support for a slide test element; first means for moving said support about an axis; an evaporation cap movable up and down relative to said support over a slide element on said support, said cap having opposite ends, a sealing surface between said ends to seal a slide element against evaporation, and at least one leg depending from each end; and second moving means for moving said cap up and down relative to said support;

the improvement wherein said support has apertures there-



through and said second moving means is disposed under said support, said legs depending through said support apertures into contact with said second moving means, and said second moving means is shaped to move both of said legs simultaneously up relative to said support, and simultaneously down relative to said support, so that said cap raises and lowers without any significant, sideways thrust on it or on a test element underneath said cap.

5,340,541

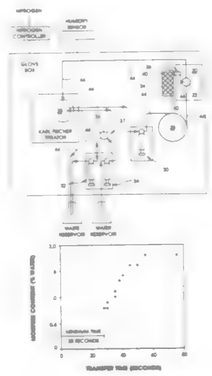
AUTOMATED KARL FISCHER TITRATION APPARATUS AND METHOD

David A. Jackson, Fishers; Ralph M. Riggin, and John K. Towns, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 5, 1993, Ser. No. 27,254

Int. Cl.[5] G01N *31/16, 33/18*

U.S. Cl. 422—75 **4 Claims**



3. An apparatus for automated coulometric determinations of moisture content using a titration vessel connected to a coulometric analyzer, comprising:

a titration vessel connected to a coulometric analyzer, and having a reaction chamber containing titrant;

an autosampler having a sample rack for receiving sealed sample containers containing titrant soluble samples, sampling and dispensing probe means for piercing said sealed sample containers and for communicating titrant to and sample and titrant solutions from within sealed sample containers, and first automated 3w-ay valve means in fluid communication with said reaction chamber of the Karl Fischer, with a sample and titrant reservoir, and with said probe means, for directing the flow of fluids alternatively between said probe means and said sample and titrant reservoir, and between said sample and titrant reservoir and said reaction chamber;

a first automated syringe pump in fluid communicating through second automated 3-way valve means alternatively with said sample and titrant reservoir and said reaction chamber;

computer means for controlling and coordinating the operations of said titration vessel and coulometric analyzer, said autosampler, said first and second 3-way valve means, and said first automated syringe pump.

5,340,542

APPARATUS FOR THE MEASUREMENT OF THE TOTAL CONTENT OF ORGANIC CARBON AND NITROGEN IN WATER

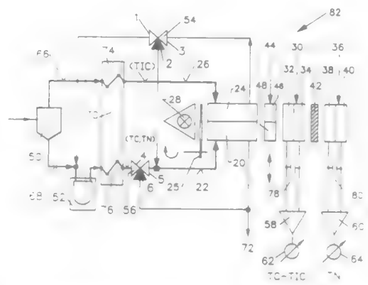
Walter Fabinski, Kriftel; Peter Hübschmann, Nidderau; Peter Schlau, Frankfurt, and Christian Wolff, Karben, all of Fed. Rep. of Germany, assignors to Hartmann & Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 880,576, May 8, 1992, Pat. No. 5,292,666. This application Jun. 4, 1993, Ser. No. 71,106

Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115425

Int. Cl.[5] G01N *21/00, 33/00*

U.S. Cl. 422—82.05 **7 Claims**



1. An apparatus for the simultaneous analysis of total content of organic carbon and nitrogen from an aqueous sample comprising

a phase separator having an input for receiving an aqueous sample, a first output, and a second output;

a double cooler including a first cooler and a second cooler, wherein;

the first cooler of the double cooler has an input connected to the first output of the phase separator and has a gas output;

a first cuvette having a gas input connected to the gas output of the first cooler and having an output;

a first valve having an input connected to the output of the first cuvette and having a first output and a second output;

a thermal reactor having a first input connected to the first output of the first valve and having a second input connected to the second output of the phase separator and having an output; wherein the

second cooler of the double cooler has an input connected to the output of the thermal reactor and having an output;

a second valve having an input connected to the output of the second cooler and having a first output, and a second output;

a second cuvette having an input connected to the first output of the second valve and having an output;

an infrared radiator source providing an infrared radiation to the first cuvette and to the second cuvette;

a chopper wheel disposed between the infrared radiator source and the first cuvette and the second cuvette;

a calibration cuvette having a first chamber filled with a gas disposed after the first cuvette in beam direction and having a second chamber filled with a calibration gas disposed after the second cuvette in beam direction;

a first receiver detector disposed neighboring to the calibration cuvette in beam direction and having an output;

a radiation filter disposed following to the first receiver detector in radiation direction;

a second receiver detector disposed neighboring to the radiation filter in radiation direction and having an output;

a first amplifier having an input connected to the output of the first receiver detector and having an output;

a second amplifier having an input connected to the output of the second receiver detector and having an output;

a first display having an input connected to the output of the first amplifier and disposed in a control display;

a second display having the input connected to the output of the second amplifier and disposed in the control display.

5,340,543

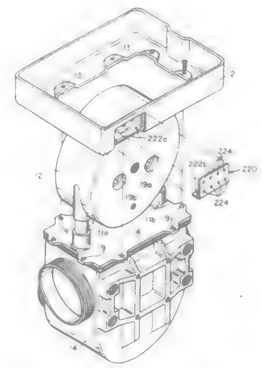
MODULAR GAS CHROMATOGRAPHY DEVICE

Raymond Annino, North Smithfield, R.I.; Edward L. Lewis, Sharon, Mass.; Dale E. Lueck, Chelmsford, Mass.; Matthew L. Phillips, North Easton, Mass., and Richard Villalobos, Duxbury, Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Aug. 22, 1990, Ser. No. 570,947

Int. Cl.[5] G01N *30/02, 31/00*

U.S. Cl. 422—89 **33 Claims**



1. A chromatography device for separating a sample fluid component from a sample fluid mixture carried by a carrier fluid and for analyzing the sample fluid component, comprising:

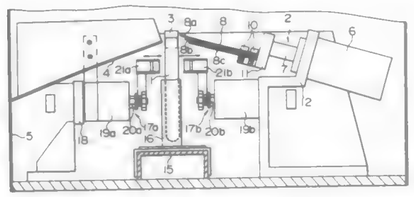
a first housing portion having an internal space in which all electronic components of the device capable of igniting a flammable gas are housed;

a second housing portion external to the first housing portion and having an interior space sealed relative to the interior space of the first housing portion, the second housing portion comprising:

VOL 1165 ISS 4 AUG 23 1994 UMI

a) a column for separating the sample fluid component from the fluid mixture;
b) a detector for detecting distinguishing characteristics of fluids exiting the column; and
c) a manifold upon which the column and the detector are configured so as to form a replaceable modular chromatography cartridge, said manifold having a means for interconnecting a column of fluid sources and for attaching the cartridge to a support structure.

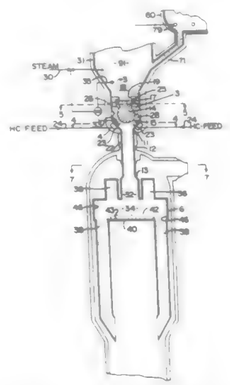
5,340,544
PLUG-OPENING DEVICE FOR A SPECIMEN CONTAINER
Susumu Nishikawa, and Hariko Ikuma, both of Hamamatsu, Japan, assignors to System Stack Co., Ltd., Hamana, Japan
Filed Apr. 14, 1993, Ser. No. 45,735
Claims priority, application Japan, Jun. 22, 1992, 4-187595
Int. Cl.[5] B01L *11/00;* **B67B** *7/02*
U.S. Cl. 422—99 **2 Claims**



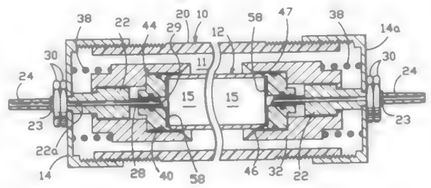
1. A plug-opening device, comprising:
a rod;
actuating means, coupled to said rod, for actuating the rod away from or towards a plug of a specimen container; and
a plug-opening means, coupled to an end portion of the rod and extended from the rod at a longitudinal direction thereof, for urging against a circumferential side of the plug, wherein the plug-opening means comprises elastic leaf springs urged against the circumferential side of the plug of the specimen container,
wherein said elastic leaf springs include a plurality of plug-opening leaf spring members which are attached to the end portion of the rod in a stack formation, and wherein an end portion of a higher leaf spring relative to another end portion of a lower leaf spring, adjacent to the higher leaf spring, extends further away from the end portion of the rod.

5,340,545
PARTICULATE SOLIDS CRACKING APPARATUS
Robert J. Gartside, Wellesley, and Richard C. Norton, Boston, both of Mass., assignors to Stone & Webster Engineering Corp., Boston, Mass.
Continuation of Ser. No. 798,627, Nov. 26, 1991, which is a continuation of Ser. No. 362,028, Jun. 6, 1989, Pat. No. 5,098,672, which is a division of Ser. No. 243,462, Sep. 12, 1988, Pat. No. 4,919,898, which is a division of Ser. No. 84,328, Aug. 11, 1987, Pat. No. 4,814,067. This application Feb. 10, 1993, Ser. No. 16,060
Int. Cl.[5] F27B *15/16;* **B01J** *8/20*
U.S. Cl. 422—146 **1 Claim**

1. A catalytic cracking unit, comprising:
a catalytic cracker comprising a catalytic cracking reactor for catalytically cracking feed oil comprising gas oil in the presence of a cracking catalyst to produce a stream of catalytically cracked oil containing particulates of coked cracking catalyst, an oil feed line communicating with said catalytic cracking reactor for feeding said feed oil to said catalytic cracking reactor, and a regenerated catalyst line communicating with said catalytic cracking reactor for conveying regenerated cracking catalyst to said catalytic cracking reactor,
a separator comprising a separating vessel communicating with said catalytic cracking reactor for substantially disengaging said particulates of coked cracking catalyst from said catalytically cracked oil;
an internal rough cut separator positioned inside said separating vessel for making a rough cut separation of said coked cracking catalyst particulates from said catalytically cracked oil, said internal rough cut separator having a product outlet for egress of catalytically cracked oil;
an oil quench injector extending into said separating vessel for inhibiting substantial thermal cracking of said catalytically cracked oil;
at least one secondary internal cyclone positioned inside said separating vessel and having an inlet at an elevation above said rough cut separator; and
said oil quench injector comprises an oil quench line disposed at said inlet of said secondary cyclone.



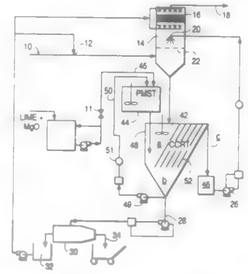
5,340,546
GAS FILTER
David Bromley, 1305 Yardley Commons, P.O. Box 513, Yardley, Pa. 19067
Filed Apr. 5, 1993, Ser. No. 42,715
Int. Cl.[5] B01D *35/30*
U.S. Cl. 422—168 **5 Claims**



1. A gas filter comprising:
a. a gas filtering element for cleansing a gas passing therethrough, said filtering element having oppositely disposed end portions, each including an opening, and further including a piercable membrane affixed over each of said openings;
b. a housing including an elongated tubular member having a surrounding wall, said tubular member closed at one end and open at the other end defining a chamber receptive of said gas filtering element;
c. an end cap removably connected to the open end of the tubular member for providing the chamber closed at both ends, the connected end cap axially movable into and out of the closed chamber;
d. a pair of oppositely disposed piercing members, one affixed to the closed end of said tubular member and the other affixed to the connected end cap, each piercing member including an elongated portion extending axially into the closed chamber, each elongated portion terminating in a piercing tip positioned for penetrating the membranes of the inserted filtering element upon axial movement of said end cap into the closed chamber, each piercing member further including means defining a longitudinally extending throughbore for providing a gas passageway into the closed chamber;
e. a pair of movable receptacles, one axially slideably attached over the elongated portion of said one piercing member and the other receptacle axially slideably attached over the elongated portion of said other piercing member, each receptacle having means defining a pocket for receiving one end portion of the filtering element;
f. a sealing member disposed within each of said pocket means;
g. spring means disposed between each receptacle and the ends said closed chamber for urging the receptacles into the closed chamber;
h. means for preventing rotational motion of said other receptacle and said connected end cap during axial movement thereof, said means for preventing rotational motion disposed on said other receptacle and on the end cap and on the tubular member; and
i. a tightening ring threadedly engaged with the open end of the tubular member and having a shoulder abutting the end cap for imparting axial movement to said end cap, wherein
in response to rotation of said tightening ring, the shoulder urges the end cap into said chamber, in turn urging the other receptacle into the closed chamber, allowing the pocket means to receive the end portions of the filtering element and wherein continued inward motion of said end cap brings said sealing members into contact with the end portions of the received filtering member compressing said spring means and compressibly confining the filtering element between the receptacles and simultaneously affecting an air tight seal between the sealing member and the end portions of the filtering element, and wherein
continued inward movement of said end cap forces the piercing tips through the membranes of the received filtering element establishing an isolated continuous gas passageway extending axially through the closed chamber for effectively cleansing throughflowing gas.

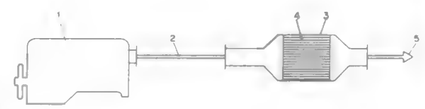
5,340,547
CLEAR LIQUOR SCRUBBING MAGNESIUM-ENHANCED LIME FLUE GAS DESULFURIZATION SYSTEM
Robert E. Moser, Palo Alto, Calif.; James H. Wilhelm, Sandy, Utah; John Burke, Chamblee, Ga., and Sterling Gray, Louisville, Ky., assignors to Electric Power Research Institute, Palo Alto, Calif.
Division of Ser. No. 796,613, Nov. 22, 1991, Pat. No. 5,213,782. This application Jan. 19, 1993, Ser. No. 986,068
Int. Cl.[5] G05D *7/00;* **B01D** *53/34;* **F01N** *3/00*
U.S. Cl. 422—177 **8 Claims**

1. A magnesium-enhanced lime flue gas desulfurization system wherein sulfur dioxide is removed from a supply of sulfur dioxide-containing gas by scrubbing in the presence of aqueous magnesium and lime to produce easily dewatered calcium sulfite waste solids, said system comprising:
(a) scrubber means for receiving a supply of sulfur dioxide-containing gas and contacting said sulfur dioxide-containing gas with an aqueous liquid, said scrubber means including a first discharge outlet for scrubbed gas and a second discharge outlet for scrubber effluent;
(b) crystallizer-clarifier reaction tank means fluidically connected to said scrubber means for receiving scrubber effluent and for separating said scrubber effluent into a clear liquor fraction and a thickened solids fraction;
(c) premix slurry tank means fluidically connected to said crystallizer clarifier reaction tank means for receiving and crystallizing said thickened solids fraction, wherein said premix slurry tank means includes reagent addition means for adding reagent to said premix slurry tank means; pH control means for controlling crystal formation and



growth, an inlet for receiving said thickened solids fraction from the crystallizer-clarifier reaction tank means and an outlet for directing crystallized solids back to said crystallizer-clarifier reaction tank means; and
(d) solids dewatering means for separating solids recirculated through said crystallizer-clarifier reaction tank means and for producing an aqueous liquid fraction for circulation through the system to said scrubber means and to contact said sulfur dioxide-containing gas.

5,340,548
EXHAUST GAS CLEANER AND METHOD OF CLEANING EXHAUST GAS
Akira Abe; Satoshi Sumiya; Yoshikazu Takahashi; Kiyohide Yoshida, and Gyo Muramatsu, all of Kumagaya, Japan, assignors to Kabushiki Kaisha Riken, Kumagaya, Japan
Division of Ser. No. 773,113, Oct. 8, 1991, Pat. No. 5,213,781. This application Feb. 11, 1993, Ser. No. 16,764
Claims priority, application Japan, Oct. 8, 1990, 2-270200; Oct. 8, 1990, 2-270201
Int. Cl.[5] B01D *53/36*
U.S. Cl. 422—177 **4 Claims**



1. An exhaust gas cleaner comprising a heat-resistant, porous filter and a catalytic layer consisting of a uniform mixture of a catalyst and a ceramic carrier powder, said catalytic layer being formed on said filter from a solution consisting of an organic salt of ceramic carrier-constituting metal and a solution of a catalytic component metal salt by a sol-gel method, said catalyst consisting essentially of:
(a) at least one of alkali metal elements;
(b) copper and vanadium; and
(c) at least one rare earth element,
wherein the amount of said catalyst is 1–20 parts by weight and the amount of said ceramic carrier powder is 1–10 parts by weight, based on 100 parts by weight of said filter.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,549

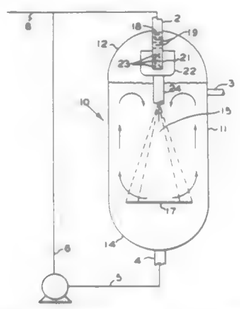
HIGH INTERFACIAL AREA MULTIPHASE REACTOR (RM-1069)

Milind B. Ajinkya, Mendham; Robert M. Koros, Westfield, and Barry L. Tarmy, Berkeley Heights, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 665,637, Feb. 14, 1991, Pat. No. 5,190,733, which is a continuation of Ser. No. 310,182, Feb. 15, 1989, which is a continuation-in-part of Ser. No. 235,572, Aug. 24, 1988, abandoned. This application Oct. 26, 1992, Ser. No. 966,634

Int. Cl.[5] **B01F** *3/04*

U.S. Cl. 422—230 **4 Claims**



1. A method for the contacting of plural distinct phases in a vertically disposed vessel comprising:

generating bubbles of a first fluid phase in a second distinct fluid phase to provide a stream of dispersed distinct phases;

providing a vertically disposed vessel having side walls and;

providing a fluid phase in the vessel;

injecting the stream of dispersed distinct phases together downwardly and outwardly into the top of the vessel, and below the surface of the fluid phase therein, the injection being at a velocity sufficient to cause the injected fluid and the fluid in the vessel in the flow path of the injected fluid to flow downwardly and outwardly, the outward distance being less than the diameter of the vessel, the downward and outward flow defining a central region within the vessel, and the flow continuing upwardly in an annular region between the central region and the side walls of the vessel, whereby the dispersed phases are circulated and contacted.

5,340,550

INSTRUMENT STERILIZATION CONTAINER

James B. Johnsen, and Hal J. Oien, both of Beaverton, Oreg., assignors to Jordco, Inc., Beaverton, Oreg.

Filed Nov. 2, 1992, Ser. No. 969,974

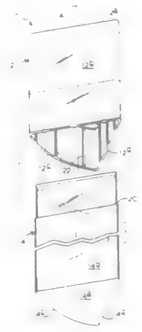
Int. Cl.[5] **A61L** *2/00;* **A61B** *19/02;* **B65D** *21/02*

U.S. Cl. 422—292 **10 Claims**

1. A two-piece instrument sterilization container comprising

an elongate, hollow base of generally triangular cross section, said base including fluid-impervious surface structure extending between an open end and a closed end in the base, and base fitment structure formed on said fluid-impervious surface structure adjacent said open end, and

an elongate, hollow cap of generally triangular cross section, said cap including fluid-impervious surface structure extending between a closed end and an open end in the cap, and cap fitment structure formed on said fluid-impervious surface structure adjacent to said open end, said cap being removably fittable on and with respect to said base with the base and cap surface structures accommodating reversible, direct-contact, longitudinal-surface-structure fitment overlap between said base and cap, said fitment structures, with the base and cap fitted together, forming a non-closeable fluid passage in the region of overlap,



which passage communicates between the outside and the inside of the container.

5,340,551

DENTAL CASSETTE KIT

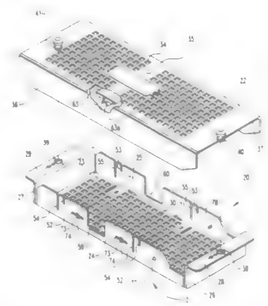
Bernie B. Berry, Jr., Indianapolis, Ind., assignor to C/T Med-Systems Ltd., Inc., Indianapolis, Ind.

Continuation of Ser. No. 981,617, Nov. 25, 1992, Pat. No. 5,279,800. This application Aug. 5, 1993, Ser. No. 102,482

The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.

Int. Cl.[5] **A61L** *2/00;* **B01J** *19/32;* **B65D** *85/20, 85/62*

U.S. Cl. 422—300 **12 Claims**



8. An autoclavable cassette for the receipt and storage of dental and surgical instruments, said cassette comprising:

a tray portion including a base, two oppositely disposed sidewalls and two oppositely disposed end walls which define an open interior space, each of said two oppositely disposed sidewalls having an upper edge and means defining a first plurality of rack slots opening upwardly through said upper edge and extending to a closed bottom edge; and

a unitary, lift-out instrument rack assembled into said first plurality of rack slots, said instrument rack having a generally rectangular, open, frame shape with two oppositely disposed sidewalls and two oppositely disposed end walls surrounding and defining an open interior area, each of said sidewalls having an outer side surface and each of said end walls having means defining a plurality of instrument receiving channels, the receiving channels of one end wall being generally aligned with the receiving channels of the oppositely disposed end wall so as to define an instrument path which is substantially parallel with said pair of oppositely disposed sidewalls and further, each of said pair of oppositely disposed end walls integrally including a pair of oppositely disposed, generally planar, upper corner tabs which extend outwardly beyond the outer surface of the corresponding adjacent sidewall and which are adapted for said lift-out instrument rack to be set down into said first plurality of rack slots in said tray portion.

5,340,552

REACTIVE MATRIX FOR REMOVING IMPURITIES FROM HYDRIDE AND INERT GASES AND PROCESS

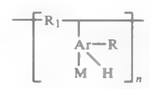
James T. Snow, Nashua, N.H., assignor to Millipore Corporation, Bedford, Mass.

Filed Sep. 10, 1992, Ser. No. 943,355

Int. Cl.[5] **C01B** *3/56;* **C08F** *6/00*

U.S. Cl. 423—210 **5 Claims**

1. A macroreticulate polymer for removing a composition selected from the group consisting of water vapor, oxygen, and mixtures thereof from a gas, said polymer having the formula:



wherein Ar is a heteroaromatic moiety containing nitrogen as the heteroatom, M is bonded to the nitrogen heteroatom and is selected from the group consisting of lithium, sodium and potassium, R is selected from the group consisting of an organic moiety and an amino moiety and R_1 is a polymerized moiety forming a molecular backbone of said polymer, said polymer being free of a composition which releases a volatile moiety upon contact with water or oxygen at room temperature.

5,340,553

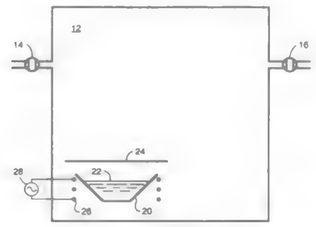
METHOD OF REMOVING OXYGEN FROM A CONTROLLED ATMOSPHERE

James E. Huffman, Fullerton, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Mar. 22, 1993, Ser. No. 36,007

Int. Cl.[5] **C01B** *13/00*

U.S. Cl. 423—219 **11 Claims**



1. A method of removing residual oxygen from the atmosphere of an enclosed chamber, comprising the steps of:

placing a charge of silicon inside the chamber;

purging oxygen from the atmosphere of the chamber;

heating said silicon to a molten state; and

said heated silicon acting as an oxygen getter to remove residual oxygen from the atmosphere of the enclosed chamber.

5,340,554

NOX REMOVAL PROCESS

Peter J. H. Carnell, Stockton on Tees, Great Britain, assignor to Imperial Chemical Industries PLC, London, England

Filed May 21, 1993, Ser. No. 65,391

Claims priority, application United Kingdom, May 22, 1992, 9210926.3; Nov. 25, 1992, 9224659.4

Int. Cl.[5] **C01B** *21/20*

U.S. Cl. 423—235 **4 Claims**

1. A process for the recovery of hydrocarbons comprising subjecting a refinery cracking catalyst on which is deposited a nitrogen compound containing carbonaceous deposit to a combustion reaction with air thereby reducing the amount of the deposit on the catalyst and forming an off-gas stream containing, in addition to carbon combustion products, also hydrogen, hydrocarbons, including olefins, and oxides of nitrogen (NOx), and thereafter passing at least part of the off-gas stream over a hydrogenation catalyst under conditions effective to reduce nitrogen oxides without effecting substantial hydrogenation of the olefins in said off-gas stream, thereby producing a NOx depleted stream, and thereafter recovering hydrocarbons from said NOx depleted stream cryogenically.

5,340,555

PROCESS FOR TREATING HALOGENATED HYDROCARBON CONTAINING-GAS, AN APPARATUS THEREFOR AND AN AGENT FOR DECOMPOSING HALOGENATED HYDROCARBON

Fujio Mashio, and Naomi Itoya, both of Kyoto, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

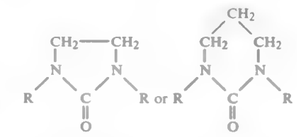
Division of Ser. No. 756,306, Sep. 6, 1991, abandoned. This application May 26, 1992, Ser. No. 887,651

Claims priority, application Japan, Sep. 7, 1990, 2-238539; Sep. 8, 1990, 2-238082

Int. Cl.[5] **B01D** *53/34*

U.S. Cl. 423—240 R **6 Claims**

3. A process for decomposing halogenated hydrocarbon in a gas phase, which comprises contacting the halogenated hydrocarbon gas with an agent for decomposing the halogenated hydrocarbon comprising a mixture of a material selected from the group consisting of caustic soda, caustic potash, sodium carbonate and mixtures thereof and an aprotic polar compound represented by the following chemical formula:



wherein R is an alkyl group having 1 to 3 carbon atoms thereby removing the halogenated hydrocarbon gas.

5,340,556

CERIUM/LANTHANUM/TERBIUM MIXED PHOSPHATES

Marie-Pierre Collin, Epinay sur Seine; Denis Huguenin, Levallois, and Anne-Marie Le Govic, Paris, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Feb. 4, 1992, Ser. No. 831,057

Claims priority, application France, Feb. 4, 1991, 91 01215

Int. Cl.[5] **C09K** *11/08;* **C01F** *17/00*

U.S. Cl. 423—263 **14 Claims**

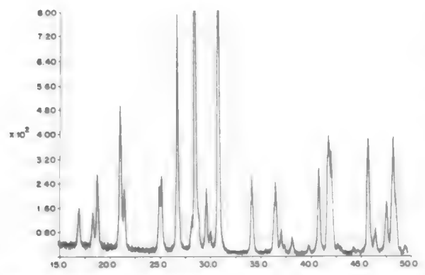
1. A process for the preparation of a cerium lanthanum terbium mixed phosphate having the formula (I):

$$La_xCe_yTb_{1-x-y}PO_4 \quad (I)$$

in which x ranges from 0.4 to 0.6 and x+y is greater than 0.8, and having a lightness (L*), measured by colorimetry, of

VOL 1165 ISS 4 AG 23 1994 UMI

greater than 98% after calcination at a temperature above 700° C. in air, the process comprising mixing a solution of soluble lanthanum, cerium and terbium salts with phosphate ions, while controlling the pH of such medium of precipitation at a value above 2, to thereby precipitate a mixed phosphate there-



from, maintaining the precipitate in the precipitation medium for a period of time ranging from 15 min to 10 hours after completion of the mixing when the value of the pH of precipitation ranges from 2 to 6, and then filtering off, washing, and optionally drying said precipitate.

5,340,557

^{32}P THIOPHOSPHATE PREPARATION

Andrew M. Creighton, London, and William A. Jeffery, Essex, both of England, assignors to British Technology Group Limited, London, United Kingdom

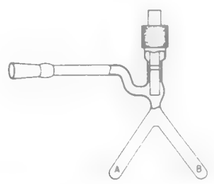
PCT No. PCT/GB92/00339, § 371 Date Aug. 30, 1993, § 102(e) Date Aug. 30, 1993, PCT Pub. No. WO92/14679, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 25, 1992, Ser. No. 107,836

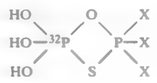
Claims priority, application United Kingdom, Feb. 25, 1991, 9103886.9

Int. Cl.[5] C01B *25/10, 25/14*

U.S. Cl. 423—300 12 Claims



9. A diphosphetane of the formula:



wherein X is halogen.

11. A process for the preparation of a diphosphetane as defined in claim 9 which comprises heating $H_3{}^{32}PO_4$ or a salt thereof with at least an equivalent amount of a thiophosphoryl halide.

5,340,558

VERMICULITE COMPOSITION WITH IMPROVED THERMAL EXPANSION PROPERTIES

Semyon D. Friedman, Baltimore, Md.; Robert W. McKinney, Palm Coast, Fla.; Chia-Chih Ou, Lexington, Mass.; Robert M. Spotnitz, Baltimore, and Shaohai Wu, Ellicott City, both of Md., assignors to W.R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 14, 1993, Ser. No. 76,663

Int. Cl.[5] C04B *14/20*

U.S. Cl. 423—328.1 15 Claims

1. A vermiculite composition having the capability of exhibiting enhanced volume increase upon subjection to thermal exfoliation consisting essentially of a vermiculite ore concentrate material having at least 90% of at least one unexpanded vermiculite mineralogical specie or mixtures thereof having a specific density in the range of from 2.5 g/cm^3 to 2.9 g/cm^3.

5,340,559

GRANULAR ALKALI METAL SILICATE PRODUCTION

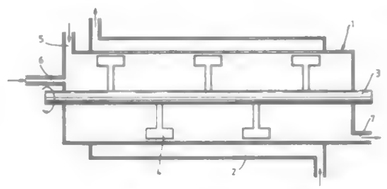
Francois Delwel, Dordrecht; Theo J. Osinga, Cadier en Keer; Joseph P. Theunissen, Eysden, and Jack M. Vrancken, Maastricht, all of Netherlands, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Jul. 2, 1992, Ser. No. 908,707

Claims priority, application European Pat. Off., Jul. 2, 1991, 91305996.0

Int. Cl.[5] C01B *33/32*

U.S. Cl. 423—334 10 Claims



1. A method of preparing alkali metal silicate granules in which a solution containing about 30% to about 53% w/w of alkali metal silicate with a SiO_2:M_2O molar ratio in the range 1.5:1 to 3.3:1 is formed into granules having an average particle size in the range from about 0.2 mm to about 2 mm in a single evaporating and granulation stage wherein the silicate solution is introduced into a drum containing a multiplicity of rotating arms proximate its internal surface, which has a temperature from about 150° C. to about 200° C., and a gas is introduced into the drum at a temperature in the range from about 175° C. to about 250° C.

5,340,560

METHOD FOR MAKING FUMED SILICA HAVING A REDUCED AGGREGATE SIZE AND PRODUCT

Donald F. Rohr, Charlton; Stanlee T. Buddle, Gloversville; Paul R. Wilson, Scotia, and Michael A. Zumbrum, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 30, 1993, Ser. No. 54,477

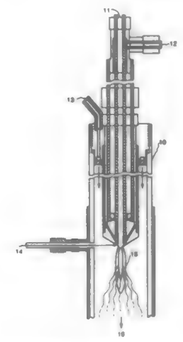
Int. Cl.[5] C01B *33/12*

U.S. Cl. 423—337 5 Claims

1. A method for making fumed silica aggregate having a surface area in the range of 75–500 m^2/g, and an average convex perimeter in the range of about 0.12 micron to about 0.60 micron, which comprises feeding into a combustion chamber, quench air and a gaseous combustible mixture, where the gaseous combustible mixture comprises a mixture of a silicon compound selected from the group consisting of a silane, organosilane, and mixtures thereof, and a mixture of elements selected from the group consisting of,

(a) oxygen and hydrogen and

(b) oxygen, hydrogen and nitrogen, and there is present in the gaseous combustible mixture from about 0.05 to about 2.5 mole % of the silicon compound based on the total moles in the gaseous combustible mixture and sufficient oxygen in the gaseous combustible mixture to produce a



flame in the combustion chamber having calculated adiabatic flame temperature in the range of about 1400° C. to 2000° C. combusting said gaseous combustible mixture at an adiabatic temperature of about 1400° C. to 2000° C. to produce said fumed silica aggregate; recovering said fumed silica aggregate.

5,340,561

PROCESS FO THE PRODUCTION OF Si_2N_4 USING A SILICON, PHOSPHOROUS AND NITROGEN CONTAINING PRECURSOR

Hans-Peter Baldus, Burscheid, and Wolfgang Schnick, Bonn, both of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 1,559, Jan. 6, 1993, Pat. No. 5,296,211. This application Dec. 20, 1993, Ser. No. 170,097

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1992, 4200787

Int. Cl.[5] C01B *33/00*

U.S. Cl. 423—344 17 Claims

1. A process for the production of low-needle silicon nitride of at least 90% α-content, wherein an amorphous nitrogen-containing silane compound is mixed with a crystalline or amorphous compound comprising the elements silicon, phosphorus and nitrogen to form a mixture and said mixture is heat-treated at temperatures above 1000° C. to form said silicon nitride.

5,340,562

HYDROTHERMAL SYNTHESIS OF OCTAHEDRAL MOLECULAR SIEVE

Chi-Lin O'Young, Poughkeepsie, N.Y.; Yan-Fei Shen, Storrs, Conn.; Richard P. Zerger, McPherson, Kans., and Steven L. Suib, Storrs, Conn., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 2, 1993, Ser. No. 42,171

Int. Cl.[5] C10G *45/12*

U.S. Cl. 423—599 12 Claims

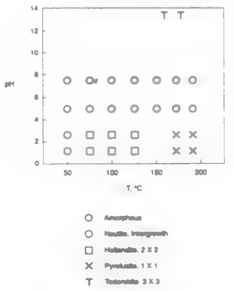
1. A process for the hydrothermal synthesis of todorokite comprising;

(a) preparing a basic mixture of a manganous salt, a permanganate salt and a soluble basic material and having a pH of at least about 13;

(b) aging said mixture at room temperature for at last 8 hours;

(c) filtering and washing said aged mixture to render said mixture essentially chlorine-free;

(d) ion exchanging said filtered mixture with a magnesium salt at room temperature for about 10 hours; and



(e) filtering, washing and autoclaving said exchanged mixture at a temperature of about 100° to about 200° C. to form said product todorokite.

5,340,563

PREPARATION OF ZEOLITES USING LOW SILICA/ALUMINA ZEOLITES AS A SOURCE OF ALUMINUM

Stacey I. Zones, San Francisco, and Yumi Nakagawa, Kensington, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 30, 1992, Ser. No. 908,680

The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[5] C01B *33/26*

U.S. Cl. 423—706 14 Claims

1. A method for preparing crystalline aluminosilicate zeolites SSZ-25, SSZ-31, SSZ-37, Beta and ZSM-12, said method comprising:

(a) preparing a reaction mixture containing a source zeolite, wherein said source zeolite contains sodalite substructures and has a tetrahedra atom density of less than about 15 TO_2 per 1000 Å^3, an alkali metal oxide, an organic template capable of forming said aluminosilicate zeolite, a source of silica, and water, and having a composition in terms of mole ratios of oxides falling within the following ranges:

M^+/SiO_2	= 0.01–1.00
OH/SiO_2	= 0.15–0.80
H_2O/SiO_2	= 20–120
Q/SiO_2	= 0.10–1.00
SiO_2/Y_2O_3	= Greater Than 8

wherein M^+ is an alkali metal not supplied by the source zeolite, Q is said organic template and is selected from cyclic or polycyclic tetraalkylammonium compounds having the N^+ incorporated into or attached directly to the ring, and Y is aluminum from the source zeolite, and

(b) maintaining said reaction mixture at crystallization temperature until crystals are formed, wherein said crystals have a pore size greater than 7 Å; and

(c) recovering said crystals.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,564

FORMULATIONS COMPRISING OLIN 10-G TO PREVENT PARTICLE AGGREGATION AND INCREASE STABILITY

Kathleen J. Illig, Phoenixville, and Pramod Sarpotdar, Malvern, both of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 10, 1992, Ser. No. 988,564
Int. Cl.[5] A61K *9/14, 31/075*
U.S. Cl. 424—9 **8 Claims**

1. A heat sterilized composition comprised of nanoparticles consisting essentially of a diagnostic or therapeutic agent having at least one surface modifier adsorbed on the surface thereof and having p-isononylphenoxypoly(glycidol) in an amount of 1–75% by weight based on the total weight of said nanoparticles as said surface modifier, wherein said nanoparticles are resistant to particle size growth when said composition is heat sterilized at 121° C. for 20 minutes.

5,340,565

TUMOR OR CANCER CELL KILLING THERAPY AND AGENTS USEFUL THEREFOR

Ronald W. Pero, New York, N.Y., assignor to Oxi-Gene, Inc., New York, N.Y.

Continuation of Ser. No. 89,477, Aug. 25, 1987. This application Jun. 10, 1992, Ser. No. 896,236
Int. Cl.[5] A61K *49/00;* **G01N** *33/15*
U.S. Cl. 424—10 **7 Claims**

1. A method of inhibiting or killing tumor or cancer cells in a human patient which comprises treating the patient with a chemotherapeutic agent or radiation while administering to the patient an N-substituted benzamide, that can activate ADPRT, in an amount effective to increase the cytotoxicity of the chemotherapeutic agent or the radiation.

5,340,566

METHOD FOR PREVENTING THE PROGRESSION OF GINGIVITIS

John P. Curtis, Bloomsbury; Susan E. Greenfeder, Metuchen, both of N.J.; Bill Seiden, Syosset, N.Y., and Michael L. Lees, Basking Ridge, N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Filed Aug. 9, 1993, Ser. No. 103,874
Int. Cl.[5] A61K *7/16, 9/68*
U.S. Cl. 424—49 **5 Claims**

1. A method of treating and preventing gingivitis involving a patient suffering from or wishing to prevent the progression of gingivitis, the method comprising the daily oral hygiene routine of brushing the patient's teeth with a toothpaste at least two times a day and the patient chewing a chewing gum for at least 20 minutes at about two and about three hour intervals after having eaten each of at least two daily meals, such routine being effective to reduce gingivitis to a level not attainable by either brushing of said toothpaste or chewing of said chewing gum, if either is employed alone.

5,340,567

SUNSCREEN COMPOSITIONS

Curtis A. Cole, Langhorne, Pa.; Martin K. O. Lindemann, Bridgewater, N.J.; Elvin R. Lukenbach, Flemington, N.J., and Ralph C. Stutzman, Ringoes, N.J., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.

Continuation of Ser. No. 452,028, Dec. 15, 1989, abandoned. This application Jan. 30, 1992, Ser. No. 827,908
Int. Cl.[5] A61K *7/42, 9/10*
U.S. Cl. 424—59 **8 Claims**

1. A sunscreen composition comprising an extending medium and a synergistic combination of titanium dioxide having a particle size of less than about 35 mμ and zinc oxide having a particle size of less than about 50 mμ; said titanium dioxide and zinc oxide being present in a weight ratio of from about 1:25 to 10:1 and the total of said titanium dioxide and zinc oxide comprising from about 4.0 to about 25.0% by weight of the total composition.

5,340,568

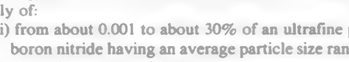
TOPICAL COMPOSITION AND METHOD CONTAINING DEOXY AND HALO DERIVATIVES OF LYSOPHOSPHATIDIC ACIDS FOR REGULATING SKIN WHINKLES

Gary A. Piazza, West Chester; Adam W. Mazar, Cincinnati, and Gerald B. Kasting, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 1, 1992, Ser. No. 907,265
Int. Cl.[5] A61K *7/42, 7/44, 9/10, 9/12*
U.S. Cl. 424—59 **14 Claims**

1. A composition for topical application for preventing, retarding, arresting or reversing the process of wrinkle formation in mammalian skin comprising:

(a) a safe and effective amount of a 2-deoxy- or 2-deoxy-2-halo-lysophosphatidic acid compound having the structure:



or a pharmaceutically acceptable salt thereof, wherein —R is unsubstituted or substituted, with a substituent selected from the group consisting of halogen, hydroxy, phenyl, amino and acylamino, saturated or unsaturated, straight or branched chain alkyl having from 11 to about 23 carbon atoms; each —X— independently —O— or —S—; —Y— is —O— or $—CH_2$; and —Z is —H or halo; and

(b) a topical carrier.

5,340,569

COLOR COSMETIC COMPOSITION

Marianne Elliott, Seymour; Lee A. Gallagher, Hamden, and Caridad Hechavarria, New Haven, all of Conn., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Filed Sep. 10, 1992, Ser. No. 943,164
Int. Cl.[5] A61K *7/021, 7/031*
U.S. Cl. 424—63 **4 Claims**

1. A powdered color cosmetic composition consisting essentially of:

(i) from about 0.001 to about 30% of an ultrafine powdered boron nitride having an average particle size ranging from about 0.1 to about 30 microns;

(ii) from about 0.001 to about 30% of magnesium myristate having an average particle size ranging from about 5 to about 20 microns; and

(iii) from about 0.5 to about 99% of a pharmaceutically acceptable vehicle which is a talc having an average particle size of from 4 to 9 microns; and

(iv) from 1 to 10% of a colorant selected from the group consisting of D&C Red 7; D&C Yellow 5; D&C Red 30; D&C Red 6; D&C Orange 4; Carmine; Green Chromium Oxide; Ultramarine Rose; Brown Iron Oxide; Red Iron Oxide; Russet Iron Oxide; Russet Iron Oxide; Yellow Iron Oxide; Black Iron Oxide; Manganese Violet, Ultramarine Blue, Prussian Blue; and combinations thereof.

5,340,570

DISPENSING SYSTEM FOR SPRAYABLE GEL-TYPE HAIR CONDITIONER

Stephanie Wong, Bridgeport; Teresa Ferullo, Wilton, and Thomas M. Schultz, Ridgefield, all of Conn., assignors to Shiseido Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 793,157, Nov. 18, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,530
Int. Cl.[5] A61K *7/06*
U.S. Cl. 424—71 **3 Claims**

1. A product delivery system for dispensing a viscous, hair conditioning gel product in a spray mist form, said delivery system comprising

A. a container for holding the viscous hair conditioning gel product;

B. a finger actuated pump
   a. mounted to the container,
   b. incorporating a movable actuator having a plurality of delivery apertures each comprising a diameter ranging between about 0.010 and 0.030 millimeters, and
   c. cooperatively associated with the hair conditioning gel product for delivering the gel product through the plurality of apertures formed in the movable actuator; and

C. a viscous hair conditioning gel product comprising
   a. hair conditioning ingredients,
   b. between about 0.10% and 10% by weight of the total gel product of an alkyl polyol selected from the group consisting of glycerin, propylene, glycol, sorbitol, hydrogenated starch hydrolysate, 1–3 butylene glycol, and diethylene glycol,
   c. between about 0.02% and 5% by weight of the total gel product of a water soluble or emulsifiable silicone based compound selected from the group consisting of amodimethicone, dimethicone, dimethicone copolyol, stearoxytrimethylsilane and stearoxy dimethicone; and
   d. a viscosity ranging between about 1,000 and 15,000 centipoises; whereby a dispensing system is achieved for delivering a viscous hair conditioning gel product in a spray mist form.

5,340,571

NON-AEROSOL SHAVING GEL

William R. Grace, Reading, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Mar. 26, 1993, Ser. No. 37,958
Int. Cl.[5] A61K *7/15*
U.S. Cl. 424—73 **6 Claims**

1. A non-aerosol shaving composition in the form of a clear gel consisting essentially of in percent by weight, with the balance being water,

(a) about 15 to 20% of a mixture of potassium myristate and potassium palmitate wherein the myristic acid to palmitic acid ratio is about 2 to 1;

(b) about 2 to 4% Oleth-20;

(c) about 1 to 5% sodium lauroyl sarcosinate; and

(d) about 1 to 2% hydroxyethylcellulose, about 1 to 3% sorbitol, and about 1 to 2% PEG-150 distearate.

5,340,572

ALKALINE OPHTHALMIC SUSPENSIONS

Rajesh Patel, San Mateo; Lyle Bowman, Pleasanton; Margarita Vildaver, Napa, and Raymond Chen, Union City, all of Calif., assignors to Insite Vision Incorporated, Alameda, Calif.

Filed Feb. 8, 1993, Ser. No. 14,512
Int. Cl.[5] A61K *31/74, 9/14;* **A61F** *2/14*
U.S. Cl. 424—78.04 **18 Claims**

1. A sustained release topical ophthalmic medicament delivery system, comprising:

an aqueous ophthalmic gel suspension at a pH equal to or greater than about 7.5 and an osmotic pressure of from about 10 to about 400 mOsM containing a pharmaceutically effective amount of one or more ophthalmic medicaments, at least one of the medicaments having multiple amine groups, and from about 0.05% to about 10.0% by weight, based on the total weight of the suspension, of a lightly cross-linked carboxyl-containing polymer with less than about 5% by weight of a cross-linking agent, such weight percentage being based on the total weight of monomers polymerized,

said suspension having a viscosity of from about 1,000 to about 100,000 centipoises prior to administration to the eye and being administrable to the eye in drop or ribbon form,

said polymer having an average particle size of not more than about 50 μm in equivalent spherical diameter, wherein, upon contact of the suspension with the tear fluid of the eye, the suspension remains a gel in the eye for a prolonged period of time allowing for the sustained release of the one or more medicaments contained therein.

5,340,573

METHOD FOR REDUCING CHOLESTEROL BY CO-ADMINISTERING M-CSF AND CONVENTIONAL CHOLESTEROL REDUCING AGENTS

Marc Garnick, Brookline, Mass., assignor to Genetics Institute, Inc., Cambridge, Mass.

Continuation of Ser. No. 709,451, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 281,432, Dec. 8, 1988, Pat. No. 5,021,239, which is a continuation-in-part of Ser. No. 170,478, Mar. 21, 1988, Pat. No. 5,019,381. This application Mar. 8, 1993, Ser. No. 27,918
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[5] A61K *37/02*
U.S. Cl. 424—85.1 **4 Claims**

1. In the method for reducing cholesterol levels in a mammal by administering a cholesterol-reducing agent selected from the group consisting of lovastatin, cholestipol, lopid, cholestyramine and probucol, the improvement comprising conjointly administering to said mammal M-CSF; whereby the lipoprotein cholesterol profile is thereby improved.

5,340,574

STABILIZED NON-GLYCOSYLATED RECOMBINANT HUMAN IL2 IN REDUCED FORM COMPOSITIONS

Bruno Maneglier, Paris, and Bernard Voncken, Fosses sur Villiers, both of France, assignors to Roussel-UCLAF, France

Filed Dec. 11, 1992, Ser. No. 989,230
Claims priority, application France, Dec. 12, 1991, 91-15418
Int. Cl.[5] A61K *45/05*
U.S. Cl. 424—85.2 **13 Claims**

1. A stabilized composition comprising an effective amount of non-glycosylated recombinant human IL2 in reduced form, citric acid, mannitol and a preservative effective amount of a mixture of dextran and mono-calcium and disodium ethylenediamine tetraacetate (EDTA calcium salt).

5,340,575

COMPLEX SUITABLE FOR CARRYING OUT A METHOD OF PURIFYING PRE-S HEPATITIS B SURFACE ANTIGEN

Johann Eibl; Friedrich Dorner, both of Vienna, and Artur Mitterer, Orth/Donau, all of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Division of Ser. No. 789,743, Nov. 8, 1991, Pat. No. 5,274,081, which is a division of Ser. No. 578,939, Sep. 7, 1990, abandoned. This application Sep. 3, 1993, Ser. No. 115,752
Claims priority, application Austria, Sep. 9, 1989, 2198/89
Int. Cl.[5] A61K *39/12;* **G01N** *33/569;* **C12N** *7/02;* **C07K** *3/12*
U.S. Cl. 424—196.11 **18 Claims**

1. A method of preparing hepatitis vaccines, comprising the steps of:

purifying pre-S hepatitis B surface antigen by binding a pre-S(2)-region of said pre-S hepatitis B surface antigen to a complex comprised of monomeric human albumin covalently bound to an insoluble polymer carrier; and

containing said pre-S hepatitis B surface antigen from said purifying step in an appropriate vessel.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,576

Patent Not Issued For This Number

5,340,577

PROBIOTIC FOR CONTROL OF SALMONELLA

David J. Nisbet; Donald E. Corrier, and John R. DeLoach, all of College Station, Tex., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 29, 1992, Ser. No. 921,173
Int. Cl.[5] A61K *35/74*
U.S. Cl. 424—93.21 27 Claims

1. A composition for inhibiting Salmonella colonization of fowl comprising populations of substantially biologically pure bacteria, said bacteria comprising:
(a) at least one lactobacillus species;
(b) one or both of:
Lactococcus lactis, and
Citrobacter freundii; and
(c) at least one of:
one or more Enterococcus species,
one or more Bifidobacterium species,
one or more Propionibacterium species, and
one or more Escherichia species.

5,340,578

METHOD FOR CONTROLLING RED ALDER USING *NECTRIA DITISSIMA* ATCC 74260

Charles E. Dorworth, Victoria, Canada, assignor to Forestry Canada, Hull, Canada

Filed Jul. 7, 1993, Ser. No. 87,005
Int. Cl.[5] A01N *63/00*; A61K *37/00*; C12N *1/00, 1/19*
U.S. Cl. 504—117 7 Claims

1. A biological method of controlling red alder tree comprising the step of injecting a cylindrical charge containing *Nectria ditissima* ATCC 74260 into the tree.

5,340,579

METHOD OF TREATING DERMATOLOGICAL CONDITIONS

Riccardo Casero, deceased, late of Como, Italy by Patrizia Magnasco Casero, executor, Francesca Margaret Casero, Elisabetta Giovanna, heirs , assignor to Farmaka S.r.l., Grandate, Italy

Continuation-in-part of Ser. No. 83,944, Aug. 4, 1987, abandoned, which is a continuation of Ser. No. 797,685, Nov. 13, 1985, abandoned. This application Jun. 20, 1990, Ser. No. 541,119
Claims priority, application Italy, Nov. 20, 1984, 23676 A/84
Int. Cl.[5] A61K *35/00, 37/00, 37/02, 37/10*
U.S. Cl. 424—114 6 Claims

1. A method for hydrating skin in a host in need thereof comprising administering to the skin of said host an effective amount of a composition comprising:
(a) from about 0.1% to about 2.0% by weight of the total composition of mucopolysaccharides free of proteins and having a pH ranging from about 5 to about 7.5 in aqueous solution, a rotary power between about 0° and +15°, and a sulfur content about 6%;
(b) from about 1% to about 3% by weight of the total composition of an aqueous extract of human umbilical cord wherein said extract produces a residue of about 2 to 3% at evaporation and is free from sulfur and having a pH of from about 5 to about 7, a viscosity at 30° C. of from 10 to 25 centistokes, a hyaluronic acid titre of from about 500 to about 700 mg/dl, and an ash content of about 0.1 to about 0.5%.
(c) from about 0.05 to about 0.08% by weight of the total composition of tetrahydrofurfuryl nicotinate; and
(d) pharmaceutically acceptable vehicles.

5,340,580

AGGLOMERATED PSYLLIUM HUSK CONTAINING EDIBLE ACID

Melvin A. Barbera, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 858,448, Mar. 25, 1992, Pat. No. 5,219,570, which is a continuation of Ser. No. 391,915, Aug. 10, 1989, abandoned. This application May 6, 1993, Ser. No. 58,506
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] A61K *35/78, 31/70*
U.S. Cl. 424—189.1 8 Claims

1. Agglomerated psyllium husk comprising:
(a) from about 25% to about 99% psyllium husk;
(b) from about 0.5% to about 20% of maltodextrin coating on said psyllium husk; and
(c) from about 0.5% to about 20% of edible acid which has been selected from the group consisting of ascorbic acid, malic acid, succinic acid, tartaric acid, phosphoric acid, mono-potassium phosphate, and mixtures thereof, and which is uniformly dispersed throughout the maltodextrin coating on said psyllium husk, and wherein further said agglomerated psyllium husk comprises less than about 20% sugar.

5,340,581

SUSTAINED-RELEASE MATRICES FOR DENTAL APPLICATION

Mingchih M. Tseng, Hingham, and Carl M. Philbrook, Jamaica Plain, both of Mass., assignors to Gillette Canada, Inc., Kirkland, Canada

Continuation-in-part of Ser. No. 749,137, Aug. 23, 1991, abandoned. This application Jun. 15, 1992, Ser. No. 898,471
Int. Cl.[5] A61K *7/16, 9/22, 9/26*
U.S. Cl. 424—401 24 Claims

1. An oral brush comprising:
a body comprising a handle and head;
a bristle portion formed of tufts of bristles connected to the head of said body; and
a sustained-release template comprising a water-insoluble support resin, a water-soluble polymer that dissolves from said template when said template is exposed to water, and an antimicrobial agent,
said template being attached to said head at the base of the tufts of bristles and including a set of holes corresponding to the pattern of the tufts of bristles so that said tufts can extend through said holes, or being attached to the brush in some other manner on or sufficiently close to the head of the brush so that said template is inserted into the mouth during normal use of the brush,
said template being sufficiently thick to ensure adequate mechanical strength, said thickness being up to about 10 mm.

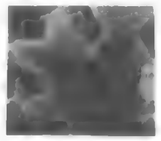
5,340,582

BARIUM SULFATE COSMETIC COMPOSITION

Hiroki Sugisawa; Satoshi Takano, both of Funabashi; Mikio Sakaguchi; Ichiro Sakamoto, both of Wakayama; Minoru Iwata, Matsudo; Nariyuki Kurotani, Chiba; Hideaki Koizumi, Tokyo; Hiroshi Itoh, Koganei, and Risa Maejima, Kasukabe, all of Japan, assignors to KAO Corporation, Tokyo, Japan

Division of Ser. No. 936,202, Aug. 27, 1992, Pat. No. 5,262,148, which is a continuation of Ser. No. 665,583, Mar. 6, 1991, Pat. No. 5,171,572. This application Jul. 29, 1993, Ser. No. 98,819
Claims priority, application Japan, Mar. 7, 1990, 2-55645; Apr. 24, 1990, 2-108232; Jun. 6, 1990, 2-147650; Aug. 29, 1990, 2-227559; Dec. 27, 1990, 2-414786
Int. Cl.[5] A61K *7/02*
U.S. Cl. 424—401 3 Claims

1. A cosmetic composition comprising: a thin film containing silicon oil and barium sulfate, said thin film of 25 μm thickness with 20% by weight of barium sulfate powder concentration



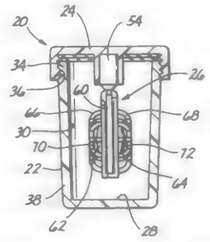
having a scattering transmittance of 70% or greater and a total transmittance of 85% or greater.

5,340,583

ANTIMICROBIAL LENSES AND LENS CARE SYSTEMS

Anthony J. Dzinbo, Lake Forest; Alix A. Holmes, Costa Mesa; Claude B. Anger, Long Beach; John C. Baker, Irvine, and Lin Peng, Tustin, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed May 6, 1993, Ser. No. 59,025
Int. Cl.[5] A01N *25/34*; G02C *7/04*
U.S. Cl. 424—412 13 Claims



1. A contact lens case comprising at least one container section sized and adapted to define a space in which to hold a contact lens when the contact lens is not in use, said at least one container section being made at least partially of a material comprising a polymeric material and an antimicrobial component which is non-leachable under normal use conditions and is present in an amount effective against one or more microorganisms to which a contact lens is exposed.

5,340,584

METHODS AND FORMULATIONS FOR USE IN INHIBITING CONCEPTION AND IN TREATING BENIGN GYNECOLOGICAL DISORDERS

Darcy V. Spicer, Pasadena, and Malcolm C. Pike, Long Beach, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

PCT No. PCT/US92/02973, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993
Continuation-in-part of Ser. No. 684,612, Apr. 12, 1991, abandoned. This PCT application Apr. 10, 1992, Ser. No. 952,513
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] A61F *2/02, 6/06*; A61K *37/38, 9/50*
U.S. Cl. 424—426 32 Claims

1. A composition comprising:
a slow-release formulation of a gonadotropin hormone releasing hormone composition which maintains serum level of said gonadotropin hormone releasing hormone composition in a female mammal at a level effective to suppress ovarian estrogen and progesterone production over a first period of time, said GnRH composition being administered so as to provide between about 0.0001 and about 10 mg/kg of body weight per day;
a slow-release formulation of an estrogenic composition which maintains serum level of said estrogenic composition over said first period of time at a level effective to prevent symptoms of estrogen deficiency, said level being equivalent to a serum level of estradiol of between about 25 and about 140 pg/ml; and
a slow-release formulation of a progestogen which maintains serum level of said progestogen at a first level effective to induce a secretory endometrium for at least 5 to about 20 days and at a second lower level effective to decrease endometrial cell proliferation for a remainder, if any, of a second period of time, said second period of time being substantially shorter than and running simultaneously with a portion of said first period of time, said first level being equivalent to a serum level of progesterone of between about 5 and about 20 ng/ml and said second level being equivalent to a serum level of progesterone of between about 0.5 and about 4 ng/ml.

5,340,585

METHOD AND FORMULATIONS FOR USE IN TREATING BENIGN GYNECOLOGICAL DISORDERS

Malcolm C. Pike, Long Beach, and Darcy V. Spicer, Pasadena, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 952,513, Dec. 3, 1992, which is a continuation-in-part of Ser. No. 684,612, Apr. 12, 1991, Pat. No. 5,211,952. This application May 17, 1993, Ser. No. 62,883
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] A61F *2/02, 6/06*; A61K *37/38, 9/50*
U.S. Cl. 424—426 21 Claims

1. A composition comprising:
a slow-release formulation of a gonadotropin hormone releasing hormone composition which maintains serum level of said gonadotropin hormone releasing hormone composition in a female mammal at a level effective to suppress ovarian estrogen and progesterone production over a period of time, wherein said gonadotropin hormone release hormone composition is administered at a rate between about 0.0001 and 10 mg/kg of body weight per day; and
a slow-release formulation of an estrogenic composition which maintains serum level of said estrogenic composition over said period of time at a level effective to prevent symptoms and signs of estrogen deficiency, wherein said serum level of said estrogenic composition is equivalent to serum estrodiol levels in the range of about 25 to about 140 pg/ml.

5,340,586

METHODS AND FORMULATIONS FOR USE IN TREATING OOPHORECTOMIZED WOMEN

Malcolm C. Pike, Long Beach, and Darcy V. Spicer, Pasadena, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 952,513, Feb. 3, 1993, which is a continuation-in-part of Ser. No. 684,612, Apr. 12, 1991, Pat. No. 5,211,952. This application May 17, 1993, Ser. No. 62,886
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] A61K *9/50, 9/14*
U.S. Cl. 424—426 14 Claims

1. A composition for preventing symptoms and signs of loss of ovarian function in oophorectomized women over a period of time consisting essentially of:
a slow-release formulation of an estrogenic composition which maintains serum level of said estrogenic composition over said period of time at a level effective to prevent symptoms and signs of estrogen deficiency, wherein said

VOL 1165 ISS 4 AG 23 1994 UMI

serum level of said estrogenic composition is equivalent to serum estradiol levels in the range of about 15 to about 50 pg/ml; and

a slow-release formulation of an androgenic hormone which increases serum level of said androgenic hormone over said period of time to a level not exceeding a normal premenopausal level for a patient, wherein said serum level of said androgenic composition is equivalent to serum testosterone levels in the range of about 20 to about 80 ng/dl.

5,340,587

LIPOSOME/BRONCHODILATOR METHOD & SYSTEM

Paul J. Mihalko, Fremont; Robert M. Abra, San Francisco, and Ramachandran Radhakrishnan, Fremont, all of Calif., assignors to Liposome Technology, Inc., Menlo Park, Calif.

Continuation of Ser. No. 22,669, Mar. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 737,221, May 19, 1985, abandoned, Ser. No. 860,528, May 7, 1986, abandoned, and Ser. No. 937,607, Dec. 3, 1986, abandoned. This application Jun. 13, 1989, Ser. No. 366,299

Int. Cl.[5] A61K *9/127, 9/42*

U.S. Cl. 424—450 **7 Claims**

1. A method of treating bronchial constriction, comprising

providing a liposome composition containing a β_2-adrenoreceptor agonist drug in liposome-encapsulated form,

aerosolizing, in a form suitable for inhalation, a metered quantity of the liposome composition containing a β_2-adrenoreceptor drug in liposome-entrapped form, and

delivering the metered quantity of liposome composition to the respiratory tract in a liposome aerosol form to produce (a) substantially the same degree of short-term bronchodilation, (b) substantially longer-term effective bronchodilation, and (c) substantially reduced systemic uptake side effects when compared with the administration of the same drug in free-drug form.

5,340,588

LIPOSPHERE CARRIERS OF VACCINES

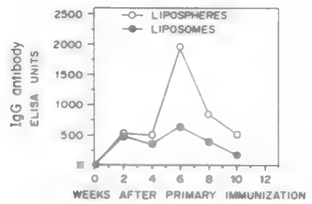
Abraham J. Domb, Baltimore, Md., assignor to Nova Pharmaceutical Corporation, Baltimore, Md.

Continuation of Ser. No. 607,544, Nov. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 435,546, Nov. 13, 1989, abandoned. This application Jan. 23, 1992, Ser. No. 825,287

The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.[5] A61K *37/22, 39/02*

U.S. Cl. 424—450 **31 Claims**



1. A liposphere comprising:

a core formed of a hydrophobic material existing as a solid at a temperature of 25° C., and

a phospholipid coating surrounding the core,

wherein the hydrophobic ends of the phospholipid are embedded in the solid core and the hydrophilip ends of the phospholipid are exposed on the surface of the liposphere, the combination forming a spherical structure having an average particle diameter between 0.35 and 250 microns, wherein the liposphere contains agents having antigenic activity which elicit a cell mediated immune response or a humoral immune response when administered to a human or animal.

5,340,589

LOW SOLUBILITY DRUG-COATED BEAD COMPOSITIONS

Gregg Stetsko, Bethlehem, N.Y., and Kuei-Tu Chang, Mountain Lakes, N.J., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 700,968, May 16, 1991, Pat. No. 5,223,268. This application May 12, 1993, Ser. No. 60,326

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] A61K *9/58*

U.S. Cl. 424—462 **6 Claims**

1. A pharmaceutical capsule filled with from about 40 milligrams to about 700 milligrams of coated sugar or sugar/starch beads coated with from about 10% to about 300% by weight of a coating composition consisting essentially of from about 1% to about 80% by weight of a drug having a solubility of less than 1% by weight in water and from about 1% to about 30% by weight each of a cellulose derivative selected from the group consisting of hydroxypropyl cellulose and hydroxypropyl methylcellulose, a polyethylene glycol or derivative thereof selected from the group consisting of a polyethylene glycol having a molecular weight from about 1,000 to about 8,000 and d-alpha tocopheryl polyethylene glycol 1000 succinate whose polyethylene glycol part has an average formula weight of about 1,000, and a waxy solid selected from the group consisting of the polyoxyethylene-polyoxypropylene-polyoxyethylene block copolymer having the structural formula

$$HO(CH_2CH_2O)_a[CH(CH_3)CH_2O]_b(CH_2CH_2O)_aH$$

Formula I

wherein a has a value of about 79 and b has a value of about 28, sulfobutanedioic acid 1,4-bis(2-ethylhexyl) ester sodium salt, and sulfuric acid monododecyl ester sodium salt.

5,340,590

DELIVERY SYSTEM WITH BILAYER OSMOTIC ENGINE

Patrick S. L. Wong, Palo Alto; Felix Theeuwes; James B. Eckenhoff, both of Los Altos; Steven D. Larsen, Dublin, and Hoa T. Huynh, Union City, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 873,901, Apr. 24, 1992, Pat. No. 5,236,689, which is a continuation-in-part of Ser. No. 701,927, May 17, 1991, Pat. No. 5,110,597, which is a continuation of Ser. No. 495,825, Mar. 19, 1990, Pat. No. 5,023,088, which is a continuation-in-part of Ser. No. 283,772, Dec. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 270,730, Nov. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 66,905, Jun. 25, 1987, abandoned. This application Jul. 8, 1993, Ser. No. 88,931

The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.

Int. Cl.[5] A61K *9/24*

U.S. Cl. 424—473 **11 Claims**

1. An improved dispenser for the delivery of an active agent to a fluid-containing environment, the dispenser comprising, in combination:

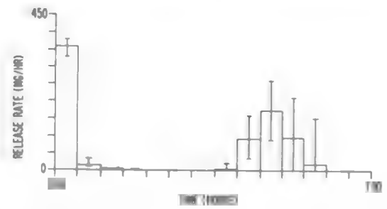
a. a housing open at one end to provide outlet means therefor, at least a portion of said hosing proximate the end of said housing opposite the outlet means permitting passage of the fluid in said environment to the interior of said housing;

b. a fluid-activated driving means within said housing; and;

c. a plurality of solid, discrete dosage units containing said active agent longitudinally disposed within said housing between said driving means and said outlet means, whereby said active agent units will be sequentially displaced from said housing into said fluid environment by said driving means upon exposure of said dispenser to said fluid environment;

wherein the improvement comprises said fluid-activated driving means comprising:

(1) a first member in fluid-transmitting relationship with the means for permitting the passage of fluid in the housing at the proximate the end of said housing oppo-



site said outlet means, said first member being comprises of an osmotic material that absorbs sufficient fluid from said relatively low fluid-containing environment of use so that, upon exposure of said dispenser to said fluid environment, said first osmotic member is the source of motive power for moving the contents of said housing through said outlet means, and

(2) a second member between said first osmotic member and said active agent dosage units and comprised of an osmotic material which does not absorb onto or stick to said active agent units but expands to form a seal against the internal wall of said housing.

5,340,591

METHOD OF PRODUCING A SOLID DISPERSION OF THE SPARINGLY WATER-SOLUBLE DRUG, NILVADIPINE

Minoru Nakano; Toshinobu Uemura, both of Kishiwada; Shinichi Morizane, Osaka; Kiyoshi Okuda, Ohtsu, and Keiko Nakata, Ibaraki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 4, 1993, Ser. No. 300

Claims priority, application Japan, Jan. 24, 1992, 4-010796

Int. Cl.[5] A61K *9/50, 31/44, 47/00*

U.S. Cl. 424—499 **4 Claims**

1. A method for producing a solid dispersion of a sparingly water-soluble drug comprising

mixing a sparingly water-soluble drug and a water-soluble polymer selected from the group consisting of methylcellulose, ethylcellulose, hydroxyethylcellulose, hydroxypropylcellulose, hydroxypropylmethylcellulose, carboxymethylcellulose, polyvinylpyrrolidone, polyvinyl alcohol, gum arabic, dextrin, gelatin and a mixture thereof together while heating in the absence of an organic solvent,

at a heating temperature where neither the sparingly water-soluble drug nor the water-soluble polymer are melted, to yield a solid dispersion,

wherein said mixing is performed by a mixing device selected from the group consisting of a universal mixer and a high-speed stir-granulator; and

wherein said sparingly water-soluble drug is nilvadipine.

5,340,592

LYOPHILIZATION OF ERYTHROCYTES

Raymond P. Goodrich, Jr., and Christine M. Williams, both of Pasadena, Calif., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 195,745, May 18, 1988, abandoned. This application Dec. 30, 1991, Ser. No. 815,893

Int. Cl.[5] A61K *35/18*

U.S. Cl. 424—533 **9 Claims**

1. A process for the lyophilization of viable erythrocytes having a cell membrane, comprising immersing a plurality of viable erythrocytes in a solution which includes a monosaccharide, which is capable of permeating the membrane of the erythrocytes, in a concentration of from about 0.5 to about 4 molar; freezing the solution; and drying the erythrocytes by sublimation of the water.

5,340,593

STABILIZED SOLID THIOCARBONATE

James A. Green, II, Maipu, Chile, and Donald C. Young, Fullerton, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 708,674, May 31, 1991, Pat. No. 5,256,424, which is a continuation of Ser. No. 262,961, Oct. 28, 1988, Pat. No. 5,041,240, which is a continuation-in-part of Ser. No. 128,146, Dec. 3, 1987, Pat. No. 5,022,952, Ser. No. 931,517, Nov. 17, 1986, abandoned, Ser. No. 55,923, May 29, 1987, Pat. No. 5,013,350, Ser. No. 55,719, May 29, 1987, abandoned, and Ser. No. 56,143, May 29, 1987, abandoned, said Ser. No. 128,146, is a continuation-in-part of Ser. No. 685,454, Apr. 30, 1984, Pat. No. 4,726,144, which is a continuation-in-part of Ser. No. 315,492, Oct. 27, 1981, Pat. No. 4,476,113, and Ser. No. 490,461, May 2, 1983, abandoned, said Ser. No. 55,923, is a division of Ser. No. 490,461, May 2, 1983, said Ser. No. 55,719, is a division of Ser. No. 490,461, May 2, 1983, said Ser. No. 56,143, is a continuation-in-part of Ser. No. 490,461, May 2, 1983. This application Mar. 15, 1993, Ser. No. 31,682

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] A61K *31/765;* **A01N** *59/02*

U.S. Cl. 424—715 **30 Claims**

1. A solid thiocarbonate composition produced by removing the water from an aqueous composition, wherein the aqueous composition comprises (a) a thiocarbonate selected from the group consisting of ammonium, alkali, and alkaline earth metal thiocarbonates and combinations thereof, and (b) a member selected from the group consisting of ammonium, alkali, and alkaline earth metal sulfides of the formula M_nS_x; M is selected from ammonium, alkali, and alkaline earth metals and combinations thereof; x is at least 1; n is 2 when M is ammonium or alkali metal; n is 1 when M is an alkaline earth metal; and the aqueous composition comprises a stoichiometric excess of the sulfide.

5,340,594

FOOD PRODUCT HAVING HIGH CONCENTRATIONS OF OMEGA-3 HIGHLY UNSATURATED FATTY ACIDS

William R. Barclay, Boulder, Colo., assignor to OmegaTech Inc., Boulder, Colo.

Division of Ser. No. 580,778, Sep. 11, 1990, Pat. No. 5,130,242, which is a continuation-in-part of Ser. No. 439,093, Nov. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 241,410, Sep. 7, 1988, abandoned. This application Jul. 10, 1992, Ser. No. 911,760

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[5] A23D *9/00*

U.S. Cl. 426—49 **10 Claims**

1. A food product, comprising:

a) lipids extracted from a fermentation process for growing microorganisms selected from the group consisting of microorganisms of the genus Thraustochytrium, microor-

VOL 1165 ISS 4 AG 23 1994 UMI

ganisms of the genus Schizochytrium and mixtures thereof, wherein said microorganisms are capable of effectively producing lipids containing mixtures of omega-3 and omega-6 highly unsaturated fatty acids under conditions comprising:

i) salinity levels less salinity levels found in seawater;

ii) a temperature of at least about 15° C.; and

b) food material.

5,340,595

DRINKS CONTAINERS

Ernest J. Cameron-Price, Tanworth-in-Arden, England, assignor to E J Price (Development) Limited, England

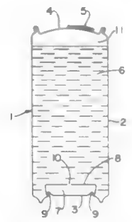
PCT No. PCT/GB91/00272, § 371 Date Oct. 21, 1992, § 102(e) Date Oct. 21, 1992, PCT Pub. No. WO91/13006, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 21, 1991, Ser. No. 940,868

Claims priority, application United Kingdom, Feb. 21, 1990, 9003889.4; Oct. 25, 1990, 9023260.4

Int. Cl.[5] B65B *31/00;* **B65D** *17/00, 25/00*

U.S. Cl. 426—112 **6 Claims**



1. A drinks container comprising a cylindrical wall (2), first and second end walls (3, 4) at opposed ends of the container, one of the end walls (4) comprising an area (5) which is adapted to provide a normally-closed pouring opening to enable drink to be poured from the container, wherein a gas reservoir (7) is defined between a cap (8) and one of the end walls (3), said one end wall being formed with an annular rib (9) which co-operates with the margin of the cap to retain the cap, and to effect an annular seal therewith, the cap being formed with one or more passage means (10) to provide restricted communication between the gas reservoir and the main chamber (6), to enable gas under pressure in the reservoir to pass into drink in the main chamber when the pouring opening is opened.

5,340,596

METHOD FOR PRESERVING THE DEGREE OF FRESHNESS OF EGGS

Ryoji Ohgake, Yachimatamachi; Mitsuo Okada; Hiroyuki Takashima, both of Yokohama; Toshishige Kurosawa, Tokyo; Takashi Kurosawa, Sakai; Seiji Oda, Ashiya; Niro Takemasa, and Kousaku Okamura, both of Kobe, all of Japan, assignors to Nippon Oil Co., Ltd. and Ikari Corporation, Japan

Continuation of Ser. No. 598,255, Oct. 16, 1990, abandoned. This application Oct. 27, 1992, Ser. No. 967,531

Claims priority, application Japan, Jul. 2, 1990, 2-174991

Int. Cl.[5] A23B *5/00*

U.S. Cl. 426—301 **6 Claims**

1. A method for preserving the degree of freshness of poultry eggs which comprises spraying the surface of a shell egg with an effective amount of a composition consisting essentially of a triglyceride of saturated fatty acids (I) of the formula:

$$\begin{array}{l} CH_2{-}OCOR^1 \\ | \\ CH{-}OCOR^2 \\ | \\ CH_2{-}OCOR^3 \end{array} \quad (I)$$

wherein: R^1, R^2 and R^3 are the same or different, linear aliphatic hydrocarbon groups containing from 5 to 11 carbon atoms, and as an essential ingredient, a fatty acid (II) containing from 12 to 20 carbon atoms in an amount of from 0.01 to 0.5% by weight on the basis of the total weight of the composition.

5,340,597

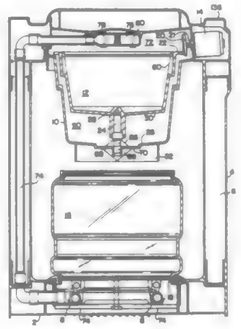
METHOD FOR BREWING COFFEE

Jack J. Gilbert, Roswell, Ga., assignor to Industria Colombiana de Electronicos y Electrodomesticos, Incelt S.A., Carrera, Colombia

Division of Ser. No. 774,077, Oct. 9, 1991, Pat. No. 5,265,517. This application Apr. 19, 1993, Ser. No. 49,747

Int. Cl.[5] A23F *5/26*

U.S. Cl. 426—433 **7 Claims**



1. A coffee brewing method comprising the steps of:

(a) adding a preselected amount of coffee grounds to a basket having a base and a frusto-conically shaped wall extending upward the base at a preselected angle relative to the central axis of the basket;

(b) rotating said basket around its central axis at a speed between about 200 rpm and about 500 rpm, said rotation of said basket forcing said coffee grounds to substantially evenly disperse in a radially outward direction along the bottom of the basket and to rise along the wall of said basket to a predetermined level;

(c) dispersing a preselected and controlled amount of water at a predetermined temperature onto the coffee grounds in said basket as said basket is rotating and forming a coffee grounds-water mixture, the ratio of the water to coffee grounds in said basket being between about 17.5 ml water per gram coffee grounds and about 19 ml water per gram coffee grounds;

(d) maintaining the rotation of the basket and forming an aqueous solution consisting essentially of caffeol and water which rises along the wall of said basket to said predetermined level;

(e) selectively removing said aqueous solution but not said coffee grounds from said basket through a plurality of circumferential ports located in the wall of said basket just below said predetermined level; said ports being substantially equidistantly spaced from the base of said basket and essentially all of the aqueous solution being forced radially outwardly through said ports by said rotation of said basket leaving essentially only said coffee grounds in said basket;

(f) continuing said rotation of said basket at said speed of rotation until essentially all of said aqueous solution introduced into said basket has been separated from said coffee grounds and removed from said basket; and

(g) collecting the separate aqueous solution in a receptacle.

5,340,598

METHOD FOR PRODUCING SPHERICAL SHAPED BAKED GOODS

Richard C. Hay, Jr., Kinnelon; Chris Pappas, Ridgewood; Harry J. Bergstrom, Mendham, and Richard D. Fazzolare, Randolph, all of N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Filed Oct. 15, 1993, Ser. No. 137,528

Int. Cl.[5] A21D *8/00*

U.S. Cl. 426—496 **13 Claims**

1. A method for the production of baked goods comprising:

(a) feeding a farinaceous based dough through at least one die to obtain at least one shaped extrudate dough rope,

(b) cutting each of the shaped extrudate ropes to obtain cylindrical or substantially spherical dough pieces,

(c) Conveying the cylindrical or substantially spherical dough pieces through an oven by means of a conveyer while moving the cylindrical or substantially spherical dough pieces relative to the conveyer so as to promote the production of spherical dough pieces, and

(d) heating the dough pieces while moving the dough pieces relative to the conveyer to leaven the dough pieces into substantially spherical or ellipsoidal baked goods.

5,340,599

METHOD OF MANUFACTURING THREE-DIMENSIONALLY FORMED FOODS

Toshirou Maruyama; Nobuyuki Tsubuki; Sakae Sakaniwa; Isao Yamaura, and Kazuo Minegishi, all of Ooizumimachi, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

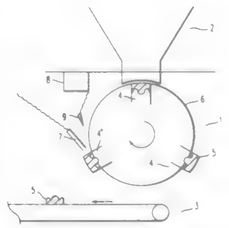
PCT No. PCT/JP92/01145, § 371 Date Jul. 9, 1993, § 102(e) Date Jul. 9, 1993, PCT Pub. No. WO93/04601, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 9, 1992, Ser. No. 39,420

Claims priority, application Japan, Sep. 12, 1991, 3-233420

Int. Cl.[5] A23P *1/00*

U.S. Cl. 426—512 **2 Claims**



1. In a method of manufacturing three-dimensionally formed foods which comprises the step of continuously processing food material into a three-dimensional form by means of a drum-type forming machine with forming blocks whose forming surface is release treated, the improvement comprises the steps of: forming the food material by filing the food material into the forming blocks; extruding the formed food material from the forming blocks thereby raising the formed food material above a surface of the drum-type forming machine; and separating the formed food material from the surface of the drum-type forming machine by jetting compressed air thereto.

5,340,600

LOW FAT SPREAD WITH NON-PROTEINACEOUS CRYSTAL INHIBITORS

Freek Reckweg, Columbia; Michael Chiaverini, Towson, and Scott A. Lehouiller, Catonsville, all of Md., assignors to Van Den Bergh Foods Company, Division of Conopco, Inc., Lisle, Ill.

Filed Feb. 17, 1993, Ser. No. 18,665

Int. Cl.[5] A23D *7/00*

U.S. Cl. 426—603 **8 Claims**

1. An edible spread consisting essentially of:

(a) about 30 to about 40 wt. % of a fat phase containing 0.05 to 0.5 wt. % based on total composition of a non-proteinaceous fat crystallization inhibitor having an HLB value of 5 to 10 and up to about 0.4 wt. % of a non-proteinaceous emulsifier system; and

(b) about 60 to about 70 wt. % of an aqueous phase having about 0.005 to less than about 0.1% of a dairy protein,

wherein the spread composition is stable for at least 5 weeks at 5° C.

5,340,601

SIMULATED EGG-YOLK COMPOSITIONS, PRODUCTS, AND METHODS OF MAKING

Eustathios Vassiliou, 12 S. Townview La., Newark, Del. 19711

Continuation-in-part of Ser. No. 75,106, Jun. 11, 1993, which is a continuation-in-part of Ser. No. 930,105, Aug. 14, 1992, Pat. No. 5,227,189, which is a continuation-in-part of Ser. No. 750,116, Aug. 19, 1991, Pat. No. 5,151,293, which is a continuation-in-part of Ser. No. 551,160, Jul. 11, 1990, Pat. No. 5,0763,399. This application Aug. 11, 1993, Ser. No. 104,709

Int. Cl.[5] A23L *1/32*

U.S. Cl. 426—614 **52 Claims**

26. A method of making a simulated egg-yolk composition comprising the steps of:

adding a colorant to egg-whites, the egg-whites selected from the group consisting of natural egg-white and natural egg-white containing additional albumin;

coagulating the egg-whites thermally;

force-filtering the thermally coagulated egg-whites;

pureeing the thusly treated egg-whites; and

adding a grain preserving agent;

with the requirement that the composition is enriched in solids and attains a consistency resembling that of real pureed hard-boiled egg-yolk, for a period of time of more than 10% longer in the presence of the grain preserving agent than in the absence of said grain preserving agent when the egg composition is maintained at substantially 45° F. for 25 hours.

5,340,602

PROCESS FOR THE PRODUCTION OF LOW CHOLESTEROL BUTTERFAT OR BUTTER

Hermann Hoche, 8567, Neunkirchen-Speikern, Fed. Rep. of Germany

Continuation of Ser. No. 892,596, May 28, 1992, abandoned, which is a continuation of Ser. No. 634,164, Dec. 13, 1990, abandoned. This application Sep. 7, 1993, Ser. No. 117,547

Claims priority, application European Pat. Off., Apr. 20, 1989, 89107138.3

Int. Cl.[5] A23C *15/00*

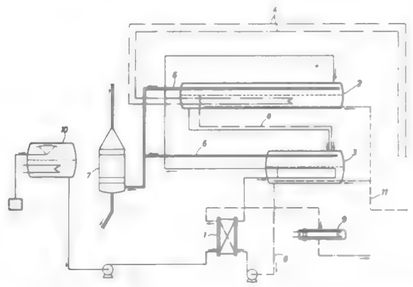
U.S. Cl. 426—664 **14 Claims**

1. A process for the production of low cholesterol butter fat and/or low cholesterol butter by steam treatment, comprising the steps of:

treating butter or butter fat in one or a plurality of horizontal or slightly inclined reaction pipes at a temperature of 195°–250° C. and at a pressure from 0.5–5 mbar with steam such that the butter or butter fat becomes liquified, wherein the temperature during the steam treatment does not exceed 250° C., and wherein the steam is injected from one or a plurality of parallel steam pipes which extend

VOL 1165 ISS 4 AG 23 1994 UMI

over the entire length of the reaction pipe in the axial direction thereof and which extend through a layer of liquid butter or butter fat therein and which steam pipes are provided with boreholes in the pipe wall as outlet apertures for the steam such that the steam emerges from the boreholes into a liquid butter or butter fat stream flowing in the direction of the axis of the reaction pipe;



separating vapors produced by the steam treatment from the butter or butter fat;

cooling the butter or butter fat ; and

recovering butter or butter fat which is substantially unaltered in taste.

5,340,603

NUTRITIONAL PRODUCT FOR HUMAN INFANTS HAVING CHRONIC LUNG DISEASE

Michael J. Neylan, Worthington; Karin M. Ostrom, Reynoldsburg; Helen R. Churella, Columbus; Merlin D. Breen, Westerville, and John D. Benson, Powell, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Aug. 30, 1993, Ser. No. 114,033

Int. Cl.[5] A23C *11/10*

U.S. Cl. 426—73 **13 Claims**

1. An infant formula comprising:

a) protein at a concentration of between 25 and 35 grams per liter of formula;

b) fat at a concentration of between 65 and 85 grams per liter of formula;

c) carbohydrates at a concentration of between 40 and 75 grams per liter of formula;

d) inositol;

e) a calcium to phosphorous ratio in the range of 1.4 to 2.2;

f) a caloric density of not less than 800 kilocalories/liter and not more than 1200 kilocalories/liter; and

g) wherein at least 56% of said calories in said infant formula are derived from fat and the nutritional product is specially formulated for use in the management of human infants having compromised lung function.

5,340,604

METHOD FOR MANUFACTURING A COMPOSITE VAPOR DEPOSITION FILM

Ogura Atsushi, 2-14-30, Yukinoshita, Kamakura, Kanagawa, Japan

Filed Mar. 22, 1991, Ser. No. 675,753

Claims priority, application Japan, Mar. 30, 1990, 2-80691; Nov. 27, 1990, 2-320689

Int. Cl.[5] B05D *3/06*

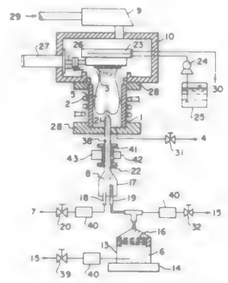
U.S. Cl. 427—10 **17 Claims**

1. A method for preparing a composite vapor depositions film comprising the steps of:

reducing by alkali reduction an aqueous solution of a composite complex salt comprising at least two different ions and a salt component;

removing from said ions said composite salt component and the moisture of said aqueous solution;

evaporating with thermal energy of high temperature plasma energy in high density active energy state said ions to form a composite vapor phase substance of said ions;



depositing said composite vapor phase substance of said ions on a deposition substrate; and

cooling said deposited composite vapor phase substance of said ions, thereby producing said composite vapor deposition film.

5,340,605

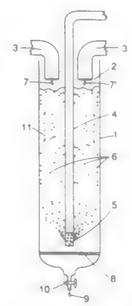
METHOD FOR PLATING WITH METAL OXIDES

Gary L. Silver, Centerville, and Frank S. Martin, Farmersville, both of Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 5, 1993, Ser. No. 26,643

Int. Cl.[5] B05D *1/00*

U.S. Cl. 427—126.3 **11 Claims**



1. A method of plating metal oxides on substrates, comprising the steps of:

providing a dilute aqueous solution of metal ions which, when oxidized, form metal oxide which is insoluble in water;

providing at least one oxidizing agent which can react with said metal ions to form said metal oxide;

providing at least one substrate onto which said metal oxide is to be deposited; and

mixing said oxidizing agent with said aqueous solution of metal ions under pH and concentration conditions, and at rates sufficiently low, to permit precipitation and adhesion of said oxide to said at least one substrate placed in contact with said aqueous solution thereby causing plating of said oxide on said at least one substrate.

5,340,606

OPTICAL READING METHOD

Shojiro Sano, and Ken Iwakura, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

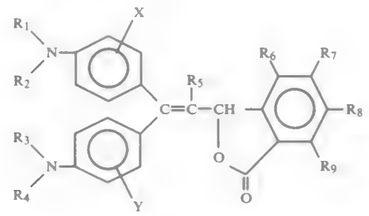
Filed Jul. 27, 1992, Ser. No. 918,607

Claims priority, application Japan, Jul. 26, 1991, 3-208898

Int. Cl.[5] B41M *3/12*

U.S. Cl. 427—151 **7 Claims**

1. A method of optically reading colored record images formed by the reaction of a substantially colorless electron donating dye and an electron accepting developer in a pressuresensitive recording sheet, comprising the step of scanning the pressure-sensitive recording sheet with a red light having a wavelength of from 620 nm to 700 nm, wherein said pressure-sensitive recording sheet comprises an electron accepting developer layer containing a metal salt of an aromatic carboxylic acid as the developer and an electron donating dye layer containing a phthalide compound represented by the following formula (I) as the electron donating dye:



(1)

wherein R_1, R_2, R_3, and R_4 each represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted aryl group; said R_1 and R_2 or said R_3 and R_4 may combine with each other to form a ring; R_5 represents a hydrogen atom or an alkyl group; R_6, R_7, R_8, and R_9 each represents a hydrogen atom, a alogen atom, an alkyl group, an alkoxy group, a substituted amino group, or an alicyclic amino group; and X and Y each represents a hydrogen atom, an alkyl group, or an alkoxy group.

5,340,607

VAPOR-DEPOSITION MATERIAL FOR THE PRODUCTION OF HIGH-REFRACTION OPTICAL COATINGS

Martin Friz, Muhltal, and Detlef Albrecht, Griesheim, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Mar. 19, 1993, Ser. No. 35,103

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208811

Int. Cl.[5] C01F *17/00*; C01G *23/00*

U.S. Cl. 427—162 **15 Claims**

10. A process for the production of a substrate with a high-refraction optical coating, comprising coating said substrate with a compound of the formula $La_2Ti_2O_{7-x}$, wherein x is 0.3–0.7, by vapor deposition.

5,340,608

METHOD OF REDUCING STATIC-CHARGE ON EASTER GRASS

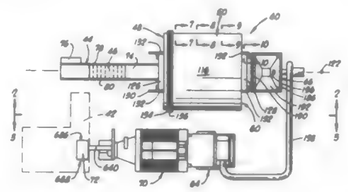
Donald E. Weder; E. H. Weder; Howard M. Ruth, all of Highland; Michael J. King, Staunton, all of Ill.; Franklin J. Craig, Valley Park, Mo.; Larry J. Jones, Highland; Kenton D. Badgley, Alton, both of Ill.; Harry J. Snider, deceased, late of Phoenix, Ariz.; Laura L. Snider, legal representative, Rochelle, Ill.; S. Owen Dye, Highland, Ill.; Clay R. Wiedner, Trenton, Ill.; Bill C. Weder, Highland, Ill., and Robert L. Langenberg, San Jose, Calif., assignors to Highland Manufacturing and Supply, Highland, Ill.

Continuation of Ser. No. 985,529, Dec. 3, 1992, Pat. No. 5,238,707, which is a continuation of Ser. No. 833,269, Feb. 10, 1992, Pat. No. 5,184,473, which is a continuation of Ser. No. 699,401, May 13, 1991, abandoned, which is a division of Ser. No. 428,249, Oct. 27, 1989, Pat. No. 5,038,975, which is a division of Ser. No. 163,596, Mar. 3, 1988, Pat. No. 4,893,757, which is a division of Ser. No. 916,892, Oct. 8, 1986, Pat. No. 4,776,521, which is a division of Ser. No. 640,517, Aug. 13, 1984, Pat. No. 4,646,388. This application May 25, 1993, Ser. No. 67,982

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] B05D *7/00*

U.S. Cl. 427—212 **3 Claims**



1. A method for treating Easter grass filaments to substantially reduce static charge on the filaments, comprising the steps of:

providing a substantial portion of the Easter grass filaments with an anti-static compound; and

producing charges of loosely aggregated Easter grass filaments for packaging.

5,340,609

APPLYING FLUID ADDITIVE TO FIBROUS MATERIAL

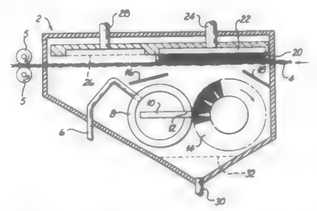
Hugh M. Arthur, Bucks, England, and Francis A. M. Labbe, Neuilly-sur-Seine, France, assignors to Molins plc, Bucks, England

Continuation of Ser. No. 20,887, Mar. 2, 1987, abandoned, which is a division of Ser. No. 328,625, Dec. 8, 1981, Pat. No. 4,646,675. This application Mar. 16, 1990, Ser. No. 496,108

Claims priority, application United Kingdom, Dec. 12, 1980, 8039930

Int. Cl.[5] B05D *5/00*

U.S. Cl. 429—244 **54 Claims**



1. A method of producing rod-like articles of the tobacco industry from a stream of fibrous material, including applying

VOL 1165 ISS 4 AG 23 1994 UMI

fluid additive to a moving stream of fibrous material to be formed into said rod-like articles, said moving stream having a thickness, comprising the steps of forming an air flow, introducing fluid additive to said air flow, directing said air flow so that the air flow penetrates into a substantial part of the thickness of the stream of fibrous material and distributes foamed fluid additive within the substantial part of the thickness of the stream of fibrous material, the air flow being directed to have a forward component relative to a direction of flow of the moving stream of fibrous material, and distributing a mixture of air and fluid additive within the stream of fibrous material to be formed into said rod-like articles, by said air flow, said mixture comprising foamed fluid additive, the mixture of air and fluid additive being distributed within the stream of fibrous material by said air flow such that the mixture penetrates into the stream of fibrous material, in the thickness direction, at least a substantial part of the thickness of the stream of fibrous material.

5,340,610

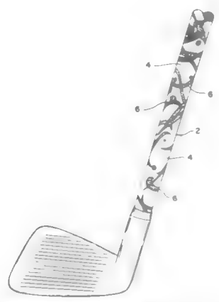
METHOD OF SPLATTER PAINTING A ROTATING OBJECT

Andrew L. Thompson, 1911 Juno Rd., Juno, Fla. 33408

Filed Feb. 22, 1994, Ser. No. 199,090

Int. Cl.[5] B05D *5/06*

U.S. Cl. 427—267 **12 Claims**



1. A method of splatter painting an object comprising the sequential steps of:

(1) cleaning the surface of the object to be painted to achieve complete paint adherence;

(2) painting the surface of the object with a desired basic paint;

(3) coating the painted surface of the object with a clear polymer;

(4) rotating the object to obtain an even coat on the surface;

(5) heating the rotating surface of the object to reduce surface viscosity to allow air bubbles to escape from the clear polymer;

(6) rotating the surface of the object;

(7) applying paint to said surface of the object with a slinging action while the clear polymer is still tacky to receive the paint from the slinging action to have the paint slung become imbedded in the tacky polymer coat and merge with the polymer to provide a smooth finish;

(8) allowing the paint slung to completely dry; and

(9) applying a coat of clear polymer over the completely dry surface.

5,340,611

PROCESS FOR COATING TRAVELLING WEBS

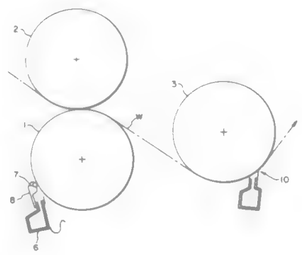
Martin Kustermann, and Hans-Peter Sollinger, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 385,212, Jul. 25, 1989, Pat. No. 4,980,207. This application Dec. 20, 1990, Ser. No. 631,375

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1990, 4002256

Int. Cl.[5] B05D *3/12*

U.S. Cl. 427—361 **10 Claims**



1. A process for coating a running web of paper or cardboard, comprising:

providing at least one rotatable roll having a shell surface for the support of the web during a first coating process;

providing at least one rotatable roll for the support of the web during a second coating process;

applying by way of a rotary doctor to the shell surface of the rotatable roll of the first coating process a small dosed quantity of a first coating substance, said rotary doctor having closely adjacent fine peripheral grooves or helical grooves, said first coating substance having a solid or pigment substance content, said solid substance content being maximally 70%;

passing the web through a press gap formed between a backing roll and the rotatable roll of the first coating process wherein the dosed quantity of the first coating substance is pressed on the web as it passes through the press gap so that at least a thin layer of said first coating substance covers the web, specifically with regard to said solid or pigment content; and

applying a second coating substance to the web during said second coating process, at least said second coating substance being dosed and applied directly on the web, wherein said second coating substance is applied in direct succession to the first layer one upon the other while the first layer is still moist.

5,340,612

SPRAYABLE PORTLAND CEMENT-BASED FIREPROOFING COMPOSITIONS

Richard P. Perito, Malden, Mass., assignor to W.R. Grace & Co.-Conn., New York, N.Y.

Filed Apr. 16, 1992, Ser. No. 869,605

Int. Cl.[5] B05D *1/02, 7/14;* **C09D** *1/06, 5/18*

U.S. Cl. 427—403 **9 Claims**

1. A portland cement-based sprayable fireproofing composition, comprising a dry blend of 50–90% portland cement and 4–30% stucco, said dry blend having a bulk density ranging from 10 to 18 pcf, and up to 3% of an accelerator for said composition.

5,340,613

PROCESS FOR SIMULTANEOUSLY COATING MULTIPLE LAYERS OF THERMOREVERSIBLE ORGANOGELS AND COATED ARTICLES PRODUCED THEREBY

Kenneth L. Hanzalik, Arden Hills; George H. Crawford, Jr., White Bear Lake; Sharon M. Rozzi, Stillwater, all of Minn., and David J. Scanlan, Fairport, N.Y., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 12, 1993, Ser. No. 30,780

Int. Cl.[5] B05D *7/00*

U.S. Cl. 427—412.5 **11 Claims**

1. A process comprising the steps of: (a) simultaneously applying at least two molten thermoreversible organogel layers to a substrate, said organogel layers each consisting essentially of a polymer and an organic solvent or blend of organic solvents; (b) chilling the molten, thermoreversible organogel layers thereby causing them to gel; and (c) removing residual solvent.

5,340,614

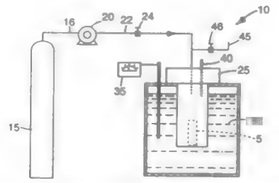
METHODS OF POLYMER IMPREGNATION

Craig A. Perman, Woodbury, and Manfred E. Riechert, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 11, 1993, Ser. No. 16,603

Int. Cl.[5] B05D *3/04*

U.S. Cl. 427—2.24 **19 Claims**



1. A method of impregnating a polymeric substrate with an impregnation additive comprising:

(a) placing a polymeric substrate into a pressure vessel at atmospheric pressure;

(b) simultaneously contacting the polymeric substrate with a mixture of a carrier liquid and an impregnation additive, wherein the impregnation additive is substantially insoluble in a supercritical fluid;

(c) sealing the pressure vessel;

(d) exposing the polymeric substrate and the mixture of the carrier liquid and impregnation additive to the supercritical fluid in the pressure vessel for time sufficient to swell the polymeric substrate, such that the carrier liquid and impregnation additive at least partially penetrates the swollen polymeric substrate; and

(e) releasing the pressure in the pressure vessel so that the carrier liquid diffuses out of the swollen polymeric substrate, wherein an amount of the impregnation additive is entrapped within the polymeric substrate.

5,340,615

METHOD TO PRODUCE NON-STRESSED FLAME SPRAY COATING AND BODIES

James A. Browning, c/o DRACO, P.O. Box 6, Hanover, N.H. 03755

Filed Jun. 1, 1993, Ser. No. 69,412

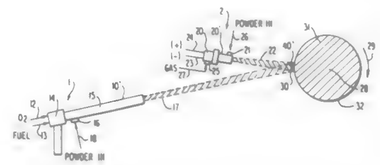
Int. Cl.[5] B05D *1/08, 1/10*

U.S. Cl. 427—446 **3 Claims**

1. A method for producing stress-free thermal sprayed coatings or solid bodies, comprising the steps of:

thermal spray impacting molten particles against a target area of a surface to be built up, and cooling said molten particles after impact, such that said particles, when cooled, are in-tension, and

thermal spray impact fusing heated solid particles at supersonic velocity against said surface at said target area whereby individual solid particles are impact fused to said



built-up surface at said target area, and cooling said impact fused particles, thereby causing compressive stress to be set up in the impact fused particles; whereby said individual particle tensile and compressive stresses cancel one another to form an overall essentially stress-free coating.

5,340,616

A COATING METHOD USING AN ELECTRIFIED WEB AND INCREASED HUMIDITY

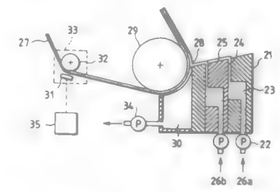
Masayuki Amano, and Makoto Kusuoka, both of Kanagawa, Japan, assignors to Fuji Photo Film., Ltd., Kanagawa, Japan

Filed Aug. 9, 1991, Ser. No. 743,062

Claims priority, application Japan, Aug. 9, 1990, 2-209085; Dec. 26, 1990, 2-413983; Jan. 9, 1991, 3-044515

Int. Cl.[5] B05D *3/14*

U.S. Cl. 427—458 **3 Claims**



1. A coating method in which a surface of en elongated support web with web seams for connecting adjacent sections of the support web, which seams create irregularities on said surface, running continuously at a speed, is electrified before a coating solution is applied and a bead is formed, the improvement wherein:

an amount of electrostatic charge that is produced at a start of the coating application and applied to the web and during each passage of the web seams is adjusted to be greater than an electrostatic charge that is produced during a steady-state coating operation.

5,340,617

ELECTROSTATIC PATTERNING OF MULTI-LAYER MODULE LAMINA

Benjamin V. Fasano, New Windsor, N.Y.; Vlad J. Novotny, Cupertino, and Lawrence B. Schein, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1992, Ser. No. 931,748

Int. Cl.[5] B05D *3/14*

U.S. Cl. 427—466 **16 Claims**

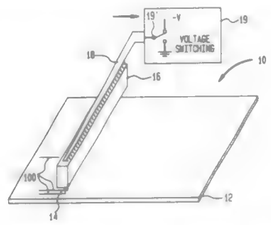
1. A method of applying electrically conductive material to a surface of a dielectric material green sheet comprising ceramic materials in a polymeric binder including the steps of

directly writing an electrostatic pattern on said surface by placing electrical charge on said surface of said dielectric material,

VOL 1165 ISS 4 AG 23 1994 UMI

applying a liquid suspension of a particulate electrically conductive material to said surface,

adhering said particulate electrically conductive material to said electrostatic pattern on said surface, and



forming an electrically conductive deposit of said adhered particulate electrically conductive material.

5,340,618

METHOD FOR UTILIZING A PLASMA REACTION UNDER AN ATMOSPHERIC PRESSURE

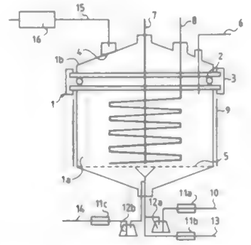
Tatsuzo Tanisaki, Onomichi; Satiko Okazaki, No. 20-11, Takaidohigashi 2-chome, Suginami-ku, Tokyo, and Masuhiro Kogoma, No. 843-15, Shimoniikura, Wako-shi, Saitama-ken, all of Japan, assignors to Kimoto Co., Ltd., Tokyo, Japan; Kimoto Tech, Inc., Cedartown, Ga.; Satiko Okazaki, Tokyo and Masuhiro Kogoma, Wako, both of Japan

Filed Jul. 21, 1992, Ser. No. 916,492

Claims priority, application Japan, Jul. 24, 1991, 3-273030

Int. Cl.[5] B05D *3/06, 7/00*

U.S. Cl. 427—488 **5 Claims**



1. A method for the treatment of a powder by use of a plasma reactor under atmospheric pressure, comprising the steps of:

providing a reaction chamber enclosing a first, spiral shaped electrode surrounding a second linear shaped electrode coaxial with the first electrode and said chamber, each electrode covered with a dielectric, an upper dispersing gas exhaust means and a lower dispersing gas inlet means;

providing a third electrode around the periphery of and coaxial with said reaction chamber;

feeding a dispersing gas selected from the group consisting of a rare gas, a monomer gas or a mixture thereof through said gas inlet means into said chamber to disperse a powder to be treated in said chamber;

concurrently removing said gas from said chamber through said gas exhaust means; and,

generating a glow plasma under the atmospheric pressure in said chamber by applying a voltage to said first electrode and grounding said second and third electrodes whereby said powder is provided with an anticorrosive surface treatment.

5,340,619

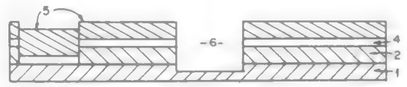
METHOD OF MANUFACTURING A COLOR FILTER ARRAY

Yih-Wen Chen; Terry Brewer; Jeffery Hunninghake, all of Rolla, and Dan Hawley, St. James, all of Mo., assignors to Brewer Science, Inc., Rolla, Mo.

Filed Oct. 18, 1993, Ser. No. 138,701

Int. Cl.[5] B05D *3/06*

U.S. Cl. 424—498 **13 Claims**



1. A method of patterning a color filter array which comprises:

a. coating a substrate with a color filter material;

b. curing the colored filter material on the substrate;

c. removing one or more regions of colored filter material on the substrate by laser ablation;

d. depositing a colored filter material into the laser ablated region;

e. curing the colored filter material which has been added into the laser ablated region;

f. leveling the entire color array by either laser ablation or plasma etching; and

thereby creating a color filter array containing one or more colors for use in a liquid crystal display.

5,340,620

PROCESS FOR PRODUCING AN IMPROVED OXYGEN BARRIER STRUCTURE ON PAPER

Paul C. Lucas, Chester, N.Y.; Guy D'Anna, Ridgefield, N.J., and Ronald J. Messenger, Matamoras, Pa., assignors to International Paper Company, Tuxedo Park, N.Y.

Filed Sep. 13, 1993, Ser. No. 120,143

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—515 **7 Claims**

1. A process for producing a paper or paperboard laminate with oxygen barrier properties comprising:

(a) hydrolyzing a silane formulation with water to form a corresponding silanol;

(b) adding a photoinitiator to said silanol to form an ultraviolet sensitive formulation;

(c) coating said ultraviolet sensitive formulation onto a paper or paperboard substrate;

(d) drying said formulation; and

(e) exposing said formulation to ultraviolet radiation to cure said formulation.

5,340,621

PLASMA CVD METHOD

Minoru Matsumoto; Etsuo Ogino, and Toshio Tsuno, all of Tsukuba, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Mar. 23, 1993, Ser. No. 35,672

Claims priority, application Japan, Mar. 30, 1992, 4-074048

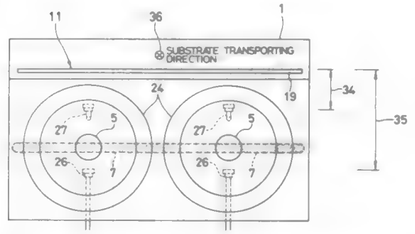
Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—571 **8 Claims**

1. A method of generating plasma CVD using a plasma beam generating cathode and an anode located opposite the plasma generating cathode in a substantially vacuum chamber, a sheet plasma connecting the plasma generating cathode and the anode and dividing the vacuum chamber into a first subsection and a second subsection, a substrate being disposed in the first subsection of the vacuum chamber, a material gas supplying nozzle being placed between the sheet plasma and the substrate in the first subsection, a reactive gas supplying nozzle being placed in the second subsection of the vacuum chamber, the method comprising the steps of:

a) supplying a discharging gas to the plasma generating cathode;

b) applying magnetic field at the plasma generating cathode for generating an arc discharging plasma at a low voltage with heavy current along the sheet plasma;



c) providing a material gas through the material gas supplying nozzle in the first subsection of the vacuum chamber;

d) providing a reactive gas through the reactive gas supplying nozzle in the second subsection of the vacuum chamber; and

e) coating the substrate substantially parallel to the arc discharging plasma with a thin film which includes at least the material gas and the reactive gas.

5,340,622

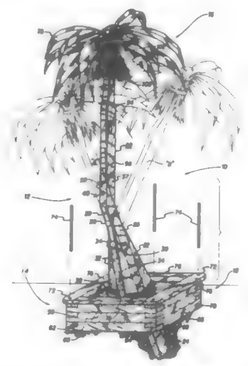
ARTIFICIAL TREE

Lenee J. Curitti, 317 Logan St., McMechen, W. Va. 26040

Continuation-in-part of Ser. No. 761,628, Sep. 18, 1991, Pat. No. Des. 343,318. This application Jul. 14, 1992, Ser. No. 913,036

Int. Cl.[5] A41G *1/00*

U.S. Cl. 428—18 **18 Claims**



1. An artificial tree for interior or exterior use, comprising:

a base;

a body extending upwardly from said base including:

a rigid trunk and at least one branch segment;

means for fastening said trunk and said at least one branch segment together;

a plurality of leaf assemblies mounted on the upper end of said at least one branch segment;

said means for fastening said trunk and said at least one branch segment together comprises:

a fastener having a threaded pin with a head at one end, adapted to be inserted through opposing holes in said trunk and said at least one branch segment; and

a mated nut adapted to fit upon said threaded pin for securing said fastener when tightened by application of torque.

5,340,623

ORNAMENTAL PANEL FOR AUTOMOBILES

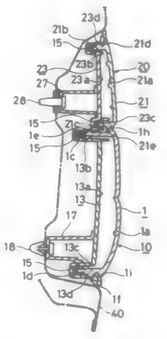
Yoshihiro Menjo; Fumio Nakagawa; Takuji Nagata, and Hiroshi Kuriyama, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jul. 9, 1991, Ser. No. 727,522

Claims priority, application Japan, Jul. 13, 1990, 2-186864

Int. Cl.[5] B60R *13/00*

U.S. Cl. 428—31 **4 Claims**



1. An ornamental panel for automobiles comprising:

a molded synthetic resin cover made of a translucent material and having an outer surface made smooth and an inner surface formed with a first rugged pattern;

an attaching molded base coupled to said synthetic resin cover such that a surface of said base is disposed opposite to the inner surface of the synthetic resin cover said attaching base being attached so as to be spaced apart from said synthetic resin cover, said surface of the attaching base being formed with a second rugged pattern of a dimension larger than a dimension of the first rugged pattern of the inner surface of the synthetic resin cover, the second rugged pattern including a plurality of hemispheric convexes two-dimensionally arranged in succession; and

a metallic film disposed on the pattern of said attaching base,

the synthetic resin cover including a first cover portion and a second cover portion larger than the first cover portion,

the attaching base including a first base portion fixed to the first cover portion and a second base portion larger than the first base portion fixed to the second cover portion,

the first cover portion and the first base portion being fixedly supported on the second cover portion and the second base portion.

5,340,624

SHRINKABLE COPOLYESTER FILM

Bobby J. Sublett, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 16, 1993, Ser. No. 106,745

Int. Cl.[5] B29D *22/00*

U.S. Cl. 428—35.8 **6 Claims**

1. A shrinkable copolyester film comprising a copolyester derived from about 70 to 99 mole percent, based on the total moles of acids, of terephthalic acid or dimethyl terephthalate, about 1 to 30 mole percent, based on the total moles of acids,

VOL 1165 ISS 4 AG 23 1994 UMI

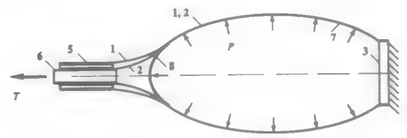
of a cycloaliphatic dicarboxylic acid selected from at least one of the monomers 1,2-cyclohexanedicarboxylic acid, 1,3-cyclohexanedicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, about 70 to 99 mole percent, based on the total moles of diols, of ethylene glycol, about 1 to 30 percent of said diol selected from the group consisting of diethylene glycol, polyethylene glycol, propylene glycol, 1,4-cyclohexanedimethanol, hexamethylene glycol, 1,4-butanediol, and neopentyl glycol, the shrinkage of said film in the machine direction or transverse direction after heating at 100° C. for 5 minutes being not less than about 30 percent, the inherent viscosity of said film being about 0.40 to about 1.1, and the glass transition temperature of said film being about 35° to about 70° C.

5,340,625

LAYOUT AND MANUFACTURING METHOD FOR FIBER-REINFORCED COMPOSITE SHELLS

Y. Jack Weitsman, 2616 Dalemere Dr., Knoxville, Tenn. 37923, and Edward N. Kuznetsov, 2009 Burlison Dr., Urbana, Ill. 61801

Filed Nov. 16, 1992, Ser. No. 944,540
Int. Cl.[5] B29D *23/00*
U.S. Cl. 428—36.3 **10 Claims**



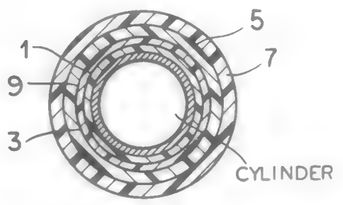
1. A manufacturing method for fiber-reinforced composite shells that employs a reinforcement layout in the form of a nested assembly of fiber braidings (sleeves), the said sleeves being kinematically deformed into a desired surface shape and impregnated with a matrix material either before or after their installation.

5,340,626

WELL PACKER

Philip F. Head, 6 Leith Mansions, Grantully Road, London W9 1LQ, Great Britain

Continuation-in-part of Ser. No. 927,170, Aug. 6, 1992. This application Apr. 7, 1993, Ser. No. 44,536
Claims priority, application United Kingdom, Aug. 16, 1991, 9117684; Aug. 4, 1992, 9216531
Int. Cl.[5] B29D *22/00;* **E21B** *23/00*
U.S. Cl. 428—36.9 **9 Claims**



1. An inflatable packer comprising:
a pair of spaced apart end fittings and an expandable elongated annular member extending between the end fittings along a longitudinal axis of the packer, said member comprising:
at least one annular layer of material having an outer circumference and an inner surface, at least a portion of the material being provided with fibers, and
an elastomer encapsulating the fibers of the portion of the material, the member being expanded from a deflated position to an inflated position to form a seal upon building up of pressure in the member bore, at least part of the fibers in the inflated position being oriented along a helix having a helical pitch angle of 54° 40′ relative to the longitudinal axis and equivalent to a lock up angle.

5,340,627

FABRIC CRAFT ARTICLE

Patricia J. Cockrell, 496 S. Parahan Rd., York, S.C. 29745

Filed Jun. 20, 1991, Ser. No. 717,962
Int. Cl.[5] B32B *31/16;* **B44C** *1/10*
U.S. Cl. 428—39 **8 Claims**



1. A fabric craft article comprising:
a substrate having at least one exterior surface:
a plurality of scored channels or grooves extending into and forming a design in said substrate, said design being defined by discrete design sections each having a predetermined shape and size;
a plurality of discrete self-cohesive padding sections carried on said substrate, each of said padding sections being of a shape and size which substantially corresponds to said predetermined shape and size of a different one of said design sections, whereby said padding sections are laid on said substrate in registration with said corresponding design sections to form a discontinuous padding layer on said substrate;
a plurality of discrete fabric sections overlaying said padding layer, each of said fabric sections substantially corresponding in shape to said predetermined shape of a different one of said design sections, but of a size larger than said corresponding design section such that the peripheral edges of said fabric sections extend beyond the peripheral edges of said corresponding design sections in each lateral dimension, wherein said fabric sections are located in registration with said corresponding padding and design sections and said peripheral edges of said fabric sections are tucked into said scored channels or grooves which define said design sections thereby securing said padding and fabric sections to said substrate; and
an adhesive contained within said channels or grooves for adhesively securing said edges of said fabric sections within said substrate.

5,340,628

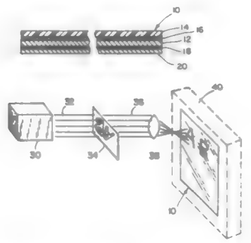
LASER MARKABLE LAMINATED SHEET

Barron G. McKillip, Grand Rapids, Mich., assignor to CCL Label, Inc., Grand Rapids, Mich.

Filed Nov. 5, 1992, Ser. No. 972,168
Int. Cl.[5] B32B *7/12*
U.S. Cl. 428—40 **11 Claims**

1. A laser markable sheet comprising:
a base sheet having a thermally sensitive front surface; and
a transparent top sheet overlyingly adhered to said front surface of said base sheet;
whereby a laser beam directed through said top sheet and onto said thermally sensitive front surface of said base sheet will activate said thermally sensitive front surface and produce markings in the areas impinged on by the laser, and further whereby any particles released as a result of the marking are trapped between said base sheet and said top sheet, said laser beam while passing through said top sheet leaving said top sheet intact.

7. A laser markable sheet comprising:
a flexible base sheet having a thermally sensitive front major surface and a rear major surface opposed to said front major surface;
a flexible, transparent cover sheet overlying said front surface of said base sheet; and



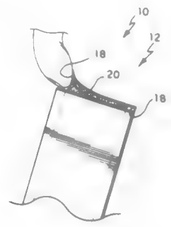
a layer of transparent adhesive disposed between said base sheet and said cover sheet, said adhesive adhering said cover sheet to said base sheet;
whereby markings may be thermally produced on said front major surface by a laser beam passing through said cover sheet and said transparent adhesive and impinging on said front major surface, and further whereby any particles released as a result of the marking are trapped between said base sheet and said cover sheet, said laser beam while passing through said top sheet and said adhesive leaving said top sheet and said adhesive intact.

5,340,629

ADHESIVE TAPE

Gerald D. Rodighiero, R.R. #2, Box 520A, Anna, Ill. 62906

Filed Aug. 5, 1993, Ser. No. 102,300
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 **2 Claims**



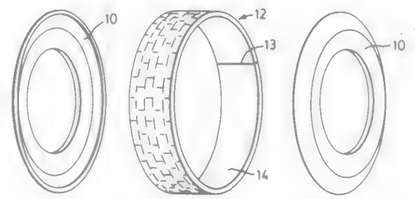
1. Adhesive tape for medical use by a health care worker having a pair of hands which are covered by protective gloves for protecting the worker from becoming contaminated, comprising: a strip of flexible material including:
a first side being adhesive-free; and
a second side opposite said first side,
said second side having oppositely disposed adhesive-free marginal portions of sufficient lateral length to be readily grasped by the gloved hands of the health care worker and separated by an adhesive-coated intermediate portion,
said intermediate portion being coated with a pressure sensitive adhesive coating,
said intermediate portion extending a majority of a lateral extent of said strip of material,
said strip of material being wound about itself so as to form a roll of adhesive tape,
said strip of material being wound about itself so as to provide a configuration which renders a gap adjacent each of said marginal portions, whereby
said gap being of sufficient extent to provide a leading edge for the health care worker wearing gloves to easily locate and separate a length of adhesive tape from said roll of tape,
a flexible release liner completely underlying said adhesive tape,
a liner of flexible material releasably attached to said flexible release liner underlying said adhesive tape so as to conceal said adhesive-coated intermediate portion and protect same from sticking against and possibly becoming contaminated by the glove of the worker, whereby
upon removal of said flexible release liner, said adhesive-coated intermediate portion is exposed, and
said liner of flexible material being releasably attached to said flexible release liner so as to provide a configuration which renders a gap adjacent each of said marginal portions, whereby
said gap provides a leading edge for the health care worker wearing protection gloves to easily locate and separate a strip of adhesive tape from said roll of adhesive tape.

5,340,630

TWO PLY MATERIAL MADE FROM USED VEHICLE TIRES

Benjamin A. Tripp, R.R. #2, Orangeville, Ontario, Canada L9W 2Y9

Continuation-in-part of Ser. No. 750,936, Aug. 28, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 37,385
Int. Cl.[5] B32B *3/14*
U.S. Cl. 428—54 **9 Claims**



1. A two ply laminated structural material, comprising:
a first continuous ply of used vehicle tire belt consisting of a plurality of tread bearing tire belts from individual tires joined end to end so that the continuous ply is capable of carrying a load in tension which is at least 10% of the magnitude of a load in tension which an individual tire belt can carry; and
a second continuous ply of used vehicle tire belt like the first continuous ply, wherein the first and second plies are bonded together tread surface to tread surface so that the resulting two ply laminated material is capable of carrying a bending, a shear, a tension, or a compression load anywhere along its length.

VOL 1165 ISS 4 AG 23 1994 UMI

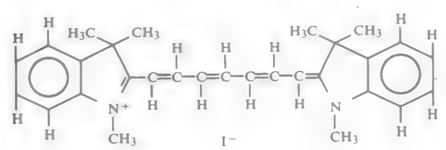
5,340,631

CLATHRATE INCLUSION COMPOUNDS AND OPTICAL RECORDING MEDIUM USING THE SAME

Nobuyuki Matsuzawa; Yoko Hayashi; Masafumi Ata, and Shin-Ichiro Tamura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 750,922, Aug. 28, 1991, abandoned. This application Nov. 29, 1993, Ser. No. 159,034
Claims priority, application Japan, Aug. 31, 1990, 2-228086
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 3 Claims

1. An optical recording medium comprising a support and a recording layer formed on said support, said recording layer comprising a clathrate inclusion compound which consists essentially of a cyanine dye and organic host molecules including the canine dye therein, wherein said organic host molecules have a molecular structure having a plurality of cyclic units assembled to form a cylindrical structure and are selected from the group consisting of α, β, and γ cyclodextrins, and wherein said cyanine dye is represented by the formula:



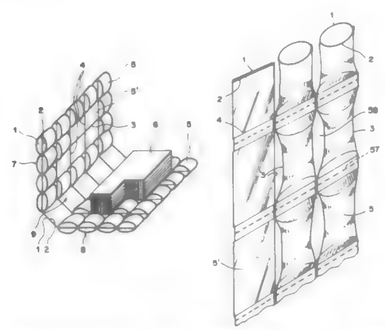
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5,340,632

PADDING ELEMENT FOR THE PACKING OF OBJECTS AND DEVICE FOR THE MANUFACTURING OF THE SAME

Michel Chappuis, Hofacherweg 2, 3423 Ersigen, Switzerland

PCT No. PCT/CH92/00087, § 371 Date Dec. 16, 1992, § 102(e) Date Dec. 16, 1992, PCT Pub. No. WO92/19436, PCT Pub. Date Dec. 11, 1992
PCT Filed Apr. 19, 1992, Ser. No. 960,467
Claims priority, application Switzerland, May 3, 1991, 1337/91; European Pat. Off., Oct. 29, 1991, 91810835.8
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—71 18 Claims



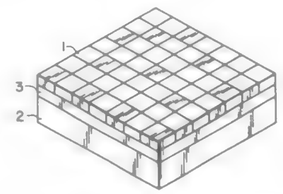
1. Padding element for the packaging of objects, comprising two synthetic foil layers arranged one over the other and joined by means of welding seams, the welding seams comprising at least two adjacent first and at least two adjacent second welding seams which intersect, wherein each two adjacent first welding seams and each two adjacent second welding seams are sealed along lengths and widths to enclose corner-shaped chambers, at least one of the chambers being partially filled with air, and wherein cutoff lines are provided at least between said two adjacent first welding seams, the cutoff lines extending over the length of the adjacent chambers.

5,340,633

MULTILAYER ANTIBALLISTIC STRUCTURE

Leonardus L. H. van der Loo, Beek, and Marcel D. M. Mertens, Sittard, both of Netherlands, assignors to DSM, N.V., Heerlen, Netherlands

Filed Nov. 27, 1991, Ser. No. 799,175
Claims priority, application Netherlands, Nov. 28, 1990, 9002550
Int. Cl.[5] B32B *3/16, 5/12;* A41D *15/04;* A41H *5/02*
U.S. Cl. 428—114 18 Claims



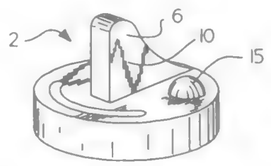
1. Multilayer antiballistic structure comprising:
a first layer which comprises ceramic tiles;
a second layer of composite material which comprises polyalkene filaments having a tensile modulus of at least 40 GPa and a tensile strength of at least 1 GPa, and a matrix which at least partially surrounds the polyalkene filaments; and
an intermediate layer disposed between the first and second layers, the intermediate layer being comprised of a material having a flexural modulus higher than the flexural modulus of the composite material of the second layer and lower than the flexural modulus of the ceramic material of the first layer.

5,340,634

ELASTIC ARTICLES HAVING PARALLEL GRIPPING SURFACES

William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.

Filed Jan. 8, 1993, Ser. No. 2,057
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—131 6 Claims



1. A decorative plastic object comprised of i) a body having a face and a back, and ii) a nose extending from the face, the nose having two substantially parallel sides and a cavity positioned on the back of the face above the gripping surface on each side of the nose, the cavity sized and positioned to create on each side a concave gripping surface adjacent the cavity which concave gripping surface is produced by providing a mold configured to produce the object and having a pin which defines the cavity; injecting plastic into the mold to form the object; and cooling the object thereby causing the object to shrink and the gripping surface on each parallel side to be formed.

5,340,635

MAGNETIC RECORDING MEDIUM HAVING A MAGNETIC LAYER WITH A SPECIFIED VICKERS INDENTATION HARDNESS OR PLASTIC DEFORMATION

Ryosuke Isobe, and Takahiro Mori, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 22, 1992, Ser. No. 888,745
Claims priority, application Japan, Jun. 7, 1991, 3-163904
Int. Cl.[5] G11B *5/00*
U.S. Cl. 428—141 5 Claims



1. A magnetic recording medium comprising a support having provided thereon a magnetic layer containing a magnetic powder, wherein a Vicker's hardness of said magnetic layer is 40 to 170 kg/mm^2, an amount of plastic deformation of said magnetic layer is 0.3 to 0.9 μm, and said material satisfies the following relationship:

$$(A+200B) \geq 180$$

wherein Vickers hardness is defined as A, and plastic deformation is defined as B, plastic deformation being equal to a depth of an indentation formed on the surface of said magnetic layer when a diamond trigonal pyramid indenter, in which an angle between opposite faces thereof is 80°, is plunged into said magnetic layer to a maximum depth of 1.5 μm, at a speed of 1 to 25 nm per second, at a temperature of 20° C. to 30° C., and a relative humidity of 40% to 80%, until a load thereon reaches 50 mg, said load then being released to 0 at a speed identical to the speed at which said indenter is plunged into said magnetic layer.

5. A magnetic recording medium comprising a support, having provided thereon, a magnetic layer containing a magnetic powder,
said magnetic layer having a surface roughness R_{10z} of 5 to 20 nm, wherein R_{10z} is a value obtained by measuring the distance in a vertical direction of a surface roughness profile curve of said magnetic layer between two parallel lines respectively selected from lines tangential to peaks of the profile and parallel with a horizontal line representing a profile of the tenth line from the highest peak and the tenth line from the lowest peak on the surface roughness profile curve obtained by cutting a magnetic recording medium perpendicularly to its surface for the reference length of 4 mm in its longitudinal direction on a line passing through the middle point in terms of width of said magnetic recording medium,
said magnetic layer further displaying a plastic deformation of 0.3 to 0.9 μm, said plastic deformation being a depth of an indentation formed on the surface of said magnetic layer when a diamond trigonal pyramid indenter, in which an angle between opposite faces thereof is 80°, is plunged into said magnetic layer, to a maximum depth of 1.5 μm, at a speed of 1 to 25 nm per second, at a temperature of 20° C. to 30° C., and a relative humidity of 40% to 80%, until the load thereof reaches 50 mg, and then releasing said load to 0 at a speed identical to that at which said indenter is plunged into said magnetic layer.

5,340,636

MAGNETIC RECORDING MEDIUM

Koh Kamada, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 726,424, Jul. 5, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 974,696
Claims priority, application Japan, Jul. 5, 1990, 2-178443
Int. Cl.[5] B32B *3/10, 5/16;* G11B *5/66*
U.S. Cl. 428—141 4 Claims

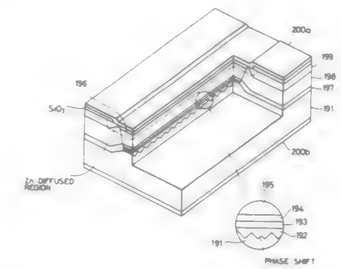
1. A magnetic recording medium comprising a non-magnetic support having on one side thereof only one magnetic layer, said magnetic layer comprising a binder having dispersed therein a ferromagnetic powder and said non-magnetic support having a coarse projection density of from 5 to 400 per 500 mm^2, wherein said coarse projection is defined as a surface projection having a height of a sextuple ring or higher in a multiple interference observation, a surface roughness (Ra) of from 0.02 to 0.07 μm where the cut-off value is 0.25 mm, and a thermal shrinkage of not more than 1.0% when preserved at 100° C. for 4 hours.

5,340,637

AN OPTICAL DEVICE DIFFRACTION GRATINGS AND A PHOTOMASK FOR USE IN THE SAME

Makoto Okai; Shinji Tsuji; Akio Ohishi; Motohisa Hirao, all of Tokyo; Hiroyoshi Matsumura, Iruma; Tatsuo Harada, Tokyo; Toshiaki Kita, Tokyo, and Hideki Taira, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 456,083, Dec. 27, 1989, abandoned, which is a continuation of Ser. No. 94,588, Sep. 9, 1987, abandoned. This application Jun. 5, 1992, Ser. No. 895,430
Claims priority, application Japan, Sep. 16, 1986, 61-215718
Int. Cl.[5] B32B *3/28;* G03C *5/00;* G02B *27/42*
U.S. Cl. 428—167 11 Claims



1. An optical device comprising:
a first semiconductor region on which a grating comprising a plurality of grooves is formed, the grating having a first region, a second region and a phase shift region of predetermined length arranged between the first and second region, a periodicity of grooves of the phase shift region being shorter than that of grooves of the first and second region, wherein said grating is formed on said first semiconductor region by arranging a grating photomask above said first semiconductor region, said grating photomask comprising a substrate and a thin film containing grooves disposed thereon, each of said grooves having a transmission factor control film on only one side thereof, permitting light to be incident upon said photomask so as to form a bright/dark pattern by interference with light, and forming said grating on said first semiconductor region, a pattern of the grating corresponding to said bright/dark pattern;
a second semiconductor region formed on the first semiconductor region;
an active region formed on the second semiconductor region;
a third semiconductor region disposed on the active region;

VOL 1165 ISS 4 AG 23 1994 UMI

a first electrode electrically connected to the first semiconductor; and

a second electrode electrically connected to the third semiconductor.

5,340,638

BULK MATERIAL FOR PACKAGING, PACKAGING UNIT USING SAME, PROCESS AND APPARATUS FOR PRODUCING THEM

Franz Sperner, Drosselweg 12, D-7449 Neckartenzlingen, Fed. Rep. of Germany

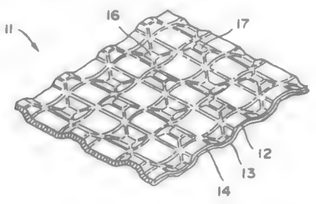
PCT No. PCT/EP90/00181, § 371 Date Oct. 2, 1991, § 102(e) Date Oct. 2, 1991, PCT Pub. No. WO90/08709, PCT Pub. Date Aug. 9, 1990

PCT Filed Jan. 2, 1990, Ser. No. 761,772

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1989, 3903382

Int. Cl.[5] B32B *3/28*; B31B *1/14*

U.S. Cl. 428—182 **10 Claims**



1. A bulk packaging material formed as chips of cardboard from packaging cardboard by cutting the packaging cardboard both lengthwise and crosswise, each chip having at least one of a coping surface, bent-over portions and peaks and recesses formed on at least one of its outer surfaces such that the bulk volume of the chips is greater than that of the used packaging cardboard.

5,340,639

PRINTED-WIRING BOARD

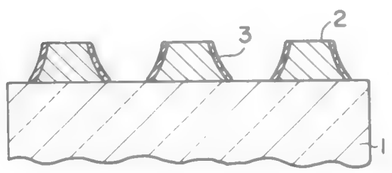
Hirofumi Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,236

Claims priority, application Japan, Sep. 26, 1990, 2-255640

Int. Cl.[5] H05K *3/28*

U.S. Cl. 428—192 **4 Claims**



1. A printed-wiring board wherein an insulating resin is coated only on sidewalls of pads to be loaded with a surface mount part.

5,340,640

CONDUCTIVE INK FOR USE WITH PRINTED CIRCUIT MODULES

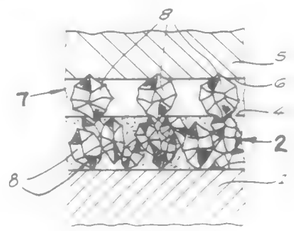
Alfred Bientz, Chateau-Gontier, France, assignor to Molex Incorporated, Lisle, Ill.

Filed Mar. 24, 1993, Ser. No. 36,309

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209597

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—206 **8 Claims**



1. In a printed circuit module for electronic applications, said printed circuit module including a circuit substrate (1) having conductive traces (2) in the form of an ink layer printed thereon, the improvement in the conductive traces comprising:

conductive crystallites (8) embedded in the ink layer, said conductive crystallites formed from a non-oxidizable crystalline compound of an element of sub-group IV of the Periodic Table, and one of the elements of the group consisting of nitrogen and carbon,

wherein the conductive crystallites are distributed within the ink layer such that each of the crystallites is in contact with an adjacent crystallite.

5,340,641

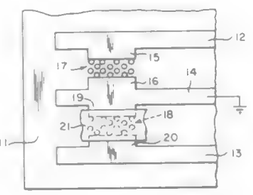
ELECTRICAL OVERSTRESS PULSE PROTECTION

Antai Xu, 750 W. Ventura Blvd., Camarillo, Calif. 93010

Filed Feb. 1, 1993, Ser. No. 11,859

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 **20 Claims**



1. An overstress responsive composite comprising an electrically insulative substrate, a pair of contraposed electrodes defining a gap therebetween over a portion of the surface of said substrate, a pattern of closely spaced electrically conductive elements affixed to said substrate and spanning said gap, and a continuous dielectric overlay also spanning said gap, said composite presenting a high resistance to a low voltage applied across said gap and a low resistance to a high voltage applied across said gap.

5,340,642

SHEETLIKE COMPOSITE

Horst Baumgartl, Mainz; Alois Schlarb, Frankenthal; Ludwig Wahl, Schifferstadt; Peter Ittemann, Mannheim, and Karl-Ludwig Brentrup, Osnabrueck, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 8, 1993, Ser. No. 28,034

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1992, 4207244; Apr. 29, 1992, 4213974

Int. Cl.[5] C08J *5/04*

U.S. Cl. 428—224 **9 Claims**

1. A sheetlike composite comprising a polyolefin matrix and very coarse vegetable fiber mats as reinforcement, wherein the very coarse vegetable fibers have a linear dinsity of more than 10 tex.

5,340,643

INTUMESCENT SHEET MATERIAL

Chia-Chih Ou, Lexington, and Leon Bablouzian, Framingham, both of Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Feb. 26, 1993, Ser. No. 23,297

Int. Cl.[5] C08K *3/34*; C09D *5/18*; C09K *21/02, 21/14*

U.S. Cl. 428—283 **16 Claims**

1. An intumescent sheet comprising an inorganic fibrous material, a binder, and a heat expandable layer mineral composition, said mineral composition containing at least 87.5% by weight of heat expandable interstratified layer minerals comprised of interstratified layers of vermiculite and biotite.

5,340,644

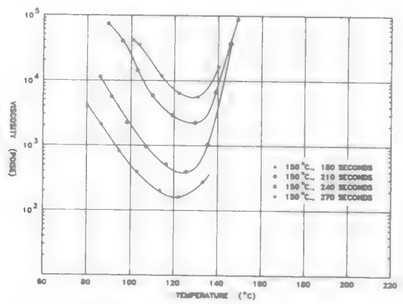
ORGANOSILICON COMPOSITIONS

Laura M. Babcock; Richard L. Brady, and Julia S. Burnier, all of New Castle County, assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 593,168, Oct. 5, 1990. This application Sep. 24, 1991, Ser. No. 764,829

Int. Cl.[5] B32B *15/00*; C08K *5/09*; C08G *77/06*

U.S. Cl. 428—285 **50 Claims**



1. A composition comprising:

(A) a crosslinkable organosilicon prepolymer comprising alternating (a) cyclic polysiloxane or tetrahedral siloxysilane residues and (b) polycyclic hydrocarbon residues derived from polycyclic polyenes having at least two non-aromatic, non-conjugated carbon-carbon double bonds in their rings linked through carbon to silicon bonds, wherein at least one of the cyclic polysiloxanes or tetrahedral siloxysilanes (a) or the polycyclic polyenes (b) used to form the prepolymer has more than two reactive sites;

(B) 30 to 85%, by weight, filler; and

(C) at least one reaction rate modifier selected from the group consisting of alkyl diamines, alkyl triamines, alkyl tetraamines and alkyl pentaamines.

5,340,645

POTASSIUM HEXATITANATE FIBERS HAVING TUNNEL STRUCTURE, PROCESS FOR PRODUCING THE SAME, AND COMPOSITE MATERIAL CONTAINING SAID FIBERS

Hidefumi Harada, and Yasuo Inoue, both of Yamaguchi, Japan, assignors to Titan Kogyo Kabushiki Kaisha, Yamaguchi, Japan

Continuation of Ser. No. 762,121, Sep. 19, 1991, abandoned, which is a division of Ser. No. 263,072, Oct. 27, 1988, Pat. No. 5,084,422. This application Mar. 2, 1993, Ser. No. 24,832

Claims priority, application Japan, Dec. 25, 1987, 62-329338; Jun. 3, 1988, 63-137110

Int. Cl.[5] B32B *5/02*; C04B *35/02*

U.S. Cl. 428—292 **14 Claims**

1. A composite material comprising potassium hexatitanate fiber having a tunnel structure characterized in that the free potassium content is 5 ppm or less and a thermoplastic synthetic resin material.

5,340,646

BREATHABLE, HYDROLYZABLE POROUS FILM

Kenji Morita; Kohichi Uchiki, both of Nagoya, and Hosei Shinoda, Kasugai, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,651

Claims priority, application Japan, Apr. 26, 1991, 3-096538

Int. Cl.[5] B32B *3/06*; C08G *63/08*

U.S. Cl. 428—307.3 **3 Claims**

1. A porous film obtained by the process comprising adding from 40 to 250 parts by weight of a finely-powdered filler having an average particle size of from 0.3 to 4 μm to 100 parts by weight of a polylactic acid-based resin composition comprising from 80 to 95% by weight of polylactic acid comprising from 85 to 100% by mol of an L-lactic acid unit and from 0 to 15% by mole of a D-lactic acid unit, or from 85 to 100% by mol of a D-lactic acid unit and from 0 to 15% by mole of an L-lactic acid unit or a lactic acid-hydroxycarboxylic acid copolymer comprising from 85 to 100% by mol of an L-lactic acid unit and from 0 to 15% by mole of a glycolic acid unit, or from 85 to 100% by tool of a D-lactic acid unit and from 0 to 15% by mole of a glycolic acid unit and 5 to 20% by weight of a plasticizer selected from the group consisting of lactic acid, lactic acid oligomer and lactide, melting and film-forming the resultant mixture in the temperature range of from 1-0-0 to 270° C., and successively stretching the thus-obtained film 1.1 times or more in at least the direction of the axis in the temperature range of from the glass transition temperature of the lactic acid based polymer to 50° C. above said glass transition temperature.

5,340,647

OPTOMAGNETIC RECORDING MEDIUM

Satoshi Matsubaguchi; Takashi Yamada, and Ryoichi Yamamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 430,508, Nov. 1, 1989, abandoned. This application Sep. 1, 1992, Ser. No. 938,686

Claims priority, application Japan, Nov. 4, 1988, 63-278594; May 12, 1989, 1-119861

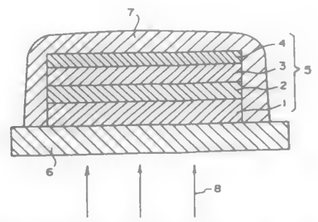
Int. Cl.[5] B32B *5/16*; G11B *11/00*

U.S. Cl. 428—336 **3 Claims**

1. A double-sided information-recording optomagnetic recording medium with improved sensitivity, corrosion resistance and long-term stability under adverse environmental conditions said double-sided medium comprising two single-sided optomagnetic recording media, each said recording medium comprising a plurality of layers, said layers comprising, in order, a substrate layer, a first dielectric protective layer

VOL 1165 ISS 4 AG 23 1994 UMI

made of a nitride selected from the group consisting of Si_3N_4 and SiAlON; a recording layer comprised of at least one rare earth metal and at least one transition metal , a second dielectric protective layer having substantially the same composition as said first dielectric protective layer, a reflection layer comprised of an alloy of Al and Ta containing 2 to 8 atomic percent



Ta, wherein the reflection layer of one single-sided recording medium is bonded to the reflection layer of the other single-sided recording medium so that a layer of a hot melt adhesive is positioned therebetween to form a central layer and each of said substrate layers forms an outermost layer of said double-sided recording medium.

5,340,648

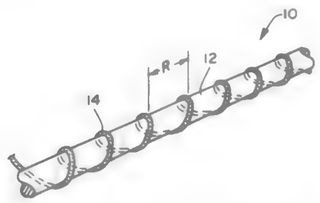
ELONGATED ELEMENT COMPRISING HELICALLY PATTERNED ADHESIVE

Neal A. Rollins, Menasha, and John A. Rooyakkers, Little Chute, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 689,230, Apr. 22, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 14,052

Int. Cl.[5] B32B *7/12, 15/04;* **D02G** *3/00;* **A61F** *13/20*

U.S. Cl. 428—343 **6 Claims**



1. An adhesive-wrapped elastic element, said element comprising an elastic strand having a substantially continuous filament of adhesive helically wrapped thereon and adhesively adhered thereto.

5,340,649

MICROWAVEABLE ADHESIVE ARTICLE AND METHOD OF USE

David C. Roeker, Hudson, Wis.; David F. Slama, Vadnais Heights, and William F. Sheffield, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Continuation-in-part of Ser. No. 725,188, Jul. 3, 1991, abandoned. This application Jul. 2, 1992, Ser. No. 907,899

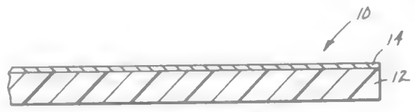
Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—344 **17 Claims**

1. A microwave actuable self-limiting adhesive article for use in a microwave oven which can be used to bond adherends, comprising:

a) a substrate consisting of a hot-melt or heat-curable adhesive; and

b) a microwave susceptor layer of at least electrically semiconductive microwave radiation absorbing material that is disposed on at least a portion of said substrate such that said substrate provides physical support to said susceptor layer, said susceptor layer being responsive to exposure to microwave radiation for raising the temperature of said



substrate above a desired level sufficient to melt said substrate and thereby deactivate said susceptor layer by destruction of said physical support through melting of said substrate when said desired temperature level is achieved.

5,340,650

VINYL ALCOHOL UNITS-CONTAINING POLYMER COMPOSITE FIBER HAVING RESISTANCE TO HOT WATER AND WET HEAT AND PROCESS FOR ITS PRODUCTION

Kiyoshi Hirakawa, Kurashiki; Izumi Watadani, Okayama; Kazuhiko Tanaka; Masao Kawamoto, both of Kurashiki; Takaaki Tanaka, Toyonaka; Hirohumi Sano, Kurashiki; Hayami Yoshimochi, Kurashiki, and Masahiro Sato, Kurashiki, all of Japan, assignors to Kuraray Company Limited, Kurashiki, Japan

Filed Feb. 18, 1993, Ser. No. 19,444

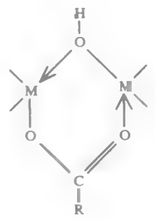
Claims priority, application Japan, Feb. 18, 1992, 4-060919; May 29, 1992, 4-163607

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—373 **9 Claims**

1. A composite fiber comprising:

(a) a vinyl alcohol units-containing polymer component, said component comprising vinyl alcohol units in which the alcoholic hydroxyl group is modified with at least one group of the following formula I



I

wherein M is a chelate-forming metal atom and R is an alkyl group; and

(b) a fiber-forming polymer component other than the one described in part (a).

5,340,651

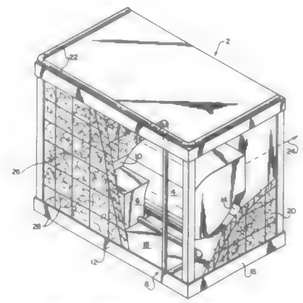
GLASS FIBER EVAPORATIVE COOLER MEDIA, METHOD OF FORMING SAME, USE THEREOF IN AN EVAPORATIVE COOLING METHOD, AND AN EVAPORATIVE COOLER APPARATUS UTILIZING GLASS FIBER COOLING MEDIA

Esu S. Esu, Morgantown, W. Va., assignor to Hollinee Corporation, Broad Axe, Pa.

Continuation of Ser. No. 777,145, Oct. 16, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 72,697

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—375 **3 Claims**



1. A porous lofted fiberglass pad suitable for use as an evaporative cooler media, comprising lofted spun glass fiber having a cured hydrophilic coating thereon, said cured coating comprising a blend of an acrylic polymer and a urea-formaldehyde polymer, and wherein said pad has an average pore size of between 5 and 10 microns.

5,340,652

ARTICLE COATED WITH INTERMINGLED EPOXY AND URETHANE LAYERS

Ratanjit S. Sondhe, 114 Anglers Dr., Chagrin Falls, Ohio 44022; Hemant A. Naik, 9965 Darrow Park Dr., #104F, Twinsburg, Ohio 44087; Shirish A. Pandit, 1796-C Treetop Trail, Akron, Ohio 44313, and Bipin C. Pant, 1 Improvement Trust Bldg., Havelock Rd., Lucknow 226001 U.P., India

Continuation of Ser. No. 791,887, Nov. 13, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 165,741

Int. Cl.[5] B32B *27/38*

U.S. Cl. 428—413 **34 Claims**

1. An article comprising a cured epoxy layer and a cured urethane layer in contact with and intermingled with said epoxy layer, said epoxy layer derived from a mixture of a two-part liquid epoxy coating composition comprising an epoxy resin part and a part of at least one epoxy hardener and containing less than 10 weight percent volatiles, said epoxy layer cured at ambient temperature or higher and having an equivalent ratio of said hardener to said epoxy resin of from 0.75 to 1.05 said urethane layer derived from the reaction mixture of a two-part urethane composition comprising a first part of an intermediate component comprising at least one polyol intermediate and optionally a moisture scavenger and a second part comprising a polyisocyanate component, said urethane layer cured at ambient temperature or higher, and said urethane composition containing less than 10 wt. % volatiles.

5,340,653

FREE-RADICAL CURABLE COMPOSITIONS COMPRISING VINYL ETHER AND URETHANE MALENATE COMPOUNDS

Gerry K. Noren, Hoffman Estates; John J. Krajewski, Wheeling; Sami A. Shama; John M. Zimmerman, both of Hoffman Estates; Danny C. Thompson, Schaumburg, and John T. Vandeberg, Barrington, all of Ill., assignors to Stamicarbon B.V., Galeen, Netherlands

Continuation-in-part of Ser. No. 647,492, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 437,374, Nov. 15, 1989, abandoned, and a continuation-in-part of Ser. No. 647,514, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 438,540, Nov. 15, 1989, abandoned, and a continuation-in-part of Ser. No. 647,460, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 436,826, Nov. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 404,578, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 319,566, Mar. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 231,362, Aug. 12, 1988, abandoned. This application May 26, 1992, Ser. No. 888,885

Int. Cl.[5] B32B *27/00, 27/40;* **C08F** *2/50, 16/32*

U.S. Cl. 428—423.1 **21 Claims**

1. A free-radical radiation curable composition comprising:

a) at least one compound containing from one to about six vinyl ether groups; and

b) at least one compound containing a urethane backbone with from one to about six maleate and/or fumarate end groups,

wherein the ratio of vinyl ether groups to maleate and/or fumarate groups is in the range of about 2:1 to about 1:2.

5,340,654

INTERLAYER FILM FOR LAMINATED GLASS

Naoki Ueda, Osaka; Kenichi Asahina, Shiga; Hirohumi Omura, Shiga, and Jiro Miyai, Shiga, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

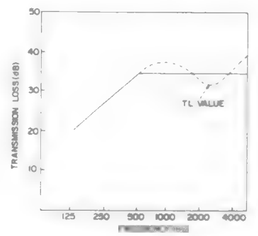
Filed Mar. 18, 1993, Ser. No. 33,586

Claims priority, application Japan, Apr. 23, 1992, 4-104589

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] B32B *17/10*

U.S. Cl. 427—437 **8 Claims**



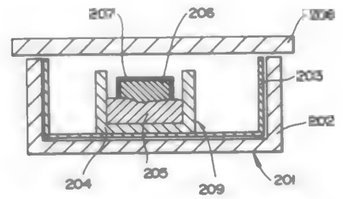
1. An interlayer film for laminated glass comprising laminated layers of at least one layer (A) which comprises a plasticizer and polyvinyl acetal resin for which the number of carbon atoms in the acetal group is 4, 5 or 6, and the mole ratio of the average amount of the ethylene groups bonded to acetyl groups is 8–30 mole % of the total amount of the main chain ethylene groups, and at least one layer (B) which comprises a plasticizer and polyvinyl acetal resin for which the number of carbon atoms in the acetal group is 3 or 4, and the mole ratio of the amount of average ethylene groups bonded to acetyl groups is 4 mole % or less of the total amount of the main chain ethylene groups.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,655
METHOD OF MAKING SHAPED CERAMIC COMPOSITES WITH THE USE OF A BARRIER AND ARTICLES PRODUCED THEREBY

David K. Creber, Kingston, Canada; William B. Johnson, and Marc S. Newkirk, both of Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation-in-part of Ser. No. 786,660, Nov. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 724,236, Jul. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 659,523, Feb. 22, 1991, Pat. No. 5,236,786, which is a continuation of Ser. No. 295,488, Jan. 10, 1989, abandoned, which is a continuation of Ser. No. 861,024, May 8, 1986, Pat. No. 4,923,832. This application Jan. 9, 1992, Ser. No. 819,308
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—446 23 Claims



1. A shaped self-supporting ceramic composite body, comprising:

a substrate body comprising a three-dimensionally interconnected polycrystalline ceramic matrix incorporating at least one filler material comprising at least one fiber, said ceramic matrix comprising (1) at least one ceramic material comprising at least one polycrystalline oxidation reaction product comprising silicon nitride crystallites and (2) at least one structural feature selected from the group consisting of voids and channels of at least one metallic constituent of a parent metal comprising silicon; and

at least one material contacting at least a portion of a surface boundary of said substrate body, said at least one contacting material comprising at least one material selected from the group consisting of a barrier material and a barrier material that has undergone chemical changes or alterations during formation of said polycrystalline ceramic matrix, said barrier material comprising at least one material selected from the group consisting of titanium nitride, zirconium nitride and aluminum nitride, wherein at least a portion of said at least one contacting material is removably attached to said substrate body.

5,340,656
THREE-DIMENSIONAL PRINTING TECHNIQUES

Emanuel M. Sachs, Somerville; John S. Haggerty, Lincoln; Michael J. Cima, Lexington, and Paul A. Williams, Concord, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 447,677, Dec. 8, 1989, Pat. No. 5,204,055. This application Apr. 9, 1993, Ser. No. 45,632
Int. Cl.[5] B22F *7/02*
U.S. Cl. 428—546 21 Claims

1. A system for making a component comprising

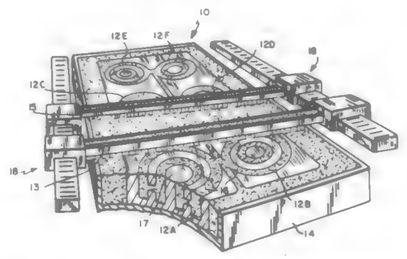
means for depositing a selected number of successive layers of a porous material;

means for applying to one or more selected regions of each successive layer of porous material a further material which will cause the porous material to become bonded at said one or more selected regions, said applying means applying said further material after each successive layer of porous material has been deposited to form said component; and

means for removing porous material which is not at said one or more selected regions.

17. A system in accordance with claim 1 and further including

a chamber;



a piston movable in said chamber, said depositing means depositing said successive layers of porous material within a region defined by the chamber and the piston; and

means for moving said piston downwardly in said chamber after the depositing of each successive layer of porous material.

5,340,657
PILLARED MICAS

Michael C. Kerby; Kenneth L. Riley; Fred M. Long, all of Baton Rouge, La.; Jack W. Johnson, Clinton, and John F. Brody, Bound Brook, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Aug. 26, 1992, Ser. No. 935,504
Int. Cl.[5] B22F *5/00;* B28D *1/32*
U.S. Cl. 428—552 17 Claims

1. A pillared mica comprising an active metal selected from the group consisting of Pt, Cr, Pd, Ir, Rh and mixtures thereof and a modifier metal selected from the group consisting of Sn, ga and mixtures thereof, wherein the height of said pillars is about 5 to 20Å.

5,340,658
COMPOSITES MADE OF CARBON-BASED AND METALLIC MATERIALS

Tadao Komatsu, Akashi, and Seiichiro Miyata, Shimonoseki, both of Japan, assignors to Ishihara Chemical Co., Ltd., Kobe, Japan

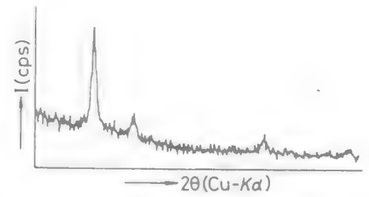
Filed Aug. 13, 1992, Ser. No. 928,751
Claims priority, application Japan, Aug. 21, 1991, 3-235418; Sep. 2, 1991, 3-248300
Int. Cl.[5] B22F *5/00*
U.S. Cl. 428—558 3 Claims

1. A welding nozzle which comprises a metal nozzle and a ring made of a carbon-based material as attached to the tip of said metal nozzle by means of a brazing filler metal which is an alloy comprising, as essential components thereof, at least one element selected from the group consisting of vanadium, niobium, titanium, zirconium and silicon and at least one element selected from the group consisting of copper, silver, nickel and aluminum.

5,340,659
HIGH STRENGTH STRUCTURAL MEMBER AND A PROCESS AND STARTING POWDER FOR MAKING SAME

Hiroyuki Horimura, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1991, Ser. No. 710,432
Claims priority, application Japan, Jun. 5, 1990, 2-146425
Int. Cl.[5] B22F *3/20*
U.S. Cl. 428—567 11 Claims



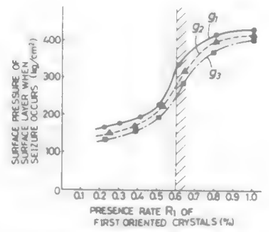
3. A structural member, comprising, a starting powder formed into the member by a forming process,

the starting powder having a main powder component and an additional powder component with a volume fraction P (Vf) of the additional powder component of 5% to 20%, said main powder component comprising a crystalline phase alloy powder with a crystalline phase volume fraction C (Vf) substantially equal to 100%, said additional powder component comprising an amorphous phase with a volume fraction A (Vf) of between 5% and 100% and the balance of a crystalline phase.

5,340,660
SLIDE MEMBER

Yoshikazu Fujisawa; Makoto Tsuji; Takeshi Narishige; Takahiro Gunji, and Kazuhisa Okamoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 917,164
Claims priority, application Japan, Jul. 18, 1991, 3-202193; Jul. 18, 1991, 3-202194; Jul. 18, 1991, 3-202197
Int. Cl.[5] C23F *3/00;* C16C *33/06, 33/12*
U.S. Cl. 428—687 3 Claims



1. A slide member comprising a surface layer having a slide surface for a mating member, wherein the surface layer is formed of an aggregate of crystals of a Pb alloy, and under application of an X-ray diffractometry to the surface layer, when I(a) represents an integrated strength of first oriented crystals with a (h00) plane by Miller indices thereof being directed toward the slide surface, and I(b) represents an integrated strength of second oriented crystals with (111) and (222) planes by Miller indices thereof being directed toward the slide surface, the following expression being established:

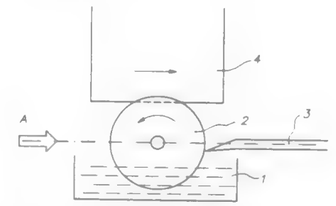
$$0.6 \leqq I(a)/\Sigma I(ab) \leqq 1.0$$

wherein $\Sigma I(ab) = I(a) + I(b)$, and $I(b) = 0$ is included.

5,340,661
RADIOGRAPHIC SCREEN WITH EDGE-REINFORCING COATING

Jan A. Van Havenbergh, Zwijndrecht, and Jozef R. Aertbelien, Schilde, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 27, 1992, Ser. No. 842,603
Claims priority, application European Pat. Off., Mar. 8, 1991, 91200511.3
Int. Cl.[5] G03C *1/79*
U.S. Cl. 428—690 6 Claims

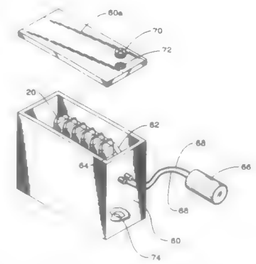


1. Radiographic screen comprising a support, a layer including side edges, said layer comprising a fluorescent phosphor dispersed in a binder and a protective topcoat on said phosphor-binder layer, wherein the side edges of said screen are reinforced with a radiation-cured coating obtained by curing a radiation curable composition containing a copolymer of ethylene terephthalate and ethylene/isophthalate dissolved in a diluent methacrylate monomer selected from the group consisting of methylmethacrylate and tetrahydrofurfurylmethacrylate.

5,340,662
EMERGENCY BATTERY SYSTEM WITH AN INFINITE SHELF LIFE

Walter K. McCarter, Davie, Fla., assignor to ACR Electronics, Inc., Fort Lauderdale, Fla.

Filed Jan. 15, 1993, Ser. No. 5,228
Int. Cl.[5] H01M *6/30, 6/32*
U.S. Cl. 429—9 13 Claims



1. An emergency battery system having a substantially indefinite shelf life comprising:

a water-activated battery;

a rechargeable battery; and

means for connecting said water-activated battery to said rechargeable battery, said rechargeable battery having power output electrodes for attachment to an emergency appliance, wherein when said water-activated battery is activated by adding water, said rechargeable battery is charged by said water-activated battery.

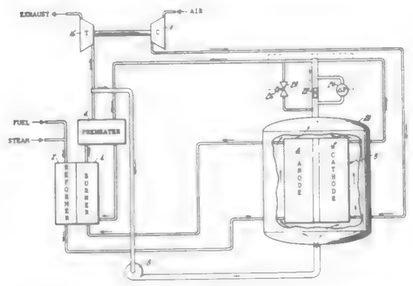
VOL 1165 ISS 4 AUG 23 1994 UMI

5,340,663

FUEL CELL POWER PLANT

Richard F. Buswell, Glastonbury, and George Vartanian, Ellington, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Continuation of Ser. No. 290,019, Dec. 22, 1988, abandoned.
This application Jul. 13, 1992, Ser. No. 912,578
Int. Cl.[5] H01M 8/04
U.S. Cl. 429—17 4 Claims



1. A fuel cell power plant comprising:

a containment vessel,

a fuel cell, enclosed within said containment vessel and including an anode and a cathode, for electrochemically reacting a pressurized fuel stream and a pressurized oxidant stream to produce electricity, an anode exhaust stream and a cathode exhaust stream,

a burner for combusting a mixture of anode exhaust to produce heat and a burner exhaust stream,

means for directing a pressurized purge gas stream through said containment vessel to provide a continuous purge of said containment vessel and produce a purge gas exhaust stream,

conduit means for directing the purge gas exhaust stream into the cathode exhaust stream, and

means for maintaining a positive pressure differential between the purge gas stream and the fuel and oxidant streams to prevent leakage of fuel and oxidant from the fuel cell, including

variable cross section purge gas exhaust stream flow control means interposed in said conduit means,

means for sensing the pressure differences between said purge gas exhaust stream and said cathode exhaust stream and for providing a control signal indicative of said pressure differences, and

means for controlling said variable cross section purge gas exhaust stream flow control means so as to vary the cross section thereof in dependence on the control signal in a sense of maintaining the positive pressure differential within a preselected range.

5,340,664

THERMALLY INTEGRATED HEAT EXCHANGE SYSTEM FOR SOLID OXIDE ELECTROLYTE SYSTEMS

Joseph J. Hartvigsen, Kaysville, Utah, assignor to Ceramatec, Inc., Salt Lake City, Utah

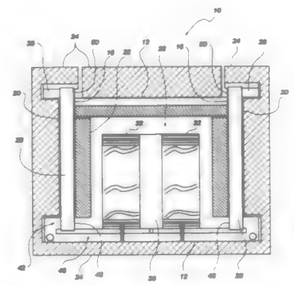
Filed Sep. 29, 1993, Ser. No. 128,522
Int. Cl.[5] H01M 8/04
U.S. Cl. 429—20 14 Claims

6. A thermally integrated heat exchange system for a solid oxide fuel cell comprising:

a furnace enclosure structure having an interior chamber substantially enclosed by thermally insulated walls;

a plurality of spaced apart solid oxide fuel cell plates disposed within said interior chamber, said plates arranged to permit fluid flow of incoming reactant air and reactant fuel gases therebetween;

a heat exchanger associated with said thermally insulated walls for preheating said incoming air destined to flow through said fuel cell plates, said heat exchanger having an incoming air passageway with an incoming air inlet in fluid communication with a source of incoming air and an incoming air outlet in fluid communication with said fuel cell plates, and an exhaust air passageway with an exhaust air inlet in fluid communication with said fuel cell plates and an exhaust air outlet;



manifold means disposed within said furnace enclosure for directing said incoming air from said incoming air passageway to said fuel cell plates, and for directing exhaust air from said fuel cell plates to said exhaust air passageway;

fuel preheating and reformation means thermally integrated with said interior chamber of said furnace enclosure for preheating incoming fuel gases destined to flow through said fuel cell plates and for reforming fuel gases to flow through said fuel cell plates; and thermal insulation substantially surrounding said furnace enclosure structure.

5,340,665

CREEP RESISTANT, METAL-COATED $LiFeO_2$ ANODES FOR MOLTEN CARBONATED FUEL CELLS

Ashok C. Khandkar, Salt Lake City, Utah, assignor to Ceramatec, Inc., Salt Lake City, Utah

Filed Sep. 3, 1992, Ser. No. 940,031
Int. Cl.[5] H01M 4/86
U.S. Cl. 429—40 14 Claims

1. A creep-resistant electrolyte/electrode structure for a high-temperature fuel cell comprising:

an ion conducting electrolyte;

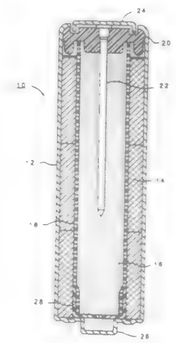
a layer of unsintered particulate single phase alpha-$LiFeO_2$ adjacent said electrolyte, said layer of unsintered particulate single phase alpha-$LiFeO_2$ being coated with a continuous film comprising a conductive metal powder, the metal thereof selected from the group consisting of nickel, copper, electrically conductive nickel alloys, and nickel-copper alloys, the metal powder and particulate $LiFeO_2$ being sinterable to a porous, electro-conductive creep-resistant electrode in electro-conductive contact with said electrolyte.

5,340,666

RECHARGEABLE ALKALINE MANGANESE CELL HAVING IMPROVED CAPACITY AND IMPROVED ENERGY DENSITY

Klaus Tomantschger; Ronald J. Book, and Robert D. Findlay, al of Mississauga, Canada, assignors to Battery Technologies Inc., Richmond Hill, Canada

Continuation of Ser. No. 893,793, Jun. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 667,476, Mar. 11, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,203
Int. Cl.[5] H01M 10/24
U.S. Cl. 429—59 14 Claims



1. A rechargeable alkaline manganese cell comprising a metal container, a zinc anode, a manganese dioxide cathode, a separator between said anode and said cathode, a closure element to seal said cell, a current collector passed through said closure element and into said anode, and an alkaline electrolyte;

wherein said zinc anode consists mainly of gelled powdered zinc, said manganese dioxide cathode consists mainly of manganese dioxide together with from about 5% to 15% by weight of conductive carbon additive and a binding agent, and said electrolyte consists mainly of an aqueous alkali metal hydroxide;

wherein said alkaline manganese dioxide cell is anode limited in that the anode has a theoretical discharge capacity which is in the range of from at least 64% up to 100% of the theoretical one electron discharge capacity of said cathode;

and wherein the theoretical gravimetric energy density of said cell exceeds 70 Wh/Kg and the volumetric energy density of the cell exceeds 200 Wh/liter.

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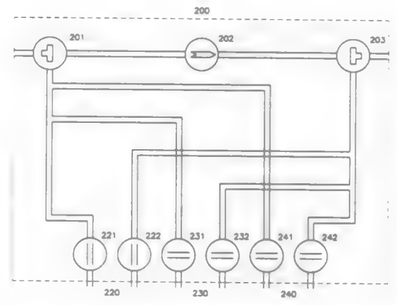
BATTERY RECIRCULATION AND RECHARGE SYSTEM

Billy M. Stinson, Rte. 4, Box 447, Gatesville, Tex. 76528, and Thomas A. Stoneham, 1216 Concho Dr., Benbrook, Tex. 76126

Continuation of Ser. No. 3,039, Jan. 11, 1993, abandoned. This application Nov. 29, 1993, Ser. No. 158,861
Int. Cl.[5] H01M 2/40
U.S. Cl. 429—64 8 Claims

1. A system for increasing the efficiency of electro-chemical batteries, comprising:

(a) a liquid electrolyte battery having a plurality of cells, each cell having an electrolyte input port and an electrolyte output port;



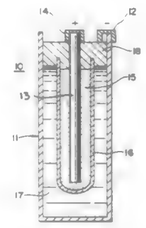
(b) means for irrigating each of said cells with electrolyte individually and sequentially, one cell at a time.

5,340,668

ELECTROCHEMICAL CELL

Laszlo I. Redey, Downers Grove; Donald R. Vissers, Naperville, and Jai Prakash, Downers Grove, all of Ill., assignors to The University of Chicago, Chicago, Ill.

Continuation-in-part of Ser. No. 774,204, Oct. 10, 1991, abandoned. This application Feb. 4, 1992, Ser. No. 830,719
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[5] H01M 10/39
U.S. Cl. 429—103 43 Claims



1. An electrochemical cell comprising a positive electrode, a negative electrode of an alkali metal, and a compatible electrolyte including an alkali metal salt molten at an operating temperature of the cell, the positive electrode comprising an electrochemically active layer of at least one transition metal chloride at least partially present as a charging product, and a small amount of a bromine and/or iodine containing additive in the positive electrode or electrolyte, the amount being sufficient to improve the cell capacity or power by being incorporated into the transition metal chloride layer formed during charging of the cell.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,669

ALLYL POLYALKYLENE ETHER POLYMERS AND SOLID ELECTROLYTES FOR AN ELECTROCHEMICAL CELL

Benjamin Chaloner-Gill, Santa Clara; Neal Golovin, San Jose, and Joseph Lundquist, Gilroy, all of Calif., assignors to Valence Technology, Inc., San Jose, Calif.

Filed Apr. 19, 1993, Ser. No. 49,198
Int. Cl.[5] H01M *10/04*
U.S. Cl. 429—192 **16 Claims**

1. A single phase, solid, solvent-containing electrolyte which comprises:
a solid polymeric matrix;
an inorganic ion salt; and
an electrolyte solvent;
wherein the solid polymeric matrix comprises a polymer consisting essentially of repeating units derived from the monomer of Formula I by polyermization

$$CH_2{=}CHCH_2O(RO)_pR_1 \qquad I$$

where R_1 is selected from the group consisting of alkyl of from 1 to 6 carbon atoms, phenyl, alkphenyl of from 7 to 12 carbon atoms, phenyl substituted with from 1 to 3 substituents selected from the group consisting of alkyl of from 1 to 4 carbon atoms, and allyl, R is

$$-(CR_2R_3)_q- \qquad II$$

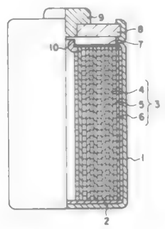
where R_2 and R_3 are independently selected from the group consisting of hydrogen and alkyl of from 1 to 4 carbon atoms, p is an integer from 2 to 6, and q is an integer from 1 to 6, and wherein when q is greater than 1, the R_2 and R_3 on each carbon atom may be the same or different.

5,340,670

LITHIUM SECONDARY BATTERY AND METHOD OF MANUFACTURING CARBONACEOUS MATERIAL FOR NEGATIVE ELECTRODE OF THE BATTERY

Norio Takami; Asako Satoh, and Takahisa Ohsaki, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 1, 1993, Ser. No. 69,424
Claims priority, application Japan, Jun. 1, 1992, 4-140247; Sep. 30, 1992, 4-261418; Mar. 16, 1993, 5-056194; Mar. 18, 1993, 5-058565
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—194 **30 Claims**



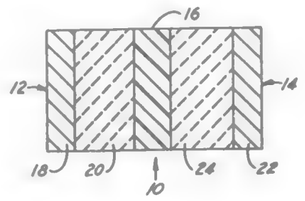
1. A lithium secondary battery comprising:
a positive electrode housed in a case;
a negative electrode housed in said case and containing a carbonaceous material which has an exothermic peak at not less than 700° C. when measured by a differential thermal analysis, and an intensity ratio P_{101}/P_{100} of a (101) diffraction peak P_{101} to a (100) diffraction peak P_{100} of a graphite structure, obtained by X-ray diffraction analysis, of 0.7 to 2.2, and absorbs and desorbs lithium ions;
a separator housed in said case so as to be arranged between said positive and negative electrodes; and
a nonaqueous electrolyte contained in said case.

5,340,671

VANADIUM OXIDE CATHODE ACTIVE MATERIAL AND METHOD OF MAKING SAME

Rene Koksbang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Jun. 14, 1993, Ser. No. 77,987
Int. Cl.[5] H01H *4/02*
U.S. Cl. 429—218 **22 Claims**



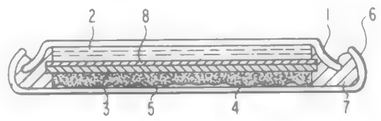
1. A positive electrode comprising a current collector and an electrode material in contact with the current collector, said electrode material comprising a vanadium oxide compound represented by the nominal general formula $M_{(1+y)}(V_3O_8)_2$ where y has a value equal to or greater than zero and M is a metal or semi-metal element having a divalent (+2) valency.

5,340,672

SECONDARY BATTERY

Tadahiko Kubota; Shoichiro Yasunami, and Yukio Maekawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1993, Ser. No. 85,173
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1992, 4178488
Int. Cl.[5] H01M *10/00*
U.S. Cl. 429—249 **18 Claims**



1. A secondary battery comprising,
(a) a negative electrode,
(b) a positive electrode,
(c) an electrolyte comprising a dissolved alkaline metal salt, and
(d) a separator comprising a high molecular solid electrolyte membrane formed by coating a latex on both surfaces of a porous membrane, and then drying the coated latex,
wherein said latex to be coated on said porous membrane is represented by the following formula (1):

$$-(A)_a-(B)_b-(C)_c(D)_d- \qquad (1)$$

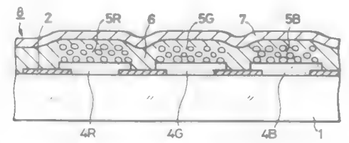
wherein A represents a repeating unit obtained by polymerizing a monomer having one polymerizable ethylenically unsaturated group and having nonpolar groups connected to side chain ester groups and amide groups or a monomer having one polymerizable ethylenically unsaturated group and having a nonpolar group in side chains; B represents a repeating unit obtained by polymerizing a monomer having one polymerizable ethylenically unsaturated group and having polar groups connected to side chain ester groups and amide groups or a monomer having one polymerizable ethylenically unsaturated group and having a cyano group; C represents a repeating unit obtained by polymerizing a monomer having at least two polymerizable ethylenically unsaturated groups, at least one of which being in side chains; D represents a repeating unit obtained by polymerizing a monomer having one polymerizable ethylenically unsaturated group and having crosslinkable groups in side chains; and a, b, c and d represent a percentage molar fraction of 0 to 95, 5 to 95, 1 to 20, and 1 to 80, respectively.

5,340,673

METHOD OF MANUFACTURING A PHOSPHOR SCREEN OF A CATHODE RAY TUBE

Norihiro Tateyama, Saitama; Katsutoshi Ohno, Tokyo, and Tsuneo Kusunoki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,242
Claims priority, application Japan, Mar. 25, 1992, 4-067569
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—23 **3 Claims**



1. A method of manufacturing a phosphor screen of a cathode ray tube comprising the steps of:
forming a uniform coating layer of a slurry comprising pigment particles, a photo resist, transparent particles and a dispersant on an inner surface of a panel of said cathode ray tube;
exposing said coating layer using a photo mask having a predetermined pattern;
developing said exposed coating layer to form a color filter layer including said pigment particles and said transparent particles; and
forming a color phosphor layer of phosphor particles on top of said color filter layer.

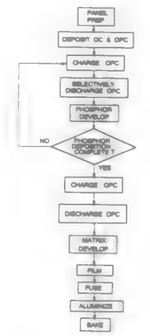
5,340,674

METHOD OF ELECTROPHOTOGRAPHICALLY MANUFACTURING A SCREEN ASSEMBLY FOR A CATHODE-RAY TUBE WITH A SUBSEQUENTLY FORMED MATRIX

John J. Moscony, and George M. Ehemann, Jr., both of Lancaster, Pa., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Mar. 19, 1993, Ser. No. 37,637
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—28 **8 Claims**

1. In a method of electrophotographically manufacturing a luminescent screen assembly on an interior surface of a faceplate panel of a CRT, said panel having a conductive layer overcoated with a photoconductive layer and having a multiplicity of red-emitting, green-emitting and blue-emitting phosphor screen elements separated from each other by a light-absorbing matrix overlying previously open areas of said photoconductive layer, said phosphor screen elements being arranged in color groups, in a cyclic order, said phosphor screen elements being formed by sequentially exposing selected areas of said photoconductive layer to actinic radiation, to affect a charge thereon, and then, depositing triboelectrically-charged red-, green- and blue-emitting phosphor screen elements, respectively, onto said selected areas, the improvement wherein said matrix is formed by
establishing a charge on said photoconductive layer, said charge initially being stronger in said open areas of said photoconductive layer than on the areas underlying said phosphor screen elements,
discharging said open areas of said photoconductive layer between said phosphor screen elements by illuminating at least said open areas with actinic radiation, and



then, developing said open areas by depositing thereon particles of matrix material having a suitable triboelectric charge.

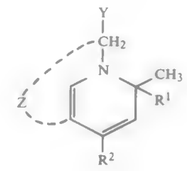
5,340,675

ELECTROPHOTOGRAPHIC RECORDING MATERIAL

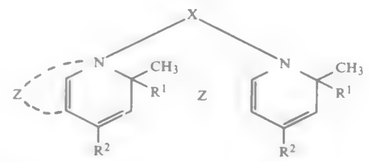
Marcel J. Monbaliu, Mortsel; David R. Terrell, Lint, and Stefaan K. De Meutter, Zandhoven, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Continuation of Ser. No. 706,015, May 28, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 4,658
Claims priority, application European Pat. Off., Jun. 19, 1990, 90201600.5
The portion of the term of this patent subsequent to Jul. 24, 2007, has been disclaimed.
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—58 **9 Claims**

1. An electrophotographic recording material which comprises an electrically conductive support having thereon a photoconductive layer, characterized in that said layer contains one or more 1,2-dihydroquinoline compounds corresponding to one of the following general formulae (A) or (B):



(A)



(B)

wherein:
each of R^1 and R^2 (same or different) represents a C_1–C_6 alkyl group,

VOL 1165 ISS 4 AG 23 1994 UMI

Y represents a polycyclic aromatic nucleus, including said nucleus carrying one or more non-ionic substituents,
X is a CH_2-Ar-CH_2 group wherein Ar is a bivalent polycyclic aromatic group, and
Z represents the atoms necessary to close an adjacent aromatic nucleus or ring system, including such nucleus or ring system substituted with one or more substituents of non-ionic character.

5,340,676

IMAGING ELEMENT COMPRISING AN ELECTRICALLY-CONDUCTIVE LAYER CONTAINING WATER-INSOLUBLE POLYMER PARTICLES

Charles C. Anderson, Penfield; Mario D. DeLaura, Hamlin; Paul A. Christian, Pittsford; Ibrahim M. Shalhoub, Pittsford, and David F. Jennings, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 18, 1993, Ser. No. 32,884
Int. Cl.[5] G03G *15/04*
U.S. Cl. 430—63 32 Claims

1. An imaging element for use in an image-forming process; said imaging element comprising a support, an image-forming layer, and an electrically-conductive layer; said electrically-conductive layer comprising a film-forming hydrophilic colloid having dispersed therein both electrically-conductive metal-containing particles and water-insoluble polymer particles; said electrically-conductive metal-containing particles having an average particle size of less than 0.3 micrometers and constituting about 10 to about 50 volume percent of said electrically-conductive layer, and said water-insoluble polymer particles having an average particle size of from about 10 to about 500 nanometers and being present in said electrically-conductive layer in an amount of from about 0.3 to about 3 parts per part by weight of said film-forming hydrophilic colloid.

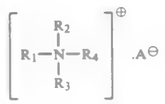
5,340,677

CARRIER FOR ELECTROPHOTOGRAPHY, TWO-COMPONENT TYPE DEVELOPER FOR ELECTROSTATIC IMAGES, PROCESS FOR PRODUCING CARRIER FOR ELECTROPHOTOGRAPHY, AND IMAGE FORMING METHOD

Yoshinobu Baba; Takeshi Ikeda; Tada Tatsuya, all of Yokohama; Yuko Sato, Kawasaki, and Yasuko Amano, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 872,979
Claims priority, application Japan, Apr. 26, 1991, 3-122831; Apr. 26, 1991, 3-122832; Apr. 26, 1991, 3-122833; Apr. 26, 1991, 3-122834
Int. Cl.[5] G03G *9/10*
U.S. Cl. 430—106.6 101 Claims

1. A carrier for electrophotography, comprising a carrier comprised of a core material, and a coating comprised of a resin coating material, a surface of said carrier core material being coated with said resin coating material, wherein
said carrier core material comprises a binder resin and fine magnetic material particles dispersed in said binder resin; and
said resin coating material contains at least one member selected from the group consisting of;
(a) a vinyl copolymer having a hydroxyl value in the range of 1 to 100 (KOHmg/g);
(b) a styrene-acrylic copolymer having an acrylic component in a monomer percentage in the range of 30% by weight to 90% by weight, a weight averge molecular weight (Mw) in the range of 30,000 to 70,000 and a weight average molecular weight/number average molecular weight (Mw/Mn) in the range of 2 to 10; and
(c) an insulating resin and a quanternary ammonium salt represented by the following Formula (I):



(I)

wherein R_1, R_2, R_3, and R_4 may be the same or different, each representing an alkyl group, and aryl group or an aralkyl group; and A represents an organic anion or a polyacid ion.

5,340,678

DRY TOWER FOR DEVELOPING ELECTROSTATIC IMAGE, PROCESS FOR PRODUCING SAME, AND IMAGE FORMATION METHOD USING SAME

Chiaki Suzuki; Atuhiko Eguchi; Yuka Ishihara; Takayoshi Aoki; Seiichi Takagi; Toshiyuki Yano, and Masao Mochizuki, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 84,072
Claims priority, application Japan, Jul. 2, 1992, 4-197452; Jul. 2, 1992, 4-197453
Int. Cl.[5] G03G *9/08, 13/22*
U.S. Cl. 430—170 12 Claims

1. A dry toner for developing an electrostatic latent image comprising toner particles and fine particles of a lubricant coated with an inorganic compound fine powder.

5,340,679

INTERMEDIATE TRANSFER ELEMENT COATINGS

Santokh S. Badesha, Pittsford; Joseph Mammino, Penfield; Dennis A. Abramsohn, Pittsford; Donald S. Sypula, Penfield; Arnold W. Henry, Pittford; George J. Heeks; David H. Pan, both of Rochester, and Louis D. Fratangelo, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 22, 1993, Ser. No. 35,023
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[5] G03G *13/20*
U.S. Cl. 430—126 21 Claims

1. An intermediate toner transfer component comprised of a substrate and thereover a coating comprised of a volume grafted elastomer, which is a substantially uniform integral interpenetrating network of a hybrid composition of a fluoroelastomer and a polyorganosiloxane, said volume graft having been formed by dehydrofluorination of said fluoroelastomer by a nucleophilic dehydrofluorinating agent, followed by addition polymerization by the addition of an alkene or alkyne functionally terminated polyorganosiloxane and a polymerization initiator.

5,340,680

DESENSITIZABLE RECORD MATERIAL

Robert E. Miller; Lowell Schleicher; Robert W. Brown, and Lucy Feldman, all of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed Sep. 10, 1992, Ser. No. 943,090
Int. Cl.[5] G03C *1/73*
U.S. Cl. 430—138 10 Claims

1. A record material comprising:
a substrate bearing nonmeltable microcapsules, said microcapsules prepared by a process in an aqueous manufacturing vehicle which comprises enwrapping intended capsule core material, substantially insoluble in said vehicle with polymeric walls produced by in situ polymerization of resins selected from melamine and formaldehyde, methylol melamine, or methylated methylol melamine, wherein the polymerization is conducted at a temperature of at least 65° C.,

said microcapsules containing a core material comprising chromogen and a photosensitive composition, said photosensitive composition undergoing a change in viscosity upon exposure to actinic radiation,
an acidic developer material outside of said microcapsules capable of reacting with said chromogen to produce a color,
said polymeric walls of said microcapsules having an elongation of not more than 1%,
said record material being resistant to heat as measured by a background color development of less than 10% when the record material is placed in a 150° C. oven for 1 minute,
said record material however forming a color upon application thereto of a point source energy input comprising a ΔT of at least 115° C. per one millisecond.
6. A record material comprising:
a substrate bearing nonmeltable microcapsules, said microcapsules prepared by a process in an aqueous manufacturing vehicle which comprises enwrapping intended capsule core material, substantially insoluble in said vehicle with polymeric walls produced by in situ polymerization of resins selected from melamine and formaldehyde, methylol melamine, or methylated methylol melamine, wherein the polymerization is conducted at a temperature of at least 65° C.,
said microcapsules containing a core material comprising an acidic developer material and a photosensitive composition, said photosensitive composition undergoing a change in viscosity upon exposure to actinic radiation,
a chromogen outside of said microcapsules capable of reacting with said acidic developer material to produce a color,
said polymeric walls of said microcapsules having an elongation of not more than 1%,
said record material being resistant to heat as measured by a background color development of less than 10% when the record material is placed in a 150° C. oven for 1 minute,
said record material however forming a color upon application thereto of a point source energy input comprising a ΔT of at least 115° C. per one millisecond.

5,340,681

METHOD FOR PREPARING PHOTOGRAPHIC ELEMENTS HAVING SINGLE PHOTOSENSITIVE LAYER CONTAINING PHOTOPOLYMERIZABLE COMPOUND, PHOTOINITIATOR, DIAZONIUM COMPOUND AND BARRIER MATERIAL ENCAPSULATED PIGMENT PARTICLES; AND NEGATIVE IMAGE FORMATION PROCESS

Maria T. Sypek, Belchertown; Paul A. Perron, Springfield, both of Mass., and Gary V. Groseclaude, Torrington, Conn., assignors to International Paper Company, Purchase, N.Y.

Division of Ser. No. 897,319, Jun. 11, 1992, Pat. No. 5,286,594, which is a continuation-in-part of Ser. No. 560,037, Jul. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 150,194, Jan. 29, 1988, abandoned. This application Nov. 5, 1993, Ser. No. 148,757
Int. Cl.[5] G03F *7/021, 7/30*
U.S. Cl. 430—138 23 Claims

1. A method for preparing a photographic element which comprises, forming a light sensitive, photopolymerizable composition which comprises an admixture of:
a.) a substantially homogeneous pigment composition, which pigment composition comprises pigment particles which are substantially pre-encapsulated by a barrier material, which barrier material comprises one or more photopolymerizable monomer, oligomer or polymer components capable of being photopolymerized and which resists de-encapsulation when in admixture with the other components of the photosensitive composition, said pigment composition being present in an amount sufficient to substantially uniformly color the photosensitive composition; and
b.) at least one photopolymerizable monomer, oligomer or polymer binder in an amount sufficient to form a substantially uniform photopolymerizable composition; and
c.) at least one photoinitiator in an amount sufficient to effect photopolymerization of the barrier material and the photopolymerizable monomer, oligomer or polymer binder upon exposure to sufficient actinic radiation; and
d. at least one diazonium compound in an amount sufficient to form a light sensitive composition; and coating a substrate with a substantially uniform layer of said photopolymerizable composition in the absence of any other light sensitive composition on said substrate.
23. A method for forming an image which comprises
I. preparing a photographic element by forming a light sensitive, photopolymerizable composition which comprises an admixture of:
a.) a substantially homogeneous pigment composition, which pigment composition comprises pigment particles which are substantially pre-encapsulated by a barrier material, which barrier material comprises one or more photopolymerizable monomer, oligomer or polymer components capable of being photopolymerized and which resists de-encapsulation when in admixture with the other components of the photosensitive composition, said pigment composition being present in an amount sufficient to substantially uniformly color the photosensitive composition; and
b.) at least one photopolymerizable monomer, oligomer or polymer binder in an amount sufficient to form a substantially uniform photopolymerizable composition; and
c.) at least one photoinitiator in an amount sufficient to effect photopolymerization of the barrier material and the photopolymerizable monomer, oligomer or polymer binder upon exposure to sufficient actinic radiation; and
d.) at least one diazonium compound in an amount sufficient to form a light sensitive composition; and
II. coating a subtrate with a substantially uniform layer of said photopolymerizable composition in the absence of any other light sensitive composition on said substrate; and
III. imagewise exposing the layer to actinic radiation; and
IV. removing the imagewise unexposed, non-image portions of the layer of photopolymerizable composition with a developing solution.

5,340,682

POSITIVE-WORKING RADIATION-SENSITIVE MIXTURE AND COPYING MATERIAL PRODUCED THEREFROM COMPRISING AN α-CARBONYL-α-SULFONYL DIAZOMETHANE, A WATER-INSOLUBLE BINDER AND AN ACID CLEAVABLE COMPOUND

Georg Pawlowski, Wiesbaden; Hans-Joachim Merrem, Seeheim-Jugenheim; Juergen Lingnau, Mainz-Laubenheim; Ralph Dammel, Klein-Winternheim, and Horst Roeschert, Biebelried, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 578,778, Sep. 7, 1990, abandoned. This application Apr. 9, 1993, Ser. No. 46,484
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930087
The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.
Int. Cl.[5] G03F *7/023, 7/30*
U.S. Cl. 430—165 21 Claims

1. A positive-working radiation-sensitive mixture consisting essentially of, in admixture:
a) a compound which forms an acid on irradiation, in an amount sufficient to cleave compound b),
b) a compound having at least one C—O—C or C—O—Si bond which can be cleaved by the acid formed by compound a), said mixture comprising an amount of com-

VOL 1165 ISS 4 AG 23 1994 UMI

pound b) sufficient to render the mixture soluble or at least swellable in aqueous-alkaline solution when the acid formed from compound a) upon irradiation cleaves compound b), and

c) a water-insoluble binder which is soluble of at least swellable in aqueous alkaline solutions, said binder being present in an amount sufficient to form a uniform film when a layer of the positive-working radiation-sensitive mixture is coated on a substrate, wherein compound (a) is an α-carbonyl-α-sulfonyldiazomethane derivative of the formula I



I

in which

R^1 and R^2, independently of one another, denote an alkyl-, cycloalkyl-, aryl- or heteroaryl radical any of which may be optionally-substituted.

15. A positive-working radiation-sensitive copying material consisting essentially of:

a support, and

a radiation-sensitive layer of a radiation-hardenable mixture as claimed in claim 1 coated on the support.

5,340,683

PRESENSITIZED PLATE HAVING SURFACE-GRAINED AND ANODIZED ALUMINUM SUBSTRATE WITH LIGHT-SENSITIVE LAYER CONTAINING QUINONE DIAZIDE SULFONIC ACID ESTER OF PARTICULAR POLYHYDROXY COMPOUND

Syunichi Kondo; Akira Nagashima, and Yasumasa Kawabe, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Jul. 7, 1993, Ser. No. 86,864

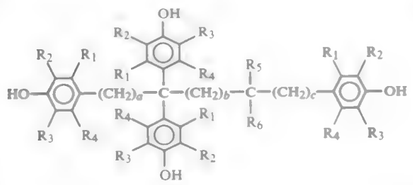
Claims priority, application Japan, Jul. 22, 1992, 4-195619

Int. Cl.[5] G03F *7/023, 7/09*

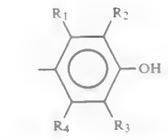
U.S. Cl. 430—165 **9 Claims**

1. A presensitized plate for use in making a lithographic printing plate comprising a surface-grained and anodized aluminum plate provided thereon with a light-sensitive layer of a composition comprising in admixture at least one light-sensitive substance and an alkali-soluble resin wherein the light-sensitive substance is present in an amount of from 5 to 100 parts by weight based on the total amount of alkali-soluble resin and is a 1,2 (and/or 2,1)-naphthoquinonediazide-5-(and/or -4-)sulfonic acid ester of a polyhydroxy compound represented by the following general formula (I):

(I)



wherein substituents R_1 to R_4 are the same or different and each represents a hydrogen atom, a hydroxyl group, a halogen atom, an alkyl group, an alkoxy group or an alkenyl group; R_5 and R_6 each represents a hydrogen atom, an alkyl group or a group:



(wherein R_1 to R_4 are the same as those defined above), a and c each represents 0 or 1 and b represents 0 or an integer ranging from 1 to 4.

5,340,684

PHOTOSENSITIVE COMPOSITION AND RESIN-ENCAPSULATED SEMICONDUCTOR DEVICE

Rumiko Hayase, Kawasaki; Masayuki Oba, Yokohama; Naoko Kihara, Matsudo, and Yukihiro Mikogami, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 623,536, Dec. 7, 1990, abandoned. This application Nov. 29, 1993, Ser. No. 158,490

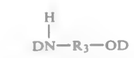
Claims priority, application Japan, Dec. 7, 1989, 1-316377; Mar. 9, 1990, 2-56433

Int. Cl.[5] G03F *7/023, 7/115*

U.S. Cl. 430—165 **18 Claims**

1. A positive photosensitive composition comprising:

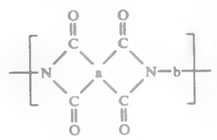
a photosensitive agent comprising an amide-ester compound of naphthoquinonediazidesulfonic acid or benzoquinonediazide-sulfonic acid represented by the following formula:



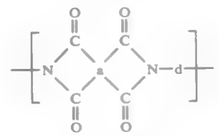
wherein R_3 represents a divalent aromatic group and D represents a residual group of naphthoquinonediazidesulfonic acid or benzoquinonediazidesulfonic acid; in admixture with

polyimide having repeating units represented by the following Formulas (I) and (II)

(I)

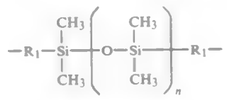


(II)



wherein a represents a tetravalent aromatic group, b represents a divalent aromatic group having a hydroxyl group, and d represents a divalent group containing silicon represented by the following Formula (III):

(III)



wherein R_1 represents a substituted or unsubstituted alkylene group having 1 to 10 carbon atoms, a substituted or unsubstituted aromatic group having 1 to 10 carbon atoms, and n represents an integer of 1 to 6;

wherein 0.1 to 50 parts by weight of said photosensitive agent are contained with respect to 100 parts by weight of said polyimide.

17. A resin-encapsulated semiconductor device comprising:

a passivation film coated on a surface of a semiconductor substrate having an element, and consisting of a photosensitive composition according to claim 1; and

an encapsulating resin for encapsulating said semiconductor substrate.

5,340,685

LIGHT-SENSITIVE COMPOSITION CONTAINING DIAZO RESIN, POLYURETHANE RESIN AND FLUORINE ATOM-CONTAINING COPOLYMER SURFACTANT

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Filed Mar. 31, 1993, Ser. No. 40,615

Claims priority, application Japan, Apr. 3, 1992, 4-082426

Int. Cl.[5] G03F *7/021*

U.S. Cl. 430—175 **12 Claims**

1. A light-sensitive composition which comprises, together in admixture, a sensitizing amount of a light-sensitive diazo resin, 50 to 95% by weight based on the light-sensitive composition of a polymer binder and 0.01 to 10% by weight based on the light-sensitive composition of a fluorine atom-containing surfactant wherein the polymer binder is a polyurethane resin having acidic hydrogen atom-containing substituents and comprising structural units derived from a diol represented by the following general formula (1),

$$HO-(CH_2CH_2O)_n-H \quad (1)$$

wherein n is an integer ranging from 3 to 6, in an amount ranging from 10 to 80 mole % on the basis of the total diol components present in the resin, the acidic hydrogen atom-containing substituent is a group having an acid dissociation constant of not more than 7 and is a member selected from the group consisting of —COOH, $-SO_2NHCOO-$, $-CONHSO_2-$, $-CONHSO_2-$, $-NHCONHSO_2-$; and wherein the fluorine atom-containing surfactant is a copolymer of (i) an acrylate or methacrylate having a fluoroaliphatic group which has a carbon atom number of 3 to 20 and a fluorine atom content of not less than 30% by weight and in which at least three terminal carbon atoms are completely fluorinated, with (ii) poly(oxyalkylene)acrylate or poly(oxyalkylene)methacrylate, the copolymer containing the fluoroaliphatic group-containing acrylate or methacrylate units in an amount ranging from 35 to 50% by weight on the basis of the weight of the copolymer and the copolymer having a molecular weight ranging from 20,000 to 100,000.

5,340,686

POSITIVE-TYPE PHOTORESIST COMPOSITION

Shinji Sakaguchi; Shiro Tan, and Tadayoshi Kokubo, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 756,699, Sep. 9, 1991, abandoned. This application Dec. 28, 1993, Ser. No. 173,924

Claims priority, application Japan, Sep. 13, 1990, 2-242973

Int. Cl.[5] G03F *7/023, 7/30*

U.S. Cl. 430—191 **6 Claims**

1. A positive-type photoresist composition comprising in admixture:

(1) an alkali-soluble phenol novolak having a degree of dispersion of from 1.5 to 4.0 and a $\overline{M}w$ of from 2,000 to 6,000;

(2) a 1,2-quinone diazide compound; and

(3) from 2 to 30% by weight, based on said novolak, of a low molecular weight compound having a total of from 12 to 50 carbon atoms per molecule and form 2 to 8 phenolic hydroxyl groups per molecule;

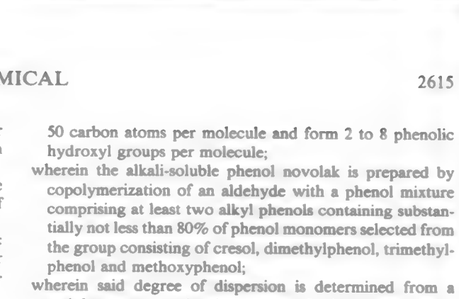
wherein the alkali-soluble phenol novolak is prepared by copolymerization of an aldehyde with a phenol mixture comprising at least two alkyl phenols containing substantially not less than 80% of phenol monomers selected from the group consisting of cresol, dimethylphenol, trimethylphenol and methoxyphenol;

wherein said degree of dispersion is determined from a weight-average molecular weight of said novolak and a number-average molecular weight of said novolak, both said weight-average and number-average molecular weights being obtained by gel permeation chromatography (GPC) defined by using standard polystyrene as a reference, such that said degree of disperison is a ratio of said weight-average molecular weight to said number-average molecular weight;

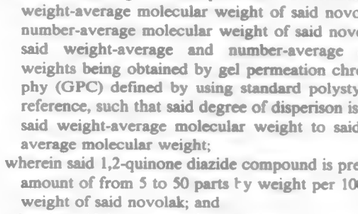
wherein said 1,2-quinone diazide compound is present in an amount of from 5 to 50 parts by weight per 100 parts by weight of said novolak; and

wherein said low molecular weight compound is represented by any of formulae (L-1) to (L-8):

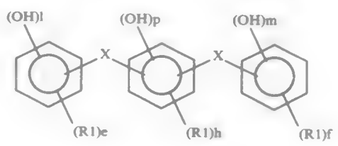
(L-1)



(L-2)



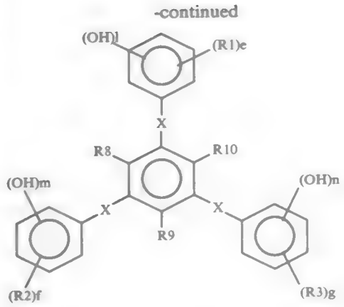
(L-3)



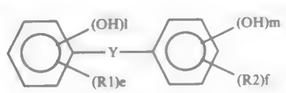
VOL 1165 ISS 4 AUG 23 1994 UMI

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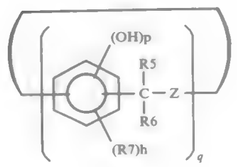
(L-4)



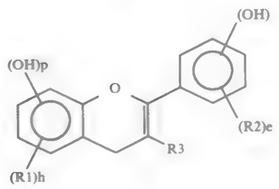
(L-5)



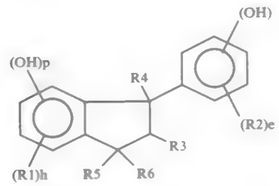
(L-6)



(L-7)



(L-8)



wherein R_1 to R_4 may be either the same or different, and each represents a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, or an acyloxy group;

R_5 and R_6 may be either the same or different, and each represents a hydrogen atom, a lower alkyl group, or a lower haloalkyl group;

R_7 represents a hydrogen atom, a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, or an acyloxy group;

R_8 to R_{10} may be either the same or different, and each represents a hydrogen atom, a halogen atom, a hydroxyl group, a lower alkyl group, an alkoxy group, an acyl group, or an acyloxy group;

a to d each represents 0 or an integer of from 1 to 3;

e to g each represents 0 or an integer of from 1 to 2;

l to n each represents an integer of from 1 to 3;

p represents an integer of from 1 to 3;

h represents 0 or an integer of from 1 to (4−p);

q represents an integer of from 3 to 8;

r represents an integer of from 1 to 3;

s represents 0 or an integer of from 1 to 4;

A represents a hydrogen atom or a hydroxyl group;

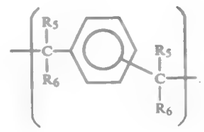
X represents a methylene group, a lower alkyl-substituted methylene group, a halomethylene group, or a haloalkylmethylene group;

Y represents a methylene group, a lower alkyl-substituted methylene group, a benzylidene group, a substituted benzylidene group, a straight chain or branched alkylene group, a substituted alkylene group, or a hydroxyalkylene group, all alkylene groups having 2 to 8 carbon atoms;

Z represents a single bond or an oxymethylene group; and D represents C=O, —S—, SO_2,



a single bond, or



wherein x is an integer from 2 to 3001 with a monomethylolated phenolic compound having a formula (III):

5,340,687

CHEMICALLY MODIFIED HYDROXY STYRENE POLYMER RESINS AND THEIR USE IN PHOTOACTIVE RESIST COMPOSITIONS WHEREIN THE MODIFYING AGENT IS MONOMETHYLOL PHENOL

Kenji Honda, Barrington, R.I., assignor to OCG Microelectronic Materials, Inc., West Paterson, N.J.

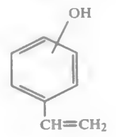
Filed May 6, 1992, Ser. No. 879,021

Int. Cl.[5] G03F *7/023, 7/30*

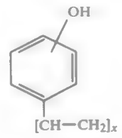
U.S. Cl. 430—192 **7 Claims**

1. An alkali-soluble binder resin made by a condensation reaction consisting of reacting a hydroxy styrene moiety having formulae (I) or (II):

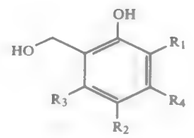
(I)



(II)



(III)



wherein R_1 and R_2 are individually selected from the group consisting of lower alkyl group having 1–4 carbon atoms, lower alkoxy group having 1–4 carbon atoms, amino group, and carboxylic acid group; wherein R_3 and $R_4$are individually selected from the group consisting of hydrogen, lower alkyl group having 1–4 carbon atoms, lower alkoxy groups having 1–4 carbon atoms, an amino group, and a carboxylic group; and wherein the mole ratio of the hydroxy styrene moiety to the monomethylolated phenolic compound is from about 1:10 to about 10:1.

5,340,688

POSITIVE TYPE PHOTORESIST COMPOSITION

Yasumasa Kawabe; Toshiaki Aoai, and Tadayoshi Kokubo, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 10, 1993, Ser. No. 15,578

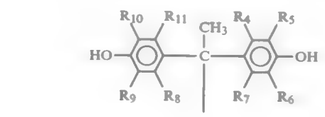
Claims priority, application Japan, Feb. 12, 1992, 4-025158

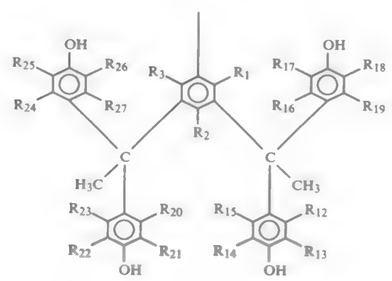
Int. Cl.[5] G03F *7/021, 7/30*

U.S. Cl. 430—192 **9 Claims**

1. A positive type photoresist composition comprising an admixture of a 1,2-naphthoquinonediazido-5-(and/or -4-)-sulfonic ester of a polyhydroxy compound represented by the following formula (I), (II) or (III) and an alkali soluble resin:

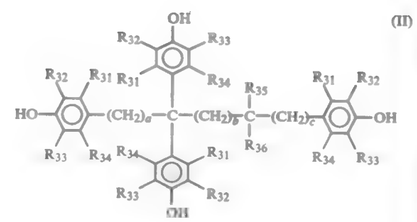
(I)



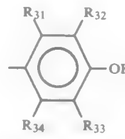


wherein R_1 to R_{27}, which may be the same or different, each represents a hydrogen atom, a hydroxyl group, a halogen atom, an alkyl group, an alkoxy group, a nitro group, an alkenyl group, an aryl group, an aralkyl group, an alkoxycarbonyl group, an arylcarbonyl group, an acyloxy group, an acyl group, an aryloxyl group or an aralkoxy group;

(II)

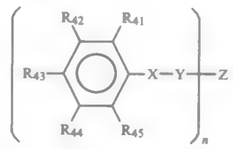


wherein R_{31} to R_{34}, which may be the same or different and in which the four groups for each of R_{31} to R_{34} may be the same or different, each represents a hydrogen atom, a hydroxyl group, a halogen atom, an alkyl group, an alkoxy group or an alkenyl group; R_{35} and R_{36} represents a hydrogen atom, an alkyl group or



a and c each represents 0 or 1; and b

(III)



wherein R_{41} to R_{45}, which may be the same or different, each represents a hydrogen atom, a hydroxyl group, a halogen atom, an alkyl group or an alkoxy group, with the proviso that at least one of R_{41} to R_{45} is a hydroxyl group; X represents a single bond or a $-(CH_2)_m-$ group; Y represents a —COO—X— or —OCO—X— group; Z represents an organic group having a valence of n; n represents an integer 3 to 6; and m represents n integer 1 to 4.

5,340,689

IMAGE-RECORDING MATERIALS WITH CYCLIC 1,3-SULFUR-NITROGEN DYE PROVIDING COMPOUNDS

Efthimios Chinoporos, Cambridge; Robert H. Pauze, Middleboro; David P. Waller, Lexington, and David C. Whritenour, Franklin, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 923,843, Jul. 31, 1992, Pat. No. 5,316,887, and a continuation-in-part of Ser. No. 995,026, Dec. 22, 1992, abandoned. This application May 6, 1993, Ser. No. 58,494

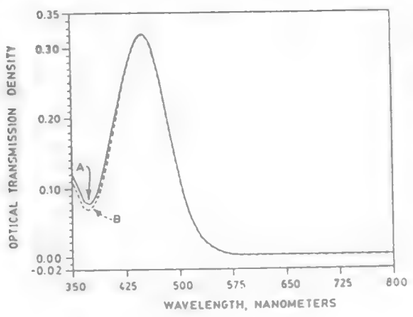
Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—200 **32 Claims**

1. An image-recording material for use in a diffusion transfer color process comprising

(a) one or more supports each carrying in one or more layers a source of silver ions and a dye-providing compound capable of releasing a diffusible coupler dye upon cleavage in the presence of said silver ions, said dye-providing compound represented by the formula:

VOL 1165 ISS 4 AUG 23 1994 UMI



5,340,690

METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

René M. De Keyzer, Sint-Niklaas; Jean-Marie O. Dewanckele, Drongen; Ludo L. Van Rompuy, Destelbergen, and Jos A. Vaes, Betekom, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Continuation of Ser. No. 810,151, Dec. 19, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 32,174

Int. Cl.[5] G03C *8/32*; G03F *7/07*

U.S. Cl. 430—204 7 Claims

1. A method for making a lithographic printing plate according to the DTR-process comprising the steps of:

information-wise exposing an imaging element comprising on a support in the order given a silver halide emulsion layer and an image-receiving layer containing physical development nuclei and a hydrophilic colloid in an amount of up to 30% by weight of the total weight of said image-receiving layer and

developing said information-wise exposed imaging element with an alkaline processing liquid, containing a hydrophobizing agent, in the presence of developing agent(s) and silver halide solvent(s) characterized in that said silver halide solvents comprise a combination of (an) alkanolamine(s) and a thiosulfate wherein said thiosulfate is used in a total amount between 0.01% and 1% by weight in said alkaline processing liquid.

5,340,691

METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Jos Vaes, Betekom; Jean-Marie Dewanckele, Drongen, and Marcel Monbaliu, Mortsel, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Sep. 29, 1993, Ser. No. 128,243

Claims priority, application European Pat. Off., Sep. 30, 1992, 92203007.7

Int. Cl.[5] G03C *5/34*

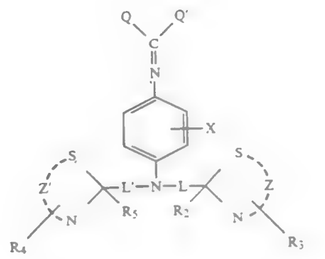
U.S. Cl. 430—204 5 Claims

1. A method for making a lithographic printing pate according to the silver salt diffusion transfer process comprising the steps of:

image-wise exposing an imaging element comprising on a support a photosensitive layer comprising a silver halide emulsion and an image receiving layer containing physical development nuclei,

developing said imaging element in the presence of developing agent(s) and silver halide solvent(s) using an alkaline processing liquid, and

neutralizing the thus obtained developed imaging element using a neutralization liquid having a pH of 7 or less characterized in that said neutralization liquid contains a mesoionic compound according to the following formula (I):



(I)

wherein M represents a 5-membered heterocyclic ring selected from the group consisting of an imidazolium ring, a pyrazolium ring, an oxazolium ring, an isoxazolium ring, a thiazolium ring, an isothiazolium ring, a 1,3,4-oxadiazolium ring, a 1,2,3-oxadiazolium ring, a 1,3,2-oxathiazolium ring, a 1,2,3-triazolium ring, a 1,3,4-triazolium ring, a 1,3,4-thiadiazolium ring, a 1,2,3-thiadiazolium ring, a 1,2,4-thiadiazolium ring, a 1,2,3,4-oxatriazolium ring, a 1,2,3,4-tetrazolium ring, and a 1,2,3,4-thiatriazolium ring; and A^- represents $—S^-$.

wherein:

Q, Q′ and C taken together represent a dye forming coupler moiety wherein C is the coupling carbon of said coupler moiety;

X is selected from hydrogen, branched or unbranched alkyl, substituted alkyl, alkoxy, aryl, alkaryl, carboxy, amido, sulfamyl, sulfonamido, halo, nitro, and cyano;

R_2 and R_5, the same or different, represent hydrogen, a monovalent organic radical or together with L or L′ represent the atoms necessary to complete a spiro union with one of the cyclic 1,3-sulfur-nitrogen moieties, or R_2 together with R_5 represents the atoms necessary to complete a 5, 6 or 7-membered heterocyclic ring with L′, N and L;

R_3 and R_4, the same or different, represent ballasting groups which render the dye-providing compound substantially non-diffusible in the imaging media;

L and L′ represent divalent organic linking groups, the same or different, each containing at least two carbon atoms, provided that when one of L and L′ contains 2 carbon atoms, the other contains at least 3 carbon atoms; and,

Z and Z′, the same or different, represent the carbon atoms necessary to complete an unsubstituted or substituted 5- or 6-membered heterocyclic ring system, and

(b) on the same or a separate support, an image receiving layer capable of receiving the diffusible coupler dye released from said dye-providing compound.

5,340,692

IMAGE RECEIVING MATERIAL WITH NACREOUS PIGMENT FOR PRODUCING CONTONE IMAGES ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Leon Vermeulen, Herenthout, and Robert Pauwels, Brasschaat, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Sep. 13, 1993, Ser. No. 120,177

Claims priority, application European Pat. Off., Sep. 14, 1992, 92202798.2

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—233 8 Claims

1. An image receiving material comprising on a support an image receiving layer containing physical development nuclei characterised in that said image receiving material contains a nacreous pigment in said image receiving layer and/or in an optional layer between said support and said image receiving layer.

5,340,693

HEAT-SENSITIVE RECORDING MATERIAL AND METHOD FOR OBTAINING AN IMAGE USING THE SAME

Herman Uytterhoeven, Bonheiden; Luc Bastiaens, Brasschaat; Rudolf Van den Bergh, Herenthout, and Luc Leenders, Herentals, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 18, 1993, Ser. No. 19,636

Claims priority, application European Pat. Off., Feb. 29, 1992, 92200592.1

Int. Cl.[5] G03C *3/00*

U.S. Cl. 430—253 11 Claims

1. A heat-sensitive recording material comprising on a support in the order given a porous layer of an image forming substance, a thermoplastic layer containing a photocurable composition and a stripping layer, said heat-sensitive material further comprising in said porous layer or a neighboring layer thereto or in said thermoplastic layer a substance capable of converting radiation into heat and/or said image forming substance is capable of converting radiation into heat.

5,340,694

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takanori Hioki, and Ryoji Nishimura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

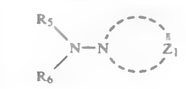
Filed Feb. 2, 1993, Ser. No. 12,350

Claims priority, application Japan, Feb. 6, 1992, 4-054124

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 18 Claims

1. A silver halide photographic material containing at least one hydrazine compound represented by formula (II):



(II)

wherein

R_5 and R_6 each represents an alkyl group, an aryl group or a heterocyclic group; or R_5 and R_6 may be bonded to each other to form a non-aromatic ring; and

Z_1 represents an alkylene group having 4 or 6 carbon atoms; provided that the carbon atoms of R_5, R_6, and Z_1 which are directly bonded to a nitrogen atom of the hydrazine core of the compound are not substituted by an oxo group.

5,340,695

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Tetsuo Yamaguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 12, 1993, Ser. No. 104,910

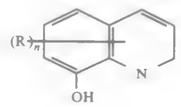
Claims priority, application Japan, Aug. 25, 1992, 4-226154

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 10 Claims

1. A silver halide photographic material comprising a support, having thereon at least one lightsensitive silver halide emulsion layer, wherein said emulsion layer or another hydrophilic colloid layer contains a hydrazine derivative and a compound which can be represented by formula (I);

Formula (I)



wherein, R represents a halogen atom or an alkyl group, n represents 0, 1, 2 or 3; and when n is 2 or 3, the individual R groups may be the same or different.

5,340,696

PHOTORESIST COMPOSITIONS WITH COPOLYMER BINDER HAVING PHENOLIC AND NONAROMATIC CYCLIC ALCOHOL UNITS WHERE THE DISTRIBUTION OF THE CYCLIC ALCOHOL CONCENTRATION IS LESS THAN 8 MOLE PERCENT

James W. Thackeray, Braintree; Mark Denison, Cambridge, and George W. Orsula, Tewksbury, all of Mass., assignors to Shipley Company Inc., Marlborough, Mass.

Filed Jan. 29, 1993, Ser. No. 10,815

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] G03F *7/004*

U.S. Cl. 430—270 9 Claims

1. A photoresist composition comprising an admixture of a resin binder and a radiation sensitive component, said resin binder comprising a copolymer having phenolic and nonaromatic cyclic alcohol units where the copolymer has a weight average molecular weight of less than about 5,000 daltons, a weight average molecular weight to number average molecular weight ratio not exceeding 3, and a distribution of the cyclic alcohol concentration not exceeding about 8 mole percent, the radiation sensitive component being present in an amount capable of generating a latent image by exposure of a coating layer of said photoresist to activating radiation.

5,340,697

NEGATIVE TYPE PHOTORESIST COMPOSITION

Hiroshi Yoshimoto; Kazuya Uenishi, and Tadayoshi Kokubo, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 9, 1993, Ser. No. 73,564

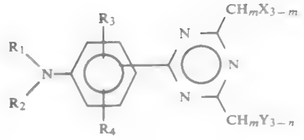
Claims priority, application Japan, Jun. 9, 1992, 4-149392

Int. Cl.[5] G03C *1/492*

U.S. Cl. 430—270 4 Claims

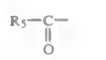
1. A negative type photoresist composition consisting essentially of a light-sensitive s-triazine compound, an acid-crosslinkable material, and an alkali soluble resin; wherein said light-sensitive s-triazine compound is represented by the following formula (I):

VOL 1165 ISS 4 AG 23 1994 UMI

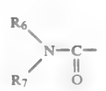


(I)

wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, a group represented by formula (II) or (III), or R_1 and R_2 may form a heterocyclic group consisting of non-metal atoms bonded to a nitrogen atom; R_3 and R_4 each represents a hydrogen atom, a halogen atom, an alkyl group, or an alkoxy group; X and Y, which may be the same or different, each represents a chlorine atom or a bromine atom; and m and n each represents 0, 1 or 2;



(II)



(III)

wherein R_5 represents an alkyl group, a substituted alkyl group, an aryl group, or a substituted aryl group; and R_6 and R_7, which may be the same or different, each represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, or a substituted aryl group; and

wherein said acid-crosslinkable material is represented by the following formula:

$$(R_7O—CH_2)_n—A—(CH_2—OR_8)_m$$

wherein R_7 and R_8, which may be the same or different, each represents a hydrogen atom, a C_1 to C_4 alkyl group, a cycloalkyl group, a substituted or unsubstituted aryl group, an alkanol group, an arylalkyl group, or an acyl group; n is an integer of 1 to 3, and m is an integer of 0 to 3; A is a group represented by B or B—Z—B, wherein B represents a substituted or unsubstituted mononuclear or condensed polynuclear aromatic hydrocarbon or a heterocyclic compound containing oxygen, sulfur and nitrogen, and Z represents a single bond, a C_1 to C_4 alkylene group, a substituted alkylene group, an arylene group, a substituted arylene group, an arylalkylene group, —O—, —S—, —SO_2—, —CO—, —COO—, —OCOO—, —CONH—, a substituted or unsubstituted alkylene group or a polymer such as a phenol resin.

5,340,698

OPTICAL DISK

Hideki Hirata; Keiji Koga, both of Saku, and Toshihiko Ishida, Komoro, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 517,179, May 1, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,264

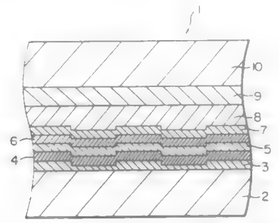
Claims priority, application Japan, May 2, 1989, 1-113132; May 2, 1989, 1-113133

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[5] G03C *1/72;* **G11B** *7/24*

U.S. Cl. 430—271 **7 Claims**

1. An optical disk comprising a pair of substrate and information carrying means on at least one of the substrates, said pair of substrates being integrated through an adhesive so as to enclose the information carrying means therebetween, wherein one of said substrates is formed of glass and the other substrate is formed of a resin, and



said adhesive has a glass transition temperature Tg of from −60° C. to −10° C. and a dynamic loss factor tan δ of between 0.2 and 1.5 at −20° C. and 10 Hz.

5,340,699

RADIATION-SENSITIVE COMPOSITION CONTAINING A RESOLE RESIN AND A NOVOLAC RESIN AND USE THEREOF IN LITHOGRAPHIC PRINTING PLATES

Neil F. Haley, Wellington, and Steven L. Corbiere, Windsor, both of Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 65,103, May 19, 1993. This application Aug. 4, 1993, Ser. No. 101,636

Int. Cl.[5] G03F *7/30, 7/021*

U.S. Cl. 430—302 **19 Claims**

1. A method of forming a lithographic printing surface comprising the following steps carried out in the following order:

(a) providing a lithographic printing plate comprising a support and an imaging layer containing an admixture of (1) a resole resin, (2) a novolac resin, (3) a latent Bronsted acid and (4) an infrared absorber;

(b) imagewise exposing said lithographic printing plate to activating radiation;

(c) heating said lithographic printing plate to provide reduced solubility in exposed areas and increased solubility in unexposed areas; and

(d) contacting said lithographic printing plate with an aqueous alkaline developing solution to remove the unexposed areas thereof and thereby form a lithographic printing surface.

5,340,700

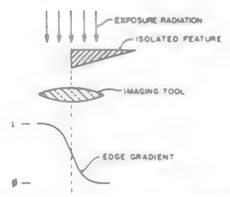
METHOD FOR IMPROVED LITHOGRAPHIC PATTERNING IN A SEMICONDUCTOR FABRICATION PROCESS

Jang F. Chen, San Jose, and James A. Matthews, Milpitas, both of Calif., assignors to Microunity Systems Engineering, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 863,791, Apr. 6, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 149,122

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—312 **22 Claims**



1. In a method for lithographically transferring a pattern from a mask into a radiation-sensitive material deposited over a semiconductor substrate utilizing an imaging tool, said pattern including a feature having first and second edges, each of said first and second edges having associated edge gradients, said first and second edges being spaced in close proximity to one another such that said associated edge gradients interact causing said feature to be distorted in said radiation-sensitive material, an improved method comprising the steps of:

a) providing a first rectilinear mask image segment, said first rectilinear mask image segment having a first set of mask edges, all opposing mask edges in said first set of mask edges being spaced a distance greater than the Rayleigh limit of said imaging tool and greater than the distance between said first and second edges, a single edge from said first set of mask edges corresponding to said first edge;

b) exposing said first rectilinear mask image segment with radiation using said imaging tool such that said single edge from said first set of mask edges produces a first pattern edge gradient defining said first edge of said two-dimensional feature in said material;

c) providing a second rectilinear mask image segment, said second rectilinear mask image segment having a second set of mask edges, all opposing mask edges in said second set of mask edges being spaced a distance greater than said Rayleigh limit of said imaging tool and greater than said distance between said first and second edges, a single edge from said second set of mask edges corresponding to said second edge;

d) exposing said second rectilinear mask image segment with radiation using said imaging tool such that said single edge from said second set of mask edges produces a second pattern edge gradient defining said second edge of said two-dimensional feature in said material, wherein said first and second edges are separated by distance which is less than or equal to the Rayleigh limit of said imaging tool and wherein said second pattern edge gradient and said first pattern edge gradient do not interact;

e) developing said radiation-sensitive material, thereby reproducing said feature on said substrate.

5,340,701

FLUORINE-FREE TITANOCENES AND THE USE THEREOF

Vincent Desobry, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

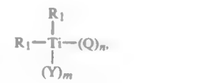
Filed Apr. 6, 1993, Ser. No. 43,237

Claims priority, application Switzerland, Apr. 9, 1992, 1155/92-0

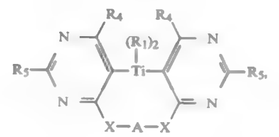
Int. Cl.[5] G03C *5/00;* **C07F** *15/02, 7/28*

U.S. Cl. 430—325 **23 Claims**

1. A compound of the formula I or II

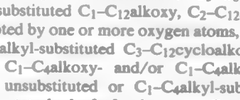


(I)



(II)

in which both R_1 radicals are, independently of one another, cyclopentadienyl⊖, indenyl⊖ or 4,5,6,7-tetrahydroindenyl⊖, these radicals being unsubstituted or substituted by C_1–C_{18}alkyl, C_1–C_{18}alkoxy, C_2–C_{18}alkenyl, C_5–C_8cycloalkyl, C_1–C_4alkyl-C_5–C_8cycloalkyl, phenyl, naphthyl, phenyl-substituted C_1–C_{12}alkyl, —$Si(R_2)_3$, —$Ge(R_2)_3$, cyano, Cl, Br or I, and the two R_2 radicals, independently of one another, are C_1–C_{12}alkyl, C_5–C_8cycloalkyl, or unsubstituted or C_1–C_6alkyl-substituted phenyl or benzyl,



Q is a

radical,

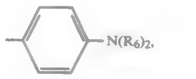
Z is —NR_{10}—, —O— or —S—,

Y is Cl, Br, I, CN, SCN, —O—CO—CH_3, —O—CO—phenyl or —O—SO_2—CH_3,

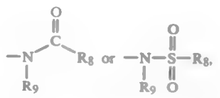
n is 1 or 2,

m is 0 or 1, where the sum of n and m must be 2,

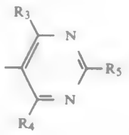
R_3, R_4 and R_5, independently of one another, are hydrogen, Cl, Br, I, unsubstituted or C_1–C_4alkoxy-, C_5–C_6cycloalkyl- or phenyl-substituted C_1–C_{12}alkyl, unsubstituted or C_1–C_4alkyl-substituted C_3–C_8cycloalkyl or adamantyl, or R_3, R_4 and R_5 are phenyl, pyrryl, furyl, thienyl, imidazolyl, pyridyl, naphthyl, anthryl, phenanthryl or biphenylyl where the radicals phenyl, pyrryl, furyl, thienyl, imidazolyl, pyridyl, naphthyl, anthryl, phenanthryl or biphenylyl are unsubstituted or substituted by C_1–C_{12}alkyl, cyclopentyl, cyclohexyl, Cl, Br, I, C_1–C_8alkylthio, —NR_8R_9, phenyl, phenylthio or/and C_1–C_{10}alkoxy, or R_3, R_4 and $R_5$are unsubstituted C_2–C_{12}alkenyl or C_2–C_{12}alkenyl which is substituted by unsubstituted or C_1–C_4alkyl-, C_1–C_4alkoxy-, C_1–C_4alkylthio-, Cl-, Br- or I-substituted phenyl or



or R_3, R_4 and R_5 are unsubstituted or C_5–C_8cycloalkyl- or phenoxy-substituted C_1–C_{12}alkoxy, C_2–C_{12}alkoxy which is interrupted by one or more oxygen atoms, unsubstituted or C_1–C_4alkyl-substituted C_3–C_{12}cycloalkoxy, unsubstituted or C_1–C_4alkoxy- and/or C_1–C_4alkyl-substituted phenoxy, unsubstituted or C_1–C_4alkyl-substituted benzyloxy, tetrahydrofurfuryloxy, C_2–C_6alkenyloxy, —O—Si—$(R_7)_3$, C_1–C_8alkylthio, C_3–C_8cycloalkylthio, unsubstituted or C_1–C_4alkyl- and/or C_1–C_4alkoxy-substituted benzylthio, unsubstituted or C_1–C_4alkyl- and/or C_1–C_4alkoxy-substituted phenylthio, —S(O)R_8, —SO_2R_8, —$N(R_9)_2$,



where R_3 and R_4 are not simultaneously hydrogen, and at least one radical R_3 or R_4 in the



radical is unsubstituted or C_5–C_8cycloalkyl- or phenoxy-

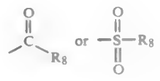
VOL 1165 ISS 4 AG 23 1994 UMI

substituted C_1–C_{12}alkoxy, C_2–C_{12}alkoxy which is interrupted by one or more oxygen atoms, unsubstituted or C_1–C_4alkyl-substituted C_3–C_{12}cycloalkoxy, unsubstituted or C_1–C_4alkoxy-and/or C_1–C_4alkyl-substituted phenoxy, unsubstituted or C_1–C_4alkyl-substituted benzyloxy, tetrahydrofurfuryloxy or C_2–C_6alkenyloxy, and in the case where Z is $—NR_{10}—$, R_3 and R_4 are Cl, Br or I, the two R_6 radicals, independently of one another, are C_1–C_4alkyl or C_2–C_{10}alkenyl, or the two R_6 radicals, together with the nitrogen atom to which they are bonded, form a morpholino radical,

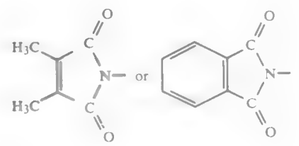
R_7 is C_1–C_{12}alkyl, C_5–C_8cycloalkyl or unsubstituted or C_1–C_6alkyl-substituted phenyl,

R_8 is unsubstituted or C_1–C_4alkyl-substituted phenyl or α-tertiary C_4–C_6alkyl,

R_9 is unsubstituted or phenyl-, C_7–C_{12}alkylphenyl-, C_5–C_8-cycloalkyl- or C_1–C_4alkyl-C_5–C_8cycloalkyl-substituted C_1–C_8alkyl, C_2–C_8alkenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl, C_6–C_{20}cycloalkenylalkyl, unsubstituted or C_1–C_{12}alkyl-substituted phenyl,



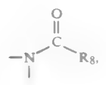
radical, where, in addition, the two R_9 radicals in $—N(R_9)_2$ are identical or different and, together with the nitrogen atom to which they are bonded, may form a 5- or 6-membered heterocyclic ring which, in addition to the nitrogen atom, may also contain further nitrogen, oxygen or sulfur atoms, or the two R_9 radicals, together with the nitrogen atom to which they are bonded, form a



radical,

R_{10} is as defined for R_9 or additionally is naphthyl, biphenylyl, pyridyl or pyrimidinyl, these radicals being unsubstituted or substituted by Cl, Br, I, NO_2, C_1–C_{12}alkyl, C_1–C_{10}alkoxy, C_1–C_8alkylthio, phenylthio, morpholino or $—N(C_1$–C_4alkyl$)_2$, or R_{10} is phenyl which is substituted by Cl, Br, I, NO_2, C_1–C_{10}alkoxy, C_1–C_8alkylthio, phenylthio, morpholino or $—N(C_1$–C_4alkyl$)_2$,

X is —O—, —S—,



methylene or ethylene, and

A is C_1–C_{12}alkylene or —X—A—X— is a direct bond.

5,340,702

METHOD OF FORMING FINE RESIST PATTERN

Hiroyuki Hirasawa, Yokohama; Minako Kobayashi, Kawasaki, and Yasuo Matsuki, Yokohama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01766, § 371 Date Aug. 27, 1992, § 102(e) Date Aug. 27, 1992, PCT Pub. No. WO92/12466, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 26, 1991, Ser. No. 923,894

Claims priority, application Japan, Dec. 27, 1990, 4-15204

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—326 2 Claims

1. A method of forming a fine resist pattern, which comprises:

(a) forming a film of a positive photoresist on a substrate, said film having a thickness of 50 to 500 μm,

(b) forming a light-shielding film directly on a surface of the film of the positive photoresist, said light-shielding film having a thickness of 0.005–0.1 μm and being formed of metal selected from the group consisting of lead, tin, indium, copper and alloys of these,

(c) processing the light-shielding film into a pattern,

(d) exposing the film of the positive photoresist to light, and

(e) developing the exposed film of the positive photoresist.

5,340,703

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Satoshi Masumi, and Shun Takada, both of Hino, Japan, assignors to Konica Corporation, Japan

Filed Sep. 1, 1992, Ser. No. 938,706

Claims priority, application Japan, Sep. 11, 1991, 3-259840

Int. Cl.[5] G03C *7/36, 5/31*

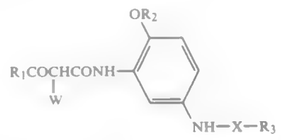
U.S. Cl. 430—389 12 Claims

1. A method of processing a silver halide light-sensitive photographic material which comprises the steps of:

exposing said material to light and

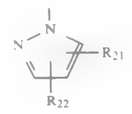
color developing said exposed material with a color developer; wherein a replenishing amount of said color developer is not more than 1000 ml/m^2 and said material contains a coupler represented by formula I;

formula I

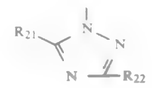


wherein R_1 represents an aliphatic group or an aromatic group, R_2 represents non-diffusible aliphatic or aromatic group, R_3 represents an aliphatic group having 1 to 6 carbon atoms; X represents —CO— or —SO_2—; W is a group represented by formulae A, B, C, D or E:

formula A



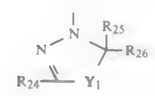
formula B



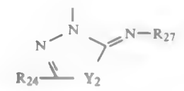
wherein R_{21} and R_{22} each represents a hydrogen atom or a substituent capable of taking a position on these azole rings;

and R_{21} and R_{22} are identical or different and may form a ring structure connecting each other,

formula C

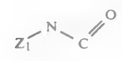


formula D



wherein Y_1 and Y_2 each represents $—N(R_{23})—$, —O— or $—S(O)_r—$ wherein R_{23} represents a hydrogen atom, an alkyl group or an aryl group, r is an integer from 0 to 2, R_{24}, R_{25} and R_{26} each identical to R_{21} and R_{22} of formula A, R_{27} represents an alkyl group, a cycloalkyl group, an aryl group, an acyl group or a sulfonyl group,

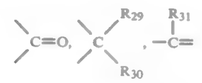
Formula E



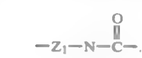
wherein Z_1 represents a heteroatom in the form of



—N=, —O—, —S $(O)_s$—wherein s is an integer from 0 to 2; or a carbon atom in the form of



wherein R_{28}, R_{29}, R_{30} and R_{31} each represents a hydrogen atom or group identical to R_{21} or R_{22} of formula A; Z_2 represents non-metal atomic group necessary for forming a five- or six-membered ring in conjunction with



5,340,704

METHOD FOR PROCESSING A SILVER HALIDE PHOTOGRAPHIC MATERIAL

Toshihide Ezoe; Kazumi Nii, and Hisashi Okamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 6, 1993, Ser. No. 86,081

Claims priority, application Japan, Jul. 7, 1992, 4-179963

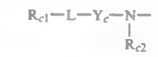
Int. Cl.[5] G03C *5/26*

U.S. Cl. 430—434 18 Claims

1. A photographic image forming method wherein a silver halide photographic material is processed with a developing solution having a pH of 9.6 to 11.0, said silver halide photographic material having at least one light-sensitive layer containing a chemically-sensitized silver halide emulsion comprising silver halide grains having a silver chloride content of at least 60 mol %, wherein at least one of said at least one light-sensitive layer and a light-insensitive hydrophilic colloid layer contains a hydrazine compound represented by the formula (1):

$$R^1—NHNH—G—R^2 \quad (1)$$

wherein R^1 represents a substituted aliphatic group, aromatic group or heterocyclic group; G represents —CO—, —SO_2—, —SO—, —COCO—, a thiocarbonyl group, an iminomethylene group or —P(O) (R^4)—; R^2 represents a substituted alkyl group in which at least one electron withdrawing group is bonded to the carbon atom of R^2 which carbon atom is attached to G; and R^4 represents a hydrogen atom, a substituted or unsubstituted aliphatic group, an aromatic group, an alkoxy group, an aryloxy group or an amino group; the substituent for R^1 is a group represented by formula (c):



(c)

wherein Y_c represents —CO—, —SO_2—, —P(O) (R_{c3})— or —OP(O) (R_{c3})— (wherein R_{c3} is an alkoxy group or an aryloxy group); L represents a single bond, —O—, —S— or $—NR_{c4}—$ (wherein R_{c4} is a hydrogen atom, a substituted or unsubstituted aliphatic, alicyclic or aromatic group), R_{c1} represents an aromatic group or heterocyclic group substituted with a group selected from the group consisting of an aralkyl group, an alkenyl group, an alkynyl group, an alkoxy group, a substituted amino group, an acylamino group, an alkyl- or aryl-sulfonlyamino, a ureido group, ROCONH— (wherein R represents an alkyl or aryl group), an aryloxy group, a sulfamoyl group, a carbamoyl group, an alkylthio group, an arylthio group, an alkyl- or aryl-sulfonyl group, an alkyl- or aryl-sulfinyl group, a hydroxy group, a halogen atom, a cyano group, —COOM, —SO_3M (wherein M represents a hydrogen atom, an alkali metal atom, —NH_4 or an ammonio group), an alkyl- or aryl-oxycarbonyl group, an acyl group, an acyloxy group, a carbonamido group, a sulfonamido group, a nitro group, an alkylthio group, and an arylthio group; R_{c2} represents a hydrogen atom, a substituted or unsubstituted aliphatic group, alicycylic group, aromatic group, or heterocyclic group.

5,340,705

PROCESSING LIQUID FOR USE IN SILVER COMPLEX DIFFUSION TRANSFER PROCESSING

René De Keyzer, Sint-Niklaas; Raymond L. Odeurs, Edegem, and Luc A. De Brabandere, Lier, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Continuation of Ser. No. 917,681, Jul. 22, 1992, abandoned, which is a continuation of Ser. No. 711,604, Jun. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 524,463, May 17, 1990, abandoned. This application Mar. 2, 1993, Ser. No. 26,209

Claims priority, application European Pat. Off., May 18, 1989, 89201253.5

Int. Cl.[5] G03C *5/54, 5/30, 5/38*

U.S. Cl. 430—456 5 Claims

1. An aqueous alkaline processing liquid for use in a silver complex diffusion transfer reversal (DTR-) process, wherein said process is carried out by development of an information-wise exposed silver halide emulsion layer with a developing agent in the presence of a silver halide solvent to form diffusible silver complexes which diffuse into an image-receiving layer containing development nuclei, (1) wherein said liquid contains no inorganic alkaline substance (s) other than an alkali metal sulfite or alkali metal thiosulfate or contains said substance(s) in an amount lower than 0.05 mole/l, (2) wherein said liquid contains a thiosulfate compound in a concentration in the range of 0.03 to 0.13 mole/l, (3) wherein said liquid comprises one or more tertiary alkanolamines having a pKa value of more than 8.5 and containing no secondary alkanolamine in a total concentration in the range of 0.3 mole/l to 1.5 mole/l,

VOL 1165 ISS 4 AG 23 1994 UMI

and (4) said liquid also contains sulfite ions in a concentration of 16 g/l to 30 g/l.

5,340,706

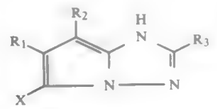
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING A PYRROLOTRIAZOLE CYAN COUPLER

Hideaki Naruse, and Makoto Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

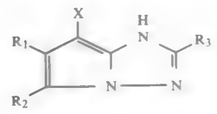
Filed Nov. 27, 1992, Ser. No. 982,773
Claims priority, application Japan, Nov. 27, 1991, 3-335905
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[5] G03C 1/46
U.S. Cl. 430—505 15 Claims

1. A silver halide color photographic light-sensitive material comprising a support and provided thereon a silver halide light-sensitive layer containing a cyan coupler, a silver halide light-sensitive layer containing a magenta coupler, and a silver halide light-sensitive layer containing a yellow coupler, wherein the silver halide light-sensitive layer containing the cyan coupler contains at least one pyrrolotriazole cyan coupler represented by the following formula (I-a) or (II-a) as a cyan coupler and the silver halide light-sensitive layer containing the magenta coupler contains a pyrazoloazole magenta coupler represented by the following Formula (M) as a magenta coupler:

(I-a)

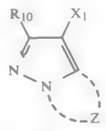


(II-a)



wherein R_1 and R_2 each represents an electron attractive group having a Hammett's substituent constant σ_p of 0.2 or more and the sum of the σ_p values of R_1 and R_2 is 0.65 or more; R_3 represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; and the group represented by R_1, R_2, R_3 or X may be a divalent group and combine with a polymer which is higher than a dimer and which has a high molecular weight chain to form a homopolymer or a copolymer;

(M)



wherein R_{10} represents a hydrogen atom or a substituent; Z represents a group of non-metallic atoms necessary to form a 5-membered azole ring containing 2 to 3 nitrogen atoms, where the azole ring may have a substituent (including a condensed ring); and X_1 represents a hydrogen atom or a group capable of splitting off upon a coupling reaction with an oxidation product of an aromatic primary amine color developing agent.

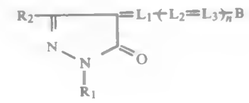
5,340,707

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Akira Ohnishi; Yasushi Usagawa, and Taketoshi Yamada, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,409
Claims priority, application Japan, Sep. 16, 1992, 4-246867
Int. Cl.[5] G03C 1/06
U.S. Cl. 430—522 9 Claims

1. A silver halide photographic light-sensitive material having a light sensitive silver halide emulsion layer and a support wherein the silver halide photographic light-sensitive material comprises a solid particle dispersion of a compound of the formula dispersed in a layer:



wherein the compound has at least one carboxyl group, sulfonamide group or sulfamoyl group, and R_1 is a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group; R_2 is a hydrogen atom, an alkyl group, an aryl group, a heterocyclic group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an acylamino group, an ureide group, an amino group, an acyl group, an alkoxy group, an aryloxy group, a hydroxyl group, a carboxyl group, a cyano group, a sulfamoyl group or a sulfonamide group; B is a 5- or 6-membered oxygen-containing heterocyclic group or a 6-membered nitrogen-containing heterocyclic group; L_1 through L_3 independently represent a methine group; n represents 0 or 1.

5,340,708

PHOTOGRAPHIC ELEMENTS CONTAINING NEW DYE-FORMING TRIS COUPLERS

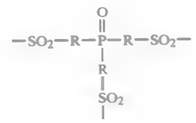
Ping-Wah Tang; Philip T. S. Lau, and Stanley W. Cowan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,466
Int. Cl.[5] G03C 7/32
U.S. Cl. 430—548 7 Claims

1. A photographic element comprising a support having thereon a photographic silver halide emulsion layer and a dye-forming tris coupler comprising three coupling moieties bonded to a phosphorous-containing tris linking group represented by



has the structure:



wherein each —R— is independently a substituted or unsubstituted alkylene, alkoxylene, arylene, or aryloxylene group.

5,340,709

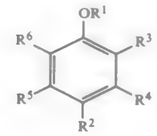
PHOTOGRAPHIC RECORDING MATERIAL

Jörg Hagemann, Cologne, and Günter Helling, Odenthal, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Mar. 10, 1993, Ser. No. 28,815
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1992, 4209346
Int. Cl.[5] G03C 1/34, 7/38
U.S. Cl. 430—551 4 Claims

1. A color-photographic recording material comprising at least one silver halide emulsion layer and a dye coupler associated with this, characterized in that the recording material contains, in at least one light-sensitive silver halide emulsion layer, a combination of a pyrazoloazole coupler and a compound of general Formula I

(I)

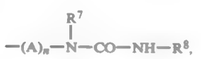


wherein

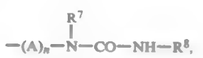
R^1 represents H, a group that can be split off under alkaline conditions, alkyl or aryl;

represents —OH, alkyl, aryl, alkoxy or





at least one of the groups R^2, R^3, R^4, R^5 and R^6 being a group of the formula



A represents alkylene with 1–6 carbon atoms;

n represents 0 or 1,

R^7 represents H or optionally substituted alkyl;

R^8 represents a member selected from the group consisting of alkyl, cycloalkyl and aryl, wherein when said alkyls, cycloalkyls and aryls are substituted, they contain at least one additional group of formula

wherein R^1 to R^7, A and n have the meanings provided above;

R^1 and R^3 can form a 5- or 6-membered ring, in which case R^2=—OH or alkoxy;

R^2 and R^4 can form a 5- or 6-membered carbocyclic ring.

R^3, R^4, R^5 and R^6 represent H, —OH, —COOH, —SO_3H, —SO_2H, alkyl, aryl, alkoxy, alkylsulphonyl, arylsulphonyl, optionally substituted sulphamoyl, acylamino or

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5,340,710

PHOTOSENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yukio Ohya; Syoji Matsuzaka; Yasushi Irie; Shuji Murakami; Satomi Asano; Hiroshi Okusa, all of Hachioji, and Hirofumi Ohtani, Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 758,419, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 598,776, Oct. 18, 1990, abandoned, which is a continuation of Ser. No. 428,027, Oct. 27, 1989, abandoned, which is a continuation of Ser. No. 290,954, Dec. 28, 1988, abandoned. This application Jul. 6, 1993, Ser. No. 86,571
Claims priority, application Japan, Dec. 28, 1987, 62-333934; Mar. 18, 1988, 63-65532; Mar. 18, 1988, 63-65533; Mar. 18, 1988, 63-65534; Mar. 23, 1988, 63-69123; Mar. 25, 1988, 63-71217; Apr. 5, 1988, 63-83600; Apr. 19, 1988, 63-96085; Sep. 7, 1988, 63-224002
Int. Cl.[5] G03C 1/035
U.S. Cl. 430—567 16 Claims



1. A photosensitive silver halide photographic material comprising

a support and, provided thereon, photographic component layers including

at least one photosensitive silver halide emulsion layer containing core/shell silver halide grains (1) comprised of seed silver halide grains, having grown on their surfaces, a shell comprised of plural silver halide phases having differing silver iodide content, said core/shell silver halide grains being prepared by mixing a water soluble silver salt solution and a water soluble halide solution comprising at least one halide other than an iodide, into a solution containing seed silver halide grains, said mixing being carried out, for at least some portion of the time period during which said silver halide shell is being grown, in the presence of preformed fine silver iodide grains, the concentration of said preformed fine silver iodide grains being greater at an early stage of growing the core/shell silver halide grains than at the termination of said growing,

whereby a shell of silver halide including the iodide from the preformed silver iodide grains is formed on the surface of the seed silver halide grains and the silver halide phase of maximum iodide content is an inner phase.

5,340,711

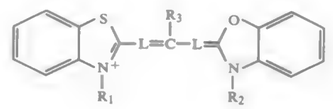
GREEN SENSITIZED SILVER HALIDE EMULSIONS

Sang H. Kim, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1993, Ser. No. 5,316
Int. Cl.[5] G03C 1/18, 1/29
U.S. Cl. 430—576 16 Claims

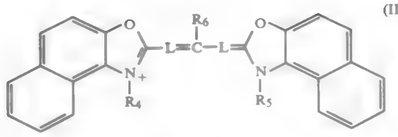
1. A silver halide photographic element having a green sensitive layer comprising silver halide grains sensitized with a combination of three sensitizing dyes of formulae I, II and III:

(I)

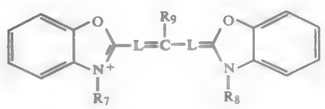


VOL 1165 ISS 4 AG 23 1994 UMI

-continued



(II)



(III)

wherein:

each of the benzo-rings of I, II or III may be substituted or unsubstituted;

each L is a substituted or unsubstituted methine; and

R_1 through R_9 are substituted or unsubstituted alkyl or aryl; and wherein the ratio of the amount of I to II to III is in the range 1:1.2:2.3 to 1:4:8.

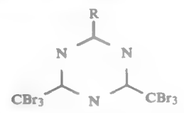
5,340,712

ANTIFOGGANTS FOR PHOTOTHERMOGRAPHIC ARTICLES

Susan H. Dunn, Lake Elmo, Minn.; Mark P. Kirk, Savona, Italy; Roger A. Mader, Stillwater, and Terence D. Spawn, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 21, 1993, Ser. No. 51,085
Int. Cl.[5] G03C *1/498*
U.S. Cl. 430—619 7 Claims

1. A photothermographic emulsion comprising photosensitive silver halide, silver oxidizing agent, reducing agent for silver ion, and a binder, said emulsion further comprising a triazine represented by the formula



wherein R is —NR^1R^2 wherein R^1 and R^2 are selected from H, alkyl group of 1 to 20 carbon atoms, and aryl group of 1 to 20 carbon atoms, or R^1 and R^2 may be combined to form a heterocyclic ring group with the included nitrogen of —NR^1R^2.

5,340,713

PROCESS FOR THE CHARACTERIZATION OF HUMAN RHINOVIRUSES

Helge Torgersen, Purkersdorf; Timothy Skern, and Dieter Blass, both of Wien, all of Austria, assignors to Boehringer Igelheim International GmbH, Fed. Rep. of Germany

Filed Jun. 22, 1990, Ser. No. 541,907
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1989, 3920754
Int. Cl.[5] C12G *1/70, 1/68;* C12P *19/34;* C07H *17/00*
U.S. Cl. 435—5 2 Claims

1. A method for serotyping a human rhinovirus, comprising:

(a) making a cDNA copy of the RNA sequence of a human rhinovirus to be typed;

(b) amplifying said cDNA obtained by polymerase chain reaction with a first primer CAAGCACTTCTGTTTCCC and a second primer ACACCCAAAGTAGT;

(c) digesting said cDNA and performing a restriction analysis of said digested cDNA fragments wherein said restriction analysis comprises the use of one or more restriction enzymes selected from the group consisting of BanII, HindIII, RsaI, EcoRI, BglII, PvuII, DraIII, and HinPI in combination with said digested cDNA fragments to generate a restriction map; and

(d) comparing said restriction map to at least one other restriction map of a human rhinovirus to determine the serotype of said human rhinovirus.

5,340,714

USE OF NONMETALLIC TETRAPYRROLE MOLECULES AND NOVEL SIGNAL SOLUTIONS IN CHEMILUMINESCENT REACTIONS AND ASSAYS

George W. Katsilometes, Davis, Calif., assignor to Monitor Diagnostics, Inc., Davis, Calif.

Filed May 8, 1992, Ser. No. 880,714
Int. Cl.[5] C12Q *1/68;* G01N *33/72;* C09K *11/07*
U.S. Cl. 435—6 32 Claims

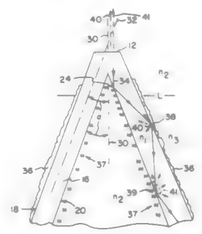
5. A chemiluminescent system for emitting measurable light useful in a chemical assay, an immunoassay, a ligand binding assay or a nucleotide assay, said system comprising: at a pH ranging from about 10.0 to about 14.0, the nonmetallic tetrapyrrole, deuteroporphyrin IX·2HCl having an oxidation potential, a luminescent reactant selected from the group consisting of luminol, isoluminol and a peroxyoxylate and an oxidant or a combination of oxidants capable of overcoming the oxidation potential of the tetrapyrrole, said tetrapyrrole being bound to an analyte, or to a binding partner of an analyte or to a ligand of a bindig partner to an analyte.

5,340,715

MULTIPLE SURFACE EVANESCENT WAVE SENSOR WITH A REFERENCE

Rudolf E. Slovacek, Norfolk, Mass.; Walter F. Love, Horseheads; Thomas A. Cook, Corning, both of N.Y.; Richard L. Schulkind, Sharon, and Irene M. Walczak, Boston, both of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Jun. 7, 1991, Ser. No. 711,783
Int. Cl.[5] G01N *33/552*
U.S. Cl. 435—6 26 Claims



1. An evanescent wave sensor comprising:

a) a single waveguide having at least a first wave propagating surface and a second wave propagating surface, said waveguide propagating at least one radiation input along said waveguide between said first and second surfaces, and emitting at least one radiation output signal(s);

b) said first surface being coated with an analyte specific reagent and being capable of receiving a radiation signal to detect a first analyte interacting with the surface; and

c) said second surface being coated with a second analyte specific reagent and a fluorescent reference material or a fluorescent reference material wherein said second surface is capable of receiving a radiation signal to detect at least one of a second analyte and said fluorescent reference material or just said fluorescent reference material.

5,340,716

ASSAY METHOD UTILIZING PHOTOACTIVATED CHEMILUMINESCENT LABEL

Edwin F. Ullman, Atherton; Hrair Kirakossian, San Jose; John S. Pease, Los Altos; Yuri Daniloff, Mountain View, and Daniel B. Wagner, Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jun. 20, 1991, Ser. No. 718,490
Int. Cl.[5] C12Q *1/00*
U.S. Cl. 435—6 86 Claims

1. A method for determining an analyte, said method comprising:

providing in combination (1) a medium suspected of containing said analyte, (2) a label reagent comprising a first specific binding pair (sbp) member associated with a photochemically activatable chemiluminescent compound (PACC) wherein said first sbp member is capable of binding to said analyte or to a second sbp member to form a complex related to the presence of said analyte,

photochemically activating said PACC, and

detecting the amount of luminescence generated by said PACC, the amount thereof being related to the amount of analyte in said medium.

5,340,717

Patent Not Issued For This Number

5,340,718

METHOD FOR ASSAYING A HUMAN MUSCULAR DYSTROPHY PROTEIN

Tsuneo Ishiguro, and Chikahiko Eguchi, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 318,952, Mar. 6, 1989, abandoned. This application Jan. 27, 1993, Ser. No. 9,392
Claims priority, application Japan, Mar. 4, 1988, 63-51313; Sep. 21, 1988, 63-237200
Int. Cl.[5] G01N *33/53;* C07K *7/10, 15/00, 15/28*
U.S. Cl. 435—71 8 Claims

1. A peptide selected from the group consisting of:

(i) Tyr-Glu-Lys-Gln-Ser-Asn-Leu-His-Arg-Val-Leu-Met-Asp-Leu-Gln-Asn-Gln-Lys-Leu-Lys-Glu-Leu-Asn-Asp-Trp-Leu-Thr-Lys-Thr-Glu-Glu-Arg-Thr-Arg-Lys-Met-Glu-Gly-Gly-Pro-Leu-Gly-Pro-Asp-Leu-Glu-Asp-Leu-Lys-Arg-Gln-NH_2,

(ii) Pro-Glu-Asp-Val-Asp-Thr-Thr-Tyr-Pro-Asp-Lys-Lys-Ser-Ile-Leu-Met-Tyr-Ile-Thr-Ser-Leu-Phe-Gln-Val-Leu-Pro-Gln-Gln-Val-Ser-Ile-Glu-Ala-Ile-Gln-Glu-Val-Glu-Met-Leu-Pro-Arg-Pro-Pro-Lys-Val-Thr-Lys-Glu-Glu-NH_2,

(iii) Glu-Gly-Pro-Phe-Asp-Val-Gln-Glu-Thr-Glu-Ile-Ala-Val-Gln-Ala-Lys-Gln-Pro-Asp-Val-Glu-Glu-Ile-Leu-Ser-Lys-Gly-Gln-His-Leu-Tyr-Lys-Glu-Lys-Pro-Ala-Thr-Gln-Pro-Val-Lys-Arg-Lys-Leu-Glu-Asp-Leu-Ser-Ser-Glu-NH_2,

(iv) Leu-Ile-Ser-Leu-Glu-Ser-Glu-Glu-Arg-Gly-Glu-Leu-Glu-Arg-Ile-Leu-Ala-Asp-Leu-Glu-Glu-Glu-Asn-Arg-Asn-Leu-Gln-Ala-Glu-Tyr-Asp-Arg-Leu-Lys-Gln-Gln-His-Glu-His-Lys-Gly-Leu-Ser-Pro-Leu-Pro-Ser-Pro-Pro-Glu-NH_2,

(v) Tyr-Glu-Arg-Glu-Asp-Val-Gln-Lys-Lys-Thr-Phe-Thr-Lys-Trp-Val-Asn-Ala-Gln-Phe-Ser-Lys-Phe-Gly-Lys-Gln-His-Ile-Glu-Asn-Leu-Phe-Ser-Asp-Leu-Gln-Asp-Gly-Arg-Arg-Leu-Leu-Asp-Leu-Leu-Glu-Gly-Leu-Thr-Gly-Gln-NH_2.

5,340,719

METHOD AND APPARATUS FOR OPTICALLY SCREENING MICROSCOPIC CELLS

Constance M. Hajek, Miami Lakes, and Thomas Russell, Miami, both of Fla., assignors to Corporation Coulter, Miami, Fla.

Filed Nov. 23, 1990, Ser. No. 617,096
Int. Cl.[5] G01N *33/50, 33/80, 1/28, 21/00*
U.S. Cl. 435—7.21 49 Claims



1. A method of optically screening microscopic cells, comprising:

providing one of a whole blood or a bone marrow sample including all originally present constituents and an anticoagulating agent or a portion thereof including at least a plurality of cells of interest unaltered in number and type;

combining at least a first sample portion of said cells with at least a first set of microspheres having at least a first reactant bound thereto specific to at least a first specific molecule which can exist on at least one type of cell, said first set of microspheres being smaller than said cells to which said microspheres are bound;

preparing a smear of said cells on a slide including said microspheres;

staining said smear with a histological type stain; and

optically viewing at least some of said cells with a microscope to at least identify the presence or absence of cells to which said first set of microspheres are bound.

5,340,720

METHODS OF DIAGNOSING AND MONITORING RHEUMATIC DISEASES

Dean A. Stetler, Lawrence, Kans., assignor to University of Kansas, Lawrence, Kans.

Filed Nov. 29, 1989, Ser. No. 442,804
Int. Cl.[5] G01N *33/573, 33/564*
U.S. Cl. 435—7.4 8 Claims

1. A method which aids in diagnosing systemic lupus erythematosus or rheumatoid arthritis in a patient, comprising the steps of:

(a) obtaining a sample of urine from the patient;

(b) detecting an RNA polymerase I antibody in said sample, wherein said antibody specifically binds with RNA polymerase I and

(c) correlating the presence or absence of the antibody with either rheumatoid arthritis or systemic lupus erythematosus, wherein if

(1) said patient has not previously been diagnosed as having systemic lupus erythematosus or rheumatoid arthritis, then the presence of said antibody indicates that the patient has systemic lupus erythematosus;

(2) said patient has not been diagnosed as having systemic lupus erythematosus or rheumatoid arthritis, then the absence of said antibody indicates that the patient does not have systemic lupus erythematosus or rheumatoid arthritis;

(3) said patient has previously been diagnosed as having an undifferentiated rheumatoid disease selected from the group consisting of systemic lupus erythematosus and rheumatoid arthritis, then the presence of said antibody

VOL 1165 ISS 4 AG 23 1994 UMI

indicates said rheumatoid disease is systemic lupus erythematosus; and

(4) said patient has previously been diagnosed as having an undifferentiated rheumatoid disease selected from the group consisting of systemic lupus erythematosus and rheumatoid arthritis, then the absence of said antibody indicates said rheumatoid disease is rheumatoid arthritis.

2. A method which aids in diagnosing systemic lupus erythematosus or rheumatoid arthritis, comprising the steps of:

(a) obtaining a sample of urine from a patient;

(b) detecting an RNA polymerase I antigen in said sample, wherein said antigen specifically binds with an antibody to RNA polymerase I; and

(c) correlating the presence or absence of the antigen with either systemic lupus erythematosus or rheumatoid arthritis, wherein if

(1) said patient has not previously been diagnosed as having systemic lupus erythematosus or rheumatoid arthritis, then the absence of said antigen indicates that the patient does not have systemic lupus erythematosus or rheumatoid arthritis;

(2) said patient has not previously been diagnosed as having systemic lupus erythematosus or rheumatoid arthritis, then the presence of said antigen indicates that the patient has systemic lupus erythematosus;

(3) said patient has previously been diagnosed as having an undifferentiated rheumatoid disease selected from the group consisting of systemic lupus erythematosus and rheumatoid arthritis, then the absence of said antigen indicates said rheumatoid disease is rheumatoid arthritis;

(4) said patient has previously been diagnosed as having an undifferentiated rheumatoid disease selected from the group consisting of systemic lupus erythematosus and rheumatoid arthritis, then the presence of said antigen indicates said rheumatoid disease is systemic lupus erythematosus; and

(5) said patient has previously been diagnosed as having systemic lupus erythematosus, then the absence of said antigen indicates said systemic lupus erythematosus in currently inactive.

5,340,721

ASSAY FOR FREE SECRETORY COMPONENT AND METHODS FOR MONITORING ORGAN REJECTION

Randall M. Goldblum, Dickinson, and Srinivasan Rajaraman, Galveston, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jul. 26, 1991, Ser. No. 736,448

Int. Cl.[5] G01N *33/543, 33/566*

U.S. Cl. 435—7.92 10 Claims

1. A non-invasive method for identifying kidney injury in an animal, the method comprising:

obtaining a biological sample from an animal having a kidney transplant;

measuring a concentration of free secretory component in the biological sample by immunoassay to provide a free secretory component test concentration;

comparing the free secretory component test concentration to a free secretory component control concentration determined by immunoassay characteristic for the biological sample; and

identifying a kidney injury in an animal having a free secretory component immunoassay test concentration greater than the free secretory component immunoassay control concentration.

5,340,722

METHOD FOR THE DETERMINATION OF THE CONCENTRATION OF AN ENZYME SUBSTRATE AND A SENSOR FOR CARRYING OUT THE METHOD

Otto S. Wolfbeis, Graz, and Wolfgang Trettnak, Mooskirchen, both of Austria, assignors to AVL Medical Instruments AG, Schauffhausen, Switzerland

Continuation of Ser. No. 857,114, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 395,463, Aug. 18, 1989, abandoned. This application Mar. 29, 1993, Ser. No. 38,065

Claims priority, application Austria, Aug. 24, 1988, A 2093/88

Int. Cl.[5] C12Q *1/54, 1/26, 1/32, 1/28*

U.S. Cl. 435—14 8 Claims

1. A method for the continuous and reversible determination of the concentration of an enzyme substrate in a specimen, comprising the steps of:

(a) contacting said specimen containing said enzyme substrate with an enzyme specific for said substrate, selected from the group consisting of oxidases and oxygenases, to which a flavin coenzyme selected from the group consisting of flavin mononucleotide and flavin adenine dinucleotide is bonded, said flavin coenzyme converting to a reduced form by said enzyme substrate and to an oxidized form by molecular oxygen dissolved in said specimen,

(b) measuring a change in intrinsic fluorescence of said flavin coenzyme under fluorescent excitation resulting from reduction of said flavin coenzyme occurring in step (a), and

(c) determining the concentration of enzyme substrate in said specimen from the change in intrinsic fluorescence measured in step (b).

5,340,723

METHOD FOR DIAGNOSING FOR ANEURYSMS

Charles D. Boyd, Princeton, and Susan B. Deak, Somerset, both of N.J., assignors to University of Medicine & Dentistry of New Jersey, Piscataway, N.J.

Filed Apr. 16, 1992, Ser. No. 869,745

Int. Cl.[5] C12Q *1/02, 1/00;* G01N *33/53;* C12N *5/00*

U.S. Cl. 435—29 6 Claims

1. A method for diagnosing for an abdominal aortic aneurysm in a patient which comprises the steps of:

(a) explanting a skin section containing dermal fibroblasts from the patient to a culture medium;

(b) culturing the fibroblasts to confluence in the culture medium;

(c) incubating the cultured fibroblasts with labeled proline to provide labeled procollagen in the culture medium;

(d) separating the culture medium from the labeled procollagen and treating the labeled procollagen with a solution of protease inhibitor;

(e) separating and purifying the labeled procollagen from the solution of protease inhibitor;

(f) subjecting the labeled procollagen to protease digestion specific for non-collagenous proteins to form a collagenous mixture;

(g) analyzing the collagenous mixture for the ratio of type I collagen to type III collagen;

(h) analyzing a control collagenous mixture for the ratio of type I collagen to type III collagen; and

(i) comparing the ratio of type I collagen to type III collagen in the collagenous mixture of step (g) to the control mixture of step (h), respectively.

5,340,724

USE OF TAXOL-DEPENDENT CELLS TO IDENTIFY AND ISOLATE TAXOL-LIKE COMPOUNDS

Irene Abraham, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 25, 1991, Ser. No. 691,326

Int. Cl.[5] C12Q *1/00, 1/04, 1/18;* C12N *1/00*

U.S. Cl. 435—32 2 Claims

1. A method of screening for taxol-like materials that act to stabilize microtubules in a manner analogous to taxol comprising the steps of:

a) contacting the taxol-like materials with taxol dependent cells:

b) maintaining the taxol dependent cells in contact with the taxol-like materials for a time and under such conditions sufficient to allow cell growth;

c) detecting cell growth; and

d) selecting compounds that allow such growth.

5,340,725

EXPRESSION VECTOR FOR INSULIN-LIKE GROWTH FACTOR I AND METHOD OF PRODUCTION

Ikuo Ueda, Osaka; Mineo Niwa, Kyoto; Yoshimasa Saito; Yoshinori Ishii, both of Osaka, and Tadashi Hitaguchi, Hyogo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 488,459, Feb. 26, 1990, abandoned, which is a continuation of Ser. No. 105,180, Oct. 6, 1987, abandoned. This application Feb. 1, 1993, Ser. No. 13,204

Claims priority, application Japan, Oct. 9, 1986, 61-240702

Int. Cl.[5] C12N *15/00, 5/00*

U.S. Cl. 435—69.4 10 Claims

1. A recombinant DNA expression vector for the production in *Escherichia coli* (*E. coli*) of methionyl insulin-like growth factor I (Met-IGF-I), said vector comprising, in the 5' to 3' direction:

(a) a promoter;

(b) a first cistron comprising a gene encoding a protective peptide of the formula:

Met Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser
Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Gly Gly
Asp Glu Phe Met Cys Tyr Cys Gln Asp Pro Tyr Val Lys Glu Ala
Glu Asn Leu Lys Lys Tyr Phe Asn Ala Gly His Ser Asp Val Ala
Asp Asn Gly Thr Leu Phe Leu Gly Ile Leu Lys Asn Trp Lys Glu
Glu Ser Asp Arg Lys Ile Met Gln Ser Gln Ile Val Ser Phe Tyr
Phe Lys Leu Glu Glu Asn Arg,

said gene containing a translational initiation signal immediately adjacent to the codon encoding the N-terminal amino acid of said protective peptide and a translational termination signal positioned downstream from the codon encoding the C-terminal amino acid of said protective peptide;

(c) a second cistron comprising a gene encoding Met-IGF-I, said gene containing a translational initiation signal immediately adjacent to the codon encoding the N-terminal amino acid of Met-IGF-I and a translational termination signal downstream from the codon encoding the C-terminal amino acid of Met-IGF-I;

wherein the promoter is operably linked to the first cistron, said vector contains a first Shine-Dalgarno (SD) sequence located upstream from the codon encoding the N-terminal amino acid of said protective peptide and a second Shine-Dalgarno (SD) sequence located upstream from the codon encoding the N-terminal amino acid of said Met-IGF-I, and said vector is selectable and autonomously replicable in *E. coli.*

5,340,726

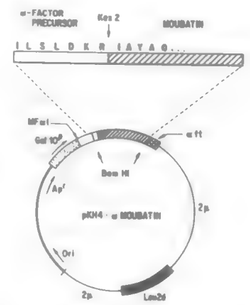
PROTEIN FOR INHIBITING COLLAGEN-STIMULATED PLATELET AGGREGATION

Thomas M. Connolly, Harleysville; Paul M. Keller, Lansdale, and Lloyd H. Waxman, Ottsville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 844,303, Feb. 27, 1992, abandoned. This application Aug. 16, 1993, Ser. No. 107,411

Int. Cl.[5] C12N *5/00;* C07K *3/00;* C12P *21/06;* C07H *15/12*

U.S. Cl. 530—350 2 Claims



1. A purified protein having a molecular weight of about 17,000, an amino acid sequence identified as SEQ. ID NO: 2, and a capacity to inhibit collagen-stimulated platelet aggregation wherein the protein is derived from the tick *Ornithodoros moubata.*

5,340,727

GPIBα FRAGMENTS AND RECOMBINANT DNA EXPRESSION VECTORS

Zaverio M. Ruggeri, La Jolla, and Jerry L. Ware, Encinitas, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 460,674, Jan. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 121,454, Nov. 17, 1987, abandoned. This application Nov. 14, 1990, Ser. No. 613,083

Int. Cl.[5] C12N *15/12, 15/85;* A61K *37/02*

U.S. Cl. 435—69.6 19 Claims

3. A recombinant DNA expression vector encoding a peptide which inhibits binding of von Willebrand factor to platelet membrane glycoprotein Ib, said vector including a nucleotide sequence encoding the amino acid sequence from HIS^{1} to LEU^{610}, inclusive, of the amino terminal region of platelet membrane glycoprotein Ibα, or any sequential subset thereof which inhibits binding of von Willebrand factor to platelet membrane glycoprotein Ib, wherein said vector is effective in expressing said peptide in the absence of the expression of glycoprotein Ibβ in a mammalian host cell.

5,340,728

METHOD FOR AMPLIFICATION OF TARGETED SEGMENTS OF NUCLEIC ACID USING NESTED POLYMERASE CHAIN REACTION

Ron Grosz, Wilmington, Del., and Mark A. Jensen, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 9, 1992, Ser. No. 990,297

Int. Cl.[5] C12P *19/34;* C12Q *1/68*

U.S. Cl. 435—91.2 16 Claims

1. An improved method for performing a nested polymerase chain reaction to selectively amplify a target segment of nucleic acid from a sample nucleic acid reaction mixture, said method amplifying in the first stage a nucleic acid segment flanked by an outer primer pair and in the second stage a

VOL 1165 ISS 4 AG 23 1994 UMI

nucleic acid target segment flanked by an inner nested primer pair; the improvement comprising wherein by controlling the concentrations and annealing times of the outer and inner primer pairs in the first and second stages selective amplification of the target segment is accomplished during the second stage by the inner primer pair, wherein the entire volume of the first stage reaction mixture is used in the second stage without depletion or removal of the outer primers from the reaction mixture; the improved method comprises the steps of:

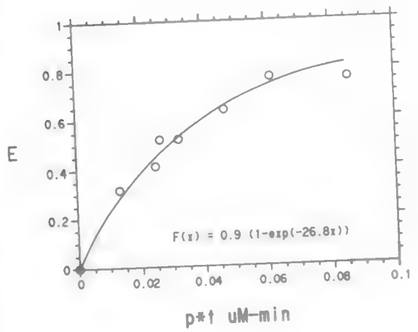
adding a pair of outer primers to a sample nucleic acid reaction mixture to achieve a concentration of said outer primers which is described by P_{011};

repetitively performing the polymerase chain reaction utilizing an annealing time at each cycle which is described by t_1;

adding a pair of inner primers to the sample nucleic acid reaction mixture to achieve a concentration of said inner primer which is described by P_{022}; and

repetitively performing the polymerase chain reaction utilizing an annealing time at each cycle which is described by t_2; wherein P_{011}, t_1, P_{022} and t_2 are selected according to the formulas

$$\epsilon_{max\ 1}(1-\exp-(k_1P_{011}t_1))>0.4$$



$$\epsilon_{max\ 2}(1-\exp-(k_2P_{022}t_2))>0.4$$

$$\epsilon_{max\ 1}(1-\exp(-k_1P_{012}t_2))<1/5\ \epsilon_{max\ 2}(1-\exp(-k_2P_{022}t_2))$$

wherein

P_{011} is the concentration of each of the outer primers in the first stage;

P_{022} is the concentration of each of the inner primers in the second stage;

P_{012} is the concentration of each of the outer primers in the second stage;

t_1 is the annealing time in the first stage;

t_2 is the annealing time in the second stage;

k_1 is the second order rate constant for the formation of extension product from the outer primers;

k_2 is the second order rate constant for the formation of extension product from the inner primers;

$\epsilon_{max\ 1}$ is the maximum per cycle primer extension of the outer primer; and

$\epsilon_{max\ 2}$ is the maximum per cycle extension of the inner primers.

5,340,729

METHOD FOR PRODUCING SPAGYRIC ESSENCES FROM PLANTS

Beat R. Krummenacher, Tägertschistr. 34a, CH-3110 Münsingen, Switzerland

Continuation-in-part of Ser. No. 867,181, Jul. 9, 1992. This application Jul. 12, 1993, Ser. No. 90,428

Claims priority, application Switzerland, Oct. 22, 1990, 3353/90

Int. Cl.[5] A61K *35/78*; **C12P** *1/02, 7/10*

U.S. Cl. 435—171 **13 Claims**

1. A method for producing spagyric essences from fresh or dried plants or parts of plants comprising:

determining a dry mass (M·T) of plant material to be used;

establishing the amount of an end product (U) based upon said dry mass of said plant material, thereby setting the amount of an intermediate product (F1) of a first fraction of a distillation and the amount of carbohydrates required for the method;

comminuting said plant material and forming a mixture of at least one fermentable carbohydrate dissolved in water, yeast and said comminuted plant material;

stirring said mixture initially to at least cover said comminuted plant material with water, and thereafter at least once a day until the comminuted plant material is completely fermented, at a temperature adapted to the yeast employed, forming a fermented mass;

distilling said fermented mass in vacuo, collecting two fractions therefrom, the first fraction containing the total amount of alcohol from the fermentation and the second fraction comprising the portion of the distillate remaining after collection of the first fraction, and forming a distillation residue;

adding alcohol to said first fraction in an amount to provide between about 10% to about 80% alcohol content in the end product (U);

drying, burning and completely incinerating said distillation residue at a temperature between about 300° C. to about 700° C., forming an ash comprising at least one soluble mineral salt;

extracting all of said at least one soluble mineral salt from said ash with a solvent producing purified salt extracts, recombining and drying said purified salt extracts while removing impurities from said extracts forming dried salts;

dissolving the dried salts in a first portion of said first fraction forming a purified salt solution, and filtering off any miscellaneous deposits which have been formed;

mixing said purified salt solution with the remaining portion of the first fraction, forming a purified salt mixture; and

adding a sufficient amount of said second fraction to said purified salt mixture so that the entire amount of said purified salt mixture with said second fraction corresponds to the predetermined amount of the end product.

5,340,730

PROCESS FOR TRANSFORMING GLADIOLUS

Anne C. F. Graves, Bowling Green, and Stephen L. Goldman, Toledo, both of Ohio, assignors to The University of Toledo, Toledo, Ohio

Continuation of Ser. No. 652,362, Feb. 7, 1991, abandoned, which is a continuation of Ser. No. 175,709, Mar. 31, 1988, abandoned. This application Jun. 17, 1992, Ser. No. 900,507

Int. Cl.[5] C12N *15/00*

U.S. Cl. 438—172.3 **4 Claims**

1. A method of producing a transformed Gladiolus plant comprising:

removing a piece of tissue from a corm;

inoculating the tissue with vir+ *Agrobacterium tumefaciens* strain;

incubating the inoculated tissue until a tumor forms;

culturing at least a portion of the tumor in hormone-free medium until a cormel forms; and

growing the cormel to produce the transformed plant.

5,340,731

METHOD OF PREPARING A B-1,4 GLYCAN MATRIX CONTAINING A BOUND FUSION PROTEIN

Douglas G. Kilburn, Vancouver; Robert C. Miller, North Vancouver; Neil Gilkes, and R. Antony J. Warren, both of Vancouver, all of Canada, assignors to University of British Columbia, Vancouver, Canada

Continuation-in-part of Ser. No. 603,987, Oct. 25, 1990, Pat. No. 5,202,247, which is a division of Ser. No. 216,794, Jul. 8, 1988, Pat. No. 5,137,819. This application Apr. 8, 1992, Ser. No. 865,095

Int. Cl.[5] C12N *11/12, 15/00*; **C12P** *21/00*

U.S. Cl. 435—179 **19 Claims**

1. A method for obtaining a β-1,4 glycan matrix comprising a fusion protein, said method comprising;

preparing a fusion protein comprising an amino acid sequence comprising a substrate binding region of a cellulase with the proviso that said substrate binding region is essentially lacking in catalytic activity, and a polypeptide;

contacting said fusion protein with a β-1,4 glycan matrix substrate for said cellulase under conditions whereby said substrate binding region binds to said β-1,4 glycan matrix.

5,340,732

ANTIVIRAL PROTEIN

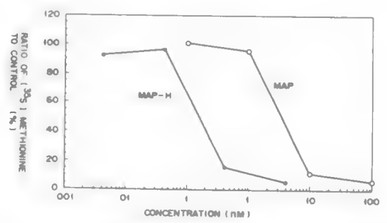
Noriyuki Habuka; Masashi Miyano; Takashi Matsumoto, and Masana Noma, all of Yokohama, Japan, assignors to Japan Tobacco, Inc., Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 854,845

Claims priority, application Japan, Mar. 22, 1991, 3-083456

Int. Cl.[5] C12N *9/12, 15/54, 15/70*

U.S. Cl. 435—193 **2 Claims**



1. An antiviral protein having the following amino acid sequence, Seq. ID: No: 8:

Ala	Pro	Thr	Leu	Glu	Thr	Ile	Ala	Ser	Leu	Asp	Leu	Asn	Asn	Pro	
1				5					10						15
Thr	Thr	Tyr	Leu	Ser	Phe	Ile	Thr	Asn	Ile	Arg	Thr	Lys	Val	Ala	
				20					25						30
Asp	Lys	Thr	Glu	Gln	Ser	Thr	Ile	Gln	Lys	Ile	Ser	Lys	Thr	Phe	
			35					40							45
Thr	Gln	Arg	Tyr	Ser	Tyr	Ile	Asp	Leu	Ile	Val	Ser	Ser	Thr	Gln	
				50					55						60
Lys	Ile	Thr	Leu	Ala	Ile	Asp	Met	Ala	Asp	Leu	Tyr	Val	Leu	Gly	
				65					70						75
Tyr	Ser	Asp	Ile	Ala	Asn	Asn	Lys	Gly	Arg	Ala	Phe	Phe	Phe	Lys	
				80					85						90
Asp	Val	Thr	Glu	Ala	Val	Ala	Asn	Asn	Phe	Phe	Pro	Gly	Ala	Thr	
				95					100						105
Gly	Thr	Asn	Arg	Ile	Lys	Leu	Thr	Phe	Thr	Gly	Ser	Tyr	Gly	Asp	
				110					115						120
Leu	Glu	Lys	Asn	Gly	Gly	Leu	Arg	Lys	Asp	Asn	Pro	Leu	Gly	Ile	
				125					130						135
Phe	Arg	Leu	Glu	Asn	Ser	Ile	Val	Asn	Ile	Tyr	Gly	Lys	Ala	Gly	
				140					145						150
Asp	Val	Lys	Lys	Gln	Ala	Lys	Phe	Phe	Leu	Leu	Ala	Ile	Gln	Met	
				155					165						160
Val	Ser	Glu	Ala	Ala	Arg	Phe	Lys	Tyr	Ile	Ser	Asp	Lys	Ile	Pro	
				170					175						180
Ser	Glu	Lys	Tyr	Glu	Glu	Val	Thr	Val	Asp	Glu	Tyr	Met	Thr	Ala	
				185					190						195

-continued

Leu	Glu	Asn	Asn	Trp	Ala	Lys	Leu	Ser	Thr	Ala	Val	Tyr	Asn	Ser	
				200					205						210
Lys	Pro	Ser	Thr	Thr	Thr	Ala	Thr	Lys	Ser	Gln	Leu	Ala	Thr	Ser	
			215					220							225
Pro	Val	Thr	Ile	Ser	Pro	Trp	Ile	Phe	Lys	Thr	Val	Glu	Glu	Ile	
				230					235						240
Lys	Leu	Val	Met	Gly	Leu	Leu	Lys	Ser	Ser.						
				245					250						

5,340,733

MBOI RESTRICTION-MODIFICATION GENES

Takashi Ueno, Otsu; Hiroyuki Ito, Sapporo; Hirokazu Kotani, Moriyama, and Kazuo Nakajima, Kyoto, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Filed Jan. 22, 1993, Ser. No. 7,775

Claims priority, application Japan, Feb. 3, 1992, 4-46366; Jan. 8, 1993, 5-16828

Int. Cl.[5] C12N *9/22, 9/10, 15/55*

U.S. Cl. 435—199 **8 Claims**

1. Isolated DNA coding for the MboI restriction enzyme, wherein the isolated DNA is obtainable from the vector pRMboI.

5,340,734

METHOD FOR MAKING STABLE, EXTRACELLULAR TYROSINASE AND SYNTHESIS OF POLYPHENOLIC POLYMERS THEREFROM

Guy R. della-Cioppa; Stephen J. Garger, Jr.; Richard B. Holtz; Michael J. McCulloch, and Genadie G. Sverlow, all of Vacaville, Calif., assignors to Biosource Genetics Corporation, Vacaville, Calif.

Filed Nov. 25, 1992, Ser. No. 982,095

Int. Cl.[5] C12N *9/48, 9/02*; **C12P** *17/06*; **C08G** *59/68*

U.S. Cl. 435—212 **19 Claims**

1. An in vitro method of producing polyphenolic polymers ("PPP") comprising the steps of contacting extracellular tyrosinase produced by a transformed microorganism containing an expression vector containing genetic sequences encoding tyrosinase and tyrosinase substrates wherein at least one tyrosinase substrate is selected from the group consisting of X/L-tyrosine, L-tyrosine/X, and X/L-tyrosine/X where X is selected from the group consisting of a single amino acid, a dipeptide or an oligopeptide bound to L-tyrosine, under suitable reaction conditions, to form PPP and recovering the PPP so produced.

5,340,735

***BACILLUS LENTUS* ALKALINE PROTEASE VARIANTS WITH INCREASED STABILITY**

Teresa Christianson, Cotati; Dean Goddette, Rohnert Park; Beth F. Ladin, Santa Rosa; Maria R. Lau, Fairfield; Christian Paech, Santa Rosa; Robert B. Reynolds, Santa Rosa; Charles R. Wilson, Santa Rosa, and Shiow-Shong Yang, Santa Rosa, all of Calif., assignors to COGNIS, Inc., Santa Rosa, Calif.

Filed May 29, 1991, Ser. No. 706,691

Int. Cl.[5] C12N *9/54, 15/57, 15/75, 15/62*

U.S. Cl. 435—221 **45 Claims**

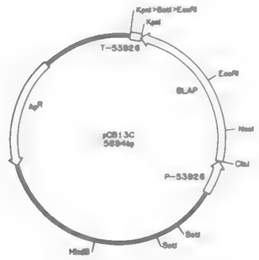
1. A substantially pure mutant *Bacillus lentus* DSM 5483 protease derived by replacement of at least one amino acid residue of the mature form of the *Bacillus lentus* DSM 5483 alkaline protease shown in SEQ ID NO: 52 wherein the position for said replacement of at least one amino acid residue is selected from the group consisting of Ser3, Val4, Ala188, Val193, and Val199, and wherein,

the amino acid for replacement of Val4 is selected from the group consisting of isoleucine, serine, threonine, glycine, alanine or cysteine;

the amino acid for replacement of Ala188 is selected from the group consisting of proline, threonine, glycine, valine, or isoleucine;

VOL 1165 ISS 4 AUG 23 1994 UMI

the amino acid for replacement of Val193 is selected from the group consisting of methionine, threonine, glycine, alanine or isoleucine;



the amino acid for replacement of Val199 is selected from the group consisting of isoleucine, threonine, glycine, or alanine.

5,340,736

ATP-DEPENDENT PROTEASE AND USE OF INHIBITORS FOR SAME IN THE TREATMENT OF CACHEXIA AND MUSCLE WASTING

Alfred L. Goldberg, Brookline, Mass., assignor to The President & Fellows of Harvard College, Cambridge, Mass.

Filed May 13, 1991, Ser. No. 699,184

Int. Cl.[5] **C12N** *9/64*

U.S. Cl. 435—226 **2 Claims**

1. Isolated component of the Ubiquitin-Conjugate-Degrading-Enzyme, said isolated component selected from the group consisting of:

(a) multipain of approximately 500 kDa, which has a proteolytic activity that preferentially cleaves ubiquitinated proteins in an ATP-dependent manner; and

(b) multipain-proteasome complex of approximately 1500 kDa, comprising the multipain of (a) and the proteasome, said complex which has a proteolytic activity that cleaves ubiquitinated and non-ubiquitinated proteins in an ATP-dependent manner.

5,340,737

PROCESS OF PREPARING PEPSIN FOR BATING HIDES

Marcel Siegler, 7855 Blvd. East, North Bergen, N.J. 07047; Mihai Deselnicu, 1 Blvd. Tineretului, Bucharest, Romania; Victoria Bratulescu, 16 Sibiului Street, Bucharest, Romania, and Andrei Anghel, Zona Bucovina Bloc B20, Timisoara, Romania

Filed Jun. 10, 1993, Ser. No. 74,882

Int. Cl.[5] **C12N** *9/64, 9/48, 9/50;* **A61K** *37/54*

U.S. Cl. 435—226 **4 Claims**

1. A process for preparing a dry enzymatic product with a proteolytic activity of 0.2 to 0.6 units FIP/mg of pepsin extract, suitable for acid bating of a hide, which comprises the steps of:

(a) macerating bovine, ovine or porcine red stomach mucous in an acid to obtain a liquid enzymatic extract containing 16 to 18% dry matter;

(b) sedimenting the liquid enzymatic extract prepared in step (a) to form three distinct phases, each having a different density, the middle phase of which is clear and suitable to produce a pharmaceutical containing pepsin, while the other two phases are by-products also containing pepsin;

(c) separating the clear middle phase containing the pepsin and having a proteolytic activity of 0.15 to 0.2 units FIP/ml from the other two phases;

(d) combining the two by-product phases formed during step (b) to obtain a liquid pepsin-containing product having a proteolytic activity of 0.10 to 0.15 units FIP/ml and 15 to 18% dry matter; and

(e) drying the liquid pepsin-containing product obtained in step (d) to yield the dry enzymatic product suitable for bating a hide.

5,340,738

MODIFIED PROKARYOTIC GLUCOSE ISOMERASE ENZYMES WITH ALTERED PH ACTIVITY PROFILES

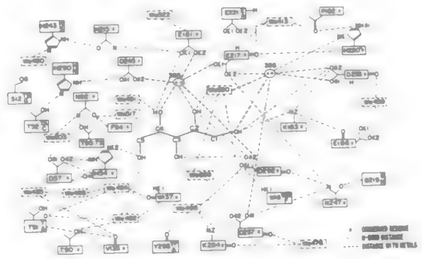
Anne-Marie Lambeir, Heverlee; Ignace Lasters, Antwerp; Nadir Mrabet, Hoeilaart, all of Belgium; Wilhelmus J. Quax, Voorschoten, Netherlands; Jan M. Van der Laan, Groningen, Netherlands, and Onno Misset, Delft, Netherlands, assignors to Gist-brocades, N.V., Delft, Netherlands and Plant Genetic Systems, N.V., Brussels, Belgium

Filed Jan. 4, 1991, Ser. No. 637,399

Claims priority, application European Pat. Off., Jan. 4, 1990, 90200030.6; Jan. 4, 1990, 90200037.1

Int. Cl.[5] **C12M** *15/61, 9/92, 15/70, 15/74*

U.S. Cl. 435—234 **13 Claims**



1. A substantially pure, recombinantly-produced, modified procaryotic glucose isomerase containing a modification wherein at least one and no more than four amino acid residues from the corresponding naturally-ocurring glucose isomerase within a sphere of 15 A of a bivalent metal cation coordination site is replaced by a more positively charged amino acid, which modified glucose isomerase exhibits an altered pH/activity profile wherein at least the acidic part of the pH/activity profile is shifted to a lower pH value and wherein said modified glucose isomerase retains glucose isomerase activity.

5,340,739

HEMATOPOIETIC CELL SPECIFIC TRANSCRIPTIONAL REGULATORY ELEMENTS OF SERGLYCIN AND USES THEREOF

Richard L. Stevens, Sudbury, and Shalom Avraham, Brighton, both of Mass., assignors to Brigham & Women's Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 816,289, Jan. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 635,544, Jan. 18, 1991, Pat. No. 5,171,674, which is a continuation-in-part of Ser. No. 224,035, Jul. 13, 1988, abandoned. This application Jul. 2, 1992, Ser. No. 906,871

Int. Cl.[5] **C12N** *5/10, 5/16, 1/00, 15/63*

U.S. Cl. 435—240.1 **28 Claims**

1. An isolated DNA sequence consisting essentially of the 5' regulatory region of the human or mouse serglycin gene, said regulatory region comprising:

a. the promoter element of said mouse serglycin gene (SEQ ID No. 17) or the equivalent position in said human serglycin gene (nucleotides 585–604 of SEQ ID No. 11);

b. the negative transcriptional regulatory element of said mouse serglycin gene (SEQ ID No. 18) or the equivalent position in said human serglycin gene (nucleotides 396–432 of SEQ ID No. 11);

c. the positive transcriptional regulatory element of said mouse serglycin gene (SEQ ID No. 16) or the equivalent position in said human serglycin gene (nucleotides 508–545 of SEQ ID No. 11).

5,340,740

METHOD OF PRODUCING AN AVIAN EMBRYONIC STEM CELL CULTURE AND THE AVIAN EMBRYONIC STEM CELL CULTURE PRODUCED BY THE PROCESS

James N. Petitte, and Zengming Yang, both of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed May 15, 1992, Ser. No. 884,423

Int. Cl.[5] **C12N** *5/00*

U.S. Cl. 435—240.2 **10 Claims**

1. A method of producing a sustained culture of undifferentiated avian cells expressing an embryonic stem cell phenotype, comprising:

collecting avian cells from an avian blastoderm prior to formation of the primitive streak;

depositing said avian cells in contact with a mouse fibroblast feeder cell layer;

growing said avian cells on said mouse fibroblast feeder cell layer in the presence of a media containing leukemia inhibitory factor in a differentiation-inhibiting amount for a time sufficient to produce a sustained avian cell culture;

said sustained avian cell culture consisting essentially of undifferentiated avian cells expressing an embryonic stem cell phenotype.

8. A sustained avian cell culture of undifferentiated avian cells expressing an embryonic stem cell phenotype produced by the process of claim 1.

5,340,741

DEVICE FOR TESTING THE STERILITY OF A FLUID

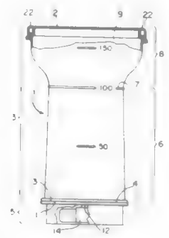
Jean Lemonnier, le Vesinet, France, assignor to Millipore Corporation, Bedford, Mass.

Filed Feb. 9, 1993, Ser. No. 15,702

Claims priority, application France, Feb. 13, 1992, 92 01605

Int. Cl.[5] **C12M** *1/34*

U.S. Cl. 435—291 **5 Claims**



1. In a device for testing the sterility of a fluid sample of the type including a plastic container which has an upper open part, a lower part and a hydrophilic membrane filter disposed between said upper and lower parts, the upper and lower parts and the membrane filter being welded together in a fluid-tight manner at their peripheries, the improvement which comprises a deformable plastic lid, sealing means integral with said lid for closing the container from the surrounding environment, said lid including at least one vent hole and being moveable from a first position to a second position whereby when the device is filled with culture media and incubated at an elevated temperature with the lid being located in said second position said lid is constructed and arranged to be deformed by excess pressure inside the container to allow said excess pressure to escape through the vent hole while preventing the admission of ambient air through the vent hole.

5,340,742

PROCESS FOR GROWING THRAUSTOCHYTRIUM AND SCHIZOCHYTRIUM USING NON-CHLORIDE SALTS TO PRODUCE A MICROFLORAL BIOMASS HAVING OMEGA-3 HIGHLY UNSATURATED FATTY ACIDS

William R. Barclay, Boulder, Colo., assignor to Omegatech Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 911,760, Jul. 10, 1992, which is a division of Ser. No. 580,778, Sep. 11, 1990, Pat. No. 5,130,242, which is a continuation-in-part of Ser. No. 439,093, Nov. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 241,410, Sep. 7, 1988, abandoned. This application Oct. 16, 1992, Ser. No. 962,522

Int. Cl.[5] **C12N** *1/18, 1/12, 1/00;* **C12P** *7/64*

U.S. Cl. 435—256.8 **12 Claims**

1. A process for growing Thraustochytrium, Schizochytrium, and mixtures thereof, comprising growing said Thraustochytrium, Schizochytrium, and mixtures thereof, in a culture medium containing less than about 3 grams of chloride per liter of said culture medium, sources of carbon, nitrogen, micronutrients, and a non-chloride sodium salt at a temperature from about 5° C. to about 48° C. and at a pH from about pH 5.0 to about pH 11.0.

5,340,743

XANTHAN GUM-PRODUCING STRAIN OF XANTHOMONAS

Thomas J. Pollock, and Linda Thorne, both of San Diego, Calif., assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan and Shin-Etsu Bio, Inc., San Diego, Calif.

Division of Ser. No. 517,551, Apr. 24, 1990, Pat. No. 5,279,961, which is a continuation of Ser. No. 180,945, Apr. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 38,302, Apr. 14, 1987, abandoned. This application Feb. 13, 1992, Ser. No. 834,938

Int. Cl.[5] **C12N** *1/21*

U.S. Cl. 435—252.3 **2 Claims**

1. A biologically pure culture of an *Xanthomonas campestris* strain comprising exogenous DNA capable of complementing an Xgs$^-$ mutation, wherein the strain produces more xanthan than the corresponding parent strain and wherein said exogenous DNA comprises exogenous DNA having a restriction map of a segment selected from the group consisting of c1H5, c1, c9H7, c82, c9, a fragment of c9H7 comprising c9e, a fragment of c82 comprising c9e, a fragment of c9 comprising c9e, and c9e and is obtained from a *Xanthomonas campestris* strain.

5,340,744

METHOD OF IDENTIFYING AND MODULATING THE ACTIVITY OF LABEL RETAINING CELLS IN HAIR FOLLICLES FOR DIAGNOSTIC AND THERAPEUTIC PURPOSES

Robert M. Lavker, Malvern, Pa.; Tung-Tien Sun, Scarsdale, N.Y., and George Cotsarelis, Upper Darby, Pa., assignors to Trustees of the Univ. of Penna., Philadelphia, Pa. and Trustees of the Univ. of New York, New York, N.Y.

Continuation of Ser. No. 971,687, Nov. 4, 1992, Pat. No. 5,279,969, which is a continuation of Ser. No. 676,185, Mar. 27, 1991, abandoned. This application Oct. 12, 1993, Ser. No. 135,051

The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.

Int. Cl.[5] **G01N** *33/48*

U.S. Cl. 436—63 **6 Claims**

1. A method of screening a hair follicle for growth by observing label-retaining cells located in the bulge region comprising:

(a) isolating a hair follicle

(b) inducing hair follicle cells into a proliferative phase;

(c) continuously labeling said cells with a selected radioisotope for a selected period;

(d) collecting label-retaining cells from the bulge region

VOL 1165 ISS 4 AG 23 1994 UMI

located at the midportion of a hair follicle at the arrector pili muscle attachment site; and

(e) observing said bulge cells for labeling to determine the number and viability of said bulge cells relative to established controls.

5,340,745

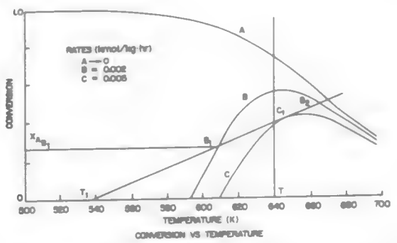
TEMPERATURE SCANNING REACTION METHOD

Bohdan W. Wojciechowski, and Norman M. Rice, both of Kingston, Canada, assignors to Queen's University, Kingston, Canada

Continuation-in-part of Ser. No. 833,182, Feb. 10, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 51,413

Int. Cl.[5] G01N *31/10*

U.S. Cl. 436—34 4 Claims



1. A method for rapid collection of kinetic rate data from a temperature scanning reactor in which a feed stock is reacted under non steady state conditions to form a conversion product comprising,

ramping the input temperature of said feed stock rapidly over a selected range of temperature,

continuously monitoring output conversion and output temperature while ramping the input temperature and determining a rate of reaction which is representative of steady-state conditions from input and output temperature and output conversion data obtained during said non-steady state operation of the reactor.

5,340,746

COMPOSITE REACTIVE ARTICLES FOR THE DETERMINATION OF CYANIDE

Donald F. Hagan, Woodbury; Louis C. Haddad, St. Paul; Robert E. Perkins, Oakdale, and Craig G. Markell, White Bear Township, Ramsey County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 8, 1993, Ser. No. 2,198

Int. Cl.[5] G01N *33/00*

U.S. Cl. 436—109 10 Claims

1. A method for quantifying cyanide ions in solution comprising the steps of:

a) contacting and passing a solution containing cyanide ions through a porous reactive support comprising a porous, high surface area, inert substrate on which is immobilized finely divided elemental gold at a controlled rate to provide sufficient contact time to provide an effluent comprising a soluble gold cyanide complex,

b) recovering the effluent comprising said gold cyanide complex, and

c) determining the quantity of cyanide present in said gold cyanide complex.

5,340,747

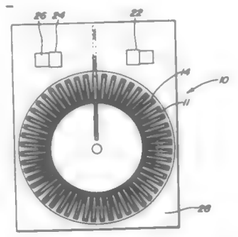
DIAGNOSTIC MICROBIOLOGICAL TESTING APPARATUS AND METHOD

Gideon Eden, Ann Arbor, Mich., assignor to Difco Laboratories, Inc., Ann Arbor, Mich.

Filed Jun. 4, 1993, Ser. No. 72,346

Int. Cl.[5] C12M *1/34*; G01N *21/64, 21/76, 35/02*

U.S. Cl. 436—172 5 Claims



5. A method of detecting the presence of a fluorescence emitting reaction (FER) resulting from the interaction of fluorescence emitting agents (FEA) and a sample for susceptibility and identification testing, said method consisting essentially of the steps of: containing an FEA in a plurality of reaction chambers of a test tray, the FEA upon reaction with a predetermined microbe in a sample emitting light at a predetermined emission wavelength upon being illuminated by light at a predetermined excitation wavelength;

directing a narrow band light substantially at the excitation wavelength at the plurality of reaction chambers of the test tray

passing through a filter only light generated by an FER at the emission wavelength simultaneously from the plurality of reaction chambers; and video imaging only the passed through light generated by the FER at the emission wavelength simultaneously from all of the plurality of reaction chambers of the test tray.

5,340,748

ANALYTE-SUBSTITUTE REAGENT FOR USE IN SPECIFIC BINDING ASSAY METHODS, DEVICES AND KITS

Bennett W. Baugher, Waukegan; Aurora J. Chamberlain, Buffalo Grove; Sharon M. Devereaux, Gurnee, and Frank S. Ungemach, Lake Villa, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 554,304, Jul. 18, 1990, abandoned. This application May 25, 1993, Ser. No. 67,254

Int. Cl.[5] G01N *33, 543*

U.S. Cl. 436—518 24 Claims

1. A method for determining the presence or amount of an analyte of interest in a test sample, comprising the steps of:

contacting said test sample sequentially or simultaneously with

(i) an analyte-substitute reagent comprising an analyte-component conjugated to a ligand-component,

wherein said analyte-component has at least one epitope in common with said analyte of interest, and said analyte-component specifically binds to a single analyte-specific binding member, and

wherein said ligand-component specifically binds to a ligand-specific binding member but does not specifically bind to an analyte-specific binding member, and

(ii) a first analyte-specific binding member which specifically binds an epitope present on both said analyte of interest and said analyte-component of said analyte-substitute reagent,

thereby forming in the presence of said analyte of interest, a mixture of: analyte of interest/first analyte-specific binding member complex; analyte-substitute reagent/first analyte-specific binding member complex; and unbound analyte-substitute reagent; wherein the amount of unbound analyte-substitute reagent increases as the amount of said analyte of interest increases;

contacting said mixture sequentially or simultaneously with

(i) a capture reagent comprising a second specific binding member which specifically binds said analyte-substitute reagent, wherein said capture reagent is directly or indirectly bound to a solid phase, and

(ii) an indicator reagent comprising a label capable of producing a detectable signal, wherein said label is conjugated to a third specific binding member which directly or indirectly specifically binds said unbound analyte-substitute reagent,

wherein said capture reagent and said indicator reagent form a directly or indirectly bound detectable complex with said unbound analyte-substitute reagent and wherein when said capture reagent specifically binds said analyte-component then said indicator reagent specifically binds said ligand-component, and when said capture reagent specifically binds said ligand-component then said indicator reagent specifically binds said analyte-component; and

(c) separating said directly or indirectly bound detectable complex from the mixture and detecting said label associated with said detectable complex, or the amount of said indicator reagent that is not associated with said detectable complex, to determine the presence or amount of said analyte of interest.

5,340,749

METHOD FOR COLLECTING AND PREPARING SPECIMENS FOR IMMUNE REACTIONS

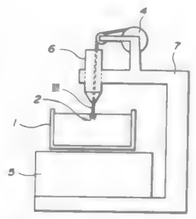
Koichi Fujiwara, Mito; Hiroko Mizutani, Tokyo, and Hiromichi Mizutani, deceased, late of Tokyo, all of Japan by Hiroko Mizutani, legal representative, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 344,239, Apr. 26, 1989, abandoned. This application Dec. 17, 1992, Ser. No. 991,507

Claims priority, application Japan, Apr. 26, 1988, 63-102919; Jun. 24, 1988, 63-156519; Oct. 28, 1988, 63-272106; Dec. 5, 1988, 63-307579; Mar. 27, 1989, 1-74245

Int. Cl.[5] G01N *1/28, 27/00, 33/553*

U.S. Cl. 436—526 12 Claims



1. A method for collecting particles of an immunoreactive specimen for electron microscopy examination, comprising the steps of:

(a) fixing antibody particles to non-magnetic particles having a mass greater than said specific antibody particles to form carrier fixed particles;

(b) subjecting a specimen and said carrier fixed particles to an immunoreaction to form reacted immunocomplex particles;

(c) labeling said reacted immunocomplex particles with magnetic micro-particles having a particle size of 10 to 30 nm;

(d) separating and removing unreacted particles of said antibody by centrifugation; and

(e) performing local concentration of the immunocomplex to a predetermined region by applying an external gradient magnetic field, which is produced by an electromagnet and a permanent magnetic pole;

(f) washing to remove extraneous particles and

(g) retrieving the immunocomplex by direct magnetic adsorption towards the magnetic pole at said region of local concentration.

5,340,750

REAGENTS AND METHODS FOR THE QUANTIFICATION OF IMIPRAMINE OR DESIPRAMINE IN BIOLOGICAL FLUIDS

Maciej Adamczyk, Gurnee; Charles A. Harrington, Lake Villa, and Donald Johnson, Lindenhurst, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

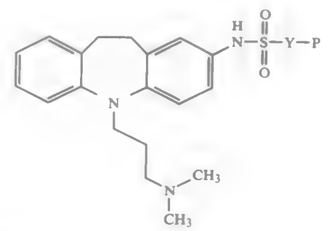
Continuation-in-part of Ser. No. 739,012, Jul. 31, 1991, abandoned. This application Jul. 24, 1992, Ser. No. 916,161

Int. Cl.[5] G01N *33/542, 33/533, 33/535*

U.S. Cl. 436—537 22 Claims

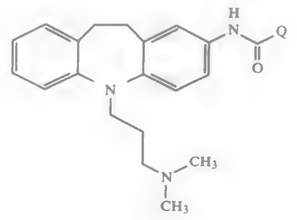
1. An immunoassay method for the quantification of imipramine in a test sample, said method comprising the steps of:

(a) contacting said test sample with a labeled reagent and an antibody reagent to form a reaction solution therewith, said antibody reagent comprising antibodies which are capable of binding to imipramine, wherein (i) said antibodies are produced with an immunogen of the formula:



wherein

Y is a linking group comprising from 1 to 6 carbon atoms and P is an immunogenic carrier material; and wherein (ii) said labeled reagent is a compound of the formula:



wherein

Q is a detectable moiety; and

(b) measuring the amount of said labeled reagent in said reaction solution which either has or has not participated in a binding reaction with said antibodies as a function of the amount of imipramine in said test sample.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,751

METHOD OF MANUFACTURING A BIMOS DEVICE

Takeo Maeda, and Hiroshi Momose, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

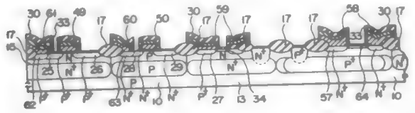
Continuation of Ser. No. 572,136, Aug. 22, 1990, Pat. No. 5,091,322, which is a division of Ser. No. 507,037, Apr. 10, 1990, Pat. No. 5,091,760. This application Nov. 18, 1991, Ser. No. 793,540

Claims priority, application Japan, Apr. 14, 1989, 1-94884; Mar. 30, 1990, 2-83909

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] H01L *2/265*

U.S. Cl. 437—31 4 Claims



1. A method of fabricating a semiconductor device including a bipolar transistor and a MOS transistor, the method comprising the steps of:

preparing a semiconductor substrate;

forming a gate oxide film on a surface of said semiconductor substrate;

selectively removing said gate oxide film to expose portions of said semiconductor substrate;

forming a first polysilicon layer on a resultant semiconductor structure;

implanting impurities in said first polysilicon layer;

annealing a resultant semiconductor structure to activate the impurities;

patterning said first polysilicon layer to form a base electrode of said bipolar transistor and a gate electrode of said MOS transistor having a same conductivity type;

forming an insulating layer on a resultant semiconductor structure;

selectively exposing portions of said semiconductor substrate;

forming a second polysilicon layer on a resultant semiconductor structure; and

patterning said second polysilicon layer to form an emitter electrode of said bipolar transistor.

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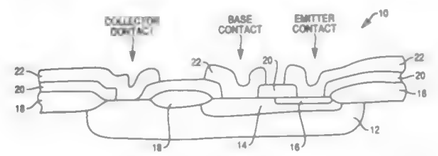
METHOD FOR FORMING A BIPOLAR TRANSISTOR USING DOPED SOG

Derryl D. J. Allman, Colorado Springs, Colo., and Dim-Lee Kwong, Austin, Tex., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 23, 1992, Ser. No. 965,823

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 15 Claims



15. A method for forming a semiconductor device comprising the steps of:

spinning a layer of SOG containing a plurality of dopants over a collector;

driving the first and second dopants into the substrate at the same time to form a base and an emitter, including the substep of performing an RTP cycle;

removing the SOG layer;

depositing an insulating layer;

masking a area of the insulating layer;

etching away the insulating layer outside the area;

implanting the emitter with the first dopant to provide a contact point for the base;

masking a second area of the insulating layer;

etching away the insulating layer outside the a second area; and

depositing a metal interconnect layer over the insulating layer and in contact with the base and the emitter.

5,340,753

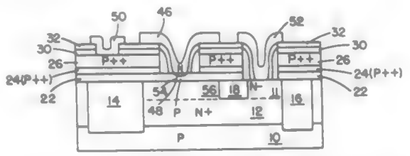
METHOD FOR FABRICATING SELF-ALIGNED EPITAXIAL BASE TRANSISTOR

Ernest Bassous, Bronx; Gary L. Patton, Poughkeepsie, and Johannes M. C. Stork, Yorktown Heights, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 606,658, Oct. 31, 1990, abandoned. This application Apr. 14, 1993, Ser. No. 47,094

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 17 Claims



1. A method for forming a self-aligned epitaxial base transistor comprising the steps of:

(a) depositing an intrinsic base layer of epitaxial semiconductor on a substrate structure having shallow and deep trench isolation regions defining a collector region doped with a first conductivity type, said intrinsic base layer being doped with a second conductivity type;

(b) depositing a conductive etch stop layer of heavily doped epitaxial semiconductor on said intrinsic base layer, said conductive etch stop layer having a thickness substantially thinner than said intrinsic base layer and being heavily doped with said second conductivity type;

(c) depositing an extrinsic base layer of undoped polycrystalline semiconductor on said conductive etch stop layer, and implanting a dopant of said second conductivity type in an upper surface of said extrinsic base layer;

(d) depositing an oxide layer on said extrinsic base layer;

(e) depositing a nitride layer on said oxide layer;

(f) forming an emitter window vertically through said nitride and oxide layers and a portion of said extrinsic base layer;

(g) selectively removing the remaining portion of said extrinsic base layer within said emitter window;

(h) selectively oxidizing said conductive etch stop layer within said emitter window;

(i) forming oxide and nitride sidewalls within said emitter window; and

(j) forming an emitter region of polycrystalline semiconductor within said emitter window, said emitter region being doped with said first conductivity type; and,

(k) driving dopant of said second conductivity type from said heavily doped conductive etch stop layer into said undoped extrinsic base layer and from said upper surface of said extrinsic base layer into said undoped extrinsic base layer.

5,340,754

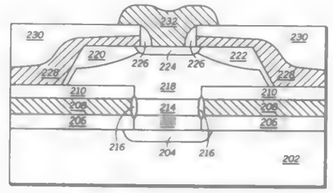
METHOD FOR FORMING A TRANSISTOR HAVING A DYNAMIC CONNECTION BETWEEN A SUBSTRATE AND A CHANNEL REGION

Keith E. Witek; Jon T. Fitch, and Carlos A. Mazuré, all of Austin, Tex., assignors to Motorla, Inc., Schaumburg, Ill.

Filed Sep. 2, 1992, Ser. No. 940,260

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—32 20 Claims



1. A method for forming a semiconductor structure comprising the steps of:

providing a substrate;

forming a vertical transistor overlying the substrate, the vertical transistor having a first current electrode, a second current electrode which overlies the first current electrode, a channel region which separates the first current electrode from the second current electrode, and a control electrode which is adjacent the channel region; and

forming a vertically raised lateral transistor overlying the vertical transistor wherein a portion of the vertically raised lateral transistor is electrically coupled to the second current electrode of the vertical transistor.

5,340,755

METHOD OF MAKING PLANAR HETEROBIPOLAR TRANSISTOR HAVING TRENCHED ISOLATION OF THE COLLECTOR TERMINAL

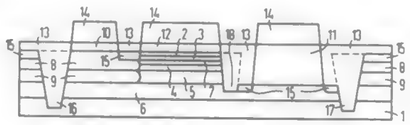
Hans-Peter Zwicknagl, Stuttgart; Joachim Hoepfner, Planegg, and Lothar Schleicher, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiegensellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 821,855, Jan. 15, 1992, abandoned, which is a continuation of Ser. No. 575,795, Aug. 31, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 912,271

Claims priority, application European Pat. Off., Sep. 8, 1989, 89116665.4

Int. Cl.[5] H01L *21/265, 29/70*

U.S. Cl. 437—33 12 Claims



1. A method of making a heterobipolar transistor of the type which has a substrate, an emitter, a base, and a collector supposed by said substrate, and which comprises a sub-collector layer of semiconductor material on said substrate, a collector layer of semiconductor material on said sub-collector layer, a layer sequence of semiconductor material for a base-emitter complex on said collector layer including at least one base layer and one emitter layer grown on top of one another and defining an upper surface, a collector metalization on said sub-collector layer, a collector parting trench between said collector metalization and said layer sequence, said collector parting trench extending from said upper surface of said layer sequence at least into said collector layer and at the most into an upper layer potion of said sub-collector layer, and passivation material filling said collector parting trench, comprising the steps of:

(a) growing the sub-collector layer, the collector layer and the layer sequence onto the substrate;

(b) masking the upper surface with a first mask to define an open mask region for the collector parting trench;

(c) removing semiconductor material through the first mask in the open mask region from the upper surface at least down into the collector layer and at most into an upper layer portion of the sub-collector region to form the collector parting trench;

(d) filling the collector parting trench with insulating material;

(e) removing the first mask to expose the upper surface;

(f) applying a base metalization to the base and an emitter metalization to the emitter;

(g) masking the upper surface and the metalizations with a second mask to define an open mask region for the collector;

(h) etching out the layer structure down to the sub-collector layer;

(i) applying the collector metalization directly on the exposed sub-collector layer; and

(j) removing the second mask.

5,340,756

METHOD FOR PRODUCING SELF-ALIGNED LDD CMOS, DMOS WITH DEEPER SOURCE/DRAIN AND P-BASE REGIONS AND, BIPOLAR DEVICES ON A COMMON SUBSTRATE

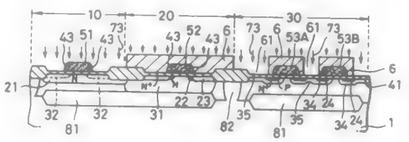
Yoshihiko Nagayasu, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 2, 1993, Ser. No. 71,016

Claims priority, application Japan, Jun. 3, 1992, 4-141848

Int. Cl.[5] H01L *21/265, 21/70*

U.S. Cl. 437—34 7 Claims



1. A method for producing a semiconductor device having a CMOSFET and an N-channel double-diffused MOSFET in a semiconductor substrate, comprising the steps of:

forming source-drain regions by implanting a first dopant using a gate of an N-channel MOSFET constructing said CMOSFET as a mask;

forming source-drain regions and a p base region of said N-channel double-diffused MOSFET deeper than said source-drain regions by successively implanting a second dopant and a third dopant using gates of said N-channel double-diffused MOSFET as a mask;

forming oxide films on side walls of individual gates of the N-channel MOSFET, a P-channel MOSFET constructing said CMOSFET, and said N-channel double-diffused MOSFET; and

forming an LDD structure by implanting into the source-drain regions of said N-channel MOSFET with a fourth dopant using the gate of said N-channel MOSFET and said oxide films as a mask.

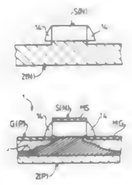
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,757

METHOD OF MANUFACTURING A VERTICAL FIELD EFFECT TRANSISTOR

Alain Chantre, Saint-Egreve; Daniel Bois, Saint-Ismier, and Alain Nouailhat, Meylan, all of France, assignors to France Telecom, Paris, France

Filed Jul. 8, 1992, Ser. No. 910,618
Claims priority, application France, Jul. 10, 1991, 91 08677
Int. Cl.[5] H01L *21/335*
U.S. Cl. 437—40 4 Claims



2. A method of manufacturing a field effect transistor, comprising the steps of:

depositing a layer of polycrystalline silicon of a given first conductivity type on a semiconductor substrate;

depositing a photosensitive layer on the layer of polycrystalline silicon, masking and photoetching the photosensitive layer and the polycrystalline silicon to thereby form a source region with sidewalls from the layer of polycrystalline silicon of the given first conductivity type that upwardly projects from said substrate;

implanting ions of a given second conductivity type in said substrate on the side of the source region to make a junction and thereby form a gate region;

covering the gate region and the source region with a layer of silicon oxide, anisotropically etching said layer of silicon oxide so as to form insulating spacers on the sidewalls of the source region;

eliminating by chemical etching the gate region previously obtained by ion implantation so as to cut away the substrate underlying the insulating spacers on the sidewalls of the source region;

forming a metal silicide on the gate and source regions; and

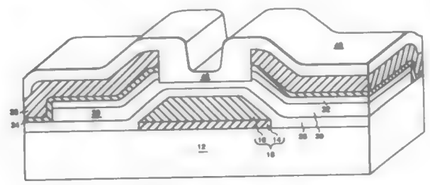
implanting ions again to reform the junction of the gate region.

5,340,758

DEVICE SELF-ALIGNMENT BY PROPAGATION OF A REFERENCE STRUCTURE'S TOPOGRAPHY

Ching-Yeu Wei; George E. Possin, and Robert F. Kwasnick, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 593,425, Oct. 5, 1990, abandoned. This application Aug. 28, 1992, Ser. No. 938,562
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] H01L *21/336, 21/28*
U.S. Cl. 437—40 13 Claims



1. A method of fabricating a thin film transistor in a self-aligned manner comprising the steps of:

forming a patterned gate conductor on an upper surface of a substrate, said patterned gate conductor having a selected topography defined by the thickness of said patterned gate conductor above said substrate upper surface and the vertical taper of sidewalls of said patterned gate conductor, said patterned gate conductor being narrower at a top raised portion that is remote from said upper surface of said substrate than it is adjacent to said upper surface of said substrate;

depositing a substantially conformal dielectric layer over said patterned gate conductor and exposed portions of said upper surface of said substrate;

depositing a substantially conformal layer of semiconductor material over said dielectric layer;

depositing a substantially conformal layer of source/drain metallization over said semiconductor material layer;

said selected topography being propagated upward through each of the substantially conformal dielectric material, semiconductor material, and source/drain metallization layers;

forming a planarization layer of a planarization material over the source/drain metallization, said planarization layer having a substantially planar exposed surface;

uniformly removing said planarization material until a portion of said source/drain metallization is exposed that is in substantial alignment with said top raised portion of said gate conductor;

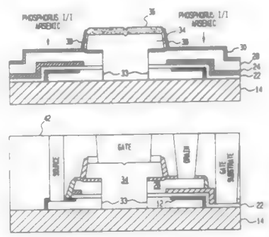
selectively etching the exposed source/drain metallization to form source and drain electrodes self aligned to said patterned gate conductor and to expose the underlying semiconductor material, the self-aligned source and drain electrodes being formed without through-the-substrate exposure of photoresist to obtain the self-alignment.

5,340,759

METHOD OF MAKING A VERTICAL GATE TRANSISTOR WITH LOW TEMPERATURE EPITAXIAL CHANNEL

Chang-Ming Hsieh; Louis L. C. Hsu, both of Fishkill, and Seiki Ogura, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 900,038, Jun. 17, 1992, Pat. No. 5,283,456.
This application Aug. 30, 1993, Ser. No. 113,941
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 4 Claims



3. A method of fabricating a pair of field effect transistors with a common vertical gate on a silicon-on-oxide layer, comprising the steps of:

forming a source layer in the silicon layer of the silicon-on-oxide layer;

forming a channel substrate layer by a low temperature epitaxial process overlying said source layer;

forming a drain layer;

forming a vertical opening in said source layer, said channel substrate layer, and said drain layer, said opening separating said source layer, said channel substrate layer, and said drain layer into two electrically isolated structures with an edge of each layer aligned along opposing walls of said opening;

forming a gate dielectric layer on said opposing walls of said opening;

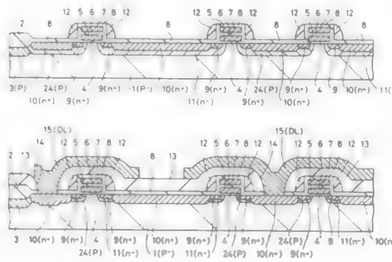
forming a vertical conductive gate structure in said opening in contact with said gate dielectric layer, said gate structure being common to said two electrically isolated structures.

5,340,760

METHOD OF MANUFACTURING EEPROM MEMORY DEVICE

Kazuhiro Komori, 39-20 Tsuda-cho 3-chome, Kodaira-shi, Tokyo; Satoshi Meguro, 2196-662, Hirai, Hinode-machi, Nishitama-gun Tokyo; Takaaki Hagiwara, 2196-479, Hirai, Hinode-machi, Nishitama-gun, Tokyo; Hitoshi Kume, 33-7, Nishikubo 1-chome,, Musashino-shi, Tokyo; Toshihisa Tsukada, 29-2, Sekimae 3-chome, Musashino-shi, Tokyo, and Hideaki Yamamoto, 25-2-103, Higashitokorozawa 1-chome, Tokorozawa-shi, Saitama, all of Japan

Division of Ser. No. 765,005, Sep. 24, 1991, Pat. No. 5,189,497, which is a continuation of Ser. No. 517,386, Apr. 30, 1990, Pat. No. 5,079,603, which is a continuation of Ser. No. 440,475, Nov. 21, 1989, abandoned, which is a continuation of Ser. No. 310,014, Feb. 13, 1989, abandoned, which is a continuation of Ser. No. 53,730, May 26, 1987, abandoned. This application Dec. 15, 1992, Ser. No. 992,473
Claims priority, application Japan, May 26, 1986, 61-119215
Int. Cl.[5] H01L *21/335*
U.S. Cl. 437—43 26 Claims



1. A method of manufacturing a semiconductor memory device, said semiconductor memory device comprising a memory cell and an MISFET for a peripheral circuit, said method comprising steps of:

providing a semiconductor substrate of a first conductivity type having a memory cell forming region and a peripheral circuit forming region, with a first gate insulating film formed on said memory cell forming region, a floating gate electrode formed on said first gate insulating film, a second gate insulating film formed on said floating gate electrode, and a control gate electrode formed on said second gate insulating film, and with a third gate insulating film formed on said peripheral circuit forming region, and a first gate electrode of said MISFET formed on said third gate insulating film;

forming a first semiconductor region, of a second conductivity type, in said memory cell forming region, by introducing in said memory cell forming region an impurity in self-alignment with one end portion of said control gate electrode;

forming a second semiconductor region, of said second conductivity type, in said memory cell forming region, by introducing in said memory cell forming region an impurity in self-alignment with another end portion of said control gate electrode, wherein a junction depth of said first semiconductor region is greater than a junction depth of said second semiconductor region;

forming a third semiconductor region, of said first conductivity type, in said memory cell forming region, by introducing in said memory cell forming region an impurity in self-alignment with said another end portion of said control gate electrode, wherein a junction depth of said third semiconductor region is greater than a junction depth of said second semiconductor region, and wherein an impurity concentration of said third semiconductor region is higher than an impurity concentration of said semiconductor substrate;

forming a fourth semiconductor region, of said second conductivity type, in said peripheral circuit forming region, by introducing in said peripheral circuit forming region an impurity in self-alignment with said first gate electrode, wherein an impurity concentration of said first semiconductor region is higher than an impurity concentration of said fourth semiconductor region;

after the steps of forming first, second, third, and fourth semiconductor regions, forming first side wall spacers on both side surfaces of said control and floating gate electrodes in self-alignment with said control and floating gate electrode, and forming second side wall spacers on both side surfaces of said first gate electrode in self-alignment with said first gate electrode; and

forming a fifth semiconductor region, of said second conductivity type, in said peripheral circuit forming region by introducing in said peripheral circuit forming region an impurity, in self-alignment with said second side wall spacers, wherein an impurity concentration of said fifth semiconductor region is higher than the impurity concentration of said fourth semiconductor region, and wherein said fourth and fifth semiconductor regions serve as a drain region of said MISFET,

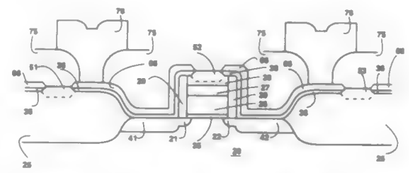
wherein data is stored in said memory cell by injecting hot-carriers into said floating gate electrode, and wherein data is erased from said memory cell by emitting said injected carriers from said floating gate electrode to said first semiconductor region by tunneling through said first gate insulating film.

5,340,761

SELF-ALIGNED CONTACTS WITH GATE OVERLAPPED LIGHTLY DOPED DRAIN (GOLDD) STRUCTURE

Ying T. Loh, Saratoga, and Chung S. Wang, Fremont, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Oct. 31, 1991, Ser. No. 786,321
Int. Cl.[5] H01L *21/336, 21/28*
U.S. Cl. 437—44 10 Claims



1. A method for producing a transistor with an overlapping gate region, the method comprising the steps of:

(a) placing on a substrate between two source/drain regions, a gate region which includes a polysilicon region, the gate region being placed on top of a dielectric region; the polysilicon region being used as part of a gate region;

(b) forming spacers around the gate region, the spacers being composed of dielectric material; and,

(c) forming a thin layer of polysilicon over the two source/-drain regions and over electrically insulating regions adjacent to the two source/drain regions;

(d) oxidizing portions of the thin layer of polysilicon to electrically isolate the two source/drain regions;

(e) forming a metal-silicide layer on the portions of the thin layer of polysilicon which are not oxidized; and,

(f) connecting the metal-silicide layer to a metal layer

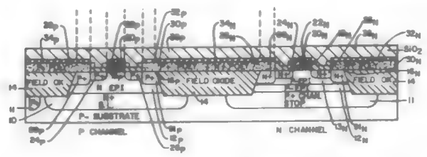
VOL 1165 ISS 4 AG 23 1994 UMI

through a contact hole, an electrical contact of the metal-silicide layer and the metal layer being over the electrically insulating layer.

5,340,762
METHOD OF MAKING SMALL CONTACTLESS RAM CELL

Madhukar B. Vora, Los Gatos, Calif., assignor to Fairchild Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 701,542, May 16, 1991, Pat. No. 5,100,824, which is a division of Ser. No. 484,459, Feb. 15, 1990, Pat. No. 5,072,275, which is a continuation of Ser. No. 224,182, Jul. 22, 1988, abandoned, which is a continuation of Ser. No. 834,926, Feb. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 718,392, Mar. 27, 1985, abandoned. This application Jan. 16, 1992, Ser. No. 822,390 The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **5 Claims**



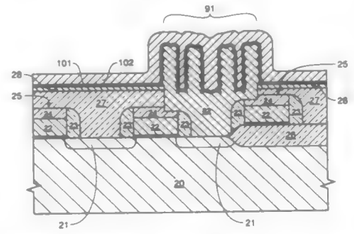
1. A process for forming MOS transistors and bipolar transistors on the same integrated circuit substrate comprising the steps of:
forming isolated islands of silicon of the proper conductivity for all bipolar and MOS transistors to be formed in said substrate;
forming a layer of gate insulating material over only the MOS islands and only over that portion of the MOS island over which the gate electrodes will be formed, and forming a plurality of transitory surface electrodes having top surfaces parallel to said substrate and side surfaces normal to substrate surface, said electrodes being formed out of the same layer of polysilicon which has been properly doped with the correct type of impurities in the regions where electrodes are to be formed, said electrodes to serve as the gate, source, drain, emitter, collector and base electrodes of the transistors being formed;
doping said substrate to form source and drain regions in electrical contact with said source and drain electrodes and aligned on one edge with the edges of said gate electrodes;
forming a layer of insulating material over all exposed portions of said silicon islands; and
heating the structure long enough and at an appropriate temperature to cause out diffusion of impurities from said electrodes so as to form emitter regions and collector, source and drain contact regions in said substrate.

5,340,763
MULTI-PIN STACKED CAPACITOR UTILIZING MICRO VILLUS PATTERNING IN A CONTAINER CELL AND METHOD TO FABRICATE SAME

Charles H. Dennison, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Feb. 12, 1993, Ser. No. 17,067
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **4 Claims**

1. A process for fabricating a mutli-pin conductive structure on a starting substrate's existing topography, said process comprising the steps of:
a) forming blanketing first, second and third insulating layers over said existing topography;
b) patterning and etching an opening into said first, second and third insulating layers;
c) forming and planarizing a conductive material thereby filling said opening;
d) recessing said planarized conductive material;
e) removing said third insulating layer thereby exposing the outer walls of said conductive material;

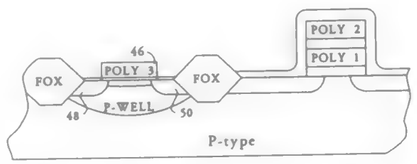


f) forming alternating insulating spacers and conductive spacers on the recessed surface of said conductive material; and
g) removing said conductive spacers and trenching into the underlying conductive material thereby forming said multi-pin structure.

5,340,764
INTEGRATION OF HIGH PERFORMANCE SUBMICRON CMOS AND DUAL-POLY NON-VOLATILE MEMORY DEVICES USING A THIRD POLYSILICON LAYER

Bradley J. Larsen, Woodland Park; Todd A. Randazzo, and Donald A. Erickson, both of Colorado Springs, all of Colo., assignors to Atmel Corporation, San Jose, Calif.

Filed Feb. 19, 1993, Ser. No. 20,291
Int. Cl.[5] H01L *29/34, 29/78*
U.S. Cl. 437—52 **15 Claims**



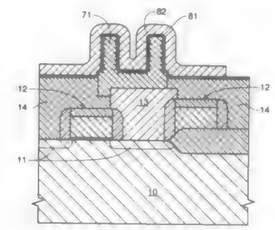
1. A method for forming a submicron transistor adjacent to a non-volatile memory transistor comprising the steps of:
providing a semiconductor substrate of a first conductivity type,
forming a non-volatile memory transistor on a first region of said semiconductor substrate, including
forming a first gate oxide layer on said substrate,
forming a first polysilicon layer on said first gate oxide layer,
forming a second gate oxide layer on said polysilicon layer,
selectively etching said gate oxide and polysilicon layers to leave a pair of polysilicon gates stacked above a section of said first region, said gates separated from each other by said second gate oxide layer and separated from said substrate by said first gate oxide layer,
forming doped regions of a second conductivity type in said first region proximate to said pair of gates,
forming a thermal oxide layer over said non-volatile memory device and said semiconductor substrate,
removing said thermal oxide from a second region of said substrate, said second region separated from said first region by a field oxide region,

forming a third gate oxide layer over said second region of said substrate,
forming a third layer of polysilicon over said non-volatile memory device and said third gate oxide layer,
selectively removing said third layer of polysilicon such that said third layer of polysilicon is removed from everywhere except for atop a portion said second region,
forming a submicron CMOS transistor, including implanting dopants of said second conductivity type into said second region of said substrate adjacent to said portion under said third layer of polysilicon,
forming metallized contacts to said submicron CMOS transistor and said non-volatile memory transistor, and
covering said semiconductor substrate including said submicron CMOS transistor and said non-volatile memory transistor with a protective coating.

5,340,765
METHOD FOR FORMING ENHANCED CAPACITANCE STACKED CAPACITOR STRUCTURES USING HEMI-SPHERICAL GRAIN POLYSILICON

Charles H. Dennison, and Randhir P. S. Thakur, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Aug. 13, 1993, Ser. No. 106,503
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **34 Claims**

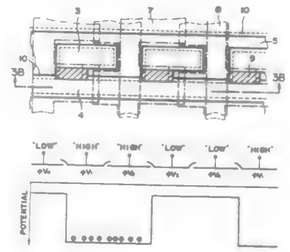


1. A process for fabricating a conductive container structure on a supporting substrate, said process comprising the steps of:
forming a planarized insulating layer;
forming an opening into said planarized layer;
forming multiple layers of silicon into said opening, wherein the first and last layers formed comprise amorphous silicon;
forming multiple silicon interfacing layers at the silicon grain boundaries between each layer, thereby separating each said silicon layer with an oxide layer;
forming individual container structures having inner and outer surfaces and thereby exposing said planarized insulating layer;
partially removing said planarized insulating layer thereby exposing said outer surface of said container structures;
covering said exposed inner and outer surfaces of amorphous silicon into hemispherical grained polysilicon by subjecting said inner and outer surfaces to a high vacuum anneal;
forming an insulating layer adjacent and coextensive said conductive container structure; and
forming a conductive layer superjacent and coextensive said insulating layer.

5,340,766
METHOD FOR FABRICATING CHARGE-COUPLED DEVICE

Yasutaka Nakashiba, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 17, 1993, Ser. No. 32,147
Claims priority, application Japan, Mar. 19, 1992, 4-093713
Int. Cl.[5] H01L *21/339*
U.S. Cl. 437—53 **3 Claims**



1. A method for fabricating a charge-coupled device, comprising the steps of:
forming a photoelectric conversion region and a charge transfer region within a semiconductor layer of a first conductivity type by introducing impurities of a second conductivity type;
forming an element isolation region by introducing impurities of the first conductivity type into said semiconductor layer by using a mask pattern, said element isolation region defining said photoelectric conversion region and said charge transfer region and also defining a charge-read-out gate region for reading out a signal charge to said charge transfer region from said photoelectron conversion region, and said mask pattern for introducing the impurities of the first conductivity type being set back from an edge line of said charge transfer region which edge line is at a side of the charge-read-out gate region.

5,340,767
METHOD OF FORMING AND SELECTIVELY COUPLING A PLURALITY OF MODULES ON AN INTEGRATED CIRCUIT CHIP

Ed Flaherty, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 720,307, Jun. 25, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 42,848
Int. Cl.[5] H01L *21/82, 21/66*
U.S. Cl. 437—54 **17 Claims**

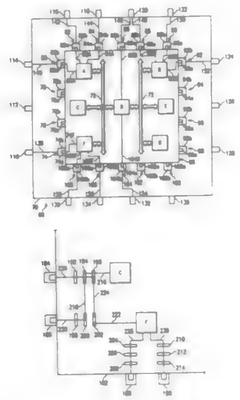
1. A method of forming an integrated circuit, comprising the steps of:
forming a plurality of modules on a chip;
forming a plurality of conductive bond regions adjacent the chip;
forming a first group of conductive regions adjacent a first one of said bond regions, said first group of conductive regions exclusive to a first one of said modules such that none of said plurality of modules except said first module are coupled directly to any of said first conductive regions;
forming a second group of conductive regions adjacent a second one of said bond regions, said second group of conductive regions exclusive to a second one of said modules such that none of said plurality of modules except said second module are coupled directly to any of said second said conductive regions;
electrically coupling said first one of said modules to a first conductive region in the first group conductive regions;
electrically coupling said second one of said modules to a

VOL 1165 ISS 4 AUG 23 1994 UMI

first conductive region in the second group of conductive regions;

electrically coupling the first conductive region in the first group of conductive regions to a second conductive region in the second group of conductive regions;

electrically coupling the first conductive region in the second group of conductive regions to a second conductive region in the first group of conductive regions;



electrically coupling the second conductive region in the second group of conductive regions to the bond region adjacent the second group of conductive regions;

electrically coupling the second conductive region in the first group of conductive regions to the bond region adjacent the first group of conductive regions; and

wherein none of said coupling pass over any other of said couplings.

5,340,768

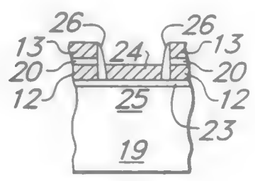
METHOD OF FABRICATING SELF-ALIGNED FIELD-PLATE ISOLATION BETWEEN CONTROL ELECTRODES

Manzur Gill, Saratoga, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 787,708, Nov. 4, 1991, Pat. No. 5,245,212, which is a continuation of Ser. No. 715,022, Jun. 13, 1991, abandoned, which is a continuation of Ser. No. 456,907, Dec. 26, 1989, abandoned. This application May 28, 1993, Ser. No. 68,047

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—61 **6 Claims**



1. A self-aligned method for isolating active elements formed on an integrated circuit semiconductor layer, comprising:

forming a region in said semiconductor layer between edges of control electrodes of said active elements;

forming sidewall oxide insulators on said edges of said control electrodes;

forming an insulating layer over said region in said semiconductor layer;

forming a field-plate conductor over said insulating layer and said control electrodes;

etching said field-plate conductor to remove that part of said field-plate conductor over said control electrodes and said sidewall oxide insulators; and

connecting the remaining part of said field-plate conductor to a source of potential that causes said region to be non-conductive.

5,340,769

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE HAVING GROOVE-STRUCTURED ISOLATION

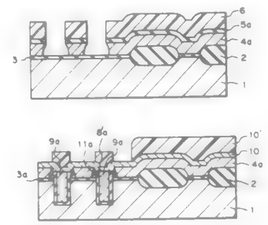
Hidenobu Miyamoto, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Nov. 26, 1993, Ser. No. 157,538

Claims priority, application Japan, Nov. 26, 1992, 4-317004

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—67 **10 Claims**



1. A method for manufacturing a semiconductor device, comprising the steps of:

forming a gate insulating layer on a semiconductor substrate of a first conductivity type;

forming a first conductive layer on said gate insulating layer;

forming a mask insulating layer on said first conductive layer;

forming a photoresist pattern layer on said mask insulating layer;

etching said mask insulating layer and said first conductive layer with a mask of said photoresist pattern layer, so that a side face of said first conductive layer is reversely-tapered;

removing said photoresist pattern layer;

forming a sidewall insulating layer on a side face of said mask insulating layer and said first conductive layer simultaneously with removing a part of said gate insulating layer where said first conductive layer and said sidewall insulating layer are not located;

etching said semiconductor substrate with a mask of said mask insulating layer and said sidewall insulating layer, to create a groove within said semiconductor substrate;

burying an isolation insulating layer within said groove;

forming a second conductive layer on said isolation insulating layer and said first conductive layer;

etching said first and second conductive layers with a predetermined pattern mask; and

introducing impurities of a second conductive type opposite to the first conductive type into said semiconductor substrate, to create a source region and a drain region within said semiconductor substrate.

5,340,770

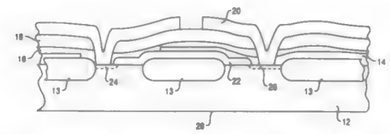
METHOD OF MAKING A SHALLOW JUNCTION BY USING FIRST AND SECOND SOG LAYERS

Derryl D. J. Allman, Colorado Springs, Colo., and Dim-Lee Kwong, Austin, Tex., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 23, 1992, Ser. No. 965,822

Int. Cl.[5] H01L *21/225*

U.S. Cl. 437—164 **20 Claims**



1. A method for producing a shallow junction semiconductor device comprising the steps of:

spinning a layer of silicon oxide glass containing a dopant over an underlying semiconductor substrate;

removing a portion of the SOG layer including the substeps of masking the SOG layer with an emulsion while leaving the portion unmasked, removing the portion, and removing the emulsion;

spinning another layer of silicon oxide glass containing another dopant over the one layer and in place of the removed portion; and

driving the one and the other dopant into the semiconductor layer to form first and second shallow junctions.

5,340,771

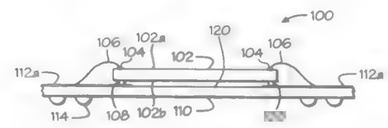
TECHNIQUES FOR PROVIDING HIGH I/O COUNT CONNECTIONS TO SEMICONDUCTOR DIES

Michael D. Rostoker, Boulder Creek, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Mar. 18, 1993, Ser. No. 33,718

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **23 Claims**



1. A method of making a high number of connections to a semiconductor die, comprising:

providing a substrate having two opposite surfaces, one of which is a first surface, another of which is a second surface, a die-receiving area defined on a the first surface of the substrate;

providing a first plurality of conductive lines on the first surface of the substrate;

providing a second plurality of conductive lines on the substrate;

providing a first plurality of bond sites around a periphery of a one surface a semiconductor die;

providing a second plurality of bond sites around a periphery of an other surface of the semiconductor die, the other surface of the die being opposite the one surface of the die;

extending the first plurality of conductive lines to within a die-receiving area where the die is to be mounted on the first surface of the substrate;

mounting the die to the first surface of the substrate so that the first bond sites are connected, by first connections, to the first conductive lines; and

connecting the second bond sites, by second connections, with bond wires to the second plurality of conductive lines.

5,340,772

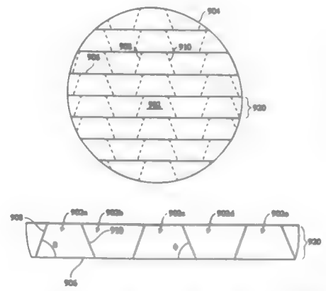
METHOD OF INCREASING THE LAYOUT EFFICIENCY OF DIES ON A WAFER AND INCREASING THE RATIO OF I/O AREA TO ACTIVE AREA PER DIE

Michael D. Rosotker, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 17, 1992, Ser. No. 916,328

Int. Cl.[5] H01L *21/304*

U.S. Cl. 437—226 **3 Claims**



1. A method of forming die sites from a semiconductor wafer, comprising:

providing a first series of equally spaced-apart scribe lines extending as parallel chords entirely across a selected diameter of a semiconductor wafer, the selected diameter being perpendicular to the first series of scribe lines, areas between adjacent first scribe lines forming a plurality of rows, each row having the same height as the other rows;

separating the rows from the wafer, each row having two opposite edges defined by adjacent first parallel scribe lines;

after separating the rows, scribing each separated row to form a plurality of individual die sites on each separated row; and

after scribing each separated row, singulating the individual die sites from the separated row into nonhomogeneous dies.

5,340,773

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

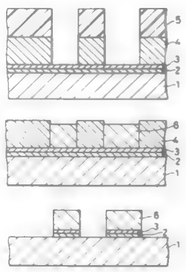
Tomio Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 14, 1992, Ser. No. 960,789

Claims priority, application Japan, Oct. 16, 1991, 3-267413

Int. Cl.[5] H01L *21/288*

U.S. Cl. 437—230 **18 Claims**



1. A method of fabricating a semiconductor device in which

VOL 1165 ISS 4 AG 23 1994 UMI

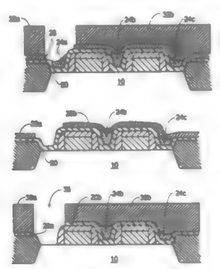
wiring is formed on a semiconductor substrate using a plating process, including the step of forming an aluminum film pattern thicker than a metallic wiring to be formed on said semiconductor substrate, and using said aluminum film pattern as a mask.

5,340,774

SEMICONDUCTOR FABRICATION TECHNIQUE USING LOCAL PLANARIZATION WITH SELF-ALIGNED TRANSISTORS

Ting-Pwu Yen, Fremont, Calif., assignor to Paradigm Technology, Inc., San Jose, Calif.

Filed Feb. 4, 1993, Ser. No. 13,466
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—240 **22 Claims**



1. A method of forming an integrated circuit comprising:
providing a semiconductory substrate having a principal surface;
forming on the principal surface a plurality of spaced apart gate structures;
implanting a dopant in the substrate after the step of forming the gate structures, thereby forming at least one doped region int he substrate;
forming a masking layer on the principal surface overlying the at least one doped region;
patterning the masking layer;
then planarizing the principal surface by forming a filler layer over the principal surface and over the gate structures and patterned mask layer;
defining a contact opening to the at least one doped region by removing a portion of the filler layer overlying the doped region, the filler layer otherwise remaining overlying a portion of the principal surface between two of the gate structures; and
then etching to remove the underlying patterned mask layer.

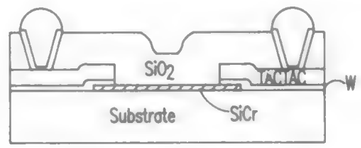
5,340,775

STRUCTURE AND FABRICATION OF SICR MICROFUSES

Roy A. Carruthers, Stormville; Fernand J. Dorleans, Wappinger Falls; John A. Fitzsimmons; Richard Flitsch, both of Poughkeepsie; James A. Jubinsky, Clinton Corners; Gerald R. Larsen, Cornwall; Geraldine C. Schwartz; Paul J. Tsang, both of Poughkeepsie, and Robert W. Zielinski, Wappinger Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 990,679, Dec. 15, 1992, Pat. No. 5,285,099. This application Nov. 9, 1993, Ser. No. 149,250
Int. Cl.[5] H01L *21/465*
U.S. Cl. 437—246 **12 Claims**

1. A method of fabricating a microfuse, deletable by low voltage electrical pulses or by laser pulses, for rerouting the various components in an integrated circuit, comprising the steps of.
a) depositing a SiCr film from a target with a composition of approximately 28% Cr and 72% Si to a thickness of approximately 30 to 100 nm on a clean substrate;
b) depositing a mask layer of photoresist material on the SiCr layer to define the size and shape of microfuse;
c) etching away a portion of the SiCr layer exposed by the photoresist mask;
d) removing the photoresist mask from the SiCr layer;
e) sputter cleaning the surface of the SiCr fuse pattern by removing a portion of the upper surface of the SiCr layer;
f) depositing a layer of tungsten, W, over the surface of the etched and cleaned SiCr layer, to a depth of about 50–200 nm;
g) depositing a final metallization layer of an aluminum (Al) alloy over the entire exposed surface of the W layer;



h) depositing a photoresist mask over the surface of the Al alloy to define the final metal pattern thereon;
i) etching away the exposed areas of Al alloy down to the W layer;
j) stripping the residual photoresist mask;
k) etching the tungsten from the surface of the fuse to expose the SiCr fuse surface;
i) annealing the structure resulting from step k) at a temperature in the range of 350°–450° C. for a period of at least 30 minutes;
m) depositing a final passivation SiO_2 layer over the top surface of the structure to a thickness of about 3.0 to 4.0 μm and providing terminal contacts through the passivation layer by standard photolithographic techniques for effecting electrical contacts thereto.

5,340,776

PREPARATION OF VERY FINE GLASS POWDER OF HIGH PURITY

Hartmut Paschke, Ergolding; Johann Daimer, Oberahrein, and Richard Häring, Landshut, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 819,237, Jan. 13, 1992, abandoned. This application May 12, 1992, Ser. No. 881,929
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1991, 4100604
Int. Cl.[5] C03C *3/00*
U.S. Cl. 501—11 **25 Claims**

1. A process for the preparation of very fine glass powder of high purity having a desired mean particle size d_{50} of ≦10 μm by wet-grinding in the presence of grinding elements, comprising grinding a glass powder having a higher mean particle size than 10 μm and a maximum particle size of ≦300 μm to said desired mean particle size d_{50} of ≦10 μm in a stirred mill with glass grinding elements, in the presence of a grinding liquid comprising water or a mixture of at least 50% by weight of water and at least one water-soluble, oxygen-containing organic compound having 1 to 5 carbon atoms in the molecule; freezing the ground slurry; and freeze-drying the frozen ground slurry to remove the grinding liquid.

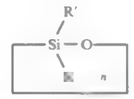
5,340,777

CARBON-CONTAINING BLACK GLASS FROM HYDROSILYLATION-DERIVED SILOXANES

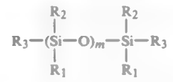
Roger Y. Leung, Schaumburg, Ill., and John G. Sikonia, Long Valley, N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 2,049, Jan. 9, 1987, Pat. No. 5,242,866, which is a continuation-in-part of Ser. No. 816,269, Dec. 23, 1991. This application Jul. 23, 1993, Ser. No. 96,494
Int. Cl.[5] C03C *3/00*
U.S. Cl. 501—12 **17 Claims**

1. A precursor polymer of a black glass ceramic, said polymer being the product of reacting compounds containing silicon-vinyl bonds with compounds containing silicon-hydride bonds, in the presence of catalytically effective amount of a hydrosilylation catalyst, said compounds being (a) cyclosiloxanes of the formula



where n is an integer from 3 to about 20,
R and R′ are independently selected from hydrogen, an unsubstituted vinyl group, a substituted vinyl group, an alkyl group have 1 to 20 carbon atoms, or aryl and where said siloxane contains at least two of either or both of hydrogen and substituted or unsubstituted vinyl groups and
(b) non-cyclic siloxanes having the formula



R_1,R_2, and R_3 are independently selected from hydrogen, an unsubstituted vinyl group, a substituted vinyl group, an alkyl group having 1 to 20 carbon atoms, or aryl and where said siloxane contains at least two of either or both of hydrogen and unsubstituted or substituted vinyl groups
m is an integer from 0 to 1,000.

5,340,778

OPTICAL CROWN GLASS HAVING NEGATIVE ANOMALOUS PARTIAL DISPERSION AND HIGH UV TRANSMISSION

Thomas Kloss; Elfi Stein; Kirsten Gerth, and Andrea Wickardt, all of Jena, Fed. Rep. of Germany, assignors to Scott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jun. 4, 1993, Ser. No. 71,636
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1992, 4218377
Int. Cl.[5] C03C *3/064, 3/145, 4/08*
U.S. Cl. 501—52 **10 Claims**

1. An optical crown glass having a negative anomalous partial dispersion $\Delta P_{g,F}$, a refractive index n_d of not less than 1.52, an Abbe number ν_d of not less than 57, a high UV transmission and a composition (in % by weight):

40–72	B_2O_3
9–31	Al_2O_3
0–15	SiO_2
0.1–0.5	H_2O
0–12	Li_2O
0–20	total R_2O wherein R = Li, Na, K, Rb, Cs
0–20	MgO
0–20	CaO
0–20	SrO
0–20	BaO
0–30	total MO wherein M = Mg, Ca, Sr, Ba, and total $(R_2O + MO) > 5$
	ZnO 0–10
	total PbO, WO_3, TiO_2 0–5
	total ZrO_2, SnO_2, GeO_2, Ta_2O_5, Nb_2O_5, P_2O_5, La_2O_3, Y_2O_3, Gd_2O_3, Ga_2O_3 0–10
	total of refining agents and reducing agents 0–3,

wherein the molar ratio between Al_2O_3 and B_2O_3 is between 0.2 and 0.3, and the molar ratio between (R_2O+MO) and B_2O_3 is between 0.1 and 0.4.

5,340,779

MANUFACTURE OF CONICAL PORE CERAMICS BY ELECTROPHORETIC DEPOSITION

Awdhoot V. Kerkar, Columbia, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Sep. 24, 1992, Ser. No. 950,355
Int. Cl.[5] C04B *38/00*
U.S. Cl. 501—80 **13 Claims**

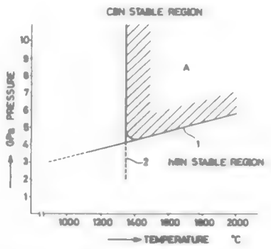
1. A porous crystalline ceramic body consisting essentially of a crystalline ceramic material containing a plurality of conically shaped pores.

5,340,780

CUBIC BORON NITRIDE SINTERED COMPACT AND METHOD OF PREPARING THE COMPACT

Hitoshi Sumiya, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 551,435, Jul. 10, 1990, abandoned. This application Jan. 28, 1992, Ser. No. 827,579
Claims priority, application Japan, Jul. 11, 1989, 1-179728
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—96 **8 Claims**



1. A cubic boron nitride sintered compact comprising cubic boron nitride grains contacted with each other directly at their interfaces, and 0.01 to 5.0% by weight of a solid oxide of an alkaline earth metal in said sintered compact.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,781

SPHERICAL CORUNDUM PARTICLES, PROCESS FOR PREPARATION THEREOF AND RUBBER OR PLASTIC COMPOSITION HAVING HIGH THERMAL CONDUCTIVITY AND HAVING SPHERICAL CORUNDUM PATICLES INCORPORATED THEREIN

Yukio Oda, Fujisawa, and Jun Ogawa, Kawasaki, both of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 666,442, Mar. 11, 1991, abandoned, which is a continuation of Ser. No. 196,206, Mar. 14, 1988, abandoned. This application Jul. 29, 1992, Ser. No. 921,376
Claims priority, application Japan, Jul. 14, 1986, 61-163719
Int. Cl.[5] C04B *35/10;* C01F *7/02;* B29B *9/10*
U.S. Cl. 501—127 10 Claims



1. A process for producing corundum particles without cutting edges, comprising the steps of:

preparing corundum having developed crystals by an electrofusion or sintering method,

pulverizing said corundum to corundum particles having a maximum particle size smaller than 150 μm and an average particle size of 5 to 35 μm as single particles and having cutting edges,

adding one or more members selected from the group consisting of halogen compounds, boron compounds and alumina hydrates to said corundum particles produced by pulverization, wherein the halogen compounds and boron compounds are added in an amount of 0.1 to 4.0 parts by weight based on 100 parts by weight of total amount of alumina, wherein the total amount of alumina includes an aluminum hydroxide which is present, and wherein the alumina hydrates are added in an amount of 5 to 100 parts by weight per 100 parts by weight of the corundum particles when the alumina hydrates are aluminum hydroxide, and

heating the resultant mixture of the corundum particles produced by pulverization and said one or more members at a temperature of at least 1000° C. to remove the cutting edges of the corundum particles produced by pulverization.

5,340,782

VITREOUS SILICA-BASED PLASTIC REFRACTORY

Mark C. Langenohl, Pittsburgh, Pa., assignor to Indresco Inc., Dallas, Tex.

Filed Jul. 26, 1993, Ser. No. 97,108
Int. Cl.[5] C04B *35/14*
U.S. Cl. 501—133 14 Claims

1. A vitreous silica-based plastic refractory mix comprising at least 50 wt. % vitreous silica having a purity of at least 99% silica, a refractory plasticizer, and an alpha alumina-containing alumina compound capable of reacting with phosphoric acid to form an aluminum phosphate bond.

5,340,783

METHOD OF PRODUCING SELF-SUPPORTING ALUMINUM TITANATE COMPOSITES AND PRODUCTS RELATING THERETO

Edward N. Anderson, Centerville, and Thomas A. Johnson, Newark, both of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 697,741, May 6, 1991, Pat. No. 5,139,979, which is a continuation of Ser. No. 320,114, Mar. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 303,832, Jan. 30, 1989, abandoned. This application Aug. 17, 1992, Ser. No. 931,170
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] C04B *35/46, 35/10*
U.S. Cl. 501—134 23 Claims

1. A method for producing a self-supporting body comprising aluminum titanate, said method comprising:

(a) providing a powder comprising a parent metal;

(b) providing at least one dopant;

(c) providing at least one material selected from the group consisting of aluminum titanate and aluminum titanate precursors;

(d) providing at least one stabilization aid;

(e) mixing the materials described in steps (a) through (d);

(f) forming a green body from the mixture of step (e); and

(g) heating said green body at a temperature sufficient and for a time sufficient to form said self-supporting body comprising aluminum titanate.

5,340,784

MICROWAVE DIELECTRIC CERAMIC COMPOSITION

Tokiomi Katoh, and Hirofumi Ozeki, both of Nagoya, Japan, assignors to NGK Spark Plug Company, Ltd., Aichi, Japan

Filed Aug. 2, 1993, Ser. No. 101,252
Claims priority, application Japan, Aug. 3, 1992, 4-226373; Sep. 9, 1992, 4-266534; Sep. 24, 1992, 4-279472; Nov. 4, 1992, 4-319421; Dec. 30, 1992, 4-360058; Dec. 30, 1992, 4-360059
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—136 18 Claims

1. A microwave dielectric ceramic composition consisting essentially of, as the main ingredient, a composition represented by $xMgTiO_3$-$(1-x)CaTiO_3$ wherein $(0.925 \leqq x \leqq 0.950)$, to which 3 to 9 parts by weight of ZnO is added per 100 parts by weight of $xMgTiO_3$-$(1-x)CaTiO_3$.

5,340,785

POLYMERIZATION CATALYSTS AND PROCESSES

William K. Reagen, Idaho Falls, Id., and Ted M. Pettijohn, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 809,777, Dec. 18, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 23,746
Int. Cl.[5] C08F *4/24*
U.S. Cl. 502—109 22 Claims

1. A catalyst system composition comprising:

a) a waste chromium compound, which has been previously used for another purpose and subsequently recovered, wherein said waste chromium compound comprises:

i) a chromium-containing compound;

ii) a pyrrole-containing compound;

iii) a non-hydrolyzed aluminum alkyl; and

iv) an unsaturated hydrocarbon; and

b) a support selected from the group consisting of zeolites, inorganic oxides, and mixtures thereof;

wherein said waste chromium compound is supported on said support; and

wherein at least a portion of the waste chromium compound in a hexavalent state.

5,340,786

OLEFIN POLYMERIZATION CATALYST AND PROCESS FOR THE POLYMERIZATION OF OLEFINS

Toshiyuki Tsutsui; Kazunori Okawa, and Akinori Toyota, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 895,168, Jun. 5, 1992, abandoned, which is a continuation of Ser. No. 304,199, Jan. 31, 1989, abandoned. This application Nov. 15, 1993, Ser. No. 151,765
Claims priority, application Japan, Feb. 12, 1988, 63-31414; Feb. 26, 1988, 63-43671
Int. Cl.[5] C08F *4/648, 10/00*
U.S. Cl. 502—117 8 Claims

1. An olefin polymerization catalyst formed from

(A) a compound of zirconium or hafnium containing a group having a conjugate π electron as a ligand,

(B) an aluminoxane, and

(C) water;

wherein the mixing molar ratio (Al/H_2O) of aluminum atom in the aluminoxane (B) to water (C) is from 0.5 to 50, the atomic ratio of aluminum in the aluminoxane (B) to zirconium or hafnium in the compound (A) is 20 to 1×10^4;

wherein said catalyst is prepared by mixing said catalyst components (A), (B) and (C) together simultaneously in a hydrocarbon medium.

2. An olefin polymerization catalyst formed from

(A) a compound of zirconium or hafnium containing a group having a conjugate π electron as a ligand,

(B) an aluminoxane, and

(C) water;

wherein the mixing molar ratio (Al/H_2O) of aluminum atom in the aluminoxane (B) to water (C) is from 0.5 to 50, the atomic ratio of aluminum in the aluminoxane (B) to zirconium or hafnium in the compound (A) is 20 to 1×10^4;

wherein said catalyst is prepared by mixing said catalyst components (B) and (C) together in a hydrocarbon medium and then mixing said mixture with catalyst component (A).

5,340,787

POLYMERIZATION PROCESS

Johannes J. Keijsper, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 851,039, Mar. 12, 1992, Pat. No. 5,237,047. This application Apr. 19, 1993, Ser. No. 49,487
Claims priority, application Netherlands, May 1, 1991, 9100747
Int. Cl.[5] B01J *31/22, 31/18*
U.S. Cl. 502—162 9 Claims

1. A supported catalyst composition, useful in the production of linear alternating polymers of carbon monoxide and at least one ethylenically unsaturated hydrocarbon, which catalyst composition comprises (a) a compound of palladium, (b) the anion of a nonhydrohalogenic acid having a pKa of below about 4 and (c) a bidentate ligand of phosphorus wherein the ligand is bound through reactive functional groups of the ligand to reactive functional groups of the catalyst composition support and the catalyst composition support particles have an average particle diameter of at least 500 μ.

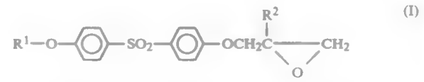
5,340,788

DIPHENYLSULFONE DERIVATIVES AND HEAT SENSITIVE RECORDING MATERIALS

Takafumi Tohyama, Osaka; Takehiro Sato, Tokyo; Kousaku Morita, Tokyo; Masaaki Uchikawa, Tokyo, and Nobuyuki Hirai, Tokyo, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00943, § 371 Date Mar. 19, 1992, § 102(e) Date Mar. 19, 1992, PCT Pub. No. WO92/01680, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 16, 1991, Ser. No. 842,093
Claims priority, application Japan, Jul. 24, 1990, 2-193966; Jul. 2, 1991, 3-187017
Int. Cl.[5] C07D *303/12;* B41M *5/30*
U.S. Cl. 503—209 1 Claim

1. Heat sensitive recording material containing chromogen, color developer, and diphenylsulfone derivative of the formula (I)



(I)

wherein R^1 is lower alkenyl or aralkyl optionally substituted with halogen or lower alkyl, and R^2 is hydrogen or methyl with the proviso: when R^1 is unsubstituted benzyl, R^2 is methyl.

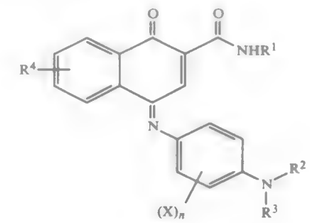
5,340,789

MIXTURE OF INDOANILINE DYES IN DYE-DONOR ELEMENT FOR THERMAL DYE TRANSFER

Steven Evans, Rochester, N.Y., and Noel R. Vanier, Fort Collins, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1993, Ser. No. 169,780
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 12 Claims

6. A process of forming a dye transfer image comprising imagewise-heating a cyan dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder and transferring a dye image to a dye-receiving element to form said dye transfer image, wherein said dye comprises a mixture of at least three different 2-carbamoyl-4-[N-(p-aminoaryl)-imino]-1, 4-naphthoquinone dyes, each of said dyes having the formula:



wherein

R^1, R^2 and R^3 each individually represents a substituted or unsubstituted alkyl group of from 1 to about 6 carbon atoms, a substituted or unsubstituted cycloalkyl group of from about 5 to about 7 carbon atoms, a substituted or unsubstituted aryl group of from about 5 to about 10 carbon atoms or an allyl group;

R^2 and R^3 may be combined together to form a 5- or 6-membered ring;

R^2 and/or R^3 may be combined with one or two of X to form a 5- or 6-membered ring;

R^4 and X each individually represents hydrogen, a substi-

VOL 1165 ISS 4 AG 23 1994 UMI

tuted or unsubstituted alkyl group of from about 1 to about 6 carbon atoms, halogen, —NHCOR[1] or —NHSO$_2$R[1]; and

n represents an integer from 1 to 4;

with the proviso that at least one of said dyes is characterized by having R[1] represent an unbranched alkyl group of from 2 to 4 carbon atoms, which may be substituted by an alkoxy group of from 1 to 4 carbon atoms, and/or having one or both of R[2] and R[3] represent a branched alkyl group of from 3 to 6 carbon atoms.

5,340,790

MIXTURE OF INDOANILINE DYES IN DYE-DONOR ELEMENT FOR THERMAL DYE TRANSFER

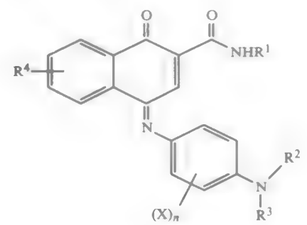
Raymond P. Scaringe; Steven Evans, both of Rochester; William H. Simpson, Pittsford, and Richard C. Vanhanehem, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1993, Ser. No. 169,831

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **12 Claims**

6. A process of forming a dye transfer image comprising imagewise-heating a cyan dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder and transferring a dye image to a dye-receiving element to form said dye transfer image, wherein said dye comprises a mixture of at least two different 2-carbamoyl-4-[N-(p-aminoaryl)-imino]-1,4-naphthoquinone dyes, each of said dyes having the formula:



wherein

R[1], R[2] and R[3] each individually represents a substituted or unsubstituted alkyl group of from 1 to about 6 carbon atoms, a substituted or unsubstituted cycloalkyl group of from about 5 to about 7 carbon atoms, a substituted or unsubstituted aryl group of from about 6 to about 10 carbon atoms or an allyl group;

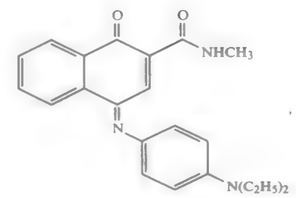
R[2] and R[3] may be combined together to form a 5- or 6-membered ring;

R[2] and/or R[3] may be combined with one or two of X to form a 5- or 6-membered ring;

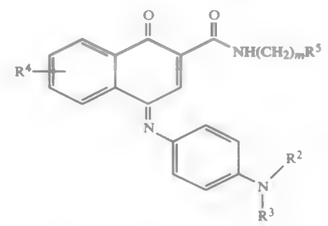
R[4] and X each individually represents hydrogen; a substituted or unsubstituted alkyl group of from about 1 to about 6 carbon atoms; halogen; —NHCOR[1] or —NHSO$_2$R[1]; and

n represents an integer from 1 to 4;

with the proviso that at least 50% of said dye mixture is a dye having the formula:



and with the further proviso that at least one of said other dyes in the mixture has the formula:



wherein

AR[5] represents a substituted or unsubstituted branched-chain alkyl group of from 1 to about 6 carbon atoms, a substituted or unsubstituted cycloalkyl group of from about 5 to about 7 carbon atoms, a substituted or unsubstituted aryl group of from about 6 to about 10 carbon atoms, alkoxycarbonyl, aryloxycarbonyl, acetyl, aroyl, alkylaminocarbonyl, arylaminocarbonyl, alkylaminocarbonyloxy, arylaminocarbonyloxy, acylamino, aryloxy, acylamino, acyloxy or arylsulfonamido;

R[2], R[3] and R[4] are defined as above; and

m represents an integer from 1 to 4.

5,340,791

TURFGRASS MANAGEMENT COMPOSITIONS

Prithvi R. Bhalla, East Windsor; Robert M. Herrick, Mercerville, both of N.J., and Donald W. Gates, Yardley, Pa., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 411,444, Sep. 22, 1989, Pat. No. 5,116,403, which is a continuation of Ser. No. 818,591, Jan. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 698,191, Feb. 4, 1985, abandoned. This application Feb. 10, 1992, Ser. No. 833,221

Int. Cl.[5] A01N *43/40, 43/50, 47/08*

U.S. Cl. 504—130 **2 Claims**

1. The composition for retarding growth and suppressing seedhealing in turfgrass, comprising a solid or liquid diluent and a sufficient amount for retarding growth and suppressing seedheading in turfgrass a mixture of 5-ethyl-2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)nicotinic acid or a salt thereof, 2-(4-isoprophyl-4-methyl-5-oxo-2-imidazolin-2-yl)nicotinic acid or a salt thereof and N-[2,4-dimethyl-5-[[(trifluoromethyl)sulfonyl]amino]phenyl]acetamide, wherein said mixture provides a rate of application of about 25 g/ha to about 60 g/ha of 5-ethyl-2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)nicotinic acid or the salt thereof, about 0.25 g/ha to about 3.0 g/ha of 2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)nicotinic acid or the salt thereof and about 25 g/ha to about 60 g/ha of N-[2,4-dimethyl-5-[[(trifluoromethyl)sulfonyl]amino]phenyl]acetamide.

5,340,792

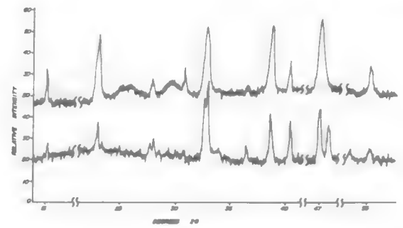
METHOD OF ALIGNING THE DISCRETE GRAINS OF A MULTI-GRAINED SUPER-CONDUCTING MATERIAL

Stanford R. Ovshinsky, Bloomfield Hills, and Rosa Young, Troy, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 78,353, Jul. 28, 1987. This application Nov. 28, 1989, Ser. No. 442,380

Int. Cl.[5] H01B *12/00*

U.S. Cl. 505—123 **8 Claims**



1. A multi-grained perovskite defect oxide type material having the composition $M^{IIA}M^{IIIA}M^{IB}O$ where M^{IIA} is a Group IIA metal, M^{IIIA} is a Group IIIA metal, M^{IB} is a Group IB metal and O is oxygen; the c-axes of more than 34 percent of the individual grains of said multi-grained material being oriented parallel to one another; and said material having at least one superconducting phase which is formed by the following steps:

providing a precursor mixture capable of being treated so as to form a multi-grained randomly aligned, perovskite ceramic defect oxide type material;

subjecting said precursor mixture to a high temperature, solid state treatment process so as to form said multi-grained perovskite defect oxide type material having at least one superconducting phase, the axes of the individual grains of the multi-grained material being randomly aligned;

diffusing a fluorinated gaseous parametric modifier element into the superconducting phase of the perovskite defect oxide type material so as to orient the c-axes of more than 34 percent of the individual grains of the superconducting phase of the multi-grained material parallel to one another.

5,340,793

LAYER-BY-LAYER PROCESS FOR FORMING B_i-CONTAINING OXIDE SUPERCONDUCTING FILMS

Seigen Otani, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 18, 1992, Ser. No. 853,295

Claims priority, application Japan, Mar. 18, 1991, 3-052601

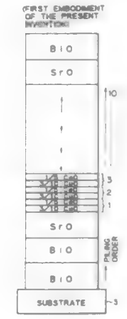
Int. Cl.[5] H01L *39/24*

U.S. Cl. 505—477 **11 Claims**

1. In a layer-by-layer process for forming a Bi system copper oxide superconducting film, composed of $Bi_2Sr_2Ca_{n-1}Cu_n$ oxide, wherein $n \geqq 2$, and comprising a base structure of a substrate having at least a BiO molecular layer and an SrO molecular layer deposited in succession thereon, the improvement comprising:

sequentially depositing, on the base structure, a CuO molecular layer portion and a CaO molecular layer portion in a manner to form a pair of CuO and CaO molecular layer portions having a superlattice structure; and

repeating said sequential depositing step a sufficient number of times to produce a pile of a total of m pairs of CuO and CaO molecular layer portions, wherein m is an integral number and $m \geqq n$, each of said CuO molecular layer portions thereby containing an amount of CuO equal to 1/m of the total amount of CuO in said pile, and each of said CaO molecular layer portions thereby containing an



amount of CaO equal to 1/m of the total amount of CaO in said pile.

5,340,794

FLUX PINNING IN SUPERCONDUCTING CUPRATES

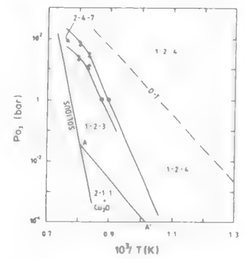
Jeffery L. Tallon, York Bay, and Donald M. Pooke, Lower Hut, both of New Zealand, assignors to Her Majesty the Queen in right of New Zealand, Lower Hutt, New Zealand

Continuation-in-part of Ser. No. 728,857, Jul. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,083, Aug. 2, 1990, abandoned. This application Mar. 18, 1992, Ser. No. 853,397

Claims priority, application New Zealand, Aug. 2, 1989, 230183; Feb. 2, 1990, 232364; Jul. 11, 1990, 234469; Mar. 18, 1991, 237470

Int. Cl.[5] H01B *1/08, 12/00*

U.S. Cl. 505—500 **25 Claims**



1. A process for producing a cuprate high T_c superconductor, comprising subjecting a synthesized precursor cuprate perovskite compound comprising the component elements for the high T_c superconductor to a temperature and oxygen partial pressure at which the precursor cuprate compound decomposes to the high T_c superconductor but below the melting point thereof to decompose the precursor cuprate compound to the high T_c superconductor and flux pinning-effective, dispersed copper oxides.

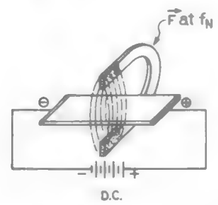
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,795

METHOD AND APPARATUS TO FACILITATE SUPERCONDUCTIVITY BY EXCITING A MATERIAL AT ITS RESONANT FREQUENCY OF MOLECULAR VIBRATION

Daniel A. Boehnen, 1244 Blue Hill Ter., Northbrook, Ill. 60062

Continuation of Ser. No. 532,737, Jun. 4, 1990, abandoned, which is a continuation of Ser. No. 208,672, Jun. 20, 1988, abandoned. This application May 22, 1992, Ser. No. 888,056
Int. Cl.[5] H01L *39/00, 39/24;* H01B *12/00*
U.S. Cl. 505—100 47 Claims



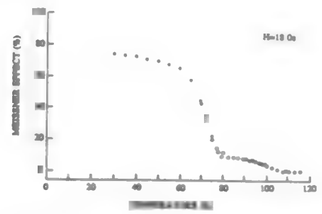
1. A method of improving the passage of an electric current through a material which exhibits superconductivity at a relatively low temperature, such that the material will exhibit superconductivity at a relatively higher temperature, comprising the step of applying an electrical potential across the material at a predetermined frequency substantially equal to a resonant frequency of the molecular vibration of the material.

5,340,796

OXIDE SUPERCONDUCTOR COMPRISING CU, BI, CA AND SR

Robert J. Cava, Bridgewater, and Steven A. Sunshine, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 155,330, Feb. 12, 1988, abandoned. This application Nov. 13, 1992, Ser. No. 976,294
Int. Cl.[5] C01F *11/02;* C01G *3/02, 29/00;* H01L *39/12*
U.S. Cl. 505—12 2 Claims



1. An article comprising material perovskite-like structure and of nominal composition $X_{2+x}M_{4-x}Cu_3O_{10+0.5\pm\delta}$, where $[x=p/q<0.4$, and p and q are positive integers$]$ $0 \leq \times < 0.4$, X is Bi and Pb, M is Ca and Sr, the Pb/Bi ratio is at most 0.5, and the Ca/Sr ratio and the value of δ are selected such that said material manifests superconductivity at a temperature of 77K or above.

5,340,797

SUPERCONDUCTING 123YBACU-OXIDE PRODUCED AT LOW TEMPERATURES

James D. Hodge, and Lori J. Klemptner, both of Lincolnwood, Ill., assignors to Illinois Superconductor Corporation, Evanston, Ill.

Filed Jan. 29, 1993, Ser. No. 10,932
Int. Cl.[5] H01L *39/00*
U.S. Cl. 505—4.7 18 Claims

1. A method of preparing a 123 YBaCu-oxide superconductor, comprising the steps of:

preparing a mixture of superconductor material constituents for the 123 YBaCu-oxide superconductor;

disposing said constituents on a silver containing substrate;

heating said mixture to a temperature between about 350° C.–975° C. in a first atmosphere having a partial pressure of CO_2 corresponding to at least about 0.8% by volume CO_2; and

controlling decomposition of at least one of said superconductor material constituents thereby suppressing decomposition of $BaCO_3$, as well as enabling decomposition and suppressing formation of 123 YBaCu-oxide precursor and changing said first atmosphere to a second atmosphere consisting essentially of an oxidizing gas capable of allowing decomposition of at least one of said superconductor material constituents and heating said superconductor material constituents to form the 123 YBaCu-oxide superconductor.

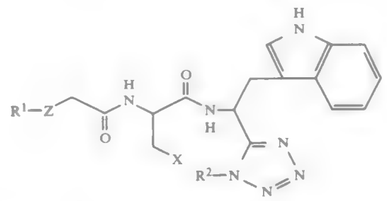
5,340,798

FIBRINOGEN RECEPTOR ANTAGONISTS

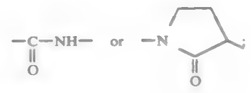
Ruth F. Nutt, Green Lane, and Daniel F. Veber, Ambler, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 14, 1992, Ser. No. 961,221
Int. Cl.[5] A61K *37/00, 37/02;* C07K *5/00, 7/00*
U.S. Cl. 514—18 4 Claims

1. A compound having the formula



wherein Z is



X is COOH;

R^1 is Y—R^3, wherein R^3 is a C_1–C_6 alkyl and Y is amino or piperidinyl; and

R^2 is H or a C_1–C_4 alkyl and pharmaceutically acceptable salts thereof.

5,340,799

HIGH CRITICAL TEMPERATURE SUPERCONDUCTOR (HTSC) INCLUDING A RARE EARTH ALKALI METAL TITANATE AS AN OXYGEN DIFFUSION BARRIER IN THE DEVICE

Arthur Tauber, Elberon, and Steven C. Tidrow, Eatontown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 18, 1993, Ser. No. 88,297
Int. Cl.[5] B32B *9/00*
U.S. Cl. 505—237 9 Claims

1. A superconductor device including a substrate and at least one layer of $Y_1Ba_2Cu_3O_{7-x}$ where x has a value of from 0.0 to 0.75 deposited on the substrate, and wherein each layer of $Y_1Ba_2Cu_3O_{7-x}$ where x has a value of from 0.0 to 0.75 alternates with a rare earth alkali metal titanate oxygen diffusion barrier and wherein the rare earth alkali metal titanate is selected from the group consisting of $LaLiTi_2O_6$, $LaNaTi_2O_6$, $LaK_{0.96}\Delta_{0.04}Ti_2O_6$, $SmLiTi_2O_6$, $SmKTi_{26}$, $LaCs_{0.42}\Delta_{0.58}Ti_2O_6$, $LaRb_{0.66}\Delta_{0.34}Ti_2O_6$, $LaAg_{0.65}\Delta_{0.35}Ti_2O_6$, $CeKTi_2O_6$, and $EuTIO_3$ where Δ is an alkali metal vacancy. and $EuTiO_3$ where Δ is an alkali metal vacancy.

5,340,800

PEPTIDE MEDICAMENTS FOR THE TREATMENT OF DISEASE

David Y. Liu, 201 Ferne Ave., Palo Alto, Calif. 94306; Zehra Kaymakcalan, 520 Norvell St., El Cerrito, Calif. 94530, and Kirsten Mundy, 2450 Heatherleaf Ln., Martinez, Calif. 94553

Continuation of Ser. No. 573,624, Aug. 27, 1990, abandoned. This application Sep. 9, 1992, Ser. No. 943,371
Int. Cl.[5] A61K *37/00;* C07K *5/00*
U.S. Cl. 514—12 9 Claims

1. A peptide selected from the group consisting of:

a) NH_2—Try—Pro—Ile—Asp—Leu—Tyr—Tyr—Leu—Met—Asp—Leu—Ser—Tyr—Ser—MET—Leu—Asp—Asp—Leu—Arg—Asn—Val—Lys—Lys—Leu—Gly—COOH;

b) NH_2—Phe—Asp—Tyr—Pro—Ser—Val—Gly—Gln—Leu—Ala—His—Lys—Leu—Ala—Glu—Asn—Asn—Ile—Gln—Pro—Ile—Phe—Ala—Val—Thr—COOH;

c) NH_2—Ile—Pro—Lys—Ser—Ala—Val—Gly—Glu—Leu—Ser—Glu—Asp—Ser—Ser—Asn—Val—Val—His—Leu—Ile—Lys—Asn—Ala—Tyr—Asn—Lys—Leu—Ser—Ser—COOH;

d) NH_2—Ile—Gly—Trp—Arg—Asn—Val—Thr—Arg—Leu—Leu—Val—Phe—Ala—Thr—Asp—Asp—Gly—Phe—His—Phe—Ala—Gly—Asp—Gly—Lys—Leu—Gly—Ala—Ile—COOH;

e) NH_2—Val—Gly—Lys—Gln—Leu—Ile—Ser—Gly—Asn—Leu—Asp—Ala—Pro—Glu—Gly—Gly—Leu—Asp—Ala—Met—Met—Gln—Val—Ala—COOH; and

f) NH_2—Arg—Ile—Gly—Phe—Gly—Ser—Phe—Val—Asp—Lys—Thr—Val—Leu—Pro—Phe—Val—Asn—Thr—His—Pro—Asp—Lys—Leu—Arg—Asn—COOH.

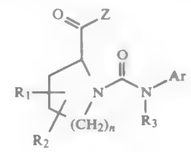
5,340,801

COMPOUNDS HAVING CHOLECYSTOKININ AND GASTRIN ANTAGONISTIC PROPERTIES

William R. Ewing, King of Prussia, and Bruce F. Molino, Hatfield, both of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Filed May 8, 1991, Ser. No. 697,177
Int. Cl.[5] A61K *31/40, 37/43;* C07K *5/06, 5/08*
U.S. Cl. 514—18 19 Claims

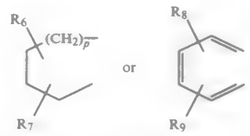
1. A method of preventing in a mammal, or treating a mammal for, cholecystokinin or gastrin-related disorders of the gastrointestinal, central nervous or appetite regulatory systems which comprises administering to said mammal a therapeutically effective amount of a compound of the formula



wherein:

Ar is aryl;

R_1 and R_2 are independently hydrogen, alkyl, aryl, aralkyl, hydroxy, alkoxy, aryloxy, aralkoxy halo, —NR_4R_5 where R_4 and R_5 are independently hydrogen, alkyl, aralkyl or aryl, or when R_1 and R_2 are vicinal, R_1 and R_2 may be taken together to be



where R_6 and R_7 are independently hydrogen, alkyl, aryl, aralkyl, hydroxy, alkoxy, aryloxy, aralkoxy, or halo, and

R_8 and R_9 are independently hydrogen, or an aryl group substituent,

and p is 0, 1, or 2;

R_3 is hydrogen or alkyl;

Z is unsubstituted or substituted nitrogen-containing heterocyclyl, —$NR_aR_b$where R_a and R_b are independently hydrogen, alkyl, aryl, aralkyl, or when taken together, R_a and R_b may form $(CH_2)_t$— where t is 3,4, or 5,



where

A_1 and A_2 are independently alkylene, phenylene, cycloalkylene, arylalkylene, arylalkylalkylene, alkoxycarbonylalkylalkylene, aryloxycarbonylalkylalkylene, aralkoxycarbonylalkylalkylene, carboxyalkylalkylene, carbamoylalkylalkylene, alkylthioalkylalkylene, hydroxymethylmethylene, (1-hydroxyethyl)methylene, (4-hydroxyphenyl)methylmethylene, indol-3-ylmethylmethylene, imidazol-4-ylmethylmethylene, quanidinoalkylalkylene, or aminoalkylalkylene,

B is hydroxy, alkoxy, aralkoxy, aryloxy or —NR_fR_g where R_f and R_g are independently hydrogen, alkyl, aralkyl, carboxyalkyl, alkoxycarbonylalkyl, aryloxycarbonylalkyl or aralkoxycarbonylalkyl,

R_c and R_d are independently hydrogen, alkyl, arly, or aralkyl; —NR_c—A_1— may be



where q is 1, 2, 3, or 3, and —NR_d—A_2— may be

VOL 1165 ISS 4 AG 23 1994 UMI



where r is 0, 1, 2, or 3; and
n is 0, 1, 2, or 3;
or a pharmaceutically acceptable salt thereof.

5,340,802

PEPTIDE ANALOG TYPE-B CCK RECEPTOR LIGANDS

Kazumi Shiosaki, Libertyville, Ill.; Alex M. Nadzan, San Diego, Calif.; David S. Garvey, Lake Forest, Ill.; Yoon-Kong Shue, Vernon Hills, Ill.; Mark S. Brodie, Glenview, Ill.; Mark W. Holladay, Libertyville, Ill.; John Y.-L. Chung, Edison, N.J.; Michael D. Tufano, Chicago, Ill., and Paul D. May, Richland, Mich., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 791,805, Nov. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,771, Jun. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 375,107, Jun. 30, 1989, abandoned. This application Jan. 29, 1993, Ser. No. 11,055

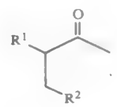
Int. Cl.[5] **A61K** *37/02;* **C07K** *5/06, 5/08, 5/10*

U.S. Cl. 514—18 **11 Claims**

1. A compound of the formula:

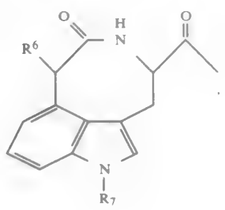
A—B—Y—Z (I)

or a pharmaceutically-acceptable salt thereof, wherein
A is either



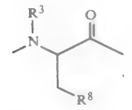
(a)

wherein
R^1 is selected from the group consisting of
(i) hydrogen,
(ii) halogen,
(iii) hydroxy,
(iv) C_1–C_6-alkoxy,
(v) thio-C_1–C_6-alkoxy,
(vi) amino,
(vii) (N-protected)amino,
(viii) C_1–C_6-alkylamino,
(ix) (N-protected)-C_1–C_6-alkylamino, and
(x) R^5—R^4—C(O)—N(R^3)—, wherein
R^3 is hydrogen or C_1–C_6-alkyl;
R^4 is C_1–C_6-alkylene or C_2–C_6-alkenylene; and
R^5 is phenyl or substituted phenyl;
R^2 is naphthyl, mono-substituted naphthyl, phenyl, mono-substituted phenyl, benzohet, or mono-substituted benzohet; or



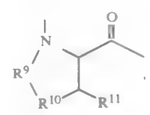
(b)

wherein
R^6 is selected from the group consisting of
(i) hydrogen,
(ii) hydroxy,
(iii) halogen,
(iv) C_1–C_6-alkyl,
(v) amino,
(vi) C_1–C_6-alkylamino, and
(vii) di-C_1–C_6-alkylamino; and
R^7 is hydrogen, C_1–C_6-alkyl or C_1–C_6-alkanoyl;
B is either



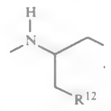
(a)

wherein
R^3 is as defined above; and
R^8 is C_1–C_6-alkyl or mono-substituted C_1–C_4-alkylene, wherein the substituent is C_1–C_6-alkoxy or thio-C_1–C_6-alkoxy; or

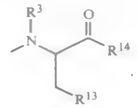


(b)

wherein
R^9 is C_2–C_4-alkylene;
R^{10} is absent or is oxygen or sulfur; and
R^{11} is hydrogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, thio-C_1–C_6-alkoxy, or mono-substituted C_1–C_4-alkylene, wherein the substituent is C_1–C_6-alkoxy or thio-C_1–C_6-alkoxy;
Y is

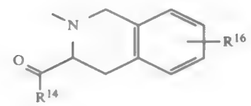


wherein R^{12} is carboxy or tetrazolyl; and
Z is

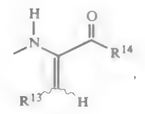


(1)

wherein
R^3 is as defined above;
R^{13} is selected from the group consisting of
(i) C_1–C_6-alkyl,
(ii) cyclo-C_3–C_8-alkyl,
(iii) Het,
(iv) mono-substituted Het,
(v) naphthyl,
(vi) mono-substituted naphthyl,
(vii) phenyl,
(viii) mono-substituted phenyl,
(ix) benzohet, and
(x) mono-substituted benzohet; and
R^{14} is —NHR^{15}, wherein R^{15} is hydrogen, hydroxy, methyl or amino;



wherein
R^{14} is as defined above;
R^{16} is selected from the group consisting of
(i) hydrogen,
(ii) C_1–C_6-alkyl,
(iii) halogen,
(iv) halo-C_1–C_6-alkyl,
(v) C_1–C_6-alkoxy,
(vi) thio-C_1–C_6-alkoxy,
(vii) hydroxy,
(viii) C_1–C_6-alkoxycarbonyl,
(ix) carboxy,
(x) amino,
(xi) C_1–C_6-alkylamino,
(xii) di-C_1–C_6-alkylamino,
(xiii) nitro, and
(xiv) —OSO_3H; or



wherein R^{13} and R^{14} are as defined above;
with the proviso that when A is selected from either option (a) for A above where R^1 is amino, (N-protected-)amino or R^5—R^4—C(O)—N(R^3)—, then B must be selected from option (b) for B above or Z must be selected from options (2) or (3) for Z above.

5,340,803

METHOD AND COMPOSITIONS FOR TREATING TUMORS HAVING HIGH TYROSINASE ACTIVITY

David Rubin, San Diego, Calif., assignor to Co Enzyme Technology Ltd., San Diego, Calif.

Continuation-in-part of Ser. No. 787,347, Nov. 4, 1991, abandoned. This application May 5, 1993, Ser. No. 57,666

Int. Cl.[5] **A01N** *43/04;* **A61K** *31/70;* **C07G** *3/00;* **C07H** *15/00*

U.S. Cl. 514—25 **27 Claims**

1. A method for selectively treating tumor cells which have both β-glucuronidase and tyrosinase activity comprising administering to a patient suffering from said tumor cells an effective amount to destroy said tumor cells of a conjugate made by conjugating glucuronic acid or a pharmaceutically acceptable ester or salt thereof to a cytotoxic phenolic compound which is also a substrate for tyrosinase.

5,340,804

1,5-DIPHENYL-3-FORMAZANCARBONITRIL PARASITICIDES

David I. Wickiser, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

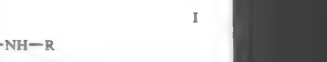
Continuation-in-part of Ser. No. 792,111, Nov. 14, 1991, abandoned. This application Oct. 15, 1992, Ser. No. 961,605

Int. Cl.[5] **C07C** *245/04, 245/06;* **A01N** *33/12, 33/26*

U.S. Cl. 514—150 **49 Claims**

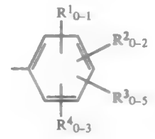
1. A method for protecting a vertebrate animal against a blood-ingesting parasite or a non-blood-ingesting intestinal parasite which comprises administering to the animal an effective amount of an active agent which is a compound of the formula:

(2)



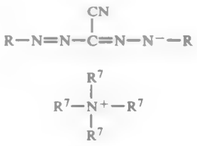
I

wherein each R independently represents a moiety of the formula:

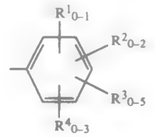


wherein
R^1 is cyano;
R^2 is nitro;
R^3 is bromo, chloro, or fluoro;
R^4 is iodo or a group of the formula —$R^5{}_nR^6$ wherein n represents 0 or 1,
R^5 represents
—O—,
—S—,
—SO—,
(3) —SO_2, or
—OSO_2—, and
R^6 represents
—CF_3,
—CF_2CF_2H,
—CH_2CF_3, or
—C_2F_5;
with the following limitations:
(1) at least one R bears at least one substituent,
(2) when an R contains one or more R^1, R^2, or R^4 substituents, the total number of substituents on that R is not more than 3; or a physiologically acceptable salt thereof.

37. A compound of the formula:



wherein each R independently represents a moiety of the formula:



wherein
R^1 is cyano;
R^2 is nitro;
R^3 is bromo, chloro, or fluoro;
R^4 is iodo or a group of the formula —$R^{5a}{}_nR^6$ wherein n represents 0 or 1,
R^{5a} represents
—O—,
—S—,
—SO—, or
—SO_2, and

VOL 1165 ISS 4 AG 23 1994 UMI

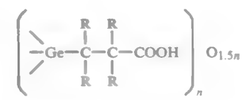
R^6 represents
—CF_3,
—CF_2CF_2H,
—CH_2CF_3, or
—C_2F_5;
with the following limitations:
(1) at least one R bears at least one substituent,
(2) when an R contains one or more R^1, R^2, or R^4 substituents, the total number of substituents on that R is not more than 3; and each R^7 is independently selected from the group consisting of alkyl of from 1 to 20 carbon atoms, with the total number of carbon atoms in all of the R^7 groups being from 4 to 40.

5,340,805
DANAZOL FOR TREATMENT OF URINARY INCONTINENCE
William J. Harrington, Jr., Miami, Fla., assignor to Sterling Winthrop Inc., New York, N.Y.
Filed Dec. 10, 1992, Ser. No. 990,395
Int. Cl.[5] A61K *31/58, 31/56*
U.S. Cl. 514—176 **8 Claims**

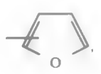
1. The method of treating urinary incontinence and any associated frequent urination in a person suffering therefrom which comprises administering to the person an amount of 17α-pregn-4-en-20-yno[2,3-d]isoxazol-17-ol or pharmaceutical composition thereof effective in reducing or eliminating the urinary incontinence and any associated frequent urination.

5,340,806
COMPOSITION CONTAINING ORGANOGERMANIUM COMPOUND AND IMMUNITY ADJUSTING AGENT COMPRISING THE COMPOSITION
Kiichi Sawai, Funabashi; Masayasu Kurono; Juichi Awaya, both of Nagoya; Akio Kojima, Kasugai; Hideaki Ninomiya; Yoshiro Ishiwata, both of Nagoya, and Masahiro Nakajima, Gifu, all of Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Nagoya, Japan
Continuation-in-part of Ser. No. 428,675, Oct. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 224,279, Jul. 25, 1988, Pat. No. 4,889,715, which is a continuation of Ser. No. 809,819, Dec. 17, 1985, abandoned. This application Jan. 7, 1993, Ser. No. 850,720
Claims priority, application Japan, Dec. 25, 1984, 59-272057
Int. Cl.[5] A61K *31/79, 31/555, 31/28*
U.S. Cl. 514—184 **6 Claims**

1. A method for the treatment of chronic B, and non A non B hepatitis in a person requiring said treatment, comprising administering to the person a pharmaceutical composition which comprises: an effective amount of a stabilized 3-oxygermylpropionic acid polymer composition comprising:
0.01 to 1.0% by weight of a therapeutically effective polymer of the formula



wherein n is an integer of 1 or more, and the R's are the same or different and are: hydrogen, C_1–C_{13} alkyl, —COOH, COOR′, phenyl,



-continued



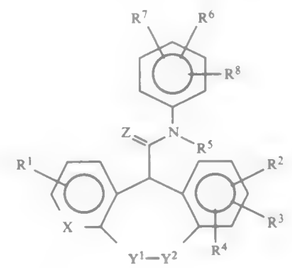
or



wherein R′ is a lower alkyl,
0.5 to 10% by weight of a high molecular weight substance as a stabilizer for the polymer which is selected from the group consisting of gelatin, lactose, hydroxypropylcellulose and hydroxypropylmethylcellulose, and a compatible and pharmaceutically acceptable carrier of the polymer composition.

5,340,807
TRICYCLIC COMPOUNDS AND INTERMEDIATES THEREOF
Toshiaki Kumazawa; Masashi Yanase, both of Shizuoka; Hiroyuki Harakawa, Numazu; Hiroyuki Obase, Mishima; Shoji Oda, Yokohama; Shiro Shirakura, Shizuoka; Koji Yamada, Susono, and Kazuhiro Kubo, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 823,456, Jan. 22, 1992, abandoned. This application Dec. 11, 1992, Ser. No. 989,906
Claims priority, application Japan, Jan. 23, 1991, 3-006589
Int. Cl.[5] A01N *43/46;* **C07D** *273/02, 313/06, 337/12*
U.S. Cl. 514—215 **24 Claims**

1. A tricyclic compound represented by formula (I);

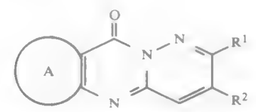


(I)

wherein each of R^1, R^2, R^3 and R^4 independently represents hydrogen, C1-6 alkyl, C1-6 alkoxy, C1-6 alkylthio, amino, C1-6 alkylamino, halogenated C1-6 alkyl, halogenated C1-6 alkoxy, halogen, nitro, cyano, carboxy, C1-6 alkoxycarbonyl, hydroxymethyl, $CR^9R^{10}CO_2R^{11}$ (wherein each of R^9, R^{10} and R^{11} independently represents hydrogen or C1-6 alkyl) or $CONR^{12}R^{13}$ (wherein each of R^{12} and R^{13} independently represents hydrogen or C1-6 alkyl); R^5 represents hydrogen or C1-6 alkyl; each of R^6, R^7 and R^8 independently represents hydrogen, C1-6 alkyl, hydroxy, C1-6 alkoxy, C1-6 alkanoyloxy, C1-6 alkylthio, thiocyanato or halogen; X represents CH or N; Y^1–Y^2 represents CH_2—O, CH_2—$S(O)_n$, (wherein n represents 0, 1, or 2), or $CON(R^{14})$ (wherein R^{14} represents hydrogen or C1-6 alkyl) and Z represents oxygen or sulfur; or a pharmaceutically acceptable salt thereof.

5,340,808
FUSED PYRIDAZINOQUINAZOLONE DERIVATIVES AS NEUROTROPHIC AGENTS
Juan C. Jaen, Plymouth, and Bradley W. Caprathe, Redford, both of Mich., assignors to Warner Lambert Company, Ann Arbor, Mich.
Filed Nov. 13, 1992, Ser. No. 976,147
Int. Cl.[5] A61K *31/505, 31/55;* **C07D** *487/04, 487/14*
U.S. Cl. 514—248 **11 Claims**

1. A compound of the formula I

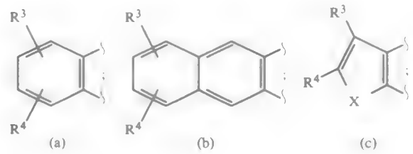


I

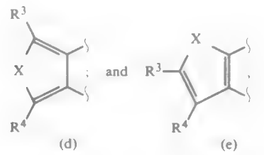
or a pharmaceutically acceptable salt thereof, wherein



is a moiety selected from



(a) (b) (c)



(d) (e)

one of R^1 and R^2 is an acid group selected from —COOH, —SO_3H,



and the other of R^1 and R^2 is H or alkyl:
R^3 and R^4 can independently be H, —$CONH_2$, —CO—NH-aryl, —CO—NH-alkyl, —NHCO-alkyl, or —NHCO-aryl, in which alkyl is a straight or branched hydrocarbon moiety of 1–6 carbon atoms, and aryl is phenyl; and
X is O, S or NH;
provided that, for a compound of formula I having moiety a) or b) wherein R^1 is COOH and R^2 is H, R^3 and R^4 represent a combination other than H and H.

3. The compound having the name 8-[(4-methylbenzoyl-)amino]-10-oxo-10H-pyridazino[6,1-b]quinazoline-2-carboxylic acid or a pharmaceutically acceptable salt thereof.

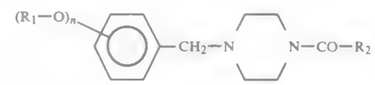
4. The compound having the name 8-(benzoylamino)-10-oxo-10H-pyridazino[6,1-b]quinazoline-2-carboxylic acid or a pharmaceutically acceptable salt thereof.

5. The compound having the name 8-[(4-chlorobenzoyl-)amino]-10-oxo-10H-pyradazino[6,1-b]-quinazoline-2-carboxylic acid or a pharmaceutically acceptable slat thereof.

6. The compound having the name 8-[(4-nitrobenzoyl-)amino]-10-oxo-10H-pyridazino[6,1-b]-quinazoline-2-carboxylic acid or a pharmaceutically acceptable salt thereof.

5,340,809
NEW 1-(ALKOXYBENZYL)PIPERAZINE AMIDE COMPOUNDS
Michel Gaudry, Fontenay le Fleury; Bruno Pfeiffer, Eaubonne; Pierre Renard, Versailles; Jean-François Renaud de la Faverie, Le Chesnay, and Gérard Adam, Le Mesnil le Roi, all of France, assignors to ADIR et Compagnie, Courbevoie Cedex, France
Filed Aug. 13, 1992, Ser. No. 929,993
Claims priority, application France, Aug. 20, 1991, 91 10431
Int. Cl.[5] A61K *31/495;* **C07D** *295/185, 403/06*
U.S. Cl. 514—252 **15 Claims**

1. A compound selected from those of formula (I):



(I)

in which:
n, an integer, can take the values 1, 2 or 3,
R_1 is linear or branched alkyl having 1 to 4 carbon atoms inclusive,
R_2 represents:
1) a group



in which:
r, can take the values 0, 1 or 2,
R_3 represents:
a) hydrogen,
b) linear or branched alkyl having 1 to 6 carbon atoms, inclusive, optionally substituted with
(I) one or two groups chosen from:
—COOH, —CO—R_6, —CO—O—R_6, with R_6 being a group chosen from: saturated or unsaturated linear or branched alkyl having 1 to 12 carbon atoms, inclusive, and —$(CH_2)_m$-aryl, optionally substituted, where m, can take the values 0, 1, 2 or 3,
(II) or with one group chosen from:
i) —OH, —)—R_6, —O—CO—R_6 and —O—CO—O—R_6, with R_6 as defined above,
ii) —NR_7R_8, with R_7 and R_8, which may be identical or different, each representing, independently of one another, hydrogen, linear or branched alkyl having 1 to 6 carbon atoms , inclusive, —CO—R_6 or —CO—O—R_6, with R_6 having the same meaning as above, and —$(CH_2)_m$-aryl, unsubstituted or optionally substituted, where m, can take the values 0, 1, 2 or 3,
iii) —CO—NR_9R_{10}, with R_9 and R_{10}, which may be identical or different, having the same definition as R_6 as defined above, and also being able to represent hydrogen,
iv) —SH or —SeH,
v) a group —S—R_6, —Se—R_6, —S—CO—O—R_6, or S—S—R_6 with R_6 as defined above,
vi) guanidino, unsubstituted or substituted with 1 to 2 groups chosen from nitro and —CO—O—R_6, with R_6 as defined above,
vii) indol-3-yl or imidazol-4-yl, unsubstituted or optionally substituted,
c) a group —$(CH_2)_m$-phenyl, unsubstituted or optionally substituted, where m, can take the values 0, 1, 2 or 3,
with the proviso that R_3 cannot represent isobutyl,

VOL 1165 ISS 4 AG 23 1994 UMI

R_4 represents hydrogen, a linear or branched alkyl having 1 to 6 carbon atoms, inclusive, a group $—(CH_2)_p$-aryl, unsubstituted or optionally substituted, where p, can take the values 0, 1, 2 or 3, or amidino, unsubstituted or substituted with a nitro or a group —CO—O—R_6, with R_6 as defined above,

or R_4, with R_3 and the atoms to which they are attached, forms a bicyclic heterocyclic system chosen from: perhydro-2-indolye, optionally substituted with one or more groups chosen from:

hydroxyl, oxo, linear or branched alkyl having 1 to 6 carbon atoms,inclusive, and linear or branched alkoxy having 1 to 6 carbon atoms, inclusive,

R_5 represents:

hydrogen,

a group $—(CH_2)_q$-aryl, optionally substituted, where q, can take the values 0, 1, 2 or 3,

saturated or unsaturated linear or branched alkyl chain having 1 to 20 carbon atoms, inclusive, optionally interrupted by one or more oxygen, sulfur or nitrogen, and optionally substituted with one or more hydroxyl or amino, linear or branched alkylamino having 1 to 6 carbon atoms, inclusive, or linear or branched alkoxy having 1 to 6 carbon atoms, inclusive,

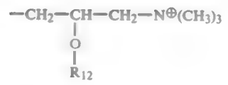
a group —CO—R_{11} or —CO—O—R_{11}, where R_{11} represents

saturated or unsaturated linear or branched alkyl having 1 to 20 carbon atoms, inclusive optionally interrupted by one or more oxygen or sulfur, and optionally substituted with one or more hydroxyl or amino, linear or branched alkylamino having 1 to 6 carbon atoms inclusive, linear or branched alkoxy having 1 to 6 carbon atoms inclusive, guanidino or guanidino unsubstituted or substituted with 1 to 2 groups chosen from nitro and —CO—O—R_6, with R_6 as defined above,

or R_{11} represents a group $—(CH_2)_q$-aryl, optionally substituted, where q, can take the values 0, 1, 2 or 3,

R_2 represents

2) a group



in which:

R_{12} represents:

hydrogen,

a group —CO—R_6 or —CO—O—R_6, with R_6 having the same meaning as above,

with the proviso that, except where otherwise specified: the term "aryl" means phenyl or naphthyl, the term "substituted" associated with the expressions "$—(CH_2)_m$-phenyl", "$—(CH_2)_m$-aryl", "$—(CH_2)_p$-aryl", "$—(CH_2)_q$-aryl", "imidazol-4-yl" and "indol-3-yl" means that these radicals may be substituted on the ring with one or more groups chosen from: hydroxyl, halogen, nitro, trifluoromethyl, linear or branched alkyl having 1 to 6 carbon atoms inclusive, linear or branched alkoxy having 1 to 6 carbon atoms inclusive, $—(CH_2)_t$-phenyl, $—O—(CH_2)_t$-phenyl, and —O—CO—O—$(CH_2)_t$-phenyl, where t, can take the values 0, 1, 2 or 3,

and its optical isomers, isolated or in the form of a mixture, as well as, where appropriate, its addition salts thereof with a Pharmaceutically-acceptable acid or base.

5,340,810

BENZANILIDE DERIVATIVES

John W. Clitherow, and Malcolm Carter, all of Ware, Great Britain, assignors to Glaxo Group Limited, London, England

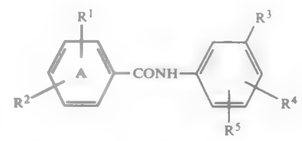
Filed Sep. 17, 1992, Ser. No. 946,098

Claims priority, application United Kingdom, Sep. 18, 1991, 9119931; Mar. 12, 1992, 9205338

Int. Cl.[5] A61K *31/495;* C07D *403/12, 413/12*

U.S. Cl. 514—252 22 Claims

1. A compound of formula (I):

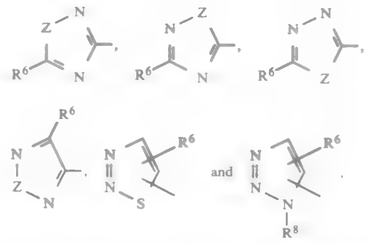


(I)

or a physiologically acceptable salt or solvate thereof wherein

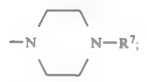
R^1 represents a hydrogen atom or a halogen atom or a group selected from C_{1-6}alkyl and C_{1-6}alkoxy;

R^2 represents a phenyl group substituted by a group selected from



said phenyl group being optionally further substituted by one or two substituents selected from halogen atoms, C_{1-6}alkoxy, hydroxy and C_{1-6}alkyl;

R^3 represents the group



R^4 and R^5 which may be the same or different each independently represent a hydrogen atom or a halogen atom or a group selected from hydroxy, C_{1-6}alkoxy and C_{1-6}alkyl;

R^6 represents a hydrogen atom or a group selected from $—NR^9R^{10}$ and a C_{1-6}alkyl group optionally substituted by one or two substituents selected from C_{1-6}alkoxy, hydroxy, C_{1-6}acyloxy or $—SO_2R^{11}$;

R^7, R^8 and R^9, which may be the same or different, each independently represent a hydrogen atom or a C_{1-6}alkyl group;

R^{10} represents a hydrogen atom or a group selected from C_{1-6}alkyl, C_{1-6}acyl benzoyl and $—SO_2R^{11}$;

R^{11} represents a C_{1-6}alkyl group or a phenyl group;

Z represents an oxygen atom or a group selected from NR^8 and $S(O)_k$; and k represents zero, 1 or 2.

5,340,811

ISOQUINOLINE-OR QUINOLINE-SULFONAMIDE DERIVATIVE AND A PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Akiro Kajihara, Nobeoka, and Shiro Miyoshi, Kashiwa, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

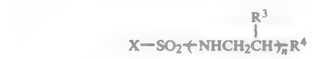
Filed Jul. 17, 1990, Ser. No. 536,630

The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.

Int. Cl.[5] C07O *401/12*

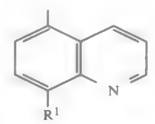
U.S. Cl. 514—253 13 Claims

1. A sulfonamide derivative represented by formula (I) or a pharmaceutically acceptable acid addition salt thereof



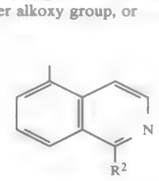
(I)

wherein X represents a quinoline residue represented by formula (II) or an isoquinoline residue represented by formula (III)



(II)

wherein R^1 is a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group, or

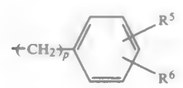


(III)

where R^2 is a hydrogen atom or a hydroxyl group, and wherein:

when X is quinoline residue (II), n is zero, or 1, in which,

when n is zero, R^4 is an unsubstituted piperazinyl group or a piperazinyl group substituted by a group represented by formula IV:



(IV)

wherein p represents an integer of from 1 to 3, and R^5 and R^6 each independently represents a hydrogen atom, a lower alkyl group, a halogen atom or a trifluoromethyl group, or R^5 and R^6 together form a methylene dioxy group; and

when n is 1, R^3 is a hydrogen atom or a lower alkyl group and R^4 is an unsubstituted piperazinyl group or a piperazinyl group substituted by a group represented by formula IV; and

when X is isoquinoline residue (III), n is 1,

in which, R^3 is a hydrogen atom or a lower alkyl group and R^4 is an unsubstituted piperazinyl group or a piperazinyl group substituted by a group represented by formula IV, said piperazinyl group being bonded at the nitrogen atom thereof.

5,340,812

PIPERAZINE DERIVATIVES

Ian A. Cliffe, Cippenham, England, assignor to John Wyeth & Brother, Limited, Maidenhead, United Kingdom

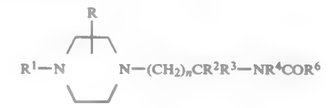
Continuation of Ser. No. 748,496, Aug. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 511,150, Apr. 19, 1990, abandoned. This application Jan. 7, 1993, Ser. No. 1,428

Claims priority, application United Kingdom, Apr. 22, 1989, 8909209.2; Oct. 28, 1989, 8924323.2

Int. Cl.[5] A61K *31/495;* C07D *237/00, 295/00, 401/00*

U.S. Cl. 514—255 10 Claims

1. A compound of the formula



(I)

or a pharmaceutically acceptable acid addition salt thereof wherein

n is one of the integers 1 or 2,

R is hydrogen or lower alkyl,

R^1 is a phenyl or naphthyl radical optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents; or a mono or bicyclic heteroaromatic radical having 5 to 10 ring atoms, the heteroaromatic radical having, as heteroatoms one or two nitrogen atoms and being optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carboalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents,

R^2 is hydrogen or lower alkyl,

R^3 is an aryl radical, or an aryl(lower)alkyl radical, in which the aryl radical is a phenyl or naphthyl radical optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents,

R^4 is hydrogen or lower alkyl,

R^6 is cycloalkyl of 3 to 12 carbon atoms or aryl(lower)alkyl where the aryl radical is a phenyl or naphthyl radical optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents.

5,340,813

SUBSTITUTED AMINOALKYL XANTHINE COMPOUNDS

J. Peter Klein, Vashon; Gail Underiner, Bothell, and Alistair Leigh, Edmonds, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

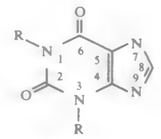
Filed Nov. 9, 1992, Ser. No. 973,804

Int. Cl.[5] C07D *473/04;* A61K *31/52*

U.S. Cl. 514—263 7 Claims

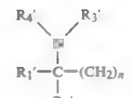
1. A compound of the formula:

FORMULA 1



wherein at least one R is

VOL 1165 ISS 4 AG 23 1994 UMI



wherein n is an integer from 4 to 18, each R_1' and R_2' is independently H, alkyl (1–4C) or alkenyl (1–4C); and R_3' and R_4' are independently H or CH_3; and wherein the alkyl or alkenyl may be substituted by a hydroxyl, halo or dimethylamino group and/or interrupted by an oxygen atom, H or alkyl (1–4C), and the other R is H or CH_3, including resolved enantiomers and/or diastereomers, salts, and mixtures thereof.

5,340,814

3-SUBSTITUTED METHYL-2,3-DIHYDROIMIDAZO[1,2-C] QUINAZOLINE DERIVATIVES, THE PREPARATION AND USE THEREOF

Ji-Wang Chern; Guan-Yu Lu; Yue-Jun Lai; Mao-Hsiung Yen, and Pao-Luh Tao, all of Taipei, Taiwan, assignors to National Science Council, Taipei, Taiwan

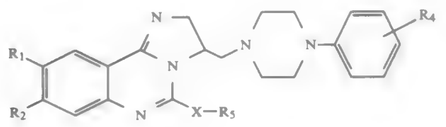
Continuation-in-part of Ser. No. 744,534, Aug. 13, 1991, Pat. No. 5,158,953. This application Oct. 14, 1992, Ser. No. 961,095

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[5] A61K *31/505;* **C07D** *487/04*

U.S. Cl. 514—267 **8 Claims**

1. An imidazo[1,2-c]quinazoline compound having the formula



which comprises racemic mixture of optically active compounds or optically pure R and S stereoisomers,

wherein:

X is S or O, when X is S, the formula represents I; and when X is O, the formula represents II:

R_1 is halogen, hydrogen, C_1–C_6 alkyl, trifluoromethyl, or C_1–C_6 alkoxy;

R_2 is halogen, hydrogen, C_1–C_6 alkyl, trifluoromethyl, or C_1–C_6 alkoxy;

R_4 is halogen, hydrogen, methoxy, trifluoromethyl, C_1–C_4 alkyl, nitro, acetyl, cyano or hydroxy group;

R_5 is C_1–C_4 alkyl group;

or pharmaceutically acceptable salts thereof.

5,340,815

2-SUBSTITUTED-4,6-DI-TERTIARY-BUTYL-5-HYDROXY-1,3-PYRIMIDINES USEFUL AS ANTIINFLAMMATORY AGENTS

David T. Connor, Ann Arbor, and Catherine R. Kostlan, Saline, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

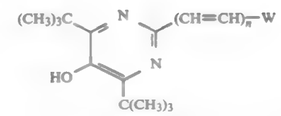
PCT No. PCT/US92/00443, § 371 Date Jul. 1, 1993, § 102(e) Date Jul. 1, 1993, PCT Pub. No. WO92/13536, PCT Pub. Date Aug. 20, 1992

Continuation-in-part of Ser. No. 648,115, Jan. 31, 1991, Pat. No. 5,177,079. This PCT application Jan. 17, 1992, Ser. No. 84,186

Int. Cl.[5] A61K *31/505;* **C07D** *239/02, 401/04, 401/06*

U.S. Cl. 514—269 **9 Claims**

1. A compound of the formula I



I

or a pharmaceutically acceptable salt, or hydrate thereof; wherein:

n is an integer or zero or one;

W is pyrazolyl or imidazolyl optionally substituted on one or more of a ring carbon by lower alkyl.

5,340,816

HYDROXYMETHYL(METHYLENECYCLOPENTYL) PURINES AND PYRIMIDINES

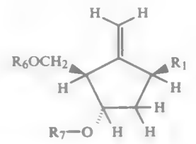
Robert Zahler, Pennington, and William A. Slusarchyk, Skillman, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 763,033, Sep. 20, 1991, which is a continuation-in-part of Ser. No. 599,568, Oct. 18, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 4,006

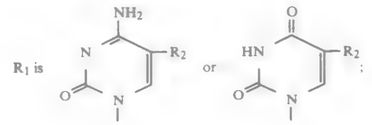
Int. Cl.[5] A61K *31/505, 31/52;* **C07D** *239/02, 473/00*

U.S. Cl. 514—269 **20 Claims**

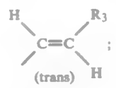
1. A compound having the formula



or a pharmaceutically acceptable salt thereof wherein:



R_2 is fluoro, chloro, bromo, iodo, hydrogen, methyl, trifluoromethyl, ethyl, n-propyl, 2-fluoroethyl, 2-chloroethyl, ethynyl or



R_3 is chloro, bromo, iodo, hydrogen, methyl or trifluoromethyl;

R_5 is hydrogen, alkyl of 1 to 10 carbons, substituted alkyl of 1 to 10 carbons wherein said substituent is selected from the group consisting of halogen, amino, azido, hydroxy, cyano, trialkylammonium wherein each alkyl has 1 to 6 carbons, alkoxy of 1 to 6 carbons, phenyl, and carboxy, phenyl, or phenyl substituted with one, two or three substituents selected from the group consisting of alkyl of 1 to 6 carbons, alkoxy of 1 to 6 carbons, halogen, trifluoromethyl, amino, alkylamino of 1 to 6 carbons, dialkylamino wherein each alkyl is of 1 to 6 carbons, nitro, cyano, alkanoyloxy of 2 to 11 carbons, carboxy, carbamoyl, and hydroxy; and

R_6 and R_7 are independently hydrogen, $—PO_3H_2$ or



5,340,817

METHOD OF TREATING TUMORS WITH ANTI-TUMOR EFFECTIVE CAMPTOTHECIN COMPOUNDS

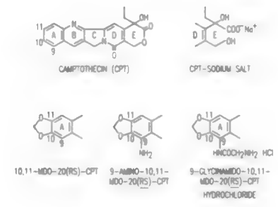
Monroe E. Wall, Chapel Hill; Mansukh C. Wani, Durham; Allan W. Nicholas, and Govindarajan Manikumar, both of Raleigh, all of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Continuation of Ser. No. 581,916, Sep. 13, 1990, Pat. No. 5,180,722, which is a continuation-in-part of Ser. No. 407,749, Sep. 15, 1989, Pat. No. 5,049,668, and a continuation-in-part of Ser. No. 511,953, Apr. 17, 1990, Pat. No. 5,053,512, and a continuation of Ser. No. 38,157, Apr. 14, 1987, abandoned. This application Jun. 17, 1992, Ser. No. 899,865

The portion of the term of this patent subsequent to Feb. 21, 2009, has been disclaimed.

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—279 **15 Claims**



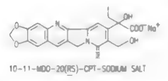
CAMPTOTHECIN (CPT)

CPT-SODIUM SALT

10,11-MDO-20(RS)-CPT

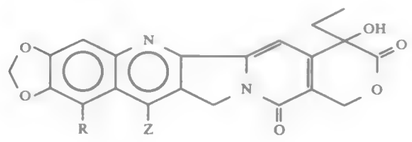
9-AMINO-10,11-MDO-20(RS)-CPT

9-GLYCINAMIDO-10,11-MDO-20(RS)-CPT HYDROCHLORIDE

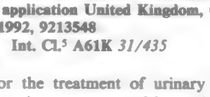


10-11-MDO-20(RS)-CPT-SODIUM SALT

1. A method of treating a colon tumor, a rectal tumor, or leukemia, comprising administering to a mammal in need thereof, an effective amount of a 20(S) or 20(RS)-camptothecin having the structure shown below:



wherein Z is hydrogen or C_{1-8} alkyl, R is NO_2, NH_2, N_3, hydrogen, halogen, COOH, OH, O-C_{1-3} alkyl, SH, S-C_{1-3} alkyl, CN, CH_2NH_2, CN-C_{1-3} alkyl, CH_2-CH-C_{1-3} alkyl, $N(C_{1-3}$ alkyl$)_2$, $CH_2N(C_{1-3}$ alkyl$)_2$, O—, NH— or S-$CH_2CH_2N(CH_2CH_2OH)_2$, O—, NH— or S-$CH_2CH_2CH_2N(CH_2CH_2OH)_2$, O—, NH— or S-$CH_2CH_2N(CH_2CH_2CH_2OH)_2$, O—, NH— or S-$CH_2CH_2CH_2N(CH_2CH_2CH_2OH)_2$, O—, NH— or S-$CH_2CH_2N(C_{1-3}$ alkyl$)_2$, O—, NH— or S-$CH_2CH_2CH_2N(C_{1-3}$ alkyl$)_2$, CHO, C_{1-3} alkyl or $NHCOCHR^1NR^2R^3$, where R^1 is the side-chain of an α-amino acid and R^2 and R^3, independently, are hydrogen or a lower alkyl group or R^3 is a peptide unit having 1–3 amino acid units bonded to the nitrogen through a peptide bond; NHCO-C_{2-8}-alkylene-X or NHCO-C_{2-8}-alkenylene-X, where X is COOH; $CONR^2$-$(CH_2)_n$-NR^2R^3, where n=1–10 and R^2 and R^3 are as defined above; NHCO-B— (CH_2)-NR^2R^3, where B=oxygen or NH; or



where m+y=3-14 6, with the proviso that R and Z are not both hydrogen, and salts thereof.

5,340,818

METHODS AND COMPOSITIONS FOR INHIBITING TUMOR CELL GROWTH

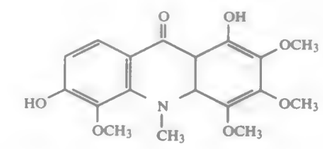
Ting-Chao Chou, New York, N.Y., and Tian-Shung Wu, Tianan, Taiwan, assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 530,103, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 357,323, May 25, 1989, abandoned. This application Feb. 10, 1993, Ser. No. 16,052

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—297 **8 Claims**

1. A method of inhibiting growth of leukemia cells in a host in need of treatment therefor which comprises administering to the host an amount of a compound having the structure:



which is effective to inhibit growth of the leukemia cells.

5,340,819

METHOD FOR TREATING URINARY INCONTINENCE USING 9-(3-NITROPHENYL)-3,4,6,7,9,10-HEXAHYDRO-1,8-(2H,5H) ACRIDINEDIONE

Cyrus J. Ohnmacht; Robert J. Harris, and Diane A. Trainor, all of Wilmington, Del., assignors to Imperial Chemical Industries plc, London, England

Filed Oct. 20, 1992, Ser. No. 963,863

Claims priority, application United Kingdom, Oct. 21, 1991, 9122305; Jun. 25, 1992, 9213548

Int. Cl.[5] A61K *31/435*

U.S. Cl. 514—297 **1 Claim**

1. A method for the treatment of urinary incontinence, comprising administering to a mammal in need of such treatment an effective amount of the compound 9-(3-nitrophenyl)-3,4,6,7,9,10-hexahydro-1,8-(2H,5H)acridinedione.

5,340,820

CYCLOAMINOALKOXYPHENYL DERIVATIVES, A PROCESS FOR THEIR PREPARATION AS WELL AS THE COMPOSITIONS CONTAINING THEM

Jean Gubin; Pierre Chatelain, both of Brussels, and Jean Lucchetti, Chastre, all of Belgium, assignors to Elf Sanofi, Paris, France

Continuation of Ser. No. 476,518, Feb. 7, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 844,979

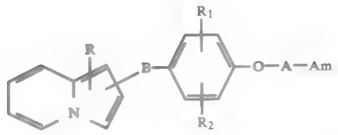
Claims priority, application France, Feb. 7, 1989, 89 01555

Int. Cl.[5] C07D *215/20;* **A61K** *31/44*

U.S. Cl. 514—300 **13 Claims**

1. An aminoalkoxyphenyl compound corresponding to the formula:

VOL 1165 ISS 4 AG 23 1994 UMI



(I)

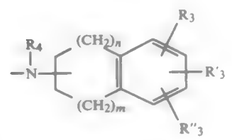
as well as its pharmaceutically acceptable salts in which:

B is selected from —S—, —SO— and —SO_2—,

R_1 and R_2, which are identical or different, are selected from the group consisting of hydrogen, methyl, ethyl, and halogen,

A is selected from a straight or branched C_2–C_5 alkylene radical, a 2-hydroxy propylene radical and a 2-(C_1–C_4) alkoxy propylene radical,

Am is selected from:



(D)

in which: R_3, R'_3 and R''_3, which are identical or different, are selected form the group consisting of hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy,

R_4 is selected from the group consisting of hydrogen and C_1–C_8 alkyl,

n plus m, which are identical or different, are selected from 0,1, and 2,

R is in the α-position with respect to the methyne group attached to the group —B— and is selected from hydrogen, C_1–C_8 alkyl, C_3–C_6 cycloalkyl, benzyl and phenyl optionally substituted by one or several substituents, which may be identical or different, selected from halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy and nitro.

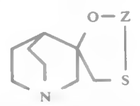
5,340,821

COMPOSITION AND METHOD FOR TREATING SJOEGREN SYNDROME DISEASE

Nobuaki Abe, Tokyo, and Yasuyoshi Takeshita, Utsunomiya, both of Japan, assignors to Snow Brand Milk Products Co., Ltd., Japan

Filed Jul. 7, 1993, Ser. No. 88,304
Claims priority, application Japan, Jul. 10, 1992, 4-207485
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—305 **4 Claims**

1. A method for treating the symptoms of Sjoegren syndrome disease comprising administering to a patient afflicted with the disease an amount of a spirooxathiolane-quinuclide compound having the following formula (I),



(I)

wherein Z is $=CR^1R^2$, wherein R^1 and R^2 may be the same or different and each represents hydrogen, alkyl, cyclopentyl, cyclohexyl, aryl, diarylmethylol, or alkyl which may be substituted by one or more aryl groups, or an acid addition salt thereof, sufficient to alleviate the symptoms of the disease.

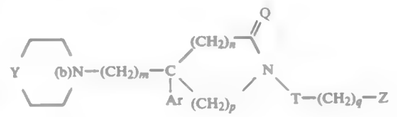
5,340,822

POLYCYCLIC AMINE COMPOUNDS AND THEIR ENANTIOMERS, THEIR METHOD OF PREPARATION AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Xavier Emonds-Alt, Combaillaux; Patrick Gueule, Teyrand; Vincenzo Proietto, Saint Georges d'Orques; Pierre Goulaouic, deceased, late of Montpellier; by Marie Bousquet, heir, Bourg la Reine, and by Catherine M. L. Goulaouic, heir, Gif sur Yvette, all of France, assignors to Elf Sanofi, Paris, France

Filed May 4, 1992, Ser. No. 878,710
Claims priority, application France, May 3, 1991, 91 05487
Int. Cl.[5] C07D *401/02, 401/14;* **A61K** *31/445, 31/55*
U.S. Cl. 514—316 **9 Claims**

1. A compound of the formula



(I)

in which:

Y is

either a group Cy—N or Cy—CH_2—N, in which:

Cy is a phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of hydrogen, a halogen atom, a hydroxyl, a C_1–C_4 alkoxy, a C_1–C_4 alkyl and a trifluoromethyl, said substituents being identical or different; a C_3–C_7 cycloalkyl group; a pyrimidyl group or a pyridyl group;

or a group



in which:

Ar is a phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of hydrogen, a halogen atom, a hydroxyl, a C_1–C_4 alkoxy, a trifluoromethyl and a C_1–C_4 alkyl, said substituents being identical or different; a pyridyl group or a thienyl group;

x is zero or one; and

X is a hydrogen; a hydroxyl; a C_1–C_4 alkoxy; a C_1–C_4 acyloxy; a carboxyl; a C_1–C_4 carbalkoxy; a cyano; a group —$N(X_1)_2$, in which the groups X_1 independently are hydrogen, a C_1–C_4 alkyl, a C_1–C_4 hydroxyalkyl or a C_1–C_4 acyl, or else —$(X_1)_2$ forms, with the nitrogen atom to which it is bonded, a heterocycle selected from the group consisting of pyrrolidine, piperidine and morpholine; or a group —S—X_2, in which X_2 is hydrogen or a C_1–C_4 alkyl group; or else X forms a double bond with the carbon atom to which it is bonded and with the adjacent carbon atom in the heterocycle;

m is 2 or 3;

Ar' is a phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of hydrogen, a halogen atom, a trifluoromethyl, a C_1–C_4 alkoxy and a C_1–C_4 alkyl, said substituents being identical or different; a thienyl; a benzothienyl; a naphthyl or an indolyl;

n is 0, 1, 2 or 3;

p is 1 or 2, and when p is equal to 2, n is then equal to 1 and Q is two hydrogen atoms;

Q is oxygen or two hydrogen atoms;

T is a group selected from



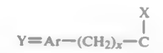
and —CH_2—

q is 0, 1, 2 or 3; and

Z is phenyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of a halogen atom, a trifluoromethyl, a C_1–C_4 alkyl, a hydroxyl and a C_1–C_4 alkoxy; a naphthyl which is unsubstituted or monosubstituted or polysubstituted by a substituent selected from the group consisting of a halogen, a trifluoromethyl, a C_1–C_4 alkyl and a hydroxyl; a pyridyl; a thienyl; an indolyl; a quinolyl; a benzothienyl; an imidazolyl; said pyridyl, thienyl, indolyl, quinolyl, benzothienyl or imidazolyl groups being unsubstituted or monosubstituted or polysubstituted by a C_1–C_4 alkyl or hydroxyl; or else when T is —C=O, —$(CH_2)_q$—Z represents a group where q=0, and Z is a benzyl group substituted on the



the benzyl group by a substituent selected from the group consisting of a hydroxyl, a C_1–C_4 alkoxy and a C_1–C_4 alkyl, and the benzyl group is unsubstituted or substituted on the aromatic ring by a substituent selected from the group consisting of a halogen, a trifluoromethyl, a C_1–C_4 alkyl, a hydroxyl and a C_1–C_4 alkoxy; or a salt thereof with a mineral or organic acid, or, when



a quaternary ammonium salt thereof, formed with nitrogen (b) of the piperidine, or an N-oxide derivative formed with this same nitrogen atom.

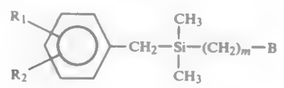
5,340,823

ORGANOSILANE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

Sandor Farkas, Budapest; Sandor Földeak, Szeged; Egon Karpati, Budapest; Peter Hegyes, Szeged; Janos Kreidl, Budapest; Laszlo Szporny, Budapest; Laszlo Czibula, Budapest, and Szilvia Petofi-Vass, Szeged, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyer RT., Budapest, Hungary

Division of Ser. No. 736,962, Jul. 29, 1991, Pat. No. 5,198,446.
This application Dec. 18, 1992, Ser. No. 993,139
Claims priority, application Hungary, Jul. 27, 1990, 4647/90
Int. Cl.[5] A61K *31/445;* **C07D** *7/10*
U.S. Cl. 514—317 **3 Claims**

1. A method of treating a mammalian subject for Parkinson's disease or to provide a central muscle relaxant effect, which comprises the step of administering to said mammalian subject in need of said treatment, a therapeutically effective amount of a compound of the Formula (I)



(I)

wherein

m is 1, 2 or 3;

R_1 and R_2 each independently stand for hydrogen, C_1 to C_4, straight or branched chain alkyl, C_1 to C_4 alkoxy, C_5 to C_7 cycloalkyl, or halogen; and

B is a 5- or 6-membered saturated or unsaturated heterocyclic group containing a nitrogen heteroatom, said heterocyclic group being bound through its heterocyclic nitrogen atom to the remainder of the compound, and which is selected from the group which consists of N-piperidino, N-imidazolyl, N-(2-methyl)-imidazolyl, N-piperazino, N-(4-propionyl)-piperazino, N-(4-n-butyl)-piperazino, N-1,2,4-triazolyl), N-pyrrolidino, N-morpholino, and (2-ethoxycarbonyl)-N-piperidino; or a pharmaceutically acceptable salt thereof.

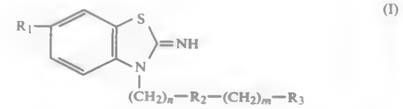
5,340,824

BENZOTHIAZOLE DERIVATIVES AND MEDICINAL PRODUCTS CONTAINING THEM

Claude Gueremy, Houilles; Patrick Jimonet, Villepreux, and Serge Mignani, Paris, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony Cedex, France

PCT No. PCT/FR91/00437, § 371 Date Dec. 2, 1992, § 102(e) Date Dec. 2, 1992, PCT Pub. No. WO91/18892, PCT Pub. Date Dec. 12, 1991
PCT Filed May 31, 1991, Ser. No. 938,153
Claims priority, application France, Jun. 7, 1990, 90 07068
The portion of the term of this patent subsequent to Dec. 25, 2007, has been disclaimed.
Int. Cl.[5] A61K *31/44;* **C07D** *417/12*
U.S. Cl. 514—321 **4 Claims**

1. A compound of formula:



(I)

in which

R_1 represents a polyfluoroalkoxy radical,

R_2 represents a sulphur or nitrogen atom which is substituted by an alkyl radical or a sulphonyl or sulphinyl radical,

R_3 represents a phenyl radical, a benzoyl radical, an NR_4R_5 radical or a 4-piperidyl radical which is substituted in position 1 by a phenylalkyl radical,

R_4 represents an alkyl radical,

R_5 represents a phenylalkyl radical,

n is equal to 1, 2 or 3,

m is equal to 0, 1, 2 or 3

it being understood that the alkyl radicals and the alkyl and alkoxy moieties contain 1 to 4 carbon atoms in a linear or branched chain, or one of their salts with an inorganic or organic acid.

5,340,825

PRO DRUGS FOR CCK ANTAGONISTS

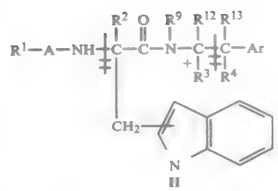
David C. Horwell; Martyn C. Pritchard, both of Cambridge, and Reginald S. Richardson, Suffolk, all of England, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 576,315, Aug. 31, 1990, abandoned. This application Jul. 12, 1991, Ser. No. 726,653
Int. Cl.[5] G07D *401/10;* **A61K** *31/44*
U.S. Cl. 514—339 **15 Claims**

1. A compound of the formula

VOL 1165 ISS 4 AG 23 1994 UMI

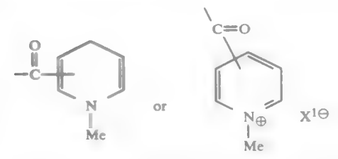
I



or a pharmaceutically acceptable salt thereof wherein:

R^1 is a cycloalkyl or polycycloalkyl hydrocarbon of from three to twelve carbon atoms with from zero to four substituents each independently selected from the group consisting of a straight or branched alkyl of from one to about six carbon atoms, halogen, CN, OR*, SR*, CO_2R^*, CF_3, NR^5R^6, and $-(CH_2)_nOR_5$ where R* is hydrogen, straight or branched alkyl of from one to six carbon atoms, $-(CH_2)_nAr$, $-COAr$, $-(CH_2)_nOCOAr$, or $-(CH_2)_nNR^5COAr$ and R* may also independently be R** as defined below,

and R** must be present at least once in Formula I, and R** is attached to Formula I through the following structure



R^5 and R^6 are each independently hydrogen or alkyl of from one to about six carbon atoms and n is an integer from zero to six;

A is

$-(CH_2)_nCO-$, $-SO_2-$, $-S(=O)-$, $-NHCO-$,

$-(CH)_n-C(=O)-$, $-SC(=O)-$, $-O-(CH_2)_nCO-$ or

$-HC=CHCO-$

wherein n is an integer from zero to six;

R^2 is methyl;

R^3 and R^4 are each independently selected from hydrogen; a straight or branched alkyl of from one to about six carbon atoms, $-HC=CH_2$ $-C\equiv CH$, $-(CH_2)_n-CH=CH_2$, $-(CH_2)_nC\equiv CH$, $-(CH_2)_nAr$, $-(CH_2)_nOR^*$, $-(CH_2)_nOAr$, $-(CH_2)_nCO_2R^*$ or $-(CH_2)_nNR^5R^6$ wherein n, R*, R^5 and R^6 are as defined above and Ar is as defined below and $-(CH_2)_{n'}-B-D$ wherein:

n' is an integer of from zero to three;

B is a bond,

$-OCO(CH_2)_n-$,

$-O(CH_2)_n-$,

$-NHCO(CH_2)_n-$,

$-CONH(CH_2)_n-$,

$-NHCOCH=CH-$,

$-COO(CH_2)_n-$,

$-CO(CH_2)_n-$,

-continued

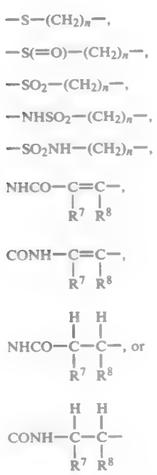
$-S-(CH_2)_n-$,

$-S(=O)-(CH_2)_n-$,

$-SO_2-(CH_2)_n-$,

$-NHSO_2-(CH_2)_n-$,

$-SO_2NH-(CH_2)_n-$,



wherein R^7 and R^8 are each independently selected from hydrogen and R^2 or together form a ring $(CH_2)_m$ wherein m is an integer of from 1 to 5 and n is as defined above;

D is hydrogen,

$-COOR^*$,

$-CH_2NR^5R^*$,

$-CHR^2NR^5R^*$,

$-CH_2OR^*$,

$-CHR^2OR^*$,

$-CH_2SR^*$,

$-CHR^2SR^*$,

$-CONR^5R^6$,

$-CONR^5R^*$,

an acid replacement selected from

$PhSO_2NHCO-$,

$CF_3CONHCO-$,

CF_3SO_2NHCO-,

H_2NSO_2-,

wherein R*, R^2, R^5, and R^6 are as defined above;

R^9 is hydrogen or a straight or branched alkyl of from one to about six carbon atoms, $-(CH_2)_nCO_2R^*$, $-(CH_2)_nNR^5R^*$, wherein n, R*, and R^5 are as defined above or taken from R^3;

R^{12} and R^{13} are each independently hydrogen or are each independently taken with R^3 and R^4, respectively, to form a moiety doubly bonded to the carbon atom; and

Ar is a mono-or polycyclic unsubstituted or substituted carbo-aromatic or carbo-hydroaromatic moiety.

5,340,826

PHARMACEUTICAL AGENTS FOR TREATMENT OF URINARY INCONTINENCE

Terry J. Rosen; Manoj C. Desai, and John A. Lowe, III, all of New York, N.Y., assignors to Pfizer Inc., New York, N.Y.

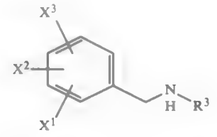
Filed Feb. 4, 1993, Ser. No. 13,277

Int. Cl.[5] A61K *31/44, 31/55, 31/38, 31/34*

U.S. Cl. 514—351 4 Claims

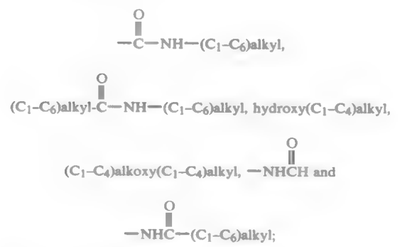
1. A method of treating or preventing urinary incontinence in a mammal, comprising administering to said mammal an amount of a compound of the formula

Id



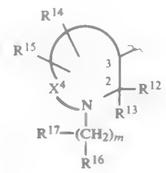
wherein X^1 is hydrogen, (C_1-C_{10}) alkoxy optionally substituted with from one to three fluorine atoms or (C_1-C_{10}) alkyl optionally substituted with from one to three fluorine atoms;

X^2 and X^3 are independently selected from hydrogen, halo, nitro, (C_1-C_{10}) alkyl optionally substituted with from one to three fluorine atoms, (C_1-C_{10}) alkoxy optionally substituted with from one to three fluorine atoms, trifluoromethyl, hydroxy, phenyl, cyano, amino, (C_1-C_6)-alkylamino, di-(C_1-C_6)alkylamino,



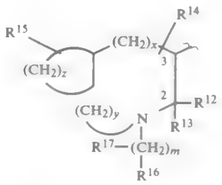
and R^3 is a group of the formula

VII



or

VIII



wherein x is an integer from zero to four;

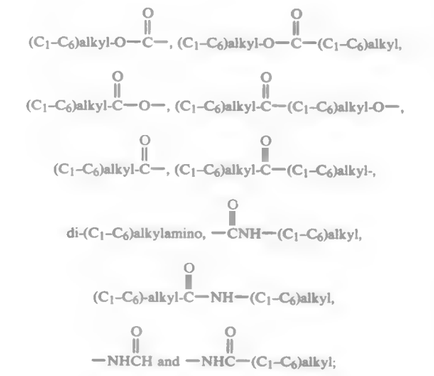
y is an integer from zero to four;

z is an integer from one to six, wherein the ring containing $(CH_2)_z$ may contain from zero to three double bonds, and any one of the carbons of $(CH_2)_z$ may optionally be replaced by oxygen, sulfur or nitrogen;

X^4 is $(CH_2)_q$ wherein q is an integer from 1 to 6, and wherein any one of the carbon-carbon single bonds in said $(CH_2)_q$ may optionally be replaced by a carbon-carbon double bond, and wherein any one of the carbon atoms of said $(CH_2)_q$ may optionally be substituted with R^{14}, and wherein any one of the carbon atoms of said $(CH_2)_q$ may optionally be substituted with R^{15};

m is an integer from 0 to 8, and any one of the carbon-carbon single bonds of $(CH_2)_m$, wherein both carbon atoms of such bond are bonded to each other and to another carbon atom in the $(CH_2)_m$ chain, may optionally be replaced by a carbon-carbon double bond or a carbon-carbon triple bond, and any one of the carbon atoms of said $(CH_2)_m$ may optionally be substituted with R^{17};

R^{12} is a radical selected from hydrogen, (C_1-C_6) straight or branched alkyl, (C_3-C_7)cycloalkyl wherein one of the carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; aryl selected from biphenyl, phenyl, indanyl and naphthyl; heteroaryl selected from thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; phenyl-(C_2-C_6)alkyl, benzhydryl and benzyl, wherein the point of attachment on R^{12} is a carbon atom unless R^{12} is hydrogen, and wherein each of said aryl and heteroaryl groups and the phenyl moieties of said benzyl, phenyl-(C_2-C_6)alkyl and benzhydryl may optionally be substituted with one or more substituents independently selected from halo, nitro, (C_1-C_{10})alkyl optionally substituted with from one to three fluorine atoms, (C_1-C_{10})alkoxy optionally substituted with from one to three fluorine atoms, amino, hydroxy-(C_1-C_6)alkyl, (C_1-C_6)alkoxy-(C_1-C_6)alkyl, (C_1-C_6)-alkylamino,

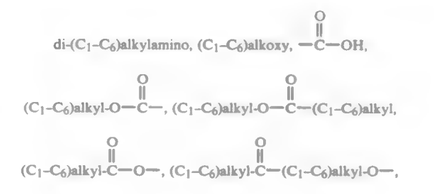


and wherein one of the phenyl moieties of said benzhydryl may optionally be replaced by naphthyl, thienyl, furyl or pyridyl;

R^{13} is hydrogen, phenyl or (C_1-C_6)alkyl;

or R^{12} and R^{13}, together with the carbon to which they are attached, form a saturated carbocyclic ring having from 3 to 7 carbon atoms wherein one of said carbon atoms that is neither the point of attachment of the spiro ring nor adjacent to it may optionally be replaced by oxygen, nitrogen or sulfur;

R^{14} and R^{15} are each independently selected from hydrogen, hydroxy, halo, amino, oxo (=O), cyano, hydroxy-(C_1-C_6)alkyl, (C_1-C_6)alkoxy-(C_1-C_6)alkyl, (C_1-C_6)alkylamino,



VOL 1165 ISS 4 AG 23 1994 UMI

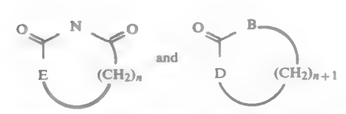
-continued



and the radicals set forth in the definition of R^{12};
R^{16} is



$NHCH_2R^{18}$, SO_2R^{18}, GR^{20} CO_2H or one of the radicals set forth in any of the definitions of R^{12}, R^{14} and R^{15};
R^{17} is oximino (=NOH) or one of the radicals set forth in any of the definitions of R^{12}, R^{14} and R^{15}; and
R^{18} is $(C_1–C_6)$alkyl, hydrogen, phenyl or phenyl $(C_1–C_6)$alkyl;
G is selected from the group consisting of CH_2, nitrogen, oxygen, sulfur and carbonyl;
R^{20} is a monocyclic or bicyclic heterocycle selected from the group consisting of pyrimidinyl, benzoxazolyl, 2,3-dihydro-3-oxobenzisosulfonazol-2-yl, morpholin-1-yl, thiomorpholin-1-yl, benzofuranyl, benzothienyl, indolyl, isoindolyl, isoquinolinyl, furyl, pyridyl, isothiazolyl, oxazolyl, triazolyl, tetrazolyl, quinolyl, thiazolyl, thienyl, and groups of the formulae



wherein B and D are selected from carbon, oxygen, and nitrogen and at least one of B and D is other than carbon; E is carbon or nitrogen; n is an integer from 1 to 5; and any one of the carbons of the $(CH_2)_m$ or $(CH_2)_{n+1}$ may be optionally substituted with $(C_1–C_6)$alkyl or $(C_2–C_6)$ spiroalkyl, and either any two of the carbon atoms of said $(CH_2)_n$ and $(CH_2)_{n+1}$ may be bridged by a one or two carbon atom linkage, or any one pair of adjacent carbons of said $(CH_2)_n$ and $(CH_2)_{n+1}$ may form, together with from one to three carbon atoms that are not members of the carbonyl containing ring, a $(C_3–C_5)$ fused carbocyclic ring;
with the proviso that (a) when m is 0, one of R^{16} and R^{17} is absent and the other is hydrogen, (b) when R^3 is a group of the formula VIII, R^{14} and R^{15} cannot be attached to the same carbon atom, (c) when R^{14} and R^{15} are attached to the same carbon atom, then either each of R^{14} and R^{15} is independently selected from hydrogen, fluoro, $(C_1–C_6)$alkyl, hydroxy-$(C_1–C_6)$alkyl and $(C_1–C_6)$alkoxy-$(C_1–C_6)$alkyl, or R^{14} and R^{15}, together with the carbon to which they are attached, form a $(C_3–C_6)$ saturated carbocyclic ring that forms a spiro compound with the nitrogen-containing ring to which the are attached; (d) R^{12} and R^{13} cannot both be hydrogen; (e) when R^{14} or R^{15} is attached to a carbon atom of X^4 or $(CH_2)_y$ that is adjacent to the ring nitrogen, then R^{14} or R^{15}, respectively, must be a substituent wherein the point of attachment is a carbon atom; and (f) neither R^{14}, R^{15}, R^{16} nor R^{17} can form a ring with R^{13};
or a pharmaceutically acceptable salt thereof, effective in treating or preventing such condition.

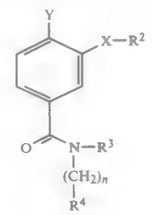
5,340,827

PHENYLCARBOXAMIDE COMPOUNDS WHICH HAVE USEFUL PHARMACEUTICAL ACTIVITY

Nigel R. A. Beeley, Thame, and Thomas A. Millican, Maidenhead, both of United Kingdom, assignors to Celltech, Limited, Berkshire, United Kingdom

Filed Jun. 14, 1993, Ser. No. 77,283
Claims priority, application United Kingdom, Jun. 15, 1992, 9212693
Int. Cl.[5] A61K *31/44; C07D 213/75*
U.S. Cl. 514—352 **16 Claims**

1. A compound of formula (1):



(1)

wherein
Y is a halogen atom or a group —OR^1 where R^1 is an optionally substituted alkyl group;
R^2 is an optionally substituted cycloalkyl, cycloalkenyl or polycycloalkyl group;
R^3 is a hydrogen atom or an alkyl, aryl or aralkyl group;
R^4 is an aryl or heteroaryl group;
X is —O—, —S—, CH_2— or —$N(R^5)$, where R^5 is a hydrogen atom or an alkyl group;
n is zero or an integer of value 1, 2 or 3;
or the salts, solvates or hydrates thereof.

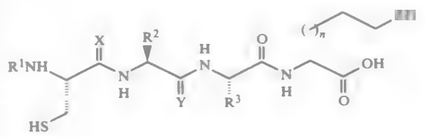
5,340,828

INHIBITORS OF FARNESYL PROTEIN TRANSFERASE

Samuel L. Graham, Schwenksville, and S. Jane deSolms, Norristown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 30, 1991, Ser. No. 768,798
Int. Cl.[5] A61K *31/44, 31/415, 31/195*
U.S. Cl. 514—357 **8 Claims**

1. A compound which inhibits farnesyl-protein transferase of the formula:



I

wherein:
X or Y are independently H_2 or O, provided that at least one of these is H_2;
R^1 is H, an alkyl group, an acyl group, an alkylsulfonyl group or arylsulfonyl group, wherein alkyl and acyl groups comprise straight chain or branched chain hydrocarbons of 1 to 6 carbon atoms, or in the alternative R^1NH may be absent;
R^2 and R^3 are the side chains of naturally occurring amino acids, or in the alternative may be substituted or unsubstituted aliphatic, aromatic or heterocyclic groups, which comprise allyl, cyclohexyl, phenyl, pyridyl, imidazolyl or saturated chains of 2 to 8 carbon atoms, wherein the aliphatic substitutents may be substituted with an aromatic or heteroaromatic ring;

Z is O or S; and
n is 0, 1, or 2;
or the pharmaceutically acceptable salts thereof.

5,340,829

IMMUNOREGULATORY AGENTS

John I. Clark; Andrew G. Farr, both of Seattle, Wash., and Stacia A. Smith, San Diego, Calif., assignors to Washington Research Foundation, Seattle, Wash.

Continuation of Ser. No. 309,446, Feb. 10, 1989, Pat. No. 4,966,911, which is a continuation-in-part of Ser. No. 159,357, Feb. 23, 1988, abandoned, which is a continuation of Ser. No. 6,985, Jan. 27, 1987, abandoned, which is a continuation of Ser. No. 673,534, Nov. 20, 1984, abandoned. This application Dec. 15, 1992, Ser. No. 990,571
Int. Cl.[5] A01N *43/50*
U.S. Cl. 514—389 **4 Claims**

1. A method of regulating the immune system of a mammalian host, comprising the step of administering to the host a compound having an immunoregulatory conformation comprising an aromatic ring associated with two atoms X_1 and X_2 selected individually from among oxygen, sulfur, and nitrogen, the immunoregulatory conformation being defined as follows:

$$3.1\ Å \leq D_1 \leq 4.1\ Å,$$

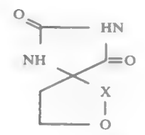
$$2.4\ Å \leq D_2 \leq 2.8\ Å,$$

$$3.8\ Å \leq D_3 \leq 4.2\ Å,$$

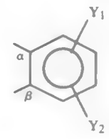
and

$$35° \leq \alpha^* \leq 60°,$$

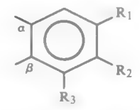
wherein
P1=the plane defined by the aromatic ring,
D_1=the distance between the centers of plane P_1 and atom X_1,
D_2=the distance between the centers of plane P_1 and atom X_2,
D_3=the distance between the centers of atoms X_1 and X_2,
P_2=the plane defined by atoms X_1 and X_2 and the center of plane P_1, and
α^*=the angle between planes P_1 and P_2, taken at the intersection of vectors normal to each plane,
wherein the aromatic ring is essentially planar and consists of 5 to 7 ring atoms that are cylindrically symmetrical within about 15 degrees of planar, and
wherein the compound is selected from the group consisting of compounds having the formula:



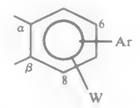
and the base salts thereof with pharmacologically acceptable cations, wherein X is:
benz-α,β-O or substituted benz-α,β-O of the formula:



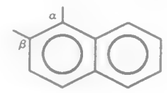
wherein Y_1 is hydrogen and Y_2 is hydrogen, hydroxy, fluorine, chlorine, lower alkyl or lower alkoxy (each having from one to four carbon atoms),
or Y_1 and Y_2, when taken separately, are each chlorine, lower alkyl or lower alkoxy, and when taken together are —$OCH_2(CH_2)_nO$—, and
n is zero or one;
substituted benz-α,β-O of the formula:



wherein R_1 is chlorine, bromine, fluorine, or alkyl of one to three carbon atoms, one of R_2 and R_3 is hydrogen, and the other of R_2 and R_3 is amino, monoalkylamino or dialkylamino, wherein each alkyl group has from one to three carbon atoms;
phenyl or phenoxy substituted benz-α,β-O of the formula:



wherein W is hydrogen, methyl, methoxy, phenyl, phenoxy, fluorine, chlorine, or boron at the 6 or 8 position, and
Ar is phenyl or phenoxy at the 6 or 8 position;
naph-α,β-O of the formula:



substituted naph-α,β-O having one or two identical substitutents selected from methyl, chlorine, or bromine; or
anthracen-α,β-O of the formula:



5,340,830

Patent Not Issued For This Number

5,340,831

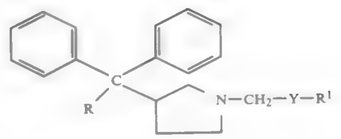
MUSCARINIC RECEPTOR ANTAGONISTS

Peter E. Cross, Canterbury, and Alexander R. MacKenzie, Deal, both of England, assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 12, 1992, Ser. No. 859,471
Claims priority, application United Kingdom, Dec. 12, 1989, 8928042.4
Int. Cl.[5] A61K *31/40;* **C07D** *207/09*
U.S. Cl. 514—408 **6 Claims**

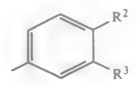
6. A method of treating irritable bowel syndrome in a patient in need of such treatment, characterized by administering to said patient an effective amount of a compound of the formula

VOL 1165 ISS 4 AG 23 1994 UMI



(I)

or a pharmaceutically acceptable salt thereof,
wherein
Y is —CH_2—, —$(CH_2)_2$—, —CH_2O—, —$(CH_2)_2O$— or —CH_2S—;
R is —CN or —$CONH_2$; and
R^1 is a group of the formula:



where
R^2 and R^3 are each independently H, C_1–C_4 alkyl, C_1–C_4 alkoxy, —$(CH_2)_n$OH, halo, trifluoromethyl, cyano, —$(CH_2)_nNR^4R^5$, —$CO(C_1$–C_4 alkyl), —$OCO(C_1$–C_4 alkyl), —$CH(OH)(C_1$–C_4 alkyl), —$C(OH)(C_1$–C_4 alkyl), —$OCO(C_1$–C_4 alkyl), —$CH(OH)(C_1$–C_4 alkyl), —$C(OH)(C_1$–C_4 alkyl)$_2$, —SO_2NH_2, —$(CH_2)_nCONR^6R^7$ or —$(CH_2)_nCOO(C_1$–C_4 alkyl);
R^4 is H or C_1–C_4 alkyl;
R^5 is H, C_1–C_4 alkyl or C_1–C_4 alkylsulphonyl;
R^6 and R^7 are each independently H or C_1–C_4 alkyl; and
n is 0, 1 or 2.

5,340,832
PROLINAL DERIVATIVES USEFUL FOR TREATING AMNESIA

Masaaki Toda, Osaka; Shuichi Ohuchida, Kyoto, and Hiroyuki Ohno, Shiga, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

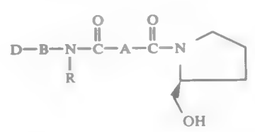
Division of Ser. No. 803,421, Dec. 6, 1991, Pat. No. 5,254,550, which is a division of Ser. No. 533,648, Jun. 5, 1990, Pat. No. 5,100,904, which is a division of Ser. No. 123,410, Nov. 20, 1987, Pat. No. 4,956,380. This application Aug. 17, 1993, Ser. No. 107,314

Claims priority, application Japan, Nov. 20, 1986, 61-275375; Sep. 14, 1987, 62-228452

Int. Cl.[5] **A61K** *31/40, 31/52;* **C07D** *207/08, 401/12*

U.S. Cl. 514—423 **17 Claims**

1. A prolinal derivative of the formula:



wherein A represents an alkylene group of from 1 to 8 carbon atom(s) or an alkenylene group of from 2 to 8 carbon atoms or a saturated hydrocarbon ring of from 3 to 7 carbon atoms, R represents a hydrogen atom, a phenyl group, a benzyl group, an alkyl group of from 1 to 8 carbon atom(s) or a cycloalkyl group of from 3 to 7 carbon atoms, B represents a single bond or alkylene group of from 1 to 8 carbon atom(s) unsubstituted or substituted by a phenyl group or a benzyl group, D represents a carbocyclic ring or heterocyclic ring which is selected from the group consisting of oxazole, isoxazole, thiazole, isothiazole, pyrazole, furazan, pyridazine, purine, indazole, cinnoline, quinoxaline, phthalazine, pteridine and phenothiazine rings which may be partially or fully saturated or aromatic, wherein said carbocyclic or heterocyclic rings are unsubstituted or substituted by from one to three of a halogen atom, an alkyl or an alkoxy group of from 1 to 4 carbon atom(s), a nitro group or a trifluoromethyl group.

5,340,833
UROKINASE INHIBITORS

Alexander Bridges; Bruce A. Littlefield, both of Andover, and C. Eric Schwartz, Wakefield, all of Mass., assignors to Eisai Co., Ltd., Tokyo, Japan

Filed May 1, 1992, Ser. No. 877,664
Int. Cl.[5] **A61K** *31/38;* **C07D** *333/66*

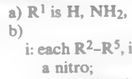
U.S. Cl. 514—443 **15 Claims**

1. A compound of the formula:

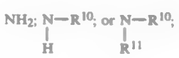


wherein
a) R^1 is H, NH_2, or a halogen;
b)
i: each R^2–R^5, independently, is a H; a halogen; a hydroxy; a nitro;
a straight chain alkyl group of between 5 and 10 carbons;
a straight chain alkenyl of between 1 and 10 carbons;
a straight chain alkynyl of between 1 and 10 carbons;
an alkyl of between 1 and 10 carbons, wherein said alkyl is substituted with an R^8 group, and wherein, when said alkyl is of less than 5 carbons, R^8 is not a halogen;
an alkoxy of between 1 and 10 carbons, wherein said alkoxy is substituted with an R^8 group, and wherein, when said alkoxy is of less than 5 carbons, R^8 is not a halogen;
a straight chain alkenyl group of between 2 and 10 carbons with an E or Z double bond substituted with at least one R^8 group;
a straight chain alkynyl group of between 2 and 10 carbons substituted with at least one R^8 group;
a cycloalkyl group of between 3 and 10 carbons;
a cycloalkenyl group of between 3 and 10 carbons;
a bicycloalkyl group of between 6 and 12 carbons;
a bicycloalkenyl group of between 7 and 12 carbons;
a cycloalkyl-alkyl group of between 4 and 20 carbons;
a cycloalkyl-alkenyl group of between 5 and 20 carbons;
a cycloalkyl-alkynyl group of between 5 and 20 carbons;
a cycloalkenyl-alkyl group of between 4 and 20 carbons;
a cycloalkenyl-alkenyl group of between 5 and 20 carbons;
a cycloalkenyl-alkynyl group of between 5 and 20 carbons;
a thio/sulfinyl/sulfonylalkyl group of between 1 and 10 carbons;
a thio/sulfinyl/sulfonylalkyl group of between 1 and 10 carbons substituted with at least one R^8 group;
a thio/sulfinyl/sulfonylalkenyl group of between 1 and 10 carbons;
a thio/sulfinyl/sulfonylalkenyl group of between 1 and 10 carbons substituted with at least one R^8 group;
a thio/sulfinyl/sulfonylcycloalkyl group of between 3 and 6 carbons;
a thio/sulfinyl/sulfonylcycloalkenyl group of between 3 and 6 carbons;

a phenyl group;
a phenyl group substituted with at least one R^9 group;
a 2- or 3-furanyl group; a 2- or 3-thienyl group; a 2- or 3- or 4-pyridyl group; a pyrimidyl group; an oxazolo group; an isoxazolo group; a thiazolo group; an isothiazolo group; a pyrazolo group; an imidazolo group; a pyrazino group; a pyridazino group;
a bicyclic aromatic group chosen from a naphthyl group, a benzothienyl group, an indolyl group, a benzofuranyl group, a naphthyridinyl group, a quinoxalinyl group, a quinazolinyl group, a quinolinyl group, an isoquinolinyl group, a benzimidazoyl group, a benzoxazoyl group, or a benzothiozoyl group, or any of said bicyclic aromatic groups substituted with at least one R^9 group;
a biaryl group consisting of two aromatic groups, the same or different, linked directly together or at least one of the aromatic groups substituted with at least one R^9 group;
a tetrahydrofuranyl group;
a cycloalkoxy group of between 3 and 8 carbons;
a cycloalkenoxy group of between 3 and 8 carbons;
an oxy(heteroaryl)aryl group; an oxy(heteroaryl)aryl group substituted with at least one R^9 group;
a thio/sulfinyl/sulfonyl(heteroaryl)aryl group; a thio/-sulfinyl/sulfonyl(heteroaryl)aryl group substituted with at least one R^9 group;



ii: R^2 and R^3, taken together, form an aryl ring chosen from a phenyl group, a 2- or 3-furanyl group, a 2- or 3-thienyl group, a 2- or 3- or 4-pyridyl group, a pyrimidyl group, an oxazolo group, an isoxazolo group, a thiazolo group, an isothiazolo group, a pyrazolo group, an imidazolo group, a pyrazino group, a pyridazino group, or any of said aryl ring groups substituted with at least one R^9 group or with at least one R^{12} group; or
iii: R^4, taken with R^3 or R^5, forms an aryl ring chosen from a phenyl group, a 2- or 3-furanyl group, a 2- or 3-thienyl group, a 2- or 3- or 4-pyridyl group, a pyrimidyl group, an oxazolo group, an isoxazolo group, a thiazolo group, an isothiazolo group, a pyrazolo group, an imidazolo group, a pyrazino group, a pyridazino group, or any of said aryl ring groups substituted with at least one R^9 group or with at least one R^{12} group;
c) wherein each R^8, independently, is:
a straight chain alkyl group of between 1 and 6 carbons;
a cycloalkyl ring of between 3 and 6 carbons;
an alkoxy group of between 1 and 6 carbons;
an alkylthio group of between 1 and 6 carbons; an alkylthio group of between 1 and 6 carbons with the S oxidized;
a hydroxy group; a halogen group; a phenyl group;
a phenyl group substituted with at least one R^9 group;
a 2- or 3-furanyl group; a 2- or 3-thienyl group; a 2- or 3- or 4-pyridyl group; a pyrimidyl group; an oxazolo group; an isoxazolo group; a thiazolo group; an isothiazolo group; a pyrazolo group; an imidazolo group; a pyrazino group; a pyridazino group;
a bicyclic aromatic group chosen from a naphthyl group, a benzothienyl group, an indolyl group, a benzofuranyl group, a naphthyridinyl group, a quinoxalinyl group, a quinazolinyl group, a quinolinyl group, an isoquinolinyl group, a benzimidazoyl group, a benzoxazoyl group, or a benzothiazoyl group, or any of said bicyclic aromatic groups substituted with at least one R^9 group;
tetrahydrofuranyl; or tetrahydrothiofuranyl;
d) wherein each R^9, independently, is:
a straight chain alkyl group of between 1 and 6 carbons; an alkoxy group of between 1 and 6 carbons; an acyloxy group of between 1 and 6 carbons; a methylenedioxy group; an ethylenedioxy group; a hydroxymethyl group; an alkoxymethyl group of between 1 and 6 carbons; a halo group; a hydroxy group; a nitro group; a cyano group; an acyl group of between 1 and 6 carbons; an alkylthio group of between 1 and 6 carbons with an oxidized S; a carboxylic acid group; a carboxylate ester group; or a carboxamidino group, a carboxamido group, or an amino group, wherein the nitrogen group is



e)
i: wherein each R^{10} and R^{11} is:
a straight chain alkyl group of between 3 and 6 carbons; a cycloalkyl group of between 3 and 6 carbons; a phenyl group; or a phenyl group substituted with at least one R^9 group; or
ii: wherein R^{10} and R^{11}, taken together, form a pyrrolidinyl, a piperidinyl, a morpholino, or an N-substituted piperazino ring; and
f) wherein each R^{12}, independently, is:
an alkenoxymethyl group of between 1 and 6 carbons;
an alkynoxymethyl group of between 1 and 6 carbons;
an arylalkenyl group;
an arylalkenyl group, wherein said aryl is phenyl, 2- or 3-furanyl, 2- or 3-thienyl, 2- or 3- or 4-pyridyl, pyrimidyl, oxazolo, isoxazolo, thiazolo, isothiazolo, pyrazolo, imidazolo, pyrazino, or pyradazino, or any of said aryl groups substituted with at least one R^9 group;
an arylalkynyl group; or
an arylalkynyl group, wherein said aryl is phenyl, 2- or 3-furanyl, 2- or 3-thienyl, 2- or 3- or 4-pyridyl, pyrimidyl, oxazolo, isoxazolo, thiazolo, isothiazolo, pyrazolo, imidazolo, pyrazino, or pyradazino, or any of said aryl groups substituted with at least one R^9 group;,
provided that at least one R^2–R^5 contains a sulfur atom, an unsaturated carbon group, or a cyclic group; and
each R^6 and R^7, independently, is H or a straight chain alkyl group of between 1 and 6 carbons.

5,340,834
METHOD OF INCREASING MUSCLE MASS IN CHICKENS

Paul A. Stitt, 123 Cleveland Ave., Manitowoc, Wis. 54220

Filed Jan. 5, 1993, Ser. No. 743
Int. Cl.[5] **A61K** *31/28*

U.S. Cl. 514—505 **10 Claims**

1. A method of increasing muscle mass in a chicken, comprising administering to the chicken a biologically effective amount of chromium citrate.

5,340,835
ESTERS OF 2,2-DIMETHYL-3-[(2,2-DIFLUORO-CYCLOPROPYLIDENE) METHYL]CYCLOPROPANE CARBOXYLIC ACIDS

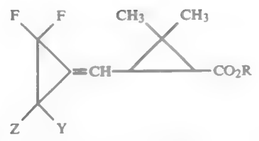
Didier Babin, Montigny; Marc Benoit, Roquevaire; Jean-Pierre Demoute, Neuilly Plaisance; Fabienne Pilorge, Tournan en Brie, and Nicole Reinier, Marseille, all of France, assignors to Roussel-UCLAF, France

Filed Jan. 19, 1993, Ser. No. 5,603
Claims priority, application France, Jan. 28, 1992, 92 00865
Int. Cl.[5] **C07C** *69/74;* **A01N** *9/24*

U.S. Cl. 514—531 **20 Claims**

1. A compound selected from the group consisting of all stereoisomeric forms and mixtures thereof of a compound of the formula

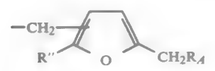
VOL 1165 ISS 4 AG 23 1994 UMI



I

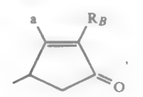
wherein Y and Z are individually selected from the group consisting of hydrogen, halogen, —CF_3. alkyl, alkoxy and alkylthio of 1 to 8 carbon atoms and hydrocarbyl aryl, aryloxy and arylthio of up to 14 14 carbon atoms optionally substituted with at least one member of the group consisting of halogen, hydroxy, optionally esterified or etherified, —CF_3 and alkyl of 1 to 8 carbon atoms and R is selected from the group consisting of a) alyl of 1 to 8 carbon atoms, b) benzyl optionally substituted with at least one member of the group consisting of alkyl and alkoxy of 1 to 4 carbon atoms optionally substituted with at least one halogen, alkenyl and alkenyloxy of 2 to 6 carbon atoms, alkadienyl of 4 to 8 carbon atoms, methylenedioxy and halogen

c)



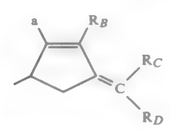
R″ is hydrogen or methyl and R_A is monocyclic aryl or —C≡CH,

d)

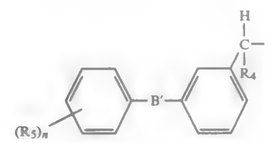


a is hydrogen or methyl and R_B is an aliphatic of 2 to 6 carbon atoms with at least one unsaturation,

e)



R_C and R_D are individually selected from the group consisting of hydrogen, halogen, alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms, alkoxycarbonyl of 2 to 5 carbon atoms and —CN,

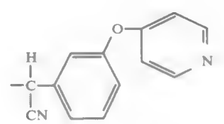


B′ is selected from the group consisting of —O—, —S—,

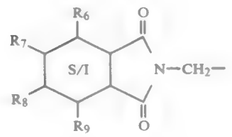


—CH_2—, —SO— and —SO_2—, R_4 is selected from the group consisting of hydrogen, —CN, —CH_3, —$CONH_2$, $CSNH_2$ and —C≡CH, R_5 is hydrogen or halogen or methyl and n is 0, 1 or 2,

g)

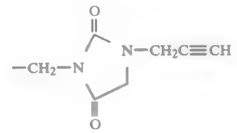


h)

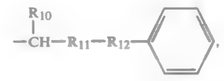


R_6, R_7, R_8 and R_9 are individually hydrogen or chlorine or methyl and S/I symbolizes an aromatic ring of a dihydro or tetrahydro ring

i)



j)

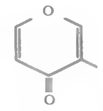


R_{10} is hydrogen or —CN, R_{12} is —CH_2— or —O—, R_{11} is thiazolyl or thiadiazolyl bonded to

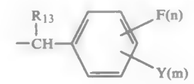


at any one of the possible positions and R_{12} is bonded to R_{11} through a carbon atom between the sulfur and nitrogen atoms,

k)

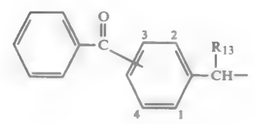


l)



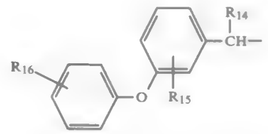
R_{13} is selected from the group consisting of hydrogen, —CH_3, —CN and —C≡CH, n is an integer from 1 to 5, m is 5-n, Y are individually selected from the group consisting of hydrogen, halogen, —CH_2CN, —OH, optionally unsaturated alkyl optionally substituted with —CN, —COO alkyl, —CO alkyl, —(CH_2)m′—O alkyl, —(CH_2)m′-S alkyl, —(CH_2)m′-N-(alkyl)$_2$ containing up to 12 alkyl carbon atoms and m′ is 0, 1, 2, 3 or 4 and Si(alkyl)$_3$ the alkyl of up to 8 carbon atoms being optionally unsaturated, —O aryl and —(CH_2)m′-aryl, the aryl containing up to 14 carbon atoms,

m)



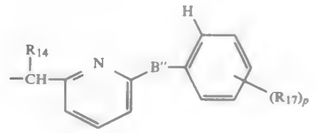
with the benzoyl being in the 3- or 4 -position,

n)



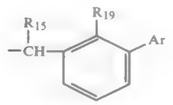
R_{14} is selected from the group consisting of hydrogen, —CH_3, ethynyl and —CN, R_{15} and R_{16} are different and are hydrogen or fluorine or bromine,

o)



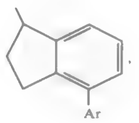
R_{17} are individually selected from the group consisting of hydrogen, alkyl, alkoxy, alkylthio and alkyl sulfonyl of 1 to 4 carbon atoms, —CF_3, methylenedioxy, chloro, fluoro and bromo, p is 0, 1 or 2, B″ is —O— or —S—,

p)

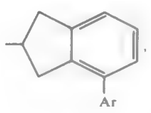


R_{18} is selected from the group consisting of hydrogen, —CH_3, ethynyl and —CN, R_{19} is different from R_{18} and is hydrogen or fluorine or bromine, Ar is aryl of up to 14 carbon atoms,

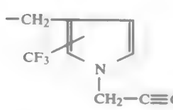
g)



r)

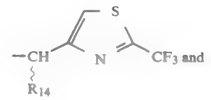


s)

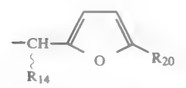


the —CF_3 being in any position of the pyrrolic ring

t)



u)



R_{20} is alkyl of 1 to 4 carbon atoms optionally substituted with at least one halogen.

5,340,836

COMPOSITION AND METHOD FOR TREATMENT OF VAGINAL YEAST INFECTIONS

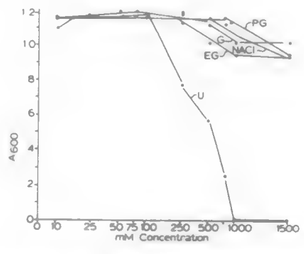
Mark S. Reinhard, 1148 Tillers Ridge Drive, Richmond, Va. 23235, and Byron T. Burlingham, Greenville, N.C., assignors to Mark S. Reinhard, Richmond, Va.

Continuation of Ser. No. 657,522, Feb. 19, 1991, abandoned. This application Jun. 1, 1992, Ser. No. 892,615

Int. Cl.[5] **A61K** *31/045, 31/70, 31/495, 31/50, 31/415, 31/19*

U.S. Cl. 514—557

19 Claims



1. A composition for use as a vaginal cleanser and for the treatment of vaginal yeast while not adversely affecting normal vaginal bacterial growth, comprising:

(a) a medically acceptable active yeast-inhibitory agent selected from one or more members of the group consisting of ethylene glycol, propylene glycol, and glycerol, having an effective concentration at the vaginal treatment site of at least 8% by volume of the composition volume plus the volume of other liquids present at the treatment site; and

(b) an effectively buffered aqueous acetate solution said composition having a concentration of 10–500 mM acetate, said acetate being selected from the group consisting of diacetin, triacetin, compounds of the formula CH_3COOR where R is selected from the group consisting of hydrogen and C_1–C_3 alkyl moieties, and salts of acetic acid;

wherein the concentration of acetate in said effectively buffered aqueous solution is effective to establish the pH of the composition in the range from pH 5.01 to about pH 7, and wherein the active yeast-inhibitory agent and said effectively buffered aqueous acetate solution are in selected proportions relative to one another effective to allow the active yeast-inhibitory agent to be inhibitory against vaginal yeast of the genus Candida, wherein growth of vaginal bacteria is enhanced as compared to growth of said bacteria at a normal vaginal pH, and wherein undesirable vaginal yeast cells are inhibited more than Saccharomyces yeast cells by said composition.

VOL 1165 ISS 4 AG 23 1994 UMI

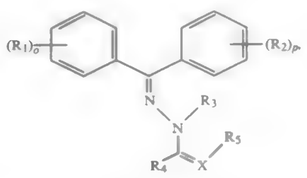
5,340,837

BENZOPHENONEHYDRAZONES

Roger G. Hall, Aesch; Alfons Pascual, Basel, and Odd Kristiansen, Mölin, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 25, 1993, Ser. No. 83,245
Claims priority, application Switzerland, Jul. 7, 1992, 2147926
Int. Cl.[5] C07D *307/87*
U.S. Cl. 514—603 19 Claims

1. A compound of the formula



(I)

wherein
each of o and p, independently of the other, is 0. 1, 2, 3, 4 or 5, the radicals R_1 being the same or different when o is greater than 1 and the radicals R_2 being the same or different when p is greater than 1;
each of R_1 and R_2, independently of the other, is selected from the group consisting of C_1–C_4alkyl, halo-C_1–C_4alkyl, halogen, —NO_2, —OH, C_1–C_4alkoxy, halo-C_1–C_4alkoxy, C_1–C_4alkylthio, halo-C_1–C_4alkylthio, —O—S(=O)—R_6, —O—S(=O)$_2$—R_6, phenoxy or —N(R_{11})SO_2R_{12} and two substituents R_1 bonded to vicinal carbon atoms of the phenyl ring and/or two substituents R_2 bonded to vicinal carbon atoms of the phenyl ring are, independently of one another, together —Y—Z—Y—;
R_3 is hydrogen, C_1–C_4alkyl or halo-C_1–C_4alkyl;
R_4 is hydrogen, C_1–C_4alkyl, halo-C_1–C_4alkyl, unsubstituted phenyl or naphthyl or mono- or di-substituted phenyl or naphthyl, the substituents being selected from the group consisting of halogen, C_1–C_4alkyl, halo-C_1–C_4alkyl, C_1–C_4alkyloxy, halo-C_1–C_4alkoxy, C_1–C_4alkylthio, halo-C_1–C_4alkylthio, —NO_2 and —CN;
R_5 is —S—R_7, —S(=O)—R_7, —S(=O)$_2$—R_7, —NO_2, —CN, —C(=O)—R_8 or —C(=O)—OR_8;
R_6 is C_1–C_8alkyl, or halo-C_1–C_8alkyl or phenyl;
R_7 is C_1–C_8alkyl, C_3–C_6cycloalkyl, halo-C_1–C_8alkyl, unsubstituted or mono- or di-substituted phenyl, the substituents being selected from the group consisting of halogen, C_1–C_4alkyl, halo-C_1–C_4alkyl, C_1–C_4alkoxy, halo-C_1–C_4alkoxy, C_1–C_4alkylthio, halo-C_1–C_4alkylthio, —NO_2 and —CN; benzyl or unsubstituted or mono- or di-substituted amino, the substituents being selected from the group consisting of C_1–C_4alkyl, halo-C_1–C_4alkyl and phenyl;
R_8 is C_1–C_8alkyl, halo-C_1–C_8alkyl or unsubstituted or mono- or di-substituted phenyl, the substituents being selected from the group consisting of halogen, C_1–C_4alkyl, halo-C_1–C_4alkyl, C_1–C_4alkoxy, halo-C_1–C_4alkoxy, C_1–C_4alkylthio, halo-C_1–C_4alkylthio, —NO_2 and —CN;
X is N;
each Y, independently of the other, is O or S;
Z is methylene, eth-1,2-ylene, halomethylene or haloeth-1,2-ylene;
R_{11} is hydrogen, C_1–C_4alkyl or halo-C_1–C_4alkyl; and
R_{12} is C_1–C_4alkyl, halo-C_1–C_4alkyl, unsubstituted or mono- or di-substituted phenyl, the substituents being selected from the group consisting of halogen, C_1–C_4alkyl, halo-C_1–C_4alkyl, C_1–C_4alkoxy, halo-C_1–C_4alkoxy, C_1–C_4alkylthio, halo-C_1–C_4alkylthio, —NO_2 and —CN;
or, where appropriate, a tautomer thereof, or a salt thereof or a salt of a tautomer;
with the proviso (A) that, in compounds of formula I in free form wherein each of o and p is O, R_4 is hydrogen and X is N, R_3 is other than hydrogen when R_5 is methanesulfonyl, unsubstituted phenylsulfonyl or 4-methylphenylsulfonyl.

5,340,838

METHOD OF INHIBITING GASTRIC ACID SECRETION WITH 2-PHENYLCYCLOPROPYLAMINES

Jaswant S. Gidda, Carmel, and John M. Schaus, Zionsville, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 898,991, Jun. 15, 1992, Pat. No. 5,232,946, which is a division of Ser. No. 707,357, May 29, 1991, Pat. No. 5,158,956, which is a continuation-in-part of Ser. No. 519,388, May 4, 1990, Pat. No. 5,096,908. This application May 26, 1993, Ser. No. 68,723
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—647 6 Claims

1. A method of inhibiting gastric acid secretion in mammals comprising administering to a mammal in need of gastric acid secretion inhibition a pharmaceutically effective dose of a direct acting 5-HT1A agonist which is a trans-2-phenylcyclopropylamine or a pharmaceutically acceptable salt thereof.

5,340,839

METHOD FOR SALVAGING ORGANIC THERMOPLASTIC VALUES FROM DISCARDED SURFACE TREATED ORGANIC THERMOPLASTIC SUBSTRATES

Gregory R. Gillette, Clifton Park, N.Y.; Popkin Shenian, Pittsfield, Mass.; Donald A. Bolon, Charlton, and Patricia C. Irwin, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 949,928, Sep. 24, 1992. This application Nov. 25, 1992, Ser. No. 981,668
Int. Cl.[5] C08J *11/04*
U.S. Cl. 521—40 11 Claims

1. A method for effecting the removal of the surface coating on a discarded organic thermoplastic substrate which has been surface treated with a decorative or protective organic or organosilicon coating, comprising,
(1) effecting contact with agitation for a period of at least 20 minutes and at a temperature in the range of about 40° C. to about 100° C. between the surface treated organic thermoplastic substrate and an aqueous alkaline solution having a $C_{(1-4)}$ alkanol cosolvent and a pH of at least 12,
(2) recovering the resulting organic thermoplastic substrate directly from (1),
(3) washing the surface of the recovered organic thermoplastic substrate of (2) with an aqueous medium until the pH of the recovered aqueous wash medium is neutral, and
(4) drying the resulting organic thermoplastic substrate.

5,340,840

FOAM STRUCTURES OF ETHYLENIC POLYMER MATERIAL HAVING ENHANCED TOUGHNESS AND ELASTICITY AND PROCESS FOR MAKING

Chung P. Park, Pickerington, Ohio; James C. Stevens, Midland, Mich., and George W. Knight, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 32,917, Mar. 18, 1993, abandoned. This application Apr. 28, 1993, Ser. No. 54,330
Int. Cl.[5] C08J *9/18*
U.S. Cl. 521—60 23 Claims

1. A process for making an ethylene polymer foam structure, comprising:
a) heating an ethylene polymer material to form a melt polymer material, the ethylene polymer material comprising a substantially linear ethylene polymer having:
i) a melt flow ratio, I_{10}/I_2, ≥ 5.63;
ii) a molecular weight distribution, M_w/M_n, defined by the equation: $M_w/M_n \leq (I_{10}/I_2) - 4.63$; and
iii) a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear olefin polymer having about the same I_2 and M_w/M_n;
b) incorporating into the melt polymer material at an elevated pressure a blowing agent; and
e) expanding the foamable gel at a reduced pressure to form the foam structure.

5,340,841

PRODUCTION METHOD OF FOAMED PARTICLES OF POLYOLEFIN RESIN

Hisao Tokoro, Tochigi; Satoru Shioya, and Akira Hinokawa, both of Utsunomiya, Japan, assignors to JSP Corporation, Tokyo, Japan

Filed Dec. 15, 1993, Ser. No. 166,827
Claims priority, application Japan, Dec. 28, 1992, 4-360031
Int. Cl.[5] C08J *9/08, 9/22*
U.S. Cl. 521—60 7 Claims

1. A method of producing foamed particles of a polyolefin resin by heating a dispersion comprising particles of the polyolefin resin, which contains at least carbon dioxide as a foaming agent, a dispersing agent and a dispersion medium in a closed vessel and then releasing the dispersion into an atmosphere of a pressure lower than the internal pressure of the vessel to expand the resin particles, which comprises using a finely particulate silicate mineral as the dispersing agent.

5,340,842

LOW DENSITY POROUS CROSSLINKED POLYMERIC MATERIALS

Robert P. Adamski, Missouri City; Maryanne Mores, Houston; Pui K. Wong, Houston, and Diana D. Davis, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 114,557, Aug. 30, 1993, Pat. No. 5,306,733. This application Jan. 19, 1994, Ser. No. 185,537
Int. Cl.[5] C08J *9/28*
U.S. Cl. 521—64 18 Claims

1. A porous crosslinked polymeric material having an absorbency ratio of Syn-Urine vertical wicking time to decane vertical wicking time of greater than 10 produced by the process comprising the steps of:
(a) providing a water-in-oil emulsion comprising (i) a mixture of polymerizable monomers comprising at least one vinyl monomer and from about 2 to about 70 weight percent, based on the mixture, of a multifunctional unsaturated crosslinking monomer, (ii) at least 90 weight percent, based on the emulsion, of water as the internal phase, (iii) an effective amount of a surfactant comprising at least one saccharide fatty acid ester to produce the water-in-oil emulsion, and (iv) an effective amount of at least one polymerization initiator to polymerize and crosslink the polymerizable monomers; and
(b) heating the water-in-oil emulsion under conditions effective to polymerize and crosslink the polymerizable monomers, and
(c) removing at least a portion of the water in said crosslinked emulsion.

5,340,843

FLUORORESIN FOAM

Makoto Tsuruta, Tokorozawa, and Ken Oda, Kamihukuoka, both of Japan, assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Feb. 22, 1993, Ser. No. 26,133
Int. Cl.[5] C08J *9/14*
U.S. Cl. 521—79 4 Claims

1. A close-cell foam of a thermoplastic fluoropolymer prepared from a thermoplastic fluoro polymer resin and a foaming agent is selected from the class consisting of perfluorotripenylamine and perfluoropolyether in which the melting point of the resin is higher than the boiling point of the foaming agent and the two are within 150° C. of each other.

5,340,844

POLYSTYRENE FOAM AND A PROCESS FOR MAKING THE SAME

Gary C. Welsh, Midland, Mich.; Eric K. C. Lee, Waterloo, Canada, and Brian D. Dalke, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 24, 1992, Ser. No. 873,419
Int. Cl.[5] C08J *9/00*
U.S. Cl. 521—82 45 Claims



1. A thermoplastic foam comprising:
(a) a styrenic polymer;
(b) a blowing agent consisting essentially of carbon dioxide; and
(c) an endothermic agent present in an amount from about one percent to about thirty percent by total weight of the carbon dioxide and the endothermic agent; and
(d) a nucleating agent in an amount of about 0.005 to about 1.0 weight percent based on styrenic polymer weight;
wherein any blowing agent consists essentially of carbon dioxide, and wherein the thermoplastic foam has less corrugation than a thermoplastic foam produced under equivalent process conditions without the endothermic agent.

5,340,845

PROCESS FOR PREPARING LOW-DENSITY FLEXIBLE POLYURETHANE FOAMS, AND THE POLYURETHANE FOAMS OBTAINED

Dario Stefani, Padova; Felix O. Sam, Venezia, and Gianflavio Lunardon, Padova, all of Italy, assignors to Enichem, S.p.A., Milan, Italy

Filed Jul. 21, 1993, Ser. No. 95,723
Claims priority, application Italy, Jul. 23, 1992, MI.92-A/001782
Int. Cl.[5] C08G *18/28;* C08J *9/08*
U.S. Cl. 521—130 9 Claims

1. A process for preparing flexible polyurethane foams having a density less than 21 kg/m3 in the presence of an expanding agent other than a chlorofluoroalkane type expanding agent, which comprises the step of reacting a) an organic polyisocyanate with b) a polyol composition consisting essentially of i) at least one polyol having an equivalent weight of between 50 and 2000 and a nominal functionality of at least 2, ii) water in a quantity equal to or greater than 3 parts by weight per 100 parts of the polyol, and iii) dimethyl carbonate (DMC), as one of the expanding agents, with the DMC water weight ratio being between 0.2 and 3.

5,340,846

INCREASED THROUGHPUT IN MELT FABRICATION AND FOAMING OF POLYESTER

George E. Rotter, Clarendon Hills; John L. Melquist; Weilong Chiang, both of Naperville; Bob C. Tsai, Inverness, and John J. Kelly, Warrenville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 10,767, Jan. 29, 1993, Pat. No. 5,288,764. This application Dec. 17, 1993, Ser. No. 169,594
Int. Cl.[5] C08J *9/00*
U.S. Cl. 521—182 21 Claims

1. An article comprising foamed polyester resin, said polyes-

VOL 1165 ISS 4 AG 23 1994 UMI

ter resin comprising at least one member selected from the group consisting of polyalkylene terephthalate and polyalkylene naphthalate, said article further comprising a branching compound selected from compounds having two or more acid anhydride groups per molecule, said branching compound being present in the article in the form of (i) a reaction product of said branching compound and said polyester resin and (ii) unreacted branching compound; and wherein the ratio of the amount of reacted+unreacted branching compound to the amount of unreacted branching compound, is greater than about

20:1 when the amount of reacted + unreacted branching compound in the article is greater than about 5000 ppm based on the weight of the article; or

40:1 when the amount of reacted + unreacted branching compound in the article is less than about 5000 ppm.

5,340,847

CURABLE SILICON COMPOSITION

Yasuo Hanazuka, Hachioji; Ikuzo Usami, Tsukui; Kazuyuki Chiba, Kanagawa, and Noriko Mizutani, Hachioji, all of Japan, assignors to Three Bond Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 964,717, Oct. 22, 1992, abandoned. This application Jul. 23, 1993, Ser. No. 97,368

Claims priority, application Japan, Oct. 23, 1991, 3-337494

Int. Cl.[5] C08F *2/46*

U.S. Cl. 522—11 **5 Claims**

1. A silicone composition which is both ultraviolet-curable and moisture-curable, comprising:

(a) 5% to 50% by weight of a polysiloxane containing, on at least one molecular end, a radical selected from the group consisting of (meth)acryl, glycidyl and propenyloxysilyl;

(b) a polyorganosiloxane having silanol groups at both molecular ends;

(c) a polyorganosiloxane containing, on at least one molecular end, a hydrolyzable group having the structural formula $-SiR_aX_{3-a}$ and the repeating unit having the structural formula



where R^2 are the same or different and are alkyl or aryl; R is alkyl, halogen-substituted alkyl or halogen-substituted aryl; X is a hydrolyzable group selected from the group consisting of acyloxy, alkoxy, ketoxime, amino, amido and alkenyl; and a is 0 or 1;

(d) a photopolymerization catalyst which is a radical-forming photopolymerization catalyst when component (a) is a polysiloxane having a (meth)acryl group at at least one molecular end or an onium salt photopolymerization catalyst when component (a) is a polysiloxane having a glycidyl or a propenyloxysilyl group at at least one molecular end; and

(e) a condensation catalyst selected from the group consisting of metallic salts of organocarboxylic acids, organic titanic acid esters organotitanium compounds, alkoxyaluminum compounds, aminoalkyl substituted alkoxysilanes, salts of amine compounds, lower fatty acids salts of alkali metals, dialkylhydroxylamines, guanidyl group-containing silanes and guanidyl group-containing siloxanes.

5,340,848

RADIATION-RESISTANT POLYPROPYLENE RESIN COMPOSITION

Tadashi Asanuma; Shigeru Kimura; Nobutaka Uchikawa, all of Takaishi, and Tetsunosuke Shiomura, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 617,154, Nov. 23, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 74,161

Claims priority, application Japan, Dec. 6, 1989, 1-315141; Feb. 19, 1990, 2-36178

Int. Cl.[5] C08J *3/28*

U.S. Cl. 522—157 **13 Claims**

1. A method for sterilizing molded articles of a polypropylene with radiation which comprises the steps of molding a resin composition comprising a propylene homopolymer having a syndiotactic pentad fraction of 0.7 or more, or a copolymer of propylene and another α-olefin having 2 to 25 carbon atoms in which in the absorption spectrum of ^{13}C-NMR measured in a 1,2,4-trichlorobenzene solution, a peak intensity at about 20.2 ppm on the basis of tetramethylsilane occupies 0.5 or more of the total intensity of peaks attributed to methyl groups of propylene units, and then irradiating the thus molded articles with said radiation so as to sterilize the molded articles.

5,340,849

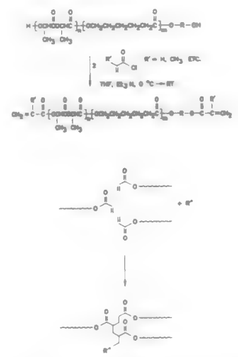
BIODEGRADABLE IN-SITU FORMING IMPLANTS AND METHODS FOR PRODUCING THE SAME

Richard L. Dunn, Fort Collins, Colo.; James P. English, Birmingham, Ala.; Donald R. Cowsar, Birmingham, Ala., and David D. Vanderbilt, Birmingham, Ala., assignors to Atrix Laboratories, Inc., Fort Collins, Colo.

Division of Ser. No. 513,782, Apr. 24, 1990, which is a division of Ser. No. 252,645, Oct. 3, 1988, Pat. No. 4,938,763. This application Dec. 23, 1991, Ser. No. 788,032

Int. Cl.[5] C08L *67/00, 69/00, 77/00;* **A61F** *2/00*

U.S. Cl. 523—113 **16 Claims**



1. A method of forming a solid implant in-situ within a living body, comprising the steps of:

a) mixing together effective amounts of a liquid acrylic-ester-terminated, biodegradable prepolymer of terminal acryloyl groups and a residue of an oligomer having terminal functional groups which react with acryloyl acylating groups and a curing agent to form a mixture in a liquid form; and

b) delivering said mixture within said body while said mixture is in a liquid form so as to allow said prepolymer to cure to form said solid implant.

5,340,850

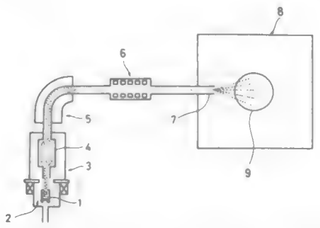
COMPOSITE RESIN FOR USE IN DENTISTRY AND METHOD FOR TREATING SAME TO PROVIDE ANTIMICROBIAL AND MICROBICIDAL PROPERTIES

Yoshiyuki Shimasue, Osaka, Japan, assignor to Elsol Products Corporation, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,370

Int. Cl.[5] A61F *2/00;* **B05D** *3/06*

U.S. Cl. 523—115 **4 Claims**



1. A composite resin for use in dentistry, comprising a synthetic resin; an inorganic filler; and ions having antimicrobial and microbicidal properties implanted into at lest one of said synthetic resin and said inorganic filler.

5,340,851

THERMOSETTING RESIN COMPOSITIONS

Toshio Shiobara; Hisashi Shimizu, both of Annaka, and Minoru Takei, Gunma, all of Japan, assignors to Shin-Etsu Chemical Company, Ltd., Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 17,290

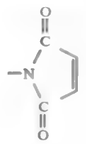
Claims priority, application Japan, Feb. 13, 1992, 4-59309

Int. Cl.[5] C08G *59/40;* **C08L** *63/00*

U.S. Cl. 523—443 **27 Claims**

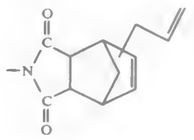
1. A thermosetting resin composition comprising

(A) a mixture of an imide compound having an allyl-free maleimide group of the general formula [I]:



[I]

and another imide compound having an allyl-containing imide group of the general formula [I']:



[I']

(B) a resin containing at least two epoxy groups in a molecule, and

(C) a phenolic resin,

wherein at least one of components (B) and

(C) contains a compound bearing a naphthalene ring having a double bond conjugated with an aromatic group.

5,340,852

POLYISOCYANATE COMPOSITION

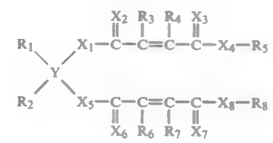
Wolfgang Pille-Wolf, Sint-Agatha-Rode; Jan W. Leenslag, Tremelo; Berend Eling, Bertem, and Dirk G. C. Ingelaere, Poperinge, all of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Filed Sep. 9, 1993, Ser. No. 119,266

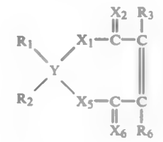
Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—14 **13 Claims**

1. Composition comprising an organic polyisocyanate and at least one compound corresponding to the following general formula (I) or (II)



(I)



(II)

wherein

Y represents Zn, Ni, Co, Cd, Pb, Sn or Cu;

X_1, X_2, X_3, X_4, X_5, X_6, X_7 and X_8 each independently represents O or S;

R_1 and R_2 each independently represents a saturated aliphatic hydrocarbon radical having 1 to 20 carbon atoms or an aromatic ring with the proviso that R_1 and R_2 are only existing if Y is Sn(IV);

R_3, R_4, R_6 and R_7 each independently represents hydrogen or a saturated aliphatic hydrocarbon radical having 1 to 20 carbon atoms;

R_5 and R_8 each independently represents a saturated aliphatic hydrocarbon radical;

with the proviso that said composition excludes a polyisocyanate composition comprising dibutyl tin maleate and ammonium salts of the type obtainable by reacting primary, secondary and/or tertiary amines with alkyl esters of acids of phosphorus exerting alkylating properties against the amines.

5,340,853

POLYMER-BASED SWELLING AND ABSORBING AGENTS WITH AN IMPROVED DEGRADABILITY AND AN IMPROVED ABSORPTION FOR WATER, AQUEOUS SOLUTIONS AND BODY LIQUIDS AND THE USE OF SAID AGENTS FOR THE PRODUCTION OF HYGIENIC ARTICLES AND FOR SOIL CONDITIONING

Miroslav Chmelir, and Helmut Klimmek, both of Krefled, Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany

Filed Sep. 17, 1991, Ser. No. 761,075

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1990, 4029592

Int. Cl.[5] C08K *5/15;* **C08G** *63/48, 63/91;* **C08L** *5/00*

U.S. Cl. 524—56 **10 Claims**

1. An absorbing and swelling agent for water, aqueous solutions and body liquids consisting of a physical mixture of at least two components, wherein component A is a water-swellable, synthetic polymer or copolymer crosslinked with a multifunctional compound, and component B is a polysaccharide selected from the group consisting of (i) the galactomannans, (ii) the polygalactomannans, and (iii) admixtures of a galactomannan or polygalactomannan with other natural or

VOL 1165 ISS 4 AG 23 1994 UMI

synthetic polymers selected from the group consisting of cellulose, alkyl cellulose, hydroxyalkyl cellulose, carboxmethyl cellulose, viscose, tragacanth gum, gum arabic, pectin, dextran, starch, amylose, amylopectin, dextrin, modified starch, hydroxyethyl starch, cationic starch, a starch graft polymer, cotton, wool, silk, cellulose acetate, cellulose triacetate, polyester, polyolefin, polyacrylonitrile, polyamide, polyvinyl alcohol, polyvinyl acetate, polyvinyl chloride, polyurethane, polyvinyl urea and copolymers thereof, which mixture of A and B is present as a pourable powder or fibrous material and is partially soluble or insoluble in water.

5,340,854

POLYOLEFIN COMPOSITION CONTAINING OPTICAL BRIGHTENERS HAVING REDUCED MIGRATION

Peter A. Martic, and Todd R. Skochdopole, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 774,955, Oct. 11, 1991, Pat. No. 5,198,330. This application Jan. 14, 1993, Ser. No. 6,293

Int. Cl.[5] C08J *5/00;* **C08B** *37/16*

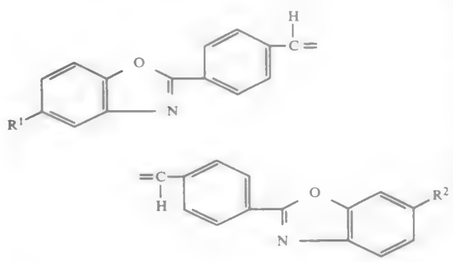
U.S. Cl. 524—94 **4 Claims**

1. A composition of matter comprising an inclusion compound of an optical brightener and a cyclodextrin selected from the class consisting of unsubstituted a, b, and g, cyclodextrin and a, b, and g, cyclodextrin having a substituent bonded to an oxygen atom in a glucose unit in said cyclodextrin, said substituent being selected from the class consisting of:

a) alkyl radicals having 1 to 6 carbon atoms,

b) radicals having the formula —(—CH—CH—R^1—O—)$_n$—H wherein R^1 is selected from hydrogen and alkyl radicals having up to about six carbon atoms, and n is equal to a small whole number up to six, and

c) radicals having the formula —CHR^1—CHOH—CHR^1— wherein R^1 has the same definition as above, such that said radicals bridge two cyclodextrin rings, and the number of said rings so bridged per molecule is from two to about six; said substituted cyclodextrin having not more than two substituents per glucose unit; said optical brightener having the formula



wherein R^1 and R^2 are independently selected from hydrogen and alkyl radicals having up to about six carbon atoms.

5,340,855

N-METHYLATED BIS-4-PIPERIDYLPHOSPHITE

Hans R. Meier, Marly, and Peter Hofmann, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 928,246, Aug. 10, 1992, Pat. No. 5,239,076. This application May 17, 1993, Ser. No. 63,999

Claims priority, application Switzerland, Aug. 13, 1991, 2393/91

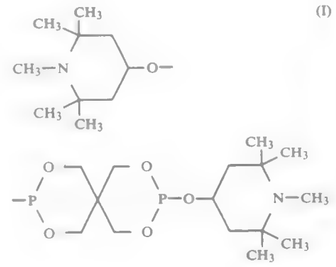
Int. Cl.[5] C08K *5/3435, 5/15*

U.S. Cl. 524—102 **10 Claims**

1. A stabilized composition which comprises

(a) an organic material which is susceptible to oxidative, thermal or light-induced degradation, and

(b) an effective stabilizing amount of the compound of formula I



(I)

5,340,856

CURABLE VINYL ESTER COMPRISING MONOMER CERESIN WAX AND DRYING OIL AND EPOXIDIZED DRYING OIL AS SECONDARY ADHESION PROMOTERS AND A CURING AGENT

Terry W. Cowley, and Mary L. N. White, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 996,545, Dec. 24, 1992, Pat. No. 5,286,554, which is a division of Ser. No. 797,640, Nov. 25, 1991, Pat. No. 5,206,077. This application Sep. 14, 1993, Ser. No. 121,399

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—109 **4 Claims**

1. A curable composition comprising (A) at least one vinyl ester resin or at least one unsaturated polyester resin or a combination thereof; (B) at least one polymerizable, vaporizable, ethylenically unsaturated monomer; (C) a polymerizable, vaporizable, ethylenically unsaturated monomer emission suppression amount of ceresin wax; (D) a drying oil in an amount of from about 0.1 to about 0.7 percent by weight based upon the combined weight of resin and polymerizable, vaporizable, ethylenically unsaturated monomer; (E) an epoxidized drying oil in an amount of from about 0.2 to about 0.7 percent by weight based upon the combined weight of resin and polymerizable, vaporizable, ethylenically unsaturated monomer; and (F) *a* curing amount of a curing agent.

5,340,857

PHOTOCHROMIC NAPHTHOPYRANS

Barry Van Gemert, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

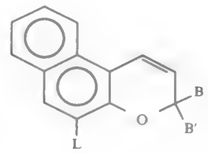
Division of Ser. No. 624,816, Dec. 3, 1990, Pat. No. 5,244,602. This application Jul. 14, 1993, Ser. No. 92,404

The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—110 **13 Claims**

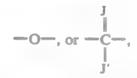
1. A photochromic article selected from the group consisting of face shields, goggles and visors, comprising a polymerized organic host material and a photochromic amount of a naphthopyran compound represented by the following graphic formula:



wherein,

I. L is the group, —W—T(Z)═Xg, wherein:

(a) W is the bivalent radical,



said J and J′ each being selected from the group consisting of C_1–C_4 alkyl, or J and J′ taken together is a single oxygen,

(b) T is carbon,

(c) X is selected from the group consisting of oxygen, and —N—J″, said J″ being selected from the group hydrogen, C_1–C_4 alkyl, or J″ may combine with Z to form a pyridyl group,

(d) Z is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 monohaloalkyl, amino, C_1–C_4 mono- or di-alkylamino, and unsubstituted or substituted phenyl, said phenyl substituents being selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 monohaloalkyl, C_1–C_4 polyhaloalkyl, C_1–C_4 alkoxy(C_1–C_4)alkyl, C_1–C_4 alkoxy and halogen, said halogen (or halo group) being fluorine or chlorine, and

(e) g is the integer 1, and

II. B and B′ are each selected from the group consisting of:

(a) the unsubstituted or substituted aryl groups phenyl and naphthyl,

(b) the unsubstituted or substituted heterocyclic groups pyridyl, thienyl, furyl, piperidinyl and furfuryl,

(c) C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy(C_1–C_4)alkyl, C_3–C_6 cycloalkyl, C_1–C_4 alkoxy(C_3–C_6) cycloalkyl, and halo C_3–C_6 cycloalkyl, said halo group being fluorine or chlorine, and

(d) B and B′ may combine and taken together form the group, adamantylidene, the aryl group substituents being selected from C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 alkoxy(C_1–C_4)alkyl and halogen, the heterocyclic group substituents being selected from C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 alkoxy(C_1–C_4)alkyl and halogen, said halogen (or halo group) being fluorine or chlorine.

5,340,858

AQUEOUS POLYMER DISPERSIONS

Gerhard Bauer, Weinheim; Oral Aydin, Mannheim, and Josef Neutzner, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 22, 1993, Ser. No. 51,167

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1992, 4213964

Int. Cl.[5] C08L *9/08*

U.S. Cl. 524—162 **13 Claims**

1. A process for preparing final aqueous polymer dispersions, which comprises polymerizing a mixture of radical polymerizable monomers comprising

A) from 60 to 100% by weight of at least one monomer from the group consisting of aromatic vinyl compounds having up to 20 carbon atoms, olefins of from 2 to 8 carbon atoms, vinyl and vinylidene halides, vinyl esters of monocarboxylic acids of from 1 to 20 carbon atoms, esters of α,β-monoethylenically unsaturated mono- and dicarboxylic acids of from 3 to 6 carbon atoms with alkanols of from 1 to 20 carbon atoms, and monoethylenically unsaturated nitriles of from 3 to 6 carbon atoms, and

B) from 0 to 40% by weight of other radical copolymerizable monomers other than conjugated hydrocarbons,

with the addition of at least one aqueous dispersion of a starting polymer in a polymerization vessel by the method of free radical aqueous emulsion polymerization in the presence of surface active substances and free radical polymerization initiators with the proviso that

a) the starting polymer is present in the at least one aqueous dispersion in the form of dispersed starting polymer particles whose weight average particle diameter is from 10 to 100 nm,

b) the total amount of starting polymer added in the forth of the at least one aqueous dispersion of a starting polymer is from 0.01 to 10% by weight, based on the total amount of final polymer,

c) of the total amount of the at least one aqueous dispersion of a starting polymer to be added the amount introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization is such that the total amount of starting polymer introduced as initial charge is at least 5% by weight of the total amount of starting polymer to be added in the form of the at least one aqueous dispersion,

d) of the total amount of the at least one monomer to be polymerized the amount introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization is either nil or at most 15% by weight of the total amount,

e) after the start of the free radical aqueous emulsion polymerization the proportion added to the polymerization vessel of the at least one aqueous dispersion of a starting polymer to be added is at most such that the amount of starting polymer contained in this added part comprises not more than 95% by weight of the total amount of starting polymer to be added,

f) after the start of the free radical aqueous emulsion polymerization at least 85% by weight of the total amount of the at least one monomer to be polymerized is added to the polymerization vessel, in such a way that at any time of this addition the polymerization conversion of the monomers already added previously to the polymerization vessel including the monomers introduced into the polymerization vessel as initial charge is at least 80%, based on the total amount formed from the monomers added previously to the polymerization vessel and from the monomers introduced into the polymerization vessel as initial charge,

g) at any tithe after the start of the free radical aqueous emulsion polymerization the ratio V of the mass already added previously to the polymerization vessel of the at least one starting polymer including the proportion of the at least one starting polymer introduced into the polymerization vessel as initial charge to the mass of the amount of the at least one monomer already added previously to the polymerization vessel including the proportion of the at least one monomer introduced into the polymerization vessel as initial charge, standardized for the ratio of the mass of the total amount of the at least one starting polymer to be added to the mass of the total amount of the at least one monomer to be polymerized, is not less than 0.3,

h) after the end of the addition of the at least one monomer no further addition takes place of the at least one aqueous dispersion of a starting polymer,

i) the final aqueous polymer dispersion contains from 1 to 8% of surface active substances, based on the total mass formed from the mass of the at least one radical polymerizable monomer and from the mass of starting polymer to be added in the forth of the at least one aqueous dispersion,

j) at any time after the start of the free radical aqueous

VOL 1165 ISS 4 AG 23 1994 UMI

emulsion polymerization the mass of the amount of surface active substances present in the polymerization vessel relative to the mass of the total amount of monomers and polymer present in the polymerization vessel is at least 1%, and

k) the total amount used of free radical polymerization initiators is from 0.1 to 5% by weight, based on the total amount of the at least one monomer to be polymerized, and is added to the polymerization vessel in the course of the free radical aqueous emulsion polymerization in such a way that the free radical aqueous emulsion polymerization continues to a minimum polymerization conversion of at least 90% of the total amount of the at least one monomer to be polymerized.

5,340,859

AQUEOUS POLYMER DISPERSION

Oral Aydin, Mannheim; Michael Portugall, Wachenheim; Josef Neutzner, Neustadt, and Walter Maechtle, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 26, 1993, Ser. No. 51,654

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1992, 4213968

Int. Cl.[5] C08L *9/08*

U.S. Cl. 524—162 **8 Claims**

1. A process for preparing a final aqueous polymer dispersion as having a solid volume concentration of at least 50% by volume, which comprises polymerizing at least one radical polymerizable monomer with the addition of at least one aqueous starting dispersion I of a starting polymer I and with the addition of at least one aqueous starting dispersion II of a starting polymer II in a polymerization vessel by the method of free radical aqueous emulsion polymerization in the presence of surface active substances and free radical polymerization initiators with the proviso that

a) the starting polymer I is present in the at least one aqueous starting dispersion I in the form of dispersed starting polymer particles of whose total mass at least 1% by weight has a non-zero particle diameter $\leqq$ 50 nm and at least 65% by weight has a particle diameter $\geqq$ 300 nm,

b) the mass of the at least one starting polymer I added relative to the total mass formed of the mass of the at least one radical polymerizable monomer and of the masses of starting polymers I, II added in the form of aqueous starting dispersions I, II is from 2 to 60% by weight,

c) the mass of the at least one starting polymer II added relative to the total mass formed of the mass of the at least one radical polymerizable monomer and of the mass of starting polymers I, II added in the form of aqueous starting dispersions I, II is at most 15% by weight,

d) of the total amount of the at least one aqueous starting dispersion I to be added the amount introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization is nil,

e) the total amount of the at least one aqueous starting dispersion II to be added is introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization,

f) of the total amount of the at least one monomer to be polymerized the proportion introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization is nil,

g) the total amount of the at least one monomer to be polymerized is added to the polymerization vessel from the start of the free radical aqueous emulsion polymerization in such a way that at any time of this addition the polymerization conversion of the total monomers alreay added previously to the polymerization vessel is at least 80 mol %,

h) at any time after the start of the free radical aqueous emulsion polymerization the ratio V of the number of moles of the particles of starting polymer I already added previously to the polymerization vessel in the forth of the at least one aqueous starting dispersion I to the number of moles of the amount already added previously to the polymerization vessel of the at least one monomer to be radical polymerized, standardized for the ratio of the number of moles of the total starting polymer particles to be added in the form of the at least one aqueous starting dispersion I to the number of moles of the total amount of monomers to be radical polymerized, is within the range from >0 to 10,

i) on completion of the addition of the total amount to be added of the at least one aqueous starting dispersion I additionally at most 20 mol % of the total amount of the at least one monomer to be radical polymerized is added to the polymerization vessel,

j) the at least one aqueous starting dispersion I to be added contains at least 1–6% by weight, based on its starting polymer I content, of surface active substances,

k) the at least one aqueous starting dispersion II to be added contains at least 1–6% by weight, based on its starting polymer II content, of surface active substances,

l) the final aqueous polymer dispersion contains from 1 to 6% by weight of the surface active substances, based on the total mass formed of the mass of the at least one radical polymerizable monomer and of the masses of starting polymers I, II to be added in the form of aqueous starting dispersions I, II,

m) the amount of surface active substances contained in the polymerization vessel at any time from the start of the free radical aqueous emulsion polymerization minus the minimum amounts mentioned under j), k) of surface active substances introduced into the polymerization vessel is less than 5% by weight and based on the monomers already added previously to the polymerization vessel, and

n) the total amount used of free radical polymerization initiators is from 0.1 to 5% by weight, based on the total amount of the at least one monomer to be radical polymerized, and is added to the polymerization vessel in the course of the free radical aqueous emulsion polymerization in such a way that the free radical aqueous emulsion polymerization continues to a minimum polymerization conversion of the total amount of the at least one monomer to be polymerized of at least 90 mol %.

5,340,860

LOW FLUID LOSS CEMENT COMPOSITIONS, FLUID LOSS REDUCING ADDITIVES AND METHODS

Bobby G. Brake, and Jiten Chatterji, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 30, 1992, Ser. No. 968,963

Int. Cl.[5] C08K *5/42, 7/00;* **C09K** *3/00*

U.S. Cl. 524—166 **20 Claims**

1. A liquid fluid loss reducing additive for use in well cementing compositions consisting essentially of:

water;

polyethylene imine present in said additive in an amount in the range of from about 50% to about 55% by weight of said additive;

an alkali metal salt of alkylbenzene sulfonic acid present in said additive in an amount in the range of from about 3% to about 4% by weight of said additive; and

an alkali metal salt of naphthalene sulfonic acid condensed with formaldehyde present in said additive in an amount in the range of from about 3% to about 4% by weight of said additive.

5,340,861

POLYPHENYLENE SULFIDE COMPOSITION WITH IMPROVED CRYSTALLIZING CHARACTERISTIC

Chi-Hwang Chen, Hsinchu; Chih-Cheng Chiang, Chung-Li Taoyuan; Bin-Yuan Lin, and Rong-Hwa Chang, both of Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

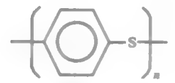
Filed May 3, 1993, Ser. No. 56,411

Int. Cl.[5] C08K *5/42*

U.S. Cl. 524—166 **18 Claims**

1. A rapidly crystallizing polyphenylene sulfide composition or composite prepared therefrom, comprising:

(a) a polyphenylene sulfide represented by the following formula:



(b) an organometallic compound represented by the following formula:

$$R'—O—M—(Q—R'')_3$$

wherein:

M is either titanium or zirconium;

R′ is a substituted or un-substituted alkyl group having a carbon number of 1 to 30;

Q is an SO_3 group; and

R″ is an alkyl group having a carbon number of 1 to 25, or an aryl-alkyl group represented by the following formula:



wherein R is an alkyl group having a carbon number of 1 to 25.

5,340,862

STABILIZERS FOR HALOGEN CONTAINING POLYMERS

Joseph Silbermann, Old Bridge, and William L. Smith, Basking Ridge, both of N.J., assignors to Elf Atochem North America, Inc., Pa.

Continuation of Ser. No. 681,615, Mar. 28, 1991, abandoned, which is a continuation of Ser. No. 528,262, May 24, 1990, abandoned, which is a continuation of Ser. No. 398,293, Aug. 23, 1989, abandoned, which is a continuation of Ser. No. 256,003, Oct. 7, 1988, abandoned. This application Feb. 10, 1993, Ser. No. 19,322

Int. Cl.[5] C08K *5/57*

U.S. Cl. 524—178 **35 Claims**

1. A stabilized thermoplastic resin composition for injection molding and extrusion processes, characterized in that the resin comprises 0 to 100% recycled poly(vinyl chloride) resin exhibiting improved time and temperature processing latitude as well as long term stability via a synergistic combination of:

(a) an organotin stabilizer, and

(b) 0.1 to 20 parts per 100 parts by weight resin of a free flowing powder of an alkali metal hydrogen phosphate or pyrophosphate salt with a B.E.T. measured surface area of at least 0.5 m^2 g.

5,340,863

HOT METAL ADHESIVE COMPOSITIONS COMPRISING LOW MOLECULAR WEIGHT ETHYLENE COPOLYMERS

Lawrence Krutzel, Morristown, N.J., assignor to AlliedSignal, Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 850,647, Mar. 13, 1992, abandoned. This application Oct. 4, 1993, Ser. No. 131,921

Int. Cl.[5] C08L *93/04, 91/06*

U.S. Cl. 524—272 **30 Claims**

1. A hot melt adhesive composition, which comprises:

a base polymer constituent having a melt index of 0.2 to 3000 g/10 min as measured by ASTM D- 1238,

a tackifying constituent,

optionally a wax constituent, and

a low molecular weight constituent having a melt index of greater than 3000 g/10 min as measured by ASTM D-1238, said low molecular weight constituent being selected from the group consisting of:

(a) random ethylene/carbon monoxide copolymers,

(b) random ethylene/vinyl alcohol copolymers consisting of less than about 10 mol% vinyl alcohol, and

(c) random ethylene/vinyl alcohol/vinyl acetate terpolymers consisting of less than about 10 mol% vinyl alcohol;

(d) random polymers of (a), (b), and (c) with additional recurring monomeric units derived from monomers selected from the group consisting of alkyl acrylates, acrylic acid, methacrylic acid, maleic anhydride, and vinyl acetate, and

(e) at least partially oxidized said (a), (b), (c), and (d),

wherein said low molecular weight constituent is present in an amount sufficient to provide greater T-Peel adhesion to a substrate, measured according to ASTM D-1876, than a comparative composition in which said low molecular weight constituent is not present.

5,340,864

FLUORORUBBER-CONTAINING POWDER COATING COMPOSITION

Nobuyuki Tomihashi; Masafumi Akamatsu, both of Osaka, and Yutaka Ueta, Kawanishi, all of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Continuation of Ser. No. 701,344, May 9, 1991, abandoned, which is a continuation of Ser. No. 481,184, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 273,983, Nov. 21, 1988, abandoned. This application May 25, 1993, Ser. No. 66,933

Claims priority, application Japan, Nov. 26, 1987, 62-298524

Int. Cl.[5] C08L *27/12*

U.S. Cl. 524—297 **13 Claims**

1. A fluororubber-containing powdery composition, which is prepared by freeze pulverization, comprising 0.05 to 10% by weight based on the weight of the fluororubber of at least one adhesion-preventing material selected from the group consisting of a plasticizer, a bulk filler, a coloring agent and an acid acceptor and optionally a cross-linking agent, which composition has a particle size of 10 to 2,000 μm and an apparent density of at least 0.2 g/cc and an angle of repose of 20° to 60° C., wherein said fluororubber is selected from the group consisting of vinylidene fluoride/hexafluoropyropylene copolymers, vinylidene fluoride/tetrafluoroethylene/hexafluoropropylene copolymers, vinylidene fluoride/chlorotrifluoroethylene copolymers, hexafluoropropylene/ethylene copolymers, perfluoro(alkyl vinyl ether)/olefin copolymers, and fluorosilicone polymers.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,865

CROSS-LINKED CATIONIC POLYERMIC MICROPARTICLES

Roger E. Neff, Stamford, and Roderick G. Ryles, Milford, both of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Continuation of Ser. No. 883,996, May 18, 1992, abandoned, which is a continuation of Ser. No. 286,015, Dec. 19, 1988, abandoned. This application Jun. 7, 1993, Ser. No. 71,821
Int. Cl.[5] C08F *2/32*
U.S. Cl. 524—317 5 Claims

1. A flocculant comprising a water-in-oil emulsion comprising an oil phase and an aqueous phase wherein the oil phase consists of 1) fuel oil, kerosene, odorless mineral spirits or mixtures thereof and 2) one more surfactants at an overall HLB ranging from about 8 to 11 and the aqueous phase is in the form of micelles and contains a cross-linked, cationic, polymer produced from about 40 to about 99 parts, by weight, of acrylamide and about 1 to about 60 parts, by weight, of a cationic monomer selected from N,N-dialkylaminoalkylacrylates and methacrylates and their quaternary or acid salts; N,N-dialkylaminoalkylacrylamides and methacrylamides and their quaternary or acid salts and diallyldimethylammonium salts, said micelles having a diameter of less than about 0.1 micron, and said polymer having a solution viscosity of from about 1.2 to about 1.8 mPa.s and a content of N,N-methylenebisacrylamide of from about 10 molar parts to about 1000 molar parts per million, based on the monomeric units present in the polymer.

5,340,866

HEAT STABLE FLUOROSILICONE RUBBER COMPOSITIONS

Edwin R. Evans, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 721,024, Jun. 29, 1991, abandoned. This application Jun. 21, 1993, Ser. No. 80,997
Int. Cl.[5] C08K *3/10*
U.S. Cl. 524—403 15 Claims

1. A heat-curable fluorosilicone composition comprising by weight:

(1) a composition prepared by reacting at a temperature in the range of from about 25° C. to about 180° C.:

(A) from about 94 to about 98 parts of an alkenyl-terminated and silanol-terminated diorganopolysiloxane copolymer having a viscosity of from about 1,000,000 to about 300,000,000 centipoise at 25° C., comprising units of the formulae RR^1SiO and $R^2{}_2SiO$, wherein R is a fluoroalkyl radical, and R^1 and R^2 are each monovalent hydrocarbon radicals, the RR^1SiO units being present in an amount sufficient to provide a silicon-bonded fluorine content of from about 36 to about 37 weight percent, the ratio of vinyl endgroups to silanol endgroups being from about 65:35 to about 75:25, the alkenyl-on-chain content of the copolymer being from 0% to about 0.6%; the total silicon-bonded alkenyl content of the copolymer being from 0.014 to about 0.020% by weight;

(B) from about 2.0 to about 6.0 parts of an alkenyl-terminated and silanol-terminated diorganopolysiloxane copolymer having a viscosity of from about 1,000,000 to about 300,000,000 centipoise at 25° C., comprising units of the formulae RR^1SiO and $R^2{}_2SiO$, wherein R is a fluoroalkyl radical, and R^1 and R^2 are each monovalent hydrocarbon radicals, the RR^1SiO units being present in an amount sufficient to provide a silicon-bonded fluorine content of from about 35.5 to about 36.5 weight percent, the ratio of vinyl endgroups to silanol endgroups being from about 65:35 to about 75:25, the alkenyl-on-chain content of the copolymer being from 1.4% to about 1.6% by weight; the total silicon-bonded alkenyl content of the copolymer being from about 1.45 to about 1.65% by weight; the sum of (A) and (B) being 100 parts; and

(C) from about 1 to about 10 parts of red iron oxide, wherein the red iron oxide has a purity of at least 96% with at least 90% by weight of the red iron oxide having an average particle size of less than about 1.2 micrometers; and

(D) from about 0.1 to about 3 parts of cerium hydroxide having an average particle size of from about 40 to about 57 micrometers, the temperature of the composition comprising (A), (B), and (C) being maintained at less than 80° C. when the cerium hydroxide (D) is contacted therewith; and

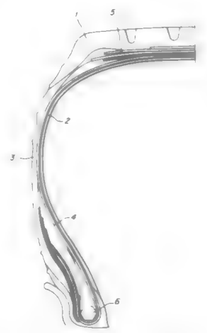
(2) a catalytic amount of an organic peroxide catalyst.

5,340,867

FLAME-RETARDANT RUBBER COMPOSITIONS

Kazuo Yagawa; Takatsugu Hashimoto; Junichi Yamagishi; Kazuo Hachiya, and Satoshi Takezawa, all of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 4, 1992, Ser. No. 971,472
Claims priority, application Japan, Nov. 7, 1991, 3-318562; Feb. 19, 1992, 4-069773; Feb. 19, 1992, 4-069775
Int. Cl.[5] C08K *3/02, 3/22*
U.S. Cl. 524—80 11 Claims



1. A flame-retardant rubber composition having an oxygen index of 19.8–27.5 and comprising not more than 24% by weight of red phosphorus as a flame retardant based on the rubber composition and replacing a part of rubber ingredients constituting the rubber composition with at least one nitrile group-containing elastomer selected from the group consisting of an acrylonitrile-butadiene rubber and an acrylonitrile-styrene-butadiene terpolymer as a flame-retardant polymer component.

5,340,868

FIBROUS GLASS BINDERS

Carl R. Strauss, Newark, and Steven H. Williams, Alexandria, both of Ohio, assignors to Owens-Corning Fiberglass Technology Inc., Summit, Ill.

Filed Jun. 21, 1993, Ser. No. 79,411
Int. Cl.[5] C08K *5/10;* C08L *39/00*
U.S. Cl. 524—461 11 Claims

1. A fibrous glass binder, comprising an aqueous solution of:
A) a polycarboxy polymer;
B) a β-hydroxyalkylamide; and
C) at least trifunctional monomeric carboxylic acid.

5,340,869

COLORABLE BINDER COMPOSITION

Masao Isobe; Yoshio Aizawa, both of Yokohama; Kenichi Kogo, and Chuzo Yoshida, both of Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,349
Claims priority, application Japan, Apr. 28, 1992, 4-134361
Int. Cl.[5] C08K *5/01;* C08L *53/02, 31/04, 33/08*
U.S. Cl. 524—484 10 Claims

1. A colorable binder composition which comprises a petroleum resin, an aromatic heavy mineral oil, a thermoplastic elastomer, an ethylene copolymer, and at least one member selected from the group consisting of a low-molecular-weight polyethylene and low-molecular-weight polypropylene, the member having a number average molecular weight of 500 to 15,000.

5,340,870

FAST DRY WATERBORNE TRAFFIC MARKING PAINT

David D. Clinnin, Schaumburg, Ill.; William G. Heiber, Salem, Oreg., and Ronald J. Lewarchik, Sleepy Hollow, Ill., assignors to Morton International, Inc., Chicago, Ill.

Continuation of Ser. No. 899,191, Jun. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 725,153, Jun. 28, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 18,986
Int. Cl.[5] C08L *33/00*
U.S. Cl. 524—522 39 Claims

1. A method of marking a paved surface comprising applying to said surface a layer of an air-dry waterborne paint comprising

(1) between about 10 and about 15 wt. percent of an emulsion binder comprising between about 20 and about 40 wt % of a support polymer formed of monomers comprising styrene or substituted styrene or alkyl-substituted styrene and acrylic acid or alkyl-substituted acrylic acid, said support polymer having an acid number of between about 50 and about 250, and an emulsion polymer formed of monomers comprising esters of acrylic acid or alkyl-substituted acrylic acid, optionally styrene or alkyl substituted styrene and optionally an amount of acrylic acid or an alkyl-substituted acrylic acid sufficiently low so that said emulsion polymer is insoluble in alkaline aqueous solution, said support polymer and said emulsion polymer being in the form of micelles with said support polymer acting as a surfactant to maintain said emulsion polymer within said micelles,

(2) between about 60 and about 75 wt. percent pigments and/or fillers, plus surfactant sufficient to maintain said pigment and/or filler dispersed, and

(3) between about 9 and about 18 wt. percent water, plus sufficient ammonia to maintain an emulsion of said binder, said paint having an ASTM D-711 "no pick-up" time of 2 minutes or less at ambient temperatures.

5,340,871

AEROSOL COMPOSITIONS CONTAINING NON-AQUEOUS DISPERSIONS

Paul D. Pearson, Diamond; Madhukar Rao, Brecksville, and Richard F. Tomko, North Olmsted, all of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jan. 29, 1993, Ser. No. 11,034
Int. Cl.[5] B65D *83/20, 83/32;* C08L *67/04*
U.S. Cl. 523—526 13 Claims

1. A pressurized aerosol paint product comprising:
a) a container; said container comprising a can, a valve cup with valve assembly, a dip tube and an actuator;
b) a composition within said container; said composition comprising a non-aqueous dispersion of addition polymers in an alkyd medium; and
c) a propellant within said container.

5,340,872

SILICONE RUBBER COMPOSITIONS AND THEIR CURED PRODUCTS

Yoshio Inoue, and Masachika Yoshino, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,269
Claims priority, application Japan, May 22, 1992, 4-155810
Int. Cl.[5] C08G *77/26;* C08K *5/54*
U.S. Cl. 524—588 9 Claims

1. A silicone rubber composition which comprises

(A) 100 parts by weight of an organopolysiloxane which is expressed by the formula (2):



(2)

wherein n is an integer of at least 2000 and R^1, R^2, R^3, R^4 and R^5 are each a substituted or unsubstituted monovalent hydrocarbon group, each of which can be the same or different, wherein the vinyl group content in the R^1–R^5 groups is in the range of 0.02 to 5 mol % based on the average total mole numbers of R^1, R^2, R^3, R^4 and R^5;

(B) 3 to 50 parts by weight of a fine powdered silica whose specific surface area is at least 50 m^2/g; and

(C) a curing agent selected from an organic peroxide or an organohydrogenpolysiloxane, having at least two SiH groups in one molecule, with a platinum group metallic catalyst.

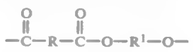
5,340,873

TOUGHENED CYANOACRYLATE ADHESIVE COMPOSITION CONTAINING POLYESTER POLYMERS

Mark Mitry, Flemington, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation of Ser. No. 749,354, Aug. 23, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 85,434
Int. Cl.[5] C08G *63/91*
U.S. Cl. 525—10 6 Claims

1. A cyanoacrylate adhesive composition having improved toughness and flexibility and consisting essentially of:
a) a cyanoacrylate monomer; and
b) an effective toughening amount of a saturated, hydroxy terminated polyester polymer derived from a dibasic aliphatic or aromatic carboxylic acid and a glycol and having repeating units of the structure:



where R is the organic residual of the dibasic carboxylic acid and R^1 is the organic residue of the glycol, the polyester having a weight average molecular weight of from about 30,000 to 60,000 and a Tg of from about −40° to 30° C.

5,340,874

MODIFIED POLYVINYL ALCOHOL AND A SOLID STATE PROCESS FOR MODIFICATION OF POLYVINYL ALCOHOL BY FREE RADICAL GRAFTING

Amir Famili, Orefield; Lori A. Vratsanos, Breinigsville, and Finn L. Marten, Emmaus, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 7, 1993, Ser. No. 88,991
Int. Cl.[5] C08L *29/02, 29/04*
U.S. Cl. 525—59 18 Claims

1. A method for modifying polyvinyl alcohol comprising:
(a) spraying a polyvinyl alcohol powder with an amount of

VOL 1165 ISS 4 AG 23 1994 UMI

a solvent containing a free radical polymerizable monomer such that the solvent swells the polyvinyl alcohol powder but does not form a slurry with the polyvinyl alcohol powder and does not dissolve the polyvinyl alcohol powder;

(b) allowing the sprayed polyvinyl alcohol powder to swell;

(c) spraying a free radical source onto the swollen polyvinyl alcohol powder; and

(d) raising the temperature of the swollen polyvinyl alcohol powder to initiate a reaction between the polyvinyl alcohol and the polymerizable monomer.

5,340,875

BLENDS OF POLYBUTYLENE TEREPHTHALATE RESINS AND METHACRYLIC ACID-CONTAINING STYRENIC COPOLYMERS

Lau Shau Yang, Wilmington, Del., and Russell J. McCready, Pottsville, Pa., assignors to Arco Chemical Technology, Greenville, Del.

Continuation of Ser. No. 745,590, Aug. 15, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 19,407

Int. Cl.[5] C08L *25/12, 55/02, 67/02*

U.S. Cl. 525—64 **15 Claims**

1. A thermoplastic molding composition consisting essentially of

a) from 40 to 60 weight percent of a styrenic copolymer, wherein said styrenic copolymer consists essentially of from 60 to 95 weight percent of styrene and from 5 to 40 weight percent of methacrylic acid; and

b) from 40 to 60 weight percent of a polybutylene terephthalate resin.

5,340,876

THERMOPLASTIC MOULDING COMPOUNDS OF POLYAMIDES AND RESIN COPOLYMERS

Uwe Westeppe, Remscheid; Klaus Struss; Christian Lindner, both of Cologne; Karsten-Josef Idel, and Hans-Joachim Laue, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 792,428, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 167,553, Mar. 14, 1988, abandoned. This application Jul. 7, 1993, Ser. No. 88,415

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1987, 3709599

The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.

Int. Cl.[5] C08L *77/00, 33/06, 25/14*

U.S. Cl. 525—66 **19 Claims**

1. Thermoplastic moulding compounds comprising

A) 5 to 95% by weight of a thermoplastic polyamide,

B) 95 to 5% by weight of a thermoplastic resin ester copolymer prepared from monomers consisting of

B1) at least on monomer selected from styrenes, α-methyl styrenes, acrylonitrile, or methacrylonitrile, and

B2) tert.butyl (meth)acrylate in quantities from 1 up to 20% by weight in the resin copolymer B) and

c) up to 35% by weight of a rubber polymer for increasing the impact strength of the moulding compound.

5,340,877

POLYOXYMETHYLENE COMPOSITION, AND ITS USE

Oskar Schleith, Hofheim am Taunus, and Hans-Dieter Sabel, Königstein/Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 18, 1992, Ser. No. 900,905

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1991, 4120490

Int. Cl.[5] C08L *59/02, 33/02*

U.S. Cl. 525—154 **12 Claims**

1. A moldable polyoxymethylene composition comprising:

A) polyoxymethylene and

B) 0.5 to 10% by weight of acrylic polymer, the mean particle size of the acrylic polymer being greater than 50 but less than 600 μm; said particle size and any additional ingredients in said moldable polyoxymethylene composition being selected to provide a moldable polyoxymethylene composition which, when molded, produces a molded article having substantially the same surface smoothness, elongation at break, modulus of elasticity in bending, and ball-impression hardness of an essentially pure polyoxymethylene molded article, said elongation at break and said modulus being determined according to DIN 53457 and said ball-impression hardness being determined according to DIN 53456, said molded polymeric article having less than 60° Gardner gloss as compared to said essentially pure polyoxymethylene molded article.

5,340,878

POLYPROPYLENE COMPOSITION AND FILM THEREOF

Hajime Sadatoshi; Seiichiro Ima, and Eisuke Shiratani, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 22, 1993, Ser. No. 79,558

Claims priority, application Japan, Jun. 30, 1992, 4-172464

Int. Cl.[5] C08L *23/10, 23/04*

U.S. Cl. 525—240 **11 Claims**

1. A polypropylene composition comprising 100 parts by weight of a crystalline propylene polymer containing at least 70% by weight propylene having a melt flow rate of at least 3.0 g/10 minutes and a molecular weight distribution of less than 5.0 and from 0.01 to less than 4.0 parts by weight of a crystalline ethylene polymer having a melt flow rate of from 0.5 to 300 g/10 minutes, a density of at least 0.910 g/cm^3, and a crystallization temperature of at least 85° C. and which is at least 1° C. higher than the crystallization temperature of the crystalline propylene polymer.

5,340,879

POLYMER RESINS AND USE THEREOF

Raymond Audenaert, Hamme, Belgium; Stephan Kirchmeyer, Leverkusen; Kirkor Sirinyan, Bergisch Gladbach, both of Fed. Rep. of Germany, and Wolfgang Henning, Amagasaki, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany and Bayer Antwerpen N.V., Antwerpen, Belgium

Filed Mar. 12, 1993, Ser. No. 30,809

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208793

Int. Cl.[5] C08F *8/20*

U.S. Cl. 525—327.4 **6 Claims**

1. A polymer resin which is dispersible or soluble in water and comprises an amorphous, chlorinated, chemically modified terpolymer prepared from a monomer mixture containing ethylene, butene and propylene, wherein the total amount of ethylene and butene is 3 to 50% by weight, based on the total weight of said monomer mixture, said polymer resin having an average molecular weight Mw of 10,000 to 100,000 g/mol, a non-uniformity of 1.0 to 6.5, a chlorine content of 2.5 to 50% by weight, an anionic or cationic salt group content of 5 to 250 milliequivalents per 100 g of polymer resin and a content of polyoxyalkylene units of 0 to 40% by weight, the proportion of oxyethylene units being at least 30% by weight of the oxyalkylene units.

5,340,880

POST-CHLORINATED SUSPENSION-POLYMERIZED POLY(VINYL CHLORIDE) HAVING AT LEAST 70 PERCENT CHLORINE

Arthur L. Backman, Westlake, and Bernard F. Cinadr, Brecksville, both of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 837,180, Feb. 18, 1992, Pat. No. 5,216,088. This application Mar. 29, 1993, Ser. No. 38,425

Int. Cl.[5] C08F *8/22*

U.S. Cl. 525—331.6 **13 Claims**

1. A mass of microporous macrogranular chlorinated poly(vinyl chloride) ("CPVC") end product derived from an aqueous suspension of granular microporous poly(vinyl chloride) ("PVC") resin having a chlorine content of about 57% Cl, said CPVC being produced by a two-step process, comprising,

in a first step,

chlorinating said PVC at a starting temperature in the range from about 30° C. to 75° C., in the absence of liquid chlorine and free oxygen, in the presence of at least a stoichiometric amount of chlorine, but less than a 10% excess over that required to produce said CPVC end product, and a catalytic amount of an organic peroxy catalyst, sufficient to produce first step CPVC having an intermediate Cl level of chemically bound Cl in the range from 67%–72% by weight, said peroxy catalyst having a 10 hr half-life in the range from 30°–130° C.; and,

in a second step,

further chlorinating said CPVC formed, in the presence of at least a stoichiometric amount of chlorine, but less than a 10% excess over that required to produce said CPVC end product, at a temperature in the range from 90° C. to 130° C. until the Cl content in said CPVC end product is in the range from 70% to 75% by weight.

5,340,881

ALDEHYDE-TELECHELIC POLYISOBUTYLENES, CATALYTIC METHOD FOR PREPARING THE SAME WITH HIGH CONVERSION AND SELECTIVITY, AND BLOCK COPOLYMERS MADE THEREFORM

Joseph P. Kennedy; Brian L. Goodall, and Alexander V. Lubnin, all of Akron, Ohio, assignors to The University of Akron, Akron, Ohio

Filed Nov. 16, 1992, Ser. No. 976,532

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—333.7 **29 Claims**

1. An elastomeric composition, comprising:

terminal functional ditelechelic polyisobutylenes wherein at least 80 percent of said terminal functional groups are an aldehyde group.

5,340,882

PREPARATION OF IMIDE-MODIFIED METHYL METHACRYLATE (MMA) POLYMER/COPOLYMERS

Patrice Gaillard, Souchez; Philippe Heim, and Stéphane Nowe, both of Pau, all of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Aug. 4, 1993, Ser. No. 101,758

Claims priority, application France, Aug. 4, 1992, 92 09650

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—379 **15 Claims**

1. A process for the preparation of an imidemodified MMA polymer or copolymer, comprising reacting an amine with a suspension, in a hydrophobic nonsolvent reaction medium, of beads of said MMA polymer or copolymer.

5,340,883

ORGANIC LIQUID ABSORBENT COMPOSITIONS BASED ON PHOSPHONIC ACID-CONTAINING POLYMERS AND DI- OR POLYAMINES

Shao H. Guo, and Roger A. Grey, both of West Chester, Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 38,586, Mar. 26, 1993, Pat. No. 5,274,050, which is a division of Ser. No. 806,955, Dec. 12, 1991, Pat. No. 5,237,028. This application Jul. 8, 1993, Ser. No. 88,713

Int. Cl.[5] C08F *8/32, 30/02*

U.S. Cl. 525—381 **5 Claims**

1. A method of producing an organic-liquid absorbent, said method comprising:

(a) reacting a polyamine with a polymeric resin that contains phosphonic acid groups in the presence of an organic solvent selected from the group consisting of aliphatic and aromatic hydrocarbons, halogenated hydrocarbons, ketones, esters, ethers, glycol ethers, glycol ether esters, mineral oils, and crude oils, to produce an insoluble gel;

(b) separating the insoluble gel from any excess organic solvent; and

(c) heating the insoluble gel under vacuum to remove the organic solvent and produce the organic-liquid absorbent;

wherein the polyamine is used in an amount within the range of about 2 to about 70 weight percent, and the polymeric resin is used in an amount within the range of about 30 to about 98 weight percent based on the total weight of the organic-liquid absorbent.

5,340,884

POLYAMIDE CONCENTRATE USEFUL FOR PRODUCING BLENDS HAVING IMPROVED FLAVOR RETAINING PROPERTY AND CLARITY

David E. Mills, Kingsport, and Steven L. Stafford, Gray, both of Tenn., assignors to Eastman Kodak Company, Kingsport, Tenn.

Continuation-in-part of Ser. No. 862,027, Apr. 2, 1992, Pat. No. 5,258,233. This application Sep. 13, 1993, Ser. No. 119,302

Int. Cl.[5] C08F *283/04;* **C08L** *77/00;* **B32B** *27/34*

U.S. Cl. 125—420 **17 Claims**

1. A polyamide concentrate which is useful for producing a polymer blend having improved flavor retaining property comprising:

(A) 1 to 90 weight percent of a polymer selected from the group consisting of polycarbonates, polyesters polyolefins, and combinations thereof; and

(B) 10 to 99 weight percent of a polyamide selected from the group consisting of low molecular weight partially aromatic polyamides having a number average molecular weight of less than 15,000, low molecular weight aliphatic polyamides having a number average molecular weight of less than 7,000, and combinations thereof, wherein the combined weights of (A) and (B) total 100 percent.

5,340,885

AMIDE-ESTER COPOLYMERS AND PROCESS FOR THE PREPARATION THEREOF

Donald C. Clagett; Daniel W. Fox; Louis M. Maresca, and Sheldon J. Shafer, all of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

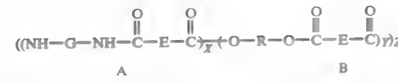
Continuation of Ser. No. 506,915, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 117,245, Nov. 4, 1987, abandoned. This application Jan. 25, 1993, Ser. No. 8,272

Int. Cl.[5] C08L *77/12;* **C08G** *69/44*

U.S. Cl. 525—425 **9 Claims**

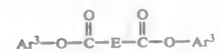
1. An alternating copolymer of the formula:

VOL 1165 ISS 4 AG 23 1994 UMI



A B

prepared by (a) reacting two equivalents of a diaryl ester of a dicarboxylic acid having the formula:



with a diamine of the formula:

$R^2NH—G—NHR^2$

and then (b) reacting the product formed in (a) with a diol of the formula:

HO—R—OH

to form the alternating amide-ester-ether copolymer, wherein units A comprise from about 1 to about 99 percent by weight of said copolymer and units B comprise from about 99 to about 1 percent by weight of said copolymer, where E is a divalent aryl group unsubstituted or substituted with at least one chlorine, bromine, fluorine, nitro, nitrile, alkyl of from 1 to 6 carbon atoms, alkoxy of from 1 to 6 carbon atoms or aryl of from 6 to 20 carbon atoms, or a mixture of any of the foregoing; G is a divalent, aryl, or cycloalkyl group of from about 2 to about 30 carbon atoms or a mixture of any of the foregoing, or G is as defined and is interrupted with alkylene, arylene, carbonyl, ether, amino or sulfur containing groups, unsubstituted or substituted with at least one of chlorine, bromine, fluorine, nitro, nitrile, alkyl of from 1 to 6 carbon atoms, alkoxy of from 1 to 6 carbon atoms, or aryl of from 6 to 20 carbon atoms, or a mixture of any of the foregoing; R is a divalent alkyl, cycloalkyl, or aliphatic ether group of from about 2 to about 20 carbon atoms or a mixture of such groups; Ar^3 is the same or different aryl group or aryl group substituted with at least one of chlorine, bromine, fluorine, or alkyl of from 1 to 6 carbon atoms, and R^2 is hydrogen or an alkyl radical having from 1 to 10 carbon atoms; and x, y and z are integers of from 1 to 100,000.

5,340,886

ACID-DYE RESISTANT POLYAMIDE PRODUCTS AND PROCESS FOR PREPARATION

Matthew B. Hoyt, Arden, N.C.; Andrew M. Coons, III, Anderson, S.C., and David N. Dickson, Charlotte, N.C., assignors to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 711,238, Jun. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 380,916, Jul. 17, 1989, abandoned. This application Jun. 2, 1993, Ser. No. 71,035

Int. Cl.[5] C08F *283/04*

U.S. Cl. 525—426 **8 Claims**

1. A process for preparing melt spun fiber-forming polymer made from polymerized amide monomers having relatively permanent color yet resisting anionic dyes comprising:

incorporating within the polymer sufficient SO_3H groups or salts thereof to give the polymer a sulphur content of between about 10 and about 160 equivalents per 10^6 grams polymer; and after said incorporating,

pigmenting the polymer, and

chemically blocking amino end groups present in the sulphonated polymer with an amount of chemical blocking agent sufficient to provide an amino end group content of less than 25 equivalents per 10^6 grams polymer.

5,340,887

OXIME-FUNCTIONAL MOISTURE-CURABLE HOT MELT SILICONE PRESSURE-SENSITIVE ADHESIVES

Gary A. Vincent, Midland; William P. Brady, Sanford; Martin E. Cifuentes, Midland; William J. Schoenherr, Midland, and Harold L. Vincent, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 11, 1993, Ser. No. 76,612

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—477 **22 Claims**

1. A moisture-curable silicone hot-melt adhesive composition comprising:

(i) a solid hydroxyl-functional organopolysiloxane resin comprising $R_3SiO_{\frac{1}{2}}$ siloxane units and $SiO_{4/2}$ siloxane units, wherein the mole ratio of the $R_3SiO_{\frac{1}{2}}$ siloxane units to $SiO_{4/2}$ siloxane units has a value of from 0.5/1 to 1.2/1, R is selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals;

(ii) a diorganopolysiloxane polymer having silicon-bonded hydroxyl terminal groups and having a viscosity at 25° C. of 100 to 500,000 centipoise, the weight ratio of said resin (i) to said polymer being (ii) in the range 40:60 to 75:25;

(iii) a ketoximosilane of the formula $R'_{4-y}SiX_y$, wherein R' is selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radical having 1–10 carbon atoms, X is a —ON=C(R'')R''', in which R'' and R''' are selected from the group consisting of alkyl radicals having 1–8 carbon atoms and phenyl radical, and y is 3 or 4, the amount of said ketoximosilane being sufficient to provide a molar ratio of X groups to total hydroxyl groups on said resin (i) and said diorganopolysiloxane (ii) of 0.9 to 3; and

(iv) optionally, sufficient catalyst to accelerate the cure of said composition,

said composition being an essentially solvent-free non-slump solid at room temperature, being extrudable at ≦150° C. and forming an essentially tack-free elastomer when cured.

5,340,888

PHENOLIC RESIN COMPOSITION

Peter H. R. B. Lemon, Romsey; James G. King, Southampton, both of England; Graham Murray, Edinburgh, Scotland; Henry Leoni, Southampton, England, and Arthur H. Gerber, Louisville, Ky., assignors to Borden Inc., Columbus, Ohio

Continuation of Ser. No. 837,701, Feb. 19, 1992, abandoned, which is a continuation of Ser. No. 451,052, Dec. 15, 1989, abandoned. This application Mar. 8, 1993, Ser. No. 29,304

Claims priority, application United Kingdom, Dec. 22, 1988, 8829984; Aug. 11, 1989, 8918385

Int. Cl.[5] C08L *61/06, 61/14*

U.S. Cl. 525—501 **64 Claims**

1. A phenolic resin composition comprising

(1) an esterified phenolic compound containing one or more phenolic hydroxyl groups and/or one or more esterified phenolic hydroxyl groups and containing one or more esterified methylol groups positioned ortho and/or para to a phenolic hydroxyl group or esterified phenolic hydroxyl group,

(2) an unesterified phenolic novolak resin, and

(3) a sufficient quantity of a base to render alkaline a mixture of all three components (1), (2) and (3), in the presence of water;

wherein said one or more esterified methylol groups of (1) contain ester functionalities generated from a functionality selected from the group consisting of formate, acetate, acetoacetate, acrylate, propionate, lactate, crotonate, methacrylate, butyrate, isobutyrate, caproate, caprylate, benzoate, toluate, p-amino-benozate, p-hydroxybenzoate, salicylate, cinnamate, laurate, myristate, palmitate, oleate, ricinoleate, stearate, oxalate, succinate, fumarate, adipate, phthalate, azelate, sebacate, and mixtures thereof, and

wherein said resin in said mixture is curable in an alkaline condition of said mixture in the presence of a polar liquid.

5,340,889

LIQUIFICATION OF BIS-CARBONATES OF BIS-GLYCIDYL ETHERS

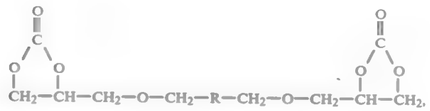
Wheeler C. Crawford, Houston; Edward T. Marquis, Austin, and Howard P. Klein, Katy, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jul. 19, 1993, Ser. No. 93,568

Int. Cl.[5] C08G *64/00;* **C07C** *261/00, 269/00, 271/00*

U.S. Cl. 525—523 **14 Claims**

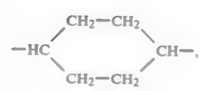
1. A liquid hydroxyurethane product having cyclocarbonate end groups prepared by reacting a bis-carbonate of a bis-glycidyl ether of the formula:



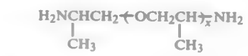
wherein R is selected from the group consisting of:



and



with a polyoxyalkylenediamine and wherein the molar ratio of the bis-carbonate of the bis-glycidyl ether reacted with the polyoxyalkylenediamine ranges from 5.0:1 to about 2.0:1 and wherein the polyoxyalkylenediamine is a polyoxypropylenediamine having the formula:



where x ranges from 2 to about 60.

5,340,890

CYCLOBUTENE ANHYDRIDE-CURED EPOXY RESIN COMPOSITION

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 28, 1993, Ser. No. 10,128

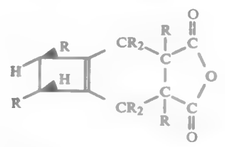
Int. Cl.[5] C08G *59/40, 59/42, 65/00*

U.S. Cl. 525—530 **11 Claims**

1. A composition comprising:

(a) an epoxy resin; and

(b) an anhydride-functional compound of the formula



in which each R is selected independently from the group consisting of hydrogen, C_{1-10} alkyl, aryl, halide and C_{1-10} hetero-interrupted (alkyl or aryl).

5,340,891

CONTINUOUS POLYMERIZATION METHOD AND APPARATUS

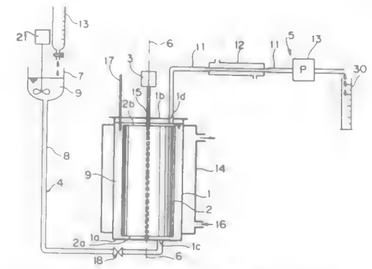
Tsuyoshi Imamura, Yawata; Katsumi Mizuguchi; Yasuhiro Shibai, both of Osaka; Keizou Ishii, Ashiya; Shinichi Ishikura, Tsuzuki, and Koichi Saito, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 831,570, Feb. 5, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 158,924

Claims priority, application Japan, Feb. 5, 1991, 3-14581; Oct. 22, 1991, 3-274355

Int. Cl.[5] C08F *2/20, 2/24*

U.S. Cl. 526—88 **8 Claims**



1. A continuous polymerization method comprising:

supplying continuously a material solution for polymerization into a clearance between an inner cylinder and an outer cylinder of a coaxial double cylinder from one end side of said coaxial double cylinder,

an axis of said coaxial-double cylinder stretches toward a direction crossing a horizontal plane;

carrying out continuously an emulsion polymerization or a suspension polymerization while rotating at least one of said inner cylinder and said outer cylinder round said axis;

rotating said inner cylinder at an angular velocity relative to said outer cylinder sufficient to produce Taylor vortices;

a production of said Taylor vortices occurring when a Taylor number is about 30 to 2,000, wherein said taylor number is a function of a radius of said inner cylinder, a radius of said outer cylinder, a dynamic viscosity of said material solution and said angular velocity; and

leading continuously a reaction solution containing a produced polymer from the other end side of said double cylinder to an outside and thus, obtaining polymer particles continuously.

5,340,892

PROCESS FOR PRODUCING STYRENE POLYMERS

Masahiko Kuramoto, Ichihara, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 727,657, Jul. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 585,724, Sep. 20, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 38,089

Claims priority, application Japan, Sep. 29, 1989, 1-256371

Int. Cl.[5] C08F *4/64, 12/08*

U.S. Cl. 526—119 **10 Claims**

1. A process for producing styrene polymer having a syndiotactic configuration, which process comprises polymerizing styrene monomers in the presence of catalysts comprising:

(a) a combination of TiRXYZ and TiR'X'Y'Z' in a molar ratio of from 10:90 to 90:10, wherein R is a cyclopentadienyl group, a substituted cyclopentadienyl group having 1 to 4 substituents or an indenyl group; R' is a substituted

VOL 1165 ISS 4 AG 23 1994 UMI

cyclopentadienyl group having 5 substituents; X, Y, Z, X', Y', and Z' are independently an alkyl group having 1 to 12 carbon atoms, an alkoxy group having 1 to 12 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aryloxy group having 6 to 20 carbon atoms, an arylalkyl group having 6 to 20 carbon atoms, or a halogen and said substituents are individually selected from alkyl groups having from 1 to 6 carbon atoms, and

(b) alkylaluminoxane.

5,340,893

CAST RESIN FOR OPTICAL USE

Toshiaki Takaoka; Katsuyoshi Tanaka, and Kenji Kato, all of Oita, Japan, assignors to NOF Corporation and Seiko Epson Corporation, both of Tokyo, Japan

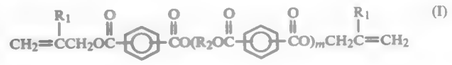
Filed Oct. 28, 1992, Ser. No. 967,715

Claims priority, application Japan, Nov. 1, 1991, 3-288098

Int. Cl.[5] **C08F** *18/18, 18/24, 222/26*

U.S. Cl. 526—292.4 **10 Claims**

1. A cast resin for optical use obtained by polymerizing 40 to 89 wt % of a diallyl phthalate component represented by the formula (I)



(I)

wherein $—R_1$ is a hydrogen atom or a methyl group, $—OR_2$ is a dihydric alcohol residue having 1 to 5 carbon atoms and

m is an integer from 0 to 20 wherein the fraction of said diallyl phthalate component where m=0 ranges from 20 to 70 wt %, the fraction where m=1 ranges from 20 to 40 wt %, the fraction where m=2 ranges from 1 to 20 wt %, the fraction where m=3 ranges from 0 to 20 wt %, the fraction where m=4 ranges from 0 to 15 wt %, the fraction where m=5 ranges from 0 to 10 wt %, and the fraction where $6 \leqq m \leqq 20$ ranges from 0 to 10 wt %;

with 10 to 59 wt % of an alkylene glycol bis-allyl carbonate component represented by the formula (II)

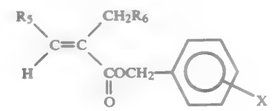


(II)

wherein $—R_4$ is a hydrogen atom or a methyl group, $—OR_3$ is a dihydric alcohol residue having 1 to 10 carbon atoms and

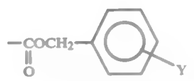
n is an integer of from 0 to 10 wherein the fraction of said alkylene glycol bis-allyl carbonate component where n=1 ranges from 20 to 60 wt %, the fraction where n=2 ranges from 25 to 40 wt %, the fraction where n=3 ranges from 5 to 25 wt %, the fraction where n=4 ranges from 1 to 20 wt %, and the fraction where $5 \leqq n \leqq 10$ ranges from 0 to 15 wt %, and

1 to 30 wt % of a vinyl compound represented by the formula (III)



(III)

wherein $—R_5$ and $—R_6$ each indicate different groups and stand for a hydrogen atom or group



wherein X and Y each indicate a hydrogen atom or a halogen atom other than a fluorine atom.

5,340,894

POLYMERS DERIVED FROM POLYMERIZABLE URETHANE VINYL ESTERS

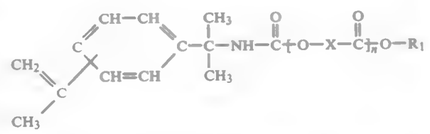
Shanti Swarup; Gregory J. McCollum, both of Gibsonia; Ronald M. Shewchuk, Allison Park, and Jonathan T. Martz, Glenshaw, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 766,374, Sep. 27, 1991, Pat. No. 5,237,090. This application Feb. 5, 1993, Ser. No. 13,914

Int. Cl.[5] **C08F** *226/02*

U.S. Cl. 526—301 **4 Claims**

1. A polymer formed from the reaction product of the polymerizable reaction product of:



wherein n is >O, R_1 is alkyl or aralkyl and X is alkylene with greater than 2 carbon atoms and a vinyl monomer other than said polymerizable reaction product and copolymerizable therewith.

5,340,895

FORMED, POLYMERIC TRANSITION-METAL COMPLEX CATALYSTS WITH ORGANOSILOXANE DIPHENYLPHOSPHINE LIGANDS

Peter Panster, Rodenbach; Robert Gradl, Alzenau, and Peter Kleinschmit, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 786,796, Nov. 1, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 43,604

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1990, 4035033

Int. Cl.[5] **C08G** *77/26, 77/30, 77/06*

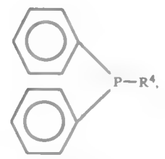
U.S. Cl. 528—9 **21 Claims**

1. A formed spherical, polymeric complex compound comprising at least one member selected from the metal containing group consisting of iron, cobalt, nickel, ruthenium, rhodium, palladium, osmium, iridium and platinum compounds; and a ligand which comprises a formed organosiloxane copolycondensate of units of the formula



(I)

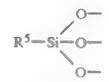
and of units of the formula



(II)

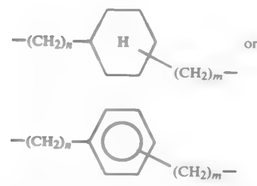
wherein the central metal atom is coordinately bound via the phosphorus atoms of the phosphine units (II) and optionally via the nitrogen atoms of the amine units (I),

R^2 and R^4 are the same or different and represent a group of the formula

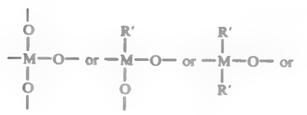


(III)

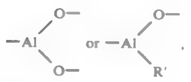
in which R^5 is bound directly to said phosphorus atom or to said nitrogen atom and represents a linear or branched alkylene group with 1 to 10 C atoms, a cycloalkylene group with 5 to 8 C atoms, or a unit of the formula



in which n and m are a number from 0 to 6, said n indicates the number of methylene groups bound to the N position or bound to the P position and m the number of methylene groups in Si position, R^1 represents a group selected from the group consisting of formula (III), H, CH_3, C_2H_5, and C_3H_7, wherein the free valences of said oxygen atoms bound to said Si atom are saturated by silicon atoms of further groups of formula (III) and/or via the metal atoms in one or several cross-linking bridge members



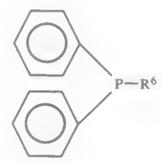
(IV)



where M is an Si, Ti or Zr atom and R' is a linear or branched alkyl group with 1 to 5 C atoms or a phenyl group, and the ratio of said silicon atoms from the groups of formula (III) to said metal atoms in the cross-linking bridge members (IV) is 1 : 0 to 1 : 20 and the molar ratio of phosphine units (II) to complexed metal units is 1 : 1 to 1000 : 1, and wherein said polymeric complex catalysts are spherical particles with a diameter of 0.01 to 3.0 mm, a BET specific surface of >0 to 1000 m^2/g a specific pore volume of 0.01 to 6.5 ml/g, and a bulk density of 50 to 1000 g/l;

said complex compound produced by a method comprising:

(a) reacting in a solvent or a solvent mixture, optionally at elevated temperature, for a period of 1 minute to 48 hours, at least one member of the metal containing group consisting of hydrous or anhydrous metal compounds FeX_3, FeX_2, CoX_3, CoX_2, NiX_2, RuX_3, $RuX_3(CH_3CN)_3$, $RuX_3(C_6H_5CN)_3$, M_3RhX_6, RhX_3, $RhX_3/(CH_3CH)_3$, $RhX_3(C_6H_5CN)_3$, RhX_2, RhX, $(RhX(diene))_2$, M_2PdX_6, M_2PdX_4, PdX_2, OsX_3, $OsX_3(Ch_3CN)_3$, $OsX_2(C_6H_5CN)_3$, M_3IrX_6, IrX_3, $IrX_3(CH_3CN)_3$, $IrX_3(C_6H_5CN)_3$, $(IrX(diene))_2$, M_2PtX_6, M_2PtX_4, and PtX_2, in which X is selected from the group consisting of Cl, Br, I, acetyl acetonate, acetate, $\frac{1}{2}SO_4$, NO_3, and CN, and diene is selected from the group consisting of cyclooctadiene and norbornadiene, and M is selected from the group consisting of H, Na, K, and NH_4, with a phosphine of the formula

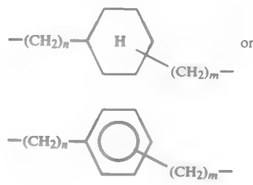


(VIII)

in which R^6 represents a group of the formula

$R^5—Si(OR^7)_3$ (IX),

where R^5 is a linear or branched alkylene group with 1 to 10 C atoms, a cycloalkylene group with 5 to 8 C atoms or a unit of the formula



where R^7 is a linear or branched alkyl group with 1 to 5 C atoms, to form a metal complex, wherein the ratio between the number of moles of phosphine of formula (VIII) and the number of moles of the totally complexly bound metal atoms in said metal compounds is at least 1 : 1 to 1000 : 1,

(b) adding to the product of step (a) an amino silane of the general formula



(X)

in which R^8 stands for H, CH_3, C_2H_5, C_3H_7 or a group of formula (IX) and R^9 and R^{10} also stand for a group of formula (IX) in which R^5 and R^7 have the same range of meaning as in formula (IX), and optionally one or several compounds of the formula

$M(OR)_{2-4}R'_{0-2}$ or $M(OR)_{2-3}R'_{0-1}$ (XI),

in which M is an Si, Ti, Zr or Al atom, R' is a linear or

VOL 1165 ISS 4 AG 23 1994 UMI

branched alkyl group with 1 to 5 C atoms or a phenyl group, R signifies a linear or branched alkyl group with 1 to 5 C atoms, and the ratio of the silicon atoms from the groups of formula (IX) to the metal atoms in the cross-linking agents (IX) is 1 : 0 to 1 : 20;

(c) adding to the product of step (b) an amount of water under agitation which suffices at least for a complete hydrolysis and condensation, and hydrolyzing the resulting reaction mixture for a period of time up to 6 hours;

(d) allowing the product of step (c) to gel under further agitation at a temperature in the range of room temperature to 200° C., wherein at the start of said gelling or up to one hour thereafter the product of step (c) is compounded with 10 to 2000% by weight, relative to the entire amount of said phosphine (VIII), aminoorganosilane (X) and optionally cross-linking agent (XI), of a solvent which is non-water-soluble but which dissolves the product of step (c), which has gelled or started to gel, in order to form a homogenizate;

(e) adding, immediately or in a time period of up to 10 hours, 100 to 2000% by weight of water, relative to the total amount of phosphine (VIII), aminoorganosilane (X) and optionally cross-linking agent (XI), to the viscous homogenizate of step (d), optionally with elevation of the originally adjusted temperature, whereby the organic phase containing the monomeric metal complex is dispersed in the liquid two-phase system and a solid in the shape of spheres is formed;

(f) separating the solid formed in step (d) from the liquid phase after a reaction time sufficient for this purpose at a temperature of room temperature of 200° C.;

(g) extracting the solid from step (f), optionally with a low-boiling solvent;

(h) drying the solid from step (g) at room temperature to 250° C., optionally under protective gas or in a vacuum; and

(i) tempering the solid from step (h) for 1 to 100 hours at temperatures of 150° C. to 300° C. and/or classifying said solid from step (h).

5,340,896

THERMOSET POLYMERIC PRECURSORS FOR ALUMINUM NITRIDE

James A. Jensen, 544 Cabot Dr. Hickory Hills, Hockessin, Del. 19707

Continuation of Ser. No. 829,818, Feb. 3, 1992, Pat. No. 5,260,397, which is a continuation-in-part of Ser. No. 594,754, Oct. 9, 1990, abandoned. This application Nov. 8, 1993, Ser. No. 148,727

Int. Cl.[5] C08G *79/10*

U.S. Cl. 528—9 **9 Claims**

1. A crosslinked aluminum-nitrogen polymer prepared by supplying energy a polymer comprising a backbone of alternating aluminum and nitrogen atoms, both having pendant organic groups, wherein at least some of said pendant organic groups are alkenyl or alkynyl groups in an amount and for a time sufficient to crosslink the alkenyl or alkynyl groups.

5,340,897

MOISTURE CURABLE ORGANOSILOXANE COATING COMPOSITIONS

Brian P. Loiselle, and Bernard VanWert, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 4, 1993, Ser. No. 101,638

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—17 **4 Claims**

1. A liquid curable organosiloxane coating composition comprising

(A) a liquid polydiorganosiloxane represented by the formula $(R^3O)_{3-a}R^4_aSiZ—(R^1R^2SiO)_xSi(R^1)(R^2)ZSiR^4_a(R^3O)_{3-a}$, where R^1, R^2 and R^4 are individually selected from monovalent hydrocarbon radicals, R^3 is an alkyl radical, Z is R^5 or $—R^5Si(R^1)(R^2)OSi(R^1)(R^2)R^5—$, R^5 is a divalent hydrocarbon radical, a is 0 or 1 and x is equivalent to a viscosity of from 0.1 to 1 Pa.s at 25° C., said polydiorganosiloxane is prepared by the reaction of an alkenyl-terminated polydiorganosiloxane and a first organosilicon compound containing a silicon-bonded hydrogen atom and two or three silicon-bonded alkoxy groups per molecule, and said composition contains said organosilicon compound in unreacted form,

(B) an amount sufficient to stabilize said composition during storage of at least one silane containing an average of at least two alkoxy groups per molecule,

(C) an amount of an organotitanium compound sufficient to promote curing of composition in the presence of atmospheric moisture, and

(D) an amount of a second organosilicon compound containing at least one alkenyl radical per molecule sufficient to react with the silicon-bonded hydrogen present in the unreacted portion of said first organosilicon compound,

where said second organosilicon compound is a liquid and said composition contains less than 5 weight percent of solvents and reactive diluents.

5,340,898

CATIONICALLY CROSSLINKABLE POLYORGANOSILOXANES AND ANTIADHESIVE COATINGS PRODUCED THEREFROM

Jacques Cavezzan, and Christian Priou, both of Villeurbanne, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Mar. 23, 1993, Ser. No. 35,603

Claims priority, application France, Mar. 23, 1992, 92 03441

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—19 **15 Claims**

1. A composition of matter comprising a cationically crosslinkable polyorganosiloxane and a catalytically effective amount of an onium borate of an element of Groups 15 to 17 of the Periodic Table, the anionic borate moiety of which onium borate having the formula:

$$[BX_aR_b]^-$$

in which a is an integer ranging from 0 to 3, b is an integer ranging from 0 to 4 and a+b=4; the symbols X are each a halogen atom when a ranges up to 3 and an OH functional group when a ranges up to 2; and the symbols R, which may be identical or different, are each a phenyl radical substituted by at least one electron-withdrawing substituent or by at least two halogen atoms, or an aryl radical containing at least two aromatic ring members, or such aryl radical bearing at least one electron-withdrawing substituent.

5,340,899

METHOD FOR THE PREPARATION OF POLYDIMETHYLSILOXANES HAVING LOW REACTIVITY ENDGROUPS AND HIGH REACTIVITY ENDGROUPS WHEREIN THE POLYDIMETHYLSILOXANES CONTAIN ETHYLENE CHAIN LINKAGES

Michael G. Altes, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 22, 1993, Ser. No. 156,129

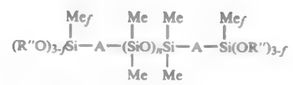
Int. Cl.[5] C08G *77/04, 77/06, 77/60*

U.S. Cl. 528—34 **4 Claims**

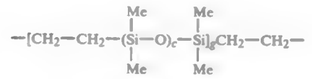
1. A method of making polydimethylsiloxanes having both low reactivity endgroups and high reactivity endgroups comprising, under conditions to exclude moisture from contacting ingredients,

(I) mixing

(A) an alkoxy terminated polydimethylsiloxane of the formula



in which each R'' is an alkyl radical having from 1 to 4 inclusive carbon atoms, f is 0 or 1, n has a value such that the polymer has a viscosity at 25° C. of from 0.5 to 500 Pa.s, and A is $—CH_2CH_2—$ or



in which g is 0 or 1, and c is from 1 to 6 with

(B) a hydroxyl terminated polydimethylsiloxane having a viscosity at 25° C. of from 0.5 to 500 Pa.s, providing a polymer mixture and thereafter

(II) admixing with the polymer mixture of step (I) an amount of a hydrolyzable difunctional silane of the formula

R_2SiX_2

in which X is N-methylacetamido and R is methyl or vinyl, sufficient to provide at least one hydrolyzable difunctional silane molecule per hydroxyl of the hydroxyl terminated polydimethylsiloxane.

5,340,900

HARDENER COMPOSITION FOR THE PRODUCTION OF POLYURETHANE SHAPED ARTICLES

Martin Spitzer, Ehrenkirchen, Fed. Rep. of Germany, and Hans Freistädter, Rheinfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 22, 1993, Ser. No. 96,136

Claims priority, application Switzerland, Jul. 30, 1992, 2403/92

Int. Cl.[5] C08L *75/00*

U.S. Cl. 528—53 **15 Claims**

1. A composition comprising

a) a polyol having on average 3 to 8 hydroxyl groups per molecule and an average molecular weight per hydroxyl group of up to 150;

b) a polyether-polyol having on average 2 to 3 hydroxyl groups per molecule and an average molecular weight per hydroxyl group of 150 to 500 and

c) a poly(oxyalkylene)polyamine having on average 2 to 4 amino groups per molecule and an average total molecular weight of between 1000 and 3000.

5,340,901

TWO-COMPONENT, PRIMERLESS, ORGANIC PHOSPHORUS CONTAINING POLYURETHANE ADHESIVE

Chia L. Wang, Hudson, Ohio, assignor to GenCorp Inc., Fairlawn, Ohio

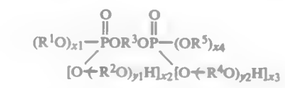
Continuation of Ser. No. 886,529, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 805,255, Dec. 9, 1991, Pat. No. 5,175,228. This application Apr. 29, 1993, Ser. No. 55,406

Int. Cl.[5] C08G *18/10*

U.S. Cl. 528—60 **12 Claims**

1. An adhesive composition, comprising:

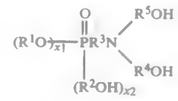
a two component primerless urethane adhesive system comprising a prepolymer component and a curative component, said prepolymer component made from a hydroxy terminated polyester or polyether intermediate and a polyisocyanate, the amount of said polyisocyanate being an equivalent ratio of at least 2.0 based upon the hydroxy terminated intermediate so that said prepolymer has free NCO groups, said curative component comprising a nitrogen-free polyol having hydroxyl groups, a primary polyamine, and an effective amount of an organic phosphorus compound to yield good adhesion of said urethane adhesive upon cure, the amount of said curative component being such that the equivalent ratio of said free NCO groups in said prepolymer component to said hydroxyl groups and said amine groups of said curative component is from about 0.9 to less than 1.2, and wherein said organic phosphorus compound is represented by the formula



Formula I

wherein R^1, R^3, and R^5, independently, is an alkyl having from 1 to 15 carbon atoms, wherein R^2 and R^4, independently, is an alkyl having from 1 to 6 carbon atoms, where y_1 or y_2, independently, is from 0 to 20, and wherein $x_1+x_2=2$, wherein $x_3+x_4=2$; and wherein x_1, x_2, x_3, or x_4 is 0, 1, or 2,

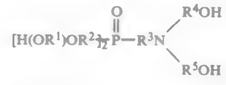
or a compound of the formula



Formula II

wherein R^1, R^2, R^3, R^4, and R^5, independently, is an alkyl having from 1 to 15 carbon atoms, where $x_1+x_2=2$, and x_1 and x_2, independently, is 0, 1, or 2,

or a compound of the formula



Formula III

wherein R^1, R^2, R^3, R^4, and R^5, independently, is an alkyl having from 1 to 8 carbon atoms,

or a compound of the formula



Formula IV

wherein R^1 is an alkyl having from 1 to 8 carbon atoms, and R^2 is nonexistent or an alkyl having from 1 to 8 carbon atoms, and wherein x is 1, 2, or 3, and wherein y is 0, 1, or 2, and wherein x+y=3,

or combinations of Formula I, II, III, and IV.

5,340,902

SPANDEX FIBERS MADE USING LOW UNSATURATION POLYOLS

Curtis P. Smith, Cheshire, and James M. O'Connor, Branford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jun. 4, 1993, Ser. No. 73,011

Int. Cl.[5] C08G *18/32*

U.S. Cl. 528—61 **21 Claims**

1. A process for enhancing the strength and hydrolytic or thermal stability of spandex fibers from a polyurethane or polyurethane precursor which comprises, prior to fiber formation, fabricating the polyurethane or polyurethane precursor by reacting a polyisocyanate with a polyol prepared using a double metal cyanide complex catalyst, and chain extending said polyurethane precursor with a diol or diamine chain ex-

VOL 1165 ISS 4 AUG 23 1994 UMI

tender, said polyol having a molecular weight in the range of between about 1,500 and about 15,000 and a low level of terminal ethylenic unsaturation that is less than 0.03 milliequivalents per gram of polyol.

5,340,903

PHENOLIC RESIN, PROCEDURE FOR PREPARATION OF THE RESIN, AND SIZING COMPOSITION FOR MINERAL FIBERS CONTAINING THIS RESIN

M. Serge Tetart, Saint-Maximin, France, and M. David Segal, Hatfield, Pa., assignors to Isover Saint-Gobain, Courbevoie, France

Division of Ser. No. 970,247, Nov. 2, 1992, which is a continuation of Ser. No. 775,759, Oct. 15, 1991, Pat. No. 5,270,434. This application Aug. 27, 1993, Ser. No. 112,223
Claims priority, application France, Oct. 12, 1990, 90 12604
Int. Cl.[5] C08G *14/08*
U.S. Cl. 528—164 19 Claims

1. A sizing composition for mineral fibers, comprising:

a) a liquid resin comprising phenol-formaldehyde, urea-formaldehyde and phenol-formaldehyde-amine condensates having a free formaldehyde content of less than or equal to 3%, of the total fluid weight and a dilutability in water of at least 1,000% at 20° C., obtained by the steps comprising:

i) reacting phenol and formaldehyde to form a phenol-formaldehyde condensate;

ii) cooling the reaction mixture; and

iii) reacting the excess formaldehyde with urea;

wherein said resin further contains an phenol-formaldehyde-amine condensate obtained by adding 5 to 40% by weight of an amine, based on phenol, to the cooled reaction mixture or during said cooling of said reaction mixture; and

said phenol-formaldehyde-amine condensate is formed before reacting the excess formaldehyde with urea; and

b) up to 50 parts per 100 parts as expressed as parts of dry material of sizing composition, of urea.

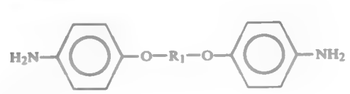
5,340,904

BIS(4-AMINOPHENOXY)NAPHTHALENE AND ITS POLYMERS

Chin-Ping Yang, and Wen-Tung Chen, both of Taipei, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Dec. 29, 1992, Ser. No. 997,094
Int. Cl.[5] C08G *73/10*; C07C *217/90*
U.S. Cl. 528—185 3 Claims

1. A bis(4-aminophenoxy)naphthalene compound having the following structure:



wherein R_1 is



5,340,905

PROCESS FOR THE PREPARATION OF THERMOPLASTIC POLYCARBONATES

Steffen Kühling; Hermann Kauth; Wolfgang Alewelt, and Dieter Freitag, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 147,651, Nov. 3, 1993, abandoned. This application Feb. 3, 1994, Ser. No. 191,227
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1992, 4238123
Int. Cl.[5] C08G *64/30, 64/00*
U.S. Cl. 528—199 4 Claims

1. A two step solvent-free process for the preparation of polycarbonates having a low degree of branching comprising

(i) transesterifying in the melt, at temperatures of from 80° to 250° C. and under atmospheric pressure and for a time of up to five hours of diphenols and carbonic acid diaryl esters in the presence of a catalyst to form an oligocarbonate, said oligocarbonate having a weight average molecular weight of from 8,000 to 18,000 and an OH-end group content of from 25 to 50%, and

(ii) polycondensing of said oligocarbonate at temperatures of from 250° C. to 295° C. and pressures of from <500 mbar to 0.01 mbar,

said catalyst being present in an amount of 10^{-1} to 10^{-8} mol of a catalyst per mol of diphenol, said catalyst being at least one member selected from the group consisting of quaternary ammonium compounds and quaternary phosphonium compounds.

5,340,906

PROCESS FOR THE PREPARATION OF POLYESTER CONTAINING LITTLE DEPOSITED ANTIMONY PARTICLES AS IMPURITIES

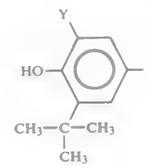
Yukio Shirokura; Fumiyuki Suzuki, and Tohru Ogura, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., LTD., Kanagawa, Japan

Filed Feb. 17, 1993, Ser. No. 18,543
Claims priority, application Japan, Feb. 17, 1992, 4-29173
Int. Cl.[5] C08G *63/02, 63/78, 63/00*
U.S. Cl. 528—274 3 Claims

1. A process for the preparation of polyester having an ethylene-terephthalate recurring-unit in the amount of not less than 60 molar % of the total recurring-unit of the polyester by polymerizing a bifunctional carboxylic acid comprising terephthalic acid and glycol comprising ethylene glycol in the presence of

at least one antimony compound selected from the group consisting of antimony oxides, antimony halides, antimony tartrate, antimony glycolate and antimony acetate,

a hindered phenol compound having a structural unit represented by the following formula (V):



(V)

in which Y represents methyl or ethyl,

a sulphur-containing ester compound having the following formula (VI) or (VII):

$(R^1SR^2COOCH_2)_4C$ (VI)

$S(R^3COOR^4)_2$ (VII)

in which R^1 and R^4 represent alkyl of 5 to 30 carbon atoms or aryl of 5 to 30 carbon atoms, and R^2 and R^3 represent alkylene of 1 to 9 carbon atoms, and

at least one metal compound selected from the group consisting of organic carboxylates, halides and hydroxides of magnesium, organic carboxylates, halides and hydroxides of manganese, and organic carboxylates, halides and hydroxides of zinc,

wherein the metal compound, the hindered phenol compound and a sulphur-containing ester compound are employed under the following conditions:

A ranges from 0.015 to 0.15	(I),
B ranges from 0.01 to 0.2	(II),
C ranges from 0.01 to 0.2	(III), and
B/C ranges from 0.5 to 2.0	(IV),

in which A represents an amount by molar % in terms of metal atom of the metal compound based on the amount of the total acid component constituting the polyester, B represents an amount by weight % of the hindered phenol compound based on the amount of the polyester and C represents an amount by weight % of the sulphur-containing ester compound based on the amount of the polyester.

5,340,907

COPOLYESTER OF CYCLOHEXANEDIMETHANOL AND PROCESS FOR PRODUCING SUCH POLYESTER

Cheuk C. Yau, and Clinton Cherry, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jun. 28, 1993, Ser. No. 82,566
Int. Cl.[5] C08G *63/02, 63/78*
U.S. Cl. 528—274 7 Claims

1. Process for producing copolyester having repeat units from a dicarboxylic acid component comprising repeat units from at least 90 mol % terephthalic acid and a glycol component comprising repeat units from about 10–95 mol % 1,4-cyclohexanedimethanol and from about 90–5 mol % ethylene glycol comprising reacting said dicarboxylic acid component and said glycol component at temperatures sufficient to effect esterification or trans-esterification and polycondensing said reaction product under absolute pressure of less than 10 mm Hg for a time of more than about 2 to about 5 hours in the presence of a catalyst and inhibitor system consisting essentially of about 0–75 ppm Mn, about 25–100 ppm Zn, about 0.5–15 ppm Ti, about 5–80 ppm P, and 0 to about 60 ppm of an organic blue toning agent, all parts by weight based on the weight of the copolyester.

5,340,908

PROCESS FOR THE PREPARATION OF AROMATIC POLYESTERS

Bhaskar B. Idage; Nayaku N. Chavan; Sudhakar S. Mahajan, and Swaminathan Sivaram, all of Pune, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Apr. 1, 1993, Ser. No. 41,700
Int. Cl.[5] C08G *63/78*
U.S. Cl. 528—275 14 Claims

1. A process for the preparation of aromatic polyester(s) having an intrinsic viscosity greater than 0.4 dL/g in chloroform at 30° C. which comprises.

(a) reacting a dialkylester of terephthalic or isophthalic acid or a mixture thereof and dihydric phenol(s) in the melt phase in an inert atmosphere in the presence of a catalyst selected from alkoxides of Group IV B metals and derivatives of Group IV A metals and in the presence of an organic solvent at a temperature in the range of 100°–300° C. to form a prepolymer having intrinsic viscosity in the range of 0.1 to 0.3 dL/g in chloroform at 30° C.

(b) purifying the prepolymer using conventional solvent extraction methods and

(c) polycondensing the purified prepolymer at a temperature in the range of 300°–350° C. in presence of a catalyst selected from alkoxides of Group IVB metals and derivatives of Group IVA metals under reduced pressure.

5,340,909

POLY(1,3-PROPYLENE TEREPHTHALATE)

Marvin L. Doerr; Joseph J. Hammer, and J. R. Dees, all of Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 18, 1991, Ser. No. 809,353
Int. Cl.[5] C08G *63/78*
U.S. Cl. 528—276 29 Claims

1. A process for making poly(1,3-propylene terephthalate) comprising steps of:

a) reacting terephthalic acid or, dimethyl terephthalate, and 1,3-propanediol to produce a monomer and reaction by-product;

b) removing said reaction byproduct during said reaction;

c) polymerizing the monomer by a polycondensation reaction to produce poly(1,3-propylene terephthalate) and 1,3-propanediol; and

d) removing said 1,3-propanediol during the polycondensation reaction;

wherein the improvement comprises adding an effective catalytic amount of tin for the polycondensation reaction.

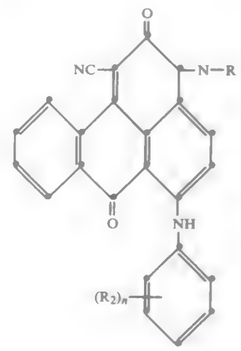
5,340,910

PROCESS FOR PREPARING 1-CYANO-3H-DIBENZ[F,IJ]ISOQUINOLINE-2,7-DIONES AND THEIR USE AS TONERS FOR POLYESTERS

Kim S. Chamberlin; Wayne P. Pruett; Max A. Weaver, all of Kingsport; Samuel D. Hilbert, Jonesborough; Donna R. Quillen, and Preston K. Salyer, both of Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 883,506, May 15, 1992, Pat. No. 5,252,699. This application Jun. 21, 1993, Ser. No. 79,416
Int. Cl.[5] C08G *69/44, 73/16*
U.S. Cl. 528—289 14 Claims

1. A method for imparting improved whiteness to a polyester normally appearing yellow, which comprises admixing a blue toner compound of the formula



wherein

R is hydrogen, cycloalkyl, allyl, alkyl, aralkyl, alkoxyalkyl or cycloalkylalkylene;

R_2 is hydrogen, alkyl, aryl, alkoxy, arylalkoxy, alkylthio, arylthio, carbalkoxy, carbaralkoxy, carboxy, sulfamoyl, alkylsulfamoyl, dialkylsulfamoyl, alkylarylsulfamoyl, cycloalkylsulfamoyl, arylsulfamoyl, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, alkylarylcarbamoyl, cycloalkylcar-

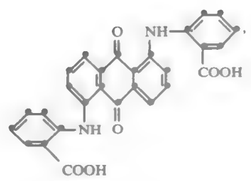
VOL 1165 ISS 4 AG 23 1994 UMI

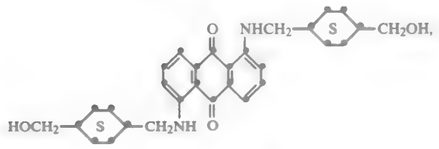
bamoyl, arylcarbamoyl, 2-pyrrolidono, acylamido or N-alkylacylamido; and

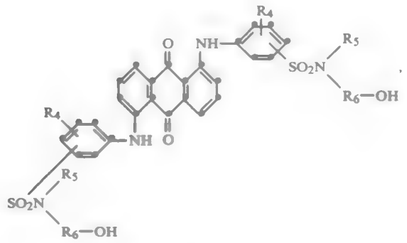
n is an integer of 1 to 5;

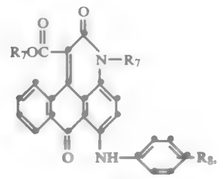
wherein one or more of said alkyl, alkoxy, aryl, aryloxy, alkylthio, arylthio or aralkyl groups contain one or more reactive groups selected from the group consisting of carboxy, carbalkoxy, carbaryloxy, N-alkylcarbamoyloxy, carbamoyloxy, acyloxy, chlorocarbonyl, hydroxyl, cycloalkylcarbonyloxy, N-arylcarbamoyloxy and N,N-dialkylcarbamoyloxy, wherein said alkyl and aryl groups may further contain one or more alkoxy, acyloxy, halo, cyano, hydroxy, and arylamido groups;

in a concentration of about 1 to about 10 parts per million, along with one or more red compounds selected from the group consisting of



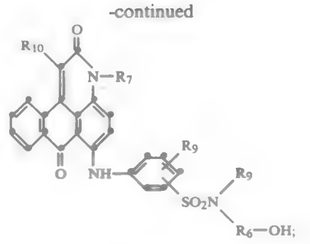






and

-continued



wherein R_4 is hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy; R_5 is hydrogen, C_1–C_4 alkyl or C_1–C_4 alkyl substituted with hydroxy; R_6 is C_2–C_6-alkylene; R_7 is C_1–C_4-alkyl; R_8 is selected from hydrogen, halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy; R_9 is hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy; and R_{10} is hydrogen or carb-C_1–C_4-alkoxy; in a concentration of about 0.1 to 3 parts per million.

5,340,911

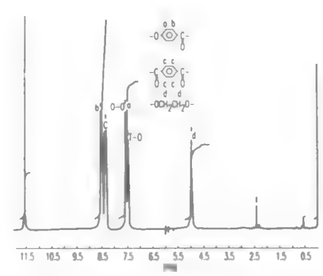
LIQUID CRYSTALLINE POLYESTERS AND METHODS FOR THEIR PRODUCTION

Osamu Kishiro, Atsugi; Rie Shirahama, Sagamihara; Yasuyuki Sakata, Machida; Hideaki Tanaka, Yokohama, and Ken Honma, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

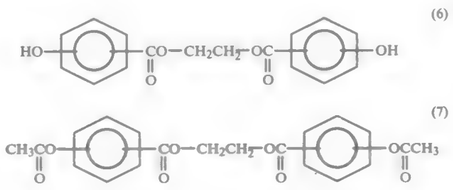
Continuation of Ser. No. 681,066, Apr. 5, 1991, Pat. No. 5,310,859. This application Oct. 20, 1993, Ser. No. 138,205

Int. Cl.[5] **C08G** *63/00*

U.S. Cl. 528—308 **9 Claims**



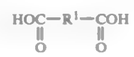
1. A method for producing a liquid crystalline polyester, which comprises reacting compounds of the following formulas (6) and/or (7):



(6)

(7)

and a dicarboxylic acid of the following formula (8):



(8)

wherein R^1 is a bivalent aromatic hydrocarbon group having

from 6 to 18 carbon atoms, and, if necessary, acetic anhydride, as starting materials, for polycondensation in a molten state.

5,340,912

CYANATE RESINS

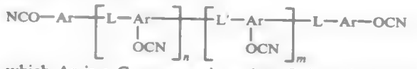
Pen-Chung Wang, Houston, and Donald R. Kelsey, Fulshear, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 23, 1993, Ser. No. 23,428

Int. Cl.[5] **C08G** *73/10, 73/00;* **C07C** *261/02*

U.S. Cl. 528—322 **9 Claims**

1. A compound of the formula



in which Ar is a $C_{6\text{-}20}$ aromatic moiety, L is a divalent cyclohexanenorbornane linking moiety, L' is a divalent cycloaliphatic linking moiety, and each of m and n is a number within the range of 0 to about 10.

5,340,913

SYNTHESIS OF AROMATIC HETEROCYCLIC POLYMERS FROM A BIOSYNTHETICALLY PREPARED PRECURSOR

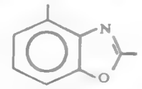
Thomas J. Meade, Altadena, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 19, 1993, Ser. No. 34,924

Int. Cl.[5] **C08G** *63/34, 69/26*

U.S. Cl. 528—335 **6 Claims**

1. A novel 2,4-polybenzoxazole having repeating units of the formula



5,340,914

MICROWAVE PROCESSING

Jerome J. Cuomo, Lincolndale, N.Y.; Jeffrey D. Gelorme, Plainville, Conn.; Michael Hatzakis, Jr., Chappaqua, N.Y.; David A. Lewis, Carmel, N.Y.; Jane M. Shaw, Ridgefield, Conn., and Stanley J. Whitehair, Peekskill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 799,377, Nov. 27, 1991, abandoned, which is a division of Ser. No. 551,716, Jul. 11, 1990, Pat. No. 5,241,040. This application Jan. 16, 1993, Ser. No. 78,732

Int. Cl.[5] **C08G** *73/10, 69/26;* **C08F** *2/46*

U.S. Cl. 528—353 **20 Claims**

1. A method of forming a polyimide having terminal acetylene groups where said acetylene groups are substantially unpolymerized, comprising exposing a precursor of said polyimide, said precursor having unpolymerized acetylene groups, to microwave radiation under conditions effective to convert said precursor to said polyimide without polymerizing said acetylenic groups.

5,340,915

CROSSLINKED MAGNETIC POLYMERS AND METHODS FOR PREPARATION THEREOF

Jack D. Mackey, Hawthorne, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Continuation of Ser. No. 866,913, Apr. 10, 1992, Pat. No. 5,252,730. This application May 4, 1993, Ser. No. 57,278

Int. Cl.[5] **C08G** *73/00*

U.S. Cl. 528—363 **17 Claims**

1. A process for producing a crosslinked polymer composition having intense magnetic properties, comprising the steps of:

reacting a phthalimide compound with an aromatic dialiphatic acid, in a proportion of about two molar amounts of the phthalimide compound to about one molar amount of the aromatic dialiphatic acid, in the presence of an acetate of a monovalent metal at a temperature of between about 200° C. to about 260° C. for about 1 to 3 hours, whereby a 1,4-phenylenebis diphthalimidine compound is formed;

cooling, solidifyng, and extracting the 1,4-phenylenebis diphthalimidine compound;

pulverizing, filtering, and washing the extracted 1,4-phenylenebis diphthalimidine compound; and,

reacting the extracted 1,4-phenylenebis diphthalimidine compound and a metal acetate salt selected from the group consisting of metal acetate salts of a divalent metal and metal acetate salts of a trivalent metal at a temperature of between about 300° C. and about 380° C. under an inert gas atmosphere, whereby the crosslinked polymer composition having intense magnetic properties is formed.

5,340,916

POLYOXYPROPYLENE-POLYOLS AND POLYOXYPROPYLENE-POLYOXYETHYLENE-POLYOLS CONTAINING HYDROXYL GROUPS

Rolf Henn, Ketsch; Werner Hinz, Frankenthal; Ludwig Schuster, Limburgerhof, and Klaus Vorspohl, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 694,621, May 2, 1991, Pat. No. 5,192,813. This application Oct. 26, 1992, Ser. No. 966,228

Int. Cl.[5] **C07C** *43/10;* **C08G** *65/08*

U.S. Cl. 528—405 **3 Claims**

1. A novel polyoxypropylene-polyol or a polyoxyethylene-polyoxypropylene-polyol containing up to 30% by weight, based on the weight of the alkylene oxide units, of oxyethylene units bonded within the chain, containing secondary hydroxyl groups, having a functionality of from 3.5 to 4.3, a hydroxyl number of from 350 to 650 and a viscosity of from 500 to 2,500 mPa·s at 23° C., and prepared by anionic polymerization of 1,2-propylene oxide or ethylene oxide and 1,2-propylene oxide at elevated temperature onto an initiator molecule mixture containing, based on the total weight of the initiator molecule mixture,

a1) from 40 to 80% by weight of a hexanetetrol,

a2) from 1 to 30% by weight of a hexanetriol,

a3) from 0 to 35% by weight of a glycerol and

a4) from 0 to 15% by weight of sorbitol or mannitol, or a mixture thereof.

5,340,917

SYNDIOTACTIC POLYPROPYLENE, METHODS FOR PRODUCING AMORPHOUS SYNDIOTACTIC POLYPROPYLENE AND APPLICATIONS THEREOF

Richard R. Eckman; Andrew J. Peacock, and Paul M. Henrichs, all of Houston, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed May 7, 1993, Ser. No. 59,058

Int. Cl.[5] **C08F** *6/26*

U.S. Cl. 528—481 **8 Claims**

1. A method for forming articles from syndiotactic polypropylene having 55% or greater racemic dyads comprising

(a) heating the syndiotactic polypropylene to a substantially molten state;

(b) quenching the syndiotactic polypropylene by rapidly reducing he temperature of the syndiotactic polypropylene to a temperature of 30° C. above the syndiotactic polypropylene's Tg or less, and

(c) forming the quenched syndiotactic polypropylene at a temperature below 50° C. before the syndiotactic polypropylene visibly hazes.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,918

PROCESS FOR THE STABILIZATION OF COPOLYMERS OF MALEIC ANHYDRIDE AND ALKYL VINYL ETHERS

James R. Kittrell, and Charles W. Quinlan, both of Amherst, Mass., assignors to KSE Inc., Sunderland, Mass.

Continuation of Ser. No. 902,015, Jun. 23, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 121,245

Int. Cl.[5] C08F *6/28*

U.S. Cl. 528—483 20 Claims

1. A process for the preparation of copolymers of maleic anhydride and alkyl vinyl ethers having a stable specific viscosity, which comprises: providing a copolymer of maleic anhydride and an alkyl vinyl ether, wherein the alkyl group contains from 1 to 5 carbon atoms; contacting said copolymer with a flowing stream of non-reactive substantially moisture free gas at a temperature of from about 30°–100° C. for from about 0.5–24 hours at sub-critical pressure, thereby stabilizing the specific viscosity of the copolymer and providing a copolymer which does not degrade on storage or upon exposure to elevated temperature.

5,340,919

Patent Not Issued For This Number

5,340,920

PHYSIOLOGICALLY ACTIVE PORCINE PEPTIDE (CNP-53)

Hisayuki Matsuo, 5-15-141, 5-chome, Onoharahigashi, Minoo-shi, Osaka; Kenji Kangawa, Miyazaki, and Naoto Minamino, Osaka, all of Japan, assignors to Hisayuki Matsuo, Minoo, Japan

Filed Jul. 12, 1991, Ser. No. 728,221

Claims priority, application Japan, Jul. 13, 1990, 1-186582

Int. Cl.[5] C07K *7/00;* A61K *37/00, 37/02*

U.S. Cl. 530—324 2 Claims

1. An isolated peptide represented by the following amino acid sequence:

H—Asp[1]—Leu—Arg—Val—Asp—Thr—Lys—Ser—Arg-(1)

(2) Ala[10]—Ala—Trp—Ala—Arg—Leu—Leu—His—Glu-(3)

(4) His—Pro[20]—Asn—Ala—Arg—Lys—Tyr—Lys—Gly-(5)

(6) Gly—Asn—Lys[30]—Lys—Gly—Leu—Ser—Lys—Gly-(7)

(8) Cys—Phe—Gly—Leu[38]—Lys—Leu—Asp—Arg—Ile-(9)

(10) Gly—Ser—Met—Ser—Gly[50]—Leu—Gly—Cys[53]—OH

where (1)/(2), (3)/(4), (5)/(6), (7)/(8) and (9)/(10) are respectively bonded directly, and each of the cysteine residues (Cys) at positions 37 and 53 forms an intramolecular S-S bond (see SEQ ID NO. 1).

5,340,921

Γ, δT CELL RECEPTOR AND METHODS AND DETECTION

Michael B. Brenner, Ashland; Jack L. Strominger, Lexington; Johnathan Seidman, Milton; Stephen H. Ip, Framingham, and Michael S. Krangel, Newtonville, all of Mass., assignors to T Cell Sciences, Inc., Cambridge; The Dana-Farber Cancer Institute, Boston and President & Fellows of Harvard College, Cambridge, all of Mass.

Continuation-in-part of Ser. No. 882,100, Jul. 3, 1986, abandoned. This application Feb. 19, 1987, Ser. No. 16,252

Int. Cl.[5] A61K *35/14;* C07K *3/00*

U.S. Cl. 530—350 40 Claims

1. A purified, isolated polypeptide which comprises a δ chain of a T cell antigen receptor, which chain is characterized by

(a) being associated in a complex with the T3 antigen when found on the surface of a T cell,

(b) not being reactive with antibodies to the alpha, beta T cell antigen receptor,

(c) not being reactive with monoclonal antibody βF1, and

(d) not being reactive with antibodies to the γ chain of the T cell antigen receptor.

5,340,922

NEURAL CALCIUM-ACTIVATED NEUTRAL PROTEINASE INHIBITORS

Ralph A. Nixon, Arlington, and Kiyoshi H. Takeuchi, Newton, both of Mass., assignors to The McLean Hospital Corporation, Belmont, Mass.

Continuation-in-part of Ser. No. 356,458, May 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 200,141, May 31, 1988, abandoned. This application Jul. 25, 1991, Ser. No. 735,611

Int. Cl.[5] C07K *7/00*

U.S. Cl. 530—350 2 Claims

1. A substantially purified, low molecular weight calpastatin with a molecular weight of about 60 kilodaltons, as determined by gel filtration, and consisting of a dimer of about 31 kilodalton subunits, as determined by SDS PAGE under reducing conditions, and wherein said calpastatin has a pI range of 4.2–4.7 on an isoelectric focusing gel and an N-terminal amino acid sequence as follows:

NH_2-X-Glu-Lys-Glu-Thr-Lys-Glu-Glu-Gly-Lys-Pro-Lys-Gln-Gln-Gln-X-X-Lys-Glu-Lys

wherein X represents an unknown amino acid residue; wherein said calpastatin has the following amino acid composition:

	Mole %
Asx	8.4
Thr	3.6
Ser	10.3
Glx	17.1
Pro	5
Gly	16.4
Ala	6.4
Cys/2	0
Val	4.3
Met	0.9
Ile	3.3
Leu	3.1
Tyr	2.7
Phe	7
Lys	1.3
His	[illegible]

wherein:

Asx = sum of aspartic acid (D) and asparagine (N), and

Glx = sum of glutamic acid (E) and glutamine (Q);

and wherein said calpastatin is capable of inhibiting calcium-activated neutral proteinase activity.

5,340,923

METHODS FOR MAKING AND PURIFYING ANTIVENOMS

Sean B. Carroll, Cottage Grove, Wis., assignor to Ophidian Pharmaceuticals, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 429,791, Oct. 31, 1989, Pat. No. 5,196,193. This application Nov. 17, 1992, Ser. No. 977,583

The portion of the term of this patent subsequent to Mar. 23, 2006, has been disclaimed.

Int. Cl.[5] A61K *37/04, 39/395*

U.S. Cl. 530—389.1 5 Claims

1. A method of producing venom-neutralizing anti-venom comprising:

a) providing *C. atrox, B. atrox, C. adamanteus,* and *C. durrisus terrificus* venom as immunogenic immunizing venom;

b) providing a prurality of purifying venoms selected from said immunizing venoms;

c) providing a plurality of members of at least one non-human mammalian species;

d) immunizing each of said members separately with one of said immunizing venoms, such that a plurality of neutralizing monovalent antivenoms are produced;

e) affinity purifying said monovalent antivenoms by: i) affinity purifying each of said *C. atrox, B. atrox, C. adamanteus* anivenoms separately with one purifying venom selected from the group consisting of *C. atrox, B. atrox,* and *C. adamanteus* and ii) affinity purifying said *C. durrisus terrificus* antivenom with *C. durrisus terrificus* venom, so that a plurality of purified, neutralizing monovalent antivenoms are produced; and

f) mixing one or more of said purified *C. atrox, B. atrox, C. adamanteus* antivenoms with said *c. durrisus* terrificus antivenom such that a polyvalent antivenom is produced.

5,340,924

METHOD FOR HEAT TREATMENT OF LACTOFERRIN WITHOUT LOSING PHYSIOLOGICAL ACTIVITIES THEREOF

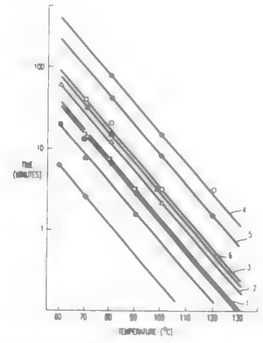
Mamoru Tomita; Yoshitaka Tamura, both of Yokohama; Hiroshi Miyakawa, Kamakura; Hitoshi Saito, Kawasaki; Hiroaki Abe, Yokosuka, and Eiji Nagao, Sagamihara, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 603,416, Oct. 26, 1990, abandoned. This application Mar. 27, 1992, Ser. No. 860,224

Claims priority, application Japan, Jan. 18, 1990, 2-10266

Int. Cl.[5] C07K *3/12, 15/00, 15/14, 15/22*

U.S. Cl. 530—395 2 Claims



1. A method for treatment of a matter which contains moisturized or liquified lactoferrin which has been isolated from mammalian milk or processed mammalian milk, without losing the physiological activities of lactoferrin which comprises:

a) adjusting pH of said moisturized or liquified lactoferrin contained in said matter to within an acetic pH range of between 2.0 and 6.0 both inclusive by adding acid or aqueous solution of acid thereto when the pH of said moisturized or liquified lactoferrin is out of said pH range; and

b) heating said matter under a combination of a temperature between 60° C.–130° C., time between 400 minutes–2 seconds, and, the adjusted pH of said matter to result in sterilization and an undenaturation rate of lactoferrin of not less that 60%.

5,340,925

NORMAL HUMAN GROWTH REGULATORY RECEPTOR FOR TGF-β

Mario N. Lioubin, Bellevue; Thomas J. Brown, and Anthony F. Purchio, both of Seattle, all of Wash., assignors to Oncogen, Seattle, Wash.

Continuation of Ser. No. 269,524, Nov. 14, 1988, abandoned. This application Jun. 17, 1992, Ser. No. 900,511

Int. Cl.[5] C07K *15/00*

U.S. Cl. 530—395 15 Claims

1. A protein that:

(a) has an amino-terminal amino acid sequence comprising:

NH_2-Lys-Tyr-Tyr-Asp-Lys-Asp-Tyr;

(b) has a glycosylated apparent molecular weight by gel electrophoresis under reducing conditions of about 200,000 to about 206,000 daltons;

(c) may be obtained from a naturally occurring mammalian fibroblast;

(d) is a specific receptor for TGF-β; and

(e) is free from bands due to other proteins which occur naturally in mammalian fibroblasts, when said protein is analyzed by the polyacrylamide gel electrophoresis procedure of Laemmli using Coomassie stain for protein detection.

5,340,926

PROCESS FOR THE RECOVERY OF RECOMBINANTLY PRODUCED PROTEIN FROM INSOLUBLE AGGREGATE

Peter A. Lowe; Fiona A. O. Marston; Sarojani Angal, all of Reading, and Joyce A. Schoemaker, London, all of United Kingdom, assignors to Celltech, Limited, United Kingdom

Continuation of Ser. No. 726,638, Jul. 2, 1991, abandoned, which is a continuation of Ser. No. 411,255, Sep. 25, 1989, abandoned, which is a continuation of Ser. No. 676,192, Nov. 20, 1984, abandoned. This application Aug. 5, 1993, Ser. No. 102,697

Claims priority, application United Kingdom, Mar. 25, 1983, 8308234; Oct. 12, 1983, 8327345

Int. Cl.[5] C07K *3/12, 15/06*

U.S. Cl. 530—423 14 Claims

1. In a process for the production of a soluble native protein which comprises the steps:

(a) culturing a host organism transformed with a vector including a gene coding for said protein to produce an insoluble aggregate form of said protein;

(b) reversibly denaturing said insoluble aggregate form of said protein by adding said insoluble aggregate form of said protein to a first solution comprising an aqueous solution of urea or guanidine hydrochloride, and

(c) subsequently renaturing the protein whereby the soluble native form of said protein is produced,

the improvement of enhancing the yield of native protein wherein a second solution is subsequently added to step (b) comprising an aqueous solution of an alkali metal hydroxide or an alkali metal extraction buffer, which second solution and the combined first and second solutions having a pH which dissociates groups of said protein which maintain conformation of said protein, and reducing in step (c) the pH of the combined aqueous solutions of step (b) to a level below that effective to denature the protein.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,927

PROCESS FOR THE PREPARATION OF 2-DIAZO-3-TRISUBSTITUTED SILYLOXY 3-BUTENOATES

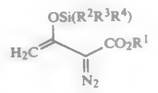
David L. Hughes, Old Bridge, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 611,237, Nov. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 381,344, Jul. 18, 1989, abandoned. This application Mar. 2, 1992, Ser. No. 846,725

Int. Cl.[5] **C07C** *245/18*

U.S. Cl. 534—558 **7 Claims**

1. A process for the preparation of 2-diazo-3-trisubstituted silyloxy 3-butenoate ester of the Formula 1:



1

wherein R^1 is:

a) C_1–C_6 alkyl;

b) C_2–C_6 alkenyl;

c) phenyl optionally substituted by 1–3 substituents which independently are: bromine, fluorine, C_1–C_4 alkyl, C_1–C_4 alkoxy or nitro;

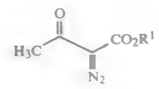
d) C_1–C_4 alkyl substituted by c) herein above;

e) benzhydryl or triphenylmethyl; R^2, R^3, $R^4$are indepen-dently selected from:

f) C_1–C_4 alkyl;

g) phenyl optionally substituted by 1–3 substituents which independently are C_1–C_4 alkyl;

h) —OR^5 where R^5 is f) or g) hereinabove; which comprises the reaction of the diazoacetate of the Formula 2:



2

wherein R_1 is described hereinabove; and a trisubstituted silyl halide of the Formula 3:

3

wherein R^2, R^3, R^4 are described hereinabove and X is bromine or chlorine; IN THE PRESENCE of a base, selected from: DBU (1, 8-diazabicyclo-[5.4.0]- undec-7-ene), DBN (1,5-diazabicyclo-[4.3.0]-non-5-ene) and tri(C_1–C_4)alkylamine; and salt selected from: sodium iodide, potassium iodide and cesium iodide, both in a amount sufficient to produce compound 1;

with an aprotic organic solvent in an inert atmosphere and at a temperature sufficient to produce compound 1.

5,340,928

REACTIVE DYESTUFF CONTAINING TRIAZINYL AND HALOPYRIMIDINE MOIETIES

Manfred Hoppe, Kürten; Karl-Josef Herd, Odenthal-Holz; Thomas Eizenhöfer, Köln; Wolfgang Harms, Odenthal; Hermann Henk, Köln; Klaus Kunde, Neunkirchen-Seelscheid, and Wolfram Reddig, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 6, 1992, Ser. No. 880,110

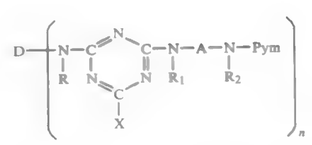
Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4115833; May 28, 1991, 4117387

The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.

Int. Cl.[5] **C09B** *62/022;* **D06P** *1/382*

U.S. Cl. 534—618 **13 Claims**

1. (Once amended) A reactive dyestuff of the formula (I)



(1)

in which

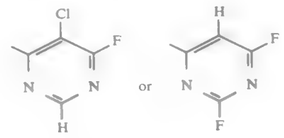
D denotes the radical of an organic dyestuff excluding one containing a group of the formula SO_2X wherein X is —CH=CH_2 or —CH_2—CH_2—Y wherein Y is a group which can be eliminated by alkali,

R, R_1 and R_2, independently of one another, denote hydrogen, or substituted or unsubstituted C_{1-4}-alkyl,

A denotes a substituted or unsubstituted aliphatic, aromatic or aromatic-aliphatic bridging member,

X denotes Cl or F,

Pym denotes the radical



and

n denotes 1 or 2.

5,340,929

TRISAZO DYE AND DYE COMPOSITION CONTAINING THE SAME

Takashi Ono, Takatsuki; Tatsuya Yagyu; Yoshihiro Sawatari, both of Neyagawa, and Masaki Yonezawa, Kadoma, all of Japan, assignors to Orient Chemical Industries, Ltd., Osaka, Japan

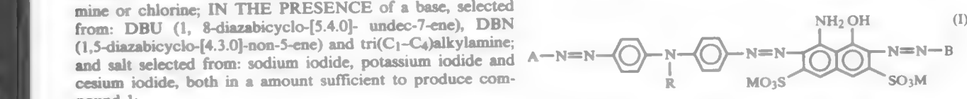
Filed Feb. 12, 1993, Ser. No. 16,999

Claims priority, application Japan, Feb. 12, 1992, 4-024878

Int. Cl.[5] **C09B** *35/46;* **C09D** *11/00*

U.S. Cl. 534—680 **22 Claims**

1. A trisazo dye represented by the formula:



(I)

wherein B is a substituted or non-substituted phenyl group, A is a phenyl group substituted with at least one substituent selected from the group consisting of an amino group, a substituted amino group and a hydroxyl group, R is a substituted or non-substituted phenyl group or an alkyl group having 1 to 8 carbon atoms, and M is hydrogen, alkali metal, aliphatic alkyl ammonium or alkanol ammonium.

5,340,930

MONOAZO DYE HAVING A THIOPHENE DERIVATIVE AS DIAZO COMPONENT

Kiyoshi Himeno, Munakata, and Ryouichi Sekioka, Kitakyushu, both of Japan, assignors to Hoechst Mitsubishi Kasei Co., Ltd., Tokyo, Japan

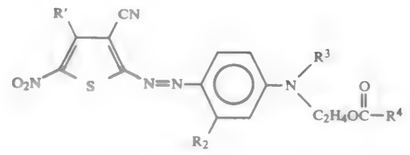
Filed Jun. 3, 1992, Ser. No. 893,022

Claims priority, application Japan, Jun. 11, 1991, 3-139267

Int. Cl.[5] **C09B** *29/033, 29/09*

U.S. Cl. 534—753 **5 Claims**

1. A monoazo dye of the following formula (I):



(I)

wherein R^1 is hydrogen, methyl or chlorine, R^2 is hydrogen or methyl, R^3 is C_{2-4} alkyl, R^4 is C_{1-3} alkyl, and the total number of carbon atoms of R^3 and R^4 is at least 4.

5,340,931

AROMATIC ALLENE COMPOUNDS OF THE FORMULA $(CH_2$=CH—$O)_n$—R—$(A)_m$ IN WHICH R IS AN AROMATIC GROUP AND PREPARATION THEREOF

Mitsuo Yamada; Hiromichi Kayano, both of Osaka; Kei Aoki, Nara, and Keizou Ishii, Hyogo, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 15, 1989, Ser. No. 323,786

Claims priority, application Japan, Mar. 15, 1988, 63-61119; Mar. 15, 1988, 63-61120; Mar. 15, 1988, 63-61121; Mar. 15, 1988, 63-61122; Mar. 15, 1988, 63-61123

Int. Cl.[5] **C07C** *43/215, 41/18, 41/32*

U.S. Cl. 534—843 **6 Claims**

1. An allene compound of the formula:

$$(CH_2{=}C{=}CH{-}O)_n{-}R{-}(A)_m \quad (I)$$

in which R is an aromatic group selected from the group consisting of benzene, naphthalene, anthracene, azobenzene, bisphenol, or polyphenyl having 2 to 10 benzene rings directly and linearly connected with each other, or

—ph—R^1—ph— group (II)

in which each ph represents a phenylene, and R^1 is a bivalent C_1–C_6 aliphatic hydrocarbon, an alicyclic hydrocarbon or C_2–C_6 aliphatic hydrocarbon whose main chain is interrupted by one or more oxygen atoms or R is any of the above-mentioned aromatic groups substituted by one or more of groups selected from halogen, alkyl, cyano or alkoxy; A is a carboxyl, sulpho or —CH=C=CH_2 group; n is an integer of from 1 to 10; m is 0, 1, 2, or 3, the sum of said m and n being equal to the valence of R, excluding the case wherein R is a halogen, methyl, cyano- or methoxy- substituted or unsubstituted benzene, n is 1 and m is 0, and excluding the case wherein R is an unsubstituted napthalene, n is 1 and m is 0.

5,340,932

SUBSTANCES WITH HEPARIN-LIKE STRUCTURE AND THEIR METHOD OF PRODUCTION

Fernando Fussi, Lugano, Switzerland; Victor Díáz, Buenos Aires, Argentina; Ricardo H. Doménico, Buenos Aires, Argentina, and Esteban P. Fuentes, Buenos Aires, Argentina, assignors to Ajorca S.A., Buenos Aires, Argentina

Continuation of Ser. No. 567,124, Aug. 14, 1990, abandoned. This application Sep. 16, 1992, Ser. No. 946,034

Int. Cl.[5] **C07H** *1/00;* **C08B** *37/10*

U.S. Cl. 536—21 **4 Claims**

2. An N-acetylated derivative of heparin having the following characteristics:

absence of O-acetylated groups;

anticoagulant activity (APTT Anti-X) of less than 10 IU/mG

N-acetyl content (expressed as CH_3CO—) of 3 to 7% by weight corresponding to a degree of N-acetylation of from 40% to 90%;

uronic acids content of 31%±1% by weight;

hexosamines content of 32%±1% by weight;

Organic sulfate content (as S) of 8%±1% by weight; molar ratio of uronic/hexosamine/S/acetyl of 1/1/1.5–1.7/0.4–0.9; **and**

specific optical rotation of greater than +35°.

5,340,933

Patent Not Issued For This Number

5,340,934

CDNA SEQUENCES OF HUMAN BONE MATRIX PROTEINS

John D. Termine, Bethesda; Marian F. Young, Silver Spring; Larry W. Fisher, Rockville, and Pamela G. Robey, Bethesda, all of Md., assignors to The United States of Americas as represented by the Secretary of Health & Human Services, Washington, D.C.

Filed Nov. 3, 1989, Ser. No. 432,044

Int. Cl.[5] **C07H** *17/00;* **C12N** *15/00*

U.S. Cl. 536—23.5 **1 Claim**

1. An isolated cDNA having the nucleotide sequence shown in FIG. 1.

5,340,935

DNAS ENCODING PROTEINS ACTIVE IN LYMPHOCYTE-MEDICATED CYTOTOXICITY

Paul J. Anderson, Watertown; Michel Streuli, Brookline, and Stuart F. Schlossman, Newton Centre, all of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 726,607, Jul. 10, 1991, which is a continuation-in-part of Ser. No. 460,678, Jan. 5, 1990, Pat. No. 5,079,343. This application Feb. 19, 1992, Ser. No. 843,949

The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.

Int. Cl.[5] **C07K** *13/00*

U.S. Cl. 536—23.5 **7 Claims**

1. A purified nucleic acid comprising a sequence encoding a polypeptide that is immunologically reactive with the monoclonal antibody produced by the hybridoma designated ATCC #HB 10319.

5,340,936

8-AZABICYCLO[3.2.1]OCTANE METHANONE AND CORRESPONDING OXIMES

Edward J. Glamkowski, Warren, N.J.; David M. Fink, Doylestown, Pa.; Barbara E. Kurys, Elmwood Park, and Yulin Chiang, Convent Station, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 831,027, Feb. 4, 1992, Pat. No. 5,234,931, which is a continuation-in-part of Ser. No. 650,144, Feb. 4, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,047

Int. Cl.[5] **C07D** *451/02, 401/04, 417/04*

U.S. Cl. 546—124 **4 Claims**

1. A compound which is (2-fluorophenyl)(8-methyl-8-azabicyclo[3.2.1]octan-3-yl) methanone or a pharmaceutically acceptable acid addition salt thereof.

4. A compound which is (2,4-difluorophenyl)(8-methyl-8-azabicyclo[3.2.1]octan-3-yl)m ethanone oxime or a pharmaceutically acceptable acid addition salt thereof.

5,340,937

AVOIDING SULFONIC PHENOLS IN PRODUCTION OF PHENOLS

Edward A. Fraini, 117 Flag Dr. East, Lake Jackson, Tex. 77566; George W. Tepera, Rte. 1, Box 552, Sweeny, Tex. 77480, and Malcolm W. McClure, Rte. 2, Box 1915-1; County Rd. 36, Angleton, Tex. 77515

Filed Jan. 8, 1993, Ser. No. 2,288

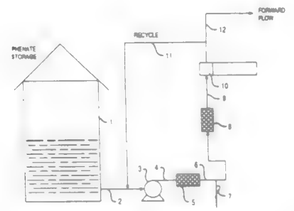
Int. Cl.[5] **C07C** *39/00*

U.S. Cl. 569—716 **19 Claims**

1. An improved process of converting a water soluble phe-

VOL 1165 ISS 4 AUG 23 1994 UMI

nate to a corresponding phenol using an acid having a pKa lower than that of the phenol in which a two phase system having an aqueous phase containing both the phenol and the phenate and an organic, phenol-containing, phase are present, the improvement comprising adding the acid to enter the



aqueous phase with mixing sufficient to substantially surround the organic phase with the aqueous phase.

5,340,938

TONE GENERATION APPARATUS WITH SELECTIVE ASSIGNMENT OF ONE OF TONE GENERATION PROCESSING MODES TO TONE GENERATION CHANNELS

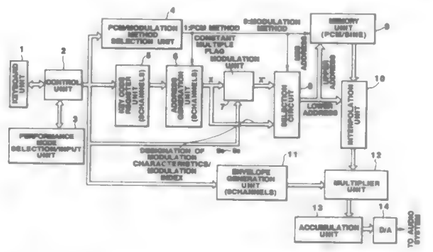
Kunihiro Sugita, and Hiroshi Iwase, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1991, Ser. No. 687,722

Claims priority, application Japan, Apr. 23, 1990, 2-107286; Jun. 29, 1990, 2-172195; Jun. 29, 1990, 2-172196

Int. Cl.[5] G10H *7/04*

U.S. Cl. 84—605 **18 Claims**



1. A tone waveform generation apparatus comprising:

tone generation processing means including a plurality of tone generation channels to each of which one of (i) a first tone generation processing mode for reading out pre-stored waveform data at a speed corresponding to a pitch to be assigned, and for outputting the readout waveform data as a tone waveform, and (ii) a second tone generation processing mode for synthesizing a plurality of signals in accordance with a predetermined algorithm to output waveform data at an assigned pitch as a tone waveform, is selectively and independently assigned as a processing mode for generating a tone, and which one generation channels are subjected to time-divisional processing;

pitch designation means for designating a pitch of a tone;

processing designation means for designating desired tone generation processing mode from the first and second tone generation processing modes for each of said plurality of tone generation channels, and for outputting corresponding processing designation data;

pitch assignment means for assigning a pitch designated by said pitch designation means to each of the tone generation channels of said tone generation processing means; and

processing assignment means for assigning processing designation data output from said processing designation means to each of the tone generation channels of said tone generation processing means.

5,340,939

INSTRUMENT HAVING MULTIPLE DATA STORING TRACKS FOR PLAYING BACK MUSICAL PLAYING DATA

Tomoyuki Kumagai, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Oct. 7, 1991, Ser. No. 774,039

Claims priority, application Japan, Oct. 8, 1990, 2-271889

Int. Cl.[5] G10H *1/38, 7/00*

U.S. Cl. 84—609 **17 Claims**

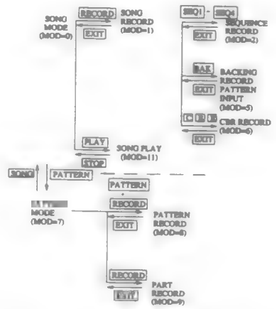
1. An instrument for recording and playing back musical playing data, comprising:

a first track means for storing first performance data;

a second track means for storing second performance data to replace the performance data in the first track means;

read out means for reading the first and second tracks simultaneously and for reading out the first performance data from the first track means and second performance data from the second track means at a predetermined timing;

tone generating means for generating musical tone based on



the first performance data and for generating musical tone based on the second performance data switched with the first performance data in response to a reading out of the second performance data from the second track.

5,340,940

MUSICAL TONE GENERATION APPARATUS CAPABLE OF WRITING/READING PARAMETERS AT HIGH SPEED

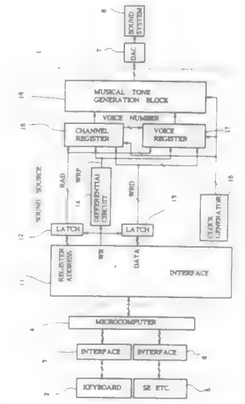
Akira Iizuka, and Keiji Kawakami, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 20, 1991, Ser. No. 673,129

Claims priority, application Japan, Mar. 20, 1990, 2-70508; Mar. 20, 1990, 2-70509

Int. Cl.[5] G10H *7/00, 1/06*

U.S. Cl. 84—622 **6 Claims**



1. A musical tone generation apparatus comprising:

a plurality of tone generation channels for generating musical tones on a time-division basis;

first parameter memory means for storing voice numbers, each of said voice numbers representing a tone color of each of said tone generation channels; and

second parameter memory means for storing tone color control parameters for different tone colors, which parameters can be read out for each time division channel in correspondence with the respective voice number stored in said first parameter memory means;

VOL 1165 ISS 4 AG 23 1994 UMI

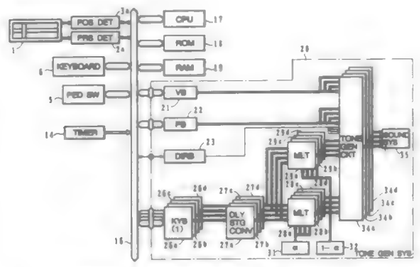
wherein each of said tone generation channels receives the tone color control parameters read out from said second parameter memory means for the channel, and forms a musical tone according to the parameters.

5,340,941

ELECTRONIC MUSICAL INSTRUMENT OF RUBBED STRING SIMULATION TYPE

Tetsuo Okamoto, and Satoshi Usa, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 17, 1991, Ser. No. 642,631
Claims priority, application Japan, Jan. 19, 1990, 2-10186
Int. Cl.[5] G10H *5/00*; G01P *3/00*
U.S. Cl. 84—658 16 Claims



1. An electronic musical instrument comprising:
manipulation means for defining a manipulation region of at least one dimension and for achieving performance manipulation within said manipulation region;
position detection means for detecting the position of performance manipulation within said manipulation region;
arithmetic operation means for calculating information pertaining to the direction and velocity of movement from the time change of the position of performance manipulation;
tone signal generating means for generating a tone signal using said information pertaining to the direction and velocity information as a parameter of controlling the tone signal; and
selectively operable latch means for latching, at the time of operation thereof, information pertaining to at least one of the direction and velocity of the movement;
wherein said tone signal generating means generates a tone signal using said information latched by said latch means during operation of said latch means regardless of changes in direction or velocity of performance manipulation.

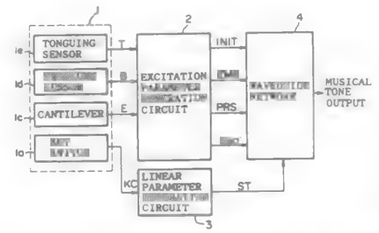
5,340,942

WAVEGUIDE MUSICAL TONE SYNTHESIZING APPARATUS EMPLOYING INITIAL EXCITATION PULSE

Toshifumi Kunimoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Continuation of Ser. No. 755,532, Sep. 5, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 10,524
Claims priority, application Japan, Sep. 7, 1990, 2-237746
Int. Cl.[5] G10H *1/12*
U.S. Cl. 84—661 5 Claims

1. A musical tone synthesizing apparatus comprising:
performance data generation means for generating performance data in accordance with a performance operation,
excitation means for generating an excitation signal corresponding to said performance data, including means for generation an initial excitation signal having a pulse width which is short relative to said excitation signal, and
wave transmission means, including at least two paths, a junction, means for delaying said excitation signal by a predetermined time, and means for extracting the excitation signal, for repeatedly circulating said excitation signal and for outputting the repeatedly circulated excitation signal,



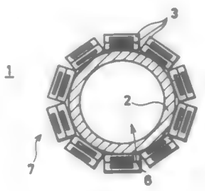
wherein said performance data operation means supplies a performance initiation signal to said excitation means during initial generation of said musical tone signal, and wherein said excitation means generates said initial excitation signal in response thereto so as to excite said wave transmission means.

5,340,943

METHOD OF USING OXIDE SUPERCONDUCTING CONDUCTOR

Kenichi Sato, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Nov. 13, 1990, Ser. No. 612,023
Claims priority, application Japan, Nov. 14, 1989, 1-296862
Int. Cl.[5] H01B *12/00*
U.S. Cl. 174—15.4 9 Claims



1. A method of using an oxide superconductor in a stable transition state between a superconducting state and a normal conducting state comprising the steps of;
preparing an oxide superconductor with a critical temperature exceeding the boiling point of liquid nitrogen;
cooling said oxide superconductor to a temperature below that of its superconductivity critical temperature; and
energizing said cooled oxide superconductor with a current exceeding the critical current of said oxide superconductor for bringing the same into said stable transition state.

5,340,944

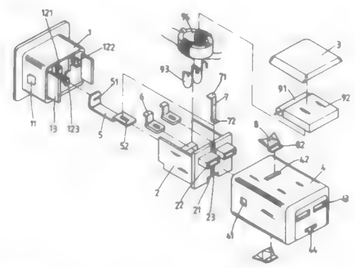
CONSTRUCTION OF AN ELECTROMAGNETIC INTERFERENCE FILTER

Frank Wang, Taoyuan, Taiwan, assignor to Delta Electronics, Inc., Taoyuan, Taiwan

Filed Apr. 19, 1993, Ser. No. 47,462
Int. Cl.[5] H01R *13/66*
U.S. Cl. 174—52.1 4 Claims

1. An electromagnetic interference filter comprising
a) an input socket having a plurality of dowel pins and at least one oblique protruding block;
b) an insulated base having an insulated upper cover, and a plurality of terminals in contact with the dowel pins and extending from the insulated base;

c) a metal case defining a plurality of first holes through which the plurality of terminals extend, at least one second hole located so as to be engaged by the at least one oblique protruding block so as to attach the metal case to the input socket such that the metal case encloses the insulated base, and an elongated opening on opposite surfaces of the metal case; and,



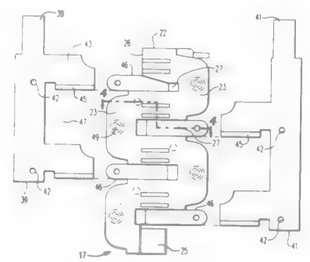
d) a spring plate located in each of the elongated openings, each spring plate having obliquely extending protrusions extending generally away from an adjacent surface of the metal case.

5,340,945

PANELBOARD WITH INSULATIVE SNAP-IN SUPPORT MEANS

Donald F. Gehrs, Brandon, and Louis L. Runge, Clinton, both of Miss., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 930,130, Aug. 14, 1992, abandoned, which is a division of Ser. No. 782,188, Oct. 24, 1991, Pat. No. 5,181,165. This application Jun. 2, 1993, Ser. No. 70,641
Int. Cl.[5] H02B *1/20*
U.S. Cl. 174—174 2 Claims



1. An insulating support structure for supporting at least one bus bar in a load center comprising:
a molded body sized and configured to receive and support at least one bus bar;
a plurality of integrally molded, ultrasonically stakable pins attached to the molded body and positioned to extend through holes in a pan to which the insulating support structure is to be attached;
a plurality of ledge parts positioned on opposite sides of the molded body;
a plurality of stab-receiving slots positioned along opposite sides of the molded body such that each of the plurality of stab-receiving slots is positioned across the molded body opposite one of the plurality of ledge parts in a staggered configuration; and
a plurality of transversely extending, longitudinally spaced fingers attached to the molded body and positioned adjacent the plurality of spaced ledges.

5,340,946

HEAT ACTIVATABLE ADHESIVE FOR WIRE SCRIBED CIRCUITS

Marju L. Friedrich, Babylon; John G. Branigan, Smithtown, and Maurice E. Fitzgibbon, Glen Cove, all of N.Y., assignors to Advanced Interconnection Technology, Inc., Islip, N.Y.

Division of Ser. No. 841,228, Feb. 21, 1992, which is a continuation of Ser. No. 335,139, Apr. 6, 1989, which is a division of Ser. No. 332,110, Apr. 3, 1989, Pat. No. Des. 319,508, which is a continuation of Ser. No. 75,351, Jul. 20, 1987, which is a continuation-in-part of Ser. No. 811,421, Dec. 20, 1985, abandoned. This application Apr. 14, 1992, Ser. No. 869,013
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—256 1 Claim

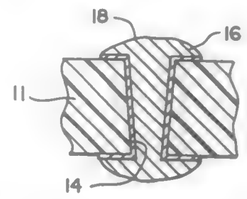
1. A wire scribed circuit board having a volume resistivity between 20° C. and 120° C. of at least 10^8 megohm-cm and an insulation resistance as measured in accordance with MIL-STD-202 of at least 1×10^6 megohms, said circuit board comprising at least one C-staged adhesive layer on a substrate and wire conductors scribed into the adhesive layer; said adhesive layer being formed from a film forming polymeric resin having a number average molecular weight greater than about 10,000 and a hydroxyl, epoxide or unsaturated functionality greater than about 7, said polymeric resin being selected from the group of polyols consisting of polyesters, polyurethanes, phenoxies, epoxies and mixtures thereof.

5,340,947

CERAMIC SUBSTRATES WITH HIGHLY CONDUCTIVE METAL VIAS

Kenneth Credle, Highland Park; Christopher G. Wolf, Beach Park, and John McConnell, Zion, all of Ill., assignors to Cirqon Technologies Corporation, Gurnee, Ill.

Filed Jun. 22, 1992, Ser. No. 902,082
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—262 14 Claims



1. A substrate for providing electrical or thermal feedthrough to or from an electronic device in a package comprising a thin ceramic plate having a plurality of via holes therethrough, each of said via holes having at least one transverse dimension measuring from about 3 mils to about 50 mils, each of said via holes being completely filled, to the extent that there are no visible holes therethrough at a microscopic enlargement of 200 diameters, said filling being with a metal selected from the group consisting of copper, silver, gold and alloys thereof, said filling metal being in the form of a dumbbell-shaped plug of said metal that seals said via hole, said dumbbell shape comprising a narrow, connecting center portion filling said via hole and two wider end portions extending beyond the ends of said via hole.

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,948

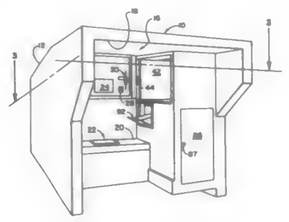
SYSTEM FOR MAILING AND COLLECTING ITEMS

Gary W. Ramsden, Eau Claire, Wis., assignor to U-Ship, USA Ltd., Eau Claire, Wis.

Continuation-in-part of Ser. No. 683,243, Apr. 10, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 903,342

Int. Cl.[5] G01G *19/40;* **G06F** *15/20*

U.S. Cl. 177—25.15 **22 Claims**



1. A system for accepting and storing parcel packages for subsequent pickup by a commercial carrier, comprising:

an outer housing having inner and outer surfaces, said inner surface defining a storage area which is constructed and sized to store a multiplicity of parcels;

a scale for weighing a parcel which a customer intends to ship;

means for inputting information relating to the destination of the parcel from the customer;

control means for calculating a shipment fee for the parcel, said control means being in communication with said scale and said information inputting means;

deposit means, connected to said outer housing, for permitting a customer to securely deposit the parcel into said storage area, said deposit means including an outer door to said storage area and an inner door, said inner door being closed when said outer door is opened to thereby keep said storage area secure; and

distributing means for distributing parcels received from said deposit means substantially evenly throughout said storage area, whereby the volume within said storage space is utilized more efficiently for storing the parcels than would otherwise be possible.

5,340,949

METERING SYSTEM CAPABLE OF EASILY EFFECTING HIGH-ACCURACY METERING FOR VARIOUS WORKS INCLUDING STICKY MATERIALS

Masahiro Fujimura, and Mitsuru Yoshida, both of Atsugi, Japan, assignors to Anritsu Corporation, Tokyo, Japan

PCT No. PCT/JP91/01230, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO92/05410, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 17, 1991, Ser. No. 855,692

Claims priority, application Japan, Sep. 17, 1990, 2-243840; Dec. 27, 1990, 2-402324[U]; Jul. 19, 1991, 3-203535; Aug. 2, 1991, 3-68506[U]; Aug. 20, 1991, 3-73015[U]; Aug. 20, 1991, 3-231178

Int. Cl.[5] G01G *13/00, 13/16;* **B65B** *1/30*

U.S. Cl. 177—25.18 **8 Claims**

1. A combination weighing machine for weighing an object of weighing, said machine comprising:

an apparatus housing having a top portion;

introduction hopper mean provided on the top portion of said apparatus housing, for introducing the object of weighing into said apparatus housing;

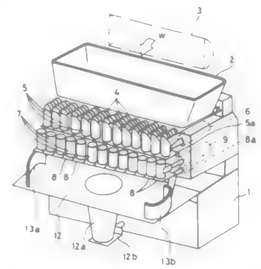
a plurality of supply feeder means horizontally arranged in a straight line under said introduction hopper means, for feeding the object of weighing introduced in said introduction hopper means to a forward portion of said apparatus housing;

a plurality of pool hopper means provided on said forward portion of said apparatus housing corresponding to said plurality of supply feeder means, for receiving the object of weighing with a predetermined quantity thereof fed by said plurality of supply feeder means;

first base plate means for carrying said plurality of pool hopper means thereon, said first base plate means being relatively slidable with respect to said plurality of pool hopper means to temporarily store predetermined quantities of the object of weighing received individually by said plurality of pool hopper means and to supply the object of weighing to a lower stage thereof;

a plurality of weighing hopper means provided under said first base plate means and corresponding to said plurality of pool hopper means, for receiving the object of weighing supplied from said plurality of pool hopper means to the lower stage by use of said first base plate means;

a plurality of second base plate means, each for carrying said plurality of weighing hopper means thereon, each of said second base plate means including means for individually weighing said predetermined quantities of the object of weighing supplied correspondingly from said plurality of pool hopper means to said plurality of weighing hopper means, and each of said second base plate means being relatively slidably individually with respect to said plurality of weighing hopper means to supply a weighed object of weighing in selective combinations to a lower stage thereof; and



collecting means for collecting said weighed object of weighing supplied in selective combinations from said plurality of weighing hopper means by use of said plurality of second base plate means,

wherein each of said plurality of pool hopper means and said plurality of weighing hopper means comprises a hollow, bottomless straight barrel-type container, and each barrel-type container has a plurality of indentations on an inner peripheral wall thereof, said indentations extending along the length of the respective barrel-type container in the direction of the barrel axis thereof, said indentations each defining projections for contacting said object of weighing with substantially point contact to enable discharge of substantially all of said object of weighing from the respective barrel-type container, and

said plurality of supply feeder means each comprises:

a transportation screw provided in a guide path for transporting the object of weighing;

a drive motor for intermittently rotating said transportation screw; and

control means for controlling said drive motor so as to transport a predetermined quantity of the object of weighing from a proximal end side of said guide path to a distal end side of said guide path through said transportation screw,

said control means including:

means for causing said drive motor to forwardly rotate said transportation screw for a predetermined variable amount for thereby transporting the object of weighing, and said control means then stopping the forward rotation of said transportation screw for stopping movement of the object of weighing; and

means for causing said drive motor to reversely rotate said transportation screw for at least one revolution after movement of the object of weighing is stopped.

5,340,950

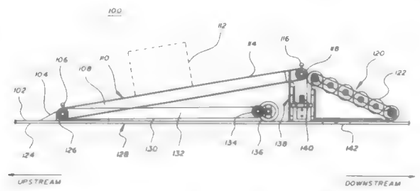
METHOD AND APPARATUS FOR WEIGHING OBJECTS

Alexander Brandorff, New Milford, Conn.; John W. Sussmeier, Wappingers Falls, N.Y., and Steven L. Smith, Oxford, Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Sep. 15, 1992, Ser. No. 945,224

Int. Cl.[5] G01G *19/52*

U.S. Cl. 177—145 **35 Claims**



1. A method for weighing an object, comprising the steps of:

(a) moving the object to a tip point;

(b) tipping the object over said tip point;

(c) generating a first signal representative of the weight of the object before the object reaches said tip point;

(d) generating a first line in accordance with said first signal;

(e) generating a second signal representative of the weight of the object after the object reaches said tip point;

(f) generating a second line in accordance with said second signal; and

(g) determining the weight of the object in accordance with the intersection point of said first and second lines.

5,340,951

DEVICE FOR REDUCING THE FORCE IN A FORCE-MEASURING APPARATUS, IN PARTICULAR IN A SCALE

Ernst Hungerbühler, Fehraltorf, and Hans R. Burkhard, Schwerzenbach, both of Fed. Rep. of Germany, assignors to Mettler-Toledo AG, Greifensee, Switzerland

Filed Jun. 15, 1992, Ser. No. 898,621

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1991, 4119734

Int. Cl.[5] G01G *3/08*

U.S. Cl. 177—229 **35 Claims**

1. A device for reducing a force to be measured in a force-measuring apparatus, said device comprising:

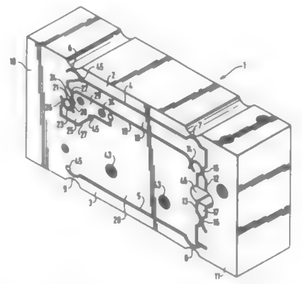
a single-piece solid block having a plurality of solid portions separated by thin line cuts in said solid block;

at least one rigid lever for reducing the measured force;

a stationary member for supporting said lever for rotation at a fulcrum formed in said solid block; and

at least one axially rigid flectionally elastic coupling member;

wherein said lever, said stationary member, and said coupling member are each defined by at least one of said plurality of solid portions, which are separated from one another by said thin-line cuts in said solid block which extend alongside zones of maximum load of said solid portions defining said lever, said stationary member and said coupling member under action of the measured force and extend perpendicular to a plane of rotation of said lever at said fulcrum; and



wherein said solid block has a flectionally elastic domain which defines said fulcrum and connects said lever and said stationary member, and a localized linkage section which connects said lever and said coupling member.

5,340,952

EXHAUST MUFFLER COMBINING COMPONENTS MADE OF DIFFERENT MATERIALS

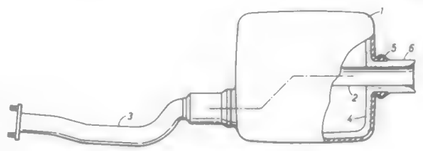
Shiro Takiguchi, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaishi, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,635

Claims priority, application Japan, Oct. 30, 1991, 3-097237[U]; Oct. 30, 1991, 3-311605

Int. Cl.[5] F01N *7/18*

U.S. Cl. 181—282 **11 Claims**



1. An exhaust muffler comprising:

an outer shell consisting of two halves made of synthetic resin material abutting each other at a brim portion of each of said two halves, each of said two halves being provided with a hollow semi-cylindrical extension extending from said brim portion of the corresponding half so as to form a completely tubular extension by the cooperation of said two hollow semi-cylindrical extensions;

an inner pipe made of metallic material extending through said outer shell and out of said tubular extension of said outer shell;

a sleeve member fitted onto said tubular extension at one end thereof and fitted in a substantially airtight fashion onto a part of said inner pipe extending out of said tubular extension of said outer shell t the other end thereof; and

fastening means for securing said sleeve member fitted on said tubular extension and producing a radial securing force which urges said semi-cylindrical extensions toward each other, wherein said tubular extension of said outer shell is provided with an annular radial projection having at least one notch, and said one end of said sleeve member is provided with a radially inwardly directed projection which is adapted to be axially passed through said notch when said sleeve member is fitted onto said tubular extension so that said sleeve member may be secured on said tubular extension by turning said sleeve member around an axial line thereof after said sleeve member is fitted onto said tubular extension until said radially inwardly directed

VOL 1165 ISS 4 AG 23 1994 UMI

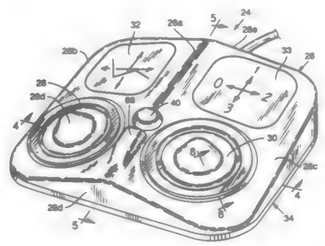
projection is passed through said notch beyond said annular radial projection.

5,340,953

SWITCH CONTROLLER

Paul B. Krebs, and Shawn R. Irwin, both of Newberg, Oreg., assignors to A-Dec, Inc., Newberg, Oreg.

Filed Nov. 19, 1992, Ser. No. 978,876
Int. Cl.[5] H01H *3/14*; A61G *15/02*
U.S. Cl. 200—86.5 **28 Claims**



1. A foot switch controller for a multiposition chair having powered mechanism operable to move the chair between selected positions, said controller comprising

a base,

a first set of spaced-apart pressuresensitive switches supported on said base, each switch being adapted for being operatively connected to the powered mechanism to produce selected movement of the chair,

a second set of spaced-apart pressure-sensitive switches supported on said base, each switch being adapted for being operatively connected to the powered mechanism to produce selected movement of the chair,

a first footpad overlying said base and said first set of switches and a second footpad overlying said base and said second set of switches, each of said first and second footpads having an upper user-engaging surface and a plurality of spacedapart contact points thereon each of which faces an associated one of said switches, and

support means for supporting said footpads in normally nonactuating positions in which said contact points are spaced from said switches and permitting selected movement of a footpad toward the base whereby selected contact points engage their associated switches, said support means comprising a housing cover having a central ridge region and oppositely disposed substantially planar first and second support regions which incline downwardly substantially continuously from opposite sides of said ridge region, said first-mentioned footpad being mounted on and inclined with said first support region and said second footpad being mounted on and inclined with said second support region.

5,340,954

WIRELESS MULTIPLE POSITION SWITCHING SYSTEM

Miles K. Hoffman, South Bend, Ind.; Brad Jenson, Berrien Spring, Mich., and Klaus Wieder, Helenville, Wis., assignors to Heath Company, Benton Harbor, Mich.

Division of Ser. No. 694,649, May 24, 1991, Pat. No. 5,239,205.
This application Mar. 4, 1993, Ser. No. 26,392
Int. Cl.[5] H01H *21/40*
U.S. Cl. 200—277.2 **7 Claims**

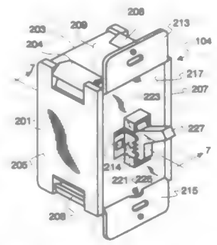
1. A two-position switch comprising:

a ball bearing having an electrically conductive surface;

a compression spring;

a set of electrical contacts; and

activation means including a toggle lever for activating said switch; said toggle lever having a first stable non-conductive resting position and a second stable non-conductive resting position, said activation means activated by moving said toggle lever from said first stable non-conductive resting position to said second stable non-conductive resting position, said activation means activated by moving said toggle lever from said second stable non-conductive resting position to said first stable non-conductive resting position;



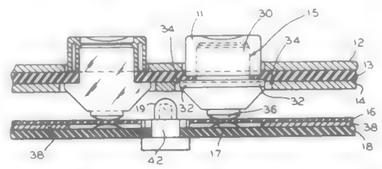
said toggle lever further including a compression spring aperture for accommodating said compression spring, said compression spring situated within said compression spring aperture and applying a force to said ball bearing such that said ball bearing momentarily rests across said set of contacts when said activation means is activated, to momentarily complete an electrical circuit across said contacts.

5,340,955

ILLUMINATED AND MOISTURE-SEALED SWITCH PANEL ASSEMBLY

Samuel J. Calvillo, Orange; Donald L. Horton, and Frank Ganz, both of Los Angeles, all of Calif., assignors to Digitran Company, a Division of Xcel Corp., Ontario, Calif.

Filed Jul. 20, 1992, Ser. No. 916,414
Int. Cl.[5] H01H *13/06*
U.S. Cl. 200—302.2 **9 Claims**



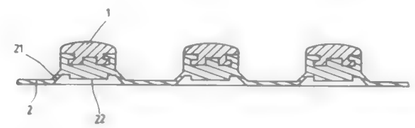
1. A sealed key switch assembly comprising a printed circuit board having an array of conductive strips thereon which are paired to meet but not touch at cross-points, a key pad comprising a plurality of individual key mechanism, each of said key mechanisms including at least a key which may be pushed by the user of the key pad, each of said individual key mechanisms being located at an individually associated one of said cross-points, a dome switch individually associated with each of said key mechanisms for operating responsive to a downward pressure or release of said pressure by said associated key mechanisms acting on said dome for interconnecting or isolating the conductive strips that meet at the cross-point where the key mechanism is operated or released, and a first sealing resilient elastomeric sheet having an array of holes formed therein to enable at least said key of each key mechanism in said key pad to pass through and stretch the perimeter of an individually associated one of said holes, the perimeter of each of said holes stretching and surrounding an individually associated key of said key mechanism to for a perimeter seal whereat, the resilience of said sealing elastomeric sheet also providing at least a part of a mechanical spring-like return force for restoring the individually associated key mechanism after it is pushed and a substantially unbroken second sheet of resilient elastomeric material interposed between bottoms of said plurality of key mechanisms in said key pads and said dome switches whereby each depressed key mechanism acts through the resilience of said second sheet as it presses against its individually associated dome switch, the memory of said second resilient sheet providing at least some spring-like return force for restoring the depressed key mechanism to a normal position.

5,340,956

KEY SWITCH

Castle Chen, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Feb. 10, 1993, Ser. No. 14,975
Int. Cl.[5] H01H *3/12*
U.S. Cl. 200—341 **1 Claim**



1. A key switch comprising a rubber key body and an integral silicone rubber base molded to said rubber key body, said key body having an upper, flattened striking surface, a lower surface and a cylindrical neck axially mounted on the lower surface and depending therefrom and having an outwardly protruding distal base surface disposed perpendicularly to a longitudinal axis thereof, said base surface defining a central recess, said neck further defining a circumferential groove formed between the lower surface of said key body and an upper surface of said protruding distal base; and said silicone rubber key base comprising an upper and a lower portion, the lower portion forming a downwardly opening recess defined by a circular sloping wall and a plunger disposed centrally therein said plunger having a distal bottom edge disposed at a higher elevation than a lower surface of said lower portion, the upper portion of said key base defining a mounting cylinder extending axially upwardly from said plunger, an upper portion of said mounting cylinder being integrally molded to the lower surface of said key body so as to receive said neck therein and thereby fill the groove and recess thereof, said key base being molded to said key body under low pressure and temperature.

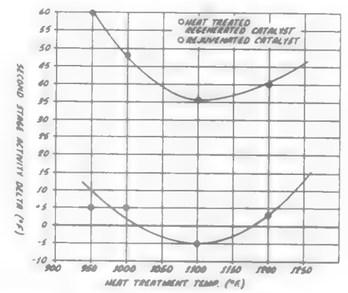
5,340,957

HYDROCRACKING PROCESS USING A REACTIVATED CATALYST

Danford E. Clark, Fountain Valley, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 717,985, Jun. 20, 1991, Pat. No. 5,206,194.
This application Dec. 21, 1992, Ser. No. 994,535
Int. Cl.[5] C10G *47/18, 65/10*
U.S. Cl. 208—59 **21 Claims**

1. A hydrocracking process which comprises contacting a hydrocarbon feedstock in the presence of added hydrogen under hydrocracking conditions in an atmosphere containing greater than about 2000 ppmv ammonia with a reactivated catalyst produced by the process which comprises contacting a deactivated catalyst, said deactivated catalyst having been produced by subjecting a fresh catalyst to hydrocracking conditions in the presence of a hydrocarbon feedstock, with a gas consisting essentially of air at a temperature between about 1025° F. and about 1175° F. for a time sufficient to produce said reactivated catalyst having an activity temperature for hydrocracking in an atmosphere containing less than about 200 ppmv ammonia of less than 48° F. above the activity temperature of said fresh catalyst and wherein said deactivated catalyst comprises (1) a crystalline dealuminated Y zeolite having a silica-to-alumina mole ratio above about 6.0, which zeolite has been



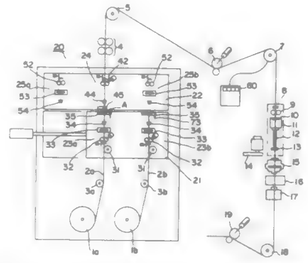
ion-exchanged with rare earth-containing cations and Group VIII noble metal-containing cations, (2) an inorganic refractory oxide, and (3) carbonaceous deposits.

5,340,958

METHOD AND APPARATUS FOR WIRE FEEDING IN A WIRE-CUT ELECTROEROSION APPARATUS

Shuji Okazaki, and Kazo Urushizaki, both of Fukui, Japan, assignors to Sodick Co., Ltd., Yokohama, Japan

Filed Jul. 29, 1993, Ser. No. 98,886
Claims priority, application Japan, Jul. 31, 1992, 4-225248
Int. Cl.[5] B23H *7/10*
U.S. Cl. 219—69.12 **37 Claims**



1. A wire feed device for a wire-cut electroerosion apparatus for machining a workpiece (**16**) having a wire transport path, including wire drive means (**19**) for driving a wire electrode along said wire transport path, and further including a first wire electrode (**1***a*), a second wire electrode (**1***b*), a first bobbin (**2***a*) on which said first wire electrode is wound, and a second bobbin (**2***b*) on which said second wire electrode is wound, said first and second bobbins being replaceable for feeding said second wire electrodes into position to machine said workpiece after consuming said first wire electrode, said device comprising:

a first cutter (**33**) positioned along said wire transport path for cutting said first wire electrode off said first bobbin;

a first clamp (**45**) positioned along said wire transport path for clamping a trailing end of said first wire electrode;

a table (**21**) adjacent to said first clamp and including a second clamp (**35**) for clamping a leading end of said second wire electrode from said second bobbin along a wire waiting path (**23***b*), said table being movable to traverse said wire transport path, whereby Maid first and second clamps may be positioned opposite each other;

means for driving one or both of said first and second clamp relative to the other to position the leading end of said

VOL 1165 ISS 4 AUG 23 1994 UMI

second wire and the trailing end of said first wire into an abutting relationship;

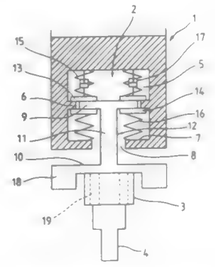
means for joining the abutted wire ends, wherein said wire drive means (19) is operable to drive the joined wire along said wire transport path.

5,340,959

EDM WITH AN ELECTRODE MOVED BY DEFORMATION OF AN ELECTRODE ACTUATOR

Kiyoshi Sawada, Sunto, and Toshio Hirai, Oshino, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed Mar. 23, 1993, Ser. No. 30,056
Claims priority, application Japan, Jul. 26, 1991, 3-208815
Int. Cl.[5] B23H *1/04, 7/30*
U.S. Cl. 219—69.15 7 Claims



1. An electric discharge machine including a quill having a distal end portion to which a tool electrode is attached, comprising:

a support body to which the tool electrode is connected through an electrode actuator including an element adapted to be deformed when an external energy is applied thereto, said support body being nonrigidly connected to the quill at an axial direction of the quill; and

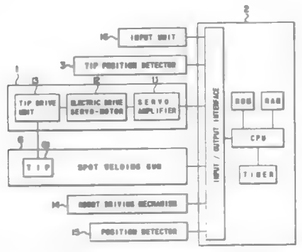
a counter weight, integrally formed with said support body, for absorbing an impact force toward the quill, the impact force being caused by a motion of the tool electrode which is in turn caused by deformation of the electrode actuator.

5,340,960

CONTROL APPARATUS FOR SPOT WELDING ROBOT

Deajiro Takasaki; Shuichi Togawa; Akio Kinoshita, and Hitoshi Arasuna, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Oct. 7, 1992, Ser. No. 957,108
Claims priority, application Japan, Oct. 11, 1991, 3-091512[U]
Int. Cl.[5] B23K *11/00*
U.S. Cl. 219—86.7 12 Claims



7. A control apparatus for a spot welding robot for carrying out a spot welding operation by means of a robot that is movable along at least one robot movement axis, comprising:

a spot welding gun having a spot welding tip that is movable in a longitudinal direction along a welding tip axis between open and closed positions;

an electric drive servo mechanism for driving the spot welding tip in said longitudinal direction; and

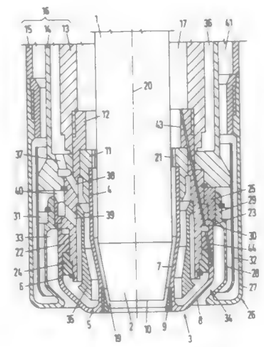
a single controller that directly controls the electric drive servo mechanism and said robot to move said spot welding tip in said longitudinal direction along said welding tip axis toward said closed position while moving said robot along said at least one robot movement axis toward a welding position and to move said spot welding tip in said longitudinal direction along said welding tip axis toward said open position while moving said robot along said at least one robot movement axis away from the welding position.

5,340,961

PLASMA TORCH FOR TRANSMITTED ARCS

Hans J. Bebber, Mülheim; Heinrich-Otto Rossner, and Gebhard Tomalla, both of Essen, Fed. Rep. of Germany, assignors to Mannesmann AG, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 8, 1993, Ser. No. 27,741
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1990, 4022112
Int. Cl.[5] B23K *10/00*
U.S. Cl. 219—121.5 20 Claims



1. A plasma torch for generating an arc from a plasma gas, said plasma torch having a plasma discharging end for discharging plasma, the plasma gas for being directed towards the plasma discharging end for the formation of the arc, said plasma torch comprising:

an outer casing;

nozzle means connected to said outer casing, said nozzle means being disposed at the plasma discharging end of said plasma torch;

said nozzle means comprising a nozzle outer part and a nozzle inner part disposed within said nozzle outer part;

said nozzle means having a recess indented in the plasma discharging end of said plasma torch between said nozzle outer part and said nozzle inner part, said recess comprising means for providing a gas filled gap between said nozzle outer part and said nozzle inner part;

electrode means disposed within said nozzle inner part, said electrode means having a forward end at the plasma discharging end of said plasma torch;

means for directing the plasma gas towards the forward end of said electrode means;

means for providing a gas for flushing at least one contaminant from said recess at least during operation of said plasma torch;

said plasma torch comprising a discharge opening at said plasma discharging end, said discharge opening being configured for the discharge of plasma gas therethrough;

said discharge opening having a diameter;

said plasma torch having a longitudinal axis;

said forward end of said electrode means being displaced from said discharge opening by a first distance, said first distance being defined parallel to said longitudinal axis;

said first distance being substantially no greater than the diameter of said discharge opening;

said recess having a discharge end for the discharge of plasma gas therethrough, said discharge end being defined between said nozzle outer part and said nozzle inner part;

said discharge end of said recess being displaced from said discharge opening by a second distance to permit said nozzle inner part to extend past said discharge end of said recess, said second distance being defined parallel to said longitudinal axis;

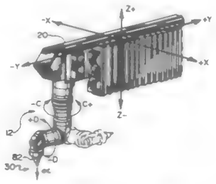
said second distance being substantially no greater than the diameter of said discharge opening.

5,340,962

AUTOMATIC CONTROL OF LASER BEAM TOOL POSITIONING

Robert H. Schmidt, Minnetonka, and Dan Martin, Minneapolis, both of Minn., assignors to Lumonics Corporation, Minneapolis, Minn.

Filed Aug. 14, 1992, Ser. No. 929,942
Int. Cl.[5] B23K *26/04*
U.S. Cl. 219—121.78 12 Claims



1. In a system for machining a workpiece with a laser beam tool, control means for maintaining a controlled distance between the tool and a workpiece surface, said control means comprising, in combination:

a. capacitive sensor means for measuring the capacitance between the tool and the surface of the workpiece;

b. beam control means for driving the laser beam for the tool with periodic pulses separated by a refractory interval

b. sampling means for taking a measurement of the capacitance between the tool and the workpiece during the refractory interval.

5,340,963

ALTERNATING CURRENT POWER SOURCE FOR WELDING

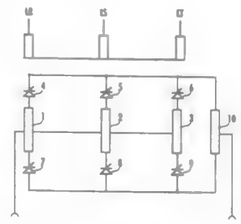
Peter W. Bodewigs, Dusseldorf, Fed. Rep. of Germany, assignor to Miller Electric Mfg. Co., Appleton, Wis.

PCT No. PCT/DE91/00012, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO91/12922, PCT Pub. Date Sep. 5, 1991
PCT Filed Jan. 9, 1991, Ser. No. 938,253
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1990, 4004667
Int. Cl.[5] B23K *9/10*
U.S. Cl. 219—130.1 8 Claims

1. An AC power source for welding, of the type configured to receive three phase power and to provide single phase current to a load having first and second terminals, comprising:

a three-phase transformer having first, second and third center tapped secondary windings wherein each of said secondary winding has a first end, a second end, and a center tap;

a center tap output indicator having a first end and a second end and a center tap; and



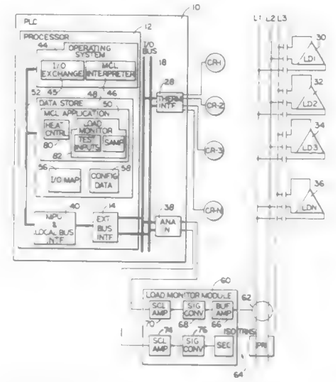
first and second electronic switches in electrically operative association with said inductor and each of said secondary windings, said electronic switches disposed to conduct current selectively through said secondary windings and in the same flux-creating direction through said inductor regardless of the direction of current through the load.

5,340,964

METHOD AND APPARATUS FOR MONITORING ELECTRICAL LOADS

Keith R. Galloway, Westchester, and Dennis G. O'Keefe, Cincinnati, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sep. 29, 1992, Ser. No. 954,196
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—486 14 Claims



1. Apparatus for controlling plural electrical loads supplied with power from a single power source, the apparatus comprising:

a. means for controlling energization of the loads to periodically isolate and energize singularly each of the loads;

b. a single current sensing means for producing a current signal representing the current delivered by the power source; and

c. means responsive to the current signal and the controlling means for detecting the value of the current signal during isolated energization of each load; and

d. means responsive to the detecting means for determining whether the value of the current signal during isolated energization of each load is abnormal for the selected load.

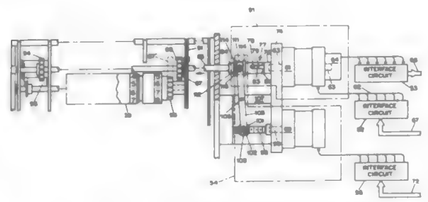
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,965

MECHANICAL POSTAGE METER RESETTING DEVICE AND METHOD

John J. Horbal, Beacon Falls, and James S. Emmett, Derby, both of Conn., assignors to Ascom Hasler Mailing Systems, Inc., Shelton, Conn.

Continuation of Ser. No. 333,993, Apr. 5, 1989, abandoned. This application Feb. 25, 1992, Ser. No. 841,893
Int. Cl.[5] G07G *1/00*
U.S. Cl. 235—101 23 Claims



1. A postage meter register setting device for use with a postage meter having at least one resettable mechanical register of available postage, and having mechanical setting means movable to reset the register; the setting device including a resetting motor having a movable mechanical output member, and means responsive to an authorizing input signal to electrically operate an enabling means for permitting setting and to cause operation of the motor to drive the register in a meter resetting direction via the mechanical output member and the mechanical setting means, the means responsive to an authorizing input signal being a central processing unit for controlling the operation of the enabling means and the resetting motor, the central processing unit being programmed to direct to the motor operating signals representative of a desired variable amount of postage to be added to the resettable mechanical register, the resetting motor being a stepper motor with control circuitry operatively connected to the central processing unit to turn an output shaft of the stepper motor an amount corresponding to the desired variable amount of postage as represented by the motor operating signals and an encoder coupled to the motor and operatively electrically connected to the central processing unit to provide information to the central processing unit indicative of the amount of rotation effected by the motor.

5,340,966

AUTOMATIC FACSIMILE-RECEIVING-SHEET RECOGNIZING APPARATUS

Kazuo Morimoto, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 17, 1991, Ser. No. 778,489
Claims priority, application Japan, Oct. 23, 1990, 2-285316; Oct. 23, 1990, 2-285317; Oct. 23, 1990, 2-285318; Oct. 23, 1990, 2-285319
Int. Cl.[5] G06F *15/46;* G06K *15/00, 19/06, 7/10*
U.S. Cl. 235—376 2 Claims

1. An automatic facsimile-receiving-sheet recognizing apparatus comprising:

a facsimile means, provided at an orderer side, for transmitting information on an order sheet on which commodity order labels incorporating a bar code and a mark sheet, for commodities to be ordered, are stuck, to a seller side, said order sheet incorporating figures and an address written thereon;

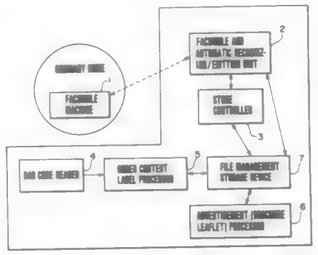
said apparatus further comprising, at said seller side:

information receiving means for receiving said information from said facsimile means;

detecting means, receiving said information from said information receiving means, for detecting positions of said bar code, said mark sheet, said figures and said address from said information received by said information receiving means, and for extracting image data corresponding to said bar code, said mark sheet, said figure and said address in accordance with said detected positions;

a store controller for checking stock inventory;

recognizing means, receiving said image data from said detecting means, for recognizing said image data to produce recognized data;



error detecting means, receiving said recognized data from said recognizing means, for detecting an error or omission in writing, or a part which cannot be recognized, on said order sheet to produce detected data, and for transmitting said recognized data and said detected data to said store controller; and

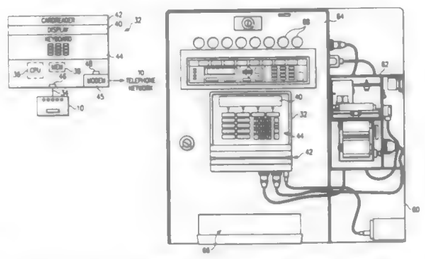
filing means, receiving said information from said information receiving means, for filing said information for evidence as digital image data.

5,340,967

METHOD FOR STORING AND DISPENSING CASH

Patrick G. Martin, Plano, and Tod G. Franklin, Dallas, both of Tex., assignors to Tidel Engineering, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 765,085, Sep. 19, 1991, Pat. No. 5,220,157. This application Nov. 17, 1992, Ser. No. 977,510
Int. Cl.[5] G06F *15/30*
U.S. Cl. 235—379 6 Claims



1. Apparatus for storing and dispensing cash, comprising:

a time delayed cash dispenser connectable to an electronic funds transfer system via a telephone network and including input means, an inlet for receiving discrete cash containers, an outlet, and a vend mechanism that normally vends individual containers from the outlet in response to a vend command signal generated at predetermined time intervals; and

a transaction control terminal connected to the time delayed cash dispenser and including control means for requesting a specific transaction authorization from the electronic funds transfer system,

determining whether confirmation of the specific transaction authorization has been received from the electronic funds transfer system, and

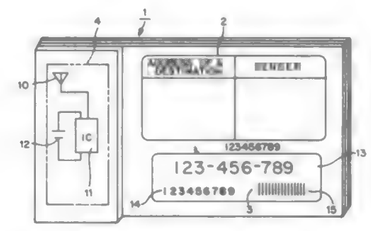
if confirmation of the specific transaction authorization has been received, producing an electronic command signal for activating the vend mechanism to dispense a discrete cash container irrespective of whether the predetermined time interval has lapsed.

5,340,968

INFORMATION STORAGE MEDIUM WITH ELECTRONIC AND VISUAL AREAS

Atsushi Watanabe, Toyokawa; Hitoshi Kamiya, Hekinan; Eiji Nakada, Kariya; Tomoaki Mizuno, Toyoake; Yoshiyuki Kago, Nishio; Tokutaro Murase, Obu, and Yoshihiko Inukai, Nagoya, all of Japan, assignors to Nippondenso Company, Ltd., Kariya, Japan

Filed May 5, 1992, Ser. No. 878,787
Claims priority, application Japan, May 7, 1991, 3-101532; May 10, 1991, 3-105945; May 17, 1991, 3-113149; May 21, 1991, 3-116277; May 23, 1991, 3-118718; May 23, 1991, 3-118720; May 24, 1991, 3-120373; May 24, 1991, 3-120374; May 29, 1991, 3-126246; May 30, 1991, 3-127635; May 30, 1991, 3-127636; Jun. 6, 1991, 3-135004; Jun. 6, 1991, 3-135005; Jun. 14, 1991, 3-143357; Nov. 25, 1991, 3-308921; Dec. 12, 1991, 3-328958
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—380 31 Claims



1. An information storage medium comprising:

at least one removable information foil having areas allowing at least one visually comprehensible information code to be entered, said information foil formed of a bendable material; and

an electronic foil including a responder for storing data representing said information code and transmitting said stored data in response to received electromagnetic waves, said electronic foil formed in a reinforcing member which is not bendable, wherein said information foil and said electronic foil are in a single body formed having a bendable and a non-bendable portion and said body accommodates a plurality of said information foils.

5,340,969

METHOD AND APPARATUS FOR APPROVING TRANSACTION CARD BASED TRANSACTIONS

Tim W. Cox, Austin, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

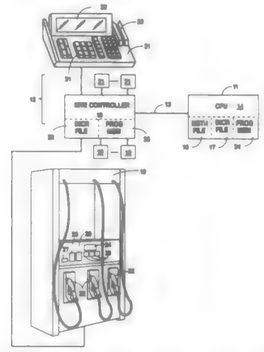
Filed Oct. 1, 1991, Ser. No. 771,261
Int. Cl.[5] G07F *7/08;* G06F *15/24*
U.S. Cl. 235—381 5 Claims

1. A fuel dispensing apparatus having transaction card approval capabilities, comprising:

at least one controllable fuel dispenser, each having a card reader associated therewith for reading transaction card account numbers;

a memory for storing incremental invalid transaction card account data; and

a data processor, for resolving actual invalid transaction card account data from said incremental invalid transaction card account data, and for producing an indication of fuel dispensing approval in accordance with a comparison between said actual invalid transaction card account data and transaction card account numbers read by said card reader;



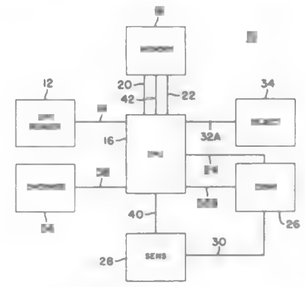
said at least one controllable fuel dispenser being activated responsive to said indication of fuel dispensing approval.

5,340,970

ARTICLE CHECKOUT SYSTEM WITH SECURITY PARAMETER OVERRIDE CAPACITY

Donald M. Wolfe, Jr., Coral Springs; John C. Allard, Boca Raton; Cuong H. Nguyen, Coral Springs; Larry E. Axsom, Boca Raton, and Jerry D. Gabbard, Deerfield Beach, all of Fla., assignors to CheckRobot Inc., Deerfield Beach, Fla.

Filed Mar. 17, 1992, Ser. No. 852,569
Int. Cl.[5] G06K *15/00;* A63F *9/02*
U.S. Cl. 235—383 6 Claims



1. A system for processing articles selected for purchase and bearing an identification code, comprising:

(a) code reader means for generating output signals indicative of said article identification codes;

(b) sensing means for generating output signals indicative of measurable characteristics of said articles;

(c) storage means for storage, for each type of article, a signal indicative of a standard or predetermined characteristic thereof correlated with the article identification code;

(d) article rejection means for rejecting the selection of an article for purchase on failure of correspondence of one of said sensing means output signals and the corresponding stored characteristic signal; and

(e) control means operable selectively on such rejection of said article purchase selection for substituting the one output signal generated by said sensing means for the stored characteristic signal.

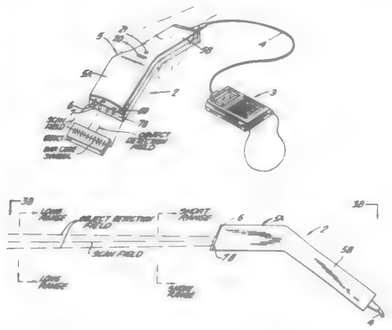
VOL 1165 ISS 4 AG 23 1994 UMI

5,340,971

AUTOMATIC BAR CODE READING SYSTEM HAVING SELECTABLE LONG RANGE AND SHORT RANGE MODES OF OPERATION

George Rockstein, Audubon; David Wilz, Sr., Sewell; Robert Blake, Woodbury, and C. Harry Knowles, Moorestown, all of N.J., assignors to Metrologic Instruments, Inc., Blackwood, N.J.

Continuation-in-part of Ser. No. 583,421, Sep. 17, 1990, Pat. No. 5,260,553. This application Sep. 17, 1991, Ser. No. 761,123
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—472 51 Claims



1. A scanning system for scanning a coded symbol located on an object, said system comprising:

a hand-holdable housing having a transmission aperture permitting passage of light out of and into said housing;

object detection means within said housing for detecting object sensing energy within an object detection field defined external to said housing, and for automatically producing a first signal indicative of the presence of an object within said object detection field, said object detection means having at least a short-range and a long-range mode of object detection, wherein, when said object detection means is in said short-range made of object detection, said object detection means is capable of detecting the presence of an object located within a short range measured from said transmission aperture out towards a first region within said object detection field, and

wherein, when said object detection means is in said long-range mode of object detection, said object detection means is capable of detecting the presence of an object located within a long-range measured from said transmission aperture out towards a second region within said object detection field;

scanning means disposed within said housing for producing in automatic response to said first signal, a light beam and scanning said light beam through said transmission aperture and across a scan field defined external to said housing, said scanning system having an operative scanning range measured from said transmission aperture out towards a region within said scan field, said scan field being characterized as having at least one scanning plane of essentially planar extent and said object detection field being characterized as having an essentially volumetric extent, and said object detection field spatially encompassing at least a portion of said scan field within said operative scanning range of said scanning means;

light detection means disposed within said housing for detecting at least a portion of light of variable intensity reflected off said object in said scan field and passing through said transmission aperture, and for producing scan data representative of the detected light intensity;

first processing means for processing scan data and producing a second signal indicative of the presence of a coded symbol on said object within said scan field;

second processing means responsive to said second signal, for processing scan data from said light detection means so as to produce symbol character data representative of a decoded symbol and providing an output signal indicative of said decoded symbol; and

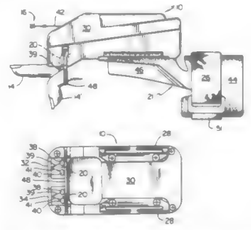
means on said housing for manually producing a short-range mode activation signal.

5,340,972

HANDS-FREE BAR CODE SCANNER WITH FINGER ACTIVATED OPTICAL CONTROL

Joseph Sandor, Balboa Island, Calif., assignor to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation-in-part of Ser. No. 699,417, May 13, 1991, Pat. No. 5,191,197. This application Apr. 3, 1992, Ser. No. 862,698
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—472 38 Claims



35. In a bar code scanner adapted to be mounted on the hand or wrist of the user and provided with a triggering arrangement to actuate the scanner for reading a bar code, the improvement which comprises the triggering arrangement including a photosensor means for detecting a predetermined position movement of the user, and for actuating the scanner to read a bar code upon such detection, wherein said photosensor means comprises an active photosensor assembly which includes means for generating a radiation beam which can be interrupted by a moving finger, and a photodetector means for detecting reflected radiation of the radiation beam.

36. In a bar code scanner adapted to be mounted on the hand or wrist of the user and provided with a triggering arrangement to actuate the scanner for reading a bar code, the improvement which comprises the triggering arrangement including a photosensor means for detecting a predetermined position movement of the user, and for actuating the scanner to read a bar code upon such detection, wherein said photosensor means comprises a passive photodetector means for detecting ambient room illumination which is blocked by a pointing finger and passed to the photodetector means by a nonpointing finger.

5,340,973

AUTOMATIC LASER SCANNING SYSTEM AND METHOD OF READING BAR CODE SYMBOLS USING SAME

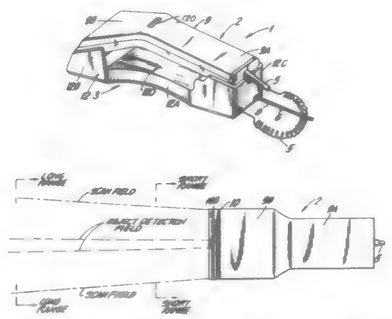
Carl H. Knowles, Moorestown; George B. Rockstein, Audubon; David M. Wilz, and Charles A. Naylor, both of Sewell, all of N.J., assignors to Metrologic Instruments, Inc., Blackwood, N.J.

Continuation-in-part of Ser. No. 761,123, Sep. 17, 1991, which is a continuation-in-part of Ser. No. 583,421, Sep. 17, 1990. This application Jun. 12, 1992, Ser. No. 898,919
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—472 83 Claims

1. A stand for receiving and supporting a hand-supportable laser scanning device in a selected position without user support, said hand-supportable laser scanning device including a hand-supportable housing having a handle portion operably configured with a head portion provided with a light transmissive window and within which a visible laser beam can be generated and projected through said light transmissive window and repeatedly scanned across a scan field defined external to said head portion, said head portion and said handle portion being disposed at an obtuse angle in the range of about 135° to about 180°, said stand including a support frame comprising:

a base portion having a longitudinal extent and being adapted for selected positioning with respect to a support surface;

a head portion support means operably associated with said base portion, for receiving and supporting the head portion of said hand-supportable housing;



a handle portion support means operably associated with said base portion, for receiving and supporting the handle portion of said hand-supportable housing; and

a finger accommodating recess disposed between said head portion support means and said handle portion support means and above said base portion, and being laterally accessible so that when the head and handle portions of said hand-supportable housing are received within and supported by said head portion support means and said handle portion support means, respectively, the fingers of a user's hand can be inserted through said finger accommodating recess and completely encircle the handle portion of said hand-supportable housing, thereby permitting said handle portion to be completely grasped prior to removing said hand-supportable housing off and away from said support frame.

5,340,974

POLYCHROMATIC SOURCE CALIBRATION BY ONE OR MORE SPECTRALLY FILTERED PHOTODETECTOR CURRENTS

Edward F. Zalewski, Sandy Hook, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 9, 1991, Ser. No. 805,445
Int. Cl.[5] G01J 1/32
U.S. Cl. 250—205 16 Claims

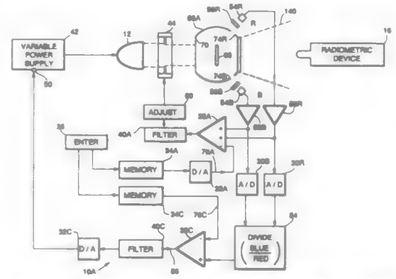
1. A method of establishing intensity and spectral distribution of radiation emitted by a light source comprising:

activating a light source with electric current to emit radiation;

simultaneously detecting the radiation in a plurality of frequency bands with photodetector means having a fixed relationship between radiation incident upon the photodetector means and photodetector current outputted by the photodetector means in response to the incident radiation;

monitoring current outputted by the photodetector means in response to radiation incident upon the photodetector means from the light source, said monitoring providing an indication of radiation intensity at each of said plurality of frequencies, said monitoring providing an indication of an actual spectral distribution of the radiation;

comparing said actual spectral distribution with a reference spectral distribution to obtain a differential distribution of the radiation;



altering the actual spectral distribution of said radiation to decrease and/or increase said differential distribution; and

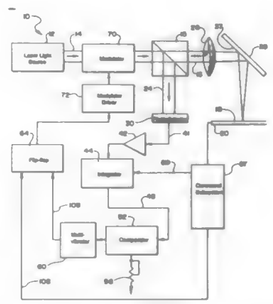
adjusting the intensity of the radiation to produce a reference value of photodetector current, the reference value of photodetector current indicating a reference value of radiation intensity.

5,340,975

METHOD AND APPARATUS FOR REDUCING THE EFFECTS OF LASER NOISE AND FOR IMPROVING MODULATION TRANSFER FUNCTION IN SCANNING A PHOTOCONDUCTIVE SURFACE

Peter J. Vogelgesang, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1993, Ser. No. 11,332
Int. Cl.[5] G01J 1/32
U.S. Cl. 250—205 5 Claims



1. A method for reducing the effects of laser noise and for improving modulation transfer function in scanning a photoconductive surface with a spot of light, comprising the steps of:

a) providing a laser light source for directing a first light beam onto a photoconductive surface and for directing a second light beam to a photodetector;

b) generating, using the photodetector, a current which is proportional to the instantaneous light intensity of the first light beam;

c) applying the generated current to an integrator to produce an output voltage proportional to the time-light intensity integral of the first light beam;

d) feeding the output voltage to a voltage comparator to

VOL 1165 ISS 4 AUG 23 1994 UMI

compare the output voltage with a pre-set voltage to create an output signal; and

e) using the output signal to control a modulator so that when the value of preset voltage in the comparator is exceeded the modulator prevents substantially all of the transmission of the light past the modulator;

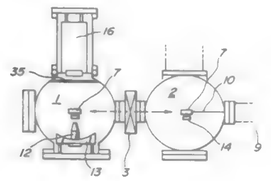
in which the first light beam and the second light beam have different wavelengths.

5,340,976

BANDPASS PHOTON DETECTOR FOR INVERSE PHOTOEMISSION SPECTROSCOPY

Masaki Taniguchi, and Toshiaki Ohta, both of Hiroshima, Japan, assignors to Hiroshima University, Hiroshima, Japan

Filed Mar. 18, 1993, Ser. No. 33,327
Claims priority, application Japan, Mar. 26, 1992, 4-068235
Int. Cl.[5] G01N *21/62, 23/22*
U.S. Cl. 250—207 **3 Claims**



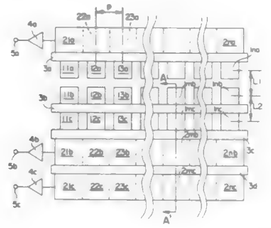
1. A bandpass photon detector for inverse photoemission spectroscopy comprising means for condensing light emitted when a beam from an electron gun is incident into a sample by a mirror and making the condensed light incident in a low cut filter of photomultiplier having a high cut filter window, wherein potassium chloride is deposited in a thickness of 500–1000 Å on a first diode of said photomultiplier.

5,340,977

SOLID-STATE IMAGE PICKUP DEVICE

Motohiro Kojima, Takatsuki; Takuya Watanabe, Mukou, and Tohru Takamura, Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Ltd., Osaka, Japan

Filed Jul. 13, 1992, Ser. No. 912,486
Claims priority, application Japan, Jul. 11, 1991, 3-170916; Feb. 24, 1992, 4-035978
Int. Cl.[5] H01J *40/14;* **H01L** *29/78, 27/14;* **H04N** *9/07*
U.S. Cl. 250—208.1 **5 Claims**



1. A solid-state image pickup device comprising:

a plurality of straight lines of photodiodes including n lines, each line including a plurality of photodiodes, said lines disposed parallel and adjacent to each other;

n lines of CCD analog shift registers disposed adjacent and parallel to the photodiode lines at one side of the group of n lines of said photodiodes;

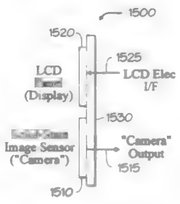
and a gate of MOS structure, between adjacent lines of the n lines of photodiodes and the n lines of CCD analog shift registers, through which the signal charges are transferred.

5,340,978

IMAGE-SENSING DISPLAY PANELS WITH LCD DISPLAY PANEL AND PHOTOSENSITIVE ELEMENT ARRAY

Michael D. Rostoker, and David E. Sanders, both of San Jose, Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 954,958, Sep. 30, 1992, abandoned. This application Apr. 21, 1993, Ser. No. 51,028
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **35 Claims**



1. An image-sensing display panel, comprising:

an LCD display panel;

a substrate having: an array of photosensitive elements disposed on a surface of the substrate; and

an optically transmissive layer above and contiguous with the array, wherein said transmissive layer is capable of focusing light onto said array;

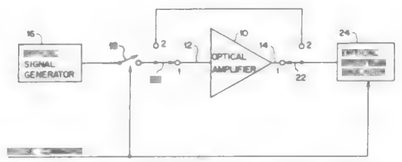
wherein said LCD display panel, and said substrate are aligned along the same optical path.

5,340,979

TECHNIQUE FOR DETERMINING THE AMPLIFIED SPONTANEOUS EMISSION NOISE OF AN OPTICAL CIRCUIT IN THE PRESENCE OF AN OPTICAL SIGNAL

Douglas M. Baney, Los Altos, and John J. Dupre, Santa Rosa, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 25, 1992, Ser. No. 951,682
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 B **22 Claims**



1. A method for determining the amplified spontaneous emission noise of an optical circuit in the presence of an optical signal, comprising the steps of:

applying an optical signal of prescribed intensity to an input of an optical circuit under test;

rapidly switching the applied optical signal off; and

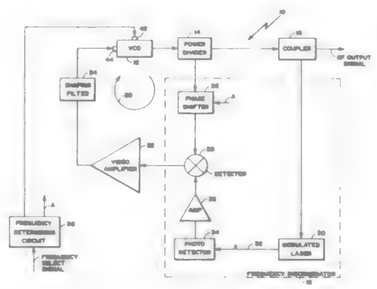
detecting an output signal from the optical circuit slightly after the optical signal is switched off, said output signal representing the amplified spontaneous emission noise of the optical circuit in the presence of an optical signal of the prescribed intensity.

5,340,980

FREQUENCY DISCRIMINATOR WITH FIBER OPTIC DELAY LINE

Michael J. Bianchini, North Middleboro; Richard A. Michalik, Andover; John A. Chiesa, Dracut, and Joanne Mistler, Marlboro, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 815,981, Jan. 2, 1992, Pat. No. 5,220,292. This application Dec. 31, 1992, Ser. No. 999,645
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 R **8 Claims**



1. A frequency discriminator comprising:

means, responsive to a first signal having a frequency and a phase, for modulating an optical signal for providing a modulated optical signal having a modulation rate in accordance with the frequency of the first signal;

delaying means, having an input and an output, for providing a delayed optical signal with a predetermined time delay, the input of the delaying means fed by the modulated optical signal;

means, having an input and an output, for demodulating the delayed optical signal for providing a second signal having a frequency with the same frequency as the first signal, but with a predetermined time delay;

phase differencing means, having a first and a second input and an output, for providing an output signal indicative of phase difference between signals fed the first and second input, the second signal fed to the second input of the phase differencing means; and

phase shifting means, having and input and an output, for shifting the phase of a signal fed to the input thereof for providing a phase shifted signal at the output thereof, the output of the phase shifting means fed to the input of the phase differencing means.

5,340,981

REAR FIELD REFLECTION MICROSCOPY PROCESS AND APPARATUS

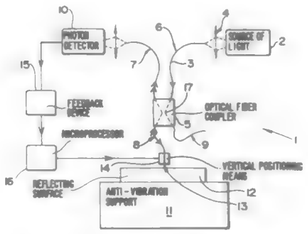
Frederique De Fornel; Jean-Pierre Goudonnet, both of Dijon, and Nathalie Cerre, Nevers, all of France, assignors to STM (Societe D'Investissement Dans La Microscopie) S.A., Auxerre, France

PCT No. PCT/FR90/00632, § 371 Date Apr. 27, 1992, § 102(e) Date Apr. 27, 1992, PCT Pub. No. WO91/03757, PCT Pub. Date Mar. 21, 1991
PCT Filed Aug. 27, 1990, Ser. No. 835,980
Claims priority, application France, Aug. 28, 1989, 89 11297
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.2 **22 Claims**

1. Process of near field reflection microscopy of a surface, comprising:

injecting a highly coherent electromagnetic wave through a waveguide, the waveguide having a flat outlet surface from which a propagation mode of the waveguide is emitted;

positioning the outlet surface a predetermined distance above a surface to be examined to obtain a coupling coefficient, between a propagation mode of the waveguide and an electromagnetic wave reflected by the surface and



guided in return by the waveguide, which is substantially exponentially dependent on distance between the flat outlet surface and the surface to be examined; and

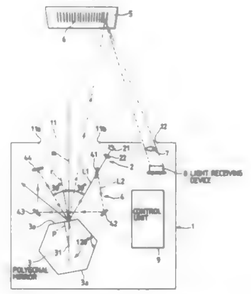
scanning the surface with the waveguide.

5,340,982

SYMBOL READING DEVICE FOR VARYING THE FOCAL POINT OF A SCANNING LASER BEAM THROUGH VARIANCE OF SCANNING LASER BEAM OPTICAL PATH LENGTH

Atsushi Nakazawa, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 884,140, May 18, 1992, abandoned. This application Mar. 19, 1993, Ser. No. 34,164
Int. Cl.[5] G06K *7/10*
U.S. Cl. 250—235 **8 Claims**



1. A symbol reading device for reading symbols on a target surface comprising:

a housing having an aperture;

a laser beam issuing means for emitting a reading laser beam;

scanning means for scanning a laser beam through a range of angles wider than those encompassing said aperture;

optical means disposed between said laser beam issuing means and said scanning means, said optical means including a single lens means for converging said reading laser beam, and a splitting means for splitting said converged reading laser beam into at least a first and second laser beam having first and second optical paths respectively, said first and second laser beams being incident on said scanning means from different directions to prevent simultaneous emergence of said first and second laser beams through said aperture, said first and second optical paths having first and second lengths, respectively, as measured from said laser beam issuing means to said scanning means, said first length differing from said second length by a

VOL 1165 ISS 4 AG 23 1994 UMI

distance sufficient to cause said first laser beam to have a first focal length different from a second focal length of said second laser beam;

light receiving means for receiving a laser beam which has emerged through said aperture and been reflected off of said target surface; and

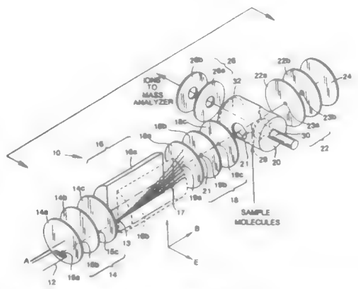
processing means for identifying symbols on said target surface based on output from said light receiving means.

5,340,983

METHOD AND APPARATUS FOR MASS ANALYSIS USING SLOW MONOCHROMATIC ELECTRONS

Max L. Deinzer, and James A. Laramée, both of Corvallis, Oreg., assignors to The State of Oregon acting by and through the State Board of Higher Education on behalf of Oregon State University, Eugene, Oreg.

Filed May 18, 1992, Ser. No. 884,705
Int. Cl.[5] H01J *49/14*
U.S. Cl. 250—281 **26 Claims**



1. A method for analyzing a sample material for the presence of molecules of an analyte in the sample material, the method comprising:

(a) generating monochromatic electrons having a kinetic energy within a range of greater than zero to less than about 6 eV;

(b) contacting molecules of the sample with the monochromatic electrons to form negative ions from at least a subpopulation of the molecules; and

(c) mass-analyzing the ions formed in step (b) to determine whether the ions formed in step (b) included ions of the analyte.

5,340,984

NON-CONTACT INTERCONNECT FOR FOCAL PLANE ARRAYS

Scott B. Evans, Carlsbad, Calif., assignor to SKW Corporation, Arlington, Va.

Filed May 19, 1992, Ser. No. 885,609
Int. Cl.[5] G01J *5/06*
U.S. Cl. 250—332 **12 Claims**

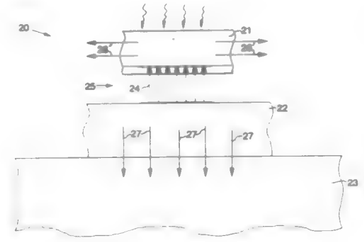
1. A detecting apparatus for detecting electromagnetic radiation for generating an image, said detecting apparatus comprising:

a detector means for detecting intensity of the radiation and generating an electrical signal responsive thereto;

a readout means for receiving said electrical signal generated by said detector means and producing an electronic signal which can be converted into an image;

means for supporting said detector means and readout means without physical contact between said detector means and said readout means; and

a non-contact interconnect means for causing said electrical signal generated by said detector means to be readout without physical contact between said detector means and said readout means, said non-contact interconnect means comprising means for generating a particle beam which is



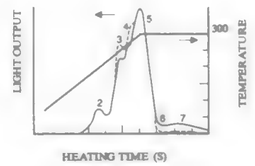
proportional to said electrical signal generated by said detector means.

5,340,985

MIXED FIELD RADIATION DOSIMETER

James C. Liu, Palo Alto, Calif., assignor to The Board of Trustees of Leland Stanford, Junior University, Stanford, Calif.

Filed Jun. 26, 1992, Ser. No. 905,274
Int. Cl.[5] G01T *1/02, 1/11*
U.S. Cl. 250—337 **2 Claims**



1. A method for measuring the radiation exposure of a human subjected to a radiation field comprising neutrons, and photons, said method comprising the steps of:

placing a first detection means for measuring neutrons and photons on said human being, said detection means comprising a 6Li doped LiF thermoluminescent detector;

removing said first detection means from said human being after said exposure;

heating said 6Li doped LiF thermoluminescent detector and measuring the light produced thereby to determine a first value which is indicative of the neutron radiation to which said human being was exposed and a second value indicative of the photon radiation to which said human being was exposed.

5,340,986

DIFFUSION-TYPE GAS SAMPLE CHAMBER

Jacob Y. Wong, Santa Barbara, Calif., assignor to Gaztech International Corporation, Goleta, Calif.

Continuation-in-part of Ser. No. 793,990, Nov. 18, 1991, Pat. No. 5,163,332. This application Jul. 16, 1992, Ser. No. 915,003
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[5] G01N *21/61*
U.S. Cl. 250—343 **4 Claims**

1. An improved diffusion-type gas sample chamber for transmitting radiation through gases present in the chamber by ambient pressure diffusion, comprising in combination

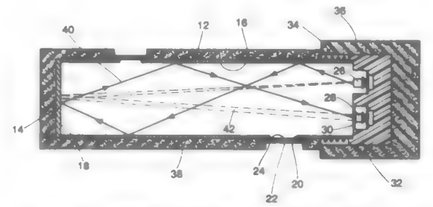
a) an elongated hollow tube having an inner wall and having a closed end and an open end, composed of a gastight material and having a specularly-reflective surface on the inner wall and on the inwardly-facing side of the closed end;

b) said tube including a plurality of filtering apertures arrayed along said tube for improving the diffusion into and out of the space within said tube;

c) a sheet of a semipermeable membrane covering each of said plurality of filtering apertures, said semipermeable membrane permitting gases to diffuse through it under ambient pressure into and out of the space within said tube and preventing airborne particles larger than a predetermined size from entering said space;

d) a source of radiation;

e) a detector of radiation; and,



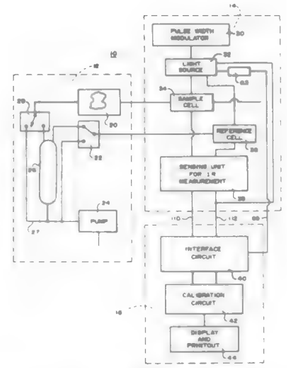
f) means for mounting both said source of radiation and said detector of radiation proximate said open end and facing said closed end, whereby some of the radiation emitted in various directions from said source of radiation is conducted by at least one reflection from the specularly-reflective surface on the inner wall to the specularly-reflective surface on the inwardly-facing side of the closed end and from the latter by at least one reflection from the specularly-reflective surface on the inner wall to said detector of radiation.

5,340,987

APPARATUS AND METHOD FOR ANALYZING GAS

Robert D. Eckles, Malcolm; Dayle K. McDermitt, and Jonathan M. Welles, both of Lincoln, all of Nebr., assignors to Li-Cor, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 670,342, Mar. 15, 1991. This application Feb. 27, 1992, Ser. No. 843,908
Int. Cl.[5] G01N *21/00, 21/05*
U.S. Cl. 250—345 **16 Claims**



1. A gas analyzer, comprising:

a source of light having a spectrum of wavelengths including longer wavelengths and shorter wavelengths;

means for transmitting light from said source of light through a gas sample cell containing a mixture of two gases, one of which has a high absorbance at said longer wavelengths and the other of which has a high absorbance at said shorter wavelengths;

a dichroic beam splitter with a high transmission for one of said longer and shorter wavelengths and a high reflectance of the other of said longer and shorter wavelengths;

a first detector positioned to receive light transmitted through said beam splitter; and

a second detector positioned to receive light reflected from said beam splitter, whereby one of said detectors receives principally light within the high absorbance frequency of one of said gases and the other detector receives light within the high absorbance frequency of the other of said gases;

a first narrow band pass filter between said beam splitter and said first detector for passing only light of said one of said longer and shorter wavelengths and a second narrow band pass filter between said beam splitter and said second detector for passing only light of said other of said longer and shorter wavelengths;

said light source being an infrared light source, said first and second filters being 50 nanometer band pass filters, said first and second detectors being linear, said first filter having a center point at 4.26 microns and said second filter having a center point at 2.59 microns;

a reference cell substantially free of said two gases;

said means for transmitting light including means for transmitting light through said reference cell to said dichroic beam splitter, whereby a reference signal and a sample signal are generated by each of said first and second detectors;

means for receiving said reference and sample signals and for generating a gross concentration signal for at least one of said two gases; and

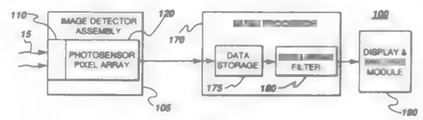
a gas source supplying gas to at least one of said sample and reference cells, said gas source including a restrictor tube and a heater such that the flow of gas through said restrictor tube to said at least one cell is controlled by heating said restrictor tube.

5,340,988

HIGH RESOLUTION RADIATION IMAGING SYSTEM

Jack D. Kingsley, and Chukka Srinivas, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1993, Ser. No. 43,116
Int. Cl.[5] G01T *1/24*
U.S. Cl. 250—370.09 **39 Claims**



1. A radiation imaging system comprising:

a photosensor pixel array, said array comprising a plurality of pixels having a predetermined photosensor pixel pitch between adjoining pixels, each of said photosensor pixels being adapted to generate a respective image data signal, said array being adapted to be sequentially disposed in selected ones of a plurality of sequential imaging positions pursuant to a predetermined imaging cycle, each of said sequential imaging positions being selected such that the area imaged by each respective pixel overlaps a portion of the area imaged by said respective pixel while disposed in the preceding imaging position in said predetermined imaging cycle so as to oversample the imaged area; and

an image processor coupled to said photosensor pixel array so as to receive the respective image data signals generated by said photosensor pixels, said image processor being adapted to store said respective image data signals

VOL 1165 ISS 4 AUG 23 1994 UMI

generated during an imaging cycle by said photosensor pixels in each of said respective sequential imaging positions as an unfiltered data set, said image processor further comprising a deblurring filter adapted to selectively filter said data set to generate a non-aliased fine resolution data set having spatial resolution greater than the imaging system Nyquist frequency determined by the pixel pitch of said photosensor array.

5,340,989

MULTIPLE COUNTER FOR DETECTING RADIOACTIVE RADIATION

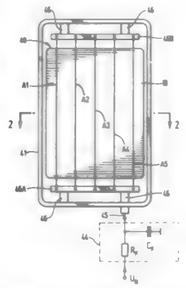
Fritz Berthold, Pforzheim, and Manfred Pfleger, Wildbad, both, Fed. Rep. of Germany, assignors to Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co. KG, Wildbad, Fed. Rep. of Germany

Filed Nov. 30, 1992, Ser. No. 982,690

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1991, 4139369

Int. Cl.[5] G01T *1/185*

U.S. Cl. 250—385.1 **25 Claims**



1. In a multiple counter for detecting radioactive radiation from a radiation source, the counter including a plurality of electrically conducting flat cathode elements, a plurality of anode wires disposed between the radiation source and the cathode elements, and an electronic evaluation element connected to the cathode elements, the improvement wherein:

each cathode element is operatively associated with at least two anode wires;

said cathode elements are disposed and connected for exclusively effecting signal detection;

said electronic evaluation element comprises a plurality of amplification circuits each connected to at least one respective cathode element; and

said counter further comprises at least one printed circuit board constituting a support element carrying said cathode elements and at which said cathode elements are connected to said amplification circuits.

5,340,990

FRACTIONAL CHANNEL MULTICHANNEL ANALYZER

Larry W. Brackenbush, Richland, and Gordon A. Anderson, Benton City, both of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Jul. 12, 1993, Ser. No. 91,574

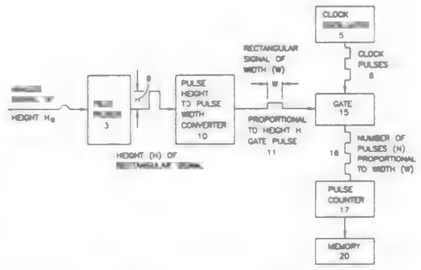
Int. Cl.[5] G01T *1/17*

U.S. Cl. 250—395 **2 Claims**

1. An apparatus for multichannel analysis of signals having a broad pulse height spectrum, said apparatus having (a) means for converting an analog signal of height "H_a" to a first rectangular signal of height "H", and (b) a means for generating clock pulses wherein the improvement comprises:

i. means for converting height "H" of said first rectangular signal to a gate pulse having a width "w" proportional to height "H", and

ii. a gate means for receiving said gate pulse asynchronously with said clock pulses wherefrom output pulses from said gate means are a number of clock pulses proportional to the width "w" of said gate pulse;



wherein said pulses are counted and recorded in channels, thereby producing the effect of having a higher number of channels available for determination of incident radiation energy.

5,340,991

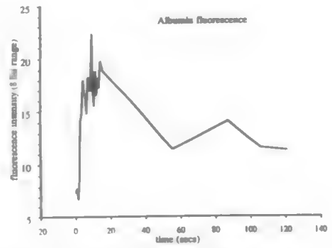
FLUOROKINETIC ANALYSIS OF DIFFUSION FROM A VESSEL

Stephen R. Fransen, and P. Lloyd Hilderbrand, both of Edmond, Okla., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla.

Filed May 21, 1993, Ser. No. 65,849

Int. Cl.[5] G01N *21/64*

U.S. Cl. 250—459.1 **1 Claim**



1. A method of characterizing the diffusion of a fluorescent material from a vessel, comprising:

providing an agarose gel vessel;

perfusing the agarose gel vessel with a solution containing a fluorescent material;

digitally recording a fluorescent image of the agarose gel vessel at predetermined times for obtaining quantitative data;

fitting a curve to the data; and

using the curve to characterize the diffusion of the fluorescent material.

5,340,992

APPARATUS AND METHOD OF DETECTING POSITIONAL RELATIONSHIP USING A WEIGHTED COEFFICIENT

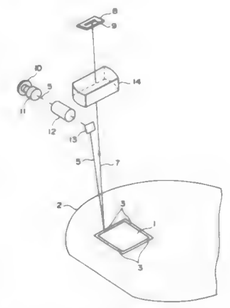
Masakazu Matsugu, Machida; Minoru Yoshii, Tokyo, and Naoto Abe, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 918,803, Jul. 23, 1992, abandoned, and a continuation-in-part of Ser. No. 875,601, Apr. 28, 1992, said Ser. No. 918,803, is a continuation of Ser. No. 825,774, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 404,343, Sep. 7, 1989, abandoned, said Ser. No. 875,601, is a continuation of Ser. No. 758,398, Sep. 4, 1991, abandoned, which is a continuation of Ser. No. 625,698, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 310,625, Feb. 15, 1989, abandoned. This application Nov. 18, 1992, Ser. No. 978,524

Claims priority, application Japan, Feb. 16, 1988, 63-033207; Sep. 9, 1988, 63-225802; Sep. 9, 1988, 63-225807; Sep. 9, 1988, 63-226010; Aug. 14, 1989, 1-209929

Int. Cl.[5] G01N *21/86;* **G01V** *9/04*

U.S. Cl. 250—548 **24 Claims**



1. A device for detecting a relative positional relationship between first and second objects, said device comprising:

light source means for projecting light to illuminate the first and second objects;

photodetecting means for detecting an intensity distribution of light from one of the first and second objects illuminated by said light source means, said photodetecting means having a light receiving surface and comprising means for producing a signal corresponding to the light intensity at each point on said light receiving surface; and

position detecting means for detecting the relative position of the first and second objects, on the basis of the signals produced by said photodetecting means, wherein said position detecting means comprises means for adjusting signals corresponding to different points on said light receiving surface of said photodetecting means, by using different weight coefficients, and means for detecting the relative position of the first and second objects on the basis of the adjusted signals.

5,340,993

OPTOCOUPLER PACKAGE WTH INTEGRAL VOLTAGE ISOLATION BARRIER

John E. Salina, Phoenix, and Clem H. Brown, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1993, Ser. No. 54,482

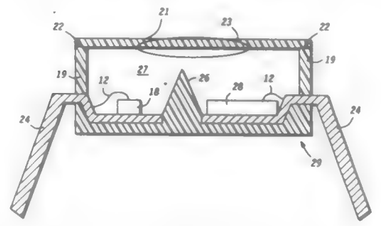
Int. Cl.[5] G02B *27/00*

U.S. Cl. 250—551 **8 Claims**

1. An optocoupler package, comprising:

a leadframe on which an optical source and an optical detector are mounted;

a body molded from a reflective plastic material disposed about said optical source and said optical detector; and



a voltage isolation barrier fabricated as part of the body and positioned between said optical source and said optical detector to substantially increase the electrical flashover path between the optical source and the optical detector.

5,340,994

METHOD FOR INSPECTING THE LENGTH OF A FLEXIBLE THIN OBJECT HAVING BINARIZING AND THINNING STEPS

Makoto Yamamoto, Tokyo, Japan, assignor to Yozan, Inc., Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,968

Claims priority, application Japan, Nov. 29, 1991, 3-342456

Int. Cl.[5] G01N *21/88*

U.S. Cl. 250—572 **6 Claims**



1. A method of inspecting the length of a flexible thin object comprising the steps of:

i) inputting a digital image of the flexible thin object;

ii) binarizing said image;

iii) thinning said binarized image;

iv) labeling said thinned image;

v) determining the area of the labeled image; and

vi) judging that the length of said flexible thin object is within tolerance when said calculated area is greater than a lower limit and less than an upper limit.

5,340,995

SCANNER FOR THE PSL RADIOGRAPHIC CASSETTE

Gentil Verbeke, and Gerard Boeve, both of Edegem, Belgium, assignors to AGFA-Gevaert N. V., Mortsel, Belgium

Filed Mar. 25, 1993, Ser. No. 38,810

Claims priority, application European Pat. Off., Apr. 21, 1992, 92201110.1

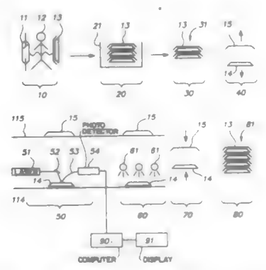
Int. Cl.[5] G01N *23/04*

U.S. Cl. 250—581 **5 Claims**

1. Scanning apparatus for scanning a cassette of the type used in photo-stimulable luminescence (PSL) radiography, which cassette comprises a flat substantially rigid base plate carrying on one side thereof a layer of PSL material and a cover for said one side adapted to be releasably secured to said base plate in overlying relation to said one side so as to light-tightly cover said layer of PSL material wherein said apparatus comprises a receiving station for the receipt of said cassette into the apparatus with the flat plate thereof extending in a

VOL 1165 ISS 4 AG 23 1994 UMI

generally vertical orientation, transport means for conveying the cassette while remaining in said substantially vertical orientation to a separating station which includes means for separating said base plate and its cover from each other while the base plate remains in said orientation, means for transporting said base plate in said generally vertical orientation along a path



leading through a scanning station where the plate is scanned, to an erasing station, and to an assembly station where the plate and its cover are re-assembled, the apparatus being arranged in such a way that the cover and the base plate remain in substantially parallel relationship during their separation and re-assembly.

5,340,996

RADIATION IMAGE READ-OUT APPARATUS, RADIATION IMAGE RECORDING METHOD AND APPARATUS, STIMULABLE PHOSPHOR SHEET, AND CASSETTE

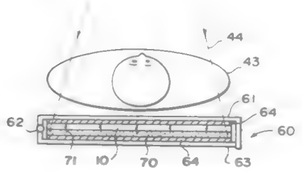
Takayoshi Fukuoka, Tokyo; Satoshi Arakawa, Kanagawa, and Ikuo Mori, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 564,503, Aug. 8, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 5,866

Claims priority, application Japan, Aug. 10, 1989, 1-207357; Sep. 5, 1989, 1-230199; Sep. 11, 1989, 1-235329

Int. Cl.[5] G21K *4/00;* **G01N** *23/04;* **G03B** *42/02*

U.S. Cl. 250—582 **6 Claims**



1. A radiation image recording apparatus in which a stimulable phosphor sheet provided with a layer of a stimulable phosphor is exposed to radiation, which carries information about an image, an the image is thereby stored on the stimulable phosphor sheet, said stimulable phosphor exhibiting such properties that, when it is exposed to radiation and is then exposed to stimulating rays, it emits light in proportion to the amount of energy stored thereon during its exposure to the radiation,

wherein the improvement comprises the provision of a member, which is provided with a layer of a phosphor and which is located such that the layer of said phosphor is close to or in close contact with said stimulable phosphor sheet located at the position that is exposed to the radiation, said phosphor exhibiting such properties that, when it is exposed to the radiation, it produces fluorescence having wavelengths falling within the stimulation wavelength range of said stimulable phosphor.

5,340,997

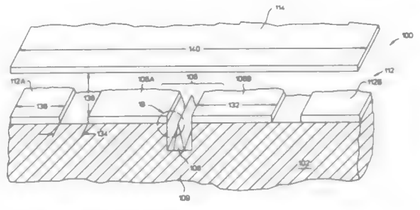
ELECTROSTATICALLY SHIELDED FIELD EMISSION MICROELECTRONIC DEVICE

Huei-Pei Kuo, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 20, 1993, Ser. No. 124,328

Int. Cl.[5] H01J *1/02*

U.S. Cl. 257—10 **19 Claims**



1. An apparatus comprising:

an electron source coupled to a substrate, with at least one voltage controlling the emission of electrons from the source out of the substrate;

a collector coupled to the substrate and positioned adjacent to the electron source, the collector being at a collector voltage to receive a current, which is substantially proportional to the number of electrons emitted from the source into the collector per unit time; and

an isolator at an isolator voltage located proximate to the emitter source to create an electrostatic enclosure for minimizing the effect of external charged structures on the electrons emitted from the source to the collector.

5,340,998

SEMICONDUCTOR SURFACE LIGHT EMITTING AND RECEIVING HETEROJUNCTION DEVICE

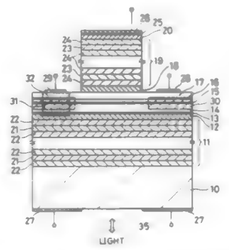
Kenichi Kasahara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,212

Claims priority, application Japan, Feb. 28, 1991, 3-034754

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—13 **21 Claims**



1. A semiconductor surface-normal optoelectronic device, comprising:

a semiconductor substrate;

a first semiconductor region of a first electroconductive type formed on said substrate;

a second semiconductor region of a second electroconductive type having a polarity opposite to that of the first electroconductive type, which is formed on said first semiconductor region;

a semiconductor active layer formed on said second semiconductor region;

a third semiconductor region of the first electroconductive type formed on said semiconductor active layer;

a fourth semiconductor region of the second electroconductive type formed on said third semiconductor region;

a cathode electrode connected to one of said first semiconductor region and said fourth semiconductor region;

an anode electrode connected to the other of said first semiconductor region and said fourth semiconductor region;

a first gate electrode connected to said second semiconductor region;

a second gate electrode connected to said third semiconductor region; and

a high electric resistance region that passes through said active layer, that surrounds a light emitting region of said active layer, and that has an electric resistance higher than that of the light emitting region;

whereby an electric current flowing through said active layer is restricted by said high electric resistance region.

5,340,999

INSULATED GATE THIN FILM TRANSISTOR WITH AMORPHOUS OR MICROCRYSTALLINE SEMICONDUCTOR FILM

Makoto Takeda, Tenri, and Tadanori Hishida, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 333,732, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 467,667, Feb. 18, 1983, abandoned. This application Oct. 29, 1992, Ser. No. 968,453

Claims priority, application Japan, Feb. 25, 1982, 57-30219; Jan. 31, 1983, 58-15748

Int. Cl.[5] H01L *27/01, 27/13, 29/78*

U.S. Cl. 257—66 **3 Claims**

1. An insulated gate thin film transistor comprising:

an insulating substrate;

a gate electrode disposed on said insulating substrate;

a first insulating film disposed directly on and completely covering the gate electrode, said first insulating film being an anodized portion made from said gate electrode;

a second insulating film disposed directly on and completely covering the first insulating film, said first and second insulating films functioning as a double insulating film for said gate electrode;

a silicon semiconductor film being a microcrystalline semiconductor film disposed over the insulating film;

a source electrode and a drain electrode disposed on said semiconductor film; and

a protecting film coated on said source and drain electrodes and on exposed portions on said semiconductor film, wherein the source electrode and the drain electrode partially overlap the gate electrode through the first insulating film, the second insulating film and the semiconductor film therebetween wherein said second insulating film is made of silicon nitride, the thickness of the silicon nitride film being equal to 1000 Å or more and less than 2000 Å.

5,341,000

THIN SILICON CARBIDE LAYER ON AN INSULATING LAYER

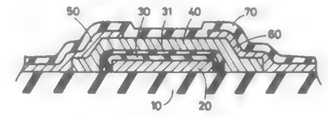
Keita Nii, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 3, 1992, Ser. No. 829,200

Claims priority, application Japan, Sep. 18, 1991, 3-237882

Int. Cl.[5] H01L *31/0312, 29, 12, 29, 06, 29, 04*

U.S. Cl. 257—77 **9 Claims**



1. A semiconductor device manufactured by a method which comprises the steps of:

(a) forming an insulating layer from a material having a high melting point on a silicon substrate;

(b) providing said insulating layer with an opening for crystal growth;

(c) effecting crystal growth until a silicon carbine crystal layer covers said insulating layer;

(d) forming a thin layer of silicon carbide by subjecting said silicon carbide crystal layer to etching; and

(e) forming a semiconductor device in said thin layer of silicon carbide.

5,341,001

SULFIDE-SELENIDE MANGANESE-ZINC MIXED CRYSTAL PHOTO SEMICONDUCTOR AND LASER DIODE

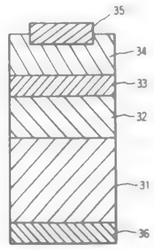
Shigeo Hayashi, Moriguchi; Kazuhiro Okawa, and Tsuneo Mitsuyu, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 26, 1993, Ser. No. 9,240

Claims priority, application Japan, Feb. 13, 1992, 4-026481; Feb. 13, 1992, 4-026482

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—94 **5 Claims**



1. A laser diode, comprising a double hetero quantum well structure on a substrate, whose clad layers are mixed crystal layers of n-type and p-type $Zn_{1-x}Mn_xS_ySe_{1-y}$, wherein, which is lattice matched to the substrate, and whose active layer between the n-type clad layer and p-type clad layer is ZnSe or a mixed crystal of $Zn_{1-z}Cd_zS_wSe_{1-w}$, and wherein the active layer has a thickness of between 5.0 and 150 nm.

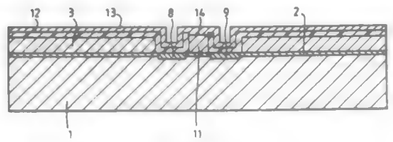
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,002

SEMICONDUCTOR LIGHT EMITTING DEVICE WITH RIDGED CONTACT

Richard G. Plumb, Birch House Farm, Chattisham, Ipswich, Suffolk, England IP8 3QQ

Filed Dec. 4, 1991, Ser. No. 800,924
Claims priority, application United Kingdom, Jun. 7, 1989, 8913070
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—95 19 Claims



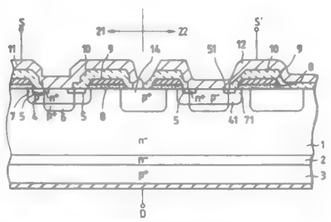
1. A light-emitting semiconductor device comprising a substrate, a first layer being an active layer on the substrate and a second layer forming a ridged contact portion on the active layer, wherein a potential barrier is formed by ion implantation into the active layer alongside the ridged contact portion.

5,341,003

MOS SEMICONDUCTOR DEVICE HAVING A MAIN UNIT ELEMENT AND A SENSE UNIT ELEMENT FOR MONITORING THE CURRENT IN THE MAIN UNIT ELEMENT

Shigeyuki Obinata, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Jun. 9, 1992, Ser. No. 895,742
Claims priority, application Japan, Jun. 10, 1991, 3-136881
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—135 16 Claims



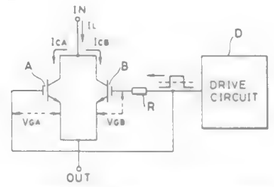
1. A MOS semiconductor device comprising:
a semiconductor layer of a first conductivity type;
a plurality of first regions having a second conductivity type formed in a surface region of said semiconductor layer;
a plurality of second regions of said first conductivity type formed in a surface region of said first region;
channel forming regions located in said first regions between said second regions and said semiconductor layer;
a gate electrode formed on a gate insulating film which is formed on each of said channel forming regions;
a main source electrode which contacts a first one of said plurality of first regions and a first one of said plurality of second regions;
a sense signal pickup source electrode which contacts a second one of said plurality of first regions and a second one of said plurality of second regions;
resistor means for providing a resistance connected between said main source electrode and said sense signal pickup source electrode; and
a third region of said second conductivity type formed in a surface region of said semiconductor layer located between said first one of said plurality of first regions and said second one of said plurality of first regions, said third region being located apart from said first regions, and being in contact with said main source electrode.

5,341,004

SEMICONDUCTOR SWITCHING DEVICE WITH REDUCED SWITCHING LOSS

Shoichi Furuhata, Kawasaki, Japan, assignor to Fuji Electric Co. Ltd., Kanagawa, Japan

Filed Feb. 28, 1992, Ser. No. 843,244
Claims priority, application Japan, Mar. 8, 1991, 3-043378
Int. Cl.[5] H01L *29/74, 31/111, 29/00*
U.S. Cl. 257—139 10 Claims



1. A semiconductor switching device comprising:
a first semiconductor element having an input electrode, an output electrode, and a control electrode to which a drive signal is applied for connecting the input electrode to the output electrode or for disconnecting the output electrode from the input electrode, the first semiconductor element having a first saturation voltage and a first fall time;
a second semiconductor element having an input electrode, an output electrode and a control electrode to which the drive signal is applied, the input and output electrodes being coupled to the input and output electrodes, respectively, of the first semiconductor element, said second semiconductor element being of the same type semiconductor device as said first semiconductor element, and having a second saturation voltage and a second fall time, the second saturation voltage being greater than the first saturation voltage and the second fall time being shorter than the first fall time; and
drive signal delay means for delaying the drive signal applied to the control electrode of said second semiconductor element by a predetermined amount with respect to the drive signal applied to the control electrode of said first semiconductor element.

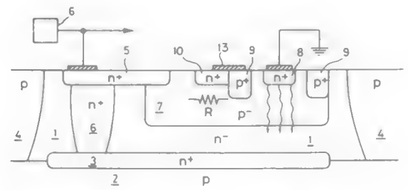
5,341,005

STRUCTURE FOR PROTECTING AN INTEGRATED CIRCUIT FROM ELECTROSTATIC DISCHARGES

Athos Canclini, Como, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Sep. 8, 1992, Ser. No. 941,520
Claims priority, application Italy, Sep. 12, 1991, VA91 A 0029
Int. Cl.[5] H01L *29/08, 29/44*
U.S. Cl. 257—173 14 Claims

1. An integrated protective structure for protecting an integrated circuit, functionally connected to a pin, from electrostatic discharges, the protective structure formed in a single epitaxial region of a first type of conductivity, the protective structure defined at a bottom side by a buried layer of the first type of conductivity and defined laterally by an isolation region of a second type of conductivity, the protective structure comprising:
a first region of the first type of conductivity electrically connected to the pin and coupled to the buried layer through a deep diffused contact region of the first type of conductivity, the first region constituting a first terminal of a Zener diode and a collector region of a vertical bipolar transistor, the Zener diode having an avalanche current and a breakdown voltage;
a well region of the second type of conductivity contained within the epitaxial region, the well region having a certain doping level, the well region constituting a second terminal of the Zener diode and a base region of the vertical transistor;
a second region of the first type of conductivity formed within the well region and connected to ground, the second region constituting an emitter region of-the vertical transistor;
an annular region of the second type of conductivity formed within the well region, the annular region having a doping



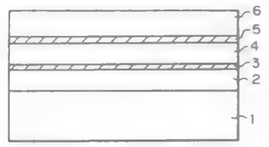
level higher than the certain doping level of the well region, the annular region surrounding the second region, the annular region intercepting the avalanche current of the Zener diode and distributing the avalanche current into the base region of the vertical transistor during an electrostatic discharge on the pin; and
a third region of the first type of conductivity formed within the well region, the third region facing the first region and connected to the annular region, the third region constituting an emitter of a lateral bipolar transistor, a collector of which is constituted by the first region, the lateral transistor reduces the breakdown voltage of the Zener diode and an ohmic drop through the structure during an electrostatic discharge.

5,341,006

SEMICONDUCTOR DEVICE HAVING DIFFUSION-PREVENTING LAYER BETWEEN III-V LAYER AND IV LAYER

Tatsuya Hirose, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 17, 1992, Ser. No. 992,042
Claims priority, application Japan, Dec. 26, 1991, 3-344555
Int. Cl.[5] H01L *21/20*
U.S. Cl. 257—190 3 Claims



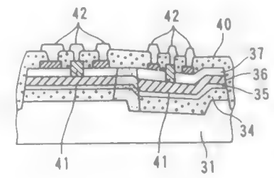
1. A semiconductor device which comprises:
a triple-layered structure consisting of a first single-crystalline layer of a group-III–V compound semiconductor, a second single-crystalline layer of a group-IV element semiconductor, and a third single-crystalline layer of an element semiconductor interposed between the first and second layers in a manner such that a coherent bond between crystal lattices is established at both interfaces between the first and third layers and between the third and second layers, wherein component elements of the first and second layers would undergo mutual diffusion from one to the other of the first and second layers if said first and second layers were in direct contact with each other, and wherein said third layer prevents said mutual diffusion.

5,341,007

SEMICONDUCTOR DEVICE AND A METHOD FOR FABRICATING THE SAME

Nobuhiro Kuwata, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 811,012, Dec. 20, 1991, abandoned, which is a division of Ser. No. 649,640, Feb. 1, 1991, Pat. No. 5,100,831. This application Jun. 2, 1993, Ser. No. 71,229
Claims priority, application Japan, Feb. 16, 1990, 2-35876; Feb. 16, 1990, 2-35878; Mar. 8, 1990, 2-57345
Int. Cl.[5] H01L *27/088, 29/04*
U.S. Cl. 257—194 3 Claims



1. A semiconductor device comprising:
a semiconductor substrate having a plurality of crystal planes;
a first field effect transistor formed on a first region of said substrate and having a first active layer with an impurity density of a first level; and
a second field effect transistor formed on a second region of said substrate and having a second active layer with an impurity density of a second level different from said first level,
said first region of said semiconductor substrate having a first surface orientation coinciding with a normal to a predetermined crystal plane of said plurality of crystal planes of said semiconductor substrate,
said second region of said semiconductor substrate having a second surface orientation which is slightly inclined from the normal to said predetermined crystal plane by substantially two degrees and being formed by applying anisotropic etching to said second region with masking of said first region,
whereby said first field effect transistor and said second field effect transistor are operated with different threshold voltages.

5,341,008

BULK CHARGE MODULATED DEVICE PHOTOCELL WITH LATERAL CHARGE DRAIN

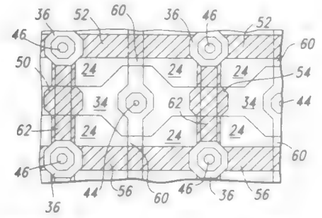
Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 21, 1993, Ser. No. 124,735
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—231 16 Claims

7. A semiconductor image sensor element comprising:
a transistor gate potential well;
a virtual potential well adjacent the transistor gate potential well;
a clear gate barrier adjacent the virtual potential well;
a clear drain adjacent the clear gate barrier;
a charge sensor for sensing charge levels in the transistor gate potential well, the charge levels responsive to light incident on the device, whereby charge is stored in the

VOL 1165 ISS 4 AG 23 1994 UMI

virtual potential well during charge integration, after charge integration, the charge is transferred into the transistor gate potential well from the virtual potential well



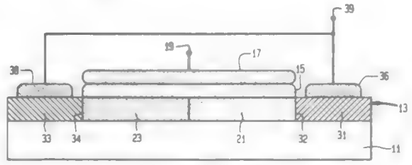
for charge detection by the charge sensor, and, after charge detection, the charge is transferred from the transistor gate potential well to the clear drain.

5,341,009

FAST CHARGING MOS CAPACITOR STRUCTURE FOR HIGH MAGNITUDE VOLTAGE OF EITHER POSITIVE OR NEGATIVE POLARITY

Dennis C. Young, Melbourne, and Rex E. Lowther, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jul. 9, 1993, Ser. No. 90,978
Int. Cl.[5] H01L *27/02;* **H01G** *1/005*
U.S. Cl. 257—296 **32 Claims**



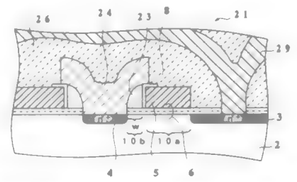
1. A semiconductor capacitor device comprising:
a semiconductor layer containing at least one semiconductor region, said at least one semiconductor region having at least one conductivity type;
an insulator layer disposed upon said at least one semiconductor region of said semiconductor layer;
a conductive layer disposed upon said insulator layer and providing a first contact for said capacitor device, so that a capacitor is formed between said conductive layer that is disposed atop said insulator layer and said at least one semiconductor region underlying said insulator layer;
said semiconductor layer further containing a first contact semiconductor region of a first conductivity type and having an impurity concentration higher than that of said at least one semiconductor region, said first contact semiconductor region contacting a first portion of said at least one semiconductor region;
said semiconductor layer further containing a second contact semiconductor region of a second conductivity type and having an impurity concentration higher than that of said at least one semiconductor region, said second contact semiconductor region contacting a second portion of said at least one semiconductor region; and
conductive material contacting said first and second contact semiconductor regions and providing a second contact for said capacitor device.

5,341,010

SEMICONDUCTOR DEVICE INCLUDING NONVOLATILE MEMORIES

Noriyuki Shimoji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 11, 1993, Ser. No. 2,606
Claims priority, application Japan, Feb. 19, 1992, 4-032243
Int. Cl.[5] H01L *29/78*
U.S. Cl. 251—326 **14 Claims**



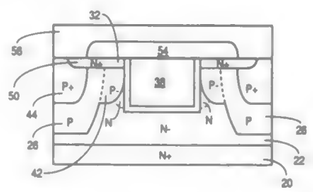
1. A semiconductor device including nonvolatile memories comprising:
a substrate of semiconductor;
a first region formed in the surface of the substrate;
a second region formed in the surface of the substrate and defining a space between the first region and the second region, the surface of the space comprising a first portion and a second portion;
an insulating layer for holding electrons spanning the first portion;
a control electrode on the insulating layer for holding electrons and spanning the first portion, the control electrode having a side surface;
a dielectric body which is formed of a high dielectric material and which spans the second portion adjacent to the side surface of the control electrode; and
a first region electrode contacting the first region and the dielectric body, which is electrically isolated from the control electrode.

5,341,011

SHORT CHANNEL TRENCHED DMOS TRANSISTOR

Fwu-Iuan Hshieh; Mike F. Chang, both of Santa Clara, and Hamza Yilmaz, Saratoga, all of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Filed Mar. 15, 1993, Ser. No. 31,798
Int. Cl.[5] H01L *29/10*
U.S. Cl. 257—330 **11 Claims**



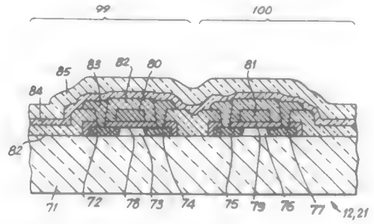
1. A trenched transistor comprising:
a substrate of a first conductivity type defining a trench containing a conductive gate electrode;
a body region of a second conductivity type extending from a principal surface of the substrate adjacent to the trench into the substrate to a depth less than that of the trench, wherein a portion of the body region immediately adjacent to the trench is shallower with respect to the principal surface than is another portion of the body region away from the trench, an edge of the body region immediately adjacent the trench sloping such that a portion of the edge immediately adjacent the trench is closer to the principal surface; and
a source region of the first conductivity type formed in the substrate.

5,341,012

CMOS DEVICE FOR USE IN CONNECTION WITH AN ACTIVE MATRIX PANEL

Toshiyuki Misawa, and Hiroyuki Oshima, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 351,758, May 15, 1989, Pat. No. 5,250,931. This application Jul. 31, 1992, Ser. No. 923,751
Claims priority, application Japan, May 17, 1988, 63-119919
Int. Cl.[5] H01L *27/01, 27/13*
U.S. Cl. 257—351 **3 Claims**



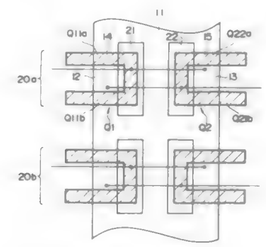
1. A CMOS device, comprising:
a substrate;
a thin silicon film carried by said substrate;
a thin film transistor formed from said thin silicon film, and carried by the substrate, said thin film transistor having a source region and a drain region formed from at least a first type of impurity; and
a second transistor, formed from said thin silicon film, and carried by the substrate, said second transistor having a source region and a drain region formed from at least said first type of impurity and a second type of impurity;
wherein the concentrations of the first type of impurity and second type of impurity are different from each other.

5,341,013

SEMICONDUCTOR DEVICE PROVIDED WITH SENSE CIRCUITS

Masaru Koyanagi, Yokohama, and Minoru Yamda, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 29, 1992, Ser. No. 905,661
Claims priority, application Japan, Jun. 28, 1991, 3-158929
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—368 **1 Claim**



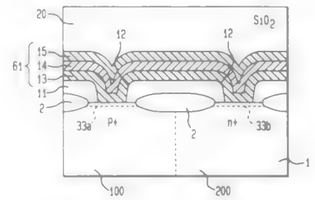
1. A semiconductor device comprising two or more sense circuits, each sense circuit including first and second MOS transistors such that their sources are commonly connected, and that the drain of one transistor and the gate of the other transistor are connected so that they are cross-coupled with each other, to thus sense a difference between potentials applied to the respective gates,
wherein each sense circuit's first and second MOS transistors include a single drain region, a single gate region and two or more channel regions connected in parallel, respectively,
each sense circuit's first and second MOS transistors being disposed with their source regions being shared among said two or more sense circuits,
said two or more sense circuits being disposed in such a manner that they share the respective source regions of each sense circuit's first and second MOS transistors.

5,341,014

SEMICONDUCTOR DEVICE AND A METHOD OF FABRICATING THE SAME

Toyokazu Fujii, Moriguchi, and Yasushi Naito, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 11, 1992, Ser. No. 989,347
Claims priority, application Japan, Jan. 7, 1992, 4-000625; Aug. 26, 1992, 4-226862
Int. Cl.[5] H01L *23/48, 21/44*
U.S. Cl. 257—377 **8 Claims**



1. A semiconductor device comprising:
a semiconductor substrate;
a p-type impurity diffused region formed in the semiconductor substrate;
a polycide interconnection electrically connected to the p-type impurity diffused region,
wherein the polycide interconnection comprises a first p-type impurity doped polysilicon film, a refractory metal silicide film formed on the first p-type impurity doped polysilicon film, and a second p-type impurity doped polysilicon film formed on the refractory metal silicide film, the refractory metal silicide film being deposited without heat treatment for silicidation, the refractory metal silicide film being doped with p-type impurities; and
an insulating layer deposited on the second p-type impurity doped polysilicon film,
thereby eliminating an interface between the refractory metal silicide film and the insulating layer, and preventing formation of a segregation site for the p-type impurities during a heat treatment performed after depositing the insulating layer on the second p-type impurity doped polysilicon film.

5,341,015

SEMICONDUCTOR DEVICE WITH REDUCED STRESS ON GATE ELECTRODE

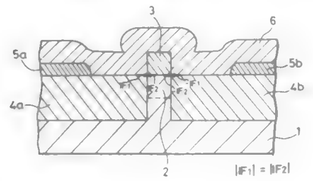
Yasutaka Kohno, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 449,789, Dec. 13, 1989, abandoned. This application Dec. 11, 1990, Ser. No. 625,798
Claims priority, application Japan, Mar. 29, 1989, 1-79254
Int. Cl.[5] H01L *29/80, 29/84, 29/04*
U.S. Cl. 257—402 **5 Claims**

1. A field effect transistor having a gate threshold voltage

VOL 1165 ISS 4 AUG 23 1994 UMI

comprising a compound semiconductor substrate having a (100) crystalline surface, a linear metal gate electrode having a gate length less than two microns disposed on said surface and having an internal stress, and an electrically insulating film disposed on said surface covering said gate electrode which



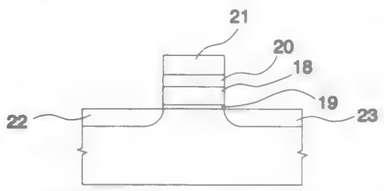
applies a stress to said gate electrode wherein the vector sum of the internal stress within the metal gate electrode and the stress applied by said electrically insulating film to said gate electrode is substantially zero and the threshold voltage is independent of gate orientation on said surface of said substrate.

5,341,016

LOW RESISTANCE DEVICE ELEMENT AND INTERCONNECTION STRUCTURE

Kirk D. Prall; Gurtej S. Sandhu, and Scott G. Meikle, all of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Jun. 16, 1993, Ser. No. 78,700
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—412 18 Claims



1. A composite electrically conductive structure for interconnecting semiconductor integrated circuit devices comprising:
a gate dielectric layer;
a conductive non-polysilicon adhesion layer in direct mechanical and electrical contact with said gate dielectric layer;
a conductive metal layer in direct mechanical and electrical contact with said adhesion layer;
wherein said metal layer is not in direct mechanical contact with said devices; and
wherein said adhesion layer acts as a device element of one of said devices.

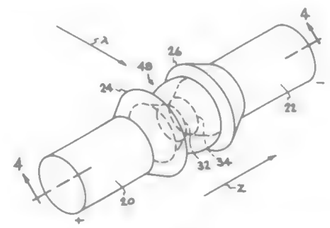
5,341,017

SEMICONDUCTOR SWITCH GEOMETRY WITH ELECTRIC FIELD SHAPING

Rex Booth, and Michael D. Pocha, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 9, 1993, Ser. No. 72,310
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—459 18 Claims

1. An optoelectric switch comprising:
at least two conductor electrodes,
an optically active dielectric medium disposed between and coupling said at least two conductor electrodes, said di-



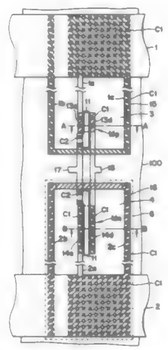
electric medium having a bulk field area and a tapered interface with said at least two conductor electrodes.

5,341,018

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING A PLURALITY OF INPUT CIRCUITS EACH INCLUDING DIFFERENTLY SIZED TRANSISTORS

Kenichi Echigoya, and Hidehiro Asai, both of Kanagawa, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 17, 1992, Ser. No. 945,882
Claims priority, application Japan, Sep. 18, 1991, 3-237537
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—503 9 Claims



1. A semiconductor integrated circuit device comprising:
a semiconductor chip,
a first bonding pad formed on said semiconductor chip and supplied with a first power voltage,
a second bonding pad formed on said semiconductor chip and supplied with a second power voltage,
a first wiring connected to said first bonding pad and elongated along a periphery of said semiconductor chip,
a second wiring connected to said second bonding pad and elongated along the periphery of said semiconductor chip,
a third bonding pad formed on said semiconductor chip at a first distance from said first bonding pad and supplied with a first input signal,
a fourth bonding pad formed on said semiconductor chip at a second distance from said first bonding pad and supplied with a second input signal,
said first distance being larger than said second distance,
a first input circuit formed on said semiconductor chip adjacent to said third bonding pad and coupled between said first and second wirings and further to said third bonding pad to receive said first input signal,
said first input circuit including a first transistor having a gate connected to said third bonding pad and a first ratio of a channel width to a channel length, and
a second input circuit formed on said semiconductor chip adjacent to said fourth bonding pad and coupled between said first and second wirings and further to said fourth bonding pad to receive said second input signal, said second input circuit including a second transistor having a gate connected to said fourth bonding pad and a second ratio of a channel width to a channel length, wherein said first ratio is larger than said second ratio such that said first input circuit has a logical threshold level that is substantially equal to a logical threshold level of said second input circuit.

5,341,019

Patent Not Issued For This Number

5,341,020

INTEGRATED MULTICELLULAR TRANSISTOR CHIP FOR POWER SWITCHING APPLICATIONS

Kunio Sasahara, Tokyo, Japan, assignor to Sanken Electric Co., Ltd., Japan

Filed Apr. 2, 1992, Ser. No. 862,058
Claims priority, application Japan, Apr. 12, 1991, 3-108909; Apr. 18, 1991, 3-113958
Int. Cl.[5] H01L *29/52, 29/70*
U.S. Cl. 257—578 4 Claims

1. An integrated multicellular transistor chip comprising:
(A) a semiconductor substrate having a first and a second opposite major surfaces, the substrate comprising:
(a) a base region comprising an inner base subregion exposed at the first major surface of the substrate, and an outer base subregion surrounding the inner base subregion and exposed at the first major surface of the substrate, the inner base subregion comprising a plurality of islands;
(b) an emitter region formed in the base region and exposed at the first major surface of the substrate, the emitter region comprising an inner emitter subregion and a peripheral annular emitter subregion surrounding the inner emitter subregion; and
(c) a collector region disposed contiguous to the base region and exposed at the second major surface of the substrate;
(B) an insulating film formed on the first major surface of the substrate, the insulating film having formed therein:
(a) a first set of base openings exposing the plurality of islands of the inner base subregion;
(b) a second set of base openings exposing the outer base subregion, the second set of base openings being separated from the first set of base openings; and
(c) a plurality of emitter openings exposing the emitter region;
(C) a base electrode formed on the insulating film and electrically contacting the inner and the outer base subregions through the first and the second sets of base openings in the insulating film;
(D) an emitter electrode formed on the insulating film and electrically contacting the inner emitter subregion and the peripheral annular emitter subregion through the emitter openings in the insulating film; and
(E) a collector electrode formed in electrical contact with the collector region;
(F) the first set of base openings in the insulating film being each less in area than the second set of base openings in the insulating film; wherein each of the second set of base openings is from 1.5 to 4.0 times as large as each of the first set of base openings.

5,341,021

BIPOLAR TRANSISTOR HAVING AN ELECTRODE STRUCTURE SUITABLE FOR INTEGRATION

Takeo Maeda, and Hiroshi Momose, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 9, 1992, Ser. No. 849,102
Claims priority, application Japan, Mar. 18, 1991, 3-052762
Int. Cl.[5] H01L *29/40, 29/70, 27/082*
U.S. Cl. 257—587 10 Claims

1. A semiconductor device comprising:
bipolar transistors continuously arrayed in a first direction in a semiconductor substrate, and each having a collector electrode, an emitter electrode and a base electrode, each bipolar transistor further comprising:
a first contact hole for guiding said emitter electrode;
a second contact hole for guiding said base electrode being, said first contact holes and said second contact hole being arranged in a direction that is substantially at a right angle relative to said first direction, said second contact hole being adjacent to said first contact hole;
a third contact hole for guiding said collector electrode being arranged so as to be adjacent to both first and second contact holes;
emitter electrode leading means for extending said emitter electrode in a second direction, said emitter electrode leading means being oriented at substantially a right angle relative to said first direction;
base electrode leading means for extending said base electrode in a third direction, said base electrode leading means being oriented at substantially a right angle relative to said first direction, the third direction being opposite to said second direction; and
collector electrode leading means for extending said collector electrode in a direction parallel with said third direction.

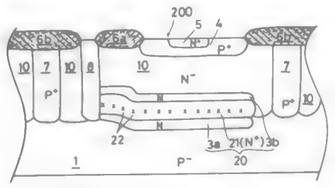
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,022

BIPOLAR TRANSISTOR HAVING A HIGH ION CONCENTRATION BURIED FLOATING COLLECTOR AND METHOD OF FABRICATING THE SAME

Takashi Kurei, and Shigeru Kusunoki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 31,988
Claims priority, application Japan, May 15, 1992, 4-123177
Int. Cl.[5] H01L *29/08, 29/32*
U.S. Cl. 257—590 5 Claims



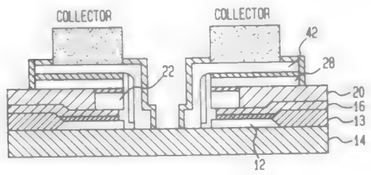
1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
a buried layer formed on said semiconductor substrate, said buried layer including a principal buried layer of a second conductivity type sandwiched between two secondary buried layers of said second conductivity type, each of said secondary buried layers having an ion concentration lower than that of said principal buried layer, wherein said principal buried layer contains ion-implanted defects; and
a bipolar transistor including a first semiconductor layer of said second conductivity type having an ion concentration lower than that of said principal buried layer, said first semiconductor layer being selectivity formed on a surface of said buried layer, a second semiconductor layer of said first conductivity type selectively formed on a surface of said first semiconductor layer, and a third semiconductor layer of said second conductivity type selectively formed on a surface of said second semiconductor layer, a surface of said second semiconductor layer being exposed on an outer surface of said semiconductor device.

5,341,023

NOVEL VERTICAL-GATE CMOS COMPATIBLE LATERAL BIPOLAR TRANSISTOR

Chang-Ming Hsieh; Louis L. C. Hsu, both of Fishkill; Shaw-Ning Mei, Wappingers Falls; Ronald W. Knepper, LaGrangeville, and Lawrence F. Wagner, Jr., Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1992, Ser. No. 900,881
Int. Cl.[5] H01L *29/72*
U.S. Cl. 257—559 3 Claims



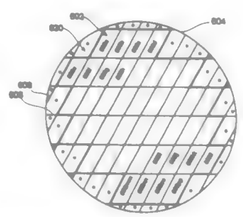
1. A bipolar transistor, comprising in combination:
a lower extrinsic base layer with an opening formed therein defining a lower extrinsic base layer edge;
an emitter layer overlying said lower extrinsic base layer, said emitter layer having an opening formed therein defining an emitter layer edge that is aligned with said extrinsic base layer edge;
an upper extrinsic base layer overlying said emitter layer with an opening formed therein defining an upper extrinsic base layer edge;
an intrinsic base layer, said intrinsic base layer extending over said lower extrinsic base layer edge, said upper extrinsic base layer edge and said emitter layer edge and extending perpendicularly with respect to said lower extrinsic base layer, said upper extrinsic base layer, and said emitter layer; and
a collector layer, said collector layer extending over said intrinsic base layer and extending perpendicularly with respect to said lower extrinsic base layer, said upper extrinsic base layer, and said emitter layer.

5,341,024

METHOD OF INCREASING THE LAYOUT EFFICIENCY OF DIES ON A WAFER, AND INCREASING THE RATIO OF I/O AREA TO ACTIVE AREA PER DIE

Michael D. Rostoker, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 916,328, Jul. 17, 1992. This application Nov. 18, 1992, Ser. No. 978,483
Int. Cl.[5] H01L *21/02, 21/302*
U.S. Cl. 257—620 12 Claims



1. A method of forming die sites on a semiconductor wafer, consisting essentially of:
providing a first series of substantially equally spaced-apart parallel scribe lines chordwise across a semiconductor wafer; and
providing a second series of substantially equally spaced-apart parallel scribe lines chordwise across the semiconductor wafer intersecting the first series of parallel scribe lines at a diagonal angle "Θ" not equal to ninety degrees; wherein:
a plurality of areas enclosed by the first and second series of scribe lines define a plurality of parallelogram-shaped die sites; and
the angle Θ, at which the second series of parallel scribe lines intersects the first series of parallel scribe lines, is equal to sixty degrees.

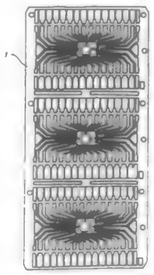
5,341,025

IC PACKAGE AND LSI PACKAGE USING A LEAD FRAME FORMED OF A COPPER-ZIRCONIUM ALLOY

Nobuaki Nakashima, and Shinzo Sugai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 810,426, Dec. 20, 1991, Pat. No. 5,210,441. This application Mar. 23, 1993, Ser. No. 35,806
Claims priority, application Japan, Dec. 20, 1990, 2-404416
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] H01L *23/54, 23/48, 29/44, 29/52*
U.S. Cl. 257—697 2 Claims

1. An IC package comprising a lead frame comprising a copper alloy containing 0.1 to 1% by weight of chromium, 0.01 to 0.5% by weight of zirconium and having partial discolored regions caused by unbalanced precipitation of the zirconium distributed thereon at a rate of 2 grains/100 cm^2 or less.

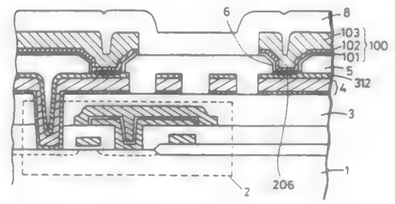


5,341,026

SEMICONDUCTOR DEVICE HAVING A TITANIUM AND A TITANIUM COMPOUND MULTILAYER INTERCONNECTION STRUCTURE

Shigeru Harada; Kazuhiro Ishimaru, and Kimio Hagi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 842,019
Claims priority, application Japan, Apr. 9, 1991, 3-076544(P)
Int. Cl.[5] H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 257—764 9 Claims



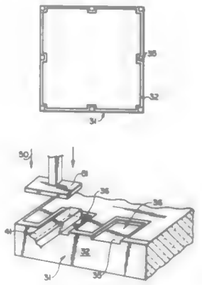
1. An interconnection structure for a semiconductor integrated circuit device, comprising:
a semiconductor substrate having a main surface;
a first interconnection layer comprising an aluminum layer formed on a barrier film layer, the barrier film layer contacting a portion of the main surface;
a surface layer comprising one of a high melting point metal, a high melting point metal compound, a high melting point metal silicide, or an amorphous silicon, formed on said aluminum layer;
an insulating layer formed on a surface of said surface layer, having a through hole extended to the surface of said surface layer; and
a second interconnection layer comprising aluminum formed on said insulating layer and electrically connected to said surface layer through said through hole,
wherein said second interconnection layer includes
a titanium layer portion formed on said insulating layer and in contact with the surface of said surface layer to form a contact interface defined by said through hole;
a titanium compound layer portion formed on said titanium layer portion; and
an aluminum-containing layer portion formed on said titanium compound layer portion.

5,341,027

SEMICONDUCTOR CHIP HAVING NOTCHES FORMED IN PERIPHERAL EDGES THEREOF

Jong Y. Park, Bucheon, and Hag J. Jung, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Oct. 2, 1992, Ser. No. 955,778
Claims priority, application Rep. of Korea, Nov. 14, 1991, 91-20271
Int. Cl.[5] H01L *29/40*
U.S. Cl. 257—786 5 Claims



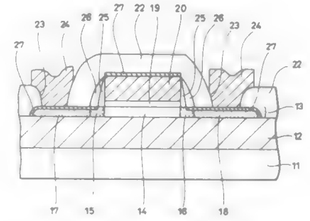
1. A semiconductor device, including:
a semiconductor chip having top and bottom major surfaces and a plurality of peripheral edges joining said top and bottom major surfaces, said semiconductor chip being provided with a plurality of spaced-apart notches formed in at least one of said peripheral edges of said chip with each of said notches extending laterally inwardly a prescribed distance from a corner formed at the juncture of said top major surface and a corresponding one of said plurality of peripheral edges of said chip;
a plurality of bonding pads disposed within respective ones of said notches, said bonding pads being recessed from said top surface of said chip; and
a plurality of leads bonded to respective ones of said bonding pads.

5,341,028

SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THEREOF

Yasuo Yamaguchi; Natsuo Ajika, and Tsuyoshi Yamano, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1991, Ser. No. 770,041
Claims priority, application Japan, Oct. 9, 1990, 2-271727
Int. Cl.[5] H01L *27/01, 29/10, 27/02, 23/48*
U.S. Cl. 257—344 2 Claims



1. A semiconductor device comprising:
a semiconductor layer formed on an insulator layer,

VOL 1165 ISS 4 AG 23 1994 UMI

a channel region of a first conductivity type formed in said semiconductor layer,

first source/drain regions of a second conductivity type formed in said semiconductor layer adjacent to the left and right sides of said channel region,

a gate electrode formed above said channel region with a dielectric thin film therebetween, first sidewall spacers provided on the left and right sidewalls of said gate electrode,

a metal layer having etching-resistance formed at the surface of said semiconductor layer in a region outside the region where said first sidewall spacers are formed and adjacent to said first sidewall spacers,

second sidewall spacers provided to cover the outer surface of said first sidewall spacers,

second source/drain regions having a concentration higher than that of said first source/drain regions, and formed in said semiconductor layer in a region outside the region where said second sidewall spacers are formed, and

an interconnection layer connected to a surface of said metal layer, wherein said metal layer comprises a titanium silicide layer of approximately 500Å in thickness.

5,341,029

METHOD FOR SUPERVISING A SWITCH

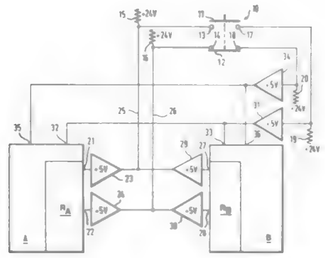
Darrell E. Johnson, Fairmont, Minn., assignor to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Dec. 13, 1990, Ser. No. 627,124

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1989, 3941319

Int. Cl.[5] G08B *21/00;* **G01R** *31/02*

U.S. Cl. 307—112 **10 Claims**



1. A method for supervising a switch having at least first and second contacts for transmitting across said switch at said contacts electrical current, comprising the steps of:

generating a coded switch supervision signal distinct from said electrical current by a random generator;

serially transmitting said coded switch supervision signal to the switch at one of the contacts to be supervised;

modulating any electrical current across said switch at said contacts with said coded switch supervision signal;

providing a return path from said switch at the other of said contacts for the coded switch supervision signal;

comparing any returned coded switch supervision signal to the transmitted coded switch supervision signal and generating a first indicia indicating a first state of said switch when said transmitted code supervision signal is recognized and a second indicia indicating a second state of said switch when said coded signal is not recognized.

5,341,030

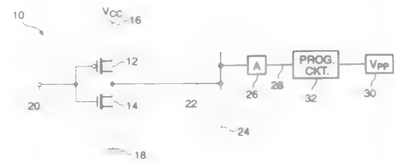
METHODS FOR PROTECTING OUTPUTS OF LOW-VOLTAGE CIRCUITS FROM HIGH PROGRAMMING VOLTAGES

Douglas C. Galbraith, Fremont, Calif., assignor to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 738,209, Jul. 31, 1991, abandoned. This application May 6, 1993, Ser. No. 58,998

Int. Cl.[5] H01H *37/76*

U.S. Cl. 307—202.1 **2 Claims**



1. In a user-programmable integrated circuit having an operating mode and a programming mode, said integrated circuit including at least one low-voltage N-Channel MOS transistor having a characteristic V_{BDSS} breakdown voltage value and connected to a low-voltage circuit node, said at least one low-voltage N-Channel MOS transistor operated from a first power supply voltage supplied to a power supply node during said operating mode of said integrated circuit, said integrated circuit further including user-programmable interconnect elements connected to said low-voltage circuit node, a method for protecting said at least one low-voltage N-Channel MOS transistor from the effects of a programming voltage higher than said first power supply voltage and present on said low-voltage circuit node during said programming mode of said integrated circuit, including the steps of:

applying a second power supply voltage to said power supply node, said second power supply voltage higher than said first power supply voltage and lower than said programming voltage, said second power supply voltage being high enough to protect said at least one low-voltage N-Channel MOS transistor from V_{BDSS} breakdown damage caused by said programming voltage; and

supplying said programming voltage to said user-programmable interconnect elements.

5,341,031

STABLE HIGH SPEED CLOCK GENERATOR

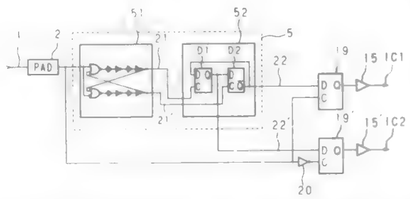
Itsuko Kinoshita; Masayuki Hata, and Mitsugu Satou, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1991, Ser. No. 751,238

Claims priority, application Japan, Aug. 27, 1990, 2-225483; Nov. 28, 1990, 2-335326

Int. Cl.[5] H03K *5/13, 7/00, 3/29*

U.S. Cl. 307—269 **10 Claims**



1. A clock generator for generating a plurality of output clock signals and for reducing a delay between an input source clock signal and said plurality of output clock signals, comprising:

a non-overlap clock generating circuit, which inputs said source clock signal and generates a first non-overlap clock signal and a second non-overlap clock signal;

a frequency dividing circuit coupled to said non-overlap clock generating circuit, wherein said frequency dividing circuit inputs said first non-overlap clock signal and said second non-overlap clock signal, and wherein said frequency dividing circuit generates a plurality of divided clock signals obtained by frequency dividing said first non-overlap clock signal and said second non-overlap clock signal in half;

a first latch coupled to a first output of said frequency dividing circuit, wherein said first latch inputs at least one of said plurality of divided clock signals, and wherein said first latch generates a first plurality of latched clock signals and a corresponding first plurality of inverted latched clock signals by latching said plurality of divided clock signals using said source clock signal as a latch clock;

a second latch coupled to a second output of said frequency dividing circuit, wherein said second latch inputs at least one of said plurality of divided clock signals, and wherein said second latch generates a second plurality of latched clock signals and a corresponding second plurality of inverted latched clock signals by latching said plurality of divided clock signals using an inverted source clock signal as a latch clock, said inverted source clock signal being a logical inverse of said source clock signal; and

a clock driver circuit coupled to said first latch and said second latch, wherein said clock driver circuit inputs at least one of said first plurality of latched clock signals and at least one of said second plurality of latched clock signals, and wherein said clock driver circuit drives said plurality of output clock signals.

5,341,032

INDUCTIVE LOAD DRIVE CIRCUIT, PARTICULARLY FOR FUEL INJECTIONS

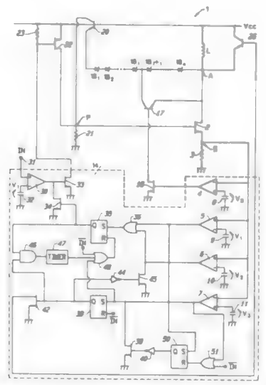
Massimiliano Brambilla, Seso San Giovanni, and Giampietro Maggioni, Cornaredo, both of Italy, assignors to S.G.S.-Thomson Microelectronics S.r.l., Italy

Continuation of Ser. No. 810,950, Dec. 19, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 14,051

Claims priority, application Italy, Dec. 21, 1990, 68/037 A/90

Int. Cl.[5] H03K *3/01, 17/687;* **H01H** *9/00;* **F02M** *51/00*

U.S. Cl. 307—270 **12 Claims**



1. An improved fuel injector drive circuit, said drive circuit having

a switch series-connected to an inductive load, said load having first and second terminals;

a first current recirculating branch, having nodes connected to said first and second terminals of said load, for maintaining a predetermined load voltage and enabling a fall in load current at a first predetermined rate from a peak current and having a plurality of series-connected Zener diodes;

a second current recirculating branch parallel-connected to the load, for enabling a fall in load current at a second predetermined rate from a predetermined maximum hold current;

a logic control unit responsive to said load current for opening and closing said switch and said branches, so that the load is supplied with current rising to said peak current, and then falling at said first predetermined rate and oscillating between said predetermined maximum hold current and a predetermined minimum hold current; the improvement comprising

means, connected to said first branch, for varying said predetermined load voltage supplied across the load to a lower predetermined load voltage when said load current reaches a predetermined amount from said peak current, said supplied voltage varying means having a transistor having emitter and collector terminals connected to said second terminal of the load and between a predetermined pair of connected Zener diodes, a base terminal of said transistor coupled to an output of a comparator having a first input connected to a reference voltage source, and a second input connected to a load current sensing element for short-circuiting a predetermined subset of said series-connected Zener diodes;

whereby said fall in load current from said peak current occurs at said first predetermined rate and is then slowed when said load current reaches said predetermined amount from said peak current.

5,341,033

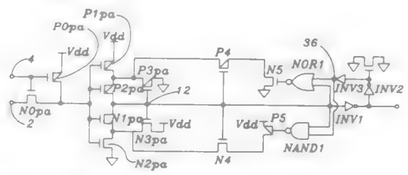
INPUT BUFFER CIRCUIT WITH DEGLITCH METHOD AND APPARATUS

Gregory T. Koker, Arlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Nov. 23, 1992, Ser. No. 980,247

Int. Cl.[5] H03K *3/295*

U.S. Cl. 307—290 **35 Claims**



5. In a Schmitt trigger circuit that includes means for switching from a LO to a HI output state in response to an input signal rising above a HI threshold level, and means for switching from a HI to a LO output state in response to the input signal falling below a LO threshold level that is offset by a hysteresis amount below said HI threshold level, the improvement comprising:

means connected to said LO to HI output state switching means for temporarily increasing said hysteresis amount in response to the input signal initiating an output state transition, and

means connected to said means for temporarily increasing said hysteresis amount for terminating said increase in the hysteresis amount after a predetermined fixed delay period that is independent of the input signal level.

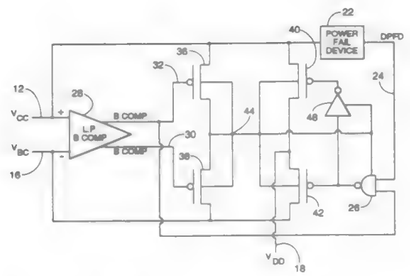
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,034

BACKUP BATTERY POWER CONTROLLER HAVING CHANNEL REGIONS OF TRANSISTORS BEING BIASED BY POWER SUPPLY OR BATTERY

Wallace E. Matthews, Richardson, Tex., assignor to Benchmarq Microelectronics, Inc., Carrollton, Tex.

Filed Feb. 11, 1993, Ser. No. 16,440
Int. Cl.[5] H02J 9/02
U.S. Cl. 307—296.1 6 Claims



1. A power supply device for selecting between a primary power supply and a backup power supply to provide power on an output terminal to a powered device, comprising:

a power fail device for comparing the voltage on the primary power supply to an internal threshold voltage and generating a power fail signal when the voltage of the primary power supply falls below said internal threshold voltage;

a switching device for connecting either the primary power supply or the backup power supply to the output terminal, said switching device having:

a first MOS transistor having a channel region of a first conductivity type material and a source/drain region on either side thereof, said source/drain region of a second conductivity type material opposite to said first conductivity type material, said first MOS transistor having a gate electrode disposed over said channel region and connected to a first control signal with the source/drain path of said first MOS transistor connected between the primary power supply and the output terminal,

a second MOS transistor having a channel region of said first conductivity type material and a source/drain region on either side of said channel region of said second conductivity type material and a gate electrode disposed over said channel region and connected to a second control signal, the source/drain path of said second MOS transistor connected between the backup power supply and the output terminal,

said channel regions of said first and second MOS transistors in a common region of first conductivity material,

a control device for generating said first and second control signals in response to receiving said power fail signal such that said first MOS transistor conducts in the absence of said power fail signal and said second MOS transistor conducts in the presence of said power fail signal, and

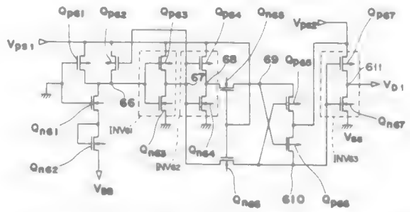
a channel bias circuit for biasing said channel regions of said first and second MOS transistors to the higher voltage one of said primary power supply or the backup power supply.

5,341,035

SUBSTRATE POTENTIAL GENERATOR

Akinori Shibayama, Neyagawa, and Toshio Yamada, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 4, 1991, Ser. No. 709,961
Claims priority, application Japan, Jun. 4, 1990, 2-146542; Nov. 19, 1990, 2-313557; May 23, 1991, 3-118253
Int. Cl.[5] H03L 1/00, 5/00
U.S. Cl. 307—296.2 9 Claims



1. A substrate potential generator, comprising:

a substrate potential detector for generating a substrate potential detection signal having alternating first and second states according to a reference potential and a received substrate potential of a substrate, the substrate potential detection signal becoming the second state each time the substrate potential decreases to a prescribed lower setting potential, and the substrate potential detection signal becoming the first state each time the substrate potential increases to a prescribed upper setting potential which is higher than the prescribed lower setting potential; and

a substrate potential supplier which when activated supplies charges to the substrate and which operates according to the substrate potential detection signal received from the substrate potential detector, said substrate potential supplier deactivating to increase the substrate potential when the substrate potential detection signal is at the second state, and activating to decrease the substrate potential when the substrate potential detection signal is at the first state.

5,341,036

TWO HAND OPERATED MACHINE CONTROL STATION USING CAPACITIVE PROXIMITY SWITCHES

Keith D. Wheeler, and Stanley H. Edwards, Jr., both of Raleigh, N.C., assignors to Square D Company, Palatine, Ill.

Filed Dec. 11, 1991, Ser. No. 805,422
Int. Cl.[5] H01H 9/26
U.S. Cl. 307—328 10 Claims

1. A machine control station comprising:

an isolation transformer for providing an isolated power supply to said machine control station, the primary of said isolation transformer being electrically connectable to a source of AC electric power;

an enclosure;

a first capacitive proximity switch received within said enclosure and electrically coupled to the secondary of said isolation transformer;

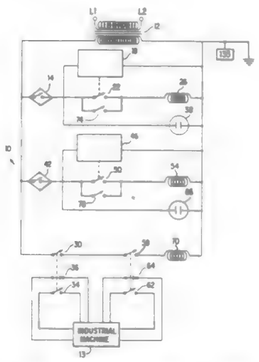
a second capacitive proximity switch received within said enclosure and electrically coupled to the secondary of said isolation transformer;

a first interval timer relay electrically coupled to said first capacitive proximity switch and the secondary of said isolation transformer whereby said first interval timer relay is energized upon activation/turning "on" of the first capacitive proximity switch, the first interval timer relay having a set of normally open contacts connected in series with the first capacitive proximity switch and which close for a preselected interval of time upon energization of the first interval timer relay and then open and remain open until the first interval timer relay is reset by the deactivation/turning "off" of the first capacitive proximity switch;

a first output control relay electrically coupled to said normally open contacts of said first interval timer relay and the secondary of said isolation transformer whereby said first output control relay is energized when last said contacts are closed, said first output control relay having a first set of normally open contacts coupled to the secondary of said isolation transformer and a second set of normally open contacts;

a second interval timer relay electrically coupled to the second capacitive proximity switch and the secondary of said isolation transformer whereby the second interval time relay is energized upon the activation/turning "on" of the second capacitive proximity switch, the second interval timer relay having a set of normally open contacts connected in series with the second capacitive proximity switch and which close for a preselected interval of time upon energization of the second interval timer relay and then open and remain open until the second interval timer relay is reset by the deactivation/turning "off" of the second capacitive proximity switch;

a second output control relay electrically coupled to the normally open contacts of the second interval timer relay



and the secondary of said isolation transformer whereby said second output control relay is energized when last said contacts are closed, the second output control relay having a first set of normally open contacts coupled to the secondary of said isolation transformer and a second set of normally open contacts;

a timer bypass relay electrically coupled to the secondary of said isolation transformer and having first and second sets of normally open contacts electrically connected in parallel with the normally open contacts of said first and second output relays, respectively, such that said first and second output relays will remain energized so long as said first and second capacitive proximity switches, respectively, are activated and said timer bypass relay is energized, said timer bypass relay being connected in series with the first sets of contacts of the first and second output control relays such that the timer bypass relay is energized when both the first and second output control relays are energized;

said second sets of normally open contacts of said first and second output control relays being electrically connectable to the control circuit of an electrically powered industrial machine such that both of last said sets of contacts must be closed for said machine to operate; and

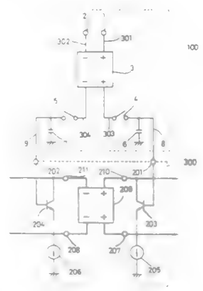
means for substantially preventing the unintended simultaneous closing of said second sets of normally open contacts of said first and second output control relays caused by an external radio frequency interference with said first and second capacitive proximity switches.

5,341,037

SAMPLE HOLD CIRCUIT, BUFFER CIRCUIT AND SAMPLE HOLD APPARATUS USING THESE CIRCUITS

Takahiro Miki, and Toshio Kumamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1992, Ser. No. 886,904
Claims priority, application Japan, Aug. 22, 1991, 3-210908
Int. Cl.[5] H03K 5/159
U.S. Cl. 307—352 10 Claims



10. A sample hold apparatus, comprising:

a differential type sample hold circuit for sampling and holding a difference between voltages of two analog signals input thereto, and

a buffer circuit including two sets of emitter follower circuits, receiving two analog signals sampled and held by said sample hold circuit and having a voltage difference corresponding to a voltage difference between these two analog signals; wherein

said sample hold circuit includes

a first differential circuit having first and second input terminals and first and second output terminals, a difference between output voltages at said first and second output terminals being changed corresponding to a difference between input voltages at said first and second input terminals,

first and second switching means which are turned ON in a sampling period and turned OFF in a holding period,

a first capacitor having one electrode connected to the first output terminal of said first differential circuit through said first switching means, and the other electrode connected to a reference potential source, and

a second capacitor having one electrode connected to the second output terminal of said first differential circuit through said second switching means and the other electrode connected to the reference potential source,

said first and second capacitors holding an output voltage from said first differential circuit when said first and second switching means a turned OFF; and

said buffer circuit includes

a first bipolar transistor having its base connected to one electrode of said first capacitor,

a second bipolar transistor having its base connected to one electrode of said second capacitor,

a first constant current source connected to the emitter of said first bipolar transistor,

a second constant current source connected to the collector of said second bipolar transistor and having approximately the same current value as said first constant current source, and

collector voltage controlling means for controlling collector voltages of said first add second bipolar transistors such

VOL 1165 ISS 4 AUG 23 1994 UMI

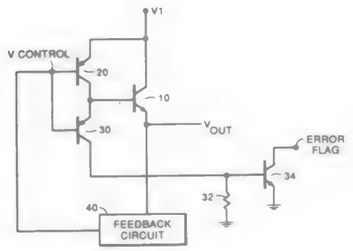
that collector-base voltage of said first bipolar transistor is constantly the same as collector-base voltage of said second bipolar transistor.

5,341,038

ERROR DETECTOR CIRCUIT FOR INDICATION OF LOW SUPPLY VOLTAGE

William E. Headen, Jr., North Kingstown, R.I., assignor to Cherry Semiconductor Corporation, East Greenwich, R.I.

Filed Jan. 27, 1992, Ser. No. 825,977
Int. Cl.[5] H03K *5/24, 3/33*
U.S. Cl. 307—359 **11 Claims**



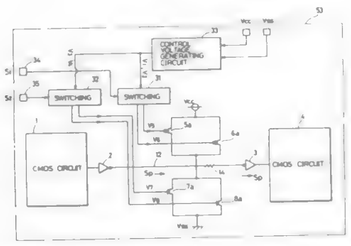
6. A saturation sensing circuit comprising:
input means for receiving an input voltage;
output means for providing an output voltage;
an output transistor having a collector connected to said input means, an emitter connected to said output means and a base;
control voltage means for providing a control voltage;
a sense transistor having an emitter connected to said input means, a collector connected to the base of said output transistor and a base connected to said control voltage means; and
an error detector transistor having an emitter connected to the collector of said sense transistor, a base connected to said control voltage means and a collector which provides a current signal if said sense transistor saturates.

5,341,039

HIGH FREQUENCY INTEGRATED CIRCUIT DEVICE INCLUDING A CIRCUIT FOR DECREASING REFLECTED SIGNALS IN WIRING FORMED ON A SEMICONDUCTOR SUBSTRATE

Kohji Fukumoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 858,280
Claims priority, application Japan, Apr. 19, 1991, 3-116922; Dec. 18, 1991, 3-334809
Int. Cl.[5] H03K *17/16, 17/0115*
U.S. Cl. 307—443 **22 Claims**



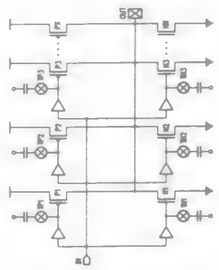
1. A semiconductor integrated circuit device operated at a frequency exceeding a predetermined high frequency, comprising:
a semiconductor substrate;
a first electronic circuit and a second electronic circuit provided on said substrate;
transmission wiring formed on said substrate for transmitting a high frequency transmitted signal output from said first electronic circuit to said second electronic circuit;
impedance of said transmission wiring being changed discontinuously due to change in form of said transmission wiring at at least one position on said wiring;
energy of said transmitted signal being reflected partially at said at least one position on said wiring; and
reflection decreasing means, connected between the vicinity of said at least one position of said transmission wiring and power supply potential, for decreasing reflection generated at said at least one position of said transmission wiring, wherein
said reflection decreasing means comprises:
controllable impedance means formed on said semiconductor substrate, and
impedance adjustment means for adjusting impedance of said controllable impedance means and having a first electrical control means responsive to an externally applied control signal for controlling impedance of said controllable impedance means.

5,341,040

HIGH PERFORMANCE OUTPUT BUFFER WITH REDUCED GROUND BOUNCE

Tim Garverick, Cupertino; Shao-Pin Chen, and Rafael C. Camarota, both of San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 752,282, Aug. 29, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,371
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—443 **2 Claims**



1. A configurable logic array comprising:
a plurality of individually configurable logic cells arranged in a matrix that includes a plurality of rows of configurable logic ccells and a plurality of columns of configurable logic cells, each configurable logic cell having at least one output node for providing an output signal from said configurable logic cell;
at least one row local bus running between adjacent rows of configurable logic cells, said configurable logic cells in said adjacent rows being selectively connectable thereto;
at least one column local bus running between adjacent columns of configurable logic cells, said configurable logic cells being selectively connectable thereto;
logic cell-to-local bus interface circuitry selectively connectable between a selected configurable logic cell and a selected row or column local bus to allow said selected configurable logic cell to either read data from or write data to said selected local bus and simultaneously and selectively connectable between said selected configurable logic cell and one or more additional local buses;

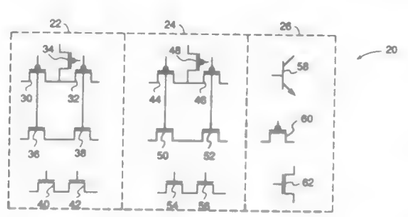
direct interconnect means connectable between said selected configurable logic cell and at least one adjacent configurable logic cell such that the output signal provided by said selected configurable logic cell can be directly provided as an input signal to said at least one adjacent configurable logic cell independent of said local row and column buses; and
output buffer means selectively connectable to the output node of said selected configurable logic cell for providing a buffered output signal, the output buffer means including an MOS output buffer transistor that provides the buffered output signal at an output buffer node, and slew rate compensation means connected to the gate of the MOS output buffer transistor for supplying or sinking current to charge or discharge, respectively, capacitance at the output buffer node such that the turn on of the MOS output buffer transistor is slowed down as temperature shifts in a manner that increases the current-carrying capability of the MOS output buffer transistor.

5,341,041

BASIC CELL FOR BICMOS GATE ARRAY

Abbas El Gamal, Palo Alto, Calif., assignor to SiArc, Sunnyvale, Calif.

Division of Ser. No. 524,183, May 15, 1990, Pat. No. 5,055,716. This application Aug. 8, 1991, Ser. No. 743,532
Int. Cl.[5] H03K *19/02*
U.S. Cl. 307—446 **42 Claims**



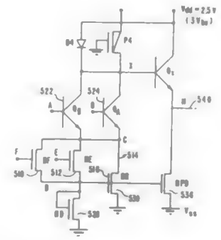
1. A cell for use in a mask programmable array comprising:
one or more small size P-channel transistors;
two or more medium size P-channel transistors;
two or more small size N-channel transistors;
two or more medium size N-channel transistors; and
one or more large size N-channel transistors;
said medium size P-channel transistors having a channel width at least approximately twice the size of said small size P-channel transistors, said medium size N-channel transistors having a channel width at least approximately twice the size of said small size N-channel transistors, said channel width of said small size P-channel transistors being equal to or narrower than said channel width of said small size N-channel transistors, said large size N-channel transistors having a channel width larger than the channel width of said medium size N-channel transistors,
gates of said one or more small size N-channel transistors being isolated from gates of said one or more small and medium size P-channel transistors,
wherein said cell is one of a plurality of identical cells located within an interior of said mask programmable array.

5,341,042

LOW VOLTAGE, CASCODED NTL BASED BICMOS CIRCUIT

Chih-Liang Chen, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1992, Ser. No. 926,436
Int. Cl.[5] H03K *17/16, 19/094*
U.S. Cl. 307—446 **20 Claims**



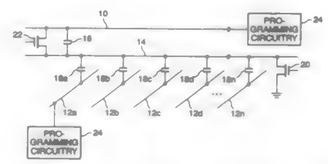
1. A circuit comprising:
a resistive element connected between a first operating potential and the collector of a first bipolar transistor, said first bipolar transistor having its base connected to first input terminal;
a second bipolar transistor, having its collector connected to said first operating potential, its emitter connected to an output terminal, and its base connected to the collector of said first bipolar transistor;
a clamping diode connected across said resistive element,
a first NFET transistor having one of its drain and source electrodes connected to a second operating potential, the other of its drain and source electrodes and its gate electrode connected to the emitter of said first bipolar transistor; and
a second NFET transistor having one of its drain and source electrodes connected to said output terminal, the other of its drain and source electrodes connected to said second operating potential and its gate electrode connected to the emitter of said first bipolar transistor.

5,341,043

SERIES LINEAR ANTIFUSE ARRAY

John L. McCollum, Saratoga, Calif., assignor to Actel Corporation, Sunnyvale, Calif.

Filed Sep. 30, 1992, Ser. No. 954,111
Int. Cl.[5] H03K *19/177;* **H01H** *37/76*
U.S. Cl. 307—465 **10 Claims**



1. In a user-programmable interconnect architecture wherein potential connections may be made between a first interconnect conductor and a plurality of second interconnect conductors, interconnection apparatus including:
an isolation conductor;
a plurality of connection antifuses, a different one of said connection antifuses connected between said isolation conductor and each one of said plurality of second interconnect conductors;

VOL 1165 ISS 4 AG 23 1994 UMI

a single isolation antifuse connected between said first interconnect conductor and said isolation conductor, said single isolation antifuse and said isolation conductor acting to limit parasitic capacitance of said first interconnect conductor to a value less than the capacitance of said isolation antifuse; and

programming means for programming said isolation antifuse.

5,341,044

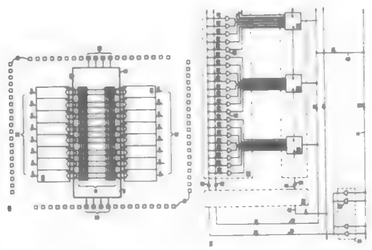
FLEXIBLE CONFIGURATION LOGIC ARRAY BLOCK FOR PROGRAMMABLE LOGIC DEVICES

Bahram Ahanin, Cupertino; Janusz K. Balicki, San Jose; Khusrow Kiani, Oakland; William Leong, San Francisco; Ken-Ming Li, Santa Clara, and Bezhad Nouban, Fremont, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed Apr. 19, 1993, Ser. No. 49,064

Int. Cl.[5] H03K *19/173*

U.S. Cl. 307—465 **21 Claims**



1. A logic array block comprising:

a plurality of logic signal conductors capable of being programmably connected to external conductors;

a plurality of dedicated global control input conductors originating outside the logic array block;

a plurality of local feedback conductors;

a plurality of local control input conductors;

a programmable configuration array for programmably connecting any of the logic signal conductors, the global control input conductors, and the local feedback conductors to any of the local control input conductors; and

a plurality of programmable macrocells capable of performing multi-variable logic functions, each macrocell comprising:

a plurality of macrocell input terminals capable of being programmably connected to any of the logic signal conductors and the local feedback conductors,

programmable combinatorial logic circuitry connected to the macrocell input terminals for generating a logic result,

means for gating the logic result, the gating means being connected to the combinatorial logic circuitry, and having a plurality of control input terminals and an output terminal,

a programmable control array for programmably connecting any of the control input terminals to any of the local control input conductors, and

a macrocell output terminal connected to the gating means output terminal, one of the local feedback conductors, and one of the external conductors.

5,341,045

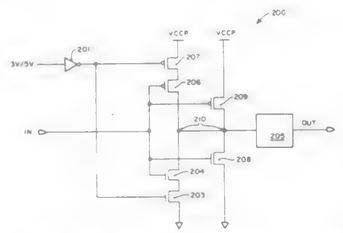
PROGRAMMABLE INPUT BUFFER

Waleed S. Almulla, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 6, 1992, Ser. No. 972,971

Int. Cl.[5] H03K *19/0185*

U.S. Cl. 307—475 **19 Claims**



1. An input buffer capable of operating at a plurality of power supply levels in an integrated circuit, said input buffer comprising:

input means for receiving a data input and generating a signal indicative of the data input, said input means having a means for determining the logic state of the data input, said means for determining having a pull-up means and pull-down means that create a trip point which is responsive to the power supply level,

wherein the input means also includes a first MOS circuit coupled to the pull-up means, where said first MOS circuit increases the strength of the pull-up means when the input buffer operates at a first of the plurality of power supply levels, and wherein said input means further comprises a second MOS circuit coupled to the pull-down means, where the second MOS circuit increases the strength of the pull-down means when the input buffer operates at a second of the plurality of power supply levels, wherein the power supply levels are changed, the strength of the pull-up and the pull-down means is adjusted such that the trip point remains the same for all power supply levels; and

output means coupled to said input means for outputting said data input in response to said signal.

5,341,046

THRESHOLD CONTROLLED INPUT CIRCUIT FOR AN INTEGRATED CIRCUIT

Harold S. Crafts, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 7, 1992, Ser. No. 986,184

Int. Cl.[5] H03K *5/153, 3/295, 19/0185*

U.S. Cl. 307—475 **11 Claims**

1. A binary circuit comprising:

a first series summing amplifier including a first p-channel FET, a second p-channel, FET, a first n-channel FET, and a second n-channel FET;

wherein the first p-channel FET, the second p-channel FET, the first n-channel FET, and the second n-channel FET are connected in series;

wherein a gate of the first p-channel FET is coupled to a gate of the first n-channel FET to provide a first inverting input;

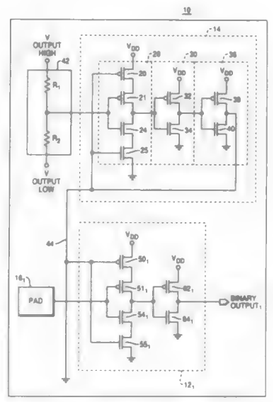
wherein a gate of the second p-channel FET is coupled to a gate of the second n-channel FET to provide a second inverting input;

wherein the output node of said first series summing amplifier is located at the series connection point between said second p-channel FET and said second n-channel FET;

wherein the output node of said first series summing amplidfier provides a binary output voltage that is a logic low if an input voltage on said first inverting input exceeds an input voltage on said second inverting input by a threshold voltage, otherwise said binary output is a logic high; and

first means for providing a first reference voltage connected to said first inverting input including a second series summing amplifier having a first inverting input, a second inverting input and an output; a first complementary series inverter stage having an input and an output; and a second complementary series inverter stage having an input and an output;

wherein said second series summing amplifier is connected between V_{DD} and circuit ground;



wherein said input of the first complementary inverter stage is connected to said output of said second series summing amplifier; and

wherein said input of said second complementary series inverter stage is connected to said output of said first complementary series inverter stage;

wherein said first inverting input is connected to a second reference voltage;

wherein said second inverting input is connected to said output of said second complementary series inverter; and

wherein an output voltage at the output of said second complementary series inverter stage is said first reference voltage.

5,341,047

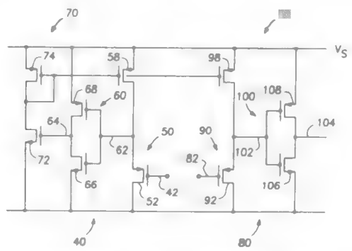
LEVEL SHIFTER CIRCUIT

Bruce D. Rosenthal, Los Gatos, Calif., assignor to Elantec, Inc., Milpitas, Calif.

Filed Dec. 16, 1992, Ser. No. 991,094

Int. Cl.[5] H03K *19/0175, 19/003*

U.S. Cl. 307—475 **9 Claims**



1. A voltage shifting circuit for generating a shifted voltage in response to an input voltage, the voltage shifting circuit comprising:

first and second voltage translation circuits, each translation circuit having an input and an output, and each translation circuit including a first transistor, a gate circuit, and a second transistor;

the first transistor having a gate, a source, and a drain, the gate forming the input of the translation circuit and the drain being connected to a reference potential, for coupling a signal from the input of the translation circuit to the source of the first transistor;

the gate circuit having an input and an output, the input being connected to the source of the first transistor and the output forming the output of the translation circuit, for producing a signal on the output that is operable between a voltage supply and a reference potential in response to a signal applied to the input of the gate circuit; and

the second transistor having a gate, source, and drain, the source being connected to a voltage supply, the drain being connected to the source of the first transistor, the second transistor being effective to control a current to the first transistor in response to a signal applied to its gate;

the first translation circuit having its input connected to a reference voltage and the second translation circuit having its input and output forming an input and output, respectively, of the voltage shifting circuit; and

a current feedback circuit having an input connected to the output of the first translation circuit and an output connected to the gates of the second transistors of the first and second translation circuits, for detecting the ouput of the first translation circuit and applying a corresponding signal to the gates of the second transistors of the first and second translation circuits, to control the current in the first transistors in accordance with the reference voltage.

5,341,048

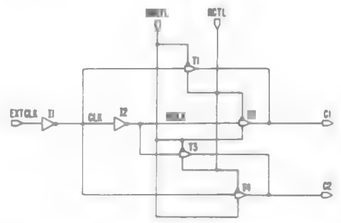
CLOCK INVERT AND SELECT CIRCUIT

Hiten S. Randhawa, Santa Clara, and Cheng-Yuan M. Wang, San Jose, both of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed Nov. 25, 1992, Ser. No. 981,442

Int. Cl.[5] H03K *19/096, 19/094*

U.S. Cl. 307—481 **11 Claims**



1. In an integrated circuit, a clock invert selection circuit comprising:

a clock for producing a periodic clock pulse signal;

an input line coupling an input terminal of said clock invert selection circuit to an output terminal of said clock;

an inverter with an output terminal, said inverter producing an inverted periodic clock pulse signal from said periodic clock pulse signal;

a first output line;

a second output line; and

a selection circuit, said selection circuit:

i) switching said clock output terminal to said first output line when a control signal assumes a first level, and

VOL 1165 ISS 4 AG 23 1994 UMI

switching said inverter output terminal to said second output line when said control signal assumes said first level; and

ii) switching said clock output terminal to said second output line when said control signal assumes a second level, and switching said inverter output terminal to said first output line when said control signal assumes said second level.

5,341,049

INTEGRATED CIRCUIT HAVING ALTERNATE ROWS OF LOGIC CELLS AND I/O CELLS

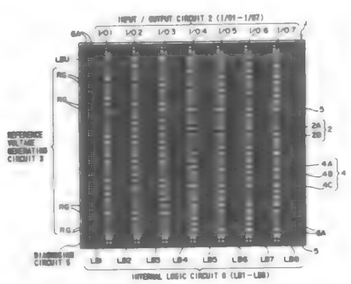
Atsushi Shimizu; Satoru Isomura, both of Ome, Japan; Takeo Yamada, Boston, Mass.; Tohru Kobayashi, Iruma, Japan; Yoshuhiro Fujimura, Ome, Japan, and Yuko Ito, Ome, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 21, 1992, Ser. No. 916,430

Claims priority, application Japan, Jul. 22, 1991, 3-180807

Int. Cl.[5] **H03K** *19/177*

U.S. Cl. 307—482.1 **21 Claims**



1. A semiconductor IC device comprising an input/output circuit and an internal logic circuit connected to said input-/output circuit, with both formed in a main surface of a semiconductor substrate of a generally rectangular shape having a predetermined thickness, wherein:

an area on said main surface for providing said internal logic circuit is divided into at least three first areas where logic circuit blocks are formed therein such that edges of the first areas for the logic circuit blocks defined by the division on the main surface of said substrate extend in a first direction substantially parallel with a pair of opposite sides of said substrate;

an area on said main surface for providing said input/output circuit is divided into at least two second areas where input/output circuit blocks are formed therein such that edges of the second areas for the logic circuit blocks defined by the division on the main surface of said substrate extend in said first direction; and

each of said input/output circuit blocks in said second areas is sandwiched by and electrically connected to adjacently arranged two of said logic circuit blocks in said first areas,

wherein each of said logic circuit blocks includes a plurality of logic circuit cells aligned in said first direction and in a second direction which is substantially perpendicular to said first direction, each of said input/output circuit blocks includes a plurality of input/output circuit cells aligned in said first and second directions in which the number of said input/output circuit cells aligned in said second direction is smaller than that in said first direction so that said input/output circuit blocks are arranged in the form of stripes.

5,341,050

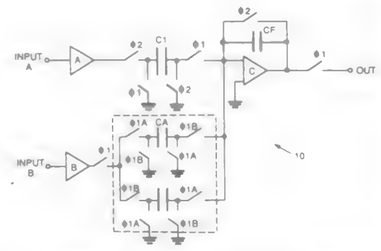
SWITCHED CAPACITOR AMPLIFIER CIRCUIT OPERATING WITHOUT SERIALLY COUPLED AMPLIFIERS

Anthony Mellissinos, Encinitas, and Scott Powell, Carlsbad, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 20, 1992, Ser. No. 855,985

Int. Cl.[5] **G06G** *7/12;* **H03K** *5/153, 5/00, 1/02*

U.S. Cl. 307—490 **3 Claims**



1. An amplifier circuit responsive to a two-phase repetitive clock signal comprised of alternating periods (ϕ1) and (ϕ2), said amplifier circuit for combining two signals and comprising

a first branch including a first amplifier having an output, and having a first capacitor switchably coupled to said output of said amplifier and switchably coupled to an output node of said first branch;

an output amplifier having an input terminal coupled to said output node of said first branch;

a first switching means in said first branch for coupling said first amplifier to said first capacitor during period (ϕ2) and for coupling said first capacitor to said output node of said first branch during period (ϕ1);

a second branch including a second amplifier having an output, and having second and third capacitors alternately switchably coupled to said output of said second amplifier and alternately switchably coupled to an output node of said second branch, said input terminal of said output amplifier coupled to said output node of said second branch;

second switching means in said second branch for coupling, during a period (ϕ1A), said second amplifier to said second capacitor and said third capacitor to said output node of said second branch and for coupling, during a period (ϕ1B), said second amplifier to said third capacitor and said second capacitor to said output node of said second branch, wherein (ϕ1A) and (ϕ1B) alternate in occurrence with one another during successive (ϕ1) periods, whereby during each (ϕ1) period the second amplifier is not coupled to the output amplifier.

5,341,051

N-DIMENSIONAL BASIS FUNCTION CIRCUIT

David B. Kirk, South Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Nov. 25, 1992, Ser. No. 981,763

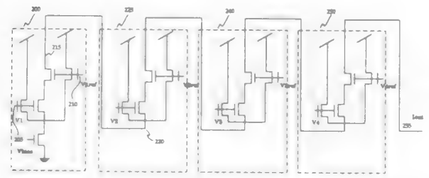
Int. Cl.[5] **H03F** *3/45*

U.S. Cl. 307—494 **24 Claims**

1. A circuit for computing a basis function in n-dimensions, where n is greater than one, comprising:

a first sub-circuit representative of a first dimension for evaluating a one-dimensional basis function to produce a measure of similarity or dissimilarity between two input signals, said first sub-circuit having an output current and voltage; and

at least one additional sub-circuit representative of additional dimensions for evaluating a one-dimensional basis functions to produce a measure of similarity or dissimilarity between two input signals, a first additional sub-circuit coupled via a coupling means to the first sub-circuit, subsequent additional sub-circuits coupled in series to



prior additional sub-circuits, wherein the output current of the first sub-circuit and prior additional sub-circuits respectively provide a bias current to coupled additional sub-circuits.

5,341,052

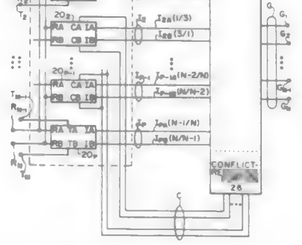
ARBITER WITH TEST CAPABILITY AND ASSOCIATED TESTING METHOD

Charles E. Dike, Pleasant Grove, Utah, and Farrell L. Ostler, Albuquerque, N. Mex., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 892,543, Jun. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 804,254, Dec. 4, 1991. This application Oct. 21, 1993, Ser. No. 141,462

Int. Cl.[5] **G01R** *19/145;* **H04Q** *3/00*

U.S. Cl. 307—518 **20 Claims**



1. An electronic circuit for generating an absolute priority signal which indicates that one of at least three request signals has gained absolute priority over all the other request signals, the circuit comprising:

mutual-exclusion ("ME") means formed with at least three ME elements each of which is generally responsive to a respective, different pair of the request signals for producing an intermediate priority signal at a value indicating that one of that pair of request signals has gained pairwise priority over the other of that pair of request signals, priority conflicts among the request signals being indicated by the intermediate priority signals, at least one of the ME elements being responsive to an externally originated test signal when the test signal is asserted for causing that ME element to reverse its pairwise priority determination and thereby produce its intermediate priority signal at a value indicating that the other of its pair of request signals has gained pairwise priority over the one of its pair of request signals.

5,341,053

LINEAR MOTOR WITH PERMANENT MAGNETS

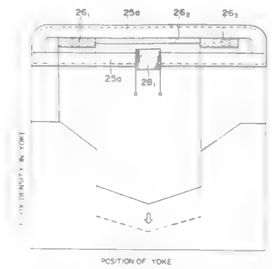
Koichi Yamazaki, Sakado; Kazuo Noda, Yokohama, and Eiichi Nakamura, Sagamihara, all of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1991, Ser. No. 682,691

Claims priority, application Japan, Apr. 9, 1990, 2-93505; Apr. 9, 1990, 2-93506; Apr. 12, 1990, 2-97216

Int. Cl.[5] **H02K** *41/02, 33/18;* **H01F** *7/08*

U.S. Cl. 310—13 **8 Claims**



1. A linear motor having a magnetic circuit and a moving coil, the magnetic circuit comprising a linear yoke provided at a center of the magnetic circuit and a pair of linear magnets, the linear yoke and the pair of linear magnets forming a pair of linear gaps with the linear yoke interposed therebetween, the magnetic circuit applying a magnetic field to the linear gaps, the movable coil mounted on the linear yoke of the magnetic circuit being moved along the linear yoke by an electromagnetic action of the magnetic circuit when the movable coil is powered, wherein

the pair of linear magnets have a larger magnetic force at opposite end portions in a longitudinal direction than at an intermediate area and are comprised of a plurality of magnets having a first energy product at opposite end portions in the longitudinal direction of the plurality of magnets and a magnet having a second energy product at an intermediate area, the first energy product being larger than the second energy product by employing a thinner magnet at the intermediate area than those at the opposite end portions, and the pair of magnetic gaps having a first gap length at opposite end portions of a path of movement of the moving coil and a second gap length at an intermediate area, the first gap length being smaller than the second gap length.

5,341,054

LOW MASS ELECTROMAGNETIC ACTUATOR

Zeev Tal, Beverly Hills; Keith O. Stuart, Cypress, and Dennis C. Bulgatz, Reseda, all of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 855,771, Mar. 23, 1992, which is a continuation-in-part of Ser. No. 499,046, Mar. 26, 1990, Pat. No. 5,099,158, which is a continuation-in-part of Ser. No. 319,956, Mar. 7, 1989, Pat. No. 4,912,343, which is a continuation-in-part of Ser. No. 238,925, Aug. 31, 1988, abandoned. This application Oct. 14, 1992, Ser. No. 961,102

Int. Cl.[5] **H02K** *41/00*

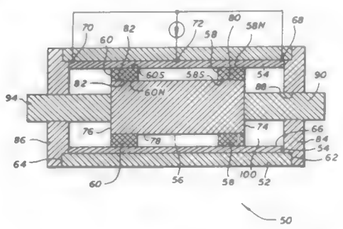
U.S. Cl. 310—14 **20 Claims**

1. In an electromagnetic actuator including a magnetic material cylindrical hollow housing defining a chamber coaxial with said housing, an electrical current coil disposed within said chamber, a magnetic material core disposed within said chamber, and at least one magnetic element being carried by said core, an improvement comprising:

said core further including a stationary core portion and a

VOL 1165 ISS 4 AG 23 1994 UMI

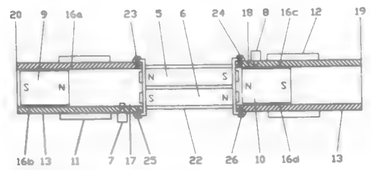
moveable core portion, said moveable core portion being disposed intermediate said coil and said stationary core portion, wherein said magnetic elements are carried on an exterior wall of said moveable core portion.



5,341,055
COMBINATION RECIPROCATING MOTOR AND INVERTER

Robert J. Roche, 719 Cedar St., Erie, Pa. 16503

Filed Aug. 7, 1992, Ser. No. 925,771
Int. Cl.[5] H02K 33/12
U.S. Cl. 310—24 1 Claim



1. A combination electrically powered direct current reciprocating motor and inverter comprising

more than one permanent magnet functioning as a piston,

more than one non-magnetizable enclosure through which said permanent magnets pass,

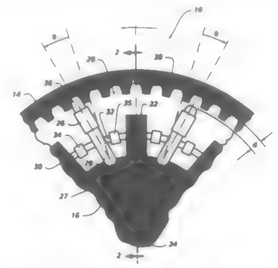
one or more electromagnets used to drive the pistons, each electromagnet placed at the ends of at least two of the non-magnetizable enclosures and one or more induction coils placed around the non-magnetizable enclosures and used to provide a source of alternating current power.

5,341,056
MAGNETOSTRICTIVE MOTOR SYSTEM

Bruce S. Maccabee, Sabillasville, Md., assignor to The United States of America as represented the Secretary of the Navy, Washington, D.C.

Filed Jan. 18, 1991, Ser. No. 643,632
Int. Cl.[5] H01L 41/06, 41/12; H02K 7/06
U.S. Cl. 310—26 11 Claims

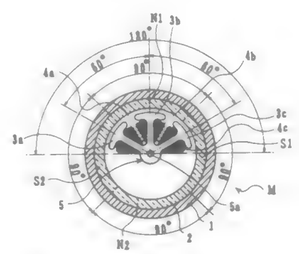
1. In a magnetostrictive device including a movable member, a stationary support, a plurality of rods possessing magnetostrictive properties, each of said rods having force transmitting and reaction end portions spaced from each other, the reaction end portions of the rods being in continuous engagement with the support at spaced locations thereon, the force transmitting end portion of one of the rods being intermittently engageable with the movable member while the force transmitting end portions of the other of the rods are in continuous engagement with said one of the rods.



5,341,057
VIBRATOR MOTOR FOR A WIRELESS SILENT ALERTING DEVICE

Tadao Yamaguchi; Naohisa Koyanagi, and Koichi Nakajima, all of Isesaki, Japan, assignors to Tokyo Parts Industrial Co., Ltd., Isesaki, Japan

Filed Jul. 23, 1993, Ser. No. 96,931
Claims priority, application Japan, Oct. 14, 1992, 4-301762
Int. Cl.[5] H02K 7/065, 1/22
U.S. Cl. 310—81 4 Claims



1. A dc vibrator motor, comprising:

(a) a generally elongated case;

(b) an axially elongated armature rotor including a shaft, said armature rotor having a first armature pole, a second armature pole and a third armature pole, each of said first, said second and said third armature poles having a radial central axis and an armature winding, said armature poles being angularly arranged about an axis of said shaft in such a manner that there is an angular interval of 60° between the radial central axes of said first armature pole and said second armature pole and there is an angular interval of 60° between the radial central axes of said second armature pole and said third armature pole so that the angular interval between the radial central axes of said first armature pole and said third armature pole is 120° and the center of mass of said rotor is thereby radially off the axis of said shaft, said armature rotor further including a commutator disposed coaxially with said shaft, said commutator having a total of six commutator segments arranged at an even angular pitch of 60°;

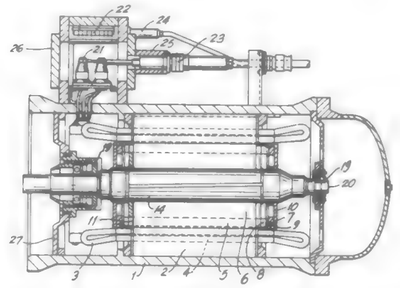
(c) a permanent field magnet disposed inside said case coaxially with said shaft, said field magnet having a total of four alternate north and south field magnetic poles arranged at an even angular pitch of 90°; and

(d) a pair of commutator brushes disposed slidably in contact with said commutator.

5,341,058
ELECTRIC MOTOR

Manfred Köhler, Ruhstorf, a.d. Rott, and Roland Kuder, Passau, both of Fed. Rep. of Germany, assignors to Loher AG, Ruhstorf a.d. Rott, Fed. Rep. of Germany

Filed Dec. 23, 1992, Ser. No. 995,991
Int. Cl.[5] H02K 5/10
U.S. Cl. 310—87 35 Claims

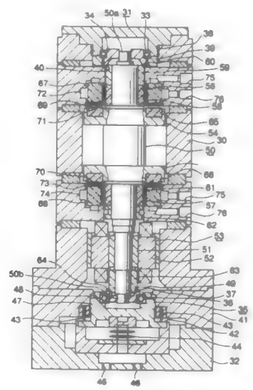


1. An electric motor comprising a motor housing, in which stator is installed and a rotor with a shaft and squirrel cage is journaled for rotation, said rotor including a lamination pack and a plurality of rotor rods which extend beyond the lamination pack, said housing being filled with a gas, under a high pressure between 5 and 150 bar or greater, characterized by a capsule portion surrounding the rotor rods at a drive end (DE) of the rotor.

5,341,059
SUPERCONDUCTING BEARING UNIT AND OPERATING METHOD THEREOF

Hiromasa Fukuyama, Ebina; Satoru Aihara, Kawasaki; Masato Murakami, Tokyo; Hiroyuki Fujimoto, Tokyo; Akihiro Kondoh, Tokyo; Hiroshi Takaichi, Tokyo, and Naoki Koshizuka, Tokyo, all of Japan, assignors to International Superconductivity Technology Center; Nippon Steel Corporation, both of Tokyo; Railway Technical Research Institute, Kokubunji; Kawasaki Jukogyo Kabushiki Kaisha, Kobe and Shikoku Electric Power Co., Inc., Takamatsu, all of Japan

Filed Sep. 30, 1992, Ser. No. 954,674
Claims priority, application Japan, Sep. 30, 1991, 3-276351
Int. Cl.[5] H02K 7/09
U.S. Cl. 310—90.5 4 Claims

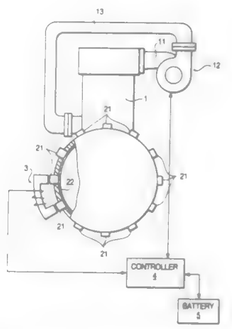


1. A superconducting bearing unit comprising a housing having an inner peripheral surface, a superconducting body secured to the inner peripheral surface of the housing, a shaft extending within the housing and having an axis and two convex faces spaced apart from each other in the direction of said axis, and a flange section, magnet means secured to the shaft between the spaced-apart convex faces thereof, the magnet means comprising first magnet means secured to the shaft, second magnet means secured to the flange section of the shaft, the superconducting body cooperating with the first and second magnet means to form a superconducting bearing section to produce forces including an attractive force, the superconducting body being of an annular shape and having an inner peripheral surface and an end face, the first magnet means being of an annular shape and being provided for radial bearing, the second magnet means being of an annular shape and being provided for thrust bearing, the inner peripheral surface of the superconducting body being radially opposed to the first magnet means for radial bearing, and the end face of the superconducting body being opposed to the second magnet means in the direction of said axis for thrust bearing, support rings supported in the housing and each being formed with a concave face, concave faces of said support rings cooperating with the convex faces of said shaft, respectively, so as to be tightly engaged therewith such that when the convex faces of the shaft are tightly engaged with the respective concave faces, the superconducting bearing section is coaxial with the shaft.

5,341,060
ENGINE WITH FLYWHEEL GENERATOR

Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa, Japan

Division of Ser. No. 626,034, Dec. 12, 1990, Pat. No. 5,214,333.
This application Mar. 19, 1993, Ser. No. 34,204
Int. Cl.[5] H02K 21/22
U.S. Cl. 310—153 9 Claims



1. A method of supplying and controlling electric energy in an internal combustion engine having a crankshaft, a flywheel having a circumferential periphery fixed to the crankshaft for rotation therewith and a turbocharger having a rotary electric machine, comprising:

providing the flywheel with a series of magnets spaced at equal intervals around the periphery thereof, said magnets being elongated and having inner and outer ends;

providing a magnetic path ring of magnetic material in said flywheel disposed radially inwardly of said magnets and in contact with said inner ends thereof;

providing a stator with magnetic poles in confronting relationship to the magnets;

producing electric energy through rotation of the flywheel; and

controlling flow of electric energy thus produced to supply power to the rotary electric machine to drive said turbo-

VOL 1165 ISS 4 AG 23 1994 UMI

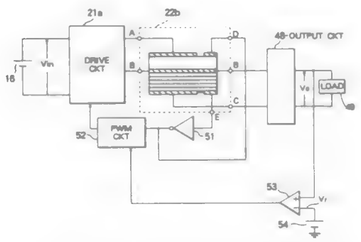
charger when the engine is operated below a predetermined speed.

5,341,061

PIEZOELECTRIC TRANSFORMER CIRCUIT USING A PIEZOELECTRIC TRANSFORMER UNIT OF A THICKNESS EXTENSIONAL VIBRATION MODE

Toshiyuki Zaitsu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 15, 1993, Ser. No. 31,811
Claims priority, application Japan, Mar. 13, 1992, 4-055020
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—318 8 Claims



1. A piezoelectric transformer circuit comprising:

a piezoelectric transformer unit which is operable in a thickness extensional vibration mode and which comprises a piezoelectric block having first and second principal surfaces opposite to each other and a predetermined thickness defined between said first and said second principal surfaces, first and second electrode units on said first and said second principal surfaces, respectively, and a third electrode unit extended between said first and said second principal surface,

said second electrode unit comprising:

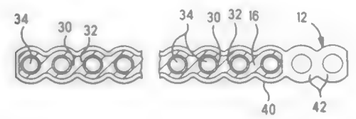
a plurality of subdivided electrode members each of which has an area and which is laid on said second principal surface.

5,341,062

PIEZOELECTRIC ENERGY GENERATOR

Joseph T. Cero, Jr., Horsham; Mitchell L. Thompson, Exton, both of Pa., and Joseph K. Hann, II, Newark, Del., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 791,742, Nov. 12, 1991. This application Feb. 1, 1993, Ser. No. 13,489
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—339 9 Claims



1. A piezoelectric energy storage and generation device comprising:

(a) an elongated strip of piezoelectric polymer film having metalized first and second layers of opposite polarity on the respective opposite sides thereof;

(b) said strip being pre-folded end to end to double thickness, thereby placing one end half of said first layer into mutually contacting relationship with the other end half of said first layer;

(c) said pre-folded strip being pleated end to end in a zigzag pattern a plurality of times, with adjacent folds in said second layer being paired and placed in mutually contacting relationship; and

(d) end plates at the respective opposite ends of said pre-folded and pleated strip, assembled therewith in stacked relationship, and electrically connected respectively to said first and second layers;

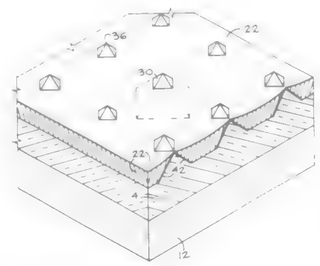
wherein said metallized first and second layers are each patterned as a series of abutting circles extending longitudinally of said strip, overlying one another in said strip, and when said strip is pre-folded, pleated, stacked and assembled.

5,341,063

FIELD EMITTER WITH DIAMOND EMISSION TIPS

Nalin Kumar, Austin, Tex., assignor to Microelectronics And Computer Technology Corporation, Austin, Tex.

Division of Ser. No. 789,237, Nov. 7, 1991, Pat. No. 5,199,918.
This application Nov. 24, 1992, Ser. No. 981,958
Int. Cl.[5] H01J *1/02, 1/14*
U.S. Cl. 313—309 28 Claims



1. A field emitter, comprising:

a conductive metal; and

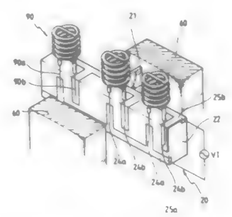
a diamond emission tip composed entirely of exposed diamond with negative electron affinity in contact with and protruding above a substantially planar top surface of said metal wherein said diamond emission tip extends from a diamond film beneath said conductive metal.

5,341,064

CATHODE ASSEMBLY OF AN ELECTRON GUN FOR A COLOR CATHODE RAY TUBE

Kwang-ki Seong, Kyungsangnam, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 30, 1992, Ser. No. 998,739
Claims priority, application Rep. of Korea, Dec. 30, 1991, 91-25437
Int. Cl.[5] H01J *29/46, 1/94, 19/48*
U.S. Cl. 313—446 7 Claims



1. A cathode assembly of an electron gun for a color cathode ray tube comprising:

three cylindrical sleeves which are arranged in an in-line type;

a base metal which is located at the upper end of said sleeves, and of which the surfaces are coated with thermal electron emitting material;

one heater which is located on the inner portion of each of said sleeves and having two parallel terminals which are exposed out of said sleeves;

a heater fixture block in which three pairs of welding terminals corresponding to the three heaters and two signal lines for forming an electrical circuit along with said welding terminals are provided in a lateral surface; and

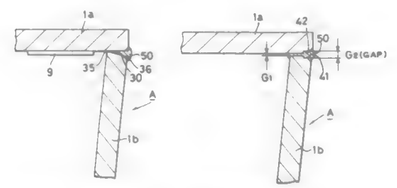
two parallel bead glasses for supporting said sleeves and said block.

5,341,065

LIGHT-EMITTING DEVICE

Sashirou Uemura; Yoshiyuki Nishii; Isamu Kanda, all of Mie; Zenichiro Hara, Nagasaki; Shunichi Futatsuishi, Nagasaki, and Kozaburo Shibayama, Nagasaki, all of Japan, assignors to Ise Electronics Corporation, Ise and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Feb. 27, 1992, Ser. No. 842,602
Claims priority, application Japan, Jun. 25, 1991, 3-153084
Int. Cl.[5] H01J *63/06*
U.S. Cl. 313—495 8 Claims



4. A light-emitting device comprising:

a front panel having an inner surface coated with a fluorescent material in a matrix pattern;

a back panel having a cathode for emitting thermions, and a control electrode for directing the thermions toward the fluorescent material; and

a spacer to which the front panel and the back panel are joined gas-tight by frit glass,

wherein joint surfaces of the front panel and the back panel for joining the front panel and the back panel to the spacer are provided with notched portions on the side of an outer surface of the spacer, and both joint surfaces of the spacer are provided with notched portions on the side of the outer surface of the spacer.

5,341,066

ANISOTROPICALLY LOADED HELIX ASSEMBLY FOR A TRAVELING-WAVE TUBE

Kenneth S. Karsten, Jr., Bethlehem, and Richard C. Wertman, Allentown, both of Pa., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 2, 1992, Ser. No. 939,305
Int. Cl.[5] H01J *23/30*
U.S. Cl. 315—3.5 12 Claims

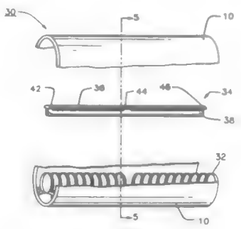
1. An anisotropically loaded helix assembly for use within a traveling-wave tube, comprising:

a helix circuit that includes at least one conductive element wound in a first helical progression for a predetermined distance between two regions, wherein said first helical progression is disrupted;

a conductive housing disposed around a length of said helix circuit;

a plurality of dielectric support members disposed between said helix circuit and said conductive housing, supporting said helix circuit within said conductive housing;

conductive material disposed on said dielectric support members creating an anisotropic load, said conductive material contacting said conductive housing disposed only



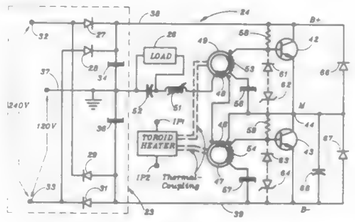
at points corresponding to said two regions of said helix circuit.

5,341,067

ELECTRONIC BALLAST WITH TRAPEZOIDAL VOLTAGE WAVEFORM

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 955,229, Oct. 1, 1992, Pat. No. 5,233,270, which is a continuation of Ser. No. 607,271, Oct. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 787,692, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 644,155, Aug. 27, 1984, abandoned, which is a continuation of Ser. No. 555,426, Nov. 23, 1983, abandoned, which is a continuation of Ser. No. 178,107, Aug. 14, 1980, abandoned. This application Apr. 27, 1993, Ser. No. 46,171
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] H05B *41/29, 41/36*
U.S. Cl. 315—209 R 59 Claims



1. An arrangement comprising:

a source operative to provide an AC power line voltage at a pair of AC terminals;

a gas discharge lamp having a pair of lamp terminals; and

a circuit assembly connected between the AC terminals and the lamp terminals; the circuit assembly being operative to provide a lamp current to the lamp terminals; the lamp current having a substantially sinusoidal waveshape and being of frequency substantially higher than that of the AC power line voltage; the circuit assembly being characterized by including:

(a) rectifying and filtering circuitry connected with the AC terminals and operative to provide a substantially constant DC supply voltage across a pair of DC terminals; the absolute magnitude of the DC supply voltage being significantly higher than the absolute peak magnitude of the AC power line voltage;

(b) inverter circuitry connected with the DC terminals and operative to provide a periodic inverter voltage at a pair of inverter terminals; and

(c) current-limiting circuitry connected between the inverter terminals and the lamp terminals.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,068

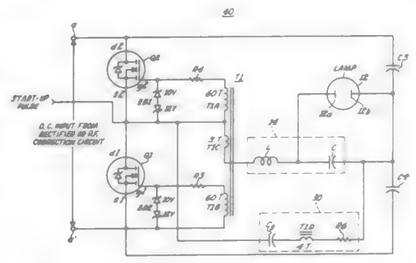
ELECTRONIC BALLAST ARRANGEMENT FOR A COMPACT FLUORESCENT LAMP

Louis R. Nerone, Brecksville, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 766,489, Sep. 26, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 20,275

Int. Cl.[5] **H05B** *37/02*

U.S. Cl. 315—219 **14 Claims**



1. A ballast circuit arrangement for a discharge lamp operable using power line current and comprising:

means for receiving and conditioning said power line current so as to achieve a conditioned signal therefrom;

switching means receptive of said conditioned signal and being effective for generating a high frequency pulsed signal in response to a control signal having a predetermined duration associated therewith;

a resonance circuit having said high frequency pulsed signal coupled thereto, said resonance circuit being effective so as to develop an operating signal for driving said discharge lamp at an appropriate operating frequency in response to said high frequency pulsed signal; and,

control means for generating said control signal, said control means capable of sampling said operating signal and generating said control signal therefrom, said control means generating said control signal at said predetermined duration so as to prevent generation of electromagnetic interference at a specified range, said control means further being coupled to said switching means such that, during a transition between an off and an on condition of said switching means, energy is diverted away from said switching means.

5,341,069

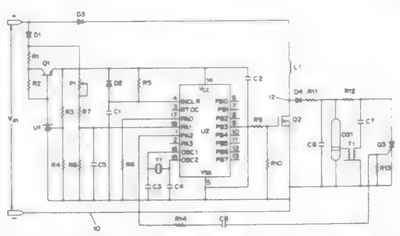
MICROPROCESSOR-CONTROLLED STROBE LIGHT

Joseph Kosich, South Toms River, and Edward V. Applegate, Toms River, both of N.J., assignors to Wheelock Inc., Long Branch, N.J.

Filed May 14, 1993, Ser. No. 61,965

Int. Cl.[5] **H05B** *37/00*

U.S. Cl. 315—241 S **25 Claims**



1. A strobe light circuit powered by an input voltage, for flashing a flashtube at a predetermined flash rate with a predetermined amount of energy in each flash, comprising:

first means for storing energy supplied from said input voltage;

second means for storing energy, connected in shunt with said flashtube and capable of storing energy at a rate faster than said first storing means;

switching means for regulating the storage over time of energy in said first storing means and for allowing transfer of energy from said first storing means to said second storing means, said switching means having a first position and a second position such that when said switching means is in said first position, energy is stored in said first storing means and when said switching means is in said second position, energy from said first storing means is transferred to said second storing means, and such that a relative peak current drawn by said first storing means is attained as said switching means switches from said first position to said second position;

means for permitting current flow from said first storing means to said second storing means and for blocking current flow from said second storing means to said first storing means or said switching means;

means for triggering said flashtube at said predetermined flash rate;

means for regulating said input voltage into a regulated voltage supply; and

microcontroller means powered by said regulated voltage supply, for initiating said triggering means at the predetermined flash rate, for receiving said input voltage, for sampling and digitizing said input voltage into a lookup table input having a corresponding D.C. lookup table output, and for repeatedly cycling said switching means between flashes of said flashtube by controlling the time said switching means is in said first position in accordance with the lookup table output, and controlling the time said switching means is in said second position in accordance with the time expended since the last flash of said flashtube, such that said second energy storing means acquires said predetermined amount of energy as the triggering means is initiated by the microcontroller means and such that the time said switching means is in said first position is maximized and the time said switching means is in said second position is generally decreased relative to the time since the last flash of said flashtube, to minimize the peak current drawn by the first storing means.

5,341,070

ELECTRON GUN FOR A COLOR CATHODE RAY TUBE

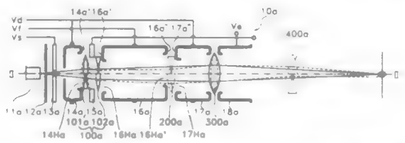
Wan-jae Son, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 16, 1993, Ser. No. 18,309

Claims priority, application Rep. of Korea, May 19, 1992, 92-8470; May 19, 1992, 92-8471

Int. Cl.[5] **G09G** *1/04;* **H01J** *29/46, 29/50*

U.S. Cl. 315—382 **19 Claims**



1. An electron gun for a color cathode ray tube comprising:

a cathode;

a control electrode adjacent to and spaced from said cathode;

a screen electrode adjacent to and spaced from said control electrode, said cathode, said screen electrode and said control electrode together constituting a triode which generates an electron beam;

first, second, third and fourth electrodes arranged sequentially;

an accelerating electrode adjacent to and spaced from said fourth electrode;

a first bipotential dynamic quadruple pre-focus lens positioned between said first and third electrodes;

a second dynamic quadruple pre-focus lens positioned between said third and fourth electrodes;

a main lens positioned between said fourth electrode and said accelerating electrode;

means for varying the intensity of said first bipotential dynamic quadruple pre-focus lens;

means for varying the intensity of said second dynamic quadruple pre-focus lens; and

means for varying the intensity of said main lens.

5,341,071

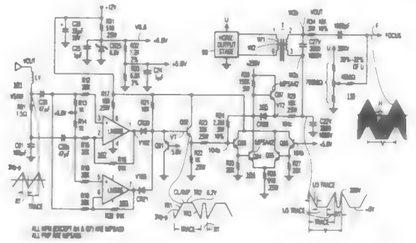
PIECEWISE LINEARIZED FOCUS VOLTAGE CIRCUIT FOR TELEVISION APPARATUS

John B. George, Carmel, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Sep. 3, 1993, Ser. No. 115,603

Int. Cl.[5] **H01J** *29/58*

U.S. Cl. 315—382.1 **10 Claims**



1. A focus voltage generating apparatus with deflection frequency modulation of the focus voltage, comprising:

a source of a first signal at a frequency that is related to a deflection frequency;

switching means responsive to said first signal for producing piecewise linearized portions of a modulation signal, during corresponding portions of a trace interval of a deflection cycle;

a source of a high voltage; and

means coupled to said high voltage source and to said switching means for generating said focus voltage that is modulated in accordance with said modulation signal.

5,341,072

BI-DIRECTIONAL SCAN CIRCUIT

Junzo Watanabe, Kanagawa; Akihiro Ueyama, Tokyo, and Ban Kawamura, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 77,751

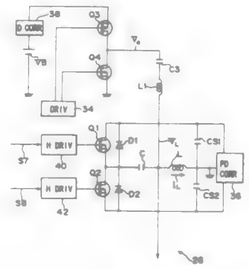
Claims priority, application Japan, Jun. 22, 1992, 4-187558; Jun. 22, 1992, 4-187559; Jun. 23, 1992, 4-190081

Int. Cl.[5] **H01J** *29/70, 29/76*

U.S. Cl. 315—408 **12 Claims**

1. A bi-directional deflecting circuit for supplying a forward scan path and a backward scan path to a horizontal deflecting coil so as to form display images by deflecting respectively said forward scan path and said backward scan path, said deflecting circuit comprising:

first and second timing control circuits for controlling respectively timings of deflection of said forward scan path and said backward scan path; and



means for matching the display position of said display image between said forward scan path and said backward scan path.

5,341,073

DEVICE FOR CONTROLLING REEL DRIVING MOTOR

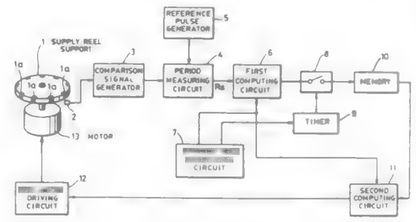
Isao Harigaya, Yokohama, and Susumu Kozuki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 679,830, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 296,613, Jan. 13, 1989, abandoned, which is a division of Ser. No. 936,741, Dec. 2, 1986, Pat. No. 4,817,887. This application Mar. 9, 1992, Ser. No. 846,774

Claims priority, application Japan, Dec. 13, 1985, 60-279125; Dec. 13, 1985, 60-279126; Dec. 25, 1985, 60-297225; Dec. 27, 1985, 60-297226

Int. Cl.[5] **B65H** *59/38*

U.S. Cl. 318—7 **28 Claims**



1. A device for running a tape-like medium between a pair of reels, comprising:

a driving motor for rotatively driving one of said reels;

winding radius data generating means for generating, in accordance with a state of rotation of the one reel driven by said driving motor, winding radius data corresponding to a radius of said tape-like medium wound on said one reel;

pulse width-setting data generating means for generating N-bit data, N being an integer not smaller than 2, which sets a pulse width of a pulse signal corresponding to the winding radius data generated by said winding radius data generating means;

pulse signal generating means for generating, when a value indicated by the data generated by said pulse width setting data generating means is not greater than a predetermined value, a first pulse signal corresponding to said data, and for, generating when the value indicated by the data generated by said pulse width setting data generating means exceeds said predetermined value, a second pulse signal; and

torque control means for controlling a driving torque of said

VOL 1165 ISS 4 AG 23 1994 UMI

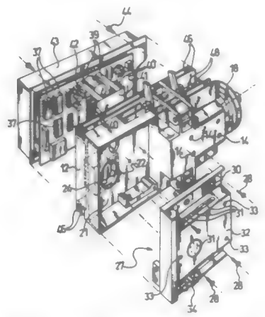
driving motor in accordance with a pulse width of the pulse signal generated by said pulse signal generating means.

5,341,074

OPERATION APPARATUS FOR A SEWING MACHINE

Alessandro Zorzolo, Vigevano-Pavia, Italy, assignor to Comelz S.p.A., Vigevano-Pavia, Italy

Filed Mar. 19, 1992, Ser. No. 854,808
Int. Cl.[5] D05B 69/12
U.S. Cl. 318—17 28 Claims



1. A sewing machine operation apparatus comprising an electric motor for actuating the sewing machine movements and electronic means for operating and controlling the electric motor and sewing machine, characterized in that the electric motor and electronic means are accommodated within a common, heat-conductive box-type body effective to dissipate heat generated inside said body by the electric motor and the electronic means to the outside,

and wherein the box-type body accommodates a cooling fan operative to generate an airflow sweeping across the electric motor and the electronic means,

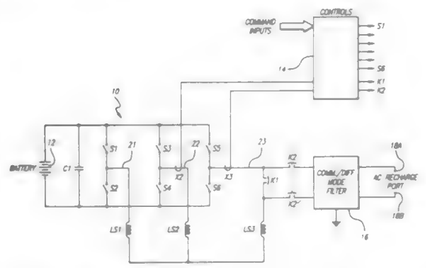
and wherein the cooling fan is powered independently.

5,341,075

COMBINED MOTOR DRIVE AND BATTERY RECHARGE SYSTEM

Alan G. Cocconi, Glendora, Calif., assignor to A.C. Propulsion, Inc., San Dimas, Calif.

Filed Mar. 10, 1993, Ser. No. 28,998
Int. Cl.[5] H02P 7/00
U.S. Cl. 318—139 16 Claims



1. An integrated motor drive and power source recharging system comprising:

a polyphase electric motor having a plurality of motor windings;

a rechargeable DC power source having a positive terminal and a negative terminal;

a plurality of bi-directional switching means for supplying electrical current to respective ones of the plurality of motor windings in a drive mode, each of the switching means having positive and negative terminals coupled in parallel to the positive and negative terminals of the DC power source, respectively, each of the switching means further having a center terminal coupled to a respective one of the motor windings in the drive mode;

an AC port having first and second terminals for connection to a source of AC electrical power;

first contactor means for selectively decoupling the center terminal of a first one of the plurality of switching means from its respective first motor winding in any mode other than the drive mode;

second contactor means for selectively coupling the first terminal of the AC port to the center terminal of the first switching means and the second terminal of the AC port to the first motor winding in a recharge mode so as to incorporate the first motor winding as an inductive circuit element in a recharging circuit;

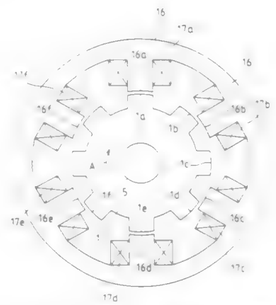
switch control means for operating the plurality of switching means as a polyphase inverter in the drive mode and for operating at least the first switching means as a switching regulator in the recharge mode.

5,341,076

HIGH-SPEED RELUCTANCE TYPE MOTOR

Itsuki Bahn, Tokyo, Japan, assignor to Kabushikigaisha Sekogiken, Tokyo, Japan

PCT No. PCT/JP92/00140, § 371 Date Oct. 9, 1992, § 102(e) Date Oct. 9, 1992, PCT Pub. No. WO92/14297, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 12, 1992, Ser. No. 934,739
Claims priority, application Japan, Feb. 12, 1991, 3-104036
Int. Cl.[5] H02P 7/06
U.S. Cl. 318—254 13 Claims



1. A three-phase half-wave high-speed reluctance type motor driven by a DC electric power source, said high speed reluctance type motor comprising:

an outer casing having an inner surface;

a rotor having an outer surface formed with a plurality of salient poles having the same circumferential width and equally spaced with each other in a circumferential direction, the rotor rotatably supported on the outer casing;

an armature having an inner surface formed with 6 n (n: a positive integer) pieces of magnetic pole respectively having circumferential widths of one of a 120- and a 180-degree electric angle and equally spaced with each other in the circumferential direction to face said plurality of salient poles over slight gaps, including first, second, and third phase exciting coils respectively associated with said

magnetic poles, said armature being fixed on the inner surface of the outer casing;

a position detecting device, having a number of position detecting elements spaced apart from each other so as to correspond to said exciting coils, successively outputting a first phase position detecting signal having a rectangular waveform of a predetermined signal level having a 120-degree width at regular intervals of a 360-degree electric angle, a second phase position detecting signal having the same rectangular waveform but delayed by an electric angle having 120 degrees with respect to the first phase position detecting signal, and a third phase position detecting signal having the same rectangular waveform but delayed by an electric angle of 120 degrees with respect to the second phase position detecting signal, in accordance with a rotational position of said rotor;

a current supply control circuit including a plurality of switching elements, each end of each phase exciting coil serially connected to a respective one of said plurality of switching elements, each of said plurality of switching elements interposed between the DC electric power source and a corresponding one of said first, second and third phase exciting coils, alternately activating and deactivating said first, second and third phase exciting coils by alternately turning on and off said corresponding serially connected switching elements in response to corresponding said first, second and third phase position detecting signals, to control exciting currents flowing .through respective said first, second and third phase exciting coils, each switching element and corresponding serially connected exciting coil forming a joint unit;

circuit means including diodes respectively connected inversely to said joint units first, second and third back-flow preventing diodes respectively connected in a forward direction with respect to the DC electric power source and respectively related to said first, second and third phase exciting coils, and first, second, and third capacitors respectively connected in parallel with said first, second and third back-flow preventing diodes, said circuit means promptly discharging a magnetic energy stored in one exciting coil into a corresponding one of said first, second and third capacitors, as a charged voltage, through a corresponding one of said inversely connected diodes to charge said corresponding one capacitor and to extinguish the magnetic energy stored in said one exciting coil when the respective exciting current supplied to said one exciting coil is stopped said circuit means also steeply building up the respective exciting current supplied to a subsequently activated exciting coil by use of the charged voltage in said corresponding one capacitor, wherein

said position detecting elements are disposed in a manner such that said position detecting device outputs position detecting signals within a 30 degree electric angle section after any one of said salient poles begins to enter any one of said magnetic poles, so that said current supply control circuit is initiated to supply the exciting current respectively corresponding to the exciting coil associated with said any one of said magnetic poles.

5,341,077

METHOD AND DEVICE FOR LIMITING ELECTRICAL CURRENT SUPPLIED TO THE MOTOR OF AN ELECTRIC VEHICLE

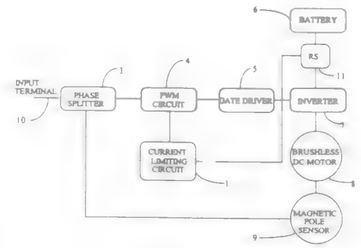
Tshaw-Chuang Chen; Hong-Shi Chang; Huan-Jen Yang, and Yaw-Shih Shieh, all of Hsinchu Hsien, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Feb. 3, 1993, Ser. No. 12,889
Int. Cl.[5] H02H 7/04
U.S. Cl. 318—434 5 Claims

1. A method for limiting electrical current passing through an electric motor which is used in driving an electrical vehicle, said method comprising the steps of:

obtaining a current limiting apparatus, said current limiting apparatus containing a gate driver which contains a first thermal switch connected to a power switching element, a second thermal switch connected to said motor, and a brake switch,

setting a high and at least a first and a second lower allowable current limits for said current limiting apparatus, said first lower current limit being higher than second lower current limit but lower than said high current limit, whereby said current limit initially will be set at said high level, each of said current limits is set according to a hysteresis operation of said electric motor;



shifting said current limit to said first lower level when either said first thernal switch or said second thermal switch is actuated due to overheating, or when said braking switch is actuated when a brake is applied;

further shifting said current limit to said second lower level when said overheating presists; and

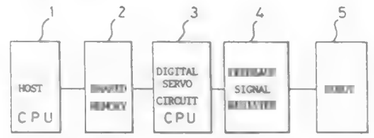
shifting said current limit from a lower level to a higher level as soon as said power switching element, said motor and said brake switch are in an normal state.

5,341,078

SLIDING MODE CONTROL METHOD FOR A MACHINE HAVING AN OPERATING SECTION OPERATIVELY COUPLED TO A SERVOMOTOR AND WHEREIN A SWITCHING VARIABLE IS DETERMINED BASED ON A TORSION AMOUNT AND A TORSION SPEED

Nobutoshi Torii, Hachioji; Ryo Nihei, and Tetsukai Kato, both of Oshino, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Continuation of Ser. No. 687,902, May 24, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,212
Claims priority, application Japan, Sep. 30, 1989, 1-253767
Int. Cl.[5] G05B 19/405
U.S. Cl. 350—568.22 4 Claims



1. A sliding mode control method applied to a machine having an operating section operatively coupled to a servomotor, said method comprising the steps of:

(a) detecting a torsion amount and torsion speed of the operating section with respect to a rotational position and speed of the servomotor;

(b) determining a switching variable during sliding mode control based on the torsion amount and the torsion speed;

(c) deriving a control output which causes the switching variable to converge toward zero; and

(d) controlling the servomotor according to the control output.

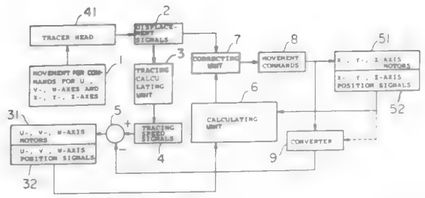
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,079

TRACKING CONTROL SYSTEM

Hitoshi Matsuura, Hachioji; Osamu Nakajima, and Tetsuji Okamoto, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP92/00516, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO92/19418, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 21, 1992, Ser. No. 949,830
Claims priority, application Japan, Apr. 26, 1991, 3-125149
Int. Cl.[5] G05D 23/275
U.S. Cl. 318—632 5 Claims



1. A tracing control system for controlling the machining of a work piece by a cutter head which is movable along respective cutting axes of a first three dimensional coordinate system in accordance with tracing of a model by a tracer head having a stylus which contacts the model, the tracer head being movable selectively along respective tracing axes of a second three dimensional coordinate system and the stylus being displacable, relatively to the tracer head and resultant from forces applied to the stylus by the model, said tracing control system comprising:

calculating means for calculating an actual position of the tracer head relative to the first three dimensional coordinate system;

cutter head actuating means for actuating the cutter head for selective movement along the respective cutting axes of the first coordinate system;

tracer head actuating means for actuating the tracer head for selective movement along the respective tracing axes of the second coordinate system, independently of movement of the cutter head within the first three dimensional coordinate system;

speed command supply means for supplying respective tracer head speed commands to the tracer head actuating means and cutter head speed commands to the cutter head actuating means, respectively defining the actuating thereby, and the resultant, corresponding movements of the tracer head and the cutter head;

stylus displacement detection means, associated with the tracer head, for detecting displacements of the stylus relatively to the tracing head along the respective tracing axes of the second coordinate system and producing corresponding displacement signals related to the respective tracing axes; and

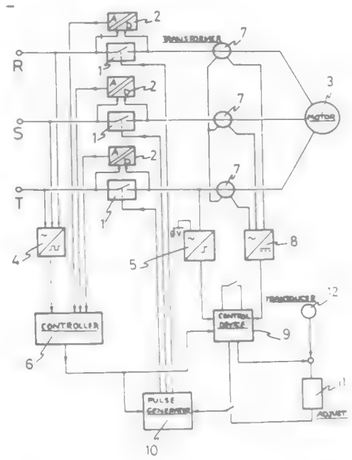
correcting means for correcting the cutter head speed commands in accordance with the displacement signals and for supplying the thus corrected cutter head speed commands to the cutter head actuating means thereby to actuate the cutter head for movement along the respective cutting axes of the first coordinate system in accordance with the corrected cutter head speed commands.

5,341,080

APPARATUS AND THREE PHASE INDUCTION MOTOR STARTING AND STOPPING CONTROL METHOD

Juan Agut Sanz, Terrassa, Spain, assignor to General Electric Company, New York, N.Y.

Filed Nov. 6, 1992, Ser. No. 972,821
Claims priority, application Spain, Nov. 6, 1991, 9200923
Int. Cl.[5] H02P 5/40
U.S. Cl. 318—778 3 Claims



1. A three phase induction motor controller comprising:

first, second and third semiconductor switches arranged in series between first, second and third phases of a three phase induction motor and a three phase power system;

a zero crossing detector connecting with each phase of said three phase power system for detecting zero crossings of voltage waveforms associated with said three phase power system;

a first controller unit connecting with said zero crossing detector and said switches for synchronizing control signals to said switches in response to zero crossing data and to switch voltage data indicative of open and closed conditions of said switches;

a pulse generator connecting with said first controller unit providing said control signals to said switches;

an electromotive force detector connecting with one phase of said three phase power system for determining when voltage within said one phase exceeds a predetermined voltage value and providing indication when said voltage value is exceeded;

first, second and third current transformers arranged within said first, second and third phases of said three phase power system determining current through each of said three phases;

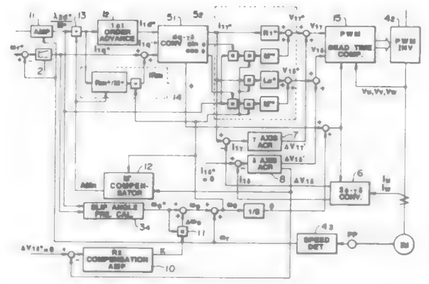
a level detector connecting with said current transformers for determining when current within any of said first, second or third phases exceeds a predetermined current value and providing indication when said current value is exceeded and a second controller connecting with said first controller unit, said pulse generator, said level detector and said electromotive force detector for first switching on a first pair of said first, second and third switches and then switching on a second pair of said first, second and third switches after said first pair of switches are turned off to control the start up and stopping of said three-phase induction motor.

5,341,081

VECTOR CONTROL APPARATUS FOR INDUCTION MOTOR

Tetsuo Yamada, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Aug. 5, 1993, Ser. No. 102,220
Int. Cl.[5] H02P 7/00
U.S. Cl. 318—800 14 Claims



1. An induction motor vector control apparatus, comprising:

a) first means for deriving a target value of d-axis component i_{1d}^* and a target value of q-axis component i_{1q}^* of a primary current in the induction motor, said d and q axes being axes of a (d-q) coordinate system of cartesian coordinate system with a secondary magnetic flux being set as a reference axis and said (d-q) coordinate system being a rotating coordinate which rotates in synchronization with a power supply angular frequency of the induction motor;

b) a first coordinate conversion block which is so constructed as to calculate a target value $i_1\gamma^*$ $(=I_1)$ of a γ-axis component of the primary current and a phase ϕ on the basis of the derived target values of i_{1d}^* and i_{1q}^*, said γ axis and δ axis being on a γ-δ coordinate system which have a phase difference from the d-q axes by $\tan^{-1}(i_{1q}^*/i_{1d}^*)$ and with the primary current I_1 being a reference axis;

c) second means for calculating target values $v_1\gamma^*$ and $v_1\delta^*$ of the γ-axis component and the δ-axis component of a primary voltage of the induction motor on the basis of a ratio of a target value λ_{2d}^* of the d-axis component of a secondary magnetic flux of the induction motor to a target value of M^* of an exciting inductance (λ_{2d}^*/M^*), calculation results of the target value of I_1 and phase ϕ of the first coordinate conversion block, and an instruction value ω_o of the power supply angular frequency;

d) a second coordinate conversion block which is so constructed as to convert a detected value of the primary current in the induction motor into each γ-axis and δ-axis component $i_1\gamma$ and $i_1\delta$ of the γ-δ coordinate system; and

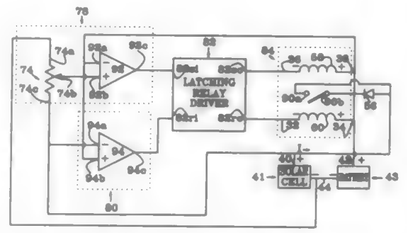
e) a slip angular frequency calculation block which is so constructed as to calculate a slip angular frequency on a calculation formula including a set value of a secondary time constant, wherein said first means includes a first-order advance element calculation block which is so constructed as to receive a derived value of a division of a value derived from a division of the target value λ_{2d}^* of the d-axis component of the secondary magnetic flux according to a rotor angular frequency of the induction motor by the target value M^* of an exciting inductance of the induction motor by a variation of the exciting inductance M' so that the target value of i_{1d}^* is derived.

5,341,082

REVERSE CURRENT FLOW PROTECTOR FOR ELECTRICITY STORAGE SYSTEMS

April D. Lorenzen, and Randall T. Wheeler, both of 39 Walcott Ave., Jamestown, R.I. 02835

Continuation-in-part of Ser. No. 324,252, Mar. 15, 1989, abandoned. This application Mar. 25, 1991, Ser. No. 675,023
Int. Cl.[5] H02J 7/00
U.S. Cl. 320—9 21 Claims



1. A circuit comprising:

A. a switch arrangement connected between a generator which generates electricity and a storage device which stores electricity;

i. said switch arrangement has a closed condition to connect said generator to said storage device, and an open condition to disconnect said generator from said storage device;

B. a switch control circuit connected to said switch arrangement to selectively control said closed condition and said open condition;

C. a first sensor circuit connected to said switch control circuit;

i. said first sensor circuit, while said switch arrangement has said open condition, is for sensing when said generator is generating sufficiently to charge said storage device;

ii. said first sensor circuit enables said switch control circuit to enable said switch arrangement to switch to said closed condition if an output of said generator exceeds a first predetermined power level while said switch arrangement has said open condition;

iii. said first predetermined power level exists when said generator is generating sufficiently to substantially charge said storage device; and

D. a second sensor circuit connected to said switch control circuit;

i. said second sensor circuit, while said switch arrangement has said closed condition, is for sensing when said generator is no longer generating sufficiently to substantially charge said storage device;

ii. said second sensor circuit enables said switch control circuit to enable said switch arrangement to switch to said open condition if said output of said generator falls to a second predetermined power level while said switch arrangement has said closed condition;

iii. said second predetermined power level exists when said generator ceases to generate sufficiently to substantially charge said storage device;

iv. said second predetermined power level is lower than said first predetermined power level so that a desirable hysteresis exists between conditions under which said switch arrangement switches to said closed condition and conditions under which said switch arrangement switches to said open condition.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,083

CONTACTLESS BATTERY CHARGING SYSTEM

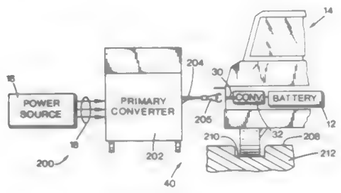
Keith W. Klontz, Sun Prairie; Deepakraj M. Divan, Madison; Donald W. Novotny, Madison, and Robert D. Lorenz, Madison, all of Wis., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 766,756, Sep. 27, 1991, Pat. No. 5,157,319. This application Oct. 20, 1992, Ser. No. 963,590

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] H01M *10/46;* **H01F** *27/00*

U.S. Cl. 320—2 **20 Claims**



1. A contactless charging system for charging batteries on board plural electrical loads each having conductor loop and a secondary converter coupled thereto for converting AC power into DC power to charge the battery at a selected charging rate, the system comprising:

a coupling link having a magnetic core and a core-mounted conductor at least partially surrounded by the magnetic core, the core-mounted conductor contoured for selectively at least partially surrounding a load loop, wherein the link is openable to receive, and closable to substantially surround, said load loop; and

a primary converter coupled to the core-mounted conductor for converting power from a power source into the AC power at the selected charging rate corresponding to a load when coupled thereto by the link.

15. A coupling link, comprising:

a core-mounted conductor for surrounding a portion of a conductor loop coupled to a power source or a load, the core-mounted conductor for coupling to the other of the power source or the load;

a magnetic core at least partially surrounding the core-mounted conductor; and

a cooling fluid chamber defining a passageway for circulating a cooling fluid through the link in a direction substantially parallel with a direction of current flow through the core-mounted conductor, wherein the link is openable to receive the loop and closable to substantially surround the loop.

5,341,084

METHOD AND DEVICE FOR DETERMINING AND INDICATING A RESIDUAL CAPACITY OF A BATTERY

Seiji Gotoh; Kenji Orita, both of Fukuoka, and Tomio Takayama, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 14, 1992, Ser. No. 990,591

Claims priority, application Japan, Dec. 12, 1991, 3-328824

Int. Cl.[5] G01R *31/36;* **G01N** *27/46;* **H02J** *7/10*

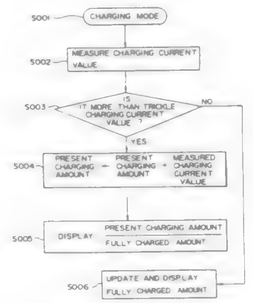
U.S. Cl. 320—44 **11 Claims**

1. A method for indicating a correct residual capacity of a battery, comprising the steps of:

measuring a charging current value in a current charging mode when a charger having a function for detecting a fully charged state is connected to the battery;

adding, if the charging current value in the charging mode is more than trickle charging current value, said measured charging amount to a present charging amount to obtain a new present charging amount and thereby indicating a ratio of the new present charging amount to a fully charged state; and

judging, if the charging current value in the charging mode is less than the trickle charging current value, by determining a charged amount from the charging current value, the present charging amount as being the fully charged amount and indicating that the present charging amount is in a fully charged state.



5,341,085

POWER SUPPLY CIRCUIT WITH STANDBY ARRANGEMENT

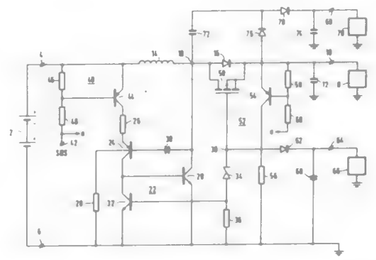
Wilhelmus G. M. Ettes, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 27, 1993, Ser. No. 68,807

Claims priority, application European Pat. Off., Jul. 3, 1992, 92202025.0

Int. Cl.[5] G05F *1/10, 1/652, 1/656*

U.S. Cl. 323—222 **23 Claims**



1. A power supply circuit comprising: an input terminal and a reference terminal for connection of a direct voltage source to the input terminal and the reference terminal means for connection of a load to an output terminal and the reference terminal, a series arrangement of an inductive element and a diode connected to one another at a first node with the inductive element connected between the input terminal and the first node and the diode being connected between the first node and the output terminal, a first electronic switch having a main current path connected between the first node and the reference terminal, and a drive circuit for periodically making the main current path of the first electronic switch conductive and non-conductive, characterized in that the drive circuit comprises a first switching device for making the main current path of the first electronic switch permanently non-conductive in response to a standby signal, and a second electronic switch having a control electrode, and a first and a second main electrode which constitute a main current path connected in parallel with at least the diode of the series arrangement of the inductive element and the diode, and a second switching device for making the main current path of the second electronic switch permanently conductive in response to the standby signal.

5,341,086

CONSTANT-CURRENT CIRCUIT FOR LIGHT-EMITTING ELEMENT

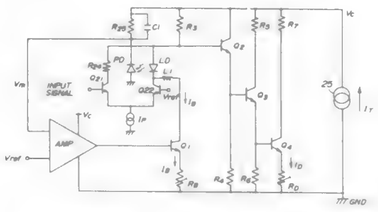
Fujito Fukudome, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Oct. 17, 1991, Ser. No. 778,008

Claims priority, application Japan, Oct. 20, 1990, 2-283207

Int. Cl.[5] G05F *1/56*

U.S. Cl. 323—273 **19 Claims**



1. A constant-current circuit for a light-emitting element, said constant-current comprising:

circuit current source means for generating a constant current necessary for the constant-current circuit;

first means, coupled to said light-emitting element, for passing a first current, which is part of the circuit constant current, through said light-emitting element in response to an input signal;

current control means, coupled to said first means, for detecting a change in the first current and for generating a control signal based on the change in the first current; and

second means, coupled to said current control means, for passing a second current which is part of the constant current and for changing the amount of the second current on the basis of the control signal so that the constant current remains substantially fixed.

5,341,087

REFERENCE CURRENT LOOP

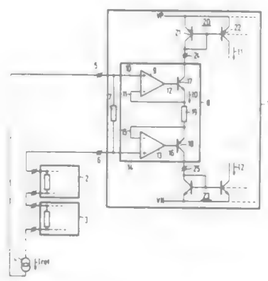
Gerrit H. Van Leeuwen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1992, Ser. No. 977,331

Claims priority, application European Pat. Off., Nov. 25, 1991, 91203074.9

Int. Cl.[5] G05F *3/26*

U.S. Cl. 323—315 **3 Claims**



1. Reference current loop comprising:

a reference current source (4);

a group of at least two integrated circuits (1, 2, 3), each comprising:

a first (5) and a second (6) reference current terminal;

a first (7) impedance connected to the first (5) and second (6) reference current terminals;

a second impedance (19) of a similar type to the first impedance (7) and having an impedance value that has a predetermined proportion to the impedance value of the first impedance;

a voltage-to-current converter (8) including:

an input (10, 14) for receiving a voltage difference occurring between the first and second reference voltage terminals (5, 6), and an output (24, 25) for supplying an output current (IO) which is a function of the impedance value of the second impedance (19);

a current mirror circuit (20) comprising an input branch (21) and at least one output branch (22), the input branch (21) being coupled to the output (24) of the voltage-to-current converter (8);

means for mutually coupling the respective first (5) and second (6) reference current terminals of the integrated circuits (1, 2, 3), the respective first impedances (7) of the integrated circuits forming a series combination and means for coupling the reference current source (4) to the series combination.

5,341,088

SYSTEM FOR RATING ELECTRIC POWER TRANSMISSION LINES AND EQUIPMENT

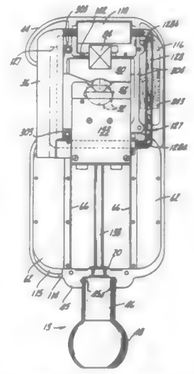
Murray W. Davis, 19790 Eastwood, Harper Woods, Mich. 48225

Division of Ser. No. 741,964, Aug. 5, 1991, Pat. No. 5,140,257.

This application Jul. 13, 1992, Ser. No. 912,813

Int. Cl.[5] G01R *21/02*

U.S. Cl. 324—106 **4 Claims**



1. A method for monitoring the current carrying capacity of a length of an overhead electric power line, which includes a plurality of overhead electric power line spans supported above the ground, comprising the steps of:

a. positioning a monitoring device for monitoring the distance between the ground and the overhead electric power line on at least one span of the length of said overhead electric power line in such a way as to not significantly affect the distance between the ground and said at least one span;

b. monitoring on a real-time basis the distance between the ground and said at least one span of the length of said overhead electric power line;

c. generating data signals at the monitored spans corre-

VOL 1165 ISS 4 AUG 23 1994 UMI

sponding to the monitored distance between the ground said at least one span;

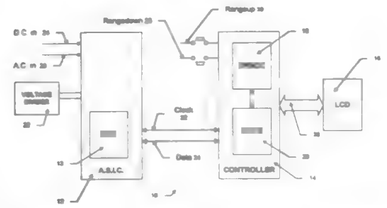
d. determining the current carrying capacity of said electric power line span using at least the data signals generated in step (c).

5,341,089

VOLTAGE TO DECIBEL CONVERTER HAVING PARTIAL TABLE LOOKUP

Jerry J. Heep, Weatherford, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Filed Mar. 27, 1992, Ser. No. 858,814
Int. Cl.[5] G01R *15/08, 15/10*
U.S. Cl. 324—115 28 Claims



1. In a multimeter, a method of providing a decibel indication of the value of an input analog voltage, comprising the steps of:

A) providing a memory circuit containing a table of voltage values wherein each entry is associated with a decibel value;

B) generating an input digital signal representative of an input value determined by the analog voltage;

C) calculating from the input value an output decibel value by:

i) comparing the input value with entries in the table to locate a first entry which is larger than the input value;

ii) locating a second entry in the table that is lower than the input value;

iii) determining a fractional value that is indicative of where the input value lies in a range between the first entry and the second entry; and

iv) combining a decibel equivalent of the fractional value with the decibel value associated by the table with one of the first and second entries to produce a decibel equivalent of the input value; and

D) generating a meter output signal representative of the output decibel value.

5,341,090

BIDIRECTIONAL, TRANSCONDUCTANCE, DC AMPLIFIER HAVING HIGH OUTPUT COMPLIANCE VOLTAGE

James M. Hoover, Galloway, Ohio, assignor to Scientific Columbus Co., Columbus, Ohio

Filed Oct. 9, 1992, Ser. No. 959,122
Int. Cl.[5] H03F *3/45*
U.S. Cl. 324—123 R 10 Claims

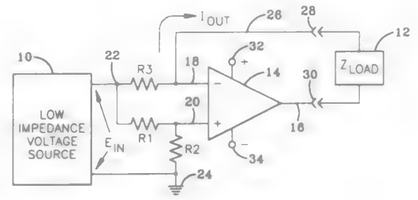
1. A bidirectional, transconductance mode DC amplifier exhibiting a compliance voltage exceeding each of the DC power supply voltages and having an input terminal connected to a voltage source, the amplifier comprising:

(a) a differential input, operational amplifier having an output, an inverting input and a non-inverting input;

(b) a voltage divider having a first impedance connected between said input terminal and said non-inverting input and a second impedance connected between said non-inverting input and a common;

(c) a third impedance connected between said input terminal and said inverting input; and

(d) a feedback circuit branch connected between said inverting input and said operational amplifier output and including a pair of output terminals interposed in the feedback circuit branch for connecting a load interposed in series in



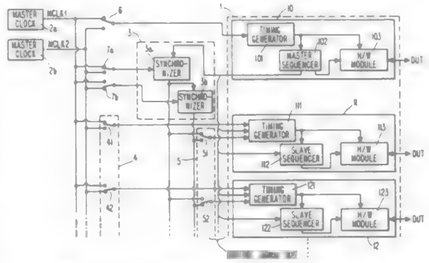
the feedback circuit branch wherein the amplifier exhibits a compliance voltage exceeding each of the DC power supply voltages.

5,341,091

APPARATUS AND METHOD FOR GENERATING SYNCHRONIZED CONTROL SIGNALS IN A SYSTEM FOR TESTING ELECTRONIC PARTS

Jun Kurita, Tokyo, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 24, 1992, Ser. No. 934,368
Claims priority, application Japan, Aug. 28, 1991, 3-242614
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—750 15 Claims



1. A testing device, comprising:

(a) a subsystem group comprising a master subsystem and a slave subsystem operated under control of said master subsystem;

(b) at least two master clock generators;

(c) master clock distribution means for distributing master clock signals of said master clock generators to said slave subsystem and said master subsystem;

(d) control signal synchronizing means for receiving a control signal from said master subsystem and synchronizing the control signal with a selected one of the master clock signals, wherein a synchronized control signal is derived; and

(e) control synchronized signal distribution means for distributing the synchronized control signal to said slave subsystem;

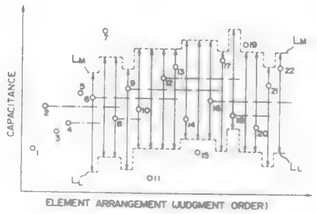
wherein said control signal synchronizing means comprises (1) a first synchronizer comprising an input operatively coupled to said master subsystem to receive said control signal and an output; and (2) a second synchronizer comprising an input operatively coupled to said output of said first synchronizer and an output; and wherein said control synchronized signal distribution means comprises a diplexer comprising first and second inputs respectively operatively comprising first and second inputs respectively operatively coupled to said outputs of said first and second synchronizers and an output operatively coupled to said slave subsystem.

5,341,094

METHOD OF GROUPING OF VARIABLE CAPACITANCE DIODES HAVING UNIFORM CHARACTERISTICS

Shigeru Hiraoka, Himeji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 666,745, Mar. 8, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,076
Claims priority, application Japan, Mar. 9, 1990, 2-59749
Int. Cl.[5] G01R *31/22*
U.S. Cl. 324—767 4 Claims



1. A method of grouping variable capacitance diodes having uniform characteristics comprising the steps of:

(a) separating element pellets of variable capacitance diodes arranged in a matrix form on a semiconductor wafer;

(b) picking up pellets neighboring each other in any one of a longitudinal, lateral, and oblique direction in the matrix on the wafer;

(c) rearranging the pellets picked up from the wafer in a row in a frame according to the order of picking up;

(d) packaging the rearranged pellets in a row in accordance with an arrangement order from one end toward another end of a group of pellets in a row to form capacitor components;

(e) measuring characteristics of the capacitor components;

(f) performing first-type testing to reject defective capacitor components which have characteristics values deviating from acceptable value ranges determined by a tendency of values from the arrangement without breaking the arrangement order;

(g) performing second-type testing to obtain a group of successive good components in accordance with an arrangement order from a component to be judged toward one end of the arrangement; and

(h) setting quality judgment criteria for components to be judged for every instance of second-type testing on the basis of results of the second-type testing, wherein step (h) includes the steps of

(1) selecting a component having an initial representative value with respect to a predetermined number of rearranged components,

(2) determining an acceptable range using the representative value as an initial reference value,

(3) determining whether or not a next component has a value within the acceptable range and whether or not a ratio of a difference between a maximum capacitance value and a minimum capacitance value in the acceptable range to the minimum capacitance value is less than a predetermined value,

(4) setting a new representative value for a predetermined number of components including a new component, and

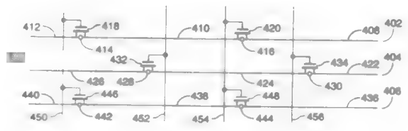
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5,341,092

TESTABILITY ARCHITECTURE AND TECHNIQUES FOR PROGRAMMABLE INTERCONNECT ARCHITECTURE

Khaled A. El-Ayat, and Jia-Hwang Chang, both of Cupertino, Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 891,969, May 26, 1992, Pat. No. 5,223,792, which is a division of Ser. No. 822,490, Jan. 14, 1992, Pat. No. 5,309,091, which is a continuation of Ser. No. 375,799, Jul. 5, 1989, Pat. No. 5,083,083, which is a continuation-in-part of Ser. No. 195,728, May 18, 1988, Pat. No. 4,873,459, which is a continuation-in-part of Ser. No. 909,261, Sep. 19, 1986, Pat. No. 4,758,745. This application Oct. 7, 1992, Ser. No. 958,879
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—158 R 4 Claims



1. In an integrated circuit including a first conductor disposed in a first direction, a plurality of second conductors forming intersections with said first conductor, and a plurality of antifuses connected between said first conductor and said second conductors at said intersections, a method for testing the integrity of said plurality of antifuses after attempting to program a selected one of said antifuses, including the steps of:

precharging each of said second conductors to a first preselected voltage potential such that a selected dynamic voltage is placed on each of said second conductors;

placing a second voltage potential on said first conductor, wherein the difference between said first voltage potential and said second voltage potential is less than the voltage necessary to cause degradation of a good antifuse;

waiting a preselected time; and

sensing the voltage potential on each of said second conductors.

5,341,093

Patent Not Issued For This Number

VOL 1165 ISS 4 AUG 23 1994 UMI

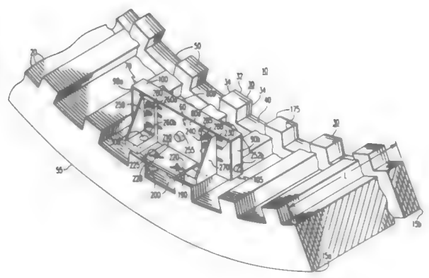
(5) repeating steps (1) to (4) for succeeding components to obtain a renewed representative value and allowable range.

5,341,095

DYNAMOELECTRIC MACHINE STATOR TEST DEVICE

James W. Shelton, Raytown, Mo.; Alan A. Marfin, Pittsburgh, and George F. Dailey, Plum Borough, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1993, Ser. No. 10,091
Int. Cl.[5] G01R *31/34*
U.S. Cl. 324—772 **14 Claims**



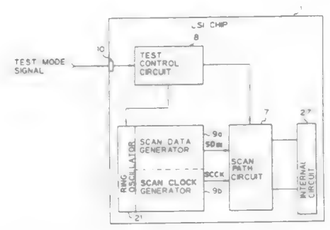
1. A hand-held testing device for a dynamoelectric machine stator formed from a plurality of laminations configured to define a plurality of substantially parallel teeth each having a pair of corner portions, an outer surface between the corner portions and extending over a preselected length of the stator, the testing device comprising:
(a) a housing having a bottom face adapted to be disposed adjacent the stator teeth and a face cover extending outwardly from said bottom face;
(b) coil means for detecting stator axial currents and disposed within said housing, said coil means having a pair of end portions with bottom surfaces each extending to said bottom face of said housing;
(c) bracket means removably attached to said face cover of said housing; and
(d) a pair of magnets each having a bottom surface, each of said pair of magnets being removably attached to said bracket means and located on said bracket means so that said bottom surfaces of said pair of magnets are positioned adjacent to selected corners of adjacent teeth and remain in adjacent positional relationship by magnetic attraction to said selected corners as said housing is moved over a preselected length of said stator.

5,341,096

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A SCAN CIRCUIT PROVIDED WITH A SELF-CONTAINED SIGNAL GENERATOR CIRCUIT

Takeshi Yamamura, Zama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 550,845, Jul. 10, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 89,628
Claims priority, application Japan, Jul. 11, 1989, 1-178307
Int. Cl.[5] G01R *31/28;* **G06F** *11/00*
U.S. Cl. 324—765 **10 Claims**



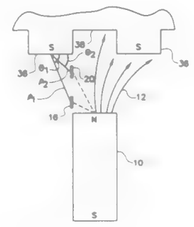
1. A semiconductor integrated circuit device comprising:
an internal circuit formed of one of a logical circuit and a functional circuit, and said internal circuit including a memory means which inputs scan data supplied via scan path means as address data;
scan path means connected to said internal circuit, for delivering scan data into said internal circuit;
scan data generation means connected to said scan path means, for generating scan data corresponding to a test mode signal, based on a scan clock output from clock generation means; and
clock generation means connected to said scan path means, for generating a scan clock based upon said test mode signal;
wherein said internal circuit, said scan path means, said scan data generation means and said clock generation means are formed in a single chip, and the scan data produced by said scan data generation means is delivered to said scan path means in response to said test mode signal.

5,341,097

ASYMMETRICAL MAGNETIC POSITION DETECTOR

Mien T. Wu, Madison, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 29, 1992, Ser. No. 952,449
Int. Cl.[5] G01B *7/34, 7/14*
U.S. Cl. 324—207.2 **13 Claims**



8. A sensor, comprising:

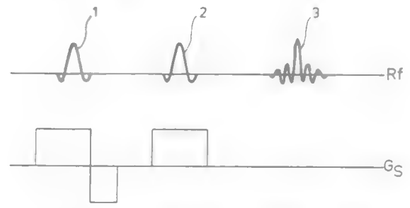
means for providing a magnetic field having a north pole and a south pole disposed along a first axis;
first means for measuring a first strength of magnetic field perpendicular to said first axis at a first position;
second means for measuring a second strength of magnetic field perpendicular to said first axis at a second position, said first position being closer to said providing means than said second position;
means for determining a ratio of said first and second magnetic field strengths; and
means for comparing said ratio to a predetermined value, said first and second measuring means are disposed in a common plane, said common plane being generally parallel with said first axis, said first and second measuring means having axes of maximum sensitivity which are perpendicular to said common plane, said common plane being disposed perpendicular to the path along which a target is intended to pass.

5,341,098

METHOD FOR THE GENERATION OF NMR SIGNALS WITH COHERENT PHASE PROFILE BY MEANS OF COMBINING RADIO FREQUENCY PULSES WITH INCOHERENT PHASE PROFILE

Jürgen Hennig, Freiburg, Fed. Rep. of Germany, assignor to Spectrospin AG, Fällanden, Switzerland

Filed Feb. 22, 1993, Ser. No. 21,433
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1992, 4205780
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **5 Claims**



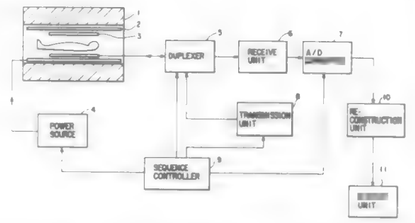
1. A method for the measurement of nuclear magnetic resonance (NMR) signals from a measuring volume of a test substance comprising the steps of:
a) exposing the test substance to a stationary homogeneous magnetic field B_0;
b) selecting, for measuring a first NMR signal, a first radio frequency (RF) pulse with a first pulse frequency, a first pulse frequency band having a and-width which is narrow with respect to the first pulse frequency, and a first pulse phase distribution within the first pulse frequency band;
c) selecting, for measuring at least one additional NMR signal, at least one additional RF pulse, each additional pulse having an additional pulse frequency, an additional pulse frequency band having a band-width which is narrow with respect to the additional pulse frequency, and an additional pulse frequency phase distribution within the additional pulse frequency band;
d) determining phase distributions of the first and the additional RF pulses in dependence on the first and additional pulse frequency bands for measuring the first and the additional NMR signals having first and additional NMR signal phases which are randomized for causing a vectorial sum over each of the first and additional signals to be zero while the combined first and additional RF pulses result in formation of an observable coherent magnetization of the test substance; and
e) irradiating the first and additional RF pulses into the measuring volume to resonantly excite nuclear spins of the test substance within the measuring volume for generating the first and additional NMR signals.

5,341,099

MAGNETIC RESONANCE IMAGING APPARATUS

Yoshinori Suzuki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1993, Ser. No. 40,854
Claims priority, application Japan, Mar. 31, 1992, 4-105832; Mar. 25, 1993, 5-89508
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **20 Claims**



1. A magnetic resonance imaging apparatus comprising:
data acquiring means for acquiring asymmetrical echo data consistent of half-echo data relating to a k space and center echo data relating to the center of the k space, from a subject to which a static magnetic field, gradient magnetic fields, and radio-frequency electro-magnetic waves have been applied; and
data producing/reconstructing means for performing inverse Fourier transformation on the center echo data, thereby producing phase data, for inverted the phase data in polarity, thereby producing polarity-inverted phase data, for performing Fourier transformation on the polarity-inverted phase data in readout direction, thereby producing phase-correction data, for performing inverse Fourier transformation on the asymmetrical echo data in encode direction, thereby producing echo data, for convoluting the phase-correction data and the echo data in the readout direction, thereby producing convoluted data free of phase distortion, for inferring unmeasured echo data from the convoluted data by utilizing complex conjugate property of the echo data, for performing inverse Fourier transformation on the convoluted data and the inferred data in the readout direction, thereby producing an image free of phase distortion, and for reconstructing from the asymmetrical echo data an MR image of a specific region of the subject.

5,341,100

ELECTROMAGNETIC WAVE METHOD AND APPARATUS FOR DOWNHOLE MEASUREMENT OF FLUID CONDUCTIVITY AND HYDROCARBON VOLUME DURING FORMATION TESTING

Robert M. Taylor, Stillwater, Okla., assignor to Western Atlas International, Inc., Houston, Tex.

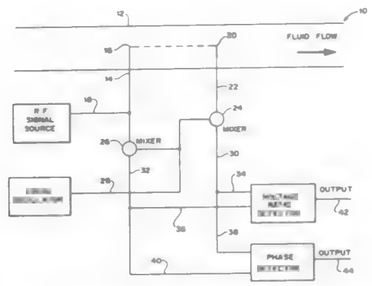
Filed Dec. 22, 1992, Ser. No. 994,984
Int. Cl.[5] G01V *3/30;* **G01N** *22/00;* **E21B** *49/00*
U.S. Cl. 324—341 **13 Claims**

5. A method for characterization for fluid conductivity and hydrocarbon volume formation fluid being transferred from a subsurface earth formation into a formation multi-tester instrument located in a borehole intersecting the formation, said method comprising:
(a) providing a coaxial transmission line within said formation multi-tester instrument as a flow tube for said formation fluid;
(b) generating an electromagnetic wave within said forma-

VOL 1165 ISS 4 AG 23 1994 UMI

tion fluid within said flow tube in a transverse electromagnetic mode;

(c) measuring the phase shift and attenuation of said electromagnetic wave within said flow tube for characterization



of said formation fluid as to dielectric constant and conductivity; and

(d) relating said dielectric constant and conductivity of said formation fluid to fluid conductivity and hydrocarbon volume.

5,341,101

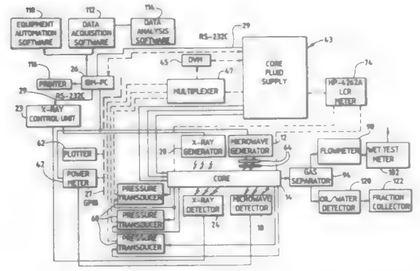
METHOD AND APPARATUS UTILIZING IONIZING AND MICROWAVE RADIATION FOR SATURATION DETERMINATION OF WATER, OIL AND A GAS IN A CORE SAMPLE

Nicida L. Maerefat, Sugar Land, Tex.; Ravi Parmeswar, Marlton, N.J.; Alan D. Brinkmeyer, Tulsa, and Mehdi Honarpour, Bartlesville, both of Okla., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 649,536, Feb. 1, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 50,977

Int. Cl.[5] G01V *3/12, 5/00;* **G01N** *22/00, 23/00*

U.S. Cl. 324—376 **11 Claims**



11. A method of determining the amounts of water, oil and gas in a core sample, the core sample having a matrix defining an open space occupied by water, oil and gas including heavy hydrocarbon gas flowing therein, the method comprising steps of:

illuminating an area of said core sample with focused microwave radiation of a known intensity;

attenuating the microwave radiation to ensure that the power level of the microwave radiation emerging from said core sample is within a range capable of being measured;

shielding regions outside the core sample from said microwave radiation to prevent microwave radiation which has not passed through the core sample from being measured;

measuring microwave radiation emerging from said core sample to determine an amount of water in open space of said core sample;

illuminating X-rays on said core sample simultaneously with said microwave radiation;

measuring X-rays emerging from said core sample to determine an amount of oil in said open space of said core sample;

comparing the void volume of said core sample without any water or oil therein to the volume of said amount of oil and the volume of said amount of water to determine the volume of gas occupying portions of said open space not occupied by said water and said oil; and

viewing the condensation of heavy hydrocarbon gas and the oil and water flowing from the core sample representative of said gas and the oil and water facilitating a determination of activity inside said core sample.

5,341,102

ELECTROMAGNETIC INDUCTION-TYPE CONDUCTIVITY METER WITH IMPROVED CALIBRATION WITH AUXILIARY CIRCUIT

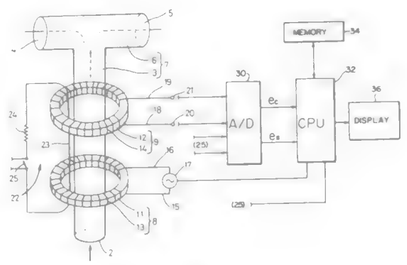
Shigeyuki Akiyama, and Tatsuhide Tsutsui, both of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Jun. 5, 1992, Ser. No. 893,756

Claims priority, application Japan, Jun. 8, 1991, 3-163604

Int. Cl.[5] G01N *27/06;* **G01R** *27/22, 35/00*

U.S. Cl. 324—445 **2 Claims**



1. An electromagnetic induction-type conductivity meter comprising:

a housing with a sample passageway;

a primary coil extending about the sample passageway;

a secondary coil extending about the sample passageway and sufficiently close to be linked by electromagnetic flux with the primary coil by the sample passageway;

means, connected to the primary coil, for providing an alternating current to the primary coil;

a circuit means extending between the primary and secondary coils for providing a voltage signal that can be sensed by the primary and secondary coils, including means for activating and deactivating the circuit means;

means for storing a value of a first voltage induced by the circuit means in the secondary coil when the circuit means is activated and subject to a predetermined alternating current;

means for providing a calibration factor including generating a second subsequent voltage in the secondary coil with an activated circuit means and providing the calibration factor from the first and second voltages;

means for measuring a voltage of a sample liquid from the secondary coil with the circuit means in a deactivated condition, and

means for modifying the sample liquid voltage with the calibration factor to provide an output signal representative of the sample liquid.

5,341,103

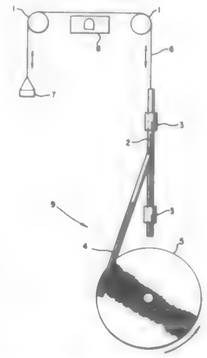
APPARATUS FOR SIMULTANEOUSLY GENERATING AND MEASURING A TRIBOELECTRIC CHARGE

Sunil P. Dasgupta; Blain H. Gingrich, both of Wilmington; Bernard J. Matyniak, New Castle, and G. Gregory Weaver, Hockessin, all of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jun. 4, 1992, Ser. No. 894,327

Int. Cl.[5] G01N *27/60*

U.S. Cl. 324—454 **3 Claims**



1. Apparatus for simultaneously generating and measuring a triboelectric charge generated on an elongated strip of flexible sample material comprises a stationary rod of insulating material fixedly attached to the apparatus, driving means including a motor for the sample material and adapted to move the sample material longitudinally in transverse frictional contact with the rod, means for maintaining the sample material under continuous tension, support means for maintaining a surface of the sample material in substantially straight-line tangential relationship with the rod after it leaves contact with it, and a static-charge sensor disposed between the stationary rod and the said support means and spaced from the said surface of the sample material for measuring, in cooperation with electrically associated voltage-measuring means, a charge on the said surface.

5,341,104

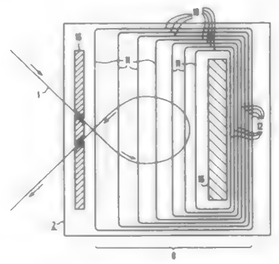
SYNCHROTRON RADIATION SOURCE

Frank Anton, Bonn, and Andreas Jahnke, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 14,401

Int. Cl.[5] H05H *13/04*

U.S. Cl. 328—235 **16 Claims**



1. A synchrotron radiation source, comprising a beam guidance system for storing an electron or positron particle beam on a closed trajectory, said beam guidance system having at least one approximately achromatic mirror magnet being formed of superconducting winding configurations for bending the trajectory through approximately 270°.

5,341,105

QUADRATORE DEMODULATOR CIRCUIT UTILIZING AUTOMATIC FREQUENCY CONTROL SIGNAL AND METHOD THEREOF

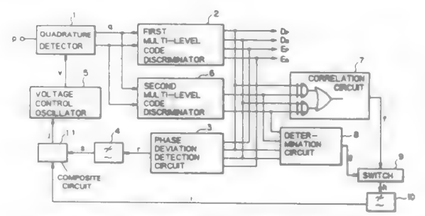
Kazumasa Satou, Fukushima, Japan, assignor to NEC Corporation, Japan

Filed Sep. 30, 1992, Ser. No. 954,272

Claims priority, application Japan, Sep. 30, 1991, 3-276450

Int. Cl.[5] H03D *3/00*

U.S. Cl. 329—308 **10 Claims**



1. A quadrature demodulator circuit utilizing an automatic frequency control signal, comprising:

a voltage control oscillator, a quadrature detector for detecting a quadrature amplitude modulated input signal through coherent detection with a reference carrier outputted from said voltage control oscillator, a first multi-level code discriminator for discriminating two pairs of output signals of said quadrature detector, a phase deviation detection circuit for logically processing the output of said first multi-level code discriminator to output a phase deviation signal for controlling said voltage control oscillator, said quadrature demodulator circuit further comprising:

a second multi-level code discriminator for discriminating the two pairs of output signals of said quadrature detector;

a correlation circuit for calculating a predetermined logical correlation between output signals of said first multi-level code discriminator and output signals of said second multi-level code discriminator;

a determination circuit for determining that the two pairs of output signals of said quadrature detector vary at the same time and that the levels of said outputs of said second multi-level code discriminator become higher than a predetermined threshold value; and

a composite circuit for adding an output of said correlation circuit to an output of said phase deviation detection circuit receiving an output of said determination circuit.

5,341,106

AMPLITUDE LOCKED LOOP CIRCUITS

Archibald M. Pettigrew, Kilmacolm, United Kingdom, assignor to The Governors of Paisley College of Technology, Paisley, United Kingdom

PCT No. PCT/GB91/00101, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1992, PCT Pub. No. WO91/11854, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 23, 1991, Ser. No. 910,347

Claims priority, application United Kingdom, Jan. 23, 1990, 9001538.9; Jan. 23, 1990, 9001539.7; Oct. 5, 1990, 9021703.5

Int. Cl.[5] H03D *1/18;* **H04B** *1/10*

U.S. Cl. 329—319 **2 Claims**

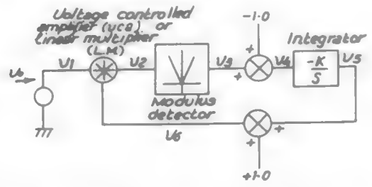
1. An electronic circuit having loop locked amplitude control, said circuit comprising:

VOL 1165 ISS 4 AG 23 1994 UMI

a voltage controlled amplifier in the form of a linear signal multiplier having an input to receive a circuit input signal and an input to receive a feedback signal;

a modulus detector in the form of a full wave rectifier having zero output impedance and wide bandwidth, an input of said modulus detector being coupled to an output of said voltage controlled amplifier;

an integrator in the form of a linear integrator, an input of which is coupled to an output of said modulus detector, an output of said linear integrator being coupled to said voltage controlled amplifier to deliver said feedback signal thereto;



a first level shifter for coupling said output of said modulus detector to said input of said integrator and functioning in use of the circuit to set the quiescent point of the circuit to zero volts at said input of said integrator; and

a second level shifter for coupling said output of said integrator to said feedback input of said voltage controlled amplifier to deliver said feedback signal thereto and functioning in use of the electronic circuit as a level set point for the voltage controlled amplifier;

said electronic circuit forming an amplitude locked loop with an output of the integrator providing an output signal of the circuit.

5,341,107

FM QUADRATURE DEMODULATOR WITH TWO PHASE COMPARISON CIRCUITS

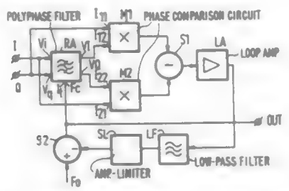
Wolter Bijker; Wolfdietrich G. Kasperkovitz; Hendricus C. De Ruytere, and Willem-Arie Sloof, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1993, Ser. No. 47,216

Claims priority, application European Pat. Off., Jun. 12, 1992, 92201752.2

Int. Cl.[5] H03D *3/06*

U.S. Cl. 329—337 **9 Claims**



1. An FM quadrature demodulator for demodulating a pair of FM-modulated signals in mutual phase quadrature, said FM-modulated signals including a modulation signal which is frequency-modulated on a carrier, said FM quadrature demodulator comprising:

an in-phase input terminal and a quadrature input terminal for receiving said FM-modulated signals;

a first phase comparison circuit having a first input coupled to said quadrature input terminal, a second input and an output;

a second phase comparison circuit having a first input coupled to said in-phase input terminal, a second input and an output;

phase shifting means comprising a polyphase filter having a bandpass characteristic which is symmetrical around the carrier frequency, said polyphase filter having in-phase and quadrature inputs coupled, respectively, to said in-phase and quadrature input terminals, and in-phase and quadrature outputs coupled, respectively, to said second inputs of said first and second phase comparison circuits, said phase shifting means realizing a phase shift which varies with said modulation signal;

a differential stage having inputs coupled, respectively, to the outputs of said first and second phase comparison circuits, and an output; and

a low-pass filter having an input coupled to the output of said differential stage, an output of said low-pass filter being coupled to an output of said FM quadrature demodulator.

5,341,108

AMPLIFIER BIASING CIRCUIT

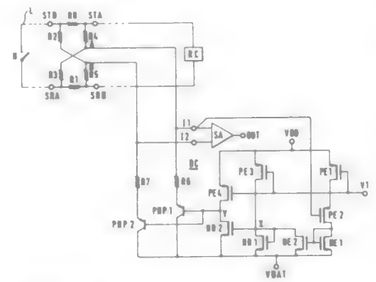
Eddie L. M. Willocx, Willebroek, and Johan G. A. Verkinderen, Torhout, both of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Dec. 15, 1992, Ser. No. 991,585

Claims priority, application European Pat. Off., Dec. 16, 1991, 91203307.3

Int. Cl.[5] H03F *3/45;* **H04M** *1/00*

U.S. Cl. 330—259 **11 Claims**



1. Amplifier biasing circuit for connecting a bias impedance to an amplifier input to which an input signal is applied, said biasing circuit comprising

means for detecting a magnitude of said input signal,

means for determining from said magnitude a value of said bias impedance, and

a negative feedback loop which maintains said magnitude substantially equal to a reference value if said magnitude exceeds said reference value in a predetermined direction.

5,341,109

CURRENT MIRROR CIRCUIT

Marc H. Ryat, Santa Clara, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jan. 5, 1993, Ser. No. 665

Int. Cl.[5] H03F *3/04*

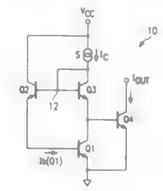
U.S. Cl. 330—288 **11 Claims**

1. A circuit for generating a selected output current, comprising:

first and second bipolar transistors forming a current mirror;

a current source connected to said current mirror in series with the second transistor;

a third bipolar transistor connected in series with said second bipolar transistor, and having a base current supplied by the first transistor; and



an output transistor connected to said current mirror to generate an output current equal to a base current of the third transistor.

5,341,110

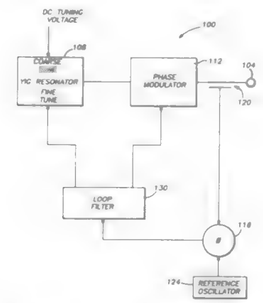
LOW PHASE NOISE REFERENCE OSCILLATOR

Benedict J. Nardi, Thurmont, Md., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Filed Jul. 14, 1993, Ser. No. 91,615

Int. Cl.[5] H03L *7/08, 7/081, 7/093, 7/20*

U.S. Cl. 331—17 **15 Claims**



1. A phase-locking oscillator circuit for providing an output signal at an output terminal, comprising:

tuned oscillator means for generating a carrier signal at a tunable carrier frequency, said tuned oscillator means having at least one tuned oscillator tuning port for receiving a tuned oscillator tuning signal;

a phase modulator having an input port to which is applied said carrier signal, a modulator control port for receiving a modulator control signal, and an output port for impressing said output signal upon said output terminal;

error detection means for comparing a predefined characteristic of said output signal to a reference signal and for generating an error signal on the basis of said comparison; and

loop filter means for generating, in accordance with said error signal, said tuned oscillator tuning signal and said modulator control signal, for applying said tuned oscillator tuning signal to said at least one tuned oscillator tuning port, and for selectively applying said modulator control signal to said modulator control port, said loop filter means including means for attenuating said error signal when frequency of said error signal is greater than a predefined crossover frequency.

5,341,111

MICROWAVE OSCILLATOR CIRCUIT

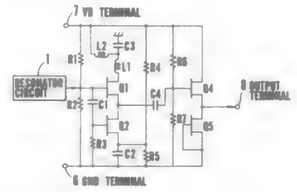
Tatsuya Miya; Kazuyoshi Uemura, and Sadayoshi Yoshida, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 16, 1992, Ser. No. 945,615

Claims priority, application Japan, Sep. 17, 1991, 3-235295; Jun. 30, 1992, 4-172221

Int. Cl.[5] H03B *5/12, 5/18, 21/01*

U.S. Cl. 331—96 **11 Claims**



1. A microwave oscillator circuit, connected to a resonator circuit generating a signal at a frequency f, for producing at its output a signal at frequency nf comprising:

a first field effect transistor having a gate connected to said resonator circuit;

a second field effect transistor whose source/drain path is connected in series with the source/drain path of said first field effect transistor; and

a connecting circuit for one of coupling the gate and coupling the source, source of said first field effect transistor to a gate of said second field effect transistor such that a signal at frequency nf is output at a node corresponding to a connection point between the source of the first field effect transistor and the drain of the second field effect transistor.

5,341,112

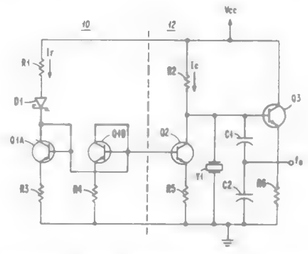
TEMPERATURE STABLE OSCILLATOR CIRCUIT APPARATUS

Leo J. Haman, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 9, 1993, Ser. No. 74,255

Int. Cl.[5] H03B *5/12, 5/36;* **H03L** *1/02*

U.S. Cl. 331—116 R **12 Claims**



1. A temperature stable oscillation circuit, comprising:

a bias circuit having a first current output;

a mirror circuit means having a second current output;

a bipolar-transistor having it's base-emitter junction coupled to the bias circuit current output and the mirror circuit means output; and

a crystal oscillator coupled to and serially disposed between the bipolar-transistor base and emitter terminal such that a driver current from the bipolar transistor to the crystal oscillator is temperature compensated by the mirror circuit means current output.

VOL 1165 ISS 4 AUG 23 1994 UMI

5,341,113

VOLTAGE CONTROLLED OSCILLATOR HAVING A 50% DUTY CYCLE

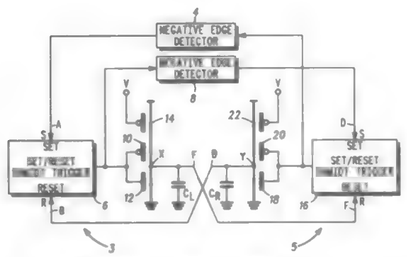
Nathan Baron, Oranit, and Judah L. Adelman, Jerusalem, both of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 30, 1993, Ser. No. 84,887

Claims priority, application United Kingdom, Jul. 2, 1992, 9214169

Int. Cl.[5] H03K *3/282;* **H03L** *7/099*

U.S. Cl. 331—144 **9 Claims**



1. A CMOS voltage controlled oscillator (VCO) for providing an output signal whose frequency depends on the voltage of a control signal supplied thereto, the VCO comprising:

first and second capacitors; and

first and second circuits for alternately charging and discharging said first and second capacitors respectively so that the VCO oscillates between the charging of the first and the charging of the second capacitor, the first and second circuits charging the respective first and second capacitors at a rate which depends on the voltage of the control signal,

wherein the first circuit comprises a first current supply means coupled to the first capacitor and to receive the control signal and a first Schmitt trigger having a reset input coupled to the second capacitor, a set input, and a switching output for providing a switching signal to the first current supply means,

wherein the second circuit comprises a second current supply means coupled to the second capacitor and to receive the control signal, and a second Schmitt trigger having a reset input coupled to the first capacitor, a set input, and a switching output for providing a switching signal to the second current supply means,

wherein the first Schmitt trigger is reset when the voltage on the second capacitor reaches a threshold voltage of the first Schmitt trigger whereby the switching signal switches the first current supply means to a charging state in which the first current supply means charges the first capacitor, and the second Schmitt trigger is reset when the voltage on the first capacitor reaches a threshold voltage of the second Schmitt trigger whereby the switching signal switches the second current supply means to a charging state in which the second current supply means charges the second capacitor, and

wherein the first Schmitt trigger is set when the second current supply means switches to the charging state whereby the switching signal switches the first current supply means to a discharging state in which the first capacitor is discharged, and the second Schmitt trigger is set when the first current supply means switches to the charging state whereby the switching signal switches the second current supply means to a discharging state in which the second capacitor is discharged.

5,341,114

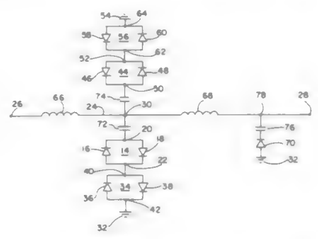
INTEGRATED LIMITER AND AMPLIFYING DEVICES

Joseph A. Calviello, Kings Park, and John A. Pierro, East Meadow, both of N.Y., assignors to AIL Systems, Inc., Deer Park, N.Y.

Filed Nov. 2, 1990, Ser. No. 608,219

Int. Cl.[5] H03G *11/04, 3/20;* **H01P** *1/22;* **H03F** *3/14*

U.S. Cl. 333—17.2 **12 Claims**



1. A high power limiter for a low noise amplifier, comprising a substrate, a first anti-parallel array of Schottky diodes monolithically integrated on said substrate and comprising first and second Schottky diodes arranged in parallel and in reverse polarity relative to each other between a first input node and a first output node, a conductor on said substrate having a first end providing a limiter input for receiving a signal and a second end providing a limiter output for connection to said low noise amplifier, said first input node being coupled to said conductor intermediate said first and second ends of said conductor, said first output node being coupled to a ground reference, a second anti-parallel array of Schottky diodes monolithically integrated on said substrate and coupled in series with said first anti-parallel array between said conductor and said ground reference, said second anti-parallel array comprising third and fourth Schottky diodes arranged in parallel and in reverse polarity relative to each other between a second input node and a second output node, said second input node being coupled to said first output node, said second output node being coupled to said ground reference.

5,341,115

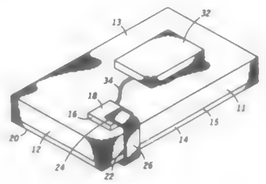
REINFORCED WRAP AROUND GROUND AND METHOD

John K. Frei, Mesa, and Howard D. Knuth, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1992, Ser. No. 993,102

Int. Cl.[5] H01D *3/08*

U.S. Cl. 333—246 **8 Claims**



1. A reinforced wrap around electrical ground comprising:

a substrate, including opposite first and second substrate surfaces separated by a substrate edge;

a first metalization layer coupled to the first substrate surface;

a second metalization layer comprising an electrical ground, wherein the second metalization layer is coupled to the second substrate surface;

electrical around reinforcement means coupled between the first metalization layer and the second metalization layer around the substrate edge, wherein the electrical ground reinforcement means comprises conductive mesh welded to the first metalization layer and to the second metalization layer; and

a conductive coating applied to the electrical ground reinforcement means, such that the electrical ground reinforcement is bound to the substrate edge and the first metalization layer is electrically grounded to the second metalization layer through the electrical ground reinforcement means and the conductive coating.

5,341,116

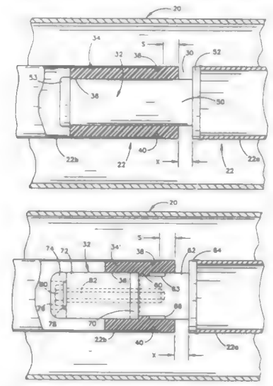
RF EXPANSION JOINT

William A. Kerkhoff, and Rex L. Niekamp, both of Quincy, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed Dec. 28, 1992, Ser. No. 997,700

Int. Cl.[5] H01P *1/04*

U.S. Cl. 333—260 **6 Claims**



1. An RF expansion joint for electrically coupling first and second axially spaced tubular conductor sections, having opposing free ends, together as said conductor sections axially expand and contract with temperature variations and for providing passage of RF energy at a desired operating frequency between said sections and comprising:

an elongated insulator sleeve constructed of dielectric material and received throughout most of its length by said first tubular conductor section, said sleeve having a passageway extending longitudinally therethrough and which passageway is coaxial with said first and second conductor sections;

an electrically conductive elongated stub having a proximal end and distal end with said proximal end mounted to the free end of said second tubular section and with said distal end extending toward the free end of said first conductor section;

said elongated stub being longer than that of said passageway and being slidably received by said passageway so that the distal end of said stub extends in a distal direction through and beyond said sleeve sufficient that said distal end is spaced inwardly from the inner walls of said first section presenting essentially an open circuit to passage of said RF energy;

means for limiting the axial movement of said stub along said passageway to a limited distance which is substantially less than the length of said stub to thereby limit the axial expansion and contraction of said sections to said distance;

said distal and proximal ends of said stub are spaced from each other by approximately one-quarter wavelength at said operating frequency; and

wherein said means for limiting includes a radially extending flange portion located on the distal end of said stub.

5,341,117

DEVICE FOR MAINTAINING THE POSITION OF A COIL SUPPORT IN A CUP-SHAPED CASING PART

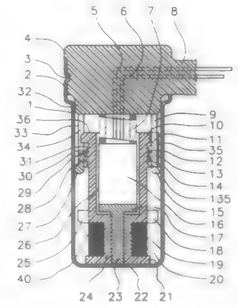
Günther Singbartl, Hanover, Fed. Rep. of Germany, assignor to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 25, 1990, Ser. No. 469,963

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1989, 3902218

Int. Cl.[5] H01F *27/02;* **G01P** *3/481;* **G01R** *33/00*

U.S. Cl. 336—92 **32 Claims**



1. An arrangement of a coil supported in a cup-shaped formed casing part comprising

a coil support for supporting a coil;

a cup-shaped casing part having a floor;

a closure part disposed on the side of the coil support remote relative to the floor of the cup-shaped casing part, wherein the closure part is attached to the cup-shaped casing part;

retaining means disposed at oppositely disposed surfaces of the closure part and of the coil support, wherein the retaining means is formed to transmit a clamping tension exerted by the coil support in the direction toward the floor of the cup-shaped casing part after application of the closure part to the coil support, wherein the retaining means are formed as matchingly engaging mechanical structures of a protrusion associated with the closure part and of a recess furnished in association with the coil support, which recess and protrusion cooperate as a snap and lock connection.

5,341,118

MULTILAYER MAGNETIC STRUCTURE WHEREIN THE MAGNITUDE OF THE STRUCTURE MAGNETORESISTANCE IS A FUNCTION OF NONMAGNETIC LAYER THICKNESS

Stuart S. P. Parkin, and Kevin P. Roche, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 653,567, Feb. 8, 1991. This application May 6, 1993, Ser. No. 60,462

Int. Cl.[5] H01L *43/00*

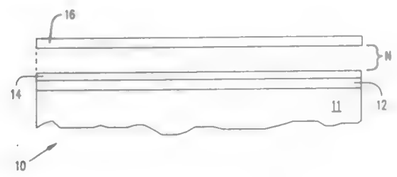
U.S. Cl. 338—32 R **31 Claims**

1. A multilayered magnetic structure comprising:

at least two bilayers, each bilayer comprising a layer of a ferromagnetic material and a layer of a nonmagnetic metallic material having a predetermined thickness, the value of the magnetoresistance of said multilayered structure exhibiting the property that its magnitude oscillates as a

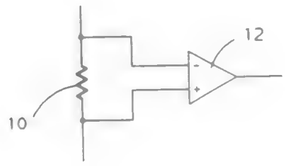
VOL 1165 ISS 4 AG 23 1994 UMI

function of thickness of said layer of nonmagnetic metallic material, the thickness of said layer of nonmagnetic metal-



lic material selected to correspond to a peak of said oscillatory function.

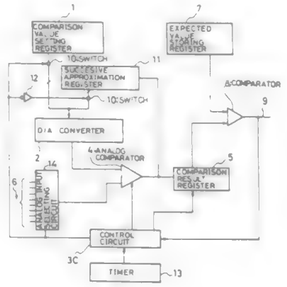
5,341,119
MEASUREMENT CIRCUIT UTILIZING A LOW TCR THICK FILM SENSE RESISTOR
Carl W. Berlin, Bringhurst, and Dwadasi H. R. Sarma, West Lafayette, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.
Division of Ser. No. 806,191, Dec. 13, 1991, Pat. No. 5,221,644.
This application Nov. 6, 1992, Ser. No. 972,334
Int. Cl.[5] H01C *8/00*
U.S. Cl. 338—224 **6 Claims**



1. A circuit comprising:
a sense resistor, a means for measuring the voltage drop across said resistor, wherein said resistor is prepared from a composition comprising:
Pd/Ag present in a weight ratio ranging from about 56/44 to about 60/40 respectively, the total weight of palladium and silver being present in an amount ranging from about 40 to about 87 weight percent of the total composition, a glass frit comprising about 55 to about 57 weight percent SiO_2, about 16 to about 18 weight percent PbO, about 8 to about 10 weight percent Al_2O_3, about 7 to about 9 weight percent CaO, about 4 to about 6 weight percent B_2O_3, about 1.5 to about 2.5 weight percent Na_2O, about 1.5 to about 2.5 weight percent K_2O, and about 0.5 to about 1.5 weight percent MgO, said glass frit being present in an amount ranging from about 5 to about 26 weight percent of the total composition, a screening agent comprising about 8 to about 18 weight percent of the total composition, and zirconium oxide present in an amount ranging from about 0 to about 18 weight percent of the total composition.

5,341,120
COMPARISON CIRCUIT
Toyokatsu Nakajima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 23, 1992, Ser. No. 872,573
Claims priority, application Japan, Apr. 23, 1991, 3-119387
Int. Cl.[5] G05B *1/03;* **G06F** *7/02*
U.S. Cl. 340—146.2 **8 Claims**

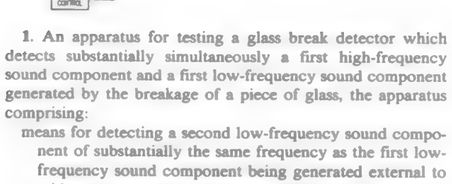
1. A comparison circuit for setting an interrupt request signal provided to a CPU, comprising:
an analog comparator, coupled to receive a comparison value, an external analog input signal characterized by a magnitude value, and a comparison control signal, for comparing, when said comparison control signal is asserted, the comparison value with the magnitude value of the external analog input signal and for setting a comparator output signal when the magnitude value of the external analog input signal coincides with the comparison value;
a comparison result register, coupled to receive the output of said analog comparator and to receive a latching signal, for latching the output of the analog comparator when the latching signal is set;
a control circuit for controlling the analog comparator and comparison result register, wherein said control circuit comprises:
a timer, coupled to receive a clock signal, for dividing the clock signal into constant cycles and providing a timer output signal defining said constant cycles;
an expected value storing register for storing an expected value;



an output comparator, coupled to said expected value storing register to receive said expected value and to said comparison result register to receive the comparator output signal latched therein, for setting the interrupt request signal provided to the CPU when the comparator output signal latched in said comparison result register coincides with the expected value stored by said expected value storing register; and
means, coupled to receive said interrupt request signal, said timer output signal and coupled to control said analog comparator and comparison result register, for setting said comparison control signal and said latching signal in response to said timer output signal every constant cycle when said interrupt signal is not set so that comparison circuit repeatedly compares the input signal magnitude value and comparison value until both values coincide without requiring control by the CPU.

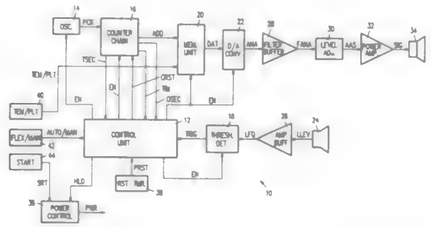
5,341,121
DIFFERENTIAL SCORE INDICATOR SYSTEM FOR BASKETBALL
J. Glenn Rada, 312 Littletown Quarter, Williamsburg, Va. 23185
Filed Dec. 21, 1992, Ser. No. 994,342
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—323 R **10 Claims**

1. A basketball game scoring system for displaying the differential score between two basketball teams and employed with a basketball court having a playing surface with a pair of player benches disposed on a side thereof comprising, in combination:
a visible differential score display unit disposed at each end of the basketball court;
each said differential score display unit facing the playing area of the basketball court and in position to be seen by spectators, game participants on the basketball court and by the occupants of both team benches;
each said visible differential score display unit being provided with color coded indicia means to indicate the score



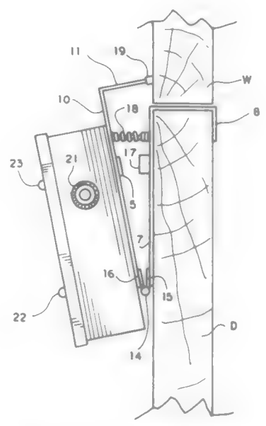
differential between the home and visiting basketball teams during a game; and
operator actuated remote control means to control and change the color of said color coded indicia means as needed while the game is in progress.

5,341,122
PRESSURE ACTUATED GLASS BREAK SIMULATOR
Stephen R. Rickman, Loomis, Calif., assignor to C & K Systems, Inc., Folsom, Calif.
Filed Jun. 22, 1992, Ser. No. 901,864
Int. Cl.[5] G08B *29/00*
U.S. Cl. 340—515 **17 Claims**



1. An apparatus for testing a glass break detector which detects substantially simultaneously a first high-frequency sound component and a first low-frequency sound component generated by the breakage of a piece of glass, the apparatus comprising:
means for detecting a second low-frequency sound component of substantially the same frequency as the first low-frequency sound component being generated external to said apparatus and generating a first signal in response thereto; and
means for generating a second high-frequency sound component of substantially the same frequency as the first high-frequency sound component in response to said first signal,
wherein said second low-frequency sound component and said second high-frequency sound component are directed to the glass-break detector and the glass break detector responds to said second low-frequency sound component and said second high-frequency sound component.

5,341,123
PORTABLE DOOR ALARM
Ralph J. Schuman, Sr., P.O. Box 1161, Absecon, N.Y. 08201, and Robert J. Schuman, P.O. Box 848, Hammonton, N.J. 08037
Filed Dec. 6, 1993, Ser. No. 161,819
Int. Cl.[5] G08B *13/08*
U.S. Cl. 340—546 **5 Claims**



1. A portable door alarm comprising:
a housing having a front side and a back side;
an alarm pushbutton switch extending out from the back side of the housing having a depressed stated and an unpressed state;
a first L-shaped member having a longitudinal portion with a bracket hanger attached at a top end thereof;
a second L-shaped member having a longitudinal portion with a leg portion extending therefrom along a top end thereof;
means for attaching said second L-shaped member to the back side of said housing;
an opening within the longitudinal portion of said second L-shaped member for allowing said alarm pushbutton switch to extend therethrough;
a hinge having a first end thereof connected to a bottom end of said first L-shaped member and a second end thereof connected to a bottom end of said second L-shaped member, said hinge having a closed position maintaining the first L-shaped member in its normal position proximate to said back side of said housing and adjacent to said second L-shaped member;
an engaging member extending from said longitudinal portion of said first L-shaped member to said alarm pushbutton switch for contacting said alarm pushbutton switch thereby placing said alarm pushbutton switch in its depressed state when said first L-shaped member is located in its normal position adjacent to said second L-shaped member;
a biasing member for urging said first L-shaped member to maintain its normal position;
an audible signal generator for producing a distinct audible signal when activated; and
alarm control circuitry having an alarm set state and an alarm unset state, said alarm control circuitry activating said audible signal generator when said alarm pushbutton switch is located in its depressed state and said alarm control circuitry is in said set state.

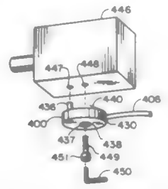
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,124

MOUNTABLE PRODUCT SENSOR AND DISPLAY STAND

Roger J. Leyden, Willow Springs, and Terrance Surma, Bloomingdale, both of Ill., assignors to Se-Kure Controls, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 707,014, May 29, 1991, Pat. No. 5,172,098. This application Aug. 30, 1991, Ser. No. 753,304
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—568 10 Claims



1. An alarm sensor for securing an object, said alarm sensor having a secured and an unsecured state, said sensor comprising:
- a sensor housing having a planar surface with a peg projecting from said surface;
- a connection means spaced from said peg for attaching the sensor housing to the object to be secured with the peg inserted into a recess in the object such that the object is prevented from rotating with respect to the sensor housing;
- an elongate cord housing a first and second conductor and extending from the sensor housing for electrical communication with an alarm system;
- a connecting mean for connecting an end of the elongate cord to a remotely located detector means for detecting the state of the sensor, said detecting means being part of said alarm system;
- a limit switch connected to said first and second conductors and mounted to said sensor housing with a switch actuator projecting from the planar surface, said sensor being in the secured state when said limit switch actuator is depressed against said object; and
- a means on the sensor housing for visually indicating the state of the sensor.

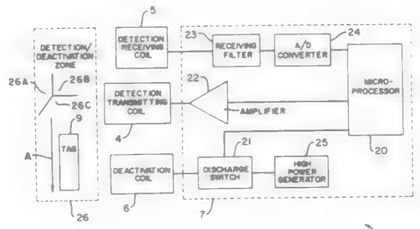
5,341,125

DEACTIVATING DEVICE FOR DEACTIVATING EAS DUAL STATUS MAGNETIC TAGS

Christopher B. Plonsky, Boca Raton; Brent F. Balch, Oakland Park, and David Fallin, Coral Springs, all of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Jan. 15, 1992, Ser. No. 820,972
Int. Cl.[5] G08B *13/14*; A63F *9/02*; H01F *13/00*
U.S. Cl. 340—572 16 Claims

1. A deactivation device for use in an EAS system utilizing a deactivatable type EAS tag, for deactivating an active EAS tag positioned in a detection/deactivation area defined by three orthogonal reference planes, said deactivation device comprising:
- means for detecting the presence of an active EAS tag in the detection/deactivation area, said means for detecting comprising means for transmitting a predetermined detection field into the detection/deactivation area and means for sensing a signal from said active EAS tag when said active EAS tag is situated at a detection position in said detection/deactivation area in response to said detection field, said detection position being a position in said detection/deactivation area at which the detection field results in a response signal from said active EAS tag, and said detection field at said detection position having components in said three orthogonal planes; and
- means for deactivating said active EAS tag comprising means for transmitting a deactivating field into the detection/deactivation area, said deactivating field having a configuration preselected in relationship to said detection field such that the deactivating field deactivates said active EAS tag when said active EAS tag is situated at a



deactivating position which is at a preset offset distance from said detection position and at which said deactivating field has components having orientations matched to the orientations of said components of said detection field at said detection position in said three orthogonal planes.

5,341,126

SELECTIVE EXIT CONTROL SYSTEM

Roger O. Boykin, 249 Symphony La., Shreveport, La. 71105

Filed Dec. 26, 1991, Ser. No. 814,920
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—573 16 Claims

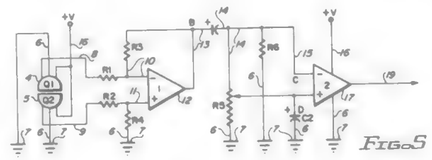


FIG. 5

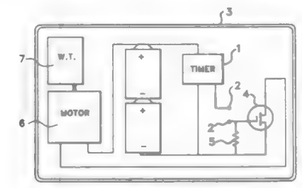
1. A selective exit control system for determining when a selected person exits a controlled area, comprising
- an anklet adapted for attachment to the ankle of the selected person and at least one magnet having a selected flux provided in said anklet;
- a magnetic detection integrated circuit having at least one "Hall Effect" integrated circuit sensor for generating a detection field having first predetermined magnetic wave-shape characteristics, said detection field taking on second predetermined magnetic wave-shape characteristics when said anklet is present in the detection field, said at least one sensor further receiving the detection field and providing a sensor signal having first predetermined signal characteristics when said anklet is present in the detection field and second predetermined signal characteristics when said anklet is not present in the detection field;
- buffer/amplifier circuit means connected to said at least one "Hall Effect" integrated circuit sensor for amplifying the signal characteristics of the sensor signal; and
- alarm means connected to said magnetic detection integrated circuit and responsive to said buffer/amplifier circuit means amplifying said first predetermined signal characteristics of the sensor signal to provide an alarm signal;
- whereby movement of the selected person through said detection field while wearing said anklet actuates said alarm means.

5,341,127

SELF-CONTAINED BED WETTING ALARM

Robert J. Smith, 1285 N. Cedarbrook Rd., Boulder, Colo. 80304

Continuation of Ser. No. 856,398, Mar. 23, 1992, abandoned.
This application Dec. 6, 1993, Ser. No. 163,605
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—604 8 Claims



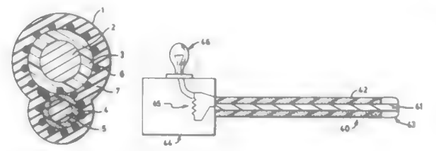
1. A nocturnal bedwetting alarm for alerting a sleeping user to a presence of urine by discontinuous mechanical vibrations, said alarm comprises:
- an enclosure for housing the entire alarm, said enclosure has a sensing surface;
- at least two sensor terminals on said sensing surface of said enclosure for sensing the presence of urine;
- an electromechanical device for inducing mechanical vibrations in said enclosure;
- switching means responsive to said terminals sensing the presence of urine for applying voltage to said electromechanical device so that said device induces vibrations in said enclosure; and
- a timer circuit electrically connected between said switching means and said electromechanical device to alternately open and close the circuit's electrical connection between said switching means and said electromechanical device so as to produce discontinuities in vibrations in said enclosure and thereby awaken the user.

5,341,128

SENSOR ELEMENT FOR DETECTION OF HYDROCARBONS

Paul Keyser, West Newbury, and George Watchko, Stoneham, both of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed Apr. 10, 1992, Ser. No. 866,725
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—605 14 Claims



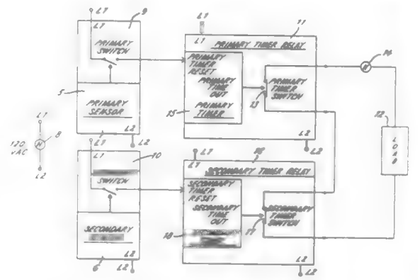
1.) A detector for liquid hydrocarbons comprising:
- a.) a first conductor surrounded by a non conductive layer;
- b.) A second conductor formed of a hydrocarbon swellable, conductively filled elastomer, the second conductor being in close proximity to the first conductor wherein the elastomer is conductive in the absence of a hydrocarbon containing liquid and is swellable and nonconductive in the presence of a hydrocarbon containing liquid;
- c.) an abuse/abrasion resistant jacket surrounding the first and second conductors; and
- d.) a non conductive, hydrocarbon permeable outer layer surrounding the jacket.

5,341,129

ZERO-MOTION DETECTION PROXIMITY SWITCH

Robert L. Wilson, and David P. Minter, both of Martinsville, Va., assignors to RPM Detection, Inc., Martinsville, Va.

Filed Nov. 7, 1991, Ser. No. 788,816
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—670 22 Claims



1. A zero motion detection apparatus for a material transporting system, the apparatus comprising:
- sensor means for detecting movement of the material transporting system;
- primary timer means, coupled to the sensor means, for counting the time during which no movement is detected by the sensor means up to a first predetermined period, the time counted by said primary timer means being reset in response to the sensor means detecting movement;
- secondary timer means, coupled to the sensor means, for counting the time during which no movement is detected by the sensor means up to a second predetermined period, the time counted by said secondary timer means being reset in response to the sensor means detecting movement; and
- alarm/interrupt means for generating an alarm or interrupting movement of the transporting system in response to the primary timer means having counted the first predetermined period and for generating an alarm or interrupting movement of the transporting system in response to the secondary timer means having counted the second predetermined period.

5,341,130

DOWNWARD COMPATIBLE AGV SYSTEM AND METHODS

James V. Yardley, Centerville; Gary L. Whatcott, Holladay; John A. M. Petersen; Bryan A. Bloomfield, both of Bountiful; Vaughn W. Guest, Farmington; Rick S. Mottes, Roy; Robert K. Forman, Taylorsville; L. Bruce Christensen, Kaysville, all of Utah; Joseph Zuercher, Brookfield, and Herman P. Schutten, Milwaukee, both of Wis., assignors to Eaton-Kenway, Inc., Salt Lake City, Utah

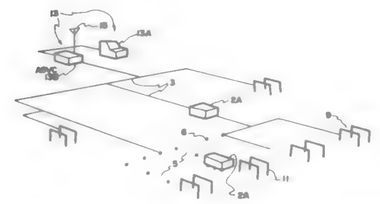
Division of Ser. No. 621,486, Dec. 3, 1990, Pat. No. 5,281,901. This application Jun. 26, 1992, Ser. No. 908,691
Int. Cl.[5] G06F *15/50*
U.S. Cl. 340—825.06 37 Claims

1. A downwardly compatible automated guided vehicle system wherein automatic guided vehicles at different times traverse a plurality of types of guidepaths, said system comprising:
- at least one guidepath marked only by a guidewire;
- at least one other guidepath marked only by widely dispersed update markers;
- at least one automated guided vehicle comprising means for navigating and guiding over the guidewire marked guidepath and for navigating and guiding over the guidepath marked only by update markers and which at different

VOL 1165 ISS 4 AG 23 1994 UMI

times traverses said at least one guidepath marked only by a guidewire and said at least one other guidepath of marked only by update markers of said plurality of guidepaths;

central means for automatically planning and controlling activity of the at least one automated guided vehicle;



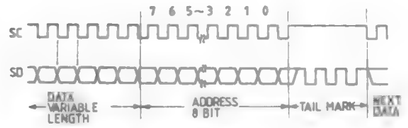
means for sending and receiving two-way communications comprising the same type and rate of data presentation, independent of the type of guidepath traveled by the vehicle, between the central means and the at least one automated guided vehicle.

5,341,131

COMMUNICATIONS SYSTEM AND A SYSTEM CONTROL METHOD

Masakazu Hoshino, Tamamura, and Tetsuo Sato, Takasaki, both of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer System Ltd., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 853,922
Claims priority, application Japan, Mar. 29, 1991, 3-091737
Int. Cl.[5] G08C *19/16*
U.S. Cl. 340—825.21 **25 Claims**



1. A communications apparatus comprising:

a sending station;

at least one receiving station;

a data bus circuit connected between the sending station and the receiving station for transferring a series of data bits from the sending station to the receiving station; and

a clock bus circuit connected between the sending station and the receiving station for transferring clock signals synchronous with each of the series of data bits from the sending station to the receiving station;

wherein the sending station also transmits control information for controlling the state of the receiving station onto the data bus circuit while the potential of the signal on the clock bus circuit is fixed by the sending station.

5,341,132

VEHICLE POSITION ALARM APPARATUS

Mark K. Dorey, and Harrell E. Dorey, both of 1001 Nob Hill Ave., Pinole, Calif. 94564

Filed May 10, 1993, Ser. No. 58,149
Int. Cl.[5] B60Q *1/48*
U.S. Cl. 340—932.2 **4 Claims**

1. A vehicle position alarm apparatus, comprising,

a resilient housing, having a housing bottom wall, with a housing central top wall spaced from and parallel the housing bottom wall, and

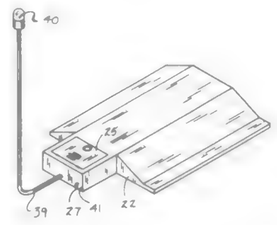
a first top wall ramp extending from a first side of the central top wall canted towards the bottom wall, and

a second top wall ramp extending from a second side of the central top wall canted towards the bottom wall, with a bottom wall recess directed into the bottom wall below the central top wall, and

the housing further having a housing first side wall spaced from a housing second side wall, with the housing first side wall including a control housing projecting from the first side wall, and

an alarm cavity directed into the housing in adjacency to the central top wall, with the alarm cavity including an alarm cavity floor, with the alarm cavity further including an alarm cavity roof below the central top wall, with a first contact plate mounted to the alarm cavity roof, and a second contact plate mounted to the alarm cavity floor in a facing relationship to the first contact plate, wherein the alarm cavity roof is arranged for deflection to permit communication of the first contact plate with the second contact plate upon a vehicle reflecting the central top wall, and

a first electrical communication cable in electrical communication with the first contact plate, and a second electrical communication cable directed to the second contact plate, with the first electrical communication cable and the second electrical communication cable directed to the control housing, and



alarm means mounted within the control housing for actuation of an audible alarm upon the first contact plate directed into the communication with the second contact plate, and

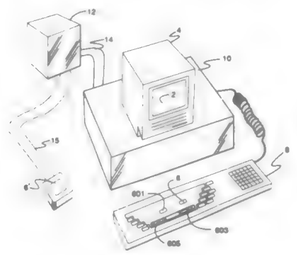
a control housing includes a control housing top wall and a control housing bottom wall, wherein the control housing top wall is coplanar with the central top wall, and the control housing bottom wall is coplanar with the housing bottom wall, and the control housing including control housing side walls spaced from the first side wall, with a control housing cavity directed into the control housing from the control housing top wall, with the control housing top wall having a top wall lid removably mounted relative to the control housing top wall, with the top wall lid including said alarm means mounted thereon, wherein the alarm means includes a battery member and speaker assembly, with the battery member and the speaker assembly arranged in electrical communication with the first contact plate and the second contact plate, with the lid including lid apertures and the speaker assembly mounted to the control housing lid in communication with the lid apertures, and a first contact spring finger mounted to the first cable, and a second spring finger mounted to the second cable, with a third spring finger mounted to the lid and a fourth spring finger mounted to the lid, with the third spring finger and the fourth spring finger arranged for communication with the respective first spring finger and second spring finger upon the lid directed in a coplanar relationship with the control housing top wall, with the third spring finger and the fourth spring finger arranged in electrical communication with the battery member and the speaker assembly.

5,341,133

KEYBOARD HAVING TOUCH SENSOR KEYS FOR CONVEYING INFORMATION ELECTRONICALLY

Robert L. Savoy, Arlington, and J. Winfield Hill, Chestnut Hill, both of Mass., assignors to The Rowland Institute for Science, Inc., Cambridge, Mass.

Filed May 9, 1991, Ser. No. 697,950
Int. Cl.[5] H03M *11/00, 17/94;* **G06F** *3/00*
U.S. Cl. 341—22 **26 Claims**



1. A keyboard for a electronic device comprising

a first key having

a touch surface which, in one mode, is responsive to pressing by a user's finger to indicate a selection associated with the first key, and

an array of sensors exposed at the touch surface to detect, in another mode, the location where a finger is positioned on the touch surface as an indication of information to be conveyed by a user, and

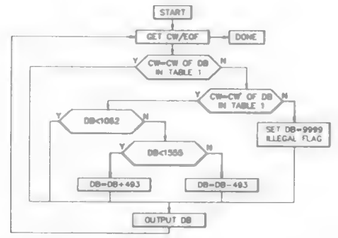
a second key having an array of sensors which are exposed at a touch surface of the second key and are sensitive to manipulations of a finger on the touch surface to provide signals for switching the first key from the one mode to the other mode.

5,341,134

SIMPLE CODING SCHEME FOR DC FREE CHANNEL CODES OF FORM M/N, WHERE M=N−1 AND M AND N ARE POSITIVE INTEGERS

Boonsieng Benjauthrit, La Canada, Calif., assignor to Datatape Incorporated, Pasadena, Calif.

Filed Dec. 30, 1992, Ser. No. 998,695
Int. Cl.[5] H03M *7/20*
U.S. Cl. 341—58 **4 Claims**



1. A method of producing a DC free channel encoded data stream comprising the steps of:

providing successive input code words of M bits;

encoding each input code word of M bits into an output codeword of N bits, where M=N−1 and M and N are positive integers;

wherein the N bit output codeword is selected as follows; (a) to have no more than four 0s or 1s at both sides of said output codeword and no more than seven 0s or 1s in the middle of said output codeword; (b) to have no 01 or 10 patterns; and (c) to have a codeword digital sum (cds) value which does not exceed ±6; and

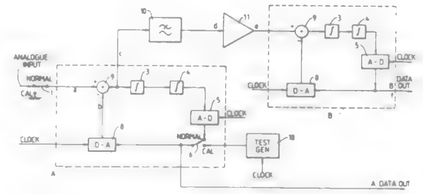
wherein, each N bit output codeword has a complementary output codeword which is chosen in order to minimize the overall digital sum variation of the encoded data stream.

5,341,135

ANALOGUE-TO-DIGITAL CONVERTERS, DIGITAL-TO-ANALOGUE CONVERTERS, AND DIGITAL MODULATORS

Timothy H. B. Pearce, Chelmsford, Great Britain, assignor to GEC-Marconi Limited, Middelsex, United Kingdom

Filed Apr. 30, 1992, Ser. No. 876,781
Claims priority, application United Kingdom, May 3, 1991, 9109637
Int. Cl.[5] H03M *1/10*
U.S. Cl. 341—120 **9 Claims**



1. An analog-to-digital converter comprising:

an input for analog signals;

filter means having an input for receiving, from a summing node, an error signal;

first quantizing means for producing a first digital signal from a signal derived from the output of the filter means;

a feedback loop for feeding a signal derived from the first digital signal to be combined in analog form with a signal derived from the analog input signal at the summing node, so that the filter means in use receives the error signal representing the total error between the signal derived from the analog input signal and the analog representation of the first digital signal;

means for filtering the error signal to remove noise outside the passband of the analog-to-digital converter;

second quantizing means for producing a second digital signal representative of the filtered error signal;

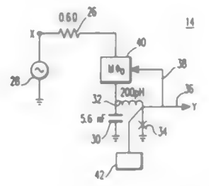
means for combining the first and second digital signals to produce a digital output signal representative of the analog input signal;

an equalization network for offsetting phase and amplitude errors introduced by the filtering means and by the second quantizing means before the first and second digital signals are combined; and

means for calibrating the equalization network by means of a test signal at intervals of time.

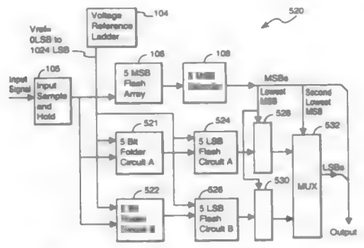
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,136
BANDPASS SIGMA-DELTA MODULATOR FOR ANALOG-TO-DIGITAL CONVERTERS
John X. Przybysz, Penn Hills, and Donald L. Miller, Penn Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 16, 1992, Ser. No. 945,803
Int. Cl.[5] H03M *1/00*
U.S. Cl. 341—133 **6 Claims**



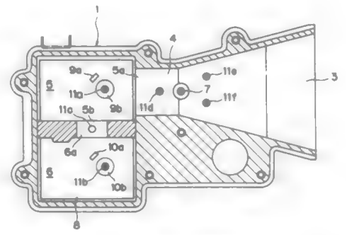
1. A bandpass sigma-delta modulator analog-to-digital converter for converting an analog input signal to a digital output signal, said converter comprising:
   a. a resistor-inductor-capacitor circuit connected to said analog input signal, said resistor-inductor-capacitor circuit being circuit resonant at an intermediate frequency, said resistor-inductor-capacitor circuit producing a current;
   b. a Josephson junction quantizer connected to said resistor-inductor-capacitor circuit and through which said current passing through said circuit flows, said Josephson junction quantizer emitting a voltage pulse which reduces said current in said circuit when current flowing through said Josephson junction quantizer exceeds a critical current of the Josephson junction quantizer;
   c. feedback means connected to said Josephson junction quantizer and feeding back to said resistor-inductor-capacitor circuit a selected multiple of each voltage pulse generated by said Josephson junction quantizer; and
   d. means for generating said digital output signal from said voltage pulses generated by said Josephson junction quantizer.

5,341,137
ANALOG TO DIGITAL CONVERTER USING PARALLEL FOLDER AND DECODER CIRCUITS
Philip W. Yee, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Nov. 6, 1992, Ser. No. 972,752
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—156 **6 Claims**



1. An analog to digital converter comprising:
   a first folder circuit that maps an analog input voltage to a first folder output voltage;
   a second folder circuit that maps said analog input voltage to a second folder output voltage;
   first and second flash circuits that generate first and second digital representations of said first and second folder output voltages, respectively;
   an MSB conversion circuit for generating a digital output in response to said analog input, said first and second digital representations being generated contemporaneously with generation of said digital output; and
   a multiplexer that selects one of said first and second digital representations in accordance with said digital output of said MSB conversion circuit.

5,341,138
STRUCTURE OF RECEPTION FREQUENCY CONVERTING PORTION IN A MULTI-BAND MICROWAVE DETECTOR
Hisao Ono, Okazaki, and Takeshi Hatasa, Toyoto, both of Japan, assignors to Yupiteru Industries Co., Ltd., Tokyo, Japan
Filed Mar. 17, 1993, Ser. No. 32,261
Claims priority, application Japan, Mar. 24, 1992, 4-066188
Int. Cl.[5] G01S *7/40;* **H04B** *1/26;* **H01P** *7/06*
U.S. Cl. 342—20 **7 Claims**

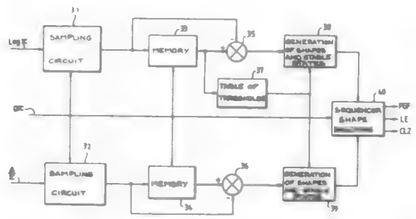


1. A structure of a reception frequency converting portion of a multi-band microwave detector, and including a microwave circuit comprising:
   a horn antenna;
   two-port cavity integrally formed with said horn antenna and having one port communicated with a throat portion of said horn antenna;
   one-port cavity integrally formed with said two-port cavity and communicated with the other port of said two-port cavity;;
   a mixer diode located at said throat portion of said horn antenna;
   a first local oscillator provided within said two-port cavity; and
   a second local oscillator provided within said one-port cavity.

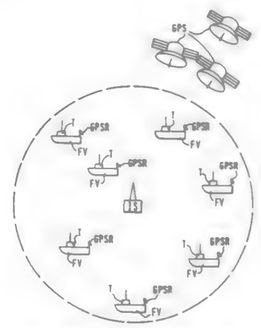
5,341,139
METHOD AND DEVICE TO DETECT THE GARBLING OF PULSES RECEIVED BY A SECONDARY RADAR
Philippe Billand, Fontenay aux Roses; Claude de Volder, Auffargis, and Michel Wybierala, Versailles, all of France, assignors to Thomson-CSF, Puteaux, France
Filed Mar. 26, 1993, Ser. No. 37,582
Claims priority, application France, Mar. 31, 1992, 92 03868
Int. Cl.[5] G01S *13/76, 13/68*
U.S. Cl. 342—40 **7 Claims**

1. A method to detect the garbling of pulses received by a secondary reception radar with monopulse reception antenna making it possible to obtain a pulse power signal $Log\Sigma(t)$ and a pulse difference measurement signal $\Delta/\Sigma(t)$ synchronous with the received pulses, wherein said method consists in detecting, at the same time, ripples superimposed on the power

signal $Log\Sigma(t)$ and ripples superimposed on the difference measurement signal $\Delta/\Sigma(t)$, the presence of at least two garbled pulses being detected by ripples on at least one of the two signals $Log\Sigma(t)$, $\Delta/\Sigma(t)$.



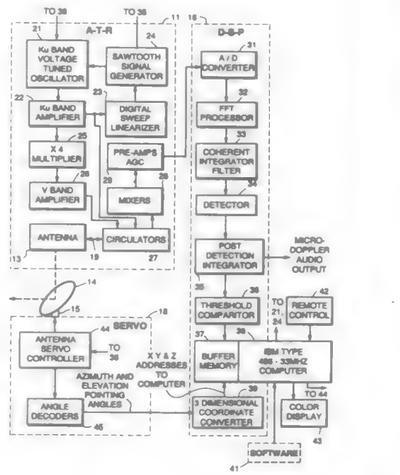
5,341,140
TRANSPONDER SYSTEM
Kenneth H. Perry, Maldon, United Kingdom, assignor to GEC-Marconi Limited, Stanmore, United Kingdom
Filed Jan. 25, 1993, Ser. No. 934,669
Claims priority, application United Kingdom, Jun. 14, 1990, 9013349.7
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—44 **9 Claims**



1. A transponder system comprising an interrogating source of H.F. electromagnetic radiation, and a plurality of transponders, wherein each includes a token reader unit to receive a removable token including on board data processing capability, the transponders, or a group of transponders, each being arranged when interrogated to transmit a unique H.F. response modulated by information carried upon the token.

5,341,141
THREE DIMENSIONAL IMAGING RADAR
Lawrence M. Frazier, West Covina; James B. Sheffler, Chino, and Ronald F. Carlson, Highland, all of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.
Filed Mar. 9, 1993, Ser. No. 28,451
Int. Cl.[5] G01S *13/89*
U.S. Cl. 342—59 **14 Claims**

1. A three dimensional imaging radar system comprising:
   an antenna system;
   a servo control system coupled to the antenna system for adaptively controlling movement thereof in response to control signals applied thereto, and for providing azimuth and elevation pointing angle signals derived from the antenna system as output signals therefrom;
   first and second radar transmitters coupled to the antenna system for providing radar signals in two predetermined radar bands that are transmitted by the antenna system to form a radar beam;
   a radar receiver coupled to the antenna system that is adapted to receive radar signal energy reflected from a target at a selected one of the first and second radar bands;
   a digital signal processor coupled to the radar receiver for processing radar return signals from targets from which the radar signals are reflected, wherein the digital signal processor comprises:
   an analog to digital converter;
   a Fourier transform processor coupled to the analog to digital converter;
   a coherent integrator filter coupled to the Fourier transform processor for providing low pass and high pass filtering of the signals to reduce noise;
   a detector coupled to the coherent integrator filter that comprises a digital Pythagorean processor that converts the signal to amplitude values for each range bin;
   a noncoherent integrator coupled to the detector;
   an adaptive threshold comparator coupled to the integrator;



   a buffer memory coupled to the adaptive threshold comparator that comprises a predetermined number of range cells that are adapted to respectively store the amplitude of the radar return signal at each range; and
   a digital scan converter comprising a three dimensional coordinate converter coupled to the buffer memory and to the servo control system for converting the azimuth and elevation pointing angle signals provided thereby into x, y and z addresses of radar signals stored in the buffer memory;
   a computer coupled to the buffer memory of the digital signal processor, to the first and second radar transmitters, and to the servo control system, for causing the transmission of the radar signals from the selected one of the radar systems, for adaptively controlling the movement of the antenna system by way of the servo system, and for processing the x, y and z addresses of radar signals stored in the buffer memory to produce a three dimensional image for display; and
   a display coupled to the computer for displaying the three dimensional radar image generated by the computer.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,142

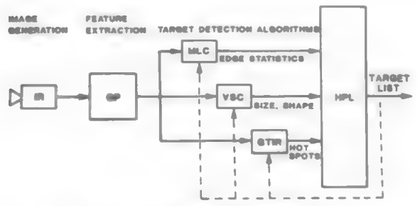
TARGET ACQUISITION AND TRACKING SYSTEM

James J. Reis, La Palma; Anthony L. Luk, Rancho Palos Verdes; Antonio B. Lucero, Anaheim, and David D. Garber, Cypress, all of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation of Ser. No. 77,717, Jul. 24, 1987, abandoned. This application Aug. 28, 1990, Ser. No. 576,121

Int. Cl.[5] G01S *13/86, 13/88, 13/89*

U.S. Cl. 342—64 59 Claims



43. A target detection apparatus comprising

MLC means for determining joint feature data and for mapping the same into a probability of target with confidence bounds based upon a maximum likelihood statistic experimentally derived from a training, of known examples of known imagery to select a target,

GTIR means for determining target-to-interference ratio matched filter feature data in such a manner so to be independent or anticorrelated to other target detection means, and for mapping the same into a probability of target with confidence bounds based on a maximum likelihood statistic experimentally derived from said training set to select a target,

VSC means for determining grey level feature data in such a manner as to be independent or anticorrelated singly and jointly to said MLC and GTIR means, and for mapping said grey level feature data into a probability of target with confidence bounds based upon a maximum likelihood statistic experimentally derived from said training set to select a target,

HPL means for combining (or mapping) said target selections from said means into a composite probability of target with confidence bounds based upon a maximum likelihood statistic experimentally derived from a training set,

means for determining if an input data cluster contains a probability of target assessment,

means for determining the types of probability assessments,

means for forwarding MLC probability of target data to a one dimensional decision Parzen table,

means for forwarding VSC data to a one dimensional decision Parzen table,

means for merging MLC probability target and VSC probability of target and data,

a two dimensional Parzen table responsive to said merged MLC and VSC data,

means for merging MLC probability of target and GTIR probability of target and data,

a two feature Parzen table responsive to said merged MLC and GTIR data,

a single feature Parzen table responsive to GTIR probability of target data,

means to merge GTIR probability of target and VSC probability of target and data,

a two feature Parzen table responsive to said merged GTIR and VSC probability of target data,

means to merge MLC, GTIR, and VSC probability of target, and

a three feature Parzen table responsive to said merged MLC, GTIR, and VSC probability of target data, and

target prioritization means for ranking the target output of said HPL means to yield a target ranking list.

5,341,143

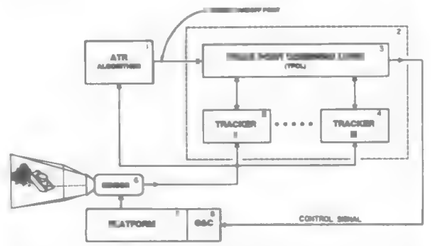
HIERARCHICAL TRACKER AND METHOD

James J. Reis, LaPalma; Anthony L. Luk, Rancho Palos Verdes, and David D. Garber, Cypress, all of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 77,717, Jul. 24, 1987, abandoned. This application Aug. 19, 1988, Ser. No. 234,710

Int. Cl.[5] G01S *13/66;* G06F *15/50*

U.S. Cl. 342—64 24 Claims



24. In apparatus for guiding a projectile to a target in a scene using a scene imaging sensor, said projectile having a guidance and control system for aiming the projectile at the target, using a first tracker for analyzing the scene and for selecting a first track point representative of a target and a first confidence value serving as a reliability measure of the first selected track point, a second tracker for analyzing the scene and for selecting a second track point representing the target and a second confidence value which serves as a reliability measure of the second selected track point, each of said trackers being constructed and arranged to operate independently in a manner that is substantially statistically uncorrelated with respect to each other,

means for estimating the position of the sensed template from the previous track point location,

means for inputting the slant range to the track point from the guidance and control system,

means for estimating the track gate size due to range induced growth,

means for estimating the uncertainty in target location due to self motion of the target and apparent target movement due to platform velocity measurement errors,

means for calculating the search neighborhood from the target uncertainty data,

means for executing track procedures for each tracker to generate updated track points and confidence values,

means for inputting the first tracker track point,

means for inputting the second tracker track point,

means for inputting the first tracker confidence value,

means for inputting the second tracker confidence value,

means for calculating relative target movement between the first tracker and the second tracker track points,

means for calculating track point separation distance,

means for calculating predicted track point location assuming uniform target motion,

means for calculating composite confidence index,

case table means for specifying the manner of combining track point data based on the above confidence values,

means for selecting type of processing from case table,

means for calculating composite track point for X,Y coordinates,

means for generating guidance and control error correction,

means for outputting error correction to guidance and control so that platform is redirected to new target track point.

means for calculating relative target movement between the first tracker and the second tracker track points,

means for calculating track point separation distance,

means for calculating predicted track point location assuming uniform target motion,

means for calculating composite confidence index,

case table means for specifying the manner of combining track point data based on the above confidence values,

means for selecting type of processing from case table,

means for calculating composite track point for X,Y coordinates,

means for generating guidance and control error correction,

means for outputting error correction to guidance and control so that platform is redirected to new target track point.

5,341,144

VEHICULAR CRUISE CONTROL SYSTEM AND RADAR SYSTEM THEREFOR

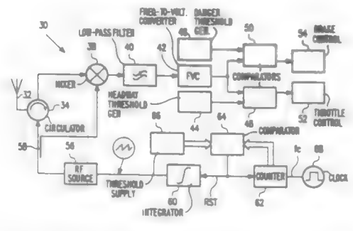
Andrew G. Stove, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1993, Ser. No. 60,385

Claims priority, application United Kingdom, May 8, 1992, 9209974

Int. Cl.[5] G01S *13/00*

U.S. Cl. 342—70 5 Claims



1. Vehicular apparatus including a radar system for predicting the range of a target relative to the radar system at a prediction time t seconds in the future, said apparatus comprising:

a. means for transmitting a signal at a frequency which repeatedly sweeps from a base frequency f at a rate r=sweep excursion/sweep duration;

b. means for receiving a return signal reflected by the target;

c. mixing means for mixing the return signal with a signal representative of the transmitted signal to provide a difference signal, said difference signal having a frequency which comprises a component due to the range of the target from the radar system and a component due to the velocity of the target relative to the radar system;

said means for transmitting a signal including means for sweeping the transmitted signal at a rate r=f/t such that the component of the frequency of the difference signal due to the range of the target accurately represents the distance relative to the radar system at the prediction time t even if the target is moving relative to the radar.

5,341,145

METHOD FOR TRACKING A RADAR TARGET

Christer Eckersten, Järfälla, and Bengt-Olof Ås, Täby, both of Sweden, assignors to NobelTech Electronics AB, Jarfalla, Sweden

Filed Jan. 14, 1993, Ser. No. 4,236

Claims priority, application Sweden, Jan. 16, 1992, 9200123-9

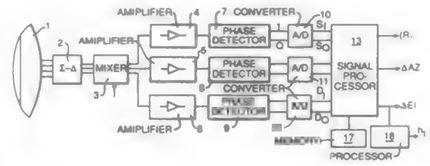
Int. Cl.[5] G01S *13/44*

U.S. Cl. 342—148 9 Claims

1. A method for tracking a radar target, particularly in low-altitude tracking, in which the imaginary part of the complex elevation error signal is utilized, said method comprising the steps of:

a) calculating the value of the imaginary part of the complex elevation error signal on the basis of radar signal information occurring for a plurality of frequencies in a repeatable sequence;

b) utilizing the calculated values of the imaginary part of the complex elevation error signal according to the above step a for the different frequencies for identifying the position of the target within an unambiguous interval;



c) utilizing the values of the imaginary part of the complex elevation error signal calculated for positions in proximity to the zero crossing for determining a measure of the inclination of the imaginary part at the zero crossing;

d) comparing the inclination determined in accordance with the above step c with inclinations calculated in the general case for zero crossings for determining the unambiguous interval of the current zero crossing;

e) calculating the elevation angle or target height on the basis of the unambiguous interval association and position of the target within the unambiguous interval.

5,341,146

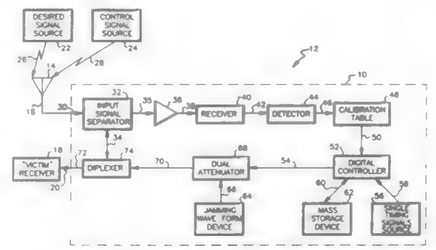
COVERT REMOTE ELECTRONIC WARFARE SIMULATOR

Michael D. Vennum; Mark Hynes, and Gary Conover, all of Sierra Vista, Ariz., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 4, 1993, Ser. No. 103,268

Int. Cl.[5] G01S *7/40, 7/38*

U.S. Cl. 342—170 23 Claims



1. The method of electronic warfare signal simulation comprising the steps of:

generating a first signal as a desired signal;

generating and propagating by radio transmission a second, low power signal over a distance as a control signal;

receiving the first and second signals with a "victim" antenna;

separating the first and second signals;

converting the second signal to one or more digital words having time-varying values representative of the environmental effects on the propagated second signal;

generating a third signal as a jamming signal;

periodically adjusting the third signal strength according to the value of the digital words;

VOL 1165 ISS 4 AG 23 1994 UMI

combining the first signal and the third signal to produce a simulated jamming signal; and

outputting the simulated jamming signal to a "victim" receiver.

5,341,147

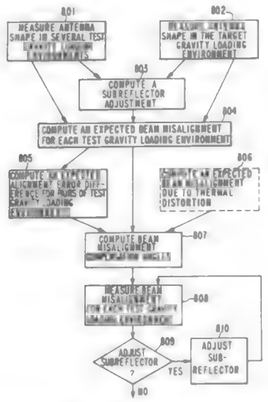
METHOD FOR MEASURING AND CORRECTING ANTENNA RF BEAM ALIGNMENT

William G. Scott, Saratoga, Calif., assignor to Space Systems/-Loral, Inc., Palo Alto, Calif.

Filed Sep. 23, 1992, Ser. No. 949,714

Int. Cl.[5] H01Q *3/00*

U.S. Cl. 342—360 **20 Claims**



1. A method for predicting a target misalignment angle of a beam of an antenna when said antenna is in a target gravity loading environment, said antenna having a gravity sensitive shape, said method comprising the steps of:

(a) measuring said antenna shape in several test gravity loading environments;

(b) measuring said antenna shape in said target gravity loading environment;

(c) computing an adjustment for an antenna component that changes beam direction so as to minimize an angle of beam misalignment for said measured antenna shapes from steps (a) and (b);

(d) for each of said several test gravity loading environments and said target gravity loading environment, computing an expected shape beam misalignment angle from said measured antenna shapes from steps (a) and (b) and using said computed adjustment that minimizes said angle of beam misalignment for said antenna component that changes beam direction;

(e) measuring a test beam misalignment angle in said several test gravity loading environments; and

(f) computing said target beam misalignment angle using said measured test beam misalignment angles and using said computed shape beam misalignment angles.

5,341,148

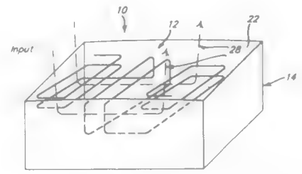
HIGH FREQUENCY MULTI-TURN LOOP ANTENNA IN CAVITY

Carlton H. Walter; Donn V. Campbell, both of Poway, and Robert V. Devore, Ramona, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 29, 1991, Ser. No. 799,793

Int. Cl.[5] H01Q *11/12*

U.S. Cl. 343—742 **22 Claims**



1. A compact high frequency loop antenna comprising:

a conductive surface having a concave cavity formed therein for receiving a magnetic field having a given distribution within the cavity;

current loop means located at least partially in said cavity and including a plurality of conductive loop elements forming a plurality of openings therein, each loop element being located in said cavity as a function of the distribution of the magnetic field distribution in said cavity, wherein at least two loop elements form different angles relative to each other to enhance the magnetic coupling between said current loop means and said conductive surface; and

a first terminal coupled to said conductive loop element and providing electrical connection to a transceiver for transmitting and receiving desired signals.

5,341,149

ANTENNA ROD AND PROCEDURE FOR MANUFACTURING SAME

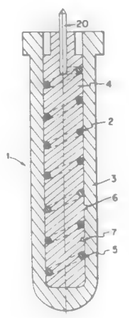
Veli-Matti Valimaa, Halikko; Ari Leman, Pertteli; Petri Hossi, and Jari Olkkola, both of Salo, all of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Mar. 24, 1992, Ser. No. 856,283

Claims priority, application Finland, Mar. 25, 1991, 911435

Int. Cl.[5] H01Q *11/08, 1/40*

U.S. Cl. 343—895 **8 Claims**



1. A method for producing an antenna rod, comprising the steps of:

(a) joining an antenna lead with a rod-shaped supporting core structure by winding the antenna lead into a helical coil around the supporting core structure,

(b) inserting the antenna lead and the supporting core structure in a cavity of a casting mold, which cavity is substantially of the shape of the antenna rod, said antenna lead and supporting core structure being positioned in said mold to extend longitudinally in said antenna rod;

(c) filling the cavity of the casting mold with molten flexible thermoplastic material,

(d) solidifying the flexible thermoplastic material in the casting mold to form said antenna rod; and

(e) removing the rod from the casting mold.

5,341,150

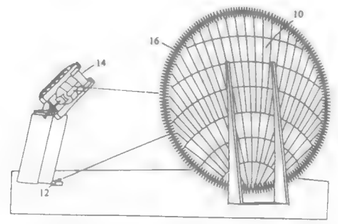
LOW SIDELOBE REFLECTOR

Edward B. Joy, Stone Mountain, Ga., assignor to Georgia Tech Research Corp., Atlanta, Ga.

Continuation-in-part of Ser. No. 250,437, Sep. 28, 1988, abandoned. This application Feb. 14, 1991, Ser. No. 656,285

Int. Cl.[5] H01Q *15/14*

U.S. Cl. 343—912 **10 Claims**



1. A method of optimizing surface currents within a transition region of a reflector surface characterized by an aperture field by using a plurality of identically shaped serrations having tips comprising the steps of:

selecting a number of serrations, and a length and width of each serration;

selecting a transition function for said transition region;

determining a shape of each serration by inverting the transition function and solving the equation:

$$r(\phi)=r_{min}+(r_{max}-r_{min})\cos^{-1}[2(\phi/360°/2N)^{1/A}-1]/\pi,$$

where

$r(\phi)$ is the radius of one half of one of the identical serrations as a function of the angle ϕ, with the radius and the angle both measured from the center of the reflector,

r_{min} is the radial distance from the center of the reflector to the beginning of the transition region,

r_{max} is the radial distance from the center of the reflector to the end of the transition region,

N is the number of serrations, and

A is a non-zero parameter; and

forming said serrations having the selected length, width and shape within said transition region on said reflector surface.

5,341,151

LIQUID CRYSTAL COLOUR DISPLAY DEVICE WITH ZIG-ZAG PATTERN

Alan Knapp, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

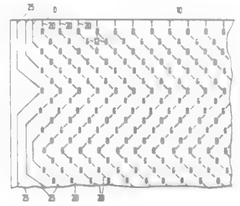
Filed Oct. 6, 1992, Ser. No. 957,296

Claims priority, application United Kingdom, Oct. 18, 1991, 9122173

Int. Cl.[5] G09G *3/30*

U.S. Cl. 345—58 **15 Claims**

1. A liquid crystal colour display device comprising liquid crystal picture elements for displaying three different colours which are strayed in rows and columns with each column comprising picture elements associated with a respective colour, in which the picture elements are each associated with a respective switching element and are addressable via first and second sets of address conductors which cross one another with each row of picture elements being connected with a respective address conductor of the first set and with each



address conductor of the second set being connected with a respective picture element each row and associated with picture elements of more than one colour, characterised in that each address conductor of the second set is connected with respective picture elements in at least three successive columns.

5,341,152

INPUT DEVICE FOR CAD

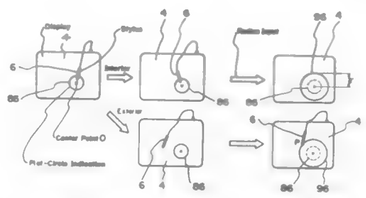
Ryuji Arai, Sapporo; Toru Eshita, Tokyo; Kaoru Niimi, Tokyo; Tatsuyoshi Ikuta, Tokyo; Hiroyuki Furuichi, Tokyo, and Tetsuya Iwanaga, Tokyo, all of Japan, assignors to Mutoh Industries Ltd., Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 737,124

Claims priority, application Japan, Sep. 26, 1990, 2-256538

Int. Cl.[5] G09G *1/06*

U.S. Cl. 345—133 **7 Claims**



7. A method of inputting data in a computer aided design apparatus of the type in which a digitizer is situated above a display device, the digitizer and the display device having a one to one relationship, wherein an operator inputs data to the apparatus through the digitizer and a cursor device and a keyboard for generating designs on a display device, said method comprising the steps of:

selecting from a command menu, using the cursor device, a circle command and drawing a plot circle on the display device at a position wherein the center of said plot circle corresponds to a first point selected by said cursor device;

selecting a second point with the cursor device which is within or out of said plot circle;

determining whether said second point selected is within or out of said plot circle;

generating, when the second point selected is within said plot circle, circle data whose center coincides with the center of said plot circle and radius corresponds to data inputted through the keyboard;

generating, when the second point selected is out of said plot circle, circle data whose center coincides with the center of said plot circle and perimeter passes through a third point selected by said cursor device; and

VOL 1165 ISS 4 AG 23 1994 UMI

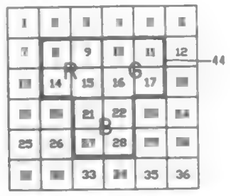
displaying a circle on the display device corresponding to said generating circle data.

5,341,153

METHOD OF AND APPARATUS FOR DISPLAYING A MULTICOLOR IMAGE

Terry L. Benzschawel, Ossining, and Webster E. Howard, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1988, Ser. No. 205,961
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—152 43 Claims



1. A method of displaying a multicolor image, said method comprising the steps of:

providing an image having a first density of image pixels, each image pixel having a position, each image pixel comprising at least first and second image subpixels, each first image subpixel having a first color, each second image subpixel having a second color different from the first color, each image subpixel having an intensity;

providing a display having a second density of display pixels less than or equal to the first density of image pixels, each display signal comprising at least first and second spatially offset display subpixels, each first display subpixel being capable of displaying the first color, each second display subpixel being capable of displaying the second color, each display subpixel having a position and an area, each display subpixel corresponding to an area of the display;

displaying a first display subpixel with an intensity which is a function of the intensities of at least two first image subpixels having positions extending over a first region, said first region being approximately centered on the position of the first display subpixel, said first region having an area greater than the area of the first display subpixel; and

displaying a second display subpixel with an intensity which is a function of the intensities of at least two second image subpixels having positions extending over a second region, said second region being approximately centered on the position of the second display subpixel, said second region having an area greater than the area of the second display subpixel.

5,341,154

PORTABLE PERSONAL COMPUTER

Gregory F. Bird, 2230 S. Woodward, Milwaukee, Wis. 53207-1316

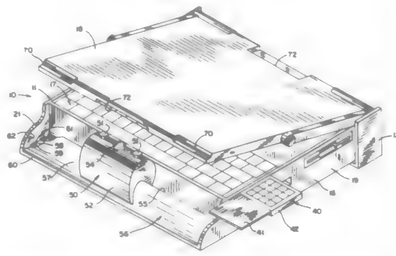
Filed Dec. 27, 1991, Ser. No. 815,303
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—167 26 Claims

12. A portable personal computer comprising:

a base having an alphanumeric keyboard on an upper surface and having front and rear sides;

a screen housing pivotally connected adjacent the rear side of said base and having a display screen for displaying alphanumeric characters, said computer having a stowed configuration in which said screen housing abuts said base with the display screen facing the upper surface;

a track ball assembly coupled to said base and including an elongated track extending across the front side of said base, and a carriage moveable along the track and having a rotatable sphere, and including means for producing electrical signals for three axes of movement indicative of rotational movement of the sphere about two axes and



indicative movement of the carriage along the track for a third axis; and

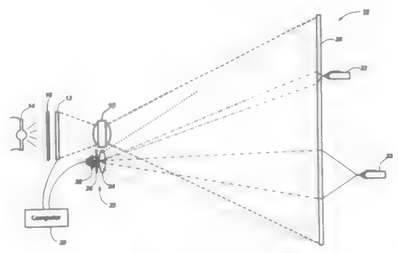
means for carrying the electrical signals between the carriage of said track ball assembly and said base.

5,341,155

METHOD FOR CORRECTION OF POSITION LOCATION INDICATOR FOR A LARGE AREA DISPLAY SYSTEM

Scott A. Elrod, Redwood City; Brent B. Welch, Mountain View, and David Goldberg, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 608,439, Nov. 2, 1990. This application Apr. 6, 1992, Ser. No. 864,271
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—179 13 Claims



1. In a projection display system comprising a screen wherein computer generated information is projected upon one side of the screen and a user interacts with the computer by projecting a modifiable light image having one of a number of identifiable frequencies towards an input position upon the opposite side of the screen, a position location indicator representative of the input position is projected onto said one side by side computer, and further comprising an illumination detector which transmits pseudo image coordinates of the input position to said computer, a method of correcting the position of said pseudo image coordinates and closely conforming said position location indicator with said input position comprising steps of:

detecting said pseudo image coordinates;

adjusting said pseudo image coordinates to normalize for detector distortions due to frequency of said projected light image;

adjusting said pseudo image coordinates to normalize for detector distortions due to electronic signal drift; and

adjusting said pseudo image coordinates for detector distortions due to screen voltage grid distortion,

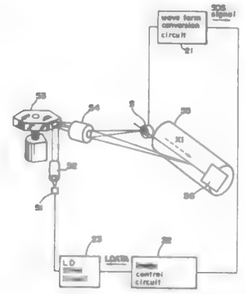
wherein coordinates of said position location indicator are determined corresponding to said adjusted pseudo image coordinates.

5,341,156

IMAGE FORMING APPARATUS OF LASER SCANNING TYPE

Tatsuya Eguchi, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 18, 1992, Ser. No. 837,858
Claims priority, application Japan, Feb. 19, 1991, 3-047655
Int. Cl.[5] B41J *2/435*
U.S. Cl. 346—108 13 Claims



1. An image forming apparatus of a laser scanning type comprising:

beam generating means for generating a laser beam from a semiconductor laser, said laser beam capable of being modulated by image drive data;

an image forming member having a surface;

an optical system for repeatedly scanning a laser beam in a main scan direction across the surface of the image forming member, the main scan direction having a beginning side and a terminal side;

image forming means for forming an image corresponding to the image drive data on the surface of the image forming member;

beam detecting means provided at the beginning side of the main scan for detecting the laser beam before activation of the image forming means;

a shield member provided at the terminal side of the main scan to block the irradiation of the laser beam to the surface of the image forming member; and

beam driving means for driving said beam generating means to stop the generation of a laser beam with each beam detecting timing cycle of said beam detecting means, including means for starting a generation of a laser beam by the image forming means in accordance with the image drive data when the main scan beam reaches a predetermined image forming area, and means for forcibly causing a generation of a laser beam by the beam generating means when the main scan beam reaches said shield member.

5,341,157

LASER-DRIVEN SILK SCREEN MASK DEVICE

Gerald L. Campagna, San Jose, and David Chapman, Sebastopol, both of Calif., assignors to Bumb & Associates, San Jose, Calif.

Filed Aug. 14, 1992, Ser. No. 930,057
Int. Cl.[5] B41J *24/435*
U.S. Cl. 346—108 9 Claims

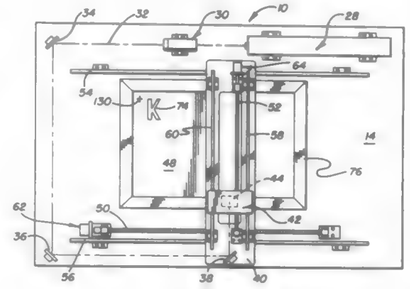
1. A laser-driven silk screen mask device comprising:

a laser;

a series of more than two reflectors for changing the direction of said laser;

a table system whereby the last two of said series of reflectors may be moved orthogonally one to the other so that said laser is reflected in a beam normal to said table system;

said table system including a surface upon which a thin sheet of non-woven thermal plastic material is placed, said surface being normal to said reflected laser beam;



means for incrementally moving said table system along a first and a second directions; and

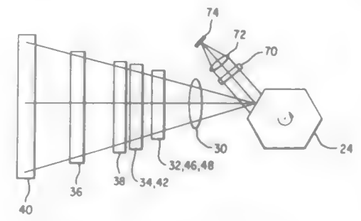
means to activate said laser intermittently with sufficient power to burn holes in said sheet of non-woven thermal plastic material.

5,341,158

RASTER OUTPUT SCANNER FOR A XEROGRAPHIC PRINTING SYSTEM HAVING LASER DIODES ARRANGED IN A LINE PARALLEL TO THE FAST SCAN DIRECTION

James J. Appel, Brighton, N.Y.; Thomas L. Paoli, and Tibor Fisli, both of Los Altos, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 22, 1992, Ser. No. 948,512
Int. Cl.[5] G01D *9/42*
U.S. Cl. 346—108 22 Claims



1. A scanning optical system comprising:

beam generating means for generating a plurality of light beams having dissimilar wavelengths and arranged in a line, said line being perpendicular to a direction in which said plurality of light beams are traveling;

a polygon mirror, rotatably mounted on a central axis and located in a path of said plurality of light beams arranged in the line, simultaneously deflecting said plurality of light beams, said central axis extending perpendicular to said line of light beams, each of said plurality of light beams remaining separate during deflection from said polygon mirror;

optical means for focusing said plurality of light beams on said polygon mirror;

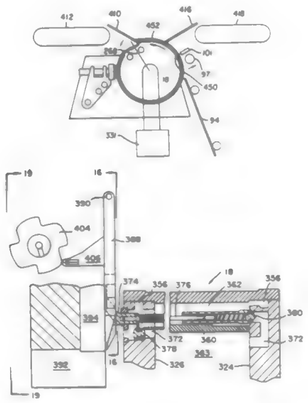
scan lens means for focusing said plurality of light beams deflected by said polygon mirror; and

optical filtering means for differentially passing and reflect-

VOL 1165 ISS 4 AG 23 1994 UMI

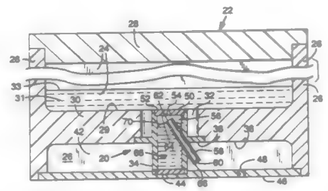
ing said plurality of light beams deflected from said polygon mirror.

5,341,159
MULTI-CHAMBERED IMAGING DRUM
Roger S. Kerr, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 23, 1991, Ser. No. 749,399
Int. Cl.[5] G01D *15/24*
U.S. Cl. 346—134 11 Claims



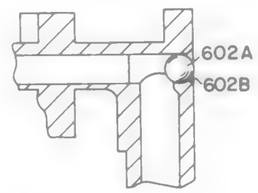
1. A thermal imaging apparatus comprising a hollow imaging drum member for rotation about an axis thereof and arranged to mount a receiver member and a donor member in superposed relationship thereon, means for providing a vacuum to an interior of said imaging drum, means for projecting a light beam onto said donor member mounted on said drum member to transfer an image onto said receiver member by transfer of a dye from said donor member, means for rotating said drum member, and means for moving said projecting means axially of said drum member, said imaging drum member being provided with a first set of vacuum openings through the surface thereof for adhering a receiver member thereto, said imaging drum member being provided with a second set of vacuum openings disposed about said first set of vacuum openings for adhering a donor member to said drum member in superposed relation with said receiver member adhered thereto, means for selectively supplying vacuum to at least a portion of said second set of vacuum openings wherein said portion of said second set of vacuum openings lie beneath an edge of said donor member adhered to said drum member whereby that edge of said donor member is released from adherence to said drum member when vacuum is turned off to that portion of said vacuum openings, said means for selectively supplying vacuum to said potion of said second set of vacuum openings from said interior of said drum member comprising a valve block disposed on an inner surface of said drum and forming a first separate vacuum chamber adjacent said portion of said second set of vacuum openings and communicating to the interior of said drum through at least one valve opening, and a valve member arranged to close said valve opening to discontinue the supply of the vacuum to said portion of said second set of vacuum openings through the drum surface.

5,341,160
VALVE FOR INK-JET PEN
Thomas H. Winslow; Paul H. McClelland, both of Corvallis, and Donald E. Wenzel, Albany, all of Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.
Filed Apr. 17, 1991, Ser. No. 687,549
Int. Cl.[5] B41J *2/055*
U.S. Cl. 347—86 24 Claims



1. A valve apparatus, comprising:
a container constructed for storing a first liquid and for maintaining a back pressure therein, the container being configured with an orifice extending therethrough, the orifice being sealed with the first liquid whenever the container is in a first position;
a basin connected to the container and located near the orifice; and
sealing liquid permanently stored within the basin and spaced from the orifice when the container is in the first position, the basin being arranged for the sealing liquid to flow against and seal the orifice after the container is moved out of the first position.

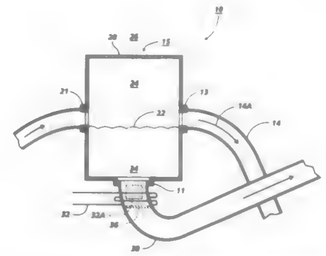
5,341,161
INK RECORDER INCLUDING A SEALING MEMBER FOR AN INK STORAGE SECTION
Koji Yamakawa; Takahisa Kawamura, both of Yokohama, and Teruo Arashima, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 12, 1992, Ser. No. 897,746
Claims priority, application Japan, Jun. 14, 1991, 3-143207; Jul. 15, 1991, 3-173960
Int. Cl.[5] B41J *2/17*
U.S. Cl. 347—87 12 Claims



1. An ink cartridge, comprising:
an ink storage section in which an ink is stored;
an opening portion through which an interior of said ink storage section is communicated with an outside, said opening portion being disposed at a bent part located at an intermediate position of an ink supply passage molded of a synthetic resin by way of which said ink is supplied from said ink storage section to an ink discharge section, at least a peripheral part of said opening portion being molded of a deformable synthetic resin; and
a sealing member for sealably closing said opening portion therewith by fitting said sealing member into said opening portion so as to shut the interior of said ink storage section from the outside, said sealing member being prepared in a form of a spherical shape which makes it possible to seal-

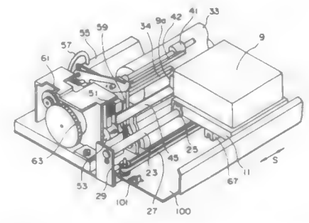
ably close said opening therewith by deformation of the peripheral part of the opening portion caused by press-fitting said sealing member into said opening portion, a radius of curvature of said sealing member being dimensioned to be slightly larger than a smallest inner diameter of said opening portion.

5,341,162
LIQUID DEAGASSING APPARATUS
Herman A. Hermanson, Penfield; Donald J. Drake, Rochester; Ivan Rezanka, Pittsford; Robert S. Karz, Webster; Roger G. Teumer, Fairport, and Robert P. Altavela, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 24, 1992, Ser. No. 933,560
Int. Cl.[5] B41J *2/01*
U.S. Cl. 347—92 15 Claims



1. An apparatus for degassing a liquid, comprising:
a main liquid supply tank having an inlet and an outlet and having a supply of liquid contained therein;
a liquid discharger communicating with the main tank outlet by way of a flow path;
means for moving the liquid along the flow path;
a secondary liquid supply tank disposed in the flow path between the main tank outlet and the liquid discharger for receiving liquid from the main tank and for supplying liquid to the liquid discharger, the secondary tank having a base with a supply outlet therein, an inlet, an overflow outlet, and a top with a gas-permeable vent therein, the vent comprising a membrane which is impermeable to the liquid, the secondary tank inlet and overflow outlet being disposed above the supply outlet and below the secondary tank top, so that a predetermined supply of liquid is contained in the secondary tank with an air space being formed thereover which is adjacent the secondary tank top, the secondary tank inlet communicating with the main tank outlet, the secondary tank supply outlet communicating with the liquid discharger, and the secondary tank overflow outlet communicating with the main tank inlet for returning liquid to the main tank when the liquid in the secondary tank rises to said overflow outlet, so that the means for moving the liquid cannot overfill the secondary tank; and
a heater disposed at a position along the flow path between the secondary tank supply outlet and the liquid discharger and adjacent the supply outlet for heating the liquid to cause any dissolved or entrained gas in the liquid to rise to the air space in the secondary tank and be removed therefrom by the vent in the secondary tank top.

5,341,163
INK JET RECORDING APPARATUS WITH WASTE-PREVENTING RECOVERY OPERATION
Tadashi Hanabusa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 24, 1992, Ser. No. 950,228
Claims priority, application Japan, Sep. 30, 1991, 3-251884
Int. Cl.[5] B41J *2/165*
U.S. Cl. 347—23 11 Claims



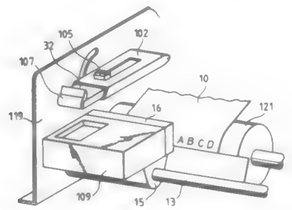
1. An ink jet recording apparatus for recording using a recording head for ejecting ink onto a recording medium through a nozzle of the recording head, said apparatus comprising:
cap means for assuming an open state exposing the nozzle of the recording head to atmosphere and a closed state covering the nozzle of the recording head;
ejection recovery means for performing an ejection recovery operation on the recording head to recover the ink ejection from the nozzle;
time count means for counting a time elapsed from the ejection recovery operation;
detection means for detecting the state of said cap means if the time elapsed from a preceding ejection recovery operation to a time a power source for the recording apparatus is turned on is shorter than a predetermined length of time; and
control means for controlling said ejection recovery means so that the ejection recovery operation is performed if said detection means detects that said cap means is in the open state when the power source is turned on, and for controlling said ejection recovery means so that the ejection recovery operating is not performed if said detection means detects that said cap means is in the closed state when the power source is turned on.

5,341,164
SOLID INK SUPPLY FOR INK JET
Yoshinori Miyazawa; Hiroshi Ishii; Osamu Nakamura; Norihiko Kurashima; Tsuyoshi Kitahara, and Hisashi Miyazawa, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Continuation of Ser. No. 641,924, Jan. 16, 1991, abandoned, which is a continuation of Ser. No. 341,773, Apr. 21, 1989, Pat. No. 5,030,972. This application May 18, 1993, Ser. No. 62,716
Claims priority, application Japan, Apr. 22, 1988, 63-99420; Apr. 30, 1988, 63-108722; Jun. 22, 1988, 63-154143; Jun. 28, 1988, 63-162325; Oct. 21, 1988, 63-265297; Nov. 21, 1988, 63-293883; Nov. 21, 1988, 63-293994
Int. Cl.[5] B41J *2/175, 2/05*
U.S. Cl. 347—88 24 Claims

1. An ink jet recording apparatus comprising:
a carriage which moves over a recording medium in a scanning manner;
an ink supplying device having an ink container in which solid-phase ink is put, an ink measuring section and a first heater, said ink supplying device being arranged at a predetermined position and said ink container being rotatably supported, said ink supplying device including a plurality of plates with gaps therebetween; and

VOL 1165 ISS 4 AG 23 1994 UMI

an ink jet head having a plurality of nozzles for jetting ink droplets therethrough, said ink jet head having a second heater and being mounted on said carriage, said ink jet head receiving ink from said ink supplying device, said ink



being liquefied in said ink container by said first heater and then moved to said ink jet head via capillary action in the gaps between said plates and kept liquefied by said second heater.

5,341,165

SCANNING CONTROLLER FOR COLOR ELECTROPHOTOGRAPHIC APPARATUS

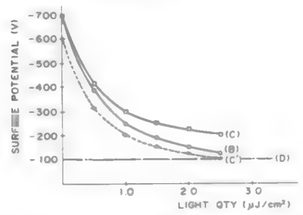
Hiroyuki Suzuki, Machida; Yukio Nagase, Kawasaki, and Kazuhisa Kemmochi, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1992, Ser. No. 818,767

Claims priority, application Japan, Jan. 16, 1991, 3-003246; Nov. 18, 1991, 3-329444

Int. Cl.[5] G01D *15/06, 15/14*

U.S. Cl. 346—157 **7 Claims**



1. A color electrophotographic apparatus, comprising:

a photosensitive member;

scanning means for scanning said photosensitive member, after being charged, with image light in accordance with color information;

developing means for developing said photosensitive member scanned by said scanning means with toner of a corresponding color;

wherein said scanning means and said developing means are operated a plurality of times to form a plurality of toner images on said photosensitive member;

control means for controlling a quantity of light onto said photosensitive member from said scanning means, wherein after a first of said toner images are formed, said control means controls the quantity of the light on a basis of a potential of the toner images on said photosensitive member.

5,341,166

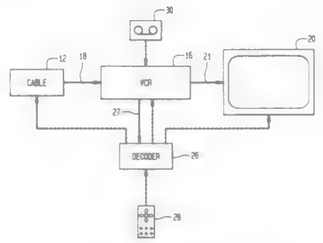
SYSTEM FOR CONTROLLING SELECTED DEVICES HAVING UNIQUE SETS OF CONTROL CODES

Michael J. Garr, Bethesda, Md.; Mark J. Dale, Fairfax, and Timothy Taylor, Alexandria, both of Va., assignors to Video Control Technology, Inc., Alexandria, Va.

Filed Feb. 27, 1992, Ser. No. 842,531

Int. Cl.[5] H04B *9/00*

U.S. Cl. 348—10 **18 Claims**



1. A system for enabling any one of a plurality of controllable devices having different respective sets of control codes to be controlled by means of common commands, comprising:

a video cassette tape having stored thereon the respective sets of control codes for each of the plurality of controllable devices;

means for enabling a user to select a particular one of the controllable devices whose set of control codes is stored on the video cassette tape;

a decoder that is responsive to selection of the particular one of the controllable devices for retrieving the set of control codes for that particular device from the video cassette tape and storing the retrieved set of control codes in a memory;

an input device for issuing commands to control a controllable device; and

control means responsive to a command from said input device for retrieving a control code corresponding to said command from said memory and transmitting said control code to a controllable device to cause the command to be carried out by said controllable device.

5,341,167

VISUAL AND SOUND COMMUNICATION SYSTEM WITH REMOTE CONTROL MEANS

Jacques Guichard, and Georges Buchner, both of Paris, France, assignors to France Telecom Etablissement Autonome de Droit Public, Paris, France

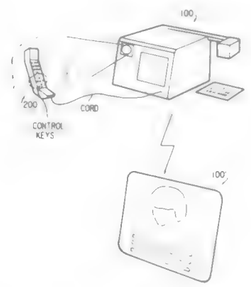
Continuation of Ser. No. 857,261, Mar. 25, 1992, abandoned. This application Dec. 3, 1993, Ser. No. 161,083

Claims priority, application France, Mar. 26, 1991, 91 03638

Int. Cl.[5] H04M *11/00*

U.S. Cl. 348—14 **1 Claim**

1. A visual and sound telecommunication system including a terminal, a camera, and a handset with an ear piece and a microphone, said handset being connected to said terminal by a cord and said handset comprising a means for remote control of the terminal and of the camera from the terminal by a user of said handset thereby making it possible to transmit digital coded remote control signals to obtain remote, X, Y movements of a cursor on a screen of said terminal and to "click" on an area, said means for remote control including operating means which consists of control keys placed on an inside portion of said handset so that it may be easily used by said user when said ear pierce is close to an ear of said user or when said handset is remote from the user's face wherein said means for remote control comprises a keyboard matrix connecting the keys of the handset to an encoder for providing a parallel binary word as a function of selected pressed keys, said encoder being connected to a serializer for transforming said parallel binary word into a serial word and to provide a logic signal applied to an input of a modulator and wherein an output of said modulator provides a modulated burst which charges a decoupling capacitor on a power supply line, said means for remote control also including an impact self-inductor placed in a power supply line of a microphone making it possible to protect said microphone from the application of a modulated signal which would impair the quality of sound pick-up and said means for remote control further including a voltage regulator placed between said self-inductor and said microphone and a voltage converter means for providing power supply voltages.



5,341,168

METHOD AND SYSTEM FOR RECEIVING AND TRANSFERRING IMAGES IN THREE DIMENSIONS

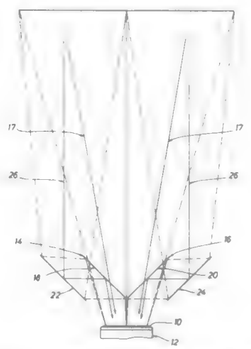
Ernesto O. Hernandez, Juan de la Barrera, 1711 Col. Martinez, Monterrey, N.L., Mexico

Filed Nov. 25, 1992, Ser. No. 981,551

Claims priority, application Mexico, Nov. 27, 1991, 9102233

Int. Cl.[5] H04N *13/00*

U.S. Cl. 348—42 **6 Claims**



1. A system for receiving and transferring captured images in three dimensions, comprising:

at least two first receiving surfaces, each of said first receiving surfaces having a non-reflecting front face and a reflecting rear face, said first receiving surfaces disposed in a V-shaped configuration which allows the transparent passage of a captured image and projection of this image toward a common plane; and

at least a reflecting surface symmetrically disposed behind each first receiving surface to capture the image and reflect said image with a predetermined incidence angle over said rear face of each of the first receiving surfaces, and subsequently projecting the reflected image toward coincidence with the image captured by the first receiving surfaces producing an image with a three dimensional effect.

5,341,169

VIDEO CAMERA APPARATUS WITH PREDICTABLY SETTABLE IMAGE SCREEN DETECTING AREA

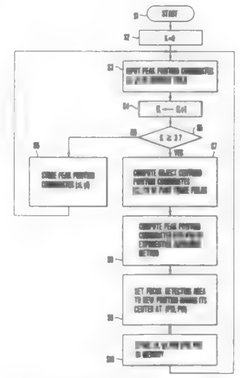
Kitahiro Kaneda, Kanagawa; Kunihiko Yamada, Tokyo; Akihiro Fujiwara, Kanagawa; Hirofumi Suda, Kanagawa, and Masamichi Toyama, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 904,881, Jun. 25, 1992, Pat. No. 5,187,585, which is a continuation of Ser. No. 563,500, Aug. 6, 1990, abandoned. This application Feb. 12, 1993, Ser. No. 17,496

Claims priority, application Japan, Aug. 19, 1989, 1-213921

Int. Cl.[5] H04N *5/225, 5/232*

U.S. Cl. 348—352 **24 Claims**



1. A video camera apparatus, comprising:

(A) area setting means for movably setting a detecting area in an image screen;

(B) detecting means for detecting predetermined information in said detecting area at a predetermined period and computing a next moving position of said detecting area on the basis of a variation of said predetermined information;

(C) storage means for storing positions of said detecting area for a predetermined period of time; and

(D) predicting means for predicting a next moving position of said detection area to be set in a succeeding period by averaging information concerning the moving position of said detecting area computed by said detecting means and information concerning a plurality of past set positions of said detecting area stored in said storage means.

5,341,170

AUTO FOCUSING DEVICE

Hiroshi Takemoto, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 719,498, Jun. 24, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 24,856

Claims priority, application Japan, Oct. 18, 1990, 2-280315

Int. Cl.[5] H04N *5/232*

U.S. Cl. 348—354 **5 Claims**

1. An auto focusing device comprising:

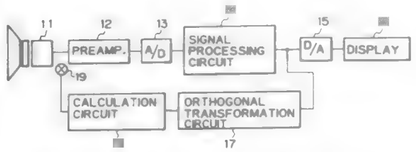
an image pickup means for photographing a subject and outputting video signals of the photographed subject;

a digitizing means for digitizing the video signals output from the image pickup means;

VOL 1165 ISS 4 AG 23 1994 UMI

an orthogonal transformation means for transforming the digitized video signals into a frequency component matrix composed of a plurality of frequency components by an orthogonal transformation of the digitized video signals; and

an operational processing means for grouping each of the plurality of frequency components in the matrix into a plurality of frequency component groups in accordance with frequency characteristics of each frequency component, each frequency component group having frequency



components similar with each other in frequency characteristic, and for outputting focusing information based on the frequency component groups,

the image pickup means being adapted to be controlled in focusing thereof based on the focusing information of the respective frequency component groups,

wherein the operational processing means is adapted to weight the frequency components of the respective frequency component groups such that the frequencies of the respective frequency component groups become almost equal.

5,341,171

VIDEO CAMERA APPARATUS WITH A CONNECTING DEVICE FOR EASY CONNECTION WITH ELECTRIC APPARATUS

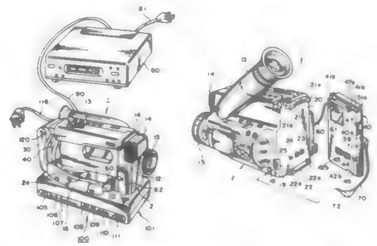
Akinari Mori, Tokyo; Yoshisada Okayasu; Toshinori Suzuki, both of Kanagawa, and Takehiko Suzuki, Tokyo, all of Japan, assignors to Sony Corporation, Japan

Filed Aug. 7, 1992, Ser. No. 926,169

Claims priority, application Japan, Aug. 23, 1991, 3-212063; Aug. 23, 1991, 3-212064

Int. Cl.[5] H04N *5/225, 5/232*

U.S. Cl. 348—373 **15 Claims**



1. An adapter apparatus contained in a housing for detachably connecting a video camera device with a battery, comprising:

a first side having a video camera device mounting site for detachably mounting the video camera device said video camera device mounting site having power supply terminals and video and audio signal terminals connectable respectively to power supply terminals and video and audio signal terminals of the video camera device;

a second side having a battery mounting site for detachably mounting the battery said battery mounting site having power supply terminals which are connectable respectively to power supply terminals of the battery; and

a third side provided with a remote control signal terminal connectable to a remote control signal terminal of the video camera device.

5,341,172

IMAGE DISPLAY APPARATUS FOR DISPLAYING IMAGES OF PLURALITY OF KINDS OF VIDEO SIGNALS

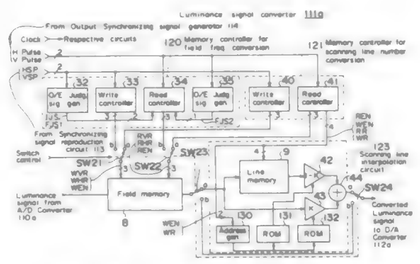
Yutaka Nio, Hirakata, and Ryuji Matsuura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 23, 1992, Ser. No. 855,797

Claims priority, application Japan, Mar. 22, 1991, 3-058661

Int. Cl.[5] H04N *7/01, 11/20, 5/46*

U.S. Cl. 348—441 **7 Claims**



1. An image display apparatus comprising:

a first synchronizing signal generating means for reproducing and generating first vertical and horizontal synchronizing signals in response to an inputted video signal, said inputted video signal of one frame being composed of an odd field and an even field each field including a plurality of scanning lines;

a second synchronizing signal generating means for generating second vertical and horizontal synchronizing signals for deflection of a display in response to said vertical and horizontal synchronizing signals generated by said first synchronizing signal generating means;

a display means for displaying an image of an inputted video signal thereon with a predetermined field frequency and a predetermined number of scanning lines, said display means being controlled by a deflection which is responsive to said second vertical and horizontal synchronizing signals outputted from said second synchronizing signal generating means;

a first converting means for converting an inputted first video signal, having a first field frequency which is lower than said predetermined field frequency and having said predetermined number of scanning lines, into an output second video signal having said predetermined field frequency and said predetermined number of scanning lines, using said first and second vertical and horizontal synchronizing signals generated by said first and second synchronizing signal generating means, and outputting said output second video signal to said display means; and

a second converting means for converting an inputted third video signal, having a first number of scanning lines which is smaller than said predetermined number of scanning lines and having said predetermined field frequency, into an output fourth video signal having said predetermined field frequency and said predetermined number of scanning lines, using said first and second vertical and horizontal synchronizing signals generated by said first and second synchronizing signal generating means, and for outputting said output fourth video signal to said display means.

5,341,173

AUTOMATIC GAIN CONTROL CIRCUIT

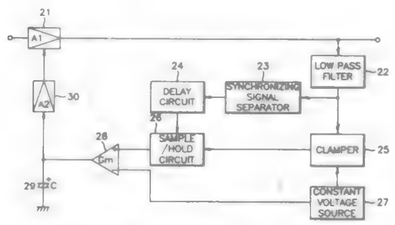
Yun-Jong Hyeon, Ibcheonjikhal, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 25, 1992, Ser. No. 934,218

Claims priority, application Rep. of Korea, Apr. 22, 1992, 1992-6726

Int. Cl.[5] H04N *5/52*

U.S. Cl. 348—525 **18 Claims**



1. An automatic gain control circuit, comprising:

first amplifier means for receiving video signals to produce first signals with a gain varied in response to control signals;

low-pass filter means for removing color components from said first signals to produce second signals;

sync separator means for separating synchronizing pulses from said second signals to produce third signals;

delay circuit means for delaying said third signals for a predetermined time to produce fourth signals;

clamper means for clamping said second signals upon a constant reference voltage generated from constant voltage generator means to produce fifth signals;

sample and hold circuit means for sampling and holding said fifth signal in dependence upon said fourth signals to produce sixth signals;

transconductance amplifier means for providing difference signal in dependence upon comparison of said sixth signals with said constant reference voltage to produce difference signal as seventh signals;

means for integrating said seventh signals to produce direct current error voltages as eighth signals; and

second amplifier means for receiving said eighth signals to produce ninth signals applied to said first amplifier means as said control signals to control the gain of said first signals.

5,341,174

MOTION COMPENSATED RESOLUTION CONVERSION SYSTEM

Kefu Xue, Beavercreek; Ann J. Winans, Dayton, and Eric Walowit, Springboro, all of Ohio, assignors to Wright State University, Dayton, Ohio

Filed Aug. 17, 1992, Ser. No. 930,772

Int. Cl.[5] H04N *5/92*

U.S. Cl. 348—576 **23 Claims**

1. A process for creating a high resolution copy of a target video frame selected from a sequence of video frames comprising the steps of:

defining an enlarged target frame having pixel locations corresponding to said high resolution copy;

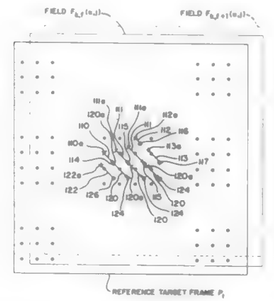
assigning pixel values from said target video frame to pixel locations in said enlarged target frame which correspond to pixel locations in said target video frame;

selecting one of said sequence of video frames which was not selected as said target video frame as a first object video frame for use in enhancing said enlarged target frame;

estimating motion vectors-extending from said target video frame to pixels in said first object video frame;

identifying accurate motion vectors;

for each motion vector identified as being accurate, assigning the value of its respective pixel to an enlarged target



frame pixel location corresponding to an origination point of said motion vector unless said enlarged target frame pixel location was previously assigned a pixel value; and

printing said enlarged target frame.

5,341,175

APPARATUS AND METHOD FOR VIDEO PIXEL DATA TRANSFER

Mark C. Koz, 2752 Glorietta Cir., Santa Clara, Calif. 95051

Division of Ser. No. 683,593, Apr. 9, 1991, Pat. No. 5,249,164, which is a continuation-in-part of Ser. No. 545,352, Jun. 27, 1990, abandoned. This application Sep. 14, 1993, Ser. No. 121,718

Int. Cl.[5] H04N *5/00*

U.S. Cl. 348—552 **19 Claims**

1. A video data transfer apparatus for assembling and rapidly transferring eight-bit digital data words, each such eight-bit digital data word defining one pixel of a video image, in parallel directly to an internal bus of a cooperating personal computer which includes a display screen upon which the personal computer may display the video image received from said video data transfer apparatus; the video data transfer apparatus receiving a succession of eight-bit digital data words of the video image from a video signal conversion subsystem which converts an analog television signal into the eight-bit digital data works; said video data transfer apparatus comprising:

a video frame memory which receives eight-bit digital data words of the video image from the video signal conversion subsystem and which stores all the received eight-bit digital data words making up a complete video image;

a video data transfer controller which transmits a signal that informs the personal computer when all the eight-bit digital data words making up a complete video image have been stored into said video frame memory, and which subsequently receives from the personal computer a command to transfer in parallel to the internal bus of the personal computer eight-bit digital data words of the video image; and

a plurality of word buffers that operate in response to load signals received from the video data transfer controller for respectively receiving from said video frame memory and temporarily storing one after the other in succession one eight-bit digital data word of the video image until all of the word buffers have received and are respectively temporarily storing one eight-bit digital data word of the video image, and then the plurality of word buffers in response to a transfer signal received from the video data transfer controller simultaneously transfer in parallel to the internal bus of the personal computer all of the eight-bit digital data words of the video image then present in the word buffers, whereby the personal computer may

VOL 1165 ISS 4 AUG 23 1994 UMI

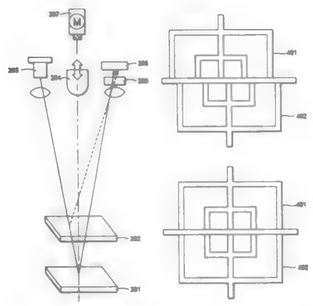
display the video image of the analog television signal on the display screen in real-time.

5,341,176

AUTOMATIC FOCUS ADJUSTER FOR PROJECTION DISPLAY SYSTEMS HAVING IN-OPERATION AND END-OF-OPERATION SYMBOLS SUPERIMPOSED OVER VIDEO DATA

Hiroyuki Baba, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP91/00740, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO92/22007, PCT Pub. Date Dec. 10, 1992
PCT Filed May 31, 1991, Ser. No. 971,861
Int. Cl.[5] H04N *5/74*
U.S. Cl. 348—569 **6 Claims**



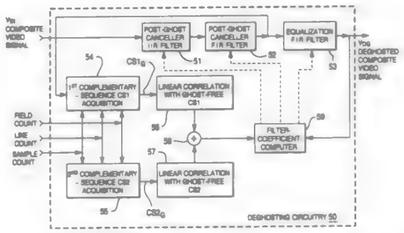
2. A projection type display system comprising:
a) optical modulation means for modulating a light in accordance with video data;
b) a projection lens system, coupled to said optical modulation means, having a projection lens for projecting the modulated light on a screen;
c) a distance changing means for changing the distance from said screen to said projection lens;
d) a range finding unit for finding the distance between said projection lens and said screen with an invisible light, said range finding unit comprising
(i) a light emitting element for irradiating said screen with said invisible light, and
(ii) a light reception element having at least two light receiving areas for receiving light reflected from said screen to output an electrical signal corresponding to the light receiving position of said reflected light;
e) a control means, coupled to said distance changing means and to said light receiving areas, for sending such a control signal to said distance changing means that said reflected light may irradiate a desired position in said light receiving areas on the basis of said electrical signal; and
f) a pattern display unit, coupled to said optical modulation means, for displaying on said screen, superimposed on said video data, a first fixed pattern during a focal adjustment period, and a second fixed pattern when focal adjustment is completed.

5,341,177

SYSTEM TO CANCEL GHOSTS GENERATED BY MULTIPATH TRANSMISSION OF TELEVISION SIGNALS

Sumit Roy, Philadelphia, Pa.; Chandrakant B. Patel, Hopewell, N.J., and Jian Yang, Philadelphia, Pa., assignors to SamSung Electronics Co., Ltd, Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 754,895, Sep. 4, 1991. This application Jun. 1, 1992, Ser. No. 891,058
Int. Cl.[5] H04N *5/213*
U.S. Cl. 348—614 **16 Claims**



1. In a television receiver ghost-cancelling circuitry for utilizing a television signal of a type containing ghost-cancelling reference signals wherein first and second ones of an extended-length complementary-sequence pair are cyclically inserted into a prescribed scan line in the vertical blanking intervals of successive fields of the television signal, said ghost-cancelling circuitry comprising:
a ghost-cancelling video filter with filtering parameters that are programmable, said ghost-cancelling video filter being arranged to respond to the television signal received by said television receiver;
means for selectively acquiring the first extended-length complementary-sequence from a television signal of said type, as received by said television receiver and accompanied at times by one or more multipath responses thereto;
means for selectively acquiring the second extended-length complementary-sequence from a television signal of said type, as received by said television receiver and accompanied at times by one or more multipath responses thereto;
means for linearly correlating the selectively acquired first extended-length complementary-sequence with a ghost-free first extended-length complementary-sequence previously stored in the television receiver, to generate a first linear correlation result;
means for linearly correlating the selectively acquired second extended-length complimentary-sequence with a ghost-free second extended-length complementary-sequence previously stored in the television receiver, to generate a second linear correlation result;
means for adding said first and said second linear correlation results to generate channel characterization data; and
a computer responding to said channel characterization data for programming the filtering parameters of said ghost-cancelling video filter.

5,341,178

SEND-OUT CONVERTORS FOR A RECORDING/REPRODUCING SYSTEM

Norio Ebihara, Kanagawa, and Masakatsu Kaburagi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,541
Claims priority, application Japan, Oct. 18, 1991, 3-297633
Int. Cl.[5] H04N *5/268*
U.S. Cl. 348—705 **10 Claims**

3. A switcher connected to a plurality of video signal inputting and outputting devices, at least two of said plurality of devices respectively handling video signals having different bit rates, said switcher comprising:
a plurality of converting means for reciprocally converting the video signals handled by said plurality of video signal inputting and outputting devices; and
changeover means for selecting, from said plurality of video signal inputting and outputting devices, a first one of the video signal inputting and outputting devices for outputting video signals and a second one of the video signal inputting and outputting devices for receiving said video signals, said changeover means also selecting, from said plurality of converting means, those converting means associated with the selected devices, and interconnecting the selected converting means and the selected devices;
wherein one of said converting means includes first bit rate converting means for converting video signals of a first bit rate into video signals of a second bit rate and for converting video signals of the second bit rate into video signals of the first bit rate, another of said converting means includes second bit rate converting means for converting video signals of the first bit rate into video signals of a third bit rate, the third bit rate being higher than the first and second bit rates, and for converting video signals of the third bit rate into video signals of the first bit rate, and wherein still another of said converting means includes third bit rate converting means for converting video signals of the second bit rate into video signals of the third bit rate and for converting video signals of the third bit rate into video signals of the second bit rate.

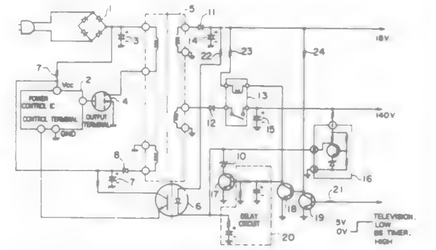
8. A switcher connected to a plurality of video signal inputting and outputting devices, at least two of said plurality of devices respectively handling video signals having different bit rates, said switcher comprising:
a plurality of converting means for reciprocally converting the video signals handled by said plurality of video signal inputting and outputting devices, said plurality of converting means including first bit rate converting means for converting signals of a first bit rate into signals of a second bit rate and vice versa, second bit rate converting means for converting signals of the first bit rate into signals of a third bit rate and vice versa, third bit rate converting means for converting signals of the second bit rate into signals of third bit rate and vice versa; and
changeover means for selecting, from said plurality of video signal inputting and outputting devices, a first one of the video signal inputting and outputting devices for outputting video signals and a second one of the video signal inputting and outputting devices for receiving said video signals, said changeover means also selecting, from said plurality of converting means, those converting means associated with the selected devices, and interconnecting the selected converting means and the selected devices;
wherein at least one of said first, second and third bit rate converting means includes an encoder for converting component signals into composite signals, a decoder for converting composite signals into component signals, a masking circuit for masking excess video signals on the screen and an adder circuit for compensating for a deficit of video data on the screen.

5,341,179

SOURCE VOLTAGE CONTROL SWITCHING CIRCUIT

Hirofumi Konishi, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 10, 1992, Ser. No. 911,629
Claims priority, application Japan, Jul. 19, 1991, 3-179331
Int. Cl.[5] H04N *5/63*
U.S. Cl. 348—730 **9 Claims**



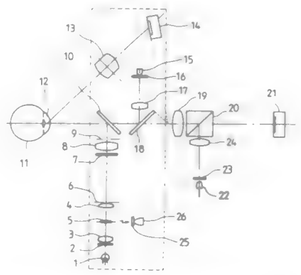
1. A source voltage control switching circuit for stabilizing output voltages by performing output voltage control using a television source voltage in a television receiving mode and voltage control using a BS (direct broadcast by satellite) source voltage switched to during a BS timer recording mode requiring light-load power, comprising:
a constant voltage diode for being inserted in a secondary side control circuit of a power supply,
a switching circuit, operatively associated with said constant voltage diode, for turning said constant voltage diode on and off, and
a delay circuit for decreasing a switching speed of said switching circuit.

5,341,180

OPHTHALMIC PHOTOGRAPHING APPARATUS

Naoki Isogai, and Kenya Ozaki, both of Aichi, Japan, assignors to Nidek Co., Ltd., Aichi, Japan

Filed Jun. 22, 1992, Ser. No. 901,984
Claims priority, application Japan, Jun. 29, 1991, 3-185448
Int. Cl.[5] A61B *3/14*
U.S. Cl. 351—206 **14 Claims**

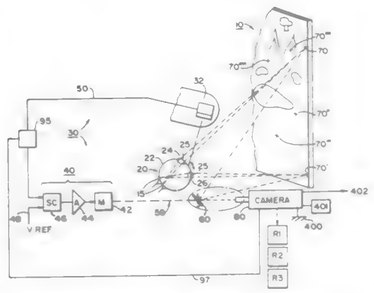


1. An ophthalmic apparatus for photographing an image of an eye to be examined, comprising:
memory means for storing image data of the photographed eye;

VOL 1165 ISS 4 AG 23 1994 UMI

light detecting means for detecting an amount of light emitted from a light source for photographing; and
correcting means for correcting a density of the image data stored in the memory means by comparing the amount of light detected by the light detecting means with a constant amount of light used as a reference,
wherein a constant density of the image is obtained even though the amount of light, emitted from said light source for photographing, changes.

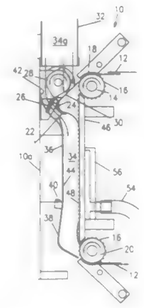
5,341,181
SYSTEMS AND METHODS FOR CAPTURING AND PRESENTNG VISUAL INFORMATION
Roger R. Godard, Van Beuren Rd., Morristown, N.J. 07690
Filed Nov. 20, 1992, Ser. No. 979,609
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—210 **15 Claims**



1. A system for providing a replica of a pattern of visual information which has excited the retina of an eye of an observing individual observing images to the retina of an eye of a perceiving individual, said system comprising:
a) first tracking means for tracking movement of said eye of said observing individual;
b) imaging means for obtaining a plurality of images corresponding to and simultaneous with said pattern of visual imformation exciting said retina of said observing individual, said imaging means being coupled to and responsive to said first tracking means;
c) image receiving means coupled to said imaging means for receiving said plurality of images obtained by said imaging means and for creating a record of said plurality of images, said record constituting said replica of said pattern of visual information;
d) second tracking means for tracking movement of said eye of said perceiving individual; and
e) image fixing means including a projecting means for projecting said record of said plurality of images, said image fixing means being responsive to said second tracking means and optically related to said perceiving individual for presenting to said retina of said eye of said perceiving individual said plurality of images.

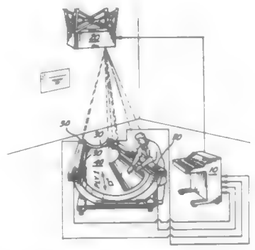
5,341,182
MOTION PICTURE PROJECTION APPARATUS
Leland R. Schmidt, Simi Valley, Calif., assignor to Pioneer Technology Corporation and L. Ron Schmidt and Associates, Inc., both of Burbank, Calif.
Filed Jan. 14, 1993, Ser. No. 4,511
Int. Cl.[5] G03B *1/00, 1/52*
U.S. Cl. 352—184 **12 Claims**

1. A motion picture projection apparatus comprising:
film input means and film takeup means for motion picture film;
gate means spanning between said film input means and said film takeup means comprising film engagement means to mate with said filth, said gate means comprising a projection aperture;
control means for selectively supplying a positive pressure or a vacuum pressure through said gate means to said film depending upon whether said film is being advanced or said film is being rewound;
air foil means positioned opposite said gate means for advancing or rewinding said film, said air foil comprising a



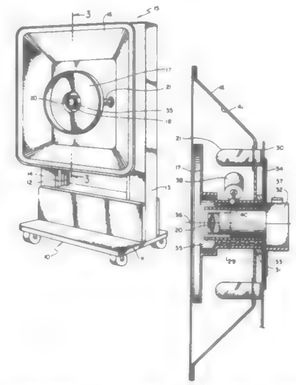
guide member integrally connected to said air foil means by a pivot means;
air input means for directing air flow toward said film takeup means between said gate means and said air foil; and
a biased flipper, contacted by a cam which causes said flipper to engage said film and place successive portions of said film in loops spanning between said air foil means and said gate means so that each of said loops is propelled toward said film takeup means by said air flow.

5,341,183
METHOD FOR CONTROLLING PROJECTION OF OPTICAL LAYUP TEMPLATE
John W. Dorsey-Palmateer, Gig Harbor, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 28, 1992, Ser. No. 951,603
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—122 **1 Claim**



1. In combination a laser projection system for projecting a three-dimensional data set onto the contained surface of an object;
an object;
a laser projector for projecting an image on said object;
a plurality of reference sensors located on said object, said plurality of reference sensors located on said object having the same coordinate system as the three-dimensional data set of said projected image.

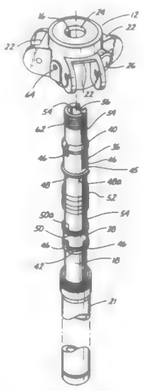
5,341,184
COMPARATIVE PHOTOGRAPHIC DOCUMENTATION APPARATUS
Richard E. Kephart, 7407 Topanga Canyon Blvd., Canoga Park, Calif. 91303
Filed Dec. 28, 1992, Ser. No. 997,551
Int. Cl.[5] G03B *29/00*
U.S. Cl. 345—62 **9 Claims**



1. A photographic recordation apparatus comprising the combination of:
a mobile platform;
an upright support carried on said mobile platform;
a combined lighting and camera assembly movably carried on said upright support;
said lighting and camera assembly having a fixed panel 34;
a camera with a zoom lens movably supported on said fixed panel;
a light reflector disposed on said fixed panel about said camera zoom lens;
a light shield carried on said fixed panel in fixed spaced-apart relationship with respect to said reflector;
light means carried on said light reflector behind said light shield; and
motor means disposed between said light shield and said reflector in driving relationship with said camera zoom lens for moving said camera zoom lens along an optical axis.

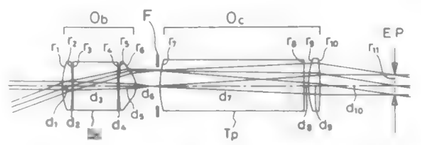
5,341,185
CENTER COLUMN FRICTION CONTROL SYSTEM FOR VIDEO TRIPOD
Koichiro Nakatani, Tokyo, Japan, assignor to Velbon International Corporation, Torrance, Calif.
Filed Feb. 24, 1993, Ser. No. 22,013
Int. Cl.[5] G03B *29/00, 17/00;* **F16M** *11/26, 11/38*
U.S. Cl. 354—81 **8 Claims**

1. A tripod for supporting video or photo equipment of the type having a plurality of telescopically extendable legs pivotably attached to a hub, a center column slidable through a bore in said hub, and a crank for turning a pinion engaged to a gear rack along said column for elevating and lowering the column; resilient means interposed between said column and said hub in said bore, spring means urging said resilient means axially along said column, and inclined mating surfaces operative for pressing said resilient means against said column to provide



frictional resistance to displacement of the column through the hub.

5,341,186
ACTIVE AUTOFOCUSING TYPE RANGEFINDER OPTICAL SYSTEM
Shigeru Kato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 12, 1993, Ser. No. 3,431
Claims priority, application Japan, Jan. 13, 1992, 4-003957
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—403 **5 Claims**



1. An active autofocusing type rangefinder optical system for cameras, which is provided separately from a photo-taking optical system, and in which an optical path-splitting means is disposed in an optical path of an objective optical system of said rangefinder optical system, a finger optical system in one optical path split by said splitting means and a range finding optical system in another optical path split by said splitting means, wherein:
said range finding optical system includes a range finding element,
an optical system located on the object side from said optical path-splitting means has a positive refracting power as a whole,
an optical system extending from said optical path-splitting means to an intermediate image-forming surface of the finder optical system has one of a positive and negative refracting power as a whole, and
an optical system located on the side of said range finding element from said optical path-splitting means has a positive refracting power as a whole.

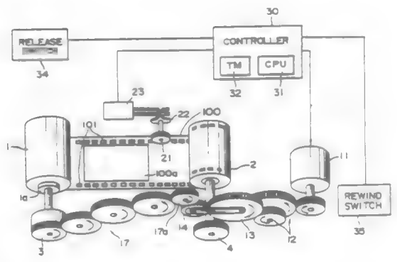
VOL 1165 ISS 4 AUG 23 1994 UMI

5,341,187

AUTOMATIC CAMERA WITH FILM REWIND APPARATUS AND METHOD CAPABLE OF REWINDING FILM IN EITHER A FIRST OR SECOND OPERATION MODE

Hiroshi Kurei, Sakado, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,337
Claims priority, application Japan, Feb. 18, 1991, 3-108074
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—173.11 **31 Claims**



19. A film rewind apparatus for an automatic camera, comprising:

a film cartridge having a cartridge shaft and being loaded into a camera for accommodating a film;

a spool that is disposed in said camera for winding said film up;

a motor for winding said film onto said spool by pulling said film from said film cartridge and for rewinding said film back into said film cartridge;

a plurality of gears for transmitting a rotational force of said motor to said cartridge shaft and said spool;

a pulse switch for generating a signal in response to a movement of said film;

means for determining whether a predetermined sufficient amount of film remains;

a rewind switch for forcibly initiating a rewinding operation of said motor before said film has been would up to an end; and

a rewinding amount control means for controlling a rewinding amount which responds to said determining means and said rewind switch in such a manner to cause said motor to rewind said film completely back into said film cartridge when said determining means determines that a predetermined sufficient amount of film does not remain, and also to cause said motor to rewind said film to an incomplete condition such that at least a leading end of said film remains outside of said film cartridge when a predetermined sufficient amount of film remains;

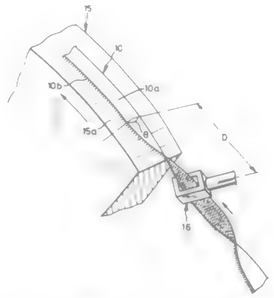
said film including a leader portion and a main portion having a plurality of images, and said rewinding amount control means comprising means for detecting an area where said leader portion meets said main portion when said film is being rewound, so that when said area is detected, said film is rewound for a first time period, when said film remaining determining means determines that film has been wound up to said end, and said film is rewound for a second time period, when said film remaining determining means determines that said film has a predetermined sufficient amount of film remaining, wherein said second time period is shorter than said first time period.

5,341,188

METHOD OF MAKING LIGHT-TRAPPING MEMBERS FOR PHOTOGRAPHIC FILM CASSETTE

Hidetoshi Kawasaki; Kazunori Mizuno, and Nobuo Sugiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 21, 1993, Ser. No. 50,567
Claims priority, application Japan, Apr. 21, 1992, 4-101152
Int. Cl.[5] B29C *53/14;* **D04H** *11/00;* **D06C** *13/00;* **G03B** *17/26*
U.S. Cl. 354—277 **16 Claims**



1. A method of making a pair of light-trapping members from a ribbon having a base fabric and piles, said light-trapping members being used for a photographic film cassette having a cassette shell for rotatably containing a spool with a photographic film wound thereon, a leading end of said photographic film being advanced out of said cassette shell through a film passage mouth formed in said cassette shell by rotation of said spool, said light-trapping members being attached to respective upper and lower inside surfaces of said film passage mouth so as to prevent light from entering in the inside of said cassette shell, said method comprising the steps of:

twisting said ribbon relative to a ribbon feeding direction;

contacting said piles of said ribbon with a first thermal drum, which extends transverse to said film feeding direction, so as to incline said piles in a width direction of said ribbon at a predetermined inclination angle; and

cutting said ribbon at a predetermined length to obtain said light-trapping members.

5,341,189

PHOTOSENSITIVE MATERIAL PROCESSOR

Jeffrey L. Helfer, Webster, and Mark J. Devaney, Jr., Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

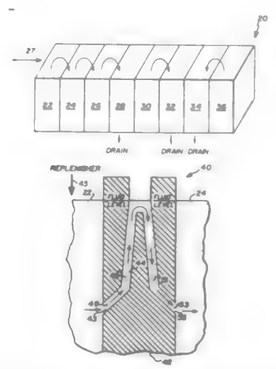
Filed Apr. 27, 1993, Ser. No. 53,780
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 **34 Claims**

1. A processor for processing photosensitive material, comprising:

a first processing tank containing a first processing fluid containing at least one component of a first concentration;

a second processing tank containing processing fluid having the same component to that of said first processing fluid, however, said concentration of said component in said second processing tank being different than said first concentration;

a weir for allowing fluid of said first concentration to flow from said first tank to said second tank resulting from the hydrostatic pressure of said first fluid in said first tank, said weir comprising means forming a passage having an inlet in fluid communication with said first processing fluid in said first processing tank and an outlet in fluid communication with the processing fluid in said second processing tank,



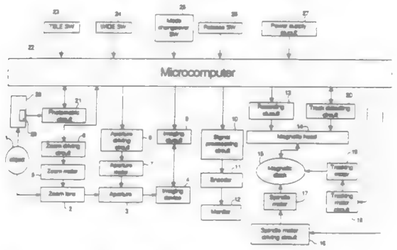
said passage having a configuration such that the diffusivity transfer rate between said tanks is not greater than about 6 milligrams per hour.

5,341,190

ZOOM LENS CAMERA

Kimiaki Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 802,717, Dec. 6, 1991, abandoned, which is a continuation of Ser. No. 533,778, Jun. 6, 1990, abandoned. This application Aug. 4, 1993, Ser. No. 101,788
Claims priority, application Japan, Jun. 9, 1989, 1-148104
Int. Cl.[5] G03B *5/00, 7/095;* **H04N** *5/238*
U.S. Cl. 354—446 **24 Claims**



1. A zoom lens camera, comprising:

a zoom driving means for driving said zoom lens;

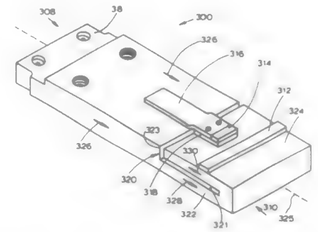
an aperture driving means for driving an aperture; and means for controlling said zoom driving means and said aperture driving means so that, when said zoom lens and said aperture are concurrently instructed to be operated, said aperture is driven by said aperture driving means while movement of said zoom lens is temporarily suspended, said zoom driving means resuming driving said zoom lens for a predetermined amount of time after said aperture is driven, said aperture again being driven, if necessary, by said aperture driving means, after said predetermined amount of time has elapsed.

5,341,191

MOLDED CASE CURRENT LIMITING CIRCUIT BREAKER

Ronald W. Crookston, Trafford; Douglas C. Marks, Murrysville; Richard E. White, III, Brighton Township, Beaver County; Andrew J. Male, Export; Yun-Ko N. Chien, Murrysville; Steven Castelein, Sewickley; William E. Beatty, Jr., Brighton Township, Beaver County; Alfred E. Maier, and John G. Salvati, both of Beaver Falls, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 18, 1991, Ser. No. 779,441
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 **21 Claims**



1. A molded case circuit breaker comprising:

a molded housing;

a plurality of pairs of separable main contacts carried by said housing, each pair defining a movably mounted main contact and a fixed main contact means;

a plurality of movably mounted contact arms for carrying said movably mounted main contacts, rotatably mounted for movement defining a closed position, an open position, a trip position, and a blow open position;

an operating mechanism, operably coupled to said plurality of movably mounted contact arms, for controlling movement of said plurality of movably mounted contact arms defining a closed position, an open position and a trip position; and

a line side conductor formed as a generally straight member adjacent said plurality of movably mounted contact arms and defining a contact portion adjacent one end carrying said fixed main contact means and forming a line side terminal on an opposing end, said line side conductor including a predetermined number of cut outs for reversing, relative to the direction of electrical current flow from the line side terminal, the direction of electrical current flow in said contact portion adjacent said plurality of movably mounted contact arms, thereby forming a reverse current loop which generates sufficient magnetic repulsion forces to blow open said plurality of movably mounted contact arms when said electrical current reaches a predetermined magnitude.

5,341,192

FLOW CAMERA FOR LARGE DOCUMENT REPRODUCTIONS

Joseph H. Wally, Jr., Overland Park, Kans., and Herbert W. Pace, Kansas City, Mo., assignors to Black & Veatch Architects, Inc., Kansas City, Mo.

Filed Mar. 2, 1993, Ser. No. 25,444
Int. Cl.[5] G03B *27/48, 27/50*
U.S. Cl. 355—50 **29 Claims**

1. A flow camera for reproducing an image on a sheet or document such as a large engineering drawing, map, or architectural plan while the sheet is in motion, said camera comprising:

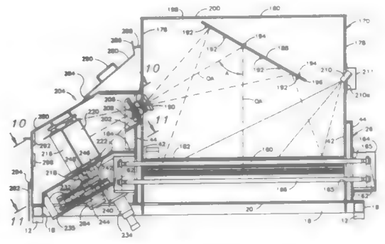
a frame presenting a slit through which light from the sheet can pass;

VOL 1165 ISS 4 AG 23 1994 UMI

means for conveying the sheet at a prescribed speed along a conveyor path carrying the sheet in proximity to said slit;

front lighting means for applying light to a side of the sheet facing said slit for reflection of the light from said front lighting means off of the sheet and through said slit;

back lighting means situated such that the sheet is between said slit and back lighting means to effect transmission of light from said back lighting means through the sheet and then through said slit;



means for transporting a light sensitive medium at a speed having a selected relationship to said prescribed speed; and

optical means for focusing, on said light sensitive medium the light reflected off of the sheet and through said slit from said front lighting means and the light transmitted through the sheet and said slit from said back lighting means.

5,341,193

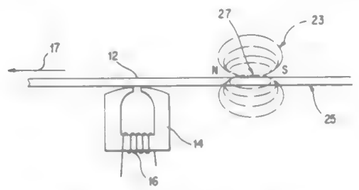
METHOD AND APPARATUS FOR SENSING MAGNETIC SIGNAL STRENGTH OF XEROGRAPHICALLY DEVELOPED TONER IMAGES FOR CLOSED LOOP CONTROL OF MAGNETIC PRINTING

Fred F. Hubble, III, Rochester; Michael G. Swales, Sodus; Michael E. Weber; Gerald Abowitz, both of Penfield, and Raphael F. Bov, Jr., Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 22, 1991, Ser. No. 659,556

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—203 **8 Claims**



1. A printing machine of a type in which magnetically permeable marking particles develop a latent image of a character recorded on a member comprising:

(a) means for moving said member along a closed path;

(b) means for forming characters with said magnetic permeable marking particles on said member;

(c) means for saturization magnetization of said characters;

(d) read head positioned adjacent the member to detect a magnetic signal from a single one of said characters and; an integrator electrically coupled to said read head for integrating said signal.

5,341,194

BELT TYPE IMAGE FORMING UNIT

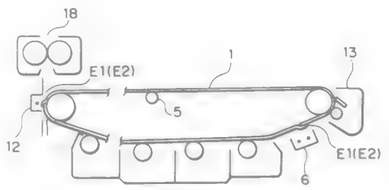
Satoshi Haneda; Shizuo Morita; Masakazu Fukuchi, and Shunji Matsuo, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Division of Ser. No. 610,382, Nov. 5, 1990, abandoned. This application Apr. 15, 1992, Ser. No. 869,894

Claims priority, application Japan, Nov. 7, 1989, 1-289596; Nov. 7, 1989, 1-289598; Nov. 21, 1989, 1-302813

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—212 **2 Claims**



1. An apparatus for forming a toner image, wherein a photoreceptor belt is moved to a corona charging device, an image exposure device, a developing device, a transfer device, a cleaning device in that order, thereafter the photoreceptor is returned to the corona charging device to conduct a next image formation; said apparatus comprising:

said photoreceptor belt having an image surface on which toner image can be formed, both ends of said photoreceptor belt being bonded to form a loop, said loop being stretched between a plurality of rollers and rotated to carry a formed image,

a position control means for controlling a stop position of the bonded ends of said photoreceptor belt, to locate said bonded ends proximate to said corona charging device.

5,341,195

ELECTROPHOTOGRAPHIC PRINTER USING ELECTROLUMINESCENT IMAGING HEAD

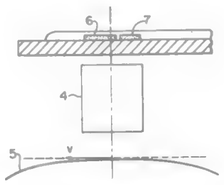
Yoshihide Satoh, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 933,078

Claims priority, application Japan, Aug. 23, 1991, 3-235588

Int. Cl.[5] G03G *15/04*

U.S. Cl. 355—237 **1 Claim**



1. An electrophotographic printer comprising:

a photosensitive member;

an imaging head positioned facing the photosensitive member and comprising an array of light emitting elements formed on a substrate, each of whose elements has a first and a second light emitting element formed in a direction perpendicular to the array and whose said first and second light emitting elements have different sizes.

5,341,196

IMAGE FORMING EQUIPMENT USING A TONER CARTRIDGE

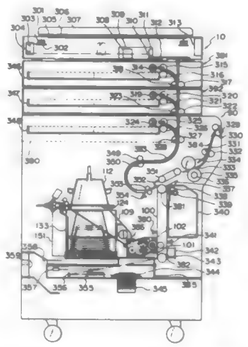
Takashi Hodoshima, Kawasaki; Kouji Ishigaki, Yokohama; Kazuyuki Nakahara, Tokyo, and Fumio Kishi, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 23, 1991, Ser. No. 781,574

Claims priority, application Japan, Oct. 24, 1990, 2-286417; Oct. 24, 1990, 2-286418; Oct. 25, 1990, 2-288055

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **36 Claims**



1. Image forming equipment of the type supplying a toner to a developing device thereof by using a cartridge which contains said toner therein and has an openable wall portion, said equipment comprising:

a cartridge inserting section for inserting said cartridge into said equipment;

a toner supplying section independent of said cartridge inserting section and having a toner supply position where said cartridge supplies the toner;

opening means for opening said openable wall portion;

cartridge transporting means for transporting said cartridge having been inserted via said cartridge inserting section to said toner supply position, said opening means opening said openable wall portion of said cartridge at said toner supply position, whereby the toner is supplied to said toner supplying section; and

sensing means for determining whether or not said cartridge has been brought to a predetermined position by said cartridge transporting means; and

alerting means responsive to an output of said sensing means for showing an occurrence that said cartridge has failed to reach said predetermined position despite that said cartridge transporting means has operated a predetermined period of time.

5,341,197

PROPER CHARGING OF DONOR ROLL IN HYBRID DEVELOPMENT

Jeffrey J. Folkins, Rochester; Thomas J. Behe, Webster, and Joseph G. Schram, Liverpool, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 7, 1992, Ser. No. 986,312

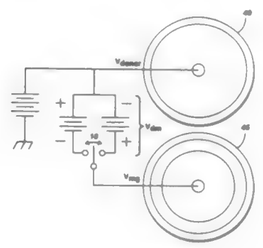
Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—264 **10 Claims**

1. A method for cleaning toner from a donor roll in a development zone in a printing machine, comprising the steps of:

stopping development of images;

changing a magnitude of a differential electrical bias being applied between the donor roll and a second roll having carrier and toner thereon; and



removing previously charged toner that has lost charge from the donor roll to clean the donor roll.

5,341,198

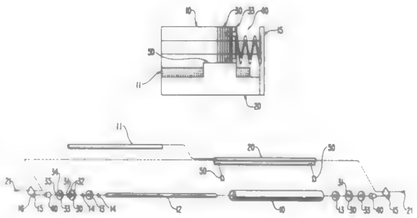
APPARATUS FOR SEALING A METERING ROLL

Robert S. Pawlik, Webster, and Robert E. Gary, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1992, Ser. No. 936,401

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—284 **21 Claims**



1. A lubricant metering apparatus, comprising:

a cylindrical metering roll supported for rotation about a central longitudinal axis, the metering roll having a peripheral surface and radial end surfaces;

a blade aligned with the longitudinal axis;

means for holding the blade so that an edge of the blade contacts the peripheral surface of the metering roll;

sealing means, supported against at least one of the radial end surfaces of the metering roll, for preventing excess lubricant from accumulating at the end of the metering roll; and

means for supporting the sealing means against the one radial end surface of the metering roll.

5,341,199

ACTIVE SUMP FILL DEVICE BLADE CLEANING APPARATUS

Bruce E. Thorp, Walworth, and Richard L. Forbes, II, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1992, Ser. No. 906,171

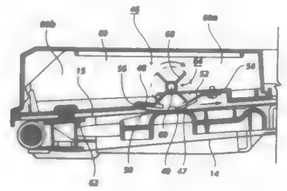
Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—298 **15 Claims**

1. Electrostatographic printing apparatus comprising an endless imaging surface and a blade cleaning station for removing residual toner particles therefrom, said blade cleaning station being positioned on top of said imaging surface at about the twelve o'clock position and comprising a cleaner sump

VOL 1165 ISS 4 AUG 23 1994 UMI

housing containing a cleaning blade mounted on said sump to provide front and rear sump portions and in interference with said imaging surface for removing residual toner therefrom, said cleaner sump housing having an active toner moving



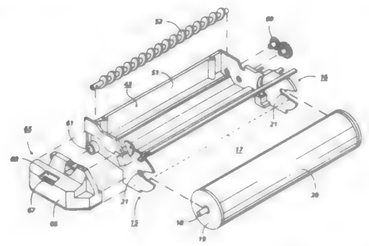
device located above the cleaning blade to limit toner accumulation on top of the blade, reduce the head height of toner accumulated at the cleaning blade/imaging surface interface and to direct residual toner to the front and rear portions of said cleaner sump.

5,341,200

REMOVABLE PROCESS UNIT WITH WASTE TONER STORAGE

Karlene R. Thomas, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1992, Ser. No. 997,047
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—298 15 Claims



1. A removable process unit for an electrostatographic printing machine comprising a photoreceptor, a frame having a longitudinal axis including means to movably mount said photoreceptor therein along said longitudinal axis, a cleaning toner sump extending along said longitudinal axis and adjacent said photoreceptor means to transport toner cleaned from said photoreceptor toward one end of said sump, said toner sump having an aperture at said one end, a cover for said frame at said one end thereof, said cover including a cavity with an aperture in communication with said aperture in said sump for the transport of cleaned toner into said cavity for storage.

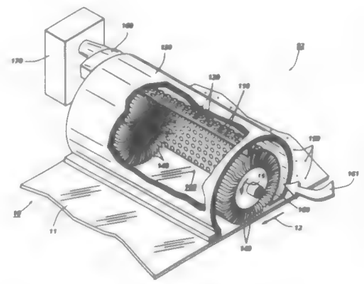
5,341,201

XEROGRAPHIC BRUSH CLEANER DETONER

N. Kedarnath, Fairport, and Samuel P. Mordenga, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,391
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—302 7 Claims

1. An apparatus for removing material from an imaging surface, comprising:
a brush having a multiplicity of fibers extendinq outwardly therefrom;
a housing defininq an open ended chamber, said brush being mounted movably in the chamber of said housinq with fibers of said brush extending outwardly from the open end of the chamber of said housing in contact with the imaging surface to remove material therefrom;
an air pervious member extending across the chamber of said housing, said member including a sheet-like portion positioned relative to the fibers of said brush to produce a plurality of impacts thereagainst by each fiber during



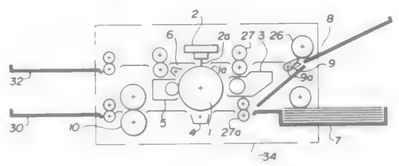
movement of said brush dislodqing material adhering thereto; and
means, coupled to said housinq, for generating an air flow adapted to remove material dislodged from the fibers of said brush by impacting against said member, said member being mounted in the chamber of said housing interposed between said brush and said generating means.

5,341,202

ELECTROPHOTOGRAPHIC RECORDING APPARATUS WITH A SCANNER FOR AUTOMATICALLY SELECTING MEDIA

Minoru Isobe, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,562
Claims priority, application Japan, Jun. 19, 1991, 3-147581; Sep. 5, 1991, 3-226030; Sep. 12, 1991, 3-233051
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—308 26 Claims



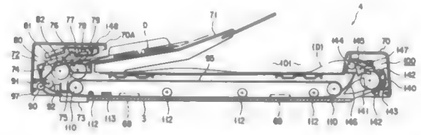
1. In an electrophotographic recording apparatus having an array of light emitting devices for emitting an exposure light to expose a photoconductor with the exposure light to form a latent image thereon, a developer assembl for developing the latent image to a toner image, a transfer assembly for transferring the toner image to a recording sheet, and a fuser assembly for fixing the toner image transferred on the recording sheet, the combination comprising:
a light emitting and light intercepting head having a single unitary body, said head including said array of light emitting devices and an array of photosensitive devices arranged adjacent to said array of light emitting devices to receive part of the exposure light; and
an original feed mechanism for feeding an original document sheet to a first path formed between said light emitting and light intercepting head and said photoconductor, said array of photosensitive devices receiving part of the exposure light reflected from the original document sheet conducted on the first path to read an image carried on the original document sheet.

5,341,203

IMAGE FORMING APPARATUS WITH AN AUTOMATIC DOCUMENT FEEDING APPARATUS DURING INTERRUPT MODE OF OPERATION

Akihito Tokutsu, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 19, 1993, Ser. No. 34,571
Claims priority, application Japan, Aug. 25, 1992, 4-225964
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—313 5 Claims



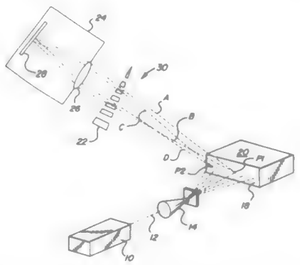
1. An image forming apparatus with an automatic document feeding apparatus, comprising:
a document table for supporting a document sheet;
means for holding a plurality of document sheets;
first transport means, not facing the document table while covering the document table, for transporting the document sheets from said holding means to the document table;
second transport means, facing the document table while covering the document table, for transporting the document sheets transported by said first transport means to a predetermined position on the document table;
third transport means not facing the document table while covering the document table, for transporting the document sheets transported by said second transport means from the document table;
means for receiving the document sheets transported by said third transport means;
means for detecting that said automatic document feeding apparatus covers said document table;
means for applying light to a document sheet transported to the predetermined position by said automatic document feeding apparatus, and for reading an image from the document sheet;
means for forming on an image carrier an image corresponding to the image read by said image-reading means;
condition setting means for setting image forming conditions in which to form an image by said image-forming means;
mode setting means for setting said image-forming means in an interruption copy mode so that said image-forming means stops forming an image in a first condition set by said condition setting means, and for causing said image-forming means to form an image in a second condition set by said condition setting means;
means for controlling said second and third transport means, when the image forming apparatus is set in the interruption copy mode by said mode setting means, such that said second transport means transports a document sheet on the document table to said third transport means, and said third transport means stops transporting the document sheet and holds at least a part of the document sheet, and for controlling said second and third transport means such that said second transport means transports the document sheet back toward said second transport means, and said second transport means transports the document sheet to said predetermined position on the document table, when said detecting means detects that said automatic document feeding apparatus covers said document table or when the interruption copy mode is cancelled after said image-forming means has formed an image in the second condition while set in the interruption copy mode.

5,341,204

SHEARING OPTICAL ELEMENT FOR INTERFEROMETRIC ANALYSIS SYSTEM

Ralph M. Grant, and Forrest Wright, both of Rochester, Mich., assignors to Grant Engineering, Inc., Rochester, Mich.

Filed Jun. 29, 1993, Ser. No. 84,570
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—35.5 14 Claims



1. A method of analyzing the strain of an object resulting from the application of stress thereon comprising the steps of:
a) illuminating the object with a source of coherent light;
b) passing light reflected from said object while in a first condition of stress, through an optical element having a plurality of regions characterized by a first index of transmissivity and a second plurality of regions characterized by a second index of transmissivity significantly different from said first index, said first and second regions being arrayed in an overall pattern such that a first set of light beams reflected from a first set of distinct points on a surface of the object to pass through said first plurality of regions and interfere at a small angle with a second set of light beams reflected from a second set of distinct sets on said surface and passed through said second plurality of regions to produce a first interferogram;
c) recording said first interferogram on a photoelectric sensing means to produce first electronic signals indicative of first interferogram;
d) passing light reflected from said object while in a second condition of stress through said optical element to cause third and fourth sets of light beams reflected from said first and second sets of distinct points on the surface of the object to interfere with each other at a small angle to produce a second interferogram;
e) recording said second interferogram on said photoelectric sensing means to produce second electronic signals indicative of said second interferogram; and
f) digitally processing said first and second electronic signals to produce a superimposed, composite image of the object having fringe families arrayed as a function of the relative strain of the object produced by the second condition of stress with respect to the first condition of stress.

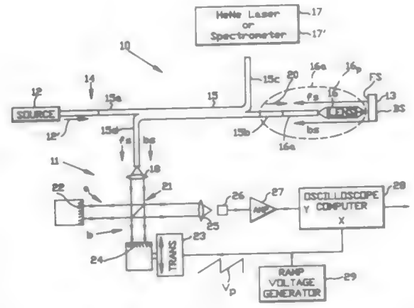
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,205

METHOD FOR CHARACTERIZATION OF OPTICAL WAVEGUIDE DEVICES USING PARTIAL COHERENCE INTERFEROMETRY

Matthew N. McLandrich; Donald J. Albares, and Stephen A. Pappert, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 15, 1991, Ser. No. 643,385
Int. Cl.[5] G01B 9/02; G01N 21/84
U.S. Cl. 356—73.1 30 Claims



1. An optical system for characterizing parameters of an optical waveguide having a front partially reflective surface and a back partially reflective surface comprising:

an optical source emitting partially coherent wave packets having a central emission wavelength λ_o with a predetermined coherence length l_c related to the width of its spectral energy wavelength distribution $\delta\lambda$ by the relation $l_c=\lambda_o^2/\delta\lambda$;

a coupler probe coupled to said optical source disposed to emit said partially coherent wave packets at said predetermined coherence length at said optical waveguide and to receive reflected said partially coherent wave packets from said front partially reflective surface and said back partially reflective surface;

a Michelson interferometer coupled to receive said reflected said partially coherent wave packets from said front partially reflective surface and said back partially reflective surface including optical components defining two optical paths that respectively transmit said reflected said partially coherent wave packets from said front partially reflective surface and said back partially reflective surface, said optical paths each having a length that differs one from the other by an amount Δp having a maximum value of l_c to assure the creation of interference signals representative of interference therebetween; and

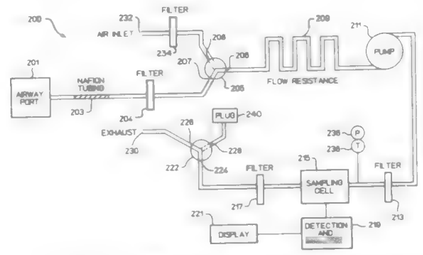
an indicator of said interference coupled to said Michelson interferometer to receive said interference signals to thereby assure characterizing said parameters of said optical waveguide, said coherence length does not exceed a round trip optical path length in said optical waveguide which is equal to 2nl where l is the distance between said front partially reflective surface and said back partially reflective surface and n is the refractive index of said optical waveguide and said characterizing is at least one of said parameters of absolute attenuation, effective refractive index, changes of these parameters with the application of a modulation voltage or an external disturbance, as well as providing the effects of interactions between absolute attenuation and effective refractive index with the application of an external disturbance.

5,341,206

METHOD FOR CALIBRATING A SPECTROGRAPH FOR GASEOUS SAMPLES

Richard J. Pittaro, San Carlos, and Tad D. Simons, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 3, 1992, Ser. No. 984,812
Int. Cl.[5] G01J 3/44; G01N 21/65
U.S. Cl. 356—301 20 Claims



1. A method for calibrating a system adapted for spectrographic analysis of gaseous substances, comprising the steps of:

using the system to generate a first spectrogram from air at a first number density level;

using the system to generate a second spectrogram from air at a second number density level;

using the first and second spectrogram of air to generate a background signal spectrogram;

retrieving spectral data stored in the system; and

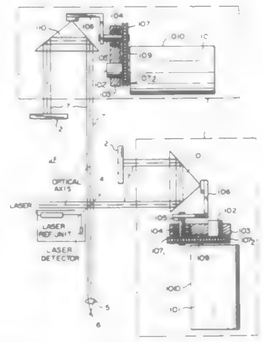
using the background signal spectrogram, one of the spectrograms of air, and the retrieved spectral data to set an operating parameter of the system.

5,341,207

MICHELSON INTERFEROMETER

Volker Tank, Eching; Peter Haschberger, Gauting, and Burkhard Jansen, Hilter, all of Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt für Luft - und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Aug. 10, 1992, Ser. No. 926,618
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128911; Nov. 4, 1991, 4136300
Int. Cl.[5] G01B 9/02
U.S. Cl. 356—346 7 Claims



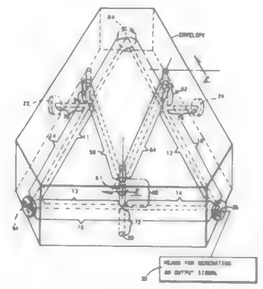
1. In a Michelson interferometer with two arms each having an optical axis, comprising a beam splitter intersecting the optical axes, two stationary plane mirrors enclosing an angle of 90° with each other and 45° with the beam splitter in each case, a collecting lens, a detector for signal radiation, and a laser reference unit consisting of a laser and a laser detector, the improvement wherein in each arm of the interferometer (IF) a retroreflector (110; 110') having its aperture plane aligned perpendicularly to its respective optical axis is mounted on a respective holder (106; 106') which in turn is rigidly connected to one end of a shaft (105; 105') rotatably mounted in a connecting member (103; 103') and to the other end of which a first gear (107_1; 107_1') is secured which is coupled via a toothed belt (109; 109') to an identically configured second gear (107_2; 107_2') which lies in the plane of the first gear (107_1; 107_1') and which is arranged concentrically to a drive shaft (102; 102') of a stationarily arranged electric motor (101; 101') and is rigidly connected to the housing (1010; 1010') thereof, the respective drive shaft (102; 102') being fixedly connected at a predetermined distance from the rotatably mounted shaft (105; 105') to the connecting member (103; 103') in such a manner that on rotation of the two drive shafts (102; 102') of the two electric motors (101, 101') the optical path length in one interferometer arm is shortened and in the other interferometer arm is lengthened synchronously therewith and the aperture planes of the two retroreflectors (110; 110') always remain unchanged aligned perpendicularly to the optical axis.

5,341,208

GAS BYPASS FOR BIAS REDUCTION IN LASER GYRESCOPES

James P. Hauck, Santa Ana, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed May 19, 1983, Ser. No. 496,166
Int. Cl.[5] H01S 3/081
U.S. Cl. 356—350 20 Claims



1. A ring laser gyro, comprising:

an envelope for an optically resonant cavity having a gain bore, wherein said envelope contains an active gas medium

electrically energizable electrode means having at least three symmetrically positioned electrodes at electrode locations coupled by said gain bore within said envelope for establishing an electrical discharge in said active gas medium between said electrode locations thereby exciting a pair of light beams along a lasing path through said gain bore between said electrode locations, said light beams counterpropagating in said optically resonant cavity, wherein said light beams exhibit bias errors;

means responsive to said counterpropagating light beams for measuring a difference in the frequencies of said counterpropagating light beams and for generating an output signal for said gyro said output signal indicating the direction of rotation and the absolute angular rate of the ring laser gyro on its sensitive axis;

said active gas medium having an axial current driven gas flow and return gas flow induced by said electrical discharge, said axial current driven gas flow and said return gas flow being unequal and contributing to said bias errors; and

a gas bypass cavity characterized to pneumatically couple said electrode locations, said gas bypass cavity having a cross section and length selected to conduct a part of said return gas flow between said respective electrode locations, said cross section and length being characterized to inhibit ionization of said gas medium within said gas bypass cavity and to minimize said bias errors;

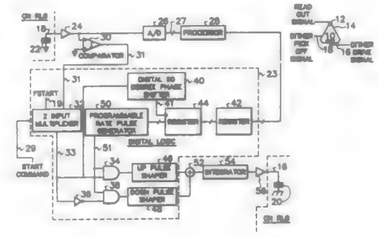
whereby, said gas bypass cavity operates to reduce said ring laser gyro bias errors by reducing said return gas flow in said gain bore by providing a gas bypass cavity through which differential pressure between respective electrode locations is reduced.

5,341,209

TRIANGULAR DITHER DRIVE APPARATUS FOR A RING LASER GYROSCOPE

Andrew J. Karpinski, Clearwater, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1992, Ser. No. 954,082
Int. Cl.[5] G01C 19/66
U.S. Cl. 356—350 14 Claims



1. Control apparatus for a dither motor, said dither motor for oscillating a ring laser angular rate sensor suspended from a support, wherein the oscillations of the sensor have controlled clockwise and counterclockwise amplitudes of rotation in response to an amplitude control signal, said ring laser gyro having a transducer for providing an angular position signal, said control apparatus comprising:

first signal means for receiving said angular position signal and for producing an amplitude word signal;

second signal means for providing a clock signal having a pulse edge concurrent with a zero rate condition of said angular position signal;

third signal means for converting said amplitude word signal to a pulse rate signal with said pulse rate related to said amplitude word signal and said pulse rate changing with each said clock signal;

fourth signal means for combining said angular position signal with said pulse rate signal to produce pulses in a first direction when said angular position signal is high and pulses in a second direction when said angular rate position signal is low;

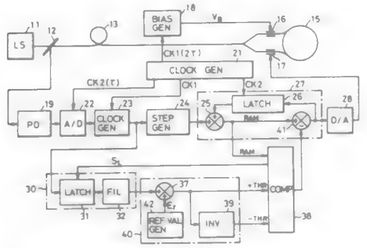
fifth signal means to receive said pulses in said first and second directions and integrate said pulses to provide a triangular wave amplitude control signal responsive to said amplitude word signal for driving said dither motor.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,210
DIGITAL RAMP PHASE TYPE OPTICAL INTERFERENCE GYRO

Kenji Ogawa; Osamu Itoyama; Motohiro Ishigami, and Kenichi Okada, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed Jul. 16, 1993, Ser. No. 92,491
Claims priority, application Japan, Jul. 22, 1992, 4-195259
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 4 Claims



1. A digital ramp phase type optical interference gyro wherein:

light from a light source is split by optical coupler means and provided therefrom as clockwise and counterclockwise like beams to a looped optical path;

said clockwise and counterclockwise light beams are phase modulated, by phase modulator means inserted between one end of said looped optical path and said optical coupler means, with a 50%-duty square wave which has a period twice longer than the time, τ, for the propagation of light through said looped optical path;

said clockwise and counterclockwise light beams having propagated through said looped optical path are combined by said optical coupler means into interference light and the intensity of said interference light is converted by a photodetector into an electric signal;

said electric signal is converted by an A–D converter into a digital signal, said digital signal is synchronously detected digitalwise and step values corresponding to the detected output are sequentially generated by a step value generator;

an accumulated value, which varies rampwise, is generated by repeatedly accumulating said step values with accumulator means until its output exceeds a predetermined value, and said accumulated value is converted by a D–A converter into an analog value; and

said clockwise and counterclockwise light beams are phase modulated with said analog value by said phase modulator means;

the improvement comprising:

comparator means for comparing said accumulated value and a threshold value and for outputting a detection signal and said threshold value when detecting that said accumulated value has exceeded said threshold value;

correcting signal generator means which responds to said detection signal from said comparator means to latch, as an error, said synchronously detected output when said accumulated value exceeded said threshold value and generates a correcting signal; and

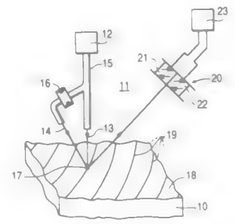
threshold generator means which generates a corrected version of said threshold value by adding said correcting signal and a reference value and provides said corrected threshold value to said comparator means;

wherein said accumulator means includes means for controlling a limit value of said accumulated value in accordance with said corrected threshold value from said comparator means.

5,341,211
APPARATUS FOR MAKING ABSOLUTE TWO-DEMENSIONAL POSITION MEASUREMENTS

Friedrich Prinzhausen, Stuttgart, and Pawel Drabarek, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00684, § 371 Date Mar. 12, 1992, § 102(e) Date Mar. 12, 1992, PCT Pub. No. WO91/04460, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 7, 1990, Ser. No. 838,735
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1989, 3930554
Int. Cl.[5] G01B *11/02*
U.S. Cl. 356—357 15 Claims

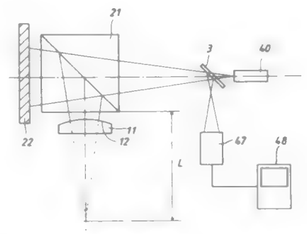


1. An apparatus for making absolute two-dimensional measurements of the position of an object with reference to a measuring arrangement comprising: means for directing an optical measuring wave onto a surface of the object, with said surface being configured as a hologram; means providing an optical reference wave for interfering with the measuring wave diffracted by the hologram; an optical sensor arrangement comprising at least two sensors for detecting the interfered-with waves; and a signal processing arrangement which determines the position of the object from the output signals of the sensors and from a value stored in a memory.

5,341,212
WAVE FRONT INTERFEROMETER

Tomohiro Yonezawa, Tokyo, Japan, assignor to Olympus Optical Company Limited, Japan

Filed Jul. 20, 1992, Ser. No. 918,203
Claims priority, application Japan, Jul. 19, 1991, 3-204942; Jan. 24, 1992, 4-034424
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—359 16 Claims

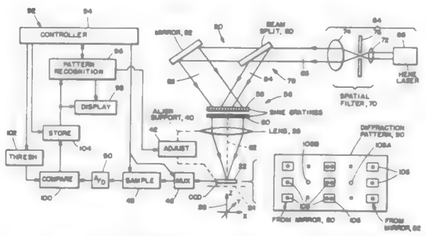


1. A wave front interferometer for determining the shape of an optical surface from interference fringes, comprising: a light source for projecting an irradiating light beam along a beam path; a beam splitter and a phase conjugate mirror in an optical path from the light source to an optical surface, the phase conjugate mirror being receptive of the irradiating light beam from the light source through the beam splitter and being effective to reflect the irradiating light beam as a reflected light beam in the form of a phase conjugate wave, the reflected light beam travelling from the phase conjugate mirror back along the same beam path as the irradiating light beam so that the distance between the phase conjugate mirror and a focus point of the reflected light beam increases as the distance between the light source and the beam splitter and/or the phase conjugate mirror increases to thereby enable measurement of a surface having a large radius of curvature, the beam splitter being effective to bend the phase conjugate wave so as to become incident and reflected as a surface reflected beam by the surface; whereby the surface reflected beam from the surface is used as a measurement wave front to determine the shape of the surface.

5,341,213
ALIGNMENT OF RADIATION RECEPTOR WITH LENS BY FOURIER OPTICS

Brian W. Giroux, Hampstead, N.H., assignor to Avco Corporation, Providence, R.I.

Filed Jul. 21, 1992, Ser. No. 917,864
Int. Cl.[5] G01B *11/00;* G02B *5/18*
U.S. Cl. 356—363 14 Claims



1. A method for aligning a photoreceptor with a lens comprising:

locating the photoreceptor and a light source on opposite sides of said lens, and along an optical path extending through said lens;

positioning a grating assembly on said optical path adjacent said lens;

providing said grating assembly with a sinusoidal diffraction grating extending in a direction transverse to said optical path with an optical transmissivity which varies in a sinusoidal fashion;

collimating light from said source to provide an illuminating light beam to illuminate said grating assembly to form a test diffraction pattern on said photoreceptor;

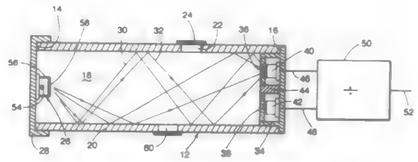
comparing said test diffraction pattern to a reference diffraction to obtain an error pattern resulting from an error in alignment of said photoreceptor with said lens; and

orienting said photoreceptor relative to said lens to null said error pattern.

5,341,214
NDIR GAS ANALYSIS USING SPECTRAL RATIOING TECHNIQUE

Jacob Y. Wong, Santa Barbara, Calif., assignor to Gaztech International Corporation, Goleta, Calif.

Continuation-in-part of Ser. No. 793,990, Nov. 18, 1991, Pat. No. 5,163,332, which is a continuation of Ser. No. 604,615, Oct. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 503,216, Apr. 2, 1990, Pat. No. 5,060,508, and a continuation-in-part of Ser. No. 503,215, Apr. 2, 1990, Pat. No. 5,103,096, which is a continuation-in-part of Ser. No. 403,587, Sep. 6, 1989, Pat. No. 5,026,992. This application Mar. 16, 1992, Ser. No. 851,869
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[5] G01N *21/03*
U.S. Cl. 356—437 9 Claims



1. An instrument for determining the concentration of a particular gas that might be present in the air around the instrument based on the propensity of the particular gas to absorb radiation in a characteristic wavelength band in which air not containing the particular gas does not absorb radiation, said instrument comprising in combination:

a tube having an open first end, having an open second end, having an inside surface that is specularly reflective for conducting radiation along said tube by multiple reflections, having a wall, and having at least one aperture extending through the wall;

a membrane spanning said at least one aperture and permitting the particular gas to diffuse into said tube from the air around the instrument and out of said tube, while preventing unwanted particles from entering said tube;

a source of radiation located within the first end of said tube;

a first filter located within the second end of said tube and oriented to receive radiation that has passed through said tube, and transmitting only radiation in a spectral band that includes the characteristic wavelength band of the particular gas;

a first detector located within the second end of said tube and positioned to receive only radiation that has passed through said first filter and responsive to that radiation to produce a first electrical signal representative of the intensity of that radiation;

a second filter located within the second end of said tube and oriented to receive radiation that has passed through said tube, and transmitting only radiation in a spectral band that does not include the characteristic wavelength band of the particular gas; and

a second detector located within the second end of said tube and positioned to receive only radiation that has passed through said second filter and responsive to that radiation to produce a second electrical signal representative of the intensity of that radiation.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,215

METHOD AND APPARATUS FOR DETECTING THE PRESENCE AND/OR CONCENTRATION OF BIOMOLECULES

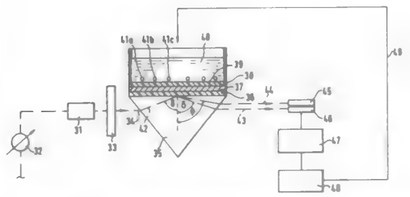
Jens-Peter Seher, Stuttgart, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 28, 1992, Ser. No. 889,629

Claims priority, application European Pat. Off., Jun. 8, 1991, 91109430.8

Int. Cl.[5] G01N *21/00*; C12M *1/34*

U.S. Cl. 356—445 **34 Claims**



1. A method for detecting biomolecules, comprising the steps of:

(a) attaching a plurality of biomolecules to a boundary surface, said boundary surface being between an optically denser and an optically rarer medium and having a first side adjacent to said optically denser medium and a second side adjacent to said optically rarer medium, said plurality of biomolecules being attached by at least one of

(i) adsorbing to said boundary surface;

(ii) depositing on said boundary surface; and

(iii) physically or chemically bonding to said boundary surface, said boundary surface having a film, the film having a conductive characteristic being capable of conducting surface plasmon waves, comprising the steps of:

(b) irradiating p-polarized electromagnetic waves, using light through said optically denser medium onto said boundary surface, wherein the angle of incidence (θ) of the p-polarized electromagnetic waves impinging onto said boundary surface is substantially equal to an angle (θ_{SPR}) at which surface plasmon resonance occurs, surface plasmon waves capable of causing said plurality of biomolecules at said boundary surface to reflect or generate electromagnetic waves in response to said surface plasmon wave;

(c) monitoring at least one of the electromagnetic waves reflected and the electromagnetic waves generated by said plurality of biomolecules at said boundary surface and determining at least one of:

(i) the presence of said plurality of biomolecules; and

(ii) the concentration of said plurality of biomolecules by analysis of at least one of said reflected or generated electromagnetic waves, wherein the intensity of the electromagnetic waves reflected or generated by said plurality of biomolecules at said boundary surface is detected; and

(d) controlling the angle of incidence (θ) of the impinging p-polarized electromagnetic waves depending on the intensity of reflected electromagnetic waves at said boundary surface such that said intensity is substantially maintained at a minimum corresponding to the occurrence of surface plasmon resonance.

5,341,216

CATV CHANNEL ACCESS CONTROL AND METERING APPARATUS

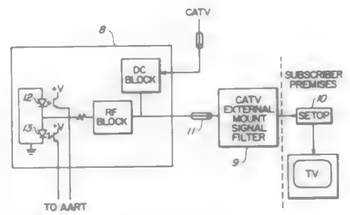
William K. Hoffart, Saskatchewan, Canada, assignor to Saskatchewan Telecommunications, Canada

Filed Sep. 27, 1990, Ser. No. 588,732

Claims priority, application Canada, Sep. 29, 1989, 615477

Int. Cl.[5] H04N *7/10, 7/14*; H04H *1/02*

U.S. Cl. 348—1 **8 Claims**



1. A CATV monitoring system for monitoring utilization by CATV subscribers of TV channels distributed over a CATV distribution line, said CATV monitoring system comprising:

a subscriber status monitor for connection between said CATV distribution line and a subscriber TV for delivering a selected TV channel from said CATV distribution line to said subscriber TV, said subscriber status monitor further comprising,

CATV signal filter means responsive to a subscriber generated activation signal to block out or pass a TV channel and to pass a status signal,

status indicating means including a pair of optoisolators connected through RF block means to said CATV filter means, said RF block means for preventing said TV channel from propagating into said status indicating means and for transmitting said status signal to said optoisolators to drive one and only one of said optoisolators to produce an output status signal indicating whether said TV channel is blocked out or delivered to said CATV subscriber TV,

DC block means for preventing said status signal from propagating into said CATV distribution line, and

means responsive to a unique electrically encoded address signal received over a communications bus for transmitting back over said communications bus said output status signal received from said status indicating means.

5,341,217

DIGITAL ADAPTIVE VIDEO SYNCHRONIZER

David T. Florsek, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

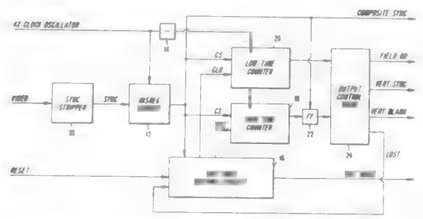
Continuation of Ser. No. 489,007, Mar. 6, 1990, abandoned. This application Jun. 30, 1992, Ser. No. 908,602

Int. Cl.[5] H04N *5/10*

U.S. Cl. 348—529 **22 Claims**

12. A video synchronization device, comprising:

first counting means for counting, during the occurrence of a sampling number of logic level transitions in a composite synch signal separated from an analog video signal, a number of clock signals occurring during a first recurrent portion of said analog video signal and for dividing a count accumulated in the course of said counting by said sampling number; and



first generating means, responsive to a result of said dividing, for generating a first synchronization signal.

5,341,218

VIDEO SIGNALS CLAMPING CIRCUIT FOR MAINTAINING DC LEVEL OF VIDEO SIGNALS

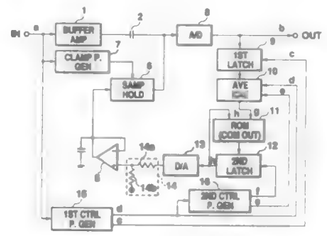
Hideki Kaneko; Sadayuki Inoue, and Ikuo Ookuma, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1992, Ser. No. 864,679

Claims priority, application Japan, Apr. 9, 1991, 3-075466

Int. Cl.[5] H04N *5/18, 5/16, 9/72*

U.S. Cl. 348—695 **11 Claims**



1. A video signal clamping circuit for maintaining a DC level of a digital video signal at a fixed level, comprising:

an A/D converter for converting an input analog video signal into the digital video signal;

a first latch circuit for sampling a predetermined part of the digital video signal at a predetermined period and latching the sampled data;

an average value calculator circuit for taking in a predetermined number of the sampled data items latched by the first latch circuit and calculating an average value of the sampled data;

a comparison output circuit for comparing the average value obtained in the average value calculator circuit with a reference value and outputting data either added or subtracted by a predetermined width to or from an output signal of a predetermined period before depending on a comparison result;

a D/A converter for converting the data output by the comparison output circuit into an analog signal; and

a clamp voltage supply means for supplying a clamp voltage to the input analog video signal on the basis of the analog signal output by the D/A converter, wherein the clamp voltage supply means includes a level compression shift for carrying out a level compression so that a voltage variation amount of the output of the D/A converter corresponding to 1 LSB of change of the input of the D/A converter is less than a voltage variation amount of 1 LSB change of the output of the A/D converter, and for shifting the voltage level to a predetermined level.

5,341,219

DEVICE AND METHOD FOR CONTROLLING THE CONTRAST IN AN IMAGE OBSERVATION SYSTEM PROVIDED WITH AN MCP IMAGE INTENSIFIER

Johannes B. J. Schelen, NR Den Haag, and J. van den Berg, AD Pijnacker, both of Netherlands, assignors to B.V. Optische Industrie "De Oude Delft", Delft, Netherlands

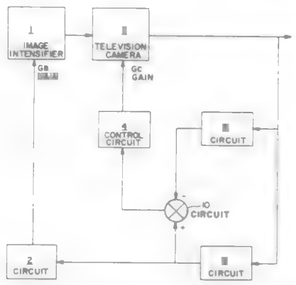
PCT No. PCT/EP91/00736, § 371 Date Nov. 16, 1992, § 102(e) Date Nov. 16, 1992, PCT Pub. No. WO91/16787, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 17, 1991, Ser. No. 940,898

Claims priority, application Netherlands, Apr. 18, 1990, 9000915

Int. Cl.[5] H04N *5/225, 5/57*

U.S. Cl. 348—217 **10 Claims**



1. A device for controlling contrast in an image observation system comprising an image intensifier provided with a microchannel plate and an image converter for converting an output image of the image intensifier into a video signal or a visible image, which comprises means for determining a control signal representative of a contrast range in an output signal of said image converter, means for adjusting gain of said image intensifier and means for adjusting gain of said image converter whereby if the control signal has a value representative of a larger contrast range in said output signal of said image converter, the gain of the image intensifier is adjusted higher and the gain of said image converter is adjusted lower, and whereby if the control signal has a value representative of a low contrast range in said output signal of said image converter, the gain of said image intensifier is adjusted lower and the gain of said image converter is adjusted higher.

5,341,220

STILL PICTURE IMAGING APPARATUS HAVING AN IMPROVED AUTOMATIC EXPOSURE CONTROL AND REDUCTION IN POWER CONSUMPTION

Masahiro Juen, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 847,844, Mar. 9, 1992, which is a continuation of Ser. No. 638,356, Jan. 4, 1991, abandoned. This application Oct. 15, 1992, Ser. No. 962,042

Claims priority, application Japan, Jan. 8, 1990, 2-388; Jan. 19, 1990, 2-8364

Int. Cl.[5] H04N *5/238*

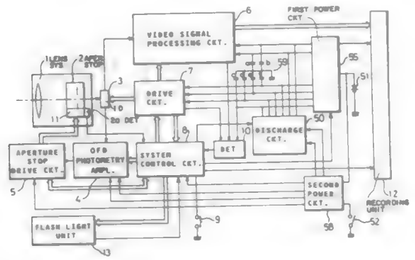
U.S. Cl. 348—296 **4 Claims**

1. In a still picture imaging apparatus including a CCD imaging device having an overflow drain, photometer means for measuring a photo current flowing into the overflow drain of said imaging device, aperture stop means for controlling the quantity of light incident to said imaging device, and command means for generating a command signal to make a start of imaging operation of said imaging device whereby, with driv-

VOL 1165 ISS 4 AG 23 1994 UMI

ing of said imaging device for said imaging operation being stopped, measurement of light quantity by said photometer means is effected and then the driving for said imaging operation of said imaging device is started in response to the command signal from said command means, the improvement comprising:

aperture stop control means for feedback-controlling said aperture stop means in accordance with a measured light quantity signal generated from said photometer means in such a manner that said measured light quantity signal becomes equal to a reference value representing an incident light quantity which provides a proper exposure



when said imaging device is exposed to incident light over a predetermined shutter time;

aperture stop fixing means for mechanically fixing an aperture stop opening of said aperture stop means controlled by said aperture stop control means immediately before said imaging device starts the imaging operation in accordance with the command signal from said command means; and

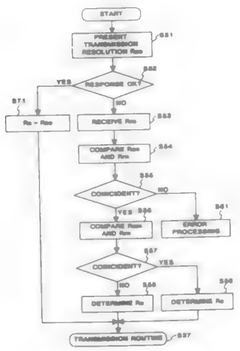
output control means for outputting from said imaging device a video output signal imaged with said predetermined shutter time after said aperture stop opening has been fixed.

5,341,221

FACSIMILE APPARATUS

Hiroyuki Mikada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1991, Ser. No. 709,823
Claims priority, application Japan, Jun. 5, 1990, 2-145467
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—400 **22 Claims**



1. A facsimile apparatus having a plurality of different nominal transmission resolutions and a plurality of different nominal transmission resolutions, said facsimile apparatus comprising:

memory means for storing image data read from an original to be transmitted;

first collation means for collating said nc minal transmission resolutions with a plurality of different nominal transmission destination resolutions;

second collation means for collating said non-nominal transmission resolutions with said nominal transmission destination resolutions, said second collation means executing the collation provided that a match occurs in the collation performed by said first collation means;

conversion means for converting the resolution of the image data stored by said memory means into one of the nominal transmission resolutions found as a matching resolution by said first collation means or said second collation means; and

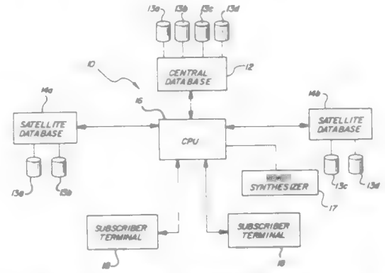
transmission means for transmitting the image data of the converted resolution.

5,341,222

DISTRIBUTED FACSIMILE INFORMATION SYSTEM AND METHOD

Charles Newman; Paul L. Jones, and Charles King, all of Ann Arbor, Mich., assignors to Demand Publishing, Inc., Dexter, Mich.

Filed May 18, 1992, Ser. No. 884,393
Int. Cl.[5] H04M *11/08;* **H04N** *1/42*
U.S. Cl. 358—403 **16 Claims**



1. A distributed facsimile information system for use with a plurality of input/output terminals disposed at remote locations of subscribers to said information system and each including a touch-tone phone for the entry of inputs corresponding to requests for particular information and a facsimile machine for the receipt of said particular information, said system comprising:

a central data base including a plurality of data files containing digitally stored information;

at least one satellite data base including at least one of said plurality of data files;

a central processing unit in communication with the central data base and the at least one satellite data base for retrieving data from said plurality of data files, said terminals being in communication with said central processing unit through a public telephone network; and

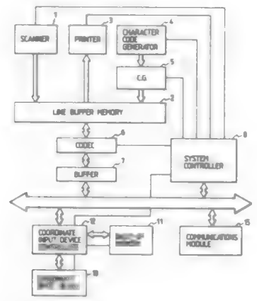
said central processing unit being programmed to retrieve in response to a request for information from a subscriber said requested information from one of said central and said at least one satellite data base and to transmit said requested information to said subscriber's facsimile machine.

5,341,223

HEIRARCHICAL INDICATION INCLUSIVE INDICATION AND HEIRARCHICAL INCLUSIVE INDICATION INPUT SYSTEM

Nobuyuki Shigeeda; Susumu Yamamoto; Masahiko Katsurabayashi, and Tadahiko Ikegaya, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 598,009, Oct. 11, 1990, abandoned.
This application Jun. 1, 1993, Ser. No. 70,037
Claims priority, application Japan, Apr. 10, 1990, 2-93049
Int. Cl.[5] H04N *1/00;* **G06F** *9/00*
U.S. Cl. 358—440 **41 Claims**



1. An indication input system, comprising:

coordinate input means for displaying an organizational chart expressing the relationship of a plurality of functions, and for registering coordinates of a point when indicated on said organizational chart;

a memory for storing a data table including said plurality of functions, a plurality of key domains defining a coordinate boundary of each of said plurality of functions, key numbers which uniquely identify each of said key domains, and related data defining the relationship between said plurality of functions as expressed on said organizational chart, said related data including the key numbers which identify the key domains related to each of said functions; and

control means for determining selected functions in accordance with a point indicated on said coordinate input means, and for sequentially effecting the execution of the selected functions and any of the plurality of functions related to said selected functions by first reading the key number identifying one of said selected functions, executing said one selected function, reading the related data of said one selected function, sequentially executing any function whose key number is read, and repeating the above procedure for the remaining selected functions.

5,341,224

IMAGE PROCESSING SYSTEM AND METHOD FOR EMPLOYING ADAPTIVE SCANNING OF HALFTONES TO PROVIDE BETTER PRINTABLE IMAGES

Reiner Eschbach, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 17, 1992, Ser. No. 870,066
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **17 Claims**

1. An image processing system for scanning and reproducing halftone images, said system comprising:

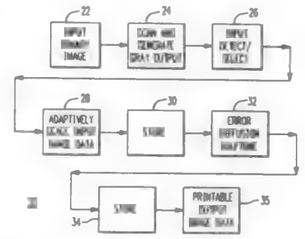
means for scanning an input halftone image to generate an input image having gray content according to a gray scale;

first means for detecting whether each pixel processed from the input image is a constant area pixel or an edge area pixel;

means for estimating a local black/white reference point for each pixel being processed as a function of individual black/white reference point values for pixels in a predetermined neighborhood of the pixel being processed;

second means for detecting whether each constant area pixel has an input value that makes it a white pixel or a black pixel relative to the local current black/white reference point estimated by the estimating means for each detected constant area pixel;

third means for modifying the input value of each detected constant area pixel to a predetermined white value or a predetermined black value according to whether a white or black pixel value is detected by said second detecting means;



means for setting the value of an individual black/white reference point for each detected constant area pixel to a predetermined value for that pixel;

fourth means for modifying an input value of each detected edge area pixel as a function of the local black/white reference point estimated by said estimating means for said each detected edge area pixel;

means for adjusting the estimated black/white local reference point for each of at least some detected edge area pixels; and

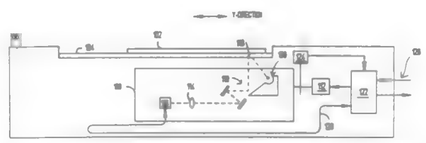
means for storing the modified constant and edge area pixels from said third and fourth means as a modified image for output processing.

5,341,225

IMAGE SCANNING SYSTEM AND METHOD WITH IMPROVED REPOSITIONING

Irene F. Stein; Greg A. Degi, both of Fort Collins; David W. Boyd, Greeley, and Steven L. Webb, Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 699,844, May 14, 1991, abandoned.
This application May 22, 1991, Ser. No. 704,576
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—498 **5 Claims**



1. An image scanning system having a photosensing array, an image buffer and a stepper motor for producing digital data of an original having scan line extents along a Y-direction defined by a relationship of Y-positioning speed to a predetermined array exposure time, comprising:

first means for stepping the stepper motor at a Y-positioning speed for positioning the array with respect to the original;

VOL 1165 ISS 4 AG 23 1994 UMI

second means for causing the array to transfer the data to the image buffer;

control means for synchronizing said first and second means and for varying said Y-positioning speed to thereby vary the extent of said scan line with respect to said motor steps and achieve one or more scanning resolutions;

third means for determining a buffer full condition and initiating a scan line pause by signaling said second means to stop transfer of the data; and

fourth means for determining a position of the array in relation to said motor steps at a corresponding time of said scan line pause;

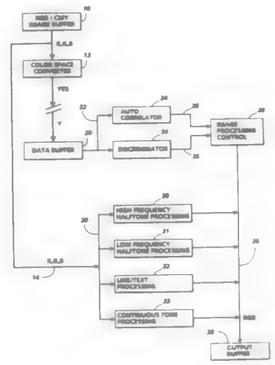
wherein said control means is further configured to reposition the array to resume scanning based on said determined position and said corresponding time.

5,341,226

AUTOMATIC IMAGE SEGMENTATION FOR COLOR DOCUMENTS

Jeng-Nan Shiau, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 22, 1993, Ser. No. 51,146
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—518 **16 Claims**



1. A method of processing a multi-separation document image in accordance with image types present therein, the steps comprising:

receiving from an image source a multi-separation document image, where each pixel in the image is represented by a triplet of color density image signals, and storing at least a portion thereof representing an area of the document image in a data buffer;

with a color space converter, converting each color triplet of image signals in the portion received from the data buffer to a luminance-chrominance signal description of the document image, where one component signal thereof represents intensity of the document image;

with an image segmentation circuit, receiving the intensity component of the document image from the color space converter and determining image types present in an area of the image therefrom;

with a multi-image type image processor also receiving the color density signal from the data buffer, processing the color density signals for the portion in accordance with the determined image type; and

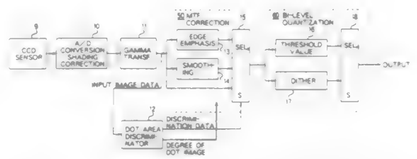
directing color density signals processed in accordance with determined image type to an output data buffer.

5,341,227

DOT IMAGE DISCRIMINATION CIRCUIT FOR DISCRIMINATING A DOT IMAGE FROM OTHER TYPES OF IMAGES

Hideo Kumashiro, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1993, Ser. No. 34,900
Claims priority, application Japan, Mar. 23, 1992, 4-064601
Int. Cl.[5] H04N *1/40, 1/46*
U.S. Cl. 358—533 **16 Claims**



1. A dot image discrimination circuit for discriminating a dot image in an area composed of many pixels which have levels corresponding to image density, said circuit comprising:

a sampling means for sampling a plurality of pixels including a central pixel in an area of a prescribed size around the central pixel;

a detection means for comparing the level of each pixel in the area sampled by said sampling means with the level of a pixel which is close thereto in a first direction and for detecting a prominent pixel having a level which has a more prominent value than the close pixel in the first direction;

an inspection means for inspecting for each prominent pixel if another prominent pixel is close thereto in a second direction perpendicular to the first direction and for ignoring the prominent pixel according to the inspection;

a count means for counting the prominent pixels excluding ignored prominent pixels; and

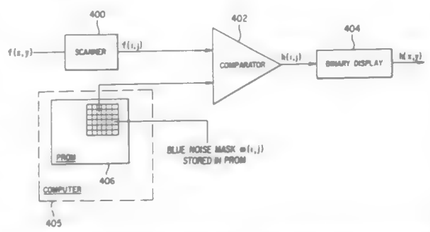
a discrimination means for discriminating if the central pixel is a pixel in a dot area, according to the count value obtained by said count means.

5,341,228

METHOD AND APPARATUS FOR HALFTONE RENDERING OF A GRAY SCALE IMAGE USING A BLUE NOISE MASK

Kevin J. Parker, Rochester, N.Y., and Theophano Mitsa, Iowa City, Iowa, assignors to Research Corporation Technologies, Tucson, Ariz.

Continuation-in-part of Ser. No. 622,056, Dec. 4, 1990, Pat. No. 5,111,310. This application Dec. 3, 1991, Ser. No. 801,921
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—534 **11 Claims**



1. A method for the halftoning of color images, comprising the steps of utilizing, in turn, a pixel-by-pixel comparison of each of a plurality of color planes of said color image against a blue noise mask in which the blue noise mask is comprised of a random non-deterministic, non-white noise single valued

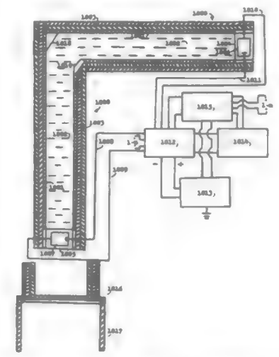
function which is designed to provide visually pleasing dot profiles when thresholded at any level of said color images, wherein a plurality of blue noise masks are separately utilized to perform said pixel-by-pixel comparison and in which at least one of said blue noise masks has its pixels shifted by at least one pixel prior to performing said pixel-by-pixel comparison.

5,341,229

HOLOGRAPHIC DISPLAY SYSTEM

Larry Rowan, 3440½ Caroline Ave., Culver City, Calif. 90230

Continuation-in-part of Ser. No. 244,331, Jul. 14, 1988, abandoned. This application Jul. 5, 1990, Ser. No. 548,750
Int. Cl.[5] G02F *1/00;* **G03H** *1/10, 1/28*
U.S. Cl. 359—10 **8 Claims**



1. A holographic display system comprising:

a plurality of laser light sources, wherein each of said laser light sources produces a laser light beam,

a plurality of Kerr units, wherein each of said Kerr units comprises input ports and output ports,

means for directing said laser light beams from said laser light sources to said input ports of said Kerr units,

wherein each of said Kerr units further comprises multiple light channel means which connect said input ports to said output ports and wherein said laser light beams are directed from said input ports to said output ports of each of said Kerr units through said multiple light channel means, inside of which the wavelength of said laser light beams is selectively shifted,

wherein said input ports and output ports of said Kerr units each comprise at least one hollow cell which comprises an entrance and exit surface, wherein each of said hollow cells is filled with an optically active medium which exhibits the Kerr effect when a voltage is applied thereacross, and wherein each of said cells comprises polarizers on said entrance and exit surfaces,

a holographic plate upon which is disposed a plurality of thin film holographic emulsions,

a plurality of fiber optic connecting means which connect said output ports of said Kerr unit to said holographic plate for directing said laser light beams from said Kerr unit to said holographic plate,

a diffusing means, disposed adjacent said plurality of thin film holographic emulsions for directing said laser light beams from said fiber optic connecting means to the edges of said thin film holographic emulsions,

central control means coupled to said plurality of laser light sources and said Kerr units for selectively controlling said laser light sources and said lens elements of the input ports and output ports of said Kerr unit,

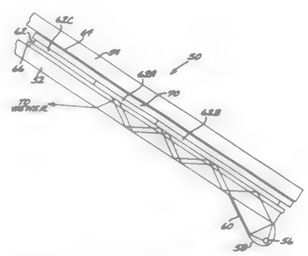
a source of electrical power which is coupled to each of said plurality of laser light sources and to said central control means.

5,341,230

WAVEGUIDE HOLOGRAPHIC TELLTALE DISPLAY

Ronald T. Smith, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 995,251
Int. Cl.[5] G02B *5/30, 5/32, 27/28*
U.S. Cl. 359—13 **37 Claims**



1. A waveguide holographic telltale display for projecting images via a vehicle windshield comprising inner and outer windshield singlets, comprising:

means for injecting light into the base of said inner windshield singlet;

a telltale image hologram disposed at a predetermined area between said singlets for diffracting light injected into said inner singlet out toward the vehicle driver; and

a holographic mirror disposed between said inner and outer singlets for confining said injected light from entering said outer singlet, and wherein said holographic mirror does not extend over said predetermined area.

5,341,231

LIQUID CRYSTAL DISPLAY DEVICE WITH EDGE LIT LIGHTGUIDE REFLECTING LIGHT TO BACK REFLECTOR BY TOTAL INTERNAL REFLECTION

Yoshitaka Yamamoto, Yamatokoriyama, and Yutaka Ishii, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1992, Ser. No. 984,937
Claims priority, application Japan, Dec. 3, 1991, 3-318989; Dec. 3, 1991, 3-318991
Int. Cl.[5] G02F *1/1335;* **F21V** *7/04, 5/00*
U.S. Cl. 359—49 **29 Claims**

1. A liquid crystal display device comprising:

a liquid crystal display element composed of a transparent substrate, a counter substrate disposed oppositely to the transparent substrate and possessing reflecting means for reflecting the incident light entering from the transparent substrate side, and a liquid crystal layer interposed therebetween,

a light guide plate disposed at the transparent substrate side of the liquid crystal display element,

a light source disposed at the edge of the light guide plate, and

a collimator disposed between the light guide plate and the light source for controlling the light from the light source,

wherein the condition of

$$n1 < n \cdot \sin\theta < n2 \qquad (1)$$

is satisfied supposing the refractive index of the light guide plate is n, the refractive index of a substance positioned at the side of the light guide plate opposite the liquid crystal display element is n1, the refractive index of a substance positioned at the liquid crystal display element side of the light guide plate is

VOL 1165 ISS 4 AG 23 1994 UMI

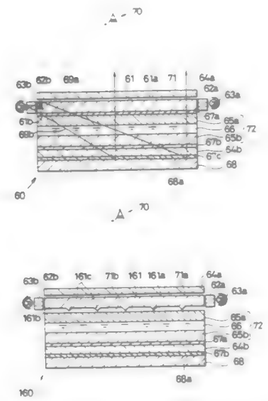
n2, and the incident angle of the light source light transmitted through the collimator to the side of the light guide plate opposite the liquid crystal display element is θ.

2. A liquid crystal display device comprising:

a liquid crystal display element composed of a transparent substrate, a counter substrate disposed oppositely to the transparent substrate and possessing reflecting means for reflecting the incident light entering from the transparent substrate side, and a liquid crystal layer interposed therebetween,

a light guide plate disposed at the transparent substrate side of the liquid crystal display element, and

a light source disposed at the edge of the light guide plate, wherein



plural protrusions are formed on the surface of the light guide plate at the liquid crystal display element side, and the condition of

$$n1 < n\text{-}\sin\theta \qquad (2)$$

is satisfied, supposing the refractive index of the light guide plate is n, the refractive index of a substance positioned at the side of the light guide plate opposite the liquid crystal display element is n1, and the incident angle of the light source light to the side of the light guide plate opposite the liquid crystal display element is θ.

5,341,232

STAR-SHAPED NETWORK FOR DATA COMMUNICATION BETWEEN STATIONS

Wolfgang Popp, Darmstadt, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltung-GmbH, Frankfurt A.M., Fed. Rep. of Germany

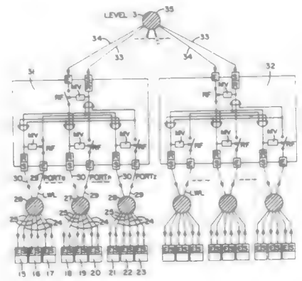
PCT No. PCT/EP89/00156, § 371 Date Aug. 12, 1991, § 102(e) Date Aug. 12, 1991, PCT Pub. No. WO90/09710, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 20, 1989, Ser. No. 741,412

Int. Cl.[5] H04B *10/20*

U.S. Cl. 359—120 **6 Claims**

1. A star-shaped network for data communication between stations comprising star couplers at branchings, said network being arranged in different levels, said levels comprising stations or sub-networks arranged alternatively in groups having passive symmetrical and active asymmetrical star couplers, said network having a lower level provided with passive symmetrical star couplers connected to said stations; said active star couplers being provided with ports, each port having a receiver and a transmitter, said receiver of said port of each active star coupler being connected to switching means which are rendered nonconductive by signals supplied to the corresponding transmitter of said port, and said receiver of each



port of each active star coupler being connected to said transmitters of only the other ports of the same active star coupler.

5,341,233

LIQUID CRYSTAL MODULE WITH TAB ASSEMBLIES CONNECTED THROUGH A FLEXIBLE CIRCUIT BOARD

Kazuhiro Tomoike, and Moriyoshi Kurosawa, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

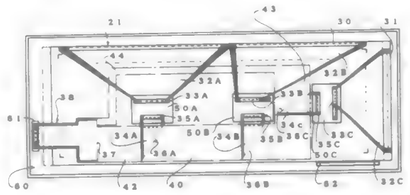
PCT No. PCT/JP92/00621, § 371 Date Jan. 13, 1993, § 102(e) Date Jan. 13, 1993, PCT Pub. No. WO92/21051, PCT Pub. Date Nov. 26, 1992

PCT Filed May 14, 1992, Ser. No. 972,478

Claims priority, application Japan, May 15, 1991, 3-139731; Aug. 30, 1991, 3-244140

Int. Cl.[5] G02F *1/1343*

U.S. Cl. 359—88 **10 Claims**



1. A liquid crystal module comprising:

a matrix liquid crystal unit including a liquid crystal panel composed of two flexible plastic substrates and a liquid crystal material sandwiched between the flexible plastic substrates, said liquid crystal panel having liquid crystal drive electrodes and first terminals for the liquid crystal drive electrodes at a side portion thereof, and a flexible circuit sheet having a plurality of liquid crystal drive TAB-LSI assemblies mounted thereon and second and third terminals for the liquid crystal drive TAB-LSI assemblies at side portions thereof, said liquid crystal panel and said flexible circuit sheet being piled and lightly connected together, and the first and second terminals being electrically connected to each other at the side portions; and

a thin board having a circuit thereon and a lock connector at a side portion, said thin board being disposed over the flexible circuit sheet and lightly connected thereto, said lock connector being fixed to the third terminals for electrically connecting said circuit of the thin board to the liquid crystal drive TAB-LSI of the flexible circuit sheet so that the liquid crystal module is made flexible.

5,341,234

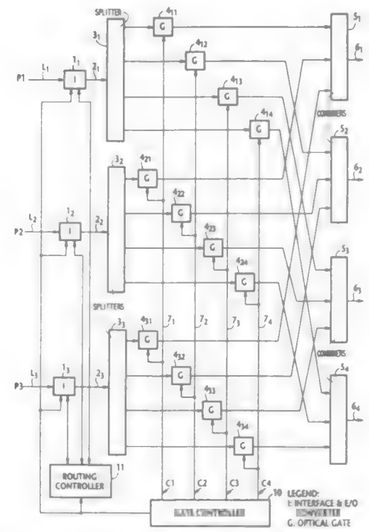
SELF-ROUTING NETWORK USING OPTICAL GATE ARRAY DRIVEN BY CONTROL VOLTAGES COINCIDENTAL WITH PACKET HEADER PULSES

Shuji Suzuki, and Makoto Nishio, both of Tokyo, Japan, assignors to Nec Corporation, Tokyo, Japan

Filed Nov. 14, 1991, Ser. No. 792,191

Int. Cl.[5] H04J *14/00, 14/02*

U.S. Cl. 359—117 **19 Claims**



1. An optical self-routing network for self-routing an optical packet having a header, comprising:

N optical splitters associated respectively with N inlet terminals of the network, each of the splitters receiving an optical packet incident from the associated inlet terminal and splitting the incident optical packet into M replicas of the optical packet;

M optical combiners associated respectively with M outlet terminals of the network, each of the optical combiners receiving N optical packets incident thereon and combining the incident optical packets into a combined optical signal and coupling the combined optical signal to the associated outlet terminal;

a plurality of optical gates divided into M sets corresponding respectively to the M optical combiners, each optical gates establishing a path between input and output ends thereof upon time coincidence between light energy and electrical energy applied thereto, each of the M sets comprising N optical gates corresponding respectively to the N optical splitters, the optical gates of each set being respectively connected at input ends thereof to the corresponding N optical splitters and connected at output ends thereof to the M optical combiner to which the set of the optical gates corresponds, each optical gate of each set receiving one of M replicas of an optical packet incident from the corresponding optical splitter and allowing passage of the incident replica and said electrical energy; and

gate control means for supplying a gate control electrical signal of a predetermined waveform to the optical gates of each set during M successive intervals as said electrical energy.

5,341,235

OPTICAL ISOLATOR AND METHOD FOR PREPARING SAME

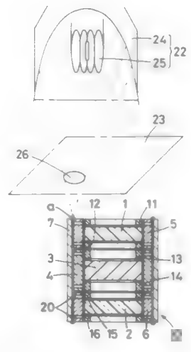
Toshiaki Watanabe, and Toshihiko Ryuo, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 918,373, Jul. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 686,422, Apr. 16, 1992, Pat. No. 5,161,049. This application Nov. 15, 1993, Ser. No. 152,903

Claims priority, application Japan, Jul. 24, 1991, 3-058049; Jul. 24, 1991, 3-058058; Jul. 24, 1991, 3-184457

Int. Cl.[5] G02F *1/09;* **G02B** *27/28*

U.S. Cl. 359—281 **11 Claims**



1. An optical isolator comprising a polarizer, a Faraday rotator, an analyzer and a magnet for applying a magnetic field to the Faraday rotator, said polarizer, rotator, analyzer and magnet being mutually immobile, wherein the polarizer is inserted between two ring members which are incorporated into a first metal cylinder to form a polarizer unit, the Faraday rotator, formed from a bismuth-substituted rare-earth iron garnet crystal is inserted between two ring members which are incorporated into a cylindrical magnet to form a Faraday rotator unit and the analyzer is inserted between two ring members which are incorporated into a second metal cylinder to form an analyzer unit, said polarizer, Faraday rotator and analyzer units being arranged in an outer cylinder and said first metal cylinder and said second metal cylinder being joined to the outer cylinder through an adhesive component.

5,341,236

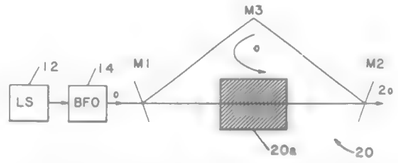
NONLINEAR OPTICAL WAVELENGTH CONVERTERS WITH FEEDBACK

Eddy A. Stappaerts, Rancho Palos Verdes, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Dec. 3, 1992, Ser. No. 985,470

Int. Cl.[5] H01S *3/109*

U.S. Cl. 359—328 **21 Claims**



1. Optical frequency conversion apparatus, comprising:

VOL 1165 ISS 4 AG 23 1994 UMI

at least one resonator means having an optical path defined by a plurality of mirrors; and

a nonlinear conversion medium disposed within the optical path of said resonator means, said nonlinear medium receiving optical radiation at a first frequency and outputting optical radiation at a second frequency that is a multiple of the first frequency; wherein

one of said mirrors is an input mirror for coupling into said at least one resonator means a pulse of radiation having a first frequency;

one of said mirrors is an output mirror for coupling out of said at least one resonator means a pulse of radiation having a frequency that is a function of the first frequency; and wherein

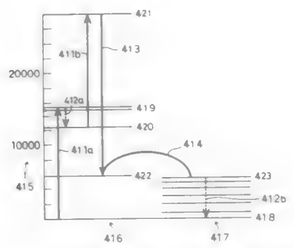
means associated with said input mirror for providing a predetermined reflectivity for providing an optical feedback for causing the pulse of radiation within said resonator means to have an intensity sufficient to optimize, over the entire pulse shape and beam profile of the pulse of radiation, a conversion efficiency of said nonlinear conversion medium without exceeding a damage threshold of said nonlinear conversion medium or of any of said plurality of mirrors.

5,341,237

RARE EARTH ION DOPED OPTICAL ELEMENT

Genji Tohmon; Hisanao Sato; Toshihiro Fujita, and Jun Ohya, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 31, 1992, Ser. No. 830,311
Claims priority, application Japan, Sep. 27, 1991, 3-249486
Int. Cl.[5] H01S *3/14*
U.S. Cl. 359—341 **12 Claims**



10. A rare earth ion doped optical amplifying element, made of an optical material doped with Tm ion and a second rare earth ion different from said Tm ion, comprising an incident portion and an emission portion, wherein

said Tm ion is adapted

(i) to be raised in energy from a ground state level to a first energy level by absorption transition from said ground state level to said first energy level or by absorption transition from said ground state level to a second energy level which is higher than said first energy level followed by non-radiative transition from said second energy level to said first energy level, said absorption transition caused by absorbing exciting light which has a wavelength corresponding to a wavelength of light that said Tm ion absorbs,

(ii) to be raised in energy from said first energy level to a third energy level by absorption transition, caused by absorbing an exciting light of 650±10 nm wavelength,

(iii) to amplify a signal light incident through said incident portion by the lowering of said Tm ion in energy from said third energy level to a fourth energy level by radiative transition, and

(iv) to be lowered in energy from said fourth energy level to said ground state level by non-radiative transition, caused by the energy transfer from said Tm ion to said second rare earth ion when said Tm ion is at said fourth energy level, and

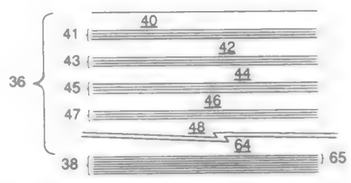
said rare earth ion doped optical amplifying element emits said signal light amplified by said Tm ion from said emission portion.

5,341,238

DICHROIC OPTICAL FILTER

David Trost, San Francisco; Philip Baumeister, Newcastle, and Dennis Fischer, Auburn, all of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

Continuation of Ser. No. 690,068, Apr. 23, 1991, Pat. No. 5,296,961. This application Sep. 9, 1993, Ser. No. 119,336
The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.[5] G02B *5/20, 1/10*
U.S. Cl. 359—359 **8 Claims**



1. A dichroic optical filter, including:

a substrate that is substantially transparent to visible radiation, wherein the substrate has a front surface;

a coating on the front surface, wherein the coating includes:

an oxide semiconductor layer that is highly reflective to a selected infrared wavelength, has optical thickness substantially less than one quarter of the selected infrared wavelength, and is substantially transparent to visible radiation; and

a first multilayer coating for enhancing the filter's reflectance to the selected infrared wavelength, wherein the first multilayer coating includes thick layers having a higher refractive index alternating with thick layers having a lower refractive index, wherein each of the thick layers has an optical thickness substantially equal to one quarter of the selected infrared wavelength, and wherein each of the thick layers is substantially transparent to visible radiation.

5,341,239

STEREOMICROSCOPE EQUIPPED WITH EYEPIECE INCLUDING VARIABLE MAGNIFICATION OPTICAL SYSTEM

Toyoharu Hanzawa, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,834
Claims priority, application Japan, Oct. 16, 1991, 3-267694
Int. Cl.[5] G02B *21/22*
U.S. Cl. 359—377 **5 Claims**

1. A stereomicroscope comprising:

an objective lens for converting light from an object into substantially parallel beams of light;

an imaging lens receiving emergent light from said objective lens, for forming an image of the object at a predetermined position;

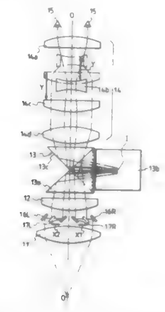
means for erecting said image of the object; and

an eyepiece for observing said image of the object,

said image of the object being viewed stereoscopically when a viewer looks through said eyepiece with his eyes,

wherein said eyepiece is equipped with, in order from the side of said image of the object, a variable magnification optical system and an eye lens and constructed from a single lens system common to the eyes of the viewer,

said eye lens having a diameter greater than an interpupil distance of the viewer,



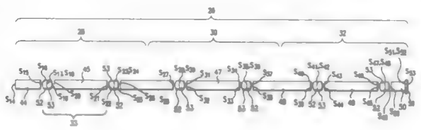
optical paths from said object image to the eyes of the viewer traversing positions outside an optical axis of said eyepiece.

5,341,240

DISPOSABLE ENDOSCOPE

Barry G. Broome, Glendora, Calif., assignor to Linvatec Corporation, Largo, Fla.

Filed Feb. 6, 1992, Ser. No. 833,416
Int. Cl.[5] A61B *1/04, 1/06;* **G02B** *23/24*
U.S. Cl. 359—435 **21 Claims**



1. A focusing ocular group for connection to a predetermined endoscope probe and adapted to therewith comprise a surgical endoscope capable of providing a corrected image to means for forming a visible image, said predetermined probe forming an uncorrected image with optical aberration including at least a predetermined degree of field curvature and a predetermined degree of lateral chromatic aberration sufficient to render the uncorrected image unusable in surgical procedures, said focusing ocular group including optical elements comprising: one or more axially movable focusing elements; and two doublet lens groups; wherein the optical elements of said focusing ocular group include one or more elements to compensate for said predetermined degree of field curvature and predetermined degree of lateral chromatic aberration in the uncorrected image formed by said probe.

5,341,241

TRAP DOOR FOR PROJECTION SCREEN CASE

Rick A. Shopp, Spiceland, Ind., assignor to Draper Shade & Screen Co., Inc., Spiceland, Ind.

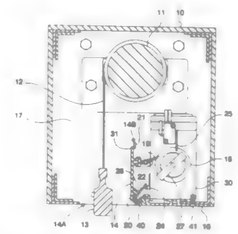
Filed May 26, 1993, Ser. No. 67,541
Int. Cl.[5] G03B *21/56*
U.S. Cl. 359—443 **21 Claims**

1. An electrically actuated trap door system for a projection screen case having a bottom surface and defining an interior space, the system comprising:

a trap door having first and second opposing edges, the first edge pivotally connected to the case such that the trap door is movable between a closed position in which the trap door is substantially flush with the bottom surface of the case and an open position in which the second edge of the trap door is disposed within the interior of the case;

a motorized roller disposed within the case, the roller having a longitudinal axis and rotatable in first and second directions about its longitudinal axis; and

a ribbon having first and second ends, the first end connected to the trap door and the second end connected to the motorized roller,



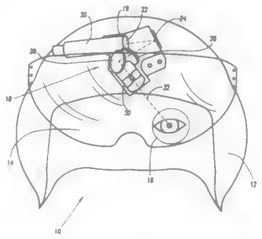
such that when the trap door is in its closed position, rotation of the motorized roller in the first direction causes the ribbon to wrap around the roller thereby moving the trap door toward its open position and, when the trap door is in its open position, rotation of the motorized roller in the second direction allows the trap door to move toward its closed position by gravitational forces.

5,341,242

HELMET MOUNTED DISPLAY

Pinhas Gilboa; Alexander Gold, and Joseph Yaeli, all of Haifa, Israel, assignors to Elbit Ltd., Haifa, Israel

Filed May 4, 1992, Ser. No. 878,391
Claims priority, application Israel, Sep. 5, 1991, 99420
Int. Cl.[5] G02B *17/08, 27/10, 5/10*
U.S. Cl. 359—631 **22 Claims**



1. Head mounted display apparatus comprising:

a surface mounted on an observer and having an at least partially reflecting portion in the view of the observer; and

an optical projector for projecting an image for refection from the at least partially reflecting portion including:

a display source whereon an image is formed; and

an optical system for focusing the image at separate sagittal and tangential foci between the display source and the at least partially reflecting portion,

wherein the at least partially reflecting portion has a substantially spherical shape, the image is reflected thereafrom at an angle to the radius thereof and the sagittal and tangential foci of the spherical surface correspond, respectively, to the sagittal and tangential foci of the image.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,243

ZOOM LENS OF REAR FOCUS TYPE

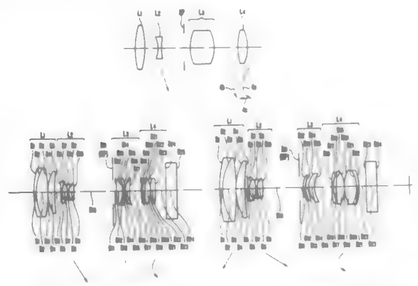
Atsushi Okuyama, Tokyo; Kenichi Kimura, and Saburo Sugawara, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,658

Claims priority, application Japan, Jun. 4, 1991, 3-159724; Jun. 4, 1991, 3-159725

Int. Cl.[5] G02B *15/14*

U.S. Cl. 359—687 **9 Claims**



1. A zoom lens of the rear focus type comprising: from front to rear, a first lens unit of positive refractive power, a second lens unit of negative refractive power, a third lens unit of positive refractive power and a fourth lens unit of positive refractive power, zooming from a wide-angle end to a telephoto end being performed by moving said first lens unit toward an object side and said second lens unit toward an image side, while shift of an image plane resulting from the zooming is simultaneously compensated for by moving said fourth lens unit, and focusing from an infinitely distant object to a closest object being performed by moving said fourth lens unit toward the object side, wherein, letting the focal length of the i-th lens unit be denoted by fi, the shortest focal length of the entire lens system by FW, the longest focal length of the entire lens system by FT, an interval between principal points of said third and fourth lens units in the telephoto end when focusing on an infinitely distant object by e3T, and a paraxial back focal distance in the telephoto end by FBT, the following conditions are satisfied:

$$0.32 < FBT/FT < 0.50$$
$$2 < \beta 3/\beta 4 < 9$$
$$2 < e3T/FW < 5$$

5,341,244

ZOOM LENS SYSTEM

Chieh-Yu Lin, Chung-Ho, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 4, 1992, Ser. No. 940,973

Int. Cl.[5] G02B *15/14*

U.S. Cl. 359—692 **3 Claims**

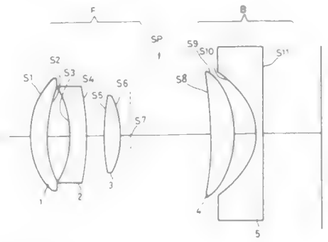
1. A zoom lens system consisting of five lens elements arranged into two groups, the first three lens elements forming a front lens group with positive refracting power and the last two lens elements forming a rear lens group with negative refracting power, an airspace between two groups is made variable to effect zooming,

counting from the objective side the front lens group consisting of a positive first lens element, a negative second lens element, and a positive third lens element, said rear lens group consisting of a positive fourth lens element and a negative fifth lens element, the zoom lens system being designed to satisfy the following condition:

$$1.0 < f_w/f_1 < 1.5$$

wherein f_w represents the focal length of the lens system in widest position, f_1 represents the focal length of front lens group,

the zoom lens system is further designed to satisfy the following condition:



$$0 < f_b/f_w < 0.4$$

wherein the f_b represents the back focal length of the lens system in widest position, further wherein the front lens group consisting of two spherical lens elements and an aspheric lens element and the rear lens group consisting of a spherical lens element and an aspheric lens element.

5,341,245

OPTICAL APPARATUS FOR IMAGE SCANNING

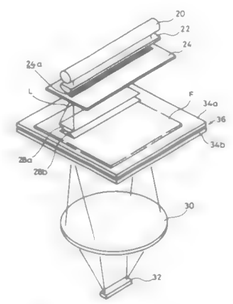
Kiyomi Tamagawa, and Akira Yoda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 15, 1993, Ser. No. 30,914

Claims priority, application Japan, Mar. 13, 1992, 4-055356; Mar. 13, 1992, 4-055357

Int. Cl.[5] G02B *26/08*; G01N *21/88*

U.S. Cl. 359—739 **11 Claims**



1. An optical apparatus for image scanning comprising:

a light source for irradiating an original having image information recorded thereon with reading light;

a slit for controlling a region of said original to be irradiated with said reading light, disposed between said light source and said original;

condenser means A for concentrating said reading light transmitted through said slit at a region of said original to be read, disposed between said slit and said original;

photoelectric conversion means for receiving said reading light from said original and converting received reading light into an electric signal; and

condenser means B for concentrating said reading light from said original at said photoelectric conversion means, disposed between said original and said photoelectric conversion means.

5,341,246

APPARATUS FOR ADJUSTING AN OPTICAL AXIS INCLUDING PLATES ON OPPOSITE SIDES OF A BEAM SHAPING PRISM

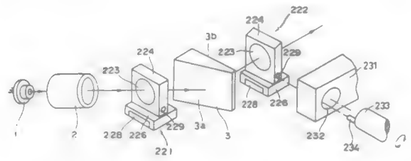
Masahiro Oono; Koichi Maruyama; Makoto Iki; Hitoshi Kimura, and Masahiko Sasaki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 770,342, Oct. 3, 1991, Pat. No. 5,237,457. This application Apr. 29, 1993, Ser. No. 53,688

Claims priority, application Japan, Oct. 4, 1990, 2-104707; Oct. 4, 1990, 2-104708; Oct. 4, 1990, 2-104709

Int. Cl.[5] G02B *5/04, 7/18*

U.S. Cl. 359—837 **11 Claims**



1. An optical axis adjusting apparatus for adjusting the optical axis of a laser beam, said apparatus comprising: a beam shaping prism having an incident surface and an emission surface which together define a predetermined apex angle; and a parallel shift mechanism which is provided on at least one of the incident an emission sides of the beam shaping prism for shifting the light rays of the laser beam, wherein said parallel shift mechanism comprises at least two adjustable plates through which said laser beam is adapted to be transmitted, a first one of said plates being positioned on the incident side of said beam shaping prism, and a second one of said plates being positioned on the emission side of said beam shaping prism.

5,341,247

APPARATUS FOR RECORDING AND REPRODUCING A DIGITAL SIGNAL TO PERFORM A TRACK BOUNCING EDITING OPERATION

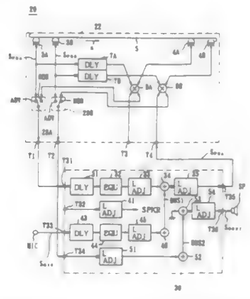
Hiroshi Takahashi, and Seiji Tanizawa, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,111

Claims priority, application Japan, Jan. 18, 1992, 4-027161

Int. Cl.[5] G11B *27/02, 15/12*

U.S. Cl. 360—13 **17 Claims**



14. An apparatus for recording and reproducing a digital signal having a plurality of channel signals each respectively digitally recorded in one of a plurality of tracks on a recording medium, said apparatus comprising:

reproducing means including at least first and second reproducing heads for reproducing said channel signals recorded in first and second tracks, respectively;

recording means including at least first and second recording heads associated with said first and second tracks, respectively, for recording digital signals in said tracks;

processing means for processing the signal reproduced by said first reproducing head;

delay means for delaying the signal reproduced by said second reproducing head for a time period corresponding to a time in which said recording medium moves between a position where said reproducing means is located and a position where said recording means is located;

a selector for selectively supplying the signal delayed by said delay means and the signal processed by said processing means to said second recording head for digital recording in said second track on said recording medium;

monitor means for monitoring a received signal; and

means coupled to said selector for supplying said signal supplied to said second recording head by said selector to said monitor means.

5,341,248

MAGNETIC RECORDING/REPRODUCING APPARATUS HAVING HEAD STRUCTURE FOR SELECTIVELY RECORDING/REPRODUCING EITHER OF TWO KINDS OF SIGNALS CONTAINING DIFFERENT AMOUNTS OF INFORMATION

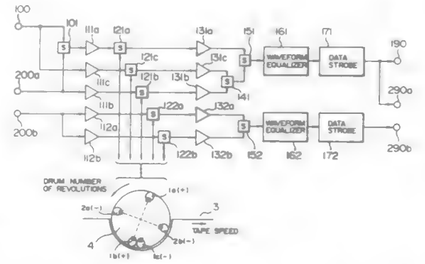
Nobutaka Amada; Harushige Nakagaki; Takao Arai, and Takaharu Noguchi, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 3, 1993, Ser. No. 12,754

Claims priority, application Japan, Feb. 5, 1992, 4-019802

Int. Cl.[5] H04N *5/78*

U.S. Cl. 360—33.1 **16 Claims**



1. A magnetic recording/reproducing apparatus for selecting either of a first digital information signal having a first amount of information per unit time or a second digital information signal having a twice larger amount of information per unit time than said first amount of information, and for recording/reproducing the information signal on/from tracks formed in a diagonal direction on a magnetic tape, said apparatus comprising:

a first magnetic head mounted at a first position on a rotary drum, and having a first azimuth angle;

a second magnetic head mounted at a second position on said rotary drum 180°-opposite to said first position, and having said first azimuth angle;

a third magnetic head mounted at a third position on said rotary drum 90°-separated from said first position in a direction opposite to the rotating direction of said rotary drum, and having a second azimuth angle of a polarity opposite to said first azimuth angle;

a fourth magnetic head mounted at a fourth position on said

VOL 1165 ISS 4 AG 23 1994 UMI

rotary drum 180°-opposite to said third position, and having said second azimuth angle;

a fifth magnetic head mounted at a position on said rotary drum close to said second magnetic head, and having said second azimuth angle;

first means for running said magnetic tape at a first speed, and for performing guard-bandless signal recording/reproducing on/from two tracks for one rotation of said rotary drum by using said first magnetic head and said fifth magnetic head, when recording/reproducing said first digital information signal; and

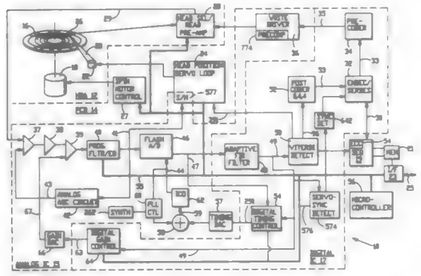
second means for running said magnetic tape at a speed n times (n is a real number more than 1) faster than said first speed, and for performing guard-bandless signal recording/reproducing on/from four tracks for one rotation of said rotary drum by using said first magnetic head, said third magnetic head, said second magnetic head and said fourth magnetic head, when recording/reproducing said second digital information signal.

5,341,249

DISK DRIVE USING PRML CLASS IV SAMPLING DATA DETECTION WITH DIGITAL ADAPTIVE EQUALIZATION

William L. Abbott, Portola Valley; Hung C. Nguyen, and Kenneth E. Johnson, both of San Jose, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Aug. 27, 1992, Ser. No. 937,064
Int. Cl.[5] G11B *5/09, 20/10*
U.S. Cl. 360—46 **38 Claims**



1. A disk drive including a rotating data storage disk, a data transducer head positionable by head positioning means relative to selected ones of a multiplicity of concentric data tracks formed on the data storage surface wherein said tracks are arranged in a plurality of radial zones wherein each zone includes user data recorded at a data transfer rate selected with regard to the radial displacement of the zone from an axis of rotation of the disk, the disk drive further including a partial response, maximum likelihood data channel comprising:

an analog signal path between said data transducer head and a quantization means, said analog signal path including analog programmable filter/equalizer means for programmably adjusting its filtering/equalizing characteristics to the data transfer rate of each zone,

the quantization means for quantizing samples of user data read from a said track into digital values and for putting out the digital values over a digital signal path,

adaptive digital FIR filter means in the digital path and downstream of said quantization means for filtering said samples in accordance with characteristics adaptively developed for a said zone containing a data track having recorded user data from which said samples have been obtained, and,

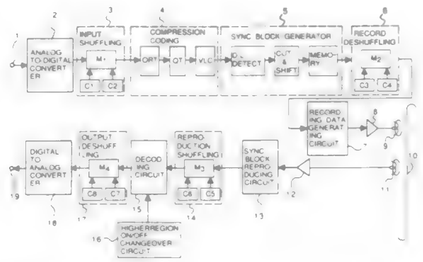
Viterbi detector means in the digital path and downstream of said adaptive digital FIR filter means for maximum likelihood decoding of said filtered digital samples.

5,341,250

VIDEO SIGNAL DIGITAL MAGNETIC RECORDING REPRODUCING APPARATUS, WITH VARIABLE LENGTH CODING DATA COMPRESSION

Hirofumi Uchida, Neyagawa; Tatsuro Juri, Osaka, and Hideki Ohtaka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 5, 1993, Ser. No. 27,281
Claims priority, application Japan, Mar. 5, 1992, 4-048208
Int. Cl.[5] G11B *5/09;* **H04N** *5/76*
U.S. Cl. 360—48 **12 Claims**



1. A video signal digital magnetic recording and/or reproducing apparatus comprising:

input shuffling means for shuffling input image data having an image data memory means for storing image data corresponding to at least one field image data, wherein said input shuffling means divides said one field image data into a specified number of image blocks which are aligned at original image block positions and selectively reads among the specified number of image blocks which are spaced a predetermined distance from each other and aligns said read image blocks in a predetermined order to define one image block group;

coding means for coding said image blocks such that the coded image blocks in each image block group has a total data amount equal to or less than a predetermined data length thereby to effect a variable length coding in each image block;

data length adjusting means for adjusting data length of each image block to form sync block data by cutting a coded image block which has a data length longer than a predetermined sync block data length so as to be equal to one sync block data length and filling the cut data portion to be added to a coded image block which has a data length shorter than one sync block data length; and

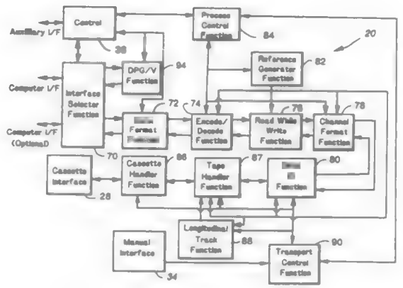
recording deshuffling means having a coded image data memory means for storing said coded image blocks from said data length adjusting means at positions corresponding to said original image block positions, said coded image data aligned corresponding to said original image block positions being divided into a plurality of frame portions in a first direction, each frame portion having a data width corresponding to one or more image blocks, wherein said recording deshuffling means sequentially reads the frame portions of said coded image data thereby to deshuffle the sync block data.

5,341,251

DATA RECORDING SYSTEM HAVING LONGITUDINAL TRACKS WITH RECORDABLE SEGMENTS

Jeffrey L. Fincher, San Carlos; Kurt Hallamasek, Berkeley, and Keith A. Kambies, Foster City, all of Calif., assignors to Ampex Systems Corporation, Redwood City, Calif.

Filed Feb. 28, 1992, Ser. No. 843,723
Int. Cl.[5] G11B *5/09, 15/18, 17/00, 19/02, 15/40*
U.S. Cl. 360—49 **52 Claims**



1. A system adapted to selectively record and reproduce digital data on an elongated flexible magnetic recording medium, said system comprising:

first means adapted to selectively record and reproduce data on helically oriented tracks on a first area of said medium, said first means further adapted to record a unit of data on a set of successive helical tracks located in said first area of said medium, each set having a predetermined number of helical tracks;

servo means for controlling the movement of said medium;

second means adapted to selectively record and reproduce data on a first track that extends in the longitudinal direction of said medium on a second area of said medium, said second means further adapted to record a longitudinal track of data relating to physical address parameters of the medium in discrete segments, each of said segments containing data corresponding to a particular set of helical tracks adapted for recording in said first area, each of said segments comprising in a first direction:

a multiple bit front field of a first predetermined timing synchronization bit pattern;

a first predefined synchronizing word;

a multiple bit physical segment information field of data;

a second predefined synchronizing word; and

a multiple bit rear field of a second predetermined timing synchronization bit pattern;

third means adapted to selectively record and reproduce data on a second track that extends in the longitudinal direction of said medium on a third area of said medium, said data recorded on said second track comprising logical address parameters of the data recorded on said helically oriented tracks on said first area of said medium; and,

fourth means adapted to selectively record and reproduce data on a third track that extends in the longitudinal direction of said medium on a fourth area of said medium, said data recorded on said third track comprising servo information for use by said servo means for controlling the movement of said medium.

5,341,252

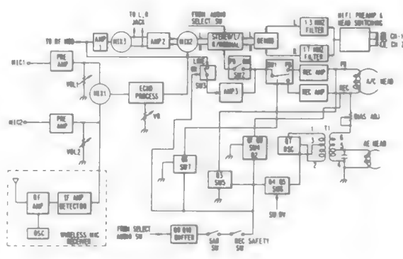
Patent Not Issued For This Number

5,341,253

EXTENDED CIRCUIT OF A HIFI KARAOKE VIDEO CASSETTE RECORDER HAVING A FUNCTION OF SIMULTANEOUS SINGING AND RECORDING

Pohsien Liao; Chin-Chang Huang, and Jye-Huei Wang, all of Taipei, Taiwan, assignors to Tatung Co., Taipei, Taiwan

Filed Nov. 28, 1992, Ser. No. 981,722
Int. Cl.[5] G11B *15/12, 27/02*
U.S. Cl. 360—61 **7 Claims**



1. An extended circuit of a HiFi karaoke video cassette recorder (KTVCR) having a simultaneous singing and recording (SAR) function which comprises:

a HiFi audio signal processing system which receives a HiFi signal, and outputs the received HiFi signal via a left channel and a right channel;

a normal signal processing system wherein a normal signal is received from a program tape by an audio control head and sent to a Stereo, left channel (L_{CH}), right channel (R_{CH}) or Normal distribution circuit selected by an audio select switch;

a microphone audio signal processing system, wherein an output of at least one microphone is amplified by a signal amplifier, the amplifier output is mixed in a first mixer, the first mixer output is processed by an echo processing unit and the echo processing unit is mixed with the HiFi signals output via the left and right channels in a second mixer;

a simultaneous singing and recording system (SAR system) including an a SAR switch, an audio control head and an audio erase head;

VOL 1165 ISS 4 AUG 23 1994 UMI

wherein while the KTVCR is in a playing mode, when the audio select switch is selected to the Stereo, left channel (L_{CH}) or right channel (R_{CH}) distribution circuit, by pressing the SAR switch, the Normal distribution circuit will automatically switch to a state of simultaneous singing and recording, the audio erase head will erase a normal signal previously recorded on the program tape, then the audio control head will record on the program tape an output of the second mixer distributed via the distribution circuit selected by the audio select switch and after which, once the audio select switch is selected to the Normal distribution circuit, the recorded output of the second mixer will be received by the normal signal processing system.

5,341,254

TAPE RECORDING AND/OR REPRODUCING APPARATUS

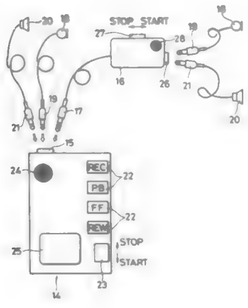
Noriyuki Ueno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 374,052, Jun. 30, 1989, abandoned. This application Oct. 16, 1991, Ser. No. 776,875

Claims priority, application Japan, Jul. 6, 1988, 63-168088; Jul. 6, 1988, 63-168089; Jul. 6, 1988, 63-168090

Int. Cl.[5] G11B *15/12, 15/18*

U.S. Cl. 360—62 **10 Claims**



1. Apparatus for switching between recording and playback modes of a tape recorder, comprising:

a single input/output jack compatible with at least two channels and arranged in a tape recorder main body;

a single plug that can be connected to said input/output jack and is compatible with said channels;

a remote-control unit connected to said plug and comprising a remote-control switch for outputting a control signal for controlling a remote-control operation of the tape recorder and an input/output unit that inputs or outputs an audio signal; and

means for supplying the control signal to said tape recorder main body through one channel of each of said input/output jack and said plug and for transmitting the audio signal as either an input or an output through the other channel of each of said jack and said plug when said plug is connected to said input/output jack.

5,341,255

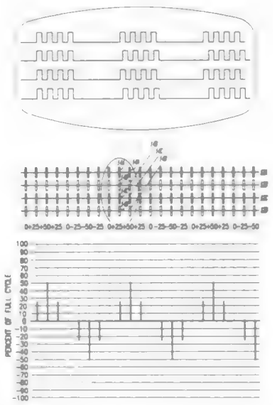
DISC DRIVE HEAD POSITIONING SERVO SYSTEM WITH COHERENT ADJACENT TRACK MAGNETIC PATTERNS

James A. Starr, San Jose, and Norman R. Sneddon, Aptos, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 598,982, Oct. 17, 1990, abandoned. This application Oct. 12, 1993, Ser. No. 134,485

Int. Cl.[5] G11B *5/596*

U.S. Cl. 360—77.08 **15 Claims**



13. A parallel track data storage system comprising:

a storage medium including parallel storage tracks, each of said parallel storage tracks comprising a plurality of sectors for storing data, each of said plurality of sectors being aligned radially on each of said parallel storage tracks;

a transducer for accessing data stored on said storage medium;

means for locating one of said parallel storage tracks, said means for locating including a position feedback field stored in each of said sectors of said parallel storage tracks, said position feedback field for storing a location value, wherein said location value is identical for all sectors on each individual track of said parallel storage tracks, and distinct as between any two of said each individual track on said storage medium;

means for ensuring detection of said position feedback field even when said transducer is positioned between an adjacent pair of said parallel storage tracks, said means for ensuring including time variant position feedback fields wherein a first of said adjacent pair of said parallel storage tracks includes a first position feedback field in each sector, and a second of said adjacent pair includes a second position feedback field which is offset in time as compared to said first position field in each sector, wherein said first and said second position feedback field are no longer radially aligned, wherein said offset in time of said position feedback field is a phase shift away from radial alignment between a first position feedback field on a first parallel data storage track and a second position field signal located on an adjacent parallel storage track, which phase shift is cumulatively incremented over successive of said plurality of sectors on said first parallel storage track to advance said shift at least a full cycle over said first parallel storage track;

servo means, coupled to said transducer, for positioning said transducer over said storage medium in response to said stored location value;

said servo means detecting and responding to location value stored in said position feedback field to position said transducer over one of said parallel storage tracks.

5,341,256

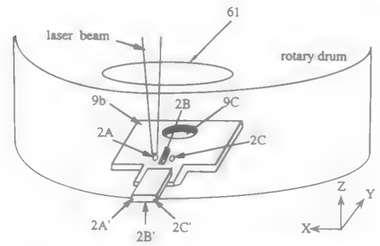
ROTARY HEAD ADJUSTER

Akio Murata, Ibaraki; Hideaki Mukae, Sanda; Takaaki Maegawa, Neyagawa; Masaru Higashionji, Katano, and Toshiharu Okada, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 26, 1991, Ser. No. 798,601

Int. Cl.[5] G11B *21/02, 5/56*

U.S. Cl. 360—75 **10 Claims**



1. A rotary head adjuster for adjusting a position of a head chip of a rotary head which comprises a head base and at least one said head chip fixed to said head base, said rotary head adjuster comprising:

a stage for mounting thereon said rotary head;

a position measuring means for measuring a position of said head chip of said rotary head mounted on said stage;

a laser means for emitting a laser beam and applying the laser beam to a specified area on said head base of said rotary head mounted on said stage so as to cause a plastic deformation of said head base at said specified area; and

control means for comparing the position of said head chip measured by said position measuring means with a predetermined position, calculating a necessary position adjusting amount, setting appropriate laser irradiation conditions depending on said necessary position adjusting amount, and controlling said laser means according to said laser irradiation conditions so as to cause a change of the position of said head chip by the plastic deformation of said head base to be the predetermined position.

5,341,257

HEAD CLEANING DEVICE FOR MAGNETIC TAPE CASSETTE APPARATUS HAVING A ROTATING HEAD

Josef Dienbauer, Mönichkirchen, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1992, Ser. No. 838,384

Claims priority, application Austria, Mar. 18, 1991, A 604/91

Int. Cl.[5] G11B *5/41*

U.S. Cl. 360—85 **3 Claims**

1. A head cleaning device for a magnetic tape cassette apparatus having a rotating head comprising;

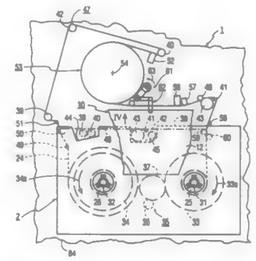
a rotating head means;

a cassette holder, said cassette holder being moveable between a loading position and an operating position along a predetermined path;

tape threading means for removing the magnetic tape from said magnetic tape cassette and positioning said tape about said rotating head means;

a head cleaning device for cleaning said rotating head means, said head cleaning device being moveable between a rest position and a cleaning position in engagement with said rotating head means;

means for biasing said head cleaning device into its rest position; and



head cleaning device actuating means for displacing said head cleaning device from said rest position to said cleaning position, said head cleaning device actuating means being activated by said cassette holder during movement from its loading position to its operating position, said head cleaning device actuating means displacing said head cleaning device into its cleaning position for at least a portion of the movement of said cassette holder means along said predetermined path.

5,341,258

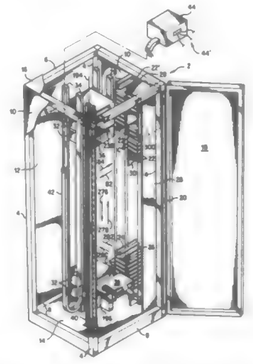
AUTOMATED CASSETTE LIBRARY SYSTEM

Dennis W. Chalmers, Dover, N.H.; Leonard M. Kendall, Weston, Conn.; Ole F. Kristensen, Hinesburg, Vt.; Eric C. W. Lin, Westwood, and Howard S. K. Wan, Burlington, both of Mass., assignors to GTE Vantage Incorporated, Stamford, Conn.

Filed Nov. 25, 1992, Ser. No. 981,518

Int. Cl.[5] G11B *15/68*

U.S. Cl. 360—92 **37 Claims**



1. A system for controlling an automated cassette library comprising:

at least one housing, each housing comprising:

a) a plurality of cassette shelves disposed horizontally within said housing;

b) a plurality of cassette players disposed horizontally within said housing;

VOL 1165 ISS 4 AG 23 1994 UMI

c) a cassette transport unit disposed horizontally within said housing, said cassette transport unit having a cassette carrying cavity therein and including a plate having a longitudinal axis which extends in the direction of said first axis, said plate being movably mounted to said cassette transport unit and disposed in said cassette carrying cavity, first means disposed in said cassette carrying cavity for selectively transferring a cassette in the direction of a first axis from a cassette shelf into said cassette carrying cavity in a first mode and from said cassette carrying cavity into a cassette shelf in a second mode, and second means disposed in said cassette carrying cavity for selectively transferring a cassette in a third mode in the direction of a second axis which is perpendicular to said first axis from said cassette carrying cavity and into a cassette player and in such a manner that no portion of said second means will be positioned within said cassette player during operation of said cassette player, and from a cassette player into said cassette carrying cavity in a fourth mode;

d) third means disposed in said housing (a) for selectively transporting said cassette transport unit in the direction of a third axis, which is perpendicular to said first axis and said second axis, and relative to said plurality of cassette shelves and said plurality of cassette players when said plate is disposed within said cassette carrying cavity; (b) for selectively transporting said cassette transport unit in the direction of said third axis, at the beginning of said first mode when said plate is disposed within said cassette shelf, to move said plate towards and into engagement with a cassette when selectively transferring a cassette from a cassette shelf to said cassette carrying cavity, and (c) for selectively transporting said cassette transport unit in the direction of said third axis, at the end of said second mode when said plate is disposed within said cassette shelf, to move said plate away from and out of engagement with said cassette when selectively transferring a cassette from said cassette carrying cavity to a cassette shelf,

e) motion controller means electrically connected to said first means, said second means and said third means for controlling actuation of said first means, said second means and said third means in response to first command signals;

f) cabinet controller means electrically connected to said motion controller means for sending and receiving signals, including the sending of said first command signals to said motion controller means; and

g) video player controller means electrically connected to said cabinet controller means for controlling each cassette player of said plurality of cassette players in response to second command signals received from said cabinet controller means;

and host computer means which communicates with each cabinet controller means of which housing for controlling each cabinet controller means.

5,341,259

PIVOTING, DUAL STATE MAGNETIC LATCH FOR DISK FILE ACTUATOR

Maziar Amirkiai, Sunnyvale; Oliver W. Northrup, Mountain View; Ali Hosseinzadeh, Fremont, all of Calif.; Naoki Yamasaki, and Takayuki Noma, both of Matsuyama, Japan, assignors to Quantum Corporation, Milpitas, Calif.

Filed Oct. 22, 1992, Ser. No. 964,762
Int. Cl.[5] G11B *5/54, 21/22*
U.S. Cl. 360—105 10 Claims

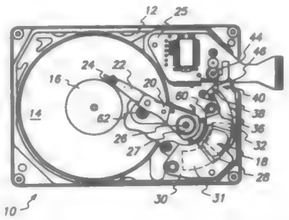
1. A toggling, dual state magnetic latch for latching a disk file rotary voice coil actuator for positioning a data transducer head relative to a rotatable data storage disk within a hard disk drive including a base and wherein the actuator is moveably mounted relative to the base; the latch comprising;

latch pin means formed of a ferromagnetic material located on a rotating part of the actuator;

latch mounting pivot pin means mounted to the base,

latch body means rotatably mounted to the latch mounting pivot pin means and rotating between an unlatched position and a latched position in a plane of rotation substantially parallel to a plane of rotation of the rotary voice coil actuator, the latch body means being formed of a nonmagnetic material and including a toggle portion for holding and enclosing a permanent magnet means,

bias force means including a permanent magnetic field providing pole of a voice coil motor of the actuator for providing a magnetic field in repulsion of a field provided by the permanent magnet means for applying a predetermined bias force to the latch body means to maintain it at the unlatched position,



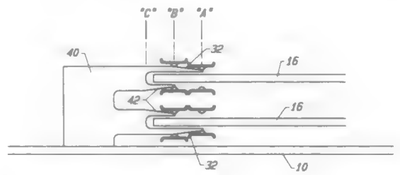
the latch body means and the latch pin means being so located that as the latch pin means reaches a predetermined distance to the permanent magnet means, the bias force is overcome, and the latch body means rotates to a latched position, the latch pin means thereupon coming into contact with a part of the toggle portion which is directly adjacent to the permanent magnet means when the actuator has positioned the data transducer head at a landing zone on the storage disk.

5,341,260

REDUCED TORQUE UNLOADING RAMP SYSTEM FOR A HARD DISK DRIVE

Irai Jabbari, San Jose, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Dec. 4, 1992, Ser. No. 985,987
Int. Cl.[5] G11B *5/54, 21/22*
U.S. Cl. 360—105 9 Claims



1. A ramp mechanism for use with a hard disk having upper and lower disk surfaces accessible by respective upper and lower read/write heads gimbal-mounted to respective upper and lower actuator arms comprising an actuator pair that move said heads in unison to access respective corresponding regions of said upper and lower disk surfaces, said hard disk rotating about a spindle axis during power-up condition and ceasing to rotate upon cessation of said power-up condition, a ramp mechanism causing said heads to be moved away from said surfaces of said hard disk upon cessation of said power-up condition, said ramp mechanism comprising:

a pair of spaced-apart first and second projecting members each having a disk-facing surface and a disk-nonfacing surface that has a parallel surface region to said and, in a region closest to said spindle axis, a ramp surface inclining from said parallel surface region toward said disk;

wherein said pair of projecting members is mounted such that at least a peripheral area of said hard disk is disposed between said disk-facing surfaces thereof, and wherein a chosen one of said pair of first and second projecting member projects further toward said spindle axis than does the unchosen projecting member comprising said pair; and

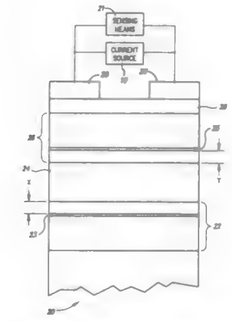
wherein said upper and lower actuator arms are adapted to contact said respective disk-nonfacing surfaces of said pair of projecting members after cessation of said power-up condition, one of said actuator arms contacting the ramp surface of the further-projecting projecting member before the remaining actuator arm in said actuator pair contacts the ramp surface of the remaining projecting member in said pair of projecting members.

5,341,261

MAGNETORESISTIVE SENSOR HAVING MULTILAYER THIN FILM STRUCTURE

Bernard Dieny, Grenoble Cedex, France; Bruce A. Gurney, Santa Clara, Calif.; Stuart S. P. Parkin, San Jose, Calif.; Ian L. Sanders, Morgan Hill, Calif.; Virgil S. Speriosu, San Jose, Calif., and Dennis R. Wilhoit, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1991, Ser. No. 750,157
Int. Cl.[5] G11B *5/127*
U.S. Cl. 360—113 16 Claims



1. A magnetoresistive sensor comprising a layered structure having at least two bilayers each said bilayer comprising a first thin film of ferromagnetic material in interfacial relationship with a second thin film of nonferromagnetic metallic material,

said first thin films of ferromagnetic material each including therein at least one thin film of material, said thin film having a thickness of between a fraction of a monolayer and several monolayers, said thin film being spaced a distance x from the interface between said first and said second thin film layers;

means for producing a current flow through said magnetoresistive sensor; and

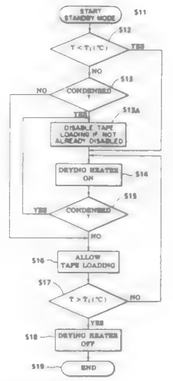
means for sensing the variations in voltage across said magnetoresistive sensor produced by changes in resistance of said magnetoresistive sensor due to rotation of the magnetization in said first layer as a function of the magnetic field being sensed.

5,341,262

MAGNETIC DATA STORAGE AND RETRIEVAL SYSTEM WITH PROVISION FOR PREVENTING CONDENSATION

Hidenori Yamasaki; Katsuaki Matsumoto, and Yoshiharu Osuga, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 758,727, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 283,835, Dec. 13, 1988, abandoned. This application Oct. 6, 1992, Ser. No. 957,065
Claims priority, application Japan, Dec. 14, 1987, 62-317832
Int. Cl.[5] G11B *5/10*
U.S. Cl. 360—128 3 Claims



1. Apparatus comprising:

a drum;

loading means for loading a storage medium onto said drum and for unloading said storage medium from said drum;

a head for writing information on the storage medium and for reading the information from the storage medium when the storage medium is loaded on said drum;

temperature detecting means provided in the vicinity of said head for detecting the temperature of the drum;

condensation detecting means provided in the vicinity of said head for detecting condensation on the drum;

a radiant heater for heating said drum; and

control means responsively connected to said temperature detecting means and said condensation detecting means and operatively connected to said loading means and said radiant heater

for operating in a first mode prior to storage medium loading wherein said control means

controls said radiant heater to heat without disabling said loading means from loading said storage medium when said temperature detecting means detects that the temperature of the drum is below a predetermined temperature and said condensation detecting means detects no condensation, and

controls said radiant heater to heat and disables said loading means from loading said storage medium when said condensation detecting means detects condensation,

and for operating in a second mode after storage medium loading wherein

said control means

controls said radiant heater to maintain said temperature of said drum above said predetermined temperature without causing said loading means to unload said storage medium when said condensation detecting means detects no condensation, and

controls said loading means to unload said storage medium when said condensation detecting means detects condensation.

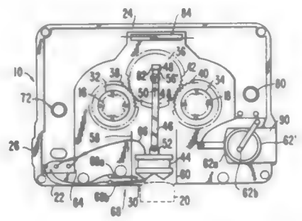
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,263

APPARATUS FOR DEMAGNETIZING THE MAGNETIC HEAD OF A CASSETTE TAPE RECORDING AND/OR REPRODUCING DEVICE

William T. McGreevy, Babylon, and Robert L. Borchardt, New York, both of N.Y., assignors to Recoton Corporation, Long Island City, N.Y.

Filed Oct. 13, 1992, Ser. No. 959,727
Int. Cl.[5] G11B *5/465*
U.S. Cl. 360—128 **14 Claims**



1. Apparatus for demagnetizing a magnetic head of a cassette tape recording and/or reproducing device of the type having holding means capable of holding a cassette in predetermined relation to said head when said head is at an operative position, and tape transport means including first and second spaced reel drive spindles, the apparatus comprising:

a cassette-shaped housing adapted to be held by said holding means and having a portion of a wall adjacent said head at said operative position when said housing is held by said holding means;

hub members rotatably mounted in said housing and adapted to be driven in rotation by at least one of said drive spindles;

electromagnet means including an electromagnet and operative electrical connection therefor for producing an alternating magnetic field having flux peaks of constant magnitude, said electromagnet means being positionable at said wall portion;

mechanical coupling means for coupling said electromagnet means to said hub members so that said electromagnet means is rectilinearly reciprocated with respect to said wall portion along a path within said housing substantially perpendicular to said wall portion in response to rotation of said hub members; and

automatic shut-off means for shutting off power to said electromagnet means when a predetermined number of reciprocation cycles has been reached and when said electromagnet means is at its farthest point from said head.

5,341,264

DOUBLE LID STRUCTURE FOR TAPE CASSETTE

Keisuke Hashimoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,371
Claims priority, application Japan, May 12, 1992, 4-145026; May 12, 1992, 4-145028
Int. Cl.[5] G11B *23/087*
U.S. Cl. 360—132 **11 Claims**

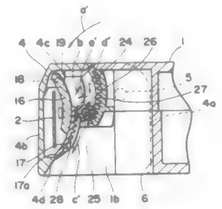
1. A tape cassette accommodating a magnetic tape therein, comprising:

a cassette body having a front opening across which a run of the tape is guided;

an outer lid pivotably mounted on said cassette body for pivotal movements between a closed position covering an outer surface of said run of the tape extending across said front opening and an opened position in which said outer lid is raised above said run of the tape;

a first inner lid mounted on said outer lid and thereby pivoted in respect to said cassette body upon movement of said outer lid for covering an upper portion of an inner surface of said run of the tape in said closed position of said outer lid and for rising above said run of the tape in said opened position of the outer lid;

a second inner lid mounted on said first inner lid for sliding movement relative to the latter between an extended edge-to-edge position and a retracted overlapping position approximately coextensive with said first inner lid; and



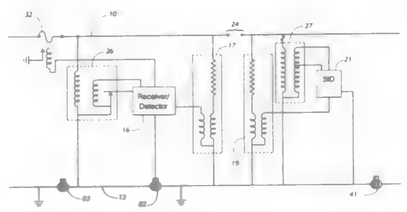
driving means for sliding said second inner lid relative to said first inner lid in response to said pivotal movements of said outer lid so that said second inner lid is in said extended position for covering a lower portion of said inner surface of the run of the tape when said outer lid is in said closed position and so that said second inner lid is in said retracted position and thereby raised above said run of the tape when said outer lid is in said opened position.

5,341,265

METHOD AND APPARATUS FOR DETECTING AND RESPONDING TO DOWNED CONDUCTORS

Arthur C. Westrom, Stone Mountain; A. P. Meliopoulos, Atlanta, both of Ga., and George J. Cokkinides, Irmo, S.C., assignors to Kearney National, Inc., Atlanta, Ga.

Continuation of Ser. No. 530,602, May 30, 1990, abandoned. This application Jul. 20, 1993, Ser. No. 94,400
Int. Cl.[5] H02H *3/16*
U.S. Cl. 361—44 **39 Claims**



1. A method of de-energizing an outdoor overhead electric power distribution conductor, comprising the steps of:

monitoring the voltage at the power distribution conductor to detect a reduction in voltage indicating an opening in the power distribution conductor;

outputting a current pulse signal into a distribution current neutral conductor in response to having detected a reduction in voltage in the power distribution conductor;

detecting the outputted current pulse signal; and

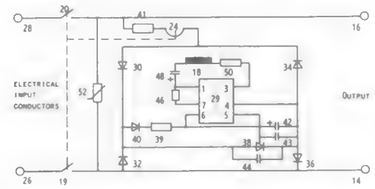
de-energizing the power distribution conductor in response to the detected signal.

5,341,266

PROTECTIVE DEVICE IN ELECTRICALLY-POWERED APPARATUS AND EQUIPMENT

Manfred Grove, Dreieich, Fed. Rep. of Germany, assignor to Intermacom A.G., Zuerich, Switzerland

Continuation of Ser. No. 621,342, Dec. 3, 1990, abandoned. This application Apr. 12, 1993, Ser. No. 46,500
Int. Cl.[5] H02H *3/16*
U.S. Cl. 361—45 **15 Claims**



1. A protective device for an externally powered electrical apparatus comprising:

a) a plug pin for coupling to an electrical power source;

b) a plurality of non-ground electrical conductors for carrying electrical power from the plug pin and the externally powered electrical apparatus;

c) a detector detecting a selected current differential between said plurality of non-ground electrical conductors;

d) a switch being electrically coupled in series between the plug pin and one or more of the plurality of non-ground electrical conductors, the switch having the plug pin as a first contact and having a second contact electrically coupled to one or more of the non-ground electrical conductors, the first and second contacts being normally electrically closed;

e) a fuse operatively coupled to the switch, for maintaining the first and second contacts in the normally electrically closed position; and

f) a trigger, electrically coupled to the detector and the fuse, for causing sufficient current to flow to the fuse in response to detection of the selected current differential by the detector so that the first and second contacts will open and current flow to the externally powered electrical apparatus will be terminated,

wherein the protective device is contained in an electrical input plug housing of the externally powered electrical apparatus, and the switch comprises a spring contact which rests on the plug pin when the first and second contacts are electrically closed.

5,341,267

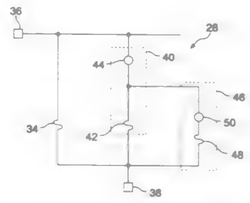
STRUCTURES FOR ELECTROSTATIC DISCHARGE PROTECTION OF ELECTRICAL AND OTHER COMPONENTS

Ralph G. Whitten, San Jose; Ta-Pen Guo, Cupertino; Amr Mohsen, Saratoga, and Alan E. Comer, San Jose, all of Calif., assignors to Aptix Corporation, San Jose, Calif.

Filed Sep. 23, 1991, Ser. No. 763,964
Int. Cl.[5] H02H *9/00*; H01H *37/76*
U.S. Cl. 361—56 **16 Claims**

1. A deactivatable, reactivatable, ESD protection device for preventing damage to at least one electrical component connected directly or indirectly between a first circuit node and a second circuit node, comprising:

a first fuse element connected between said first circuit node and said second circuit node;



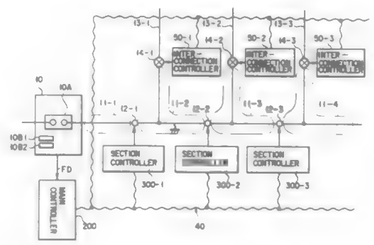
a first dual element connected in parallel with said first fuse element, said first dual element comprising a second fuse element in series with a first antifuse element.

5,341,268

METHOD OF AND SYSTEM FOR DISCONNECTING FAULTY DISTRIBUTION LINE SECTION FROM POWER DISTRIBUTION LINE

Takashi Ishiguro, Niiza; Kazutoyo Narita, and Masahide Susuta, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 14, 1992, Ser. No. 990,294
Claims priority, application Japan, Dec. 16, 1991, 3-352753; Apr. 13, 1992, 4-119687
Int. Cl.[5] H02H *7/28*
U.S. Cl. 361—62 **20 Claims**



1. For use with an electric power system including a main controller installed in a distribution substation having a circuit breaker and distribution line fault detecting means, a plurality of section controllers installed in section switches which divide a distribution line drawn out from said distribution substation into a plurality of line sections, and a transmission system for signal transmission between said main controller and said section controllers, a method of carrying out control for, when a fault occurs on said distribution line, disconnecting only a faulty line section from said distribution line, comprising:

the first step of transmitting a request signal from said main controller to said transmission system when said distribution line fault detecting means detects a fault on said distribution line;

the second step of receiving said request signal transmitted from said main controller over said transmission system by said section controllers;

the third step of detecting the fault by said section controllers;

the fourth step of transmitting to said transmission system fault detect signals indicating a fault or non fault from said section controllers which have received said request signal in the second step or performed in the third step;

the fifth step of, by each of said section controllers, receiving said fault detect signals transmitted from other section controllers over said transmission system;

VOL 1165 ISS 4 AG 23 1994 UMI

the sixth step of, by each of said section controllers, Judging whether or not its associated section switch divides said distribution line between faulty and normal line sections on the basis of said fault detect signals received from said other section controllers in the fifth step; and

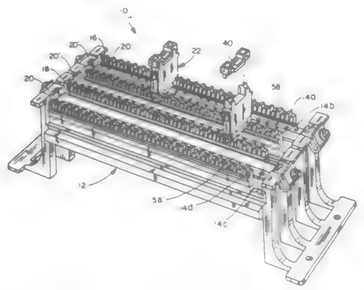
the seventh step of, by each of said section controllers, opening its associated section switch when it is judged in the sixth step that its associated section switch is dividing said distribution line between faulty and normal line sections.

5,341,269

VOLTAGE PROTECTOR AND GROUNDING BAR ARRANGEMENT FOR TERMINAL BLOCK

Gregory R. Hayward, Glenview, and Bjarne Frederiksen, Villa Park, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jul. 31, 1992, Ser. No. 923,249
Int. Cl.[5] H02H *1/04, 3/22*
U.S. Cl. 361—119 **20 Claims**



1. In combination, a voltage protector and grounding bar arrangement, and a telephone terminal block, comprising:

a telephone terminal block having at least two rows of terminals which are laterally spaced apart with respect to each other so as to form a longitudinally extending channel therebetween;

a grounding bar disposed within said longitudinally extending channel defined between said at least two rows of terminals of said terminal block and having a plurality of holes defined therein;

a housing;

voltage suppressor means disposed within said housing;

a plurality of terminal/fuse contacts disposed within laterally spaced portions of said housing for mating with opposed terminals of said at least two rows of laterally spaced terminals of said terminal block, disposed upon opposite sides of said longitudinally extending channel, when said housing is mounted upon said terminal block;

ground contact means disposed within said housing and between said laterally spaced terminal/fuse contacts for connection to said voltage suppressor means and to one of said plurality of holes defined within said grounding bar disposed within said longitudinally extending channel of said terminal block defined between said laterally spaced rows of terminals; and

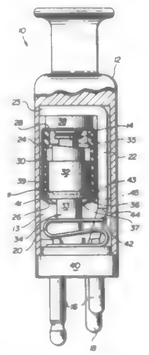
plug-in fuse carrier means, having fuse means carried therein, removably disposed upon said housing for connecting to said plurality of terminal/fuse contacts.

5,341,270

DROP RESISTANT CUP-ARRESTER ASSEMBLY

Richard T. Kaczmarek, Chicago, Ill., assignor to Reliance COMM/TEC Corporation, Chicago, Ill.

Filed Oct. 14, 1992, Ser. No. 960,950
Int. Cl.[5] H02H *3/22, 9/04*
U.S. Cl. 361—119 **12 Claims**



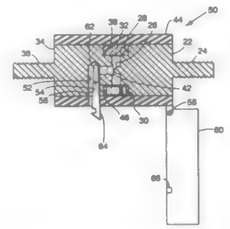
1. An arrester assembly for isolating an arrester element from the effects of external forces applied to the arrester assembly, said assembly comprising: a cup; said arrester element having a given axial height and being located within the cup; a tubular sleeve of greater axial height than said arrester element disposed within the cup and surrounding the arrester element; an electrical contact disposed partially within and extending externally of the cup; said sleeve having a seat constructed and located for engagement with the contact so that forces applied to the contact are axially transmitted to and absorbed by said sleeve; and a compressible spring disposed in said cup for causing electrical conduction between the arrester element and the electrical contact, thereby isolating said arrester element from the effects of external axial compressive forces applied to the arrester assembly.

5,341,271

SURGE ARRESTER FAULT INDICATOR

Ted F. Hutchinson, Cedar Park, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 22, 1992, Ser. No. 901,895
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—123 **10 Claims**



1. A fault indicator for indicating a fault condition of a surge arrester comprising:

a first conductive indicator half including an exterior surface, means on said exterior surface for mounting said first indicator half in series electrically with the surge arrester

and means for focussing an electrical arc created by an overvoltage in the fault indicator;

a second conductive indicator half including an exterior surface, means on said exterior surface for mounting said second indicator half in series electrically with the surge arrester and means for producing pressurized gas in response to the application of heat created by said electrical arc;

said first and said second indicator halves being aligned so that said electrical arc is focussed on said means for producing pressurized gas;

a gas vent passageway extending from said means for producing pressurized gas in a direction away from said first indicator half, said passageway extending to and communicating with said exterior of said second indicator half;

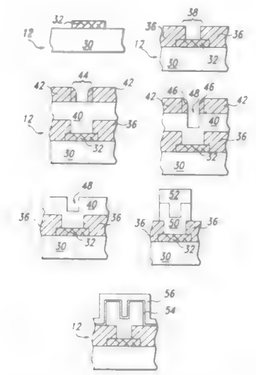
means disposed in said gas vent passageway and responsive to said pressurized gas for producing a signal that said electrical arc has been created and said pressurized gas has been produced.

5,341,272

INCREASED CAPACITANCE MEMORY CELL CAPACITOR

Sudhir K. Madan, Dallas, Tex., assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed Sep. 8, 1992, Ser. No. 941,484
Int. Cl.[5] H01G *4/06*
U.S. Cl. 361—311 **14 Claims**



8. A microelectronic device, said microelectronic device comprising:

a) a substrate including a conductive region;

b) an insulating layer overlying said substrate having a storage node contact window overlying a selected area of said conductive region;

c) a storage electrode into which a cavity has been defined and which is in electrical communication with said conductive region of said substrate and having sidewalls extending a selected distance above said insulating layer;

d) a dielectric layer conformably covering said storage electrode including said sidewalls; and

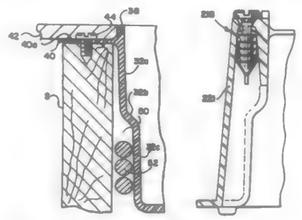
e) a conductive layer covering said dielectric layer and forming a plate electrode capacitively-coupled to said storage electrode whereby an increased capacitance memory cell capacitor is formed having a plate area equal to the surface area of the storage electrode including the cavity and the sidewalls.

5,341,273

ELECTRICAL LOAD CENTER

Jeffrey O. Sharp, Lexington; Michael R. Harris, Winchester; Robert J. Cooper; Steve M. Ledbetter, both of Lexington; Ronald H. Reed, Versailles, all of Ky., and Ronald W. Chaffin, Lafayette, Ind., assignors to Square D Company, Palatine, Ill.

Division of Ser. No. 382,830, Jul. 19, 1989, Pat. No. 5,134,543. This application Dec. 23, 1991, Ser. No. 814,983
Int. Cl.[5] H02B *1/26*
U.S. Cl. 361—641 **18 Claims**



1. A panelboard enclosure for an electrical load center for placement between studs in a wall, the panelboard enclosure comprising:

a back wall;

a pair of opposing, frontwardly extending endwalls integral with said back wall;

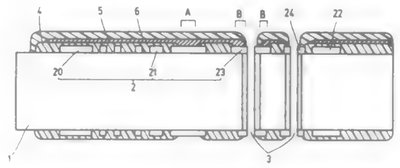
first and second opposing, frontwardly extending, sidewalls, said first and second sidewalls integral with said backwall and said endwalls, and said first sidewall tapering outwardly relative to said backwall, said outward taper defining a conductor channel between said first sidewall and its respective stud, said conductor channel extending along the entire length of said first sidewall.

5,341,274

PRINTED CIRCUIT BOARD WITH ENHANCED EMI SUPPRESSION

Fumio Nakatani, Yamatokoriyama; Shinichi Wakita, Akashi; Hisatoshi Murakami, Higashiosaka; Tsunehiko Terada, Ikeda, and Shohei Morimoto, Higashiosaka, all of Japan, assignors to Tatsuta Electric Wire & Cable Co., Ltd., Osaka, Japan

Filed Feb. 8, 1990, Ser. No. 477,322
Claims priority, application Japan, Feb. 21, 1989, 1-19218[U]; Feb. 21, 1989, 1-19219[U]; Feb. 21, 1989, 1-19220[U]; Feb. 21, 1989, 1-40836; Feb. 21, 1989, 1-40837; Feb. 21, 1989, 1-40838
Int. Cl.[5] H05K *9/00*
U.S. Cl. 361—818 **5 Claims**



1. A printed circuit board, comprising:

a substrate;

a circuit pattern including a ground line pattern and a signal line pattern which are formed on said substrate, the ground line pattern including lands for IC ground pin connection;

an insulation layer which is formed on said substrate so as to cover said circuit pattern excepting at least a part of said ground line pattern which is left uncovered, wherein said

VOL 1165 ISS 4 AG 23 1994 UMI

uncovered part of said ground line pattern includes at least the lands for IC ground pin connection; and

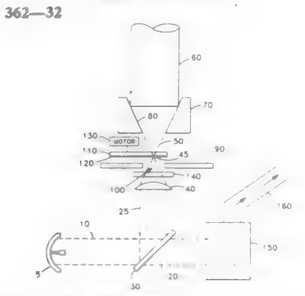
a conductive layer substantially overlying the insulation layer which is formed so as to be connected to said uncovered part of said ground line pattern.

5,341,275

COMPACT LIGHT SOURCE FOR FIBER OPTICS ILLUMINATION

Abbas Ghandehari, 711 April Dr., Huntington Beach, Calif.

Filed Jan. 22, 1992, Ser. No. 823,667
Int. Cl.[5] F21V *7/04*
U.S. Cl. 362—32 **9 Claims**



1. An illumination apparatus, comprising:

a light source for projecting an illuminating light beam, the light beam having broadband energy components including a heat component;

means for rejecting the heat component of the light beam;

means for focusing the light beam so that the beam passes through a point in space forming a diverging cone therefrom;

a conduit to receive the diverging cone for conducting the light beam;

means for supporting the conduit in a position incident to the light beam, the support means having a cone-shaped aperture, the aperture positioned coaxially with the diverging cone of the light beam such that the cone of the light beam is coincident with the cone-shaped aperture in direct congruence such that the conduit, coaxially inserted into the cone-shaped aperture, receives the total diverging cone of the light beam thereon.

5,341,276

TRACK-MOUNTED LIGHTING FIXTURE

Wei H. Shen, 6F, No. 416, Sec. 4, Jen Ai Rd., Taipei, Taiwan

Filed Jun. 24, 1993, Ser. No. 80,719
Int. Cl.[5] H01R *33/00*
U.S. Cl. 362—226 **1 Claim**

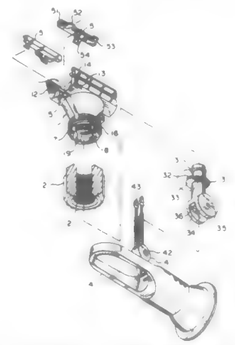
1. A track-mounted lighting fixture comprising:

a track mounting device for mounting on an overhead track, said track mounting device comprising a horizontal top channel having two opposite side walls, two longitudinal inside ribs respectively made on the two opposite side walls on the inside, two longitudinal outside grooves respectively made on the two opposite side walls on the outside, pairs of opposite holes made through said longitudinal grooves, a bottom stub screw tube vertically extended downward from said top channel, said bottom stub screw tube having a locating hole through a peripheral wall thereof in communication with a center bottom hole thereof, an inside flange disposed inside the center bottom hole, and split made through said top channel and part of said bottom stub screw tube in the middle;

a lock nut threaded onto said bottom stub screw tube of said track mounting device and turned in either direction to adjust the pitch between the two opposite side walls of said top channel;

a lamp holder having a mounting block with two stub axles aligned on two opposite sides thereof, and two contact terminals;

a tubular connector to connect said lamp holder to said track mounting device, said tubular connector comprising an annular groove around a top end thereof inserted into the center bottom hole of said bottom stub screw tube and engaged with the inside flange inside said bottom stub screw tube, a locating projection fitted into the locating hole on said bottom stub screw tube, a collar blocked over



the center bottom hole of said bottom stub screw tube, two spaced eye lugs to which said stub axles of said mounting block of said lamp holder are pivotably connected, and a longitudinal center through hole through which the contact terminals of said lamp holder insert; and

two contact metal plates, each contact metal plate having longitudinal clamping portion clamped on either longitudinal inside rib on said top channel, two spaced hooked portions respectively extended out of respective holes on either side wall of said top channel and hooked on the respective longitudinal outside groove, and a contract portion connected to either contact terminal of said lamp holder.

5,341,277

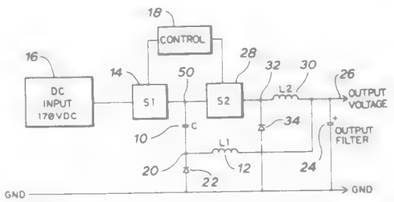
Patent Not Issued For This Number

5,341,278

SWITCHING PULSED RESONANT DC-DC CONVERTER POWER AMPLIFIER

Steven W. Brooks, c/o Calaway and Brooks, 216 S. Reservoir St., Pomona, Calif. 91766

Filed Aug. 20, 1992, Ser. No. 932,674
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—16 **12 Claims**



1. A dc to dc converter having first and second output terminals, said converter for use with a cooperative dc power supply, said converter comprising:

a) an output filter connected across said first and said second output terminals,

b) a series LC resonant circuit comprising a capacitor having its output terminal connected to the input terminal of a first inductor, the output terminal of said first inductor being connected to said output filter and said first output terminal,

c) first switching means for connecting said power supply to the input terminal of said capacitor when said first switching means is closed, and for disconnecting said power supply from said input terminal when said first switching means is open,

d) first control means for closing said first switching means whereby a first current flows through said series LC circuit into said output filter when said first switching means is closed,

e) second control means for opening said first switching means to disconnect said input terminal of said capacitor from said power supply when the voltage across said capacitor equals the voltage of said power supply,

f) first means for alternately sourcing the flow of said first current into said first inductor after opening of said first switching means, whereby said first current continues to flow into said output filter,

g) a second inductor having its output terminal connected to said output filter and said first output terminal,

h) second switching means for connecting said capacitor input terminal to the input terminal of said second inductor when said second switching means is closed, and for disconnecting said capacitor input terminal from said input terminal of said second inductor when said second switching means is open,

i) third control means for closing said second switching means when said voltage across said capacitor equals said power supply voltage, whereby a second current flows through said second inductor from said capacitor into said output filter when said second switching means is closed,

j) fourth control means for opening said second switching means when said voltage across said capacitor decays to zero, and

k) second means for alternately sourcing the flow of said second current after said second switching means is opened, whereby said second current continues to flow through said second inductor into said output filter.

5,341,279

SWITCHING POWER SUPPLY CIRCUIT PROVIDING REDUCED POWER LOSS UPON TERMINATION OF OPERATION OF A STARTING POWER SUPPLY CIRCUIT

Masanori Yamada, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 73,068
Claims priority, application Japan, Jun. 9, 1992, 4-173654
Int. Cl.[5] H02M *3/335, 3/22;* **H02J** *1/00*
U.S. Cl. 363—21 **5 Claims**

1. A switching power supply circuit comprising:

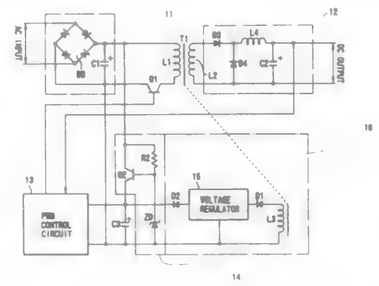
a DC/DC converter for converting a DC input voltage into a DC output voltage, said DC/DC converter having a first transistor for switching said DC input voltage;

a control circuit for controlling an ON/OFF time of said first transistor to keep said DC output voltage from said DC/DC converter constant;

a first auxiliary power supply circuit for supplying a first power voltage generated by said DC/DC converter to said control circuit during a normal switching operation period of said first transistor; and

a second auxiliary power supply circuit for supplying a second power voltage based on said DC input voltage to said control circuit when said DC input voltage is initially applied to said DC/DC converter, said second auxiliary power supply circuit being controlled by said first power voltage output from said first auxiliary power supply circuit to terminate supply of said second power voltage to said control circuit, said first power voltage from said first auxiliary power supply being set higher than said second power voltage from said second auxiliary power supply.

2. The circuit according to claim 1, wherein said second auxiliary power supply circuit is constituted by a second transistor having a collector connected to one power supply for a DC input voltage, and an emitter connected to an output of said first auxiliary power supply circuit, a resistor connected between the collector and a base of said second transistor, and a constant voltage circuit connected between the base of said second transistor and the other power supply for a DC input voltage.

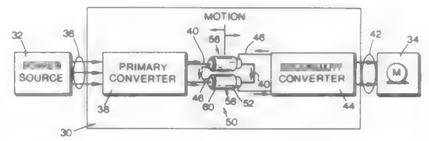


5,341,280

CONTACTLESS COAXIAL WINDING TRANSFORMER POWER TRANSFER SYSTEM

Deepakraj M. Divan, Madison; Keith W. Klontz, Sun Prairie; Donald W. Novotny, and Robert D. Lorenz, both of Madison, all of Wis., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Sep. 27, 1991, Ser. No. 767,024
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] H02M *5/453;* **H02J** *7/00*
U.S. Cl. 363—37 **86 Claims**



1. A contactless power transfer system for transferring power from a power source to an electric load, comprising:

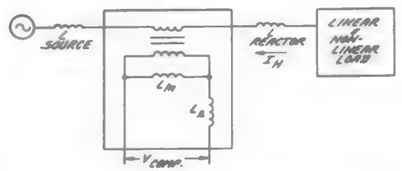
a first conductor coupled to one of the power source or the electric load;

a core-mounted conductor coupled to the other of the power source or the electric load, with the core-mounted conductor having an outer peripheral surface; and

a magnetic core supporting the core-mounted conductor and substantially surrounding the outer peripheral surface, with both the core-mounted conductor and the magnetic core surrounding a portion of the first conductor so as to transfer power from the power source to the electric load.

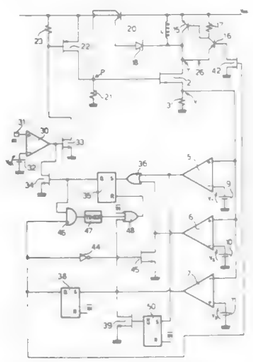
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,281
HARMONIC COMPENSATOR USING LOW LEAKAGE REACTANCE TRANSFORMER
Gary Skibinski, Milwaukee, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.
Filed May 14, 1993, Ser. No. 62,376
Int. Cl.[5] H02M *1/12*
U.S. Cl. 363—39 **7 Claims**



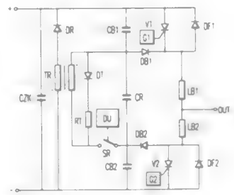
1. A device for compensating for undesirable higher order harmonics induced by a load, said device comprising:
transformer means having low leakage reactance connected between a utility and said load on a line having a line frequency;
a compensator connected to said transformer means, said compensator comprising a signal generator which injects into said transformer means a signal having a frequency which cancels said undesirable higher order harmonics induced by said load.

5,341,282
CIRCUIT FOR DETECTING SHORT-CIRCUITING OF INDUCTIVE LOAD DRIVE DEVICES
Massimiliano Brambilla, Sesto San Giovanni, and Giampietro Maggioni, Cornaredo, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Italy
Filed Apr. 8, 1992, Ser. No. 865,421
Claims priority, application Italy, Apr. 9, 1991, T091A000253
Int. Cl.[5] G05F *1/573*
U.S. Cl. 363—50 **16 Claims**



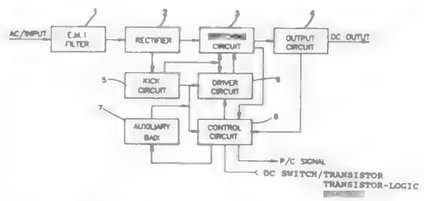
1. A circuit for detecting short-circuiting in an inductive load drive device having a switch defining an output terminal connectable to an inductive load between said output terminal and a reference potential line; at least a first current recirculating branch connectable parallel to the load; control means for opening and closing said switch, so that said load is supplied with current rising to a first predetermined value in a first increasing phase and falling to a second predetermined value in a first recirculating phase; said circuit comprising
means for detecting a short-circuit between said output terminal of said switch and said reference potential line, said detecting means having a first current sensor for detecting current flow in said first recirculating branch during said first recirculating phase.

5,341,283
PROTECTIVE CIRCUIT WITH FEEDBACK CAPABILITY FOR TWO-POINT AND THREE-POINT INVERTERS, AND METHOD OF FEEDING BACK THE PROTECTIVE-CIRCUIT ENERGY
Ralph Niederer, Basel, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland
Filed Jul. 27, 1993, Ser. No. 96,984
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1992, 4229771
Int. Cl.[5] H02M *7/122*
U.S. Cl. 363—58 **10 Claims**



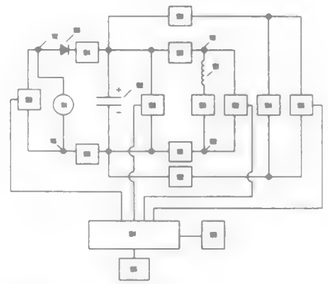
1. A two-point inverter, comprising
a) a positive and a negative input (+, −) to which a direct-voltage source can be connected;
b) two semiconductor switches (V1, V2), in antiparallel with which one free-wheeling diode (DF1, DF2) is connected in each case and which are driven by one gate unit (G1, G2) in each case, the anode of the first semiconductor switch (V1) being connected to the positive input (+) and the cathode of the second semiconductor switch (V2) being connected to the negative input (−);
c) two current-rise limiting chokes (LB1, LB2) which are connected in series between the two semiconductor switches (V1, V2) and serve to limit the current rise in the semiconductor switches;
d) an output (OUT) which is disposed between the two current-rise limiting chokes (LB1, LB2);
e) two load-reducing capacitors (CB1, CB2) which are disposed in parallel with the semiconductor switches (V1, V2) via one load-reducing diode (DB1, DB2) in each case and serve to limit the voltage rise across the semiconductor switch, the cathode of the load-reducing diode (DB1) being connected to the cathode of the semiconductor switch (V1) and the anode of the load-reducing diode (DB2) being connected to the anode of the semiconductor switch (V2);
f) a feedback capacitor (CR) which is disposed between the anode of the load-reducing diode (DB1) and the cathode of the load-reducing diode (DB2);
g) a link capacitor (CZK) which is disposed between the positive input (+) and the negative input (−); and
h) means for feeding back the energy stored in the current-rise limiting chokes (LB1, LB2) and load-reducing capacitors (CB1, CB2);
wherein the means for feeding back
i) are connected in parallel with the feedback capacitor (CR) and comprise:
j) a semiconductor valve (SR) which is driven by a drive unit (DU) and is connected to the feedback capacitor (CR), the cathode of the load-reducing diode (DB2) and the load-reducing capacitor (CB2);
k) a transformer (TR) whose primary winding is connected, on the one hand, to the semiconductor valve (SR) and, on the other hand, to the feedback capacitor (CR), the anode of the load-reducing diode (DB1) and the load-reducing capacitor (CB1), and whose secondary winding is connected, on the one hand, to the positive input via a feedback diode (DR) and, on the other hand, directly to the negative input, the anode of the feedback diode (DR) being connected to the secondary winding of the transformer (TR); and
l) a series circuit of a diode (DT) and a resistor (RT), which circuit is connected in parallel with the primary winding in such a way that the anode of the diode (DT) is connected to the anode of the load-reducing diode (DB1).

5,341,284
POWER-SAVING POWER SUPPLY UNIT
Ming-Ho Huang, Taipei, Taiwan, assignor to Hipro Electronics Co., Ltd., Taipei Hsien, Taiwan
Filed Jun. 24, 1993, Ser. No. 80,721
Int. Cl.[5] H02M *5/42*
U.S. Cl. 363—89 **4 Claims**



1. A power supply unit comprising
an E.M.I. filter to protect the power supply unit from interference of magnetic waves;
a rectifier connected to said E.M.I. filter AC power into high voltage DC power;
a switching circuit connected to said rectifier;
an output circuit of the power supply unit connected to said switching circuit;
a driver circuit connected to said switching circuit to turn on said switching circuit;
a kick circuit connected to provide a pulse signal to said driver circuit to enable it to turn on said switching circuit;
an auxiliary BAIX to provide an auxiliary power supply to an IC of the power supply unit having an output to said driver circuit;
a control circuit having an output connection to said driver circuit;
a DC switch with a DC switch control circuit connected to said control circuit with said DC switch in an open position shutting down power out of said output circuit;
a power shutdown circuit connected to said DC switch control circuit;
a pulse width modulation power supply control connected to said DC switch control circuit, said power shutdown circuit, and said driver circuit and providing a pulse to said driver circuit;
a standby power supply provided by said output circuit to said DC switch control circuit via said power shutdown circuit as said DC switch is switched on, causing said DC switch control circuit to drive said pulse width modulation power supply control so as to send a smaller power supply to said switching circuit via said driver circuit, for driving said switching circuit to send a power output through said output circuit;
said pulse width modulation power supply control stopping said driver circuit from sending said power output through said output circuit when said DC switch is switched off.

5,341,285
INTELLIGENT TRANSFORMERLESS SYSTEM FOR TRANSFERRING ENERGY FROM A POWER SOURCE TO AN ISOLATED LOAD
Thomas L. Wakefield, and George R. Plunkett, both of Anchorage, Ak., assignors to Wave Energy Corporation, Anchorage, Ak.
Filed Jul. 14, 1992, Ser. No. 913,598
Int. Cl.[5] H02M *3/07*
U.S. Cl. 363—97 **28 Claims**



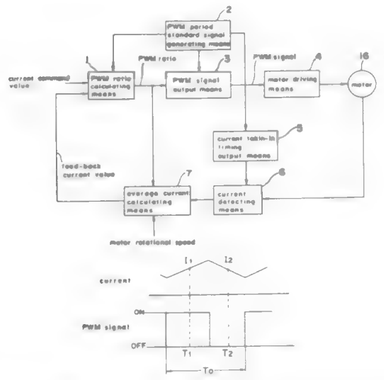
18. A power supply comprising:
(a) an energy accumulator;
(b) one or more input switching units for electrically connecting a D.C. power source to the energy accumulator in response to first control signals, and for disconnecting the energy accumulator from the power source in response to second control signals;
(c) one or more output switching units for electrically connecting the energy accumulator to a load in response to third control signals, and for disconnecting the energy accumulator from the load in response to fourth control signals; and
(d) a microprocessor electrically connected to the power source and the switching units, programmed to perform steps comprising:
(a) providing the first control signals to the input switching units;
(b) providing the second control signals to the input switching units when the voltage of the energy accumulator reaches a selected first level;
(c) providing the third control signals to the output switching units; and
(d) providing the fourth control signals to the output switching units when the voltage of the energy accumulator reaches a selected second level.

5,341,286
CURRENT DETECTING METHOD
Hiroyuki Inoue, Yawata, and Mikio Hasegawa, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 615,452, Nov. 19, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 918,811
Claims priority, application Japan, Nov. 17, 1989, 1-300445
Int. Cl.[5] H02M *7/537*
U.S. Cl. 363—98 **6 Claims**

1. A motor current detection method comprising:
driving a motor according to a periodic PWM signal having an ON time period and an OFF time period for each pulse thereof; and,
detecting a motor current I of the motor from instantaneous

VOL 1165 ISS 4 AG 23 1994 UMI

current values I1 and I2 of the motor at respective intermediate time points of the ON and OFF time periods of



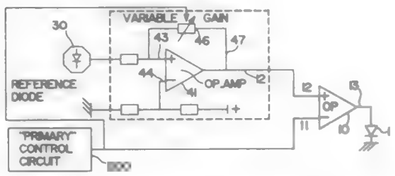
the periodic PWM signal and from a duty factor α of the PWM signal.

5,341,287

METHOD AND APPARATUS FOR THE CONTROL AND REGULATION OF A FIRST MAGNITUDE OF A DEVICE BY ACTION ON A SECOND MAGNITUDE

Joël Cordier, Carrieres sur Seine, and Laurent Carlou, Sceaux, both of France, assignors to Thomson-CSF, Pluteaux, France

Filed Aug. 12, 1992, Ser. No. 929,711
Claims priority, application France, Aug. 23, 1991, 91 10569
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—148 30 Claims



1. A method for the control of a magnitude x between two values, x_m and x_M, by action on a control magnitude y with which said magnitude x is in a one-to-one relationship when a parameter h, to which the magnitude x is sensitive remains constant, wherein said magnitude y varies between two values y_m and y_M causing said magnitude x to vary from x_m to x_M when the parameter h has a reference value h_i,

said magnitude x is a one-to-one function of the parameter h, for each control value x_p the parameter h varies in a determined interval h_m to h_M, including said reference value h_i, and for each value of $x_p(h)$ a function $y_p=g_p(h)$ is defined where y_p is a value given to said magnitude y to obtain the value x_p when said parameter has a value of h, a second function $g'_p(h)$ can be determined from different values of $g_p(h)$, with h being a value in said interval h_m to h_M, from a value of a first function $g_p(h)$ for the same value of the parameter h, by addition of a function of the difference between the real measured value h_r of the parameter h and the reference value h_i; said method comprising,

representing said magnitude x by the output magnitude of a first operational amplifier having first and second inputs,

applying to said first input a voltage U_i representing control magnitude y_i to obtain said output magnitude having a value x_i when said parameter h has a reference value h_i,

varying said voltage U_i from U_m to U_M when x varies from x_m to x_M,

applying to said second input a voltage V_c which represents the output magnitude corrected by a sensor of the parameter h, wherein said corrected voltage V_c is substantially equal to 0 when $h=h_i$ and substantially equal to $H_{(hr-hi)}$ when $h\neq h_i$, and

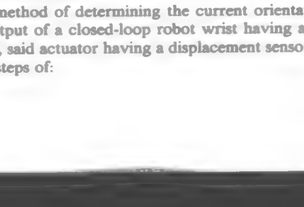
applying a correction to said control magnitude U_i to obtain a control value x_i when the parameter h goes from said reference value h_i to a measured value h_r, wherein said correction is represented by function $H_{(hr-hi)}$.

5,341,288

METHOD AND APPARATUS FOR ANALYZING PROCESS CHARACTERISTICS

Francis G. Shinskey, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed May 27, 1992, Ser. No. 889,472
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—159 44 Claims



12. A method of testing a self-regulating process that is controlled by application of a manipulated variable signal thereto to vary a first characteristic thereof, and that generates a controlled variable signal representative of that first characteristic, the improvement for determining a second characteristic of said process comprising the steps of:

A. applying a doublet pulse to said process by

i) incrementing said manipulated variable signal from an original value a predetermined amount, δm, to cause said controlled variable signal to change from an original value thereof,

ii) monitoring said controlled variable signal to determine a time period, τ_σ, after such incrementing, over which the controlled variable signal changes from original value by a determined amount, NB,

iii) responding to such determination by decrementing said manipulated variable signal stepwise an amount, $-2\times\delta m$,

iv) incrementing, after another time interval τ_σ, said manipulated variable signal to said original value, and

B. determining said second characteristic of said process as a function of a time-wise change in a value of said controlled variable signal during application of said doublet pulse.

5,341,289

METHOD FOR CONTROLLING THREE DEGREE OF FREEDOM ACTUATOR SYSTEM

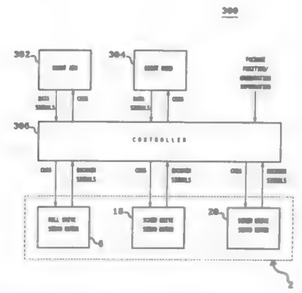
Jason J. Lee, Danbury, Conn., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Division of Ser. No. 906,205, Jun. 25, 1992. This application Feb. 5, 1993, Ser. No. 14,331
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—167.01 21 Claims

1. A method of determining the current orientation of the wrist output of a closed-loop robot wrist having at least one actuator, said actuator having a displacement sensor, comprising the steps of:

(a) generating a look-up table having table orientation data corresponding to the orientation of said wrist output for specific table displacement values of the displacements of said actuator;

(b) generating displacement signals representative of the displacement of said actuator;



(c) selecting from said look-up table a set of table orientation data in accordance with said displacement signals; and

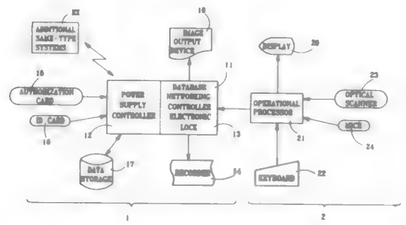
(d) determining said current orientation of said wrist output from said set of table orientation data.

5,341,290

MODULAR SYSTEM FOR PRINTING AND PROCESSING FINANCIAL DOCUMENTS

James Lu, 628 Rte. 10 S., Whippany, N.J. 07981

Filed Sep. 15, 1992, Ser. No. 945,254
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—408 2 Claims



1. A system for printing and processing financial documents, comprising:

a control module, an operation module, and a database, wherein the control module includes:

a database/networking controller which includes means for managing the database and means for managing networking operations between the control module and the operation module;

an electronic lock which includes a mechanical lock, means for automatically increasing a count of an electronic counter connected to a built-in battery every time the system is accessed, and at the same time sending an interrupt signal from the electronic lock to the database/networking controller each time the electronic lock is triggered, means for storing the interrupt signal in the database to thereby record a total number of accesses to the database, and means for displaying the count and the number recorded in the database and sounding an alarm if the count and number do not match;

a synchronous power supply controller which includes an uninterruptible power supply, means including a control switch for turning the system on and off, and means including a synchronous power switch for automatically connecting the system to the uninterruptible power supply when a normal power supply is off, and for automatically disconnecting the system from the uninterruptible power supply when the normal power supply comes on again;

an image output device for printing customized financial documents in response to commands received from the control module via the database/networking controller;

identification means including an integrated circuit card reader for inputting customer identification data, and means for comparing the customer identification data with identification data stored in the database;

a real-time recorder including means for recording identification codes, instruction commands, and an operation status of the system each time the system is accessed; and

authorization means for storing a customer's authorization information in the form of digital image information; and

wherein the operation module includes:

means including a display for displaying processing steps, prompts, and results of a financial operation;

means including an optical scanner for scanning image data and writing the scanned image data into the database;

means including a keyboard for inputting data;

means including a magnetic ink character reader for reading magnetic ink characters during a data input operation; and

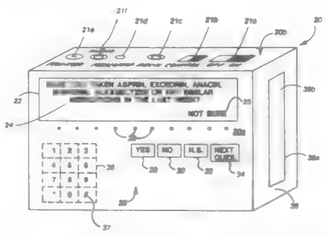
a second processor for receiving data from the optical scanner, the keyboard, and the magnetic ink character reader, and for processing said data responsive to said database/networking controller.

5,341,291

PORTABLE MEDICAL INTERACTIVE TEST SELECTOR HAVING PLUG-IN REPLACEABLE MEMORY

Michael Roizen, Chicago; William E. Turcotte, II, Oak Park, and Richard E. Pfisterer, Arlington Heights, all of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 794,295, Nov. 14, 1991, abandoned, which is a continuation of Ser. No. 497,891, Mar. 21, 1990, abandoned, which is a division of Ser. No. 130,934, Dec. 9, 1987, Pat. No. 5,025,374. This application Mar. 8, 1993, Ser. No. 27,920
Int. Cl.[5] H03M *11/02;* G06F *15/42*
U.S. Cl. 364—413.02 22 Claims



1. In a data-processing display device of the type including a hand-holdable, battery-operated digital computer having display means, patient input means, a programmable central processor, non-volatile means for storing a program for said processor, means for storing operating data, and means for storing temporary data, the improvement wherein:

said operating data storage means includes one or more predetermined questions directed to the medical history of a patient;

said display means and said input means are the exclusive

VOL 1165 ISS 4 AG 23 1994 UMI

means by which said patient may interact with said device; and

said hand-holdable, battery-operated digital computer comprises supervisor input means separate from said patient input means for receiving supervisory commands, means for selectably rendering said supervisor input means unrecognizable as an input means; and means operable by a supervisor for selectably making said supervisor input means recognizable as an input means.

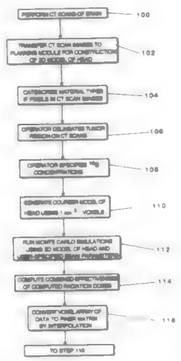
21. The improvement of claim 20 wherein said central processor is responsive to a predetermined password to cause said device to enter said first mode.

5,341,292

MONTE CARLO BASED TREATMENT PLANNING FOR NEUTRON CAPTURE THERAPY

Robert G. Zamenhof, Brookline, Mass., assignor to New England Medical Center Hospitals, Inc., Boston, Mass.

Filed Jun. 4, 1992, Ser. No. 893,650
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.13 19 Claims



1. A method of developing a treatment plan for neutron capture therapy of a target organ containing a tumor, said method comprising:

using a diagnostic cross-sectional scanner to scan the target organ to generate cross-sectional images of the organ;

generating a three-dimensional model of the organ from the cross-sectional images, said model including information about variations in internal composition of the organ in addition to said tumor; and

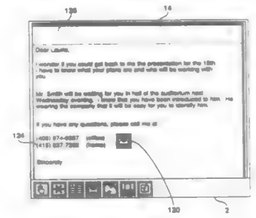
computing a three-dimensional array of expected radiation doses throughout the organ assuming a given arrangement of one or more neutron beams, said computing step using the three-dimensional model of the organ to compute said three-dimensional array of expected radiation doses.

5,341,293

USER INTERFACE SYSTEM HAVING PROGRAMMABLE USER INTERFACE ELEMENTS

Laurie J. Vertelney, San Carlos; Thomas D. Erickson; S. Joy Mountford, both of Mountain View; John A. Thompson-Rohrlich, Palo Alto; Gitta B. Salomon, Palo Alto; Yin Y. Wong, Palo Alto; Daniel S. Venolia, Soquel; Kathleen M. Gomoll, San Francisco, and Eric A. Hulteen, Los Gatos, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 700,729, May 15, 1991, Pat. No. 5,202,828. This application Sep. 3, 1992, Ser. No. 940,237
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[5] G06F *15/403*
U.S. Cl. 364—419.17 48 Claims



1. A user interface system for use in a computerized system having a processor, a memory, a display and an interactive input/output system in communication with the processor, the memory and the display for operating the user interface system, comprising:

a user interface element including first means for identifying said user interface element to a user, means for marking data displayed within one or more documents on said display with said first identifying means, and second means for identifying said user interface element to said computerized system such that said marked data can subsequently be found by said computerized system through utilization of said second identifying means;

means for storing one or more of said second identifying means for one or more of said user interface elements in said memory as a proxy to said marked data;

means for finding said marked data in said memory by searching for said proxy in said memory; and

means for displaying said marked data on said display after finding said marked data.

5,341,294

FOUR-WHEEL STEERING SYSTEM FOR VEHICLE

Hirotaka Kanazawa; Takeshi Edahiro; Hiroki Yoshioka; Nobuhiro Totoki; Hiroyuki Noda; Takashi Nakashima; Hiroshi Ohmura; Takeshi Murai, and Ryuya Akita, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

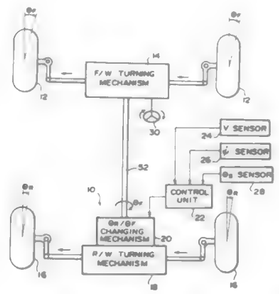
Filed Aug. 23, 1991, Ser. No. 748,838
Claims priority, application Japan, Aug. 24, 1990, 2-223937; Aug. 24, 1990, 2-223938; Aug. 31, 1990, 2-230155
Int. Cl.[5] B62D *5/06, 6/02*
U.S. Cl. 364—424.05 17 Claims

1. A four-wheel turning system for a vehicle comprising

a front wheel turning mechanism for turning front wheels of the vehicle in response to turning of a steering wheel,

a rear wheel turning mechanism which is connected to the front wheel turning mechanism by way of a rear wheel turning angle ratio changing mechanism for turning rear wheels of the vehicle, whereby the rear wheels are maintained in the neutral position where the turning angle is zero when the front wheels are in the neutral position,

the rear wheel turning angle ratio changing mechanism being mechanically connected to both the front wheel turning mechanism and the rear wheel turning mechanism and transmitting a mechanical displacement input therein from the front wheel turning mechanism to the rear wheel turning mechanism to drive the same by an amount the ratio of which to the amount of the mechanical displacement input into the rear wheel turning angle ratio changing mechanism gives a predetermined rear wheel turning angle ratio by which the turning angle of the front



wheels is multiplied to obtain a target rear wheel turning angle, and

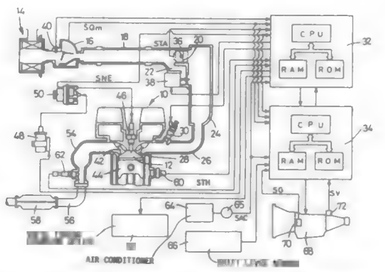
a control means for controlling the rear wheel turning angle ratio changing mechanism in such a way that, when the front wheels are turned from the neutral position in a middle vehicle speed range, the rear wheel turning angle ratio is made negative for a moment immediately after initiation of turning of the front wheels and is thereafter turned positive.

5,341,295

VEHICLE TRANSMISSION SHIFT CONTROL APPARATUS HAVING MEANS FOR SUITABLY DETERMINING COMPENSATING COEFFICIENT USED IN DETERMINING SHIFTING OF THE TRANSMISSION

Norihisa Nakagawa, Numazu, and Hiroki Matsuoka, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 21, 1992, Ser. No. 916,362
Claims priority, application Japan, Jul. 23, 1991, 3-206325; Jul. 23, 1991, 3-206326; Jul. 23, 1991, 3-206327; Jul. 23, 1991, 3-206328; Jul. 23, 1991, 3-206329; Jul. 31, 1991, 3-216145; Aug. 2, 1991, 3-217806; Nov. 8, 1991, 3-321203; Nov. 8, 1991, 3-321205; Dec. 25, 1991, 3-357759
Int. Cl.[5] G06F *15/50;* G06G *7/70*
U.S. Cl. 364—424.1 75 Claims



1. A shift control apparatus for an automatic transmission of a motor vehicle having an engine with a throttle valve, including (a) shift control means for automatically shifting the automatic transmission according to a predetermined shift pattern representing a relationship of operating parameters of the vehicle, and on the basis of actually detected values of said operating parameters, (b) detecting means for detecting a speed (NE) of said engine, an opening (TA) of said throttle valve and an intake air quantity (Qm) of said engine, (c) coefficient calculating means for calculated a required intake air quantity (Qc) of said engine from the detected speed of the engine and the detected opening of the throttle valve, and calculating a compensating coefficient (K) by dividing the calculating required intake air quantity by the detected intake air quantity, and (d) compensating means for compensating one of said shift pattern and at least one of said actually detected values of the operating parameters, depending upon said compensating coefficient, wherein the improvement comprises:

judging means for determining whether or not said compensating coefficient (K) has changed; and

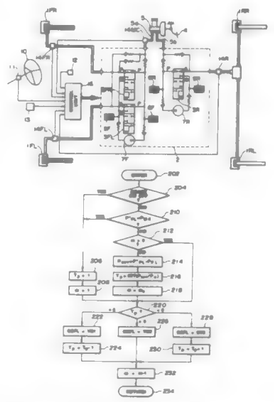
adjusting means for adjusting said compensating coefficient by a predetermined amount ($\alpha 1$, $\beta 1$, $\alpha 2$, $\beta 2$, $\beta 3$), each time said judging means determines that said compensating coefficient has changed, whereby an adjusted compensating coefficient (MK) is obtained so that said compensating means operates according to said adjusted compensating coefficient.

5,341,296

VEHICLE DYNAMIC CHARACTERISTIC CONTROL APPARATUS

Yoshiki Yasuno, and Ken Ito, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 27, 1991, Ser. No. 750,563
Claims priority, application Japan, Aug. 28, 1990, 2-224243
Int. Cl.[5] B60T *8/62;* B62D *5/06*
U.S. Cl. 364—426.01 5 Claims



1. A vehicle dynamic characteristic control apparatus for use with a vehicle having a steering wheel supported on a pair of front wheels and a pair of rear wheels, said vehicle having a first degree of freedom providing a first motion of said vehicle and a second degree of freedom providing a second motion of said vehicle different from said first motion, said apparatus comprising:

a first unit for controlling braking forces to be applied to left and right wheels of at least one of said wheel pairs;

a second unit for controlling a steering angle of one of said wheel pairs;

sensor means for sensing a steering wheel angle of said steering wheel and a vehicle speed of said vehicle and for providing signals indicative of said steering wheel angle and said vehicle speed; and

VOL 1165 ISS 4 AG 23 1994 UMI

a third unit coupled to said sensor means for controlling said first and second units, said third unit including

first means operable during an absence of vehicle braking for calculating a first target value for a first parameter related to said first motion of said vehicle based upon said vehicle speed and said steering wheel angle, said first means controlling said second unit to bring said first parameter to said first target value, said first means calculating a second value of a second parameter related to said second motion of said vehicle provided when said first parameter is controlled to said first target value in the absence of vehicle braking; and

second means operable during vehicle braking for calculating changes in cornering powers of said wheel pairs, said second means calculating a modified first target value based upon said changes in cornering powers, said second means controlling said second unit to bring said first parameter to said modified first target value, said second means controlling said first unit to bring said second parameter to said second value.

5,341,297

APPARATUS AND METHOD FOR PREVENTING INSTABILITIES IN VEHICLE HANDLING

Adam Zomotor, Waiblingen; Walter Klinkner, Stuttgart; Erich Schindler, Unterweissach; Frank-Werner Mohn, Esslingen, and Thomas Wohland, Stuttgart, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jul. 1, 1992, Ser. No. 907,283

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1991, 4123235

Int. Cl.[5] B60T *8/64;* **B62D** *6/04*

U.S. Cl. 364—426.03 **19 Claims**

1. A method for preventing instabilities in handling of a vehicle, comprising the steps of

(a) forming a desired value of vehicle yaw angle rate μ_{des} in a computer unit from measured values,

(b) supplying to the computer unit at least one sensor signal to form an actual value of the vehicle yaw angle rate μ_{act},

(c) determining the difference between the desired value of the yaw angle rate μ_{des} and the actual value of the yaw angle rate μ_{act} in the computer unit,

(d) forming a time derivative of said difference in the computer unit,

(e) generating at least one output signal in the computer unit from said difference and as a function of said time derivative, said output signal being representative of a detected driving situation with respect to yaw behavior of the vehicle as to whether the vehicle has oversteering handling or understeering handling, and

(f) varying brake slip of individual wheels of the vehicle as a function of this output signal, such that, in the case of oversteering handling, the brake slip is increased for a front wheel of the vehicle on an outside of a turn, and, in the case of understeering handling, the brake slip is increased for a rear wheel of the vehicle on an inside of a turn.

5,341,298

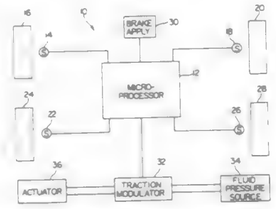
THROTTLE TRACTION CONTROL FOR AUTOMOTIVE VEHICLE

William A. Singleton, Grafton, and Robert D. Burns, North Royalton, both of Ohio, assignors to Allied-Signal Inc., Morristown, N.J.

Filed Aug. 25, 1992, Ser. No. 934,607

Int. Cl.[5] B60T *8/32*

U.S. Cl. 364—426.02 **14 Claims**



8. System for controlling wheel slippage upon acceleration of a motor vehicle having driven and nondriven wheels and an engine controlled by a power control controlled by the vehicle operator comprising wheel speed generating means for generating wheel speed signals representing wheel speeds of the wheels of the vehicle, calculation means responsive to said wheel speed signals for detecting a wheel slippage condition upon acceleration of the vehicle and generating a control signal in response thereto, and actuating means responsive to said control signal for adjusting said power control in response to the wheel slippage condition, said calculation means including means for calculating a driven wheel average wheel speed variable equal to the average wheel speeds of said driven wheels, means for calculating a nondriven wheel average wheel speed variable equal to the average wheel speeds of the nondriven wheel, means for calculating an error variable equal to the difference between the driven wheel average wheel speed signal and the nondriven wheel average wheel speed signal, means for recalculating said error variable during each of successive time periods, means for calculating a difference variable equal to the difference between the error variables calculated in successive time periods, and means for recalculating said control signal in each of said successive time period as a function of the error variable and the difference variable.

5,341,299

GAS MOTOR CONTROL

Karl Stellwagen, Mannheim; Hans Gerstner, Heddesheim, and Hasso Buchheister, Mannheim, all of Fed. Rep. of Germany, assignors to Kloeckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 959,178, Oct. 9, 1992, abandoned, which is a continuation of Ser. No. 490,967, Mar. 9, 1990, abandoned. This application Sep. 28, 1993, Ser. No. 128,316

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1989, 3907802; Jun. 8, 1989, 3918683

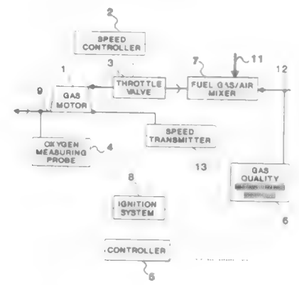
Int. Cl.[5] F01N *3/20*

U.S. Cl. 364—431.05 **7 Claims**

1. A method of operating a fuel gas burning motor having spark ignition or pilot injection ignition and which runs with an oxygen excess, comprising the steps of

providing a controller, an oxygen measuring probe measuring the oxygen in the exhaust gas of said motor and delivering to said controller a signal indicative of the oxygen content of said exhaust gas, a gas quality measuring device measuring the calorific value of fuel gas supplied to said motor and delivering a signal to said controller indicative of the calorific value of fuel gas supplied to said motor and delivering a signal to said controller indicative of the calorific value of said fuel gas, a fuel gas/air mixer delivering a fuel gas/air mixture to said motor and a throttle

value for the fuel gas/air mixture operable to deliver a signal to said controller indicative of the speed setting of said motor, said fuel gas/air mixer being connected in controlled relation to said controller,



generating an output signal by said controller in response to said signals delivered to said controller, and

regulating the composition of said fuel gas/air mixture by said fuel gas/air mixer responding to said output signal.

5,341,300

TROUBLE DIAGNOSIS DEVICE AND METHOD FOR EXHAUST GAS RETURN CONTROL DEVICE

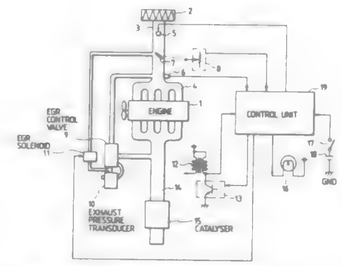
Shinya Fujimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1992, Ser. No. 946,100

Claims priority, application Japan, Sep. 18, 1991, 3-238063

Int. Cl.[5] F02B *47/08;* **G06F** *15/48*

U.S. Cl. 364—431.06 **7 Claims**



1. A trouble diagnosis device for an exhaust gas return control system which returns part of gas exhausted from an internal combustion engine to an intake pipe, said trouble diagnosis device comprising:

means for changing a flow rate of the exhaust gas returned to said intake pipe from an initial flow rate to a predetermined flow rate;

first detecting means for detecting operating conditions of said internal combustion engine;

diagnosing means for calculating a variation between one of said operating conditions detected by said first detection means under the initial flow rate and under the predetermined flow rate, and for comparing the variation of said one of the operating conditions with a first predetermined value for determining whether said exhaust gas return control system is out of order;

second detection means for detecting a rate of change of a second one of the operating conditions every predetermined period of time independent from a detecting operation performed by said first detection means; and

means for suspending a trouble diagnosis operation for said exhaust gas return control system when the rate of change detected by said second detection means exceeds a second predetermined value, said rate of change being determined by a difference between a current detected value representing said second one of the operating conditions and an immediately preceding detected value representing said second one of the operating conditions.

5,341,301

DIVERSITY TYPE GLOBAL POSITIONING SYSTEM FOR MOTOR VEHICLES

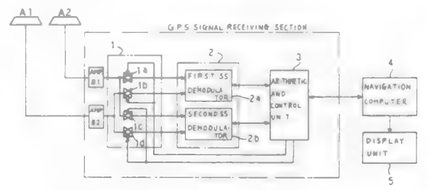
Kazunari Shirai, Obu; Yoshitaka Ozaki, Anjo, and Hiroyasu Fukaya, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 23, 1991, Ser. No. 812,102

Claims priority, application Japan, Dec. 27, 1990, 2-407959

Int. Cl.[5] H04B *7/08;* **G01S** *5/02*

U.S. Cl. 364—449 **19 Claims**



1. A diversity type GPS for a vehicle for computing a position of the vehicle on the basis of rf signals received from a plurality of satellites, comprising:

first and second antennas, mounted at first and second discrete positions, respectively, in a compartment of a vehicle, for receiving rf signals from a plurality of satellites, and

signal receiving means for demodulating rf signals from said satellites on the basis of signals received from said first and second antennas, and for computing a position of said vehicle on the basis of the demodulated data,

said signal receiving means comprising:

first and second demodulators, each for receiving a search command for a specific satellite, for performing a satellite search operation in accordance with said signals received by a selected one of said first and second antennas, and for demodulating said received signals when said satellite search operation is effected,

first switching means for selectively inputting signals received from said first and second antennas to said first demodulator,

second switching means for selectively inputting signals received from said first and second antennas to said second demodulator,

control means for outputting said search command for a first satellite to said first demodulator, for outputting a first antenna selection command for selection of either said first or second antenna to said first switching means, for outputting said search command for a second satellite to said second demodulator, and for outputting a second antenna selection command for selection of either said first or second antenna to said second switching means, and

computing means for computingthe position of said vehicle, wherein

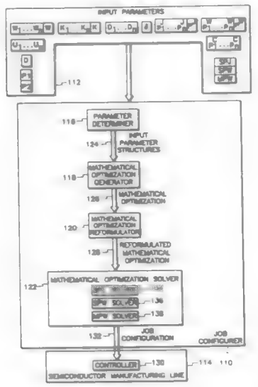
said first and second demodulators simultaneously search out said first and second satellites.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,302
JOB CONFIGURATION FOR SEMICONDUCTOR MANUFACTURING

Daniel P. Connors, Wappinger Falls, and David D. Yao, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 23, 1992, Ser. No. 872,878
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **28 Claims**



1. A method of manufacturing a demanded quantity of chip sets at a desired serviceability level, each of the chip sets comprising a demanded quantity of chips of each of a plurality of chip types, the method comprising the steps of:

(a) constructing an initial optimization program having:

(i) decision variable values,

(ii) an objective of minimizing a quantity of wafers used, and

(iii) an initial constraint of producing the demanded quantity of chip sets at the desired serviceability level;

(b) replacing said initial constraint with a lower bound so as to generate a reformulated optimization program, said lower bound being a constraint that is equal to a product of chip type probabilities, each of said chip type probabilities being equal to a probability that a quantity of chips of one of said chip types will be successfully manufactured when jobs are released into a semiconductor manufacturing line according to said decision variable values, each of said chip type probabilities being not less than respective chip demands associated with respective chip types;

(c) determining said decision variable values by solving said reformulated optimization program; and

(d) utilizing said solution of said reformulated optimization program to control a semiconductor manufacturing line by releasing jobs into said semiconductor manufacturing line as indicated by said decision variable values.

5,341,303
METHOD OF DEVELOPING COMPLEX TOOL SHAPES

Saeed D. Foroudastan, Antioch, and Mitchell C. Holman, Smyrna, both of Tenn., assignors to Avco Corporation, Providence, R.I.

Continuation of Ser. No. 743,745, Aug. 12, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,722
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **24 Claims**

1. A method of age forming a desired metal member having a surface contour of complex shape from an unformed member including the steps of

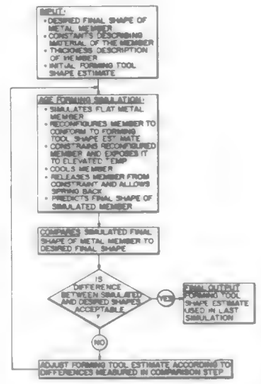
(a) overforming the unformed member in a forming tool having a contour of smaller curvature than the contour of the desired member;

(b) constraining the unformed member in the overformed condition;

(c) applying a thermal aging cycle to the member;

(d) cooling the constrained member following the thermal aging cycle;

(e) releasing the constrained member from the condition imparted by step (b) and allowing it to spring back to a dimensionally stable condition which defines the desired member having a surface contour of complex shape;



and predicting the surface contour of the forming tool comprising the steps, prior to performing steps (a) through (e), of:

(f) simulating mathematically the application of steps (a) through (e) solely on a model representing the shape of a member having the material properties of the desired metal member; and

(g) determining from step (f) the contour of smaller curvature in step (a) enabling the desired metal member to be produced upon the completion of step (e).

5,341,304
PRODUCTION PROCESS ADMINISTRATION SYSTEM

Shunji Sakamoto, and Toshihiko Hoshino, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 690,057, Apr. 23, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,227
Claims priority, application Japan, Apr. 26, 1990, 2-110979; Jun. 30, 1990, 2-173408; Apr. 18, 1991, 3-086648
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **18 Claims**

1. A production process administration system for controlling production processes which are performed on a production line having an assembling station line and a correction station line which is connected to the assembling station line, comprising:

the assembling station line along which a plurality of assembling stations are provided at which production operations are performed;

the correction station line along which at least one correction station is provided at which a correction operation is performed, said correction station line being connected to the assembling station line so that the correction station line and assembling station line form a single line;

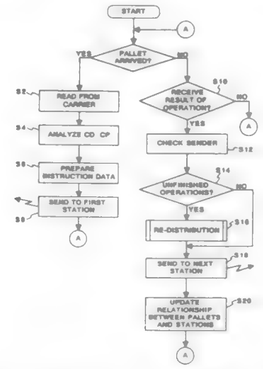
a work that moves along said correction station line and successively said assembling station line;

a data carrier that moves with the work and that is capable of recording data;

said plurality of assembling stations each having means for detecting defects of said production operations and for writing a nature of the defects in said data carrier;

means for advancing the work together with the data carrier along the assembling station line and toward the correction station line;

correction instruction distribution means, provided at a data collection point between the last assembling station and



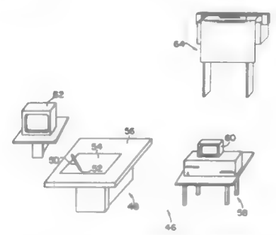
the first correction station, for reading the contents of said data carrier when the data carrier arrives at the point, for preparing a correction instructions according to a defect which is read out of the data carrier, and for sending instructions to the at least one correction station; and

said at least one correction station at which correction operations are performed based on the correction instructions sent from the instruction means.

5,341,305
A COMPUTERIZED PATTERN DEVELOPMENT SYSTEM CAPABLE OF DIRECT DESIGNER INPUT

Thomas N. Clarino, East Haven, and Mary M. Altshul, South Windsor, both of Conn., assignors to Gerber Garment Technology, Inc., Tolland, Conn.

Filed May 2, 1991, Ser. No. 694,666
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—470 **26 Claims**



1. A system for use in developing a garment pattern that includes a plurality of preferred garment pattern segment lines positioned in a spatial sequence with consecutive ones of said pattern segment lines having an intersection corresponding to the ends thereof, said system comprising:

a stylus having a means for drawing a visible line on a sheet of work material and further having an enabling means for selectively enabling the generation of position signals in an electrical circuit in proximity with a stylus tip;

a digitizer having a digitizing panel in substantial registration with a work supporting surface adapted to receive said work material sheet, said digitizing panel having an electrical circuit for producing position signals representing the position of said stylus tip relative to said supporting surface as said stylus is moved over said work supporting surface in proximity thereto, said stylus tip position signals arranged in signal sets corresponding to randomly drawn, non-continuous or overlapping ones of said drawn lines;

a controller adapted to receive said positions signals and generate therefrom a database of signals corresponding to said garment pattern segment lines, said controller including:

a composing means for composing, for each of said pattern segment lines, a preferred pattern segment line signal set from one or more substantially adjacent drawn line signal sets;

a means for forming a garment pattern signal group corresponding to said garment pattern from selected ones of said pattern segment line signal sets;

an editing means for editing selected position signals in said segment lines signal sets in response to instruction signals; and

a memory means for storing said signal database;

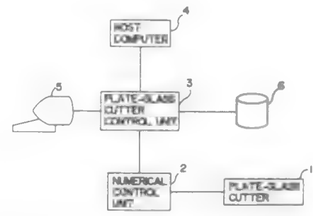
a graphic display device connected with said controller for visually displaying selected ones of said position signals as well as said instruction signals and signals indicative of the operational status of the system; and

an input means for the manual input of said instruction signals to said controller.

5,341,306
BLANK LAYOUT METHOD FOR PLATE-GLASS CUTTERS

Hideyuki Fujita, Osaka; Masaharu Okafuji, Ichihara, and Mitsunori Kawabe, Kitakyushi, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/00118, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO92/13808, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 5, 1992, Ser. No. 923,991
Claims priority, application Japan, Feb. 6, 1991, 3-015527
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—473 **4 Claims**



1. A blank layout method for plate-glass cutters for automatically laying out a plurality of rectangular product plates on a rectangular glass blank, comprising the steps of:

creating candidate layout plans for a first product plate on said glass blank by positioning said plate in a plurality of positions according to the possible combinations of the longitudinal and transverse direction in which said plate is laid out and the longitudinal and transverse direction in which a cutter line is drawn to cut said product plate, said candidate layout plans having a plurality of residual blank spaces divided from said glass blank as said product plate is cut;

creating a candidate layout plan for a second product plate on said residual blank spaces in the same manner as the creation of said candidate layout plans for said first glass plate on said glass blank;

recursively repeating the creation of candidate layout plans

VOL 1165 ISS 4 AG 23 1994 UMI

for successive product plates on residual blank spaces until no product plate fits on said blank spaces;

determining the final yields of all candidate layout plans; and

selecting the layout plan having the highest yield with respect to said glass blank.

5,341,307

APPARATUS AND METHOD FOR CONTROLLING FLOW RATE IN VIBRATORY FEEDERS

John B. Myhre, Pitman, N.J., and Stefan Ludescher, Oftringen, Switzerland, assignors to K-Tron Technologies, Inc., Wilmington, Del.

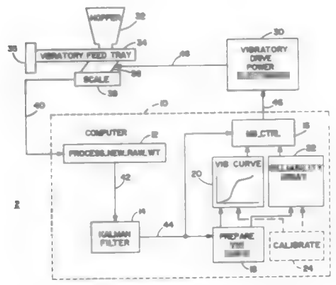
Filed Feb. 19, 1993, Ser. No. 21,531

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—479 **15 Claims**

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 82 Pages)



1. In a vibratory weigh feeding system having a material container, an actuator for vibrating the container, weighing apparatus for sensing the weight of the material being discharged and apparatus for estimating the material discharge rate, a method for controlling the actuator to adjust the discharge rate, comprising the steps of:

(a) establishing a plurality of drive command values;

(b) associating a respective predicted discharge rate and a respective reliability factor with each respective drive command value;

(c) estimating the current discharge rate;

(d) selecting a drive command value associated with one of the predicted discharge rates that is substantially equal to a previously selected setpoint discharge rate;

(e) reducing the selected drive command value according to the respective reliability factors associated with two of the predicted discharge rates that are closest to the setpoint, forming a reduced drive command value;

(f) transmitting a drive command signal representing the reduced drive command value to the actuator; setting the discharge rate; and

(g) increasing the respective reliability factor associated with the selected drive command value, if the respective predicted discharge rate differs from the estimated discharge rate by less than a predetermined amount.

5,341,308

METHODS FOR ALLOCATING CIRCUIT ELEMENTS BETWEEN CIRCUIT GROUPS

David W. Mendel, Menlo Park, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed May 17, 1991, Ser. No. 702,001

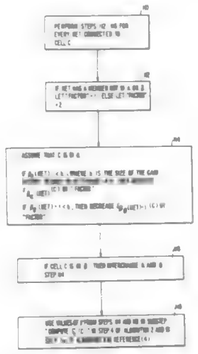
Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—489 **7 Claims**

1. A method of fabricating an electrical circuit which includes two subcircuits and at least one circuit node which is not in either of said subcircuits, each of said subcircuits including a plurality of circuit elements, each of said circuit elements requiring predetermined electrical connections to predetermined others of said circuit elements, and at least some of said circuit elements requiring predetermined electrical connections to said node, said method including the step of placing the circuit elements in the circuit so that the circuit elements are divided between the subcircuits, said placing step comprising a preliminary trial phase in which at least some of said circuit elements are moved between said subcircuits in an effort to reduce a variable which indicates the number of said electrical connections which must extend between said subcircuits, said preliminary trail phase of said placing step comprising the steps of:

identifying all circuit elements which require an electrical connection to said node;

after performing said identifying step and each time a circuit element which was identified in said identifying step is a first of the circuit elements identified in said identifying



step to move from a subcircuit which previously contained all of said circuit elements identified in said identifying step to the other of said subcircuits, increasing said variable by approximately half the amount that said variable is increased when a circuit element connected only to other circuit elements in one of said subcircuits is moved to the other of said subcircuits; and

after performing said identifying step and each time a circuit element which was identified in said identifying step is moved to a subcircuit which previously contained all other circuit elements identified in said identifying step, decreasing said variable by approximately half the amount that said variable is decreased when a circuit element connected only to other elements in said subcircuits is moved to a subcircuit which contains all of the other circuit elements to which that circuit element is connected.

5,341,309

APPARATUS FOR OPTIMIZING HIERARCHICAL CIRCUIT DATA BASE AND METHOD FOR THE APPARATUS

Tetsuro Kawata, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1992, Ser. No. 958,714

Claims priority, application Japan, Oct. 11, 1991, 3-290426

Int. Cl.[5] G06F *15/60*

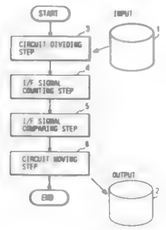
U.S. Cl. 364—489 **4 Claims**

1. A device for optimizing a hierarchical circuit data base which stores data relevant to a plurality of circuit modules having a hierarchical structure, said apparatus comprising:

means for selecting partial circuits satisfying conditions as indicated by parameters obtained from said hierarchical circuit data base, said parameters representing a hierarchical level of the circuit modules and the degree of connection indicating the number of connections of interface signals in the partial circuits in a stratum lower than the hierarchical level;

means for counting, as the number of the interface signals prior to the movement of the partial circuits, the number of the interface signals found to be present directly between the circuit modules at the hierarchical level and the partial circuits, both of which furnish the parameters serving as the reference for the selection of said partial circuit by selecting means;

interface signal comparing means, which counts, as the number of the interface signals after the movement, the number of the interface signals found to be present directly between another circuit module at the hierarchical



level and the partial circuit in case said partial circuit is moved into said other circuit module at said hierarchical level, the number of the interface signals present after the movement of said partial circuit being set in contrast with the number of the interface signals found to be present prior to the movement of said partial circuit, to compare the number of the interface signals found to be present prior to the movement of the partial circuit with the number of the interface signals found to be present after said movement of the partial circuit; and

renewing means, for renewing the hierarchical structure of the hierarchical circuit data base in case the number of the interface signals found to be present after the movement of the partial circuit is smaller than the number of the interface signals found to be present prior to said movement of the partial circuit.

5,341,310

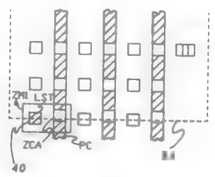
WIRING LAYOUT DESIGN METHOD AND SYSTEM FOR INTEGRATED CIRCUITS

Scott W. Gould, Burlington; Mark G. Marshall, Essex Junction, and Patrick E. Perry, Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1991, Ser. No. 809,681

Int. Cl.[5] H01L *21/02;* **G06F** *15/20*

U.S. Cl. 364—491 **19 Claims**



1. A method for designing a wiring layout to connect multiple function blocks in an integrated circuit, each of said function blocks having at least one logic service terminal associated therewith for facilitating layout wiring thereof, said logic service terminals aligning with a predetermined grid pattern, said design method comprising the steps of:

(a) generating for each of said logic service terminals a corresponding locator designating a desired contact point for wiring from the logic service terminal to the associated function block, said contact point designation being irrespective of said predetermined grid pattern of said logic service terminals, such that at least some said desired contact points are located off-grid relative to said predetermined grid pattern;

(b) generating a global wiring layout to connect function blocks of said integrated circuit, said generated global wiring layout connecting to multiple logic service terminals of said logic service terminals aligned with said predetermined grid pattern; and

(c) reformatting said global wiring layout to route wiring from each connected logic service terminal to its desired contact point on the associated function block using said corresponding locators generated in step (a).

5,341,311

METHOD AND APPARATUS FOR LIMITING THE CAPACITY OF A HYDROSTATIC MACHINE

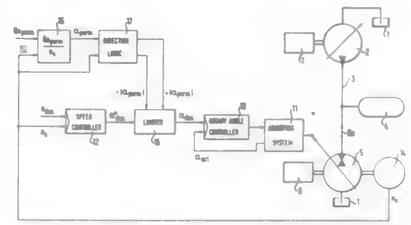
Gerold Liebler, Erlenbach, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany

Filed Apr. 2, 1992, Ser. No. 862,347

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1991, 4111500

Int. Cl.[5] F04B *49/06*

U.S. Cl. 364—510 **7 Claims**



1. A method for limiting the flow capacity of a hydrostatic machine defining a secondary unit and having variable displacement volume and speed which are functions of a variable rotary angle, the secondary unit being connected to a pressure line in which an impressed pressure of an approximately constant volume is maintained by a hydrostatic machine defining a primary unit having a nominal capacity and speed, said method comprising the steps of: predetermining a permissible flow capacity of the secondary unit from the nominal capacity and speed of the primary unit, measuring the speed of the secondary unit, calculating a permissible rotary angle value for the secondary unit as the ratio of the predetermined permissible flow capacity to the measured speed of the secondary unit, and limiting the rotary angle of the secondary unit of the calculated permissible rotary angle value.

5,341,312

METHOD FOR ASSESSING AND CORRECTING INDIVIDUAL COMPONENTS OF A NON-MONOLITHIC IMAGING ASSEMBLY

Jerold B. Lisson, Henrietta; Darryl I. Mounts, Pittsford, and Dale K. Mack, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 26, 1991, Ser. No. 766,232

Int. Cl.[5] G02B *27/10*

U.S. Cl. 364—525 **3 Claims**

1. A method for providing correction feedback for an imaging assembly comprising a lens or mirror and at least two

VOL 1165 ISS 4 AG 23 1994 UMI

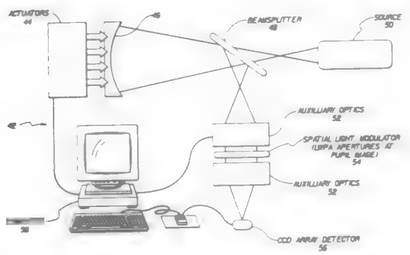
components, which imaging assembly can image a radiation beam, which method comprises:

1) sampling a pupil of the imaging assembly at at least two regions for assessing wavefront errors associated with at least two regions;

2) computing a localized optical transfer function (LOTF) for the localized wavefront errors;
the LOTF being defined by an equation:

$$LOTF_{freq} = LMTF_{freq} \times e^{(i)LPTF_{freq}}$$

where



$LOTF_{freq}$=Local Optical Transfer Function at frequency freq;

$LMTF_{freq}$=Local Modulation Transfer Function at frequency freq;

$LPTF_{freq}$=Local Phase Transfer Function at frequency freq;

3) generating from the LOTF a performance map comprising

a) a local optical quality factor (LOQF) comprising the ratio

$$\frac{\text{the computed } LMTF}{\text{a diffraction limited } LMTF}\text{; and,}$$

b) the local phase transfer function (LPTF); and,

4) generating from the performance map correction feedback comprising inter-component difference errors, for applying a controlled action to at least one of the components.

5,341,313

CATALYST LIFE PREDICTION IN HYDRODESULFURIZATION

Stephen L. Parrott, Okla.; Raul Adarme; Fan-Nan Lin, and Edwin P. Sasscer, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 3, 1992, Ser. No. 924,138

Int. Cl.[5] G06G *7/58*

U.S. Cl. 364—578 **12 Claims**

1. A method of predicting useful life of a catalyst in a continuous hydrodesulfurization (HDS) reaction with the aid of a computer simulation, said method comprising:

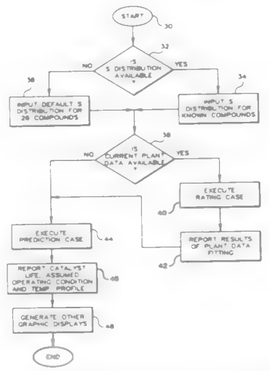
(a) constructing a kinetic model for use in said computer simulation;

(b) constructing a catalyst deactivation model for use in said computer simulation, wherein said deactivation model specifies a decline of catalyst activity with time and a simulated current reaction temperature required to maintain the initial catalyst activity;

(c) providing said computer simulation with a data base including at least a maximum HDS reaction temperature, a desired total product sulfur concentration, said initial catalyst activity, and a sulfur component distribution for the feed;

(d) using said computer simulation for:

(i) determining a temperature-time profile and the sulfur component distribution of the desulfurized product; and



(ii) predicting useful catalyst life as the time required for the activity of said catalyst to decline sufficiently that said simulated current reaction temperature reaches said maximum HDS reaction temperature.

5,341,314

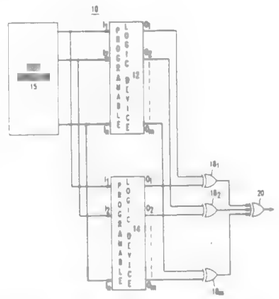
METHOD FOR GENERATING A TEST TO DETECT DIFFERENCES BETWEEN INTEGRATED CIRCUITS

Robert Bencivenga, Somerville; Scott Davidson, Pennington, and Victor J. Velasco, Montgomery, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 2, 1992, Ser. No. 939,758

Int. Cl.[5] G01R *31/28*; G06G *7/48*

U.S. Cl. 364—578 **3 Claims**



1. A method for differentiating between two different-version integrated circuits, comprising the steps of:

(a) modeling the different-version integrated circuits in a system such that:

(1) the different-version integrated circuits have their corresponding inputs coupled in parallel;

(2) the different-version integrated circuits have each of their corresponding outputs exclusively OR'd by a separate one of a plurality of exclusive OR gates; and

(3) the outputs of the exclusive OR gates are OR'd by an OR gate;

(b) generating a set of vectors, which, when input to the modeled system to be used for differentiating different-version integrated circuits including the different-version integrated circuits, causes a predetermined logic value to appear on at least one input of the OR gate in the modeled system;

(c) applying the set of vectors to each actual different-version integrated circuit to cause each to generate a response; and

(d) comparing the response generated by each actual different-version integrated circuit to determine if any differences exist therebetween.

5,341,315

TEST PATTERN GENERATION DEVICE

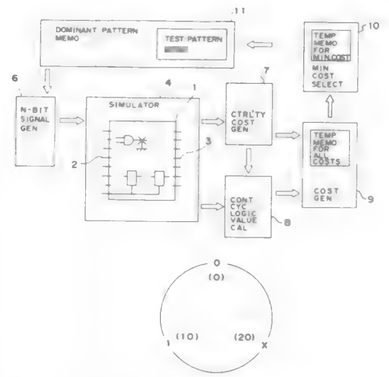
Hisao Niwa, Osaka, and Kazuhiro Kayashima, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 13, 1992, Ser. No. 850,877

Claims priority, application Japan, Mar. 14, 1991, 3-049406; Aug. 30, 1991, 3-219891

Int. Cl.[5] G01R *31/28*

U.S. Cl. 364—580 **5 Claims**



1. A test pattern generation device for producing test pattern signals for testing a preselected digital circuit having a preselected line comprising:

means for producing a dominant pattern signal in a binary form;

means for producing a set of subservient pattern signals from said dominant pattern, each of said subservient pattern signals having a binary form and being unit Hamming distance from said dominant pattern signal;

means, responsive to each subservient pattern, for simulating an operation of the preselected digital circuit which produces a result;

means for producing, from the result of the simulation operation, a controllability cost at the preselected line in said digital circuit for each of said subservient pattern signals;

means for producing, from the result of the simulation operation, a continuous cyclic logic value at said preselected line for each of said subservient pattern signals, said continuous cyclic logic value having a continuous value which changes from logic "0" to logic "1", logic "1" to logic "unknown X", and logic "unknown X" to logic "0", said continuous logic value having a first distance from logic "0" to logic "unknown X" equal to a second distance from logic "unknown X" to logic "1", which is in turn equal to a third distance from logic "0" to logic "1";

means for producing an evaluation cost at said preselected line by the use of said controllability cost and said continuous cyclic logic value for each subservient pattern signal;

means for selecting from said set of subservient pattern signals the subservient pattern signal that produced a minimum evaluation cost; and

test pattern memory means for storing said selected subservient pattern signal as one test pattern and assigning said selected subservient pattern signal as a next dominant pattern signal in a next cycle operation.

5,341,316

PERSONAL COMPUTER SYSTEM ALLOWING SELECTIVE USE OF BUILT-IN AND EXTERNAL KEYBOARDS BY MEANS OF SELECTOR

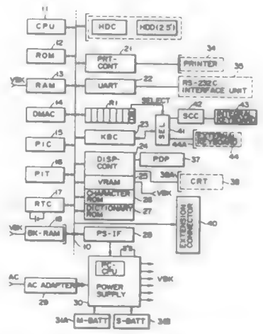
Nobutaka Nishigaki, Fussa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 552,055, Jul. 13, 1990, abandoned. This application Mar. 19, 1993, Ser. No. 33,971

Claims priority, application Japan, Sep. 8, 1989, 1-233420

Int. Cl.[5] G06F *3/00*

U.S. Cl. 364—709.12 **20 Claims**



1. A portable computer system comprising:

a main body having a central processing unit, a system bus, an external keyboard connector, and a built-in keyboard;

an external keyboard of a type different from said built-in keyboard, removably connected to the main body through the external keyboard connector;

a keyboard controller included in the main body, having a system bus interface connected to the system bus to send-/receive data to/from the central processing unit, and a keyboard interface for sending/receiving signals to/from one of the built-in and the external keyboards, and capable of receiving keyed-in data from one of the built-in and the external keyboards and for transmitting the keyed-in data received to the central processing unit; and

a selecting circuit, included in the main body and connected to said keyboard interface, said built-in keyboard, and said external keyboard connector, for connecting said keyboard interface to one of said built-in and said external keyboards through said external keyboard connector.

5,341,317

CURVILINEAR APPROXIMATION METHOD

Shingo Takahashi, and Aisaku Imanishi, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 775,659, Oct. 10, 1991. This application Dec. 29, 1992, Ser. No. 998,892

Claims priority, application Japan, Oct. 17, 1990, 2-278100

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—720 **3 Claims**

3. An apparatus for constructing a second curve that is an approximation of a first curve, comprising:

a computer having a program memory,

first, second, third and fourth random access memories coupled to said computer,

said first memory having stored therein predetermined values of WA, WB, WC and WD that are cubic functions of

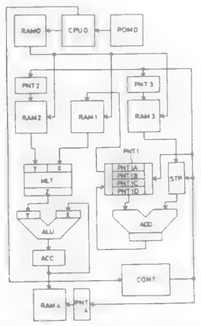
VOL 1165 ISS 4 AG 23 1994 UMI

a variable t, defining said first curve, for a sequence of a plurality of equally spaced values of t, wherein $0 \leqq t \leqq 1$,

said second memory having stored therein, coordinates of anchor points PA and PD and control points PB and PC of a plurality of segments of said first curve,

said third memory having stored therein a predetermined separate step number n for each of said segments, wherein n is different for at least some of said segments,

said program memory comprising means for calculating, for



each segment, coordinates thereof in accordance with the relationship:

$$Q = WA \cdot PA + WB \cdot PB + WC \cdot PC + WD \cdot PC$$

employing only nth stored values of said first memory and nth coordinates stored in said first and second memories, respectively, and means for storing said calculated coordinates in said fourth memory, said calculated coordinates comprising said adjacent determined coordinate points.

5,341,318

SYSTEM FOR COMPRESSION AND DECOMPRESSION OF VIDEO DATA USING DISCRETE COSINE TRANSFORM AND CODING TECHNIQUES

Alexandre Balkanski, San Francisco; Steve Purcell, Mountain View, and James Kirkpatrick, San Jose, all of Calif., assignors to C-Cube Microsystems, Inc., Milpitas, Calif.

Division of Ser. No. 818,403, Jan. 3, 1992, Pat. No. 5,191,548, which is a continuation of Ser. No. 495,583, Mar. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 494,242, Mar. 14, 1990, Pat. No. 5,196,946. This application Dec. 1, 1992, Ser. No. 985,092

Int. Cl.[5] G06F *7/38;* **H04N** *11/00*

U.S. Cl. 364—725 **16 Claims**



1. A system for data compression and decompression, comprising:

a video interface for receiving and transmitting digitized images as a stream of composite pixels, each composite pixel being represented by data of a plurality of chrominance and luminance component types;

a block memory control circuit coupled to said video interface for receiving into a memory circuit, during data compression, said stream of composite pixels and sorting said stream of composite pixels into single-component type data blocks, and for receiving into said memory circuit and reconstituting, during data decompression, said single-component type data blocks into said stream of composite pixels;

a discrete cosine transform circuit, coupled to receive said single-component type data blocks and a stream of dequantized coefficients, for performing, during data compression, a 2-dimensional discrete cosine transform on each of said single-component type data blocks to compute coefficients of said 2-dimensional discrete cosine transform, and for performing on said stream of dequantized coefficients, during data decompression, a 2-dimensional inverse discrete cosine transform to provide as output data said single-component type data blocks;

a quantization circuit for quantizing said coefficients of said 2-dimensional discrete cosine transform to provide quantized coefficients of said 2-dimensional discrete cosine transform, and for dequantizing, during data decompression, said quantized coefficients of said 2-dimensional discrete cosine transform to provide said stream of dequantized coefficients;

a zig-zag circuit coupled to receive and to transmit said quantized coefficients of said 2-dimensional discrete cosine transform for rearranging, during data compression, said quantized coefficients of said 2-dimensional discrete cosine transform from "sequential" order into "zig-zag" order, and for rearranging, during data decompression, said zig-zag ordered quantized coefficients of said 2-dimensional discrete cosine transform from a "zig-zag" order to a "sequential" order;

a data packing and unpacking circuit coupled to receive and to transmit said "zig-zag" ordered quantized coefficients of said 2-dimensional discrete cosine transform for packing, during data compression, said "zig-zag" ordered quantized coefficients of said 2-dimensional discrete cosine transform as run length-represented coefficients of said 2-dimensional discrete cosine transform, and for unpacking, during data decompression, said run length-represented coefficients of said 2-dimensional discrete cosine transform to said "zig-zag" order quantized coefficients;

a Huffman coding/decoding circuit, coupled to receive and to transmit said run-length represented coefficients of said 2-dimensional discrete cosine transform, for coding, during data compression, said run length-represented coefficients of said 2-dimensional discrete cosine transform into Huffman codes, and for decoding, during data decompression, said Huffman codes into said run length-represented coefficients of said 2-dimensional discrete cosine transform; and

a host interface for receiving control data from a host computer, said host interface being coupled to said video interface, said block memory control circuit, said discrete cosine transform circuit, said quantization circuit, said zig-zag circuit, said data packing and unpacking circuit and said Huffman coding/decoding circuit, to provide said control data to control the operations of said video interface, said block memory control circuit, said discrete cosine transform circuit, said quantization circuit, said zig-zag circuit, said data packing and unpacking circuit and said Huffman coding/decoding circuit.

5,341,319

METHOD AND APPARATUS FOR CONTROLLING A ROUNDING OPERATION IN A FLOATING POINT MULTIPLIER CIRCUIT

William C. Madden, Lexington; Vidya Rajagopalan, Hudson, and Sridhar Samudrala, Westboro, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 10, 1993, Ser. No. 16,058

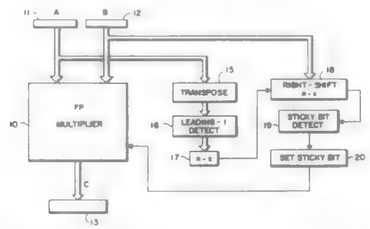
Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—748 **14 Claims**

1. A floating point multiplier circuit, comprising:

a) an array multiplier having a first input for receiving a first n-bit operand and a second input for receiving a second n-bit operand, and having a output for producing an n-bit result;

b) trailing zero detecting means receiving said first n-bit operand and calculating the number of trailing zeros x, in said n-bit operand, and generating a value $n-x$;



c) right-shifting means receiving said second n-bit operand and right-shifting said second n-bit operand by a number of bit positions equal to said value $n-x$;

d) detecting means responsive to bits shifted out by said right-shifting means to generate a sticky bit if any logic "1's" are in $n-x-2$ bits shifted out of said right-shifting means.

5,341,320

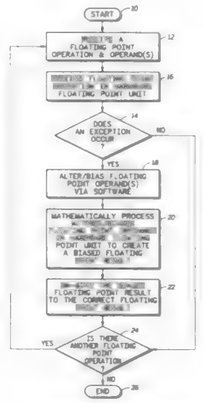
METHOD FOR RAPIDLY PROCESSING FLOATING-POINT OPERATIONS WHICH INVOLVE EXCEPTIONS

David W. Trissel; Roderick L. Dorris, and Stuart A. Werbner, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,011

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—748 **26 Claims**



1. A method for applying a mathematical operation to a floating-point value in a floating-point unit wherein the floating-point unit has a hardware operation unit and has access to an exception handler, the method comprising the steps of:

providing the floating-point value to the floating-point unit;

determining within the floating point unit, the mathematical operation which is required for the floating-point value;

determining, using the hardware operation unit and the floating-point value, whether a floating-point exception is needed to process the mathematical operation using the floating-point value;

invoking the exception handler to perform the mathematical operation with the floating-point value when a floating-point exception is detected, the exception handler numerically altering the floating-point value to a biased floating-point value and processing the biased floating-point value with the hardware operating unit to determine a biased result; and

unbiasing the result using the exception handler.

5,341,321

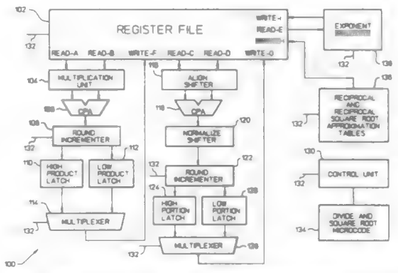
FLOATING POINT ARITHMETIC UNIT USING MODIFIED NEWTON-RAPHSON TECHNIQUE FOR DIVISION AND SQUARE ROOT

Alan H. Karp, Sunnyvale; Peter Markstein, Woodside, and Dennis Brzezinski, Sunnyvale, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 5, 1993, Ser. No. 58,164

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—748 **9 Claims**



1. A floating point arithmetic unit for performing at least one of a division operation to divide a dividend by a divisor to produce an estimated quotient and a square root operation of a value to produce an estimated square root, said arithmetic processing unit comprising:

a multi-ported storage device for storing data;

arithmetic means for multiplying two numbers to produce a product and for adding two numbers to produce a sum;

divide and square root microcode containing iterative procedures for performing at least one of the divide and square root operations;

reciprocal approximation means for supplying an initial approximation for at least one of a reciprocal value of the divisor and a reciprocal value of the square root of the value; and

a control unit for controlling said floating point arithmetic unit;

wherein said divide and square microcode carries out at least one of the divide and square root operations to produce at least one of the estimated quotient and square root with a precision of 2N-bits without requiting any 2N-by-2N multiplications; where N is a positive integer.

5,341,322

BIT LEVEL PIPELINE DIVIDE CIRCUIT AND METHOD THEREFOR

Gerhard P. Fettweis, Berkeley, Calif., and Herbert R. Dawid, Aachen, Fed. Rep. of Germany, assignors to Teknekron Communications Systems, Inc., Berkeley, Calif.

Filed May 11, 1992, Ser. No. 881,336

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—764 **15 Claims**

1. An apparatus for producing a quotient binary digital signal from a numerator binary digital signal representative of a numerator binary value (N) and a denominator binary digital

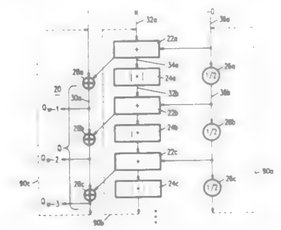
VOL 1165 ISS 4 AG 23 1994 UMI

signal representative of a denominator binary value (D), said quotient binary digital signal representative of a quotient binary value (N/D), said apparatus comprising:

a plurality of substantially similar electrical circuit stages, each electrical circuit stage comprising:

a) first circuit means for receiving said numerator signal and said denominator signal and for adding said denominator signal to said numerator signal to produce an added signal, said added signal having a plurality of bit signals including a sign bit signal, said added signal representative of said numerator binary value minus said denominator binary value;

b) second circuit means for receiving said added signal and for producing an absolute value signal therefrom, said absolute value signal representative of the absolute value of the number represented by said added signal;



c) third circuit means for receiving said denominator signal and for shifting said denominator signal by one bit to produce a shifted signal therefrom, said shifted signal representative of the value of the number supplied thereto divided by two;

d) fourth circuit means for receiving said sign bit signal and a quotient bit signal from a prior stage and forming an exclusive OR therefrom to produce a quotient bit signal of the current electrical circuit stage; and

means for connecting said plurality of electrical circuit stages by supplying the absolute value signal from one electrical circuit stage as the numerator signal to an immediately adjacent electrical circuit stage; and by supplying the shifted signal from one electrical circuit stage as the denominator signal to an immediately adjacent electrical circuit stage.

5,341,323

FUZZY MEMBERSHIP FUNCTION CIRCUIT

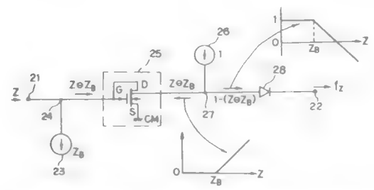
Takeshi Yamakawa, Kumamoto, Japan, assignor to Omron Tateisi Electronics Co., Nagaokakyo, Japan

Continuation of Ser. No. 313,722, Mar. 14, 1989, Pat. No. 5,113,366, which is a division of Ser. No. 917,952, Oct. 14, 1986, Pat. No. 4,837,725. This application Dec. 2, 1991, Ser. No. 801,478

Claims priority, application Japan, Oct. 22, 1985, 60-234644

Int. Cl.[5] G06G *7/12*; G06F *9/44*

U.S. Cl. 364—807 **10 Claims**



1. A slope changing circuit for a fuzzy membership function circuit comprising a multi-output current mirror having a plurality of output lines connected thereto in parallel, a switching device provided on at least one of the output lines, said switching device having at least three terminals including a control terminal, and means for applying a separate control signal to said switching device for turning said switching device on and off.

5,341,324

SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

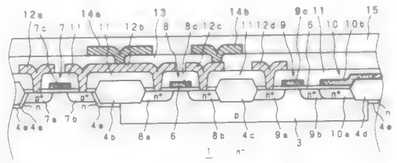
Toshiyuki Matsumoto, Ibaraki; Hirofumi Inada, Amagasaki; Hiroshi Nittaya, Ikoma, and Masahiro Kato, Kobe, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Sep. 30, 1992, Ser. No. 953,699

Claims priority, application Japan, Oct. 4, 1991, 3-285729; Oct. 16, 1991, 3-298534; Sep. 24, 1992, 4-254875

Int. Cl.[5] G11C *11/24*

U.S. Cl. 365—51 **7 Claims**



1. A semiconductor device comprising:

a substrate;

a memory cell composed of a transistor and a capacitor formed on said substrate, wherein a gate electrode of said transistor and an electrode of said capacitor are formed in the same process;

a logic circuit for turning on and off the transistor of said memory cell in accordance with access and non-access to said memory cell, which is composed of a transistor with a gate electrode formed in the same process with said gate electrode of the transistor and said electrode of the capacitor such that said capacitor electrode and said gate electrodes each extend, at least in part, in the same plane within said semiconductor device.

5,341,325

FERROELECTRIC MEMORY DEVICE WITH CROSSTALK PROTECTION IN READING/WRITING OPERATION

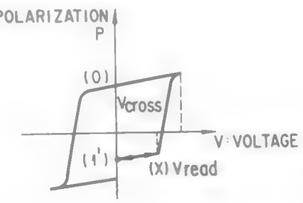
Hiroshi Nakano, and Yasuo Isono, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 971,947

Claims priority, application Japan, Aug. 6, 1992, 4-210470

Int. Cl.[5] G11C *11/22*

U.S. Cl. 365—145 **14 Claims**



11. A method for executing a reading/writing operation in a ferroelectric memory device, said method comprising the steps of:

preparing a matrix memory cell array in which a plurality of belt-like first conductive members, a plurality of belt-like second conductive members and ferroelectric capacitors are arranged in a matrix manner, said second conductive members being arranged in a direction perpendicular to said first conductive members, respectively, and said ferroelectric capacitors being formed at nodes of said first conductive members and said second conductive members, respectively;

precedently-applying a non-zero voltage with the same polarity as that of a reading/writing voltage to said matrix memory cell array prior to a reading/writing operation; and

subsequently executing the reading/writing operation for an addressed memory cell of said matrix memory cell array following said precedent voltage-applying step.

5,341,326

SEMICONDUCTOR MEMORY HAVING MEMORY CELL UNITS EACH INCLUDING CASCADE-CONNECTED MOS TRANSISTORS

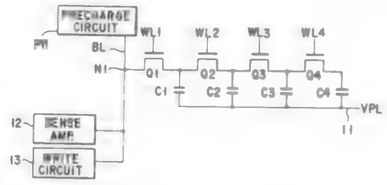
Satoru Takase; Natsuki Kushiyama, both of Yokohama, and Tohru Furuyama, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 10, 1992, Ser. No. 833,045

Claims priority, application Japan, Feb. 13, 1991, 3-041321

Int. Cl.[5] G11C *11/24, 11/34*

U.S. Cl. 365—149 **43 Claims**



1. A semiconductor memory comprising:

a memory cell array formed of a plurality of memory cell units, each of the memory cell units including:

a first node for reading data;

a first cascade gate including a plurality of cascade-connected first MOS transistors and having a one end connected to said first node; and

a plurality of capacitors for data storage each having a first electrode connected to one of said first MOS transistors at an end of said one first MOS transistor remote from said first node, said capacitors having a predetermined relationship with respect to each capacitance of said capacitors; and

word lines respectively connected to gates of said first MOS transistors for supplying signals to control the ON/OFF switching of said first MOS transistors, wherein

data stored in said capacitors is output to said first node in a sequence, and

the predetermined relationship of said capacitors is such that the capacitor whose data is output last in said sequence has a greater capacitance than the capacitor whose data is output first in said sequence.

5,341,327

STATIC RANDOM ACCESS TYPE SEMICONDUCTOR MEMORY DEVICE

Hirotada Kuriyama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 859,566

Claims priority, application Japan, Mar. 28, 1991, 3-93429; Feb. 4, 1992, 4-19231

Int. Cl.[5] G11C *11/00*

U.S. Cl. 365—154 **20 Claims**

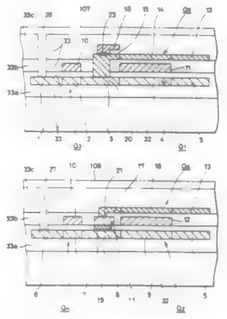
1. In a semiconductor memory device including a memory cell characterized by a pair of driver transistors of a first conductivity type, a pair of load transistors of a second conductivity type and a pair of access transistors, wherein said driver transistors and load transistors make up a flipflop circuit, said memory cell comprising:

a semiconductor substrate;

an insulating layer formed on said semiconductor substrate;

a first group of thin film transistors arranged on said insulating layer;

an interlayer insulating layer covering the surface of said first group of thin film transistors; and



a second group of thin film transistors arranged on said interlayer insulating layer,

wherein at least one transistor of said driver transistors, said load transistors or said access transistors, are included in said first group of thin film transistors, and

wherein at least one transistor of said driver transistors, said load transistors or said access transistors, excluding at least one transistor included in said first group of thin film transistors, are included in said second group of thin film transistors.

5,341,328

ELECTRICALLY ERASABLE MEMORY ELEMENTS HAVING REDUCED SWITCHING CURRENT REQUIREMENTS AND INCREASED WRITE/ERASE CYCLE LIFE

Stanford R. Ovshinsky, Bloomfield Hills; Stephen J. Hudgens, Southfield; Wolodymyr Czubatyj, Warren; David A. Strand, Bloomfield Township, Oakland County, and Guy C. Wicker, Southfield, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 789,234, Nov. 7, 1991, which is a continuation-in-part of Ser. No. 768,139, Sep. 30, 1991, and Ser. No. 747,053, Aug. 19, 1991, said Ser. No. 768,139, and Ser. No. 747,053, each is a continuation-in-part of Ser. No. 642,984, Jan. 18, 1991, Pat. No. 5,166,758. This application Jun. 15, 1992, Ser. No. 898,635

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[5] H01L *45/00*

U.S. Cl. 365—163 **30 Claims**

1. A directly overwritable, single-cell memory element comprising;

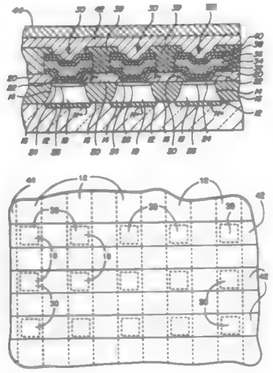
a volume of memory material defining a single cell memory element, said memory material characterized by (1) at least two electrically detectable values of resistance (2) the ability to be set at one of said detectable values in response to a selected electrical input signal so as to provide said single cell with data storage capabilities;

means for applying an input signal to set said memory material to a selected resistance value; said input means consisting of two spacedly disposed contacts, each contact including a thin-film layer of silicon material disposed in

VOL 1165 ISS 4 AG 23 1994 UMI

direct contact with said volume of memory material, said two contacts providing the terminals for reading information stored in and writing information into said memory material; and

said single cell of memory material being setable, by said selected input signal to a desired resistance value regardless of the previous value to which said memory material was set, and said memory material capable of remaining set at said value after the set signal has been terminated.



5,341,329

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE CAPABLE OF PREVENTING READ ERROR CAUSED BY OVERERASE STATE AND METHOD THEREFOR

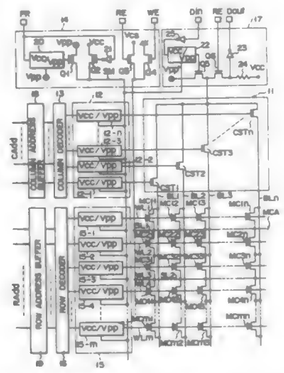
Masataka Takebuchi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 752,956, Aug. 28, 1991, abandoned, which is a continuation of Ser. No. 456,869, Dec. 27, 1989, abandoned. This application Sep. 9, 1993, Ser. No. 118,285

Claims priority, application Japan, Dec. 28, 1988, 63-333561

Int. Cl.[5] G11C *16/06*

U.S. Cl. 365—185 **29 Claims**



1. A non-volatile semiconductor memory device from which data is read during a data read mode, comprising:

a memory cell array in which a plurality of non-volatile memory cells each having source and drain regions in arranged in a row and column matrix;

row selecting means for selecting a row of non-volatile memory cells in said memory cell array;

column selecting means, coupled to one of the source and drain regions of said non-volatile memory cells, for selecting a column of non-volatile memory cells in said memory cell array;

first voltage level setting means for setting an output voltage level of said row selecting means;

second voltage level setting means for setting an output voltage level of said column selecting means; and

voltage control means for controlling said first and second voltage level setting means, said voltage control means including means for supplying voltage to the other of said source and drain regions of said non-volatile memory cells, said voltage supplying means and said second voltage level setting means respectively supplying first and second voltages to source and drain regions of non-volatile memory cells in said selected column of said memory cell array during the data read mode, wherein the lower of said first and second voltages is a positive voltage sufficient to back bias an overerased non-volatile memory cell in said selected column so that the threshold voltage level required to turn the overerased non-volatile memory cell ON is positive.

5,341,330

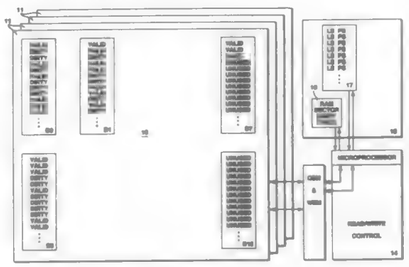
METHOD FOR WRITING TO A FLASH MEMORY ARRAY DURING ERASE SUSPEND INTERVALS

Steven E. Wells, Citrus Heights; Mark Winston, and Virgil N. Kynett, both of Eldorado Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 969,463, Oct. 30, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 145,732

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—185 **6 Claims**



1. A method for writing data to an entry in a portion of a flash EEPROM memory array during a period in which the portion of the array is being erased and writing is prohibited, the method comprising the steps of:

writing the data to a new entry position apart from the portion of the array which is being erased along with a revision number for the new entry which is greater than a revision number of the entry holding in the original data in the portion of the array being erased,

writing an indication of the busy condition of the original entry to a temporary storage position apart from the portion of the array which is being erased,

invalidating entries listed in the temporary storage position when the erase operation is concluded, and

testing for duplicate entries when power is applied to the array to determine which entry is valid.

5,341,331

DATA TRANSMISSION CIRCUIT HAVING COMMON INPUT/OUTPUT LINES

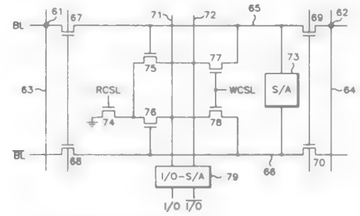
Jun-Young Jeon, Seoul, Rep. of Korea, assignor to SamSung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 30, 1991, Ser. No. 785,098

Claims priority, application Rep. of Korea, Jul. 31, 1991, 13263

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.01 **18 Claims**



1. A data transmission circuit for use in a semiconductor memory device comprising first and second memory array blocks each having a plurality of memory cells for storing data, a plurality of bit lines each commonly connected to said first and second memory array blocks, a plurality of isolation transistors connected to said bit lines for selecting one of said first and second memory array block, and a bit line sense amplifier for amplifying a potential difference between a first of said bit lines and a second of said bit lines, said circuit comprising:

a plurality of common input/output lines for commonly transferring the data of said first and second memory array blocks;

input means having a first channel connected between a first of said common input/output lines and said first bit line, and a second channel connected between a second of said common input/output lines and said second bit line, said input means being operable by a control signal, for transferring data conveyed on said common input/output lines to said bit lines; and

output means having a first control terminal connected to said first bit line to control a third channel, one terminal of said third channel being connected to said first common input/output line, said output means having a second control terminal connected to said second bit line to control a fourth channel, one terminal of said fourth channel being connected to said second common input/output line, a second terminal of said third channel being commonly connected to a second terminal of said fourth channel, and means for providing a voltage in response to a given operating signal to said second terminal of said third channel and said second terminal of said fourth channel, said output means for transferring a state of the potential difference between said first bit line and said second bit line, to said common input/output lines, said state capable of being sensed by said given operating signal.

5,341,332

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF FLASH WRITING AND METHOD OF FLASH WRITING

Kazunari Inoue, and Toshiyuki Ogawa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1993, Ser. No. 59,406

Claims priority, application Japan, May 12, 1992, 4-119202

Int. Cl.[5] G11C *7/00, 8/00*

U.S. Cl. 365—189.01 **17 Claims**

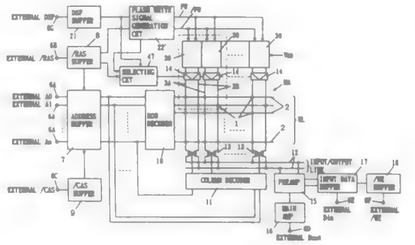
6. A semiconductor memory device, comprising:

a plurality of memory cells provided in a plurality of rows and a plurality of columns each for storing one of first information and second information;

a plurality of word lines provided in the plurality of rows and each connected to a plurality of memory cells provided to a corresponding row;

a plurality of bit line pairs provided in the plurality of columns and each connected to a plurality of memory cells provided to a corresponding column;

a plurality of sense amplifiers provided in the plurality of columns and each connected to bit line pairs provided to a corresponding column for amplifying the potential difference appearing between the bit line pairs;



flash write means for applying a prescribed potential only to one bit line of each of the plurality of bit line pairs when it writes the first or second information in a plurality of memory cells connected to the selected one of the plurality of word lines, upon receiving a flash write designation signal; and

sense amplifier activation signal generation means responsive to the flash write means for generating a signal for maintaining said plurality of sense amplifiers in an active state until a flash write operation is completed.

5,341,333

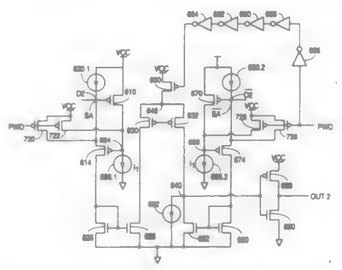
CIRCUITS AND METHODS FOR AMPLIFICATION OF ELECTRICAL SIGNALS

Ta-Ke Tien, and Chau-Chin Wu, both of Cupertino, Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Aug. 11, 1992, Ser. No. 929,874

Int. Cl.[5] G11C *7/06*

U.S. Cl. 365—189.06 **21 Claims**



19. A method for converting a current into a voltage, said method comprising the steps of:

providing a first current to a terminal S2 of a field effect transistor FET2 which also has a terminal D2 and a gate G2;

controlling a voltage on said gate G2 so that a current through said transistor FET2 counteracts voltage changes

VOL 1165 ISS 4 AG 23 1994 UMI

on said terminal S2, thereby keeping a voltage on said terminal S2 substantially constant; and

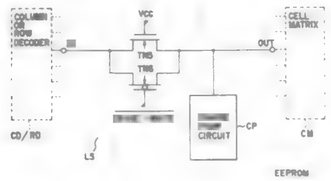
mirroring a current on said terminal D2 to a node O so that a voltage on said node O is indicative of the current on said terminal D2.

5,341,334

LEVEL SHIFTER CIRCUIT CONSTITUTED OF E AND I TYPE TRANSISTORS AND AN EEPROM USING THE SAME

Tadashi Maruyama, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 1, 1993, Ser. No. 115,031
Claims priority, application Japan, Sep. 2, 1992, 4-234965
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.11 **17 Claims**



1. A level shifter circuit comprising:

an input terminal for receiving an input signal oscillating between a first power source voltage and a second power source voltage according to a selected mode and non-selected mode;

an output terminal for delivering an output signal oscillating between the first and second power source voltages and a third power source voltage;

a first N-channel E type transistor having a drain electrode and a source electrode connected between the input terminal and the output terminal and a gate electrode supplied with the first power source voltage, the first N-channel E type transistor having a positive threshold voltage;

a first N-channel I type transistor having a source electrode and a drain electrode connected between the input terminal and the output terminal and a gate electrode applied with a control signal oscillating between the first power source voltage and the second power source voltage and determining whether or not a voltage conversion be made, the first N-channel I type transistor having a neutral threshold voltage; and

a charge pump circuit connected to the output terminal and operative with the first, second and third power source voltages such that the charge pump circuit is rendered an active state only when the voltage conversion is made.

5,341,335

DECIMATING FILTER

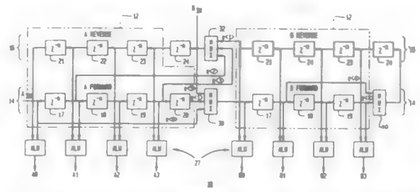
William R. Young, and William F. Johnstone, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 724,206, Jul. 1, 1991, Pat. No. 5,206,821.
This application Sep. 15, 1992, Ser. No. 945,674
Int. Cl.[5] G11C *8/04*
U.S. Cl. 365—189.12 **13 Claims**

1. An arrangement for generating a multibit digital code of length m, comprising:

a shift register having n flip-flop stages, where n is greater than or equal to m, a first flip-flop stage of said shift register having a first input port to which a first input bit may be applied and controllably shifted through said shift register in a first direction, and an nth flip-flop stage of said shift register having a second input port to which a second input bit may be applied and controllably shifted through said shift register in a second direction, and wherein each of said n flip-flop stages has an output bit line from which a bit value of a respective one of said n flip-flop stages, through which of multibit digital code is defined, is obtained;

a shift register state control unit coupled with the respective flip-flip stages of said shift register and being operative to receive state control inputs and a clock signal applied



thereto, and to controllably cause each of the n flip-flop stages of said shift register to shift the contents of said shift register by one flip-flip stage in said first direction, to shift the contents of said shift register by one flip-flip stage in said second direction, to hold the contents of said shift register, or to be reset.

5,341,336

METHOD FOR STRESS TESTING DECODERS AND PERIPHERY CIRCUITS

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Apr. 30, 1993, Ser. No. 56,376
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—201 **27 Claims**

13. A method for stress testing decoders and periphery circuits used with a memory array in an integrated circuit, comprising the steps of:

simultaneously setting the inputs of a plurality of column decoding circuits to a first common voltage level, wherein a plurality of bit and complementary bit lines within the memory array are selected for a predetermined period of time and simultaneously setting the inputs of a plurality of row decoding circuits to the first common voltage level, wherein a plurality of rows within the memory array are selected for a predetermined period of time;

applying a stress voltage to the integrated circuit;

simultaneously setting the inputs of the plurality of column decoding circuits to a second common voltage level, wherein the plurality of bit and complementary bit lines within the memory array are deselected; and

applying a stress voltage to the integrated circuit;

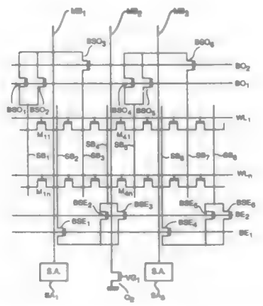
wherein a bit line load of a bit line pair is turned off during selection of the plurality of rows.

5,341,337

SEMICONDUCTOR READ ONLY MEMORY WITH PARALLELED SELECTING TRANSISTORS FOR HIGHER SPEED

Yasuhiro Hotta, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 16, 1993, Ser. No. 121,424
Claims priority, application Japan, Sep. 18, 1992, 4-250147
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—204 **4 Claims**



1. A semiconductor read only memory including a plurality of word lines disposed in parallel, the semiconductor read only memory having a plurality of units, each of the plurality of units comprising:

a first main bit line and a second main bit line which cross the word lines,

a first sub-bit line, a second sub-bit line, a third sub-bit line, and a fourth sub-bit line which are disposed substantially in parallel to the first and second main bit lines, each of the first, second, third and fourth sub-bit lines having a first end and a second end;

four memory cell columns, each including a plurality of memory cells connected in parallel between respective adjacent two of the first, second, third and fourth sub-bit lines; and

a plurality of bank selecting switches for selecting one of the four memory cell columns;

wherein to the first main bit line, the first ends of the first sub-bit line and the third sub-bit line are connected, and to the second main bit line, the second ends of the second sub-bit line and the fourth sub-bit line are connected,

wherein first and second ones of the bank selecting switches are disposed in parallel between the first main bit line and the first sub-bit line, and third and fourth ones of the bank selecting switches are disposed in parallel between the second main bit line and the fourth sub-bit line, and

wherein a fifth one of the bank selecting switches is disposed between the first main bit line and the third sub-bit line, and a sixth one of the bank selecting switches is disposed between the second main bit line and the second sub-bit line.

5,341,338

DATA OUTPUT CIRCUIT WITH MINIMUM POWER SOURCE NOISE

Hiroyuki Hashiguchi, and Ituro Iwakiri, both of Miyazaki, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,563
Claims priority, application Japan, Jun. 26, 1991, 3-154225
Int. Cl.[5] H03K *3/01*
U.S. Cl. 365—206 **11 Claims**

1. An integrated circuit comprising a plurality of data output circuits, each of which is responsive to data signals complementary to each other for outputting data corresponding to said data signals:

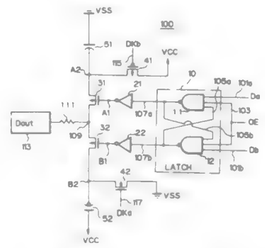
each of said plurality of data output circuits comprising:

an output terminal for outputting the data;

a first output transistor comprising a path of controllable conductivity whose one electrode is connected to said output terminal, and a control electrode for controlling said path of controllable conductivity in response to a first signal;

a second output transistor comprising a path of controllable conductivity whose one electrode for controlling said path of controllable conductivity in response to a second signal complementary to the first signal;

a first switch transistor comprising a path of controllable conductivity having one electrode connected to the other



electrode of the path of controllable conductivity of said first output transistor and another electrode connected to a first power source, and a control electrode for rendering said path of controllable conductivity of said first switch transistor conductive in response to a first switch signal; and

a first capacitor having one electrode connected to another electrode of the path of controllable conductivity of said first output transistor and another electrode connected to a second power source;

said integrated circuit further comprising a control circuit for receiving a control signal which occurs after the first signal, delaying said control signal a predetermined period of time to produce the first switch signal, and feeding said first switch signal to said first switch transistor of each of said plurality of data output circuits.

5,341,339

METHOD FOR WEAR LEVELING IN A FLASH EEPROM MEMORY

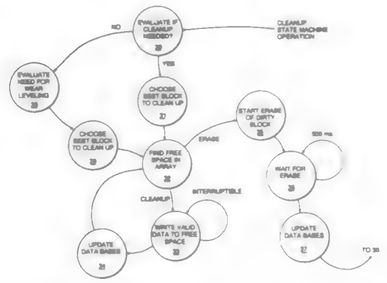
Steven E. Wells, Citrus Heights, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 969,467, Oct. 30, 1992, abandoned.
This application Nov. 1, 1993, Ser. No. 145,654
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—218 **8 Claims**

1. In a process for cleaning up a flash EEPROM array separated into blocks of memory cells which blocks store data in sectors which contain valid and invalid data, and which blocks may be separately erased, and in which process for cleaning up all valid data is first written to other blocks of the array, and then the block is entirely erased, the improvement comprising:

VOL 1165 ISS 4 AG 23 1994 UMI

the step of determining a block to clean up based on a comparison of the number of invalid sectors each block includes and the number of switching operations which each block has undergone.

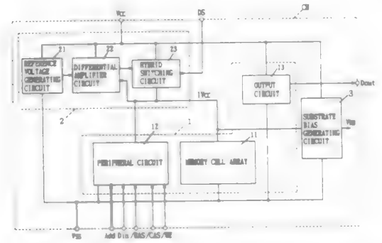


5,341,340

SEMICONDUCTOR MEMORY DEVICE AND OPERATING METHOD

Tsukasa Hagura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,955
Claims priority, application Japan, Mar. 30, 1992, 4-074304
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—226 **32 Claims**



1. A semiconductor memory device formed on a semiconductor substrate comprising:

voltage converting means for converting an external power supply voltage to an internal power supply voltage lower than the external power supply voltage;

storage means, coupled to said voltage converting means and driven by said internal power supply voltage, for storing data;

substrate bias generating means, coupled to said voltage converting means and driven by a drive voltage, for generating from said drive voltage a substrate bias voltage for retaining said semiconductor substrate at a constant voltage; and

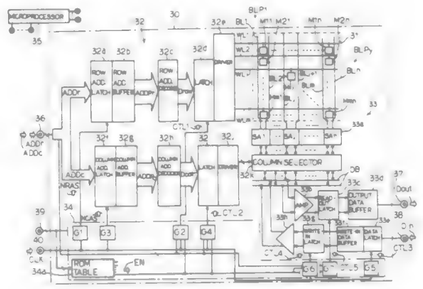
switching means, coupled to said substrate bias voltage generating means and said voltage converting means, for selectively switching the drive voltage to said substrate bias generating means between said external power supply voltage and said internal power supply voltage, depending on whether said storage means is in an active state or in a standby state.

5,341,341

DYNAMIC RANDOM ACCESS MEMORY DEVICE HAVING ADDRESSING SECTION AND/OR DATA TRANSFERRING PATH ARRANGED IN PIPELINE ARCHITECTURE

Yukio Fukuzo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 36,031
Claims priority, application Japan, Mar. 26, 1992, 4-067795
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—233 **6 Claims**



1. A dynamic random access memory device fabricated on a semiconductor chip, comprising:

a) a memory cell array having a plurality of memory cells arranged in rows and columns, row addresses and column addresses being respectively assigned to said rows and said columns;

b) a row addressing means having a row address latch circuit responsive to an internal row address strobe signal for temporarily storing an external row address signal, a row address decoder unit for producing a row address decoded signal from said external row address signal, and a word line driver circuit responsive to said row address decoded signal for selecting a row of memory cells indicated by said external row address signal;

c) a column addressing means having a column address latch circuit responsive to an internal column address strobe signal for temporarily storing an external column address signal, a column address decoder unit for producing an internal column address decoded signal from said external column address signal, and a column selecting unit responsive to said column address decoded signal for selecting a column of memory cells indicated by said external column address signal;

d) a data transferring means inserted between a data input-/output means and said memory cell array for providing a data path between said data input/output means and one of said plurality of memory cells indicated by said external row address signal and said external column address signal, and having a first temporary data storage coupled with said data input/output means and responsive to a first control signal for storing an external data signal, a second temporary data storage responsive to a second control signal for storing a first differential voltage produced from said external data signal and a third temporary data storage responsive to a third control signal for storing a second differential voltage indicative of a read-out data bit supplied from said memory cell array, said second temporary data storage transferring said first differential voltage in an absence of said second control signal, said third temporary data storage transferring said second differential voltage in an absence of said third control signal; and

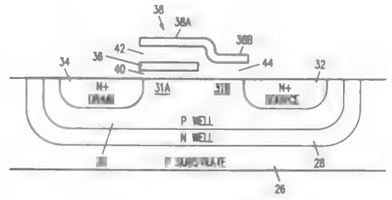
e) a controlling means having a plurality of timing generating stages operative to produce said internal row address strobe signal, said internal column address strobe signal, said first control signal, said second control signal and said third control signal in synchronism with an external clock signal, said row addressing means further having a first temporary address storage responsive to a fourth control signal for storing said row address decoded signal, said column addressing means further having a second temporary address storage responsive to a fifth control signal for storing said internal column address decoded signal, said first temporary address storage transferring said row address decoded signal in an absence of said fourth control signal, said second temporary address storage transferring said column address decoded signal in an absence of said fifth control signal, said controlling means further having a timing generating stages for producing said fourth control signal and said fifth control signal in synchronism with said external clock signal, and a programming circuit responsive to an external command signal for enabling the timing generating stages operative to produce said internal row address stobe signal, said internal column address strobe signal and only said first control signal, or for enabling the timing generating stages operative to produce said internal row address strobe signal, said internal column address strobe signal and only said first to third control signals.

5,341,342

FLASH MEMORY CELL STRUCTURE

Dhaval J. Brahmbhatt, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 18, 1992, Ser. No. 992,838
Int. Cl.[5] G11C *17/00;* **H01L** *29/68*
U.S. Cl. 365—182 **5 Claims**



1. A semiconductor flash memory cell comprising:

a semiconductor body of a first conductivity type;

a first well of a second conductivity type, opposite said first conductivity type, formed in the semiconductor body;

a second well of said first conductivity type formed in the first well;

a first region of the second conductivity type formed in the second well at a surface of the semiconductor body;

a second region of the second conductivity type formed in the second well at said surface and spaced apart from the first region so as to define a channel region between the first region and the second region in the second well, the channel region including a first portion adjacent said first region and a second portion adjacent said second region, with said first and second portions of said channel region defining a series configured electrical path between said first and second regions;

a floating gate disposed over only said first portion of the channel region; and

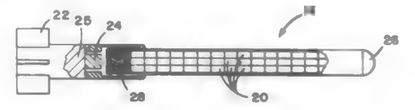
a control gate electrically insulated from the floating gate and having a first segment disposed over only said second portion of the channel region and a second segment disposed over the floating gate.

5,341,343

UNDERWATER EXPLOSIVE ACOUSTIC SIGNATURE DEVICE

Robert L. Aske, St. Louis Park, Minn., assignor to Alliant Techsystems, Inc., Edina, Minn.

Filed Apr. 2, 1993, Ser. No. 41,560
Int. Cl.[5] H04K *3/00*
U.S. Cl. 367—1 **26 Claims**



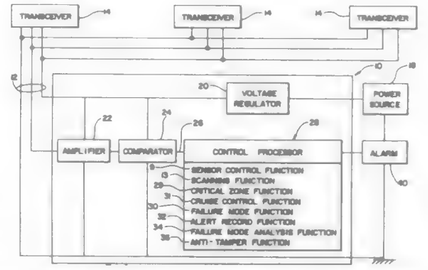
1. An explosive actuated acoustic apparatus for deployment in water, comprising a multiplicity of explosive actuated acoustic devices, wherein the acoustic devices include means for dispersing the devices over an extended area and wherein the multiplicity of acoustic devices have a plurality of sink rates for distributing activation of the acoustic devices over an extended period of time.

5,341,344

OBSTACLE-DETECTION SYSTEM

Stephen W. O'Brien, Arlington, Tex.; Leo C. Hayes, Jr., Lake Matthews, Calif., and Takaaki Nishyama, Ann Arbor, Mich., assignors to Optical Detective Systems, Inc., Fort Worth, Tex.

Filed Oct. 14, 1992, Ser. No. 960,767
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—96 **21 Claims**



1. A system for detecting objects around a vehicle comprising:

a plurality of microwave-transceiver sensors mounted to the vehicle for transmitting microwave signals having a first phase and receiving microwave signals reflected from objects around the vehicle and having a second phase;

a phase comparator for comparing the transmitted microwave signal having the first phase with the received microwave signal having the second phase, said comparator generating an output signal in response to the phase comparison of the first phase and the second phase;

a control processor responsive to the output signal of the comparator and generating an alarm signal, the control processor including means for altering a scanning pattern of a sensor in response to the speed of the vehicle; and

alarm means for generating an alarm in response to the alarm signal received from the control processor.

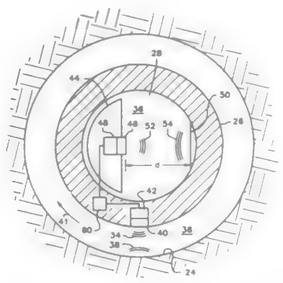
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,345

ULTRASONIC STAND-OFF GAUGE

Kevin L. Warner, and Joe M. Delasko, both of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Aug. 9, 1993, Ser. No. 104,433
Int. Cl.[5] G01S *15/08*; G01V *1/00*
U.S. Cl. 367—99 29 Claims



1. A stand-off gauge for measuring the distance between a drill stem and a borehole wall during drilling of a borehole, wherein the drill stem has an internal conduit used to pump drilling fluid into the borehole, said stand-off gauge comprising:

a primary transducer unit disposed on the drill stem for transmitting pressure waves towards the borehole wall, for receiving and detecting pressure waves reflected by the borehole wall and for providing a primary signal indicative thereof;

a reference transducer unit disposed within the drill stem conduit for transmitting pressure waves towards an inner surface of the drill stem conduit through the drilling fluid for receiving and detecting pressure waves reflected from said inner surface of the drill stem conduit and for providing a reference signal indicative thereof, wherein said reference transducer unit is located a predetermined distance from said inner surface of the drill stem conduit; and

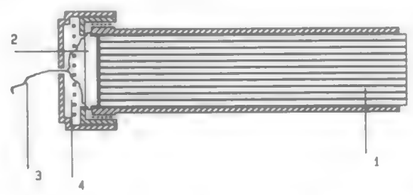
a calculation unit coupled to said primary and reference transducer means and for receiving said primary and reference signals and for calculating a corresponding stand-off distance between the exterior wall of the drill stem and the borehole wall by combining said primary and secondary reference signals using a predetermined relationship.

5,341,346

PORTABLE NARROW ANGLE SONAR RANGE FINDER

Francis W. Youlton, P.O. Box 938, Palo Alto, Calif. 94302

Filed Aug. 16, 1993, Ser. No. 106,517
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—99 12 Claims



1. A sonar ranging obstacle avoidance system with a variable narrow obstacle detection spatial beam comprising:

a bundle of hollow tubes mounted in front of the plane of a transducer, which transducer has means for emitting sonic or ultrasonic pulses and means for detecting reflected sonic or ultrasonic waves which have an energy above a certain detection threshold;

means for measuring the time between the emission of a sonic or ultrasonic pulse by the transducer and the detection of reflected sonic or ultrasonic waves;

means for converting this said measured time to the distance travelled by the sonic or ultrasonic pulse during this time;

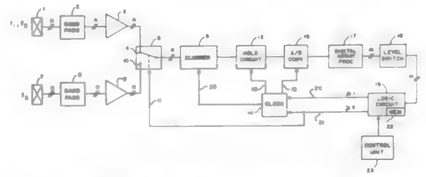
means for displaying this distance; said transducer repeatedly emits sonic or ultrasonic pulses which then travel down the said tubes and leave the end of the tubes and spread out as a wave, any of the said wave which is reflected back from an obstacle toward and through the said tubes to the transducer is detected by the transducer detection means if it is above the said certain energy value of the transducer detection means, and the time between the emission of the ultrasonic or sonic or pulses and the detection of the reflected waves by the transducer is measured by the said transducer time measuring means and converted to a said distance which is then displayed by the said display means; said wave's energy after passing through the said tubes is dependant on the absorption of the said reflected wave in the said tubes, and which absorption also depends on the angle the said reflected wave makes with the axis of the said tubes and only such waves that are reflected within a range of certain said angles, and certain distances from the axis of the tubes and certain distances of the reflecting object from the tube bundle, have an energy above the said certain detection threshold of the said transducer detection means, which transducer will therefore only detect reflections from objects which are within a certain shaped narrow spatial beam in front of the bundle of tubes and around the extended axis of the tubes, which spatial beam's shape is predetermined by the length of the individual said tubes, the diameter of the individual tubes, the tube material, internal tube coatings, the cross sectional and longitudinal profile of the tubes, the sonic or ultrasonic wavelength and the said certain energy value of the transducer detection means.

5,341,347

ELECTRO ACOUSTIC TARGET SEARCHING SYSTEM FOR TORPEDOS

Reinhard Ludwig, Uhlenkrog 23, D-2300 Kiel, Fed. Rep. of Germany

Filed Oct. 15, 1981, Ser. No. 313,888
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039434
Int. Cl.[5] G01S *3/80*
U.S. Cl. 367—129 3 Claims



1. An electro acoustic target searching system comprising:

receiving transducer means adapted to receive acoustic signal at first, second and third frequencies, the second frequency being higher than the first frequency and the third frequency being higher than the second frequency;

signal evaluation means connected to said receiving transducer means and capable of determining the direction of reception of acoustic signals at any of the first, second and third frequencies and producing corresponding direction signals, the frequency at which evaluation is made to determine direction being controllable; and

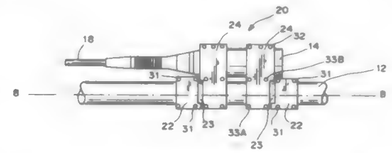
logic means connected to receive the direction signals from said signal evaluation means, and operable to control the frequency at which said evaluation means determines the direction of reception so that if a direction signal determined from evaluation at the first frequency exceeds a reference magnitude, evaluation is made at the second frequency, and if the resulting direction signals indicate receipt of acoustic signals exceeding the predetermined magnitude from a plurality of directions, evaluation is made at the third frequency.

5,341,348

SWIVEL MOUNT FOR GIMBAL GEOPHONE

Richard C. Farris, Dickinson, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Jul. 13, 1993, Ser. No. 91,217
Int. Cl.[5] G01V *1/16*
U.S. Cl. 367—154 3 Claims



2. An apparatus for use in geophysical exploration, comprising:

(a) a cable;

(b) a cable mount fixedly placed on the cable, said cable mount having a groove extending around the substantial periphery of the cable mount;

(c) a sensor mount having a key adapted to rotate in the groove, said sensor mount rotatably placed on the cable in a manner which enables the key to remain in the groove when the sensor mount rotates about the cable; and

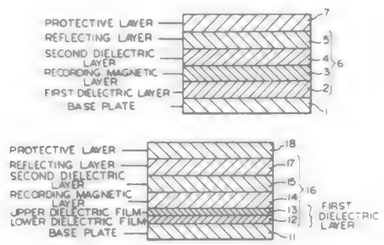
(d) a sensor attached to the sensor mount.

5,341,349

MAGNETOOPTICAL RECORDING MEDIUM HAVING IMPROVED SENSITIVITY

Nobutake Kagami; Yuichiro Doi, and Yuko Nakamura, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,537
Claims priority, application Japan, Nov. 30, 1991, 3-342326
Int. Cl.[5] G11B *11/00*
U.S. Cl. 369—13 2 Claims



1. A magneto-optical recording medium, comprising:

a transparent base plate;

a dielectric layer formed on one major surface of the transparent base plate;

a recording magnetic layer formed over the dielectric layer; and

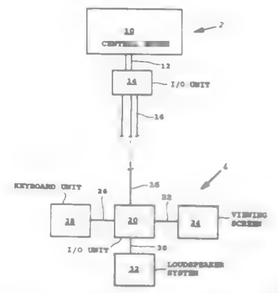
the dielectric layer being etchable at an etching rate of equal to or less than 20 Å/min by a 5% hydrofluoric acid buffer solution at 25° C., said etching rate with the acid buffer solution at 25° C. defining a lower limit density of the dielectric layer which is sufficiently high to result in improved sensitivity of the magneto-optical recording medium by reducing a coercive force thereof.

5,341,350

COIN OPERATED JUKEBOX DEVICE USING DATA COMMUNICATION NETWORK

Armin Frank, Mönchweiler, and Horst Niederlein, Bingen, both of Fed. Rep. of Germany, assignors to NSM Aktiengesellschaft, Bingen, Fed. Rep. of Germany

PCT No. PCT/DE91/00560, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/01342, PCT Pub. Date Jan. 23, 1991
PCT Filed Jul. 4, 1991, Ser. No. 961,920
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1990, 4021707
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—30 21 Claims



1. An improved jukebox which is connected with a central music store by way of a data telecommunications line suitable for the transmission of audio information, the jukebox including a digital/analog converter and an amplifier for audio information picked up by way of the data telecommunications line, a payment unit, a display, an input keyboard, and at least one loudspeaker, wherein the improvement comprises:

an intermediate memory is provided for the audio information picked up over the data telecommunications line;

a memory is provided for frequency played musical selections;

a central computer is provided which processes user data for the individual jukeboxes and the jukebox connected with the central computer includes an operator code unit which permits access to the central computer and the corresponding user data; and

the jukebox includes a computer which processes user data.

5,341,351

METHOD AND MEANS FOR OPTIMALLY ACCESSING DATA RESIDING ON DUAL ACTUATOR DASDS

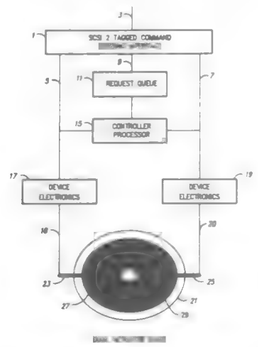
Spencer W. Ng, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1992, Ser. No. 958,860
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—30 10 Claims

1. A method for ensuring maximal occupancy of dual, independently dispatchable, actuators movable over a cyclic multitracked DASD in transferring any mix of short and long records responsive to a set of queued externally received commands referencing said records, the inter-arrival time between the commands being a random variable exponentially distributed, said inter-arrival time having a predetermined lower bound, comprising in the processing of each command the steps of:

VOL 1165 ISS 4 AG 23 1994 UMI

(a) ascertaining actuator availability, reference queue length, and the length of the referenced record; and
(b) dispatching selectively ones of the actuators to the record referenced by the command being processed and solely as a function of actuator availability, reference



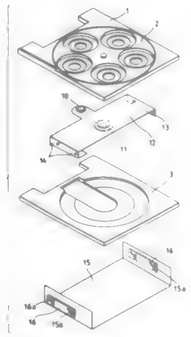
queue length, and the length of the referenced record such that the occupancy of the actuators selectively dispatched where the inter-arrival time approaches the lower bound is no less than the occupancy of actuators independently scheduled for record transfers whose record length exceeds a predetermined threshold.

5,341,352

DISK PLAYER FOR PLAYING BACK MORE THAN ONE KIND OF DISK

Nobuyuki Isobe, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 650,382, Feb. 4, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 5,188
Claims priority, application Japan, May 22, 1990, 2-130260
Int. Cl.[5] G11B *17/03*
U.S. Cl. 369—37 **20 Claims**



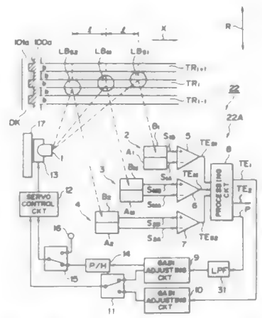
1. A disk player, comprising:
at least two tray means for positioning disks having signal reproducing surfaces so that said signal reproducing surfaces of said disks face in predetermined directions;
loading means provided for each of said at least two tray means, each of said loading means moving a respective tray means between a disk playback position and a disk non-playback position;
driven turntable means for rotating disks;
clamping means for clamping selectively a disk, in cooperation with said driven turntable means, which is at said disk playback position from said at least two tray means, said clamping means comprising a clamper plate having first and second sides including a first clamping member on said first side and a second clamping member on said second side;
pickup means for reproducing signals from a signal reproducing surface of said disk at said playback position; and
moving means for moving said pickup means over to said signal reproducing surface of said disk thus clamped.

5,341,353

ACTUATOR POSITION DETECTOR, ACTUATOR POSITION CONTROLLER AND TRACK SEARCH CONTROLLER

Junichi Yoshio, and Yoshitaka Shimoda, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 824,584, Jan. 23, 1992, abandoned. This application Aug. 4, 1993, Ser. No. 102,111
Claims priority, application Japan, Jan. 30, 1991, 3-009956
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.28 **12 Claims**



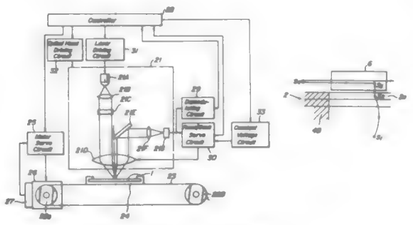
1. An actuator position controller for detecting and controlling a position of an actuator with respect to a carriage on which the actuator is movably disposed, so as to control a position of a light spot on a signal recording surface of an optical disk based on light beams reflected form the signal recording surface of the optical disk, said actuator position controller comprising:
light emitting means for applying to a signal recording surface of the optical disk, a first light spot, a second light spot spaced forwardly from said first light spot by a distance along an axis of the recording track and spaced radially from said first light spot by a distance in a direction perpendicular to the axis of the recording track, and a third light spot spaced rearwardly from said first light spot by a distance along the axis of the recording track and spaced radially from said first light spot on the opposite side to said second light spot with respect to the axis of the recording track by a distance in a direction perpendicular to the axis of the recording track;
first photodetector means having two divided photodetector surfaces, for photoelectrically converting a light beam reflected form said first light spot into an electric signal;
second photodetector means having two divided photodetector surfaces, for photoelectrically converting a light beam reflected from said second light spot into an electric signal;
third photodetector means having two divided photodetector surfaces, for photoelectrically converting a light beam reflected from said third light spot into an electric signal;
calculating means for calculating a second differential output signal representing a difference between output signal from the photodetector surfaces of said second photodetector means and a third differential output signal representing a difference between output signals from the photodetector surfaces of said third photodetector means;
processing means for producing an actuator position signal which represents a sum of said second and third differential output signals and indicates the position of the actuator with respect to a carriage; and
control means for controlling a position of the actuator on the carriage based on said actuator position signal.

5,341,354

APPARATUS FOR RECORDING/REPRODUCING OPTICAL INFORMATION ON/FROM OPTICAL CARD

Toshio Horiguchi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 29, 1991, Ser. No. 706,864
Claims priority, application Japan, May 31, 1990, 2-139842
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.11 **2 Claims**



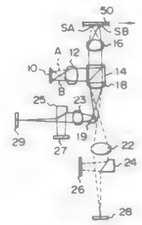
2. An optical card system, comprising:
an optical card including an information data recording area and a card identifying information recording area formed outside said information data recording area, wherein said information data recording area comprises a plurality of information data recording tracks each including a guide means for light beams illuminated thereon and said card identifying information recording area includes no guide means for said light means;
an apparatus for recording and reproducing information data on and from said optical card, comprising:
support means for receiving and supporting said optical card when said optical card is mounted in said apparatus;
optical means for emitting light beams to perform at least one of recording information data on and reproducing information data from said information data recording area of said optical card;
driving means for causing relative movement between said optical card and said light beams in a track direction; and
controlling means for controlling said optical means and said driving means to cause said optical means to be in a position outside said information data recording area of said optical card to reproduce said card identifying information recorded on the card identifying information recording area when said optical card is supported on said support means.

5,341,355

MULTIBEAM OPTICAL PICKUP AND SERVO METHOD THEREOF

Hiroshi Gotoh, Kawasaki; Isamu Shibata, Fuchu; Ikuo Maeda, Kawasaki, and Tatsuaki Sakurai, Yokohama, all of Japan, assignors to Ricoh Company, Ltd.

Filed May 11, 1989, Ser. No. 350,567
Claims priority, application Japan, May 20, 1988, 63-123040; May 24, 1988, 63-126495
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.37 **15 Claims**



1. A servo method in a multibeam optical pickup for simultaneously focusing and positioning respective spots of recording and reproducing beams on an optical disk when reproducing and confirming information being recorded on said optical disk while said information is being simultaneously recorded on said optical disk by said recording beam in a recording mode, and when reproducing said recorded information using said reproducing beam in a reproducing mode; said reproducing beam and said recording beam being emitted by at least one light source and being identical in wavelength with each other, said method comprising the steps of:
detecting a first focus servo signal and a first track servo signal with respect to said recording beam reflected from said optical disk;
detecting a second focus servo signal and a second track servo signal with respect to said reproducing beam reflected from said optical disk;
performing a focusing operation of said recording beam based on said first focus servo signal and performing a tracking operation of said recording beam based on said first track servo signal in said recording mode; and
performing a focusing operation of said reproducing beam based on said second focus servo signal and performing a tracking operation of said reproducing beam based on said second track servo signal in said reproducing mode.

5,341,356

METHOD AND DEVICE FOR RECORDING INFORMATION VOLUMES IN A TRACK OF A RECORD CARRIER, AND A DEVICE FOR READING THE RECORD CARRIER

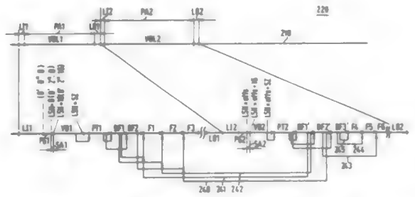
Adrianus H. Dieleman, Eindhoven, Netherlands; Jos G. Schepers, Hasselt, Belgium, and Gerrit D. Westerhout, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 817,571, Jan. 7, 1992, abandoned. This application Jan. 18, 1992, Ser. No. 900,874
Claims priority, application European Pat. Off., Apr. 2, 1991, 91200764.8; Apr. 26, 1991, 91201005.5
Int. Cl.[5] G11B *15/05*
U.S. Cl. 369—47 **26 Claims**

1. A method of recording information volumes in a track of a record carrier, the method comprising:
recording a first information volume in the track, the first information volume including (i) a lead-out signal denoting the end of the first information volume and (ii) control information for use in controlling reading of the first information volume; and

VOL 1165 ISS 4 AG 23 1994 UMI

recording at least one additional information volume in the track following the lead-out signal of the first information volume, each additional information volume including a



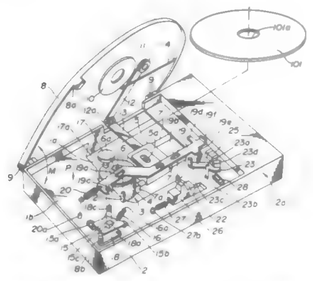
lead-out signal (i) denoting the end of that additional information volume and (ii) having control information for use in controlling reading of at least that additional information volume.

5,341,357

OPTICAL DISC RECORDING APPARATUS

Hiroshi Mukawa, and Nobuhiko Ando, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 11, 1991, Ser. No. 806,930
Claims priority, application Japan, Dec. 21, 1990, 2-413359
Int. Cl.[5] G11B *17/022*
U.S. Cl. 369—75.2 **5 Claims**



1. An optical disc recording apparatus comprising:

disc driving means for rotationally driving an optical disc accommodated in a disc cartridge, on which information signals are recorded for being read subsequently optically;

recording means moved radially of said optical disc in said disc cartridge rotationally driven by said disc driving means for recording information signals on said optical disc via an aperture in said disc cartridge;

transporting means for transporting said disc cartridge between a lower position in which said disc cartridge is loaded in said disc driving means and a raised position in which said disc cartridge is moved in the inserting and ejecting direction;

a casing accommodating said disc driving means and said transporting means and having an opening for insertion and ejection of said disc cartridge;

a recording setting device which, when activated by a user, initiates a start of recording of information signals on the optical disc;

an ejection inhibiting lever connected to the recording setting device to be moved at the start of recording of the information signals on the optical disc from an initial position to an inhibition position for inhibiting a movement of said disc cartridge in an ejecting direction by said transporting means;

inhibiting means for inhibiting resetting of said ejection inhibiting lever to the initial position, and

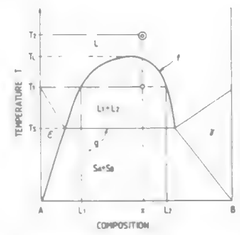
controlling means connected to the inhibiting means for causing the inhibiting means to cease inhibiting resetting of said ejection inhibiting lever to said initial position after the end of recording of a table-of-contents signal after recording of said information signals on said optical disc.

5,341,358

OPTICAL RECORDING MEDIUM AND OPTICAL RECORDING METHOD USING THE SAME

Hideo Kobayashi; Osamu Ueno, and Kiichi Ueyanagi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 757,058
Claims priority, application Japan, Sep. 11, 1990, 2-239002
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—100 **5 Claims**



1. An optical recording medium comprising a layer of recording material provided on a substrate, said material having an optical property which is changed reversibly by means of light or heat so that writing and/or reproducing or writing, reproducing, and/or erasing of information is performed by using the reversible change of the optical property of said recording material layer,

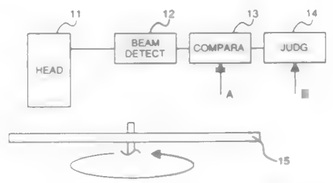
wherein said recording material includes a composition being composed of a plurality of elements and taking, as a melt state thereof, a selected one of a single phase state in which the plurality of elements are uniformly mixed in a temperature range of a liquid phase and a two-phase coexistent state in which the plurality of elements are not uniformly mixed in a temperature range of a solid phase.

5,341,359

ABNORMALITY DETECTION OF A RECORDING MEDIUM IN A MAGNETO-OPTICAL RECORDING SYSTEM

Masahiro Birukawa, Hirakata; Norio Miyatake, Kobe, and Yasumori Hino, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 16, 1992, Ser. No. 946,525
Claims priority, application Japan, Sep. 17, 1991, 3-236060
Int. Cl.[5] G11B *11/10, 27/36*
U.S. Cl. 369—107 **17 Claims**



1. A magneto-optical recording and/or reading-out apparatus capable of recording and reading out information on and

from a magneto-optical recording medium by use of a laser beam, said apparatus comprising:

a reflected beam detector for detecting the intensity of a laser beam reflected from said magneto-optical recording medium during recording;

a comparator, operatively coupled with said reflected beam detector, for comparing the intensity of said reflected laser beam with at least one reference value during the recording, thereby detecting an abnormality in said reflected laser beam, said abnormality indicating the existence of a defect in said magneto-optical recording medium; and

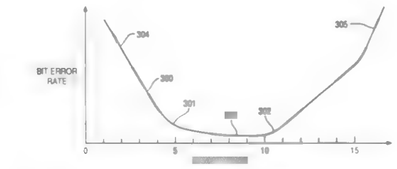
a judgment means, operatively coupled with said comparator, for judging whether a first area of said magneto-optical recording medium which has caused said abnormality is practically usable, in accordance with an output from said comparator and data to be recorded on said first area.

5,341,360

METHOD AND APPARATUS FOR CALIBRATING LASER WRITE POWER BY AVERAGING UPPER AND LOWER KNEES OF A CALIBRATION PROFILE

Donald F. Johann, Palo Alto; Alan C. Burroughs, San Jose; Neil T. Phipps, and Feng Li, both of Fremont, all of Calif., assignors to Maxoptix Corporation, San Jose, Calif.

Filed Jun. 5, 1992, Ser. No. 893,777
Int. Cl.[5] G11B *7/125*
U.S. Cl. 369—116 **21 Claims**



1. In an optical recording system having a laser for writing data to a storage medium, a method of calibrating said laser to a power level which minimizes data errors, when said storage medium has been installed within said optical recording system and periodically re-calibrating said laser, said method comprising the steps of:

generating a calibration profile comprising a number of read errors as a function of different laser power levels by:

a) writing at least one data pattern to said storage medium at a plurality of different laser power levels;

b) reading said data pattern;

c) determining a number of write errors for each of said laser power levels by comparing said written data pattern to said read data pattern;

determining an optimum laser power level which corresponds to a minimum number of write errors according to said calibration profile by taking an average of a power level corresponding to an upper knee of said calibration profile and a lower knee of said calibration profile; setting said laser to said optimum power level.

5,341,361

INFORMATION RECORDING METHOD CAPABLE OF INCREASING INFORMATION REPRODUCING EFFICIENCY

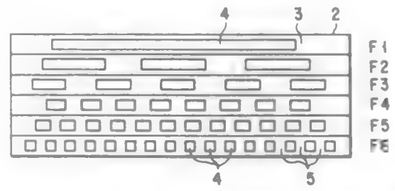
Naoki Hosaka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 952,602
Claims priority, application Japan, Feb. 6, 1992, 4-021437
Int. Cl.[5] G06F *15/40*
U.S. Cl. 369—275.3 **14 Claims**

1. A method for recording information on an information recording medium having a plurality of sectors including sectors of different physical sizes, said method comprising:

a first recording step of recording information in those of said plurality of sectors on said information recording medium which have a certain size other than a largest size of the different sizes;

a step of reproducing said information recorded in said sectors having said certain size on said information recording medium; and



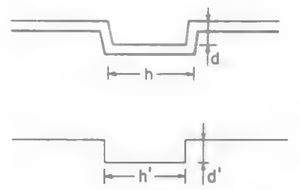
a second recording step of recording said information reproduced in said reproducing step, in a sector or sectors among said plurality of sectors on said information recording medium, wherein said sector or sectors has or have a size greater than said certain size.

5,341,362

OPTICAL MEMORY DEVICE HAVING GUIDE TRACKS SHAPED FOR INCREASING THE QUALITY OF INFORMATION SIGNALS

Yoshikazu Fujii; Tetsuya Inui; Toshihisa Deguchi, all of Nara, and Kenji Ohta, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 663,048, Feb. 26, 1991, abandoned, which is a continuation of Ser. No. 555,677, Jul. 20, 1990, abandoned, which is a continuation of Ser. No. 767,537, Aug. 20, 1985, abandoned. This application Nov. 18, 1992, Ser. No. 978,039
Claims priority, application Japan, Aug. 20, 1984, 59-174736
Int. Cl.[5] G11B *7/24, 13/04*
U.S. Cl. 369—275.4 **2 Claims**



1. An optical memory device comprising a substrate and guide tracks formed on said substrate,

wherein a part of said guide tracks is formed into pit-shaped track addresses, said substrate comprises a recording medium formed thereon, said recording medium being used for the recording of information based on variations in a reflectivity thereof or a photomagnetic effect, the depth d of said guide tracks being in the range of $\lambda/24n$ to $\lambda/12n$ and the depth d' of said pit-shaped track addresses being in the range of $\lambda/8n$ to $\lambda/4n$,

wherein the width h' of said pit-shaped track addresses is narrower that the width h of said guide tracks,

wherein λ is the wavelength of laser light used for the optical memory device, and n is the refraction index of the guide track portion and the track address portion of the substrate.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,363

COMPUTER SYSTEM CAPABLE OF DISCONNECTING ITSELF FROM A LAN

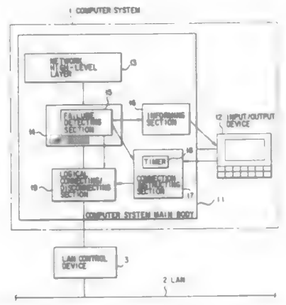
Yutaka Hirasawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 8, 1992, Ser. No. 879,948

Claims priority, application Japan, May 10, 1991, 3-105443

Int. Cl.[5] H04J *1/16, 3/14*

U.S. Cl. 370—13 **5 Claims**



1. A computer system connected to a CSMA/CD LAN with a protocol using broadcast packets, comprising:

failure detecting means for detecting a network failure including a broadcast storm and a meltdown of said CSMA/CD LAN by checking said broadcast packets on said CSMA/CD LAN for a defective broadcast packet causing the network failure;

connecting/disconnecting means for logically disconnecting said computer system from said CSMA/CD LAN in response to the network failure detected by said failure detecting means and logically connecting said computer system to said CSMA/CD LAN; and

informing means for informing the network failure to an external device in response to the network failure detected by said failure detecting means;

wherein a broadcast storm is defined to be a failure where a first type of computer transmits a first packet having a first address, a second type of computer receives the packet and cannot recognize the first address, and the second type of computer transmits a subsequent packet in response to receipt of the first packet but no computer has an address corresponding to the address of the subsequent packet; and

wherein a meltdown is defined to be a failure where the second computer continues to transmit subsequent packets but no computer has an address corresponding to the address of the subsequent packet.

5,341,364

DISTRIBUTED SWITCHING IN BIDIRECTIONAL MULTIPLEX SECTION-SWITCHED RINGTRANSMISSION SYSTEMS

William C. Marra, Bricktown; Darius D. Slavinskas, North Middletown, and Mark J. Soulliere, Manasquan, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 2, 1992, Ser. No. 892,079

Int. Cl.[5] H04J *1/16*

U.S. Cl. 370—16.1 **10 Claims**

1. A bidirectional multiplex section-switched ring transmission system including:

a plurality of ring nodes;

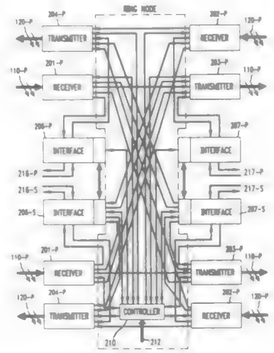
a first transmission path including a service path and a protection path interconnecting said plurality of ring nodes and transporting communications signals around the ring transmission system from ring node to ring node in a first direction of transmission;

a second transmission path including a service path and a protection path interconnecting said plurality of ring nodes and transporting communications circuits around the ring transmission system from ring node to ring node in a second direction of transmission opposite the first direction of transmission;

each of said plurality of ring nodes comprising:

means for storing entries identifying communications tributaries active in the ring node and for storing entries identifying all the ring nodes and their relative positions in the bidirectional multiplex section-switched ring transmission system;

means for monitoring protection switch messages incoming to the ring node to determine whether any changes in the



protection switch messages have occurred indicating that one or more failures exist in a transmission path between this ring node and any other ring node in the bidirectional multiplex section-switched ring transmission system;

means responsive to any changes in said protection switch messages for determining which of said active communications tributaries in the ring node are affected by the failure in a transmission path; and

means for directly bridging and switching to and from, respectively, said protection paths said affected communications tributaries having a termination in this ring node, which ring node is not necessarily adjacent the failure in a transmission path and wherein the shortest direct restoration path is attained between ring nodes and loop-back switching of communications tributaries in any ring node is eliminated.

5,341,365

PASSIVE OPTICAL NETWORK

Donald E. A. Clarke, Colchester, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB90/01758, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO91/08623, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 17, 1990, Ser. No. 859,412

Claims priority, application United Kingdom, Nov. 24, 1989, 8926548

Int. Cl.[5] H04J *3/14*

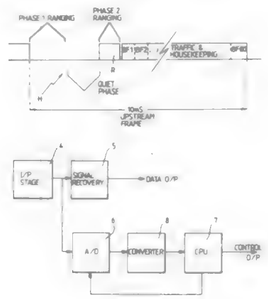
U.S. Cl. 370—17 **11 Claims**

1. A method of operating a passive optical network including a head-end station and a plurality of terminations, the terminations being responsive to control signals from the head-end station and the head-end station being arranged to receive frames having a predetermined bit rate and comprising signals

transmitted by the plurality of terminations, the method including:

transmitting respective ranging pulses from the terminations to the head-end station,

sampling the received ranging pulses at a high sampling rate greater than said predetermined bit rate and producing corresponding data samples,



applying the data samples to processor means arranged to integrate the data samples to determine the respective phases of the ranging pulses relative to respective expected values and to determine the respective amplitudes of the ranging pulses, and

generating respective control signals for the terminations to modify the phase and amplitude of transmissions from the terminations accordingly.

a plurality of B-ISDN terminal means each for transmitting a call connection request and traffic parameters in call origination;

ATM switching means connected to each of said B-ISDN terminal means, for receiving one of said call connection requests from one of said plurality of B-ISDN terminal means;

central control means for controlling an internal line switching of said ATM switching means;

call acceptance control means provided in said central control means, for executing a switching routine and a band allocation in response to a statement of the traffic parameters received from said one of said plurality of B-ISDN terminal means; and

fuzzy control means provided in said central control means, for analyzing the traffic parameters received by said call acceptance control means, for calculating a necessary band in accordance with fuzzy rules, and for discriminating whether a call setup for the call, based on the call connection request, is acceptable or not.

5,341,367

Patent Not Issued For This Number

5,341,366

CONNECTION ADMISSION CONTROL SYSTEM

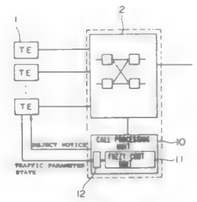
Toshio Soumiya; Shunji Abe; Masafumi Katoh, and Naotoshi Watanabe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1993, Ser. No. 32,113

Claims priority, application Japan, Mar. 18, 1992, 4-061673; Mar. 25, 1992, 4-067414; Sep. 18, 1992, 4-249974; Oct. 8, 1992, 4-270184

Int. Cl.[5] H04J *3/12, 3/14;* **H04L** *12/24, 12/56*

U.S. Cl. 370—17 **29 Claims**



1. A connection admission control system comprising:

5,341,368

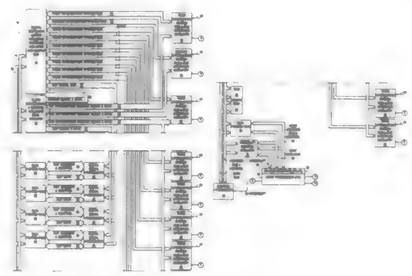
DIGITAL SWITCHING SYSTEM INTERCONNECTING BUSES WITH IMCOMPATIBLE PROTOCOLS

Paul N. Henning, Madison, and Kent D. Anderson, Brodhead, both of Wis., assignors to American Tel-A-Systems, Inc., McFarland, Wis.

Filed May 5, 1992, Ser. No. 880,161

Int. Cl.[5] H04L *12/52, 12/50*

U.S. Cl. 370—58.1 **52 Claims**



1. A digital switching system comprising:

VOL 1165 ISS 4 AG 23 1994 UMI

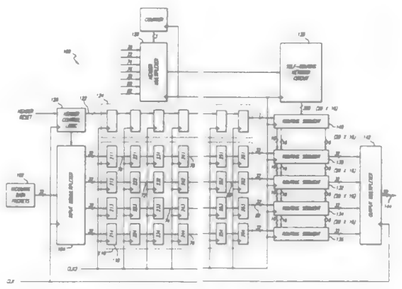
a digital switching matrix having an input bus and an output bus with information on the input bus being selectively connectable to information on the output bus in response to control signals applied to switches of the switching matrix;

a plurality of information systems with each information system having an information bus for transmitting and receiving information using a protocol which is different from a protocol used by the information bus of each of the other information systems with the information buses of the information systems being electrically connected to the input and the output buses of the matrix to permit information transmitted on a conductor of any of the information buses to be received by another conductor of any of the information buses through the input bus, the switching matrix and the output bus;

a host processor, coupled to each of the plurality of the information systems, for controlling the information systems with commands causing at least one of the information systems to transmit and at least one of the information systems to receive information using the information bus of the transmitting and the information bus of the receiving information systems, the switching matrix and the input and output buses; and

a control processor, responsive to commands from the host processor, for generating the control signals controlling switching of the switches of the digital switching matrix.

wherein said input demultiplexer and said output multiplexer are coupled to a clock source operating at said entering and exiting clock rate, and wherein said transport pipeline



and said self-routing fabric are coupled to a clock source operating at a reduced clock rate which is substantially less than said entering and exiting clock rate.

5,341,370

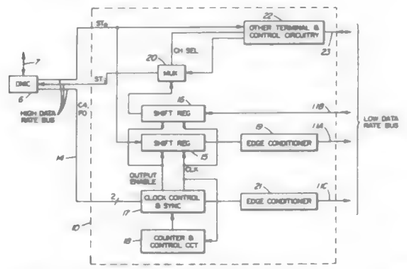
DATA TRANSFER BETWEEN HIGH BIT RATE BUSES VIA UNSHIELDED LOW BIT RATE BUS

Derek J. Nuhn, Ottawa; Gordon W. Servant, Kanata; Robert P. Brennan, Pakenham, and George A. Jeffrey, Buckingham, all of Canada, assignors to Pascal & Associates, Canada

Division of Ser. No. 541,050, Jun. 20, 1990, Pat. No. 5,220,561. This application Mar. 3, 1993, Ser. No. 25,838

Int. Cl.[5] H04B *3/00;* **H04L** *5/22*

U.S. Cl. 370—84 **4 Claims**



1. Data transfer means between two high bit rate buses comprising means for temporarily storing data received from one of the buses, means for converting the data to low data rate, means for conditioning the low data rate data to remove high frequency components therefrom, means for applying the conditioned data to a low data rate bus for transmission to the other of the high bit rate buses, means for receiving and temporarily storing the conditioned data received from the low data rate bus, and means for reading the stored conditioned data at a high data rate to said other of the buses, the low data rate bus being an unshielded cable.

5,341,369

MULTICHANNEL SELF-ROUTING PACKET SWITCHING NETWORK ARCHITECTURE

Richard M. Langer, Thousand Oaks, Calif., assignor to Vitesse Semiconductor Corp., Camarillo, Calif.

Filed Feb. 11, 1992, Ser. No. 834,129

Int. Cl.[5] H04Q *11/04;* **H04L** *12/56*

U.S. Cl. 370—60 **24 Claims**

17. An apparatus for routing data at a given bandwidth, said bandwidth defining a clock rate at which the data to be routed enters said apparatus and the routed data exits said apparatus, said apparatus comprising:

an input demultiplexer having a plurality of inputs coupled to a source of the data to be routed;

a transport pipeline having a plurality of inputs coupled to a plurality of outputs of said input demultiplexer;

a self-routing fabric having a plurality of inputs coupled to a plurality of outputs of said transport pipeline;

an output multiplexer having a plurality of inputs coupled to a plurality of outputs of said self-routing fabric, said output multiplexer having an output over which the routed data exits said apparatus; and

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COMMUNICATION INTERFACE

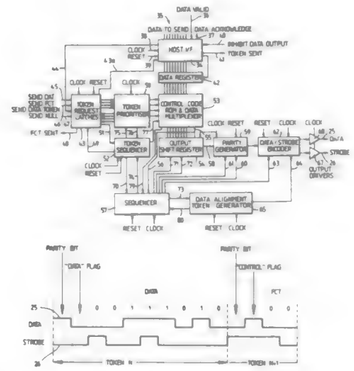
Robert J. Simpson, Bristol, United Kingdom, assignor to Inmos Limited, Bristol, England

Filed May 24, 1991, Ser. No. 705,186

Claims priority, application United Kingdom, May 25, 1990, 9011700

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.4 **37 Claims**



2. A communication interface for use in a communication system interconnecting a computer with at least one other device, said interface comprising:

(a) output circuitry for outputting messages, said output circuitry including

(i) control circuitry and encoding circuitry for encoding and outputting a succession of encoded serial tokens each including a serial bit string, and

(ii) a parity bit generator responsive to successive bits in an encoded serial token and arranged to generate a parity bit after encoding of each serial token, said parity bit being included in a next serial token to provide a parity check responsive to the bits in the preceding serial token, and

(b) input circuitry for inputting messages, said input circuitry including decoding circuitry for inputting and decoding data in each serial token received and a parity checking circuit to detect a parity bit in each serial token and compare said parity bit with a bit pattern including bits from said preceding serial token.

5,341,372

PROTOCOL FOR MULTIPLE NODE NETWORK

Harold Kirkham, Sunland, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Apr. 10, 1991, Ser. No. 683,269

Int. Cl.[5] H04L *12/00*

U.S. Cl. 370—85.8 **8 Claims**

1. A communication network comprising:

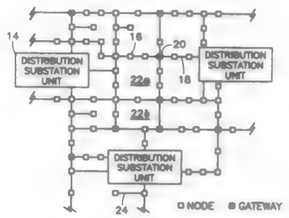
a plurality of remote nodes, each of said remote nodes comprising node processor means for repeating received messages addressed to others of said nodes;

a plurality of link means for connecting said plural nodes in multiple paths, said nodes being divided among a plurality of zones containing plural nodes; and

some of said remote nodes comprising intersection nodes connected by respective link means to nodes in different ones of said paths;

said communication network further comprising one master node for each one of said zones, said master node being connected by respective link means to at least one of the remote nodes in the corresponding zone, said master node comprising master node processor means comprising:

polling means for transmitting a message authorizing a particular one of the remote nodes to transmit a new message originated by the particular one node; and



wherein the node processor means of each of said remote nodes comprise means for permitting transmission of a new message upon receipt of a message authorizing transmission of a new message.

5,341,373

CONGESTION RELIEVING SYSTEM IN A COMMUNICATION SYSTEM

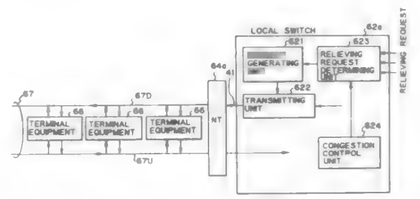
Ryoichi Ishibashi, and Katsumi Sekine, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 5, 1992, Ser. No. 831,794

Claims priority, application Japan, Feb. 5, 1991, 3-035519; Feb. 5, 1991, 3-035520

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—85.9 **11 Claims**



10. A method of transmitting a first cell having a request bit from a local switch to a customer station by way of a down-signal bus conformable to a DQDB protocol and for receiving a second cell from the customer station by way of an up-signal bus conformable to the DQDB protocol, comprising the steps of:

generating a cell restriction signal under the DQDB protocol when the customer station is to be restricted from sending the second cell;

inserting the cell restriction signal as the request bit in the first cell; and

transmitting the first cell to the customer station; and

monitoring the request bit to control sending the second cell onto the up-signal bus.

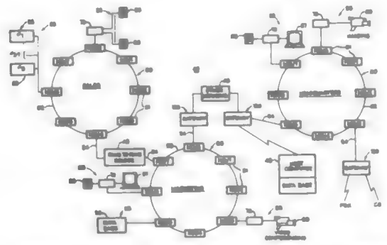
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,374

COMMUNICATION NETWORK INTEGRATING VOICE DATA AND VIDEO WITH DISTRIBUTED CALL PROCESSING

Ronald C. Lewen, Sycamore; Jonathan V. Coyle, Downers Grove; Peter P. Marotta, Oak Park; Tauras J. Liubinskas, Westmont; David P. Arnold, St. Charles; Kenneth R. Byers, Aurora; Anthony K. Dean, Elgin, and Victor A. Nowakowski, North Aurora, all of Ill., assignors to TriLAN Systems Corporation, St. Charles, Ill.

Filed Mar. 1, 1991, Ser. No. 663,369
Int. Cl.[5] H04J 3/02
U.S. Cl. 370—85.4 40 Claims



1. A communication system having a plurality of terminals not exceeding a maximum number of terminals including real-time information terminals interconnected in a token passing network for transmission of digital data including digitized real-time information signals along the network in the form of packets of bits with each packet including a number of bits, wherein each terminal gains access to the network by seizing a free token, said system comprising:

encoder means at each real-time information terminal for digitizing real-time information signals into bits,

decoder means at each real-time information terminal for regenerating real-time information signals from received packets,

buffer means at each real-time information terminal coupled to said encoder means for collecting a group of digitized real-time information bits such that a bit in the collected group which is first to enter the buffer means resides therein for a predetermined storage time period which is equal to or greater than a minimum value,

packetizing means at each real-time information terminal coupled to said buffer means for assembling each collected group of stored digitized real-time information bits generating by said encoder means along with control bits into a real-time information packet having a predetermined first maximum length such that the terminal assembling the packet can seize a free token in a time period less than the minimum value of the predetermined storage time period,

transmitting means at each real-time information terminal for transmitting packets to other terminals along the network, and

receiver means at each real-time information terminal for receiving packets from other terminals along the network.

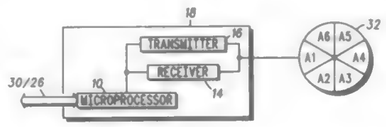
5,341,375

TRANSMISSION OF BROADCAST PACKETS IN AN RF SYSTEM

Dale R. Buchholz, Palatine; Karen E. Robbins, Lake Zurich; William K. Doss, Lake in the Hills, and R. Lee Hamilton, Jr., Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 12, 1992, Ser. No. 975,452
Int. Cl.[5] H04J 3/24
U.S. Cl. 370—94.1 15 Claims

1. A method for selectively transmitting broadcast packets in a radio frequency (RF) communication system between a control module (CM) and user modules (UMs) having a plurality of user devices connected thereto for receiving said broadcast packets, the control module and the user modules each having a plurality of antennae, oriented to provide a 360° horizontal pattern of radio coverage, the method comprising the steps of at the control module:



generating a list of control module antennae in radio communication with at least one of said plurality of user modules; and

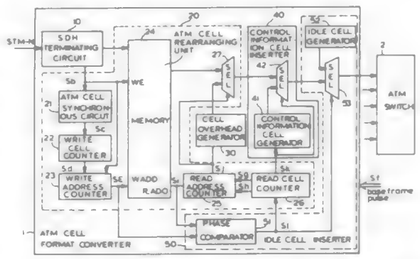
selecting the listed control module antennae for transmission of broadcast packets.

5,341,376

ATM CELL FORMAT CONVERSION SYSTEM

Hiroshi Yamashita, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 26, 1991, Ser. No. 736,728
Claims priority, application Japan, Jul. 27, 1990, 2-197627
Int. Cl.[5] H04J 3/00
U.S. Cl. 370—99 6 Claims



2. An apparatus for converting an ATM cell format, comprising:

SDH terminating means for receiving as an input signal an ATM cell stream having a plurality of 53-octet-long ATM cells mapped in the payload fields of virtual containers VC-4-NC which have been multiplexed in the form of STM-N frames having a predetermined repetition rate, and for generating a payload field indication signal representative of the receipt of a payload field by detecting the position of SDH overhead information associated with each of said STM-N frames;

ATM cell rearranging means for removing, in response to said payload field indication signal, said SDH overhead information from said STM-N frames so as to extract said ATM cells, for adding cell overhead information to each of said ATM cells to convert said ATM cells to 1-octet-added ATM cells each being 54 octets long, and for rearranging said 1-octet-added ATM cells, so as to maintain both a synchronous relation between said STM-N frames and said 1-octet-added ATM cells accommodated in said STM-N frames, and said predetermined repetition period of said STM-N frames;

idle cell inserting means for generating, when the ATM cells at the input side and the output side of said ATM cell rearranging means have a phase difference which is smaller than a predetermined value, an idle cell having a length equal to that of said 1-octet-added ATM cells, and inserting said idle cell in the output of said ATM cell rearranging means;

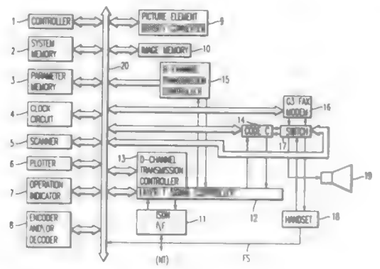
further comprising control information cell inserting means for generating a control information cell having a length equal to that of said 1-octet-addet ATM cells with a frequency corresponding to a predetermined number of said STM-N frames, and adding said control information cell to said 1-octet-added ATM cells.

5,341,377

ISDN TERMINAL, ISDN TERMINAL COMMUNICATION SYSTEM, AND METHOD FOR CONTROLLING ISDN TERMINALS

Masahito Ohtani, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 2, 1991, Ser. No. 694,914
Claims priority, application Japan, May 11, 1990, 2-119738
Int. Cl.[5] H04J 3/12
U.S. Cl. 370—110.1 15 Claims



10. An ISDN (integrated service digital network) terminal communication system comprising:

a transmission line comprising a B-channel (data channel) and D-channel (signal channel);

at least two ISDN terminals, operatively interconnected to said transmission line, each ISDN terminal comprising;

first control means for controlling the connection between said ISDN terminal and another ISDN terminal by means of predetermined protocol information transmitted through the D-channel, the predetermined protocol information including identification information of said ISDN terminal and the other ISDN terminal;

second control means for controlling the transmitting of data via the B-channel;

memory means for storing at least the identification information of the other ISDN terminal;

third control means, coupled to the memory means, for producing a receipt result information report after the ISDN terminal receives the data via the B-channel, comprising image information, the receipt result information report indicating a result of the receiving of the image information, and for controlling the first control means so that the first control means transmits said receipt result information report to the other ISDN terminal only via the D-channel, and thus each ISDN terminal being able to recognize the receipt result information report transmitted through the D-channel; and

said B-channel is a data channel prepared fundamentally for transferring image information which a user wishes to transfer using said ISDN terminal; and

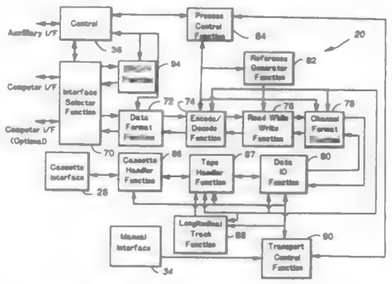
said D-channel is a signal channel prepared fundamentally for transferring protocol information which a user does not always wish to transfer using said ISDN terminal but which rather said ISDN terminal itself automatically transfers for controlling appropriate connection between said ISDN terminal and another ISDN terminal so as to achieve transfer of image information which a user wishes to transfer therebetween via said B-channel; and said D-channel is also used to transfer said receipt result information report even though such a receipt result information report is not a protocol information and thus transfer of such a receipt result information is not the fundamental service of said B-channel.

5,341,378

DATA RECORDING SYSTEM HAVING IMPROVED AUTOMATIC REWRITE CAPABILITY AND METHOD OF REWRITING

Lionel C. Shih, San Jose, Calif., assignor to Ampex Systems Corporation

Filed Feb. 28, 1992, Ser. No. 843,449
Int. Cl.[5] G06F 11/00
U.S. Cl. 371—2.2 11 Claims



1. A system adapted to selectively record and reproduce digital data on a magnetic tape, said system comprising:

helical means adapted to selectively record and reproduce user data and system format data in physical blocks of data of predetermined size on helical tracks on said tape, with each physical block being contained on a predetermined number of successive helical tracks which comprise a set of tracks, said helical means being adapted to reproduce data from at least one of the track being recorded and a track recorded prior to and near the track being recorded;

error detecting means adapted to receive said reproduced data from said helical means for detecting writing errors during a recording process, said error detecting means producing an error signal for a particular physical block when writing errors exceed a predetermined criteria;

processing means for generating said system format data and for providing said user data and said system format data to said helical means for recording thereby on said tape, said processing means generating a subarea matrix of said system format data for recording on at least several predetermined helical tracks of each set of helical tracks;

buffer means having a capacity to retain at least three physical blocks of data, said buffer means being in communication with said helical means and selectively forwarding physical blocks of data thereto for recording, said processing means causing said buffer means to forward at least a particular physical block of data to said helical means for rerecording when said error detecting means produces an error signal for said particular physical block of data;

servo means adapted to selectively record and reproduce servo information on a servo control track that extends in a longitudinal direction of said tape, said servo means being adapted to control movement of said tape in a first direction and moving said tape generally continuously in said first direction during recording;

said processing means being adapted to generate said system format data that includes data designating said particular physical block as being invalid in response to said detecting means producing an error signal for said particular physical block of data when said error signal is produced

VOL 1165 ISS 4 AG 23 1994 UMI

during a first portion of the recording of said particular physical block, said processing means causing said buffer means to provide said particular physical block to said helical means for rerecording at a next physical block recording location;

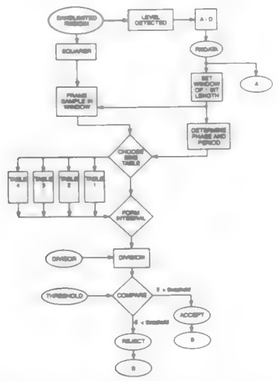
said processing means being adapted to generate said system format data in the next subsequent physical block that includes data designating said next subsequent physical block as being invalid in response to said detecting means producing an error signal for said particular physical block when said next subsequent physical block is being recorded when said error signal is produced, said processing means causing said buffer means to provide said particular physical block and said next subsequent physical block to said helical means for rerecording.

5,341,379

DATA ERROR DETECTION IN DATA COMMUNICATIONS

George E. Crisp, Melbourne, Australia, assignor to Signalling Technology Pty Ltd., Seaford, Australia

PCT No. PCT/AU90/00601, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO91/10304, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 20, 1990, Ser. No. 860,516
Claims priority, application Australia, Dec. 22, 1989, PJ7991
Int. Cl.[5] G08C *25/00*
U.S. Cl. 371—6 **10 Claims**



1. A method for the detection of bit errors in a received transmission, comprising the steps of:

(a) comparing the waveform of the received transmission with a stored ideal representation of the waveform on a bit-by-bit basis;

(b) ascribing a quality factor according to the comparison for each bit;

(c) determining which bits are acceptable or are suspected to be in error by a comparison of the quality factor for each bit against a threshold value; and

(d) indicating suspected data errors if there is an error or errors determined; wherein step (a) includes

(i) squaring the waveform,

(ii) decoding the waveform to provide a digital data stream;

(iii) synchronizing the digital data stream in 1.0 bit windows;

(iv) determining a respective sine table to be used in a comparison with the squared waveform for each bit as determined from the phase and period of the 1.0 bit window;

(v) sampling the squared waveform at a number of points in time within the 1.0 bit window; and

(vi) performing a comparison of phase between each sampled point of the squared waveform and an expected value of phase for an ideal waveform as determined from the respective sine table;

and wherein step (b) includes

(i) forming an integral by adding a probability value from the sine table for each correct value of phase or deducting a probability value from the sine table for each incorrect value of phase; and

(ii) dividing the integral by a factor to rationalize the integral value;

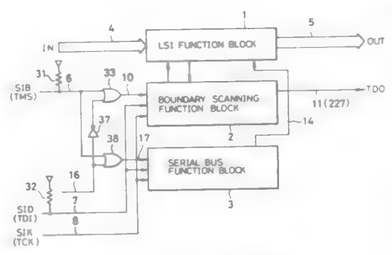
and wherein step (c) includes comparing the quality factor with the threshold value, and if the quality factor is above the threshold value the bit is accepted, and if the quality factor is not above the threshold value the bit is suspected to be in error.

5,341,380

LARGE-SCALE INTEGRATED CIRCUIT DEVICE

Masahiro Shoda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 29,029
Claims priority, application Japan, Mar. 19, 1992, 4-063929
Int. Cl.[5] H04B *17/00*
U.S. Cl. 371—22.3 **8 Claims**



1. A large-scale integrated circuit comprising:

a large-scale integrated circuit function block

a serial bus function block for setting and changing of an internal function of the large-scale integrated circuit function block, said serial bus function block including a clock terminal receiving a clock signal, a bus busy terminal receiving a serial bus busy signal as an operation designating signal and a serial data terminal receiving a serial data;

a boundary scanning function block for checking wiring of the large-scale integrated circuit function block after installation on a circuit board, said boundary scanning function block including a clock terminal receiving a clock signal, a test mode select terminal receiving a test mode select signal and a test data terminal receiving a test data;

a first common terminal being in common with the bus busy terminal and the test mode select terminal;

a second common terminal being in common with the serial data terminal and the test data terminal;

a select terminal for receiving a select signal for selectively activating one of said serial bus function block and said boundary scanning function block;

first gate means for blocking supply of the serial bus busy signal supplied to said first common terminal, to said boundary scanning function block when said select signal activates said serial bus function block; and

second gate means for blocking supply of the test mode select signal supplied to said first common terminal, to said serial bus function block when said select signal activates said boundary scanning function block;

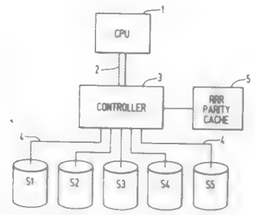
wherein each of said first and second gate means is controlled respectively by one of complementary signals of the select signal.

5,341,381

REDUNDANT ARRAY PARITY CACHING SYSTEM

William T. Fuller, San Jose, Calif., assignor to Tandem Computers, Incorporated, Cupertino, Calif.

Filed Jan. 21, 1992, Ser. No. 823,141
Int. Cl.[5] G06F *11/20*
U.S. Cl. 371—10.1 **28 Claims**



1. A redundant storage array system including:

a. a plurality of failure independent data storage units for storing data and redundancy information in the form of blocks;

b. caching means for temporarily storing remaining redundancy row parity (RRR-parity) blocks derived from the plurality of data storage units;

c. storage unit controller means, coupled to the plurality of data storage units and to the caching means, for:

(1) controlling reading data and redundancy blocks from, and writing data and redundancy blocks to, the plurality of data storage units;

(2) computing RRR-parity blocks derived from the plurality of data storage units; and

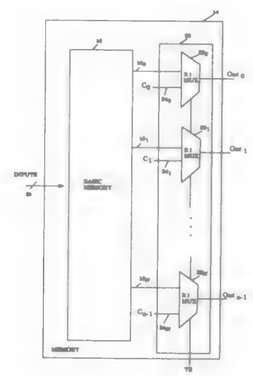
(3) caching the computed RRR-parity blocks in the caching means.

5,341,382

METHOD AND APPARATUS FOR IMPROVING FAULT COVERAGE OF SYSTEM LOGIC OF AN INTEGRATED CIRCUIT WITH EMBEDDED MEMORY ARRAYS

Marc E. Levitt, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 19, 1991, Ser. No. 717,890
Int. Cl.[5] H04B *17/00*
U.S. Cl. 371—22.1 **29 Claims**



16. A method comprising the steps of:

providing a memory array for performing the steps of storing and outputting operational data;

providing a binary constant generator/selector, coupled to said memory array, for performing the step of receiving said operational data and a test enable signal and providing as output signals said operational data if said test enable signal is in a first state indicating a normal mode of operation and a binary constant if said test enable signal is in a second state indicating a test mode of operation; and

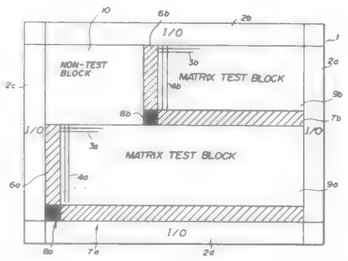
providing system logic for processing said output signals of said binary constant generator/selector wherein said binary constant is permanently set to a fixed value.

5,341,383

CIRCUIT ARRANGEMENT SUITABLE FOR TESTING CELLS ARRANGED IN ROWS AND COLUMNS, SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING THE SAME, AND METHOD FOR ARRANGING CIRCUIT BLOCKS ON CHIP

Junichi Shikatani, Toyonaka, and Shigeki Kawahara, Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 29, 1991, Ser. No. 736,999
Claims priority, application Japan, Jul. 30, 1990, 2-202263
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.1 **32 Claims**



1. A circuit arrangement formed on an IC chip comprising:

a first type block having a plurality of cells arranged into rows and columns and a plurality of transistors respectively provided for said cells, each of said transistors having a first terminal coupled to a corresponding one of said cells, a second terminal and a gate terminal;

a second type block which is not required to be tested in a way identical to that for said first type block;

a probe line driver testing said cells in the first type block, said probe line driver being located along a first edge of said first type block, a plurality of probe lines extending from said probe line driver and running in said first type block, and said probe lines being arranged such as to not pass through said second type block, each of said probe lines being connected to the gate of a corresponding one of said transistors;

a sense circuit sensing data read out from said cells via a plurality of sense lines running in said first type block, said sense lines being arranged such as to not pass through said second type block, each of said sense lines being connected to the second terminal of a corresponding one of said transistors, said sense circuit being located along a second edge of said first type block substantially perpendicular to said first edge of the first type block; and

a test control circuit controlling said probe line driver and said sense circuit so that data are successively read out from said cells and transferred to said sense lines via said transistors, said test control circuit being adjacent to said probe line drive and said sense circuit.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,384

ERROR DETECTION METHOD USING CRC

Kazuyuki Miya, Machida; Osamu Kato, and Kouichi Honma, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

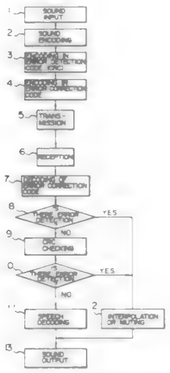
PCT No. PCT/JP91/00408, § 371 Date Nov. 12, 1991, § 102(e) Date Nov. 12, 1991, PCT Pub. No. WO91/15901, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 28, 1991, Ser. No. 778,982

Claims priority, application Japan, Apr. 2, 1990, 2-087914

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—31 **8 Claims**



1. An error detection method comprising:

(a) receiving data comprising speech data and a cyclic redundancy checking code (CRC) encoded in an error correction code;

(b) decoding said data;

(c) determining whether an error is included in the data decoded in step (b);

(d) when step (c) determines that no error is included in the data decoded in step (b), performing a CRC-check on the data;

(e) determining whether an error is included in the data which was CRC-checked in step (d);

(f) when step (e) determines that no error is included in the data which was CRC-checked in step (d), decoding said data which was CRC-checked in step (d) into speech data;

(g) when step (c) determines that an error is included in the data decoded in step (b), interpolating the data decoded in step (b) into first interpolated data and decoding the first interpolated data into first interpolated speech data; and

(h) when step (e) determines that an error is included in the data which was CRC-checked in step (d), interpolating the data which was CRC-checked in step (d) into second interpolated data and decoding the second interpolated data into second interpolated second speech data.

5,341,385

METHOD AND APPARATUS FOR DECODING REED-SOLOMON CODE

Norihisa Shirota, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 630,765, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 208,056, Jun. 17, 1988, abandoned. This application Sep. 24, 1992, Ser. No. 950,779

Claims priority, application Japan, Jun. 18, 1987, 62-152233; Jun. 18, 1987, 62-152234

Int. Cl.[5] H03M *13/00*

U.S. Cl. 371—37.1 **2 Claims**

1. A method for decoding Reed-Solomon Code to obtain an error position polynomial $\sigma(x)$ and an error evaluation polynomial $\omega(x)$ by a Euclidean algorithm for correcting t symbol errors, comprising the following steps in the following order:

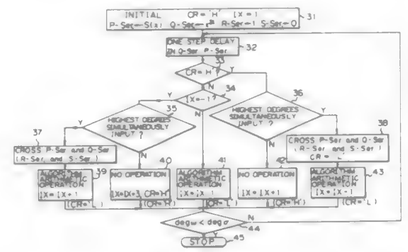
obtaining a syndrome polynomial S(x);

receiving a polynomial B(x) to be decoded and having an initial value x^{2t};

delaying the polynomial B(x) to reduce the degree thereof by one;

multiplying the highest degree of the syndrome polynomial S(x) and the highest degree of the polynomial B(x) having the initial value x^{2t}, which is determined by the number t of symbol errors to be corrected, to obtain a product of said polynomials;

sequentially reducing the degree of the product of said polynomials by one and repeating the step of multiplying, wherein the data sequence of the product polynomial and



the data sequence of the polynomial B(x) are interchanged in dependence on the condition of a first flag indicating the magnitude and direction of the difference between the highest degrees of the product polynomial and the polynomial B(X), providing a second flag indicating whether the data sequence of the product polynomial and the data sequence of the polynomial B(x) have been interchanged, until polynomials h(x) and g(x) are obtained that satisfy the relation of

$$f(x)\cdot B(x)+g(x)\cdot S(x)=h(x)$$

where the degree of $h(x)<$the degree of $g(x)\leqq t$;

and then setting said polynomial g(x) to said error position polynomial $\sigma(x)$, and setting said polynomial h(x) to said error evaluation polynomial $\omega(x)$.

5,341,386

VITERBI EQUALIZER AND RECORDING/REPRODUCING DEVICE USING THE SAME

Kaneyasu Shimoda, and Hideto Furukawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 23, 1991, Ser. No. 705,065

Claims priority, application Japan, May 25, 1990, 2-136226

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—43 **10 Claims**

9. A viterbi equalizer, comprising:

a distributor receiving a run length limited code and producing viterbi decoding algorithm branch metric signals responsive to the code, wherein said distributor produces first, second, third, fourth, fifth and sixth branch metric signals;

a path memory receiving path select signals and outputting a maximum likelihood path; and

an adder, comparator and selector combination circuit connected between said distributor and said memory, producing the path select signals from the branch metric signals and having comparators and selectors corresponding to branch metrics only for state transitions that take place, and said combination circuit comprises:

a first adder receiving the first branch metric signal and a first previous path metric signal and producing a first output;

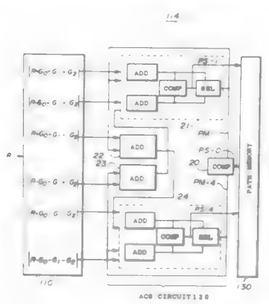
a second adder receiving the second branch metric signal and a second previous path metric signal and producing a second output;

a first comparator, coupled to said first adder and to said second adder, comparing the first output with the second output and producing a first path select signal;

a first selector, coupled to said first adder, to said second adder, and to said first comparator, and selecting among the first output and the second output and producing the first previous path metric signal;

A third adder, coupled to the first selector, receiving a third branch metric signal and the first previous path metric signal and producing a third previous path metric signal;

a fourth adder, coupled to the second adder, the sixth adder, and the second selector, and receiving a fourth branch metric signal and a fourth previous path metric signal and producing the second previous path metric signal;



a fifth adder, coupled to the third adder, receiving a fifth branch metric signal and the third previous path metric signal and producing a third output;

a sixth adder, coupled to the fourth adder, receiving a sixth branch metric signal and the fourth previous path metric signal and producing a fourth output;

a second comparator, coupled to the fifth adder and the sixth adder, comparing the third output with the fourth output and producing a second path select signal;

a second selector, coupled to second comparator, the sixth adder, and the fourth adder, selecting among the output of the said first and second adders and producing the fourth previous path metric signal; and

a third comparator, coupled to the first selector and to the second selector, receiving the first and fourth previous path metric signals and producing a third path selection signal.

5,341,387

VITERBI DETECTOR HAVING ADJUSTABLE DETECTION THRESHOLDS FOR PRML CLASS IV SAMPLING DATA DETECTION

Hung C. Nguyen, San Jose, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Aug. 27, 1992, Ser. No. 936,759

Int. Cl.[5] H04L *1/00*; **G06J** *1/00*

U.S. Cl. 371—45 **13 Claims**

1. An interleave decoder within a Viterbi detector for a partial response class IV, maximum likelihood data channel comprising:

a data sample input for receiving filtered and equalized digital data samples from a source thereof, the data samples taken of data which has been coded in a predetermined data code format and which has been passed through a data degrading channel,

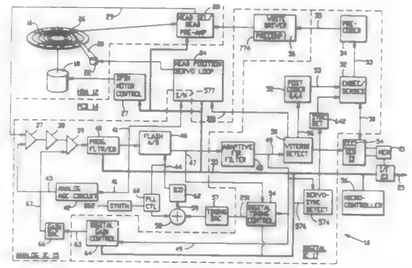
delay means for delaying the data samples received at the data sample input to produce delayed data samples,

delay selector means for controlling an output of the delay means in accordance with a feedback control bit value,

adder means for combining data samples from the data sample input with the delayed data samples from the delay means to produce a sum,

a threshold input for receiving programmable positive and negative data threshold values,

threshold selector means for selectively putting out the positive and negative data threshold values in accordance with a sign bit control value,



comparator means for comparing the sum with a selected one of the threshold values and for putting out a logical value based upon comparison thereof,

Viterbi decision state logic means for determining the sign bit control value, the feedback control bit value, and two raw data bits for each incoming data sample,

memory path means for decoding a sequence of consecutive values of said two raw data bits per incoming sample in accordance with a predetermined maximum likelihood trellis decode logic table related to said predetermined data code format and for thereupon putting out a sequence of detected code bits.

5,341,388

LASER LIGHT BEAM GENERATING APPARATUS

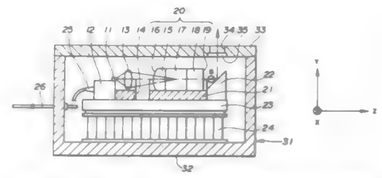
Hisashi Masuda, and Yushi Kaneda, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Feb. 9, 1993, Ser. No. 15,361

Claims priority, application Japan, Feb. 20, 1992, 4-033754; Feb. 21, 1992, 4-072515

Int. Cl.[5] H01S *3/045, 3/094*

U.S. Cl. 372—36 **23 Claims**



1. A laser light beam generating apparatus comprising:

a light beam source for emitting at least one pumping light beam to a resonator spaced apart from said light beam source;

said resonator comprising a laser medium excited by the pumping light beam from said light beam source;

a non-linear optical crystal element arranged in an outgoing light path of the pumping light beam from said light source;

VOL 1165 ISS 4 AG 23 1994 UMI

and reflecting means disposed before said laser medium and after said non-linear optical crystal element; and

a temperature-controlling means for controlling the temperature of said light beam source and of said resonator in response to the output of a single temperature detecting [illegible]

5,341,389

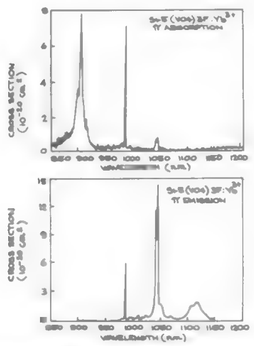
YTTERBIUM- AND NEODYMIUM-DOPED VANADATE LASER HOSE CRYSTALS HAVING THE APATITE CRYSTAL STRUCTURE

Stephen A. Payne, Castro Valley; Wayne L. Kway, Fremont; Laura D. DeLoach, Manteca; William F. Krupke, Pleasanton, all of Calif., and Bruce H. T. Chai, Oviedo, Fla., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 8, 1993, Ser. No. 72,951

Int. Cl.[5] C09K *11/82, 11/83, 11/85, 11/61*

U.S. Cl. 372—41 **15 Claims**



1. A solid-state laser gain medium, comprising:

a crystal of the composition $M_5(VO_4)_3X$, wherein M is at least one divalent cation selected from Sr^{2+}, Mg^{2+}, Ba^{2+}, Cd^{2+}, or Pb^{2+}, or at least one combination of monovalent and trivalent ions, selected from Li^+, Na^+, K^+, Rb^+, with Sc^{3+}, Y^{3+}, La^{3+}, Gd^{3+}, Lu^{3+}, or other RE^{3+} (rare earth), and X is at least one singly-charged anion selected from F^-, Cl^-, Br^-, I^-, OH^-, or one-half the fraction of a doubly-charge anion selected from O^{2-}, S^{2-};

one or more dopants included in the crystal, selected from rare earth ions, transition metal ions and actinide ions.

5,341,390

SURFACE EMITTING SECOND HARMONIC GENERATING DEVICE

Norihide Yamada, Tokyo, and Yoshikatsu Ichimura, Kanagawa, both of Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 15, 1993, Ser. No. 47,969

Claims priority, application Japan, Apr. 16, 1992, 4-122583

Int. Cl.[5] H01S *3/19*

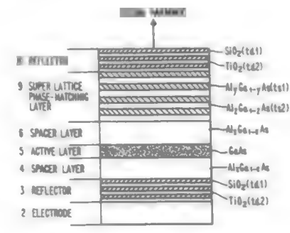
U.S. Cl. 372—45 **16 Claims**

1. A surface emitting second harmonic generating device, comprising, as a cavity:

an active layer composed of semiconductor crystals of a III-V group compound;

a first spacer layer disposed on a first side of said active layer and a second spacer layer disposed on a second side of said active layer; and

a first reflector disposed on said first spacer layer opposite said active layer and a second reflector disposed on said second spacer layer opposite said active layer, wherein said second reflector transmits the second harmonic at a prescribed rate;



wherein the <100> direction of said semiconductor crystals makes an angle of at least 5° with respect to the direction of light rays propagating in said cavity.

5,341,391

VARIABLE WAVELENGTH SEMICONDUCTOR LASER

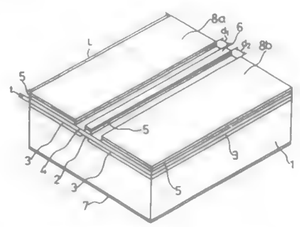
Eitaro Ishimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,887

Claims priority, application Japan, May 11, 1992, 4-146597

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—46 **13 Claims**



1. A semiconductor laser device comprising:

a semiconductor substrate;

an active layer having a stripe-shaped region, a cladding layer, and a contact layer successively disposed on said semiconductor substrate;

means for injecting a current into said stripe-shaped region of said active layer to produce a laser light emission; and

a pair of electrodes for passing a current through said cladding layer parallel to said cladding and contact layers and perpendicular to said stripe-shaped region, disposed adjacent said cladding layer and opposite said stripe-shaped region.

5,341,392

LONGITUDINAL DISCHARGE LASER ELECTRODES

Bruce E. Warner, Livermore; John L. Miller, and Earl R. Ault, both of Dublin, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 22, 1984, Ser. No. 640,174

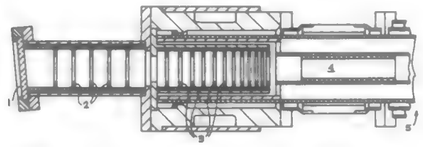
Int. Cl.[5] H01S *3/22, 3/03*

U.S. Cl. 372—62 **8 Claims**

1. An improved longitudinal discharge laser electrode, comprising:

a longitudinal discharge laser having a discharge region and a window on each end spaced apart and centered along an axis;

an electrode on at least one end between the discharge region and the window on the at least one end, the electrode comprising a plurality of discrete sections spaced apart to produce a substantially hollow cathode discharge



along the axis with the axis running centrally through each of the discrete sections.

5,341,393

LASER-DIODE-PUMPED SOLID-STATE LASER

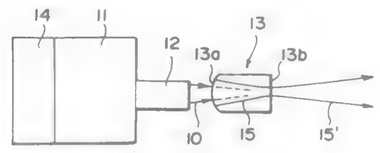
Yoji Okazaki, and Hiroaki Hyuga, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 697,568, May 9, 1991. This application Mar. 10, 1993, Ser. No. 29,378

Claims priority, application Japan, May 10, 1990, 2-120350; Jun. 25, 1990, 2-165890; Jun. 25, 1990, 2-165891

Int. Cl.[5] H01S *3/09*

U.S. Cl. 372—69 **8 Claims**



1. A laser-diode-pumped solid-state laser comprising a solid-state laser rod which is doped with a rare-earth material such as neodymium and has a wavelength converting function and a semiconductor laser which pumps the solid-state laser rod wherein the improvement comprises that

a wave plate integrally provided on one end face of the solid-state laser rod to stabilize the power of a wavelength-converted wave,

the other end face of the solid-state laser rod is formed into a resonator mirror and one end face of the wave plate is formed into the other resonator mirror, said other end face of the solid-state laser rod and said one end face of the wave plate forming a resonator and

said wavelength-converted wave is extracted from the resonator which is a sum frequency wave of a laser beam oscillated by the solid-state laser rod and a semiconductor laser beam emitted by a designated semiconductor laser, said designated semiconductor laser being one of said semiconductor laser which pumps the solid-state laser rod and a second semiconductor laser which is separate from the semiconductor laser which pumps the solid-state laser rod.

5,341,394

FURNACE FOR MELTING MATERIALS WITH LOW MELTING POINT WITH IMPROVED CASTING DUCT

Romeo Nicetto, Senago, Italy, assignor to Nicem S.r.l., Milan, Italy

Filed Aug. 31, 1992, Ser. No. 937,031

Int. Cl.[5] F27D *3/00*

U.S. Cl. 373—115 **15 Claims**

1. Furnace for melting materials with a low melting point having an improved casting duct, said furnace comprising;

a crucible for containing molten material introduced therein up to a surface level;

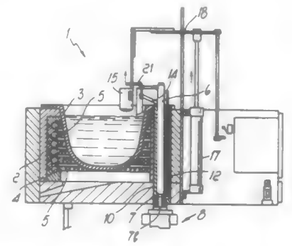
a furnace body surrounding said crucible;

first heating means for heating said crucible provided in said furnace body;

a casting duct;

an inlet defined by said casting duct above said surface level of molten material in said crucible;

feeding means for transferring molten material from said crucible to said casting duct;



second heating means for heating said casting duct, and;

control means for controlling temperature of said casting duct;

wherein said second heating means comprise;

a substantially cylindrical block made of heat-conducting material and surrounding said casting duct, and;

an electric resistor embedded in said substantially cylindrical block.

5,341,395

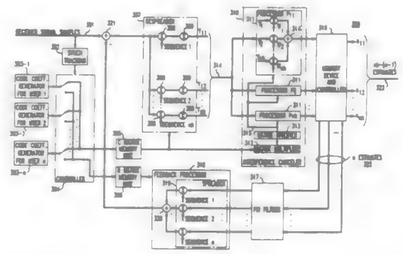
DATA RECOVERY TECHNIQUE FOR ASYNCHRONOUS CDMA SYSTEMS

Qi Bi, Morris Plains, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 24, 1992, Ser. No. 982,168

Int. Cl.[5] H04B *7/216*

U.S. Cl. 375—1 **21 Claims**



1. Apparatus for use in a CDMA system wherein each of a plurality of users transmits a coded user signal, each coded user signal being formed by spreading each of that user's symbols using a code coefficient sequence and wherein a received signal includes a composite of the transmitted coded user signals, said apparatus comprising

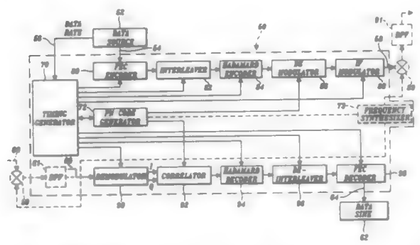
means for receiving samples of said received signal in a time interval; and

means responsive to said received signal samples for estimating at least one symbol of a user in said time interval, said estimating means altering said received signal samples in response to a first portion of the code coefficient sequences of said plurality of users in said time interval and processing the altered received signal samples in response to a second portion of the code coefficient sequences of

VOL 1165 ISS 4 AUG 23 1994 UMI

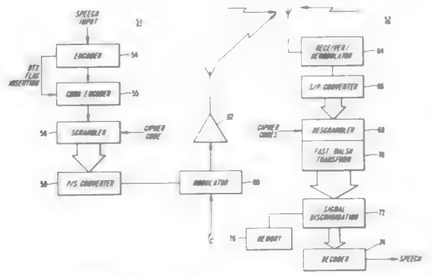
said plurality of users, said first and second portions being different from one another and said first portion being less than all of the code coefficients in the code coefficient sequences of said plurality of users in said time interval.

5,341,396
MULTI-RATE SPREAD SYSTEM
Robert P. Higgins, and John H. Nitardy, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Mar. 2, 1993, Ser. No. 24,931
Int. Cl.[5] H04L *9/00, 27/30*
U.S. Cl. 375—1 **20 Claims**



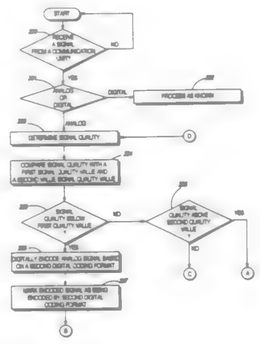
1. A transmitter for a direct sequence, spread spectrum communication system, the transmitter comprising:
(a) means for receiving an information-bearing input signal at a variable data rate;
(b) means for producing a code signal comprising a pseudo-random sequence of chips at a chip rate;
(c) DS modulation means for modulating the information-bearing signal with the code signal to produce a DS modulated signal such that each bit of the information-bearing signal is modulated with N chips of the code signal, N being an integer greater than 1; and
(d) timing means for causing the value of N to vary as the variable data rate varies, such that the chip rate of the DS modulated signal is substantially constant as the data rate varies.

5,341,397
CDMA FREQUENCY ALLOCATION
Bjorn Gudmundson, Sollentuna, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Division of Ser. No. 868,038, Apr. 13, 1992, Pat. No. 5,295,153.
This application Dec. 8, 1993, Ser. No. 162,948
Int. Cl.[5] H04B *7/216, 1/76*
U.S. Cl. 375—1 **7 Claims**



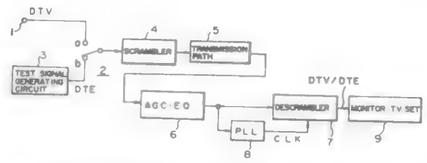
1. In a multiple access, spread spectrum communication system for communication information signals, which include speech, control and pilot-sequence signals, between a plurality of base station and a plurality of mobile stations, a method comprising:
coding blocks of bit sequences of an information signal;
scrambling each said coded information signal using a unique selected scrambling bit sequence;
transmitting said scrambled coded signals from each base station;
receiving a composite signal of overlapping, transmitted signals;
descrambling said composite signal using one of said unique scrambling bit sequences to distinguish coded information signals from a selected base station from other signals in said composite signal;
recursively correlating said composite signal with block codes corresponding to said information signals;
determining which block code generates a greatest correlation and producing a correlated signal;
successively removing said correlated signal from said composite signal;
rescrambling a residual portion of said correlated, composite signal using said corresponding block codes to generate a series of recorded signals;
detecting received pilot-sequence signals;
measuring the signal strength of each received pilot sequence signal; and
storing the measured signal strengths of the received pilot sequences.

5,341,398
METHOD FOR REPEATERS TO ADAPTIVELY DIGITALLY CODE RECEIVED ANALOG INFORMATION
Mario F. DeRango, Lake Zurich, and Richard L. Bennett, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 25, 1993, Ser. No. 22,229
Int. Cl.[5] H04B *17/02, 1/40;* **H04L** *27/00*
U.S. Cl. 375—3.1 **17 Claims**



1. In a communication system that includes a limited number of repeaters and a plurality of communication units, wherein the limited number of repeaters are operably coupled together via a digital bus, wherein at least a first set of the plurality of communication units transceives analog information with the limited number of repeaters, a method for each of the limited number of repeaters to adaptively digitally code the analog information, the method comprises the steps of:
a) receiving, by a first repeater of the limited number of repeaters, analog information from a communication unit of the first set to produce received analog information;
b) determining, by the first repeater, signal quality of the received analog information;
c) comparing, by the first repeater, the signal quality of the received analog information with a first signal quality value;
d) when the signal quality of the received analog information is above the first signal quality value, digitally coding the received analog information based on a first digital coding format to produce a first digital coded information; and
e) when the signal quality of the received analog information is below the first signal quality value, digitally coding the received analog information based on a second digital coding format to produce second digital coded information, wherein the first digital coding format requires less bandwidth than the second digital coding format.

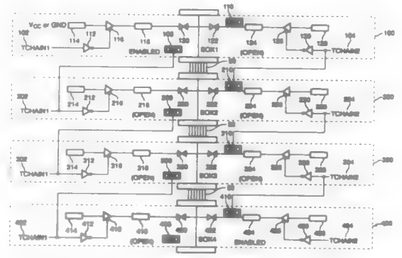
5,341,399
DIGITAL TRANSMISSION TEST SIGNAL GENERATING CIRCUIT
Takeo Eguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 9, 1992, Ser. No. 865,974
Claims priority, application Japan, Apr. 11, 1991, 3-079013
Int. Cl.[5] H04B *3/46, 17/00*
U.S. Cl. 375—10 **7 Claims**



1. A digital transmission test signal generating circuit for generating a digital test signal and applying the digital test signal to a digital signal transmission system, the digital signal transmission system including a series connection of an encoding means, a transmission path, decoding means, and a display supplied with an output of the decoding means, the digital transmission test signal generating circuit comprising:
generating means for generating and applying to the encoding means as the digital test signal a first predetermined repeated bit pattern to cause a first predetermined image to appear at a first predetermined area on the display if a first predetermined component within the digital signal transmission system operates normally in processing the first predetermined repeated bit pattern and another, different second predetermined image to appear on the display if the first predetermined component operates abnormally in processing the first predetermined repeated bit pattern.

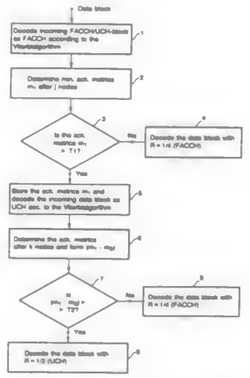
5,341,400
METHOD AND APPARATUS FOR AUTOMATICALLY SENSING AND CONFIGURING A TERMINATION IN A BUS-BASED NETWORK
Eric R. Davis, San Jose, Calif., assignor to 3COM Corporation, Santa Clara, Calif.
Filed Jul. 29, 1992, Ser. No. 921,883
Int. Cl.[5] H04B *3/00, 14/04*
U.S. Cl. 375—36 **22 Claims**

4. In a local area network (LAN) having a wire communications medium between a plurality of devices, said wire communications medium having a first end and a second end, said LAN requiring at each end an impedance-matched termination, an apparatus in each one of said devices for providing selective impedance-matched termination at any one of said devices comprising:
a matched termination load for said wire communications medium;
means coupled to said matched termination load for connecting said matched termination load to said wire communications medium, said connecting means comprises a three-state buffer coupled between a termination reference voltage and said matched termination load such that said termination reference voltage can drive said wire communications medium through said matched termination load; and



means coupled to said connecting means for enabling said connecting means where a device is most closely adjacent to one of said first end and said second end, and for disabling said connecting means where said device is not most closely adjacent to one of said first end and said second end.

5,341,401
METHOD OF DETECTING THE CHANNEL IDENTITY OF A NUMBER OF CHANNELS IN A MOBILE RADIO SYSTEM
Jan F. Farjh, Enskede, and Jon K. Ugland, Sundbyber, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Sep. 9, 1992, Ser. No. 942,443
Claims priority, application Sweden, Sep. 10, 1991, 9102611
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—94 **7 Claims**



1. A method for detecting the channel identity of a number of channels in a mobile radio system in which each channel is represented by a time slot and in which a number of channels to be identified are represented by a corresponding number of time slots Included in a frame, wherein at least one channel of a first identity and remaining channels in the frame of a second identity are channel coded by means of convolution coding at a first rate and a second rate respectively so that when correspondingly channel decoding in a receiver having a corre-

VOL 1165 ISS 4 AG 23 1994 UMI

sponding convolution code according to the Viterbi algorithm, the channel separated in said first identity and said second identity, wherein a given data part in an incoming burst, which may represent a channel of either said first or said second identity is decoded by convolution decoding at a rate which corresponds to the rate at which the first identity was coded, thereby to obtain a given accumulated metric after a first number of nodes in the Viterbi algorithm, and in that value of said metric is compared with a given threshold value wherein when the accumulated metric is less than the threshold value, data in the burst is decoded at the rate which corresponds to channels of the first identity.

5,341,402

AUTOMATIC FREQUENCY CONTROL METHOD AND DEVICE FOR USE IN RECEIVER

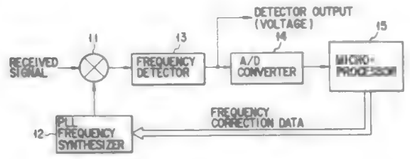
Naohiro Matsushita, Mishima, and Masaaki Makino, Shizuoka, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1992, Ser. No. 835,210

Claims priority, application Japan, Feb. 19, 1991, 3-045379; Jun. 3, 1991, 3-131393

Int. Cl.[5] H04L *27/06*

U.S. Cl. 375—97 **3 Claims**



1. A method of automatic frequency control for use in a receiver comprising the steps of:

mixing a received signal with a local oscillator signal to produce an intermediate frequency signal, the received signal including GMSK modulated waves;

converting the intermediate frequency signal to a voltage signal;

converting the voltage signal to digital data;

identifying binary data of the received signal by performing arithmetic processing on the digital data;

outputting frequency correction data produced by the step of comparing the digital data with a theoretical value of digital data when the binary identification data is obtained, and when an intermediate frequency which is obtained when a signal modulated with the same transmit data as the binary identification data is received, becomes a normal frequency, and the step of outputting frequency correction data comprising the steps of:

comparing a digital information value at a timing corresponding to a center of a neighboring bit of the binary identification data with each one bit before and after a point at which the binary identification data changes with a digital theoretical value at a timing corresponding to a center of a second bit:

only when at lest three successive bits of the binary identification data are identical to one another, and

when an intermediate frequency, obtained when three bits of the signal modulated with transmit data which is the same as the binary identification data whose at least three successive bits are identical is received successively, becomes the normal frequency, and

outputting frequency correction data which permits a difference of said comparing step to be minimized; and

controlling the frequency of the local oscillator signal with the frequency correction data so that the intermediate frequency signal becomes the normal frequency.

5,341,403

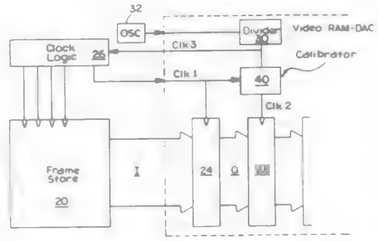
MEANS TO AVOID DATA DISTORTION IN CLOCK-SYNCHRONIZED SIGNAL SAMPLING

Sean Morley, Limerick, Ireland, assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Jan. 27, 1992, Ser. No. 826,398

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—106 **8 Claims**



1. A calibrator for monitoring first and second synchronous clock signals controlling the input to a receiving device and for producing an output signal whenever one of the clock signals occurs within a forbidden time window with respect to the other clock signal, said time window being at least equal to a setup time and a hold time for said device, said calibrator comprising:

first pulse-generating means responsive to said first clock signal for producing a window pulse having a duration at least as wide as said forbidden time window;

said first pulse-generating means comprising a set-reset flip-flop wherein the set input is coupled to the output of a pulse generator activated by said first clock pulses;

the reset input of said flip-flop being coupled to the output of a pulse-generator activated by said first pulses through a delay means corresponding to at least said setup and hold times, thereby to control the time duration of said window pulse:

second pulse-generating means responsive to said second clock signal for producing a test pulse at a specified time delay after said second clock signal, said specified time delay including said hold time; and

means responsive to said window and test pulses for producing said output signal when said test pulse is activated during the time of said window pulse.

5,341,404

SYNCHRONIZING CIRCUIT AND METHOD

Joannes M. J. Sevenhans, Brasschaat, and Jean-Jacques Schmit, Ottignies-Louvain-La-Neuve, both of Belgium, assignors to Alcatel N.V., Netherlands

Filed Mar. 5, 1992, Ser. No. 847,661

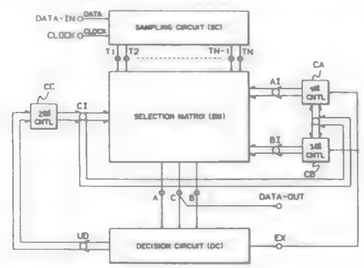
Claims priority, application European Pat. Off., Mar. 5, 1991, 91200475.1

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—106 **25 Claims**

1. Synchronizing circuit having a digital signal input (DATA-IN), a clock signal input (CLOCK) and a plurality of signal sample outputs (A, C/DATA-OUT, B) at one (C/DATA-OUT) of which a signal sample (C26) of a digital signal (DATA) applied to said digital signal input is available for generating another digital signal synchronized with a clock signal (CLOCK) applied to said clock signal input, said synchronizing circuit including a signal sampling means (SC, SM) which provides simultaneously at said signal sample outputs (A, C/DATA-OUT, B) a set of signal samples (A25, C26, B27) taken in a set of distinct time positions (t25, t26, t27) of said digital signal and separated by a first predetermined time interval (T), and a control logic means (DC, CA, CC, CB) to which said signal sample outputs (A, C/DATA-OUT, B) are coupled

and which checks whether a logical function of said set of signal samples is true or false and, when it is true, controls said signal sampling means (SC, SM) to continue to provide said signal sample (C26) at said one signal sample output (C/DATA-OUT), characterized in that when said logical function is



true, said control logic means (DC, CA, CC, CB) controls said signal sampling means (SC, SM) for providing a second set of signal samples (A24, C26, B28) taken in a second set of time positions (t24, t26, t28) of said digital signal (DATA) and separated by a second predetermined time interval (2*T) larger than said first predetermined time interval (T).

5,341,405

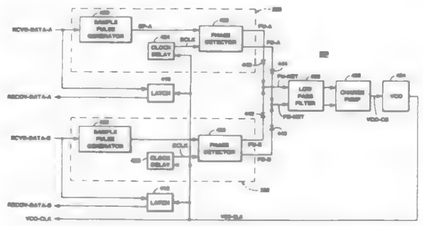
DATA RECOVERY APPARATUS AND METHODS

William C. Mallard, Jr., Nashua, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 713,302, Jun. 11, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 184,892

Int. Cl.[5] H03D *3/24*

U.S. Cl. 375—120 **7 Claims**



1. Data recovery apparatus for the synchronized recovery of first and second channels of data signal portions from first and second parallel transmission media, the first and second channels of data signal portions being transmitted in synchronism into the first and second transmission media, said data recovery apparatus comprising:

voltage-controlled oscillator (VCO) means, responsive to a VCO control signal, for generating a VCO clock signal;

phase comparator and latch means, responsive to the VCO clock signal and the first and second channels of data signal portions, for generating data corresponding to data of the first and second channels of data signal portions at a predetermined phase of each clock period of the VCO clock signal;

control means responsive to said phase comparator for generating the VCO control signal effective to maintain a stable relatively low phase difference between the VCO clock signal and each of the first and second channels of data signal portions;

said phase comparator and latch means includes means for providing a phase difference control signal which represents respective phase differences between the VCO clock signal and the first and second channels of data signal portions; and

said control means generating the VCO control signal in response to the phase difference control signal;

said phase difference control signal includes first and second control signals which represent phase differences between the VCO clock signal and the first and second channels of data signal portions, respectively;

said phase comparator and latch means comprising:

first phase Comparator means, responsive to the VCO clock signal and the first channel of data signal portions, for providing the first control signal; and

second phase comparator means, responsive to the VCO clock signal and the second channel of data signal portions, for providing the second control signal;

said VCO clock signal consists of a periodic succession of alternate rising and falling clock edges, each successive VCO clock period including a rising and a falling clock edge, the first and second channels of data each consisting of a succession of alternate rising and falling edges;

said first phase comparator means including

first means for initiating a first sampling signal at each rising and falling edge of the first channel of data signal portions, each said first sampling signal having a first predetermined duration,

first delay means for delaying said VCO clock signal by one-half the first predetermined duration to provide a first delayed clock signal, and

means, responsive to the first delayed clock signal and the first sampling signal, for providing the first control signal according to a phase difference between a selected one of the rising and falling clock edges of the first delayed clock signal and the first sampling signal; and

said second phase comparator means including

second means for initiating a second sampling signal for each rising and falling edge of the second channel of data signal portions, each said second sampling signal having a second predetermined duration,

second delay means for delaying said VCO clock signal by one-half the second predetermined duration to provide a second delayed clock signal, and

means, responsive to the second delayed clock signal and the second sampling signal, for providing the second control signal according to a phase difference between a selected one of the rising and falling edges of the second delayed clock signal and the second sampling signal;

so that said control means generates the VCO control signal with a magnitude effective to control said VCO means to generate the VCO clock signal with the selected one of the rising and falling edges of each clock period occurring at or near the rising and falling edges of both the first and second channels of data signal portions.

5,341,406

SLIDING LANCE GUIDE FLEXIBLE LANCE SYSTEM

Stephen C. Jens, Ashland, Mass.; Bernard Sawaf, deceased, late of Nashua, N.H. by Marilene Sawaf, administratrix. ; Paul F. Viola, Sommerville, Mass.; Paul R. Belkus, Whittinsville, Mass., and Robert A. S. Lee, Stoneham, Mass., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 303,268, Jan. 27, 1989, Pat. No. 5,065,703, which is a continuation-in-part of Ser. No. 27,810, Mar. 18, 1987, Pat. No. 4,827,953, and a continuation-in-part of Ser. No. 314,091, Feb. 22, 1989, Pat. No. 5,036,871, and a continuation-in-part of Ser. No. 661,825, Feb. 27, 1991, Pat. No. 5,286,154, and a continuation-in-part of Ser. No. 695,308, May 3, 1991. This application Jul. 31, 1991, Ser. No. 738,469

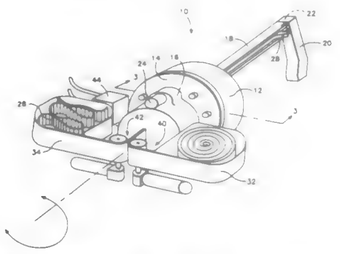
Int. Cl.[5] B08B *3/02*

U.S. Cl. 376—316 **18 Claims**

1. A flexible lance system comprising, in combination, a flexible means for accessing an assembly having a difficult to

VOL 1165 ISS 4 AG 23 1994 UMI

access geometry, which comprises a flexible member having a distal end, said flexible member being configured to be driven into the difficult to access geometry, a support rail, a rigid guide extending lengthwise of said flexible member and being mounted within said support rail, said flexible member being movably mounted along said rigid guide, said rigid guide having an end positioned to turn said flexible member in a



predetermined angle with respect to an extending direction of said flexible member as said flexible member passes from said rigid guide through said end, a first drive means external of the assembly having the difficult to access geometry for driving said flexible member through said rigid guide, and a second drive means external of the assembly having the difficult to access geometry for driving said rigid guide along said support rail.

5,341,407

INNER LINERS FOR FUEL CLADDING HAVING ZIRCONIUM BARRIERS LAYERS

Herman S. Rosenbaum, Fremont, and Joseph S. Armijo, Saratoga, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 14, 1993, Ser. No. 92,188
Int. Cl.[5] G21C *3/00*
U.S. Cl. 376—409 **58 Claims**

1. A cladding tube having a cross-section, the cladding tube comprising:

an outer circumferential substrate having an inner surface;

a zirconium barrier layer bonded to the inner surface of the outer circumferential substrate and itself having an inner surface; and

an inner circumferential liner bonded to the inner surface of the zirconium barrier layer, wherein the inner circumferential liner comprises a zirconium alloy having less than about 1.2% tin by weight.

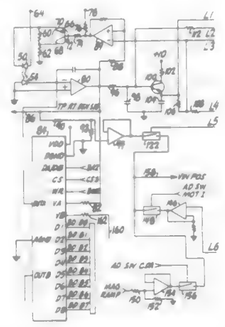
5,341,408

CONTROL SYSTEM FOR CURRENTY COUNTER

Richard A. Melcher, Croydon, Pa.; William Sherman, III, Medford; Madhura Nadig, Sewell, both of N.J.; Robert M. Stewart, Langhorne, Pa.; Paul L. Hessler, Oreland, Pa., and David R. Bryce, Morrisville, Pa., assignors to Brandt, Inc., Bensalem, Pa.

Filed Jul. 26, 1991, Ser. No. 736,085
Int. Cl.[5] G06F *15/30*
U.S. Cl. 377—8 **24 Claims**

1. Document handling apparatus including in combination energizable means for advancing documents along a path, detecting means including a variable gain amplifier, means positioning said detecting means in operative relationship to said path whereby said amplifier puts out a signal of a first magnitude in response to the presence of a document adjacent to the detecting means and of a second magnitude in the absence of a document adjacent to the detecting means, actuatable means for energizing said energizable means and means responsive to actuation of said actuatable means for automatically setting the gain of said amplifier to cause said second magnitude signal to assume a predetermined value, said gain setting means comprising means for storing a representation of



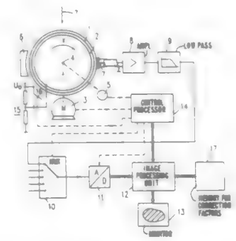
gain, and means responsive to successive actuation of said actuatable means for updating said representation.

5,341,409

METHOD OF GENERATING X-RAY IMAGES AND DEVICE SUITABLE FOR CARRYING OUT THE METHOD

Norbert Conrads, Hauset, Belgium; Walter Hillen, Aachen, Fed. Rep. of Germany; Hanns-Ingo Maack, Norderstedt, Fed. Rep. of Germany; Stephan Rupp, Stuttgart, Fed. Rep. of Germany; Ingo Schäfer, Kiel, Fed. Rep. of Germany, and Ulrich Schiebel, Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,499
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1992, 4205566
Int. Cl.[5] B41M *5/00*
U.S. Cl. 378—29 **7 Claims**



1. A method of generating X-ray images by means of a photoconductor (1) which is provided on a conductive substrate (2) and whose surface potential can be read by means of probes (7), comprising:

a) charging the photoconductor to a defined potential;

b) varying the substrate potential and reading a potential variation (U) thus caused on the photoconductor surface;

c) generating test data (T(x)) which corresponds to the spatial and/or temporal variation of the potential on the surface of the photoconductor;

d) determining correction data (a, b, k(x)) which compensates for a deviation of the test data from its ideal value;

e) storing the correction data;

f) exposing said photoconductor to X-ray radiation;

g) reading by means of said probes, as image data (B(x,y)), the surface potential for pixels on the surface of the photoconductor; and

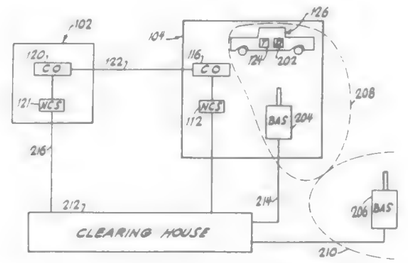
h) correcting the image data (B(x,y)) read by taking into account the stored correction data.

5,341,410

CELLULAR TELEPHONE LOCATOR USING A MOBILE DATA SYSTEM

Carl R. Aron, New York, N.Y., and James L. Troe, Morristown, N.J., assignors to RAM Mobile Data USA Limited Partnership, Woodbridge, N.J.

Filed Jul. 21, 1992, Ser. No. 918,309
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 **36 Claims**



1. A method of informing a home cellular telephone service region of a cellular telephone network of a location of a customer having a cellular telephone unit located proximate to a mobile data terminal in a foreign cellular telephone service region of the cellular telephone network comprising the steps of:

automatically providing a first signal identifying the customer from the mobile data terminal to a mobile data base radio station of a mobile data network;

determining the foreign cellular telephone service region in which the customer is located based upon a location of the mobile data base radio station; and

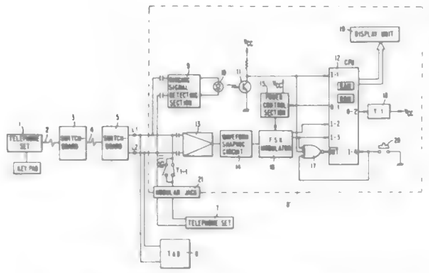
transmitting data identifying the customer and the foreign cellular telephone service region in which the customer is located from the mobile data base radio station to the home cellular telephone service region of the customer.

5,341,411

CALLER ID BLOCKING METHOD AND PROCESSING SYSTEM (BLOCK CALLER ID INFORMATION)

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Sep. 23, 1991, Ser. No. 763,470
Claims priority, application Japan, Sep. 21, 1990, 2-253010
Int. Cl.[5] H04M *1/64, 1/66*
U.S. Cl. 379—67 **12 Claims**



1. A method of blocking caller identification of a telephone signal to a called party in a telephone system having an exchange system between telephone devices of a calling party and the called party and the telephone device of the called party having a telephone set and a receiving device for displaying the caller identification of the calling party, said method comprising the steps of:

inputting a specified key number together with telephone number information of the called party by the calling party into his or her telephone device,

connecting the telephone devices of the calling party and the called party together based on the telephone information, said exchange system blocking from the telephone signal being sent to the telephone device of the called party an FSK signal to display the caller identification when the exchange system detects the specified key number,

detecting a presence or absence of an FSK signal between first bell and second bell rings of the telephone set and displaying the caller identification of the calling party to the called party only in response to the presence of said FSK signal, and

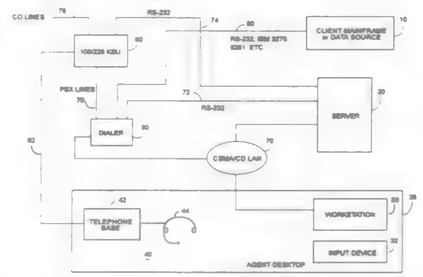
energizing a relay of the receiving device to disconnect the telephone set from a telephone line in order to stop the telephone set of the called party from ringing after a predetermined number of rings.

5,341,412

APPARATUS AND A METHOD FOR PREDICTIVE CALL DIALING

Danny Ramot, Fairfield; George Chen, and Alexander Henkin, both of Stamford, all of Conn., assignors to Executone Information Systems, Inc., Darien, Conn.

Filed Oct. 10, 1991, Ser. No. 774,600
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—92 **3 Claims**



1. A control system for a telephone data collection network including an automatic dialer coupled to a private branch exchange, a plurality of telephone sets and a respective plurality of computer terminals each having a video monitor and an input device, and each assigned to one of a plurality of agents, said control system comprising:

means for initiating calls by the automatic dialer;

means for detecting that one of the agents is available to receive a call;

means for assigning one of the initiated calls to the available agent; and

telephone line control means, coupled to the computer terminal assigned to the agent and to the private branch exchange, for facilitating telephone keypad functions and for controlling the connection between the private branch exchange and the telephone set assigned to the agent via commands entered by the agent into the computer terminal using the input device;

wherein the telephone data collection network further includes a plurality of loudspeakers positioned to provide

VOL 1165 ISS 4 AG 23 1994 UMI

audio information to the agents, wherein the control system further comprises:

means for one of the agents to initiate an intercom call by manually entering commands at the terminal input device;

broadcasting said intercom calls over the loudspeakers; and

means coupled to at least one of said plurality of computer terminals not assigned to the one agent for establishing a connection with the one agent by using the input device associated with the one terminal not assigned to the agent.

5,341,413

COMMUNICATION EQUIPMENT WITH A DESTINATION AREA ON-LINE DISPLAY FUNCTION

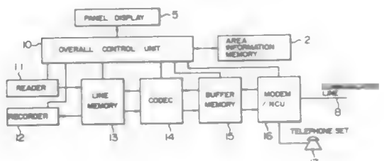
Yasuro Hori; Soshiro Kuzunuki, both of Katsuta; Shuichi Okabe, Yokohama, and Fumitaka Ito, Inba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

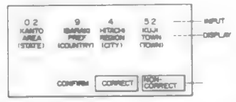
Filed Aug. 20, 1992, Ser. No. 932,578

Claims priority, application Japan, Aug. 21, 1991, 3-209150

Int. Cl.[5] H04M *11/00;* **H04N** *1/42*

U.S. Cl. 379—100 **11 Claims**





1. A communication equipment with a destination area on-line display function comprising:

destination entry means for entering destination information;

communication means for transmitting information to a communication destination station based on the entered destination information and for receiving information from the communication destination station;

a destination dictionary file containing destination areas and destination names corresponding to destination information;

retrieval means for retrieving a destination area and a destination name from said destination dictionary file in accordance with a sequence of entry of the information from said destination entry means;

informing means for sequentially informing the retrieved information; and

correction means for correcting only an error portion of said entered destination information or the content of said destination dictionary file when an error of said entered destination information or an error of the content of said destination dictionary file is detected by said informing means, wherein

said destination entry means enters sequentially said destination information such as destination areas, names and telephone number of the communication destination station,

said retrieval means retrieves information corresponding to said entered destination information including a part or all of the corresponding telephone number when the destination area or destination name of the communication destination station is entered, or the destination area or destination name of the corresponding communication destination station when a part or all of the telephone number is entered from said destination dictionary file, and

information is transmitted by said communication means when the communication destination station is affirmed by said informing means.

5,341,414

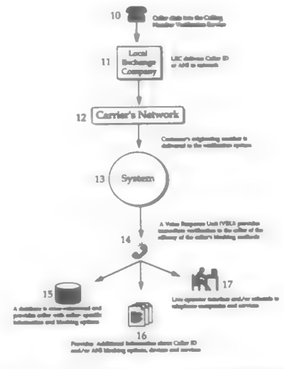
CALLING NUMBER VERIFICATION SERVICE

Fred Popke, P.O. Box 18911, Irvine, Calif. 92713

Filed Feb. 5, 1992, Ser. No. 831,680

Int. Cl.[5] H04M *1/56, 15/06, 3/42, 1/64*

U.S. Cl. 379—142 **4 Claims**



1. A method of processing a telecommunications transmission from a calling party to a terminating call processing system and providing said calling party with verification of said calling party's originating telephone number comprising the steps of:

detecting at a first premise, remote from said system, an off-hook condition of said system's telephone line;

automatically sending from said first premise a request-to-send signal in response to detecting the said system's off-hook condition;

transmitting said calling party's originating telephone number from said first premise to said system;

receiving said originating telephone number;

translating said originating telephone number into an audible format;

connecting said calling party to a source of audible presentation of said audible format.

5,341,415

METHOD AND APPARATUS FOR SHARING OF COMMON IN-HOUSE WIRING TO PERMIT MULTIPLE TELEPHONE CARRIERS TO SERVE THE SAME CUSTOMER

Paul Baran, 83 James Ave., Atherton, Calif. 94027

Filed Sep. 22, 1992, Ser. No. 949,424

Int. Cl.[5] H04M *3/42*

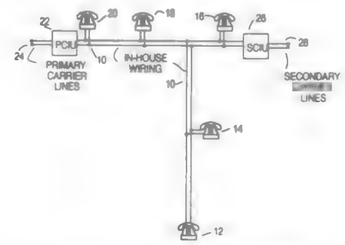
U.S. Cl. 379—201 **8 Claims**

1. A competitive access on premises telephone connection system to allow a telephone user to selectively connect a single in-house telephone wiring circuit, to a primary carrier and to a secondary carrier, said primary and said secondary carriers having separate and independent physical paths, connected to said single in-house wiring circuit are said telephone user's telephone sets and telecommunications equipment, said system comprising:

a first remotely controlled switching unit having a first switch connected between said single in-house telephone wiring circuit and said primary carrier with said first switch being normally closed, said first switch disposed to selectively disconnect and interconnect said single in-house telephone wiring circuit to and from said primary carrier on the premises of said telephone user;

a second remotely controlled switching unit having a second switch connected between said single in-house telephone wiring circuit and said secondary carrier with said second switch being normally open, said second switch disposed to selectively interconnect and disconnect said single in-house telephone wiring circuit from and to said secondary carrier on the premises of said telephone user;

an actuation controller coupled to said first switching unit and said second switching unit to individually control the activation of said first switching unit and said second switching unit, and thus the corresponding said first and



second switches, to connect or disconnect said single in-house telephone wiring circuit to either said primary carrier or said secondary carrier in response to a selection of carrier made by said telephone user; and

a pair of interlocks, each coupled to a different one of said first and second switching units, with each of said pair of interlocks coupled to and under the control of said actuation controller to prevent closure of an open one of said first and second switches before the opening of a closed one of said first and second switches to prevent the interconnection of said primary carrier and secondary carrier one to the other through said single in-house telephone wiring circuit.

5,341,416

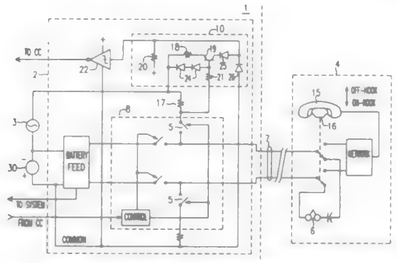
RING-TRIP DETECTION USING RING VOLTAGE AND CURRENT

John C. Gammel, Womelsdorf, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 30, 1992, Ser. No. 983,488

Int. Cl.[5] H04M *3/00*

U.S. Cl. 379—382 **2 Claims**



1. In a subscriber line interface circuit, an apparatus for detecting when a subscriber terminal goes off-book when a ringing signal generator is coupled to the terminal, CHARACTERIZED BY:

a resistor, disposed in series with the ringing signal generator for producing a voltage across the resistor;

a transistor, responsive to the voltage across the resistor for converting the voltage across the resistor into a current;

a buffer having an input, an output and a predetermined threshold voltage;

a load resistor, coupling to the input of the buffer, for converting the current from the transistor into a voltage; and

a gate means for selectively coupling the current from the transistor to the load resistor and the input of the buffer only when the ringing signal voltage has a predetermined polarity;

wherein the output of the buffer indicates that the subscriber terminal is off-hook.

5,341,417

INTEGRATED PCM-CODEC CIRCUIT WITH TELEMETERING NOISE ELIMINATION

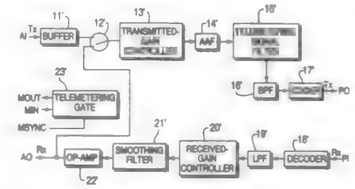
In-Hwan Hwang; Hye-Kyoung Lee, both of Inchon-city; Yi-Sung Bae, Seoul, and Bang-Won Lee, Kwangmyong-city, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 22, 1992, Ser. No. 901,757

Claims priority, application Rep. of Korea, Oct. 2, 1991, 91-17281

Int. Cl.[5] H04M *3/18, 11/00;* **H04B** *1/10, 14/04*

U.S. Cl. 379—399 **25 Claims**



1. An integrated pulse-code-modulation coder-decoder circuit of an electronic switching system comprising a plurality of subscriber lines comprising an interface circuit interfacing a telephone line with the electronic switching system, an impedance conformer and a common bus for transferring a telephone call from a first subscriber to a second subscriber, a telemetry source for generating a telemetering signal and a central processing unit for controlling operation of the telephone call, said integrated pulse-code-modulation coder-decoder circuit comprising:

buffer means for allowing high input impedance;

signal selector means having an analog loopback for checking trouble from a received signal through said buffer means to transmit a selected signal;

transmitted-gain controller means for generating a first gain controlled signal by compensating said selected signal in accordance with a protocol conformed to the subscriber line;

anti-aliasing filter means for preventing alias of said first gain controlled signal;

telemetering filter means for removing echo components of the telemetering signal in a signal output from said anti-aliasing filter means;

band-pass filter means for filtering only a signal whose frequency is located in a first voice frequency band within 300 Hz to 3.3 KHz from a signal output from said telemetering filter means;

coder means for converting a signal output from said band-pass filter means into a PCM output signal via said common bus;

decoder means for converting a PCM input signal from said common bus into a decoded signal;

low-pass filter means for filtering only a signal whose frequency is located in a second voice frequency band within 0 Hz to 3.3 KHz from said decoded signal;

received-gain controller means for generating a second gain

VOL 1165 ISS 4 AG 23 1994 UMI

controlled signal by compensating a signal output from said low-pass filter means;

smoothing filter means for generating a smoothed signal by attenuating step-pulse components of said second gain controlled signal;

operational amplifier means for amplifying said smoothed signal to drive the subscriber line; and

telemetering gate means for switching the supply of the telemetering signal output from said telemetry source.

5,341,418

ISDN TERMINAL ADAPTER FOR ACCESS FROM ANALOG SIGNAL EQUIPMENT OF FOUR-WIRE FULL DUPLEX TYPE TO ISDN

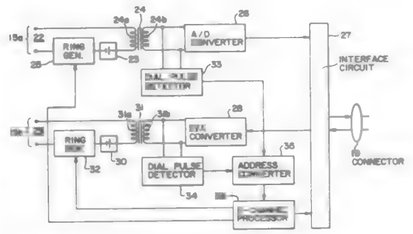
Atsushi Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 924,884

Claims priority, application Japan, Aug. 6, 1991, 3-196761

Int. Cl.[5] H04M *11/06, 3/22*

U.S. Cl. 379—399 **3 Claims**



1. A terminal adapter for use in access from an analog signal equipment to ISDN (Integrated Services Digital Network), said analog signal equipment having a first and a second port for transmitting an outgoing analog signal and for receiving an incoming analog signal, respectively, and to be connected to a first and a second analog public telephone line, respectively, so as to use said first and said second analog public telephone lines as a transmitting line and a receiving line, respectively, and said ISDN including an ISDN subscriber's line to be connected to said terminal adapter, said ISDN subscriber's line transmitting a TDM (Time Division Multiplex) signal which comprises first and second communication information channels for conveying communication information and a control channel for conveying a control signal for data link establishment and call control, said terminal adapter comprising:

input circuit means to be connected to said first port for receiving said outgoing analog signal as a received analog signal;

analog-digital converting means coupled to said input circuit means for converting said received analog signal to an outgoing digital signal;

interface circuit means to be connected to said ISDN subscriber's line for transmitting an outgoing TDM signal to and receiving an incoming TDM signal from said ISDN subscriber's line, said interface circuit means coupled to said analog-digital converting means for delivering said outgoing digital signal into a particular one of said first and said second communication information channels of said outgoing TDM signal, said interface circuit means deriving, as an incoming digital signal, a signal of the particular communication channel of the incoming TDM signal;

digital-analog converting means coupled to said interface circuit means for converting said incoming digital signal into a converted analog signal; and

output circuit means to be connected to said second port of said analog signal equipment and coupled to said digital-analog converting means for delivering said converted analog signal as said incoming analog signal to said second port of said analog signal equipment.

5,341,419

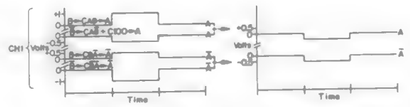
CAPACITIVE UNBALANCING FOR REDUCTION OF DIFFERENTIAL MODE CROSS-TALK

Julian J. Ferry, Kernersville, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 21, 1992, Ser. No. 933,267

Int. Cl.[5] H04B *3/32;* **H04J** *3/10;* **H04M** *9/00*

U.S. Cl. 379—417 **2 Claims**



1. In a data communication system including at least first and second balanced data communication channels for transmitting serial data in a differential mode, wherein each of the balanced data communication channels includes a complementary pair of positive and negative transmission lines, wherein the data transmitted over each balanced data communication channel includes a first signal transmitted over the positive transmission line and a complementary signal transmitted over the negative transmission line, and wherein the balanced data communication channels are in a sufficiently close proximity to create respective intrinsic capacitive couplings between the positive transmission line of the first balanced data communication channel and the positive and negative transmission lines of the second balanced data communication channel, and between the negative transmission line of the first balanced data communication channel and the positive and negative transmission lines of the second balanced data communication channel, and wherein a leakage of a differential signal transmitted over the second balanced data communication channel occurring through the intrinsic capacitive couplings causes an undesirable differential mode cross-talk to appear on the positive and negative transmission lines of the first balanced data communication channel,

the improvement comprising unbalancing the respective balanced data communication channels, said unbalancing achieved by an auxiliary capacitance coupled between the positive transmission line of the first balanced data communication channel and the negative transmission line of the second balanced data communication channel to supplement the intrinsic capacitance therebetween, thereby unbalancing the respective balanced data communication channels, and thereby reciprocally cancelling the differential mode cross-talk occurring, in the first unbalanced data communication channel.

5,341,420

NOISE-CANCELLING HANDSET

Michael P. Hollier, and Kevin Welsby, both of Suffolk, England, assignors to British Telecommunications public limited company, London, England

PCT No. PCT/GB91/01513, § 371 Date Apr. 20, 1993, § 102(e) Date Apr. 20, 1993, PCT Pub. No. WO92/04792, PCT Pub. Date Mar. 19, 1992

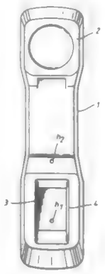
PCT Filed Sep. 5, 1991, Ser. No. 39,370

Claims priority, application United Kingdom, Sep. 6, 1990, 9019448; Nov. 28, 1990, 9025853

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—433 **7 Claims**

1. A noise-cancelling telephone handset comprising a housing containing a first order pressure gradient microphone, the housing having on a face-side thereof two pressure-sensing locations which are connected to the microphone by means of ducts whereby sound travels from the pressure-sensing locations to the microphone, the pressure-sensing locations being spaced apart by a predetermined distance which is sufficiently large to permit locally-generated speech signals to produce a pressure gradient between the pressure-sensing locations whilst sound signals from distant sources produce substantially



equal pressures at the pressure-sensing locations, whereby, in use, the output of the microphone is substantially entirely that resulting from the locally-generated speech signals, the predetermined distance being at least 20 mm and preferably between 30 mm and 80 mm.

5,341,421

SECURITY DEVICE, INCLUDING A MEMORY AND/OR A MICROCOMPUTER FOR DATA PROCESSING MACHINES

Michel Ugon, Maurepas, France, assignor to Bull CP8, Trapps, France

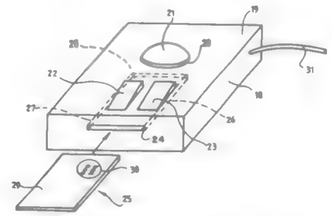
PCT No. PCT/FR91/00865, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO92/08181, PCT Pub. Date May 14, 1992

PCT Filed Nov. 5, 1991, Ser. No. 852,267

Claims priority, application France, Nov. 6, 1990, 90 13727

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **7 Claims**



1. A portable, user-controlled pointing peripheral for positioning a cursor on a display of a data processing machine, comprising:

pointing means (**47, 48, 49**) for generating X-Y information and generating a pointing signal therefrom;

module (**44**) having a processing means and an interface adapted to receive information from and send information to said processing machine;

a first standard interface for connecting said pointing peripheral with a general purpose peripheral interface of said processing machine, said first standard interface comprising a plurality of shared conductors including a data sending conductor, a data receiving conductor and control conductors, said module receiving information from the processing machine by said data receiving conductor; and

program switching means (**50, 52**) connected to an output of said pointing means and of said module, said program switching means being controlled by at least one control signal transmitted by said processing machine over one of said plurality of conductors so that either said pointing signal or an output signal of said module is transmitted on said data sending conductor.

5,341,422

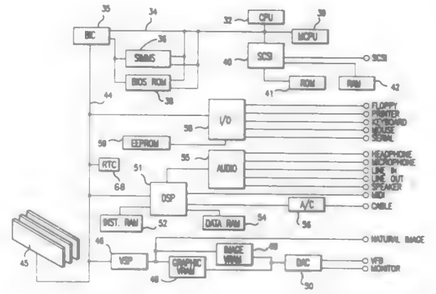
TRUSTED PERSONAL COMPUTER SYSTEM WITH IDENTIFICATION

John W. Blackledge, Jr.; Richard A. Dayan; Dennis L. Moeller; Palmer E. Newman, and Kenneth J. P. Zubay, all of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 17, 1992, Ser. No. 947,014

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **5 Claims**



1. A personal computer system for receiving and retaining data and for enabling data retained within the system to be secured against unauthorized access, the system comprising:

a normally closed enclosure,

an enclosure lock for normally maintaining said enclosure in a securely locked condition denying access to the interior of the enclosure apart form possession of a key for said enclosure lock,

an erasable memory element mounted within said enclosure for selective activation to one of an active state and an inactive state,

an option switch mounted and accessible solely from within said enclosure and connected with said erasable memory element for setting said erasable memory element to a selected one of the active and inactive states, and

a system processor mounted within said enclosure and connected with said erasable memory element for controlling access to at least certain levels of data and programs stored within the system by distinguishing between the active and inactive states of said memory element.

5,341,423

MASKED DATA TRANSMISSION SYSTEM

Edward J. Nossen, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 6, 1987, Ser. No. 12,088

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—6 **15 Claims**

1. A method for masking the transmission of data, comprising:

phase-modulating a first pseudorandom sequence with said data to produce a phase-modulated PRS signal, said first pseudorandom sequence having a first chip rate;

modulating first carrier signal by means of said phase-modulated PRS signal to produce first modulated carrier signal having a first frequency characteristic;

transmitting said first modulated carrier signal from a first site to produce a transmitted first signal, which it is desired to mask;

generating a second pseudorandom sequence;

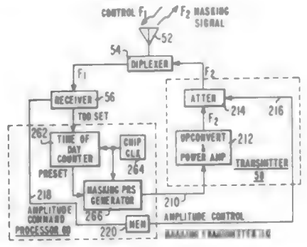
VOL 1165 ISS 4 AG 23 1994 UMI

modulating second carrier signal by means of said second pseudorandom sequence to produce second modulated carrier signal having approximately said first frequency characteristic;

transmitting said second modulated carrier signal from a second site to produce a transmitted masking signal;

receiving at a third site a combination of signals including said transmitted first signal and said transmitted masking signal,

processing said combination of signals to generate an ensemble signal including at least a representation of said phase-modulated PRS signal and said second pseudorandom sequence;



at said third site, generating a replica of said second pseudorandom sequence;

phase controlling said replica of said second pseudorandom sequence to substantially equal the phase of said second pseudorandom sequence contained in said ensemble signal to produce a controlled second PRS signal;

subtracting a signal including at least said controlled second PRS signal from said ensemble signal to produce a residue signal including at least a representation of said phase-modulated PRS signal; and

processing said residue signal using a replica of said first pseudorandom signal to obtain said data.

5,341,424

INTERDICTION METHOD AND APPARATUS WITH FREQUENCY CHANGE INHIBIT FUNCTION

William B. Thatcher, Atlanta, and Mark E. Schutte, Sugar Hill, both of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation of Ser. No. 896,517, Jun. 10, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 115,358

Int. Cl.[5] H04K *1/02*

U.S. Cl. 380—7 **11 Claims**

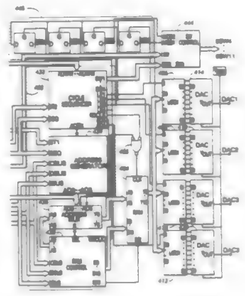
1. An interdiction apparatus for selectively interdicting unauthorized channel signals in a broadband CATV signal with jamming signals, said apparatus comprising:

means for storing frequency control words, each of said frequency control words representing a particular jamming frequency;

means for controlling said storing means to selectively output said stored frequency control words in a predetermined sequence;

a plurality of jamming frequency generators for receiving said predetermined sequence of frequency control words and for generating a plurality of jamming frequencies representative of said predetermined sequence;

means for varying said predetermined sequence responsive to authorization data, said sequence varying means comprising means for generating authorization signals for enabling or inhibiting the receipt of said frequency control words by said jamming frequency generators; and



means for combining said jamming frequencies with the broadband CATV signal to interdict the unauthorized channels.

5,341,425

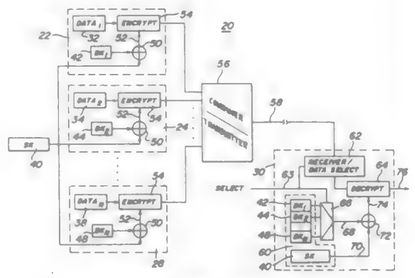
METHODS AND APPARATUS FOR UNIQUELY ENCRYPTING DATA AT A PLURALITY OF DATA TRANSMISSION SITES FOR TRANSMISSION TO A RECEPTION SITE

Anthony J. Wasilewski, Alpharetta, Ga., and Keith Gammie, Markham, Canada, assignors to Scientific Atlanta, Inc., Atlanta, Ga.

Filed Dec. 2, 1992, Ser. No. 984,461

Int. Cl.[5] H04L *9/18*

U.S. Cl. 380—20 **45 Claims**



36. In a pay television system wherein a plurality N of programmer sites each transmit program data to at least one reception site, and wherein each programmer encrypts the program data transmitted from that site with locally generated program keys, and wherein there is a broadcast key unique to each programmer site and a system key that is the same for all programmer sites, said system key comprising a first number S of bits and each of said broadcast keys comprising a second number B of bits where B is less than S, and wherein the program keys locally generated at each programmer site are encrypted by (a) providing at the programmer site the system key and the broadcast key unique to that programmer site, (b) convolving, in a predetermined manner, the system key and the broadcast key for that programmer site to generate a unique encryption key for that programmer site, and (c) encrypting the program keys at that programmer site with the unique encryption key generated at that programmer site, and wherein each programmer transmits its respective encrypted program keys and encrypted program data to the reception site, and further wherein there is stored, in a memory at the reception site, the system key and each of said broadcast keys, a method for decrypting, at the reception site, the program keys and program data transmitted from a selected one of the programmer sites comprising the steps of:

(a) receiving the encrypted program data and the encrypted program keys transmitted from the selected programmer site;

(b) retrieving from the memory at the reception site the system key and the broadcast key unique to the selected programmer site;

(c) convolving the retrieved system key and retrieved broadcast key in said predetermined manner to reproduce the unique encryption key generated at the selected programmer site;

(d) decrypting the encrypted program keys with the reproduced encryption key; and

(e) decrypting the encrypted program data with the decrypted program keys;

wherein the memory capacity necessary to store the system key and the broadcast keys at the reception site is no greater than ((N×B)+S) bits.

5,341,426

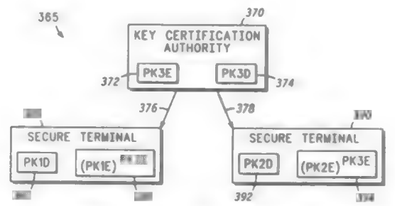
CRYPTOGRAPHIC KEY MANAGEMENT APPARATUS AND METHOD

George M. Barney, Scottsdale; Douglas A. Hardy, and Craig R. Balogh, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 15, 1992, Ser. No. 991,054

Int. Cl.[5] H04L *9/00, 9/30, 9/08, 9/12*

U.S. Cl. 380—21 **20 Claims**



12. An apparatus for providing encrypted communication between first and second terminals, said apparatus comprising:

means for encrypting and decrypting using a plurality of different encryption and decryption algorithms;

means for transmitting messages, said transmitting means coupled to said encrypting and decrypting means;

means for receiving messages, said receiving means coupled to said encrypting and decrypting means; and

controller means coupled to said encrypting and decrypting, transmitting and receiving means, said controller means, transmitting means and receiving means for:

(i) sending a first message to said second terminal, the first message comprising a first plaintext portion providing information identifying encryption and decryption algorithms and communication modes available within said first terminal and comprising a second encrypted portion identifying terminal authentication information;

(ii) sending a second message to said second terminal for providing pseudorandom data; and

(iii) initiating encrypted communication with said second terminal using a traffic key formed from said pseudoramdom data.

5,341,427

ALGORITHM INDEPENDENT CRYPTOGRAPHIC KEY MANAGEMENT APPARATUS

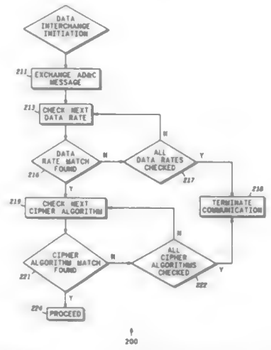
Douglas A. Hardy, Mesa; Leslie K. Lewis, and Barry N. Altschuler, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 954,205, Sep. 30, 1992, Pat. No. 5,230,020, which is a division of Ser. No. 777,870, Oct. 16, 1991, Pat. No. 5,179,591. This application Apr. 23, 1993, Ser. No. 52,438

The portion of the term of this patent subsequent to Jun. 12, 2010, has been disclaimed.

Int. Cl.[5] H04L *9/08*

U.S. Cl. 380—21 **18 Claims**



9. An apparatus for secure communications, comprising:

a plurality of different data ciphering means for encrypting input data to be transmitted and for decrypting received data to provide decrypted output data, some of said plurality of different data ciphering means requiring traffic keys of different lengths;

transceiver means coupled to said plurality of different data ciphering means, said transceiver means for exchanging encrypted data with another secure communication apparatus;

control means coupled to said transceiver means and said plurality of different data ciphering means, said control means for selecting a first of said plurality of different data ciphering means according to a predetermined preference hierarchy, said first of said plurality of different data ciphering means for encrypting and decrypting messages exchanged with said another secure communication apparatus, said control means creating a traffic key by combining data contained in said exchanged messages and selecting a second of said plurality of different data ciphering means for using said traffic key to exchange encrypted data with said another secure communication apparatus.

5,341,428

MULTIPLE CROSS-CHECK DOCUMENT VERIFICATION SYSTEM

Vernon L. Schatz, Lake Bluff, Ill., assignor to GBS Systems Corporation, Arlington Heights, Ill.

Filed Jan. 30, 1992, Ser. No. 828,134

Int. Cl.[5] H04L *9/32, 9/06*

U.S. Cl. 380—23 **13 Claims**

1. A method in which the holder of a document is identified by a personal identifier represented in numerical form and is issued a dam-beating card, comprising the steps of:

recording a personal-identifier-related card derivation number on said data-beating card;

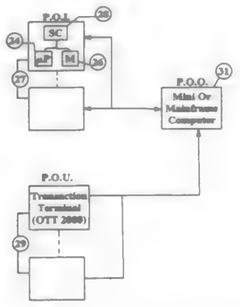
applying a data encryption algorithm to said personal identifier and to a further number together to produce a document derivation number;

VOL 1165 ISS 4 AG 23 1994 UMI

recording said document derivation number on said document, said further number also being recorded on said document;

reading said card derivation number from a data-bearing card presented when said document is being negotiated;

ascertaining a personal identifier from a bearer of said document;



using said personal identifier as ascertained from said bearer, producing a personal-identifier-related card derivation number and comparing the same with said card derivation number read from said data beating card; and

applying a data encryption algorithm to said personal identifier as ascertained from said bearer and to said further number together to produce a document derivation number and comparing the same with said document derivation number recorded on said document.

5,341,429

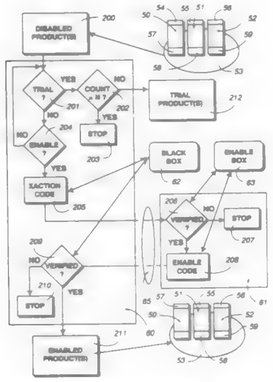
TRANSFORMATION OF EPHEMERAL MATERIAL

John W. Stringer, Santa Cruz, and Theodore S. Richards, Los Gatos, both of Calif., assignors to TestDrive Corporation, Santa Clara, Calif.

Filed Dec. 4, 1992, Ser. No. 986,105

Int. Cl.[5] H04K *1/00*

U.S. Cl. 380—23 **20 Claims**



1. An apparatus for transformation of ephemeral materials, comprising:

a denaturing module for separating a portion of original material from said original material to produce a denatured version of the original material that is functionally identical to the original material, said denatured version including said separated portion and a residual portion of said original material, wherein said separated portion and said residual portion of said original material are physically stored on the same medium.

5,341,430

DEVICE FOR EFFECTING A MODIFICATION IN A STREAM OF TRANSMISSION CELLS

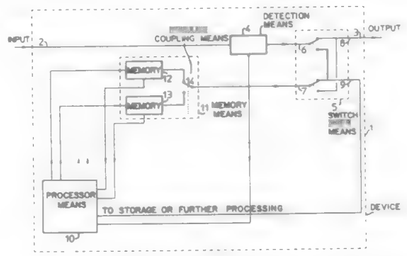
Ari N. Aulia, Delft, and Jan C. Groenendijk, Oegstgeest, both of Netherlands, assignors to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed Feb. 22, 1993, Ser. No. 20,988

Claims priority, application Netherlands, Mar. 3, 1992, 9200291

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—49 **5 Claims**



1. Device for effecting a modification in a stream of transmission blocks provided with

detection means for detecting a transmission block to be modified and for generating a detection signal,

memory means for generating, in response to the detection signal, the modification to be applied,

combining means for combining the unmodified stream of transmission blocks and the modification to be applied, provided with a first input for receiving the stream of unmodified transmission blocks, with a second input for receiving the modification to be applied and with an output for generating a modified stream of transmission blocks, and

delay means for effecting a delay in said unmodified stream of transmission blocks

characterized in that the detection means comprises the delay means and in that the combining means comprises switch-over means for coupling one of said inputs of said combining means through to the output thereof, as a function of the detection signal, the combining means being bufferless.

5,341,431

AM STEREO DETECTION AND AUDIO PROCESSING APPARATUS

Detlef Griessman; Gregory J. Manlove, both of Kokomo; Thomas G. Block, Carmel, and Gordon P. Howlett, Greentown, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Oct. 1, 1992, Ser. No. 954,721

Int. Cl.[5] H04H *5/00*

U.S. Cl. 381—15 **5 Claims**

1. A synchronous AM detector and processor comprising:

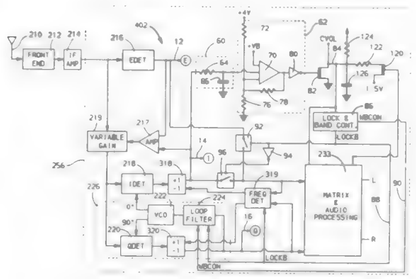
an audio processor having a first filter operation controlled by a control voltage;

an AM stereo decoder including a lock detector and a phase locked loop having a second filter operation controlled by the control voltage;

a single control node coupled to the audio processor and the phase locked loop, the control node providing the control voltage for the audio processor and the phase locked loop;

the voltage at the control node biased normally in a first state, capable of being pulled into a second state by the audio processing circuit and capable of being pulled to the second state by the lock detector;

means for decaying, with a settle time, the control voltage at the control node after the control voltage has been pulled to the second state;



means for controlling the first filter operation of the audio processing circuitry responsive to the control voltage at the control node;

means for controlling the second filter operation of the phase locked loop in response to the control voltage level, wherein the voltage level at the control node is characterized by a fast attack and slow decay.

5,341,432

APPARATUS AND METHOD FOR PERFORMING SPEECH RATE MODIFICATION AND IMPROVED FIDELITY

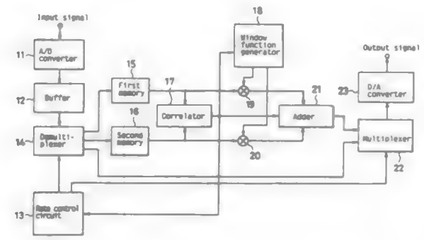
Ryoji Suzuki, Nara, and Masayuki Misaki, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 593,209, Oct. 4, 1990, abandoned. This application Dec. 16, 1992, Ser. No. 993,526

Claims priority, application Japan, Oct. 6, 1989, 1-262391; Jan. 24, 1990, 2-13857; Aug. 23, 1990, 2-223167

Int. Cl.[5] G10L *3/02*

U.S. Cl. 381—34 **25 Claims**



1. Method for modifying speech rate and changing a speech reproduction time interval by 1.0 times or more comprising the following steps:

deriving a correlation function in a range being shorter than a time length T with respect to a positive direction in which said second signal is moved to a direction with respect to said first signal and a negative direction in which said second signal is moved to an inverse direction of said direction with respect to said first signal from a reference time point at which a starting point of said first signal is in coincidence with a starting point of said second signal, in said first signal of the time length T and said second signal of the time length T, and deriving a time point T_c at which a value of said correlation function becomes a maximum value,

displacing said first signal with respect to said second signal at a time point at which the correlation function takes a largest value within a time-length of one unitary segment of speech to be analyzed,

multiplying said first signal by a first window function whose amplitude determined on the basis of a time point at which a value of the correlation function is maximum increases gradually to obtain a windowed first signal,

multiplying said second signal by a second window function whose amplitude determined on the basis of a time point at which a value of the correlation function is maximum decreases gradually to obtain a windowed second signal,

adding said first signal multiplied by said first window function and said second signal multiplied by said second window function to each other and outputting them,

issuing a third signal of a time-length of $\{T/(\alpha-1)\}$ time-units subsequent to the first signal wherein α is a time-scale modification ratio defined as output time duration-/input time duration,

setting a starting point for said first signal at a next process to be a point at which the starting point of said first signal is delayed by a time interval of $\{T/(\alpha-1)\}$ time-units, and

repeating all the above-mentioned steps.

5,341,433

HEARING AID DEVICE

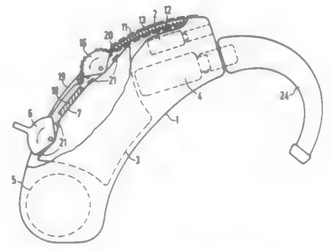
Wolfram Meyer, Moehrendorf, and Joseph Sauer, Strullendorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 10, 1992, Ser. No. 988,973

Claims priority, application European Pat. Off., Dec. 17, 1991, 91121598.6

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—69 **18 Claims**



1. In a hearing aid device having a housing containing electrical components, which are selected from a microphone, an amplifier, an earphone, a current source, an on/off switch, a control element, the improvements comprising sensor means being sensitive selectively to one of pressure alone and pressure and position, said sensor means being constructed as a film reactive to variable pressures and composed of laminated polymer layers, wherein one layer is connected with interdigitalizing electrodes and the appertaining other layer is coated with a semiconductor material, said sensor means being arranged on a structure element including an outside surface of the housing, the housing, and a structural element disposed within the housing, said sensor means being utilized as switches and regulators.

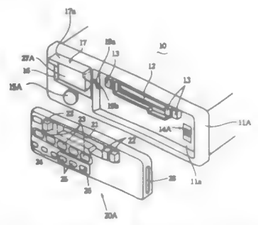
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,434

CAR STEREO HAVING A DETACHABLE GRILLE

Masashi Kawamoto, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 25, 1993, Ser. No. 36,728
Claims priority, application Japan, Apr. 16, 1992, 4-122571
Int. Cl.[5] H04B 1/00
U.S. Cl. 381—86 3 Claims



1. A car stereo having a detachable grille attached to a body of the car stereo, the grille having operating switches for selecting operating modes of the car stereo, comprising:

a display provided on the car stereo body for display the operating modes;

a cover provided on the car stereo body for convering the display; and

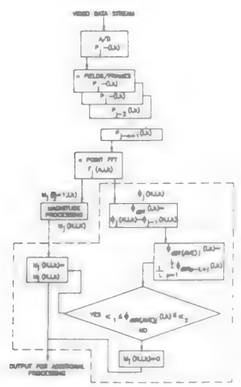
actuating means for moving the cover to a projected position so as to cover the display in response to movement of the grille in a detaching direction and for moving the cover to a retracted position so as to expose the display in response to movement of the grille in a attaching direction to the car stereo body.

5,341,435

SYSTEM FOR DETECTION AND RECOGNITION OF AN OBJECT BY VIDEO IMAGING MEANS

Kenneth A. Corbett, Huntsville, and David R. Anderson, Arab, both of Ala., assignors to Corbett Technology Company, Inc., Huntsville, Ala.

Filed Mar. 17, 1992, Ser. No. 854,471
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—1 7 Claims



1. A system for detection and identification of a helicopter, said helicopter including a rotor having a characteristic signature including modulated electromagnetic signals containing phase and magnitude information, said system for detection and identification of said helicopter comprising:

detection means including video imaging means for detecting and acquiring said helicopter said detection means disposed for generation of video output signals containing said phase and magnitude information;

temporal filtering means for receiving and temporally filtering said video output signals generated by said detection means; and

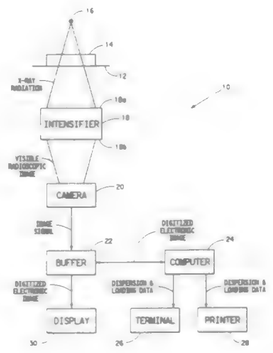
identification means for receiving said temporally filtered video output signals and for comparing said temporally filtered signals with reference signals for identifying said helicopter.

5,341,436

NONDESTRUCTIVE ANALYSIS OF DISPERSION AND LOADING OF REINFORCING MATERIAL IN A COMPOSITE MATERIAL

David M. Scott, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 606,799, Oct. 31, 1990, abandoned.
This application Nov. 6, 1992, Ser. No. 973,196
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—1 10 Claims



1. An apparatus for determining the mechanical strength of a composite material, the composite material including a reinforcing material and a matrix, the composite material having an average linear attenuation coefficient and the reinforcing material and the matrix each having a linear attenuation coefficient, comprising:

(a) means for producing a visible, radioscopic image of a sample of the composite material including a sample holder for holding the sample;

(b) image recording means for recording the radioscopic image of the sample and for generating an image signal from the radioscopic image;

(c) buffer means for receiving the image signal and for producing a digitized electronic image from the image signal; and

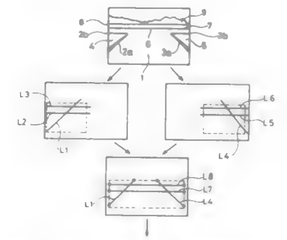
(d) computer means for analyzing the digitized electronic image to determine the average linear attenuation coefficient of the composite material, for calculating the volume fraction loading of the reinforcing material in the composite material from the linear attenuation coefficients of the reinforcing material and the matrix, respectively, and the average linear attenuation coefficient of the composite material, and for comparing the calculated volume fraction loading to a predetermined value in order to determine the mechanical strength of the composite material.

5,341,437

METHOD OF DETERMINING THE CONFIGURATION OF A PATH FOR MOTOR VEHICLE

Shigeto Nakayama, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 631,910, Dec. 21, 1990, abandoned.
This application Feb. 9, 1993, Ser. No. 16,656
Claims priority, application Japan, Dec. 22, 1989, 1-334127
Int. Cl.[5] G06K 9/00, 9/54; G06F 7/70; H04N 7/00
U.S. Cl. 382—1 12 Claims



1. A method of determining the configuration of a path for motor vehicles on roadways in which extraneous clutter and noise is relatively minimal, comprising the steps of:

extracting straight lines from a group of straight lines which have been redetermined from original image data of the path based on an array of feature points included in said original image data, wherein the extracted straight lines determine boundaries of the path;

dividing the extracted straight lines into a plurality of line segments, each of said line segments being defined by points of intersection between the straight lines; and

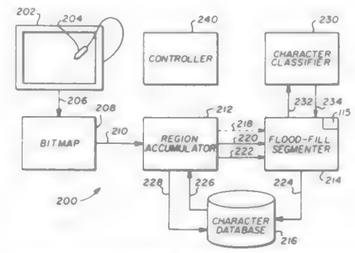
comparing said line segments with the feature points of said original image data to determine whether the line segments correspond to the boundaries of the path.

5,341,438

METHOD AND APPARATUS FOR SEGMENTING AND CLASSIFYING UNCONSTRAINED HANDWRITTEN CHARACTERS

Daniel Clifford, Stanford, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1992, Ser. No. 918,299
Int. Cl.[5] G06K 9/34
U.S. Cl. 382—9 11 Claims



1. A method for recognizing an object contained within an image, the method comprising the steps of;

generating an electronic bitmap, comprising a plurality of pixels, representative of said image;

identifying a group of said pixels, each having a grey-level value associated therewith, associated with said object;

enclosing a region of said bitmap including said group of pixels within an invalid region, wherein said enclosing step comprises the step of determining an optimum portion of said bitmap needed to segment said object, wherein said determining step comprises the step of ascertaining whether said object overlaps a second object in said image;

processing said invalid region to thereby segment said object; and

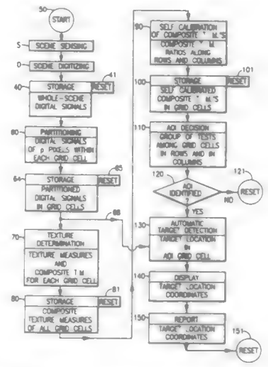
thereafter classifying said segmented object.

5,341,439

SYSTEM FOR TEXTURE-BASED AUTOMATIC DETECTION OF MAN-MADE OBJECTS IN REPRESENTATIONS OF SENSED NATURAL ENVIRONMENTAL SCENES

Shin-Yi Hsu, 2312 Hemlock La., Vestal, N.Y. 13850

Continuation-in-part of Ser. No. 729,139, Apr. 6, 1992, Pat. No. 5,274,715, which is a continuation-in-part of Ser. No. 410,218, Sep. 21, 1989, abandoned. This application Aug. 21, 1992, Ser. No. 934,094
Int. Cl.[5] G06K 9/52, 9/54
U.S. Cl. 382—28 23 Claims



1. A method for texture-based automatic detection of targets comprising the steps of:

sensing a natural environment scene;

digitizing the sensed scene into a first plurality of spatially coordinated picture elements (pixels) with associated digital signals;

storing the spatially coordinated digital signals;

partitioning the first plurality of spatially coordinated pixels into a second plurality of spatially overlapping groups of pixels arranged spatially sequentially in orthogonal rows and columns with an identical fraction of pixels of the first plurality of pixels in each group of pixels, said spatially sequentially arranged groups having a sequential arrangement extending along successive straight paths across the scene;

storing the digital signals associated with the partitioned groups of pixels;

determining simultaneously a plurality of texture measure values and a composite texture measure value from the digital signals associated with each partitioned spatially coordinated group of pixels;

storing the spatially coordinated composite texture measure values of the groups of pixels; and

identifying said target in the scene from said texture measure values, and wherein said identifying step includes the steps of:

self calibrating the composite texture measure values of the stored spatially coordinated groups of pixels along both the rows and the columns;

storing the spatially coordinated self-calibrated composite texture measure values;

VOL 1165 ISS 4 AG 23 1994 UMI

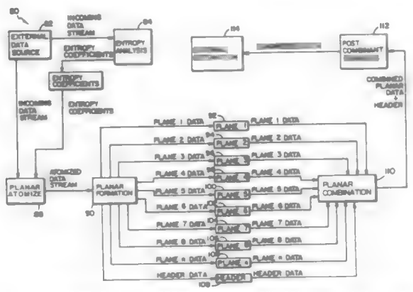
deciding the identity of an area or areas of interest (AOI) as the spatially coordinated group or groups of pixels most likely to contain a target;
routing the AOI identity decision obtained in said deciding step;
detecting automatically the presence of a target within the AOI or AOIs;
displaying the spatial location coordinates of the target within the AOI or AOIs;
reporting the spatial location coordinates of the target or targets; and
resetting the automatic detection system for acceptance of a subsequent representation of a sensed scene.

5,341,440

METHOD AND APPARATUS FOR INCREASING INFORMATION COMPRESSIBILITY

Joseph G. Earl, 5100 Covington St., Greenwood, Minn. 55331, and Michael D. Moffitt, 5570 Covingting Rd., Shorewood, Minn. 55331

Filed Jul. 12, 1991, Ser. No. 730,268
Int. Cl.[5] H04N *1/41*
U.S. Cl. 382—56 **23 Claims**



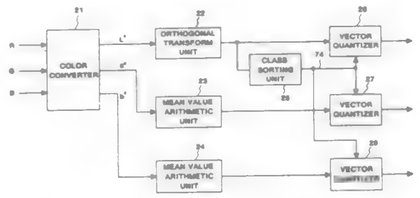
1. An apparatus for compressing information, comprising:
means for receiving information from an information source and providing a stream of unprocessed information;
planar atomize means for reducing the stream of unprocessed information into an atomized data stream comprising component elements of the unprocessed information;
means for calculating entropy of arrangements of the stream of unprocessed information and providing coefficients to the planar atomize means wherein the planar atomize means creates the atomized data stream such that the atomized data stream has a greater number of recurring patterns than the stream of unprocessed information;
planar formation means for arranging component elements of the atomized data stream of unprocessed information into a plurality of data planes;
planar combination means for converting the plurality of data planes into a combined planar data stream having a length;
data compression means for receiving the combined planar data stream, reducing the length of the combined planar data stream, and providing a compressed information stream; and
means for receiving the compressed information stream.

5,341,441

METHOD AND APPARATUS FOR CODING IMAGE INFORMATION, AND METHOD OF CREATING CODE BOOKS

Mitsuru Maeda, Yokohama, and Tadashi Yoshida, Ichikawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 489,247, Mar. 5, 1990, abandoned. This application Jan. 11, 1993, Ser. No. 3,874
Claims priority, application Japan, Mar. 10, 1989, 1-56321; Mar. 13, 1989, 1-57906; Apr. 3, 1989, 1-81505
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **14 Claims**



1. An image processing apparatus comprising:
generating means for generating luminance information and chrominance information representing an image;
first dividing means for dividing the luminance information and the chrominance information into a plurality of luminance blocks and a plurality of chrominance blocks, respectively, wherein the luminance blocks have luminance information corresponding to a plurality of pixels and the chrominance blocks have chrominance information corresponding to a plurality of pixels;
second dividing means for dividing each of said chrominance blocks into a plurality of sub-blocks;
reducing means for reducing the amount of the chrominance information by extracting a representative chrominance value of each of said sub-blocks;
detecting means for detecting a feature of the image in accordance with the luminance information generated by said generating means and outputting a detection signal representing the feature of the image; and
encoding means for encoding the representative chrominance value of each of said sub-blocks based on the feature of the image represented by the detection signal.

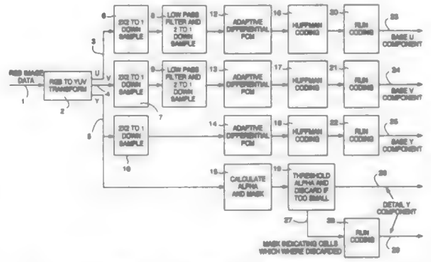
5,341,442

METHOD AND APPARATUS FOR COMPRESSION DATA BY GENERATING BASE IMAGE DATA FROM LUMINANCE AND CHROMINANCE COMPONENTS AND DETAIL IMAGE DATA FROM LUMINANCE COMPONENT

Peter T. Barrett, Palo Alto, Calif., assignor to SuperMac Technology, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 823,156, Jan. 21, 1992, abandoned. This application Aug. 24, 1993, Ser. No. 111,268
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—56 **6 Claims**

1. A method of compressing display data for YUV color image data representing an original image including a Y component, a U component and a V component, the method comprising the steps of:
(a) generating a base image data containing low frequency image information wherein the base image data is a function of the Y component, the U component and the V component; and
(b) generating a detail image data containing high frequency image information wherein the detail image data is a function of the Y component alone, whereby the base image data can be decompressed to form a decompressed base image data that is an approximate facsimile of the original image and the detail image data can be decompressed and selectively added to said decompressed base image data to form a facsimile which more accurately duplicates the original image than the decompressed base image data alone, wherein step (b) comprises the steps of:



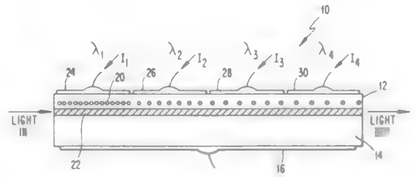
a) determining an average of Y component signals of a c×d sub-array of pixels;
b) determining an approximate variance of Y component signals of the c×d sub-array of pixels; and
c) forming a c×d bit mask wherein each bit in the mask indicates whether the corresponding pixel is greater than or less than the mean.

5,341,443

TUNABLE OPTICAL FILTER

Jean-Pierre Weber, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 14, 1992, Ser. No. 929,448
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—2 **24 Claims**



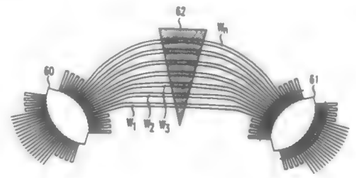
1. A tunable optical filter, comprising:
a first semiconductor substrate having a first electrode means provided on a first surface thereof;
a waveguide means formed in and laterally defined within the surface of said substrate for carrying light waves;
a plurality of tunable reflection grating means provided on a second surface of said semiconductor substrate on top of said waveguide, wherein said reflection grating blocks incoming lightwaves when said grating is untuned;
an insulating substrate means provided on both sides of said waveguide; and
a plurality of electrode means, wherein each of said tunable reflection gratings has an electrode for varying an effective index of refraction of a section of said waveguide below said grating.

5,341,444

POLARIZATION COMPENSATED INTEGRATED OPTICAL FILTERS AND MULTIPLEXERS

Charles H. Henry, Skillman, N.J.; Michele A. Milbrodt, Macungie, Pa., and Henry H. Yaffe, Fanwood, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 19, 1993, Ser. No. 35,143
Int. Cl.[5] G02B *6/12, 6/10;* **H04J** *14/00*
U.S. Cl. 385—11 **11 Claims**



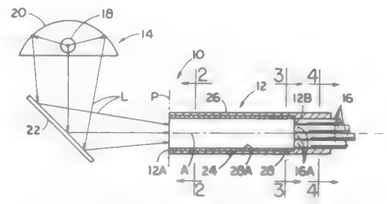
1. In an optical waveguide device of the type comprising a substrate, a cladding layer disposed on said substrate, an elongated waveguide core having a refractive index higher than the indices of surrounding cladding material for transmitting light, and a top cladding disposed upon said core, said waveguide device characterized by the capacity to transmit light in a plurality of optical modes having different states of polarization and exhibiting different effective indices of refraction for said different states of polarization, the improvement comprising a patch of material for providing polarization independent spectral response disposed within said cladding layer spaced from said core but sufficiently close to said core to couple with transmitted optical modes, said patch having an index of refraction higher than that of said core, a width exceeding that of the core, a thickness in the range 100–500 angstroms and a length less than that of the waveguide.

5,341,445

POLYGONAL-SHAPED OPTICAL COUPLING MEMBER FOR USE WITH A HIGH BRIGHTNESS LIGHT SOURCE

John M. Davenport, Lyndhurst, and Richard L. Hansler, Pepper Pike, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 27, 1992, Ser. No. 859,179
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—39 **32 Claims**

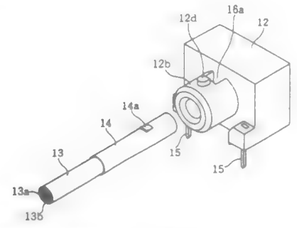


1. An optical coupling member for use in coupling non-coherent light from a source of light to a plurality of optical light conductors, said coupling member comprising:
(a) an elongated light transmissive body having a central longitudinal axis and being disposable between the light source and leading ends of the plurality of optical light conductors;
(b) said elongated body also having a cross-sectional shape selected only from a group of different polygonal shapes for providing improved uniformity of light intensity distribution and mixing of light color of such non-coherent light; and,
(c) wherein said group of different polygonal shapes in-

VOL 1165 ISS 4 AG 23 1994 UMI

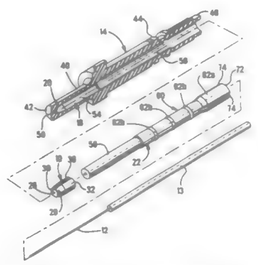
cludes rectangular, square, triangular and hexagonal shapes.

5,341,446
OPTICAL CONNECTOR
Saeji Shibata, Tokyo, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed Aug. 2, 1993, Ser. No. 100,267
Claims priority, application Japan, Aug. 25, 1992, 4-248627
Int. Cl.[5] G02B *6/36*
U.S. Cl.,385—78 4 Claims



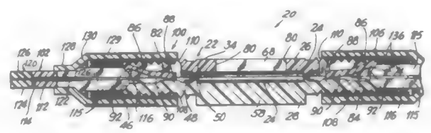
1. An optical connector comprising:
a sleeve fitted onto a terminal of an optical cable;
a disengagement preventing claw formed on said sleeve by cutting and raising a peripheral wall of said sleeve outwardly;
a connector housing including a cable receiving port into which said sleeve is inserted, said disengagement preventing claw being resiliently restored into a recess which is open to an inner surface of said cable receiving port, so that a foremost end of said disengagement preventing claw is brought into engagement with an inner surface of said recess; and
wherein said recess is constructed by a through-hole which is open outwardly, and said through-hole serves as a means for disengaging said disengagement preventing claw.

5,341,447
INSERT FOR POSITIONING AN OPTICAL FIBER AND AN OPTICAL FIBER CONNECTOR FOR USE THEREWITH
Bryan T. Edwards, Camp Hill; David D. Erdman, Hummelstown; Kevin T. Monroe, and David L. Stakem, both of Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Mar. 8, 1993, Ser. No. 27,980
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—81 14 Claims



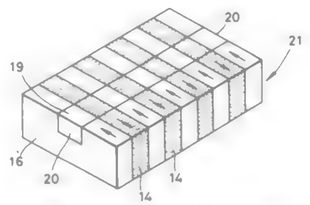
1. An insert for securing an optical fiber within a housing when the insert is compacted within a passage of the housing between a constriction of the passage and a plunger movable within the passage, the insert comprising:
an elastic body having an aperture therethrough and a relief region wherein said relief region provides controlled expansionary forces of the elastic body when the elastic body is compacted within a constriction of the passage.

5,341,448
OPTICAL FIBER SPLICE
Laszlo Huebscher, New Brunswick, N.J., assignor to Advanced Custom Applications, Inc., Belle Mead, N.J.
Filed Jul. 30, 1992, Ser. No. 922,848
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—97 16 Claims



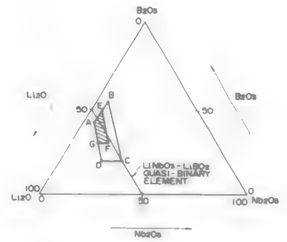
1. An optical fiber splice for splicing the free end of a first optical fiber to the free end of a second optical fiber, each of said optical fibers being of a predetermined diameter, said optical fiber splice comprising housing means, a capillary tube disposed within said housing means for receiving said free end of a first optical fiber and said free end of a second optical fiber, said capillary tube comprising an elongated non-deformable member; and releasable holding means for releasably selectively holding at least one optical fiber fixedly in position within said housing means; said releasable holding means applying a holding pressure to said first optical fiber and second optical fiber away from said capillary tube.

5,341,449
WAVELENGTH CONVERTING DEVICE AND ITS METHOD FOR MANUFACTURING
Kiyofumi Chikuma, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jan. 28, 1993, Ser. No. 10,191
Claims priority, application Japan, Feb. 21, 1992, 4-35302
Int. Cl.[5] G02F *1/37*
U.S. Cl. 385—122 8 Claims



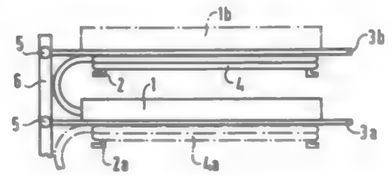
1. A wavelength converting device comprising:
a waveguide for generating a second harmonic of an incident laser beam, said waveguide being formed in a main surface of a substrate made of a nonlinear optical crystal, said substrate having polarization whose direction lies in said main surface, wherein said waveguide includes a plurality of polarization inverting layers in which polarization is perpendicular to a waveguide direction of the waveguide and periodically inverted to the polarization of said substrate along the waveguide direction.

5,341,450
LINBO3 THIN FILM OPTICAL WAVEGUIDE DEVICE AND PROCESS FOR PRODUCING THE SAME
Atsuo Yamada, Kanagawa; Hitoshi Tamada, Tokyo, and Masaki Saitoh, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 31, 1992, Ser. No. 861,135
Claims priority, application Japan, Mar. 27, 1991, 3-063469; Mar. 28, 1991, 3-064674; Feb. 10, 1992, 3-023980
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—130 5 Claims



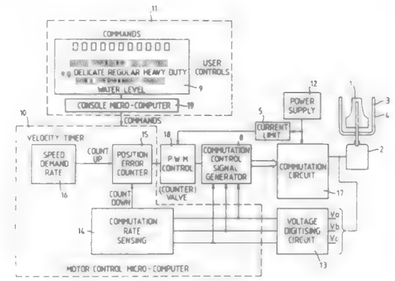
1. An $LiNbO_3$ thin film optical waveguide device which comprises an MgO-doped $LiNbO_3$ substrate and a waveguide of thin film epitaxially grown on said substrate from $LiNbO_3$ which is free from impurity atoms and which acts as an optical absorption center.

5,341,451
ARRANGEMENT FOR DEPOSITING SPLICING CASSETTES FOR LIGHT WAVEGUIDES WITHIN A CABLE SLEEVE
Frank-Helge Latte, Geltendorf; Franz-Fr. Froehlich, Hagen; Georg Boscher, Hagen, and Martin Behrendt, Hagen, all of Fed. Rep. of Germany, assignors to RXS Schrumpftechnik-Garnituren GmbH, Hagen, Fed. Rep. of Germany
Filed Jul. 12, 1993, Ser. No. 89,557
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1992, 4223675
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—135 3 Claims



1. In an arrangement comprising depositing splicing cassettes and light waveguides within a cable sleeve, wherein a receptacle for excess length of the light waveguide leads is provided for every splicing cassette, the improvements comprising each splicing cassette and its receptacle for excess length of the light waveguide leads being arranged on a common carrier plate, the carrier plate having a U-shaped cross sectional configuration formed of a pair of legs, said legs being mounted on one side by hinges to allow opening of the legs to gain access to the interior thereof, the splicing cassette being mounted on the interior of one of the pair of legs and the receptacle being provided on the other leg, and fixing means for detachably holding each of the carrier plates so that every carrier plate can be individually moved from the fixing means with the remaining carrier plates remaining in their desired positions therein.

5,341,452
ELECTRONIC CONTROLS FOR ELECTRIC MOTORS, LAUNDRY MACHINES INCLUDING SUCH CONTROLS AND MOTORS AND/OR METHODS OF OPERATING SAID CONTROLS
David J. Ensor, Auckland, New Zealand, assignor to Fisher & Paykel Limited, Auckland, New Zealand
Filed Dec. 19, 1991, Ser. No. 810,385
Claims priority, application New Zealand, Dec. 19, 1990, [illegible]
Int. Cl.[5] H02P *5/17*
U.S. Cl. 388—811 13 Claims



1. A method of electronically cyclically controlling the supply of power to an electric motor having a rotor and a stator using control means to control the supply of power to said motor, said method including the steps of performing cycles of accelerating said rotor to a plateau speed and bringing said rotor to rest by
a. in each cycle setting a desired speed and direction of rotation and a desired acceleration time for the motor from rest to said desired speed;
b. setting an initial series of incremental steps, each successive step corresponding to an increase in the level of power supplied to said motor over the level of power supply reached in the previous step, said steps being initially estimated to be sufficient to enable sufficient energy to be supplied to said motor to reach said desired speed in said acceleration time;
c. supplying power to said motor in said incremental steps and determining the speed attained after said acceleration time has elapsed, the speed being determined by rotational inertia of said rotor and any load connected thereto;
d. switching off the power supply to said motor and allowing said motor to come to rest;
e. repeating steps (b) to (d) as desired in the same or a reverse direction with the energy supplied adjusted by adjusting the number and/or size of said incremental steps.

5,341,453
APPARATUS AND METHODS FOR REALISTIC CONTROL OF DC HOBBY MOTORS AND LAMPS
Norman M. Hill, 17417 28th Ave. SE., Bothell, Wash. 98012
Filed Jun. 25, 1991, Ser. No. 720,231
Int. Cl.[5] H02P *5/00*
U.S. Cl. 388—815 22 Claims

1. A controller apparatus for a DC motor of a model locomotive, comprising:
a. means for generating a DC power signal, where the DC power signal energizes the DC motor to move the locomotive;
b. means for determining a speed of the locomotive by mea-

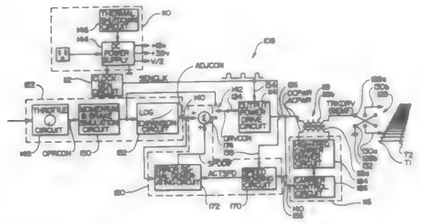
VOL 1165 ISS 4 AG 23 1994 UMI

suring a back EMF signal generated by the DC motor; and

c. means for correcting the DC power signal based on the speed of the locomotive; and

d. means for setting a desired speed signal based on a desired speed of the locomotive; wherein

the speed determining means generates an actual speed signal indicative of the actual speed of the locomotive; and



the correcting means (i) generates a difference signal corresponding to a difference between the actual speed signal and the desired speed signal, and (ii) adds the difference signal to the desired speed signal to generate a drive control signal, where the DC power signal generating means generates the DC power signal based on the drive control signal.

5,341,454

DC MOTOR CONTROL IN ELECTRONIC SEWING MACHINE

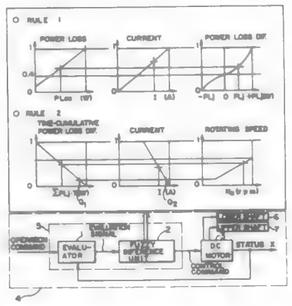
Akira Orii, Hachioji, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 538,217, Jun. 14, 1990, abandoned. This application May 19, 1992, Ser. No. 942,681

Claims priority, application Japan, Jun. 16, 1989, 1-52223

Int. Cl.[5] **H02P** *5/168*

U.S. Cl. 388—815 **2 Claims**



1. In an electronic sewing machine having upper and lower shafts to be rotated by a DC motor, a DC motor control system comprising:

means (VR1) operated to drive the DC motor at a desired rotation speed;

means (10) for feeding back a rotation speed of the DC motor;

means (R2, R3, C2) for feeding back a voltage value applied to the DC motor;

means for calculating a current value (I) from the rotation speed of the DC motor and the voltage value applied to the DC motor;

means for calculating a power loss (PLos) incurred in the DC motor from the current value (I); and

fuzzy inferring means storing predetermined fuzzy rules so formulated as to evaluate a power loss difference (PLj) between the power loss (PLos) and a rated power loss of the DC motor based on the current value (I) and the power loss (PLos) and further to evaluate deceleration of rotation speed of the DC motor based on the current value (I) and a time-cumulative value (ΣPLj·T) of the evaluated power loss difference (PLj), so that a voltage to be applied to the DC motor is controlled to a lower value so that the DC motor is running at the decelerated rotation speed.

5,341,455

OIL RADIATOR WITH WELDED PLATE RADIATING ELEMENTS HAVING FOLDED PORTIONS PROVIDING COOL PLANAR LATERAL OUTER SURFACES FOR PREVENTING INJURIES

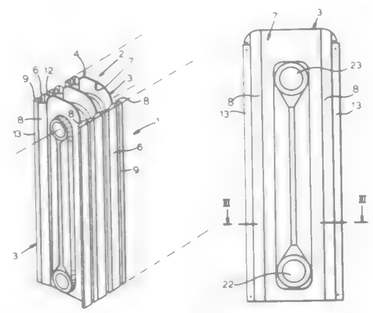
Giuseppe DE' Longhi, Treviso, Italy, assignor to Miralfin S.R.L., Treviso, Italy

Filed May 18, 1992, Ser. No. 885,127

Claims priority, application Italy, Feb. 18, 1992, MI92U000138[U]

Int. Cl.[5] **H05B** *1/00*; **F28D** *1/03*; **F28F** *3/12*; **F24H** *3/00*

U.S. Cl. 392—378 **1 Claim**



1. An oil radiator for heating a room including:

a plurality of radiating elements connected to one another in succession along a longitudinal axis and having mutually parallel symmetry planes extending perpendicular to said axis, each of said radiating elements being formed with by a respective pair of mutually symmetrical plates disposed on opposite sides of a respective one of said symmetry planes, each of said plates of a respective one of said pairs being formed with:

a respective generally part lying substantially in the respective symmetry plane, welded to the flat part of the other plate of the pair and defining inwardly of the flat part a space within which an oil heating medium is disposed, said flat parts having vertical outer ends, and

a respective flap on a respective one of said outer ends and inclined to said plane of symmetry and having a first length, each of said flaps being formed with a respective remote end spaced from a respective one of said outer ends, said flat parts of said pair of plates lying against one another, said flaps of said pair of plates flaring away from one another and symmetrically to the respective symmetry plane,

a respective intermediary flap extending from a respective one of said distant ends parallel to one of said planes of symmetry and formed with a respective outer end said intermediary flap being formed with a second length less than said first length,

a respective flap tab on a respective one of said outer ends and formed with a respective third length less than said

first length but greater than said second length, said flap tab extending from a respective one of said outer ends toward one of said planes of symmetry, said flap tabs of said plates extending perpendicular to said symmetry planes in opposite directions and forming opposite planar vertical outer surfaces of said radiating elements, said flap tabs being folds formed subsequent to welding of said plates of said radiating elements together and forming respective continuous side walls of the oil radiator perpendicular to said symmetry planes, and

a respective end flap formed on a respective one of said flap tabs and extending parallel to said one plane of symmetry toward said heat exchanger, said end flaps, folds, intermediary flaps and tabs of each pair forming an airflow region preventing said side walls from heating up to a temperature equal to a temperature of the heating element.

5,341,456

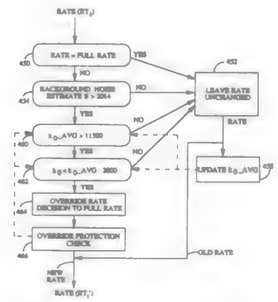
METHOD FOR DETERMINING SPEECH ENCODING RATE IN A VARIABLE RATE VOCODER

Andrew P. DeJaco, San Diego, Calif., assignor to QUALCOMM Incorporated, San Diego, Calif.

Filed Dec. 2, 1992, Ser. No. 984,602

Int. Cl.[5] **G10L** *9/00*

U.S. Cl. 395—2.23 **12 Claims**



1. In a variable rate vocoder a method for determining a higher encoding rate of a set of encoding rates for unvoiced speech comprising the steps of:

generating a variable rate encoding rate indication based upon a first characteristic of an audio signal;

determining a second characteristic of said audio signal;

comparing said second characteristic against an unvoiced speech threshold;

determining from said comparison if said audio signal is representative of unvoiced speech; and

modifying said variable rate encoding rate indication when said second characteristic of said audio signal is representative of unvoiced speech to provide a modified encoding rate indication corresponding to a higher encoding rate of said set of encoding rates.

5,341,457

PERCEPTUAL CODING OF AUDIO SIGNALS

Joseph L. Hall, II, Basking Ridge, and James D. Johnston, Warren, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 962,151, Oct. 16, 1992, abandoned, which is a continuation of Ser. No. 844,967, Feb. 28, 1992, abandoned, which is a continuation of Ser. No. 292,598, Dec. 30, 1988, abandoned. This application Aug. 20, 1993, Ser. No. 109,867

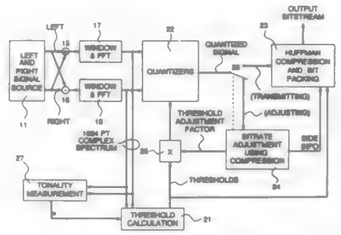
Int. Cl.[5] **G10L** *7/00, 3/02*

U.S. Cl. 395—2.35 **17 Claims**

1. A method of processing an ordered time sequence of audio signals partitioned into a set of ordered blocks, each said block having a discrete frequency spectrum comprising a first set of frequency coefficients, the method comprising, for each of said blocks, the steps of:

(a) grouping said first set of frequency coefficients into at least one group, each group comprising at least one frequency coefficient;

(b) generating at least one tonality value, each group having



an associated tonality value, said at least one tonality value reflecting the degree to which said time sequence of audio signals comprises tone-like quality;

(c) generating at least one noise masking threshold, each said at least one noise masking threshold being based upon at least a portion of said at least one tonality value; and

(d) quantizing at least one frequency coefficient in said at least one group, said quantizing based upon said at least one noise masking threshold.

5,341,458

METHOD OF AND SYSTEM FOR GENERATING TEACHING DATA FOR ROBOTS

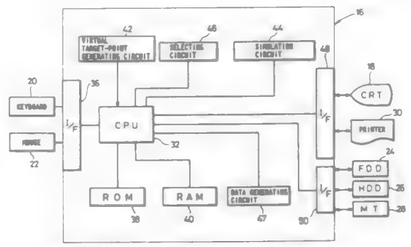
Masakatsu Kaneko; Hidetaka Nosse, and Katsumi Takeishi, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,983

Claims priority, application Japan, Sep. 11, 1991, 3-232028; Sep. 12, 1991, 3-233260

Int. Cl.[5] **G06F** *15/46*; **G05B** *17/00*

U.S. Cl. 395—80 **4 Claims**



3. An off-line system for generating teaching data for a robot in which operations of the robot are simulated prior to supplying the teaching data to a robot controller, comprising:

storing means for storing positional data of a proposed target point where a tool center point of the robot is desired to be positioned, work environment data including shape data of at least one of the robot, a peripheral device, a jig and a workpiece and operating performance data including data indicative of at least one of a number of arms of the robot, lengths of said arms, and acceleration and deceleration performance;

setting means for setting a plurality of trial points in a vicinity of said proposed target point where said tool center point of the robot is desired to be positioned and storing

VOL 1165 ISS 4 AG 23 1994 UMI

position data of said trial points together with said proposed target point in said storing means;

simulating means for determining by computation, based on said work environment data and said operating performance data, whether or not said tool center point of the robot can be successfully moved to said proposed target point and each of said trial points;

selecting means for evaluating a result of the computation by said simulating means in accordance with a predetermined evaluation standard and selecting an optimum point from said proposed target point and said trial points, said evaluation standard including at least one of the following criteria (a) whether a tool can reach said proposed target point or said trial points, (b) whether said tool encounters interference in moving to said proposed target point or said trial points, (c) minimizing an amount of displacement of said tool center point in moving to said proposed target point or said trial points, and (d) maintaining said tool center point in a positive coordinate position relative to said proposed target point; and

teaching data generating means for replacing said proposed target point with the optimum point, wherein the optimum point is supplied as the teaching data to the robot controller.

5,341,459

GENERALIZED COMPLIANT MOTION PRIMITIVE

Paul G. Backes, La Crescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 699,299, May 9, 1991, Pat. No. 5,231,693. This application Aug. 9, 1991, Ser. No. 744,118

Int. Cl.[5] G06F *15/00*; G05B *19/24*

U.S. Cl. 395—95 **1 Claim**

1. A method of operating a telerobot, comprising the steps of:

transferring a set of input parameters from a local control site to a remote execution site including a telerobot, said input parameters specifying desired telerobot trajectory behavior in Cartesian space including behavior based on remote and local site sensor information and desired termination conditions;

retrieving a general motion primitive at the remote site for autonomous, remote site closed loop control of the telerobot to perform a compliant motion task in response to the set of input parameters and to remote and local sensor data;

autonomously generating trajectory motion input at the remote site with the general motion primitive in response to said input parameters specifying desired telerobot trajectory behavior, said trajectory motion input being held constant during an ending motion time segment at a value related to its final value during a nominal motion time segment occurring before the ending motion time segment;

autonomously generating sensor specific remote sensor motion input at the remote site with the general motion primitive for each of a plurality of remote sensors with regard to a coordinate frame specific to that remote sensor in response to a combination of said input parameters related to each of said remote sensors specifying desired telerobot behavior based on remote site sensor information and sensor data originating at the remote site related to each of said remote sensors;

autonomously generating sensor specific local sensor motion input at the remote site with the general motion primitive for each of a plurality of local sensors with regard to a coordinate frame specific to that local sensor in response to a combination of said input parameters related to each of said local sensors specifying desired telerobot behavior based on local site sensor information and sensor data originating at the local site related to each of said local sensors;

autonomously generating sensor specific virtual sensor motion input at the remote site with the general motion primitive for each of a plurality of virtual sensors with regard to a coordinate frame specific to that virtual sensor in response to a combination of said input parameters related to each of said virtual sensors specifying desired telerobot behavior based on virtual sensor information and virtual sensor data related to each of said virtual sensors;

transforming each said sensor specific motion input into a common coordinate frame;

merging all sensor specific motion inputs in said common coordinate frame together to generate a sensor based motion input in said common coordinate frame;

integrating said sensor based motion input with previous sensor based motion input to form a cumulative sensor based motion input;

resolving a kinematic ring equation to specify the Cartesian spatial relationships between the trajectory motion input and the cumulative sensor based motion input at the remote site to generate task level commands in Cartesian space for controlling the motion of the telerobot to perform said compliant motion task;

transforming the task level commands at the remote site to produce joint angle commands to control the motion of the telerobot to perform the compliant motion task;

generating nominal motion monitoring information at the remote site during the nominal motion time segment in response to input parameters, sensor data and the motion of the telerobot to determine if telerobot motion is within predetermined limits during the nominal motion time segment; and

generating ending motion monitoring information at the remote site during the ending motion time segment in response to sensor data and the motion of the telerobot to determine when to terminate telerobot motion in accordance with said input parameters specifying desired termination conditions.

5,341,460

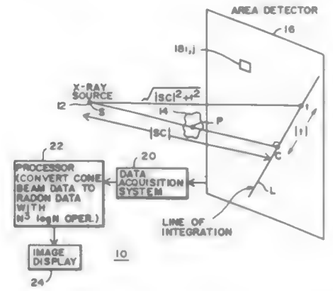
METHOD AND APPARATUS FOR PRODUCING A THREE-DIMENSIONAL COMPUTERIZED TOMOGRAPHY IMAGE OF AN OBJECT WITH IMPROVED CONVERSION OF CONE BEAM DATA TO RADON DATA

Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 936,497, Aug. 28, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 119,803

Int. Cl.[5] G06F *15/64*

U.S. Cl. 395—119 **18 Claims**



1. A method of imaging comprising the steps of:

(a) using a computed tomography cone beam source to apply cone beam energy, dependent upon an object of interest, to an area detector;

(b) detecting the cone beam energy to define a cone beam data image X(i,j) based upon the cone beam energy detected at points (i,j) on the area detector, each point (i,j) having a corresponding detector element;

(c) determining the value of line integral J on the detector where

$$J = \int \frac{|SC'|X(t)}{(t-\Delta C)\sqrt{|SC|^2 + t^2}}\,dt$$

and where X(t) is cone beam data image at point t along a line of integration, SC' is the distance from a source S of cone beam energy to a rotation center C' on the detector, SC is the distance from the source S to a point C, wherein point C is the closest point to the origin on the line of integration and ΔC is the displacement of C' from C, the value of J being determined by the substeps of:

(c1) calculating a modified image F(i,j)=X(i,j)/R(i,j) where R(i,j) is the distance from source S to point (i,j) on the area detector;

(c2) calculating a two-dimensional Fourier transform g(m,n) in (m,n) space using a fast Fourier transform and dependent on F(i,j);

(c3) interpolating from g(m,n) a line of Fourier components $g_\alpha(k)$ where α is a desired projection angle, k are inputs to g_α along the line of Fourier components passing through an origin in (m,n) space and oriented perpendicular to the desired projection angle;

(c4) performing a one-dimensional fast Fourier transform on $g_\alpha(k)$ to obtain a one-dimensional projection $p_\alpha(1)$;

(c5) obtaining $p_\alpha(s)$ by one-dimensional interpolation from $p_\alpha(1)$ where $p_\alpha(s)$ is a line integral on a particular line at a location s in the desired projection angle α;

(d) using a Radon inversion process on $p_\alpha(s)$ to produce a reconstructed three-dimensional image of the object; and

(e) displaying the reconstructed three-dimensional image of the object.

5,341,461

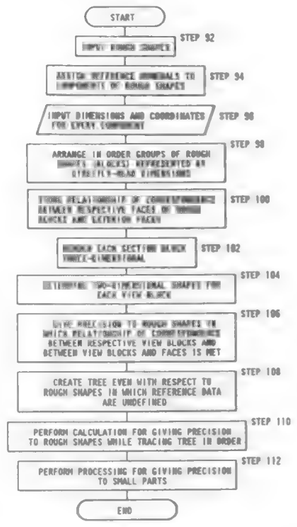
METHOD OF RENDERING A TWO DIMENSIONAL DRAWING INTO A THREE DIMENSIONAL DRAWING, USING A CAD PROGRAM

Fumio Kikuchi; Kazuo Itoh; Kazuharu Taga; Naoto Matsunaga; Hiroshi Ono; Takaoki Namba, and Kazuhiko Narita, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1991, Ser. No. 671,215

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—120 **14 Claims**



1. A method of generating a solid representation of an object in a system having storage and processing means, from data including data representing a two dimensional representation of the object, comprising the steps of:

(a) dividing the two dimensional representation of the object by locating two dimensional portions, according to predetermined criteria, and defining the two dimensional portions;

(b) defining a reference line for each said two dimensional portion;

(c) defining, for each said two dimensional portion, a plurality of parallel cross-sectional sections relative to the two dimensional portion, each said cross-sectional section being a combination of connected line segments, wherein each said line segment is positioned in approximately correct relationship to said two dimensional portions reference line for defining a line segment-reference line relationship;

(d) specifying orientation or positional data on said line segments of each said cross-sectional sections relative to said two dimensional portions reference line;

(e) accurately rendering said line segment-reference line relationships, by using said orientation or positional data, thereby accurately rendering said cross-sectional sections;

(f) rendering said two dimensional portions solid into three dimensional portions by referring to said accurately rendered cross-sectional sections; and

(g) connecting smoothly said three dimensional portions.

VOL 1165 ISS 4 AUG 23 1994 UMI

5,341,462

FIGURE DRAWING METHOD AND APPARATUS FOR DRAWINGS ACCENTUATED LINES

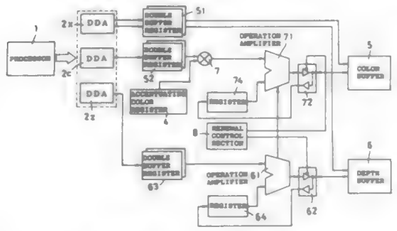
Koei Obata, Shiga, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

Filed Jan. 11, 1991, Ser. No. 638,898

Claims priority, application Japan, Jan. 11, 1990, 2-5516; Apr. 19, 1990, 2-103925

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—122 **4 Claims**



4. A figure drawing apparatus comprising:

pixel data generating means for individually outputting first pixel data for filling a polygon which constitutes a three dimensional object, and second pixel data for drawing a desired figure;

linear interpolation means for generating three dimensional coordinates data including plane coordinates data and depth data of a line segment portion of the polygon and of the desired figure based upon said first and second pixel data;

color data generating means for generating color data, based upon said first and second pixel data, said generated color data corresponding to the three dimensional coordinates data generated by said linear interpolation means;

a depth buffer for holding said depth data included in the three dimensional coordinates data generated by said linear interpolation means;

a color buffer for holding the color data generated by said color data generating means;

repetition control means for controlling said pixel data generating means to repeat outputting said first and second pixel data; and

renewal control means for selectively inhibiting renewal of the depth data and renewal of the color data corresponding to the number of time of repetition by said repetition control means.

5,341,463

SELECTIVE POLYGON MAP DISPLAY METHOD

Thomas F. Wescott; Lawrence E. McCleary, both of San Diego, Calif., and David A. Nation, Hanover, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 31, 1990, Ser. No. 473,258

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—129 **21 Claims**

1. A method of selectively displaying areal and linear features having polygon fill of vector data for world maps and other display items by signal transformation of data representative of areal and linear features from which polygons can be extracted comprising:

feeding said data representative of areal and linear features from which closed polygons can be extracted to a computer;

establishing from said data representative of areal and linear features in said computer, display geographic coordinate relationships for display;

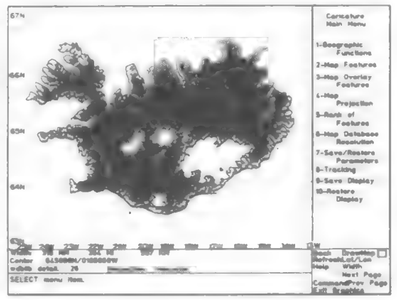
transforming from said data representative of areal and linear features in said computer, a greater circle polyline format for display;

selecting from said data representative of areal and linear features in said computer, background overlay features for display;

determining from said data representative of areal and linear features in said computer, spatial relationships between spherical polygons for display;

processing from said data representative of areal and linear features in said computer, to provide clipping and singularity removal at map interruption lines to allow the display of curved surface features in a flat plane;

clipping from said data representative of areal and linear features in said computer, polygons by lines so that portions thereof can be displayed as separate areas;



projecting from said data representative of areal and linear features in said computer, geographic coordinates onto a defined map display for the display thereof;

providing from said data representative of areal and linear features in said computer, inverse transformations to latitude/longitude which is the inverse of geographic to display coordinates for the display thereof; and

displaying said signal transformations of said establishing, transforming, selecting, determining, processing, clipping, projecting and providing to enable choices of the displayed said signal transformations to allow a designation of said choices of the displayed said signal transformations thereby assuring said selectably displaying of said areal and linear features.

5,341,464

LUMINANCE EMPHASIZED COLOR IMAGE RENDERING

Steven J. Friedman, Bellevue; Karen A. Hargrove; Joseph M. Joy, both of Redmond; Nathan P. Myhrvold, Bellevue; Sunita Shrivastava, Redmond, and Gideon A. Yuval, Mercer Island, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 995,854, Dec. 23, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 77,852

Int. Cl.[5] G06F *15/62*

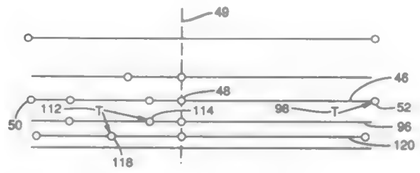
U.S. Cl. 395—131 **21 Claims**

1. A method for reproducing a color image at a lower color resolution, the color image comprising a plurality of pixels each having one of a plurality of colors in an original palette, the method comprising the steps of:

defining at least three discrete luminance levels;

defining a reduced resolution palette comprising a plurality of colors, at least one of the reduced resolution palette colors being nearer to a first original palette color than any of the reduced resolution palette colors on or between two of the at least three luminance levels that are adjacent the first original palette color;

for each pixel color in the color image, mapping the pixel color to a selected color in the reduced resolution palette that, out of a plurality of colors in the reduced resolution palette on or between two of the at least three luminance



levels that are adjacent to the pixel color, is nearest to the pixel color; and

reproducing the color image using the selected colors in the reduced resolution palette.

5,341,465

METHOD AND APPARATUS FOR DISPLAYING AND CUTTING OUT REGION OF INTEREST FROM PICTURE

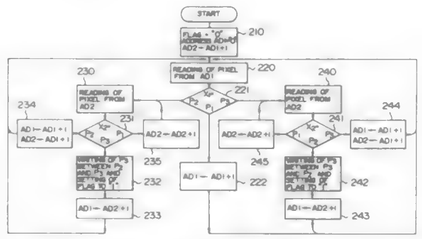
Yoshihiro Goto, Tokyo, Japan, assignor to Hitachi Medical Corp., Tokyo, Japan

Filed Jun. 15, 1990, Ser. No. 538,651

Claims priority, application Japan, Jun. 19, 1989, 1-154619

Int. Cl.[5] G05F *15/62*

U.S. Cl. 395—134 **25 Claims**



5. A method of cutting out a region of interest from a displayed picture, said method comprising the steps of:

a) drawing a contour of said region of interest on said picture being displayed;

b) defining pixel information of said contour as a pattern value P_2 while defining pixel information of portions other than said contour as a pattern value P_1;

c) scanning said contour in four directions from the top, the bottom, the left and the right, respectively;

d) extracting, as contour lines, only those portions of said contour that can be viewed in each of said scanning directions;

e) changing the pixel information of portions located outside of said contour lines from the pattern P_1 to a pattern P_3;

f) storing said patterns P_1, P_2 and P_3 as contour information for said region of interest; and

g) extracting picture information corresponding to the pixels of pattern P_1 within the contour from the information of the picture being displayed.

5,341,466

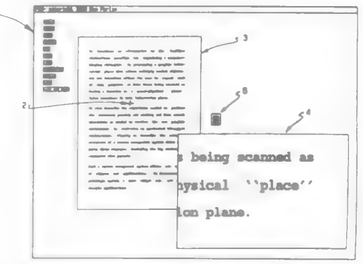
FRACTAL COMPUTER USER CENTERFACE WITH ZOOMING CAPABILITY

Kenneth Perlin, and Jacob Schwartz, both of New York, N.Y., assignors to New York University, New York, N.Y.

Filed May 9, 1991, Ser. No. 698,016

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—139 **30 Claims**



8. A method of visually displaying, on a display area, items of information stored in computer memory, by displaying representation objects, which represent the items of information, on a reference surface, each of which representation objects has a predetermined size and position on such reference surface and is comprised of groups of pixels, comprising:

storing a data object for each of the representation objects having a predetermined size, shape and position on such reference surface;

storing at least one portal data object defining a portion of the reference surface and a portal scale at which the portion of the reference surface is to be displayed and for providing a portal representation object at a predetermined size, shape and position on the reference surface;

displaying at least one portal representation object in the display area, whereby the portion of the reference surface defined by such portal data object is displayed in the display area; and

varying at least one of (1) the portion of the reference surface displayed in such portal representation object in response to control signals to display different representation objects therein, and (2) the portal scale in response to control signals to display the representation objects at a different scale.

5,341,467

METHOD AND APPARATUS FOR GENERATING AND DISPLAYING FREEFORM STROKES OF VARYING OR CONSTANT WIDTH USING ADAPTIVE FORWARD DIFFERENCING

Robert V. Klassen, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1991, Ser. No. 814,652

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—142 **12 Claims**

1. A method of generating and displaying a freeform stroke, comprising the steps of:

generating, using an adaptive forward differencing technique in accordance with a step size of a parameter t, points along a centerline curve of the freeform stroke, said centerline curve being a spline curve varying as a function of said parameter t, and each of said points along said centerline curve being associated with a horizontal coordinate defined by a function x(t), a vertical coordinate defined by a function y(t), and a width defined by a function w(t);

generating a normal vector associated with each of said points along said centerline curve;

generating points along a right offset curve and a left offset

VOL 1165 ISS 4 AG 23 1994 UMI

curve for corresponding ones of said points along said centerline curve, said right and left offset curves defining an outer boundary of said freeform stroke and each of said points along said right and left offset curves being associated with a horizontal coordinate and a vertical coordinate generated in accordance with the horizontal coordinate, vertical coordinate, width, and normal vector associated with a corresponding point along said centerline curve; and

displaying graphical representations of said points along said right and left offset curves to display the outer boundary of the freeform stroke.

5,341,468

IMAGE PROCESSOR

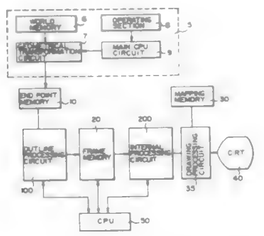
Naoto Shiraishi, Mineo, and Tatsuya Fujii, Nishinomiya, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,892

Claims priority, application Japan, Jan. 28, 1991, 3-26914; Jan. 28, 1991, 3-26915; Apr. 3, 1991, 3-98129; Apr. 3, 1991, 3-98130; Sep. 5, 1991, 3-254573

Int. Cl.[5] G06F *15/64*

U.S. Cl. 395—132 **15 Claims**



1. An image processor comprising:

an end point memory for storing two end point information of a polygon and respective end point information of internal pattern information;

outline processing means for performing outline processings of address information of an outline of the polygon and the internal pattern information corresponding to the polygon on the basis of the two end point information and the respective end point information of the internal pattern information from said end point memory;

internal figure-drawing processing means for calculating an address between two opposite polygonal sides calculated by said outline processing means on the basis of the outline address information, said internal figure-drawing processing means calculating an address of the internal pattern information corresponding to the polygonal outline; and

display means for displaying image information;

the image processor being constructed such that an image is displayed by deforming an internal pattern shown by the internal pattern information based on contour point information of a supplied figure.

5,341,469

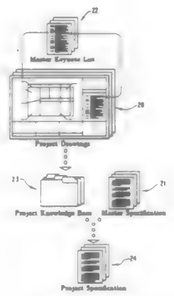
STRUCTURED TEXT SYSTEM

Wayne Rossberg; Edward F. Smith, and Angelica Matinkhah, all of Salt Lake City, Utah, assignors to Arcom Architectural Computer Services, Inc., Salt Lake City, Utah

Filed May 13, 1991, Ser. No. 698,996

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—145 **24 Claims**



1. A structured text system for generating a project specific derivative of a master specification which derivative is specialized for use in a specific project for which the master specification pertains comprising:

a data base comprising:

i. a master specification organized as master documents one of which said master documents is designated as the first document of the specification and each of said master documents consists of an ordered list of elements wherein each element of said list of elements describes one of:

A. a content element comprising a portion of the master document;

B. a question element comprising a multiple choice question including a description of each valid alternative selection pertaining to said question, a description of actions required to edit said master specification upon selecting said valid alternative selection to answer said question and a description of actions required to edit said master specification upon not selecting said valid alternative selection to answer said question; or

C. a control element comprising descriptions of actions required to edit said master specification;

ii. a master keynote list comprising a set of notes wherein each said note is a uniquely labeled description and a set of answers, each answer of said set of answers identifies one of said multiple choice questions associated with one of said master documents in said master specification, said answer further identifies an allowable alternative for the identified question;

iii. a project knowledge base for characterizing a specific project comprising;

A. a set of keynote references wherein each such reference identifies one note in said master keynote list; and

B. a set of answers, wherein each said answer identifies one of said multiple choice questions associated with one of said master documents of said master specification, and said answer further identifies one of a number of allowable alternatives for said identified multiple choice questions;

a device consisting of:

a stored program computer means for performing the functions of a structured text system, and said stored program computer means includes:

a long term read/write storage means for storing said data base and system programs which said long term read/write storage means is for retaining data electrical power being applied to said long term read/write storage means, wherein said long term read/write storage means is further implemented, under control of said stored program computer means, for selectively altering and erasing data previously written to said long term read/write storage means;

an optional read-only storage means for storing portions of said data base that are not modified by the performance of the functions of said structured text system and for storing systems programs, wherein said read-only storage means retains a permanent and retrievable record of the information contained therein;

a manual input means for communicating information from a user to said stored program computer means;

a display output means for communicating information from said stored program computer to a user;

a hardcopy output means for producing a printed copy of said project specific derivative of said master specification;

system programs that describe, by implementation by said stored program computer means, actions to be performed by said stored program computer means for carrying out operations utilizing said data base to produce said project specific derivation of said master specification, by:

i. means for creating a project knowledge base using sources of project specific knowledge which sources include information generated by a user through said manual input and display means; and documents and data bases, each of said sources being stored in said long term read/write or read-only storage means, which project specific knowledge is present in the form of identifications of notes in said master keynote list or identifications of an alternative, wherein said alternative is one of a number of allowed alternatives to an identified question, which said question is described by one of said master documents of said master specification;

ii. means for constructing a working knowledge base comprising a set of answers wherein each said answer of said set identifies one of said multiple choice questions associated with one of said master documents in said master specification, and further identifies one of said allowable alternatives for said multiple choice question and which said working knowledge base is the union of said set of answers of said project knowledge base with each set of answers in a collection of sets of answers, the collection comprising one set of answers for each said keynote reference in said set of keynote references of said project knowledge base, which said set of answers is the set of answers in said master keynote list identified by said keynote reference;

iii. means for editing said master specification comprising means for constructing a derivative of each master document of said master specification, such construction comprising;

A. means for making a copy of said master document;

B. means for evaluating each question element of said master document copy, by performing, upon the master document copy, editing actions as described by each of said alternatives to said multiple choice question as described by said question element, which actions are those described by said alternative as being required to edit said master specification when said alternative is chosen to answer said multiple choice question and an answer is present in said working knowledge base, which answer identifies said multiple choice question and said alternative described by said question element, otherwise the actions are those described by said alternative as being required to edit said master specification when said alternative is not chosen to answer said multiple choice question;

C. means for performing, upon said master document copy, editing actions described by each said control element of said master document copy;

D. means for adding information obtained from a user through said manual input means to said master document copy, which information is not part of said master document; and

E. means for transcribing said edited master document copy into its final form; and

iv. means for assembling the derivative of said master specification from the final transcribed derivatives of said master documents.

5,341,470

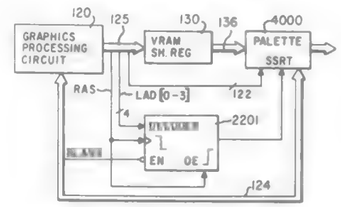
COMPUTER GRAPHICS SYSTEMS, PALETTE DEVICES AND METHODS FOR SHIFT CLOCK PULSE INSERTION DURING BLANKING

Richard D. Simpson, Bedford, England; Jeffrey L. Nye, Houston, and Michael D. Asal, Sugar Land, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 27, 1990, Ser. No. 544,779

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—164 **11 Claims**



1. A computer graphics system comprising:

a video memory, the video memory having a split shift register and a tap point counter clocked by a shift clock signal, and operable in a split shift register mode and a normal shift register mode;

a digital computer connected to the video memory, the digital computer having a blanking circuit with an blanking output and supplying a predetermined multi-bit code when the video memory is operable in the split shift register mode; and

logic circuitry connected to the blanking output of the digital computer, receiving the multi-bit code of the digital computer, said logic circuitry including a decoder for detecting a predetermined value of said multi-bit code, said logic circuitry connected to the tap point counter of the video memory to initiate an extra shift clock signal for said tap point counter during a blanking interval whenever the multi-bit code of the digital computer has said predetermined value.

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,471

CONTROLLER FOR ACCESSING AN IMAGE DATA MEMORY BASED ON A STATE OF A HARD COPY PRINTER

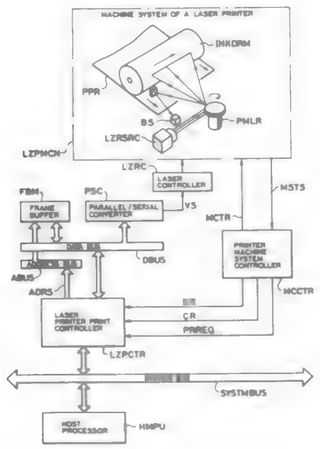
Hideki Yamazaki, Hitachi; Hiroshi Takeda, Higashi-yamamato, and Yoshikazu Yokota, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 713,757, Jun. 11, 1991, Pat. No. 5,179,635, which is a continuation of Ser. No. 494,874, Mar. 8, 1990, Pat. No. 5,067,097, which is a continuation of Ser. No. 173,355, Mar. 25, 1988, abandoned. This application Oct. 15, 1992, Ser. No. 961,424

Claims priority, application Japan, Mar. 27, 1987, 62-71441

Int. Cl.[5] **G06F** *15/62*

U.S. Cl. 395—164 **19 Claims**



1. An image data control system comprising:

memory means for storing image formation data;

printer means for forming an image on paper in accordance with the image formation data;

access control means for making access control to the memory means, wherein the access control means is formed on a single semiconductor chip;

state designation signal generation means coupled to the printer means for generating at least two state designation signals representing an operation state of the printer means;

the access control means having an address operation function, the operation function being controlled in accordance with the state designation signals;

a first of the at least two state designation signals being a print address output request signal, wherein the access control means executes the address operation function for sequentially generating corresponding address signals in accordance with the output request signal; and

a second of the at least two state designation signals being at least one of a page-changing signal representing a change in a page of the paper to be printed upon by the printer means, wherein the access control means executes the address operation function for generating a corresponding address signal in accordance with the page-changing signal and a line-changing signal representing a change of a line to be printed by the printer means, wherein the access control means executes the address operation function for generating a corresponding address signal in accordance with the line-changing signal.

5,341,472

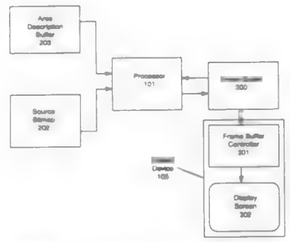
EFFICIENT AREA DESCRIPTION FOR RASTER DISPLAYS

Bruce A. Leak, Palo Alto, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 474,522, Feb. 2, 1990, abandoned. This application Jun. 15, 1992, Ser. No. 898,495

Int. Cl.[5] **G06F** *15/20*

U.S. Cl. 395—166 **20 Claims**



1. In a computer controlled display system, a process for specifying and manipulating regions of a graphic representation, said process comprising the steps of:

providing a frame buffer having a plurality of memory locations containing image data, said image data being data bits corresponding to a plurality of displayable picture elements (pixels), each of said plurality of memory locations further including at least one bit location, each bit location containing one data bit of image data;

providing an area description command, said area description command being information specifying a location and size of a frame buffer region in said frame buffer and specifying manipulations to said frame buffer region, said location of said frame buffer region being specifiable at any said bit location in said frame buffer, said area description command including a scan count and an instruction stream, said scan count indicating at least one scan line in said frame buffer, the scan line being operated on by said area description command, said instruction stream having at least one graphic instruction, said graphic instruction comprising a first group of bits, said first group of bits being an encoded representation of a second group of bits located in said frame buffer region, said first number of bits being less than said second number of bits;

reading and interpreting said area description command; and

modifying the contents of said frame buffer in accordance with said area description command.

5,341,473

SYSTEM OF TRANSFERRING DATA IN A MULTI-CPU ARRANGEMENT USING ADDRESS GENERATORS

Michio Takayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 9, 1991, Ser. No. 743,052

Claims priority, application Japan, Aug. 9, 1990, 2-209221

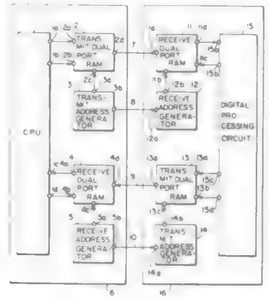
Int. Cl.[5] **G06F** *9/46, 13/42*

U.S. Cl. 395—200 **15 Claims**

1. A package to package data transmission system for transmitting digital data between at least two printed circuit boards or packages provided within a digital signal processing apparatus and mounting respectively thereon a plurality of electronic parts such as microprocessors, comprising:

(1) a first package including: a first microprocessor for providing a first address, a first data and a first write instruction; a transmitting sequential address generator for producing a timing reference signal having a predetermined period and generating and providing a second address and a second read instruction at a timing predetermined on the basis of said timing reference signal; and a transmitting dual port RAM responsive to said first address, said first data and said first write instruction for writing said first data in an area of a first memory area assigned by said first address and responsive to said second address and said second read instruction for outputting a second data in an area of said first memory area assigned by said second address; and

(2) a second package including: a second microprocessor for providing a third address and a third read instruction; a receiving sequential address generator responsive to said



timing reference signal for generating and providing a fourth address and a fourth write instruction at a timing predetermined on the basis of said timing reference signal; and a receiving dual port RAM responsive to said fourth address, said second data and said fourth write instruction for writing said second data in an area of a second memory area assigned by said fourth address and responsive to said third address and said third read instruction for outputting a third data in an area of said second memory area assigned by said third address.

5,341,474

COMMUNICATIONS ARCHITECTURE AND BUFFER FOR DISTRIBUTING INFORMATION SERVICES

Alexander Gelman, Brooklyn, N.Y.; Haim Kobrinski, Colts Neck, N.J.; Lanny S. Smoot, Morris Township, Morris County, N.J., and Stephen B. Weinstein, Summit, N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed May 15, 1992, Ser. No. 884,515

Int. Cl.[5] **G06F** *13/00;* **H04H** *1/02*

U.S. Cl. 395—200 **19 Claims**

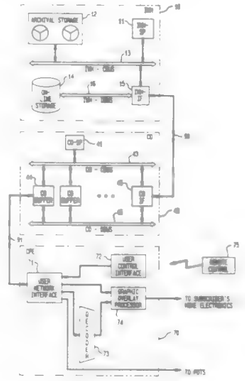
1. A store-and-forward architecture for distributing information programs to subscribers, comprising:

a plurality of information warehouses (IWHs) which include means for archiving information programs and means for dispensing segments of said information programs in bursts;

a plurality of central offices (COs) which request and receive said segments of information programs from said IWHs for play-out to subscribers in real-time, wherein each of said COs comprises

1 to N buffers, each of said buffers comprising interface means for external access to said buffer thereto, processor means for managing a subscriber's request for an information program based upon a service presentation script and a program presentation map corresponding to said information program and for managing and administering internal operations of said buffer, buffer storage means for storing segments of said information program, memory storage means for storing said script and map associated with said information program, and bus means connected to said interface means, said processor means, said buffer storage means, and said memory storage means for providing internal transport of data and control signals there between; and

a plurality of customer premises equipments (CPEs) wherein



each of said CPE is serviced by one of said buffers and is the subscriber's interface for generating requests and control signals for interactive play-out and receiving and processing information programs for the subscriber's use.

5,341,475

METHOD FOR EXCHANGING MESSAGES BETWEEN A SHARED MEMORY AND COMMUNICATION ADAPTERS USING AN EFFICIENT LOGICAL PROTOCOL

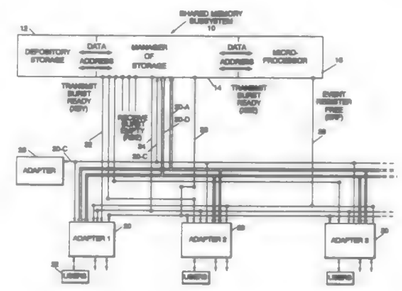
Pierre Austruy; Bernard Brezzo, both of Nice; Jean-Pierre Lips, Cagnes-sur-Mer; Bernard Naudin, Saint Laurent du Var; Jean Calvignac, La Gaude, all of France, and Richard H. Waller, Chapel Hill, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,687

Claims priority, application European Pat. Off., Oct. 16, 1991, 91480161.8

Int. Cl.[5] **G06F** *13/00*

U.S. Cl. 395—200 **5 Claims**



1. A method for transmitting interleaved bursts of messages sent from a shared memory subsystem (**10**) comprising a storage (**12**) and managing means (**14**) for managing said storage, to a plurality of communication adapters (**20**) to which are attached different users (**22**), said adapters (**20**) being connected to the subsystem (**10**) by a bus (**30**) comprising data lines (**30-*d***), address lines (**30-*a***) and control lines (**30-*c***) controlled by an arbiter (**26**), said messages being sliced into data bursts (**57**) of

VOL 1165 ISS 4 AUG 23 1994 UMI

variable sizes, the method characterized in that it comprises the steps of:

(a) dequeueing a message from said storage (12);

(b) sending a first control information indicating that a message is ready for transmission (MRX) to a communication adapter (20), connected to a user (22) to whom the message is being sent, hereinafter, a selected communication adapter (20) through the bus (30), said first control information comprising at least the identification of the user (22) to whom the message has to be transmitted on said data lines (30-*d*) with a special code on said address lines (30-*a*);

(c) providing a second unique data flow control line XBE (36) connecting said selected communication managing means (14) to all said communication adapters (20) and asserted (20) by said managing means (14) to allow said adapters to request the data bursts from the shared memory subsystem (10);

(d) making a bus request to said arbiter (26) by the selected communication adapters (20) that have messages to receive from the shared memory subsystem (10);

(e) generating a second control information Transmit Burst Request (XBR) for requesting the transmission of a burst comprising at least the identification of the connected user and the maximum burst size of the requested data that can be processed by the adapter, said second control information (XBR) is sent on said data lines (30-*d*) of the bus (30) from the communication adapter (20) authorized by the arbiter (26) with a unique address for all adapters on said address lines (30-*a*) to the subsystem (10);

(f) fetching the requested data burst whose size must be below the maximum demanded by said selected adapter (20) in the depository storage (12) to store them temporarily in managing means (14);

(g) providing third data flow control lines Transmit Burst Ready (XBY) (32) connecting said managing means (14) to each adapter (20) and asserted by managing means (14) to notify the selected communication adapter (20) to read the requested data burst in managing means (14);

(b) making a bus request to said arbiter (26) by the selected communication adapters (20) that have messages to receive from the shared memory subsystem (10);

(i) sending a burst of data (50) to which is associated a burst control word (52) on said data lines (30-*d*) of said bus (30) by managing means (14) when said arbiter (26) has granted said bus (30), said control word (52) comprising at least the identification of the user of the data burst;

(j) reading said control word by said selected adapter (20) to check if the data that follow correspond to the requested data burst to send that data burst to the connected user indicated in the control word; and,

(k) sending a third control information End of Message (EOM) indicating if the complete message has been transmitted to the subsystem (10) by said adapter (20), said third control information comprising at least the identification of the user (22) to which the message has been transmitted and the notification of good or bad transmission.

5,341,476

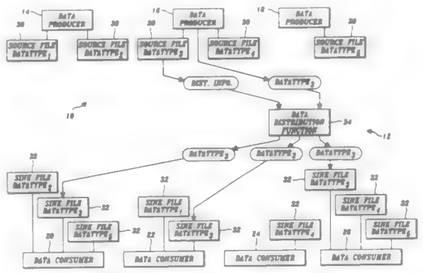
DYNAMIC DATA DISTRIBUTION NETWORK WITH SINK AND SOURCE FILES FOR PARTICULAR DATA TYPES

Augustus P. Lowell, Sunnyvale, Calif., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 23, 1992, Ser. No. 995,757
Int. Cl.[5] G06F *13/00, 15/40*
U.S. Cl. 395—200 21 Claims

1. A method of distributing data in a digital data processing system having data producers that generate data, data consumers that use data, sink files associated with the data consumers, and with a specific type of data used by a specific one of the data consumers, and source files, each source file being associated with a specific type of data generated by a particular one of the data producers and including a list of sink files associated with data consumers that use the specific type of data, the method of distribution including the steps of:

selectively copying the data generated by a specific one of



the data producers into specific sink files identified and listed in the specific source file associated with the specific type of data generated by the data producer; and

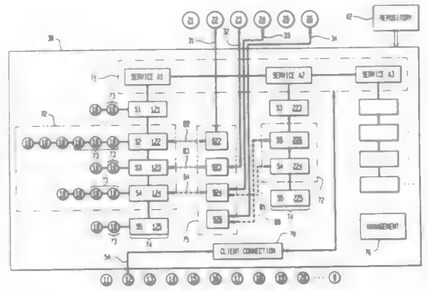
transferring the data from the specific sink files to the data consumers associated with the source files.

5,341,477

BROKER FOR COMPUTER NETWORK SERVER SELECTION

Richard P. Pitkin, Lowell, and John P. Morency, Chelmsford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 924,390, Aug. 3, 1992, abandoned, which is a continuation of Ser. No. 314,853, Feb. 24, 1989, abandoned. This application Aug. 6, 1993, Ser. No. 103,722
Int. Cl.[5] G06F *13/00, 15/16*
U.S. Cl. 395—200 24 Claims



1. A computer-implemented method for allocating a plurality of servers, each server having an available resource capacity, to a plurality of clients for delivering a plurality of services to said clients, the method comprising the steps of:

a) developing a network policy for said plurality of servers by collecting a local policy for each of said servers, wherein the local policy for each server is based on an overall capacity of each server to deliver each of the plurality of services to said clients;

b) receiving client requests for said services in a least one broker;

c) making a server suggestion, from the broker to one of said clients making a request for one of said services, the server suggestion identifying a suggested one of said servers based on the network policy and available resource capacities of said servers, said suggested one of said servers

having the available resource capacity to deliver said one of said services;

d) making a request for said one of said services from said one of said clients to said suggested one of said servers in response to said one of said clients receiving the server suggestion of step c) from the broker,;

e) operating the suggested one of said servers in accordance with its respective local policy to reject the request for said one of said services of step d) when the request exceeds a local policy limit for the respective local policy of the suggested one of said servers; and

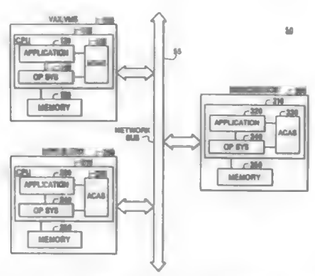
f) operating the suggested on of said servers in accordance with its respective local policy to accept the request for said one of said service of step d) when the request does not exceed the local policy limit for the respective local policy of the suggested one of said servers.

5,341,478

METHODS AND APPARATUS FOR PROVIDING DYNAMIC INVOCATION OF APPLICATIONS IN A DISTRIBUTED HETEROGENEOUS ENVIRONMENT

Robert L. Travis, Jr., Concord, Mass.; Andrew P. Wilson, Burghfield Common, England; Neal F. Jacobson, Nashua, N.H., and Michael J. Renzullo, Ashland, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 567,389, Aug. 14, 1990, abandoned. This application Nov. 3, 1993, Ser. No. 148,607
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—200 14 Claims



1. In a data processing network including a plurality of platforms for executing a plurality of applications, server ones of said applications being capable of performing operations, a method of invoking, in a server one of said plurality of platforms, one of said server applications requested by a client application running on a client one of said plurality of platforms, said method of invoking comprising the steps of:

providing a data base stored in a memory in the network, said data base having

a plurality of method entries each corresponding to one of said server applications and further containing a reference to a mechanism for invoking the corresponding server application to allow said server application to perform a specified operation on a specified instance,

a plurality of class entries each containing information identifying a uniquely identifiable class and a corresponding group of said method entries, each of the classes being referenced by a different set of instances which are items that may be manipulated or accessed by said client and server applications, with instances in the same class sharing common characteristics, and each class entry further containing an identification of one or more message entries, and

a plurality of message entries identified in said class entries, each specifying types of operations which can be performed on the instances associated with a corresponding class entry;

generating by the client one of said plurality platforms operating under the control of a first operating system and executing said client application, a request including an identifier for a selected instance and an identifier for a desired message;

using said data base to determine, from said request and its corresponding message and instance identifiers, an identifier for a corresponding method, said identifier for said corresponding method including a reference to a procedure to allow the server application to perform said desired operation on said first instance; and

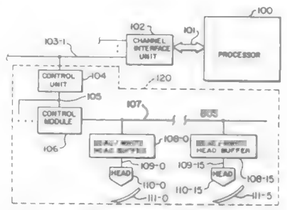
transmitting said identifier for said selected instance and said reference to said procedure, to the server one of said plurality of platforms, said server one of said plurality of platforms operating under the control of a second, different operating system.

5,341,479

ADDRESS MARK TRIGGERED READ/WRITE HEAD BUFFER

Robert E. Dean, Boulder; Steven C. Cacka, Longmont; Douglas P. Schaefer, Lafayette; Hossein F. Sevvom, Boulder, and Robert A. Brumnet, Denver, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Continuation of Ser. No. 304,664, Jan. 31, 1989, abandoned. This application Oct. 16, 1991, Ser. No. 778,301
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—250 17 Claims



1. In a data processing system that includes a processor connected by at least one data channel to at least one control module, each control module being connected by a bus to a plurality of read/write heads and including a plurality of buffers, each one of which is connected to said bus and an associated one of said plurality of read/write heads, a method of buffering data receiving from each of said plurality of read/-write heads into said associated buffer comprising the steps of:

detecting, in response to said processor requesting a data record, an address mark written on a designated data storage track of said rotating media;

writing said designated track into said buffer.

5,341,480

METHOD AND APPARATUS FOR PROVIDING A TWO CONDUCTOR SERIAL BUS

Steven Wasserman, Sunnyvale, and Steven Roskowski, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 9, 1992, Ser. No. 866,816
Int. Cl.[5] G06F *13/00, 13/36, 13/368, 13/376*
U.S. Cl. 395—325 7 Claims

1. A method for rapidly transferring serial data in a two conductor busing arrangement in which one conductor is utilized to transfer data and the other conductor is utilized to transfer clock signals, and in which a plurality of components are connected to the two conductors, wherein said components include a first master circuit, a second master circuit, a first slave circuit, a second slave circuit, and a single clock signal generator, comprising the steps of

providing continuously periodic clock signals, from said clock signal generator, on the clock conductor, wherein

VOL 1165 ISS 4 AG 23 1994 UMI

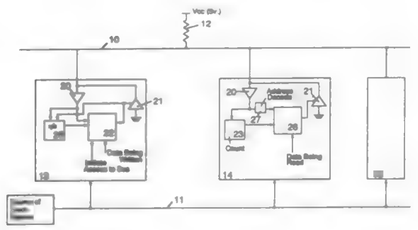
each one of the clock signals has an active rising edge and an active falling edge,

placing a first special signal, from at least one of said master circuits, on the data conductor to indicate the start of an operation,

attempting to place a first set of address data, from said first master circuit, on the data conductor, wherein said first set of address data specifies an address of said first slave circuit,

attempting to place a second set of address data, from said second master circuit, on the data conductor, wherein said second set of address data specifies an address of said second slave circuit,

comparing, in each of said first and second master circuits, said first set of address data with said second set of address data, and granting the first master circuit access to the data conductor if a predetermined relationship between



said first set of address data and said second set of address data is satisfied,

placing data, from said first master circuit, on the data conductor to indicate a transfer requiring one of said first master circuit and said first slave circuit to act as a transmitting circuit, and the other one of said first master circuit and said first slave circuit to act as a receiving circuit,

placing an acknowledge signal, from said first slave circuit, on the data conductor after said first slave circuit verifies that said transmitted first set of address data matches the address of said first slave circuit,

performing said transfer by said transmitting circuit sending data to said receiving circuit,

placing a second special signal, from said transmitting circuit, on the data conductor to indicate the end of the transfer, and

placing a third special signal, from said first master circuit, on the data conductor to indicate the end of the operation.

5,341,481

METHOD AND APPARATUS FOR DYNAMICALLY CHANGING BUS SIZE USING ADDRESS REGISTER MEANS AND COMPARATOR MEANS AS BUS SIZE DETECTORS

Takashi Tsukamoto, Kodaira, Japan, assignor to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., Tokyo, Japan

Continuation of Ser. No. 573,456, Aug. 27, 1990, abandoned. This application Apr. 28, 1993, Ser. No. 55,230

Claims priority, application Japan, Sep. 11, 1989, 1-235446

Int. Cl.[5] G06F *13/36*

U.S. Cl. 395—325 **25 Claims**

1. A microcomputer comprising:

an address bus;

a data bus including a plurality of data lines;

a data input and output circuit coupled to said data bus;

external data terminals coupled to said data input and output circuit, wherein the external data terminals and said plurality of data lines are equal in number;

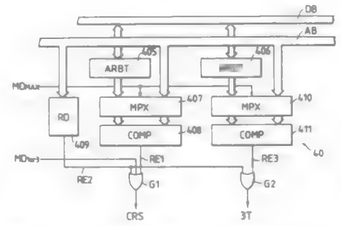
a processor unit coupled to said address bus and to said data bus, said processor unit accessing an address in a predetermined address space by using said address bus;

register means for defining a specific address area within said predetermined address space designating an address data of a plurality of devices each having an equal bus size; and

a comparator coupled to said address bus and to said register means for comparing said address data with an address signal outputted from the processor unit to said address bus and for providing to said processor unit a comparison result indicating whether an address designated by said address signal is in said specific address area,

wherein the register means and the comparator are disposed within the microcomputer which includes means for receiving address data through the data lines from the data input and output circuit, and

wherein said processor unit controls said data input and output circuit in response to the comparison result



indicating that the address designated by said address signal is in said specific address area so that the plurality of data lines of said data bus are coupled to a first set of said external data terminals, thereby accessing the address in said specific address area by a first data bus size, and

wherein said processor unit controls said data input and output circuit in response to the comparison result indicating that the address designated by said address signal is not in said specific address area so that the plurality of data lines of said data bus are coupled to a second set of said external data terminals, respectively, thereby accessing the address which is not in said specific address area by a second data bus size different from the first data bus size.

5,341,482

METHOD FOR SYNCHRONIZATION OF ARITHMETIC EXCEPTIONS IN CENTRAL PROCESSING UNITS HAVING PIPELINED EXECUTION UNITS SIMULTANEOUSLY EXECUTING INSTRUCTIONS

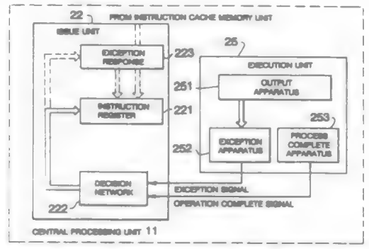
David N. Cutler, Bellevue; David A. Orbits, Redmond, both of Wash.; Dileep Bhandarkar, Shrewsbury, Mass.; Wayne Cardoza, Merrimack, N.H., and Richard T. Witek, Littleton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 541,148, Jun. 20, 1990, abandoned, which is a continuation of Ser. No. 373,662, Jun. 27, 1989, abandoned, which is a continuation of Ser. No. 28,248, Mar. 20, 1987, abandoned. This application Dec. 22, 1992, Ser. No. 995,341

Int. Cl.[5] G06F *9/30, 9/34, 13/376, 9/38*

U.S. Cl. 395—375 **27 Claims**

25. A method as defined in claim 23 wherein said issue unit maintains unfinished instruction information identifying instructions that have been transferred to an execution unit but for which processing has not been completed, said issue unit using said unfinished instruction information in determining



whether it has received an operation complete indication from all of the execution units currently processing instructions.

5,341,483

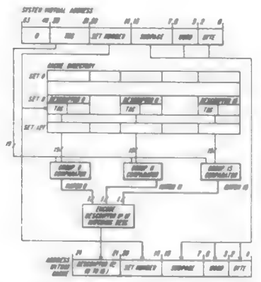
DYNAMIC HIERARCHIAL ASSOCIATIVE MEMORY

Steven J. Frank, Hopkinton, Mass., and Paul A. Binder, Hollis, N.H., assignors to Kendall Square Research Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 136,930, Dec. 22, 1987, Pat. No. 5,055,999, Ser. No. 509,480, Apr. 13, 1990, abandoned, Ser. No. 370,325, Jun. 22, 1989, abandoned, Ser. No. 370,341, Jun. 22, 1989, Pat. No. 5,297,265, Ser. No. 370,287, Jun. 22, 1989, Pat. No. 5,251,308, Ser. No. 499,182, Mar. 26, 1990, and Ser. No. 521,798, May 10, 1990, Pat. No. 5,282,201, said Ser. No. 509,480, is a continuation of Ser. No. 136,701, Dec. 22, 1987, abandoned, said Ser. No. 370,325, is a continuation-in-part of Ser. No. 136,930, Dec. 22, 1987, said Ser. No. 370,341, is a continuation of Ser. No. 136,930, Dec. 22, 1987, said Ser. No. 370,287, is a continuation-in-part of Ser. No. 136,930, Dec. 22, 1987, said Ser. No. 499,182, is a continuation-in-part of Ser. No. 136,930, Dec. 22, 1987. This application May 31, 1990, Ser. No. 531,506

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—400 **48 Claims**



1. An associative memory for information-representative signals representative of information relating to a plurality of descriptors, each descriptor including a set portion and (n) other portions, where (n) is an integer greater than or equal to two, said associative memory having an associativity of two to the (q)th power, where (q) is an integer greater than or equal to one, said associative memory comprising

A. input means for receiving a candidate descriptor,

B. directory means for storing and accessing said information-representative signals, said directory means including:

i. (n) table means including table means(n) for storing said information-representative signals and table means (j), where (j) where (j) represents successive integers between (1) and (n−1), inclusive, for storing pointer-representative signals, and

ii. each said table means (j) including a plurality of entry means, each for storing a (q)-bit pointer-representative signal directed to at least one respective entry means of table means (j+1), said table means (n) including a plurality of entry means, each for storing an information-representative signal relating to at least one said descriptor,

iii. each said entry means of table means (1) being accessible as a function of a common set portion and a common portion (1) of a plurality of descriptors with which that entry means is respectively associated, said table means (1) including memory means responsive to values of a common set portion and a common portion (1) of a candidate descriptor for accessing the entry means of table means (1) respectively associated with that candidate descriptor and for generating a pointer signal representative of the pointer stored therein,

iv. each said entry means of table means (m), where (m) represents successive integers between (2) and (n), being accessible as a function of values of a common set and a common portion (m) of a plurality of descriptors with which such table means (m) entry means is respectively associated, and a value of a pointer signal of the respective table means (m−1) entry means with which such table means (m) entry means is respectively associated, each said table means (m) including memory means responsive to values of a common set and a common portion (m) of candidate descriptors with which such table means (m) entry means is respectively associated, as well as to a value of a pointer signal of the respective table means (m−1) entry means with which such table means (m) entry means is respectively associated, for accessing the entry means of table means (m) respectively associated with that candidate descriptor and for generating a signal representative of the information stored therein,

C. look-up means connected to said input means and to said directory means for determining whether said directory means stores an information-representative signal relating to said candidate descriptor, and for generating a signal representative of that determination, and

D. update means, coupled to said input means and to said look-up means and to said directory means, selectively responsive to a determination that an information-representative signal relating to said candidate descriptor is not stored in said directory means for updating at least one of said (n) table means to include a signal representative of said candidate descriptor.

5,341,484

VIRTUAL MACHINE SYSTEM HAVING AN EXTENDED STORAGE

Shunji Tanaka, Sagamihara; Akira Yamaoka, Hadano; Hidenori Umeno, Kanagawa; Masatoshi Haraguchi, Fujisawa; Kiyoshi Ogawa; Keiji Saijo, both of Yokohama, and Katsumi Takeda, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP89/00983, § 371 Date May 24, 1990, § 102(e) Date May 24, 1990, PCT Pub. No. WO90/05338, PCT Pub. Date May 17, 1990

PCT Filed Sep. 28, 1989, Ser. No. 476,434

Claims priority, application Japan, Nov. 2, 1988, 63-276252; May 26, 1989, 1-131348

Int. Cl.[5] G06F *12/00, 12/10*

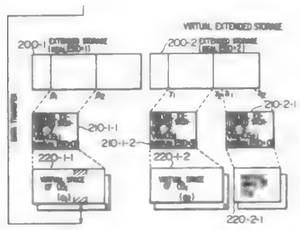
U.S. Cl. 395—400 **2 Claims**

1. A virtual machine system in which a plurality of operating systems (OS's) can run on one computer including a physical main storage (physical MS) and at least one physical extended storage (physical ES), each operating system (OS) of the OS's having a virtual MS on the physical MS and at least one virtual ES on the at least one physical ES, the system comprising:

VOL 1165 ISS 4 AG 23 1994 UMI

ES address translation table storing means for storing an ES address translation table for each OS of the OS's, the ES address translation table including a start address of each virtual ES of the at least one virtual ES of said each OS in a corresponding physical ES of the at least one physical ES of the computer;

start address reading means for reading from the ES address translation table for one OS of the OS's the start address of one virtual ES of the at least one virtual ES of the one OS,



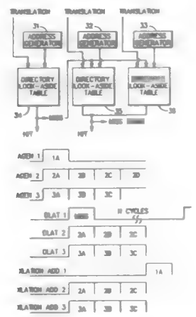
the one virtual ES being a virtual ES on which an address has been designated by a channel program of the one OS, the channel program residing on the virtual MS of the one OS; and

address translation means for translating the address on the one virtual ES designated by the channel program to a physical ES address on the physical ES corresponding to the one virtual ES based on the address on the one virtual ES designated by the channel program and the start address read by the start address reading means.

5,341,485
MULTIPLE VIRTUAL ADDRESS TRANSLATION PER COMPUTER CYCLE

John R. Hattersley, Saugerties, N.Y.; Thomas D. Kim, Highland Park, N.J.; Jeffery Y. Lee, Saugerties, N.Y., and Forrest A. Reiley, Eastham, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1991, Ser. No. 697,168
Int. Cl.[5] G06F *12/10*
U.S. Cl. 395—400 **13 Claims**



1. An address translation mechanism for a virtual storage system in a data processing system which supports multiple virtual address translations per computer cycle, said address translation mechanism comprising:

means for storing a plurality of virtual addresses to be translated, said virtual addresses including segment index bits, page index bits and displacement index bits;

dynamic look-aside table means for storing virtual-to-real translation information; and

accessing means responsive to said page index bits of said virtual addresses for accessing during a computer cycle said dynamic look-aside table means to simultaneously generate real addresses for each of said virtual addresses,

wherein an instruction specifies a starting address, a stride and a number of operands in the instruction, the stride being an increment between successive addresses, said mechanism further comprising:

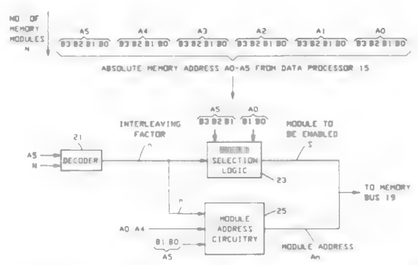
mode switching means for determining when the stride is less than a predetermined fraction of a page size and for switching between a real mode of translation and a virtual mode of translation; and

incrementing means operable in said real mode for incrementing a first real address multiple times within a page boundary to generate real addresses.

5,341,486
AUTOMATICALLY VARIABLE MEMORY INTERLEAVING SYSTEM

David E. Castle, Alhambra, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 27, 1988, Ser. No. 263,569
Int. Cl.[5] G06F *12/06*
U.S. Cl. 395—425 **7 Claims**



1. For use in a computer system, improved memory means providing for variable interleaved access thereto in response to memory addresses provided by said computer, said memory means comprising:

a plurality of addressable memory modules; and

a memory address controller for selectively enabling and addressing selected memory modules in a variable interleaved manner in response to memory addresses received from said computer, each memory address comprising a plurality of digits including a most significant digit;

said memory address controller providing for different interleaving factors for different ones of said modules dependent upon the number of available modules including providing for concurrent plural and one-way interleaving to Dermit use of all available modules;

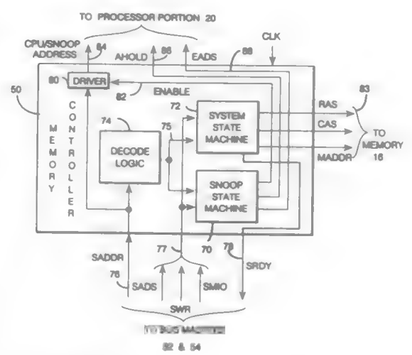
said memory address controller automatically varying the interleaving factors provided for said modules dependent upon the number of modules;

said memory address controller including a decoder, module selection logic, and module address circuitry, said decoder being responsive to the number of available modules and the most significant digit of an applied memory address for producing the interleaving factor applicable to the particular module containing said memory address, said module selection logic being responsive to said interleaving factor and predetermined digits of said memory address for enabling said particular module, and said module address circuitry being responsive to said interleaving factor and predetermined digits of said memory address for accessing the module address in said particular module corresponding to said memory address.

5,341,487
PERSONAL COMPUTER HAVING MEMORY SYSTEM WITH WRITE-THROUGH CACHE AND PIPELINED SNOOP CYCLES

Michael T. Derwin, Delray Beach, and William A. Wall, Boca Raton, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 20, 1991, Ser. No. 812,196
Int. Cl.[5] G06F *12/00, 9/38*
U.S. Cl. 395—425 **11 Claims**



1. A personal computer comprising:

a memory system including a planar memory and a write-through cache, said cache comprising a cache memory for storing a plurality of cache lines and a cache controller for controlling access to said cache memory and selectively invalidating cache lines in said cache memory in response to receiving invalidating signals;

bus master means for generating control signals and producing a plurality of consecutive memory write cycles during which a plurality of planar writes occur that require invalidation of different cache lines; and

a memory controller connected to said memory system and said bus master means for controlling access to said planar memory, said memory controller comprising

first snoop control means operative, during a first memory write cycle of said consecutive memory write cycles, to start a basic snoop cycle during which said first snoop control means transmits first invalidating signals to said cache control for invalidating a first cache line corresponding to a first planar memory location being written in during said first memory write cycle, said basic snoop cycle being longer than a memory write cycle,

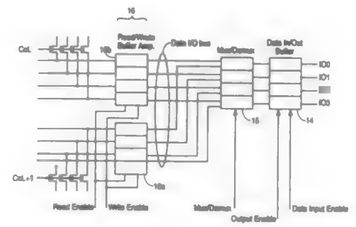
monitoring means connected to said bus master means for monitoring said control signals and detecting when a second memory write cycle has been started by said bus master before said basic snoop cycle has finished, and for generating a snoop control signal in response to detecting that said second memory write cycle has been started before said basic snoop cycle has finished, and

second snoop control means connected to said monitoring means for receiving said snoop control signal and initiating, in response to said snoop control signal, a pipeline snoop cycle immediately after said basic snoop cycle, said pipeline snoop cycle having the same duration as a memory write cycle, said second snoop control means being operative, during said pipeline snoop cycle, to transmit second invalidating signals to said cache controller for invalidating a second cache line corresponding to a second planar memory location being written into during said second memory write cycle.

5,341,488
N-WORD READ/WRITE ACCESS ACHIEVING DOUBLE BANDWIDTH WITHOUT INCREASING THE WIDTH OF EXTERNAL DATA I/O BUS

Satoru Kobayashi, Natick, Mass., assignor to NEC Electronics, Inc., Mountain View, Calif.

Continuation of Ser. No. 507,685, Apr. 11, 1990, abandoned.
This application Feb. 14, 1992, Ser. No. 837,555
Int. Cl.[5] G06F *12/00;* **G11C** *7/00, 8/00*
U.S. Cl. 395—425 **8 Claims**



1. A memory, comprising:

a read/write access memory array having a plurality of memory words each accessed using a row address and a column address;

means for receiving said row and column addresses from an address bus;

means for receiving and outputting data onto a data bus; and

means for receiving first, second, third and fourth control signals, such that:

the first control signal causes the means for receiving said row and column addresses to receive the row address, and the means for receiving and outputting data to receive a first datum from the data bus simultaneously,

the second control signal causes the means for receiving said row and column addresses to receive the column address and the means for receiving and outputting data to receive a second datum from the data bus simultaneously;

and, (i) if the third control signal is received, the first and second data are written respectively into first and second halves of a memory word specified by the row and column addresses; (ii) if the fourth signal is received, a first half of a memory word specified by the row and column addresses is output as a first output datum onto the data bus, and thereafter, a second half of the memory word specified by the row and column addresses is output as a second output datum onto the data bus.

5,341,489
MEMORY CARD WITH PROGRAMMABLE INTERLEAVING

James F. Heiberger, and David A. Smith, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1992, Ser. No. 868,163
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 **21 Claims**

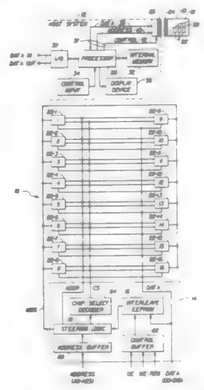
1. Data storage apparatus for use with a host data processing system, said data storage apparatus comprising:

memory means, divided into a plurality of memory devices, for storing data in addressable data locations;

memory interleave means, responsive to a control factor input from the host system, for specifying the order by which data locations are addressed among successive memory devices; and

VOL 1165 ISS 4 AG 23 1994 UMI

circuit means responsive to said memory interleave means and to an address input from the host system for accessing



data locations among the memory devices according to the order specified by said memory designation means.

5,341,490

Patent Not Issued For This Number

5,341,491

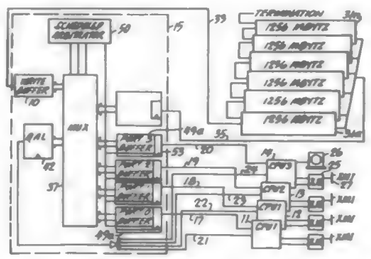
APPARATUS AND METHOD FOR ENSURING THAT LOCK REQUESTS ARE SERVICED IN A MULTIPROCESSOR SYSTEM

Raj Ramanujan, Leominster, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 546,365, Jun. 29, 1990, abandoned. This application Oct. 22, 1993, Ser. No. 141,427

Int. Cl.[5] G06F *12/14*

U.S. Cl. 395—425 **22 Claims**



1. A lockout avoidance circuit for a plurality of nodes generating lock requests for a shared resource, comprising

a queue including:

a plurality of registers pipelined together, a first of said registers being the head of the queue and the last of said registers being the tail of the queue;

means for counting lock requests that have been refused from at least one of said nodes;

means for enabling said queue to store a lock request from said node at the tail of the queue after a predetermined number of lock requests from said node have been refused and storing all subsequent lock requests from any other of said nodes at the tail of the queue in the order in which they are registered; and

said means for enabling operating said queue to advance the stored lock requests toward the head of said queue each time the lock request at the head of the queue is serviced.

5,341,492

FRAME CONVERSION CIRCUIT INCLUDING INITIAL VALUE INPUT CIRCUIT

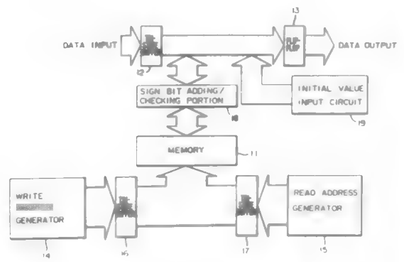
Tatsumi Sakata, Fukuoka, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 542,098, Jun. 22, 1990, abandoned. This application Nov. 19, 1993, Ser. No. 155,159

Claims priority, application Japan, Jun. 29, 1989, 1-167840

Int. Cl.[5] G06F *13/00, 5/06;* **H04J** *3/06;* **G11C** *7/00*

U.S. Cl. 395—425 **5 Claims**



1. A frame conversion circuit comprising:

means for receiving a variety of types of data signals from a data bus, each data signal having data elements;

means for adding a sign bit to the data elements of the received data signals;

write address means for generating a random address signal, based on the type of data signal, and for writing the data elements of each data signal into memory locations, based on the random address signal;

read address generation for generating a sequential address signal to address the memory locations sequentially, for reading each data element from each memory location, based on the sequential address signal, and for checking the sign bit of each data element as each data element is read out; and

initial value input means for writing an arbitrary initial value into each memory location as each data element corresponding to each memory location is read out.

5,341,493

DISK STORAGE SYSTEM WITH WRITE PRESERVATION DURING POWER FAILURE

Moshe Yanai, Framingham; Natan Vishlitzky, Brookline; Bruno Altereacu, Newton, and Daniel Castel, Framingham, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Continuation of Ser. No. 586,254, Sep. 21, 1990, abandoned. This application Nov. 22, 1993, Ser. No. 156,394

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **15 Claims**

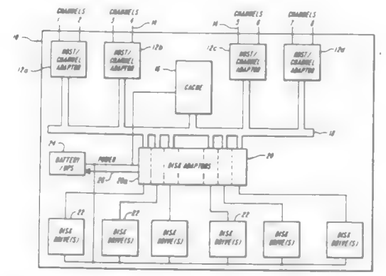
1. A disk storage system with write preservation, for assuring completion of data write commands for received data which is to be written to a data storage disk upon the failure of main electrical power, comprising:

at least one host computer, for issuing at least data write commands including data to be written to one or more storage disks;

at least one data receiver, for receiving said data write commands including said received data to be written to one or more data storage disks, and for storing each of said received data write commands including said data to be written to disk in a directly addressable temporary memory storage area;

said at least one data receiver establishing, in said directly addressable temporary memory storage area, at least one data storage system identification table including at least one data storage disk write pending indicator storage region, for storing at least one write pending indicator associated with each of said one or more data storage disks for which at least one data write command including data to be written to disk is received and pending, and for storing at least one data storage disk write pending indicator associated with each datum to be written to said data storage disk;

at least one disk controller, for searching said data storage system identification table in said directly addressable temporary memory storage area for data stored in said temporary memory storage area to be written to said one or more data storage disks as indicated by said associated data write pending indicator, for writing said data to said one or more data storage disks, and for clearing the at least



one write pending indicator associated with each datum as each datum is written to disk, and for clearing the write pending indicator for each data storage disk after all write pending indicators associated with each datum for said each data storage disk has been cleared; and

a source of backup electrical power, for providing electrical power to said one or more data storage disks, said directly addressable temporary memory storage area and said means for searching and writing, upon the failure of main electrical power, for assuring completion of write commands as indicated by said write pending indicators stored in said directly addressable temporary memory storage area upon the failure of main electrical power.

5,341,494

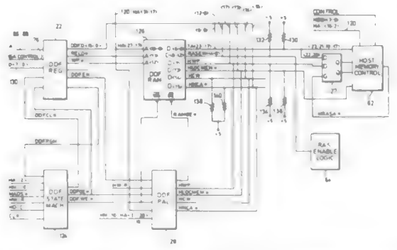
MEMORY ACCESSING SYSTEM WITH AN INTERFACE AND MEMORY SELECTION UNIT UTILIZING WRITE PROTECT AND STROBE SIGNALS

John S. Thayer; Dale J. Mayer; Javier F. Izquierdo, all of Houston; Paul R. Culley, Cypress, and John A. Landry, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 17,976, Feb. 12, 1993, abandoned, which is a continuation of Ser. No. 431,666, Nov. 3, 1993, abandoned. This application Dec. 10, 1993, Ser. No. 165,514

Int. Cl.[5] G06F *12/06*

U.S. Cl. 395—425 **11 Claims**



1. A memory accessing system for use in a computer system having an address bus for communication of address values, a data bus for communication of data and a control bus for communication of status and timing signals, the address bus, data bus and control bus having defined content and timing requirements, the memory accessing system comprising:

at least one memory module, each memory module containing memory having data inputs and outputs for coupling to the data bus and having address lines and control inputs, said address lines and control inputs having defined content and timing requirements different from the content and timing requirements of the address bus, the data bus and the control bus;

a plurality of memory module locations, each memory module location for removably receiving a memory module and having connections for coupling said data inputs and outputs of an attached memory module to the data bus and for connection to said address lines and control inputs of an attached memory module;

means for interfacing address and control signals to each memory module location, said interfacing means having enable signal inputs for selecting one of said plurality of memory module locations; a plurality of address line inputs, a portion of which are coupled to the address bus, wherein said address line inputs are received according to the address bus content and timing requirements; control signal inputs connected to the control bus, wherein said control signal inputs are received according to the control bus content and timing requirements; address line outputs which are connected to each of said memory module location address line input connections and control signal outputs connected to said memory module location control input connections, wherein said control signal outputs are activated based on said enable signal inputs, wherein said address line outputs are developed based on said address line inputs and wherein said address line outputs and control signal outputs are providing according to said memory module content and timing requirements; and

memory selection random access memory having a plurality of storage locations; address inputs to select one of said plurality of storage locations of said memory selection random access memory, said address inputs being coupled to the address bus; data inputs for receiving data to be stored in said one storage location in said memory selection random access memory, said data inputs being coupled to the data bus; and data outputs for providing data stored in said one storage location in said memory selection random access memory, said data outputs being coupled to said interfacing means enable signal inputs and the remainder of said interfacing means address line inputs.

5,341,495

BUS CONTROLLER HAVING STATE MACHINE FOR TRANSLATING COMMANDS AND CONTROLLING ACCESSES FROM SYSTEM BUS TO SYNCHRONOUS BUS HAVING DIFFERENT BUS PROTOCOLS

Thomas F. Joyce, Westford, Mass.; James W. Keeley, Nashua, N.H.; Richard A. Lemay, Carlisle, Mass.; Bruno DiPlacido, Jr., Dedham, Mass., and Martin M. Massucci, Burlington, Mass., assignors to Bull HN Information Systems, Inc., Billerica, Mass.

Filed Oct. 4, 1991, Ser. No. 771,297

Int. Cl.[5] G06F *13/42, 13/38, 13/00*

U.S. Cl. 395—500 **15 Claims**

1. A processing unit tightly coupled to a system bus which utilizes a split cycle bus protocol for processing read and write memory requests, said processing unit comprising:

a local memory;

a synchronous bus tightly coupled to said local memory for enabling access to said local memory using a predetermined bus protocol different from said split cycle bus protocol; and,

a state machine coupled to said synchronous bus and to said system bus, said state machine for processing a plurality of

VOL 1165 ISS 4 AG 23 1994 UMI

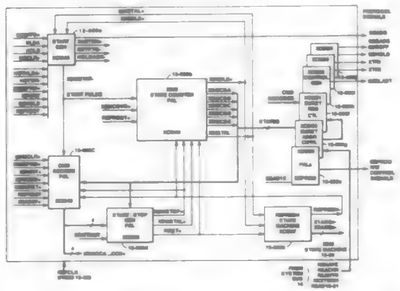
different types of complex commands received from said system bus and including:

a plurality of synchronously operated programmable array logic (PAL) circuits, a first one of said PAL circuits being coupled to said system bus for decoding each of said different types of complex commands received from said system bus to generate a state code designating the command type;

a second one of said PAL circuits coupled to said first one of said PAL circuits and to said synchronous bus for generating a start signal upon receipt of synchronous bus signals indicating that said state machine has gained control of said synchronous bus according to said predetermined bus protocol;

a third one of said PAL circuits coupled to said first and second ones of said PAL circuits, said third one of said PALS being preprogrammed for generating signals representative of a plurality of sequential states corresponding to a number of different basic sequences required for executing said different types of complex commands within a preestablished number of clock cycles which emulates said predetermined bus protocol of said synchronous bus; and

a fourth one of said PAL circuits coupled to said first and third ones of said PAL circuits for receiving said state code and sequential state signals representative of said plurality of sequential states, said fourth one of said PAL circuits in response to said state code and said sequential state signals, generating stop and stall control signals indicating completion or temporary interruption of a number of said basic sequences required for processing each of said complex commands, said third one of said plurality of PAL circuits in response to said stop and stall signals respectively sequencing to an idle state to await receipt of a next complex command from said system bus and sequencing to a stall state to await receipt of a signal from said system bus indicating completion of an operation according to said split cycle protocol.



5,341,496

APPARATUS AND METHOD FOR INTERFACING HOST COMPUTER AND COMPUTER NODES USING REDUNDANT GATEWAY DATA LISTS OF ACCESSIBLE COMPUTER NODE DATA

Frans M. Middledorp, Attleboro, and Allan P. Fournier, North Attleboro, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 574,706, Aug. 29, 1990, abandoned. This application Aug. 11, 1993, Ser. No. 105,766

Int. Cl.[5] G06F *13/00, 11/20*

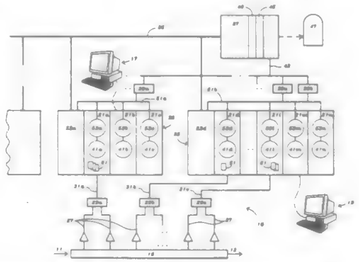
U.S. Cl. 395—575 **9 Claims**

1. In a data processing system having a host processor and a network of working computer nodes linked to the host processor over the network for communication therebetween according to a predefined host processor protocol, each one of said working computer nodes having respective computer node data, interface apparatus comprising:

a plurality of gateways coupled between the host processor and the working computer nodes, each gateway coupled to a respective multiplicity of working computer nodes, said gateways serving as interpreters between respective working computer nodes and programs executed on the host processor and each gateway having a data list indicating names of items of computer node data at the respective working computer nodes which items are accessible by the host processor via the gateway which has the data list, such that programs executed on the host processor use the host processor protocol to request computer node data by item name and the gateways support access to the computer node data according to item name; and

data handling means coupled to the gateways to interface the programs executed on the host processor with the gateways, the data handling means storing a relationship between each computer node data item and a gateway which has a data list which includes the computer node data item name, the data handling means receiving a request for a computer node data item by item name from a program executed on the host processor and identifying a gateway which has a data list indicating the item name received;

wherein, during times of one gateway disfunctioning, the data handling means copies a data list from the one disfunctioning gateway to a second functioning gateway and modifies the stored relationship between the computer node data items and the gateways such that the second gateway supports access to the computer node data items whose names are indicated in the copied data list instead of the one gateway, said copying of the data list from the one gateway to the second gateway enabling programs executed on the host processor to continue requesting computer node data by item name and in a manner that is free of change in host processor protocol.



5,341,497

METHOD AND APPARATUS FOR A COMPUTER SYSTEM TO DETECT PROGRAM FAULTS AND PERMIT RECOVERY FROM SUCH FAULTS

Thomas C. Younger, Monona, Wis., assignor to Ohmeda Inc., Liberty Corner, N.J.

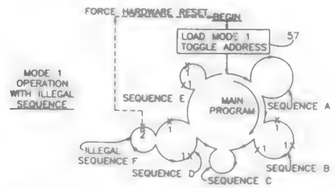
Continuation of Ser. No. 777,858, Oct. 16, 1991. This application Dec. 16, 1993, Ser. No. 168,767

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **16 Claims**

1. A circuit for monitoring the programmed flow of operation of a computerized system including a programmable controller for at desired times operating said system in one of a plurality of different programmed modes of operation, respectively, and within each mode of operation, in programmed sequences of operation, relative to a main program, comprising:

assignment means for assigning a unique mode toggle address from a plurality of programmable addresses for each predetermined mode of operation of said system being monitored only at the beginning of the associated mode of operation, which toggle mode address remains assigned to said mode, and to its associated said plurality of programmed sequences, respectively, so long as said mode is active;



matching means controlled only by software for both matching said predetermined mode toggle address preloaded into said monitoring circuit for the computerized system a system reset signal is generated substantially immediately after the error is detected for resetting said controller, if the error was transitory or has been removed, to reinitiate the desired mode of operation.

5,341,498

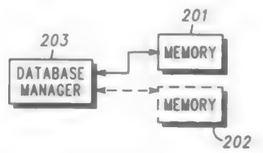
DATABASE MANAGEMENT SYSTEM HAVING FIRST AND SECOND DATABASES FOR AUTOMATICALLY MODIFYING STORAGE STRUCTURE OF SECOND DATABASE WHEN STORAGE STRUCTURE OF FIRST DATABASE IS MODIFIED

James M. Connor, Carol Stream, Ill.; Theodore M. Bloomstein, Cambridge, Mass.; James A. Henderson, Jr., Hoffman Estates, Ill.; John W. Maher, Woodstock, Ill., and James H. Errico, Schaumburg, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 509,915, Apr. 16, 1990, Pat. No. 5,175,727. This application Apr. 12, 1991, Ser. No. 684,718

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 **11 Claims**



1. A method of maintaining data in a communications network having at least first and second communication systems, the method comprising the steps of:

providing a first data base having a data storage structure directly related to characteristics of operating parameters for the first communication system and storing a first set of information relating to operating parameter characteristic values for the first communication system;

providing a second data base having a data storage structure directly related to characteristics of operating parameters for the second communication system and storing a second set of information and a third set of information, wherein the second set of information includes at least some of the first set of information, and wherein the third set of information relates to operating parameter characteristic values for the second communication system;

modifying the data storage structure of the first data base by changing the operating parameter characteristics when the operating parameter characteristic values for the first communication system are modified due to an environmental change in the first communication system and said operating parameter characteristic value modification cannot be readily accommodated by a current data storage structure of the first data base:

automatically modifying the data storage structure of the second data base by changing the operating parameter characteristics whenever any of the following occur:

the data storage structure of the first data base is modified; and

new operating parameter characteristic values must be added to the second data base, and the new operating parameter characteristic values cannot be readily accommodated by a current data storage structure of the second data base.

5,341,499

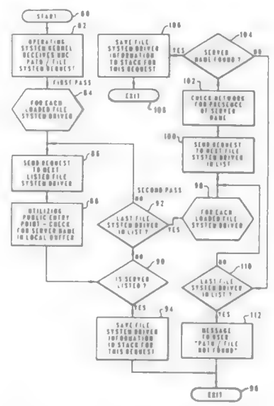
METHOD AND APPARATUS FOR PROCESSING MULTIPLE FILE SYSTEM SERVER REQUESTS IN A DATA PROCESSING NETWORK

Philip H. Doragh, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 2, 1992, Ser. No. 862,162

Int. Cl.[5] G06F *15/16*

U.S. Cl. 395—700 **9 Claims**



1. A method in a data processing network which includes multiple server devices which are connected to a client user within said data processing network for processing multiple server requests, said method comprising processing network implemented steps of:

loading a plurality of diverse file system drivers during the loading of an operating system within said client user;

providing a public entry point into each file system driver wherein an identification of each server device managed by an associated file system driver may be ascertained;

sequentially checking each of said plurality of file system drivers in response to a server request for a selected server wherein a particular file system driver within said client user which manages said selected server may be identified;

processing said server requests for said selected server utilizing said particular file system driver if said particular file system driver is identified; and

searching said data processing network to locate said selected server in response to a failure to identify a particular file system driver which manages said selected server.

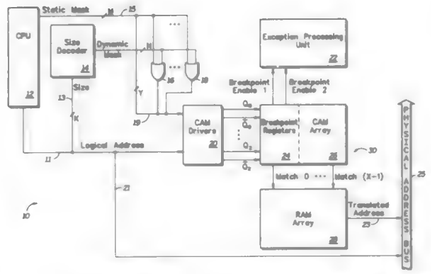
VOL 1165 ISS 4 AG 23 1994 UMI

5,341,500

DATA PROCESSOR WITH COMBINED STATIC AND DYNAMIC MASKING OF OPERAND FOR BREAKPOINT OPERATION

William C. Moyer, Dripping Springs; Joseph A. Gutierrez, and Yui K. Ho, both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1991, Ser. No. 679,478
Int. Cl.[5] G06F *11/34*
U.S. Cl. 395—725 12 Claims



1. A data processor for executing a breakpoint operation comprising:

a processing unit, the processing unit decoding an instruction to provide both an operand of the instruction and a static mask signal, the static mask signal defining a first portion of the operand to be masked during execution of the breakpoint, the static mask signal being provided to the processing unit before the processing unit decodes the instruction;

a decoder having an input coupled to the processing unit for receiving the operand of the instruction, the decoder decoding the operand to provide a dynamic mask signal for defining a second portion of the operand to be masked for use during execution of the breakpoint operation, the dynamic mask signal being provided when the operand is decoded;

first logic means for logically combining the static mask signal and the dynamic mask signal to provide a combined mask signal, the combined mask signal defining a third portion of the operand of the instruction to be masked for use during execution of the breakpoint operation, the first logic means being coupled to both the processing unit for receiving the static mask signal and the decoder for receiving the dynamic mask signal;

driver means for masking the third portion of the operand with the combined mask signal to provide a masked operand value, the driver means being coupled to both the first logic means for receiving the combined mask signal and the processing unit for receiving the operand of the instruction; and

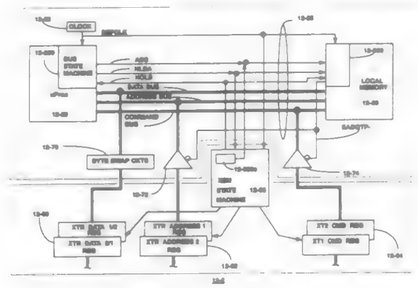
a breakpoint register for storing a breakpoint value, the breakpoint register having an input coupled to the driver means for receiving the masked operand value, the breakpoint register having an output for providing a breakpoint enable signal.

5,341,501

PROCESSOR BUS ACCESS

James W. Keeley, Nashua, N.H.; Richard A. Lemay, Carlisle, and Chester M. Nibby, Jr., Beverly, both of Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Oct. 4, 1991, Ser. No. 771,582
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—725 11 Claims



1. A system comprising:

a local memory;

a first synchronous state machine for generating commands to said local memory according to a predetermined bus protocol for performing read and write operations;

a second synchronous state machine for generating commands to said local memory according to said predetermined bus protocol for performing read and write operations;

a synchronous bus tightly coupling said first state machine, said second state machine and said local memory together;

a clock generator coupled to said first state machine, to said local memory and to said second state machine, said clock generator generating a single frequency clock reference signal for synchronizing the operations of said system on a predetermined transition of said clock reference signal; and,

programmable means associated with said local memory coupled to said synchronous bus and to said clock generator, said programmable means generating an output signal developed from using transitions alternate to said a predetermined transitions of said clock reference signal for providing earlier access to said local memory and a signal representative of a state of a predetermined one of said bus protocol signals by which said first state machine signals release of control of said bus, said output signal enabling early transfer of commands to said bus by said second state machine for execution by said local memory immediately following said release of control said first state machine.

5,341,502

DEVICE FOR ASSIGNING A SHARED RESOURCE IN A DATA PROCESSING SYSTEM

Anita S. Grossman; Chin-Cheng Kau, both of Austin; Aubrey D. Ogden, Roundrock, and Mason L. Weems, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1992, Ser. No. 989,864
Int. Cl.[5] G06F *12/02, 13/14*
U.S. Cl. 395—725 6 Claims

1. A device for assigning a shared resource to a request for the shared resource, the shared resource and the one request for the shared resource of a group of at least one resource and of a group of at least one request for the resource, respectively, the availability and unavailability of the shared resource represented by a resource signal being logically equivalent to a first and second logic state, respectively, the assertion and non assertion of the request for resource represented by a request

signal being logically equivalent to a first and second logic state, respectively, the device comprising:

a resource input line associated with a resource signal;

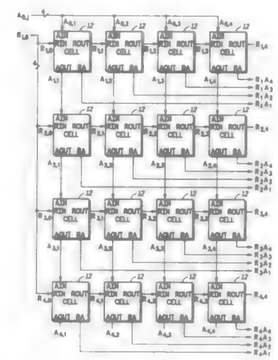
a request for resource input line associated with a request signal;

at least one cell coupled to the resource input line and to the request for resource input line, the at least one cell comprising:

allocation circuitry coupled to the resource input line and to the request for resource input line, the allocation circuitry generating a predetermined signal assigning the shared resource to the request for the resource if both the resource signal and the request signal corresponds to a first logic state;

resource input circuitry coupled to the resource input line and to the request for resource input line, the resource input circuitry toggling the resource signal from the first to a second logic state if both the resource signal and the request signal corresponds to the first logic state; and

request for resource input circuitry coupled to the resource input line and to the request for resource input line, the request for resource input circuitry toggling the request signal from the first to the second logic state if both the resource signal and the request signal corresponds to the first logic state.



5,341,503

BATTERY OPERATED COMPUTER HAVING IMPROVED BATTERY GAUGE AND SYSTEM FOR MEASURING BATTERY CHARGE

Leo A. Gladstein, Boca Raton, Fla.; Christopher D. Jones, Georgetown, Ky.; Kyriakos Leontiades, Boca Raton, Fla.; Paritosh D. Patel, Deerfield Beach, Fla., and Paul W. Petroskey, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1992, Ser. No. 869,403
Int. Cl.[5] G06F *1/30, 1/32*
U.S. Cl. 395—750 11 Claims

1. In a portable, battery operated, tablet computer, the combination comprising:

a video system including a display;

a digitizing subsystem comprising

a digitizer physically coupled to said display,

a stylus operated by a user and being movable between different locations relative to said digitizer and said display for writing on said digitizer to enter user information into said computer, and

a digitizer controller connected to said digitizer for converting positions of said stylus, as it writes on said digitizer, into digital coordinates indicative of stylus position;

a selectively actuated control switch for turning said computer on and off;

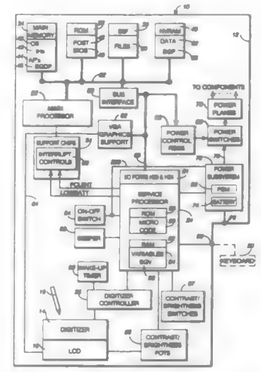
a power subsystem including

a connector adapted to selectively connect said computer to an external source of electrical energy,

a battery for supplying electrical energy to operate said computer,

a converter connected to said battery and to said connector for supplying voltages to power said computer from said battery or the external source dependent upon whether said connector is connected to or disconnected from the external source, said converter including means for generating a load signal indicating how much charge from said battery is being consumed by said computer when said computer is turned on and being powered by said battery,

a charger connected to said battery and said connector for charging said battery when said connector is connected to the external source, said charger being selectively operable in response to a control signal to add an amount of charge to said battery from an external source in proportion to said control signal, and



a power subsystem microcontroller (PSM) connected to said converter for periodically reading said load signal and determining how much charge has been consumed, said PSM being further connected to said charger and operative to generate said control signal, transmit said control signal to said charger and determine from said control signal how much charge has been added to said battery during a charging interval, said PSM being further operative to periodically form packets of information and include in each packet an indication of such added charge and an indication of said amount of consumed charge;

a service processor connected to said PSM and including a memory for storing battery information indicating how much charge said battery contains, said service processor being operative to periodically poll said PSM and receive said packets of information therefrom, said service processor being further operative to update said battery information in accordance with charge added and consumed as indicated by each of said packets;

a host processor connected to said display and to said service processor, said host processor being operative to read said battery information from said service processor and selectively display battery information on said display;

said service processor being further connected to said digitizer controller for receiving said coordinates from said

VOL 1165 ISS 4 AG 23 1994 UMI

digitizer controller, processing said coordinates to produce coordinate information, and transmitting said coordinate information to said host processor; and

said host processor being operative, in response to receiving said coordinate information from said service processor, to analyze said coordinate information and to operate said display and visually output to the user said user information written on said digitizer by stylus.

5,341,504

MULTI-DIMENSIONAL STRUCTURED COMPUTER SYSTEM

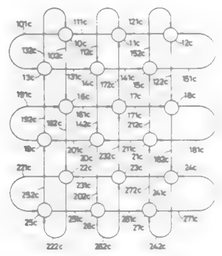
Kinji Mori, Yokohama; Shoji Miyamoto, Kawasaki, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 182,218, Apr. 15, 1988, abandoned, which is a division of Ser. No. 687,245, Dec. 28, 1984, abandoned. This application Mar. 1, 1990, Ser. No. 490,520

Claims priority, application Japan, Dec. 28, 1983, 58-246294

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—800 28 Claims



1. A three-dimensional structured computer system comprising:

a plurality of processors each having a plural number of inputs and a plural number of outputs;

at least a first transmission loop line; and

at least one second transmission line being connected to said first transmission loop line at least through two processors connected in common in said first transmission loop line and the second transmission line, said second transmission line having at least one other processor connected therein which is not connected in said first transmission loop line,

each of said processors having means for relaying data from one of said inputs thereof to at least one of said outputs thereof, each of said inputs of said processors being connected to one of said first and second transmission lines and each of said outputs being connected to one of said first and second transmission lines, and each of said processors further having means for independently determining, by use of a routine table stored in said each of said processors, said at lest one output to which to relay said data from said one of said inputs based upon content of the data to be relayed, without instruction from another processor, and for controlling said relay of data according to the determination, thereby forming an independently routed network.

5,341,505

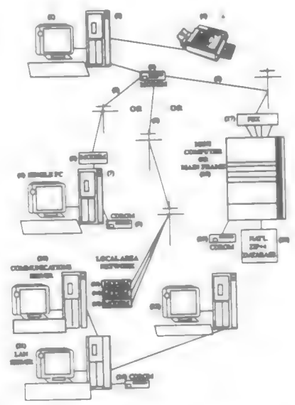
SYSTEM AND METHOD FOR ACCESSING REMOTELY LOCATED ZIP+4 ZIPCODE DATABASE

Harry T. Whitehouse, 70 Hayfield Rd., Portola Valley, Calif. 94028-7249

Filed Oct. 30, 1990, Ser. No. 605,649

Int. Cl.[5] G06F *3/12, 15/20*

U.S. Cl. 395—800 9 Claims



1. A distributed computer system: comprising:

a plurality of end-user computers; and

a first computer including a modem for receiving calls from said plurality of end-user computers, and a ZIP+4 database with query response means coupled to said modem for transmitting to said plurality of end-user computers ZIP+4 zipcode values retrieved from said ZIP+4 database in response to address information transmitted to said first computer via said modem;

each of said plurality of end-user computers including:

a modem for communicating with said first computer;

address input means for receiving address information input by a user of each of said plurality of end-user computers and for storing said user input address information;

remote zipcode retrieval means for transmitting said stored address information to said first computer via said modem, receiving ZIP+4 zipcode values from said first computer via said modem, and for storing and inserting said received ZIP+4 zipcode values into said stored address information;

a printer;

envelope printing means for directing said printer to print barcodes on envelopes, each said barcode representing one of said ZIP+4 zipcode values received from said first computer; and

a keyboard with a multiplicity of keys for entering said address information;

said address input means including means for displaying said stored address information in a predefined screen format and means for responding to a predefined single user command when said address input means is displaying said stored address information in said predefined screen format by invoking said remote zipcode retrieval means to call said first computer, to transmit said displayed address to said first computer, to receive in said each of said plurality of end-user computers a corresponding ZIP+4 zipcode value from said first computer, and to insert the received ZIP+4 zipcode value into said displayed address.

5,341,506

DATA FLOW PROCESSOR WITH A FULL-TO-HALF WORD CONVERTOR

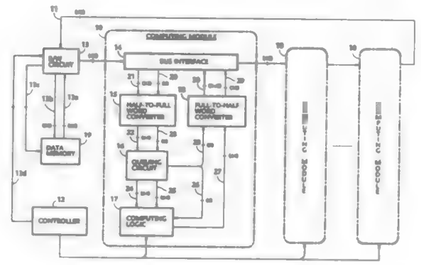
Hitoshi Nohmi, and Katsutoshi Nakada, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 326,370, Mar. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 806,558, Dec. 9, 1985, abandoned. This application Apr. 22, 1991, Ser. No. 688,089

Claims priority, application Japan, Dec. 10, 1984, 59-260376

Int. Cl.[5] G06F *13/00, 13/38, 15/00, 15/82*

U.S. Cl. 395—800 2 Claims



1. A dataflow processor for processing double and single precision data in accordance with a program, comprising:

a ring bus having a bit width greater than a bit width of said single precision data but smaller than a bit width of said double precision data;

a plurality of computing modules serially connected by said ring bus;

a data memory for storing said double and single precision data as data segments of equal bit width, said double precision data being made up of a companion data segment of higher significant bits and a like companion data segment of lower significant bits; and

means for sequentially reading data segments of either double or single precision data from said data memory in accordance with said program, appending a tag to each of the data segments read out of said memory to form a data packet and forwarding the data packet to said ring bus, said tag of each data packet identifying one or the other of said computing modules as a destination of the data packet and identifying the data packet as the single precision data or one of the companion data segments of the double precision data;

each of said computing modules comprising:

interface means responsive to the tag of said data packet received from said ring bus for forwarding the received data packet to said ring bus or decomposing the received data packet into a decomposed tag and a decomposed data segment;

half-to-full word converter means including a waiting memory and means responsive to the decomposed tag of each said data packet supplied from the interface means for storing the decomposed data segment of the data packet into said waiting memory if said decomposed tag identifies the decomposed data segment as one of the companion data segments and assembling the stored decomposed data segment with the decomposed data segment of a subsequently received data packet into a double precision data word if the tag of the subsequent data packet identifies the data segment contained therein as the other of said companion data segments, and translating the decomposed data segment of each said data packet supplied from the interface means to a single precision data word having a format of said double precision data word if said decomposed tag identifies the decomposed data segment as the single precision data;

queuing means for sequentially receiving the data words of either the double or single precision data from said half-to-full word converter means, forming a data set with successively received data words and generating a variable identifying each data set as the double or single precision data and indicating which computation is to be performed on said data set;

computing logic means for performing computation on the data words of each data set in accordance with said variable to produce a computed data word; and

full-to-half word converter means responsive to said variable identifying the data set as the double precision data for separating the computed data word into the companion data segments of higher and lower significant bits, appending said tag to each of said separated companion data segments to form data packets and forwarding same to said interface means, and responsive to said variable identifying the data set as the single precision data for translating the computed data word to a data segment of single precision data format, appending said tag to the translated data segment to form a data packet, and forwarding same to said interface means,

said interface means multiplexing data packets from said full-to-half word converter means with data packets from said ring bus.

5,341,507

DATA DRIVE TYPE INFORMATION PROCESSOR HAVING BOTH SIMPLE AND HIGH FUNCTION INSTRUCTION PROCESSING UNITS

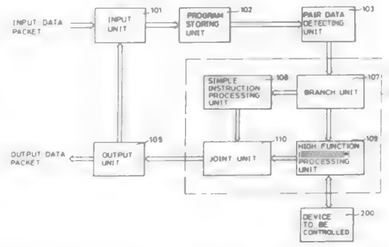
Hiroak Terada; Hiroaki Nishikawa, both of Osaka; Tetsuo Yamasaki; Yoshie Inaoka, Hyogo; Kenji Shima, Hyogo; Shinji Komori, Hyogo; Shin-ichi Yoshida, Nara; Shunji Hine, Osaka; Youichiro Nishikawa, Hyogo, and Shuji Hara, Osaka, all of, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo; Sharp Kabushiki Kaisha, Osaka; Matsushita Electric Industrial Co., Ltd., Osaka and Sanyo Electric Co., Ltd., Osaka, all of Japan

Filed Jul. 15, 1991, Ser. No. 729,727

Claims priority, application Japan, Jul. 17, 1990, 2-191817

Int. Cl.[5] G06F *15/82*

U.S. Cl. 395—800 5 Claims



1. A data driven type information processing apparatus, comprising:

input means for inputting a data packet at least including a node number and data;

program storing means, coupled to said input means, for storing a data flow program, reading at least a node number and instruction information from the data flow program on the basis of the node number included in the data packet provided from said input means, and producing and outputting a new data packet including the node number, the instruction information, and the data in said data packet;

pair detecting means for receiving the data packet outputted

VOL 1165 ISS 4 AG 23 1994 UMI

from said program storing means, detecting two data packets to be a pair having the same node number, and producing and outputting a new data packet having the data in both of the data packets;

operation processing means for receiving the data packet outputted from said pair detecting means, performing an operation process related to the data included int he data packet on the basis of the instruction information included in the data packet, and producing and outputting a data packet having data indicating the operation result; and

output control means for receiving the data packet outputted from said operation processing means and controlling whether the data packet is to be externally outputted or to be outputted to said input means; wherein

said operation processing means comprises,

branching means for branching the data packet received from sad program storing means into a data packet having a simple instruction and a data packet having a high function instruction,

simple instruction processing means for performing an operation process of the data packet having said simple instruction of the data packets branched by said branching means, and outputting a processed data packet,

high function instruction processing means which stored in advance process information necessary for processing a high function instruction for performing operation process of the data packet having said high function instruction on the basis of the process information of the data packets branched by said branching means, for outputting a processed data packet, and

junction means for joining the processed data packet from the simple instruction processing means and the processed data packet from the high function instruction processing means to output the processed data packets to said output control means.

5,341,508

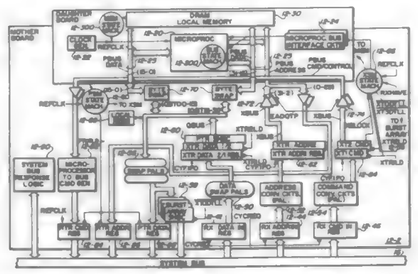
PROCESSING UNIT HAVING MULTIPLE SYNCHRONOUS BUS FOR SHARING ACCESS AND REGULATING SYSTEM BUS ACCESS TO SYNCHRONOUS BUS

James W. Keeley, Nashua, N.H., and Thomas F. Joyce, Westford, Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Oct. 4, 1991, Ser. No. 771,289

Int. Cl.[5] G06F *13/42, 13/38, 13/00*

U.S. Cl. 395—800 **14 Claims**



1. A processing unit coupled to a system bus for transferring and receiving requests, said processing unit comprising:

a synchronous local bus;

a microprocessor including a synchronous independently operated microprocessor bus state machine coupled to said synchronous local bus for controlling access to said synchronous local bus according to a predetermined protocol;

a local memory tightly coupled to said synchronous local bus, said memory including a synchronous independently operated memory state machine for controlling processing of local commands received from said microprocessor and external commands received from said system bus;

a synchronous independently operated processor state machine tightly coupled to said synchronous local bus and to said system bus for controlling transfer of microprocessor issued read and write commands from said synchronous local bus to said system bus; and

a synchronous independently operated external state machine tightly coupled to said synchronous local bus and to said system bus for controlling the transfer of external read and write commands received from said system bus to said local memory, each of said state machines including synchronizing circuit means for generating signals to selectively interconnect different ones of said state machines together for sharing access to said local bus without interference to enable optimum performance in processing commands.

5,341,509

PARALLEL PROCESSING SYSTEM INCLUDING A STACK OF BUS-PRINTED DISKS AND A PLURALITY OF RADIALLY EXENDING PROCESSING UNIT BOARDS

Tokuhei Takashima, Tokyo, Japan, assignor to Graphico Co. Ltd., Tokyo, Japan

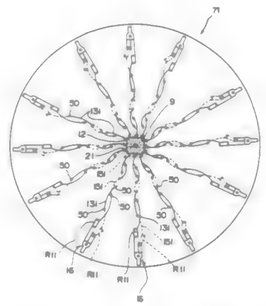
Filed Nov. 6, 1991, Ser. No. 788,470

Claims priority, application Japan, Nov. 16, 1990, 2-308848; Nov. 26, 1990, 2-325038

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] G06F *15/20;* **H05K** *7/00*

U.S. Cl. 395—800 **4 Claims**



1. A parallel processing system comprising, in combination, a stack assembly of bus-printed disks whose centers are arranged on a common center axis, and a plurality of processing unit boards standing upright around and electrically connected to said stack assembly of bus-printed disks, each bus-printed disk comprising:

a disk of dielectric material bearing on each of its opposite major surfaces, a printed radial pattern including a plurality of printed signal conductors of equal length radially extending from the center of said disk, each signal conductor on one major surface of said disk being connected to a corresponding signal conductor on the other major surface of said disk to make up a signal conductor pair; an integrated circuit crossbar switch placed on the center of said one major surface, the terminals of said crossbar switch being connected to said plurality of printed signal conductors on said one major surface; a plurality of impedance matching elements each connected to each signal conductor pair; and

means for connecting said impedance matching elements to said processing unit boards, and at least one of said processing unit boards having means for controlling all the integrated circuit crossbar switches to allow the switch elements of each crossbar switch to open and close in a predetermined sequence.

5,341,510

COMMANDER NODE METHOD AND APPARATUS FOR ASSURING ADEQUATE ACCESS TO SYSTEM RESOURCES IN A MULTIPROCESSOR

Richard B. Gillett, Jr., Westford, and Douglas D. Williams, Pepperell, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 711,107, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 333,575, Apr. 5, 1989, abandoned, which is a continuation of Ser. No. 45,043, May 1, 1987, abandoned. This application Oct. 22, 1993, Ser. No. 141,466

The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.

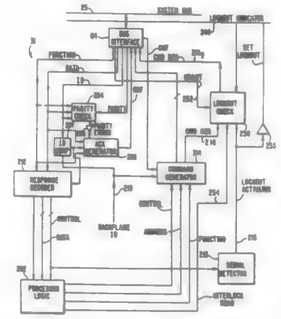
Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—800 **27 Claims**

1. A commander node coupled to a resource node in a multiprocessor computer system via a pended bus, said resource node responsive to access commands and generating resource denial indications when said access commands are not executed, said system including a lockout indicator responsive to a lockout activator to switch between an asserted condition and an unasserted condition, said commander node comprising:

means for transmitting an access command over said pended bus to said resource node;

means coupled to said pended bus and responsive to a resource denial indication generated in response to said transmitted access command for asserting a lockout activator when said access command has received inadequate response by said resource node according to a predetermined lockout assertion criterion; and,



lockout check means, coupled to said means for transmitting an access command, for monitoring said lockout indicator and for preventing transmission of said access commands over said bus by said commander node according to a predetermined access gating criteria when said lockout indicator is in said asserted condition.

VOL
1165

ISS
4

AG
23

1994

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DESIGN PATENTS

GRANTED AUG. 23, 1994

ERRATA

For CLASS	See PATENT NO.
026-003	D 349,816
012-111	D 349,869

VOL
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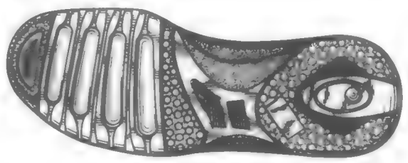
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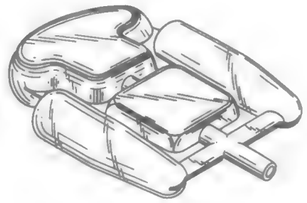
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349,803
SHOE SOLE
Mariamia Godinez, Sherman Oaks, Calif., assignor to L.A. Gear, Inc., Santa Monica, Calif.
Filed Jan. 22, 1993, Ser. No. 3,998
Term of patent 14 years
U.S. Cl. D2—956



349,804
BLADDER FOR A SHOE SOLE
Joel L. Passke, Portland, Oreg., and David M. Forland, Battle Ground, Wash., assignors to Nike, Inc., Beaverton, Oreg.
Filed Sep. 1, 1993, Ser. No. 12,417
Term of patent 14 years
U.S. Cl. D2—961



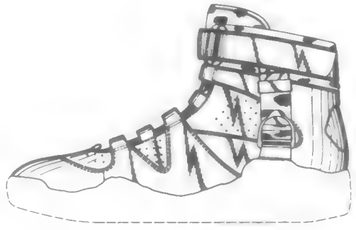
349,805
SHOE UPPER
John S. Earle; Ruk Peterson, both of Portland, and Linda Poetsch, Oregon City, all of Oreg., assignors to Avia Group International, Inc., Beaverton, Del.
Filed Dec. 26, 1993, Ser. No. 16,049
Term of patent 14 years
U.S. Cl. D2—970



349,806
SHOE UPPER
Amy S. Minkin, Canton, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Jan. 31, 1994, Ser. No. 18,131
Term of patent 14 years
U.S. Cl. D2—970

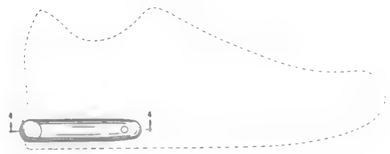


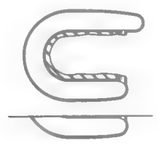
349,807
SHOE UPPER
Tinker L. Hatfield, and Bradford A. Johnson, both of Portland, Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Feb. 24, 1994, Ser. No. 19,187
Term of patent 14 years
U.S. Cl. D2—970



VOL 1165 ISS 4 AG 23 1994 UMI

349,808
BLADDER ELEMENT FOR A SHOE SOLE
Joel Passke, Portland, Oreg.; David M. Forland, Battle Ground; Larry R. Sarkinen, Vancouver, both of Wash., and William J. Worthington, Portland, Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Sep. 1, 1993, Ser. No. 12,386
Term of patent 14 years
U.S. Cl. D2—977





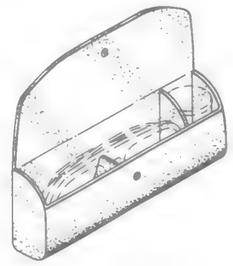
349,809
ELEMENT OF A SHOE UPPER
Judith R. Close, Dedham, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 7,593, Mar. 15, 1993, which is a continuation of Ser. No. 873,277, Apr. 22, 1992, Pat. No. Des. 333,905. This application Oct. 12, 1993, Ser. No. 14,106
Term of patent 14 years
U.S. Cl. D2—977



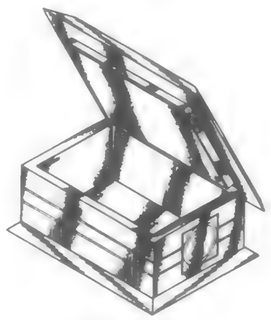
349,810
GLOVE CADDY
William F. Rutledge, Rte. 3, Box 272, Trinity, N.C. 27370
Filed Apr. 7, 1992, Ser. No. 841,978
Term of patent 14 years
U.S. Cl. D3—215



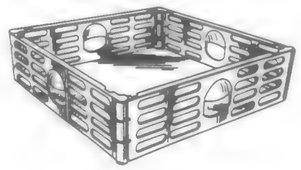
349,811
COMBINATION EYEGLASS/CONTACT LENS HOLDER
Sheri L. Gibb, 15789 Mountain View Drive, South Surrey British Columbia, Canada V4B 4Z5
Filed Jun. 28, 1993, Ser. No. 9,974
Claims priority, application Canada, Feb. 5, 1993, 05-02-93-2
Term of patent 14 years
U.S. Cl. D3—266



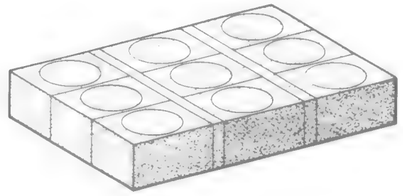
349,812
MEMENTO STORAGE BOX
Ed Rockery, and Joan Rockery, both of 292 Marlborough St., Brantford, Ontario, Canada N3S 4T5
Filed Aug. 20, 1992, Ser. No. 932,054
Term of patent 14 years
U.S. Cl. D3—273



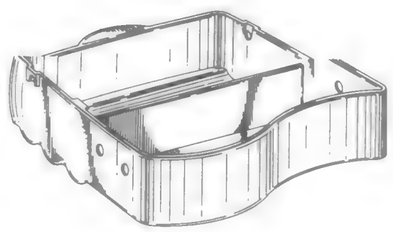
349,813
STORAGE CONTAINER
Robert Schwartzkopf, Columbus, Ind., assignor to Cosco, Inc., Columbus, Ind.
Filed May 14, 1993, Ser. No. 8,320
Term of patent 14 years
U.S. Cl. D3—304



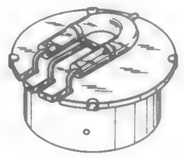
349,814
A SOFT FOAM INSERT FOR A COMBINED BASEBALL AND CARD STORAGE TRAY
L. Cullen Crisp, 1327 Chestnut, Mansfield, Tex. 76063
Filed Mar. 2, 1992, Ser. No. 843,110
Term of patent 14 years
U.S. Cl. D3—319



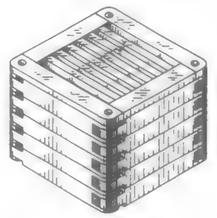
349,815
COSMETIC TRAY
Stacy L. Wolff, Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 8, 1993, Ser. No. 3,587
Term of patent 14 years
U.S. Cl. D3—319



349,816
BULB ASSEMBLY FOR A STROBE LIGHT
John B. Elliott, 225 W. El Norte Pkwy., #106, Escondido, Calif. 92026
Filed Aug. 31, 1992, Ser. No. 938,471
Term of patent 14 years
U.S. Cl. D26—3



349,817
COMBINED BENCH AND STORAGE BOX
Harry W. Scott, Jr., Dover; Randall W. Britt, and Kenneth L. Renfroe, both of Russellville, all of Ark., assignors to Thompson Industries, Inc., Russellville, Ark.
Filed Apr. 9, 1992, Ser. No. 866,313
The portion of the term of this patent subsequent to Aug. 17, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—336



349,818
GLIDER
Ronald C. Noll, Lyndhurst, Ohio, assignor to Cardinal American Corporation, Cleveland, Ohio
Filed Sep. 17, 1992, Ser. No. 948,826
Term of patent 14 years
U.S. Cl. D6—344

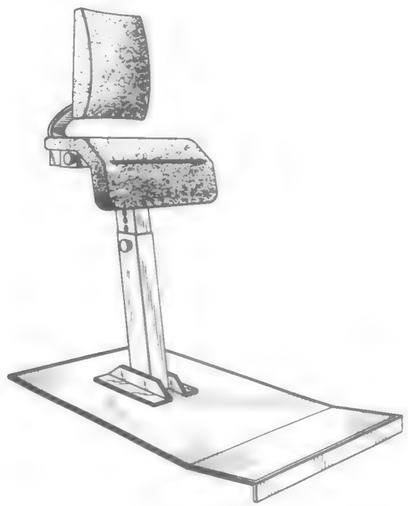


349,819
SWING
Ronald C. Noll, Lyndhurst, Ohio, assignor to Cardinal American Corporation, Cleveland, Ohio
Filed Sep. 17, 1992, Ser. No. 948,825
Term of patent 14 years
U.S. Cl. D6—347



VOL 1165 ISS 4 AG 23 1994 UMI

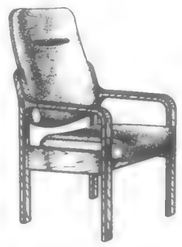
349,820
SIT STAND
Lester P. Schaevitz, 431 Latch's La., Merion Station, Pa. 19066
Filed Jan. 19, 1993, Ser. No. 3,822
Term of patent 14 years
U.S. Cl. D6—364



349,821
CHAIR
Bernie Lowsky, 1000 W. Island Blvd., Apt. #1810, North Miami Beach, Fla. 33160
Filed Jun. 1, 1992, Ser. No. 891,469
Term of patent 14 years
U.S. Cl. D6—369



349,822
CHAIR
Edsel E. Murry, Coldwater, Miss., assignor to Chromcraft Revington, Inc., Senatobia, Miss.
Filed May 11, 1993, Ser. No. 8,232
Term of patent 14 years
U.S. Cl. D6—379

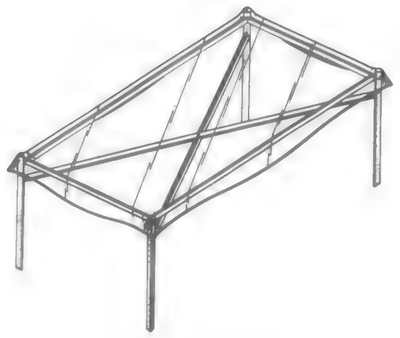


349,823
HOUSING FOR A FACSIMILE MACHINE
Stephen A. Gregg, Portland, Oreg., assignor to Ethix Corporation, Beaverton, Oreg.
Filed Sep. 14, 1992, Ser. No. 948,869
Term of patent 14 years
U.S. Cl. D6—436

349,824
MOBILE TABLE
Douglas C. Ball, Senneville, Canada, assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Jun. 8, 1993, Ser. No. 9,198
Term of patent 14 years
U.S. Cl. D6—482



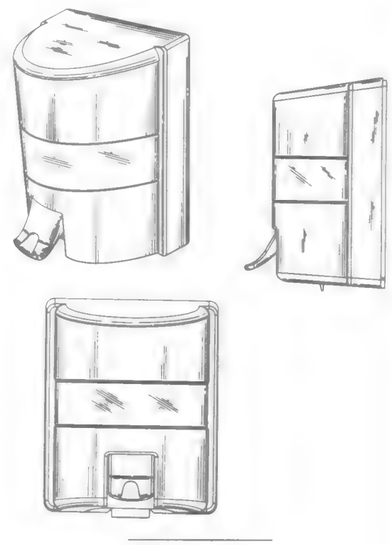
349,825
TABLE
Philippe Starck, Paris, France, assignor to Fiam Italia S.p.A., Tavullia, Italy
Filed Sep. 21, 1992, Ser. No. 948,886
Term of patent 14 years
U.S. Cl. D6—484



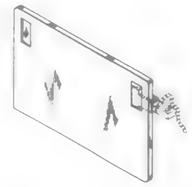
349,826
SEAT FOR A CHAIR
Alfred Homann, Holme-Olstrup, Denmark, assignor to Fritz Hansens EFT. A/S, Denmark
Filed Jul. 17, 1992, Ser. No. 915,431
Claims priority, application Denmark, Jan. 17, 1992, MA 0046 1991
Term of patent 14 years
U.S. Cl. D6—500



349,827
LIQUID SOAP DISPENSER
Allen E. Brandenburg, Austin, Tex., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Aug. 20, 1993, Ser. No. 12,021
Term of patent 14 years
U.S. Cl. D6—545

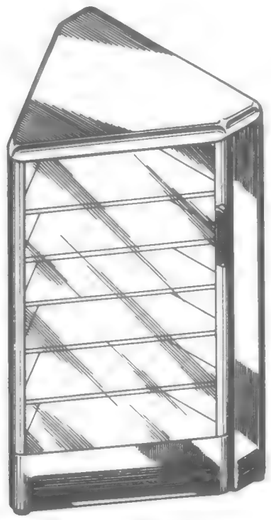


349,828
BALLAST FOR A VERTICAL BLIND LOUVER
Gary E. Reinhardt, 11 Markham Dr., Morganville, N.J. 07751
Filed Mar. 19, 1992, Ser. No. 854,443
Term of patent 14 years
U.S. Cl. D6—580

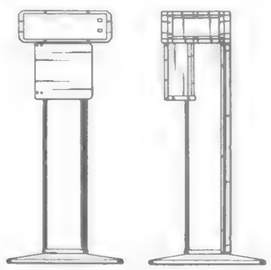


VOL 1165 ISS 4 AG 23 1994 UMI

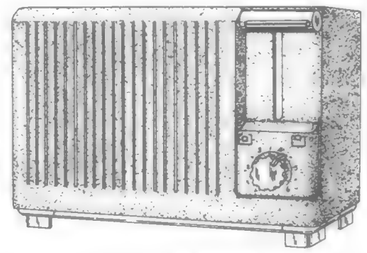
349,829
REFRIGERATED BEVERAGE DISPLAY CASE
Rafael T. Bustos, Alpharetta, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.
Filed Oct. 25, 1991, Ser. No. 784,004
Term of patent 14 years
U.S. Cl. D6—470



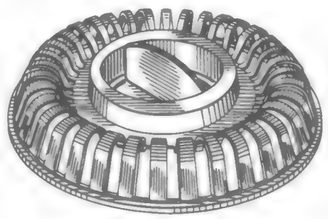
349,830
WATER VENDING MACHINE
Gary F. Barr, Pompano Beach, and Paul J. Celauro, Plantation, both of Fla., assignors to Bestech, Inc., Pompano Beach, Fla.
Filed Oct. 7, 1991, Ser. No. 771,995
Term of patent 14 years
U.S. Cl. D7—306



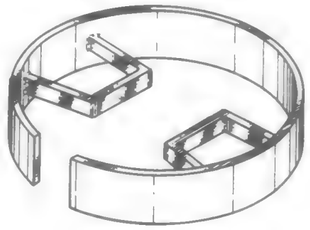
349,831
ELECTRIC TOASTER
Gunter Storsberg, Solingen, Fed. Rep. of Germany, assignor to Robert Krups GmbH & Co. KG, Solingen, Fed. Rep. of Germany
Filed Apr. 22, 1992, Ser. No. 914,330
The portion of the term of this patent subsequent to May 31, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—330



349,832
MICROWAVEABLE CHIP AND DIP SERVER
Norton Sarnoff, Northbrook; Carl R. Fletcher, Arlington Heights; Laura A. Morris, Oak Park, and John F. Chmela, Mount Prospect, all of Ill., assignors to Ensar Corporation, Wheeling, Ill.
Filed Mar. 8, 1993, Ser. No. 5,598
Term of patent 14 years
U.S. Cl. D7—557



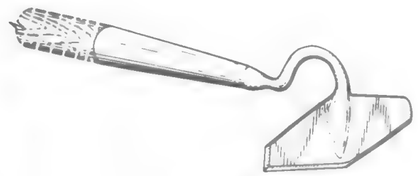
349,833
COFFEE FILTER RETAINER
Gary Enos, 2843 Pikake St., Lihue, Hi. 96766
Filed Nov. 20, 1992, Ser. No. 1,676
Term of patent 14 years
U.S. Cl. D7—400



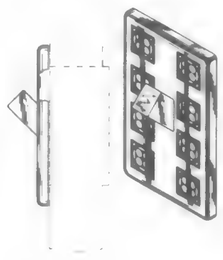
349,834
DRINKING GLASS
Elliott N. Zivin, 60 Cherry St., Bridgeport, Conn. 06605
Filed Sep. 24, 1993, Ser. No. 13,470
Term of patent 14 years
U.S. Cl. D7—523



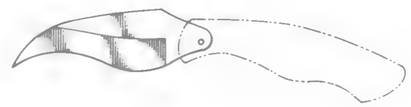
349,835
BLADE AND FERRULE UNIT FOR A HAND HOE
Gaylord A. Brinson, Box #5, Mt. Summit, Ind. 47361
Filed Apr. 20, 1993, Ser. No. 7,246
Term of patent 14 years
U.S. Cl. D8—11



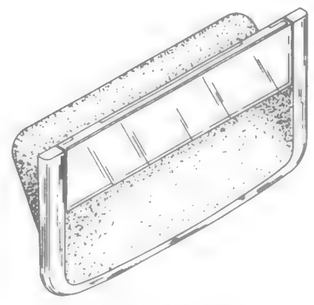
349,836
PAINT SHIELD FOR AN ELECTRICAL FIXTURE
Donald Maggard, 3732 Semones Rd., Union City, Tenn. 38261
Filed Jun. 8, 1992, Ser. No. 894,229
Term of patent 14 years
U.S. Cl. D8—14



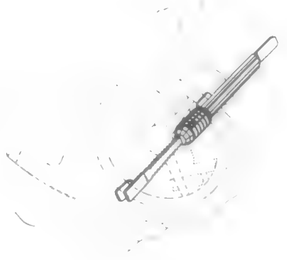
349,837
KNIFE BLADE
Louis Glesser, P.O. Box 800, Golden, Colo. 80402
Filed Dec. 16, 1992, Ser. No. 2,692
Term of patent 14 years
U.S. Cl. D8—20



349,838
PULL HANDLE
Scott N. Barton, Grand Rapids, Mich., and William A. Lee, Wheaton, Ill., assignors to Steelcase, Inc., Grand Rapids, Mich.
Filed Oct. 9, 1992, Ser. No. 396
Term of patent 14 years
U.S. Cl. D8—313



349,839
ANTI-THEFT STEERING WHEEL LOCK
Federico Gilardelli, Milan, Italy, assignor to The Rock Italia Di Alfredo Baldieri, Milan, Italy
Filed Sep. 7, 1993, Ser. No. 12,666
Term of patent 14 years
U.S. Cl. D8—331

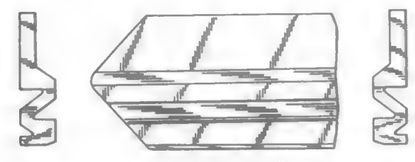


VOL 1165 ISS 4 AG 23 1994 UMI

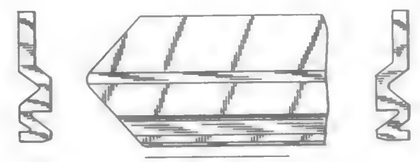
349,840
STEERING WHEEL LOCK
Kip L. Fuller, Littleton, Colo., assignor to Innovisions Technology Group, Inc., Littleton, Colo.
Filed Nov. 23, 1993, Ser. No. 15,662
Term of patent 14 years
U.S. Cl. D8—331



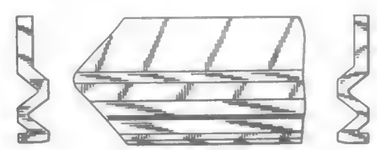
349,841
PORTION OF A KEY BLADE BLANK
Robert E. Kearns, San Francisco, Calif., assignor to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,297
Term of patent 14 years
U.S. Cl. D8—347



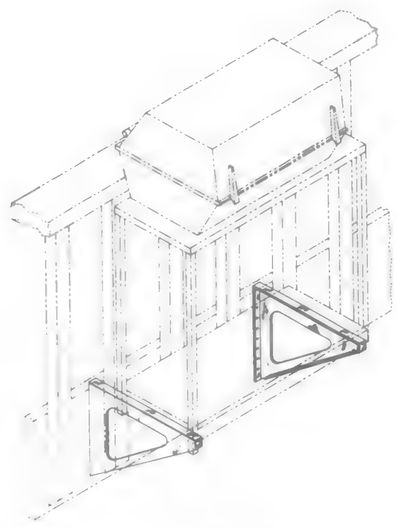
349,842
PORTION OF A KEY BLADE BLANK
Robert E. Kearns, San Francisco, Calif., assignor to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,298
Term of patent 14 years
U.S. Cl. D8—347



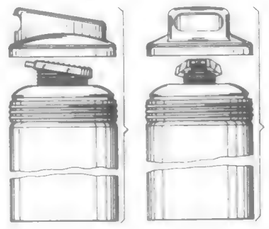
349,843
PORTION OF A KEY BLADE BLANK
Robert E. Kearns, San Francisco, Calif., assignor to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,299
Term of patent 14 years
U.S. Cl. D8—347



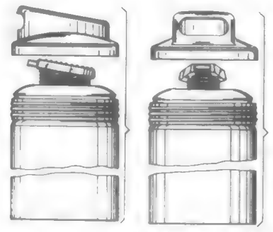
349,844
A PAIR OF GRILL MOUNTING BRACKETS
Harry K. Jaremkof, Wayne, N.J., assignor to GCHM Enterprises, Inc., Boonton, N.J.
Continuation-in-part of Ser. No. 4,783, Feb. 12, 1993. This application Jun. 28, 1993, Ser. No. 9,972
Term of patent 14 years
U.S. Cl. D8—380



349,845
COMBINATION ACTUATOR AND HOOD FOR DISPENSING GEL MATERIAL
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of Ser. No. 784,794, Oct. 30, 1991, Pat. No. D. 339,739. This application Mar. 17, 1992, Ser. No. 850,169
The portion of the term of this patent subsequent to Sep. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—300



349,846
COMBINATION ACTUATOR AND HOOD FOR DISPENSING FOAM MATERIAL
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of Ser. No. 785,512, Oct. 30, 1991, Pat. No. D. 343,789. This application Mar. 17, 1992, Ser. No. 850,168
The portion of the term of this patent subsequent to Feb. 1, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—300



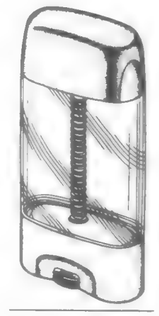
349,847
CONTAINER
Gary Avins, 13900 SW. 248th St., Princeton, Fla. 33032
Filed Apr. 2, 1993, Ser. No. 6,595
Term of patent 14 years
U.S. Cl. D9—310



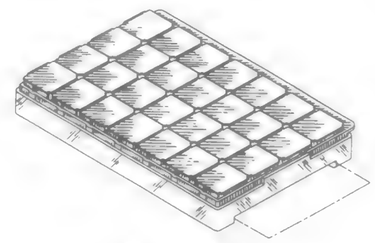
349,848
BOTTLE
Jean P. Gaultier, Paris, France, assignor to Beaute Prestige International, Paris, France
Filed May 6, 1993, Ser. No. 7,954
Claims priority, application Int'l Pat. Institute, Nov. 10, 1992, DM/024 377
Term of patent 14 years
U.S. Cl. D9—314



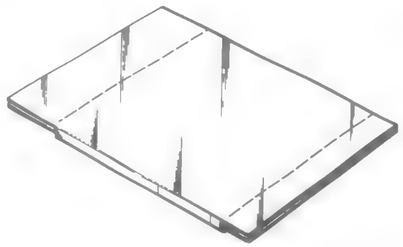
349,849
COSMETIC DISPENSER
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Filed May 21, 1993, Ser. No. 8,643
Term of patent 14 years
U.S. Cl. D9—338



349,850
PILL ORGANIZER
Glenn A. Leman, North Attleboro, Mass., assignor to Health Enterprises, Inc., North Attleboro, Mass.
Filed Apr. 16, 1993, Ser. No. 7,293
Term of patent 14 years
U.S. Cl. D9—341

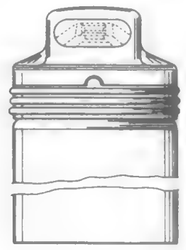


349,851
PACKAGE FOR OPTICAL DISCS
Lennart Olsson, Malmö , Sweden, assignor to CD-Sverige Aktiebolag, Lund, Sweden
Filed Oct. 13, 1992, Ser. No. 375
Claims priority, application Sweden, Apr. 13, 1992, 920837
Term of patent 14 years
U.S. Cl. D9—422

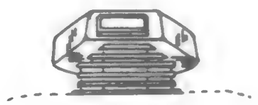


VOL 1165 ISS 4 AUG 23 1994 UMI

349,852
HOOD AND CONTAINER
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Division of Ser. No. 784,794, Oct. 30, 1991, Pat. No. D. 339,739.
This application Nov. 4, 1991, Ser. No. 786,951
The portion of the term of this patent subsequent to Feb. 1, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—448



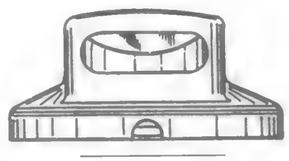
349,853
ACTUATOR TURRET FOR FOAM DISPENSER
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Division of Ser. No. 785,512, Oct. 30, 1991, Pat. No. D. 343,789.
This application Nov. 4, 1991, Ser. No. 786,971
The portion of the term of this patent subsequent to Feb. 1, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—448



349,854
ACTUATOR TURRET FOR GEL DISPENSER
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Division of Ser. No. 784,794, Oct. 30, 1991, Pat. No. 339,739.
This application Nov. 4, 1991, Ser. No. 786,973
The portion of the term of this patent subsequent to Sep. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—448



349,855
HOOD FOR DISPENSER
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Division of Ser. No. 784,794, Oct. 30, 1991, Pat. No. 339,739.
This application Nov. 4, 1991, Ser. No. 786,929
The portion of the term of this patent subsequent to Sep. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—445



349,856
COMBINED BOTTLE AND CAP
Hans Linnér, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden
Filed Jan. 18, 1991, Ser. No. 643,672
Claims priority, application Sweden, Jul. 20, 1990, 90-1571
Term of patent 14 years
U.S. Cl. D9—503



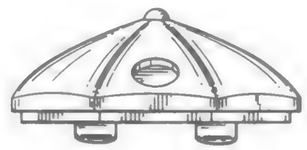
349,857
COMBINED BOTTLE AND CAP
John Lonczak, Newburgh; Leonard A. Filiz; Kin S. Yan, both of New York, and Victor Ivenitsky, Bronx, all of N.Y., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Filed Aug. 20, 1992, Ser. No. 932,854
Term of patent 14 years
U.S. Cl. D9—558



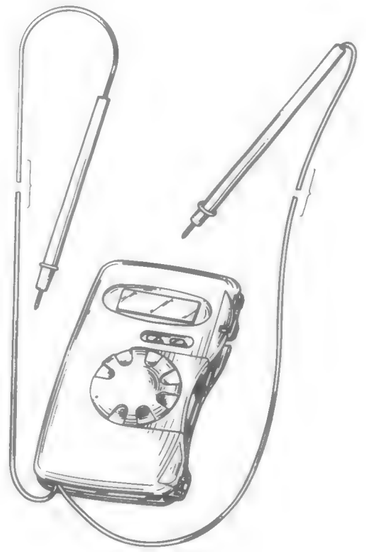
349,858
COMBINED BOTTLE AND CAP
John Lonczak, Newburgh; Leonard A. Filiz; Kin S. Yan, both of New York, and Victor Ivenitsky, Bronx, all of N.Y., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Filed Aug. 20, 1992, Ser. No. 932,853
Term of patent 14 years
U.S. Cl. D9—558



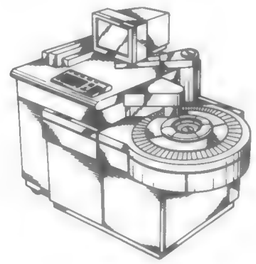
349,859
SCORE COUNTER
Eiji Asano, 5-28, Nijigahama, Hiratsuka-shi, Kanagawa-ken, Japan
Filed Apr. 29, 1993, Ser. No. 7,661
Claims priority, application Japan, Nov. 6, 1992, 4-32300
Term of patent 14 years
U.S. Cl. D10—46.1



349,860
DIGITAL MULTI METER
Makoto Omuro, and Eiji Tsukahara, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 7, 1993, Ser. No. 7,925
Claims priority, application Japan, Oct. 9, 1992, 4-29750; Jan. 28, 1993, 5-1996
Term of patent 14 years
U.S. Cl. D10—78

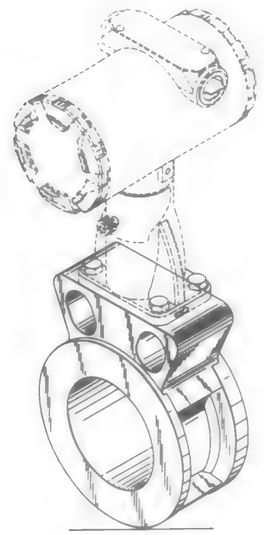


349,861
AUTOMATED ANALYTICAL INSTRUMENT
William J. Kanewske, Dallas, Tex.; Max K. Yoshimoto, San Mateo, and Brett C. Lovelady, San Jose, both of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Jul. 20, 1992, Ser. No. 915,169
Term of patent 14 years
U.S. Cl. D10—81

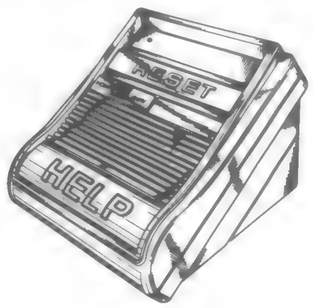


VOL 1165 ISS 4 AG 23 1994 UMI

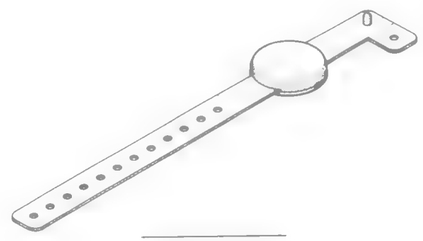
349,862
LARGE LINE SIZE FLOWMETER DESIGN
George C. Hausler, Maple Grove, and Melvin R. Beulke, Hopkins, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Oct. 23, 1992, Ser. No. 737
Term of patent 14 years
U.S. Cl. D10—96



349,863
HOME COMMUNICATOR FOR A PERSONAL EMERGENCY RESPONSE SYSTEM
Eric H. Freedman, New York, N.Y., assignor to Health Watch, Inc., Boca Raton, Fla.
Filed Jul. 23, 1993, Ser. No. 11,042
Term of patent 14 years
U.S. Cl. D10—106



349,864
IDENTIFICATION BRACELET
Paula Dunlap, Nashville, Tenn., and Gloria G. Hood, Birmingham, Ala., assignors to Tag-Along Enterprises, Inc., Birmingham, Ala.
Filed Jul. 19, 1993, Ser. No. 10,955
Term of patent 14 years
U.S. Cl. D11—3



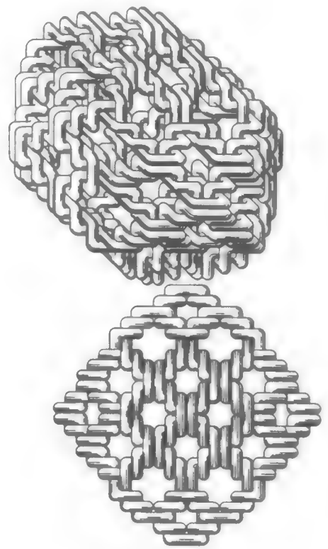
349,865
HEART JEWELRY CHAIN
Guy S. Benhamou, Beverly Hills, Calif., assignor to OroAmerica, Inc., Burbank, Calif.
Filed Oct. 27, 1993, Ser. No. 14,599
Term of patent 14 years
U.S. Cl. D11—14



349,866
EXPANSION BRACELET
John J. McNally, Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed Aug. 26, 1993, Ser. No. 12,253
Term of patent 14 years
U.S. Cl. D11—19



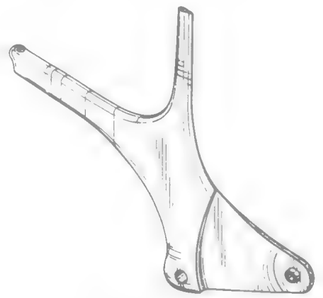
349,867
SCULPTURE
R. Morris Fuller, 400 Park Pl., Newport News, Va. 23601
Filed Jun. 9, 1993, Ser. No. 9,259
Term of patent 14 years
U.S. Cl. D11—131



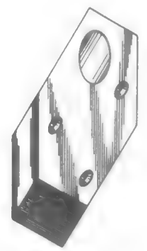
349,868
DOUBLE SIDED JEWELRY SETTING
Richard W. Udko, Beverly Hills, Calif., assignor to Unigem International, Beverly Hills, Calif.
Filed Nov. 23, 1993, Ser. No. 15,623
Term of patent 14 years
U.S. Cl. D11—91



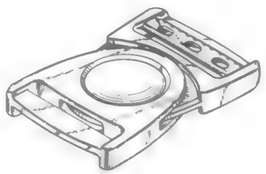
349,869
BICYCLE FRAME
Michael P. Burrows, and Richard D. Hill, both of Norfolk, United Kingdom, assignors to Group Lotus plc, Norfolk, United Kingdom
Filed Aug. 21, 1992, Ser. No. 934,160
Term of patent 14 years
U.S. Cl. D12—111



349,870
FLAG STAFF MOUNTING BASE
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.
Filed Apr. 6, 1993, Ser. No. 6,761
Term of patent 14 years
U.S. Cl. D11—182

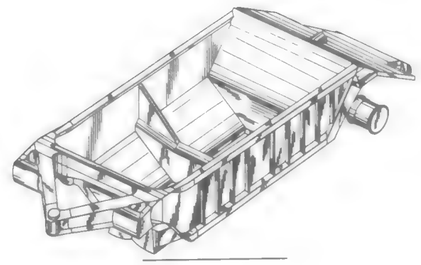


349,871
BUCKLE
Ryukichi Murai, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Nov. 5, 1993, Ser. No. 14,790
Claims priority, application Japan, May 19, 1993, 5-14502
Term of patent 14 years
U.S. Cl. D11—216



VOL 1165 ISS 4 AG 23 1994 UMI

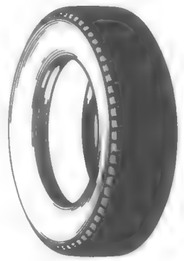
349,872
TRAILER BODY
Arthur W. Chaseling, 10 Malvern Street, Albany Creek, Queensland 4035, and Peter B. McGiffin, 11 Sidney Street, Clayfield, Queensland 4011, both of Australia
Filed Nov. 30, 1992, Ser. No. 2,031
Claims priority, application Australia, May 28, 1992, 1388/92
Term of patent 14 years
U.S. Cl. D12—15



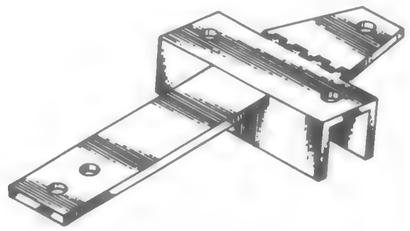
349,873
AUTOMOBILE TIRE
Kouji Shibata, Nishinomiya, and Atsuko Morita, Miki, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Apr. 1, 1993, Ser. No. 6,583
Claims priority, application Japan, Oct. 1, 1992, 4-28840
Term of patent 14 years
U.S. Cl. D12—141



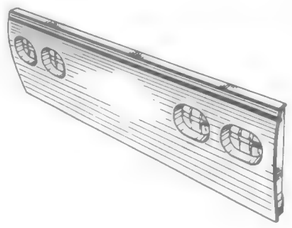
349,874
AUTOMOBILE TIRE
Toshiaki Suzuki, Ashiya, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 11, 1993, Ser. No. 5,801
Claims priority, application Japan, Sep. 18, 1992, 4-27557
Term of patent 14 years
U.S. Cl. D12—147



349,875
SNOWMOBILE TOW HITCH
Rick Blodgett, P.O. Box 532, Teller, Ak. 99778-0532
Filed Apr. 2, 1993, Ser. No. 6,612
Term of patent 14 years
U.S. Cl. D12—162



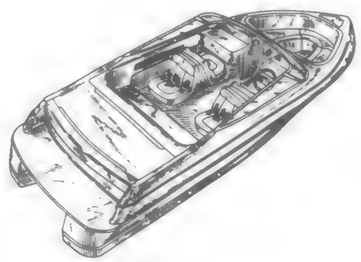
349,876
TRUCK TAILGATE
Andrew J. Martin, 981 Fassler Ave., Pacifica, Calif. 94044
Filed Apr. 13, 1993, Ser. No. 7,003
Term of patent 14 years
U.S. Cl. D12—196



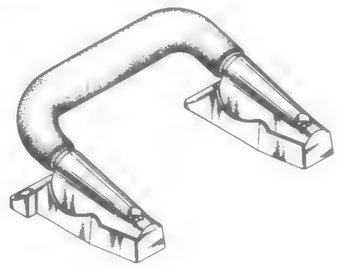
349,877
WIPER BLADE
Yoshisuke Oyama, Tokyo, Japan, assignor to Y. Corporation, Tokyo, Japan
Filed Nov. 17, 1992, Ser. No. 1,529
Term of patent 14 years
U.S. Cl. D12—220



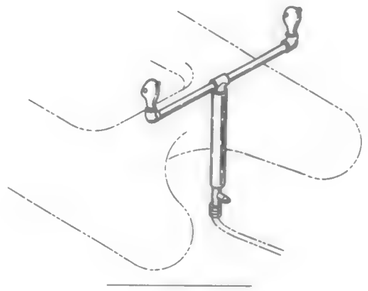
349,878
RECREATIONAL BOAT
Thomas D. Wenstadt, and J. Kelly Payne, both of Cadillac, Mich., assignors to Outboard Marine Corporation, Waukegan, Ill.
Continuation-in-part of Ser. No. 824,250, Jan. 21, 1992. This application May 17, 1993, Ser. No. 8,445
Term of patent 14 years
U.S. Cl. D12—313



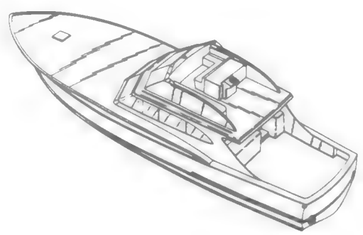
349,879
JET SKI HANDLE
Alfonso Jaramillo, Sr., 20205 Lounsberry Dr., Lake Matthews, Calif. 92570
Filed May 7, 1993, Ser. No. 8,075
Term of patent 14 years
U.S. Cl. D12—317



349,880
RAFT TILLER ASSEMBLY
Don J. Williamson, 408 Carswold Dr., St. Louis, Mo. 63105, and Jerome A. Tuchschmidt, St. Louis, Mo., assignors to Don J. Williamson, St. Louis, Mo.
Filed May 10, 1993, Ser. No. 8,100
Term of patent 14 years
U.S. Cl. D12—317

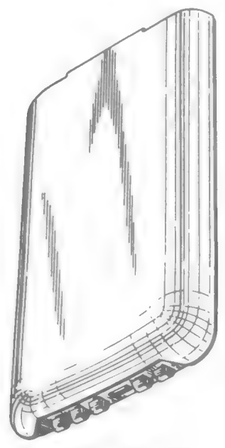


349,881
ABOVE-WATER PORTION OF A BOAT
Gary Hilliard, Tequesta, Fla., assignor to Spencer Boat Company, West Palm Beach, Fla.
Filed Sep. 30, 1992, Ser. No. 954,925
Term of patent 14 years
U.S. Cl. D12—318

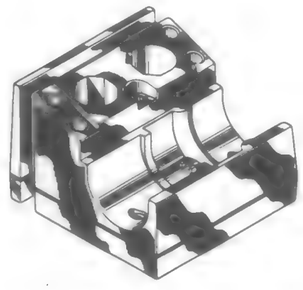


VOL 1165 ISS 4 AG 23 1994 UMI

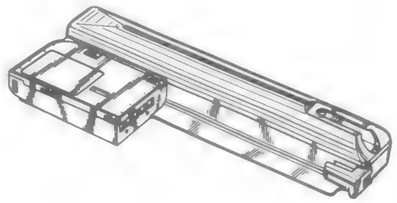
349,882
BATTERY HOUSING FOR A PORTABLE TELEPHONE
Terry Johnson, Fleet, England, assignor to Nokia Mobile Phones (U.K.) Ltd., Surrey, England
Filed Jul. 29, 1992, Ser. No. 921,506
Claims priority, application United Kingdom, Feb. 6, 1992, 2020846
Term of patent 14 years
U.S. Cl. D13—103



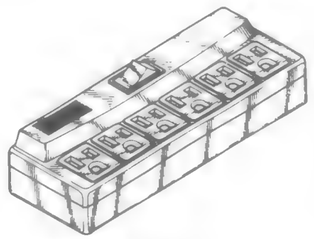
349,883
BATTERY CHARGER WITH MEANS FOR SUPPORTING DUAL BATTERY PACKS AND TOOL
P. Sean Gallagher, Park Forest, and William H. Schultz, Northbrook, both of Ill., assignors to Skil and S-B Power Tool Company, Chicago, Ill.
Filed Aug. 9, 1991, Ser. No. 743,564
Term of patent 14 years
U.S. Cl. D13—108



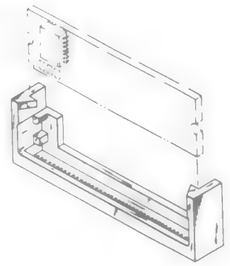
349,884
CHARGER FOR ELECTRONIC COMPUTER
Masaaki Iino, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Dec. 13, 1993, Ser. No. 16,268
Claims priority, application Japan, Jun. 25, 1993, D18995/1993
Term of patent 14 years
U.S. Cl. D13—108



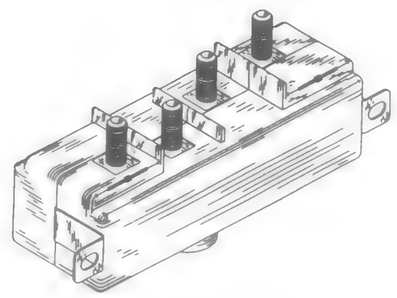
349,885
POWER STRIP
James Lee, 5th Fl., No. 10, Alley 10, Lane 321, Hsin Min Rd., Taipei, Taiwan
Filed Jun. 23, 1993, Ser. No. 9,907
Term of patent 14 years
U.S. Cl. D13—142



349,886
SOCKET FOR MOUNTING A PRINTED CIRCUIT BOARD MODULE
Nour E. Derouiche, Durham, N.C., assignor to Mitsubishi Semiconductor America, Inc., Durham, N.C.
Filed Jul. 15, 1992, Ser. No. 913,543
Term of patent 14 years
U.S. Cl. D13—147



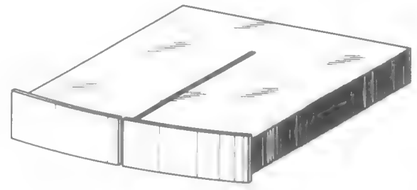
349,887
HOUSING FOR MOTOR REVERSING CONTROL
Alan B. Page, Cass County, Ind., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Jul. 29, 1993, Ser. No. 11,186
Term of patent 14 years
U.S. Cl. D13—162



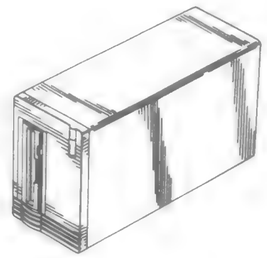
349,888
CONTROLLER FOR SEMI-CONDUCTOR PROCESSING MACHINE
Takashi Yamamoto, Kodaira; Tomoyuki Miyata, Kokubunji; Kazunori Hasimoto, Tachikawa; Mitsuru Ohnuma, Tokyo; Toshihiko Wada, Musashimurayama, and Seishiro Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 8, 1993, Ser. No. 4,588
Claims priority, application Japan, Nov. 27, 1992, 4-34702
Term of patent 14 years
U.S. Cl. D13—163



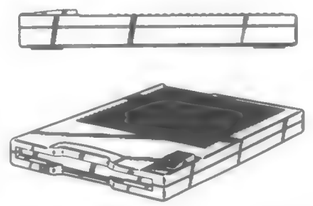
349,889
AUTOMATIC DATA BACKUP UNIT
Pit-Kin Loh, Seremban, Malaysia; Edward V. Cruz, Newbury Park, and Barry P. Sweea, Santa Monica, both of Calif., assignors to BlackCurrant Technology, Costa Mesa, Calif.
Filed Dec. 7, 1992, Ser. No. 2,433
Term of patent 14 years
U.S. Cl. D14—100



349,890
OPTICAL FILING SYSTEM
Masaaki Kabumoto, Yachiyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed May 28, 1992, Ser. No. 889,311
Claims priority, application Japan, Nov. 29, 1991, 3-35963
Term of patent 14 years
U.S. Cl. D14—109

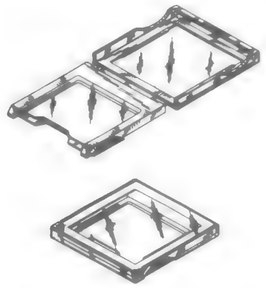


349,891
DISC DRIVE
Kenji Matsumoto, Houya; Takashi Watanabe, Ichikawa, and Katsuhiko Noda, Higashiyamato, all of Japan, assignors to Teac Corporation, Japan
Filed Nov. 12, 1992, Ser. No. 1,392
Claims priority, application Japan, Jun. 23, 1992, 4-18727
Term of patent 14 years
U.S. Cl. D14—109

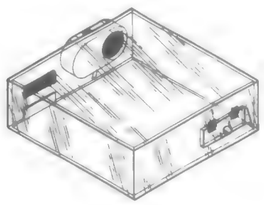


VOL 1165 ISS 4 AG 23 1994 UMI

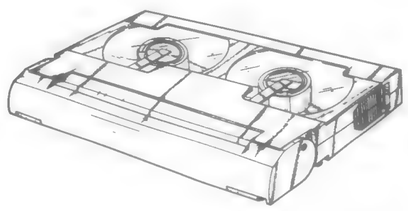
349,892
CASE FOR AN OPTICAL DISC CARTRIDGE
Hiroshi Nakaizumi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 17, 1992, Ser. No. 870,311
Claims priority, application Japan, Nov. 21, 1991, 3-35121
Term of patent 14 years
U.S. Cl. D14—114



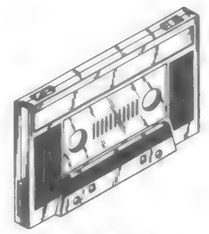
349,893
PROTECTION COVER FOR A COMPUTER
Rodney K. Bennett, R.D. #1 English Hill Rd., Dalton, N.Y. 14836
Filed Dec. 21, 1992, Ser. No. 2,578
Term of patent 14 years
U.S. Cl. D14—114



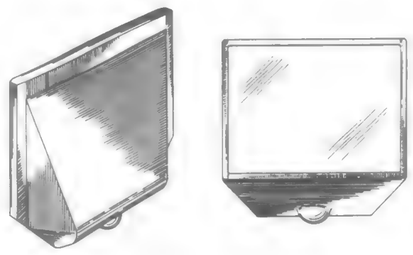
349,894
TAPE CASSETTE
Chul-Ju Chung, and Seok-Woo Ko, both of Seoul, Rep. of Korea, assignors to SKC Limited, Suwon, Rep. of Korea
Filed Jun. 11, 1992, Ser. No. 896,347
Claims priority, application Rep. of Korea, Dec. 30, 1991, 91-19728
Term of patent 14 years
U.S. Cl. D14—121



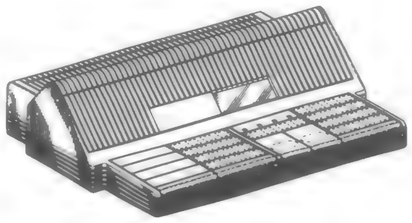
349,895
AUDIO CASSETTE
Thomas Gramuglia, 50 Westwood Dr., Massena, N.Y. 13662
Filed Feb. 16, 1993, Ser. No. 4,935
Term of patent 14 years
U.S. Cl. D14—121



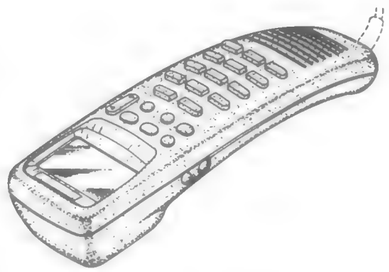
349,896
REAR PROJECTION MONITOR
Ronald Gale, Sharon; Richard McCullough, Wrentham, and Jack P. Salerno, Waban, all of Mass., assignors to Kopin Corporation, Taunton, Mass.
Filed Nov. 16, 1992, Ser. No. 1,509
Term of patent 14 years
U.S. Cl. D14—128



349,897
REMOTE COMMUNICATIONS CONSOLE
Leonid Sorea, Lincolnwood; Giuseppe M. DiPrizio, Chicago, both of Ill., and Eyali Brami, Tel Aviv, Israel, assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 478,175, Feb. 9, 1990, Pat. No. Des. 335,128. This application Jul. 8, 1992, Ser. No. 910,606
Term of patent 14 years
U.S. Cl. D14—137



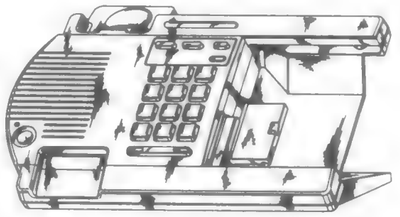
349,898
RADIO TELEPHONE
Jouko Tattari, Salo, Finland; Frank Nuovo, Los Angeles, and Andy Vong, Venice, both of Calif., assignors to Nokia Mobile Phones Ltd., Salo, Finland
Filed Dec. 20, 1991, Ser. No. 812,377
Claims priority, application Finland, Jun. 26, 1991, 541/91
Term of patent 14 years
U.S. Cl. D14—148



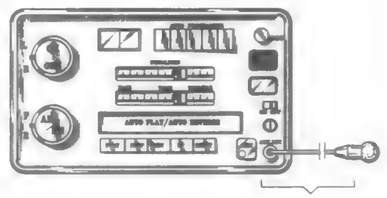
349,899
CHARGER/PRIVATE BASE STATION FOR A CORDLESS TELEPHONE
Craig F. Siddoway, Davie, Fla., and Bee L. Khoo, Johor, Malaysia, assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 28, 1993, Ser. No. 8,874
Term of patent 14 years
U.S. Cl. D14—151



349,900
TELEPHONE BASE
Clifford D. Read, Stittsville; Paul J. Koens, Ashton, and Ernie R. Dynie, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Jun. 28, 1993, Ser. No. 9,988
Term of patent 14 years
U.S. Cl. D14—151



349,901
COMBINED RADIO RECEIVER, TAPE PLAYER AND MICROPHONE
Eddie Smith, 3325 Wilmington Dr., Grand Prairie, Tex. 75051
Filed Nov. 19, 1992, Ser. No. 1,662
Term of patent 14 years
U.S. Cl. D14—168



349,902
RADIO
James L. Hanig, Highland Park, Ill., assignor to Hanig & Co., Lincolnwood, Ill.
Filed Nov. 6, 1992, Ser. No. 1,266
Term of patent 14 years
U.S. Cl. D14—176

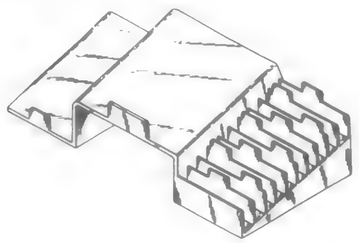


VOL 1165 ISS 4 AUG 23 1994 UMI

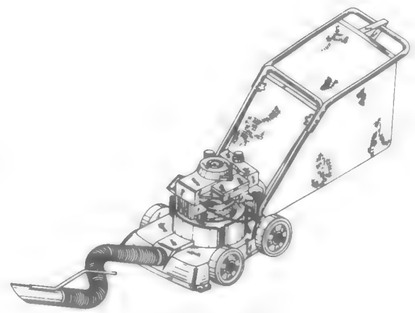
349,903
HEADPHONE
Mitsuhiro Nakamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 18, 1992, Ser. No. 1,642
Claims priority, application Japan, Jun. 16, 1992, 4-17787
Term of patent 14 years
U.S. Cl. D14—205



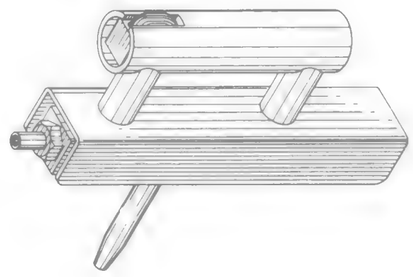
349,904
COMBINED TELEPHONE STAND AND DESK ORGANIZER
Irving K. Arenberg, Greenwood Village, Colo., assignor to Wildflower Communications, Inc., Englewood, Colo.
Filed Feb. 3, 1993, Ser. No. 4,374
Term of patent 14 years
U.S. Cl. D14—252



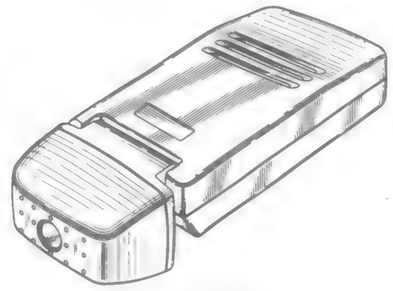
349,905
COMBINED LAWN AND GARDEN CHIPPER SHREDDER VACUUM APPARATUS WITH HOSE ATTACHMENT
Kevin J. Connolly, Ballston Lake, N.Y.; George W. Bingley, Kankakee, Ill., and Karl K. Holt, Hartland, Wis., assignors to Garden Way Incorporated, Troy, N.Y.
Filed Nov. 21, 1991, Ser. No. 795,639
Term of patent 14 years
U.S. Cl. D15—10



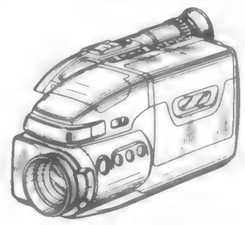
349,906
VEHICLE DENT REMOVAL ELECTRODE HANDLE
Donald L. Galbraith, and Richard P. Tice, both of Spokane, Wash., assignors to U.S. Dent Master, Inc., Spokane, Wash.
Filed May 20, 1993, Ser. No. 8,614
Term of patent 14 years
U.S. Cl. D15—142



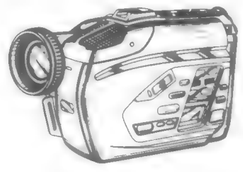
349,907
FLEXIBLE HEAD VIDEO CAMERA
Klaus K. Allmendinger, Mission Viejo, Calif., assignor to Workstation Technologies, Inc., Irvine, Calif.
Filed Dec. 30, 1992, Ser. No. 3,218
Term of patent 14 years
U.S. Cl. D16—202



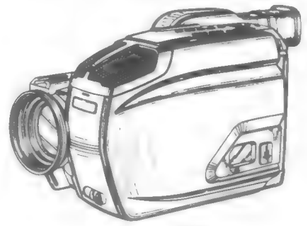
349,908
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Kazuhiko Miyahara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 8, 1993, Ser. No. 5,635
Claims priority, application Japan, Sep. 7, 1992, 4-26399
Term of patent 14 years
U.S. Cl. D16—202



349,909
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Masakazu Mori; Hiroshi Takano, and Masaaki Goto, all of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 30, 1993, Ser. No. 7,678
Term of patent 14 years
U.S. Cl. D16—202



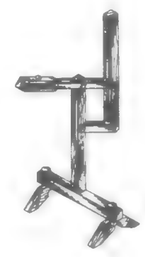
349,910
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Hiroshi Takano; Masakazu Mori, and Masaaki Goto, all of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 19, 1993, Ser. No. 8,510
Claims priority, application Japan, Dec. 3, 1992, 4-35809
Term of patent 14 years
U.S. Cl. D16—202



349,911
SURVEILLANCE CAMERA
Norio Shimizu, and Shingo Iwasawa, both of Tokyo, Japan, assignors to Koyo Electronics Industries Co., Ltd., Tokyo, Japan
Filed Apr. 27, 1993, Ser. No. 7,578
Claims priority, application Japan, Apr. 5, 1993, 5-9901
Term of patent 14 years
U.S. Cl. D16—203

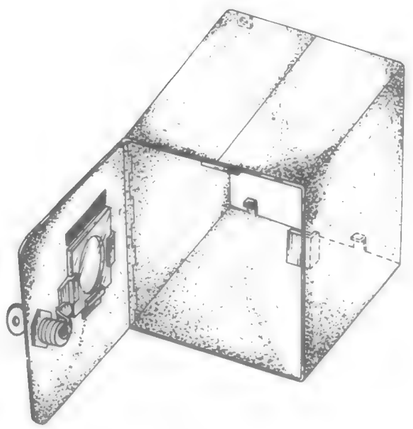


349,912
ADJUSTABLE STAND FOR MOUNTING A VIDEO CAMERA
Vernon S. Brewer, 967 S. New St., West Chester, Pa. 19382
Filed Sep. 22, 1992, Ser. No. 949,056
Term of patent 14 years
U.S. Cl. D16—242

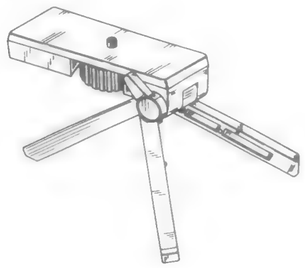


VOL 1165 ISS 4 AG 23 1994 UMI

349,913
SURVEILLANCE VIDEO CAMERA SECURITY BOX
Bryan W. Morris, 6225 N. 29th St., Arlington, Va. 22207
Filed Jan. 22, 1993, Ser. No. 3,960
Term of patent 14 years
U.S. Cl. D16—242



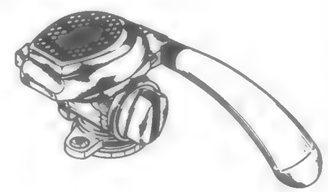
349,914
TRIPOD FOR CAMERA
Hisaichi Usui, Tama, Japan, assignor to Habuka Shashin Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1992, Ser. No. 839,214
Term of patent 14 years
U.S. Cl. D16—244



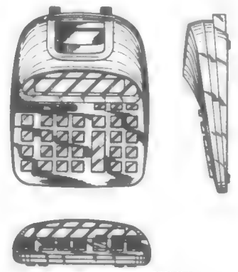
349,915
TRIPOD
Rudolph M. Hanke, Monheim, Fed. Rep. of Germany, assignor to Hama Hamaphot KG Hanke & Thomas, Monheim, Fed. Rep. of Germany
Filed Dec. 21, 1992, Ser. No. 2,787
Claims priority, application Hague, Aug. 17, 1992, DM/023646
Term of patent 14 years
U.S. Cl. D16—244



349,916
CAMERA PLATFORM
Chien-Shu Chen, 4th Fl., No. 2-3, Lane 313, Chang An St., La Chou Hsiang, Taipei Hsien, Taiwan
Filed Jul. 20, 1993, Ser. No. 10,867
Term of patent 14 years
U.S. Cl. D16—245



349,917
ELECTRONIC CALCULATOR
Osamu Tsuchida, and Yuichi Onumata, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,486
Term of patent 14 years
U.S. Cl. D18—7



349,918
ELECTRONIC CALCULATOR
Osamu Tsuchida, Tokyo; Hideaki Yamabe, Tachikawa, and Yuichi Onumata, Hachioji, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 2,557
Term of patent 14 years
U.S. Cl. D18—7



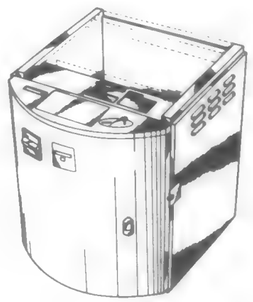
349,919
CALCULATOR
Hugh D. Tunstall-Pedoe, Dundee, United Kingdom, assignor to The University Court of the University of Dundee, Dundee, United Kingdom
Filed May 28, 1991, Ser. No. 728,052
Claims priority, application United Kingdom, Nov. 28, 1990, 2011353
Term of patent 14 years
U.S. Cl. D18—10



349,920
HANDHELD PRINTER FOR PRINTING ON SMALL OBJECTS
David W. Wendt, Monona; Mark A. Gilbertson, Sauk City; Daniel R. Bullis, Madison; Lawrence R. Borucki, Jr., Oostburg, and Charles J. Check, Mequon, all of Wis., assignors to Brady USA, Inc., Milwaukee, Wis.
Filed Oct. 15, 1993, Ser. No. 14,313
Term of patent 14 years
U.S. Cl. D18—14

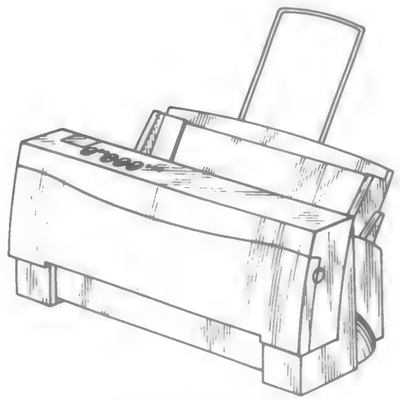


349,921
PHOTOCOPIER CONVER HOUSING
William L. Gray, 690 W. Racquet Club Rd., Palm Springs, Calif. 92262-1836
Filed Dec. 27, 1991, Ser. No. 813,405
Term of patent 14 years
U.S. Cl. D18—40

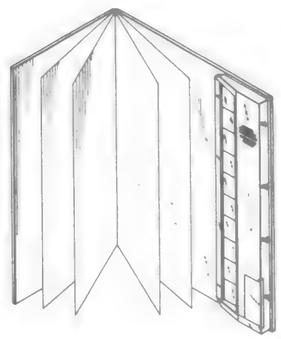


VOL 1165 ISS 4 AG 23 1994 UMI

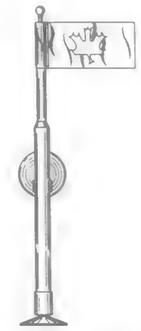
349,922
PRINTER FOR ELECTRONIC COMPUTER
Naoki Tashiro, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 17, 1993, Ser. No. 6,023
Claims priority, application Japan, Sep. 17, 1992, 4-27540
Term of patent 14 years
U.S. Cl. D18—50



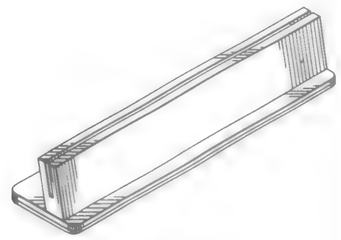
349,923
ELECTRONIC BOOK
Zeb Billings, Hartland, Wis.; Harold D. Pierce, Woodland Hills, Calif., and Martin R. J. Moore, Sr., Cedarburg, Wis., assignors to Western Publishing Company, Inc., Racine, Wis.
Division of Ser. No. 420,264, Oct. 12, 1989, Pat. No. 5,209,665.
This application Apr. 26, 1993, Ser. No. 99,799
Term of patent 14 years
U.S. Cl. D19—26



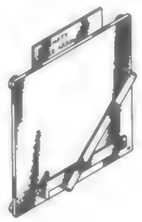
349,924
COMBINED PEN AND FLAG
Johann Fisch, 475 The West Hall - Apt-709, Etobicoke, Ontario, Canada M9C 4Z3
Filed Mar. 23, 1993, Ser. No. 6,250
Term of patent 14 years
U.S. Cl. D19—42



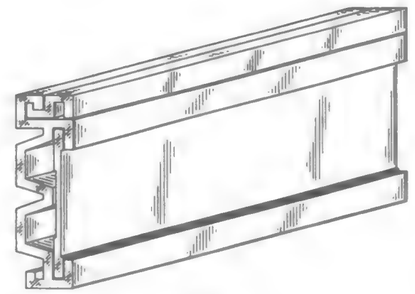
349,925
CARD HOLDER
Joseph A. Charron, and Loretta Charron, both of 219 Bella Coola Dr., Indian Harbor Beach, Fla. 32937
Filed Nov. 12, 1993, Ser. No. 15,268
Term of patent 14 years
U.S. Cl. D19—90



349,926
SIGN FOR DUMPSTERS
J. A. Junge, Drawer 2244, Ruidoso, N. Mex. 88345
Filed Oct. 4, 1993, Ser. No. 13,816
Term of patent 14 years
U.S. Cl. D20—42



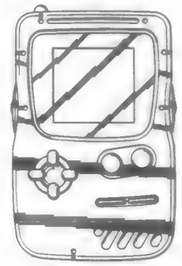
349,927
NAME PLATE HOLDER
Nicholas M. Orsos, Balassi B.U. 25.II 1/A, 1055 Budapest, Hungary
Filed May 28, 1993, Ser. No. 8,973
Term of patent 14 years
U.S. Cl. D20—43



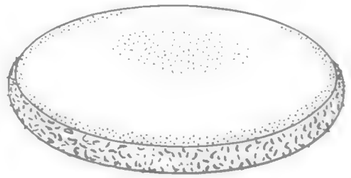
349,928
BALL STRIKING GAME
David Rippin, 12226 Woodsfield Cir. NW., Pickerington, Ohio 43147
Filed Aug. 5, 1992, Ser. No. 924,658
Term of patent 14 years
U.S. Cl. D21—5



349,929
ELECTRONIC GAME HOUSING
Siu Y. Lee, Tsuen Wan, Hong Kong, assignor to Timlex International Ltd., Hong Kong
Filed May 27, 1993, Ser. No. 8,818
Claims priority, application United Kingdom, Dec. 4, 1992, 2027573
Term of patent 14 years
U.S. Cl. D21—13



349,930
DISC FOR TOSSING GAMES
Darryl B. Killion, 830 W. Almond, Orange, Calif. 92668
Filed Oct. 8, 1992, Ser. No. 231
Term of patent 14 years
U.S. Cl. D21—82

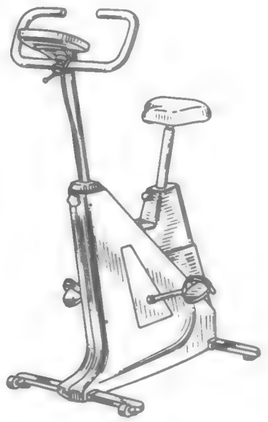


349,931
PHYSICAL EXERCISER
James R. Bostic, Watertown, and John S. Dreibelbis, Shakopee, both of Minn., assignors to NordicTrack, Inc., Chaska, Minn.
Filed Aug. 26, 1992, Ser. No. 936,534
Term of patent 14 years
U.S. Cl. D21—193



VOL 1165 ISS 4 AG 23 1994 UMI

349,932
EXERCISE BICYCLE
Takashi Ueda, Izumi, and Masao Tsushi, Sakai, both of Japan, assignors to Cat Eye Co., Ltd., Osaka, Japan
Filed Sep. 25, 1992, Ser. No. 951,548
Claims priority, application Japan, Apr. 3, 1992, 4-10001
Term of patent 14 years
U.S. Cl. D21—194



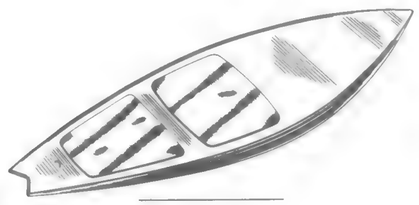
349,933
AERIAL TOY GOAL
James C. Offutt, Peoria, Ill., assignor to Rimball Marketing and Development, Inc., Evanston, Ill.
Filed Mar. 18, 1992, Ser. No. 853,320
Term of patent 14 years
U.S. Cl. D21—200



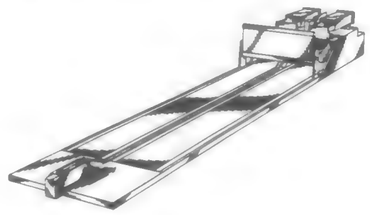
349,934
GOLF CLUB HEAD
Pierre Feche, Cran-Gevrier, and Jean-Francois Bernault, Annecy, both of France, assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.
Continuation-in-part of Ser. No. 716,321, Jun. 17, 1991, abandoned. This application Nov. 25, 1991, Ser. No. 797,279
Term of patent 14 years
U.S. Cl. D21—214



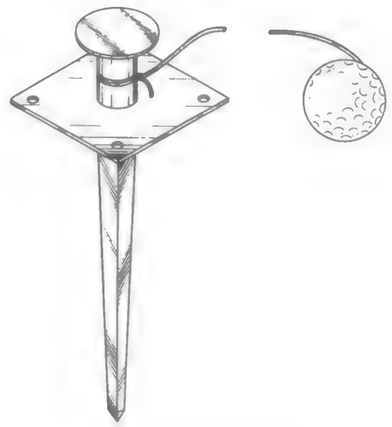
349,935
FREE STYLE SURFBOARD
Simonson, Eric, 2455 Newport Ave., Cardiff, Calif. 92007
Filed Nov. 17, 1992, Ser. No. 1,528
Term of patent 14 years
U.S. Cl. D21—228



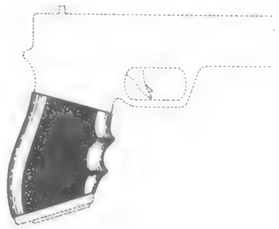
349,936
BOWLING ALLEY
Lucien Rochefort, 103 Abbé Ruelland Street, Beauport, (Québec), Canada G1E 5L4
Filed Mar. 30, 1992, Ser. No. 860,353
Term of patent 14 years
U.S. Cl. D21—233



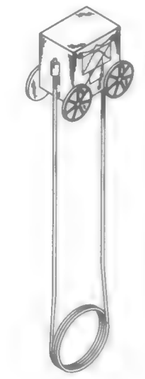
349,937
PRACTICE TETHERED GOLF BALL
Ezra M. Hill, 6 Eagle Point Rd., Hampton, Va. 23669
Filed Nov. 22, 1991, Ser. No. 797,094
Term of patent 14 years
U.S. Cl. D21—234



349,938
SLEEVE FOR A PISTOL GRIP
Patrick L. Hogue, and Aaron G. Hogue, both of Atascadero, Calif., assignors to Hogue Grips, Atascadero, Calif.
Filed Apr. 12, 1993, Ser. No. 6,895
Term of patent 14 years
U.S. Cl. D22—108



349,939
INSECT CATCHER
Dina M. Marruzzi, 126 Roberts Ave., Holbrook, Mass. 02343
Filed May 17, 1993, Ser. No. 8,417
Term of patent 14 years
U.S. Cl. D22—122



349,940
FLY SWATTER
Jack D. Blaisdell, 14205 W. Oak Ave., Lake Forest, Ill. 60045
Filed May 3, 1993, Ser. No. 7,811
Term of patent 14 years
U.S. Cl. D22—124

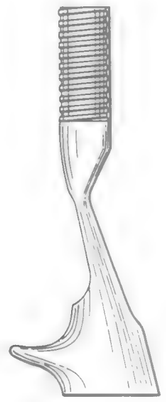


349,941
FISHING LURE RATTLE ATTACHMENT
Don Gentry, Carterville, Ill., assignor to Lunker Lure Products, Inc., Carterville, Ill.
Filed Jul. 14, 1992, Ser. No. 914,947
Term of patent 14 years
U.S. Cl. D22—126



VOL 1165 ISS 4 AG 23 1994 UMI

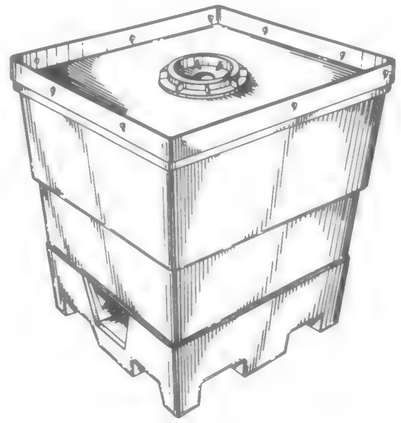
349,942
REEL SEAT FOR A FISHING ROD
Mitsuyoshi Oyama, Musashino; Shigeru Yamamoto, and Hideyuki Furuya, both of Higashikurume, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jan. 27, 1993, Ser. No. 4,086
Claims priority, application Japan, Jul. 31, 1992, 4-22915; Dec. 9, 1992, 4-36230; Dec. 19, 1992, 4-36229
Term of patent 14 years
U.S. Cl. D22—142



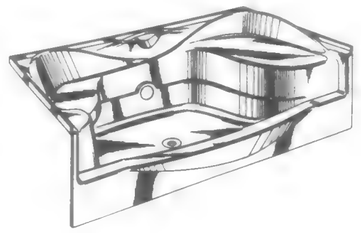
349,943
REEL SEAT FOR A FISHING ROD
Shin-ya Takizawa, Musashino; Shigeru Yamamoto, and Hideyuki Furuya, both of Higashikurume, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Feb. 22, 1993, Ser. No. 5,056
Claims priority, application Japan, Aug. 27, 1992, 4-25437; Jan. 25, 1993, 5-1624
Term of patent 14 years
U.S. Cl. D22—142



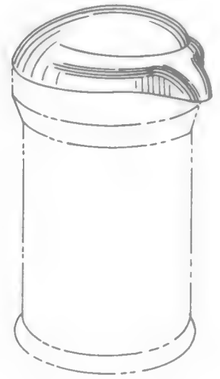
349,944
CONTAINER FOR BULK MATERIALS
Jack E. Harris, Savannah, Ga., assignor to Encon, Inc., Romeo, Mich.
Filed May 12, 1993, Ser. No. 8,210
Term of patent 14 years
U.S. Cl. D23—202



349,945
SHOWER BASE
Kenneth E. Cummings, Mississauga, Canada, assignor to 122235 Canada Limited, Richmond Hill, Canada
Filed Dec. 10, 1992, Ser. No. 2,443
Claims priority, application Canada, Jun. 26, 1992, 26-06-92-4
Term of patent 14 years
U.S. Cl. D23—283



349,946
WATER FILTER COVER
William H. Harty, Daytona Beach, Fla., assignor to Eagle Spring Filtration, Inc., South Daytona, Fla.
Continuation-in-part of Ser. No. 679,335, Apr. 2, 1991, Pat. No. Des. 333,337. This application Aug. 4, 1992, Ser. No. 925,470
Term of patent 14 years
U.S. Cl. D23—209



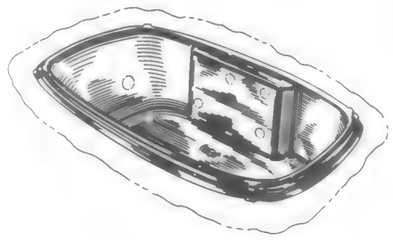
349,947
SHOWER HEAD
Huen Hing-Wah, Kowloon, Hong Kong, assignor to Fairform Mfg. Co., Ltd., Kowloon, Hong Kong
Filed Sep. 21, 1993, Ser. No. 13,236
Claims priority, application United Kingdom, Aug. 5, 1993, 2032923
Term of patent 14 years
U.S. Cl. D23—223



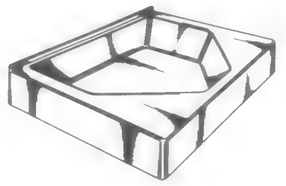
349,948
FAUCET
John E. Bollenbacher, Sheboygan, and Herbert V. Kohler, Jr., Kohler, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 14, 1993, Ser. No. 3,686
Term of patent 14 years
U.S. Cl. D23—241



349,949
BATHTUB
Anna-Pia K. Formgren, Paris, France, and William C. McKeone, Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Division of Ser. No. 959,508, Oct. 9, 1992, which is a continuation-in-part of Ser. No. 792,048, Nov. 8, 1991, abandoned. This application Mar. 9, 1994, Ser. No. 19,720
Term of patent 14 years
U.S. Cl. D23—277

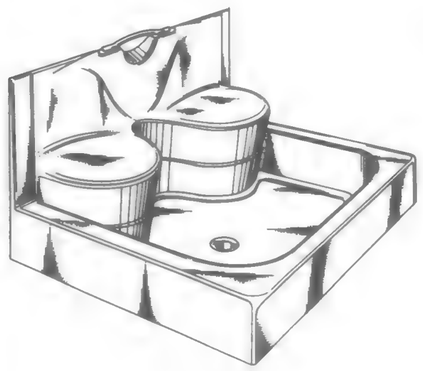


349,950
SHOWER BASE
Kenneth E. Cummings, Mississauga, Canada, assignor to 122235 Canada Limited, Richmond Hill, Canada
Filed Jul. 31, 1992, Ser. No. 924,336
Claims priority, application Canada, Feb. 18, 1992, 18-02-92-12
Term of patent 14 years
U.S. Cl. D23—283

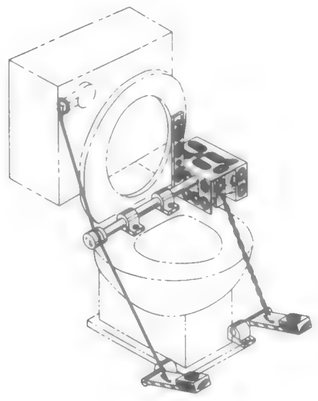


VOL 1165 ISS 4 AG 23 1994 UMI

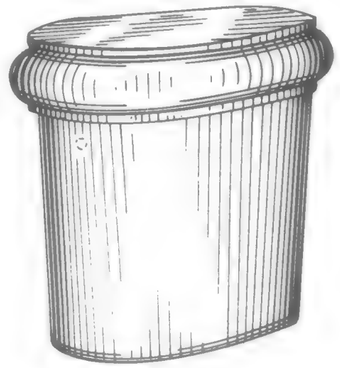
349,951
SHOWER BASE
Kenneth E. Cummings, Mississauga, Canada, assignor to 122235 Canada Limited, Richmond Hill, Canada
Filed Dec. 10, 1992, Ser. No. 2,445
Claims priority, application Canada, Jun. 26, 1992, 26-06-92-3
Term of patent 14 years
U.S. Cl. D23—283



349,952
SANITARY TOILET LIFT
Thomas L. Evans, 2510 Birchfield Rd., Yakima, Wash. 98901, and Michael S. Allen, 315 White St., Union Gap, Wash. 98903
Filed Dec. 31, 1992, Ser. No. 3,237
Term of patent 14 years
U.S. Cl. D23—309



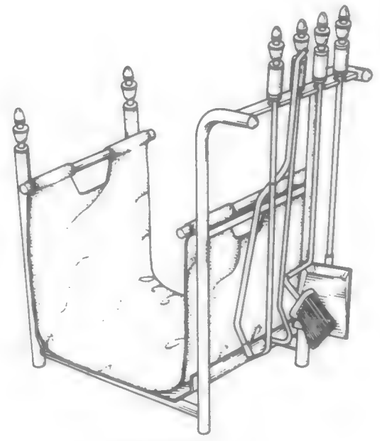
349,953
WATER CLOSET TANK
Herbert V. Kohler, Jr., Kohler; Mary J. Reid, Sheboygan, and William C. McKeone, Sheboygan Falls, all of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Nov. 5, 1993, Ser. No. 15,085
Term of patent 14 years
U.S. Cl. D23—313



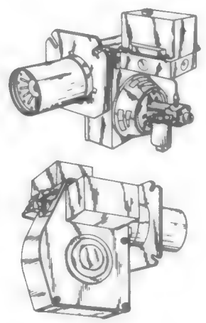
349,954
COMBINED PORTABLE FAN AND SPRAY BOTTLE
Gregory A. Steiner, Lisle, and Terry Arnieri, Addison, both of Ill., assignors to Innovative Design Enterprises, Addison, Ill.
Filed Oct. 18, 1993, Ser. No. 14,268
Term of patent 14 years
U.S. Cl. D23—328



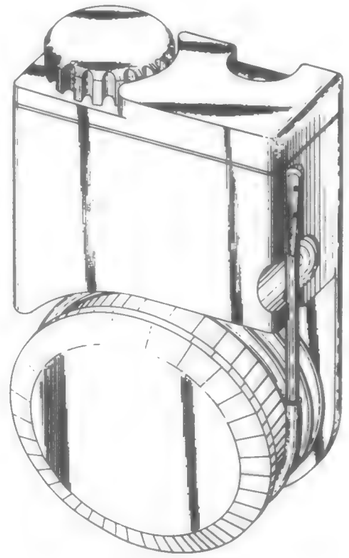
349,955
COMBINED FIREPLACE TOOL SET AND STAND THEREFOR
Patrick Lin, 14th Fl., No. 128, Sec. 3, Min Sheng E. Rd., Taipei, Taiwan
Filed Dec. 18, 1992, Ser. No. 3,961
Term of patent 14 years
U.S. Cl. D23—403



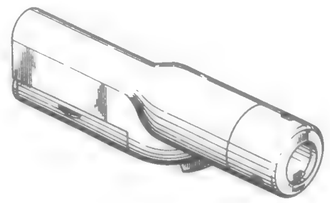
349,956
FUEL OIL BURNER
John M. Mulqueen; Harley B. Kaplan; James E. Wellman, and Richard J. Ostroski, all of Fort Wayne, Ind., assignors to Wayne/Scott Fetzer Company, Fort Wayne, Ind.
Filed Dec. 11, 1991, Ser. No. 805,074
Term of patent 14 years
U.S. Cl. D23—416



349,957
FEMININE HYGIENIC SYRINGE
Frances Johnson, 6305 Stonecress Ave., Newark, Calif. 94560
Continuation-in-part of Ser. No. 463,994, Jan. 12, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 2,011
Term of patent 14 years
U.S. Cl. D24—111

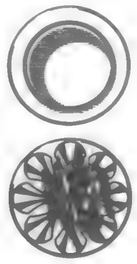


349,958
NEEDLELESS INJECTOR
Richard B. Hollis, Vancouver, Wash., and Steven F. Peterson, West Linn, Oreg., assignors to Bioject Inc., Portland, Oreg.
Filed Jul. 24, 1992, Ser. No. 920,144
Term of patent 14 years
U.S. Cl. D24—112

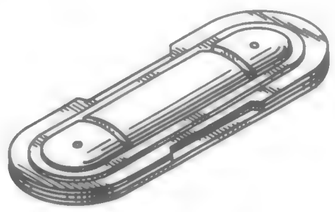


VOL 1165 ISS 4 AG 23 1994 UMI

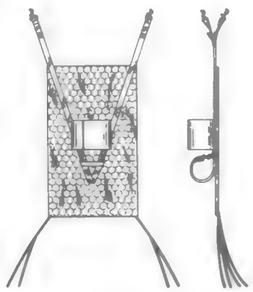
349,959
STETHOSCOPE PROTECTOR
Tracy A. Troiani, 14 Kendall Ave.-Apt. #2, Bellvue, Pa. 15202
Filed Dec. 11, 1992, Ser. No. 2,409
Term of patent 14 years
U.S. Cl. D24—134



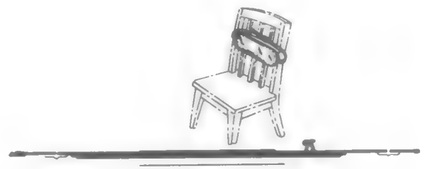
349,960
ELECTROTRANSPORT DRUG DELIVERY PATCH
J. Richard Gyory, San Jose, and Jay Wilson, Portola Valley, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.
Filed Dec. 31, 1992, Ser. No. 3,172
Term of patent 14 years
U.S. Cl. D24—89



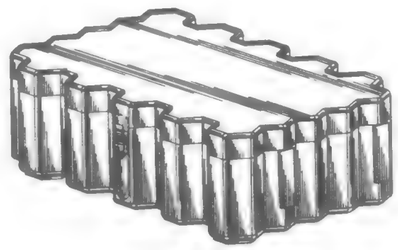
349,961
COMBINED SLING AND HARNESS FOR USE IN PEDIATRIC POSITIONAL THERAPY
Jody E. McLeod, 14 Fairfield St., Lowell, Mass. 01851
Filed Feb. 22, 1991, Ser. No. 659,138
Term of patent 14 years
U.S. Cl. D24—190



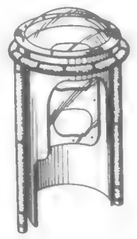
349,962
LUMBAR PILLOW
Sydney M. Rogers, 16 N. Chatsworth Ave., Larchmont, N.Y. 10538
Filed Oct. 13, 1992, Ser. No. 289
Term of patent 14 years
U.S. Cl. D24—190



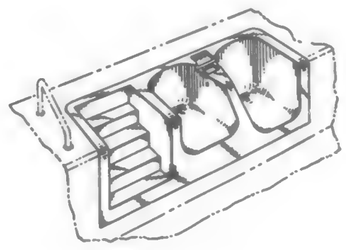
349,963
HEX MICRO TEST TUBE HOLDER
Louis A. Kane, Boston, and Paul B. Chang, Holden, both of Mass., assignors to Interlab Products, Inc., Framingham, Mass.
Filed Oct. 6, 1992, Ser. No. 148
Term of patent 14 years
U.S. Cl. D24—227



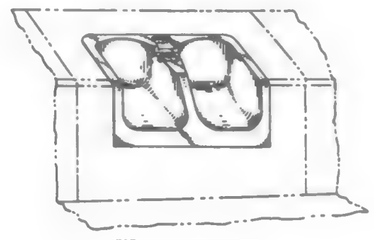
349,964
TELEPHONE BOOTH
Mitchell R. Warren, Charlotte, N.C., assignor to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Jan. 30, 1992, Ser. No. 828,588
Term of patent 14 years
U.S. Cl. D25—16



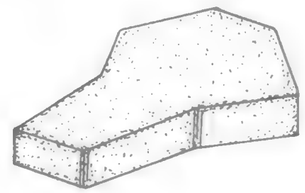
349,965
COMBINED SWIMMING POOL WALL SEAT AND STAIR MODULE
Donald H. Weir, York, Pa., assignor to Wexco Incorporated, York, Pa.
Filed Jun. 26, 1992, Ser. No. 904,539
Term of patent 14 years
U.S. Cl. D25—2



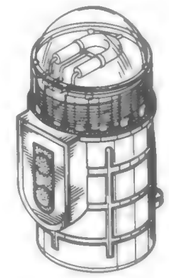
349,966
SWIMMING POOL WALL SEAT UNIT
Donald H. Weir, York, Pa., assignor to Wexco Incorporated, York, Pa.
Filed Jun. 26, 1992, Ser. No. 904,540
Term of patent 14 years
U.S. Cl. D25—2



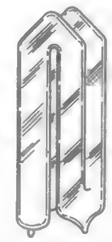
349,967
PAVING STONE
Ronald G. Krueger, Hampton, and Arthur A. Labouseur, Wantage, both of N.J., assignors to Concrete Stone and Tile Corporation, Branchville, N.J.
Filed Apr. 3, 1992, Ser. No. 864,914
Term of patent 14 years
U.S. Cl. D25—113



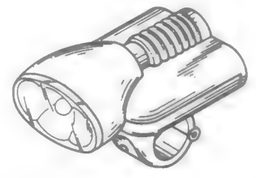
349,968
STROBE LIGHT
John B. Elliott, 225 W. El Norte Pkwy., #106, Escondido, Calif. 92026
Filed Aug. 31, 1992, Ser. No. 938,472
Term of patent 14 years
U.S. Cl. D26—24



349,969
FLUORESCENT TUBE
Chi W. Yang, Kowloon, Hong Kong, assignor to Mass Technology (H.K.) Ltd., Kowloon, Hong Kong
Filed Mar. 9, 1992, Ser. No. 849,319
Term of patent 14 years
U.S. Cl. D26—3

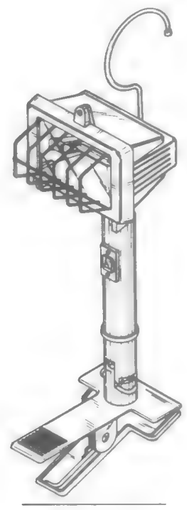


349,970
MULTI-PURPOSE FLASH LIGHT
Tseng-Lu Chien, and Ping-Hsiang Wu, both of 21815 E. Shetland Way, Walnut, Calif. 91792-1475
Filed Jan. 22, 1993, Ser. No. 3,954
Term of patent 14 years
U.S. Cl. D26—38

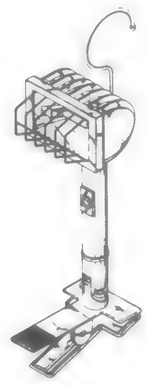


VOL 1165 ISS 4 AG 23 1994 UMI

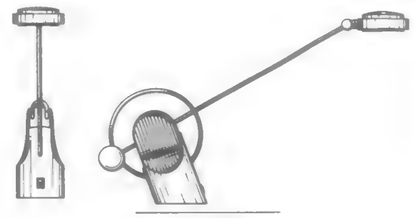
349,971
HALOGEN LAMP WITH CLAMP
Albert Stekelenburg, 9th Fl., 102 Kuang-Fu S. Rd., Taipei, Taiwan
Filed Nov. 12, 1993, Ser. No. 15,281
Term of patent 14 years
U.S. Cl. D26—60



349,972
HALOGEN LAMP WITH CLAMP
Albert Stekelenburg, 9th Fl., 102 Kuang-Fu S. Rd., Taipei, Taiwan
Filed Nov. 12, 1993, Ser. No. 15,288
Term of patent 14 years
U.S. Cl. D26—60

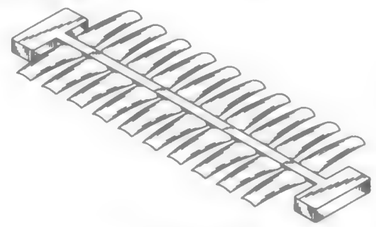


349,973
ADJUSTABLE TABLE LAMP
Thomas Y. Lam, Central Hong Kong, Hong Kong, assignor to Dipper Industrial Ltd., Hong Kong, Hong Kong
Filed Jun. 22, 1992, Ser. No. 901,913
Claims priority, application United Kingdom, Dec. 23, 1991, 2019794
Term of patent 14 years
U.S. Cl. D26—65

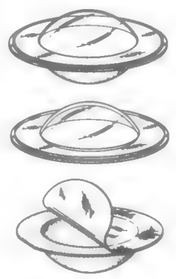


D,349,974
Patent Not Issued For This Number

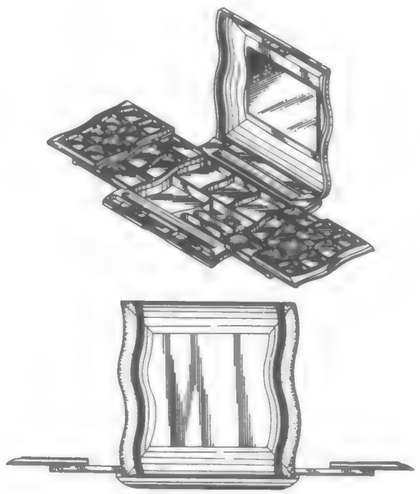
349,975
NAIL COLOR DISPLAY
Ronald Bannett, 4530 N. Hiatus Rd., Unit #109, Sunrise, Fla. 33351
Filed Apr. 23, 1993, Ser. No. 7,486
Term of patent 14 years
U.S. Cl. D28—56



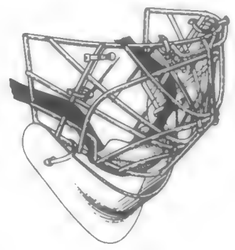
349,976
COSMETIC SAMPLER CONTAINER
Victoria Connell, New York, N.Y., assignor to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 515,284, Apr. 27, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 1,952
Term of patent 14 years
U.S. Cl. D28—76



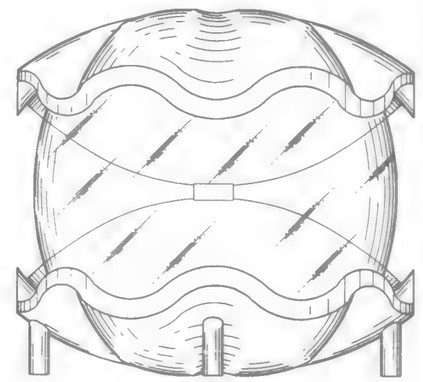
349,977
COSMETIC CASE
Wen-Chang Shen, Tainan, Taiwan, assignor to Mei Shuai Cosmetics Co., Ltd., Tainan, Taiwan
Filed Mar. 15, 1993, Ser. No. 5,899
Term of patent 14 years
U.S. Cl. D28—78



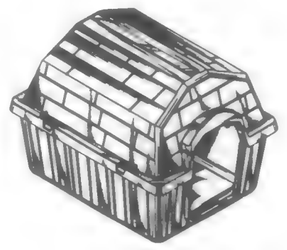
349,978
FACEGUARD FOR GOALTENDER
Steve Copeland, Pickering, and Roger Ball, Toronto, both of Canada, assignors to Itech Sport Products Inc., Montreal, Canada
Filed Aug. 22, 1991, Ser. No. 748,400
Term of patent 14 years
U.S. Cl. D29—111



349,979
AQUARIUM
Elva Ulloa, and David A. Ulloa, both of 15041 Gwendolyn St., El Paso, Tex. 77936
Filed Apr. 5, 1993, Ser. No. 6,726
Term of patent 14 years
U.S. Cl. D30—102

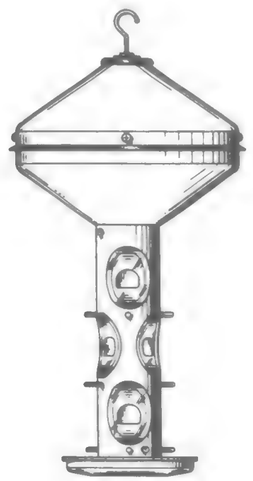


349,980
PET HOUSE
Melaney L. Northrop, Cleburne, and Thomas B. Murphy, Arlington, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 9, 1993, Ser. No. 5,676
Term of patent 14 years
U.S. Cl. D30—108



VOL 1165 ISS 4 AG 23 1994 UMI

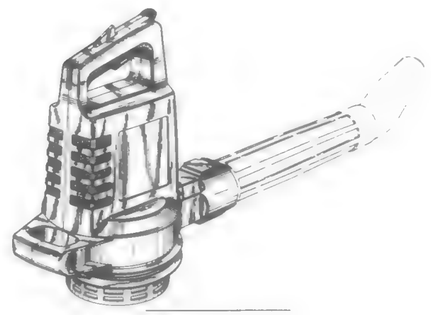
349,981
CLYINDRICAL BIRD FEEDER
Victor Fasino, 62 Oneida Ave., Landing, N.J. 07850
Filed Jan. 14, 1993, Ser. No. 3,694
Term of patent 14 years
U.S. Cl. D30—127



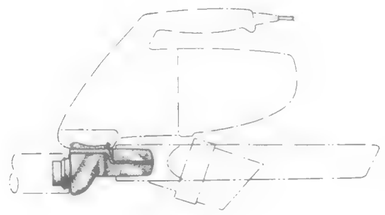
349,982
BIRD FEEDER
Stewart Hardison, P.O. Box 333, Bainbridge, N.Y. 13733
Filed Jul. 30, 1993, Ser. No. 11,236
Term of patent 14 years
U.S. Cl. D30—128



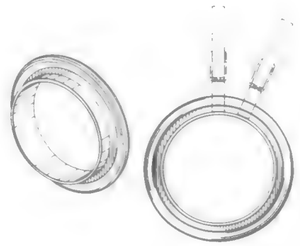
349,983
CORDLESS LEAF BLOWER
Lloyd H. Tuggle, and Jerry E. Stuart, both of Shreveport, La., assignors to WCI Outdoor Products, Inc., Cleveland, Ohio
Filed Aug. 12, 1992, Ser. No. 928,975
Term of patent 14 years
U.S. Cl. D32—15



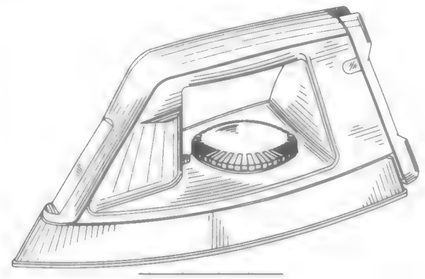
349,984
VACUUM CLEANER CONVERTER
John D. Essex, North Canton, and Ronald J. Stephens, Rittman, both of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Nov. 23, 1992, Ser. No. 1,776
Term of patent 14 years
U.S. Cl. D32—31



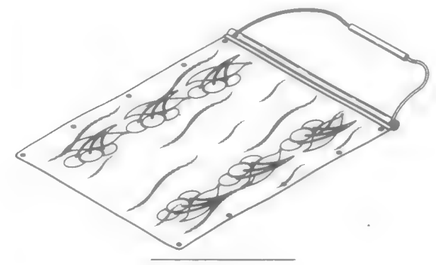
349,985
CLOTHESPIN CADDY
Walter Surowiec, 35 Dexter St., Woonsocket, R.I. 02895
Filed Jun. 29, 1992, Ser. No. 906,132
Term of patent 14 years
U.S. Cl. D32—35



349,986
ELECTRIC IRON
Alvaro Correa, Cheshire, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 10, 1992, Ser. No. 866,914
Term of patent 14 years
U.S. Cl. D32—70



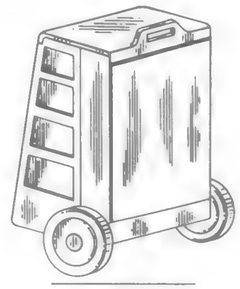
349,987
COMBINED COLLECTOR AND TRANSPORTER OF LEAVES
Leslie L. Barnett, 312 Fith St., P.O. Box 86, Elkville, Ill. 62932
Filed Jul. 9, 1993, Ser. No. 10,542
Term of patent 14 years
U.S. Cl. D34—1



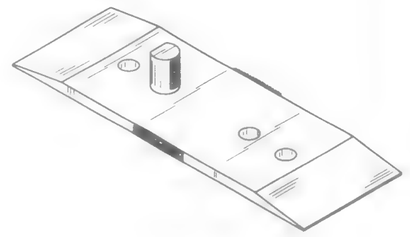
349,988
FOOD AND BEVERAGE SERVICE TROLLEY
Wills N. Green, 846 King St., Gary, Ind. 46406
Filed Jun. 21, 1993, Ser. No. 9,645
Term of patent 14 years
U.S. Cl. D34—21



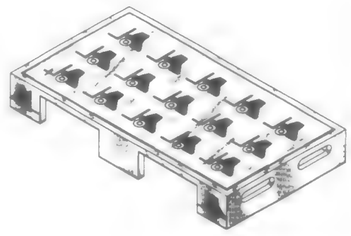
349,989
UTILITY CART
Thomas H. Shetterly, 1601 N. Main St., #203, Walnut Creek, Calif. 94596
Filed Nov. 5, 1992, Ser. No. 1,166
Term of patent 14 years
U.S. Cl. D34—25



349,990
SELF PLACEMENT TRANSFER BOARD
James W. Schottel, 77 Heather Way, Wood River, Ill. 62095
Filed Nov. 26, 1993, Ser. No. 15,724
Term of patent 14 years
U.S. Cl. D34—32

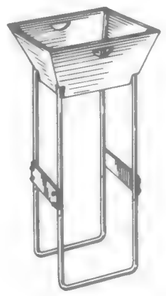


349,991
PALLET
Donald W. Wilks, Jr., R.R. #1 Box 27, Potwin, Kans. 67123
Filed Feb. 22, 1993, Ser. No. 5,052
Term of patent 14 years
U.S. Cl. D34—38

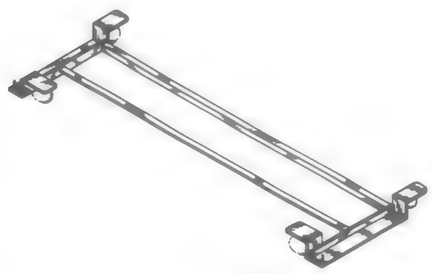


VOL 1165 ISS 4 AG 23 1994 UMI

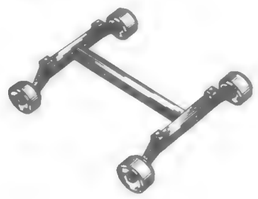
349,992
OPEN BAG SUPPORT
John J. Brohan, 176 Wilcox Dr., Bartlett, Ill. 60130
Filed Apr. 7, 1993, Ser. No. 6,806
Term of patent 14 years
U.S. Cl. D34—5



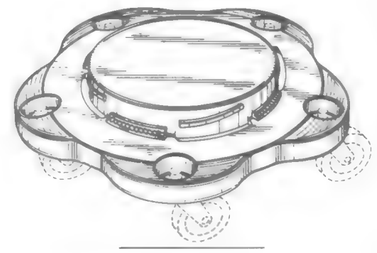
349,993
DOLLY
Barry E. Brand, 16580 Montauk Rd., Apple Valley, Calif. 92307, and Roger A. Evans, Apple Valley, Calif., assignors to Barry E. Brand, Apple Valley, Calif.
Filed Nov. 2, 1992, Ser. No. 1,044
Term of patent 14 years
U.S. Cl. D34—23



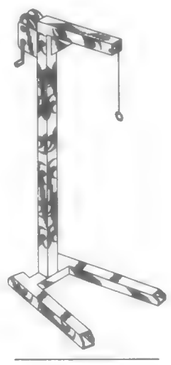
349,994
CONTAINER DOLLY
Tom Schurr, 3135 Hatton St., Sarasota, Fla. 34237
Filed Jun. 9, 1993, Ser. No. 9,264
Term of patent 14 years
U.S. Cl. D34—23



349,995
INDUSTRIAL CONTAINER DOLLY
Timothy S. Cassel, Arlington, and Paul Benham, Leominster, both of Mass., assignors to Tucker Housewares, Leominster, Mass.
Filed Apr. 20, 1993, Ser. No. 7,360
Term of patent 14 years
U.S. Cl. D34—23



349,996
HOIST
J. B. Litwiller, 3465 W. Johnson Rd., Ithaca, Mich. 48847
Filed Aug. 17, 1992, Ser. No. 930,223
Term of patent 14 years
U.S. Cl. D34—33



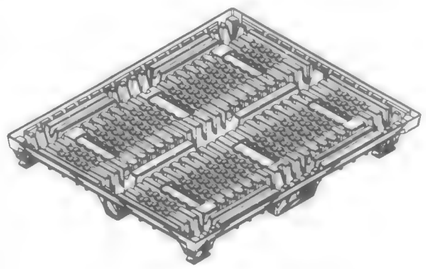
349,997
TRANSIT RECYCLING BIN
Ralph J. Ullmann, Shiner, Tex., assignor to Kaspar Wire Works, Inc., Shiner, Tex.
Filed Oct. 1, 1992, Ser. No. 133
Term of patent 14 years
U.S. Cl. D34—1



349,998
GOLF CART HANDLE COVER
Eric J. F. Wang, 35 Quail Run, Massapequa, N.Y. 11758
Filed Oct. 19, 1992, Ser. No. 552
Term of patent 14 years
U.S. Cl. D34—27



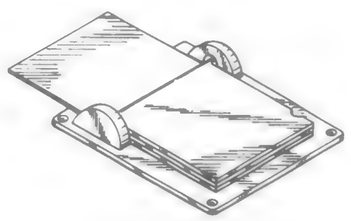
349,999
VENTILATED PALLET
John W. Knight, IV, New Concord; Paul W. Baker, Cambridge, and Donald J. Dietsch, Byesville, all of Ohio, assignors to The Fabri-Form Co., Byesville, Ohio
Filed Dec. 10, 1992, Ser. No. 2,448
Term of patent 14 years
U.S. Cl. D34—38



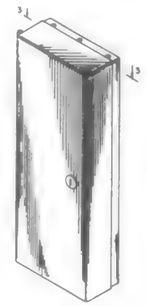
350,000
WASTEBASKET
David A. Bird, and Mitchell L. Wilgus, both of Akron, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 13, 1994, Ser. No. 17,426
Term of patent 14 years
U.S. Cl. D34—4



350,001
MONUMENT TABLET
Patricia A. Perkins, and Terry R. Perkins, both of Newkirk, Okla., assignors to Rayann Enterprises, Inc., Sulphur, Okla.
Filed Dec. 22, 1992, Ser. No. 2,872
Term of patent 14 years
U.S. Cl. D99—17



350,002
LOCKABLE DELIVERY BOX FOR ENTERTAINMENT ARTICLES
Christopher J. Viola, 437 Oak Knoll Dr., Englishtown, N.J. 07726
Filed Oct. 12, 1993, Ser. No. 14,076
Term of patent 14 years
U.S. Cl. D99—28

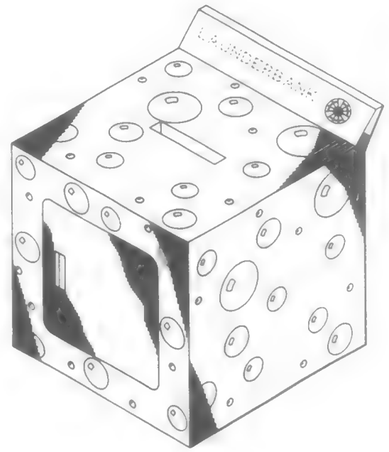


VOL 1165 ISS 4 AG 23 1994 UMI

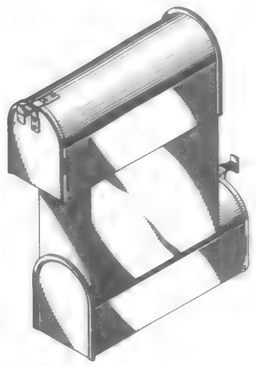
350,003
MAIL BOX AND SUPPORT
Ceilon H. Rentz, 3704 Ponce de Leon Ave., Jacksonville, Fla. 32217
Filed Feb. 18, 1992, Ser. No. 836,460
The portion of the term of this patent subsequent to Feb. 23, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D99—29



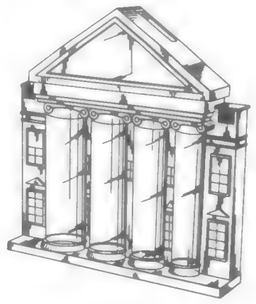
350,005
LAUNDER BANK
Carol E. Casher, R.D. 3, Box 647, Valantie, N.Y. 12184
Filed May 21, 1991, Ser. No. 703,346
Term of patent 14 years
U.S. Cl. D99—37



350,004
SECURITY MAIL VAULT
Terry L. Nicholas, 10603 Mills Walk, Houston, Tex. 77070
Filed Aug. 2, 1993, Ser. No. 11,373
Term of patent 14 years
U.S. Cl. D99—29



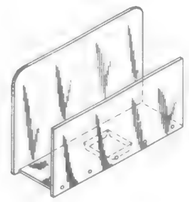
350,006
COIN DISPENSER
Yiu K. Wan, Tsuen Wan, Hong Kong, assignor to Flourishing Enterprises Development, Ltd., Hong Kong, Hong Kong
Filed Sep. 30, 1992, Ser. No. 954,240
Claims priority, application United Kingdom, Apr. 2, 1992, 2072045
Term of patent 14 years
U.S. Cl. D99—37



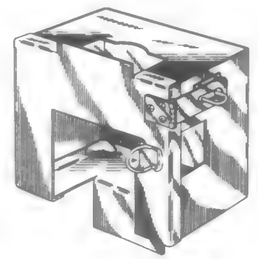
350,007
MAILBOX SIGNAL FLAG
George Ferguson, 6000 Webb Rd., Hillsboro, Mo. 63050
Filed Nov. 8, 1990, Ser. No. 611,131
Term of patent 14 years
U.S. Cl. D99—43



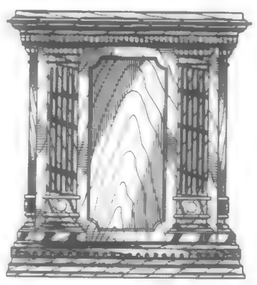
350,008
MAILBOX GUARD
Allen E. Gaudet, Sr., Bloomfield, Conn., assignor to American Prefab Corporation, Bloomfield, Conn.
Filed Jun. 26, 1991, Ser. No. 721,670
Term of patent 14 years
U.S. Cl. D99—99



350,009
THERMOSTAT LOCK BOX
Thaddeus Zajchowski, 60 Willow Ave., Dracut, Mass. 01826
Filed Aug. 13, 1993, Ser. No. 11,755
Term of patent 14 years
U.S. Cl. D99—99



350,010
CREMATION URN
Marcus N. May, Cincinnati, Ohio, and Daniel J. Parker, Connersville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.
Filed Sep. 22, 1992, Ser. No. 949,021
Term of patent 14 years
U.S. Cl. D99—5



VOL
1165
ISS
4
AG
23
1994
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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF AUGUST, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Kobayashi, Masahiko; Takemura, Hirobumi; Ishida, Tetsuo; and Takahashi, Nobuyuki, 5,340,460, Cl. 204-298.090.

A. Ahlstrom Corporation: *See*—
Henricson, Kaj, 5,340,440, Cl. 162-31.000.

A.C. Propulsion, Inc.: *See*—
Cocconi, Alan G., 5,341,075, Cl. 318-139.000.

A-Dec, Inc.: *See*—
Halbirt, J. Rick, 5,340,072, Cl. 248-279.000.
Krebs, Paul B.; and Irwin, Shawn R., 5,340,953, Cl. 200-86.500.

A. Raymond GmbH & Co. KG: *See*—
Muller, Klaus, deceased; and Hullmann, Klaus, 5,339,500, Cl. 24-514.000.

Aarts, Mathias L. C., to Sara Lee/DE N.V. Method and apparatus for making a vacuum package filled with granular material. 5,339,604, Cl. 53-432.000.

ABB Flakt AB: *See*—
Johansson, Anders; and Gustavsson, Lennart, 5,339,688, Cl. 73-204.220.

ABB Patent GmbH: *See*—
Baier, Gunar, 5,339,627, Cl. 60-274.000.

ABB Vetco Gray Inc.: *See*—
Hosie, Stanley; and Dinnes, Callum J. B., 5,339,912, Cl. 175-66.000.

Abbott Laboratories: *See*—
Adamczyk, Maciej; Harrington, Charles A.; and Johnson, Donald, 5,340,750, Cl. 436-537.000.
Baugher, Bennett W.; Chamberlain, Aurora J.; Devereaux, Sharon M.; and Ungemach, Frank S., 5,340,748, Cl. 436-518.000.
Kaye, Gail L., 5,340,315, Cl. 434-127.000.
Lowell, Augustus P., 5,341,476, Cl. 395-200.000.
Neylan, Michael J.; Ostrom, Karin M.; Churella, Helen R.; Breen, Merlin D.; and Benson, John D., 5,340,603, Cl. 426-73.000.
Rouse, Daniel H.; McClure, Thomas D.; and Reese, Ralph E., 5,339,595, Cl. 53-88.000.
Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., 5,340,802, Cl. 514-18.000.

Abbott, William L.; Nguyen, Hung C.; and Johnson, Kenneth E., to Quantum Corporation. Disk drive using PRML class IV sampling data detection with digital adaptive equalization. 5,341,249, Cl. 360-46.000.

Abdelli, Mohand: *See*—
MacNeil, Ralph M.; Coutya, Samir F.; and Abdelli, Mohand, 5,340,136, Cl. 280-472.000.

Abe, Akira; Sumiya, Satoshi; Takahashi, Yoshikazu; Yoshida, Kiyohide; and Muramatsu, Gyo, to Kabushiki Kaisha Riken. Exhaust gas cleaner and method of cleaning exhaust gas. 5,340,548, Cl. 422-177.000.

Abe, Hiroaki: *See*—
Tomita, Mamoru; Tamura, Yoshitaka; Miyakawa, Hiroshi; Saito, Hitoshi; Abe, Hiroaki; and Nagao, Eiji, 5,340,924, Cl. 530-395.000.

Abe, Naoto: *See*—
Matsugu, Masakazu; Yoshii, Minoru; and Abe, Naoto, 5,340,992, Cl. 250-548.000.

Abe, Nobuaki; and Takeshita, Yasuyoshi, to Snow Brand Milk Products Co., Ltd. Composition and method for treating Sjoegren syndrome disease. 5,340,821, Cl. 514-305.000.

Abe, Shunji: *See*—
Soumiya, Toshio; Abe, Shunji; Katoh, Masafumi; and Watanabe, Naotoshi, 5,341,366, Cl. 370-17.000.

Abe, Takao: *See*—
Ito, Yatsuo; Abe, Takao; Takei, Tokio; Nakamura, Susumu; and Ota, Hiroko, 5,340,435, Cl. 156-632.000.

Abell, Petra. Small animal restrainer. 5,339,772, Cl. 119-724.000.

Abou-Sayed, Ibrahim S.: *See*—
Jennings, Alfred R., Jr.; and Abou-Sayed, Ibrahim S., 5,339,904, Cl. 166-303.000.

Abowitz, Gerald: *See*—
Hubble, Fred F., III; Swales, Michael G.; Weber, Michael E.; Abowitz, Gerald; and Bov, Raphael F., Jr., 5,341,193, Cl. 355-203.000.

Abra, Robert M.: *See*—
Mihalko, Paul J.; Abra, Robert M.; and Radhakrishnan, Ramachandran, 5,340,587, Cl. 424-450.000.

Abraham, Irene, to Upjohn Company, The. Use of taxol-dependent cells to identify and isolate taxol-like compounds. 5,340,724, Cl. 435-32.000.

Abrams, Michael: *See*—
Jacobson, Richard B.; and Abrams, Michael, 5,340,118, Cl. 273-411.000.

Abramsohn, Dennis A.: *See*—
Badesha, Santokh S.; Mammino, Joseph; Abramsohn, Dennis A.; Sypula, Donald S.; Henry, Arnold W.; Heeks, George J.; Pan, David H.; and Fratangelo, Louis D., 5,340,679, Cl. 430-126.000.

Accary, Andre; Coutiere, Jean; and Lacour, Andre, to Aubert & Duval. Method and apparatus for producing powders. 5,340,377, Cl. 75-334.000.

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Porcaro, Felix A.; Feibelman, Jeffrey A.; and Triangolo, Daniel A., 5,340,074, Cl. 248-309.100.

Acheson Industries, Inc.: *See*—
Willoughby, Anthony P., 5,340,486, Cl. 252-43.000.

ACR Electronics, Inc.: *See*—
McCarter, Walter K., 5,340,662, Cl. 429-9.000.

Actel Corporation: *See*—
El-Ayat, Khaled A.; and Chang, Jia-Hwang, 5,341,092, Cl. 324-158.00R.
Galbraith, Douglas C., 5,341,030, Cl. 307-202.100.
McCollum, John L., 5,341,043, Cl. 307-465.000.

Adachi, Hideyuki: *See*—
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.

Adam, Gerard: *See*—
Gaudry, Michel; Pfeiffer, Bruno; Renard, Pierre; Renaud de la Faverie, Jean-Francois; and Adam, Gerard, 5,340,809, Cl. 514-252.000.

Adamczyk, Maciej; Harrington, Charles A.; and Johnson, Donald, to Abbott Laboratories. Reagents and methods for the quantification of imipramine or desipramine in biological fluids. 5,340,750, Cl. 436-537.000.

Adams, Lawrence J.; Fruda, Thomas R.; and Hughett, Paul D., to Petro Chemical Products, Inc. Composition for cleaning an internal combustion engine. 5,340,488, Cl. 252-47.500.

Adams Mfg. Corp.: *See*—
Adams, William E., 5,340,634, Cl. 428-131.000.

Adams, Robert J., to Spraying Systems Co. Rotary spray tip assembly with improved rotor sealing means. 5,340,029, Cl. 239-119.000.

Adams, Terry N.: *See*—
Gess, Jerome M.; Petersen, Dennis E.; Adams, Terry N.; and Martz, Russell J., 5,340,442, Cl. 162-198.000.

Adams, William E., to Adams Mfg. Corp. Elastic articles having parallel gripping surfaces. 5,340,634, Cl. 428-131.000.

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Adamson, Kenneth P.; and Spector, George. Racket attachment whistle. 5,340,102, Cl. 273-29.00A.

Adamson, William G.: *See*—
Craven, B. Thomas; Wiedefeld, William G.; Poor, Kyle W.; Johnson, Bruce S.; Sogge, John W.; Peterson, Michael H.; Adamson, William G.; and Froelich, Ronald W., 5,339,741, Cl. 102-361.000.

Adarme, Raul: *See*—
Parrott, Stephen L.; Adarme, Raul; Lin, Fan-Nan; and Sasscer, Edwin P., 5,341,313, Cl. 364-578.000.

Adelman, Judah L.: *See*—
Baron, Nathan; and Adelman, Judah L., 5,341,113, Cl. 331-144.000.

ADIR et Compagnie: *See*—
Gaudry, Michel; Pfeiffer, Bruno; Renard, Pierre; Renaud de la Faverie, Jean-Francois; and Adam, Gerard, 5,340,809, Cl. 514-252.000.

Advanced Custom Applications, Inc.: *See*—
Huebscher, Laszlo, 5,341,448, Cl. 385-97.000.

Advanced Interconnection Technology, Inc.: *See*—
Friedrich, Marju L.; Branigan, John G.; and Fitzgibbon, Maurice E., 5,340,946, Cl. 174-256.000.

Advanced Mechanical Technology, Inc.: *See*—
Carignan, Forest J., 5,339,696, Cl. 73-862.041.
Carignan, Forest J., 5,339,699, Cl. 73-862.690.

Aerofoam Chemicals, Division of Border Chemical Company: *See*—
Smerchanski, Thomas C.; and Boge, Hans, 5,339,578, Cl. 52-98.000.

Aeroquip Corporation: *See*—
Haunhorst, Gregory A., 5,339,862, Cl. 137-614.050.
Prendel, Troy A.; and Meredith, Leo, 5,340,162, Cl. 285-81.000.

Aertbelien, Jozef R.: *See*—
Van Havenbergh, Jan A.; and Aertbelien, Jozef R., 5,340,661, Cl. 428-690.000.

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VOL 1165 ISS 4 AG 23 1994 UMI

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De Keyzer, Rene M.; Dewanckele, Jean-Marie O.; Van Rompuy, Ludo L.; and Vaes, Jos A., 5,340,690, Cl. 430-204.000.

AGFA-Gevaert AG: *See—*
Hagemann, Jorg; and Helling, Gunter, 5,340,709, Cl. 430-551.000

AGFA-Gevaert N. V.: *See—*
Verbeke, Gentil; and Boeve, Gerard, 5,340,995, Cl. 250-581.000.

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De Keyzer, Rene; M.; Odeurs, Raymond L.; and De Brabandere, Luc A., 5,340,705, Cl. 430-456.000
Monbaliu, Marcel J.; Terrell, David R.; and De Meutter, Stefaan K., 5,340,675, Cl. 430-58.000.
Uytterhoeven, Herman; Bastiaens, Luc; Van den Bergh, Rudolf; and Leenders, Luc, 5,340,693, Cl. 430-253.000.
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Van Havenbergh, Jan A.; and Aertbelien, Jozef R., 5,340,661, Cl. 428-690.000.
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Tao, Yang, 5,339,963, Cl. 209-581.000.

Agut Sanz, Juan, to General Electric Company. Apparatus and three phase induction motor starting and stopping control method. 5,341,080, Cl. 318-778.000.

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Ahmad, Jamil; Riccitelli, Samuel D.; Bankert, Charles S.; Hannah, Richard; and Davis, Christopher L., to Puritan-Bennett Corporation. Calibration cuvette. 5,339,671, Cl. 73-1.00G

Aiba, Osamu: *See—*
Kawahara, Sadao; Kojima, Yoshinori; and Aiba, Osamu, 5,340,287, Cl. 417-410.00D.

Aichholz, Klaus: *See—*
Ostholt, Rudiger; and Aichholz, Klaus, 5,339,944, Cl. 198-430.000.

Aihara, Satoru: *See—*
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.

AIL Systems, Inc.: *See—*
Calviello, Joseph A.; and Pierro, John A., 5,341,114, Cl. 333-17.200.

Air Cover Corporation: *See—*
Rodyniuk, Michael; and Berg, Keevin, 5,340,055, Cl. 244-1.00R

Air Products and Chemicals, Inc.: *See—*
Famili, Amir; Vratsanos, Lori A.; and Marten, Finn L., 5,340,874, Cl. 525-59.000.

Aisin AW Co., Ltd.: *See—*
Suzuki, Akira; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Oba, Hidehiro; Kimura, Hiromachi; and Otsubo, Hideaki, 5,339,709, Cl. 477-145.000.

Aizawa, Yoshio: *See—*
Isobe, Masao; Aizawa, Yoshio; Kogo, Kenichi; and Yoshida, Chuzo, 5,340,869, Cl. 524-484.000.

Ajika, Natsuo: *See—*
Yamaguchi, Yasuo; Ajika, Natsuo; and Yamano, Tsuyoshi, 5,341,028, Cl. 257-344.000.

Ajinkya, Milind B.; Koros, Robert M.; and Tarmy, Barry L., to Exxon Research and Engineering Company. High interfacial area multiphase reactor (RM-1069). 5,340,549, Cl. 422-230.000.

Ajinomoto Co., Inc.: *See—*
Ishiguro, Tsuneo; and Eguchi, Chikahiko, 5,340,718, Cl. 435-71.000.
Maruyama, Toshirou; Tsubuki, Nobuyuki; Sakaniwa, Sakae; Yamaura, Isao; and Minegishi, Kazuo, 5,340,599, Cl. 426-512.000.

Ajorca S.A.: *See—*
Fussi, Fernando; Diaz, Victor; Domanico, Ricardo H.; and Fuentes, Esteban P., 5,340,932, Cl. 536-21.000.

Akamaru, Hidefumi: *See—*
Naka, Toshiaki; Motomura, Akira; and Akamaru, Hidefumi, 5,339,597, Cl. 53-167.000.

Akamatsu, Masafumi: *See—*
Tomihashi, Nobuyuki; Akamatsu, Masafumi; and Ueta, Yutaka, 5,340,864, Cl. 524-297.000.

Akamatsu, Shigeru; and Kondo, Yuji, to Aloka Co., Ltd.; and Shigeru Akamatsu. Ultrasonic doppler blood flow monitoring system. 5,339,816, Cl. 128-661.090.

Akano, Hirofumi: *See—*
Fukushige, Tomoaki; Toda, Hiroko; Akano, Hirofumi; Ito, Emiko; Fukuta, Tomohiko; Fujimori, Masahiro; and Kawamura, Yoshiya, 5,340,461, Cl. 204-299.00R.

Akasu, Hiroyuki: *See—*
Kawata, Ichiro; Okamoto, Takehiko; Akasu, Hiroyuki; and Komatsu, Kensaku, 5,340,480, Cl. 210-500.230.

Akita, Ryuya: *See—*
Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, 5,341,294, Cl. 364-424.050.

Akiyama, Shigeyuki; and Tsutsui, Tatsuhide, to Horiba, Ltd. Electromagnetic induction-type conductivity meter with improved calibration with auxiliary circuit. 5,341,102, Cl. 324-445.000.

Akizawa, Seiichi: *See—*
Naoi, Hisashi; Inoue, Yasusuke; Nagasaka, Tetsuo; Matsubara, Yoichi; Takagishi, Masaaki; and Akizawa, Seiichi, 5,339,868, Cl. 138-172.000.

Akzo Nobel, Inc.: *See—*
Milliken, Larry D., 5,340,235, Cl. 405-128.000.

Albares, Donald J.: *See—*
McLandrich, Matthew N.; Albares, Donald J.; and Pappert, Stephen A., 5,341,205, Cl. 356-73.100.

Albertson, Daniel L.: *See—*
Dubbert, Patrick C.; Neely, Nathan R.; Albertson, Daniel L.; and Luebbert, Norbert A., 5,339,996, Cl. 222-185.000.

Albertson, Luther D., III; Key, Walter R.; and Stansbury, Mark A., to Redi Controls, Inc. Portable apparatus for recovery of chlorofluorocarbon (CFC) refrigerants. 5,339,647, Cl. 62-292.000.

Albrecht, Detlef: *See—*
Friz, Martin; and Albrecht, Detlef, 5,340,607, Cl. 427-162.000.

Alcan International Limited: *See—*
Tremblay, Francois; and Dube, Ghyslain, 5,340,379, Cl. 75-680.000.

Alcatel N.V.: *See—*
Sevenhans, Joannes M. J.; and Schmit, Jean-Jacques, 5,341,404, Cl. 375-106.000.
Willocx, Eddie L. M.; and Verkinderen, Johan G. A., 5,341,108, Cl. 330-259.000.

Alesi, Thomas W., Jr.: *See—*
Green, David T.; Alesi, Thomas W., Jr.; Bolanos, Henry; and Toso, Kenneth E., 5,339,870, Cl. 140-123.500.

Alewelt, Wolfgang: *See—*
Kuhling, Steffen; Kauth, Hermann; Alewelt, Wolfgang; and Freitag, Dieter, 5,340,905, Cl. 528-199.000.

Alex, James W.; Alex, Jeffrey S.; and Gates, Rick R. Staple box protector. 5,339,953, Cl. 206-340.000.

Alex, Jeffrey S.: *See—*
Alex, James W.; Alex, Jeffrey S.; and Gates, Rick R., 5,339,953, Cl. 206-340.000.

Alexander, Dennis J.: *See—*
Hastings, Robert J.; Varghese, Paily T.; Alexander, Dennis J.; Babb, James F.; and Bradshaw, John R., 5,340,340, Cl. 439-64.000.

Alfred Teves GmbH: *See—*
Reinartz, Hans-Dieter; and Steffes, Helmut, 5,340,285, Cl. 417-221.000.

Alfred University: *See—*
Stangle, Gregory C.; Niedzialek, Scott E.; and Williams, William C., 5,340,533, Cl. 419-45.000.

Alimkak AB: *See—*
Lindberg, Ulf, 5,339,704, Cl. 74-89.150.

Allard, John C.: *See—*
Wolfe, Donald M., Jr.; Allard, John C.; Nguyen, Cuong H.; Axsom, Larry E.; and Gabbard, Jerry D., 5,340,970, Cl. 235-383.000.

Allen-Bradley Company, Inc.: *See—*
Skibinski, Gary, 5,341,281, Cl. 363-39.000.

Allen Fruit Co., Inc.: *See—*
Klukis, Edward L.; and Cohn, Avi P., 5,339,965, Cl. 209-639.000.

Allen, Michael P.; and Jeong, Henry J., to ChemTrak, Inc. Non-instrumented cholesterol assay. 5,340,539, Cl. 422-56.000.

Allergan, Inc.: *See—*
Dziabo, Anthony J.; Holmes, Alix A.; Anger, Claude B.; Baker, John C.; and Peng, Lin, 5,340,583, Cl. 424-412.000.

Allgaier, Frieder: *See—*
Thumm, Helmut; and Allgaier, Frieder, 5,339,504, Cl. 29-48.50A.

Alliant Techsystems, Inc.: *See—*
Aske, Robert L., 5,341,343, Cl. 367-1.000.

Allied-Signal Inc.: *See—*
Jacko, Michael G.; Tsang, Peter H.; and Rhee, Seong K., 5,339,931, Cl. 188-251.00M.
Jankowski, Richard B.; and Zvonar, Robert F., 5,340,124, Cl. 277-136.000.
Latvala, Bruce E., 5,340,212, Cl. 303-7.000.
Singleton, William A.; and Burns, Robert D., 5,341,298, Cl. 364-426.020.

AlliedSignal Inc.: *See—*
Decaire, Barbara R.; Logsdon, Peter B.; Lund, Earl A. E.; Shankland, Ian R.; Singh, Rajiv R.; Wilson, David P.; and Thomas, Raymond H. P., 5,340,490, Cl. 252-67.000.
Desai, Trilok; Goestenkors, Gregory N.; and Boumarafi, Mohamed, 5,340,339, Cl. 439-892.000.
Fontecchio, Robert P.; Ennis, Thomas A.; Musiol, John A.; Medvedik, Douglas E.; and Paglia, Nicola F., 5,340,147, Cl. 280-728.00A.
Krutzel, Lawrence, 5,340,863, Cl. 524-272.000.
Leung, Roger Y.; and Sikonia, John G., 5,340,777, Cl. 501-12.000.
Martis, Ronald, 5,340,413, Cl. 148-305.000.
Mauro, Daniel A.; and Martin, Kevin B., 5,339,722, Cl. 91-376.00R.
Robinson, Michael J.; and Woodruff, James R., 5,339,698, Cl. 73-862.590.

Allman, Derryl D. J.; and Kwong, Dim-Lee, to NCR Corporation. Method for forming a bipolar transistor using doped SOG. 5,340,752, Cl. 437-31.000.

Allman, Derryl D. J.; and Kwong, Dim-Lee, to NCR Corporation Method of making a shallow junction by using first and second SOG layers. 5,340,770, Cl. 437-164.000.

Almulla, Waleed S., to Intel Corporation. Programmable input buffer. 5,341,045, Cl. 307-475.000.

Aloka Co., Ltd.: *See—*
Akamatsu, Shigeru; and Kondo, Yuji, 5,339,816, Cl. 128-661.090.

Altavela, Robert P.: *See—*
Hermanson, Herman A.; Drake, Donald J.; Rezanka, Ivan; Karz, Robert S.; Teumer, Roger G.; and Altavela, Robert P., 5,341,162, Cl. 347-92.000.

Altera Corporation: *See—*
Ahanin, Bahram; Balicki, Janusz K.; Kiani, Khusrow; Leong, William; Li, Ken-Ming; and Nouban, Bezhad, 5,341,044, Cl. 307-465.000.
Mendel, David W., 5,341,308, Cl. 364-489.000.
Randhawa, Hiten S.; and Wang, Cheng-Yuan M., 5,341,048, Cl. 307-481.000.

Alterescu, Bruno: *See—*
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, 5,341,493, Cl. 395-425.000.

Altes, Michael G., to Dow Corning Corporation. Method for the preparation of polydimethylsiloxanes having low reactivity endgroups and high reactivity endgroups wherein the polydimethylsiloxanes contain ethylene chain linkages. 5,340,899, Cl. 528-34.000.

Altschuler, Barry N.: *See—*
Hardy, Douglas A.; Lewis, Leslie K.; and Altschuler, Barry N., 5,341,427, Cl. 380-21.000.

Altshul, Mary M.: *See—*
Clarino, Thomas N.; and Altshul, Mary M., 5,341,305, Cl. 364-470.000.

Alusuisse-Lonza Services Ltd.: *See—*
Ritzl, Antal; and Wernli, Markus, 5,339,745, Cl. 105-452.000.

Alza Corporation: *See—*
Wong, Patrick S. L.; Theeuwes, Felix; Eckenhoff, James B.; Larsen, Steven D.; and Huynh, Hoa T., 5,340,590, Cl. 424-473.000.

Amada, Nobutaka; Nakagaki, Harushige; Arai, Takao; and Noguchi, Takaharu, to Hitachi, Ltd. Magnetic recording/reproducing apparatus having head structure for selectively recording/reproducing either of two kinds of signals containing different amounts of information. 5,341,248, Cl. 360-33.100.

Amada Technologies Inc.: *See—*
Kemp, William H., 5,339,804, Cl. 601-2.000.

Amano, Masaaki: *See—*
Nakanishi, Motoyasu; and Amano, Masaaki, 5,340,352, Cl. 450-57.000.

Amano, Masayuki; and Kusuoka, Makoto, to Fuji Photo Film., Ltd. A coating method using an electrified web and increased humidity. 5,340,616, Cl. 427-458.000.

Amano, Yasuko: *See—*
Baba, Yoshinobu; Ikeda, Takeshi; Tada Tatsuya; Sato, Yuko; and Amano, Yasuko, 5,340,677, Cl. 430-106.600.

American Colloid Company: *See—*
Kangas, William W., 5,339,590, Cl. 52-396.020.

American Cyanamid Company: *See—*
Bhalla, Prithvi R.; Herrick, Robert M.; and Gates, Donald W., 5,340,791, Cl. 504-130.000.

American Rocket Company: *See—*
McKinney, Bevin C.; and Kniffen, Roy J., Jr., 5,339,625, Cl. 60-219.000.

American Tel-A-Systems, Inc.: *See—*
Henning, Paul N.; and Anderson, Kent D., 5,341,368, Cl. 370-58.100.

American Trading and Production Corporation: *See—*
Ditch, Kevin J., 5,340,066, Cl. 248-170.000.

Amirkiai, Maziar; Northrup, Oliver W.; Hosseinzadeh, Ali; Yamasaki, Naoki; and Noma, Takayuki, to Quantum Corporation. Pivoting, dual state magnetic latch for disk file actuator. 5,341,259, Cl. 360-105.000.

Amoco Corporation: *See—*
Rotter, George E.; Melquist, John L.; Chiang, Weilong; Tsai, Boh C.; and Kelly, John J., 5,340,846, Cl. 521-182.000.

Ampex Systems Corporation: *See—*
Fincher, Jeffrey L.; Hallamasek, Kurt; and Kambies, Keith A., 5,341,251, Cl. 360-49.000.
Shih, Lionel C., 5,341,378, Cl. 371-2.200.

Amundson, Steven E.; and Luedeke, Arthur P., to Minnesota Mining and Manufacturing Company. Contact wheel. 5,339,570, Cl. 51-141.000.

Analog Devices, Inc.: *See—*
Koker, Gregory T., 5,341,033, Cl. 307-290.000.
Morley, Sean, 5,341,403, Cl. 375-106.000.

Anchor Bay Packaging Corporation: *See—*
Taravella, Philip; and Domanski, Ronald S., 5,339,958, Cl. 206-521.000.

Anderson, Charles C.; DeLaura, Mario D.; Christian, Paul A.; Shalhoub, Ibrahim M.; and Jennings, David F., to Eastman Kodak Company. Imaging element comprising an electrically-conductive layer containing water-insoluble polymer particles. 5,340,676, Cl. 430-63.000.

Anderson, David N., to FMC Corporation. Fruit juice extraction press. 5,339,729, Cl. 99-509.000.

Anderson, David R.: *See—*
Corbett, Kenneth A.; and Anderson, David R., 5,341,435, Cl. 382-1.000.

Anderson, Edward N.; and Johnson, Thomas A., to Lanxide Technology Company, LP. Method of producing self-supporting aluminum titanate composites and products relating thereto. 5,340,783, Cl. 501-134.000.

Anderson, Gordon A.: *See—*
Brackenbush, Larry W.; and Anderson, Gordon A., 5,340,990, Cl. 250-395.000.

Anderson, John R., to Osram Sylvania Inc. Seamless wire connector. 5,340,230, Cl. 403-300.000.

Anderson, Kent D.: *See—*
Hennanson, Paul N.; and Anderson, Kent D., 5,341,368, Cl. 370-58.100.

Anderson, Paul J.; Streuli, Michel; and Schlossman, Stuart F., to Dana-Farber Cancer Institute, Inc. DNAS encoding proteins active in lymphocyte-medicated cytotoxicity. 5,340,935, Cl. 536-23.500.

Anderson, Thomas; and Hanewald, Julius, to Anderson, Thomas; Hanewald, Julius; and Juhring, Avery B. Meat tenderizing apparatus and process for tenderizing meat. 5,340,354, Cl. 452-142.000.

Ando, Nobuhiko: *See—*
Mukawa, Hiroshi; and Ando, Nobuhiko, 5,341,357, Cl. 369-75.200.

Andreatta, Alejandro: *See—*
Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, 5,340,499, Cl. 252-500.000.

Andrew Corporation: *See—*
Dyott, Richard B., 5,340,371, Cl. 65-501.000.

Anelva Corporation: *See—*
Kobayashi, Masahiko; Takemura, Hirobumi; Ishida, Tetsuo; and Takahashi, Nobuyuki, 5,340,460, Cl. 204-298.090.

Angal, Sarojani: *See—*
Lowe, Peter A.; Marston, Fiona A. O.; Angal, Sarojani; and Schoemaker, Joyce A., 5,340,926, Cl. 530-423.000.

Anger, Claude B.: *See—*
Dziabo, Anthony J.; Holmes, Alix A.; Anger, Claude B.; Baker, John C.; and Peng, Lin, 5,340,583, Cl. 424-412.000.

Angerman, Irving. Shower curtain ring. 5,339,884, Cl. 160-330.000.

Anghel, Andrei: *See—*
Siegler, Marcel; Deselnicu, Mihai; Bratulescu, Victoria; and Anghel, Andrei, 5,340,737, Cl. 435-226.000.

Anneser, Douglas L.; and Male, Barry J., to United Technologies Corporation. Non-contact current injection apparatus and method for use with linear bipolar circuits. 5,341,093, Cl. 324-752.000.

Annette, Mitchell, Legal Representative: *See—*
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.

Annino, Raymond; Lewis, Edward L.; Lueck, Dale E.; Phillips, Matthew L.; and Villalobos, Richard, to Foxboro Company, The. Modular gas chromatography device. 5,340,543, Cl. 422-89.000.

Anquetil, Jean-Yves: *See—*
Trouve, Claude; Richard, Michel; Mallo, Paul; and Anquetil, Jean-Yves, 5,340,441, Cl. 162-135.000.

Anritsu Corporation: *See—*
Fujimura, Masahiro; and Yoshida, Mitsuru, 5,340,949, Cl. 177-25.180.

Anthony, James M.: *See—*
Colson, Wendell B.; Anthony, James M.; Oberg, Brad H.; and Jansen, Cornelis M., 5,339,883, Cl. 160-84.10D.

Anton, Frank; and Jahnke, Andreas, to Siemens Aktiengesellschaft. Synchrotron radiation source. 5,341,104, Cl. 328-235.000.

Antonanzas-Barroso, Norma: *See—*
Javkin, Hector R.; Keate, Elizabeth G.; Antonanzas-Barroso, Norma; and Hanson, Brian A., 5,340,316, Cl. 434-185.000.

Antonellis, Stephen M., to United Technologies Corporation. Active cooling of turbine rotor assembly. 5,339,619, Cl. 60-39.020.

Antonini, Joseph; and Budovec, Ronald T., to Dana Corporation. Flangeless fire ring holder. 5,340,126, Cl. 277-181.000.

Antrim, Robert G.; Dirrett, Edward G.; and Tuominen, Steven M., to Teledyne Industries, Inc. Vanadium-nickel-chromium master alloy. 5,340,535, Cl. 420-588.000.

Anttonen, Kalevi K., to Tamglass Engineering Oy. Method and apparatus for bending and tempering a glass sheet. 5,340,375, Cl. 65-104.000.

Aoai, Toshiaki: *See—*
Kawabe, Yasumasa; Aoai, Toshiaki; and Kokubo, Tadayoshi, 5,340,688, Cl. 430-192.000.

Aoki, Kei: *See—*
Yamada, Mitsuo; Kayano, Hiromichi; Aoki, Kei; and Ishii, Keizou, 5,340,931, Cl. 534-843.000.

Aoki, Takayoshi: *See—*
Suzuki, Chiaki; Eguchi, Atuhiko; Ishihara, Yuka; Aoki, Takayoshi; Takagi, Seiichi; Yano, Toshiyuki; and Mochizuki, Masao, 5,340,678, Cl. 430-170.000.

Appel, James J.; Paoli, Thomas L.; and Fisli, Tibor, to Xerox Corporation. Raster output scanner for a xerographic printing system having laser diodes arranged in a line parallel to the fast scan direction. 5,341,158, Cl. 346-108.000.

Apple Computer, Inc.: *See—*
Leak, Bruce A., 5,341,472, Cl. 395-166.000.
Vertelney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., 5,341,293, Cl. 364-419.170.
Wasserman, Steven; and Roskowski, Steven, 5,341,480, Cl. 395-325.000.

Appleby, Kenneth G.: *See—*
Boda, James C.; and Appleby, Kenneth G., 5,340,342, Cl. 440-86.000.

Applegate, Edward V.: *See—*
Kosich, Joseph; and Applegate, Edward V., 5,341,069, Cl. 315-241.00S.

Appleton Papers Inc.: *See—*
Miller, Robert E.; Schleicher, Lowell; Brown, Robert W.; and Feldman, Lucy, 5,340,680, Cl. 430-138.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Aptix Corporation: *See—*
Whitten, Ralph G.; Guo, Ta-Pen; Mohsen, Amr; and Comer, Alan E., 5,341,267, Cl. 361-56.000.

APV Corporation Limited: *See—*
Clifton, Brian, 5,339,892, Cl. 165-82.000.

Aquamax Oy: *See—*
Heinio, Tapio M.; and Kontu, Mauri, 5,340,443, Cl. 202-182.000.

Arabian, Sandro; and Baumann, Manfred, to CWS International AG. Method for the sequential provision of portions of a towel web. 5,340,045, Cl. 242-535.200.

Arai, Fumio: *See—*
Komiyama, Yoshizo; Arai, Fumio; Toyama, Yoshiyasu; Hasegawa, Yutaka; and Tanioka, Tetsuya, 5,340,374, Cl. 65-29.120.

Arai, Ryuji; Eshita, Toru; Niimi, Kaoru; Ikuta, Tatsuyoshi; Furuichi, Hiroyuki; and Iwanaga, Tetsuya, to Mutoh Industries Ltd. Input device for CAD. 5,341,152, Cl. 345-133.000.

Arai, Takao: *See—*
Amada, Nobutaka; Nakagaki, Harushige; Arai, Takao; and Noguchi, Takaharu, 5,341,248, Cl. 360-33.100.

Arai, Yoshihisa; Yui, tomoyuki; and Gocho, Yoshihiro, to Mitsubishi Gas Chemical Company, Inc. Anti-ferroelectric liquid crystal and liquid crystal display device. 5,340,498, Cl. 252-299.650.

Arakawa, Satoshi: *See—*
Fukuoka, Takayoshi; Arakawa, Satoshi; and Mori, Ikuo, 5,340,996, Cl. 250-582.000.

Araki, Kenji: *See—*
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, 5,339,666, Cl. 72-56.000.

Arashi, Norio: *See—*
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000.

Arashima, Teruo: *See—*
Yamakawa, Koji; Kawamura, Takahisa; and Arashima, Teruo, 5,341,161, Cl. 347-87.000

Arasuna, Hitoshi: *See—*
Takasaki, Denjiro; Togawa, Shuichi; Kinoshita, Akio; and Arasuna, Hitoshi, 5,340,960, Cl. 219-86.700.

Arbogast, Jeffrey H.: *See—*
Lewis, Terry M.; Kosty, John W.; Goodman, James R.; Krzemein, Mark A.; Lenhert, Jon M.; and Arbogast, Jeffrey H., 5,340,121, Cl. 277-43.000.

Arbus, William J. Compound automotive transmission for light trucks. 5,339,707, Cl. 74-606.00R.

Arch Development Corporation: *See—*
Roizen, Michael; Turcotte, William E., II; and Pfisterer, Richard E., 5,341,291, Cl. 364-413.020.

Arco Chemical Technology: *See—*
Yang, Lau Shan; and McCready, Russell J., 5,340,875, Cl 525-64.000.

ARCO Chemical Technology, L.P.: *See—*
Guo, Shao H.; and Grey, Roger A., 5,340,883, Cl. 525-381.000.

Arcom Architectural Computer Services, Inc.: *See—*
Rossberg, Wayne; Smith, Edward F.; and Matinkhah, Angelica, 5,341,469, Cl. 395-145.000.

Ard, Terry S. Apparatus for threading a drawstring through a garment sleeve. 5,340,001, Cl. 223-50.000.

Arfaei, Ahmad; Berke, Neal S.; and Jeknavorian, Ara A., to W. R. Grace & Co.-Conn. Hydraulic cement set-accelerating admixtures incorporating glycols. 5,340,385, Cl. 106-14.050.

Armbrust, William D.; and Deemer, Randall E., to Kennametal Inc. Chip-breaking toolholder with adjustable orifice cap. 5,340,242, Cl. 407-11.000.

Armijo, Joseph S.: *See—*
Rosenbaum, Herman S.; and Armijo, Joseph S., 5,341,407, Cl. 376-409.000.

Arndt, Douglas J.: *See—*
Thiele, Charles W.; Willemstyn, Tunis J.; Arndt, Douglas J.; and McMullen, John J., 5,340,241, Cl. 406-132.000.

Arnold, David P.: *See—*
Lewen, Ronald C.; Coyle, Jonathan V.; Marotta, Peter P.; Liubinskas, Tauras J.; Arnold, David P.; Byers, Kenneth R.; Dean, Anthony K.; and Nowakowski, Victor A., 5,341,374, Cl. 370-85.400.

Arold, Klaus; and Player, Otto, to Mercedes-Benz AG. Assembly arrangement for a vehicle heating system or air conditioning system. 5,340,022, Cl. 237-12.30A.

Aron, Carl R.; and Troe, James L., to RAM Mobile Data USA Limited Partnership. Cellular telephone locator using a mobile data system. 5,341,410, Cl. 379-59.000.

Arterbury, Bryant A.; and Spangler, James E., to Halliburton Company. Sintered spherical plastic bead prepack screen aggregate. 5,339,895, Cl. 166-227.000.

Arthur, Hugh M.; and Labbe, Francis A. M., to Molins plc. Applying fluid additive to fibrous material. 5,340,609, Cl. 429-244.000.

Aruga, Hideki: *See—*
Kawai, Masao; Kyotani, Yoshihiro; Aruga, Hideki; Shiimado, Toshihiro; Ito, Yoshihisa; and Hori, Koji, 5,339,649, Cl. 62-46.100.

As, Bengt-Olof: *See—*
Eckersten, Christer; and As, Bengt-Olof, 5,341,145, Cl. 342-148.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Harada, Tadamasa; Sakamoto, Midori; and Nakashima, Noriaki, 5,340,150, Cl. 280-740.000.
Kajihara, Akiro; and Miyoshi, Shiro, 5,340,811, Cl. 514-253.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kurei, Hiroshi, 5,341,187, Cl. 354-173.110.
Ogawa, Kimiaki, 5,341,190, Cl. 354-446.000.
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,341,246, Cl. 359-837.000.

Asahina, Kenichi: *See—*
Ueda, Naoki; Asahina, Kenichi; Omura, Hirohumi; and Miyai, Jiro, 5,340,654, Cl. 427-437.000.

Asai, Hidehiro: *See—*
Echigoya, Kenichi; and Asai, Hidehiro, 5,341,018, Cl. 257-503.000.

Asai, Hiroshi; Takeshige, Nobuhide; Uosaki, Yasuo; Shibahara, Masahiko; Omori, Motofumi; and Morimoto, Shigenori, to Mazda Motor Corporation. Heat-resistant ferritic cast steel member. 5,340,414, Cl. 148-325.000.

Asakawa, Teruo: *See—*
Oosawa, Tetsu; Asakawa, Teruo; Nebuka, Kenji; and Ono, Hiroo, 5,340,261, Cl. 414-217.000.

Asal, Michael D.: *See—*
Simpson, Richard D.; Nye, Jeffrey L.; and Asal, Michael D., 5,341,470, Cl. 395-164.000.

Asano, Satomi: *See—*
Ohya, Yukio; Matsuzaka, Syoji; Irie, Yasushi; Murakami, Shuji; Asano, Satomi; Okusa, Hiroshi; and Ohtani, Hirofumi, 5,340,710, Cl. 430-567.000.

Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, to Mitsui Toatsu Chemicals, Incorporated. Radiation-resistant polypropylene resin composition. 5,340,848, Cl. 522-157.000.

Ascom Hasler Mailing Systems, Inc.: *See—*
Horbal, John J.; and Emmett, James S., 5,340,965, Cl. 235-101.000.

Asea Brown Boveri AB: *See—*
Spicar, Erich, 5,339,672, Cl. 73-19.100.

Asea Brown Boveri Ltd.: *See—*
Keller, Jakob; and Breidenthal, Robert E., 5,340,306, Cl. 431-351.000.
Niederer, Ralph, 5,341,283, Cl. 363-58.000.

Asghar, Janet A.: *See—*
Asghar, Jonathan E.; and Asghar, Janet A., 5,339,865, Cl. 138-26.000.

Asghar, Jonathan E.; and Asghar, Janet A. Apparatus for compensating for variations in pressure exerted by a fluid within a container against the container. 5,339,865, Cl. 138-26.000.

Ash Grove Cement Company: *See—*
Tutt, James R., 5,339,751, Cl. 110-186.000.

Aske, Robert L., to Alliant Techsystems, Inc. Underwater explosive acoustic signature device. 5,341,343, Cl. 367-1.000.

Astroscan, Ltd.: *See—*
Jackson, Peter, 5,340,453, Cl. 204-182.800.

AT&T Bell Laboratories: *See—*
Bencivenga, Robert; Davidson, Scott; and Velasco, Victor J., 5,341,314, Cl. 364-578.000.
Bi, Qi, 5,341,395, Cl. 375-1.000.
Cava, Robert J.; and Sunshine, Steven A., 5,340,796, Cl. 505-12.000.
Fletcher, Linda M.; Guth, Leslie A.; and Monroe, Douglas W., 5,340,016, Cl. 228-219.000.
Gammel, John C., 5,341,416, Cl. 379-382.000.
Hall, Joseph L., II; and Johnston, James D., 5,341,457, Cl. 395-2.350.
Henry, Charles H.; Milbrodt, Michele A.; and Yaffe, Henry H., 5,341,444, Cl. 385-11.000.
Marra, William C.; Slavinskas, Darius D.; and Soulliere, Mark J., 5,341,364, Cl. 370-16.100.

Ata, Masafumi: *See—*
Matsuzawa, Nobuyuki; Hayashi, Yoko; Ata, Masafumi; and Tamura, Shin-Ichiro, 5,340,631, Cl. 428-64.000.

Atlantic Richfield Company: *See—*
Mickas, Anthony, 5,340,464, Cl. 208-131.000.

Atmel Corporation: *See—*
Larsen, Bradley J.; Randazzo, Todd A.; and Erickson, Donald A., 5,340,764, Cl. 437-52.000.

Atrix Laboratories, Inc.: *See—*
Dunn, Richard L.; English, James P.; Cowsar, Donald R.; and Vanderbilt, David D., 5,340,849, Cl. 523-113.000.

Atsushi, Ogura. Method for manufacturing a composite vapor deposition film. 5,340,604, Cl. 427-10.000.

Aubert & Duval: *See—*
Accary, Andre; Coutiere, Jean; and Lacour, Andre, 5,340,377, Cl. 75-334.000.

Audenaert, Raymond; Kirchmeyer, Stephan; Sirinyan, Kirkor; and Henning, Wolfgang, to Bayer Aktiengesellschaft; and Bayer Antwerpen N.V. Polymer resins and use thereof. 5,340,879, Cl. 525-327.400.

Audi Ag: *See—*
Vollmer, Elmar, 5,340,185, Cl. 296-68.100.

Aulia, Ari N.; and Groenendijk, Jan C., to Koninklijke PTT Nederland N.V. Device for effecting a modification in a stream of transmission cells. 5,341,430, Cl. 380-49.000.

Ault, Earl R.: *See—*
Warner, Bruce E.; Miller, John L.; and Ault, Earl R., 5,341,392, Cl. 372-62.000.

Aune, Thomas M.: *See—*
Szczepanski, Joseph T.; Aune, Thomas M.; and Schneider, Henry J., 5,340,479, Cl. 210-497.100.

Aura Systems, Inc.: *See—*
Tal, Zeev; Stuart, Keith O.; and Bulgatz, Dennis C., 5,341,054, Cl. 310-14.000.

Austruy, Pierre; Brezzo, Bernard; Lipa, Jean-Pierre; Naudin, Bernard; Calvignac, Jean; and Waller, Richard H., to International Business Machines Corporation. Method for exchanging messages between a shared memory and communication adapters using an efficient logical protocol. 5,341,475, Cl. 395-200.000.

Autoliv Development AB: *See—*
Ernst, Hans-Hellmut, 5,340,052, Cl. 242-381.100.

Avco Corporation: *See—*
Foroudastan, Saeed D.; and Holman, Mitchell C., 5,341,303, Cl. 364-468.000.
Giroux, Brian W., 5,341,213, Cl. 356-363.000.

Avery Dennison Corporation: *See—*
Cusack, Joyce M.; Phillips, Allison S.; Tataryan, Anahit; and Sinanyan, Astgik, 5,340,427, Cl. 156-268.000.
Podosek, Edward, 5,340,155, Cl. 281-29.000.

Avibank Mfg., Inc.: *See—*
Duran, John A., 5,340,255, Cl. 411-373.000.

AVL Medical Instruments AG: *See—*
Wolfbeis, Otto S.; and Trettnak, Wolfgang, 5,340,722, Cl. 435-14.000.

Avraham, Shalom: *See—*
Stevens, Richard L.; and Avraham, Shalom, 5,340,739, Cl. 435-240.100.

Awaya, Juichi: *See—*
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideaki; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,340,806, Cl. 514-184.000.

Axelrod, Herbert R. Animal chew toy containing animal meal. 5,339,771, Cl. 119-710.000.

Axsom, Larry E.: *See—*
Wolfe, Donald M., Jr.; Allard, John C.; Nguyen, Cuong H.; Axsom, Larry E.; and Gabbard, Jerry D., 5,340,970, Cl. 235-383.000.

Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, to BASF Aktiengesellschaft. Aqueous polymer dispersion. 5,340,859, Cl. 524-162.000.

Aydin, Oral: *See—*
Bauer, Gerhard; Aydin, Oral; and Neutzner, Josef, 5,340,858, Cl. 524-162.000.

Aymerich, Jose ; and Prat, Jesus, to Fico I.T.M. S.A. Attachment device for sunvisor vanity mirrors. 5,340,186, Cl. 296-97.100.

Azuhata, Shigeru: *See—*
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000.

B.A.T. Cigarettenfabriken GmbH: *See—*
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J., 5,339,837, Cl. 131-296.000.

B.F. Goodrich Company, The: *See—*
Backman, Arthur L.; and Cinadr, Bernard F., 5,340,880, Cl. 525-331.600.

B&G Plastics, Inc.: *See—*
Kolton, Chester; and Spater, Stuart S., 5,339,552, Cl. 40-640.000.

B-W Fabricators, Inc.: *See—*
Eastman, Robert L., 5,340,482, Cl. 210-525.000.

Baach, Michael K.: *See—*
Kroon, David H.; and Baach, Michael K., 5,340,455, Cl. 204-196.000.

Baba, Fumiaki: *See—*
Ishii, Kozo; Takemoto, Kazuo; Fujiwara, Takuji; Mizobe, Tatsutoshi; Baba, Fumiaki; Nagayama, Shigeru; Watanabe, Osamu; and Takeuchi, Koichiro, 5,339,935, Cl. 192-3.300.

Baba, Hiroyuki, to Seiko Epson Corporation. Automatic focus adjuster for projection display systems having in-operation and end-of-operation symbols superimposed over video data. 5,341,176, Cl. 348-569.000.

Baba, Yoshinobu; Ikeda, Takeshi; Tada Tatsuya; Sato, Yuko; and Amano, Yasuko, to Canon Kabushiki Kaisha. Carrier for electrophotography, two-component type developer for electrostatic images, process for producing carrier for electrophotography, and image forming method. 5,340,677, Cl. 430-106.600.

Babb, James F.: *See—*
Hastings, Robert J.; Varghese, Paily T.; Alexander, Dennis J.; Babb, James F.; and Bradshaw, John R., 5,340,340, Cl. 439-64.000.

Babcock, Laura M.; Brady, Richard L.; and Burnier, Julia S., to Hercules Incorporated. Organosilicon compositions. 5,340,644, Cl. 428-285.000.

Babcock & Wilcox Company, The: *See—*
Henning, Thomas L.; and Giammaruti, Robert J., 5,340,041, Cl. 241-119.000.
Kidáloski, Raymond G.; Detzel, Roger A.; and Byan, Donald E., 5,339,891, Cl. 165-67.000.
Pinske, Edward E., Jr., 5,339,538, Cl. 34-370.000.
Smith, J. William, 5,339,755, Cl. 110-345.000.

Babin, Didier; Benoit, Marc; Demoute, Jean-Pierre; Pilorge, Fabienne; and Reinier, Nicole, to Roussel-UCLAF. Esters of 2,2-dimethyl-3-[(2,2-difluoro-cyclopropylidene) methyl]cyclopropane carboxylic acids. 5,340,835, Cl. 514-531.000.

Bablouzian, Leon: *See—*
Ou, Chia-Chih; and Bablouzian, Leon, 5,340,643, Cl. 428-283.000.

Bachmann, Theo: *See—*
Uftring, Winfried; Bachmann, Theo; Geis, Helmut; and Haase, Lothar, 5,340,399, Cl. 118-59.000.

Backes, Paul G., to United States of America, National Aeronautics and Space Administration. Generalized compliant motion primitive. 5,341,459, Cl. 395-95.000.

Backman, Arthur L.; and Cinadr, Bernard F., to B.F. Goodrich Company, The. The post-chlorinated suspension-polymerized poly(vinyl chloride) having at least 70 percent chlorine. 5,340,880, Cl. 525-331.600.

Badesha, Santokh S.; Mammino, Joseph; Abramsohn, Dennis A.; Sypula, Donald S.; Henry, Arnold W.; Heeks, George J.; Pan, David H.; and Fratangelo, Louis D., to Xerox Corporation. Intermediate transfer element coatings. 5,340,679, Cl. 430-126.000.

Badger Meter, Inc.: *See—*
DeJarlais, George; and Slaugenhoup, Mark D., 5,339,686, Cl. 73-201.000.

Badgley, Kenton D.: *See—*
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.

Badillo, Paul: *See—*
Badillo, Ralph; and Badillo, Paul, 5,339,756, Cl. 112-68.000.

Badillo, Ralph; and Badillo, Paul, to Ralph's Industrial Sewing Machine Company. Material removal device used with a sewing machine. 5,339,756, Cl. 112-68.000.

Bae, Yi-Sung: *See—*
Hwang, In-Hwan; Lee, Hye-Kyoung; Bae, Yi-Sung; and Lee, Bang-Won, 5,341,417, Cl. 379-399.000.

Bagnulo, Luigi, to Prochind S.p.A. Coupling for pipelines and the like. 5,340,161, Cl. 285-50.000.

Bahn, Itsuki, to Kabushikigaisha Sekogiken. High-speed reluctance type motor. 5,341,076, Cl. 318-254.000.

Baier, Gunar, to ABB Patent GmbH. Method and apparatus for regulating and testing. 5,339,627, Cl. 60-274.000.

Baird, Randy K.; and Hilton, Sydney, to FMC Corporation. Bucket lift distribution system. 5,339,943, Cl. 198-365.000.

Baker Hughes Incorporated: *See—*
Bradley, Bruce D.; and Coombs, Steven G., 5,340,485, Cl. 210-767.000.
Warner, Kevin L.; and Delasko, Joe M., 5,341,345, Cl. 367-99.000.

Baker, John C.: *See—*
Dziabo, Anthony J.; Holmes, Alix A.; Anger, Claude B.; Baker, John C.; and Peng, Lin, 5,340,583, Cl. 424-412.000.

Baker, Phillip D.; Orr, Joseph A.; Westenskow, Dwayne R.; and Egbert, Timothy P., to University of Utah Research Foundation. Method for determining blood pressure utilizing a neural network. 5,339,818, Cl. 128-677.000.

Baker, Robert R.; and Carden, Robin A., to Ceradyne, Inc. Monolithic ceramic golf club putter head and method of manufacture thereof. 5,340,107, Cl. 273-167.00R.

Bakht, Baidar: *See—*
Jaeger, Leslie G.; Mufti, Aftab A.; and Bakht, Baidar, 5,339,475, Cl. 14-73.000.

Balch, Brent F.: *See—*
Plonsky, Christopher B.; Balch, Brent F.; and Fallin, David, 5,341,125, Cl. 340-572.000.

Baldus, Hans-Peter; and Schnick, Wolfgang, to Bayer AG. Process fo the production of Si_2N_4 using a silicon, phosphorous and nitrogen containing precursor. 5,340,561, Cl. 423-344.000.

Balicki, Janusz K.: *See—*
Ahanin, Bahram; Balicki, Janusz K.; Kiani, Khusrow; Leong, William; Li, Ken-Ming; and Nouban, Bezhad, 5,341,044, Cl. 307-465.000.

Balkanski, Alexandre; Purcell, Steve; and Kirkpatrick, James, to C-Cube Microsystems, Inc. System for compression and decompression of video data using discrete cosine transform and coding techniques. 5,341,318, Cl. 364-725.000.

Ballard Medical Products: *See—*
Palmer, Darrel; and Cook, Robert P., 5,339,988, Cl. 222-82.000.

Ballard, Sanford: *See—*
Looney, Brian B.; and Ballard, Sanford, 5,339,694, Cl. 73-861.070.

Ballstadt, George. Extruded frame molding for glass block structures. 5,339,588, Cl. 52-308.000.

Balogh, Craig R.: *See—*
Barney, George M.; Hardy, Douglas A.; and Balogh, Craig R., 5,341,426, Cl. 380-21.000.

Ban, Koichi: *See—*
Kajino, Yuuichi; Sugi, Hikaru; Ban, Koichi; Honda, Yuuji; Samukawa, Katsuhiko; and Kawai, Takayoshi, 5,340,021, Cl. 236-49.300.

Ban, Yoichiro: *See—*
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl. 51-429.000.

Baney, Douglas M.; and Dupre, John J., to Hewlett-Packard Company. Technique for determining the amplified spontaneous emission noise of an optical circuit in the presence of an optical signal. 5,340,979, Cl. 250-214.00B.

Bankert, Charles S.: *See—*
Ahmad, Jamil; Riccitelli, Samuel D.; Bankert, Charles S.; Hannah, Richard; and Davis, Christopher L., 5,339,671, Cl. 73-1.00G.

Bar-Avi, Patrick, to State of Israel, Ministry of Defence, Rafael Armament Development Authority, The. Apparatus for measuring the rate of rotation and linear accelleration of a moving body in two perpendicular axes. 5,339,690, Cl. 73-505.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Baran, Paul. Method and apparatus for sharing of common in-house wiring to permit multiple telephone carriers to serve the same customer. 5,341,415, Cl. 379-201.000.

Barbera, Melvin A., to Procter & Gamble Company, The. Agglomerated psyllium husk containing edible acid. 5,340,580, Cl. 424-189.100.

Barclay, William R., to OmegaTech Inc. Food product having high concentrations of omega-3 highly unsaturated fatty acids. 5,340,594, Cl. 426-49.000.

Barclay, William R., to Omegatech Inc. Process for growing Thraustochytrium and chizochytrium using non-chloride salts to produce a microfloral biomass having omega-3 highly unsaturated fatty acids. 5,340,742, Cl. 435-256.800.

Bardey, Xavier M. H.; Desaulty, Michel A. A.; Jolu, Jerome E. R.; Meunier, Serge M.; Mouton, Pierre C.; Poutonnet, Sylvie; and Renvier, Jacques, to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.M.A.). Gas turbine engine with improved water ingestion prevention. 5,339,622, Cl. 60-39.092.

Barker, David A. Piloted swivel seal fitting. 5,340,168, Cl. 285-276.000.

Barlow, Graham F., to Offshell Trading Limited. Apparatus for the extraction of meat from the tails of crustacea. 5,340,353, Cl. 452-9.000.

Barmag AG: *See*—
Dammann, Peter, 5,339,617, Cl. 57-290.000.

Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, to British Telecommunications Public Limited Company; Ferranti Creditophone Limited; GEC Plessey Telecommunications Limited; Mercury Communications Limited; Orbitel Mobile Communications Limited; Shaye Communications Limited; Phonepoint Limited; and STC plc. Time division duplex telecommunication system. 5,341,367, Cl. 370-29.000.

Barney, George M.; Hardy, Douglas A.; and Balogh, Craig R., to Motorola, Inc. Cryptographic key management apparatus and method. 5,341,426, Cl. 380-21.000.

Baron, Nathan; and Adelman, Judah L., to Motorola, Inc. Voltage controlled oscillator having a 50% duty cycle. 5,341,113, Cl. 331-144.000.

Barrett, Peter T., to SuperMac Technology, Inc. Method and apparatus for compression data by generating base image data from luminance and chrominance components and detail image data from luminance component. 5,341,442, Cl. 382-56.000.

Barrett, Richard B., to Big Three Industries, Inc. Temperature indicating compositions. 5,340,537, Cl. 422-26.000.

Bartel, Daniel F.: *See*—
Zaicow, Todd A.; Farber, Scott A.; and Bartel, Daniel F., 5,340,538, Cl. 422-33.000.

Barthomeuf, Jean-Paul; and Gauthier, Alain, to Societe de Prospection et d'Inventions Techniques (S.P.I.T. Tubular cartridge for storing and applying a non-solid product, and a drive and thrust assembly for the cartridge. 5,339,992, Cl. 222-137.000.

Bartl, James C., to Best Label Co., Inc. Packing list and shipping label combination. 5,340,158, Cl. 283-81.000.

BASF Aktiengesellschaft: *See*—
Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, 5,340,859, Cl. 524-162.000.
Bauer, Gerhard; Aydin, Oral; and Neutzner, Josef, 5,340,858, Cl. 524-162.000.
Baumgartl, Horst; Schlarb, Alois; Wahl, Ludwig; Ittemann, Peter; and Brentrup, Karl-Ludwig, 5,340,642, Cl. 428-224.000.
Henn, Rolf; Hinz, Werner; Schuster, Ludwig; and Vorspohl, Klaus, 5,340,916, Cl. 528-405.000.

BASF Corporation: *See*—
Hauck, Steven M.; and Viola, Jeffrey P., 5,340,208, Cl. 312-406.000.
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., 5,340,886, Cl. 525-426.000.

Basker, Milo F., Jr.: *See*—
Kanter, David J.; and Basker, Milo F., Jr., 5,339,847, Cl. 135-16.000.

Bassous, Ernest; Patton, Gary L.; and Stork, Johannes M. C., to International Business Machines Corp. Method for fabricating self-aligned epitaxial base transistor. 5,340,753, Cl. 437-31.000.

Bastiaans, Richard G., to R L Industries Inc. Device for locking and mounting a fire arm. 5,339,966, Cl. 211-4.000.

Bastiaens, Luc: *See*—
Uytterhoeven, Herman; Bastiaens, Luc; Van den Bergh, Rudolf; and Leenders, Luc, 5,340,693, Cl. 430-253.000.

Battelle Memorial Institute: *See*—
Brackenbush, Larry W.; and Anderson, Gordon A., 5,340,990, Cl. 250-395.000.

Battery Technologies Inc.: *See*—
Tomantschger, Klaus; Book, Ronald J.; and Findlay, Robert D., 5,340,666, Cl. 429-59.000.

Bauer, Gerhard; Aydin, Oral; and Neutzner, Josef, to BASF Aktiengesellschaft. Aqueous polymer dispersions. 5,340,858, Cl. 524-162.000.

Bauer, Hans J.; Wurl, Wolfgang; Haas, Ludwig; and Hein, Otmar, to Suspa Compart AG. Length-adjustable crash damper for vehicles. 5,339,933, Cl. 188-371.000.

Baugher, Bennett W.; Chamberlain, Aurora J.; Devereaux, Sharon M.; and Ungemach, Frank S., to Abbott Laboratories. Analyte-substitute reagent for use in specific binding assay methods, devices and kits. 5,340,748, Cl. 436-518.000.

Baumann, Manfred: *See*—
Arabian, Sandro; and Baumann, Manfred, 5,340,045, Cl. 242-535.200.

Baumeister, Philip: *See*—
Trost, David; Baumeister, Philip; and Fischer, Dennis, 5,341,238, Cl. 359-359.000.

Baumgartl, Horst; Schlarb, Alois; Wahl, Ludwig; Ittemann, Peter; and Brentrup, Karl-Ludwig, to BASF Aktiengesellschaft. Sheetlike composite. 5,340,642, Cl. 428-224.000.

Baxter International Inc.: *See*—
Thompson, Joseph F., 5,339,831, Cl. 128-852.000.

Bayer AG: *See*—
Baldus, Hans-Peter; and Schnick, Wolfgang, 5,340,561, Cl. 423-344.000.
Claussen, Uwe, 5,340,504, Cl. 252-585.000.

Bayer Aktiengesellschaft: *See*—
Audenaert, Raymond; Kirchmeyer, Stephan; Sirinyan, Kirkor; and Henning, Wolfgang, 5,340,879, Cl. 525-327.400.
Hoppe, Manfred; Herd, Karl-Josef; Eizenhofer, Thomas; Harms, Wolfgang; Henk, Hermann; Kunde, Klaus; and Reddig, Wolfram, 5,340,928, Cl. 534-618.000.
Kuhling, Steffen; Kauth, Hermann; Alewelt, Wolfgang; and Freitag, Dieter, 5,340,905, Cl. 528-199.000.
Wehling, Bernhard; Schade, Franz; Kochta, Joachim; Burkhardt, Herbert; and Schindlmayr, Peter, 5,340,365, Cl. 8-94.180.
Westeppe, Uwe; Struss, Klaus; Lindner, Christian; Idel, Karsten-Josef; and Laue, Hans-Joachim, 5,340,876, Cl. 525-66.000.

Bayer Antwerpen N.V.: *See*—
Audenaert, Raymond; Kirchmeyer, Stephan; Sirinyan, Kirkor; and Henning, Wolfgang, 5,340,879, Cl. 525-327.400.

Bayliss, Keith H.: *See*—
Griffiths, Christopher N.; Raybone, David; and Bayliss, Keith H., 5,340,450, Cl. 204-157.300.

Beakes, John M.; and Newman, Lawrence E., to Globe Products Inc. Stator winding apparatus including winding form assemblies. 5,340,043, Cl. 242-1.10R.

Beard, Thomas L. Acid gas absorption process. 5,340,382, Cl. 95-151.000.

Beatty, David E.; Nyquist, Jeffery A.; and Ropp, Kenneth, to Dutchess Bakers' Machinery Co., Inc. Divider assembly. 5,340,298, Cl. 425-183.000.

Beatty, William E., Jr.: *See*—
Crookston, Ronald W.; Marks, Douglas C.; White, Richard E., III; Male, Andrew J.; Chien, Yun-Ko N.; Castelein, Steven; Beatty, William E., Jr.; Maier, Alfred E.; and Salvati, John G., 5,341,191, Cl. 335-16.000.

Beaussant, Raymond; Frison, Jacques; and Schegerin, Robert, to Intertechnique. Protective equipment including a closed suit. 5,339,806, Cl. 128-201.210.

Bebber, Hans J.; Rossner, Heinrich-Otto; and Tomalla, Gebhard, to Mannesmann AG. Plasma torch for transmitted arcs. 5,340,961, Cl. 219-121.500.

Beck, Charles A., Jr.; and Scher, Natan. Method of inserting a cricothyroidal endotracheal device between the cricoid and thyroid cartilages for treatment of chronic respiratory disorders. 5,339,809, Cl. 128-207.290.

Beckett, D. Gregory, to Beckett Industries Inc. Demetallizing procedure. 5,340,436, Cl. 156-639.000.

Beckett Industries Inc.: *See*—
Beckett, D. Gregory, 5,340,436, Cl. 156-639.000.

Beckman Instruments, Inc.: *See*—
Brenner, Nathaniel; and Palmieri, Richard H., 5,340,452, Cl. 204-180.100.

Beech Aircraft Corp.: *See*—
Strunk, Louis M.; Bosch, Anthony; and Kruhmin, Ted, 5,340,520, Cl. 264-174.000.

Beechler, Robert C., to Benante, Richard. Tree stand for hunters. 5,339,922, Cl. 182-188.000.

Beeferman, Dennis; and Lucas, William F., to Handy & Harman. Titanium hydride coated brazing product. 5,340,012, Cl. 228-56.300.

Beeley, Nigel R. A.; and Millican, Thomas A., to Celltech, Limited. Phenylcarboxamide compounds which have useful pharmaceutical activity. 5,340,827, Cl. 514-352.000.

Behe, Thomas J.: *See*—
Folkins, Jeffrey J.; Behe, Thomas J.; and Schram, Joseph G., 5,341,197, Cl. 355-264.000.

Behnke, Willi: *See*—
Roderfeld, Heinrich; Heidjann, Franz; Diekhans, Norbert; and Behnke, Willi, 5,339,611, Cl. 56-10.200.

Behrendt, Martin: *See*—
Latte, Frank-Helge; Froehlich, Franz-Fr.; Boscher, Georg; and Behrendt, Martin, 5,341,451, Cl. 385-135.000.

Beisswanger, Rudolf, to J.M. Voith GmbH. Nozzle applicator for application of coating color on a paper web. 5,340,402, Cl. 118-410.000.

Belkus, Paul R.: *See*—
Jens, Stephen C.; Sawaf, Bernard, deceased; Viola, Paul F.; Belkus, Paul R.; and Lee, Robert A. S., 5,341,406, Cl. 376-316.000.

Bell Communications Research, Inc.: *See*—
Gelman, Alexander; Kobrinski, Haim; Smoot, Lanny S.; and Weinstein, Stephen B., 5,341,474, Cl. 395-200.000.

Bell, Margaret A. Method for screwing medication vials to IV-bags. 5,339,511, Cl. 29-451.000.

Belvedere, Paul C.: *See*—
Kittelsen, Jon D.; and Belvedere, Paul C., 5,339,832, Cl. 128-862.000.

Benante, Richard: *See*—
Beechler, Robert C., 5,339,922, Cl. 182-188.000.

Benchmarq Microelectronics, Inc.: *See*—
Matthews, Wallace E., 5,341,034, Cl. 307-296.100.

Bencivenga, Robert; Davidson, Scott; and Velasco, Victor J., to AT&T Bell Laboratories. Method for generating a test to detect differences between integrated circuits. 5,341,314, Cl. 364-578.000.

Benckert, Hartmut; and Hurr, Helmut, to Putzmeister-Werk Maschinenfabrik GmbH. Flow restraining device for a thick matter conveying apparatus. 5,340,291, Cl. 417-569.000.

Bender, Frederick F.; and Watson, Earl L., to Chrysler Corporation. Mounting arrangement for vehicle door handle. 5,340,174, Cl. 292-336.300.

Bendix Europe Services Techniques: *See*—
Deit, Gerard L.; and Gerard, Jean L., 5,339,928, Cl. 188-1.110.

Benedict, David R.; and Burke, James F., to Martin Marietta Corporation. Controlled agitation cleaning system. 5,339,843, Cl. 134-56.00R.

Benjauthrit, Boonsieng, to Datatape Incorporated. Simple coding scheme for DC free channel codes of form M/N, where M=N−1 and M and N are positive integers. 5,341,134, Cl. 341-58.000.

Bennett, Richard L.: *See*—
DeRango, Mario F.; and Bennett, Richard L., 5,341,398, Cl. 375-3.100.

Bennett, Ronald G.: *See*—
Taylor, Lee A.; Bennett, Ronald G.; and Salisbury, Herbert R., 5,339,822, Cl. 128-700.000.

Benoit, Marc: *See*—
Babin, Didier; Benoit, Marc; Demoute, Jean-Pierre; Pilorge, Fabienne; and Reinier, Nicole, 5,340,835, Cl. 514-531.000.

Benske, Gregory A.: *See*—
Murphy, Joseph F.; McGeehan, Michael J.; Benske, Gregory A.; and Gaudiano, Juan, 5,340,198, Cl. 297-483.000.

Benson, John D.: *See*—
Neylan, Michael J.; Ostrom, Karin M.; Churella, Helen R.; Breen, Merlin D.; and Benson, John D., 5,340,603, Cl. 426-73.000.

Bentley, Steven R.; Chliwnyj, Alex; Johnson, Steven D.; Paranjape, Sushama M.; and Rhodes, Ronald K., to International Business Machines Corporation. Method and apparatus for improving inter-block gap length tolerance and locate accuracy for write appends. 5,341,252, Cl. 360-50.000.

Benz, Gottlieb, to Pamag AG. Method for accepting continuously supplied products from a production facility and respectively discontinuous delivery of a number of these products at a delivery station. 5,339,606, Cl. 53-444.000.

Benzschawel, Terry L.; and Howard, Webster E., to International Business Machines Corporation. Method of and apparatus for displaying a multicolor image. 5,341,153, Cl. 345-152.000.

Beretta, Pier G., to Fabrica d'Armi P. Beretta S.p.A. Tripping mechanism for semiautomatic and automatic firearms. 5,339,721, Cl. 89-142.000.

Berg-Fernstrum, Rosemary. Spherical toy. 5,340,349, Cl. 446-126.000.

Berg, Keevin: *See*—
Rodyniuk, Michael; and Berg, Keevin, 5,340,055, Cl. 244-1.00R.

Berger, Terry A.; and Wilson, William H., to Hewlett-Packard Company. High efficiency packed column supercritical fluid chromatography. 5,340,476, Cl. 210-198.200.

Bergkamp, Alan; and Sowers, Kenneth W., to DewEze Manufacturing, Inc. Reciprocating blade bale cutter. 5,340,042, Cl. 241-283.000.

Bergstrom, Harry J.: *See*—
Hay, Richard C., Jr.; Pappas, Chris; Bergstrom, Harry J.; and Fazzolare, Richard D., 5,340,598, Cl. 426-496.000.

Bergstrom, Lennart, to Sandvik AB. Method for forming ceramic powders by temperature induced flocculation. 5,340,532, Cl. 419-38.000.

Berke, Neal S.: *See*—
Arfaei, Ahmad; Berke, Neal S.; and Jeknavorian, Ara A., 5,340,385, Cl. 106-14.050.

Berkholz, Daniel S.: *See*—
Brash, Douglas J.; Berkholz, Daniel S.; Ericson, R. Ken; and Ciaramitaro, Anthony J., 5,339,945, Cl. 198-468.800.

Berlin, Carl W.; and Sarma, Dwadasi H. R., to Delco Electronics Corporation. Measurement circuit utilizing a low TCR thick film sense resistor. 5,341,119, Cl. 338-224.000.

Bernasek, Edward: *See*—
Young, Harvey J.; Bernasek, Edward; Lekwauwa, Aju N.; and Young, Walter R. D., Jr., 5,339,838, Cl. 131-372.000.

Berol Nobel AB: *See*—
Hellsten, Martin; and Harwigsson, Ian, 5,339,855, Cl. 137-13.000.

Berol Novel AB: *See*—
Palicka, Jadwiga, 5,340,502, Cl. 252-546.000.

Berry, Bernie B., Jr., to C/T Med-Systems Ltd., Inc. Dental cassette kit. 5,340,551, Cl. 422-300.000.

Bertaud, Yves; Bouvet, Sylvie; and Lamaze, Airy-Pierre, to Uranium Pechiney. Process for the selective electrofluorination of alloys or metallic mixtures based on uranium. 5,340,447, Cl. 204-1.500.

Berthiaume, William A.; and LeBlanc, Michel J., to C.R. Bard, Inc. Swivel exchange guidewire. 5,339,833, Cl. 128-772.000.

Berthold, Fritz; and Pfleger, Manfred, to Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co. KG. Multiple counter for detecting radioactive radiation. 5,340,989, Cl. 250-385.100.

Bertrand Faure Ltd.: *See*—
Notta, Adolf, 5,340,195, Cl. 297-354.100.

Bessemer, Robert H.: *See*—
Preiato, Ernest J.; Meetze, Marion M.; Hoopes, Mark S.; and Bessemer, Robert H., 5,340,295, Cl. 425-71.000.

Best Label Co., Inc.: *See*—
Bartl, James C., 5,340,158, Cl. 283-81.000.

Bethel, Stanley C. Door security device. 5,340,173, Cl. 292-288.000.

BGK Finishing Systems, Inc.: *See*—
Heath, James E.; and Eppeland, John R., 5,340,089, Cl. 266-87.000.

Bhalla, Prithvi R.; Herrick, Robert M.; and Gates, Donald W., to American Cyanamid Company. Turfgrass management compositions. 5,340,791, Cl. 504-130.000.

Bhandarkar, Dileep: *See*—
Cutler, David N.; Orbits, David A.; Bhandarkar, Dileep; Cardoza, Wayne; and Witek, Richard T., 5,341,482, Cl. 395-375.000.

Bi, Qi, to AT&T Bell Laboratories. Data recovery technique for asynchronous CDMA systems. 5,341,395, Cl. 375-1.000.

Bianchini, Michael J.; Michalik, Richard A.; Chiesa, John A.; and Mistler, Joanne, to Raytheon Company. Frequency discriminator with fiber optic delay line. 5,340,980, Cl. 250-214.00R.

Bianco, Ronald M., to Day Runner, Inc. Notebook binder having a tray with sliding lid. 5,340,156, Cl. 281-37.000.

Bidwell, Brian A.: *See*—
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Bientz, Alfred, to Molex Incorporated. Conductive ink for use with printed circuit modules. 5,340,640, Cl. 428-206.000.

Bifulk, Edward J. Dental prophy angle. 5,340,310, Cl. 433-123.000.

Big Three Industries, Inc.: *See*—
Barrett, Richard B., 5,340,537, Cl. 422-26.000.

Bigham, Fred L. Controlled biocide feeder for cooling water systems. 5,339,889, Cl. 165-1.000.

Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruytere, Hendricus C.; and Sloof, Willem-Arie, to U.S. Philips Corporation. FM quadrature demodulator with two phase comparison circuits. 5,341,107, Cl. 329-337.000.

Billaud, Philippe; de Volder, Claude; and Wybierala, Michel, to Thomson-CSF. Method and device to detect the garbling of pulses received by a secondary radar. 5,341,139, Cl. 342-40.000.

Billew, Dennis. Doorstop. 5,339,492, Cl. 16-82.000.

Billivant, Kenneth W.; and Preiser, Friedrich, to K-Tron Technologies, Inc. Mechanical feeder having a hemispherical hopper. 5,339,997, Cl. 222-238.000.

Bilotti, Alfred J., to Dayva International, Inc. Table cover. 5,339,748, Cl. 108-90.000.

Binder, Paul A.: *See*—
Frank, Steven J.; and Binder, Paul A., 5,341,483, Cl. 395-400.000.

Biosource Genetics Corporation: *See*—
della-Cioppa, Guy R.; Garger, Stephen J., Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., 5,340,734, Cl. 435-212.000.

Bird, Gregory F. Portable personal computer. 5,341,154, Cl. 345-167.000.

Birk, Manfred: *See*—
Bronkal, Bernhard; Gerwing, Wolfram; Grieshaber, Hermann; Birk, Manfred; and Engel, Gerhard, 5,339,680, Cl. 73-118.200.

Birukawa, Masahiro; Miyatake, Norio; and Hino, Yasumori, to Matsushita Electric Industrial Co., Ltd. Abnormality detection of a recording medium in a magneto-optical recording system. 5,341,359, Cl. 369-107.000.

Blaas, Dieter: *See*—
Torgersen, Helge; Skern, Timothy; and Blaas, Dieter, 5,340,713, Cl. 435-5.000.

Black & Decker Inc.: *See*—
Cuneo, Giuseppe; and Bonacina, Sergio, 5,340,247, Cl. 409-202.000.
Dolson, Michael D.; and Maknyik, Tibor, 5,340,330, Cl. 439-447.000.
Timmons, Russell M.; and Karnicki, Vladimir S., 5,339,571, Cl. 51-168.000.

Black, Thomas J., Jr.: *See*—
Toboni, James C.; and Black, Thomas J., Jr., 5,340,122, Cl. 277-59.000.

Black & Veatch Architects, Inc.: *See*—
Wally, Joseph H., Jr.; and Pace, Herbert W., 5,341,192, Cl. 355-50.000.

Blackburn, Brian K.: *See*—
Faigle, Ernst M.; Sparks, Tracy S.; Thompson, Richard J.; and Blackburn, Brian K., 5,340,148, Cl. 280-730.00A.

Blackledge, John W., Jr.; Dayan, Richard A.; Moeller, Dennis L.; Newman, Palmer E.; and Zubay, Kenneth J. P., to International Business Machines Corp. Trusted personal computer system with identification. 5,341,422, Cl. 380-4.000.

Blake, Joseph W., III. Blood coagulation test system. 5,339,830, Cl. 128-771.000.

Blake, Robert: *See*—
Rockstein, George; Wilz, David, Sr.; Blake, Robert; and Knowles, C. Harry, 5,340,971, Cl. 235-472.000.

Blaser, Peter T.; Miltner, Karl-Hermann; and Spiegel, Nikolaus, to Heidelberger Druckmaschinen AG. Sheet-fed offset printing machine equipped for automated changing of printing plates. 5,339,738, Cl. 101-477.000.

Block, Thomas G.: *See*—
Griessman, Detlef; Manlove, Gregory J.; Block, Thomas G.; and Howlett, Gordon P., 5,341,431, Cl. 381-15.000.

Bloechle, Hans; and Wanner, Karl, to Robert Bosch GmbH. Device on portable machine tools. 5,340,245, Cl. 408-226.000.

Bloomfield, Bryan A.: *See*—
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,341,130, Cl. 340-825.060.

VOL 1165 ISS 4 AG 23 1994 UMI

Bloomstein, Theodore M.: *See—*
Connor, James M.; Bloomstein, Theodore M.; Henderson, James A., Jr.; Maher, John W.; and Errico, James H., 5,341,498, Cl. 395-600.000.

Blumenstock, Andreas; and Denz, Helmut, to Robert Bosch GmbH. Method and arrangement for conducting a tank-venting diagnosis in a motor vehicle. 5,339,788, Cl. 123-520.000.

Boam R&D Co., Ltd.: *See—*
Chang, Dong S.; and Lee, Sang S., 5,340,422, Cl. 156-89.000.

Board of Regents, The University of Texas System: *See—*
Goldblum, Randall M.; and Rajaraman, Srinivasan, 5,340,721, Cl. 435-7.920.

BOC Group Plc., The: *See—*
Garrett, Michael E., 5,339,639, Cl. 62-6.000.

Boda, James C.; and Appleby, Kenneth G., to Brunswick Corporation. Universal tiller handle with shift and throttle. 5,340,342, Cl. 440-86.000.

Bodewigs, Peter W., to Miller Electric Mfg. Co. Alternating current power source for welding. 5,340,963, Cl. 219-130.100.

Boehm, George L. Folding fish landing net with improved hinge mechanisms. 5,339,556, Cl. 43-11.000.

Boehnen, Daniel A. Method and apparatus to facilitate superconductivity by exciting a material at its resonant frequency of molecular vibration. 5,340,795, Cl. 505-100.000.

Boehringer Igelheim International GmbH: *See—*
Torgersen, Helge; Skern, Timothy; and Blaas, Dieter, 5,340,713, Cl. 435-5.000.

Boeing Company, The: *See—*
Dorsey-Palmateer, John W., 5,341,183, Cl. 353-122.000.
Higgins, Robert P.; and Nitardy, John H., 5,341,396, Cl. 375-1.000.

Boer, Karl W., to University of Delaware, The. Inverse delta-doping for improved open circuit voltage of solar cells or photo diodes. 5,340,408, Cl. 136-255.000.

Boeve, Gerard: *See—*
Verbeke, Gentil; and Boeve, Gerard, 5,340,995, Cl. 250-581.000.

Boge AG: *See—*
Schyboll, Georg; and Mayerbock, Heinrich, 5,340,094, Cl. 267-219.000.

Boge, Hans: *See—*
Smerchanski, Thomas C.; and Boge, Hans, 5,339,578, Cl. 52-98.000.

Bohan, John E., Jr.; Mills, Frank S.; and Ward, Scott A., to Honeywell Inc. Electronic aquastat in immersible capsule. 5,340,019, Cl. 236-20.00R.

Bohlen, Hans-Dieter; and Starchikow, Manfred. Cabling arrangement. 5,340,331, Cl. 439-502.000.

Bois, Daniel: *See—*
Chantre, Alain; Bois, Daniel; and Nouailhat, Alain, 5,340,757, Cl. 437-40.000.

Bok, Hendrik F., to Specialty Coating Systems, Inc. Methods and apparatus for cleaning objects. 5,339,842, Cl. 134-1.000.

Bolanos, Henry: *See—*
Greeh, David T.; Alesi, Thomas W., Jr.; Bolanos, Henry; and Toso, Kenneth E., 5,339,870, Cl. 140-123.500.

Bolden, Paul L.; and Hayes, Michael E., to Petroferm Inc. Process of removing soldering flux and/or adhesive tape residue from a substrate. 5,340,407, Cl. 134-26.000.

Bolen, Richard K., to Northwestern Corporation, The. Coin mechanism for bulk vending machine. 5,339,937, Cl. 194-292.000.

Bollini, Germano, to Brymore Enterprises S.A. Water based multicolor coating compositions and process for their preparation. 5,340,389, Cl. 106-197.200.

Bolon, Donald A.: *See—*
Gillette, Gregory R.; Shenian, Popkin; Bolon, Donald A.; and Irwin, Patricia C., 5,340,839, Cl. 521-40.000.

Bonascina, Sergio: *See—*
Cuneo, Giuseppe; and Bonacina, Sergio, 5,340,247, Cl. 409-202.000.

Bonaquist, Dante P.: *See—*
Lockett, Michael J.; Bonaquist, Dante P.; and Victor, Richard A., 5,339,648, Cl. 62-24.000.

Book, Ronald J.: *See—*
Tomantschger, Klaus; Book, Ronald J.; and Findlay, Robert D., 5,340,666, Cl. 429-59.000.

Booth, Rex; and Pocha, Michael D., to United States of America, Energy. Semiconductor switch geometry with electric field shaping. 5,341,017, Cl. 257-459.000.

Borchardt, Robert L.: *See—*
McGreevy, William T.; and Borchardt, Robert L., 5,341,263, Cl. 360-128.000.

Borden Inc.: *See—*
Lemon, Peter H. R. B.; King, James G.; Murray, Graham; Leoni, Henry; and Gerber, Arthur H., 5,340,888, Cl. 525-501.000.

Bosc, Richard: *See—*
Layre, Rene ; and Bosc, Richard, 5,340,463, Cl. 205-201.000.

Bosch, Anthony: *See—*
Strunk, Louis M.; Bosch, Anthony; and Kruhmin, Ted, 5,340,520, Cl. 264-174.000.

Boscher, Georg: *See—*
Latte, Frank-Helge; Froehlich, Franz-Fr.; Boscher, Georg; and Behrendt, Martin, 5,341,451, Cl. 385-135.000.

Boumarafi, Mohamed: *See—*
Desai, Trilok; Goestenkors, Gregory N.; and Boumarafi, Mohamed, 5,340,339, Cl. 439-892.000.

Bousquet, Marie, heir: *See—*
Emonds-Alt, Xavier; Gueule, Patrick; Proietto, Vincenzo; Goulaouic, Pierre, deceased; Bousquet, Marie, heir; and Goulaouic, Catherine M. L., heir, 5,340,822, Cl. 514-316.000.

Bouvet, Sylvie: *See—*
Bertaud, Yves; Bouvet, Sylvie; and Lamaze, Airy-Pierre, 5,340,447, Cl. 204-1.500.

Bov, Raphael F., Jr.: *See—*
Hubble, Fred F., III; Swales, Michael G.; Weber, Michael E.; Abowitz, Gerald; and Bov, Raphael F., Jr., 5,341,193, Cl. 355-203.000.

Bowen, Leslie J., to Materials Systems Incorporated. Method for making piezoelectric ceramic/polymer composite transducers. 5,340,510, Cl. 264-22.000.

Bowles, Sylvia J.: *See—*
Kacher, Mark L.; Taneri, James E.; Camden, James B.; Vest, Paul E.; and Bowles, Sylvia J., 5,340,492, Cl. 252-112.000.

Bowman, Gerald E. Water conservation system. 5,339,859, Cl. 137-337.000.

Bowman, Lyle: *See—*
Patel, Rajesh; Bowman, Lyle; Vildaver, Margarita; and Chen, Raymond, 5,340,572, Cl. 424-78.040.

Box, Thomas, to Spectrum International, Inc. All-purpose utility crate. 5,339,979, Cl. 220-529.000.

Boyd, Charles D.; and Deak, Susan B., to University of Medicine & Dentistry of New Jersey. Method for diagnosing for aneurysms. 5,340,723, Cl. 435-29.000.

Boyd, David W.: *See—*
Stein, Irene F.; Degi, Greg A.; Boyd, David W.; and Webb, Steven L., 5,341,225, Cl. 358-498.000.

Boyd, James W., to Harnischfeger Corporation. Boarding ladder assembly having a variable counterweight lifting force. 5,339,919, Cl. 182-85.000.

Boykin, Roger O. Selective exit control system. 5,341,126, Cl. 340-573.000.

BP Chemicals (HITCO), Inc.,: *See—*
Strunk, Louis M.; Bosch, Anthony; and Kruhmin, Ted, 5,340,520, Cl. 264-174.000.

Brackenbush, Larry W.; and Anderson, Gordon A., to Battelle Memorial Institute. Fractional channel multichannel analyzer. 5,340,990, Cl. 250-395.000.

Brackett, Douglas C.; and Webster, William H. Apparatus for removing and installing valve-spring retainer assemblies and for testing the tension of springs employed thereby. 5,339,515, Cl. 29-705.000.

Bradley, Bruce D.; and Coombs, Steven G., to Baker Hughes Incorporated. Apparatus and method for clarifier sludge collection. 5,340,485, Cl. 210-767.000.

Bradshaw, John R.: *See—*
Hastings, Robert J.; Varghese, Paily T.; Alexander, Dennis J.; Babb, James F.; and Bradshaw, John R., 5,340,340, Cl. 439-64.000.

Brady, Richard L.: *See—*
Babcock, Laura M.; Brady, Richard L.; and Burnier, Julia S., 5,340,644, Cl. 428-285.000.

Brady, William P.: *See—*
Vincent, Gary A.; Brady, William P.; Cifuentes, Martin E.; Schoenherr, William J.; and Vincent, Harold L., 5,340,887, Cl. 525-477.000.

Brahmbhatt, Dhaval J., to National Semiconductor Corporation. Flash memory cell structure. 5,341,342, Cl. 365-182.000.

Brake, Bobby G.; and Chatterji, Jiten, to Halliburton Company. Low fluid loss cement compositions, fluid loss reducing additives and methods. 5,340,860, Cl. 524-166.000.

Brambilla, Massimiliano; and Maggioni, Giampietro, to S.G.S.-Thomson Microelectronics S.r.l. Inductive load drive circuit, particularly for fuel injections. 5,341,032, Cl. 307-270.000.

Brambilla, Massimiliano; and Maggioni, Giampietro, to SGS-Thomson Microelectronics S.r.l. Circuit for detecting short-circuiting of inductive load drive devices. 5,341,282, Cl. 363-50.000.

Brandenburg, Bruce L.: *See—*
Roberts, Russell D.; Brandenburg, Bruce L.; and Ellis, Claude E., 5,340,473, Cl. 210-177.000.

Brandorff, Alexander; Sussmeier, John W.; and Smith, Steven L., to United Parcel Service of America, Inc. Method and apparatus for weighing objects. 5,340,950, Cl. 177-145.000.

Brandt, Inc.: *See—*
Melcher, Richard A.; Sherman, William, III; Nadig, Madhura; Stewart, Robert M.; Hessler, Paul L.; and Bryce, David R., 5,341,408, Cl. 377-8.000.

Branigan, John G.: *See—*
Friedrich, Marju L.; Branigan, John G.; and Fitzgibbon, Maurice E., 5,340,946, Cl. 174-256.000.

Brash, Douglas J.; Berkholz, Daniel S.; Ericson, R. Ken; and Ciaramitaro, Anthony J., to General Mills, Inc. Indexing device for a gravity log-feeding system. 5,339,945, Cl. 198-468.800.

Bratulescu, Victoria: *See—*
Siegler, Marcel; Deselnicu, Mihai; Bratulescu, Victoria; and Anghel, Andrei, 5,340,737, Cl. 435-226.000.

Breen, Merlin D.: *See—*
Neylan, Michael J.; Ostrom, Karin M.; Churella, Helen R.; Breen, Merlin D.; and Benson, John D., 5,340,603, Cl. 426-73.000.

Breidenthal, Robert E.: *See—*
Keller, Jakob; and Breidenthal, Robert E., 5,340,306, Cl. 431-351.000.

Brennan, Robert P.: *See—*
Nuhn, Derek J.; Servant, Gordon W.; Brennan, Robert P.; and Jeffrey, George A., 5,341,370, Cl. 370-84.000.

Brenner, Michael B.; Strominger, Jack L.; Seidman, Johnathan; Ip, Stephen H.; and Krangel, Michael S., to T Cell Sciences, Inc.; Dana-Farber Cancer Institute, The; and President & Fellows of Harvard College. Γ, δT cell receptor and methods and detection. 5,340,921, Cl. 530-350.000.

Brenner, Nathaniel; and Palmieri, Richard H., to Beckman Instruments, Inc. On-column preconcentration of samples in capillary electrophoresis. 5,340,452, Cl. 204-180.100.

Brentrup, Karl-Ludwig: *See—*
Baumgartl, Horst; Schlarb, Alois; Wahl, Ludwig; Ittemann, Peter; and Brentrup, Karl-Ludwig, 5,340,642, Cl. 428-224.000.

Breton, Marcel P.; and McGibbon, Barbel, to Xerox Corporation. Ink compositions treated with zeolites. 5,340,388, Cl. 106-22.00B.

Breunig, Timothy A.; and Roepka, Gregory A., to Mega Manufacturing, Inc. Method and apparatus for surface freezing followed by complete freezing of meat products. 5,339,651, Cl. 62-65.000.

Brewer Science, Inc.: *See—*
Chen, Yih-Wen; Brewer, Terry; Hunninghake, Jeffery; and Hawley, Dan, 5,340,619, Cl. 424-498.000.

Brewer, Terry: *See—*
Chen, Yih-Wen; Brewer, Terry; Hunninghake, Jeffery; and Hawley, Dan, 5,340,619, Cl. 424-498.000.

Brezzo, Bernard: *See—*
Austruy, Pierre; Brezzo, Bernard; Lips, Jean-Pierre; Naudin, Bernard; Calvignac, Jean; and Waller, Richard H., 5,341,475, Cl. 395-200.000.

Bridges, Alexander; Littlefield, Bruce A.; and Schwartz, C. Eric, to Eisai Co., Ltd. Urokinase inhibitors. 5,340,833, Cl. 514-443.000.

Bridgestone Corporation: *See—*
Kata, Takehiro, 5,340,294, Cl. 425-32.000.
Kawabe, Hiroshi; Watanabe, Toshiyuki; and Tomita, Naotaka, 5,339,880, Cl. 157-1.000.
Takase, Kiyoshi, 5,339,878, Cl. 152-527.000.
Yagawa, Kazuo; Hashimoto, Takatsugu; Yamagishi, Junichi; Hachiya, Kazuo; and Takezawa, Satoshi, 5,340,867, Cl. 524-80.000.

Bridgestone/Firestone, Inc.: *See—*
Vossberg, Stephen M.; Clothiaux, John D.; Chaplin, Gregory D.; Harrigle, Dale R., Jr.; Kearney, Allen C.; Williams, James A., Jr.; and Fleishchman, Thomas S., 5,339,879, Cl. 152-540.000.

Briggs & Stratton Corporation: *See—*
Winberg, James R.; and Daby, Keith O., 5,339,629, Cl. 60-299.000.

Brigham & Women's Hospital: *See—*
Stevens, Richard L.; and Avraham, Shalom, 5,340,739, Cl. 435-240.100.

Brinkley, Herman E., to Nu-Life Inc. of Illinois. Hang-type earmuff and method of manufacture. 5,339,467, Cl. 2-209.000.

Brinkmeyer, Alan D.: *See—*
Maerefat, Nicida L.; Parmeswar, Ravi; Brinkmeyer, Alan D.; and Honarpour, Mehdi, 5,341,101, Cl. 324-376.000.

British Technology Group Limited: *See—*
Creighton, Andrew M.; and Jeffery, William A., 5,340,557, Cl. 423-300.000.

British Telecommunications Public Limited Company: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.
Clarke, Donald E. A., 5,341,365, Cl. 370-17.000.
Hollier, Michael P.; and Welsby, Kevin, 5,341,420, Cl. 379-433.000.

Brodbeck, John W.; and Brunsting, William J., to K & B Mfg, Inc. Water pickup and cooling apparatus for boat drive systems. 5,340,345, Cl. 440-88.000.

Brodie, Mark S.: *See—*
Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., 5,340,802, Cl. 514-18.000.

Brody, John F.: *See—*
Kerby, Michael C.; Riley, Kenneth L.; Long, Fred M.; Johnson, Jack W.; and Brody, John F., 5,340,657, Cl. 428-552.000.

Bromine Compounds Ltd.: *See—*
Hermolin, Joshua; Keselman, Hugo; and Oren, Jacob, 5,340,445, Cl. 203-33.000.

Bromley, David. Gas filter. 5,340,546, Cl. 422-168.000.

Bronkal, Bernhard; Gerwing, Wolfram; Grieshaber, Hermann; Birk, Manfred; and Engel, Gerhard, to Robert Bosch GmbH. System and method for sensing temperature. 5,339,680, Cl. 73-118.200.

Brooks, Steven W. Switching pulsed resonant DC-DC converter power amplifier. 5,341,278, Cl. 363-16.000.

Broome, Barry G., to Linvatec Corporation. Disposable endoscope. 5,341,240, Cl. 359-435.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Fujita, Tomoyuki, 5,339,758, Cl. 112-278.000.
Masakazu, Kuki, 5,340,073, Cl. 248-291.000.
Nakano, Motonari; and Kunieda, Syoichi, 5,339,757, Cl. 112-221.000.

Brothers, Lance E., to Halliburton Company. Set retarded ultra fine cement compositions and methods. 5,340,397, Cl. 106-727.000.

Brown, Clem H.: *See—*
Salina, John E.; and Brown, Clem H., 5,340,993, Cl. 250-551.000.

Brown, Paul E.; and Socier, Timothy R., to Liquid Molding Systems, Inc. Dispensing valve for packaging. 5,339,995, Cl. 222-185.000.

Brown, Richard C.; and Oldham, Gary J. Gasket for radially spaced pipes. 5,340,125, Cl. 277-169.000.

Brown, Robert W.: *See—*
Miller, Robert E.; Schleicher, Lowell; Brown, Robert W.; and Feldman, Lucy, 5,340,680, Cl. 430-138.000.

Brown, Thomas J.: *See—*
Lioubin, Mario N.; Brown, Thomas J.; and Purchio, Anthony F., 5,340,925, Cl. 530-395.000.

Browning, James A. Method to produce non-stressed flame spray coating and bodies. 5,340,615, Cl. 427-446.000.

Bruck, Rolf: *See—*
Maus, Wolfgang; Swars, Helmut; and Bruck, Rolf, 5,339,628, Cl. 60-277.000.

Brumnet, Robert A.: *See—*
Dean, Robert E.; Cacka, Steven C.; Schaefer, Douglas P.; Sevvom, Hossein F.; and Brumnet, Robert A., 5,341,479, Cl. 395-250.000.

Brundage, David A.; and Jones, Jerry E. Dip net apparatus for catching fish. 5,339,557, Cl. 43-11.000.

Brunsting, William J.: *See—*
Brodbeck, John W.; and Brunsting, William J., 5,340,345, Cl. 440-88.000.

Brunswick Corporation: *See—*
Boda, James C.; and Appleby, Kenneth G., 5,340,342, Cl. 440-86.000.

Brusse, Jaime R., to General Dynamics Corporation. Inflatable engine protection system for recoverable rocket booster. 5,339,626, Cl. 60-271.000.

Bryce, David R.: *See—*
Melcher, Richard A.; Sherman, William, III; Nadig, Madhura; Stewart, Robert M.; Hessler, Paul L.; and Bryce, David R., 5,341,408, Cl. 377-8.000.

Brymore Enterprises S.A.: *See—*
Bollini, Germano, 5,340,389, Cl. 106-197.200.

Brynildson, Laura D.: *See—*
Hardy, Tyrone L.; Glover, Gary W.; and Brynildson, Laura D., 5,339,812, Cl. 128-653.100.

Brzezinski, Dennis: *See—*
Karp, Alan H.; Markstein, Peter; and Brzezinski, Dennis, 5,341,321, Cl. 364-748.000.

BTM Corporation: *See—*
Sawdon, Stephen E.; and Sawdon, Edwin G., 5,339,509, Cl. 29-432.000.

Buchheister, Hasso: *See—*
Stellwagen, Karl; Gerstner, Hans; and Buchheister, Hasso, 5,341,299, Cl. 364-431.050.

Buchholz, Dale R.; Robbins, Karen E.; Doss, William K.; and Hamilton, R. Lee, Jr., to Motorola, Inc. Transmission of broadcast packets in an RF system. 5,341,375, Cl. 370-94.100.

Buchner, Georges: *See—*
Guichard, Jacques; and Buchner, Georges, 5,341,167, Cl. 348-14.000.

Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased (by Annette, Mitchell, Legal Representative), to International Business Machines Corporation. Process for producing a metal organic polymer combination. 5,340,451, Cl. 204-165.000.

Buchwalter, Stephen L.: *See—*
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.

Bud, Andrew: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Buday, John M., Jr.: *See—*
Romanenko, Michael; Sadler, Robert E., Jr.; and Buday, John M., Jr., 5,340,099, Cl. 271-303.000.

Buddle, Stanlee T.: *See—*
Rohr, Donald F.; Buddle, Stanlee T.; Wilson, Paul R.; and Zumbrum, Michael A., 5,340,560, Cl. 423-337.000.

Budovec, Ronald T.: *See—*
Antonini, Joseph; and Budovec, Ronald T., 5,340,126, Cl. 277-181.000.

Buhl, Reinhard: *See—*
Sprang, Ruediger; Vossel, Andreas; Schmudde, Werner; and Buhl, Reinhard, 5,340,220, Cl. 384-125.000.

Buhler-Vidal, Jorge O.: *See—*
Chang, David S.; Rhee, Aaron S.; Crossland, Ronald K.; and Buhler-Vidal, Jorge O., 5,340,509, Cl. 264-5.000.

Bulgatz, Dennis C.: *See—*
Tal, Zeev; Stuart, Keith O.; and Bulgatz, Dennis C., 5,341,054, Cl. 310-14.000.

Bull CP8: *See—*
Ugon, Michel, 5,341,421, Cl. 380-4.000.

Bull, Danny C. Permanent portable weatherproof blind. 5,339,852, Cl. 135-87.000.

Bull HN Information Systems, Inc.: *See—*
Joyce, Thomas F.; Keeley, James W.; Lemay, Richard A.; DiPlacido, Bruno, Jr.; and Massucci, Martin M., 5,341,495, Cl. 395-500.000.
Keeley, James W.; Lemay, Richard A.; and Nibby, Chester M., Jr., 5,341,501, Cl. 395-725.000.
Keeley, James W.; and Joyce, Thomas F., 5,341,508, Cl. 395-800.000.

Bumb & Associates: *See—*
Campagna, Gerald L.; and Chapman, David, 5,341,157, Cl. 346-108.000.

Burke, James F.: *See—*
Benedict, David R.; and Burke, James F., 5,339,843, Cl. 134-56.00R.

VOL 1165 ISS 4 AG 23 1994 UMI

Burke, John: *See—*
Moser, Robert E.; Wilhelm, James H.; Burke, John; and Gray, Sterling, 5,340,547, Cl. 422-177.000.

Burkhard, Hans R.: *See—*
Hungerbuhler, Ernst; and Burkhard, Hans R., 5,340,951, Cl. 177-229.000.

Burkhardt, Herbert: *See—*
Wehling, Bernhard; Schade, Franz; Kochta, Joachim; Burkhardt, Herbert; and Schindlmayr, Peter, 5,340,365, Cl. 8-94.180.

Burlingham, Byron T.: *See—*
Reinhard, Mark S.; and Burlingham, Byron T., 5,340,836, Cl. 514-557.000.

Burnier, Julia S.: *See—*
Babcock, Laura M.; Brady, Richard L.; and Burnier, Julia S., 5,340,644, Cl. 428-285.000.

Burns, Fredrick B.: *See—*
Polzin, Bruce C.; Shehow, Kenneth L.; and Burns, Fredrick B., 5,339,484, Cl. 15-230.110.

Burns, Robert D.: *See—*
Singleton, William A.; and Burns, Robert D., 5,341,298, Cl. 364-426.020.

Burroughs, Alan C.: *See—*
Johann, Donald F.; Burroughs, Alan C.; Phipps, Neil T.; and Li, Feng, 5,341,360, Cl. 369-116.000.

Busink, Cornelis L.; van Rijzingen, Johannes W. H.; and Mason, David B., to Varco International, Inc. Safety elevator. 5,340,182, Cl. 294-88.000.

Bussiere, Raymond; and Topping, Gilbert, to High Line Manufacturing Inc. Disintegration of baled crop materials. 5,340,040, Cl. 241-101.700.

Buswell, Richard F.; and Vartanian, George, to International Fuel Cells Corporation. Fuel cell power plant. 5,340,663, Cl. 429-17.000.

Buttars, Scott K., to Compaq Computer Corporation. Apparatus and method for solder paste printing process for printed circuit boards. 5,339,536, Cl. 33-613.000.

B.V. Optische Industrie "De Oude Delft": *See—*
Schelen, Johannes B. J.; and van den Berg, J., 5,341,219, Cl. 348-217.000.

BW/IP International, Inc.: *See—*
Fehlau, Rudolf, 5,340,272, Cl. 415-110.000.

Byan, Donald E.: *See—*
Kidaloski, Raymond G.; Detzel, Roger A.; and Byan, Donald E., 5,339,891, Cl. 165-67.000.

Byers, Kenneth R.: *See—*
Lewen, Ronald C.; Coyle, Jonathan V.; Marotta, Peter P.; Liubinskas, Tauras J.; Arnold, David P.; Byers, Kenneth R.; Dean, Anthony K.; and Nowakowski, Victor A., 5,341,374, Cl. 370-85.400.

Bynum, Johnnie J. Foldable oxygen tank platform for a wheelchair. 5,340,140, Cl. 280-304.100.

Byun, Y. K., to Cosmetech International Inc., a part interest. Holder for cosmetic or hygienic item. 5,339,483, Cl. 15-184.000.

C-Cube Microsystems, Inc.: *See—*
Balkanski, Alexandre; Purcell, Steve; and Kirkpatrick, James, 5,341,318, Cl. 364-725.000.

C & H Enterprises: *See—*
Hollis, Tommy W.; and Morris, Hugh L., 5,339,608, Cl. 52-545.000.

C & K Systems, Inc.: *See—*
Rickman, Stephen R., 5,341,122, Cl. 340-515.000.

C.R. Bard, Inc.: *See—*
Berthiaume, William A.; and LeBlanc, Michel J., 5,339,833, Cl 128-772.000.

C/T Med-Systems Ltd., Inc.: *See—*
Berry, Bernie B., Jr., 5,340,551, Cl. 422-300.000

Caberlotto, Alberto, to Lotto S.p.A. Footgear structure. 5,339,544, Cl. 36-102.000.

Cacka, Steven C.: *See—*
Dean, Robert E.; Cacka, Steven C.; Schaefer, Douglas P.; Sevvom, Hossein F.; and Brumnet, Robert A., 5,341,479, Cl. 395-250.000.

Cadence Environmental Energy, Inc.: *See—*
Tutt, James R., 5,339,751, Cl. 110-186.000.

Cadien, Kenneth C.; and Feller, Daniel A., to Intel Corporation. Slurries for chemical mechanical polishing. 5,340,370, Cl. 51-308.000.

California Institute of Technology: *See—*
Kirk, David B., 5,341,051, Cl. 307-494.000.
Kirkham, Harold, 5,341,372, Cl. 370-85.800.

Calsson, Staffan; and Schmid, Hermann, to Nobelkrut AB. Ramjet propellants. 5,339,624, Cl. 60-207.000.

Calvert, Scott A.: *See—*
Kolbe, Kenneth W.; and Calvert, Scott A., 5,340,209, Cl. 312-408.000.

Calviello, Joseph A.; and Pierro, John A., to AIL Systems, Inc. Integrated limiter and amplifying devices. 5,341,114, Cl. 333-17.200.

Calvignac, Jean: *See—*
Austruy, Pierre; Brezzo, Bernard; Lips, Jean-Pierre; Naudin, Bernard; Calvignac, Jean; and Waller, Richard H., 5,341,475, Cl. 395-200.000.

Calvillo, Samuel J.; Horton, Donald L.; and Ganz, Frank, to Digitran Company, a Division of Xcel Corp. Illuminated and moisture-sealed switch panel assembly. 5,340,955, Cl. 200-302.200.

Camarota, Rafael C.: *See—*
Garverick, Tim; Chen, Shao-Pin; and Camarota, Rafael C., 5,341,040, Cl. 307-443.000.

Camden, James B.: *See—*
Kacher, Mark L.; Taneri, James E.; Camden, James B.; Vest, Paul E.; and Bowles, Sylvia J., 5,340,492, Cl. 252-112.000.

Cameron-Price, Ernest J., to E J Price (Development) Limited. Drinks containers. 5,340,595, Cl. 426-112.000.

Campagna, Gerald L.; and Chapman, David, to Bumb & Associates. Laser-driven silk screen mask device. 5,341,157, Cl. 346-108.000.

Campain, Jean-Pierre: *See—*
Janssen, Sylvain; Fournier, Jacques; and Campain, Jean-Pierre, 5,339,685, Cl. 73-199.000.

Campanile, Luigi. Scraping device for belt conveyors. 5,339,947, Cl. 198-499.000.

Campbell, Donn V.: *See—*
Walter, Carlton H.; Campbell, Donn V.; and Devore, Robert V., 5,341,148, Cl. 343-742.000.

Campbell, Robert M.: *See—*
Cortes, Hernan J.; and Campbell, Robert M., 5,340,475, Cl. 210-198.200.

Canadian Liquid Air Ltd.: *See—*
MacNeil, Ralph M.; Coutya, Samir F.; and Abdelli, Mohand, 5,340,136, Cl. 280-472.000.

Canadian Occidental Petroleum Ltd.: *See—*
Gregoli, Armand A.; Hamshar, John A., 3rd; Rimmer, Daniel P.; Yildirim, Erdal; and Olah, Andrew M., 5,340,467, Cl. 208-390.000.

Canarslan, Necip S.: *See—*
Sekhar, Jainagesh A.; Subramanian, V.; and Canarslan, Necip S., 5,340,014, Cl. 228-198.000.

Canclini, Athos, to SGS-Thomson Microelectronics S.r.l. Structure for protecting an integrated circuit from electrostatic discharges. 5,341,005, Cl. 257-173.000.

Cann, Gordon L., to Celestech Inc. Diamond deposition cell. 5,340,401, Cl. 118-725.000

Cannon, Howard N., to Caterpillar Inc. Electrohydraulic device for actuating a control element. 5,339,777, Cl. 123-90.120.

Canon Kabushiki Kaisha: *See—*
Baba, Yoshinobu; Ikeda, Takeshi; Tada Tatsuya; Sato, Yuko; and Amano, Yasuko, 5,340,677, Cl. 430-106.600.
Enomoto, Takashi; Shimamune, Masayuki; and Danjo, Keishi, 5,340,491, Cl. 252-79.100.
Hanabusa, Tadashi, 5,341,163, Cl. 347-23.000.
Harigaya, Isao; and Kozuki, Susumu, 5,341,073, Cl. 318-7.000.
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,341,169, Cl. 348-352.000.
Maeda, Mitsuru; and Yoshida, Tadashi, 5,341,441, Cl. 382-56.000.
Matsugu, Masakazu; Yoshii, Minoru; and Abe, Naoto, 5,340,992, Cl. 250-548.000.
Mikada, Hiroyuki, 5,341,221, Cl. 358-400.000.
Miyazaki, Sunao, 5,340,373, Cl. 65-24.000.
Okuyama, Atsushi; Kimura, Kenichi; and Sugawara, Saburo, 5,341,243, Cl. 359-687.000.
Suzuki, Hiroyuki; Nagase, Yukio; and Kemmochi, Kazuhisa, 5,341,165, Cl. 346-157.000.
Tsuzuki, Koji; and Takehara, Nobuyoshi, 5,340,409, Cl 136-256.000.
Yamakawa, Koji; Kawamura, Takahisa; and Arashima, Teruo, 5,341,161, Cl. 347-87.000.

Caple, Richard F., to Multifastener Corporation. Dual pawl spool feeder. 5,339,983, Cl. 221-25.000.

Caprathe, Bradley W.: *See—*
Jaen, Juan C.; and Caprathe, Bradley W., 5,340,808, Cl. 514-248.000.

Carbaugh, William L.; and Carlson, Douglas W., to Hydril Company. Safety sub for retaining drilling fluids. 5,339,864, Cl. 137-844.000

Carbone, John J. Method and apparatus for cementing intramedullary bone prosthesis. 5,340,362, Cl. 623-23.000.

Carden, Robin A.: *See—*
Baker, Robert R.; and Carden, Robin A., 5,340,107, Cl. 273-167.00R

Cardiac Evaluation Center, Inc.: *See—*
Engira, Ram M., 5,339,824, Cl. 128-712.000.

Cardoza, Wayne: *See—*
Cutler, David N.; Orbits, David A.; Bhandarkar, Dileep; Cardoza, Wayne; and Witek, Richard T., 5,341,482, Cl. 395-375.000.

Cari-All, Inc.: *See—*
Trubiano, Antoine, 5,340,133, Cl. 280-33.992.

Caridis, Anthony A.; Cranfield, John; and Vine, Kyle C., to Heat and Control, Inc. Method for handling elongate products. 5,340,269, Cl. 414-786.000.

Carignan, Forest J., to Advanced Mechanical Technology, Inc. Bolt torque and tension transducer. 5,339,696, Cl. 73-862.041.

Carignan, Forest J., to Advanced Mechanical Technology, Inc. Displacement/force transducers utilizing hall effect sensors. 5,339,699, Cl. 73-862.690.

Cariou, Laurent: *See—*
Cordier, Joel; and Cariou, Laurent, 5,341,287, Cl. 364-148.000.

Carl F. Schroth GmbH: *See—*
Schroth, Karl-Jurgen; Jeche, Rolf; and Meier-Armdt, Stefan, 5,340,046, Cl. 242-407.000.

Carl Freudenberg, Firma: *See—*
Rudolph, Axel, 5,340,093, Cl. 267-219.000.

Carl Fuhr GmbH & Co.: *See—*
Doring, Ralf, 5,339,663, Cl. 70-379.00R.

Carl Schmale GmbH & Co. KG: *See—*
Freermann, Johannes; and Malcherek, Dieter, 5,340,008, Cl. 226-171.000.

Carlson, Douglas W.: *See—*
Carbaugh, William L.; and Carlson, Douglas W., 5,339,864, Cl. 137-844.000.

Carlson, Ronald F.: *See—*
Frazier, Lawrence M.; Sheffler, James B.; and Carlson, Ronald F., 5,341,141, Cl. 342-59.000.

Carnell, Peter J. H., to Imperial Chemical Indutries PLC. NOx removal process. 5,340,554, Cl. 423-235.000.

Carpenter, Robert B.: *See—*
Harris, Kirk L.; Carpenter, Robert B.; Himes, Ronald E.; Dalrymple, E. Dwyann; Dahl, Jeffrey A.; and Thomas, Bruce D., 5,339,902, Cl. 166-293.000.

Carraro S.p.A.: *See—*
Carraro, Timante; and Perin, Raimondo, 5,340,137, Cl. 280-96.100.

Carraro, Timante; and Perin, Raimondo, to Carraro S.p.A. Steering axle. 5,340,137, Cl. 280-96.100.

Carrier Corporation: *See—*
Thompson, Kevin D., 5,340,028, Cl. 236-10.000.

Carroll, Sean B., to Ophidian Pharmaceuticals, Inc. Methods for making and purifying antivenoms. 5,340,923, Cl. 530-389.100.

Carruba, Samuel C., to CBS Engineering, Inc. Offshore support structure. 5,340,240, Cl. 405-227.000.

Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., to International Business Machines Corporation. Structure and fabrication of SiCr microfuses. 5,340,775, Cl. 437-246.000.

Carstens, Ronald, to Key Tech Corporation. High friction package retainer. 5,339,957, Cl. 206-386.000.

Carter, Danis, to Puritan-Bennett Corporation. Exhalation valve stabilizing apparatus. 5,339,807, Cl. 128-205.240.

Carter, Malcolm: *See—*
Clitherow, John W.; and Carter, Malcolm, 5,340,810, Cl. 514-252.000.

Casero, Patrizia Magnasco, executor, Francesca Margaret Casero, Elisabetta Giovanna, heirs: *See—*
Casero, Riccardo, deceased, 5,340,579, Cl. 424-114.000.

Casero, Riccardo, deceased (by Casero, Patrizia Magnasco, executor, Francesca Margaret Casero, Elisabetta Giovanna, heirs), to Farmaka S.r.l. Method of treating dermatological conditions. 5,340,579, Cl. 424-114.000.

Casio Computer Co., Ltd.: *See—*
Sugita, Kunihiro; and Iwase, Hiroshi, 5,340,938, Cl. 84-605.000.

Cassidy, Kenneth R.: *See—*
Lewis, Thomas E.; Nowak, Michael T.; Robichaud, Kenneth T.; and Cassidy, Kenneth R., 5,339,737, Cl. 101-454.000.

Castel, Daniel: *See—*
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, 5,341,493, Cl. 395-425.000.

Castelein, Steven: *See—*
Crookston, Ronald W.; Marks, Douglas C.; White, Richard E., III; Male, Andrew J.; Chien, Yun-Ko N.; Castelein, Steven; Beatty, William E., Jr.; Maier, Alfred E.; and Salvati, John G., 5,341,191, Cl. 335-16.000.

Castellani, Federico, to S.I.M.A.C. S.P.A. Packing method and bar packer with hanging transfer. 5,340,270, Cl. 414-793.200.

Castle, David E., to Unisys Corporation. Automatically variable memory interleaving system. 5,341,486, Cl. 395-425.000.

Caterpillar Inc.: *See—*
Cannon, Howard N., 5,339,777, Cl. 123-90.120.
Clarke, John M.; and Ranganathan, Padmanabhan R., 5,339,775, Cl. 123-41.350.

Cava, Robert J.; and Sunshine, Steven A., to AT&T Bell Laboratories. Oxide superconductor comprising Cu, Bi, Ca and Sr. 5,340,796, Cl. 505-12.000.

Cavezzan, Jacques; and Priou, Christian, to Rhone-Poulenc Chimie. Cationically crosslinkable polyorganosiloxanes and antiadhesive coatings produced therefrom. 5,340,898, Cl. 528-19.000.

Cawlfield, David W.: *See—*
Ford, James M.; and Cawlfield, David W., 5,340,457, Cl. 204-252.000.

CBS Engineering, Inc.: *See—*
Carruba, Samuel C., 5,340,240, Cl. 405-227.000.

CCL Label, Inc.: *See—*
McKillip, Barron G., 5,340,628, Cl. 428-40.000.

Cegedur Pechiney Rhenalu: *See—*
Layre, Rene ; and Bosc, Richard, 5,340,463, Cl. 205-201.000.

Celestech Inc.: *See—*
Cann, Gordon L., 5,340,401, Cl. 118-725.000.

Cell Therapeutics, Inc.: *See—*
Klein, J. Peter; Underiner, Gail; and Leigh, Alistair, 5,340,813, Cl. 514-263.000.

Celltech, Limited: *See—*
Beeley, Nigel R. A.; and Millican, Thomas A., 5,340,827, Cl. 514-352.000.
Lowe, Peter,A.; Marston, Fiona A. O.; Angal, Sarojani; and Schoemaker, Joyce A., 5,340,926, Cl. 530-423.000.

Centa, Antony R. Edging strips for floorcoverings. 5,339,586, Cl. 52-220.500.

Ceradyne, Inc.: *See—*
Baker, Robert R.; and Carden, Robin A., 5,340,107, Cl. 273-167.00R.

Ceramatec, Inc.: *See—*
Hartv'gsen, Joseph J., 5,340,664, Cl. 429-20.000.
Khandkar, Ashok C., 5,340,665, Cl. 429-40.000.

Cerf, Alain A., to Polycerf, Inc. Apparatus and process for film wrapping packaged product. 5,339,609, Cl. 53-550.000.

Cero, Joseph T., Jr.; Thompson, Mitchell L.; and Hann, Joseph K., II, to Whitaker Corporation, The. Piezoelectric energy generator. 5,341,062, Cl. 310-339.000.

Cerre, Nathalie: *See—*
De Fornel, Frederique; Goudonnet, Jean-Pierre; and Cerre, Nathalie, 5,340,981, Cl. 250-227.200.

Chaffin, Ronald W.: *See—*
Sharp, Jeffrey O.; Harris, Michael R.; Cooper, Robert J.; Ledbetter, Steve M.; Reed, Ronald H.; and Chaffin, Ronald W., 5,341,273, Cl. 361-641.000.

Chai, Bruce H. T.: *See—*
Payne, Stephen A.; Kway, Wayne L.; DeLoach, Laura D.; Krupke, William F.; and Chai, Bruce H. T., 5,341,389, Cl. 372-41.000.

Chalmers, Dennis W.; Kendall, Leonard M.; Kristensen, Ole F.; Lin, Eric C. W.; and Wan, Howard S. K., to GTE Vantage Incorporated. Automated cassette library system. 5,341,258, Cl. 360-92.000.

Chaloner-Gill, Benjamin; Golovin, Neal; and Lundquist, Joseph, to Valence Technology, Inc. Allyl polyalkylene ether polymers and solid electrolytes for an electrochemical cell. 5,340,669, Cl. 429-192.000.

Chamberlain, Aurora J.: *See—*
Baugher, Bennett W.; Chamberlain, Aurora J.; Devereaux, Sharon M.; and Ungemach, Frank S., 5,340,748, Cl. 436-518.000.

Chamberlin, Kim S.; Pruett, Wayne P.; Weaver, Max A.; Hilbert, Samuel D.; Quillen, Donna R.; and Salyer, Preston K., to Eastman Chemical Company. Process for preparing 1-cyano-3H-dibenz[f,ij-]isoquinoline-2,7-diones and their use as toners for polyesters. 5,340,910, Cl. 528-289.000.

Chan, Henry C.: *See—*
Wallace, Paul S.; and Chan, Henry C., 5,340,037, Cl. 241-62.000.

Chandley, George D., to Metal Casting Technology, Inc. Method and apparatus for densifying an article. 5,340,419, Cl. 148-631.000.

Chang, David S.; Rhee, Aaron S.; Crossland, Ronald K.; and Buhler-Vidal, Jorge O., to Shell Oil Company. Process for pelletizing ultra high melt flow crystalline polymers and products therefrom. 5,340,509, Cl. 264-5.000.

Chang, Dong S.; and Lee, Sang S., to Boam R&D Co., Ltd. Method for making ferrite chip bead array. 5,340,422, Cl. 156-89.000.

Chang, Hong-Shi: *See—*
Chen, Tshaw-Chuang; Chang, Hong-Shi; Yang, Huan-Jen; and Shieh, Yaw-Shih, 5,341,077, Cl. 318-434.000.

Chang, Jia-Hwang: *See—*
El-Ayat, Khaled A.; and Chang, Jia-Hwang, 5,341,092, Cl. 324-158.00R.

Chang, Kuei-Tu: *See—*
Stetsko, Gregg; and Chang, Kuei-Tu, 5,340,589, Cl. 424-462.000.

Chang, Mike F.: *See—*
Hshieh, Fwu-Iuan; Chang, Mike F.; and Yilmaz, Hamza, 5,341,011, Cl. 257-330.000.

Chang, Rong-Hwa: *See—*
Chen, Chi-Hwang; Chiang, Chih-Cheng; Lin, Bin-Yuan; and Chang, Rong-Hwa, 5,340,861, Cl. 524-166.000.

Chang, Shun-Der. Powered toothbrush. 5,339,476, Cl. 15-28.000.

Chang, Te-Chung: *See—*
Chao, Kuei-Jung; Ho, Shih-Yeng; and Chang, Te-Chung, 5,340,500, Cl. 252-500.000.

Chantre, Alain; Bois, Daniel; and Nouailhat, Alain, to France Telecom. Method of manufacturing a vertical field effect transistor. 5,340,757, Cl. 437-40.000.

Chao, Kuei-Jung; Ho, Shih-Yeng; and Chang, Te-Chung, to National Science Council. Conducting pan-layered inorganic composite and preparation of the same. 5,340,500, Cl. 252-500.000.

Chao, Sidney C.: *See—*
Stanford, Thomas B., r.; and Chao, Sidney C., 5,339,844, Cl. 134-107.000.

Chao, Wen-Kuei. Push-type writing instrument. 5,340,224, Cl. 401-65.000.

Chaplin, Gregory D.: *See—*
Vossberg, Stephen M.; Clothiaux, John D.; Chaplin, Gregory D.; Harrigle, Dale R., Jr.; Kearney, Allen C.; Williams, James A., Jr.; and Fleishchman, Thomas S., 5,339,879, Cl. 152-540.000.

Chapman, David: *See—*
Campagna, Gerald L.; and Chapman, David, 5,341,157, Cl 346-108.000.

Chappuis, Michel. Padding element for the packing of objects and device for the manufacturing of the same. 5,340,632, Cl. 428-71.000.

Charng, Cedric S. K., to China Wiper Special Rubber Co., Ltd. Dual wiper blade assembly. 5,339,490, Cl. 15-250.410.

Chase, William L.; and Perkins, David W., to Paper Systems, Inc. Apparatus for securing contained material. 5,340,180, Cl. 294-68.100.

Chatelain, Pierre: *See—*
Gubin, Jean; Chatelain, Pierre; and Lucchetti, Jean, 5,340,820, Cl. 514-300.000.

Chatterji, Jiten: *See—*
Brake, Bobby G.; and Chatterji, Jiten, 5,340,860, Cl. 524-166.000.

Chavan, Nayaku N.: *See—*
Idage, Bhaskar B.; Chavan, Nayaku N.; Mahajan, Sudhakar S.; and Sivaram, Swaminathan, 5,340,908, Cl. 528-275.000.

Cheatham, Sean A.: *See—*
Miller, Mark W.; and Cheatham, Sean A., 5,339,851, Cl. 135-88.000.

CheckRobot Inc.: *See—*
Wolfe, Donald M., Jr.; Allard, John C.; Nguyen, Cuong H.; Axsom, Larry E.; and Gabbard, Jerry D., 5,340,970, Cl. 235-383.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Chemische Fabrik Stockhausen GmbH: *See*—
Chmelir, Miroslav; and Klimmek, Helmut, 5,340,853, Cl. 524-56.000.

ChemTrak, Inc.: *See*—
Allen, Michael P.; and Jeong, Henry J., 5,340,539, Cl. 422-56.000

Chen, Castle, to Silitek Corporation. Key switch. 5,340,956, Cl. 200-341.000.

Chen, Cheng-Tung. Folding golf bag stand mounting hardware. 5,339,951, Cl. 206-315.700.

Chen, Chi-Hwang; Chiang, Chih-Cheng; Lin, Bin-Yuan; and Chang, Rong-Hwa, to Industrial Technology Research Institute. Polyphenylene sulfide composition with improved crystallizing characteristic. 5,340,861, Cl. 524-166.000.

Chen, Chih-Liang, to International Business Machines Corporation. Low voltage, cascoded NTL based BiCMOS circuit. 5,341,042, Cl. 307-446.000.

Chen, George: *See*—
Ramot, Danny; Chen, George; and Henkin, Alexander, 5,341,412, Cl. 379-92.000.

Chen, Jang F.; and Matthews, James A., to Microunity Systems Engineering, Inc. Method for improved lithographic patterning in a semiconductor fabrication process. 5,340,700, Cl. 430-312.000.

Chen, Joseph. Rotating mechanism for a crystal ball. 5,339,923, Cl. 185-39.000.

Chen, Raymond: *See*—
Patel, Rajesh; Bowman, Lyle; Vildaver, Margarita; and Chen, Raymond, 5,340,572, Cl. 424-78.040.

Chen, Shao-Pin: *See*—
Garverick, Tim; Chen, Shao-Pin; and Camarota, Rafael C., 5,341,040, Cl. 307-443.000.

Chen, Shun-Teng, to Shern Diau Enterprise Co., Ltd. Foldable assembly cabinet. 5,340,207, Cl. 312-262.000.

Chen, Tshaw-Chuang; Chang, Hong-Shi; Yang, Huan-Jen; and Shieh, Yaw-Shih, to Industrial Technology Research Institute. Method and device for limiting electrical current supplied to the motor of an electric vehicle. 5,341,077, Cl. 318-434.000.

Chen, Wen-Tung: *See*—
Yang, Chin-Ping; and Chen, Wen-Tung, 5,340,904, Cl. 528-185.000.

Chen, Yih-Wen; Brewer, Terry; Hunninghake, Jeffery; and Hawley, Dan, to Brewer Science, Inc. Method of manufacturing a color filter array. 5,340,619, Cl. 424-498.000.

Chern, Ji-Wang; Lu, Guan-Yu; Lai, Yue-Jun; Yen, Mao-Hsiung; and Tao, Pao-Luh, to National Science Council. 3-substituted methyl-2,3-dihydroimidazo[1,2-C] quinazoline derivatives, the preparation and use thereof. 5,340,814, Cl. 514-267.000.

Chern, Tsoung Ren. Brake assembly for a bicycle. 5,339,929, Cl. 188-24.160.

Cherry, Clinton: *See*—
Yau, Cheuk C.; and Cherry, Clinton, 5,340,907, Cl. 528-274.000.

Cherry Semiconductor Corporation: *See*—
Headen, William E., Jr., 5,341,038, Cl. 307-359.000.

Chevassus, Alain, to Techpack International - TPI. Case for sticks of pasty cosmetic, pharmaceutical or like products. 5,340,225, Cl. 401-78.000.

Chevron Research and Technology Company: *See*—
Zones, Stacey I.; and Nakagawa, Yumi, 5,340,563, Cl. 423-706.000.

Chiang, Chih-Cheng: *See*—
Chen, Chi-Hwang; Chiang, Chih-Cheng; Lin, Bin-Yuan; and Chang, Rong-Hwa, 5,340,861, Cl. 524-166.000.

Chiang, Weilong: *See*—
Rotter, George E.; Melquist, John L.; Chiang, Weilong; Tsai, Boh C.; and Kelly, John J., 5,340,846, Cl. 521-182.000.

Chiang, Yulin: *See*—
Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, 5,340,936, Cl. 546-124.000.

Chiaverini, Michael: *See*—
Reckweg, Freek; Chiaverini, Michael; and Lehouiller, Scott A., 5,340,600, Cl. 426-603.000.

Chiavoni, Araxi: *See*—
Magauran, Edward D.; Reynolds, William; DiCarlo, Lawrence; Cody, Charles A.; Chiavoni, Araxi; and El-Shoubary, Modasser, 5,340,390, Cl. 106-244.000.

Chiba, Kazuyuki: *See*—
Hanazuka, Yasuo; Usami, Ikuzo; Chiba, Kazuyuki; and Mizutani, Noriko, 5,340,847, Cl. 522-11.000.

Chien, Yun-Ko N.: *See*—
Crookston, Ronald W.; Marks, Douglas C.; White, Richard E., III; Male, Andrew J.; Chien, Yun-Ko N.; Castelein, Steven; Beatty, William E., Jr.; Maier, Alfred E.; and Salvati, John G., 5,341,191, Cl. 335-16.000.

Chiesa, John A.: *See*—
Bianchini, Michael J.; Michalik, Richard A.; Chiesa, John A.; and Mistler, Joanne, 5,340,980, Cl. 250-214.00R.

Chikuma, Kiyofumi, to Pioneer Electronic Corporation. Wavelength converting device and its method for manufacturing. 5,341,449, Cl. 385-122.000.

China Wiper Special Rubber Co., Ltd.: *See*—
Charng, Cedric S. K., 5,339,490, Cl. 15-250.410.

Chinoporos, Efthimios; Pauze, Robert H.; Waller, David P.; and Whritenour, David C., to Polaroid Corporation. Image-recording materials with cyclic 1,3-sulfur-nitrogen dye providing compounds. 5,340,689, Cl. 430-200.000.

Chliwnyj, Alex: *See*—
Bentley, Steven R.; Chliwnyj, Alex; Johnson, Steven D.; Paranjape, Sushama M.; and Rhodes, Ronald K., 5,341,252, Cl. 360-50.000.

Chmelir, Miroslav; and Klimmek, Helmut, to Chemische Fabrik Stockhausen GmbH. Polymer-based swelling and absorbing agents with an improved degradability and an improved absorption for water, aqueous solutions and body liquids and the use of said agents for the production of hygienic articles and for soil conditioning. 5,340,853, Cl. 524-56.000.

Chomerics, Inc.: *See*—
Keyser, Paul; and Watchko, George, 5,341,128, Cl. 340-605.000.

Chosa, Masatoshi: *See*—
Nakayama, Hiroshi; Takeda, Tomokazu; Yomoto, Toshiyuki; Kitada, Mitsuo; Ohta, Shoji; and Chosa, Masatoshi, 5,339,918, Cl. 180-292.000.

Chou, Ting-Chao; and Wu, Tian-Shung, to Sloan-Kettering Institute for Cancer Research. Methods and compositions for inhibiting tumor cell growth. 5,340,818, Cl. 514-297.000.

Christensen, L. Bruce: *See*—
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,341,130, Cl. 340-825.060.

Christensen, Richard N.: *See*—
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,339,654, Cl. 62-476.000.

Christian, Paul A.: *See*—
Anderson, Charles C.; DeLaura, Mario D.; Christian, Paul A.; Shalhoub, Ibrahim M.; and Jennings, David F., 5,340,676, Cl. 430-63.000.

Christian, William D. Modular home system. 5,339,798, Cl. 126-629.000.

Christianson, Teresa; Goddette, Dean; Ladin, Beth F.; Lau, Maria R.; Paech, Christian; Reynolds, Robert B.; Wilson, Charles R.; and Yang, Shiow-Shong, to COGNIS, Inc. *Bacillus lentus* alkaline protease variants with increased stability. 5,340,735, Cl. 435-221.000.

Chrysler Corporation: *See*—
Bender, Frederick F.; and Watson, Earl L., 5,340,174, Cl. 292-336.300.
Freeman, Hobart R., 5,339,706, Cl. 74-493.000.
Regueiro, Jose F., 5,339,776, Cl. 123-196.0CP.
Stewart, Robert L.; Osterman, Alan J.; Jalbert, Dennis W.; and Nulty, John D., 5,340,178, Cl. 293-122.000.

Chu, Jennifer: *See*—
Payne, Gregory F.; Chu, Jennifer; Wallace, Kimberlee K.; and Sun, Wei-Qiang, 5,340,483, Cl. 210-632.000.

Chu, Te-Yaung: *See*—
Huang, Wen-Chang, 5,339,761, Cl. 114-274.000.

Chubu Electric Power Co., Inc.: *See*—
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl. 51-429.000.

Chung, Hae Y.: *See*—
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,339,474, Cl. 8-159.000.

Chung, John Y.-L.: *See*—
Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., 5,340,802, Cl. 514-18.000.

Churella, Helen R.: *See*—
Neylan, Michael J.; Ostrom, Karin M.; Churella, Helen R.; Breen, Merlin D.; and Benson, John D., 5,340,603, Cl. 426-73.000.

Chute, Frederick S.: *See*—
Yu, C. Lawrence; McGee, Bruce C. W.; Chute, Frederick S.; and Vermeulen, Fred E., 5,339,898, Cl. 166-248.000.

Ciaramitaro, Anthony J.: *See*—
Brash, Douglas J.; Berkholz, Daniel S.; Ericson, R. Ken; and Ciaramitaro, Anthony J., 5,339,945, Cl. 198-468.800.

Ciba Corning Diagnostics Corp.: *See*—
Slovacek, Rudolf E.; Love, Walter F.; Cook, Thomas A.; Schulkind, Richard L.; and Walczak, Irene M., 5,340,715, Cl. 435-6.000.

Ciba-Geigy Corporation: *See*—
Desobry, Vincent, 5,340,701, Cl. 430-325.000.
Hall, Roger G.; Pascual, Alfons; and Kristiansen, Odd, 5,340,837, Cl. 514-603.000.
Kuster, Kaspar, 5,339,537, Cl. 34-612.000.
Meier, Hans R.; and Hofmann, Peter, 5,340,855, Cl. 524-102.000.
Spitzer, Martin; and Freistadter, Hans, 5,340,900, Cl. 528-53.000.
Uftring, Winfried; Bachmann, Theo; Geis, Helmut; and Haase, Lothar, 5,340,399, Cl. 118-59.000.

Cifuentes, Martin E.: *See*—
Vincent, Gary A.; Brady, William P.; Cifuentes, Martin E.; Schoenherr, William J.; and Vincent, Harold L., 5,340,887, Cl. 525-477.000.

Cima, Michael J.: *See*—
Sachs, Emanuel M.; Haggerty, John S.; Cima, Michael J.; and Williams, Paul A., 5,340,656, Cl. 428-546.000.

Cinadr, Bernard F.: *See*—
Backman, Arthur L.; and Cinadr, Bernard F., 5,340,880, Cl. 525-331.600.

Cincinnati Milacron Inc.: *See*—
Galloway, Keith R.; and O'Keefe, Dennis G., 5,340,964, Cl. 219-486.000.

Cirqon Technologies Corporation: *See*—
Credle, Kenneth; Wolf, Christopher G.; and McConnell, John, 5,340,947, Cl. 174-262.000.

Claas oHG: *See*—
Roderfeld, Heinrich; Heidjann, Franz; Diekhans, Norbert; and Behnke, Willi, 5,339,611, Cl. 56-10.200.

Clagett, Donald C.; Fox, Daniel W.; Maresca, Louis M.; and Shafer, Sheldon J., to General Electric Company. Amide-ester copolymers and process for the preparation thereof. 5,340,885, Cl. 525-425.000.

Clarino, Thomas N.; and Altshul, Mary M., to Gerber Garment Technology, Inc. A computerized pattern development system capable of direct designer input. 5,341,305, Cl. 364-470.000.

Clark, Danford E., to Union Oil Company of California. Hydrocracking process using a reactivated catalyst. 5,340,957, Cl. 208-59.000.

Clark, John I.; Farr, Andrew G.; and Smith, Stacia A., to Washington Research Foundation. Immunoregulatory agents. 5,340,829, Cl. 514-389.000.

Clarke, Donald E. A., to British Telecommunications public limited company. Passive optical network. 5,341,365, Cl. 370-17.000.

Clarke, John M.; and Ranganathan, Padmanabhan R., to Caterpillar Inc. Cooling arrangement for a piston assembly. 5,339,775, Cl. 123-41.350.

Clarke, William L.: *See*—
Wilson, Steve D.; and Clarke, William L., 5,339,564, Cl. 43-124.000.

Claussen, Uwe, to Bayer AG. Light-polarizing films containing dichroic dyes. 5,340,504, Cl. 252-585.000.

Clean-Flo Laboratories, Inc.: *See*—
Thompson, Creighton R., 5,340,508, Cl. 261-122.100.

Cleland, Robert K. Flow control device. 5,340,080, Cl. 251-120.000.

Clemens, Anton H., to Scilog, Inc. Double feed peristaltic pump. 5,340,290, Cl. 417-477.00R.

Clemens, Richard W., Jr. Wrecking tool II. 5,339,527, Cl. 30-299.000.

Clement Clarke International Ltd.: *See*—
McNaughton, John; and Hutchison, Derek P., 5,339,825, Cl. 128-725.000.

Cliffe, Ian A., to John Wyeth & Brother, Limited. Piperazine derivatives. 5,340,812, Cl. 514-255.000.

Clifford, Daniel, to Eastman Kodak Company. Method and apparatus for segmenting and classifying unconstrained handwritten characters. 5,341,438, Cl. 382-9.000.

Clifton, Brian, to APV Corporation Limited. Heat exchange device. 5,339,892, Cl. 165-82.000.

Climate Master, Inc.: *See*—
Rawlings, John P., 5,339,890, Cl. 165-45.000.

Clinnin, David D.; Heiber, William G.; and Lewarchik, Ronald J., to Morton International, Inc. Fast dry waterborne traffic marking paint. 5,340,870, Cl. 524-522.000.

Clitherow, John W.; and Carter, Malcolm, to Glaxo Group Limited. Benzanilide derivatives. 5,340,810, Cl. 514-252.000.

Clothiaux, John D.: *See*—
Vossberg, Stephen M.; Clothiaux, John D.; Chaplin, Gregory D.; Harrigle, Dale R., Jr.; Kearney, Allen C.; Williams, James A., Jr.; and Fleishchman, Thomas S., 5,339,879, Cl. 152-540.000.

Clough, Thomas J., to Ensci, Inc. Process for recovering hydrocarbon. 5,339,900, Cl. 166-274.000.

CNA Manufacturing Systems, Inc.: *See*—
Gueble, Jeffrey R.; and Soderberg, Mark S., 5,339,939, Cl. 198-345.200.

Co Enzyme Technology Ltd.: *See*—
Rubin, David, 5,340,803, Cl. 514-25.000.

COBE Laboratories, Inc.: *See*—
Goodrich, Raymond P., Jr.; and Williams, Christine M., 5,340,592, Cl. 424-533.000.

Cocconi, Alan G., to A.C. Propulsion, Inc. Combined motor drive and battery recharge system. 5,341,075, Cl. 318-139.000.

Cockrell, Patricia J. Fabric craft article. 5,340,627, Cl. 428-39.000.

Cody, Charles A.: *See*—
Magauran, Edward D.; Reynolds, William; DiCarlo, Lawrence; Cody, Charles A.; Chiavoni, Araxi; and El-Shoubary, Modasser, 5,340,390, Cl. 106-244.000.

Coeling, Kenneth J.: *See*—
Konieczynski, Ronald D.; Coeling, Kenneth J.; and Hartle, Ronald J., 5,340,289, Cl. 417-430.000.

COGNIS, Inc.: *See*—
Christianson, Teresa; Goddette, Dean; Ladin, Beth F.; Lau, Maria R.; Paech, Christian; Reynolds, Robert B.; Wilson, Charles R.; and Yang, Shiow-Shong, 5,340,735, Cl. 435-221.000.

Cohen, Zev B. Toner cartridge recharging tool. 5,339,596, Cl. 53-136.300.

Coherent, Inc.: *See*—
Trost, David; Baumeister, Philip; and Fischer, Dennis, 5,341,238, Cl. 359-359.000.

Cohn, Avi P.: *See*—
Klukis, Edward L.; and Cohn, Avi P., 5,339,965, Cl. 209-639.000.

Cokkinides, George J.: *See*—
Westrom, Arthur C.; Meliopoulos, A. P.; and Cokkinides, George J., 5,341,265, Cl. 361-44.000.

Cole, Curtis A.; Lindemann, Martin K. O.; Lukenbach, Elvin R.; and Stutzman, Ralph C., to Johnson & Johnson Consumer Products, Inc. Sunscreen compositions. 5,340,567, Cl. 424-59.000.

Cole, Donald. Coin counting device. 5,340,356, Cl. 453-59.000.

Coleman, Clarance B., to Fabricated Metals, Inc. Bulk material containing having a flexible liner with a follower. 5,339,989, Cl. 222-105.000.

Coleman, Derek I., to Davidson Textron Inc. Programmable pressure control system. 5,339,715, Cl. 83-53.000.

Colgate-Palmolive Company: *See*—
Curtis, John P.; Greenfeder, Susan E.; Seiden, Bill; and Lees, Michael L., 5,340,566, Cl. 424-49.000.

Colin, Gilles M.: *See*—
Pellarin, Jean-Francois R.; and Colin, Gilles M., 5,339,720, Cl. 89-41.190.

Collin, Marie-Pierre; Huguenin, Denis; and Le Govic, Anne-Marie, to Rhone-Poulenc Chimie. Cerium/lanthanum/terbium mixed phosphates. 5,340,556, Cl. 423-263.000.

Collins, Alfred L.; Cutright, Edwin L.; DeBlasio, James A.; Dickerson, Richard H.; Kean, Billy J., Jr.; Ritt, Renzer R., Sr.; and Scott, George R., to Philip Morris Incorporated. Apparatus and methods for transferring and metering granular material. 5,339,871, Cl. 141-1.000.

Colson, Wendell B.; Anthony, James M.; Oberg, Brad H.; and Jansen, Cornelis M., to Hunter Douglas Inc. Covering assembly for architectural openings. 5,339,883, Cl. 160-84.10D.

Columbia Gas System Service Corporation: *See*—
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,339,654, Cl. 62-476.000.

Comelz S.p.A.: *See*—
Zorzolo, Alessandro, 5,341,074, Cl. 318-17.000.

Comer, Alan E.: *See*—
Whitten, Ralph G.; Guo, Ta-Pen; Mohsen, Amr; and Comer, Alan E., 5,341,267, Cl. 361-56.000.

Compaq Computer Corporation: *See*—
Buttars, Scott K., 5,339,536, Cl. 33-613.000.
Hastings, Robert J.; Varghese, Paily T.; Alexander, Dennis J.; Babb, James F.; and Bradshaw, John R., 5,340,340, Cl. 439-64.000.
Thayer, John S.; Mayer, Dale J.; Izquierdo, Javier F.; Culley, Paul R.; and Landry, John A., 5,341,494, Cl. 395-425.000.

Conair Group, Inc., The: *See*—
Preiato, Ernest J.; Meetze, Marion M.; Hoopes, Mark S.; and Bessemer, Robert H., 5,340,295, Cl. 425-71.000.

Connolly, Thomas M.; Keller, Paul M.; and Waxman, Lloyd H., to Merck & Co., Inc. Protein for inhibiting collagen-stimulated platelet aggregation. 5,340,726, Cl. 530-350.000.

Connor, David T.; and Kostlan, Catherine R., to Warner-Lambert Company. 2-substituted-4,6-di-tertiary-butyl-5-hydroxy-1,3-pyrimidines useful as antiinflammatory agents. 5,340,815, Cl. 514-269.000.

Connor, James M.; Bloomstein, Theodore M.; Henderson, James A., Jr.; Maher, John W.; and Errico, James H., to Motorola, Inc. Database management system having first and second databases for automatically modifying storage structure of second database when storage structure of first database is modified. 5,341,498, Cl. 395-600.000.

Connors, Daniel P.; and Yao, David D., to International Business Machines Corporation. Job configuration for semiconductor manufacturing. 5,341,302, Cl. 364-468.000.

Conover, Gary: *See*—
Vennum, Michael D.; Hynes, Mark; and Conover, Gary, 5,341,146, Cl. 342-170.000.

Conrado, Edward. Aerodynamically improved tailgate construction for pickup truck. 5,340,184, Cl. 296-50.000.

Conrads, Norbert; Hillen, Walter; Maack, Hanns-Ingo; Rupp, Stephan; Schafer, Ingo; and Schiebel, Ulrich, to U.S. Philips Corporation. Method of generating X-ray images and device suitable for carrying out the method. 5,341,409, Cl. 378-29.000.

Conti, Fabio K. P.: *See*—
Reis, Ney Robinson S. d.; and Conti, Fabio K. P., 5,340,237, Cl. 405-169.000.

Conversion Systems, Inc.: *See*—
Juzwiak, John H., 5,340,214, Cl. 366-292.000.

Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., to Columbia Gas System Service Corporation. Heat transfer apparatus. 5,339,654, Cl. 62-476.000.

Cook, Richard G. Endoscopic retractor. 5,339,802, Cl. 128-20.000.

Cook, Robert P.: *See*—
Palmer, Darrel; and Cook, Robert P., 5,339,988, Cl. 222-82.000.

Cook, Thomas A.: *See*—
Slovacek, Rudolf E.; Love, Walter F.; Cook, Thomas A.; Schulkind, Richard L.; and Walczak, Irene M., 5,340,715, Cl. 435-6.000.

Coombs, Steven G.: *See*—
Bradley, Bruce D.; and Coombs, Steven G., 5,340,485, Cl. 210-767.000.

Coons, Andrew M., III: *See*—
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., 5,340,886, Cl. 525-426.000.

Cooper, Gary L.: *See*—
Patel, Mayur; Phillips, Michael T.; Cooper, Gary L.; and Emmons, Daniel, 5,340,210, Cl. 366-132.000.

Cooper Industries, Inc.: *See*—
Deremo, Edwin J., 5,340,243, Cl. 408-17.000.

Cooper, Robert J.: *See*—
Sharp, Jeffrey O.; Harris, Michael R.; Cooper, Robert J.; Ledbetter, Steve M.; Reed, Ronald H.; and Chaffin, Ronald W., 5,341,273, Cl. 361-641.000.

Coppier, Michel, to Seb S.A. Device for locking the cover of a kettle during pouring and kettle comprising such a device. 5,339,978, Cl. 220-318.000.

Corbett, Kenneth A.; and Anderson, David R., to Corbett Technology Company, Inc. System for detection and recognition of an object by video imaging means. 5,341,435, Cl. 382-1.000.

Corbett Technology Company, Inc.: *See*—
Corbett, Kenneth A.; and Anderson, David R., 5,341,435, Cl. 382-1.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Corbiere, Steven L.: *See*—
Haley, Neil F.; and Corbiere, Steven L., 5,340,699, Cl. 430-302.000.
Corderman, Daniel D. Dialamatic stencil numbering machine. 5,339,735, Cl. 101-114.000.
Cordier, Joel; and Cariou, Laurent, to Thomson-CSF. Method and apparatus for the control and regulation of a first magnitude of a device by action on a second magnitude. 5,341,287, Cl. 364-148.000.
Corley, Larry S., to Shell Oil Company. Cyclobutene anhydride-cured epoxy resin composition. 5,340,890, Cl. 525-530.000.
Cormier, Mario R., to First Choice Manufacturing Ltd. Seedling container. 5,339,566, Cl. 47-87.000.
Cornell Research Foundation, Inc.: *See*—
Liu, Yujun; and Stouffer, James R., 5,339,815, Cl. 128-660.010.
Cornwell, James T., to QCI, Inc. Disposable medical waste bag. 5,339,959, Cl. 206-524.800.
Corrier, Donald E.: *See*—
Nisbet, David J.; Corrier, Donald E.; and DeLoach, John R., 5,340,577, Cl. 424-93.210.
Corrocon, Inc.: *See*—
Whited, Timothy A.; Leatherman, Jack L.; and Markham, John L., 5,339,911, Cl. 175-62.000.
Corrpro Companies, Inc.: *See*—
Kroon, David H.; and Basch, Michael K., 5,340,455, Cl. 204-196.000.
Cortes, Hernan J.; and Campbell, Robert M., to Dow Chemical Company, The. On-line supercritical fluid extraction multidimensional chromatographic system. 5,340,475, Cl. 210-198.200.
Cosmetech International Inc.: *See*—
Byun, Y. K., 5,339,483, Cl. 15-184.000.
Cote, Daniel A.: *See*—
DiLeo, Anthony J.; Snow, James T.; and Cote, Daniel A., 5,339,675, Cl. 73-24.040.
Cotsarelis, George: *See*—
Lavker, Robert M.; Sun, Tung-Tien; and Cotsarelis, George, 5,340,744, Cl. 436-63.000.
Cotteret, Jean: *See*—
Lang, Gerard; and Cotteret, Jean, 5,340,366, Cl. 8-406.000.
Coulon, Andre , to GEC Alsthom Electromecanique SA. Method of forming an insert on a part to be clad that is made of steel or of titanium alloy. 5,340,530, Cl. 419-5.000.
Coulter, Corporation: *See*—
Hajek, Constance M.; and Russell, Thomas, 5,340,719, Cl. 435-7.210.
Council of Scientific & Industrial Research: *See*—
Idage, Bhaskar B.; Chavan, Nayaku N.; Mahajan, Sudhakar S.; and Sivaram, Swaminathan, 5,340,908, Cl. 528-275.000.
Coutiere, Jean: *See*—
Accary, Andre; Coutiere, Jean; and Lacour, Andre, 5,340,377, Cl. 75-334.000.
Coutya, Samir F.: *See*—
MacNeil, Ralph M.; Coutya, Samir F.; and Abdelli, Mohand, 5,340,136, Cl. 280-472.000.
Cowan, Stanley W.: *See*—
Tang, Ping-Wah; Lau, Philip T. S.; and Cowan, Stanley W., 5,340,708, Cl. 430-548.000.
Cowley, Terry W.; and White, Mary L. N., to Dow Chemical Company, The. Curable vinyl ester comprising monomer ceresin wax and drying oil and epoxidized drying oil as secondary adhesion promoters and a curing agent. 5,340,856, Cl. 524-109.000.
Cowsar, Donald R.: *See*—
Dunn, Richard L.; English, James P.; Cowsar, Donald R.; and Vanderbilt, David D., 5,340,849, Cl. 523-113.000.
Cox, Gary B.; Reifsteck, Dennis R.; Hills, Gregg A.; and Fenter, Lynn R., to Kraft General Foods, Inc. Conveyor apparatus with unloader. 5,339,948, Cl. 198-635.000.
Cox, Rick L. Window removal system. 5,339,507, Cl. 29-267.000.
Cox, Tim W., to Dresser Industries, Inc. Method and apparatus for approving transaction card based transactions. 5,340,969, Cl. 235-381.000.
Coyle, Jonathan V.: *See*—
Lewen, Ronald C.; Coyle, Jonathan V.; Marotta, Peter P.; Liubinskas, Tauras J.; Arnold, David P.; Byers, Kenneth R.; Dean, Anthony K.; and Nowakowski, Victor A., 5,341,374, Cl. 370-85.400.
Crafts, Harold S., to NCR Corporation. Threshold controlled input circuit for an integrated circuit. 5,341,046, Cl. 307-475.000.
Cragun, E. Brent, to Fountain Fresh International. Beverage dispensing apparatus and process. 5,339,874, Cl. 141-9.000.
Craig, Franklin J.: *See*—
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.
Cranfield, John: *See*—
Caridis, Anthony A.; Cranfield, John; and Vine, Kyle C., 5,340,269, Cl. 414-786.000.
Crates, Thomas B.; and Hesprich, Donald N., to Jameson Corporation. Fish tape reel and reel assembly with detachable accessory storage compartment. 5,340,084, Cl. 254-134.3FT.
Craven, B. Thomas; Wiedefeld, William G.; Poor, Kyle W.; Johnson, Bruce S.; Sogge, John W.; Peterson, Michael H.; Adamson, William G.; and Froelich, Ronald W., to Walt Disney Company, The. Precision fireworks display system having a decreased environmental impact. 5,339,741, Cl. 102-361.000.
Crawford, George H., Jr.: *See*—
Hanzalik, Kenneth L.; Crawford, George H., Jr.; Rozzi, Sharon M.; and Scanlan, David J., 5,340,613, Cl. 427-412.500.
Crawford, Wheeler C.; Marquis, Edward T.; and Klein, Howard P., to Texaco Chemical Company. Liquification of bis-carbonates of bis-glycidyl ethers. 5,340,889, Cl. 525-523.000.
Crawford, William R.: *See*—
Edwards, Richard T.; Rider, Edward W., Jr.; Susta, Stephen J., Jr.; and Crawford, William R., 5,339,973, Cl. 220-4.230.
Creber, David K.; Johnson, William B.; and Newkirk, Marc S., to Lanxide Technology Company, LP. Method of making shaped ceramic composites with the use of a barrier and articles produced thereby. 5,340,655, Cl. 428-446.000.
Credle, Kenneth; Wolf, Christopher G.; and McConnell, John, to Cirqon Technologies Corporation. Ceramic substrates with highly conductive metal vias. 5,340,947, Cl. 174-262.000.
Creighton, Andrew M.; and Jeffery, William A., to British Technology Group Limited. ^{32}P thiophosphate preparation. 5,340,557, Cl. 423-300.000.
Cresci, Randolph J. Window wedge. 5,340,176, Cl. 292-343.000.
Cretin, Michel; Lespour, Jean-Paul; and Marcon, Charles, to Escofier Technologie S.A. Apparatus and process permitting the cold forming of grooves on the wall of a revolving part. 5,339,669, Cl. 72-108.000.
Crisp, George E., to Signalling Technology Pty Ltd. Data error detection in data communications. 5,341,379, Cl. 371-6.000.
Crisp, Malcolm: *See*—
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N., and Rodgers, Ian, 5,341,367, Cl. 370-29.000.
Crist, Timothy M. Tapping chip extractor tool. 5,339,473, Cl. 7-170.000.
Crookston, Ronald W.; Marks, Douglas C.; White, Richard E., III; Male, Andrew J.; Chien, Yun-Ko N.; Castelein, Steven; Beatty, William E., Jr.; Maier, Alfred E.; and Salvati, John G., to Eaton Corporation. Molded case current limiting circuit breaker. 5,341,191, Cl. 335-16.000.
Crosnier, Daniel; and Dulery, Jean-Marie. Device for total and immediate closure of bottle-like containers. 5,339,972, Cl. 215-320.000.
Cross, Peter E.; and MacKenzie, Alexander R., to Pfizer Inc. Muscarinic receptor antagonists. 5,340,831, Cl. 514-408.000.
Crossland, Ronald K.: *See*—
Chang, David S.; Rhee, Aaron S.; Crossland, Ronald K.; and Buhler-Vidal, Jorge O., 5,340,509, Cl. 264-5.000.
Crown Cork & Seal Company, Inc.: *See*—
Howard, William R.; Tysver, Oliver J.; Osheff, Sheldon; McGrail, John G.; and Petrie, Robert J., 5,339,731, Cl. 101-35.000.
CRS Holdings, Inc.: *See*—
Magee, John H., 5,340,534, Cl. 420-35.000.
Crumly, William R.: *See*—
Schreiber, Christopher M.; and Crumly, William R., 5,340,296, Cl. 425-123.000.
Crump, S. Scott, to Stratasys, Inc. Modeling apparatus for three-dimensional objects. 5,340,433, Cl. 156-578.000.
Cukan, Vladimir: *See*—
Morgan, David L.; Cukan, Vladimir; and Frielingsdorf, Klaus, 5,340,511, Cl. 264-29.200.
Cukjati, Joseph F. Adjustable dental tray. 5,340,308, Cl. 433-41.000.
Culley, Paul R.: *See*—
Thayer, John S.; Mayer, Dale J.; Izquierdo, Javier F.; Culley, Paul R.; and Landry, John A., 5,341,494, Cl. 395-425.000.
Cuneo, Giuseppe; and Bonacina, Sergio, to Black & Decker Inc. Workcentre and supports. 5,340,247, Cl. 409-202.000.
Cunha, Francisco J., to General Electric Company. Integrated steam-/air cooling system for gas turbines. 5,340,274, Cl. 415-115.000.
Cunningham, John, to Sierra Horticultural Products Company, The. Controlled-release microbe nutrients and method for bioremediation. 5,340,376, Cl. 71-6.000.
Cuomo, Jerome J.; Gelorme, Jeffrey D.; Hatzakis, Michael, Jr.; Lewis, David A.; Shaw, Jane M.; and Whitehair, Stanley J., to International Business Machines Corporation. Microwave processing. 5,340,914, Cl. 528-353.000.
Curitti, Lenee J. Artificial tree. 5,340,622, Cl. 428-18.000.
Curtis, John P.; Greenfeder, Susan E.; Seiden, Bill; and Lees, Michael L., to Colgate-Palmolive Company. Method for preventing the progression of gingivitis. 5,340,566, Cl. 424-49.000.
Cusack, Joyce M.; Phillips, Allison S.; Tataryan, Anahit; and Sinanyan, Astgik, to Avery Dennison Corporation. Method of making an index tab label assembly. 5,340,427, Cl. 156-268.000.
Cuthbertson, Bruce, to Transac, Inc. Bulk storage bag with remotely openable discharge spout. 5,340,218, Cl. 383-67.000.
Cutler, David N.; Orbits, David A.; Bhandarkar, Dileep; Cardoza, Wayne; and Witek, Richard T., to Digital Equipment Corporation. Method for synchronization of arithmetic exceptions in central processing units having pipelined execution units simultaneously executing instructions. 5,341,482, Cl. 395-375.000.
Cutright, Edwin L.: *See*—
Collins, Alfred L.; Cutright, Edwin L.; DeBlasio, James A.; Dickerson, Richard H.; Kean, Billy J., Jr.; Ritt, Renzer R., Sr.; and Scott, George R., 5,339,871, Cl. 141-1.000.
CWS International AG: *See*—
Arabian, Sandro; and Baumann, Manfred, 5,340,045, Cl. 242-535.200.
Cyclofur Company, L.P.: *See*—
Poulson, Larry, 5,339,726, Cl. 99-327.000.
Cycon, James P.; Hunter, David H.; and Krauss, Timothy A., to United Technologies Corporation. Snubber assembly for a rotor assembly having ducted, coaxial counter-rotating rotors. 5,340,279, Cl. 416-134.00A.
Cytec Technology Corp.: *See*—
Neff, Roger E.; and Ryles, Roderick G., 5,340,865, Cl. 524-317.000.
Czernik, Daniel E., to Fel-Pro Incorporated. Method of forming a sealing bead on a gasket. 5,340,525, Cl. 264-266.000.
Czibula, Laszlo: *See*—
Farkas, Sandor; Foldeak, Sandor; Karpati, Egon; Hegyes, Peter; Kreidl, Janos; Szporny, Laszlo; Czibula, Laszlo; and Petofi-Vass, Szilvia, 5,340,823, Cl. 514-317.000.
Czubatyj, Wolodymyr: *See*—
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Czubatyj, Wolodymyr; Strand, David A.; and Wicker, Guy C., 5,341,328, Cl. 365-163.000.
Daby, Keith O.: *See*—
Winberg, James R.; and Daby, Keith O., 5,339,629, Cl. 60-299.000.
Dagel, Robert J.: *See*—
Sanda, Jeffrey L.; Dagel, Robert J.; and Elsenheimer, John A., 5,339,716, Cl. 83-452.000.
Dahl, Jeffrey A.: *See*—
Harris, Kirk L.; Carpenter, Robert B.; Himes, Ronald E.; Dalrymple, E. Dwyann; Dahl, Jeffrey A.; and Thomas, Bruce D., 5,339,902, Cl. 166-293.000.
Dai, Pei-Shing E.; Sherwood, David E., Jr.; and Petty, Randall Hughes, to Texaco Inc. Hydrodesulfurization of cracked naphtha with hydrotalcite-containing catalyst. 5,340,466, Cl. 208-216.0PP.
Daidousanso Co., Ltd.: *See*—
Yoshino, Akira; Tahara, Masaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, 5,340,412, Cl. 148-208.000.
Daifuku Co., Ltd.: *See*—
Tsujimoto, Kazushi; Goto, Yukihiro; and Ohnishi, Katsuji, 5,340,262, Cl. 414-273.000.
Daikin Industries, Ltd.: *See*—
Obata, Koei, 5,341,462, Cl. 395-122.000.
Tomihashi, Nobuyuki; Akamatsu, Masafumi; and Ueta, Yutaka, 5,340,864, Cl. 524-297.000.
Dailey, George F.: *See*—
Shelton, James W.; Marfin, Alan A.; and Dailey, George F., 5,341,095, Cl. 324-772.000.
Daimer, Johann: *See*—
Paschke, Hartmut; Daimer, Johann; and Haring, Richard, 5,340,776, Cl. 501-11.000.
Dale, Mark J.: *See*—
Garr, Michael J.; Dale, Mark J.; and Taylor, Timothy, 5,341,166, Cl. 348-10.000.
Dalke, Brian D.: *See*—
Welsh, Gary C.; Lee, Eric K. C.; and Dalke, Brian D., 5,340,844, Cl. 521-82.000.
Dalrymple, E. Dwyann: *See*—
Harris, Kirk L.; Carpenter, Robert B.; Himes, Ronald E.; Dalrymple, E. Dwyann; Dahl, Jeffrey A.; and Thomas, Bruce D., 5,339,902, Cl. 166-293.000.
Daly, Daniel T.: *See*—
Koch, Frederick W.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Kolp, Christopher J.; Stoldt, Stephen H.; and Denis, Richard A., 5,340,369, Cl. 44-366.000.
Dammann, Peter, to Barmag AG. False twist yarn crimping apparatus. 5,339,617, Cl. 57-290.000.
Dammel, Ralph: *See*—
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,340,682, Cl. 430-165.000.
Dana Corporation: *See*—
Antonini, Joseph; and Budovec, Ronald T., 5,340,126, Cl. 277-181.000.
Dana-Farber Cancer Institute, The: *See*—
Brenner, Michael B.; Strominger, Jack L.; Seidman, Johnathan; Ip, Stephen H.; and Krangel, Michael S., 5,340,921, Cl. 530-350.000.
Dana-Farber Cancer Institute, Inc.: *See*—
Anderson, Paul J.; Streuli, Michel; and Schlossman, Stuart F., 5,340,935, Cl. 536-23.500.
D'Andrade, Bruce M. Controlled flow, bursting water gun release mechanism. 5,339,987, Cl. 222-79.000.
D'Andrade, Bruce M. Water projecting pump action pen. 5,340,227, Cl. 401-195.000.
Danieli & C. Officine Meccaniche SpA: *See*—
Marchesan, Guido; and Ruzza, Wogler, 5,339,877, Cl. 164-418.000.
Daniloff, Yuri: *See*—
Ullman, Edwin F.; Kirakossian, Hrair; Pease, John S.; Daniloff, Yuri; and Wagner, Daniel B., 5,340,716, Cl. 435-6.000.
Danjo, Keishi: *See*—
Enomoto, Takashi; Shimamune, Masayuki; and Danjo, Keishi, 5,340,491, Cl. 252-79.100.
D'Anna, Guy: *See*—
Lucas, Paul C.; D'Anna, Guy; and Messenger, Ronald J., 5,340,620, Cl. 427-515.000.
Darlington, Henry S.: *See*—
Shea, Patrick P.; and Darlington, Henry S., 5,340,421, Cl. 156-69.000.
Dasgupta, Sunil P.; Gingrich, Blain H.; Matyniak, Bernard J.; and Weaver, G. Gregory, to Hercules Incorporated. Apparatus for simultaneously generating and measuring a triboelectric charge. 5,341,103, Cl. 324-454.000.
Data Pac Mailing Systems Corp.: *See*—
Yankloski, Richard, 5,340,097, Cl. 271-10.000.

Datar, Rajiv V.; and Rios, Luis G., to 3-I Systems. Method and apparatus for neutralization of biohazardous waste. 5,340,536, Cl. 422-23.000.
Datatape Incorporated: *See*—
Benjauthrit, Boonsieng, 5,341,134, Cl. 341-58.000.
Davenport, John M.; and Hansler, Richard L., to General Electric Company. Polygonal-shaped optical coupling member for use with a high brightness light source. 5,341,445, Cl. 385-39.000.
David, George; and David, Rose H. Beverage identification tags for cup handles. 5,339,549, Cl. 40-324.000.
David, Rose H.: *See*—
David, George; and David, Rose H., 5,339,549, Cl. 40-324.000.
Davidson, Scott: *See*—
Bencivenga, Robert; Davidson, Scott; and Velasco, Victor J., 5,341,314, Cl. 364-578.000.
Davidson Textron Inc.: *See*—
Coleman, Derek I., 5,339,715, Cl. 83-53.000.
Gajewski, Gerard H., 5,340,149, Cl. 280-732.000.
Davis, Charles R.: *See*—
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.
Davis, Christopher L.: *See*—
Ahmad, Jamil; Riccitelli, Samuel D.; Bankert, Charles S.; Hannah, Richard; and Davis, Christopher L., 5,339,671, Cl. 73-1.00G.
Davis, Daniel W. Ambulatory wheelstand with torso and leg support. 5,340,139, Cl. 280-304.100.
Davis, Diana D.: *See*—
Adamski, Robert P.; Mores, Maryanne; Wong, Pui K.; and Davis, Diana D., 5,340,842, Cl. 521-64.000.
Davis, Eric R., to 3COM Corporation. Method and apparatus for automatically sensing and configuring a termination in a bus-based network. 5,341,400, Cl. 375-36.000.
Davis, Murray W. System for rating electric power transmission lines and equipment. 5,341,088, Cl. 324-106.000.
Dawid, Herbert R.: *See*—
Fettweis, Gerhard P.; and Dawid, Herbert R., 5,341,322, Cl. 364-764.000.
Day, Ivor J.: *See*—
Freeman, Christopher; Day, Ivor J.; and Wright, William B., 5,340,271, Cl. 415-1.000.
Day, Richard M., to Raymond Corporation. Service braking technique for material handling vehicles. 5,340,202, Cl. 303-19.000.
Day Runner, Inc.: *See*—
Bianco, Ronald M., 5,340,156, Cl. 281-37.000.
Dayan, Richard A.: *See*—
Blackledge, John W., Jr.; Dayan, Richard A.; Moeller, Dennis L.; Newman, Palmer E.; and Zubay, Kenneth J. P., 5,341,422, Cl. 380-4.000.
Dayco Products, Inc.: *See*—
Manning, Timothy J.; and Hoffman, Jerome P., 5,339,668, Cl. 72-70.000.
Dayva International, Inc.: *See*—
Bilotti, Alfred J., 5,339,748, Cl. 108-90.000.
Deadmond, Bobby J.; and Duvall, James E., Jr. Offset line socket. 5,339,710, Cl. 81-57.300.
Deak, Susan B.: *See*—
Boyd, Charles D.; and Deak, Susan B., 5,340,723, Cl. 435-29.000.
Dean, Anthony K.: *See*—
Lewen, Ronald C.; Coyle, Jonathan V.; Marotta, Peter P.; Liubinskas, Tauras J.; Arnold, David P.; Byers, Kenneth R.; Dean, Anthony K.; and Nowakowski, Victor A., 5,341,374, Cl. 370-85.400.
Dean, Robert E.; Cacka, Steven C.; Schaefer, Douglas P.; Sevvom, Hossein F.; and Brumnet, Robert A., to Storage Technology Corporation. Address mark triggered read/write head buffer. 5,341,479, Cl. 395-250.000.
Dean, Robert H., to Midland Manufacturing Corp. Actuator for valve. 5,340,078, Cl. 251-59.000.
de Beco, Hugues: *See*—
Vaquier, Mariannick; and de Beco, Hugues, 5,340,061, Cl. 244-175.000.
DeBlasio, James A.: *See*—
Collins, Alfred L.; Cutright, Edwin L.; DeBlasio, James A.; Dickerson, Richard H.; Kean, Billy J., Jr.; Ritt, Renzer R., Sr.; and Scott, George R., 5,339,871, Cl. 141-1.000.
De Brabandere, Luc A.: *See*—
De Keyzer, Rene; M.; Odeurs, Raymond L.; and De Brabandere, Luc A., 5,340,705, Cl. 430-456.000.
Decaire, Barbara R.; Logsdon, Peter B.; Lund, Earl A. E.; Shankland, Ian R.; Singh, Rajiv R.; Wilson, David P.; and Thomas, Raymond H. P., to AlliedSignal Inc. Azeotrope-like compositions of trifluoromethane and carbon dioxide or hexafluoroethane and carbon dioxide. 5,340,490, Cl. 252-67.000.
Deemer, Randall E.: *See*—
Armbrust, William D.; and Deemer, Randall E., 5,340,242, Cl. 407-11.000.
Deere & Company: *See*—
Esau, Dierk; and Hosgoer, Sinan, 5,339,494, Cl. 16-294.000.
Fox, Robert E.; Smith, William L., Jr.; and Flugrad, Donald R., Jr., 5,339,906, Cl. 172-4.000.
Nagorcka, James A., 5,340,205, Cl. 305-22.000.
Dees, J. R.: *See*—
Doerr, Marvin L.; Hammer, Joseph J.; and Dees, J. R., 5,340,909, Cl. 528-276.000.

VOL 1165 ISS 4 AG 23 1994 UMI

De Fornel, Frederique; Goudonnet, Jean-Pierre; and Cerre, Nathalie, to STM (Societe D'Investissement Dans La Microscopie) S.A. Rear field reflection microscopy process and apparatus. 5,340,981, Cl. 250-227.200.

Degi, Greg A.: *See*—
Stein, Irene F.; Degi, Greg A.; Boyd, David W.; and Webb, Steven L., 5,341,225, Cl. 358-498.000.

DeGregorio, Anthony J. Elastomer bed. 5,339,653, Cl. 62-467.000.

Deguchi, Toshihisa: *See*—
Fujii, Yoshikazu; Inui, Tetsuya; Deguchi, Toshihisa; and Ohta, Kenji, 5,341,362, Cl. 369-275.400.

Degussa Aktiengesellschaft: *See*—
Panster, Peter; Gradl, Robert; and Kleinschmit, Peter, 5,340,895, Cl. 528-9.000.

Deinzer, Max L.; and Laramee, James A., to State of Oregon acting by and through the State Board of Higher Education on behalf of Oregon State University, The. Method and apparatus for mass analysis using slow monochromatic electrons. 5,340,983, Cl. 250-281.000.

Deit, Gerard L.; and Gerard, Jean L., to Bendix Europe Services Techniques. Friction member provided with a wear indicator device and disk-brake fitted with such member. 5,339,928, Cl. 188-1.110.

DeJaco, Andrew P., to QUALCOMM Incorporated. Method for determining speech encoding rate in a variable rate vocoder. 5,341,456, Cl. 395-2.230.

DeJarnais, George; and Slaugenhoup, Mark D., to Badger Meter, Inc. Water meter housing connection apparatus. 5,339,686, Cl. 73-201.000.

De Keyzer, Rene M.; Dewanckele, Jean-Marie O.; Van Rompuy, Ludo L.; and Vaes, Jos A., to Agfa-Gavaert, N.V. Method for making a lithographic printing plate according to the silver salt diffusion transfer process. 5,340,690, Cl. 430-204.000.

De Keyzer, Rene; M.; Odeurs, Raymond L.; and De Brabandere, Luc A., to AGFA-Gevaert, N.V. Processing liquid for use in silver complex diffusion transfer processing. 5,340,705, Cl. 430-456.000.

Del-Met Corporation: *See*—
Weirs, Gary, 5,340,201, Cl. 301-37.260.

Delasko, Joe M.: *See*—
Warner, Kevin L.; and Delasko, Joe M., 5,341,345, Cl. 367-99.000.

DeLaura, Mario D.: *See*—
Anderson, Charles C.; DeLaura, Mario D.; Christian, Paul A.; Shalhoub, Ibrahim M.; and Jennings, David F., 5,340,676, Cl. 430-63.000.

Delaware Capital Formation, Inc.: *See*—
Holloway, James A., 5,340,082, Cl. 254-88.000.

Delco Electronics Corporation: *See*—
Berlin, Carl W.; and Sarma, Dwadasi H. R., 5,341,119, Cl. 338-224.000.
Griessman, Detlef; Manlove, Gregory J.; Block, Thomas G.; and Howlett, Gordon P., 5,341,431, Cl. 381-15.000.

della-Cioppa, Guy R.; Garger, Stephen J., Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., to Biosource Genetics Corporation. Method for making stable, extracellular tyrosinase and synthesis of polyphenolic polymers therefrom. 5,340,734, Cl. 435-212.000.

DeLoach, John R.: *See*—
Nisbet, David J.; Corrier, Donald E.; and DeLoach, John R., 5,340,577, Cl. 424-93.210.

DeLoach, Laura D.: *See*—
Payne, Stephen A.; Kway, Wayne L.; DeLoach, Laura D.; Krupke, William F.; and Chai, Bruce H. T., 5,341,389, Cl. 372-41.000.

De'Longhi, Giuseppe, to Miralfin S.R.L. Device for emulsifying steam and milk particularly for cappuccinos. 5,339,725, Cl. 99-293.000.

DE' Longhi, Giuseppe, to Miralfin S.R.L. Oil radiator with welded plate radiating elements having folded portions providing cool planar lateral outer surfaces for preventing injuries. 5,341,455, Cl. 392-378.000.

Delta Electronics, Inc.: *See*—
Wang, Frank, 5,340,944, Cl. 174-52.100.

Delwel, Francois; Osinga, Theo J.; Theunissen, Joseph P.; and Vrancken, Jack M., to Unilever Patent Holdings B.V. Granular alkali metal silicate production. 5,340,559, Cl. 423-334.000.

Demand Publishing, Inc.: *See*—
Newman, Charles; Jones, Paul L.; and King, Charles, 5,341,222, Cl. 358-403.000.

De Meutter, Stefaan K.: *See*—
Monbaliu, Marcel J.; Terrell, David R.; and De Meutter, Stefaan K., 5,340,675, Cl. 430-58.000.

Demoute, Jean-Pierre: *See*—
Babin, Didier; Benoit, Marc; Demoute, Jean-Pierre; Pilorge, Fabienne; and Reinier, Nicole, 5,340,835, Cl. 514-531.000.

Denis, Richard A.: *See*—
Koch, Frederick W.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Kolp, Christopher J.; Stoldt, Stephen H.; and Denis, Richard A., 5,340,369, Cl. 44-366.000.

Denison, Mark: *See*—
Thackeray, James W.; Denison, Mark; and Orsula, George W., 5,340,696, Cl. 430-270.000.

Dennison, Charles H., to Micron Semiconductor, Inc. Multi-pin stacked capacitor utilizing micro villus patterning in a container cell and method to fabricate same. 5,340,763, Cl. 437-52.000.

Dennison, Charles H.; and Thakur, Randhir P. S., to Micron Semiconductor, Inc. Method for forming enhanced capacitance stacked capacitor structures using hemi-spherical grain polysilicon. 5,340,765, Cl. 437-52.000.

de Nora, Vittorio: *See*—
Sekhar, Jainagesh; and de Nora, Vittorio, 5,340,448, Cl. 204-67.000.

Denz, Helmut: *See*—
Blumenstock, Andreas; and Denz, Helmut, 5,339,788, Cl. 123-520.000.

Derafe, Ltd.: *See*—
Feldstein, Robert S., 5,339,873, Cl. 141-1.001.

DeRango, Mario F.; and Bennett, Richard L., to Motorola, Inc. Method for repeaters to adaptively digitally code received analog information. 5,341,398, Cl. 375-3.100.

Deremo, Edwin J., to Cooper Industries, Inc. Airfeed peck drill configuration. 5,340,243, Cl. 408-17.000.

Deroy, Claude: *See*—
Paquin, Georges A.; and Deroy, Claude, 5,339,522, Cl. 29-897.312.

De Ruytere, Hendricus C.: *See*—
Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruytere, Hendricus C.; and Sloof, Willem-Arie, 5,341,107, Cl. 329-337.000.

Derwin, Michael T.; and Wall, William A., to International Business Machines Corp. Personal computer having memory system with write-through cache and pipelined snoop cycles. 5,341,487, Cl. 395-425.000.

Desai, Manoj C.: *See*—
Rosen, Terry J.; Desai, Manoj C.; and Lowe, John A., III, 5,340,826, Cl. 514-351.000.

Desai, Trilok; Goestenkors, Gregory N.; and Boumarafi, Mohamed, to AlliedSignal Inc. Wire cover for an air bag inflator. 5,340,339, Cl. 439-892.000.

Desaraju, Padma: *See*—
Varaprasad, Desaraju V.; Lynam, Niall R.; Habibi, Hamid R.; and Desaraju, Padma, 5,340,503, Cl. 252-583.000.

Desaulty, Michel A. A.: *See*—
Bardey, Xavier M. H.; Desaulty, Michel A. A.; Jolu, Jerome E. R.; Meunier, Serge M.; Mouton, Pierre C.; Poutonnet, Sylvie; and Renvier, Jacques, 5,339,622, Cl. 60-39.092.

Deselnicu, Mihai: *See*—
Siegler, Marcel; Deselnicu, Mihai; Bratulescu, Victoria; and Anghel, Andrei, 5,340,737, Cl. 435-226.000.

Desimone, Joseph A.; and Goldinger, Richard A., to Johnson & Johnson Consumer Products, Inc. Toothbrush having non-slip surface. 5,339,482, Cl. 15-167.100.

Desobry, Vincent, to Ciba-Geigy Corporation. Fluorine-free titanocenes and the use thereof. 5,340,701, Cl. 430-325.000.

deSolms, S. Jane: *See*—
Graham, Samuel L.; and deSolms, S. Jane, 5,340,828, Cl. 514-357.000.

Detzel, Roger A.: *See*—
Kidaloski, Raymond G.; Detzel, Roger A.; and Byan, Donald E., 5,339,891, Cl. 165-67.000.

Deutsche Aerospace Airbus GmbH: *See*—
Martens, Wilhelm, 5,339,924, Cl. 184-40.000.

Deutsche Forschungsanstalt fur Luft - und Raumfahrt e.V.: *See*—
Tank, Volker; Haschberger, Peter; and Jansen, Burkhard, 5,341,207, Cl. 356-346.000.

Devaney, Mark J., Jr.: *See*—
Helfer, Jeffrey L.; and Devaney, Mark J., Jr., 5,341,189, Cl. 354-324.000.

Devereaux, Sharon M.: *See*—
Baugher, Bennett W.; Chamberlain, Aurora J.; Devereaux, Sharon M.; and Ungemach, Frank S., 5,340,748, Cl. 436-518.000.

Devmed Group Inc.: *See*—
Wiita, Bruce E.; Teets, J. Michael; and Wiita, Gregory D., 5,339,800, Cl. 128-4.000.

de Volder, Claude: *See*—
Billaud, Philippe; de Volder, Claude; and Wybierala, Michel, 5,341,139, Cl. 342-40.000.

Devon Industries, Inc.: *See*—
Horan, Robert; and Valentine, A. H. Lynn, 5,339,955, Cl. 206-370.000.

Devore, Robert V.: *See*—
Walter, Carlton H.; Campbell, Donn V.; and Devore, Robert V., 5,341,148, Cl. 343-742.000.

Dewanckele, Jean-Marie: *See*—
Vaes, Jos; Dewanckele, Jean-Marie; and Monbaliu, Marcel, 5,340,691, Cl. 430-204.000.

Dewanckele, Jean-Marie O.: *See*—
De Keyzer, Rene M.; Dewanckele, Jean-Marie O.; Van Rompuy, Ludo L.; and Vaes, Jos A., 5,340,690, Cl. 430-204.000.

DewEze Manufacturing, Inc.: *See*—
Bergkamp, Alan; and Sowers, Kenneth W., 5,340,042, Cl. 241-283.000.

DeWitt, Troy C.; and DeWitt, Vicki A. Gold jewelry alloy. 5,340,529, Cl. 420-483.000.

DeWitt, Vicki A.: *See*—
DeWitt, Troy C.; and DeWitt, Vicki A., 5,340,529, Cl. 420-483.000

DeYoe, Edgar A.; and Neitz, John F., to MCW Research Foundation, Inc., The. Patient video system for medical imaging equipment 5,339,813, Cl. 128-653.100.

Diaz, Victor: *See*—
Fussi, Fernando; Diaz, Victor; Domanico, Ricardo H.; and Fuentes, Esteban P., 5,340,932, Cl. 536-21.000.

DiCarlo, Lawrence: *See*—
Magauran, Edward D.; Reynolds, William; DiCarlo, Lawrence; Cody, Charles A.; Chiavoni, Araxi; and El-Shoubary, Modasser, 5,340,390, Cl. 106-244.000.

Dickerson, Richard H.: *See*—
Collins, Alfred L.; Cutright, Edwin L.; DeBlasio, James A.; Dickerson, Richard H.; Kean, Billy J., Jr.; Ritt, Renzer R., Sr.; and Scott, George R., 5,339,871, Cl. 141-1.000.

Dickson, David N.: *See*—
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., 5,340,886, Cl. 525-426.000.

Dideco S.r.l.: *See*—
Ghelli, Nicola; and Panzani, Ivo, 5,340,364, Cl. 604-32.000.

Diekhans, Norbert: *See*—
Roderfeld, Heinrich; Heidjann, Franz; Diekhans, Norbert; and Behnke, Willi, 5,339,611, Cl. 56-10.200.

Dieleman, Adrianus; Schepers, Jos G.; and Westerhout, Gerrit D., to U.S. Philips Corporation. Method and device for recording information volumes in a track of a record carrier, and a device for reading the record carrier. 5,341,356, Cl. 369-47.000.

Diemer, Gordon J., to John Henry Company, The. Plant tagging apparatus. 5,339,517, Cl. 29-809.000.

Dienbauer, Josef, to U.S. Philips Corporation. Head cleaning device for magnetic tape cassette apparatus having a rotating head. 5,341,257, Cl. 360-85.000

Dieny, Bernard; Gurney, Bruce A.; Parkin, Stuart S. P.; Sanders, Ian L.; Speriosu, Virgil S.; and Wilhoit, Dennis R., to International Business Machines Corporation. Magnetoresistive sensor having multilayer thin film structure. 5,341,261, Cl. 360-113.000.

Dietrich, Alfred T.: *See*—
Stoll, Donald E.; and Dietrich, Alfred T., 5,340,267, Cl. 414-537.000.

Difco Laboratories, Inc.: *See*—
Eden, Gideon, 5,340,747, Cl. 436-172.000.

Digital Equipment Corporation: *See*—
Cutler, David N.; Orbits, David A.; Bhandarkar, Dileep; Cardoza, Wayne; and Witek, Richard T., 5,341,482, Cl. 395-375.000.
Gillett, Richard B., Jr.; and Williams, Douglas D., 5,341,510, Cl. 395-800.000.
Madden, William C.; Rajagopalan, Vidya; and Samudrala, Sridhar, 5,341,319, Cl. 364-748.000.
Mallard, William C., Jr., 5,341,405, Cl. 375-120.000.
Pitkin, Richard P.; and Morency, John P., 5,341,477, Cl. 395-200.000.
Ramanujan, Raj, 5,341,491, Cl. 395-425.000.
Travis, Robert L., Jr.; Wilson, Andrew P.; Jacobson, Neal F.; and Renzullo, Michael J., 5,341,478, Cl. 395-200.000.

Digitran Company, a Division of Xcel Corp.: *See*—
Calvillo, Samuel J.; Horton, Donald L.; and Ganz, Frank, 5,340,955, Cl. 200-302.200.

Dike, Charles E.; and Ostler, Farrell L., to North American Philips Corporation. Arbiter with test capability and associated testing method. 5,341,052, Cl. 307-518.000.

DiLeo, Anthony J.; Snow, James T.; and Cote, Daniel A., to Millipore Corporation. Apparatus for monitoring impurities in a gas stream. 5,339,675, Cl. 73-24.040.

Dinnes, Callum J. B.: *See*—
Hosie, Stanley; and Dinnes, Callum J. B., 5,339,912, Cl. 175-66.000.

Dinola, Louis P.: *See*—
Waclawik, Ronald E.; Duarte, George M.; and Dinola, Louis P., 5,339,762, Cl. 114-312.000.

Di Pietro, Charles. Emulsion coating apparatus. 5,339,739, Cl. 101-129.000.

DiPlacido, Bruno, Jr.: *See*—
Joyce, Thomas F.; Keeley, James W.; Lemay, Richard A.; DiPlacido, Bruno, Jr.; and Massucci, Martin M., 5,341,495, Cl. 395-500.000.

Dirrett, Edward G.: *See*—
Antrim, Robert G.; Dirrett, Edward G.; and Tuominen, Steven M., 5,340,535, Cl. 420-588.000.

Ditch, Kevin J., to American Trading and Production Corporation. Stand for article. 5,340,066, Cl. 248-170.000.

Divan, Deepakraj M.; Klontz, Keith W.; Novotny, Donald W.; and Lorenz, Robert D., to Electric Power Research Institute. Contactless coaxial winding transformer power transfer system. 5,341,280, Cl. 363-37.000.

Divan, Deepakraj M.: *See*—
Klontz, Keith W.; Divan, Deepakraj M.; Novotny, Donald W.; and Lorenz, Robert D., 5,341,083, Cl. 320-2.000.

Dockwiller, Joseph F., III. Computer keyboard support stand. 5,340,076, Cl. 248-371.000.

Dodson, Thomas L. Collapsible and hand portable trailer. 5,340,134, Cl. 280-37.000

Doerr, Marvin L.; Hammer, Joseph J.; and Dees, J. R., to Hoechst Celanese Corporation. Poly(1,3-propylene terephthalate). 5,340,909, Cl. 528-276.000.

Doi, Yuichiro: *See*—
Kagami, Nobutake; Doi, Yuichiro; and Nakamura, Yuko, 5,341,349, Cl. 369-13.000.

Doll, Gerhard: *See*—
Reckzugel, Christoph; Murwald, Mario; Doll, Gerhard; Frey, Jurgen; and Ohlendorf, Ralf, 5,339,778, Cl. 123-193.500.

Dolson, Michael D.; and Maknyik, Tibor, to Black & Decker Inc. Anti-kink control for electrical cords. 5,340,330, Cl. 439-447.000.

Domanico, Ricardo H.: *See*—
Fussi, Fernando; Diaz, Victor; Domanico, Ricardo H.; and Fuentes, Esteban P., 5,340,932, Cl. 536-21.000.

Domanski, Ronald S.: *See*—
Taravella, Philip; and Domanski, Ronald S., 5,339,958, Cl. 206-521.000.

Domb, Abraham J., to Nova Pharmaceutical Corporation. Liposphere carriers of vaccines. 5,340,588, Cl. 424-450.000.

Don Michael, T. Anthony. Endotracheal-esophageal intubation devices. 5,339,808, Cl. 128-207.150.

Donnelly, Brian G.; Dyer, Gerald P.; and Wiesner, Charles E., to United Technologies Corporation. Fuel splitter valve assembly for gas turbine. 5,339,636, Cl. 60-734.000.

Donnelly Corporation: *See*—
Varaprasad, Desaraju V.; Lynam, Niall R.; Habibi, Hamid R.; and Desaraju, Padma, 5,340,503, Cl. 252-583.000.

Donovan, Beth M.: *See*—
Martin, Teresa A.; and Donovan, Beth M., 5,340,067, Cl. 248-118.500.

Doomernik, Franciscus M. P. P.; Jacobs, Franciscus C. A. J.; and Vink, Nicolaas G., to U.S. Philips Corporation. Method of manufacturing a saddle-shaped deflection coil for a picture display tube. 5,340,044, Cl. 242-7.030.

Dor, Amotz, to Litton Systems, Inc. Universal adapter for night vision system. 5,339,464, Cl. 2-6.200.

Doragh, Philip H., to International Business Machines Corporation. Method and apparatus for processing multiple file system server requests in a data processing network. 5,341,499, Cl. 395-700.000.

Dorey, Harrell E.: *See*—
Dorey, Mark K.; and Dorey, Harrell E., 5,341,132, Cl. 340-932.200.

Dorey, Mark K.; and Dorey, Harrell E. Vehicle position alarm apparatus. 5,341,132, Cl. 340-932.200.

Doring, Ralf, to Carl Fuhr GmbH & Co. Lock cylinder. 5,339,663, Cl. 70-379.00R.

Dorleans, Fernand J.: *See*—
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,340,775, Cl. 437-246.000.

Dorner, Friedrich: *See*—
Eibl, Johann; Dorner, Friedrich; and Mitterer, Artur, 5,340,575, Cl. 424-196.110.

Dorr, Sandra L. Protective barb coverings for barbed wire. 5,340,086, Cl. 256-3.000.

Dorris, Roderick L.: *See*—
Trissel, David W.; Dorris, Roderick L.; and Werbner, Stuart A., 5,341,320, Cl. 364-748.000.

Dorsam, Willi R. L.; and Fischer, Christian M. M., to Koenig & Bauer Aktiengesellschaft. Roller bearing support assembly. 5,339,736, Cl. 101-352.000.

Dorsey-Palmateer, John W., to Boeing Company, The. Method for controlling projection of optical layup template. 5,341,183, Cl. 353-122.000.

Dorworth, Charles E., to Forestry Canada. Method for controlling red alder using *Nectria ditissima* ATCC 74260. 5,340,578, Cl. 504-117.000.

Dosch, Daniel E.: *See*—
Jircitano, Albert; and Dosch, Daniel E., 5,339,684, Cl. 73-178.00R.

Doss, William K.: *See*—
Buchholz, Dale R.; Robbins, Karen E.; Doss, William K.; and Hamilton, R. Lee, Jr., 5,341,375, Cl. 370-94.100.

Dow Chemical Company, The: *See*—
Cortes, Hernan J.; and Campbell, Robert M., 5,340,475, Cl. 210-198.200.
Cowley, Terry W.; and White, Mary L. N., 5,340,856, Cl. 524-109.000.
Nader, Bassam S.; and Pawloski, Chester E., 5,340,489, Cl. 252-48.600.
Park, Chung P.; Stevens, James C.; and Knight, George W., 5,340,840, Cl. 521-60.000.
Stultz, Jeffrey H., 5,340,164, Cl. 285-158.000.
Toth, Cheryl A.; and Sheskey, Paul J., 5,339,769, Cl. 119-173.000
Weimer, Alan W.; Moore, William G.; Rafaniello, William; and Roach, Raymond P., 5,340,417, Cl. 148-513.000.
Welsh, Gary C.; Lee, Eric K. C.; and Dalke, Brian D., 5,340,844, Cl. 521-82.000.

Dow Corning Corporation: *See*—
Altes, Michael G., 5,340,899, Cl. 528-34.000.
Loiselle, Brian P.; and VanWert, Bernard, 5,340,897, Cl. 528-17.000.
Vincent, Gary A.; Brady, William P.; Cifuentes, Martin E.; Schoenherr, William J.; and Vincent, Harold L., 5,340,887, Cl. 525-477.000.
Vincent, Judith M.; and Ward, Andrew H., 5,340,386, Cl. 106-19.00B.

Dowker, Clark A., to Subzone Lift Systems. Gas injection dewatering process and apparatus. 5,339,905, Cl. 166-369.000.

Downing, Brian B. Inflatable mold construction. 5,339,574, Cl. 52-2.150.

Dowty, Alvis E. Article handling mechanism for attachment to warehouse trucks. 5,340,268, Cl. 414-622.000.

Drabarek, Pawel: *See*—
Prinzhausen, Friedrich; and Drabarek, Pawel, 5,341,211, Cl. 356-357.000.

Draftex Industries Limited: *See*—
Maass, Klaus P., 5,339,488, Cl. 15-250.010.

Drake, Donald J.: *See*—
Hermanson, Herman A.; Drake, Donald J.; Rezanka, Ivan; Karz, Robert S.; Teumer, Roger G.; and Altavela, Robert P., 5,341,162, Cl. 347-92.000

Draper Shade & Screen Co., Inc.: *See*—
Shopp, Rick A., 5,341,241, Cl. 359-443.000.

Dreiman, Nelik I., to Tecumseh Products Company. Sound and vibration absorbing damper. 5,339,652, Cl. 62-296.000.

Dresser Industries, Inc.: *See*—
Cox, Tim W., 5,340,969, Cl. 235-381.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Scallan, David J.; and Parker, George W., 5,339,857, Cl. 251-38.000.
Dresser-Rand Company: *See*—
Templar, Gary A., 5,339,856, Cl. 137-15.000.
DSM, N.V.: *See*—
van der Loo, Leonardus L. H.; and Mertens, Marcel D. M., 5,340,633, Cl. 428-114.000.
Duarte, George M.: *See*—
Waclawik, Ronald E.; Duarte, George M.; and Dinola, Louis P., 5,339,762, Cl. 114-312.000.
Dubbert, Patrick C.; Neely, Nathan R.; Albertson, Daniel L.; and Luebbert, Norbert A., to Midwest Pre-Mix, Inc. Portable mini silo system. 5,339,996, Cl. 222-185.000.
Dube, Ghyslain: *See*—
Tremblay, Francois; and Dube, Ghyslain, 5,340,379, Cl. 75-680.000.
Dudek, Michael T.: *See*—
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.
Duffy, Joseph J.; Kirayoglu, Birol; Lin, Pui-Yan; Marin, Robert A.; and Santucci, Robert J., to Du Pont de Nemours, E. I., and Company. Apparatus and process for stacking sheets of half-cell structure to make a honeycomb core. 5,340,429, Cl. 156-288.000.
Dulery, Jean-Marie: *See*—
Crosnier, Daniel; and Dulery, Jean-Marie, 5,339,972, Cl. 215-320.000.
Dunn, Richard L.; English, James P.; Cowsar, Donald R.; and Vanderbilt, David D., to Atrix Laboratories, Inc. Biodegradable in-situ forming implants and methods for producing the same. 5,340,849, Cl. 523-113.000.
Dunn, Susan H.; Kirk, Mark P.; Mader, Roger A.; and Spawn, Terence D., to Minnesota Mining and Manufacturing Company. Antifoggants for photothermographic articles. 5,340,712, Cl. 430-619.000.
Du Pont de Nemours, E. I., and Company: *See*—
Duffy, Joseph J.; Kirayoglu, Birol; Lin, Pui-Yan; Marin, Robert A.; and Santucci, Robert J., 5,340,429, Cl. 156-288.000.
Grosz, Ron; and Jensen, Mark A., 5,340,728, Cl. 435-91.200.
Jacobson, Howard W., 5,340,393, Cl. 106-492.000.
Kodokian, George R., 5,340,428, Cl. 156-272.200.
Pease, Richard A.; and Rodini, David J., 5,340,519, Cl. 264-169.000.
Scott, David M., 5,341,436, Cl. 382-1.000.
Dupre, John J.: *See*—
Baney, Douglas M.; and Dupre, John J., 5,340,979, Cl. 250-214.00B.
Duran, John A., to Avibank Mfg., Inc. Plug locking assembly. 5,340,255, Cl. 411-373.000.
Dutchess Bakers' Machinery Co., Inc.: *See*—
Beatty, David E.; Nyquist, Jeffery A.; and Ropp, Kenneth, 5,340,298, Cl. 425-183.000.
Duvall, James E., Jr.: *See*—
Deadmond, Bobby J.; and Duvall, James E., Jr., 5,339,710, Cl. 81-57.300.
Dye, S. Owen: *See*—
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.
Dyer, Gerald P.: *See*—
Donnelly, Brian G.; Dyer, Gerald P.; and Wiesner, Charles E., 5,339,636, Cl. 60-734.000.
Dyott, Richard B., to Andrew Corporation. Optical fiber splicing chuck. 5,340,371, Cl. 65-501.000.
Dziabo, Anthony J.; Holmes, Alix A.; Anger, Claude B.; Baker, John C.; and Peng, Lin, to Allergan, Inc. Antimicrobial lenses and lens care systems. 5,340,583, Cl. 424-412.000.
E J Price (Development) Limited: *See*—
Cameron-Price, Ernest J., 5,340,595, Cl. 426-112.000.
E. R. Squibb & Sons, Inc.: *See*—
Zahler, Robert; and Slusarchyk, William A., 5,340,816, Cl. 514-269.000.
E-Z Gard Industries, Inc.: *See*—
Kittelsen, Jon D.; and Belvedere, Paul C., 5,339,832, Cl. 128-862.000.
E-Z Trail, Inc.: *See*—
Kuhns, Abe B., 5,340,142, Cl. 280-444.000.
Earl, Joseph G.; and Moffitt, Michael D. Method and apparatus for increasing information compressibility. 5,341,440, Cl. 382-56.000.
Earth Resources Corporation: *See*—
Hawley, Alan M.; and Mattern, Charles C., 5,340,244, Cl. 408-87.000.
Mattern, Charles C., 5,339,876, Cl. 141-51.000.
Eastman Chemical Company: *See*—
Chamberlin, Kim S.; Pruett, Wayne P.; Weaver, Max A.; Hilbert, Samuel D.; Quillen, Donna R.; and Salyer, Preston K., 5,340,910, Cl. 528-289.000.
Sublett, Bobby J., 5,340,624, Cl. 428-35.800.
Yau, Cheuk C.; and Cherry, Clinton, 5,340,907, Cl. 528-274.000.
Eastman Kodak Company: *See*—
Anderson, Charles C.; DeLaura, Mario D.; Christian, Paul A.; Shalhoub, Ibrahim M.; and Jennings, David F., 5,340,676, Cl. 430-63.000.
Clifford, Daniel, 5,341,438, Cl. 382-9.000.
English, David G. N.; and Glabach, Raymond H., 5,339,875, Cl. 141-9.000.
Evans, Steven; and Vanier, Noel R., 5,340,789, Cl. 503-227.000.
Goodfellow, Alan G., 5,340,051, Cl. 242-348.100.
Haley, Neil F.; and Corbiere, Steven L., 5,340,699, Cl. 430-302.000.
Heiberger, James F.; and Smith, David A., 5,341,489, Cl. 395-425.000.
Helfer, Jeffrey L.; and Devaney, Mark J., Jr., 5,341,189, Cl. 354-324.000.
Kerr, Roger S., 5,341,159, Cl. 346-134.000.
Kim, Sang H., 5,340,711, Cl. 430-576.000.
Lisson, Jerold B.; Mounts, Darryl I.; and Mack, Dale K., 5,341,312, Cl. 364-525.000.
Martic, Peter A.; and Skochdopole, Todd R., 5,340,854, Cl. 524-94.000.
Miller, James G., 5,340,540, Cl. 422-64.000.
Mills, David E.; and Stafford, Steven L., 5,340,884, Cl. 125-420.000.
Ozimek, Edward J.; and Tarn, Terry, 5,340,420, Cl. 156-64.000.
Roselle, Paul L.; and Kosman, Stephen L., 5,340,438, Cl. 156-643.000.
Scaringe, Raymond P.; Evans, Steven; Simpson, William H.; and Vanhanehem, Richard C., 5,340,790, Cl. 503-227.000.
Tang, Ping-Wah; Lau, Philip T. S.; and Cowan, Stanley W., 5,340,708, Cl. 430-548.000.
Eastman, Robert L., to B-W Fabricators, Inc. Surface skimming apparatus. 5,340,482, Cl. 210-525.000.
Eaton Corporation: *See*—
Crookston, Ronald W.; Marks, Douglas C.; White, Richard E., III; Male, Andrew J.; Chien, Yun-Ko N.; Castelein, Steven; Beatty, William E., Jr.; Maier, Alfred E.; and Salvati, John G., 5,341,191, Cl. 335-16.000.
Fortune, G. Clark, 5,339,519, Cl. 29-840.000.
Lauer, Ernst H.; and Martin, James L., 5,339,936, Cl. 192-53.00E.
Eaton-Kenway, Inc.: *See*—
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,341,130, Cl. 340-825.060.
Eberhart, Eugen, to TRW Fahrwerksysteme GmbH & Co. KG. Power steering device. 5,339,917, Cl. 180-143.000.
Ebihara, Norio; and Kaburagi, Masakatsu, to Sony Corporation. Send-out convertors for a recording/reproducing system. 5,341,178, Cl. 348-705.000.
Ebisuno, Tadahiro: *See*—
Hamada, Akihiko; and Ebisuno, Tadahiro, 5,340,112, Cl. 273-226.000.
Echigoya, Kenichi; and Asai, Hidehiro, to NEC Corporation. Semiconductor integrated circuit device having a plurality of input circuits each including differently sized transistors. 5,341,018, Cl. 257-503.000.
Eckenhoff, James B.: *See*—
Wong, Patrick S. L.; Theeuwes, Felix; Eckenhoff, James B.; Larsen, Steven D.; and Huynh, Hoa T., 5,340,590, Cl. 424-473.000.
Eckersten, Christer; and As, Bengt-Olof, to NobelTech Electronics AB. Method for tracking a radar target. 5,341,145, Cl. 342-148.000.
Eckles, Robert D.; McDermitt, Dayle K.; and Welles, Jonathan M., to Li-Cor, Inc. Apparatus and method for analyzing gas. 5,340,987, Cl. 250-345.000.
Eckman, Richard R.; Peacock, Andrew J.; and Henrichs, Paul M., to Exxon Chemical Patents Inc. Syndiotactic polypropylene, methods for producing amorphous syndiotactic polypropylene and applications thereof. 5,340,917, Cl. 528-481.000.
Ecoffet, Roger: *See*—
Vollert, Alfred; and Ecoffet, Roger, 5,340,009, Cl. 277-206.00A.
Ecolab Inc.: *See*—
Steindorf, Richard E., 5,340,501, Cl. 252-546.000.
Edahiro, Takeshi: *See*—
Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, 5,341,294, Cl. 364-424.050.
Eden, Gideon, to Difco Laboratories, Inc. Diagnostic microbiological testing apparatus and method. 5,340,747, Cl. 436-172.000.
Edwards, Bryan T.; Erdman, David D.; Monroe, Kevin T.; and Stakem, David L., to Whitaker Corporation, The. Insert for positioning an optical fiber and an optical fiber connector for use therewith. 5,341,447, Cl. 385-81.000.
Edwards, Richard T.; Rider, Edward W., Jr.; Susta, Stephen J., Jr.; and Crawford, William R., to Genpak Corp. Latch for a container. 5,339,973, Cl. 220-4.230.
Edwards, Stanley H., Jr.: *See*—
Wheeler, Keith D.; and Edwards, Stanley H., Jr., 5,341,036, Cl. 307-328.000.
Edwards, Syd. Hair dryer accessory device. 5,339,540, Cl. 34-97.000.
EFFEM GmbH: *See*—
Schormair, Eckhart; Ponisch, Jurgen; and Laaf, Rainer, 5,339,977, Cl. 220-307.000.
Egbert, Timothy P.: *See*—
Baker, Phillip D.; Orr, Joseph A.; Westenskow, Dwayne R.; and Egbert, Timothy P., 5,339,818, Cl. 128-677.000.
Eguchi, Atuhiko: *See*—
Suzuki, Chiaki; Eguchi, Atuhiko; Ishihara, Yuka; Aoki, Takayoshi; Takagi, Seiichi; Yano, Toshiyuki; and Mochizuki, Masao, 5,340,678, Cl. 430-170.000.
Eguchi, Chikahiko: *See*—
Ishiguro, Tsuneo; and Eguchi, Chikahiko, 5,340,718, Cl. 435-71.000.
Eguchi, Takeo, to Sony Corporation. Digital transmission test signal generating circuit. 5,341,399, Cl. 375-10.000.

Eguchi, Tatsuya, to Minolta Camera Kabushiki Kaisha. Image forming apparatus of laser scanning type. 5,341,156, Cl. 346-108.000.
Ehemann, George M., Jr.: *See*—
Moscony, John J.; and Ehemann, George M., Jr., 5,340,674, Cl. 430-28.000.
Eibl, Johann; Dorner, Friedrich; and Mitterer, Artur, to Immuno Aktiengesellschaft. Complex suitable for carrying out a method of purifying pre-S hepatitis B surface antigen. 5,340,575, Cl. 424-196.110.
Eicher, Bernhard, to Robert Bosch GmbH. Hand tool. 5,339,572, Cl. 51-170.0PT.
Eicher, Charles W., III. Adjustable door buck spreader. 5,340,095, Cl. 269-43.000.
Einzinger, Richard: *See*—
Endroes, Arthur; Kruehler, Wolfgang; Einzinger, Richard; and Plaettner, Rolf, 5,340,410, Cl. 136-258.000.
Eisai Co., Ltd.: *See*—
Bridges, Alexander; Littlefield, Bruce A.; and Schwartz, C. Eric, 5,340,833, Cl. 514-443.000.
Eisermann, Armin, to Schulte-Schlagbaum Aktiengesellschaft. Magnetic card lock with key card. 5,339,661, Cl. 70-276.000.
Eisinger, Frantisek L., to Foster Wheeler Energy Corporation. Rotary throat cutoff device and method for reducing centrifugal fan noise. 5,340,275, Cl. 415-119.000.
Eizenhofer, Thomas: *See*—
Hoppe, Manfred; Herd, Karl-Josef; Eizenhofer, Thomas; Harms, Wolfgang; Henk, Hermann; Kunde, Klaus; and Reddig, Wolfram, 5,340,928, Cl. 534-618.000.
ELA Medical: *See*—
Henry, Christine; and Nitzsche, Remy, 5,339,820, Cl. 128-696.000.
Elantec, Inc.: *See*—
Rosenthal, Bruce D., 5,341,047, Cl. 307-475.000
Elastomeric Technologies, Inc.: *See*—
Kunihiro, James J., 5,340,318, Cl. 439-66.000.
El-Ayat, Khaled A.; and Chang, Jia-Hwang, to Actel Corporation. Testability architecture and techniques for programmable interconnect architecture. 5,341,092, Cl. 324-158.00R.
Elbit Ltd.: *See*—
Gilboa, Pinhas; Gold, Alexander; and Yaeli, Joseph, 5,341,242, Cl. 359-631.000.
Electric Power Research Institute: *See*—
Divan, Deepakraj M.; Klontz, Keith W.; Novotny, Donald W.; and Lorenz, Robert D., 5,341,280, Cl. 363-37.000.
Moser, Robert E.; Wilhelm, James H.; Burke, John; and Gray, Sterling, 5,340,547, Cl. 422-177.000.
Electric Power Research Institute, Inc.: *See*—
Jens, Stephen C.; Sawaf, Bernard, deceased; Viola, Paul F.; Belkus, Paul R.; and Lee, Robert A. S., 5,341,406, Cl. 376-316.000.
Klontz, Keith W.; Divan, Deepakraj M.; Novotny, Donald W.; and Lorenz, Robert D., 5,341,083, Cl. 320-2.000.
ElectroCom GARD Ltd.: *See*—
Romanenko, Michael; Sadler, Robert E., Jr.; and Buday, John M., Jr., 5,340,099, Cl. 271-303.000.
Romanenko, Michael, 5,340,100, Cl. 271-303.000.
Electroimpact, Inc.: *See*—
Rink, Philip A.; and Zieve, Peter B., 5,339,598, Cl. 53-236.000.
Eleneke, Charles L. Dynamic fluid engaging surface for vehicles. 5,340,144, Cl. 280-609.000.
Elf Atochem North America, Inc.: *See*—
Silbermann, Joseph; and Smith, William L., 5,340,862, Cl. 524-178.000.
Elf Atochem S.A.: *See*—
Gaillard, Patrice; Heim, Philippe; and Nowe, Stephane, 5,340,882, Cl. 525-379.000.
Elf Sanofi: *See*—
Emonds-Alt, Xavier; Gueule, Patrick; Proietto, Vincenzo; Goulaouic, Pierre, deceased; Bousquet, Marie, heir; and Goulaouic, Catherine M. L., heir, 5,340,822, Cl. 514-316.000.
Gubin, Jean; Chatelain, Pierre; and Lucchetti, Jean, 5,340,820, Cl. 514-300.000.
El Gamal, Abbas, to SiArc. Basic cell for BiCMOS gate array 5,341,041, Cl. 307-446.000.
Eli Lilly and Company: *See*—
Gidda, Jaswant S.; and Schaus, John M., 5,340,838, Cl. 514-647.000.
Jackson, David A.; Riggin, Ralph M.; and Towns, John K., 5,340,541, Cl. 422-75.000.
Price, Jerry D., 5,339,960, Cl. 206-531.000.
Wickiser, David I., 5,340,804, Cl. 514-150.000.
Eling, Berend: *See*—
Pille-Wolf, Wolfgang; Leenslag, Jan W.; Eling, Berend; and Ingelaere, Dirk G. C., 5,340,852, Cl. 524-14.000.
Elizabeth Arden Co., Division of Conopco, Inc.: *See*—
Elliott, Marianne; Gallagher, Lee A.; and Hechavarria, Caridad, 5,340,569, Cl. 424-63.000.
Elliott, Marianne; Gallagher, Lee A.; and Hechavarria, Caridad, to Elizabeth Arden Co., Division of Conopco, Inc. Color cosmetic composition. 5,340,569, Cl. 424-63.000.
Ellis, Claude E.: *See*—
Roberts, Russell D.; Brandenburg, Bruce L.; and Ellis, Claude E., 5,340,473, Cl. 210-177.000.
Elmer, William A. Removable vehicle mounted advertising signs and method. 5,339,551, Cl. 40-591.000.
Elrod, Scott A.; Welch, Brent B.; and Goldberg, David, to Xerox Corporation. Method for correction of position location indicator for a large area display system. 5,341,155, Cl. 345-179.000.
Elsamanoudi, Abmed A., to Glidden Company, The. Zero voc tinting concentrates for decorative paints. 5,340,394, Cl. 106-500.000.
Elsenheimer, John A.: *See*—
Sands, Jeffrey L.; Dagel, Robert J.; and Elsenheimer, John A., 5,339,716, Cl. 83-452.000.
El-Shoubary, Modasser: *See*—
Magauran, Edward D.; Reynolds, William; DiCarlo, Lawrence; Cody, Charles A.; Chiavoni, Araxi; and El-Shoubary, Modasser, 5,340,390, Cl. 106-244.000.
Elsol Products Corporation: *See*—
Shimasue, Yoshiyuki, 5,340,850, Cl. 523-115.000.
Embrex, Inc.: *See*—
Phelps, Patricia V.; Tyczkowski, Julius K.; O'Connell, Toni O.; and Gore, Ann B., 5,339,766, Cl. 119-6.800.
EMC Corporation: *See*—
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, 5,341,493, Cl. 395-425.000.
Emerson Electric Co.: *See*—
Riley, Wayne C., 5,340,036, Cl. 241-56.000.
Emert, Jacob; and Lundberg, Robert D., to Exxon Chemical Patents Inc. Dispersant adducts comprising alcohol adducts of dicarboxylic acid monoepoxy thiol reaction products. 5,340,487, Cl. 252-46.300.
Emitec Gesellschaft fuer Emissionstechnologie mbH: *See*—
Maus, Wolfgang; Swars, Helmut; and Bruck, Rolf, 5,339,628, Cl. 60-277.000.
Emitec Gesellschaft fuer Emissiontechnologie mbH: *See*—
Maus, Wolfgang; Swars, Helmut; Putz, Heinrich; and Jager, Walter, 5,340,020, Cl. 237-12.30C.
Emmett, James S.: *See*—
Horbal, John J.; and Emmett, James S., 5,340,965, Cl. 235-101.000.
Emmons, Daniel: *See*—
Patel, Mayur; Phillips, Michael T.; Cooper, Gary L.; and Emmons, Daniel, 5,340,210, Cl. 366-132.000
Emonds-Alt, Xavier; Gueule, Patrick; Proietto, Vincenzo; Goulaouic, Pierre, deceased; by Bousquet, Marie, heir; and by Goulaouic, Catherine M. L., heir, to Elf Sanofi. Polycyclic amine compounds and their enantiomers, their method of preparation and pharmaceutical compositions in which they are present. 5,340,822, Cl. 514-316.000.
Enbergs, Bernhard, to Sandvik AB. Mechanical chuck with clamp for pulling tool shank to tightly clamped position. 5,340,248, Cl. 409-233.000.
Endress & Hauser Limited: *See*—
Gimson, Christopher; J.; and Pasdari, Mehran, 5,339,687, Cl. 73-204.190.
Endroes, Arthur; Kruehler, Wolfgang; Einzinger, Richard; and Plaettner, Rolf, to Siemens Aktiengesellschaft; and Siemens Solar GmbH Method for manufacturing polycrystalline silicon thin-film solar cells. 5,340,410, Cl. 136-258.000.
Energy Conversion Devices, Inc.: *See*—
Ovshinsky, Stanford R.; and Young, Rosa, 5,340,792, Cl. 505-123.000
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Czubatyj, Wolodymyr; Strand, David A.; and Wicker, Guy C., 5,341,328, Cl. 365-163.000.
Energy and Environmental Research: *See*—
Lyon, Richard K., 5,339,754, Cl. 110-345.000.
Enerkom (Proprietary Limited: *See*—
Morgan, David L.; Cukan, Vladimir; and Frielngsdorf, Klaus, 5,340,511, Cl. 264-29.200.
Engel, Don J., to R.O.A.D. Industries, Inc. Air-flow management device. 5,340,190, Cl. 296-180.100.
Engel, Gerhard: *See*—
Bronkal, Bernhard; Gerwing, Wolfram; Grieshaber, Hermann; Birk, Manfred; and Engel, Gerhard, 5,339,680, Cl. 73-118.200.
Engel, John F.: *See*—
Morrison, Robert C.; Hall, Randy W.; Schwindeman, James A.; Kamienski, Conrad W.; and Engel, John F., 5,340,507, Cl. 260-665.00R.
Engelhard Corporation: *See*—
Yavuz, Bulent O.; Larkin, Matthew P.; Rice, Gary W.; and Voss, Kenneth E., 5,340,516, Cl. 264-63.000.
Engelman, Bill R.: *See*—
Hedrick, Brian W.; Micklich, Frank T.; Johnson, Brian H.; Meier, Daniel G.; Whitsura, Frank R.; and Engelman, Bill R., 5,340,470, Cl. 210-130.000.
Engira, Ram M., to Cardiac Evaluation Center, Inc. Memory loop ECG recorder with LIFO data transmission. 5,339,824, Cl. 128-712.000.
English, David G. N.; and Glabach, Raymond H., to Eastman Kodak Company. Liquid preparation method. 5,339,875, Cl. 141-9.000.
English, James P.: *See*—
Dunn, Richard L.; English, James P.; Cowsar, Donald R.; and Vanderbilt, David D., 5,340,849, Cl. 523-113.000
Enichem, S.p.A.: *See*—
Stefani, Dario; Sam, Felix O.; and Lunardon, Gianflavio, 5,340,845, Cl. 521-130.000.
Ennis, Thomas A.: *See*—
Fontecchio, Robert P.; Ennis, Thomas A.; Musiol, John A.; Medvedik, Douglas E.; and Paglia, Nicola F., 5,340,147, Cl. 280-728.00A.
Enomoto, Masahiro; and Fukushima, Minoru, to Molex Incorporated. Electric connector for printed circuit boards. 5,340,319, Cl. 439-75.000.
Enomoto, Takashi; Shimamune, Masayuki; and Danjo, Keishi, to Canon Kabushiki Kaisha. Etchant for production of electrode plate structure for liquid crystal display device. 5,340,491, Cl. 252-79.100.
Ensci, Inc.: *See*—
Clough, Thomas J., 5,339,900, Cl. 166-274.000

VOL 1165 ISS 4 AG 23 1994 UMI

Ensor, David J., to Fisher & Paykel Limited. Electronic controls for electric motors, laundry machines including such controls and motors and/or methods of operating said controls. 5,341,452, Cl. 388-811.000.

Environamics Corporation: *See—*
Rockwood, Robert E., 5,340,273, Cl. 415-113.000.

Environmental Energy Systems, Inc.: *See—*
Tolman, Radon, 5,339,621, Cl. 60-39.020.

Eoff, Larry S.; and Loughridge, Bill W., to Halliburton Company. Method for control of gas migration in well cementing. 5,339,903, Cl. 166-293.000.

Epitope, Inc.: *See—*
Thieme, Thomas R.; Goldstein, Andrew S.; Piacentini, Stephen C.; and Klimkow, Nanette M., 5,339,829, Cl. 128-760.000.

Eppeland, John R.: *See—*
Heath, James E.; and Eppeland, John R., 5,340,089, Cl. 266-87.000.

Epps, Alan L. Detachably interconnected work tables using panel sections of various geometric shapes. 5,339,747, Cl. 108-64.000.

Equey, Jean-Francois: *See—*
Hanulik, Jozef; and Equey, Jean-Francois, 5,340,505, Cl. 588-18.000.

Erdman, David D.: *See—*
Edwards, Bryan T.; Erdman, David D.; Monroe, Kevin T.; and Stakem, David L., 5,341,447, Cl. 385-81.000.

Erickson, Donald A.: *See—*
Larsen, Bradley J.; Randazzo, Todd A.; and Erickson, Donald A., 5,340,764, Cl. 437-52.000.

Erickson, Kenneth R. Brush recycling apparatus. 5,340,200, Cl. 300-2.000.

Erickson, Thomas D.: *See—*
Vertelney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., 5,341,293, Cl. 364-419.170.

Ericson, R. Ken: *See—*
Brash, Douglas J.; Berkholz, Daniel S.; Ericson, R. Ken; and Ciaramitaro, Anthony J., 5,339,945, Cl. 198-468.800.

Eriksson, Goran, to Scandsam AB. Foldable fire-escape ladder. 5,339,920, Cl. 182-96.000.

Erk, Henry F.; and Vandamme, Roland R., to MEMC Electronic Materials, Inc. Process and apparatus for etching semiconductor wafers. 5,340,437, Cl. 156-639.000.

Ernst, Hans-Hellmut, to Autoliv Development AB. Self-sensing clamping device for a safetybelt system. 5,340,052, Cl. 242-381.100.

Errico, James H.: *See—*
Connor, James M.; Bloomstein, Theodore M.; Henderson, James A., Jr.; Maher, John W.; and Errico, James H., 5,341,498, Cl. 395-600.000.

Erskine, Edward J., to Nelson A. Taylor Co., Inc. Fastener for a boat cover. 5,339,763, Cl. 114-361.000.

Erwin Sick GmbH Optik-Elektronik: *See—*
Johnson, Darrell E., 5,341,029, Cl. 307-112.000.

Esau, Dierk; and Hosgoer, Sinan, to Deere & Company. Vehicle hood with hinge. 5,339,494, Cl. 16-294.000.

Esbenson, Mark C.: *See—*
Sawyer, Kenneth C., III; and Esbenson, Mark C., 5,339,524, Cl. 30-113.200.

Eschbach, Reiner, to Xerox Corporation. Image processing system and method for employing adaptive scanning of halftones to provide better printable images. 5,341,224, Cl. 358-456.000.

Escofier Technologie S.A.: *See—*
Cretin, Michel; Lespour, Jean-Paul; and Marcon, Charles, 5,339,669, Cl. 72-108.000.

Eshita, Toru: *See—*
Arai, Ryuji; Eshita, Toru; Niimi, Kaoru; Ikuta, Tatsuyoshi; Furuichi, Hiroyuki; and Iwanaga, Tetsuya, 5,341,152, Cl. 345-133.000.

Esu, Esu S., to Hollinee Corporation. Glass fiber evaporative cooled media, method of forming same, use thereof in an evaporative cooling method, and an evaporative cooler apparatus utilizing glass fiber cooling media. 5,340,651, Cl. 428-375.000.

Ethicon, Inc.: *See—*
Huitema, Thomas W., 5,339,723, Cl. 91-388.000.
Stefanchik, David, 5,340,360, Cl. 606-142.000.

Ettes, Wilhelmus G. M., to U.S. Philips Corporation. Power supply circuit with standby arrangement. 5,341,085, Cl. 323-222.000.

Evans, Edwin R., to General Electric Company. Heat stable fluorosilicone rubber compositions. 5,340,866, Cl. 524-403.000.

Evans, Scott B., to SKW Corporation. Non-contact interconnect for focal plane arrays. 5,340,984, Cl. 250-332.000.

Evans, Steven; and Vanier, Noel R., to Eastman Kodak Company. Mixture of indoaniline dyes in dye-donor element for thermal dye transfer. 5,340,789, Cl. 503-227.000.

Evans, Steven: *See—*
Scaringe, Raymond P.; Evans, Steven; Simpson, William H.; and Vanhanehem, Richard C., 5,340,790, Cl. 503-227.000.

Everts, Robert G., to Ryobi Outdoor Products. Resistance spool for a line trimmer head. 5,339,526, Cl. 30-276.000.

Ewing, William R.; and Molino, Bruce F., to Rhone-Poulenc Rorer Pharmaceuticals Inc. Compounds having cholecystokinin and gastrin antagonistic properties. 5,340,801, Cl. 514-18.000.

Executone Information Systems, Inc.: *See—*
Ramot, Danny; Chen, George; and Henkin, Alexander, 5,341,412, Cl. 379-92.000.

Exxon Chemical Patents Inc.: *See—*
Eckman, Richard R.; Peacock, Andrew J.; and Henrichs, Paul M., 5,340,917, Cl. 528-481.000.
Emert, Jacob; and Lundberg, Robert D., 5,340,487, Cl. 252-46.300.

Exxon Producton Research Company: *See—*
Leaute, Roland P., 5,339,897, Cl. 166-245.000.

Exxon Research and Engineering Company: *See—*
Ajinkya, Milind B.; Koros, Robert M.; and Tarmy, Barry L., 5,340,549, Cl. 422-230.000.
Kerby, Michael C.; Riley, Kenneth L.; Long, Fred M.; Johnson, Jack W.; and Brody, John F., 5,340,657, Cl. 428-552.000.

EZ Paintr Corporation: *See—*
Polzin, Bruce C.; Shehow, Kenneth L.; and Burns, Fredrick B., 5,339,484, Cl. 15-230.110.

Ezoe, Toshihide; Nii, Kazumi; and Okamura, Hisashi, to Fuji Photo Film Co., Ltd. Method for processing a silver halide photographic material. 5,340,704, Cl. 430-434.000.

Fabinski, Walter; Hubschmann, Peter; Schlau, Peter; and Wolff, Christian, to Hartmann & Braun Aktiengesellschaft. Apparatus for the measurement of the total content of organic carbon and nitrogen in water. 5,340,542, Cl. 422-82.050.

Fabo, Tomas, to Molnlycke AB. Wound dressing. 5,340,363, Cl. 604-304.000.

Fabrica d'Armi P. Beretta S.p.A.: *See—*
Beretta, Pier G., 5,339,721, Cl. 89-142.000.

Fabricated Metals, Inc.: *See—*
Coleman, Clarance B., 5,339,989, Cl. 222-105.000.

Fabriques de Tabac Reunies SA: *See—*
Lauenstein, Michael; and Tallier, Bernard, 5,339,836, Cl. 131-84.100.

Faigle, Ernst M.; Sparks, Tracy S.; Thompson, Richard J.; and Blackburn, Brian K., to TRW Vehicle Safety Systems Inc. Air bag inflator with composite stored gas container. 5,340,148, Cl. 280-730.00A.

Fain, Charles C.; Lowe, Gregory M.; Frianeza-Kullberg, Teresita N. C.; and McDonald, Daniel P., to FMC Corporation. Polycrystalline y-lithium aluminate fibers and process of manufacture. 5,340,515, Cl. 264-63.000.

Fairchild Semiconductor Corporation: *See—*
Vora, Madhukar B., 5,340,762, Cl. 437-52.000.

Fallin, David: *See—*
Plonsky, Christopher B.; Balch, Brent F.; and Fallin, David, 5,341,125, Cl. 340-572.000.

Famili, Amir; Vratsanos, Lori A.; and Marten, Finn L., to Air Products and Chemicals, Inc. Modified polyvinyl alcohol and a solid state process for modification of polyvinyl alcohol by free radical grafting. 5,340,874, Cl. 525-59.000.

Fanuc Ltd.: *See—*
Matsuura, Hitoshi; Nakajima, Osamu; and Okamoto, Tetsuji, 5,341,079, Cl. 318-632.000.
Sawada, Kiyoshi; and Hirai, Toshio, 5,340,959, Cl. 219-69.150.
Torii, Nobutoshi; Nihei, Ryo; and Kato, Tetsukai, 5,341,078, Cl. 350-568.220.

Farber, Scott A.: *See—*
Zaicow, Todd A.; Farber, Scott A.; and Bartel, Daniel F., 5,340,538, Cl. 422-33.000.

Fargo Electronics, Inc.: *See—*
Gunderson, Ernest M., 5,340,098, Cl. 271-21.000.

Farjh, Jan F.; and Ugland, Jon K., to Telefonaktiebolaget L M Ericsson. Method of detecting the channel identity of a number of channels in a mobile radio system. 5,341,401, Cl. 375-94.000.

Farkas, Sandor; Foldeak, Sandor; Karpati, Egon; Hegyes, Peter; Kreidl, Janos; Szporny, Laszlo; Czibula, Laszlo; and Petofi-Vass, Szilvia, to Richter Gedeon Vegyeszeti Gyer RT. Organosilane derivatives, pharmaceutical compositions containing them and process for preparing same. 5,340,823, Cl. 514-317.000.

Farmaka S.r.l.: *See—*
Casero, Riccardo, deceased, 5,340,579, Cl. 424-114.000.

Farnier & Penin: *See—*
Jeuffray, Jean-Marie; and Memeteau, Michel, 5,340,007, Cl. 224-321.000.

Farr, Andrew G.: *See—*
Clark, John I.; Farr, Andrew G.; and Smith, Stacia A., 5,340,829, Cl. 514-389.000.

Farris, Richard C., to Western Atlas International, Inc. Swivel mount for gimbal geophone. 5,341,348, Cl. 367-154.000.

Fasano, Benjamin V.; Novotny, Vlad J.; and Schein, Lawrence B., to International Business Machines Corporation. Electrostatic patterning of multi-layer module lamina. 5,340,617, Cl. 427-466.000.

Faulkner, Marie-Francoise B.: *See—*
Faulkner, William G.; and Faulkner, Marie-Francoise B., 5,339,946, Cl. 198-494.000.

Faulkner, Marie-Francoise Bigot: *See—*
Faulkner, William G.; and Faulkner, Marie-Francoise B., 5,339,946, Cl. 198-494.000.

Faulkner, William G.; and Faulkner, Marie-Francoise B., to Faulkner, William G.; and Faulkner, Marie-Francoise Bigot. Conveyor belt having link assemblies with leading and trailing shaft projections. 5,339,946, Cl. 198-494.000.

Faupel, Dana C. Ladder leveling device. 5,339,921, Cl. 182-111.000.

Fazzolare, Richard D.: *See—*
Hay, Richard C., Jr.; Pappas, Chris; Bergstrom, Harry J.; and Fazzolare, Richard D., 5,340,598, Cl. 426-496.000.

Fearon, Lee C. Method for removing contaminants from soil. 5,340,406, Cl. 134-10.000.

Fehlau, Rudolf, to BW/IP International, Inc. Multi-stage centrifugal pump incorporating a sealed thrust bearing. 5,340,272, Cl. 415-110.000.

Feibelman, Jeffrey A.: *See—*
Porcaro, Felix A.; Feibelman, Jeffrey A.; and Triangolo, Daniel A., 5,340,074, Cl. 248-309.100.

Fel-Pro Incorporated: *See—*
Czernik, Daniel E., 5,340,525, Cl. 264-266.000.

Feldman, Lucy: *See—*
Miller, Robert E.; Schleicher, Lowell; Brown, Robert W.; and Feldman, Lucy, 5,340,680, Cl. 430-138.000.

Feldstein, Robert S., to Derafe, Ltd. Cored battery plates for lead/acid batteries. 5,339,873, Cl. 141-1.001.

Fell, Holger. Quick release hub. 5,339,660, Cl. 70-233.000.

Feller, Daniel A.: *See—*
Cadien, Kenneth C.; and Feller, Daniel A., 5,340,370, Cl. 51-308.000.

Fenter, Lynn R.: *See—*
Cox, Gary B.; Reifsteck, Dennis R.; Hills, Gregg A.; and Fenter, Lynn R., 5,339,948, Cl. 198-635.000.

Ferranti Creditophone Limited: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Ferreiro, Luis M., deceased: *See—*
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.

Ferrofluidics Corporation: *See—*
Toboni, James C.; and Black, Thomas J., Jr., 5,340,122, Cl. 277-59.000.

Ferry, Julian J., to Whitaker Corporation, The. Capacitive unbalancing for reduction of differential mode cross-talk. 5,341,419, Cl. 379-417.000.

Ferullo, Teresa: *See—*
Wong, Stephanie; Ferullo, Teresa; and Schultz, Thomas M., 5,340,570, Cl. 424-71.000.

Fessmann, Klaus-Dieter, to GFRMOS-Fessmann GmbH & Co KG. Product processing system. 5,339,727, Cl. 99-482.000.

Fettweis, Gerhard P.; and Dawid, Herbert R., to Teknekron Communications Systems, Inc. Bit level pipeline divide circuit and method therefor. 5,341,322, Cl. 364-764.000.

Fico I.T.M. S.A.: *See—*
Aymerich, Jose ; and Prat, Jesus, 5,340,186, Cl. 296-97.100.

Fields, James H.; Williams, Roberta B.; and McKinney, C. L. Phone jack lock. 5,340,324, Cl. 439-133.000.

Fields, Peter R.; and Wilson, Robin J., to Zeneca Limited. Process for the production of xylose. 5,340,403, Cl. 127-37.000.

Filipowski, George H. Quick assembly hanging file folder frame. 5,339,969, Cl. 211-189.000.

Filterwerk Mann & Hummel GmbH: *See—*
Heck, Alfred, deceased, 5,340,472, Cl. 210-173.000.

Fincher, Jeffrey L.; Hallamasek, Kurt; and Kambies, Keith A., to Ampex Systems Corporation. Data recording system having longitudinal tracks with recordable segments. 5,341,251, Cl. 360-49.000.

Findlay, Robert D.: *See—*
Tomantschger, Klaus; Book, Ronald J.; and Findlay, Robert D., 5,340,666, Cl. 429-59.000.

Findley, Alan T. Bow stabilizer. 5,339,793, Cl. 124-89.000.

Fink, David M.: *See—*
Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, 5,340,936, Cl. 546-124.000.

Fink, Steven R.; and Herman, Floyd J., to Sterman Enterprises, Inc. Multi-positional inflatable auto decoy. 5,340,350, Cl. 446-226.000.

First Choice Manufacturing Ltd.: *See—*
Cormier, Mario R., 5,339,566, Cl. 47-87.000.

Fischer, Christian M. M.: *See—*
Dorsam, Willi R. L.; and Fischer, Christian M. M., 5,339,736, Cl. 101-352.000.

Fischer, Dennis: *See—*
Trost, David; Baumeister, Philip; and Fischer, Dennis, 5,341,238, Cl. 359-359.000.

Fischer, Hans: *See—*
Sinden, A. David; Fischer, Hans; and Twining, Roy V., 5,339,885, Cl. 164-450.400.

Fischer Italia S.a.s. di Paolo Morassutti & C.: *See—*
Morassutti, Paolo, 5,340,257, Cl. 411-512.000.

Fisher, Larry W.: *See—*
Termine, John D.; Young, Marian F.; Fisher, Larry W.; and Robey, Pamela G., 5,340,934, Cl. 536-23.500.

Fisher & Paykel Limited: *See—*
Ensor, David J., 5,341,452, Cl. 388-811.000.

Fisli, Tibor: *See—*
Appel, James J.; Paoli, Thomas L.; and Fisli, Tibor, 5,341,158, Cl. 346-108.000.

Fitch, Jon T.: *See—*
Witek, Keith E.; Fitch, Jon T.; and Mazure, Carlos A., 5,340,754, Cl. 437-32.000.

Fitzgibbon, Maurice E.: *See—*
Friedrich, Marju L.; Branigan, John G.; and Fitzgibbon, Maurice E., 5,340,946, Cl. 174-256.000.

Fitzsimmons, John A.: *See—*
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,340,775, Cl. 437-246.000.

Flagship Group II, Inc., The: *See—*
Wilcox, Reed N.; George, Richard L.; and Lichfield, William H., 5,340,228, Cl. 401-262.000.

Flaherty, Ed, to Texas Instruments Incorporated. Method of forming and selectively coupling a plurality of modules on an integrated circuit chip. 5,340,767, Cl. 437-54.000.

Flaskey, David L. Round bale handling trailer apparatus. 5,340,259, Cl. 414-24.500.

Fleishchman, Thomas S.: *See—*
Vossberg, Stephen M.; Clothiaux, John D.; Chaplin, Gregory D.; Harrigle, Dale R., Jr.; Kearney, Allen C.; Williams, James A., Jr.; and Fleishchman, Thomas S., 5,339,879, Cl. 152-540.000.

Flemming, Gunter; Streubel, Hans; and Rohde, Wolfgang, to SMS Schloemann-Siemag Aktiengesellschaft. Process for production of steel strip. 5,339,887, Cl. 164-476.000.

Fletcher, Linda M.; Guth, Leslie A.; and Monroe, Douglas W., to AT&T Bell Laboratories. Soldering method and apparatus. 5,340,016, Cl. 228-219.000.

Flitsch, Richard: *See—*
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,340,775, Cl. 437-246.000.

Florsek, David T., to Martin Marietta Corporation. Digital adaptive video synchronizer. 5,341,217, Cl. 348-529.000.

FLS Airlog A/S: *See—*
Hammerich, Mads; Henningsen, Jes O.; and Olafsson, ri, 5,339,674, Cl. 73-24.020.

Flugrad, Donald R., Jr.: *See—*
Fox, Robert E.; Smith, William L., Jr.; and Flugrad, Donald R., Jr., 5,339,906, Cl. 172-4.000.

FMC Corporation: *See—*
Anderson, David N., 5,339,729, Cl. 99-509.000.
Baird, Randy K.; and Hilton, Sydney, 5,339,943, Cl. 198-365.000.
Fain, Charles C.; Lowe, Gregory M.; Frianeza-Kullberg, Teresita N. C.; and McDonald, Daniel P., 5,340,515, Cl. 264-63.000.
Morrison, Robert C.; Hall, Randy W.; Schwindeman, James A.; Kamienski, Conrad W.; and Engel, John F., 5,340,507, Cl. 260-665.00R
Scott, Phillip R., 5,339,612, Cl. 56-330.000.

Foamseal, Inc.: *See—*
Snyder, Robert D., 5,339,991, Cl. 222-136.000.

Fogel, Allan. Display device. 5,339,547, Cl. 40-124.400.

Fohl, Artur, to TRW Repa GmbH. Safety belt restraining system with belt tensioner. 5,340,152, Cl. 280-805.000.

Foldeak, Sandor: *See—*
Farkas, Sandor; Foldeak, Sandor; Karpati, Egon; Hegyes, Peter; Kreidl, Janos; Szporny, Laszlo; Czibula, Laszlo; and Petofi-Vass, Szilvia, 5,340,823, Cl. 514-317.000.

Folkins, Jeffrey J.; Behe, Thomas J.; and Schram, Joseph G., to Xerox Corporation. Proper charging of donor roll in hybrid development. 5,341,197, Cl. 355-264.000.

Fontecchio, Robert P.; Ennis, Thomas A.; Musiol, John A.; Medvedik, Douglas E.; and Paglia, Nicola F., to AlliedSignal Inc. Air bag inflator assembly. 5,340,147, Cl. 280-728.00A.

Forbes, Richard L., II: *See—*
Thorp, Bruce E.; and Forbes, Richard L., II, 5,341,199, Cl. 355-298.000.

Forcelledo, Jack L.; and Kimmell, Steven D., to Forcelledo, Jack L. Comb with fluid applicator. 5,339,839, Cl. 132-114.000.

Ford, James M.; and Cawlfield, David W., to Olin Corporation. Electrolytic cell. 5,340,457, Cl. 204-252.000.

Ford Motor Company: *See—*
Steele, Duane F., 5,340,292, Cl. 418-55.100.
Wiksch, Mark, 5,339,785, Cl. 123-457.000.

Ford-New Holland, Inc.: *See—*
Hurlburt, Joseph C., 5,340,138, Cl. 280-97.000.

Ford, Stuart N. Combination chipper and shredder apparatus and lawn vacuum machine. 5,340,035, Cl. 241-55.000.

Forestry Canada: *See—*
Dorworth, Charles E., 5,340,578, Cl. 504-117.000.

Forman, Robert K.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,341,130, Cl. 340-825.060.

Foroudastan, Saeed D.; and Holman, Mitchell C., to Avco Corporation. Method of developing complex tool shapes. 5,341,303, Cl. 364-468.000.

Fortune, G. Clark, to Eaton Corporation. Method of cooling an electrical device using a heat sink attached to a circuit board containing heat conductive layers and channels. 5,339,519, Cl. 29-840.000.

Foster Wheeler Energy Corporation: *See—*
Eisinger, Frantisek L., 5,340,275, Cl. 415-119.000.
Tang, John T., 5,339,774, Cl. 122-4.00D.

Fountain Fresh International: *See—*
Cragun, E. Brent, 5,339,874, Cl. 141-9.000.

Fournier, Allan P.: *See—*
Middledorp, Frans M.; and Fournier, Allan P., 5,341,496, Cl. 395-575.000.

Fournier, Jacques: *See—*
Janssen, Sylvain; Fournier, Jacques; and Campain, Jean-Pierre, 5,339,685, Cl. 73-199.000.

Fox, Daniel W.: *See—*
Clagett, Donald C.; Fox, Daniel W.; Maresca, Louis M.; and Shafer, Sheldon J., 5,340,885, Cl. 525-425.000.

Fox, Douglas O., II. Shade saver. 5,340,071, Cl. 248-231.800.

VOL 1165 ISS 4 AG 23 1994 UMI

Fox, Robert E.; Smith, William L., Jr.; and Flugrad, Donald R., Jr., to Deere & Company. Positon feedback mechanism for an implement. 5,339,906, Cl. 172-4.000.

Foxboro Company, The: *See—*
Annino, Raymond; Lewis, Edward L.; Lueck, Dale E.; Phillips, Matthew L.; and Villalobos, Richard, 5,340,543, Cl. 422-89.000.
Middledorp, Frans M.; and Fournier, Allan P., 5,341,496, Cl. 395-575.000.
Shinskey, Francis G., 5,341,288, Cl. 364-159.000.

Fraisi, Edward A.; Tepera, George W.; and McClure, Malcolm W. Avoiding sulfonic phenols in production of phenols. 5,340,937, Cl. 569-716.000.

France Telecom: *See—*
Chantre, Alain; Bois, Daniel; and Nouailhat, Alain, 5,340,757, Cl. 437-40.000.

France Telecom Etablissement Autonome de Droit Public: *See—*
Guichard, Jacques; and Buchner, Georges, 5,341,167, Cl. 348-14.000.

Frank, Armin; and Niederlein, Horst, to NSM Aktiengesellschaft. Coin operated jukebox device using data communication network. 5,341,350, Cl. 369-30.000.

Frank, Steven J.; and Binder, Paul A., to Kendall Square Research Corporation. Dynamic hierarchial associative memory. 5,341,483, Cl. 395-400.000.

Frankholz, Christian: *See—*
Heimann, Bruno; and Frankholz, Christian, 5,340,064, Cl. 248-75.000.

Franklin Industries, Inc.: *See—*
Westbrook, C. Eric; and Severinghaus, Nelson, 5,340,392, Cl. 106-471.000.

Franklin, Tod G.: *See—*
Martin, Patrick G.; and Franklin, Tod G., 5,340,967, Cl. 235-379.000.

Franses, Stephen R.; and Hilderbrand, P. Lloyd, to University of Oklahoma, The Board of Regents of the. Fluorokinetic analysis of diffusion from a vessel. 5,340,991, Cl. 250-459.100.

Fratangelo, Louis D.: *See—*
Badesha, Santokh S.; Mammino, Joseph; Abramsohn, Dennis A.; Sypula, Donald S.; Henry, Arnold W.; Heeks, George J.; Pan, David H.; and Fratangelo, Louis D., 5,340,679, Cl. 430-126.000.

Frazier, Lawrence M.; Sheffler, James B.; and Carlson, Ronald F., to Hughes Missile Systems Company. Three dimensional imaging radar. 5,341,141, Cl. 342-59.000.

Frederiksen, Bjarne: *See—*
Hayward, Gregory R.; and Frederiksen, Bjarne, 5,341,269, Cl. 361-119.000.

Freeman, Christopher; Day, Ivor J.; and Wright, William B., to Rolls-Royce plc. Flow control method and means. 5,340,271, Cl. 415-1.000.

Freeman, Hobart R., to Chrysler Corporation. Latchable steering column tilt mechanism. 5,339,706, Cl. 74-493.000.

Freeman, Michael J. Real-time interactive conversational apparatus. 5,340,317, Cl. 434-321.000.

Freeport-McMoran Inc.: *See—*
Womack, James T., 5,340,383, Cl. 295-243.000.

Freermann, Johannes; and Malcherek, Dieter, to Carl Schmale GmbH & Co. KG. Fabric conveyor system. 5,340,008, Cl. 226-171.000.

Freewing Aerial Robotics Corporation: *See—*
Schmittle, Hugh, 5,340,057, Cl. 244-48.000.

Frei, John K.; and Knuth, Howard D., to Motorola, Inc. Reinforced wrap around ground and method. 5,341,115, Cl. 333-246.000.

Freightliner Corporation: *See—*
Teichert, Ulrich J., 5,339,783, Cl. 123-400.000.

Freistadter, Hans: *See—*
Spitzer, Martin; and Freistadter, Hans, 5,340,900, Cl. 528-53.000.

Freitag, Dieter: *See—*
Kuhling, Steffen; Kauth, Hermann; Alewelt, Wolfgang; and Freitag, Dieter, 5,340,905, Cl. 528-199.000.

Frey, Jurgen: *See—*
Reckzugel, Christoph; Murwald, Mario; Doll, Gerhard; Frey, Jurgen; and Ohlendorf, Ralf, 5,339,778, Cl. 123-193.500.

Frianeza-Kullberg, Teresita N. C.: *See—*
Fain, Charles C.; Lowe, Gregory M.; Frianeza-Kullberg, Teresita N. C.; and McDonald, Daniel P., 5,340,515, Cl. 264-63.000.

Friedman, Semyon D.; McKinney, Robert W.; Ou, Chia-Chih; Spotnitz, Robert M.; and Wu, Shaohai, to W.R. Grace & Co.-Conn. Vermiculite composition with improved thermal expansion properties. 5,340,558, Cl. 423-328.100.

Friedman, Steven J.; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., to Microsoft Corporation. Luminance emphasized color image rendering. 5,341,464, Cl. 395-131.000.

Friedrich Grohe Aktiengesellschaft: *See—*
Heimann, Bruno; and Frankholz, Christian, 5,340,064, Cl. 248-75.000.

Friedrich, Marju L.; Branigan, John G.; and Fitzgibbon, Maurice E., to Advanced Interconnection Technology, Inc. Heat activatable adhesive for wire scribed circuits. 5,340,946, Cl. 174-256.000.

Frielingsdorf, Klaus: *See—*
Morgan, David L.; Cukan, Vladimir; and Frielingsdorf, Klaus, 5,340,511, Cl. 264-29.200.

Frison, Jacques: *See—*
Beaussant, Raymond; Frison, Jacques; and Schegerin, Robert, 5,339,806, Cl. 128-201.210.

Fritz Hansen A/S: *See—*
Vogtherr, Burkhard, 5,340,197, Cl. 297-452.120.

Friz, Martin; and Albrecht, Detlef, to Merck Patent Gesellschaft Mit Beschrankter Haftung. Vapor-deposition material for the production of high-refraction optical coatings. 5,340,607, Cl. 427-162.000.

Froehlich, Franz-Fr.: *See—*
Latte, Frank-Helge; Froehlich, Franz-Fr.; Boscher, Georg; and Behrendt, Martin, 5,341,451, Cl. 385-135.000.

Froelich, David S. Golf driving range platform. 5,340,111, Cl. 273-195.00B.

Froelich, Ronald W.: *See—*
Craven, B. Thomas; Wiedefeld, William G.; Poor, Kyle W.; Johnson, Bruce S.; Sogge, John W.; Peterson, Michael H.; Adamson, William G.; and Froelich, Ronald W., 5,339,741, Cl. 102-361.000.

Fruda, Thomas R.: *See—*
Adams, Lawrence J.; Fruda, Thomas R.; and Hughett, Paul D., 5,340,488, Cl. 252-47.500.

Fuel Systems Textron, Inc.: *See—*
Huddas, Richard V., 5,339,845, Cl. 134-169.00A.

Fuentes, Esteban P.: *See—*
Fussi, Fernando; Diaz, Victor; Domanico, Ricardo H.; and Fuentes, Esteban P., 5,340,932, Cl. 536-21.000.

Fugro-McClelland Leasing, Inc.: *See—*
Ingram, Wayne B.; and Porter, Byron W., 5,339,679, Cl. 73-84.000.

Fuji Electric Co. Ltd.: *See—*
Furuhata, Shoichi, 5,341,004, Cl. 257-139.000.
Nagayasu, Yoshihiko, 5,340,756, Cl. 437-34.000.
Obinata, Shigeyuki, 5,341,003, Cl. 257-135.000.

Fuji Photo Film Co., Ltd.: *See—*
Ezoe, Toshihide; Nii, Kazumi; and Okamura, Hisashi, 5,340,704, Cl. 430-434.000.
Fukuoka, Takayoshi; Arakawa, Satoshi; and Mori, Ikuo, 5,340,996, Cl. 250-582.000.
Hioki, Takanori; and Nishimura, Ryoji, 5,340,694, Cl. 430-264.000.
Kamada, Koh, 5,340,636, Cl. 428-141.000.
Kawabe, Yasumasa; Aoai, Toshiaki; and Kokubo, Tadayoshi, 5,340,688, Cl. 430-192.000.
Kawasaki, Hidetoshi; Mizuno, Kazunori; and Sugiyama, Nobuo, 5,341,188, Cl. 354-277.000.
Kondo, Syunichi; Nagashima, Akira; and Kawabe, Yasumasa, 5,340,683, Cl. 430-165.000.
Kubota, Tadahiko; Yasunami, Shoichiro; and Maekawa, Yukio, 5,340,672, Cl. 429-249.000.
Matsubaguchi, Satoshi; Yamada, Takashi; and Yamamoto, Ryoichi, 5,340,647, Cl. 428-336.000.
Naruse, Hideaki; and Suzuki, Makoto, 5,340,706, Cl. 430-505.000.
Okazaki, Yoji; and Hyuga, Hiroaki, 5,341,393, Cl. 372-69.000.
Sakaguchi, Shinji; Tan, Shiro; and Kokubo, Tadayoshi, 5,340,686, Cl. 430-191.000.
Sano, Shojiro; and Iwakura, Ken, 5,340,606, Cl. 427-151.000.
Sekiya, Toshiyuki, 5,340,685, Cl. 430-175.000.
Shirokura, Yukio; Suzuki, Fumiyuki; and Ogura, Tohru, 5,340,906, Cl. 528-274.000.
Takahashi, Koichi; and Ichikawa, Haruo, 5,340,426, Cl. 156-264.000.
Tamagawa, Kiyomi; and Yoda, Akira, 5,341,245, Cl. 359-739.000.
Yamaguchi, Tetsuo, 5,340,695, Cl. 430-264.000.
Yoshimoto, Hiroshi; Uenishi, Kazuya; and Kokubo, Tadayoshi, 5,340,697, Cl. 430-270.000.

Fuji Photo Film., Ltd.: *See—*
Amano, Masayuki; and Kusuoka, Makoto, 5,340,616, Cl. 427-458.000

Fuji Xerox Co., Ltd.: *See—*
Kawata, Tetsuro, 5,341,309, Cl. 364-489.000.
Kobayashi, Hideo; Ueno, Osamu; and Ueyanagi, Kiichi, 5,341,358, Cl. 369-100.000.
Satoh, Yoshihide, 5,341,195, Cl. 355-237.000.
Shigeeda, Nobuyuki; Yamamoto, Susumu; Katsurabayashi, Masahiko; and Ikegaya, Tadahiko, 5,341,223, Cl. 358-440.000.
Suzuki, Chiaki; Eguchi, Atuhiko; Ishihara, Yuka; Aoki, Takayoshi; Takagi, Seiichi; Yano, Toshiyuki; and Mochizuki, Masao, 5,340,678, Cl. 430-170.000.

Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, to Kansai Electric Power Co., Ltd., The; and Mitsubishi Jukogyo Kabushiki Kaisha. Recovery of carbon dioxide from combustion exhaust gas. 5,339,633, Cl. 60-648.000.

Fujii, Tatsuya: *See—*
Shiraishi, Naoto; and Fujii, Tatsuya, 5,341,468, Cl. 395-132.000.

Fujii, Toyokazu; and Naito, Yasushi, to Matsushita Electric Industrial Co., Ltd. Semiconductor device and a method of fabricating the same. 5,341,014, Cl. 257-377.000.

Fujii, Yoshikazu; Inui, Tetsuya; Deguchi, Toshihisa; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Optical memory device having guide tracks shaped for increasing the quality of information signals. 5,341,362, Cl. 369-275.400.

Fujikiko Kabushiki Kaisha: *See—*
Ikegaya, Isao; and Yamamura, Mituji, 5,340,196, Cl. 297-367.000.

Fujikin Incorporated: *See—*
Shinohara, Tsutomu; Yamaji, Michio; Yoshikawa, Kazuhiro; and Yamamoto, Kenji, 5,340,170, Cl. 285-379.000.

Fujimori, Masahiro: *See—*
Fukushige, Tomoaki; Toda, Hiroko; Akano, Hirofumi; Ito, Emiko; Fukuta, Tomohiko; Fujimori, Masahiro; and Kawamura, Yoshiya, 5,340,461, Cl. 204-299.00R.

Fujimoto, Hiroyuki: *See—*
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.

Fujimoto, Jun, to Seta Co., Ltd.; and NASA Corporation Co., Ltd. Home medical system and medical apparatus for use therewith. 5,339,821, Cl. 128-700.000.

Fujimoto, Shinya, to Mitsubishi Denki Kabushiki Kaisha. Trouble diagnosis device and method for exhaust gas return control device. 5,341,300, Cl. 364-431.060.

Fujimura, Masahiro; and Yoshida, Mitsuru, to Anritsu Corporation. Metering system capable of easily effecting high-accuracy metering for various works including sticky materials. 5,340,949, Cl. 177-25.180.

Fujimura, Yoshuhiro: *See—*
Shimizu, Atsushi; Isomura, Satoru; Yamada, Takeo; Kobayashi, Tohru; Fujimura, Yoshuhiro; and Ito, Yuko, 5,341,049, Cl. 307-482.100.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Nakano, Minoru; Uemura, Toshinobu; Morizane, Shinichi; Okuda, Kiyoshi; and Nakata, Keiko, 5,340,591, Cl. 424-499.000.
Ueda, Ikuo; Niwa, Mineo; Saito, Yoshimasa; Ishii, Yoshinori; and Hitaguchi, Todashi, 5,340,725, Cl. 435-69.400.

Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, to Honda Giken Kogyo Kabushiki Kaisha. Slide member. 5,340,660, Cl. 428-687.000.

Fujita, Hideyuki; Okafuji, Masaharu; and Kawabe, Mitsunori, to Nippon Sheet Glass Co., Ltd. Blank layout method for plate-glass cutters. 5,341,306, Cl. 364-473.000.

Fujita, Tomoyuki, to Brother Kogyo Kabushiki Kaisha. Remaining bobbin-thread amount measuring apparatus for sewing machine. 5,339,758, Cl. 112-278.000.

Fujita, Toshihiro: *See—*
Tohmon, Genji; Sato, Hisanao; Fujita, Toshihiro; and Ohya, Jun, 5,341,237, Cl. 359-341.000.

Fujitsu Limited: *See—*
Fukudome, Fujito, 5,341,086, Cl. 323-273.000.
Gotoh, Seiji; Orita, Kenji; and Takayama, Tomio, 5,341,084, Cl. 320-44.000.
Hirose, Tatsuya, 5,341,006, Cl. 257-190.000.
Ishibashi, Ryoichi; and Sekine, Katsumi, 5,341,373, Cl. 370-85.900.
Otani, Seigen, 5,340,793, Cl. 505-477.000.
Sakata, Tatsumi, 5,341,492, Cl. 395-425.000.
Shikatani, Junichi; and Kawahara, Shigeki, 5,341,383, Cl. 371-22.100.
Shimoda, Kaneyasu; and Furukawa, Hideto, 5,341,386, Cl. 371-43.000.
Soumiya, Toshio; Abe, Shunji; Katoh, Masafumi; and Watanabe, Naotoshi, 5,341,366, Cl. 370-17.000.
Yamamura, Takeshi, 5,341,096, Cl. 324-765.000.

Fujiwara, Akihiro: *See—*
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,341,169, Cl. 348-352.000.

Fujiwara, Koichi; and Mizutani, Hiromichi, deceased (by Mizutani, Hiroko, legal representative), to Nippon Telegraph and Telephone Corporation. Method for collecting and preparing specimens for immune reactions. 5,340,749, Cl. 436-526.000.

Fujiwara, Takuji: *See—*
Ishii, Kozo; Takemoto, Kazuo; Fujiwara, Takuji; Mizobe, Tatsutoshi; Baba, Fumiaki; Nagayama, Shigeru; Watanabe, Osamu; and Takeuchi, Koichiro, 5,339,935, Cl. 192-3.300.

Fukamachi, Kazuyuki: *See—*
Watanabe, Shinichi; Shibayama, Takao; Uzuyama, Kimitake; Fukamachi, Kazuyuki; Maekawa, Keiichiro; and Maruo, Masaru, 5,339,682, Cl. 73-123.000.

Fukami, Shinji: *See—*
Itoh, Tsutomu; Fukami, Shinji; and Kitoh, Masayuki, 5,340,023, Cl. 239-13.000.

Fukaya, Hiroyasu: *See—*
Shirai, Kazunari; Ozaki, Yoshitaka; and Fukaya, Hiroyasu, 5,341,301, Cl. 364-449.000.

Fukaya, Takashi: *See—*
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.

Fukuchi, Masakazu: *See—*
Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, 5,341,194, Cl. 355-212.000.

Fukudome, Fujito, to Fujitsu Limited. Constant-current circuit for light-emitting element. 5,341,086, Cl. 323-273.000.

Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for a marine engine. 5,339,784, Cl. 123-417.000.

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Fukuoka, Takayoshi; Arakawa, Satoshi; and Mori, Ikuo, to Fuji Photo Film Co., Ltd. Radiation image read-out apparatus, radiation image recording method and apparatus, stimulable phosphor sheet, and cassette. 5,340,996, Cl. 250-582.000.

Fukushige, Tomoaki; Toda, Hiroko; Akano, Hirofumi; Ito, Emiko; Fukuta, Tomohiko; Fujimori, Masahiro; and Kawamura, Yoshiya, to Nakano Vinegar Co., Ltd. Electrophoretic medium for electrophoretic separation, gel holder for holding the same medium, slab type electrophoretic apparatus using the same medium and gel holder, and electrophoretic gel cutter. 5,340,461, Cl. 204-299.00R.

Fukushima, Minoru: *See—*
Enomoto, Masahiro; and Fukushima, Minoru, 5,340,319, Cl. 439-75.000.

Fukushima, Toyoaki: *See—*
Nakagawa, Kazuya; Miyoshi, Satoru; and Fukushima, Toyoaki, 5,339,673, Cl. 73-23.360.

Fukuta, Tomohiko: *See—*
Fukushige, Tomoaki; Toda, Hiroko; Akano, Hirofumi; Ito, Emiko; Fukuta, Tomohiko; Fujimori, Masahiro; and Kawamura, Yoshiya, 5,340,461, Cl. 204-299.00R.

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Fukuzo, Yukio, to NEC Corporation. Dynamic random access memory device having addressing section and/or data transferring path arranged in pipeline architecture. 5,341,341, Cl. 365-233.000.

Fuller, Mark; and Robinson, Alan. Numerically controlled water jet display pool. 5,340,024, Cl. 239-17.000.

Fuller, William T., to Tandem Computers, Incorporated. Redundant array parity caching system. 5,341,381, Cl. 371-10.100.

Fulmer, Timothy K.: *See—*
McCanse, James E.; McCanse, Richard L.; and Fulmer, Timothy K., 5,339,926, Cl. 187-8.470.

Furon Company: *See—*
Lewis, Terry M.; Kosty, John W.; Goodman, James R.; Krzemein, Mark A.; Lenhert, Jon M.; and Arbogast, Jeffrey H., 5,340,121, Cl. 277-43.000.

Furuhata, Shoichi, to Fuji Electric Co. Ltd. Semiconductor switching device with reduced switching loss. 5,341,004, Cl. 257-139.000.

Furuichi, Hiroyuki: *See—*
Arai, Ryuji; Eshita, Toru; Niimi, Kaoru; Ikuta, Tatsuyoshi; Furuichi, Hiroyuki; and Iwanaga, Tetsuya, 5,341,152, Cl. 345-133.000.

Furukawa, Hideto: *See—*
Shimoda, Kaneyasu; and Furukawa, Hideto, 5,341,386, Cl. 371-43.000.

Furuta, Yasunori: *See—*
Kawamukai, Kenji; and Furuta, Yasunori, 5,340,343, Cl. 440-88.000.

Furuyama, Tohru: *See—*
Takase, Satoru; Kushiyama, Natsuki; and Furuyama, Tohru, 5,341,326, Cl. 365-149.000.

Fuse, Eiichi: *See—*
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.

Fusegawa, Izumi: *See—*
Takano, Kiyotaka; Fusegawa, Izumi; and Yamagishi, Hirotoshi, 5,340,434, Cl. 117-21.000.

Fussi, Fernando; Diaz, Victor; Domanico, Ricardo H.; and Fuentes, Esteban P., to Ajorca S.A. Substances with heparin-like structure and their method of production. 5,340,932, Cl. 536-21.000.

Fussler, Philippe, to Steelcase Strafor (S.A.). System of modulable walls. 5,339,576, Cl. 52-71.000.

Futatsuishi, Shunichi: *See—*
Uemura, Sashirou; Nishii, Yoshiyuki; Kanda, Isamu; Hara, Zenichiro; Futatsuishi, Shunichi; and Shibayama, Kozaburo, 5,341,065, Cl. 313-495.000.

Futureflite Corporation: *See—*
Kanigowski, Andrew S., 5,340,059, Cl. 244-121.000.

G.D. S.p.A.: *See—*
Neri, Armando; and Turra, Mario, 5,340,263, Cl. 414-412.000.
Turra, Mario; and Neri, Armando, 5,340,260, Cl. 414-27.000.

Gabbard, Jerry D.: *See—*
Wolfe, Donald M., Jr.; Allard, John C.; Nguyen, Cuong H.; Axsom, Larry E.; and Gabbard, Jerry D., 5,340,970, Cl. 235-383.000.

Gaillard, Patrice; Heim, Philippe; and Nowe, Stephane, to Elf Atochem S.A. Preparation of imide-modified methyl methacrylate (MMA) polymer/copolymers. 5,340,882, Cl. 525-379.000.

Gajewski, Gerard H., to Davidson Textron Inc. Door assembly with integral tether. 5,340,149, Cl. 280-732.000.

Galbraith, Douglas C., to Actel Corporation. Methods for protecting outputs of low-voltage circuits from high programming voltages. 5,341,030, Cl. 307-202.100.

Gale, Nigel F.; Naegeli, David W.; Ryan, Thomas W., III; and King, Steven R., to Southwest Research Institute. Fuel supply system for engines and combustion processes therefor. 5,339,634, Cl. 60-723.000.

Galic, George J.: *See—*
Maus, Steven M.; and Galic, George J., 5,340,303, Cl. 425-549.000.

Galic Maus Ventures: *See—*
Maus, Steven M.; and Galic, George J., 5,340,303, Cl. 425-549.000.

Gallagher, Lee A.: *See—*
Elliott, Marianne; Gallagher, Lee A.; and Hechavarria, Caridad, 5,340,569, Cl. 424-63.000.

Galloway, Keith R.; and O'Keefe, Dennis G., to Cincinnati Milacron Inc. Method and apparatus for monitoring electrical loads. 5,340,964, Cl. 219-486.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Galvanetto, Francois: *See—*
Spiess, Hansruedi; and Galvanetto, Francois, 5,340,232, Cl. 404-25.000.

Gammel, John C., to AT&T Bell Laboratories. Ring-trip detection using ring voltage and current. 5,341,416, Cl. 379-382.000.

Gammie, Keith: *See—*
Wasilewski, Anthony J.; and Gammie, Keith, 5,341,425, Cl. 360 20.000.

Ganz, Frank: *See—*
Calvillo, Samuel J.; Horton, Donald L.; and Ganz, Frank, 5,340,955, Cl. 200-302.200.

Garber, David D.: *See—*
Reis, James J.; Luk, Anthony L.; Lucero, Antonio B.; and Garber, David D., 5,341,142, Cl. 342-64.000.
Reis, James J.; Luk, Anthony L.; and Garber, David D., 5,341,143, Cl. 342-64.000.

Garger, Stephen J., Jr.: *See—*
della-Cioppa, Guy R.; Garger, Stephen J.; Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., 5,340,734, Cl. 435-212.000.

Garnick, Marc, to Genetics Institute, Inc. Method for reducing cholesterol by co-administering M-CSF and conventional cholesterol reducing agents. 5,340,573, Cl. 424-85.100.

Garr, Michael J.; Dale, Mark J.; and Taylor, Timothy, to Video Control Technology, Inc. System for controlling selected devices having unique sets of control codes. 5,341,166, Cl. 348-10.000.

Garrett, Michael E., to BOC Group Plc., The. Freon free refrigerator. 5,339,639, Cl. 62-6.000.

Gartside, Robert J.; and Norton, Richard C., to Stone & Webster Engineering Corp. Particulate solids cracking apparatus. 5,340,545, Cl. 422-146.000.

Garverick, Tim; Chen, Shao-Pin; and Camarota, Rafael C., to National Semiconductor Corporation. High performance output buffer with reduced ground bounce. 5,341,040, Cl. 307-443.000.

Garvey, David S.: *See—*
Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., 5,340,802, Cl. 514-18.000.

Gary, Robert E.: *See—*
Pawlik, Robert S.; and Gary, Robert E., 5,341,198, Cl. 355-284.000.

Gas Research Institute: *See—*
Hemsath, Klaus H., 5,340,091, Cl. 266-256.000.
Kang, Sukhvinder S.; Patel, Bharatan R.; Nutt, William E.; and Kothari, Kirankumar K., 5,339,695, Cl. 73-861.190.

Gasser, Markus; and Schneider, Hauke, to Sig Schweizerische Industrie-Gesellschaft. Apparatus for introducing articles into a storage device. 5,339,942, Cl. 198-347.100.

Gates, Donald W.: *See—*
Bhalla, Prithvi R.; Herrick, Robert M.; and Gates, Donald W., 5,340,791, Cl. 504-130.000.

Gates, Rick R.: *See—*
Alex, James W.; Alex, Jeffrey S.; and Gates, Rick R., 5,339,953, Cl. 206-340.000.

Gates Rubber COmpany, The: *See—*
Morse, George E., 5,340,167, Cl. 285-243.000.

Gaudiano, Juan: *See—*
Murphy, Joseph F.; McGeehan, Michael J.; Benske, Gregory A.; and Gaudiano, Juan, 5,340,198, Cl. 297-483.000.

Gaudry, Michel; Pfeiffer, Bruno; Renard, Pierre; Renaud de la Faverie, Jean-Francois; and Adam, Gerard, to ADIR et Compagnie. New 1-(alkoxybenzyl)piperazine amide compounds. 5,340,809, Cl. 514-252.000.

Gauthier, Alain: *See—*
Barthomeuf, Jean-Paul; and Gauthier, Alain, 5,339,992, Cl. 222-137.000.

Gaztech International Corporation: *See—*
Wong, Jacob Y., 5,340,986, Cl. 250-343.000.
Wong, Jacob Y., 5,341,214, Cl. 356-437.000.

GBS Systems Corporation: *See—*
Schatz, Vernon L., 5,341,428, Cl. 380-23.000.

GEC Alsthom Electromecanique SA: *See—*
Coulon, Andre , 5,340,530, Cl. 419-5.000.

GEC Alsthom Transport SA: *See—*
Ricaud, Patrick; and Mormede, Bernard, 5,339,744, Cl. 105-332.000.

GEC-Marconi Limited: *See—*
Pearce, Timothy H. B., 5,341,135, Cl. 341-120.000.
Perry, Kenneth H., 5,341,140, Cl. 342-44.000.

GEC Plessey Telecommunications Limited: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Geelhaar, Thomas: *See—*
Wachtler, Andreas; Kompter, Hans-Michael; Poetsch, Eike; Geelhaar, Thomas; Hittich, Reinhard; and Krause, Joachim, 5,340,497, Cl. 252-299.610.

Gehrs, Donald F.; and Runge, Louis L., to Westinghouse Electric Corp. Panelboard with insulative snap-in support means. 5,340,945, Cl. 174-174.000.

Geis, Helmut: *See—*
Uftring, Winfried; Bachmann, Theo; Geis, Helmut; and Haase, Lothar, 5,340,399, Cl. 118-59.000.

Gelder, Milton J.: *See—*
Meriwether, Jon D.; and Gelder, Milton J., 5,340,250, Cl. 410-99.000.

Gelman, Alexander; Kobrinski, Haim; Smoot, Lanny S.; and Weinstein, Stephen B., to Bell Communications Research, Inc. Communications architecture and buffer for distributing information services. 5,341,474, Cl. 395-200.000.

Gelorme, Jeffrey D.: *See—*
Cuomo, Jerome J.; Gelorme, Jeffrey D.; Hatzakis, Michael, Jr.; Lewis, David A.; Shaw, Jane M.; and Whitehair, Stanley J., 5,340,914, Cl. 528-353.000.

GenCorp Inc.: *See—*
Wang, Chia L., 5,340,901, Cl. 528-60.000.

General Dynamics Corporation: *See—*
Brusse, Jaime R., 5,339,626, Cl. 60-271.000.

General Electric Company: *See—*
Agut Sanz, Juan, 5,341,080, Cl. 318-778.000.
Clagett, Donald C.; Fox, Daniel W.; Maresca, Louis M.; and Shafer, Sheldon J., 5,340,885, Cl. 525-425.000.
Cunha, Francisco J., 5,340,274, Cl. 415-115.000.
Davenport, John M.; and Hansler, Richard L., 5,341,445, Cl. 385-39.000.
Evans, Edwin R., 5,340,866, Cl. 524-403.000.
Gillette, Gregory R.; Shenian, Popkin; Bolon, Donald A.; and Irwin, Patricia C., 5,340,839, Cl. 521-40.000.
Kingsley, Jack D.; and Srinivas, Chukka, 5,340,988, Cl. 250-370.090.
Kolbe, Kenneth W.; and Calvert, Scott A., 5,340,209, Cl. 312-408.000.
Meade, Thomas J., 5,340,913, Cl. 528-335.000.
Nerone, Louis R., 5,341,068, Cl. 315-219.000.
Nossen, Edward J., 5,341,423, Cl. 380-6.000.
Paul, William C., 5,340,518, Cl. 264-154.000.
Rohr, Donald F.; Buddle, Stanlee T.; Wilson, Paul R.; and Zumbrum, Michael A., 5,340,560, Cl. 423-337.000.
Rosenbaum, Herman S.; and Armijo, Joseph S., 5,341,407, Cl. 376-409.000.
Schilling, Jan C., 5,340,280, Cl. 416-229.00A.
Tam, Kwok C., 5,341,460, Cl. 395-119.000.
Tanner, Roy E., Jr., 5,339,888, Cl. 164-516.000.
Wei, Ching-Yeu; Possin, George E.; and Kwasnick, Robert F., 5,340,758, Cl. 437-40.000.

General Mills, Inc.: *See—*
Brash, Douglas J.; Berkholz, Daniel S.; Ericson, R. Ken; and Ciaramitaro, Anthony J., 5,339,945, Cl. 198-468.800.

General Motors Corporation: *See—*
Pettit, William H., 5,339,630, Cl. 60-303.000.
Shah, Sanjay M.; and Lovell, Michael H., 5,339,667, Cl. 72-58.000.

Genetics Institute, Inc.: *See—*
Garnick, Marc, 5,340,573, Cl. 424-85.100.

Genie Company, The: *See—*
Whitaker, Louis G., 5,340,277, Cl. 416-5.000.

Genpak Corp.: *See—*
Edwards, Richard T.; Rider, Edward W., Jr.; Susta, Stephen J., Jr.; and Crawford, William R., 5,339,973, Cl. 220-4.230.

George, John B., to Thomson Consumer Electronics, Inc. Piecewise linearized focus voltage circuit for television apparatus. 5,341,071, Cl. 315-382.100.

George, Richard L.: *See—*
Wilcox, Reed N.; George, Richard L.; and Lichfield, William H., 5,340,228, Cl. 401-262.000.

Georgetown Steel Corporation: *See—*
Huestis, Allan C., 5,340,378, Cl. 75-414.000.

Georgia Tech Research Corp.: *See—*
Joy, Edward B., 5,341,150, Cl. 343-912.000.

Gerard Gorse Equipements de Machines-Outils S.A.: *See—*
Gorse, Gerard, 5,340,130, Cl. 279-110.000.

Gerard, Jean L.: *See—*
Deit, Gerard L.; and Gerard, Jean L., 5,339,928, Cl. 188-1.110.

Gerber, Arthur H.: *See—*
Lemon, Peter H. R. B.; King, James G.; Murray, Graham; Leoni, Henry; and Gerber, Arthur H., 5,340,888, Cl. 525-501.000.

Gerber Garment Technology, Inc.: *See—*
Clarino, Thomas N.; and Altshul, Mary M., 5,341,305, Cl. 364-470.000.

Gerhardt, Terry D.: *See—*
Rowlands, Robert E.; Saliklis, Edmond P.; Wise, John T.; and Gerhardt, Terry D., 5,339,693, Cl. 73-825.000.

Gerling, John S.: *See—*
Murg, Sandra D.; and Gerling, John S., 5,339,480, Cl. 15-106.000.

Gerpheide, George E.; Wilson, Donald A.; and King, Sidney L., to Wilson, Donald A. Apparatus for projecting and moving a spot of light in a scene projected on a screen and for controlling operation of a stepper motor used therewith. 5,340,108, Cl. 273-185.00A.

Gerstner, Hans: *See—*
Stellwagen, Karl; Gerstner, Hans; and Buchheister, Hasso, 5,341,299, Cl. 364-431.050.

Gerth, Kirsten: *See—*
Kloss, Thomas; Stein, Elfi; Gerth, Kirsten; and Wickardt, Andrea, 5,340,778, Cl. 501-52.000.

Gerwing, Wolfram: *See—*
Bronkal, Bernhard; Gerwing, Wolfram; Grieshaber, Hermann; Birk, Manfred; and Engel, Gerhard, 5,339,680, Cl. 73-118.200.

Gess, Jerome M.; Petersen, Dennis E.; Adams, Terry N.; and Martz, Russell J., to Weyerhaeuser Company. Evaluating furnish behavior. 5,340,442, Cl. 162-198.000.

GFRMOS-Fessmann GmbH & Co KG: *See—*
Fessmann, Klaus-Dieter, 5,339,727, Cl. 99-482.000.

Ghandehari, Abbas. Compact light source for fiber optics illumination. 5,341,275, Cl. 362-32.000.

Ghelli, Nicola; and Panzani, Ivo, to Dideco S.r.l. Device for selectively drawing samples of blood from two sections of a line and for injecting blood into said line. 5,340,364, Cl. 604-32.000.

Giammaruti, Robert J.: *See—*
Henning, Thomas L.; and Giammaruti, Robert J., 5,340,041, Cl. 241-119.000.

Giat Industries: *See—*
Larmignat, Daniel; Morand, Phillippe C.; Prieur, Christian H.; and Lacreuse, Gilles F., 5,340,395, Cl. 106-504.000.
Pellarin, Jean-Francois R.; and Colin, Gilles M., 5,339,720, Cl. 89-41.190.

Gibbs, Glen A.: *See—*
Iorio, Ralph A.; and Gibbs, Glen A., 5,339,867, Cl. 138-140.000.

Gibson, Barry; and McLoughlin, James A., to Micropore International Limited. Shaping panels of microporous thermal insulation. 5,340,527, Cl. 264-320.000.

Gibson, Daryl: *See—*
Slocum, John; Kiproff, Peter N.; Gibson, Daryl; and Merritt, Will, 5,340,512, Cl. 264-37.000.

Gidda, Jaswant S.; and Schaus, John M., to Eli Lilly and Company. Method of inhibiting gastric acid secretion with 2-phenylcyclopropylamines. 5,340,838, Cl. 514-647.000.

Gilbert, Jack J., to Industria Colombiana de Electronicos y Electrodomesticos, Incelt S.A. Method for brewing coffee. 5,340,597, Cl. 426-433.000.

Gilboa, Pinhas; Gold, Alexander; and Yaeli, Joseph, to Elbit Ltd. Helmet mounted display. 5,341,242, Cl. 359-631.000.

Giles, Alan B., to Spurion Technology Pty. Ltd. Device for restoring a fluid level in a fluid receptacle. 5,339,858, Cl. 137-130.000.

Gilkes, Neil: *See—*
Kilburn, Douglas G.; Miller, Robert C.; Gilkes, Neil; and Warren, R. Antony J., 5,340,731, Cl. 435-179.000.

Gill, Manzur, to Texas Instruments Incorporated. Method of fabricating self-aligned field-plate isolation between control electrodes. 5,340,768, Cl. 437-61.000.

Gilles, Gregory S. Shower apparatus. 5,339,469, Cl. 4-601.000.

Gillespie, Ralph D.; and Holmgren, Jennifer S., to UOP. Use of a metal oxide solid solution for sweetening a sour hydrocarbon fraction. 5,340,465, Cl. 208-191.000.

Gillett, Richard B., Jr.; and Williams, Douglas D., to Digital Equipment Corporation. Commander node method and apparatus for assuring adequate access to system resources in a multiprocessor. 5,341,510, Cl. 395-800.000.

Gillette Canada, Inc.: *See—*
Tseng, Mingchih M.; and Philbrook, Carl M., 5,340,581, Cl. 424-401.000.

Gillette Company, The: *See—*
Grace, William R., 5,340,571, Cl. 424-73.000.

Gillette, Gregory R.; Shenian, Popkin; Bolon, Donald A.; and Irwin, Patricia C., to General Electric Company. Method for salvaging organic thermoplastic values from discarded surface treated organic thermoplastic substrates. 5,340,839, Cl. 521-40.000.

Gimson, Christopher; J.; and Pasdari, Mehran, to Endress & Hauser Limited. Flowmeter. 5,339,687, Cl. 73-204.190.

Gingrich, Blain H.: *See—*
Dasgupta, Sunil P.; Gingrich, Blain H.; Matyniak, Bernard J.; and Weaver, G. Gregory, 5,341,103, Cl. 324-454.000.

Giroux, Brian W., to Avco Corporation. Alignment of radiation receptor with lens by Fourier optics. 5,341,213, Cl. 356-363.000.

Gist-brocades, N.V.: *See—*
Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,340,738, Cl. 435-234.000.

Glabach, Raymond H.: *See—*
English, David G. N.; and Glabach, Raymond H., 5,339,875, Cl. 141-9.000.

Gladstein, Leo A.; Jones, Christopher D.; Leontiades, Kyriakos; Patel, Paritosh D.; and Petroskey, Paul W., to International Business Machines Corporation. Battery operated computer having improved battery gauge and system for measuring battery charge. 5,341,503, Cl. 395-750.000.

Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, to Hoechst-Roussel Pharmaceuticals Inc. 8-azabicyclo[3.2.1]octane methanone and corresponding oximes. 5,340,936, Cl. 546-124.000.

Glaxo Group Limited: *See—*
Clitherow, John W.; and Carter, Malcolm, 5,340,810, Cl. 514-252.000.

Glidden Company, The: *See—*
Elsamanoudi, Abmed A., 5,340,394, Cl. 106-500.000.

Globe Products Inc.: *See—*
Beakes, John M.; and Newman, Lawrence E., 5,340,043, Cl. 242-1.10R.

Glover, Gary W.: *See—*
Hardy, Tyrone L.; Glover, Gary W.; and Brynildson, Laura D., 5,339,812, Cl. 128-653.100.

Goble, Rowland H. Truck attachment. 5,340,188, Cl. 296-100.000.

Gocho, Yoshihiro: *See—*
Arai, Yoshihisa; Yui, tomoyuki; and Gocho, Yoshihiro, 5,340,498, Cl. 252-299.650.

Godard, Roger R. Systems and methods for capturing and presentng visual information. 5,341,181, Cl. 351-210.000.

Goddette, Dean: *See—*
Christianson, Teresa; Goddette, Dean; Ladin, Beth F.; Lau, Maria R.; Paech, Christian; Reynolds, Robert B.; Wilson, Charles R.; and Yang, Shiow-Shong, 5,340,735, Cl. 435-221.000.

Goestenkors, Gregory N:: *See—*
Desai, Trilok; Goestenkors, Gregory N.; and Boumarafi, Mohamed, 5,340,339, Cl. 439-892.000.

Goff, Dan: *See—*
Smith, Anthony; Goff, Dan; Kruchowy, Roman; and Rhoads, Carl, 5,339,691, Cl. 73-597.000.

Gold, Alexander: *See—*
Gilboa, Pinhas; Gold, Alexander; and Yaeli, Joseph, 5,341,242, Cl. 359-631.000.

Goldberg, Alfred L., to President & Fellows of Harvard College, The. ATP-dependent protease and use of inhibitors for same in the treatment of cachexia and muscle wasting. 5,340,736, Cl. 435-226.000.

Goldberg, David: *See—*
Elrod, Scott A.; Welch, Brent B.; and Goldberg, David, 5,341,155, Cl. 345-179.000.

Goldberg, Edward M.: *See—*
Poloyko, Alexander; Goldberg, Mark C.; Goldberg, Edward M.; Melinyshyn, Lev A.; and Schucart, David E., 5,339,801, Cl. 128-20.000.

Goldberg, Mark C.: *See—*
Poloyko, Alexander; Goldberg, Mark C.; Goldberg, Edward M.; Melinyshyn, Lev A.; and Schucart, David E., 5,339,801, Cl. 128-20.000.

Goldblatt, Ronald D.: *See—*
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.

Goldblum, Randall M.; and Rajaraman, Srinivasan, to Board of Regents, The University of Texas System. Assay for free secretory component and methods for monitoring organ rejection. 5,340,721, Cl. 435-7.920.

Goldfarb, Simon. Method of playing a game of chance at locations remote from the game site. 5,340,119, Cl. 273-439.000.

Goldinger, Richard A.: *See—*
Desimone, Joseph A.; and Goldinger, Richard A., 5,339,482, Cl. 15-167.100.

Goldman, Ilan, to Ilco Unican, Inc. Door locking system. 5,339,662, Cl. 70-278.000.

Goldman, Stephen L.: *See—*
Graves, Anne C. F.; and Goldman, Stephen L., 5,340,730, Cl 438-172.300.

Goldschmidt, Robert E., to Kaye Instruments, Inc. Uniform temperature reference apparatus for use with modular screw-terminal block. 5,340,216, Cl. 374-182.000.

Goldstar Co., Ltd.: *See—*
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,339,474, Cl. 8-159.000.

Goldstein, Andrew S.: *See—*
Thieme, Thomas R.; Goldstein, Andrew S.; Piacentini, Stephen C.; and Klimkow, Nanette M., 5,339,829, Cl. 128-760.000.

Golovin, Neal: *See—*
Chaloner-Gill, Benjamin; Golovin, Neal; and Lundquist, Joseph, 5,340,669, Cl. 429-192.000.

Golzer, Thomas; and Streib, Martin, to Robert Bosch GmbH. Arrangement for controlling the drive power of a motor vehicle. 5,339,782, Cl. 123-399.000.

Gombault, Jacobus F., deceased; Gombault, Petronella A., legal representative; and Hidding, Gerhard, to Hadewe B.V. Method for setting a folding station included in an apparatus for preparing items to be mailed, and apparatus for preparing items to be mailed and folding station adapted for carrying out such method. 5,339,603, Cl. 53-429.000.

Gombault, Petronella A., legal representative: *See—*
Gombault, Jacobus F., deceased; Gombault, Petronella A., legal representative; and Hidding, Gerhard, 5,339,603, Cl. 53-429.000.

Gomi, Tsugikichi: *See—*
Hama, Taira; and Gomi, Tsugikichi, 5,339,505, Cl. 29-243.560.

Gomoll, Kathleen M.: *See—*
Vertelney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., 5,341,293, Cl. 364-419.170.

Goodall, Brian L.: *See—*
Kennedy, Joseph P.; Goodall, Brian L.; and Lubnin, Alexander V., 5,340,881, Cl. 525-333.700.

Goodfellow, Alan G., to Eastman Kodak Company. Wound spool of web material. 5,340,051, Cl. 242-348.100.

Goodings, Rupert: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Goodman, James R.: *See—*
Lewis, Terry M.; Kosty, John W.; Goodman, James R.; Krzemein, Mark A.; Lenhert, Jon M.; and Arbogast, Jeffrey H., 5,340,121, Cl. 277-43.000.

Goodman, R. Anthony. Bulletproof leg protection device for a vehicle door. 5,340,189, Cl. 296-152.000.

Goodrich, Raymond P., Jr.; and Williams, Christine M., to COBE Laboratories, Inc. Lyophilization of erythrocytes. 5,340,592, Cl. 424-533.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Gore, Ann B.: *See—*
Phelps, Patricia V.; Tyczkowski, Julius K.; O'Connell, Toni O.; and Gore, Ann B., 5,339,766, Cl. 119-6.800.

Gorse, Gerard, to Gerard Gorse Equipements de Machines-Outils S.A. Polyvalent clamp chuck for machine tools. 5,340,130, Cl. 279-110.000.

Gostyla, Bernie J. Counter rotating pointer and disc chance device. 5,340,105, Cl. 273-142.00R.

Goto, Yoshihiro, to Hitachi Medical Corp. Method and apparatus for displaying and cutting out region of interest from picture. 5,341,465, Cl. 395-134.000.

Goto, Yukihiro: *See—*
Tsujimoto, Kazushi; Goto, Yukihiro; and Ohnishi, Katsuji, 5,340,262, Cl. 414-273.000.

Gotoh, Hiroshi; Shibata, Isamu; Maeda, Ikuo; and Sakurai, Tatsuaki, to Ricoh Company, Ltd. Multibeam optical pickup and servo method thereof. 5,341,355, Cl. 369-44.370.

Gotoh, Seiji; Orita, Kenji; and Takayama, Tomio, to Fujitsu Limited. Method and device for determining and indicating a residual capacity of a battery. 5,341,084, Cl. 320-44.000.

Goudonnet, Jean-Pierre: *See—*
De Fornel, Frederique; Goudonnet, Jean-Pierre; and Cerre, Nathalie, 5,340,981, Cl. 250-227.200.

Goulaouic, Catherine M. L., heir: *See—*
Emonds-Alt, Xavier; Gueule, Patrick; Proietto, Vincenzo; Goulaouic, Pierre, deceased; Bousquet, Marie, heir; and Goulaouic, Catherine M. L., heir, 5,340,822, Cl. 514-316.000.

Goulaouic, Pierre, deceased: *See—*
Emonds-Alt, Xavier; Gueule, Patrick; Proietto, Vincenzo; Goulaouic, Pierre, deceased; Bousquet, Marie, heir; and Goulaouic, Catherine M. L., heir, 5,340,822, Cl. 514-316.000.

Gould, Scott W.; Marshall, Mark G.; and Perry, Patrick E., to International Business Machines Corporation. Wiring layout design method and system for integrated circuits. 5,341,310, Cl. 364-491.000.

Gowda, Padmanab L., to Westinghouse Air Brake Company. Variable load control valve with dual diaphragms reinforced by washers and spacer members. 5,340,203, Cl. 303-22.500.

Grace, William R., to Gillette Company, The. Non-aerosol shaving gel. 5,340,571, Cl. 424-73.000.

Gradl, Robert: *See—*
Panster, Peter; Gradl, Robert; and Kleinschmit, Peter, 5,340,895, Cl. 528-9.000.

Graham, Samuel L.; and deSolms, S. Jane, to Merck & Co., Inc. Inhibitors of farnesyl protein transferase. 5,340,828, Cl. 514-357.000.

Grando, Stefano. Gem setting and method for assembling the same. 5,339,655, Cl. 63-9.000.

Granelli, Anthony. Apparatus and method for bending tubing. 5,339,670, Cl. 72-152.000.

Grant Engineering, Inc.: *See—*
Grant, Ralph M.; and Wright, Forrest, 5,341,204, Cl. 356-35.500.

Grant, Ralph M.; and Wright, Forrest, to Grant Engineering, Inc. Shearing optical element for interferometric analysis system. 5,341,204, Cl. 356-35.500.

Graphico Co. Ltd.: *See—*
Takashima, Tokuhei, 5,341,509, Cl. 395-800.000.

Graves, Anne C. F.; and Goldman, Stephen L., to University of Toledo, The. Process for transforming gladiolus. 5,340,730, Cl. 438-172.300.

Gray, Calvin G.; and Thomason, Frank B., to SIMCO/Ramic Corporation. Method and apparatus for using passive exhaust for pneumatic sorting system. 5,339,964, Cl. 209-587.000.

Gray, Sterling: *See—*
Moser, Robert E.; Wilhelm, James H.; Burke, John; and Gray, Sterling, 5,340,547, Cl. 422-177.000.

Green, David T.; Alesi, Thomas W., Jr.; Bolanos, Henry; and Toso, Kenneth E., to United States Surgical Corporation. Sternum buckle and applier. 5,339,870, Cl. 140-123.500.

Green, James A., II; and Young, Donald C., to Union Oil Company of California. Stabilized solid thiocarbonate. 5,340,593, Cl. 424-715.000.

Green, Thomas B., to Tekmar Company. Needle interface apparatus. 5,339,701, Cl. 73-864.860.

Greenfeder, Susan E.: *See—*
Curtis, John P.; Greenfeder, Susan E.; Seiden, Bill; and Lees, Michael L., 5,340,566, Cl. 424-49.000.

Greenland, Steven J.: *See—*
Landers, James A.; Reid, Gary O.; and Greenland, Steven J., 5,339,602, Cl. 53-410.000.

Gregg, Jerald R.: *See—*
McCrabb, James; and Gregg, Jerald R., 5,339,632, Cl. 60-618.000.

Gregoli, Armand A.; Hamshar, John A., 3rd; Rimmer, Daniel P.; Yildirim, Erdal; and Olah, Andrew M., to Canadian Occidental Petroleum Ltd. Process for recovery of hydrocarbons and rejection of sand. 5,340,467, Cl. 208-390.000.

Gregory, Paul: *See—*
Maliczyszyn, Walter; Peek, Leroy; and Gregory, Paul, 5,340,405, Cl. 127-65.000.

Grey, Roger A.: *See—*
Guo, Shao H.; and Grey, Roger A., 5,340,883, Cl. 525-381.000.

Griebel, Ulrich; Kraska, Claudia; and Schielein, Peter, to Schwan-Stabilo Schwanhausser GmbH & Co. Process for the production of a pencil stick, a stick produced by the process and a pencil having such a stick. 5,340,226, Cl. 401-96.000.

Grieshaber, Hermann: *See—*
Bronkal, Bernhard; Gerwing, Wolfram; Grieshaber, Hermann; Birk, Manfred; and Engel, Gerhard, 5,339,680, Cl. 73-118.200.

Grieshop, Maurice, to J. & M. Manufacturing Co., Inc. Grain wagon with unload mechanism. 5,340,265, Cl. 414-526.000.

Griessman, Detlef; Manlove, Gregory J.; Block, Thomas G.; and Howlett, Gordon P., to Delco Electronics Corporation. AM stereo detection and audio processing apparatus. 5,341,431, Cl. 381-15.000.

Griffin, Ronald D. Golf putter head with adjustable hosel. 5,340,104, Cl. 273-80.200.

Griffiths, Carl R., to Thunderline Corporation. Pressure hardware for a modular inter-wall elastomer seal. 5,340,123, Cl. 277-104.000.

Griffiths, Christopher N.; Raybone, David; and Bayliss, Keith H., to United Kingdom Atomic Energy Authority. Removal of organic materials from a gas. 5,340,450, Cl. 204-157.300.

Groenendijk, Jan C.: *See—*
Aulia, Ari N.; and Groenendijk, Jan C., 5,341,430, Cl. 380-49.000.

Grosclaude, Gary V.: *See—*
Sypek, Maria T.; Perron, Paul A.; and Grosclaude, Gary V., 5,340,681, Cl. 430-138.000.

Grossenbacher, Peter; and Nabulon, Werner. Method and apparatus for plug loosening after texturing. 5,339,502, Cl. 28-221.000.

Grossman, Anita S.; Kau, Chin-Cheng; Ogden, Aubrey D.; and Weems, Mason L., to Motorola, Inc. Device for assigning a shared resource in a data processing system. 5,341,502, Cl. 395-725.000.

Grosz, Ron; and Jensen, Mark A., to Du Pont de Nemours, E. I., and Company. Method for amplification of targeted segments of nucleic acid using nested polymerase chain reaction. 5,340,728, Cl. 435-91.200.

Groupe Herve Pomerleau Inc.: *See—*
Paquin, Georges A.; and Deroy, Claude, 5,339,522, Cl. 29-897.312.

Grove, Manfred, to Intermacom A.G. Protective device in electrically-powered apparatus and equipment. 5,341,266, Cl. 361-45.000.

Groya, Robert J.; and Hofmann, Richard W., to Magenta Corporation. Shaker closure. 5,339,993, Cl. 222-153.000.

Grzybowski, Ken F., to ReClaim, Inc. Performance-modified cold-applied asphalt compositions. 5,340,391, Cl. 106-281.100.

GTE Vantage Incorporated: *See—*
Chalmers, Dennis W.; Kendall, Leonard M.; Kristensen, Ole F.; Lin, Eric C. W.; and Wan, Howard S. K., 5,341,258, Cl. 360-92.000.

Guardian Products, Inc.: *See—*
Mertz, Steven H., 5,339,850, Cl. 135-72.000.

Gubin, Jean; Chatelain, Pierre; and Lucchetti, Jean, to Elf Sanofi. Cycloaminoalkoxyphenyl derivatives, a process for their preparation as well as the compositions containing them. 5,340,820, Cl. 514-300.000.

Gudmundson, Bjorn, to Telefonaktiebolaget L M Ericsson. CDMA frequency allocation. 5,341,397, Cl. 375-1.000.

Gueble, Jeffrey R.; and Soderberg, Mark S., to CNA Manufacturing Systems, Inc. Pocket tape feeder system. 5,339,939, Cl. 198-345.200.

Guelman, Moshe; and Yavnai, Arie, to State of Israel, Ministry of Defence, Rafael Armament Development Authority, The. Active defense system against tactical ballistic missiles. 5,340,056, Cl. 244-3.160.

Gueremy, Claude; Jimonet, Patrick; and Mignani, Serge, to Rhone-Poulenc Rorer S.A. Benzothiazole derivatives and medicinal products containing them. 5,340,824, Cl. 514-321.000.

Gueret, Jean-Louis, to l'Oreal. Makeup device. 5,339,841, Cl. 132-218.000

Guerra, Ricardo; and Salazar, Alfred. Pointless releasable fish hook. 5,339,562, Cl. 43-43.160.

Guest, Vaughn W.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,341,130, Cl. 340-825.060.

Gueule, Patrick: *See—*
Emonds-Alt, Xavier; Gueule, Patrick; Proietto, Vincenzo; Goulaouic, Pierre, deceased; Bousquet, Marie, heir; and Goulaouic, Catherine M. L., heir, 5,340,822, Cl. 514-316.000.

Gugle, James E.; and Tisol, James S., to Illinois Tool Works Inc. Snap and ratchet panel fastener and support assembly. 5,339,501, Cl. 24-573.100.

Guichard, Jacques; and Buchner, Georges, to France Telecom Etablissement Autonome de Droit Public. Visual and sound communication system with remote control means. 5,341,167, Cl. 348-14.000.

Gunderson, Ernest M., to Fargo Electronics, Inc. Single sheet supplier. 5,340,098, Cl. 271-21.000.

Gunji, Takahiro: *See—*
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,340,660, Cl. 428-687.000.

Guo, Shao H.; and Grey, Roger A., to ARCO Chemical Technology, L.P. Organic liquid absorbent compositions based on phosphonic acid-containing polymers and di- or polyamines. 5,340,883, Cl. 525-381.000.

Guo, Ta-Pen: *See—*
Whitten, Ralph G.; Guo, Ta-Pen; Mohsen, Amr; and Comer, Alan E., 5,341,267, Cl. 361-56.000.

Gurney, Bruce A.: *See—*
Dieny, Bernard; Gurney, Bruce A.; Parkin, Stuart S. P.; Sanders, Ian L.; Speriosu, Virgil S.; and Wilhoit, Dennis R., 5,341,261, Cl. 360-113.000.

Gustavsson, Lennart: *See—*
Johansson, Anders; and Gustavsson, Lennart, 5,339,688, Cl. 73-204.220.

Guth, Leslie A.: *See—*
Fletcher, Linda M.; Guth, Leslie A.; and Monroe, Douglas W., 5,340,016, Cl. 228-219.000.

Gutierrez, Joseph A.: *See—*
Moyer, William C.; Gutierrez, Joseph A.; and Ho, Yui K., 5,341,500, Cl. 395-725.000.

Gutmark, Ephraim: *See—*
Smith, Robert A.; Gutmark, Ephraim; Schadow, Klaus C.; and Wilson, Kenneth J., 5,340,054, Cl. 244-1.00N.

Guzzinati, Alberto, to Mottura Serrature Di Sicurezza SpA. Security lock with two locking mechanisms, of the pump type and of the double-bit type, respectively. 5,339,659, Cl. 70-120.000.

H. Krantz-TKT GmbH: *See—*
Halupczok, Johann; and Sodec, Franc, 5,340,358, Cl. 454-299.000

Haas, Ludwig: *See—*
Bauer, Hans J.; Wurl, Wolfgang; Haas, Ludwig; and Hein, Otmar, 5,339,933, Cl. 188-371.000.

Haase, Lothar: *See—*
Uftring, Winfried; Bachmann, Theo; Geis, Helmut; and Haase, Lothar, 5,340,399, Cl. 118-59.000.

Habibi, Hamid R.: *See—*
Varaprasad, Desaraju V.; Lynam, Niall R.; Habibi, Hamid R.; and Desaraju, Padma, 5,340,503, Cl. 252-583.000.

Habuka, Noriyuki; Miyano, Masashi; Matsumoto, Takashi; and Noma, Masana, to Japan Tobacco, Inc. Antiviral protein. 5,340,732, Cl. 435-193.000.

Hachiya, Kazuo: *See—*
Yagawa, Kazuo; Hashimoto, Takatsugu; Yamagishi, Junichi; Hachiya, Kazuo; and Takezawa, Satoshi, 5,340,867, Cl. 524-80.000.

Haddad, Edward N., Jr., to Pioneer Consolidated Corporation. Front mount telescopic arm truck cover system. 5,340,187, Cl. 296-98.000

Haddad, Louis C.: *See—*
Hagan, Donald F.; Haddad, Louis C.; Perkins, Robert E.; and Markell, Craig G., 5,340,746, Cl. 436-109.000.

Hadewe B.V.: *See—*
Gombault, Jacobus F., deceased; Gombault, Petronella A., legal representative; and Hidding, Gerhard, 5,339,603, Cl. 53-429.000.

Haffner, Roberta L. Exercise and amusement toy for pets. 5,339,770, Cl 119-708.000.

Hagan, Donald F.; Haddad, Louis C.; Perkins, Robert E.; and Markell, Craig G., to Minnesota Mining and Manufacturing Company. Composite reactive articles for the determination of cyanide. 5,340,746, Cl. 436-109.000.

Hagemann, Jorg; and Helling, Gunter, to AGFA-Gevaert AG. Photographic recording material. 5,340,709, Cl. 430-551.000.

Haggerty, John S.: *See—*
Sachs, Emanuel M.; Haggerty, John S.; Cima, Michael J.; and Williams, Paul A., 5,340,656, Cl. 428-546.000.

Hagi, Kimio: *See—*
Harada, Shigeru; Ishimaru, Kazuhiro; and Hagi, Kimio, 5,341,026, Cl. 257-764.000.

Hagiwara, Takaaki: *See—*
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,340,760, Cl. 437-43.000.

Hagura, Tsukasa, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device and operating method. 5,341,340, Cl. 365-226.000.

Hajdukiewicz, Peter: *See—*
McMurtry, David R.; Wilson, David; Hellier, Peter K.; and Hajdukiewicz, Peter, 5,339,535, Cl. 33-561.000.

Hajek, Constance M.; and Russell, Thomas, to Coulter, Corporation. Method and apparatus for optically screening microscopic cells. 5,340,719, Cl. 435-7.210.

Hakamada, Ryuichi; Takahashi, Masahiko; Kuriyama, Toru; and Nakagome, Hideki, to Kabushiki Kaisha Toshiba. Cryostat. 5,339,650, Cl. 62-51.100.

Hakoda, Takashi: *See—*
Takizawa, Michiaki; and Hakoda, Takashi, 5,340,297, Cl. 425-145.000.

Halbirt, J. Rick, to A-Dec, Inc. Linkage assembly for mechanical arm. 5,340,072, Cl. 248-279.000.

Haley, Neil F.; and Corbiere, Steven L., to Eastman Kodak Company. Radiation-sensitive composition containing a resole resin and a novolac resin and use thereof in lithographic printing plates. 5,340,699, Cl. 430-302.000.

Haley, Paul H.: *See—*
Schmidt, Albert L.; McKinley, Ellen K.; Hanes, Lewis F.; Morris, Michael R.; McKenzie, Patrick J.; and Haley, Paul H., 5,339,826, Cl. 128-731.000.

Hall, Joseph L., II; and Johnston, James D., to AT&T Bell Laboratories. Perceptual coding of audio signals. 5,341,457, Cl. 395-2.350.

Hall, Randy W.: *See—*
Morrison, Robert C.; Hall, Randy W.; Schwindeman, James A.; Kamienski, Conrad W.; and Engel, John F., 5,340,507, Cl. 260-665.00R.

Hall, Richard L.: *See—*
Hira, Govind L.; Hall, Richard L.; and Segal, Gary I., 5,340,015, Cl. 228-205.000.

Hall, Roger G.; Pascual, Alfons; and Kristiansen, Odd, to Ciba-Geigy Corporation. Benzophenonehydrazones. 5,340,837, Cl. 514-603.000.

Hallamasek, Kurt: *See—*
Fincher, Jeffrey L.; Hallamasek, Kurt; and Kambies, Keith A., 5,341,251, Cl. 360-49.000.

Halliburton Company: *See—*
Arterbury, Bryant A.; and Spangler, James E., 5,339,895, Cl. 166-227.000.
Brake, Bobby G.; and Chatterji, Jiten, 5,340,860, Cl. 524-166.000.
Brothers, Lance E., 5,340,397, Cl. 106-727.000.
Eoff, Larry S.; and Loughridge, Bill W., 5,339,903, Cl. 166-293.000.
Harris, Kirk L.; Carpenter, Robert B.; Himes, Ronald E.; Dalrymple, E. Dwyann; Dahl, Jeffrey A.; and Thomas, Bruce D., 5,339,902, Cl. 166-293.000.
Ravi, Kris M.; and Sabins, Fred L., 5,339,899, Cl. 166-250.000.
Shelton, Robert Q.; and Pratt, James V., Jr., 5,339,846, Cl. 134-201.000.

Halupczok, Johann; and Sodec, Franc, to H. Krantz-TKT GmbH. Air vent. 5,340,358, Cl. 454-299.000.

Hama, Taira; and Gomi, Tsugikichi, to Kabushiki Kaisha Mihama Seisakusho. Band-clamping apparatus. 5,339,505, Cl. 29-243.560.

Hamada, Akihiko; and Ebisuno, Tadahiro, to Sumitomo Rubber Industries, Ltd. Thread wound golf ball. 5,340,112, Cl. 273-226.000.

Haman, Leo J., to Rockwell International Corporation. Temperature stable oscillator circuit apparatus. 5,341,112, Cl. 331-116.00R.

Hamanaka, Kengo: *See—*
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl. 51-429.000.

Hamano, Ichirou; Honda, Munetaka; Takakuwa, Tateki; Omori, Toshiyuki; and Kotani, Yasuaki, to Shibuya Kogyo Co., Ltd.; and Kao Corporation. Cap conveying unit. 5,339,600, Cl. 53-306.000.

Hamburger, Hermann: *See—*
Piefenbrink, Wilfried; Weber, Walter; and Hamburger, Hermann, 5,340,199, Cl. 299-10.000.

Hamilton Industries: *See—*
Smies, Ronald J., 5,339,750, Cl. 108-147.000.

Hamilton, R. Lee, Jr.: *See—*
Buchholz, Dale R.; Robbins, Karen E.; Doss, William K.; and Hamilton, R. Lee, Jr., 5,341,375, Cl. 370-94.100.

Hammer, Joseph J.: *See—*
Doerr, Marvin L.; Hammer, Joseph J.; and Dees, J. R., 5,340,909, Cl. 528-276.000.

Hammerich, Mads; Henningsen, Jes O.; and Olafsson, ri, to FLS Airlog A/S. Method and apparatus for the transmision of an acoustic signal in a photoacoustic cell. 5,339,674, Cl. 73-24.020.

Hamshar, John A., 3rd: *See—*
Gregoli, Armand A.; Hamshar, John A., 3rd; Rimmer, Daniel P.; Yildirim, Erdal; and Olah, Andrew M., 5,340,467, Cl. 208-390.000

Hanabusa, Tadashi, to Canon Kabushiki Kaisha. Ink jet recording apparatus with waste-preventing recovery operation. 5,341,163, Cl. 347-23.000.

Hanazuka, Yasuo; Usami, Ikuzo; Chiba, Kazuyuki; and Mizutani, Noriko, to Three Bond Co., Ltd. Curable silicon composition. 5,340,847, Cl. 522-11.000.

Handi-Foil Corporation: *See—*
Marchwiak, Zbigniew; and Kapica, John, 5,339,728, Cl. 99-426.000.

Handy & Harman: *See—*
Beeferman, Dennis; and Lucas, William F., 5,340,012, Cl. 228-56.300.

Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, to Konica Corporation. Belt type image forming unit. 5,341,194, Cl. 355-212.000.

Hanemaayer, Jacobus N., to Hanmar Motor Corporation. Awning window assembly and operator therefor. 5,339,568, Cl. 49-324.000.

Hanes, Douglas M.: *See—*
Mautino, Peter S.; and Hanes, Douglas M., 5,339,970, Cl. 213-67.00R.

Hanes, Lewis F.: *See—*
Schmidt, Albert L.; McKinley, Ellen K.; Hanes, Lewis F.; Morris, Michael R.; McKenzie, Patrick J.; and Haley, Paul H., 5,339,826, Cl. 128-731.000

Hanewald, Julius: *See—*
Anderson, Thomas; and Hanewald, Julius, 5,340,354, Cl. 452-142.000.

Hanmar Motor Corporation: *See—*
Hanemaayer, Jacobus N., 5,339,568, Cl. 49-324.000.

Hann, Joseph K., II: *See—*
Cero, Joseph T., Jr.; Thompson, Mitchell L.; and Hann, Joseph K., II, 5,341,062, Cl. 310-339.000.

Hannah, Richard: *See—*
Ahmad, Jamil; Riccitelli, Samuel D.; Bankert, Charles S.; Hannah, Richard; and Davis, Christopher L., 5,339,671, Cl. 73-1.00G.

Hans Oetiker AG Maschinen- und Apparate-fabrik: *See—*
Oetiker, Hans, 5,339,496, Cl. 24-20.0CW.

Hansler, Richard L.: *See—*
Davenport, John M.; and Hansler, Richard L., 5,341,445, Cl. 385-39.000.

Hanson, Brian A.: *See—*
Javkin, Hector R.; Keate, Elizabeth G.; Antonanzas-Barroso, Norma; and Hanson, Brian A., 5,340,316, Cl. 434-185.000.

Hanulik, Jozef; and Equey, Jean-Francois, to Recytec SA. Method for dissolving radioactively contaminated surfaces from metal articles. 5,340,505, Cl. 588-18.000.

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Hanzawa, Toyoharu, to Olympus Optical Co., Ltd. Stereomicroscope equipped with eyepiece including variable magnification optical system. 5,341,239, Cl. 359-377.000.

Hara, Shuji: *See—*
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine,

VOL 1165 ISS 4 AG 23 1994 UMI

Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.

Hara, Zenichiro: *See*—
Uemura, Sashirou; Nishii, Yoshiyuki; Kanda, Isamu; Hara, Zenichiro; Futatsuishi, Shunichi; and Shibayama, Kozaburo, 5,341,065, Cl. 313-495.000.

Harada, Hidefumi; and Inoue, Yasuo, to Titan Kogyo Kabushiki Kaisha. Potassium hexatitanate fibers having tunnel structure, process for producing the same, and composite material containing said fibers. 5,340,645, Cl. 428-292.000.

Harada, Shigeru; Ishimaru, Kazuhiro; and Hagi, Kimio, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device having a titanium and a titanium compound multilayer interconnection structure. 5,341,026, Cl. 257-764.000.

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Harada, Tatsuo: *See*—
Okai, Makoto; Tsuji, Shinji; Ohishi, Akio; Hirao, Motohisa; Matsumura, Hiroyoshi; Harada, Tatsuo; Kita, Toshiaki; and Taira, Hideki, 5,340,637, Cl. 428-167.000.

Haraguchi, Masatoshi: *See*—
Tanaka, Shunji; Yamaoka, Akira; Umeno, Hidenori; Haraguchi, Masatoshi; Ogawa, Kiyoshi; Saijo, Keiji; and Takeda, Katsumi, 5,341,484, Cl. 395-400.000.

Harakawa, Hiroyuki: *See*—
Kumazawa, Toshiaki; Yanase, Masashi; Harakawa, Hiroyuki; Obase, Hiroyuki; Oda, Shoji; Shirakura, Shiro; Yamada, Koji; and Kubo, Kazuhiro, 5,340,807, Cl. 514-215.000.

Hardy, Douglas A.; Lewis, Leslie K.; and Altschuler, Barry N., to Motorola, Inc. Algorithm independent cryptographic key management apparatus. 5,341,427, Cl. 380-21.000.

Hardy, Douglas A.: *See*—
Barney, George M.; Hardy, Douglas A.; and Balogh, Craig R., 5,341,426, Cl. 380-21.000.

Hardy, Tyrone L.; Glover, Gary W.; and Brynildson, Laura D., to Medical Instrumentation and Diagnostic Corporation; and Hardy, Tyrone L. Three-dimensional computer graphics simulation and computerized numerical optimization for dose delivery and treatment planning. 5,339,812, Cl. 128-653.100.

Hargrove, Karen A.: *See*—
Friedman, Steven J.; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., 5,341,464, Cl. 395-131.000.

Harigaya, Isao; and Kozuki, Susumu, to Canon Kabushiki Kaisha. Device for controlling reel driving motor. 5,341,073, Cl. 318-7.000.

Haring, Richard: *See*—
Paschke, Hartmut; Daimer, Johann; and Haring, Richard, 5,340,776, Cl. 501-11.000.

Harmon Industries, Inc.: *See*—
Heggestad, Robert E., 5,340,062, Cl. 246-5.000.

Harms, Wolfgang: *See*—
Hoppe, Manfred; Herd, Karl-Josef; Eizenhofer, Thomas; Harms, Wolfgang; Henk, Hermann; Kunde, Klaus; and Reddig, Wolfram, 5,340,928, Cl. 534-618.000.

Harnischfeger Corporation: *See*—
Boyd, James W., 5,339,919, Cl. 182-85.000.

Harrigle, Dale R., Jr.: *See*—
Vossberg, Stephen M.; Clothiaux, John D.; Chaplin, Gregory D.; Harrigle, Dale R., Jr.; Kearney, Allen C.; Williams, James A., Jr.; and Fleishchman, Thomas S., 5,339,879, Cl. 152-540.000.

Harrington, Charles A.: *See*—
Adamczyk, Maciej; Harrington, Charles A.; and Johnson, Donald, 5,340,750, Cl. 436-537.000.

Harrington, William J., Jr., to Sterling Winthrop Inc. Danazol for treatment of urinary incontinence. 5,340,805, Cl. 514-176.000.

Harris Corporation: *See*—
Kerkhoff, William A.; and Niekamp, Rex L., 5,341,116, Cl. 333-260.000.
Young, Dennis C.; and Lowther, Rex E., 5,341,009, Cl. 257-296.000.
Young, William R.; and Johnstone, William F., 5,341,335, Cl. 365-189.120.

Harris, Kirk L.; Carpenter, Robert B.; Himes, Ronald E.; Dalrymple, E. Dwyann; Dahl, Jeffrey A.; and Thomas, Bruce D., to Halliburton Company. Well cementing using permeable cement. 5,339,902, Cl. 166-293.000.

Harris, Michael R.: *See*—
Sharp, Jeffrey O.; Harris, Michael R.; Cooper, Robert J.; Ledbetter, Steve M.; Reed, Ronald H.; and Chaffin, Ronald W., 5,341,273, Cl. 361-641.000.

Harris, Robert J.: *See*—
Ohnmacht, Cyrus J.; Harris, Robert J.; and Trainor, Diane A., 5,340,819, Cl. 514-297.000.

Hart, Charles M.; Hoff, H. Milton, Jr.; Tillman, John L., Jr.; Trout, Lindell R.; and Witte, Stephen L., Sr., to J. M. Huber Corp. Field installable rod guide and method. 5,339,896, Cl. 166-241.100.

Hartig, Klaus: *See*—
Schaefer, Christian; and Hartig, Klaus, 5,340,454, Cl. 204-192.120.

Hartle, Ronald J.: *See*—
Konieczynski, Ronald D.; Coeling, Kenneth J.; and Hartle, Ronald J., 5,340,289, Cl. 417-430.000.

Hartman, Robert L.: *See*—
Saffire, Victor N.; Masters, John H.; Hartman, Robert L.; and Taaffe, Robert B., 5,340,301, Cl. 425-336.000.

Hartmann & Braun Aktiengesellschaft: *See*—
Fabinski, Walter; Hubschmann, Peter; Schlau, Peter; and Wolff, Christian, 5,340,542, Cl. 422-82.050.

Hartvigsen, Joseph J., to Ceramatec, Inc. Thermally integrated heat exchange system for solid oxide electrolyte systems. 5,340,664, Cl. 429-20.000.

Harwigsson, Ian: *See*—
Hellsten, Martin; and Harwigsson, Ian, 5,339,855, Cl. 137-13.000.

Haschberger, Peter: *See*—
Tank, Volker; Haschberger, Peter; and Jansen, Burkhard, 5,341,207, Cl. 356-346.000.

Hasegawa, Mikio: *See*—
Inoue, Hiroyuki; and Hasegawa, Mikio, 5,341,286, Cl. 363-98.000.

Hasegawa, Saburo, to Matsushita Electric Industrial Co., Ltd. Method of machining sleeve bearing. 5,339,523, Cl. 29-898.020.

Hasegawa, Yutaka: *See*—
Komiyama, Yoshizo; Arai, Fumio; Toyama, Yoshiyasu; Hasegawa, Yutaka; and Tanioka, Tetsuya, 5,340,374, Cl. 65-29.120

Haselmaier, L. Haynes, Sr., to Johnson Service Company. Test apparatus for seal members in a pressurized oxygen environment. 5,339,678, Cl. 73-49.800.

Haselwander, Jack G., to Manufacturing Designs And Solutions, Inc. Yarn dyeing apparatus. 5,339,658, Cl. 68-203.000.

Hashiguchi, Hiroyuki; and Iwakiri, Ituro, to Oki Electric Industry Co., Ltd. Data output circuit with minimum power source noise. 5,341,338, Cl. 365-206.000.

Hashiguchi, Osamu; and Kinoshita, Hiroaki, to Japan Aviation Electronics. Electrical connector with a shielding shell. 5,340,321, Cl. 439-108.000.

Hashimoto Corporation: *See*—
Hashimoto, Kazuo, 5,341,411, Cl. 379-67.000.

Hashimoto Forming Industry Co., Ltd.: *See*—
Ohtake, Shinichi; Tamura, Tatsuya; Hotta, Tetsuo; and Kashiwagi, Takeshi, 5,339,584, Cl. 52-208.000.

Hashimoto, Kazuo, to Hashimoto Corporation. Caller ID blocking method and processing system (block caller ID information). 5,341,411, Cl. 379-67.000.

Hashimoto, Keisuke, to Sony Corporation. Double lid structure for tape cassette. 5,341,264, Cl. 360-132.000.

Hashimoto, Takatsugu: *See*—
Yagawa, Kazuo; Hashimoto, Takatsugu; Yamagishi, Junichi; Hachiya, Kazuo; and Takezawa, Satoshi, 5,340,867, Cl. 524-80.000.

Hashimoto, Yasuaki; and Uematsu, Tadahiro, to Usui Kokusai Sangyo Kaisha Ltd. Method of manufacturing thick-walled small diameter pipe. 5,339,513, Cl. 29-526.600.

Hastings, Robert J.; Varghese, Paily T.; Alexander, Dennis J.; Babb, James F.; and Bradshaw, John R., to Compaq Computer Corporation. Apparatus for removably supporting a plurality of hot plug-connected hard disk drives. 5,340,340, Cl. 439-64.000.

Hata, Masayuki: *See*—
Kinoshita, Itsuko; Hata, Masayuki; and Satou, Mitsugu, 5,341,031, Cl. 307-269.000.

Hatasa, Takeshi: *See*—
Ono, Hisao; and Hatasa, Takeshi, 5,341,138, Cl. 342-20.000.

Hattersley, John R.; Kim, Thomas D.; Lee, Jeffery Y.; and Reiley, Forrest A., to International Business Machines Corporation. Multiple virtual address translation per computer cycle. 5,341,485, Cl. 395-400.000.

Hatzakis, Michael, Jr.: *See*—
Cuomo, Jerome J.; Gelorme, Jeffrey D.; Hatzakis, Michael, Jr.; Lewis, David A.; Shaw, Jane M.; and Whitehair, Stanley J., 5,340,914, Cl. 528-353.000.

Hauck, James P., to Rockwell International Corporation. Gas bypass for bias reduction in laser gyrescopes. 5,341,208, Cl. 356-350.000.

Hauck, Steven M.; and Viola, Jeffrey P., to BASF Corporation. Refrigerator liner structures. 5,340,208, Cl. 312-406.000.

Haug, Thomas J., to HMF, Incorporated. Hydraulic hose flex-impulse tester. 5,339,677, Cl. 73-49.500.

Haun, Christopher, to Whitaker Corporation, The. Electrical tap connector. 5,340,335, Cl. 439-783.000.

Hauner, Friedrich, to Rieter Ingolstadt Spinnereimaschinenbau AG. Device to move spinning cans. 5,339,615, Cl. 57-281.000.

Haunhorst, Gregory A., to Aeroquip Corporation. Refrigeration system service adapter. 5,339,862, Cl. 137-614.050.

HAVE Limited Partnership: *See*—
Ikenberry, Maynard D., 5,340,236, Cl. 405-128.000.

Hawley, Alan M.; and Mattern, Charles C., to Earth Resources Corporation. Tapping assembly. 5,340,244, Cl. 408-87.000.

Hawley, Dan: *See*—
Chen, Yih-Wen; Brewer, Terry; Hunninghake, Jeffery; and Hawley, Dan, 5,340,619, Cl. 424-498.000.

Haworth, Walter; Whiteley, John; Wood, Alfred; and Yates, Stephen W., to Hollingsworth (U.K.) Ltd. Coiler and autoleveller. 5,339,495, Cl. 19-159.00R.

Hawthorne Treatment Systems, Inc.: *See*—
Hawthorne, William H.; and Herbert, Gary J., 5,340,468, Cl. 210-96.100.

Hawthorne, William H.; and Herbert, Gary J., to Hawthorne Treatment Systems, Inc. System for controlling addition of lime to reduce water alkalinity. 5,340,468, Cl. 210-96.100.

Hay, Richard C., Jr.; Pappas, Chris; Bergstrom, Harry J.; and Fazzolare, Richard D., to Nabisco, Inc. Method for producing spherical shaped baked goods. 5,340,598, Cl. 426-496.000.

Hayakawa, Toshio. Stranded wire binder. 5,339,869, Cl. 140-119.000.

Hayase, Rumiko; Oba, Masayuki; Kihara, Naoko; and Mikogami, Yukihiro, to Kabushiki Kaisha Toshiba. Photosensitive composition

and resin-encapsulated semiconductor device. 5,340,684, Cl. 430-165.000.

Hayashi, Shigeo; Okawa, Kazuhiro; and Mitsuyu, Tsuneo, to Matsushita Electric Industrial Co., Ltd. Sulfide-selenide manganese-zinc mixed crystal photo semiconductor and laser diode. 5,341,001, Cl. 257-94.000.

Hayashi, Yoko: *See*—
Matsuzawa, Nobuyuki; Hayashi, Yoko; Ata, Masafumi; and Tamura, Shin-Ichiro, 5,340,631, Cl. 428-64.000.

Hayes, Leo C., Jr.: *See*—
O'Brien, Stephen W.; Hayes, Leo C., Jr.; and Nishyama, Takaaki, 5,341,344, Cl. 367-96.000.

Hayes, Michael E.: *See*—
Bolden, Paul L.; and Hayes, Michael E., 5,340,407, Cl. 134-26.000.

Hayes Wheels International, Inc.: *See*—
Wei, Daniel C., 5,340,418, Cl. 148-549.000.

Haynes, Francis D.; Zarling, John P.; and Quinn, William F., to United States of America, Army. Apparatus for containing toxic spills employing hybrid thermosyphons. 5,339,893, Cl. 165-45.000.

Hayward, Gregory R.; and Frederiksen, Bjarne, to Illinois Tool Works Inc. Voltage protector and grounding bar arrangement for terminal block. 5,341,269, Cl. 361-119.000.

HDRK Mining Research Limited: *See*—
Piefenbrink, Wilfried; Weber, Walter; and Hamburger, Hermann, 5,340,199, Cl. 299-10.000.

Head, Philip F. Well packer. 5,340,626, Cl. 428-36.900.

Headen, William E., Jr., to Cherry Semiconductor Corporation. Error detector circuit for indication of low supply voltage. 5,341,038, Cl. 307-359.000.

Heat and Control, Inc.: *See*—
Caridis, Anthony A.; Cranfield, John; and Vine, Kyle C., 5,340,269, Cl. 414-786.000.

Heath Company: *See*—
Hoffman, Miles K.; Jenson, Brad; and Wieder, Klaus, 5,340,954, Cl. 200-277.200.

Heath, James E.; and Eppeland, John R., to BGK Finishing Systems, Inc. Coolant controlled IR heat treat apparatus. 5,340,089, Cl. 266-87.000.

Hechavarria, Caridad: *See*—
Elliott, Marianne; Gallagher, Lee A.; and Hechavarria, Caridad, 5,340,569, Cl. 424-63.000.

Hecht, Lewis C.; Sulger, Merritt P., deceased (by Sulger, Ellen, executrix); Thiele, Ernst E.; Pierson, Mark V.; and Williams, Lawrence E., to International Business Machines Corporation. Transfer container for transferring flimsy circuit panels under clean room conditions. 5,339,952, Cl. 206-334.000.

Heck, Alfred, deceased (representatives, Brigitte Heck and Pierre Heck legal), to Filterwerk Mann & Hummel GmbH. Apparatus for processing wastes from the machining of ferromagnetic materials. 5,340,472, Cl. 210-173.000.

Hecken, Hans J.; Heine, Rudiger; Lohse, Dietmar; and Moser, Heinz, to Mannesmann Aktiengesellschaft. Transfer station for foundry ladles. 5,340,092, Cl. 266-276.000.

Hedrick, Brian W.; Micklich, Frank T.; Johnson, Brian H.; Meier, Daniel G.; Whitsura, Frank R.; and Engelman, Bill R., to UOP. Phase separator apparatus. 5,340,470, Cl. 210-130.000.

Heeks, George J.: *See*—
Badesha, Santokh S.; Mammino, Joseph; Abramsohn, Dennis A.; Sypula, Donald S.; Henry, Arnold W.; Heeks, George J.; Pan, David H.; and Fratangelo, Louis D., 5,340,679, Cl. 430-126.000.

Heenan, Sidney A.: *See*—
Steere, Richard M.; and Heenan, Sidney A., 5,340,231, Cl. 404-14.000

Heep, Jerry J., to Tandy Corporation. Voltage to decibel converter having partial table lookup. 5,341,089, Cl. 324-115.000.

Hegge, Kjell, to Pyrozone Manufacturing Pty. Ltd. Apparatus for detecting variations in heat transfer for measuring the fluid level or the interface between two fluids within a container. 5,339,689, Cl. 73-295.000.

Heggestad, Robert E., to Harmon Industries, Inc. Train control system integrating dynamic and fixed data. 5,340,062, Cl. 246-5.000.

Hegyes, Peter: *See*—
Farkas, Sandor; Foldeak, Sandor; Karpati, Egon; Hegyes, Peter; Kreidl, Janos; Szporny, Laszlo; Czibula, Laszlo; and Petofi-Vass, Szilvia, 5,340,823, Cl. 514-317.000.

Heiber, William G.: *See*—
Clinnin, David D.; Heiber, William G.; and Lewarchik, Ronald J., 5,340,870, Cl. 524-522.000.

Heiberger, James F.; and Smith, David A., to Eastman Kodak Company. Memory card with programmable interleaving. 5,341,489, Cl. 395-425.000.

Heidelberger Druckmaschinen AG: *See*—
Blaser, Peter T.; Miltner, Karl-Hermann; and Spiegel, Nikolaus, 5,339,738, Cl. 101-477.000.

Heidenreich, John E., III: *See*—
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.

Heidjann, Franz: *See*—
Roderfeld, Heinrich; Heidjann, Franz; Diekhans, Norbert; and Behnke, Willi, 5,339,611, Cl. 56-10.200.

Heim, Philippe: *See*—
Gaillard, Patrice; Heim, Philippe; and Nowe, Stephane, 5,340,882, Cl. 525-379.000.

Heimann, Bruno; and Frankholz, Christian, to Friedrich Grohe Aktiengesellschaft. Wall-mount bracket for hand shower. 5,340,064, Cl. 248-75.000.

Hein, Otmar: *See*—
Bauer, Hans J.; Wurl, Wolfgang; Haas, Ludwig; and Hein, Otmar, 5,339,933, Cl. 188-371.000.

Heine, Rudiger: *See*—
Hecken, Hans J.; Heine, Rudiger; Lohse, Dietmar; and Moser, Heinz, 5,340,092, Cl. 266-276.000.

Heinio, Tapio M.; and Kontu, Mauri, to Aquamax Oy. Distillation apparatus with paired membrane units. 5,340,443, Cl. 202-182.000.

Heitz, Walter, to Mayer & Grammelspacher Dianawerk GmbH & Co KG. Low-recoil firearm. 5,339,789, Cl. 124-56.000.

Helfer, Jeffrey L.; and Devaney, Mark J., Jr., to Eastman Kodak Company. Photosensitive material processor. 5,341,189, Cl. 354-324.000.

Heller, Eugene. Tethered telescopic paper holder. 5,340,047, Cl. 242-599.100.

Hellier, Peter K.: *See*—
McMurtry, David R.; Wilson, David; Hellier, Peter K.; and Hajdukiewicz, Peter, 5,339,535, Cl. 33-561.000.

Helling, Gunter: *See*—
Hagemann, Jorg; and Helling, Gunter, 5,340,709, Cl. 430-551.000.

Hellsten, Martin; and Harwigsson, Ian, to Berol Nobel AB. Use of alkoxylated alkanolamide as friction-reducing agent. 5,339,855, Cl. 137-13.000.

Hemsath, Klaus H., to Gas Research Institute. Batch coil annealing furnace. 5,340,091, Cl. 266-256.000.

Henderson, James A., Jr.: *See*—
Connor, James M.; Bloomstein, Theodore M.; Henderson, James A., Jr.; Maher, John W.; and Errico, James H., 5,341,498, Cl. 395-600.000.

Henk, Hermann: *See*—
Hoppe, Manfred; Herd, Karl-Josef; Eizenhofer, Thomas; Harms, Wolfgang; Henk, Hermann; Kunde, Klaus; and Reddig, Wolfram, 5,340,928, Cl. 534-618.000.

Henkel Corporation: *See*—
Virnig, Michael J., 5,340,380, Cl. 75-744.000.

Henkin, Alexander: *See*—
Ramot, Danny; Chen, George; and Henkin, Alexander, 5,341,412, Cl. 379-92.000.

Henn, Rolf; Hinz, Werner; Schuster, Ludwig; and Vorspohl, Klaus, to BASF Aktiengesellschaft. Polyoxypropylene-polyols and polyoxypropylene-polyoxyethylene-polyols containing hydroxyl groups. 5,340,916, Cl. 528-405.000.

Hennig, Jurgen, to Spectrospin AG. Method for the generation of NMR signals with coherent phase profile by means of combining radio frequency pulses with incoherent phase profile. 5,341,098, Cl. 324-309.000.

Henning, Paul N.; and Anderson, Kent D., to American Tel-A-Systems, Inc. Digital switching system interconnecting buses with imcompatible protocols. 5,341,368, Cl. 370-58.100.

Henning, Thomas L.; and Giammaruti, Robert J., to Babcock & Wilcox Company, The. Welded rotating annular passage segment for coal pulverizers with replaceable vanes and adjustable passage port area. 5,340,041, Cl. 241-119.000.

Henning, Wolfgang: *See*—
Audenaert, Raymond; Kirchmeyer, Stephan; Sirinyan, Kirkor; and Henning, Wolfgang, 5,340,879, Cl. 525-327.400.

Henningsen, Jes O.: *See*—
Hammerich, Mads; Henningsen, Jes O.; and Olafsson, ri, 5,339,674, Cl. 73-24.020.

Henrichs, Paul M.: *See*—
Eckman, Richard R.; Peacock, Andrew J.; and Henrichs, Paul M., 5,340,917, Cl. 528-481.000.

Henricson, Kaj, to A. Ahlstrom Corporation. Method for recovering chemicals using recovery boiler having at least 2 different melt sections. 5,340,440, Cl. 162-31.000.

Henry, Arnold W.: *See*—
Badesha, Santokh S.; Mammino, Joseph; Abramsohn, Dennis A.; Sypula, Donald S.; Henry, Arnold W.; Heeks, George J.; Pan, David H.; and Fratangelo, Louis D., 5,340,679, Cl. 430-126.000.

Henry, Charles H.; Milbrodt, Michele A.; and Yaffe, Henry H., to AT&T Bell Laboratories. Polarization compensated integrated optical filters and multiplexers. 5,341,444, Cl. 385-11.000.

Henry, Christine; and Nitzsche, Remy, to ELA Medical. Implantable cardiac monitoring and/or control devices having automatic sensitivity control, apparatus and methods therefor. 5,339,820, Cl. 128-696.000.

Her Majesty the Queen in right of New Zealand: *See*—
Tallon, Jeffery L.; and Pooke, Donald M., 5,340,794, Cl. 505-500.000.

Herbert, Gary J.: *See*—
Hawthorne, William H.; and Herbert, Gary J., 5,340,468, Cl 210-96.100.

Herbert, Raymond J., to Neopost Limited. Multi-strike ink ribbon feed control. 5,340,223, Cl. 400-208.000.

Hercules Incorporated: *See*—
Babcock, Laura M.; Brady, Richard L.; and Burnier, Julia S., 5,340,644, Cl. 428-285.000.
Dasgupta, Sunil P.; Gingrich, Blain H.; Matyniak, Bernard J.; and Weaver, G. Gregory, 5,341,103, Cl. 324-454.000.

Herd, Karl-Josef: *See*—
Hoppe, Manfred; Herd, Karl-Josef; Eizenhofer, Thomas; Harms, Wolfgang; Henk, Hermann; Kunde, Klaus; and Reddig, Wolfram, 5,340,928, Cl. 534-618.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Herman, Floyd J.: *See—*
Fink, Steven R.; and Herman, Floyd J., 5,340,350, Cl. 446-226.000.
Hermanson, Herman A.; Drake, Donald J.; Rezanka, Ivan; Karz, Robert S.; Teumer, Roger G.; and Altavela, Robert P., to Xerox Corporation. Liquid deagassing apparatus. 5,341,162, Cl. 347-92.000.
Hermolin, Joshua; Keselman, Hugo; and Oren, Jacob, to Bromine Compounds Ltd. Process for the purification of diaminodiphenyl compounds. 5,340,445, Cl. 203-33.000.
Hernandez, Ernesto O. Method and system for receiving and transferring images in three dimensions. 5,341,168, Cl. 348-42.000.
Herrick, Robert M.: *See—*
Bhalla, Prithvi R.; Herrick, Robert M.; and Gates, Donald W., 5,340,791, Cl. 504-130.000.
Hertel, Paul E.; and Schneider, James R., to Textron Inc. Thread forming screw for forming an internal thread in a low ductility material. 5,340,254, Cl. 411-311.000.
Hesprich, Donald N.: *See—*
Crates, Thomas B.; and Hesprich, Donald N., 5,340,084, Cl. 254-134.3FT.
Hessler, Klaus-Michael: *See—*
Kozlowski, Thomas; Hessler, Klaus-Michael; and Musebrink, Olaf, 5,340,513, Cl. 264-42.000.
Hessler, Paul L.: *See—*
Melcher, Richard A.; Sherman, William, III; Nadig, Madhura; Stewart, Robert M.; Hessler, Paul L.; and Bryce, David R., 5,341,408, Cl. 377-8.000.
Hewlett-Packard Company: *See—*
Baney, Douglas M.; and Dupre, John J., 5,340,979, Cl. 250-214.00B.
Berger, Terry A.; and Wilson, William H., 5,340,476, Cl. 210-198.200.
Karp, Alan H.; Markstein, Peter; and Brzezinski, Dennis, 5,341,321, Cl. 364-748.000.
Kuo, Huei-Pei, 5,340,997, Cl. 257-10.000.
Kurita, Jun, 5,341,091, Cl. 324-750.000.
Pittaro, Richard J.; and Simons, Tad D., 5,341,206, Cl. 356-301.000.
Seher, Jens-Peter, 5,341,215, Cl. 356-445.000.
Stein, Irene F.; Degi, Greg A.; Boyd, David W.; and Webb, Steven L., 5,341,225, Cl. 358-498.000.
Yamada, Norihide; and Ichimura, Yoshikatsu, 5,341,390, Cl. 372-45.000.
Hewlett-Packard Corporation: *See—*
Winslow, Thomas H.; McClelland, Paul H.; and Wenzel, Donald E., 5,341,160, Cl. 347-86.000.
Hidding, Gerhard: *See—*
Gombault, Jacobus F., deceased; Gombault, Petronella A., legal representative; and Hidding, Gerhard, 5,339,603, Cl. 53-429.000.
Hieber, Fritz. Earring. 5,339,656, Cl. 63-14.100.
Higashionji, Masaru: *See—*
Murata, Akio; Mukae, Hideaki; Maegawa, Takaaki; Higashionji, Masaru; and Okada, Toshiharu, 5,341,256, Cl. 360-75.000.
Higgins, Robert P.; and Nitardy, John H., to Boeing Company, The. Multi-rate spread system. 5,341,396, Cl. 375-1.000.
High Line Manufacturing Inc.: *See—*
Bussiere, Raymond; and Topping, Gilbert, 5,340,040, Cl. 241-101.700.
Highland Manufacturing and Supply: *See—*
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.
Highland Supply Corporation: *See—*
Weder, Donald E.; and Straeter, Joseph G., 5,339,565, Cl. 47-72.000.
Weder, Donald E.; Straeter, William F.; and King, Michael J., 5,339,601, Cl. 53-397.000.
Hihasuto Seiko Co., Ltd.: *See—*
Hirose, Kazuya, 5,339,749, Cl. 108-143.000.
Hilbert, Samuel D.: *See—*
Chamberlin, Kim S.; Pruett, Wayne P.; Weaver, Max A.; Hilbert, Samuel D.; Quillen, Donna R.; and Salyer, Preston K., 5,340,910, Cl. 528-289.000.
Hilderbrand, P. Lloyd: *See—*
Fransen, Stephen R.; and Hilderbrand, P. Lloyd, 5,340,991, Cl. 250-459.100.
Hill, David C., to Navimap Corporation. Transparency holder for navigation aid. 5,339,528, Cl. 33-1.0SD.
Hill, J. Winfield: *See—*
Savoy, Robert L.; and Hill, J. Winfield, 5,341,133, Cl. 341-22.000.
Hill, Norman M. Apparatus and methods for realistic control of DC hobby motors and lamps. 5,341,453, Cl. 388-815.000.
Hillen, Walter: *See—*
Conrads, Norbert; Hillen, Walter; Maack, Hanns-Ingo; Rupp, Stephan; Schafer, Ingo; and Schiebel, Ulrich, 5,341,409, Cl. 378-29.000.
Hills, Gregg A.: *See—*
Cox, Gary B.; Reifsteck, Dennis R.; Hills, Gregg A.; and Fenter, Lynn R., 5,339,948, Cl. 198-635.000.
Hilti Aktiengesellschaft: *See—*
Ludwig, Wolfgang; and Hoffmann, Armin, 5,339,593, Cl. 52-707.000.
Hilton, Sydney: *See—*
Baird, Randy K.; and Hilton, Sydney, 5,339,943, Cl. 198-365.000.
Himeno, Kiyoshi; and Sekioka, Ryouichi, to Hoechst Mitsubishi Kasei Co., Ltd. Monoazo dye haivng a thiophene derivative as diazo component. 5,340,930, Cl. 534-753.000.
Himes, Ronald E.: *See—*
Harris, Kirk L.; Carpenter, Robert B.; Himes, Ronald E.; Dalrymple, E. Dwyann; Dahl, Jeffrey A.; and Thomas, Bruce D., 5,339,902, Cl. 166-293.000.
Hine, Shunji: *See—*
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.
Hino, Yasumori: *See—*
Birukawa, Masahiro; Miyatake, Norio; and Hino, Yasumori, 5,341,359, Cl. 369-107.000.
Hinokawa, Akira: *See—*
Tokoro, Hisao; Shioya, Satoru; and Hinokawa, Akira, 5,340,841, Cl. 521-60.000.
Hinson, Terry F., Sr.: *See—*
Simpson, Billy J., Sr.; and Hinson, Terry F., Sr., 5,339,605, Cl. 53-439.000.
Hinz, Werner: *See—*
Henn, Rolf; Hinz, Werner; Schuster, Ludwig; and Vorspohl, Klaus, 5,340,916, Cl. 528-405.000.
Hioki, Takanori; and Nishimura, Ryoji, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,340,694, Cl. 430-264.000.
Hipro Electronics Co., Ltd.: *See—*
Huang, Ming-Ho, 5,341,284, Cl. 363-89.000.
Hira, Govind L.; Hall, Richard L.; and Segal, Gary I., to Westinghouse Electric Corp. Method for applying brazing filler metals. 5,340,015, Cl. 228-205.000.
Hirai, Nobuyuki: *See—*
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaki; and Hirai, Nobuyuki, 5,340,788, Cl. 503-209.000.
Hirai, Toshio: *See—*
Sawada, Kiyoshi; and Hirai, Toshio, 5,340,959, Cl. 219-69.150.
Hirai, Yuji, to Honda Tsushin Kogyo Kabushiki Kaisha. Connector combination. 5,340,329, Cl. 439-357.000.
Hirakawa, Kiyoshi; Watadani, Izumi; Tanaka, azuhiko; Kawamoto, Masao; Tanaka, Takaaki; Sano, Hirohumi; Yoshimochi, Hayami; and Sato, Masahiro, to Kuraray Company Limited. Vinyl alçohol units-containing polymer composite fiber having resistance to hot water and wet heat and process for its production. 5,340,650, Cl. 428-373.000.
Hirao, Motohisa: *See—*
Okai, Makoto; Tsuji, Shinji; Ohishi, Akio; Hirao, Motohisa; Matsumura, Hiroyoshi; Harada, Tatsuo; Kita, Toshiaki; and Taira, Hideki, 5,340,637, Cl. 428-167.000.
Hiraoka, Shigeru, to Kabushiki Kaisha Toshiba. method of grouping of variable capacitance diodes having uniform characteristics. 5,341,094, Cl. 324-767.000.
Hirasawa, Hiroyuki; Kobayashi, Minako; and Matsuki, Yasuo, to Japan Synthetic Rubber Co., Ltd. Method of forming fine resist pattern. 5,340,702, Cl. 430-326.000.
Hirasawa, Yutaka, to Kabushiki Kaisha Toshiba. Computer system capable of disconnecting itself from a lan. 5,341,363, Cl. 370-13.000.
Hirata, Hideki; Koga, Keiji; and Ishida, Toshihiko, to TDK Corporation. Optical disk. 5,340,698, Cl. 430-271.000.
Hirose, Kazuya, to Hihasuto Seiko Co., Ltd. Table positioning mechanism. 5,339,749, Cl. 108-143.000.
Hirose, Tatsuya, to Fujitsu Limited. Semiconductor device having diffusion-preventing layer between III-V layer and IV layer. 5,341,006, Cl. 257-190.000.
Hiroshima University: *See—*
Taniguchi, Masaki; and Ohta, Toshiaki, 5,340,976, Cl. 250-207.000.
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J., to B.A.T. Cigarettenfabriken GmbH. Drying process for increasing the filling power of tobacco material. 5,339,837, Cl. 131-296.000.
Hirschberg, Bruno: *See—*
Madritsch, Gerhard; Hirschberg, Bruno; Kassegger, Friedrich; Maslo, Heinz; and Weitzer, Paul, 5,340,088, Cl. 266-44.000.
Hishida, Tadanori: *See—*
Takeda, Makoto; and Hishida, Tadanori, 5,340,999, Cl. 257-66.000.
Hitachi, Ltd.: *See—*
Amada, Nobutaka; Nakagaki, Harushige; Arai, Takao; and Noguchi, Takaharu, 5,341,248, Cl. 360-33.100.
Hori, Yasuro; Kuzunuki, Soshiro; Okabe, Shuichi; and Ito, Fumitaka, 5,341,413, Cl. 379-100.000.
Hoshino, Masakazu; and Sato, Tetsuo, 5,341,131, Cl. 340-825.210.
Ikeda, Hiraku; Sasada, Tetsuo; Sato, Isao; Moritomo, Yoshikazu; Takahashi, Koji; and Takaba, Minoru, 5,339,620, Cl. 60-39.030.
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000.
Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, 5,341,504, Cl. 395-800.000.
Okai, Makoto; Tsuji, Shinji; Ohishi, Akio; Hirao, Motohisa; Matsumura, Hiroyoshi; Harada, Tatsuo; Kita, Toshiaki; and Taira, Hideki, 5,340,637, Cl. 428-167.000.
Sekozawa, Teruji; Takahashi, Shinsuke; and Shioya, Makoto, 5,339,681, Cl. 73-118.200.
Shimizu, Atsushi; Isomura, Satoru; Yamada, Takeo; Kobayashi, Tohru; Fujimura, Yoshuhiro; and Ito, Yuko, 5,341,049, Cl. 307-482.100.

Tanaka, Shunji; Yamaoka, Akira; Umeno, Hidenori; Haraguchi, Masatoshi; Ogawa, Kiyoshi; Saijo, Keiji; and Takeda, Katsumi, 5,341,484, Cl. 395-400.000.
Tsukamoto, Takashi, 5,341,481, Cl. 395-325.000.
Yamazaki, Hideki; Takeda, Hiroshi; and Yokota, Yoshikazu, 5,341,471, Cl. 395-164.000.
Hitachi Medical Corp.: *See—*
Goto, Yoshihiro, 5,341,465, Cl. 395-134.000.
Hitachi Microcomputer Engineering Ltd.: *See—*
Tsukamoto, Takashi, 5,341,481, Cl. 395-325.000.
Hitachi Microcomputer System Ltd.: *See—*
Hoshino, Masakazu; and Sato, Tetsuo, 5,341,131, Cl. 340-825.210.
Hitaguchi, Todashi: *See—*
Ueda, Ikuo; Niwa, Mineo; Saito, Yoshimasa; Ishii, Yoshinori; and Hitaguchi, Todashi, 5,340,725, Cl. 435-69.400.
Hittich, Reinhard: *See—*
Wachtler, Andreas; Kompter, Hans-Michael; Poetsch, Eike; Geelhaar, Thomas; Hittich, Reinhard; and Krause, Joachim, 5,340,497, Cl. 252-299.610.
HMF, Incorporated: *See—*
Haug, Thomas J., 5,339,677, Cl. 73-49.500.
Ho, Shih-Yeng: *See—*
Chao, Kuei-Jung; Ho, Shih-Yeng; and Chang, Te-Chung, 5,340,500, Cl. 252-500.000.
Ho, Yui K.: *See—*
Moyer, William C.; Gutierrez, Joseph A.; and Ho, Yui K., 5,341,500, Cl. 395-725.000.
Hoagland, Mary M., to Vining Industries, Inc. Scrub brush. 5,339,481, Cl. 15-111.000.
Hobbel, Arend: *See—*
Minderman, Walter; and Hobbel, Arend, 5,340,351, Cl. 452-182.000.
Hoche, Hermann. Process for the production of low cholesterol butterfat or butter. 5,340,602, Cl. 426-664.000.
Hochman, Lana: *See—*
Schultz, Thomas M.; and Hochman, Lana, 5,340,367, Cl. 8-432.000.
Hodge, James D.; and Klemptner, Lori J., to Illinois Superconductor Corporation. Superconducting 123YBaCu-oxide produced at low temperatures. 5,340,797, Cl. 505-4.700.
Hodgetts, Graham L., to Loadhandler Industries, Inc. Pickup truck unloader. 5,340,266, Cl. 414-527.000.
Hodoshima, Takashi; Ishigaki, Kouji; Nakahara, Kazuyuki; and Kishi, Fumio, to Ricoh Company, Ltd. Image forming equipment using a toner cartridge. 5,341,196, Cl. 355-260.000.
Hoechst Aktiengesellschaft: *See—*
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,340,682, Cl. 430-165.000
Schleith, Oskar; and Sabel, Hans-Dieter, 5,340,877, Cl. 525-154.000.
Hoechst Celanese Corporation: *See—*
Doerr, Marvin L.; Hammer, Joseph J.; and Dees, J. R., 5,340,909, Cl. 528-276.000.
Hoechst Mitsubishi Kasei Co., Ltd.: *See—*
Himeno, Kiyoshi; and Sekioka, Ryouichi, 5,340,930, Cl. 534-753.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, 5,340,936, Cl. 546-124.000.
Hoepfner, Joachim: *See—*
Zwicknagl, Hans-Peter; Hoepfner, Joachim; and Schleicher, Lothar, 5,340,755, Cl. 437-33.000.
Hoff, H. Milton, Jr.: *See—*
Hart, Charles M.; Hoff, H. Milton, Jr.; Tillman, John L., Jr.; Trout, Lindell R.; and Witte, Stephen L., Sr., 5,339,896, Cl. 166-241.100.
Hoffart, William K., to Saskatchewan Telecommunications. CATV channel access control and metering apparatus. 5,341,216, Cl. 348-1.000.
Hoffman, Jerome P.: *See—*
Manning, Timothy J.; and Hoffman, Jerome P., 5,339,668, Cl. 72-70.000.
Hoffman, Miles K.; Jenson, Brad; and Wieder, Klaus, to Heath Company. Wireless multiple position switching system. 5,340,954, Cl. 200-277.200.
Hoffman, Peter. Illuminated sign and method of assembly. 5,339,550, Cl. 40-544.000.
Hoffmann, Armin: *See—*
Ludwig, Wolfgang; and Hoffmann, Armin, 5,339,593, Cl. 52-707.000.
Hoffmann, Klaus, to Pont-A-Mousson S.A. Locking device for laid pipes with embedded insert. 5,340,169, Cl. 285-337.000.
Hoffmann, Martin: *See—*
Schulz, Jens; Hoffmann, Martin; and Rebeaud, Jean-Claude, 5,340,432, Cl. 156-472.000.
Hofmann, Peter: *See—*
Meier, Hans R.; and Hofmann, Peter, 5,340,855, Cl. 524-102.000.
Hofmann, Richard W.: *See—*
Groya, Robert J.; and Hofmann, Richard W., 5,339,993, Cl. 222-153.000.
Holl, Rolf; Rombach, Rudolf; and Roosmann, Karl-Heinz, to Rheinmetall GmbH. Projectile with cooled nose cone. 5,340,058, Cl. 244-117.00A.
Holladay, Mark W.: *See—*
Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., 5,340,802, Cl. 514-18.000.
Hollier, Michael P.; and Welsby, Kevin, to British Telecommunications public limited company. Noise-cancelling handset. 5,341,420, Cl. 379-433.000.
Hollinee Corporation: *See—*
Esu, Esu S., 5,340,651, Cl. 428-375.000.
Hollingsworth (U.K.) Ltd.: *See—*
Haworth, Walter; Whiteley, John; Wood, Alfred; and Yates, Stephen W., 5,339,495, Cl. 19-159.00R.
Hollis, Tommy W.; and Morris, Hugh L., to C & H Enterprises. Mounting clip for vinyl siding. 5,339,608, Cl. 52-545.000.
Holloway, James A., to Delaware Capital Formation, Inc. Portable surface lift for a vehicle. 5,340,082, Cl. 254-88.000.
Holman, Mitchell C.: *See—*
Foroudastan, Saeed D.; and Holman, Mitchell C., 5,341,303, Cl. 364-468.000.
Holmes, Alix A.: *See—*
Dziabo, Anthony J.; Holmes, Alix A.; Anger, Claude B.; Baker, John C.; and Peng, Lin, 5,340,583, Cl. 424-412.000.
Holmgren, Jennifer S.: *See—*
Gillespie, Ralph D.; and Holmgren, Jennifer S., 5,340,465, Cl. 208-191.000.
Holso, Eino: *See—*
Jarvenkyla, Jyri; and Holso, Eino, 5,340,299, Cl. 425-326.100.
Holt, Earl R., to Hose Specialties/Capri, Inc. Multiple hose assembly. 5,339,866, Cl. 138-111.000.
Holtz, Richard B.: *See—*
della-Cioppa, Guy R.; Garger, Stephen J., Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., 5,340,734, Cl. 435-212.000.
Holyoak, Hugh K. Fish rodeo game and method having a lasso apparatus and method. 5,340,120, Cl. 273-447.000.
Honarpour, Mehdi: *See—*
Macrefat, Nicida L.; Parmeswar, Ravi; Brinkmeyer, Alan D.; and Honarpour, Mehdi, 5,341,101, Cl. 324-376.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,340,660, Cl. 428-687.000.
Horimura, Hiroyuki, 5,340,659, Cl. 428-567.000.
Kaneko, Masakatsu; Nosse, Hidetaka; and Takeishi, Katsumi, 5,341,458, Cl. 395-80.000.
Kikuchi, Fumio; Itoh, Kazuo; Taga, Kazuharu; Matsunaga, Naoto; Ono, Hiroshi; Namba, Takaoki; and Narita, Kazuhiko, 5,341,461, Cl. 395-120.000.
Nakayama, Hiroshi; Takeda, Tomokazu; Yomoto, Toshiyuki; Kitada, Mitsuo; Ohta, Shoji; and Chosa, Masatoshi, 5,339,918, Cl. 180-292.000.
Nakayama, Shigeto, 5,341,437, Cl. 382-1.000.
Watanabe, Shinichi; Shibayama, Takao; Uzuyama, Kimitake; Fukamachi, Kazuyuki; Maekawa, Keiichiro; and Maruo, Masaru, 5,339,682, Cl. 73-123.000.
Honda Giken Kogyo Kabushiki Kaishi: *See—*
Takiguchi, Shiro, 5,340,952, Cl. 181-282.000.
Honda, Kenji, to OCG Microelectronic Materials, Inc. Chemically modified hydroxy styrene polymer resins and their use in photoactive resist compositions wherein the modifying agent is monomethylol phenol. 5,340,687, Cl. 430-192.000.
Honda, Munetaka: *See—*
Hamano, Ichirou; Honda, Munetaka; Takakuwa, Tateki; Omori, Toshiyuki; and Kotani, Yasuaki, 5,339,600, Cl. 53-306.000.
Honda Tsushin Kogyo Kabushiki Kaisha: *See—*
Hirai, Yuji, 5,340,329, Cl. 439-357.000.
Honda, Yoshiyuki: *See—*
Shiraishi, Hirofumi; and Honda, Yoshiyuki, 5,339,539, Cl. 34-58.000.
Honda, Yuuji: *See—*
Kajino, Yuuichi; Sugi, Hikaru; Ban, Koichi; Honda, Yuuji; Samukawa, Katsuhiko; and Kawai, Takayoshi, 5,340,021, Cl. 236-49.300.
Honeywell Inc.: *See—*
Bohan, John E., Jr.; Mills, Frank S.; and Ward, Scott A., 5,340,019, Cl. 236-20.00R.
Karpinski, Andrew J., 5,341,209, Cl. 356-350.000.
Wu, Mien T., 5,341,097, Cl. 324-207.200.
Honma, Ken: *See—*
Kishiro, Osamu; Shirahama, Rie; Sakata, Yasuyuki; Tanaka, Hideaki; and Honma, Ken, 5,340,911, Cl. 528-308.000.
Honma, Kouichi: *See—*
Miya, Kazuyuki; Kato, Osamu; and Honma, Kouichi, 5,341,384, Cl. 371-31.000.
Hoopes, Mark S.: *See—*
Preiato, Ernest J.; Meetze, Marion M.; Hoopes, Mark S.; and Bessemer, Robert H., 5,340,295, Cl. 425-71.000.
Hoover Company, The: *See—*
Louis, Jeffrey S., 5,339,916, Cl. 180-19.300.
Hoover, James M., to Scientific Columbus Co. Bidirectional, transconductance, DC amplifier having high output compliance voltage. 5,341,090, Cl. 324-123.00R.
Hoppe, Manfred; Herd, Karl-Josef; Eizenhofer, Thomas; Harms, Wolfgang; Henk, Hermann; Kunde, Klaus; and Reddig, Wolfram, to Bayer Aktiengesellschaft. Reactive dyestuff containing triazinyl and halopyrimidine moieties. 5,340,928, Cl. 534-618.000.
Horan, Robert; and Valentine, A. H. Lynn, to Devon Industries, Inc. Instrument tray with instrument supports. 5,339,955, Cl. 206-370.000.
Horbal, John J.; and Emmett, James S., to Ascom Hasler Mailing Systems, Inc. Mechanical postage meter resetting device and method. 5,340,965, Cl. 235-101.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Hori, Koji: *See*—
Kawai, Masao; Kyotani, Yoshihiro; Aruga, Hideki; Shiimado, Toshihiro; Ito, Yoshihisa; and Hori, Koji, 5,339,649, Cl. 62-46.100.
Hori, Yasuro; Kuzunuki, Soshiro; Okabe, Shuichi; and Ito, Fumitaka, to Hitachi, Ltd. Communication equipment with a destination area on-line display function. 5,341,413, Cl. 379-100.000.
Horian, Richard C. Cargo partition. 5,340,183, Cl. 296-24.100.
Horiba, Ltd.: *See*—
Akiyama, Shigeyuki; and Tsutsui, Tatsuhide, 5,341,102, Cl. 324-445.000.
Horiguchi, Toshio, to Olympus Optical Co., Ltd. Apparatus for recording/reproducing optical information on/from optical card. 5,341,354, Cl. 369-44.110.
Horimura, Hiroyuki, to Honda Giken Kogyo Kabushiki Kaisha. High strength structural member and a process and starting powder for making same. 5,340,659, Cl. 428-567.000.
Horton, Donald L.: *See*—
Calvillo, Samuel J.; Horton, Donald L.; and Ganz, Frank, 5,340,955, Cl. 200-302.200.
Horwell, David C.; Pritchard, Martyn C.; and Richardson, Reginald S., to Warner-Lambert Company. Pro drugs for CCK antagonists. 5,340,825, Cl. 514-339.000.
Hosaka, Naoki, to Olympus Optical Co., Ltd. Information recording method capable of increasing information reproducing efficiency. 5,341,361, Cl. 369-275.300.
Hose Specialties/Capri, Inc.: *See*—
Holt, Earl R., 5,339,866, Cl. 138-111.000.
Hosgoer, Sinan: *See*—
Esau, Dierk; and Hosgoer, Sinan, 5,339,494, Cl. 16-294.000.
Hoshino, Kazutomo: *See*—
Ohta, Hiroshi; and Hoshino, Kazutomo, 5,339,811, Cl. 128-653.100.
Hoshino, Masakazu; and Sato, Tetsuo, to Hitachi, Ltd.; and Hitachi Microcomputer System Ltd. Communications system and a system control method. 5,341,131, Cl. 340-825.210.
Hoshino, Toshihiko: *See*—
Sakamoto, Shunji; and Hoshino, Toshihiko, 5,341,304, Cl. 364-468.000.
Hosie, Stanley; and Dinnes, Callum J. B., to ABB Vetco Gray Inc. Cuttings disposal system. 5,339,912, Cl. 175-66.000.
Hosseinzadeh, Ali: *See*—
Amirkiai, Maziar; Northrup, Oliver W.; Hosseinzadeh, Ali; Yamasaki, Naoki; and Noma, Takayuki, 5,341,259, Cl. 360-105.000.
Hossi, Petri: *See*—
Valimaa, Veli-Matti; Leman, Ari; Hossi, Petri; and Olkkola, Jari, 5,341,149, Cl. 343-895.000.
Hotta, Tetsuo: *See*—
Ohtake, Shinichi; Tamura, Tatsuya; Hotta, Tetsuo; and Kashiwagi, Takeshi, 5,339,584, Cl. 52-208.000.
Hotta, Yasuhiro, to Sharp Kabushiki Kaisha. Semiconductor read only memory with paralleled selecting transistors for higher speed. 5,341,337, Cl. 365-204.000.
Hotta, Yoshitsugu: *See*—
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.
Hou, Chih-Hsiang. Automatic screw feed-in apparatus. 5,339,713, Cl. 81-434.000.
Howard, Webster E.: *See*—
Benzschawel, Terry L.; and Howard, Webster E., 5,341,153, Cl. 345-152.000.
Howard, William R.; Tysver, Oliver J.; Osheff, Sheldon; McGrail, John G.; and Petrie, Robert J., to Crown Cork & Seal Company, Inc. Method and apparatus for printing multicolored container body blanks in a single pass. 5,339,731, Cl. 101-35.000.
Howlett, Gordon P.: *See*—
Griessman, Detlef; Manlove, Gregory J.; Block, Thomas G.; and Howlett, Gordon P., 5,341,431, Cl. 381-15.000.
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., to BASF Corporation. Acid-dye resistant polyamide products and process for preparation. 5,340,886, Cl. 525-426.000.
Hrdlicka, Fred L.; Newman, Gary R.; and Minter, Mearl J., to Pella Corporation. Window sash and method of constructing same. 5,339,583, Cl. 52-204.530.
Hsh, Ah-Yeh. Bicycle seat structure. 5,340,192, Cl. 297-197.000.
Hshieh, Fwu-Iuan; Chang, Mike F.; and Yilmaz, Hamza, to Siliconix Incorporated. Short channel trenched DMOS transistor. 5,341,011, Cl. 257-330.000.
Hsieh, Chang-Ming; Hsu, Louis L. C.; and Ogura, Seiki, to International Business Machines Corporation. Method of making a vertical gate transistor with low temperature epitaxial channel. 5,340,759, Cl. 437-41.000.
Hsieh, Chang-Ming; Hsu, Louis L. C.; Mei, Shaw-Ning; Knepper, Ronald W.; and Wagner, Lawrence F., Jr., to International Business Machines Corporation. Novel vertical-gate CMOS compatible lateral bipolar transistor. 5,341,023, Cl. 257-559.000.
Hsieh, Chi-Chung. Folding golf bag stand. 5,340,063, Cl. 248-96.000.
Hsu, Louis L. C.: *See*—
Hsieh, Chang-Ming; Hsu, Louis L. C.; and Ogura, Seiki, 5,340,759, Cl. 437-41.000.
Hsieh, Chang-Ming; Hsu, Louis L. C.; Mei, Shaw-Ning; Knepper, Ronald W.; and Wagner, Lawrence F., Jr., 5,341,023, Cl. 257-559.000.
Hsu, Shin-Yi. System for texture-based automatic detection of man-made objects in representations of sensed natural environmental scenes. 5,341,439, Cl. 382-28.000.
Huang, Chin-Chang: *See*—
Liao, Pohsien; Huang, Chin-Chang; and Wang, Jye-Huei, 5,341,253, Cl. 360-61.000.
Huang, Ming-Ho, to Hipro Electronics Co., Ltd. Power-saving power supply unit. 5,341,284, Cl. 363-89.000.
Huang, Nai Z.: *See*—
Koch, Frederick W.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Kolp, Christopher J.; Stoldt, Stephen H.; and Denis, Richard A., 5,340,369, Cl. 44-366.000.
Huang, Tien-Tsai. Gauge with alarm device. 5,339,683, Cl. 73-146.800.
Huang, Wen-Chang, to Huang, Wen-Chang; and Chu, Te-Yaung. Hydrofoil craft. 5,339,761, Cl. 114-274.000.
Hubble, Fred F., III; Swales, Michael G.; Weber, Michael E.; Abowitz, Gerald; and Bov, Raphael F., Jr., to Xerox Corporation. Method and apparatus for sensing magnetic signal strength of xerographically developed toner images for closed loop control of magnetic printing. 5,341,193, Cl. 355-203.000.
Hubschmann, Peter: *See*—
Fabinski, Walter; Hubschmann, Peter; Schlau, Peter; and Wolff, Christian, 5,340,542, Cl. 422-82.050.
Huddas, Richard V., to Fuel Systems Textron, Inc. Cleaning apparatus and method for fuel and other passages. 5,339,845, Cl. 134-169.00A.
Hudgens, Stephen J.: *See*—
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Czubatyj, Wolodymyr; Strand, David A.; and Wicker, Guy C., 5,341,328, Cl. 365-163.000.
Huebscher, Laszlo, to Advanced Custom Applications, Inc. Optical fiber splice. 5,341,448, Cl. 385-97.000.
Huestis, Allan C., to Georgetown Steel Corporation. Method and apparatus for producing low sulfur metallized pellets. 5,340,378, Cl. 75-414.000.
Huffman, James E., to Rockwell International Corporation. Method of removing oxygen from a controlled atmosphere. 5,340,553, Cl. 423-219.000.
Huffman, James M.: *See*—
Slaybuagh, Loren E.; and Huffman, James M., 5,340,171, Cl. 292-21.000.
Hughes Aircraft Company: *See*—
Megerle, Clifford A.; and Wong, Boon, 5,340,411, Cl. 148-26.000.
Mellissinos, Anthony; and Powell, Scott, 5,341,050, Cl. 307-490.000.
Schreiber, Christopher M.; and Crumly, William R., 5,340,296, Cl 425-123.000.
Smith, Ronald T., 5,341,230, Cl. 359-13.000.
Stanford, Thomas B., r.; and Chao, Sidney C., 5,339,844, Cl. 134-107.000.
Zalewski, Edward F., 5,340,974, Cl. 250-205.000.
Hughes, David L., to Merck & Co., Inc. Process for the preparation of 2-diazo-3-trisubstituted silyloxy 3-butenoates. 5,340,927, Cl. 534-558.000.
Hughes Missile Systems Company: *See*—
Frazier, Lawrence M.; Sheffler, James B.; and Carlson, Ronald F., 5,341,141, Cl. 342-59.000.
Hulderman, Garry N.; and Ord, Hugh L., 5,339,742, Cl. 102-387.000.
Hughett, Paul D.: *See*—
Adams, Lawrence J.; Fruda, Thomas R.; and Hughett, Paul D., 5,340,488, Cl. 252-47.500.
Huguenin, Denis: *See*—
Collin, Marie-Pierre; Huguenin, Denis; and Le Govic, Anne-Marie, 5,340,556, Cl. 423-263.000.
Huitema, Thomas W., to Ethicon, Inc. Pressurized fluid actuation system for amplifying operator input force in a surgical instrument. 5,339,723, Cl. 91-388.000.
Hulderman, Garry N.; and Ord, Hugh L., to Hughes Missile Systems Company. Target detection and fire control system for parachute-suspended weapon. 5,339,742, Cl. 102-387.000.
Hullmann, Klaus: *See*—
Muller, Klaus, deceased; and Hullmann, Klaus, 5,339,500, Cl. 24-514.000.
Hulteen, Eric A.: *See*—
Vertelney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., 5,341,293, Cl. 364-419.170.
Hungerbuhler, Ernst; and Burkhard, Hans R., to Mettler-Toledo AG. Device for reducing the force in a force-measuring apparatus, in particular in a scale. 5,340,951, Cl. 177-229.000.
Hungler, Joel: *See*—
Ruppel, Remy; Hungler, Joel; and Laurent, Pierre, 5,339,730, Cl. 101-32.000.
Hunninghake, Jeffery: *See*—
Chen, Yih-Wen; Brewer, Terry; Hunninghake, Jeffery; and Hawley, Dan, 5,340,619, Cl. 424-498.000.
Hunt Holdings, Inc.: *See*—
Schreiner, Michael J., 5,340,075, Cl. 248-346.000.
Hunter, David H.: *See*—
Cycon, James P.; Hunter, David H.; and Krauss, Timothy A., 5,340,279, Cl. 416-134.00A.
Hunter Douglas Inc.: *See*—
Colson, Wendell B.; Anthony, James M.; Oberg, Brad H.; and Jansen, Cornelis M., 5,339,883, Cl. 160-84.10D.

Hurlburt, Joseph C., to Ford-New Holland, Inc. Oversteer correction for compound steering apparatus. 5,340,138, Cl. 280-97.000.
Hurr, Helmut: *See*—
Benckert, Hartmut; and Hurr, Helmut, 5,340,291, Cl. 417-569.000.
Husky Injection Molding Systems Ltd.: *See*—
Ingram, Ronald W., 5,340,302, Cl. 425-528.000.
Hussin, Gregory J. Tooth isolation device. 5,340,313, Cl. 433-136.000.
Hutchinson, Ted F., to Minnesota Mining and Manufacturing Company. Surge arrester fault indicator. 5,341,271, Cl. 361-123.000.
Hutchison, Derek P.: *See*—
McNaughton, John; and Hutchison, Derek P., 5,339,825, Cl. 128-725.000.
Hutchison, John W.; and Hutchison, Margaret B. Hand control valve. 5,340,079, Cl. 251-85.000.
Hutchison, Margaret B.: *See*—
Hutchison, John W.; and Hutchison, Margaret B., 5,340,079, Cl. 251-85.000.
Huynh, Hoa T.: *See*—
Wong, Patrick S. L.; Theeuwes, Felix; Eckenhoff, James B.; Larsen, Steven D.; and Huynh, Hoa T., 5,340,590, Cl. 424-473.000.
Hwang, In-Hwan; Lee, Hye-Kyoung; Bae, Yi-Sung; and Lee, Bang-Won, to SamSung Electronics Co., Ltd. Integrated PCM-CODEC circuit with telemetering noise elimination. 5,341,417, Cl. 379-399.000.
Hydril Company: *See*—
Carbaugh, William L.; and Carlson, Douglas W., 5,339,864, Cl. 137-844.000.
Hyeon, Yun-Jong, to SamSung Electronics Co., Ltd. Automatic gain control circuit. 5,341,173, Cl. 348-525.000.
Hynecek, Jaroslav, to Texas Instruments Incorporated. Bulk charge modulated device photocell with lateral charge drain. 5,341,008, Cl. 257-231.000.
Hynes, Mark: *See*—
Vennum, Michael D.; Hynes, Mark; and Conover, Gary, 5,341,146, Cl. 342-170.000.
Hyuga, Hiroaki: *See*—
Okazaki, Yoji; and Hyuga, Hiroaki, 5,341,393, Cl. 372-69.000.
Ibe, Tomoyoshi: *See*—
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl. 51-429.000.
Ichikawa, Haruo: *See*—
Takahashi, Koichi; and Ichikawa, Haruo, 5,340,426, Cl. 156-264.000.
Ichimura, Yoshikatsu: *See*—
Yamada, Norihide; and Ichimura, Yoshikatsu, 5,341,390, Cl. 372-45.000.
Idage, Bhaskar B.; Chavan, Nayaku N.; Mahajan, Sudhakar S.; and Sivaram, Swaminathan, to Council of Scientific & Industrial Research. Process for the preparation of aromatic polyesters. 5,340,908, Cl. 528-275.000.
Idel, Karsten-Josef: *See*—
Westeppe, Uwe; Struss, Klaus; Lindner, Christian; Idel, Karsten-Josef; and Laue, Hans-Joachim, 5,340,876, Cl. 525-66.000.
Idemitsu Kosan Co., Ltd.: *See*—
Kuramoto, Masahiko, 5,340,892, Cl. 526-119.000.
Tomoike, Kazuhiro; and Kurosawa, Moriyoshi, 5,341,233, Cl. 359-88.000.
Ihara, Hirokazu: *See*—
Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, 5,341,504, Cl. 395-800.000.
Iijima, Masaki: *See*—
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.
Iizuka, Akira; and Kawakami, Keiji, to Yamaha Corporation. Musical tone generation apparatus capable of writing/reading parameters at high speed. 5,340,940, Cl. 84-622.000.
Ikari Corporation: *See*—
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, 5,340,596, Cl. 426-301.000.
Ikeda, Hiraku; Sasada, Tetsuo; Sato, Isao; Moritomo, Yoshikazu; Takahashi, Koji; and Takaba, Minoru, to Hitachi, Ltd. Control apparatus and a control method of a gas turbine combustor. 5,339,620, Cl. 60-39.030.
Ikeda, Takeshi: *See*—
Baba, Yoshinobu; Ikeda, Takeshi; Tada Tatsuya; Sato, Yuko; and Amano, Yasuko, 5,340,677, Cl. 430-106.600.
Ikegaya, Isao; and Yamamura, Mituji, to Fujikiko Kabushiki Kaisha. Seat reclining apparatus. 5,340,196, Cl. 297-367.000.
Ikegaya, Tadahiko: *See*—
Shigeeda, Nobuyuki; Yamamoto, Susumu; Katsurabayashi, Masahiko; and Ikegaya, Tadahiko, 5,341,223, Cl. 358-440.000.
Ikenberry, Maynard D., to HAVE Limited Partnership. Burn chamber for use in a system for heated air extraction of contaminants from a soil stack. 5,340,236, Cl. 405-128.000.
Iki, Makoto: *See*—
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,341,246, Cl. 359-837.000.
Ikkala, Olli: *See*—
Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, 5,340,499, Cl. 252-500.000.
Ikuma, Hariko: *See*—
Nishikawa, Susumu; and Ikuma, Hariko, 5,340,544, Cl. 422-99.000.
Ikusawa, Katsumi: *See*—
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, 5,339,666, Cl. 72-56.000.
Ikuta, Tatsuyoshi: *See*—
Arai, Ryuji; Eshita, Toru; Niimi, Kaoru; Ikuta, Tatsuyoshi; Furuichi, Hiroyuki; and Iwanaga, Tetsuya, 5,341,152, Cl. 345-133.000.
Ilco Unican, Inc.: *See*—
Goldman, Ilan, 5,339,662, Cl. 70-278.000.
Illig, Kathleen J.; and Sarpotdar, Pramod, to Sterling Winthrop Inc. Formulations comprising olin 10-G to prevent particle aggregation and increase stability. 5,340,564, Cl. 424-9.000.
Illinois Superconductor Corporation: *See*—
Hodge, James D.; and Klemptner, Lori J., 5,340,797, Cl. 505-4.700.
Illinois Tool Works Inc.: *See*—
Gugle, James E.; and Tisol, James S., 5,339,501, Cl. 24-573.100.
Hayward, Gregory R.; and Frederiksen, Bjarne, 5,341,269, Cl. 361-119.000.
Ima, Seiichiro: *See*—
Sadatoshi, Hajime; Ima, Seiichiro; and Shiratani, Eisuke, 5,340,878, Cl. 525-240.000.
Imamura, Tsuyoshi; Mizuguchi, Katsumi; Shibai, Yasuhiro; Ishii, Keizou; Ishikura, Shinichi; and Saito, Koichi, to Nippon Paint Co., Ltd. Continuous polymerization method and apparatus. 5,340,891, Cl. 526-88.000.
Imanishi, Aisaku: *See*—
Takahashi, Shingo; and Imanishi, Aisaku, 5,341,317, Cl. 364-720.000.
Imanishi, Hisao; and Nakajima, Keiichi, to Sumitomo Wiring Systems, Ltd. Coil spring engagement construction of a high tension terminal in an engine ignition apparatus. 5,340,323, Cl. 439-125.000.
Immuno Aktiengesellschaft: *See*—
Eibl, Johann; Dorner, Friedrich; and Mitterer, Artur, 5,340,575, Cl. 424-196.110.
Imperial Chemical Industries plc: *See*—
Ohnmacht, Cyrus J.; Harris, Robert J.; and Trainor, Diane A., 5,340,819, Cl. 514-297.000.
Pille-Wolf, Wolfgang; Leenslag, Jan W.; Eling, Berend; and Ingelaere, Dirk G. C., 5,340,852, Cl. 524-14.000.
Imperial Chemical Indutries PLC: *See*—
Carnell, Peter J. H., 5,340,554, Cl. 423-235.000.
Inada, Hirofumi: *See*—
Matsumoto, Toshiyuki; Inada, Hirofumi; Nittaya, Hiroshi; and Kato, Masahiro, 5,341,324, Cl. 365-51.000.
Inada, Tooru: *See*—
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000.
Inaoka, Yoshie: *See*—
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.
Indresco Inc.: *See*—
Langenohl, Mark C., 5,340,782, Cl. 501-133.000.
Industria Colombiana de Electronicos y Electrodomesticos, Incelt S.A.: *See*—
Gilbert, Jack J., 5,340,597, Cl. 426-433.000.
Industrial Technology Research Institute: *See*—
Chen, Chi-Hwang; Chiang, Chih-Cheng; Lin, Bin-Yuan; and Chang, Rong-Hwa, 5,340,861, Cl. 524-166.000.
Chen, Tshaw-Chuang; Chang, Hong-Shi; Yang, Huan-Jen; and Shieh, Yaw-Shih, 5,341,077, Cl. 318-434.000.
Lin, Chieh-Yu, 5,341,244, Cl. 359-692.000.
Ingelaere, Dirk G. C.: *See*—
Pille-Wolf, Wolfgang; Leenslag, Jan W.; Eling, Berend; and Ingelaere, Dirk G. C., 5,340,852, Cl. 524-14.000.
Ingram, Bill; and Spector, George. Cutting torch tip cleaner. 5,339,485, Cl. 15-236.060.
Ingram, Ronald W., to Husky Injection Molding Systems Ltd. Apparatus for preparing hollow plastic article. 5,340,302, Cl. 425-528.000.
Ingram, Wayne B.; and Porter, Byron W., to Fugro-McClelland Leasing, Inc. Self-contained apparatus and method for determining the static and dynamic loading characteristics of a soil bed. 5,339,679, Cl. 73-84.000.
Inmos Limited: *See*—
Simpson, Robert J., 5,341,371, Cl. 370-85.400.
Inoue, Akihisa: *See*—
Shibata, Toshisuke; Inoue, Akihisa; and Masumoto, Tsuyoshi, 5,340,416, Cl. 148-420.000.
Inoue, Hiroyuki; and Hasegawa, Mikio, to Matsushita Electric Industrial Co., Ltd. Current detecting method. 5,341,286, Cl. 363-98.000.
Inoue, Kazunari; and Ogawa, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device capable of flash writing and method of flash writing. 5,341,332, Cl. 365-189.010.
Inoue, Ryuji: *See*—
Saeki, Noriyasu; Watanabe, Koichi; Iwai, Hideo; Yasuda, Eiichi; and Inoue, Ryuji, 5,340,300, Cl. 425-329.000.
Inoue, Sadayuki: *See*—
Kaneko, Hideki; Inoue, Sadayuki; and Ookuma, Ikuo, 5,341,218, Cl. 348-695.000.
Inoue, Yasuo: *See*—
Harada, Hidefumi; and Inoue, Yasuo, 5,340,645, Cl. 428-292.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Inoue, Yasusuke: *See—*
Naoi, Hisashi; Inoue, Yasusuke; Nagasaka, Tetsuo; Matsubara, Yoichi; Takagishi, Masaaki; and Akizawa, Seiichi, 5,339,868, Cl. 138-172.000.

Inoue, Yoshio; and Yoshino, Masachika, to Shin-Etsu Chemical Co., Ltd. Silicone rubber compositions and their cured products. 5,340,872, Cl. 524-588.000.

Insite Vision Incorporated: *See—*
Patel, Rajesh; Bowman, Lyle; Vildaver, Margarita; and Chen, Raymond, 5,340,572, Cl. 424-78.040.

Institute of Physical and Chemical Research (Riken), The: *See—*
Ohta, Hiroshi; and Hoshino, Kazutomo, 5,339,811, Cl. 128-653.100.

Intech Scientific, Inc.: *See—*
Masopust, Jiri, 5,339,827, Cl. 128-735.000.

Integrated Device Technology, Inc.: *See—*
Tien, Ta-Ke; and Wu, Chau-Chin, 5,341,333, Cl. 365-189.060.

Intel Corporation: *See—*
Almulla, Waleed S., 5,341,045, Cl. 307-475.000.
Cadien, Kenneth C.; and Feller, Daniel A., 5,340,370, Cl. 51-308.000.
Wells, Steven E.; Winston, Mark; and Kynett, Virgil N., 5,341,330, Cl. 365-185.000.
Wells, Steven E., 5,341,339, Cl. 365-218.000.

Interconnect Systems Group Inc.: *See—*
Schroth, Walter D., 5,340,333, Cl. 439-607.000.

Intermacom A.G.: *See—*
Grove, Manfred, 5,341,266, Cl. 361-45.000.

International Business Machines Corporation: *See—*
Austruy, Pierre; Brezzo, Bernard; Lips, Jean-Pierre; Naudin, Bernard; Calvignac, Jean; and Waller, Richard H., 5,341,475, Cl. 395-200.000.
Bassous, Ernest; Patton, Gary L.; and Stork, Johannes M. C., 5,340,753, Cl. 437-31.000.
Bentley, Steven R.; Chliwnyj, Alex; Johnson, Steven D.; Paranjape, Sushama M.; and Rhodes, Ronald K., 5,341,252, Cl 360-50.000.
Benzschawel, Terry L.; and Howard, Webster E., 5,341,153, Cl. 345-152.000.
Blackledge, John W., Jr.; Dayan, Richard A.; Moeller, Dennis L.; Newman, Palmer E.; and Zubay, Kenneth J. P., 5,341,422, Cl. 380-4.000.
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,340,775, Cl. 437-246.000.
Chen, Chih-Liang, 5,341,042, Cl. 307-446.000.
Connors, Daniel P.; and Yao, David D., 5,341,302, Cl. 364-468.000.
Cuomo, Jerome J.; Gelorme, Jeffrey D.; Hatzakis, Michael, Jr.; Lewis, David A.; Shaw, Jane M.; and Whitehair, Stanley J., 5,340,914, Cl. 528-353.000.
Derwin, Michael T.; and Wall, William A., 5,341,487, Cl. 395-425.000.
Dieny, Bernard; Gurney, Bruce A.; Parkin, Stuart S. P.; Sanders, Ian L.; Speriosu, Virgil S.; and Wilhoit, Dennis R., 5,341,261, Cl. 360-113.000.
Doragh, Philip H., 5,341,499, Cl. 395-700.000.
Fasano, Benjamin V.; Novotny, Vlad J.; and Schein, Lawrence B., 5,340,617, Cl. 427-466.000.
Gladstein, Leo A.; Jones, Christopher D.; Leontiades, Kyriakos; Patel, Paritosh D.; and Petroskey, Paul W., 5,341,503, Cl. 395-750.000.
Gould, Scott W.; Marshall, Mark G.; and Perry, Patrick E., 5,341,310, Cl. 364-491.000.
Hattersley, John R.; Kim, Thomas D.; Lee, Jeffery Y.; and Reiley, Forrest A., 5,341,485, Cl. 395-400.000.
Hecht, Lewis C.; Sulger, Merritt P., deceased; Thiele, Ernst E.; Pierson, Mark V.; and Williams, Lawrence E., 5,339,952, Cl. 206-334.000.
Hsieh, Chang-Ming; Hsu, Louis L. C.; and Ogura, Seiki, 5,340,759, Cl. 437-41.000.
Hsieh, Chang-Ming; Hsu, Louis L. C.; Mei, Shaw-Ning; Knepper, Ronald W.; and Wagner, Lawrence F., Jr., 5,341,023, Cl. 257-559.000.
Ng, Spencer W., 5,341,351, Cl. 369-30.000.
Parkin, Stuart S. P.; and Roche, Kevin P., 5,341,118, Cl. 338-32.00R.
Poole, Joseph D.; and Zickefoose, Frank P., 5,340,013, Cl. 228-119.000.

International Fuel Cells Corporation: *See—*
Buswell, Richard F.; and Vartanian, George, 5,340,663, Cl. 429-17.000.

International Paper Company: *See—*
Lucas, Paul C.; D'Anna, Guy; and Messenger, Ronald J., 5,340,620, Cl. 427-515.000.
Markham, Larry D.; and Srivatsa, Narendta R., 5,340,439, Cl. 162-5.000.
Sypek, Maria T.; Perron, Paul A.; and Grosclaude, Gary V., 5,340,681, Cl. 430-138.000.

International Purity Corp.: *See—*
Strand, Charles D.; and Meehon, Anthony B., 5,340,478, Cl. 210-284.000.

International Superconductivity Technology Center: *See—*
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.

Intertechnique: *See—*
Beaussant, Raymond; Frison, Jacques; and Schegerin, Robert, 5,339,806, Cl. 128-201.210.

Inui, Tetsuya: *See—*
Fujii, Yoshikazu; Inui, Tetsuya; Deguchi, Toshihisa; and Ohta, Kenji, 5,341,362, Cl. 369-275.400.

Inukai, Yoshihiko: *See—*
Watanabe, Atsushi; Kamiya, Hitoshi; Nakada, Eiji; Mizuno, Tomoaki; Kago, Yoshiyuki; Murase, Tokutaro; and Inukai, Yoshihiko, 5,340,968, Cl. 235-380.000.

Iorio, Ralph A.; and Gibbs, Glen A., to ITT Corporation. Composite metal tube and method of making the same. 5,339,867, Cl. 138-140.000.

Ip, Stephen H.: *See—*
Brenner, Michael B.; Strominger, Jack L.; Seidman, Johnathan; Ip, Stephen H.; and Krangel, Michael S., 5,340,921, Cl. 530-350.000.

Irie, Yasushi: *See—*
Ohya, Yukio; Matsuzaka, Syoji; Irie, Yasushi; Murakami, Shuji; Asano, Satomi; Okusa, Hiroshi; and Ohtani, Hirofumi, 5,340,710, Cl. 430-567.000.

Irwin, Patricia C.: *See—*
Gillette, Gregory R.; Shenian, Popkin; Bolon, Donald A.; and Irwin, Patricia C., 5,340,839, Cl. 521-40.000.

Irwin, Shawn R.: *See—*
Krebs, Paul B.; and Irwin, Shawn R., 5,340,953, Cl. 200-86.500.

Isco, Inc.: *See—*
Wright, Paul G.; and Nabity, Frederick A., 5,339,700, Cl. 73-864.340.

Ise Electronics Corporation: *See—*
Uemura, Sashirou; Nishii, Yoshiyuki; Kanda, Isamu; Hara, Zenichiro; Futatsuishi, Shunichi; and Shibayama, Kozaburo, 5,341,065, Cl. 313-495.000.

Ishibashi, Ryoichi; and Sekine, Katsumi, to Fujitsu Limited. Congestion relieving system in a communication system. 5,341,373, Cl. 370-85.900.

Ishibashi, Yoji: *See—*
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000.

Ishida, Tetsuo: *See—*
Kobayashi, Masahiko; Takemura, Hirobumi; Ishida, Tetsuo; and Takahashi, Nobuyuki, 5,340,460, Cl. 204-298.090.

Ishida, Toshihiko: *See—*
Hirata, Hideki; Koga, Keiji; and Ishida, Toshihiko, 5,340,698, Cl. 430-271.000.

Ishigaki, Kouji: *See—*
Hodoshima, Takashi; Ishigaki, Kouji; Nakahara, Kazuyuki; and Kishi, Fumio, 5,341,196, Cl. 355-260.000.

Ishigami, Motohiro: *See—*
Ogawa, Kenji; Itoyama, Osamu; Ishigami, Motohiro; and Okada, Kenichi, 5,341,210, Cl. 356-350.000.

Ishiguro, Takashi; Narita, Kazutoyo; and Susuta, Masahide, to Kabushiki Kaisha Toshiba. Method of and system for disconnecting faulty distribution line section from power distribution line. 5,341,268, Cl. 361-62.000.

Ishiguro, Tsuneo; and Eguchi, Chikahiko, to Ajinomoto Co., Inc. Method for assaying a human muscular dystrophy protein. 5,340,718, Cl. 435-71.000.

Ishihara Chemical Co., Ltd.: *See—*
Komatsu, Tadao; and Miyata, Seiichiro, 5,340,658, Cl. 428-558.000.

Ishihara, Yuka: *See—*
Suzuki, Chiaki; Eguchi, Atuhiko; Ishihara, Yuka; Aoki, Takayoshi; Takagi, Seiichi; Yano, Toshiyuki; and Mochizuki, Masao, 5,340,678, Cl. 430-170.000.

Ishii, Hiroshi: *See—*
Miyazawa, Yoshinori; Ishii, Hiroshi; Nakamura, Osamu; Kurashima, Norihiko; Kitahara, Tsuyoshi; and Miyazawa, Hisashi, 5,341,164, Cl. 347-88.000.

Ishii, Keizou: *See—*
Imamura, Tsuyoshi; Mizuguchi, Katsumi; Shibai, Yasuhiro; Ishii, Keizou; Ishikura, Shinichi; and Saito, Koichi, 5,340,891, Cl. 526-88.000
Yamada, Mitsuo; Kayano, Hiromichi; Aoki, Kei; and Ishii, Keizou, 5,340,931, Cl. 534-843.000.

Ishii, Kozo; Takemoto, Kazuo; Fujiwara, Takuji; Mizobe, Tatsutoshi; Baba, Fumiaki; Nagayama, Shigeru; Watanabe, Osamu; and Takeuchi, Koichiro, to Mazda Motor Corporation. Control system for torque converter. 5,339,935, Cl. 192-3.300.

Ishii, Yasuo: *See—*
Itoi, Akito; Nishi, Isao; and Ishii, Yasuo, 5,340,521, Cl. 264-176.100.

Ishii, Yoshinori: *See—*
Ueda, Ikuo; Niwa, Mineo; Saito, Yoshimasa; Ishii, Yoshinori; and Hitaguchi, Todashi, 5,340,725, Cl. 435-69.400.

Ishii, Yutaka: *See—*
Yamamoto, Yoshitaka; and Ishii, Yutaka, 5,341,231, Cl. 359-49.000.

Ishikawa, Kazunori: *See—*
Suzuki, Akira; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Oba, Hidehiro; Kimura, Hiromachi; and Otsubo, Hideaki, 5,339,709, Cl. 477-145.000.

Ishikawa, Kiichiro; and Nishida, Yasutaka, to YKK Corporation. Apparatus for assembling cord fasteners. 5,339,516, Cl. 29-705.000.

Ishikura, Shinichi: *See—*
Imamura, Tsuyoshi; Mizuguchi, Katsumi; Shibai, Yasuhiro; Ishii, Keizou; Ishikura, Shinichi; and Saito, Koichi, 5,340,891, Cl. 526-88.000.

Ishimaru, Kazuhiro: *See—*
Harada, Shigeru; Ishimaru, Kazuhiro; and Hagi, Kimio, 5,341,026, Cl. 257-764.000.

Ishimura, Eitaro, to Mitsubishi Denki Kabushiki Kaisha. Variable wavelength semiconductor laser. 5,341,391, Cl. 372-46.000.

Ishiwata, Yoshiro: *See—*
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideaki; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,340,806, Cl. 514-184.000.

Isobe, Masao; Aizawa, Yoshio; Kogo, Kenichi; and Yoshida, Chuzo, to Nippon Oil Company, Ltd. Colorable binder composition. 5,340,869, Cl. 524-484.000.

Isobe, Minoru, to OKI Electric Industry Co., Ltd. Electrophotographic recording apparatus with a scanner for automatically selecting media. 5,341,202, Cl. 355-308.000.

Isobe, Nobuyuki, to Pioneer Electronic Corporation. Disk player for playing back more than one kind of disk. 5,341,352, Cl. 369-37.000.

Isobe, Ryosuke; and Mori, Takahiro, to Konica Corporation. Magnetic recording medium having a magnetic layer with a specified vickers indentation hardness or plastic deformation. 5,340,635, Cl. 428-141.000.

Isogai, Naoki; and Ozaki, Kenya, to Nidek Co., Ltd. Ophthalmic photographing apparatus. 5,341,180, Cl. 351-206.000.

Isomura, Satoru: *See—*
Shimizu, Atsushi; Isomura, Satoru; Yamada, Takeo; Kobayashi, Tohru; Fujimura, Yoshuhiro; and Ito, Yuko, 5,341,049, Cl. 307-482.100.

Isono, Yasuo: *See—*
Nakano, Hiroshi; and Isono, Yasuo, 5,341,325, Cl. 365-145.000.

Isover Saint-Gobain: *See—*
Tetart, M. Serge; and Segal, M. David, 5,340,903, Cl. 528-164.000.

Isuzu Ceramics Research Institute Co., Ltd.: *See—*
Kawamura, Hideo, 5,341,060, Cl. 310-153.000.

Ito, Emiko: *See—*
Fukushige, Tomoaki; Toda, Hiroko; Akano, Hirofumi; Ito, Emiko; Fukuta, Tomohiko; Fujimori, Masahiro; and Kawamura, Yoshiya, 5,340,461, Cl. 204-299.00R.

Ito, Fumitaka: *See—*
Hori, Yasuro; Kuzunuki, Soshiro; Okabe, Shuichi; and Ito, Fumitaka, 5,341,413, Cl. 379-100.000.

Ito, Hiroyuki: *See—*
Ueno, Takashi; Ito, Hiroyuki; Kotani, Hirokazu; and Nakajima, Kazuo, 5,340,733, Cl. 435-199.000.

Ito, Ken: *See—*
Yasuno, Yoshiki; and Ito, Ken, 5,341,296, Cl. 364-426.010.

Ito, Motoya: *See—*
Yasuda, Minoru; Kato, Takahiko; and Ito, Motoya, 5,340,293, Cl. 418-171.000.

Ito, Yatsuo; Abe, Takao; Takei, Tokio; Nakamura, Susumu; and Ota, Hiroko. Bonded wafer and method of manufacturing it. 5,340,435, Cl. 156-632.000.

Ito, Yoshihisa: *See—*
Kawai, Masao; Kyotani, Yoshihiro; Aruga, Hideki; Shiimado, Toshihiro; Ito, Yoshihisa; and Hori, Koji, 5,339,649, Cl. 62-46.100.

Ito, Yuko: *See—*
Shimizu, Atsushi; Isomura, Satoru; Yamada, Takeo; Kobayashi, Tohru; Fujimura, Yoshuhiro; and Ito, Yuko, 5,341,049, Cl. 307-482.100.

Itoh, Hiroshi: *See—*
Sugasawa, Hiroki; Takano, Satoshi; Sakaguchi, Mikio; Sakamoto, Ichiro; Iwata, Minoru; Kurotani, Nariyuki; Koizumi, Hideaki; Itoh, Hiroshi; and Maejima, Risa, 5,340,582, Cl. 424-401.000.

Itoh, Kazuo: *See—*
Kikuchi, Fumio; Itoh, Kazuo; Taga, Kazuharu; Matsunaga, Naoto; Ono, Hiroshi; Namba, Takaoki; and Narita, Kazuhiko, 5,341,461, Cl. 395-120.000.

Itoh, Tsutomu; Fukami, Shinji; and Kitoh, Masayuki, to Onoda Cement Company, Ltd. Plasma spraying method and apparatus. 5,340,023, Cl. 239-13.000.

Itoi, Akito; Nishi, Isao; and Ishii, Yasuo, to Kao Corporation. Melt viscosity depressant for polyester resin and polyester resin composition comprising the same. 5,340,521, Cl. 264-176.100.

Itoya, Naomi: *See—*
Mashio, Fujio; and Itoya, Naomi, 5,340,555, Cl. 423-240.00R.

Itoyama, Osamu: *See—*
Ogawa, Kenji; Itoyama, Osamu; Ishigami, Motohiro; and Okada, Kenichi, 5,341,210, Cl. 356-350.000.

ITT Automotive Europe GmbH: *See—*
Roth, Christian; and Scholl, Wolfgang, 5,339,510, Cl. 29-436.000.

ITT Corporation: *See—*
Iorio, Ralph A.; and Gibbs, Glen A., 5,339,867, Cl. 138-140.000.
Karsten, Kenneth S., Jr.; and Wertman, Richard C., 5,341,066, Cl. 315-3.500.

Ittemann, Peter: *See—*
Baumgartl, Horst; Schlarb, Alois; Wahl, Ludwig; Ittemann, Peter; and Brentrup, Karl-Ludwig, 5,340,642, Cl. 428-224.000.

Ivachev, Alex: *See—*
Shoenhair, John J.; and Ivachev, Alex, 5,339,692, Cl. 73-636.000.

Ivers, David L.; and Mach, Stanley R., to Marquette Electronics, Inc. Pulse oximetry sensor. 5,339,810, Cl. 128-633.000.

Iwai, Hideo: *See—*
Saeki, Noriyasu; Watanabe, Koichi; Iwai, Hideo; Yasuda, Eiichi; and Inoue, Ryuji, 5,340,300, Cl. 425-329.000.

Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, to Hitachi, Ltd. Gas turbine combustor of the completely premixed combustion type. 5,339,635, Cl. 60-733.000.

Iwaki Glass Co., Ltd.: *See—*
Taniguchi, Ryoziro; Yamaguchi, Takao; and Saito, Osamu, 5,340,514, Cl. 264-62.000.

Iwakiri, Ituro: *See—*
Hashiguchi, Hiroyuki; and Iwakiri, Ituro, 5,341,338, Cl. 365-206.000.

Iwakura, Ken: *See—*
Sano, Shojiro; and Iwakura, Ken, 5,340,606, Cl. 427-151.000.

Iwanaga, Tetsuya: *See—*
Arai, Ryuji; Eshita, Toru; Niimi, Kaoru; Ikuta, Tatsuyoshi; Furuichi, Hiroyuki; and Iwanaga, Tetsuya, 5,341,152, Cl. 345-133.000.

Iwase, Hiroshi: *See—*
Sugita, Kunihiro; and Iwase, Hiroshi, 5,340,938, Cl. 84-605.000.

Iwata, Minoru: *See—*
Sugasawa, Hiroki; Takano, Satoshi; Sakaguchi, Mikio; Sakamoto, Ichiro; Iwata, Minoru; Kurotani, Nariyuki; Koizumi, Hideaki; Itoh, Hiroshi; and Maejima, Risa, 5,340,582, Cl. 424-401.000.

Iwatsuki, Kunihiro: *See—*
Suzuki, Akira; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Oba, Hidehiro; Kimura, Hiromachi; and Otsubo, Hideaki, 5,339,709, Cl. 477-145.000.

Izquierdo, Javier F.: *See—*
Thayer, John S.; Mayer, Dale J.; Izquierdo, Javier F.; Culley, Paul R.; and Landry, John A., 5,341,494, Cl. 395-425.000.

J. M. Huber Corp.: *See—*
Hart, Charles M.; Hoff, H. Milton, Jr.; Tillman, John L., Jr.; Trout, Lindell R.; and Witte, Stephen L., Sr., 5,339,896, Cl. 166-241.100.

J. & M. Manufacturing Co., Inc.: *See—*
Grieshop, Maurice, 5,340,265, Cl. 414-526.000.

J.M. Voith GmbH: *See—*
Beisswanger, Rudolf, 5,340,402, Cl. 118-410.000.
Kustermann, Martin; and Sollinger, Hans-Peter, 5,340,611, Cl. 427-361.000.

Jabbari, Irai, to Seagate Technology, Inc. Reduced torque unloading ramp system for a hard disk drive. 5,341,260, Cl. 360-105.000.

Jacaruso, Gary J.; and Ramey, Philip J., to United Technologies Corporation. Method for fabricating a composite structure. 5,340,423, Cl. 156-158.000.

Jacko, Michael G.; Tsang, Peter H.; and Rhee, Seong K., to Allied-Signal Inc. Porous copper powder modified friction material. 5,339,931, Cl. 188-251.00M.

Jackson, David A.; Riggin, Ralph M.; and Towns, John K., to Eli Lilly and Company. Automated Karl Fischer titration apparatus and method. 5,340,541, Cl. 422-75.000.

Jackson, Peter, to Astroscan, Ltd. Analysis of carbohydrates. 5,340,453, Cl. 204-182.800.

Jacobs, Franciscus C. A. J.: *See—*
Doomernik, Franciscus M. P. P.; Jacobs, Franciscus C. A. J.; and Vink, Nicolaas G., 5,340,044, Cl. 242-7.030.

Jacobson, Howard W., to Du Pont de Nemours, E. I., and Company. Process for preparing silica coated inorganic particles. 5,340,393, Cl. 106-492.000.

Jacobson, Neal F.: *See—*
Travis, Robert L., Jr.; Wilson, Andrew P.; Jacobson, Neal F.; and Renzullo, Michael J., 5,341,478, Cl. 395-200.000.

Jacobson, Richard B.; and Abrams, Michael. Playing court. 5,340,118, Cl. 273-411.000.

Jadrich, Raymond P.: *See—*
Mulcahy, James P.; and Jadrich, Raymond P., 5,340,495, Cl. 252-162.000.

Jaeger, Leslie G.; Mufti, Aftab A.; and Bakht, Baidar, to Queen in Right of Ontario as represented by the Ministry of Transportation, The. Load supporting structure. 5,339,475, Cl. 14-73.000.

Jaen, Juan C.; and Caprathe, Bradley W., to Warner Lambert Company. Fused pyridazinoquinazolone derivatives as neurotrophic agents. 5,340,808, Cl. 514-248.000.

Jager, Walter: *See—*
Maus, Wolfgang; Swars, Helmut; Putz, Heinrich; and Jager, Walter, 5,340,020, Cl. 237-12.30C.

Jahnke, Andreas: *See—*
Anton, Frank; and Jahnke, Andreas, 5,341,104, Cl. 328-235.000.

Jalbert, Dennis W.: *See—*
Stewart, Robert L.; Osterman, Alan J.; Jalbert, Dennis W.; and Nulty, John D., 5,340,178, Cl. 293-122.000.

Jameson Corporation: *See—*
Crates, Thomas B.; and Hesprich, Donald N., 5,340,084, Cl. 254-134.3FT.

Jang, Seong J. Paper grinder. 5,340,034, Cl. 241-3.000.

Jankowski, Richard B.; and Zvonar, Robert F., to Allied-Signal Inc. Seal retention and anti-rotation locking assembly. 5,340,124, Cl. 277-136.000.

Janome Sewing Machine Co., Ltd.: *See—*
Orii, Akira, 5,341,454, Cl. 388-815.000.

Jansen, Burkhard: *See—*
Tank, Volker; Haschberger, Peter; and Jansen, Burkhard, 5,341,207, Cl. 356-346.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Jansen, Cornelis M.: *See—*
Colson, Wendell B.; Anthony, James M.; Oberg, Brad H.; and Jansen, Cornelis M., 5,339,883, Cl. 160-84.10D.

Janssen, Sylvain; Fournier, Jacques; and Campain, Jean-Pierre, to Schlumberger Industries. Positive-displacement fluid flow-measuring system. 5,339,685, Cl. 73-199.000.

Japan Aviation Electronics: *See—*
Hashiguchi, Osamu; and Kinoshita, Hiroaki, 5,340,321, Cl. 439-108.000.

Japan Aviation Electronics Industry Limited: *See—*
Ogawa, Kenji; Itoyama, Osamu; Ishigami, Motohiro; and Okada, Kenichi, 5,341,210, Cl. 356-350.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Hirasawa, Hiroyuki; Kobayashi, Minako; and Matsuki, Yasuo, 5,340,702, Cl. 430-326.000.

Japan Tobacco, Inc.: *See—*
Habuka, Noriyuki; Miyano, Masashi; Matsumoto, Takashi; and Noma, Masana, 5,340,732, Cl. 435-193.000.

Jarvenkyla, Jyri; and Holso, Eino, to Uponor, N.V. Apparatus for manufacturing ribbed pipes. 5,340,299, Cl. 425-326.100.

Javkin, Hector R.; Keate, Elizabeth G.; Antonanzas-Barroso, Norma; and Hanson, Brian A., to Panasonic Technologies, Inc. Synthesis-based speech training system. 5,340,316, Cl. 434-185.000.

Jayashankar, S.; and Kaufman, Michael J., to University of Florida. Refractory metal reinforced $MoSi_2$/SiC composite with matched thermal coefficients of expansion. 5,340,531, Cl. 419-10.000.

Jean Walterscheid GmbH: *See—*
Roth, Andreas, 5,339,907, Cl. 172-678.000.

Jeche, Rolf: *See—*
Schroth, Karl-Jurgen; Jeche, Rolf; and Meier-Armdt, Stefan, 5,340,046, Cl. 242-407.000.

Jeffery, William A.: *See—*
Creighton, Andrew M.; and Jeffery, William A., 5,340,557, Cl. 423-300.000.

Jeffrey, George A.: *See—*
Nuhn, Derek J.; Servant, Gordon W.; Brennan, Robert P.; and Jeffrey, George A., 5,341,370, Cl. 370-84.000.

Jehannet, Jean-Pierre: *See—*
Journee, Maurice; and Jehannet, Jean-Pierre, 5,339,489, Cl. 15-250.200.

Jeknavorian, Ara A.: *See—*
Arfaei, Ahmad; Berke, Neal S.; and Jeknavorian, Ara A., 5,340,385, Cl. 106-14.050.

Jenne, Dietmar: *See—*
Jenne, Gustav; and Jenne, Dietmar, 5,339,909, Cl. 175-22.000.

Jenne, Gustav; and Jenne, Dietmar, to Terra AG Fuer Tiefbautechnik. Apparatus for making earth bores. 5,339,909, Cl. 175-22.000.

Jennings, Alfred R., Jr.; and Abou-Sayed, Ibrahim S., to Mobil Oil Corporation. Oil recovery optimization using a well having both horizontal and vertical sections. 5,339,904, Cl. 166-303.000.

Jennings, David F.: *See—*
Anderson, Charles C.; DeLaura, Mario D.; Christian, Paul A.; Shalhoub, Ibrahim M.; and Jennings, David F., 5,340,676, Cl. 430-63.000.

Jens, Stephen C.; Sawaf, Bernard, deceased (by Sawaf, Marilene, administratrix.); Viola, Paul F.; Belkus, Paul R.; and Lee, Robert A. S., to Electric Power Research Institute, Inc. Sliding lance guide flexible lance system. 5,341,406, Cl. 376-316.000.

Jensen AG Burgdorf: *See—*
Jensen, Jorn M., 5,339,949, Cl. 198-803.900.

Jensen, James A. Thermoset polymeric precursors for aluminum nitride. 5,340,896, Cl. 528-9.000.

Jensen, Jorn M., to Jensen AG Burgdorf. Device for conveying items of household linen. 5,339,949, Cl. 198-803.900.

Jensen, Mark A.: *See—*
Grosz, Ron; and Jensen, Mark A., 5,340,728, Cl. 435-91.200.

Jenson, Brad: *See—*
Hoffman, Miles K.; Jenson, Brad; and Wieder, Klaus, 5,340,954, Cl. 200-277.200.

Jeon, Jun-Young, to SamSung Electronics, Co., Ltd. Data transmission circuit having common input/output lines. 5,341,331, Cl. 365-189.010.

Jeong, Henry J.: *See—*
Allen, Michael P.; and Jeong, Henry J., 5,340,539, Cl. 422-56.000.

Jeuffray, Jean-Marie; and Memeteau, Michel, to Farnier & Penin. Motor vehicle roof-rack. 5,340,007, Cl. 224-321.000.

Jimonet, Patrick: *See—*
Gueremy, Claude; Jimonet, Patrick; and Mignani, Serge, 5,340,824, Cl. 514-321.000.

Jircitano, Albert; and Dosch, Daniel E., to Textron Inc. Gravity aided inertial navigation system. 5,339,684, Cl. 73-178.00R.

JKS Boyles International, Inc.: *See—*
Laporte, Irwin J.; and Watkins, Amos J., 5,339,915, Cl. 175-244.000.

Job, Frank. Non-toxic insect capture and killing apparatus. 5,339,563, Cl. 43-122.000.

Johann, Donald F.; Burroughs, Alan C.; Phipps, Neil T.; and Li, Feng, to Maxoptix Corporation. Method and apparatus for calibrating laser write power by averaging upper and lower knees of a calibration profile. 5,341,360, Cl. 369-116.000.

Johansson, Anders; and Gustavsson, Lennart, to ABB Flakt AB. Device for measuring a gas flow, and method for using the device. 5,339,688, Cl. 73-204.220.

John Henry Company, The: *See—*
Diemer, Gordon J., 5,339,517, Cl. 29-809.000.

John Wyeth & Brother, Limited: *See—*
Cliffe, Ian A., 5,340,812, Cl. 514-255.000.

Johnsen, James B.; and Oien, Hal J., to Jordco, Inc. Instrument sterilization container. 5,340,550, Cl. 422-292.000.

Johnson, Brian H.: *See—*
Hedrick, Brian W.; Micklich, Frank T.; Johnson, Brian H.; Meier, Daniel G.; Whitsura, Frank R.; and Engelman, Bill R., 5,340,470, Cl. 210-130.000.

Johnson, Bruce S.: *See—*
Craven, B. Thomas; Wiedefeld, William G.; Poor, Kyle W.; Johnson, Bruce S.; Sogge, John W.; Peterson, Michael H.; Adamson, William G.; and Froelich, Ronald W., 5,339,741, Cl. 102-361.000.

Johnson, Darrell E., to Erwin Sick GmbH Optik-Elektronik. Method for supervising a switch. 5,341,029, Cl. 307-112.000.

Johnson, Del. Water leak detection, collection and support device. 5,339,676, Cl. 73-40.000.

Johnson, Donald: *See—*
Adamczyk, Maciej; Harrington, Charles A.; and Johnson, Donald, 5,340,750, Cl. 436-537.000.

Johnson, Jack W.: *See—*
Kerby, Michael C.; Riley, Kenneth L.; Long, Fred M.; Johnson, Jack W.; and Brody, John F., 5,340,657, Cl. 428-552.000.

Johnson & Johnson Consumer Products, Inc.: *See—*
Cole, Curtis A.; Lindemann, Martin K. O.; Lukenbach, Elvin R.; and Stutzman, Ralph C., 5,340,567, Cl. 424-59.000.
Desimone, Joseph A.; and Goldinger, Richard A., 5,339,482, Cl. 15-167.100.

Johnson, Kenneth E.: *See—*
Abbott, William L.; Nguyen, Hung C.; and Johnson, Kenneth E., 5,341,249, Cl. 360-46.000.

Johnson Service Company: *See—*
Haselmaier, L. Haynes, Sr., 5,339,678, Cl. 73-49.800.

Johnson, Steven D.: *See—*
Bentley, Steven R.; Chliwnyj, Alex; Johnson, Steven D.; Paranjape, Sushama M.; and Rhodes, Ronald K., 5,341,252, Cl. 360-50.000.

Johnson, Thomas A.: *See—*
Anderson, Edward N.; and Johnson, Thomas A., 5,340,783, Cl. 501-134.000.

Johnson, William B.: *See—*
Creber, David K.; Johnson, William B.; and Newkirk, Marc S., 5,340,655, Cl. 428-446.000.

Johnston, James D.: *See—*
Hall, Joseph L., II; and Johnston, James D., 5,341,457, Cl. 395-2.350.

Johnstone, William F.: *See—*
Young, William R.; and Johnstone, William F., 5,341,335, Cl. 365-189.120.

Jolley, Scott T.: *See—*
Koch, Frederick W.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Kolp, Christopher J.; Stoldt, Stephen H.; and Denis, Richard A., 5,340,369, Cl. 44-366.000.

Jolu, Jerome E. R.: *See—*
Bardey, Xavier M. H.; Desaulty, Michel A. A.; Jolu, Jerome E. R.; Meunier, Serge M.; Mouton, Pierre C.; Poutonnet, Sylvie; and Renvier, Jacques, 5,339,622, Cl. 60-39.092.

Jones, Christopher D.: *See—*
Gladstein, Leo A.; Jones, Christopher D.; Leontiades, Kyriakos; Patel, Paritosh D.; and Petroskey, Paul W., 5,341,503, Cl. 395-750.000.

Jones, Jerry E.: *See—*
Brundage, David A.; and Jones, Jerry E., 5,339,557, Cl. 43-11.000.

Jones, Larry J.: *See—*
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000

Jones, Paul L.: *See—*
Newman, Charles; Jones, Paul L.; and King, Charles, 5,341,222, Cl. 358-403.000.

Jordco, Inc.: *See—*
Johnsen, James B.; and Oien, Hal J., 5,340,550, Cl. 422-292.000.

Josef Albrecht Bohrfutterfabrik GmbH & Co.: *See—*
Weiss, Rolf; and Schniepp, Werner, 5,340,128, Cl. 279-60.000.

Journee, Maurice; and Jehannet, Jean-Pierre, to Paul Journee, S.A. Screen wiping apparatus with adjustable wiper force. 5,339,489, Cl. 15-250.200.

Joy, Edward B., to Georgia Tech Research Corp. Low sidelobe reflector. 5,341,150, Cl. 343-912.000.

Joy, Joseph M.: *See—*
Friedman, Steven J.; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., 5,341,464, Cl. 395-131.000.

Joyce, John V. Low nox gas burner. 5,340,305, Cl. 431-7.000.

Joyce, Thomas F.; Keeley, James W.; Lemay, Richard A.; DiPlacido, Bruno, Jr.; and Massucci, Martin M., to Bull HN Information Systems, Inc. Bus controller having state machine for translating commands and controlling accesses from system bus to synchronous bus having different bus protocols. 5,341,495, Cl. 395-500.000.

Joyce, Thomas F.: *See—*
Keeley, James W.; and Joyce, Thomas F., 5,341,508, Cl. 395-800.000.

JSP Corporation: *See—*
Tokoro, Hisao; Shioya, Satoru; and Hinokawa, Akira, 5,340,841, Cl. 521-60.000.

Jubinsky, James A.: *See—*
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,340,775, Cl. 437-246.000.

Judkins, Ren, to Verosol USA Inc. Venetian-type window covering. 5,339,882, Cl. 160-84.10D.

Juen, Masahiro, to Nikon Corporation. Still picture imaging apparatus having an improved automatic exposure control and reduction in power consumption. 5,341,220, Cl. 348-296.000.

Juhring, Avery B.: *See—*
Anderson, Thomas; and Hanewald, Julius, 5,340,354, Cl. 452-142.000.

Junemann, Gitta: *See—*
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J., 5,339,837, Cl. 131-296.000.

Jung, Hag J.: *See—*
Park, Jong Y.; and Jung, Hag J., 5,341,027, Cl. 257-786.000.

Jungquist, Bruce E.; McBroom, Michael E.; Yaeger, Curtis G.; Knauff, Donald G.; and Sem, Thomas R., to Westinghouse Electric Corporation. Method and apparatus for distributing fuel in a diesel engine. 5,339,787, Cl. 123-514.000.

Juri, Tatsuro: *See—*
Uchida, Hirofumi; Juri, Tatsuro; and Ohtaka, Hideki, 5,341,250, Cl. 360-48.000.

Juusti, Pekka: *See—*
Puttonen, Martti; Juusti, Vesa; and Juusti, Pekka, 5,340,166, Cl. 285-189.000.

Juusti, Vesa: *See—*
Puttonen, Martti; Juusti, Vesa; and Juusti, Pekka, 5,340,166, Cl. 285-189.000.

Juzwiak, John H., to Conversion Systems, Inc. Pug mill mixer. 5,340,214, Cl. 366-292.000.

K & B Mfg, Inc.: *See—*
Brodbeck, John W.; and Brunsting, William J., 5,340,345, Cl. 440-88.000.

K-Tron Technologies, Inc.: *See—*
Billivant, Kenneth W.; and Preiser, Friedrich, 5,339,997, Cl. 222-238.000.
Myhre, John B.; and Ludescher, Stefan, 5,341,307, Cl. 364-479.000.

Kaburagi, Masakatsu: *See—*
Ebihara, Norio; and Kaburagi, Masakatsu, 5,341,178, Cl. 348-705.000.

Kabushiki Kaisha Denkosha: *See—*
Koda, Yoshiharu, 5,340,327, Cl. 439-239.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Yoshikawa, Eiji, 5,339,665, Cl. 72-21.000.

Kabushiki Kaisha Meidensha: *See—*
Yamada, Tetsuo, 5,341,081, Cl. 318-800.000.

Kabushiki Kaisha Mihama Seisakusho: *See—*
Hama, Taira; and Gomi, Tsugikichi, 5,339,505, Cl. 29-243.560.

Kabushiki Kaisha Riken: *See—*
Abe, Akira; Sumiya, Satoshi; Takahashi, Yoshikazu; Yoshida, Kiyohide; and Muramatsu, Gyo, 5,340,548, Cl. 422-177.000.

Kabushiki Kaisha Shinkawa: *See—*
Torihata, Minoru; and Nakamura, Osamu, 5,340,010, Cl. 228-1.100.

Kabushiki Kaisha Sigel: *See—*
Nakanishi, Motoyasu; and Amano, Masaaki, 5,340,352, Cl. 450-57.000.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Sato, Koki, 5,340,151, Cl. 280-743.00R.

Kabushiki Kaisha Toshiba: *See—*
Hakamada, Ryuichi; Takahashi, Masahiko; Kuriyama, Toru; and Nakagome, Hideki, 5,339,650, Cl. 62-51.100.
Hayase, Rumiko; Oba, Masayuki; Kihara, Naoko; and Mikogami, Yukihiro, 5,340,684, Cl. 430-165.000.
Hiraoka, Shigeru, 5,341,094, Cl. 324-767.000.
Hirasawa, Yutaka, 5,341,363, Cl. 370-13.000.
Ishiguro, Takashi; Narita, Kazutoyo; and Susuta, Masahide, 5,341,268, Cl. 361-62.000.
Koyanagi, Masaru; and Yamda, Minoru, 5,341,013, Cl. 257-368.000.
Maeda, Takeo; and Momose, Hiroshi, 5,340,751, Cl. 437-31.000.
Maeda, Takeo; and Momose, Hiroshi, 5,341,021, Cl. 257-587.000.
Maruyama, Tadashi, 5,341,334, Cl. 365-189.110.
Nakashima, Nobuaki; and Sugai, Shinzo, 5,341,025, Cl. 257-697.000.
Nishigaki, Nobutaka, 5,341,316, Cl. 364-709.120.
Suzuki, Yoshinori, 5,341,099, Cl. 324-309.000.
Takami, Norio; Satoh, Asako; and Ohsaki, Takahisa, 5,340,670, Cl. 429-194.000.
Takase, Satoru; Kushiyama, Natsuki; and Furuyama, Tohru, 5,341,326, Cl. 365-149.000.
Takebuchi, Masataka, 5,341,329, Cl. 365-185.000.
Tokutsu, Akihito, 5,341,203, Cl. 355-313.000.

Kabushikigaisha Sekogiken: *See—*
Bahn, Itsuki, 5,341,076, Cl. 318-254.000.

Kabushikikaisha Equos Research: *See—*
Kawai, Masao; Kyotani, Yoshihiro; Aruga, Hideki; Shiimado, Toshihiro; Ito, Yoshihisa; and Hori, Koji, 5,339,649, Cl. 62-46.100.

Kacher, Mark L.; Taneri, James E.; Camden, James B.; Vest, Paul E.; and Bowles, Sylvia J., to Procter & Gamble Company, The. Shaped solid made with a rigid, interlocking mesh of neutralized carboxylic acid. 5,340,492, Cl. 252-112.000.

Kaczmarek, Richard T., to Reliance COMM/TEC Corporation. Drop resistant cup-arrester assembly. 5,341,270, Cl. 361-119.000.

Kagami, Nobutake; Doi, Yuichiro; and Nakamura, Yuko, to Sony Corporation. Magnetooptical recording medium having improved sensitivity. 5,341,349, Cl. 369-13.000.

Kageyama, Fumio: *See—*
Okazaki, Haruki; Kawamura, Makoto; Nobumoto, Kazutoshi; and Kageyama, Fumio, 5,340,204, Cl. 303-111.000.

Kago, Yoshiyuki: *See—*
Watanabe, Atsushi; Kamiya, Hitoshi; Nakada, Eiji; Mizuno, Tomoaki; Kago, Yoshiyuki; Murase, Tokutaro; and Inukai, Yoshihiko, 5,340,968, Cl. 235-380.000.

Kajihara, Akiro; and Miyoshi, Shiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Isoquinoline-or quinoline-sulfonamide derivative and a pharmaceutical composition comprising the same. 5,340,811, Cl. 514-253.000.

Kajima Corporation: *See—*
Koshika, Norihide; Sakamoto, Mitsuo; Nishimura, Isao; Sasaki, Katsuyasu; and Oorui, Satoshi, 5,339,580, Cl. 52-167.00E.

Kajino, Yuuichi; Sugi, Hikaru; Ban, Koichi; Honda, Yuuji; Samukawa, Katsuhiko; and Kawai, Takayoshi, to Nippondenso Co., Ltd. Air conditioning device for vehicles. 5,340,021, Cl. 236-49.300.

Kakuchi, Shusuke: *See—*
Koike, Masao; Yamagishi, Akihito; Maruyama, Katsuhiko; and Kakuchi, Shusuke, 5,340,415, Cl. 148-325.000.

Kamada, Koh, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,340,636, Cl. 428-141.000.

Kambies, Keith A.: *See—*
Fincher, Jeffrey L.; Hallamasek, Kurt; and Kambies, Keith A., 5,341,251, Cl. 360-49.000.

Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, to Olympus Optical Co., Ltd. Medical system for reproducing a state of contact of the treatment section in the operation unit. 5,339,799, Cl. 128-4.000.

Kamienski, Conrad W.: *See—*
Morrison, Robert C.; Hall, Randy W.; Schwindeman, James A.; Kamienski, Conrad W.; and Engel, John F., 5,340,507, Cl. 260-665.00R.

Kamiya, Hitoshi: *See—*
Watanabe, Atsushi; Kamiya, Hitoshi; Nakada, Eiji; Mizuno, Tomoaki; Kago, Yoshiyuki; Murase, Tokutaro; and Inukai, Yoshihiko, 5,340,968, Cl. 235-380.000.

Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, to Mazda Motor Corporation. Four-wheel steering system for vehicle. 5,341,294, Cl. 364-424.050.

Kanda, Isamu: *See—*
Uemura, Sashirou; Nishii, Yoshiyuki; Kanda, Isamu; Hara, Zenichiro; Futatsuishi, Shunichi; and Shibayama, Kozaburo, 5,341,065, Cl. 313-495.000.

Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, to Canon Kabushiki Kaisha. Video camera apparatus with predictably settable image screen detecting area. 5,341,169, Cl. 348-352.000.

Kaneda, Yushi: *See—*
Masuda, Hisashi; and Kaneda, Yushi, 5,341,388, Cl. 372-36.000.

Kaneko, Hideki; Inoue, Sadayuki; and Ookuma, Ikuo, to Mitsubishi Denki Kabushiki Kaisha. Video signals clamping circuit for maintaining DC level of video signals. 5,341,218, Cl. 348-695.000.

Kaneko, Masakatsu; Nosse, Hidetaka; and Takeishi, Katsumi, to Honda Giken Kogyo Kabushiki Kaisha. Method of and system for generating teaching data for robots. 5,341,458, Cl. 395-80.000.

Kang, Sukhvinder S.; Patel, Bharatan R.; Nutt, William E.; and Kothari, Kirankumar K., to Gas Research Institute. Fluidic gas flowmeter with large flow metering range. 5,339,695, Cl. 73-861.190.

Kangas, William W., to American Colloid Company. Trapezium-shaped aqueously-swelling concrete joint-sealing method. 5,339,590, Cl. 52-396.020.

Kangawa, Kenji: *See—*
Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, 5,340,920, Cl. 530-324.000.

Kanigowski, Andrew S., to Futureflite Corporation. Energy absorbing cabinet for aircraft buckheads. 5,340,059, Cl. 244-121.000.

Kanigowski, Wojceich. Balanced turbocharger. 5,340,286, Cl. 417-407.000.

Kanjo, Wajih: *See—*
Sich, Gary M.; and Kanjo, Wajih, 5,339,930, Cl. 188-210.000.

Kansai Electric Power Co., Ltd., The: *See—*
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.

Kanter, David J.; and Basker, Milo F., Jr. Beach umbrella. 5,339,847, Cl. 135-16.000.

Kanzaki Kokyukoki Mfg. Co. Ltd.: *See—*
Ohashi, Ryota, 5,339,631, Cl. 60-487.000.

Kao Corporation: *See—*
Hamano, Ichirou; Honda, Munetaka; Takakuwa, Tateki; Omori, Toshiyuki; and Kotani, Yasuaki, 5,339,600, Cl. 53-306.000.
Itoi, Akito; Nishi, Isao; and Ishii, Yasuo, 5,340,521, Cl. 264-176.100.
Sugasawa, Hiroki; Takano, Satoshi; Sakaguchi, Mikio; Sakamoto, Ichiro; Iwata, Minoru; Kurotani, Nariyuki; Koizumi, Hideaki; Itoh, Hiroshi; and Maejima, Risa, 5,340,582, Cl. 424-401.000.

Kapica, John: *See—*
Marchwiak, Zbigniew; and Kapica, John, 5,339,728, Cl. 99-426.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Karasaki, Mutsunori: *See*—
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.

Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, to Neste Oy. Electrically conductive compositions and methods for their preparation. 5,340,499, Cl. 252-500.000.

Karnicki, Vladimir S.: *See*—
Timmons, Russell M.; and Karnicki, Vladimir S., 5,339,571, Cl. 51-168.000.

Karp, Alan H.; Markstein, Peter; and Brzezinski, Dennis, to Hewlett-Packard Company. Floating point arithmetic unit using modified Newton-Raphson technique for division and square root. 5,341,321, Cl. 364-748.000.

Karpati, Egon: *See*—
Farkas, Sandor; Foldeak, Sandor; Karpati, Egon; Hegyes, Peter; Kreidl, Janos; Szporny, Laszlo; Czibula, Laszlo; and Petofi-Vass, Szilvia, 5,340,823, Cl. 514-317.000.

Karpinski, Andrew J., to Honeywell Inc. Triangular dither drive apparatus for a ring laser gyroscope. 5,341,209, Cl. 356-350.000.

Karsten, Kenneth S., Jr.; and Wertman, Richard C., to ITT Corporation. Anisotropically loaded helix assembly for a traveling-wave tube. 5,341,066, Cl. 315-3.500.

Karz, Robert S.: *See*—
Hermanson, Herman A.; Drake, Donald J.; Rezanka, Ivan; Karz, Robert S.; Teumer, Roger G.; and Altavela, Robert P., 5,341,162, Cl. 347-92.000.

Kasahara, Kenichi, to NEC Corporation. Semiconductor surface light emitting and receiving heterojunction device. 5,340,998, Cl. 257-13.000.

Kashiwagi, Takeshi: *See*—
Ohtake, Shinichi; Tamura, Tatsuya; Hotta, Tetsuo; and Kashiwagi, Takeshi, 5,339,584, Cl. 52-208.000.

Kasper, Gary A., to Rexair, Inc. Filtering means for a liquid pan assembly for a liquid bath vacuum cleaner. 5,339,487, Cl. 15-246.200.

Kasperkovitz, Wolfdietrich G.: *See*—
Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruytere, Hendricus C.; and Sloof, Willem-Arie, 5,341,107, Cl. 329-337.000.

Kassegger, Friedrich: *See*—
Madritsch, Gerhard; Hirschberg, Bruno; Kassegger, Friedrich; Maslo, Heinz; and Weitzer, Paul, 5,340,088, Cl. 266-44.000.

Kasting, Gerald B.: *See*—
Piazza, Gary A.; Mazur, Adam W.; and Kasting, Gerald B., 5,340,568, Cl. 424-59.000.

Kata, Takehiro, to Bridgestone Corporation. Circumferentially aligned detachable segmented curing mold for pneumatic tires and method of manufacturing same. 5,340,294, Cl. 425-32.000.

Kato, Kenji: *See*—
Takaoka, Toshiaki; Tanaka, Katsuyoshi; and Kato, Kenji, 5,340,893, Cl. 526-292.400.

Kato, Masahiro: *See*—
Matsumoto, Toshiyuki; Inada, Hirofumi; Nittaya, Hiroshi; and Kato, Masahiro, 5,341,324, Cl. 365-51.000.

Kato, Osamu: *See*—
Miya, Kazuyuki; Kato, Osamu; and Honma, Kouichi, 5,341,384, Cl. 371-31.000.

Kato, Shigeru, to Olympus Optical Co., Ltd. Active autofocusing type rangefinder optical system. 5,341,186, Cl. 354-403.000.

Kato, Takahiko: *See*—
Yasuda, Minoru; Kato, Takahiko; and Ito, Motoya, 5,340,293, Cl. 418-171.000.

Kato, Tetsukai: *See*—
Torii, Nobutoshi; Nihei, Ryo; and Kato, Tetsukai, 5,341,078, Cl. 350-568.220.

Kato, Yoichiro, to Nissan Motor Co., Ltd. Wheel independent suspension system. 5,340,146, Cl. 280-673.000.

Katoh, Masafumi: *See*—
Soumiya, Toshio; Abe, Shunji; Katoh, Masafumi; and Watanabe, Naotoshi, 5,341,366, Cl. 370-17.000.

Katoh, Tokiomi; and Ozeki, Hirofumi, to NGK Spark Plug Company, Ltd. Microwave dielectric ceramic composition. 5,340,784, Cl. 501-136.000.

Katsilometes, George W., to Monitor Diagnostics, Inc. Use of nonmetallic tetrapyrrole molecules and novel signal solutions in chemiluminescent reactions and assays. 5,340,714, Cl. 435-6.000.

Katsurabayashi, Masahiko: *See*—
Shigeeda, Nobuyuki; Yamamoto, Susumu; Katsurabayashi, Masahiko; and Ikegaya, Tadahiko, 5,341,223, Cl. 358-440.000.

Kau, Chin-Cheng: *See*—
Grossman, Anita S.; Kau, Chin-Cheng; Ogden, Aubrey D.; and Weems, Mason L., 5,341,502, Cl. 395-725.000.

Kaufman, Michael J.: *See*—
Jayashankar, S.; and Kaufman, Michael J., 5,340,531, Cl. 419-10.000.

Kauth, Hermann: *See*—
Kuhling, Steffen; Kauth, Hermann; Alewelt, Wolfgang; and Freitag, Dieter, 5,340,905, Cl. 528-199.000.

Kauvar, Lawrence M., to Terrapin Technologies, Inc. Panels of analyte-binding ligands. 5,340,474, Cl. 210-198.200.

Kawabe, Hiroshi; Watanabe, Toshiyuki; and Tomita, Naotaka, to Bridgestone Corporation. Apparatus for assembling tire and rim and filling inner pressure. 5,339,880, Cl. 157-1.000.

Kawabe, Mitsunori: *See*—
Fujita, Hideyuki; Okafuji, Masaharu; and Kawabe, Mitsunori, 5,341,306, Cl. 364-473.000.

Kawabe, Yasumasa; Aoai, Toshiaki; and Kokubo, Tadayoshi, to Fuji Photo Film Co., Ltd. Positive type photoresist composition. 5,340,688, Cl. 430-192.000.

Kawabe, Yasumasa: *See*—
Kondo, Syunichi; Nagashima, Akira; and Kawabe, Yasumasa, 5,340,683, Cl. 430-165.000.

Kawahara, Sadao; Kojima, Yoshinori; and Aiba, Osamu, to Matsushita Electric Industrial Co., Ltd. Scroll-type compressor having a plate preventing excess lift of the crankshaft. 5,340,287, Cl. 417-410.00D.

Kawahara, Shigeki: *See*—
Shikatani, Junichi; and Kawahara, Shigeki, 5,341,383, Cl. 371-22.100.

Kawai, Masao; Kyotani, Yoshihiro; Aruga, Hideki; Shimado, Toshihiro; Ito, Yoshihisa; and Hori, Koji, to Kabushikikaisha Equos Research. Cryogenic refrigerator. 5,339,649, Cl. 62-46.100.

Kawai, Takayoshi: *See*—
Kajino, Yuuichi; Sugi, Hikaru; Ban, Koichi; Honda, Yuuji; Samukawa, Katsuhiko; and Kawai, Takayoshi, 5,340,021, Cl. 236-49.300.

Kawakami, Keiji: *See*—
Iizuka, Akira; and Kawakami, Keiji, 5,340,940, Cl. 84-622.000.

Kawamoto, Masao: *See*—
Hirakawa, Kiyoshi; Watadani, Izumi; Tanaka, azuhiko; Kawamoto, Masao; Tanaka, Takaaki; Sano, Hirohumi; Yoshimochi, Hayami; and Sato, Masahiro, 5,340,650, Cl. 428-373.000.

Kawamoto, Masashi, to Pioneer Electronic Corporation. Car stereo having a detachable grille. 5,341,434, Cl. 381-86.000.

Kawamukai, Kenji; and Furuta, Yasunori, to Sanshin Kogyo Kabushiki Kaisha. Marine propulsion unit. 5,340,343, Cl. 440-88.000.

Kawamura, Ban: *See*—
Watanabe, Junzo; Ueyama, Akihiro; and Kawamura, Ban, 5,341,072, Cl. 315-408.000.

Kawamura, Hideo, to Isuzu Ceramics Research Institute Co., Ltd. Engine with flywheel generator. 5,341,060, Cl. 310-153.000.

Kawamura, Makoto: *See*—
Okazaki, Haruki; Kawamura, Makoto; Nobumoto, Kazutoshi; and Kageyama, Fumio, 5,340,204, Cl. 303-111.000.

Kawamura, Takahisa: *See*—
Yamakawa, Koji; Kawamura, Takahisa; and Arashima, Teruo, 5,341,161, Cl. 347-87.000.

Kawamura, Yoshiya: *See*—
Fukushige, Tomoaki; Toda, Hiroko; Akano, Hirofumi; Ito, Emiko; Fukuta, Tomohiko; Fujimori, Masahiro; and Kawamura, Yoshiya, 5,340,461, Cl. 204-299.00R.

Kawasaki, Hidetoshi; Mizuno, Kazunori; and Sugiyama, Nobuo, to Fuji Photo Film Co., Ltd. Method of making light-trapping members for photographic film cassette. 5,341,188, Cl. 354-277.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.
Takasaki, Denjiro; Togawa, Shuichi; Kinoshita, Akio; and Arasuna, Hitoshi, 5,340,960, Cl. 219-86.700.

Kawase, Hiroyuki, to NGK Insulators, Ltd. Machining method of ceramic turbine rotor. 5,339,521, Cl. 29-889.230.

Kawata, Ichiro; Okamoto, Takehiko; Akasu, Hiroyuki; and Komatsu, Kensaku, to Kuraray Co., Ltd. Polysulfone-based hollow fiber membrane and process for manufacturing the same. 5,340,480, Cl. 210-500.230.

Kawata, Tetsuro, to Fuji Xerox Co., Ltd. Apparatus for optimizing hierarchical circuit data base and method for the apparatus. 5,341,309, Cl. 364-489.000.

Kayano, Hiromichi: *See*—
Yamada, Mitsuo; Kayano, Hiromichi; Aoki, Kei; and Ishii, Keizou, 5,340,931, Cl. 534-843.000.

Kayashima, Kazuhiro: *See*—
Niwa, Hisao; and Kayashima, Kazuhiro, 5,341,315, Cl. 364-580.000.

Kaye, Gail L., to Abbott Laboratories. Method of treating obesity. 5,340,315, Cl. 434-127.000.

Kaye Instruments, Inc.: *See*—
Goldschmidt, Robert E., 5,340,216, Cl. 374-182.000.

Kaymakcalan, Zehra: *See*—
Liu, David Y.; Kaymakcalan, Zehra; and Mundy, Kirsten, 5,340,800, Cl. 514-12.000.

Kaysersberg: *See*—
Ruppel, Remy; Hungler, Joel; and Laurent, Pierre, 5,339,730, Cl. 101-32.000.

Kean, Billy J., Jr.: *See*—
Collins, Alfred L.; Cutright, Edwin L.; DeBlasio, James A.; Dickerson, Richard H.; Kean, Billy J., Jr.; Ritt, Renzer R., Sr.; and Scott, George R., 5,339,871, Cl. 141-1.000.

Kearney, Allen C.: *See*—
Vossberg, Stephen M.; Clothiaux, John D.; Chaplin, Gregory D.; Harrigle, Dale R., Jr.; Kearney, Allen C.; Williams, James A., Jr.; and Fleishchman, Thomas S., 5,339,879, Cl. 152-540.000.

Kearney National, Inc.: *See*—
Westrom, Arthur C.; Meliopoulos, A. P.; and Cokkinides, George J., 5,341,265, Cl. 361-44.000.

Kearns, Robert M. Self-removing cover for percussion type firearms. 5,339,553, Cl. 42-83.000.

Keate, Elizabeth G.: *See*—
Javkin, Hector R.; Keate, Elizabeth G.; Antonanzas-Barroso, Norma; and Hanson, Brian A., 5,340,316, Cl. 434-185.000.

Keating, Daniel J.; and Siska, Natalie R. Apparatus and method for taking cultures endoscopically. 5,339,828, Cl. 128-759.000.

Kedarnath, N.; and Mordenga, Samuel P., to Xerox Corporation. Xerographic brush cleaner detoner. 5,341,201, Cl. 355-302.000.

Keeley, James W.; Lemay, Richard A.; and Nibby, Chester M., Jr., to Bull HN Information Systems Inc. Processor bus access. 5,341,501, Cl. 395-725.000.

Keeley, James W.; and Joyce, Thomas F., to Bull HN Information Systems Inc. Processing unit having multiple synchronous bus for sharing access and regulating system bus access to synchronous bus. 5,341,508, Cl. 395-800.000.

Keeley, James W.: *See*—
Joyce, Thomas F.; Keeley, James W.; Lemay, Richard A.; DiPlacido, Bruno, Jr.; and Massucci, Martin M., 5,341,495, Cl. 395-500.000.

Keibler, Howard M. Log lifting and supporting device. 5,340,085, Cl. 254-266.000.

Keijsper, Johannes J., to Shell Oil Company. Polymerization process. 5,340,787, Cl. 502-162.000.

Keller, Jakob; and Breidenthal, Robert E., to Asea Brown Boveri Ltd. Device for mixing two gaseous components and burner in which this device is employed. 5,340,306, Cl. 431-351.000.

Keller, Paul M.: *See*—
Connolly, Thomas M.; Keller, Paul M.; and Waxman, Lloyd H., 5,340,726, Cl. 530-350.000.

Kelly, John J.: *See*—
Rotter, George E.; Melquist, John L.; Chiang, Weilong; Tsai, Boh C.; and Kelly, John J., 5,340,846, Cl. 521-182.000.

Kelsey, Donald R.: *See*—
Wang, Pen-Chung; and Kelsey, Donald R., 5,340,912, Cl. 528-322.000.

Kemmochi, Kazuhisa: *See*—
Suzuki, Hiroyuki; Nagase, Yukio; and Kemmochi, Kazuhisa, 5,341,165, Cl. 346-157.000.

Kemp, William H., to Amada Technologies Inc. Ultrasonic bathing system. 5,339,804, Cl. 601-2.000.

Kendall, Leonard M.: *See*—
Chalmers, Dennis W.; Kendall, Leonard M.; Kristensen, Ole F.; Lin, Eric C. W.; and Wan, Howard S. K., 5,341,258, Cl. 360-92.000.

Kendall Square Research Corporation: *See*—
Frank, Steven J.; and Binder, Paul A., 5,341,483, Cl. 395-400.000.

Kennametal Inc.: *See*—
Armbrust, William D.; and Deemer, Randall E., 5,340,242, Cl. 407-11.000.

Kennedy, Joseph P.; Goodall, Brian L.; and Lubnin, Alexander V., to University of Akron, The. Aldehyde-telechelic polyisobutylenes, catalytic method for preparing the same with high conversion and selectivity, and block copolymers made thereform. 5,340,881, Cl. 525-333.700.

Kennedy, William J.; and Rocha, Gerald F., to Velcro Industries B.V. Hook design for a hook and loop fastener. 5,339,499, Cl. 24-452.000.

Kephart, Richard E. Comparative photographic documentation apparatus. 5,341,184, Cl. 345-62.000.

Kerby, Michael C.; Riley, Kenneth L.; Long, Fred M.; Johnson, Jack W.; and Brody, John F., to Exxon Research and Engineering Company. Pillared micas. 5,340,657, Cl. 428-552.000.

Kerkar, Awdhoot V., to W. R. Grace & Co.-Conn. Manufacture of conical pore ceramics by electrophoretic deposition. 5,340,779, Cl. 501-80.000.

Kerkhoff, William A.; and Niekamp, Rex L., to Harris Corporation. RF expansion joint. 5,341,116, Cl. 333-260.000.

Kerr, Roger S., to Eastman Kodak Company. Multi-chambered imaging drum. 5,341,159, Cl. 346-134.000.

Kersten, Jens-Heinrich: *See*—
Neuhaus, Reinhard; Kersten, Jens-Heinrich; and Schmitz, Detlef, 5,340,031, Cl. 239-343.000.

Keselman, Hugo: *See*—
Hermolin, Joshua; Keselman, Hugo; and Oren, Jacob, 5,340,445, Cl. 203-33.000.

Kessel, Suzette C. Thermoelectric cooler container with cigarette lighter support jack. 5,339,638, Cl. 62-3.610.

Key, James C.; and Sloan, George A., to Reynolds Metals Company. Method and apparatus for trimming edge scrap from continuously cast metal strip. 5,339,886, Cl. 164-463.000.

Key Tech Corporation: *See*—
Carstens, Ronald, 5,339,957, Cl. 206-386.000.

Key, Walter R.: *See*—
Albertson, Luther D., III; Key, Walter R.; and Stansbury, Mark A., 5,339,647, Cl. 62-292.000.

Keyser, Paul; and Watchko, George, to Chomerics, Inc. Sensor element for detection of hydrocarbons. 5,341,128, Cl. 340-605.000.

Keyvani, Daryoush. Hand tool having offset work elements. 5,339,712, Cl. 81-416.000.

Khandkar, Ashok C., to Ceramatec, Inc. Creep resistant, metal-coated $LiFeO_2$ anodes for molten carbonated fuel cells. 5,340,665, Cl. 429-40.000.

Kiani, Khusrow: *See*—
Ahanin, Bahram; Balicki, Janusz K.; Kiani, Khusrow; Leong, William; Li, Ken-Ming; and Nouban, Bezhad, 5,341,044, Cl. 307-465.000

Kidalouski, Raymond G.; Detzel, Roger A.; and Byan, Donald E., to Babcock & Wilcox Company, The. Modular arrangement for heat exchanger units. 5,339,891, Cl. 165-67.000.

Kihara, Naoko: *See*—
Hayase, Rumiko; Oba, Masayuki; Kihara, Naoko; and Mikogami, Yukihiro, 5,340,684, Cl. 430-165.000.

Kikuchi, Fumio; Itoh, Kazuo; Taga, Kazuharu; Matsunaga, Naoto; Ono, Hiroshi; Namba, Takaoki; and Narita, Kazuhiko, to Honda Giken Kogyo Kabushiki Kaisha. Method of rendering a two dimensional drawing into a three dimensional drawing, using a CAD program. 5,341,461, Cl. 395-120.000.

Kilburn, Douglas G.; Miller, Robert C.; Gilkes, Neil; and Warren, R. Antony J., to University of British Columbia. Method of preparing a B-1,4 glycan matrix containing a bound fusion protein. 5,340,731, Cl. 435-179.000.

Kim, Hyung S.: *See*—
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,339,474, Cl. 8-159.000.

Kim, John Y., to Metapro. Frontal sole exercise device. 5,339,542, Cl. 36-7.200.

Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., to Goldstar Co., Ltd. Apparatus for and method of determining twist of clothes being washed in washer. 5,339,474, Cl. 8-159.000.

Kim, Sang H., to Eastman Kodak Company. Green sensitized silver halide emulsions. 5,340,711, Cl. 430-576.000.

Kim, Thomas D.: *See*—
Hattersley, John R.; Kim, Thomas D.; Lee, Jeffery Y.; and Reiley, Forrest A., 5,341,485, Cl. 395-400.000.

Kimberly-Clark Corporation: *See*—
Rollins, Neal A.; and Rooyakkers, John A., 5,340,648, Cl. 428-343.000.

Kimmell, Steven D.: *See*—
Forcelledo, Jack L.; and Kimmell, Steven D., 5,339,839, Cl. 132-114.000.

Kimoto Co., Ltd.: *See*—
Tanisaki, Tatsuzo; Okazaki, Satiko; and Kogoma, Masuhiro, 5,340,618, Cl. 427-488.000.

Kimoto Tech, Inc.: *See*—
Tanisaki, Tatsuzo; Okazaki, Satiko; and Kogoma, Masuhiro, 5,340,618, Cl. 427-488.000.

Kimura, Hiromachi: *See*—
Suzuki, Akira; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Oba, Hidehiro; Kimura, Hiromachi; and Otsubo, Hideaki, 5,339,709, Cl. 477-145.000.

Kimura, Hitoshi: *See*—
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,341,246, Cl. 359-837.000.

Kimura, Kenichi: *See*—
Okuyama, Atsushi; Kimura, Kenichi; and Sugawara, Saburo, 5,341,243, Cl. 359-687.000.

Kimura, Shigeru: *See*—
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,340,848, Cl. 522-157.000.

King, Charles: *See*—
Newman, Charles; Jones, Paul L.; and King, Charles, 5,341,222, Cl. 358-403.000.

King, James G.: *See*—
Lemon, Peter H. R. B.; King, James G.; Murray, Graham; Leoni, Henry; and Gerber, Arthur H., 5,340,888, Cl. 525-501.000.

King, Michael J.: *See*—
Weder, Donald E.; Straeter, William F.; and King, Michael J., 5,339,601, Cl. 53-397.000.
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.

King, Sidney L.: *See*—
Gerpheide, George E.; Wilson, Donald A.; and King, Sidney L., 5,340,108, Cl. 273-185.00A.

King, Steven R.: *See*—
Gale, Nigel F.; Naegeli, David W.; Ryan, Thomas W., III; and King, Steven R., 5,339,634, Cl. 60-723.000.

Kingsley, Jack D.; and Srinivas, Chukka, to General Electric Company. High resolution radiation imaging system. 5,340,988, Cl. 250-370.090.

Kinnings Marlow Limited: *See*—
Morgan, Jack L., 5,340,256, Cl. 411-405.000.

Kinoshita, Akio: *See*—
Takasaki, Denjiro; Togawa, Shuichi; Kinoshita, Akio; and Arasuna, Hitoshi, 5,340,960, Cl. 219-86.700.

Kinoshita, Hiroaki: *See*—
Hashiguchi, Osamu; and Kinoshita, Hiroaki, 5,340,321, Cl. 439-108.000.

Kinoshita, Itsuko; Hata, Masayuki; and Satou, Mitsugu, to Mitsubishi Denki Kabushiki Kaisha. Stable high speed clock generator. 5,341,031, Cl. 307-269.000.

Kinoshita, Yoshiji: *See*—
Sai, Noriaki; and Kinoshita, Yoshiji, 5,340,338, Cl. 439-845.000.

Kinstrey, James: *See*—
Mustafa, Reynaldo A.; and Kinstrey, James, 5,339,734, Cl. 101-109.000.

Kiproff, Peter N.: *See*—
Slocum, John; Kiproff, Peter N.; Gibson, Daryl; and Merritt, Will, 5,340,512, Cl. 264-37.000.

Kirakossian, Hrair: *See*—
Ullman, Edwin F.; Kirakossian, Hrair; Pease, John S.; Daniloff, Yuri; and Wagner, Daniel B., 5,340,716, Cl. 435-6.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Kirayoglu, Birol: *See*—
Duffy, Joseph J.; Kirayoglu, Birol; Lin, Pui-Yan; Marin, Robert A.; and Santucci, Robert J., 5,340,429, Cl. 156-288.000.

Kirby, Jack E.; and Shabram, Lyle F., Jr., to Kirby, Jack E. Collapsible golf fairway distance marker. 5,340,103, Cl. 273-32.00H.

Kirchmeyer, Stephan: *See*—
Audenaert, Raymond; Kirchmeyer, Stephan; Sirinyan, Kirkor; and Henning, Wolfgang, 5,340,879, Cl. 525-327.400.

Kirk, David B., to California Institute of Technology. N-dimensional basis function circuit. 5,341,051, Cl. 307-494.000.

Kirk, Mark P.: *See*—
Dunn, Susan H.; Kirk, Mark P.; Mader, Roger A.; and Spawn, Terence D., 5,340,712, Cl. 430-619.000.

Kirkham, Harold, to California Institute of Technology. Protocol for multiple node network. 5,341,372, Cl. 370-85.800.

Kirkpatrick, James: *See*—
Balkanski, Alexandre; Purcell, Steve; and Kirkpatrick, James, 5,341,318, Cl. 364-725.000.

Kishi, Fumio: *See*—
Hodoshima, Takashi; Ishigaki, Kouji; Nakahara, Kazuyuki; and Kishi, Fumio, 5,341,196, Cl. 355-260.000

Kishiro, Osamu; Shirahama, Rie; Sakata, Yasuyuki; Tanaka, Hideaki; and Honma, Ken, to Mitsubishi Kasei Corporation. Liquid crystalline polyesters and methods for their production. 5,340,911, Cl. 528-308.000.

Kiso, Hiroyuki: *See*—
Machida, Tetsuo; Kiso, Hiroyuki; Sasaki, Nobuyuki; and Kondo, Hiroshi, 5,340,528, Cl. 264-328.700.

Kita, Toshiaki: *See*—
Okai, Makoto; Tsuji, Shinji; Ohishi, Akio; Hirao, Motohisa; Matsumura, Hiroyoshi; Harada, Tatsuo; Kita, Toshiaki; and Taira, Hideki, 5,340,637, Cl. 428-167.000.

Kitada, Mitsuo: *See*—
Nakayama, Hiroshi; Takeda, Tomokazu; Yomoto, Toshiyuki; Kitada, Mitsuo; Ohta, Shoji; and Chosa, Masatoshi, 5,339,918, Cl. 180-292.000.

Kitahara, Tsuyoshi: *See*—
Miyazawa, Yoshinori; Ishii, Hiroshi; Nakamura, Osamu; Kurashima, Norihiko; Kitahara, Tsuyoshi; and Miyazawa, Hisashi, 5,341,164, Cl. 347-88.000.

Kitano, Kenzo: *See*—
Yoshino, Akira; Tahara, Massaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, 5,340,412, Cl. 148-208.000.

Kitoh, Masayuki: *See*—
Itoh, Tsutomu; Fukami, Shinji; and Kitoh, Masayuki, 5,340,023, Cl. 239-13.000.

Kittel, Michael A.: *See*—
Sommer, Edward J., Jr.; Kittel, Michael A.; and Peatman, James R., 5,339,962, Cl. 209-576.000.

Kittelsen, Jon D.; and Belvedere, Paul C., to E-Z Gard Industries, Inc. Thermoplastic mouthguard with integral shock absorbing framework. 5,339,832, Cl. 128-862.000.

Kittrell, James R.; and Quinlan, Charles W., to KSE Inc. Process for the stabilization of copolymers of maleic anhydride and alkyl vinyl ethers. 5,340,918, Cl. 528-483.000.

Klassen, Robert V., to Xerox Corporation. Method and apparatus for generating and displaying freeform strokes of varying or constant width using adaptive forward differencing. 5,341,467, Cl. 395-142.000.

Klein, Howard P.: *See*—
Crawford, Wheeler C.; Marquis, Edward T.; and Klein, Howard P., 5,340,889, Cl. 525-523.000.

Klein, J. Peter; Underiner, Gail; and Leigh, Alistair, to Cell Therapeutics, Inc. Substituted aminoalkyl xanthine compounds. 5,340,813, Cl. 514-263.000.

Kleinschmit, Peter: *See*—
Panster, Peter; Gradl, Robert; and Kleinschmit, Peter, 5,340,895, Cl. 528-9.000.

Klemptner, Lori J.: *See*—
Hodge, James D.; and Klemptner, Lori J., 5,340,797, Cl. 505-4.700.

Klimkow, Nanette M.: *See*—
Thieme, Thomas R.; Goldstein, Andrew S.; Piacentini, Stephen C.; and Klimkow, Nanette M., 5,339,829, Cl. 128-760.000.

Klimmek, Helmut: *See*—
Chmelir, Miroslav; and Klimmek, Helmut, 5,340,853, Cl. 524-56.000.

Klinkner, Walter: *See*—
Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, 5,341,297, Cl 364-426.030.

Kloeckner-Humboldt-Deutz AG: *See*—
Stellwagen, Karl; Gerstner, Hans; and Buchheister, Hasso, 5,341,299, Cl. 364-431.050.

Klontz, Keith W.; Divan, Deepakraj M.; Novotny, Donald W.; and Lorenz, Robert D., to Electric Power Research Institute, Inc. Contactless battery charging system. 5,341,083, Cl. 320-2.000.

Klontz, Keith W.: *See*—
Divan, Deepakraj M.; Klontz, Keith W.; Novotny, Donald W.; and Lorenz, Robert D., 5,341,280, Cl. 363-37.000.

Kloss, Thomas; Stein, Elfi; Gerth, Kirsten; and Wickardt, Andrea, to Scott Glaswerke. Optical crown glass having negative anomalous partial dispersion and high UV transmission. 5,340,778, Cl. 501-52.000.

Klukis, Edward L.; and Cohn, Avi P., to Allen Fruit Co., Inc. Granular article sorter having improved fluid nozzle separating system. 5,339,965, Cl. 209-639.000.

Knapp, Alan, to U.S. Philips Corporation. Liquid crystal colour display device with zig-zag pattern. 5,341,151, Cl. 345-58.000.

Knauff, Donald G.: *See*—
Jungquist, Bruce E.; McBroom, Michael E.; Yaeger, Curtis G.; Knauff, Donald G.; and Sem, Thomas R., 5,339,787, Cl. 123-514.000.

Knepper, Ronald W.: *See*—
Hsieh, Chang-Ming; Hsu, Louis L. C.; Mei, Shaw-Ning; Knepper, Ronald W.; and Wagner, Lawrence F., Jr., 5,341,023, Cl. 257-559.000.

Kniffen, Roy J., Jr.: *See*—
McKinney, Bevin C.; and Kniffen, Roy J., Jr., 5,339,625, Cl. 60-219.000.

Knight, George W.: *See*—
Park, Chung P.; Stevens, James C.; and Knight, George W., 5,340,840, Cl. 521-60.000.

Knowles, C. Harry: *See*—
Rockstein, George; Wilz, David, Sr.; Blake, Robert; and Knowles, C. Harry, 5,340,971, Cl. 235-472.000.

Knowles, Carl H.; Rockstein, George B.; Wilz, David M.; and Naylor, Charles A., to Metrologic Instruments, Inc. Automatic laser scanning system and method of reading bar code symbols using same. 5,340,973, Cl. 235-472.000.

Knuth, Howard D.: *See*—
Frei, John K.; and Knuth, Howard D., 5,341,115, Cl. 333-246.000.

Kobayashi, Hideo; Ueno, Osamu; and Ueyanagi, Kiichi, to Fuji Xerox Co., Ltd. Optical recording medium and optical recording method using the same. 5,341,358, Cl. 369-100.000.

Kobayashi, Hironobu: *See*—
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000.

Kobayashi, Kenji: *See*—
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.

Kobayashi, Masahiko; Takemura, Hirobumi; Ishida, Tetsuo; and Takahashi, Nobuyuki, to Anelva Corporation; and. Vacuum processing equipment. 5,340,460, Cl. 204-298.090.

Kobayashi, Minako: *See*—
Hirasawa, Hiroyuki; Kobayashi, Minako; and Matsuki, Yasuo, 5,340,702, Cl. 430-326.000.

Kobayashi, Satoru, to NEC Electronics, Inc. N-word read/write access achieving double bandwidth without increasing the width of external data I/O bus. 5,341,488, Cl. 395-425.000.

Kobayashi, Tohru: *See*—
Shimizu, Atsushi; Isomura, Satoru; Yamada, Takeo; Kobayashi, Tohru; Fujimura, Yoshuhiro; and Ito, Yuko, 5,341,049, Cl. 307-482.100.

Kobrinski, Haim: *See*—
Gelman, Alexander; Kobrinski, Haim; Smoot, Lanny S.; and Weinstein, Stephen B., 5,341,474, Cl. 395-200.000.

Koch, Frederick W.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Kolp, Christopher J.; Stoldt, Stephen H.; and Denis, Richard A., to Lubrizol Corporation, The. Diesel fuels containing organometallic complexes. 5,340,369, Cl. 44-366.000.

Kochta, Joachim: *See*—
Wehling, Bernhard; Schade, Franz; Kochta, Joachim; Burkhardt, Herbert; and Schindlmayr, Peter, 5,340,365, Cl. 8-94.180.

Koda, Yoshiharu, to Kabushiki Kaisha Denkosha. Sockets for discharge lamp. 5,340,327, Cl. 439-239.000.

Kodokian, George R., to Du Pont de Nemours, E. I., and Company. Method for induction heating of composite material. 5,340,428, Cl. 156-272.200.

Koene, Caspar H.: *See*—
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J., 5,339,837, Cl. 131-296.000.

Koenig & Bauer Aktiengesellschaft: *See*—
Dorsam, Willi R. L.; and Fischer, Christian M. M., 5,339,736, Cl. 101-352.000.

Koga, Keiji: *See*—
Hirata, Hideki; Koga, Keiji; and Ishida, Toshihiko, 5,340,698, Cl. 430-271.000.

Kogo, Kenichi: *See*—
Isobe, Masao; Aizawa, Yoshio; Kogo, Kenichi; and Yoshida, Chuzo, 5,340,869, Cl. 524-484.000.

Kogoma, Masuhiro: *See*—
Tanisaki, Tatsuzo; Okazaki, Satiko; and Kogoma, Masuhiro, 5,340,618, Cl. 427-488.000.

Kohler, Manfred; and Kuder, Roland, to Loher AG. Electric motor. 5,341,058, Cl. 310-87.000.

Kohno, Yasutaka, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device with reduced stress on gate electrode. 5,341,015, Cl. 257-402.000

Koike, Masao; Yamagishi, Akihito; Maruyama, Katsuhiko; and Kakuchi, Shusuke, to Sumitomo Metal Industries, Ltd. Ferritic stainless steel plates and foils and method for their production. 5,340,415, Cl. 148-325.000.

Koizumi, Haruhiko, to Toho Technical Service Co., Ltd. Electrolytic ion water generator. 5,340,458, Cl. 204-253.000.

Koizumi, Hideaki: *See*—
Sugasawa, Hiroki; Takano, Satoshi; Sakaguchi, Mikio; Sakamoto, Ichiro; Iwata, Minoru; Kurotani, Nariyuki; Koizumi, Hideaki; Itoh, Hiroshi; and Maejima, Risa, 5,340,582, Cl. 424-401.000.

Kojima, Akio: *See*—
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideaki; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,340,806, Cl. 514-184.000.

Kojima, Motohiro; Watanabe, Takuya; and Takamura, Tohru, to Matsushita Electronics Corporation, Ltd. Solid-state image pickup device. 5,340,977, Cl. 250-208.100.

Kojima, Yoshinori: *See*—
Kawahara, Sadao; Kojima, Yoshinori; and Aiba, Osamu, 5,340,287, Cl. 417-410.00D.

Koker, Gregory T., to Analog Devices, Inc. Input buffer circuit with deglitch method and apparatus. 5,341,033, Cl. 307-290.000.

Koksbang, Rene; and Olsen, Ib I., to Valence Technology, Inc. Method for in situ preparation of an electrode composition. 5,340,368, Cl. 29-623.500.

Koksbang, Rene, to Valence Technology, Inc. Vanadium oxide cathode active material and method of making same. 5,340,671, Cl. 429-218.000.

Kokubo, Tadayoshi: *See*—
Kawabe, Yasumasa; Aoai, Toshiaki; and Kokubo, Tadayoshi, 5,340,683 Cl. 430-192.000.
Sakaguchi, Shinji; Tan, Shiro; and Kokubo, Tadayoshi, 5,340,686, Cl. 430-191.000.
Yoshimoto, Hiroshi; Uenishi, Kazuya; and Kokubo, Tadayoshi, 5,340,697 Cl. 430-270.000.

Kolbe, Kenneth W.; and Calvert, Scott A., to General Electric Company. Slide-out shelf assembly for refrigerators. 5,340,209, Cl. 312-408.000.

Kolp, Christopher J.: *See*—
Koch, Frederick W.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Kolp, Christopher J.; Stoldt, Stephen H.; and Denis, Richard A., 5,340,369, Cl. 44-366.000.

Kolton, Chester; and Spater, Stuart S., to B&G Plastics, Inc. Belt and indicator assembly and method for use in belt manufacture. 5,339,552, Cl. 40-640.000.

Komatsu, Kensaku: *See*—
Kawata, Ichiro; Okamoto, Takehiko; Akasu, Hiroyuki; and Komatsu, Kensaku, 5,340,480, Cl. 210-500.230.

Komatsu, Tadao; and Miyata, Seiichiro, to Ishihara Chemical Co., Ltd. Composites made of carbon-based and metallic materials. 5,340,658, Cl. 428-558.000.

Komiyama, Yoshizo; Arai, Fumio; Toyama, Yoshiyasu; Hasegawa, Yutaka; and Tanioka, Tetsuya, to Toshiba Kikai Kabushiki Kaisha. Method for molding optical glass elements. 5,340,374, Cl. 65-29.120.

Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki. Method of manufacturing EEPROM memory device. 5,340,760, Cl. 437-43.000.

Komori, Shinji: *See*—
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.

Kompter, Hans-Michael: *See*—
Wachtler, Andreas; Kompter, Hans-Michael; Poetsch, Eike; Geelhaar, Thomas; Hittich, Reinhard; and Krause, Joachim, 5,340,497, Cl. 252-299.610.

Kondo, Hiroshi: *See*—
Machida, Tetsuo; Kiso, Hiroyuki; Sasaki, Nobuyuki; and Kondo, Hiroshi, 5,340,528, Cl. 264-328.700.

Kondo, Syunichi; Nagashima, Akira; and Kawabe, Yasumasa, to Fuji Photo Film Co., Ltd. Presensitized plate having surface-grained and anodized aluminum substrate with light-sensitive layer containing quinone diazide sulfonic acid ester of particular polyhydroxy compound. 5,340,683, Cl. 430-165.000.

Kondo, Tomomasa: *See*—
Sato, Kanji; and Kondo, Tomomasa, 5,340,496, Cl. 252-186.270.

Kondo, Yuji: *See*—
Akamatsu, Shigeru; and Kondo, Yuji, 5,339,816, Cl. 128-661.090.

Kondoh, Akihiro: *See*—
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.

Konica Corporation: *See*—
Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, 5,341,194, Cl. 355-212.000.
Isobe, Ryosuke; and Mori, Takahiro, 5,340,635, Cl. 428-141.000.
Masumi, Satoshi; and Takada, Shun, 5,340,703, Cl. 430-389.000.
Ohnishi, Akira; Usagawa, Yasushi; and Yamada, Taketoshi, 5,340,707, Cl. 430-522.000.
Ohya, Yukio; Matsuzaka, Syoji; Irie, Yasushi; Murakami, Shuji; Asano, Satomi; Okusa, Hiroshi; and Ohtani, Hirofumi, 5,340,710, Cl. 430-567.000.

Konieczynski, Ronald D.; Coeling, Kenneth J.; and Hartle, Ronald J., to Nordson Corporation. Apparatus for electrostatically isolating and pumping conductive coating materials. 5,340,289, Cl. 417-430.000.

Koninklijke PTT Nederland N.V.: *See*—
Aulia, Ari N.; and Groenendijk, Jan C., 5,341,430, Cl. 380-49.000.

Konishi, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Source voltage control switching circuit. 5,341,179, Cl. 348-730.000.

Kontu, Mauri: *See*—
Heinio, Tapio M.; and Kontu, Mauri, 5,340,443, Cl. 202-182.000.

Koppel, Bernard, to Sunbelt Precision Products Inc. Adjustable comb. 5,339,840, Cl. 132-151.000.

Koros, Robert M.: *See*—
Ajinkya, Milind B.; Koros, Robert M.; and Tarmy, Barry L., 5,340,549, Cl. 422-230.000.

Korsgaard, Jens. Apparatus for securing a vessel to a submersible mooring buoy. 5,339,760, Cl. 114-230.000.

Kosaka, Yoshihiro: *See*—
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.

Koschinek, Gunter; and Wandel, Dietmar, to Zimmer Aktiengesellschaft. Process for producing synthetic filaments. 5,340,517, Cl. 264-103.000.

Koshika, Norihide; Sakamoto, Mitsuo; Nishimura, Isao; Sasaki, Katsuyasu; and Oorui, Satoshi, to Kajima Corporation. Laminated rubber building support and vibration damping device. 5,339,580, Cl. 52-167.00E.

Koshizuka, Naoki: *See*—
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.

Kosich, Joseph; and Applegate, Edward V., to Wheelock Inc. Microprocessor-controlled strobe light. 5,341,069, Cl. 315-241.00S.

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Kosman, Stephen L.: *See*—
Roselle, Paul L.; and Kosman, Stephen L., 5,340,438, Cl. 156-643.000.

Kostlan, Catherine R.: *See*—
Connor, David T.; and Kostlan, Catherine R., 5,340,815, Cl. 514-269.000.

Kosty, John W.: *See*—
Lewis, Terry M.; Kosty, John W.; Goodman, James R.; Krzemein, Mark A.; Lenhert, Jon M.; and Arbogast, Jeffrey H., 5,340,121, Cl. 277-43.000.

Kotani, Hirokazu: *See*—
Ueno, Takashi; Ito, Hiroyuki; Kotani, Hirokazu; and Nakajima, Kazuo, 5,340,733, Cl. 435-199.000.

Kotani, Yasuaki: *See*—
Hamano, Ichirou; Honda, Munetaka; Takakuwa, Tateki; Omori, Toshiyuki; and Kotani, Yasuaki, 5,339,600, Cl. 53-306.000.

Kothari, Kirankumar K.: *See*—
Kang, Sukhvinder S.; Patel, Bharatan R.; Nutt, William E.; and Kothari, Kirankumar K., 5,339,695, Cl. 73-861.190.

Koyama, Tadafumi, to United States of America, Energy. Method to synthesize dense crystallized sodalite pellet for immobilizing halide salt radioactive waste. 5,340,506, Cl. 588-14.000.

Koyanagi, Masaru; and Yamda, Minoru, to Kabushiki Kaisha Toshiba. Semiconductor device provided with sense circuits. 5,341,013, Cl. 257-368.000.

Koyanagi, Naohisa: *See*—
Yamaguchi, Tadao; Koyanagi, Naohisa; and Nakajima, Koichi, 5,341,057, Cl. 310-81.000.

Koz, Mark C. Apparatus and method for video pixel data transfer. 5,341,175, Cl. 348-552.000.

Kozuki, Susumu: *See*—
Harigaya, Isao; and Kozuki, Susumu, 5,341,073, Cl. 318-7.000.

Kraft General Foods, Inc.: *See*—
Cox, Gary B.; Reifsteck, Dennis R.; Hills, Gregg A.; and Fenter, Lynn R., 5,339,948, Cl. 198-635.000.

Krag, Jeffrey B. Automatic bird feeder. 5,339,767, Cl. 119-57.800.

Krajewski, John J.: *See*—
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,340,653, Cl. 428-423.100.

Kral, Dean C. Paint can sealer. 5,339,981, Cl. 220-580.000.

Krangel, Michael S.: *See*—
Brenner, Michael B.; Strominger, Jack L.; Seidman, Johnathan; Ip, Stephen H.; and Krangel, Michael S., 5,340,921, Cl. 530-350.000.

Kraska, Claudia: *See*—
Griebel, Ulrich; Kraska, Claudia; and Schielein, Peter, 5,340,226, Cl. 401-96.000.

Krause, Joachim: *See*—
Wachtler, Andreas; Kompter, Hans-Michael; Poetsch, Eike; Geelhaar, Thomas; Hittich, Reinhard; and Krause, Joachim, 5,340,497, Cl. 252-299.610.

Krauss, Timothy A.: *See*—
Cycon, James P.; Hunter, David H.; and Krauss, Timothy A., 5,340,279, Cl. 416-134.00A.

Krayenhagen, Everett D. Warp measurement device. 5,339,534, Cl. 33-533.000.

Krebs, Paul B.; and Irwin, Shawn R., to A-Dec, Inc. Switch controller. 5,340,953, Cl. 200-86.500.

Kreidl, Janos: *See*—
Farkas, Sandor; Foldeak, Sandor; Karpati, Egon; Hegyes, Peter; Kreidl, Janos; Szporny, Laszlo; Czibula, Laszlo; and Petofi-Vass, Szilvia, 5,340,823, Cl. 514-317.000.

Kristensen, Ole F.: *See*—
Chalmers, Dennis W.; Kendall, Leonard M.; Kristensen, Ole F.; Lin, Eric C. W.; and Wan, Howard S. K., 5,341,258, Cl. 360-92.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Kristiansen, Odd: *See—*
Hall, Roger G.; Pascual, Alfons; and Kristiansen, Odd, 5,340,837, Cl. 514-603.000.

Kroon, David H.; and Baach, Michael K., to Corrpro Companies, Inc. Cathodic protection system for above-ground storage tank bottoms and method of installing. 5,340,455, Cl. 204-196.000.

Kruchowy, Roman: *See—*
Smith, Anthony; Goff, Dan; Kruchowy, Roman; and Rhoads, Carl, 5,339,691, Cl. 73-597.000.

Kruehler, Wolfgang: *See—*
Endroes, Arthur; Kruehler, Wolfgang; Einzinger, Richard; and Plaettner, Rolf, 5,340,410, Cl. 136-258.000.

Kruhmin, Ted: *See—*
Strunk, Louis M.; Bosch, Anthony; and Kruhmin, Ted, 5,340,520, Cl. 264-174.000.

Krummenacher, Beat R. Method for producing spagyric essences from plants. 5,340,729, Cl. 435-171.000.

Krupke, William F.: *See—*
Payne, Stephen A.; Kway, Wayne L.; DeLoach, Laura D.; Krupke, William F.; and Chai, Bruce H. T., 5,341,389, Cl. 372-41.000.

Krutzel, Lawrence, to AlliedSignal, Inc. Hot metal adhesive compositions comprising low molecular weight ethylene copolymers. 5,340,863, Cl. 524-272.000.

Krzemein, Mark A.: *See—*
Lewis, Terry M.; Kosty, John W.; Goodman, James R.; Krzemein, Mark A.; Lenhert, Jon M.; and Arbogast, Jeffrey H., 5,340,121, Cl. 277-43.000.

KSE Inc.: *See—*
Kittrell, James R.; and Quinlan, Charles W., 5,340,918, Cl. 528-483.000.

Kubo, Kazuhiro: *See—*
Kumazawa, Toshiaki; Yanase, Masashi; Harakawa, Hiroyuki; Obase, Hiroyuki; Oda, Shoji; Shirakura, Shiro; Yamada, Koji; and Kubo, Kazuhiro, 5,340,807, Cl. 514-215.000.

Kubota Corporation: *See—*
Tanaka, Tomio, 5,339,703, Cl. 74-15.400.

Kubota, Tadahiko; Yasunami, Shoichiro; and Maekawa, Yukio, to Fuji Photo Film Co., Ltd. Secondary battery. 5,340,672, Cl. 429-249.000.

Kuder, Roland: *See—*
Kohler, Manfred; and Kuder, Roland, 5,341,058, Cl. 310-87.000.

Kuhling, Steffen; Kauth, Hermann; Alewelt, Wolfgang; and Freitag, Dieter, to Bayer Aktiengesellschaft. Process for the preparation of thermoplastic polycarbonates. 5,340,905, Cl. 528-199.000.

Kuhns, Abe B., to E-Z Trail, Inc. Towing tongue assembly. 5,340,142, Cl. 280-444.000.

Kuhns, Richard L. Rain gutter covers and roof line protectors. 5,339,575, Cl. 52-12.000.

Kumagai, Tomoyuki, to Yamaha Corporation. Instrument having multiple data storing tracks for playing back musical playing data. 5,340,939, Cl. 84-609.000.

Kumamoto, Toshio: *See—*
Miki, Takahiro; and Kumamoto, Toshio, 5,341,037, Cl. 307-352.000.

Kumar, Nalin, to Microelectronics And Computer Technology Corporation. Field emitter with diamond emission tips. 5,341,063, Cl 313-309.000.

Kumashiro, Hideo, to Minolta Camera Kabushiki Kaisha. Dot image discrimination circuit for discriminating a dot image from other types of images. 5,341,227, Cl. 358-533.000.

Kumazawa, Toshiaki; Yanase, Masashi; Harakawa, Hiroyuki; Obase, Hiroyuki; Oda, Shoji; Shirakura, Shiro; Yamada, Koji; and Kubo, Kazuhiro, to Kyowa Hakko Kogyo Co., Ltd. Tricyclic compounds and intermediates thereof. 5,340,807, Cl. 514-215.000.

Kume, Hitoshi: *See—*
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,340,760, Cl. 437-43.000.

Kunde, Klaus: *See—*
Hoppe, Manfred; Herd, Karl-Josef; Eizenhofer, Thomas; Harms, Wolfgang; Henk, Hermann; Kunde, Klaus; and Reddig, Wolfram, 5,340,928, Cl. 534-618.000.

Kunieda, Syoichi: *See—*
Nakano, Motonari; and Kunieda, Syoichi, 5,339,757, Cl. 112-221.000.

Kunihiro, James J., to Elastomeric Technologies, Inc. Conductive elastomeric element electronic connector assembly. 5,340,318, Cl. 439-66.000.

Kunimoto, Toshifumi, to Yamaha Corporation. Waveguide musical tone synthesizing apparatus employing initial excitation pulse. 5,340,942, Cl. 84-661.000.

Kunreuther, Steven. Clip of attachments. 5,339,954, Cl. 206-346.000.

Kuo, Huei-Pei, to Hewlett-Packard Company. Electrostatically shielded field emission microelectronic device. 5,340,997, Cl. 257-10.000.

Kuramoto, Masahiko, to Idemitsu Kosan Co., Ltd. Process for producing styrene polymers. 5,340,892, Cl. 526-119.000.

Kuraray Company Limited: *See—*
Hirakawa, Kiyoshi; Watadani, Izumi; Tanaka, azuhiko; Kawamoto, Masao; Tanaka, Takaaki; Sano, Hirohumi; Yoshimochi, Hayami; and Sato, Masahiro, 5,340,650, Cl. 428-373.000.
Kawata, Ichiro; Okamoto, Takehiko; Akasu, Hiroyuki; and Komatsu, Kensaku, 5,340,480, Cl. 210-500.230.

Kurashima, Norihiko: *See—*
Miyazawa, Yoshinori; Ishii, Hiroshi; Nakamura, Osamu; Kurashima, Norihiko; Kitahara, Tsuyoshi; and Miyazawa, Hisashi, 5,341,164, Cl. 347-88.000.

Kurei, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic camera with film rewind apparatus and method capable of rewinding film in either a first or second operation mode. 5,341,187, Cl. 354-173.110.

Kurita, Jun, to Hewlett-Packard Company. Apparatus and method for generating synchronized control signals in a system for testing electronic parts. 5,341,091, Cl. 324-750.000.

Kurita, Tsutomu: *See—*
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl. 51-429.000.

Kuriyama, Hiroshi: *See—*
Menjo, Yoshihiro; Nakagawa, Fumio; Nagata, Takuji; and Kuriyama, Hiroshi, 5,340,623, Cl. 428-31.000.

Kuriyama, Hirotada, to Mitsubishi Denki Kabushiki Kaisha. Static random access type semiconductor memory device. 5,341,327, Cl. 365-154.000.

Kuriyama, Toru: *See—*
Hakamada, Ryuichi; Takahashi, Masahiko; Kuriyama, Toru; and Nakagome, Hideki, 5,339,650, Cl. 62-51.100.

Kuroda, Michio: *See—*
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000.

Kuroi, Takashi; and Kusunoki, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Bipolar transistor having a high ion concentration buried floating collector and method of fabricating the same. 5,341,022, Cl. 257-590.000.

Kurono, Masayasu: *See—*
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideaki; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,340,806, Cl. 514-184.000.

Kurosawa, Moriyoshi: *See—*
Tomoike, Kazuhiro; and Kurosawa, Moriyoshi, 5,341,233, Cl. 359-88.000.

Kurosawa, Takashi: *See—*
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, 5,340,596, Cl. 426-301.000.

Kurosawa, Toshishige: *See—*
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, 5,340,596, Cl. 426-301.000.

Kurotani, Nariyuki: *See—*
Sugasawa, Hiroki; Takano, Satoshi; Sakaguchi, Mikio; Sakamoto, Ichiro; Iwata, Minoru; Kurotani, Nariyuki; Koizumi, Hideaki; Itoh, Hiroshi; and Maejima, Risa, 5,340,582, Cl. 424-401.000

Kurys, Barbara E.: *See—*
Glamkowski, Edward J.; Fink, David M.; Kurys, Barbara E.; and Chiang, Yulin, 5,340,936, Cl. 546-124.000.

Kushiyama, Natsuki: *See—*
Takase, Satoru; Kushiyama, Natsuki; and Furuyama, Tohru, 5,341,326, Cl. 365-149.000.

Kuster, Kaspar, to Ciba-Geigy Corporation. Continuous drier for flat piece material. 5,339,537, Cl. 34-612.000.

Kustermann, Martin; and Sollinger, Hans-Peter, to J. M. Voith GmbH. Process for coating travelling webs. 5,340,611, Cl. 427-361.000.

Kusunoki, Shigeru: *See—*
Kuroi, Takashi; and Kusunoki, Shigeru, 5,341,022, Cl. 257-590.000.

Kusunoki, Tsuneo: *See—*
Tateyama, Norihiro; Ohno, Katsutoshi; and Kusunoki, Tsuneo, 5,340,673, Cl. 430-23.000

Kusuoka, Makoto: *See—*
Amano, Masayuki; and Kusuoka, Makoto, 5,340,616, Cl. 427-458.000.

Kuwata, Nobuhiro, to Sumitomo Electric Industries, Ltd. Semiconductor device and a method for fabricating the same. 5,341,007, Cl. 257-194.000.

Kuznetsov, Edward N.: *See—*
Weitsman, Y. Jack; and Kuznetsov, Edward N., 5,340,625, Cl. 428-36.300.

Kuzunuki, Soshiro: *See—*
Hori, Yasuro; Kuzunuki, Soshiro; Okabe, Shuichi; and Ito, Fumitaka, 5,341,413, Cl. 379-100.000.

Kwasnick, Robert F.: *See—*
Wei, Ching-Yeu; Possin, George E.; and Kwasnick, Robert F., 5,340,758, Cl. 437-40.000.

Kway, Wayne L.: *See—*
Payne, Stephen A.; Kway, Wayne L.; DeLoach, Laura D.; Krupke, William F.; and Chai, Bruce H. T., 5,341,389, Cl. 372-41.000.

Kwong, Dim-Lee: *See—*
Allman, Derryl D. J.; and Kwong, Dim-Lee, 5,340,752, Cl. 437-31.000.
Allman, Derryl D. J.; and Kwong, Dim-Lee, 5,340,770, Cl. 437-164.000.

Kyewski, Ronald A. Palm guard for sports. 5,339,465, Cl. 2-20.000.

Kynett, Virgil N.: *See—*
Wells, Steven E.; Winston, Mark; and Kynett, Virgil N., 5,341,330, Cl. 365-185.000

Kyotani, Yoshihiro: *See—*
Kawai, Masao; Kyotani, Yoshihiro; Aruga, Hideki; Shiimado, Toshihiro; Ito, Yoshihisa; and Hori, Koji, 5,339,649, Cl. 62-46.100.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Kumazawa, Toshiaki; Yanase, Masashi; Harakawa, Hiroyuki; Obase, Hiroyuki; Oda, Shoji; Shirakura, Shiro; Yamada, Koji; and Kubo, Kazuhiro, 5,340,807, Cl. 514-215.000.

L. Ron Schmidt and Associates, Inc.: *See—*
Schmidt, Leland R., 5,341,182, Cl. 352-184.000.

L & S Bait Company of Florida, Incorporated: *See—*
LeMaster, William H., 5,339,560, Cl. 43-42.440.

Laaf, Rainer: *See—*
Schormair, Eckhart; Ponisch, Jurgen; and Laaf, Rainer, 5,339,977, Cl. 220-307.000.

Laakso, Jukka: *See—*
Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, 5,340,499, Cl. 252-500.000.

Labbe, Francis A. M.: *See—*
Arthur, Hugh M.; and Labbe, Francis A. M., 5,340,609, Cl. 429-244.000.

Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co. KG: *See—*
Berthold, Fritz; and Pfleger, Manfred, 5,340,989, Cl. 250-385.100.

Lacour, Andre: *See—*
Accary, Andre; Coutiere, Jean; and Lacour, Andre, 5,340,377, Cl. 75-334.000.

Lacreuse, Gilles F.: *See—*
Larmignat, Daniel; Morand, Phillippe C.; Prieur, Christian H.; and Lacreuse, Gilles F., 5,340,395, Cl. 106-504.000.

Ladin, Beth F.: *See—*
Christianson, Teresa; Goddette, Dean; Ladin, Beth F.; Lau, Maria R.; Paech, Christian; Reynolds, Robert B.; Wilson, Charles R.; and Yang, Shiow-Shong, 5,340,735, Cl. 435-221.000.

Lai, Yue-Jun: *See—*
Chern, Ji-Wang; Lu, Guan-Yu; Lai, Yue-Jun; Yen, Mao-Hsiung; and Tao, Pao-Luh, 5,340,814, Cl. 514-267.000.

Lamaze, Airy-Pierre: *See—*
Bertaud, Yves; Bouvet, Sylvie; and Lamaze, Airy-Pierre, 5,340,447, Cl. 204-1.500.

Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, to Gist-brocades, N.V.; and Plant Genetic Systems, N.V. Modified prokaryotic glucose isomerase enzymes with altered pH activity profiles. 5,340,738, Cl. 435-234.000.

Laminated Films & Packaging: *See—*
Landers, James A.; Reid, Gary O.; and Greenland, Steven J., 5,339,602, Cl. 53-410.000.

Landers, James A.; Reid, Gary O.; and Greenland, Steven J., to Laminated Films & Packaging. Inflatable packaging bag and process for inflating the bag. 5,339,602, Cl. 53-410.000.

Landry, John A.: *See—*
Thayer, John S.; Mayer, Dale J.; Izquierdo, Javier F.; Culley, Paul R.; and Landry, John A., 5,341,494, Cl. 395-425.000.

Lane Company, Inc., The: *See—*
May, Teddy J., 5,340,191, Cl. 297-61.000.

Lang, Gerard; and Cotteret, Jean, to L'Oreal. Hair dye compositions and process comprising and utilizing a combination of isatin and aminopyrimidine derivatives. 5,340,366, Cl. 8-406.000.

Langenberg, Robert L.: *See—*
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.

Langenohl, Mark C., to Indresco Inc. Vitreous silica-based plastic refractory. 5,340,782, Cl. 501-133.000.

Langer, Richard M., to Vitesse Semiconductor Corp. Multichannel self-routing packet switching network architecture. 5,341,369, Cl. 370-60.000.

Lanterman, Harold L., to Teledyne Hyson. Apparatus and method to cushion movement of a member. 5,339,932, Cl. 188-316.000.

Lanxide Technology Company, LP: *See—*
Anderson, Edward N.; and Johnson, Thomas A., 5,340,783, Cl. 501-134.000.
Creber, David K.; Johnson, William B.; and Newkirk, Marc S., 5,340,655, Cl. 428-446.000.

Lanzara, Ronald F. Bed for supporting a prone user with a large abdomen. 5,339,471, Cl. 5-110.000.

Laporte, Irwin J.; and Watkins, Amos J., to JKS Boyles International, Inc. Drilling apparatus, particularly wire line core drilling apparatus. 5,339,915, Cl. 175-244.000.

Laramee, James A.: *See—*
Deinzer, Max L.; and Laramee, James A., 5,340,983, Cl. 250-281.000.

Larkin, Matthew P.: *See—*
Yavuz, Bulent O.; Larkin, Matthew P.; Rice, Gary W.; and Voss, Kenneth E., 5,340,516, Cl. 264-63.000.

Larmignat, Daniel; Morand, Phillippe C.; Prieur, Christian H.; and Lacreuse, Gilles F., to Giat Industries. Material for efficient masking in the infrared region. 5,340,395, Cl. 106-504.000.

Larsen, Bradley J.; Randazzo, Todd A.; and Erickson, Donald A., to Atmel Corporation. Integration of high performance submicron CMOS and dual-poly non-volatile memory devices using a third polysilicon layer. 5,340,764, Cl. 437-52.000.

Larsen, Gerald R.: *See—*
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,340,775, Cl. 437-246.000.

Larsen, Steven D.: *See—*
Wong, Patrick S. L.; Theeuwes, Felix; Eckenhoff, James B.; Larsen, Steven D.; and Huynh, Hoa T., 5,340,590, Cl. 424-473.000.

Lasker, Sigmund E. Process for visualizing tissue metabolism using oxygen-17. 5,339,814, Cl. 128-653.400.

Lasters, Ignace: *See—*
Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,340,738, Cl. 435-234.000.

Latte, Frank-Helge; Froehlich, Franz-Fr.; Boscher, Georg; and Behrendt, Martin, to RXS Schrumpftechnik-Garnituren GmbH. Arrangement for depositing splicing cassettes for light waveguides within a cable sleeve. 5,341,451, Cl. 385-135.000.

Latvala, Bruce E., to Allied-Signal Inc. Proportioning relay valve disabled by failed front braking circuit. 5,340,212, Cl. 303-7.000.

Lau, Maria R.: *See—*
Christianson, Teresa; Goddette, Dean; Ladin, Beth F.; Lau, Maria R.; Paech, Christian; Reynolds, Robert B.; Wilson, Charles R.; and Yang, Shiow-Shong, 5,340,735, Cl. 435-221.000.

Lau, Philip T. S.: *See—*
Tang, Ping-Wah; Lau, Philip T. S.; and Cowan, Stanley W., 5,340,708, Cl. 430-548.000.

Laue, Hans-Joachim: *See—*
Westeppe, Uwe; Struss, Klaus; Lindner, Christian; Idel, Karsten-Josef; and Laue, Hans-Joachim, 5,340,876, Cl. 525-66.000.

Lauenstein, Michael; and Tallier, Bernard, to Fabriques de Tabac Reunies SA. Cigarette-making machine with transfer device. 5,339,836, Cl. 131-84.100.

Lauer, Ernst H.; and Martin, James L., to Eaton Corporation. Synchronizer pre-energizer spring system. 5,339,936, Cl. 192-53.00E.

Laukhuf, Gregg, to SPX Corporation. Refrigerant recovery to multiple refrigerant storage containers. 5,339,642, Cl. 62-77.000.

Laurent, Pierre: *See—*
Ruppel, Remy; Hungler, Joel; and Laurent, Pierre, 5,339,730, Cl. 101-32.000.

Lavker, Robert M.; Sun, Tung-Tien; and Cotsarelis, George, to Univ. of Penna., Trustees of the; and Univ. of New York, Trustees of the. Method of identifying and modulating the activity of label retaining cells in hair follicles for diagnostic and therapeutic purposes. 5,340,744, Cl. 436-63.000.

Lawson, Raymond J.: *See—*
Lawson, Steven R.; and Lawson, Raymond J., 5,340,101, Cl. 273-26.000.

Lawson, Steven R.; and Lawson, Raymond J. Training apparatus for batters. 5,340,101, Cl. 273-26.000.

Layre, Rene ; and Bosc, Richard, to Cegedur Pechiney Rhenalu. Process for obtaining multilayer materials suitable for transformation into hollow bodies by drawing or drawing and ironing. 5,340,463, Cl. 205-201.000.

Leak, Bruce A., to Apple Computer, Inc. Efficient area description for raster displays. 5,341,472, Cl. 395-166.000.

Leatherman, Jack L.: *See—*
Whited, Timothy A.; Leatherman, Jack L.; and Markham, John L., 5,339,911, Cl. 175-62.000.

Leaute, Roland P., to Exxon Producton Research Company. Recovery and upgrading of hydrocarbon utilizing in situ combustion and horizontal wells. 5,339,897, Cl. 166-245.000.

LeBlanc, Michel J.: *See—*
Berthiaume, William A.; and LeBlanc, Michel J., 5,339,833, Cl. 128-772.000.

Ledbetter, Steve M.: *See—*
Sharp, Jeffrey O.; Harris, Michael R.; Cooper, Robert J.; Ledbetter, Steve M.; Reed, Ronald H.; and Chaffin, Ronald W., 5,341,273, Cl. 361-641.000.

Leduc, Christophe. Musical instruments having bowed or plucked strings. 5,339,718, Cl. 84-291.000.

Leduc, Robert D. Braided high-temperature packing. 5,339,520, Cl. 29-888.300.

Lee, Bang-Won: *See—*
Hwang, In-Hwan; Lee, Hye-Kyoung; Bae, Yi-Sung; and Lee, Bang-Won, 5,341,417, Cl. 379-399.000.

Lee, Bernard J.: *See—*
Lee, Paul, 5,339,914, Cl. 175-73.000.

Lee, Byeong H.: *See—*
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,339,474, Cl. 8-159.000.

Lee, Eric K. C.: *See—*
Welsh, Gary C.; Lee, Eric K. C.; and Dalke, Brian D., 5,340,844, Cl. 521-82.000.

Lee, Hye-Kyoung: *See—*
Hwang, In-Hwan; Lee, Hye-Kyoung; Bae, Yi-Sung; and Lee, Bang-Won, 5,341,417, Cl. 379-399.000

Lee, Jason J., to United Parcel Service of America, Inc. Method for controlling three degree of freedom actuator system. 5,341,289, Cl. 364-167.010.

Lee, Jeffery Y.: *See—*
Hattersley, John R.; Kim, Thomas D.; Lee, Jeffery Y.; and Reiley, Forrest A., 5,341,485, Cl. 395-400.000.

Lee, Paul, to PBL Drilling Tools Ltd.; PBL Machinery Ltd.; and Lee, Bernard J. Adjustable drilling mechanism. 5,339,914, Cl. 175-73.000.

Lee, Robert A. S.: *See—*
Jens, Stephen C.; Sawaf, Bernard, deceased; Viola, Paul F.; Belkus, Paul R.; and Lee, Robert A. S., 5,341,406, Cl. 376-316.000

Lee, Roger. PC board connector. 5,340,328, Cl. 439-326.000.

Lee, Sang S.: *See—*
Chang, Dong S.; and Lee, Sang S., 5,340,422, Cl. 156-89.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Leenders, Luc: *See—*
Uytterhoeven, Herman; Bastiaens, Luc; Van den Bergh, Rudolf; and Leenders, Luc, 5,340,693, Cl. 430-253.000.

Leenslag, Jan W.: *See—*
Pille-Wolf, Wolfgang; Leenslag, Jan W.; Eling, Berend; and Ingelaere, Dirk G. C., 5,340,852, Cl. 524-14.000.

Lees, Michael L.: *See—*
Curtis, John P.; Greenfeder, Susan E.; Seiden, Bill; and Lees, Michael L., 5,340,566, Cl. 424-49.000.

Lefevre Corporation: *See—*
Lefevre, Mark S., 5,340,039, Cl. 241-84.000.

Lefevre, Mark S., to Lefevre Corporation. Medical waste disposal apparatus. 5,340,039, Cl. 241-84.000.

Le Govic, Anne-Marie: *See—*
Collin, Marie-Pierre; Huguenin, Denis; and Le Govic, Anne-Marie, 5,340,556, Cl. 423-263.000.

Lehouiller, Scott A.: *See—*
Reckweg, Freek; Chiaverini, Michael; and Lehouiller, Scott A., 5,340,600, Cl. 426-603.000.

Leib, Donald; and Thurm, Kenneth. Collapsible trailer. 5,340,145, Cl. 280-656.000.

Leigh, Alistair: *See—*
Klein, J. Peter; Underiner, Gail; and Leigh, Alistair, 5,340,813, Cl. 514-263.000.

Leino, Ilmo: *See—*
Rosgren, Carl-Erik; and Leino, Ilmo, 5,339,724, Cl. 92-153.000.

Leith, Charles D. Conservation system and method. 5,339,854, Cl. 137-2.000.

Lekwauwa, Aju N.: *See—*
Young, Harvey J.; Bernasek, Edward; Lekwauwa, Aju N.; and Young, Walter R. D., Jr., 5,339,838, Cl. 131-372.000.

Leland Stanford, Junior University, The Board of Trustees of: *See—*
Liu, James C., 5,340,985, Cl. 250-337.000.

Leman, Ari: *See—*
Valimaa, Veli-Matti; Leman, Ari; Hossi, Petri; and Olkkola, Jari, 5,341,149, Cl. 343-895.000.

LeMaster, Dolan M. Connectivity management system. 5,340,326, Cl. 439-207.000.

LeMaster, William H., to L & S Bait Company of Florida, Incorporated. Fishing lure. 5,339,560, Cl. 43-42.440.

Lemay, Richard A.: *See—*
Joyce, Thomas F.; Keeley, James W.; Lemay, Richard A.; DiPlacido, Bruno, Jr.; and Massucci, Martin M., 5,341,495, Cl. 395-500.000.
Keeley, James W.; Lemay, Richard A.; and Nibby, Chester M., Jr., 5,341,501, Cl. 395-725.000.

Lemforder Metallwaren AG: *See—*
Sprang, Ruediger; Vossel, Andreas; Schmudde, Werner; and Buhl, Reinhard, 5,340,220, Cl. 384-125.000.

Lemon, Peter H. R. B.; King, James G.; Murray, Graham; Leoni, Henry; and Gerber, Arthur H., to Borden Inc. Phenolic resin composition. 5,340,888, Cl. 525-501.000.

Lemonnier, Jean, to Millipore Corporation. Device for testing the sterility of a fluid. 5,340,741, Cl. 435-291.000.

Lenhert, Jon M.: *See—*
Lewis, Terry M.; Kosty, John W.; Goodman, James R.; Krzemein, Mark A.; Lenhert, Jon M.; and Arbogast, Jeffrey H., 5,340,121, Cl. 277-43.000.

Leong, William: *See—*
Ahanin, Bahram; Balicki, Janusz K.; Kiani, Khusrow; Leong, William; Li, Ken-Ming; and Nouban, Bezhad, 5,341,044, Cl. 307-465.000.

Leoni, Henry: *See—*
Lemon, Peter H. R. B.; King, James G.; Murray, Graham; Leoni, Henry; and Gerber, Arthur H., 5,340,888, Cl. 525-501.000.

Leontiades, Kyriakos: *See—*
Gladstein, Leo A.; Jones, Christopher D.; Leontiades, Kyriakos; Patel, Paritosh D.; and Petroskey, Paul W., 5,341,503, Cl. 395-750.000.

Lespour, Jean-Paul: *See—*
Cretin, Michel; Lespour, Jean-Paul; and Marcon, Charles, 5,339,669, Cl. 72-108.000.

Leung, Roger Y.; and Sikonia, John G., to AlliedSignal Inc. Carbon-containing black glass from hydrosilylation-derived siloxanes. 5,340,777, Cl. 501-12.000.

Levitt, Marc E., to Sun Microsystems, Inc. Method and apparatus for improving fault coverage of system logic of an integrated circuit with embedded memory arrays. 5,341,382, Cl. 371-22.100.

Lewarchik, Ronald J.: *See—*
Clinnin, David D.; Heiber, William G.; and Lewarchik, Ronald J., 5,340,870, Cl. 524-522.000.

Lewen, Ronald C.; Coyle, Jonathan V.; Marotta, Peter P.; Liubinskas, Tauras J.; Arnold, David P.; Byers, Kenneth R.; Dean, Anthony K.; and Nowakowski, Victor A., to TriLAN Systems Corporation. Communication network integrating voice data and video with distributed call processing. 5,341,374, Cl. 370-85.400.

Lewis, David A.: *See—*
Cuomo, Jerome J.; Gelorme, Jeffrey D.; Hatzakis, Michael, Jr.; Lewis, David A.; Shaw, Jane M.; and Whitehair, Stanley J., 5,340,914, Cl. 528-353.000.

Lewis, Edward L.: *See—*
Annino, Raymond; Lewis, Edward L.; Lueck, Dale E.; Phillips, Matthew L.; and Villalobos, Richard, 5,340,543, Cl. 422-89.000.

Lewis, Larry D. Livestock incinerator. 5,339,752, Cl. 110-194.000.

Lewis, Leslie K.: *See—*
Hardy, Douglas A.; Lewis, Leslie K.; and Altschuler, Barry N., 5,341,427, Cl. 380-21.000.

Lewis, Terry M.; Kosty, John W.; Goodman, James R.; Krzemein, Mark A.; Lenhert, Jon M.; and Arbogast, Jeffrey H., to Furon Company. Face seal with integral fluorocarbon polymer bellows. 5,340,121, Cl. 277-43.000.

Lewis, Thomas E.; Nowak, Michael T.; Robichaud, Kenneth T.; and Cassidy, Kenneth R., to Presstek, Inc. Lithographic printing plates for use with laser-discharge imaging apparatus. 5,339,737, Cl. 101-454.000.

Leybold Aktiengesellschaft: *See—*
Schaefer, Christian; and Hartig, Klaus, 5,340,454, Cl. 204-192.120.

Leyden, Roger J.; and Surma, Terrance, to Se-Kure Controls, Inc. Mountable product sensor and display stand. 5,341,124, Cl. 340-568.000

Li, Chin-Chu. Computer disk storage box with a collapsible copy holding means. 5,339,950, Cl. 206-45.230.

Li-Cor, Inc.: *See—*
Eckles, Robert D.; McDermitt, Dayle K.; and Welles, Jonathan M., 5,340,987, Cl. 250-345.000.

Li, Feng: *See—*
Johann, Donald F.; Burroughs, Alan C.; Phipps, Neil T.; and Li, Feng, 5,341,360, Cl. 369-116.000.

Li, Ken-Ming: *See—*
Ahanin, Bahram; Balicki, Janusz K.; Kiani, Khusrow; Leong, William; Li, Ken-Ming; and Nouban, Bezhad, 5,341,044, Cl. 307-465.000.

Li, Tianhou. Head-supported cup holder. 5,340,006, Cl. 224-148.000.

Liang, Joseph. Luggage steering device. 5,339,934, Cl. 190-18.00A.

Liao, Pohsien; Huang, Chin-Chang; and Wang, Jye-Huei, to Tatung Co. Extended circuit of a HiFi KARAOKE video cassette recorder having a function of simultaneous singing and recording. 5,341,253, Cl. 360-61.000.

Licentia Patent-Verwaltung-GmbH: *See—*
Popp, Wolfgang, 5,341,232, Cl. 359-120.000.

Lichfield, William H.: *See—*
Wilcox, Reed N.; George, Richard L.; and Lichfield, William H., 5,340,228, Cl. 401-262.000.

Liebler, Gerold, to Mannesmann Rexroth GmbH. Method and apparatus for limiting the capacity of a hydrostatic machine. 5,341,311, Cl. 364-510.000.

Lien, Orphey A. Centrifugal device for rotary engine. 5,339,780, Cl. 123-243.000.

Lin, Bin-Yuan: *See—*
Chen, Chi-Hwang; Chiang, Chih-Cheng; Lin, Bin-Yuan; and Chang, Rong-Hwa, 5,340,861, Cl. 524-166.000.

Lin, Chieh-Yu, to Industrial Technology Research Institute. Zoom lens system. 5,341,244, Cl. 359-692.000.

Lin, Eric C. W.: *See—*
Chalmers, Dennis W.; Kendall, Leonard M.; Kristensen, Ole F.; Lin, Eric C. W.; and Wan, Howard S. K., 5,341,258, Cl. 360-92.000

Lin, Fan-Nan: *See—*
Parrott, Stephen L.; Adarme, Raul; Lin, Fan-Nan; and Sasscer, Edwin P., 5,341,313, Cl. 364-578.000.

Lin, Nan-Sun. Shoe. 5,339,543, Cl. 36-101.000.

Lin, Pui-Yan: *See—*
Duffy, Joseph J.; Kirayoglu, Birol; Lin, Pui-Yan; Marin, Robert A.; and Santucci, Robert J., 5,340,429, Cl. 156-288.000.

Lin, Shyh S. Hopper lid and the flush mechanism of a flush toilet. 5,339,468, Cl. 4-246.500.

Lindberg, Kenneth M., to Prince Corporation. Magnetic sensor mount. 5,339,529, Cl. 33-355.00R.

Lindberg, Ulf, to Alimkak AB. Screw lift. 5,339,704, Cl. 74-89.150.

Lindemann, Martin K. O.: *See—*
Cole, Curtis A.; Lindemann, Martin K. O.; Lukenbach, Elvin R.; and Stutzman, Ralph C., 5,340,567, Cl. 424-59.000.

Linden Machines B.V.: *See—*
Piggen, Wilhelmus A. J., 5,339,569, Cl. 51-109.00R.

Lindner, Christian: *See—*
Westeppe, Uwe; Struss, Klaus; Lindner, Christian; Idel, Karsten-Josef; and Laue, Hans-Joachim, 5,340,876, Cl. 525-66.000.

Lindstrom, Helge: *See—*
Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, 5,340,499, Cl. 252-500.000.

Lingnau, Juergen: *See—*
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,340,682, Cl. 430-165.000

L'Institut Municipal D'Assistencia Sanitaria: *See—*
Segura Badia, Marcelo, 5,340,359, Cl. 604-283.000.

Linvatec Corporation: *See—*
Broome, Barry G., 5,341,240, Cl. 359-435.000.

Lioubin, Mario N.; Brown, Thomas J.; and Purchio, Anthony F., to Oncogen. Normal human growth regulatory receptor for TGF-β. 5,340,925, Cl. 530-395.000.

Liposome Technology, Inc.: *See—*
Mihalko, Paul J.; Abra, Robert M.; and Radhakrishnan, Ramachandran, 5,340,587, Cl. 424-450.000.

Lippens, Philip S. Catfish worm dryer. 5,339,554, Cl. 43-4.000.

Lips, Jean-Pierre: *See—*
Austruy, Pierre; Brezzo, Bernard; Lips, Jean-Pierre; Naudin, Bernard; Calvignac, Jean; and Waller, Richard H., 5,341,475, Cl. 395-200.000

Liquid Carbonic Corporation: *See—*
Zaicow, Todd A.; Farber, Scott A.; and Bartel, Daniel F., 5,340,538, Cl. 422-33.000.

Liquid Molding Systems, Inc.: *See—*
Brown, Paul E.; and Socier, Timothy R., 5,339,995, Cl. 222-185.000.

Lisson, Jerold B.; Mounts, Darryl I.; and Mack, Dale K., to Eastman Kodak Company. Method for assessing and correcting individual components of a non-monolithic imaging assembly. 5,341,312, Cl. 364-525.000.

Litovitz, Theodore Aaron: *See—*
Macedo, Pedro B.; and Mohr, Robert K., 5,340,372, Cl. 65-21.100.

Littlefield, Bruce A.: *See—*
Bridges, Alexander; Littlefield, Bruce A.; and Schwartz, C. Eric, 5,340,833, Cl. 514-443.000.

Litton Systems, Inc.: *See—*
Dor, Amotz, 5,339,464, Cl. 2-6.200.

Liu, David Y.; Kaymakcalan, Zehra; and Mundy, Kirsten. Peptide medicaments for the treatment of disease. 5,340,800, Cl. 514-12.000.

Liu, James C., to Leland Stanford, Junior University, The Board of Trustees of. Mixed field radiation dosimeter. 5,340,985, Cl. 250-337.000.

Liu, Yujun; and Stouffer, James R., to Cornell Research Foundation, Inc. Methods and apparatus for analyzing an ultrasonic image of an animal or carcass. 5,339,815, Cl. 128-660.010.

Liubinskas, Tauras J.: *See—*
Lewen, Ronald C.; Coyle, Jonathan V.; Marotta, Peter P.; Liubinskas, Tauras J.; Arnold, David P.; Byers, Kenneth R.; Dean, Anthony K.; and Nowakowski, Victor A., 5,341,374, Cl. 370-85.400.

Loadhandler Industries, Inc.: *See—*
Hodgetts, Graham L., 5,340,266, Cl. 414-527.000.

Lockett, Michael J.; Bonaquist, Dante P.; and Victor, Richard A., to Praxair Technology, Inc. Distillation system with partitioned column. 5,339,648, Cl. 62-24.000.

Lockwood, Hanford N.: *See—*
Norris, Thomas R.; Lockwood, Hanford N.; and Watts, J. Alan, 5,340,276, Cl. 415-208.100.

Logsdon, Peter B.: *See—*
Decaire, Barbara R.; Logsdon, Peter B.; Lund, Earl A. E.; Shankland, Ian R.; Singh, Rajiv R.; Wilson, David P.; and Thomas, Raymond H. P., 5,340,490, Cl. 252-67.000.

Loh, Ying T.; and Wang, Chung S., to VLSI Technology, Inc. Self-aligned contacts with gate overlapped lightly doped drain (goldd) structure. 5,340,761, Cl. 437-44.000.

Loher AG: *See—*
Kohler, Manfred; and Kuder, Roland, 5,341,058, Cl. 310-87.000.

Lohse, Dietmar: *See—*
Hecken, Hans J.; Heine, Rudiger; Lohse, Dietmar; and Moser, Heinz, 5,340,092, Cl. 266-276.000.

Loiselle, Brian P.; and VanWert, Bernard, to Dow Corning Corporation. Moisture curable organosiloxane coating compositions. 5,340,897, Cl. 528-17.000.

Long, Fred M.: *See—*
Kerby, Michael C.; Riley, Kenneth L.; Long, Fred M.; Johnson, Jack W.; and Brody, John F., 5,340,657, Cl. 428-552.000.

Looney, Brian B.; and Ballard, Sanford, to United States of America, Energy. Monitoring probe for groundwater flow. 5,339,694, Cl. 73-861.070.

Loram Maintenance of Way, Inc.: *See—*
Shoenhair, John J.; and Ivachev, Alex, 5,339,692, Cl. 73-636.000.

l'Oreal: *See—*
Gueret, Jean-Louis, 5,339,841, Cl. 132-218.000.
Lang, Gerard; and Cotteret, Jean, 5,340,366, Cl. 8-406.000.

Lorenz, Robert D.: *See—*
Divan, Deepakraj M.; Klontz, Keith W.; Novotny, Donald W.; and Lorenz, Robert D., 5,341,280, Cl. 363-37.000.
Klontz, Keith W.; Divan, Deepakraj M.; Novotny, Donald W.; and Lorenz, Robert D., 5,341,083, Cl. 320-2.000.

Lorenzen, April D.; and Wheeler, Randall T. Reverse current flow protector for electricity storage systems. 5,341,082, Cl. 320-9.000.

Lotto S.p.A.: *See—*
Caberlotto, Alberto, 5,339,544, Cl. 36-102.000.

Loughridge, Bill W.: *See—*
Eoff, Larry S.; and Loughridge, Bill W., 5,339,903, Cl. 166-293.000.

Louis Berkman Company, The: *See—*
Meriwether, Jon D.; and Gelder, Milton J., 5,340,250, Cl. 410-99.000.

Louis, Jeffrey S., to Hoover Company, The. Self seeking neutralling arrangement for a power assisted cleaner. 5,339,916, Cl. 180-19.300.

Love, Walter F.: *See—*
Slovacek, Rudolf E.; Love, Walter F.; Cook, Thomas A.; Schulkind, Richard L.; and Walczak, Irene M., 5,340,715, Cl. 435-6.000.

Lovell, Michael H.: *See—*
Shah, Sanjay M.; and Lovell, Michael H., 5,339,667, Cl. 72-58.000.

Lowe, Gregory M.: *See—*
Fain, Charles C.; Lowe, Gregory M.; Frianeza-Kullberg, Teresita N. C.; and McDonald, Daniel P., 5,340,515, Cl. 264-63.000.

Lowe, John A., III: *See—*
Rosen, Terry J.; Desai, Manoj C.; and Lowe, John A., III, 5,340,826, Cl. 514-351.000.

Lowe, Peter A.; Marston, Fiona A. O.; Angal, Sarojani; and Schoemaker, Joyce A., to Celltech, Limited. Process for the recovery of recombinantly produced protein from insoluble aggregate. 5,340,926, Cl. 530-423.000.

Lowell, Augustus P., to Abbott Laboratories. Dynamic data distribution network with sink and source files for particular data types. 5,341,476, Cl. 395-200.000.

Lowther, Rex E.: *See—*
Young, Dennis C.; and Lowther, Rex E., 5,341,009, Cl. 257-296.000.

LSI Logic Corporation: *See—*
Rosotker, Michael D., 5,340,772, Cl. 437-226.000.
Rosotker, Michael D., 5,341,024, Cl. 257-620.000.
Rosotker, Michael D., 5,340,771, Cl. 437-209.000.
Rosotker, Michael D.; and Sanders, David E., 5,340,978, Cl. 250-208.100.
Sanchez, Antonio, 5,340,011, Cl. 228-4.500.
Simms, Alan, 5,339,940, Cl. 198-345.300.

Lu, Guan-Yu: *See—*
Chern, Ji-Wang; Lu, Guan-Yu; Lai, Yue-Jun; Yen, Mao-Hsiung; and Tao, Pao-Luh, 5,340,814, Cl. 514-267.000.

Lu, James. Modular system for printing and processing financial documents. 5,341,290, Cl. 364-408.000.

Lubing Maschinenfabrik Ludwig Bening GmbH & Co.: *See—*
Schumacher, Egon, 5,339,768, Cl. 119-72.000.

Lubnin, Alexander V.: *See—*
Kennedy, Joseph P.; Goodall, Brian L.; and Lubnin, Alexander V., 5,340,881, Cl. 525-333.700.

Lubrizol Corporation, The: *See—*
Koch, Frederick W.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Kolp, Christopher J.; Stoldt, Stephen H.; and Denis, Richard A., 5,340,369, Cl. 44-366.000.

Lucas Industries Public Limited Company: *See—*
Nicol, Stuart W., 5,340,284, Cl. 417-206.000.

Lucas, Paul C.; D'Anna, Guy; and Messenger, Ronald J., to International Paper Company. Process for producing an improved oxygen barrier structure on paper. 5,340,620, Cl. 427-515.000.

Lucas, William F.: *See—*
Beeferman, Dennis; and Lucas, William F., 5,340,012, Cl. 228-56.300.

Lucchetti, Jean: *See—*
Gubin, Jean; Chatelain, Pierre; and Lucchetti, Jean, 5,340,820, Cl. 514-300.000.

Lucero, Antonio B.: *See—*
Reis, James J.; Luk, Anthony L.; Lucero, Antonio B.; and Garber, David D., 5,341,142, Cl. 342-64.000.

Ludescher, Stefan: *See—*
Myhre, John B.; and Ludescher, Stefan, 5,341,307, Cl. 364-479.000.

Ludwig, Reinhard. Electro acoustic target searching system for torpedos. 5,341,347, Cl. 367-129.000.

Ludwig, Wolfgang; and Hoffmann, Armin, to Hilti Aktiengesellschaft. Arrangement for reinforcing parts of a wall with a hardenable mass. 5,339,593, Cl. 52-707.000.

Luebbert, Norbert A.: *See—*
Dubbert, Patrick C.; Neely, Nathan R.; Albertson, Daniel L.; and Luebbert, Norbert A., 5,339,996, Cl. 222-185.000.

Lueck, Dale E.: *See—*
Annino, Raymond; Lewis, Edward L.; Lueck, Dale E.; Phillips, Matthew L.; and Villalobos, Richard, 5,340,543, Cl. 422-89.000.

Luedeke, Arthur P.: *See—*
Amundson, Steven E.; and Luedeke, Arthur P., 5,339,570, Cl. 51-141.000.

Luk, Anthony L.: *See—*
Reis, James J.; Luk, Anthony L.; Lucero, Antonio B.; and Garber, David D., 5,341,142, Cl. 342-64.000.
Reis, James J.; Luk, Anthony L.; and Garber, David D., 5,341,143, Cl. 342-64.000.

Lukenbach, Elvin R.: *See—*
Cole, Curtis A.; Lindemann, Martin K. O.; Lukenbach, Elvin R.; and Stutzman, Ralph C., 5,340,567, Cl. 424-59.000.

Lumonics Corporation: *See—*
Schmidt, Robert H.; and Martin, Dan, 5,340,962, Cl. 219-121.780.

Lunardon, Gianflavio: *See—*
Stefani, Dario; Sam, Felix O.; and Lunardon, Gianflavio, 5,340,845, Cl. 521-130.000.

Lund, Earl A. E.: *See—*
Decaire, Barbara R.; Logsdon, Peter B.; Lund, Earl A. E.; Shankland, Ian R.; Singh, Rajiv R.; Wilson, David P.; and Thomas, Raymond H. P., 5,340,490, Cl. 252-67.000.

Lundberg, Robert D.: *See—*
Emert, Jacob; and Lundberg, Robert D., 5,340,487, Cl. 252-46.300.

Lundquist, Joseph: *See—*
Chaloner-Gill, Benjamin; Golovin, Neal; and Lundquist, Joseph, 5,340,669, Cl. 429-192.000.

Lyman, Mark. Motivational toothbrush. 5,339,479, Cl. 15-105.000.

Lynam, Niall R.: *See—*
Varaprasad, Desaraju V.; Lynam, Niall R.; Habibi, Hamid R.; and Desaraju, Padma, 5,340,503, Cl. 252-583.000.

Lyon, Richard K., to Energy and Environmental Research. Method and apparatus for prevention of puffing by rotary kiln and other incinerators and combustion systems. 5,339,754, Cl. 110-345.000.

M-B-W Inc.: *See—*
Motl, Robert M., 5,340,233, Cl. 404-133.050.

M.O.S.S.-S.r.l.: *See—*
Peterlini, Franco; Schenetti, Tiziano; and Minardi, Marco, 5,339,732, Cl. 101-38.100.

M P H I S.A.: *See—*
Ruhlmann, Rene P., 5,339,587, Cl. 52-287.100.

VOL 1165 ISS 4 AG 23 1994 UMI

Maack, Hanns-Ingo: *See—*
Conrads, Norbert; Hillen, Walter; Maack, Hanns-Ingo; Rupp, Stephan; Schafer, Ingo; and Schiebel, Ulrich, 5,341,409, Cl. 378-29.000.

Maass, Klaus P., to Draftex Industries Limited. Sealing and wiping arrangement including inflatable chamber. 5,339,488, Cl. 15-250.010.

Maccabee, Bruce S., to United States of America, Navy. Magnetostrictive motor system. 5,341,056, Cl. 310-26.000.

MacDonald, Robert, to Masco Corporation of Indiana. Thermostatically controlled mixing valve. 5,340,018, Cl. 236-12.200.

Macedo, Pedro B.; and Mohr, Robert K., to Macedo, Pedro Buarque de; and Litovitz, Theodore Aaron. Process for vitrifying asbestos containing waste, infectious waste, toxic materials and radioactive waste. 5,340,372, Cl. 65-21.100.

Macedo, Pedro Buarque de: *See—*
Macedo, Pedro B.; and Mohr, Robert K., 5,340,372, Cl. 65-21.100.

Mach, Stanley R.: *See—*
Ivers, David L.; and Mach, Stanley R., 5,339,810, Cl. 128-633.000.

Machida, Tetsuo; Kiso, Hiroyuki; Sasaki, Nobuyuki; and Kondo, Hiroshi, to Sony Corporation. Injection/compression molding method, a die for injection/compression molding and an injection/compression molding machine. 5,340,528, Cl. 264-328.700.

Machinefabriek Meyn B.V.: *See—*
Meyn, Cornelis, 5,340,355, Cl. 452-179.000.

MacIntyre, Robert J. Adjustable hinge. 5,339,493, Cl. 16-238.000.

Mack, Dale K.: *See—*
Lisson, Jerold B.; Mounts, Darryl I.; and Mack, Dale K., 5,341,312, Cl. 364-525.000.

MacKenzie, Alexander R.: *See—*
Cross, Peter E.; and MacKenzie, Alexander R., 5,340,831, Cl. 514-408.000.

Mackey, Jack D., to Northrop Corporation. Crosslinked magnetic polymers and methods for preparation thereof. 5,340,915, Cl. 528-363.000.

MacNeil, Ralph M.; Coutya, Samir F.; and Abdelli, Mohand, to Canadian Liquid Air Ltd. Cylinder cart with magnetics. 5,340,136, Cl. 280-472.000.

Madan, Sudhir K., to Texas Instruments, Incorporated. Increased capacitance memory cell capacitor. 5,341,272, Cl. 361-311.000.

Madden, William C.; Rajagopalan, Vidya; and Samudrala, Sridhar, to Digital Equipment Corporation. Method and apparatus for controlling a rounding operation in a floating point multiplier circuit. 5,341,319, Cl. 364-748.000.

Mader, Roger A.: *See—*
Dunn, Susan H.; Kirk, Mark P.; Mader, Roger A.; and Spawn, Terence D., 5,340,712, Cl. 430-619.000.

Madritsch, Gerhard; Hirschberg, Bruno; Kassegger, Friedrich; Maslo, Heinz; and Weitzer, Paul, to Veitscher Magnesitwerke-Actien-Gesellschaft. Metallurgical vessel and method of making the refractory lining of such vessels. 5,340,088, Cl. 266-44.000.

Maechtle, Walter: *See—*
Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, 5,340,859, Cl. 524-162.000.

Maeda, Ikuo: *See—*
Gotoh, Hiroshi; Shibata, Isamu; Maeda, Ikuo; and Sakurai, Tatsuaki, 5,341,355, Cl. 369-44.370.

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Murata, Akio; Mukae, Hideaki; Maegawa, Takaaki; Higashionji, Masaru; and Okada, Toshiharu, 5,341,256, Cl. 360-75.000.

Maejima, Risa: *See—*
Sugasawa, Hiroki; Takano, Satoshi; Sakaguchi, Mikio; Sakamoto, Ichiro; Iwata, Minoru; Kurotani, Nariyuki; Koizumi, Hideaki; Itoh, Hiroshi; and Maejima, Risa, 5,340,582, Cl. 424-401.000.

Maekawa, Keiichiro: *See—*
Watanabe, Shinichi; Shibayama, Takao; Uzuyama, Kimitake; Fukamachi, Kazuyuki; Maekawa, Keiichiro; and Maruo, Masaru, 5,339,682, Cl. 73-123.000.

Maekawa, Yukio: *See—*
Kubota, Tadahiko; Yasunami, Shoichiro; and Maekawa, Yukio, 5,340,672, Cl. 429-249.000.

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Magee, John H., to CRS Holdings, Inc. Corrosion resistant austenitic stainless steel with improved galling resistance. 5,340,534, Cl. 420-35.000.

Magenta Corporation: *See—*
Groya, Robert J.; and Hofmann, Richard W., 5,339,993, Cl 222-153.000.

Maggioni, Giampietro: *See—*
Brambilla, Massimiliano; and Maggioni, Giampietro, 5,341,032, Cl. 307-270.000.

Brambilla, Massimiliano; and Maggioni, Giampietro, 5,341,282, Cl. 363-50.000.

Magowan, John W., to United Technologies Corporation. Rotor blade with integral platform and a fillet cooling passage. 5,340,278, Cl. 416-96.00R

Mahajan, Sudhakar S.: *See—*
Idage, Bhaskar B.; Chavan, Nayaku N.; Mahajan, Sudhakar S.; and Sivaram, Swaminathan, 5,340,908, Cl. 528-275.000.

Maher, John W.: *See—*
Connor, James M.; Bloomstein, Theodore M.; Henderson, James A., Jr.; Maher, John W.; and Errico, James H., 5,341,498, Cl. 395-600.000.

Maitland, Kenneth R., to Majco Building Specialties, L.P. Fireplace and method for cooling same. 5,339,797, Cl. 126-528.000.

Majco Building Specialties, L.P.: *See—*
Maitland, Kenneth R., 5,339,797, Cl. 126-528.000.

Makino, Masaaki: *See—*
Matsushita, Naohiro; and Makino, Masaaki, 5,341,402, Cl. 375-97.000.

Makita, Shigeru; Sano, Yoshihiko; Ota, Hiroyuki; and Nakamura, Yasushi, to OMRON Corporation. Radiant-energy clinical thermometer. 5,340,215, Cl. 374-121.000.

Maknyik, Tibor: *See—*
Dolson, Michael D.; and Maknyik, Tibor, 5,340,330, Cl. 439-447.000.

Malcherek, Dieter: *See—*
Freermann, Johannes; and Malcherek, Dieter, 5,340,008, Cl. 226-171.000.

Male, Andrew J.: *See—*
Crookston, Ronald W.; Marks, Douglas C.; White, Richard E., III; Male, Andrew J.; Chien, Yun-Ko N.; Castelein, Steven; Beatty, William E., Jr.; Maier, Alfred E.; and Salvati, John G., 5,341,191, Cl. 335-16.000.

Male, Barry J.: *See—*
Anneser, Douglas L.; and Male, Barry J., 5,341,093, Cl 324-752.000

Malewicz, Andrzej M., to Rollerblade, Inc. Torsionally stiffened in-line roller skate frame with dual side walls. 5,340,132, Cl. 280-11.220.

Maliczyszyn, Walter; Peek, Leroy; and Gregory, Paul, to National Starch and Chemical Investment Holding Corporation. High solids liquid starch prepared by batch cooking. 5,340,405, Cl. 127-65.000.

Malin, Richard A., to Pitney Bowes Inc. Apparatus for sensing mail piece surface contour. 5,339,733, Cl. 101-91.000.

Mallard, William C., Jr., to Digital Equipment Corporation. Data recovery apparatus and methods. 5,341,405, Cl. 375-120.000.

Mallo, Paul: *See—*
Trouve, Claude; Richard, Michel; Mallo, Paul; and Anquetil, Jean-Yves, 5,340,441, Cl. 162-135.000.

Maloney, James J.: *See—*
Mathis, Mary J.; and Maloney, James J., 5,339,641, Cl. 62-24.000.

Mam Babyartikel Gesellschaft M.b.H.: *See—*
Rohrig, Peter, 5,339,971, Cl. 215-11.500.

Mammino, Joseph: *See—*
Badesha, Santokh S.; Mammino, Joseph; Abramsohn, Dennis A.; Sypula, Donald S.; Henry, Arnold W.; Heeks, George J.; Pan, David H.; and Fratangelo, Louis D., 5,340,679, Cl. 430-126.000.

Maneglier, Bruno; and Voncken, Bernard, to Roussel-UCLAF. Stabilized non-glycosylated recombinant human IL2 in reduced form compositions. 5,340,574, Cl. 424-85.200.

Manikumar, Govindarajan: *See—*
Wall, Monroe E.; Wani, Mansukh C.; Nicholas, Allan W.; and Manikumar, Govindarajan, 5,340,817, Cl. 514-279.000.

Manker, Charles F., to Prism Technologies, Inc. Reusable warmers of the type employing a super-cooled solution and an activator. 5,339,796, Cl. 126-263.00B.

Manlove, Gregory J.: *See—*
Griessman, Detlef; Manlove, Gregory J.; Block, Thomas G.; and Howlett, Gordon P., 5,341,431, Cl. 381-15.000.

Mannesmann AG: *See—*
Bebber, Hans J.; Rossner, Heinrich-Otto; and Tomalla, Gebhard, 5,340,961, Cl. 219-121.500.

Mannesmann Aktiengesellschaft: *See—*
Hecken, Hans J.; Heine, Rudiger; Lohse, Dietmar; and Moser, Heinz, 5,340,092, Cl. 266-276.000.

Mannesmann Aktiengesellschaft A Corporation of Germany: *See—*
Ostholt, Rudiger; and Aichholz, Klaus, 5,339,944, Cl. 198-430.000.

Mannesmann Rexroth GmbH: *See—*
Liebler, Gerold, 5,341,311, Cl. 364-510.000.

Manning, Timothy J.; and Hoffman, Jerome P., to Dayco Products, Inc. Hose coupling, ferrule therefor and methods of making the same. 5,339,668, Cl. 72-70.000.

Manufacturing Designs And Solutions, Inc.: *See—*
Haselwander, Jack G., 5,339,658, Cl. 68-203.000.

Marcelli, Eileen. Infusion site cover and immobilizer. 5,339,834, Cl. 128-877.000.

Marchesan, Guido; and Ruzza, Wogler, to Danieli & C. Officine Meccaniche SpA. Crystallizer, or inner portion, of a mould having a lengthwise curvature for continuous curved casting of thin slabs. 5,339,877, Cl. 164-418.000.

Marchwiak, Zbigniew; and Kapica, John, to Handi-Foil Corporation. Cooking rack for a pan. 5,339,728, Cl. 99-426.000.

Marcon, Charles: *See—*
Cretin, Michel; Lespour, Jean-Paul; and Marcon, Charles, 5,339,669, Cl. 72-108.000.

Maresca, Louis M.: *See—*
Clagett, Donald C.; Fox, Daniel W.; Maresca, Louis M.; and Shafer, Sheldon J., 5,340,885, Cl. 525-425.000.

Marfin, Alan A.: *See—*
Shelton, James W.; Marfin, Alan A.; and Dailey, George F., 5,341,095, Cl. 324-772.000.

Marin, Robert A.: *See—*
Duffy, Joseph J.; Kirayoglu, Birol; Lin, Pui-Yan; Marin, Robert A.; and Santucci, Robert J., 5,340,429, Cl. 156-288.000.

Marini, David R.: *See—*
Verlinden, Jerome M.; and Marini, David R., 5,339,646, Cl. 62-292.000.

Marino, Thomas F. Spill Containment bag. 5,339,872, Cl. 141-001.000.

Markell, Craig G.: *See—*
Hagan, Donald F.; Haddad, Louis C.; Perkins, Robert E.; and Markell, Craig G., 5,340,746, Cl. 436-109.000.

Marketing Displays, Inc.: *See—*
Sarkisian, Robert; Mason, James J.; and Muir, David J., 5,340,068, Cl. 248-188.600.

Markham, John L.: *See—*
Whited, Timothy A.; Leatherman, Jack L.; and Markham, John L., 5,339,911, Cl. 175-62.000.

Markham, Larry D.; and Srivatsa, Narendta R., to International Paper Company. Method for removing ink from printed paper using agglomerating agent, followed by addition of talc. 5,340,439, Cl. 162-5.000.

Marks, Douglas C.: *See—*
Crookston, Ronald W.; Marks, Douglas C.; White, Richard E., III; Male, Andrew J.; Chien, Yun-Ko N.; Castelein, Steven; Beatty, William E., Jr.; Maier, Alfred E.; and Salvati, John G., 5,341,191, Cl. 335-16.000.

Markstein, Peter: *See—*
Karp, Alan H.; Markstein, Peter; and Brzezinski, Dennis, 5,341,321, Cl. 364-748.000.

Marotta, Peter P.: *See—*
Lewen, Ronald C.; Coyle, Jonathan V.; Marotta, Peter P.; Liubinskas, Tauras J.; Arnold, David P.; Byers, Kenneth R.; Dean, Anthony K.; and Nowakowski, Victor A., 5,341,374, Cl. 370-85.400.

Marquette Electronics, Inc.: *See—*
Ivers, David L.; and Mach, Stanley R., 5,339,810, Cl. 128-633.000.

Marquis, Edward T.: *See—*
Crawford, Wheeler C.; Marquis, Edward T.; and Klein, Howard P., 5,340,889, Cl. 525-523.000.

Marra, William C.; Slavinskas, Darius D.; and Soulliere, Mark J., to AT&T Bell Laboratories. Distributed switching in bidirectional multiplex section-switched ringtransmission systems. 5,341,364, Cl. 370-16.100.

Marshall, Mark G.: *See—*
Gould, Scott W.; Marshall, Mark G.; and Perry, Patrick E., 5,341,310, Cl. 364-491.000.

Marston, Fiona A. O.: *See—*
Lowe, Peter A.; Marston, Fiona A. O.; Angal, Sarojani; and Schoemaker, Joyce A., 5,340,926, Cl. 530-423.000.

Marten, Finn L.: *See—*
Famili, Amir; Vratsanos, Lori A.; and Marten, Finn L., 5,340,874, Cl. 525-59.000.

Martens, Wilhelm, to Deutsche Aerospace Airbus GmbH. Lubricating mechanism including a dosing device for lubricant, especially for an aircraft. 5,339,924, Cl. 184-40.000.

Martic, Peter A.; and Skochdopole, Todd R., to Eastman Kodak Company. Polyolefin composition containing optical brighteners having reduced migration. 5,340,854, Cl. 524-94.000.

Martin, Dan: *See—*
Schmidt, Robert H.; and Martin, Dan, 5,340,962, Cl. 219-121.780.

Martin, Frank S.: *See—*
Silver, Gary L.; and Martin, Frank S., 5,340,605, Cl. 427-126.300.

Martin GmbH fuer Umweltund Energietechnik: *See—*
Martin, Walter J.; and Martin, Johannes J. E., 5,339,753, Cl. 110-313.000.

Martin, James L.: *See—*
Lauer, Ernst H.; and Martin, James L., 5,339,936, Cl. 192-53.00E.

Martin, Johannes J. E.: *See—*
Martin, Walter J.; and Martin, Johannes J. E., 5,339,753, Cl. 110-313.000.

Martin, Kevin B.: *See—*
Mauro, Daniel A.; and Martin, Kevin B., 5,339,722, Cl. 91-376.00R.

Martin Marietta Corporation: *See—*
Benedict, David R.; and Burke, James F., 5,339,843, Cl. 134-56.00R.
Florsek, David T., 5,341,217, Cl. 348-529.000.

Martin, Patrick G.; and Franklin, Tod G., to Tidel Engineering, Inc. Method for storing and dispensing cash. 5,340,967, Cl. 235-379.000.

Martin, Teresa A.; and Donovan, Beth M. Hand and wrist support for computer mouse. 5,340,067, Cl. 248-118.500.

Martin, Tiby M. High pressure electronic common-rail fuel injection system for diesel engines. 5,339,786, Cl. 123-467.000.

Martin, Walter J.; and Martin, Johannes J. E., to Martin GmbH fuer Umweltund Energietechnik. Secondary air nozzle for furnaces. 5,339,753, Cl. 110-313.000.

Martin, Zollmann, to Zollmann GmbH. Chuck for tool. 5,340,127, Cl. 279-20.000.

Martis, Ronald, to AlliedSignal Inc. Fe-NI based soft magnetic alloys having nanocrystalline structure. 5,340,413, Cl. 148-305.000.

Martz, Jonathan T.: *See—*
Swarup, Shanti; McCollum, Gregory J.; Shewchuk, Ronald M.; and Martz, Jonathan T., 5,340,894, Cl. 526-301.000.

Martz, Russell J.: *See—*
Gess, Jerome M.; Petersen, Dennis E.; Adams, Terry N.; and Martz, Russell J., 5,340,442, Cl. 162-198.000.

Maruo, Masaru: *See—*
Watanabe, Shinichi; Shibayama, Takao; Uzuyama, Kimitake; Fukamachi, Kazuyuki; Maekawa, Keiichiro; and Maruo, Masaru, 5,339,682, Cl. 73-123.000.

Maruyama, Katsuhiko: *See—*
Koike, Masao; Yamagishi, Akihito; Maruyama, Katsuhiko; and Kakuchi, Shusuke, 5,340,415, Cl. 148-325.000.

Maruyama, Koichi: *See—*
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,341,246, Cl. 359-837.000.

Maruyama, Tadashi, to Kabushiki Kaisha Toshiba. Level shifter circuit constituted of E and I type transistors and an EEPROM using the same. 5,341,334, Cl. 365-189.110.

Maruyama, Toshirou; Tsubuki, Nobuyuki; Sakaniwa, Sakae; Yamaura, Isao; and Minegishi, Kazuo, to Ajinomoto Co., Inc. Method of manufacturing three-dimensionally formed foods. 5,340,599, Cl. 426-512.000.

Masakazu, Kuki, to Brother Kogyo Kabushiki Kaisha. Display supporting device. 5,340,073, Cl. 248-291.000.

Maschinenfabrik Goebel GmbH: *See—*
Pfuhl, Reiner, 5,340,430, Cl. 156-344.000.

Maschinenfabrik Rieter AG: *See—*
Witschi, Martin, 5,339,614, Cl. 57-87.000.

Masco Corporation of Indiana: *See—*
MacDonald, Robert, 5,340,018, Cl. 236-12.200.

Mashio, Fujio; and Itoya, Naomi, to Nippon Paint Co., Ltd. Process for treating halogenated hydrocarbon containing-gas, an apparatus therefor and an agent for decomposing halogenated hydrocarbon. 5,340,555, Cl. 423-240.00R.

Maslo, Heinz: *See—*
Madritsch, Gerhard; Hirschberg, Bruno; Kassegger, Friedrich; Maslo, Heinz; and Weitzer, Paul, 5,340,088, Cl. 266-44.000.

Mason, David B.: *See—*
Busink, Cornelis L.; van Rijzingen, Johannes W. H.; and Mason, David B., 5,340,182, Cl. 294-88.000.

Mason, James J.: *See—*
Sarkisian, Robert; Mason, James J.; and Muir, David J., 5,340,068, Cl. 248-188.600.

Masopust, Jiri, to Intech Scientific, Inc. Acupuncture system and method. 5,339,827, Cl. 128-735.000.

Massachusetts Institute of Technology: *See—*
Sachs, Emanuel M.; Haggerty, John S.; Cima, Michael J.; and Williams, Paul A., 5,340,656, Cl. 428-546.000.

Massucci, Martin M.: *See—*
Joyce, Thomas F.; Keeley, James W.; Lemay, Richard A.; DiPlacido, Bruno, Jr.; and Massucci, Martin M., 5,341,495, Cl. 395-500.000.

Masters, John H.: *See—*
Saffire, Victor N.; Masters, John H.; Hartman, Robert L.; and Taaffe, Robert B., 5,340,301, Cl. 425-336.000

Masuda, Hisashi; and Kaneda, Yushi, to Sony Corporation. Laser light beam generating apparatus. 5,341,388, Cl. 372-36.000.

Masumi, Satoshi; and Takada, Shun, to Konica Corporation. Silver halide photographic light-sensitive material. 5,340,703, Cl. 430-389.000.

Masumoto, Tsuyoshi: *See—*
Shibata, Toshisuke; Inoue, Akihisa; and Masumoto, Tsuyoshi, 5,340,416, Cl. 148-420.000.

Materials Systems Incorporated: *See—*
Bowen, Leslie J., 5,340,510, Cl. 264-22.000.

Mathis, Mary J.; and Maloney, James J., to Praxair Technology, Inc. Cryogenic liquid nitrogen production system. 5,339,641, Cl. 62-24.000.

Matinkhah, Angelica: *See—*
Rossberg, Wayne; Smith, Edward F.; and Matinkhah, Angelica, 5,341,469, Cl. 395-145.000.

Matra Marconi Space UK Limited: *See—*
Smith, Peter, 5,339,623, Cl. 60-203.100.

Matsubaguchi, Satoshi; Yamada, Takashi; and Yamamoto, Ryoichi, to Fuji Photo Film Co., Ltd. Optomagnetic recording medium. 5,340,647, Cl. 428-336.000.

Matsubara, Yoichi: *See—*
Naoi, Hisashi; Inoue, Yasusuke; Nagasaka, Tetsuo; Matsubara, Yoichi; Takagishi, Masaaki; and Akizawa, Seiichi, 5,339,868, Cl. 138-172.000.

Matsugu, Masakazu; Yoshii, Minoru; and Abe, Naoto, to Canon Kabushiki Kaisha. Apparatus and method of detecting positional relationship using a weighted coefficient. 5,340,992, Cl. 250-548.000.

Matsuki, Yasuo: *See—*
Hirasawa, Hiroyuki; Kobayashi, Minako; and Matsuki, Yasuo, 5,340,702, Cl. 430-326.000.

Matsumoto, Katsuaki: *See—*
Yamasaki, Hidenori; Matsumoto, Katsuaki; and Osuga, Yoshiharu, 5,341,262, Cl. 360-128.000.

Matsumoto, Minoru; Ogino, Etsuo; and Tsuno, Toshio, to Nippon Sheet Glass Co., Ltd. Plasma CVD method. 5,340,621, Cl. 427-571.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Matsumoto, Takashi: *See*—
Habuka, Noriyuki; Miyano, Masashi; Matsumoto, Takashi; and Noma, Masana, 5,340,732, Cl. 435-193.000.

Matsumoto, Toshiyuki; Inada, Hirofumi; Nittaya, Hiroshi; and Kato, Masahiro, to Sumitomo Metal Industries, Ltd. Semiconductor device and manufacturing method thereof. 5,341,324, Cl. 365-51.000.

Matsumura, Hiroyoshi: *See*—
Okai, Makoto; Tsuji, Shinji; Ohishi, Akio; Hirao, Motohisa; Matsumura, Hiroyoshi; Harada, Tatsuo; Kita, Toshiaki; and Taira, Hideki, 5,340,637, Cl. 428-167.000.

Matsunaga, Naoto: *See*—
Kikuchi, Fumio; Itoh, Kazuo; Taga, Kazuharu; Matsunaga, Naoto; Ono, Hiroshi; Namba, Takaoki; and Narita, Kazuhiko, 5,341,461, Cl. 395-120.000.

Matsuno, Kiyotaka: *See*—
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.

Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, to Matsuo, Hisayuki. Physiologically active porcine peptide (CNP-53). 5,340,920, Cl. 530-324.000.

Matsuo, Shunji: *See*—
Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, 5,341,194, Cl. 355-212.000.

Matsuoka, Hiroki: *See*—
Nakagawa, Norihisa; and Matsuoka, Hiroki, 5,341,295, Cl. 364-424.100.

Matsushita Electric Industrial Co., Ltd.: *See*—
Birukawa, Masahiro; Miyatake, Norio; and Hino, Yasumori, 5,341,359, Cl. 369-107.000.
Fujii, Toyokazu; and Naito, Yasushi, 5,341,014, Cl. 257-377.000.
Hasegawa, Saburo, 5,339,523, Cl. 29-898.020.
Hayashi, Shigeo; Okawa, Kazuhiro; and Mitsuyu, Tsuneo, 5,341,001, Cl. 257-94.000.
Inoue, Hiroyuki; and Hasegawa, Mikio, 5,341,286, Cl. 363-98.000.
Kawahara, Sadao; Kojima, Yoshinori; and Aiba, Osamu, 5,340,287, Cl. 417-410.00D.
Konishi, Hirofumi, 5,341,179, Cl. 348-730.000.
Miya, Kazuyuki; Kato, Osamu; and Honma, Kouichi, 5,341,384, Cl. 371-31.000.
Morimoto, Kazuo, 5,340,966, Cl. 235-376.000.
Murata, Akio; Mukae, Hideaki; Maegawa, Takaaki; Higashionji, Masaru; and Okada, Toshiharu, 5,341,256, Cl. 360-75.000.
Nio, Yutaka; and Matsuura, Ryuji, 5,341,172, Cl. 348-441.000.
Niwa, Hisao; and Kayashima, Kazuhiro, 5,341,315, Cl. 364-580.000.
Shibayama, Akinori; and Yamada, Toshio, 5,341,035, Cl. 307-296.200.
Suzuki, Ryoji; and Misaki, Masayuki, 5,341,432, Cl. 381-34.000.
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.
Tohmon, Genji; Sato, Hisanao; Fujita, Toshihiro; and Ohya, Jun, 5,341,237, Cl. 359-341.000.
Uchida, Hirofumi; Juri, Tatsuro; and Ohtaka, Hideki, 5,341,250, Cl. 360-48.000.

Matsushita Electronics Corporation, Ltd.: *See*—
Kojima, Motohiro; Watanabe, Takuya; and Takamura, Tohru, 5,340,977, Cl. 250-208.100.

Matsushita, Michiko, to Uni-Charm Corporation. Method for making disposable pants. 5,340,424, Cl. 156-164.000.

Matsushita, Naohiro; and Makino, Masaaki, to Tokyo Electric Co., Ltd. Automatic frequency control method and device for use in receiver. 5,341,402, Cl. 375-97.000.

Matsuura, Hitoshi; Nakajima, Osamu; and Okamoto, Tetsuji, to Fanuc Ltd. Tracking control system. 5,341,079, Cl. 318-632.000.

Matsuura, Ryuji: *See*—
Nio, Yutaka; and Matsuura, Ryuji, 5,341,172, Cl. 348-441.000.

Matsuyama, Sumiko. Hook apparatus for lifting a heavy object. 5,340,181, Cl. 294-82.330.

Matsuzaka, Syoji: *See*—
Ohya, Yukio; Matsuzaka, Syoji; Irie, Yasushi; Murakami, Shuji; Asano, Satomi; Okusa, Hiroshi; and Ohtani, Hirofumi, 5,340,710, Cl. 430-567.000.

Matsuzawa, Nobuyuki; Hayashi, Yoko; Ata, Masafumi; and Tamura, Shin-Ichiro, to Sony Corporation. Clathrate inclusion compounds and optical recording medium using the same. 5,340,631, Cl. 428-64.000.

Mattern, Charles C., to Earth Resources Corporation. Apparatus and methods for removing hazardous contents from compressed gas cylinders. 5,339,876, Cl. 141-51.000.

Mattern, Charles C.: *See*—
Hawley, Alan M.; and Mattern, Charles C., 5,340,244, Cl. 408-87.000.

Matthews, James A.: *See*—
Chen, Jang F.; and Matthews, James A., 5,340,700, Cl. 430-312.000.

Matthews, Wallace E., to Benchmarq Microelectronics, Inc. Backup battery power controller having channel regions of transistors being biased by power supply or battery. 5,341,034, Cl. 307-296.100.

Matyniak, Bernard J.: *See*—
Dasgupta, Sunil P.; Gingrich, Blain H.; Matyniak, Bernard J.; and Weaver, G. Gregory, 5,341,103, Cl. 324-454.000.

Mauro, Daniel A.; and Martin, Kevin B., to AlliedSignal Inc. Apply and relief valve mechanism for a fluid power apparatus. 5,339,722, Cl. 91-376.00R.

Maus, Steven M.; and Galic, George J., to Galic Maus Ventures. Faster cycling sprue for centerhole - tearout optical disk injection molds. 5,340,303, Cl. 425-549.000.

Maus, Wolfgang; Swars, Helmut; and Bruck, Rolf, to Emitec Gesellschaft fuer Emissionstechnologie mbH. Method for monitoring the catalytic activity of a catalytic converter in the exhaust gas system of an internal combustion engine. 5,339,628, Cl. 60-277.000.

Maus, Wolfgang; Swars, Helmut; Putz, Heinrich; and Jager, Walter, to Emitec Gesellschaft fuer Emissiontechnologie mbH. Method and apparatus for generating heat by flameless combustion of a fuel in a gas flow. 5,340,020, Cl. 237-12.30C.

Mautino, Peter S.; and Hanes, Douglas M., to McConway & Torley Corporation. Slackless drawbar assembly employing adjustable blockout apparatus. 5,339,970, Cl. 213-67.00R.

Maxam, V. Dale, to Shape Corporation. Vehicle bumper with step. 5,340,177, Cl. 293-117.000.

Maxoptix Corporation: *See*—
Johann, Donald F.; Burroughs, Alan C.; Phipps, Neil T.; and Li, Feng, 5,341,360, Cl. 369-116.000.

May, Paul D.: *See*—
Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., 5,340,802, Cl. 514-18.000.

May, Teddy J., to Lane Company, Inc., The. Reclining chair having pop-up headrest. 5,340,191, Cl. 297-61.000.

Mayer, Dale J.: *See*—
Thayer, John S.; Mayer, Dale J.; Izquierdo, Javier F.; Culley, Paul R.; and Landry, John A., 5,341,494, Cl. 395-425.000.

Mayer & Grammelspacher Dianawerk GmbH & Co KG: *See*—
Heitz, Walter, 5,339,789, Cl. 124-56.000.

Mayerbock, Heinrich: *See*—
Schyboll, Georg; and Mayerbock, Heinrich, 5,340,094, Cl. 267-219.000.

Mayhak, Richard L., to Recycling Specialists, Inc. Debagger sorter machine. 5,339,961, Cl. 209-3.000.

Mayumi, Tohru: *See*—
Yasuda, Yoshinobu; Tsushi, Fukuhiro; and Mayumi, Tohru, 5,340,221, Cl. 384-499.000.

Mayzels, Ilya; and Shvager, Joseph. Self-hinging disposable retractor instrument for endoscopic surgery. 5,339,803, Cl. 128-20.000.

Mazda Motor Corporation: *See*—
Asai, Hiroshi; Takeshige, Nobuhide; Uosaki, Yasuo; Shibahara, Masahiko; Omori, Motofumi; and Morimoto, Shigenori, 5,340,414, Cl. 148-325.000.
Ishii, Kozo; Takemoto, Kazuo; Fujiwara, Takuji; Mizobe, Tatsutoshi; Baba, Fumiaki; Nagayama, Shigeru; Watanabe, Osamu; and Takeuchi, Koichiro, 5,339,935, Cl. 192-3.300.
Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, 5,341,294, Cl. 364-424.050.
Okazaki, Haruki; Kawamura, Makoto; Nobumoto, Kazutoshi; and Kageyama, Fumio, 5,340,204, Cl. 303-111.000.
Sakamoto, Shunji; and Hoshino, Toshihiko, 5,341,304, Cl. 364-468.000.

Mazur, Adam W.: *See*—
Piazza, Gary A.; Mazur, Adam W.; and Kasting, Gerald B., 5,340,568, Cl. 424-59.000.

Mazure, Carlos A.: *See*—
Witek, Keith E.; Fitch, Jon T.; and Mazure, Carlos A., 5,340,754, Cl. 437-32.000.

McBroom, Michael E.: *See*—
Jungquist, Bruce E.; McBroom, Michael E.; Yaeger, Curtis G.; Knauff, Donald G.; and Sem, Thomas R., 5,339,787, Cl. 123-514.000.

McCain, Robert F. Archery sighting apparatus. 5,339,792, Cl. 124-87.000.

McCanse Engineering, Incorporated: *See*—
McCanse, James E.; McCanse, Richard L.; and Fulmer, Timothy K., 5,339,926, Cl. 187-8.470.

McCanse, James E.; McCanse, Richard L.; and Fulmer, Timothy K., to McCanse Engineering, Incorporated. Vehicle service lift. 5,339,926, Cl. 187-8.470.

McCanse, Richard L.: *See*—
McCanse, James E.; McCanse, Richard L.; and Fulmer, Timothy K., 5,339,926, Cl. 187-8.470.

McCarter, Walter K., to ACR Electronics, Inc. Emergency battery system with an infinite shelf life. 5,340,662, Cl. 429-9.000.

McCleary, Lawrence E.: *See*—
Wescott, Thomas F.; McCleary, Lawrence E.; and Nation, David A., 5,341,463, Cl. 395-129.000.

McClelland, Paul H.: *See*—
Winslow, Thomas H.; McClelland, Paul H.; and Wenzel, Donald E., 5,341,160, Cl. 347-86.000.

McClure, David C., to SGS-Thomson Microelectronics, Inc. Method for stress testing decoders and periphery circuits. 5,341,336, Cl. 365-201.000.

McClure, Malcolm W.: *See*—
Fraini, Edward A.; Tepera, George W.; and McClure, Malcolm W., 5,340,937, Cl. 569-716.000.

McClure, Thomas D.: *See*—
Rouse, Daniel H.; McClure, Thomas D.; and Reese, Ralph E., 5,339,595, Cl. 53-88.000.

McCollum, Gregory J.: *See*—
Swarup, Shanti; McCollum, Gregory J.; Shewchuk, Ronald M.; and Martz, Jonathan T., 5,340,894, Cl. 526-301.000.

McCollum, John L., to Actel Corporation. Series linear antifuse array. 5,341,043, Cl. 307-465.000.

McConnell, John: *See*—
Credle, Kenneth; Wolf, Christopher G.; and McConnell, John, 5,340,947, Cl. 174-262.000.

McConway & Torley Corporation: *See*—
Mautino, Peter S.; and Hanes, Douglas M., 5,339,970, Cl. 213-67.00R

McCrabb, James; and Gregg, Jerald R. Method and apparatus for increasing the efficiency of internal combustion engines. 5,339,632, Cl. 60-618.000.

McCready, Russell J.: *See*—
Yang, Lau Shan; and McCready, Russell J., 5,340,875, Cl. 525-64.000.

McCulloch, Beth, to UOP. Process for separating allose from other sugars. 5,340,404, Cl. 127-46.200.

McCulloch, Michael J.: *See*—
della-Cioppa, Guy R.; Garger, Stephen J., Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., 5,340,734, Cl. 435-212.000.

McDermitt, Dayle K.: *See*—
Eckles, Robert D.; McDermitt, Dayle K.; and Welles, Jonathan M., 5,340,987, Cl. 250-345.000.

McDonald, Daniel P.: *See*—
Fain, Charles C.; Lowe, Gregory M.; Frianeza-Kullberg, Teresita N. C.; and McDonald, Daniel P., 5,340,515, Cl. 264-63.000.

McGahey, Kevin R.: *See*—
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,339,654, Cl. 62-476.000.

McGee, Bruce C. W.: *See*—
Yu, C. Lawrence; McGee, Bruce C. W.; Chute, Frederick S.; and Vermeulen, Fred E., 5,339,898, Cl. 166-248.000.

McGeehan, Michael J.: *See*—
Murphy, Joseph F.; McGeehan, Michael J.; Benske, Gregory A.; and Gaudiano, Juan, 5,340,198, Cl. 297-483.000.

McGibbon, Barbel: *See*—
Breton, Marcel P.; and McGibbon, Barbel, 5,340,388, Cl. 106-22.00B.

McGill Incorporated: *See*—
Schwartzman, Wayne, 5,340,229, Cl. 402-4.000.

McGrail, John G.: *See*—
Howard, William R.; Tysver, Oliver J.; Osheff, Sheldon; McGrail, John G.; and Petrie, Robert J., 5,339,731, Cl. 101-35.000.

McGreevy, William T.; and Borchardt, Robert L., to Recoton Corporation. Apparatus for demagnetizing the magnetic head of a cassette tape recording and/or reproducing device. 5,341,263, Cl. 360-128.000.

McKenzie, Patrick J.: *See*—
Schmidt, Albert L.; McKinley, Ellen K.; Hanes, Lewis F.; Morris, Michael R.; McKenzie, Patrick J.; and Haley, Paul H., 5,339,826, Cl. 128-731.000.

McKillip, Barron G., to CCL Label, Inc. Laser markable laminated sheet. 5,340,628, Cl. 428-40.000.

McKinley, Ellen K.: *See*—
Schmidt, Albert L.; McKinley, Ellen K.; Hanes, Lewis F.; Morris, Michael R.; McKenzie, Patrick J.; and Haley, Paul H., 5,339,826, Cl. 128-731.000.

McKinney, Bevin C.; and Kniffen, Roy J., Jr., to American Rocket Company. Hybrid rocket motor solid fuel grain. 5,339,625, Cl. 60-219.000.

McKinney, C. L.: *See*—
Fields, James H.; Williams, Roberta B.; and McKinney, C. L., 5,340,324, Cl. 439-133.000.

McKinney, Robert W.: *See*—
Friedman, Semyon D.; McKinney, Robert W.; Ou, Chia-Chih; Spotnitz, Robert M.; and Wu, Shaohai, 5,340,558, Cl. 423-328.100.

McKinzie, Howard L., to Texaco Inc. Method of achieve zonal isolation. 5,339,901, Cl. 166-289.000.

McLandrich, Matthew N.; Albares, Donald J.; and Pappert, Stephen A., to United States of America, Navy. Method for characterization of optical waveguide devices using partial coherence interferometry. 5,341,205, Cl. 356-73.100.

McLean Hospital Corporation, The: *See*—
Nixon, Ralph A.; and Takeuchi, Kiyoshi H., 5,340,922, Cl. 530-350.000.

McLoughlin, James A.: *See*—
Gibson, Barry; and McLoughlin, James A., 5,340,527, Cl. 264-320.000.

McMillan, Jim S.; and Tarsha, Simon, to Pipe Rehab International, Inc. Variable angular insertion method for lining tubular members. 5,340,524, Cl. 264-229.000.

McMullen, Donald J. Cold weather sleeping hood. 5,339,466, Cl. 2-203.000.

McMullen, John J.: *See*—
Thiele, Charles W.; Willemstyn, Tunis J.; Arndt, Douglas J.; and McMullen, John J., 5,340,241, Cl. 406-132.000.

McMurray, Brian L., to McMurray Fabrics, Inc. Net having different size openings and method of making. 5,339,657, Cl. 66-195.000.

McMurray Fabrics, Inc.: *See*—
McMurray, Brian L., 5,339,657, Cl. 66-195.000.

McMurtry, David R.; Wilson, David; Hellier, Peter K.; and Hajdukiewicz, Peter, to Renishaw Metrology Limited. Touch probe. 5,339,535, Cl. 33-561.000.

McNaughton, John; and Hutchison, Derek P., to Clement Clarke International Ltd. Apparatus to measure and record peak air passage pressure. 5,339,825, Cl. 128-725.000.

MCW Research Foundation, Inc., The: *See*—
DeYoe, Edgar A.; and Neitz, John F., 5,339,813, Cl. 128-653.100.

Meacham, Howard C., Jr.: *See*—
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,339,654, Cl. 62-476.000.

Meade, Thomas J., to General Electric Company. Synthesis of aromatic heterocyclic polymers from a biosynthetically prepared precursor. 5,340,913, Cl. 528-335.000.

Medical Instrumentation and Diagnostic Corporation: *See*—
Hardy, Tyrone L.; Glover, Gary W.; and Brynildson, Laura D., 5,339,812, Cl. 128-653.100.

Medvedik, Douglas E.: *See*—
Fontecchio, Robert P.; Ennis, Thomas A.; Musiol, John A.; Medvedik, Douglas E.; and Paglia, Nicola F., 5,340,147, Cl. 280-728.00A.

Meegoda, Namunu J., to New Jersey Institute of Technology. Preparation of asphalt concrete with organic contaminated soil. 5,340,396, Cl. 106-669.000.

Meehon, Anthony B.: *See*—
Strand, Charles D.; and Meehon, Anthony B., 5,340,478, Cl. 210-284.000.

Meetze, Marion M.: *See*—
Preiato, Ernest J.; Meetze, Marion M.; Hoopes, Mark S.; and Bessemer, Robert H., 5,340,295, Cl. 425-71.000.

Mega Manufacturing, Inc.: *See*—
Breunig, Timothy A.; and Roepka, Gregory A., 5,339,651, Cl. 62-65.000.

Megamation Incorporated: *See*—
Schmidt, Thomas D.; and Smit, Peter, 5,340,400, Cl. 118-313.000.

Megerle, Clifford A.; and Wong, Boon, to Hughes Aircraft Company. Surface treatment method for fatigue-resistant solder. 5,340,411, Cl. 148-26.000.

Meguro, Satoshi: *See*—
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,340,760, Cl. 437-43.000.

Mehler, Vern A. Anode basket. 5,340,456, Cl. 204-242.000.

Mei, Shaw-Ning: *See*—
Hsieh, Chang-Ming; Hsu, Louis L. C.; Mei, Shaw-Ning; Knepper, Ronald W.; and Wagner, Lawrence F., Jr., 5,341,023, Cl. 257-559.000.

Meier-Armdt, Stefan: *See*—
Schroth, Karl-Jurgen; Jeche, Rolf; and Meier-Armdt, Stefan, 5,340,046, Cl. 242-407.000.

Meier, Daniel G.: *See*—
Hedrick, Brian W.; Micklich, Frank T.; Johnson, Brian H.; Meier, Daniel G.; Whitsura, Frank R.; and Engelman, Bill R., 5,340,470, Cl. 210-130.000

Meier, Hans R.; and Hofmann, Peter, to Ciba-Geigy Corporation. N-methylated bis-4-piperidylphosphite. 5,340,855, Cl. 524-102.000.

Meijers, Augustinus G. H.; and van Beurden, Karin M. M., to Wavin B.V. Thermoplastic saddle in two parts for repairing or renovating a pipe line with branch pipe and repaired or renovated pipe with a saddle. 5,340,160, Cl. 285-15.000.

Meikle, Scott G.: *See*—
Prall, Kirk D.; Sandhu, Gurtej S.; and Meikle, Scott G., 5,341,016, Cl. 257-412.000.

Melcher, Richard A.; Sherman, William, III; Nadig, Madhura; Stewart, Robert M.; Hessler, Paul L.; and Bryce, David R., to Brandt, Inc. Control system for currenty counter. 5,341,408, Cl. 377-8.000.

Melinyshyn, Lev A.: *See*—
Poloyko, Alexander; Goldberg, Mark C.; Goldberg, Edward M.; Melinyshyn, Lev A.; and Schucart, David E., 5,339,801, Cl. 128-20.000.

Meliopoulos, A. P.: *See*—
Westrom, Arthur C.; Meliopoulos, A. P.; and Cokkinides, George J., 5,341,265, Cl. 361-44.000.

Mellissinos, Anthony; and Powell, Scott, to Hughes Aircraft Company. Switched capacitor amplifier circuit operating without serially coupled amplifiers. 5,341,050, Cl. 307-490.000

Mellor, H. Clay. System for identifying, carrying and storing keys. 5,339,664, Cl. 70-456.00R.

Melquist, John L.: *See*—
Rotter, George E.; Melquist, John L.; Chiang, Weilong; Tsai, Boh C.; and Kelly, John J., 5,340,846, Cl. 521-182.000.

MEMC Electronic Materials, Inc.: *See*—
Erk, Henry F.; and Vandamme, Roland R., 5,340,437, Cl. 156-639.000

Memeteau, Michel: *See*—
Jeuffray, Jean-Marie; and Memeteau, Michel, 5,340,007, Cl. 224-321.000

Mendel, David W., to Altera Corporation. Methods for allocating circuit elements between circuit groups. 5,341,308, Cl. 364-489.000.

Menechella, Gino, to Whitaker Corporation, The. Electrical connector 5,340,336, Cl. 439-783.000.

Menjo, Yoshihiro; Nakagawa, Fumio; Nagata, Takuji; and Kuriyama, Hiroshi, to Toyoda Gosei Co., Ltd. Ornamental panel for automobiles. 5,340,623, Cl. 428-31.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Mercedes-Benz AG: *See—*
Arold, Klaus; and Player, Otto, 5,340,022, Cl. 237-12.30A.
Reckzugel, Christoph; Murwald, Mario; Doll, Gerhard; Frey, Jurgen; and Ohlendorf, Ralf, 5,339,778, Cl. 123-193.500.
Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, 5,341,297, Cl. 364-426.030.

Merck & Co., Inc.: *See—*
Connolly, Thomas M.; Keller, Paul M.; and Waxman, Lloyd H., 5,340,726, Cl. 530-350.000.
Graham, Samuel L.; and deSolms, S. Jane, 5,340,828, Cl. 514-357.000.
Hughes, David L., 5,340,927, Cl. 534-558.000.
Nutt, Ruth F.; and Veber, Daniel F., 5,340,798, Cl. 514-18.000.

Merck Patent Gesellschaft Mit Beschrankter Haftung: *See—*
Friz, Martin; and Albrecht, Detlef, 5,340,607, Cl. 427-162.000.
Wachtler, Andreas; Kompter, Hans-Michael; Poetsch, Eike; Geelhaar, Thomas; Hittich, Reinhard; and Krause, Joachim, 5,340,497, Cl. 252-299.610.

Mercury Communications Limited: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Meredith, Leo: *See—*
Prendel, Troy A.; and Meredith, Leo, 5,340,162, Cl. 285-81.000.

Meriwether, Jon D.; and Gelder, Milton J., to Louis Berkman Company, The. Apparatus for securing a load to a vehicle. 5,340,250, Cl. 410-99.000.

Merrem, Hans-Joachim: *See—*
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,340,682, Cl. 430-165.000.

Merrer, Emile; and Morel, Michel M. J., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.). Safety sealing conduit connector. 5,340,163, Cl. 285-93.000.

Merritt, Will: *See—*
Slocum, John; Kiproff, Peter N.; Gibson, Daryl; and Merritt, Will, 5,340,512, Cl. 264-37.000.

Mertens, Marcel D. M.: *See—*
van der Loo, Leonardus L. H.; and Mertens, Marcel D. M., 5,340,633, Cl. 428-114.000.

Mertz, Steven H., to Guardian Products, Inc. Orthopedic hand grip for ambulation aids, tools and other implements. 5,339,850, Cl. 135-72.000.

Messenger, Ronald J.: *See—*
Lucas, Paul C.; D'Anna, Guy; and Messenger, Ronald J., 5,340,620, Cl. 427-515.000.

Metal Casting Technology, Inc.: *See—*
Chandley, George D., 5,340,419, Cl. 148-631.000.

Metapro: *See—*
Kim, John Y., 5,339,542, Cl. 36-7.200.

Metrologic Instruments, Inc.: *See—*
Knowles, Carl H.; Rockstein, George B.; Wilz, David M.; and Naylor, Charles A., 5,340,973, Cl. 235-472.000.
Rockstein, George; Wilz, David, Sr.; Blake, Robert; and Knowles, C. Harry, 5,340,971, Cl. 235-472.000.

Mettler-Toledo AG: *See—*
Hungerbuhler, Ernst; and Burkhard, Hans R., 5,340,951, Cl. 177-229.000.

Meunier, Serge M.: *See—*
Bardey, Xavier M. H.; Desaulty, Michel A. A.; Jolu, Jerome E. R.; Meunier, Serge M.; Mouton, Pierre C.; Poutonnet, Sylvie; and Renvier, Jacques, 5,339,622, Cl. 60-39.092.

Meyer, Wolfram; and Sauer, Joseph, to Siemens Aktiengesellschaft. Hearing aid device. 5,341,433, Cl. 381-69.000.

Meyn, Cornelis, to Machinefabriek Meyn B.V. Apparatus for orienting birds, which are supplied by a belt conveyor, with their heads in the direction of conveyance. 5,340,355, Cl. 452-179.000.

Michalik, Richard A.: *See—*
Bianchini, Michael J.; Michalik, Richard A.; Chiesa, John A.; and Mistler, Joanne, 5,340,980, Cl. 250-214.00R.

Mickas, Anthony, to Atlantic Richfield Company. Method and apparatus for disposal of filter media. 5,340,464, Cl. 208-131.000.

Micklich, Frank T.: *See—*
Hedrick, Brian W.; Micklich, Frank T.; Johnson, Brian H.; Meier, Daniel G.; Whitsura, Frank R.; and Engelman, Bill R., 5,340,470, Cl. 210-130.000.

Micro Chemical, Inc.: *See—*
Pratt, William C., 5,340,211, Cl. 366-141.000.

Microelectronics And Computer Technology Corporation: *See—*
Kumar, Nalin, 5,341,063, Cl. 313-309.000.

Micron Semiconductor, Inc.: *See—*
Dennison, Charles H., 5,340,763, Cl. 437-52.000.
Dennison, Charles H.; and Thakur, Randhir P. S., 5,340,765, Cl. 437-52.000.
Prall, Kirk D.; Sandhu, Gurtej S.; and Meikle, Scott G., 5,341,016, Cl. 257-412.000.

Micropore International Limited: *See—*
Gibson, Barry; and McLoughlin, James A., 5,340,527, Cl. 264-320.000.

Microsoft Corporation: *See—*
Friedman, Steven J.; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., 5,341,464, Cl. 395-131.000.

Microunity Systems Engineering, Inc.: *See—*
Chen, Jang F.; and Matthews, James A., 5,340,700, Cl. 430-312.000.

Mid-America Power Drives Manufacturing & Distributing, Inc.: *See—*
Van Wie, David, 5,339,863, Cl. 137-798.000.

Middledorp, Frans M.; and Fournier, Allan P., to Foxboro Company, The. Apparatus and method for interfacing host computer and computer nodes using redundant gateway data lists of accessible computer node data. 5,341,496, Cl. 395-575.000.

Midland Manufacturing Corp.: *See—*
Dean, Robert H., 5,340,078, Cl. 251-59.000.

Midwest Pre-Mix, Inc.: *See—*
Dubbert, Patrick C.; Neely, Nathan R.; Albertson, Daniel L.; and Luebbert, Norbert A., 5,339,996, Cl. 222-185.000.

Mignani, Serge: *See—*
Gueremy, Claude; Jimonet, Patrick; and Mignani, Serge, 5,340,824, Cl. 514-321.000.

Mihalich, Herman. Method of dispensing beverage. 5,339,986, Cl. 222-1.000.

Mihalko, Paul J.; Abra, Robert M.; and Radhakrishnan, Ramachandran, to Liposome Technology, Inc. Liposome/bronchodilator method & System. 5,340,587, Cl. 424-450.000.

Mikada, Hiroyuki, to Canon Kabushiki Kaisha. Facsimile apparatus. 5,341,221, Cl. 358-400.000.

Miki, Takahiro; and Kumamoto, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Sample hold circuit, buffer circuit and sample hold apparatus using these circuits. 5,341,037, Cl. 307-352.000

Mikiya, Toshio; and Osada, Toshio, to Nitto Kohki Co., Ltd. Electromagnetic pump. 5,340,288, Cl. 417-417.000.

Mikogami, Yukihiro: *See—*
Hayase, Rumiko; Oba, Masayuki; Kihara, Naoko; and Mikogami, Yukihiro, 5,340,684, Cl. 430-165.000.

Milbrodt, Michele A.: *See—*
Henry, Charles H.; Milbrodt, Michele A.; and Yaffe, Henry H., 5,341,444, Cl. 385-11.000.

Miller, Donald L.: *See—*
Przybysz, John X.; and Miller, Donald L., 5,341,136, Cl. 341-133.000.

Miller Electric Mfg. Co.: *See—*
Bodewigs, Peter W., 5,340,963, Cl. 219-130.100.

Miller, James G., to Eastman Kodak Company. Cap raising mechanism for an incubator. 5,340,540, Cl. 422-64.000.

Miller, John L.: *See—*
Warner, Bruce E.; Miller, John L.; and Ault, Earl R., 5,341,392, Cl. 372-62.000.

Miller, Mark W.; and Cheatham, Sean A. Assembly for attaching a removable tent to a motor vehicle. 5,339,851, Cl. 135-88.000.

Miller, Omer E. Pivoting golf mat. 5,340,109, Cl. 273-186.100.

Miller, Robert C.: *See—*
Kilburn, Douglas G.; Miller, Robert C.; Gilkes, Neil; and Warren, R. Antony J., 5,340,731, Cl. 435-179.000.

Miller, Robert E.; Schleicher, Lowell; Brown, Robert W.; and Feldman, Lucy, to Appleton Papers Inc. Desensitizable record material. 5,340,680, Cl. 430-138.000.

Millican, Thomas A.: *See—*
Beeley, Nigel R. A.; and Millican, Thomas A., 5,340,827, Cl. 514-352.000.

Milliken, Larry D., to Akzo Nobel, Inc. Process for making cementitious mine backfill in a salt environment using solid waste materials. 5,340,235, Cl. 405-128.000.

Millipore Corporation: *See—*
DiLeo, Anthony J.; Snow, James T.; and Cote, Daniel A., 5,339,675, Cl. 73-24.040.
Lemonnier, Jean, 5,340,741, Cl. 435-291.000.
Snow, James T., 5,340,552, Cl. 423-210.000.

Mills, David E.; and Stafford, Steven L., to Eastman Kodak Company. Polyamide concentrate useful for producing blends having improved flavor retaining property and clarity. 5,340,884, Cl. 125-420.000.

Mills, Frank S.: *See—*
Bohan, John E., Jr.; Mills, Frank S.; and Ward, Scott A., 5,340,019, Cl. 236-20.00R.

Milocco, Claudio, to Zanussi Elettrodomestici S.p.A. Drive system for a water pump with rotatable sealing arrangement. 5,340,282, Cl. 417-18.000.

Miltner, Karl-Hermann: *See—*
Blaser, Peter T.; Miltner, Karl-Hermann; and Spiegel, Nikolaus, 5,339,738, Cl. 101-477.000.

Minami, Nagio: *See—*
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl. 51-429.000.

Minamino, Naoto: *See—*
Matsuo, Hisayuki; Kangawa, Kenji; and Minamino, Naoto, 5,340,920, Cl. 530-324.000.

Minardi, Marco: *See—*
Peterlini, Franco; Schenetti, Tiziano; and Minardi, Marco, 5,339,732, Cl. 101-38.100.

Minato, Teruo: *See—*
Yoshino, Akira; Tahara, Massaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, 5,340,412, Cl. 148-208.000.

Minderman, Walter; and Hobbel, Arend, to Systemate Holland B.V. Poultry conveyor line transfer system. 5,340,351, Cl. 452-182.000.

Minegishi, Kazuo: *See—*
Maruyama, Toshirou; Tsubuki, Nobuyuki; Sakaniwa, Sakae; Yamaura, Isao; and Minegishi, Kazuo, 5,340,599, Cl. 426-512.000.

Mineo, Shigeharu; and Okuzawa, Kazuhiro, to Sanshin Kogyo Kabushiki Kaisha. Air intake system. 5,340,344, Cl. 440-88.000.

Minnesota Mining and Manufacturing: *See—*
Roeker, David C.; Slama, David F.; and Sheffield, William F., 5,340,649, Cl. 428-344.000.

Minnesota Mining and Manufacturing Company: *See—*
Amundson, Steven E.; and Luedeke, Arthur P., 5,339,570, Cl. 51-141.000
Dunn, Susan H.; Kirk, Mark P.; Mader, Roger A.; and Spawn, Terence D., 5,340,712, Cl. 430-619.000.
Hagan, Donald F.; Haddad, Louis C.; Perkins, Robert E.; and Markell, Craig G., 5,340,746, Cl. 436-109.000.
Hanzalik, Kenneth L.; Crawford, George H., Jr.; Rozzi, Sharon M.; and Scanlan, David J., 5,340,613, Cl. 427-412.500.
Hutchinson, Ted F., 5,341,271, Cl. 361-123.000.
Perman, Craig A.; and Riechert, Manfred E., 5,340,614, Cl. 427-2.240.
Vogelgesang, Peter J., 5,340,975, Cl. 250-205.000.
Wright, David W., 5,340,129, Cl. 279-90.000.

Minolta Camera Kabushiki Kaisha: *See—*
Eguchi, Tatsuya, 5,341,156, Cl. 346-108.000.
Kumashiro, Hideo, 5,341,227, Cl. 358-533.000.

Minter, David P.: *See—*
Wilson, Robert L.; and Minter, David P., 5,341,129, Cl 340-670.000.

Minter, Mearl J.: *See—*
Hrdlicka, Fred L.; Newman, Gary R.; and Minter, Mearl J., 5,339,583, Cl. 52-204.530.

Miralfin S.R.L.: *See—*
De'Longhi, Giuseppe, 5,339,725, Cl. 99-293.000.
DE' Longhi, Giuseppe, 5,341,455, Cl. 392-378.000.

Misaki, Masayuki: *See—*
Suzuki, Ryoji; and Misaki, Masayuki, 5,341,432, Cl. 381-34.000.

Misawa, Toshiyuki; and Oshima, Hiroyuki, to Seiko Epson Corporation. CMOS device for use in connection with an active matrix panel. 5,341,012, Cl. 257-351.000.

Miskimins, Robert L., to Ohio Electronics Machinery, Inc. Fish handler. 5,339,555, Cl. 43-5.000.

Misset, Onno: *See—*
Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,340,738, Cl. 435-234.000.

Mistler, Joanne: *See—*
Bianchini, Michael J.; Michalik, Richard A.; Chiesa, John A.; and Mistler, Joanne, 5,340,980, Cl. 250-214.00R.

Mitry, Mark, to National Starch and Chemical Investment Holding Corporation. Toughened cyanoacrylate adhesive composition containing polyester polymers. 5,340,873, Cl. 525-10.000.

Mitsa, Theophano: *See—*
Parker, Kevin J.; and Mitsa, Theophano, 5,341,228, Cl. 358-534.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Fujimoto, Shinya, 5,341,300, Cl. 364-431.060.
Fukui, Wataru, 5,339,784, Cl. 123-417.000.
Fukumoto, Kohji, 5,341,039, Cl. 307-443.000.
Hagura, Tsukasa, 5,341,340, Cl. 365-226.000.
Harada, Shigeru; Ishimaru, Kazuhiro; and Hagi, Kimio, 5,341,026, Cl. 257-764.000.
Inoue, Kazunari; and Ogawa, Toshiyuki, 5,341,332, Cl. 365-189.010.
Ishimura, Eitaro, 5,341,391, Cl. 372-46.000.
Kaneko, Hideki; Inoue, Sadayuki; and Ookuma, Ikuo, 5,341,218, Cl. 348-695.000.
Kinoshita, Itsuko; Hata, Masayuki; and Satou, Mitsugu, 5,341,031, Cl. 307-269.000.
Kohno, Yasutaka, 5,341,015, Cl. 257-402.000.
Kuriyama, Hirotada, 5,341,327, Cl. 365-154.000.
Kuroi, Takashi; and Kusunoki, Shigeru, 5,341,022, Cl. 257-590.000.
Miki, Takahiro; and Kumamoto, Toshio, 5,341,037, Cl. 307-352.000.
Nakajima, Toyokatsu, 5,341,120, Cl. 340-146.200.
Shindo, Osamu, 5,340,060, Cl. 244-161.000.
Suzuki, Hiroyoshi, 5,340,462, Cl. 204-425.000.
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.
Uemura, Sashirou; Nishii, Yoshiyuki; Kanda, Isamu; Hara, Zenichiro; Futatsuishi, Shunichi; and Shibayama, Kozaburo, 5,341,065, Cl. 313-495.000.
Yamaguchi, Yasuo; Ajika, Natsuo; and Yamano, Tsuyoshi, 5,341,028, Cl. 257-344.000.
Yamasaki, Hidenori; Matsumoto, Katsuaki; and Osuga, Yoshiharu, 5,341,262, Cl. 360-128.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Arai, Yoshihisa; Yui, tomoyuki; and Gocho, Yoshihiro, 5,340,498, Cl. 252-299.650.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Nakamura, Yoshiki, 5,340,249, Cl. 410-78.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl 51-429.000.

Mitsubishi Kasei Corporation: *See—*
Kishiro, Osamu; Shirahama, Rie; Sakata, Yasuyuki; Tanaka, Hideaki; and Honma, Ken, 5,340,911, Cl. 528-308.000.

Mitsui Mining & Smelting Co., Ltd.: *See—*
Ohta, Hiroshi; and Hoshino, Kazutomo, 5,339,811, Cl. 128-653.100.

Mitsui Petrochemical Industries, Ltd.: *See—*
Tsutsui, Toshiyuki; Okawa, Kazunori; and Toyota, Akinori, 5,340,786, Cl. 502-117.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,340,848, Cl. 522-157.000.
Morita, Kenji; Uchiki, Kohichi; and Shinoda, Hosei, 5,340,646, Cl. 428-307.300.

Mitsuoka, Shigeaki: *See—*
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.

Mitsuyu, Tsuneo: *See—*
Hayashi, Shigeo; Okawa, Kazuhiro; and Mitsuyu, Tsuneo, 5,341,001, Cl. 257-94.000.

Mitterer, Artur: *See—*
Eibl, Johann; Dorner, Friedrich; and Mitterer, Artur, 5,340,575, Cl. 424-196.110.

Miya, Kazuyuki; Kato, Osamu; and Honma, Kouichi, to Matsushita Electric Industrial Co., Ltd. Error detection method using CRC. 5,341,384, Cl. 371-31.000.

Miya, Tatsuya; Uemura, Kazuyoshi; and Yoshida, Sadayoshi, to NEC Corporation. Microwave oscillator circuit. 5,341,111, Cl. 331-96.000.

Miyachi, Yoshikazu: *See—*
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl. 51-429.000.

Miyai, Jiro: *See—*
Ueda, Naoki; Asahina, Kenichi; Omura, Hirohumi; and Miyai, Jiro, 5,340,654, Cl. 427-437.000.

Miyakawa, Hiroshi: *See—*
Tomita, Mamoru; Tamura, Yoshitaka; Miyakawa, Hiroshi; Saito, Hitoshi; Abe, Hiroaki; and Nagao, Eiji, 5,340,924, Cl. 530-395.000.

Miyamoto, Hidenobu, to Nec Corporation. Method for manufacturing semiconductor device having groove-structured isolation. 5,340,769, Cl. 437-67.000.

Miyamoto, Shoji: *See—*
Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, 5,341,504, Cl. 395-800.000

Miyano, Masashi: *See—*
Habuka, Noriyuki; Miyano, Masashi; Matsumoto, Takashi; and Noma, Masana, 5,340,732, Cl. 435-193.000.

Miyata, Seiichiro: *See—*
Komatsu, Tadao; and Miyata, Seiichiro, 5,340,658, Cl. 428-558.000.

Miyatake, Norio: *See—*
Birukawa, Masahiro; Miyatake, Norio; and Hino, Yasumori, 5,341,359, Cl. 369-107.000.

Miyazaki, Sunao, to Canon Kabushiki Kaisha. Method for producing optical element by press molding a blank having a component removed layer and a hydrocarbon coating. 5,340,373, Cl. 65-24.000.

Miyazawa, Hisashi: *See—*
Miyazawa, Yoshinori; Ishii, Hiroshi; Nakamura, Osamu; Kurashima, Norihiko; Kitahara, Tsuyoshi; and Miyazawa, Hisashi, 5,341,164, Cl. 347-88.000.

Miyazawa, Yoshinori; Ishii, Hiroshi; Nakamura, Osamu; Kurashima, Norihiko; Kitahara, Tsuyoshi; and Miyazawa, Hisashi, to Seiko Epson Corporation. Solid ink supply for ink jet. 5,341,164, Cl. 347-88.000.

Miyoshi, Satoru: *See—*
Nakagawa, Kazuya; Miyoshi, Satoru; and Fukushima, Toyoaki, 5,339,673, Cl. 73-23.360.

Miyoshi, Shiro: *See—*
Kajihara, Akiro; and Miyoshi, Shiro, 5,340,811, Cl. 514-253.000.

Mizobe, Tatsutoshi: *See—*
Ishii, Kozo; Takemoto, Kazuo; Fujiwara, Takuji; Mizobe, Tatsutoshi; Baba, Fumiaki; Nagayama, Shigeru; Watanabe, Osamu; and Takeuchi, Koichiro, 5,339,935, Cl. 192-3.300.

Mizuguchi, Katsumi: *See—*
Imamura, Tsuyoshi; Mizuguchi, Katsumi; Shibai, Yasuhiro; Ishii, Keizou; Ishikura, Shinichi; and Saito, Koichi, 5,340,891, Cl. 526-88.000.

Mizuno, Kazunori: *See—*
Kawasaki, Hidetoshi; Mizuno, Kazunori; and Sugiyama, Nobuo, 5,341,188, Cl. 354-277.000.

Mizuno, Masaharu: *See—*
Taniguchi, Atsushi; Mizuno, Masaharu; and Suzuki, Mitsuo, 5,340,522, Cl. 264-185.000.

Mizuno, Shigeki: *See—*
Tanaka, Minoru; Mizuno, Shigeki; and Shimomura, Masaki, 5,340,222, Cl. 400-124.250.

Mizuno, Tomoaki: *See—*
Watanabe, Atsushi; Kamiya, Hitoshi; Nakada, Eiji; Mizuno, Tomoaki; Kago, Yoshiyuki; Murase, Tokutaro; and Inukai, Yoshihiko, 5,340,968, Cl. 235-380.000.

Mizutani, Hiroko, legal representative: *See—*
Fujiwara, Koichi; and Mizutani, Hiromichi, deceased, 5,340,749, Cl. 436-526.000

VOL 1165 ISS 4 AG 23 1994 UMI

Mizutani, Hiromichi, deceased: *See*—
Fujiwara, Koichi; and Mizutani, Hiromichi, deceased, 5,340,749, Cl. 436-526.000.

Mizutani, Noriko: *See*—
Hanazuka, Yasuo; Usami, Ikuzo; Chiba, Kazuyuki; and Mizutani, Noriko, 5,340,847, Cl. 522-11.000.

Mobil Oil Corporation: *See*—
Jennings, Alfred R., Jr.; and Abou-Sayed, Ibrahim S., 5,339,904, Cl. 166-303.000.

Mochizuki, Masao: *See*—
Suzuki, Chiaki; Eguchi, Atuhiko; Ishihara, Yuka; Aoki, Takayoshi; Takagi, Seiichi; Yano, Toshiyuki; and Mochizuki, Masao, 5,340,678, Cl. 430-170.000.

Modernfold, Inc.: *See*—
Owens, N. Douglas, 5,339,881, Cl. 160-40.000.

Modine Manufacturing Co.: *See*—
Reinke, Michael J., 5,339,640, Cl. 62-6.000.

Moeller, Dennis L.: *See*—
Blackledge, John W., Jr.; Dayan, Richard A.; Moeller, Dennis L.; Newman, Palmer E.; and Zubay, Kenneth J. P., 5,341,422, Cl. 376-4.000.

Moffitt, Michael D.: *See*—
Earl, Joseph G.; and Moffitt, Michael D., 5,341,440, Cl. 382-56.000.

Mohn, Frank-Werner: *See*—
Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, 5,341,297, Cl. 364-426.030.

Mohr, Robert K.: *See*—
Macedo, Pedro B.; and Mohr, Robert K., 5,340,372, Cl. 65-21.100.

Mohsen, Amr: *See*—
Whitten, Ralph G.; Guo, Ta-Pen; Mohsen, Amr; and Comer, Alan E., 5,341,267, Cl. 361-56.000.

Molex Incorporated: *See*—
Bientz, Alfred, 5,340,640, Cl. 428-206.000.
Enomoto, Masahiro; and Fukushima, Minoru, 5,340,319, Cl. 439-75.000.

Molino, Bruce F.: *See*—
Ewing, William R.; and Molino, Bruce F., 5,340,801, Cl. 514-18.000.

Molins plc: *See*—
Arthur, Hugh M.; and Labbe, Francis A. M., 5,340,609, Cl. 429-244.000.

Moll, Philipp. Process and device for aligning and co-processing flaccid workpiece layers. 5,339,941, Cl. 198-345.300.

Mollenkopf, Lloyd C.; and Rein, Russell J., to Rosemount Office Systems, Inc. Raceway swivel spacer leg assembly. 5,339,585, Cl. 52-220.700.

Mollis, Michael. Firm-grip swing trainer. 5,340,110, Cl. 273-187.200.

Molnlycke AB: *See*—
Fabo, Tomas, 5,340,363, Cl. 604-304.000.

Moltech Invent S.A.: *See*—
Sekhar, Jainagesh; and de Nora, Vittorio, 5,340,448, Cl. 204-67.000.

Momose, Hiroshi: *See*—
Maeda, Takeo; and Momose, Hiroshi, 5,340,751, Cl. 437-31.000.
Maeda, Takeo; and Momose, Hiroshi, 5,341,021, Cl. 257-587.000.

Monbaliu, Marcel: *See*—
Vaes, Jos; Dewanckele, Jean-Marie; and Monbaliu, Marcel, 5,340,691, Cl. 430-204.000.

Monbaliu, Marcel J.; Terrell, David R.; and De Meutter, Stefaan K., to AGFA-Gevaert, N.V. Electrophotographic recording material. 5,340,675, Cl. 430-58.000.

Mondry, James M. Anti-theft apparatus for riding saddles. 5,339,610, Cl. 54-1.000.

Monitor Diagnostics, Inc.: *See*—
Katsilometes, George W., 5,340,714, Cl. 435-6.000.

Monobe, Juzaburo: *See*—
Yokota, Takao; Monobe, Juzaburo; and Sano, Nobuhiro, 5,339,908, Cl. 173-216.000.

Monogram Aerospace Fasteners: *See*—
Stencel, Edgar L., 5,340,253, Cl. 411-310.000.

Monroe, Douglas W.: *See*—
Fletcher, Linda M.; Guth, Leslie A.; and Monroe, Douglas W., 5,340,016, Cl. 228-219.000.

Monroe, Kevin T.: *See*—
Edwards, Bryan T.; Erdman, David D.; Monroe, Kevin T.; and Stakem, David L., 5,341,447, Cl. 385-81.000.

Monsen, Arthur M. Ice fishing devices. 5,339,558, Cl. 43-17.000.

Montesissa, Giancarlo, to Nestec S.A. Easy cleaning metering device. 5,339,999, Cl. 222-380.000.

Montgomery, Stephen M., to Unitog Rental Services, Inc. Apparatus for removal of fat, oil and grease from laundry wash water. 5,340,469, Cl. 210-96.100.

Moore, Donal, to Polytech Netting Industries, Inc. Automotive storage net. 5,340,004, Cl. 224-42.46R.

Moore, William G.: *See*—
Weimer, Alan W.; Moore, William G.; Rafaniello, William; and Roach, Raymond P., 5,340,417, Cl. 148-513.000.

Morand, Phillippe C.: *See*—
Larmignat, Daniel; Morand, Phillippe C.; Prieur, Christian H.; and Lacreuse, Gilles F., 5,340,395, Cl. 106-504.000.

Morassutti, Paolo, to Fischer Italia S.a.s. di Paolo Morassutti & C. Accessory spacing element for dowel anchoring devices for wall covering slabs. 5,340,257, Cl. 411-512.000.

Mordenga, Samuel P.: *See*—
Kedarnath, N.; and Mordenga, Samuel P., 5,341,201, Cl. 355-302.000.

Morel, Michel M. J.: *See*—
Merrer, Emile; and Morel, Michel M. J., 5,340,163, Cl. 285-93.000.

Morency, John P.: *See*—
Pitkin, Richard P.; and Morency, John P., 5,341,477, Cl. 395-200.000.

Mores, Maryanne: *See*—
Adamski, Robert P.; Mores, Maryanne; Wong, Pui K.; and Davis, Diana D., 5,340,842, Cl. 521-64.000.

Morgan, David L.; Cukan, Vladimir; and Frielingsdorf, Klaus, to Enerkom (Proprietary Limited. Production of carbon fibre. 5,340,511, Cl. 264-29.200.

Morgan, Jack L., to Kinnings Marlow Limited. Security nuts. 5,340,256, Cl. 411-405.000.

Mori, Akinari; Okayasu, Yoshisada; Suzuki, Toshinori; and Suzuki, Takehiko, to Sony Corporation. Video camera apparatus with a connecting device for easy connection with electric apparatus. 5,341,171, Cl. 348-373.000.

Mori, Ikuo: *See*—
Fukuoka, Takayoshi; Arakawa, Satoshi; and Mori, Ikuo, 5,340,996, Cl. 250-582.000.

Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, to Hitachi, Ltd. Multi-dimensional structured computer system. 5,341,504, Cl. 395-800.000.

Mori, Takahiro: *See*—
Isobe, Ryosuke; and Mori, Takahiro, 5,340,635, Cl. 428-141.000.

Morikawa, Sumio, to Oyodokomatsu Co., Ltd. Reinforcing steel shear. 5,339,525, Cl. 30-134.000.

Morimoto, Kazuo, to Matsushita Electric Industrial Co., Ltd. Automatic facsimile-receiving-sheet recognizing apparatus. 5,340,966, Cl. 235-376.000.

Morimoto, Shigenori: *See*—
Asai, Hiroshi; Takeshige, Nobuhide; Uosaki, Yasuo; Shibahara, Masahiko; Omori, Motofumi; and Morimoto, Shigenori, 5,340,414, Cl. 148-325.000.

Morimoto, Shinichi, to Shimano Inc. Clutch mechanism of double-bearing reel. 5,340,053, Cl. 242-261.000.

Morimoto, Shohei: *See*—
Nakatani, Fumio; Wakita, Shinichi; Murakami, Hisatoshi; Terada, Tsunehiko; and Morimoto, Shohei, 5,341,274, Cl. 361-818.000.

Morinaga Milk Industry Co., Ltd.: *See*—
Tomita, Mamoru; Tamura, Yoshitaka; Miyakawa, Hiroshi; Saito, Hitoshi; Abe, Hiroaki; and Nagao, Eiji, 5,340,924, Cl. 530-395.000.

Morioroku Kabushiki Kaisha: *See*—
Nagai, Yoshiyuki; and Okamoto, Hiroyuki, 5,340,357, Cl. 454-155.000.

Morita, Kenji; Uchiki, Kohichi; and Shinoda, Hosei, to Mitsui Toatsu Chemicals, Inc. Breathable, hydrolyzable porous film. 5,340,646, Cl. 428-307.300.

Morita, Kousaku: *See*—
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, 5,340,788, Cl. 503-209.000.

Morita, Shizuo: *See*—
Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, 5,341,194, Cl. 355-212.000.

Moritomo, Yoshikazu: *See*—
Ikeda, Hiraku; Sasada, Tetsuo; Sato, Isao; Moritomo, Yoshikazu; Takahashi, Koji; and Takaba, Minoru, 5,339,620, Cl. 60-39.030.

Morizane, Shinichi: *See*—
Nakano, Minoru; Uemura, Toshinobu; Morizane, Shinichi; Okuda, Kiyoshi; and Nakata, Keiko, 5,340,591, Cl. 424-499.000.

Morley, Sean, to Analog Devices, Incorporated. Means to avoid data distortion in clock-synchronized signal sampling. 5,341,403, Cl. 375-106.000.

Mormede, Bernard: *See*—
Ricaud, Patrick; and Mormede, Bernard, 5,339,744, Cl. 105-332.000.

Morris, Hugh L.: *See*—
Hollis, Tommy W.; and Morris, Hugh L., 5,339,608, Cl. 52-545.000.

Morris, Michael R.: *See*—
Schmidt, Albert L.; McKinley, Ellen K.; Hanes, Lewis F.; Morris, Michael R.; McKenzie, Patrick J.; and Haley, Paul H., 5,339,826, Cl. 128-731.000.

Morrison, Robert C.; Hall, Randy W.; Schwindeman, James A.; Kamienski, Conrad W.; and Engel, John F., to FMC Corporation. Catalyzed hydrocarbyllithium process. 5,340,507, Cl. 260-665.00R.

Morse, George E., to Gates Rubber COmpany, The. Heat shrinkable polymer hose and tubing clamp. 5,340,167, Cl. 285-243.000.

Morton International, Inc.: *See*—
Clinnin, David D.; Heiber, William G.; and Lewarchik, Ronald J., 5,340,870, Cl. 524-522.000.

Moscony, John J.; and Ehemann, George M., Jr., to Thomson Consumer Electronics, Inc. Method of electrophotographically manufacturing a screen assembly for a cathode-ray tube with a subsequently formed matrix. 5,340,674, Cl. 430-28.000.

Moser, Heinz: *See*—
Hecken, Hans J.; Heine, Rudiger; Lohse, Dietmar; and Moser, Heinz, 5,340,092, Cl. 266-276.000.

Moser, Robert E.; Wilhelm, James H.; Burke, John; and Gray, Sterling, to Electric Power Research Institute. Clear liquor scrubbing magnesium-enhanced lime flue gas desulfurization system. 5,340,547, Cl. 422-177.000.

Motan, Inc.: *See*—
Thiele, Charles W.; Willemstyn, Tunis J.; Arndt, Douglas J.; and McMullen, John J., 5,340,241, Cl. 406-132.000.

Motl, Robert M., to M-B-W Inc. Pneumatically operated rammer. 5,340,233, Cl. 404-133.050.

Motomura, Akira: *See*—
Naka, Toshiaki; Motomura, Akira; and Akamaru, Hidefumi, 5,339,597, Cl. 53-167.000.

Motorla, Inc.: *See*—
Witek, Keith E.; Fitch, Jon T.; and Mazure, Carlos A., 5,340,754, Cl. 437-32.000.

Motorola, Inc.: *See*—
Barney, George M.; Hardy, Douglas A.; and Balogh, Craig R., 5,341,426, Cl. 380-21.000.
Baron, Nathan; and Adelman, Judah L., 5,341,113, Cl. 331-144.000.
Buchholz, Dale R.; Robbins, Karen E.; Doss, William K.; and Hamilton, R. Lee, Jr., 5,341,375, Cl. 370-94.100.
Connor, James M.; Bloomstein, Theodore M.; Henderson, James A., Jr.; Maher, John W.; and Errico, James H., 5,341,498, Cl. 395-600.000
DeRango, Mario F.; and Bennett, Richard L., 5,341,398, Cl. 375-3.100
Frei, John K.; and Knuth, Howard D., 5,341,115, Cl. 333-246.000.
Grossman, Anita S.; Kau, Chin-Cheng; Ogden, Aubrey D.; and Weems, Mason L., 5,341,502, Cl. 395-725.000.
Hardy, Douglas A.; Lewis, Leslie K.; and Altschuler, Barry N., 5,341,427, Cl. 380-21.000.
Moyer, William C.; Gutierrez, Joseph A.; and Ho, Yui K., 5,341,500, Cl. 395-725.000.
Salina, John E.; and Brown, Clem H., 5,340,993, Cl. 250-551.000.
Tran, Truoc T.; and Sterlin, Wilhelm, 5,339,518, Cl. 29-827.000.
Trissel, David W.; Dorris, Roderick L.; and Werbner, Stuart A., 5,341,320, Cl. 364-748.000.

Mottes, Rick S.: *See*—
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,341,130, Cl. 340-825.060.

Mottura Serrature Di Sicurezza SpA: *See*—
Guzzinati, Alberto, 5,339,659, Cl. 70-120.000.

Mountford, S. Joy: *See*—
Vertelney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., 5,341,293, Cl. 364-419.170.

Mounts, Darryl I.: *See*—
Lisson, Jerold B.; Mounts, Darryl I.; and Mack, Dale K., 5,341,312, Cl. 364-525.000.

Mouton, Pierre C.: *See*—
Bardey, Xavier M. H.; Desaulty, Michel A. A.; Jolu, Jerome E. R.; Meunier, Serge M.; Mouton, Pierre C.; Poutonnet, Sylvie; and Renvier, Jacques, 5,339,622, Cl. 60-39.092.

Mowry, William H., Jr., to Standard Register Company, The. Varying tone security document. 5,340,159, Cl. 283-93.000.

Moyer, William C.; Gutierrez, Joseph A.; and Ho, Yui K., to Motorola, Inc. Data processor with combined static and dynamic masking of operand for breakpoint operation. 5,341,500, Cl. 395-725.000.

Mrabet, Nadir: *See*—
Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,340,738, Cl. 435-234.000.

MTS Systems Corporation: *See*—
Mullin, Robert L., 5,339,697, Cl. 73-862.043.

Mueller, Mark D., to Union Oil Company of California. Drilling torsional friction reducer. 5,339,910, Cl. 175-61.000.

Mufti, Aftab A.: *See*—
Jaeger, Leslie G.; Mufti, Aftab A.; and Bakht, Baidar, 5,339,475, Cl. 14-73.000.

Muir, David J.: *See*—
Sarkisian, Robert; Mason, James J.; and Muir, David J., 5,340,068, Cl. 248-188.600.

Mukae, Hideaki: *See*—
Murata, Akio; Mukae, Hideaki; Maegawa, Takaaki; Higashionji, Masaru; and Okada, Toshiharu, 5,341,256, Cl. 360-75.000

Mukawa, Hiroshi; and Ando, Nobuhiko, to Sony Corporation. Optical disc recording apparatus. 5,341,357, Cl. 369-75.200.

Mulcahy, James P.; and Jadrich, Raymond P., to Siebert, Inc. Compositions for cleaning ink from a printing press and methods thereof. 5,340,495, Cl. 252-162.000.

Muller, Herta, Legal representative: *See*—
Muller, Klaus, deceased; and Hullmann, Klaus, 5,339,500, Cl 24-514.000.

Muller, Klaus, deceased (by Muller, Herta, Legal representative); and Hullmann, Klaus, to A. Raymond GmbH & Co. KG. Holding clamp for connecting sheets having different expansion characteristics. 5,339,500, Cl. 24-514.000.

Mullin, Robert L., to MTS Systems Corporation. Multi-axis load cell. 5,339,697, Cl. 73-862.043.

Mullins, Norman B., to PV Enterprises, Inc. Dense media processing cyclone. 5,340,481, Cl. 210-512.100.

Mullins, William H.: *See*—
Prince, Jack E.; and Mullins, William H., 5,340,484, Cl. 210-712.000

Multifastener Corporation: *See*—
Caple, Richard F., 5,339,983, Cl. 221-25.000.
Takahashi, Takao; and Takehara, Hiroshi, 5,340,251, Cl. 411-179.000.

Mundy, Kirsten: *See*—
Liu, David Y.; Kaymakcalan, Zehra; and Mundy, Kirsten, 5,340,800, Cl. 514-12.000.

Muntz, Eric P.: *See*—
Orme, Melissa E.; and Muntz, Eric P., 5,340,090, Cl. 266-202.000.

Murai, Takeshi: *See*—
Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, 5,341,294, Cl. 364-424.050.

Murakami, Hisatoshi: *See*—
Nakatani, Fumio; Wakita, Shinichi; Murakami, Hisatoshi; Terada, Tsunehiko; and Morimoto, Shohei, 5,341,274, Cl. 361-818.000.

Murakami, Masato: *See*—
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.

Murakami, Shuji: *See*—
Ohya, Yukio; Matsuzaka, Syoji; Irie, Yasushi; Murakami, Shuji; Asano, Satomi; Okusa, Hiroshi; and Ohtani, Hirofumi, 5,340,710, Cl. 430-567.000.

Murakami, Tadayoshi: *See*—
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000.

Muramatsu, Gyo: *See*—
Abe, Akira; Sumiya, Satoshi; Takahashi, Yoshikazu; Yoshida, Kiyohide; and Muramatsu, Gyo, 5,340,548, Cl. 422-177.000.

Murase, Masahiro. Anti-contamination type elongated hand piece of a dental instrument. 5,340,312, Cl. 433-132.000.

Murase, Tokutaro: *See*—
Watanabe, Atsushi; Kamiya, Hitoshi; Nakada, Eiji; Mizuno, Tomoaki; Kago, Yoshiyuki; Murase, Tokutaro; and Inukai, Yoshihiko, 5,340,968, Cl. 235-380.000.

Murata, Akio; Mukae, Hideaki; Maegawa, Takaaki; Higashionji, Masaru; and Okada, Toshiharu, to Matsushita Electric Industrial Co., Ltd. Rotary head adjuster. 5,341,256, Cl. 360-75.000.

Murata Kikai Kabushiki Kaisha: *See*—
Uehara, Masao, 5,339,616, Cl. 57-281.000.

Murayama, Yoshio: *See*—
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, 5,339,666, Cl. 72-56.000.

Murg, Sandra D.; and Gerling, John S. Tint bottle and nozzle cleaning brush. 5,339,480, Cl. 15-106.000.

Murphy, Joseph F.; McGeehan, Michael J.; Benske, Gregory A.; and Gaudiano, Juan. Seat belt adjustment device. 5,340,198, Cl. 297-483.000.

Murray, Graham: *See*—
Lemon, Peter H. R. B.; King, James G.; Murray, Graham; Leoni, Henry; and Gerber, Arthur H., 5,340,888, Cl. 525-501.000.

Murwald, Mario: *See*—
Reckzugel, Christoph; Murwald, Mario; Doll, Gerhard; Frey, Jurgen; and Ohlendorf, Ralf, 5,339,778, Cl. 123-193.500.

Musebrink, Olaf: *See*—
Koslowski, Thomas; Hessler, Klaus-Michael; and Musebrink, Olaf, 5,340,513, Cl. 264-42.000.

Musiol, John A.: *See*—
Fontecchio, Robert P.; Ennis, Thomas A.; Musiol, John A.; Medvedik, Douglas E.; and Paglia, Nicola F., 5,340,147, Cl. 280-728.00A.

Mustafa, Reynaldo A.; and Kinstrey, James. Personal barcoder. 5,339,734, Cl. 101-109.000.

Mutoh Industries Ltd.: *See*—
Arai, Ryuji; Eshita, Toru; Niimi, Kaoru; Ikuta, Tatsuyoshi; Furuichi, Hiroyuki; and Iwanaga, Tetsuya, 5,341,152, Cl. 345-133.000.

Muzeroll, Martin M., to Osram Sylvania Inc. Double-ended metal halide arc discharge lamp with electrically isolated containment shroud. 5,340,346, Cl. 445-26.000.

Myhre, John B.; and Ludescher, Stefan, to K-Tron Technologies, Inc. Apparatus and method for controlling flow rate in vibratory feeders. 5,341,307, Cl. 364-479.000.

Myhrvold, Nathan P.: *See*—
Friedman, Steven J.; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., 5,341,464, Cl. 395-131.000.

Myles, Peter R. W., to Stone Panels, Inc. Method for cutting stone laminate panels. 5,339,795, Cl. 125-21.000.

Nabisco, Inc.: *See*—
Hay, Richard C., Jr.; Pappas, Chris; Bergstrom, Harry J.; and Fazzolare, Richard D., 5,340,598, Cl. 426-496.000.

Nabity, Frederick A.: *See*—
Wright, Paul G.; and Nabity, Frederick A., 5,339,700, Cl. 73-864.340.

Nabulon, Werner: *See*—
Grossenbacher, Peter; and Nabulon, Werner, 5,339,502, Cl. 28-221.000.

Nader, Bassam S.; and Pawloski, Chester E., to Dow Chemical Company, The. Aryl arenesulfonates and a method of lubrication using the aryl arenesulfonates. 5,340,489, Cl. 252-48.600.

Nadig, Madhura: *See*—
Melcher, Richard A.; Sherman, William, III; Nadig, Madhura; Stewart, Robert M.; Hessler, Paul L.; and Bryce, David R., 5,341,408, Cl. 377-8.000

VOL 1165 ISS 4 AG 23 1994 UMI

Nadzan, Alex M.: *See*—
Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., 5,340,802, Cl. 514-18.000.

Naegeli, David W.: *See*—
Gale, Nigel F.; Naegeli, David W.; Ryan, Thomas W., III; and King, Steven R., 5,339,634, Cl. 60-723.000.

Nagai, Yoshiyuki; and Okamoto, Hiroyuki, to Moriroku Kabushiki Kaisha. Air-conditioning blow-out port unit and process for manufacturing the same. 5,340,357, Cl. 454-155.000.

Nagao, Eiji: *See*—
Tomita, Mamoru; Tamura, Yoshitaka; Miyakawa, Hiroshi; Saito, Hitoshi; Abe, Hiroaki; and Nagao, Eiji, 5,340,924, Cl. 530-395.000.

Nagao, Hiroyuki: *See*—
Toki, Hirotaka; Wakuda, Osamu; Yamamoto, Hiranaga; and Nagao, Hiroyuki, 5,340,096, Cl. 271-9.000.

Nagasaka, Tetsuo: *See*—
Naoi, Hisashi; Inoue, Yasusuke; Nagasaka, Tetsuo; Matsubara, Yoichi; Takagishi, Masaaki; and Akizawa, Seiichi, 5,339,868, Cl. 138-172.000.

Nagase, Yukio: *See*—
Suzuki, Hiroyuki; Nagase, Yukio; and Kemmochi, Kazuhisa, 5,341,165, Cl. 346-157.000.

Nagashima, Akira: *See*—
Kondo, Syunichi; Nagashima, Akira; and Kawabe, Yasumasa, 5,340,683, Cl. 430-165.000.

Nagata, Takuji: *See*—
Menjo, Yoshihiro; Nakagawa, Fumio; Nagata, Takuji; and Kuriyama, Hiroshi, 5,340,623, Cl. 428-31.000.

Nagata, Tsugio. Water pumping apparatus utilizing produced compressed air. 5,340,283, Cl. 417-118.000.

Nagayama, Shigeru: *See*—
Ishii, Kozo; Takemoto, Kazuo; Fujiwara, Takuji; Mizobe, Tatsutoshi; Baba, Fumiaki; Nagayama, Shigeru; Watanabe, Osamu; and Takeuchi, Koichiro, 5,339,935, Cl. 192-3.300.

Nagayasu, Yoshihiko, to Fuji Electric Co., Ltd. Method for producing self-aligned LDD CMOS, DMOS with deeper source/drain and P-base regions and, bipolar devices on a common substrate. 5,340,756, Cl. 437-34.000.

Nagorcka, James A., to Deere & Company. Suspension system for a tracked vehicle. 5,340,205, Cl. 305-22.000.

Naik, Hemant A.: *See*—
Sondhe, Ratanjit S.; Naik, Hemant A.; Pandit, Shirish A.; and Pant, Bipin C., 5,340,652, Cl. 428-413.000.

Naito, Yasushi: *See*—
Fujii, Toyokazu; and Naito, Yasushi, 5,341,014, Cl. 257-377.000.

Naka, Toshiaki; Motomura, Akira; and Akamaru, Hidefumi, to Shibuya Kogyo Co., Ltd. Work head changer for rotary vessel processing system. 5,339,597, Cl. 53-167.000.

Nakada, Eiji: *See*—
Watanabe, Atsushi; Kamiya, Hitoshi; Nakada, Eiji; Mizuno, Tomoaki; Kago, Yoshiyuki; Murase, Tokutaro; and Inukai, Yoshihiko, 5,340,968, Cl. 235-380.000.

Nakada, Katsutoshi: *See*—
Nohmi, Hitoshi; and Nakada, Katsutoshi, 5,341,506, Cl. 395-800.000.

Nakagaki, Harushige: *See*—
Amada, Nobutaka; Nakagaki, Harushige; Arai, Takao; and Noguchi, Takaharu, 5,341,248, Cl. 360-33.100.

Nakagawa, Fumio: *See*—
Menjo, Yoshihiro; Nakagawa, Fumio; Nagata, Takuji; and Kuriyama, Hiroshi, 5,340,623, Cl. 428-31.000.

Nakagawa, Kazuya; Miyoshi, Satoru; and Fukushima, Toyoaki, to Shimadzu Corporation. Gas chromatograph and method of using same. 5,339,673, Cl. 73-23.360.

Nakagawa, Norihisa; and Matsuoka, Hiroki, to Toyota Jidosha Kabushiki Kaisha. Vehicle transmission shift control apparatus having means for suitably determining compensating coefficient used in determining shifting of the transmission. 5,341,295, Cl. 364-424.100.

Nakagawa, Yumi: *See*—
Zones, Stacey I.; and Nakagawa, Yumi, 5,340,563, Cl. 423-706.000.

Nakagome, Hideki: *See*—
Hakamada, Ryuichi; Takahashi, Masahiko; Kuriyama, Toru; and Nakagome, Hideki, 5,339,650, Cl. 62-51.100.

Nakahara, Kazuyuki: *See*—
Hodoshima, Takashi; Ishigaki, Kouji; Nakahara, Kazuyuki; and Kishi, Fumio, 5,341,196, Cl. 355-260.000.

Nakajima, Kazuo: *See*—
Ueno, Takashi; Ito, Hiroyuki; Kotani, Hirokazu; and Nakajima, Kazuo, 5,340,733, Cl. 435-199.000.

Nakajima, Keiichi: *See*—
Imanishi, Hisao; and Nakajima, Keiichi, 5,340,323, Cl. 439-125.000.

Nakajima, Koichi: *See*—
Yamaguchi, Tadao; Koyanagi, Naohisa; and Nakajima, Koichi, 5,341,057, Cl. 310-81.000.

Nakajima, Masahiro: *See*—
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideaki; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,340,806, Cl. 514-184.000.

Nakajima, Osamu: *See*—
Matsuura, Hitoshi; Nakajima, Osamu; and Okamoto, Tetsuji, 5,341,079, Cl. 318-632.000.

Nakajima, Toyokatsu, to Mitsubishi Denki Kabushiki Kaisha. Comparison circuit. 5,341,120, Cl. 340-146.200.

Nakajima Tsushinki Kogyo Co., Ltd.: *See*—
Nakajima, Yoshikatsu; and Tatsumi, Keigo, 5,340,332, Cl. 439-584.000.

Nakajima, Yoshikatsu; and Tatsumi, Keigo, to Nakajima Tsushinki Kogyo Co., Ltd. Coaxial cable connector. 5,340,332, Cl. 439-584.000.

Nakamura, Akira, to Tsubakimoto Emerson Co. Space-saving inching device. 5,339,708, Cl. 74-665.00A.

Nakamura, Eiichi: *See*—
Yamazaki, Koichi; Noda, Kazuo; and Nakamura, Eiichi, 5,341,053, Cl. 310-13.000.

Nakamura, Hirofumi, to NEC Corporation. Printed-wiring board. 5,340,639, Cl. 428-192.000.

Nakamura, Masakazu: *See*—
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.

Nakamura, Osamu: *See*—
Miyazawa, Yoshinori; Ishii, Hiroshi; Nakamura, Osamu; Kurashima, Norihiko; Kitahara, Tsuyoshi; and Miyazawa, Hisashi, 5,341,164, Cl. 347-88.000.
Torihata, Minoru; and Nakamura, Osamu, 5,340,010, Cl. 228-1.100.

Nakamura, Susumu: *See*—
Ito, Yatsuo; Abe, Takao; Takei, Tokio; Nakamura, Susumu; and Ota, Hiroko, 5,340,435, Cl. 156-632.000.

Nakamura, Yasushi: *See*—
Makita, Shigeru; Sano, Yoshihiko; Ota, Hiroyuki; and Nakamura, Yasushi, 5,340,215, Cl. 374-121.000.

Nakamura, Yoshiki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Work transportation apparatus and work transportation method. 5,340,249, Cl. 410-78.000.

Nakamura, Yoshinori, to Nissei ASB Machine Co., Ltd. Mold for injection molding preform with undercut lip. 5,340,304, Cl. 425-577.000.

Nakamura, Yuko: *See*—
Kagami, Nobutake; Doi, Yuichiro; and Nakamura, Yuko, 5,341,349, Cl. 369-13.000.

Nakanishi, Motoyasu; and Amano, Masaaki, to Kabushiki Kaisha Sigel. Figure adjusting pad and process for manufacturing same. 5,340,352, Cl. 450-57.000.

Nakano, Hiroshi; and Isono, Yasuo, to Olympus Optical Co., Ltd. Ferroelectric memory device with crosstalk protection in reading/-writing operation. 5,341,325, Cl. 365-145.000.

Nakano, Minoru; Uemura, Toshinobu; Morizane, Shinichi; Okuda, Kiyoshi; and Nakata, Keiko, to Fujisawa Pharmaceutical Co., Ltd. Method of producing a solid dispersion of the sparingly water-soluble drug, nilvadipine. 5,340,591, Cl. 424-499.000.

Nakano, Motonari; and Kunieda, Syoichi, to Brother Kogyo Kabushiki Kaisha. Needle-bar driving device. 5,339,757, Cl. 112-221.000.

Nakano Vinegar Co., Ltd.: *See*—
Fukushige, Tomoaki; Toda, Hiroko; Akano, Hirofumi; Ito, Emiko; Fukuta, Tomohiko; Fujimori, Masahiro; and Kawamura, Yoshiya, 5,340,461, Cl. 204-299.00R.

Nakashiba, Yasutaka, to NEC Corporation. Method for fabricating charge-coupled device. 5,340,766, Cl. 437-53.000.

Nakashima, Nobuaki; and Sugai, Shinzo, to Kabushiki Kaisha Toshiba. IC package and LSI package using a lead frame formed of a copper-zirconium alloy. 5,341,025, Cl. 257-697.000.

Nakashima, Noriaki: *See*—
Harada, Tadamasa; Sakamoto, Midori; and Nakashima, Noriaki, 5,340,150, Cl. 280-740.000.

Nakashima, Takashi: *See*—
Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, 5,341,294, Cl. 364-424.050.

Nakata, Keiko: *See*—
Nakano, Minoru; Uemura, Toshinobu; Morizane, Shinichi; Okuda, Kiyoshi; and Nakata, Keiko, 5,340,591, Cl. 424-499.000.

Nakatani, Fumio; Wakita, Shinichi; Murakami, Hisatoshi; Terada, Tsunehiko; and Morimoto, Shohei, to Tatsuta Electric Wire & Cable Co., Ltd. Printed circuit board with enhanced EMI suppression. 5,341,274, Cl. 361-818.000.

Nakatani, Koichiro, to Velbon International Corporation. Center column friction control system for video tripod. 5,341,185, Cl. 354-81.000.

Nakayama, Hiroshi; Takeda, Tomokazu; Yomoto, Toshiyuki; Kitada, Mitsuo; Ohta, Shoji; and Chosa, Masatoshi, to Honda Giken Kogyo Kabushiki Kaisha. Drive system for automobile. 5,339,918, Cl. 180-292.000.

Nakayama, Shigeto, to Honda Giken Kogyo Kabushiki Kaisha. Method of determining the configuration of a path for motor vehicle. 5,341,437, Cl. 382-1.000.

Nakazawa, Atsushi, to Sumitomo Electric Industries, Ltd. Symbol reading device for varying the focal point of a scanning laser beam through variance of scanning laser beam optical path length. 5,340,982, Cl. 250-235.000.

Nalco Chemical Company: *See*—
Patel, Mayur; Phillips, Michael T.; Cooper, Gary L.; and Emmons, Daniel, 5,340,210, Cl. 366-132.000.

Namba, Takaoki: *See*—
Kikuchi, Fumio; Itoh, Kazuo; Taga, Kazuharu; Matsunaga, Naoto; Ono, Hiroshi; Namba, Takaoki; and Narita, Kazuhiko, 5,341,461, Cl. 395-120.000.

Naoi, Hisashi; Inoue, Yasusuke; Nagasaka, Tetsuo; Matsubara, Yoichi; Takagishi, Masaaki; and Akizawa, Seiichi, to Nippon Steel Corporation. Bent pipe having sectional form of high strength. 5,339,868, Cl. 138-172.000.

Narato, Kiyoshi: *See*—
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000.

Nardi, Benedict J., to Watkins-Johnson Company. Low phase noise reference oscillator. 5,341,110, Cl. 331-17.000.

Narishige, Takeshi: *See*—
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,340,660, Cl. 428-687.000.

Narita, Kazuhiko: *See*—
Kikuchi, Fumio; Itoh, Kazuo; Taga, Kazuharu; Matsunaga, Naoto; Ono, Hiroshi; Namba, Takaoki; and Narita, Kazuhiko, 5,341,461, Cl. 395-120.000.

Narita, Kazutoyo: *See*—
Ishiguro, Takashi; Narita, Kazutoyo; and Susuta, Masahide, 5,341,268, Cl. 361-62.000.

Naruse, Hideaki; and Suzuki, Makoto, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material containing a pyrrolotriazole cyan coupler. 5,340,706, Cl. 430-505.000.

NASA Corporation Co., Ltd.: *See*—
Fujimoto, Jun, 5,339,821, Cl. 128-700.000.

Nation, David A.: *See*—
Wescott, Thomas F.; McCleary, Lawrence E.; and Nation, David A., 5,341,463, Cl. 395-129.000.

National Coupling Company, Inc.: *See*—
Smith, Robert E., III, 5,339,861, Cl. 137-614.040.

National Recovery Technologies, Inc.: *See*—
Sommer, Edward J., Jr.; Kittel, Michael A.; and Peatman, James R., 5,339,962, Cl. 209-576.000.

National Science Council: *See*—
Chao, Kuei-Jung; Ho, Shih-Yeng; and Chang, Te-Chung, 5,340,500, Cl. 252-500.000.
Chern, Ji-Wang; Lu, Guan-Yu; Lai, Yue-Jun; Yen, Mao-Hsiung; and Tao, Pao-Luh, 5,340,814, Cl. 514-267.000
Yang, Chin-Ping; and Chen, Wen-Tung, 5,340,904, Cl. 528-185.000.

National Semiconductor Corporation: *See*—
Brahmbhatt, Dhaval J., 5,341,342, Cl. 365-182.000.
Garverick, Tim; Chen, Shao-Pin; and Camarota, Rafael C., 5,341,040, Cl. 307-443.000.
Yee, Philip W., 5,341,137, Cl. 341-156.000.

National Starch and Chemical Investment Holding Corporation: *See*—Maliczyszyn, Walter; Peek, Leroy; and Gregory, Paul, 5,340,405, Cl. 127-65.000.
Mitry, Mark, 5,340,873, Cl. 525-10.000.

Naudin, Bernard: *See*—
Austruy, Pierre; Brezzo, Bernard; Lips, Jean-Pierre; Naudin, Bernard; Calvignac, Jean; and Waller, Richard H., 5,341,475, Cl. 395-200.000.

Navimap Corporation: *See*—
Hill, David C., 5,339,528, Cl. 33-1.0SD.

Naylor, Charles A.: *See*—
Knowles, Carl H.; Rockstein, George B.; Wilz, David M.; and Naylor, Charles A., 5,340,973, Cl. 235-472.000.

NCR Corporation: *See*—
Allman, Derryl D. J.; and Kwong, Dim-Lee, 5,340,752, Cl. 437-31.000.
Allman, Derryl D. J.; and Kwong, Dim-Lee, 5,340,770, Cl. 437-164.000.
Crafts, Harold S., 5,341,046, Cl. 307-475.000.

Nebuka, Kenji: *See*—
Oosawa, Tetsu; Asakawa, Teruo; Nebuka, Kenji; and Ono, Hiroo, 5,340,261, Cl. 414-217.000.

NEC Corporation: *See*—
Echigoya, Kenichi; and Asai, Hidehiro, 5,341,018, Cl. 257-503.000.
Fukuzo, Yukio, 5,341,341, Cl. 365-233.000.
Kasahara, Kenichi, 5,340,998, Cl. 257-13.000.
Miya, Tatsuya; Uemura, Kazuyoshi; and Yoshida, Sadayoshi, 5,341,111, Cl. 331-96.000.
Miyamoto, Hidenobu, 5,340,769, Cl. 437-67.000.
Nakamura, Hirofumi, 5,340,639, Cl. 428-192.000.
Nakashiba, Yasutaka, 5,340,766, Cl. 437-53.000.
Nohmi, Hitoshi; and Nakada, Katsutoshi, 5,341,506, Cl. 395-800.000.
Satou, Kazumasa, 5,341,105, Cl. 329-308.000.
Shoda, Masahiro, 5,341,380, Cl. 371-22.300.
Suzuki, Shuji; and Nishio, Makoto, 5,341,234, Cl. 359-117.000.
Takayama, Michio, 5,341,473, Cl. 395-200.000.
Takehara, Kei, 5,340,459, Cl. 204-298.070.
Yamada, Masanori, 5,341,279, Cl. 363-21.000.
Yamamoto, Tomio, 5,340,773, Cl. 437-230.000.
Yamashita, Hiroshi, 5,341,376, Cl. 370-99.000.
Yoshida, Atsushi, 5,341,418, Cl. 379-399.000.
Zaitsu, Toshiyuki, 5,341,061, Cl. 310-318.000.

NEC Electronics, Inc.: *See*—
Kobayashi, Satoru, 5,341,488, Cl. 395-425.000.

Neely, Nathan R.: *See*—
Dubbert, Patrick C.; Neely, Nathan R.; Albertson, Daniel L.; and Luebbert, Norbert A., 5,339,996, Cl. 222-185.000.

Neff, Roger E.; and Ryles, Roderick G., to Cytec Technology Corp. Cross-linked cationic polyermic microparticles. 5,340,865, Cl. 524-317.000.

Neitz, John F.: *See*—
DeYoe, Edgar A.; and Neitz, John F., 5,339,813, Cl. 128-653.100.

Nelok, Inc.: *See*—
Niemeyer, Thomas L., 5,340,069, Cl. 248-214.000.

Nelson A. Taylor Co., Inc.: *See*—
Erskine, Edward J., 5,339,763, Cl. 114-361.000.

Nelson, William P.; and Smith, William A., to Texaco Chemical Company. Purification of propylene oxide by cosolvent extractive distillation. 5,340,446, Cl. 203-56.000.

Neopost Limited: *See*—
Herbert, Raymond J., 5,340,223, Cl. 400-208.000.

Neri, Armando; and Turra, Mario, to G.D. S.p.A. Apparatus for feeding packaging machines with stacks of sheet material. 5,340,263, Cl. 414-412.000.

Neri, Armando: *See*—
Turra, Mario; and Neri, Armando, 5,340,260, Cl. 414-27.000.

Nerone, Louis R., to General Electric Company. Electronic ballast arrangement for a compact fluorescent lamp. 5,341,068, Cl. 315-219.000.

Neste Oy: *See*—
Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, 5,340,499, Cl. 252-500.000.

Nestec S.A.: *See*—
Montesissa, Giancarlo, 5,339,999, Cl. 222-380.000.

Neuhaus, Reinhard; Kersten, Jens-Heinrich; and Schmitz, Detlef, to Perfect-Valois Ventil GmbH. Foaming head. 5,340,031, Cl. 239-343.000.

Neumuller, Konrad, to Sifa Sitzfabrabrik GmbH. Device for adjusting seat frame and back rest of chair of swivel type chair. 5,340,194, Cl. 297-304.000.

Neutzner, Josef: *See*—
Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, 5,340,859, Cl. 524-162.000
Bauer, Gerhard; Aydin, Oral; and Neutzner, Josef, 5,340,858, Cl. 524-162.000.

New England Medical Center Hospitals, Inc.: *See*—
Zamenhof, Robert G., 5,341,292, Cl. 364-413.130.

New Jersey Institute of Technology: *See*—
Meegoda, Namunu J., 5,340,396, Cl. 106-669.000.

New York University: *See*—
Perlin, Kenneth; and Schwartz, Jacob, 5,341,466, Cl. 395-139.000.

Newell Operating Co.: *See*—
Sands, Jeffrey L.; Dagel, Robert J.; and Elsenheimer, John A., 5,339,716, Cl. 83-452.000.

Newkirk, Marc S.: *See*—
Creber, David K.; Johnson, William B.; and Newkirk, Marc S., 5,340,655, Cl. 428-446.000.

Newman, Charles; Jones, Paul L.; and King, Charles, to Demand Publishing, Inc. Distributed facsimile information system and method. 5,341,222, Cl. 358-403.000.

Newman, Gary R.: *See*—
Hrdlicka, Fred L.; Newman, Gary R.; and Minter, Mearl J., 5,339,583, Cl. 52-204.530.

Newman, Lawrence E.: *See*—
Beakes, John M.; and Newman, Lawrence E., 5,340,043, Cl. 242-1.10R.

Newman, Palmer E.: *See*—
Blackledge, John W., Jr.; Dayan, Richard A.; Moeller, Dennis L.; Newman, Palmer E.; and Zubay, Kenneth J. P., 5,341,422, Cl. 380-4.000.

Neylan, Michael J.; Ostrom, Karin M.; Churella, Helen R.; Breen, Merlin D.; and Benson, John D., to Abbott Laboratories. Nutritional product for human infants having chronic lung disease. 5,340,603, Cl. 426-73.000.

Ng, Spencer W., to International Business Machines Corporation. Method and means for optimally accessing data residing on dual actuator DASDs. 5,341,351, Cl. 369-30.000.

NGK Insulators, Ltd.: *See*—
Kawase, Hiroyuki, 5,339,521, Cl. 29-889.230.

NGK Spark Plug Company, Ltd.: *See*—
Katoh, Tokiomi; and Ozeki, Hirofumi, 5,340,784, Cl. 501-136.000.

Nguyen, Cuong H.: *See*—
Wolfe, Donald M., Jr.; Allard, John C.; Nguyen, Cuong H.; Axsom, Larry E.; and Gabbard, Jerry D., 5,340,970, Cl. 235-383.000.

Nguyen, Hung C., to Quantum Corporation. Viterbi detector having adjustable detection thresholds for PRML class IV sampling data detection. 5,341,387, Cl. 371-45.000.

Nguyen, Hung C.: *See*—
Abbott, William L.; Nguyen, Hung C.; and Johnson, Kenneth E., 5,341,249, Cl. 360-46.000.

Nguyen, Hung T., to Whitaker Corporation, The. Filtered electrical connector. 5,340,334, Cl. 439-620.000.

Nibby, Chester M., Jr.: *See*—
Keeley, James W.; Lemay, Richard A.; and Nibby, Chester M., Jr., 5,341,501, Cl. 395-725.000.

Nicem S.r.l.: *See*—
Nicetto, Romeo, 5,341,394, Cl. 373-115.000.

Nicetto, Romeo, to Nicem S.r.l. Furnace for melting materials with low melting point with improved casting duct. 5,341,394, Cl. 373-115.000

Nicholas, Allan W.: *See*—
Wall, Monroe E.; Wani, Mansukh C.; Nicholas, Allan W.; and Manikumar, Govindarajan, 5,340,817, Cl. 514-279.000.

Nicol, Stuart W., to Lucas Industries Public Limited Company. Two stage fuel pump with pressure passage in the first stage rotor. 5,340,284, Cl. 417-206.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Nidek Co., Ltd.: *See*—
Isogai, Naoki; and Ozaki, Kenya, 5,341,180, Cl. 351-206.000.

Niederer, Ralph, to Asea Brown Boveri Ltd. Protective circuit with feedback capability for two-point and three-point inverters, and method of feeding back the protective-circuit energy. 5,341,283, Cl. 363-58.000.

Niederlein, Horst: *See*—
Frank, Armin; and Niederlein, Horst, 5,341,350, Cl. 369-30.000.

Niedzialek, Scott E.: *See*—
Stangle, Gregory C.; Niedzialek, Scott E.; and Williams, William C., 5,340,533, Cl. 419-45.000.

Niekamp, Rex L.: *See*—
Kerkhoff, William A.; and Niekamp, Rex L., 5,341,116, Cl. 333-260.000.

Niemeyer, Thomas L., to Nelok, Inc. Bracket for traffic control device. 5,340,069, Cl. 248-214.000.

Niemi, Timo: *See*—
Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, 5,340,499, Cl. 252-500.000.

Nihei, Ryo: *See*—
Torii, Nobutoshi; Nihei, Ryo; and Kato, Tetsukai, 5,341,078, Cl. 350-568.220.

Nii, Kazumi: *See*—
Ezoe, Toshihide; Nii, Kazumi; and Okamura, Hisashi, 5,340,704, Cl. 430-434.000.

Nii, Keita, to Rohm Co., Ltd. Thin silicon carbide layer on an insulating layer. 5,341,000, Cl. 257-77.000.

Niimi, Kaoru: *See*—
Arai, Ryuji; Eshita, Toru; Niimi, Kaoru; Ikuta, Tatsuyoshi; Furuichi, Hiroyuki; and Iwanaga, Tetsuya, 5,341,152, Cl. 345-133.000.

Nikon Corporation: *See*—
Juen, Masahiro, 5,341,220, Cl. 348-296.000.

Nilssen, Ole K. Electronic ballast with trapezoidal voltage waveform. 5,341,067, Cl. 315-209.00R.

Nilsson, Gert. System and a method for measurement and presentation of fluid flow movements, particularly the flow of blood through a body organ. 5,339,817, Cl. 128-664.000.

Nilsson, Torsten, to PLM AB. Temperature conditioning. 5,340,526, Cl. 264-292.000.

Ninomiya, Hideaki: *See*—
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideaki; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,340,806, Cl. 514-184.000.

Nintendo Co., Ltd.: *See*—
Shirai, Ichiro; and Sugino, Kenichi, 5,340,115, Cl. 273-310.000.

Nio, Yutaka; and Matsuura, Ryuji, to Matsushita Electric Industrial Co., Ltd. Image display apparatus for displaying images of plurality of kinds of video signals. 5,341,172, Cl. 348-441.000.

Nippon Conlux Co., Ltd.: *See*—
Yamazaki, Koichi; Noda, Kazuo; and Nakamura, Eiichi, 5,341,053, Cl. 310-13.000.

Nippon Oil Company, Ltd.: *See*—
Isobe, Masao; Aizawa, Yoshio; Kogo, Kenichi; and Yoshida, Chuzo, 5,340,869, Cl. 524-484.000.
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, 5,340,596, Cl. 426-301.000.

Nippon Paint Co., Ltd.: *See*—
Imamura, Tsuyoshi; Mizuguchi, Katsumi; Shibai, Yasuhiro; Ishii, Keizou; Ishikura, Shinichi; and Saito, Koichi, 5,340,891, Cl. 526-88.000.
Mashio, Fujio; and Itoya, Naomi, 5,340,555, Cl. 423-240.00R.
Yamada, Mitsuo; Kayano, Hiromichi; Aoki, Kei; and Ishii, Keizou, 5,340,931, Cl. 534-843.000.

Nippon Sheet Glass Co., Ltd.: *See*—
Fujita, Hideyuki; Okafuji, Masaharu; and Kawabe, Mitsunori, 5,341,306, Cl. 364-473.000.
Matsumoto, Minoru; Ogino, Etsuo; and Tsuno, Toshio, 5,340,621, Cl. 427-571.000.

Nippon Soda Co., Ltd.: *See*—
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, 5,340,788, Cl. 503-209.000.

Nippon Steel Corporation: *See*—
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.
Naoi, Hisashi; Inoue, Yasusuke; Nagasaka, Tetsuo; Matsubara, Yoichi; Takagishi, Masaaki; and Akizawa, Seiichi, 5,339,868, Cl. 138-172.000.

Nippon Telegraph and Telephone Corporation: *See*—
Fujiwara, Koichi; and Mizutani, Hiromichi, deceased, 5,340,749, Cl. 436-526.000.

Nippon Thompson Co., Ltd.: *See*—
Agari, Norimasa, 5,340,219, Cl. 384-15.000.

Nippondenso Co., Ltd.: *See*—
Kajino, Yuuichi; Sugi, Hikaru; Ban, Koichi; Honda, Yuuji; Samukawa, Katsuhiko; and Kawai, Takayoshi, 5,340,021, Cl. 236-49.300.
Shirai, Kazunari; Ozaki, Yoshitaka; and Fukaya, Hiroyasu, 5,341,301, Cl. 364-449.000.
Watanabe, Atsushi; Kamiya, Hitoshi; Nakada, Eiji; Mizuno, Tomoaki; Kago, Yoshiyuki; Murase, Tokutaro; and Inukai, Yoshihiko, 5,340,968, Cl. 235-380.000.
Yasuda, Minoru; Kato, Takahiko; and Ito, Motoya, 5,340,293, Cl. 418-171.000.

Nisbet, David J.; Corrier, Donald E.; and DeLoach, John R., to United States of America, Agriculture. Probiotic for control of salmonella. 5,340,577, Cl. 424-93.210.

Nishi, Isao: *See*—
Itoi, Akito; Nishi, Isao; and Ishii, Yasuo, 5,340,521, Cl. 264-176.100.

Nishida, Yasutaka: *See*—
Ishikawa, Kiichiro; and Nishida, Yasutaka, 5,339,516, Cl. 29-705.000.

Nishigaki, Nobutaka, to Kabushiki Kaisha Toshiba. Personal computer system allowing selective use of built-in and external keyboards by means of selector. 5,341,316, Cl. 364-709.120.

Nishii, Yoshiyuki: *See*—
Uemura, Sashirou; Nishii, Yoshiyuki; Kanda, Isamu; Hara, Zenichiro; Futatsuishi, Shunichi; and Shibayama, Kozaburo, 5,341,065, Cl. 313-495.000.

Nishikawa, Hiroaki: *See*—
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.

Nishikawa, Susumu; and Ikuma, Hariko, to System Stack Co., Ltd. Plug-opening device for a specimen container. 5,340,544, Cl. 422-99.000.

Nishikawa, Youichiro: *See*—
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.

Nishimura, Isao: *See*—
Koshika, Norihide; Sakamoto, Mitsuo; Nishimura, Isao; Sasaki, Katsuyasu; and Oorui, Satoshi, 5,339,580, Cl. 52-167.00E.

Nishimura, Ryoji: *See*—
Hioki, Takanori; and Nishimura, Ryoji, 5,340,694, Cl. 430-264.000.

Nishio, Makoto: *See*—
Suzuki, Shuji; and Nishio, Makoto, 5,341,234, Cl. 359-117.000.

Nishyama, Takaaki: *See*—
O'Brien, Stephen W.; Hayes, Leo C., Jr.; and Nishyama, Takaaki, 5,341,344, Cl. 367-96.000.

Nissan Motor Co., Ltd.: *See*—
Kato, Yoichiro, 5,340,146, Cl. 280-673.000.
Shirahama, Katsunori; Okuda, Michihiro; and Ohno, Atsuo, 5,339,705, Cl. 74-475.000.
Yasuno, Yoshiki; and Ito, Ken, 5,341,296, Cl. 364-426.010.

Nissei ASB Machine Co., Ltd.: *See*—
Nakamura, Yoshinori, 5,340,304, Cl. 425-577.000.

Nissei Jushi Kogyo Kabushiki Kaisha: *See*—
Takizawa, Michiaki; and Hakoda, Takashi, 5,340,297, Cl. 425-145.000.

Nitardy, John H.: *See*—
Higgins, Robert P.; and Nitardy, John H., 5,341,396, Cl. 375-1.000.

Nittaya, Hiroshi: *See*—
Matsumoto, Toshiyuki; Inada, Hirofumi; Nittaya, Hiroshi; and Kato, Masahiro, 5,341,324, Cl. 365-51.000.

Nitto Kohki Co., Ltd.: *See*—
Mikiya, Toshio; and Osada, Toshio, 5,340,288, Cl. 417-417.000.

Nitzsche, Remy: *See*—
Henry, Christine; and Nitzsche, Remy, 5,339,820, Cl. 128-696.000.

Niwa, Hisao; and Kayashima, Kazuhiro, to Matsushita Electric Industrial Co., Ltd. Test pattern generation device. 5,341,315, Cl. 364-580.000.

Niwa, Mineo: *See*—
Ueda, Ikuo; Niwa, Mineo; Saito, Yoshimasa; Ishii, Yoshinori; and Hitaguchi, Todashi, 5,340,725, Cl. 435-69.400.

Nixon, Ralph A.; and Takeuchi, Kiyoshi H., to McLean Hospital Corporation, The. Neural calcium-activated neutral proteinase inhibitors. 5,340,922, Cl. 530-350.000.

NKK Corporation: *See*—
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, 5,339,666, Cl. 72-56.000.

Nobelkrut AB: *See*—
Calsson, Staffan; and Schmid, Hermann, 5,339,624, Cl. 60-207.000.

NobelTech Electronics AB: *See*—
Eckersten, Christer; and As, Bengt-Olof, 5,341,145, Cl. 342-148.000.

Nobumoto, Kazutoshi: *See*—
Okazaki, Haruki; Kawamura, Makoto; Nobumoto, Kazutoshi; and Kageyama, Fumio, 5,340,204, Cl. 303-111.000.

Nobushige, Tadashi: *See*—
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl. 51-429.000.

Noda, Hiroyuki: *See*—
Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, 5,341,294, Cl. 364-424.050.

Noda, Kazuo: *See*—
Yamazaki, Koichi; Noda, Kazuo; and Nakamura, Eiichi, 5,341,053, Cl. 310-13.000.

NOF Corporation: *See*—
Takaoka, Toshiaki; Tanaka, Katsuyoshi; and Kato, Kenji, 5,340,893, Cl. 526-292.400.

Noguchi, Takaharu: *See*—
Amada, Nobutaka; Nakagaki, Harushige; Arai, Takao; and Noguchi, Takaharu, 5,341,248, Cl. 360-33.100.

Nohmi, Hitoshi; and Nakada, Katsutoshi, to NEC Corporation. Data flow processor with a full-to-half word convertor. 5,341,506, Cl. 395-800.000.

Nokia Mobile Phones Ltd.: *See*—
Valimaa, Veli-Matti; Leman, Ari; Hossi, Petri; and Olkkola, Jari, 5,341,149, Cl. 343-895.000.

Noma, Masana: *See*—
Habuka, Noriyuki; Miyano, Masashi; Matsumoto, Takashi; and Noma, Masana, 5,340,732, Cl. 435-193.000.

Noma, Takayuki: *See*—
Amirkiai, Maziar; Northrup, Oliver W.; Hosseinzadeh, Ali; Yamasaki, Naoki; and Noma, Takayuki, 5,341,259, Cl. 360-105.000.

Nordson Corporation: *See*—
Konieczynski, Ronald D.; Coeling, Kenneth J.; and Hartle, Ronald J., 5,340,289, Cl. 417-430.000.

Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., to Stamicarbon B.V. Free-radical curable compositions comprising vinyl ether and urethane malenate compounds. 5,340,653, Cl. 428-423.100.

Norlock Technologies, Inc.: *See*—
Norris, Thomas R.; Lockwood, Hanford N.; and Watts, J. Alan, 5,340,276, Cl. 415-208.100.

Norris, Thomas R.; Lockwood, Hanford N.; and Watts, J. Alan, to Norlock Technologies, Inc. Method and apparatus for enhancing gas turbo machinery flow. 5,340,276, Cl. 415-208.100.

Norseman Plastics Limited: *See*—
Raghunathan, Narayan, 5,339,974, Cl. 220-4.260.

North American Philips Corporation: *See*—
Dike, Charles E.; and Ostler, Farrell L., 5,341,052, Cl. 307-518.000.

North Carolina State University: *See*—
Petitte, James N.; and Yang, Zengming, 5,340,740, Cl. 435-240.200.

Northern Joinery Limited, The: *See*—
Turner, Jack, 5,340,087, Cl. 256-67.000.

Northrop Corporation: *See*—
Mackey, Jack D., 5,340,915, Cl. 528-363.000.
Stappaerts, Eddy A., 5,341,236, Cl. 359-328.000.

Northrop Grumman Corporation: *See*—
Reis, James J.; Luk, Anthony L.; Lucero, Antonio B.; and Garber, David D., 5,341,142, Cl. 342-64.000.
Reis, James J.; Luk, Anthony L.; and Garber, David D., 5,341,143, Cl. 342-64.000.
Saffire, Victor N.; Masters, John H.; Hartman, Robert L.; and Taaffe, Robert B., 5,340,301, Cl. 425-336.000.

Northrup, Oliver W.: *See*—
Amirkiai, Maziar; Northrup, Oliver W.; Hosseinzadeh, Ali; Yamasaki, Naoki; and Noma, Takayuki, 5,341,259, Cl. 360-105.000.

Northwestern Corporation, The: *See*—
Bolen, Richard K., 5,339,937, Cl. 194-292.000.

Norton, Richard C.: *See*—
Gartside, Robert J.; and Norton, Richard C., 5,340,545, Cl. 422-146.000.

Nosse, Hidetaka: *See*—
Kaneko, Masakatsu; Nosse, Hidetaka; and Takeishi, Katsumi, 5,341,458, Cl. 395-80.000.

Nossen, Edward J., to General Electric Company. Masked data transmission system. 5,341,423, Cl. 380-6.000.

Notta, Adolf, to Bertrand Faure Ltd. Vehicle seat assembly hinge and method of assembly. 5,340,195, Cl. 297-354.100.

Nouailhat, Alain: *See*—
Chantre, Alain; Bois, Daniel; and Nouailhat, Alain, 5,340,757, Cl. 437-40.000.

Nouban, Bezhad: *See*—
Ahanin, Bahram; Balicki, Janusz K.; Kiani, Khusrow; Leong, William; Li, Ken-Ming; and Nouban, Bezhad, 5,341,044, Cl. 307-465.000.

Nova Pharmaceutical Corporation: *See*—
Domb, Abraham J., 5,340,588, Cl. 424-450.000.

Novotny, Donald W.: *See*—
Divan, Deepakraj M.; Klontz, Keith W.; Novotny, Donald W.; and Lorenz, Robert D., 5,341,280, Cl. 363-37.000.
Klontz, Keith W.; Divan, Deepakraj M.; Novotny, Donald W.; and Lorenz, Robert D., 5,341,083, Cl. 320-2.000.

Novotny, Vlad J.: *See*—
Fasano, Benjamin V.; Novotny, Vlad J.; and Schein, Lawrence B., 5,340,617, Cl. 427-466.000.

Nowak, Michael T.: *See*—
Lewis, Thomas E.; Nowak, Michael T.; Robichaud, Kenneth T.; and Cassidy, Kenneth R., 5,339,737, Cl. 101-454.000.

Nowakowski, Victor A.: *See*—
Lewen, Ronald C.; Coyle, Jonathan V.; Marotta, Peter P.; Liubinskas, Tauras J.; Arnold, David P.; Byers, Kenneth R.; Dean, Anthony K.; and Nowakowski, Victor A., 5,341,374, Cl. 370-85.400.

Nowe, Stephane: *See*—
Gaillard, Patrice; Heim, Philippe; and Nowe, Stephane, 5,340,882, Cl. 525-379.000.

NSM Aktiengesellschaft: *See*—
Frank, Armin; and Niederlein, Horst, 5,341,350, Cl. 369-30.000.

NTN Corporation: *See*—
Yasuda, Yoshinobu; Tsushi, Fukuhiro; and Mayumi, Tohru, 5,340,221, Cl. 384-499.000.

Nu-Life Inc. of Illinois: *See*—
Brinkley, Herman E., 5,339,467, Cl. 2-209.000.

Nuhn, Derek J.; Servant, Gordon W.; Brennan, Robert P.; and Jeffrey, George A., to Pascal & Associates. Data transfer between high bit rate buses via unshielded low bit rate bus. 5,341,370, Cl. 370-84.000.

Nuila, Jorge A. Fertilizer or like dry material dispensing assembly. 5,339,994, Cl. 222-175.000.

Nulty, John D.: *See*—
Stewart, Robert L.; Osterman, Alan J.; Jalbert, Dennis W.; and Nulty, John D., 5,340,178, Cl. 293-122.000.

Nunes, Sharon L.: *See*—
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.

Nusz, John A. Overhead cam lifter removal tool. 5,339,506, Cl. 29-252.000.

Nutt, Ruth F.; and Veber, Daniel F., to Merck & Co., Inc. Fibrinogen receptor antagonists. 5,340,798, Cl. 514-18.000.

Nutt, William E.: *See*—
Kang, Sukhvinder S.; Patel, Bharatan R.; Nutt, William E.; and Kothari, Kirankumar K., 5,339,695, Cl. 73-861.190.

Nye, Jeffrey L.: *See*—
Simpson, Richard D.; Nye, Jeffrey L.; and Asal, Michael D., 5,341,470, Cl. 395-164.000.

Nyquist, Jeffery A.: *See*—
Beatty, David E.; Nyquist, Jeffery A.; and Ropp, Kenneth, 5,340,298, Cl. 425-183.000.

Oba, Hidehiro: *See*—
Suzuki, Akira; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Oba, Hidehiro; Kimura, Hiromachi; and Otsubo, Hideaki, 5,339,709, Cl. 477-145.000.

Oba, Masayuki: *See*—
Hayase, Rumiko; Oba, Masayuki; Kihara, Naoko; and Mikogami, Yukihiro, 5,340,684, Cl. 430-165.000.

Obase, Hiroyuki: *See*—
Kumazawa, Toshiaki; Yanase, Masashi; Harakawa, Hiroyuki; Obase, Hiroyuki; Oda, Shoji; Shirakura, Shiro; Yamada, Koji; and Kubo, Kazuhiro, 5,340,807, Cl. 514-215.000.

Obata, Koei, to Daikin Industries, Ltd. Figure drawing method and apparatus for drawings accentuated lines. 5,341,462, Cl. 395-122.000.

Oberg, Brad H.: *See*—
Colson, Wendell B.; Anthony, James M.; Oberg, Brad H.; and Jansen, Cornelis M., 5,339,883, Cl. 160-84.10D.

Obinata, Shigeyuki, to Fuji Electric Co., Ltd. MOS semiconductor device having a main unit element and a sense unit element for monitoring the current in the main unit element. 5,341,003, Cl. 257-135.000.

O'Brien, Stephen W.; Hayes, Leo C., Jr.; and Nishyama, Takaaki, to Optical Detective Systems, Inc. Obstacle-detection system. 5,341,344, Cl. 367-96.000.

OCG Microelectronic Materials, Inc.: *See*—
Honda, Kenji, 5,340,687, Cl. 430-192.000.

O'Connell, Toni O.: *See*—
Phelps, Patricia V.; Tyczkowski, Julius K.; O'Connell, Toni O.; and Gore, Ann B., 5,339,766, Cl. 119-6.800.

O'Connor, James M.: *See*—
Smith, Curtis P.; and O'Connor, James M., 5,340,902, Cl. 528-61.000.

Oda, Ken: *See*—
Tsuruta, Makoto; and Oda, Ken, 5,340,843, Cl. 521-79.000.

Oda, Seiji: *See*—
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, 5,340,596, Cl. 426-301.000.

Oda, Shoji: *See*—
Kumazawa, Toshiaki; Yanase, Masashi; Harakawa, Hiroyuki; Obase, Hiroyuki; Oda, Shoji; Shirakura, Shiro; Yamada, Koji; and Kubo, Kazuhiro, 5,340,807, Cl. 514-215.000.

Oda, Yukio; and Ogawa, Jun, to Showa Denko Kabushiki Kaisha. Spherical corundum particles, process for preparation thereof and rubber or plastic composition having high thermal conductivity and having spherical corundum paticles incorporated therein. 5,340,781, Cl. 501-127.000.

Odeurs, Raymond L.: *See*—
De Keyzer, Rene; M.; Odeurs, Raymond L.; and De Brabandere, Luc A., 5,340,705, Cl. 430-456.000.

Odhams, David C.: *See*—
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Odsberg, Hans; and Sundberg, Staffan, to Ovako Couplings AB. Method for prestressing casingbolts. 5,339,512, Cl. 29-452.000.

Oetiker, Hans, to Hans Oetiker AG Maschinen- und Apparate-fabrik. Self-aligning clamp structure. 5,339,496, Cl. 24-20.0CW.

Offshell Trading Limited: *See*—
Barlow, Graham F., 5,340,353, Cl. 452-9.000.

Ogawa, Jun: *See*—
Oda, Yukio; and Ogawa, Jun, 5,340,781, Cl. 501-127.000.

Ogawa, Kenji; Itoyama, Osamu; Ishigami, Motohiro; and Okada, Kenichi, to Japan Aviation Electronics Industry Limited. Digital ramp phase type optical interference gyro. 5,341,210, Cl. 356-350.000.

Ogawa, Kimiaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens camera. 5,341,190, Cl. 354-446.000.

Ogawa, Kiyoshi: *See*—
Tanaka, Shunji; Yamaoka, Akira; Umeno, Hidenori; Haraguchi, Masatoshi; Ogawa, Kiyoshi; Saijo, Keiji; and Takeda, Katsumi, 5,341,484, Cl. 395-400.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Ogawa, Toshiyuki: *See*—
Inoue, Kazunari; and Ogawa, Toshiyuki, 5,341,332, Cl. 365-189.010.

Ogden, Aubrey D.: *See*—
Grossman, Anita S.; Kau, Chin-Cheng; Ogden, Aubrey D.; and Weems, Mason L., 5,341,502, Cl. 395-725.000.

Ogino, Etsuo: *See*—
Matsumoto, Minoru; Ogino, Etsuo; and Tsuno, Toshio, 5,340,621, Cl. 427-571.000.

Ogiwara, Shinichiro, to Tokyo Seimitsu, Co., Ltd. Coordinate measuring machine. 5,339,531, Cl. 33-503.000.

Ogura, Seiki: *See*—
Hsieh, Chang-Ming; Hsu, Louis L. C.; and Ogura, Seiki, 5,340,759, Cl. 437-41.000.

Ogura, Tohru: *See*—
Shirokura, Yukio; Suzuki, Fumiyuki; and Ogura, Tohru, 5,340,906, Cl. 528-274.000.

Ohashi, Ryota, to Kanzaki Kokyukoki Mfg. Co. Ltd. Axle driving system. 5,339,631, Cl. 60-487.000.

Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, to Nippon Oil Co., Ltd.; and Ikari Corporation. Method for preserving the degree of freshness of eggs. 5,340,596, Cl. 426-301.000.

Ohio Electronics Machinery, Inc.: *See*—
Miskimins, Robert L., 5,339,555, Cl. 43-5.000.

Ohishi, Akio: *See*—
Okai, Makoto; Tsuji, Shinji; Ohishi, Akio; Hirao, Motohisa; Matsumura, Hiroyoshi; Harada, Tatsuo; Kita, Toshiaki; and Taira, Hideki, 5,340,637, Cl. 428-167.000.

Ohlendorf, Ralf: *See*—
Reckzugel, Christoph; Murwald, Mario; Doll, Gerhard; Frey, Jurgen; and Ohlendorf, Ralf, 5,339,778, Cl. 123-193.500.

Ohmeda Inc.: *See*—
Younger, Thomas C., 5,341,497, Cl. 395-575.000.

Ohmura, Hiroshi: *See*—
Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, 5,341,294, Cl. 364-424.050.

Ohnishi, Akira; Usagawa, Yasushi; and Yamada, Taketoshi, to Konica Corporation. Silver halide photographic light-sensitive material. 5,340,707, Cl. 430-522.000.

Ohnishi, Katsuji: *See*—
Tsujimoto, Kazushi; Goto, Yukihiro; and Ohnishi, Katsuji, 5,340,262, Cl. 414-273.000.

Ohnmacht, Cyrus J.; Harris, Robert J.; and Trainor, Diane A., to Imperial Chemical Industries plc. Method for treating urinary incontinence using 9-(3-nitrophenyl)-3,4,6,7,9,10-hexahydro-1,8-(2H,5H) acridinedione. 5,340,819, Cl. 514-297.000.

Ohno, Atsuo: *See*—
Shirahama, Katsunori; Okuda, Michihiro; and Ohno, Atsuo, 5,339,705, Cl. 74-475.000.

Ohno, Hiroyuki: *See*—
Toda, Masaaki; Ohuchida, Shuichi; and Ohno, Hiroyuki, 5,340,832, Cl. 514-423.000.

Ohno, Katsutoshi: *See*—
Tateyama, Norihiro; Ohno, Katsutoshi; and Kusunoki, Tsuneo, 5,340,673, Cl. 430-23.000.

Ohsaki, Takahisa: *See*—
Takami, Norio; Satoh, Asako; and Ohsaki, Takahisa, 5,340,670, Cl. 429-194.000.

Ohta, Hiroshi; and Hoshino, Kazutomo, to Mitsui Mining & Smelting Co., Ltd.; and Institute of Physical and Chemical Research (Riken), The. Magnetoencephalograph. 5,339,811, Cl. 128-653.100.

Ohta, Kenji: *See*—
Fujii, Yoshikazu; Inui, Tetsuya; Deguchi, Toshihisa; and Ohta, Kenji, 5,341,362, Cl. 369-275.400.

Ohta, Shoji: *See*—
Nakayama, Hiroshi; Takeda, Tomokazu; Yomoto, Toshiyuki; Kitada, Mitsuo; Ohta, Shoji; and Chosa, Masatoshi, 5,339,918, Cl. 180-292.000.

Ohta, Toshiaki: *See*—
Taniguchi, Masaki; and Ohta, Toshiaki, 5,340,976, Cl. 250-207.000.

Ohtaka, Hideki: *See*—
Uchida, Hirofumi; Juri, Tatsuro; and Ohtaka, Hideki, 5,341,250, Cl. 360-48.000.

Ohtake, Shinichi; Tamura, Tatsuya; Hotta, Tetsuo; and Kashiwagi, Takeshi, to Hashimoto Forming Industry Co., Ltd. Synthetic resin window for automotive vehicles or the like. 5,339,584, Cl. 52-208.000.

Ohtani, Hirofumi: *See*—
Ohya, Yukio; Matsuzaka, Syoji; Irie, Yasushi; Murakami, Shuji; Asano, Satomi; Okusa, Hiroshi; and Ohtani, Hirofumi, 5,340,710, Cl. 430-567.000.

Ohtani, Masahito, to Ricoh Company, Ltd. ISDN terminal, ISDN terminal communication system, and method for controlling ISDN terminals. 5,341,377, Cl. 370-110.100

Ohuchida, Shuichi: *See*—
Toda, Masaaki; Ohuchida, Shuichi; and Ohno, Hiroyuki, 5,340,832, Cl. 514-423.000.

Ohya, Jun: *See*—
Tohmon, Genji; Sato, Hisanao; Fujita, Toshihiro; and Ohya, Jun, 5,341,237, Cl. 359-341.000.

Ohya, Yukio; Matsuzaka, Syoji; Irie, Yasushi; Murakami, Shuji; Asano, Satomi; Okusa, Hiroshi; and Ohtani, Hirofumi, to Konica Corporation. Photosensitive silver halide photographic material. 5,340,710, Cl. 430-567.000.

Oien, Hal J.: *See*—
Johnsen, James B.; and Oien, Hal J., 5,340,550, Cl. 422-292.000.

Okabe, Shuichi: *See*—
Hori, Yasuro; Kuzunuki, Soshiro; Okabe, Shuichi; and Ito, Fumitaka, 5,341,413, Cl. 379-100.000.

Okada, Kenichi: *See*—
Ogawa, Kenji; Itoyama, Osamu; Ishigami, Motohiro; and Okada, Kenichi, 5,341,210, Cl. 356-350.000.

Okada, Mitsuo: *See*—
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, 5,340,596, Cl. 426-301.000.

Okada, Toshiharu: *See*—
Murata, Akio; Mukae, Hideaki; Maegawa, Takaaki; Higashionji, Masaru; and Okada, Toshiharu, 5,341,256, Cl. 360-75.000.

Okafuji, Masaharu: *See*—
Fujita, Hideyuki; Okafuji, Masaharu; and Kawabe, Mitsunori, 5,341,306, Cl. 364-473.000.

Okai, Makoto; Tsuji, Shinji; Ohishi, Akio; Hirao, Motohisa; Matsumura, Hiroyoshi; Harada, Tatsuo; Kita, Toshiaki; and Taira, Hideki, to Hitachi, Ltd. An optical device diffraction gratings and a photomask for use in the same. 5,340,637, Cl. 428-167.000.

Okamoto, Hiroyuki: *See*—
Nagai, Yoshiyuki; and Okamoto, Hiroyuki, 5,340,357, Cl. 454-155.000.

Okamoto, Kazuhisa: *See*—
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,340,660, Cl. 428-687.000.

Okamoto, Takehiko: *See*—
Kawata, Ichiro; Okamoto, Takehiko; Akasu, Hiroyuki; and Komatsu, Kensaku, 5,340,480, Cl. 210-500.230.

Okamoto, Tetsuji: *See*—
Matsuura, Hitoshi; Nakajima, Osamu; and Okamoto, Tetsuji, 5,341,079, Cl. 318-632.000.

Okamoto, Tetsuo; and Usa, Satoshi, to Yamaha Corporation. Electronic musical instrument of rubbed string simulation type. 5,340,941, Cl. 84-658.000

Okamura, Hisashi: *See*—
Ezoe, Toshihide; Nii, Kazumi; and Okamura, Hisashi, 5,340,704, Cl. 430-434.000.

Okamura, Kousaku: *See*—
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, 5,340,596, Cl. 426-301.000.

Okawa, Kazuhiro: *See*—
Hayashi, Shigeo; Okawa, Kazuhiro; and Mitsuyu, Tsuneo, 5,341,001, Cl. 257-94.000.

Okawa, Kazunori: *See*—
Tsutsui, Toshiyuki; Okawa, Kazunori; and Toyota, Akinori, 5,340,786, Cl. 502-117.000.

Okayasu, Yoshisada: *See*—
Mori, Akinari; Okayasu, Yoshisada; Suzuki, Toshinori; and Suzuki, Takehiko, 5,341,171, Cl. 348-373.000.

Okazaki, Haruki; Kawamura, Makoto; Nobumoto, Kazutoshi; and Kageyama, Fumio, to Mazda Motor Corporation. Vehicle slip control system. 5,340,204, Cl. 303-111.000.

Okazaki, Satiko: *See*—
Tanisaki, Tatsuzo; Okazaki, Satiko; and Kogoma, Masuhiro, 5,340,618, Cl. 427-488.000.

Okazaki, Shuji; and Urushizaki, Kazo, to Sodick Co., Ltd. Method and apparatus for wire feeding in a wire-cut electroerosion apparatus. 5,340,958, Cl. 219-69.120.

Okazaki, Yoji; and Hyuga, Hiroaki, to Fuji Photo Film Co., Ltd. Laser-diode-pumped solid-state laser. 5,341,393, Cl. 372-69.000.

O'Keefe, Dennis G.: *See*—
Galloway, Keith R.; and O'Keefe, Dennis G., 5,340,964, Cl. 219-486.000.

O'Keefe, John G. Fish length measuring device. 5,339,532, Cl. 33-511.000.

Oki Electric Industry Co., Ltd.: *See*—
Hashiguchi, Hiroyuki; and Iwakiri, Ituro, 5,341,338, Cl. 365-206.000.
Isobe, Minoru, 5,341,202, Cl. 355-308.000.

Okuda, Kiyoshi: *See*—
Nakano, Minoru; Uemura, Toshinobu; Morizane, Shinichi; Okuda, Kiyoshi; and Nakata, Keiko, 5,340,591, Cl. 424-499.000.

Okuda, Michihiro: *See*—
Shirahama, Katsunori; Okuda, Michihiro; and Ohno, Atsuo, 5,339,705, Cl. 74-475.000.

Okusa, Hiroshi: *See*—
Ohya, Yukio; Matsuzaka, Syoji; Irie, Yasushi; Murakami, Shuji; Asano, Satomi; Okusa, Hiroshi; and Ohtani, Hirofumi, 5,340,710, Cl. 430-567.000.

Okuyama, Atsushi; Kimura, Kenichi; and Sugawara, Saburo, to Canon Kabushiki Kaisha. Zoom lens of rear focus type. 5,341,243, Cl. 359-687.000.

Okuzawa, Kazuhiro: *See*—
Mineo, Shigeharu; and Okuzawa, Kazuhiro, 5,340,344, Cl. 440-88.000

Olafsson, ri: *See*—
Hammerich, Mads; Henningsen, Jes O.; and Olafsson, ri, 5,339,674, Cl. 73-24.020.

Olah, Andrew M.: *See*—
Gregoli, Armand A.; Hamshar, John A., 3rd; Rimmer, Daniel P.; Yildirim, Erdal; and Olah, Andrew M., 5,340,467, Cl. 208-390.000.

Oldham, Gary J.: *See*—
Brown, Richard C.; and Oldham, Gary J., 5,340,125, Cl. 277-169.000.

Olin Corporation: *See*—
Ford, James M.; and Cawlfield, David W., 5,340,457, Cl. 204-252.000.
Smith, Curtis P.; and O'Connor, James M., 5,340,902, Cl. 528-61.000.

Olkkola, Jari: *See*—
Valimaa, Veli-Matti; Leman, Ari; Hossi, Petri; and Olkkola, Jari, 5,341,149, Cl. 343-895.000.

Olsen, Ib I.: *See*—
Koksbang, Rene; and Olsen, Ib I., 5,340,368, Cl. 29-623.500.

Olympus Optical Co., Ltd.: *See*—
Hanzawa, Toyoharu, 5,341,239, Cl. 359-377.000.
Horiguchi, Toshio, 5,341,354, Cl. 369-44.110.
Hosaka, Naoki, 5,341,361, Cl. 369-275.300.
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.
Kato, Shigeru, 5,341,186, Cl. 354-403.000.
Nakano, Hiroshi; and Isono, Yasuo, 5,341,325, Cl. 365-145.000.
Yonezawa, Tomohiro, 5,341,212, Cl. 356-359.000.

Omann, Lawrence F. Material reduction apparatus. 5,340,038, Cl. 241-84.000.

OmegaTech Inc.: *See*—
Barclay, William R., 5,340,594, Cl. 426-49.000.
Barclay, William R., 5,340,742, Cl. 435-256.800.

Omori, Motofumi: *See*—
Asai, Hiroshi; Takeshige, Nobuhide; Uosaki, Yasuo; Shibahara, Masahiko; Omori, Motofumi; and Morimoto, Shigenori, 5,340,414, Cl. 148-325.000.

Omori, Toshiyuki: *See*—
Hamano, Ichirou; Honda, Munetaka; Takakuwa, Tateki; Omori, Toshiyuki; and Kotani, Yasuaki, 5,339,600, Cl. 53-306.000.

OMRON Corporation: *See*—
Makita, Shigeru; Sano, Yoshihiko; Ota, Hiroyuki; and Nakamura, Yasushi, 5,340,215, Cl. 374-121.000.

Omron Tateisi Electronics Co.: *See*—
Yamakawa, Takeshi, 5,341,323, Cl. 364-807.000.

Omura, Hirohumi: *See*—
Ueda, Naoki; Asahina, Kenichi; Omura, Hirohumi; and Miyai, Jiro, 5,340,654, Cl. 427-437.000.

Oncogen: *See*—
Lioubin, Mario N.; Brown, Thomas J.; and Purchio, Anthony F., 5,340,925, Cl. 530-395.000.

Ono, Hiroo: *See*—
Oosawa, Tetsu; Asakawa, Teruo; Nebuka, Kenji; and Ono, Hiroo, 5,340,261, Cl. 414-217.000.

Ono, Hiroshi: *See*—
Kikuchi, Fumio; Itoh, Kazuo; Taga, Kazuharu; Matsunaga, Naoto; Ono, Hiroshi; Namba, Takaoki; and Narita, Kazuhiko, 5,341,461, Cl. 395-120.000.

Ono, Hisao; and Hatasa, Takeshi, to Yupiteru Industries Co., Ltd. Structure of reception frequency converting portion in a multi-band microwave detector. 5,341,138, Cl. 342-20.000.

Ono Pharmaceutical Co., Ltd.: *See*—
Toda, Masaaki; Ohuchida, Shuichi; and Ohno, Hiroyuki, 5,340,832, Cl. 514-423.000.

Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, to Orient Chemical Industries, Ltd. Trisazo dye and dye composition containing the same. 5,340,929, Cl. 534-680.000.

Onoda Cement Company, Ltd.: *See*—
Itoh, Tsutomu; Fukami, Shinji; and Kitoh, Masayuki, 5,340,023, Cl. 239-13.000.

Ookuma, Ikuo: *See*—
Kaneko, Hideki; Inoue, Sadayuki; and Ookuma, Ikuo, 5,341,218, Cl. 348-695.000.

Oomichi, Takeo: *See*—
Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,339,573, Cl 51-429.000.

Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for adjusting an optical axis including plates on opposite sides of a beam shaping prism. 5,341,246, Cl. 359-837.000.

Oorui, Satoshi: *See*—
Koshika, Norihide; Sakamoto, Mitsuo; Nishimura, Isao; Sasaki, Katsuyasu; and Oorui, Satoshi, 5,339,580, Cl. 52-167.00E.

Oosawa, Tetsu; Asakawa, Teruo; Nebuka, Kenji; and Ono, Hiroo, to Tokyo Electron Limited. Load-lock unit and wafer transfer system. 5,340,261, Cl. 414-217.000.

Ophidian Pharmaceuticals, Inc.: *See*—
Carroll, Sean B., 5,340,923, Cl. 530-389.100.

Optical Detective Systems, Inc.: *See*—
O'Brien, Stephen W.; Hayes, Leo C., Jr.; and Nishyama, Takaaki, 5,341,344, Cl. 367-96.000.

Orbitel Mobile Communications Limited: *See*—
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Orbits, David A.: *See*—
Cutler, David N.; Orbits, David A.; Bhandarkar, Dileep; Cardoza, Wayne; and Witek, Richard T., 5,341,482, Cl. 395-375.000.

Ord, Hugh L.: *See*—
Hulderman, Garry N.; and Ord, Hugh L., 5,339,742, Cl. 102-387.000.

Oren, Jacob: *See*—
Hermolin, Joshua; Keselman, Hugo; and Oren, Jacob, 5,340,445, Cl. 203-33.000.

Orient Chemical Industries, Ltd.: *See*—
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, 5,340,929, Cl. 534-680.000.

Orii, Akira, to Janome Sewing Machine Co., Ltd. DC motor control in electronic sewing machine. 5,341,454, Cl. 388-815.000.

Orita, Kenji: *See*—
Gotoh, Seiji; Orita, Kenji; and Takayama, Tomio, 5,341,084, Cl. 320-44.000.

Orme, Melissa E.; and Muntz, Eric P., to University of Southern California. Method and apparatus for droplet stream manufacturing. 5,340,090, Cl. 266-202.000.

Orr, Joseph A.: *See*—
Baker, Phillip D.; Orr, Joseph A.; Westenskow, Dwayne R.; and Egbert, Timothy P., 5,339,818, Cl. 128-677.000.

Orsula, George W.: *See*—
Thackeray, James W.; Denison, Mark; and Orsula, George W., 5,340,696, Cl. 430-270.000.

Osada, Toshio: *See*—
Mikiya, Toshio; and Osada, Toshio, 5,340,288, Cl. 417-417.000.

Osawa, Tomio, to Zexel Corporation. Electronic governor of fuel supplying device for engine. 5,339,781, Cl. 123-357.000.

Osheff, Sheldon: *See*—
Howard, William R.; Tysver, Oliver J.; Osheff, Sheldon; McGrail, John G.; and Petrie, Robert J., 5,339,731, Cl. 101-35.000.

Oshima, Hiroyuki: *See*—
Misawa, Toshiyuki; and Oshima, Hiroyuki, 5,341,012, Cl. 257-351.000.

Osinga, Theo J.: *See*—
Delwel, Francois; Osinga, Theo J.; Theunissen, Joseph P.; and Vrancken, Jack M., 5,340,559, Cl. 423-334.000.

Osmonics, Inc.: *See*—
Szczepanski, Joseph T.; Aune, Thomas M.; and Schneider, Henry J., 5,340,479, Cl. 210-497.100.

Osram Sylvania Inc.: *See*—
Anderson, John R., 5,340,230, Cl. 403-300.000.
Muzeroll, Martin M., 5,340,346, Cl. 445-26.000.

Osterman, Alan J.: *See*—
Stewart, Robert L.; Osterman, Alan J.; Jalbert, Dennis W.; and Nulty, John D., 5,340,178, Cl. 293-122.000.

Ostholt, Rudiger; and Aichholz, Klaus, to Mannesmann Aktiengesellschaft A Corporation of Germany. Device for displacing articles from a moving transport path. 5,339,944, Cl. 198-430.000.

Ostler, Farrell L.: *See*—
Dike, Charles E.; and Ostler, Farrell L., 5,341,052, Cl. 307-518.000.

Ostrom, Karin M.: *See*—
Neylan, Michael J.; Ostrom, Karin M.; Churella, Helen R.; Breen, Merlin D.; and Benson, John D., 5,340,603, Cl. 426-73.000.

Osuga, Yoshiharu: *See*—
Yamasaki, Hidenori; Matsumoto, Katsuaki; and Osuga, Yoshiharu, 5,341,262, Cl. 360-128.000.

Ota, Hiroko: *See*—
Ito, Yatsuo; Abe, Takao; Takei, Tokio; Nakamura, Susumu; and Ota, Hiroko, 5,340,435, Cl. 156-632.000.

Ota, Hiroyuki: *See*—
Makita, Shigeru; Sano, Yoshihiko; Ota, Hiroyuki; and Nakamura, Yasushi, 5,340,215, Cl. 374-121.000.

Otani, Seigen, to Fujitsu Limited. Layer-by-layer process for forming Bi-containing oxide superconducting films. 5,340,793, Cl. 505-477.000.

Otsubo, Hideaki: *See*—
Suzuki, Akira; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Oba, Hidehiro; Kimura, Hiromachi; and Otsubo, Hideaki, 5,339,709, Cl. 477-145.000.

Ou, Chia-Chih; and Bablouzian, Leon, to W. R. Grace & Co.-Conn. Intumescent sheet material. 5,340,643, Cl. 428-283.000

Ou, Chia-Chih: *See*—
Friedman, Semyon D.; McKinney, Robert W.; Ou, Chia-Chih; Spotnitz, Robert M.; and Wu, Shaohai, 5,340,558, Cl. 423-328.100.

Ovako Couplings AB: *See*—
Odsberg, Hans; and Sundberg, Staffan, 5,339,512, Cl. 29-452.000.

Overhead Door Corporation: *See*—
Stoll, Donald E.; and Dietrich, Alfred T., 5,340,267, Cl. 414-537.000.

Ovshinsky, Stanford R.; and Young, Rosa, to Energy Conversion Devices, Inc. Method of aligning the discrete grains of a multi-grained super-conducting material. 5,340,792, Cl. 505-123.000.

Ovshinsky, Stanford R.; Hudgens, Stephen J.; Czubatyj, Wolodymyr; Strand, David A.; and Wicker, Guy C., to Energy Conversion Devices, Inc. Electrically erasable memory elements having reduced switching current requirements and increased write/erase cycle life. 5,341,328, Cl. 365-163.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Owens, Byron C., to Vesture Corporation. Footwear with therapeutic pad. 5,339,541, Cl. 36-2.600.

Owens-Corning Fiberglass Technology Inc.: *See—*
Strauss, Carl R.; and Williams, Steven H., 5,340,868, Cl. 524-461.000.

Owens, N. Douglas, to Modernfold, Inc. Electrically operated drop seal for operable walls. 5,339,881, Cl. 160-40.000.

Oxi-Gene, Inc.: *See—*
Perro, Ronald W., 5,340,565, Cl. 424-10.000.

Oyodokomatsu Co., Ltd.: *See—*
Morikawa, Sumio, 5,339,525, Cl. 30-134.000.

O'Young, Chi-Lin; Shen, Yan-Fei; Zerger, Richard P.; and Suib, Steven L., to Texaco Inc. Hydrothermal synthesis of octahedral molecular sieve. 5,340,562, Cl. 423-599.000.

Ozaki, Kenya: *See—*
Isogai, Naoki; and Ozaki, Kenya, 5,341,180, Cl. 351-206.000.

Ozaki, Yoshitaka: *See—*
Shirai, Kazunari; Ozaki, Yoshitaka; and Fukaya, Hiroyasu, 5,341,301, Cl. 364-449.000.

Ozeki, Hirofumi: *See—*
Katoh, Tokiomi; and Ozeki, Hirofumi, 5,340,784, Cl. 501-136.000.

Ozimek, Edward J.; and Tarn, Terry, to Eastman Kodak Company. Method for bonding a color separation filter to an image sensor. 5,340,420, Cl. 156-64.000.

Pace, Herbert W.: *See—*
Wally, Joseph H., Jr.; and Pace, Herbert W., 5,341,192, Cl. 355-50.000.

Paech, Christian: *See—*
Christianson, Teresa; Goddette, Dean; Ladin, Beth F.; Lau, Maria R.; Paech, Christian; Reynolds, Robert B.; Wilson, Charles R.; and Yang, Shiow-Shong, 5,340,735, Cl. 435-221.000.

Paglia, Nicola F.: *See—*
Fontecchio, Robert P.; Ennis, Thomas A.; Musiol, John A.; Medvedik, Douglas E.; and Paglia, Nicola F., 5,340,147, Cl. 280-728.00A.

Pai, Tien-Fa. Capacitive coupled BNC type self-terminating coaxial connector. 5,340,325, Cl. 439-188.000.

Paint Trix Inc.: *See—*
Woodruff, Byron J., 5,340,026, Cl. 239-104.000.

Paisley College of Technology, The Governors of: *See—*
Pettigrew, Archibald M., 5,341,106, Cl. 329-319.000.

Palicka, Jadwiga, to Berol Novel AB. Liquid dishwashing compositions comprising anionic tenside and three amphoteric compounds. 5,340,502, Cl. 252-546.000.

Palmer, Darrel; and Cook, Robert P., to Ballard Medical Products. Disposable tray sump foamer, assembly and methods. 5,339,988, Cl. 222-82.000.

Palmieri, Richard H.: *See—*
Brenner, Nathaniel; and Palmieri, Richard H., 5,340,452, Cl. 204-180.100.

Pamag AG: *See—*
Benz, Gottlieb, 5,339,606, Cl. 53-444.000.

Pan, David H.: *See—*
Badesha, Santokh S.; Mammino, Joseph; Abramsohn, Dennis A.; Sypula, Donald S.; Henry, Arnold W.; Heeks, George J.; Pan, David H.; and Fratangelo, Louis D., 5,340,679, Cl. 430-126.000.

Panasonic Technologies, Inc.: *See—*
Javkin, Hector R.; Keate, Elizabeth G.; Antonanzas-Barroso, Norma; and Hanson, Brian A., 5,340,316, Cl. 434-185.000.

Pandit, Shirish A.: *See—*
Sondhe, Ratanjit S.; Naik, Hemant A.; Pandit, Shirish A.; and Pant, Bipin C., 5,340,652, Cl. 428-413.000.

Panster, Peter; Gradl, Robert; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Formed, polymeric transition-metal complex catalysts with organosiloxane diphenylphosphine ligands. 5,340,895, Cl. 528-9.000.

Pant, Bipin C.: *See—*
Sondhe, Ratanjit S.; Naik, Hemant A.; Pandit, Shirish A.; and Pant, Bipin C., 5,340,652, Cl. 428-413.000.

Panzani, Ivo: *See—*
Ghelli, Nicola; and Panzani, Ivo, 5,340,364, Cl. 604-32.000.

Paoli, Thomas L.: *See—*
Appel, James J.; Paoli, Thomas L.; and Fisli, Tibor, 5,341,158, Cl. 346-108.000.

Paper Systems, Inc.: *See—*
Chase, William L.; and Perkins, David W., 5,340,180, Cl. 294-68.100.

Pappas, Chris: *See—*
Hay, Richard C., Jr.; Pappas, Chris; Bergstrom, Harry J.; and Fazzolare, Richard D., 5,340,598, Cl. 426-496.000.

Pappert, Stephen A.: *See—*
McLandrich, Matthew N.; Albares, Donald J.; and Pappert, Stephen A., 5,341,205, Cl. 356-73.100.

Paquin, Georges A.; and Deroy, Claude, to Groupe Herve Pomerleau Inc. Method for constructing modular doors. 5,339,522, Cl. 29-897.312.

Paradigm Technology, Inc.: *See—*
Yen, Ting-Pwu, 5,340,774, Cl. 437-240.000.

Paragon Trade Brands, Inc.: *See—*
Terada, Stanley A., 5,340,431, Cl. 156-359.000.

Paranjape, Sushama M.: *See—*
Bentley, Steven R.; Chliwnyj, Alex; Johnson, Steven D.; Paranjape, Sushama M.; and Rhodes, Ronald K., 5,341,252, Cl. 360-50.000.

Paris, Jean, to Salomon S.A.. Ski boot liner. 5,339,545, Cl. 36-119.000.

Park, Chung P.; Stevens, James C.; and Knight, George W., to Dow Chemical Company, The. Foam structures of ethylenic polymer material having enhanced toughness and elasticity and process for making. 5,340,840, Cl. 521-60.000.

Park, Jae M.: *See—*
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.

Park, Jong Y.; and Jung, Hag J., to Samsung Electronics Co., Ltd. Semiconductor chip having notches formed in peripheral edges thereof. 5,341,027, Cl. 257-786.000.

Parker, George W.: *See—*
Scallan, David J.; and Parker, George W., 5,339,857, Cl. 251-38.000.

Parker, Jeffrey D. Blind orolaryngeal and oroesophageal guiding and aiming device. 5,339,805, Cl. 128-200.260.

Parker, Kevin J.; and Mitsa, Theophano, to Research Corporation Technologies. Method and apparatus for halftone rendering of a gray scale image using a blue noise mask. 5,341,228, Cl. 358-534.000.

Parker, Stephen J. Ski transport dolly. 5,340,153, Cl. 280-814.000.

Parkin, Stuart S. P.; and Roche, Kevin P., to International Business Machines Corporation. Multilayer magnetic structure wherein the magnitude of the structure magnetoresistance is a function of non-magnetic layer thickness. 5,341,118, Cl. 338-32.00R.

Parkin, Stuart S. P.: *See—*
Dieny, Bernard; Gurney, Bruce A.; Parkin, Stuart S. P.; Sanders, Ian L.; Speriosu, Virgil S.; and Wilhoit, Dennis R., 5,341,261, Cl. 360-113.000.

Parmeswar, Ravi: *See—*
Maerefat, Nicida L.; Parmeswar, Ravi; Brinkmeyer, Alan D.; and Honarpour, Mehdi, 5,341,101, Cl. 324-376.000.

Parrott, Stephen L.; Adarme, Raul; Lin, Fan-Nan; and Sasscer, Edwin P., to Phillips Petroleum Company. Catalyst life prediction in hydrodesulfurization. 5,341,313, Cl. 364-578.000.

Parsons, Llewellyn B. Adjustable tyer. 5,339,498, Cl. 24-129.00R.

Pascal & Associates: *See—*
Nuhn, Derek J.; Servant, Gordon W.; Brennan, Robert P.; and Jeffrey, George A., 5,341,370, Cl. 370-84.000.

Paschke, Hartmut; Daimer, Johann; and Haring, Richard, to Schott Glaswerke. Preparation of very fine glass powder of high purity. 5,340,776, Cl. 501-11.000.

Pascual, Alfons: *See—*
Hall, Roger G.; Pascual, Alfons; and Kristiansen, Odd, 5,340,837, Cl. 514-603.000.

Pasdari, Mehran: *See—*
Gimson, Christopher; J.; and Pasdari, Mehran, 5,339,687, Cl. 73-204.190.

Patel, Bharatan R.: *See—*
Kang, Sukhvinder S.; Patel, Bharatan R.; Nutt, William E.; and Kothari, Kirankumar K., 5,339,695, Cl. 73-861.190.

Patel, Chandrakant B.: *See—*
Roy, Sumit; Patel, Chandrakant B.; and Yang, Jian, 5,341,177, Cl. 348-614.000.

Patel, Mayur; Phillips, Michael T.; Cooper, Gary L.; and Emmons, Daniel, to Nalco Chemical Company. Apparatus for blending chemicals with a reversible multi-speed pump. 5,340,210, Cl. 366-132.000.

Patel, Paritosh D.: *See—*
Gladstein, Leo A.; Jones, Christopher D.; Leontiades, Kyriakos; Patel, Paritosh D.; and Petroskey, Paul W., 5,341,503, Cl. 395-750.000.

Patel, Rajesh; Bowman, Lyle; Vildaver, Margarita; and Chen, Raymond, to Insite Vision Incorporated. Alkaline ophthalmic suspensions. 5,340,572, Cl. 424-78.040.

Patin, Pierre. Variable-speed conveyor element, particularly for accelerated transporters. 5,339,938, Cl. 198-334.000.

Patton, Gary L.: *See—*
Bassous, Ernest; Patton, Gary L.; and Stork, Johannes M. C., 5,340,753, Cl. 437-31.000.

Paul Journee, S.A.: *See—*
Journee, Maurice; and Jehannet, Jean-Pierre, 5,339,489, Cl. 15-250.200.

Paul, William C., to General Electric Co. Method for corrugating sheet material. 5,340,518, Cl. 264-154.000.

Pautke, Ingo: *See—*
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J.. 5,339,837, Cl. 131-296.000.

Pauwels, Robert: *See—*
Vermeulen, Leon; and Pauwels, Robert, 5,340,692, Cl. 430-233.000.

Pauze, Robert H.: *See—*
Chinoporos, Efthimios; Pauze, Robert H.; Waller, David P.; and Whritenour, David C., 5,340,689, Cl. 430-200.000.

Pawlik, Robert S.; and Gary, Robert E., to Xerox Corporation. Apparatus for sealing a metering roll. 5,341,198, Cl. 355-284.000.

Pawloski, Chester E.: *See—*
Nader, Bassam S.; and Pawloski, Chester E., 5,340,489, Cl. 252-48.600.

Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, to Hoechst Aktiengesellschaft. Positive-working radiation-sensitive mixture and copying material produced therefrom comprising an α-carbonyl-α-sulfonyl diazomethane, a water-insoluble binder and an acid cleavable compound. 5,340,682, Cl. 430-165.000.

Payne, Gregory F.; Chu, Jennifer; Wallace, Kimberlee K.; and Sun, Wei-Qiang, to University of Maryland at College Park. Two step process for conversion of a weakly adsorbable compound to a strongly adsorbable compound and selective removal thereof. 5,340,483, Cl. 210-632.000.

Payne, Stephen A.; Kway, Wayne L.; DeLoach, Laura D.; Krupke, William F.; and Chai, Bruce H. T., to United States of America, Energy. Ytterbium- and neodymium-doped vanadate laser hose crystals having the apatite crystal structure. 5,341,389, Cl. 372-41.000.

PBL Drilling Tools Ltd.: *See—*
Lee, Paul, 5,339,914, Cl. 175-73.000.

PBL Machinery Ltd.: *See—*
Lee, Paul, 5,339,914, Cl. 175-73.000

Peabody, Andrew L. Boat hatch wind scoop system. 5,339,759, Cl. 114-211.000.

Peacock, Andrew J.: *See—*
Eckman, Richard R.; Peacock, Andrew J.; and Henrichs, Paul M., 5,340,917, Cl. 528-481.000.

Pearce, George W. Wind controlled spraying. 5,340,025, Cl. 239-70.000.

Pearce, Timothy H. B., to GEC-Marconi Limited. Analogue-to-digital converters, digital-to-analogue converters, and digital modulators. 5,341,135, Cl. 341-120.000.

Pearson, Paul D.; Rao, Madhukar; and Tomko, Richard F., to Sherwin-Williams Company, The. Aerosol compositions containing non-aqueous dispersions. 5,340,871, Cl. 523-526.000.

Pease, John S.: *See—*
Ullman, Edwin F.; Kirakossian, Hrair; Pease, John S.; Daniloff, Yuri; and Wagner, Daniel B., 5,340,716, Cl. 435-6.000.

Pease, Richard A.; and Rodini, David J., to Du Pont de Nemours, E. I., and Company. Preparation of poly(m-phenylene isophthalamide) filaments. 5,340,519, Cl. 264-169.000.

Peatman, James R.: *See—*
Sommer, Edward J., Jr.; Kittel, Michael A.; and Peatman, James R., 5,339,962, Cl. 209-576.000.

Peek, Leroy: *See—*
Maliczyszyn, Walter; Peek, Leroy; and Gregory, Paul, 5,340,405. Cl. 127-65.000.

Pella Corporation: *See—*
Hrdlicka, Fred L.; Newman, Gary R.; and Minter, Mearl J., 5,339,583, Cl. 52-204.530.

Pellarin, Jean-Francois R.; and Colin, Gilles M., to Giat Industries. Modular and reconfigurable episcopic sight. 5,339,720, Cl. 89-41.190.

Peng, Lin: *See—*
Dziabo, Anthony J.; Holmes, Alix A.; Anger, Claude B.; Baker, John C.; and Peng, Lin, 5,340,583, Cl. 424-412.000.

Pentz, Edward L., to Whitaker Corporation, The. Protective sleeve for cantilevered spring contacts and method of making the same. 5,340,337, Cl. 439-843.000.

Perego, Luciano, to Tapematic U.S.A., Inc. Method and apparatus for cutting and splicing tape in automatic cassette loading machines 5,340,048, Cl. 242-527.000.

Perego, Luciano, to Tapematic U.S.A., Inc. Method and apparatus for finding one end of tape wound onto a reel. 5,340,049, Cl. 242-332.200.

Perelman, David. Business form adapted for facsimile transmission 5,340,157, Cl. 283-62.000.

Perez, Hector. Coin operated dispensing machine. 5,339,985, Cl 221-151.000.

Perfect-Valois Ventil GmbH: *See—*
Neuhaus, Reinhard; Kersten, Jens-Heinrich; and Schmitz, Detlef, 5,340,031, Cl. 239-343.000.

Perin, Raimondo: *See—*
Carraro, Timante; and Perin, Raimondo, 5,340,137, Cl. 280-96.100.

Perito, Richard P., to W.R. Grace & Co.-Conn. Sprayable portland cement-based fireproofing compositions. 5,340,612, Cl. 427-403.000.

Perkins, David W.: *See—*
Chase, William L.; and Perkins, David W., 5,340,180, Cl 294-68.100.

Perkins, Robert E.: *See—*
Hagan, Donald F.; Haddad, Louis C.; Perkins, Robert E.; and Markell, Craig G., 5,340,746, Cl. 436-109.000.

Perlin, Kenneth; and Schwartz, Jacob, to New York University. Fractal computer user centerface with zooming capability. 5,341,466, Cl 395-139.000.

Perman, Craig A.; and Riechert, Manfred E., to Minnesota Mining and Manufacturing Company. Methods of polymer impregnation. 5,340,614, Cl. 427-2.240.

Pero, Ronald W., to Oxi-Gene, Inc. Tumor or cancer cell killing therapy and agents useful therefor. 5,340,565, Cl. 424-10.000.

Perron, Paul A.: *See—*
Sypek, Maria T.; Perron, Paul A.; and Grosclaude, Gary V., 5,340,681, Cl. 430-138.000.

Perry, Kenneth H., to GEC-Marconi Limited. Transponder system. 5,341,140, Cl. 342-44.000.

Perry, Patrick E.: *See—*
Gould, Scott W.; Marshall, Mark G.; and Perry, Patrick E., 5,341,310, Cl. 364-491.000.

Persic, William V., Jr. Golf ball cleaner. 5,339,486, Cl. 15-244.100.

Peter W. D. van der Heijden Laborbedarf: *See—*
van der Heijden, Peter W. D., 5,340,444, Cl. 202-186.000.

Peterlini, Franco; Schenetti, Tiziano; and Minardi, Marco, to M.O.S.S.-S.r.l. Machine for silk-screen printing decoration of the outer sides of containers in general. 5,339,732, Cl. 101-38.100.

Peters Maschinenfabrik: *See—*
Schulz, Jens; Hoffmann, Martin; and Rebeaud, Jean-Claude. 5,340,432, Cl. 156-472.000.

Petersen, Dennis E.: *See—*
Gess, Jerome M.; Petersen, Dennis E.; Adams, Terry N.; and Martz, Russell J., 5,340,442, Cl. 162-198.000.

Petersen, John A. M.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,341,130, Cl. 340-825.060.

Peterson, Michael H.: *See—*
Craven, B. Thomas; Wiedefeld, William G.; Poor, Kyle W.; Johnson, Bruce S.; Sogge, John W.; Peterson, Michael H.; Adamson, William G.; and Froelich, Ronald W., 5,339,741, Cl. 102-361.000.

Petitte, James N.; and Yang, Zengming, to North Carolina State University. Method of producing an avian embryonic stem cell culture and the avian embryonic stem cell culture produced by the process. 5,340,740, Cl. 435-240.200.

Petofi-Vass, Szilvia: *See—*
Farkas, Sandor; Foldeak, Sandor; Karpati, Egon; Hegyes, Peter; Kreidl, Janos; Szporny, Laszlo; Czibula, Laszlo; and Petofi-Vass, Szilvia, 5,340,823, Cl. 514-317.000.

Petrie, Robert J.: *See—*
Howard, William R.; Tysver, Oliver J.; Osheff, Sheldon; McGrail, John G.; and Petrie, Robert J., 5,339,731, Cl. 101-35.000.

Petro Chemical Products, Inc.: *See—*
Adams, Lawrence J.; Fruda, Thomas R.; and Hughett, Paul D., 5,340,488, Cl. 252-47.500.

Petroferm Inc.: *See—*
Bolden, Paul L.; and Hayes, Michael E., 5,340,407, Cl. 134-26.000.

Petroleo Brasileiro S.A.: *See—*
Reis, Ney Robinson S. d.; and Conti, Fabio K. P., 5,340,237, Cl 405-169.000.

Petroskey, Paul W.: *See—*
Gladstein, Leo A.; Jones, Christopher D.; Leontiades, Kyriakos; Patel, Paritosh D.; and Petroskey, Paul W., 5,341,503, Cl 395-750.000

Pettigrew, Archibald M., to Paisley College of Technology, The Governors of. Amplitude locked loop circuits. 5,341,106, Cl. 329-319.000

Pettijohn, Ted M.: *See—*
Reagen, William K.; and Pettijohn, Ted M., 5,340,785, Cl 502-109.000.

Pettit, William H., to General Motors Corporation. Exhaust burner catalyst preheater. 5,339,630, Cl. 60-303.000.

Petty, Randall Hughes: *See—*
Dai, Pei-Shing E.; Sherwood, David E., Jr.; and Petty, Randall Hughes, 5,340,466, Cl. 208-216.0PP

Petty, Stephen E.: *See—*
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,339,654, Cl 62-476.000.

Pfeiffer, Bruno: *See—*
Gaudry, Michel; Pfeiffer, Bruno; Renard, Pierre; Renaud de la Faverie, Jean-Francois; and Adam, Gerard, 5,340,809, Cl. 514-252.000.

Pfisterer, Richard E.: *See—*
Roizen, Michael; Turcotte, William E., II; and Pfisterer, Richard E., 5,341,291, Cl. 364-413.020.

Pfizer Inc.: *See—*
Cross, Peter E.; and MacKenzie, Alexander R., 5,340,831, Cl. 514-408.000.
Rosen, Terry J.; Desai, Manoj C.; and Lowe, John A., III, 5,340,826, Cl. 514-351.000.

Pfleger, Manfred: *See—*
Berthold, Fritz; and Pfleger, Manfred, 5,340,989, Cl. 250-385.100.

Pfuhl, Reiner, to Maschinenfabrik Goebel GmbH. System for handling a waste web of a web laminate. 5,340,430, Cl. 156-344.000.

Phelps, Patricia V.; Tyczkowski, Julius K.; O'Connell, Toni O.; and Gore, Ann B., to Embrex, Inc. Method of introducing material into eggs during early embryonic development. 5,339,766, Cl. 119-6.800.

Philbrook, Carl M.: *See—*
Tseng, Mingchih M.; and Philbrook, Carl M., 5,340,581, Cl 424-401.000.

Philip Morris Incorporated: *See—*
Collins, Alfred L.; Cutright, Edwin L.; DeBlasio, James A.; Dickerson, Richard H.; Kean, Billy J., Jr.; Ritt, Renzer R., Sr.; and Scott, George R., 5,339,871, Cl. 141-1.000.

Phillips, Allison S.: *See—*
Cusack, Joyce M.; Phillips, Allison S.; Tataryan, Anahit; and Sinanyan, Astgik, 5,340,427, Cl. 156-268.000.

Phillips, Matthew L.: *See—*
Annino, Raymond; Lewis, Edward L.; Lueck, Dale E.; Phillips, Matthew L.; and Villalobos, Richard, 5,340,543, Cl. 422-89.000.

Phillips, Michael T.: *See—*
Patel, Mayur; Phillips, Michael T.; Cooper, Gary L.; and Emmons, Daniel, 5,340,210, Cl. 366-132.000.

Phillips Petroleum Company: *See—*
Parrott, Stephen L.; Adarme, Raul; Lin, Fan-Nan; and Sasscer, Edwin P., 5,341,313, Cl. 364-578.000.
Reagen, William K.; and Pettijohn, Ted M., 5,340,785, Cl. 502-109.000.

Phipps, Neil T.: *See—*
Johann, Donald F.; Burroughs, Alan C.; Phipps, Neil T.; and Li, Feng, 5,341,360, Cl. 369-116.000.

Phonepoint Limited: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Piacentini, Stephen C.: *See—*
Thieme, Thomas R.; Goldstein, Andrew S.; Piacentini, Stephen C.; and Klimkow, Nanette M., 5,339,829, Cl. 128-760.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Piazza, Gary A.; Mazur, Adam W.; and Kasting, Gerald B., to Procter & Gamble Company, The. Topical composition and method containing deoxy and halo derivatives of lysophosphatidic acids for regulating skin wrinkles. 5,340,568, Cl. 424-59.000.

Piefenbrink, Wilfried; Weber, Walter; and Hamburger, Hermann, to HDRK Mining Research Limited; and Wirth Maschinen-und Bohrgerate-Fabrik GmbH. Method and machine for excavating drifts, tunnels, stopes, caverns or the like. 5,340,199, Cl. 299-10.000.

Pierpont, John M.; and Pierpont, Pauline S. Interior-mounted security bars. 5,339,567, Cl. 49-55.000.

Pierpont, Pauline S.: *See—*
Pierpont, John M.; and Pierpont, Pauline S., 5,339,567, Cl. 49-55.000.

Pierro, John A.: *See—*
Calviello, Joseph A.; and Pierro, John A., 5,341,114, Cl. 333-17.200.

Pierson, Mark V.: *See—*
Hecht, Lewis C.; Sulger, Merritt P., deceased; Thiele, Ernst E.; Pierson, Mark V.; and Williams, Lawrence E., 5,339,952, Cl. 206-334.000.

Piggen, Wilhelmus A. J., to Linden Machines B.V. Surface processing device. 5,339,569, Cl. 51-109.00R.

Pikaart, Jeffrey A., to Venturedyne Limited. Method for defrosting a laboratory freezer door. 5,339,643, Cl. 62-80.000.

Pike, Malcolm C.; and Spicer, Darcy V., to University of Southern California. Method and formulations for use in treating benign gynecological disorders. 5,340,585, Cl. 424-426.000.

Pike, Malcolm C.; and Spicer, Darcy V., to University of Southern California. Methods and formulations for use in treating oophorectomized women. 5,340,586, Cl. 424-426.000.

Pike, Malcolm C.: *See—*
Spicer, Darcy V.; and Pike, Malcolm C., 5,340,584, Cl. 424-426.000.

Pille-Wolf, Wolfgang; Leenslag, Jan W.; Eling, Berend; and Ingelaere, Dirk G. C., to Imperial Chemical Industries PLC. Polyisocyanate composition. 5,340,852, Cl. 524-14.000.

Pilorge, Fabienne: *See—*
Babin, Didier; Benoit, Marc; Demoute, Jean-Pierre; Pilorge, Fabienne; and Reinier, Nicole, 5,340,835, Cl. 514-531.000.

Pinecrest, Inc.: *See—*
Underdahl, Russell H., 5,339,591, Cl. 52-473.000.

Pinske, Edward E., Jr., to Babcock & Wilcox Company, The. Fluid bed material transfer method. 5,339,538, Cl. 34-370.000.

Pioneer Consolidated Corporation: *See—*
Haddad, Edward N., Jr., 5,340,187, Cl. 296-98.000.

Pioneer Electronic Corporation: *See—*
Chikuma, Kiyofumi, 5,341,449, Cl. 385-122.000.
Isobe, Nobuyuki, 5,341,352, Cl. 369-37.000.
Kawamoto, Masashi, 5,341,434, Cl. 381-86.000.
Yoshio, Junichi; and Shimoda, Yoshitaka, 5,341,353, Cl. 369-44.280.

Pioneer Technology Corporation: *See—*
Schmidt, Leland R., 5,341,182, Cl. 352-184.000.

Pipe Rehab International, Inc.: *See—*
McMillan, Jim S.; and Tarsha, Simon, 5,340,524, Cl. 264-229.000.

Pitkin, Richard P.; and Morency, John P., to Digital Equipment Corporation. Broker for computer network server selection. 5,341,477, Cl. 395-200.000.

Pitney Bowes Inc.: *See—*
Malin, Richard A., 5,339,733, Cl. 101-91.000.

Pittaro, Richard J.; and Simons, Tad D., to Hewlett-Packard Company. Method for calibrating a spectrograph for gaseous samples. 5,341,206, Cl. 356-301.000.

Plaettner, Rolf: *See—*
Endroes, Arthur; Kruehler, Wolfgang; Einzinger, Richard; and Plaettner, Rolf, 5,340,410, Cl. 136-258.000.

Plant Genetic Systems, N.V.: *See—*
Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,340,738, Cl. 435-234.000.

Player, Otto: *See—*
Arold, Klaus; and Player, Otto, 5,340,022, Cl. 237-12.30A.

PLM AB: *See—*
Nilsson, Torsten, 5,340,526, Cl. 264-292.000.

Plonsky, Christopher B.; Balch, Brent F.; and Fallin, David, to Sensormatic Electronics Corporation. Deactivating device for deactivating EAS dual status magnetic tags. 5,341,125, Cl. 340-572.000.

Plumb, Richard G. Semiconductor light emitting device with ridged contact. 5,341,002, Cl. 257-95.000.

Plunkett, George R.: *See—*
Wakefield, Thomas L.; and Plunkett, George R., 5,341,285, Cl. 363-97.000.

Pocha, Michael D.: *See—*
Booth, Rex; and Pocha, Michael D., 5,341,017, Cl. 257-459.000.

Podosek, Edward, to Avery Dennison Corporation. Case-bound hot-melt binding system. 5,340,155, Cl. 281-29.000.

Poetsch, Eike: *See—*
Wachtler, Andreas; Kompter, Hans-Michael; Poetsch, Eike; Geelhaar, Thomas; Hittich, Reinhard; and Krause, Joachim, 5,340,497, Cl. 252-299.610.

Polaroid Corporation: *See—*
Chinoporos, Efthimios; Pauze, Robert H.; Waller, David P.; and Whritenour, David C., 5,340,689, Cl. 430-200.000.

Pollock, Thomas J.; and Thorne, Linda, to Shin-Etsu Chemical Co., Ltd.; and Shin-Etsu Bio, Inc. Xanthan gum-producing strain of xanthomonas. 5,340,743, Cl. 435-252.300.

Poloyko, Alexander; Goldberg, Mark C.; Goldberg, Edward M.; Melinyshyn, Lev A.; and Schucart, David E., to UreSil Corporation. Surgical retractor and surgical method. 5,339,801, Cl. 128-20.000.

Polycerf, Inc.: *See—*
Cerf, Alain A., 5,339,609, Cl. 53-550.000.

Polytech Netting Industries, Inc.: *See—*
Moore, Donal, 5,340,004, Cl. 224-42.46R.

Polzin, Bruce C.; Shehow, Kenneth L.; and Burns, Fredrick B., to EZ Paintr Corporation. Closed end paint roller and method of manufacture thereof. 5,339,484, Cl. 15-230.110.

Ponisch, Jurgen: *See—*
Schormair, Eckhart; Ponisch, Jurgen; and Laaf, Rainer, 5,339,977, Cl. 220-307.000.

Pont-A-Mousson S.A.: *See—*
Hoffmann, Klaus, 5,340,169, Cl. 285-337.000.

Pooke, Donald M.: *See—*
Tallon, Jeffery L.; and Pooke, Donald M., 5,340,794, Cl. 505-500.000.

Poole, Joseph D.; and Zickefoose, Frank P., to International Business Machines Corporation. Rework process for printed circuit cards and solder fountain having gas blanket for carrying out the process. 5,340,013, Cl. 228-119.000.

Poor, Kyle W.: *See—*
Craven, B. Thomas; Wiedefeld, William G.; Poor, Kyle W.; Johnson, Bruce S.; Sogge, John W.; Peterson, Michael H.; Adamson, William G.; and Froelich, Ronald W., 5,339,741, Cl. 102-361.000.

Popke, Fred. Calling number verification service. 5,341,414, Cl. 379-142.000.

Popp, Wolfgang, to Licentia Patent-Verwaltung-GmbH. Star-shaped network for data communication between stations. 5,341,232, Cl. 359-120.000.

Porcaro, Felix A.; Feibelman, Jeffrey A.; and Triangolo, Daniel A., to Accessories Associates, Inc. Eyeglass display hanger. 5,340,074, Cl. 248-309.100.

Porter, Byron W.: *See—*
Ingram, Wayne B.; and Porter, Byron W., 5,339,679, Cl. 73-84.000.

Portugall, Michael: *See—*
Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, 5,340,859, Cl. 524-162.000.

Possin, George E.: *See—*
Wei, Ching-Yeu; Possin, George E.; and Kwasnick, Robert F., 5,340,758, Cl. 437-40.000.

Poulsen, Peder U. Low voltage cable lighting system. 5,340,322, Cl. 439-111.000.

Poulson, Larry, to Cyclofur Company, L.P. Hot air circulating oven and food heating apparatus. 5,339,726, Cl. 99-327.000.

Poutonnet, Sylvie: *See—*
Bardey, Xavier M. H.; Desaulty, Michel A. A.; Jolu, Jerome E. R.; Meunier, Serge M.; Mouton, Pierre C.; Poutonnet, Sylvie; and Renvier, Jacques, 5,339,622, Cl. 60-39.092.

Powell, Scott: *See—*
Mellissinos, Anthony; and Powell, Scott, 5,341,050, Cl. 307-490.000.

PPG Industries, Inc.: *See—*
Swarup, Shanti; McCollum, Gregory J.; Shewchuk, Ronald M.; and Martz, Jonathan T., 5,340,894, Cl. 526-301.000.
Van Gemert, Barry, 5,340,857, Cl. 524-110.000.

Prakash, Jai: *See—*
Redey, Laszlo I.; Vissers, Donald R.; and Prakash, Jai, 5,340,668, Cl. 429-103.000.

Prall, Kirk D.; Sandhu, Gurtej S.; and Meikle, Scott G., to Micron Semiconductor, Inc. Low resistance device element and interconnection structure. 5,341,016, Cl. 257-412.000.

Prat, Jesus: *See—*
Aymerich, Jose ; and Prat, Jesus, 5,340,186, Cl. 296-97.100.

Pratt, James V., Jr.: *See—*
Shelton, Robert Q.; and Pratt, James V., Jr., 5,339,846, Cl. 134-201.000.

Pratt, William C., to Micro Chemical, Inc. Programmable apparatus and method for delivering microingredient feed additives by weight. 5,340,211, Cl. 366-141.000.

Praxair Technology, Inc.: *See—*
Lockett, Michael J.; Bonaquist, Dante P.; and Victor, Richard A., 5,339,648, Cl. 62-24.000.
Mathis, Mary J.; and Maloney, James J., 5,339,641, Cl. 62-24.000.

Precision Shooting Equipment, Inc.: *See—*
Smith, Allan F., 5,339,790, Cl. 124-25.600.

Preiato, Ernest J.; Meetze, Marion M.; Hoopes, Mark S.; and Bessemer, Robert H., to Conair Group, Inc., The. Vacuum sizing apparatus with controlled vacuum. 5,340,295, Cl. 425-71.000.

Preiser, Friedrich: *See—*
Billivant, Kenneth W.; and Preiser, Friedrich, 5,339,997, Cl. 222-238.000.

Prendel, Troy A.; and Meredith, Leo, to Aeroquip Corporation. Interference nut retention system. 5,340,162, Cl. 285-81.000.

President & Fellows of Harvard College: *See—*
Brenner, Michael B.; Strominger, Jack L.; Seidman, Johnathan; Ip, Stephen H.; and Krangel, Michael S., 5,340,921, Cl. 530-350.000.
Goldberg, Alfred L., 5,340,736, Cl. 435-226.000.

Presstek, Inc.: *See—*
Lewis, Thomas E.; Nowak, Michael T.; Robichaud, Kenneth T.; and Cassidy, Kenneth R., 5,339,737, Cl. 101-454.000.

Price, Jerry D., to Eli Lilly and Company. Child resistant package and method for making same. 5,339,960, Cl. 206-531.000.

Price, Raymond D. Hydraulic chain lift. 5,339,925, Cl. 187-8.410.

Prieur, Christian H.: *See—*
Larmignat, Daniel; Morand, Phillippe C.; Prieur, Christian H.; and Lacreuse, Gilles F., 5,340,395, Cl. 106-504.000.

Prince Corporation: *See—*
Lindberg, Kenneth M., 5,339,529, Cl. 33-355.00R.

Prince, Jack E.; and Mullins, William H. Air scrubbing system for waste water treatment. 5,340,484, Cl. 210-712.000.

Principato, Richard J. Low-volatility cleaning compositions for printing inks. 5,340,493, Cl. 252-462.000.

Prinzhausen, Friedrich; and Drabarek, Pawel, to Robert Bosch GmbH. Apparatus for making absolute two-demensional position measurements. 5,341,211, Cl. 356-357.000.

Priou, Christian: *See—*
Cavezzan, Jacques; and Priou, Christian, 5,340,898, Cl. 528-19.000.

Prism Technologies, Inc.: *See—*
Manker, Charles F., 5,339,796, Cl. 126-263.00B.

Pritchard, Martyn C.: *See—*
Horwell, David C.; Pritchard, Martyn C.; and Richardson, Reginald S., 5,340,825, Cl. 514-339.000.

Prochind S.p.A.: *See—*
Bagnulo, Luigi, 5,340,161, Cl. 285-50.000.

Procter & Gamble Company, The: *See—*
Barbera, Melvin A., 5,340,580, Cl. 424-189.100.
Kacher, Mark L.; Taneri, James E.; Camden, James B.; Vest, Paul E.; and Bowles, Sylvia J., 5,340,492, Cl. 252-112.000.
Piazza, Gary A.; Mazur, Adam W.; and Kasting, Gerald B., 5,340,568, Cl. 424-59.000.

Proctor, Peter N.: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Proietto, Vincenzo: *See—*
Emonds-Alt, Xavier; Gueule, Patrick; Proietto, Vincenzo; Goulaouic, Pierre, deceased; Bousquet, Marie, heir; and Goulaouic, Catherine M. L., heir, 5,340,822, Cl. 514-316.000.

Promident Manufacturing, Limited: *See—*
Sakurai, Masatoshi, 5,340,311, Cl. 433-126.000.

Protocol Systems, Inc.: *See—*
Taylor, Lee A.; Bennett, Ronald G.; and Salisbury, Herbert R., 5,339,822, Cl. 128-700.000.

Pruett, Wayne P.: *See—*
Chamberlin, Kim S.; Pruett, Wayne P.; Weaver, Max A.; Hilbert, Samuel D.; Quillen, Donna R.; and Salyer, Preston K., 5,340,910, Cl. 528-289.000.

Przybysz, John X.; and Miller, Donald L., to Westinghouse Electric Corp. Bandpass sigma-delta modulator for analog-to-digital converters. 5,341,136, Cl. 341-133.000.

Puerner, Dean A., to Whitaker Corporation, The. Shield for a header having right angle electrical terminals. 5,340,320, Cl. 439-79.000.

Purcell, Steve: *See—*
Balkanski, Alexandre; Purcell, Steve; and Kirkpatrick, James, 5,341,318, Cl. 364-725.000.

Purchio, Anthony F.: *See—*
Lioubin, Mario N.; Brown, Thomas J.; and Purchio, Anthony F., 5,340,925, Cl. 530-395.000.

Puritan-Bennett Corporation: *See—*
Ahmad, Jamil; Riccitelli, Samuel D.; Bankert, Charles S.; Hannah, Richard; and Davis, Christopher L., 5,339,671, Cl. 73-1.00G.
Carter, Danis, 5,339,807, Cl. 128-205.240.

Puttonen, Martti; Juusti, Vesa; and Juusti, Pekka, to RP Oy Teollisuuden ja Rakentaijain Palvelukeskus. Conduit collar and method of installing the collar. 5,340,166, Cl. 285-189.000.

Putz, Heinrich: *See—*
Maus, Wolfgang; Swars, Helmut; Putz, Heinrich; and Jager, Walter, 5,340,020, Cl. 237-12.30C.

Putzmeister-Werk Maschinenfabrik GmbH: *See—*
Benckert, Hartmut; and Hurr, Helmut, 5,340,291, Cl. 417-569.000.

PV Enterprises, Inc.: *See—*
Mullins, Norman B., 5,340,481, Cl. 210-512.100.

Pyrozone Manufacturing Pty. Ltd.: *See—*
Hegge, Kjell, 5,339,689, Cl. 73-295.000.

QCI, Inc.: *See—*
Cornwell, James T., 5,339,959, Cl. 206-524.800.

Quaeck, Manfred W. Reciprocating floor conveyor. 5,340,264, Cl. 414-525.900.

QUALCOMM Incorporated: *See—*
DeJaco, Andrew P., 5,341,456, Cl. 395-2.230.

Quantum Corporation: *See—*
Abbott, William L.; Nguyen, Hung C.; and Johnson, Kenneth E., 5,341,249, Cl. 360-46.000.
Amirkiai, Maziar; Northrup, Oliver W.; Hosseinzadeh, Ali; Yamasaki, Naoki; and Noma, Takayuki, 5,341,259, Cl. 360-105.000.
Nguyen, Hung C., 5,341,387, Cl. 371-45.000.

Quax, Wilhelmus J.: *See—*
Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,340,738, Cl. 435-234.000.

Queen in Right of Ontario as represented by the Ministry of Transportation, The: *See—*
Jaeger, Leslie G.; Mufti, Aftab A.; and Bakht, Baidar, 5,339,475, Cl. 14-73.000.

Queen's University: *See—*
Wojciechowski, Bohdan W.; and Rice, Norman M., 5,340,745, Cl. 436-34.000.

Quillen, Donna R.: *See—*
Chamberlin, Kim S.; Pruett, Wayne P.; Weaver, Max A.; Hilbert, Samuel D.; Quillen, Donna R.; and Salyer, Preston K., 5,340,910, Cl. 528-289.000.

Quinlan, Charles W.: *See—*
Kittrell, James R.; and Quinlan, Charles W., 5,340,918, Cl. 528-483.000.

Quinn, William F.: *See—*
Haynes, Francis D.; Zarling, John P.; and Quinn, William F., 5,339,893, Cl. 165-45.000.

R. J. Reynolds Tobacco Company: *See—*
Young, Harvey J.; Bernasek, Edward; Lekwauwa, Aju N.; and Young, Walter R. D., Jr., 5,339,838, Cl. 131-372.000.

R L Industries Inc.: *See—*
Bastiaans, Richard G., 5,339,966, Cl. 211-4.000.

R.O.A.D. Industries, Inc.: *See—*
Engel, Don J., 5,340,190, Cl. 296-180.100.

Rada, J. Glenn. Differential score indicator system for basketball. 5,341,121, Cl. 340-323.00R.

Radcliffe, Sandra E.: *See—*
Woods, Robert D.; and Radcliffe, Sandra E., 5,340,005, Cl. 224-42.46R.

Radhakrishnan, Ramachandran: *See—*
Mihalko, Paul J.; Abra, Robert M.; and Radhakrishnan, Ramachandran, 5,340,587, Cl. 424-450.000.

Rafaniello, William: *See—*
Weimer, Alan W.; Moore, William G.; Rafaniello, William; and Roach, Raymond P., 5,340,417, Cl. 148-513.000.

Raghunathan, Narayan, to Norseman Plastics Limited. Domestic composters. 5,339,974, Cl. 220-4.260.

Rahwan, Michael. Organizing and scheduling device. 5,339,546, Cl. 40-107.000.

Railway Technical Research Institute: *See—*
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.

Rajagopalan, Vidya: *See—*
Madden, William C.; Rajagopalan, Vidya; and Samudrala, Sridhar, 5,341,319, Cl. 364-748.000.

Rajaraman, Srinivasan: *See—*
Goldblum, Randall M.; and Rajaraman, Srinivasan, 5,340,721, Cl. 435-7.920.

Ralph's Industrial Sewing Machine Company: *See—*
Badillo, Ralph; and Badillo, Paul, 5,339,756, Cl. 112-68.000.

RAM Mobile Data USA Limited Partnership: *See—*
Aron, Carl R.; and Troe, James L., 5,341,410, Cl. 379-59.000.

Ramanujan, Raj, to Digital Equipment Corporation. Apparatus and method for ensuring that lock requests are serviced in a multiprocessor system. 5,341,491, Cl. 395-425.000.

Ramey, Philip J.: *See—*
Jacaruso, Gary J.; and Ramey, Philip J., 5,340,423, Cl. 156-158.000.

Ramot, Danny; Chen, George; and Henkin, Alexander, to Executone Information Systems, Inc. Apparatus and a method for predictive call dialing. 5,341,412, Cl. 379-92.000.

Ramsden, Gary W., to U-Ship, USA Ltd. System for mailing and collecting items. 5,340,948, Cl. 177-25.150.

Randazzo, Todd A.: *See—*
Larsen, Bradley J.; Randazzo, Todd A.; and Erickson, Donald A., 5,340,764, Cl. 437-52.000.

Randhawa, Hiten S.; and Wang, Cheng-Yuan M., to Altera Corporation. Clock invert and select circuit. 5,341,048, Cl. 307-481.000.

Ranganathan, Padmanabhan R.: *See—*
Clarke, John M.; and Ranganathan, Padmanabhan R., 5,339,775, Cl. 123-41.350.

Rao, Madhukar: *See—*
Pearson, Paul D.; Rao, Madhukar; and Tomko, Richard F., 5,340,871, Cl. 523-526.000.

Ravaris, Paul A. Moment of inertia golf putter. 5,340,106, Cl. 273-164.100.

Ravi, Kris M.; and Sabins, Fred L., to Halliburton Company. Drilling fluid removal in primary well cementing. 5,339,899, Cl. 166-250.000.

Rawlings, John P., to Climate Master, Inc. Ground source heat pump system comprising modular subterranean heat exchange units with concentric conduits. 5,339,890, Cl. 165-45.000.

Raybone, David: *See—*
Griffiths, Christopher N.; Raybone, David; and Bayliss, Keith H., 5,340,450, Cl. 204-157.300.

Raymond Corporation: *See—*
Day, Richard M., 5,340,202, Cl. 303-19.000.

Raytheon Company: *See—*
Bianchini, Michael J.; Michalik, Richard A.; Chiesa, John A.; and Mistler, Joanne, 5,340,980, Cl. 250-214.00R.

Read-Rite Corporation: *See—*
Viches, Ilya, 5,339,702, Cl. 73-865.900.

Reagen, William K.; and Pettijohn, Ted M., to Phillips Petroleum Company. Polymerization catalysts and processes. 5,340,785, Cl. 502-109.000.

Rebeaud, Jean-Claude: *See—*
Schulz, Jens; Hoffmann, Martin; and Rebeaud, Jean-Claude, 5,340,432, Cl. 156-472.000.

Reckweg, Freek; Chiaverini, Michael; and Lehouiller, Scott A., to Van Den Bergh Foods Company, Division of Conopco, Inc. Low fat spread with non-proteinaceous crystal inhibitors. 5,340,600, Cl. 426-603.000.

Reckzugel, Christoph; Murwald, Mario; Doll, Gerhard; Frey, Jurgen; and Ohlendorf, Ralf, to Mercedes-Benz AG. Cylinder-head-mounted camshaft bearing for an internal combustion engine. 5,339,778, Cl. 123-193.500.

ReClaim, Inc.: *See—*
Grzybowski, Ken F., 5,340,391, Cl. 106-281.100.

VOL 1165 ISS 4 AG 23 1994 UMI

Recoton Corporation: *See—*
McGreevy, William T.; and Borchardt, Robert L., 5,341,263, Cl. 360-128.000.

Recycling Specialists, Inc.: *See—*
Mayhak, Richard L., 5,339,961, Cl. 209-3.000.

Recytec SA: *See—*
Hanulik, Jozef; and Equey, Jean-Francois, 5,340,505, Cl. 588-18.000.

Reddig, Wolfram: *See—*
Hoppe, Manfred; Herd, Karl-Josef; Eizenhofer, Thomas; Harms, Wolfgang; Henk, Hermann; Kunde, Klaus; and Reddig, Wolfram, 5,340,928, Cl. 534-618.000.

Redey, Laszlo I.; Vissers, Donald R.; and Prakash, Jai, to University of Chicago, The. Electrochemical cell. 5,340,668, Cl. 429-103.000

Redi Controls, Inc.: *See—*
Albertson, Luther D., III; Key, Walter R.; and Stansbury, Mark A., 5,339,647, Cl. 62-292.000.

Reed, Ronald H.: *See—*
Sharp, Jeffrey O.; Harris, Michael R.; Cooper, Robert J.; Ledbetter, Steve M.; Reed, Ronald H.; and Chaffin, Ronald W., 5,341,273, Cl. 361-641.000.

Reese, Ralph E.: *See—*
Rouse, Daniel H.; McClure, Thomas D.; and Reese, Ralph E., 5,339,595, Cl. 53-88.000.

Regier, Robert D. Apparatus and method for dispensing objects to a count and/or weight. 5,339,607, Cl. 53-501.000.

Regueiro, Jose F., to Chrysler Corporation. Lubrication system with an oil bypass valve. 5,339,776, Cl. 123-196.0CP.

Reid, Gary O.: *See—*
Landers, James A.; Reid, Gary O.; and Greenland, Steven J., 5,339,602, Cl. 53-410.000.

Reifsteck, Dennis R.: *See—*
Cox, Gary B.; Reifsteck, Dennis R.; Hills, Gregg A.; and Fenter, Lynn R., 5,339,948, Cl. 198-635.000.

Reiley, Forrest A.: *See—*
Hattersley, John R.; Kim, Thomas D.; Lee, Jeffery Y.; and Reiley, Forrest A., 5,341,485, Cl. 395-400.000.

Rein, Russell J.: *See—*
Mollenkopf, Lloyd C.; and Rein, Russell J., 5,339,585, Cl. 52-220.700.

Reinart, David J. Mobile silhouette target device with remote resetting means. 5,340,116, Cl. 273-391.000.

Reinartz, Hans-Dieter; and Steffes, Helmut, to Alfred Teves GmbH Motor pump assembly with variably set eccentric. 5,340,285, Cl. 417-221.000.

Reinhard, Mark S.; and Burlingham, Byron T., to Reinhard, Mark S Composition and method for treatment of vaginal yeast infections. 5,340,836, Cl. 514-557.000.

Reinhold, Herbert E., Jr., to Survival Technology, Inc. Twelve-lead portable heart monitor and method. 5,339,823, Cl. 128-710.000.

Reinier, Nicole: *See—*
Babin, Didier; Benoit, Marc; Demoute, Jean-Pierre; Pilorge, Fabienne; and Reinier, Nicole, 5,340,835, Cl. 514-531.000.

Reinke, Michael J., to Modine Manufacturing Co. Heat exchanger for a thermoacoustic heat pump. 5,339,640, Cl. 62-6.000.

Reis, James J.; Luk, Anthony L.; Lucero, Antonio B.; and Garber, David D., to Northrop Grumman Corporation. Target acquisition and tracking system. 5,341,142, Cl. 342-64.000.

Reis, James J.; Luk, Anthony L.; and Garber, David D., to Northrop Grumman Corporation. Hierarchical tracker and method. 5,341,143, Cl. 342-64.000.

Reis, Ney Robinson S. d.; and Conti, Fabio K. P., to Petroleo Brasileiro S.A. Guide-post interchangeability mechanism operated by remotely controlled vehicle. 5,340,237, Cl. 405-169.000.

Reishauer AG: *See—*
Thyssen, Wolfgang, 5,339,794, Cl. 125-11.040.

Reliance COMM/TEC Corporation: *See—*
Kaczmarek, Richard T., 5,341,270, Cl. 361-119.000.

Remington Arms Company, Inc.: *See—*
Scarlata, Vincent F., 5,339,743, Cl. 102-439.000.

Renard, Pierre: *See—*
Gaudry, Michel; Pfeiffer, Bruno; Renard, Pierre; Renaud de la Faverie, Jean-Francois; and Adam, Gerard, 5,340,809, Cl. 514-252.000.

Renaud de la Faverie, Jean-Francois: *See—*
Gaudry, Michel; Pfeiffer, Bruno; Renard, Pierre; Renaud de la Faverie, Jean-Francois; and Adam, Gerard, 5,340,809, Cl. 514-252.000.

Renck, Lawrence E., to Sonoco Products Company. Tubular core assembly having inside-diameter reducing end members secured by mechanical interlocking member. 5,340,050, Cl. 242-609.100.

Renishaw Metrology Limited: *See—*
McMurtry, David R.; Wilson, David; Hellier, Peter K.; and Hajdukiewicz, Peter, 5,339,535, Cl. 33-561.000.

Renvier, Jacques: *See—*
Bardey, Xavier M. H.; Desaulty, Michel A. A.; Jolu, Jerome E. R.; Meunier, Serge M.; Mouton, Pierre C.; Poutonnet, Sylvie; and Renvier, Jacques, 5,339,622, Cl. 60-39.092.

Renzullo, Michael J.: *See—*
Travis, Robert L., Jr.; Wilson, Andrew P.; Jacobson, Neal F.; and Renzullo, Michael J., 5,341,478, Cl. 395-200.000.

representatives, Brigitte Heck and Pierre Heck legal: *See—*
Heck, Alfred, deceased, 5,340,472, Cl. 210-173.000.

Republic Industries, Inc.: *See—*
Slaybuagh, Loren E.; and Huffman, James M., 5,340,171, Cl. 292-21.000

Research Corporation Technologies: *See—*
Parker, Kevin J.; and Mitsa, Theophano, 5,341,228, Cl. 358-534.000.

Research Triangle Institute: *See—*
Wall, Monroe E.; Wani, Mansukh C.; Nicholas, Allan W.; and Manikumar, Govindarajan, 5,340,817, Cl. 514-279.000.

Respicio, Fred E. Method of playing a board game. 5,340,113, Cl. 273-249.000.

Rexair, Inc.: *See—*
Kasper, Gary A., 5,339,487, Cl. 15-246.200.

Reynolds Metals Company: *See—*
Key, James C.; and Sloan, George A., 5,339,886, Cl. 164-463.000.

Reynolds, Robert B.: *See—*
Christianson, Teresa; Goddette, Dean; Ladin, Beth F.; Lau, Maria R.; Paech, Christian; Reynolds, Robert B.; Wilson, Charles R.; and Yang, Shiow-Shong, 5,340,735, Cl. 435-221.000

Reynolds, William: *See—*
Magauran, Edward D.; Reynolds, William; DiCarlo, Lawrence; Cody, Charles A.; Chiavoni, Araxi; and El-Shoubary, Modasser, 5,340,390, Cl. 106-244.000.

Rezanka, Ivan: *See—*
Hermanson, Herman A.; Drake, Donald J.; Rezanka, Ivan; Karz, Robert S.; Teumer, Roger G.; and Altavela, Robert P., 5,341,162, Cl. 347-92.000.

Rhee, Aaron S.: *See—*
Chang, David S.; Rhee, Aaron S.; Crossland, Ronald K.; and Buhler-Vidal, Jorge O., 5,340,509, Cl. 264-5.000

Rhee, Seong K.: *See—*
Jacko, Michael G.; Tsang, Peter H.; and Rhee, Seong K., 5,339,931, Cl. 188-251.00M

Rheinmetall GmbH: *See—*
Holl, Rolf; Rombach, Rudolf; and Roosmann, Karl-Heinz, 5,340,058, Cl. 244-117.00A.

Rheox, Inc.: *See—*
Magauran, Edward D.; Reynolds, William; DiCarlo, Lawrence; Cody, Charles A.; Chiavoni, Araxi; and El-Shoubary, Modasser, 5,340,390, Cl. 106-244.000.

Rhoads, Carl: *See—*
Smith, Anthony; Goff, Dan; Kruchowy, Roman; and Rhoads, Carl, 5,339,691, Cl. 73-597.000.

Rhodes, Ronald K.: *See—*
Bentley, Steven R.; Chliwnyj, Alex; Johnson, Steven D.; Paranjape, Sushama M.; and Rhodes, Ronald K., 5,341,252, Cl. 360-50.000.

Rhone-Poulenc Chimie: *See—*
Cavezzan, Jacques; and Priou, Christian, 5,340,898, Cl. 528-19.000.
Collin, Marie-Pierre; Huguenin, Denis; and Le Govic, Anne-Marie, 5,340,556, Cl. 423-263.000.

Rhone-Poulenc Rorer Pharmaceuticals Inc.: *See—*
Ewing, William R.; and Molino, Bruce F., 5,340,801, Cl. 514-18.000.

Rhone-Poulenc Rorer S.A.: *See—*
Gueremy, Claude; Jimonet, Patrick; and Mignani, Serge, 5,340,824, Cl. 514-321.000.

Ricaud, Patrick; and Mormede, Bernard, to GEC Alsthom Transport SA. Baggage rack under flap for the passenger space of a rail vehicle. 5,339,744, Cl. 105-332.000.

Riccitelli, Samuel D.: *See—*
Ahmad, Jamil; Riccitelli, Samuel D.; Bankert, Charles S.; Hannah, Richard; and Davis, Christopher L., 5,339,671, Cl. 73-1.00G.

Rice, Gary W.: *See—*
Yavuz, Bulent O.; Larkin, Matthew P.; Rice, Gary W.; and Voss, Kenneth E., 5,340,516, Cl. 264-63.000.

Rice, Norman M.: *See—*
Wojciechowski, Bohdan W.; and Rice, Norman M., 5,340,745, Cl. 436-34.000.

Richard, Michel: *See—*
Trouve, Claude; Richard, Michel; Mallo, Paul; and Anquetil, Jean-Yves, 5,340,441, Cl. 162-135.000.

Richards, Theodore S.: *See—*
Stringer, John W.; and Richards, Theodore S., 5,341,429, Cl. 380-23.000.

Richardson, James B. System for measuring stiffness of a fractured bone. 5,339,533, Cl. 33-512.000.

Richardson, Reginald S.: *See—*
Horwell, David C.; Pritchard, Martyn C.; and Richardson, Reginald S., 5,340,825, Cl. 514-339.000.

Richmond, Henry. Motorized sunshade. 5,339,848, Cl. 135-20.100.

Richter Gedeon Vegyeszeti Gyer RT.: *See—*
Farkas, Sandor; Foldeak, Sandor; Karpati, Egon; Hegyes, Peter; Kreidl, Janos; Szporny, Laszlo; Czibula, Laszlo; and Petofi-Vass, Szilvia, 5,340,823, Cl. 514-317.000.

Rickman, Stephen R., to C & K Systems, Inc. Pressure actuated glass break simulator. 5,341,122, Cl. 340-515.000.

Ricoh Company, Ltd.: *See—*
Gotoh, Hiroshi; Shibata, Isamu; Maeda, Ikuo; and Sakurai, Tatsuaki, 5,341,355, Cl. 369-44.370.
Hodoshima, Takashi; Ishigaki, Kouji; Nakahara, Kazuyuki; and Kishi, Fumio, 5,341,196, Cl. 355-260.000.
Ohtani, Masahito, 5,341,377, Cl. 370-110.100.
Shiraishi, Naoto; and Fujii, Tatsuya, 5,341,468, Cl. 395-132.000.
Takemoto, Hiroshi, 5,341,170, Cl. 348-354.000.

Rider, Edward W., Jr.: *See—*
Edwards, Richard T.; Rider, Edward W., Jr.; Susta, Stephen J., Jr.; and Crawford, William R., 5,339,973, Cl. 220-4.230.

Riechert, Manfred E.: *See—*
Perman, Craig A.; and Riechert, Manfred E., 5,340,614, Cl 427-2.240.

Rieter Ingolstadt Spinnereimaschinenbau AG: *See—*
Hauner, Friedrich, 5,339,615, Cl. 57-281.000.

Riggin, Ralph M.: *See—*
Jackson, David A.; Riggin, Ralph M.; and Towns, John K., 5,340,541, Cl. 422-75.000.

Riley, Kenneth L.: *See—*
Kerby, Michael C.; Riley, Kenneth L.; Long, Fred M.; Johnson, Jack W.; and Brody, John F., 5,340,657, Cl. 428-552.000.

Riley, Wayne C., to Emerson Electric Co. Dry waste grinder 5,340,036, Cl. 241-56.000.

Rimmer, Daniel P.: *See—*
Gregoli, Armand A.; Hamshar, John A., 3rd; Rimmer, Daniel P.; Yildirim, Erdal; and Olah, Andrew M., 5,340,467, Cl 208-390.000.

Ring Can Corporation: *See—*
Ring, Carl D., 5,340,000, Cl. 222-468.000.

Ring, Carl D., to Ring Can Corporation. Vented plastic bottle 5,340,000, Cl. 222-468.000.

Rink, Philip A.; and Zieve, Peter B., to Electroimpact, Inc. Apparatus for laoding fasteners in a cartridge. 5,339,598, Cl. 53-236.000.

Rios, Luis G.: *See—*
Datar, Rajiv V.; and Rios, Luis G., 5,340,536, Cl. 422-23.000.

Risnes, Scott C., to Thiele Engineering Company. Packaging system with a flite adjuster mechanism. 5,339,599, Cl. 53-252.000.

Ritt, Renzer R., Sr.: *See—*
Collins, Alfred L.; Cutright, Edwin L.; DeBlasio, James A.; Dickerson, Richard H.; Kean, Billy J., Jr.; Ritt, Renzer R., Sr.; and Scott, George R., 5,339,871, Cl. 141-1.000.

Rittershaus, Erhard: *See—*
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J., 5,339,837, Cl. 131-296.000.

Ritzl, Antal; and Wernli, Markus, to Alusuisse-Lonza Services Ltd. Sound proofing and vibration dampening elastic connecting element 5,339,745, Cl. 105-452.000.

Rives, Allen K. Well orienting tool and method of use. 5,339,913, Cl. 175-73.000.

Roach, Raymond P.: *See—*
Weimer, Alan W.; Moore, William G.; Rafaniello, William; and Roach, Raymond P., 5,340,417, Cl. 148-513.000.

Robbins, Karen E.: *See—*
Buchholz, Dale R.; Robbins, Karen E.; Doss, William K.; and Hamilton, R. Lee, Jr., 5,341,375, Cl. 370-94.100.

Robert Bosch GmbH: *See—*
Bloechle, Hans; and Wanner, Karl, 5,340,245, Cl. 408-226.000.
Blumenstock, Andreas; and Denz, Helmut, 5,339,788, Cl 123-520.000.
Bronkal, Bernhard; Gerwing, Wolfram; Grieshaber, Hermann; Birk, Manfred; and Engel, Gerhard, 5,339,680, Cl. 73-118.200
Eicher, Bernhard, 5,339,572, Cl. 51-170.0PT.
Golzer, Thomas; and Streib, Martin, 5,339,782, Cl. 123-399.000.
Prinzhausen, Friedrich; and Drabarek, Pawel, 5,341,211, Cl. 356-357.000.
Stegmaier, Alwin; and Tanski, Kenneth, 5,340,032, Cl. 239-575.000.

Roberts, Russell D.; Brandenburg, Bruce L.; and Ellis, Claude E., to Zimpro Environmental, Inc. Gas/liquid mixing apparatus. 5,340,473, Cl. 210-177.000.

Robertson, James G. Apparatus and method for recording jaw motion 5,340,309, Cl. 433-69.000.

Robey, Pamela G.: *See—*
Termine, John D.; Young, Marian F.; Fisher, Larry W.; and Robey, Pamela G., 5,340,934, Cl. 536-23.500.

Robichaud, Kenneth T.: *See—*
Lewis, Thomas E.; Nowak, Michael T.; Robichaud, Kenneth T.; and Cassidy, Kenneth R., 5,339,737, Cl. 101-454.000.

Robinson, Alan: *See—*
Fuller, Mark; and Robinson, Alan, 5,340,024, Cl. 239-17.000.

Robinson, Michael J.; and Woodruff, James R., to AlliedSignal Inc. Vibrating beam force transducer with automatic adjustment of its electromagnetic drive. 5,339,698, Cl. 73-862.590.

Rocha, Gerald F.: *See—*
Kennedy, William J.; and Rocha, Gerald F., 5,339,499, Cl 24-452.000

Roche, Kevin P.: *See—*
Parkin, Stuart S. P.; and Roche, Kevin P., 5,341,118, Cl. 338-32.00R.

Roche, Robert J. Combination reciprocating motor and inverter 5,341,055, Cl. 310-24.000.

Rock-Tenn Company: *See—*
Vannatta, Truman J., 5,339,746, Cl. 108-56.300.

Rockstein, George; Wilz, David, Sr.; Blake, Robert; and Knowles, C. Harry, to Metrologic Instruments, Inc. Automatic bar code reading system having selectable long range and short range modes of operation. 5,340,971, Cl. 235-472.000.

Rockstein, George B.: *See—*
Knowles, Carl H.; Rockstein, George B.; Wilz, David M.; and Naylor, Charles A., 5,340,973, Cl. 235-472.000.

Rockwell International Corporation: *See—*
Haman, Leo J., 5,341,112, Cl. 331-116.00R.
Hauck, James P., 5,341,208, Cl. 356-350.000.
Huffman, James E., 5,340,553, Cl. 423-219.000.

Rockwood, Robert E., to Environamics Corporation. Sealing and pumping means and methods environmentally leak-proof pump with misting chamber defined therein. 5,340,273, Cl. 415-113.000.

Roderfeld, Heinrich; Heidjann, Franz; Diekhans, Norbert; and Behnke, Willi, to Claas oHG. Tandem running gear on a self-propelled agricultural machine. 5,339,611, Cl. 56-10.200.

Rodgers, Ian: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Rodighiero, Gerald D. Adhesive tape. 5,340,629, Cl. 428-40.000

Rodini, David J.: *See—*
Pease, Richard A.; and Rodini, David J., 5,340,519, Cl. 264-169.000.

Rodyniuk, Michael; and Berg, Keevin, to Air Cover Corporation. Aircraft wing cover and method of attachment. 5,340,055, Cl. 244-1.00R

Roeker, David C.; Slama, David F.; and Sheffield, William F., to Minnesota Mining and Manufacturing. Microwaveable adhesive article and method of use. 5,340,649, Cl. 428-344.000.

Roepka, Gregory A.: *See—*
Breunig, Timothy A.; and Roepka, Gregory A., 5,339,651, Cl. 62-65.000.

Roeschert, Horst: *See—*
Pawlowski, Georg; Merrem, Hans-Joachim; Lingnau, Juergen; Dammel, Ralph; and Roeschert, Horst, 5,340,682, Cl. 430-165.000.

Roh, Young H.: *See—*
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,339,474, Cl. 8-159.000.

Rohde, Wolfgang: *See—*
Flemming, Gunter; Streubel, Hans; and Rohde, Wolfgang, 5,339,887, Cl. 164-476.000.

Rohm Co., Ltd.: *See—*
Nii, Keita, 5,341,000, Cl. 257-77.000.
Shimoji, Noriyuki, 5,341,010, Cl. 251-326.000.

Rohr, Donald F.; Buddle, Stanlee T.; Wilson, Paul R.; and Zumbrum, Michael A., to General Electric Company. Method for making fumed silica having a reduced aggregate size and product. 5,340,560, Cl 423-337.000.

Rohrig, Peter, to Mam Babyartikel Gesellschaft M.b.H. Feeding bottle 5,339,971, Cl. 215-11.500.

Roizen, Michael; Turcotte, William E., II; and Pfisterer, Richard E., to Arch Development Corporation. Portable medical interactive test selector having plug-in replaceable memory. 5,341,291, Cl. 364-413.020.

Rollerblade, Inc.: *See—*
Malewicz, Andrzej M., 5,340,132, Cl. 280-11.220.

Rollins, Neal A.; and Rooyakkers, John A., to Kimberly-Clark Corporation. Elongated element comprising helically patterned adhesive 5,340,648, Cl. 428-343.000.

Rolls-Royce plc: *See—*
Freeman, Christopher; Day, Ivor J.; and Wright, William B., 5,340,271, Cl. 415-1.000.

Romanenko, Michael; Sadler, Robert E., Jr.; and Buday, John M., Jr., to ElectroCom GARD Ltd. Orientation chute for sorting machine 5,340,099, Cl. 271-303.000.

Romanenko, Michael, to ElectroCom GARD Ltd. Orientation chute for sorting machine. 5,340,100, Cl. 271-303.000.

Rombach, Rudolf: *See—*
Holl, Rolf; Rombach, Rudolf; and Roosmann, Karl-Heinz, 5,340,058, Cl. 244-117.00A.

Ron Warner Associates: *See—*
Warner, Ronald C.; and Warner, Craig M., 5,339,477, Cl. 15-97.100.

Roosmann, Karl-Heinz: *See—*
Holl, Rolf; Rombach, Rudolf; and Roosmann, Karl-Heinz, 5,340,058, Cl. 244-117.00A.

Rooyakkers, John A.: *See—*
Rollins, Neal A.; and Rooyakkers, John A., 5,340,648, Cl 428-343.000.

Ropp, Kenneth: *See—*
Beatty, David E.; Nyquist, Jeffery A.; and Ropp, Kenneth, 5,340,298, Cl. 425-183.000.

Roselle, Paul L.; and Kosman, Stephen L., to Eastman Kodak Company. Low temperature insitu image reversal process for microelectric fabrication. 5,340,438, Cl. 156-643.000.

Rosemount Office Systems, Inc.: *See—*
Mollenkopf, Lloyd C.; and Rein, Russell J., 5,339,585, Cl 52-220.700.

Rosen, Terry J.; Desai, Manoj C.; and Lowe, John A., III, to Pfizer Inc. Pharmaceutical agents for treatment of urinary incontinence 5,340,826, Cl. 514-351.000.

Rosenbaum, Herman S.; and Armijo, Joseph S., to General Electric Company. Inner liners for fuel cladding having zirconium barriers layers. 5,341,407, Cl. 376-409.000.

Rosenberg, Daniel W.: *See—*
Rossi, Anthony P.; and Rosenberg, Daniel W., 5,340,234, Cl 405-48.000.

Rosenberg, Peretz. Fluid pressure regulator. 5,339,860, Cl. 137-343.000.

Rosenthal, Bruce D., to Elantec, Inc. Level shifter circuit. 5,341,047. Cl. 307-475.000.

Rosgren, Carl-Erik; and Leino, Ilmo, to Wartsila Diesel International Ltd. Oy. Arrangement for the lubrication of the piston member of a fuel injection pump. 5,339,724, Cl. 92-153.000.

Roskowski, Steven: *See—*
Wasserman, Steven; and Roskowski, Steven, 5,341,480, Cl 395-325.000

VOL 1165 ISS 4 AG 23 1994 UMI

Rosotker, Michael D., to LSI Logic Corporation. Method of increasing the layout efficiency of dies on a wafer and increasing the ratio of I/O area to active area per die. 5,340,772, Cl. 437-226.000.
Rosotker, Michael D., to LSI Logic Corporation. Method of increasing the layout efficiency of dies on a wafer, and increasing the ratio of I/O area to active area per die. 5,341,024, Cl. 257-620.000.
Rossberg, Wayne; Smith, Edward F.; and Matinkhah, Angelica, to Arcom Architectural Computer Services, Inc. Structured text system. 5,341,469, Cl. 395-145.000.
Rossi, Anthony P.; and Rosenberg, Daniel W. Trench drain system and installation method. 5,340,234, Cl. 405-48.000.
Rossner, Heinrich-Otto: *See*—
Bebber, Hans J.; Rossner, Heinrich-Otto; and Tomalla, Gebhard, 5,340,961, Cl. 219-121.500.
Rostoker, Michael D., to LSI Logic Corporation. Techniques for providing high I/O count connections to semiconductor dies. 5,340,771, Cl. 437-209.000.
Rostoker, Michael D.; and Sanders, David E., to LSI Logic Corporation. Image-sensing display panels with LCD display panel and photosensitive element array. 5,340,978, Cl. 250-208.100.
Roth, Andreas, to Jean Walterscheid GmbH. Device for connecting an agricultural implement to a tractor. 5,339,907, Cl. 172-678.000.
Roth, Christian; and Scholl, Wolfgang, to ITT Automotive Europe GmbH. Method for press fitting a pivot pin for a wiper assembly. 5,339,510, Cl. 29-436.000.
Rothman, Herbert B. Flexible bulk container lifting means construction. 5,340,217, Cl. 383-17.000.
Rotter, George E.; Melquist, John L.; Chiang, Weilong; Tsai, Boh C.; and Kelly, John J., to Amoco Corporation. Increased throughput in melt fabrication and foaming of polyester. 5,340,846, Cl. 521-182.000.
Rouse, Daniel H.; McClure, Thomas D.; and Reese, Ralph E., to Abbott Laboratories. Head for apparatus for filling a container and placing a stopper therein. 5,339,595, Cl. 53-88.000.
Roussel-UCLAF: *See*—
Babin, Didier; Benoit, Marc; Demoute, Jean-Pierre; Pilorge, Fabienne; and Reinier, Nicole, 5,340,835, Cl. 514-531.000.
Maneglier, Bruno; and Voncken, Bernard, 5,340,574, Cl. 424-85.200.
Rowan, Larry. Holographic display system. 5,341,229, Cl. 359-10.000.
Rowland Institute for Science, Inc., The: *See*—
Savoy, Robert L.; and Hill, J. Winfield, 5,341,133, Cl. 341-22.000.
Rowlands, Robert E.; Saliklis, Edmond P.; Wise, John T.; and Gerhardt, Terry D., to Sonoco Products Company. Apparatus and method for testing tubular products. 5,339,693, Cl. 73-825.000.
Roy, Sumit; Patel, Chandrakant B.; and Yang, Jian, to SamSung Electronics Co., Ltd. System to cancel ghosts generated by multipath transmission of television signals. 5,341,177, Cl. 348-614.000.
Rozzi, Sharon M.: *See*—
Hanzalik, Kenneth L.; Crawford, George H., Jr.; Rozzi, Sharon M.; and Scanlan, David J., 5,340,613, Cl. 427-412.500.
RP Oy Teollisuuden ja Rakentaijain Palvelukeskus: *See*—
Puttonen, Martti; Juusti, Vesa; and Juusti, Pekka, 5,340,166, Cl. 285-189.000.
RPM Detection, Inc.: *See*—
Wilson, Robert L.; and Minter, David P., 5,341,129, Cl. 340-670.000.
Rubin, David, to Co Enzyme Technology Ltd. Method and compositions for treating tumors having high tyrosinase activity. 5,340,803, Cl. 514-25.000.
Rubin, Robert M. Ball retriever having a counter. 5,340,179, Cl. 294-19.200.
Rudolph, Axel, to Carl Freudenberg, Firma. Hydraulically damped rubber bearing. 5,340,093, Cl. 267-219.000.
Ruggeri, Zaverio M.; and Ware, Jerry L., to Scripps Research Institute, The. GPIbα fragments and recombinant DNA expression vectors. 5,340,727, Cl. 435-69.600.
Ruhlmann, Rene P., to M P H I S.A. Invisible joint device, particularly for stretched cloths. 5,339,587, Cl. 52-287.100.
Rumph, Robert M., to Sumter Transport, Inc. Agitation system. 5,340,213, Cl. 366-196.000.
Runge, Louis L.: *See*—
Gehrs, Donald F.; and Runge, Louis L., 5,340,945, Cl. 174-174.000.
Ruohonen, Heikki: *See*—
Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, 5,340,499, Cl. 252-500.000.
Rupp, Stephan: *See*—
Conrads, Norbert; Hillen, Walter; Maack, Hanns-Ingo; Rupp, Stephan; Schafer, Ingo; and Schiebel, Ulrich, 5,341,409, Cl. 378-29.000.
Ruppel, Remy; Hungler, Joel; and Laurent, Pierre, to Kaysersberg. Method for printing-embossing paper sheets. 5,339,730, Cl. 101-32.000.
Russell, James M. Receptacle display activated after the sensing of the condition of the liquid. 5,339,548, Cl. 40-324.000.
Russell, Thomas: *See*—
Hajek, Constance M.; and Russell, Thomas, 5,340,719, Cl. 435-7.210.
Ruth, Howard M.: *See*—
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.
Ruzza, Wogler: *See*—
Marchesan, Guido; and Ruzza, Wogler, 5,339,877, Cl. 164-418.000.
RXS Schrumpftechnik-Garnituren GmbH: *See*—
Latte, Frank-Helge; Froehlich, Franz-Fr.; Boscher, Georg; and Behrendt, Martin, 5,341,451, Cl. 385-135.000.
Ryan, Thomas W., III: *See*—
Gale, Nigel F.; Naegeli, David W.; Ryan, Thomas W., III; and King, Steven R., 5,339,634, Cl. 60-723.000.
Ryat, Marc H., to SGS-Thomson Microelectronics, Inc. Current mirror circuit. 5,341,109, Cl. 330-288.000.
Ryles, Roderick G.: *See*—
Neff, Roger E.; and Ryles, Roderick G., 5,340,865, Cl. 524-317.000.
Ryobi Limited: *See*—
Yokota, Takao; Monobe, Juzaburo; and Sano, Nobuhiro, 5,339,908, Cl. 173-216.000.
Ryobi Outdoor Products: *See*—
Everts, Robert G., 5,339,526, Cl. 30-276.000.
Ryuo, Toshihiko: *See*—
Watanabe, Toshiaki; and Ryuo, Toshihiko, 5,341,235, Cl. 359-281.000.
S.G.S.-Thomson Microelectronics S.r.l.: *See*—
Brambilla, Massimiliano; and Maggioni, Giampietro, 5,341,032, Cl. 307-270.000.
S.I.M.A.C. S.P.A.: *See*—
Castellani, Federico, 5,340,270, Cl. 414-793.200.
Sabel, Hans-Dieter: *See*—
Schleith, Oskar; and Sabel, Hans-Dieter, 5,340,877, Cl. 525-154.000.
Sabins, Fred L.: *See*—
Ravi, Kris M.; and Sabins, Fred L., 5,339,899, Cl. 166-250.000.
Sachs, Emanuel M.; Haggerty, John S.; Cima, Michael J.; and Williams, Paul A., to Massachusetts Institute of Technology. Three-dimensional printing techniques. 5,340,656, Cl. 428-546.000.
Sadatoshi, Hajime; Ima, Seiichiro; and Shiratani, Eisuke, to Sumitomo Chemical Company, Limited. Polypropylene composition and film thereof. 5,340,878, Cl. 525-240.000.
Sadler, Robert E., Jr.: *See*—
Romanenko, Michael; Sadler, Robert E., Jr.; and Buday, John M., Jr., 5,340,099, Cl. 271-303.000.
Saeki, Noriyasu; Watanabe, Koichi; Iwai, Hideo; Yasuda, Eiichi; and Inoue, Ryuji, to Sekisui Kagaku Kogyo Kabushiki Kaisha. An apparatus for continuously manufacturing a fiber reinforced resin. 5,340,300, Cl. 425-329.000.
Saffire, Victor N.; Masters, John H.; Hartman, Robert L.; and Taaffe, Robert B., to Northrop Grumman Corporation. Corrugated substructure forming tool. 5,340,301, Cl. 425-336.000.
Sai, Noriaki; and Kinoshita, Yoshiji, to Whitaker Corporation, The. Female electrical terminal. 5,340,338, Cl. 439-845.000.
Saijo, Keiji: *See*—
Tanaka, Shunji; Yamaoka, Akira; Umeno, Hidenori; Haraguchi, Masatoshi; Ogawa, Kiyoshi; Saijo, Keiji; and Takeda, Katsumi, 5,341,484, Cl. 395-400.000.
Saito, Hitoshi: *See*—
Tomita, Mamoru; Tamura, Yoshitaka; Miyakawa, Hiroshi; Saito, Hitoshi; Abe, Hiroaki; and Nagao, Eiji, 5,340,924, Cl. 530-395.000.
Saito, Koichi: *See*—
Imamura, Tsuyoshi; Mizuguchi, Katsumi; Shibai, Yasuhiro; Ishii, Keizou; Ishikura, Shinichi; and Saito, Koichi, 5,340,891, Cl. 526-88.000.
Saito, Osamu: *See*—
Taniguchi, Ryoziro; Yamaguchi, Takao; and Saito, Osamu, 5,340,514, Cl. 264-62.000.
Saito, Yoshimasa: *See*—
Ueda, Ikuo; Niwa, Mineo; Saito, Yoshimasa; Ishii, Yoshinori; and Hitaguchi, Todashi, 5,340,725, Cl. 435-69.400.
Saitoh, Masaki: *See*—
Yamada, Atsuo; Tamada, Hitoshi; and Saitoh, Masaki, 5,341,450, Cl. 385-130.000.
Sakaguchi, Mikio: *See*—
Sugasawa, Hiroki; Takano, Satoshi; Sakaguchi, Mikio; Sakamoto, Ichiro; Iwata, Minoru; Kurotani, Nariyuki; Koizumi, Hideaki; Itoh, Hiroshi; and Maejima, Risa, 5,340,582, Cl. 424-401.000.
Sakaguchi, Shinji; Tan, Shiro; and Kokubo, Tadayoshi, to Fuji Photo Film Co., Ltd. Positive-type photoresist composition. 5,340,686, Cl. 430-191.000.
Sakamoto, Ichiro: *See*—
Sugasawa, Hiroki; Takano, Satoshi; Sakaguchi, Mikio; Sakamoto, Ichiro; Iwata, Minoru; Kurotani, Nariyuki; Koizumi, Hideaki; Itoh, Hiroshi; and Maejima, Risa, 5,340,582, Cl. 424-401.000.
Sakamoto, Midori: *See*—
Harada, Tadamasa; Sakamoto, Midori; and Nakashima, Noriaki, 5,340,150, Cl. 280-740.000.
Sakamoto, Mitsuo: *See*—
Koshika, Norihide; Sakamoto, Mitsuo; Nishimura, Isao; Sasaki, Katsuyasu; and Oorui, Satoshi, 5,339,580, Cl. 52-167.00E.
Sakamoto, Shunji; and Hoshino, Toshihiko, to Mazda Motor Corporation. Production process administration system. 5,341,304, Cl. 364-468.000.
Sakaniwa, Sakae: *See*—
Maruyama, Toshirou; Tsubuki, Nobuyuki; Sakaniwa, Sakae; Yamaura, Isao; and Minegishi, Kazuo, 5,340,599, Cl. 426-512.000.
Sakata, Tatsumi, to Fujitsu Limited. Frame conversion circuit including initial value input circuit. 5,341,492, Cl. 395-425.000.
Sakata, Yasuyuki: *See*—
Kishiro, Osamu; Shirahama, Rie; Sakata, Yasuyuki; Tanaka, Hideaki; and Honma, Ken, 5,340,911, Cl. 528-308.000.
Sakurai, Masatoshi, to Promident Manufacturing, Limited. Dental handpiece. 5,340,311, Cl. 433-126.000.

Sakurai, Tatsuaki: *See*—
Gotoh, Hiroshi; Shibata, Isamu; Maeda, Ikuo; and Sakurai, Tatsuaki, 5,341,355, Cl. 369-44.370.
Salazar, Alfred: *See*—
Guerra, Ricardo; and Salazar, Alfred, 5,339,562, Cl. 43-43.160.
Saliklis, Edmond P.: *See*—
Rowlands, Robert E.; Saliklis, Edmond P.; Wise, John T.; and Gerhardt, Terry D., 5,339,693, Cl. 73-825.000.
Salina, John E.; and Brown, Clem H., to Motorola, Inc. Optocoupler package wth integral voltage isolation barrier. 5,340,993, Cl 250-551.000.
Salisbury, Herbert R.: *See*—
Taylor, Lee A.; Bennett, Ronald G.; and Salisbury, Herbert R., 5,339,822, Cl. 128-700.000.
Salomon, Gitta B.: *See*—
Vertelney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., 5,341,293, Cl. 364-419.170.
Salomon S.A..: *See*—
Paris, Jean, 5,339,545, Cl. 36-119.000.
Salvati, John G.: *See*—
Crookston, Ronald W.; Marks, Douglas C.; White, Richard E., III; Male, Andrew J.; Chien, Yun-Ko N.; Castelein, Steven; Beatty, William E., Jr.; Maier, Alfred E.; and Salvati, John G., 5,341,191, Cl. 335-16.000.
Salyer, Preston K.: *See*—
Chamberlin, Kim S.; Pruett, Wayne P.; Weaver, Max A.; Hilbert, Samuel D.; Quillen, Donna R.; and Salyer, Preston K., 5,340,910, Cl. 528-289.000.
Sam, Felix O.: *See*—
Stefani, Dario; Sam, Felix O.; and Lunardon, Gianflavio, 5,340,845, Cl. 521-130.000.
Samsung Electron Devices Co., Ltd.: *See*—
Seong, Kwang-ki, 5,341,064, Cl. 313-446.000.
Son, Wan-jae, 5,341,070, Cl. 315-382.000.
SamSung Electronics Co., Ltd.: *See*—
Hwang, In-Hwan; Lee, Hye-Kyoung; Bae, Yi-Sung; and Lee, Bang-Won, 5,341,417, Cl. 379-399.000.
Hyeon, Yun-Jong, 5,341,173, Cl. 348-525.000.
Jeon, Jun-Young, 5,341,331, Cl. 365-189.010.
Park, Jong Y.; and Jung, Hag J., 5,341,027, Cl. 257-786.000.
SamSung Electronics Co., Ltd: *See*—
Roy, Sumit; Patel, Chandrakant B.; and Yang, Jian, 5,341,177, Cl. 348-614.000.
Samudrala, Sridhar: *See*—
Madden, William C.; Rajagopalan, Vidya; and Samudrala, Sridhar, 5,341,319, Cl. 364-748.000.
Samukawa, Katsuhiko: *See*—
Kajino, Yuuichi; Sugi, Hikaru; Ban, Koichi; Honda, Yuuji; Samukawa, Katsuhiko; and Kawai, Takayoshi, 5,340,021, Cl. 236-49.300.
Sanchez, Antonio, to LSI Logic Corporation. Adjustable height work holder for bonding semiconductor dies. 5,340,011, Cl. 228-4.500.
Sanders, David E.: *See*—
Rostoker, Michael D.; and Sanders, David E., 5,340,978, Cl. 250-208.100.
Sanders, Ian L.: *See*—
Dieny, Bernard; Gurney, Bruce A.; Parkin, Stuart S. P.; Sanders, Ian L.; Speriosu, Virgil S.; and Wilhoit, Dennis R., 5,341,261, Cl. 360-113.000.
Sandhu, Gurtej S.: *See*—
Prall, Kirk D.; Sandhu, Gurtej S.; and Meikle, Scott G., 5,341,016, Cl. 257-412.000.
Sandor, Joseph, to Symbol Technologies, Inc. Hands-free bar code scanner with finger activated optical control. 5,340,972, Cl 235-472.000.
Sands, Jeffrey L.; Dagel, Robert J.; and Elsenheimer, John A., to Newell Operating Co. Mini blind cutter. 5,339,716, Cl. 83-452.000
Sandvik AB: *See*—
Bergstrom, Lennart, 5,340,532, Cl. 419-38.000.
Enbergs, Bernhard, 5,340,248, Cl. 409-233.000.
Tukala, Tommy, 5,340,246, Cl. 408-233.000.
Sanken Electric Co., Ltd.: *See*—
Sasahara, Kunio, 5,341,020, Cl. 257-578.000.
Sano, Hirohumi: *See*—
Hirakawa, Kiyoshi; Watadani, Izumi; Tanaka, azuhiko; Kawamoto, Masao; Tanaka, Takaaki; Sano, Hirohumi; Yoshimochi, Hayami. and Sato, Masahiro, 5,340,650, Cl. 428-373.000.
Sano, Nobuhiro: *See*—
Yokota, Takao; Monobe, Juzaburo; and Sano, Nobuhiro, 5,339,908, Cl. 173-216.000.
Sano, Shojiro; and Iwakura, Ken, to Fuji Photo Film Co., Ltd. Optical reading method. 5,340,606, Cl. 427-151.000.
Sano, Yoshihiko: *See*—
Makita, Shigeru; Sano, Yoshihiko; Ota, Hiroyuki; and Nakamura, Yasushi, 5,340,215, Cl. 374-121.000.
Sanshin Kogyo Kabushiki Kaisha: *See*—
Kawamukai, Kenji; and Furuta, Yasunori, 5,340,343, Cl 440-88.000.
Mineo, Shigeharu; and Okuzawa, Kazuhiro, 5,340,344, Cl 440-88.000.
Yoshimura, Tsuyoshi, 5,340,341, Cl. 440-61.000.
Santucci, Robert J.: *See*—
Duffy, Joseph J.; Kirayoglu, Birol; Lin, Pui-Yan; Marin, Robert A ; and Santucci, Robert J., 5,340,429, Cl. 156-288.000.
Sanwa Kagaku Kenkyusho Co., Ltd.: *See*—
Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideaki; Ishiwata, Yoshiro; and Nakajima, Masahiro, 5,340,806, Cl. 514-184.060.
Sanyo Electric Co., Ltd.: *See*—
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl 395-800.000.
Sara Lee/DE N.V.: *See*—
Aarts, Mathias L. C., 5,339,604, Cl. 53-432.000.
Sarkisian, Robert; Mason, James J.; and Muir, David J., to Marketing Displays, Inc. Release mechanism for locking pivotable leg 5,340,068, Cl. 248-188.600.
Sarma, Dwadasi H. R.: *See*—
Berlin, Carl W.; and Sarma, Dwadasi H. R., 5,341,119, Cl 338-224.000.
Sarpotdar, Pramod: *See*—
Illig, Kathleen J.; and Sarpotdar, Pramod, 5,340,564, Cl. 424-9.000.
Sasada, Tetsuo: *See*—
Ikeda, Hiraku; Sasada, Tetsuo; Sato, Isao; Moritomo, Yoshikazu; Takahashi, Koji; and Takaba, Minoru, 5,339,620, Cl. 60-39.030.
Sasahara, Kunio, to Sanken Electric Co., Ltd. Integrated multicellular transistor chip for power switching applications. 5,341,020, Cl 257-578.000.
Sasaki, Katsuyasu: *See*—
Koshika, Norihide; Sakamoto, Mitsuo; Nishimura, Isao; Sasaki, Katsuyasu; and Oorui, Satoshi, 5,339,580, Cl. 52-167.00E.
Sasaki, Masahiko: *See*—
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,341,246, Cl. 359-837.000.
Sasaki, Nobuyuki: *See*—
Machida, Tetsuo; Kiso, Hiroyuki; Sasaki, Nobuyuki; and Kondo, Hiroshi, 5,340,528, Cl. 264-328.700.
Saskatchewan Telecommunications: *See*—
Hoffart, William K., 5,341,216, Cl. 348-1.000.
Sasscer, Edwin P.: *See*—
Parrott, Stephen L.; Adarme, Raul; Lin, Fan-Nan; and Sasscer, Edwin P., 5,341,313, Cl. 364-578.000.
Sato, Hisanao: *See*—
Tohmon, Genji; Sato, Hisanao; Fujita, Toshihiro; and Ohya, Jun, 5,341,237, Cl. 359-341.000.
Sato, Isao: *See*—
Ikeda, Hiraku; Sasada, Tetsuo; Sato, Isao; Moritomo, Yoshikazu; Takahashi, Koji; and Takaba, Minoru, 5,339,620, Cl. 60-39.030.
Sato, Kanji; and Kondo, Tomomasa, to Tokai Denka Kogyo Kabushiki Kaisha. Stabilized sodium percarbonate composition. 5,340,496, Cl 252-186.270.
Sato, Kenichi, to Sumitomo Electric Industries, Ltd. Method of using oxide superconducting conductor. 5,340,943, Cl. 174-15.400.
Sato, Koki, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Air bag apparatus. 5,340,151, Cl. 280-743.00R.
Sato, Masahiro: *See*—
Hirakawa, Kiyoshi; Watadani, Izumi; Tanaka, azuhiko; Kawamoto, Masao; Tanaka, Takaaki; Sano, Hirohumi; Yoshimochi, Hayami; and Sato, Masahiro, 5,340,650, Cl. 428-373.000.
Sato, Michio: *See*—
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.
Sato, Takehiro: *See*—
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, 5,340,788, Cl. 503-209.000.
Sato, Tetsuo: *See*—
Hoshino, Masakazu; and Sato, Tetsuo, 5,341,131, Cl. 340-825.210
Sato, Yuko: *See*—
Baba, Yoshinobu; Ikeda, Takeshi; Tada Tatsuya; Sato, Yuko; and Amano, Yasuko, 5,340,677, Cl. 430-106.600.
Satoh, Asako: *See*—
Takami, Norio; Satoh, Asako; and Ohsaki, Takahisa, 5,340,670, Cl. 429-194.000.
Satoh, Yoshihide, to Fuji Xerox Co., Ltd. Electrophotographic printer using electroluminescent imaging head. 5,341,195, Cl. 355-237.000.
Satou, Kazumasa, to NEC Corporation. Quadrature demodulator circuit utilizing automatic frequency control signal and method thereof. 5,341,105, Cl. 329-308.000.
Satou, Mitsugu: *See*—
Kinoshita, Itsuko; Hata, Masayuki; and Satou, Mitsugu, 5,341,031, Cl. 307-269.000.
Sauer, Joseph: *See*—
Meyer, Wolfram; and Sauer, Joseph, 5,341,433, Cl. 381-69.000.
Sauter Feinmechanik GmbH: *See*—
Thumm, Helmut; and Allgaier, Frieder, 5,339,504, Cl. 29-48.50A.
Savolainen, Esko: *See*—
Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, 5,340,499, Cl. 252-500.000.
Savoy, Robert L.; and Hill, J. Winfield, to Rowland Institute for Science, Inc., The. Keyboard having touch sensor keys for conveying information electronically. 5,341,133, Cl. 341-22.000.
Sawada, Kiyoshi; and Hirai, Toshio, to Fanuc Ltd. EDM with an electrode moved by deformation of an electrode actuator. 5,340,959, Cl. 219-69.150.

VOL 1165 ISS 4 AG 23 1994 UMI

Sawaf, Bernard, deceased: *See—*
Jens, Stephen C.; Sawaf, Bernard, deceased; Viola, Paul F.; Belkus, Paul R.; and Lee, Robert A. S., 5,341,406, Cl. 376-316.000.

Sawaf, Marilene, administratrix.: *See—*
Jens, Stephen C.; Sawaf, Bernard, deceased; Viola, Paul F.; Belkus, Paul R.; and Lee, Robert A. S., 5,341,406, Cl. 376-316.000

Sawai, Kiichi; Kurono, Masayasu; Awaya, Juichi; Kojima, Akio; Ninomiya, Hideaki; Ishiwata, Yoshiro; and Nakajima, Masahiro, to Sanwa Kagaku Kenkyusho Co., Ltd. Composition containing organogermanium compound and immunity adjusting agent comprising the composition. 5,340,806, Cl. 514-184.000.

Sawatari, Yoshihiro: *See—*
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, 5,340,929, Cl. 534-680.000.

Sawdon, Edwin G.: *See—*
Sawdon, Stephen E.; and Sawdon, Edwin G., 5,339,509, Cl 29-432.000.

Sawdon, Stephen E.; and Sawdon, Edwin G., to BTM Corporation Method for attachment of fastener to sheet material. 5,339,509, Cl. 29-432.000.

Sawyer, Gerald F. Pull chain adapter. 5,339,618, Cl. 59-93.000.

Sawyer, Kenneth C., III; and Esbenson, Mark C. Pistachio nut opener 5,339,524, Cl. 30-113.200.

Scallan, David J.; and Parker, George W., to Dresser Industries Inc. Media assisted valves. 5,339,857, Cl. 251-38.000.

Scandsam AB: *See—*
Eriksson, Goran, 5,339,920, Cl. 182-96.000.

Scanlan, David J.: *See—*
Hanzalik, Kenneth L.; Crawford, George H., Jr.; Rozzi, Sharon M.; and Scanlan, David J., 5,340,613, Cl. 427-412.500.

Scaringe, Raymond P.; Evans, Steven; Simpson, William H.; and Vanhanehem, Richard C., to Eastman Kodak Company. Mixture of indoaniline dyes in dye-donor element for thermal dye transfer. 5,340,790, Cl. 503-227.000.

Scarlata, Vincent F., to Remington Arms Company, Inc. Ammunition system comprising slug holding sabot and slug type shot shell. 5,339,743, Cl. 102-439.000.

Schade, Franz: *See—*
Wehling, Bernhard; Schade, Franz; Kochta, Joachim; Burkhardt, Herbert; and Schindlmayr, Peter, 5,340,365, Cl. 8-94.180.

Schadow, Klaus C.: *See—*
Smith, Robert A.; Gutmark, Ephraim; Schadow, Klaus C.; and Wilson, Kenneth J., 5,340,054, Cl. 244-1.00N.

Schaefer, Christian; and Hartig, Klaus, to Leybold Aktiengesellschaft. Method and apparatus for the coating of substrates. 5,340,454, Cl. 204-192.120.

Schaefer, Douglas P.: *See—*
Dean, Robert E.; Cacka, Steven C.; Schaefer, Douglas P.; Sevvom, Hossein F.; and Brumnet, Robert A., 5,341,479, Cl. 395-250.000.

Schafer, Ingo: *See—*
Conrads, Norbert; Hillen, Walter; Maack, Hanns-Ingo; Rupp, Stephan; Schafer, Ingo; and Schiebel, Ulrich, 5,341,409, Cl. 378-29.000.

Schatz, Vernon L., to GBS Systems Corporation. Multiple cross-check document verification system. 5,341,428, Cl. 380-23.000.

Schaus, John M.: *See—*
Gidda, Jaswant S.; and Schaus, John M., 5,340,838, Cl. 514-647.000.

Schegerin, Robert: *See—*
Beaussant, Raymond; Frison, Jacques; and Schegerin, Robert, 5,339,806, Cl. 128-201.210.

Schein, Lawrence B.: *See—*
Fasano, Benjamin V.; Novotny, Vlad J.; and Schein, Lawrence B., 5,340,617, Cl. 427-466.000.

Schelen, Johannes B. J.; and van den Berg, J., to B.V. Optische Industrie "De Oude Delft". Device and method for controlling the contrast in an image observation system provided with an MCP image intensifier. 5,341,219, Cl. 348-217.000.

Schelhorn, Fritz: *See—*
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J., 5,339,837, Cl. 131-296.000.

Schenetti, Tiziano: *See—*
Peterlini, Franco; Schenetti, Tiziano; and Minardi, Marco, 5,339,732, Cl. 101-38.100.

Schepers, Jos G.: *See—*
Dieleman, Adrianus; Schepers, Jos G.; and Westerhout, Gerrit D., 5,341,356, Cl. 369-47.000.

Scher, Natan: *See—*
Beck, Charles A., Jr.; and Scher, Natan, 5,339,809, Cl. 128-207.290.

Schetter, Bernhard, to Siemens Atkiengesellschaft. Tube segment, in particular flame tube, with a cooled support frame for a heatproof lining. 5,339,637, Cl. 60-752.000.

Schiebel, Ulrich: *See—*
Conrads, Norbert; Hillen, Walter; Maack, Hanns-Ingo; Rupp, Stephan; Schafer, Ingo; and Schiebel, Ulrich, 5,341,409, Cl. 378-29.000.

Schielein, Peter: *See—*
Griebel, Ulrich; Kraska, Claudia; and Schielein, Peter, 5,340,226, Cl. 401-96.000.

Schilling, Jan C., to General Electric Company. Dovetail attachment for composite blade and method for making. 5,340,280, Cl. 416-229.00A.

Schindler, Erich: *See—*
Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, 5,341,297, Cl. 364-426.030.

Schindlmayr, Peter: *See—*
Wehling, Bernhard; Schade, Franz; Kochta, Joachim; Burkhardt, Herbert; and Schindlmayr, Peter, 5,340,365, Cl. 8-94.180.

Schlarb, Alois: *See—*
Baumgartl, Horst; Schlarb, Alois; Wahl, Ludwig; Ittemann, Peter; and Brentrup, Karl-Ludwig, 5,340,642, Cl. 428-224.000.

Schlau, Peter: *See—*
Fabinski, Walter; Hubschmann, Peter; Schlau, Peter; and Wolff, Christian, 5,340,542, Cl. 422-82.050.

Schleeter, Keith M. Rollover car wash with retracting cloth strips. 5,339,478, Cl. 15-97.300.

Schleicher, Lothar: *See—*
Zwicknagl, Hans-Peter; Hoepfner, Joachim; and Schleicher, Lothar, 5,340,755, Cl. 437-33.000.

Schleicher, Lowell: *See—*
Miller, Robert E.; Schleicher, Lowell; Brown, Robert W.; and Feldman, Lucy, 5,340,680, Cl. 430-138.000.

Schleith, Oskar; and Sabel, Hans-Dieter, to Hoechst Aktiengesellschaft. Polyoxymethylene composition, and its use. 5,340,877, Cl. 525-154.000.

Schlickenmeyer, Glen A. Modular deck flooring system. 5,339,581, Cl. 52-177.000.

Schlossman, Stuart F.: *See—*
Anderson, Paul J.; Streuli, Michel; and Schlossman, Stuart F., 5,340,935, Cl. 536-23.500.

Schlumberger Industries: *See—*
Janssen, Sylvain; Fournier, Jacques; and Campain, Jean-Pierre, 5,339,685, Cl. 73-199.000.

Schmid, Donald T. Insulated building blocks and composite walls having stackable half-bond symmetry. 5,339,592, Cl. 52-606.000.

Schmid, Hermann: *See—*
Calsson, Staffan; and Schmid, Hermann, 5,339,624, Cl. 60-207.000.

Schmidt, Albert L.; McKinley, Ellen K.; Hanes, Lewis F.; Morris, Michael R.; McKenzie, Patrick J.; and Haley, Paul H., to Westinghouse Electric Corp. Method for training material evaluation with method of EEG spectral estimation. 5,339,826, Cl. 128-731.000.

Schmidt, Erich A.: *See—*
Schmidt, Volker; and Schmidt, Erich A., 5,339,984, Cl. 221-124.000.

Schmidt, Leland R., to Pioneer Technology Corporation; and L. Ron Schmidt and Associates, Inc. Motion picture projection apparatus. 5,341,182, Cl. 352-184.000.

Schmidt, Robert H.; and Martin, Dan, to Lumonics Corporation. Automatic control of laser beam tool positioning. 5,340,962, Cl. 219-121.780.

Schmidt, Thomas D.; and Smit, Peter, to Megamation Incorporated. Linear motor surface coating system. 5,340,400, Cl. 118-313.000.

Schmidt, Volker; and Schmidt, Erich A. Fastener attaching apparatus having multiple sources of fastener hardware. 5,339,984, Cl. 221-124.000.

Schmit, Jean-Jacques: *See—*
Sevenhans, Joannes M. J.; and Schmit, Jean-Jacques, 5,341,404, Cl. 375-106.000

Schmittle, Hugh, to Freewing Aerial Robotics Corporation. Thrust vectoring free wing aircraft. 5,340,057, Cl. 244-48.000.

Schmitz, Detlef: *See—*
Neuhaus, Reinhard; Kersten, Jens-Heinrich; and Schmitz, Detlef, 5,340,031, Cl. 239-343.000.

Schmudde, Werner: *See—*
Sprang, Ruediger; Vossel, Andreas; Schmudde, Werner; and Buhl, Reinhard, 5,340,220, Cl. 384-125.000.

Schneider, Hauke: *See—*
Gasser, Markus; and Schneider, Hauke, 5,339,942, Cl. 198-347.100.

Schneider, Henry J.: *See—*
Szczepanski, Joseph T.; Aune, Thomas M.; and Schneider, Henry J., 5,340,479, Cl. 210-497.100.

Schneider, James R.: *See—*
Hertel, Paul E.; and Schneider, James R., 5,340,254, Cl. 411-311.000

Schnick, Wolfgang: *See—*
Baldus, Hans-Peter; and Schnick, Wolfgang, 5,340,561, Cl. 423-344.000

Schniepp, Werner: *See—*
Weiss, Rolf; and Schniepp, Werner, 5,340,128, Cl. 279-60.000.

Schoemaker, Joyce A.: *See—*
Lowe, Peter A.; Marston, Fiona A. O.; Angal, Sarojani; and Schoemaker, Joyce A., 5,340,926, Cl. 530-423.000.

Schoenherr, William J.: *See—*
Vincent, Gary A.; Brady, William P.; Cifuentes, Martin E.; Schoenherr, William J.; and Vincent, Harold L., 5,340,887, Cl. 525-477.000.

Scholl, Wolfgang: *See—*
Roth, Christian; and Scholl, Wolfgang, 5,339,510, Cl. 29-436.000.

Schormair, Eckhart; Ponisch, Jurgen; and Laaf, Rainer, to EFFEM GmbH. Pressure lid can. 5,339,977, Cl. 220-307.000.

Schott Glaswerke: *See—*
Paschke, Hartmut; Daimer, Johann; and Haring, Richard, 5,340,776, Cl. 501-11.000.

Schram, Joseph G.: *See—*
Folkins, Jeffrey J.; Behe, Thomas J.; and Schram, Joseph G., 5,341,197, Cl. 355-264.000.

Schreiber, Christopher M.; and Crumly, William R., to Hughes Aircraft Company. Resilient interconnection bridge. 5,340,296, Cl. 425-123.000.

Schreiner, Michael J., to Hunt Holdings, Inc. Ergonomic mouse pad. 5,340,075, Cl. 248-346.000.

Schroeder, Eric J. Doll with patch and cover for releasably engaging a removable item. 5,340,348, Cl. 446-73.000.

Schroth, Karl-Jurgen; Jeche, Rolf; and Meier-Armdt, Stefan, to Carl F. Schroth GmbH. Energy converter for a safety belt. 5,340,046, Cl 242-407.000.

Schroth, Walter D., to Interconnect Systems Group Inc. Shielded modular adapter. 5,340,333, Cl. 439-607.000.

Schucart, David E.: *See—*
Poloyko, Alexander; Goldberg, Mark C.; Goldberg, Edward M.; Melinyshyn, Lev A.; and Schucart, David E., 5,339,801, Cl 128-20.000.

Schulkind, Richard L.: *See—*
Slovacek, Rudolf E.; Love, Walter F.; Cook, Thomas A.; Schulkind, Richard L.; and Walczak, Irene M., 5,340,715, Cl. 435-6.000.

Schulte-Schlagbaum Aktiengesellschaft: *See—*
Eisermann, Armin, 5,339,661, Cl. 70-276.000.

Schultz, Thomas M.; and Hochman, Lana, to Shiseido Co. Ltd. Permanent waving and color enhancing composition and method. 5,340,367, Cl. 8-432.000.

Schultz, Thomas M.: *See—*
Wong, Stephanie; Ferullo, Teresa; and Schultz, Thomas M., 5,340,570, Cl. 424-71.000.

Schulz, Jens; Hoffmann, Martin; and Rebeaud, Jean-Claude, to Peters Maschinenfabrik. Single-face station for a machine that produces corrugated cardboard. 5,340,432, Cl. 156-472.000.

Schumacher, Egon, to Lubing Maschinenfabrik Ludwig Bening GmbH & Co. Floor watering system for feeding water to animals. 5,339,768, Cl. 119-72.000.

Schuman, Ralph J., Sr.; and Schuman, Robert J. Portable door alarm 5,341,123, Cl. 340-546.000.

Schuman, Robert J.: *See—*
Schuman, Ralph J., Sr.; and Schuman, Robert J., 5,341,123, Cl 340-546.000.

Schuster, Ludwig: *See—*
Henn, Rolf; Hinz, Werner; Schuster, Ludwig; and Vorspohl, Klaus. 5,340,916, Cl. 528-405.000.

Schutte, Mark E.: *See—*
Thatcher, William B.; and Schutte, Mark E., 5,341,424, Cl 380-7.000

Schutten, Herman P.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph, and Schutten, Herman P., 5,341,130, Cl. 340-825.060.

Schwan-Stabilo Schwanhausser GmbH & Co.: *See—*
Griebel, Ulrich; Kraska, Claudia; and Schielein, Peter, 5,340,226, Cl. 401-96.000.

Schwartz, C. Eric: *See—*
Bridges, Alexander; Littlefield, Bruce A.; and Schwartz, C. Eric. 5,340,833, Cl. 514-443.000.

Schwartz, Geraldine C.: *See—*
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,340,775, Cl. 437-246.000.

Schwartz, Jacob: *See—*
Perlin, Kenneth; and Schwartz, Jacob, 5,341,466, Cl. 395-139.000.

Schwartzman, Wayne, to McGill Incorporated. Combined multi-hole punch and ruler. 5,340,229, Cl. 402-4.000.

Schwindeman, James A.: *See—*
Morrison, Robert C.; Hall, Randy W.; Schwindeman, James A.; Kamienski, Conrad W.; and Engel, John F., 5,340,507, Cl. 260-665.00R.

Schyboll, Georg; and Mayerbock, Heinrich, to Boge AG. Hydraulic damping elastomeric bearing. 5,340,094, Cl. 267-219.000.

Scientific-Atlanta, Inc.: *See—*
Thatcher, William B.; and Schutte, Mark E., 5,341,424, Cl 380-7.000.
Wasilewski, Anthony J.; and Gammie, Keith, 5,341,425, Cl 380-20.000.

Scientific Columbus Co.: *See—*
Hoover, James M., 5,341,090, Cl. 324-123.00R.

Scilog, Inc.: *See—*
Clemens, Anton H., 5,340,290, Cl. 417-477.00R.

Scott, David M., to Du Pont de Nemours, E. I., and Company. Nondestructive analysis of dispersion and loading of reinforcing material in a composite material. 5,341,436, Cl. 382-1.000.

Scott, Gary M., to Warn Industries, Inc. Fender flare for a vehicle. 5,340,154, Cl. 280-848.000.

Scott, George R.: *See—*
Collins, Alfred L.; Cutright, Edwin L.; DeBlasio, James A.; Dickerson, Richard H.; Kean, Billy J., Jr.; Ritt, Renzer R., Sr.; and Scott, George R., 5,339,871, Cl. 141-1.000.

Scott Glaswerke: *See—*
Kloss, Thomas; Stein, Elfi; Gerth, Kirsten; and Wickardt, Andrea, 5,340,778, Cl. 501-52.000.

Scott, Phillip R., to FMC Corporation. Self-adjusting force balance radial grape and raisin harvester. 5,339,612, Cl. 56-330.000.

Scott, William G., to Space Systems/Loral, Inc. Method for measuring and correcting antenna RF beam alignment. 5,341,147, Cl. 342-360.000

Scripps Research Institute, The: *See—*
Ruggeri, Zaverio M.; and Ware, Jerry L., 5,340,727, Cl. 435-69.600.

Se-Kure Controls, Inc.: *See—*
Leyden, Roger J.; and Surma, Terrance, 5,341,124, Cl. 340-568.000.

Seagate Technology, Inc.: *See—*
Jabbari, Irai, 5,341,260, Cl. 360-105.000.
Starr, James A.; and Sneddon, Norman R., 5,341,255, Cl 360-77.080.

Seb S.A.: *See—*
Coppier, Michel, 5,339,978, Cl. 220-318.000.

Segal, Gary I.: *See—*
Hira, Govind L.; Hall, Richard L.; and Segal, Gary I., 5,340,015, Cl. 228-205.000.

Segal, M. David: *See—*
Tetart, M. Serge; and Segal, M. David, 5,340,903, Cl. 528-164.000.

Segura Badia, Marcelo, to L'Institut Municipal D'Assistencia Sanitaria. Disinfecting connection for catheters. 5,340,359, Cl. 604-283.000.

Seher, Jens-Peter, to Hewlett-Packard Company. Method and apparatus for detecting the presence and/or concentration of biomolecules 5,341,215, Cl. 356-445.000.

Seiden, Bill: *See—*
Curtis, John P.; Greenfeder, Susan E.; Seiden, Bill; and Lees. Michael L., 5,340,566, Cl. 424-49.000.

Seidman, Johnathan: *See—*
Brenner, Michael B.; Strominger, Jack L.; Seidman, Johnathan; Ip, Stephen H.; and Krangel, Michael S., 5,340,921, Cl. 530-350.000.

Seiko Epson Corporation: *See—*
Baba, Hiroyuki, 5,341,176, Cl. 348-569.000.
Misawa, Toshiyuki; and Oshima, Hiroyuki, 5,341,012, Cl 257-351.000.
Miyazawa, Yoshinori; Ishii, Hiroshi; Nakamura, Osamu; Kurashima, Noriniko; Kitahara, Tsuyoshi; and Miyazawa, Hisashi, 5,341,164, Cl. 347-88.000.
Takaoka, Toshiaki; Tanaka, Katsuyoshi; and Kato, Kenji, 5,340,893, Cl. 526-292.400.
Tanaka, Minoru; Mizuno, Shigeki; and Shimomura, Masaki. 5,340,222, Cl. 400-124.250.

Seikosha Co., Ltd.: *See—*
Takahashi, Shingo; and Imanishi, Aisaku, 5,341,317, Cl 364-720.000.

Sekhar, Jainagesh; and de Nora, Vittorio, to Moltech Invent S.A. Aluminum electrolytic cell method with application of refractory protective coatings on cello components. 5,340,448, Cl. 204-67.000.

Sekhar, Jainagesh A.; Subramanian, V.; and Canarslan, Necip S., to University of Cincinnati. Combustible slurry for joining metallic or ceramic surfaces or for coating metallic, ceramic and refractory surfaces. 5,340,014, Cl. 228-198.000.

Sekine, Katsumi: *See—*
Ishibashi, Ryoichi; and Sekine, Katsumi, 5,341,373, Cl. 370-85.900.

Sekioka, Ryouichi: *See—*
Himeno, Kiyoshi; and Sekioka, Ryouichi, 5,340,930, Cl 534-753.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Saeki, Noriyasu; Watanabe, Koichi; Iwai, Hideo; Yasuda, Eiichi; and Inoue, Ryuji, 5,340,300, Cl. 425-329.000.
Ueda, Naoki; Asahina, Kenichi; Omura, Hirohumi; and Miyai, Jiro, 5,340,654, Cl. 427-437.000.

Sekiya, Toshiyuki, to Fuji Photo Film Co., Ltd. Light-sensitive composition containing diazo resin, polyurethane resin and fluorine atom-containing copolymer surfactant. 5,340,685, Cl. 430-175.000.

Sekozawa, Teruji; Takahashi, Shinsuke; and Shioya, Makoto, to Hitachi, Ltd. Method for calculating air flow rate at cylinder port and throttle valve opening angle. 5,339,681, Cl. 73-118.200.

Sells, Gary L. Roof vent. 5,339,582, Cl. 52-198.000.

Sem, Thomas R.: *See—*
Jungquist, Bruce E.; McBroom, Michael E.; Yaeger, Curtis G.; Knauff, Donald G.; and Sem, Thomas R., 5,339,787, Cl. 123-514.000.

Senbokuya, Haruo: *See—*
Yoshino, Akira; Tahara, Massaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, 5,340,412, Cl. 148-208.000.

Senior Engineering Investments, B.V.: *See—*
Sheppard, Michael W., 5,340,165, Cl. 285-226.000.

Sensormatic Electronics Corporation: *See—*
Plonsky, Christopher B.; Balch, Brent F.; and Fallin, David, 5,341,125, Cl. 340-572.000.

Seong, Kwang-ki, to Samsung Electron Devices Co., Ltd. Cathode assembly of an electron gun for a color cathode ray tube. 5,341,064, Cl. 313-446.000.

Serlachius, Jarl F. Fastening device. 5,339,497, Cl. 24-129.00R.

Servant, Gordon W.: *See—*
Nuhn, Derek J.; Servant, Gordon W.; Brennan, Robert P.; and Jeffrey, George A., 5,341,370, Cl. 370-84.000.

Seta Co., Ltd.: *See—*
Fujimoto, Jun, 5,339,821, Cl. 128-700.000.

Seto, Toru: *See—*
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.

Setoseido Kabushiki Kaisha: *See—*
Taniguchi, Ryoziro; Yamaguchi, Takao; and Saito, Osamu, 5,340,514, Cl. 264-62.000.

Sevenhans, Joannes M. J.; and Schmit, Jean-Jacques, to Alcatel N.V. Synchronizing circuit and method. 5,341,404, Cl. 375-106.000.

Severinghaus, Nelson: *See—*
Westbrook, C. Eric; and Severinghaus, Nelson, 5,340,392, Cl. 106-471.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Sevvom, Hossein F.: *See—*
Dean, Robert E.; Cacka, Steven C.; Schaefer, Douglas P.; Sevvom, Hossein F.; and Brumnet, Robert A., 5,341,479, Cl. 395-250.000.

Sextant Avionique: *See—*
Vaquier, Mariannick; and de Beco, Hugues, 5,340,061, Cl. 244-175.000.

SGS-Thomson Microelectronics, Inc.: *See—*
McClure, David C., 5,341,336, Cl. 365-201.000.
Ryat, Marc H., 5,341,109, Cl. 330-288.000.

SGS-Thomson Microelectronics S.r.l.: *See—*
Brambilla, Massimiliano; and Maggioni, Giampietro, 5,341,282, Cl. 363-50.000.
Canclini, Athos, 5,341,005, Cl. 257-173.000.

Shabram, Lyle F., Jr.: *See—*
Kirby, Jack E.; and Shabram, Lyle F., Jr., 5,340,103, Cl. 273-32.00H.

Shafer, Sheldon J.: *See—*
Clagett, Donald C.; Fox, Daniel W.; Maresca, Louis M.; and Shafer, Sheldon J., 5,340,885, Cl. 525-425.000.

Shah, Sanjay M.; and Lovell, Michael H., to General Motors Corporation. Method for pinch free tube forming. 5,339,667, Cl. 72-58.000.

Shalhoub, Ibrahim M.: *See—*
Anderson, Charles C.; DeLaura, Mario D.; Christian, Paul A.; Shalhoub, Ibrahim M.; and Jennings, David F., 5,340,676, Cl. 430-63.000.

Shama, Sami A.: *See—*
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,340,653, Cl. 428-423.100.

Shamie, Louis. Combination foldable playpen and dressing/changing table. 5,339,470, Cl. 5-98.100.

Shankland, Ian R.: *See—*
Decaire, Barbara R.; Logsdon, Peter B.; Lund, Earl A. E.; Shankland, Ian R.; Singh, Rajiv R.; Wilson, David P.; and Thomas, Raymond H. P., 5,340,490, Cl. 252-67.000.

Shape Corporation: *See—*
Maxam, V. Dale, 5,340,177, Cl. 293-117.000.

Sharp, Jeffrey O.; Harris, Michael R.; Cooper, Robert J.; Ledbetter, Steve M.; Reed, Ronald H.; and Chaffin, Ronald W., to Square D Company. Electrical load center. 5,341,273, Cl. 361-641.000.

Sharp Kabushiki Kaisha: *See—*
Fujii, Yoshikazu; Inui, Tetsuya; Deguchi, Toshihisa; and Ohta, Kenji, 5,341,362, Cl. 369-275.400.
Hotta, Yasuhiro, 5,341,337, Cl. 365-204.000.
Takeda, Makoto; and Hishida, Tadanori, 5,340,999, Cl. 257-66.000.
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.
Toki, Hirotaka; Wakuda, Osamu; Yamamoto, Hiranaga; and Nagao, Hiroyuki, 5,340,096, Cl. 271-9.000.
Yamamoto, Yoshitaka; and Ishii, Yutaka, 5,341,231, Cl. 359-49.000.

Shaw, Jane M.: *See—*
Cuomo, Jerome J.; Gelorme, Jeffrey D.; Hatzakis, Michael, Jr.; Lewis, David A.; Shaw, Jane M.; and Whitehair, Stanley J., 5,340,914, Cl. 528-353.000.

Shaye Communications Limited: *See—*
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.

Shea, Patrick P.; and Darlington, Henry S., to Teledyne Industries, Inc. Method using a cam for folding a seal removal tab on a collapsible tube. 5,340,421, Cl. 156-69.000.

Sheffield, William F.: *See—*
Roeker, David C.; Slama, David F.; and Sheffield, William F., 5,340,649, Cl. 428-344.000.

Sheffler, James B.: *See—*
Frazier, Lawrence M.; Sheffler, James B.; and Carlson, Ronald F., 5,341,141, Cl. 342-59.000.

Shehow, Kenneth L.: *See—*
Polzin, Bruce C.; Shehow, Kenneth L.; and Burns, Fredrick B., 5,339,484, Cl. 15-230.110.

Shell Oil Company: *See—*
Adamski, Robert P.; Mores, Maryanne; Wong, Pui K.; and Davis, Diana D., 5,340,842, Cl. 521-64.000.
Chang, David S.; Rhee, Aaron S.; Crossland, Ronald K.; and Buhler-Vidal, Jorge O., 5,340,509, Cl. 264-5.000.
Corley, Larry S., 5,340,890, Cl. 525-530.000.
Keijsper, Johannes J., 5,340,787, Cl. 502-162.000
Wang, Pen-Chung; and Kelsey, Donald R., 5,340,912, Cl. 528-322.000.

Shelton, James W.; Marfin, Alan A.; and Dailey, George F., to Westinghouse Electric Corporation. Dynamoelectric machine stator test device. 5,341,095, Cl. 324-772.000.

Shelton, Robert Q.; and Pratt, James V., Jr., to Halliburton Company. Line mole trap. 5,339,846, Cl. 134-201.000.

Shen, Wei H. Track-mounted lighting fixture. 5,341,276, Cl. 362-226.000.

Shen, Yan-Fei: *See—*
O'Young, Chi-Lin; Shen, Yan-Fei; Zerger, Richard P.; and Suib, Steven L., 5,340,562, Cl. 423-599.000

Shenian, Popkin: *See—*
Gillette, Gregory R.; Shenian, Popkin; Bolon, Donald A.; and Irwin, Patricia C., 5,340,839, Cl. 521-40.000.

Sheppard, Michael W., to Senior Engineering Investments, B.V. Flexible connector. 5,340,165, Cl. 285-226.000.

Sherman, William, III: *See—*
Melcher, Richard A.; Sherman, William, III; Nadig, Madhura; Stewart, Robert M.; Hessler, Paul L.; and Bryce, David R., 5,341,408, Cl. 377-8.000.

Shern Diau Enterprise Co., Ltd.: *See—*
Chen, Shun-Teng, 5,340,207, Cl. 312-262.000.

Sherwin-Williams Company, The: *See—*
Pearson, Paul D.; Rao, Madhukar; and Tomko, Richard F., 5,340,871, Cl. 523-526.000.

Sherwood, David E., Jr.: *See—*
Dai, Pei-Shing E.; Sherwood, David E., Jr.; and Petty, Randall Hughes, 5,340,466, Cl. 208-216.0PP.

Sheskey, Paul J.: *See—*
Toth, Cheryl A.; and Sheskey, Paul J., 5,339,769, Cl. 119-173.000.

Shewchuk, Ronald M.: *See—*
Swarup, Shanti; McCollum, Gregory J.; Shewchuk, Ronald M.; and Martz, Jonathan T., 5,340,894, Cl. 526-301.000.

Shiau, Jeng-Nan, to Xerox Corporation. Automatic image segmentation for color documents. 5,341,226, Cl. 358-518.000.

Shibahara, Masahiko: *See—*
Asai, Hiroshi; Takeshige, Nobuhide; Uosaki, Yasuo; Shibahara, Masahiko; Omori, Motofumi; and Morimoto, Shigenori, 5,340,414, Cl. 148-325.000.

Shibai, Yasuhiro: *See—*
Imamura, Tsuyoshi; Mizuguchi, Katsumi; Shibai, Yasuhiro; Ishii, Keizou; Ishikura, Shinichi; and Saito, Koichi, 5,340,891, Cl. 526-88.000.

Shibata, Isamu: *See—*
Gotoh, Hiroshi; Shibata, Isamu; Maeda, Ikuo; and Sakurai, Tatsuaki, 5,341,355, Cl. 369-44.370.

Shibata, Sueji, to Yamaichi Electronics Co., Ltd. Optical connector. 5,341,446, Cl. 385-78.000.

Shibata, Toshisuke; Inoue, Akihisa; and Masumoto, Tsuyoshi, to Tsuyoshi Masumoto; Yoshida Kogyo K.K.; and Inoue, Akihisa. High-strength magnesium-based alloy. 5,340,416, Cl. 148-420.000.

Shibayama, Akinori; and Yamada, Toshio, to Matsushita Electric Industrial Co., Ltd. Substrate potential generator. 5,341,035, Cl. 307-296.200.

Shibayama, Kozaburo: *See—*
Uemura, Sashirou; Nishii, Yoshiyuki; Kanda, Isamu; Hara, Zenichiro; Futatsuishi, Shunichi; and Shibayama, Kozaburo, 5,341,065, Cl. 313-495.000.

Shibayama, Takao: *See—*
Watanabe, Shinichi; Shibayama, Takao; Uzuyama, Kimitake; Fukamachi, Kazuyuki; Maekawa, Keiichiro; and Maruo, Masaru, 5,339,682, Cl. 73-123.000.

Shibuya Kogyo Co., Ltd.: *See—*
Hamano, Ichirou; Honda, Munetaka; Takakuwa, Tateki; Omori, Toshiyuki; and Kotani, Yasuaki, 5,339,600, Cl. 53-306.000.
Naka, Toshiaki; Motomura, Akira; and Akamaru, Hidefumi, 5,339,597, Cl. 53-167.000.

Shieh, Yaw-Shih: *See—*
Chen, Tshaw-Chuang; Chang, Hong-Shi; Yang, Huan-Jen; and Shieh, Yaw-Shih, 5,341,077, Cl. 318-434.000.

Shigeeda, Nobuyuki; Yamamoto, Susumu; Katsurabayashi, Masahiko; and Ikegaya, Tadahiko, to Fuji Xerox Co., Ltd. Heirarchical indication inclusive indication and heirarchical inclusive indication input system. 5,341,223, Cl. 358-440.000.

Shigeru Akamatsu: *See—*
Akamatsu, Shigeru; and Kondo, Yuji, 5,339,816, Cl. 128-661.090.

Shih, Lionel C., to Ampex Systems Corporation. Data recording system having improved automatic rewrite capability and method of rewriting. 5,341,378, Cl. 371-2.200.

Shimado, Toshihiro: *See—*
Kawai, Masao; Kyotani, Yoshihiro; Aruga, Hideki; Shiimado, Toshihiro; Ito, Yoshihisa; and Hori, Koji, 5,339,649, Cl. 62-46 100.

Shikatani, Junichi; and Kawahara, Shigeki, to Fujitsu Limited. Circuit arrangement suitable for testing cells arranged in rows and columns, semiconductor integrated circuit device having the same, and method for arranging circuit blocks on chip. 5,341,383, Cl. 371-22.100.

Shikoku Electric Power Co., Inc.: *See—*
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.

Shima, Kenji: *See—*
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.

Shimadzu Corporation: *See—*
Nakagawa, Kazuya; Miyoshi, Satoru; and Fukushima, Toyoaki, 5,339,673, Cl. 73-23.360.

Shimamune, Masayuki: *See—*
Enomoto, Takashi; Shimamune, Masayuki; and Danjo, Keishi, 5,340,491, Cl. 252-79.100.

Shimano Inc.: *See—*
Morimoto, Shinichi, 5,340,053, Cl. 242-261.000.

Shimasue, Yoshiyuki, to Elsol Products Corporation. Composite resin for use in dentistry and method for treating same to provide antimicrobial and microbicidal properties. 5,340,850, Cl 523-115.000.

Shimizu, Atsushi; Isomura, Satoru; Yamada, Takeo; Kobayashi, Tohru; Fujimura, Yoshuhiro; and Ito, Yuko, to Hitachi, Ltd. Integrated circuit having alternate rows of logic cells and I/O cells. 5,341,049, Cl. 307-482.100.

Shimizu, Hisashi: *See—*
Shiobara, Toshio; Shimizu, Hisashi; and Takei, Minoru, 5,340,851, Cl. 523-443.000.

Shimoda, Kaneyasu; and Furukawa, Hideto, to Fujitsu Limited. Viterbi equalizer and recording/reproducing device using the same. 5,341,386, Cl. 371-43.000.

Shimoda, Yoshitaka: *See—*
Yoshio, Junichi; and Shimoda, Yoshitaka, 5,341,353, Cl. 369-44.280.

Shimoji, Noriyuki, to Rohm Co., Ltd. Semiconductor device including nonvolatile memories. 5,341,010, Cl. 251-326.000.

Shimojo, Shigeru: *See—*
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.

Shimomura, Masaki: *See—*
Tanaka, Minoru; Mizuno, Shigeki; and Shimomura, Masaki, 5,340,222, Cl. 400-124.250.

Shin-Etsu Bio, Inc.: *See—*
Pollock, Thomas J.; and Thorne, Linda, 5,340,743, Cl. 435-252.300.

Shin-Etsu Chemical Co., Ltd.: *See—*
Inoue, Yoshio; and Yoshino, Masachika, 5,340,872, Cl. 524-588.000.
Pollock, Thomas J.; and Thorne, Linda, 5,340,743, Cl. 435-252.300.
Shiobara, Toshio; Shimizu, Hisashi; and Takei, Minoru, 5,340,851, Cl. 523-443.000.
Watanabe, Toshiaki; and Ryuo, Toshihiko, 5,341,235, Cl. 359-281.000.

Shin-Etsu Handotai Co., Ltd.: *See—*
Takano, Kiyotaka; Fusegawa, Izumi; and Yamagishi, Hirotoshi, 5,340,434, Cl. 117-21.000.

Shindo, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Rendezvous docking optical sensor system. 5,340,060, Cl. 244-161.000.

Shinoda, Hosei: *See—*
Morita, Kenji; Uchiki, Kohichi; and Shinoda, Hosei, 5,340,646, Cl. 428-307.300.

Shinohara, Tsutomu; Yamaji, Michio; Yoshikawa, Kazuhiro; and Yamamoto, Kenji, to Fujikin Incorporated. Pipe joint and gasket retainer for use in pipe joint. 5,340,170, Cl. 285-379.000.

Shinskey, Francis G., to Foxboro Company, The. Method and apparatus for analyzing process characteristics. 5,341,288, Cl. 364-159.000.

Shiobara, Toshio; Shimizu, Hisashi; and Takei, Minoru, to Shin-Etsu Chemical Company, Ltd. Thermosetting resin compositions. 5,340,851, Cl. 523-443.000.

Shiomura, Tetsunosuke: *See—*
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,340,848, Cl. 522-157.000.

Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., to Abbott Laboratories. Peptide analog type-B CCK receptor ligands. 5,340,802, Cl. 514-18.000.

Shioya, Makoto: *See—*
Sekozawa, Teruji; Takahashi, Shinsuke; and Shioya, Makoto, 5,339,681, Cl. 73-118.200.

Shioya, Satoru: *See—*
Tokoro, Hisao; Shioya, Satoru; and Hinokawa, Akira, 5,340,841, Cl. 521-60.000.

Shipley Company Inc.: *See—*
Thackeray, James W.; Denison, Mark; and Orsula, George W., 5,340,696, Cl. 430-270.000.

Shirahama, Katsunori; Okuda, Michihiro; and Ohno, Atsuo, to Nissan Motor Co., Ltd. Shift device for automatic transmission. 5,339,705, Cl. 74-475.000.

Shirahama, Rie: *See—*
Kishiro, Osamu; Shirahama, Rie; Sakata, Yasuyuki; Tanaka, Hideaki; and Honma, Ken, 5,340,911, Cl. 528-308.000.

Shirai, Ichiro; and Sugino, Kenichi, to Nintendo Co., Ltd. Shooting scope used in shooting game system. 5,340,115, Cl. 273-310.000.

Shirai, Kazunari; Ozaki, Yoshitaka; and Fukaya, Hiroyasu, to Nippondenso Co., Ltd. Diversity type global positioning system for motor vehicles. 5,341,301, Cl. 364-449.000.

Shiraishi, Hirofumi; and Honda, Yoshiyuki, to Tokyo Electron Limited; and Tokyo Electron Saga Limited. Spindrier. 5,339,539, Cl. 34-58.000.

Shiraishi, Naoto; and Fujii, Tatsuya, to Ricoh Company, Ltd. Image processor. 5,341,468, Cl. 395-132.000.

Shirakura, Shiro: *See—*
Kumazawa, Toshiaki; Yanase, Masashi; Harakawa, Hiroyuki; Obase, Hiroyuki; Oda, Shoji; Shirakura, Shiro; Yamada, Koji; and Kubo, Kazuhiro, 5,340,807, Cl. 514-215.000.

Shiratani, Eisuke: *See—*
Sadatoshi, Hajime; Ima, Seiichiro; and Shiratani, Eisuke, 5,340,878, Cl. 525-240.000.

Shirokura, Yukio; Suzuki, Fumiyuki; and Ogura, Tohru, to Fuji Photo Film Co., LTD. Process for the preparatin of polyester containing little deposited antimony particles as impurities. 5,340,906, Cl. 528-274.000.

Shirota, Norihisa, to Sony Corporation. Method and apparatus for decoding Reed-Solomon code. 5,341,385, Cl. 371-37.100.

Shiseido Co. Ltd.: *See—*
Schultz, Thomas M.; and Hochman, Lana, 5,340,367, Cl. 8-432.000.
Wong, Stephanie; Ferullo, Teresa; and Schultz, Thomas M., 5,340,570, Cl. 424-71.000.

Shoda, Masahiro, to NEC Corporation. Large-scale integrated circuit device. 5,341,380, Cl. 371-22.300.

Shoenhair, John J.; and Ivachev, Alex, to Loram Maintenance of Way, Inc. Ultrasonic rail web centerline detector. 5,339,692, Cl. 73-636.000.

Sholder, Jason A., to Siemens Pacesetter, Inc. Implantable pacemaker having adaptive AV interval adoptively shortened to assure ventricular pacing. 5,340,361, Cl. 607-24.000.

Shopp, Rick A., to Draper Shade & Screen Co., Inc. Trap door for projection screen case. 5,341,241, Cl. 359-443.000.

Showa Denko Kabushiki Kaisha: *See—*
Oda, Yukio; and Ogawa, Jun, 5,340,781, Cl. 501-127.000.

Shrivastava, Sunita: *See—*
Friedman, Steven J.; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., 5,341,464, Cl. 395-131.000.

Shu, Zu-Shung. Ratchet screw driver. 5,339,711, Cl. 81-63.000.

Shue, Youe-Kong: *See—*
Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., to Abbott Laboratories. 5,340,802, Cl.

Shukla, Ashok K. Apparatus for electroelution. 5,340,449, Cl. 204-180.100.

Shvager, Joseph: *See—*
Mayzels, Ilya; and Shvager, Joseph, 5,339,803, Cl. 128-20.000.

SiArc: *See—*
El Gamal, Abbas, 5,341,041, Cl. 307-446.000.

Sich, Gary M.; and Kanjo, Wajih, to Westinghouse Air Brake Company. Constant tension device for railway car handbrake. 5,339,930, Cl. 188-210.000.

SICOWA Verfahrenstechnik fur Baustoffe GmbH & Co., KG: *See—*
Koslowski, Thomas; Hessler, Klaus-Michael; and Musebrink, Olaf, 5,340,513, Cl. 264-42.000.

Siebert, Inc.: *See—*
Mulcahy, James P.; and Jadrich, Raymond P., 5,340,495, Cl. 252-162.000.

Siegel, Israel. Solar hot water cooling system. 5,339,645, Cl. 62-235.100.

Siegler, Marcel; Deselnicu, Mihai; Bratulescu, Victoria; and Anghel, Andrei. Process of preparing pepsin for bating hides. 5,340,737, Cl. 435-226.000.

Siegrist, Raymond F., Jr. Selective dispensing of substances in granular or powder form. 5,340,030, Cl. 239-289.000.

Siemens Aktiegensellschaft: *See—*
Zwicknagl, Hans-Peter; Hoepfner, Joachim; and Schleicher, Lothar, 5,340,755, Cl. 437-33.000.

Siemens Aktiengesellschaft: *See—*
Anton, Frank; and Jahnke, Andreas, 5,341,104, Cl. 328-235.000.
Endroes, Arthur; Kruehler, Wolfgang; Einzinger, Richard; and Plaettner, Rolf, 5,340,410, Cl. 136-258.000.
Meyer, Wolfram; and Sauer, Joseph, 5,341,433, Cl. 381-69.000.

Siemens Atkiengesellschaft: *See—*
Schetter, Bernhard, 5,339,637, Cl. 60-752.000.

Siemens Pacesetter, Inc.: *See—*
Sholder, Jason A., 5,340,361, Cl. 607-24.000.

Siemens Solar GmbH: *See—*
Endroes, Arthur; Kruehler, Wolfgang; Einzinger, Richard; and Plaettner, Rolf, 5,340,410, Cl. 136-258.000.

Sierra Horticultural Products Company, The: *See—*
Cunningham, John, 5,340,376, Cl. 71-6.000.

Sıfa Sitzfabrabrik GmbH: *See—*
Neumuller, Konrad, 5,340,194, Cl. 297-304.000.

Sig Schweizerische Industrie-Gesellschaft: *See—*
Gasser, Markus; and Schneider, Hauke, 5,339,942, Cl. 198-347.100.

Signalling Technology Pty Ltd.: *See—*
Crisp, George E., 5,341,379, Cl. 371-6.000.

Signature Packaging Machinery, Inc.: *See—*
Simpson, Billy J., Sr.; and Hinson, Terry F., Sr., 5,339,605, Cl. 53-439.000.

Sikonia, John G.: *See—*
Leung, Roger Y.; and Sikonia, John G., 5,340,777, Cl. 501-12.000.

Silbermann, Joseph; and Smith, William L., to Elf Atochem North America, Inc. Stabilizers for halogen containing polymers. 5,340,862, Cl. 524-178.000.

Siliconix Incorporated: *See—*
Hshieh, Fwu-Iuan; Chang, Mike F.; and Yilmaz, Hamza, 5,341,011, Cl. 257-330.000.

Silitek Corporation: *See—*
Chen, Castle, 5,340,956, Cl. 200-341.000.

Silver, Gary L.; and Martin, Frank S., to United States of America, Energy. Method for plating with metal oxides. 5,340,605, Cl. 427-126.300.

SIMCO/Ramic Corporation: *See—*
Gray, Calvin G.; and Thomason, Frank B., 5,339,964, Cl 209-587.000.

Simms, Alan, to LSI Logic Corporation. Equipment alignment docking system. 5,339,940, Cl. 198-345.300.

Simon, Robert L., to Texaco Inc. Produced water-oil separation tank for emulsions. 5,340,477, Cl. 210-218.000.

Simon, Werner. Variable-length distancing unit. 5,340,258, Cl. 411-535.000.

Simons, Tad D.: *See—*
Pittaro, Richard J.; and Simons, Tad D., 5,341,206, Cl. 356-301.000.

Simpson, Billy J., Sr.; and Hinson, Terry F., Sr., to Signature Packaging Machinery, Inc. Product compressor for shrink tunnel. 5,339,605, Cl. 53-439.000.

Simpson, Richard D.; Nye, Jeffrey L.; and Asal, Michael D., to Texas Instruments Incorporated. Computer graphics systems, palette de-

VOL 1165 ISS 4 AG 23 1994 UMI

vices and methods for shift clock pulse insertion during blanking. 5,341,470, Cl. 395-164.000.
Simpson, Robert J., to Inmos Limited. Communication interface. 5,341,371, Cl. 370-85.400.
Simpson, William H.: *See*—
Scaringe, Raymond P.; Evans, Steven; Simpson, William H.; and Vanhanehem, Richard C., 5,340,790, Cl. 503-227.000.
Sims, Carl W., to Systec, Inc. Vacuum degassing. 5,340,384, Cl. 96-6.000.
Sims, Kenneth A., to United Technologies Automotive, Inc. Sealed retainer grommet. 5,339,491, Cl. 16-2.000
Sinanyan, Astgik: *See*—
Cusack, Joyce M.; Phillips, Allison S.; Tataryan, Anahit; and Sinanyan, Astgik, 5,340,427, Cl. 156-268.000.
Sinclair Enterprises, Inc.: *See*—
Sinclair, Robert F., Sr., 5,339,714, Cl. 83-16.000.
Sinclair, Robert F., Sr., to Sinclair Enterprises, Inc. Method and machine for producing packaging material. 5,339,714, Cl. 83-16.000.
Sinden, A. David; Fischer, Hans; and Twining, Roy V., to Wagstaff Inc. Integrated non-contact molten metal level sensor and controller. 5,339,885, Cl. 164-450.400.
Singbartl, Gunther, to WABCO Standard GmbH. Device for optically indicating the pressure of a medium. 5,339,764, Cl. 116-266.000.
Singbartl, Gunther, to WABCO Westinghouse Fahrzeugbremsen GmbH. Device for maintaining the position of a coil support in a cup-shaped casing part. 5,341,117, Cl. 336-92.000
Singh, Kanwal N. Defrost system for refrigeration apparatus. 5,339,644, Cl. 62-234.000.
Singh, Rajiv R.: *See*—
Decaire, Barbara R.; Logsdon, Peter B.; Lund, Earl A. E.; Shankland, Ian R.; Singh, Rajiv R.; Wilson, David P.; and Thomas, Raymond H. P., 5,340,490, Cl. 252-67.000.
Singleton, William A.; and Burns, Robert D., to Allied-Signal Inc. Throttle traction control for automotive vehicle. 5,341,298, Cl. 364-426.020.
Sirinyan, Kirkor: *See*—
Audenaert, Raymond; Kirchmeyer, Stephan; Sirinyan, Kirkor; and Henning, Wolfgang, 5,340,879, Cl. 525-327.400.
Siska, Natalie R.: *See*—
Keating, Daniel J.; and Siska, Natalie R., 5,339,828, Cl. 128-759.000.
Sivaram, Swaminathan: *See*—
Idage, Bhaskar B.; Chavan, Nayaku N.; Mahajan, Sudhakar S.; and Sivaram, Swaminathan, 5,340,908, Cl. 528-275.000.
Skern, Timothy: *See*—
Torgersen, Helge; Skern, Timothy; and Blaas, Dieter, 5,340,713, Cl. 435-5.000
Skibinski, Gary, to Allen-Bradley Company, Inc. Harmonic compensator using low leakage reactance transformer. 5,341,281, Cl. 363-39.000
Skochdopole, Todd R.: *See*—
Martic, Peter A.; and Skochdopole, Todd R., 5,340,854, Cl. 524-94.000.
SKW Corporation: *See*—
Evans, Scott B., 5,340,984, Cl. 250-332.000.
Slama, David F.: *See*—
Roeker, David C.; Slama, David F.; and Sheffield, William F., 5,340,649, Cl. 428-344.000.
Slaugenhoup, Mark D.: *See*—
DeJarlais, George; and Slaugenhoup, Mark D., 5,339,686, Cl. 73-201.000.
Slavinskas, Darius D.: *See*—
Marra, William C.; Slavinskas, Darius D.; and Soulliere, Mark J., 5,341,364, Cl. 370-16.100.
Slaybuagh, Loren E.; and Huffman, James M., to Republic Industries, Inc. Door latch control apparatus with independent actuators. 5,340,171, Cl. 292-21.000.
Sloan, George A.: *See*—
Key, James C.; and Sloan, George A., 5,339,886, Cl. 164-463.000.
Sloan-Kettering Institute for Cancer Research: *See*—
Chou, Ting-Chao; and Wu, Tian-Shung, 5,340,818, Cl. 514-297.000.
Slocum, John; Kiproff, Peter N.; Gibson, Daryl; and Merritt, Will, to Thomas & Betts Corporation. Polymer concrete electrical insulator and method and apparatus for making. 5,340,512, Cl. 264-37.000.
Sloof, Willem-Arie: *See*—
Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruytere, Hendricus C.; and Sloof, Willem-Arie, 5,341,107, Cl. 329-337.000.
Slovacek, Rudolf E.; Love, Walter F.; Cook, Thomas A.; Schulkind, Richard L.; and Walczak, Irene M., to Ciba Corning Diagnostics Corp. Multiple surface evanescent wave sensor with a reference. 5,340,715, Cl. 435-6.000.
Slusarchyk, William A.: *See*—
Zahler, Robert; and Slusarchyk, William A., 5,340,816, Cl. 514-269.000.
Smathers, David R.; and Smathers, Jeffrey J., to Smathers, David R. Hydraulic braking system for in-line roller skates. 5,340,131, Cl. 280-112.000
Smathers, Jeffrey J.: *See*—
Smathers, David R.; and Smathers, Jeffrey J., 5,340,131, Cl. 280-112.000.
Smerchanski, Thomas C.; and Boge, Hans, to Aerofoam Chemicals, Division of Border Chemical Company. Support form for a grade beam or slab. 5,339,578, Cl. 52-98.000.
Smies, Ronald J., to Hamilton Industries. Adjustable work table. 5,339,750, Cl. 108-147.000.
Smit, Peter: *See*—
Schmidt, Thomas D.; and Smit, Peter, 5,340,400, Cl. 118-313.000.
Smith, Allan F., to Precision Shooting Equipment, Inc. Limb attachment for archery bow. 5,339,790, Cl. 124-25.600.
Smith, Anthony; Goff, Dan; Kruchowy, Roman; and Rhoads, Carl, to United States of America, Navy. Ultrasonic test system. 5,339,691, Cl. 73-597.000.
Smith, Curtis P.; and O'Connor, James M., to Olin Corporation. Spandex fibers made using low unsaturation polyols. 5,340,902, Cl. 528-61.000.
Smith, David A.: *See*—
Heiberger, James F.; and Smith, David A., 5,341,489, Cl. 395-425.000
Smith, Donald A. Color transforming art medium compositions. 5,340,387, Cl. 106-20.00A.
Smith, Edward F.: *See*—
Rossberg, Wayne; Smith, Edward F.; and Matinkhah, Angelica, 5,341,469, Cl. 395-145.000.
Smith, J. William, to Babcock & Wilcox Company, The. Dry scrubber with condensing heat exchanger for cycle efficiency improvement. 5,339,755, Cl. 110-345.000.
Smith, Peter, to Matra Marconi Space UK Limited. Singly fueled multiple thrusters simultaneously energized by a common power supply. 5,339,623, Cl. 60-203.100.
Smith, Robert A.; Gutmark, Ephraim; Schadow, Klaus C.; and Wilson, Kenneth J., to United States of America, Navy. Suppressor of oscillations in airframe cavities. 5,340,054, Cl. 244-1.00N.
Smith, Robert E., III, to National Coupling Company, Inc. Hydraulic coupling with hollow metal o-ring seal. 5,339,861, Cl. 137-614.040.
Smith, Robert J. Self-contained bed wetting alarm. 5,341,127, Cl. 340-604.000
Smith, Ronald T., to Hughes Aircraft Company. Waveguide holographic telltale display. 5,341,230, Cl. 359-13.000.
Smith, Stacia A.: *See*—
Clark, John I.; Farr, Andrew G.; and Smith, Stacia A., 5,340,829, Cl. 514-389.000
Smith, Steven L.: *See*—
Brandorff, Alexander; Sussmeier, John W.; and Smith, Steven L., 5,340,950, Cl. 177-145.000.
Smith, William A.: *See*—
Nelson, William P.; and Smith, William A., 5,340,446, Cl. 203-56.000.
Smith, William L.: *See*—
Silbermann, Joseph; and Smith, William L., 5,340,862, Cl. 524-178.000.
Smith, William L., Jr.: *See*—
Fox, Robert E.; Smith, William L., Jr.; and Flugrad, Donald R., Jr., 5,339,906, Cl. 172-4.000.
Smoot, Lanny S.: *See*—
Gelman, Alexander; Kobrinski, Haim; Smoot, Lanny S.; and Weinstein, Stephen B., 5,341,474, Cl. 395-200.000.
SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Flemming, Gunter; Streubel, Hans; and Rohde, Wolfgang, 5,339,887, Cl. 164-476.000.
Sneddon, Norman R.: *See*—
Starr, James A.; and Sneddon, Norman R., 5,341,255, Cl. 360-77.080.
Snider, Harry J., deceased: *See*—
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.
Snider, Laura L., legal representative: *See*—
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.
Snow Brand Milk Products Co., Ltd.: *See*—
Abe, Nobuaki; and Takeshita, Yasuyoshi, 5,340,821, Cl. 514-305.000.
Snow, James T., to Millipore Corporation. Reactive matrix for removing impurities from hydride and inert gases and process. 5,340,552, Cl. 423-210.000.
Snow, James T.: *See*—
DiLeo, Anthony J.; Snow, James T.; and Cote, Daniel A., 5,339,675, Cl. 73-24.040.
Snyder, Darryl L. Laminated non-combustible board for forming ductwork and headers. 5,339,577, Cl. 52-95.000
Snyder, Robert D., to Foamseal, Inc. Apparatus for applying a foamable resin. 5,339,991, Cl. 222-136.000.
Snytex (U.S.A.) Inc.: *See*—
Ullman, Edwin F.; Kirakossian, Hrair; Pease, John S.; Daniloff, Yuri; and Wagner, Daniel B., 5,340,716, Cl. 435-6.000.
Socier, Timothy R.: *See*—
Brown, Paul E.; and Socier, Timothy R., 5,339,995, Cl. 222-185.000
Societe de Prospection et d'Inventions Techniques (S.P.I.T.: *See*—
Barthomeuf, Jean-Paul; and Gauthier, Alain, 5,339,992, Cl. 222-137.000
Societe Francaise Hoechst: *See*—
Trouve, Claude; Richard, Michel; Mallo, Paul; and Anquetil, Jean-Yves, 5,340,441, Cl. 162-135.000.

Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.M.A.): *See*—
Bardey, Xavier M. H.; Desaulty, Michel A. A.; Jolu, Jerome E. R.; Meunier, Serge M.; Mouton, Pierre C.; Poutonnet, Sylvie; and Renvier, Jacques, 5,339,622, Cl. 60-39.092.
Merrer, Emile; and Morel, Michel M. J., 5,340,163, Cl. 285-93.000.
Sodec, Franc: *See*—
Halupczok, Johann; and Sodec, Franc, 5,340,358, Cl. 454-299.000.
Soderberg, Mark S.: *See*—
Gueble, Jeffrey R.; and Soderberg, Mark S., 5,339,939, Cl. 198-345.200
Sodick Co., Ltd.: *See*—
Okazaki, Shuji; and Urushizaki, Kazo, 5,340,958, Cl. 219-69.120.
Sogge, John W.: *See*—
Craven, B. Thomas; Wiedefeld, William G.; Poor, Kyle W.; Johnson, Bruce S.; Sogge, John W.; Peterson, Michael H.; Adamson, William G.; and Froelich, Ronald W., 5,339,741, Cl. 102-361.000.
Sohma, Kenichi: *See*—
Iwai, Yasuo; Azuhata, Shigeru; Sohma, Kenichi; Narato, Kiyoshi; Kobayashi, Hironobu; Inada, Tooru; Murakami, Tadayoshi; Arashi, Norio; Ishibashi, Yoji; and Kuroda, Michio, 5,339,635, Cl. 60-733.000
Sokolis, Herman G.; and Sokolis, Linda L. Walking assistance night light apparatus. 5,339,853, Cl. 135-67.000.
Sokolis, Linda L.: *See*—
Sokolis, Herman G.; and Sokolis, Linda L., 5,339,853, Cl 135-67.000
Sollinger, Hans-Peter: *See*—
Kustermann, Martin; and Sollinger, Hans-Peter, 5,340,611, Cl. 427-361.000.
Soma, Betsy A. Leg shave plate. 5,340,070, Cl. 248-220.100.
Sommer, Edward J., Jr.; Kittel, Michael A.; and Peatman, James R., to National Recovery Technologies, Inc. Method and apparatus for sorting materials using electromagnetic sensing. 5,339,962, Cl. 209-576.000.
Sommer, Herbert: *See*—
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J., 5,339,837, Cl. 131-296.000.
Son, Wan-jae, to Samsung Electron Devices Co., Ltd. Electron gun for a color cathode ray tube. 5,341,070, Cl. 315-382.000.
Sondhe, Ratanjit S.; Naik, Hemant A.; Pandit, Shirish A.; and Pant, Bipin C. Article coated with intermingled epoxy and urethane layers. 5,340,652, Cl. 428-413.000.
Sonoco Products Company: *See*—
Renck, Lawrence E., 5,340,050, Cl. 242-609.100.
Rowlands, Robert E.; Saliklis, Edmond P.; Wise, John T.; and Gerhardt, Terry D., 5,339,693, Cl. 73-825.000.
Sony Corporation: *See*—
Ebihara, Norio; and Kaburagi, Masakatsu, 5,341,178, Cl. 348-705.000.
Eguchi, Takeo, 5,341,399, Cl. 375-10.000.
Hashimoto, Keisuke, 5,341,264, Cl. 360-132.000.
Kagami, Nobutake; Doi, Yuichiro; and Nakamura, Yuko, 5,341,349, Cl. 369-13.000.
Machida, Tetsuo; Kiso, Hiroyuki; Sasaki, Nobuyuki; and Kondo, Hiroshi, 5,340,528, Cl. 264-328.700
Masuda, Hisashi; and Kaneda, Yushi, 5,341,388, Cl. 372-36.000.
Matsuzawa, Nobuyuki; Hayashi, Yoko; Ata, Masafumi; and Tamura, Shin-Ichiro, 5,340,631, Cl. 428-64.000
Mori, Akinari; Okayasu, Yoshisada; Suzuki, Toshinori; and Suzuki, Takehiko, 5,341,171, Cl. 348-373.000
Mukawa, Hiroshi; and Ando, Nobuhiko, 5,341,357, Cl. 369-75.200.
Shirota, Norihisa, 5,341,385, Cl. 371-37.100.
Takahashi, Hiroshi; and Tanizawa, Seiji, 5,341,247, Cl. 360-13.000.
Takashima, Mitsuru, 5,339,819, Cl. 128-681.000.
Tateyama, Norihiro; Ohno, Katsutoshi; and Kusunoki, Tsuneo, 5,340,673, Cl. 430-23.000.
Ueno, Noriyuki, 5,341,254, Cl. 360-62.000.
Watanabe, Junzo; Ueyama, Akihiro; and Kawamura, Ban, 5,341,072, Cl. 315-408.000.
Yamada, Atsuo; Tamada, Hitoshi; and Saitoh, Masaki, 5,341,450, Cl. 385-130.000.
Soulliere, Mark J.: *See*—
Marra, William C.; Slavinskas, Darius D.; and Soulliere, Mark J., 5,341,364, Cl. 370-16.100.
Soumiya, Toshio; Abe, Shunji; Katoh, Masafumi; and Watanabe, Naotoshi, to Fujitsu Limited. Connection admission control system. 5,341,366, Cl. 370-17.000.
Southern Imperial, Inc.: *See*—
Valiulis, Stanley C., 5,339,967, Cl. 211-57.100.
Southwest Research Institute: *See*—
Gale, Nigel F.; Naegeli, David W.; Ryan, Thomas W., III; and King, Steven R., 5,339,634, Cl. 60-723.000.
Sowers, Kenneth W.: *See*—
Bergkamp, Alan; and Sowers, Kenneth W., 5,340,042, Cl 241-283.000
Space Systems/Loral, Inc.: *See*—
Scott, William G., 5,341,147, Cl. 342-360.000
Spangler, James E.: *See*—
Arterbury, Bryant A.; and Spangler, James E., 5,339,895, Cl. 166-227.000.
Sparks, Tracy S.: *See*—
Faigle, Ernst M.; Sparks, Tracy S.; Thompson, Richard J.; and Blackburn, Brian K., 5,340,148, Cl. 280-730.00A.
Spater, Stuart S.: *See*—
Kolton, Chester; and Spater, Stuart S., 5,339,552, Cl. 40-640.000.
Spawn, Terence D.: *See*—
Dunn, Susan H.; Kirk, Mark P.; Mader, Roger A.; and Spawn, Terence D., 5,340,712, Cl. 430-619.000.
Specialty Coating Systems, Inc.: *See*—
Bok, Hendrik F., 5,339,842, Cl. 134-1.000.
Spector, George: *See*—
Adamson, Kenneth P.; and Spector, George, 5,340,102, Cl. 273-29.00A.
Ingram, Bill; and Spector, George, 5,339,485, Cl. 15-236.060.
Spectrospin AG: *See*—
Hennig, Jurgen, 5,341,098, Cl. 324-309.000.
Spectrum International, Inc.: *See*—
Box, Thomas, 5,339,979, Cl. 220-529.000.
Speriosu, Virgil S.: *See*—
Dieny, Bernard; Gurney, Bruce A.; Parkin, Stuart S. P.; Sanders, Ian L.; Speriosu, Virgil S.; and Wilhoit, Dennis R., 5,341,261, Cl. 360-113.000.
Sperner, Franz. Bulk material for packaging, packaging unit using same, process and apparatus for producing them. 5,340,638, Cl. 428-182.000.
Spicar, Erich, to Asea Brown Boveri AB. Monitoring of gas dissolved in oil. 5,339,672, Cl. 73-19.100.
Spicer, Darcy V.; and Pike, Malcolm C., to University of Southern California. Methods and formulations for use in inhibiting conception and in treating benign gynecological disorders. 5,340,584, Cl. 424-426.000.
Spicer, Darcy V.: *See*—
Pike, Malcolm C.; and Spicer, Darcy V., 5,340,585, Cl. 424-426.000.
Pike, Malcolm C.; and Spicer, Darcy V., 5,340,586, Cl. 424-426.000.
Spiegel, Nikolaus: *See*—
Blaser, Peter T.; Miltner, Karl-Hermann; and Spiegel, Nikolaus, 5,339,738, Cl. 101-477.000.
Spiess, Hansruedi; and Galvanetto, Francois, to Von Roll AG. Manhole cover. 5,340,232, Cl. 404-25.000.
Spitzer, Martin; and Freistadter, Hans, to Ciba-Geigy Corporation. Hardener composition for the production of polyurethane shaped articles. 5,340,900, Cl. 528-53.000.
Spotnitz, Robert M.: *See*—
Friedman, Semyon D.; McKinney, Robert W.; Ou, Chia-Chih; Spotnitz, Robert M.; and Wu, Shaohai, 5,340,558, Cl. 423-328.100.
Sprang, Ruediger; Vossel, Andreas; Schmudde, Werner; and Buhl, Reinhard, to Lemforder Metallwaren AG. Pivoting bearing for mouting pull rods in motor vehicles. 5,340,220, Cl. 384-125.000.
Spraying Systems Co.: *See*—
Adams, Robert J., 5,340,029, Cl. 239-119.000.
Spurion Technology Pty. Ltd.: *See*—
Giles, Alan B., 5,339,858, Cl. 137-130.000.
SPX Corporation: *See*—
Laukhuf, Gregg, 5,339,642, Cl. 62-77.000.
Square D Company: *See*—
Sharp, Jeffrey O.; Harris, Michael R.; Cooper, Robert J.; Ledbetter, Steve M.; Reed, Ronald H.; and Chaffin, Ronald W., 5,341,273, Cl. 361-641.000.
Wheeler, Keith D.; and Edwards, Stanley H., Jr., 5,341,036, Cl. 307-328.000
Srinivas, Chukka: *See*—
Kingsley, Jack D.; and Srinivas, Chukka, 5,340,988, Cl. 250-370.090.
Srivatsa, Narendta R.: *See*—
Markham, Larry D.; and Srivatsa, Narendta R., 5,340,439, Cl. 162-5.000.
Stafford, Steven L.: *See*—
Mills, David E.; and Stafford, Steven L., 5,340,884, Cl. 125-420.000.
Stakem, David L.: *See*—
Edwards, Bryan T.; Erdman, David D.; Monroe, Kevin T.; and Stakem, David L., 5,341,447, Cl. 385-81.000.
Stamicarbon B.V.: *See*—
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,340,653, Cl. 428-423.100.
Standard Register Company, The: *See*—
Mowry, William H., Jr., 5,340,159, Cl. 283-93.000.
Stanford, Thomas B., r.; and Chao, Sidney C., to Hughes Aircraft Company. Low cost equipment for cleaning using liquefiable gases. 5,339,844, Cl. 134-107.000.
Stangle, Gregory C.; Niedzialek, Scott E.; and Williams, William C., to Alfred University. Combustion synthesis process utilizing an ignitable primer which is ignited after application of pressure. 5,340,533, Cl. 419-45.000.
Stansbury, Mark A.: *See*—
Albertson, Luther D., III; Key, Walter R.; and Stansbury, Mark A., 5,339,647, Cl. 62-292.000.
Stappaerts, Eddy A., to Northrop Corporation. Nonlinear optical wavelength converters with feedback. 5,341,236, Cl. 359-328.000
Starchikow, Manfred: *See*—
Bohlen, Hans-Dieter; and Starchikow, Manfred, 5,340,331, Cl. 439-502.000.
Starr, James A.; and Sneddon, Norman R., to Seagate Technology, Inc. Disc drive head positioning servo system with coherent adjacent track magnetic patterns. 5,341,255, Cl. 360-77.080.
State of Israel, Ministry of Defence, Rafael Armament Development Authority, The: *See*—
Bar-Avi, Patrick, 5,339,690, Cl. 73-505.000
Guelman, Moshe; and Yavnai, Arie, 5,340,056, Cl. 244-3.160

VOL 1165 ISS 4 AG 23 1994 UMI

State of Oregon acting by and through the State Board of Higher Education on behalf of Oregon State University, The: *See*—
Deinzer, Max L.; and Laramee, James A., 5,340,983, Cl. 250-281.000.
STC plc: *See*—
Barnes, Nigel E.; Bidwell, Brian A.; Bud, Andrew; Crisp, Malcolm; Dudek, Michael T.; Goodings, Rupert; Odhams, David C.; Proctor, Peter N.; and Rodgers, Ian, 5,341,367, Cl. 370-29.000.
Steelcase Strafor (S.A.): *See*—
Fussler, Philippe, 5,339,576, Cl. 52-71.000.
Steele, Duane F., to Ford Motor Company. Scroll compressor with relief port for reduction of vibration and noise. 5,340,292, Cl. 418-55.100.
Steere, Richard M.; and Heenan, Sidney A., to Stimsonite Corporation. Pavement marker. 5,340,231, Cl. 404-14.000.
Stefanchik, David, to Ethicon, Inc. Ligating clip applier. 5,340,360, Cl. 606-142.000.
Stefani, Dario; Sam, Felix O.; and Lunardon, Gianflavio, to Enichem, S.p.A. Process for preparing low-density flexible polyurethane foams, and the polyurethane foams obtained. 5,340,845, Cl. 521-130.000.
Steffes, Helmut: *See*—
Reinartz, Hans-Dieter; and Steffes, Helmut, 5,340,285, Cl. 417-221.000.
Stegmaier, Alwin; and Tanski, Kenneth, to Robert Bosch GmbH. Electromagnetically operated injection valve with a fuel filter that sets a spring force. 5,340,032, Cl. 239-575.000.
Stein, Elfi: *See*—
Kloss, Thomas; Stein, Elfi; Gerth, Kirsten; and Wickardt, Andrea, 5,340,778, Cl. 501-52.000.
Stein, Irene F.; Degi, Greg A.; Boyd, David W.; and Webb, Steven L., to Hewlett-Packard Company. Image scanning system and method with improved repositioning. 5,341,225, Cl. 358-498.000.
Steindorf, Richard E., to Ecolab Inc. Solid highly chelated warewashing detergent composition containing alkaline detersives and Aminocarboxylic acid sequestrants. 5,340,501, Cl. 252-546.000.
Stellwagen, Karl; Gerstner, Hans; and Buchheister, Hasso, to Kloeckner-Humboldt-Deutz AG. Gas motor control. 5,341,299, Cl. 364-431.050.
Stencel, Edgar L., to Monogram Aerospace Fasteners. Fastener with thread lock. 5,340,253, Cl. 411-310.000.
Sterlin, Wilhelm: *See*—
Tran, Truoc T.; and Sterlin, Wilhelm, 5,339,518, Cl. 29-827.000.
Sterling Winthrop Inc.: *See*—
Harrington, William J., Jr., 5,340,805, Cl. 514-176.000.
Illig, Kathleen J.; and Sarpotdar, Pramod, 5,340,564, Cl. 424-9.000.
Stetsko, Gregg; and Chang, Kuei-Tu, 5,340,589, Cl. 424-462.000.
Sterman Enterprises, Inc.: *See*—
Fink, Steven R.; and Herman, Floyd J., 5,340,350, Cl. 446-226.000.
Stetler, Dean A., to University of Kansas. Methods of diagnosing and monitoring rheumatic diseases. 5,340,720, Cl. 435-7.400.
Stetsko, Gregg; and Chang, Kuei-Tu, to Sterling Winthrop Inc. Low solubility drug-coated bead compositions. 5,340,589, Cl. 424-462.000.
Stevens, James C.: *See*—
Park, Chung P.; Stevens, James C.; and Knight, George W., 5,340,840, Cl. 521-60.000.
Stevens, Richard L.; and Avraham, Shalom, to Brigham & Women's Hospital. Hematopoietic cell specific transcriptional regulatory elements of serglycin and uses thereof. 5,340,739, Cl. 435-240.100.
Stewart, Robert L.; Osterman, Alan J.; Jalbert, Dennis W.; and Nulty, John D., to Chrysler Corporation. Vehicle bumper beam. 5,340,178, Cl. 293-122.000.
Stewart, Robert M.: *See*—
Melcher, Richard A.; Sherman, William, III; Nadig, Madhura; Stewart, Robert M.; Hessler, Paul L.; and Bryce, David R., 5,341,408, Cl. 377-8.000.
Stimsonite Corporation: *See*—
Steere, Richard M.; and Heenan, Sidney A., 5,340,231, Cl. 404-14.000.
Stinson, Billy M.; and Stoneham, Thomas A. Battery recirculation and recharge system. 5,340,667, Cl. 429-64.000.
Stitt, Paul A. Method of increasing muscle mass in chickens. 5,340,834, Cl. 514-505.000.
STM (Societe D'Investissement Dans La Microscopie) S.A.: *See*—
De Fornel, Frederique; Goudonnet, Jean-Pierre; and Cerre, Nathalie, 5,340,981, Cl. 250-227.200.
Stoldt, Stephen H.: *See*—
Koch, Frederick W.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Kolp, Christopher J.; Stoldt, Stephen H.; and Denis, Richard A., 5,340,369, Cl. 44-366.000.
Stoll, Donald E.; and Dietrich, Alfred T., to Overhead Door Corporation. Retractable vehicle ramp with lift assist. 5,340,267, Cl. 414-537.000.
Stone Panels, Inc.: *See*—
Myles, Peter R. W., 5,339,795, Cl. 125-21.000.
Stone & Webster Engineering Corp.: *See*—
Gartside, Robert J.; and Norton, Richard C., 5,340,545, Cl. 422-146.000.
Stone, William J.: *See*—
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J., 5,339,837, Cl. 131-296.000.
Stoneham, Thomas A.: *See*—
Stinson, Billy M.; and Stoneham, Thomas A., 5,340,667, Cl. 429-64.000.
Stoner, Theodore A. Interlocking container structures. 5,339,975, Cl. 220-4.270.
Storage Technology Corporation: *See*—
Dean, Robert E.; Cacka, Steven C.; Schaefer, Douglas P.; Sevvom, Hossein F.; and Brumnet, Robert A., 5,341,479, Cl. 395-250.000.
Stork, Johannes M. C.: *See*—
Bassous, Ernest; Patton, Gary L.; and Stork, Johannes M. C., 5,340,753, Cl. 437-31.000.
Stotler, William R. Rubber seal adaptor. 5,339,894, Cl. 166-182.000.
Stouffer, James R.: *See*—
Liu, Yujun; and Stouffer, James R., 5,339,815, Cl. 128-660.010.
Stove, Andrew G., to U.S. Philips Corporation. Vehicular cruise control system and radar system therefor. 5,341,144, Cl. 342-70.000.
Straeter, Joseph G.: *See*—
Weder, Donald E.; and Straeter, Joseph G., 5,339,565, Cl. 47-72.000.
Straeter, William F.: *See*—
Weder, Donald E.; Straeter, William F.; and King, Michael J., 5,339,601, Cl. 53-397.000.
Strand, Charles D.; and Meehon, Anthony B., to International Purity Corp. Dual chamber water filter. 5,340,478, Cl. 210-284.000.
Strand, David A.: *See*—
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Czubatyj, Wolodymyr; Strand, David A.; and Wicker, Guy C., 5,341,328, Cl. 365-163.000.
Strapazzini, Vittorio. Method for forming plastic molded panels with inserts. 5,340,425, Cl. 156-211.000.
Stratasys, Inc.: *See*—
Crump, S. Scott, 5,340,433, Cl. 156-578.000.
Strauss, Carl R.; and Williams, Steven H., to Owens-Corning Fiberglass Technology Inc. Fibrous glass binders. 5,340,868, Cl. 524-461.000.
Streib, Martin: *See*—
Golzer, Thomas; and Streib, Martin, 5,339,782, Cl. 123-399.000.
Streubel, Hans: *See*—
Flemming, Gunter; Streubel, Hans; and Rohde, Wolfgang, 5,339,887, Cl. 164-476.000.
Streuli, Michel: *See*—
Anderson, Paul J.; Streuli, Michel; and Schlossman, Stuart F., 5,340,935, Cl. 536-23.500.
Stringer, John W.; and Richards, Theodore S., to TestDrive Corporation. Transformation of ephemeral material. 5,341,429, Cl. 380-23.000.
Strobbe, Steven. Fishing jig. 5,339,559, Cl. 43-42.370.
Strominger, Jack L.: *See*—
Brenner, Michael B.; Strominger, Jack L.; Seidman, Johnathan; Ip, Stephen H.; and Krangel, Michael S., 5,340,921, Cl. 530-350.000.
Strunk, Louis M.; Bosch, Anthony; and Kruhmin, Ted, to Beech Aircraft Corp.; and BP Chemicals (HITCO), Inc.,. Non-woven mat surface ply for woven fabric. 5,340,520, Cl. 264-174.000.
Struss, Klaus: *See*—
Westeppe, Uwe; Struss, Klaus; Lindner, Christian; Idel, Karsten-Josef; and Laue, Hans-Joachim, 5,340,876, Cl. 525-66.000.
Stuart, Keith O.: *See*—
Tal, Zeev; Stuart, Keith O.; and Bulgatz, Dennis C., 5,341,054, Cl. 310-14.000.
Stultz, Jeffrey H., to Dow Chemical Company, The. Pipe to concrete transition. 5,340,164, Cl. 285-158.000.
Stutler, Mark. Trash collection and sorting system. 5,339,980, Cl. 220-571.000.
Stutz, Joseph. Device for removeably joining two crutches. 5,339,849, Cl. 135-66.000.
Stutzman, Ralph C.: *See*—
Cole, Curtis A.; Lindemann, Martin K. O.; Lukenbach, Elvin R.; and Stutzman, Ralph C., 5,340,567, Cl. 424-59.000.
Su, Pai-Tzeng. Protective device for a water-pump apparatus. 5,340,281, Cl. 417-12.000.
Sublett, Bobby J., to Eastman Chemical Company. Shrinkable copolyester film. 5,340,624, Cl. 428-35.800.
Subramanian, V.: *See*—
Sekhar, Jainagesh A.; Subramanian, V.; and Canarslan, Necip S., 5,340,014, Cl. 228-198.000.
Subzone Lift Systems: *See*—
Dowker, Clark A., 5,339,905, Cl. 166-369.000.
Suda, Hirofumi: *See*—
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,341,169, Cl. 348-352.000.
Suda, Taiichiro: *See*—
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.
Sugai, Shinzo: *See*—
Nakashima, Nobuaki; and Sugai, Shinzo, 5,341,025, Cl. 257-697.000.
Sugasawa, Hiroki; Takano, Satoshi; Sakaguchi, Mikio; Sakamoto, Ichiro; Iwata, Minoru; Kurotani, Nariyuki; Koizumi, Hideaki; Itoh, Hiroshi; and Maejima, Risa, to KAO Corporation. Barium sulfate cosmetic composition. 5,340,582, Cl. 424-401.000.
Sugawara, Saburo: *See*—
Okuyama, Atsushi; Kimura, Kenichi; and Sugawara, Saburo, 5,341,243, Cl. 359-687.000
Sugi, Hikaru: *See*—
Kajino, Yuuichi; Sugi, Hikaru; Ban, Koichi; Honda, Yuuji; Samukawa, Katsuhiko; and Kawai, Takayoshi, 5,340,021, Cl. 236-49.300.
Sugino, Kenichi: *See*—
Shirai, Ichiro; and Sugino, Kenichi, 5,340,115, Cl. 273-310.000.
Sugita, Kunihiro; and Iwase, Hiroshi, to Casio Computer Co., Ltd. Tone generation apparatus with selective assignment of one of tone

generation processing modes to tone generation channels. 5,340,938, Cl. 84-605.000.
Sugiyama, Nobuo: *See*—
Kawasaki, Hidetoshi; Mizuno, Kazunori; and Sugiyama, Nobuo, 5,341,188, Cl. 354-277.000.
Suhy, David J.: *See*—
Suhy, David R.; Suhy, David J.; and Suhy, Richard C., 5,340,083, Cl. 254-100.000.
Suhy, David R.; Suhy, David J.; and Suhy, Richard C. Pool table slate lifter. 5,340,083, Cl. 254-100.000.
Suhy, Richard C.: *See*—
Suhy, David R.; Suhy, David J.; and Suhy, Richard C., 5,340,083, Cl. 254-100.000.
Suib, Steven L.: *See*—
O'Young, Chi-Lin; Shen, Yan-Fei; Zerger, Richard P.; and Suib, Steven L., 5,340,562, Cl. 423-599.000.
Sulger, Ellen, executrix: *See*—
Hecht, Lewis C.; Sulger, Merritt P., deceased; Thiele, Ernst E.; Pierson, Mark V.; and Williams, Lawrence E., 5,339,952, Cl. 206-334.000.
Sulger, Merritt P., deceased: *See*—
Hecht, Lewis C.; Sulger, Merritt P., deceased; Thiele, Ernst E.; Pierson, Mark V.; and Williams, Lawrence E., 5,339,952, Cl. 206-334.000.
Sullivan, Brian. Gas powered gun. 5,339,791, Cl. 124-73.000.
Sumitomo Chemical Company, Limited: *See*—
Sadatoshi, Hajime; Ima, Seiichiro; and Shiratani, Eisuke, 5,340,878, Cl. 525-240.000.
Sumitomo Electric Industries, Ltd.: *See*—
Kuwata, Nobuhiro, 5,341,007, Cl. 257-194.000.
Nakazawa, Atsushi, 5,340,982, Cl. 250-235.000.
Sato, Kenichi, 5,340,943, Cl. 174-15.400.
Sumiya, Hitoshi, 5,340,780, Cl. 501-96.000.
Sumitomo Metal Industries, Ltd.: *See*—
Koike, Masao; Yamagishi, Akihito; Maruyama, Katsuhiko; and Kakuchi, Shusuke, 5,340,415, Cl. 148-325.000.
Matsumoto, Toshiyuki; Inada, Hirofumi; Nittaya, Hiroshi; and Kato, Masahiro, 5,341,324, Cl. 365-51.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Hamada, Akihiko; and Ebisuno, Tadahiro, 5,340,112, Cl. 273-226.000.
Sumitomo Wiring Systems, Ltd.: *See*—
Imanishi, Hisao; and Nakajima, Keiichi, 5,340,323, Cl. 439-125.000.
Sumiya, Hitoshi, to Sumitomo Electric Industries, Ltd. Cubic boron nitride sintered compact and method of preparing the compact. 5,340,780, Cl. 501-96.000.
Sumiya, Satoshi: *See*—
Abe, Akira; Sumiya, Satoshi; Takahashi, Yoshikazu; Yoshida, Kiyohide; and Muramatsu, Gyo, 5,340,548, Cl. 422-177.000.
Sumter Transport, Inc.: *See*—
Rumph, Robert M., 5,340,213, Cl. 366-196.000.
Sun Microsystems, Inc.: *See*—
Levitt, Marc E., 5,341,382, Cl. 371-22.100.
Sun, Tung-Tien: *See*—
Lavker, Robert M.; Sun, Tung-Tien; and Cotsarelis, George, 5,340,744, Cl. 436-63.000.
Sun, Wei-Qiang: *See*—
Payne, Gregory F.; Chu, Jennifer; Wallace, Kimberlee K.; and Sun, Wei-Qiang, 5,340,483, Cl. 210-632.000.
Sunbelt Precision Products Inc.: *See*—
Koppel, Bernard, 5,339,840, Cl. 132-151.000.
Sundberg, Staffan: *See*—
Odsberg, Hans; and Sundberg, Staffan, 5,339,512, Cl. 29-452.000.
Sunshine, Steven A.: *See*—
Cava, Robert J.; and Sunshine, Steven A., 5,340,796, Cl. 505-12.000.
SuperMac Technology, Inc.: *See*—
Barrett, Peter T., 5,341,442, Cl. 382-56.000.
Surma, Terrance: *See*—
Leyden, Roger J.; and Surma, Terrance, 5,341,124, Cl. 340-568.000.
Survival Technology, Inc.: *See*—
Reinhold, Herbert E., Jr., 5,339,823, Cl. 128-710.000.
Suspa Compart AG: *See*—
Bauer, Hans J.; Wurl, Wolfgang; Haas, Ludwig; and Hein, Otmar, 5,339,933, Cl. 188-371.000.
Sussman, Martin V. Method and apparatus for incrementally drawing fibers. 5,339,503, Cl. 28-244.000.
Sussman, Martin V. Improved method of incrementally drawing fibers. 5,340,523, Cl. 264-205.000.
Sussmeier, John W.: *See*—
Brandorff, Alexander; Sussmeier, John W.; and Smith, Steven L., 5,340,950, Cl. 177-145.000.
Susta, Stephen J., Jr.: *See*—
Edwards, Richard T.; Rider, Edward W., Jr.; Susta, Stephen J., Jr.; and Crawford, William R., 5,339,973, Cl. 220-4.230.
Susuta, Masahide: *See*—
Ishiguro, Takashi; Narita, Kazutoyo; and Susuta, Masahide, 5,341,268, Cl. 361-62.000.
Suzuki, Akira; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Oba, Hidehiro; Kimura, Hiromachi; and Otsubo, Hideaki, to Aisin AW Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Control system for a combined shift in which an accumulator is disconnected in an automatic transmission. 5,339,709, Cl. 477-145.000.
Suzuki, Chiaki; Eguchi, Atuhiko; Ishihara, Yuka; Aoki, Takayoshi; Takagi, Seiichi; Yano, Toshiyuki; and Mochizuki, Masao, to Fuji Xerox Co., Ltd. Dry tower for developing electrostatic image, process for producing same, and image formation method using same. 5,340,678, Cl. 430-170.000.
Suzuki, Fumiyuki: *See*—
Shirokura, Yukio; Suzuki, Fumiyuki; and Ogura, Tohru, 5,340,906, Cl. 528-274.000.
Suzuki, Hiroyoshi, to Mitsubishi Denki Kabushiki Kaisha. Air-fuel ratio sensor. 5,340,462, Cl. 204-425.000.
Suzuki, Hiroyuki; Nagase, Yukio; and Kemmochi, Kazuhisa, to Canon Kabushiki Kaisha. Scanning controller for color electrophotographic apparatus. 5,341,165, Cl. 346-157.000.
Suzuki, Katsuya: *See*—
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.
Suzuki, Makoto: *See*—
Naruse, Hideaki; and Suzuki, Makoto, 5,340,706, Cl. 430-505.000.
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, to NKK Corporation. Apparatus for generating a detonation pressure. 5,339,666, Cl. 72-56.000.
Suzuki, Mitsuo: *See*—
Taniguchi, Atsushi; Mizuno, Masaharu; and Suzuki, Mitsuo, 5,340,522, Cl. 264-185.000.
Suzuki, Ryoji; and Misaki, Masayuki, to Matsushita Electric Industrial Co., Ltd. Apparatus and method for performing speech rate modification and improved fidelity. 5,341,432, Cl. 381-34.000.
Suzuki, Shuji; and Nishio, Makoto, to Nec Corporation. Self-routing network using optical gate array driven by control voltages coincidental with packet header pulses. 5,341,234, Cl. 359-117.000.
Suzuki, Takehiko: *See*—
Mori, Akinari; Okayasu, Yoshisada; Suzuki, Toshinori; and Suzuki, Takehiko, 5,341,171, Cl. 348-373.000.
Suzuki, Toshinori: *See*—
Mori, Akinari; Okayasu, Yoshisada; Suzuki, Toshinori; and Suzuki, Takehiko, 5,341,171, Cl. 348-373.000.
Suzuki, Yoshinori, to Kabushiki Kaisha Toshiba. Magnetic resonance imaging apparatus. 5,341,099, Cl. 324-309.000.
Sverlow, Genadie G.: *See*—
della-Cioppa, Guy R.; Garger, Stephen J., Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., 5,340,734, Cl. 435-212.000.
Swales, Michael G.: *See*—
Hubble, Fred F., III; Swales, Michael G.; Weber, Michael E.; Abowitz, Gerald; and Bov, Raphael F., Jr., 5,341,193, Cl. 355-203.000.
Swars, Helmut: *See*—
Maus, Wolfgang; Swars, Helmut; and Bruck, Rolf, 5,339,628, Cl. 60-277.000.
Maus, Wolfgang; Swars, Helmut; Putz, Heinrich; and Jager, Walter, 5,340,020, Cl. 237-12.30C.
Swarup, Shanti; McCollum, Gregory J.; Shewchuk, Ronald M.; and Martz, Jonathan T., to PPG Industries, Inc. Polymers derived from polymerizable urethane vinyl esters. 5,340,894, Cl. 526-301.000.
Sweet, Lloyd. Door security system. 5,340,172, Cl. 292-259.00R.
Symbol Technologies, Inc.: *See*—
Sandor, Joseph, 5,340,972, Cl. 235-472.000.
Sypek, Maria T.; Perron, Paul A.; and Grosclaude, Gary V., to International Paper Company. Method for preparing photographic elements having single photosensitive layer containing photopolymerizable compound, photoinitiator, diazonium compound and barrier material encapsulated pigment particles; and negative image formation process. 5,340,681, Cl. 430-138.000.
Sypula, Donald S.: *See*—
Badesha, Santokh S.; Mammino, Joseph; Abramsohn, Dennis A.; Sypula, Donald S.; Henry, Arnold W.; Heeks, George J.; Pan, David H.; and Fratangelo, Louis D., 5,340,679, Cl. 430-126.000.
Systec, Inc.: *See*—
Sims, Carl W., 5,340,384, Cl. 96-6.000.
System Stack Co., Ltd.: *See*—
Nishikawa, Susumu; and Ikuma, Hariko, 5,340,544, Cl. 422-99.000.
Systemate Holland B.V.: *See*—
Minderman, Walter; and Hobbel, Arend, 5,340,351, Cl. 452-182.000.
Szczepanski, Joseph T.; Aune, Thomas M.; and Schneider, Henry J., to Osmonics, Inc. Depth filter cartridge and method and apparatus for making same. 5,340,479, Cl. 210-497.100.
Szporny, Laszlo: *See*—
Farkas, Sandor; Foldeak, Sandor; Karpati, Egon; Hegyes, Peter; Kreidl, Janos; Szporny, Laszlo; Czibula, Laszlo; and Petofi-Vass, Szilvia, 5,340,823, Cl. 514-317.000.
T Cell Sciences, Inc.: *See*—
Brenner, Michael B.; Strominger, Jack L.; Seidman, Johnathan; Ip, Stephen H.; and Krangel, Michael S., 5,340,921, Cl. 530-350.000.
Taaffe, Robert B.: *See*—
Saffire, Victor N.; Masters, John H.; Hartman, Robert L.; and Taaffe, Robert B., 5,340,301, Cl. 425-336.000.
Tada Tatsuya: *See*—
Baba, Yoshinobu; Ikeda, Takeshi; Tada Tatsuya; Sato, Yuko; and Amano, Yasuko, 5,340,677, Cl. 430-106.600.
Taga, Kazuharu: *See*—
Kikuchi, Fumio; Itoh, Kazuo; Taga, Kazuharu; Matsunaga, Naoto; Ono, Hiroshi; Namba, Takaoki; and Narita, Kazuhiko, 5,341,461, Cl. 395-120.000.
Tahara, Massaki: *See*—
Yoshino, Akira; Tahara, Massaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, 5,340,412, Cl. 148-208.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Taira, Hideki: *See—*
Okai, Makoto; Tsuji, Shinji; Ohishi, Akio; Hirao, Motohisa; Matsumura, Hiroyoshi; Harada, Tatsuo; Kita, Toshiaki; and Taira, Hideki, 5,340,637, Cl. 428-167.000.

Takaba, Minoru: *See—*
Ikeda, Hiraku; Sasada, Tetsuo; Sato, Isao; Moritomo, Yoshikazu; Takahashi, Koji; and Takaba, Minoru, 5,339,620, Cl. 60-39.030.

Takada, Shun: *See—*
Masumi, Satoshi; and Takada, Shun, 5,340,703, Cl. 430-389.000.

Takagi, Seiichi: *See—*
Suzuki, Chiaki; Eguchi, Atuhiko; Ishihara, Yuka; Aoki, Takayoshi; Takagi, Seiichi; Yano, Toshiyuki; and Mochizuki, Masao, 5,340,678, Cl. 430-170.000.

Takagishi, Masaaki: *See—*
Naoi, Hisashi; Inoue, Yasusuke; Nagasaka, Tetsuo; Matsubara, Yoichi; Takagishi, Masaaki; and Akizawa, Seiichi, 5,339,868, Cl. 138-172.000.

Takahashi, Hiroshi; and Tanizawa, Seiji, to Sony Corporation. Apparatus for recording and reproducing a digital signal to perform a track bouncing editing operation. 5,341,247, Cl. 360-13.000.

Takahashi, Koichi; and Ichikawa, Haruo, to Fuji Photo Film Co., Ltd. Apparatus and method for adhering light shielding ribbons to a photographic film. 5,340,426, Cl. 156-264.000.

Takahashi, Koji: *See—*
Ikeda, Hiraku; Sasada, Tetsuo; Sato, Isao; Moritomo, Yoshikazu; Takahashi, Koji; and Takaba, Minoru, 5,339,620, Cl. 60-39.030.

Takahashi, Masahiko: *See—*
Hakamada, Ryuichi; Takahashi, Masahiko; Kuriyama, Toru; and Nakagome, Hideki, 5,339,650, Cl. 62-51.100.

Takahashi, Nobuyuki: *See—*
Kobayashi, Masahiko; Takemura, Hirobumi; Ishida, Tetsuo; and Takahashi, Nobuyuki, 5,340,460, Cl. 204-298.090.

Takahashi, Shingo; and Imanishi, Aisaku, to Seikosha Co., Ltd. Curvilinear approximation method. 5,341,317, Cl. 364-720.000.

Takahashi, Shinsuke: *See—*
Sekozawa, Teruji; Takahashi, Shinsuke; and Shioya, Makoto, 5,339,681, Cl. 73-118.200.

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Abe, Akira; Sumiya, Satoshi; Takahashi, Yoshikazu; Yoshida, Kiyohide; and Muramatsu, Gyo, 5,340,548, Cl. 422-177.000.

Takaichi, Hiroshi: *See—*
Fukuyama, Hiromasa; Aihara, Satoru; Murakami, Masato; Fujimoto, Hiroyuki; Kondoh, Akihiro; Takaichi, Hiroshi; and Koshizuka, Naoki, 5,341,059, Cl. 310-90.500.

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Hamano, Ichirou; Honda, Munetaka; Takakuwa, Tateki; Omori, Toshiyuki; and Kotani, Yasuaki, 5,339,600, Cl. 53-306.000.

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Kojima, Motohiro; Watanabe, Takuya; and Takamura, Tohru, 5,340,977, Cl. 250-208.100.

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Ueno, Takashi; Ito, Hiroyuki; Kotani, Hirokazu; and Nakajima, Kazuo, 5,340,733, Cl. 435-199.000.

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Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, 5,340,596, Cl. 426-301.000.

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Gotoh, Seiji; Orita, Kenji; and Takayama, Tomio, 5,341,084, Cl. 320-44.000.

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Yamazaki, Hideki; Takeda, Hiroshi; and Yokota, Yoshikazu, 5,341,471, Cl. 395-164.000.

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Tanaka, Shunji; Yamaoka, Akira; Umeno, Hidenori; Haraguchi, Masatoshi; Ogawa, Kiyoshi; Saijo, Keiji; and Takeda, Katsumi, 5,341,484, Cl. 395-400.000.

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Nakayama, Hiroshi; Takeda, Tomokazu; Yomoto, Toshiyuki; Kitada, Mitsuo; Ohta, Shoji; and Chosa, Masatoshi, 5,339,918, Cl. 180-292.000.

Takehara, Hiroshi: *See—*
Takahashi, Takao; and Takehara, Hiroshi, 5,340,251, Cl. 411-179.000.

Takehara, Kei, to NEC Corporation. Reactive sputtering system. 5,340,459, Cl. 204-298.070.

Takehara, Nobuyoshi: *See—*
Tsuzuki, Koji; and Takehara, Nobuyoshi, 5,340,409, Cl. 136-256.000.

Takei, Minoru: *See—*
Shiobara, Toshio; Shimizu, Hisashi; and Takei, Minoru, 5,340,851, Cl. 523-443.000

Takei, Tokio: *See—*
Ito, Yatsuo; Abe, Takao; Takei, Tokio; Nakamura, Susumu; and Ota, Hiroko, 5,340,435, Cl. 156-632.000.

Takeishi, Katsumi: *See—*
Kaneko, Masakatsu; Nosse, Hidetaka; and Takeishi, Katsumi, 5,341,458, Cl. 395-80.000.

Takemasa, Niro: *See—*
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Kurosawa, Toshishige; Kurosawa, Takashi; Oda, Seiji; Takemasa, Niro; and Okamura, Kousaku, 5,340,596, Cl. 426-301.000.

Takemoto, Hiroshi, to Ricoh Company, Ltd. Auto focusing device. 5,341,170, Cl. 348-354.000.

Takemoto, Kazuo: *See—*
Ishii, Kozo; Takemoto, Kazuo; Fujiwara, Takuji; Mizobe, Tatsutoshi; Baba, Fumiaki; Nagayama, Shigeru; Watanabe, Osamu; and Takeuchi, Koichiro, 5,339,935, Cl. 192-3.300.

Takemura, Hirobumi: *See—*
Kobayashi, Masahiko; Takemura, Hirobumi; Ishida, Tetsuo; and Takahashi, Nobuyuki, 5,340,460, Cl. 204-298.090.

Takeshige, Nobuhide: *See—*
Asai, Hiroshi; Takeshige, Nobuhide; Uosaki, Yasuo; Shibahara, Masahiko; Omori, Motofumi; and Morimoto, Shigenori, 5,340,414, Cl. 148-325.000.

Takeshita, Yasuyoshi: *See—*
Abe, Nobuaki; and Takeshita, Yasuyoshi, 5,340,821, Cl. 514-305.000.

Takeuchi, Kiyoshi H.: *See—*
Nixon, Ralph A.; and Takeuchi, Kiyoshi H., 5,340,922, Cl. 530-350.000

Takeuchi, Koichiro: *See—*
Ishii, Kozo; Takemoto, Kazuo; Fujiwara, Takuji; Mizobe, Tatsutoshi; Baba, Fumiaki; Nagayama, Shigeru; Watanabe, Osamu; and Takeuchi, Koichiro, 5,339,935, Cl. 192-3.300

Takezawa, Satoshi: *See—*
Yagawa, Kazuo; Hashimoto, Takatsugu; Yamagishi, Junichi; Hachiya, Kazuo; and Takezawa, Satoshi, 5,340,867, Cl. 524-80.000.

Takiguchi, Shiro, to Honda Giken Kogyo Kabushiki Kaishi. Exhaust muffler combining components made of different materials. 5,340,952, Cl. 181-282.000.

Takizawa, Michiaki; and Hakoda, Takashi, to Nissei Jushi Kogyo Kabushiki Kaisha. Molding machine having controlled injection screw speed and resin pressure. 5,340,297, Cl. 425-145.000.

Tal, Zeev; Stuart, Keith O.; and Bulgatz, Dennis C., to Aura Systems, Inc. Low mass electromagnetic actuator. 5,341,054, Cl. 310-14.000.

Tallier, Bernard: *See—*
Lauenstein, Michael; and Tallier, Bernard, 5,339,836, Cl. 131-84.100.

Tallon, Jeffery L.; and Pooke, Donald M., to Her Majesty the Queen in right of New Zealand. Flux pinning in superconducting cuprates. 5,340,794, Cl. 505-500.000.

Tam, Kwok C., to General Electric Company. Method and apparatus for producing a three-dimensional computerized tomography image of an object with improved conversion of cone beam data to radon data. 5,341,460, Cl. 395-119.000.

Tamada, Hitoshi: *See—*
Yamada, Atsuo; Tamada, Hitoshi; and Saitoh, Masaki, 5,341,450, Cl. 385-130.000.

Tamagawa, Kiyomi; and Yoda, Akira, to Fuji Photo Film Co., Ltd. Optical apparatus for image scanning. 5,341,245, Cl. 359-739.000.

Tamglass Engineering Oy: *See—*
Anttonen, Kalevi K., 5,340,375, Cl. 65-104.000

Tamura, Shin-Ichiro: *See—*
Matsuzawa, Nobuyuki; Hayashi, Yoko; Ata, Masafumi; and Tamura, Shin-Ichiro, 5,340,631, Cl. 428-64.000.

Tamura, Tatsuya: *See—*
Ohtake, Shinichi; Tamura, Tatsuya; Hotta, Tetsuo; and Kashiwagi, Takeshi, 5,339,584, Cl. 52-208.000.

Tamura, Yoshitaka: *See—*
Tomita, Mamoru; Tamura, Yoshitaka; Miyakawa, Hiroshi; Saito, Hitoshi; Abe, Hiroaki; and Nagao, Eiji, 5,340,924, Cl. 530-395.000.

Tan, Shiro: *See—*
Sakaguchi, Shinji; Tan, Shiro; and Kokubo, Tadayoshi, 5,340,686, Cl. 430-191.000

Tanaka, azuhiko: *See—*
Hirakawa, Kiyoshi; Watadani, Izumi; Tanaka, azuhiko; Kawamoto, Masao; Tanaka, Takaaki; Sano, Hirohumi; Yoshimochi, Hayami; and Sato, Masahiro, 5,340,650, Cl. 428-373.000.

Tanaka, Hideaki: *See—*
Kishiro, Osamu; Shirahama, Rie; Sakata, Yasuyuki; Tanaka, Hideaki; and Honma, Ken, 5,340,911, Cl. 528-308.000.

Tanaka, Katsuyoshi: *See—*
Takaoka, Toshiaki; Tanaka, Katsuyoshi; and Kato, Kenji, 5,340,893, Cl. 526-292.400.

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Tanaka, Shunji; Yamaoka, Akira; Umeno, Hidenori; Haraguchi, Masatoshi; Ogawa, Kiyoshi; Saijo, Keiji; and Takeda, Katsumi, to Hitachi, Ltd. Virtual machine system having an extended storage. 5,341,484, Cl. 395-400.000.

Tanaka, Takaaki: *See—*
Hirakawa, Kiyoshi; Watadani, Izumi; Tanaka, azuhiko; Kawamoto, Masao; Tanaka, Takaaki; Sano, Hirohumi; Yoshimochi, Hayami; and Sato, Masahiro, 5,340,650, Cl. 428-373.000.

Tanaka, Tomio, to Kubota Corporation. Transmission for a vehicle. 5,339,703, Cl. 74-15.400.

Tanaka, Yasundo: *See—*
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.

Tandem Computers, Incorporated: *See—*
Fuller, William T., 5,341,381, Cl. 371-10.100.

Tandy Corporation: *See—*
Heep, Jerry J., 5,341,089, Cl. 324-115.000.

Taneri, James E.: *See—*
Kacher, Mark L.; Taneri, James E.; Camden, James B.; Vest, Paul E.; and Bowles, Sylvia J., 5,340,492, Cl. 252-112.000.

Tang, John T., to Foster Wheeler Energy Corporation. Fluidized bed steam generation system and method of using recycled flue gases to assist in passing loopseal solids. 5,339,774, Cl. 122-4.00D.

Tang, Ping-Wah; Lau, Philip T. S.; and Cowan, Stanley W., to Eastman Kodak Company. Photographic elements containing new dye-forming tris couplers. 5,340,708, Cl. 430-548.000.

Taniguchi, Atsushi; Mizuno, Masaharu; and Suzuki, Mitsuo, to Toray Industries, Inc. Process for producing polyvinyl alcohol multifilament yarn. 5,340,522, Cl. 264-185.000.

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Taniguchi, Ryoziro; Yamaguchi, Takao; and Saito, Osamu, to Setoseido Kabushiki Kaisha; Iwaki Glass Co., Ltd.; and Tokai Kogyo Kabushiki Kaisha. Method for preparing pottery products containing shirasu balloons. 5,340,514, Cl. 264-62.000.

Tanioka, Tetsuya: *See—*
Komiyama, Yoshizo; Arai, Fumio; Toyama, Yoshiyasu; Hasegawa, Yutaka; and Tanioka, Tetsuya, 5,340,374, Cl. 65-29.120.

Tanisaki, Tatsuzo; Okazaki, Satiko; and Kogoma, Masuhiro, to Kimoto Co., Ltd.; Kimoto Tech, Inc.; Okazaki, Satiko; and Kogoma, Masuhiro. Method for utilizing a plasma reaction under an atmospheric pressure. 5,340,618, Cl. 427-488.000.

Tanizawa, Seiji: *See—*
Takahashi, Hiroshi; and Tanizawa, Seiji, 5,341,247, Cl. 360-13.000.

Tank, Volker; Haschberger, Peter; and Jansen, Burkhard, to Deutsche Forschungsanstalt fur Luft - und Raumfahrt e.V. Michelson interferometer. 5,341,207, Cl. 356-346.000.

Tanknology Corporation International: *See—*
Tuma, John E., 5,340,238, Cl. 405-184.000.

Tanner, Roy E., Jr., to General Electric Company. Method for obtaining near net shape castings by post injection forming of wax patterns. 5,339,888, Cl. 164-516.000.

Tanski, Kenneth: *See—*
Stegmaier, Alwin; and Tanski, Kenneth, 5,340,032, Cl. 239-575.000.

Tao, Pao-Luh: *See—*
Chern, Ji-Wang; Lu, Guan-Yu; Lai, Yue-Jun; Yen, Mao-Hsiung; and Tao, Pao-Luh, 5,340,814, Cl. 514-267.000.

Tao, Yang, to Agri-Tech, Incorporated. Method and apparatus for sorting objects by color. 5,339,963, Cl. 209-581.000.

Tapematic U.S.A., Inc.: *See—*
Perego, Luciano, 5,340,048, Cl. 242-527.000.
Perego, Luciano, 5,340,049, Cl. 242-332.200.

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Tarmy, Barry L.: *See—*
Ajinkya, Milind B.; Koros, Robert M.; and Tarmy, Barry L., 5,340,549, Cl. 422-230.000.

Tarn, Terry: *See—*
Ozimek, Edward J.; and Tarn, Terry, 5,340,420, Cl. 156-64.000

Tarsha, Simon: *See—*
McMillan, Jim S.; and Tarsha, Simon, 5,340,524, Cl. 264-229.000.

Tarvis, Jo-Ellen. Method of bonding and relining dentures. 5,340,314, Cl. 433-168.100.

Tataryan, Anahit: *See—*
Cusack, Joyce M.; Phillips, Allison S.; Tataryan, Anahit; and Sinanyan, Astgik, 5,340,427, Cl. 156-268.000.

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Tatsumi, Keigo: *See—*
Nakajima, Yoshikatsu; and Tatsumi, Keigo, 5,340,332, Cl. 439-584.000.

Tatsuta Electric Wire & Cable Co., Ltd.: *See—*
Nakatani, Fumio; Wakita, Shinichi; Murakami, Hisatoshi; Terada, Tsunehiko; and Morimoto, Shohei, 5,341,274, Cl. 361-818.000.

Tatung Co.: *See—*
Liao, Pohsien; Huang, Chin-Chang; and Wang, Jye-Huei, 5,341,253, Cl. 360-61.000.

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Taylor, Timothy: *See—*
Garr, Michael J.; Dale, Mark J.; and Taylor, Timothy, 5,341,166, Cl. 348-10.000.

TDK Corporation: *See—*
Hirata, Hideki; Koga, Keiji; and Ishida, Toshihiko, 5,340,698, Cl. 430-271.000.

Techpack International - TPI: *See—*
Chevassus, Alain, 5,340,225, Cl. 401-78.000.

Tecumseh Products Company: *See—*
Dreiman, Nelik I., 5,339,652, Cl. 62-296.000.

Teets, J. Michael: *See—*
Wiita, Bruce E.; Teets, J. Michael; and Wiita, Gregory D., 5,339,800, Cl. 128-4.000.

Teichert, Ulrich J., to Freightliner Corporation. Throttle breakover apparatus. 5,339,783, Cl. 123-400.000.

Tekmar Company: *See—*
Green, Thomas B., 5,339,701, Cl. 73-864.860.

Teknekron Communications Systems, Inc.: *See—*
Fettweis, Gerhard P.; and Dawid, Herbert R., 5,341,322, Cl. 364-764.000.

Teledyne Hyson: *See—*
Lanterman, Harold L., 5,339,932, Cl. 188-316.000.

Teledyne Industries, Inc.: *See—*
Antrim, Robert G.; Dirrett, Edward G.; and Tuominen, Steven M., 5,340,535, Cl. 420-588.000.
Shea, Patrick P.; and Darlington, Henry S., 5,340,421, Cl. 156-69.000.

Telefonaktiebolaget L M Ericsson: *See—*
Farjh, Jan F.; and Ugland, Jon K., 5,341,401, Cl. 375-94.000.
Gudmundson, Bjorn, 5,341,397, Cl. 375-1.000.
Weber, Jean-Pierre, 5,341,443, Cl. 385-2.000.

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Tepera, George W.: *See—*
Fraini, Edward A.; Tepera, George W.; and McClure, Malcolm W., 5,340,937, Cl. 569-716.000.

Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, to Mitsubishi Denki Kabushiki Kaisha; Sharp Kabushiki Kaisha; Matsushita Electric Industrial Co., Ltd.; and Sanyo Electric Co., Ltd. Data drive type information processor having both simple and high function instruction processmg units. 5,341,507, Cl. 395-800.000.

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Nakatani, Fumio; Wakita, Shinichi; Murakami, Hisatoshi; Terada, Tsunehiko; and Morimoto, Shohei, 5,341,274, Cl. 361-818.000.

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Jenne, Gustav; and Jenne, Dietmar, 5,339,909, Cl. 175-22.000

Terrapin Technologies, Inc.: *See—*
Kauvar, Lawrence M., 5,340,474, Cl. 210-198.200.

Terrell, David R.: *See—*
Monbaliu, Marcel J.; Terrell, David R.; and De Meutter, Stefaan K., 5,340,675, Cl. 430-58.000.

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Stringer, John W.; and Richards, Theodore S., 5,341,429, Cl. 380-23.000

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VOL 1165 ISS 4 AG 23 1994 UMI

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Teumer, Roger G.: *See—*
Hermanson, Herman A.; Drake, Donald J.; Rezanka, Ivan; Karz, Robert S.; Teumer, Roger G.; and Altavela, Robert P., 5,341,162, Cl. 347-92.000.
Texaco Canada Petroleum, Inc.: *See—*
Yu, C. Lawrence; McGee, Bruce C. W.; Chute, Frederick S.; and Vermeulen, Fred E., 5,339,898, Cl. 166-248.000.
Texaco Chemical Company: *See—*
Crawford, Wheeler C.; Marquis, Edward T.; and Klein, Howard P., 5,340,889, Cl. 525-523.000.
Nelson, William P.; and Smith, William A., 5,340,446, Cl. 203-56.000.
Texaco Inc.: *See—*
Dai, Pei-Shing E.; Sherwood, David E., Jr.; and Petty, Randall Hughes, 5,340,466, Cl. 208-216.0PP.
McKinzie, Howard L., 5,339,901, Cl. 166-289.000.
O'Young, Chi-Lin; Shen, Yan-Fei; Zerger, Richard P.; and Suib, Steven L., 5,340,562, Cl. 423-599.000.
Simon, Robert L., 5,340,477, Cl. 210-218.000.
Wallace, Paul S.; and Chan, Henry C., 5,340,037, Cl. 241-62.000.
Texas Instruments Incorporated: *See—*
Flaherty, Ed, 5,340,767, Cl. 437-54.000.
Gill, Manzur, 5,340,768, Cl. 437-61.000.
Hynecek, Jaroslav, 5,341,008, Cl. 257-231.000.
Madan, Sudhir K., 5,341,272, Cl. 361-311.000.
Simpson, Richard D.; Nye, Jeffrey L.; and Asal, Michael D., 5,341,470, Cl. 395-164.000.
Textron Inc.: *See—*
Hertel, Paul E.; and Schneider, James R., 5,340,254, Cl. 411-311.000.
Jircitano, Albert; and Dosch, Daniel E., 5,339,684, Cl. 73-178.00R.
Thackeray, James W.; Denison, Mark; and Orsula, George W., to Shipley Company Inc. Photoresist compositions with copolymer binder having phenolic and nonaromatic cyclic alcohol units where the distribution of the cyclic alcohol concentration is less than 8 mole percent. 5,340,696, Cl. 430-270.000.
Thakur, Randhir P. S.: *See—*
Dennison, Charles H.; and Thakur, Randhir P. S., 5,340,765, Cl. 437-52.000.
Thatcher, William B.; and Schutte, Mark E., to Scientific-Atlanta, Inc. Interdiction method and apparatus with frequency change inhibit function. 5,341,424, Cl. 380-7.000.
Thayer, John S.; Mayer, Dale J.; Izquierdo, Javier F.; Culley, Paul R.; and Landry, John A., to Compaq Computer Corporation. Memory accessing system with an interface and memory selection unit utilizing write protect and strobe signals. 5,341,494, Cl. 395-425.000.
Theeuwes, Felix: *See—*
Wong, Patrick S. L.; Theeuwes, Felix; Eckenhoff, James B.; Larsen, Steven D.; and Huynh, Hoa T., 5,340,590, Cl. 424-473.000.
Theunissen, Joseph P.: *See—*
Delwel, Francois; Osinga, Theo J.; Theunissen, Joseph P.; and Vrancken, Jack M., 5,340,559, Cl. 423-334.000.
Thiele, Charles W.; Willemstyn, Tunis J.; Arndt, Douglas J.; and McMullen, John J., to Motan, Inc. Device for metering and entraining a product into a gas stream. 5,340,241, Cl. 406-132.000.
Thiele Engineering Company: *See—*
Risnes, Scott C., 5,339,599, Cl. 53-252.000.
Thiele, Ernst E.: *See—*
Hecht, Lewis C.; Sulger, Merritt P., deceased; Thiele, Ernst E.; Pierson, Mark V.; and Williams, Lawrence E., 5,339,952, Cl. 206-334.000.
Thieme, Thomas R.; Goldstein, Andrew S.; Piacentini, Stephen C.; and Klimkow, Nanette M., to Epitope, Inc. Oral collection device. 5,339,829, Cl. 128-760.000.
Thomas & Betts Corporation: *See—*
Slocum, John; Kiproff, Peter N.; Gibson, Daryl; and Merritt, Will, 5,340,512, Cl. 264-37.000.
Thomas, Bruce D.: *See—*
Harris, Kirk L.; Carpenter, Robert B.; Himes, Ronald E.; Dalrymple, E. Dwyann; Dahl, Jeffrey A.; and Thomas, Bruce D., 5,339,902, Cl. 166-293.000.
Thomas, John E. Support post. 5,340,065, Cl. 248-150.000.
Thomas, Karlene R., to Xerox Corporation. Removable process unit with waste toner storage. 5,341,200, Cl. 355-298.000.
Thomas, Raymond H. P.: *See—*
Decaire, Barbara R.; Logsdon, Peter B.; Lund, Earl A. E.; Shankland, Ian R.; Singh, Rajiv R.; Wilson, David P.; and Thomas, Raymond H. P., 5,340,490, Cl. 252-67.000.
Thomas, Richard R.: *See—*
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.
Thomason, Frank B.: *See—*
Gray, Calvin G.; and Thomason, Frank B., 5,339,964, Cl. 209-587.000.
Thomason, Raymon. Tool box with combined elements. 5,339,956, Cl. 206-372.000.
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Thompson, Creighton R., to Clean-Flo Laboratories, Inc. Aeration system and method. 5,340,508, Cl. 261-122.100.
Thompson, Danny C.: *See—*
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,340,653, Cl. 428-423.100.
Thompson, Joseph F., to Baxter International Inc. Pouch within a pouch design. 5,339,831, Cl. 128-852.000.
Thompson, Kevin D., to Carrier Corporation. Adaptive microprocessor control system and method for providing high and low heating modes in a furnace. 5,340,028, Cl. 236-10.000.
Thompson, Mitchell L.: *See—*
Cero, Joseph T., Jr.; Thompson, Mitchell L.; and Hann, Joseph K., II, 5,341,062, Cl. 310-339.000.
Thompson, Richard J.: *See—*
Faigle, Ernst M.; Sparks, Tracy S.; Thompson, Richard J.; and Blackburn, Brian K., 5,340,148, Cl. 280-730.00A.
Thompson-Rohrlich, John A.: *See—*
Vertelney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., 5,341,293, Cl. 364-419.170.
Thomson Consumer Electronics, Inc.: *See—*
George, John B., 5,341,071, Cl. 315-382.100.
Moscony, John J.; and Ehemann, George M., Jr., 5,340,674, Cl. 430-28.000.
Thomson-CSF: *See—*
Billaud, Philippe; de Volder, Claude; and Wybierala, Michel, 5,341,139, Cl. 342-40.000.
Cordier, Joel; and Cariou, Laurent, 5,341,287, Cl. 364-148.000.
Thorndyke, Robert J. Lift systems for elevating the load bed of a vehicle. 5,340,141, Cl. 280-423.100.
Thorne, Linda: *See—*
Pollock, Thomas J.; and Thorne, Linda, 5,340,743, Cl. 435-252.300.
Thornton, Danny M. Mating separable containers. 5,339,976, Cl. 220-23.400.
Thorp, Bruce E.; and Forbes, Richard L., II, to Xerox Corporation. Active sump fill device blade cleaning apparatus. 5,341,199, Cl. 355-298.000.
Three Bond Co., Ltd.: *See—*
Hanazuka, Yasuo; Usami, Ikuzo; Chiba, Kazuyuki; and Mizutani, Noriko, 5,340,847, Cl. 522-11.000.
3-I Systems: *See—*
Datar, Rajiv V.; and Rios, Luis G., 5,340,536, Cl. 422-23.000.
Thrower, John H. Aggregate floor and method for forming same. 5,339,589, Cl. 52-318.000.
Thumm, Helmut; and Allgaier, Frieder, to Sauter Feinmechanik GmbH. Tool turret with reduced switching times. 5,339,504, Cl. 29-48.50A.
Thunderline Corporation: *See—*
Griffiths, Carl R., 5,340,123, Cl. 277-104.000.
Thurm, Kenneth: *See—*
Leib, Donald; and Thurm, Kenneth, 5,340,145, Cl. 280-656.000.
Thyssen, Wolfgang, to Reishauer AG. Tool for dressing double-lead, cylindrical grinding worms. 5,339,794, Cl. 125-11.040.
Tidel Engineering, Inc.: *See—*
Martin, Patrick G.; and Franklin, Tod G., 5,340,967, Cl. 235-379.000.
Tidrow, Steven C.: *See—*
Tauber, Arthur; and Tidrow, Steven C., 5,340,799, Cl. 505-237.000.
Tien, Ta-Ke; and Wu, Chau-Chin, to Integrated Device Technology, Inc. Circuits and methods for amplification of electrical signals. 5,341,333, Cl. 365-189.060.
Tighe, John F. Return mailing unit. 5,340,017, Cl. 229-300.000.
Tillman, John L., Jr.: *See—*
Hart, Charles M.; Hoff, H. Milton, Jr.; Tillman, John L., Jr.; Trout, Lindell R.; and Witte, Stephen L., Sr., 5,339,896, Cl. 166-241.100.
Timmons, Russell M.; and Karnicki, Vladimir S., to Black & Decker Inc. Tool element subassembly. 5,339,571, Cl. 51-168.000.
Tisol, James S.: *See—*
Gugle, James E.; and Tisol, James S., 5,339,501, Cl. 24-573.100.
Titan Kogyo Kabushiki Kaisha: *See—*
Harada, Hidefumi; and Inoue, Yasuo, 5,340,645, Cl. 428-292.000.
Toboni, James C.; and Black, Thomas J., Jr., to Ferrofluidics Corporation. Differentially-pumped ferrofluidic seal. 5,340,122, Cl. 277-59.000.
Toda, Hiroko: *See—*
Fukushige, Tomoaki; Toda, Hiroko; Akano, Hirofumi; Ito, Emiko; Fukuta, Tomohiko; Fujimori, Masahiro; and Kawamura, Yoshiya, 5,340,461, Cl. 204-299.00R.
Toda, Masaaki; Ohuchida, Shuichi; and Ohno, Hiroyuki, to Ono Pharmaceutical Co., Ltd. Prolinal derivatives useful for treating amnesia. 5,340,832, Cl. 514-423.000.
Togawa, Shuichi: *See—*
Takasaki, Denjiro; Togawa, Shuichi; Kinoshita, Akio; and Arasuna, Hitoshi, 5,340,960, Cl. 219-86.700.
Tohmon, Genji; Sato, Hisanao; Fujita, Toshihiro; and Ohya, Jun, to Matsushita Electric Industrial Co., Ltd. Rare earth ion doped optical element. 5,341,237, Cl. 359-341.000.
Toho Technical Service Co., Ltd.: *See—*
Koizumi, Haruhiko, 5,340,458, Cl. 204-253.000.
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, to Nippon Soda Co., Ltd. Diphenylsulfone derivatives and heat sensitive recording materials. 5,340,788, Cl. 503-209.000.
Tokai Denka Kogyo Kabushiki Kaisha: *See—*
Sato, Kanji; and Kondo, Tomomasa, 5,340,496, Cl. 252-186.270.

Tokai Kogyo Kabushiki Kaisha: *See—*
Taniguchi, Ryoziro; Yamaguchi, Takao; and Saito, Osamu, 5,340,514, Cl. 264-62.000.
Toki, Hirotaka; Wakuda, Osamu; Yamamoto, Hiranaga; and Nagao, Hiroyuki, to Sharp Kabushiki Kaisha. Feeding apparatus. 5,340,096, Cl. 271-9.000.
Tokoro, Hisao; Shioya, Satoru; and Hinokawa, Akira, to JSP Corporation. Production method of foamed particles of polyolefin resin. 5,340,841, Cl. 521-60.000.
Tokutsu, Akihito, to Kabushiki Kaisha Toshiba. Image forming apparatus with an automatic document feeding apparatus during interrupt mode of operation. 5,341,203, Cl. 355-313.000.
Tokyo Electric Co., Ltd.: *See—*
Matsushita, Naohiro; and Makino, Masaaki, 5,341,402, Cl. 375-97.000.
Tokyo Electron Limited: *See—*
Oosawa, Tetsu; Asakawa, Teruo; Nebuka, Kenji; and Ono, Hiroo, 5,340,261, Cl. 414-217.000.
Shiraishi, Hirofumi; and Honda, Yoshiyuki, 5,339,539, Cl. 34-58.000.
Tokyo Electron Saga Limited: *See—*
Shiraishi, Hirofumi; and Honda, Yoshiyuki, 5,339,539, Cl. 34-58.000.
Tokyo Parts Industrial Co., Ltd.: *See—*
Yamaguchi, Tadao; Koyanagi, Naohisa; and Nakajima, Koichi, 5,341,057, Cl. 310-81.000.
Tokyo Seimitsu Co., Ltd.: *See—*
Ogiwara, Shinichiro, 5,339,531, Cl. 33-503.000.
Tolman, Radon, to Environmental Energy Systems, Inc. Waste treatment system and method utilizing pressurized fluid. 5,339,621, Cl. 60-39.020.
Tomalla, Gebhard: *See—*
Bebber, Hans J.; Rossner, Heinrich-Otto; and Tomalla, Gebhard, 5,340,961, Cl. 219-121.500.
Tomantschger, Klaus; Book, Ronald J.; and Findlay, Robert D., to Battery Technologies Inc. Rechargeable alkaline manganese cell having improved capacity and improved energy density. 5,340,666, Cl. 429-59.000.
Tomihashi, Nobuyuki; Akamatsu, Masafumi; and Ueta, Yutaka, to Daikin Industries Ltd. Fluororubber-containing powder coating composition. 5,340,864, Cl. 524-297.000.
Tomita, Mamoru; Tamura, Yoshitaka; Miyakawa, Hiroshi; Saito, Hitoshi; Abe, Hiroaki; and Nagao, Eiji, to Morinaga Milk Industry Co., Ltd. Method for heat treatment of lactoferrin without losing physiological activities thereof. 5,340,924, Cl. 530-395.000.
Tomita, Naotaka: *See—*
Kawabe, Hiroshi; Watanabe, Toshiyuki; and Tomita, Naotaka, 5,339,880, Cl. 157-1.000.
Tomko, Richard F.: *See—*
Pearson, Paul D.; Rao, Madhukar; and Tomko, Richard F., 5,340,871, Cl. 523-526.000.
Tomoike, Kazuhiro; and Kurosawa, Moriyoshi, to Idemitsu Kosan Co., Ltd. Liquid crystal module with tab assemblies connected through a flexible circuit board. 5,341,233, Cl. 359-88.000.
Topping, Gilbert: *See—*
Bussiere, Raymond; and Topping, Gilbert, 5,340,040, Cl. 241-101.700.
Toray Industries, Inc.: *See—*
Taniguchi, Atsushi; Mizuno, Masaharu; and Suzuki, Mitsuo, 5,340,522, Cl. 264-185.000.
Torgersen, Helge; Skern, Timothy; and Blaas, Dieter, to Boehringer Igelheim International GmbH. Process for the characterization of human rhinoviruses. 5,340,713, Cl. 435-5.000.
Torihata, Minoru; and Nakamura, Osamu, to Kabushiki Kaisha Shinkawa. Bonding apparatus. 5,340,010, Cl. 228-1.100.
Torii, Nobutoshi; Nihei, Ryo; and Kato, Tetsukai, to Fanuc Ltd. Sliding mode control method for a machine having an operating section operatively coupled to a servomotor and wherein a switching variable is determined based on a torsion amount and a torsion speed. 5,341,078, Cl. 350-568.220.
Tortorella, Domenico: *See—*
Buchwalter, Leena P.; Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; Heidenreich, John E., III; Nunes, Sharon L.; Park, Jae M.; Thomas, Richard R.; Tortorella, Domenico; and Ferreiro, Luis M., deceased, 5,340,451, Cl. 204-165.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
Komiyama, Yoshizo; Arai, Fumio; Toyama, Yoshiyasu; Hasegawa, Yutaka; and Tanioka, Tetsuya, 5,340,374, Cl. 65-29.120.
Toso, Kenneth E.: *See—*
Green, David T.; Alesi, Thomas W., Jr.; Bolanos, Henry; and Toso, Kenneth E., 5,339,870, Cl. 140-123.500.
Toth, Cheryl A.; and Sheakey, Paul J., to Dow Chemical Company, The. Process for making an absorbent composition. 5,339,769, Cl. 119-173.000.
Totoki, Nobuhiro: *See—*
Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, 5,341,294, Cl. 364-424.050.
Towns, John K.: *See—*
Jackson, David A.; Riggin, Ralph M.; and Towns, John K., 5,340,541, Cl. 422-75.000.
Toyama, Masamichi: *See—*
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,341,169, Cl. 348-352.000.
Toyama, Yoshiyasu: *See—*
Komiyama, Yoshizo; Arai, Fumio; Toyama, Yoshiyasu; Hasegawa, Yutaka; and Tanioka, Tetsuya, 5,340,374, Cl. 65-29.120.
Toyoda Gosei Co., Ltd.: *See—*
Menjo, Yoshihiro; Nakagawa, Fumio; Nagata, Takuji; and Kuriyama, Hiroshi, 5,340,623, Cl. 428-31.000.
Toyota, Akinori: *See—*
Tsutsui, Toshiyuki; Okawa, Kazunori; and Toyota, Akinori, 5,340,786, Cl. 502-117.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Nakagawa, Norihisa; and Matsuoka, Hiroki, 5,341,295, Cl. 364-424.100.
Suzuki, Akira; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Oba, Hidehiro; Kimura, Hiromachi; and Otsubo, Hideaki, 5,339,709, Cl. 477-145.000.
Trainor, Diane A.: *See—*
Ohnmacht, Cyrus J.; Harris, Robert J.; and Trainor, Diane A., 5,340,819, Cl. 514-297.000.
Tran, Truoc T.; and Sterlin, Wilhelm, to Motorola, Inc. Method for making a quad leadframe for a semiconductor device. 5,339,518, Cl. 29-827.000.
Transac, Inc.: *See—*
Cuthbertson, Bruce, 5,340,218, Cl. 383-67.000.
Travis, Robert L., Jr.; Wilson, Andrew P.; Jacobson, Neal F.; and Renzullo, Michael J., to Digital Equipment Corporation. Methods and apparatus for providing dynamic invocation of applications in a distributed heterogeneous environment. 5,341,478, Cl. 395-200.000.
Tremblay, Francois; and Dube, Ghyslain, to Alcan International Limited. Jet flow device for injecting gas into molten metal and process. 5,340,379, Cl. 75-680.000.
Trettnak, Wolfgang: *See—*
Wolfbeis, Otto S.; and Trettnak, Wolfgang, 5,340,722, Cl. 435-14.000.
Triangolo, Daniel A.: *See—*
Porcaro, Felix A.; Feibelman, Jeffrey A.; and Triangolo, Daniel A., 5,340,074, Cl. 248-309.100.
TriLAN Systems Corporation: *See—*
Lewen, Ronald C.; Coyle, Jonathan V.; Marotta, Peter P.; Liubinskas, Tauras J.; Arnold, David P.; Byers, Kenneth R.; Dean, Anthony K.; and Nowakowski, Victor A., 5,341,374, Cl. 370-85.400.
Tripp, Benjamin A. Two ply material made from used vehicle tires. 5,340,630, Cl. 428-54.000.
Trissel, David W.; Dorris, Roderick L.; and Werbner, Stuart A., to Motorola, Inc. Method for rapidly processing floating-point operations which involve exceptions. 5,341,320, Cl. 364-748.000.
Troe, James L.: *See—*
Aron, Carl R.; and Troe, James L., 5,341,410, Cl. 379-59.000.
Trost, David; Baumeister, Philip; and Fischer, Dennis, to Coherent, Inc. Dichroic optical filter. 5,341,238, Cl. 359-359.000.
Trout, Lindell R.: *See—*
Hart, Charles M.; Hoff, H. Milton, Jr.; Tillman, John L., Jr.; Trout, Lindell R.; and Witte, Stephen L., Sr., 5,339,896, Cl. 166-241.100.
Trouve, Claude; Richard, Michel; Mallo, Paul; and Anquetil, Jean-Yves, to Societe Francaise Hoechst. Cationic copolymers which are insoluble in water, new dispersions and their use in the coatings of papers. 5,340,441, Cl. 162-135.000.
Truax, Alfred. Auxiliary support mechanism for an automotive hoist. 5,339,927, Cl. 187-8.490.
Trubiano, Antoine, to Cari-All, Inc. Wire mesh edge protector. 5,340,133, Cl. 280-33.992.
Trudeau, Genin: *See—*
Tardie, Pierre, 5,339,982, Cl. 220-708.000.
TRW Fahrwerksysteme GmbH & Co. KG: *See—*
Eberhart, Eugen, 5,339,917, Cl. 180-143.000.
TRW Inc.: *See—*
Walter, Carlton H.; Campbell, Donn V.; and Devore, Robert V., 5,341,148, Cl. 343-742.000.
TRW Repa GmbH: *See—*
Fohl, Artur, 5,340,152, Cl. 280-805.000.
TRW Vehicle Safety Systems Inc.: *See—*
Faigle, Ernst M.; Sparks, Tracy S.; Thompson, Richard J.; and Blackburn, Brian K., 5,340,148, Cl. 280-730.00A.
Tsai, Boh C.: *See—*
Rotter, George E.; Melquist, John L.; Chiang, Weilong; Tsai, Boh C.; and Kelly, John J., 5,340,846, Cl. 521-182.000.
Tsang, Paul J.: *See—*
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,340,775, Cl. 437-246.000.
Tsang, Peter H.: *See—*
Jacko, Michael G.; Tsang, Peter H.; and Rhee, Seong K., 5,339,931, Cl. 188-251.00M.
Tseng, Mingchih M.; and Philbrook, Carl M., to Gillette Canada, Inc. Sustained-release matrices for dental application. 5,340,581, Cl. 424-401.000.
Tsubakimoto Emerson Co.: *See—*
Nakamura, Akira, 5,339,708, Cl. 74-665.00A.
Tsubuki, Nobuyuki: *See—*
Maruyama, Toshirou; Tsubuki, Nobuyuki; Sakaniwa, Sakae; Yamaura, Isao; and Minegishi, Kazuo, 5,340,599, Cl. 426-512.000.
Tsuji, Makoto: *See—*
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,340,660, Cl. 428-687.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Tsuji, Shinji: *See*—
Okai, Makoto; Tsuji, Shinji; Ohishi, Akio; Hirao, Motohisa; Matsumura, Hiroyoshi; Harada, Tatsuo; Kita, Toshiaki; and Taira, Hideki, 5,340,637, Cl. 428-167.000.

Tsujimoto, Kazuaki; Goto, Yukihiro; and Ohnishi, Katsuji, to Daifuku Co., Ltd. Automatic warehousing system and operating file therefor. 5,340,262, Cl. 414-273.000.

Tsukada, Toshihisa: *See*—
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,340,760, Cl. 437-43.000.

Tsukamoto, Takashi, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering Ltd. Method and apparatus for dynamically changing bus size using address register means and comparator means as bus size detectors. 5,341,481, Cl. 395-325.000.

Tsuno, Toshio: *See*—
Matsumoto, Minoru; Ogino, Etsuo; and Tsuno, Toshio, 5,340,621, Cl. 427-571.000.

Tsuruta, Makoto; and Oda, Ken, to W. L. Gore & Associates, Inc. Fluororesin foam. 5,340,843, Cl. 521-79.000.

Tsushi, Fukuhiro: *See*—
Yasuda, Yoshinobu; Tsushi, Fukuhiro; and Mayumi, Tohru, 5,340,221, Cl. 384-499.000.

Tsutsui, Tatsuhide: *See*—
Akiyama, Shigeyuki; and Tsutsui, Tatsuhide, 5,341,102, Cl. 324-445.000.

Tsutsui, Toshiyuki; Okawa, Kazunori; and Toyota, Akinori, to Mitsui Petrochemical Industries, Ltd. Olefin polymerization catalyst and process for the polymerization of olefins. 5,340,786, Cl. 502-117.000.

Tsuyoshi Masumoto: *See*—
Shibata, Toshisuke; Inoue, Akihisa; and Masumoto, Tsuyoshi, 5,340,416, Cl. 148-420.000.

Tsuzuki, Koji; and Takehara, Nobuyoshi, to Canon Kabushiki Kaisha. Photovoltaic element and method for forming the same. 5,340,409, Cl. 136-256.000.

Tufano, Michael D.: *See*—
Shiosaki, Kazumi; Nadzan, Alex M.; Garvey, David S.; Shue, Youe-Kong; Brodie, Mark S.; Holladay, Mark W.; Chung, John Y.-L.; Tufano, Michael D.; and May, Paul D., 5,340,802, Cl. 514-18.000.

Tukala, Tommy, to Sandvik AB. Indexable insert drill and an insert with a symmetrical drill point and cutting edges of different lengths. 5,340,246, Cl. 408-233.000.

Tuma, John E., to Tanknology Corporation International. Method and apparatus for testing above ground liquid storage tanks for leaks. 5,340,238, Cl. 405-184.000.

Tuominen, Steven M.: *See*—
Antrim, Robert G.; Dirrett, Edward G.; and Tuominen, Steven M., 5,340,535, Cl. 420-588.000.

Turcotte, William E., II: *See*—
Roizen, Michael; Turcotte, William E., II; and Pfisterer, Richard E., 5,341,291, Cl. 364-413.020.

Turner, Jack, to Northern Joinery Limited, The. Balustrades. 5,340,087, Cl. 256-67.000.

Turra, Mario; and Neri, Armando, to G.D. S.p.A. Trolley for loading rolls in a device for feeding a packaging machine. 5,340,260, Cl. 414-27.000.

Turra, Mario: *See*—
Neri, Armando; and Turra, Mario, 5,340,263, Cl. 414-412.000.

Tutt, James R., to Ash Grove Cement Company; and Cadence Environmental Energy, Inc. Apparatus and method for charging combustible solids into a rotary kiln. 5,339,751, Cl. 110-186.000.

Twining, Roy V.: *See*—
Sinden, A. David; Fischer, Hans; and Twining, Roy V., 5,339,885, Cl. 164-450.400.

Tyczkowski, Julius K.: *See*—
Phelps, Patricia V.; Tyczkowski, Julius K.; O'Connell, Toni O.; and Gore, Ann B., 5,339,766, Cl. 119-6.800.

Tyler, William C., to Zebco Corporation. Trolling motor anti-bounce mechanism. 5,340,077, Cl. 248-642.000.

Tysver, Oliver J.: *See*—
Howard, William R.; Tysver, Oliver J.; Osheff, Sheldon; McGrail, John G.; and Petrie, Robert J., 5,339,731, Cl. 101-35.000.

U-Ship, USA Ltd.: *See*—
Ramsden, Gary W., 5,340,948, Cl. 177-25.150.

Uchida, Hirofumi; Juri, Tatsuro; and Ohtaka, Hideki, to Matsushita Electric Industrial Co., Ltd. Video signal digital magnetic recording reproducing apparatus, with variable length coding data compression. 5,341,250, Cl. 360-48.000.

Uchida, Kiyoshi; Miyachi, Yoshikazu; Ibe, Tomoyoshi; Kurita, Tsutomu; Oomichi, Takeo; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, to Chubu Electric Power Co., Inc.; and Mitsubishi Jukogyo Kabushiki Kaisha. Floor surface blasting apparatus. 5,339,573, Cl. 51-429.000.

Uchikawa, Masaaki: *See*—
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, 5,340,788, Cl. 503-209.000.

Uchikawa, Nobutaka: *See*—
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,340,848, Cl. 522-157.000.

Uchiki, Kohichi: *See*—
Morita, Kenji; Uchiki, Kohichi; and Shinoda, Hosei, 5,340,646, Cl. 428-307.300.

Ueda, Ikuo; Niwa, Mineo; Saito, Yoshimasa; Ishii, Yoshinori; and Hitaguchi, Todashi, to Fujisawa Pharmaceutical Co., Ltd. Expression vector for insulin-like growth factor I and method of production. 5,340,725, Cl. 435-69.400.

Ueda, Naoki; Asahina, Kenichi; Omura, Hirohumi; and Miyai, Jiro, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Interlayer film for laminated glass. 5,340,654, Cl. 427-437.000.

Uehara, Masao, to Murata Kikai Kabushiki Kaisha. Winding method. 5,339,616, Cl. 57-281.000.

Uematsu, Tadahiro: *See*—
Hashimoto, Yasuaki; and Uematsu, Tadahiro, 5,339,513, Cl. 29-526.600.

Uemura, Kazuyoshi: *See*—
Miya, Tatsuya; Uemura, Kazuyoshi; and Yoshida, Sadayoshi, 5,341,111, Cl. 331-96.000.

Uemura, Sashirou; Nishii, Yoshiyuki; Kanda, Isamu; Hara, Zenichiro; Futatsuishi, Shunichi; and Shibayama, Kozaburo, to Ise Electronics Corporation; and Mitsubishi Denki Kabushiki Kaisha. Light-emitting device. 5,341,065, Cl. 313-495.000.

Uemura, Toshinobu: *See*—
Nakano, Minoru; Uemura, Toshinobu; Morizane, Shinichi; Okuda, Kiyoshi; and Nakata, Keiko, 5,340,591, Cl. 424-499.000.

Uenishi, Kazuya: *See*—
Yoshimoto, Hiroshi; Uenishi, Kazuya; and Kokubo, Tadayoshi, 5,340,697, Cl. 430-270.000.

Ueno, Noriyuki, to Sony Corporation. Tape recording and/or reproducing apparatus. 5,341,254, Cl. 360-62.000.

Ueno, Osamu: *See*—
Kobayashi, Hideo; Ueno, Osamu; and Ueyanagi, Kiichi, 5,341,358, Cl. 369-100.000.

Ueno, Takashi; Ito, Hiroyuki; Kotani, Hirokazu; and Nakajima, Kazuo, to Takara Shuzo Co., Ltd. MboI restriction-modification genes. 5,340,733, Cl. 435-199.000.

Ueta, Yutaka: *See*—
Tomihashi, Nobuyuki; Akamatsu, Masafumi; and Ueta, Yutaka, 5,340,864, Cl. 524-297.000.

Ueyama, Akihiro: *See*—
Watanabe, Junzo; Ueyama, Akihiro; and Kawamura, Ban, 5,341,072, Cl. 315-408.000.

Ueyanagi, Kiichi: *See*—
Kobayashi, Hideo; Ueno, Osamu; and Ueyanagi, Kiichi, 5,341,358, Cl. 369-100.000.

Uftring, Winfried; Bachmann, Theo; Geis, Helmut; and Haase, Lothar, to Ciba-Geigy Corporation. Apparatus for the heat treatment of ophthalmic lenses, especially contact lenses. 5,340,399, Cl. 118-59.000.

Ugland, Jon K.: *See*—
Farjh, Jan F.; and Ugland, Jon K., 5,341,401, Cl. 375-94.000.

Ugon, Michel, to Bull CP8. Security device, including a memory and/or a microcomputer for data processing machines. 5,341,421, Cl. 380-4.000.

Ullman, Edwin F.; Kirakossian, Hrair; Pease, John S.; Daniloff, Yuri; and Wagner, Daniel B., to Snytex (U.S.A.) Inc. Assay method utilizing photoactivated chemiluminescent label. 5,340,716, Cl. 435-6.000.

Umeno, Hidenori: *See*—
Tanaka, Shunji; Yamaoka, Akira; Umeno, Hidenori; Haraguchi, Masatoshi; Ogawa, Kiyoshi; Saijo, Keiji; and Takeda, Katsumi, 5,341,484, Cl. 395-400.000.

Umeyama, Koichi: *See*—
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.

Underdahl, Russell H., to Pinecrest, Inc. Shutter with pin-mounted stationary louvers. 5,339,591, Cl. 52-473.000.

Underiner, Gail: *See*—
Klein, J. Peter; Underiner, Gail; and Leigh, Alistair, 5,340,813, Cl. 514-263.000.

Ungemach, Frank S.: *See*—
Baugher, Bennett W.; Chamberlain, Aurora J.; Devereaux, Sharon M.; and Ungemach, Frank S., 5,340,748, Cl. 436-518.000.

Uni-Charm Corporation: *See*—
Matsushita, Michiko, 5,340,424, Cl. 156-164.000.

Unilever Patent Holdings B.V.: *See*—
Delwel, Francois; Osinga, Theo J.; Theunissen, Joseph P.; and Vrancken, Jack M., 5,340,559, Cl. 423-334.000.

Union Oil Company of California: *See*—
Clark, Danford E., 5,340,957, Cl. 208-59.000.
Green, James A., II; and Young, Donald C., 5,340,593, Cl. 424-715.000.
Mueller, Mark D., 5,339,910, Cl. 175-61.000.

Unisys Corporation: *See*—
Castle, David E., 5,341,486, Cl. 395-425.000.

United Kingdom Atomic Energy Authority: *See*—
Griffiths, Christopher N.; Raybone, David; and Bayliss, Keith H., 5,340,450, Cl. 204-157.300.

United Parcel Service of America, Inc.: *See*—
Brandorff, Alexander; Sussmeier, John W.; and Smith, Steven L., 5,340,950, Cl. 177-145.000.
Lee, Jason J., 5,341,289, Cl. 364-167.010.

United States of America
Agriculture: *See*—
Nisbet, David J.; Corrier, Donald E.; and DeLoach, John R., 5,340,577, Cl. 424-93.210.
Army: *See*—
Haynes, Francis D.; Zarling, John P.; and Quinn, William F., 5,339,893, Cl. 165-45.000.

Tauber, Arthur; and Tidrow, Steven C., 5,340,799, Cl. 505-237.000.
Vennum, Michael D.; Hynes, Mark; and Conover, Gary, 5,341,146, Cl. 342-170.000.

Energy: *See*—
Booth, Rex; and Pocha, Michael D., 5,341,017, Cl. 257-459.000.
Koyama, Tadafumi, 5,340,506, Cl. 588-14.000.
Looney, Brian B.; and Ballard, Sanford, 5,339,694, Cl. 73-861.070.
Maerefat, Nicida L.; Parmeswar, Ravi; Brinkmeyer, Alan D.; and Honarpour, Mehdi, 5,341,101, Cl. 324-376.000.
Payne, Stephen A.; Kway, Wayne L.; DeLoach, Laura D.; Krupke, William F.; and Chai, Bruce H. T., 5,341,389, Cl. 372-41.000.
Silver, Gary L.; and Martin, Frank S., 5,340,605, Cl. 427-126.300.
Warner, Bruce E.; Miller, John L.; and Ault, Earl R., 5,341,392, Cl. 372-62.000.
Wright, Kenneth E., 5,340,081, Cl. 251-129.060.

Health & Human Services: *See*—
Termine, John D.; Young, Marian F.; Fisher, Larry W.; and Robey, Pamela G., 5,340,934, Cl. 536-23.500.

National Aeronautics and Space Administration: *See*—
Backes, Paul G., 5,341,459, Cl. 395-95.000.
Weddendorf, Bruce, 5,340,252, Cl. 411-267.000.

Navy: *See*—
Maccabee, Bruce S., 5,341,056, Cl. 310-26.000.
McLandrich, Matthew N.; Albares, Donald J.; and Pappert, Stephen A., 5,341,205, Cl. 356-73.100.
Smith, Anthony; Goff, Dan; Kruchowy, Roman; and Rhoads, Carl, 5,339,691, Cl. 73-597.000.
Smith, Robert A.; Gutmark, Ephraim; Schadow, Klaus C.; and Wilson, Kenneth J., 5,340,054, Cl. 244-1.00N.
Waclawik, Ronald E.; Duarte, George M.; and Dinola, Louis P., 5,339,762, Cl. 114-312.000.
Wescott, Thomas F.; McCleary, Lawrence E.; and Nation, David A., 5,341,463, Cl. 395-129.000.

U.S. Philips Corporation: *See*—
Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruytere, Hendricus C.; and Sloof, Willem-Arie, 5,341,107, Cl. 329-337.000.
Conrads, Norbert; Hillen, Walter; Maack, Hanns-Ingo; Rupp, Stephan; Schafer, Ingo; and Schiebel, Ulrich, 5,341,409, Cl. 378-29.000.
Dieleman, Adrianus; Schepers, Jos G.; and Westerhout, Gerrit D., 5,341,356, Cl. 369-47.000.
Dienbauer, Josef, 5,341,257, Cl. 360-85.000.
Doomernik, Franciscus M. P. P.; Jacobs, Franciscus C. A. J.; and Vink, Nicolaas G., 5,340,044, Cl. 242-7.030.
Ettes, Wilhelmus G. M., 5,341,085, Cl. 323-222.000.
Knapp, Alan, 5,341,151, Cl. 345-58.000.
Stove, Andrew G., 5,341,144, Cl. 342-70.000.
Van Leeuwen, Gerrit H., 5,341,087, Cl. 323-315.000.

United States Surgical Corporation: *See*—
Green, David T.; Alesi, Thomas W., Jr.; Bolanos, Henry; and Toso, Kenneth E., 5,339,870, Cl. 140-123.500.

United Technologies Automotive, Inc.: *See*—
Sims, Kenneth A., 5,339,491, Cl. 16-2.000.

United Technologies Corporation: *See*—
Anneser, Douglas L.; and Male, Barry J., 5,341,093, Cl. 324-752.000.
Antonellis, Stephen M., 5,339,619, Cl. 60-39.020.
Cycon, James P.; Hunter, David H.; and Krauss, Timothy A., 5,340,279, Cl. 416-134.00A.
Donnelly, Brian G.; Dyer, Gerald P.; and Wiesner, Charles E., 5,339,636, Cl. 60-734.000.
Jacaruso, Gary J.; and Ramey, Philip J., 5,340,423, Cl. 156-158.000.
Magowan, John W., 5,340,278, Cl. 416-96.00R.

Unitog Rental Services, Inc.: *See*—
Montgomery, Stephen M., 5,340,469, Cl. 210-96.100.

Univ. of New York, Trustees of the: *See*—
Lavker, Robert M.; Sun, Tung-Tien; and Cotsarelis, George, 5,340,744, Cl. 436-63.000.

Univ. of Penna., Trustees of the: *See*—
Lavker, Robert M.; Sun, Tung-Tien; and Cotsarelis, George, 5,340,744, Cl. 436-63.000.

University of Akron, The: *See*—
Kennedy, Joseph P.; Goodall, Brian L.; and Lubnin, Alexander V., 5,340,881, Cl. 525-333.700.

University of British Columbia: *See*—
Kilburn, Douglas G.; Miller, Robert C.; Gilkes, Neil; and Warren, R. Antony J., 5,340,731, Cl. 435-179.000.

University of Chicago, The: *See*—
Redey, Laszlo I.; Vissers, Donald R.; and Prakash, Jai, 5,340,668, Cl. 429-103.000.

University of Cincinnati: *See*—
Sekhar, Jainagesh A.; Subramanian, V.; and Canarslan, Necip S., 5,340,014, Cl. 228-198.000.

University of Delaware, The: *See*—
Boer, Karl W., 5,340,408, Cl. 136-255.000.

University of Florida: *See*—
Jayashankar, S.; and Kaufman, Michael J., 5,340,531, Cl. 419-10.000.

University of Kansas: *See*—
Stetler, Dean A., 5,340,720, Cl. 435-7.400.

University of Maryland at College Park: *See*—
Payne, Gregory F.; Chu, Jennifer; Wallace, Kimberlee K.; and Sun, Wei-Qiang, 5,340,483, Cl. 210-632.000.

University of Medicine & Dentistry of New Jersey: *See*—
Boyd, Charles D.; and Deak, Susan B., 5,340,723, Cl. 435-29.000.

University of Oklahoma, The Board of Regents of the: *See*—
Fransen, Stephen R.; and Hilderbrand, P. Lloyd, 5,340,991, Cl. 250-459.100.

University of Southern California: *See*—
Orme, Melissa E.; and Muntz, Eric P., 5,340,090, Cl. 266-202.000.
Pike, Malcolm C.; and Spicer, Darcy V., 5,340,585, Cl. 424-426.000.
Pike, Malcolm C.; and Spicer, Darcy V., 5,340,586, Cl. 424-426.000.
Spicer, Darcy V.; and Pike, Malcolm C., 5,340,584, Cl. 424-426.000.

University of Toledo, The: *See*—
Graves, Anne C. F.; and Goldman, Stephen L., 5,340,730, Cl. 438-172.300.

University of Utah Research Foundation: *See*—
Baker, Phillip D.; Orr, Joseph A.; Westenskow, Dwayne R.; and Egbert, Timothy P., 5,339,818, Cl. 128-677.000.

UOP: *See*—
Gillespie, Ralph D.; and Holmgren, Jennifer S., 5,340,465, Cl. 208-191.000.
Hedrick, Brian W.; Micklich, Frank T.; Johnson, Brian H.; Meier, Daniel G.; Whitsura, Frank R.; and Engelman, Bill R., 5,340,470, Cl. 210-130.000.
McCulloch, Beth, 5,340,404, Cl. 127-46.200.

Uosaki, Yasuo: *See*—
Asai, Hiroshi; Takeshige, Nobuhide; Uosaki, Yasuo; Shibahara, Masahiko; Omori, Motofumi; and Morimoto, Shigenori, 5,340,414, Cl. 148-325.000.

Upjohn Company, The: *See*—
Abraham, Irene, 5,340,724, Cl. 435-32.000.

Uponor, N.V.: *See*—
Jarvenkyla, Jyri; and Holso, Eino, 5,340,299, Cl. 425-326.100.

Uppco Incorporated: *See*—
Whitesel, J. Warren, 5,339,514, Cl. 29-596.000.

Uranium Pechiney: *See*—
Bertaud, Yves; Bouvet, Sylvie; and Lamaze, Airy-Pierre, 5,340,447, Cl. 204-1.500.

UreSil Corporation: *See*—
Poloyko, Alexander; Goldberg, Mark C.; Goldberg, Edward M.; Melinyshyn, Lev A.; and Schucart, David E., 5,339,801, Cl. 128-20.000.

Urushizaki, Kazo: *See*—
Okazaki, Shuji; and Urushizaki, Kazo, 5,340,958, Cl. 219-69.120.

Usa, Satoshi: *See*—
Okamoto, Tetsuo; and Usa, Satoshi, 5,340,941, Cl. 84-658.000.

Usagawa, Yasushi: *See*—
Ohnishi, Akira; Usagawa, Yasushi; and Yamada, Taketoshi, 5,340,707, Cl. 430-522.000.

Usami, Ikuzo: *See*—
Hanazuka, Yasuo; Usami, Ikuzo; Chibe, Kazuyuki; and Mizutani, Noriko, 5,340,847, Cl. 522-11.000.

Usui Kokusai Sangyo Kaisha Ltd.: *See*—
Hashimoto, Yasuaki; and Uematsu, Tadahiro, 5,339,513, Cl. 29-526.600.

Uytterhoeven, Herman; Bastiaens, Luc; Van den Bergh, Rudolf; and Leenders, Luc, to Agfa-Gevaert, N.V. Heat-sensitive recording material and method for obtaining an image using the same. 5,340,693, Cl. 430-253.000.

Uzuyama, Kimitake: *See*—
Watanabe, Shinichi; Shibayama, Takao; Uzuyama, Kimitake; Fukamachi, Kazuyuki; Maekawa, Keiichiro; and Maruo, Masaru, 5,339,682, Cl. 73-123.000.

Vaes, Jos; Dewanckele, Jean-Marie; and Monbaliu, Marcel, to AGFA-Gevaert, N.V. Method for making a lithographic printing plate according to the silver salt diffusion transfer process. 5,340,691, Cl. 430-204.000.

Vaes, Jos A.: *See*—
De Keyzer, Rene M.; Dewanckele, Jean-Marie O.; Van Rompuy, Ludo L.; and Vaes, Jos A., 5,340,690, Cl. 430-204.000.

Vagias, Ernest. Keyboard instrument having soundboard with unconstrained edges. 5,339,717, Cl. 84-192.000.

Valence Technology, Inc.: *See*—
Chaloner-Gill, Benjamin; Golovin, Neal; and Lundquist, Joseph, 5,340,669, Cl. 429-192.000.
Koksbang, Rene; and Olsen, Ib I., 5,340,368, Cl. 29-623.500.
Koksbang, Rene, 5,340,671, Cl. 429-218.000.

Valentine, A. H. Lynn: *See*—
Horan, Robert; and Valentine, A. H. Lynn, 5,339,955, Cl. 206-370.000.

Valimaa, Veli-Matti; Leman, Ari; Hossi, Petri; and Olkkola, Jari, to Nokia Mobile Phones Ltd. Antenna rod and procedure for manufacturing same. 5,341,149, Cl. 343-895.000.

Valiulis, Stanley C., to Southern Imperial, Inc. Strip merchandiser. 5,339,967, Cl. 211-57.100.

Van Den Bergh Foods Company, Division of Conopco, Inc : *See*—
Reckweg, Freek; Chiaverini, Michael; and Lehouiller, Scott A., 5,340,600, Cl. 426-603.000.

van Beurden, Karin M. M.: *See*—
Meijers, Augustinus G. H.; and van Beurden, Karin M. M., 5,340,160, Cl. 285-15.000.

Vandamme, Roland R.: *See*—
Erk, Henry F.; and Vandamme, Roland R., 5,340,437, Cl. 156-639.000.

Vandeberg, John T.: *See*—
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,340,653, Cl. 428-423.100.

VOL 1165 ISS 4 AG 23 1994 UMI

van den, Berk; Henry. Installation for carrying out experiments under the condition of weightlessness or microgravity. 5,340,239, Cl. 405-224.000.
van den Berg, J.: *See—*
Schelen, Johannes B. J.; and van den Berg, J., 5,341,219, Cl. 348-217.000.
Van den Bergh, Rudolf: *See—*
Uytterhoeven, Herman; Bastiaens, Luc; Van den Bergh, Rudolf; and Leenders, Luc, 5,340,693, Cl. 430-253.000.
Vanderbilt, David D.: *See—*
Dunn, Richard L.; English, James P.; Cowsar, Donald R.; and Vanderbilt, David D., 5,340,849, Cl. 523-113.000.
van der Heijden, Peter W. D., to Peter W. D. van der Heijden Laborbedarf. Circulation cooler for vacuum distillation apparatus. 5,340,444, Cl. 202-186.000.
Van der Laan, Jan M.: *See—*
Lambeir, Anne-Marie; Lasters, Ignace; Mrabet, Nadir; Quax, Wilhelmus J.; Van der Laan, Jan M.; and Misset, Onno, 5,340,738, Cl. 435-234.000.
van der Loo, Leonardus L. H.; and Mertens, Marcel D. M., to DSM, N.V. Multilayer antiballistic structure. 5,340,633, Cl. 428-114.000.
Van Druff, Benjamin. Track with moveable trolley for tethering and restraining an animal. 5,339,773, Cl. 119-785.000.
Van Gemert, Barry, to PPG Industries, Inc. Photochromic naphthopyrans. 5,340,857, Cl. 524-110.000.
Vanhanehem, Richard C.: *See—*
Scaringe, Raymond P.; Evans, Steven; Simpson, William H.; and Vanhanehem, Richard C., 5,340,790, Cl. 503-227.000.
Van Havenbergh, Jan A.; and Aertbelien, Jozef R., to AGFA-Gevaert, N.V. Radiographic screen with edge-reinforcing coating. 5,340,661, Cl. 428-690.000.
Vanier, Noel R.: *See—*
Evans, Steven; and Vanier, Noel R., 5,340,789, Cl. 503-227.000.
Van Leeuwen, Gerrit H., to U.S. Philips Corporation. Reference current loop. 5,341,087, Cl. 323-315.000.
Vannatta, Truman J., to Rock-Tenn Company. Pallet leg assembly. 5,339,746, Cl. 108-56.300.
van Rijzingen, Johannes W. H.: *See—*
Busink, Cornelis L.; van Rijzingen, Johannes W. H.; and Mason, David B., 5,340,182, Cl. 294-88.000.
Van Rompuy, Ludo L.: *See—*
De Keyzer, Rene M.; Dewanckele, Jean-Marie O.; Van Rompuy, Ludo L.; and Vaes, Jos A., 5,340,690, Cl. 430-204.000.
VanWert, Bernard: *See—*
Loiselle, Brian P.; and VanWert, Bernard, 5,340,897, Cl. 528-17.000.
Van Wie, David, to Mid-America Power Drives Manufacturing & Distributing, Inc. Port mounted implement selector. 5,339,863, Cl. 137-798.000.
Vaquier, Mariannick; and de Beco, Hugues, to Sextant Avionique. Method and device for revising the lateral flight plan of an aircraft. 5,340,061, Cl. 244-175.000.
Varaprasad, Desaraju V.; Lynam, Niall R.; Habibi, Hamid R.; and Desaraju, Padma, to Donnelly Corporation. High performance electrochemichromic solutions and devices thereof. 5,340,503, Cl. 252-583.000.
Varco International, Inc.: *See—*
Busink, Cornelis L.; van Rijzingen, Johannes W. H.; and Mason, David B., 5,340,182, Cl. 294-88.000.
Varghese, Paily T.: *See—*
Hastings, Robert J.; Varghese, Paily T.; Alexander, Dennis J.; Babb, James F.; and Bradshaw, John R., 5,340,340, Cl. 439-64.000.
Vartanian, George: *See—*
Buswell, Richard F.; and Vartanian, George, 5,340,663, Cl. 429-17.000.
Vassiliou, Eustathios. Simulated egg-yolk compositions, products, and methods of making. 5,340,601, Cl. 426-614.000.
Veber, Daniel F.: *See—*
Nutt, Ruth F.; and Veber, Daniel F., 5,340,798, Cl. 514-18.000.
Veitscher Magnesitwerke-Actien-Gesellschaft: *See—*
Madritsch, Gerhard; Hirschberg, Bruno; Kassegger, Friedrich; Maslo, Heinz; and Weitzer, Paul, 5,340,088, Cl. 266-44.000.
Velasco, Victor J.: *See—*
Bencivenga, Robert; Davidson, Scott; and Velasco, Victor J., 5,341,314, Cl. 364-578.000.
Velbon International Corporation: *See—*
Nakatani, Koichiro, 5,341,185, Cl. 354-81.000.
Velcro Industries B.V.: *See—*
Kennedy, William J.; and Rocha, Gerald F., 5,339,499, Cl. 24-452.000.
Vennum, Michael D.; Hynes, Mark; and Conover, Gary, to United States of America, Army. Covert remote electronic warfare simulator. 5,341,146, Cl. 342-170.000.
Venolia, Daniel S.: *See—*
Vertelney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., 5,341,293, Cl. 364-419.170.
Ventress, Ray. Apparatus for wheel alignment. 5,339,508, Cl. 29-273.000.
Ventura-Berti, Miguel. Post, especially for supporting electric power supply cables. 5,339,594, Cl. 52-727.000.
Venturedyne Limited: *See—*
Pikaart, Jeffrey A., 5,339,643, Cl. 62-80.000.
Verbeke, Gentil; and Boeve, Gerard, to AGFA-Gevaert N. V. Scanner for the PSL radiographic cassette. 5,340,995, Cl. 250-581.000.
Verkinderen, Johan G. A.: *See—*
Willocx, Eddie L. M.; and Verkinderen, Johan G. A., 5,341,108, Cl. 330-259.000.
Verlinden, Jerome M.; and Marini, David R. Apparatus for recovery of refrigerant. 5,339,646, Cl. 62-292.000.
Vermeulen, Fred E.: *See—*
Yu, C. Lawrence; McGee, Bruce C. W.; Chute, Frederick S.; and Vermeulen, Fred E., 5,339,898, Cl. 166-248.000.
Vermeulen, Leon; and Pauwels, Robert, to Agfa-Gevaert, N.V. Image receiving material with nacreous pigment for producing contone images according to the silver salt diffusion transfer process. 5,340,692, Cl. 430-233.000.
Verne Q. Powell Flutes, Inc.: *See—*
Wasser, Steven A., 5,339,719, Cl. 84-385.00P.
Verosol USA Inc.: *See—*
Judkins, Ren, 5,339,882, Cl. 160-84.10D.
Vertelney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., to Apple Computer, Inc. User interface system having programmable user interface elements. 5,341,293, Cl. 364-419.170.
Vest, Paul E.: *See—*
Kacher, Mark L.; Taneri, James E.; Camden, James B.; Vest, Paul E.; and Bowles, Sylvia J., 5,340,492, Cl. 252-112.000.
Vesture Corporation: *See—*
Owens, Byron C., 5,339,541, Cl. 36-2.600.
Viches, Ilya, to Read-Rite Corporation. Test fixture for air bearing magnetic head suspension assembly. 5,339,702, Cl. 73-865.900.
Victor, Richard A.: *See—*
Lockett, Michael J.; Bonaquist, Dante P.; and Victor, Richard A., 5,339,648, Cl. 62-24.000.
Video Control Technology, Inc.: *See—*
Garr, Michael J.; Dale, Mark J.; and Taylor, Timothy, 5,341,166, Cl. 348-10.000.
Vildaver, Margarita: *See—*
Patel, Rajesh; Bowman, Lyle; Vildaver, Margarita; and Chen, Raymond, 5,340,572, Cl. 424-78.040.
Villalobos, Richard: *See—*
Annino, Raymond; Lewis, Edward L.; Lueck, Dale E.; Phillips, Matthew L.; and Villalobos, Richard, 5,340,543, Cl. 422-89.000.
Vincent, Gary A.; Brady, William P.; Cifuentes, Martin E.; Schoenherr, William J.; and Vincent, Harold L., to Dow Corning Corporation. Oxime-functional moisture-curable hot melt silicone pressure-sensitive adhesives. 5,340,887, Cl. 525-477.000.
Vincent, Harold L.: *See—*
Vincent, Gary A.; Brady, William P.; Cifuentes, Martin E.; Schoenherr, William J.; and Vincent, Harold L., 5,340,887, Cl. 525-477.000.
Vincent, Judith M.; and Ward, Andrew H., to Dow Corning Corporation. Silicone containing artists' media. 5,340,386, Cl. 106-19.00B.
Vine, Kyle C.: *See—*
Caridis, Anthony A.; Cranfield, John; and Vine, Kyle C., 5,340,269, Cl. 414-786.000.
Vining Industries, Inc.: *See—*
Hoagland, Mary M., 5,339,481, Cl. 15-111.000.
Vink, Nicolaas G.: *See—*
Doomernik, Franciscus M. P. P.; Jacobs, Franciscus C. A. J.; and Vink, Nicolaas G., 5,340,044, Cl. 242-7.030.
Viola, Jeffrey P.: *See—*
Hauck, Steven M.; and Viola, Jeffrey P., 5,340,208, Cl. 312-406.000.
Viola, Paul F.: *See—*
Jens, Stephen C.; Sawaf, Bernard, deceased; Viola, Paul F.; Belkus, Paul R.; and Lee, Robert A. S., 5,341,406, Cl. 376-316.000.
Virnig, Michael J., to Henkel Corporation. Recovery of precious metal. 5,340,380, Cl. 75-744.000.
Virtanen, Esa: *See—*
Karna, Toivo; Laakso, Jukka; Niemi, Timo; Ruohonen, Heikki; Savolainen, Esko; Lindstrom, Helge; Virtanen, Esa; Ikkala, Olli; and Andreatta, Alejandro, 5,340,499, Cl. 252-500.000.
Vishlitzky, Natan: *See—*
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, 5,341,493, Cl. 395-425.000.
Vissers, Donald R.: *See—*
Redey, Laszlo I.; Vissers, Donald R.; and Prakash, Jai, 5,340,668, Cl. 429-103.000.
Vitesse Semiconductor Corp.: *See—*
Langer, Richard M., 5,341,369, Cl. 370-60.000.
VLSI Technology, Inc.: *See—*
Loh, Ying T.; and Wang, Chung S., 5,340,761, Cl. 437-44.000.
Voelz, Dale, to White Consolidated Industries, Inc. Vertical merchandise display carousel. 5,339,968, Cl. 211-121.000.
Vogelgesang, Peter J., to Minnesota Mining and Manufacturing Company. Method and apparatus for reducing the effects of laser noise and for improving modulation transfer function in scanning a photoconductive surface. 5,340,975, Cl. 250-205.000.
Vogtherr, Burkhard, to Fritz Hansen A/S. One-piece seat shell. 5,340,197, Cl. 297-452.120.
Vollert, Alfred; and Ecoffet, Roger, to Werthanor S.A. Packing. 5,340,009, Cl. 277-206.00A.
Vollmer, Elmar, to Audi Ag. Vehicle safety seat having a raisable front edge. 5,340,185, Cl. 296-68.100.
Von Roll AG: *See—*
Spiess, Hansruedi; and Galvanetto, Francois, 5,340,232, Cl. 404-25.000.

Voncken, Bernard: *See—*
Maneglier, Bruno; and Voncken, Bernard, 5,340,574, Cl. 424-85.200.
Vora, Madhukar B., to Fairchild Semiconductor Corporation. Method of making small contactless RAM cell. 5,340,762, Cl. 437-52.000.
Vorih, Marc L. Operating system for dual-sieve oxygen concentrators. 5,340,381, Cl. 95-21.000.
Vorspohl, Klaus: *See—*
Henn, Rolf; Hinz, Werner; Schuster, Ludwig; and Vorspohl, Klaus, 5,340,916, Cl. 528-405.000.
Voss, Kenneth E.: *See—*
Yavuz, Bulent O.; Larkin, Matthew P.; Rice, Gary W.; and Voss, Kenneth E., 5,340,516, Cl. 264-63.000.
Vossberg, Stephen M.; Clothiaux, John D.; Chaplin, Gregory D.; Harrigle, Dale R., Jr.; Kearney, Allen C.; Williams, James A., Jr.; and Fleishchman, Thomas S., to Bridgestone/Firestone, Inc. Pneumatic tire having opposite spiral oriented beads. 5,339,879, Cl. 152-540.000.
Vossel, Andreas: *See—*
Sprang, Ruediger; Vossel, Andreas; Schmudde, Werner; and Buhl, Reinhard, 5,340,220, Cl. 384-125.000.
Vrancken, Jack M.: *See—*
Delwel, Francois; Otinga, Theo J.; Theunissen, Joseph P.; and Vrancken, Jack M., 5,340,559, Cl. 423-334.000.
Vratsanos, Lori A.: *See—*
Famili, Amir; Vratsanos, Lori A.; and Marten, Finn L., 5,340,874, Cl. 525-59.000.
W. L. Gore & Associates, Inc.: *See—*
Tsuruta, Makoto; and Oda, Ken, 5,340,843, Cl. 521-79.000.
W. R. Grace & Co.-Conn.: *See—*
Arfaei, Ahmad; Berke, Neal S.; and Jeknavorian, Ara A., 5,340,385, Cl. 106-14.050.
Friedman, Semyon D.; McKinney, Robert W.; Ou, Chia-Chih; Spotnitz, Robert M.; and Wu, Shaohai, 5,340,558, Cl. 423-328.100.
Kerkar, Awdhoot V., 5,340,779, Cl. 501-80.000.
Ou, Chia-Chih; and Bablouzian, Leon, 5,340,643, Cl. 428-283.000.
Perito, Richard P., 5,340,612, Cl. 427-403.000.
WABCO Standard GmbH: *See—*
Singbartl, Gunther, 5,339,764, Cl. 116-266.000.
WABCO Westinghouse Fahrzeugbremsen GmbH: *See—*
Singbartl, Gunther, 5,341,117, Cl. 336-92.000.
Wachtler, Andreas; Kompter, Hans-Michael; Poetsch, Eike; Geelhaar, Thomas; Hittich, Reinhard; and Krause, Joachim, to Merck Patent Gesellschaft Mit Beschrankter Haftung. Fluorophenylpyrimidines. 5,340,497, Cl. 252-299.610.
Waclawik, Ronald E.; Duarte, George M.; and Dinola, Louis P., to United States of America, Navy. Undersea launcher for a tethered device. 5,339,762, Cl. 114-312.000.
Wagner, Daniel B.: *See—*
Ullman, Edwin F.; Kirakossian, Hrair; Pease, John S.; Daniloff, Yuri; and Wagner, Daniel B., 5,340,716, Cl. 435-6.000.
Wagner, Lawrence F., Jr.: *See—*
Hsieh, Chang-Ming; Hsu, Louis L. C.; Mei, Shaw-Ning; Knepper, Ronald W.; and Wagner, Lawrence F., Jr., 5,341,023, Cl. 257-559.000.
Wagstaff Inc.: *See—*
Sinden, A. David; Fischer, Hans; and Twining, Roy V., 5,339,885, Cl. 164-450.400.
Wahl, Ludwig: *See—*
Baumgartl, Horst; Schlarb, Alois; Wahl, Ludwig; Ittemann, Peter; and Brentrup, Karl-Ludwig, 5,340,642, Cl. 428-224.000.
Wakefield, Thomas L.; and Plunkett, George R., to Wave Energy Corporation. Intelligent transformerless system for transferring energy from a power source to an isolated load. 5,341,285, Cl. 363-97.000.
Wakita, Shinichi: *See—*
Nakatani, Fumio; Wakita, Shinichi; Murakami, Hisatoshi; Terada, Tsunehiko; and Morimoto, Shohei, 5,341,274, Cl. 361-818.000.
Wakuda, Osamu: *See—*
Toki, Hirotaka; Wakuda, Osamu; Yamamoto, Hiranaga; and Nagao, Hiroyuki, 5,340,096, Cl. 271-9.000.
Walczak, Irene M.: *See—*
Slovacek, Rudolf E.; Love, Walter F.; Cook, Thomas A.; Schulkind, Richard L.; and Walczak, Irene M., 5,340,715, Cl. 435-6.000.
Wall, Monroe E.; Wani, Mansukh C.; Nicholas, Allan W.; and Manikumar, Govindarajan, to Research Triangle Institute. Method of treating tumors with anti-tumor effective camptothecin compounds. 5,340,817, Cl. 514-279.000.
Wall, William A.: *See—*
Derwin, Michael T.; and Wall, William A., 5,341,487, Cl. 395-425.000.
Wallace, Kimberlee K.: *See—*
Payne, Gregory F.; Chu, Jennifer; Wallace, Kimberlee K.; and Sun, Wei-Qiang, 5,340,483, Cl. 210-632.000.
Wallace, Paul S.; and Chan, Henry C., to Texaco Inc. Method and apparatus for grinding hot material and recovering gasses emitted therefrom. 5,340,037, Cl. 241-62.000.
Waller, David P.: *See—*
Chinoporos, Efthimios; Pauze, Robert H.; Waller, David P.; and Whritenour, David C., 5,340,689, Cl. 430-200.000.
Waller, Richard H.: *See—*
Austruy, Pierre; Brezzo, Bernard; Lips, Jean-Pierre; Naudin, Bernard; Calvignac, Jean; and Waller, Richard H., 5,341,475, Cl. 395-200.000.
Wally, Joseph H., Jr.; and Pace, Herbert W., to Black & Veatch Architects, Inc. Flow camera for large document reproductions. 5,341,192, Cl. 355-50.000.
Walowit, Eric: *See—*
Xue, Kefu; Winans, Ann J.; and Walowit, Eric, 5,341,174, Cl. 348-576.000.
Walt Disney Company, The: *See—*
Craven, B. Thomas; Wiedefeld, William G.; Poor, Kyle W.; Johnson, Bruce S.; Sogge, John W.; Peterson, Michael H.; Adamson, William G.; and Froelich, Ronald W., 5,339,741, Cl. 102-361.000.
Walter, Carlton H.; Campbell, Donn V.; and Devore, Robert V., to TRW Inc. High frequency multi-turn loop antenna in cavity. 5,341,148, Cl. 343-742.000.
Wan, Howard S. K.: *See—*
Chalmers, Dennis W.; Kendall, Leonard M.; Kristensen, Ole F.; Lin, Eric C. W.; and Wan, Howard S. K., 5,341,258, Cl. 360-92.000.
Wandel, Dietmar: *See—*
Koschinek, Gunter; and Wandel, Dietmar, 5,340,517, Cl. 264-103.000.
Wang, Cheng-Yuan M.: *See—*
Randhawa, Hiten S.; and Wang, Cheng-Yuan M., 5,341,048, Cl. 307-481.000.
Wang, Chia L., to GenCorp Inc. Two-component, primerless, organic phosphorus containing polyurethane adhesive. 5,340,901, Cl. 528-60.000.
Wang, Chung S.: *See—*
Loh, Ying T.; and Wang, Chung S., 5,340,761, Cl. 437-44.000.
Wang, Frank, to Delta Electronics, Inc. Construction of an electromagnetic interference filter. 5,340,944, Cl. 174-52.100.
Wang, Jye-Huei: *See—*
Liao, Pohsien; Huang, Chin-Chang; and Wang, Jye-Huei, 5,341,253, Cl. 360-61.000.
Wang, Pen-Chung; and Kelsey, Donald R., to Shell Oil Company. Cyanate resins. 5,340,912, Cl. 528-322.000.
Wani, Mansukh C.: *See—*
Wall, Monroe E.; Wani, Mansukh C.; Nicholas, Allan W.; and Manikumar, Govindarajan, 5,340,817, Cl. 514-279.000.
Wanner, Karl: *See—*
Bloechle, Hans; and Wanner, Karl, 5,340,245, Cl. 408-226.000.
Ward, Andrew H.: *See—*
Vincent, Judith M.; and Ward, Andrew H., 5,340,386, Cl. 106-19.00B.
Ward, James E. Direction indicating traffic barricade. 5,339,765, Cl. 116-63.00P.
Ward, Scott A.: *See—*
Bohan, John E., Jr.; Mills, Frank S.; and Ward, Scott A., 5,340,019, Cl. 236-20.00R.
Ware, Jerry L.: *See—*
Ruggeri, Zaverio M.; and Ware, Jerry L., 5,340,727, Cl. 435-69.600.
Warn Industries, Inc.: *See—*
Scott, Gary M., 5,340,154, Cl. 280-848.000.
Warner, Bruce E.; Miller, John L.; and Ault, Earl R., to United States of America, Energy. Longitudinal discharge laser electrodes. 5,341,392, Cl. 372-62.000.
Warner, Craig M.: *See—*
Warner, Ronald C.; and Warner, Craig M., 5,339,477, Cl. 15-97.100.
Warner, Kevin L.; and Delasko, Joe M., to Baker Hughes Incorporated. Ultrasonic stand-off gauge. 5,341,345, Cl. 367-99.000.
Warner-Lambert Company: *See—*
Connor, David T.; and Kostlan, Catherine R., 5,340,815, Cl. 514-269.000.
Horwell, David C.; Pritchard, Martyn C.; and Richardson, Reginald S., 5,340,825, Cl. 514-339.000.
Jaen, Juan C.; and Caprathe, Bradley W., 5,340,808, Cl. 514-248.000.
Warner, Ronald C.; and Warner, Craig M., to Ron Warner Associates. Apparatus for removing coatings from fingernails. 5,339,477, Cl. 15-97.100.
Warren, R. Antony J.: *See—*
Kilburn, Douglas G.; Miller, Robert C.; Gilkes, Neil; and Warren, R. Antony J., 5,340,731, Cl. 435-179.000.
Warren, Timothy C., to Xerox Corporation. Auger feeding agitator. 5,339,998, Cl. 222-241.000.
Wartsila Diesel International Ltd. Oy: *See—*
Rosgren, Carl-Erik; and Leino, Ilmo, 5,339,724, Cl. 92-153.000.
Washington Research Foundation: *See—*
Clark, John I.; Farr, Andrew G.; and Smith, Stacia A., 5,340,829, Cl. 514-389.000.
Wasilewski, Anthony J.; and Gammie, Keith, to Scientific Atlanta, Inc. Methods and apparatus for uniquely encrypting data at a plurality of data transmission sites for transmission to a reception site. 5,341,425, Cl. 380-20.000.
Wasser, Steven A., to Verne Q. Powell Flutes, Inc. Process for seating a tone hole pad. 5,339,719, Cl. 84-385.00P.
Wasserman, Steven; and Roskowski, Steven, to Apple Computer, Inc. Method and apparatus for providing a two conductor serial bus. 5,341,480, Cl. 395-325.000.
Watadani, Izumi: *See—*
Hirakawa, Kiyoshi; Watadani, Izumi; Tanaka, azuhiko; Kawamoto, Masao; Tanaka, Takaaki; Sano, Hirohumi; Yoshimochi, Hayami; and Sato, Masahiro, 5,340,650, Cl. 428-373.000.
Watanabe, Atsushi; Kamiya, Hitoshi; Nakada, Eiji; Mizuno, Tomoaki; Kago, Yoshiyuki; Murase, Tokutaro; and Inukai, Yoshihiko, to Nippondenso Company, Ltd. Information storage medium with electronic and visual areas. 5,340,968, Cl. 235-380.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Watanabe, Junzo; Ueyama, Akihiro; and Kawamura, Ban, to Sony Corporation. Bi-directional scan circuit. 5,341,072, Cl. 315-408.000.
Watanabe, Koichi: *See*—
Saeki, Noriyasu; Watanabe, Koichi; Iwai, Hideo; Yasuda, Eiichi; and Inoue, Ryuji, 5,340,300, Cl. 425-329.000.
Watanabe, Naotoshi: *See*—
Soumiya, Toshio; Abe, Shunji; Katoh, Masafumi; and Watanabe, Naotoshi, 5,341,366, Cl. 370-17.000.
Watanabe, Osamu: *See*—
Ishii, Kozo; Takemoto, Kazuo; Fujiwara, Takuji; Mizobe, Tatsutoshi; Baba, Fumiaki; Nagayama, Shigeru; Watanabe, Osamu; and Takeuchi, Koichiro, 5,339,935, Cl. 192-3.300.
Watanabe, Shinichi; Shibayama, Takao; Uzuyama, Kimitake; Fukamachi, Kazuyuki; Maekawa, Keiichiro; and Maruo, Masaru, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus and method of testing anti-lock brake system. 5,339,682, Cl. 73-123.000.
Watanabe, Takuya: *See*—
Kojima, Motohiro; Watanabe, Takuya; and Takamura, Tohru, 5,340,977, Cl. 250-208.100.
Watanabe, Toshiaki; and Ryuo, Toshihiko, to Shin-Etsu Chemical Co., Ltd. Optical isolator and method for preparing same. 5,341,235, Cl. 359-281.000.
Watanabe, Toshiyuki: *See*—
Kawabe, Hiroshi; Watanabe, Toshiyuki; and Tomita, Naotaka, 5,339,880, Cl. 157-1.000.
Watchko, George: *See*—
Keyser, Paul; and Watchko, George, 5,341,128, Cl. 340-605.000.
Watkins, Amos J.: *See*—
Laporte, Irwin J.; and Watkins, Amos J., 5,339,915, Cl. 175-244.000.
Watkins-Johnson Company: *See*—
Nardi, Benedict J., 5,341,110, Cl. 331-17.000.
Watson, Earl L.: *See*—
Bender, Frederick F.; and Watson, Earl L., 5,340,174, Cl. 292-336.300.
Watts, J. Alan: *See*—
Norris, Thomas R.; Lockwood, Hanford N.; and Watts, J. Alan, 5,340,276, Cl. 415-208.100.
Wave Energy Corporation: *See*—
Wakefield, Thomas L.; and Plunkett, George R., 5,341,285, Cl. 363-97.000.
Wavin B.V.: *See*—
Meijers, Augustinus G. H.; and van Beurden, Karin M. M., 5,340,160, Cl. 285-15.000.
Waxman, Lloyd H.: *See*—
Connolly, Thomas M.; Keller, Paul M.; and Waxman, Lloyd H., 5,340,726, Cl. 530-350.000.
Wayne, Jack L., Jr.: *See*—
Wayne, Jack L., Sr.; and Wayne, Jack L., Jr., 5,340,398, Cl. 118-58.000.
Wayne, Jack L., Sr.; and Wayne, Jack L., Jr. Foliage coating method and apparatus. 5,340,398, Cl. 118-58.000.
Weaver, G. Gregory: *See*—
Dasgupta, Sunil P.; Gingrich, Blain H.; Matyniak, Bernard J.; and Weaver, G. Gregory, 5,341,103, Cl. 324-454.000.
Weaver, Max A.: *See*—
Chamberlin, Kim S.; Pruett, Wayne P.; Weaver, Max A.; Hilbert, Samuel D.; Quillen, Donna R.; and Salyer, Preston K., 5,340,910, Cl. 528-289.000.
Webb, Steven L.: *See*—
Stein, Irene F.; Degi, Greg A.; Boyd, David W.; and Webb, Steven L., 5,341,225, Cl. 358-498.000.
Weber, Jean-Pierre, to Telefonaktiebolaget L M Ericsson. Tunable optical filter. 5,341,443, Cl. 385-2.000.
Weber, Michael E.: *See*—
Hubble, Fred F., III; Swales, Michael G.; Weber, Michael E.; Abowitz, Gerald; and Bov, Raphael F., Jr., 5,341,193, Cl. 355-203.000.
Weber, Russell W. Directional diving device for trolling. 5,339,561, Cl. 43-43.130.
Weber, Walter: *See*—
Piefenbrink, Wilfried; Weber, Walter; and Hamburger, Hermann, 5,340,199, Cl. 299-10.000.
Webster, William H.: *See*—
Brackett, Douglas C.; and Webster, William H., 5,339,515, Cl. 29-705.000.
Weddendorf, Bruce, to United States of America, National Aeronautics and Space Administration. Quick connect fastener. 5,340,252, Cl. 411-267.000.
Weder, Bill C.: *See*—
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.
Weder, Donald E.; and Straeter, Joseph G., to Highland Supply Corporation. Apparatus and method using air pressure and vacuum to form flat-paneled flower pot cover. 5,339,565, Cl. 47-72.000.
Weder, Donald E.; Straeter, William F.; and King, Michael J., to Highland Supply Corporation. Decorative cover with band. 5,339,601, Cl. 53-397.000.
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., to Highland Manufacturing and Supply. Method of reducing static-charge on easter grass. 5,340,608, Cl. 427-212.000.
Weder, E. H.: *See*—
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.
Weems, Mason L.: *See*—
Grossman, Anita S.; Kau, Chin-Cheng; Ogden, Aubrey D.; and Weems, Mason L., 5,341,502, Cl. 395-725.000.
Wehling, Bernhard; Schade, Franz; Kochta, Joachim; Burkhardt, Herbert; and Schindlmayr, Peter, to Bayer Aktiengesellschaft. Process for producing chrome leather. 5,340,365, Cl. 8-94.180.
Wei, Ching-Yeu; Possin, George E.; and Kwasnick, Robert F., to General Electric Company. Device self-alignment by propagation of a reference structure's topography. 5,340,758, Cl. 437-40.000.
Wei, Daniel C., to Hayes Wheels International, Inc. Method for producing a cast aluminum vehicle wheel. 5,340,418, Cl. 148-549.000.
Weimer, Alan W.; Moore, William G.; Rafaniello, William; and Roach, Raymond P., to Dow Chemical Company, The. Process for preparing silicon carbide by carbothermal reduction. 5,340,417, Cl. 148-513.000.
Weinstein, Stephen B.: *See*—
Gelman, Alexander; Kobrinski, Haim; Smoot, Lanny S.; and Weinstein, Stephen B., 5,341,474, Cl. 395-200.000.
Weirs, Gary, to Del-Met Corporation. Snap-on dress wheel simulator. 5,340,201, Cl. 301-37.260.
Weiss, Arno: *See*—
Hirsch, Werner; Weiss, Arno; Rittershaus, Erhard; Junemann, Gitta; Koene, Caspar H.; Pautke, Ingo; Schelhorn, Fritz; Sommer, Herbert; and Stone, William J., 5,339,837, Cl. 131-296.000.
Weiss, Rolf; and Schniepp, Werner, to Josef Albrecht Bohrfutterfabrik GmbH & Co. Wear-resistant chuck for driving hard-shank bits. 5,340,128, Cl. 279-60.000.
Weitsman, Y. Jack; and Kuznetsov, Edward N. Layout and manufacturing method for fiber-reinforced composite shells. 5,340,625, Cl. 428-36.300.
Weitzer, Paul: *See*—
Madritsch, Gerhard; Hirschberg, Bruno; Kassegger, Friedrich; Maslo, Heinz; and Weitzer, Paul, 5,340,088, Cl. 266-44.000.
Welch, Brent B.: *See*—
Elrod, Scott A.; Welch, Brent B.; and Goldberg, David, 5,341,155, Cl. 345-179.000.
Welles, Jonathan M.: *See*—
Eckles, Robert D.; McDermitt, Dayle K.; and Welles, Jonathan M., 5,340,987, Cl. 250-345.000.
Wells, Steven E.; Winston, Mark; and Kynett, Virgil N., to Intel Corporation. Method for writing to a flash memory array during erase suspend intervals. 5,341,330, Cl. 365-185.000.
Wells, Steven E., to Intel Corporation. Method for wear leveling in a flash EEPROM memory. 5,341,339, Cl. 365-218.000.
Welsby, Kevin: *See*—
Hollier, Michael P.; and Welsby, Kevin, 5,341,420, Cl. 379-433.000.
Welsh, Gary C.; Lee, Eric K. C.; and Dalke, Brian D., to Dow Chemical Company, The. Polystyrene foam and a process for making the same. 5,340,844, Cl. 521-82.000.
Wenzel, Donald E.: *See*—
Winslow, Thomas H.; McClelland, Paul H.; and Wenzel, Donald E., 5,341,160, Cl. 347-86.000.
Werbner, Stuart A.: *See*—
Trissel, David W.; Dorris, Roderick L.; and Werbner, Stuart A., 5,341,320, Cl. 364-748.000.
Wernli, Markus: *See*—
Ritzl, Antal; and Wernli, Markus, 5,339,745, Cl. 105-452.000.
Werthanor S.A.: *See*—
Vollert, Alfred; and Ecoffet, Roger, 5,340,009, Cl. 277-206.00A.
Wertman, Richard C.: *See*—
Karsten, Kenneth S., Jr.; and Wertman, Richard C., 5,341,066, Cl. 315-3.500.
Wescott, Thomas F.; McCleary, Lawrence E.; and Nation, David A., to United States of America, Navy. Selective polygon map display method. 5,341,463, Cl. 395-129.000.
Westbrook, C. Eric; and Severinghaus, Nelson, to Franklin Industries, Inc. Method and product of calcium sulfate dihydrate as filler in aqueous polymer dispersions. 5,340,392, Cl. 106-471.000.
Westenskow, Dwayne R.: *See*—
Baker, Phillip D.; Orr, Joseph A.; Westenskow, Dwayne R.; and Egbert, Timothy P., 5,339,818, Cl. 128-677.000.
Westeppe, Uwe; Struss, Klaus; Lindner, Christian; Idel, Karsten-Josef; and Laue, Hans-Joachim, to Bayer Aktiengesellschaft. Thermoplastic moulding compounds of polyamides and resin copolymers. 5,340,876, Cl. 525-66.000.
Wester, Dan. Checker bottom single, dual, or triple indicator. 5,340,114, Cl. 273-260.000.
Westerhout, Gerrit D.: *See*—
Dieleman, Adrianus; Schepers, Jos G.; and Westerhout, Gerrit D., 5,341,356, Cl. 369-47.000.
Western Atlas International, Inc.: *See*—
Farris, Richard C., 5,341,348, Cl. 367-154.000.
Taylor, Robert M., 5,341,100, Cl. 324-341.000.
Westinghouse Air Brake Company: *See*—
Gowda, Padmanab L., 5,340,203, Cl. 303-22.500.
Sich, Gary M.; and Kanjo, Wajih, 5,339,930, Cl. 188-210.000.
Westinghouse Electric Corp.: *See*—
Gehrs, Donald F.; and Runge, Louis L., 5,340,945, Cl. 174-174.000.
Hira, Govind L.; Hall, Richard L.; and Segal, Gary I., 5,340,015, Cl. 228-205.000.

Jungquist, Bruce E.; McBroom, Michael E.; Yaeger, Curtis G.; Knauff, Donald G.; and Sem, Thomas R., 5,339,787, Cl. 123-514.000.
Przybysz, John X.; and Miller, Donald L., 5,341,136, Cl. 341-133.000.
Schmidt, Albert L.; McKinley, Ellen K.; Hanes, Lewis F.; Morris, Michael R.; McKenzie, Patrick J.; and Haley, Paul H., 5,339,826, Cl. 128-731.000.
Shelton, James W.; Marfin, Alan A.; and Dailey, George F., 5,341,095, Cl. 324-772.000.
Westrom, Arthur C.; Meliopoulos, A. P.; and Cokkinides, George J., to Kearney National, Inc. Method and apparatus for detecting and responding to downed conductors. 5,341,265, Cl. 361-44.000.
Weyerhaeuser Company: *See*—
Gess, Jerome M.; Petersen, Dennis E.; Adams, Terry N.; and Martz, Russell J., 5,340,442, Cl. 162-198.000.
Whatcott, Gary L.: *See*—
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,341,130, Cl. 340-825.060.
Wheeler, Keith D.; and Edwards, Stanley H., Jr., to Square D Company. Two hand operated machine control station using capacitive proximity switches. 5,341,036, Cl. 307-328.000.
Wheeler, Randall T.: *See*—
Lorenzen, April D.; and Wheeler, Randall T., 5,341,082, Cl. 320-9.000.
Wheelock Inc.: *See*—
Kosich, Joseph; and Applegate, Edward V., 5,341,069, Cl. 315-241.00S.
Whitaker Corporation, The: *See*—
Cero, Joseph T., Jr.; Thompson, Mitchell L.; and Hann, Joseph K., II, 5,341,062, Cl. 310-339.000.
Edwards, Bryan T.; Erdman, David D.; Monroe, Kevin T.; and Stakem, David L., 5,341,447, Cl. 385-81.000.
Ferry, Julian J., 5,341,419, Cl. 379-417.000.
Haun, Christopher, 5,340,335, Cl. 439-783.000.
Menechella, Gino, 5,340,336, Cl. 439-783.000.
Nguyen, Hung T., 5,340,334, Cl. 439-620.000.
Pentz, Edward L., 5,340,337, Cl. 439-843.000.
Puerner, Dean A., 5,340,320, Cl. 439-79.000.
Sai, Noriaki; and Kinoshita, Yoshiji, 5,340,338, Cl. 439-845.000.
Whitaker, Louis G., to Genie Company, The. Controller for remote control ceiling fan. 5,340,277, Cl. 416-5.000.
White Consolidated Industries, Inc.: *See*—
Voelz, Dale, 5,339,968, Cl. 211-121.000.
White, Mary L. N.: *See*—
Cowley, Terry W.; and White, Mary L. N., 5,340,856, Cl. 524-109.000.
White, Richard E., III: *See*—
Crookston, Ronald W.; Marks, Douglas C.; White, Richard E., III; Male, Andrew J.; Chien, Yun-Ko N.; Castelein, Steven; Beatty, William E., Jr.; Maier, Alfred E.; and Salvati, John G., 5,341,191, Cl. 335-16.000.
Whited, Timothy A.; Leatherman, Jack L.; and Markham, John L., to Corrocon, Inc. Cathodic protection and leak detection process and apparatus. 5,339,911, Cl. 175-62.000.
Whitehair, Stanley J.: *See*—
Cuomo, Jerome J.; Gelorme, Jeffrey D.; Hatzakis, Michael, Jr.; Lewis, David A.; Shaw, Jane M.; and Whitehair, Stanley J., 5,340,914, Cl. 528-353.000.
Whitehouse, Harry T. System and method for accessing remotely located ZIP+4 zipcode database. 5,341,505, Cl. 395-800.000.
Whiteley, John: *See*—
Haworth, Walter; Whiteley, John; Wood, Alfred; and Yates, Stephen W., 5,339,495, Cl. 19-159.00R.
Whitell, David. Granular material spreader. 5,340,033, Cl. 239-676.000.
Whitesel, J. Warren, to Uppco Incorporated. Method of manufacturing laminated stator with improved flux pattern. 5,339,514, Cl. 29-596.000.
Whitsura, Frank R.: *See*—
Hedrick, Brian W.; Micklich, Frank T.; Johnson, Brian H.; Meier, Daniel G.; Whitsura, Frank R.; and Engelman, Bill R., 5,340,470, Cl. 210-130.000.
Whitten, Ralph G.; Guo, Ta-Pen; Mohsen, Amr; and Comer, Alan E., to Aptix Corporation. Structures for electrostatic discharge protection of electrical and other components. 5,341,267, Cl. 361-56.000.
Whritenour, David C.: *See*—
Chinoporos, Efthimios; Pauze, Robert H.; Waller, David P.; and Whritenour, David C., 5,340,689, Cl. 430-200.000.
Wickardt, Andrea: *See*—
Kloss, Thomas; Stein, Elfi; Gerth, Kirsten; and Wickardt, Andrea, 5,340,778, Cl. 501-52.000.
Wicker, Guy C.: *See*—
Ovshinsky, Stanford R.; Hudgens, Stephen J.; Czubatyj, Wolodymyr; Strand, David A.; and Wicker, Guy C., 5,341,328, Cl. 365-163.000.
Wickiser, David I., to Eli Lilly and Company. 1,5-diphenyl-3-formazancarbonitril parasiticides. 5,340,804, Cl. 514-150.000.
Wiedefeld, William G.: *See*—
Craven, B. Thomas; Wiedefeld, William G.; Poor, Kyle W.; Johnson, Bruce S.; Sogge, John W.; Peterson, Michael H.; Adamson, William G.; and Froelich, Ronald W., 5,339,741, Cl. 102-361.000.
Wieder, Klaus: *See*—
Hoffman, Miles K.; Jenson, Brad; and Wieder, Klaus, 5,340,954, Cl. 200-277.200.
Wiedner, Clay R.: *See*—
Weder, Donald E.; Weder, E. H.; Ruth, Howard M.; King, Michael J.; Craig, Franklin J.; Jones, Larry J.; Badgley, Kenton D.; Snider, Harry J., deceased; Snider, Laura L., legal representative; Dye, S. Owen; Wiedner, Clay R.; Weder, Bill C.; and Langenberg, Robert L., 5,340,608, Cl. 427-212.000.
Wiesner, Charles E.: *See*—
Donnelly, Brian G.; Dyer, Gerald P.; and Wiesner, Charles E., 5,339,636, Cl. 60-734.000.
Wiita, Bruce E.; Teets, J. Michael; and Wiita, Gregory D., to Devmed Group Inc. Lens cleaning means for invasive viewing medical instruments with anti-contamination means. 5,339,800, Cl. 128-4.000.
Wiita, Gregory D.: *See*—
Wiita, Bruce E.; Teets, J. Michael; and Wiita, Gregory D., 5,339,800, Cl. 128-4.000.
Wilcox, Reed N.; George, Richard L.; and Lichfield, William H., to Flagship Group II, Inc., The. Self-adjusting soft seal cap for fine point craft paint applicators. 5,340,228, Cl. 401-262.000.
Wilder, Robert E. Adjustable pump dispenser. 5,339,990, Cl. 222-135.000.
Wilhelm, James H.: *See*—
Moser, Robert E.; Wilhelm, James H.; Burke, John; and Gray, Sterling, 5,340,547, Cl. 422-177.000.
Wilhoit, Dennis R.: *See*—
Dieny, Bernard; Gurney, Bruce A.; Parkin, Stuart S. P.; Sanders, Ian L.; Speriosu, Virgil S.; and Wilhoit, Dennis R., 5,341,261, Cl. 360-113.000.
Wilksch, Mark, to Ford Motor Company. Automotive fuel supply apparatus and control valve. 5,339,785, Cl. 123-457.000.
Willemstyn, Tunis J.: *See*—
Thiele, Charles W.; Willemstyn, Tunis J.; Arndt, Douglas J.; and McMullen, John J., 5,340,241, Cl. 406-132.000.
Williams, Christine M.: *See*—
Goodrich, Raymond P., Jr.; and Williams, Christine M., 5,340,592, Cl. 424-533.000.
Williams, Douglas D.: *See*—
Gillett, Richard B., Jr.; and Williams, Douglas D., 5,341,510, Cl. 395-800.000.
Williams, J. Michael: *See*—
Wilson, Mark L.; and Williams, J. Michael, 5,340,471, Cl. 210-167.000.
Williams, James A., Jr.: *See*—
Vossberg, Stephen M.; Clothiaux, John D.; Chaplin, Gregory D.; Harrigle, Dale R., Jr.; Kearney, Allen C.; Williams, James A., Jr.; and Fleishchman, Thomas S., 5,339,879, Cl. 152-540.000.
Williams, Lawrence E.: *See*—
Hecht, Lewis C.; Sulger, Merritt P., deceased; Thiele, Ernst E.; Pierson, Mark V.; and Williams, Lawrence E., 5,339,952, Cl. 206-334.000.
Williams, Paul A.: *See*—
Sachs, Emanuel M.; Haggerty, John S.; Cima, Michael J.; and Williams, Paul A., 5,340,656, Cl. 428-546.000.
Williams, Roberta B.: *See*—
Fields, James H.; Williams, Roberta B.; and McKinney, C. L., 5,340,324, Cl. 439-133.000.
Williams, Steven H.: *See*—
Strauss, Carl R.; and Williams, Steven H., 5,340,868, Cl. 524-461.000.
Williams, Thomas M., Jr. Slidable support for heavily loaded trailer jack post. 5,340,143, Cl. 280-475.000.
Williams, William C.: *See*—
Stangle, Gregory C.; Niedzialek, Scott E.; and Williams, William C., 5,340,533, Cl. 419-45.000.
Willocx, Eddie L. M.; and Verkinderen, Johan G. A., to Alcatel N.V. Amplifier biasing circuit. 5,341,108, Cl. 330-259.000.
Willoughby, Anthony P., to Acheson Industries, Inc. Lubricant compositions for use in diecasting of metals and process. 5,340,486, Cl. 252-43.000.
Wilson, Andrew P.: *See*—
Travis, Robert L., Jr.; Wilson, Andrew P.; Jacobson, Neal F.; and Renzullo, Michael J., 5,341,478, Cl. 395-200.000.
Wilson, Charles R.: *See*—
Christianson, Teresa; Goddette, Dean; Ladin, Beth F.; Lau, Maria R.; Paech, Christian; Reynolds, Robert B.; Wilson, Charles R.; and Yang, Shiow-Shong, 5,340,735, Cl. 435-221.000.
Wilson, David: *See*—
McMurtry, David R.; Wilson, David; Hellier, Peter K.; and Hajdukiewicz, Peter, 5,339,535, Cl. 33-561.000.
Wilson, David P.: *See*—
Decaire, Barbara R.; Logsdon, Peter B.; Lund, Earl A. E.; Shankland, Ian R.; Singh, Rajiv R.; Wilson, David P.; and Thomas, Raymond H. P., 5,340,490, Cl. 252-67.000.
Wilson, Donald A.: *See*—
Gerpheide, George E.; Wilson, Donald A.; and King, Sidney L., 5,340,108, Cl. 273-185.00A.
Wilson, Kenneth J.: *See*—
Smith, Robert A.; Gutmark, Ephraim; Schadow, Klaus C.; and Wilson, Kenneth J., 5,340,054, Cl. 244-1.00N.
Wilson, Mark L.; and Williams, J. Michael. Portable cooking oil filter apparatus. 5,340,471, Cl. 210-167.000.
Wilson, Mark S. Bicycle carrier rack adapter. 5,340,003, Cl. 224-39.000.
Wilson, Paul R.: *See*—
Rohr, Donald F.; Buddle, Stanlee T.; Wilson, Paul R.; and Zumbrum, Michael A., 5,340,560, Cl. 423-337.000.
Wilson, Robert L.; and Minter, David P., to RPM Detection, Inc. Zero-motion detection proximity switch. 5,341,129, Cl. 340-670.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Wilson, Robin J.: *See—*
Fields, Peter R.; and Wilson, Robin J., 5,340,403, Cl. 127-37.000.
Wilson, Steve D.; and Clarke, William L. Method for control and destruction of agricultural pests by coherent electromagnetic excitation. 5,339,564, Cl. 43-124.000.
Wilson, William H.: *See—*
Berger, Terry A.; and Wilson, William H., 5,340,476, Cl. 210-198.200.
Wilz, David, Sr.: *See—*
Rockstein, George; Wilz, David, Sr.; Blake, Robert; and Knowles, C. Harry, 5,340,971, Cl. 235-472.000.
Wilz, David M.: *See—*
Knowles, Carl H.; Rockstein, George B.; Wilz, David M.; and Naylor, Charles A., 5,340,973, Cl. 235-472.000.
Winans, Ann J.: *See—*
Xue, Kefu; Winans, Ann J.; and Walowit, Eric, 5,341,174, Cl. 348-576.000.
Winberg, James R.; and Daby, Keith O., to Briggs & Stratton Corporation. External catalytic converter for small internal combustion engines. 5,339,629, Cl. 60-299.000.
Winslow, Thomas H.; McClelland, Paul H.; and Wenzel, Donald E., to Hewlett-Packard Corporation. Valve for ink-jet pen. 5,341,160, Cl. 347-86.000.
Winston, Mark: *See—*
Wells, Steven E.; Winston, Mark; and Kynett, Virgil N., 5,341,330, Cl. 365-185.000.
Wirth Maschinen-und Bohrgerate-Fabrik GmbH: *See—*
Piefenbrink, Wilfried; Weber, Walter; and Hamburger, Hermann, 5,340,199, Cl. 299-10.000.
Wise, John T.: *See—*
Rowlands, Robert E.; Saliklis, Edmond P.; Wise, John T.; and Gerhardt, Terry D., 5,339,693, Cl. 73-825.000.
Witek, Keith E.; Fitch, Jon T.; and Mazure, Carlos A., to Motorla, Inc. Method for forming a transistor having a dynamic connection between a substrate and a channel region. 5,340,754, Cl. 437-32.000.
Witek, Richard T.: *See—*
Cutler, David N.; Orbits, David A.; Bhandarkar, Dileep; Cardoza, Wayne; and Witek, Richard T., 5,341,482, Cl. 395-375.000.
Witschi, Martin, to Maschinenfabrik Rieter AG. Rotating disc for separating and processing the end of yarn. 5,339,614, Cl. 57-87.000.
Witte, Stephen L., Sr.: *See—*
Hart, Charles M.; Hoff, H. Milton, Jr.; Tillman, John L., Jr.; Trout, Lindell R.; and Witte, Stephen L., Sr., 5,339,896, Cl. 166-241.100.
Wohland, Thomas: *See—*
Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, 5,341,297, Cl. 364-426.030.
Wojciechowski, Bohdan W.; and Rice, Norman M., to Queen's University. Temperature scanning reaction method. 5,340,745, Cl. 436-34.000.
Wojcinski, Allan S. Granulate - backstop assembly. 5,340,117, Cl. 273-410.000.
Wolf, Christopher G.: *See—*
Credle, Kenneth; Wolf, Christopher G.; and McConnell, John, 5,340,947, Cl. 174-262.000.
Wolf, Henry W. Foldable dual seat. 5,340,193, Cl. 297-232.000.
Wolfbeis, Otto S.; and Trettnak, Wolfgang, to AVL Medical Instruments AG. Method for the determination of the concentration of an enzyme substrate and a sensor for carrying out the method. 5,340,722, Cl. 435-14.000.
Wolfe, Donald M., Jr.; Allard, John C.; Nguyen, Cuong H.; Axsom, Larry E.; and Gabbard, Jerry D., to CheckRobot Inc. Article checkout system with security parameter override capacity. 5,340,970, Cl. 235-383.000.
Wolff, Christian: *See—*
Fabinski, Walter; Hubschmann, Peter; Schlau, Peter; and Wolff, Christian, 5,340,542, Cl. 422-82.050.
Womack, James T., to Freeport-McMoran Inc. Reduction of particulate sulfur emissions from liquid sulfur storage tanks. 5,340,383, Cl. 295-243.000.
Womberly, Johnnie V. Hand truck for fishing equipment. 5,340,135, Cl. 280-47.190.
Wong, Boon: *See—*
Megerle, Clifford A.; and Wong, Boon, 5,340,411, Cl. 148-26.000.
Wong, Jacob Y., to Gaztech International Corporation. Diffusion-type gas sample chamber. 5,340,986, Cl. 250-343.000.
Wong, Jacob Y., to Gaztech International Corporation. NDIR gas analysis using spectral ratioing technique. 5,341,214, Cl. 356-437.000.
Wong, Patrick S. L.; Theeuwes, Felix; Eckenhoff, James B.; Larsen, Steven D.; and Huynh, Hoa T., to Alza Corporation. Delivery system with bilayer osmotic engine. 5,340,590, Cl. 424-473.000.
Wong, Pui K.: *See—*
Adamski, Robert P.; Mores, Maryanne; Wong, Pui K.; and Davis, Diana D., 5,340,842, Cl. 521-64.000.
Wong, Stephanie; Ferullo, Teresa; and Schultz, Thomas M., to Shiseido Co., Ltd. Dispensing system for sprayable gel-type hair conditioner. 5,340,570, Cl. 424-71.000.
Wong, Yin Y.: *See—*
Verteilney, Laurie J.; Erickson, Thomas D.; Mountford, S. Joy; Thompson-Rohrlich, John A.; Salomon, Gitta B.; Wong, Yin Y.; Venolia, Daniel S.; Gomoll, Kathleen M.; and Hulteen, Eric A., 5,341,293, Cl. 364-419.170.
Wood, Alfred: *See—*
Haworth, Walter; Whiteley, John; Wood, Alfred; and Yates, Stephen W., 5,339,495, Cl. 19-159.00R.
Wood, Clifford C. Portable security door stop. 5,340,175, Cl. 292-339.000.
Woodruff, Byron J., to Paint Trix Inc. Fluid spraying apparatus. 5,340,026, Cl. 239-104.000.
Woodruff, James R.: *See—*
Robinson, Michael J.; and Woodruff, James R., 5,339,698, Cl. 73-862.590.
Woods, Robert D.; and Radcliffe, Sandra E. Fabric accessories for crutches and walkers, providing carrying expandable volumes for personal use items and shopping items, and presenting reflective fabric portions thereof for observation by others. 5,340,005, Cl. 224-42.46R.
Woodyer, Bruce O.; and Woodyer, Kimberly A. Security well covers. 5,339,579, Cl. 52-107.000.
Woodyer, Kimberly A.: *See—*
Woodyer, Bruce O.; and Woodyer, Kimberly A., 5,339,579, Cl. 52-107.000.
Wright, David W., to Minnesota Mining and Manufacturing Company. Saw blade retention system. 5,340,129, Cl. 279-90.000.
Wright, Forrest: *See—*
Grant, Ralph M.; and Wright, Forrest, 5,341,204, Cl. 356-35.500.
Wright, Kenneth E., to United States of America, Energy. Means for positively seating a piezoceramic element in a piezoelectric valve during inlet gas injection. 5,340,081, Cl. 251-129.060.
Wright, Paul G.; and Nabity, Frederick A., to Isco, Inc. Sample collector. 5,339,700, Cl. 73-864.340.
Wright, Randall J. Hand level instrument with composite metal and plastic body. 5,339,530, Cl. 33-427.000.
Wright State University: *See—*
Xue, Kefu; Winans, Ann J.; and Walowit, Eric, 5,341,174, Cl. 348-576.000.
Wright, William B.: *See—*
Freeman, Christopher; Day, Ivor J.; and Wright, William B., 5,340,271, Cl. 415-1.000.
Wu, Chau-Chin: *See—*
Tien, Ta-Ke; and Wu, Chau-Chin, 5,341,333, Cl. 365-189.060
Wu, Mien T., to Honeywell Inc. Asymmetrical magnetic position detector. 5,341,097, Cl. 324-207.200.
Wu, Shaohai: *See—*
Friedman, Semyon D.; McKinney, Robert W.; Ou, Chia-Chih; Spotnitz, Robert M.; and Wu, Shaohai, 5,340,558, Cl. 423-328.100.
Wu, Tian-Shung: *See—*
Chou, Ting-Chao; and Wu, Tian-Shung, 5,340,818, Cl. 514-297.000.
Wurl, Wolfgang: *See—*
Bauer, Hans J.; Wurl, Wolfgang; Haas, Ludwig; and Hein, Otmar, 5,339,933, Cl. 188-371.000.
Wybierala, Michel: *See—*
Billaud, Philippe; de Volder, Claude; and Wybierala, Michel, 5,341,139, Cl. 342-40.000.
Wymore, Roger S. Leaf loading systems for truck mounted compactors. 5,339,613, Cl. 56-344.000.
Xerox Corporation: *See—*
Appel, James J.; Paoli, Thomas L.; and Fisli, Tibor, 5,341,158, Cl. 346-108.000.
Badesha, Santokh S.; Mammino, Joseph; Abramsohn, Dennis A.; Sypula, Donald S.; Henry, Arnold W.; Heeks, George J.; Pan, David H.; and Fratangelo, Louis D., 5,340,679, Cl. 430-126.000.
Breton, Marcel P.; and McGibbon, Barbel, 5,340,388, Cl. 106-22.00B.
Elrod, Scott A.; Welch, Brent B.; and Goldberg, David, 5,341,155, Cl. 345-179.000.
Eschbach, Reiner, 5,341,224, Cl. 358-456.000.
Folkins, Jeffrey J.; Behe, Thomas J.; and Schram, Joseph G., 5,341,197, Cl. 355-264.000.
Hermanson, Herman A.; Drake, Donald J.; Rezanka, Ivan; Karz, Robert S.; Teumer, Roger G.; and Altavela, Robert P., 5,341,162, Cl. 347-92.000.
Hubble, Fred F., III; Swales, Michael G.; Weber, Michael E.; Abowitz, Gerald; and Bov, Raphael F., Jr., 5,341,193, Cl. 355-203.000.
Kedarnath, N.; and Mordenga, Samuel P., 5,341,201, Cl. 355-302.000.
Klassen, Robert V., 5,341,467, Cl. 395-142.000.
Pawlik, Robert S.; and Gary, Robert E., 5,341,198, Cl. 355-284.000.
Shiau, Jeng-Nan, 5,341,226, Cl. 358-518.000.
Thomas, Karlene R., 5,341,200, Cl. 355-298.000.
Thorp, Bruce E.; and Forbes, Richard L., II, 5,341,199, Cl. 355-298.000.
Warren, Timothy C., 5,339,998, Cl. 222-241.000.
Xu, Antai. Electrical overstress pulse protection. 5,340,641, Cl. 428-209.000.
Xue, Kefu; Winans, Ann J.; and Walowit, Eric, to Wright State University. Motion compensated resolution conversion system. 5,341,174, Cl. 348-576.000.
Yaeger, Curtis G.: *See—*
Jungquist, Bruce E.; McBroom, Michael E.; Yaeger, Curtis G.; Knauff, Donald G.; and Sem, Thomas R., 5,339,787, Cl. 123-514.000.
Yaeli, Joseph: *See—*
Gilboa, Pinhas; Gold, Alexander; and Yaeli, Joseph, 5,341,242, Cl. 359-631.000.
Yaffe, Henry H.: *See—*
Henry, Charles H.; Milbrodt, Michele A.; and Yaffe, Henry H., 5,341,444, Cl. 385-11.000.

Yagawa, Kazuo; Hashimoto, Takatsugu; Yamagishi, Junichi; Hachiya, Kazuo; and Takezawa, Satoshi, to Bridgestone Corporation. Flame-retardant rubber compositions. 5,340,867, Cl. 524-80.000.
Yagyu, Tatsuya: *See—*
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, 5,340,929, Cl. 534-680.000.
Yamada, Atsuo; Tamada, Hitoshi; and Saitoh, Masaki, to Sony Corporation. LiNbO3 thin film optical waveguide device and process for producing the same. 5,341,450, Cl. 385-130.000.
Yamada, Koji: *See—*
Kumazawa, Toshiaki; Yanase, Masashi; Harakawa, Hiroyuki; Obase, Hiroyuki; Oda, Shoji; Shirakura, Shiro; Yamada, Koji; and Kubo, Kazuhiro, 5,340,807, Cl. 514-215.000.
Yamada, Kunihiko: *See—*
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,341,169, Cl. 348-352.000.
Yamada, Masanori, to NEC Corporation. Switching power supply circuit providing reduced power loss upon termination of operation of a starting power supply circuit. 5,341,279, Cl. 363-21.000.
Yamada, Mitsuo; Kayano, Hiromichi; Aoki, Kei; and Ishii, Keizou, to Nippon Paint Co., Ltd. Aromatic allene compounds of the formula $(CH_2{=}CH{-}O)_m{-}R{-}(A)_m$ in which R is an aromatic group and preparation thereof. 5,340,931, Cl. 534-843.000.
Yamada, Norihide; and Ichimura, Yoshikatsu, to Hewlett-Packard Company. Surface emitting second harmonic generating device. 5,341,390, Cl. 372-45.000.
Yamada, Takashi: *See—*
Matsubaguchi, Satoshi; Yamada, Takashi; and Yamamoto, Ryoichi, 5,340,647, Cl. 428-336.000.
Yamada, Takeo: *See—*
Shimizu, Atsushi; Isomura, Satoru; Yamada, Takeo; Kobayashi, Tohru; Fujimura, Yoshuhiro; and Ito, Yuko, 5,341,049, Cl. 307-482.100.
Yamada, Taketoshi: *See—*
Ohnishi, Akira; Usagawa, Yasushi; and Yamada, Taketoshi, 5,340,707, Cl. 430-522.000.
Yamada, Tetsuo, to Kabushiki Kaisha Meidensha. Vector control apparatus for induction motor. 5,341,081, Cl. 318-800.000.
Yamada, Toshio: *See—*
Shibayama, Akinori; and Yamada, Toshio, 5,341,035, Cl. 307-296.200.
Yamagishi, Akihito: *See—*
Koike, Masao; Yamagishi, Akihito; Maruyama, Katsuhiko; and Kakuchi, Shusuke, 5,340,415, Cl. 148-325.000.
Yamagishi, Hirotoshi: *See—*
Takano, Kiyotaka; Fusegawa, Izumi; and Yamagishi, Hirotoshi, 5,340,434, Cl. 117-21.000.
Yamagishi, Junichi: *See—*
Yagawa, Kazuo; Hashimoto, Takatsugu; Yamagishi, Junichi; Hachiya, Kazuo; and Takezawa, Satoshi, 5,340,867, Cl. 524-80.000.
Yamaguchi, Seiji: *See—*
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,339,799, Cl. 128-4.000.
Yamaguchi, Tadao; Koyanagi, Naohisa; and Nakajima, Koichi, to Tokyo Parts Industrial Co., Ltd. Vibrator motor for a wireless silent alerting device. 5,341,057, Cl. 310-81.000.
Yamaguchi, Takao: *See—*
Taniguchi, Ryoziro; Yamaguchi, Takao; and Saito, Osamu, 5,340,514, Cl. 264-62.000.
Yamaguchi, Tetsuo, to Fuji Photo Film Co., Ltd. Silver halide photographic materials. 5,340,695, Cl. 430-264.000.
Yamaguchi, Yasuo; Ajika, Natsuo; and Yamano, Tsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device and a method of manufacturing thereof. 5,341,028, Cl. 257-344.000.
Yamaha Corporation: *See—*
Iizuka, Akira; and Kawakami, Keiji, 5,340,940, Cl. 84-622.000.
Kumagai, Tomoyuki, 5,340,939, Cl. 84-609.000.
Kunimoto, Toshifumi, 5,340,942, Cl. 84-661.000.
Okamoto, Tetsuo; and Usa, Satoshi, 5,340,941, Cl. 84-658.000.
Yamaichi Electronics Co., Ltd.: *See—*
Shibata, Sueji, 5,341,446, Cl. 385-78.000.
Yamaji, Michio: *See—*
Shinohara, Tsutomu; Yamaji, Michio; Yoshikawa, Kazuhiro; and Yamamoto, Kenji, 5,340,170, Cl. 285-379.000.
Yamakawa, Koji; Kawamura, Takahisa; and Arashima, Teruo, to Canon Kabushiki Kaisha. Ink recorder including a sealing member for an ink storage section. 5,341,161, Cl. 347-87.000.
Yamakawa, Takeshi, to Omron Tateisi Electronics Co. Fuzzy membership function circuit. 5,341,323, Cl. 364-807.000.
Yamamoto, Hideaki: *See—*
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,340,760, Cl. 437-43.000.
Yamamoto, Hiranaga: *See—*
Toki, Hirotaka; Wakuda, Osamu; Yamamoto, Hiranaga; and Nagao, Hiroyuki, 5,340,096, Cl. 271-9.000.
Yamamoto, Kenji: *See—*
Shinohara, Tsutomu; Yamaji, Michio; Yoshikawa, Kazuhiro; and Yamamoto, Kenji, 5,340,170, Cl. 285-379.000.
Yamamoto, Makoto, to Yozan, Inc. Method for inspecting the length of a flexible thin object having binarizing and thinning steps. 5,340,994, Cl. 250-572.000.
Yamamoto, Ryoichi: *See—*
Matsubaguchi, Satoshi; Yamada, Takashi; and Yamamoto, Ryoichi, 5,340,647, Cl. 428-336.000.
Yamamoto, Susumu: *See—*
Shigeeda, Nobuyuki; Yamamoto, Susumu; Katsurabayashi, Masahiko; and Ikegaya, Tadahiko, 5,341,223, Cl. 358-440.000.
Yamamoto, Tomio, to NEC Corporation. Method of fabricating a semiconductor device. 5,340,773, Cl. 437-230.000.
Yamamoto, Yoshitaka; and Ishii, Yutaka, to Sharp Kabushiki Kaisha. Liquid crystal display device with edge lit lightguide reflecting light to back reflector by total internal reflection. 5,341,231, Cl. 359-49.000.
Yamamura, Mituji: *See—*
Ikegaya, Isao; and Yamamura, Mituji, 5,340,196, Cl. 297-367.000.
Yamamura, Takeshi, to Fujitsu Limited. Semiconductor integrated circuit having a scan circuit provided with a self-contained signal generator circuit. 5,341,096, Cl. 324-765.000.
Yamano, Tsuyoshi: *See—*
Yamaguchi, Yasuo; Ajika, Natsuo; and Yamano, Tsuyoshi, 5,341,028, Cl. 257-344.000.
Yamaoka, Akira: *See—*
Tanaka, Shunji; Yamaoka, Akira; Umeno, Hidenori; Haraguchi, Masatoshi; Ogawa, Kiyoshi; Saijo, Keiji; and Takeda, Katsumi, 5,341,484, Cl. 395-400.000.
Yamasaki, Hidenori; Matsumoto, Katsuaki; and Osuga, Yoshiharu, to Mitsubishi Denki Kabushiki Kaisha. Magnetic data storage and retrieval system with provision for preventing condensation. 5,341,262, Cl. 360-128.000.
Yamasaki, Naoki: *See—*
Amirkiai, Maziar; Northrup, Oliver W.; Hosseinzadeh, Ali; Yamasaki, Naoki; and Noma, Takayuki, 5,341,259, Cl. 360-105.000.
Yamasaki, Tersuo: *See—*
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.
Yamashita, Hiroshi, to NEC Corporation. ATM cell format conversion system. 5,341,376, Cl. 370-99.000.
Yamaura, Isao: *See—*
Maruyama, Toshirou; Tsubuki, Nobuyuki; Sakaniwa, Sakae; Yamaura, Isao; and Minegishi, Kazuo, 5,340,599, Cl. 426-512.000.
Yamazaki, Hideki; Takeda, Hiroshi; and Yokota, Yoshikazu, to Hitachi, Ltd. Controller for accessing an image data memory based on a state of a hard copy printer. 5,341,471, Cl. 395-164.000.
Yamazaki, Koichi; Noda, Kazuo; and Nakamura, Eiichi, to Nippon Conlux Co., Ltd. Linear motor with permanent magnets. 5,341,053, Cl. 310-13.000.
Yamda, Minoru: *See—*
Koyanagi, Masaru; and Yamda, Minoru, 5,341,013, Cl. 257-368.000.
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, to EMC Corporation. Disk storage system with write preservation during power failure. 5,341,493, Cl. 395-425.000.
Yanase, Masashi: *See—*
Kumazawa, Toshiaki; Yanase, Masashi; Harakawa, Hiroyuki; Obase, Hiroyuki; Oda, Shoji; Shirakura, Shiro; Yamada, Koji; and Kubo, Kazuhiro, 5,340,807, Cl. 514-215.000.
Yang, Chin-Ping; and Chen, Wen-Tung, to National Science Council. Bis(4-aminophenoxy)naphthalene and its polymers. 5,340,904, Cl. 528-185.000.
Yang, Huan-Jen: *See—*
Chen, Tshaw-Chuang; Chang, Hong-Shi; Yang, Huan-Jen; and Shieh, Yaw-Shih, 5,341,077, Cl. 318-434.000.
Yang, Jian: *See—*
Roy, Sumit; Patel, Chandrakant B.; and Yang, Jian, 5,341,177, Cl. 348-614.000.
Yang, Lau Shan; and McCready, Russell J., to Arco Chemical Technology. Blends of polybutylene terephthalate resins and methacrylic acid-containing styrenic copolymers. 5,340,875, Cl. 525-64.000.
Yang, Shiow-Shong: *See—*
Christianson, Teresa; Goddette, Dean; Ladin, Beth F.; Lau, Maria R.; Paech, Christian; Reynolds, Robert B.; Wilson, Charles R.; and Yang, Shiow-Shong, 5,340,735, Cl. 435-221.000.
Yang, Zengming: *See—*
Petitte, James N.; and Yang, Zengming, 5,340,740, Cl. 435-240.200.
Yankloski, Richard, to Data Pac Mailing Systems Corp. Automatic mailing machine. 5,340,097, Cl. 271-10.000.
Yano, Toshiyuki: *See—*
Suzuki, Chiaki; Eguchi, Atuhiko; Ishihara, Yuka; Aoki, Takayoshi; Takagi, Seiichi; Yano, Toshiyuki; and Mochizuki, Masao, 5,340,678, Cl. 430-170.000.
Yao, David D.: *See—*
Connors, Daniel P.; and Yao, David D., 5,341,302, Cl. 364-468.000.
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., to Eaton-Kenway, Inc. Downward compatible AGV system and methods. 5,341,130, Cl. 340-825.060.
Yasuda, Eiichi: *See—*
Saeki, Noriyasu; Watanabe, Koichi; Iwai, Hideo; Yasuda, Eiichi; and Inoue, Ryuji, 5,340,300, Cl. 425-329.000.
Yasuda, Minoru; Kato, Takahiko; and Ito, Motoya, to Nippondenso Co., Ltd. Gear-type pump having pressure balanced support. 5,340,293, Cl. 418-171.000.
Yasuda, Yoshinobu; Tsushi, Fukuhiro; and Mayumi, Tohru, to NTN Corporation. Bearing ring with parallel flow internal structure. 5,340,221, Cl. 384-499.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Yasunami, Shoichiro: *See*—
Kubota, Tadahiko; Yasunami, Shoichiro; and Maekawa, Yukio, 5,340,672, Cl. 429-249.000.

Yasuno, Yoshiki; and Ito, Ken, to Nissan Motor Co., Ltd. Vehicle dynamic characteristic control apparatus. 5,341,296, Cl. 364-426.010.

Yates, Stephen W.: *See*—
Haworth, Walter; Whiteley, John; Wood, Alfred; and Yates, Stephen W., 5,339,495, Cl. 19-159.00R.

Yau, Cheuk C.; and Cherry, Clinton, to Eastman Chemical Company. Copolyester of cyclohexanedimethanol and process for producing such polyester. 5,340,907, Cl. 528-274.000.

Yavnai, Arie: *See*—
Guelman, Moshe; and Yavnai, Arie, 5,340,056, Cl. 244-3.160.

Yavuz, Bulent O.; Larkin, Matthew P.; Rice, Gary W.; and Voss, Kenneth E., to Engelhard Corporation. Thermal shock and creep resistant porous mullite articles prepared from topaz and process for manufacture. 5,340,516, Cl. 264-63.000.

Yee, Philip W., to National Semiconductor Corporation. Analog to digital converter using parallel folder and decoder circuits. 5,341,137, Cl. 341-156.000.

Yen, Mao-Hsiung: *See*—
Chern, Ji-Wang; Lu, Guan-Yu; Lai, Yue-Jun; Yen, Mao-Hsiung; and Tao, Pao-Luh, 5,340,814, Cl. 514-267.000.

Yen, Ting-Pwu, to Paradigm Technology, Inc. Semiconductor fabrication technique using local planarization with self-aligned transistors. 5,340,774, Cl. 437-240.000.

Yenerich, Philip C. Flying toy. 5,340,347, Cl. 446-48.000.

Yildirim, Erdal: *See*—
Gregoli, Armand A.; Hamahar, John A., 3rd; Rimmer, Daniel P.; Yildirim, Erdal; and Olah, Andrew M., 5,340,467, Cl. 208-390.000.

Yilmaz, Hamza: *See*—
Hshieh, Fwu-Iuan; Chang, Mike F.; and Yilmaz, Hamza, 5,341,011, Cl. 257-330.000.

Yin, Helen. Infant head and neck support pillow. 5,339,472, Cl. 5-631.000.

YKK Corporation: *See*—
Ishikawa, Kiichiro; and Nishida, Yasutaka, 5,339,516, Cl. 29-705.000.

Yoda, Akira: *See*—
Tamagawa, Kiyomi; and Yoda, Akira, 5,341,245, Cl. 359-739.000.

Yokota, Takao; Monobe, Juzaburo; and Sano, Nobuhiro, to Ryobi Limited. Power tool. 5,339,908, Cl. 173-216.000.

Yokota, Yoshikazu: *See*—
Yamazaki, Hideki; Takeda, Hiroshi; and Yokota, Yoshikazu, 5,341,471, Cl. 395-164.000.

Yomoto, Toshiyuki: *See*—
Nakayama, Hiroshi; Takeda, Tomokazu; Yomoto, Toshiyuki; Kitada, Mitsuo; Ohta, Shoji; and Chosa, Masatoshi, 5,339,918, Cl. 180-292.000.

Yonezawa, Masaki: *See*—
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; and Yonezawa, Masaki, 5,340,929, Cl. 534-680.000.

Yonezawa, Tomohiro, to Olympus Optical Company Limited. Wave front interferometer. 5,341,212, Cl. 356-359.000.

Yoshida, Atsushi, to NEC Corporation. ISDN terminal adapter for access from analog signal equipment of four-wire full duplex type to ISDN. 5,341,418, Cl. 379-399.000.

Yoshida, Chuzo: *See*—
Isobe, Masao; Aizawa, Yoshio; Kogo, Kenichi; and Yoshida, Chuzo, 5,340,869, Cl. 524-484.000.

Yoshida, Kiyohide: *See*—
Abe, Akira; Sumiya, Satoshi; Takahashi, Yoshikazu; Yoshida, Kiyohide; and Muramatsu, Gyo, 5,340,548, Cl. 422-177.000.

Yoshida Kogyo K.K.: *See*—
Shibata, Toshisuke; Inoue, Akihisa; and Masumoto, Tsuyoshi, 5,340,416, Cl. 148-420.000.

Yoshida, Kunihiko: *See*—
Fujii, Masumi; Hotta, Yoshitsugu; Suda, Taiichiro; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,339,633, Cl. 60-648.000.

Yoshida, Mitsuru: *See*—
Fujimura, Masahiro; and Yoshida, Mitsuru, 5,340,949, Cl. 177-25.180.

Yoshida, Sadayoshi: *See*—
Miya, Tatsuya; Uemura, Kazuyoshi; and Yoshida, Sadayoshi, 5,341,111, Cl. 331-96.000.

Yoshida, Shin-ichi: *See*—
Terada, Hiroaki; Nishikawa, Hiroaki; Yamasaki, Tersuo; Inaoka, Yoshie; Shima, Kenji; Komori, Shinji; Yoshida, Shin-ichi; Hine, Shunji; Nishikawa, Youichiro; and Hara, Shuji, 5,341,507, Cl. 395-800.000.

Yoshida, Tadashi: *See*—
Maeda, Mitsuru; and Yoshida, Tadashi, 5,341,441, Cl. 382-56.000.

Yoshihara, Naotake: *See*—
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, 5,339,666, Cl. 72-56.000.

Yoshii, Minoru: *See*—
Matsugu, Masakazu; Yoshii, Minoru; and Abe, Naoto, 5,340,992, Cl. 250-548.000.

Yoshikawa, Eiji, to Kabushiki Kaisha Komatsu Seisakusho. Die-cushion apparatus of press machine. 5,339,665, Cl. 72-21.000.

Yoshikawa, Kazuhiro: *See*—
Shinohara, Tsutomu; Yamaji, Michio; Yoshikawa, Kazuhiro; and Yamamoto, Kenji, 5,340,170, Cl. 285-379.000.

Yoshimochi, Hayami: *See*—
Hirakawa, Kiyoshi; Watadani, Izumi; Tanaka, azuhiko; Kawamoto, Masao; Tanaka, Takaaki; Sano, Hirohumi; Yoshimochi, Hayami; and Sato, Masahiro, 5,340,650, Cl. 428-373.000.

Yoshimoto, Hiroshi; Uenishi, Kazuya; and Kokubo, Tadayoshi, to Fuji Photo Film Co., Ltd. Negative type photoresist composition. 5,340,697, Cl. 430-270.000.

Yoshimura, Tsuyoshi, to Sanshin Kogyo Kabushiki Kaisha. Power assisting mechanism for marine propulsion unit. 5,340,341, Cl. 440-61.000.

Yoshino, Akira; Tahara, Massaki; Senbokuya, Haruo; Kitano, Kenzo; and Minato, Teruo, to Daidousanso Co., Ltd. Method of fluorinated nitriding of austenitic stainless steel screw. 5,340,412, Cl. 148-208.000.

Yoshino, Masachika: *See*—
Inoue, Yoshio; and Yoshino, Masachika, 5,340,872, Cl. 524-588.000.

Yoshio, Junichi; and Shimoda, Yoshitaka, to Pioneer Electronic Corporation. Actuator position detector, actuator position controller and track search controller. 5,341,353, Cl. 369-44.280.

Yoshioka, Hiroki: *See*—
Kanazawa, Hirotaka; Edahiro, Takeshi; Yoshioka, Hiroki; Totoki, Nobuhiro; Noda, Hiroyuki; Nakashima, Takashi; Ohmura, Hiroshi; Murai, Takeshi; and Akita, Ryuya, 5,341,294, Cl. 364-424.050.

Youlton, Francis W. Portable narrow angle sonar range finder. 5,341,346, Cl. 367-99.000.

Young, Dennis C.; and Lowther, Rex E., to Harris Corporation. Fast charging MOS capacitor structure for high magnitude voltage of either positive or negative polarity. 5,341,009, Cl. 257-296.000.

Young, Donald C.: *See*—
Green, James A., II; and Young, Donald C., 5,340,593, Cl. 424-715.000.

Young, Harvey J.; Bernasek, Edward; Lekwauwa, Aju N.; and Young, Walter R. D., Jr., to R. J. Reynolds Tobacco Company. Method for providing a reconstituted tobacco material. 5,339,838, Cl. 131-372.000.

Young, James R. Plastic wheel. 5,340,206, Cl. 305-24.000.

Young, Marian F.: *See*—
Termine, John D.; Young, Marian F.; Fisher, Larry W.; and Robey, Pamela G., 5,340,934, Cl. 536-23.500.

Young, Rosa: *See*—
Ovshinsky, Stanford R.; and Young, Rosa, 5,340,792, Cl. 505-123.000.

Young, Walter R. D., Jr.: *See*—
Young, Harvey J.; Bernasek, Edward; Lekwauwa, Aju N.; and Young, Walter R. D., Jr., 5,339,838, Cl. 131-372.000.

Young, William R.; and Johnstone, William F., to Harris Corporation. Decimating filter. 5,341,335, Cl. 365-189.120.

Younger, Thomas C., to Ohmeda Inc. Method and apparatus for a computer system to detect program faults and permit recovery from such faults. 5,341,497, Cl. 395-575.000.

Yozan, Inc.: *See*—
Yamamoto, Makoto, 5,340,994, Cl. 250-572.000.

Yu, C. Lawrence; McGee, Bruce C. W.; Chute, Frederick S.; and Vermeulen, Fred E., to Texaco Canada Petroleum, Inc. Electromagnetic reservoir heating with vertical well supply and horizontal well return electrodes. 5,339,898, Cl. 166-248.000.

Yu, Michael. Pressure-compensated self-flushing dripper. 5,340,027, Cl. 239-106.000.

Yui, tomoyuki: *See*—
Arai, Yoshihisa; Yui, tomoyuki; and Gocho, Yoshihiro, 5,340,498, Cl. 252-299.650.

Yupiteru Industries Co., Ltd.: *See*—
Ono, Hisao; and Hatasa, Takeshi, 5,341,138, Cl. 342-20.000.

Yuval, Gideon A.: *See*—
Friedman, Steven J.; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., 5,341,464, Cl. 395-131.000.

Zahler, Robert; and Slusarchyk, William A., to E. R. Squibb & Sons, Inc. Hydroxymethyl(methylenecyclopentyl) purines and pyrimidines. 5,340,816, Cl. 514-269.000.

Zaicow, Todd A.; Farber, Scott A.; and Bartel, Daniel F., to Liquid Carbonic Corporation. Sterilizing gas delivery method. 5,340,538, Cl. 422-33.000.

Zaitsu, Toshiyuki, to NEC Corporation. Piezoelectric transformer circuit using a piezoelectric transformer unit of a thickness extensional vibration mode. 5,341,061, Cl. 310-318.000.

Zalewski, Edward F., to Hughes Aircraft Company. Polychromatic source calibration by one or more spectrally filtered photodetector currents. 5,340,974, Cl. 250-205.000.

Zamenhof, Robert G., to New England Medical Center Hospitals, Inc. Monte Carlo based treatment planning for neutron capture therapy. 5,341,292, Cl. 364-413.130.

Zanussi Elettrodomestici S.p.A.: *See*—
Milocco, Claudio, 5,340,282, Cl. 417-18.000.

Zarling, John P.: *See*—
Haynes, Francis D.; Zarling, John P.; and Quinn, William F., 5,339,893, Cl. 165-45.000.

Zebco Corporation: *See*—
Tyler, William C., 5,340,077, Cl. 248-642.000.

Zeneca Limited: *See*—
Fields, Peter R.; and Wilson, Robin J., 5,340,403, Cl. 127-37.000.

Zerger, Richard P.: *See*—
O'Young, Chi-Lin; Shen, Yan-Fei; Zerger, Richard P.; and Suib, Steven L., 5,340,562, Cl. 423-599.000.

Zettner, Michael L. Piston connection for a reciprocating piston engine. 5,339,779, Cl. 123-197.400.

Zexel Corporation: *See*—
Osawa, Tomio, 5,339,781, Cl. 123-357.000.

Zickefoose, Frank P.: *See*—
Poole, Joseph D.; and Zickefoose, Frank P., 5,340,013, Cl. 228-119.000.

Zielinski, Robert W.: *See*—
Carruthers, Roy A.; Dorleans, Fernand J.; Fitzsimmons, John A.; Flitsch, Richard; Jubinsky, James A.; Larsen, Gerald R.; Schwartz, Geraldine C.; Tsang, Paul J.; and Zielinski, Robert W., 5,340,775, Cl. 437-246.000.

Zieve, Peter B.: *See*—
Rink, Philip A.; and Zieve, Peter B., 5,339,598, Cl. 53-236.000.

Zimmer Aktiengesellschaft: *See*—
Koschinek, Gunter; and Wandel, Dietmar, 5,340,517, Cl. 264-103.000.

Zimmerman, John M.: *See*—
Noren, Gerry K.; Krajewski, John J.; Shama, Sami A.; Zimmerman, John M.; Thompson, Danny C.; and Vandeberg, John T., 5,340,653, Cl. 428-423.100.

Zimpro Environmental, Inc.: *See*—
Roberts, Russell D.; Brandenburg, Bruce L.; and Ellis, Claude E., 5,340,473, Cl. 210-177.000.

Zollmann GmbH: *See*—
Martin, Zollmann, 5,340,127, Cl. 279-20.000.

Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, to Mercedes-Benz AG. Apparatus and method for preventing instabilities in vehicle handling. 5,341,297, Cl. 364-426.030.

Zones, Stacey I.; and Nakagawa, Yumi, to Chevron Research and Technology Company. Preparation of zeolites using low silica/alumina zeolites as a source of aluminum. 5,340,563, Cl. 423-706.000.

Zorzolo, Alessandro, to Comelz S.p.A. Operation apparatus for a sewing machine. 5,341,074, Cl. 318-17.000.

Zubay, Kenneth J. P.: *See*—
Blackledge, John W., Jr.; Dayan, Richard A.; Moeller, Dennis L.; Newman, Palmer E.; and Zubay, Kenneth J. P., 5,341,422, Cl. 380-4.000.

Zuercher, Joseph: *See*—
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,341,130, Cl. 340-825.060.

Zumbrum, Michael A.: *See*—
Rohr, Donald F.; Buddle, Stanlee T.; Wilson, Paul R.; and Zumbrum, Michael A., 5,340,560, Cl. 423-337.000.

Zvonar, Robert F.: *See*—
Jankowski, Richard B.; and Zvonar, Robert F., 5,340,124, Cl. 277-136.000.

Zwicknagl, Hans-Peter; Hoepfner, Joachim; and Schleicher, Lothar, to Siemens Aktiengesellschaft. Method of making planar heterobipolar transistor having trenched isolation of the collector terminal. 5,340,755, Cl. 437-33.000.

3COM Corporation: *See*—
Davis, Eric R., 5,341,400, Cl. 375-36.000.

VOL 1165 ISS 4 AG 23 1994 UMI

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF AUGUST, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ball, Roger: *See—*
Copeland, Steve; and Ball, Roger, Re. 34,699, Cl. 2-419.000.

Bayer Aktiengesellschaft: *See—*
Starzewski, Karl-Heinz A. O., Re. 34,706, Cl. 58-435.000.

Charnay, Patrick: *See—*
Galibert, Francis; Tiollais, Pierre; and Charnay, Patrick, Re. 34,705, Cl. 530-329.000.

Cole, Martin T. Improved pollution detection apparatus. Re. 34,704, Cl. 340-630.000.

Copeland, Steve; and Ball, Roger, to Itech Sport Products Inc. Protective headgear and detachable face protector. Re. 34,699, Cl. 2-419.000.

Corrigan, John: *See—*
Lane, Jan M.; Corrigan, John; and Crouch, Philip D., Re. 34,702, Cl. 164-517.000.

Crouch, Philip D.: *See—*
Lane, Jan M.; Corrigan, John; and Crouch, Philip D., Re. 34,702, Cl. 164-517.000.

Galibert, Francis; Tiollais, Pierre; and Charnay, Patrick, to Institut Pasteur; and Institut National de la Sante et de la Recherche Medicale. Nucleotidic sequence coding the surface antigen of the hepatitis B virus, vector containing said nucleotidic sequence, process allowing the obtention thereof and antigen obtained thereby. Re. 34,705, Cl. 530-329.000.

Gas Research Institute: *See—*
Goodman, William L., Re. 34,701, Cl. 156-244.110.

Goodman, William L., to Gas Research Institute. Magnetically detectable plastic pipe. Re. 34,701, Cl. 156-244.110.

Howmet Corporation: *See—*
Lane, Jan M.; Corrigan, John; and Crouch, Philip D., Re. 34,702, Cl. 164-517.000.

Institut National de la Sante et de la Recherche Medicale: *See—*
Galibert, Francis; Tiollais, Pierre; and Charnay, Patrick, Re. 34,705, Cl. 530-329.000.

Institut Pasteur: *See—*
Galibert, Francis; Tiollais, Pierre; and Charnay, Patrick, Re. 34,705, Cl. 530-329.000.

Itech Sport Products Inc.: *See—*
Copeland, Steve; and Ball, Roger, Re. 34,699, Cl. 2-419.000.

Lane, Jan M.; Corrigan, John; and Crouch, Philip D., to Howmet Corporation. Reinforced ceramic investment casting shell mold and method of making such mold. Re. 34,702, Cl. 164-517.000.

Masubuchi, Takamichi: *See—*
Suzuki, Hideo; Matsushima, Shunichi; Obata, Masahiko; Masubuchi, Takamichi; and Sakama, Masao, Re. 34,700, Cl. 84-600.000.

Matsushima, Shunichi: *See—*
Suzuki, Hideo; Matsushima, Shunichi; Obata, Masahiko; Masubuchi, Takamichi; and Sakama, Masao, Re. 34,700, Cl. 84-600.000.

Obata, Masahiko: *See—*
Suzuki, Hideo; Matsushima, Shunichi; Obata, Masahiko; Masubuchi, Takamichi; and Sakama, Masao, Re. 34,700, Cl. 84-600.000.

Sakama, Masao: *See—*
Suzuki, Hideo; Matsushima, Shunichi; Obata, Masahiko; Masubuchi, Takamichi; and Sakama, Masao, Re. 34,700, Cl. 84-600.000.

Starzewski, Karl-Heinz A. O., to Bayer Aktiengesellschaft. Process for the preparation of styrene derivatives extended at the double bond by ethylene and having a double bond remaining in the extension chain formed and new styrene derivatives extended with ethylene. Re. 34,706, Cl. 58-435.000.

Suzuki, Hideo; Matsushima, Shunichi; Obata, Masahiko; Masubuchi, Takamichi; and Sakama, Masao, to Yamaha Corporation. Angle sensor for musical tone control. Re. 34,700, Cl. 84-600.000.

Tiollais, Pierre: *See—*
Galibert, Francis; Tiollais, Pierre; and Charnay, Patrick, Re. 34,705, Cl. 530-329.000.

Yamaha Corporation: *See—*
Suzuki, Hideo; Matsushima, Shunichi; Obata, Masahiko; Masubuchi, Takamichi; and Sakama, Masao, Re. 34,700, Cl. 84-600.000.

Zilliox, Kent B. Interlocking plate and cup set. Re. 34,703, Cl. 220-575.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Brundage, Richard B.; and Mitchell, Richard L., to Emerson Electric Co. Compound miter saw. B1 4,934,233, 8-23-94, Cl. 83-397.000.

Brundage, Richard B.; and Mitchell, Richard L. Compound miter saw. B1 5,042,348, 8-23-94, Cl. 83-471.300.

Emerson Electric Co.: *See—*
Brundage, Richard B.; and Mitchell, Richard L., B1 4,934,233, Cl. 83-397.000.

Johnson, Martin L., to Nokia Mobile Phones (U.K.) Limited. RF sealed radio housing. B1 5,095,177, 8-23-94, Cl. 174-35.00R.

Mitchell, Richard L.: *See—*
Brundage, Richard B.; and Mitchell, Richard L., B1 4,934,233, Cl. 83-397.000.
Brundage, Richard B.; and Mitchell, Richard L., B1 5,042,348, Cl. 83-471.300.

Nokia Mobile Phones (U.K.) Limited: *See—*
Johnson, Martin L., B1 5,095,177, Cl. 174-35.00R.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See—*
Kanewake, William J.; Yoshimoto, Max K.; and Lovelady, Brett C., 349,861, Cl. D10-81.000.

Allen, Michael S.: *See—*
Evans, Thomas L.; and Allen, Michael S., 349,952, Cl. D23-309.000.

Allmendinger, Klaus K., to Workstation Technologies, Inc. Flexible head video camera. 349,907, 8-23-94, Cl. D16-202.000.

Alza Corporation: *See—*
Gyory, J. Richard; and Wilson, Jay, 349,960, Cl. D24-89.000.

American Prefab Corporation: *See—*
Gaudet, Allen E., Sr., 350,008, Cl. D99-99.000.

Arenberg, Irving K., to Wildflower Communications, Inc. Combined telephone stand and desk organizer. 349,904, 8-23-94, Cl. D14-252.000.

Arnieri, Terry: *See—*
Steiner, Gregory A.; and Arnieri, Terry, 349,954, Cl. D23-328.000.

Asano, Eiji. Score counter. 349,859, 8-23-94, Cl. D10-46.100.

Avia Group International, Inc.: *See—*
Earle, John S.; Peterson, Ruk; and Poetsch, Linda, 349,805, Cl. D2-970.000.

Avins, Gary. Container. 349,847, 8-23-94, Cl. D9-310.000.

Baker, Paul W.: *See—*
Knight, John W., IV; Baker, Paul W.; and Dietsch, Donald J., 349,999, Cl. D34-38.000.

Ball, Douglas C., to Steelcase Inc. Mobile table. 349,824, 8-23-94, Cl. D6-482.000.

Ball, Roger: *See—*
Copeland, Steve; and Ball, Roger, 349,978, Cl. D29-111.000.

Bannett, Ronald. Nail color display. 349,975, 8-23-94, Cl. D28-56.000.

Barnett, Leslie L. Combined collector and transporter of leaves. 349,987, 8-23-94, Cl. D34-1.000.

Barr, Gary F.; and Celauro, Paul J., to Bestech, Inc. Water vending machine. 349,830, 8-23-94, Cl. D7-306.000.

Barton, Scott N.; and Lee, William A., to Steelcase, Inc. Pull handle. 349,838, 8-23-94, Cl. D8-313.000.

Batesville Casket Company, Inc.: *See—*
May, Marcus N.; and Parker, Daniel J., 350,010, Cl. D99-5.000.

Beaute Prestige International: *See—*
Gaultier, Jean P., 349,848, Cl. D9-314.000.

Benham, Paul: *See—*
Cassel, Timothy S.; and Benham, Paul, 349,995, Cl. D34-23.000.

Benhamou, Guy S., to OroAmerica, Inc. Heart jewelry chain. 349,865, 8-23-94, Cl. D11-14.000.

Bennett, Rodney K. Protection cover for a computer. 349,893, 8-23-94, Cl. D14-114.000.

Bernault, Jean-Francois: *See—*
Feche, Pierre; and Bernault, Jean-Francois, 349,934, Cl. D21-214.000.

Bestech, Inc.: *See—*
Barr, Gary F.; and Celauro, Paul J., 349,830, Cl. D7-306.000.

Beulke, Melvin R.: *See—*
Hausler, George C.; and Beulke, Melvin R., 349,862, Cl. D10-96.000.

Billings, Zeb; Pierce, Harold D.; and Moore, Martin R. J., Sr., to Western Publishing Company, Inc. Electronic book. 349,923, 8-23-94, Cl. D19-26.000.

Bingley, George W.: *See—*
Connolly, Kevin J.; Bingley, George W.; and Holt, Karl K., 349,905, Cl. D15-10.000.

Bioject Inc.: *See—*
Hollis, Richard B.; and Peterson, Steven F., 349,958, Cl. D24-112.000.

Bird, David A.; and Wilgus, Mitchell L., to Rubbermaid Incorporated. Wastebasket. 350,000, 8-23-94, Cl. D34-4.000.

Black & Decker Inc.: *See—*
Correa, Alvaro, 349,986, Cl. D32-70.000.

BlackCurrant Technology: *See—*
Loh, Pit-Kin; Cruz, Edward V.; and Sween, Barry P., 349,889, Cl. D14-100.000.

Blaisdell, Jack D. Fly swatter. 349,940, 8-23-94, Cl. D22-124.000.

Blodgett, Rick. Snowmobile tow hitch. 349,875, 8-23-94, Cl. D12-162.000.

Bollenbacher, John E.; and Kohler, Herbert V., Jr., to Kohler Co. Faucet. 349,948, 8-23-94, Cl. D23-241.000.

Borucki, Lawrence R., Jr.: *See—*
Wendt, David W.; Gilbertson, Mark A.; Bullis, Daniel R.; Borucki, Lawrence R., Jr.; and Check, Charles J., 349,920, Cl. D18-14.000.

Bostic, James R.; and Dreibelbis, John S., to NordicTrack, Inc. Physical exerciser. 349,931, 8-23-94, Cl. D21-193.000.

Brady USA, Inc.: *See—*
Wendt, David W.; Gilbertson, Mark A.; Bullis, Daniel R.; Borucki, Lawrence R., Jr.; and Check, Charles J., 349,920, Cl. D18-14.000.

Brami, Eyall: *See—*
Soren, Leonid; DiPrizio, Giuseppe M.; and Brami, Eyall, 349,897, Cl. D14-137.000.

Brand, Barry E.; and Evans, Roger A., to Brand, Barry E. Dolly. 349,993, 8-23-94, Cl. D34-23.000.

Brandenburg, Allen E., to Scott Paper Company. Liquid soap dispenser. 349,827, 8-23-94, Cl. D6-545.000.

Brewer, Vernon S. Adjustable stand for mounting a video camera. 349,912, 8-23-94, Cl. D16-242.000.

Brinson, Gaylord A. Blade and ferrule unit for a hand hoe. 349,835, 8-23-94, Cl. D8-11.000.

Britt, Randall W.: *See—*
Scott, Harry W., Jr.; Britt, Randall W.; and Renfroe, Kenneth L., 349,817, Cl. D6-336.000.

Brohan, John J. Open bag support. 349,992, 8-23-94, Cl. D34-5.000.

Bullis, Daniel R.: *See—*
Wendt, David W.; Gilbertson, Mark A.; Bullis, Daniel R.; Borucki, Lawrence R., Jr.; and Check, Charles J., 349,920, Cl. D18-14.000.

Burrows, Michael P.; and Hill, Richard D., to Group Lotus plc. Bicycle frame. 349,869, 8-23-94, Cl. D12-111.000.

Bustos, Rafael T., to Leggett & Platt, Incorporated. Refrigerated beverage display case. 349,829, 8-23-94, Cl. D6-470.000.

Canon Kabushiki Kaisha: *See—*
Miyahara, Kazuhiko, 349,908, Cl. D16-202.000.
Tashiro, Naoki, 349,922, Cl. D18-50.000.

Cardinal American Corporation: *See—*
Noll, Ronald C., 349,818, Cl. D6-344.000.
Noll, Ronald C., 349,819, Cl. D6-347.000.

Casher, Carol E. Launder bank. 350,005, 8-23-94, Cl. D99-37.000.

Casio Computer Co., Ltd.: *See—*
Tsuchida, Osamu; and Onumata, Yuichi, 349,917, Cl. D18-7.000.
Tsuchida, Osamu; Yamabe, Hideaki; and Onumata, Yuichi, 349,918, Cl. D18-7.000.

Cassel, Timothy S.; and Benham, Paul, to Tucker Housewares. Industrial container dolly. 349,995, 8-23-94, Cl. D34-23.000.

Cat Eye Co., Ltd.: *See—*
Ueda, Takashi; and Tsushi, Masao, 349,932, Cl. D21-194.000.

CD-Sverige Aktiebolag: *See—*
Olsson, Lennart, 349,851, Cl. D9-422.000.

Celauro, Paul J.: *See—*
Barr, Gary F.; and Celauro, Paul J., 349,830, Cl. D7-306.000.

Chaenomeles, Inc.: *See—*
Willis, Tucker; and Cinquemani, James, Jr., 349,870, Cl. D11-182.000.

Chang, Paul B.: *See—*
Kane, Louis A.; and Chang, Paul B., 349,963, Cl. D24-227.000.

Charron, Joseph A.; and Charron, Loretta. Card holder. 349,925, 8-23-94, Cl. D19-90.000.

Charron, Loretta: *See—*
Charron, Joseph A.; and Charron, Loretta, 349,925, Cl. D19-90.000.

Chaseling, Arthur W.; and McGiffin, Peter B. Trailer body. 349,872, 8-23-94, Cl. D12-15.000.

Check, Charles J.: *See—*
Wendt, David W.; Gilbertson, Mark A.; Bullis, Daniel R.; Borucki, Lawrence R., Jr.; and Check, Charles J., 349,920, Cl. D18-14.000.

Chen, Chien-Shu. Camera platform. 349,916, 8-23-94, Cl. D16-245.000.

Chien, Tseng-Lu; and Wu, Ping-Hsiang. Multi-purpose flash light. 349,970, 8-23-94, Cl. D26-38.000.

Chmela, John F.: *See—*
Sarnoff, Norton; Fletcher, Carl R.; Morris, Laura A.; and Chmela, John F., 349,832, Cl. D7-557.000.

Chromcraft Revington, Inc.: *See—*
Murry, Edsel E., 349,822, Cl. D6-379.000.

Chung, Chul-Ju; and Ko, Seok-Woo, to SKC Limited. Tape cassette. 349,894, 8-23-94, Cl. D14-121.000.

Cinquemani, James, Jr.: *See—*
Willis, Tucker; and Cinquemani, James, Jr., 349,870, Cl. D11-182.000.

Close, Judith R., to Reebok International Ltd. Element of a shoe upper. 349,809, 8-23-94, Cl. D2-977.000.

Concrete Stone and Tile Corporation: *See—*
Krueger, Ronald G.; and Labouseur, Arthur A., 349,967, Cl. D25-113.000.

Connell, Victoria, to Elizabeth Arden Co., Division of Conopco, Inc. Cosmetic sampler container. 349,976, 8-23-94, Cl. D28-76.000.

Connolly, Kevin J.; Bingley, George W.; and Holt, Karl K., to Garden Way Incorporated. Combined lawn and garden chipper shredder vacuum apparatus with hose attachment. 349,905, 8-23-94, Cl. D15-10.000.

Copeland, Steve; and Ball, Roger, to Itech Sport Products Inc. Faceguard for goaltender. 349,978, 8-23-94, Cl. D29-111.000.

Corbin Russwin, Inc.: *See—*
Kearns, Robert E., 349,841, Cl. D8-347.000.
Kearns, Robert E., 349,842, Cl. D8-347.000.
Kearns, Robert E., 349,843, Cl. D8-347.000.

Correa, Alvaro, to Black & Decker Inc. Electric iron. 349,986, 8-23-94, Cl. D32-70.000.

Cosco, Inc.: *See—*
Schwartzkopf, Robert, 349,813, Cl. D3-304.000.

Crisp, L. Cullen. A soft foam insert for a combined baseball and card storage tray. 349,814, 8-23-94, Cl. D3-319.000.

Cruz, Edward V.: *See—*
Loh, Pit-Kin; Cruz, Edward V.; and Sween, Barry P., 349,889, Cl. D14-100.000.

Cummings, Kenneth E., to 122235 Canada Limited. Shower base. 349,945, 8-23-94, Cl. D23-283.000.

Cummings, Kenneth E., to 122235 Canada Limited. Shower base. 349,950, 8-23-94, Cl. D23-283.000.

Cummings, Kenneth E., to 122235 Canada Limited. Shower base. 349,951, 8-23-94, Cl. D23-283.000.

Daiwa Seiko, Inc.: *See—*
Oyama, Mitsuyoshi; Yamamoto, Shigeru; and Furuya, Hideyuki, 349,942, Cl. D22-142.000.
Takizawa, Shin-ya; Yamamoto, Shigeru; and Furuya, Hideyuki, 349,943, Cl. D22-142.000.

Derouiche, Nour E., to Mitsubishi Semiconductor America, Inc. Socket for mounting a printed circuit board module. 349,886, 8-23-94, Cl. D13-147.000.

Dietsch, Donald J.: *See—*
Knight, John W., IV; Baker, Paul W.; and Dietsch, Donald J., 349,999, Cl. D34-38.000.

Dipper Industrial Ltd.: *See—*
Lam, Thomas Y., 349,973, Cl. D26-65.000.

DiPrizio, Giuseppe M.: *See—*
Soren, Leonid; DiPrizio, Giuseppe M.; and Brami, Eyall, 349,897, Cl. D14-137.000.

Dreibelbis, John S.: *See—*
Bostic, James R.; and Dreibelbis, John S., 349,931, Cl. D21-193.000.

Dunlap, Paula; and Hood, Gloria G., to Tag-Along Enterprises, Inc. Identification bracelet. 349,864, 8-23-94, Cl. D11-3.000.

Dynie, Ernie R.: *See—*
Read, Clifford D.; Koens, Paul J.; and Dynie, Ernie R., 349,900, Cl. D14-151.000.

Eagle Spring Filtration, Inc.: *See—*
Harty, William H., 349,946, Cl. D23-209.000.

Earle, John S.; Peterson, Ruk; and Poetsch, Linda, to Avia Group International, Inc. Shoe upper. 349,805, 8-23-94, Cl. D2-970.000.

Elizabeth Arden Co., Division of Conopco, Inc.: *See—*
Connell, Victoria, 349,976, Cl. D28-76.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Elliott, John B. Bulb assembly for a strobe light. 349,816, 8-23-94, Cl. D26-3.000.
Elliott, John B. Strobe light. 349,968, 8-23-94, Cl. D26-24.000.
Emerson Electric Co.: *See—*
Page, Alan B., 349,887, Cl. D13-162.000.
Encon, Inc.: *See—*
Harris, Jack E., 349,944, Cl. D23-202.000.
Enos, Gary. Coffee filter retainer. 349,833, 8-23-94, Cl. D7-400.000.
Ensar Corporation: *See—*
Sarnoff, Norton; Fletcher, Carl R.; Morris, Laura A.; and Chmela, John F., 349,832, Cl. D7-557.000.
Essex, John D.; and Stephens, Ronald J., to Hoover Company, The. Vacuum cleaner converter. 349,984, 8-23-94, Cl. D32-31.000.
Ethix Corporation: *See—*
Gregg, Stephen A., 349,823, Cl. D6-436.000.
Evans, Roger A.: *See—*
Brand, Barry E.; and Evans, Roger A., 349,993, Cl. D34-23.000.
Evans, Thomas L.; and Allen, Michael S. Sanitary toilet lift. 349,952, 8-23-94, Cl. D23-309.000.
Fabri-Form Co., The: *See—*
Knight, John W., IV; Baker, Paul W.; and Dietsch, Donald J., 349,999, Cl. D34-38.000.
Fairform Mfg. Co., Ltd.: *See—*
Hing-Wah, Huen, 349,947, Cl. D23-223.000.
Fasino, Victor. Clyindrical bird feeder. 349,981, 8-23-94, Cl. D30-127.000.
Feche, Pierre; and Bernault, Jean-Francois, to Taylor Made Golf Company, Inc. Golf club head. 349,934, 8-23-94, Cl. D21-214.000.
Ferguson, George. Mailbox signal flag. 350,007, 8-23-94, Cl. D99-43.000.
Fiam Italia S.p.A.: *See—*
Starck, Philippe, 349,825, Cl. D6-484.000.
Filiz, Leonard A.: *See—*
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,857, Cl. D9-558.000.
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,858, Cl. D9-558.000.
Fisch, Johann. Combined pen and flag. 349,924, 8-23-94, Cl. D19-42.000.
Fletcher, Carl R.: *See—*
Sarnoff, Norton; Fletcher, Carl R.; Morris, Laura A.; and Chmela, John F., 349,832, Cl. D7-557.000.
Flourishing Enterprises Development, Ltd.: *See—*
Wan, Yiu K., 350,006, Cl. D99-37.000.
Forland, David M.: *See—*
Passke, Joel; Forland, David M.; Sarkinen, Larry R.; and Worthington, William J., 349,808, Cl. D2-977.000.
Passke, Joel L.; and Forland, David M., 349,804, Cl. D2-961.000.
Formgren, Anna-Pia K.; and McKeone, William C., to Kohler Co. Bathtub. 349,949, 8-23-94, Cl. D23-277.000.
Freedman, Eric H., to Health Watch, Inc. Home communicator for a personal emergency response system. 349,863, 8-23-94, Cl. D10-106.000.
Fritz Hansens EFT. A/S: *See—*
Homann, Alfred, 349,826, Cl. D6-500.000.
Fuller, Kip L., to Innovisions Technology Group, Inc. Steering wheel lock. 349,840, 8-23-94, Cl. D8-331.000.
Fuller, R. Morris. Sculpture. 349,867, 8-23-94, Cl. D11-131.000.
Furuya, Hideyuki: *See—*
Oyama, Mitsuyoshi; Yamamoto, Shigeru; and Furuya, Hideyuki, 349,942, Cl. D22-142.000.
Takizawa, Shin-ya; Yamamoto, Shigeru; and Furuya, Hideyuki, 349,943, Cl. D22-142.000.
Galbraith, Donald L.; and Tice, Richard P., to U.S. Dent Master, Inc. Vehicle dent removal electrode handle. 349,906, 8-23-94, Cl. D15-142.000.
Gale, Ronald; McClullough, Richard; and Salerno, Jack P., to Kopin Corporation. Rear projection monitor. 349,896, 8-23-94, Cl. D14-128.000.
Gallagher, P. Sean; and Schultz, William H., to Skil and S-B Power Tool Company. Battery charger with means for supporting dual battery packs and tool. 349,883, 8-23-94, Cl. D13-108.000.
Garden Way Incorporated: *See—*
Connolly, Kevin J.; Bingley, George W.; and Holt, Karl K., 349,905, Cl. D15-10.000.
Gaudet, Allen E., Sr., to American Prefab Corporation. Mailbox guard. 350,008, 8-23-94, Cl. D99-99.000.
Gaultier, Jean P., to Beaute Prestige International. Bottle. 349,848, 8-23-94, Cl. D9-314.000.
GCHM Enterprises, Inc.: *See—*
Jaremkof, Harry K., 349,844, Cl. D8-380.000.
Gentry, Don, to Lunker Lure Products, Inc. Fishing lure rattle attachment. 349,941, 8-23-94, Cl. D22-126.000.
Gibb, Sheri L. Combination eyeglass/contact lens holder. 349,811, 8-23-94, Cl. D3-266.000.
Gilardelli, Federico, to Rock Italia Di Alfredo Baldieri, The. Anti-theft steering wheel lock. 349,839, 8-23-94, Cl. D8-331.000.
Gilbertson, Mark A.: *See—*
Wendt, David W.; Gilbertson, Mark A.; Bullis, Daniel R.; Borucki, Lawrence R., Jr.; and Check, Charles J., 349,920, Cl. D18-14.000.
Gillette Company, The: *See—*
Gray, Michael J., 349,845, Cl. D9-300.000.
Gray, Michael J., 349,846, Cl. D9-300.000.
Gray, Michael J., 349,852, Cl. D9-448.000.
Gray, Michael J., 349,853, Cl. D9-448.000.
Gray, Michael J., 349,854, Cl. D9-448.000.
Gray, Michael J., 349,855, Cl. D9-445.000.
Poisson, Norman D., 349,849, Cl. D9-338.000.
Glesser, Louis. Knife blade. 349,837, 8-23-94, Cl. D8-20.000.
Godinez, Mariamia, to L.A. Gear, Inc. Shoe sole. 349,803, 8-23-94, Cl. D2-956.000.
Goto, Masaaki: *See—*
Mori, Masakazu; Takano, Hiroshi; and Goto, Masaaki, 349,909, Cl. D16-202.000.
Takano, Hiroshi; Mori, Masakazu; and Goto, Masaaki, 349,910, Cl. D16-202.000.
Gramuglia, Thomas. Audio cassette. 349,895, 8-23-94, Cl. D14-121.000.
Gray, Michael J., to Gillette Company, The. Combination actuator and hood for dispensing gel material. 349,845, 8-23-94, Cl. D9-300.000.
Gray, Michael J., to Gillette Company, The. Combination actuator and hood for dispensing foam material. 349,846, 8-23-94, Cl. D9-300.000.
Gray, Michael J., to Gillette Company, The. Hood and container. 349,852, 8-23-94, Cl. D9-448.000.
Gray, Michael J., to Gillette Company, The. Actuator turret for foam dispenser. 349,853, 8-23-94, Cl. D9-448.000.
Gray, Michael J., to Gillette Company, The. Actuator turret for gel dispenser. 349,854, 8-23-94, Cl. D9-448.000.
Gray, Michael J., to Gillette Company, The. Hood for dispenser. 349,855, 8-23-94, Cl. D9-445.000.
Gray, William L. Photocopier conver housing. 349,921, 8-23-94, Cl. D18-40.000.
Green, Wills N. Food and beverage service trolley. 349,988, 8-23-94, Cl. D34-21.000.
Gregg, Stephen A., to Ethix Corporation. Housing for a facsimile machine. 349,823, 8-23-94, Cl. D6-436.000.
Group Lotus plc: *See—*
Burrows, Michael P.; and Hill, Richard D., 349,869, Cl. D12-111.000.
Gyory, J. Richard; and Wilson, Jay, to Alza Corporation. Electrotransport drug delivery patch. 349,960, 8-23-94, Cl. D24-89.000.
Habuka Shashin Sangyo Kabushiki Kaisha: *See—*
Usui, Hisaichi, 349,914, Cl. D16-244.000.
Hama Hamaphot KG Hanke & Thomas: *See—*
Hanke, Rudolph M., 349,915, Cl. D16-244.000.
Hanig & Co.: *See—*
Hanig, James L., 349,902, Cl. D14-176.000.
Hanig, James L., to Hanig & Co. Radio. 349,902, 8-23-94, Cl. D14-176.000.
Hanke, Rudolph M., to Hama Hamaphot KG Hanke & Thomas. Tripod. 349,915, 8-23-94, Cl. D16-244.000.
Hardison, Stewart. Bird feeder. 349,982, 8-23-94, Cl. D30-128.000.
Harris, Jack E., to Encon, Inc. Container for bulk materials. 349,944, 8-23-94, Cl. D23-202.000.
Harty, William H., to Eagle Spring Filtration, Inc. Water filter cover. 349,946, 8-23-94, Cl. D23-209.000.
Hasimoto, Kazunori: *See—*
Yamamoto, Takashi; Miyata, Tomoyuki; Hasimoto, Kazunori; Ohnuma, Mitsuru; Wada, Toshihiko; and Sato, Seishiro, 349,888, Cl. D13-163.000.
Hatfield, Tinker L.; and Johnson, Bradford A., to Nike, Inc. Shoe upper. 349,807, 8-23-94, Cl. D2-970.000.
Hausler, George C.; and Beulke, Melvin R., to Rosemount Inc. Large line size flowmeter design. 349,862, 8-23-94, Cl. D10-96.000.
Health Enterprises, Inc.: *See—*
Leman, Glenn A., 349,850, Cl. D9-341.000.
Health Watch, Inc.: *See—*
Freedman, Eric H., 349,863, Cl. D10-106.000.
Hill, Ezra M. Practice tethered golf ball. 349,937, 8-23-94, Cl. D21-234.000.
Hill, Richard D.: *See—*
Burrows, Michael P.; and Hill, Richard D., 349,869, Cl. D12-111.000.
Hilliard, Gary, to Spencer Boat Company. Above-water portion of a boat. 349,881, 8-23-94, Cl. D12-318.000.
Hing-Wah, Huen, to Fairform Mfg. Co., Ltd. Shower head. 349,947, 8-23-94, Cl. D23-223.000.
Hitachi, Ltd.: *See—*
Yamamoto, Takashi; Miyata, Tomoyuki; Hasimoto, Kazunori; Ohnuma, Mitsuru; Wada, Toshihiko; and Sato, Seishiro, 349,888, Cl. D13-163.000.
Hogue, Aaron G.: *See—*
Hogue, Patrick L.; and Hogue, Aaron G., 349,938, Cl. D22-108.000.
Hogue Grips: *See—*
Hogue, Patrick L.; and Hogue, Aaron G., 349,938, Cl. D22-108.000.
Hogue, Patrick L.; and Hogue, Aaron G., to Hogue Grips. Sleeve for a pistol grip. 349,938, 8-23-94, Cl. D22-108.000.
Hollis, Richard B.; and Peterson, Steven F., to Bioject Inc. Needleless injector. 349,958, 8-23-94, Cl. D24-112.000.
Holt, Karl K.: *See—*
Connolly, Kevin J.; Bingley, George W.; and Holt, Karl K., 349,905, Cl. D15-10.000.
Homann, Alfred, to Fritz Hansens EFT. A/S. Seat for a chair. 349,826, 8-23-94, Cl. D6-500.000.
Hood, Gloria G.: *See—*
Dunlap, Paula; and Hood, Gloria G., 349,864, Cl. D11-3.000.
Hoover Company, The: *See—*
Essex, John D.; and Stephens, Ronald J., 349,984, Cl. D32-31.000.
Iino, Masaaki, to Kabushiki Kaisha Toshiba. Charger for electronic computer. 349,884, 8-23-94, Cl. D13-108.000.
Innovative Design Enterprises: *See—*
Steiner, Gregory A.; and Arnieri, Terry, 349,954, Cl. D23-328.000.

Innovisions Technology Group, Inc.: *See—*
Fuller, Kip L., 349,840, Cl. D8-331.000.
Interlab Products, Inc.: *See—*
Kane, Louis A.; and Chang, Paul B., 349,963, Cl. D24-227.000.
International Business Machines Corporation: *See—*
Northrop, Melaney L.; and Murphy, Thomas B., 349,980, Cl. D30-108.000.
Itech Sport Products Inc.: *See—*
Copeland, Steve; and Ball, Roger, 349,978, Cl. D29-111.000.
Ivenitsky, Victor: *See—*
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,857, Cl. D9-558.000.
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,858, Cl. D9-558.000.
Iwasawa, Shingo: *See—*
Shimizu, Norio; and Iwasawa, Shingo, 349,911, Cl. D16-203.000.
Jaramillo, Alfonso, Sr. Jet ski handle. 349,879, 8-23-94, Cl. D12-317.000.
Jaremkof, Harry K., to GCHM Enterprises, Inc. A pair of grill mounting brackets. 349,844, 8-23-94, Cl. D8-380.000.
Johnson, Bradford A.: *See—*
Hatfield, Tinker L.; and Johnson, Bradford A., 349,807, Cl. D2-970.000.
Johnson, Frances. Feminine hygienic syringe. 349,957, 8-23-94, Cl. D24-111.000.
Johnson & Johnson Consumer Products, Inc.: *See—*
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,857, Cl. D9-558.000.
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, 349,858, Cl. D9-558.000.
Johnson, Terry, to Nokia Mobile Phones (U.K.) Ltd. Battery housing for a portable telephone. 349,882, 8-23-94, Cl. D13-103.000.
Junge, J. A. Sign for dumpsters. 349,926, 8-23-94, Cl. D20-42.000.
Kabumoto, Masaaki, to Ricoh Company, Ltd. Optical filing system. 349,890, 8-23-94, Cl. D14-109.000.
Kabushiki Kaisha Toshiba: *See—*
Iino, Masaaki, 349,884, Cl. D13-108.000.
Kane, Louis A.; and Chang, Paul B., to Interlab Products, Inc. Hex micro test tube holder. 349,963, 8-23-94, Cl. D24-227.000.
Kanewske, William J.; Yoshimoto, Max K.; and Lovelady, Brett C., to Abbott Laboratories. Automated analytical instrument. 349,861, 8-23-94, Cl. D10-81.000.
Kaplan, Harley B.: *See—*
Mulqueen, John M.; Kaplan, Harley B.; Wellman, James E.; and Ostroski, Richard J., 349,956, Cl. D23-416.000.
Kaspar Wire Works, Inc.: *See—*
Ullmann, Ralph J., 349,997, Cl. D34-1.000.
Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 349,841, 8-23-94, Cl. D8-347.000.
Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 349,842, 8-23-94, Cl. D8-347.000.
Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 349,843, 8-23-94, Cl. D8-347.000.
Khoo, Bee L.: *See—*
Siddoway, Craig F.; and Khoo, Bee L., 349,899, Cl. D14-151.000.
Killion, Darryl B. Disc for tossing games. 349,930, 8-23-94, Cl. D21-82.000.
Knight, John W., IV; Baker, Paul W.; and Dietsch, Donald J., to Fabri-Form Co., The. Ventilated pallet. 349,999, 8-23-94, Cl. D34-38.000.
Ko, Seok-Woo: *See—*
Chung, Chul-Ju; and Ko, Seok-Woo, 349,894, Cl. D14-121.000.
Koens, Paul J.: *See—*
Read, Clifford D.; Koens, Paul J.; and Dynie, Ernie R., 349,900, Cl. D14-151.000.
Kohler Co.: *See—*
Bollenbacher, John E.; and Kohler, Herbert V., Jr., 349,948, Cl. D23-241.000.
Formgren, Anna-Pia K.; and McKeone, William C., 349,949, Cl. D23-277.000.
Kohler, Herbert V., Jr.; Reid, Mary J.; and McKeone, William C., 349,953, Cl. D23-313.000.
Kohler, Herbert V., Jr.; Reid, Mary J.; and McKeone, William C., to Kohler Co. Water closet tank. 349,953, 8-23-94, Cl. D23-313.000.
Kohler, Herbert V., Jr.: *See—*
Bollenbacher, John E.; and Kohler, Herbert V., Jr., 349,948, Cl. D23-241.000.
Kopin Corporation: *See—*
Gale, Ronald; McClullough, Richard; and Salerno, Jack P., 349,896, Cl. D14-128.000.
Koyo Electronics Industries Co., Ltd.: *See—*
Shimizu, Norio; and Iwasawa, Shingo, 349,911, Cl. D16-203.000.
Krueger, Ronald G.; and Labouseur, Arthur A., to Concrete Stone and Tile Corporation. Paving stone. 349,967, 8-23-94, Cl. D25-113.000.
L.A. Gear, Inc.: *See—*
Godinez, Mariamia, 349,803, Cl. D2-956.000.
Labouseur, Arthur A.: *See—*
Krueger, Ronald G.; and Labouseur, Arthur A., 349,967, Cl. D25-113.000.
Lam, Thomas Y., to Dipper Industrial Ltd. Adjustable table lamp. 349,973, 8-23-94, Cl. D26-65.000.
Lee, James. Power strip. 349,885, 8-23-94, Cl. D13-142.000.
Lee, Siu Y., to Timlex International Ltd. Electronic game housing. 349,929, 8-23-94, Cl. D21-13.000.
Lee, William A.: *See—*
Barton, Scott N.; and Lee, William A., 349,838, Cl. D8-313.000.
Leggett & Platt, Incorporated: *See—*
Bustos, Rafael T., 349,829, Cl. D6-470.000.
Leman, Glenn A., to Health Enterprises, Inc. Pill organizer. 349,850, 8-23-94, Cl. D9-341.000.
Lin, Patrick. Combined fireplace tool set and stand therefor. 349,955, 8-23-94, Cl. D23-403.000.
Linner, Hans, to Norden Pac Development AB. Combined bottle and cap. 349,856, 8-23-94, Cl. D9-503.000.
Litwiller, J. B. Hoist. 349,996, 8-23-94, Cl. D34-33.000.
Loh, Pit-Kin; Cruz, Edward V.; and Sween, Barry P., to BlackCurrant Technology. Automatic data backup unit. 349,889, 8-23-94, Cl. D14-100.000.
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, to Johnson & Johnson Consumer Products, Inc. Combined bottle and cap. 349,857, 8-23-94, Cl. D9-558.000.
Lonczak, John; Filiz, Leonard A.; Yan, Kin S.; and Ivenitsky, Victor, to Johnson & Johnson Consumer Products, Inc. Combined bottle and cap. 349,858, 8-23-94, Cl. D9-558.000.
Lovelady, Brett C.: *See—*
Kanewske, William J.; Yoshimoto, Max K.; and Lovelady, Brett C., 349,861, Cl. D10-81.000.
Lowsky, Bernie. Chair. 349,821, 8-23-94, Cl. D6-369.000.
Lunker Lure Products, Inc.: *See—*
Gentry, Don, 349,941, Cl. D22-126.000.
Maggard, Donald. Paint shield for an electrical fixture. 349,836, 8-23-94, Cl. D8-14.000.
Marruzzi, Dina M. Insect catcher. 349,939, 8-23-94, Cl. D22-122.000.
Martin, Andrew J. Truck tailgate. 349,876, 8-23-94, Cl. D12-196.000.
Mass Technology (H.K.) Ltd.: *See—*
Yang, Chi W., 349,969, Cl. D26-3.000.
Matsumoto, Kenji; Watanabe, Takashi; and Noda, Katsuhiko, to Teac Corporation. Disc drive. 349,891, 8-23-94, Cl. D14-109.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Mori, Masakazu; Takano, Hiroshi; and Goto, Masaaki, 349,909, Cl. D16-202.000.
Takano, Hiroshi; Mori, Masakazu; and Goto, Masaaki, 349,910, Cl. D16-202.000.
May, Marcus N.; and Parker, Daniel J., to Batesville Casket Company, Inc. Cremation urn. 350,010, 8-23-94, Cl. D99-5.000.
McClullough, Richard: *See—*
Gale, Ronald; McClullough, Richard; and Salerno, Jack P., 349,896, Cl. D14-128.000.
McGiffin, Peter B.: *See—*
Chaseling, Arthur W.; and McGiffin, Peter B., 349,872, Cl. D12-15.000.
McKeone, William C.: *See—*
Formgren, Anna-Pia K.; and McKeone, William C., 349,949, Cl. D23-277.000.
Kohler, Herbert V., Jr.; Reid, Mary J.; and McKeone, William C., 349,953, Cl. D23-313.000.
McLeod, Jody E. Combined sling and harness for use in pediatric positional therapy. 349,961, 8-23-94, Cl. D24-190.000.
McNally, John J., to Textron Inc. Expansion bracelet. 349,866, 8-23-94, Cl. D11-19.000.
Mei Shual Cosmetics Co., Ltd.: *See—*
Shen, Wen-Chang, 349,977, Cl. D28-78.000.
Minkin, Amy S., to Reebok International Ltd. Shoe upper. 349,806, 8-23-94, Cl. D2-970.000.
Mitsubishi Semiconductor America, Inc.: *See—*
Derouiche, Nour E., 349,886, Cl. D13-147.000.
Miyahara, Kazuhiko, to Canon Kabushiki Kaisha. Video camera with video tape recorder. 349,908, 8-23-94, Cl. D16-202.000.
Miyata, Tomoyuki: *See—*
Yamamoto, Takashi; Miyata, Tomoyuki; Hasimoto, Kazunori; Ohnuma, Mitsuru; Wada, Toshihiko; and Sato, Seishiro, 349,888, Cl. D13-163.000.
Moore, Martin R. J., Sr.: *See—*
Billings, Zeb; Pierce, Harold D.; and Moore, Martin R. J., Sr., 349,923, Cl. D19-26.000.
Mori, Masakazu; Takano, Hiroshi; and Goto, Masaaki, to Matsushita Electric Industrial Co., Ltd. Video camera with video tape recorder. 349,909, 8-23-94, Cl. D16-202.000.
Mori, Masakazu: *See—*
Takano, Hiroshi; Mori, Masakazu; and Goto, Masaaki, 349,910, Cl. D16-202.000.
Morita, Atsuko: *See—*
Shibata, Kouji; and Morita, Atsuko, 349,873, Cl. D12-141.000.
Morris, Bryan W. Surveillance video camera security box. 349,913, 8-23-94, Cl. D16-242.000.
Morris, Laura A.: *See—*
Sarnoff, Norton; Fletcher, Carl R.; Morris, Laura A.; and Chmela, John F., 349,832, Cl. D7-557.000.
Motorola, Inc.: *See—*
Siddoway, Craig F.; and Khoo, Bee L., 349,899, Cl. D14-151.000.
Soren, Leonid; DiPrizio, Giuseppe M.; and Brami, Eyall, 349,897, Cl. D14-137.000.
Mulqueen, John M.; Kaplan, Harley B.; Wellman, James E.; and Ostroski, Richard J., to Wayne/Scott Fetzer Company. Fuel oil burner. 349,956, 8-23-94, Cl. D23-416.000.
Murai, Ryukichi, to Yoshida Kogyo K.K. Buckle. 349,871, 8-23-94, Cl. D11-216.000.
Murphy, Thomas B.: *See—*
Northrop, Melaney L.; and Murphy, Thomas B., 349,980, Cl. D30-108.000.
Murry, Edsel E., to Chromcraft Revington, Inc. Chair. 349,822, 8-23-94, Cl. D6-379.000.

VOL 1165 ISS 4 AG 23 1994 UMI

Nakaizumi, Hiroshi, to Sony Corporation. Case for an optical disc cartridge. 349,892, 8-23-94, Cl. D14-114.000.
Nakamura, Mitsuhiro, to Sony Corporation. Headphone. 349,903, 8-23-94, Cl. D14-205.000.
Nicholas, Terry L. Security mail vault. 350,004, 8-23-94, Cl. D99-[illegible]9.000.
Nike, Inc.: *See*—
Hatfield, Tinker L.; and Johnson, Bradford A., 349,807, Cl. D2-970.000.
Paaske, Joel; Forland, David M.; Sarkinen, Larry R.; and Worthington, William J., 349,808, Cl. D2-977.000.
Paaske, Joel L.; and Forland, David M., 349,804, Cl. D2-961.000.
Noda, Katsuhiko: *See*—
Matsumoto, Kenji; Watanabe, Takashi; and Noda, Katsuhiko, 349,891, Cl. D14-109.000.
Nokia Mobile Phones Ltd.: *See*—
Tattari, Jouko; Nuovo, Frank; and Vong, Andy, 349,898, Cl. D14-[illegible]48.000.
Nokia Mobile Phones (U.K.) Ltd.: *See*—
Johnson, Terry, 349,882, Cl. D13-103.000.
Noll, Ronald C., to Cardinal American Corporation. Glider. 349,818, 8-23-94, Cl. D6-344.000.
Noll, Ronald C., to Cardinal American Corporation. Swing. 349,819, 8-23-94, Cl. D6-347.000.
Norden Pac Development AB: *See*—
Linner, Hans, 349,856, Cl. D9-503.000.
NordicTrack, Inc.: *See*—
Bostic, James R.; and Dreibelbis, John S., 349,931, Cl. D21-193.000.
Northern Telecom Limited: *See*—
Read, Clifford D.; Koens, Paul J.; and Dynie, Ernie R., 349,900, Cl. D14-151.000.
Northrop, Melaney L.; and Murphy, Thomas B., to International Business Machines Corporation. Pet house. 349,980, 8-23-94, Cl. D30-[illegible]05.000.
Nuovo, Frank: *See*—
Tattari, Jouko; Nuovo, Frank; and Vong, Andy, 349,898, Cl. D14-148.000.
Offutt, James C., to Rimball Marketing and Development, Inc. Aerial toy goal. 349,933, 8-23-94, Cl. D21-200.000.
Ohnuma, Mitsuru: *See*—
Yamamoto, Takashi; Miyata, Tomoyuki; Hasimoto, Kazunori; Ohnuma, Mitsuru; Wada, Toshihiko; and Sato, Seishiro, 349,888, Cl. D13-163.000.
Olsson, Lennart, to CD-Sverige Aktiebolag. Package for optical discs. 349,851, 8-23-94, Cl. D9-422.000.
Omuro, Makoto; and Tsukahara, Eiji, to Seiko Epson Corporation. Digital multi meter. 349,860, 8-23-94, Cl. D10-78.000.
Onumata, Yuichi: *See*—
Tsuchida, Osamu; and Onumata, Yuichi, 349,917, Cl. D18-7.000.
Tsuchida, Osamu; Yamabe, Hideaki; and Onumata, Yuichi, 349,918, Cl. D18-7.000.
OroAmerica, Inc.: *See*—
Benhamou, Guy S., 349,865, Cl. D11-14.000.
Orsos, Nicholas M. Name plate holder. 349,927, 8-23-94, Cl. D20-43.000.
Ostroski, Richard J.: *See*—
Mulqueen, John M.; Kaplan, Harley B.; Wellman, James E.; and Ostroski, Richard J., 349,956, Cl. D23-416.000.
Outboard Marine Corporation: *See*—
Wenstadt, Thomas D.; and Payne, J. Kelly, 349,878, Cl. D12-313.000.
Oyama, Mitsuyoshi; Yamamoto, Shigeru; and Furuya, Hideyuki, to Daiwa Seiko, Inc. Reel seat for a fishing rod. 349,942, 8-23-94, Cl. D22-142.000.
Oyama, Yoshisuke, to Y. Corporation. Wiper blade. 349,877, 8-23-94, Cl. D12-220.000.
Page, Alan B., to Emerson Electric Co. Housing for motor reversing control. 349,887, 8-23-94, Cl. D13-162.000.
Parker, Daniel J.: *See*—
May, Marcus N.; and Parker, Daniel J., 350,010, Cl. D99-5.000.
Passke, Joel; Forland, David M.; Sarkinen, Larry R.; and Worthington, William J., to Nike, Inc. Bladder element for a shoe sole. 349,808, 8-23-94, Cl. D2-977.000.
Passke, Joel L.; and Forland, David M., to Nike, Inc. Bladder for a shoe sole. 349,804, 8-23-94, Cl. D2-961.000.
Payne, J. Kelly: *See*—
Wenstadt, Thomas D.; and Payne, J. Kelly, 349,878, Cl. D12-313.000.
Perkins, Patricia A.; and Perkins, Terry R., to Rayann Enterprises, Inc. Monument tablet. 350,001, 8-23-94, Cl. D99-17.000.
Perkins, Terry R.: *See*—
Perkins, Patricia A.; and Perkins, Terry R., 350,001, Cl. D99-17.000.
Peterson, Ruk: *See*—
Earle, John S.; Peterson, Ruk; and Poetsch, Linda, 349,805, Cl. D2-970.000.
Peterson, Steven F.: *See*—
Hollis, Richard B.; and Peterson, Steven F., 349,958, Cl. D24-112.000.
Pierce, Harold D.: *See*—
Billings, Zeb; Pierce, Harold D.; and Moore, Martin R. J., Sr., 349,923, Cl. D19-26.000.
Poetsch, Linda: *See*—
Earle, John S.; Peterson, Ruk; and Poetsch, Linda, 349,805, Cl. D2-970.000.
Poisson, Norman D., to Gillette Company, The. Cosmetic dispenser. 349,849, 8-23-94, Cl. D9-338.000.
Rayann Enterprises, Inc.: *See*—
Perkins, Patricia A.; and Perkins, Terry R., 350,001, Cl. D99-17.000.
Read, Clifford D.; Koens, Paul J.; and Dynie, Ernie R., to Northern Telecom Limited. Telephone base. 349,900, 8-23-94, Cl. D14-151.000.
Reebok International Ltd.: *See*—
Close, Judith R., 349,809, Cl. D2-977.000.
Minkin, Amy S., 349,806, Cl. D2-970.000.
Reid, Mary J.: *See*—
Kohler, Herbert V., Jr.; Reid, Mary J.; and McKeone, William C., 349,953, Cl. D23-313.000.
Reinhardt, Gary E. Ballast for a vertical blind louver. 349,828, 8-23-94, Cl. D6-580.000.
Renfroe, Kenneth L.: *See*—
Scott, Harry W., Jr.; Britt, Randall W.; and Renfroe, Kenneth L., 349,817, Cl. D6-336.000.
Rentz, Ceilon H. Mail box and support. 350,003, 8-23-94, Cl. D99-29.000.
Restaurant Technology, Inc.: *See*—
Warren, Mitchell R., 349,964, Cl. D25-16.000.
Ricoh Company, Ltd.: *See*—
Kabumoto, Masaaki, 349,890, Cl. D14-109.000.
Rimball Marketing and Development, Inc.: *See*—
Offutt, James C., 349,933, Cl. D21-200.000.
Rippin, David. Ball striking game. 349,928, 8-23-94, Cl. D21-5.000.
Robert Krups GmbH & Co. KG: *See*—
Storsberg, Gunter, 349,831, Cl. D7-330.000.
Rochefort, Lucien. Bowling alley. 349,936, 8-23-94, Cl. D21-233.000.
Rock Italia Di Alfredo Baldieri, The: *See*—
Gilardelli, Federico, 349,839, Cl. D8-331.000.
Rockery, Ed; and Rockery, Joan. Memento storage box. 349,812, 8-23-94, Cl. D3-273.000.
Rockery, Joan: *See*—
Rockery, Ed; and Rockery, Joan, 349,812, Cl. D3-273.000.
Rogers, Sydney M. Lumbar pillow. 349,962, 8-23-94, Cl. D24-190.000.
Rosemount Inc.: *See*—
Hausler, George C.; and Beulke, Melvin R., 349,862, Cl. D10-96.000.
Rubbermaid Incorporated: *See*—
Bird, David A.; and Wilgus, Mitchell L., 350,000, Cl. D34-4.000.
Wolff, Stacy L., 349,815, Cl. D3-319.000.
Rutledge, William F. Glove caddy. 349,810, 8-23-94, Cl. D3-215.000.
Salerno, Jack P.: *See*—
Gale, Ronald; McCllullough, Richard; and Salerno, Jack P., 349,896, Cl. D14-128.000.
Sarkinen, Larry R.: *See*—
Passke, Joel; Forland, David M.; Sarkinen, Larry R.; and Worthington, William J., 349,808, Cl. D2-977.000.
Sarnoff, Norton; Fletcher, Carl R.; Morris, Laura A.; and Chmela, John F., to Ensar Corporation. Microwaveable chip and dip server. 349,832, 8-23-94, Cl. D7-557.000.
Sato, Seishiro: *See*—
Yamamoto, Takashi; Miyata, Tomoyuki; Hasimoto, Kazunori; Ohnuma, Mitsuru; Wada, Toshihiko; and Sato, Seishiro, 349,888, Cl. D13-163.000.
Schaevitz, Lester P. Sit stand. 349,820, 8-23-94, Cl. D6-364.000.
Schottel, James W. Self placement transfer board. 349,990, 8-23-94, Cl. D34-32.000.
Schultz, William H.: *See*—
Gallagher, P. Sean; and Schultz, William H., 349,883, Cl. D13-108.000.
Schurr, Tom. Container dolly. 349,994, 8-23-94, Cl. D34-23.000.
Schwartzkopf, Robert, to Cosco, Inc. Storage container. 349,813, 8-23-94, Cl. D3-304.000.
Scott, Harry W., Jr.; Britt, Randall W.; and Renfroe, Kenneth L., to Thompson Industries, Inc. Combined bench and storage box. 349,817, 8-23-94, Cl. D6-336.000.
Scott Paper Company: *See*—
Brandenburg, Allen E., 349,827, Cl. D6-545.000.
Seiko Epson Corporation: *See*—
Omuro, Makoto; and Tsukahara, Eiji, 349,860, Cl. D10-78.000.
Shen, Wen-Chang, to Mei Shuai Cosmetics Co., Ltd. Cosmetic case. 349,977, 8-23-94, Cl. D28-78.000.
Shetterly, Thomas H. Utility cart. 349,989, 8-23-94, Cl. D34-25.000.
Shibata, Kouji; and Morita, Atsuko, to Sumitomo Rubber Industries, Ltd. Automobile tire. 349,873, 8-23-94, Cl. D12-141.000.
Shimizu, Norio; and Iwasawa, Shingo, to Koyo Electronics Industries Co., Ltd. Surveillance camera. 349,911, 8-23-94, Cl. D16-203.000.
Siddoway, Craig F.; and Khoo, Bee L., to Motorola, Inc. Charger/private base station for a cordless telephone. 349,899, 8-23-94, Cl. D14-151.000.
Simonson, Eric. Free style surfboard. 349,935, 8-23-94, Cl. D21-228.000.
SKC Limited: *See*—
Chung, Chul-Ju; and Ko, Seok-Woo, 349,894, Cl. D14-121.000.
Skil and S-B Power Tool Company: *See*—
Gallagher, P. Sean; and Schultz, William H., 349,883, Cl. D13-108.000.
Smith, Eddie. Combined radio receiver, tape player and microphone. 349,901, 8-23-94, Cl. D14-168.000.
Sony Corporation: *See*—
Nakaizumi, Hiroshi, 349,892, Cl. D14-114.000.
Nakamura, Mitsuhiro, 349,903, Cl. D14-205.000.

Soren, Leonid; DiPrizio, Giuseppe M.; and Brami, Eyall, to Motorola, Inc. Remote communications console. 349,897, 8-23-94, Cl. D14-137.000.
Spencer Boat Company: *See*—
Hilliard, Gary, 349,881, Cl. D12-318.000.
Starck, Philippe, to Fiam Italia S.p.A. Table. 349,825, 8-23-94, Cl. D6-484.000.
Steelcase Inc.: *See*—
Ball, Douglas C., 349,824, Cl. D6-482.000.
Barton, Scott N.; and Lee, William A., 349,838, Cl. D8-313.000.
Steiner, Gregory A.; and Arnieri, Terry, to Innovative Design Enterprises. Combined portable fan and spray bottle. 349,954, 8-23-94, Cl. D23-328.000.
Stekelenburg, Albert. Halogen lamp with clamp. 349,971, 8-23-94, Cl. D26-60.000.
Stekelenburg, Albert. Halogen lamp with clamp. 349,972, 8-23-94, Cl. D26-60.000.
Stephens, Ronald J.: *See*—
Essex, John D.; and Stephens, Ronald J., 349,984, Cl. D32-31.000.
Storsberg, Gunter, to Robert Krups GmbH & Co. KG. Electric toaster. 349,831, 8-23-94, Cl. D7-330.000.
Stuart, Jerry E.: *See*—
Tuggle, Lloyd H.; and Stuart, Jerry E., 349,983, Cl. D32-15.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Shibata, Kouji; and Morita, Atsuko, 349,873, Cl. D12-141.000.
Suzuki, Toshiaki, 349,874, Cl. D12-147.000.
Surowiec, Walter. Clothespin caddy. 349,985, 8-23-94, Cl. D32-35.000.
Suzuki, Toshiaki, to Sumitomo Rubber Industries, Ltd. Automobile tire. 349,874, 8-23-94, Cl. D12-147.000.
Sween, Barry P.: *See*—
Loh, Pit-Kin; Cruz, Edward V.; and Sween, Barry P., 349,889, Cl. D14-100.000.
Tag-Along Enterprises, Inc.: *See*—
Dunlap, Paula; and Hood, Gloria G., 349,864, Cl. D11-3.000.
Takano, Hiroshi; Mori, Masakazu; and Goto, Masaki, to Matsushita Electric Industrial Co., Ltd. Video camera with video tape recorder. 349,910, 8-23-94, Cl. D16-202.000.
Takano, Hiroshi: *See*—
Mori, Masakazu; Takano, Hiroshi; and Goto, Masaaki, 349,909, Cl. D16-202.000.
Takizawa, Shin-ya; Yamamoto, Shigeru; and Furuya, Hideyuki, to Daiwa Seiko, Inc. Reel seat for a fishing rod. 349,943, 8-23-94, Cl. D22-142.000.
Tashiro, Naoki, to Canon Kabushiki Kaisha. Printer for electronic computer. 349,922, 8-23-94, Cl. D18-50.000.
Tattari, Jouko; Nuovo, Frank; and Vong, Andy, to Nokia Mobile Phones Ltd. Radio telephone. 349,898, 8-23-94, Cl. D14-148.000.
Taylor Made Golf Company, Inc.: *See*—
Feche, Pierre; and Bernault, Jean-Francois, 349,934, Cl. D21-214.000.
Teac Corporation: *See*—
Matsumoto, Kenji; Watanabe, Takashi; and Noda, Katsuhiko, 349,891, Cl. D14-109.000.
Textron Inc.: *See*—
McNally, John J., 349,866, Cl. D11-19.000.
Thompson Industries, Inc.: *See*—
Scott, Harry W., Jr.; Britt, Randall W.; and Renfroe, Kenneth L., 349,817, Cl. D6-336.000.
Tice, Richard P.: *See*—
Galbraith, Donald L.; and Tice, Richard P., 349,906, Cl. D15-142.000.
Timlex International Ltd.: *See*—
Lee, Siu Y., 349,929, Cl. D21-13.000.
Troiani, Tracy A. Stethoscope protector. 349,959, 8-23-94, Cl. D24-134.000.
Tsuchida, Osamu; and Onumata, Yuichi, to Casio Computer Co., Ltd. Electronic calculator. 349,917, 8-23-94, Cl. D18-7.000.
Tsuchida, Osamu; Yamabe, Hideaki; and Onumata, Yuichi, to Casio Computer Co., Ltd. Electronic calculator. 349,918, 8-23-94, Cl. D18-7.000.
Tsukahara, Eiji: *See*—
Omuro, Makoto; and Tsukahara, Eiji, 349,860, Cl. D10-78.000.
Tsushi, Masao: *See*—
Ueda, Takashi; and Tsushi, Masao, 349,932, Cl. D21-194.000.
Tuchschmidt, Jerome A.: *See*—
Williamson, Don J.; and Tuchschmidt, Jerome A., 349,880, Cl. D12-317.000.
Tucker Housewares: *See*—
Cassel, Timothy S.; and Benham, Paul, 349,995, Cl. D34-23.000.
Tuggle, Lloyd H.; and Stuart, Jerry E., to WCI Outdoor Products, Inc. Cordless leaf blower. 349,983, 8-23-94, Cl. D32-15.000.
Tunstall-Pedoe, Hugh D., to University of Dundee, The University Court of the. Calculator. 349,919, 8-23-94, Cl. D18-10.000.
Udko, Richard W., to Unigem International. Double sided jewelry setting. 349,868, 8-23-94, Cl. D11-91.000.
Ueda, Takashi; and Tsushi, Masao, to Cat Eye Co., Ltd. Exercise bicycle. 349,932, 8-23-94, Cl. D21-194.000.
Ullmann, Ralph J., to Kaspar Wire Works, Inc. Transit recycling bin. 349,997, 8-23-94, Cl. D34-1.000.
Ulloa, David A.: *See*—
Ulloa, Elva; and Ulloa, David A., 349,979, Cl. D30-102.000.
Ulloa, Elva; and Ulloa, David A. Aquarium. 349,979, 8-23-94, Cl. D30-102.000.
Unigem International: *See*—
Udko, Richard W., 349,868, Cl. D11-91.000.
U.S. Dent Master, Inc.: *See*—
Galbraith, Donald L.; and Tice, Richard P., 349,906, Cl. D15-142.000.
University of Dundee, The University Court of the: *See*—
Tunstall-Pedoe, Hugh D., 349,919, Cl. D18-10.000.
Usui, Hisaichi, to Habuka Shashin Sangyo Kabushiki Kaisha. Tripod for camera. 349,914, 8-23-94, Cl. D16-244.000.
Viola, Christopher J. Lockable delivery box for entertainment articles. 350,002, 8-23-94, Cl. D99-28.000.
Vong, Andy: *See*—
Tattari, Jouko; Nuovo, Frank; and Vong, Andy, 349,898, Cl. D14-148.000.
Wada, Toshihiko: *See*—
Yamamoto, Takashi; Miyata, Tomoyuki; Hasimoto, Kazunori; Ohnuma, Mitsuru; Wada, Toshihiko; and Sato, Seishiro, 349,888, Cl. D13-163.000.
Wan, Yiu K., to Flourishing Enterprises Development, Ltd. Coin dispenser. 350,006, 8-23-94, Cl. D99-37.000.
Wang, Eric J. F. Golf cart handle cover. 349,998, 8-23-94, Cl. D34-27.000.
Warren, Mitchell R., to Restaurant Technology, Inc. Telephone booth. 349,964, 8-23-94, Cl. D25-16.000.
Watanabe, Takashi: *See*—
Matsumoto, Kenji; Watanabe, Takashi; and Noda, Katsuhiko, 349,891, Cl. D14-109.000.
Wayne/Scott Fetzer Company: *See*—
Mulqueen, John M.; Kaplan, Harley B.; Wellman, James E.; and Ostroski, Richard J., 349,956, Cl. D23-416.000.
WCI Outdoor Products, Inc.: *See*—
Tuggle, Lloyd H.; and Stuart, Jerry E., 349,983, Cl. D32-15.000.
Weir, Donald H., to Wexco Incorporated. Combined swimming pool wall seat and stair module. 349,965, 8-23-94, Cl. D25-2.000.
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Bird, David A.; and Wilgus, Mitchell L., 350,000, Cl. D34-4.000.
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VOL
1165
ISS
4
AG
23
1994
UMI

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CLASS 2
6.2 5,339,464
[illegible] 5,339,465
[illegible] 5,339,466
[illegible] 5,339,467
419 Re.34,699

CLASS 4
246.5 5,339,468
601 5,339,469

CLASS 5
98.1 5,339,470
110 5,339,471
631 5,339,472

CLASS 7
170 5,339,473

CLASS 8
84.18 5,340,365
159 5,339,474
406 5,340,366
432 5,340,367

CLASS 14
73 5,339,475

CLASS 15
28 5,339,476
97.1 5,339,477
97.3 5,339,478
105 5,339,479
106 5,339,480
111 5,339,481
167.1 5,339,482
184 5,339,483
230.11 5,339,484
236.06 5,339,485
244.1 5,339,486
246.2 5,339,487
250.01 5,339,488
250.2 5,339,489
250.41 5,339,490

CLASS 16
2 5,339,491
82 5,339,492
238 5,339,493
294 5,339,494

CLASS 19
159 R 5,339,495

CLASS 24
20 CW 5,339,496
129 R 5,339,497
5,339,498
452 5,339,499
514 5,339,500
573.1 5,339,501

CLASS 28
221 5,339,502
244 5,339,503

CLASS 29
48.5 A 5,339,504
243.56 5,339,505
252 5,339,506
267 5,339,507
273 5,339,508
432 5,339,509
436 5,339,510
451 5,339,511
452 5,339,512
526.6 5,339,513
596 5,339,514
623.5 5,340,368
705 5,339,515
5,339,516
809 5,339,517
827 5,339,518
840 5,339,519
888.3 5,339,520
889.23 5,339,521
897.312 5,339,522
898.02 5,339,523

CLASS 30
113.2 5,339,524
134 5,339,525
276 5,339,526
[illegible] 5,339,527

CLASS 33
1 SD 5,339,528
355 R 5,339,529
427 5,339,530
503 5,339,531
511 5,339,532
512 5,339,533
533 5,339,534
561 5,339,535
613 5,339,536

CLASS 34
58 5,339,539
97 5,339,540
370 5,339,538
612 5,339,537

CLASS 36
2.6 5,339,541
7.2 5,339,542
101 5,339,543
102 5,339,544
119 5,339,545

CLASS 40
107 5,339,546
124.4 5,339,547
324 5,339,548
5,339,549
544 5,339,550
591 5,339,551
640 5,339,552

CLASS 42
83 5,339,553

CLASS 43
4 5,339,554
5 5,339,555
11 5,339,556
5,339,557
17 5,339,558
42.37 5,339,559
42.44 5,339,560
43.13 5,339,561
43.16 5,339,562
122 5,339,563
124 5,339,564

CLASS 44
366 5,340,369

CLASS 47
72 5,339,565
[illegible] 5,339,566

CLASS 49
55 5,339,567
324 5,339,568

CLASS 51
109 R 5,339,569
141 5,339,570
[illegible] 5,339,571
170 PT 5,339,572
[illegible] 5,340,370
[illegible] 5,339,573

CLASS 52
2.15 5,339,574
12 5,339,575
71 5,339,576
[illegible] 5,339,577
98 5,339,578
[illegible] 5,339,579
167 E 5,339,580
177 5,339,581
[illegible] 5,339,582
204.53 5,339,583
208 5,339,584
220.5 5,339,586
220.7 5,339,585
287.1 5,339,587
308 5,339,588
[illegible] 5,339,589
396.[illegible] 5,339,590
473 5,339,591
543 5,339,608
606 5,339,592
[illegible] 5,339,593
727 5,339,594

CLASS 53
[illegible] 5,339,595
136.3 5,339,596
167 5,339,597
236 5,339,598
252 5,339,599
506 5,339,600
397 5,339,601
410 5,339,602
[illegible] 5,339,603
432 5,339,604
439 5,339,605
[illegible] 5,339,606
701 5,339,607
550 5,339,609

CLASS 54
1 5,339,610

CLASS [illegible]
10.2 5,339,611
330 5,339,612
344 5,339,613

CLASS 57
87 5,339,614
281 5,339,615
5,339,616
290 5,339,617

CLASS 58
435 Re.34,706

CLASS 59
93 5,339,618

CLASS 60
39.02 5,339,619
5,339,621
39.03 5,339,620
[illegible] 5,339,622
203.1 5,339,623
207 5,339,624
219 5,339,625
271 5,339,626
274 5,339,627
277 5,339,628
[illegible] 5,339,629
303 5,339,630
[illegible] 5,339,631
[illegible] 5,339,632
[illegible] 5,339,633
723 5,339,634
733 5,339,635
734 5,339,636
752 5,339,637

CLASS 62
3.61 5,339,638
[illegible] 5,339,639
5,339,640
24 5,339,641
5,339,648
46.1 5,339,649
51.1 5,339,650
[illegible] 5,339,651
77 5,339,642
80 5,339,643
234 5,339,644
235.1 5,339,645
[illegible] 5,339,646
5,339,647
[illegible] 5,339,652
467 5,339,653
476 5,339,654

CLASS 63
[illegible] 5,339,655
14.1 5,339,656

CLASS 65
21.1 5,340,372
24 5,340,373
29.12 5,340,374
104 5,340,375
501 5,340,371

CLASS 66
195 5,339,657

CLASS 68
203 5,339,658

CLASS 70
120 5,339,659
233 5,339,660
276 5,339,661
278 5,339,662
379 R 5,339,663
456 R 5,339,664

CLASS 71
6 5,340,376

CLASS 72
21 5,339,665
56 5,339,666
58 5,339,667
70 5,339,668
108 5,339,669
152 5,339,670

CLASS 73
1 G 5,339,671
19.1 5,339,672
23.36 5,339,673
24.02 5,339,674
24.040 5,339,675
[illegible] 5,339,676
49.5 5,339,677
49.8 5,339,678
[illegible] 5,339,679
118.2 5,339,680
5,339,681
123 5,339,682
146.8 5,339,683
178 R 5,339,684
[illegible] 5,339,685
203 5,339,686
204.19 5,339,687
204.22 5,339,688
[illegible] 5,339,689
[illegible] 5,339,690
597 5,339,691
[illegible] 5,339,692
825 5,339,693
861.07 5,339,694
861.19 5,339,695
[illegible] 5,339,696
[illegible] 5,339,697
[illegible] 5,339,698
[illegible] 5,339,699
[illegible] 5,339,700
[illegible] 5,339,701
[illegible] 5,339,702

CLASS 74
15.4 5,339,703
89.15 5,339,704
475 5,339,705
493 5,339,706
606 R 5,339,707
665 A 5,339,708

CLASS 75
334 5,340,377
414 5,340,378
680 5,340,379
744 5,340,380

CLASS 81
57.3 5,339,710
63 5,339,711
416 5,339,712
434 5,339,713

CLASS 83
16 5,339,714
53 5,339,715
397 B1 4,934,233
452 5,339,716
471.3 B1 5,042,348

CLASS 84
[illegible] 5,339,717
291 5,339,718
385 P 5,339,719
[illegible] Re.34,700
605 5,340,938
[illegible] 5,340,939
[illegible] 5,340,940
658 5,340,941
[illegible] 5,340,942

CLASS 89
41.19 5,339,720
142 5,339,721

CLASS 91
376 R 5,339,722
388 5,339,723

CLASS 91
153 5,339,724

CLASS 95
21 5,340,381
151 5,340,382

CLASS 96
6 5,340,384

CLASS 99
293 5,339,725
327 5,339,726
426 5,339,728
482 5,339,727
509 5,339,729

CLASS 101
32 5,339,730
35 5,339,731
38.1 5,339,732
91 5,339,733
[illegible] 5,339,734
114 5,339,735
129 5,339,739
352 5,339,736
[illegible] 5,339,737
477 5,339,738

CLASS 102
361 5,339,741
387 5,339,742
439 5,339,743

CLASS 105
332 5,339,744
452 5,339,745

CLASS 106
14.05 5,340,385
19 B 5,340,386
20 A 5,340,387
22 B 5,340,388
197.2 5,340,389
244 5,340,390
281.1 5,340,391
471 5,340,392
492 5,340,393
500 5,340,394
504 5,340,395
669 5,340,396
727 5,340,397

CLASS 108
56.3 5,339,746
64 5,339,747
90 5,339,748
143 5,339,749
147 5,339,750

CLASS 110
186 5,339,751
194 5,339,752
313 5,339,753
345 5,339,754
5,339,755

CLASS 112
[illegible] 5,339,756
221 5,339,757
278 5,339,758

CLASS 114
211 5,339,759
230 5,339,760
274 5,339,761
312 5,339,762
361 5,339,763

CLASS 116
63 P 5,339,765
266 5,339,764

CLASS 117
21 5,340,434

CLASS 118
58 5,340,398
59 5,340,399
313 5,340,400
410 5,340,402
725 5,340,401

CLASS 119
6.8 5,339,766
57.8 5,339,767
72 5,339,768
173 5,339,769
[illegible] 5,339,770
710 5,339,771
724 5,339,772
[illegible] 5,339,773

CLASS 122
4 D 5,339,774

CLASS 123
41.35 5,339,775
90.12 5,339,777
193.5 5,339,778
196 CP 5,339,776
197.4 5,339,779
243 5,339,780
357 5,339,781
[illegible] 5,339,782
[illegible] 5,339,783
417 5,339,784
457 5,339,785
467 5,339,786
514 5,339,787
520 5,339,788

CLASS 126
25.6 5,339,790
[illegible] 5,339,789
73 5,339,791
[illegible] 5,339,792
[illegible] 5,339,793

CLASS 128
11.04 5,339,794
21 5,339,795
420 5,340,884

CLASS 126
263 B 5,339,796
[illegible] 5,339,797
629 5,339,798

CLASS 127
37 5,340,403
46.2 5,340,404
65 5,340,405

CLASS 128
[illegible] 5,339,799
5,339,800
[illegible] 5,339,801
5,339,802
5,339,803
200.26 5,339,805
201.21 5,339,806
205.24 5,339,807
207.15 5,339,808
[illegible] 5,339,809
633 5,339,810
653.1 5,339,811
5,339,812
5,339,813
653.4 5,339,814
[illegible] 5,339,815
661.09 5,339,816
[illegible] 5,339,817
677 5,339,818
[illegible] 5,339,819
696 5,339,820
700 5,339,821
5,339,822
710 5,339,823
712 5,339,824
725 5,339,825
731 5,339,826
735 5,339,827
759 5,339,828
[illegible] 5,339,829
771 5,339,830
772 5,339,833
[illegible] 5,339,831
[illegible] 5,339,832
877 5,339,834

CLASS 131
84.1 5,339,836
296 5,339,837
372 5,339,838

VOL 1165 ISS 4 AG 23 1994 UMI

CLASS 132
114 5,339,839
151 5,339,840
218 5,339,841
CLASS 134
1 5,339,842
10 5,340,406
26 5,340,407
56 R 5,339,843
107 5,339,844
169 A 5,339,845
201 5,339,846
CLASS 135
16 5,339,847
20.1 5,339,848
66 5,339,849
67 5,339,853
72 5,339,850
87 5,339,852
88 5,339,851
CLASS 136
255 5,340,408
256 5,340,409
258 5,340,410
CLASS 137
2 5,339,854
13 5,339,855
15 5,339,856
130 5,339,858
337 5,339,859
343 5,339,860
614.04 5,339,861
614.05 5,339,862
798 5,339,863
844 5,339,864
CLASS 138
26 5,339,865
111 5,339,866
140 5,339,867
172 5,339,868
CLASS 140
119 5,339,869
123.5 5,339,870
CLASS 141
1 5,339,871
1.001 5,339,873
9 5,339,874
5,339,875
51 5,339,876
001 5,339,872
CLASS 148
26 5,340,411
208 5,340,412
305 5,340,413
325 5,340,414
5,340,415
420 5,340,416
513 5,340,417
549 5,340,418
631 5,340,419
CLASS 151
527 5,339,878
540 5,339,879
CLASS 156
64 5,340,420
69 5,340,421
89 5,340,422
158 5,340,423
166 5,340,424
211 5,340,425
244.11 Re.34,701
264 5,340,426
268 5,340,427
272.2 5,340,428
288 5,340,429
344 5,340,430
359 5,340,431
472 5,340,432
578 5,340,433
632 5,340,435
639 5,340,436
5,340,437
643 5,340,438
CLASS 157
1 5,339,880
CLASS 160
40 5,339,881
84.1 D 5,339,882
5,339,883
330 5,339,884
CLASS 162
5 5,340,439
31 5,340,440
135 5,340,441
198 5,340,442
CLASS 164
418 5,339,877
450.4 5,339,885
463 5,339,886
476 5,339,887
516 5,339,888
517 Re.34,702
CLASS 165
1 5,339,889
45 5,339,890
5,339,893
67 5,339,891
82 5,339,892
CLASS 166
182 5,339,894
227 5,339,895
241.1 5,339,896
245 5,339,897
248 5,339,898
250 5,339,899
274 5,339,900
289 5,339,901
293 5,339,902
5,339,903
303 5,339,904
369 5,339,905
CLASS 172
4 5,339,906
678 5,339,907
CLASS 173
216 5,339,908
CLASS 174
15.4 5,340,943
35 R B1 5,095,177
52.1 5,340,944
174 5,340,945
256 5,340,946
262 5,340,947
CLASS 175
22 5,339,909
61 5,339,910
62 5,339,911
66 5,339,912
73 5,339,913
5,339,914
244 5,339,915
CLASS 177
25.15 5,340,948
25.18 5,340,949
145 5,340,950
229 5,340,951
CLASS 180
19.3 5,339,916
143 5,339,917
292 5,339,918
CLASS 181
282 5,340,952
CLASS 182
85 5,339,919
96 5,339,920
111 5,339,921
188 5,339,922
CLASS 184
40 5,339,924
CLASS 185
39 5,339,923
CLASS 187
8.41 5,339,925
8.47 5,339,926
8.49 5,339,927
CLASS 188
1.11 5,339,928
24.16 5,339,929
210 5,339,930
251 M 5,339,931
316 5,339,932
371 5,339,933
CLASS 190
18 A 5,339,934
CLASS 192
3.3 5,339,935
53 E 5,339,936
CLASS 194
292 5,339,937
CLASS 198
334 5,339,938
345.2 5,339,939
345.3 5,339,940
5,339,941
347.1 5,339,942
365 5,339,943
430 5,339,944
468.8 5,339,945
494 5,339,946
499 5,339,947
635 5,339,948
803.9 5,339,949
CLASS 200
86.5 5,340,953
277.2 5,340,954
302.2 5,340,955
341 5,340,956
CLASS 203
182 5,340,443
186 5,340,444
CLASS 204
33 5,340,445
56 5,340,446
CLASS 205
1.5 5,340,447
67 5,340,448
157.3 5,340,450
165 5,340,451
180.1 5,340,449
5,340,452
182.8 5,340,453
192.12 5,340,454
196 5,340,455
242 5,340,456
252 5,340,457
253 5,340,458
298.07 5,340,459
298.09 5,340,460
299 R 5,340,461
425 5,340,462
CLASS 205
201 5,340,463
CLASS 206
45.23 5,339,950
315.7 5,339,951
334 5,339,952
340 5,339,953
346 5,339,954
370 5,339,955
372 5,339,956
386 5,339,957
521 5,339,958
524.8 5,339,959
531 5,339,960
CLASS 208
59 5,340,957
131 5,340,464
191 5,340,465
216 PP 5,340,466
390 5,340,467
CLASS 209
3 5,339,961
576 5,339,962
581 5,339,963
587 5,339,964
639 5,339,965
CLASS 210
96.1 5,340,468
5,340,469
130 5,340,470
167 5,340,471
173 5,340,472
177 5,340,473
198.2 5,340,474
5,340,475
5,340,476
218 5,340,477
284 5,340,478
497.1 5,340,479
500.23 5,340,480
512.1 5,340,481
525 5,340,482
632 5,340,483
712 5,340,484
767 5,340,485
CLASS 211
4 5,339,966
57.1 5,339,967
121 5,339,968
189 5,339,969
CLASS 213
67 R 5,339,970
CLASS 215
11.5 5,339,971
320 5,339,972
CLASS 219
69.12 5,340,958
69.15 5,340,959
86.7 5,340,960
121.5 5,340,961
121.78 5,340,962
130.1 5,340,963
486 5,340,964
CLASS 220
4.23 5,339,973
4.26 5,339,974
4.27 5,339,975
23.4 5,339,976
307 5,339,977
318 5,339,978
529 5,339,979
571 5,339,980
575 Re.34,703
580 5,339,981
708 5,339,982
CLASS 221
25 5,339,983
124 5,339,984
151 5,339,985
CLASS 222
1 5,339,986
79 5,339,987
82 5,339,988
105 5,339,989
135 5,339,990
136 5,339,991
137 5,339,992
153 5,339,993
175 5,339,994
185 5,339,995
5,339,996
238 5,339,997
241 5,339,998
380 5,339,999
468 5,340,000
CLASS 223
50 5,340,001
CLASS 224
39 5,340,003
42.46 R 5,340,004
5,340,005
148 5,340,006
321 5,340,007
CLASS 126
171 5,340,008
CLASS 138
1.1 5,340,010
4.5 5,340,011
56.3 5,340,012
119 5,340,013
198 5,340,014
205 5,340,015
219 5,340,016
CLASS 229
300 5,340,017
CLASS 235
101 5,340,965
376 5,340,966
379 5,340,967
380 5,340,968
381 5,340,969
383 5,340,970
472 5,340,971
5,340,972
5,340,973
CLASS 236
10 5,340,028
12.2 5,340,018
20 R 5,340,019
49.3 5,340,021
CLASS 237
12.3 A 5,340,022
12.3 C 5,340,020
CLASS 239
13 5,340,023
17 5,340,024
70 5,340,025
104 5,340,026
106 5,340,027
119 5,340,029
289 5,340,030
343 5,340,031
575 5,340,032
676 5,340,033
CLASS 241
3 5,340,034
55 5,340,035
56 5,340,036
62 5,340,037
84 5,340,038
5,340,039
101.7 5,340,040
119 5,340,041
283 5,340,042
CLASS 242
1.1 R 5,340,043
7.03 5,340,044
261 5,340,053
332.2 5,340,049
348.1 5,340,051
381.1 5,340,052
407 5,340,046
527 5,340,048
535.2 5,340,045
599.1 5,340,047
609.1 5,340,050
CLASS 244
1 N 5,340,054
1 R 5,340,055
3.16 5,340,056
48 5,340,057
117 A 5,340,058
121 5,340,059
161 5,340,060
175 5,340,061
CLASS 246
5 5,340,062
CLASS 248
75 5,340,064
96 5,340,063
118.5 5,340,067
150 5,340,065
170 5,340,066
188.6 5,340,068
214 5,340,069
220.1 5,340,070
231.8 5,340,071
279 5,340,072
291 5,340,073
309.1 5,340,074
346 5,340,075
371 5,340,076
642 5,340,077
CLASS 250
205 5,340,974
5,340,975
207 5,340,976
208.1 5,340,977
5,340,978
214 B 5,340,979
214 R 5,340,980
227.2 5,340,981
235 5,340,982
281 5,340,983
332 5,340,984
337 5,340,985
343 5,340,986
345 5,340,987
370.09 5,340,988
385.1 5,340,989
395 5,340,990
459.1 5,340,991
548 5,340,992
551 5,340,993
572 5,340,994
581 5,340,995
582 5,340,996
CLASS 251
38 5,339,857
59 5,340,078
85 5,340,079
120 5,340,080
129.06 5,340,081
326 5,341,010
CLASS 252
43 5,340,486
46.3 5,340,487
47.5 5,340,488
48.6 5,340,489
67 5,340,490
79.1 5,340,491
112 5,340,492
162 5,340,495
186.27 5,340,496
299.61 5,340,497
299.65 5,340,498
462 5,340,493
500 5,340,499
5,340,500
546 5,340,501
5,340,502
583 5,340,503
585 5,340,504
CLASS 254
88 5,340,082
100 5,340,083
134.3 FT 5,340,084
266 5,340,085
CLASS 256
3 5,340,086
67 5,340,087
CLASS 257
10 5,340,997
13 5,340,998
66 5,340,999
77 5,341,000
94 5,341,001
95 5,341,002
135 5,341,003
139 5,341,004
173 5,341,005
190 5,341,006
194 5,341,007
231 5,341,008
296 5,341,009
330 5,341,011
344 5,341,028
351 5,341,012
368 5,341,013
377 5,341,014
402 5,341,015
412 5,341,016
459 5,341,017
503 5,341,018
559 5,341,023
578 5,341,020
587 5,341,021
590 5,341,022
620 5,341,024
697 5,341,025
764 5,341,026
786 5,341,027
CLASS 260
665 R 5,340,507
CLASS 261
122.1 5,340,508
CLASS 264
5 5,340,509
22 5,340,510
29.2 5,340,511
37 5,340,512
42 5,340,513
62 5,340,514
63 5,340,515
5,340,516
103 5,340,517
154 5,340,518
169 5,340,519
174 5,340,520
176.1 5,340,521
185 5,340,522
205 5,340,523
229 5,340,524
266 5,340,525
292 5,340,526
320 5,340,527
328.7 5,340,528
CLASS 266
44 5,340,088
87 5,340,089
202 5,340,090
256 5,340,091
276 5,340,092
CLASS 267
219 5,340,093
5,340,094
CLASS 269
43 5,340,095
CLASS 271
9 5,340,096
10 5,340,097
21 5,340,098
303 5,340,099
5,340,100
CLASS 273
26 5,340,101
29 A 5,340,102
32 H 5,340,103
80.2 5,340,104
142 R 5,340,105
164.1 5,340,106
167 R 5,340,107
185 A 5,340,108
186.1 5,340,109
187.2 5,340,110
195 B 5,340,111
226 5,340,112
249 5,340,113
260 5,340,114
310 5,340,115
391 5,340,116
410 5,340,117
411 5,340,118
439 5,340,119
447 5,340,120
CLASS 277
43 5,340,121
59 5,340,122
104 5,340,123
136 5,340,124

169 5,340,125
181 5,340,126
206 A 5,340,009
CLASS 279
20 5,340,127
5,340,128
90 5,340,129
110 5,340,130
CLASS 280
11.22 5,340,132
33.992 5,340,133
37 5,340,134
47.19 5,340,135
96.1 5,340,137
97 5,340,138
112 5,340,131
304.1 5,340,139
5,340,140
423.1 5,340,141
5,340,142
472 5,340,136
475 5,340,143
5,340,144
656 5,340,145
673 5,340,146
728 A 5,340,147
730 A 5,340,148
732 5,340,149
740 5,340,150
743 R 5,340,151
805 5,340,152
814 5,340,153
5,340,154
CLASS 281
29 5,340,155
37 5,340,156
CLASS 283
62 5,340,157
5,340,158
93 5,340,159
CLASS 285
15 5,340,160
5,340,161
5,340,162
93 5,340,163
5,340,164
5,340,166
226 5,340,165
243 5,340,167
276 5,340,168
337 5,340,169
379 5,340,170
CLASS 292
21 5,340,171
259 R 5,340,172
288 5,340,173
336.3 5,340,174
339 5,340,175
343 5,340,176
CLASS 293
117 5,340,177
122 5,340,178
CLASS 294
19.2 5,340,179
68.1 5,340,180
82.33 5,340,181
88 5,340,182
CLASS 296
243 5,340,383
CLASS 296
24.1 5,340,183
5,340,184
5,340,185
97.1 5,340,186
5,340,187
100 5,340,188
152 5,340,189
180.1 5,340,190
CLASS 297
5,340,191
197 5,340,192
232 5,340,193
5,340,194
354.1 5,340,195
367 5,340,196
452.12 5,340,197
5,340,198
CLASS 299
10 5,340,199
CLASS 300
2 5,340,200
CLASS 301
37.26 5,340,201
CLASS 303
7 5,340,212
19 5,340,202
22.5 5,340,203
111 5,340,204
CLASS 305
22 5,340,205
24 5,340,206
CLASS 307
112 5,341,029
202.1 5,341,030
269 5,341,031
270 5,341,032
5,341,033
296.1 5,341,034
296.2 5,341,035
328 5,341,036
352 5,341,037
359 5,341,038
443 5,341,039
5,341,040
5,341,041
5,341,042
465 5,341,043
5,341,044
475 5,341,045
5,341,046
5,341,047
481 5,341,048
482.1 5,341,049
5,341,050
494 5,341,051
518 5,341,052
CLASS 310
13 5,341,053
14 5,341,054
24 5,341,055
26 5,341,056
5,341,057
5,341,058
90.5 5,341,059
153 5,341,060
318 5,341,061
339 5,341,062
CLASS 312
262 5,340,207
406 5,340,208
408 5,340,209
CLASS 313
309 5,341,063
446 5,341,064
495 5,341,065
CLASS 315
3.5 5,341,066
209 R 5,341,067
219 5,341,068
241 S 5,341,069
382 5,341,070
382.1 5,341,071
408 5,341,072
CLASS 318
7 5,341,073
17 5,341,074
139 5,341,075
254 5,341,076
434 5,341,077
632 5,341,079
778 5,341,080
800 5,341,081
CLASS 320
2 5,341,083
9 5,341,082
44 5,341,084
CLASS 323
222 5,341,085
273 5,341,086
315 5,341,087
CLASS 324
5,341,088
115 5,341,089
123 R 5,341,090
158 R 5,341,092
207.2 5,341,097
5,341,098
5,341,099
341 5,341,100
376 5,341,101
445 5,341,102
454 5,341,103
750 5,341,091
752 5,341,093
765 5,341,096
767 5,341,094
772 5,341,095
CLASS 328
235 5,341,104
CLASS 329
5,341,105
319 5,341,106
337 5,341,107
CLASS 330
259 5,341,108
5,341,109
CLASS 331
17 5,341,110
96 5,341,111
116 R 5,341,112
144 5,341,113
CLASS 333
17.2 5,341,114
246 5,341,115
260 5,341,116
CLASS 335
16 5,341,191
CLASS 336
92 5,341,117
CLASS 338
32 R 5,341,118
224 5,341,119
CLASS 340
146.2 5,341,120
323 R 5,341,121
515 5,341,122
5,341,123
568 5,341,124
572 5,341,125
573 5,341,126
5,341,127
5,341,128
630 Re.34,704
670 5,341,129
825.06 5,341,130
825.21 5,341,131
932.2 5,341,132
CLASS 341
22 5,341,133
5,341,134
120 5,341,135
133 5,341,136
156 5,341,137
CLASS 342
5,341,138
5,341,139
5,341,140
59 5,341,141
5,341,142
5,341,143
70 5,341,144
5,341,145
170 5,341,146
360 5,341,147
CLASS 343
742 5,341,148
5,341,149
912 5,341,150
CLASS 345
58 5,341,151
62 5,341,184
133 5,341,152
152 5,341,153
167 5,341,154
179 5,341,155
CLASS 346
108 5,341,156
5,341,157
5,341,158
134 5,341,159
157 5,341,165
CLASS 347
23 5,341,163
5,341,160
87 5,341,161
5,341,164
172 5,341,162
CLASS 348
1 5,341,216
10 5,341,166
14 5,341,167
42 5,341,168
217 5,341,219
5,341,220
352 5,341,169
354 5,341,170
373 5,341,171
5,341,172
525 5,341,173
5,341,217
552 5,341,175
569 5,341,176
576 5,341,174
614 5,341,177
5,341,218
705 5,341,178
730 5,341,179
CLASS 350
568.22 5,341,078
CLASS 351
206 5,341,180
210 5,341,181
CLASS 352
184 5,341,182
CLASS 353
122 5,341,183
CLASS 354
81 5,341,185
173.11 5,341,187
277 5,341,188
324 5,341,189
403 5,341,186
446 5,341,190
CLASS 355
5,341,192
203 5,341,193
212 5,341,194
237 5,341,195
5,341,196
5,341,197
284 5,341,198
298 5,341,199
5,341,200
302 5,341,201
5,341,202
313 5,341,203
CLASS 356
35.5 5,341,204
73.1 5,341,205
301 5,341,206
346 5,341,207
350 5,341,208
5,341,209
5,341,210
357 5,341,211
359 5,341,212
363 5,341,213
437 5,341,214
445 5,341,215
CLASS 358
5,341,221
403 5,341,222
5,341,223
456 5,341,224
5,341,225
518 5,341,226
533 5,341,227
534 5,341,228
CLASS 359
10 5,341,229
13 5,341,230
49 5,341,231
5,341,233
117 5,341,234
120 5,341,232
281 5,341,235
328 5,341,236
341 5,341,237
359 5,341,238
377 5,341,239
435 5,341,240
443 5,341,241
631 5,341,242
5,341,243
5,341,244
739 5,341,245
837 5,341,246
CLASS 360
13 5,341,247
33.1 5,341,248
5,341,249
5,341,250
5,341,251
50 5,341,252
61 5,341,253
62 5,341,254
75 5,341,256
77.08 5,341,255
5,341,257
92 5,341,258
105 5,341,259
5,341,260
113 5,341,261
128 5,341,262
5,341,263
132 5,341,264
CLASS 361
44 5,341,265
45 5,341,266
5,341,267
62 5,341,268
119 5,341,269
5,341,270
123 5,341,271
311 5,341,272
641 5,341,273
818 5,341,274
CLASS 361
32 5,341,275
226 5,341,276
CLASS 363
16 5,341,278
21 5,341,279
37 5,341,280
39 5,341,281
50 5,341,282
58 5,341,283
89 5,341,284
97 5,341,285
98 5,341,286
CLASS 364
148 5,341,287
159 5,341,288
167.01 5,341,289
5,341,290
413.02 5,341,291
413.13 5,341,292
419.17 5,34.,293
424.05 5,341,294
424.1 5,341,295
426.01 5,341,296
426.02 5,341,298
426.03 5,341,297
431.05 5,341,299
431.06 5,341,300
5,341,301
5,341,302
5,341,303
5,341,304
5,341,305
470 5,341,306
473 5,341,307
479 5,341,308
5,341,309
491 5,341,310
510 5,341,311
525 5,341,312
578 5,341,313
5,341,314
5,341,315
709.12 5,341,316
720 5,341,317
725 5,341,318
748 5,341,319
5,341,320
5,341,321
764 5,341,322
5,341,323
CLASS 365
51 5,341,324
145 5,341,325
149 5,341,326
154 5,341,327
163 5,341,328
182 5,341,342
185 5,341,329
5,341,330
189.01 5,341,331
5,341,332
5,341,333
189.11 5,341,334
189.12 5,341,335
5,341,336
5,341,337
5,341,338
218 5,341,339
226 5,341,340
233 5,341,341
CLASS 366
132 5,340,210
141 5,340,211
196 5,340,213
292 5,340,214
CLASS 367
1 5,341,343
5,341,344
5,341,345
5,341,346
129 5,341,347
154 5,341,348
CLASS 369
13 5,341,349
30 5,341,350
5,341,351
5,341,352
44.11 5,341,354
44.28 5,341,353
44.37 5,341,355
47 5,341,356
75.2 5,341,357
CLASS 370
107 5,341,358
5,341,359
116 5,341,360
275.3 5,341,361
275.4 5,341,362
CLASS 370
13 5,341,363
16.1 5,341,364
17 5,341,365
5,341,366
29 5,341,367
58.1 5,341,368
60 5,341,369
5,341,370
85.4 5,341,371
5,341,374
85.8 5,341,372
5,341,373
94.1 5,341,375
5,341,376
110.1 5,341,377
CLASS 371
2.2 5,341,378
6 5,341,379
10.1 5,341,381
22.1 5,341,382
5,341,383
22.3 5,341,380
31 5,341,384
37.1 5,341,385
43 5,341,386
45 5,341,387
CLASS 372
36 5,341,388
41 5,341,389
45 5,341,390
46 5,341,391
62 5,341,392
5,341,393
CLASS 373
115 5,341,394
CLASS 374
121 5,340,215
182 5,340,216
CLASS 375
1 5,341,395
5,341,396
5,341,397
3.1 5,341,398
10 5,341,399
36 5,341,400
94 5,341,401
97 5,341,402
106 5,341,403
5,341,404
120 5,341,405
CLASS 376
316 5,341,406
409 5,341,407
CLASS 377
8 5,341,408
CLASS 378
29 5,341,409
CLASS 379
59 5,341,410
67 5,341,411
92 5,341,412
100 5,341,413
142 5,341,414
201 5,341,415
382 5,341,416
399 5,341,417
5,341,418
417 5,341,419
433 5,341,420
CLASS 380
4 5,341,421
5,341,422
6 5,341,423
7 5,341,424
20 5,341,425
21 5,341,426
5,341,427
23 5,341,428
5,341,429
49 5,341,430
CLASS 381
15 5,341,431
5,341,432
5,341,433
86 5,341,434
CLASS 382
1 5,341,435
5,341,436

VOL 1165 ISS 4 AG 23 1994 UMI

5,341,437
9 5,341,438
28 5,341,439
56 5,341,440
5,341,441
5,341,442

CLASS 303
17 5,340,217
67 5,340,218

CLASS 384
15 5,340,219
125 5,340,220
499 5,340,221

CLASS 389
2 5,341,443
11 5,341,444
39 5,341,445
78 5,341,446
81 5,341,447
97 5,341,448
122 5,341,449
130 5,341,450
135 5,341,451

CLASS 396
811 5,341,452
815 5,341,453
5,341,454

CLASS 397
378 5,341,455

CLASS 395
2.23 5,341,456
2.35 5,341,457
80 5,341,458
95 5,341,459
119 5,341,460
120 5,341,461
122 5,341,462
129 5,341,463
131 5,341,464
132 5,341,468
134 5,341,465
139 5,341,466
142 5,341,467
145 5,341,469
164 5,341,470
5,341,471
5,341,472
166 5,341,473
200 5,341,474
5,341,475
5,341,476
5,341,477
5,341,478
250 5,341,479
325 5,341,480
5,341,481
375 5,341,482
400 5,341,483
5,341,484
5,341,485
425 5,341,486
5,341,487
5,341,488
5,341,489
5,341,491
5,341,492
5,341,493
5,341,494
500 5,341,495
575 5,341,496
5,341,497
600 5,341,498
700 5,341,499
725 5,341,500
5,341,501
5,341,502
750 5,341,503
800 5,341,504
5,341,505
5,341,506
5,341,507
5,341,508
5,341,509
5,341,510

CLASS 406
124.25 5,340,222
208 5,340,223

CLASS 407
65 5,340,224
5,340,225
5,340,226
195 5,340,227
5,340,228

CLASS 407
4 5,340,229

CLASS 408
300 5,340,230

CLASS 414
14 5,340,231
25 5,340,232
133.05 5,340,233

CLASS 415
48 5,340,234
5,340,235
5,340,236
5,340,237
5,340,238
5,340,239
227 5,340,240

CLASS 416
132 5,340,241

CLASS 417
11 5,340,242

CLASS 418
17 5,340,243
5,340,244
5,340,245
233 5,340,246

CLASS 419
5,340,247
233 5,340,248

CLASS 419
78 5,340,249
5,340,250

CLASS 411
179 5,340,251
5,340,252
310 5,340,253
311 5,340,254
373 5,340,255
5,340,256
512 5,340,257
535 5,340,258

CLASS 414
24.5 5,340,259
27 5,340,260
217 5,340,261
273 5,340,262
412 5,340,263
525.9 5,340,264
526 5,340,265
527 5,340,266
537 5,340,267
5,340,268
5,340,269
793.2 5,340,270

CLASS 415
1 5,340,271
110 5,340,272
113 5,340,273
115 5,340,274
119 5,340,275
5,340,276

CLASS 416
5,340,277
5,340,278
134 A 5,340,279
229 A 5,340,280

CLASS 417
12 5,340,281
5,340,282
118 5,340,283
206 5,340,284
221 5,340,285
5,340,286
410 D 5,340,287
417 5,340,288
5,340,289
477 R 5,340,290
5,340,291

CLASS 418
55.1 5,340,292
171 5,340,293

CLASS 419
5 5,340,530
10 5,340,531
38 5,340,532
45 5,340,533

CLASS 420
35 5,340,534
483 5,340,529
588 5,340,535

CLASS 422
23 5,340,536
5,340,537
33 5,340,538
5,340,539
5,340,540
75 5,340,541
82.08 5,340,542
5,340,543
5,340,544
5,340,545
168 5,340,546
177 5,340,547
5,340,548
230 5,340,549
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CLASS 423
210 5,340,552
219 5,340,553
235 5,340,554
240 R 5,340,555
5,340,556
5,340,557
328.1 5,340,558
334 5,340,559
337 5,340,560
344 5,340,561
599 5,340,562
5,340,563

CLASS 424
5,340,564
10 5,340,565
49 5,340,566
5,340,567
5,340,568
5,340,569
71 5,340,570
73 5,340,571
78.04 5,340,572
85.1 5,340,573
85.2 5,340,574
93.21 5,340,577
114 5,340,579
189.1 5,340,580
196.11 5,340,575
5,340,581
5,340,582
412 5,340,583
426 5,340,584
5,340,585
5,340,586
5,340,587
5,340,588
5,340,589
473 5,340,590
5,340,619
499 5,340,591
533 5,340,592
715 5,340,593

CLASS 428
32 5,340,294
71 5,340,295
123 5,340,296
145 5,340,297
5,340,298
326.1 5,340,299
329 5,340,300
336 5,340,301
528 5,340,302
5,340,303
577 5,340,304

CLASS 430
5,340,594
73 5,340,603
112 5,340,595
5,340,596
433 5,340,597
5,340,598
512 5,340,599
603 5,340,600
614 5,340,601
5,340,602

CLASS 427
2.24 5,340,614
10 5,340,604
126.3 5,340,605
151 5,340,606
162 5,340,607
212 5,340,608
267 5,340,610
361 5,340,611
5,340,612
412.5 5,340,613
437 5,340,654
5,340,615
5,340,616
5,340,617
5,340,618
515 5,340,620
571 5,340,621

CLASS 428
18 5,340,622
31 5,340,623
35.8 5,340,624
36.3 5,340,625
36.9 5,340,626
39 5,340,627
40 5,340,628
5,340,629
5,340,630
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CLASS 429
5,340,662
17 5,340,663
20 5,340,664
40 5,340,665
59 5,340,666
5,340,667
103 5,340,668
192 5,340,669
5,340,670
5,340,671
5,340,609
249 5,340,672

CLASS 430
23 5,340,673
28 5,340,674
58 5,340,675
63 5,340,676
106.6 5,340,677
126 5,340,679
138 5,340,680
5,340,681
165 5,340,682
5,340,683
5,340,684
170 5,340,678
175 5,340,685
191 5,340,686
192 5,340,687
5,340,688
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200 5,340,690
204 5,340,691
5,340,692
233 5,340,693
253 5,340,694
264 5,340,695
5,340,696
270 5,340,697
5,340,698
271 5,340,699
302 5,340,700
312 5,340,701
325 5,340,702
326 5,340,703
389 5,340,704
434 5,340,705
456 5,340,706
505 5,340,707
522 5,340,708
548 5,340,709
551 5,340,710
567 5,340,711
576 5,340,712
619

CLASS 431
7 5,340,305
351 5,340,306

CLASS 433
41 5,340,308
5,340,309
123 5,340,310
126 5,340,311
132 5,340,312
5,340,313
168.1 5,340,314

CLASS 434
127 5,340,315
185 5,340,316
321 5,340,317

CLASS 435
5,340,713
5,340,714
5,340,715
5,340,716
7.21 5,340,719
7.4 5,340,720
7.92 5,340,721
14 5,340,722
29 5,340,723
32 5,340,724
69.4 5,340,725
69.6 5,340,727
71 5,340,718
91.2 5,340,728
171 5,340,729
179 5,340,731
193 5,340,732
5,340,733
212 5,340,734
221 5,340,735
226 5,340,736
5,340,737
234 5,340,738
240.1 5,340,739
240.2 5,340,740
252.3 5,340,743
5,340,742
291 5,340,741

CLASS 436
34 5,340,745
5,340,744
5,340,746
172 5,340,747
518 5,340,748
5,340,749
537 5,340,750

CLASS 437
31 5,340,751
5,340,752
5,340,753
32 5,340,754
33 5,340,755
34 5,340,756
5,340,757
5,340,758
41 5,340,759
43 5,340,760
5,340,761
52 5,340,762
5,340,763
5,340,764
5,340,765
53 5,340,766
5,340,767
5,340,768
67 5,340,769
5,340,770
5,340,771
226 5,340,772
5,340,773
5,340,774
5,340,775

CLASS 438
172.3 5,340,730

CLASS 439
5,340,340
5,340,318
75 5,340,319
79 5,340,320
5,340,321
111 5,340,322
125 5,340,323
133 5,340,324
5,340,325
207 5,340,326
239 5,340,327
326 5,340,328
357 5,340,329
5,340,330
5,340,331
5,340,332
5,340,333
5,340,334
783 5,340,335
5,340,336
5,340,337
5,340,338
5,340,339

CLASS 440
61 5,340,341
86 5,340,342
88 5,340,343
5,340,344
5,340,345

CLASS 445
26 5,340,346

CLASS 446
48 5,340,347
73 5,340,348
126 5,340,349
226 5,340,350

CLASS 450
57 5,340,352

CLASS 451
5,340,353
142 5,340,354
179 5,340,355
182 5,340,351

CLASS 452
5,340,356

CLASS 454
155 5,340,357
299 5,340,358

CLASS 477
145 5,339,709

CLASS 501
11 5,340,776
12 5,340,777
52 5,340,778
80 5,340,779
96 5,340,780
127 5,340,781
133 5,340,782
134 5,340,783
136 5,340,784

CLASS 502
109 5,340,785
117 5,340,786
162 5,340,787

CLASS 505
209 5,340,788
227 5,340,789
5,340,790

CLASS 504
117 5,340,578
130 5,340,791

CLASS 503
4.7 5,340,797
12 5,340,796
100 5,340,795
123 5,340,792
237 5,340,799
477 5,340,793
5,340,794

CLASS 514
12 5,340,800
18 5,340,798
5,340,801
5,340,802
25 5,340,803
150 5,340,804
176 5,340,805
5,340,806
215 5,340,807
248 5,340,808
252 5,340,809
5,340,810
253 5,340,811
255 5,340,812
263 5,340,813
267 5,340,814
269 5,340,815
5,340,816
279 5,340,817
297 5,340,818
5,340,819
5,340,820
5,340,821
316 5,340,822
317 5,340,823
321 5,340,824
339 5,340,825
351 5,340,826
352 5,340,827
357 5,340,828
389 5,340,829
5,340,831
423 5,340,832
443 5,340,833
505 5,340,834
531 5,340,835
557 5,340,836
5,340,837
647 5,340,838

CLASS 521
40 5,340,839
60 5,340,840
5,340,841
64 5,340,842
79 5,340,843
82 5,340,844
130 5,340,845
182 5,340,846

CLASS 521
11 5,340,847
157 5,340,848

CLASS 523
113 5,340,849
115 5,340,850
443 5,340,851
526 5,340,871

CLASS 524
14 5,340,852
36 5,340,853
80 5,340,867
94 5,340,854
102 5,340,855
109 5,340,856
110 5,340,857
162 5,340,858
5,340,859
186 5,340,860
5,340,861
178 5,340,862
272 5,340,863
297 5,340,864
317 5,340,865
403 5,340,866
5,340,868
484 5,340,869
522 5,340,870
588 5,340,872

CLASS 530
10 5,340,873
39 5,340,874
84 5,340,875
5,340,876
154 5,340,877
240 5,340,878
327.4 5,340,879
331.6 5,340,880
333.7 5,340,881
379 5,340,882
381 5,340,883
425 5,340,885
426 5,340,886
477 5,340,887
501 5,340,888
523 5,340,889
530 5,340,890

CLASS 536
88 5,340,891
119 5,340,892
292.4 5,340,893
301 5,340,894

CLASS 538
5,340,895
5,340,896
17 5,340,897
19 5,340,898
34 5,340,899
53 5,340,900
80 5,340,901
61 5,340,902
5,340,903
184 5,340,904
185 5,340,905
199 5,340,906
274 5,340,907
5,340,908
275 5,340,909
276 5,340,910
289 5,340,911
308 5,340,912
322 5,340,913
335 5,340,914
353 5,340,915
363 5,340,916
403 5,340,917
443 5,340,918

CLASS 536
324 5,340,920
329 Re.34,705
350 5,340,921
5,340,922
389.1 5,340,923
395 5,340,924
5,340,925
423 5,340,926

CLASS 534
558 5,340,927
618 5,340,928
880 5,340,929
753 5,340,930
843 5,340,931

CLASS 536
21 5,340,932
23.5 5,340,934
5,340,935

CLASS 546
124 5,340,936

CLASS 540
716 5,340,937

CLASS 548
14 5,340,506
18 5,340,505

CLASS 601
2 5,339,804

CLASS 604
32 5,340,364
284 5,340,359
304 5,340,363

CLASS 606
142 5,340,360

CLASS 607
14 5,340,361

CLASS 623
23 5,340,362

CLASSIFICATION OF DESIGNS

D2— 336 349,803
961 349,804
970 349,805
349,806
349,807
977 349,808
349,809
D3— 215 349,810
266 349,811
273 349,812
284 349,813
319 349,814
349,815
D6— 336 349,817
344 349,818
347 349,819
364 349,820
369 349,821
379 349,822
436 349,823
470 349,829
482 349,824
484 349,825
500 349,826
543 349,827
580 349,828
D7— 306 349,830
330 349,831
400 349,833
523 349,834
557 349,832
D8— 11 349,835
14 349,836
20 349,837
313 349,838
331 349,839
349,840
347 349,841
349,842
349,843
349,844
D9— 300 349,845
349,846
310 349,847
314 349,848
338 349,849
341 349,850
422 349,851
443 349,855
448 349,852
349,853
349,854
349,856
558 349,857
349,858
D10— 46.1 349,859
70 349,860
81 349,861
96 349,862
D04 349,863
D11— 3 349,864
19 349,866
91 349,868
131 349,867
172 349,870
216 349,871
D12— 15 349,872
111 349,869
141 349,873
147 349,874
182 349,875
196 349,876
220 349,877
313 349,878
317 349,879
318 349,881
D13— 103 349,882
308 349,883
349,884
142 349,885
147 349,886
162 349,887
163 349,888
D14— 100 349,889
109 349,890
349,891
114 349,892
349,893
121 349,894
349,895
129 349,896
137 349,897
148 349,898
151 349,899
349,900
349,901
176 349,902
205 349,903
252 349,904
D15— 10 349,905
142 349,906
D16— 202 349,907
349,908
349,909
349,910
D23— 202 349,944
209 349,946
223 349,947
241 349,948
277 349,949
283 349,945
349,950
D18— 7 349,917
349,918
10 349,919
19 349,920
40 349,921
56 349,922
D19— 26 349,923
42 349,924
60 349,925
D20— 42 349,926
43 349,927
D21— 5 349,928
13 349,929
32 349,930
D22— 108 349,938
122 349,939
124 349,940
126 349,941
142 349,942
349,943
D29— 111 349,978
D30— 102 349,979
108 349,980
127 349,981
128 349,982
D32— 15 349,983
31 349,984
35 349,985
70 349,986
D34— 1 349,987
349,997
4 350,000
8 349,992
21 349,988
23 349,993
349,994
349,995
25 349,989
27 349,998
32 349,990
33 349,996
38 349,991
349,999
D99— 5 350,010
17 350,001
18 350,002
19 350,003
350,004
37 350,005
350,006
43 350,007
50 350,008
350,009
D24— 89 349,960
111 349,957
112 349,958
134 349,959
190 349,961
349,962
227 349,963
D25— 2 349,965
349,966
24 349,968
31 349,970
34 349,971
349,972
65 349,973
D26— 3 349,816
349,969
56 349,975
D28— 76 349,976

CLASSIFICATION OF PLANTS

P.— 68.1 8,867
82.2 8,868
82.3 8,869
87.6 8,870

VOL
1165
ISS
4
AG
23
1994
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,340,135	5,339,894	5,340,547	5,341,092	5,341,392	5,340,663
	5,340,252	5,339,900	5,340,553	5,341,109	5,341,400	5,340,865
	5,340,439	5,339,910	5,340,563	5,341,118	5,341,407	5,340,902
	5,341,435	5,339,953	5,340,572	5,341,122	5,341,414	5,340,950
02 :	5,339,743	5,339,955	5,340,583	5,341,132	5,341,415	5,340,965
	5,339,770	5,339,966	5,340,584	5,341,134	5,341,429	5,340,974
	5,341,285	5,339,989	5,340,585	5,341,137	5,341,438	5,341,093
04 :	5,339,526	5,340,003	5,340,586	5,341,141	5,341,442	5,341,289
	5,339,790	5,340,011	5,340,587	5,341,142	5,341,456	5,341,305
	5,339,854	5,340,024	5,340,590	5,341,143	5,341,459	5,341,412
	5,340,018	5,340,026	5,340,592	5,341,147	5,341,463	10 : 5,339,773
	5,340,179	5,340,027	5,340,641	5,341,148	5,341,472	5,340,071
	5,340,320	5,340,054	5,340,669	5,341,155	5,341,476	5,340,393
	5,340,326	5,340,059	5,340,671	5,341,157	5,341,480	5,340,428
	5,340,345	5,340,079	5,340,700	5,341,175	5,341,486	5,340,429
	5,340,993	5,340,080	5,340,714	5,341,182	5,341,505	5,340,476
	5,341,115	5,340,083	5,340,716	5,341,184	08 : 5,339,524	5,340,519
	5,341,146	5,340,090	5,340,727	5,341,205	5,339,646	5,340,601
	5,341,252	5,340,103	5,340,734	5,341,206	5,339,756	5,340,644
	5,341,426	5,340,107	5,340,735	5,341,208	5,339,850	5,340,728
	5,341,427	5,340,111	5,340,743	5,341,214	5,339,883	5,340,783
05 :	5,339,886	5,340,119	5,340,761	5,341,229	5,339,911	5,340,819
	5,340,268	5,340,121	5,340,762	5,341,230	5,339,975	5,340,875
06 :	Re.34,701	5,340,144	5,340,771	5,341,236	5,340,086	5,340,896
	Re.34,703	5,340,145	5,340,772	5,341,238	5,340,167	5,341,103
	5,339,465	5,340,156	5,340,774	5,341,240	5,340,193	5,341,436
	5,339,480	5,340,158	5,340,800	5,341,249	5,340,228	12 : 5,339,472
	5,339,507	5,340,168	5,340,803	5,341,251	5,340,468	5,339,547
	5,339,540	5,340,175	5,340,913	5,341,255	5,340,594	5,339,550
	5,339,542	5,340,183	5,340,915	5,341,259	5,340,699	5,339,551
	5,339,563	5,340,184	5,340,955	5,341,260	5,340,742	5,339,559
	5,339,564	5,340,200	5,340,957	5,341,267	5,340,752	5,339,560
	5,339,588	5,340,253	5,340,972	5,341,275	5,340,764	5,339,567
	5,339,607	5,340,255	5,340,978	5,341,278	5,340,770	5,339,609
	5,339,612	5,340,269	5,340,979	5,341,293	5,340,849	5,339,645
	5,339,625	5,340,272	5,340,985	5,341,308	5,341,046	5,339,729
	5,339,655	5,340,276	5,340,986	5,341,318	5,341,127	5,339,741
	5,339,671	5,340,286	5,340,997	5,341,321	5,341,225	5,339,800
	5,339,691	5,340,296	5,341,011	5,341,322	5,341,479	5,339,810
	5,339,702	5,340,301	5,341,017	5,341,330	09 : 5,339,619	5,339,840
	5,339,712	5,340,309	5,341,024	5,341,333	5,339,636	5,339,859
	5,339,726	5,340,316	5,341,030	5,341,339	5,339,733	5,339,876
	5,339,742	5,340,324	5,341,040	5,341,342	5,339,830	5,339,985
	5,339,748	5,340,347	5,341,041	5,341,346	5,339,870	5,339,994
	5,339,772	5,340,361	5,341,043	5,341,351	5,339,872	5,340,030
	5,339,791	5,340,368	5,341,044	5,341,360	5,340,105	5,340,110
	5,339,803	5,340,376	5,341,045	5,341,369	5,340,230	5,340,172
	5,339,807	5,340,380	5,341,047	5,341,372	5,340,279	5,340,188
	5,339,808	5,340,401	5,341,048	5,341,378	5,340,322	5,340,244
	5,339,839	5,340,411	5,341,050	5,341,381	5,340,367	5,340,313
	5,339,844	5,340,452	5,341,051	5,341,382	5,340,423	5,340,391
	5,339,847	5,340,474	5,341,054	5,341,387	5,340,569	5,340,398
	5,339,851	5,340,539	5,341,075	5,341,389	5,340,570	5,340,407

VOL 1165 ISS 4 AG 23 1994 UMI

5,340,488
5,340,531
5,340,610
5,340,662
5,340,719
5,340,805
5,340,970
5,341,009
5,341,125
5,341,209
5,341,217
5,341,335
5,341,422
5,341,487
5,341,499
5,341,503

13 :
5,339,477
5,339,492
5,339,516
5,339,618
5,339,676
5,339,792
5,340,120
5,340,218
5,340,392
5,340,597
5,341,150
5,341,265
5,341,424
5,341,425

15 :
5,340,113
16 :
5,339,553
5,340,763
5,340,765
5,340,785
5,341,016

17 :
5,339,467
5,339,469
5,339,501
5,339,514
5,339,549
5,339,554
5,339,562
5,339,565
5,339,579
5,339,590
5,339,601
5,339,710
5,339,716
5,339,728
5,339,735
5,339,739
5,339,775
5,339,777

23 :
5,339,515
5,339,796
5,339,801

24 :
5,339,527
5,339,828
5,339,831
5,339,853
5,339,926
5,339,937
5,339,948
5,339,967
5,339,968
5,339,993
5,340,029
5,340,078
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5,340,100
5,340,126
5,340,142
5,340,165
5,340,229
5,340,231
5,340,371
5,340,404

25 :
5,339,503
5,340,427
5,340,465
5,340,470
5,340,495
5,340,525
5,340,608
5,340,629
5,340,653
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5,340,748
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5,340,802
5,340,846
5,340,870
5,340,947
5,341,067
5,341,116
5,341,124
5,341,269
5,341,270
5,341,291
5,341,374
5,341,375
5,341,398
5,341,428
5,341,498

18 :
5,339,486
5,339,534
5,339,582
5,339,647
5,339,722
5,339,797
5,339,881
5,339,960
5,340,028
5,340,124
5,340,209
5,340,348
5,340,456
5,340,518
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5,340,541
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5,340,804
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5,341,027
5,341,071
5,341,119
5,341,173
5,341,241
5,341,431

19 :
5,339,583
5,339,613
5,339,632
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20 :
5,339,651
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21 :
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22 :
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5,339,515
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5,339,626
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5,341,292
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26 :
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5,339,509
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5,339,519
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5,339,643
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5,340,139
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5,340,178
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5,340,425
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5,340,132
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5,340,303
5,340,310
5,340,384
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5,340,712
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5,340,962
5,340,975
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28 :
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5,340,077
5,340,082
5,340,191
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29 :
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5,340,062
5,340,066
5,340,381
5,340,437
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4,934,233
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33 :
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34 :
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5,339,575
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35 :
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36 :
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5,341,153
5,341,158
5,341,159
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37 :
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41 :
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5,340,072
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5,340,125
5,340,131
5,340,154
5,340,370
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5,341,160

42 :
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5,339,774
5,339,826
5,339,843
5,339,882
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5,339,930
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5,340,081
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5,340,138
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5,340,214

45 :
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5,340,109
5,340,203
5,340,213
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48 :
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5,340,134
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5,340,210
5,340,211
5,340,238
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5,341,101
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5,341,336
5,341,344
5,341,345
5,341,348
5,341,494
5,341,500
5,341,502

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5,339,707
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5,339,874
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5,340,108
5,340,485
5,340,664
5,340,665
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5,339,746
5,339,871
5,339,963
5,339,990
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5,340,481
5,340,836
5,341,121
5,341,129

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5,339,598
5,339,698
5,339,885
5,339,939
5,339,957
5,340,005
5,340,104
5,340,236
5,340,264
5,340,306
5,340,387
5,340,406
5,340,431
5,340,442
5,340,464
5,340,813
5,340,829
5,340,925
5,340,990
5,341,183
5,341,396
5,341,453
5,341,464
5,341,482

54 :
5,339,980
5,340,250
5,340,622
5,340,651

55 :
5,339,479
5,339,484
5,339,493
5,339,506
5,339,530
5,339,561
5,339,581
5,339,629
5,339,640
5,339,653
5,339,677
5,339,686
5,339,693
5,339,750
5,339,813
5,339,824
5,339,919
5,339,983
5,340,012
5,340,036
5,340,171
5,340,233
5,340,234
5,340,254
5,340,290
5,340,342
5,340,473
5,340,648
5,340,649
5,340,680
5,340,834
5,340,923
5,340,948
5,341,083
5,341,097
5,341,154
5,341,280
5,341,281
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349,865
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349,921
349,930
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08 : 349,837
349,840
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09 : 349,834
349,986
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12 : 349,821
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15 : 349,833
17 : 349,832
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ISS
4

AG
23

1994

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VOL
1165

ISS
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1994

UMI

Vol. 1165 Number 5

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VOL
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ISS
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30

1994

UMI

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August 30, 1994 Volume 1165 Number 5

CONTENTS

			Page
Patent and Trademark Office Notices			
Patent Cooperation Treaty (PCT) Information	1165	OG	101
Status of Appeal Cases	1165	OG	101
Notice of Maintenance Fees Payable	1165	OG	102
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee	1165	OG	102
Notification of Acceptance of Delayed Payment of Maintenance Fee	1165	OG	108
Reissue Applications Filed	1165	OG	109
Requests for Reexaminations Filed	1165	OG	109
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1165	OG	110
Erratum	1165	OG	111
Service by Publication	1165	OG	111
Service by Publication	1165	OG	112
CD-Rom Products Now Available	1165	OG	112
Patent and Trademark Office (PTO) Information Contacts	1165	OG	113
Patent Certificates of Correction	1165	OG	130
Notice of Final Rulemaking and Lifting of Suspension	1165	OG	132
Summary of Final Decisions Issued by the Trademark Trial and Appeal Board	1165	OG	148
Special Boxes for Mail	1165	OG	151
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1165	OG	152
Patent Examining Corps	1165	OG.	154
Condition of Trademark Applications	1165	OG	155
Reexaminations			2947
Reissue Patents Granted (34,707)			2955
Plant Patents Granted (8,871)			2959
Patents Granted			
General and Mechanical (5,341,511)			2961
Chemical (5,342,415)			3271
Electrical (5,342,988)			3435
Design Patents Granted (350,011)			3635
Index of Patentees		PI	1
Indices of Reissue, Reexaminations, Design and Plant Patents		PI	87
Classification of			
Patents (Including Reissues and Reexaminations)		PI	95
Designs and Plants Applications		PI	99
Geographical Index of Residence of Inventors			
Patents (Including Reissues and Reexaminations)		PI	101
Designs and Plant Applications		PI	103
Change of Address Form		PI	105
Subscription Order Form		PI	107

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For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

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The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel for a Decision Without a Hearing as of July 29, 1994.

Chemical Discipline -	September 14, 1992
Mechanical Discipline -	December 3, 1993
Electrical Discipline -	January 15, 1993*

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of July 29, 1994.

Chemical Discipline -	March 24, 1992*
Mechanical Discipline -	August 4, 1993*
Electrical Discipline -	January 25, 1993*

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals

VOL
1165
ISS
5
AG
30
1994
UMI

During the Month of July, 1994.

Affirmed	130
Affirmed-in-Part	37
Reversed	86
Total Decided	253

* These cases were just recently received from the examining group.

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 27, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,042,087 through 5,044,010
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 25, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,688,269 through 4,689,827
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 23, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,399,567 through 4,440,028
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 22, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 34,532	07/892,147	02/01/94
(4,934,962)	(07/395,991)	(06/19/90)
4,335,503	06/219,678	06/21/62
4,335,518	06/235,592	06/22/82
4,335,525	06/247,910	06/22/82
4,335,550	06/218,215	06/22/82
4,335,563	06/246,983	06/22/82
4,335,564	06/246,985	06/22/82
4,335,565	06/246,986	06/22/82
4,335,568	06/288,398	06/22/82
4,335,580	06/245,880	06/22/82
4,335,582	06/236,372	06/22/82
4,335,650	06/235,928	06/22/82
4,335,683	06/252,545	06/22/82
4,335,694	06/219,274	06/22/82
4,335,719	06/231,200	06/22/82
4,335,813	06/263,211	06/22/82
4,335,842	06/215,620	06/22/82
4,335,843	06/232,666	06/22/82
4,335,848	06/260,313	06/22/82
4,335,902	06/277,725	06/22/82
4,335,957	06/266,240	06/22/82
4,335,976	06/228,226	06/22/82
4,336,022	06/230,030	06/22/82
4,336,025	06/271,569	06/22/82
4,336,036	06/223,458	06/22/82

Patent Number	Serial Number	Issue Date
4,336,040	06/232,263	06/22/82
4,336,045	06/278,725	06/22/82
4,336,052	06/221,644	06/22/82
4,336,058	06/232,069	06/22/82
4,336,072	06/218,473	06/22/82
4,336,100	06/264,857	06/22/82
4,336,101	06/233,318	06/22/82
4,336,107	06/298,788	06/22/82
4,336,113	06/277,511	06/22/82
4,336,119	06/229,378	06/22/82
4,336,123	06/233,735	06/22/82
4,336,125	06/241,386	06/22/82
4,336,126	06/246,555	06/22/82
4,336,127	06/267,137	06/22/82
4,336,162	06/288,273	06/22/82
4,336,167	06/254,608	06/22/82
4,336,184	06/292,117	06/22/82
4,336,197	06/230,406	06/22/82
4,336,198	06/271,153	06/22/82
4,336,236	06/247,441	06/22/82
4,336,239	06/219,402	06/22/82
4,336,240	06/256,438	06/22/82
4,336,254	06/247,048	06/22/82
4,336,255	06/247,049	06/22/82
4,336,285	06/231,128	06/22/82
4,336,289	06/280,863	06/22/82
4,336,295	06/219,167	06/22/82
4,336,298	06/273,133	06/22/82
4,336,302	06/227,384	06/22/82
4,336,321	06/231,445	06/22/82
4,336,330	06/216,529	06/22/82
4,336,333	06/243,283	06/22/82
4,336,342	06/244,521	06/22/82
4,336,343	06/277,417	06/22/82
4,336,351	06/237,231	06/22/82
4,336,362	06/239,833	06/22/82
4,336,366	06/236,465	06/22/82
4,336,373	06/247,885	06/22/82
4,336,374	06/247,884	06/22/82
4,336,379	06/245,188	06/22/82
4,336,380	06/234,538	06/22/82
4,336,384	06/257,308	06/22/82
4,336,388	06/216,097	06/22/82
4,336,397	06/221,159	06/22/82
4,336,561	06/243,325	06/22/82
4,336,585	06/219,773	06/22/82
4,336,595	06/277,904	06/22/82
4,336,609	06/252,226	06/22/82
4,594,734	06/684,192	06/17/86
4,594,735	06/815,947	06/17/86
4,594,741	06/681,431	06/17/86
4,594,743	06/629,350	06/17/86
4,594,744	06/697,043	06/17/86
4,594,750	06/672,364	06/17/86
4,594,752	06/660,342	06/17/86
4,594,754	06/619,179	06/17/86
4,594,755	06/713,349	06/17/86
4,594,756	06/534,183	06/17/86
4,594,760	06/713,362	06/17/86
4,594,766	06/705,246	06/17/86
4,594,771	06/652,126	06/17/86
4,594,774	06/607,820	06/17/86
4,594,776	06/702,992	06/17/86
4,594,782	06/764,213	06/17/86
4,594,787	06/784,893	06/17/86
4,594,793	06/641,222	06/17/86
4,594,794	06/669,899	06/17/86
4,594,798	06/737,519	06/17/86
4,594,799	06/680,184	06/17/86
4,594,804	06/620,860	06/17/86
4,594,805	06/713,595	06/17/86
4,594,811	06/687,801	06/17/86
4,594,812	06/667,447	06/17/86
4,594,814	06/763,422	06/17/86
4,594,815	06/679,285	06/17/86
4,594,818	06/730,210	06/17/86
4,594,819	06/583,613	06/17/86
4,594,820	06/656,642	06/17/86
4,594,822	06/490,247	06/17/86
4,594,823	06/670,517	06/17/86
4,594,824	06/363,058	06/17/86
4,594,826	06/623,709	06/17/86
4,594,828	06/709,538	06/17/86
4,594,830	06/558,322	06/17/86
4,594,832	06/522,001	06/17/86
4,594,833	06/783,127	06/17/86
4,594,834	06/704,595	06/17/86
4,594,836	06/633,138	06/17/86
4,594,837	06/729,310	06/17/86
4,594,840	06/702,774	06/17/86
4,594,847	06/642,372	06/17/86
4,594,848	06/620,342	06/17/86
4,594,850	06/464,196	06/17/86
4,594,852	06/666,535	06/17/86
4,594,857	06/768,115	06/17/86
4,594,859	06/707,080	06/17/86
4,594,862	06/689,015	06/17/86
4,594,863	06/557,970	06/17/86
4,594,873	06/666,177	06/17/86
4,594,876	06/616,512	06/17/86
4,594,880	06/686,695	06/17/86
4,594,884	06/622,926	06/17/86
4,594,888	06/703,025	06/17/86
4,594,889	06/678,901	06/17/86
4,594,890	06/593,930	06/17/86
4,594,891	06/487,866	06/17/86
4,594,892	06/742,460	06/17/86
4,594,893	06/636,630	06/17/86
4,594,897	06/574,327	06/17/86
4,594,900	06/727,265	06/17/86
4,594,906	06/585,482	06/17/86
4,594,907	06/654,480	06/17/86
4,594,921	06/763,860	06/17/86
4,594,922	06/715,161	06/17/86
4,594,924	06/723,564	06/17/86
4,594,926	06/544,528	06/17/86
4,594,930	06/608,214	06/17/86
4,594,935	06/593,396	06/17/86
4,594,939	06/657,044	06/17/86
4,594,944	06/635,011	06/17/86
4,594,945	06/676,028	06/17/86
4,594,948	06/646,976	06/17/86
4,594,949	06/462,730	06/17/86
4,594,950	06/626,409	06/17/86
4,594,954	06/702,039	06/17/86
4,594,957	06/678,727	06/17/86
4,594,959	06/739,111	06/17/86
4,594,960	06/649,188	06/17/86
4,594,964	06/696,222	06/17/86
4,594,965	06/290,255	06/17/86
4,594,967	06/710,725	06/17/86
4,594,971	06/665,138	06/17/86
4,594,972	06/793,727	06/17/86
4,594,974	06/734,753	06/17/86
4,594,975	06/761,335	06/17/86
4,594,977	06/676,647	06/17/86
4,594,980	06/631,990	06/17/86
4,594,985	06/687,339	06/17/86
4,594,991	06/700,357	06/17/86
4,594,994	06/584,621	06/17/86
4,594,996	06/696,585	06/17/86
4,595,008	06/521,262	06/17/86
4,595,010	06/588,379	06/17/86
4,595,011	06/632,127	06/17/86
4,595,014	06/542,953	06/17/86
4,595,017	06/713,996	06/17/86
4,595,022	06/464,869	06/17/86
4,595,024	06/646,329	06/17/86
4,595,026	06/679,690	06/17/86
4,595,031	06/641,956	06/17/86
4,595,032	06/579,991	06/17/86
4,595,036	06/580,170	06/17/86
4,595,040	06/786,054	06/17/86
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VOL
1165
ISS
5
AG
30
1994
UMI

Patent Number	Serial Number	Issue Date
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4,595,054	06/736,031	06/17/86
4,595,057	06/611,794	06/17/86
4,595,061	06/641,308	06/17/86
4,595,068	06/526,037	06/17/86
4,595,069	06/506,403	06/17/86
4,595,072	06/546,176	06/17/86
4,595,075	06/769,475	06/17/86
4,595,076	06/772,532	06/17/86
4,595,079	06/720,830	06/17/86
4,595,080	06/669,331	06/17/86
4,595,086	06/615,804	06/17/86
4,595,087	06/582,100	06/17/86
4,595,088	06/539,695	06/17/86
4,595,089	06/693,092	06/17/86
4,595,092	06/706,246	06/17/86
4,595,095	06/633,951	06/17/86
4,595,097	06/695,267	06/17/86
4,595,100	06/648,217	06/17/86
4,595,102	06/800,496	06/17/86
4,595,103	06/692,571	06/17/86
4,595,104	06/627,883	06/17/86
4,595,114	06/727,839	06/17/86
4,595,121	06/737,562	06/17/86
4,595,125	06/546,396	06/17/86
4,595,126	06/410,420	06/17/86
4,595,132	06/547,581	06/17/86
4,595,134	06/759,079	06/17/86
4,595,136	06/659,673	06/17/86
4,595,138	06/695,736	06/17/86
4,595,140	06/604,014	06/17/86
4,595,141	06/714,994	06/17/86
4,595,143	06/516,006	06/17/86
4,595,144	06/548,283	06/17/86
4,595,146	06/659,537	06/17/86
4,595,155	06/660,582	06/17/86
4,595,156	06/622,379	06/17/86
4,595,157	06/523,430	06/17/86
4,595,160	06/495,804	06/17/86
4,595,169	06/761,443	06/17/86
4,595,171	06/754,713	06/17/86
4,595,177	06/658,707	06/17/86
4,595,179	06/504,847	06/17/86
4,595,183	06/586,500	06/17/86
4,595,191	06/660,318	06/17/86
4,595,192	06/644,793	06/17/86
4,595,203	06/623,813	06/17/86
4,595,204	06/751,244	06/17/86
4,595,205	06/702,489	06/17/86
4,595,207	06/753,234	06/17/86
4,595,208	06/610,290	06/17/86
4,595,211	06/594,738	06/17/86
4,595,213	06/592,586	06/17/86
4,595,221	06/658,536	06/17/86
4,595,223	06/702,488	06/17/86
4,595,229	06/596,670	06/17/86
4,595,240	06/460,241	06/17/86
4,595,246	06/650,068	06/17/86
4,595,252	06/730,510	06/17/86
4,595,257	06/495,618	06/17/86
4,595,262	06/643,535	06/17/86
4,595,264	06/529,868	06/17/86
4,595,265	06/481,854	06/17/86
4,595,277	06/574,820	06/17/86
4,595,288	06/535,839	06/17/86
4,595,295	06/684,432	06/17/86
4,595,298	06/729,388	06/17/86
4,595,299	06/704,225	06/17/86
4,595,301	06/679,693	06/17/86
4,595,303	06/671,617	06/17/86
4,595,307	06/667,092	06/17/86
4,595,311	06/523,239	06/17/86
4,595,319	06/616,734	06/17/86
4,595,322	06/628,587	06/17/86
4,595,329	06/539,539	06/17/86
4,595,330	06/420,165	06/17/86
4,595,331	06/566,891	06/17/86
4,595,333	06/527,271	06/17/86
4,595,335	06/523,788	06/17/86
4,595,336	06/641,604	06/17/86
4,595,337	06/684,096	06/17/86
4,595,339	06/647,635	06/17/86
4,595,340	06/635,958	06/17/86
4,595,342	06/577,627	06/17/86
4,595,344	06/429,279	06/17/86
4,595,347	06/616,813	06/17/86
4,595,348	06/691,482	06/17/86
4,595,350	06/678,633	06/17/86
4,595,361	06/693,268	06/17/86
4,595,366	06/572,651	06/17/86
4,595,367	06/642,649	06/17/86
4,595,369	06/709,892	06/17/86
4,595,371	06/567,168	06/17/86
4,595,376	06/737,661	06/17/86
4,595,378	06/781,300	06/17/86
4,595,383	06/652,763	06/17/86
4,595,385	06/592,773	06/17/86
4,595,386	06/693,150	06/17/86
4,595,389	06/735,958	06/17/86
4,595,396	06/610,227	06/17/86
4,595,397	06/421,225	06/17/86
4,595,399	06/668,432	06/17/86
4,595,400	06/662,009	06/17/86
4,595,401	06/291,859	06/17/86
4,595,402	06/735,043	06/17/86
4,595,404	06/691,298	06/17/86
4,595,407	06/649,542	06/17/86
4,595,408	06/325,883	06/17/86
4,595,411	06/707,999	06/17/86
4,595,413	06/626,672	06/17/86
4,595,415	06/674,164	06/17/86
4,595,419	06/453,762	06/17/86
4,595,427	06/663,410	06/17/86
4,595,428	06/567,708	06/17/86
4,595,433	06/702,124	06/17/86
4,595,436	06/646,415	06/17/86
4,595,438	06/667,994	06/17/86
4,595,439	06/701,184	06/17/86
4,595,443	06/729,092	06/17/86
4,595,446	06/726,783	06/17/86
4,595,452	06/710,618	06/17/86
4,595,455	06/299,564	06/17/86
4,595,456	06/680,335	06/17/86
4,595,459	06/441,002	06/17/86
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Patent Number	Serial Number	Issue Date
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4,934,980	07/406,022	06/19/90
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4,934,985	07/366,056	06/19/90
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4,934,990	07/324,404	06/19/90
4,934,997	07/168,597	06/19/90
4,935,003	07/271,957	06/19/90
4,935,010	07/118,606	06/19/90
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4,935,031	07/198,466	06/19/90
4,935,033	07/247,204	06/19/90
4,935,036	07/209,983	06/19/90
4,935,044	07/316,706	06/19/90
4,935,049	07/255,207	06/19/90
4,935,073	07/111,210	06/19/90
4,935,079	07/197,432	06/19/90
4,935,080	07/295,371	06/19/90
4,935,086	06/917,294	06/19/90
4,935,090	06/298,864	06/19/90
4,935,098	07/244,882	06/19/90
4,935,105	07/425,374	06/19/90
4,935,107	07/106,256	06/19/90
4,935,121	07/370,670	06/19/90
4,935,123	07/044,429	06/19/90
4,935,129	07/326,068	06/19/90
4,935,134	07/267,136	06/19/90
4,935,136	07/286,252	06/19/90
4,935,142	07/370,609	06/19/90
4,935,152	07/361,938	06/19/90
4,935,158	06/925,769	06/19/90
4,935,159	07/264,421	06/19/90
4,935,160	07/246,590	06/19/90
4,935,162	07/109,041	06/19/90
4,935,166	06/777,063	06/19/90
4,935,170	07/230,862	06/19/90
4,935,185	07/265,333	06/19/90
4,935,187	07/373,624	06/19/90
4,935,193	07/283,745	06/19/90
4,935,195	07/237,537	06/19/90
4,935,197	07/205,850	06/19/90
4,935,200	07/371,364	06/19/90
4,935,206	07/260,917	06/19/90
4,935,215	07/366,111	06/19/90
4,935,218	06/518,403	06/19/90
4,935,219	07/133,448	06/19/90
4,935,221	07/206,061	06/19/90
4,935,225	07/346,259	06/19/90
4,935,236	07/252,239	06/19/90
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4,935,259	07/298,990	06/19/90
4,935,268	07/326,153	06/19/90
4,935,290	07/086,523	06/19/90
4,935,294	07/273,369	06/19/90
4,935,297	07/185,011	06/19/90
4,935,301	07/380,364	06/19/90
4,935,312	07/282,183	06/19/90
4,935,329	07/200,985	06/19/90
4,935,332	07/376,922	06/19/90
4,935,352	06/919,798	06/19/90
4,935,356	07/302,064	06/19/90
4,935,360	07/055,960	06/19/90
4,935,366	06/864,730	06/19/90
4,935,381	07/282,408	06/19/90
4,935,397	07/250,293	06/19/90
4,935,409	07/186,522	06/19/90
4,935,416	07/300,390	06/19/90
4,935,425	07/269,301	06/19/90
4,935,426	07/307,525	06/19/90
4,935,429	07/260,860	06/19/90
4,935,433	07/080,397	06/19/90
4,935,434	07/148,454	06/19/90
4,935,435	07/335,551	06/19/90
4,935,436	07/299,910	06/19/90
4,935,438	07/138,993	06/19/90
4,935,441	06/869,458	06/19/90
4,935,443	07/371,151	06/19/90
4,935,444	07/254,220	06/19/90
4,935,452	07/373,900	06/19/90
4,935,453	07/278,002	06/19/90
4,935,459	07/398,380	06/19/90
4,935,460	07/378,445	06/19/90
4,935,478	07/226,009	06/19/90
4,935,494	07/271,328	06/19/90
4,935,496	06/805,381	06/19/90
4,935,499	07/250,994	06/19/90
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VOL 1165 ISS 5 AG 30 1994 UMI

Patent Number	Serial Number	Issue Date
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4,935,534	07/327,079	06/19/90
4,935,538	07/041,509	06/19/90
4,935,539	07/339,471	06/19/90
4,935,543	07/353,755	06/19/90
4,935,546	07/107,188	06/19/90
4,935,556	07/356,476	06/19/90
4,935,560	07/467,291	06/19/90
4,935,561	06/740,180	06/19/90
4,935,568	07/279,616	06/19/90
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4,935,577	07/297,805	06/19/90
4,935,585	07/195,717	06/19/90
4,935,587	07/216,567	06/19/90
4,935,590	07/309,145	06/19/90
4,935,591	07/228,664	06/19/90
4,935,598	07/270,862	06/19/90
4,935,601	07/047,302	06/19/90
4,935,611	07/402,978	06/19/90
4,935,612	07/272,644	06/19/90
4,935,626	07/243,684	06/19/90
4,935,627	07/322,352	06/19/90
4,935,632	07/271,436	06/19/90
4,935,633	07/255,690	06/19/90
4,935,645	07/163,082	06/19/90
4,935,652	07/251,470	06/19/90
4,935,653	07/351,065	06/19/90
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4,935,655	07/264,009	06/19/90
4,935,667	06/743,251	06/19/90
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4,935,697	07/252,368	06/19/90
4,935,720	07/265,619	06/19/90
4,935,721	07/392,321	06/19/90
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4,935,727	07/226,040	06/19/90
4,935,728	07/122,951	06/19/90
4,935,736	07/146,110	06/19/90
4,935,741	07/272,966	06/19/90
4,935,744	07/335,915	06/19/90
4,935,748	07/352,053	06/19/90
4,935,749	07/230,665	06/19/90
4,935,767	07/256,853	06/19/90
4,935,776	07/261,416	06/19/90
4,935,781	07/120,595	06/19/90
4,935,789	07/306,706	06/19/90
4,935,805	07/332,876	06/19/90
4,935,813	07/173,681	06/19/90
4,935,817	07/289,331	06/19/90
4,935,818	07/347,666	06/19/90
4,935,836	07/341,363	06/19/90
4,935,838	07/236,483	06/19/90
4,935,839	07/206,487	06/19/90
4,935,845	07/217,249	06/19/90
4,935,847	07/370,927	06/19/90
4,935,851	07/119,643	06/19/90
4,935,854	07/436,736	06/19/90
4,935,857	07/396,643	06/19/90
4,935,874	07/148,564	06/19/90
4,935,883	07/194,888	06/19/90
4,935,888	07/191,431	06/19/90
4,935,905	07/389,539	06/19/90
4,935,906	07/141,693	06/19/90
4,935,908	07/412,602	06/19/90
4,935,911	07/196,613	06/19/90
4,935,926	07/420,662	06/19/90
4,935,938	07/271,255	06/19/90
4,935,943	06/645,652	06/19/90
4,935,945	07/338,338	06/19/90
4,935,950	07/277,148	06/19/90
4,935,952	07/218,638	06/19/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,453,424	06/445,002	06/12/84	11/29/82	06/28/94
4,487,061	06/450,597	12/11/84	12/17/82	06/16/94
4,490,900	06/343,845	01/01/85	01/29/82	06/16/94
4,499,777	06/471,769	02/19/85	03/03/83	06/30/94
4,507,716	06/482,196	03/26/85	04/05/83	06/27/94
4,525,168	06/574,323	06/25/85	01/27/84	06/03/94
4,526,542	06/577,211	07/02/85	02/06/84	06/16/94
4,530,342	06/540,633	07/23/85	10/11/83	06/27/94
4,556,114	06/480,251	12/03/85	03/30/83	06/16/94
4,562,974	06/522,301	01/07/86	07/20/83	06/16/94
4,584,587	06/528,898	04/22/86	09/02/83	06/27/94
4,700,999	06/894,472	10/20/87	08/04/86	06/08/94
4,740,937	06/814,676	04/26/88	12/30/85	06/13/94
4,744,524	07/032,538	05/17/88	04/01/87	06/27/94
4,833,641	07/043,549	05/23/89	04/28/87	06/16/94
4,853,854	06/813,401	08/01/89	12/26/85	06/30/94
4,854,037	07/128,105	08/08/89	12/03/87	06/16/94
4,856,036	07/224,121	08/08/89	06/20/88	06/03/94
4,860,031	06/654,098	08/22/89	09/24/84	06/03/94
4,866,849	07/065,446	09/19/89	06/23/87	06/13/94
4,879,966	06/880,368	11/14/89	06/30/86	05/10/94
4,884,898	07/306,588	12/05/89	02/06/89	06/13/94
4,890,576	07/108,061	01/02/90	10/14/87	04/21/94
4,919,739	07/157,836	04/24/90	03/03/88	06/27/94
4,920,897	07/344,654	05/01/90	04/28/89	06/27/94
4,926,596	07/294,023	05/22/90	01/06/89	06/30/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,666,003, Re. S.N. 08/270,256, July 5, 1994, Cl. 177/136, ON-BOARD LOAD CELL, Keith Reichow, Owner of Record: *Stress-Tek Inc., Renton, Wash.*, Attorney or Agent: Clark A. Puntigam, Ex. Gp.: 2108

4,701,510, Re. S.N. 08/266,440, June 28, 1994, Cl. 526, POLYCYCLOOLEFINS RESISTANT TO SOLVENTS, Robert J. Minchak et. al., Owner of Record: *B.F. Goodrich Company, New York, N.Y.*, Attorney or Agent: Richard J. Traverso, Ex. Gp.: 1505

4,856,805, Re. S.N. 08/253,626, June 3, 1994, Cl. 280, FOLDABLE TOW BAR, Darrel B. Davis, Owner of Record: *Inventor*, Attorney or Agent: Christopher Duffy, Ex. Gp.: 3106

5,021,145, Re. S.N. 08/240,156, May 10, 1994, Cl. 208/120, CATALYST, Andrew Paul Chapple, Owner of Record: *Unilever Patent Holdings B.V.*, Attorney or Agent: Paul N. Kokulis, Ex. Gp.: 1106

5,089,888, Re. S.N. 08/198,738, Feb. 18, 1994, Cl. 348/143, MOVING-IMAGE SIGNAL ENCODING APPARATUS WITH VARIABLY SELECTED QUANTIZATION STEP SIZE, Joel Walter Zdepski, et. al., Owner of Record: *Matsushita Electric Industrial Co. Ltd., Osaka, Japan*, Attorney or Agent: Israel Gopstein, Ex. Gp.: 2615

5,103,416, Re. S.N. 08/224,235, Apr. 7, 1994, Cl. 364/724.16, PROGRAMMABLE DIGITAL FILTER, Franco Cavallotti, et. al., Owner of Record: *SGS-Thomson Microelectronics S.R.L., Milano, Italy*, Attorney or Agent: James H. Morris, Ex. Gp.: 2306

5,111,488, Re. S.N. 08/238,822, May 5, 1994, Cl. 377/47, DOUBLING/DIVIDING DEVICE FOR A SERIES BIT FLOW, Philippe Chaisemartin, et. al., Owner of Record: *SGS-Thomson Microelectronics S.A., Gentilly, France*, Attorney or Agent: Robert Groover, Ex. Gp.: 2504

5,121,370, Re. S.N. 08/257,152, June 9,1994, Cl. 369/32, APPARATUS AND METHOD FOR ACCURATELY SCANNING A LIGHT BEAM ACROSS TRACKS OF A RECORDING MEDIUM, Shigenori Yanagi, Owner of Record: *Fujitsu Limited, Kawasaki-Shi, Japan*, Attorney or Agent: Richard A. Gollhofer, Ex. Gp.: 2502

5,122,112, Re. S.N. 08/259,590, June 15, 1994, Cl. 604/4, ANTIGEN-SPECIFIC REMOVAL OF CIRCULATING IMUNE COMPLEXES, Frank R. Jones, Owner of Record: *Imre Corporation, Seattle, Wash.*, Attorney or Agent: James M. Heslin, Ex. Gp.: 3301

5,149,958, Re. S.N. 08/260,574, June 16, 1994, Cl. 250/216, OPTOELECTRONIC DEVICE COMPONENT PACKAGE, Gary A. Hallenbeck, et. al., Owner of Record: *Eastman Kodak Company, Rochester, N.Y.*, Attorney or Agent: David A. Howley, Ex. Gp.: 2509

5,202,947, Re. S.N. 08/275,738, July 19, 1994, Cl. 385/123, OPTICAL FIBER COMPONENTS OPTICAL COUPLER AND METHOD OF PRODUCING THEREOF, Sumio Hoshino, et. al., Owner of Record: *Sumitomo Electric Industries, Ltd., Tokyo, Japan*, Attorney or Agent: Michelle N. Lester, Ex. Gp.: 2501

5,252,924, Re. S.N. 08/267,515, June 29, 1994, Cl. 324/320, MAGNETIC FIELD GENERATING APPARATUS FOR MRI, Hideya Sakurai, et. al., Owner of Record: *Hitachi Medical Corp., Sumitumo Special Metals Company Ltd., both of Osaka, Japan*, Attorney or Agent: R. J. Lasker, Ex. Gp.: 2607

5,267,547, Re. S.N. 08/270,778, July 5, 1994, Cl. 123/518, TANK INTERNAL PRESSURE-DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINES, Masataka Chikamatsu, et. al., Owner of Record: *Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Charles M. Marmelstein, Ex. Gp.: 3402

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,425,481, Reexam. No. 90/003,399, Apr. 15, 1994, Cl. 381/68.2, PROGRAMMABLE SIGNAL PROCESSING DEVICE, Stephan Mansgold, et. al., Owner of Record: *Inventors*, Attorney or Agent: William D. Bauer, Minnesota Mining and Manu. Co., St. Paul, Minn., Ex. Gp.: 2605, Requester: Topholm & Westermann, Vaerloese, Denmark

4,427,848, Reexam. No. 90/003,386, Mar. 24, 1994, Cl. 379/088, TELEPHONIC ALPHANUMERIC DATA TRANSMISSION SYSTEM, Peter J. Tsakanikas, Owner of Record: *Inventor, Ft. Lauderdale, Fla.*, Attorney or Agent: None, Ex. Gp.: 2601, Requester: Richard A. Steinberg, Sherman & Shalloway, Alexandria, Va.

4,605,992,Reexam. No. 90/003,398, Apr. 14, 1994, Cl. 362/147, LIGHTING FIXTURE INSULATION, Craig H. Cover, Owner of Record: *Inventor, Germantown, Pa.*, Attorney or Agent: Gregory T. Gore, Doylestown, Pa., Ex. Gp.: 3406, Requester: Glen Fortunado Hydramatic Park, Bethayres, Pa.

4,611,730, Reexam. No. 90/003,384, Mar. 31, 1994, Cl. 222/167, TONER REPLENISHING DEVICE, Masumi Ikesue, et. al., Owner of Record: *Ricoh Co., Ltd., Tokyo, Japan*, Attorney or Agent: Norman F. Oblon, Oblon, Spivak, McClelland, Maier & Neustadt, Arlington, Va., Ex. Gp.: 3104, Requester: International Communication Materials, Inc., Connesville, Pa.

4,648,388, Reexam. No. 90/003,381, Mar. 31, 1994, Cl. 606/061, APPARATUS AND METHOD FOR MAINTAINING VERTEBRAE IN A DESIRED RELATIONSHIP, Arthur D. Steffee, Owner of Record: *Acromed Corp., Cleveland, Ohio*, Attorney or Agent: Thomas L. Tarolli, Cleveland, Ohio, Ex. Gp.: 3309, Requester: Owner

4,714,680, Reexam. No. 90/003,400, Apr. 15, 1994, Cl. 435/240.25, HUMAN STEM CELLS, Curt I. Civin, Owner of Record: *Johns Hopkins University, Baltimore, Md.*, Attorney or Agent: Laurence H. Posorske, Banner, Birch, McKie & Beckett, Wash., D.C., Ex. Gp.: 1808, Requester: Owner

4,719,905, Reexam. No. 90/003,382, Mar. 31, 1994, Cl. 606/061, APPARATUS AND METHOD FOR MAINTAINING VERTIBRAE IN A DESIRED RELATIONSHIP, Arthur D. Steefee, Owner of Record: *Acromed Corp., Cleveland, Ohio*, Attorney or Agent: Thomas L. Tarolli, Cleveland, Ohio, Ex. Gp.: 3309, Requester: Owner

4,818,058, Reexam. No. 90/003,387, Mar. 14, 1994, Cl. 385/071, OPTICAL CONNECTOR, Rocco Bonanni, Owner of Record: *AT&T Bell Labs, Inc., Murray Hill, N.J.*, Attorney or Agent: L.H. Birnbaum, Murray Hill, N.J., Ex. Gp.: 2501, Requester: Owner

4,878,603, Reexam. No. 90/003,383, Mar. 31, 1994, Cl. 222/167, TONER REPLENISHING DEVICE, Masumi Ikesue, et. al., Owner of Record: *Ricoh Co., Ltd., Tokyo, Japan*, Attorney or Agent: Norman F. Oblon, Oblon, McClelland, Maier &

VOL 1165 ISS 5 AG 30 1994 UMI

Neustadt, Arlington, Va., Ex. Gp.: 3104, Requester: International Communication Materials, Inc., Connesville, Pa.

5,234,280, Reexam. No. 90/003,397, Apr. 5, 1994, Cl. 404/006, TRAFFIC CHANNELLING DEVICES, David A. Cowan, Owner of Record: *Plastic Safety Systems, Inc., Cleveland, Ohio,* Attorney or Agent: None, Ex. Gp.: 3506, Requester: Traffix Devices, Inc., San Clemente, Calif.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JULY 04, 1994
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
93,598	71/070,843	09/30/1913
93,605	71/071,170	09/30/1913
306,574	71/326,705	09/26/1933
306,576	71/323,153	09/26/1933
306,610	71/336,046	09/26/1933
306,659	71/337,066	09/26/1933
306,667	71/333,093	09/26/1933
306,689	71/335,782	09/26/1933
306,690	71/335,770	09/26/1933
306,697	71/337,683	09/26/1933
306,736	71/337,857	09/26/1933
306,788	71/338,396	09/26/1933
580,413	71/557,504	09/29/1953
580,416	71/569,515	09/29/1953
580,425	71/597,203	09/29/1953
580,438	71/607,895	09/29/1953
580,440	71/609,437	09/29/1953
580,443	71/611,604	09/29/1953
580,444	71/611,605	09/29/1953
580,448	71/613,146	09/29/1953
580,452	71/613,774	09/29/1953
580,455	71/614,131	09/29/1953
580,462	71/616,199	09/29/1953
580,468	71/618,520	09/29/1953
580,474	71/620,564	09/29/1953
580,482	71/622,824	09/29/1953
580,485	71/623,340	09/29/1953
580,488	71/624,006	09/29/1953
580,493	71/624,992	09/29/1953
580,498	71/625,555	09/29/1953
580,502	71/626,329	09/29/1953
580,505	71/626,973	09/29/1953
580,507	71/627,221	09/29/1953
580,510	71/627,519	09/29/1953
580,513	71/627,934	09/29/1953
580,515	71/628,005	09/29/1953
580,517	71/628,783	09/29/1953
580,519	71/629,087	09/29/1953
580,527	71/629,741	09/29/1953
580,528	71/630,035	09/29/1953
580,531	71/630,134	09/29/1953
580,533	71/630,710	09/29/1953
580,534	71/630,741	09/29/1953
580,536	71/631,214	09/29/1953
580,537	71/631,355	09/29/1953
580,539	71/632,284	09/29/1953
580,542	71/632,696	09/29/1953
580,548	71/633,529	09/29/1953
580,554	71/634,549	09/29/1953
580,556	71/634,744	09/29/1953
580,557	71/634,956	09/29/1953
580,558	71/635,324	09/29/1953
580,559	71/635,420	09/29/1953
580,561	71/635,559	09/29/1953
580,564	71/636,249	09/29/1953
580,566	71/636,497	09/29/1953
580,569	71/636,731	09/29/1953
580,574	71/636,916	09/29/1953
580,577	71/636,971	09/29/1953
580,599	71/639,200	09/29/1953
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580,611	71/640,759	09/29/1953
580,612	71/640,795	09/29/1953
580,613	71/641,032	09/29/1953
580,623	71/632,376	09/29/1953
580,626	71/613,746	09/29/1953
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580,633	71/628,015	09/29/1953
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968,954	72/444,168	09/25/1973
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968,957	72/296,086	09/25/1973
968,966	72/439,790	09/25/1973
968,968	72/400,053	09/25/1973
968,972	72/436,187	09/25/1973
968,973	72/415,747	09/25/1973
968,974	72/418,359	09/25/1973
968,975	72/430,892	09/25/1973
968,978	72/383,635	09/25/1973
968,979	72/386,402	09/25/1973
968,981	72/409,662	09/25/1973
968,983	72/414,419	09/25/1973
968,984	72/416,671	09/25/1973
968,988	72/425,829	09/25/1973
968,990	72/427,919	09/25/1973
968,991	72/428,622	09/25/1973
968,994	72/437,747	09/25/1973
968,999	72/438,441	09/25/1973
969,000	72/438,459	09/25/1973
969,001	72/438,534	09/25/1973
969,002	72/439,185	09/25/1973
969,003	72/439,251	09/25/1973
969,004	72/439,534	09/25/1973
969,005	72/440,520	09/25/1973
969,012	72/411,975	09/25/1973
969,015	72/420,001	09/25/1973
969,016	72/424,251	09/25/1973
969,017	72/424,255	09/25/1973
969,019	72/428,957	09/25/1973
969,022	72/396,381	09/25/1973
969,025	72/423,291	09/25/1973
969,028	72/361,319	09/25/1973
969,030	72/402,597	09/25/1973
969,031	72/403,907	09/25/1973
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969,053	72/432,032	09/25/1973
969,056	72/441,671	09/25/1973
969,057	72/441,866	09/25/1973
969,059	72/419,068	09/25/1973
969,063	72/425,195	09/25/1973
969,066	72/368,500	09/25/1973
969,074	72/429,557	09/25/1973
969,079	72/393,516	09/25/1973
969,083	72/415,876	09/25/1973
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969,104	72/441,999	09/25/1973
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969,108	72/442,095	09/25/1973
969,109	72/442,766	09/25/1973
969,115	72/382,701	09/25/1973
969,118	72/397,036	09/25/1973
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969,120	72/399,297	09/25/1973
969,121	72/399,935	09/25/1973
969,125	72/404,129	09/25/1973
969,131	72/410,166	09/25/1973
969,135	72/414,641	09/25/1973
969,137	72/416,617	09/25/1973
969,138	72/417,918	09/25/1973
969,139	72/418,562	09/25/1973
969,140	72/418,773	09/25/1973
969,142	72/419,652	09/25/1973
969,144	72/422,446	09/25/1973
969,145	72/424,008	09/25/1973
969,147	72/424,021	09/25/1973
969,154	72/426,263	09/25/1973
969,155	72/427,252	09/25/1973
969,156	72/428,047	09/25/1973
969,158	72/430,613	09/25/1973
969,159	72/432,656	09/25/1973
969,167	72/423,335	09/25/1973
969,171	72/433,781	09/25/1973
969,172	72/413,448	09/25/1973
969,173	72/413,449	09/25/1973
969,174	72/417,770	09/25/1973
969,178	72/420,086	09/25/1973
969,181	72/345,674	09/25/1973
969,185	72/405,236	09/25/1973
969,189	72/433,780	09/25/1973
969,210	72/438,237	09/25/1973
969,212	72/438,345	09/25/1973
969,215	72/441,237	09/25/1973
969,216	72/441,279	09/25/1973
969,218	72/441,831	09/25/1973
969,219	72/442,685	09/25/1973
969,224	72/426,152	09/25/1973
969,226	72/443,162	09/25/1973
969,232	72/439,641	09/25/1973
969,234	72/410,440	09/25/1973
969,236	72/438,316	09/25/1973
969,239	72/393,128	09/25/1973
969,243	72/402,885	09/25/1973
969,246	72/412,120	09/25/1973
969,253	72/426,902	09/25/1973
969,254	72/426,903	09/25/1973
969,255	72/426,904	09/25/1973
969,256	72/330,212	09/25/1973
969,263	72/423,694	09/25/1973
969,265	72/425,355	09/25/1973
969,266	72/426,029	09/25/1973
969,273	72/436,317	09/25/1973
969,278	72/447,646	09/25/1973
969,280	72/393,713	09/25/1973
969,282	72/399,805	09/25/1973
969,284	72/442,288	09/25/1973
969,285	72/442,289	09/25/1973
969,286	72/411,194	09/25/1973
969,290	72/350,350	09/25/1973
969,296	72/430,796	09/25/1973
969,297	72/430,803	09/25/1973
969,298	72/435,214	09/25/1973
969,306	72/440,537	09/25/1973
969,307	72/440,544	09/25/1973
969,308	72/440,548	09/25/1973
969,310	72/441,822	09/25/1973
969,311	72/441,823	09/25/1973
969,312	72/441,824	09/25/1973
969,314	72/442,335	09/25/1973
969,319	72/412,293	09/25/1973
969,321	72/438,176	09/25/1973
969,322	72/439,499	09/25/1973
969,323	72/441,579	09/25/1973
969,324	72/441,580	09/25/1973
969,325	72/356,848	09/25/1973
969,328	72/382,035	09/25/1973
969,332	72/401,736	09/25/1973
969,333	72/405,464	09/25/1973
969,334	72/406,331	09/25/1973
969,335	72/408,983	09/25/1973
969,341	72/417,142	09/25/1973
969,342	72/419,340	09/25/1973
969,343	72/420,625	09/25/1973
969,351	72/428,699	09/25/1973
969,352	72/432,884	09/25/1973
969,354	72/433,858	09/25/1973
969,355	72/433,862	09/25/1973
969,356	72/433,864	09/25/1973
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969,363	72/424,128	09/25/1973
969,365	72/432,863	09/25/1973
969,367	72/433,103	09/25/1973
969,371	72/383,970	09/25/1973
969,372	72/392,265	09/25/1973
969,374	72/402,709	09/25/1973
969,377	72/406,780	09/25/1973
969,381	72/423,430	09/25/1973
969,386	72/381,582	09/25/1973
969,387	72/406,303	09/25/1973
969,389	72/417,551	09/25/1973
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Erratum

In the "Registration to Practice" notice appearing at 1165 OG and TMOG 35 (August 9, 1994) the last sentence reads: "Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds should be furnished to the Director of Enrollment and Discipline on or before August 23, 1994". The date should have read *September 23, 1994*, and not "August 23, 1994".

August 11, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceeding sent by registered mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Mr. Sign Franchising Corp., Bohemia, N.Y., Reg. No. 1,471,774 for the mark MR. SIGN, Canc. No. 21,450

Prevent Chemicals Ltd., New York, N.Y., Reg. No. 1,533,833 for the mark REMOVZ-IT and DESIGN, Canc. No. 21,496.

VOL 1165 ISS 5 AG 30 1994 UMI

Tele-Data Advanced Information Systems, Inc., Reg. No. 1,225,351 for the mark TELE-DATA, Canc. No. 22,017.

Jim Rekoutis dba Snackmasters Marketing, San Jose, Calif., Reg. No. 1,595,595 for the mark TURKEY JERSEY and DESIGN, Canc. No. 22,146.

Rudolph International, Inc., Brea, calif., Reg. No. 1,734,277 for the mark GRINDER, Canc. No. 22,164.

Medelson-Zeller Co., Inc., Fresno, Calif., Reg. No. 430,329 for the mark GLOBAL, Canc. No. 22,294.

Clifford M. Larson, Hoffman Estates, Ill., Reg. No. 1,488,183 for the mark THE EDGE, Canc. No. 22,303.

Hi-Tek Corporation, Garden Grove, Calif., Reg. No. 1,214,709 for the mark HI-TEK, Canc. No. 22,363.

Star Television Network, Inc., Orlando, Fla., Reg. No. 1,535,819 for the mark STAR TELEVISION NETWORK, Canc. No. 22,391.

Legkeepers, Inc., Carrollton, Tex., Reg. No. 1,545,434 for the mark FOR YOUR LEGS ONLY, Canc. No. 22,448.

B. Altman & Co., New York, N.Y., Reg. No. 1,553,019 for the mark SNOW BABY, Canc. No. 22,462.

Compagnie des Cristalleries de Baccarat, France, Reg. No. 1,547,625 for the mark BACCARAT and DESIGN, Canc. No. 22,492.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

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Cosmopolitan Publications, Inc., Chicago, Ill., Reg. No. 1,510,092, for the mark "BUSINESS LINES", Canc. No. 21,641.

United Fidelity Life Insurance Company, Dallas Tex., Reg. No. 978,343 for the mark "CLASS" and Design, Canc. No. 21,856.

Ice Cold Auto Air of Clearwater, Inc., Clearwater, Fla., Reg. No. 1,636,346, for the mark "ICE COLD AIR" and 1,636,346 for the mark "ICE COLD AUTO AIR", Canc. No. 21,900.

Tele-Data Advanced Information Systems, Inc., Miami, Fla., Reg. No. 1,225,351, for the mark "TELE-DATA", Canc. No. 22,017.

Foremost Dairies, Inc., La Jolla, Calif., Reg. Nos. 614,915 and 1,106,220, for the mark "DAIRYLAND", Canc. No. 22,332.

Popper-Strong Communications, Inc., Mamaroneck, N.Y., Reg. No. 1,334,903, for the mark "WOMEN'S NEWS" (Stylized), Canc. No. 22,411.

Exports International, Inc., Virginia Beach, Va., Reg. No. 1,654,357, for the mark "4 SAIL" and Design, Canc. No. 22,519.

Kirby & Wilson Manufacturing Inc., Mississauga, Ontario, Canada, Reg. No. 1,538,953, for the mark "MR. SHAVER", Canc. No. 22,520.

Interstyle, Inc., St. Louis, Mo., Reg. No. 1,290,236, for the mark "CHAMELEON" and Design, Canc. No. 22,525.

Avicenna Corp., Tampa, Fla., Reg. No. 1,666,015, for the mark "TROPICAL GROVE" and 1,655,723 for the mark "TROPIC FRUIT GROVES" and Design, Canc. No. 22,629.

Topaz Productions, Inc., Orlando, Fla., Reg. No. 1,526,860, for the mark "AWARENESS MAGAZINE", Canc. No. 22,650.

Kansas Microtech, Inc., Chanute, Kans., Reg. No. 1,552,706, for the mark "CAR COP" and Design, Canc. No. 22,699.

Michael Machat, New York, N.Y., Reg. No. 1,626,211, for the mark "VAMPIRE", Canc. No. 22,715.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Ranch House of America, Inc., Fort Lauderdale, Fla., Reg. No. 978,773 for the mark "RANCH HOUSE", Canc. No. 22,358.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
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TABLE OF CONTENTS

Page
General 113
Patents 118
Trademarks 124

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VOL
1165
ISS
5
AG
30
1994
UMI

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Law Office 5	308-7185
Law Office 6	308-7184
Law Office 7	308-7187
Law Office 8	308-7188
Law Office 9	308-7189
Law Office 10	308-7190
Law Office 11	308-7191

VOL
1165
ISS
5
AG
30
1994
UMI

Law Office 12 308-7192
Law Office 13 308-7193
Law Office 14 308-7194
Law Office 15 308-7195
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Patent Examining Group 1100 305-3599
Patent Examining Group 1200 308-4556
Patent Examining Group 1300 305-3601
Patent Examining Group 1500 305-3596
Patent Examining Group 1800 305-3014
Patent Examining Group 2100 305-3431
Patent Examining Group 2200 305-3603
Patent Examining Group 2300 305-9564
Patent Examining Group 2400 305-3588
Patent Examining Group 2500 305-3594
Patent Examining Group 2600 305-9508
Patent Examining Group 2900 305-3603
Patent Examining Group 3100 305-7687
Patent Examining Group 3200 305-3579
Patent Examining Group 3300 305-3590
Patent Examining Group 3400 305-3463
Patent Examining Group 3500 305-3597
Patent Maintenance Fee Information 308-5077
Public Service Branch 305-7786
Refunds 305-8007
Scientific & Technical Information Center 308-0989
Search & Information Resources Administration 557-0668
Special Processing and Correspondence Branch 305-9863
Systems Quality & Enhancement Division 308-0493

Fees

Fee Rates 308-HELP/4357
Fee Receipts 308-0904
(FAX) 308-3491

General Information 308-HELP/4357
Refunds 305-4229
(FAX) 305-8007
(TDD) 308-6695

File Histories

Self-service Copies 308-2733
PTO-provided Copies 308-9726

File Information Unit 308-2733

Forms, Patent and Trademark 308-HELP/4357
(FAX) 305-7786

Help with Service Problems (Unsuccessfully resolved through normal channels) 308-HELP/4357
(FAX) 305-7786

Information, General

PTO's Automated INFOrmation Lines 557-INFO/4636

Journal of the Patent and Trademark Office Society (JPTOS)

Address Questions and Correspondence to:

JPTOS
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Arlington, Va. 22202

Library, PTO
(See Scientific and Technical Information Center)

Official Gazette (Government Printing Office)

Distribution and/or Subscription Problems ..... (202) 512-2303

Official Gazette, Notices 305-8594

Patents Available for Licensing or Sale 308-0402

Patent and Trademark Depository Library Program (PTDLP) 308-3924

Procurement 305-8014

Telecommunications Device for the Deaf (TDD) 305-8018

Project XL 305-8341

Telecommunications Device for the Deaf (TDD) 305-8240

Public Affairs 305-8341

Address Mail to:

Office of Public Affairs
Crystal Park 1, Suite 208B
Patent and Trademark Office
Washington, D.C. 20231

Public Search Facilities

Patents (Crystal Plaza 3, Rm. 1A03) 308-0595
(Hours: Weekdays, 8:00 a.m. to 8:00 p.m., EST/EDT)
Patent Image Retrieval (Crystal Mall 1, Rm. 1A02) 308-6001
(Hours: Weekdays, 8:00 a.m. to 8:00 p.m., EST/EDT)
Patent Assignments (Crystal Plaza 3, Rm. 2C03) 308-2768
(Hours: Weekdays, 8:30 a.m. to 5:00 p.m., EST/EDT)
Trademarks (South Tower, Rm. 2B30) 308-9800
(Hours: Weekdays, 8:00 a.m. to 5:30 p.m., EST/EDT)
Trademark Assignments (South Tower, Rm. 2B10) 308-9855
(Hours: Weekdays, 8:00 a.m. to 5:30 p.m., EST/EDT)

Public Information Service

For help with service problems unsuccessfully resolved through normal channels 308-HELP/4357
(FAX) 305-7786

For general information on how to file for a patent or trademark:
PTO's Automated Information Lines 557-INFO/4636
Patents (Message 20)
Trademarks (Message 40)

Telecommunications Device for the Deaf (TDD) 305-7785

Public Service Windows

Patent Search Room 308-1057
Trademark Search Library 308-9811

Publications, General Information 557-INFO/4636

Reasonable Accommodation for the Disabled, Requests for 305-8292

Scientific and Technical Information Center

General 308-0810
Electrical/Mechanical Reference Assistance 308-0810
Chemical/Biotech Reference Assistance 308-4506

Solicitor 305-9035

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P.O. Box 15667

VOL
1165
ISS
5
AG
30
1994
UMI

Arlington, Va. 22215

Status, Patent or Trademark

Patent Applications ..... Appropriate Examining Group or 308-1844

Patents 308-1844
Trademark Applications 305-8747
Trademark Registered Files 305-8747

Telecommunication Devices for the Deaf (TDD)

Office of Civil Rights 305-8059
Office of Finance 308-6695
Office of Human Resources 308-6645
Office of Procurement 305-8018
Office of Public Records 308-7172
Project XL 305-8341
Public Service Branch 305-7785

Training

Employee/Career Development 305-8431
Public Users of Automated Systems 308-3924

Patents

Advance Orders of Patent Soft Copies, Non-Receipt 305-8237

Amendments

General Information 308-HELP/4357
Specific Pending Applications ..... Appropriate Examining Group

Address Amendments After Final Rejection to:

Commissioner of Patents and Trademarks
Box AF
Washington, D.C. 20231

Address Rule 312 Amendments to:

Commissioner of Patents and Trademarks
Box Issue Fee
Washington, D.C. 20231

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Commissioner of Patents and Trademarks
Box Non-Fee Amendment
Washington, D.C. 20231

Amino Acid Sequence Information Submissions (37 C.F.R. 1.821-1.825)

Sequence Rules 308-1123
CRF Submissions (STIC) 308-4212
PatentIn Program Support (S&IRA) 308-6856

Applications

Address New Patent Applications to:

Commissioner of Patents and Trademarks
Box Patent Application
Washington, D.C. 20231

Applications for Admission to the PTO
Registration Examination 308-9618

Address Mail to:

Commissioner of Patents and Trademarks
Box OED
Washington, D.C. 20231

Examination ..... Appropriate Examining Group
General Information 308-HELP/4357
Patent Cooperation Treaty (PCT) - General Information 305-3257

Post-Examination 305-8283
Pre-Examination 308-0921
Re-Examination - General Information 308-1203
Status Inquiry of Pending Applications ..... Appropriate Examining Group or 308-7004
Statutory Invention Registrations (SIRs) ..... Group 2200 308-0766

Assignments

Changes Affecting Title of Pending Applications and Patented Files 308-9723
Information Concerning Pending Patent Assignments 308-9723
Recording Assignments 308-9723
Refund and Status Requests (Only) ..... (FAX) 308-7124
Search Information 308-2768

Attorney Roster File, on Diskette or Tape 308-0555
on CD-ROM 308-0322

Attorney's Window
(See Public Service Window - Patent Search Room)
(See Customer Window - Mail Room)

Attorneys/Agents Registered to Practice Before PTO 308-9617

Attorneys, Conduct of 308-9618

Cashier's Window (Patent Search Room) 308-0649

CASSIS/CD-ROM (Classification and Search Support Information System/Compact Disc - Read Only Memory)

General Information 308-0322
Problem Resolution for Commercial Subscribers 308-0322
Subscriptions 308-0322

CD-ROM Products 308-0322
(Also see CASSIS/CD-ROM)

Certificates of Correction 305-8309

Certified Copies of Patent Documents 308-9726

Change of Address

Pending Patent Applications ..... Appropriate Examining Group
Issued Patents for Maintenance Fee Notification 308-5069

Classification Definitions, Changes and Reclassification Orders (Sale of) 305-6101

Classification of Published Patents 305-5951

Complaints

Service 308-HELP/4357
(FAX) 305-7786
Examining Groups ..... Appropriate Examining Group Director

Copies

Abandoned File Histories
Local Access for Public Copying 308-2733
PTO-provided Copies 308-9726
Abstracts of Title* 308-9726
(FAX) 308-9759
Advance Orders, Non-Receipt (Patent Copies) 305-8237
Applications As Filed 308-9726
File Wrapper and Contents 308-9726
Certified Copies of Patent Documents 308-9726
(FAX) 308-9759
Certified Copies of Patent Assignment Documents* 308-9726
(FAX) 308-9759
Electronic Ordering Service (EOS) 305-8716
Problems 305-8716
Foreign Patents 308-1076
Patented File Histories
Local Access for Public Copying 308-2733
PTO-provided Copies 308-9726
U.S. Patents 305-8716

VOL
1165
ISS
5
AG
30
1994
UMI

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Washington, D.C. 20231

Customer Window (Mail Room - Crystal Plaza 2, Rm. 1B03)

(Hours: Weekdays, 8:30 a.m. to 12:00 a.m., EST/EDT) 308-6472

Data Base Administration 308-0555

Depository Libraries, Patent and Trademark (PTDLs)
(See Patent and Trademark Depository Library Program)

Disclaimers 305-8408

Disclosure Document Program 308-0995

Drawing Corrections 305-8404

Duty of Disclosure Matters 305-9282

Examining Groups

Chemical Examining Groups

Group 1100 308-0661
(FAX) 305-3599
Group 1200 308-1235
(FAX) 308-4556
Group 1300 308-0651
(FAX) 305-3601
Group 1500 308-2351
(FAX) 305-3596
Group 1800 308-0196
(FAX) 305-3014

Electrical Examining Groups

Group 2100 308-1782
(FAX) 305-3431
Group 2200 308-0511
(FAX) 305-3603
Group 2300 305-9600
(FAX) 305-9564
Group 2400 308-0771
(FAX) 305-3588
Group 2500 308-0956
(FAX) 305-3594
Group 2600 305-4700
(FAX) 305-9508
Group 2900 305-3291
(FAX) 305-3603

Mechanical Examining Groups

Group 3100 308-1113
(FAX) 305-7687
Group 3200 308-1148
(FAX) 305-3579
Group 3300 308-0858
(FAX) 305-3590
Group 3400 308-0861
(FAX) 305-3463
Group 3500 308-2168
(FAX) 305-3597

Fees

Fee Rates 308-HELP/4357
Fee Receipts 308-0904
(FAX) 308-3491
General Information 308-HELP/4357
Refunds 305-4229
(FAX) 305-8007
(TDD) 308-6695

File Wrapper Continuation Applications 308-1202

Address Mail to:

Commissioner of Patents and Trademarks
Box FWC
Washington, D.C. 20231

Files (File Information)

Abandoned File Histories 308-2733
Patented File Histories 308-2733
Pending Patent Applications 308-2733

Filing Receipt Corrections 308-3610

Foreign Patents

Copies 308-1076
Reference assistance
(Hours: Weekdays, 8:45 a.m. to 4:45 p.m., EST/EDT) 308-1076
Translations 308-0881

Forms

Patents 308-HELP/4357
(FAX) 305-7786
PCT (Help Desk) 308-4129

Information Products Development 308-0322

Inspection of Patent Files 308-2733

Interferences 603-3361

Address Mail to:

Commissioner of Patents and Trademarks
Box Interference
Washington, D.C. 20231

Inventors
Correction of Error in Joining Inventors
Applications ..... Appropriate Examiner or 305-9282
Patents ..... Appropriate Group Art Unit Supervisor
Deceased, Filing Applications for 305-9282

Issue Fee

Address Mail to:

Commissioner of Patents and Trademarks
Box Issue Fee
Washington, D.C. 20231

Balance of Issue Fee Transmittals 305-8495
Issue Fee Receipt, Incorrect 305-8495
Issue Fee Receipt, Non-Receipt 305-8495
Lapse Notices 305-8495

License (Request to file patent application abroad) 308-1722

Maintenance Fees 308-5068
or
308-5069
(FAX) 308-5077

Address Mail to:

Commissioner of Patents and Trademarks
Box M Fee
Washington, D.C. 20231

Manual of Classification

General Information 305-6101
Index to 305-6101

Manual, Sale of

VOL
1165
ISS
5
AG
30
1994
UMI

Address Inquiries to:

Superintendent of Documents
Government Printing Office
Washington, D.C. 20402
(202) 783-3238

Subclass Listing, Sale of 308-0322
Subclass Subscriptions, Sale of 305-8594

Manual of Patent Examining Procedure (MPEP) 305-8813

Manual, Sale of or Subscription to

Address Inquiries for Printed Manual to:

Superintendent of Documents
Government Printing Office
Washington, DC 20402
(202) 783-3238

Sale of or Subscription to MPEP on Diskette or CD-ROM 308-0322

Notice of Allowance ..... Appropriate Examining Group

Notice of Appeal

Board of Patent Appeals and Interferences 603-3361
Court of Appeals for the Federal Circuit (CAFC) 305-9035

Nucleic Acid Information Submissions (37 C.F.R. 1.821-1.825)

Sequence Rules 308-1123
CRF Submissions (STIC) 308-4212
PatentIn Program Support (S&IRA) 308-6856

Official Gazette Subscriptions (Government Printing Office) ..... (202) 783-3238

Official Searches (for lost patent or trademark files) 308-1844

Patent and Trademark Depository Library Program (PTDLP) 308-3924

For contact information on them see *Official Gazette* issues (Notices section) or call the PTDLP.

Patent Cooperation Treaty (PCT) 305-3257
(FAX) 305-3230

Address Mail to:

Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Patent Documentation Society (PDS) 305-5085

Patent Grant, Non-Receipt 305-8203

Patent Index

Index Support 305-5951

Use of Index 305-5951

Patent Products on Magnetic Tape 308-0555

Patent Term Extension 305-9282

Patented Files 308-2733

Patent-In Program 308-6856

Petitions

Abandonment, Withdrawal of
Examiner's Holding of ..... Appropriate Examining Group Director

Access to Application Files ..... Office of Special Program Examination 305-9282

Amendment
After Payment of Issue Fee ..... Appropriate Examining Group Director

Refusal to Enter an Amendment ..... Appropriate Examining Group Director

Appeals

Reinstate, Appeal Dismissed by Group ..... Appropriate Examining Group Director

Application
Acceptance of When
Filed by Other Than Inventor ..... Office of Special Program Examination 305-9282

Assignments and Issuance of
Patents to Assignees ..... Office of Petitions 305-9282

Attorney, Withdrawal of
During Prosecution ..... Appropriate Examining Group Director

Attorney, Withdrawal of in Patented Cases ..... Office of Public Records 308-7112

Certificates of Correction,
Refusal to Issue ..... Office of Petitions 305-0292

Concurrent Ex Parte and/or
Inter Partes Proceedings ..... Board of Patent Appeals and Interferences 603-3300

Disclaimers ..... Office of Petitions 305-9282

Divisional Reissue ..... Office of Special Program Examination 305-9282

Examiner's Requirements or Holdings,
Review of ..... Appropriate Examining Group Director

Questions in Cases Before
the CAFC ..... Solicitor 305-9035

Express Abandonment After
Issue Fee Payment ..... Office of Petitions 305-9282

Expunge Papers ..... Office of Special Program Examination 305-9282

Extensions of Time

In Court Matters ..... Solicitor 305-9035

During Pendency in Group ..... Appropriate Examining Group Director

During Pendency at
Board of Patent Appeals and
Interferences ..... Board of Patent Appeals and Interferences 603-3361

To Appeal to the CAFC or
Commence a Civil Action ..... Solicitor 305-9035

Filing Date ..... Office of Special Program Examination 305-9282

VOL
1165
ISS
5
AG
30
1994
UMI

Final Rejection, Premature ..... Appropriate Examining Group Director

Institute an Interference ..... Appropriate Examining Group Director

Access to Applications, Unopened Preliminary Statements ..... Board of Patent Appeals and Interferences 603-3300

From Action by a Primary Examiner or an Interlocutory Action ..... Board of Patent Appeals and Interferences 603-3300

Late Settlement Papers ..... Board of Patent Appeals and Interferences 603-3300

Priority Papers in Patent Application ..... Board of Patent Appeals and Interferences 603-3300

Reconsideration of Decision on Motion ..... Board of Patent Appeals and Interferences 603-3300

Issuance, Defer ..... Office of Petitions 305-9282

Late Payment Issue Fee ..... Office of Petitions 305-9282

Maintenance Fee ..... Office of Petitions 305-9282

License to File in Foreign Countries ..... Director, Group 2200 308-1721

Limited Recognition to Prosecute Specified Application(s) ..... Committee on Enrollment 308-9618

Make Special Prospective Manufacture, Infringement ..... Office of Special Program Examination 305-9282

Within Jurisdiction of Board of Patent Appeals and Interferences ..... Board of Patent Appeals and Interferences 603-3361

Applicant's Age or Health, Environmental Quality Program, Special Examining Procedure (accelerated examination), Energy Program, Recombinant DNA, Superconductivity ..... Appropriate Examining Group Director

Petitions, Office of ..... 305-9282 (FAX) 308-6916

Priority Papers, Return of ..... Appropriate Examining Group Director

Priority Papers, After Payment of Issue Fee ..... Office of Petitions 305-9282

Public Use Proceedings ..... Office of Special Program Examination 305-9282

Rehearing, Reconsideration, or Modification of Board Decision ..... Board of Patent Appeals and Interferences 603-3361

Rejection, Premature Final ..... Appropriate Examining Group Director

Reopen Prosecution After Decision by Board of Patent Appeals and Interferences ..... Appropriate Examining Group Director

Restriction Requirement ..... Appropriate Examining Group Director

Revive an Abandoned Application ..... Office of Petitions 305-9282

Statutory Invention Registrations (SIRs) ..... Group 2200 308-0766

Supervisory Authority of Commissioner, Invoke in Matters Concerning the Office of Public Services and Administration ..... Office of Petitions 305-9282

Supervisory Authority of Commissioner, Invoke in Matters Concerning the Patent Examining Operation ..... Office of Petitions 305-9282

Suspension of Action, Second or Subsequent ..... Appropriate Examining Group Director

Suspension of Rules Relating to the Examining of Patent Applications ..... Office of Petitions 305-9282

Suspension of Rules in Patent Matters Administered by the Office of Public Services and Administration ..... Office of Petitions 305-9282

Withdraw from Issue ..... Office of Petitions 305-9282

Protest Against Pending Patent Applications 305-9282

Public Service Branch ..... 308-HELP/4357 (FAX) 305-7786

Telecommunication Device for the Deaf (TDD) 305-7785

Public Service Window (Patent Search Room) 308-1057

Reclassification Orders, Sale of 305-6101

Reconstruction of Files 308-9726

Record Room (Patented and Abandoned Files) (See Files - File Information Unit)

Reexaminations

Address Mail to:

Commissioner of Patents and Trademarks
Box Reexam
Washington, D.C. 20231

General Questions 308-1202

Reexamination Examiners ..... Appropriate Examining Group

Reexamination Petitions ..... Office of Special Program Examination 305-9282

Reexamination Pre-processing 308-1202

Refunds (See Fees)

Reissues

VOL
1165
ISS
5
AG
30
1994
UMI

Divisional ..... Office of Special Program Examination 305-9282

Specific Applications ..... Appropriate Examining Group

Address Reissue Applications for Patents Involved in Litigation and Subsequently Filed Related Papers to:

Commissioner of Patents and Trademarks
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Washington, D.C. 20231

Search Facility, Patent Image Retrieval (Crystal Mall 1, Rm. 1A02)

(Hours: Weekdays, 8:00 a.m. to 8:00 p.m., EST/EDT) 308-6001

Search Room, Patent(Crystal Plaza 3, Rm. 1A03)

Reference to Patents and Indices 308-0595

(Hours: Weekdays, 8:00 a.m. to 8:00 p.m., EST/EDT)

Search Room, Patent Assignments(Crystal Plaza 3, Rm. 2C03)

(Hours: Weekdays, 8:30 a.m. to 5:00 p.m., EST/EDT) 308-2768

Secrecy Orders 308-1720

Sequence Information Submissions (37 C.F.R. 1.821-1.825)

Sequence Rules 308-1123
CRF Submissions (STIC) 308-4212
PatentIn Program Support (S&IRA) 308-6856

Simultaneous Issuances 305-8594

Status of Patent Files in Official Search Status 308-1844

Statutory Invention Registrations (SIRs)

General Questions 308-0766
SIR Examiners 308-0766

Subclass Listings 308-0322

Subscription Information

CD-ROM Products 308-0322
MPEP on CD-ROM or Diskette 308-0322
MPEP (Paper Version) ..... Government Printing Office (202) 783-3238
Official Gazette ..... Government Printing Office (202) 783-3238
Patent and Trademark Office Notices ..... Government Printing Office (202) 783-3238
Patent Copy Sales 305-8716
Subclass 305-8594

Technology Assessment and Forecast Program
Patent Statistics 308-0322

Terminal Disclaimers

General 305-8408

To Overcome Obvious-Type Double Patenting Rejection ..... Appropriate Examining Group

Training for Public Users, Automated Search Systems 308-3924

Translations (See Foreign Patents)

Trademarks

Affidavits

Of Use (Section 8) ..... Post-Registration Team 308-9500

Of Incontestability (Section 15) ..... Post-Registration Team 308-9500

Correction to Registration (Section 7) ..... Post-Registration Team 308-9500

Amendments

After Publication or Allowance ..... Quality Review Clerk 308-9400 (Exts. 37 & 38)
After Registration ..... Post-Registration Team 308-9500
General Information 308-HELP/4357
Specific Pending Application ..... Appropriate Law Office

Appeals

Trademark Trial and Appeal Board (TTAB)
Final Refusal by Examining Attorney 308-9300

Applications

Address New Trademark Applications to:

Assistant Commissioner for Trademarks
Box Trademark Application
2900 Crystal Drive
Arlington, Va. 22202-3513

Examination ..... Appropriate Law Office

General Information 308-HELP/4357

Informal Applications ..... 308-9400 (Ext. 10)
Post-Examination 308-9400

Power of Attorney
Re Pending Applications ..... Appropriate Law Office
Pre-Examination ..... 308-9400 (Ext. 10)

Status of Pending Applications 305-8748
Status of Registered Files 305-8748

Assignments

Changes Affecting Title of Pending Application Files and of Registered Files 308-9723
Information Concerning Pending Trademark Assignments 308-9723
Refund and Status Requests (Only) ..... (FAX) 308-7124
Search Information 308-9855

Cancellations Registration ..... Trademark Trial and Appeal Board 308-9300

Voluntary Surrender of Registration ..... Post-Registration Team 308-9500

Cashier's Window (Trademark Search Library) 308-9810

CD-ROM Products 308-0322

Certificates of Correction ..... 308-9500 (Ext. 47)

Certified Copies of Trademark Documents ..... 308-9726 (FAX) 308-9759

Classification of Goods and Services Specific Application ..... Appropriate Law Office

General Information 308-9000

Complaints (Services) ..... 308-HELP/4357 (FAX) 305-7786

VOL
1165
ISS
5
AG
30
1994
UMI

Concurrent Use Proceeding ..... Trademark Trial and Appeal Board 308-9300

Copies

Certified Copies of Assignment Documents* 308-9726
Certificates of Non-Registration for Kuwait 308-9500
Certified Copies of Registrations (Status Copies) 308-9726
Certified Copies of Trademark Registrations 308-9726
Certified Copies of Trademark Related Documents* 308-9726
(FAX) 308-9759
Electronic Ordering Service (Trademark Copy Sales) 308-8716
Problems 305-8716

Address Requests for the Electronic Ordering Service to:

Commissioner of Patents and Trademarks
Box 11
Washington, D.C. 20231

Pending Application Files* 308-9726
Printed Copies of Registrations (Trademark Copy Sales) 305-8716
Status Copies of Registrations 308-9726
Title Records (for applications and registrations)

*Address Orders for Certified Copies of These Products to:

Commissioner of Patents and Trademarks
Box 10
Washington, D.C. 20231

Corrections

Pending Applications ..... Appropriate Law Office
Registrations 308-9500

Depository Libraries, Patent and Trademark (PTDLs)
(See Patent and Trademark Depository Library Program)

Fees

Fee Rates 308-HELP/4357
Fee Receipts 308-0904
(FAX) 308-3491
General Information 308-HELP/4357
Refunds 305-4229
(FAX) 305-8007
(TDD) 308-6695

Files

Pending Trademark Applications ..... Appropriate Law Office

Filing Receipts

Corrections 308-9400
(Exts. 44, 45, 47, & 48)
Specific Information Regarding Filing Receipt 308-9400
(Exts. 45, 46, 47, 48, & 49)

Forms, Trademark 308-9000
or
308 -HELP/4357
(FAX) 305-7786

Input Records and Control 308-9730

Law Offices

(No Law Offices 1 and 2)

Law Office 3 308-9103
(FAX) 308-7182
Law Office 4 308-9104
(FAX) 308-7186
Law Office 5 308-9105
(FAX) 308-7185
Law Office 6 308-9106

Law Office 7 ..... (FAX) 308-7184
308-9107
Law Office 8 ..... (FAX) 308-7187
308-9108
Law Office 9 ..... (FAX) 308-7188
308-9109
Law Office 10 ..... (FAX) 308-7189
308-9110
Law Office 11 ..... (FAX) 308-7190
308-9111
Law Office 12 ..... (FAX) 308-7191
308-9112
Law Office 13 ..... (FAX) 308-7192
308-9113
Law Office 14 ..... (FAX) 308-7193
308-9114
Law Office 15 ..... (FAX) 308-7194
308-9115
(FAX) 308-7195

Mail

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2900 Crystal Drive
Arlington, Va. 22202-3513

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Box 5
2900 Crystal Drive
Arlington, Va. 22202-3513

New Certificates 308-9400

Official Gazette Subscriptions (Government Printing Office) ..... (202) 783-3238

Oppositions 308-9300

Patent and Trademark Depository Library Program (PTDLP) 308-3924

For contact information on them see Official Gazette issues (Notices section) or call the PTDLP.

Petitions

Abandoned Application, To Revive ..... Paralegal Specialist 308-9330 (Ext. 69)

Application Special, To Make ..... Petitions and Classification Attorney 308-9000 (Ext. 29)

All Other Trademark ..... Trademark Legal Administrator 308-9464

Post-Registration Information 308-9500

Protests, Letters of ..... Petitions and Classification Attorney 308-9000 (Ext. 29)

Public Information Service 308-HELP/4357
(FAX) 305-7786
Telecommunications Device for the Deaf (TDD) 305-7785

Public Service Window (Trademark Search Library) 308-9811

Reconstruction of Files 308-9400
(Exts. 37 & 38)

Refunds (See Fees)

Renewal, Registrations 308-9500

Search Library (South Tower, Rm. 2B30)

VOL
1165
ISS
5
AG
30
1994
UMI

(Hours: Weekdays, 8:00 a.m. to 5:30 p.m., EST/EDT)..... 308-9800

Search Room, Trademark Assignment (South Tower, Rm. 2B10)

(Hours: Weekdays, 8:00 a.m. to 5:30 p.m., EST/EDT)..... 308-9855

Status of Registrations and Applications via Automated Voice System
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Subscription Information

Official Gazette..... Government Printing Office (202) 783-3238

Trademark Manual of Examining Procedure (TMEP)..... 308-9000 (Exts. 43, 44 & 46)

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Director's Office
Center for Patent and Trademark Information
Crystal Plaza 3, Room 2C04
U.S. Patent and Trademark Office
Washington, D.C. 20231

Certificates of Correction For Week of August 30, 1994

B1 4,307,320	5,084,232	5,173,341	5,210,355
B1 4,845,027	5,084,441	5,174,959	5,212,153
P. 8,404	5,086,226	5,175,009	5,212,620
P. 8,451	5,087,775	5,176,164	5,215,569
Re. 34,353	5,087,927	5,176,401	5,216,084
Re. 34,363	5,088,291	5,179,722	5,217,506
Re. 34,547	5,091,000	5,180,078	5,217,636
D. 332,187	5,091,244	5,180,624	5,218,055
D. 339,329	5,092,920	5,181,076	5,219,120
D. 343,081	5,093,758	5,182,549	5,219,178
D. 345,300	5,100,917	5,183,630	5,219,764
D. 345,733	5,102,867	5,183,881	5,219,867
D. 346,196	5,102,997	5,183,891	5,220,007
D. 347,000	5,105,213	5,184,017	5,220,063
D. 347,298	5,109,766	5,185,037	5,220,660
D. 347,676	5,110,964	5,187,289	5,221,476
4,964,661	5,110,966	5,189,178	5,223,541
4,997,762	5,116,821	5,189,379	5,223,741
5,007,782	5,118,029	5,190,133	5,223,934
5,008,887	5,118,801	5,190,306	5 224,079
5,015,958	5,120,556	5,190,898	5,224,997
5,016,024	5,123,671	5,191,742	5,225,174
5,028,607	5,125,956	5,192,327	5,225,414
5,043,431	5,127,158	5,193,901	5,225,471
5,053,060	5,128,215	5,194,393	5,225,513
5,053,452	5,128,467	5,195,401	5,225,715
5,054,765	5,130,603	5,198,592	5,226,089
5,056,794	5,134,152	5,199,273	5,226,143
5,057,345	5,139,052	5,199,378	5,226,672
5,065,030	5,141,739	5,201,954	5,227,927
5,068,340	5,142,055	5,202,336	5,229,858
5,070,142	5,147,431	5,203,712	5,231,583
5,073,234	5,151,221	5,204,193	5,233,172
5,079,111	5,165,822	5,205,038	5,233,489
5,082,783	5,166,157	5,206,719	5,234,260
5,083,436	5,172,738	5,210,285	5,234,431
5,234,999	5,250,099	5,263,850	5,275,868
5,235,233	5,250,524	5,263,933	5,276,405
5,236,135	5,250,996	5,264,313	5,276,418
5,236,287	5,252,557	5,264,639	5,276,717
5,236,599	5,252,645	5,265,175	5,277,454
5,236,645	5,252,952	5,265,196	5,277,609
5,236,859	5,252,986	5,265,402	5,277,974
5,237,508	5,253,081	5,265,443	5,278,156
5,238,240	5,253,734	5,266,369	5,278,185
5,238,621	5,254,638	5,266,661	5,278,552
5,238,885	5,254,988	5,267,264	5,278,595
5,238,924	5,255,877	5,267,434	5,278,692
5,238,948	5,255,975	5,267,638	5,278,698
5,239,006	5,256,111	5,267,813	5,278,719
5,239,383	5,256,191	5,267,833	5,278,777
5,239,420	5,257,346	5,268,852	5,280,108
5,239,886	5,257,362	5,269,161	5,280,299
5,239,950	5,257,442	5,269,227	5,280,465
5,240,291	5,257,958	5,269,677	5,280,708
5,240,424	5,258,021	5,269,998	5,280,986
5,240,663	5,258,104	5,270,316	5,281,227
5,240,686	5,258,134	5,270,418	5,281,238
5,240,961	5,258,285	5,270,730	5,281,362
5,241,168	5,258,723	5,270,768	5,281,242
5,242,140	5,258,998	5,270,808	5,281,493
5,243,462	5,259,897	5,270,965	5,281,958
5,243,733	5,260,064	5,271,080	5,282,068
5,245,199	5,261,063	5,271,183	5,282,208
5,245,248	5,261,961	5,271,976	5,282,236
5,245,318	5,261,971	5,272,512	5,282,265
5,245,561	5,262,193	5,272,948	5,282,652
5,245,701	5,262,482	5,273,962	5,282,738
5,246,174	5,262,519	5,274,085	5,282,742
5,246,459	5,262,941	5,274,250	5,282,843
5,247,353	5,262,989	5,274,502	5,283,142
5,247,447	5,263,311	5,274,568	5,283,604
5,248,228	5,263,419	5,274,605	5,284,107
5,248,652	5,263,654	5,274,765	5,284,409
5,250,000	5,263,808	5,274,849	5,284,438

5,284,499	5,290,488	5,295,757	5,301,311	5,307,364	5,310,823	5,315,337	5,319,680
5,284,828	5,290,493	5,295,813	5,301,316	5,307,536	5,310,838	5,315,413	5,319,698
5,284,829	5,290,523	5,296,070	5,301,494	5,307,542	5,311,235	5,315,516	5,319,718
5,284,945	5,290,525	5,296,171	5,301,740	5,307,551	5,311,400	5,315,645	5,319,743
5,285,068	5,290,526	5,296,246	5,301,770	5,307,641	5,311,526	5,315,647	5,320,017
5,285,220	5,290,566	5,296,249	5,301,777	5,307,721	5,311,613	5,315,765	5,320,022
5,285,294	5,290,615	5,296,589	5,301,803	5,307,796	5,311,623	5,316,143	5,320,086
5,285,299	5,290,662	5,296,691	5,302,130	5,307,847	5,311,799	5,316,351	5,320,223
5,285,304	5,290,775	5,296,903	5,302,421	5,307,888	5,311,899	5,316,500	5,321,405
5,285,368	5,290,789	5,296,978	5,302,896	5,307,990	5,312,109	5,316,820	5,321,747
5,285,859	5,291,084	5,297,147	5,303,237	5,308,063	5,312,219	5,316,841	5,321,803
5,286,256	5,291,253	5,297,255	5,303,500	5,308,225	5,312,364	5,317,167	5,321,912
5,286,631	5,291,383	5,297,858	5,303,530	5,308,303	5,312,589	5,317,220	5,321,917
5,286,747	5,291,662	5,297,915	5,303,662	5,308,416	5,312,605	5,317,364	5,322,113
5,287,150	5,291,784	5,298,266	5,303,823	5,308,690	5,312,638	5,317,490	5,322,153
5,287,290	5,291,975	5,298,651	5,303,825	5,308,858	5,312,691	5,317,568	5,322,409
5,287,730	5,292,076	5,298,708	5,304,314	5,308,879	5,313,010	5,317,610	5,322,701
5,288,172	5,292,219	5,298,828	5,304,354	5,308,904	5,313,080	5,317,678	5,322,883
5,288,502	5,292,361	5,298,857	5,304,479	5,309,128	5,314,059	5,317,710	5,322,995
5,288,626	5,292,720	5,298,959	5,304,603	5,309,191	5,314,127	5,317,763	5,323,096
5,289,028	5,292,835	5,299,003	5,304,615	5,309,195	5,314,213	5,317,764	5,323,311
5,289,219	5,293,192	5,299,114	5,304,690	5,390,448	5,314,470	5,317,850	5,323,419
5,289,295	5,293,220	5,299,189	5,305,121	5,309,568	5,314,545	5,317,912	5,324,393
5,289,296	5,293,239	5,299,214	5,305,231	5,309,840	5,314,583	5,318,286	5,324,494
5,289,414	5,293,344	5,299,303	5,305,256	5,309,977	5,314,658	5,318,348	5,324,576
5,289,649	5,293,361	5,299,379	5,305,457	5,310,055	5,314,749	5,318,596	5,324,693
5,289,650	5,293,368	5,300,035	5,305,517	5,310,094	5,314,852	5,318,730	5,325,392
5,289,855	5,293,800	5,300,337	5,305,675	5,310,107	5,314,896	5,318,758	5,326,650
5,289,926	5,293,998	5,300,583	5,305,875	5,310,281	5,314,948	5,319,204	5,327,371
5,289,949	5,294,736	5,301,010	5,306,129	5,310,351	5,315,019	5,319,400	5,327,415
5,290,024	5,295,106	5,301,100	5,307,092	5,310,461	5,315,071	5,319,411	5,330,797
5,290,083	5,295,201	5,301,190	5,307,144	5,310,649	5,315,075	5,319,412	
5,290,193	5,295,559	5,301,207	5,307,149	5,310,712	5,315,284	5,319,426	

VOL
1165
ISS
5
AG
30
1994
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NOTICE OF FINAL RULEMAKING AND LIFTING OF SUSPENSION.

SUMMARY: The Patent and Trademark Office (PTO) is amending the rules of practice in patent cases, Part 1 of title 37, Code of Federal Regulations, to adjust certain patent fee amounts to reflect fluctuations in the Consumer Price Index (CPI) and to recover costs of operation. The PTO also is providing notice that, beginning on October 1, 1994, the suspension of the fee for access to the Automated Patent System's Full Text Search capability (APS-Text) at a Patent and Trademark Depository Library (PTDL) will be lifted. However, the PTO is rescinding this hourly fee, which was established by 37 CFR 1.21(p), and in its place assessing an annual subscription fee on PTDLs providing such service. On October 1, 1994, the PTO also will begin collecting a fee for access to the Automated Patent System's Classified Search and Image Retrieval capability (APS-CSIR) from the search facilities in Arlington, Virginia.

EFFECTIVE DATE: October 1, 1994.

FOR FURTHER INFORMATION CONTACT: Robert Kopson by telephone at (703) 305-8510, fax at (703) 305-8525, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This rule change is designed to adjust the PTO fees in accordance with the applicable provisions of title 35, United States Code, and section 10101 of the Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508), all as amended by the Patent and Trademark Office Authorization Act of 1991 (Public Law 102-204).

There are two objectives of this final rule package. The first objective is to adjust certain patent fee amounts to reflect fluctuations in the Consumer Price Index (CPI) and to recover costs of operation.

The second objective is to provide notice that PTO is lifting the suspension on the fee for access to APS-Text at a Patent and Trademark Depository Library (PTDL). This fee was established by rule on October 1, 1992 (published in the *Federal Register* on August 21, 1992 at 57 FR 38190). Collection of the fee was immediately suspended by the Commissioner to provide additional time for the PTO to solicit input from the private sector on alternative collection methods, and other options for accessing patent search and retrieval in the Libraries. In response to public comments, the PTO will rescind the fee established by 37 CFR 1.21(p), and assess a subscription fee under 37 CFR 1.21(k) on each PTDL that provides its patrons with access to APS-Text. The basis for the subscription amount is less than the fee amount that was established in 37 CFR 1.21(p). Each participating library will be responsible for establishing policies for providing access to their patrons.

The PTO also will begin charging a fee for on-line access to APS-CSIR at the Patent Search and Image Retrieval Facility (PSIRF) in Arlington, Virginia. Free access to APS-CSIR has been offered at the PSIRF since July 12, 1993. The PTO now will begin recovering the cost of providing this on-line access in accordance with 37 CFR 1.21(k).

The PTO will make any necessary adjustments to these automated system fees based upon actual fiscal year 1995 usage. Future adjustments will be made based upon deviations in system costs and/or public usage.

BACKGROUND

Statutory Provisions

Patent fees are authorized by 35 U.S.C. 41 and 35 U.S.C. 376. A fifty percent reduction in the fees paid under 35 U.S.C. 41(a) and 41(b) by independent inventors, small business concerns, and nonprofit organizations who meet prescribed definitions is required by 35 U.S.C. 41(h).

Subsection 41(f) of title 35, United States Code, provides that fees established under 35 U.S.C. 41(a) and (b) may be adjusted on October 1, 1992, and every year thereafter, to reflect fluctuations in the Consumer Price Index (CPI) over the previous 12 months.

Section 10101 of the Omnibus Budget Reconciliation Act of 1990 (Pub. L. 101-508) provides that there shall be a surcharge on all fees established under 35 U.S.C. 41(a) and 41(b) to collect $107 million in fiscal year 1995.

Subsection 41(d) of title 35, United States Code, authorizes the Commissioner to establish fees for all other processing, services, or materials related to patents to recover the average cost of providing these services or materials, except for the fees for recording a document affecting title, for each photocopy, and for each black and white copy of a patent.

Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty (PCT).

Subsection 41(i)(3) of title 35, United States Code, authorizes the Commissioner to establish reasonable fees for access to automated search systems of the PTO.

Subsection 41(g) of title 35, United States Code, provides that new fee amounts established by the Commissioner under Section 41 may take effect thirty days after notice in the *Federal Register* and the *Official Gazette of the Patent and Trademark Office*.

Recovery Level Determinations

This rule adjusts patent fees for a planned recovery of $571,439,000 in fiscal year 1995, as proposed in the Administration's budget request to the Congress. The fee amounts established for automated access to PTO's data bases will recover reasonable costs of providing these services to the public. The total amount expected to be collected is consistent with the budgeted amount.

The patent statutory fees established by 35 U.S.C. 41(a) and 41(b) are being adjusted on October 1, 1994, to reflect any fluctuations occurring during the previous 12 months in the Consumer Price Index (CPI-U). In calculating these fluctuations, the Office of Management and Budget (OMB) has determined that the PTO should use CPI-U data as determined by the Secretary of Labor. However, the Department of Labor does not make public the CPI-U until approximately 21 days after the end of the month being calculated. Therefore, the latest CPI-U information available is for the month of May 1994. In accordance with previous rulemaking methodology, the PTO uses the Administration's projected CPI-U for the 12-month period ending September 30, 1994, which is 3.0 percent. Based on this projection, patent statutory fees are being adjusted by 3.0 percent. Before the final fee schedule is published, the fees may be slightly adjusted based on actual data available from the Department of Labor.

Certain non-statutory patent processing fees established under 35 U.S.C. 41(d) and PCT processing fees established under 35 U.S.C. 376 are being adjusted up to the three percent fluctuation in the CPI in order to recover their estimated average costs in 1995. Three patent service fees that are set by statute are not adjusted. The three fees that are not being adjusted are assignment recording fees, printed patent copy fees and photocopy charge fees.

The Office calculated unit costs for all fees based on OMB Circular A-25, "User Fees", and OMB Circular A-130, "Management of Federal Information Resources". Costs were determined from the best available records (for example, financial statements of the Office) and included direct and indirect costs to the Office for carrying out the activity, as directed by OMB Circular A-25. The patent statutory fee amounts were rounded by applying standard arithmetic rules so that the amounts rounded would be convenient to the user.

VOL 1165 ISS 5 AG 30 1994 UMI

Fees of $100 or more were rounded to the nearest $10. Fees between $2 and $99 were rounded to an even number so that the comparable small entity fee would be a whole number.

The Office has detailed cost calculation worksheets for each fee amount. These worksheets are available for public inspection in Suite 507 of Crystal Park 1, 2011 Crystal Drive, Arlington, Virginia.

Workload Projections

Determination of workloads varies by fee. Principal workload projection techniques are as follows:

Patent application workloads are projected from statistical regression models using recent application filing trends. Patent issues are projected from an in-house patent production model and reflect examiner production achievements and goals. Patent maintenance fee workloads utilize patents issued 3.5, 7.5 and 11.5 years prior to payment and assume payment rates of 80 percent, 57 percent and 25 percent, respectively. Service fee workloads follow linear trends from prior years' activities.

Any fee amount that is paid on or after October 1, 1994, would be subject to the new fees then in effect. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing or Transmission, where authorized under 37 CFR 1.8, will be considered to be the date of receipt in the PTO. A Certificate of Mailing or Transmission under Section 1.8 is not "proper" for items which are specifically excluded from the provisions of Section 1.8. Section 1.8 should be consulted for those items for which a Certificate of Mailing or Transmission is not "proper." Such items include, inter alia, the filing of national and international applications for patents. However, the provisions of 37 CFR 1.10 relating to filing papers and fees with an "Express Mail" certificate do apply to any paper or fee (including patent applications) to be filed in the PTO. If an application or fee is filed by "Express Mail" with a proper certificate dated on or after the effective date of the rules, as amended, the amount of the fee to be paid would be the fee established by the amended rules.

COST CALCULATIONS

APS-Text at a Patent and Trademark Depository Library (PTDL)

The costs for one hour terminal session time on APS-Text at a PTDL include license fees that must be paid to Chemical Abstracts Service (CAS) for its proprietary text and structure search software. Other costs are included for a portion, projected at 3.65 percent, of the lease of a computer mainframe for memory storage purposes; all costs associated with training PTDL staff (equipment rental, materials and time); personnel to provide client support to the PTDLs; and telecommunication costs. A summary of the costs are listed below

APS-Text Cost of One Hour of Terminal Session Time at a Patent and Trademark Depository Library

Cost Element	Public Share
Client Support Overtime	$10,203
Additional Mainframe Costs	$43,216
Software (license fee)	$273,000
Training Costs	$10,000
Subtotal	$336,419
General & Admin. Overhead @ 12.2%	$40,976
Total Cost	$377,395
Estimated Annual Usage (hours)	54,600
Unit Cost (per hour)	$6 91
Telecommunication Costs (per hour)	$8 00
Total Cost (per hour)	$14 91
Total Cost (per hour - rounded)	$15 00

The PTDLs will pay an annual maximum use subscription rate based on one of five tier levels, roughly equivalent to one to five hours of use per day, five days per week. Each PTDL will select a maximum use subscription tier based on its anticipated usage and be responsible for monitoring their own use. The PTDLs will also be responsible for establishing their own policies regarding the provision of APS-Text in their library.

If during the year a PTDL is about to exceed its chosen level of maximum use, the PTDL will be allowed to move to a higher tier (and pay the additional subscription rate) or to use up to the subscribed level and cease continued access mid-year.

Tiers	Annual Usage	Annual Subscription Rate
I	0 - 300 hours	$2,250
II	301 - 600 hours	$6,750
III	601 - 900 hours	$11,250
IV	901 - 1200 hours	$15,750
V	1201 - 1500 hours	$20,250

The subscription rates were derived using the $15.00 per hour access charge previously calculated. There will be no additional charges or refunds to each library. For each tier, a discount mechanism is included in the annual subscription calculation. For example, the annual subscription rate of $2,250 for Tier I is calculated by taking the mean average of the annual usage range (in this case 150 hours is the mean of zero and 300 hours) and multiplying it by the $15.00 per hour access charge. Therefore, for a PTDL in Tier I, any usage over 150 hours is free to the library. But if a PTDL in Tier I were to not use at least 150 hours, the PTO would not be required to refund the amount of the subscription fee that was not used.

APS-CSIR at the Patent Search and Image Retrieval Facility (PSIRF)

The costs for one hour terminal session time on APS-CSIR at the PSIRF include license fees that must be paid to Chemical Abstracts Service (CAS) for its proprietary text and structure search software. It is estimated that 40 percent of the terminal time will be used for text searching, which requires the search software from CAS.

Other costs are included for a portion, projected at 2.25 percent, of the lease of a computer mainframe for memory storage purposes; additional personnel for the PSIRF and the Office of Computer and Telecommunications Operations; computer acquisition, installation, and maintenance; supplies and equipment dedicated to public use; and general and administrative overhead. A summary of the costs are listed below.

APS-CSIR Cost of One Hour of Terminal Session Time at the Patent Search and Image Retrieval Facility

Cost Element	Total Cost
Compensation and Benefits	$250,813
Additional Hardware and Mainframe Costs	$226,792
Software (license fee)	$25,000
Supply Costs	$10,512
Installation Costs (amortized)	$25,366
Subtotal	$538,483
Space Costs	$41,759
General & Admin Overhead @ 12.2%	$65,695
Total Cost	$645,937
Estimated Annual Usage (hours)	13,000
Unit Cost (per hour)	$49 68
Rounded Fee Amount (per hour - prorated)	$50.00

A comparison of existing and revised fee amounts is included as an Appendix to this notice of final rulemaking

In order to ensure clarity in the implementation of the revised fees, a discussion of specific sections is set forth below

VOL
1165
ISS
5
AG
30
1994
UMI

Discussion of Specific Rules

37 CFR 1.16 National application filing fees.

Section 1.16, paragraphs (a), (b), (d), and (f)-(i), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.17 Patent application processing fees.

Section 1.17, paragraphs (b)-(g) and (m), is revised to adjust fees established therein to reflect fluctuations in the CPI.

Section 1.17, paragraphs (j), and (n)-(p), is revised to adjust fees established therein to recover costs.

37 CFR 1.18 Patent issue fees.

Section 1.18, paragraphs (a)-(c), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.20 Post-issuance fees.

Section 1.20, paragraphs (c), (i)(1), and (j), is revised to adjust fees established therein to recover costs.

Section 1.20, paragraphs (e)-(g), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.21 Miscellaneous fees and charges.

Section 1.21 is amended to remove paragraph (p).

37 CFR 1.445 International application filing, processing, and search fees.

Section 1.445, paragraph (a), is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs.

37 CFR 1.482 International preliminary examination fees.

Section 1.482, paragraphs (a)(1) and (a)(2)(ii), is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs.

37 CFR 1.492 National stage fees.

Section 1.492, paragraphs (a), (b) and (d), is revised to adjust fees established therein to reflect fluctuations in the CPI.

Response to Comments on the Rules

Patent Fee Increase

A notice of proposed rulemaking to adjust patent fees was published in the *Federal Register* on May 27, 1994, at 59 FR 27519, and in the *Official Gazette* on June 7, 1994, at 1163 OG 14.

A public hearing was held on June 28, 1994. Three comments were received and considered in adopting the rules set forth herein.

Comments: The respondents, although not objecting to the three percent fee increase, strongly oppose any fee increase for the purpose of making up patent fee surcharge money that is being withheld from the PTO. The respondents support the Administration's proposal to ensure that all user fees assessed by the PTO are used exclusively by the PTO.

Response: The Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508) requires the PTO, in fiscal year 1995, to collect $107 million in patent fee surcharges and to deposit these collections to the Patent and Trademark Office Fee Surcharge Fund. In the past, Congress has only appropriated part of these deposits back to the PTO. Deposits not made available to the Office reside in the Fund. To date, the reserve in the

Fund is slightly in excess of $35 million. For fiscal year 1995, the PTO requested that all patent fees be provided directly to the Office, thereby eliminating reliance on appropriations from the Fee Surcharge Fund. This language will not be enacted. The House of Representatives has recommended that an additional $18.7 million in patent fee surcharges not be made available to the Office in fiscal year 1995. Final action on the 1995 appropriations bill is pending. The Administration does not propose to increase patent fees in fiscal year 1995 other than the increase that reflects fluctuations in the Consumer Price Index.

Collection of the Fee for Access to APS-Text at the PTDLs

A fee for access to APS-Text at a PTDL was set in the final rule package published in the *Federal Register* on August 21, 1992 (57 FR 38189). The final rule became effective October 1, 1992. On that date, the fee took effect but collection was immediately suspended by the Commissioner to provide additional time to solicit input from the private sector on alternative collection methods, and other options for accessing patent search and retrieval in the Libraries.

The Office received six comments.

Comment: Two respondents stated that many of the PTDLs already have considerable experience in collecting fees for access to on-line patent and trademark services provided by private sector vendors. They suggested that mechanisms already in place could be adapted to the collection of fees for PTO-provided services.

These respondents also suggested that the PTO procure access for the PTDLs to private sector on-line patent and trademark services, using a Federal procurement mechanism, such as Fedlink.

Response: The PTO encourages the PTDLs to provide a variety of patent and trademark services for their patrons. However, the PTDLs are not required to provide access to private sector on-line services, and the PTO can only provide support and training to the PTDLs for products and services it develops.

In the case of APS access, participation on the part of the PTDLs will be voluntary. With respect to other services, the PTDLs will make the decision as to which ones best fit the needs of their user communities. Fedlink, which provides on-line services to Government agencies, cannot extend its charter to include the PTDLs.

Under the proposed subscription method, libraries should develop policies and procedures which best suit their particular circumstances.

Comment: One respondent suggested that the access to APS be expanded beyond the PTDLs, with a small fee for general use, and discounted fees for independent inventors and/or off-peak usage.

Response: At this time, allowing direct access by the public would impact internal PTO operations. Access at PTDLs will ensure usage in a controlled environment, where end-users will have access to knowledge and skills of trained librarians.

Comment: One respondent suggested that the PTO permit voluntary participation by the individual PTDLs.

Response: Participation on the part of the PTDLs will be voluntary. The level of participation by the PTDLs will not affect their relationship with the PTO in any manner.

Comment: One respondent suggested that the PTO provide access to APS-Text on a subscription basis. This method would set a fee for anticipated usage over a determined period of time.

Response: The PTO will provide access to APS-Text to the PTDLs on an annual subscription basis. All of the libraries will have the option of subscribing. Each library that chooses to subscribe will establish a policy for providing the public with access to APS-Text.

Comment: One respondent suggested that the PTO set up a system that allows users to input credit or debit card numbers

Response: Currently, the PTO is studying this collection option. The current equipment in use does not allow access via a credit or debit card. This option may be feasible in the near future.

VOL 1165 ISS 5 AG 30 1994 UMI

Other Considerations

This final rule change is in conformity with the requirements of Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, et seq. There are no information collection requirements relating to these patent fee rules. This final rule has been determined to be significant for purposes of Executive Order 12866.

The PTO has determined that this final rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the final rule change would not have a significant impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The final rule change increases fees by changes in the CPI as authorized by 35 U.S.C. 41(f). The principal impact of the major patent fees has already been taken into account in 35 U.S.C. 41(h), which provides small entities with a 50-percent reduction in the major patent fees.

Lists of Subjects

37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements, Small businesses.

For the reasons set forth in the preamble, the PTO is amending title 37 of the Code of Federal Regulations, Chapter 1, Part 1, as set forth below.

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is amended by revising paragraphs (a), (b), (d), and (f) through (i) to read as follows:

§ 1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant
By a small entity (§ 1.9(f)) $365.00
By other than a small entity $730.00

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:
By a small entity (§ 1.9(f)) $38.00
By other than a small entity $76.00

•••••

(d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:
By a small entity (§ 1.9(f)) $120.00
By other than a small entity $240.00

(If the additional fees required by paragraphs (b), (c), and (d) of this section are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims canceled by amendment prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

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(f) For filing each design application:
By a small entity (§ 1.9(f)) $150.00
By other than a small entity $300.00

(g) Basic fee for filing each plant application:
By a small entity (§ 1.9(f)) $245.00
By other than a small entity $490.00

(h) Basic fee for filing each reissue application:
By a small entity (§ 1.9(f)) $365.00
By other than a small entity $730.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:
By a small entity (§ 1.9(f)) $38.00
By other than a small entity $76.00

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3. Section 1.17 is amended by revising paragraphs (b) through (g), (j), and (m) through (p) to read as follows:

§ 1.17 Patent application processing fees.

•••••

(b) Extension fee for response within second month pursuant to § 1.136(a):
By a small entity (§ 1.9(f)) $185.00
By other than a small entity $370.00

(c) Extension fee for response within third month pursuant to § 1.136(a)
By a small entity (§ 1.9(f)) $435.00
By other than a small entity $870.00

(d) Extension fee for response within fourth month pursuant to § 1.136(a)
By a small entity (§ 1.9(f)) $680.00
By other than a small entity $1,360.00

(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:
By a small entity (§ 1.9(f)) $140.00
By other than a small entity $280.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:
By a small entity (§ 1.9 (f)) $140.00
By other than a small entity $280.00

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in an appeal under 35 U.S.C. 134:
By a small entity (§ 1.9(f)) $120.00
By other than a small entity $240.00

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VOL 1165 ISS 5 AUG 30 1994 UMI

(j) For filing a petition to institute a public use proceeding under § 1.292 ..... $1,390.00

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(m) For filing a petition:
(1) For revival of an unintentionally abandoned application, or
(2) For the unintentionally delayed payment of the fee for issuing a patent:
By a small entity (§ 1.9(f)) $605.00
By other than a small entity $1,210.00

(n) For requesting publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to § 1.104--$840.00 reduced by the amount of the application basic filing fee paid.

(o) For requesting publication of a statutory invention registration after the mailing of the first examiner's action pursuant to § 1.104--$1,690.00 reduced by the amount of the application basic filing fee paid.

(p) For submission of an information disclosure statement under § 1.97(c) $210.00

4. Section 1.18 is revised to read as follows:

§ 1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:
By a small entity (§ 1.9(f)) $605.00
By other than a small entity $1,210.00

(b) Issue fee for issuing a design patent:
By a small entity (§ 1.9(f)) $210.00
By other than a small entity $420.00

(c) Issue fee for issuing a plant patent:
By a small entity (§ 1.9(f)) $305.00
By other than a small entity $610.00

5. Section 1.20 is amended by revising paragraphs (c), (e) through (g), (i)(1), and (j) to read as follows:

§ 1.20 Post issuance fees.

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(c) For filing a request for reexamination (§ 1.510(a)) $2,320.00

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(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond four years; the fee is due by three years and six months after the original grant
By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond eight years; the fee is due by seven years and six months after the original grant
By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond twelve years; the fee is due by eleven years and six months after the original grant
By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

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(i) •••
(1) unavoidable $640.00

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(j) For filing an application for extension of the term of a patent (§ 1.740) $1,030.00

6. Section 1.21 is amended by removing paragraph (p).

7. Section 1.445 is amended by revising paragraph (a) to read as follows:

§ 1.445 International application filing, processing and search fees.

(a) The following fees and charges for international applications are established by the Commissioner under the authority of 35 U.S.C. 376:
(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) $210.00
(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:
(i) No corresponding prior United States national application with basic filing fee has been filed $640.00
(ii) A corresponding prior United States national application with basic filing fee has been filed $420.00

(3) A supplemental search fee when required, per additional invention $180.00

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8. Section 1.482 is amended by revising paragraphs (a)(1) and (a)(2)(ii) to read as follows:

§ 1.482 International preliminary examination fees.

(a) •••

(1) A preliminary examination fee is due on filing the Demand:
(i) Where an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority, a preliminary examination fee of $460.00
(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office, a preliminary examination fee of $690.00

(2) •••

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office $240.00

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VOL 1165 ISS 5 AUG 30 1994 UMI

9. Section 1.492 is amended by revising paragraphs (a), (b), and (d) to read as follows:

§ 1.492 National stage fees.

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(a) ***

(1) Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the United States Patent and Trademark Office:
By a small entity (§ 1.9(f)) $330.00
By other than a small entity $660.00

(2) Where no international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:
By a small entity (§ 1.9(f)) $365.00
By other than a small entity $730.00

(3) Where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:
By a small entity (§ 1.9(f)) $490.00
By other than a small entity $980.00

(4) Where an international preliminary examination fee as set forth in §1.482 has been paid to the United States Patent and Trademark Office and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33 (1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see § 1.496(b)):
By a small entity (§ 1.9(f)) $46.00
By other than a small entity $92.00

(5) Where a search report on the international application has been prepared by the European Patent Office of the Japanese Patent Office:
By a small entity (§ 1.9(f)) $425.00
By other than a small entity $850.00

(b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:
By a small entity (§ 1.9(f)) $38.00
By other than a small entity $76.00

*****

(d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:
By a small entity (§ 1.9(f)) $120.00
By other than a small entity $240.00

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Date: 08/18/94

Bruce A. Lehman
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

NOTE- The following appendix will not appear in the Code of Federal Regulations.

Appendix A - Comparison of Existing and Revised Fee Amounts

Page 1

37 CFR Sec.	DESCRIPTION	Oct 1993	Oct 1994
1.16(a)	Basic Filing Fee	$710	$730
1.16(a)	Basic Filing Fee (Small Entity)	$355	$365
1.16(b)	Independent Claims	$74	$76
1.16(b)	Independent Claims (Small Entity)	$37	$38
1.16(c)	Claims in Excess of 20	$22	---
1.16(c)	Claims in Excess of 20 (Small Entity)	$11	---
1.16(d)	Multiple Dependent Claims	$230	$240
1.16(d)	Multiple Dependent Claims (Small Entity)	$115	$120
1.16(e)	Surcharge - Late Filing Fee	$130	---
1.16(e)	Surcharge - Late Filing Fee (Small Entity)	565	---
1.16(f)	Design Filing Fee	$290	$300
1.16(f)	Design Filing Fee (Small Entity)	$145	$150
1.16(g)	Plant Filing Fee	$480	$490
1.16(g)	Plant Filing Fee (Small Entity)	$240	$245
1.16(h)	Reissue Filing Fee	$710	$730
1.16(h)	Reissue Filing Fee (Small Entity)	$355	$365
1.16(i)	Reissue Independent Claims	$74	$76
1.16(i)	Reissue Independent Claims (Small Entity)	$37	$38
1.16(j)	Reissue Claims in Excess of 20	$22	---
1.16(j)	Reissue Claims in Excess of 20 (Small Entity)	$11	---
1.17(a)	Extension - First Month	$110	---
1.17(a)	Extension - First Month (Small Entity)	$55	---
1.17(b)	Extension - Second Month	$360	$370
1.17(b)	Extension - Second Month (Small Entity)	$180	$185
1.17(c)	Extension - Third Month	$840	$870
1.17(c)	Extension - Third Month (Small Entity)	$420	$435
1.17(d)	Extension - Fourth Month	$1,320	$1,360
1.17(d)	Extension - Fourth Month (Small Entity)	$660	$680
1.17(e)	Notice of Appeal	$270	$280
1.17(e)	Notice of Appeal (Small Entity)	$135	$140
1.17(f)	Filing a Brief	$270	$280
1.17(f)	Filing a Brief (Small Entity)	$135	$140
1.17(g)	Request for Oral Hearing	$230	$240
1.17(g)	Request for Oral Hearing (Small Entity)	$115	$120
1.17(h)	Petition - Not All Inventors	$130	---
1.17(h)	Petition - Correction of Inventorship	$130	---
1.17(h)	Petition - Decision on Questions	$130	---
1.17(h)	Petition - Suspend Rules	$130	---
1.17(h)	Petition - Expedited License	$130	---
1.17(h)	Petition - Scope of License	$130	---
1.17(h)	Petition - Retroactive License	$130	---

--- These fees are not affected by this rulemaking.

VOL 1165 ISS 5 AG 30 1994 UMI

Appendix A - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Oct 1993	Oct 1994
1.17(h)	Petition - Refusing Maintenance Fee	$130	---
1.17(h)	Petition - Refusing Maintenance Fee - Expired Patent	$130	---
1.17(h)	Petition - Interference	$130	---
1.17(h)	Petition - Reconsider Interference	$130	---
1.17(h)	Petition - Late Filing of Interference	$130	---
1.20(b)	Petition - Correction of Inventorship	$130	---
1.17(h)	Petition - Refusal to Publish SIR	$130	---
1.17(i)(1)	Petition - For Assignment	$130	---
1.17(i)(1)	Petition - For Application	$130	---
1.17(i)(1)	Petition - Late Priority Papers	$130	---
1.17(i)(1)	Petition - Suspend Action	$130	---
1.17(i)(1)	Petition - Divisional Reissues to Issue Separately	$130	---
1.17(i)(1)	Petition - For Interference Agreement	$130	---
1.17(i)(1)	Petition - Amendment After Issue	$130	---
1.17(i)(1)	Petition - Withdrawal After Issue	$130	---
1.17(i)(1)	Petition - Defer Issue	$130	---
1.17(i)(1)	Petition - Issue to Assignee	$130	---
1.17(i)(1)	Petition - Accord a Filing Date Under §1.53	$130	---
1.17(i)(1)	Petition - Accord a Filing Date Under §1.60	$130	---
1.17(i)(1)	Petition - Accord a Filing Date Under §1.62	$130	---
1.17(i)(2)	Petition - Make Application Special	$130	---
1.17(j)	Petition - Public Use Proceeding	$1,350	$1,390
1.17(k)	Non-English Specification	$130	---
1.17(l)	Petition - Revive Abandoned Appl.	$110	---
1.17(l)	Petition - Revive Abandoned Appl. (Small Entity)	$55	---
1.17(m)	Petition - Revive Unintentionally Abandoned Appl.	$1,170	$1,210
1.17(m)	Petition - Revive Unintent Abandoned Appl. (Small Entity)	$585	$605
1.17(n)	SIR - Prior to Examiner's Action	$820	$840
1.17(o)	SIR - After Examiner's Action	$1,640	$1,690
1.17(p)	Submission of an Information Disclosure Statement (§1.97)	$200	$210
1.18(a)	Issue Fee	$1,170	$1,210
1.18(a)	Issue Fee (Small Entity)	$585	$605
1.18(b)	Design Issue Fee	$410	$420
1.18(b)	Design Issue Fee (Small Entity)	$205	$210
1.18(c)	Plant Issue Fee	$590	$610
1.18(c)	Plant Issue Fee (Small Entity)	$295	$305
1.19(a)(1)(i)	Copy of Patent	$3	---
1.19(a)(1)(ii)	Patent Copy - Expedited Local Service	$6	---
1.19(a)(1)(iii)	Patent Copy Ordered Via EOS - Expedited Service	$25	---
1.19(a)(2)	Plant Patent Copy	$12	---
1.19(a)(3)(i)	Copy of Utility Patent or SIR in Color	$24	---
1.19(b)(1)(i)	Certified Copy of Patent Application as Filed	$12	---
1.19(b)(1)(i)	Certified Copy of Patent Application as Filed, Expedited	$24	---
1.19(b)(2)	Cert or Uncert Copy of Patent-Related File Wrapper/Cont.	$150	---

--- These fees are not affected by this rulemaking.

Appendix A - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Oct 1993	Oct 1994
1.19(b)(3)	Cert. or Uncert. Copies of Office Records, per Document	$25	---
1.19(b)(4)	For Assignment Records, Abstract of Title and Certification	$25	---
1.19(c)	Library Service	$50	---
1.19(d)	List of Patents in Subclass	$3	---
1.19(e)	Uncertified Statement-Status of Maintenance Fee Payment	$10	---
1.19(f)	Copy of Non-U.S. Patent Document	$25	---
1.19(g)	Comparing and Certifying Copies, Per Document, Per Copy	$25	---
1.19(h)	Duplicate or Corrected Filing Receipt	$25	---
1.20(a)	Certificate of Correction	$100	---
1.20(c)	Reexamination	$2,250	$2,320
1.20(d)	Statutory Disclaimer	$110	---
1.20(d)	Statutory Disclaimer (Small Entity)	$55	---
1.20(e)	Maintenance Fee - 3.5 Years	$930	$960
1.20(e)	Maintenance Fee - 3.5 Years (Small Entity)	$465	$480
1.20(f)	Maintenance Fee - 7.5 Years	$1,870	$1,930
1.20(f)	Maintenance Fee - 7.5 Years (Small Entity)	$935	$965
1.20(g)	Maintenance Fee - 11.5 Years	$2,820	$2,900
1.20(g)	Maintenance Fee - 11.5 Years (Small Entity)	$1,410	$1,450
1.20(h)	Surcharge - Maintenance Fee - 6 Months	$130	---
1.20(h)	Surcharge - Maintenance Fee - 6 Months (Small Entity)	$65	---
1.20(i)(1)	Surcharge - Maintenance After Expiration - Unavoidable	$620	$640
1.20(i)(2)	Surcharge - Maintenance After Expiration - Unintentional	$1,500	---
1.20(j)	Extension of Term of Patent	$1,000	$1,030
1.21(a)(1)	Admission to Examination	$300	---
1.21(a)(2)	Registration to Practice	$100	---
1.21(a)(3)	Reinstatement to Practice	$15	---
1.21(a)(4)	Certificate of Good Standing	$10	---
1.21(a)(4)	Certificate of Good Standing, Suitable Framing	$20	---
1.21(a)(5)	Review of Decision of Director, OED	$130	---
1.21(a)(6)	Regrading of Examination	$130	---
1.21(b)(1)	Establish Deposit Account	$10	---
1.21(b)(2)	Service Charge Below Minimum Balance	$25	---
1.21(b)(3)	Service Charge Below Minimum Balance	$25	---
1.21(c)	Filing a Disclosure Document	$10	---
1.21(d)	Box Rental	$50	---
1.21(e)	International Type Search Report	$40	---
1.21(g)	Self-Service Copy Charge	$.25	---
1.21(h)	Recording Patent Property	$40	---
1.21(i)	Publication in the OG	$25	---
1.21(j)	Labor Charges for Services	$30	---
1.21(k)	Unspecified Other Services	Actual Cost	---
1.21(k)	Terminal Use APS-TEXT by the PTDL's	$70	Subscription
1.21(k)	Terminal Use APS-CSIR	---	$50

--- These fees are not affected by this rulemaking.

VOL 1165 ISS 5 AG 30 1994 UMI

Appendix A - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Oct 1993	Oct 1994
1.21(l)	Retaining Abandoned Application	$130	—
1.21(m)	Processing Returned Checks	$50	—
1.21(n)	Handling Fee - Incomplete Application	$130	—
1.21(o)	Terminal Use APS-TEXT	$40	—
1.24	Coupons for Patent and Trademark Copies	$3	—
1.296	Handling Fee - Withdrawal SIR	$130	—
1.445(a)(1)	Transmittal Fee	$200	$210
1.445(a)(2)(i)	PCT Search Fee - No U.S. Application	$620	$640
1.445(a)(2)(ii)	PCT Search Fee - Prior U.S. Application	$410	$420
1.445(a)(3)	Supplemental Search	$170	$180
1.482(a)(1)(i)	Preliminary Exam Fee	$450	$460
1.482(a)(1)(ii)	Preliminary Exam Fee	$670	$690
1.482(a)(2)(i)	Additional Invention	$140	—
1.482(a)(2)(ii)	Additional Invention	$230	$240
1.492(a)(1)	Preliminary Examining Authority	$640	$660
1.492(a)(1)	Preliminary Examining Authority (Small Entity)	$320	$330
1.492(a)(2)	Searching Authority	$710	$730
1.492(a)(2)	Searching Authority (Small Entity)	$355	$365
1.492(a)(3)	PTO Not ISA nor IPEA	$950	$980
1.492(a)(3)	PTO Not ISA nor IPEA (Small Entity)	$475	$490
1.492(a)(4)	Claims - IPEA	$90	$92
1.492(a)(4)	Claims - IPEA (Small Entity)	$45	$46
1.492(a)(5)	Filing with EPO/JPO Search Report	$830	$850
1.492(a)(5)	Filing with EPO/JPO Search Report (Small Entity)	$415	$425
1.492(b)	Claims - Extra Individual (Over 3)	$74	$76
1.492(b)	Claims - Extra Individual (Over 3) (Small Entity)	$37	$38
1.492(c)	Claims - Extra Total (Over 20)	$22	---
1.492(c)	Claims - Extra Total (Over 20) (Small Entity)	$11	---
1.492(d)	Claims - Multiple Dependents	$230	$240
1.492(d)	Claims - Multiple Dependents (Small Entity)	$115	$120
1.492(e)	Surcharge	$130	—
1.492(e)	Surcharge (Small Entity)	$65	---
1.492(f)	English Translation - After 20 Months	$130	—
2.6(a)(1)	Application for Registration, Per Class	$245	—
2.6(a)(2)	Amendment to Allege Use, Per Class	$100	—
2.6(a)(3)	Statement of Use, Per Class	$100	—
2.6(a)(4)	Extension for Filing Statement of Use, Per Class	$100	—
2.6(a)(5)	Application for Renewal, Per Class	$300	---
2.6(a)(6)	Surcharge for Late Renewal, Per Class	$100	—
2.6(a)(7)	Publication of Mark Under §12(c), Per Class	$100	—
2.6(a)(8)	Issuing New Certificate of Registration	$100	---
2.6(a)(9)	Certificate of Correction of Registrant's Error	$100	---
2.6(a)(10)	Filing Disclaimer to Registration	$100	—

--- These fees are not affected by this rulemaking.

Appendix A - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Oct 1993	Oct 1994
2.6(a)(11)	Filing Amendment to Registration	$100	---
2.6(a)(12)	Filing Affidavit Under Section 8, Per Class	$100	---
2.6(a)(13)	Filing Affidavit Under Section 15, Per Class	$100	---
2.6(a)(14)	Filing Affidavit Under Sections 8 & 15, Per Class	$200	---
2.6(a)(15)	Petitions to the Commissioner	$100	---
2.6(a)(16)	Petition to Cancel, Per Class	$200	---
2.6(a)(17)	Notice of Opposition, Per Class	$200	---
2.6(a)(18)	Ex Parte Appeal to the TTAB, Per Class	$100	---
2.6(a)(19)	Dividing an Application, Per New Application Created	$100	---
2.6(b)(1)(i)	Copy of Registered Mark	$3	---
2.6(b)(1)(ii)	Copy of Registered Mark, Expedited	$6	---
2.6(b)(1)(iii)	Copy of Registered Mark Ordered Via EOS, Expedited Svc	$25	---
2.6(b)(2)(i)	Certified Copy of TM Application as Filed	$12	---
2.6(b)(2)(ii)	Certified Copy of TM Application as Filed, Expedited	$24	---
2.6(b)(3)	Cert. or Uncert. Copy of TM-Related File Wrapper/Cont.	$50	---
2.6(b)(4)(i)	Cert. Copy of Registered Mark, Title or Status	$10	---
2.6(b)(4)(ii)	Cert. Copy of Registered Mark, Title or Status - Expedited	$20	---
2.6(b)(5)	Certified or Uncertified Copy of TM Records	$25	---
2.6(b)(6)	Recording Trademark Property, Per Mark, Per Document	$40	---
2.6(b)(6)	For Second and Subsequent Marks in Same Document	$25	---
2.6(b)(7)	For Assignment Records, Abstracts of Title and Cert.	$25	---
2.6(b)(8)	Terminal Use X-SEARCH	$40	---
2.6(b)(9)	Self-Service Copy Charge	$0.25	---
2.6(b)(10)	Labor Charges for Services	$30	---
2.6(b)(11)	Unspecified Other Services	Actual Cost	---

--- These fees are not affected by this rulemaking.

VOL 1165 ISS 5 AG 30 1994 UMI

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
July 11-15, 1994

Date Issued	Type of Case(1)	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
7-11	EX	74/173,382	Trimark Technologies, Inc.	2(e)(1)	Refusal Affirmed		"THE LIFE ADMINISTRATION NETWORK" [computer hardware and software for use in the insurance field]		No
7-11	EX	74/243,967	Folette Design, Inc.	2(d)	Refusal Reversed		"NEEDLE & THREADS" [sweaters, jump suits, rompers, shorts, T-shirts, jackets, etc.]	"NEEDLE & THREADS" [sewing patterns and magazines dealing with needlecraft; sewing kits for the home sewer containing fabric, yarn, thread, buttons, and patterns]	No
7-11	EX	74/244,156	Video Giant, Inc.	2(d)	Refusal Reversed		"VIDEO GIANT" [retail store services in the field of rental of pre-recorded video tapes and the sale of blank video tapes]	"APPLIANCE GIANT" [video recorders and players and blank tapes and records, etc.]	No
7-11	EX	74/253,749	Science Kit, Inc.	Disclaimer Requirement	Requirement Affirmed		"TEACHER DEVELOPED CLASSROOM TESTED" (and design) [laboratory equipment for use in science education and instruction; mail order services in the field of such equipment]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case(1)	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
7-12	EX	74/218,667	Roger Selbert	2(d)	Refusal Affirmed		"FUTURE SCAN" (and design) [newsletter reporting on economic, social, political, technological, demographic, lifestyle, consumer, business, etc. trends]	"FUTURESCAN" [forecasting services for time series variables based upon historical data and predicted events]	No
7-12	EX	74/247,452	Carol Seltzer	Whether amended identification is acceptable under Rule 2.71(b); whether specimens show use on identified goods; 2(d)	Refusal Affirmed (on all grounds)		"TRAVEL VISION" *(original identification: computer software related to travel and vacations; amended identification:* viewing and evaluating golf course, hotel and spa facilities using computer software]	"TRAVEL VISION" (stylized) [travel guides, maps, magazines, atlases; travel booklets and brochures]	No
7-12	EX	74/248,825	Diamond Hill Farms	whether applicant's trade name functions also as trademark	Refusal Affirmed		"DIAMOND HILL FARMS" [raw potatoes]		Yes
7-13	EX	74/223,489	IMI Electronics, Inc.	2(e)(1)	Refusal Affirmed		"RADAR OVERLAY" [marine radar equipment]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

VOL
1165
ISS
5
AG
30
1994
UMI

Date Issued	Type of Case(1)	Proceeding or Appl'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
7-15	EX	74/095,352	The Scientific Ecology Group, Inc.	2(d): Requirement for affidavit supporting dates of use and specimens in extra classes	Refusal and Requirement Affirmed		"SEG" [engineering services, emergency planning and response consulting services, waste management consulting services]	"SEG" [environmental and engineering consulting, research and testing]	No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

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Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box 6	Mail for the Office of Procurement
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Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents except: trademark registrations and assignments.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
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Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85 "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

VOL
1165
ISS
5
AG
30
1994
UMI

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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
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	Milwaukee Public Library	(414) 286-3247
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VOL
1165
ISS
5
AG
30
1994
UMI

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	09/06/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	07/01/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	11/15/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	09/13/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/05/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/06/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/25/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	08/03/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	08/08/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/03/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	01/13/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	11/10/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	08/16/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	07/26/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	09/02/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	03/12/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/29/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during July 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,032,989 to 4,038,696 inclusive
Plant Patents.....4,069 to 4,085

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/16/94	05/23/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/08/94	01/21/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	03/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/02/94	03/09/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	05/02/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/07/94	04/19/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/22/94	04/28/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/94	04/01/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/14/94	05/16/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	03/16/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/10/94	04/20/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/23/94	03/03/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/01/94	—0—
Renewals (All Classes)	03/24/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

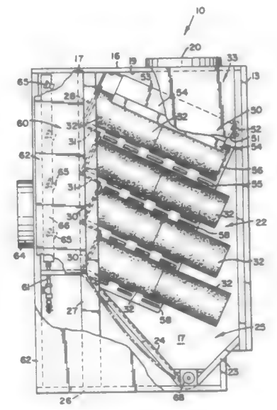
VOL
1165
ISS
5
AG
30
1994
UMI

REEXAMINATIONS

AUGUST 30, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,395,269 (2362nd)
COMPACT DUST FILTER ASSEMBLY
Frederick E. Schuler, St. Paul, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Reexamination Request No. 90/001,776, May 18, 1989.
Reexamination Certificate for Patent No. 4,395,269, issued Jul. 26, 1983, Ser. No. 307,166, Sep. 30, 1981.
Int. Cl.[5] B01D *46/04, 46/48, 50/00*
U.S. Cl. 55—302



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

1. An air filter assembly for filtering air laden with particulate matter, said assembly comprising:

a housing having a clean air chamber and a filtering chamber, said housing having an upper wall, a closed bottom, and a plurality of side walls depending from said upper wall;

a clean air outlet from said clean air chamber in one of said side walls;

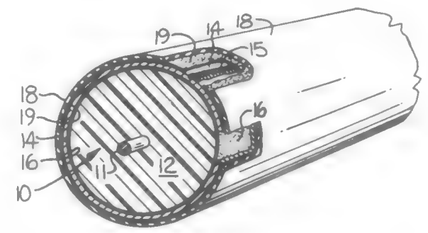
a dirty air inlet to said filtering chamber positioned in a wall of said housing in a location generally above said clean air outlet;

means separating said clean air chamber from said filtering chamber including means mounting a plurality of spaced-apart filter elements within said filtering chamber, with each of said elements being in fluid communication with said air outlet;

pulse-jet cleaning means, intermediate said outlet and said filter elements, for cleaning each of said filter elements; and

a lowermost portion in said filtering chamber arranged and constructed for the collection of particulate matter, said portion having means, responsive to pressure increases in said chamber caused by said cleaning means, for moving particulate matter in a downward direction to a bottommost point in said portion for subsequent transfer to a location exterior to said assembly.

B1 4,472,595 (2363rd)
COAXIAL CABLE HAVING ENHANCED HANDLING AND BENDING CHARACTERISTICS
Steve A. Fox, Hickory; Larry W. Nelson, Conover, and Dave W. Neville, Hickory, all of N.C., assignors to Comm/Scope Company, Catawba, N.C.
Reexamination Request No. 90/003,226, Oct. 21, 1993.
Reexamination Certificate for Patent No. 4,472,595, issued Sep. 18, 1984, Ser. No. 399,347, Jul. 19, 1982.
Int. Cl.[5] H01B *11/18*
U.S. Cl. 174—36



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–16** is confirmed.

1. A coaxial cable comprising a core including at least one inner conductor and a low loss dielectric surrounding the inner conductor, and an electrically and mechanically continuous non-overlapping tubular metallic sheath closely surrounding said core and being adhesively bonded thereto, the ratio of the radial compressive stiffness of the core to the radial compressive stiffness of the tubular sheath being greather than **5**.

B1 4,674,818 (2364th)
METHOD AND APPARATUS FOR SEALING A COAXIAL CABLE COUPLING ASSEMBLY
Corey J. McMills, Los Altos; John S. Mattis, Sunnyvale, and James C. Milroy, Palo Alto, all of Calif., assignors to Raychem Corp., Menlo Park, Calif.
Reexamination Request No. 90/003,218, Oct. 8, 1993.
Reexamination Certificate for Patent No. 4,674,818, issued Jun. 23, 1987, Ser. No. 778,168, Sep. 18, 1985.
Continuation of Ser. No. 663,807, Oct. 22, 1984, abandoned
Int. Cl.[5] H01R *9/07*
U.S. Cl. 439—275

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3** is confirmed.

1. A connector for connecting a first coaxial cable to a coaxial cable box, the coaxial cable box having a first threaded member for receiving the first coaxial cable, said first threaded member having external threads on an outer surface thereof, comprising:

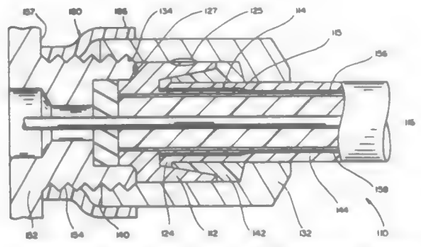
a second threaded member connected to said first coaxial

VOL 1165 ISS 5 AG 30 1994 UMI

cable and having internal threads therein matable with said external threads of said first threaded member of said coaxial cable box;

a hollow, cylindrically shaped, elastically deformed sealant member disposed on some of said external threads and on an external surface of said second threaded member;

said sealant member having an unstretched substantially uniform inside diameter which is less than an outside



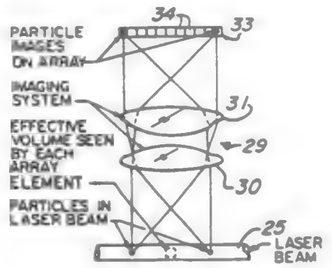
diameter of both said first and second threaded members, said sealant member having an elasticity such that part of an inner surface thereof substantially fills and tightly contacts at least one groove turn of said external threads on which said sealant member is disposed and such that another part of said internal surface of said sealant member tightly contacts an external nut surface of said second threaded member.

B1 4,798,465 (2365th)

PARTICLE SIZE DETECTION DEVICE HAVING HIGH SENSITIVITY IN HIGH MOLECULAR SCATTERING ENVIRONMENT

Robert G. Knollenberg, Boulder, Colo., assignor to Particle Measuring Systems, Inc., Boulder, Colo.

Reexamination Request No. 90/003,299, Jan. 7, 1994.
Reexamination Certificate for Patent No. 4,798,465, issued Jan. 17, 1989, Ser. No. 851,477, Apr. 14, 1986.
Int. Cl.[5] G01N *15/02, 21/00*
U.S. Cl. 356—336



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–20** is confirmed.

1. A particle size detection device capable of operation with high sensitivity in a high molecular scattering environment, said device comprising:

first means for enabling a mixture of gas and particles to be passed through a predetermined sensing region such that a high molecular scattering background is present at said sensing reginon that includes noise due to background light from molecular scattering exceeding light scattered by particles to be detected at said sensing region;

second means for illuminating said sensing region so that particles in said sensing region cause light scattering; and

detecting and processing means for receiving light scattered at said sensing region, said detecting and processing means being configured to reduce said noise due to background light from molecular scattering occurring within said sensing region to a level that enables detection and processing of light scattered by particles within said sensing region having a diameter of at least as small as 0.1 micron and larger, said detecting and processing means providing an electrical signal output indicative of the presence of such particles sensed in said sensing region.

B1 4,798,729 (2366th)

METHOD FOR DELAYING CLOSTRIDIUM BOTULINUM GROWTH IN FISH AND POULTRY

Robert J. Anders, Middleton; John G. Cerveny, and Andrew L. Milkowski, both of Madison, all of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Reexamination Request No. 90/003,104, Jun. 23, 1993.
Reexamination Certificate for Patent No. 4,798,729, issued Jan. 17, 1989, Ser. No. 120,769, Nov. 13, 1987.
Reexamination Certificate B0 4,798,729, issued . Continuation of Ser. No. 808,319, Dec. 12, 1985, abandoned
Int. Cl.[5] A23B *4/14*
U.S. Cl. 426—326

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** is confirmed.

1. A method for delaying Clostridium botulinum growth in a foodstuff selected from the group consisting of fish and poultry, the method consisting essentially of:

(a) adding a lactate slat to a fresh foodstuff selected from the group consisting of fish and poultry, said lactate salt being added in an amount of about 1% to about 7%;

(b) cooking the foodstuff at high humidity to a termperature sufficient to cook the foodstuff but not sufficient to sterilize the foodstuff;

(c) cooling the cooked foodstuff; and

(d) packaging the cooked foodstuff in a plastic barrier package.

B1 4,929,641 (2367th)

MERCAPTO-ACYLAMINO ACID ANTIHYPERTENSIVES

Martin F. Haslanger, Ridgewood; Bernard R. Neustadt, West Orange, and Elizabeth M. Smith, Verona, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Reexamination Request No. 90/003,058, May 14, 1993.
Reexamination Certificate for Patent No. 4,929,641, issued May 29, 1990, Ser. No. 192,435, May 11, 1988.
Int. Cl.[5] C07C *317/00, 321/00, 323/00, 325/00, 381/00, 335/00*
U.S. Cl. 514—513

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

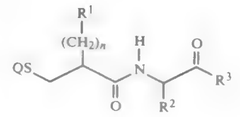
Claims **6**, **9**, **16** and **19** are cancelled.

Claim **1** is determined to be patentable as amended.

Claims **2–5**, **7–8**, **10–15**, **17–18** and **20**, dependent on an amended claim, are determined to be patentable.

New claims **21–23** are added and determined to be patentable.

1. A compound having the structural formula



wherein R^1 is [phenyl substituted by alkyl,] *2-methylphenyl or 3-methylphenyl,* R^2 is alkyl-$S(O)_{0-2}(CH_2)_q$, R^3 is OR^7 wherein R^7 is hydrogen or lower alkyl, Q is hydrogen or $R^{10}CO$— wherein R^{10} is alkyl, n is 0–2 and q is [1–4.] *1 or 2.*

B1 4,990,658 (2368th)

PROCESS FOR PREPARING IBUPROFEN AND ITS ALKYL ESTERS

Barbara C. Stahly; Ronny W. Lin, both of Baton Rouge, and E. E. Atkinson, Jr., Greenwell Springs, all of La., assignors to Ethyl Corporation, Richmond, Va.

Reexamination Request No. 90/002,654, Feb. 28, 1992.
Reexamination Certificate for Patent No. 4,990,658, issued Feb. 5, 1991, Ser. No. 451,563, Dec. 18, 1989.
Int. Cl.[5] C07C *51/14*
U.S. Cl. 562—406

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–41** is confirmed.

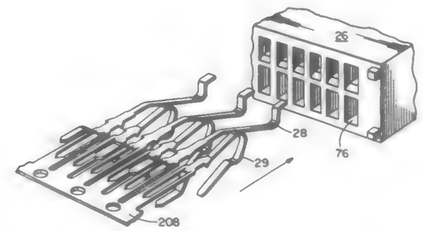
1. A process for preparing ibuprofen or an ester thereof which comprises carbonylating a 1-halo-1-(4-isobutylphenyl)ethane with carbon monoxide in a neutral or acidic medium containing at least about 1 mol of water or of a C_1 to about C_6 linear or branched aliphatic alcohol per mol of 1-halo-1-(4-isobutylphenyl)ethane at a temperature between about 10° C. and about 200° C. and a carbon monoxide pressure of at least about one atmosphere in the presence of (a) a palladium compound in which the palladium has a valence of 0–2 and (b) at least one acid-stable ligand.

B1 4,996,766 (2369th)

BI-LEVEL CARD CONNECTOR AND METHOD OF MAKING THE SAME

Heinz Piorunneck, Trumbull, and Donald S. Eisenberg, Weston, both of Conn., assignors to Burndy Corp., Norwalk, Conn.

Reexamination Request No. 90/003,140, Jul. 22, 1993.
Reexamination Certificate for Patent No. 4,996,766, issued Mar. 5, 1991, Ser. No. 476,944, Feb. 7, 1990.
Division of Ser. No. 287,765, Dec. 21, 1988, Pat. No. 4,934,961
Int. Cl.[5] H01R *9/00*
U.S. Cl. 29—842



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3** is confirmed.

Claim **4** is determined to be patentable as amended.

New claims **5–7** are added and determined to be patentable.

1. A method of fabricating an electrical contact strip comprising the steps of:

providing an elongate strip of electrically conductive material;

stamping the strip to substantially simultaneously produce a series of spring contacts connected at their lower portions by a carry strip, the series of contacts comprising alternating first and second types of contacts, the first type of contacts having a first length and shape and the second type of contact having a different second length and shape, the first and second contacts being adapted to be inserted into a row of contact chambers in a card edge connector housing and be substantially enclosed thereby, such that both the first and second types of contacts can be inserted into a connector housing in their alternating orientations with one insertion operation to provide an alternating contact bi-level card edge connector.

B1 5,007,929 (2370th)

OPEN-CELL SILICONE-ELASTOMER MEDICAL IMPLANT

Joel Quaid, Santa Barbara, Calif., assignor to Medical Products Development, Inc., Santa Barbara, Calif.

Reexamination Request No. 90/003,117, Jul. 9, 1993.
Reexamination Certificate for Patent No. 5,007,929, issued Apr. 16, 1991, Ser. No. 559,973, Jul. 27, 1990.
Continuation of Ser. No. 361,786, May 30, 1989, abandoned, which is a continuation of Ser. No. 927,272, Nov. 4, 1986, abandoned
Int. Cl.[5] A61F *2/10*
U.S. Cl. 623—8

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

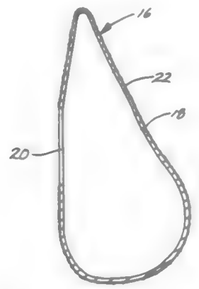
VOL 1165 ISS 5 AG 30 1994 UMI

The patentability of claim 7 is confirmed.

Claims 1–6 and 8 are determined to be patentable as amended.

New claims 9–27 are added and determined to be patentable.

1. A medical implantable *mammary* device of substantially homogeneous composition comprised of silicone elastomer, said implantable device having an external surface integral therewith, at least a portion of said surface having an open-cell structure, *said open-cell structure having an interconnected network of cells, wherein some of the cells open directly to the surface and other cells communicate with the surface only through interconnection to cells which open directly to the surface to simulate*



foam proximate the surface of the mammary device, said medical implantable *mammary* device *being* made by the method comprising the steps of:

(a) [applying] *forming* a layer of *uncured* silicone elastomer [to] *for a shell for* said medical implantable *mammary* device; [and]

(b) applying *a first group of* solid particles to [the] *a first range of depths where they are completely below the exposed* surface [before the layer is fully cured] *and a second group of solid particles to a second range of depths where they are in communication with at least some of the particles in the first group and at least partially in communication with the surface while the layer is uncured;* [and]

(c) fully curing the layer; and

(d) dissolving the solid particles with a solvent that does not dissolve the silicone elastomer to any appreciable extent.

B1 5,149,960 (2371st)

METHOD OF CONVERTING SCANNER SIGNALS INTO COLORIMETRIC SIGNALS

Bruce Dunne, Westmont, Ill., and Thomas G. Stockham, Jr., Salt Lake City, Utah, assignors to R.R. Donnelley & Sons Company, Lisle, Ill.

Reexamination Request No. 90/003,304, Jan. 14, 1994.
Reexamination Certificate for Patent No. 5,149,960, issued Sep. 22, 1992, Ser. No. 725,657, Jul. 3, 1991.
Int. Cl.[5] G01J *3/46*
U.S. Cl. 250—226

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 13–29 is confirmed.

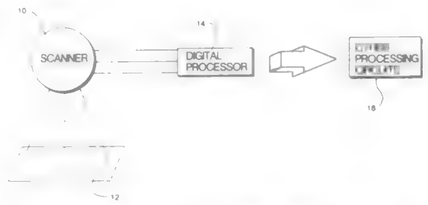
Claims 2 and 3 are cancelled.

Claims 1, 5 and 12 are determined to be patentable as amended.

Claims 4 and 6–11 dependent on an amended claim, are determined to be patentable.

1. A method of developing a set of colorant signals representing substantially exact amounts of colorants required to reproduce a color in a medium, comprising the steps of:

using a [photosensitive device] *densitometer* to develop a first set of color definition signals defining the color in



terms of amounts of color components according to a transformation function;

processing the set of color definition signals in an iterative conversion loop wherein the loop develops a succession of sets of colorant estimates that converge toward the required exact amounts of colorants; and

selecting a set of colorant estimates that meets a solution criterion as the set of colorant signals.

B1 5,151,423 (2372nd)

HETEROCYCLIC N-OXIDE DERIVATIVES OF SUBSTITUTED BENZO[5,6]CYCLOHEPTAPYRIDINES, COMPOSITIONS AND METHODS OF USE

John J. Piwinski, Parsippany; Michael J. Green, Skillman, and Jesse Wong, Union, all of N.J., assignors to Schering Corp., Kenilworth, N.J.

Reexamination Request No. 90/003,213, Oct. 5, 1993.
Reexamination Certificate for Patent No. 5,151,423, issued Sep. 29, 1992, Ser. No. 625,261, Dec. 10, 1990.
Continuation of Ser. No. 345,604, May 1, 1989, Pat. No. 5,089,496
Claims priority, application European Pat. Off., Apr. 30, 1990, 90108225.5
Int. Cl.[5] A61K *31/495, 31/50;* **C07D** *401/04, 221/06*
U.S. Cl. 514—254

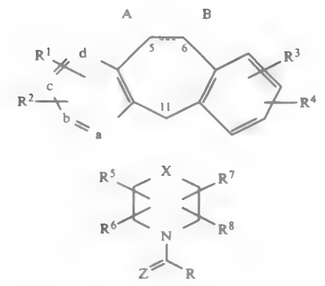
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–12, 17, 19 (second occurrance and one of the two identical claims 19) and 29–30 are cancelled.

Claims 13, 18, 19 (first occurrance) and 20–22 are determined to be patentable as amended.

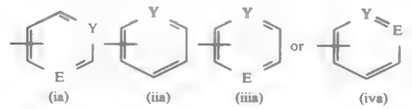
Claims 14–16, 23–28 and 31, dependent on an amended claim, are determined to be patentable.

13. A compound having the structural formula



or a pharmaceutically acceptable salt or solvate thereof, wherein:

R represents an N-oxide heterocyclic group of the formula (ia), (iia), (iiia), or (iva):



wherein Y represents $N^+—O^-$ and E represents $N^+—O^-$ or N, or R represents an alkyl group substituted with one of said N-oxide heterocyclic groups (ia), (iia), (iiia) or (iva):

one of a, b, c and d represents N or NR^{12} where R^{12} is O, $—CH_3$ or $—(CH_2)_nCO_2H$ where n is 1 to 3, and the remaining a, b, c and d groups are CH, which remaining a, b, c and d groups optionally may be substituted with R^1 or R^2;

R^1 and R^2 may be the same or different and each independently represents halo, $—CF_3$, $—OR^{13}$, $—COR^{13}$, $—SR^{13}$, $—S(O)_eR^{14}$ where e is 1 or 2, $—N(R^{13})_2$, $—NO_2$, $—OC(O)R^{13}$, [$—CO_2R^{13}$,] $—OCO_2R^{14}$, —CN, —N—$R—OC(O)R^{13}$, alkynyl, alkenyl or alkyl, which alkyl group may be substituted with halo, $—OR^{13}$ or $—CO_2R^{13}$ and which alkenyl group may be substituted with halo, $—OR^{14}$ or $—CO_2R^{13}$;

R^3 and R^4 may be the same or different and each independently represents H or any of the substituents of R^1 and R^2, or R^3 and R^4 together may represent a saturated or unsaturated C_5–C_7 carbocylic ring fused to the benzene ring;

R^5, R^6, R^7 and R^8 each independently represent H, $—CF_3$, alkyl or aryl, which alkyl or aryl may be substituted with $—OR^{13}$, $—SR^{13}$, or $—N(R^{13})_2$;

in addition, R^5 may be combined with R^6 to represent =O or =S and/or R^7 may be combined with R^8 to represent =O or =S;

[R^9, R^{10}, and R^{11} may be the same or different and each is independently selected from H, $—CF_3$, $—OR^{13}$, $—C(O)R^{13}$, $—SR^{13}$, $—S(O)_eR^{14}$ where e is 1 or 2, $—N(R^{13})_2$, $—NO_2$, $—CO_2R^{13}$, $—OCO_2R^{14}$, $—OCOR^{13}$, alkyl, aryl, alkenyl or alkynyl, which alkyl or alkenyl may be substituted with $—OR^{13}$, $—SR^{13}$ or $—N(R^{13})_2$ and which alkenyl may be substituted with OR^{14} or SR^{14};]

R^{13} represents H, alkyl or aryl;

R^{14} represents alkyl or alkyl;

R^{15} represents H or alkyl;

X represents N, [CH] or C;

when X represents C, an optional double bond indicated by the dotted lines to carbon atom 11 is present, and when X is N [or CH,] the double bond is absent;

the dotted line between carbon atoms 5 and 6 represents an optional double bond, such that when a double bond is present, A and B each independently represent $—R^{13}$, [halo,] $—OR^{14}$, *or* $—OC(O)R^{13}$ [or $—OCO_2R^{14}$] and when no double bond is present between carbon atoms 5 and 6, A and B each independently represent H_2, $—(OR^{14})_2$, [H and halo,] dihalo, [alkyl and H,] $(alkyl)_2$, [—H and $—OC(O)R^{13}$, H and $—OR^{13}$,] =O, [aryl and H,] $=NOR^{15}$ or $—O—(CH_2)_p—O—$ where p is 2, 3 or 4 and R^{13} is as previously defined; and

Z represents =O or =S;

alkyl as used herein represents a straight and branched carbon chain containing from one to twenty carbon atoms;

alkenyl as used herein represents a straight and branched carbon chain having at least one carbon to carbon double bond and containing from 2 to 12 carbon atoms;

alkynyl as used herein represents a straight and branched carbon chain having at least one carbon to carbon triple bond and containing from 2 to 12 carbon atoms; and

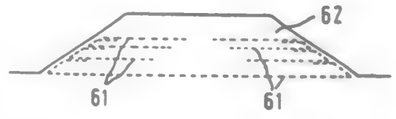
aryl as used herein represents a carbocyclic group containing from 6 to 15 carbon atoms and having at least one phenyl or fused phenylene ring, with all available substitutable carbon atoms of the carbocyclic group being intended as possible points of attachment, said carbocyclic group being optionally substituted with one or more of halo, alkyl, hydroxy, alkoxy, phenoxy, CF_3, amino, alkylamino, dialkylamino, $—COOR^{15}$ or $—NO_2$.

B1 5,156,495 (2373rd)

PLASTIC MATERIAL MESH STRUCTURE

Frank B. Mercer, Blackburn, England, assignor to P. L. G. Research Limited, Blackburn, England

Reexamination Request No. 90/003,129, Jul. 16, 1993.
Reexamination Certificate for Patent No. 5,156,495, issued Oct. 20, 1992, Ser. No. 628,991, Dec. 17, 1990.
Int. Cl.[5] E02D *17/20, 17/18*
U.S. Cl. 405—262



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–8 and 10–30 is confirmed.

Claim 9 is determined to be patentable as amended.

New claims 31–49 are added and determined to be patentable.

1. A composite civil engineering structure, comprising a mass of particulate material and a reinforcing means therefor, said reinforcing means comprising at least one generally horizontally extending layer of a flexible, integral, plastics material mesh structure, said mesh structure having upper and lower faces and comprising molecularly orientated longitudinal strands interconnected by substantially parallel transverse members, said orientated strands and said transverse members defining therebetween mesh opening whose dimension in a direction parallel to said orientated strands is at least several multiples of the width of the mid-points of said orientated strands between said transverse members, portions of said mesh structure at the intersection of the axes of said orientated

VOL 1165 ISS 5 AG 30 1994 UMI

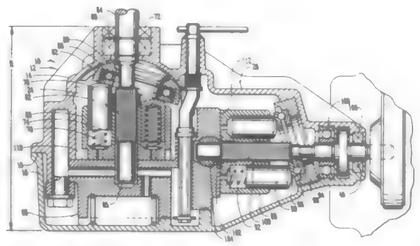
strands and said transverse members being unorientated or substantially less orientated than the mid-points of orientated strands connected thereby, said portions of said mesh structure at the intersection of the axes of said orientated strands and said transverse members also being thicker than the thickness of said mid-points of said orientated strands, said mesh structure having been formed by stretching, at least in the direction parallel to said orientated strands, a sheet of starting material having upper and lower faces, a thickness of not less than 1.5 mm, and a pattern of holes whose centers lie on a notional, substantially square or rectangular grid of rows or columns, the stretching of the starting sheet in the direction of said columns having been effected to such extend that notional points which, on each face of the starting sheet, lay on notional straight lines which are parallel to the rows and tangential to respective holes, have moved into the corresponding strands, said reinforcing means being embedded in said mass of particulate material with portions of said mass of particulate material being below said mesh structure, portions of said mass of particulate material being above said mesh structure, and portions of said mass of particulate material being within the openings defined by said mesh structure, so that portions of said particulate material are in direct contact with said upper and lower faces of said mesh structure and with portions of said mesh structure defining said mesh opening, whereby said mesh structure has good slip resistance properties with respect to said particulate material and provides good stress transmission paths.

B1 5,156,576 (2374th)

COMPACT INTEGRATED TRANSAXLE

Alan W. Johnson, Ames, Iowa, assignor to Sauer, Inc., Ames, Iowa

Reexamination Request No. 90/003,181, Aug. 23, 1993.
Reexamination Certificate for Patent No. 5,156,576, issued May 22, 1991, Ser. No. 703,930, Oct. 20, 1992.
Int. Cl.[5] F16H *57/02*
U.S. Cl. 475—72



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1, 2 & 4 & 6–10** is confirmed.

Claim **3** is cancelled.

Claim **5** is determined to be patentable as amended.

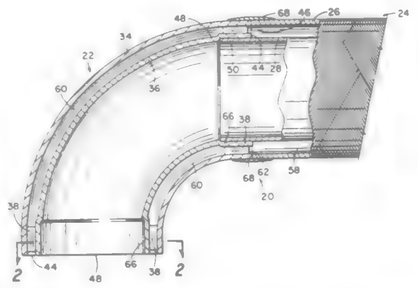
1. An integrated hydrostatic transaxle comprising:
a transaxle casing rotatably mounting a pair of oppositely extending axles along a substantially horizontal peripheral seam formed between a first casing part and a second casing part;
a hydraulic pump;
a hydraulic motor having an associated output shaft;
a center section positionable in the casing and having first and second faces, the first face being a pump mounting face for mounting the hydraulic pump within the transaxle casing and the second face being a motor mounting face for mounting the hydraulic motor within the transaxle casing with the output shaft extending along the peripheral seam; and
an intermediate shaft interposed between the output shaft and the axles, the intermediate shaft being journalled in the transaxle casing offset from a plane defined by the peripheral seam and substantially parallel to the pump mounting face, the pump mounting face being offset from a plane defined by the peripheral seam.

B1 5,186,502 (2375th)

DOUBLE-CONTAINMENT PIPE FITTINGS AND SYSTEM

Carl E. Martin, Sand Springs, Okla., assignor to Fibercast Company, Sand Springs, Okla.

Reexamination Request No. 90/003,325, Feb. 7, 1994.
Reexamination Certificate for Patent No. 5,186,502, issued Feb. 16, 1993, Ser. No. 625,837, Dec. 11, 1990.
Int. Cl.[5] F16L *39/00*
U.S. Cl. 285—133.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–35** is confirmed.

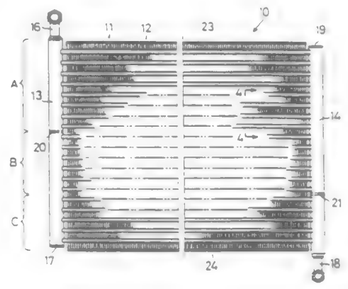
1. A double-containment pipe fitting for joining sections of double-containment pipe, each section of double-containment pipe including a containment pipe and a carrier pipe positionable inside the containment pipe, the fitting comprising:
a containment housing having a plurality of open ends, each open end being constructed to securely connect to an open end of containment pipe;
a carrier housing having a plurality of open ends constructed and arranged for positioning within the containment housing, each open end being constructed to securely connect to an open end of a carrier pipe; and
a plurality of restraining means, at least one restraining means located at each open end of the containment housing and connected to the inside surface of the containment housing and to the outside surface of the carrier housing, for securely connecting the carrier housing to the containment housing and for restraining expansion and contraction of the carrier pipe and containment pipe, the carrier pipe and containment pipe being otherwise unrestrained against expansion and contraction.

B1 5,190,100 (2376th)

CONDENSER FOR USE IN A CAR COOLING SYSTEM

Ryoichi Hoshino; Hironaka Sasaki, and Takayuki Yasutake, all of Oyamashi, Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

Reexamination Request No. 90/003,073, Jun. 3, 1993.
Reexamination Certificate for Patent No. 5,190,100, issued Mar. 2, 1993, Ser. No. 671,365, Mar. 19, 1991.
Claims priority, application Japan, Jul. 29, 1986, 61-179763; Nov. 2, 1986, 61-263138
Int. Cl.[5] F28F *13/00*
U.S. Cl. 165—146



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–14** dependent on an amended claim, are determined to be patentable.

1. A condenser for liquefying gaseous coolant in an air conditioning system of an automobile after the system has compressed the coolant, said condenser comprising:
(i) a plurality of flat tubular elements defining flow paths and disposed in a spaced, substantially parallel relation, each element including at least one inside wall;
(ii) a plurality of fin members, each fin member disposed between adjacent tubular elements;
(iii) a pair of headers disposed in a spaced, substantially parallel relation at opposite ends of the tubular elements, the one and/or the other header defining a coolant inlet and a coolant outlet for the condenser, each header being a substantially round, elongate member and defining, for each tubular element, an opening through which it receives the tubular element and establishes fluid communication with the element;
(iv) at least one partitioning plate mounted in one of the header transversely of the header to divide the inside opening of the header, said plate including a first portion which extends into a slit in the header and a second portion which is generally co-extensive with the inside opening of the header, *said second portion of the partitioning plate being without any perforations;*
the coolant flowing from the inlet into one header and making a first pass through a plurality of the tubes to the other header, the coolant also making a final pass through a plurality of tubes to the outlet, the tubular elements and headers forming a first zone which receives gaseous coolant from the inlet and a final zone through which the coolant flows before discharging through the outlet, the effective cross sectional area of the flow paths defined by the tubular elements through which the coolant makes the final pass being smaller than the effective cross sectional area of the flow paths of those through which the coolant makes the first pass; said condenser being able to resist internal pressures greater than 10 atmospheres.

VOL
1165
ISS
5
AG
30
1994
UMI

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,707

ANTICORROSION COATING COMPOSITION WITH IMPROVED STABILITY, AND COATED SUBSTRATE

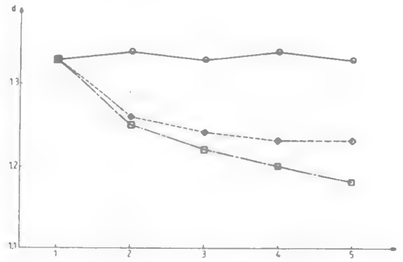
Gilbert Marguier, Senlis, France, assignor to Dacral S.A., France

Original No. 4,931,074, dated Jun. 5, 1990, Ser. No. 62,167, Jun. 12, 1987. Application for reissue May 27, 1992, Ser. No. 889,517

Claims priority, application France, Jun. 13, 1986, 86 08559

Int. Cl.[5] C23U *22/26*

U.S. Cl. 148—248 **17 Claims**



1. An anticorrosion coating composition for a metal substrate which comprises:

(a) from approximately 10 to approximately 40% by weight of a particulate metal,

(b) from approximately 1 to approximately 12% by weight of boric acid and hexavalent chromiun,

(c) from approximately 0.5 to approximately 4% by weight of a pH regulator,

(d) from approximately 7 to approximately 30% by weight of a high-boiling solvent of the group consisting of polyols and glycol ethers,

(e) from at least approximately 0.1 to approximately 10% by weight of an organic cosolvent with a solubility parameter of 10.8 ± 1,

(f) from approximately 0.1 to approximately 10% by weight of mineral spirits

(g) from approximately 1 to approximately 3% by weight of a system of nonionic surfactants comprising at least one water-soluble surfactant which has a HLB close to but higher than 10 and a surfactant which is soluble in mineral spirits which has a HLB close to but lower than 10,

(h) water.

Re. 34,708

SCANNING ION CONDUCTANCE MICROSCOPE

Paul K. Hansma, and Barney Drake, both of Santa Barbara, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Original No. 4,924,091, dated May 8, 1990, Ser. No. 305,465, Feb. 1, 1989. Application for reissue Apr. 29, 1992, Ser. No. 875,441

Int. Cl.[5] G21K *5/08*

U.S. Cl. 250—306 **18 Claims**

1. A scanning ion conductance microscope comprising:

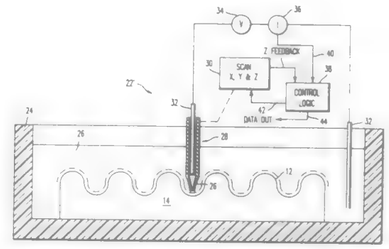
(a) a reservoir holding a sample to be scanned therein;

(b) a micropipette having an open tip communicating with a hollow shaft;

(c) an electrolyte solution disposed within said reservoir covering said sample and disposed within said tip [and shaft] of said micropipette;

(d) a first microelectrode [diposed] *disposed* in said shaft in [electrical contact] *ionic communication* with said electrolyte [therein] *solution in said open tip*, said first microelectrode being [spaced from inner sidewalls of said shaft to allow said electrolyte solution to pass between said first microelectrode and said inner sidewalls of said shaft] *in ionic communication with electrolyte solution in said reservoir via said open tip by means of electrolyte solution within said tip;*

(e) a second microelectrode disposed in said reservoir in [electrical contact] *ionic communication* with said electrolyte [therein] *solution in said reservoir and forming a continuous ionic current path between said first and second microelectrodes via the electrolyte solution in said reservoir and in said open tip;*



(f) scanning means for scanning said tip of said micropipette over a top surface of said sample in a scanning pattern;

(g) voltage means for applying a voltage across said first and second microelectrodes;

(h) current means for measuring [the] *an ionic* current flowing *in the ionic current path* between said first and second microelectrodes through said open tip of said micropipette and for supplying an indication of said current at an output thereof; and,

(i) control logic means having an output connected to said scanning means and an input connected to said output of said current means for causing said scanning means to set the height of said tip at a desired distance above said top surface and for outputting data of interest related to said [top surface] *sample* as it is scanned.

Re. 34,709

LIGHTING SYSTEM

Glenn M. Tyson, Crescenta, Calif., assignor to GTY Industries, Sylmar, Calif.

Original No. 5,041,950, dated Aug. 20, 1991, Ser. No. 389,363, Aug. 3, 1989. Application for reissue Apr. 9, 1993, Ser. No. 45,565

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—96 **30 Claims**

1. A lighting system comprising

a structurally supportive housing [have] *having* a first opening;

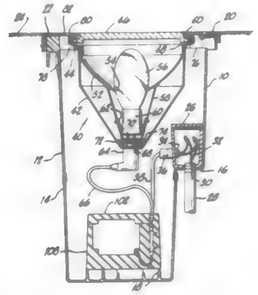
a lamp assembly having a socket enclosure and a lens, said socket enclosure with said lens defining a lamp cavity separately sealed from said housing;

electrical lighting elements in said housing electrically coupled with said lamp assembly and including wicking barriers;

a closure assembly enclosing said electrical lighting ele-

VOL 1165 ISS 5 AG 30 1994 UMI

ments, said closure assembly including a potting body, in which are embedded said electrical lighting elements, and



a potting base, said electrical lighting elements being sealed against moisture from said lamp assembly by a said wicking barrier and from said housing.

Re. 34,710

MAGNETO-OPTICAL RECORDING APPARATUS

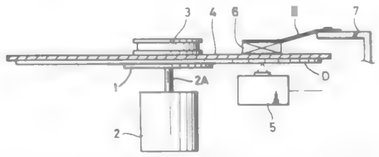
Hirotoshi Fujisawa; Takashi Ohmori, and Ryo Ando, all of Tokyo; Japan, assignors to Sony Corporation, Japan

Original No. 5,034,933, dated Jul. 23, 1991, Ser. No. 482,216, Feb. 20, 1990. Application for reissue Jul. 16, 1993, Ser. No. 92,489

Claims priority, application Japan, Mar. 10, 1989, 1-027793[U]; Jul. 10, 1989, 1-081074[U]; Jul. 13, 1989, 1-082316[U]

Int. Cl.[5] **G11B** *11/00, 23/00*

U.S. Cl. 369—13 **33 Claims**



1. In a magneto-optical disc recording apparatus of the type in which a magneto-optical disc is recorded by irradiating the magneto-optical disc with a recording light from a beam optical pickup head device under the condition that the magneto-optical disc has applied to it an external magnetic field by external magnetic field generating means, the improvement comprising [a spacer sheet to be mounted] *spacer means provided* on the magneto-optical disc wherein the external magnetic field generating means is brought in contact with the spacer [sheet] *means, the spacer means being made of a material which has a smooth surface and a predetermined thickness.*

Re. 34,711

DEVICE FOR FEEDING AN EXTRUSION HEAD FOR PLASTIC MATERIAL

Michel F. Compagnon, La Tour-de-Peilz, Switzerland, assignor to Nokia-Maillefer SA, Ecublens, Switzerland

Original No. 4,832,960, dated May 23, 1989, Ser. No. 124,994, Mar. 5, 1987. Application for reissue May 13, 1991, Ser. No. 699,447

Claims priority, application Switzerland, Mar. 6, 1986, 928/86

Int. Cl.[5] **B29C** *47/04, 47/10*

U.S. Cl. 425—131.1 **26 Claims**

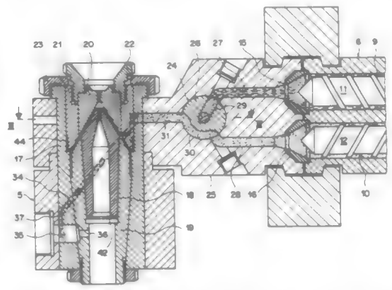
18. A device for extruding a continuous elongated element of plastic materials having a core encompassed by at least one outer sheath, comprising:

a main extruder for extruding a continuous main flow of a plastic material;

first auxiliary feed means for feeding a first continuous auxiliary flow of a first material, the first auxiliary feed means having a first exit orifice for continuously conducting said first auxiliary flow;

second auxiliary feed means for feeding a second continuous auxiliary flow of a second material, the second auxiliary feed means having a second exit orifice for continuously conducting said second auxiliary flow;

extruder means for extruding the elongated element comprised



of said main flow and said first and second auxiliary flows, the extruder means having a first flow path for directing one material of said first and second materials to join with the main flow to form the core of the elongated element and a second flow path for directing the other material of said first and second materials to form the outer sheath of the elongated element to encompass the core; and

inverter means connected to the first and second exit orifices of the first and second auxiliary feed means and the first and second flow paths of the extruder means, for selectively exchanging connections between the first and second exit orifices and the first and second flow paths.

Re. 34,712

PHARMACEUTICALLY USEFUL (+)-1-(3-DIMETHYLAMINOPROPYL)-1-(4'-FLUOROPHENYL)-1,3-DIHYDROISO BENZOFURAN-5-CARBONITRILE AND NON-TOXIC ACID ADDITION SALTS THEREOF

Klaus P. Boegesoe, Hørsholm, and Jens K. Perregaard, J Gerspris, both of Denmark, assignors to H. Lundbeck A/S, Copenhagen-Valby, Denmark

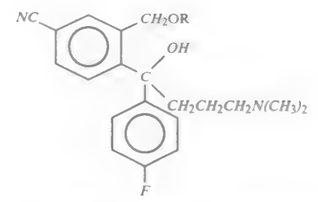
Original No. 4,943,590, dated Jul. 24, 1990, Ser. No. 363,589, Jun. 8, 1989. Application for reissue Sep. 14, 1993, Ser. No. 122,009

Claims priority, application United Kingdom, Jun. 14, 1988, [illegible]4087

Int. Cl.[5] **A61K** *31/34;* **C07D** *307/87;* **C07C** *255/59*

U.S. Cl. 514—469 **12 Claims**

12. A compound of the formula *(31)-Enantiomer of the compound 4-[4-(dimethylamino)-1-(4'-fluorophenyl)-1-hydroxy-1-butyl]-3-(hydroxymethyl)-benzonitrile or an ester of said (−)-enantiomer, which has the formula*



wherein R is hydrogen or represents a group completing a labile ester.

Re. 34,713

VINYLAMINE COPOLYMER FLOCCULATING AGENT ETC.

Takaharu Itagaki, Yokohama; Mitsuaki Shiraga, Machida; Shigeru Sawayama, Yokohama, and Kohichi Satoh, Zama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

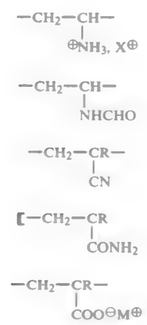
Original No. 4,957,977, dated Sep. 18, 1990, Ser. No. 4,70,,395, Jan. 25, 1990. Continuation of Ser. No. 65,296, Jun. 22, 1987, abandoned. Application for reissue Sep. 16, 1992, Ser. No. 946,530

Claims priority, application Japan, Jun. 25, 1986, 61-148680

Int. Cl.[5] **C08F** *8/12*

U.S. Cl. 525—328.4 **31 Claims**

1. A vinylamine copolymer having the structural units represented by the following formulas (I), (II), (III)[,] *and* (IV) [and (V)]:



wherein $X^{\ominus}$ represents an anion, R represents a hydrogen atom or a methyl group, $M^{\oplus}$ represents a hydrogen ion or a monovalent cation, in which the molar fraction of the structural unit (I) is 5 to 85% by mole, the molar fraction of the structural unit (II) is 2 to 85% by mole, the molar fraction of the structural unit (III) is 5 to 80% by mole, the molar fraction of the structural unit (IV) [is 0 to 40% by mole, all of said molar fractions being based on the vinylamine copolymer, and the molar fraction of the structural unit (V)] is 0 to 8% by mole which is based on the total content of the structural units (III)[,] *and* (IV) [and (V)] and the total of the molar fractions of the structural units [I–V is equal to 100%] *I–III is at least 60%;*

wherein the vinylamine copolymer is prepared by:

polymerizing, in the presence of a radical polymerization initiator, a mixture consisting essentially of (1) N-vinylformamide and (2) acrylonitrile or methacrylonitrile and

hydrolyzing the resultant polymer.

Re. 34,714

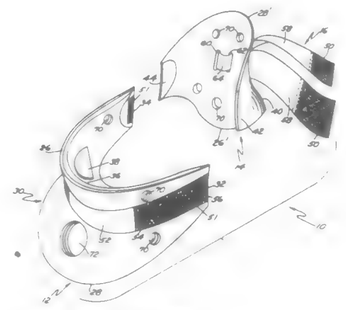
CERVICAL COLLAR OF LAMINATE CONSTRUCTION

William R. Burns; Gary R. Burns, and Paul W. Burns, all of 252 Old Baptist Rd., North Kingstown, R.I. 02852

Original No. 4,940,043, dated Jul. 10, 1990, Ser. No. 337,418, Apr. 13, 1989. Continuation-in-part of Ser. No. 943,655, Dec. 17, 1986, abandoned. Application for reissue Sep. 30, 1992, Ser. No. 954,560

Int. Cl.[5] **A61F** *5/01*

U.S. Cl. 602—18 **1 Claim**



1. A cervical collar comprising:

front and back halves adapted to fit around a person's neck;

said halves being preformed from a laminated member comprising exterior layers of foamed polymeric material and an interior layer disposed between said exterior layers, said [internal] *interior* layer being of a substantially solid thermoplastic material and being centrally coextensive with the exterior layers to define an un-reinforced periphery;

said front half having a front most portion with a chin receiving depression formed in the top edge thereof, said portion extending generally downwardly and providing a lower edge means for engaging the upper portion of the chest, and end portions extending from said front most portion along both sides of the neck, said end portions tapering in height away from said front portion;

said [rear] *back* half having a rear most portion curved in the vertical direction to correspond to the shape of the base of the head and neck along the spine, and end portions extending from said rear most portion along both sides of the neck, said end portions tapering in height away from said rear most portion, said rear portion having a pair of parallel slots substantially central of the rear half;

said halves being provided with a plurality of ventilation holes;

said [ends] *end portions* of said front half tapering in thickness so as to overlap said [ends] *end portions* of said back half to provide continuous encircling support around the neck;

strap means *having first and second ends* for positioning said halves on the neck and strap securing means being mutually cooperative for releasably securing the ends of said strap means and retaining said halves in a collar configuration;

said strap means including a first strap spanning said front half along its outer perimeter and securely fastened thereto [at intermediate points] *adjacent the end portions of said front half* and at said [ends] *end portions of said front half* by stitching to the front half *in the strap securing means*, and a second strap spanning said back half along its outer perimeter by being looped through parallel slots formed in said rear most portions, said second strap being gripped by said slots.

VOL
1165
ISS
5
AG
30
1994
UMI

PLANT PATENTS

GRANTED AUGUST 30, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,871

SHRUB ROSE PLANT NAMED KORISSEL

Wilhelm Kordes, Sparrieshoop, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Sep. 22, 1993, Ser. No. 126,387
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by its small, white, five-petalled flowers that are borne in large clusters; its resistance to powdery mildew and rust; its small, dark green, glossy foliage and its low growing and spreading plant habit.

8,872

SHRUB ROSE PLANT NAMED KORFULLWIND

Wilhelm Kordes, Sparrieshoop, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Sep. 22, 1993, Ser. No. 127,141
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its dark green, glossy, disease-resistant foliage; its compact spreading habit of growth; its rapid repeat bloom and its attractive pink blooms borne in clusters.

8,873

ILEX AQUIFOLIUM — LIMSI CULTIVAR

Arie Blanken, Boskoop, Netherlands, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Oct. 22, 1993, Ser. No. 139,725
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—65 **1 Claim**

1. A new and distinct female *Ilex aquifolium* cultivar possessing the following characteristics:

(a) forms an attractive densely-formed naturally pyramidal upright evergreen shrub or small tree with a vigorous head branch that well retains such pyramidal configuration following pruning,
(b) forms dark green leaves of variable shape having a good luster on the upper surface and which bear spines that lack a propensity to catch clothing,
(c) forms pistillate flowers primarily during the first half of May when grown in southeastern Pennsylvania,
(d) forms in abundance highly-visible bright red berries, and
(e) exhibits a cold tolerance that substantially exceeds that of the Pyramidalis and J. C. Van Tol cultivars of *Ilex aquifolium;*

substantially as herein shown and described.

8,874

ASTER PLANT NAMED DARK BLUE BUTTERFLY

Zelimir K. Tvrtkovic-Sahin, Alphen aan den Rijn, and Petrus J. Akerboom, Ter Aar, both of Netherlands, assignors to De-Nachtvlinder B.V., Paradijsweg, Netherlands

Filed Jan. 21, 1993, Ser. No. 7,235
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct Aster plant named Dark Blue Butterfly, as described and illustrated.

8,875

ASTER PLANT NAMED CASABLANCA

Zelimir K. Tvrtkovic-Sahin, Alphen aan den Rijn, and Petrus J. Akerboom, Ter Aar, both of Netherlands, assignors to De-Nachtvlinder B.V., Paradijsweg, Netherlands

Filed Jan. 21, 1993, Ser. No. 7,236
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct Aster plant named Casablanca, as described and illustrated.

8,876

GERBERA JAMESONII PLANT NAMED TERTONO

Lambertus J. M. Stravers, Carlsbad, Calif., assignor to Terra Nigra B.V., De Kwakel, Netherlands

Filed Dec. 23, 1993, Ser. No. 172,262
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Gerbera plant named 'Tertono' as illustrated and described, characterized by its semi-double type, a very distinct dark pink ray floret with white edges, a green disc floret, the outermost florets of which display white stigmas and the middle flowers of which show yellow anthers, pink perianth lobe color and 110 mm overall flower diameter.

8,877

CHRYSANTHEMUM PLANT NAMED RADIANT LYNN

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 29, 1993, Ser. No. 143,153
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Radiant Lynn, as described and illustrated.

VOL
1165

ISS
5

AG
30

1994

UMI

PATENTS

GRANTED AUG. 30, 1994

ERRATA

For CLASS	See PATENT NO.
477-065	5,341,703
409-234	5,341,710
122-004	5,341,753
528-049	5,341,799
254-209	5,342,020
256-001	5,342,021
264-001	5,342,022
267-064	5,342,023
117-083	5,342,475
523-466	5,342,554
514-475	5,342,579
430-049	5,342,784
117-089	5,342,805
428-294	5,342,872
514-337	5,342,941
548-262	5,342,943
335-172	5,343,174
347-085	5,343,226
347-042	5,343,227
347-029	5,343,228
347-008	5,343,229
347-031	5,343,230
347-014	5,343,231
358-445	5,343,283
348-301	5,343,297
348-184	5,343,298
348-445	5,343,299
348-478	5,343,300
348-500	5,343,301
348-251	5,343,302
348-346	5,343,303

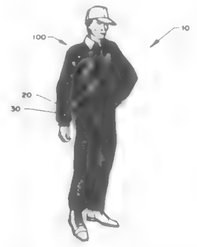
VOL
1165
ISS
5
AG
30
1994
UMI

PATENTS

GRANTED AUGUST 30, 1994

GENERAL AND MECHANICAL

5,341,511
ARTICULAR SKELETON, INSECT PROTECTIVE GARMENT
Marvin H. Wells, 5265 Daffodil Dr., Fredericksburg, Va. 22407
Filed Apr. 5, 1993, Ser. No. 43,005
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **19 Claims**

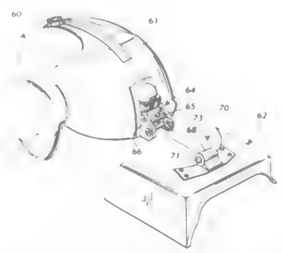


1. A garment for protecting a wearer against bites from small insects, comprising:

an outer means for screening small insects; and

an inner means, positioned under said means for screening, for supporting said means for screening said means for supporting forming a grid pattern comprised of a plurality of bands comprised of two types of spacers wherein each first spacer includes a coil and each second spacer is connected on each end to a different first spacer in an alternating manner and wherein each band is connected to a contiguous band by stretchable means.

5,341,512
VISION LIMITING DEVICE
Casey Noble, 106 Brandon Hall Dr., Columbus, Ga. 31909
Filed Aug. 20, 1993, Ser. No. 110,113
Int. Cl.[5] A42B *3/02, 1/24*
U.S. Cl. 2—6.2 **6 Claims**



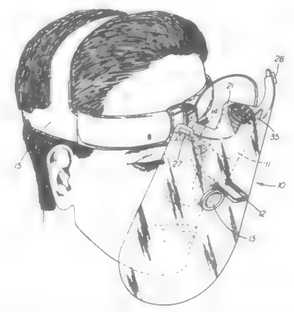
1. For use with an aviator's sound protective helmet having a front opening therein at least partially defined by depending, contoured edged ear coverings and having a top edge for permitting vision in forward, peripheral, upward and downward directions by the wearer, and further having a mounting structure thereon above the top edge of the opening; a vision limiting helmet attachment comprising:

a unitary hood frame structure having a first, operative, position and a second, inoperative, position, said frame structure having an inner edge adapted to abut the top edge of the front opening of the helmet when said frame structure is in the operative position; said frame structure having means for blocking the helmet wearer's vision in the upward direction comprising a top wall extending forwardly from said inner edge of said frame structure; said frame structure further having means for substantially completely blocking the helmet wearer's peripheral vision comprising two spaced, depending side walls joined by said top wall and coextensive therewith, each said side wall having a proximal end contoured to conform to the forward edges of the helmet ear coverings; said frame structure having means for blocking a portion of the helmet wearer's forward vision comprising a front wall depending from said top wall remote from said inner edge and joining said side walls, said front wall having a cut-away opening therein;

quick coupling means for releasably mounting said unitary frame structure to the mounting structure on the helmet in pivotal relationship thereto for pivoting between said operative and said inoperative positions; and

bracket means for mounting said quick coupling means on said top wall of said unitary frame structure.

5,341,513
MEDICAL SHIELD WITH HEADLIGHT MOUNTING
Walter F. Klein; Ira J. Cooper, and Leon M. Cooper, all of Lexington, Ky., assignors to B. F. Wehmer, Medical Instrument Division, Lexington, Ky.
Filed Mar. 31, 1992, Ser. No. 860,899
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—9 **5 Claims**



1. A disposable protective shield for a headlight assembly for projecting illumination for external viewing and supported on a user head comprising:

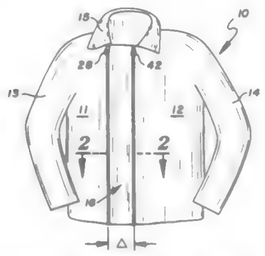
a thin sheet of flexible clear plastic, said sheet includes top and lateral edges and extends laterally and downwardly sufficient to cover a face portion of the user's head; and

means for mounting said sheet directly on said headlight assembly;

said mounting means being integral with said sheet and including separate, spaced dual flexible portions for securing the sheet to a headlight assembly by manual bending action, said flexible portions of said mounting means including an integral loop substantially centered along a top portion of said sheet, spaced fold lines defining said loop, means for attaching said loop to a top of said headlight assembly, a pair of curved wings spaced from the face portion and extending outwardly from said loop, and means for fastening said wings adjacent the top and lateral edges of said sheet to provide a curl to said sheet around the face.

VOL 1165 ISS 5 AG 30 1994 UMI

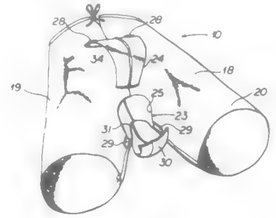
5,341,514
JACKET EXTENDER TO ENLARGEN THE CIRCUMFERENCE OF A JACKET
Thomas E. Dale, 327 14th Ave. SE., Minneapolis, Minn. 55414
Filed Mar. 1, 1993, Ser. No. 24,469
Int. Cl.[5] A41D *3/02*
U.S. Cl. 2—96 19 Claims



1. A leather jacket comprising: a first body section having first releasable connector means, a second body section having second releasable connector means, extender means attachable to the first and second body sections at a front portion of the jacket to increase a circumferential dimension of the jacket to an extended position allowing a user person to wear addition garments under the jacket, the extender means removable from the first and second body sections to decrease the circumferential dimension of the jacket to an unextended position to substantially fit the body of the user person, the extender means having an inside layer, an outside layer, core material interposed between the inside and outside layers, a first side and second side generally parallel to the first side, third releasable connector means attached to the first side of the extender means, fourth releasable connector means attached to the second side of the extender means, first closure means movably mounted on the second connector means, the fourth connector means having an end member engageable with the first closure means to orient the second and fourth connector means relative to each other whereby upon movement of the first closure means in an upward direction, the second and fourth connector means are held in a closed position, second closure means movably mounted on the third connector means, the first connector means having an end member engageable with the second closure means to orient the first and third connector means relative to each other whereby upon movement of the second closure means in an upward direction, the first and third connector means are held in a closed position thereby increasing the circumferential dimension of the jacket to the extended position.

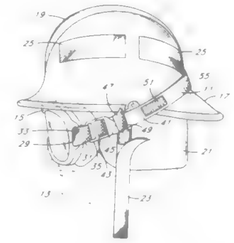
5,341,515
MEDICAL EXAMINATION GARMENT
Robert A. Cohen, Atlanta, Ga., assignor to Dignity Wear, Ltd., Boca Raton, Fla.
Filed Jan. 28, 1993, Ser. No. 10,329
Int. Cl.[5] A41B *9/00*
U.S. Cl. 2—400 22 Claims

1. A garment adapted to be worn by a patient undergoing medical examination or treatment of the perineum such as pelvic exams, urological procedures, in vitro fertilization, tubal occlusion procedures and the like, and with the garment comprising:
a trunk with front and rear portions that have a waist region;
a right leg with front and rear portions extending from said trunk which in combination extend circumferentially entirely about a portion of a patient's leg with the garment donned;
a left leg with front and rear portions extending from said trunk which in combination extend circumferentially entirely about a portion of a patient's leg with the garment donned;
said garment having an opening therein spaced from said waist region, said opening having an opening front portion extending into said trunk front portion, said right leg front portion and said left leg front portion, and an opening rear portion extending into said trunk rear portion, said right leg rear portion and said left leg rear portion;
a movable front flap mounted to said trunk front portion



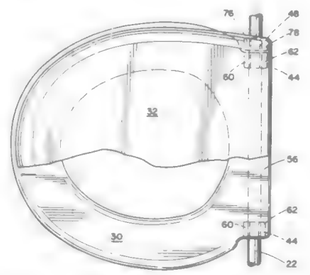
having a size and shape for substantially covering and uncovering said opening front portion; and
a movable rear flap mounted to said trunk rear portion having a size and shape for substantially covering and uncovering said opening rear portion;
whereby the lower abdomen, upper thighs, buttock and genitalia of a patient wearing the garment remains covered except during actual examination when only the perineum is exposed by moving the front and rear flaps to an uncovering position.

5,341,516
GOGGLE SUPPORT SYSTEM
Eric Keim, 2914 Mountain View Dr., Laguna Beach, Calif. 92651
Filed Dec. 22, 1992, Ser. No. 994,929
Int. Cl.[5] A61F *9/02*; A42B *3/00*
U.S. Cl. 2—452 10 Claims



1. A side strap for a goggle support system for securing goggles comprising:
a tension lock buckle;
a forestrap permanently attached to said tension lock buckle;
a main strap portion having a first end extending through said first tension lock buckle and a second end;
a patch of felt-like material attached to said first end of said main strap;
a patch of hook-like material attached adjacent to said second end of said main strap portion; and
a washer grommet supported by said main strap portion between said patch of hook-like material and said tension lock buckle.

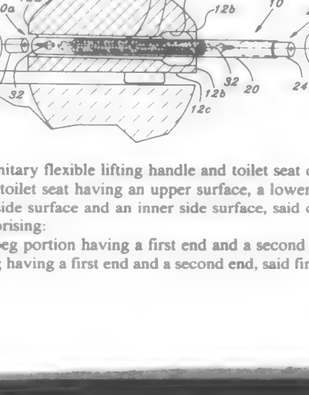
5,341,517
PORTABLE COMMODE
Robert R. Bly, Wellington, Ohio, assignor to Invacare Corporation, Elyria, Ohio
Continuation of Ser. No. 589,457, Sep. 27, 1990, abandoned, which is a division of Ser. No. 326,229, Mar. 20, 1989, Pat. No. 4,962,551. This application Mar. 18, 1992, Ser. No. 855,117
Int. Cl.[5] A47K *13/12*
U.S. Cl. 4—236 1 Claim



1. A commode seat and lid combination for securement to an elongated cylindrical rod, said combination comprising:
a generally planar seat member having top and bottom surfaces defining a curved periphery and a hole passing therethrough, the seat member further including first and second spaced integral seat clamps each having a C-shaped groove defining an opening facing downward from and substantially perpendicular to said bottom surface of said seat member said grooves being axially aligned, said clamps being formed of a resilient material and said openings being smaller than the diameter of said cylindrical rod such that said clamps are suited for gripping, pivotal receipt about said cylindrical rod when said seat clamps are forced over said rod and said rod is retained in said grooves; and
a generally planar lid member having top and bottom surfaces defining a curved periphery, said lid member including first and second spaced integral lid clamps, said lid clamps each having a base of substantially constant cross section extending from said bottom surface of said lid member, and further having a C-shaped groove extending from the base each said lid member groove defining an opening facing downward from and substantially perpendicular to said lid member bottom surface, said lid member grooves being axially aligned, said lid member clamps being formed of a resilient material and said lid member openings being smaller than said rod diameter such that said lid clamps are suited for gripping, pivotal receipt about the cylindrical rod, co-cylindrically with the seat clamps when said lid clamps are forced over said rod and said rod is retained in said grooves.

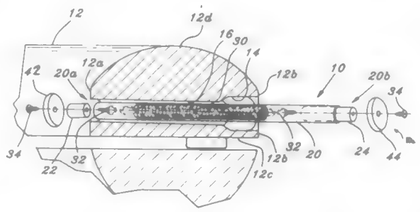
5,341,518
COMMODE SEAT LIFT APPARATUS
James R. Uhl, Scharf & Frazee Ave., Box 59, Vergas, Minn. 56587
Filed Jul. 1, 1993, Ser. No. 84,927
Int. Cl.[5] A47K *13/10, 13/12*
U.S. Cl. 4—236 2 Claims

1. A commode seat lift apparatus, comprising,
a commode bowl, having a commode bowl top wall, including a commode seat and a commode lid, and
a plurality of spaced first hinge plates mounted to the commode seat, with each of the first hinge plates including a first hinge tube, and a plurality of second hinge plates, wherein one of said second hinge plates is mounted in spaced adjacency to one of said first hinge plates, and the second hinge plates are secured to said commode lid, wherein each of the second hinge plates includes a second hinge tube, wherein one said second hinge tube is positioned in spaced adjacency to one said first hinge tube, and
a plurality of central hinge tubes, wherein one of said central hinge tubes is positioned interposed between one of said first hinge tubes and one of said second hinge tubes, wherein one first hinge tube, one second hinge tube, and one central hinge tube defines a tube group, and each tube group is coaxially aligned with an axle shaft directed through each tube group, and



a plurality of lift springs, with an individual lift spring positioned in adjacency to each tube group, each lift spring including a spring first end secured to one of said first hinge plates and a spring second end arranged for biasing relative to the commode bowl top wall, and
each spring second end includes an adjuster plate securing said spring second end, each adjuster plate includes an adjuster rod threadedly directed therethrough, each adjuster rod includes an adjuster rod head and a mounting plate rotatably securing each adjuster rod head, with the mounting plate fixedly secured to the commode bowl top wall.

5,341,519
SANITARY FLEXIBLE TOILET SEAT HANDLE
Vincent P. Cusenza, 22400 Alger, St. Clair Shores, Mich. 48080
Filed Jan. 21, 1994, Ser. No. 184,647
Int. Cl.[5] A47K *13/10*
U.S. Cl. 4—246.1 8 Claims



1. A sanitary flexible lifting handle and toilet seat combination, said toilet seat having an upper surface, a lower surface, an outer side surface and an inner side surface, said combination comprising:
a first peg portion having a first end and a second end;
a spring having a first end and a second end, said first end of

VOL 1165 ISS 5 AG 30 1994 UMI

said spring connected to said first end of said first peg portion;

a second peg portion having a first end and a second end, said second end of said second peg portion connected to said second end of said spring;

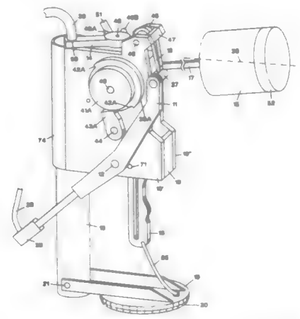
a sheath having a first end and a second end, said sheath covering said first peg portion, and at least a portion of said spring; and

said toilet seat having a first bore located in said outer side surface and extending in a direction toward said inner side surface of said toilet seat, said toilet seat having a second bore located in said inner side surface and extending in a direction toward said outer side surface of said toilet seat such that said first and second bores are axially aligned, said sheath being located in said first and second bores of said toilet seat and extending in a direction away from said toilet seat.

5,341,520
VARIABLE TWIN CYCLE WATER METERING MACHINE

Vladimir F. Lazar, 2015 32d Ave., San Francisco, Calif. 94116-1124

Filed Jul. 21, 1992, Ser. No. 917,463
Int. Cl.[5] E03D *1/14*
U.S. Cl. 4—325 **20 Claims**



1. A selective full or partial flush mode water metering machine for controlling the release of water from a storage tank having an overflow pipe, a flap valve, and a normal quantity of water therein, into a bowl, comprising:

a body for fitting over said overflow pipe of said storage tank,

guide means movably fitted to said body, said guide means adapted to be connected to said flap valve of said storage tank for controlling the opening and closing of said flap valve, said guide means being movable in a vertical direction for opening said flap valve to allow water to flow from said storage tank, said guide means having a first detent near a top portion thereof, and a second detent near a lower portion thereof,

lifting means adapted to be connected to said tank and in connection with said guide means for moving said guide means in said vertical direction,

first locking means in connection with said body for engaging said first detent of said guide means for locking said guide means in a first position during operation of a partial flush mode,

rocker means pivoted about a horizontal axis and having a first portion slidably connected to said first locking means for moving said first locking means out from said first detent in said guide means, said rocker means having a second portion with a second locking means for engaging said second detent of said guide means for locking said guide means in a second position higher than said first position during operation of a full flush mode,

float means in connection with said body floating on top of said water, when present, in said storage tank,

first cam means connected to said float means and adapted to engage said rocker means and pivoted for rotation about a horizontal axis, said first cam means being arranged to rotate in response to said float means as said float means follows the rise and fall of said water, such that:

during said partial flush mode, when a first amount of water has been released from said storage tank such that said float means has fallen to a first level and caused said first cam means to rotate by a first amount, said first cam means will rotate said rocker means and said first portion of said rocker means, such that said first portion of said rocker means may move said first locking means out of said first detent of said guide means to allow said guide means to fall and said flap valve to close to stop water outflow from said storage tank,

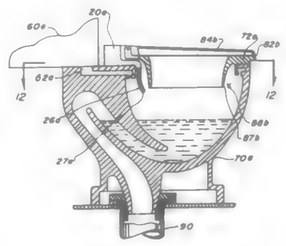
second cam means connected to said float means and adapted to engage said rocker means and pivoted for rotation about a horizontal axis, said second cam means being arranged to rotate in response to said float means as said float means follows the rise and fall of said water, such that:

during said full flush mode, when a second amount of water has been released from said storage tank such that said float means has fallen to a second level and caused said second cam means to rotate by a second amount, said second cam means will rotate said rocker means and said second locking means out of said second detent of said guide means to allow said guide means to fall and said flap valve to close to stop water outflow from said storage tank.

5,341,521
ENVIRONMENTALLY CONTROLLED STANDARD TOILET

Daniel S. Redford, 5270 Elvira Rd., Woodland Hills, Calif. 91364

Division of Ser. No. 746,934, Aug. 19, 1991, Pat. No. 5,210,884.
This application May 10, 1993, Ser. No. 59,649
Int. Cl.[5] E03D *9/05*
U.S. Cl. 4—348 **5 Claims**



1. An environmentally controlled standard toilet comprising:

a) a standard flushing toilet bowl adapted to be connected to a sewer line and having a water seal, an upper rim, a bowl top, and a center,

b) a toilet seat, positioned on top of the said rim, said seat having an integrated seat-skirt extending downwardly into the said bowl and forming within said bowl, and air-trapping cavity between said seat-skirt and said bowl,

c) a bowl flushing means permitting water to enter said bowl and flush matter therefrom,

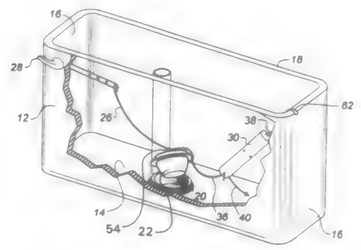
d) an air circulation means for generating a flow of air into said bowl through at least one exhaust opening positioned inside said air-trapping cavity, moving air inside said bowl, and returning the air from said air-trapping cavity to said air circulation means through at least one inlet opening positioned inside said air trapping cavity, wherein the moving air inside said bowl resembles a cyclone-type air circulation that generates secondary air currents that move radially from the center of said bowl, carrying airborne contaminants from the bowl center to said air-trapping cavity, and mixing them with the air sweeping tangentially inside said air-trapping cavity thus lowering the temperature of the air carrying the airborne contaminants to prevent their escape from the bowl during the toilet use, and

e) a sanitizer/conditioning means for dispensing odor conditioning and sanitizing agents into recirculating air returning to said bowl.

5,341,522
WATER CONSERVATION DEVICE FOR USE IN TOILET TANKS

James Munro, Edmonton, Canada, assignor to The Enviro Shop Corp., Canada

Filed May 28, 1993, Ser. No. 68,892
Claims priority, application Canada, Oct. 23, 1992, 2081293
Int. Cl.[5] E03D *3/12*
U.S. Cl. 4—415 **9 Claims**



1. A water conservation device for use in toilet tanks which have a valve movable between an open and a closed position, the valve being connected to a flush linkage which draws the valve to the open position upon activation of a flushing lever, comprising:

a. an elongate body having a first end and a second end;

b. first linkage means for linking the first end of the elongate body to one of the valve and the flush linkage;

c. second linkage means for suspending the second end of the elongate body within the toilet tank, such that the elongate body is disposed at an angle to the valve, the elongate body pivoting about the second linkage means whereby the weight of the body pulls the valve into the closed position.

5,341,523
ANTI-VORTEX DRAIN

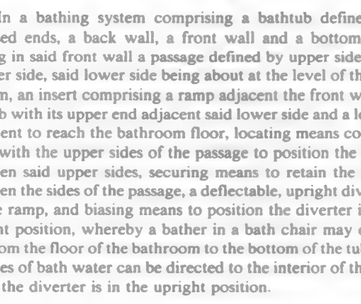
Steven R. Barnes, Phoenix, Ariz., assignor to Caretaker Systems, Inc., Scottsdale, Ariz.

Filed Mar. 15, 1993, Ser. No. 30,903
Int. Cl.[5] E04H *4/00*
U.S. Cl. 4—507 **12 Claims**

1. An improved drain for a floor surface of a pool including in combination:

a main cylindrical housing with a first predetermined diameter, a top and a bottom and having a cylindrical side wall terminating in an upper peripheral edge, a top flange depending from said upper peripheral edge and extending radially inwardly and downwardly from said side wall to define a circular opening of a second predetermined diameter wherein said top flange has an upper surface surrounding said opening, the top of said housing further adapted for mounting said upper peripheral edge flush with the surface of the floor of a pool;

a solid circular cover member having a peripheral edge and a lower surface and mounted in, and spaced above, said opening such that said lower surface partially overlaps said upper surface;



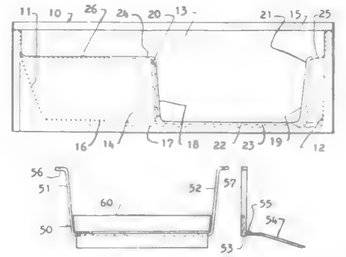
means operatively connected between said cover and said housing for maintaining said cover and said upper surface in a spaced apart relationship thereby causing water flow from said pool into said housing to take place between the edge of said cover member and an edge of said opening; and

means for removing water from said main housing.

5,341,524
ROLL-IN BATH TUB

Robert J. Zellner, 648 Highview Ter., Lake Forest, Ill. 60045

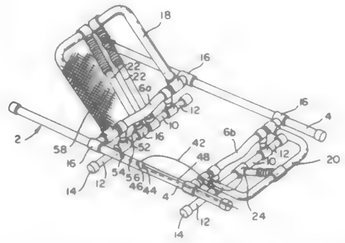
Filed May 10, 1993, Ser. No. 58,378
Int. Cl.[5] A47K *3/022*
U.S. Cl. 4—555 **6 Claims**



1. In a bathing system comprising a bathtub defined by opposed ends, a back wall, a front wall and a bottom, and having in said front wall a passage defined by upper sides and a lower side, said lower side being about at the level of the tub bottom, an insert comprising a ramp adjacent the front wall of the tub with its upper end adjacent said lower side and a length sufficient to reach the bathroom floor, locating means cooperating with the upper sides of the passage to position the ramp between said upper sides, securing means to retain the ramp between the sides of the passage, a deflectable, upright diverter on the ramp, and biasing means to position the diverter in the upright position, whereby a bather in a bath chair may easily roll from the floor of the bathroom to the bottom of the tub and splashes of bath water can be directed to the interior of the tub when the diverter is in the upright position.

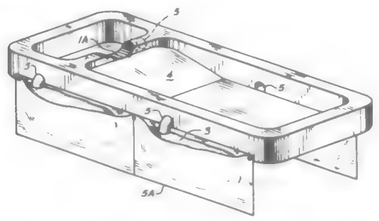
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,525
SHOWER LOUNGE CHAIR
Dorothy M. Tillman, Brandon, and Robert L. Marion, Jackson, both of Miss., assignors to Spartan Health Care Products, Inc., Jackson, Miss.
Filed Jan. 19, 1994, Ser. No. 182,827
Int. Cl.[5] A47K *3/12*
U.S. Cl. 4—579 **9 Claims**



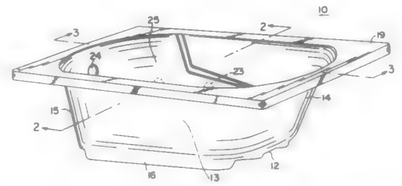
1. A shower lounge chair for supporting an individual in a bathtub for showering, said bathtub including side walls having upper edges, said shower lounge chair comprising
(a) a horizontal frame adapted to rest on the uppper edges of the side walls of the bathtub, said frame including at least two adjustable cross members adapted to engage inner surfaces of said side walls for securing said frame to the bathtub;
(b) a back rest pivotally connected with said frame for movement between a lower position wherein said back rest is parallel to said frame and an upper position wherein said back rest is perpendicular to said frame;
(c) a leg rest pivotally connected with said frame for movement between a lower position wherein said leg rest is perpendicular to said frame and an upper position wherein said leg rest is parallel to said frame; and
(d) means for independently pivoting said back rest and said leg rest to selected positions between said lower and upper positions, respectively, whereby when an individual is supported on said frame, said back rest may be pivoted to position the individual between prone and seated positions and said leg rest may be pivoted to suspend the individual's feet and legs in and out of the bathtub.

5,341,526
PERSONAL HYGIENE CARE UNIT
Linda J. Kennedy, P.O. Box 101, Paden, Okla. 74860
Filed Nov. 5, 1992, Ser. No. 972,223
Int. Cl.[5] A47K *3/062*
U.S. Cl. 4—584 **4 Claims**



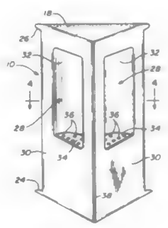
1. An apparatus for personal hygiene care of a person confined to a bed comprising disposable waste water bags, a mobile service station and an inflatable tub adapted to receive said person in a supine position, said inflatable tub comprising a bottom wall and two inflatable end walls connected by two inflatable side walls, said side and end walls connected to and extending upwardly from around the periphery of said bottom wall to form a tub shaped enclosure therein when said side and end walls are inflated, each of said side walls further including apron means connected proximate the bottom of each of said side walls, each of said apron means comprising a first longitudinal edge connected to said side wall and a second longitudinal edge comprising attachment means for connecting said second longitudinal edge to said first longitudinal edge thereby forming a cavity to hold said waste water bags therein, said waste water bags being disposed in each of said apron means and including means for collecting waste water from said tub.

5,341,527
BATHTUB WITH INTEGRALLY FORMED LEVELING BASE
A. Robert Schmidt, Leonardo; Drew J. Yuhas, Pennington, both of N.J., and Ronald D. Barndt, Tatamy, Pa., assignors to American Standard Inc., New York, N.Y.
Filed Apr. 30, 1993, Ser. No. 57,245
Int. Cl.[5] A47K *3/02*
U.S. Cl. 4—592 **8 Claims**



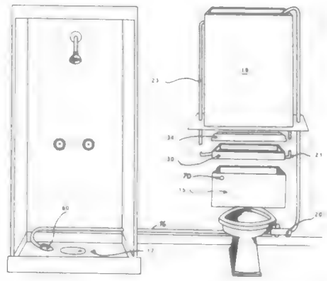
1. A molded article comprising:
a rigid shell having a finish side and a non-finish side, said rigid shell comprised of a bottom wall, left and right side walls, and a pair of end walls;
said rigid shell further having an interior and an exterior, said interior and exterior defined by said bottom wall, said left and right side walls, and said end walls, and wherein said finish side corresponds to said interior and said non-finished side corresponds to said exterior;
a single-layer rigid coating on said non-finish side of said shell forming a hardened exterior, said rigid coating covering the entire non-finish side; and
a leveling base integrally formed in said hardened exterior on the bottom side of said rigid shell.

5,341,528
FOOT REST FOR USE IN A SHOWER
Caroline Sultzbaugh, 6426 Woodland Dr., Dallas, Tex. 75225
Filed Mar. 11, 1993, Ser. No. 29,450
Int. Cl.[5] A47K *3/022*
U.S. Cl. 4—611 **6 Claims**



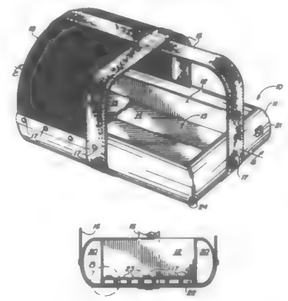
1. A foot rest comprising:
an elongated generally triangular shaped body portion, said body portion being formed by two connected back walls which together form a right angle and a front wall connected to each of the two back walls forming a hypotenuse of said body portion;
a bottommost generally triangular shaped section integral to said body portion and flush with respect to said back walls, said bottommost section sloping downwardly from said right angle to said front wall at essentially the same slope as a floor of a shower stall such that said back walls are generally parallel to walls of a shower stall when said foot rest is placed in a corner of the shower stall;
a topmost generally triangular shaped, essentially planar section integral to said body portion and flush with respect to said back walls and extending beyond said front wall, said planar section sloping downwardly from said right angle to said front wall for providing a user with a foot rest while taking a shower; and
a pair of integral shelf units formed within said body portion and accessible through corresponding apertures defined within each of said back walls for storage of supplies in said shelf units.

5,341,529
ADAPTABLE ASSEMBLY FOR A SOAPY WATER OPERATED TOILET SYSTEM
Fabian A. Serrano, Sierra Chalchihui No. 235, Torre A-402, Col. Lomas de Chapultepec, 11000, Mexico
Continuation-in-part of Ser. No. 788,221, Nov. 5, 1991, abandoned. This application Dec. 24, 1992, Ser. No. 997,762
Int. Cl.[5] A47K *4/00*
U.S. Cl. 4—665 **9 Claims**



1. In a system for saving water by recycling soapy water collected at an accumulation site for flushing a toilet, said system comprising a primary tank coupled to a toilet bowl and an auxiliary tank disposed above the primary tank and communicating with the latter to supply the primary tank with soapy water, a first pipe to convey the soapy water from the accumulation site to the auxiliary tank and a second pipe to supply the soapy water from said auxiliary tank to the primary tank, a pumping element disposed in the first pipe to pump the soapy water to the auxiliary tank, the improvement comprising:
a) a frame capable of being placed between an upper end of the primary tank and a cover thereof, said frame having a first opening arranged to receive one end of said second pipe from the auxiliary tank to supply the primary tank with soapy water from the auxiliary tank and a second opening arranged to receive one end of a relief pipe by which water exceeding a predetermined level in the auxiliary tank passes to said primary tank, said frame including an outwardly and downwardly extending flange which provides a seat surface to freely and removably rest on the upper end of the primary tank; an upper end of said flange acting as a support on which the tank cover can freely and removably rest; and
b) a float assembly fastened to said frame and comprising a pair of arms extending parallel to each other and at least one float element attached to said arms.

5,341,530
INFLATABLE CRIB WITH CARRYING STRAPS
Raymond Ward, 13430 N. 2nd St., Phoenix, Ariz. 85022
Filed May 17, 1993, Ser. No. 62,275
Int. Cl.[5] A47D *13/02, 7/00*
U.S. Cl. 5—93.1 **19 Claims**



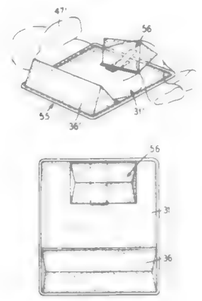
1. In a cradle for transporting an infant and providing a place of comfortable repose for said infant, said cradle comprising an enclosure with walls for encompassing said infant, a base on which said infant is laid for rest and transport, said base being coupled to said walls of said enclosure, and means coupled to said cradle for carrying said cradle while said infant is being transported therein, the improvement comprising:
said walls comprising an air impervious bladder;
means coupled to said bladder for the selected entry and exit of air into and from said bladder;
whereby, upon inflation with air, said bladder forms a resilient, soft enclosure for said infant, and, upon deflation of said bladder, the volume of said cradle is reduced for storage;
said means for carrying said cradle comprising form retaining, flexible strap means having a first cross member extending above said cradle, to be grasped for carrying, and further extending beneath said base as a first load bearing member to reinforce said base when said infant is placed on said base and transported by a person grasping said strap means; and
said strap means further comprises a second cross member, generally orthogonal to said first cross member, extending above said cradle for grasping and further extending beneath said base as a second load bearing member reinforcing said base; said form retaining, flexible strap means adapted to be folded or rolled for storage when the cradle is deflated, and upon inflation of the cradle, the first and second cross member portions of the strap means adapted to be configured in a self supported configuration above the cradle, standing away from making interfering contact with an infant resting in the cradle, whereby a protective covering means may be supported on said self supported straps means to thereby shield the infant.

VOL 1165 ISS 5 AG 30 1994 UMI

5,341,531
BOLSTER STRUCTURE FOR INFANT SIDE SLEEPING SUPPORT

Mariann C. Straub, 636 S. Belmont, Arlington Heights, Ill. 60005, and Mark H. Greenwood, 702 S. Mitchell, Arlington Heights, Ill. 60005

Continuation-in-part of Des. Ser. No. 8,056, May 6, 1993. This application Aug. 24, 1993, Ser. No. 111,139
Int. Cl.[5] A47D *15/00*
U.S. Cl. 5—655 **8 Claims**



1. A bolster structure for infant side sleeping support and positioning comprising:

(a) a generally rectangular apron having an upper face and an opposed lower face, and opposing pairs of side and end edges;

(b) a first elongated pillow, said first pillow having:

a generally rectangular flat base and an elongated crest in spaced relationship to said base,

cross-sectionally symmetrical side walls which generally decline in transverse width with increasing upward distance from said base to said crest,

a size such that said base extends on said upper face between a portion of said opposed side edges and adjacent to one of said end edges

a fill which defines the contours of said base, said sidewalls, and said crest, said fill being comprised of a resilient, elastomeric, compressible, shape-retaining material, and

a covering which extends from said upper face over said fill and which includes means mounting said covering to adjacent portions of said apron;

(c) a second elongated pillow, said second pillow having:

a generally rectangular flat base and an elongated crest in spaced relationship to said base,

cross-sectionally symmetrical side walls which generally decline in transverse width with increasing upward distance from said base to said crest,

a size such that said base is substantially longitudinally shorter than said base of said first pillow,

a fill which defines the contours of said base, said sidewalls, and said crest, said fill being comprised of resilient, elastomeric, compressible, shape-retaining material, and

a covering for said fill including mounting means therefor;

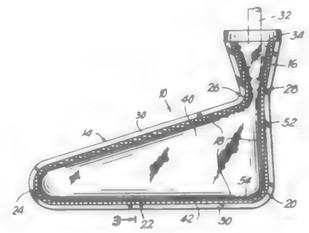
(d) hook and loop fastener means associated with said base of said second pillow and with said upper face adjacent to the other one of said end edges so that said base of said second pillow is releasably engagable at various orientations with said upper face; and

(e) said first and said second pillows each having a similar cross-sectional configuration, and said second pillow having a length which is substantially shorter than the length of said first pillow so that said second pillow has a length which is substantially shorter than the transverse distance across said apron between said side edges.

5,341,532
INFLATABLE STUFFING FOR FOOTWEAR

Edward Markowitz, 277 Prospect Ave., Hackensack, N.J. 07602

Continuation of Ser. No. 859,571, Mar. 27, 1992, abandoned. This application May 27, 1993, Ser. No. 68,280
Int. Cl.[5] A43D *3/00*
U.S. Cl. 12—114.4 **3 Claims**



1. A gas-inflatable stuffing for insertion into, and removal from, footwear, comprising:

a pair of overlying, generally L-shaped, planar sheets of synthetic plastic material having outer peripheral edges; said sheets being heat-sealed together along a heat-fused seal spaced inwardly of the outer peripheral edges; said sealed sheets having a rear heel region, a front toe region, a sole region extending in a longitudinal direction between the rear heel region and the front toe region, front and rear ankle regions spaced apart along the longitudinal direction above the rear heel region, and front and rear gas inlet regions extending in a transverse direction upwardly from the front and rear ankle regions, respectively; said seal extending in the longitudinal direction from the rear heel region along the sole region to the front toe region; said seal also extending in the longitudinal direction from the front toe region to the front ankle region and continuing in the transverse direction along the front gas inlet region, said seal further extending in the transverse direction from the rear heel region to the rear ankle region and continuing in the transverse direction along the rear gas inlet region; said front and rear gas inlet regions being spaced apart along the longitudinal direction to bound a gas inlet having an upper open end through which gas is introduced between the sheets to inflate the stuffing; and a heat-fused closure seal extending along the longitudinal direction across and closing said upper open end to seal the inflated stuffing.

5,341,533
MODULAR RAMP

Jack Seitz, 1732 Sawmill Rd., Cottonwood, Ariz. 86326

Filed Jan. 25, 1993, Ser. No. 8,744
Int. Cl.[5] E01D *1/00*
U.S. Cl. 14—69.5 **5 Claims**

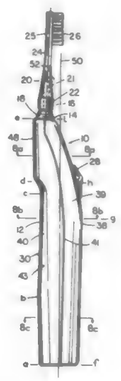


2. A kit of parts which when assembled form a ramp, comprising, a plurality of separate sections each of which has substantially similar length along the ramp between opposed first and second edges, there being a lip near the first edge and a groove near the second edge and a single supporting leg adjacent the second edge, the first and second edges of a section having different heights when the parts are assembled to form the ramp, and wherein when sections are placed edge to edge a lip of one section engages a groove of the adjacent section to provide a substantially continuous ramp, and wherein each section has an L-shaped cross-section.

5,341,534
ELECTRIC TOOTHBRUSH

Andrew Serbinski, Annadale, N.J.; Steve O. Mork, and Roberta L. Callaghan, both of Fort Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.

Filed Jun. 21, 1993, Ser. No. 80,003
Int. Cl.[5] A61C *17/34*
U.S. Cl. 15—22.1 **6 Claims**



1. In a battery powered toothbrush having an elongated housing with a nose defined at one end thereof, said housing being shaped to be grasped by the human hand and within which housing are a battery, a motor energized by said battery, a brush shaft driven by said motor with a stub projecting through said nose of said housing and upon which a brush is secured for use, said housing comprising a generally tubular housing shell within which said battery, said motor and said shaft are mounted and which comprises:

an upper half shell of U-shaped exterior cross section over a substantial portion of its length;

a switch button located on said upper half shell at a location toward said nose relative to said substantial portion;

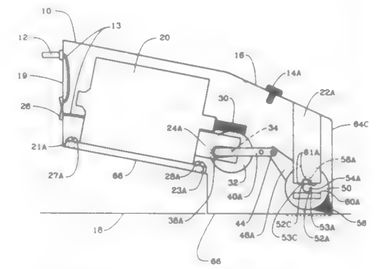
a lower half shell mated to said upper half shell in definition of said housing and being of semi-cylindrical exterior cross section over a similar substantial portion of its length; and

said substantial portions of said half shells defining a longitudinal geometric axis, in which said stub projects along a working axis parallel to but spaced in the direction away from said upper shell a predetermined distance from said geometric axis, and in which beyond said substantial portions toward said nose said half shells smoothly curve downwardly in accommodation of said predetermined distance; the downward curve of said upper shell beyond its substantial portion being substantially uniform along its length to said nose, the downward curve of said lower shell is completed in a distance beyond its substantial portion toward said nose to define an arcuate abutment for providing finger support opposite said switch button, and a generally flat surface defined beyond said abutment and laterally spaced from said working axis to the opposite side thereof from said geometric axis.

5,341,535
WINDOW SCRAPER

George A. O'Brien, 384 Hollow Tree Ridge Rd., Darien, Conn. 06820

Continuation-in-part of Ser. No. 768,389, Sep. 30, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,701
Int. Cl.[5] A46B *13/02*; A47L *1/05*
U.S. Cl. 15—22.4 **24 Claims**



1. An apparatus for removing substances from a surface comprising:

a housing having front and side walls defining a work area opening;

a brush disposed within said housing including a brush support with a plurality of filaments extending from a portion of said brush support toward said work area opening, said brush being mounted to said housing so as to be rotatable about an axis of rotation substantially perpendicular to said filaments, said axis of rotation being movable from a first position toward said work area opening to a second position away from said open work area;

biasing means for biasing said axis to said first position;

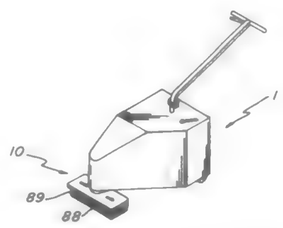
drive means connected to said brush for oscillating said brush about said axis; and

camming means for moving said brush axis of rotation from said first position to said second position in opposition to said biasing means during a portion of each oscillation of said brush by said drive means, said filaments contacting a surface placed against said work area opening in both said first and second positions.

5,341,536
SCRUBBING DEVICE

David L. Hill, 397 Hudsondale St., Weatherly, Pa. 18255

Filed Aug. 10, 1993, Ser. No. 103,708
Int. Cl.[5] A47L *11/12*
U.S. Cl. 15—98 **14 Claims**



1. A scrubbing device attachable to a rotary power source comprising:

a.) a stationary portion comprising:

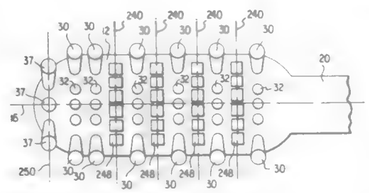
1.) a stationary plate having an orifice, a seating cavity adjacent said orifice, and a plurality of oblong slots, and

2.) a plurality of posts, slidably disposed within said slots,

VOL 1165 ISS 5 AG 30 1994 UMI

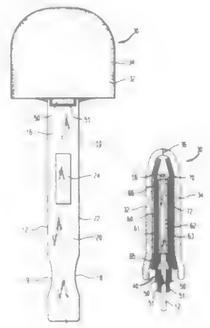
b.) a drive portion comprising:
1.) a shaft, said shaft disposed within said orifice of said stationary plate,
2.) a cam attached to said shaft, and said cam seated in said seating cavity of said stationary plate,
3.) a rod attached to said cam, offset from said shaft, and
4.) a bearing having a cavity, said rod disposed within said cavity of said bearing,
c.) an oscillating portion comprising:
1.) an oscillating plate attached to said posts of said stationary portion, said oscillating plate having at least one straight edge for scrubbing along walls and said oscillating plate having at least one corner having an angle of 90° or less for scrubbing in corners,
2.) a slot means, having an oblong slot, attached to said oscillating plate, said bearing of said drive portion seated in said slot, and
3.) abrasive portion attachment means attached to said oscillating plate, and
d.) an abrasive portion attached to said abrasive portion attachment means of said oscillating portion.

5,341,537
PLAQUE REMOVING TOOTHBRUSH
John P. Curtis, Bloomsbury; Kedar N. Rustogi, Kendall Park; John C. Crawford, Lake Mahopac; James H. Kemp, North Brunswick; Thomas E. Mintel, Rahway; Bert D. Heinzelman, Tenafly, all of N.J.; Donald R. Lamond, Lynbrook, and Laura H. Edelman, New York, both of N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation of Ser. No. 636,802, Jan. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 501,992, Mar. 29, 1990. This application Jun. 3, 1992, Ser. No. 892,655
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 **34 Claims**



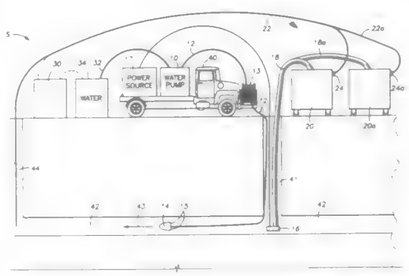
19. A toothbrush head having a handle attached thereto, the head having a longitudinal axis and terminating in a free end remote from said handle, the head having a surface from which tufts of bristles extend generally upwardly, the tufts on the peripheral edge of the head tilting laterally outwardly at an angle from the vertical, the tufts being arranged in three groups of rows of tufts wherein each row is transverse to said longitudinal axis, the tufts of each row of the first group being shorter in height than those in the other rows, the tufts of each row of the second group so arranged that the endmost tuft in each row thereof tilts laterally outwardly toward a respective side of the head and the remaining tufts of each second row extend substantially perpendicular to said head surface, some of said first and second groups alternating with each other along the longitudinal axis of the head, said third group of tufts located nearest said head free end and including two endmost tufts each tilting laterally outwardly toward a respective side of the head, said third group of tufts including both said two endmost tufts and a third tuft, the third tuft being located between said laterally tilting, two endmost tufts and extending perpendicularly to said head surface, said two endmost tilting tufts and said third endmost tuft lying in a plane transverse to said head longitudinal axis, said two endmost tufts located on opposite sides of said longitudinal axis.

5,341,538
SUN LOTION APPLICATOR
Anthony Banome, Brooklyn, N.Y., assignor to Sun Stix Incorporated, Brooklyn, N.Y.
Filed Mar. 5, 1993, Ser. No. 27,021
Int. Cl.[5] A47K *7/02;* **A47L** *13/46*
U.S. Cl. 15—210.1 **12 Claims**



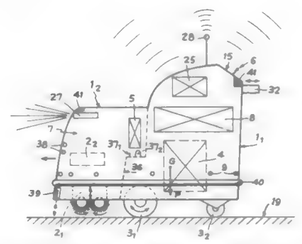
1. A lotion applicator for applying sun lotion and liquids to the body, comprising:
an elongate handle having a proximal end and a distal end;
a detachable lotion applicator pad assembly comprising two porous, flexible pad members attached substantially about their edges except at an opening to define a pocket therebetween in communication with said opening;
two semi-rigid reinforcing members disposed in said pocket and corresponding substantially to the shape of said pad members; and
fastening means for removably securing said pad assembly to said distal end of said handle, said fastening means being operative to connect said distal end of said handle to at least one of said reinforcing members when said distal end is disposed between said two reinforcing members.

5,341,539
APPARATUS FOR CLEANING WASTE COLLECTION SYSTEM
Sheron R. Sheppard, 6942 FM 1960 East #133, Humble, Tex. 77346, and Henry B. Polston, 2305 Huckleberry, Pasadena, Tex. 77503
Continuation-in-part of Ser. No. 608,067, Nov. 1, 1990, Pat. No. 5,068,940. This application Dec. 2, 1991, Ser. No. 801,305
Int. Cl.[5] B08B *3/02*
U.S. Cl. 15—302 **16 Claims**



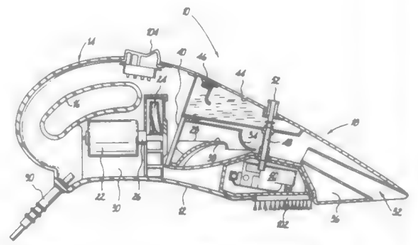
1. An apparatus for cleaning waste collection systems of solid material by suspending the material in a water slurry and pumping the slurry to a waste container where the solids separate from the water and drop to the bottom of the container and water is decanted for use in cleaning the waste collection system, comprising:
a source of water;
means to pressurize water;
means to direct the pressurized water against solid materials contained in a waste collection system, whereby the solid material is suspended in a water slurry;
means to control the movement of the water pressurization means through the waste collection system;
a submersible pump adapted for pumping a slurry comprised of liquids and solids from the waste collection system and located downstream of said water pressurization means, said pump being powered from a remotely located power source;
a positive pressure waste container;
a slurry hose having first and second ends, said slurry hose first end in communication with said waste container and said second end in communication with said submersible pump for transmitting the pumped slurry to the waste container;
a decant water outlet in said waste container; and
a decant water hose having first and second ends, said decant water hose first end in communication with said waste container water decant outlet and said second end in communication with the waste collection system upstream of said submersible pump.

5,341,540
PROCESS AND AUTONOMOUS APPARATUS FOR THE AUTOMATIC CLEANING OF GROUND AREAS THROUGH THE PERFORMANCE OF PROGRAMMED TASKS
Jean-Louis D. C. Soupert, and Joël O. P. Poujon, both of Marseilles, France, assignors to Onet, S.A., Marseilles Cedex, France
PCT No. PCT/FR90/00398, § 371 Date Dec. 6, 1991, § 102(e) Date Dec. 6, 1991, PCT Pub. No. WO90/14788, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 6, 1990, Ser. No. 778,128
Claims priority, application France, Jun. 7, 1989, 89 07758
Int. Cl.[5] B62D *11/04*
U.S. Cl. 15—319 **10 Claims**



1. Autonomous apparatus for automatically cleaning ground areas, comprising a support frame of the type comprising known tools adapted to said cleaning, propulsion and steering means by wheels, an electrical supply by on-board battery, various converters and relays, and control levers allowing operation of said tools and said propulsion and steering means, which apparatus is covered with a protecting body and comprises an electronic system of micro-computer type composed of at least one microprocessor, a fixed read-only memory, an erasable memory and various input/output cards connected in particular to the various components allowing operation and start-up of said tools and propulsion and steering means, fixed distance monitoring sensors and at least one initialization sensor, which sensors are connected to at least one of said input-/output cards and are placed on said protecting body, further comprising a console on which said control levers are grouped, said console presenting a display and a keyboard, and said console being connected to a specific input/output card of the microprocessor, which read-only memory of the electronic system is loaded with a program ensuring, on the one hand, permanently and in known and automatic manner, the management of all the input/output interface cards and of all the equipment connected to said cards, and on the other hand, as required and successively in several places and for different tasks, a learning phase by memorization of a cleaning task made manually in a first step, then a phase of execution by repetition of this recorded cleaning task, and this in automatic manner even in the case of an unexpected obstacle detected by said distance monitoring sensors and from the same reference point on which said initialization sensor is reset at the beginning of each execution of the same task on the same learnt path, which apparatus comprises a known positioning system compatible with fixed reference beacons located near the ground area to be cleaned and from which, and at any chosen moment, said apparatus is positioned on said ground area.

5,341,541
PORTABLE STEAM VACUUM CLEANER
John C. K. Sham, Room 1508, Block C, 19 Broadwood Road, Hong Kong
Filed Sep. 9, 1992, Ser. No. 942,308
Int. Cl.[5] A47L *5/26*
U.S. Cl. 15—320 **31 Claims**



1. A hand-held vacuum cleaner comprising:
a) a housing having a handle portion and a nozzle portion;
b) a reservoir associated with said housing for retaining liquid;
c) means for heating the liquid so as to generated steam for delivery to a surface to be cleaned;
d) a motor driven fan assembly disposed in said housing and communicating with said nozzle portion for drawing liquid and debris into said nozzle portion;
e) means for containing the debris and liquid drawn into said nozzle portion; and
f) means for deflecting liquid drawn into said nozzle port away from said fan assembly for collection in said containing means.

5,341,542
ANTI-TIP HINGE DEVICE AND METHOD
Edward J. Hannan, Muncy, and George H. Schneider, Williamsport, both of Pa., assignors to Keystone Friction Hinge Co., South Williamsport, Pa.
Filed Oct. 5, 1992, Ser. No. 956,227
Int. Cl.[5] E05F *1/08;* **E05D** *11/06;* **F23M** *7/00;* **A47B** *88/00*
U.S. Cl. 16—289 **64 Claims**

1. A release hinge device for releasing a door when an overload is applied to said door, and said door is pivotally secured to a unit for pivotal movement in a first angular direction and for retaining said door in a generally horizontal position in a

VOL 1165 ISS 5 AG 30 1994 UMI

cantilever fashion relative to said unit, and wherein said door has sheath means for receiving said release hinge device, said release hinge device comprising:

a lever arm having a first and a second end,

counterbalance spring means having one end attached to said first end of said lever arm and another end attached to said unit for allowing said pivotal movement of and said retaining of said door in said horizontal position,

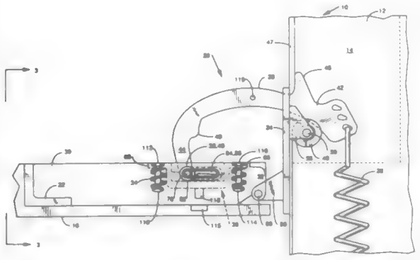
cam follower means rotatably mounted to said second end of said lever arm,

channel means secured in said sheath means of said door and having elongated slot means and connected to said door and to said unit for said pivotal movement of said door,

cam means mounted in said channel means and having a recess and ramp means located adjacent to said recess, and being disposed between said slot means of said channel [illegible],

said cam follower means engageable with said cam means and having mounting means for said rotatable mounting of said cam follower means to said lever arm and engageable with said slot means, and being in an operative position when in said recess of said cam means, and

biasing means connected to said cam means and said channel means for allowing movement of said cam means and movement of said cam follower means from said recess and along said ramp means of said cam means, and for causing said mounting means of said cam follower means to move along said slot means of said channel means to



interrupt the effect of said counterbalance spring means on said hinge device and to allow further angular displacement of said door from said horizontal position when said overload is applied to said door.

64. A method for safely releasing a door pivotally connected to a unit by a hinge device when an excessive load is placed on said door when in an open condition, to prevent said unit from falling over, the steps comprising:

attaching a first part of said hinge device to said unit and a second part to said door,

providing a lever arm connected at one end to a counterbalance spring means in said unit and cam follower means mounted on the other end of said lever arm,

providing cam means in said second part of said hinge device and having a recess and adjacent ramp means,

engaging said cam follower means in said recess of said cam means for an operative condition of said door from a generally vertical position parallel to said unit, to a generally horizontal and cantilevered position, relative to said unit,

providing biasing means connected to and on either side of said cam means for allowing pivotal movement of said cam means,

applying said excessive load on said door, and causing said biasing means in close proximity to the cantilevered end of said door to be compressed and said cam means to be pivotted thereby forcing said cam follower means to be snapped out of said recess of said cam means and to engage and travel along said ramp portion of said cam means, resulting in said door being released from the effect of said hinge device.

5,341,543

SPREADING AND LAP-FORMING MACHINE

Robert Jean, Fouqueville; Bernard Chatelet, and Bernard Jourde, both of Elbeuf, all of France, assignors to Asselin (Societe Anonyme), Elbeuf, France

PCT No. PCT/FR92/00483, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO92/21800, PCT Pub. Date Dec. 10, 1992

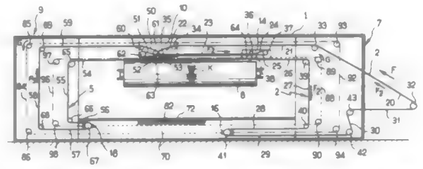
PCT Filed May 29, 1992, Ser. No. 969,829

Claims priority, application France, Jun. 3, 1991, 91 06635

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[5] D01G *15/46, 25/00;* **D04H** *1/74*

U.S. Cl. 19—163 **6 Claims**



1. A spreading and lap-forming machine for converting a web (**4**) to a lap (**6**) by folding in pleats, comprising:

at least two conveyor-belts (**2, 5**) which follow a closed path (**20** to **31**, **50** to **59**) and are associated with rollers (**32** to **43**, **60** to **69**) for respective guiding and displacing of said conveyor-belts, the closed paths (**20** to **31**, **50** to **59**) being external to each other and adjacent to each other in a pinching zone (**23**, **53**) delimited by guide rollers (**35**, **61**; **38**, **64**) carried by two main carriages (**10**, **14**) which are displaced in translational motion in a horizontal direction at right angles to longitudinal axes of the rollers (**32** to **43**, **60** to **69**);

compensating means including at least one auxiliary carriage (**16**, **18**) which is displaced in translational motion at right angles to the longitudinal axes of the rollers (**32** to **43**, **60** to **69**) so as to maintain the length of each closed path (**20** to **31**, **50** to **59**) at a substantially constant value, each closed path (**20** to **31**, **50** to **59**) making a 180-degree turn around at least one guide roller (**41**, **67**) carried by at least one auxiliary carriage (**16**, **18**);

belt section means (**20**, **21**,k **22**) for conveying the web (**4**) to the entrance of the pinching zone (**23**, **53**);

an apron (**8**) which moves in a direction parallel to the longitudinal axes of the rollers (**32** to **43**, **60** to **69**) and receives the web (**4**) passing out of the pinching zone (**23**, **53**); and

driving means (**84**, **85**, **88**, **89**) for applying reciprocating movements of translation to the two main carriages (**10**, **14**) and to the compensating means (**16**, **18**);

wherein the driving means (**84**, **85**, **88**, **89**) include at least one motion-transmission element (**84**, **88**) which engages with a driving pinion (**85**, **89**), said motion-transmission element (**84**, **88**) being attached at one end to one of the two main carriages (**10**, **14**) and at an opposite end to at least one auxiliary carriage (**16**, **18**);

whereby rotation of the driving pinion (**85**, **89**) in one direction pulls the main carriage (**10**, **14**) in a first stage of the reciprocating movements and whereby rotation of the driving pinion (**85**, **89**) in an opposite direction pulls the auxiliary carriage (**16**, **18**) in a second stage of the reciprocating movements;

wherein each main carriage (**10**, **14**) is connected to at least one auxiliary carriage (**16**, **18**) by coupling means (**92**, **96**) which are less extensible than the conveyor-belts (**2**, **5**),

said coupling means (**92**, **96**) being put under tension under the action of the driving means (**84**, **85**, **88**, **89**).

5,341,544

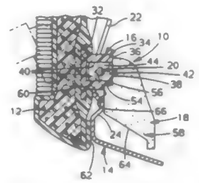
FASTENER ASSEMBLY FOR DETACHABLY CONNECTING A DOOR TRIM PANEL

Thomas L. Richter, Sterling Heights, and Michael W. Jary, West Bloomfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 7, 1993, Ser. No. 57,928

Int. Cl.[5] A44B *17/00*

U.S. Cl. 24—289 **4 Claims**



1. A fastener assembly for detachably connecting a trim panel to an apertured body panel of a vehicle comprising:

a retainer housing having a base connected to said trim panel, said retainer housing extending from said base through said apertured body panel and having a face on a side of the body panel opposite the base;

a hook fastener for extending through said aperture of said body panel, said hook fastener extending outwardly downward from said trim panel and engaging said body panel to retain said trim panel to said body panel; and

means for detachably connecting said retainer housing to said fastener so that said trim panel can be disconnected from said body panel without damaging said retainer housing and said trim panel and without disconnecting said retainer housing from said trim panel.

5,341,545

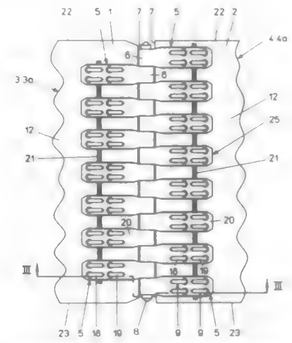
BELT FASTENING ARRANGEMENT

Wolfgang Herold, Main, Fed. Rep. of Germany, assignor to MATO Maschinen-und Metallwarenfabrik Curt. Matthaei GmbH & Co. KG, Offenbach, Fed. Rep. of Germany

Filed Jan. 19, 1993, Ser. No. 4,913

Int. Cl.[5] F16G *3/00*

U.S. Cl. 24—33 P **34 Claims**



22. An arrangement for interconnecting opposite ends of a belt, comprising:

a plurality of individual belt fasteners arranged side-by-side across the width of the belt ends to securely interconnect the same, wherein said belt fasteners include spaced apart mounting portions which are sequentially converged against and impressed into opposing faces of the belt ends such that the overall width of the belt ends tends to thereby expand and distort;

an elongate tensioning element extending continuously along a major portion of at least one of the belt ends, and positioned between one of the belt faces and the adjacent mounting portions of said belt fasteners; said tensioning element being longitudinally inelastic, whereby as the mounting portions of said belt fasteners are sequentially impressed into the opposite faces of the belt ends, said tensioning element is contemporaneously pressed into the one belt face and thereby frictionally interconnected with the associated belt end and said belt fasteners, so as to generally maintain the overall width of the associated belt end and resist distortion thereof.

5,341,546

SEAT BELT BUCKLE

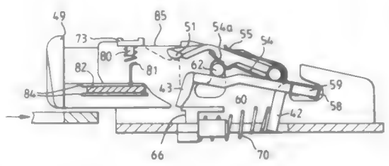
David Burke, Stanwix, England, assignor to AlliedSignal Inc., Morristown, N.J.

Filed Mar. 4, 1993, Ser. No. 26,335

Claims priority, application United Kingdom, Mar. 5, 1992, 9204793

Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—641 **11 Claims**



2. A seat belt buckle mechanism comprising a generally U-shaped frame presenting an opening at one end for receiving a tongue along a path between two side portions and generally parallel to a base portion, said tongue being engageable with a spring-loaded ejector, a locking element tiltably supported in the frame whereby a projection of said element is movable into or out of locking relationship with said tongue and a retaining member movable into or out of a locking position wherein it prevents movement of the projection away from said locking relationship and said retaining member being movable by the action of a release member to permit release of the tongue, the mechanism including inertial protection means slidingly movable from a first position to a second position, in response to a predetermined acceleration or deceleration, for inhibiting unlocking of the locking element.

5,341,547

APPARATUS FOR THE TREATMENT AND BIAXIAL STRETCHING AND AXIAL SHRINKING OF THERMOPLASTIC FILM WEB

Andreas Rutz, Lindau, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Oct. 21, 1993, Ser. No. 140,268

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1992, 4235648

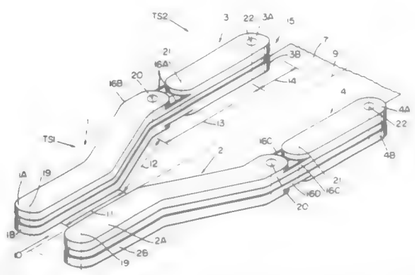
Int. Cl.[5] D06C *3/02*

U.S. Cl. 26—72 **14 Claims**

1. An apparatus for the simultaneous biaxial stretching and axial shrinking of a thermoplastic film web, comprising a plurality of tentering clamps (**17**) for gripping longitudinal edges of said film web, two separate transport systems (**TS1**, **TS2**) including separate first and second endless tentering chains (**18**,

VOL 1165 ISS 5 AG 30 1994 UMI

38) for moving said tentering clamps through said apparatus, said transport systems comprising a first transport system including a first section (1) and a second section (2) each having a first portion and a second portion, said first portions extending in parallel to each other, said second portions diverging from each other at an angle to a transport direction (10) of said film web (7) and a second transport system also including a first section (3) and a second section (4) extending in parallel to each other, said first transport system comprising



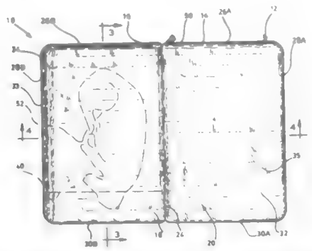
endless rails forming first guide tracks for said first tentering chains, said second transport system comprising separate endless rails forming second guide tracks for said second tentering chains, and transition tracks (16A, 16B, 16C, 16D) interconnecting only portions of said first and second guide tracks for transferring said tentering clamps from said first transport system to said second transport system and vice versa while circulating said first and second tentering chains independently of each other respectively in said first and second transport systems (TS1, TS2).

5,341,548

BURIAL/CREMATION CASE FOR ANIMALS

Jacquelyn J. Zerick, 837 Country La., Walland, Tenn. 37886

Filed Feb. 16, 1993, Ser. No. 18,278
Int. Cl.[5] A61G *1/00*
U.S. Cl. 27—28 15 Claims



1. A burial/cremation case for receiving a deceased animal for transport and disposal thereof, said burial/cremation case comprising:

a covering member defining an interior volume dimensioned to receive said deceased animal and an opening dimensioned for passing said deceased animal therethrough and into said volume, said covering member being fabricated from an at least partially absorbent and fluid permeable material, said material being biodegradable, said material further being incinerable;

a fluid retention member carried by said covering member for absorbing and retaining fluids excreted by said deceased animal immediately following death and prior to disposal of said deceased animal in a selected manner, said fluid retention member being configured to coincide with at least a portion of said covering member and dimensioned to absorb a substantial portion of said fluids; and

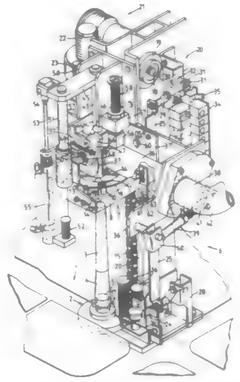
a closure device for selectively closing said opening to prevent unselected removal of said animal and evacuation of said fluids.

5,341,549

APPARATUS FOR REMOVING YARN REMNANTS

Ulrich Wirtz; Hans Grecksch; Wolfgang Irmen; Helmuth Hensen, and Walter Böhmer, all of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Sep. 23, 1992, Ser. No. 949,684
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1991, 4131667
Int. Cl.[5] B65H *73/00*
U.S. Cl. 28—298 22 Claims



1. An apparatus for removing yarn remnants from a cop tube, comprising:

means for removing yarn remnants from a cop tube;

elastically deformable energy storing means disposed in the vicinity of the bottom of the cop tube; and

a holder for said yarn remnant removing means, said yarn remnant removing means being disposed on said holder and, means for moving said yarn remnant removing means together with said holder along the cop tube into engagement with said energy storing means for storing potential energy.

5,341,550

METHOD OF MANUFACTURING A PIEZOELECTRIC TUNING FORK RESONATOR

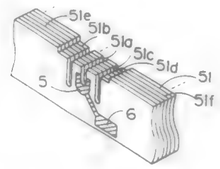
Hiroaki Kaida, Nagaokakyo, Japan, assignor to Myrata Manufacturing Co., Ltd., Japan

Division of Ser. No. 64,944, May 20, 1993. This application Sep. 21, 1993, Ser. No. 125,018
Claims priority, application Japan, May 20, 1992, 4-127591; Jun. 19, 1992, 4-161468; Jun. 19, 1992, 4-161469
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 8 Claims

1. A method of manufacturing a piezoelectric tuning fork resonator by forming tuning fork grooves in a piezoelectric substrate, said method comprising the steps of:

superposing a plurality of piezoelectric substrates while aligning edges thereof with each other;

cutting said edges of said superposed piezoelectric substrates for defining cut planes; and



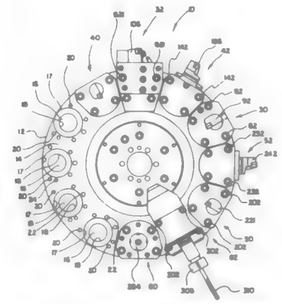
forming tuning fork grooves while setting depths of said tuning fork grooves as measured from said cut planes.

5,341,551

UNIVERSAL TURRET SYSTEM FOR QUICK-CHANGE LATHE TOOLING

Charles R. Brown, Raleigh; Robert J. Robertson, Zebulon; Dandridge W. Buckley, Jr., and Frank A. Milchuck, both of Raleigh, all of N.C., assignors to Kennametal Inc., Latrobe, Pa.

Filed May 15, 1992, Ser. No. 884,600
Int. Cl.[5] B23B *29/32*
U.S. Cl. 29—40 7 Claims



1. A universal turret system for accommodating a full range of multi-class tools including conventional manual tools, manual quick-change tools, semi or fully automatic tools, and motivated or driven tools, the universal turret system comprising:

(a) a turret disk having front tool mounting face;

(b) a series of through cavities circumferentially spaced about the turret mounting face of the turret disk with each through cavity extending completely through the turret disk and having front and rear openings;

(c) a like hole mounting pattern formed around each of the cavities;

(d) a coolant exhaust port formed adjacent each cavity and disposed in the same location relative to the hole mounting pattern formed around the respective cavities;

(e) a series of at least four distinct and different tools adapted to be mounted adjacent each cavity of the turret disk, the tools including at least one conventional manual tool having a first tool holder and a cutting tool mounted on the first tool holder, a manual quick-change tool including a second tool holder and a cutting tool mounted on the second tool holder, a semi or fully automatic tool having a third tool holder and a cutting tool mounted on the third tool holder and having associated therewith biasing means for locking the third tool holder in place and for assisting in the release of the third tool holder and a rotatively driven tool having an integral drive assembly and a tool clamping assembly;

(f) a series of at least four different tool adapters with at least three of the tool adapters having a bolt hole mounting pattern identical to that of the turret face each that at least three tool adapters may be mounted within any cavity formed on the turret face;

(g) one tool adapter including means for receiving the conventional manual tool, a second tool adapter having means for receiving the manual quick-change tool, a third tool adapter having means for receiving a semi or fully automatic tool, and a fourth tool adapter including means for receiving and driving the driven tool; and

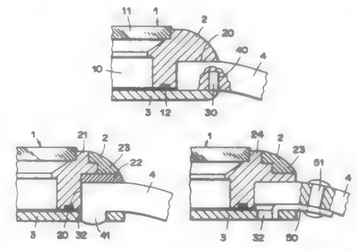
(h) wherein the four multi-class tools can be mounted at any tool station about the turret face resulting in the universal turret having the capability of accommodating any and all of the multi-class tools.

5,341,552

WATCH WITH WATCHBAND ATTACHMENT

Bertrand P. Voumard, Chexbres, Switzerland, assignor to Isafrance, Villers-le-Lac, France

Continuation of Ser. No. 728,143, Jul. 10, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 38,078
Claims priority, application Switzerland, Jul. 13, 1990, 2345/90
Int. Cl.[5] B23P *19/02*; G04D *3/00*; G04B *37/16*
U.S. Cl. 29—179 18 Claims



1. A method of making a watch having a watchcase including a caseband and a watchcase back, the watch further comprising a watchband having a first part and a second part, the method comprising the steps of:

forming said caseband in a single operation, without any projecting elements;

forming, at opposite ends of said caseband, first attachment means for attaching said watchband to said caseband;

forming a groove adapted to receive a gasket in a bottom portion of said caseband;

blanking a piece of sheet metal of substantially uniform thickness in a predetermined shape to form said watchcase back, said watchcase back having a substantially uniform thickness;

forming, at opposite ends of said watchcase back, second attachment means for attaching said watchband to said caseband;

forming, at one end of each of the first and second parts of said watchband, third attachment means for attaching said watchband to said caseband;

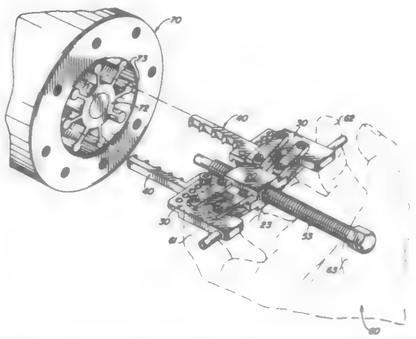
placing a watch movement inside said caseband;

attaching said third attachment means to said second attachment means; and

attaching said caseband to said watchcase back thereby securing said watch movement and said watchband in said watchcase.

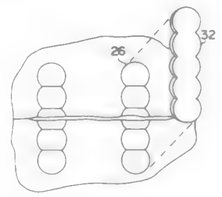
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,553
IMPELLER PULLER
Ludwig Herzhauser, 8188 Aviation Blvd., Marathon, Fla. 33050
Continuation-in-part of Ser. No. 28,935, Mar. 5, 1993, abandoned. This application Sep. 24, 1993, Ser. No. 126,998
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—261 **4 Claims**



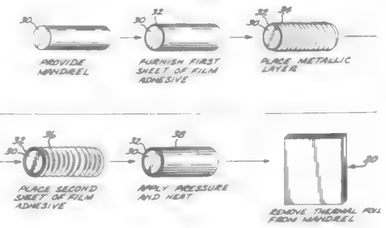
1. To be used to remove flexible impellers of varying dimensions from a shaft, an impeller puller comprising:
a linkage head, said linkage head including an axial bore extending therethrough,
at least two clamp members, said clamp members being oppositely disposed from one another on opposite sides of said linkage head,
a plurality of elongate link members,
at least two of said link members being hingedly disposed between said linkage head and a first of said clamp members such that said first clamp member is hingedly movable between a retracted and a clamping position,
at least two of said link members being hingedly disposed between said linkage head and a second of said clamp members such that said second clamp member is hingedly movable between a retracted and a clamping position,
said first and said second clamp members each including at least one gripping jaw, said gripping jaws on each of said clamp members including confronting toothed inner surfaces structured and disposed to securely grip the impeller,
adjustment means structured and disposed to adjustably and removably position said gripping jaws on said clamp members such that a length between said confronting toothed inner surfaces is varied to accommodate impellers of varying sizes and configurations,
each of said clamp members including an outwardly extending handle segment structure and disposed to enable said clamp members to be easily and fully held, utilizing one hand, in said retracted position during attachment positioning and removal of said gripping jaws from the impeller,
an elongate screw member extending axially through said axial bore of said linkage head, said screw member being adjustably positionable therein so as to contact the shaft upon which the flexible impeller is disposed, and
said screw member being structured and disposed to be inwardly screwed towards the shaft such that contact by said screw member with the shaft will result in said linkage head moving away from the shaft and accordingly the impeller gripped between said gripping jaws being pulled from the shaft.

5,341,554
METHOD FOR REPAIRING A CRACKED METAL PART USING REPAIR PLUGS COATED WITH A SURFACE LAYER OF ZINC
David Diperstein, 125 Bickley Rd., Glenside, Pa. 19038
Continuation-in-part of Ser. No. 926,082, Aug. 5, 1992, abandoned. This application May 18, 1993, Ser. No. 63,388
Int. Cl.[5] B23P *6/04*
U.S. Cl. 29—402.17 **13 Claims**



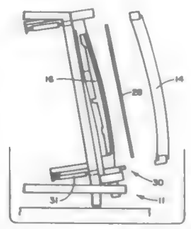
1. A method of repairing a cracked metal part having an outer surface, comprising the steps of:
providing a series of overlapping blind holes extending away from and intersecting a crack in the part;
fixedly securing a lock in said series of overlapping blind holes;
providing a hole in said part that overlaps a portion of said lock and a portion of said crack;
securing a repair plug coated with a surface layer of zinc in said hole; and
removing any portion of said plug which extends beyond the outer surface of said part.

5,341,555
METHOD OF PREPARING FILM ADHESIVE THERMAL FOIL
Laurence Warden, and Keith Esser, both of San Diego, Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.
Filed Jul. 30, 1992, Ser. No. 922,678
Int. Cl.[5] B21D *35/00*
U.S. Cl. 29—469.5 **9 Claims**



1. A method of preparing a thermal foil material, comprising the steps of:
furnishing a first sheet of a B-staged film adhesive material;
placing a layer of metallic elements onto the first sheet, the metallic elements being arranged in a side-by-side fashion with interstices therebetween;
placing a second sheet of a B-staged film adhesive material over the layer of metallic elements and the first sheet, the second sheet being in direct contact with the first sheet so that the layer of metallic elements is sandwiched between the first sheet and the second sheet; and
applying a pressure perpendicular to the first and second sheets to cause the B-staged film adhesive material to flow into the interstices between the metallic elements, without substantial curing of the first and second sheets of film adhesive material past the B-stage cure level.

5,341,556
METHOD AND APPARATUS FOR MANUFACTURE OF REINFORCED PANELS
Jack A. Shubin, Monterey Park; Gene S. Oliver, Hemat, both of Calif., and Jeff J. Jerabek, Salt Lake, Utah, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Continuation of Ser. No. 725,726, Jun. 28, 1991, abandoned. This application Mar. 9, 1993, Ser. No. 28,711
Int. Cl.[5] B25B *1/20;* **B23P** *11/00*
U.S. Cl. 29—448 **3 Claims**

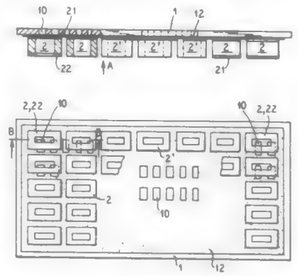


1. A method for tack-free positioning of a panel sheet and stringers, and subsequent fastening thereof comprising the steps of, positioning a plurality of stringers on lower contour boards in an assembly jig, positioning a panel sheet on said stringers, positioning upper contour boards on said panel sheet, closing said upper contour boards against said panel sheet, stringers and lower contour boards, thereby clamping and drape-forming said panel sheet against said stringers in a desired contour, moving said assembly jig along with said lower contour boards, stringers, panel sheet and upper contour boards to a fastening station, fastening said panel sheet to said stringers such that said panel sheet remains in said desired contour, opening said upper contour boards and removing the fastened panel sheet and stringers from said upper and lower contour boards, so that said upper and lower contour boards are freed for re-use in positioning subsequent panel sheets and stringers.

5,341,557
USE OF NON-ADHESIVE STRETCH-FILM AS A LABORATORY CONTAINER CLOSURE
Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.
Filed Nov. 12, 1992, Ser. No. 975,404
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—446 **12 Claims**

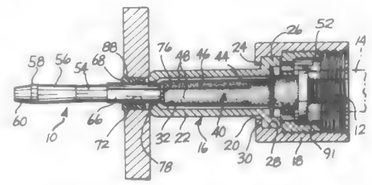
1. A method for covering and sealing an opening in a laboratory container, said opening defined by an upper perimeter wall, said method employing a sized portion of a polyolefin-based stretch film free of adhesive, said film having an upper and lower surface and a softening temperature in excess of 100° C., wherein at least one surface of said film is substantially free of constituents which can dissolve in, or react with a organic solvent or a caustic agent, said method comprising the steps of:
providing a portion of said film sufficient in size to cover said opening and overhang said perimeter wall,
stretching and deforming at least one region of said film surrounding said upper perimeter wall using a mechanical force in a direction generally parallel to the principal axis of said opening,
releasing said force and allowing at least some of said region of said film to contract to form a snug and essentially unpleated collar around said perimeter wall, thereby providing a liquid-tight seal over said container opening.

5,341,558
METHOD OF ASSEMBLING A MOVABLE UPPER TOOL FOR SEPARATING BLANKS
Charly Varidel, Le Mont, and Marcel Yerly, Jouxtens, both of Switzerland, assignors to Bobst SA, Lausanne, Switzerland
Division of Ser. No. 682,952, Apr. 10, 1991. This application Sep. 30, 1992, Ser. No. 953,938
Int. Cl.[5] B23P *19/02*
U.S. Cl. 29—450 **1 Claim**



1. A process for preparing a movable upper tool, having a plate with a plurality of position-adjustable blocks thereon, in a selected configuration for separating blanks connected by a perforated line, comprising the steps of:
providing a plate and covering a surface of said plate completely with a first layer of a two-layer hook-and-loop fastening system;
providing a plurality of blocks and partially covering one surface of each of said blocks with a second layer of said two-layer hook-and-loop fastening system;
robotically placing said blocks at respective locations on said plate, with said first and second layers abutting, in a pattern for causing said blanks to separate at said perforation line;
pressing said blocks at said locations against said plate to temporarily fix said blocks at said locations by said hook-and-loop fastening system to produce a completed upper tool; and
separating said blanks by applying said completed upper tool to said blanks.

5,341,559
METHOD AND APPARATUS FOR SECURING A TUBULAR BUSHING IN A CIRCULAR OPENING
Leonard F. Reid, Bellevue, and Roger T. Bolstad, Seattle, both of Wash., assignors to Fatigue Technology, Inc., Seattle, Wash.
Filed Apr. 13, 1993, Ser. No. 47,108
Int. Cl.[5] B21D *39/00*
U.S. Cl. 29—523 **4 Claims**



1. A method of installing a tubular bushing in a circular opening extending between first and second sides of a structural member, said circular opening having a cylindrical sidewall, said method comprising:

VOL 1165 ISS 5 AG 30 1994 UMI

providing a puller tool which includes an elongated tubular nosepiece having a forward end, an elongated tubular sleeve positioner within the nosepiece having an axially split forward end portion and a sleeve contacting forward end, and a mandrel having, in series, an inner end portion, a small diameter portion, an increasing diameter portion, and a maximum diameter portion, said mandrel extending through the sleeve positioner;

extending the mandrel so that the small diameter portion of the mandrel is within the sleeve positioner, the axially split forward portion of the sleeve positioner is gripping the small diameter portion of the mandrel, and the increasing diameter portion, the maximum diameter portion and a part of the small diameter portion of the mandrel project endwise outwardly from the sleeve positioner and the nosepiece;

providing a one-piece split sleeve and positioning such sleeve on the projecting part of small diameter portion of the mandrel;

providing a tubular bushing having a substantially constant outside diameter and a substantially constant inside diameter, said outside diameter being sized to snugly fit into the opening in the structural member, and said inside diameter being sized to pass the maximum diameter portion of the mandrel and the split sleeve when the split sleeve is on the small diameter portion of the mandrel;

sizing the sleeve positioner so that it grips the small diameter portion of the mandrel, and sizing the sleeve so that when it is on the small diameter portion of the mandrel it frictionally engages the small diameter portion of the mandrel, and sizing the bushing so that when it is on the split sleeve and the split sleeve is on the small diameter portion of the mandrel, the bushing frictionally engages the split sleeve;

inserting the mandrel, the split sleeve and the bushing into the opening in the structural member, with the split sleeve within the bushing;

positioning the nosepiece against the structural member;

pulling on the inner end of the mandrel to initially move the sleeve positioner, the sleeve and the bushing rearwardly, until the end of the bushing confronting the nosepiece is in contact with said nosepiece;

stopping movement of the sleeve positioner and holding the sleeve positioner against further axial movement, following movement of the bushing into contact with the nosepiece;

continuing retraction of the mandrel axially to move first the increasing diameter portion and then the maximum diameter portion of the mandrel axially through the split sleeve, for expanding the split sleeve radially and imposing a radially outwardly directed expansion force on the bushing for expanding the bushing within said opening;

wherein the mandrel and the split sleeve are dimensioned such that the radial expansion of the split sleeve exerts sufficient radial forces on the bushing to plastically expand the bushing and place the sidewall of the opening into tight gripping contact with the outer surface of the bushing; and

removing the split sleeve from the bushing after the mandrel has passed through the split sleeve, leaving the tubular bushing within said opening, firmly secured by the expansion to the sidewall of the opening.

5,341,560

METHOD OF ELONGATING AND RELAXING A STUD

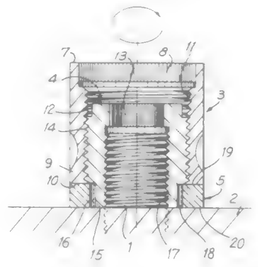
John K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07540

Division of Ser. No. 879,342, May 7, 1992. This application Apr. 22, 1993, Ser. No. 51,478

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—525.1 **6 Claims**

1. A method of elongating and relaxing a stud having an axis and arranged in an object, the method comprising the steps of connecting the stud with a first part which is movable only in an axial direction so as to pull the stud in the axial direction to elongate the stud and thereby to tension it in the object or to relax the stud; moving the first part only in the axial direction by connecting the first part with a second part which is moveable in a transverse direction; connecting a friction element with the first part, so that the first part has more surfaces cooperating with other elements and subjectable to friction during movement than the second part and so that the second part is not connected with the friction element but instead is



freely turnable relative to the friction element while freely abutting against the friction element; and applying a holding force to the first part via first engaging means at an end portion of the first part spaced from the friction element and simultaneously applying an opposite active force to the second part via second engaging means whereby the second part is moved in the transverse direction and the first part is moved in the axial direction to move the stud in the axial direction without turning so as to elongate the stud.

5,341,561

PROCESS FOR PRODUCING THE ELECTRIC INSULATION OF ELECTRIC MACHINE WINDINGS

Josef Schorm; Otakar Zych, both of Prague, Czechoslovakia, and Gottfried Deutschmann, Leibnitz, Austria, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Austria and CKD Trakce A.S., Czechoslovakia

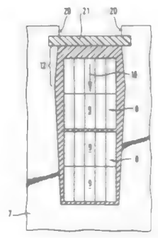
PCT No. PCT/AT91/00083, § 371 Date Apr. 8, 1992, § 102(e) Date Apr. 8, 1992, PCT Pub. No. WO92/01328, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 3, 1991, Ser. No. 838,224

Claims priority, application Czechoslovakia, Jul. 3, 1990, PV 3326-90

Int. Cl.[5] H02K *15/06*

U.S. Cl. 29—596 **19 Claims**



1. A process for manufacturing the electrical insulation of the winding of an electric machine, said machine having a rotor and a stator, each of which having radially directed grooves with groove openings, which has winding sections or subconductor bundles placed with play in the grooves of the rotor or stator comprising providing grooves whose cross-section proximate to the groove opening, tapers in a radial direction inwardly towards the groove opening, inserting at least in the area proximate to the groove opening, a laminate which expands under heating into the gap-shaped space which forms between the groove surface and the winding sections, this laminate containing an elastically compressible, highly elastic fiber material as well as a solidified, curable synthetic resin, which can, however, be thermally softened and which maintains the fiber material in its compressed state, heating the laminate in order to soften the synthetic resin, whereupon the laminate expands because of the released tension on the compressed fibers and fills out the aforementioned gap-shaped space such that, in said area of the tapering groove cross-section, the elastically expanding fiber material exerts at least on an inserted winding section or a subconductor bundle a considerable component of force in the direction of the bottom of the groove, and hardening the synthetic resin at an increased temperature.

5,341,562

METHOD FOR PREVENTING CORROSION OF A REINFORCED CONCRETE STRUCTURE

Akio Furuya; Toshimoto Tsuji, and Takayuki Sato, all of Yokohama, Japan, assignors to DAI Nippon Toryo Co., Ltd., Osaka, Japan

Filed Apr. 26, 1993, Ser. No. 51,655

Claims priority, application Japan, Apr. 27, 1992, 4-107294; Jun. 16, 1992, 4-156760

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—825 **5 Claims**

1. A method for preventing corrosion of a reinforced concrete structure having a reinforcing steel embedded therein, which comprises coating an aggregate-containing primer on the surface of the reinforced concrete structure, to form a primer layer having a rough surface, metal-spraying a metal having an ionization tendency larger than iron on the primer layer to form a metal spray coating layer, and connecting the metal spray coating layer and the reinforcing steel by an electrically conductive material.

5,341,563

APPARATUS FOR MANUFACTURING OPTICAL MODULE

Mitsutoshi Kamakura; Akihiko Shioda; Yoshihide Enami, and Hisao Go, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 9, 1992, Ser. No. 959,127

Claims priority, application Japan, Jan. 22, 1992, 4-009498; Jan. 22, 1992, 4-009500; Jan. 22, 1992, 4-009501

Int. Cl.[5] B23P *19/04*

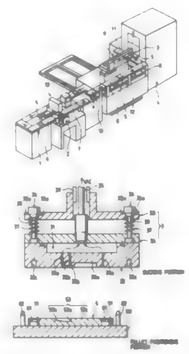
U.S. Cl. 29—743 **21 Claims**

1. An apparatus for manufacturing an optical module having optical members with lead pins and a lead frame having inner lead pins and circuitry thereon, said apparatus for manufacturing comprising:

(a) a pallet on which said optical members and said lead frame are set with a predetermined positional relationship therebetween;

(b) wire connecting means for connecting said circuitry on said lead frame to said optical members and to said lead frame;

(c) die-setting suction means for moving said optical members connected to said lead frame in said predetermined positional relationship from said pallet to a die using a suction force, said optical members and said lead frame being maintained in said predetermined positional relationship therebetween during movement between said pallet and said die; and



(d) conveyance means for conveying said pallet having said optical members connected to said lead frame in said predetermined positional relationship thereon from said wire connecting means to said die-setting suction means.

5,341,564

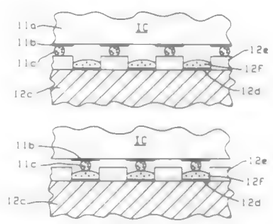
METHOD OF FABRICATING INTEGRATED CIRCUIT MODULE

Mohammad Akhavain, San Diego, and Ken W. Economy, Escondido, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 856,592, Mar. 24, 1992, abandoned. This application May 10, 1993, Ser. No. 60,689

Int. Cl.[5] H05K *3/30*

U.S. Cl. 29—832 **9 Claims**



1. A method of fabricating an integrated circuit module which comprises - a) an integrated circuit chip having a plurality of input/output pads in a pattern on a surface thereof, and b) an interconnect member having a surface with input/output pads in a pattern that matches said pattern of pads on said integrated circuit chip; said method including the steps of:

forming an electrical insulating layer on one of said surfaces with a predetermined number of holes with vertical sidewalls which encompass said pads on said one surface, and forming a single solder ball on each of said pads on the other surface;

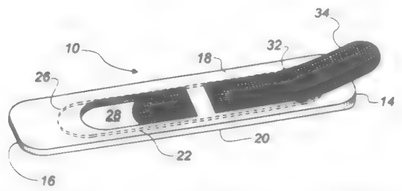
randomly placing said solder balls in contact with said insulating layer such that said matching patterns of input/output pads are randomly misaligned with each other; and,

sliding said surface with said solder balls parallel to said

VOL 1165 ISS 5 AG 30 1994 UMI

insulating layer, in random directions, until said solder balls drop into said holes of said insulating layer.

5,341,565
METHOD OF SECURING A FILTER ELEMENT TO A BLADE OF A FAN
William Kuryliw, Box 1434, Lac La Biche, Alberta, Canada T0A 2C0
Filed Jun. 15, 1993, Ser. No. 76,748
Int. Cl.[5] B23D *15/00*
U.S. Cl. 29—889.721 6 Claims



6. A method of securing a filter element to a blade of a fan, comprising the steps of:

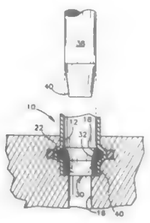
a) forming a cavity within a fan blade, the cavity having a tip end oriented toward a tip of the fan blade and a root end oriented toward a root of the fan blade;

b) forming flow passages extending from one broad surface of the fan blade through the cavity to an opposed broad surface of the fan blade, such that air circulates through the cavity via the flow passages upon movement of the fan blade;

c) forming an access channel through one of the broad surfaces of the fan blade adjacent to and spaced inwardly from the tip end while being angled between 5 and 35 degrees toward the root end; and

d) inserting a filter element through the access opening into the cavity, such that upon rotation of the fan blade the filter element is propelled by centrifugal force past the access channel until the filter element engages the tip end thereby maintaining the filter element within the cavity.

5,341,566
CONDUIT ATTACHMENT
Algird R. Quitschau, Downers Grove, and Dennis K. Seals, Carol Stream, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio
Filed May 10, 1993, Ser. No. 59,794
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.035 3 Claims



1. A method of attaching and sealing a relatively thin walled fluid conduit to a ported block or valve body comprising:

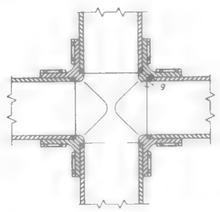
(a) forming a bore in the block or valve body communicating with a port and forming an undercut groove in the bore and disposing a resilient seal ring therein;

(b) inserting the end of said conduit in said bore and said seal ring;

(c) disposing a tubular insert with a thickened wall portion of the insert against the wall of said conduit portion in said bore; and,

(d) inserting a tool and expanding the thickened wall and bulging the wall of said conduit into said groove and sealing said conduit against said seal ring.

5,341,567
METHOD OF MAKING CLEAN SOCKET FIT CONNECTION
Charles A. Grenci, 205 Brown Rd., Montrose, Colo. 81401, and R. Dallas Clayton, 200 Altez S.E., Albuquerque, N. Mex. 87123
Filed Jun. 5, 1992, Ser. No. 894,464
Int. Cl.[5] B23P *11/02*
U.S. Cl. 29—890.141 3 Claims



1. A method of connecting an end of a plastic, male vacuum-component to a female vacuum-component in a vacuum system in order to prevent real and virtual leaks therebetween, comprising:

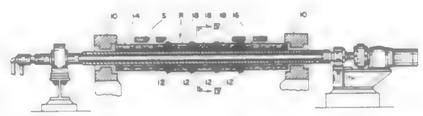
a) attaching an elastomeric sealing member to the end of the male vacuum-component;

b) after said step (a), inserting the end of the male vacuum-component into a female vacuum-component until the elastomeric sealing member is in at least partial contact with a mating surface-portion of the female vacuum-component;

c) creating a vacuum in the vacuum-system in which the male vacuum-component has become part during said step (b);

d) said step (c) causing the elastomeric sealing member to be drawn completely against the mating surface-portion of the female vacuum-component.

5,341,568
INSULATED FURNACE ROLLER AND METHOD OF MANUFACTURE
Francis H. Bricmont, Pittsburgh, and Hugh B. Carr, McMurray, both of Pa., assignors to Bricmanage, Inc., McMurray, Pa.
Division of Ser. No. 840,147, Feb. 24, 1992, Pat. No. 5,230,618. This application Jul. 9, 1993, Ser. No. 88,815
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—895.32 11 Claims



1. A method of manufacturing a furnace roller for supporting a heated workpiece in a furnace, said roller including a

rotatable arbor having internal means for receiving a coolant to cool the arbor and at least a pair of axially spaced apart tires secured to the arbor for rotation therewith, said tires including substantially equal radially extending portions for supporting the workpiece, said method comprising the steps of:

securing anchoring means to the arbor in a manner to form radially outwardly projecting anchoring ends between an adjacent pair of tires and within the radially extending portions of said pair of tires,

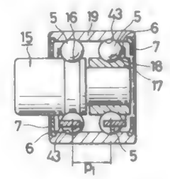
covering at least the outer ends of said anchoring ends with a coating material of a type that will provide a stress relieving space between said anchoring ends and a thermal resistant castable means when subject to an operating temperature of the furnace,

covering said arbor with an insulating material,

applying a covering of a spacer material and securing the spacer material to the radially extending portions of said pair of tires to substantially cover said sides, said spacer material being of the type that at said operating temperature of the furnace will provide a stress relieving space between said radially extending portions of said tires and said thermal resistant castable means,

forming said thermal resistant castable means around the arbor between a pair of said tires and over said anchoring means out of a liquescent thermal resistant insulating material in a manner that the thermal resistant castable means is secured to the arbor by said anchoring means and extends a distance radially outwardly from the arbor at a substantial distance but less than the radially extending portions of said pair of tires.

5,341,569
PRELOADING METHOD FOR PRELOAD-ADJUSTABLE ROLLING BEARING AND MANUFACTURING METHOD OF THE SAME
Toru Takamizawa, and Seizo Miyazaki, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Feb. 22, 1993, Ser. No. 20,533
Claims priority, application Japan, Feb. 24, 1992, 4-072181; Dec. 2, 1992, 4-345146; Feb. 10, 1993, 5-044383
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—898.09 17 Claims



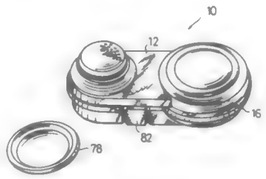
1. A method for setting the preload of a preload-adjustable bearing constructed of a first rotary unit and second rotary unit rotatable relative to each other, said first rotary unit having a first race and second race arranged immobile in a direction approaching toward each other, said second rotary unit having a third race and fourth race, said third race being located opposite said first race of said first rotary unit with a first row of balls interposed therebetween, said fourth race being located opposite said second race of said first rotary unit with a second row of balls interposed therebetween, said third race being immobile relative to said second rotary unit in a direction away from said fourth race, said fourth race being fitted with said second rotary unit with an interference formed therebetween movably relative to said second rotary unit, and said fourth race being movable toward said third race under pressure along a central axis of the bearing applied between said fourth race and said second rotary unit, which method comprises:

applying pressure along a central axis of the bearing between said fourth race and said second rotary unit; and

moving said fourth race toward said third race while measuring by preload measuring means a preload between said first, second, third and fourth races and said first and second rows of balls;

whereby said preload is set at a predetermined value.

5,341,570
SPRING DRIVEN SHAVER
Tatsuaki Kumakawa, Ichikawa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Feb. 5, 1993, Ser. No. 14,277
Claims priority, application Japan, Oct. 16, 1992, 4-078176[U]
Int. Cl.[5] B26B *19/14*
U.S. Cl. 30—43.6 14 Claims



1. A spring driven shaver comprising:

a shaver body;

a spiral spring arranged in said shaver body;

a spring wind-up wheel arranged in said shaver body for carrying out a winding-up movement of said spiral spring to store spring energy;

a gear member arranged in said shaver body in a manner to be coaxial with said spring wind-up wheel and movable with said spring wind-up wheel;

a speed-up gear train engageable with said gear member and including a plurality of speed-up gears mounted on gear shafts and engaged with each other in order;

a blade assembly mounted in said shaver body, one of said gear shafts on which one of said speed-up gears is fitted being arranged so as to upwardly extend from said shaver body and be detachably mounted thereon with said blade assembly, said spring wind-up wheel being mounted so that a part thereof is projected from a side of said shaver body to enable a contact movement of said wind-up wheel to rotate it in engagement with said gear member; and

control means for controlling the movement of said speed-up gear train by the spring energy stored in said spiral spring including a planetary gear for selectively engaging said gear member with said speed-up gear train to release the stored spring energy and to alternatively release engagement of said planetary gear between said gear member and said speed-up gear train.

5,341,571
MOVABLE BLADE SHAVING CARTRIDGE OR THE LIKE
Frank H. Prochaska, Waynesboro, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Apr. 16, 1993, Ser. No. 46,989
Int. Cl.[5] B26B *21/22*
U.S. Cl. 30—50 15 Claims

14. A flexible blade cartridge comprising a platform member defining a guard member and a cap member, and a blade means disposed therein having a forward and rearward section, said rearward section of said blade means permanently fixed between said guard member and said cap member, said forward section of said blade means flexible about the longitudinal axis of said blade means to a less aggressive position in response to applied shaving forces, wherein:

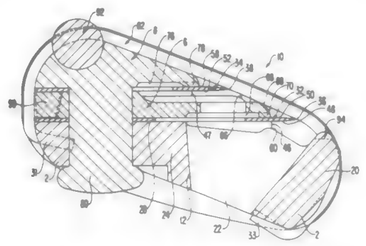
said cap member comprises means for preventing said blade means from moving in the upward direction, and

said blade means comprises a first and second blade, said

VOL 1165 ISS 5 AG 30 1994 UMI

forward portion of said first and second blades being flexible to a less aggressive position in response to applied shaving forces, said first and second blades being flexible about the longitudinal axis of the respective blade,

said flexible blade cartridge further comprising a spacer affixed to both said first and second blades so as to maintain a predetermined distance between the rearward portion of said first and second blades; said spacer comprising means for limiting the movement of said second blade to a predetermined level; said spacer comprising means for preventing said first blade from moving in the upward direction.



5,341,572

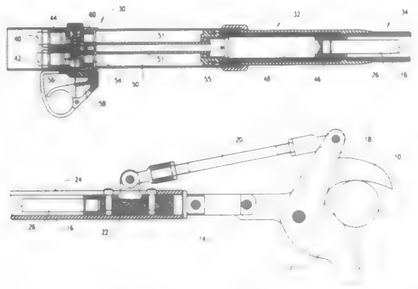
HYDRAULIC PRUNING TOOL

Yigal Michelson, 3 Hashkedim, 37000 Pardes Hanna, Israel

Filed Mar. 11, 1993, Ser. No. 29,508

Int. Cl.[5] B26B *15/00*

U.S. Cl. 30—228 **8 Claims**



1. A hydraulic tool for alternately producing a relatively strong power stroke and a relatively weak reset stroke, comprising:

(a) a housing;

(b) a reciprocating member slidable within said housing such that during the power stroke said reciprocating member slides in a first direction and during the reset stroke said reciprocating member slides in a direction which is opposite said first direction;

(c) a hydraulic inlet;

(d) a hydraulic outlet, said outlet being hydraulically connected to said inlet during the reset stroke and during the time between the end of the reset stroke and the beginning of the next power stroke, said outlet being hydraulically disconnected from said inlet during the power stroke;

(e) a first chamber, having a first chamber effective projected area for applying pressure to said reciprocating member, said first chamber being hydraulically connected to said outlet; and

(f) a second chamber, having a second chamber effective projected area for applying pressure to said reciprocating member which is smaller than said first chamber effective projected area, said second chamber being hydraulically connected to said inlet and hydraulically disconnected from said outlet during the power stroke, said second chamber being hydraulically disconnected from said first chamber during the power stroke and hydraulically connected to said first chamber during the reset stroke and during the time between the end of the reset stroke and the beginning of the next power stroke, such that during the power stroke said reciprocating member is urged in said first direction and during the reset stroke said reciprocating member is urged in a direction which is opposite that of said first direction.

5,341,573

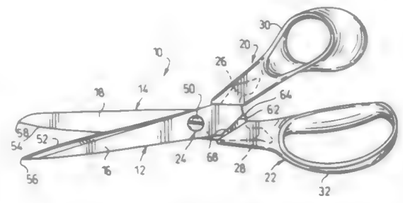
PIVOTED TOOL HAVING A SELF-COMPENSATING UNITARY PIVOT MEMBER

Erkki O. Linden, Billnäs; Karl S. Rönnholm, Karis, and Carl-Olof J. Holm, Dragsvik, all of Finland, assignors to Fiskars Oy Ab, Helsinki, Finland

Filed Nov. 30, 1992, Ser. No. 986,057

Int. Cl.[5] B26B *13/28*

U.S. Cl. 30—254 **19 Claims**



1. A tool having a force applying end and an opposed working end disposed across a pivotable joint through which a working force may be transmitted, wherein said tool includes first and second elongated members, each having oppositely facing inner and outer surfaces, said members being disposed for cooperative engagement about said pivotable joint and further wherein said joint is comprised of:

a) first and second registering apertures, one of each formed in a respective one of said elongated members, said apertures having respective first and second center lines generally normal to said surfaces, said center lines being misaligned by an eccentricity amount but in sufficient registration to permit said cooperative engagement;

b) a unitary pivot member mechanically interlocked within one of said apertures; said pivot member having a head lying adjacent and effectively in contact with the outer surface of said second elongated member, and a shank projecting from said head through, and conforming with, said apertures into engagement with the interior surfaces thereof, said shank comprising a head portion having a longitudinal axis, said head portion conforming with said second aperture, said shank further comprising an end portion having a longitudinal axis, said end portion conforming with said first aperture and terminating at a point lying substantially proximate but below the juncture of said first aperture and the outer surface of said first member, said shank further including a threaded bore; and

c) a threaded fastener received in said bore for controlling a compressive force applied to said joint;

whereby said head portion longitudinal axis is coincident with the second center line and said end portion longitudinal axis is coincident with the first center line so that the head portion longitudinal axis and the end portion longitudinal axis are misaligned by an amount substantially equal to said eccentricity amount.

5,341,574

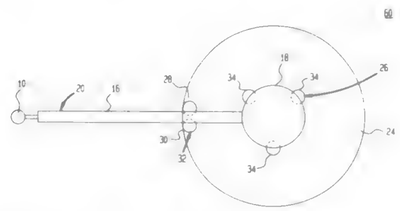
COORDINATE MEASURING MACHINE TEST STANDARD APPARATUS AND METHOD

Lothar F. Bieg, Louisville, Colo., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 29, 1993, Ser. No. 83,229

Int. Cl.[5] G01B *5/03*

U.S. Cl. 33—502 **25 Claims**



1. A coordinate measuring machine test standard apparatus, comprising:

a rotary spindle having an upper phase plate, said phase plate having a circumference and an axis of rotation;

a kinematic ball mount attached to said phase plate concentric with said axis of rotation of said phase plate;

a angular locating groove comprising at least two locking spheres mounted at said circumference of said phase plate;

an arm assembly, said arm of said arm assembly having a first end and a second end, said first end having a small sphere attached thereto and said second end having a large sphere attached thereto, said large sphere mounted in said kinematic ball mount and said arm resting in said groove;

means for securing said second sphere in said kinematic ball mount; and

means for holding said arm in said groove.

5,341,575

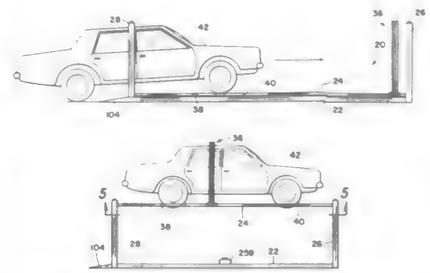
APPARATUS TO GATHER, DISPLAY, AND/OR PRINT VEHICLE CHASSIS MEASUREMENT DATA FOR ACCURATE REPAIR OF COLLISION DAMAGED VEHICLES

Finis L. Chisum, Rte. 5, Box 267, Claremore, Okla. 74017

Continuation of Ser. No. 778,391, Oct. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 431,471, Nov. 1, 1989, Pat. No. 5,058,286. This application Nov. 19, 1992, Ser. No. 979,422

Int. Cl.[5] G01B *5/25;* **G01C** *15/12*

U.S. Cl. 33—608 **9 Claims**



1. Apparatus for specifying X, Y and Z coordinates of a plurality of datum check points on a vehicle chassis relative to a given horizontal and vertical plane comprising:

a base frame;

a lift frame;

means on said lift frame to receive said vehicle, said lift frame having parallel rails along each side of said vehicle forming an X-axis;

means to raise said lift frame to a working height above said base frame;

at least one coordinate measuring assembly for each of said rails, each said assembly comprised of a vertical support member forming a Y-axis and moveable along said rail, a horizontal arm moveable vertically along said vertical support member (Y-axis), and moveable horizontally transverse to said vertical support member along a Z-axis, and a pointer at one end of said horizontal arm for positioning at a given one of said check points to establish the X, Y, and Z coordinate of a given one of said check points; and

means associated with said vertical support member and with said horizontal arm to sense their locations relative to said horizontal and vertical planes and record said X, Y, and Z coordinates for each of said check points.

5,341,576

METHOD AND APPARATUS FOR DRYING GRANULAR MATERIALS

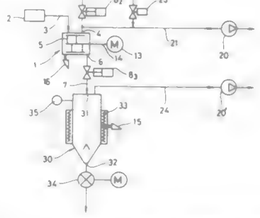
Ono Tsutomu, and Nosaka Masaaki, both of Hirakata, Japan, assignors to Matsui Manufacturing Co., Ltd., Osaka, Japan

Filed Jun. 25, 1991, Ser. No. 720,193

Claims priority, application Japan, Jun. 29, 1990, 2-172948

Int. Cl.[5] F26B *3/34*

U.S. Cl. 34—263 **5 Claims**



1. A method for drying granular materials intended to dry the granular materials to be dried through a heating process which heats the granular materials with electromagnetic waves under a reduced pressure lower than the atmospheric pressure and a pressure reducing process which performs final drying by producing a vacuum of a higher degree compared with the state of pressure reduction in said heating process in the absence of electromagnetic waves.

5,341,577

DRYING METHOD OF AND DRYING APPARATUS FOR POWDER AND GRANULAR MATERIAL

Iori Hashimoto, Kyoto; Motoki Numata, Munakata; Jun Nishizawa, and Tomiyuki Kamada, both of Kitakyushu, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 94,437

Claims priority, application Japan, Jul. 21, 1992, 4-193852

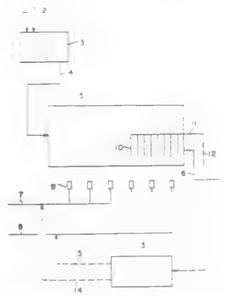
Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—493 **14 Claims**

1. In a drying method of powder and granular material

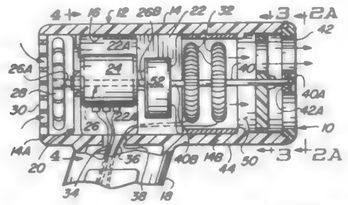
VOL 1165 ISS 5 AG 30 1994 UMI

which dries powder and granular material within a time from the introducing of the powder and granular from an end of a dryer having heat sources in plurally divided sections to the discharging of the powder and granular from the other end of the dryer, the drying method being characterized in that the temperature of the powder and granular material in the dryer is measured; a critical point at which a state of drying of the powder and granular material is changed from a constant rate



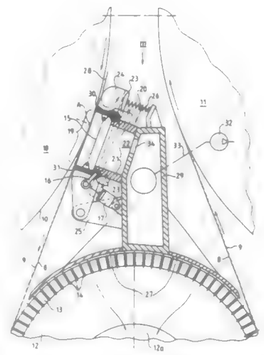
of drying to a falling rate of drying is estimated by calculation on the basis of a result of the temperature measurement and the temperature of the powder and granular material at the outlet of the dryer; and the temperature of the powder and granular material at the outlet of the dryer and the critical point are controlled by controlling independently the quantity of heat of the plural heat sources on the basis of a result of the estimation of the critical point concerning the state of drying of the powder and granular material.

5,341,578
BLOWER DRYER PULSED AIRFLOW GENERATING MECHANISM
Donald D. Anderson, Colorado Springs, Colo., assignor to J. A. Horn, Colorado Springs, Colo., a part interest
Filed Apr. 30, 1993, Ser. No. 56,119
Int. Cl.[5] A45D *20/00*
U.S. Cl. 34—97 **18 Claims**



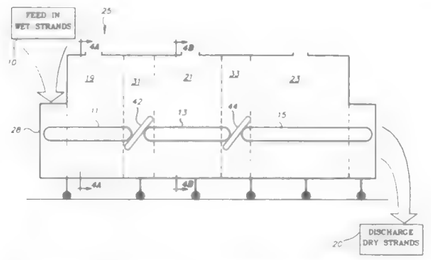
1. A pulsed airflow generating mechanism, comprising:
(a) an elongated shaft;
(b) a stationary disc disposed over said shaft and having at least one port radially spaced from said shaft;
(c) a housing defining an elongated passageway for guiding a substantially constant airflow therethrough in a predetermined direction, said housing rotatably mounting said shaft and stationarily mounting said stationary disc relative to said shaft;
(d) a spinning disc disposed over and connected to said shaft for rotation therewith relative to said housing and to said stationary disc, said spinning disc being located upstream of said stationary disc relative to the direction of airflow, said spinning disc having at least one aperture radially spaced from said shaft for moving intermittently into and out of registry with said port of said stationary disc to convert the constant airflow received by said housing passageway into a pulsating airflow discharged from said housing passageway as said spinning disc is rotated relative to said stationary disc; and
(e) an impeller disposed in said housing passageway, located upstream of said spinning disc and stationary disc relative to the direction of airflow, and secured on said shaft for causing rotation of said shaft in response to receiving the constant airflow through said housing passageway.

5,341,579
DEVICE FOR REMOVING A WEB FROM A DRYING CYLINDER
Christian Schiel, Heidenheim; Gerhard Kotitschke, Steinheim, and Karl Gröner, Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany
Filed Dec. 11, 1992, Ser. No. 989,207
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141296
Int. Cl.[5] F26B *13/30*
U.S. Cl. 34—115 **28 Claims**



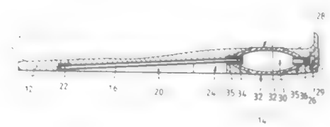
1. A device for removing a web from a drying cylinder in a drying section of a paper making machine:
the drying section comprising:
a rotatable drying cylinder having a peripheral surface;
a porous web support belt which passes partly around the cylinder peripheral surface; the belt having a side which supports the web against the drying cylinder peripheral surface as the belt passes around the cylinder;
means supporting the belt to move around the cylinder and to move off the cylinder surface at a removal point around the cylinder;
the removing device comprising:
a stationary suction box extending over the width of the belt, the suction box having a suction zone in the region around the drying cylinder which is also at the opposite sides of the removal point around the cylinder;
first and second yieldable sealing strips between the suction box and the peripheral surface of the cylinder and extending across the direction of belt travel, the strips being spaced apart from each other in the direction around the cylinder and defining the suction zone between them around the cylinder;
a respective sealing strip holder at the suction box for each of the strips; the sealing strip holders being spaced at least 30 mm from the cylinder peripheral surface, and the strips extending from their respective holders toward the cylinder surface for defining the suction zone;
each of the sealing strips being sufficiently stiff as to remain substantially free of deformation as a result of a predetermined pressure difference between the suction zone and the surrounding area; and
said sealing strips being constructed to remain substantially free of deformation at a pressure difference between the pressure in the suction zone and in the surrounding area in the range of 0.01 to 0.1 bar.

5,341,580
METHOD FOR DRYING WOOD STRANDS
William B. Teal, 18902 92nd Ave. West, Edmonds, Wash. 98020
Filed Jan. 22, 1993, Ser. No. 7,603
Int. Cl.[5] F26B *3/00*
U.S. Cl. 34—446 **21 Claims**



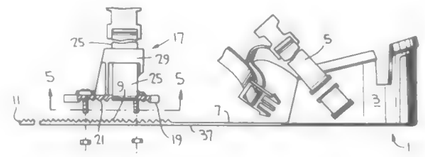
1. A method for drying wood strands for the manufacture of oriented strand board comprising the steps of:
feeding wood strands onto a belt conveyor to form a bed of strands;
conveying the wood strands on the belt conveyor through a dryer housing in a substantially continuous manner;
heating a quantity of drying air to a desired temperature;
passing the drying air through the bed of strands in the dryer housing; and
after passing the drying air through the bed of strands, discharging the wood strands from the dryer housing.

5,341,581
COMPRESSION COOLING SYSTEM OF SHOE MIDSOLE
Kinger Huang, No. 34, Wu-Chang Rd., Taichung, Taiwan
Filed Sep. 15, 1993, Ser. No. 120,792
Int. Cl.[5] A43B *7/06, 13/20*
U.S. Cl. 36—3 B **7 Claims**



1. A compression cooling system of a shoe midsole comprising:
a main body provided in a lower side thereof with a slot of a predetermined length and having a through hole extending from a front end of said slot to reach an upper surface of said main body;
an air sac disposed in a rear segment of said main body and provided in a periphery thereof with an air admitting one-way valve and an air discharging one-way valve which are separated by an appropriate distance, with said air admitting one-way valve being in communication with said slot, and with said air discharging one-way valve being in communication with an outer surface of said main body; and
an air duct disposed in said slot such that a rear end of said air duct is connected with said air admitting one-way valve and that a front end of said air duct is in communication with said through hole;
wherein said air sac is provided respectively on an upper surface thereof and a lower surface thereof with a level surface,
each said level surface respectively spaced slightly out from an upper and a lower surface of said main body,
wherein said front end of said air duct can be caused to bring about a stream of suction at the time when said air sac is compressed and decompressed, with said suction being capable of drawing atmospheric air into said air sac from which said atmospheric air is then driven out via said air discharging one-way valve.

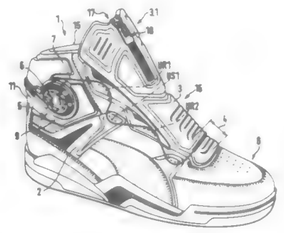
5,341,582
ANTI-SLIP DEVICE FOR FOOTWEAR
Jeffrey Liautaud, Park Ridge, Ill., assignor to Sherpa, Inc., Walworth, Wis.
Filed Apr. 6, 1993, Ser. No. 42,797
Int. Cl.[5] A43C *15/06*
U.S. Cl. 36—76 **7 Claims**



1. An anti-slip device for footwear comprising:
(a) a heel portion including an upstanding heel engaging flange and a tongue portion having formed therein a plurality of serrations and a plurality of apertures wherein the tongue portion is of a length sufficient to extend beyond a toe portion of said anti-slip device to provide traction for the anti-slip device;
(b) said toe portion having a base with an underside having a plurality of serrations formed therein, a first upstanding member attached to a first side wall of the base, a second upstanding member attached to a second side wall of the base, and at least two apertures formed in said base which are positioned so as to be alignable with at least two of the plurality of apertures formed in said tongue portion;
(c) a means of fastening said toe portion to said tongue portion;
(d) a first fastening means attached to said upstanding heel engaging flange constructed and arranged to retain footwear in said heel portion;
(e) a second fastening means attached to said toe portion constructed and arranged to retain a toe end of footwear in said toe portion; and
(f) at least one traction plate attached to the tongue portion, said traction plate having a plurality of exposed downwardly extending cleats in relation to the heel portion.

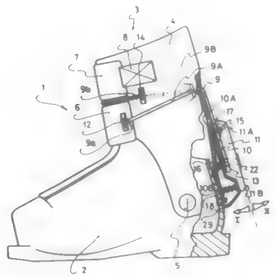
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,583
SPORT OR LEISURE SHOE WITH A CENTRAL CLOSURE
Barry Hallenbeck, Nashua, N.H., assignor to Tretorn AB, Helsingorg, Sweden
Filed May 21, 1993, Ser. No. 64,644
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1992, 9209867[U]
Int. Cl.[5] A43B *11/00*
U.S. Cl. 36—50.1 **21 Claims**



1. A shoe having an upper which is formed of an elastically flexible material at least in side parts thereof, an instep cover covering an instep of the foot, a tightening element which can be wound for closing the shoe and can be extended for opening it, and a central rotary closure coupled with the tightening element and mounted on an upper portion of a lateral side of one of the side parts in an area of the upper at which a wearer's ankle is received; wherein said tightening element acts on a portion of a throat area of the shoe extending from the central rotary closure toward a tip of the shoe being alternately guided, beginning with a guide element on the instep cover, between guide elements on the instep cover and respective guide elements of the lateral side of one of the side parts; across the instep in a metatarsophalangeal joint area to a medial side of one of the side parts where the tightening element runs upwardly and toward an upper heel area being alternately guided between guide elements on the medial side of one of the side parts and respective guide elements of the instep cover to an attaching point for a distal end thereof at the upper portion of the upper on one of the side parts thereof.

5,341,584
SKI BOOT HAVING A CLOSURE DEVICE
Jean Paris, Sevrier, and Jean-Pierre Chemello, Annecy-Le-Vieux, both of France, assignors to Salomon S.A., Metz-Tessy, France
Filed Jun. 21, 1993, Ser. No. 79,198
Claims priority, application France, Jun. 22, 1992, 92 07761
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—117 **20 Claims**



1. A ski boot comprising:

a shell base having an abutment at a rear portion;

an upper comprising a collar for surrounding a lower leg of a skier, said collar further comprising:

an upper strap having a first closure device for facilitating closing of the upper about the lower leg, said upper strap located in an upper portion of said collar; and

a lower strap, having a second closure device for facilitating closing of the upper about the lower leg, said lower strap having a portion located in a zone proximate to an upper edge of said shell base substantially corresponding with a flexion fold area of the ankle of the skier;

means for journalling said collar with respect to said shell base about a transverse axis in an area of the malleoli of the skier;

a latching mechanism, located at a rear portion of said collar, for selectively latching and unlatching said collar in rear support with respect to said shell base by means of said abutment of said shell base;

a tensioning lever mounted for movement at a rear portion of the ski boot, said tensioning lever having a cam for engagement with and for controlling movement of said latching mechanism;

at least one inextensible and flexible link extending in a predeterminate circuit, whereby said link has a first end affixed as a mobile attachment point to said lower strap, said link extending to and being connected to said tensioning lever, said link extending from said tensioning lever and having a second end affixed to a portion of said collar at a fixed attachment point;

said tensioning lever, said link and said latching mechanism comprising, upon movement of said tensioning lever in a closing direction to a predeterminate latched position and upon application of a traction force to said link by movement of said tensioning lever and upon a forward pivotal movement of said collar about said shell base:

means for simultaneously (1) tightening said collar on the lower leg of the skier by means of a tightening movement of said mobile attachment point of said lower strap; and (2) latching said collar in rear support with respect to said shell base by means of said abutment of said shell base, said tensioning lever being in said predeterminate latched position concurrently with said collar being latched in rear support with respect to said shell base.

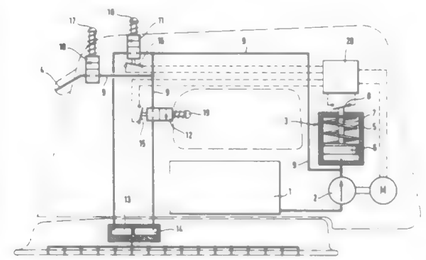
5,341,585
STEAM IRON WITH PUMP AND PRESSURE RESERVOIR
Hilmar Stephan, Gelnhausen; Gerhard Molz, Frankfurt am Main, and Heinz Büttgen, Niedernberg, all of Fed. Rep. of Germany, assignors to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed May 6, 1993, Ser. No. 58,604
Claims priority, application Fed. Rep. of Germany, May 8, 1992, 4214564
Int. Cl.[5] D06F *75/14*
U.S. Cl. 38—77.5 **7 Claims**

1. A steam iron which comprises:

an evaporation chamber;

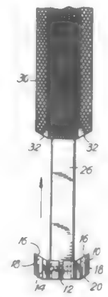
a pump for supplying water from a water tank to said evaporation chamber; and

a pressure reservoir which is provided between said pump and said evaporation chamber, wherein the operation of



said pump is controllable between on and off modes as a function of an amount of water in said pressure reservoir.

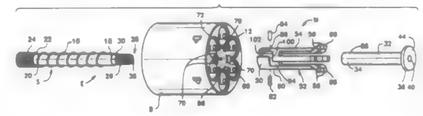
5,341,586
STOCK EXTENDER
Peter A. Aluotto, 1668 Hendrickson St., and John A. Gulardo, 1866 E. 53 St., both of Brooklyn, N.Y. 11234
Filed Apr. 7, 1992, Ser. No. 864,647
Int. Cl.[5] F41A *9/65*
U.S. Cl. 42—7 **4 Claims**



1. In a handgun of the variety having a stock, said stock being gripped by a hand of a user holding said handgun and into a lower end of which an ammunition-bearing magazine may be inserted to load said handgun, said magazine having an upper end, from which said ammunition is dispensed, and a lower end, said magazine being inserted upper end first into said stock when loading said handgun, the improvement comprising a stock extender, said stock extender being a collar defining an opening and fitting around the lower end of said magazine, said magazine being inserted through said opening up to said lower end, said magazine being longer than said stock and said stock extender having a thickness in an axial direction equal to the amount by which said magazine is longer than said stock, whereby said stock may be lengthened by an amount equal to the thickness of said stock extender to facilitate the gripping of said stock by a user of said handgun,

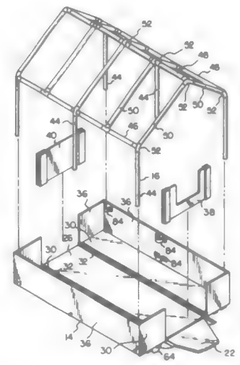
wherein said stock extender is provided with a split at a point on the circumference thereof in an axial direction and with a screw directed transversely across said split, said screw, upon being tightened, narrowing said split to tighten said stock extender about said magazine.

5,341,587
EJECTOR AND CARTRIDGE POSITIONER
Jonathan W. Phillips, Jr., Hitchcock, Tex., assignor to Phillips and Rodgers, Inc., Huntsville, Tex.
Filed Feb. 3, 1993, Ser. No. 12,591
Int. Cl.[5] F41A *15/02*
U.S. Cl. 42—68 **7 Claims**



1. A casing ejector/cartridge positioner mechanism adapted for revolvers having a revolver cylinder body with cartridge bores, comprising a longitudinally extending extractor rod which is movable along its longitudinal axis relative to a central bore passage of the cylinder body, said extractor rod having an aligned central passage along its length and a pivot pin mounted in said passage to mount said casing ejector mechanism and the revolver cylinder body within a revolver, and including an extractor spring mounted extending from a forward end along said extractor rod forward of the cylinder body, an ejector body mounted about and enclosing said extractor rod at an intermediate position within the cylinder body and having a front surface contacting a rear end of said extractor spring ejector arms integral with said ejector body formed extending rearwardly from said ejector body toward a rear face of the cylinder body, said ejector arms having a first portion adapted to slidably move within said central passage bore and an outwardly sloping second portion fitting along a corresponding outwardly tapered rest surface formed in a rear portion of the cylinder body between the central bore and a cartridge bore, a cartridge engaging lip formed on said second portion and movable within a radially extending recess formed in said rear portion of said revolver cylinder body between said central bore and the cartridge bore.

5,341,588
PORTABLE ICE FISHING HUT
Quentin Lizotte, 104 Lockerill Cres, Fort McMurray, Alberta, Canada T9K 2J3
Filed Sep. 24, 1993, Ser. No. 125,762
Int. Cl.[5] A01M *31/00*
U.S. Cl. 43—1 **8 Claims**



2. An ice fish house readily transportable comprising, in combination:

a housing base having a horizontal central platform, a pair of

VOL 1165 ISS 5 AG 30 1994 UMI

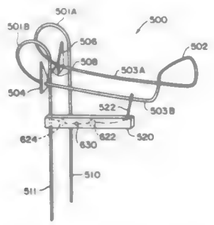
similarly shaped side platforms, parallel hinges coupling the central platform and the side platforms with the side platforms being positionable between a deployed orientation wherein the side platforms extend in a horizontal plane with the central plane and a collapsed orientation wherein the side platforms extend upwardly at about 90 degrees with respect to the central platform, walls extending vertically from the side platforms;

a frame fabricated of vertical rods coupled at their lower edges to the walls, two parallel lengths of horizontal rods couplable to the vertical rods, a single horizontal length of rods centrally located between the lengths of horizontal rods but at an elevated location, a plurality of angled rods coupling the single length of rods and two parallel lengths of rods, and coupling elements separably joining the lengths of rods and the angled rods;

sheet material covering the housing base and frame for forming an interior space therebetween; and

a pair of parallel skids positioned beneath the central platform, a plurality of holes through each skid in axially aligned pairs, a plurality of tubular housing coupling each axially aligned pair of holes, a support pole extending through each housing and extending axially therefrom a distance to support the side platforms when in the deployed orientation.

5,341,589
FISHING ROD HOLDER AND STAND
Manuel Gutierrez, 1273 Meadow Sweet Rd., Golden, Colo. 80401
Continuation-in-part of Ser. No. 822,634, Jan. 17, 1992, Pat. No. 5,187,892, and a continuation-in-part of Ser. No. 649,677, Feb. 1, 1991, Pat. No. 5,088,224. This application Jan. 28, 1993, Ser. No. 10,428
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] A01K *97/10, 97/12*
U.S. Cl. 43—17 **8 Claims**



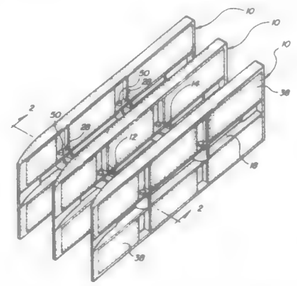
1. A holder for a rod having a handle, comprising:
(a) a rearward rod handle support;
(b) a forward rod handle support comprising a first and second finger each having a tip and a bottom end portion, said bottom end portions being connected by at least one cable; wherein said fingers are mounted for pivotal movement of said tips in unison toward each other when a downward force is applied to said cable;
(c) a frame upon which said rearward and forward rod handle supports are mounted; and
(d) spaced-apart downwardly depending leg members carried by said frame.

5,341,590
CARRYING CASE FOR FLY FISHING ROD AND REEL
Allen Hepworth; Gordon Smith, both of Port Moody, and Walter Johb, Surrey, all of Canada
Filed Nov. 16, 1992, Ser. No. 977,115
Int. Cl.[5] A01K *97/08*
U.S. Cl. 43—26 **11 Claims**



1. A floating, rigid, carrying case for a fly fishing rod and mounted reel, comprising:
a) a tubular main body for containing a fly fishing rod;
b) an end cap sealed onto a first end of the tubular main body;
c) a reel compartment body for containing a portion of the rod to which the reel is mounted and for containing the reel, affixed to a second end of the tubular main body;
d) an end door attached by a hinge joint to the reel compartment for giving access to withdraw and insert the rod and reel from and into the case, the end door containing an inner door to an inner tackle compartment within the end door;
e) a snap tab that fits under a snap bridge to releasably hold the end door in a closed position on the reel compartment.

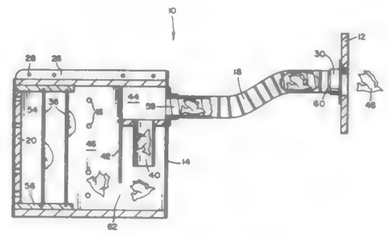
5,341,591
PLANER BOARD
Carl E. Hicks, 76200 True Rd., Armada, Mich. 48005
Filed Jul. 16, 1992, Ser. No. 913,629
Int. Cl.[5] A01K *91/08, 73/045*
U.S. Cl. 43—43.13 **4 Claims**



1. A trolling assembly comprising three substantially identical planer boards, the boards each being a buoyant, flat, elongated, rectangular member having a central, longitudinally aligned slot terminating short of each end of the board and having one of its flat end surfaces tapered toward the opposed flat end surface so as to form a relatively sharp leading edge; and a pair of extension arms connecting said planer boards to one another in stacked, parallel relationship consisting of two outside boards sandwiching a center planar board, each arm having its midpoint pivotally connected to the center planer board of said stack at the central slot, for movement in a plane transverse to the plane of said board, the two arms being spaced from one another along said central slot, and each arm

having two opposed ends similarly pivotally connected to the two outside boards of the stack at pivotal axes disposed within the central slots of said two outside boards, whereby said arms may be positioned to extend generally transverse to the planes of the boards so that the boards are supporting in spaced parallel relationship to one another or the arms may be positioned in a retracted position in which the arms lie substantially within said slots and the opposed planer surfaces of the three boards abut one another in a collapsed position.

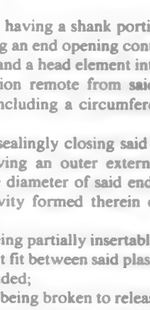
5,341,592
BAT ELIMINATION AND CONTAINMENT DEVICE
David Lafforthun, 1383 West Galway Rd., Galway, N.Y. 12074
Filed May 19, 1993, Ser. No. 64,819
Int. Cl.[5] A01K *69/06;* **A01M** *23/00*
U.S. Cl. 43—66 **19 Claims**



1. A device for eliminating bats from the interior of a structure having a structural opening through which said bats enter and exit said interior, and containing said eliminated bats, said device comprising:
a containment housing having an entry way and an exit way, said housing divided into a first chamber and a second chamber by an interior wall, said first chamber connected to said second chamber by an aperture in said interior wall;
a tubular-shaped radially corrugated entry passage having a first end and a second end, said first end being mountable to said structure such that it substantially covers said structural opening and allows said bats occupying the interior of said structure to enter said housing, and said second end of said entry passage being secured to said entry way of said housing and providing entry to said housing;
a movable closure means sealing said exit way of said housing; and
roosting means positioned within said housing.

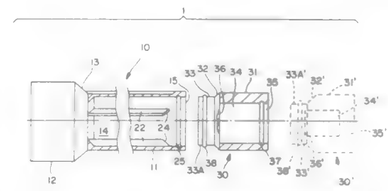
5,341,593
PLANT SUPPORT
Howard R. Foreman, Rte. 1, Box 184, Miami, Okla. 74354
Filed Feb. 17, 1993, Ser. No. 18,779
Int. Cl.[5] A01G *17/06*
U.S. Cl. 47—47 **20 Claims**

1. A support for a plant comprising:
a resiliently flexible elongated member having a lower end adapted for penetration into the ground proximate the base of the plant for positioning and maintaining said member substantially vertically adjacent the stem of the plant;
an elongated member having a plurality of apertures spaced therealong;
means fixed proximate an upper end of said resiliently flexible member for suspending said apertured member therefrom; and



a plurality of means, each one engaged with a different one of said apertures, for releasably closely girding the stem of the plant.

5,341,594
TREE TREATMENT CAPSULE WITH VOLUMES FOR SEQUENTIALLY DISCHARGING FLUID
Hans Merving, August Stalbergsvag 10A, 644 00 Torshalla, Sweden
Filed Sep. 24, 1992, Ser. No. 950,247
Int. Cl.[5] A01G *29/00*
U.S. Cl. 47—57.5 **5 Claims**



1. A tree treatment capsule for insertion into a bore in a tree comprising:
a plastic container having a shank portion with a first internal cavity having an end opening containing therein a first chemical agent and a head element integrally formed with said shank portion remote from said end opening, said shank portion including a circumferential recess formed therein; and
a plastic plug for sealingly closing said internal cavity, said plastic plug having an outer external diameter slightly smaller than the diameter of said end opening and a second internal cavity formed therein containing a second chemical agent;
said plastic plug being partially insertable into said end opening so that a tight fit between said plastic plug and said end opening is provided;
said shank portion being broken to release said first chemical agent from the first internal cavity immediately as an impact force is applied to said head element and moves said head element towards said plastic plug, said plastic plug being gradually broken down to release said second chemical agent after said first chemical agent has been released.

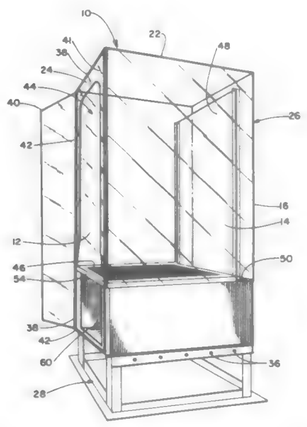
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,595

ENVIRONMENTAL CHAMBER FOR PLANT GROWTH ANALYSIS

Steven H. Griggs, Cleveland; William E. Bartley, and Adrian O. Rule, III, both of Chagrin Falls, all of Ohio, assignors to Environmental Growth Chambers, Chagrin Falls, Ohio

Filed Jun. 15, 1992, Ser. No. 898,569
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—60 14 Claims



1. A stand-alone growth cabinet for outdoor use in conducting plant experiments, comprising:

a frameless upright container comprised of transparent interconnected panels forming a day-lit chamber shell, said chamber shell comprising a pair of side panels, a back panel, a front panel, a roof, and an integral floor panel;

wherein said interconnected panels are chemically bonded along their periphery to provide a substantially air-tight and frameless chamber shell, adapted to maximize entry of daylight into said growth cabinet;

a horizontal surface within said chamber shell forming a horizontal plant supporting floor, said horizontal floor having perforations or slots there through on its entire surface;

a transport vertical surface within said chamber shell rising from said horizontal floor to define an air return plenum adjacent the back panel of said chamber shell, said transparent vertical surface adapted to direct air from said perforated or slotted horizontal floor over the top of said vertical surface and down said air return plenum, said vertical surface and horizontal floor together defining a growth chamber with the chamber shell, said growth chamber being adjacent to the front panel of the chamber shell;

said transparent panels and said transparent vertical surface being formed of the same plastic material;

a base having sufficient height to insulate said growth chamber from ground temperature and defeating wind loads;

means for opening and sealingly closing said growth chamber, said means comprising a door at the front of said chamber shell;

means for equalized distribution of air forced into said growth chamber associated with said chamber shell; and,

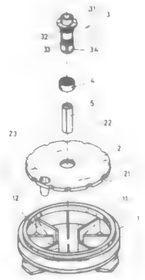
means for control of temperature and humidity, and optionally for monitoring and controlling of carbon dioxide within said growth chamber associated with said chamber shell.

5,341,596

AUTOMATIC WATER SUPPLY DEVICE FOR POTTED PLANTS

Hsin-Lin Kao, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan

Filed Mar. 30, 1993, Ser. No. 40,285
Int. Cl.[5] A01G *25/00*
U.S. Cl. 47—79 4 Claims



1. An automatic water supply device for a potted plant, comprising:

a housing having a cavity formed therein, said cavity defining a water reservoir, said cavity having a plurality of spaced upstanding rib members extending from a bottom wall of said housing;

a disk member supported by said plurality of rib members for forming a closure for said cavity, said disk member having a plurality of water entry openings formed therethrough in radially spaced relation about a peripheral portion of said disk member and an observation opening formed through said disk member for observation of a water level of said reservoir, said disk member having a centrally disposed opening formed therethrough;

a longitudinally extended water controlling sleeve having a predetermined length dimension and being formed with a through bore extending longitudinally therein, said water controlling sleeve being disposed in said central opening of said disk member, said water controlling sleeve having a first bead portion formed on a first end thereof and a second bead portion spaced from said first bead portion for capturing said disk member therebetween, said water controlling sleeve including a plurality of clip members formed on a second end thereof and an outer wall portion adjacent said second end having threads formed thereon;

a longitudinally extended wick member disposed within said through bore for transferring water from said reservoir, said wick member having a length dimension greater than said predetermined length dimension of said water controlling sleeve and having one end extending beyond said first end of said water controlling sleeve; and,

a nut member threadedly coupled to said outer wall portion of said water controlling sleeve, whereby said plurality of clip members are radially displaced responsive to longitudinal displacement of said nut member to adjust a flow of water through said wick member.

5,341,597

POWER OPERATED GARAGE DOOR

Donald A. Stoltenberg, 419 N. Ashland Ave., Park Ridge, Ill. 60068

Filed Jan. 22, 1993, Ser. No. 8,557
Int. Cl.[5] E05F *11/00*
U.S. Cl. 49—199 19 Claims

1. A power operated door for installation in a building having a vertical wall with an outer surface and with a door opening in said wall comprising:

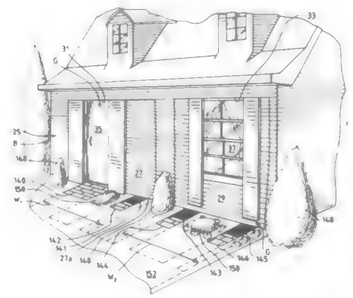
a one-piece door movable between a closed position disposed vertically in said door opening with said door being substantially flush with said outer surface of said vertical wall with said door filling said opening and a horizontal position above said opening, said door having an upper edge and a lower edge;

vertically extending tracks disposed adjacent said door opening;

horizontally extending tracks positioned above said door opening and extending inwardly from said door opening;

first bearing means at the lower edge of said one-piece door engageable in said vertically extending tracks for guiding said door for vertical movement;

second bearing means at the upper edge of said door engageable in said horizontally extending tracks for guiding said door for horizontal movement;



door drive mechanism including a first reversible motor, a flexible drive member drivingly connecting said motor and said door to raise and lower said door, a pulley fixedly supported adjacent said lower edge of said door in the closed position of said door, said flexible drive including a first portion extending from said motor to a connection to said door and a second portion extending from said motor around said pulley to a connection to said door, said connection to said door by said first and second portions of said flexible drive member being located at said first bearing means;

and a control circuit for driving said motor in a first direction for closing said door and a second direction for opening said door, said circuit including means responsive to motor rotation to reverse said motor upon said door engaging an obstruction to the closing of said door.

5,341,598

POWER DOOR DRIVE AND DOOR SUPPORT HAVING MOTOR OPERATED LOCKS

Redreddy S. Reddy, Evanston, Ill., assignor to Mark IV Transportation Products Corporation, Niles, Ill.

Filed May 8, 1992, Ser. No. 880,794
Int. Cl.[5] E05F *11/34*; F16H *55/17*
U.S. Cl. 49—362 18 Claims

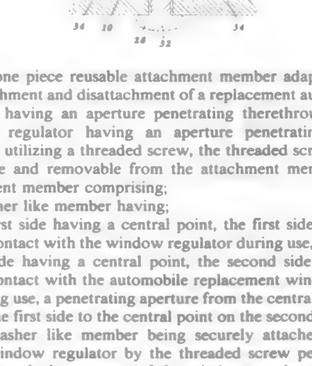
1. A rotary lock for an electric door drive used to open and close a door in a transit vehicle comprising:

a rotary helical drive member;

means electrically rotating said drive member;

continuous thread means on said drive member, said threads having positive and negative pitch segments, said segments corresponding to running and lock portions of said drive member, respectively;

nut means running on said thread means, said nut means carrying said door for motion therealong when said drive member is rotated, said motion moving said door along the running thread portion from a door open position to said lock thread portion for a door closed position;



whereby nut travel into said lock thread portion prevents door movement without shaft rotation.

5,341,599

REPLACEMENT VEHICLE WINDOW ATTACHMENT

Charles E. Cox, 1016 Superior St., Lot 6, Ft. Myers, Fla. 33916

Filed Jan. 10, 1992, Ser. No. 819,078
Int. Cl.[5] E05F *11/38*
U.S. Cl. 49—375 2 Claims

1. A one piece reusable attachment member adaptable for the attachment and disattachment of a replacement automobile window having an aperture penetrating therethrough, to a window regulator having an aperture penetrating therethrough, utilizing a threaded screw, the threaded screw being insertable and removable from the attachment member, the attachment member comprising;

a washer like member having;

a first side having a central point, the first side being in contact with the window regulator during use, a second side having a central point, the second side being in contact with the automobile replacement window during use, a penetrating aperture from the central point on the first side to the central point on the second side, the washer like member being securely attached to the window regulator by the threaded screw penetrating though the aperture of the window regulator and the aperture of the washer like member during use,

four prongs each having;

two opposing relatively perpendicularly intersecting

VOL 1165 ISS 5 AG 30 1994 UMI

members, the four prongs extending relatively perpendicularly from the washer like member on the second side and partially overlying the aperture of the washer like member, the four prongs being inserted through the penetrating aperture of the automobile replacement window and expanded outward by the placement of the threaded screw through the aperture of the washer like member were the four prongs overlie portions of the automobile replacement window to securely clamp the automobile replacement window to the attachment member during use wherein each prong has a pair of axially extending surfaces and wherein each pair of axially extending surfaces gradually increase in thickness and converges to a maximum radial thickness at substantially a midpoint of said prong.

5,341,600

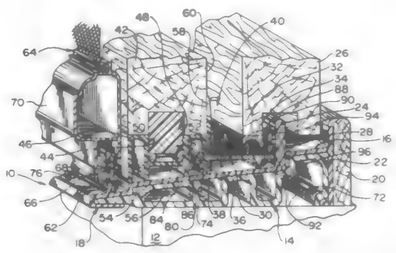
SLIDING DOOR SILL CONSTRUCTION

Thomas J. Heppner, Warroad, Minn., assignor to Marvin Lumber and Cedar Co., Warroad, Minn.

Continuation of Ser. No. 642,642, Jan. 17, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,068

Int. Cl.[5] G06B *1/70*

U.S. Cl. 49—471 **4 Claims**



1. A door sill for receipt in a frame mounting a fixed door panel at one end thereof and a sliding door panel movable along a longitudinally-extending track, defined by said sill, generally parallel to the fixed door panel and able to close a portion of an opening defined within the frame which is unobstructed by the fixed door panel, wherein the sliding door panel is disposed inwardly of the fixed door panel for movement, comprising:

(a) a sill floor external to the portion of the opening, defined within the frame, which is unobstructed by the fixed door panel;

(b) a platform, elevated above said sill floor, intermediate the sliding door panel track and the fixed door panel, extending substantially the length of the fixed door panel and abutting, at an inner end thereof, the sliding door panel track to define, in part, a drainage channel;

(c) a weather strip, having a pair of discrete legs, extending along an outer surface of the longitudinally-extending track along which the sliding door panel moves at least the length of the opening defined within the frame which is unobstructed by the fixed door panel, a first leg of said weather strip being generally planar, and generally parallel to, and engaged against the longitudinally-extending track along which the sliding door panel is movable, and a second generally planar leg of said weather strip being hinged, at a top edge thereof, to a top edge of said first leg; and

(d) means for biasing said second leg upwardly and away from said first leg and into engagement with a bottom edge of the sliding door panel.

5,341,601

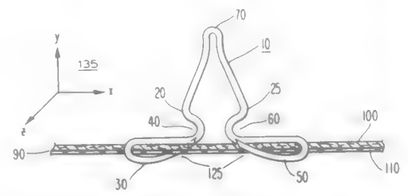
GASKETS FOR SEALING A SPACE BETWEEN SURFACES AND CLIPS FOR MOUNTING GASKETS TO SURFACES

James D. Moyer, Downingtown, Pa., assignor to The Bentley-Harris Manufacturing Company, Lionville, Pa.

Division of Ser. No. 665,289, Mar. 6, 1991, Pat. No. 5,205,075. This application Feb. 4, 1993, Ser. No. 13,705

Int. Cl.[5] E06B *7/16;* **F16B** *15/00*

U.S. Cl. 49—493.1 **8 Claims**



1. A clip for securing an oven gasket to a surface on an oven having spaced apertures, said clip comprising:

a head portion having an apex, shoulder means extending from said head portion for interfacing to one of said apertures in the surface on the oven, said shoulder means securing the oven gasket to the surface;

first retaining means integrally formed on a first side of the shoulder means for fixedly retaining the clip to the oven gasket; and

second retaining means integrally formed on a second side of the shoulder means for further fixedly retaining the clip to the oven gasket, the first and second retaining means each being crimped at a crimp angle relative to a plane substantially containing the shoulder means, the first and second retaining means being substantially parallel to each other in spaced apart relationship so as to provide radial rigidity to the clip when the clip is fixed to the gasket.

5,341,602

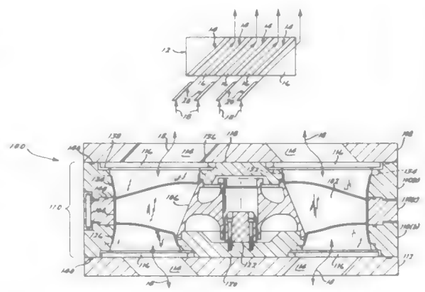
APPARATUS FOR IMPROVED SLURRY POLISHING

Michael G. Foley, White Lake, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Filed Apr. 14, 1993, Ser. No. 47,225

Int. Cl.[5] B24B *29/00, 57/02*

U.S. Cl. 51—2 R **4 Claims**



1. A slurry polishing apparatus comprising:

a first section having at least one opening to allow an abrasive slurry polishing mixture to flow through said apparatus;

a second section connected to said first section having a means for retaining a metal part in contact with the slurry polishing mixture flow, and a means for evenly directing the slurry polishing mixture over a portion of the metal part surface designated for polishing; and

a third section connected to said second section having at least one opening to allow the slurry polishing mixture to flow through said apparatus

wherein said means for evenly directing the slurry polishing mixture comprises a plurality of removable deflector blades positioned between the metal part and the at least one opening in said first and third sections, each of said plurality of deflector blade being contoured to deflect the flow of the slurry polishing mixture at an approximately uniform angle and flow rate relative to the designated surface of the metal part for which polishing is desired.

5,341,603

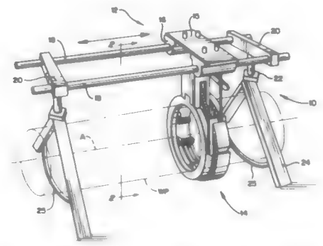
EXTERNAL HONE

R. A. Pollock, Ballston Lake, and J. F. Van Nest, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 10, 1992, Ser. No. 910,898

Int. Cl.[5] B24B *7/00*

U.S. Cl. 51—73 R **18 Claims**



1. Apparatus for externally honing a fixed workpiece having an axis comprising:

(a) a support assembly;

(b) a honing fixture including (i) a mounting structure carried by said support assembly mounting a plurality of rollers circumferentially spaced one from the other and defining a honing axis; (ii) a rotatable structure carried by said rollers for rotation about said honing axis and relative to said mounting structure; and (iii) means carried by said honing fixture and coupled to said rotatable structure for applying a torque thereto such that said rotatable structure rotates about said honing axis;

(c) a plurality of honing stones carried by said rotatable structure for rotation therewith about said honing axis and for engagement with a workpiece for honing the external surface of the workpiece; and

(d) means coupled between said support assembly and said mounting structure for compensating for the weight of the honing fixture and the torque applied to said rotatable structure such that the workpiece and honing axes are maintained coaxial one to the other during honing.

5,341,604

SINGLE BLOCK MOUNTING SYSTEM FOR SURFACING AND EDGING OF A LENS BLANK AND METHOD THEREFOR

Kenneth O. Wood, Stafford Springs, Conn., assignor to Gerber Optical, Inc., South Windsor, Conn.

Division of Ser. No. 604,052, Oct. 26, 1990, Pat. No. 5,210,695. This application Dec. 30, 1992, Ser. No. 998,385

Int. Cl.[5] B24B *13/00*

U.S. Cl. 51—165.71 **29 Claims**

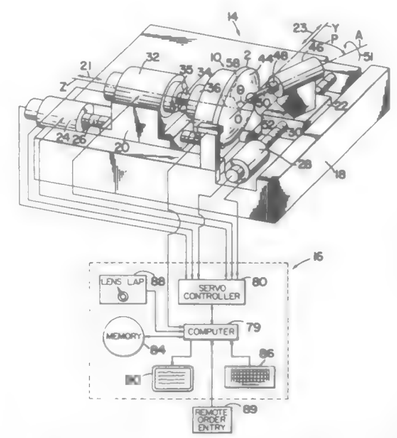
1. A system for shaping the rear surface of a lens blank, for polishing said rear surface and for edging a given shape into the blank for fitting into a selected frame opening of an eyeglass pair, said system comprising:

a lens blank and block assembly, said lens blank of said assembly having a first finished surface facing the block and a second rear surface facing away from the block, the first surface being fixedly bonded with said block such that the centers of the block and the lens are coincident with one another and define a block center;

cutting means for cutting a given shape in the rear surface of said lens blank by rotating said assembly about a cutting axis of rotation coincident with said block center to cause the lens blank to have the optical characteristics specified by prescription data;

said cutting means including a rotatable holding means for releasably mounting said assembly to said machine such that said block center is located coincidentally with said cutting axis of rotation and is disposed at a given angular orientation coincident with a given radial reference axis;

control means associated with said cutting means for creating a custom lap for off-axis finishing of the worked on second surface of said lens blank such that the custom lap is formed with a surface correspondingly shaped to fit the



given shape cut in the rear surface of the lens and means for holding said custom lap in said cutting means at a given orientation with respect to said block center and said given radial reference axis in said cutting machine;

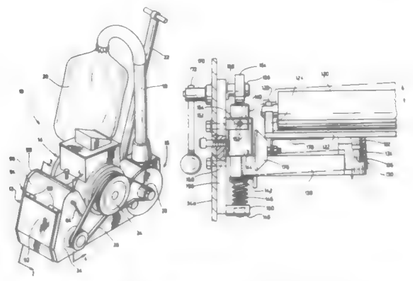
means formed on said assembly for holding it in registry with means for finishing said second surface of said lens regardless of the surface contour formed thereon and for orienting said assembly with respect to said custom lap while said assembly is mounted in said finishing means such that the cut surfaces of said lap and said lens blank mate with each other;

edging means for edging a given shape in said lens blank while fixed to said block assembly and rotated relative to an edging tool about an edging means central axis; and

means provided on said block for mounting said assembly to said edging means for rotation about said edging means central axis such that the edging means central axis is located coincidentally with said block center and said block is angularly oriented on said edging means relative to said given radial reference axis whereby said edging of said block and lens blank assembly is accomplished without re-blocking after said lens second surface is cut and finished.

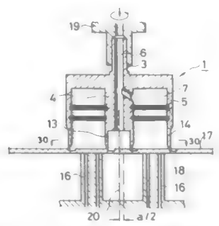
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,605
DUAL MODE FLOOR SANDER
James Tasikas, 128 Krieghoff Avenue, Markham, Ontario, Canada L3R 1V9
Continuation-in-part of Ser. No. 854,579, Mar. 20, 1992, Pat. No. 5,224,301. This application Apr. 9, 1993, Ser. No. 44,497
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] B24B *23/00*
U.S. Cl. 51—174 **12 Claims**



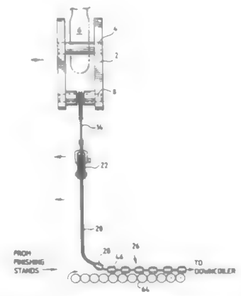
1. A dual mode floor sander adapted for use in a drum sanding, and in a belt sanding, mode and comprising;
housing means defining a front wall, back and side walls, and means whereby the same may be guided;
a sanding drum mounted in said housing means, adjacent a forward area thereof, and power operated means therefor;
strip clamping means on said drum for clamping a strip of abrasive material therearound, for use in said drum sanding mode;
a belt tension roller located in spaced relation to said sanding drum;
movement means for moving said tension roller relative to said sanding drum;
tension means associated with said tension roller, for tensioning said roller relative to said sanding drum, whereby a belt of abrasive material placed around said sanding drum and tension roller may be placed in tension, and,
door means in said housing means for giving access to said sanding drum and said tension roller.

5,341,606
DEVICE FOR CUTTING AND GRINDING A DOUGHNUT SHAPED SUBSTRATE AND A METHOD THEREFOR
Toshihiko Hirabayashi, Higashikurume, Japan, assignor to Kyokuei Kenmakako Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 19, 1993, Ser. No. 6,506
Claims priority, application Japan, Jan. 29, 1992, 4-036997
Int. Cl.[5] B23B *35/00*
U.S. Cl. 51—283 R **8 Claims**



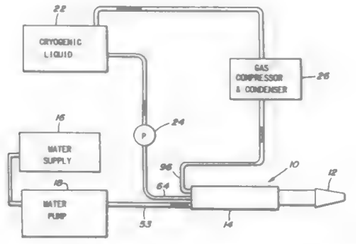
1. A method for cutting and grinding a hard but brittle material to produce a doughnut shaped substrate having an inner circumference and an outer periphery, and comprising the steps of:
a. associating a core drill with a skirt drill of a cutting and grinding device in contact with said material, each said drill having at least one circumferential cavity provided with diamond whetstone parts;
b. cutting out and grinding a doughnut shaped substrate from said material by rotating and advancing said cutting and grinding device in contact with said material while providing eccentric motion between the drill of said device and said material;
c. moving said doughnut shaped substrate with respect to said device so that said substrate becomes at least partially contained within said device;
d. contacting the inner circumference and the outer periphery of said substrate with the circumferential cavities of said core and skirt drills, respectively, and providing an eccentric movement between said device and said substrate;
wherein the drilling speed of said drills is reduced after initially penetrating into said material, and said drilling speed of said drills is adjusted so that said drills are advanced to a position of about ¾ thickness of the whole thickness of the material in about one half of total drilling time, and thereafter the drilling speed of the drills is reduced so that the remaining thickness of ¼ of the whole thickness of the material is drilled out in the other half of the total drilling time.

5,341,607
METHOD AND APPARATUS FOR POLISHING HOT STRIP MILL RUN-OUT TABLE ROLLS
George C. Perneczky, 8918 Biloba, Orland Park, Ill. 60462
Filed Jan. 7, 1993, Ser. No. 1,453
Int. Cl.[5] B24D *11/00*
U.S. Cl. 51—289 R **29 Claims**



1. Apparatus for polishing run-out table rolls, comprising:
(a) a polishing block assembly comprising a plurality of linked abrasive blocks, wherein each of the abrasive blocks includes top and bottom contact surfaces made of a hard synthetic rubber having abrasive particles homogeneously embedded therein, each of the abrasive blocks further including a plate embedded through a middle portion of the abrasive block, the plate having a plurality of connecting holes located along outer edges of the plate to allow the plurality of abrasive blocks to be linked together; and
(b) a support for joining an upper edge of the polishing block assembly to means for positioning the polishing block assembly over and into contact with a plurality of run-out table rolls.

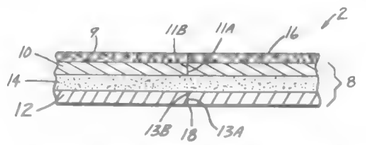
5,341,608
METHOD AND APPARATUS FOR MATERIAL REMOVAL
Gilbert L. Mains, Jr., 1200 Hayes Industrial Dr., Marietta, Ga. 30062
Continuation of Ser. No. 684,979, Apr. 10, 1991, Pat. No. 5,222,332. This application Dec. 7, 1992, Ser. No. 986,379
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] B24C *1/00*
U.S. Cl. 51—320 **13 Claims**



1. A method of removing solid material from a workpiece which comprises the steps of:
supplying a pressurized working liquid through a conduit having an outer surface and an orifice for emitting a high pressure stream of at least partially solidified working liquid,
removing heat from said conduit via said outer surface such that said conduit is cooled to a temperature sufficient to cause solidification of at least some of said working liquid within said conduit,
and impinging said stream on the workpiece to dislodge solid material therefrom.

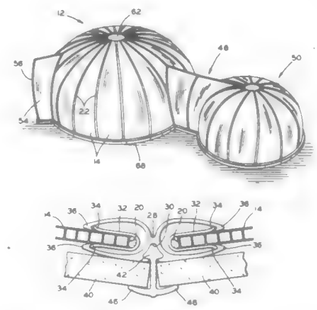
10. An apparatus for removing solid material from a workpiece, comprising:
a high pressure pump for supplying a liquid working material,
a conduit coupled to said pump to receive the liquid working material, said conduit having an orifice for emitting a stream containing at least partially solidified working material, and
cooling means for removing heat from within said conduit to thereby cause solidification of at least some of the working material contained in said conduit.

5,341,609
ABRASIVE BELTS AND THEIR MANUFACTURE
Jan Gorsuch; Mark R. Ennis, and Robert M. Burgess, all of Kent, United Kingdom, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 826,811, Jan. 28, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 78,484
Int. Cl.[5] B24D *11/06;* **B24B** *21/18*
U.S. Cl. 51—399 **16 Claims**



1. An endless coated abrasive belt comprising a flexible backing laminate material having a major surface and an abrasive layer attached to said major surface, said flexible backing laminate material comprising two flexible support layers and a hot-melt adhesive layer interposed between said two flexible support layers, said hot-melt adhesive layer being parallel to said major surface of said flexible backing laminate material, said flexible support layers each having a first and a second complementary end, said flexible backing laminate material being in the shape of an elongated strip having a length, a width, and said complementary ends abutted, said hot-melt adhesive layer extending the length of said belt and being continuous over said abutted ends to provide a splice, each of said first complementary ends of each of said flexible support layers being substantially coterminous with each other and said second complementary ends of said flexible support layers being substantially coterminous with each other, said coated abrasive belt being of substantially the same thickness throughout its length, and said coated abrasive belt having a width equal to said width of said elongated strip.

5,341,610
PORTABLE DOME-SHAPED STRUCTURE
C. William Moss, 7830 E. Pecos La., Scottsdale, Ariz. 85253
Filed Jul. 27, 1992, Ser. No. 920,257
Int. Cl.[5] E04B *7/08*
U.S. Cl. 52—82 **5 Claims**



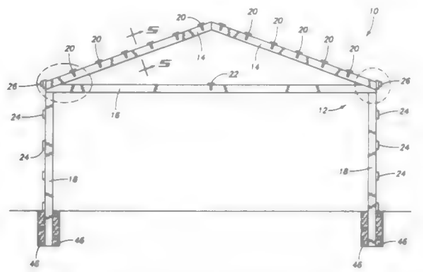
2. A dome-shaped structure comprising:
a) a plurality of flexible panels, said panels being provided with a base, a pair of arcuate side edges, and a top edge;
b) flexible connector means forcibly attached to the side edges of said panels for joining said plurality of panels to form an enclosure;
c) a plurality of panel coverings provided with a base, a pair of arcuate side edges, and a top edge, and positioned in spaced-apart relationship to an outer surface of said plurality of flexible panels;
d) a flexible, T-shaped mounting means for securing said plurality of panel coverings to said flexible connector means, said T-shaped mounting means including a base end positioned in an external center channel in said flexible connector means, whereby the force required to attach said flexible connector means to the arcuate side edges causes said panels and said panel coverings to flex inward to form a dome-shaped structure having inner panels and outer panel coverings.

5,341,611
STRUCTURAL FRAMING SYSTEM FOR BUILDINGS
Robert C. Lewis, Valley Ford, Wash., assignor to Spokane Structures, Inc., Spokane, Wash.
Filed Feb. 24, 1993, Ser. No. 22,068
Int. Cl.[5] E04B *7/02*
U.S. Cl. 52—90.1 **12 Claims**

6. For a structural framing system for a building which includes a plurality of dual roof truss members and upstanding support columns comprising multiple support members extending through and coupled to the dual roof truss members,

VOL 1165 ISS 5 AG 30 1994 UMI

each truss member comprising opposed sloping rafters and an interconnecting joist, the rafters being connected to one another at an apex and sloping downwardly away from one another and terminating at opposite lower ends of the truss member, the rafters aligned to create sloped top surfaces for attaching an exterior roof structure, the joists coupled to the lower ends of the rafters, and a plurality of cross brace members secured between said dual roof trusses, said cross brace members providing lateral support to the building structure and providing an outer support surface for attaching an exterior roof structure, the cross brace members comprising T-purlins, each T-purlin having a face board and a cross brace board, the face boards extending across the dual roof truss members



and being secured to the top of both rafters of said dual truss members, each cross brace board being secured between adjacent dual trusses, an eave girt comprising:

a girt block having a first height and a first top, mounting surface for securing an exterior roof structure;

a cornice piece coupled to the board coupled to the girt block at said first height, said cornice piece having a second top, mounting surface for securing an exterior roof structure;

said first and second mounting surfaces lying in substantially the same plane such that an exterior roof structure can be mounted upon the combined first and second mounting surfaces.

5,341,612

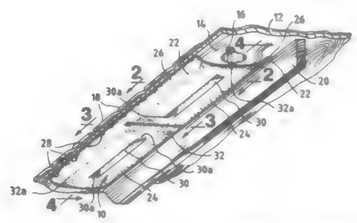
BAFFLE VENT STRUCTURE

Gary L. Robbins, Springfield, Ill., assignor to Inno-Tech Plastics, Inc., Springfield, Ill.

Filed Jul. 16, 1992, Ser. No. 913,832

Int. Cl.[5] E04B *7/18*

U.S. Cl. 52—95 **14 Claims**



1. A baffle vent for positioning against the underside of a roof and defining a duct between the vent and the interior surface of the roof for directing air from the soffit area of the roof upwardly over the interior surface of the roof, the duct having a first end with an opening below the roof for admitting air into the duct and a second end with an opening longitudinally spaced from said first end, the baffle vent comprising:

an elongated self-supporting structure of sheet-like material having a generally channel-shaped cross section defining longitudinal side walls joined by a flat generally planar bottom wall, attachment means on the sidewalls for attaching the baffle vent to the underside of the roof, and at least one integral longitudinal reinforcing rib,

said longitudinal reinforcing rib having first and second sides tapering crosswise of said structure from an apex of the rib into said bottom wall to define a generally triangular cross-sectional configuration for the rib,

said longitudinal reinforcing rib having first and second generally triangularly shaped ramped ends tapering lengthwise of said structure from said sides into said bottom wall, and

said longitudinal reinforcing rib extending generally parallel to the sidewalls to resist collapsing of the baffle vent if subjected to external forces such as from roof insulation, handling, shipping and the like.

5,341,613

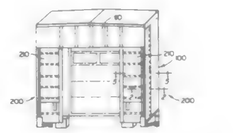
STORAGE TERMINAL SHELTER, INCLUDING SIDE CURTAIN ASSEMBLY FOR TRUCK/TRAILER HINGE GAP CLOSURE

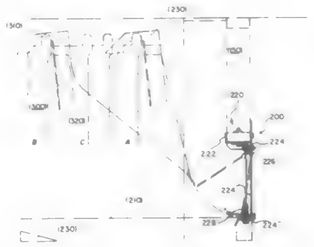
Thomas R. Brockman, Kenton, and Mark Dillon, Upper Sandusky, both of Ohio, assignors to Fairborn USA Inc., Upper Sandusky, Ohio

Filed Dec. 22, 1992, Ser. No. 994,747

Int. Cl.[5] E04H *14/00*

U.S. Cl. 52—173.2 **1 Claim**





1. The combination with a storage terminal having dock, door and truck/trailer shelter with projecting, opposed shelter side frames, each frame projecting from the storage terminal wall and curtain assemblies thereon for truck/trailer hinge gap closures comprising:

a) opposed mirror image truck/trailer hinge units, each unit comprising an elongated single leaf hinge with curtain clamping means on a distal end of each hinge, the hinge being fixed and anchored at its proximal end to a fixed projecting dock side frame, said hinge unit being restrained by torsion extension-compression means, abutting the shelter side frame;

b) opposed reinforced side curtains, each said curtain being clamped on its near end to the hinge, substantially perpendicular to respective side frames and parallel to the storage terminal wall, respective curtains being laterally reinforced by transversely disposed stays and longitudinally reinforced by at least one vertically disposed stay;

c) a compressible hinge gap closure seal for each side curtain, resiliently anchored to the side curtain on a far end thereof, said seal comprising a fabric encased, vertically

extending and elongated pad, bounded by five interconnected walls, there being a first anchor wall to which is connected an elongated intermediate second wall and a shorter intermediate third wall which is parallel to the second intermediate wall, both said intermediate walls being disposed normal to the anchor wall; a fourth hinged striker wall connected at an obtuse angle on its outer end to the third wall and connected at an acute angle to a fifth wall, said fifth wall connecting both said second and fourth walls, whereby upon rearward displacement of the curtain by a truck/trailer, respective hinge gap closure seals will be forcibly displaced rearwardly and any gaps existing between truck/trailer body and dock door will be closed, relative to the shelter side frame.

5,341,614

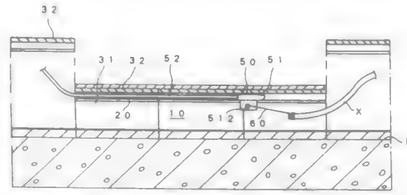
FLOOR SYSTEM FOR LAYING CABLES AND PIPES UNDERNEATH THE FLOOR

Shohachi Shimizu, Ogaki, Japan, assignor to Mirai Industries Co., Ltd., Anpachi, Japan

Filed Dec. 29, 1992, Ser. No. 997,905

Int. Cl.[5] E04B *5/43, 5/58*

U.S. Cl. 52—220.1 **20 Claims**



1. A floor system for laying cables and/or pipes underneath a floor without opening the floor except at entry and exit comprising:

at least one housing space provided underneath a floor for housing said cables and/or pipes; and

at least one elongated guide means disposed within said at least one housing space for guiding a cable/pipe distributer means along said at least one housing space from entry to exit; whereby said cables and/or pipes to be laid underneath said floor is accomplished without need of removing the entire floor or any office equipment thereon.

5,341,615

UTILITY PANEL SYSTEM

Ronald R. Hodges, Grandville, and George V. Weller, Grand Rapids, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Continuation of Ser. No. 639,513, Jan. 10, 1991, Pat. No. 5,209,035. This application Mar. 23, 1993, Ser. No. 36,067

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

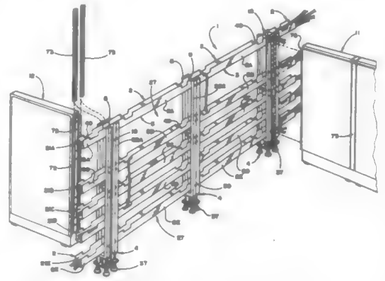
Int. Cl.[5] E04B *5/48*

U.S. Cl. 52—220.7 **30 Claims**

1. A freestanding, portable utility panel for open office spaces and the like, comprising:

a panel frame, including a foot portion adapted to abuttingly support said panel on a floor surface; first and second uprights positioned adjacent opposite sides of said frame, having lower ends thereof connected with said foot portion, and extending upwardly therefrom in a generally vertical orientation; said uprights being channel-shaped, and including a rear portion oriented toward an interior area of said frame, and a front portion oriented toward an exterior area of said frame; a trough having upstanding sidewalls, and extending between the opposite sides of said frame in a substantially horizontal orientation to define a horizontal raceway between interior sides of said trough, which horizontal raceway is configured to receive and retain utilities therein; said uprights having the rear portions thereof positioned along an exterior side of one of said trough sidewalls, and extending outwardly thereof to avoid encroachment into said horizontal raceway;

at least one cover panel shaped to enclose at least a portion



of one side of said frame, and extending between the front portions of said uprights to define a vertical raceway between an interior side of said cover panel and the exterior side of said trough sidewall, which vertical raceway is configured to receive and retain utilities therein;

a fastener detachably connecting said cover panel to said frame to provide ready access to both said horizontal raceway and said vertical raceway.

5,341,616

CONCRETE INSERT ELEMENT AND CONCRETE STRUCTURE HAVING AT LEAST ONE CONCRETE INSERT ELEMENT

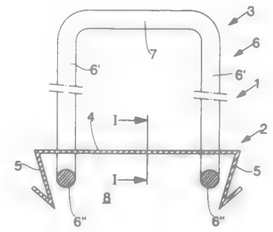
Ludwig Penzkofer, Leiblfing, Fed. Rep. of Germany, assignor to Max Frank GmbH & Co KG, Fed. Rep. of Germany

Filed May 17, 1991, Ser. No. 702,264

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1991, 9101219; Mar. 23, 1991, 4109706; May 17, 1991, 3015886

Int. Cl.[5] E04B *1/16*

U.S. Cl. 52—340 **10 Claims**



1. Concrete structure having at least one concrete insert element, which in at least a partial region is fabricated of steel and there has at least one surface embedded in concrete or cement of the concrete structure (**9**, **10**), characterized in that the insert element (**2**) is provided on this surface with a layer (**12**) of aluminum or of an aluminum alloy, and in that this layer, upon setting of the concrete, has reacted at least partially with the free lime and oxygen to form calcium aluminate, specifically for obtaining a particularly intimate and firm bond between the concrete insert element and the concrete of the concrete structure (**9**, **10**).

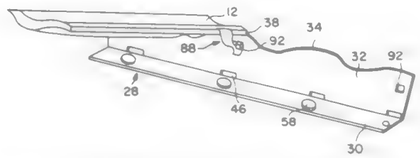
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,617

ROOF TILE FASTENING ARRANGEMENT

John F. Thomas, Villa Park, Calif., and Paul S. Hensey, Horsham, United Kingdom, assignors to Monier Roof Tile Inc., Orange, Calif.

Continuation-in-part of Ser. No. 964,729, Oct. 22, 1992. This application Jun. 15, 1993, Ser. No. 76,909
Int. Cl.[5] E04D *1/34*
U.S. Cl. 52—547 7 Claims



1. A roof tile fastening arrangement comprising the combination of:

a roof support structure having a lower edge;

a facia member mounted on the roof support structure adjacent the lower edge thereof;

a plurality of tiles mounted side-by-side on the roof support structure and disposed on the facia member, each of the plurality of tiles having a pair of opposite side edges adjacent side edges of adjacent tiles;

a plurality of clips, each extending between and coupled to the facia member and to one of the pair of opposite side edges of one of the plurality of tiles; and

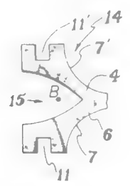
the facia member comprising a birdstop having a plurality of apertures therein and each of the clips having a lower clasp portion resiliently locked within one of the plurality of apertures in the birdstop.

5,341,618

NON-RECTANGULAR BLOCK AND WALL

Cecil F. Schaaf, 3015 Palmer Rd., Standish, Mich. 48658, and Craig R. Schaaf, 741 Crawford St., Flint, Mich. 48507

Filed Mar. 9, 1992, Ser. No. 848,379
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—608 2 Claims



1. A building block, wherein said building block has a cross axis, a core axis, and a long axis;

said block providing a back surface, a front surface, two essentially identical side walls, and two essentially identical end surfaces, a center from back to front of the block, a center from one end surface to the other end surface of the block, and a center from one side wall to the other side wall of the block;

said cross axis located through the center of the building block from back to front;

said core axis being located through the center of the building block from one end surface to the other end surface;

said long axis being located through the center of one side wall of the block to the other side wall of the block, and perpendicular to a plane formed by the cross axis and the core axis;

said block having a large center opening therethrough aligned with and parallel to the core axis of the block;

said back surface being perpendicular to a plane formed by the cross axis and the core axis and having three segments comprised of an open center segment, and two lateral segments;

said open center segment being a continuum of the large center opening through the back surface;

said front surface having three segments, a raised center segment having a less dense surface than the interior of the block and two lateral segments;

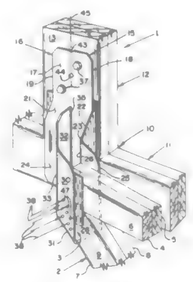
each said side wall having located essentially centered therein from front to back, a channel of predetermined width and depth, each said channel being aligned with and parallel to the core axis of the block, the length of each said channel being equal to the length of the back surface of the block.

5,341,619

TRUSS GIRDER HANGER CONNECTION

Brian D. Dunagan, Gardnerville, Nev., and Alfred D. Commins, Danville, Calif., assignors to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Filed Apr. 9, 1993, Ser. No. 46,019
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—702 5 Claims



1. A skewed truss girder hanger connection comprising:

a. a generally planar carried wood truss girder having an end formed by the intersection of a carried wood bottom chord formed with generally planar first and second sides and a carried wood compression member formed with generally planar sides;

b. a generally planar supporting wood truss girder having a supporting wood bottom chord and a supporting wood vertical member connected to said supporting wood bottom chord having a front generally planar face and formed with a plurality of bolt openings therethrough wherein said carried wood truss girder intersects said plane of said supporting wood truss girder at a selected first skew angle;

c. a metal truss girder hanger constructed from a single sheet of material by bending along substantially straight bend lines, said metal truss girder hanger including:

1) an elongated back member having an upper portion having a center line and first and second upper side edges generally spaced laterally equidistant from said center line and including upper and lower ends and formed with bolt openings for registration with said plurality of bolt openings in said front generally planar face of said supporting wood vertical member, said elongated back member having an offset mid portion offset at an angle to said upper portion of said elongated back member having first and second intermediate inset edges having upper end points respectively intersecting said lower ends of said first and second, upper side edges and said first intermediate inset edge terminating at a lower end point inwardly of said first upper side edge, and said elongated back member including a lower portion offset from said upper portion of said elongated back member;

2) a first side member joined to said lower portion of said elongated back member along a first bend line positioned between said center line of said upper portion of said elongated back member and inset from said first upper side edge and terminating at its upper end closely adjacent said lower end point of said first intermediate inset edge of said mid portion of said elongated back member formed and dimensioned for registration with said first generally planar side of said carried wood truss girder;

3) a seat member joined to said first side member along a second bend line formed and dimensioned for receiving said end of said carried wood truss girder;

4) a second side member spaced from and in parallel relation to said first side member and joined to said seat member along a third bend line, formed and dimensioned for registration with said second generally planar side of said carried wood truss girder;

5) an extension member joined to said second side member along a fourth bend line and having an edge formed and dimensioned for connection to said lower and mid portions of said elongated back member at a location between said center line of said upper portion of said elongated back member and said second upper side edge of said elongated back member by a weld so that said carried wood truss girder is angularly skewed at a selected angle relative to said supporting wood truss girder so that the load imposed on said carried wood truss girder is transferred to said supporting wood truss girder along a line closely adjacent the center line of said upper portion of said elongated back member of said metal truss girder hanger;

d. bolt fasteners inserted through said bolt openings in said upper portion of said elongated back member of said metal truss girder hanger and into said supporting wood vertical member; and

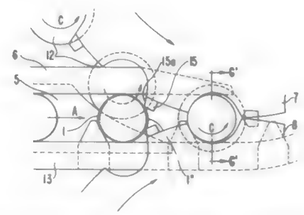
e. fasteners inserted through said first and second side members of said metal truss girder hanger and into said carried wood truss girder.

5,341,620

CAN FEEDING APPARATUS FOR A CAN SEAMER

Naoyoshi Katou; Seiki Tamiya, and Masateru Takahara, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Churyo Engineering Kabushiki Kaisha, Aichi, both of Japan

Filed Oct. 29, 1992, Ser. No. 968,572
Claims priority, application Japan, Oct. 30, 1991, 3-310203; Nov. 25, 1991, 3-334600; Jan. 10, 1992, 4-020753; Jan. 10, 1992, 4-020754
Int. Cl.[5] B65B *43/50, 43/52*
U.S. Cl. 53—287 10 Claims



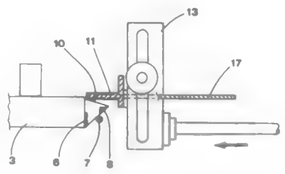
1. A can feeding apparatus comprising: opposed can guides defining a can passageway therebetween; a rail in the form of a plate delimiting the bottom of said can passageway; a conveyor including a drive chain and a plurality of fingers fixed to said drive chain and extending into said can passageway, the fingers moving along said can passageway to push can bodies in the can passageway along said rail toward an end of said passageway when said conveyor is driven; a seaming turret and a turret opposed thereto located at the end of said can passageway so as to receive can bodies pushed by the fingers of said conveyor, each of said turrets having a plurality of teeth at the outer periphery thereof, the teeth of at least one of said turrets including first portions defining can body-receiving recesses therebetween and claws extending from said first portions, respectively, radially outwardly of the pitch circle of the at least one turret, each of said claws having a surface extending contiguously from a surface of a said first portion forming a leading end of a said can body-receiving recess with respect to a direction of rotation of the at least one turret, and each said surface of the claws having a profile of a cycloid.

5,341,621

MECHANISM FOR FOLDING A CLOSING FLAP OF A CARTON AND FOR INSERTING THE FLAP INTO A CORRESPONDING OPENING OF THIS CARTON

Guglielmo Martelli, Loddington, United Kingdom, assignor to A.M.R.P. Handels AG, Basek, Switzerland

Filed May 11, 1993, Ser. No. 60,594
Claims priority, application Italy, Jun. 24, 1992, 92A 000257
Int. Cl.[5] B65B *7/22, 7/26*
U.S. Cl. 53—377.5 2 Claims



1. In a mechanism for folding a closing flap of a carton and for inserting the folded flap in a corresponding opening of this carton, said mechanism being located aside of a carton transporting line and including a folding member working in conjuction with a stop member for folding a closing flap of each carton along a fold line, so that a tab of the flap is oriented towards a corresponding opening of the carton, a slab extending in front of the said cartons so as to be adjacent to said cartons, a lower surface of said slab being adapted for guiding said tab being inserted into said opening, and a pushing member reciprocating in a vertical plane transverse to said transporting line, said pushing member being designed for pushing said tab into said opening of the carton;

a frame for supporting said slab, with said folding member slidably supported on top of said slab and made to reciprocate in accordance to directions transverse to said transporting line, by actuating means;

a plate linked to said actuating means and featuring a vertical slot adapted to receive therein an axle of a roller supported by said folding member and resting slidingly on top of said slab;

a pushing member pivoted to said frame;

a lever made to reciprocate in circular path and in a vertical plane transverse to said transporting line, said lever featuring a longitudinal slot;

an arm extending rearwardly from said pushing member and supporting a roller running in and along said longitudinal slot of said lever;

an adjustment device designed for adjusting the vertical position of said frame, so as to adjust, through a single operation, the position of all said members which cooper-

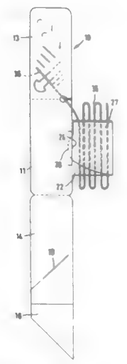
VOL 1165 ISS 5 AG 30 1994 UMI

ate for closing said cartons, in accordance with the size of the same cartons.

5,341,622
METHOD OF FOLDING OF PACK FOR HOLDING SUTURE MATERIAL

Erich Odermatt, and Robert Sulzberger, both of Schaffhausen, Switzerland, assignors to B. Braun SSC AG, Emmenbrueke, Switzerland

Division of Ser. No. 897,276, Jun. 11, 1992, Pat. No. 5,271,494. This application Sep. 9, 1993, Ser. No. 118,228
Claims priority, application European Pat. Off., Jun. 11, 1991, 91109584.7
Int. Cl.[5] B65B *63/04, 11/58*
U.S. Cl. 53—429 **7 Claims**

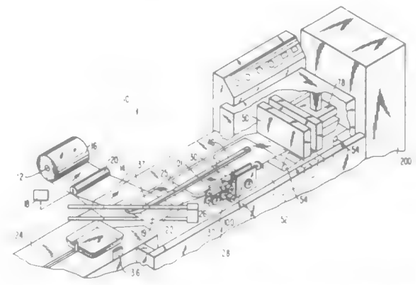


1. A method for inserting suture material into a foldable pack comprising a plurality of plates adapted to be folded over each other to assume a folded condition, the method comprising:
providing a base plate defining a longitudinal dimension, a transversal dimension, a first end, a second end, and a side,
providing a first holding plate and a second holding plate for enclosing suture material, the first holding plate defining a plurality of edges, the second holding plate defining a plurality of edges, an edge of the first holding plate being attached to an edge of the second holding plate along a crease,
providing a slip-in connector associated with an edge of the first holding plate and an edge of the second holding plate for enabling a slip-in connection between an edge of the first holding plate and an edge of the second holding plate, whereby the first holding plate and the second holding plate are arrangable in a substantially interlocking relationship to thereby define a space for enclosing suture material,
attaching an edge of the first holding plate to the side of the base plate along a crease that is substantially parallel to the longitudinal dimension, whereby the first and second holding plates are foldable over the base plate, the first and second holding plates being shorter than the base plate,
attaching a first cover plate to the first end of the base plate along a first crease that is substantially parallel to the transversal dimension, the first cover plate and the base plate being relatively proportioned such that the first cover plate covers substantially all of the base plate when the pack is in the folded condition,
fixing an end of the suture material to the first cover plate,
arranging the suture material in substantially adjacent loops on the first holding plate,
folding the second holding plate over the arranged suture material,
establishing a slip-in connection between at least one of the edges of the first holding plate and at least one of the edges of the second holding plate, thereby locking the second holding plate over the arranged suture material, and
releasing the loops of the arranged suture material,
whereby at least a portion of the loops of the suture material protrude beyond at least some of the edges of the first and second holding plates.

5,341,623
FILM SEALING AND PACKAGING METHOD AND APPARATUS WITH ADJUSTABLE SEAL QUALITY

Martin Siegel, Englewood Cliffs, N.J., assignor to Weldotron of Delaware, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 725,009, Jul. 2, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,818
Int. Cl.[5] B65B *11/48, 31/00, 51/16, 51/32*
U.S. Cl. 53—433 **49 Claims**



41. A hermetic sealing and packaging apparatus comprising:
a film dispenser
a film-forming means for forming film into a tube by drawing the edges of the film together;
a longitudinal seal section for hermetically sealing the edges by pressing them between a heated sealing roller and a sealing bed roller;
a roller axis line defined by the center of the heated sealing roller and the center of the sealing bed roller;
a means for displacing the roller axis line;
a hermetic cross-sealer; and
a gas nozzle for blowing a selected gas into the tube.

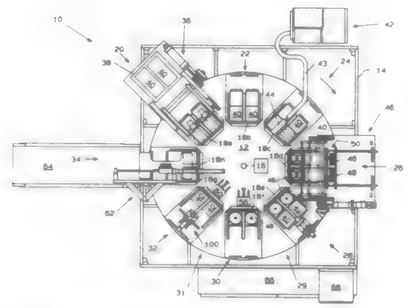
5,341,624
PANEL PLACER

Stephen Kaye, Eden Prairie, Minn., assignor to Thiele Engineering Co., Minneapolis, Minn.

Filed Dec. 30, 1992, Ser. No. 998,607
Int. Cl.[5] B65B *25/24, 61/20*
U.S. Cl. 53—254 **11 Claims**

1. Automatic panel placer comprising:
a. a rotary table;
b. a plurality of radially aligned product holders on said rotary table;
c. a first process station about said rotary table for placing a sleeve on a first of said plurality of product holders;
d. a second process station about said rotary table for applying adhesive to a first portion of said sleeve;
e. a third process station about said rotary table for placing a tray having a flip-top on said adhesive;
f. a fourth process station about said rotary table for compressing said tray on said adhesive;
g. a fifth process station about said rotary table for raising said flip-top and for commencing the positioning of a second portion of said sleeve over said tray;

h. a sixth process station about said rotary table for closing said flip-top over said second portion of said sleeve; and,

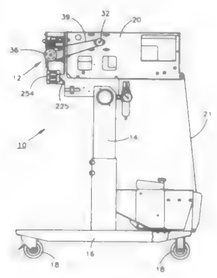


i. a seventh process station about said rotary table for removing said tray and sleeve combination from said first product holder.

5,341,625
BAGGING CONTROL APPARATUS AND METHOD

James D. Kramer, Medina, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Aug. 27, 1992, Ser. No. 936,925
Int. Cl.[5] B65B *43/22, 41/16, 43/36, 51/14*
U.S. Cl. 53—459 **9 Claims**

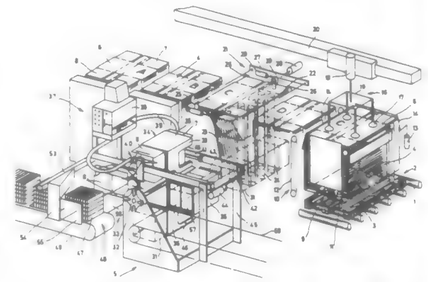


1. A packaging apparatus, comprising:
a) structure establishing a path of travel for a web of interconnected bags connected along transverse lines of weakness from a supply to a bagging station;
b) a first nip roll assembly including a drive roller and an idle roller in frictional engagement with the drive roller, said nip roll assembly for selectively pulling said web from the supply along a first portion of the path of travel to the bagging station;
c) a first drive means including a motor operatively connected to the drive roller of the first nip roll assembly for rotating the drive roller;
d) a second drive means spaced apart from the first drive means along the path of travel of the web of interconnected bags, the second drive means advancing an endmost bag in the web furthest from the supply roll to the bagging station;
e) a control system for selectively actuating said motor to advance the web through the first nip roll assembly and maintain a controlled web movement between the first nip roll assembly and the second drive means as the web of interconnected bags are fed to the bagging station.

5,341,626
CARTONING METHOD AND APPARATUS

Harald Beckmann, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

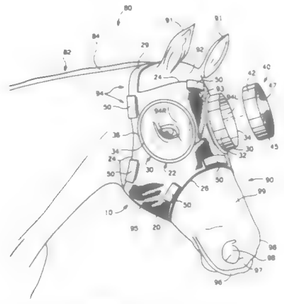
Filed Mar. 30, 1993, Ser. No. 40,122
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1992, 4210813
Int. Cl.[5] B65B *43/60, 43/50, 43/30*
U.S. Cl. 53—566 **20 Claims**



1. In apparatus for packaging articles within a package volume having a generally rectangular cross-section, the package being formed from a carton blank having a continuous sidewall defining region and integral bottom and lid flaps extending outwardly therefrom, improved apparatus for filling and closing the carton blanks comprising:
a rotary turret, said turret having a plurality of receiving cells, said receiving cells being of generally rectangular cross-sectional area and being open at a pair of opposite ends, said cells each defining an axis and said ends being disposed along said axis, a pair of adjacent walls of each of said cells being fixed in position and a second pair of adjacent cell defining walls being adjustable relative to oppositely disposed of said fixed walls whereby the width and height of said cells may be varied as a function of the format of a carton blank;
means for causing said turret to rotate about an axis, said rotation causing means producing step-wise motion of said turret;
means for erecting a carton blank to a tubular configuration having the carton end flaps extending outwardly at a pair of oppositely disposed open carton ends;
means for inserting an erected carton blank in a cell of said turret at a first position of said turret;
means for transferring articles to be packaged into an erected carton blank disposed in a cell of said turret;
means located adjacent to said cell open ends along the path of motion thereof during rotation of said turret for folding the bottom and lid flaps of an erected carton blank inwardly to a closed position;
means located adjacent to said cell open ends for applying adhesive to selected of said bottom and lid flaps of an erected carton blank, said adhesive applying means being located at a second position of said turret; and
means for varying the spacing between oppositely disposed of said flap folding and adhesive applying means as a function of the carton blank format.

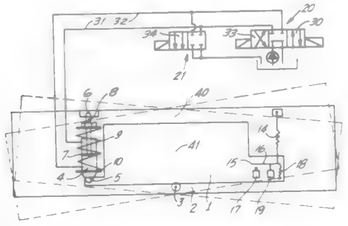
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,627
FLY GUARD
David Eby, 52975 Diaz, La Quinta, Calif. 92253
Filed Feb. 11, 1993, Ser. No. 16,508
Int. Cl.[5] B68C *5/00*; A01K *13/00*
U.S. Cl. 54—80.2 **11 Claims**



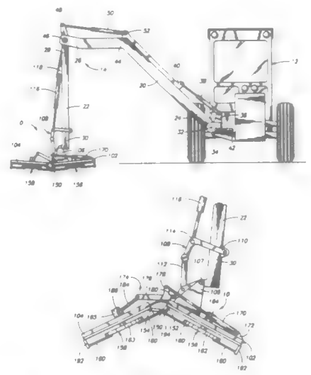
7. . A device for repelling insects comprising:
a first pair of hook/loop fastener patches comprising:
a first patch of material having:
an outward facing side at least partially covered by hook/loop fastener material; and
a rearward facing side; and
a second patch of material having:
an outward facing side; and
an inward facing side at least partially covered by mating hook/loop fastener material; said mating hook/-loop fastener material attaching said second patch to said first patch outward facing side fastener material;
attachment means attached to said first patch for attaching said first patch to an object such that said first patch outward facing side is facing outward; and
an evaporative insect repellant disposed between said first patch and said second patch.

5,341,628
CONTROL DEVICE FOR AN OSCILLATINGLY SUPPORTED MACHINE STRUCTURE OF AN AGRICULTURAL MACHINE
Gustav Schumacher, II, Gartenstrasse 8, and Guenter Schumacher, Raiffeisenstrasse 10, both of D-5231 Eichelhardt, Fed. Rep. of Germany
Filed Aug. 19, 1992, Ser. No. 932,258
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1991, 4127189
Int. Cl.[5] A01D *47/00*
U.S. Cl. 56—10.2 E **11 Claims**



1. A control device for a machine structure oscillatingly supported on a base unit about an axis of rotation of a harvesting machine, including a cutter table inclinable about a longitudinal axis of a harvester thresher, the inclination being effected by a hydraulically operating cylinder relative to a conveyor channel, said cylinder being pivoted at one end to the conveyor channel and at another end to the cutter table, the control device comprising a spring which bridges said hydraulically operating cylinder and rests, on one end, at said operating cylinder and, on the other end, at a piston rod of said operating cylinder and is biased by biasing means including a bolt nut on a threaded part of said piston rod so that by a force of the spring an imbalance of said cutter table relative to a point of rotation thereof is equalized.

5,341,629
HINGED-BLADE ROADSIDE MOWER
Erich R. Penner, Rural Route #1 S29 C5, Castlegar, B. C., Canada
Filed Feb. 9, 1993, Ser. No. 16,165
Int. Cl.[5] A01D *34/86*
U.S. Cl. 56—15.2 **35 Claims**

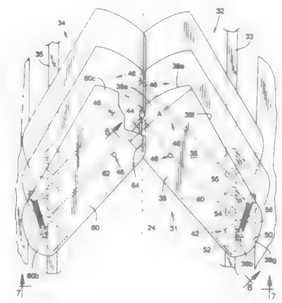


1. A dual-blade mower assembly for mounting upon a boom, comprising:
a mower frame mountable to the boom; said mower frame having at least a first frame section and a second frame section; said first and second frame sections being connected to allow relative angular motion between said frame sections;
a first mower blade mounted on said first frame section;
a second mower blade mounted on said second frame section; and
at least a first remotely-controlled power actuator operably connected to the mower frame, the first remotely-controlled power actuator being controllable remotely from the mower frame to allow a human operator to control the relative angular positions of the first and second frame sections while mowing.

5,341,630
CATCHER PLATE ASSEMBLY FOR A HARVESTER
Eugene G. Littau, 8974 Shaw Square Rd., SE., Aumsville, Oreg. 97325
Filed Oct. 4, 1993, Ser. No. 130,734
Int. Cl.[5] A01D *46/00*
U.S. Cl. 56—330 **7 Claims**

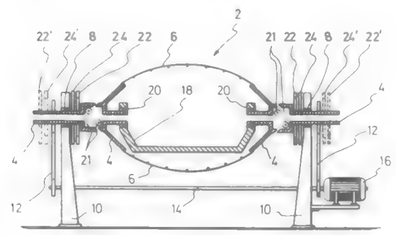
1. A harvester having a traveling frame and further comprising;
a catcher plate assembly for collecting harvested product dropped thereon, the plate assembly comprising multiple plate members mounted on said frame and disposed in a row with adjacent plate members in overlapped relation,

each plate member including a sheet body cut from a sheet of stiff but flexible plastic having uniform thickness throughout,
each sheet body having a leading edge and further including a turned-over leading-edge lip bent into the sheet body and extending along the length of the leading edge,



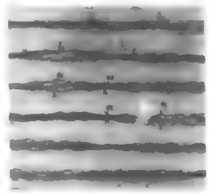
each sheet body further including an indent-detent pressed into the sheet body in a region inwardly from its perimeter to form a projection projecting from one face of the sheet body, and the projection establishing a spacing between the sheet body of one plate member and the sheet body of an adjacent plate member overlapped therewith.

5,341,631
DOUBLE-TWISTING DEVICE WITH MAGNETIC DEVICE FOR ELEVATING AXIAL FORCES
Peter Boesman, U. La Vina, Venezuela, and Marc Derdeyn, Zwevegem, Belgium, assignors to N. V. Bekaert S.A., Zwevegem, Belgium
Filed Jun. 2, 1992, Ser. No. 892,319
Claims priority, application European Pat. Off., Jul. 4, 1991, 91201727.4
Int. Cl.[5] D01H *1/10, 7/86*
U.S. Cl. 57—58.83 **8 Claims**



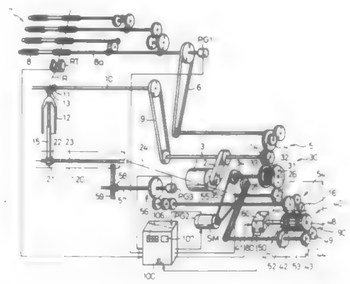
1. A double-twisting device comprising:
two rotatable half-shafts;
at least one flyer connecting the two half-shafts and being rotatable therewith, wherein during rotation of the two half shafts the at least one flyer causes axial forces to be exerted on the two half-shafts; and
magnetic means, operatively connected to at least one of the two rotatable half-shafts, for at least partially compensating for the axial forces.

5,341,632
YARN WITH THE APPEARANCE OF A SPUN YARN, MADE FROM POLYAMIDE-BASED FIBRES
Emmanuel Jung, and Christine Raffin, both of Lyons, France, assignors to Rhone-Poulenc Fibres, Lyons, France
Continuation of Ser. No. 666,640, Mar. 8, 1991, abandoned. This application May 6, 1993, Ser. No. 57,420
Claims priority, application France, Mar. 16, 1990, 90 03643
Int. Cl.[5] D02G *1/02, 3/24, 3/44*
U.S. Cl. 57—208 **9 Claims**



1. A spun yarn made of polyamide filaments, said yarn being without twist, spirals or loops, consisting of two populations of filaments differing in denier, filament number and orientation, and having randomly alternating crimped bulked parts and tight parts of different lengths l_1 and l_2, l_1 being the length of the bulked parts and l_2 being the length of the tight parts, wherein:
the tight parts are both interlaced and entangled,
the cohesion factor lies between 90 and 140 knots/m,
the Young's modulus lies between 100 and 150 cN/tex, and
the difference in the sonic modulus between the two populations of filaments is between 25 and 50 cN/tex., and represents the difference in orientation therebetween.

5,341,633
APPARATUS FOR WINDING A ROVING APPLIED TO A ROVING FRAME
Hirotaka Nishikawa, Ichinomiya; Yoshio Kurachi, Nishikasugai; Takashi Kogiso, Mizunami; Shigeki Sekiya, Kuwana; Teruhiko Sato, Ama; Hideki Hashimoto, Kasugai; Makoto Ohmori, Tsushima, and Kenji Sasaki, Komaki, all of Japan, assignors to Howa Machinery, Ltd., Nagoya, Japan
Continuation of Ser. No. 545,613, Jun. 29, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 984,278
Claims priority, application Japan, Jun. 30, 1989, 1-170711
Int. Cl.[5] D01H *1/30, 1/26*
U.S. Cl. 57—264 **12 Claims**



12. A roving winding apparatus applied to a roving frame to produce roving bobbins, wherein the apparatus is provided with a plurality of draft parts and corresponding bobbin wheels, a bobbin shaft for driving said bobbin wheels, an elongated bobbin rail on which said bobbin shaft is rotatably

VOL 1165 ISS 5 AG 30 1994 UMI

mounted along the longitudinal direction thereof, a lifting motion mechanism for lifting said bobbin rail, a main motor for driving said draft parts at a predetermined rotational speed, said draft parts being provided with a common bottom front roller, and said lifting motion mechanism being provided with a change over mechanism for changing over a direction of displacement of said bobbin rail, comprising:

digital control means for producing a signal based on the combination of a sensed rotation angle of the bottom front roller and a computed diameter of the roving bobbin;

a digitally controlled motor for rotating the bobbin wheel, actuated by said signal issued from said digital control means and arranged independently from said main motor, said digitally controlled motor being actuated through a rotation angle for thereby rotating the bobbin wheel a predetermined rotation angle corresponding to the rotation angle of the bottom front roller and in accordance with the diameter of the roving bobbin, whereby the rotation angle of said bobbin wheel is controlled to a condition precisely corresponding to said rotation angle of said front roller so that the balance between the winding length of the roving on said roving bobbin and the delivery length of the roving is maintained;

said bobbin rail lifting mechanism including a lifter shaft for alternately displacing said bobbin rail upward and downward, said lifter shaft being driven by transmitting a rotation of said digitally controlled motor through said displacing direction change-over mechanism of said bobbin rail;

said change-over mechanism including a gear box, a pair of supporting shafts rigidly mounted on said gear box, a change-over rod shaft slidably supported by said supporting shafts along the axial direction thereof;

a change-over drive mechanism for actuating said change-over rod shaft;

a change-over wheel rotatably mounted on said change-over rod shaft in such a manner that a displacement thereof along the axial direction of said change-over rod shaft is restricted, said change-over wheel being provided with annular teeth at both sides thereof and further meshed with an intermediate gear for transmitting a driving power thereof to said lifting motion mechanism;

a pair of driven gears rotatably mounted on said pair of supporting shafts at both sides of said change-over wheel, each of said driven gears being provided with an annular gear formed on a side thereof facing said change-over wheel while meshing with corresponding annular teeth of said change-over wheel;

a control shaft indirectly driven by said digitally controlled motor; and

a pair of drive gears rigidly mounted on said control shaft and meshing with a corresponding one of said driven gears.

5,341,634

INTERLOCKING LINK CHAIN

Christian L. Straight, 235 E. Santa Clara St. #1102, San Jose, Calif. 95113

Filed Jan. 5, 1993, Ser. No. 464

Int. Cl.[5] A44C *5/02*

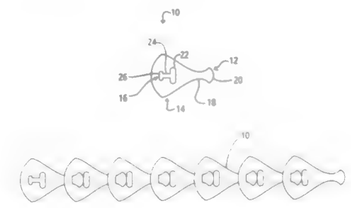
U.S. Cl. 59—80 **8 Claims**

1. A link chain comprising a plurality of interlocking links, each of said links comprising:

a link body,

a slot formed within said link body having a mouth, a base, and a narrow throat which connects said mouth of said slot to said base of said slot, said throat being narrower than either said mouth or said base,

and a tab projecting from said link body having a neck which is attached to said link body, said neck terminating in a head which is wider than said neck, and said mouth of said slot being wide enough to allow insertion of said head of said tab, and said base being wider than said neck of said tab and narrower than said head of said tab,



whereby said plurality of interlocking links can be joined together by inserting the tab of each link into the slot of an adjacent link, thereby interlinking said links into a chain.

5,341,635

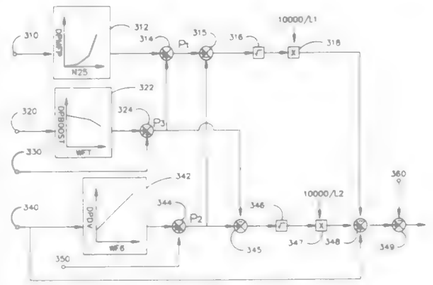
FUEL CIRCULATION CONTROL METHOD

Kevin H. Kast, Cincinnati, and William J. Myers, Jr., West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 599,211, Oct. 17, 1990, Pat. No. 5,148,671. This application Mar. 23, 1992, Ser. No. 855,972

Int. Cl.[5] F02C *9/28*

U.S. Cl. 60—39.03 **6 Claims**



1. A method of controlling a fuel supply system including a pump connected to a fuel disbursement means through a controllable valve in parallel with a first restrictor means and a return path connecting said fuel disbursement means to said pump and including a second restrictor means, said method comprising the steps of:

summing a first pressure signal representative of a pressure at an input of said first restrictor means with a second pressure signal representative of a pressure in a manifold of said fuel disbursement means to form a first sum signal;

calculating a square root of said first sum signal to form a first square root signal;

multiplying said first square root signal by a first constant signal representative of a constant proportional to a flow coefficient of said first restrictor means to form a first product signal;

summing said second pressure signal with a third pressure signal representative of a pressure at an output of said second restrictor means to form a second sum signal;

calculating a square root of said second sum signal to form a second square root signal;

multiplying said second square root signal by a constant signal representative of a constant proportional to a flow coefficient of said second restrictor means to form a second product signal;

adjusting said controllable valve according to the value of said third signal.

5,341,636

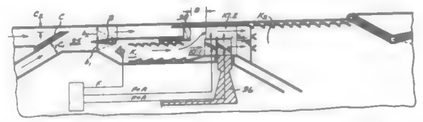
GAS TURBINE ENGINE OPERATING METHOD

Marius A. Paul, 1120 E. Elm Av., Fullerton, Calif. 92631

Division of Ser. No. 543,557, Jun. 26, 1990, Pat. No. 5,177,954, which is a division of Ser. No. 348,674, May 8, 1990, Pat. No. 5,003,766, which is a continuation of Ser. No. 924,136, Oct. 27, 1986, abandoned, which is a continuation of Ser. No. 659,328, Oct. 10, 1984, abandoned. This application Jan. 11, 1993, Ser. No. 3,098

Int. Cl.[5] F02C *7/16*

U.S. Cl. 60—39.03 **5 Claims**



1. A method of combusting fuel with air for high speed propulsion, comprising steps of:

providing a gas turbine engine having means defining first and second combustion chambers, a turbine having a plurality of blades with an outer periphery encircled by an annular air and gas mixing channel, each blade of the turbine including an internal passageway terminating in an outlet port at its outer periphery in communication with the air and gas mixing channel; and air supply means for directing air along two separate paths, a first path by-passing the first combustion chamber and the turbine, and, a second path entering the first combustion chamber and passing at least in part through the turbine to the second combustion chamber;

injecting fuel into the first combustion chamber, where fuel and air mix and fuel combusts to produce combustion gases, the step of injecting including a step of injecting fuel into the turbine blade passageways for cooling the turbine and for subsequent entry into the air and gas mixing channel via the outlet ports;

discharging the combustion gases from the first combustion chamber along two channels, a first discharge channel following the second path through the turbine, and a second discharge channel following a path bypassing the turbine connecting with the air and gas mixing channel;

regulating the relative proportions of combustion gases discharged through the respective first and second discharge channels in the step of discharging;

passing gases mixed in the air and gas mixing channel to the second combustion chamber;

combining gases discharged from the first combustion chamber through the turbine with gases passed from the air and gas mixing channel in the second combustion chamber; and,

injecting additional fuel into the second combustion chamber for combustion of fuel to produce additional gases for ejection from the turbine engine.

5,341,637

SYSTEM FOR BURNING BIOMASS TO FUEL A GAS TURBINE

Joseph T. Hamrick, 4353 Wendy Gap Dr., Roanoke, Va. 24014

Filed Dec. 22, 1992, Ser. No. 994,720

Int. Cl.[5] F02C *3/26*

U.S. Cl. 60—39.464 **18 Claims**

1. A system for burning biomass particles to fuel a gas turbine comprising:

a turbine having a plurality of blades;

a pressurized combustion chamber including a combustion mechanism for combusting said biomass particles therein, said combustion chamber having at least a primary combustion zone;

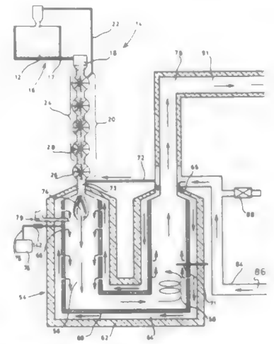
a feeder device for feeding said biomass particles into said pressurized combustion chamber;

an air compressor for circulating compressed air into said pressurized combustion chamber via a conduit connecting said air compressor to said pressurized combustion chamber, said air compressor being driven by said turbine, said compressed air facilitating said combustion mechanism to combust said biomass particles and to produce high temperature high pressure combustion gases;

preheating means for preheating said compressed air before said compressed air enters said pressurized combustion chamber;

cooling means for cooling said combustion gases before said combustion gases exit said pressurized combustion chamber;

an injection system for injecting said combustion gases into



said turbine to rotate said turbine at a selected rotational speed such that said turbine can drive a load;

an ash extractor for removing ash from said combustion gases before said combustion gases enter said turbine; and

a control system for controlling said rotational speed of said turbine, said control system including an inlet turbine temperature controller and a turbine speed controller, said inlet turbine temperature controller including a feeder device controller which controls said feeding of said biomass particles into said pressurized combustion chamber, said turbine speed controller controlling a dump valve, a steam injector and load replacement device, said dump valve for depressurizing said pressurized combustion chamber when said dump valve is opened, said steam injector injecting steam into said combustion gases, said load replacement device for absorbing said load driven by said rotation of said turbine.

5,341,638

LOW COST SEGMENTED STRUCTURE FOR PRESSURE VESSELS, ROCKET MOTORS, PIPING

Frederick W. Van Name, Newark, Del.; Michael A. Gerace, Nottingham, Pa.; Victor Singer, Newark, and Brendan M. Walsh, Wilmington, both of Del., assignors to Thiokol Corporation, Ogden, Utah

Filed Mar. 9, 1992, Ser. No. 847,169

Int. Cl.[5] F02K *9/00*

U.S. Cl. 60—204 **19 Claims**

1. The method of assembling a rocket motor comprising a thermoplastic cartridge, a propellant grain, case segments, and a composite overwrap, said method comprising

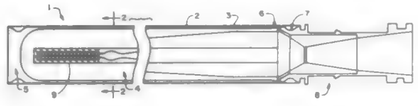
casting said propellant grain into said cartridge

curing said propellant in said cartridge

installing said case segments over said cartridge so that said segments are joined along mated edges

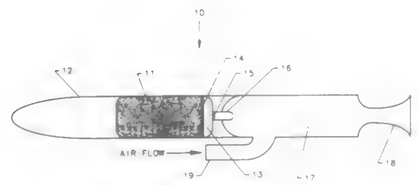
VOL 1165 ISS 5 AG 30 1994 UMI

overwrapping said case segments with said composite overwrap, and
curing said composite overwrap,
said composite overwrap comprising reinforcing fiber in a resin matrix, said reinforcing fiber being high strength



polyolefin, thereby providing insensitive munitions capability to said rocket motor,
said composite overwrap being overwrapped over said case segments and cured so as to maintain said joined edges in said joined position and so as to withstand the intended pressure on said segments.

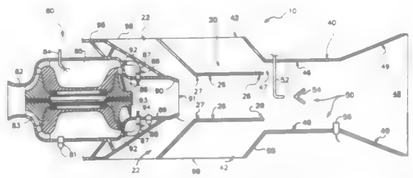
5,341,639
FULLERENE ROCKET FUELS
William D. Stephens, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 19, 1993, Ser. No. 5,729
Int. Cl.[5] F02K *9/00*
U.S. Cl. 60—204 **6 Claims**



1. In the method of operation of a ducted rocket comprising a primary combustor containing a solid fuel gas generator for supplying hot fuel gases and partial decomposition products for combining with oxygen acquired from air during flight for producing complete combustion products in a secondary combustor and discharging combustion gases through a nozzle to provide thrust for said ducted rocket, the improvement in said method of operation of said ducted rocket for achieving high efficiency in the operation of said ducted rocket comprising incorporating into a solid fuel gas generator composition a solid fuel selected from the group consisting of fullerenes having a cage structure and derivatives of fullerenes having a cage structure.

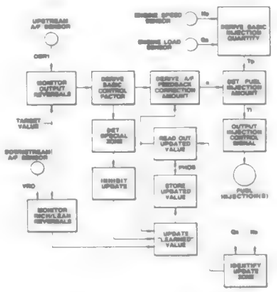
5,341,640
TURBOJET ENGINE WITH AFTERBURNER AND THRUST AUGMENTATION EJECTORS
Robie L. Faulkner, P.O. Box 1630, Alpine, Calif. 91903
Filed Mar. 30, 1993, Ser. No. 40,355
Int. Cl.[5] F02K *1/46, 3/10*
U.S. Cl. 60—251 **15 Claims**

1. A thrust propulsion unit for an aircraft comprising:
an engine capable of producing thrust by expulsion of hot gases at near sonic or greater velocity through a portal;
said engine being a turbojet engine having an afterburner; and
an ejector connected to said engine comprising:
air intake means connected to said engine for directing ambient air to an intake end of a duct;
a duct, connected to said engine and having a lateral cross sectional area greater than said portal, comprising:
an intake end disposed to receive the gases expelled from said engine portal and the air from said air intake means;
a flame holder assembly mounted in said duct in the combined flow of the gasses expelled by said engine and the



air from said intake means for combustion of the combined flow; and
an exhaust end for expelling combined the burned gases and air received by said intake end, such that the momentum of the gasses and air exiting said exhaust end is greater than the momentum of the gasses expelled from said engine portal.

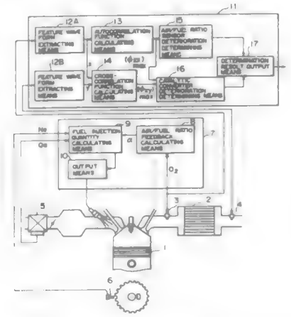
5,341,641
DUAL SENSOR TYPE AIR FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE
Yuki Nakajima, and Masaaki Uchida, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed May 28, 1991, Ser. No. 705,819
Claims priority, application Japan, May 28, 1990, 2-137854
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 **31 Claims**



1. An internal combustion engine air-fuel ratio control apparatus comprising:
sensor means for sensing engine speed and engine load;
a catalytic converter disposed in an exhaust gas conduit;
a first air-fuel ratio sensor disposed in the exhaust gas conduit upstream of the catalytic converter;
a second air-fuel ratio sensor disposed in the exhaust gas conduit downstream of said catalytic converter;
fuel injection means for supplying fuel into the engine;
a control circuit operatively connected with said sensor means and said fuel injector means, said control circuit including circuitry for;
using an output of said sensor means to determine a basic injection pulse width;
determining an air-fuel ratio feedback control factor value based on the output of said first air-fuel ratio sensor;
determining an actual pulse width by correcting the basic pulse width using air-fuel ratio feedback control factor;

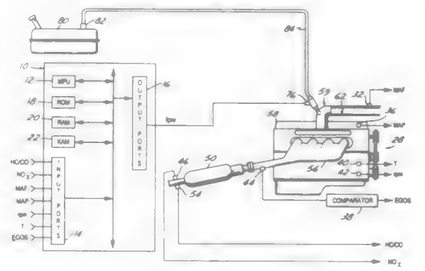
modifying air-fuel ratio feedback control factor using an adaptive update value which is read out of memory in a first predetermined manner, based on the instant engine speed and load, and updated based on the output of said second air-fuel ratio sensor; and
inhibiting the updating of said adaptive update value in the event that the output of said second means indicates that the engine is operating in a predetermined zone of engine speed and engine load,
wherein said control circuit comprises an inhibiting means for inhibiting the updating of said adaptive update value in response to a special zone signal, and a storage means for storing a data table which contains a collection of the feedback control factor values and said special zone signal.

5,341,642
SYSTEM FOR DIAGNOSING ENGINE EXHAUST GAS PURIFYING DEVICE AND SYSTEM FOR DIAGNOSING SENSOR
Nobuo Kurihara, Hitachiota; Toshio Ishii, Mito; Takashi Mukaihira, Katsuta; Kazuya Kawano, Katsuta, and Yutaka Takaku, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Dec. 21, 1992, Ser. No. 994,344
Claims priority, application Japan, Dec. 20, 1991, 3-338220
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—276 **18 Claims**



1. A system for diagnosing an engine exhaust gas purifying device for purifying with a catalyst an exhaust gas from an engine having an air/fuel ratio control unit for adjusting the fuel injection quantity by detecting the concentration of the oxygen or the air/fuel ratio in the exhaust gas so that a constant air/fuel ratio in the exhaust gas is maintained, comprising:
a front air/fuel ratio sensor for detecting the oxygen concentration or the air/fuel ratio in the exhaust gas prior to the purification thereof with said catalyst;
a rear air/fuel ratio sensor for detecting the oxygen concentration or the air/fuel ratio in the exhaust gas after the purification thereof with said catalyst;
feature wave form extracting means for attenuating signals in a frequency band lower than the air/fuel ratio control frequency band of said air/fuel ratio control unit in signal outputs from said front and rear air/fuel ratio sensors;
correlation function calculating means for calculating the correlation function of said signal which has passed through said feature wave form extracting means; and
catalyst condition determining means for determining the deterioration condition of said catalyst based upon the value of said correlation function, whereby the engine exhaust gas purifying device is diagnosed from the deterioration condition of the catalyst which was determined by said catalyst condition determining means.

5,341,643
FEEDBACK CONTROL SYSTEM
Douglas R. Hamburg, Bloomfield; Eleftherios M. Logothetis, Birmingham; Richard E. Soltis, Redford, and Jacobus H. Visser, Belleville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Apr. 5, 1993, Ser. No. 43,095
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—276 **8 Claims**



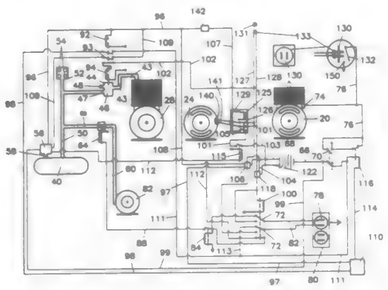
1. An engine air/fuel control method for optimizing conversion efficiency of a catalytic converter positioned,in the engine exhaust, comprising the steps of:
measuring nitrogen oxide content of exhaust gases downstream of the catalytic converter to generate a first measurement signal;
measuring combined hydrocarbon and carbon monoxide content in exhaust gases downstream of the catalytic converter to generate a second measurement signal;
subtracting said first measurement signal from said second measurement signal to generate a third signal;
generating a correction signal from an exhaust gas oxygen sensor positioned upstream of the catalytic converter;
trimming said correction signal with a trim signal derived from said third signal and then integrating to generate a feedback variable; and
correcting fuel delivered to the engine by said feedback variable to maintain maximum conversion efficiency of the catalytic converter.

5,341,644
POWER PLANT FOR GENERATION OF ELECTRICAL POWER AND PNEUMATIC PRESSURE
Bill Nelson, 400 N. Frankwood St., Sanger, Calif. 93657
Continuation-in-part of Ser. No. 506,169, Apr. 9, 1990, Pat. No. 5,087,824. This application Nov. 19, 1991, Ser. No. 794,578
Int. Cl.[5] F02N *9/00*
U.S. Cl. 60—627 **10 Claims**

1. In a power plant for driving at least one power supply for the provision of electrical or pneumatic power to an operator controlled power tool, by selectively driving one or both of an electric generator or pneumatic compressor, each of which being selectively connected to the tool, and a drive engine for providing motive power to the power supplies, the improvement comprising:
engine start up means for starting said drive engine in re-

VOL 1165 ISS 5 AG 30 1994 UMI

sponse to a demand for power from said tool; said engine start up means including switching means connectable to



said tool, and operable upon demand for power from said tool, to cause drive engine start up.

5,341,645

FUEL/OXIDIZER PREMIXING COMBUSTION CHAMBER

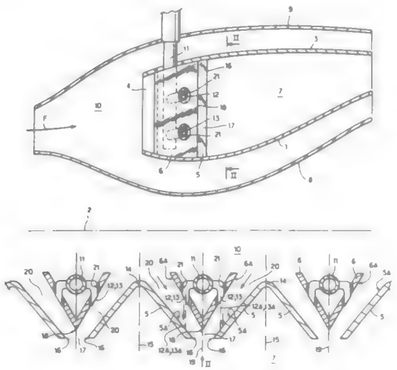
Denis R. H. Ansart, Bois Le Roi; Michel A. A. Desaulty, Vert Saint Denis, and Denis J. M. Sandelis, Nangis, all of France, assignors to Societe National d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Paris, France

Filed Apr. 8, 1993, Ser. No. 44,388

Claims priority, application France, Apr. 8, 1992, 92 04281

Int. Cl.[5] F02C *1/00*; F02G *3/00*

U.S. Cl. 60—737 **11 Claims**



1. A fuel/oxidizer pre-mixing combustion chamber for a turbojet engine having a central longitudinal axis and an oxidizer source, the combustion chamber comprising:

a) wall means defining transverse boundaries of the combustion chamber such that the combustion chamber has an upstream end;

b) fuel/oxidizer pre-mixing means operatively associated with the upstream end of the combustion chamber comprising a plurality of first members, each first member having a substantially "V"-shaped cross-sectional configuration having external sides, an upstream edge and a downstream edge spaced from the upstream edge in an axial direction along the central axis, the downstream edges of adjacent first members defining therebetween a first passageway in communication with the oxidizer source and the combustion chamber;

c) fuel injector means positioned between adjacent first members and between the axial positions of the upstream and downstream edges of the first members, the fuel injector means having fuel injection orifices oriented to direct fuel into contact with the external sides of adjacent first members, thereby mixing the fuel and oxidizer upstream of the first passageways; and

d) a plurality of second members wherein a second member is located between adjacent first members such that portions of the first and second members define opposite sides of a second passageway in communication with the oxidizer source and the first passageway and wherein each second member has a substantially "V"-shaped cross-sectional configuration and is oriented such that the vertex of the "V" faces generally in a downstream direction.

5,341,646

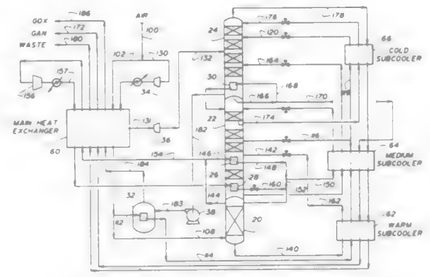
TRIPLE COLUMN DISTILLATION SYSTEM FOR OXYGEN AND PRESSURIZED NITROGEN PRODUCTION

Rakesh Agrawal, Emmaus, Pa.; Jeffrey S. Langston, Weybridge; Paul Rodgers, Woking, both of England, and Jianguo Xu, Fogelsville, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 15, 1993, Ser. No. 92,164

Int. Cl.[5] F25J *3/02*

U.S. Cl. 62—25 **26 Claims**



1. A process for the separation of a compressed feed air stream to produce gaseous oxygen with purity less than 98% and nitrogen with high recoveries comprising:

(a) using three distillation columns consisting of a low pressure column, a medium pressure column which operates at a pressure higher than the low pressure column and a high pressure column which operates at a pressure higher than the medium pressure column;

(b) feeding a portion of the compressed feed air stream to the high pressure column for distillation into a high pressure oxygen-enriched liquid bottoms and a high pressure nitrogen overhead;

(c) feeding at least a portion of the high pressure oxygen-enriched liquid bottoms to the medium-pressure column;

(d) condensing at least a portion of the high pressure nitrogen overhead by heat exchange against a liquid stream of the medium pressure column and using at least a portion of the condensed high pressure nitrogen to provide reflux to the high pressure column;

(e) removing a medium-pressure oxygen-enriched liquid from the medium pressure column at a location below the high pressure oxygen-enriched liquid bottoms feed point and feeding the removed, medium-pressure oxygen-enriched liquid to an intermediate point of the low pressure column for distillation;

(f) producing at least a portion of the oxygen product from the bottom of the low pressure column; and

(g) recovering greater than 35% of the feed air flow to the distillation column system as nitrogen product wherein the nitrogen product is recovered from the high pressure column, the medium pressure column or both the high pressure and medium pressure columns.

5,341,647

PORCESS AND APPARATUS FOR THE PRODUCTION OF HIGH PRESSURE NITROGEN AND OXYGEN

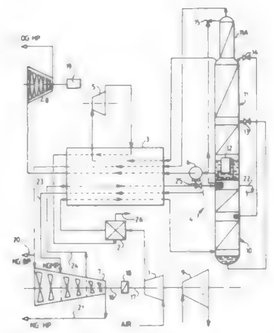
Yves Koeberle, Le Perreux sur Marne, and Jean-Pierre Tranier, Villejuif, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 8, 1993, Ser. No. 27,788

Claims priority, application France, Mar. 24, 1992, 92 03501

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—39 **11 Claims**



1. Process for the simultaneous production on the one hand of pure nitrogen at an elevated pressure which is higher than about 25 bars absolute, and on the other hand of oxygen, by air distillation in a double distillation column, comprising a mean pressure column and a low pressure column providing pure nitrogen at the top of said low pressure column, comprising the steps of withdrawing nitrogen from the low pressure column, heating the withdrawn nitrogen, compressing the heated nitrogen at elevated pressure by means of a single nitrogen compressor of the centrifugal type having at most six compression wheels, and operating the low pressure column at a pressure of the order of P_N/ρ_N, where P_N represents the elevated pressure of said nitrogen and ρ_N the compression ratio of said nitrogen compressor.

5,341,648

PROCESS FOR PRODUCING ICES

Shin-ichi Umemura, and Sadao Yashiro, both of Yokohama, Japan, assignors to Morinaga & Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,677

Claims priority, application Japan, Mar. 6, 1992, 4-084771

Int. Cl.[5] F25C *5/10*

U.S. Cl. 62—73 **1 Claim**

1. A process for producing an ice, comprising the steps of:

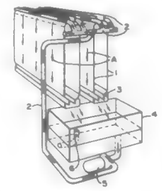
allowing a material solution containing a sweetener to flow downward from the upper part of and along the surface of a freezing plate provided substantially upright, to thereby cause said material solution to freeze on and stick to the surface of said freezing plate to form an ice plate;

breaking said ice plate into ice pieces having a diameter of about 20 mm at maximum; and

filling a container with said ice pieces;

said material solution being so controlled as to flow down in such a quantity that at least 30% of the solution freezes on and sticks to said freezing plate before the solution reaches the lower end thereof; and

said material solution having a concentration so adjusted that said ice plate has a fragmentation resistance of 1,000 mm or less as measured by a dropping test method comprising the steps of putting the material in a low cylindri-



cal container having a diameter of 88 mm and cooling over night to produce an ice plate with a thickness of 10 mm; putting the ice plate into a stainless steel ring with a diameter of 76 mm and, at a temperature of −20° C., dropping a 47 gram steel ball onto the plate from various heights, the fragmentation resistance being the minimum height at which the ball breaks the plate.

5,341,649

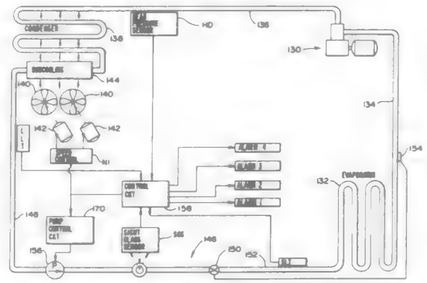
HEAT TRANSFER SYSTEM METHOD AND APPARATUS

James N. Nevitt, Cape Coral, and Laurel R. Chapman, North Ft. Myers, both of Fla., assignors to Future Controls, Inc., Ft. Myers, Fla.

Filed Mar. 5, 1993, Ser. No. 27,237

Int. Cl.[5] F25B *41/00*

U.S. Cl. 62—126 **25 Claims**



1. Apparatus for remotely monitoring the condition of a heat transfer fluid stream in a conduit of a heat transfer system, comprising;

(a) a radiation source,

(b) means for detecting radiation,

(c) an indicating element adapted to change color when the moisture content of the heat transfer fluid changes, said indicating element being located so that the amount of radiation detected by said radiation detection means is altered in response to a change in color of said indicating element,

(d) means for positioning said radiation source so that radiation therefrom impinges a fluid stream in a conduit,

(e) means for positioning said radiation detecting means to detect radiation after impingement with the fluid stream,

(f) means responsive to said radiation detecting means for generating a signal which is proportional to the amount of radiation detected, and

VOL 1165 ISS 5 AG 30 1994 UMI

(g) means responsive to said signal for indicating the condition of said fluid stream.

5,341,650

AIR CONDITIONING APPARATUS HAVING A PLURALITY OF INLETS FOR TAKING IN INDOOR AIR AT A PLURALITY OF PORTIONS OF MAIN BODY THEREOF

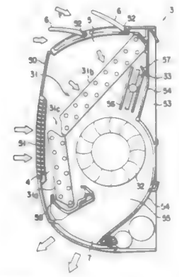
Atsushi Nagasawa, Mishima; Keiichi Morita, Fujinomiya; Masaya Yamazaki, Shizuoka; Yoshinori Katagami, Yokohama; Masaru Shinoda, Warabi; Takeshi Matsuo, Fujinomiya, and Masaru Misawa, Fuji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1993, Ser. No. 10,338

Claims priority, application Japan, Mar. 13, 1992, 4-054719; Mar. 13, 1992, 4-055298

Int. Cl.[5] F25D *17/06*

U.S. Cl. 62—180 **12 Claims**



1. An air conditioning apparatus having a plurality of inlets for taking in indoor air at a plurality of portions of a main body thereof, comprising:

at least an openable/closable cover provided to any one of said plurality of inlets;

first control means for opening said cover to execute a first operation;

second control means for closing said cover to execute a second operation;

setting means for setting a silent operation mode; and

selecting means for selecting said first operation when the silent operation mode is not set, thereby causing said first control means to open said cover, and for selecting said second operation when the silent operation mode is set, thereby causing said second control means to close said cover.

5,341,651

CONTROL APPARATUS FOR USE IN AUTOMOTIVE AIR CONDITIONING SYSTEM

Atsuo Inoue, Gunma, Japan, assignor to Sanden Corporation, Isesaki, Japan

Filed Apr. 8, 1993, Ser. No. 43,939

Int. Cl.[5] F25B *41/04*; **G05B** *11/36*

U.S. Cl. 62—225 **12 Claims**

1. An automotive air conditioning system comprising:

a refrigerant circuit having a refrigerant compressor with an externally controlled, variable capacity control mechanism and an evaporator connected to a suction chamber of said refrigerant compressor;

means for moving air through an exterior surface of said evaporator; and

a control mechanism for controlling said circuit, wherein said control mechanism comprises:

means for sensing a thermodynamic characteristic relating to said evaporator;

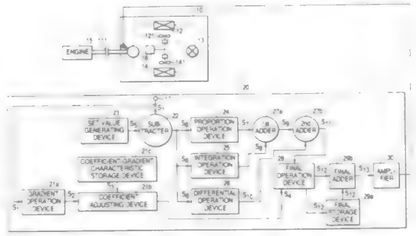
gradient determining means for determining a gradient of the thermodynamic characteristic over a time period;

means for storing a relationship between said gradient and a coefficient;

coefficient determining means for determining a value for said coefficient by using the result of said gradient determining means and the relationship stored in said storing means;

feedback control means for monitoring the thermodynamic characteristic, comparing the thermodynamic characteristic to a set thermodynamic characteristic, and determining a feedback operational result for providing at least proportional control to said circuit; and

pressure adjusting means for adjusting a control point of pressure in said suction chamber of said compressor responsive to said feedback operational result and said value of said coefficient determined by said coefficient determining means, whereby said feedback operational result is multiplied by said value.



5,341,652

AIR-CONDITIONING SYSTEM FOR VEHICLE

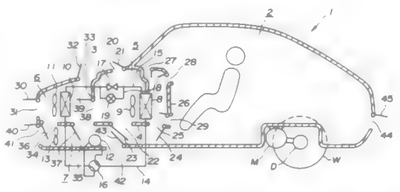
Akihiro Tajiri, and Yoshihko Hotta, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,429

Claims priority, application Japan, Oct. 17, 1991, 3-296648

Int. Cl.[5] B60H *1/00*

U.S. Cl. 62—244 **29 Claims**



1. An air-conditioning system for a vehicle, comprising an interior heat exchanger disposed in a first chamber for heat exchange with air introduced into the first chamber, said first chamber having an inside-air introduction port for admitting air from a vehicle passenger compartment into the first chamber and an air discharge port for discharging the air into the compartment,

an exterior heat exchanger disposed in a second chamber for heat exchange with air introduced into the second chamber, said second chamber having an open air introduction port for admitting air from outside of the vehicle into the second chamber and an air discharge port for discharging the air to outside of the vehicle,

a compressor mounted in communication with one of two refrigerant pipes for compressing a refrigerant, said two refrigerant pipes being connected to said heat exchangers for circulating the refrigerant between said interior and exterior heat exchangers, and

a depressurizing means mounted in the other refrigerant pipe for depressurizing said refrigerant flowing between said interior and exterior heat exchangers, wherein

said compressor is disposed in a third chamber which is partitioned from said first and second chambers and said compartment, and

said third chamber having a cooling air-intake port for admitting air directly from outside of the vehicle into the third chamber and a heat discharge port for discharging the air to outside of the vehicle.

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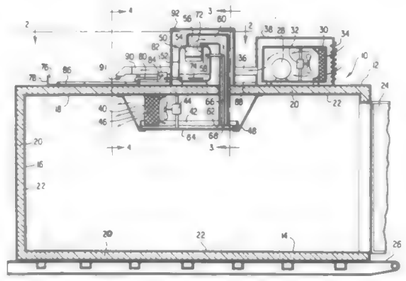
APPARATUS AND METHOD FOR DISPOSING OF CONDENSATE FROM EVAPORATOR DRIP PANS

Joseph R. Tippmann, HRC-33, Box 8419, Rapid City, S. Dak. 57701, and Vincent P. Tippmann, 8605 N. River Rd., New Haven, Ind. 46774

Filed Nov. 3, 1993, Ser. No. 145,086

Int. Cl.[5] F25D *21/14*

U.S. Cl. 62—288 **15 Claims**



1. In a refrigerated storage enclosure of the type having a plurality of insulated upstanding side wall members at least one of which has a doorway therethrough, a floor member beneath said side wall members and a roof member over said side wall members, a refrigeration compressor and condenser mounted on the outside of said enclosure operatively connected to an evaporator coil mounted on the inside of said enclosure for cooling the inside of said enclosure, and drip pan means beneath said evaporator coil for collecting condensation dropping from said coil, said improvement comprising:

a) open means adjacent said outside of said enclosure for receiving said collected condensation,

b) air pump means mounted on said outside of said roof for withdrawing said collected condensate from said drip pan,

c) means for storing said withdrawn condensate, and

d) means for transferring said stored condensate to said open means adjacent the outside of said roof for evaporation into the atmosphere.

5,341,654

SUCTION GAS CONDUIT

Chip Hewette, Troy, and Hubert Bukac, Sidney, both of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Apr. 16, 1993, Ser. No. 49,985

Int. Cl.[5] F25D *19/00*

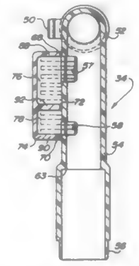
U.S. Cl. 62—296 **24 Claims**

5. In a refrigeration compressor including:

an outer hermetic shell;

compressor means within said shell;

motor means within said shell and operatively connected to said compressor means for driving same, an improved suction muffler assembly comprising an elongated suction conduit having a first end connected to said compressor means and a second end open to the interior of said shell, said conduit being operative to supply suction gas from the interior of said shell to said compressor means, said conduit having a first internal cross sectional area at said first end and a second internal cross sectional area at said second end, said first cross sectional area being larger than said second cross sectional area, said conduit further including first and second axially spaced openings in the sidewall intermediate the ends thereof, and a pair of generally radially extending axially elongated flanges, each of said flanges including a longitudinally extending rib thereon, a muffler housing secured to said suction conduit



in overlying relationship to said pair of axially spaced openings, said muffler housing having a pair of outwardly extending flanges provided thereon, each having an elongated groove adapted to receive one of said ribs, said ribs and said notches cooperating to secure said muffler housing to said conduit, said muffler housing including laterally extending partition means cooperating with said suction conduit to define first and second substantially closed chambers within said muffler housing, said first chamber being in fluid communication with said suction gas flowpath via said first opening and said second chamber being in fluid communication with said suction gas flowpath via said second opening, said first and second chambers being operative to attenuate noise resulting from operation of said compressor means.

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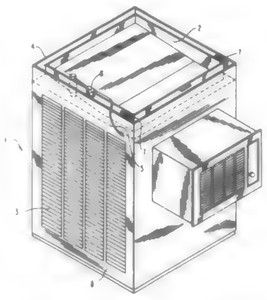
SALT FREE EVAPORATIVE AIR CONDITIONING

Abdul A. A. Al-Saleh, P.O. Box 21952, Riyadh 11485, Saudi Arabia

Filed Oct. 26, 1992, Ser. No. 966,814

Int. Cl.[5] B01F *3/04*

U.S. Cl. 62—304 **18 Claims**



1. An evaporative air conditioner of the type including an

VOL 1165 ISS 5 AG 30 1994 UMI

evaporative cooler and a cooler reservoir, the improvement comprising:

a. means for disposing of salty water which normally accumulates in increasing concentration within the cooler reservoir, said disposal means including a drying basin in a location remote from the cooler reservoir, the drying basin being exposed to sun and air so that salty water from the cooler reservoir will evaporate therein; and

b. flow control means for periodically refilling the drying basin with salty water from the cooler reservoir when the salty water from a previous filling has substantially evaporated.

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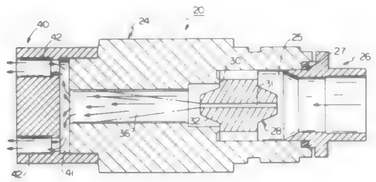
COMBINATION EXPANSION AND FLOW DISTRIBUTOR DEVICE

Raymond A. Rust, Jr., and Larry D. Amick, Brownsburg, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 20, 1993, Ser. No. 65,239

Int. Cl.[5] F25B *13/00*

U.S. Cl. 62—324.6 **10 Claims**



1. A combination expansion and flow distributor device that accommodates bidirectional flow and is suitable for use in a reverse cycle air conditioning system said device including:

an elongated housing having a distal end and a proximal end which contains a chamber that opens through the proximal end of the housing whereby the chamber can be connected to the liquid line of a reverse cycle air conditioning system,

a flow distribution section situated at the distal end of said housing having a radially-expanded distribution passage and a series of axially-disposed flow tubes in fluid flow communication with said passage which discharges through the distal end of said housing, whereby said flow tubes can each be connected to separate flow circuits of a heat exchanger,

an elongated control channel connecting the distal end of said chamber and said flow distribution passage which is radially offset from said flow, said control channel having a length in the general direction of refrigerant flow through said elongated housing and a width substantially smaller than said length, said channel length and width thereby defining means to allow expanding refrigerant to slow down and completely fill said channel so that sufficient energy remains in the refrigerant to prevent separation of said refrigerants liquid's refrigerant and vapor phases and so to overcome gravitation effects of the system's orientation,

a free floating piston slidably mounted within said chamber, said piston having an axially-disposed metering orifice passing therethrough, and

seating means located at the distal end of said chamber at the entrance to said control channel for sealing the piston against said entrance, whereby refrigerant moving from said liquid line toward said heat exchanger is throttled through said metering orifice into said control chamber.

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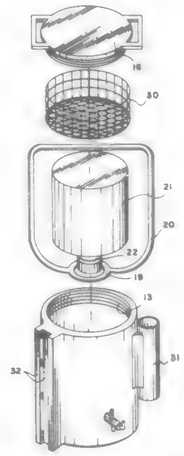
BEVERAGE COOLER AND CONTAINER APPARATUS

James M. Fuller, P.O. Box 16, 1301 Capeheart, Ingleside, Tex. 78362

Filed Jun. 1, 1993, Ser. No. 69,748

Int. Cl.[5] A47J *45/06*; B65B *3/04*

U.S. Cl. 62—389 **4 Claims**



1. A beverage container apparatus, comprising,

a rigid container housing symmetrically oriented about a housing axis, having a housing side wall, and the housing side wall including an internally threaded entrance end, and the housing further including a housing floor spaced from the entrance end, the housing floor orthogonally oriented relative to the axis and including a floor opening coaxially aligned with said axis, the housing including a lid arranged for threaded engagement with the entrance end, and

a piercer tip coaxially aligned with the axis oriented medially of the floor opening, and

a fluid jug having a jug neck, wherein the jug neck is arranged for reception through the floor opening, with the piercer tip arranged for reception through the neck for piercing within the neck directing fluid flow from the fluid jug through the floor opening, and

a first fluid conduit in fluid communication with the floor opening, and

the housing including a housing bottom wall spaced from said housing floor, with the first fluid conduit oriented between the bottom wall and the floor, and

the first fluid conduit directed through the container housing into communication with the housing side wall, and having a first valve member mounted to the side wall in operative fluid communication with the first fluid conduit, and

a second fluid conduit directed through the side wall, and including a by-pass conduit extending in fluid communication from the second fluid conduit into and through the floor, and

a sealing ring mounted about the jug neck, and the jug further including a jug side wall and a jug bottom wall, with an elastomeric strap extending from the sealing ring extending along the jug side wall and along the jug floor permitting ease of grasping in removal and insertion of the jug relative to the housing floor.

5,341,658

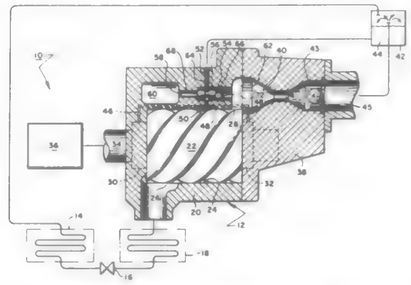
FAIL SAFE MECHANICAL OIL SHUTOFF ARRANGEMENT FOR SCREW COMPRESSOR

Jerome C. Roach, and Garry E. Andersen, both of La Crosse, Wis., assignors to American Standard Inc., New York, N.Y.

Continuation of Ser. No. 74,284, Jun. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 926,797, Aug. 7, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,367

Int. Cl.[5] F25B *43/02*

U.S. Cl. 62—468 **19 Claims**



1. A rotary screw refrigerant gas compressor comprising:

a housing defining a working chamber, said housing further defining a suction port, a discharge port and an oil supply passage, all in flow communication with said working chamber, said housing further defining an oil flow cutoff passage which is in flow communication with said oil supply passage, with an area in said compressor which is at a pressure less than compressor discharge pressure when said compressor is in operation and with an area in said compressor downstream of said discharge port which is at compressor discharge pressure when said compressor is in operation; and

a pair of screw rotors meshingly disposed for rotation in said working chamber; and

valve means disposed within said compressor and positionable to (i) occlude said oil supply passage to prevent the flow of oil therethrough and to (ii) open said oil passage to permit the flow of oil therethrough in direct response to ambient conditions in said compressor downstream of said discharge port which inherently exist at compressor shutdown and startup respectively.

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MULTI-STRAND JEWELRY CLASP

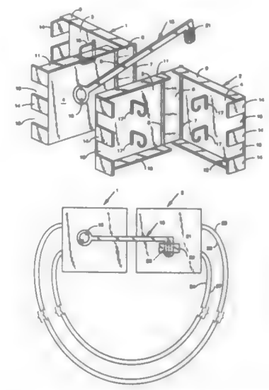
Marilyn P. Wright, 247 Watson Blvd., Pittsburgh, Pa. 15214

Filed Jul. 6, 1993, Ser. No. 86,659

Int. Cl.[5] A44C *13/00*

U.S. Cl. 63—2 **5 Claims**

2. A jewelry clasp comprising a pair of clasp connector boxes, a plurality of pivot hooks mounted inside one connector box, a plurality of pivot rings mounted inside the other connector box, said pivot hooks and said pivot rings respectively adapted to receive and detachably hold one end of each of a plurality of jewelry strands, a latch arm pivotably connected at one end to an outside surface of one of said connector boxes and having a spring latch at the other end of said latch arm, and a latch bar on an outside surface of the other connector box



and adapted to receive said spring latch to detachably connect the connector boxes together.

5,341,660

DISPENSER-DISBRIBUTOR FOR LIQUID DETERGENT FOR WASHING MACHINES

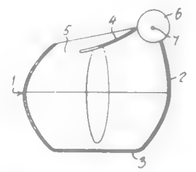
Fabrizio Berveglieri, Genoa, Italy, assignor to Mira Lanza S.p.A., Milan, Italy

Filed Mar. 26, 1993, Ser. No. 37,443

Claims priority, application Italy, Jun. 26, 1992, GE9-ZU000036

Int. Cl.[5] D06F *39/08*

U.S. Cl. 68—17 R **4 Claims**



1. A dispenser-distributor for liquid detergent for insertion into a drum of a washing machine together with laundry to be washed comprising:

a hollow base member having a side surface and a top which meet at a corner;

a main opening in said top of said base member through which the liquid detergent is poured into said base member and from which the liquid detergent freely exits said base member; and

an applicator means for applying the liquid detergent in said base member selectively to a desired portion of a component of the laundry, said applicator means including

an aperture provided in said corner and defined by a surrounding rim,

an element of circular cross section located in said aperture in said corner which substantially fills said aperture and which extends from outwardly from said aperture for application to a component adjacent said side or said top, said element including pins at opposite sides thereof, and

opposed recesses in said rim in which said pins are received for mounting said element for rotation about said

VOL 1165 ISS 5 AG 30 1994 UMI

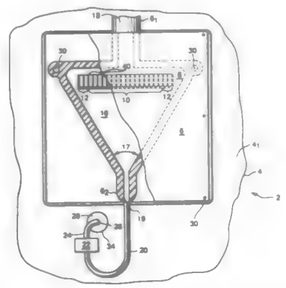
pins such that the liquid detergent in said hollow base member is spread onto the desired portion of the component of the laundry by rolling said element along a surface of the component.

5,341,661

SENSOR HOLDER HAVING A CONTAINER WITH A PROJECTION FOR COLLECTING FLUID SAMPLES IN A MACHINE FOR CLEANSING ARTICLES

Mark E. Dausch, Latham; Walter Whipple, III, Amsterdam; Terry C. Cooper, Schenectady, all of N.Y., and David A. Schneider, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1993, Ser. No. 166,859
Int. Cl.[5] D06F *39/08*
U.S. Cl. 68—207 **27 Claims**



1. A turbidity sensor holder system for a machine for cleansing articles, said holder system comprising:
- a container attached to an outer surface of a wall of said machine for cleansing articles, said container having a projection extending at a predetermined distance away from an inner surface of said wall, said projection including a respective plurality of collector channels situated to collect fluid flowing along said inner surface and at least one vent channel;
- a reservoir substantially located within said container, said vent channel in said projection situated to vent air out of said reservoir;
- a reservoir inlet located adjacent to a first end of said container;
- a reservoir outlet located adjacent to a second end of said container, said reservoir inlet and outlet being in spaced relationship with respect to one another;
- a turbidity sensor fluidly coupled to said reservoir outlet at a predetermined distance from said reservoir outlet; and
- a fluid outlet fluidly coupled to said turbidity sensor and located in said wall of said machine for cleansing articles.

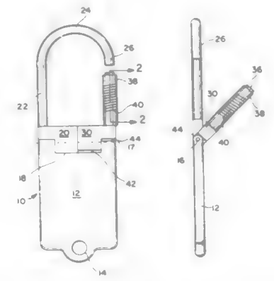
5,341,662

KEY HOLDER

Sumner B. MacDonald, 285 N. Farm Dr., Bristol, R.I. 02809

Continuation of Ser. No. 881,051, May 11, 1992, abandoned.
This application Oct. 15, 1993, Ser. No. 138,145
Int. Cl.[5] A47G *29/10*
U.S. Cl. 70—456 R **1 Claim**

1. A key ring which comprises:
- a flat base having a thickness, a width, an upper surface, and front and back surfaces,
- a first support having the same thickness as said base and a lower surface,
- a hook having a cross-section substantially smaller than said width,
- a rod having a cross-section substantially smaller than said width,
- a second support having the same thickness as said base and said first support, and
- a sleeve
  - said base supporting said first support and said second support,
  - said first support being fixedly mounted on said base longitudinally of said base,
  - said first and second supports being mounted on said base by a pin mounted on said base along an axis, said first support being prevented from rotation owing to interference of said lower surface with said upper surface,



said axis being parallel to planes of said front and back surfaces, said second support being rotatably mounted on said base longitudinally of said base and beside said first support for rotation about said axis of said pin,

said hook being mounted in said first support and including a longer straight portion extending from said first support, a second portion, and an intermediate arcuate portion,

said rod being carried by said second support for movement therewith and extending in one selectable position parallel to said longer straight portion, said rod being threaded at its end away from said second support,

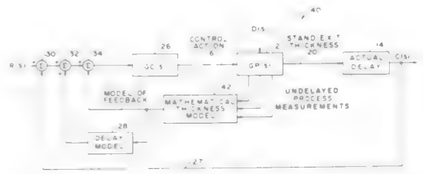
said sleeve being screw-threadedly carried by said rod.

5,341,663

AUTOMATIC PROCESS CONTROL AND NOISE SUPPRESSION

David J. Knapp, Knoxville, Tenn., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 872,081, Apr. 22, 1992, abandoned.
This application Jul. 23, 1993, Ser. No. 96,575
Int. Cl.[5] B21B *37/02;* **G05B** *13/04*
U.S. Cl. 72—8 **5 Claims**



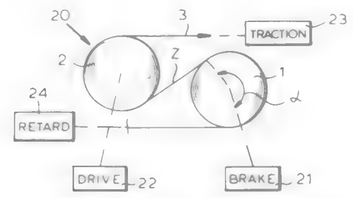
1. A method of controlling a process of making a material to a nominal property value using control configuration of a Smith Linear Predictor which employs an undelayed estimate of the property value, a measurement of the property value in a delayed time frame, and a delay buffer that places said estimate in the time frame of the delayed measurement of said property value, wherein the improvement comprises:
- providing a feedback model of the process that includes a state observer and no transfer function model;
- using said state observer in an undelayed time frame to estimate the property value as a function of at least one measurable variable of the process observed by the state observer to eliminate the influence of transport delay of the material on controlling the process to said nominal property value;
- eliminating any influence of model errors in the state observer on the control process by using a delay buffer that models transport delay in a manner that places said estimate of the property value in the time frame of the delayed measurable variable; and
- using said estimate to control the process to said nominal property value.

5,341,664

ROLL SET FOR THIN METAL STRIP

Rolf Noé, and Andreas Noé, both of Mülheim, Fed. Rep. of Germany, assignors to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH, Duisburg, Fed. Rep. of Germany

Filed Jul. 14, 1993, Ser. No. 92,230
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1992, 4230243
Int. Cl.[5] B21B *39/08*
U.S. Cl. 72—161 **14 Claims**



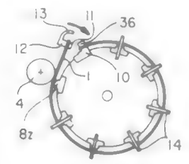
1. A roller bridle for metal strip having a thickness up to 1 mm, comprising a pair of rolls over which said metal strip passes in an S pattern, at least one of said rolls having a rotatable support, a flexible periphery with which said metal strip is in contact over a given wrapping angle, and means for imparting to said periphery a selected deformation ranging between an outwardly convex and an inwardly concave bulge.

5,341,665

TOOL SYSTEM FOR AN ANNULAR SHEET METAL PART

Bernard G. Christophel, Ris Orangis; Jean M. Dautremont, Melun; Pierre H. Fert, Bondoufle, and Guy R. Harmegnies, Courcouronnes, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.-M.A.", Paris, France

Filed Mar. 12, 1992, Ser. No. 850,294
Claims priority, application France, Mar. 14, 1991, 91 03066
Int. Cl.[5] B21D *5/14;* **B23K** *37/00*
U.S. Cl. 72—166 **5 Claims**



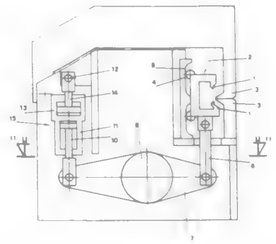
1. Tool system for the production of an annular part having an axis of revolution from a flat sheet having a first and second opposite ends by the progressive bending of the sheet by winding the sheet around an axis of revolution by said first end and by exerting a pressure force on the outer surface of the sheet, which becomes the outer surface of the annular part, so as to join together the first and second ends using deformation forces remaining below the yield strength of the metal and by welding the first and second ends, which comprises:
- a rotary plate which surrounds the axis of revolution, is concentric with that of the annular part to be produced and on which are mounted inner supports;
- a motor for rotating said rotary plate;
- a fixing mechanism for fixing a first end of the sheet to the rotary plate with an inclination corresponding to that of generatrixes of the shaped part with respect to the axis of revolution;
- a pressure roller mounted so as to rotate about an axis of revolution parallel to the inclination of the generatrixes and coplanar to the axis of the rotary plate;
- a mechanism for fixing the second end of the sheet to the first end of the sheet wherein the inner supports are fixed in a regulatable manner to the rotary plate to guide an inner surface of the sheet during bending and the inner supports comprise semicylinders, the generatrix of each of the supports being located at point furthest from the axis of the rotary plate; an
- a plurality of holding brackets, each positioned facing one of said inner supports, to hold the sheet during the bending operation.

5,341,666

DEVICE FOR HANDLING THE BLADES OF A PRESS FOR BENDING SHEETS

Antonio Codatto, Lonigo, Italy, assignor to Sapim Amada S.p.A., Turin, Italy

Filed Apr. 13, 1993, Ser. No. 46,416
Claims priority, application Italy, Apr. 22, 1992, VI92A000064
Int. Cl.[5] B21D *5/04*
U.S. Cl. 72—323 **3 Claims**



1. In a bending press for bending a sheet on a working plane having a fixed frame, two counter blades (3) on said frame adapted to receive said sheet therebetween in said working plane, a substantially C shaped bending block (2) having bending blades (1) supported at the extremities thereof, said bending block (2) being provided with rolls (4) adapted to roll along a track (5) perpendicular to said working plane, and two connecting rods (6) substantially perpendicular to said working plane and having upper and lower parts, the upper parts of said connecting rods being hingedly connected to a lower part of said bending block (2), the improvement comprising
- an axially rotatable cylinder (8) whose axis is parallel to said working plane, a first arm (7) associated with each connecting rod (6) integral with and radially extending from said cylinder (8) and having an axis substantially parallel to said working plane, a lower part of each connecting rod (6) being hingedly connected to each said first arm (7), a second arm (9) integral with and radially extending from said cylinder (8) and having an exterior end, and a fluid-dynamic cylinder (11) hingedly connected to said fixed frame at a first end and having an actuated stem (10) at a

VOL 1165 ISS 5 AG 30 1994 UMI

second end hingedly connected to the exterior end of said second arm (9) whereby actuation of said stem (10) by said fluid-dynamic cylinder (11) translates into movement of said bending block (2) perpendicular to said working plane.

5,341,667

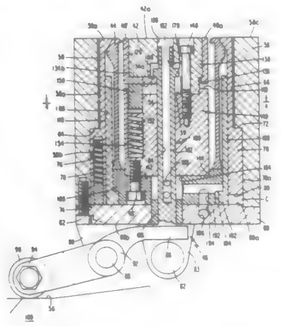
CONTAINER BOTTOM WALL REFORMING APPARATUS AND METHOD

Harry W. Lee, Jr., Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 1, 1992, Ser. No. 877,559

Int. Cl.[5] B21D *51/26*

U.S. Cl. 72—379.4 **27 Claims**



1. A method for reforming a preformed, profiled bottom wall of a container having a side wall extending substantially axially from the bottom wall to define an open end of the container, comprising the steps of:

a) applying a first support in the form of a necking spindle assembly into the open end of the container, said necking spindle assembly including a necker die assembly;

b) applying a second support to a first portion of said bottom wall;

c) advancing the necker die assembly into necking contact with said open end to form a necked-in diameter therein; and

d) moving at least one forming finger into deforming contact with a second portion of the bottom wall, as said open end is being necked, so that said second portion is deformed against the counter pressure of the second support acting on said first portion, wherein said bottom wall includes a preformed central panel, an annular outward conical or radial surface extending downwardly and inwardly from the side wall toward the central panel, and an annular resting radius connecting the conical surface to the central panel, said resting radius projecting downward from the central panel to define an annular support surface for the container, said resting radius being defined by said first portion which extends upward from the annular support surface to join the central panel and said second portion which is an outwardly concave portion extending upward from the annular support surface to join the side wall, said outwardly concave portion having a radius of curvature R, which is reformed by said at least one forming finger to have a reduced radius of curvature r, wherein $r<R$, by being pinched toward said first portion so that the annular resting radius and thereby the annular support surface defined by and between the first and second portions is tightened to have a reduced radius of curvature to resist unrolling when the container is pressurized with fluid to a predetermined extend for normal use, wherein a plurality of forming fingers extend continuously around the bottom wall to contact substantially the entire periphery thereof.

5,341,668

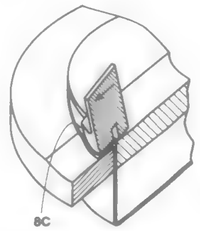
METHOD OF FORMING A VESSEL POURING SPOUT

Alfred N. Mack, and Stephen L. Tobey, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,548

Int. Cl.[5] B21D *51/42*

U.S. Cl. 72—379.4 **5 Claims**



1. A method for forming a constant geometry and non-turbulent stream inducing pouring spout in the rim of an annular side-walled vessel comprising the steps of:

a) positioning the vessel within a clamp possessing a groove, the centerline of the groove forming a 90° angle with the annular side wall of the vessel when the clamp is in place;

b) placing inside the vessel a center plug possessing a radially extending groove, the centerline of the groove forming a 90° angle with the annular side wall when the center plug is in place;

c) aligning the respective grooves' centerlines resulting in a straight line travel path;

d) placing a pour spout former in the center plug groove and causing the spout former to move along the travel path and into contact with the rim of the vessel, and,

e) further causing the former to move along the travel path thereby yieldably deforming the rim of the annular wall within the clamp groove into a pouting spout of a desired shape.

5,341,669

ROTARY BENDING TOOL WITH CONTINUOUS LUBRICATION

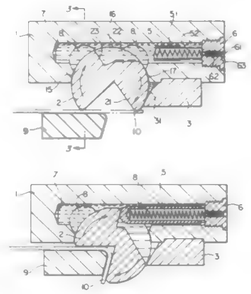
Wolfgang Katz, Dauchingen, Fed. Rep. of Germany, assignor to Ready Tools, Inc., Dayton, Ohio

Filed Feb. 8, 1993, Ser. No. 15,538

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 4203680

Int. Cl.[5] B21D *5/01*

U.S. Cl. 72—387 **15 Claims**



1. A rotary bending tool comprising:

a saddle block having cylindrical bearing surfaces,

a rotary bending head having cylindrical surfaces journalled by the cylindrical bearing surfaces of said saddle block,

a retaining key carried by said saddle block having a bearing surface for retaining said rotary bending head,

a member in said saddle block for restoring said rotary bending head to an initial position after rotation thereof in said saddle block,

a die for engagement by a component to be deformed by said rotary bending head,

at least one lubricant chamber in said saddle block in fluid communication with said bearing surfaces and having an extension to an exterior surface of said saddle block to enable lubricant to be introduced into said lubricant chamber from the exterior of said bending tool, and

a plug in said saddle block for closing said extension of said lubricant chamber.

5,341,670

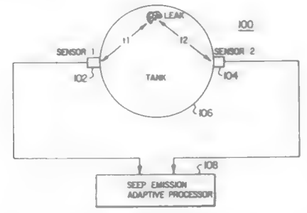
METHOD AND APPARATUS FOR LOCATING SEEPAGE FROM TANKS

Robert A. Brook, Richardson; Gary A. Crews, Plano, both of Tex., and Susan M. Perrell, Seal Beach, Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 807,539, Dec. 13, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 42,905

Int. Cl.[5] G01M *3/24*

U.S. Cl. 73—40.5 A **21 Claims**



19. An apparatus for determining the location of a leak from the bottom of a tank containing a fluid using a spectrum of acoustic signals generated by the leak, comprising:

(a) a digital signal processor for discriminating against large inconsistent ambient noise and high energy noise bursts and for determining time differences between the times of receipt at a plurality of sensors;

(b) a plurality of sensors at a plurality of locations on the periphery of the tank in electronic communication with said digital signal processor for detecting the acoustic signals thereby allowing determination of a plurality of differences between times of receipt of the acoustic signal at each of the plurality of sensors;

(c) a computing device in electronic communication with said digital signal processor for comparing the differences in times of receipt and determining possible leak locations.

5,341,671

HELIUM LEAK DETECTOR

Gilles Baret, Annecy, and Roland Gevaud, Pringy, both of France, assignors to ALCATEL CIT, Paris, France

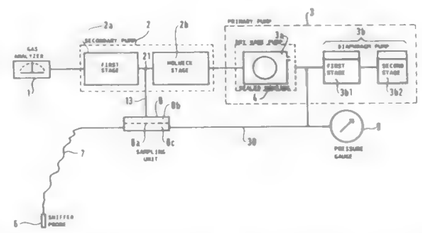
Filed Sep. 23, 1992, Ser. No. 949,155

Claims priority, application France, Sep. 24, 1991, 91 11755

Int. Cl.[5] G01M *3/20*

U.S. Cl. 73—40.7 **3 Claims**

1. Helium leak detector comprising; a gas analyzer, a dry primary pump, a secondary pump connected in series with said primary pump and comprising at least on a discharge side thereof, a Holweck type stage, said secondary pump comprising means for reducing the suction pressure to a value at least equal to 10^{-4} mbar and having a discharge pressure compatible with a suction pressure of said dry primary pump, said dry primary pump comprising at least two stages in series, said secondary pump being connected to a low-pressure output of a sampling unit at an intermediate point on said secondary pump where the flow conditions are molecular, a sniffer probe being connected to a high-pressure side of said sampling unit, and



said high-pressure side being further connected to said dry primary pump at a point between said at least two stages thereof, whereby said helium leak detector has a very high level of sensitivity, as well as a very short period of recovery when helium pollution of the detector occurs during a previous inspection of a container having a leak.

5,341,672

METHOD FOR MEASUREMENT OF POLYMER MOLECULAR WEIGHT BASED UPON A TEMPERATURE DIFFERENCE

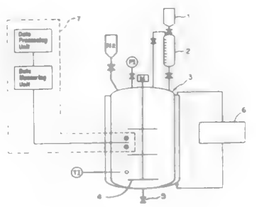
Norio Kawanami; Kiyotaka Kondo; Yoshihiro Ikeda; Tooru Nakagawa, both of Hyogo; Kensuke Itoh, Tokyo; Yukihiro Saiki, Saitama; Saburo Ishii, and Kenji Aoyama, both of Tokyo, all of Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd. and Snow Brand Milk Products Co., Ltd., both of Japan

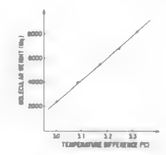
Continuation of Ser. No. 871,735, Apr. 21, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 155,657

Claims priority, application Japan, Apr. 22, 1991, 3-90454; Apr. 22, 1991, 3-90455

Int. Cl.[5] G01N *25/00*

U.S. Cl. 73—64.54 **2 Claims**





1. A method for the measurement of a molecular weight of a polymer during a present polymerization thereof which comprises the steps of:

heating a polymer portion with heating means,

measuring, with temperature measuring means, a difference between temperatures of at least two points of the poly-

VOL 1165 ISS 5 AG 30 1994 UMI

mer portion thereby determining an empirical point, each of said points being thermally influenced by said heating means differently from the other of said points, and

establishing the molecular weight of the polymer which corresponds to the difference between the temperatures obtained by the measuring step according to a predetermined relationship between the temperature difference and the molecular weight of the polymer, wherein

the predetermined relationship is obtained by first obtaining a calibration curve between the temperature difference and the molecular weight of the polymer in an earlier polymerization process, and then moving the calibration curve in parallel, while maintaining the shape of the calibration curve, so that the curve contains said empirically determined point measured during the present polymerization.

5,341,673

METHOD AND DEVICE FOR MONITORING OF MOISTURE IN SOIL

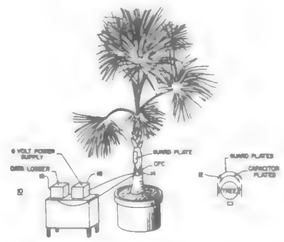
Michael J. Burns, Mountain View, and Noel M. Holbrook, La Houda, both of Calif., assignors to University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 816,737, Jan. 3, 1992, Pat. No. 5,224,769. This application May 21, 1993, Ser. No. 64,576

The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[5] G01N *27/22;* **G01R** *27/26*

U.S. Cl. 73—73 **10 Claims**



1. A device for monitoring moisture content of soil, comprising:

a timing capacitor having an electrical potential and comprising a plurality of conductive elements operable upon insertion into the soil to sense the hydration state capacitance of said soil;

a capacitance-to-frequency converter electrically connected to said timing capacitor and comprising an oscillator circuit having a frequency dependent upon the value of said timing capacitor and independent electrical losses in said timing capacitor;

means for supplying electrical power to said capacitance-to-frequency converter;

means for measuring the frequency generated by said capacitance-to-frequency converter, said frequency bearing a known relationship to the dielectric constant and, hence, the moisture content of said soil; and

means for electrically guarding said conductive elements from capacitance extraneous to said soil comprising means for surrounding said conductive elements with shields of electrical potential substantially equal to that of said timing capacitor.

5,341,674

METHOD AND ARRANGEMENT FOR WARMING UP INTERNAL COMBUSTION ENGINES ON A TESTING STAND

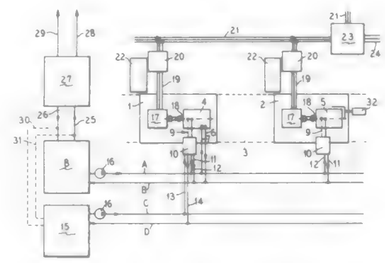
Wilhelm Kunzfeld, Graz, Austria, assignor to AVL Gesellschaft fuer Verbrennungskraftmaschinen und Messtechnik mbh. Prof. Dr. Dr. h.c. Hans List, Graz, Austria

Filed Mar. 12, 1992, Ser. No. 849,888

Claims priority, application Austria, Mar. 13, 1991, A 563/91

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—116 **12 Claims**



12. An apparatus for testing a plurality of air cooled internal combustion engines on a testing stand including at least one engine in operation and at least one engine not yet in operation comprising in combination:

means for circulating air over said air cooled engine in operation;

means for preventing said air circulation over said engine not yet in operation by a throttle arrangement for increasing the temperature of the engine not yet in operation prior to testing;

a lubrication heater connected to extract heat from lubricant supplied to said engine in operation and to deliver preheated lubricant to the engine not yet in operation prior to its operated for testing;

and a drag means for applying a testing load whereby the engine in operation can be tested in operation.

5,341,675

ASSEMBLY FOR IDENTIFYING THE DIRECTION OF POWER IN THE CASE OF TORQUE TRANSMISSION

Klaus Kämpf, Schlesierweg 4, D-5204 Lohmar 1; Hans-Jürgen Langen, St. Magdalenenstrasse 28, D-5020 Frechen 4, and Friedrich Herberg, Elly-Heuss-Knapp-Weg 18, D-6300 Giessen, all of Fed. Rep. of Germany

Filed Oct. 19, 1992, Ser. No. 963,058

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1991, 4134659

Int. Cl.[5] G01M *19/00;* **G01L** *3/06*

U.S. Cl. 73—118.1 **17 Claims**

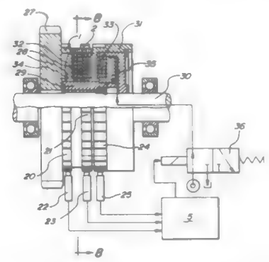
1. An assembly for identifying the direction of power in a driveline in the case of torque transmission comprising:

a positively driven first drive element;

a second drive element connected to said first element for passing on torque, said first and second drive elements, via a limited angle of rotation, being rotatable relative to each other in a torque-free way or at a predetermined torque value, said first and second elements in respective end positions relative to each other resting against non-rotating stops;

means for recording the respective relative position of rotation of the second drive element relative to the first drive element;

means for recording the direction of rotation of said first and second elements, and an evaluating unit for generating a signal characterizing the direction of power, said evaluation unit generating said signal as a function of the relative



positions of rotation of the drive elements and the directions of rotation.

5,341,676

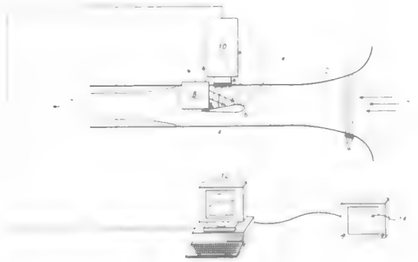
SURFACE PRESSURE MEASUREMENT BY OXYGEN QUENCHING OF LUMINESCENCE

Martin P. Gouterman, Seattle; Janet L. Kavandi, Renton; Jean Gallery, and James B. Callis, both of Seattle, all of Wash., assignors to The Board of Regents, Seattle, Wash.

Division of Ser. No. 570,275, Aug. 20, 1990, Pat. No. 5,186,046. This application May 11, 1992, Ser. No. 881,121

Int. Cl.[5] G01L *9/00*

U.S. Cl. 73—147 **31 Claims**



1. A method of measuring the pressure of an oxygen-containing gas on a surface, which comprises:

providing an aerodynamic surface coated with an oxygen-permeable film comprising sensors A and B, wherein

sensor A, upon irradiation with exciting wavelength λ_a, produces luminescence at an emission wavelength λ_A of intensity I_A that is dependent on both temperature and oxygen pressure, and

sensor B, upon irradiation with exciting wavelength λ_b, produces luminescence at an emission wavelength λ_B of intensity I_B that is dependent on temperature and independent of oxygen pressure;

causing an oxygen-containing gas to flow over said surface;

irradiating at least a portion of said surface with λ_a and λ_b, while said oxygen-containing gas is flowing over said irradiated surface;

detecting I_A and I_B, for a plurality of smaller areas of said irradiated surface; and,

comparing the I_A value for each smaller area to the corresponding I_B value for said smaller area to calibrate said I_A value to a reference temperature, thereby resulting in an indication of the pressure of said gas on said surface.

5,341,677

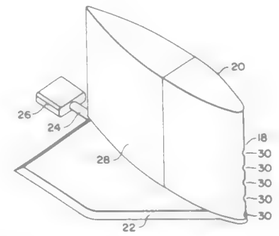
METHOD OF AERODYNAMIC STALL-TURBULENCE INDICATION

John M. Maris, 6 Lakeview Crescent, Cold Lake, Alberta, Canada T0A 0V2

Filed Nov. 20, 1992, Ser. No. 979,794

Int. Cl.[5] G01M *9/00*

U.S. Cl. 73—147 **14 Claims**



8. Apparatus for investigating airflow over the external surface of an airfoil comprising:

means to measure pressure in real-time at a predetermined location spaced from said surface

means to produce at least one output signal corresponding to said pressure,

means to separate said signal into steady state and overlaid ripple components

means to derive a dimensionless ratio of said overlaid ripple component and said steady state component to produce a pressure turbulence intensity factor.

5,341,678

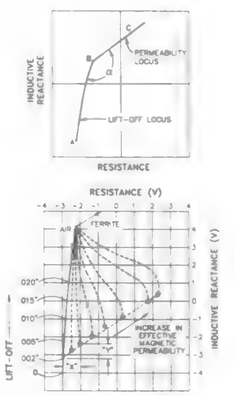
METHOD FOR DETERMINING THICKNESS OF FERROMAGNETIC MATERIAL DEPOSITION ON NUCLEAR FUEL RODS

John A. Kervinen, Palo Alto, Calif., assignor to General Electric Company, San Jose, Calif.

Filed May 12, 1993, Ser. No. 58,152

Int. Cl.[5] G01B *21/08*

U.S. Cl. 73—150 R **15 Claims**



1. A method for determining the thickness of a coating of substantially electrically insulating material formed on the surface of an electrically conductive component when said substantially electrically insulating material includes ferromag-

VOL 1165 ISS 5 AG 30 1994 UMI

netic material, said coating having an unknown thickness and an unknown permeability, comprising the steps of:

mapping a plurality of complex impedance data points for a probe of an eddy current sensor excited with an alternating current having a predetermined frequency, each data point being acquired in the presence of ferromagnetic material having a different respective effective permeability;

placing said probe in contact with said layer of substantially electrically insulating material of unknown thickness and unknown permeability;

exciting said probe with an alternating current having said predetermined frequency;

measuring the complex impedance of said excited probe in contact with said layer;

comparing said measured complex impedance of said probe to said data points; and

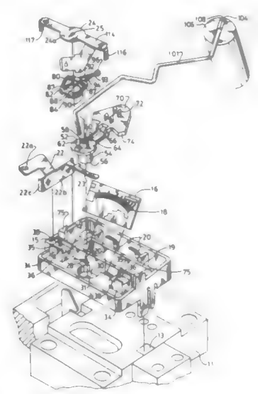
determining the portion of the inductive reactance component of said measured complex impedance which is attributable to the permeability of said layer of substantially electrically insulating material.

5,341,679

RESISTOR CARD FUEL LEVEL SENDER WITH FLOAT ARM ACTUATOR

Paul D. Walkowski, and Duane M. Schliebe, both of Ann Arbor, Mich., assignors to G.T. Products, Inc., Ann Arbor, Mich.

Filed May 14, 1993, Ser. No. 61,868
Int. Cl.[5] G01F *23/32, 23/36*
U.S. Cl. 73—317 **14 Claims**



7. An easily-manufactured, stable, accurate fuel level sender for sensing the level of liquid fuel in a fuel tank, the sender having a plastic rheostat housing for connection to the interior of a fuel tank, a resistor card connected to the plastic housing and defining an arcuate path of variably-resistive conductive pads, positive and ground terminals mounted on the plastic housing, a float arm assembly rotatably connected to the plastic housing to rotate in a plane parallel to the resistor card in response to liquid fuel level changes in the tank, a plastic support arm connected to pivot with the float arm assembly about a common axis between the float arm and the plastic housing, a conductive wiper arm carried by the support arm to rotate with float arm assembly, the wiper arm having a resistor contact in continuous sliding contact with the resistor card arc and at least one ground contact in continuous sliding contact with the ground terminal, the improvement comprising:

a first pivot bearing for the float arm assembly formed on the plastic housing below the plane of the resistor card;

an axial thrust bearing surface formed in the plastic housing, the support arm rotatably mounted on the thrust bearing surface;

a pair of spaced support posts formed on the plastic housing, the support posts providing a pair of support surfaces parallel to the plane of the resistor card and of the thrust bearing surface, the support surfaces located in a plane above the plane of the resistor card;

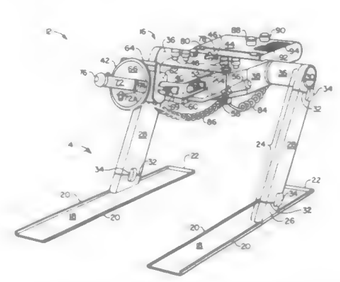
the ground terminal mounted on the support surfaces of the support posts, the ground terminal defining a second pivot bearing for the float arm assembly above the plane of the resistor card, the second pivot bearing coaxial with the first pivot bearing, the wiper arm carried on the support arm between the support arm and the ground terminal.

5,341,680

DISABLED DRIVER ASSESSMENT SYSTEM

Edwin D. Smart, Marion; Julie N. Dezern, Asheville; William B. Pendleton, Winston-Salem; Kenneth C. Pearson, Greenville; Allison M. Blui, Cary; James R. Machen; David E. Mehaffey, both of Charlotte; Edmund H. Machen, Charlotte, and Edgar B. Montague, Charlotte, all of N.C., assignors to NC Dept. of Human Resources, Division of Vocational Rehabilitation Services, Raleigh, N.C.

Continuation of Ser. No. 752,862, Aug. 30, 1991, abandoned.
This application Sep. 27, 1993, Ser. No. 127,989
Int. Cl.[5] A61B *5/22*
U.S. Cl. 73—379.06 **15 Claims**



1. A driver assessment system for assessing the driving ability of a disabled driver in order to enable prescribing structural modifications and adaptive driving equipment to customize a vehicle for said disabled driver comprising:

a frame adapted to receive a driver seated in a wheelchair;

a steering assembly mounted on the frame comprising a steering wheel rotatable by the driver, said steering wheel having a height, an angle, a position, and a diameter, means for adjusting the height of the steering wheel, means for adjusting the angle of the steering wheel plane, means for laterally adjusting the position of the steering wheel relative to the driver's mid-sagittal plane, and means for adjusting the diameter of the steering wheel;

a first force measuring means operatively connected with the steering wheel for measuring a steering force applied by the driver;

a hand control mounted on the frame and at least movable by the driver forward and backward and up and down;

a second force measuring means operatively connected with the hand control for measuring a force applied by the driver to the hand control; and

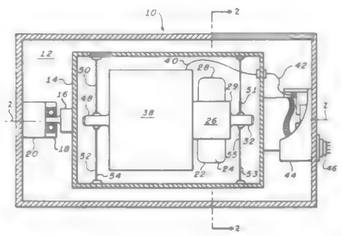
track means for positioning said wheelchair with respect to said assessment system thereby providing a reference for assessing structural modifications.

5,341,681

STEPPED GRAVITY GRADIOMETER

Marvin J. Molny, and Melvin Feinberg, both of Huntington, N.Y., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 27, 1987, Ser. No. 125,840
Int. Cl.[5] G01V *7/02*
U.S. Cl. 73—382 G **14 Claims**



1. An improved gradiometer for measuring gravity gradient components, of the type including a housing defining a chamber, a cage contained within the chamber and coupled to the housing such as to be rotatable relative to the housing about an axis of rotation, gradient sensor means disposed within the cage and having a sensing axis aligned in a plane orthogonal to the axis of rotation of the cage and responsive to gravitational accelerations parallel to the sensing axis, and further including electrical output means coupled to the gradient sensor means for providing an output signal corresponding to relative gravitational accelerations sensed by said gradient sensor means and indicative of at least one gravity gradient component, wherein the improvement comprises:

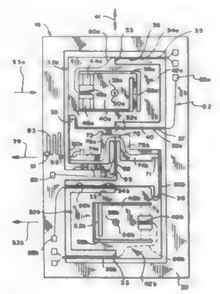
means for alternately and sequentially rotating said gradient sensor means over a predetermined angular displacement about said axis in first and second directions wherein said displacement does not exceed 360°, and wherein said output signal is periodically sensed in opposing directions while said gradient sensor means is stationary relative to said axis of rotation.

5,341,682

MICROMACHINED RATE AND ACCELERATION SENSOR

Rand H. Hulsing, II, Redmond, Wash., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 653,533, Feb. 8, 1991, Pat. No. 5,241,861.
This application Jun. 8, 1993, Ser. No. 73,814
Int. Cl.[5] G01P *9/04*
U.S. Cl. 73—505 **27 Claims**



1. Apparatus for measuring the specific force and angular rotation rate of a moving body, comprising:

a) a monolithic substrate having first and second substantially planar surfaces disposed substantially parallel to each other;

b) a first accelerometer formed of said substrate and having a first force sensing axis for producing a first output signal indicative of the acceleration of the moving body along said first force sensing axis, said first accelerometer having a proof mass, a support frame, and at least one flexure connecting said proof mass to said support frame;

c) a second accelerometer formed of said substrate and having a second force sensing axis for producing a second output signal indicative of the acceleration of the moving body along said second force sensing axis, said second accelerometer having a proof mass, a support frame, and at least one flexure connecting said proof mass to said support frame;

d) a dither frame formed of said substrate, said dither frame being of a rectangular configuration having first and third opposing members and second and fourth opposing members;

e) a first pair of S-bend flexures connected between said support frame of said first accelerometer and said dither frame, and a second pair of S-bend flexures connected between said support frame of said second accelerometer and said dither frame, said S-bend flexures being formed of said substrate for mounting said first and second accelerometers such that said first and second force sensing axes are both oriented at the same angle with respect to said first and second surfaces and such that said first and second accelerometers can be moved along a vibration axis perpendicular to each of said first and second sensing axes;

f) link means having first and second points connected respectively to said first and second accelerometers, a pivoting point disposed intermediate between said first and second connected points, and support means for affixedly disposing said pivot point with respect to said frame to permit said link means to pivot there about and, when one of said first and second accelerometers is moved, to impart an equal and opposite motion to said other of said first and second accelerometers;

g) drive means coupled to each of said first and second accelerometers for imparting a dithering motion thereto of a predetermined frequency along said vibration axis; and

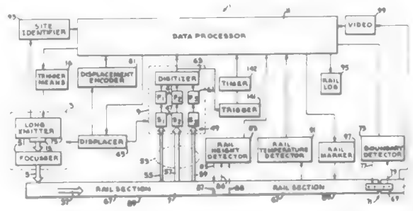
h) said substrate having a rate axis perpendicular to each of said first and second force sensing axes and said vibration axis, whereby said first and second output signals have a Coriolis component indicative of the angular rotation of he moving body about said axis.

5,341,683

DYNAMIC RAIL LONGITUDINAL STRESS MEASURING SYSTEM

Donald S. Searle, 206 Main St., Hartville, Wyo. 82215

Filed Jun. 2, 1992, Ser. No. 892,183
Int. Cl.[5] G01N *29/18, 29/24*
U.S. Cl. 73—597 **21 Claims**



1. An apparatus for dynamically measuring the longitudinal stress in a continuous rail constructed from rail sections con-

VOL 1165 ISS 5 AG 30 1994 UMI

nected in an end-to-end configuration and having a boundary, comprising:

(a) transmitter means transmitting an ultrasonic pulse into said rail to cause propagation through said rail in a longitudinal direction thereof;

(b) receiver means receiving said ultrasonic pulse after propagation through said rail in a propagation path;

(c) path measuring means connected to said receiver means and operative to measure a path variation in said path from a reference propagation path; and

(d) processor means connected to said path measuring means and operative to evaluate a longitudinal stress in said rail from said path variation of said rail.

5,341,684

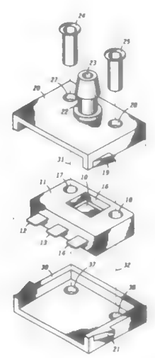
PRESSURE SENSOR BUILT INTO A CABLE CONNECTOR

Victor J. Adams, Tempe; Sidney H. Griest, and John W. Hart, Jr., both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1992, Ser. No. 986,411

Int. Cl.[5] G01L *7/08, 9/06*

U.S. Cl. 73—756 **5 Claims**



1. A pressure sensor built into a cable connector, comprising:

a semiconductor pressure sensor that is on a semiconductor chip which also includes an analog-to-digital converter, a resistor bridge, an amplifier and temperature compensation;

a pressure sensor package for receiving the semiconductor pressure sensor, wherein the pressure sensor package has walls through which cable connector leads extend, the walls forming an enclosure for the semiconductor pressure sensor and the semiconductor pressure sensor being wirebonded to the connector leads: and

a housing for enclosing the pressure sensor package, the housing providing a protective cover for the connector leads, and the connector leads being for directly receiving a cable connector, and wherein the housing has a port for conveying an external pressure to be measured to the pressure sensor.

5,341,685

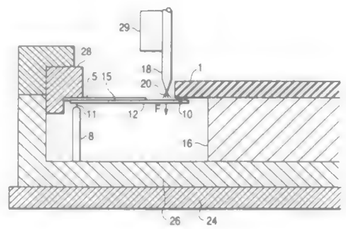
METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING OF INNER LEAD TAB BONDS AND SEMICONDUCTOR CHIPS

Steven Malone, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Apr. 5, 1993, Ser. No. 42,632

Int. Cl.[5] G01N *3/08*

U.S. Cl. 73—827 **19 Claims**



1. An apparatus for determining the operability of a semiconductor chip including at least one bond between the semiconductor chip and at least one electrical lead, the at least one electrical lead having a first surface, the at least one bond connecting the first surface to the semiconductor chip, the apparatus comprising:

a handling carrier rigidly supporting the semiconductor chip;

a test socket for containing the handling carrier and for providing an electrical path from the test socket to the at least one electrical lead and through the at least one bond to the semiconductor chip and back;

means for applying an electrical signal to the electrical path for generating an output signal;

a gas nozzle, positionable near the first surface for directing a gas flow at the first surface while an electrical signal is applied to the electrical path, the gas nozzle for generating a force on the electrical lead in a direction away from the semiconductor chip; and

means for comparing the output signal with a predetermined, characteristic signal for determining operability of the semiconductor chip and at least one bond.

5,341,686

VERTICALLY DISPOSED WATER METER

Wen L. Chai, No. 1, Wen Chang Road, Yu Min Ts'un, Erh Shui Hsiang, Changhua Hsien, Taiwan

Filed Sep. 14, 1993, Ser. No. 120,364

Int. Cl.[5] G01F *1/06*

U.S. Cl. 73—861.33 **1 Claim**

1. An improved vertical water meter, comprising:

a meter body having an extended bottom portion and a plurality of spaced first oval holes at one end thereof;

a rotation propeller;

a cone-shaped block having a central cavity;

a housing cavity having a vertical water inlet duct and a horizontal water outlet duct;

an elbow tube connected to said horizontal water outlet duct;

a check valve being connected to said elbow tube;

a removable tube being connected to said vertical water inlet duct;

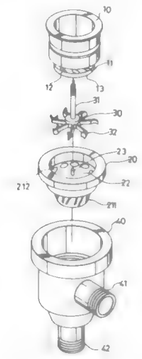
a ball valve being connected to said vertical water inlet duct;

said rotation propeller having an extended driving shaft and a plurality of spaced blades;

said cone-shaped block being provided with a mounting post at the center of said central cavity; and a plurality of spaced second oval holes on the periphery of said central cavity; a plurality of spaced slots disposed at the end of said cone-shaped block;

a round hole being disposed at the center of said extended bottom portion and engaged with one end of said driving shaft;

said rotation propeller being mounted to said mounting post at one end and engaged with said round hole at the other;



said rotation propeller being housed between said meter body and said central cavity of said cone-shaped block;

said cone-shaped block and said meter body being received in said housing cavity;

whereby water led into said vertical inlet duct and further into said cone-shaped block via said slots and said second oval holes and discharged out thereof via said spaced first oval holes at one end of said meter body.

5,341,687

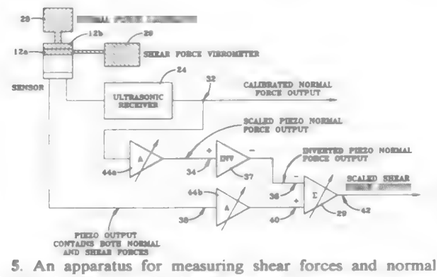
3-DIMENSIONAL PRESSURE SENSOR

Aurel V. Stan, Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 16, 1992, Ser. No. 976,856

Int. Cl.[5] G01L *3/00*

U.S. Cl. 73—862.046 **9 Claims**



5. An apparatus for measuring shear forces and normal forces of an elastomeric object comprising

a) at least one sensor comprising a piezoelectric material, having conductive surfaces on both sides thereof and an axis of orientation, and generating an electrical voltage in response to pressure contact;

b) an ultrasonic pulsing source in proximity to said at least one sensor scuh that said pulsing source is capable of stimulating an ultrasonic echo in said sensor;

c) means for measuring normal forces on said sensor using an ultrasonic echo;

d) means for measuring shear forces and normal forces on said sensor by measuring a voltage generated by said sensor; and

e) means for subtracting normal forces measured by ultrasonic means from total forces measured by said generated voltage to provide a measure of pure shear forces.

5,341,688

FORCE TRANSDUCER

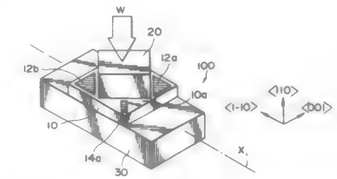
Takeshi Morikawa, Aichi; Kouji Tsukada, Seto; Yutaka Nonomura, Nagoya, and Yoshiteru Omura, Seto, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Dec. 23, 1992, Ser. No. 995,826

Claims priority, application Japan, Dec. 26, 1991, 3-113507[U]

Int. Cl.[5] G01L *1/16*

U.S. Cl. 73—862.68 **20 Claims**



1. A force transducer comprising:

(a) an N-type silicon single crystal having a crystal face of (110) on which a force is to applied;

(b) a pair of first electrodes and a pair of second electrodes mounted on the crystal face of (110) of said N-type silicon single crystal, said first electrodes facing in a direction angularly spaced by 135 degrees from a direction of <001> of the crystal, and said second electrodes being angularly spaced by 90 degrees from said first electrodes, one of said pairs of first and second electrodes being adapted to serve as input electrodes and the other being adapted to serve as output electrodes;

(c) a force transmission block connected to the crystal face of (110) of said N-type silicon single crystal for transmitting the force perpendicularly to the crystal face; and

(d) a support bed supporting said N-type silicon single crystal and connected to said N-type silicon single crystal at a face opposite to the crystal face to which said force transmission block is connected, said support bed being in the form of a planar body having a horizontal cross-sectional shape with a short axis and a long axis which are different in length.

5,341,689

PEN FORCE GAGE FOR A PEN PLOTTER

Richard Freudenberger, Fountain Valley, Calif., assignor to CalComp Inc., Anaheim, Calif.

Filed Apr. 30, 1993, Ser. No. 54,488

Int. Cl.[5] G01L *1/00*

U.S. Cl. 73—862.541 **12 Claims**

1. A pen force gage for a pen plotter for determining whether the force of a pen positioned by a pen support on the surface of a drawing media in said pen plotter falls within a range of upper and lower pen force limits comprising:

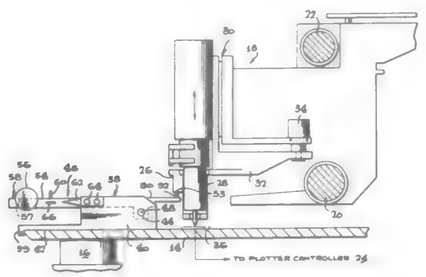
alignment means for positioning said gage within said pen plotter so as to enable said gage to measure said force of said pen;

engagement means for interacting with said pen support as said pen moves toward said surface of said media; and

measurement means coupled to said engagement means for

VOL 1165 ISS 5 AG 30 1994 UMI

determining said force to be applied by said pen on said surface of said media, said measurement means including



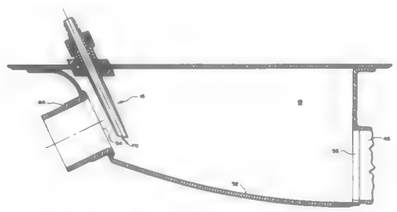
indicator means for indicating whether said force falls within said range of upper and lower pen force limits.

5,341,690

COMPOSITE WASTEWATER SAMPLER

Brian D. Dawson, and Richard D. Hartz, both of Lincoln, Nebr., assignors to Isco, Inc., Lincoln, Nebr.

Filed Oct. 13, 1989, Ser. No. 421,559
Int. Cl.[5] G01N *1/14, 1/20*
U.S. Cl. 73—863.61 **24 Claims**



1. A wastewater composite sampler comprising:

a flow-through-chamber having an inlet port and an outlet port;

said inlet port and outlet port being adapted to communicate with a wastewater pipe so that wastewater flows from the inlet port into the flow-through-chamber and into the outlet port back into the wastewater pipe;

said flow-through-chamber being contoured to cause wastewater flowing from the inlet port to drop to a lower level;

an intake nozzle having a longitudinal axis and a tip positioned with its tip located so that the wastewater falling to the lower level flows over at least a lower portion of the intake nozzle;

the intake nozzle having a slight taper about its longitudinal axis and an intake opening at its tip shaped to cancel venturi forces; and

means for pumping wastewater upwardly through the intake nozzle for collection.

5,341,691

DUAL USE PRESSURIZED AND UNPRESSURIZED OIL SAMPLING APPARATUS

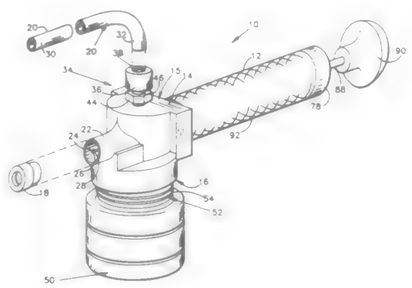
Rex D. Callis, 2904 Hamburg Pike, Jeffersonville, Ind. 47130, and John M. Callis, 7713 Old Hwy. 60, Sellersburg, both of Ind. 47172

Filed Mar. 31, 1992, Ser. No. 860,145
Int. Cl.[5] G01N *1/14*
U.S. Cl. 73—863.83 **19 Claims**

1. An oil sampling apparatus for taking samples form either pressurized or non-pressurized oil sources, the apparatus comprising

a body having an upper and a lower side, the body being configured to define an conduit therethrough extending between the upper and lower sides, a neck recepticale define adjacent to said lower side in fluid communication with the conduit, a vacuum passageway defined to extend through the body in direct fluid communication with the neck receptacle, a pressurized oil passageway defined to extend through the body in fluid communication with the conduit, and the body further defining a right tube having a tube interior connectable between a source of pressurized oil and the pressurized oil passageway,

a sample bottle positionable adjacent to the lower side of the body in fluid tight communication with the the neck receptacle,



a manually operated vacuum pump attached in fluid communication to the vacuum passageway,

a needle positioned in the tube interior and configured to trigger release of pressurized oil from the source of pressurized oil when connected to the source of pressurized oil,

a flexible tube insertible through the upper side of the body into the conduit for conveying oil between a non-pressurized oil source and the conduit,

a coupling system attached to the upper side of the body to connect the flexible tube in fluid tight connection with the conduit, and

a removable seal for removably sealing the tube interior to promote drawing a vacuum in the conduit when oil is drawn by action of the manually operated vacuum pump from a non-pressurized oil source through the flexible tubing into the conduit.

5,341,692

DEVICE FOR TAKING, PRESERVING AND TRANSPORTING A FLUID SAMPLE FOR ANALYSIS

Samuel E. Sher, Rockaway; Stephen A. Borgianini, Mount Holly; Robert E. Carpenter, Nutley; Scott Santora, Hammonton, and William S. Scavuzzo, Clark, all of N.J., assignors to Norton Company, Worcester, Mass.

Filed Nov. 12, 1991, Ser. No. 792,324
Int. Cl.[5] G01N *1/12*
U.S. Cl. 73—864.63 **15 Claims**

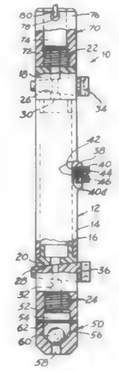
1. A device for taking a preserving a fluid sample for analysis comprising:

a tubular body including an outer wall extending around an inner chamber; opposite inlet and outlet end portions sealingly attached to and extending from opposite ends of the outer wall and having inlet and outlet passages extending therethrough to the inner chamber;

gas tight valve means in the inlet and outlet end portions for selectively allowing and preventing the flow of fluid through the inlet and outlet passages and into and out of the inner chamber;

an access passage into the inner chamber positioned in between the gas tight valve means;

seal means including a self sealing septum adjacent the inner chamber for sealing off the access passage to the inner chamber and which functions as a port for withdrawing a



sample of the fluid sealed within the inner chamber for analysis by means of sealably inserting a hypodermic needle of any suitable device through the septum; and

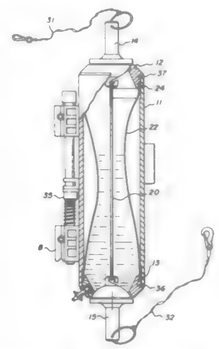
fastening means on both the inlet and outlet end portions for selectively connecting additional attachments or adapters and another of the said device thereto.

5,341,693

DOUBLE WALL SAMPLER

John Banu, Plantation, Fla., assignor to Ocean Test Equipment, Inc., Fort Lauderdale, Fla.

Filed Jan. 14, 1993, Ser. No. 4,414
Int. Cl.[5] G01N *1/12*
U.S. Cl. 73—864.67 **5 Claims**



1. In a water sampler of the type having a substantially rigid body with two end portions with openings for receiving a water sample, two end plugs for closing the openings, and means for closing the end plugs by remote action so as to entrap a water sample in the substantially rigid body, wherein the improvement comprises:

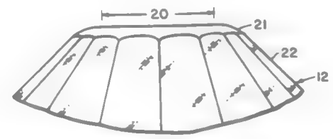
flexible liner means disposed within the rigid body for receiving the water sample and for preventing direct contact between the water sample and the rigid body, upper collar means disposed between the rigid body and an upper end plug, lower collar means disposed between the rigid body and a lower end plug, said flexible liner means being sealingly attached to said upper and lower collar means, said flexible liner means together with said upper and lower collar means and the upper and lower end plugs defining a sealed container for a water sample.

5,341,694

DIAMOND ANVIL HAVING DIAMONDS WITH CURVED EDGES

George R. Kaplan, Rye Brook, N.Y., assignor to Lizare Kaplan International, Inc., New York, N.Y.

Filed Mar. 12, 1992, Ser. No. 849,867
Int. Cl.[5] G01N *1/28, 21/84*
U.S. Cl. 73—864.91 **6 Claims**



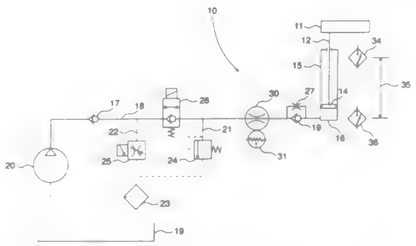
1. In diamond anvil apparatus comprising (a) a pair of diamonds having facing, plane parallel bearing surfaces and (b) means for applying a force to said diamonds tending to press said bearing surfaces together, the improvement wherein both of said diamonds have a peripheral surface, extending outward from said bearing surface, which is tangent to said bearing surface at the interface thereto and which tapers away from said bearing surface with a continuous curved surface.

5,341,695

MATERIAL HANDLING VEHICLE CARRIAGE HEIGHT MEASUREMENT

Isaac Avitan, Vestal, N.Y., assignor to The Raymond Corporation, Greene, N.Y.

Filed Feb. 7, 1992, Ser. No. 832,457
Int. Cl.[5] G01F *15/02*
U.S. Cl. 73—1 J **5 Claims**



1. An apparatus for determining the height of a carriage that is movably disposed upon a material handling vehicle, said height being obtained as a function of hydraulic flow rate of fluid utilized to raise and lower said carriage of said vehicle, comprising:

hydraulic moving means for raising and lowering a carriage movably disposed upon a material handling vehicle;

means defining a travel path along which said carriage is raised and lowered;

a source of hydraulic fluid;

pumping means connected to said hydraulic fluid source and to said hydraulic moving means for actuating said hydraulic moving means to raise and lower said carriage;

a flow sensor associated with said pumping means for sensing a flow rate value and direction of said hydraulic fluid

VOL 1165 ISS 5 AG 30 1994 UMI

when raising and lowering said carriage, and for providing an electrical signal indicative of the flow rate and flow direction, said flow sensor having different forward and reverse flow characteristics, wherein said generated signal is dependent upon fluid flow direction;

conversion means operatively connected to said flow sensor for converting said electrical signal into a height value of said raised or lowered carriage; and

a pair of reference switches operatively connected to said flow sensor and said conversion means, and disposed along said travelpath of said carriage for providing said conversion means with a unitary distance factor per electrical signal of said flow sensor.

5,341,696

PROCESS AND DEVICE FOR PRODUCING A PEEL OR TEAR TEST SPECIMEN ON A WELDED COMPOUND SHEET

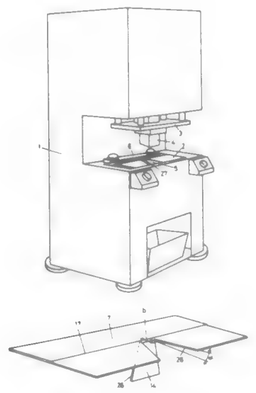
Georg Benedikt, Schaffhausen, and Werner Urech, Kaiserstuhl, both of Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Filed Apr. 2, 1993, Ser. No. 41,939

Claims priority, application Switzerland, Apr. 3, 1992, 01087/92; May 12, 1992, 01522/92

Int. Cl.[5] G01M *19/00;* **B21D** *28/10*

U.S. Cl. 73—827 **14 Claims**



1. Device for carrying out the process of producing a peel or tear test specimen on a welded compound sheet or part thereof characterized by a table to support the compound sheet or part thereof, an actuating device, a cutting and bending punch arranged above the table and connected to the actuating device to produce a cutout in the compound sheet or part thereof and pulling means arranged underneath the table for gripping and exerting a defined tension on the cutout.

5,341,697

SHIFT LEVER SUPPORTING DEVICE FOR STARTER MOTOR

Shuzo Isozumi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,468

Claims priority, application Japan, Mar. 30, 1992, 4-105510

Int. Cl.[5] F02N *15/06*

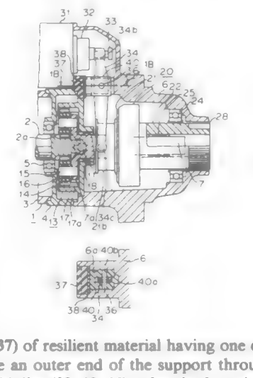
U.S. Cl. 74—7 A **1 Claim**

1. A shift lever supporting device for a starter motor which comprises:

a shift lever (**34**) having one end engaged with an axially movable hook (**33**) of an electromagnetic switch, another, opposite end having a stirrup shaped form to straddle an annular groove formed in an overrunning clutch so as to move said clutch in an axial direction, and a pivotally supported intermediate portion, the overrunning clutch being movable forwardly and rearwardly by the pivotal movement of the shift lever under the control of the switch;

a unitary cylindrical support (**40**; **41**; **45**) defining, at an axial inner end, a diametrical groove (**40***a*; **41***a*, **45***a*) into which the intermediate portion of the shift lever is inserted;

a pivot pin (**36**) inserted through respective holes individually formed in the support and the intermediate portion of the shift lever to pivotally support the shift lever; and



a packing (**37**) of resilient material having one end disposed proximate an outer end of the support through an interposed rigid disc (**38**; **42**; **44**), wherein the unitary cylindrical support, the disc and the packing are disposed in a cylindrical opening (**6***a*) formed in a front motor bracket (**6**) having upper and lower slots into which upper and lower arms of the shift lever are inserted, the cylindrical opening facing, in an axial direction, another motor bracket (**4**) against which another, opposite end of the packing is supported.

5,341,698

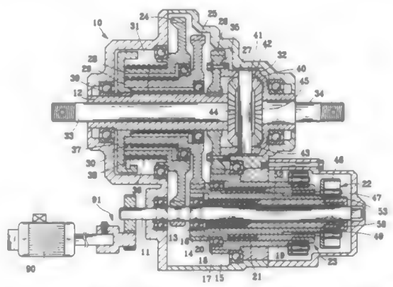
FULL MESHING GEAR TYPE VARIABLE SPEED TRANSMISSION FOR ELECTRIC CARS

Sheng-Tsai Tseng, No. 5-3, Chia An W.Road, Chia An Tsun, Long Tang Hsian, Taoyuan Hsien, Taiwan

Filed Dec. 4, 1992, Ser. No. 986,008

Int. Cl.[5] F16H *3/08*

U.S. Cl. 74—359 **4 Claims**



1. A variable speed transmission for electric car, comprising:

a dynamic power source;

a mainshaft operatively connected to the dynamic source;

a transmission housing;

an auxiliary axle housing

in which power from the mainshaft is transmitted to a plurality of different pairs of gears in the transmission housing, each pair of gears comprising a driving gear and a driven gear that are meshed with each other, the number of gear teeth of this driving gear is increasing from a primary driving gear and decreasing to a final driven gear, the primary driving gear being directly attached to and rotated synchronously with the mainshaft while the rest of the driving gears have individual extension housings interlocked to the mainshaft from an inner end to an outer end in an alternating order such that the mainshaft cannot directly transmit its power to these driving gears, the final driven gear being directly attached to the auxiliary axle housing thus the two such that they can rotate synchronously, the driven gears having individual extension housings interlocked to an exterior of the auxiliary axle housing from an outer end to an inner end in an alternating order such that the driven gears can rotate the auxiliary axle housing

only when the mainshaft is rotating in a forward direction by transmitting its power to a one-way spiral spring of a second driven gear and the rest of the gears, one-way spiral spring of the driving gears installed between the extension housing of the second main gear and the main shaft, and between two adjacent extension housings of the driving gears, each spiral spring of the driving gears being interlocked to the extension housing of the next higher driving gear such that each pair can rotate synchronously, whereby each spiral spring of a driving gear may be compressed against the mainshaft and extension housing of a lower driving gear thereby enabling the driving gear to be rotated by the mainshaft;

further one-way spiral springs installed between adjacent extension housings of the driven gears and between the extension housing of the next to the last driven gear and the auxiliary axle housing, Such that each of the further one-way spiral springs transmits its power to the auxiliary housing when the mainshaft is rotating in a forward direction, whereby the further spiral spring allows an extension housing of a lower driven gear to rotate at a lower speed than an extension housing of a higher driven gear;

a reverse gear driven assembly directly attached to the auxiliary axle housing so as to rotate synchronously with the auxiliary axle housing;

a reverse gear spiral spring installed between an extension housing of the primary driven gear and the reverse gear driven assembly, whereby the reverse gear spiral spring can transmit power on the extension housing of the primary driven gear to the reverse gear assembly when the mainshaft is rotating in a reverse direction; and

a plurality of automatic gravity type shifting assemblies installed in the extension housings of the driving gears, each automatic gravity type shifting assembly interlocking with a one-way spiral spring of the driving gear by a driven shifting part, such that centrifugal action the shifting part to shift from a holding position when the auxiliary axle housing rotational speed is less than a pro-set limit of the automatic gravity type shifting assembly, whereby the shifting part does not interlock with a spiral spring of the driving gear and thus it cannot directly be driven by the mainshaft to a driving position in which the spiral spring of the driving gear is compressed inward towards one of the mainshaft and the extension housing of a lower gear and then rotated synchronously when the shifting part is shifted to a position whereby in gear, and power is transmitted ,from the mainshaft to the extension housing of the higher gear, thus the mainshaft and the auxiliary axle housing will have a variable speed ratio.

5,341,699

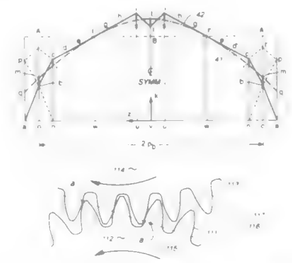
ZERO DYNAMIC INCREMENT GEARING

William S. Rouverol, Berkeley, Calif., assignor to Axicon Gear Company, Berkeley, Calif.

Filed Apr. 6, 1993, Ser. No. 43,375

Int. Cl.[5] F16H *55/08*

U.S. Cl. 74—462 **52 Claims**



1. A pair of gears having mating teeth with differential crowning, the tooth pair stiffness curve of said gears being a self-complementary curve.

2. A pair of gears having mating teeth with differential crowning, the tooth pair stiffness curve of said gears being a self-complementary curve with a synchronization ratio of at least two, said differential crowning including supplementary crowning at at least one roll angle one pitch angle smaller than the roll angle of a point on one of the loading ramps of said stiffness curve.

5,341,700

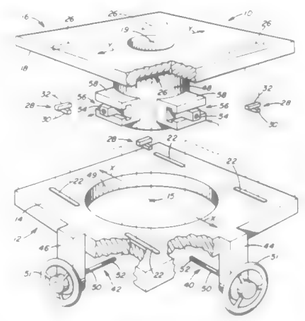
X-Y MOVEMENT MECHANISM

Richard J. Speranza, Jeannette, and Richard A. Speranza, Export, both of Pa., assignors to Speranza Specialty Machining, Export, Pa.

Filed Dec. 17, 1992, Ser. No. 992,170

Int. Cl.[5] G05G *11/00;* **F16C** *33/00*

U.S. Cl. 74—479 MF **24 Claims**



1. An X-Y movement mechanism comprising:

a fixed base having first surface means;

a movable member having second surface means;

said movable member being disposed for movement relative to said fixed base with said second surface means being parallel with and facing toward said first surface means;

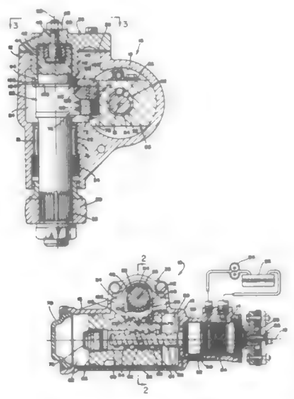
said fixed base having first groove means in said first surface means extending in an X direction;

said movable member having second groove means in said second surface means extending in a Y direction;

VOL 1165 ISS 5 AG 30 1994 UMI

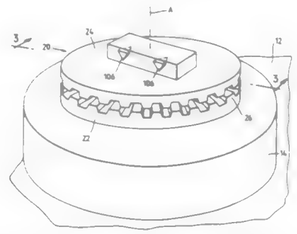
said X direction being different from and at an angle with respect to said Y direction;
said X direction and said Y direction being parallel to said first surface means and to said second surface means;
said first groove means and said second groove means respectively having overlying regions when said movable member is disposed for said movement relative to said fixed base;
X-Y guide means having a first half and a second half;
said first half being disposed in said first groove means for sliding, non-rotating relative movement therebetween in said X direction;
said second half being disposed in said second groove means for sliding, non-rotating relative movement therebetween in said Y direction;
said first half and said second half including portions thereof disposed within said overlying regions of said first and said second groove means;
said first surface means including a first planar surface;
said second surface means including a second planar surface;
said first planar surface and said second planar surface being in sliding contact throughout said movement of said movable member relative to said fixed base;
said first groove means, said second groove means, and said X-Y guide means being substantially confined between said fixed base and said movable member;
said first planar surface and said second planar surface including regions of said sliding contact surrounding said first groove means, said second groove means and said X-Y guide means; and
whereby said movable member is capable of movement in said X direction as said first half of said X-Y guide means moves in said X direction along said first groove means and in said Y direction as said second groove means moves in said Y direction on said second half of said X-Y guide means.

5,341,701
STEERING GEAR FOR MOTOR VEHICLE
Lynn C. Krom, Bay City, and Duane K. Dye, Saginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 9, 1993, Ser. No. 73,868
Int. Cl.[5] B62D *3/08;* **F16H** *55/28*
U.S. Cl. 74—499 **3 Claims**



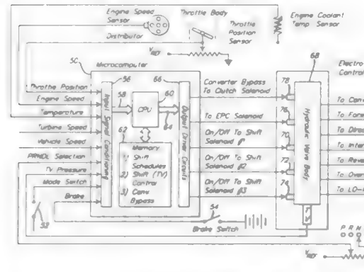
1. In a motor vehicle steering gear of the type including
a housing,
a worm shaft supported on said housing for rotation about a first centerline of said housing,
a cylindrical rack piston supported on said housing for bodily movement along and limited rotation about said first centerline,
screw thread means connecting said worm shaft to said rack piston such that rotation of said worm shaft effects concurrent bodily movement of said rack piston in the direction of said first centerline, and
a pitman shaft supported on said housing for rotation about a second centerline of said housing perpendicular to said first centerline and laterally offset therefrom,
the combination comprising:
means defining a plurality of straight rack gear teeth on a planar wall of said rack piston generally parallel to said second centerline,
means defining a plurality of straight sector gear teeth on said pitman shaft generally parallel to said second centerline meshing with said rack gear teeth so that bodily movement of said rack piston along said first centerline in opposite directions from a center position thereof corresponding to straight ahead driving effects concurrent rotation of said pitman shaft about said second centerline in opposite directions from a center position thereof corresponding to straight ahead driving,
a flat plunger,
means mounting said plunger on a planar surface of said pitman shaft for bodily movement relative thereto in a plane perpendicular to said second centerline and spaced apart from said first centerline and for rotation relative to said pitman shaft in said plane perpendicular to said second centerline, and
a leaf spring between said plunger and said pitman shaft biasing said plunger radially outward relative to said second centerline so that an outer edge of said plunger bears against said rack piston whereby said rack piston and said pitman shaft in said center positions thereof are urged in opposite linear directions against said housing to remove side clearance and said rack piston is rotatably biased about said first centerline to wedge said rack gear teeth against said sector gear teeth to remove lash therebetween.

5,341,702
APPARATUS FOR CALIBRATION OF AN ANGULAR DISPLACEMENT
Raymond J. Chaney, Berkeley, and Jeffrey Graham, Wotton-Under-Edge, both of United Kingdom, assignors to Renishaw Transducer Systems Limited, Gloucestershire, United Kingdom
PCT No. PCT/GB92/01653, § 371 Date Apr. 13, 1993, § 102(e) Date Apr. 13, 1993, PCT Pub. No. WO93/05360, PCT Pub. Date Mar. 18, 1993
PCT Filed Sep. 10, 1992, Ser. No. 39,188
Claims priority, application United Kingdom, Sep. 10, 1991, 9119304.5
Int. Cl.[5] B23B *29/24;* **B23Q** *16/00*
U.S. Cl. 74—821 **7 Claims**



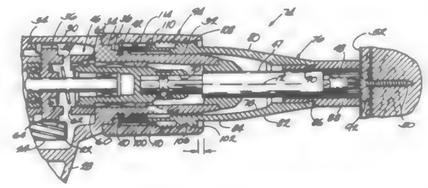
1. Apparatus for measuring angular displacement of a support mounted for rotation relative to a base of a rotary table, the apparatus comprising:
an indexing table including a stator which, in use, is mounted to the support of the rotary table, and a rotor rotatable relative to the stator between a plurality of discrete angular rest positions;
an angular interferometer for measuring angular displacement of said rotor of said indexing table;
a motor provided on said indexing table for rotating said rotor relative to said stator in response to a control signal; and
a control for;
(a) receiving a value of angular displacement from said interferometer;
(b) determining whether said value is equal to or exceeds a predetermined threshold value; and
(c) generating said control signal in response to said value equalling or exceeding said predetermined threshold value to cause said motor to counter-rotate said rotor.

5,341,703
PERFORMANCE MODE AND ECONOMY MODE SHIFT SCHEDULING IN AN AUTOMATIC TRANSMISSION
Bruce J. Palansky, Livonia; Thomas L. Greene, Plymouth; John A. Daubenmier, Canton; Paul F. Smith, Dearborn Heights, all of Mich.; Karl H. Kock; Stuart L. Bird, both of Cologne, Fed. Rep. of Germany, and Gavin F. McCall, Witham, England, assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 4, 1993, Ser. No. 27,514
Int. Cl.[5] B60K *41/18*
U.S. Cl. 477—65 **8 Claims**



1. A system for controlling gearshifts in an automatic, multiple gear ratio transmission for an automotive vehicle having an engine controlled by the position of an engine throttle comprising:
hydraulically-actuated friction elements selectively engaged and released to produce multiple gear ratios;
a hydraulic circuit having multiple shift control valves for selectively engaging and releasing said friction elements;
means for determining current position of the engine throttle and time rate of change of the throttle;
means for determining current vehicle speed;
means for determining the currently engaged gear ratio;
means for selecting predetermined performance weighting factors PWF having values associated with paired combinations of the current throttle position and current time rate of change of throttle position;
means for establishing first vehicle speeds FNXXN corresponding to the current throttle position at which gear ratio changes are scheduled to occur from each gear ratio when the vehicle is in a reference mode of operation, and for establishing the difference FNXXP between said first vehicle speeds and the vehicle speeds corresponding to the current throttle position at which gear ratio changes are scheduled to occur from each gear ratio when the vehicle is in a second mode of operation;
means for calculating second vehicle speeds corresponding to upshifts and downshifts from the current gear ratio from the relation [FNXXN+(PWF*FNXXP)];
means for commanding a change to a higher gear ratio from the current gear ratio if the current vehicle speed exceeds the second vehicle speed corresponding to an upshift from the current gear ratio, and for commanding a change to a lower gear ratio from the current gear ratio if the current vehicle speed exceeds the second vehicle speed corresponding to a downshift from the current gear ratio; and
means responsive to the commanded change in gear ratio for changing the state of shift valves and friction elements to a state that produces the commanded gear ratio.

5,341,704
DEPTH ADJUSTMENT ASSEMBLY FOR POWER TOOL
Robert W. Klemm, Colgate, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.
Filed Jan. 15, 1993, Ser. No. 4,935
Int. Cl.[5] B25B *23/00*
U.S. Cl. 81—429 **19 Claims**



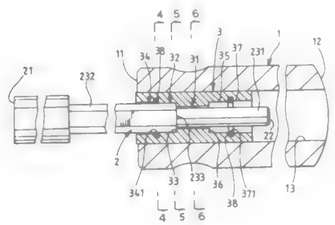
1. A depth adjustment assembly for a hand-held tool, the tool including a housing, the depth adjustment assembly comprising:
a locator adapted to extend forwardly from the housing and having a central bore adapted to house a tool attachment, and
means for adjustably attaching the locator to the housing such that the position of the locator can be adjusted forwardly and rearwardly with respect to the housing, the means for adjustably attaching the locator to the housing including means for supporting the locator for rotation with respect to the housing to provide for axial adjustment of the position of the locator with respect to the housing, and the means for adjustably attaching the locator to the housing including means for supporting the locator such that the locator can be removed from the housing without varying the relative axial position of the locator with respect to the housing when the locator is repositioned on the housing.

5,341,705
ASSEMBLY SCREW DRIVER
Ming-Chen Lin, 5, Lane 1072, Min Tsu I Road, Tso Ying District, Kaohsiung, Taiwan
Filed May 10, 1993, Ser. No. 59,259
Int. Cl.[5] B25B *15/02*
U.S. Cl. 81—438 **7 Claims**

1. An assembly screw driver comprising:
a handle having a front end and a rear end, and a through hole connecting said front end and said rear end; and
a body having a front end and a rear end, said rear end connecting to a base, the outside diameter of said body being smaller than the inside diameter of said through hole of said handle; wherein
said base of said body has a push bar which is connected to an angular portion, forming a shoulder at the joint of said push bar and said angular portion; and

VOL 1165 ISS 5 AG 30 1994 UMI

a tubular support device is fixed inside said through hole near said front end of said handle, the middle portion of said support device being a chamber which extends forwardly in the direction of said front end to connect with a front sleeve portion which comprises a front internal angular portion and a front clamp portion, forming a front shoulder at the joint of said front sleeve portion and said chamber; said chamber further extends rearwardly in the direction of said rear end of said handle to connect with a rear sleeve portion which comprises a rear internal angu-



lar portion and a rear clamp portion, forming a rear shoulder at the joint of said rear sleeve portion and said chamber; the inside diameter of said chamber being greater than the outside diameter of said push bar of said body, the configuration of said front internal angular portion and said rear internal angular portion matching the shape of said angular portion of said body so that when said angular portion of said body is inserted into said front internal angular portion or said rear internal angular portion, no turning movement can be performed.

5,341,706

SCREW-DRIVING DEVICE

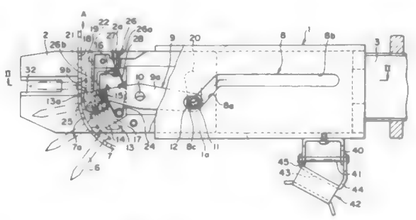
Haruo Takagi, Tokyo, Japan, assignor to Toyo Techno Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,802

Claims priority, application Japan, Oct. 20, 1992, 4-281858; Jan. 26, 1993, 5-1671[U]

Int. Cl.[5] B25B *23/04*

U.S. Cl. 81—434 **8 Claims**



1. A screw-driving device which is adapted to be coupled to a screwdriver and continuously drive screws held in a screw-holding tape in line one by one during a pressure stroke, which comprises:

a tubular casing coupled to said screwdriver;

a slide member slidably fitted for reciprocating movement in said casing;

a return spring means for returning said slide member to its initial extended position during a return stroke;

a mechanism provided in said slide member for feeding said screw-holding tape by one-step pitches corresponding to the distances between the adjacent screws on said tape,

said screw-holding tape-feeding mechanism including:

a guide slot means provided in said casing;

a two-arm lever means having a pin fitted into said guide slot at the end of one arm of said two-arm lever and pivotally connected to said slide member;

a pawl member pivotally connected to the end of the other arm of said two-arm lever and engageable in one of grooves or apertures at one lateral edge of said screw-holding tape by a spring means; and

a further pawl member pivotally connected to said slide member and engageable in one of further grooves or apertures at one lateral edge or the opposite lateral edge of the screw-holding tape by a spring means,

said guide slot means including an inclined section which causes said two-arm lever means to be pivotally moved so that said pawl member of said two-arm lever is returned over said screw-holding tape held by said further pawl member by one pitch during said pressure stroke and feeds said screw-holding tape by one pitch during said return stroke.

5,341,707

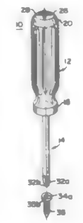
HEAD INDICIA TO INDICATE TOOL TYPE

David Bond, Phoenix, Ariz., assignor to Klein Tools, Inc., Chicago, Ill.

Filed Jun. 23, 1992, Ser. No. 902,839

Int. Cl.[5] B25B *15/02*

U.S. Cl. 81—436 **15 Claims**



1. A combination tool and tool head indicia, the combination comprising:

a tool having an upper end and a lower end, and a vertical axis through said upper end and said lower end;

said tool having a handle portion located along said upper end of said tool, said handle being centered along said vertical axis;

a butt portion presenting a face on said handle portion substantially perpendicular to said vertical axis of said tool;

a tool head located along said lower end of said tool opposite said handle portion, said tool head being centered along said vertical axis of said tool; and

a symbol integrally formed on said butt portion that emulates the exact configuration of said tool head, said symbol being recessed into said butt portion of said tool so that said tool head may be identified when hung from the user's belt.

5,341,708

FASTENER SUPPORT APPARATUS

Edward V. Nick, 512 Lexington Ave., Fox River Grove, Ill. 60021

Filed Jul. 9, 1993, Ser. No. 89,692

Int. Cl.[5] B25B *23/10*

U.S. Cl. 81—451 **20 Claims**

1. A fastener support apparatus for facilitating the installation of individual screws into a work surface comprising:

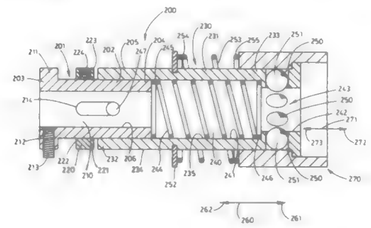
a rotatable bit for engaging the head of the screw;

a housing borne by the rotatable bit and defining a passageway, and wherein the bit is received in the passageway, and the housing simultaneously rotates with the bit;

a screw support assembly movably borne by the housing and including a passageway defining a screw receiving station and which is operable to receive the head of the screw;

a locking assembly borne by the screw support assembly and operable for travel from a first, partially occluding position relative to the passageway, to a second, substantially nonoccluding position; and

an actuating assembly borne by the screw support assembly, and which positions the locking assembly in the first or



second positions, and wherein the actuating assembly is freely rotatable relative to the screw support assembly, and wherein during operation, the locking assembly, when disposed in the first, partially occluding position retains the head of the screw in the screw receiving station, and when disposed in the second, substantially nonoccluding position releases the screw from the screw receiving station such that the screw may be driven completely into the work surface.

5,341,709

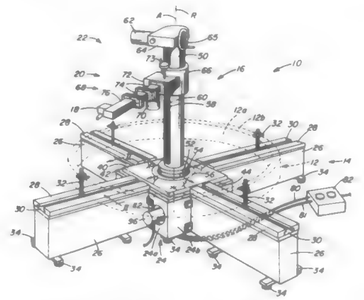
PORTABLE VERTICAL BORING MACHINE

Richard J. Speranza, Jeannette, and Richard A. Speranza, Export, both of Pa., assignors to Speranza Specialty Machining, Export, Pa.

Filed Dec. 17, 1992, Ser. No. 992,482

Int. Cl.[5] B23B *5/00*

U.S. Cl. 82—1.11 **18 Claims**



18. A method of boring or facing a circular region of a component having a central axis, said method comprising the steps of:

supporting the component in a fixed position in a horizontal plane with the central axis extending in a vertical direction;

disposing a tool support means at the central axis to extend in said vertical direction with a tool head of said tool support means extending radially outwardly of the central axis;

rotating said tool support means about the central axis;

selectively moving said tool head in a radial direction and in an axial direction relative to the central axis to produce the boring or facing of the circular region; and

said disposing said tool support means including selectively moving said tool support means, relative to the component in said fixed position, in an X direction and in a Y direction which are parallel with said horizontal plane and at an angle with respect to each other.

5,341,710

COUPLING STRUCTURE AND METHOD

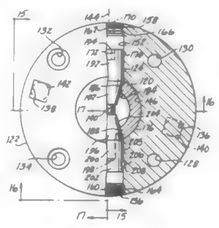
Bruce G. Peuterbaugh, Warren, Mich., assignor to J. P. Tool, Inc., Macomb, Mich.

Filed Jan. 2, 1985, Ser. No. 688,249

The portion of the term of this patent subsequent to Mar. 30, 2006, has been disclaimed.

Int. Cl.[5] B23C *5/26*

U.S. Cl. 409—234 **15 Claims**



5. A tool holder comprising:

a body member having an axis of rotation extending through the body member and a sidewall defining a recess formed in the body member with a transversely extending aperture formed in the sidewall of the recess;

means for securing the body member to structure for rotating the body member about the axis of rotation;

a coupling member including an elongated one end having a radially and longitudinally extending slot, said one end positioned within the recess of the body member; and

means extending transversely into the slot in the one end of the coupling member from the aperture in the sidewall of the body member for expanding the one end of the coupling member within the recess of the body member to secure the coupling member to the body member, said expanding means passing through said slot during insertion of said coupling member within said recess of said body member.

5,341,711

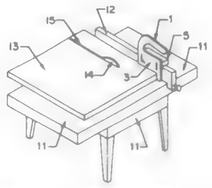
FINGERSAVER

Francis E. Stay, Jr., 1725 Pathfinder Dr., Virginia Beach, Va. 23454, and Robert A. Hoyt, R.D. 1, Box 116, Centerline Rd., Galway, N.Y. 12074

Filed Feb. 24, 1993, Ser. No. 21,568

Int. Cl.[5] B27B *25/10*

U.S. Cl. 83—425 **1 Claim**



1. An adjustable and reversible safety tool and pushing device used to push, hold down, and guide work pieces through a cutting device comprising;

(a) a transparent main member including a handle, a heel

VOL 1165 ISS 5 AG 30 1994 UMI

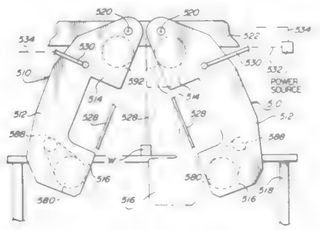
piece, two vertically elongated slots and one angled slot extending through the main member, said angled slot connected to and extending at an acute angle with respect to one of said vertically elongated slots;

(b) a transparent shoe member including two mounting holes extending through said shoe member;

(c) means for attaching the shoe member to the main member, said attaching means extending through two of said slots in said main member and through said holes in said shoe member;

(d) said angled slot allowing the shoe member to be positioned at an acute angle with respect to a direction of longitudinal extension of the main member, wherein, even when the shoe member is attached to the main member through the angled slot, said shoe member lays flat on top of a rip fence mounted to a table and the main member contacts a work piece during use of the pushing device.

5,341,712
BAND SAW COLUMN ASSEMBLY
John W. D'Arcy, 20 Austin St., Suffield, Conn. 06078
Continuation-in-part of Ser. No. 858,636, Mar. 27, 1992, Pat. No. 5,203,247. This application Mar. 18, 1993, Ser. No. 33,368
Int. Cl.[5] B27B *15/08*
U.S. Cl. 83—808 **1 Claim**



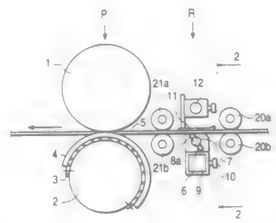
1. A band saw machine comprising: a pair of column assemblies, each assembly including a column comprising a back portion and two support portions extending therefrom in spaced relationship to one another and in the same general direction; means for mounting each said column for pivotable movement about a selected axis; and a pair of pulleys for mounting a band saw blade, one of said pulleys being rotatably mounted on each of said support portions;

support means for supporting said column assemblies, said support means engaging said means for mounting said column of both of said assemblies and disposing said columns in confronting relationship with said support portions thereof inwardly directed toward one another and with said selected axes substantially mutually parallel, said support means also providing support for a workpiece at a location between said column assemblies;

means for effecting pivoting of said column assemblies on said means for mounting; and

drive means for rotating one of said pulleys of each of said assemblies, whereby the workpiece may be cut simultaneously, from opposite sides, by blades mounted on said column assemblies.

5,341,713
CUTTING APPARATUS FOR CORRUGATED CARDBOARD SHEETS
Arifumi Okamoto, Mihara, and Ikuo Shibayama, Tatebayashi, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 832,591, Feb. 7, 1992, abandoned. This application Apr. 14, 1993, Ser. No. 52,273
Claims priority, application Japan, Feb. 28, 1991, 3-16452
Int. Cl.[5] B26D *1/15, 3/08*
U.S. Cl. 83—865 **6 Claims**



1. A cutting apparatus for corrugated cardboard sheets which cuts and separates a corrugated cardboard sheet proceeding in a direction of travel, said cutting apparatus comprising:

(a) first means for cutting a corrugated cardboard sheet having a front liner, a rear liner and a core there between, the first cutting means comprising a preliminary cutting means for cutting at least the front liner portion of said corrugated cardboard sheet; and

(b) a secondary cutting means for cutting completely through the corrugated cardboard sheet at least where said preliminary cutting means cut at least the front liner portion of said corrugated cardboard sheet;

wherein said preliminary cutting means comprises a bracket in an upstream position relative to said secondary cutting means, said bracket being adjustable in a widthwise direction of said cardboard sheet, said bracket comprising a cutter knife having an adjustable knife edge and a sheet Guide provided at the opposite side of the corrugated sheet;

wherein said bracket is engagable with a tie bar provided latitudinally in said widthwise direction of said cardboard sheet, and said cutter knife being movable in an axial direction of said tie bar and being fixable in a predetermined position; and

wherein said sheet guide is engaged with a guide rod provided latitudinally in the widthwise direction of the sheet, and said sheet guide is capable of movement in the axial direction of the same guide rod and capable of fixing at a predetermined position.

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5 341,714
SHOULDER SUPPORT FOR VIOLIN
Paul-Antoine Roulet, Les Jordils 1, CH-2016 Cortaillod, Switzerland
Filed Apr. 21, 1993, Ser. No. 49,427
Claims priority, application France, Apr. 21, 1992, 92 04977
Int. Cl.[5] G01D *1/02*
U.S. Cl. 84—278 **17 Claims**

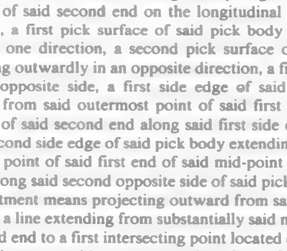
1. A shoulder support arrangement for violin comprising:

a clamping stirrup intended to be secured to the respective edges of the top plate (T) and the back plate (F) of the violin proximate the tailpiece end button (B),

a chin rest secured on the stirrup on the top plate side thereof,

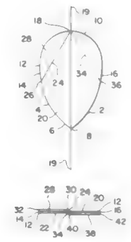
and a shoulder support preferably coupled in an adjustable manner to a support arm, itself removably attached to said stirrup, the latter, to such effect, including a passage in which the end of the support arm proximate the stirrup is clamped by adjustable clamping means,

said end of the support arm being split longitudinally so as to form prongs of a fork,



said adjustable clamping means forming a part of said support arm or of said stirrup and being arranged so as to enable the selective spreading apart of said prongs in order to clamp said end within said passage.

5,341,715
GUITAR PICK WITH STEPPED LEDGE FINGER GRIP
Raymond R. Hucek, 2428 Suffolk La., Joliet, Ill. 60433
Filed Oct. 15, 1993, Ser. No. 136,604
Int. Cl.[5] G10D *3/16*
U.S. Cl. 84—322 **15 Claims**



1. A pick for a string instrument, comprising a pick body having a tapered first end and an oppositely located rounded second end, a longitudinal axis extending from said first end to said second end, said tapered first end having an outermost point, said rounded second end having a mid-point, said outermost point of said first end being axially aligned with said mid-point of said second end on the longitudinal axis of said pick body, a first pick surface of said pick body facing outwardly in one direction, a second pick surface of said pick body facing outwardly in an opposite direction, a first side and a second opposite side, a first side edge of said pick body extending from said outermost point of said first end to said mid-point of said second end along said first side of said pick body, a second side edge of said pick body extending from said outermost point of said first end of said mid-point of said second end along said second opposite side of said pick body, first finger abutment means projecting outward from said first pick surface on a line extending from substantially said mid-point of said second end to a first intersecting point located on said first side edge between said outermost point of said first end and said mid-point of said second end, and second finger abutment means projecting outward from said second pick surface on a line extending from substantially said mid-point of said second end to a second intersecting point located on said second side edge between said outermost point of said first end and said mid-point of said second end.

5,341,716
PLASTIC-CLAD WOODEN DRUMSTICK AND METHOD OF MAKING
David G. Donohoe, Springville, Calif., assignor to Aquarian Accessories Corporation, Anaheim, Calif.
Continuation of Ser. No. 844,106, Mar. 2, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,765
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—422.4 **21 Claims**

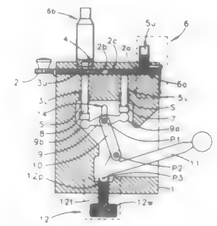


1. A drumstick for use with musical percussion instruments, said drumstick having improved durability and comprising;

a. an elongated rigid body, said body having an elongated generally cylindrically-shaped shaft section having an outer cylindrical surface, a shorter frusto-conically-shaped front section which tapers to a smaller diameter neck, and a still shorter tip section of larger diameter than said neck, and

b. an elongated tubular sleeve fitted coaxially over a longitudinal portion of said shaft section and attached thereto, said sleeve being fabricated from an impact-resistant material and having an outer cylindrical wall surface continuous with said outer cylindrical surface of said shaft section.

5,341,717
TOLERANCE COMPENSATING ASSEMBLY/POSITIONING SYSTEM AND METHOD OF USE
Richard L. Feldman, 10350 N. 142nd, Waverly, Nebr. 68462
Filed May 5, 1993, Ser. No. 56,864
Int. Cl.[5] F42B *33/04*
U.S. Cl. 86—32 **30 Claims**



1. An assembly-positioning system for use in assembling tolerance dimensioned process elements into assembled tolerance dimensioned process element systems, and for use in positioning tolerance dimensioned first process elements for processing, which assembly-positioning system can simultaneously safely provide required insertion force and a desired gauging force between assembled tolerance dimensioned elements at a point of abutted contact therebetween; which assembly-positioning system does not require that process elements entered thereto for assembly be removed until assembly is complete; said assembly-positioning system comprising a toggle means comprising a first and a second plunger and means for causing the upper ends of said first and second plungers to raise or lower by application of forces to lower oriented aspects thereof, which forces are determined by other assembly-positioning system means which contact said first and second plungers at said lower oriented aspects thereof, which raising and lowering of said first and second plungers serve to first apply prestressing forces to compensate toler-

VOL 1165 ISS 5 AG 30 1994 UMI

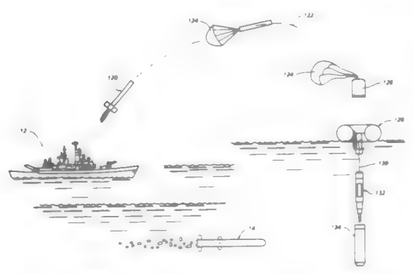
ances in said tolerance dimensioned process elements and in all assembly-positioning system elements and subsequently to insert a toleranced length first process element into a toleranced depth hole in a second tolerance dimensioned process element during use; the upper end of which second plunger serves during use to push a toleranced length first process element upward into a toleranced depth hole in a second tolerance dimensioned process element, after said first plunger serves to apply tolerance compensating prestressing force, developed by operation of said other assembly-positioning system means which contact said first and second plungers at said lower oriented aspects thereof, to a lower end of said tolerenced length first process element as an upper end thereof contacts a gauging surface in said assembly-positioning system, and as the upper end of said second plunger simultaneously applies tolerance compensation prestressing force to an upper end of said toleranced depth hole in said second tolerance dimensioned process element.

5,341,718

LAUNCHED TORPEDO DECOY

Robert C. Woodall, Jr., Pasadena; S. Kyle Jones, Hyattsville, and H. Joseph Jones, Jr., Elkridge, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 19, 1993, Ser. No. 110,257
Int. Cl.[5] B63G *9/00*
U.S. Cl. 89—1.11 **10 Claims**



5. In a system for launching an acoustical decoy from a marine vessel in response to detection of approach of an underwater torpedo, a program for deployment of the decoy including the steps of: simultaneously stabilizing flight of the decoy and enabling operation thereof in response to powered launch from the vessel; separating the decoy into a flotation anchor and a payload in response to impact of the decoy with water upon completion of said flight thereof; and emitting acoustical signals from the separated payload in response to submergence thereof to a tethered depth within the water below the flotation anchor.

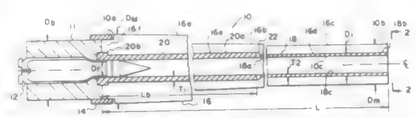
5,341,719

MULTI-LAYER COMPOSITE GUN BARREL

Stephen J. Bullis, Colchester; David P. Perrin, Hinesburg, and Peter C. Wolff, Milton, all of Vt., assignors to General Electric Company, Philadelphia, Pa.

Filed Dec. 14, 1992, Ser. No. 990,107
Int. Cl.[5] F41A *21/02*
U.S. Cl. 89—16 **10 Claims**

1. A gun barrel comprising a full-length jacket portion of a first alloy, having a multi-layer forebarrel portion wherein the jacket portion is substantially metallurgically bonded to a relatively thick liner portion formed of a second alloy, coextruded within the jacket portion to have a highly-concentric



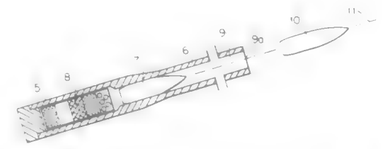
tubular interface, and with an interface diameter D_i relatively greater than the diameter of the barrel bore.

5,341,720

SYSTEM FOR REDUCING THE EFFECTS OF POWDER TEMPERATURE SENSITIVITY ON FIRING WITH GUNS

Arne Franzén, Karlskoga; Larseric Larsson, Degerfors; Neile Nilsson, Karlskoga, and Lars-Berno Fredriksson, Kinnahult, all of Sweden, assignors to Bofors AB, Karlskoga, Sweden

Filed Sep. 16, 1992, Ser. No. 945,172
Claims priority, application Sweden, Sep. 16, 1991, 9102673-2
Int. Cl.[5] F41A *1/06*
U.S. Cl. 89—45 **13 Claims**



1. A system for reducing the temperature-dependent influence of the powder on the muzzle velocity of ammunition units on discharging of the ammunition units from a barrel of a large-caliber gun with high muzzle velocities up to about 1,000 m/s, said system including:

a plurality of part charges having predetermined types, powder varieties, charge sizes and geometric dimensions of the powder;

means for storing said plurality of part charges;

controlling means for calculating desired optimum muzzle velocities within said high velocity range based on predetermined parameters inputted thereinto including a powder temperature prevailing in said part charges during said discharging from said gun barrel, such that said desired optimum muzzle velocities of the respective ammunition units and the gun barrel pressure do not exceed a predetermined acceptable value while ensuring the highest possible performance of the gun, and for determining corresponding predetermined combinations of part charges allowing to achieve said desired optimum muzzle velocities; and

selecting and assembling means responsive to control signals from said controlling means for selecting said predetermined combinations of said part charges from said plurality of part charges, such that the respective part charges in each combination contribute to achieving said desired optimum muzzle velocity determined by said controlling means;

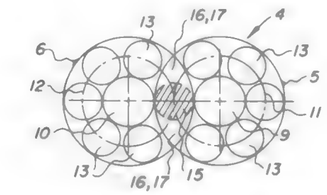
wherein said plurality of part charges are combinable into a plurality of combinations, the number of said possible combinations corresponding to said desired muzzle velocities allowing to efficiently control the barrel pressure and the muzzle velocities within said range of high muzzle velocities within a large temperature range.

5,341,721

AMMUNITION DRUM FOR A LARGE CALIBER WEAPON

Ference Kotai, Munich; Rudolf Zurek, Gröbenzell, and Ingo Bolling, Laadshut, all of Fed. Rep. of Germany, assignors to Krauss-Maffei A.G., Fed. Rep. of Germany

Filed Apr. 16, 1990, Ser. No. 509,127
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1989, 3913173
Int. Cl.[5] F41A *9/13*
U.S. Cl. 89—46 **18 Claims**



1. A large caliber armored vehicle ammunition drum comprising:

at least two parallel independently rotatable drum elements wherein each of said drum elements exhibits a plurality of ammunition holders concentrically disposed about a drum element axle in at least one concentric ammunition layer, wherein each of said holders may be moved to an intersection between each of said drum elements;

each of said drum elements further exhibits a recess configured so that adjacent drum elements alternatingly penetrate each other defining a switching position between said adjacent drum elements;

at least one superposition location within said recess;

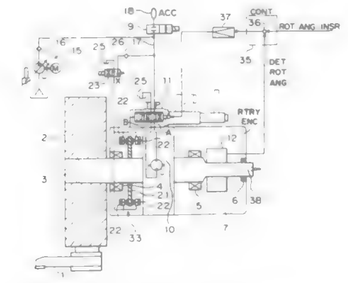
means for positioning said drum element ammunition holders step-by-step into said superposition location.

5,341,722

POSITIONING APPARATUS USED FOR MACHINE TOOLS ETC.

Nobuyuki Tani, and Tenzo Yamaguchi, both of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed Aug. 12, 1992, Ser. No. 928,369
Claims priority, application Japan, Aug. 12, 1991, 3-201751; Jun. 29, 1992, 4-170531
Int. Cl.[5] F15B *15/26;* **F16D** *31/02*
U.S. Cl. 91—43 **8 Claims**



1. A positioning apparatus comprising:

a hydraulic motor for driving a rotary shaft of a positioned object,

a flow control valve connected to the hydraulic motor,

rotation angle detection means for detecting an angle of rotation of the rotary shaft,

rotation angle control means for controlling the flow control valve to rotate the hydraulic motor by an angle determined based on a detection result of the rotation angle detection means and a rotation angle instruction, and

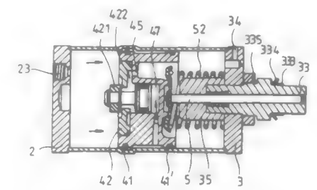
hydraulic locking means for directly or indirectly holding the rotary shaft at a periphery thereof to lock the rotary shaft, the hydraulic locking means being a sleeve disposed between the rotary shaft and an internal surface of a housing, the sleeve having outer circumferential surfaces at both end portions with the outer circumferential surfaces being in a hydraulically tight relation with the internal surfaces of the housing, and the sleeve expands radially inward by hydraulic fluid supplied from an oil passage formed in the housing for locking of the rotary shaft.

5,341,723

RECIPROCATING PNEUMATIC MOTOR FOR HYDRAULICS

Michael Hung, 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan

Filed Apr. 20, 1993, Ser. No. 49,299
Int. Cl.[5] F01L *15/12, 25/04*
U.S. Cl. 91—224 **5 Claims**



1. A reciprocating pneumatic motor for a hydraulic pump, comprising:

a cylinder having an inner wall and an exterior wall, said cylinder having guide grooves punched in said inner wall thereof such that said exterior wall protrudes, and said guide grooves being located at a predetermined location along said inner wall of said cylinder;

a cylinder cover on one end of said cylinder;

an air inlet at said one end of said cylinder;

a bottom cover on the other end of said cylinder bolted to said cylinder cover with said cylinder therebetween, said bottom cover having a central hole therein, said central hole having a piston pump component extending therethrough and fixed therein, said piston pump component having a piston pump cover fixed thereto extending into said cylinder, and said bottom cover further having a plurality of L-shaped holes therein communicating the inside of said cylinder with the outside of said cylinder;

a pneumatic piston in said cylinder having a circular body with top and bottom ends, a first seal ring on said top end and a second seal ring on said bottom end, a front portion facing said cylinder cover, a rear portion facing said bottom cover, a central hole facing said cylinder cover, a ring plate on said front portion, said ring plate having a central aperture, a shuttle valve disposed in said central hole and extending through said central aperture of said ring plate, a seal ring on said shuttle valve between said ring plate and said cylinder cover adapted to open and close said central aperture, an end portion on said shuttle valve sidably disposed in said central hole and having an oil seal that forms an air tight seal between said shuttle valve and said central hole, an air vent hole communicating the bottom end of said pneumatic piston with said central aperture of said ring plate, a shuttle compression chamber between said shuttle valve and said central hole, and a

VOL 1165 ISS 5 AG 30 1994 UMI

radial air inlet communicating said shuttle compressison chamber with the exterior of said circular body between said first and second seal rings; and

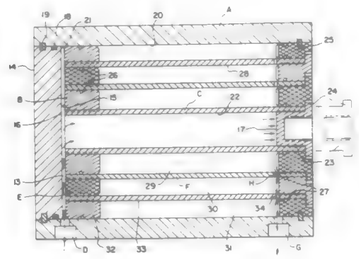
a piston rod having one end extending into said piston pump cover and said piston pump component and another end connected to a spring base, said spring base being biased snug against said bottom end of said circular body of said pneumatic piston by a spring.

5,341,724

PNEUMATIC TELESCOPING CYLINDER AND METHOD

Bronislav Vatel, 3730 Countryside La., Glenview, Ill. 60025

Filed Jun. 28, 1993, Ser. No. 82,494
Int. Cl.[5] F01B *7/20*
U.S. Cl. 92—53 **12 Claims**



1. A double acting telescoping cylinder extensible and collapsible responsive to the application of air under pressure, comprising:

a housing having an external cylindrical wall;

an end cap closing one end of said cylindrical wall;

a central piston having a central opening facing said end cap;

a central hollow piston rod extending outwardly from said central piston away from said end cap in axial alignment with said central opening and with said cylindrical wall and terminating at a terminating wall having a face remote from said central piston and facing said end cap;

a first port through a first end of said cylindrical wall adjacent said end cap communicating with said central piston, central hollow piston rod and terminating wall face;

a concentric piston and concentric piston rod having a hollow interior portion containing said central piston and central hollow piston rod respectively;

said central piston carrying said central hollow piston rod to extended position remote from said end cap whereupon movement of said concentric piston and concentric piston rod is initiated through exposure of a face of said concentric piston facing said end cap to air pressure from said first port;

said external cylindrical wall terminating at an end wall remote from said end cap, said end wall extending radially inwardly with respect to an inner cylindrical surface of said external cylindrical wall, said end wall having an end wall face facing said end cap;

a second port through said external cylindrical wall, said second port extending perpendicular to said end wall face and straddling said end wall face;

an air opening in said concentric piston rod aligned with said second port when said concentric piston is retracted and adjacent said end cap for connecting said hollow interior portion in said concentric piston and piston rod with said second port;

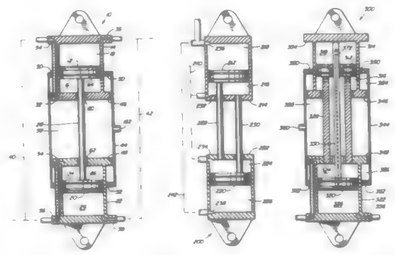
whereby application of air pressure to said first port causes said central piston and central piston rod to be extended followed by extension of said concentric piston and concentric piston rod from the cylindrical wall, and whereby application of air pressure to said second port causes retraction of the concentric piston and concentric piston rod followed by retraction of said central piston and central piston rod toward said end cap.

5,341,725

TWIN PISTON POWER CYLINDER

James B. Dick, 389 King George Terrace, Victoria, British Columbia, Canada V8S 2J8

Filed Jun. 14, 1993, Ser. No. 76,445
Int. Cl.[5] F01B *15/00*
U.S. Cl. 92—66 **12 Claims**



1. A power cylinder (**10**) having a first piston (**12**) slidably mounted within a first cylinder (**14**) to define inner and outer chambers (**16, 18**) within said first cylinder, a second piston (**20**) slidably mounted within a second cylinder (**22**) to define inner and outer chambers (**24, 26**) within said second cylinder and at least one rod (**28**) coupled between said first and second pistons, characterized by:

(a) first fluid flow means (**40**) coupled to said first and second cylinder inner chambers;

(b) second fluid flow means (**42**) coupled to said first and second cylinder outer chambers.

(c) a cylindrical guard (**44**) surrounding said first and second cylinders; and,

(d) bearing means for allowing slidable displacement of said first and second cylinders relative to said guard.

8. A power cylinder (**300**) having a first piston (**312**) slidably mounted within a first cylinder (**314**) to define inner and outer chambers (**316, 318**) within said first cylinder, and a second piston (**320**) slidably mounted within a second cylinder (**322**) to define inner and outer chambers (**324, 326**) within said second cylinder, characterized by:

(a) a first-rod (**328**) coupled between said first piston and said second cylinder; and,

(b) a second rod (**330**) coupled through said first rod between said second piston and said first cylinder.

5,341,726

PISTON FOR TANK

M. Burnell Watson, Box 34, Dorsey, Ill. 62021

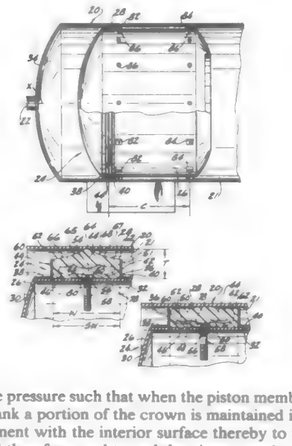
Filed Mar. 31, 1993, Ser. No. 40,525
Int. Cl.[5] F15B *21/04*
U.S. Cl. 92—80 **16 Claims**

1. In an elongate tank for transport or for storage in bulk of semisolid and fluid material, said tank having an outlet at one end thereof for discharging material contained therein, said tank having a generally cylindric interior surface, a generally cylindric piston sized to slide in the tank and adapted to be moved in a direction toward said outlet thereby to force the material in the tank through the outlet, said piston comprising:

a piston member;

a pair of circumferential flanges around the piston member extending radially outwardly from the piston member, said flanges being axially spaced apart to define a circumferential channel;

an elastic expandable annular seal disposed at least partly within and carried by said channel, said seal having an annular base and an annular crown disposed radially outwardly of and joined to the base, said base having an inwardly facing surface engageable with the piston member and an outwardly facing surface, said crown having side surfaces and an inwardly facing surface opposing the outwardly facing surface of said base and an outwardly facing surface engageable with the interior surface of the tank, said outwardly facing surface of the crown having two sloping surface portions, said outwardly facing surface of said base and said inwardly facing surface of said crown defining an annular fluid chamber, said seal also having a fluid inlet port for introducing fluid into and removing fluid from the fluid chamber for varying the pressure within the seal between atmospheric pressure and a pressure higher than atmospheric wherein the seal expands and presses against the interior surface of the tank



with the pressure such that when the piston member slides in the tank a portion of the crown is maintained in sliding engagement with the interior surface thereby to wipe the material therefrom and to seal the piston member relative to the tank, the outwardly facing surface of said crown having a circumferential ridge intermediate the side surfaces defined by the junction of said two sloping surface portions of the crown, said two sloping surface portions of the crown each being continuously concave from one of the side surfaces to said junction whereby a minimal area of contact is maintained between the crown and the interior surface of the tank; and

at least one anti-canting member extending radially outwardly beyond the periphery of the piston member and spaced axially from the seal for engagement with the interior surface of the tank for holding the piston member against canting in the tank while permitting said piston member to slide freely in said tank.

5,341,727

POSITIONING MECHANISM

J. Douglas Dickson, Columbus, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed May 20, 1992, Ser. No. 886,509
Int. Cl.[5] A47J *37/06*
U.S. Cl. 99—335 **8 Claims**

1. Double-sided griddle apparatus for cooking an item of food having lower and upper surfaces;

said apparatus comprising

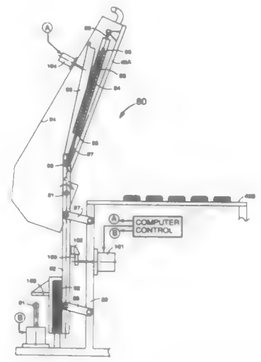
A. a lower platen having a substantially flat horizontal heated upper surface for contacting the lower surface of the item of food while it is resting thereon, to cook at least a lower portion of the food;

B. an upper platen having a substantially flat heated lower surface for contacting the upper surface of the said item of food, to cook at least an upper portion of the food; and

C. means for positioning the upper platen in a predetermined sequence before, during, and after cooking;

said positioning means comprising

D. means for permitting movement of the upper platen from a predetermined position with its lower surface at an angle to the horizontal plane, and into a predetermined position with the lower surface of the upper platen horizontal and directly above and parallel to the upper surface of the lower platen, to begin a cooking cycle;



E. means for then providing vertically downward movement of the upper platen to press the lower surface thereof downward against the upper surface of the food until the lower surface of the upper platen reaches a predetermined level above the upper surface of the lower platen;

F. means for stopping the vertically downward movement of the upper platen at the said predetermined level;

G. means for providing a signal upon the attainment of a selected condition in the food or the apparatus, or after a predetermined time; and

H. means responsive to the said signal for lifting the upper platen away from the food, and thus to end the cooking cycle.

5,341,728

ALARM DEVICE FOR TELLING END-OF-COOKING TIMING

Susumu Ejiri, Toyoake, and Hajime Hiraoka, Aichi, both of Japan, assignors to Paloma Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 4, 1993, Ser. No. 26,535
Claims priority, application Japan, Mar. 9, 1992, 4-021322
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—336 **13 Claims**

1. An alarm device for informing an operator of an end-of-cooking timing, which is applied to a cooker for cooking food items in a cooking medium,

said alarm device comprising

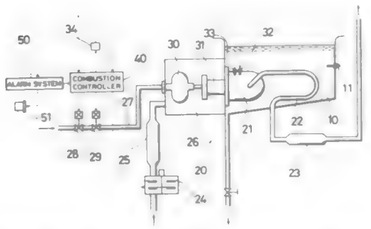
temperature detecting means for detecting temperature of said cooking medium,

accumulation means for accumulating a selected heating amount based on the temperature detected by said temperature detecting means and a heating time,

alarm means for informing said operator of said end-of-cooking timing when said heating amount accumulated by said accumulation means reaches a predetermined value,

VOL 1165 ISS 5 AG 30 1994 UMI

slope comparing means for comparing a downward slope in the detected temperature of said cooking with a predetermined limit, and



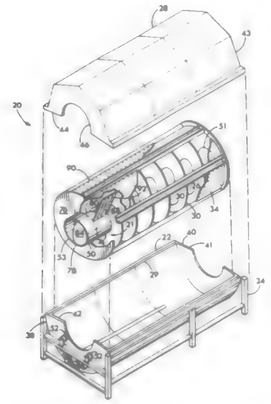
first control means for controlling said accumulation means to initiate accumulation of a heating amount when said downward slope becomes equal to or greater than said predetermined limit.

5,341,729

DISCHARGE FOR ROTATING DRUM BLANCHERS AND COOLERS

David R. Zittel, Columbus, Wis., assignor to Lyco Manufacturing, Inc., Columbus, Wis.

Filed Sep. 23, 1993, Ser. No. 126,037
Int. Cl.[5] A23L *3/00*; A23N *12/00*; A47J *37/12*; F25D *25/02*
U.S. Cl. 99—348 9 Claims



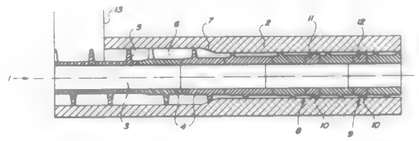
1. A food processing apparatus, comprising:
a) a tank having an inlet end and a discharge end;
b) a cylinder which has a perforated sidewall, the cylinder being mounted rotatably within the tank so that water contained in the tank will enter the cylinder, the cylinder having an inlet opening near the inlet end of the tank for receiving introduced food product and an outlet opening in a discharge end plate near the discharge end of the tank through which food product which has moved through the cylinder can be discharged from the tank;
c) an auger positioned substantially within the cylinder to rotate with the cylinder, such that food product introduced into the cylinder is advanced by the auger from the inlet end to the discharge end of the tank;
d) a discharge chute which extends between the auger and the discharge end plate and is fixed to the cylinder to rotate with the cylinder, wherein the discharge chute has a discharge opening which communicates with the discharge end plate outlet opening, and a chute inlet opening which is within the cylinder;
e) a lifting flight which extends between the perforated side wall and the discharge chute and which is fixed to the discharge chute, such that food product advanced to the discharge end of the tank by the auger is engaged by the lifting flight and elevated to discharge into the chute discharge opening and then through the end plate outlet opening.

5,341,730

SCREW PRESS HAVING A PLURALITY OF THROTTLE POINTS AND AT LEAST ONE CAM MOVABLE TRANSVERSELY THERETO

B. Tydiks, Hamburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Reinartz GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed May 25, 1993, Ser. No. 66,662
Claims priority, application Fed. Rep. of Germany, May 26, 1992, 9207096[U]
Int. Cl.[5] B30B *9/14*
U.S. Cl. 100—37 15 Claims



11. A process for pressing off fluids, from a fluid containing material comprising the steps of:
a) providing a screw having a plurality of screw segments arranged consecutively in an axial direction of the press, each of the screw segments having an outer surface, each of said outer surfaces increasing in diameter for each consecutive screw segment in a transport direction;
b) providing a fluid permeable mantel surrounding the screw and having an inner surface facing the screw outer surface defining a screw channel therebetween;
c) flowing the fluid containing material into the screw channel;
d) increasing the pressure of the fluid containing material at a plurality of throttle points disposed between adjacent screw segments by reducing the cross-sectional area of the screw channel at each of the throttle point;
e) reducing the pressure of the fluid containing material following said increasing step at an expansion zone downstream from each of the throttle points;
f) providing a transversely moveable cam disposed at one of said throttle points; and
g) breaking up the fluid containing material at said at least one of the throttle points with the transversely movable cam.

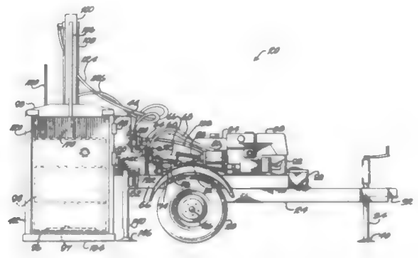
5,341,731

MOBILE COMPACTOR OF DRUM CONTENTS

Bennett C. Grizzard, Jr., Moore, S.C., and Keith R. Brown, 604 Valhalla Dr., Columbia, S.C. 29223, assignors to Keith R. Brown, Columbia, S.C.

Continuation of Ser. No. 965,880, Oct. 23, 1992, abandoned.
This application Sep. 17, 1993, Ser. No. 123,708
Int. Cl.[5] B30B *15/00*, *9/02*
U.S. Cl. 100—100 20 Claims

1. Mobile apparatus for compacting contents of a container of waste and for use with means for transporting said apparatus, said apparatus comprising:
a frame;
a housing pivotally carried by said frame, said housing having a base with at least one hole for draining fluids from said housing, said housing dimensioned to receive said container;
means carried by said housing for compacting the contents of said container; and
a hydraulic cylinder carried by said frame for pivoting said housing with respect to said frame between a first position for compacting and a second position for transporting,



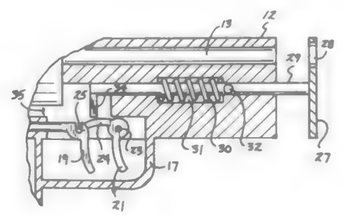
said cylinder including a ram attached to the housing and the ram moving between a retracted position and an extended position, said housing being in said first position when said ram is in said extended position and in said second position when said ram is in said retracted position, said housing being held over said frame by said hydraulic cylinder when said housing in said second position.

5,341,732

IMPELLER GUN SAFETY TRIGGER MECHANISM

Norman R. Landers, 404 Kenova Rd., Smackover, Ark. 71762

Filed Apr. 12, 1993, Ser. No. 44,807
Int. Cl.[5] B44B *5/00*, *5/02*
U.S. Cl. 101—3.1 4 Claims



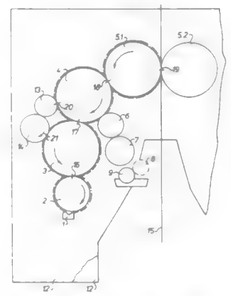
1. A gun safety mechanism, comprising,
a gun housing, and a gun barrel mounted to the gun housing, with a magazine interposed between the gun barrel and the gun housing, the magazine including an annular array of bores directed therethrough, with the gun barrel having a gun barrel bore, and one of said magazine bores with the barrel bore, and the magazine receiving at least one elongate marking die therewithin, an actuator rod bore positioned adjacent said housing,
and
a first trigger, having an actuator rod fixedly mounted to the first trigger, with the actuator rod slidably received within the actuator rod bore,
and
a second trigger, the second trigger having a second trigger pivot axle, and the second trigger pivot axle fixedly secured to the gun housing in adjacency to the barrel, with the second trigger including second trigger lock means for selective locking of the first trigger relative to the second trigger.

5,341,733

SHORT INKING APPARATUS FOR A ROTARY PRESS

Norbert G. Weisbrod, Hessheim, Fed. Rep. of Germany, assignor to Albert Frankenthal Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

PCT No. PCT/DE91/00158, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO91/13761, PCT Pub. Date Sep. 19, 1991
PCT Filed Feb. 27, 1991, Ser. No. 924,048
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1990, 4006720; Mar. 22, 1990, 4009254; Jan. 23, 1991, 4101797
Int. Cl.[5] B41F *7/26*, *31/00*; B41L *27/04*
U.S. Cl. 101—148 5 Claims



1. A short inking unit for an offset rotary printing press comprising:
a printing unit having a single screened surface ink roller, means to supply ink to said ink roller, a single ink application cylinder in direct contact with said ink roller, a single forme cylinder in direct contact with said ink application cylinder and a single blanket cylinder in direct contact with said forme cylinder and with a web to be printed, said ink application cylinder, forme cylinder, and blanket cylinder all having the same diameter;
a dampening fluid system on a first side of said printing unit and in contact with said forme cylinder; and
a first additional pair of rollers having a first roller having a rubber jacket and being in contact with said forme cylinder of said printing unit and a second roller of said first additional pair of rollers having a jacket, said second roller being in contact with said ink application cylinder and said first roller of said first additional pair of rollers.

5,341,734

METHOD AND DEVICE FOR REGULATING A SUPPLY OF DAMPENING SOLUTION IN AN OFFSET PRINTING PRESS

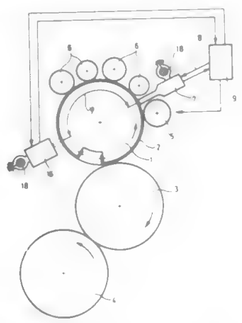
Willi Jeschke, Bad Herrenalb, and Norbert Freyer, Sandhausen, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Apr. 29, 1993, Ser. No. 54,884
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1992, 4214139
Int. Cl.[5] B41F *7/24*, *25/00*
U.S. Cl. 101—148 18 Claims

1. Method for regulating a supply of dampening solution in an offset printing press having a printing plate, which comprises supplying at least one selected region of the printing plate with a well-defined amount of energy for removing a constant quantity of dampening solution from the selected region; determining and measuring scumming occurring in the selected region; comparing the measured scumming in the

VOL 1165 ISS 5 AG 30 1994 UMI

selected region with a prescribed scumming matched to the respective supplied amount of energy; and adjusting the supply



of dampening solution, if the measured scumming and the prescribed scumming deviate from one another.

5,341,735

ROTARY PRINTING MACHINE SYSTEM WITH SYNCHRONIZED MULTIPLE PRINTING MACHINE UNITS OR STATIONS

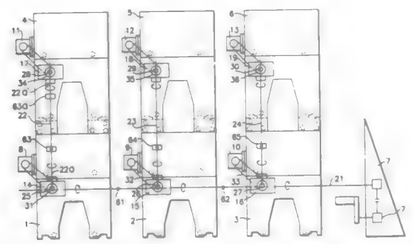
Josef Hajek, Friedberg, Fed. Rep. of Germany, assignor to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 917,831, Jul. 21, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 108,064

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1991, 4127321

Int. Cl.[5] **B41F** *5/08, 13/12*

U.S. Cl. 101—181 **13 Claims**



1. Rotary printing machine system with a plurality of synchronized printing machine units (1–6; 44–47),

at least one of said units (4, 5, 6) being located above another one of said units (1, 2, 3) to thereby define upper units (4, 5, 6) and lower units (1, 2, 3), and an upper and a lower unit together defining a tower printing station,

each of said units having a printing cylinder (20) carrying an image to be printed, and a printing cylinder shaft (59) coupled to the printing cylinder;

at least one horizontal synchronizing shaft (21, 38, 57) extending through the plurality of said lower machine units (1, 2, 3);

a vertical synchronizing shaft (22, 23, 24) coupling together the lower and upper printing units of a tower printing station (1, 4; 2, 5; 3, 6),

said synchronizing shafts (21, 38, 22, 23, 24) coupling the units together into a synchronized, coordinate printing machine system,

wherein, in accordance with the invention,

each printing machine unit has an individual drive motor (8–13) directly associated therewith, said motor having a motor shaft which is mechanically coupled to the printing cylinder shaft (59) of the printing cylinder (20) of the unit

in combination with

an individual power take-off unit (14–19; 53–56) directly associated with each printing machine unit,

said power take-off unit including

a right-angle drive transmission (14) having

means (81–80) for coupling the horizontal synchronizing shaft (21, 38) via a right-angle drive to the vertical synchronizing shaft (22, 23, 24) of the printing unit for synchronizing the lower and upper units of a tower station; and

means (81–79; 72) for positively, selectively coupling or uncoupling the motor drive shaft of the individual drive motor (8–13) of the unit, and hence the printing cylinder shaft (59) of the printing cylinder, to or from said right-angle drive transmission and hence from both the horizontal synchronizing shaft (21, 38, 57) and the vertical shaft (22, 23, 24) of the printing machine unit, whereby the vertical synchronizing shaft (22, 23, 24) of said tower station (1, 4; 2, 5; 3, 6) will be in continuous synchronous driving engagement with the horizontal synchronizing shaft (21, 38) while permitting selective individual engagement or disengagement of the printing cylinder shaft (59) of any one printing cylinder (20) and the drive motor (8) coupled thereto of any one unit to or from the synchronized, coordinate printing machine system; and

wherein the power take-off units of the printing machine units of the printing machine system are essentially similar.

5,341,736

SAFETY DEVICE AT CYLINDERS WITH A FEED GAP IN WEB-FED ROTARY PRINTING MACHINES

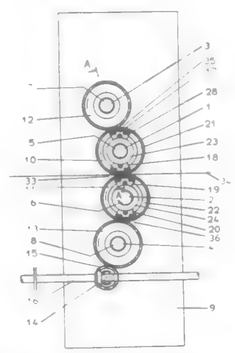
Manfred Makosch, Königsbrunn, and Klaus T. Reichel, Augsburg, both of Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 23, 1993, Ser. No. 156,077

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1992, 4240142

Int. Cl.[5] **B41F** *5/00*

U.S. Cl. 101—212 **5 Claims**



1. A safety device for cylinders with a feed gap in a web-fed rotary printing machine, which cylinders are in drive connection via gear wheels, comprising: a wheel body; a toothed rim, at least one of the gear wheels being formed by the wheel body and the toothed rim; overload coupling means for connecting the wheel body to the toothed rim so as to limit torque acting between them; and a sliding coating located between the wheel body and the toothed rim.

5,341,737

FLEXOGRAPHIC PRINTING SYSTEM

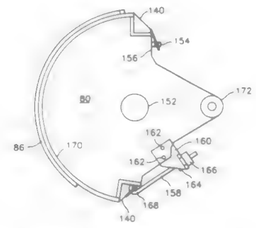
John Marozzi, 634 Dogwood La., Booton Township, Morris County, N.J. 07950; Greg Rochon, Boonton; Urmil Patel, Somerville, both of N.J., and Ben Dambly, York, Pa., assignors to John Marozzi, Boonton Township, Morris County; Theresa Pugh, Parsippany and Barbara Batesko, Montville, all of N.J.

Division of Ser. No. 852,531, Mar. 17, 1992, Pat. No. 5,224,422.

This application Apr. 8, 1993, Ser. No. 43,925

Int. Cl.[5] **B41F** *5/04, 5/24*

U.S. Cl. 101—216 **11 Claims**



1. A printing system comprising:

a flexographic printer having printing means for imprinting a web, inking means for providing ink to said printing means and drive means for moving said printing means into contact with a web, and

said printing means including a print cylinder with a carrier sheet removably mounted on said print cylinder, said carrier sheet including a printing plate and two elongated drive bearers located on opposite sides of said printing plate so that said printing plate and said two elongated drive bearers wear down together at the same rate to maintain print quality with said carrier sheet including said printing plate and said two elongated drive bearers being removable from said print cylinder and being replacable with a new carrier sheet,

a leading edge of said two elongated drive bearers extending to a point closer to a leading edge of said carrier sheet than any printing surfaces defined by said printing plate for buffered initial engagement with an impression cylinder by said two elongated drive bearers prior to contact with the web by any printing surfaces defined by said printing plate.

5,341,738

DEVICE FOR TRANSPORTING SHEETS WITHIN A PRINTING MACHINE

Helmut Emrich, Offenbach am Main, and Reinhold Guba, Darmstadt, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

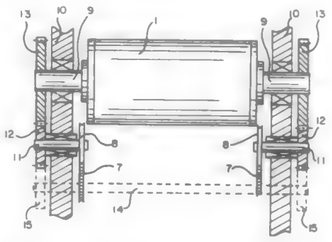
Filed Apr. 28, 1993, Ser. No. 55,225

Claims priority, application Fed. Rep. of Germany, May 8, 1992, 4214604

Int. Cl.[5] **B41F** *13/24*

U.S. Cl. 101—232 **5 Claims**

1. A device for transporting sheets within a printing machine having frame side walls and having a rotatable sheet-guiding cylinder located between and supported by said side walls, said device comprising a pair of chain wheels, endless chains driven by said wheels, and gripper carriages mounted on said endless chains for conveying said sheets and for transferring said sheets between said endless chains and said sheet-guiding cylinder in the region of said chain wheels, said device being characterized in that two mutually aligned stub shafts are supported by said frame side walls and have axially spaced facing end portions and opposite end portions extending out from said axially spaced facing end portions, said chain wheels being mounted on said axially spaced facing end portions of said stub shafts such that said gripper carriages grip opposite edges of said sheets to avoid smearing said sheets between said chain wheels, gear wheels mounted on said opposite end portions of said stub



shafts, and means meshing with said gear wheels and causing said gear wheels and said chain wheels to rotate in synchronism with said sheet-guiding cylinder.

5,341,739

APPARATUS FOR DISPLACING TWO BEARING BLOCKS MOUNTED ON CARRIAGES

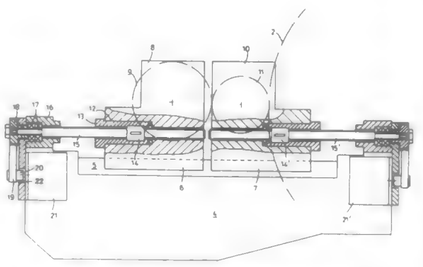
Dieter Rogge, Lengerich, and Dietmar Koopmann, Lienen-Kattenvenne, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 14, 1993, Ser. No. 91,142

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1992, 9209455[U]

Int. Cl.[5] **B41F** *13/30, 31/32;* **B41L** *35/22*

U.S. Cl. 101—247 **6 Claims**



1. Apparatus comprising two bearing blocks which are each mounted on respective carriages on a frame, the two carriages being displaceable on a common carriage guideway, and having two respective lead screw drives driven respectively by two electric motors; the improvement wherein each bearing block is provided with a respective nut and a respective lead screw engaged with each of the bearing blocks, said respective lead screw being screwed into said respective nut; wherein each of the two lead screws is provided with a respective one of said lead screw drives fixed to the frame at a respective end zone of the carriage guideway; and wherein the electric motor of each lead screw drive is fixed to the frame beneath the respective lead screw.

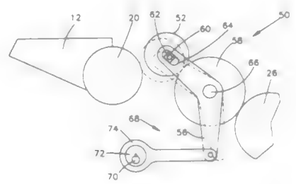
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,740

HIGH SPEED INK FEED MECHANISM

Glenn A. Guaraldi, Kingston, N.H., assignor to Heidelberg Harris Inc., Dover, N.H.

Filed Jul. 16, 1990, Ser. No. 553,717
Int. Cl.[5] B41F *31/00*
U.S. Cl. 101—350 1 Claim



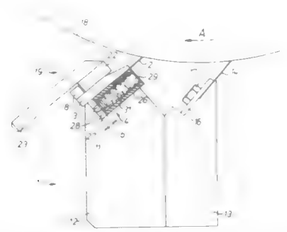
1. A printing apparatus for transferring ink to a rotatable plate cylinder, said printing apparatus comprising:
an ink fountain for containing a supply of ink;
a fountain roll for picking up ink from said ink fountain, said fountain roll having an outer surface rotatable at a first surface speed;
an ink distributing roll spaced from said fountain roll for transferring ink to said plate cylinder, said ink distributing roll having an outer surface rotatable at a second surface speed which is substantially greater than said first surface speed;
a ductor roll for transferring ink from said fountain roll to said ink distributing roll, said ductor roll being movable between a first position in contact with said outer surface of said fountain roll and a second position not in contact with said outer surface of said fountain roll but in contact with said outer surface of said ink distributing roll; and
means for moving said ductor roll through a duct cycle from said first position to said second position and back to said first position at a rate of at least one quarter of a duct cycle per one rotation of said plate cylinder, including means for continuously holding said ductor roll in ink transferring relationship with said distributing roll and means for supporting said ductor roll in driven engagement with said distributor roll and for adjusting said rolls to permit slipping between the surface of said rolls.

5,341,741

DOCTOR BLADE BAR FOR A SHORT INKING SYSTEM

Georg Schneider, Würzburg; Wolfgang O. Reder, Veitshöchheim, and Dieter Reinhart, Hettstadt, all of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Apr. 26, 1993, Ser. No. 51,124
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213663
Int. Cl.[5] B41F *31/04;* B41L *27/06*
U.S. Cl. 101—365 8 Claims



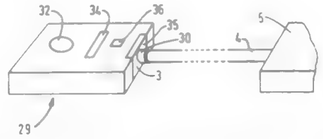
1. A doctor blade bar assembly for a short inking system of a web-fed rotary printing press, said doctor blade bar assembly comprising:
a doctor blade bar having at least a first doctor blade supporting base body;
a doctor blade holder and a doctor blade guide slidably supported on said doctor blade bar for movement with respect to said at least first doctor blade supporting base body and supporting a doctor blade;
means to resiliently urge said doctor blade guide and said doctor blade for sliding movement on said doctor blade bar independent of movement of said first doctor blade supporting base body toward a surface of an ink-dispensing roller; and
actuating means to retract said doctor blade guide and said doctor blade holder away from a surface of an ink-dispensing roller to move said doctor blade away from an ink-dispensing roller and to hold said doctor blade guide and said doctor blade holder and said doctor blade in a retracted position while keeping said doctor blade bar stationary.

5,341,742

FIRING ARRANGEMENTS

Sidney Alford, Corsham, and Graham M. Cook, West, both of United Kingdom, assignors to EEV Limited, Essex, United Kingdom

PCT No. PCT/GB91/02247, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/10718, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 16, 1991, Ser. No. 960,502
Claims priority, application United Kingdom, Dec. 14, 1990, 9027203.0
Int. Cl.[5] F23Q *21/00*
U.S. Cl. 102—202.8 21 Claims



1. A firing arrangement for initiating a secondary explosive comprising:
a switch,
charge storage means electrically connected to said switch, for storing an electrical charge,
power supply means electrically connected to said charge storage means, for charging said charge storage means,
an initiator electrically connected to said charge storage means through said switch, for directly initiating the secondary explosive, and
a common unit, which during initiation is hand held, for housing said initiator and at least one of said switch, said charge storage means, and said power supply means, and including manually activated means for causing discharge of said charge storage means through said switch and said initiator, to directly initiate the secondary explosive.

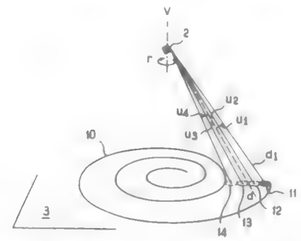
5,341,743

DIRECTED-EFFECT MUNITION

Christophe Redaud, Bourges, France, assignor to Giat Industries, Versailles, France

Filed Sep. 21, 1993, Ser. No. 124,012
Claims priority, application France, Sep. 21, 1992, 92 11220
Int. Cl.[5] F41G *9/00, 7/24*
U.S. Cl. 102—384 13 Claims

1. A directed-effect submunition projectable, before being detonated, along a substantially vertical axis above a region containing a target, said submunition having a displacement velocity along said vertical axis and a rotation velocity relative to said vertical axis, said submunition comprising:
a charge having an axis of symmetry forming a first angle with said vertical axis;
a detection device having a detection axis forming a second angle with said axis of symmetry;
means for detecting a target;
means for triggering said charge when said target is detected;
means for determining at least one of displacement velocity and altitude of the submunition with respect to the region containing said target;



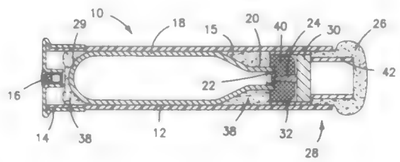
calculation means for calculating, based on at least one of said displacement velocity and said altitude, a trajectory angle selected from among a set of trajectory angles, said trajectory angle minimizing a deviation existing between a position of a target instantaneously detected and an impact point of the submunition if the submunition were triggered upon detection of the target; and
means for imparting said trajectory angle between said detection axis and said axis of symmetry.

5,341,744

CLEANING SHELL FOR FIREARMS

Xiao Shi, 3 Coleman St., 2A, West Haven, Conn. 06516

Filed Feb. 22, 1993, Ser. No. 20,430
Int. Cl.[5] F42B *5/24*
U.S. Cl. 102—442 17 Claims



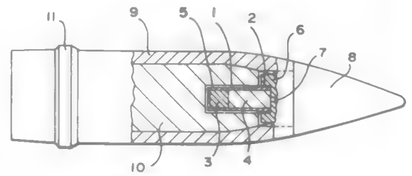
1. An apparatus for cleaning the bore of a firearm, comprising:
a shell housing having a rearwardly oriented base portion, a substantially tubular body defining a cavity, and a forward end;
tank means for confining a compressed fluid, the tank means being slidably disposed within the cavity of the housing;
cleaning means for cleaning the bore of the firearm disposed forward of the tank means;
means for rupturing the tank means located between the cleaning means and the tank means and means for connecting the rupturing means to the cleaning means whereby the compressed fluid is released from the tank means and propels the cleaning means and the rupturing means through the bore of the firearm;
means for displacing the tank means toward the rupturing means so as to rupture the tank means, the displacing means comprising a primer disposed in the cavity of the housing between the base portion of the housing and the tank means, whereby actuation of the primer causes the tank means to displace toward the rupturing means; and
a ring mounted within the housing between the tank means and the forward end of the housing so as to retain the tank means in the cavity of the housing.

5,341,745

GRENADE CONTAINING AN INCENDIARY ELEMENT

Kare R. Strandli, Lyngv. 5, and Colin Foreman, Lyngv. 18, both of 2830 Raufoss, Norway

Filed Jul. 31, 1992, Ser. No. 922,485
Claims priority, application Norway, Aug. 1, 1991, 912996
Int. Cl.[5] F42B *12/20, 12/44*
U.S. Cl. 102—499 2 Claims



1. A grenade comprising:
a shell having a rearward closed end and a forward open end;
a main charge disposed in the shell and a bore centrally disposed within a forward end of the main charge;
a nose portion connected to the forward end of the shell;
a fuse in said nose portion having a threaded rearwardly extending opening;
an incendiary retainer in the form of a tube open at its forward end and closed at its rearward end, and including external threads disposed at its forward open end;
an incendiary element pressed into and extending entirely over the closed end of the retainer tube, said incendiary element extending forwardly only partially along the length of the retainer tube;
a transfer or booster charge filling the remaining interior of the retainer tube to its forward end;
said external threads of said retainer threadedly engaging the threads of said opening of said fuse; and
said retainer disposed in said bore at the forward end of said main charge.

5,341,746

TRANSPORT WAGON COMPRISING A WAGON FRAME SUPPORTED ON ON-TRACK UNDERCARRIAGES

Josef Theurer, Vienna, and Manfred Brunninger, Altenberg, both of Austria, assignors to Franz Plasser Bahn Baumaschinen- Industriegeesellschaft m.b.H., Vienna, Austria

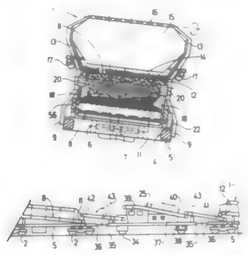
Filed Feb. 18, 1993, Ser. No. 19,225
Claims priority, application Austria, Mar. 16, 1992, A 530/92
Int. Cl.[5] B65G *67/00*
U.S. Cl. 105—355 11 Claims

1. A transport wagon comprising a wagon frame supported on-track undercarriages, said wagon frame comprising a plurality of frame parts,
each of said frame parts including an individual conveyor belt extending in a longitudinal direction of said wagon, said conveyor belt being inclined relative to a track plane and having a lower-lying receiving end and an elevated discharge end, and sidewalls associated with each conveyor belt, said sidewalls extending in a longitudinal direction of said conveyor belt and delimiting laterally each of said frame parts to form a storage space,
each of said frame parts further including control flaps in a

VOL 1165 ISS 5 AG 30 1994 UMI

region of the sidewalls and the discharge end of each frame part so as to be pivotable about pivot axes and connected to a pivot drive, wherein said control flaps are located between a region of the conveyor belt immediately preceding the discharge end and the receiving end of a preceding conveyor belt in a transport direction,

said frame parts being disposed one behind another in the longitudinal direction of said wagon, and being joined together in an articulated manner at articulation points located above said on-track undercarriages,



wherein successive frame parts are supported on a common on-track undercarriage,

wherein each of said control flaps include a lower edge which is immediately above the conveyor belt of a preceeding frame part when said control flaps are arranged vertically,

and wherein an angle formed between a pivot axis of each of the control flaps and a plane of the conveyer belt is between 0° and 50°.

5,341,747

RAILWAY GONDOLA CAR

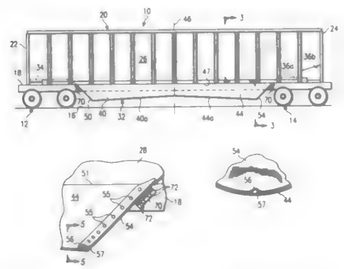
D. Bruce Fetterman, Arlington, and Stephen W. Smith, Dallas, both of Tex., assignors to Trinity Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 795,495, Nov. 21, 1991, Pat. No. 5,178,074, and a continuation-in-part of Ser. No. 986,752, Dec. 8, 1992, abandoned, and a continuation-in-part of Ser. No. 2,354, Dec. 9, 1992, Pat. No. Des. 344,913. This application Jan. 8, 1993, Ser. No. 1,838

The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.[5] B61D *7/00*

U.S. Cl. 105—406.1 **31 Claims**



1. A railway gondola car including trucks for movably supporting the car on railway tracks, comprising:

a center sill extending longitudinally between said trucks;

a gondola body including front and rear walls, side walls and a bottom assembly;

said bottom assembly including a plurality of generally concave troughs, said troughs being located on each side of said center sill and extending between said trucks, each trough extending at a downward angle from a first end towards a second end;

said first ends being located near the mid point of said center sill between said trucks and said second ends being located proximate said trucks;

end members connected to and closing said second end of each trough; and

said end members disposed at an angle relative to said center sill of approximately forty degrees to fifty degrees.

5,341,748

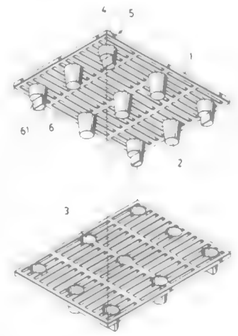
STACKABLE PALLET

Cheng-Chia Liu, No.10. Sung-chiang N. Rd., Chung-Li City, Taiwan

Filed Jul. 19, 1993, Ser. No. 92,887

Int. Cl.[5] B65D *19/00*

U.S. Cl. 108—53.3 **2 Claims**



1. A pallet of the type including a support platform and a plurality of hollow, conical-shaped struts extending downwardly from the platform for nesting engagement within corresponding struts of an adjacent pallet to permit stacking of the pallets, the improvement comprising:

a) each conical strut including a lower portion provided with an asymmetrical concavity which extends inwardly from one side of the lower portion approximately one-half of the width thereof, each concavity being partially defined by an inner horizontal wall and an outer horizontal wall, and all concavities facing in the same direction to permit nesting of two adjacent pallets in either of first and second nesting orientations; wherein

b) in the first nesting orientation, the inner and outer horizontal walls of the adjacent pallets are disposed in corresponding respective engagement with each other for decreasing the spacing between the support platforms of the nested pallets; and

c) in the second nesting orientation, the outer horizontal walls of one pallet are disposed in engagement with the inner horizontal walls of the other pallet for increasing the spacing between the support platforms of the nested pallets.

5,341,749

GANGING LEG AND SWING PLATE CONSTRUCTION FOR TABLES

Laura A. Noakes, New York, N.Y., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Jun. 2, 1992, Ser. No. 892,256

Int. Cl.[5] A47B *57/00*

U.S. Cl. 108—64 **23 Claims**

1. A gangable table, comprising:

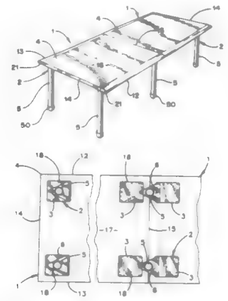
a top having a bottom surface, and at least one side edge for mating abutment when said top is positioned in a gaged relationship;

a leg arrangement supporting said top on a floor surface in a freestanding fashion, and including at least one ganging leg assembly, comprising:

a rigid leg having an upper end, and a lower end abutting the floor surface;

a swing plate fixedly mounted on the upper end of said leg, and matingly abutting the bottom surface of said top; and

fasteners detachably mounting said swing plate to the bottom surface of said top, and positioned for shifting said swing plate between a first support position wherein said leg is positioned wholly inboard of said side edge, underneath said top, for supporting said top in a stand alone fashion, and a second support position wherein said leg is positioned at least partially outboard of said side edge, protruding outwardly from said top, for supporting both said top and an adjacent top in a ganged fashion; said swing plate being configured such that in said second support position, the upper end of said leg is positioned directly beneath both adjacent side edges of the adjacent tops to rigidly support the same without sagging.



5,341,750

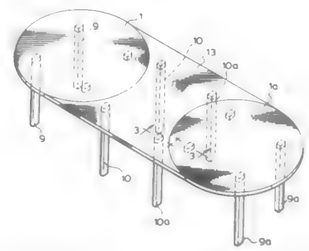
EXTENDABLE TABLE

Mike M. Fuchs, Thornhill, Canada, assignor to Eurocollection Canada Ltd., Brampton, Canada

Filed May 4, 1993, Ser. No. 56,398

Int. Cl.[5] A47B *1/00*

U.S. Cl. 108—64 **3 Claims**



1. An extendable resin table combination comprising first and second resin tables and a resin table extension comprising and removable fitted between said tables, each of said tables having first and second sets of undersurface leg pockets, said table extension including connectors fittable into said first set of leg pockets of each table which connects said table extension to said tables, said extension including third and fourth sets of leg pockets, said arrangement further including support legs releasably secured in said second set of leg pockets of said tables and also releasably secured in said third and fourth sets of leg pockets in said table extension, each of said tables having rounded table top edges and wherein said extension includes a center body part with a flat top and opposite end rounded edges mating with said rounded table top edges, said extension further including connector support portions bordered by said rounded edges of said extension and vertically below said table top, said connectors comprising posts extending upwardly from said support portions.

5,341,751

WORKCENTER AND SUPPORTS

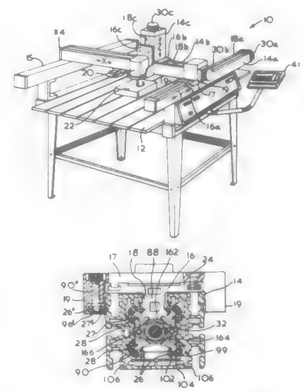
Giuseppe Cuneo, Calolzio Corte, and Sergio Bonacina, Galbiate, both of Italy, assignors to Black & Decker Inc., Newark, Del.

Filed Mar. 4, 1993, Ser. No. 26,381

Claims priority, application United Kingdom, Mar. 5, 1992, 9204770.3

Int. Cl.[5] A47B *11/00*

U.S. Cl. 108—143 **16 Claims**



1. A wood-machining workcentre for mounting a tool for movement in at least two directions, comprising:

linear elements of which at least one linear element comprises an extruded support of substantially U-shaped section having at least four tracks;

a carriage received within said support and having a centre line parallel said tracks;

bearing wheels journalled to said carriage and running on said tracks, four of said bearing wheels being mounted at or adjacent each end of the carriage on axles received in said carriage;

two of said wheels at each end of the carriage being radially adjustable to take up free play between said carriage and said support in a first plane perpendicular to said carriage centre line; and

each adjustable wheel being adjustable by an eccentric stub section of the respective axle on which that wheel is mounted, said respective axle being rotatable in the support to adjust the angular position of said eccentric stub section.

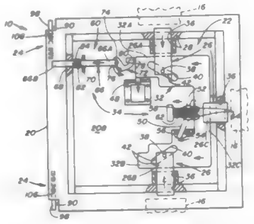
VOL 1165 ISS 5 AUG 30 1994 UMI

5,341,752

SECURITY SAFE WITH IMPROVED DOOR LOCKING FEATURES

Brian Hambleton, 47 Ridge Rd., Boulder, Colo. 80303

Continuation of Ser. No. 893,442, Jun. 4, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 151,465
Int. Cl.[5] G05G 1/04
U.S. Cl. 109—59 R 14 Claims



1. A security safe including a housing defining an interior storage cavity and having an annular portion defining an opening to said cavity, a door mounted to said annular portion of said housing for movement between opened and closed positions relative to said opening and having opposite exterior and interior sides with said interior side facing toward said interior cavity in said closed position of said door, and a lock and boltworks mechanism mounted on said door, said lock and boltworks mechanism comprising:

(a) a pair of first and second lock members disposed on said interior side of said door in spaced apart relation to and aligned opposite from one another and adjacent to opposite sides of said annular portion of said housing in said closed position of said door and being slidably movable toward and away from said annular portion between locked and unlocked positions with respect to said annular portion;

(b) a third lock member disposed on said interior side of said door in spaced apart relation to and offset from said first and second lock members and adjacent to an end of said annular portion of said housing extending between said opposite sides of said annular portion in said closed position of said door and being slidably movable toward and away from said annular portion between locked and unlocked positions with respect to said annular portion;

(c) means mounted on said door operable for converting said door between locked and unlocked conditions;

(d) means mounted on said interior side of said door adjacent to said opposite sides and said end of said annular portion of said housing in said closed position of said door and at positions corresponding to said first, second and third lock members for defining guide passages slidably receiving said respective lock members and supporting said lock members for linear movement toward and away from said annular portion between locked and unlocked positions with respect to said annular portion;

(e) a coupler member connected to said converting means and mounted on said interior side of said door, said coupler member being linearly movable between first and second displaced positions, said coupler member being movable from said first to second displaced position in response to said operable means converting from said locked to unlocked condition, said coupler member interconnecting said lock members such that said lock members undergo concurrent movement between said locked and unlocked positions in response to said coupler member undergoing linear movement between said first and second displaced positions, said coupler member having a substantially U-shaped configuration formed by a pair of side portions and an end portion extending between and interconnecting said side portions, said side portions of said coupler member being slidably connected to said first and second lock members such that said first and second lock members move in a direction generally transverse to the direction of linear movement of said side portions of said coupler member as said coupler member moves between said first and second displaced positions, said end portion of said coupler member being fixedly connected to said third one of said lock members such that said third lock member is centrally-located and equidistantly spaced from the first and second lock members and moves in the same direction and in unison with said end portion of said coupler member as said coupler member moves between said first and second displaced positions, said coupler member being movably mounted to said door and in a self-aligning relationship with respect to said lock members solely because of said respective slidably and fixedly connected relationships of said coupler member with said lock members in which said coupler member is guided by said means for guiding said third lock member solely because of said fixedly connected relationship of said coupler member with said third lock member, said converting means including a handle member mounted on said exterior side of said door for undergoing pivotal movement between unlatched and latched positions and being connected to said coupler member such that said coupler member is movable between said first and second linearly displaced positions in response to pivotal movement of said handle member between said latched and unlatched positions; and

(f) means mounted on said interior side of said door for causing movement of said coupler member from said second displaced position to said first displaced position in response to said door moving from said opened to closed position, said means for causing movement of said coupler member including a support member stationarily mounted on said interior side of said door in spaced relation from said transverse end portion of said coupler member and in alignment with said third lock member, said means for causing movement of said coupler member also including a spring mounted along said interior side of said door between and engaged with said support member and said transverse end portion of said coupler member and aligned with said third lock member, said spring being biased to extend and cause said coupler member to move from said second displaced position toward said first displaced position thereof and thereby said lock members to move from said unlocked positions toward said locked positions thereof, said spring being yieldably compressible in response to said handle being moved from said latched to unlatched position.

5,341,753

CIRCULATING FLUIDIZED BED POWER PLANT WITH IMPROVED MIXING OF SORBENTS WITH COMBUSTION GASES

David B. Russell, San Diego, Calif., assignor to Pyropower Corporation, San Diego, Calif.

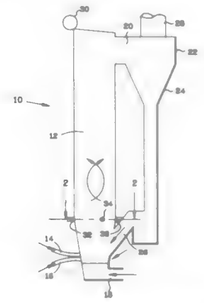
Filed Feb. 12, 1993, Ser. No. 16,847
Int. Cl.[5] F22B 1/02
U.S. Cl. 122—4 D 9 Claims

1. In a circulating fluidized bed combustor comprising;

a plurality of side walls defining a fluidized bed combustion chamber having a vertical orientation and a substantially rectangular cross-section;

recirculating means including a separator connected by conduct means to a return inlet for recirculating fluidized solids through the combustion chamber;

at least one nozzle disposed immediately above said return inlet for injecting steam outward from and adjacent to each side wall into said combustion chamber for inducing a circular flow of circulating material in said combustion chamber substantially perpendicular to the circulating flow as said circulating material flows upward through said chamber; and



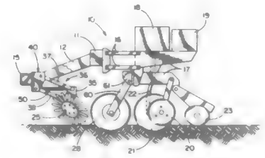
a source of high pressure steam for injecting at a high velocity through said nozzles for inducing said circular flow for improved mixing of gases and solids in said chamber.

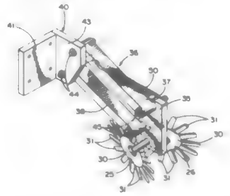
5,341,754

ROTARY ROW CLEANER FOR A PLANTER

Dean A. Winterton, Paw Paw, Ill., assignor to Farmer's Factory Co., Lee, Ill., a part interest

Filed Apr. 3, 1992, Ser. No. 863,219
Int. Cl.[5] A01C 5/04
U.S. Cl. 111—139 3 Claims





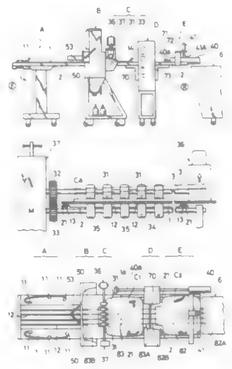
1. Apparatus for use with a planter unit having an elongated and laterally extending bar by which the planter unit is pulled forwardly, the planter unit having means for opening a furrow in minimally tilled or untilled soil, said apparatus comprising a pair of vertically spaced and generally parallel bars having forward ends pivotally connected to said elongated bar to swing upwardly and downwardly independently of said furrow opening means, said parallel bars extending downwardly and rearwardly from said elongated bar, an upright mounting bracket pivotally connected to the rear ends of said parallel bars, a pair of toothed sweeper wheels rotatably supported by said upright mounting bracket and located ahead of said furrow opening means, said wheels being positioned in engagement with the soil and being positioned with their centers on opposite sides of a vertical plane in the path of travel of said furrow opening means whereby forward movement of said planter unit rotatably drives said wheels to cause the wheels to pull residue in laterally opposite directions away from the path of the advancing furrow opening means, and means biasing said parallel bars downwardly to press said wheels into the soil while allowing the wheels to move upwardly and downwardly in uneven soil, said pair of toothed sweeper wheels being the only ground-engaging members carried by said parallel bars.

5,341,755

AUTOMATED MULTIPLE-NEEDLE SEWING MACHINE

Kiyoshi Kawasaki, Ohme, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,214
Int. Cl.[5] D05B 1/08
U.S. Cl. 112—163 11 Claims



1. An automated multiple-needle sewing device, comprising:

a multiple-needle sewing mechanism;

a table extending in a forward direction and rearward direction relative to said multiple-needle sewing mechanism, wherein a forward area and a rearward area are defined on said table in relation to said multiple-needle sewing mechanism;

a guide means upon which a material to be sewn is securely mounted, said guide means being moveable on said table along a longitudinal direction thereof, passing through said multiple-needle sewing mechanism;

a feed roller mechanism disposed at said rearward area, said feed roller mechanism including:

(a) a pair of shafts extending transversely of said table;

(b) at least one feed roller fixed on each shaft of said pair of shafts; said feed roller being normally disposed for contact with both said guide means and material in order to feed them;

(c) a gear means provided on said pair of shafts, one of said gear means being operatively connected with a driving source; and

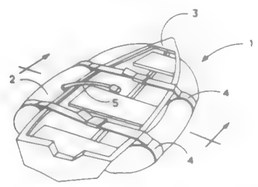
(d) a lifting means for lifting one of said shafts upwardly so as to raise said feed roller out of contact with said guide means and said material thereof;

a yarn cutting mechanism which is disposed more rearwardly than said feed roller mechanism at said rearward area; and

a guide means returning mechanism which is disposed more rearwardly than said yarn cutting mechanism, said guide means returning mechanism being for returning said guide means to said forward area.

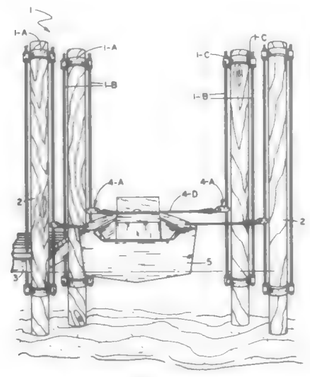
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,756
STORAGE MEANS FOR WATERCRAFT
Donald Hinze, N2232 Cleghorn Rd., Waupaca, Wis. 54981
Filed Aug. 18, 1993, Ser. No. 107,634
Int. Cl.[5] B63C *7/00*
U.S. Cl. 114—54 5 Claims



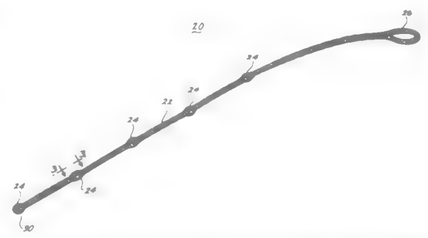
1. An inflatable support apparatus for lifting and supporting a watercraft above a surface for an extended period of time, comprising;
1) at least one toroidal shaped inflatable accommodating support body, for lifting and supporting a watercraft above a surface and at least two separate segments of the support body pass under the watercraft,
2) securement bands joined with the support body at locations around the perimeter of the support body and said bands serve to position and secure the support body in place relative to the watercraft,
3) an inflation means having as a part thereof an elongate tube through which said inflatable support body is inflatable from a location at a distance from the support body.

5,341,757
VERTICALLY ADJUSTING MOORING DEVICE
Don A. Digiacomo, 9131 SW. 122nd Ave., Apartment 5-105, Miami, Fla. 33186
Filed Nov. 15, 1993, Ser. No. 152,392
Int. Cl.[5] B63B *21/00*
U.S. Cl. 114—230 9 Claims



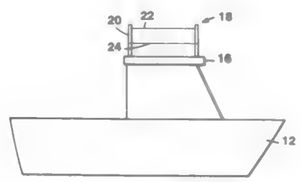
1. A vertically adjusting mooring device for a floating object, comprising:
(a) a pair of cables, each cable comprising an upper end and a lower end;
(b) means for connecting said pair of cables vertically along opposite sides of a dock post,
said upper end of each of said cables is connected to said dock post at a position above the surface of the water and said lower end of each of said cables is connected to said dock post at a position sufficiently above the ground surface to prevent said floating object from contacting the ground surface, whereby said cables are positioned substantially near said dock post; and
wherein said means for connecting said cables to said dock post comprises a top connecting bracket and a bottom connecting bracket, wherein each of said lower cable ends is threaded through said bottom bracket on opposite sides and secured by a cable head, and wherein each of said upper cable ends is threaded through said top connecting bracket and secured by a nut threaded onto said upper cable end;
(c) at least one pulley;
(d) means for rotatably coupling said pulley to one of said cables for vertical movement between said upper end and said lower end of said cables; and
(e) means for fastening said pulley to said floating object such that said pulley moves vertically in contact with said cable as said floating object moves vertically.

5,341,758
SURFING ROPE
David A. Strickland, 8754 Sand Point Way NE., Seattle, Wash. D#115
Filed Sep. 16, 1991, Ser. No. 760,767
Int. Cl.[5] B63B *35/85*
U.S. Cl. 114—253 15 Claims



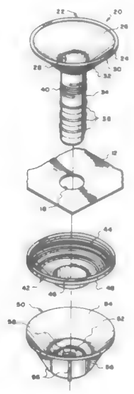
13. A tow rope for towing a person behind a moving vehicle, comprising:
an expandable tubular sleeve defining a hollow interior;
a plurality of shaped inserts capable of being inserted within the hollow interior of the sleeve at predetermined intervals along the length of the sleeve to expand the diameter of the sleeve at locations covering the inserts, thereby creating a plurality of enlarged diameter gripping nodules along the length of the sleeve spaced apart by smaller diameter segments of the tow line so that the tow line has a discontinuous profile and can be gripped at selected nodules or between spaced nodules, wherein the inserts have a predetermined length and diameter so that the gripping nodules are substantially contained within the hand of a user grasping a gripping nodule and being substantially nonelongatable when grasped, whereby a person can securely grip the tow line at selected nodules while under dynamic towing conditions;
means for securely retaining the inserts within the sleeve to prevent the inserts from sliding within the sleeve during dynamic loading of the tow line, wherein adjacent inserts are spaced apart a distance exceeding the length of each insert; and
wherein the tow rope is of buoyant construction.

5,341,759
SEA BIRD DETERRENT FOR BOATS AND NAVIGATION AIDS
Roger W. Hood, 15 Durfee Ct., Somerset, Mass. 02726
Filed Jan. 2, 1991, Ser. No. 636,768
Int. Cl.[5] B63B *21/52*
U.S. Cl. 114—255 11 Claims



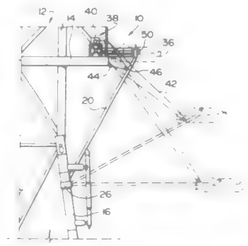
1. A boat comprising
a boat shell,
a deck on said shell providing surfaces to support people,
a top at an elevation above said deck,
at least two posts extending upward from said top, and
at least one line between said posts at an elevation above said top to prevent sea birds from landing on said top, said elevation being greater than about 5" and less than about 20",
wherein there are four said posts generally along the perimeter of said top, and said lines go generally along the perimeter of said top between posts, said lines along said perimeter defining a region having more than about 3' between said lines, said region having a generally square area, said lines being at two elevations,
wherein there is an additional line bisecting the region within the perimeter such that there is a space of no more than about 3' between lines.

5,341,760
TARPAULIN DRAINAGE APPARATUS
James A. Summers, 27717 Avenue Scott, Valencia, Calif. 91355
Filed Sep. 27, 1993, Ser. No. 126,873
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—361 2 Claims



1. A tarp drainage apparatus for draining liquid from a low area within the top surface of a tarp which has been used to cover an exterior object, said tarp drainage apparatus comprising:
a funnel having a flared upper end and a tubular lower end, said flared upper end being cup shaped, said funnel having a center through opening adapted to pass liquid therethrough, said flared upper end having a back annular surface, said tubular lower end adapted to be conducted through a hole in a tarp with said back annular surface resting on the tarp, said tubular lower end having a series of exterior screw threads;
a washer having a center opening, said washer having a cup shaped surface which matingly matches with said cup shaped surface of said flared upper end, said cup shaped surface to abut against said back annular surface with the tarp adapted to be located therebetween, said tubular lower end located within said center opening, said washer having a smoothly contoured back surface;
a clamping nut having a through hole, said clamping nut having a smoothly contoured clamping surface, said through hole including a series of internal screw threads, said internal screw threads to engage with said exterior screw threads with said clamping surface abutting against said smoothly contoured back surface, whereby as said clamping nut is tightened said smoothly contoured clamping surface slides on said smoothly contoured back surface tightly clamping the tarp between said funnel and said washer;
said back annular surface having a plurality of first protuberances, said cup shaped surface having a plurality of second protuberances, said first and second protuberances cooperate together to tightly clamp therebetween the tarp and prevent rotational movement of said washer relative to said funnel;
a drain hose, said drain hose being secured to said tubular lower end, whereby the draining liquid is to be conducted from said center through opening into said drain hose and to a desired disposing location located spaced from said tarp drainage apparatus; and
said clamping nut having an exterior surface which includes a series of spaced apart ribs, said ribs facilitating manual installation of said drainage apparatus by a human by being manually contactable to apply a turning torque during tightening of said clamping nut.

5,341,761
EVACUATION SYSTEM
Daniel P. O'Brien, and Paul Johnson, both of 95 Elizabeth Avenue, St. John's Newfoundland, Canada
Filed Jun. 4, 1993, Ser. No. 71,249
Int. Cl.[5] B63B *23/04*
U.S. Cl. 114—365 27 Claims

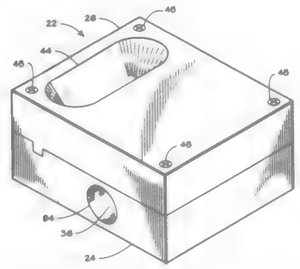


1. A system for launching and retrieving from an offshore work platform a boat having support pins extending outwardly thereof, said system comprising:
a deployment arm adapted to be rotatably secured at one end thereof to superstructure of said platform for rotation between a first pre-launch position in which an outer end of said arm is above the surface of the water and a second

VOL 1165 ISS 5 AG 30 1994 UMI

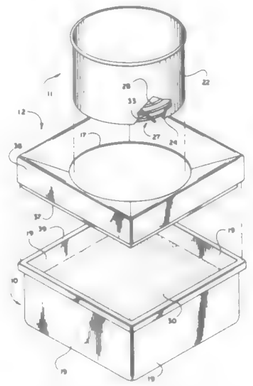
post-launch position in which said outer end of said arm is substantially at or below the surface of the water;
means for controlling rotation of said arm between said first and second positions;
a pair of spaced support members mounted adjacent said outer end of said arm, each having thereon an open claw structure for receiving a support pin connected to and extending outwardly of a boat to be launched and retrieved,
said claw structure opening generally upwardly when said deployment arm is in said first pre-launch position and opening upwardly and outwardly when said deployment arm has been rotated to a position in which the outer end thereof is at or near water level,
said system being free of structure in addition to said deployment arm and support members for connecting said system with a boat.

5,341,762
ULTRASONIC PEST CONTROL DEVICE AND METHOD FOR CONSTRUCTING THE SAME
Robert L. Petersen, Kentfield, Calif., assignor to Viprotec, Beverly Hills, Calif.
Filed Feb. 1, 1993, Ser. No. 11,960
Int. Cl.[5] G10K *5/02, 7/06*
U.S. Cl. 116—137 A **15 Claims**



1. An ultrasonic pest control device comprising:
a first block, a second block, and means for coupling said first and second blocks together, said first and second blocks when coupled together forming at least one ultrasonic whistle in fluid communication with a manifold and an acoustic horn;
said first block comprising a first face and a second face opposite said first face, said first face having said acoustic horn formed therein, and said second face comprising a first surface and a second surface separated by a raised tongue;
said first surface having a primary cut and at least one secondary cut formed therein, said primary cut having one edge bordering said raised tongue and having another edge intersecting said at least one secondary cut, and said primary cut extending through said first block to said acoustic horn;
said raised tongue having at least one tertiary cut formed therein, a base portion of said at least one tertiary cut forming a knife edge across from said intersection of said at least one secondary cut and said primary cut;
said second block comprising a third face and having said manifold formed therein, said manifold being adapted to receive fluid from a fluid source, said third face comprising a third surface and a fourth surface separated by a channel;
said channel being adapted to slideably receive said raised tongue of said first block, said third surface having at least one cut formed therein, said at least one cut corresponding to said at least one secondary cut of said first block, and said manifold being in fluid communication with said at least one cut.

5,341,763
REMOVABLE SCREEN FOR ANIMAL LITTER BOX
John P. Bondurant, III, 106 Braeburn Dr., Athens, Ga. 30601
Filed Sep. 16, 1993, Ser. No. 122,765
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—166 **5 Claims**

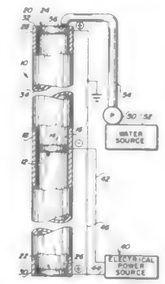


1. An animal litter box with a litter screen, comprising in combination:
a box having a liquid-impervious bottom and sides effective to receive and contain a quantity of animal litter; and
a litter screen removably disposed in the box;
the litter screen having a hollow cylindrical body with a longitudinal axis;
the body having an open upper end to allow an animal to enter the hollow body and use the litter box; and
the litter screen having a lower end associated with the body and comprising a plurality of curvilinear turns concentric with the longitudinal axis;
the radial gap between adjacent concentric turns being sized to sift solid waste products from the litter and retain those waste products within the litter screen while the litter flows through the gaps as the litter screen is lifted from the box,
whereby the litter screen, after the retained waste products are discarded, can be returned to the box by placing the lower end on the litter in the box and thrusting downwardly on the body while oscillating the litter screen around the longitudinal axis of the body.

5,341,764
ELECTRIC FISH BARRIER
Norman G. Sharber, 515 W. Havasupi Rd., Flagstaff, Ariz. 86001
Filed Oct. 13, 1992, Ser. No. 960,119
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—220 **27 Claims**

15. A module fish barrier for accommodating fluid communication between two bodies of water and for inhibiting movement of fish therethrough without injuring such fish, said modular barrier comprising in combination:
a) a means for accommodating flow of water between the bodies of water;
b) a first electrode at a first voltage potential associated with said accommodating means;
c) a pair of equipotential second electrodes at a second voltage potential different from said first voltage potential

associated with said accommodating means and bracketing said first electrode;
d) means for establishing an electric field between said first electrode and each electrode of said pair of electrodes and within any water in said accommodating means disposed



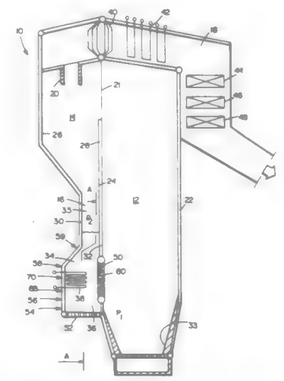
between said pair of second electrodes and defining a segment of said accommodating means to induce at least narcosis in any fish entering the defined segment of said accommodating means; and
e) means for limiting the electric field to be within the defined segment of said accommodating means.

5,341,765
PROTECTIVE GARMENT FOR ANIMAL FRONT LEGS
Darlene D. McComb, 3011 E. Funston, Wichita, Kans. 67211
Filed May 13, 1993, Ser. No. 61,158
Int. Cl.[5] A01K *13/00*
U.S. Cl. 119—850 **12 Claims**



1. A protective garment for an animal's front legs, comprising:
(a) an elongated back strap fittable over the back and shoulders of an animal;
(b) a pair of leg holsters attached to opposite ends of said back strap and being tapered so as to fit around the front knees adjacent upper and lower front leg areas of the animal such that such areas are protected from direct contact with a surface upon which a dog may be lying so as to prevent callus development on and minimize hair loss from such areas of the animal; and
(c) means extendable under the chest of the animal behind the front legs thereof for interconnecting said back strap adjacent to said opposite ends thereof;
(d) said back strap and leg holsters being formed integrally with one another from a blank of continuous length flexible material having a pair of opposite end portions, said back strap being a middle portion of said blank extending between said opposite end portions of said blank, said leg holsters being formed by turning said opposite end portions of said blank inwardly and circumferentially and attaching said opposite end portions of said blank to said opposite ends of said back strap.

5,341,766
METHOD AND APPARATUS FOR OPERATING A CIRCULATING FLUIDIZED BED SYSTEM
Timo Hyppanen, Karhula, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland
Filed Nov. 10, 1992, Ser. No. 973,396
Int. Cl.[5] B09B *3/00*; **F22B** *1/00*
U.S. Cl. 122—4 D **32 Claims**



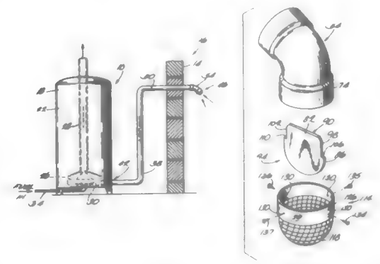
1. A method of operating a circulating fluidized bed reactor system, utilizing a combustion chamber, having a fluidized bed of particles therein, a particle separator connected to a discharge opening in the upper part of the combustion chamber, a return duct connected in its upper part to the particle separator and in its lower part to the combustion chamber through two or more inlets disposed one on top of the other and including a top inlet, and a gas outlet in the particle separator, the method comprising the steps of:
(a) establishing a fast fluidized bed of solid particles in the combustion chamber so that a particle suspension comprising flue gases and solid particles entrained therein is caused to flow upwardly in the combustion chamber,
(b) collecting solid particles separated from the gas and particle suspension,
(c) directing the collected solid particles into the return duct,
(d) establishing a bed of solid particles in the return duct immediately in front of the inlets and having an upper surface above the top inlet to provide a gas seal to substantially prevent the passage of gas through the inlets, and
(e) introducing transporting gas into the bed of solid particles in the return duct to effect recycling of particles from the bed through the inlets into the combustion chamber.

5,341,767
COMBUSTION AIR INLET DIVERTER PLATE FOR A WATER HEATER
Herbert E. Smith, Sumter, S.C., assignor to AOS Holding Company, Milwaukee, Wis.
Filed May 5, 1993, Ser. No. 57,725
Int. Cl.[5] F24H *1/00*
U.S. Cl. 122—14 **8 Claims**

1. A water heater comprising:
a tank defining a water chamber;
a combustion chamber for heating water in said water chamber,
a combustion air inlet pipe including an outlet end communicating with said combustion chamber, and including a generally horizontal inlet pipe; and

VOL 1165 ISS 5 AG 30 1994 UMI

a generally planar vertical plate connected to said inlet end of said pipe, said plate extending outwardly from and



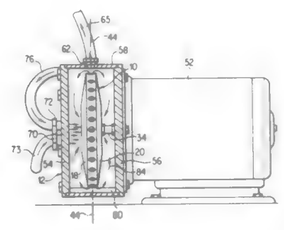
extending across said inlet end so as to substantially prevent horizontal air flow completely across said inlet end.

5,341,768

APPARATUS FOR FRICTIONALLY HEATING LIQUID

Ralph E. Pope, Cumming, Ga., assignor to Kinetic Systems, Inc., Lynn, N.C.

Filed Sep. 21, 1993, Ser. No. 124,019
Int. Cl.[5] F24C *9/00*
U.S. Cl. 122—26 **10 Claims**



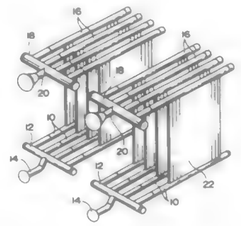
1. Apparatus for heating liquid comprising: a rotor for disposition within a housing defining a reservoir for a heat transfer liquid, said rotor being rotatable about an axis of rotation in a predetermined direction and having axially spaced front and rear annular face members each having radially spaced inner and outer edges, radially spaced inner and outer cylindrical surfaces of predetermined axial width joining the respective inner and outer edges of said face members, a web having an axial width substantially less than the axial width of said inner cylindrical surface and being fixed to said surface midway of the width thereof, said web with said inner cylindrical surface on either side of said web defining first and second annular inlet cavities in said rotor, and a plurality of passages in said rotor having outlets circumferentially spaced around and opening through said outer cylindrical surface, alternate ones of said passages having inlets opening through said inner cylindrical surface on one side of said web to connect said alternate ones of said outlets with said first inlet cavity, the other alternate ones of said passages having inlets opening through said inner cylindrical surface on the other side of said web to connect said other alternate outlets with said second inlet cavity.

5,341,769

VAPORIZER FOR LIQUEFIED NATURAL GAS

Koichi Ueno; Akio Tsukamoto, both of Takasago; Tamotsu Tori, Kobe; Hiroo Nishimura, Kobe; Keizo Konishi, Kobe, and Fukuzo Harada, Takasago, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Dec. 11, 1992, Ser. No. 989,375
Claims priority, application Japan, Dec. 12, 1991, 3-329053
Int. Cl.[5] F22B *23/06*
U.S. Cl. 122—367.3 **4 Claims**



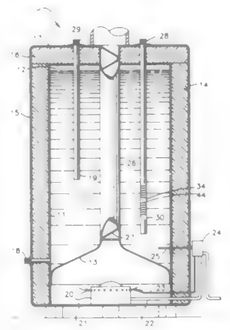
1. A vaporizer for liquefied natural gas having an inlet header into which liquefied natural gas is introduced and an outlet header into which vaporized natural gas is introduced, said inlet header and outlet header being connected to each other by heat exchanger tubes extending in the direction approximately perpendicular to said inlet header and outlet header, each of said heat exchanger tubes being heated by a heating medium running along the outside thereof so that liquefied natural gas is vaporized therein, characterized in that said heat exchanger tube is provided therein with a pipe through which liquefied natural gas is introduced from said inlet header, said pipe extending from one end thereof near said inlet header to a certain position, said pipe having fins projecting from the outside thereof toward the inside of said heat exchanger tube, with the ends of said fins being in pressure contact with the inside of said heat exchanger tube, so that that part of said heat exchanger tube which is near the outlet header and beyond the region in which said pipe lies is in direct contact with liquefied natural gas.

5,341,770

INTEGRAL LIME INHIBITOR

Eric M. Lannes, Kentwood, Mich., assignor to Bradford-White Corporation, Ambler, Pa.

Filed Mar. 26, 1993, Ser. No. 38,154
Int. Cl.[5] F22B *37/48*
U.S. Cl. 122—383 **14 Claims**



1. A water heater comprising a water storage tank; a water inlet port; and an inlet conduit connected to said port and extending into said tank, said conduit having a passage for water flow;

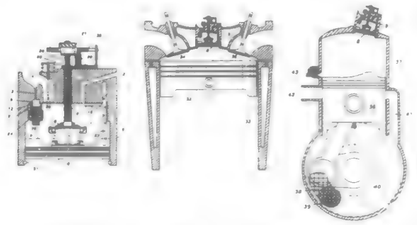
deflecting means positioned internally of said conduit and having an angularly arranged surface relative to said conduit for deflecting the path of water flow, said deflecting means being constructed and arranged to create turbulent water flow within said conduit and to introduce turbulent water into said water storage tank.

5,341,771

INTERNAL COMBUSTION ENGINE WITH VARIABLE COMBUSTION CHAMBERS AND INCREASED EXPANSION CYCLE

Michael B. Riley, Fort Collins, Colo., assignor to Motive Holdings Limited, Fort Collins, Colo.

Filed Dec. 3, 1991, Ser. No. 800,920
Int. Cl.[5] F02B *75/04*
U.S. Cl. 123—48 AA **33 Claims**



1. An assembly for varying the combustion chamber volume in an internal combustion engine, comprising a housing with a chamber in communication with the combustion chamber; a piston slidably and adjustably extending into the housing chamber to adjust the volume of the combustion chamber; a hydraulic chamber containing hydraulic fluid, substantially enclosed by the piston and the housing on the opposite side of the piston from the combustion chamber, the hydraulic chamber having a hydraulic fluid channel extending from inside the hydraulic chamber to outside the hydraulic chamber to allow limited release of hydraulic fluid therethrough upon an increase in the pressure in the hydraulic fluid, and a hydraulic fluid port from inside the hydraulic chamber to outside the hydraulic chamber, the hydraulic port having an operable valve to open and close it and being sized substantially larger than the hydraulic fluid channel to allow a flow rate substantially greater than the flow rate through the hydraulic flow channel.

5,341,772

INTAKE MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE HAVING A CYLINDER HEAD

Klaus Döhring, Heidelberg, Fed. Rep. of Germany; Tom Boardman, Lanconia, N.H., and Chris Andrews, New London, N.H., assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jul. 6, 1993, Ser. No. 88,287
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1992, 4221913
Int. Cl.[5] F02M *35/10, 25/06;* **F02F** *1/42;* **F01M** *13/00*
U.S. Cl. 123—184.21 **14 Claims**

1. An intake manifold for an internal combustion engine having a cylinder head comprising:

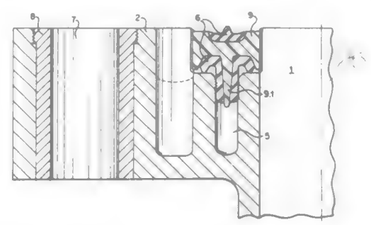
at least one intake pipe;

an intake manifold flange for leak free attachment of the intake manifold to the cylinder head;

a bypass line for feeding a secondary gas into an intake opening of the internal combustion engine; and

a secondary gas connection for providing said secondary gas into said bypass line,

wherein the bypass line is formed by a groove in the intake flange open in the direction of the portion of the flange



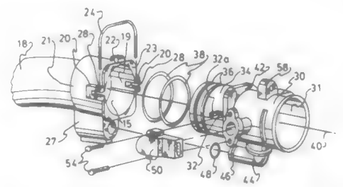
which is attached to the cylinder head, and wherein the secondary gas connection is connected to one end of the groove and the intake pipe is connected to the other end of the groove.

5,341,773

JOINT FOR AN AUTOMATIVE AIR INDUCTION SYSTEM

Paul J. Schulte, Ann Arbor, and Catherine A. Gandolfo, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 4, 1993, Ser. No. 145,552
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—184.61 **13 Claims**



1. An air induction system for an internal combustion engine comprising:

throttle means for selectively throttling flow into said engine comprising a throttle body having a throttle valve therein and a sleeve extending therefrom, said sleeve having at least one lug thereon;

a manifold having an opening for receiving said sleeve and having at least one slot for receiving said at least one lug to provide positive location for said sleeve relative to said opening; and

means for retaining said at least one lug in said at least one slot so that an unstressed joint is formed between said throttle body and said manifold.

5,341,774

SELF SUPERCHARGED TWO STROKED CYCLE AND ENGINE HAVING MIGRATING COMBUSTION CHAMBERS

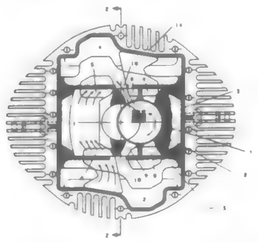
Frederick L. Erickson, 12108 Burning Tree Rd., Fort Wayne, Ind. 46845

Filed Oct. 12, 1993, Ser. No. 134,619
Int. Cl.[5] F02B *59/00*
U.S. Cl. 123—61 R **20 Claims**

1. In a self supercharged two stroke cycle internal combustion engine having a stationary power block housing, a combustion chamber member, a working piston, a crankshaft, and bearing means rotatably joining said crankshaft and said working piston, wherein the working piston is adapted to recipro-

VOL 1165 ISS 5 AG 30 1994 UMI

cate inside and along a first axis relative to the combustion chamber member whereby two combustion chambers are formed with the working piston separating them, and wherein said combustion chamber member is adapted to reciprocate inside and relative to the stationary power block housing along a second axis substantially perpendicular to said first axis, whereby the working piston is guided through a circular motion by the crankshaft; and whereby the combustion chambers simultaneously change volume and position, the improvement comprising: a pair of non-symmetrical exhaust ports, one for each combustion chamber, and each comprising an aperture in



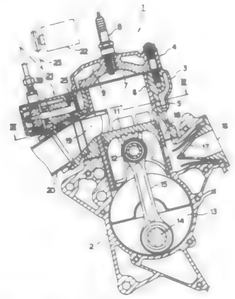
the stationary power block housing located relative to the combustion chamber member and the working piston to be covered and closed off from the combustion chamber by motion of the combustion chamber member and subsequently uncovered and reconnected to the combustion chamber by motion of the working piston to thereby provide non-symmetrical exhaust port timing for the combustion chamber relative to its bottom dead center reference point in which the exhaust port opens at a larger angle before bottom dead center than the angle at which the exhaust port closes after bottom dead center.

5,341,775

EXHAUST TIMING CONTROLLER FOR TWO-STROKE CYCLE ENGINE

Kosaku Yamauchi, Shizuoka, Japan, assignor to Suzuki Kabushiki Kaisha, Shizuoka, Japan

Filed May 5, 1993, Ser. No. 56,895
Claims priority, application Japan, Dec. 28, 1992, 4-349118
Int. Cl.[5] F02B *25/20*
U.S. Cl. 123—65 PE **16 Claims**



1. An exhaust timing controller for a two-stroke cycle engine having a crank case, a cylinder block with a cylinder bore providing an inside wall surface, and a cylinder head, the crank case having a scavenging port having a suction end and an opposite end opening to the inside wall surface of the cylinder bore, an exhaust port passing through the cylinder block from the inside wall surface of the cylinder bore to the exterior of the block, the exhaust port having an open edge portion opening into the cylinder bore, the exhaust timing controller comprising:

an actuator for transmitting power;

an eccentric cam being operatively connected to and driven by the actuator; and

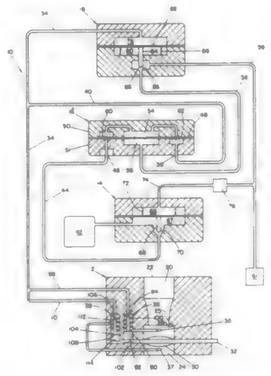
an exhaust timing control valve for changing the height of the open edge portion on the top dead center side of the exhaust port, the exhaust timing control valve moving axially of the cylinder bore and in and out of the exhaust port by the motion of the eccentric cam to provide an elevating stroke of the exhaust timing control valve, whereby the exhaust timing of the engine accelerates in response to rotational frequency rises in the engine.

5,341,776

FUEL SUPPLY SYSTEM

Harold E. Phelps, 1845 B Franciscan Ter., Winston Salem, N.C. 27127

Filed Jul. 12, 1993, Ser. No. 89,483
Int. Cl.[5] F02B *33/04*
U.S. Cl. 123—73 C **13 Claims**



1. A fuel supply system for operating an engine in various positions including an inverted position, comprising:

a housing,

a mixing passage in said housing for supplying a mixture of fuel and air to the engine,

a throttle valve in said passage for controlling the supply of air and fuel mixture to the engine,

a pump operative in response to vacuum pulsations in conduit communicating with the crank case of the engine and having an inlet for receiving fuel and an outlet for delivering fuel,

a fuel metering system connected to said outlet of said pump and to said mixing passage, and

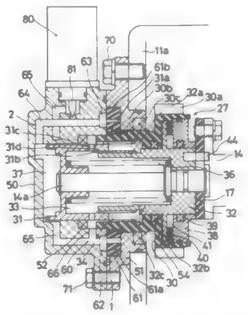
fuel control means responsive to the level of pressure of fuel delivered by said pump to regulate the level of vacuum in said conduit to drive said pump and thereby regulate the output pressure of fuel from said pump to said fuel metering system.

5,341,777

VALVE OPERATION CONTROL SYSTEM

Yasushi Miura, Toyoake, and Kongo Aoki, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 29, 1993, Ser. No. 10,884
Claims priority, application Japan, Jan. 30, 1992, 4-015470
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **4 Claims**



1. A valve operation control system for an internal combustion engine having a cam-shaft and a crank-shaft, comprising:

a timing gear driven by the crank-shaft;

a transmitting member connected to the cam-shaft; and

means for adjusting a phase difference between the cam-shaft and the crank-shaft, the means for adjusting including a pump having an inlet port and an outlet port, a pressure chamber disposed between the inlet port and the outlet port of the pump, a piston associated with the timing gear and the transmitting member in such a manner that movements of the piston in opposite directions respectively establish an increase and a decrease of the phase difference between the cam-shaft and the crank-shaft, one side of the piston being exposed to the pressure chamber, biasing means for biasing the piston toward the pressure chamber, a passage provided between the inlet port and outlet port of the pump and bypassing the pressure chamber, and control means for opening and closing the passage.

5,341,778

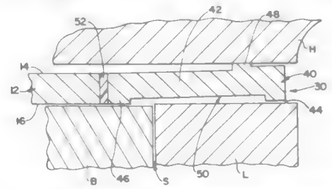
Patent Not Issued For This Number

5,341,779

BEAM FUNCTIONING FIRE RING

Colin Chen, Barrington; Hoover Oliver, Jr., LaGrange, and Thomas Zurfluh, Evanston, all of Ill., assignors to Fel-Pro Incorporated, Skokie, Ill.

Filed Oct. 5, 1993, Ser. No. 131,703
Int. Cl.[5] F16J *15/06*
U.S. Cl. 123—193.3 **12 Claims**



1. An internal combustion engine assembly including a head, a block defining at least one cylinder and a liner in each cylinder and said block and said liner defining a liquid filled annulus, and a gasket assembly comprising an expansive main gasket body having upper and lower main surfaces adapted to be disposed between said head and block, said gasket body defining a plurality of openings, including at least one combustion opening, fluid openings and bolt holes, and an annular beam functioning fire ring positioned and disposed in each combustion opening,

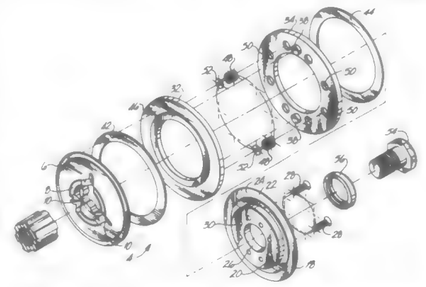
each beam functioning fire ring comprising, in radial cross-section, an annular beam, an annular bead projecting from the beam in a first vertical direction and annular support feet projecting from the beam in the opposite vertical direction, said feet straddling and defining an annular recess therebetween, said bead being disposed above said recess and between said feet and being offset radially inwardly of said recess from the vertical projection of each foot by a distance at least equal to one half of the radial width of said bead, with at least a first foot being supported on the upper surface of said liner and a second foot being supported on said block, said first foot providing a combustion seal and said second foot providing a liquid seal to prevent liquid from said annulus from passing over said main body.

5,341,780

DEVICE TO SUPPRESS FIRING IMPULSE TORQUE INDUCED VIBRATIONS IN INTERNAL COMBUSTION ENGINES

Charles B. Rau, 2900 Bristol St., G106, Costa Mesa, Calif. 92626, and Douglas D. Fisher, 5320 Bindewald Rd., Torrance, Calif. 90505

Filed Jul. 30, 1993, Ser. No. 99,744
Int. Cl.[5] F02B *75/06*
U.S. Cl. 123—192.1 **6 Claims**



1. A device in a vehicle drive train at the output end of an internal combustion engine crankshaft to suppress firing impulse torque related vibration, said drive train including a drive sprocket freely coaxially rotatable relative to the crankshaft said drive sprocket providing input to a transmission to drive the vehicle, said device comprising:

a first plate adapted to be coupled to the drive sprocket for coaxial rotation therewith;

a second plate attached to the first plate for coaxial rotation therewith, at least one of said first or second plates attached to the crankshaft so that said plates and sprocket coaxially rotate with and are driven by the crankshaft;

a first inertial ring;

a second inertial ring, said first and second inertial rings coupled for mutual co-axial rotation, said inertial rings coaxially disposed between said first and second plates;

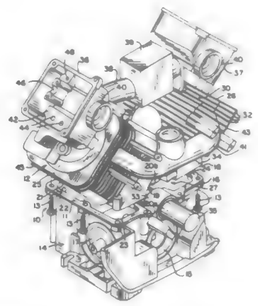
friction discs disposed between the inertial rings and plates; and

means for urging the inertial rings to press the discs between said rings and plates to frictionally slip couple the rings to the plates to rotate coaxially therewith below a pre-selected value of firing impulse torque, said plates frictionally slipping relative to the rings above said pre-selected

VOL 1165 ISS 5 AG 30 1994 UMI

value to suppress vibration related to firing impulse torques.

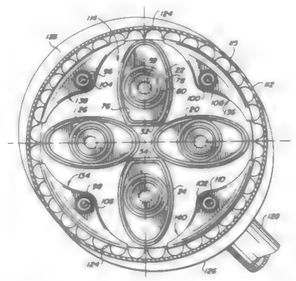
5,341,781
REDUCED COMPONENT INTERNAL COMBUSTION ENGINE
Todd Gerhardt, Grafton, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Oct. 18, 1993, Ser. No. 138,793
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—195 R **16 Claims**



1. An engine block for an internal combustion engine comprising:
a single piece lower crankcase having flat first surface with a substantially semicircular first notch;
a single piece upper crankcase having a second surface adjoining the first surface of said lower crankcase with the second surface having a semicircular second notch aligned with the first notch to form an opening for receiving a crankshaft, said upper crankcase containing an entire cylinder bore for a piston, apertures at one end of the cylinder bore for receiving stems of a pair of cylinder valves, and a housing for a mechanism that actuates the pair of cylinder valves; and
means for securing said upper crankcase to said lower crankcase with the first and second surfaces adjoining each other.

5,341,782
ROTARY INTERNAL COMBUSTION ENGINE
W. Biswell McCall, 5 Clarita Ct., Novato, Calif. 94947, and Gerald L. Merrill, Tempe, Ariz., assignors to W. Biswell McCall, Novato, Calif.
Filed Jul. 26, 1993, Ser. No. 97,638
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—246 **23 Claims**

1. A rotary internal combustion engine comprising in combination:
a. a grouping of four rotors, each being generally oval-shaped and each having first and second opposing ends, each of said rotors having first and second opposing planar faces, the first planar faces of said plurality of rotors lying substantially in a first common plane, and the second planar faces of said plurality of rotors lying substantially in a second common plane, each of said rotors having a peripheral surface extending between the first and second planar faces thereof, each of said rotors having a central axis of rotation extending perpendicular to its first and second planar faces, the peripheral surfaces of said rotors generally bounding a working volume disposed between said rotors, said working volume periodically increasing and decreasing in size as said rotors are rotated;
b. first and second endplates disposed on opposing sides of said plurality of rotors, said first endplate being disposed proximate and parallel to said first common plane, and said second endplate being disposed proximate and parallel to said second common plane, said first and second endplates lying on opposing sides of, and bounding, said working volume;
c. four driveshafts, each of said four driveshafts being secured to a different one of said four rotors, each of said four driveshafts extending along the central axis of rotation of the rotor to which it is secured, said driveshafts being disposed at the four corners of a square, each of said driveshafts having an end extending through at least one of said first and second endplates;
d. synchronizing means coupled to the end of each of said driveshafts for ensuring that said rotors rotate in the same angular direction as each other and at the same angular speed of rotation as each other;
e. a shroud surrounding said rotors and spaced apart therefrom for defining a gas flow space outside said working

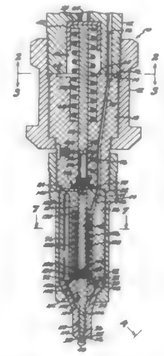


volume, said shroud having first and second opposing ends, the first end of said shroud extending about said first endplate, and the second end of said shroud extending about said second endplate;
f. air induction means coupled to the first end of said shroud for inducting air generally from the first end of said shroud toward the second end of said shroud and through the gas flow space of said shroud, said air induction means selectively inducting air into the working volume bounded by said rotors;
g. fuel means for adding a fuel to said working volume to form a combustible mixture with the air; and
h. exhaust means coupled to the second end of said shroud for venting air from the gas flow space of said shroud and selectively venting exhaust gases from said working volume after ignition of the combustible mixture;
i. said rotors being forced to rotate to increase said working volume upon ignition of said combustible mixture.

5,341,783
ACCUMULATOR FUEL INJECTION SYSTEM
Niels J. Beck, Bonita; James A. Pena, Solana Beach; Alan R. Roach, Del Mar, and Bevan H. Johnston, La Mesa, all of Calif., assignors to Servojet Electronic Systems, Ltd., San Diego, Calif.
Continuation of Ser. No. 830,981, Jan. 28, 1992, Pat. No. 5,241,935, which is a continuation of Ser. No. 152,013, Feb. 3, 1988. This application Sep. 3, 1993, Ser. No. 117,393
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—446 **34 Claims**

1. A method of reducing undesired premixed burning in an internal combustion engine, comprising:
A. lifting an injector needle of a fuel injector a constant low-lift increment from a valve seat of said fuel injector; then

B. preventing lifting of said needle beyond said low-lift increment for a sufficient interval of time to inject a relatively small initial fuel charge into the engine, said interval terminating when lifting forces imposed on said needle overcome holding forces imposed on said needle by a stop

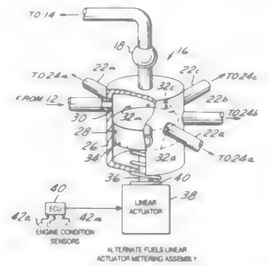


plate, said stop plate having opposed first and second surfaces exposed to an ambient fluid pressure and to a fluid vapor pressure, respectively; and then
C. lifting said needle to a higher lift position to inject a main fuel charge into the engine.

5,341,784

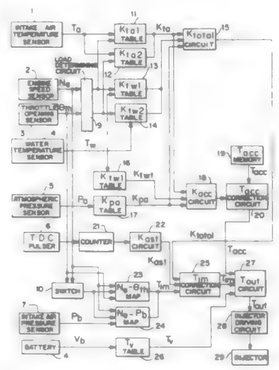
Patent Not Issued For This Number

5,341,785
FUEL DELIVERY SYSTEM FOR INTERNAL COMBUSTION ENGINES
John D. Meaney, Hartland, Mich., assignor to Echlin, Inc., Branford, Conn.
Filed Jul. 20, 1992, Ser. No. 915,268
Int. Cl.[5] F02M *39/00*
U.S. Cl. 123—452 **13 Claims**



1. A fuel delivery system for an internal combustion engine having at least one cylinder, said system comprising: a source of fuel under pressure, a fuel line for feeding fuel to the at least one engine cylinder, and fuel metering means for metering fuel under pressure from said source to said fuel line,
said fuel metering means comprising a linear electromagnetic actuator, valve means coupled to said actuator and responsive to linear motion imparted to said valve means by said actuator for variably controlling flow of fuel from said source to said line, said valve means and said actuator being continuously variable between fully closed and fully open positions of said valve means, and means for continuously energizing said actuator and thereby controlling flow of fuel through said valve means continuously between said fully closed and fully open positions of said valve means as a function of engine operating conditions, said actuator providing the sole motive force to said valve means responsive to engine operating conditions.

5,341,786
FUEL INJECTION CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE
Masahiko Abe; Yasuo Iwata, and Shoji Masuda, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 2, 1992, Ser. No. 955,998
Claims priority, application Japan, Oct. 3, 1991, 3-282037; Oct. 3, 1991, 3-282038
Int. Cl.[5] F02D *41/10*
U.S. Cl. 123—486 **18 Claims**

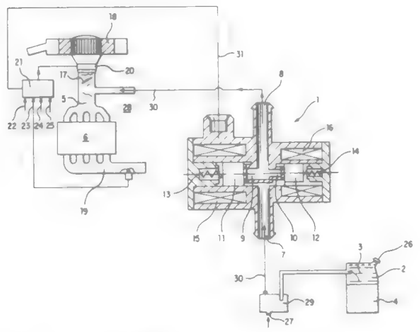


1. A fuel injection control device for an internal combustion engine, comprising:
fundamental fuel injection quantity setting means for establishing a fundamental fuel injection quantity as a fuel injection quantity during normal operation of the engine;
fundamental fuel injection quantity correction factor setting means for establishing a fundamental fuel injection quantity correction factor;
fundamental fuel injection quantity correcting means for correcting said fundamental fuel injection quantity by said fundamental fuel injection quantity correction factor;
acceleration incremental fuel injection quantity setting means for establishing an acceleration incremental fuel injection quantity as an increment of said fuel injection quantity during acceleration of the engine;
acceleration incremental fuel injection quantity correction factor setting means for establishing an acceleration incremental fuel injection quantity correction factor;
acceleration incremental fuel injection quantity correcting means for correcting said acceleration incremental fuel injection quantity;
first water temperature correction factor setting means for establishing a first water temperature correction factor according to an engine temperature;
second water temperature correction factor setting means for establishing a second water temperature correction factor according to the temperature of the engine; and
throttle detecting means for detecting an angle of a throttle of the engine;
said fundamental fuel injection quantity correction factor setting means establishing said fundamental fuel injection quantity correction factor according to said first water temperature correction factor;
said acceleration incremental fuel injection quantity correction factor setting means establishing said acceleration incremental fuel injection correction factor according to said second water temperature correction factor;

VOL 1165 ISS 5 AG 30 1994 UMI

said fundamental fuel injection correcting means using said acceleration incremental fuel injection quantity correction factor when said throttle detecting means detects that the angle of the throttle is greater than a predetermined value.

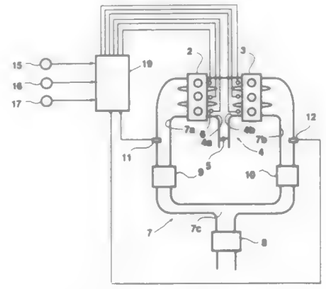
5,341,787
ELECTROMAGNETICALLY OPERATED VALVE
Sebastian Zabeck, Viernheim, and Andreas Sausner, Neu Isenburg, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany
Filed Sep. 1, 1993, Ser. No. 115,384
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1992, 4229105
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—520 **16 Claims**



1. An electromagnetically operated valve for the clocked feeding of volatile fuel components out of the free space of a fuel tank into the intake manifold of an internal combustion engine, comprising:
at least one inlet port and at least one outlet port;
a main valve seat, and a corresponding main closing element having a movable mass m_I;
an auxiliary valve seat, and a corresponding auxiliary closing element having a movable mass m_{II} connected parallel to the main valve seat, said valve seats being located between the inlet and the outlet ports;
electromagnetic coils for actuating each of the valves; and
at least one valve spring for urging each of the closing elements into sealing contact with the corresponding valve seats in an off position through the force of the at least one valve spring at a given time;
whereby the main closing element, when actuated, is shiftable to an open position by a resultant force F_{resI} and the auxiliary closing element is shiftable to an open position by a resultant force F_{resII}, such that the ratio F_{resI}/m_I is smaller than the ratio F_{resII}/m_{II}, and the rate of build-up of force Df_{MII}/dt of the electromagnetic coil of the auxiliary closing element is greater than that of rate of build-up of force Df_{MI}/dt of the magnetic coil of the main closing element.

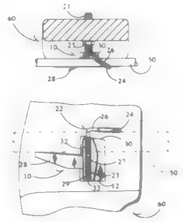
5,341,788
AIR-FUEL RATIO CONTROLLER FOR MULTIPLE CYLINDER BANK ENGINE
Masaaki Uchida, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Mar. 18, 1993, Ser. No. 33,888
Claims priority, application Japan, Mar. 24, 1992, 4-066306
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—692 **4 Claims**

1. An air-fuel ratio controller for an engine provided with a plurality of cylinder banks, an intake manifold provided for each cylinder bank to provide a fuel mixture to each cylinder in the bank, an exhaust manifold provided for each cylinder bank for collecting exhaust gas from each cylinder of the bank, an exhaust pipe combining the gas flow from each of said exhaust manifolds, and a three-way catalyst interposed in said exhaust pipe, said controller comprising;
an air-fuel ratio sensor installed in each of said exhaust manifolds, said sensor sensing an air-fuel ratio of the fuel mixture provided to the cylinder bank,
means for performing feedback control of the air-fuel ratio of all the cylinder banks based on the air-fuel ratio detected in a specific bank such that the air-fuel ratio of said specific bank varies within a predetermined amplitude about the theoretical air-fuel ratio as center value,



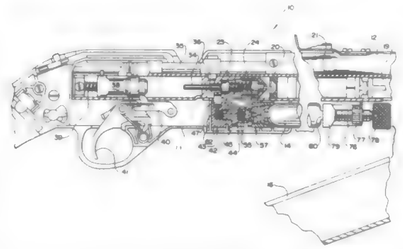
means for measuring a rich time during which the air-fuel ratio detected in a cylinder bank is greater than the theoretical air-fuel ratio and a lean time during which the air-fuel ratio detected in this cylinder bank is smaller than the theoretical air-fuel ratio, said measuring means being provided for each of the cylinder banks, and
means for correcting said feedback control for each cylinder bank such that the rich time and lean time measured by said measuring means are identical for any bank.

5,341,789
ARROW REST WITH INTEGRATED ARROW HOLDER
John Paglia, 1680 Narcissa, Blue Bell, Pa. 19422-2505
Filed Apr. 30, 1993, Ser. No. 54,155
Int. Cl.[5] F41B *5/22*
U.S. Cl. 124—44.5 **18 Claims**



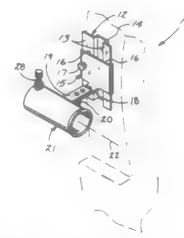
1. In combination with a bow handle riser portion and nocked arrow, an arrow rest holder assembly comprising:
a mounting means for securing said arrow rest holder assembly to said bow handle riser portion;
a body means having a top edge shelf, and at least one arrow rest arm projecting from said body means generally in the direction of arrow flight such that said nocked arrow can rest thereon;
said body means having a rod bore and larger diameter spring bore in-line and parallel to said bow handle riser and generally perpendicular to the line of arrow flight, with said rod bore initiating at said top shelf, and said spring bore below said rod bore;
a generally L-shaped arrow retainer member;
the bores rotatably receiving one leg of said L-shaped member, said one leg terminating in a spring retainer and girdled by a spring means housed in said spring bore, said spring acts between said rod bore and said spring retainer in compression to bias said L-shaped member downward;
said other leg of said L-shape member, termed an arrow holder arm, positioned to engage the top of said nocked arrow and bias the arrow downwardly into engagement with said arrow rest arm, thus causing the arrow to be pinched between said arrow holder arm and said arrow rest arm, with friction created between said arrow and said arrow holder arm;
said arrow holder arm being at a level above said shelf when engaged with an arrow, such that as the arrow is drawn rearwardly, said friction causes the arrow holder arm to rotate rearwardly and ultimately out of contact with the arrow, at which time the spring further biases the arrow holder arm down onto the shelf, such that upon forward movement of the arrow, the arrow holder arm is no longer in engagement with the arrow.

5,341,790
GUN POWERED BY PRESSURIZED GAS AND/OR PRESSURIZED AIR
Gary F. Ebert, Walworth, N.Y., assignor to Crosman Corporation, Bloomfield, N.Y.
Filed Jan. 27, 1992, Ser. No. 826,428
Int. Cl.[5] F41B *11/06, 11/26, 11/32*
U.S. Cl. 124—69 **23 Claims**



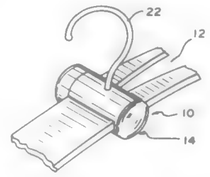
1. A gun which may be powered by a cartridge of pressurized gas or by pressurized air comprising:
a frame,
a barrel mounted on the frame,
a valve body on the frame having a pressure reservoir for storing pressurized gas or pressurized air,
firing means for releasing pressurized gas or air from the pressure reservoir to the bore of the barrel when the gun is fired for propelling a projectile out of the barrel,
pump means on the frame for supplying pressurized air to the pressure reservoir,
a check valve in the valve body for permitting pressurized air supplied by the pump means to enter the pressure reservoir but preventing pressurized air or gas from leaving the pressure reservoir, and
an adapter assembly mounted on the gun for holding a gas cartridge, the adapter assembly communicating with the pressure reservoir and including a check valve for permitting pressurized gas to enter the pressure reservoir, the adapter assembly an adapter housing, a plunger slidably mounted in the adapter housing and movable between a sealing position in which the plunger is sealing engaged with the adapter housing and an exhaust position in which pressurized air or gas in the pressure reservoir can flow out of the adapter assembly.

5,341,791
BOW SIGHT APPARATUS
Gary J. Shafer, R.R. 3, Box 167, Edinburg, Va. 22824, assignor to Gary J. Shafer, Edingburg, Va.
Filed Jul. 9, 1993, Ser. No. 88,374
Int. Cl.[5] F41G *1/467*
U.S. Cl. 124—87 **2 Claims**



1. A bow sight apparatus, comprising,
a mounting plate, the mounting plate including a mounting plate base, with a plurality of coplanar flanges secured in a spaced relationship relative to a mounting plate base, and
a slide plate, the slide plate receiving the coplanar flanges, with a first lock fastener directed through the slide plate into engagement with one of said coplanar flanges to secure the slide plate relative to the coplanar flanges, and
a slide plate flange projecting from the slide plate, the slide plate flange including a slot, and a tube flange in contiguous communication with the slide plate flange longitudinally aligned therewith, with the tube flange including a second lock fastener projecting from the tube flange received within the slot, and a guide pin spaced from the second lock fastener, with the guide pin received within the slide plate flange, and
a sight tube symmetrically oriented about a sight tube axis, the sight tube fixedly mounted to the tube flange, with the axis orthogonally oriented relative to the tube flange, with the sight tube having a first end spaced from a second end, and
a chemiluminescent translucent ring mounted to the second end of the sight tube.

5,341,792
ARCHERY BOW AND APPURTENANCE
Anthony D. Pucillo, 2210 Bermondsey Dr., Mitchelville, Md. 20721
Filed Jan. 12, 1993, Ser. No. 3,421
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—89 **1 Claim**



1. A compound archery bow having, at a longitudinally outer limb section, a conventional crotch configuration that is the inner terminus of a pulley supporting fork structure, means to effect uniform distribution of stresses and to inhibit longitudinal splitting, vibrations and twisting about the longitudinal and transverse axes of the limb and said means to effect and

VOL 1165 ISS 5 AG 30 1994 UMI

inhibit being structurally compounded for appurtenance purposes, said means comprising:

an open-ended slotted bar that is threaded at its open end and operatively associates with the limb in a close sliding fit transverse to the limb's axis, the bar overlying in part exactly the inner terminus of said crotch and being retained on said limb by a threaded nut, and

a hook element extending from said bar, whereby the bow is adapted to be supported by suspension.

5,341,793

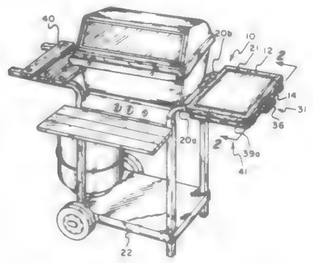
DRAWER ATTACHMENT FOR BARBECUE GRILLS

Thomas J. Brown, R.D. 3, Harding Wood 165, 9 Birchwood Dr., Newfield, N.J. 08344

Filed Aug. 10, 1993, Ser. No. 103,668

Int. Cl.[5] A47J *37/00;* **F24C** *3/00*

U.S. Cl. 126—41 R **6 Claims**



1. A drawer attachment for providing a surface on which food can be cut and for storing grill accessories, said drawer attachment for use in conjunction with a grill support apparatus wherein said grill support apparatus comprises a stand for supporting a grill, first and second sides and a pair of substantially parallel positioned arms extending from at least one of said sides and having a space therebetween, said drawer attachment comprising a cutting board having a top and a bottom, said bottom of said cutting board being secured to said pair of substantially parallel positioned arms, a drawer having flanges extending therefrom and means for securing said drawer to said cutting board.

5,341,794

COMBUSTION DEVICE FOR STOVES AND FIREPLACES

Daniel S. Henry, and G. Michael Hoteling, both of Colville, Wash., assignors to Aladdin Steel Products, Colville, Wash.

Continuation of Ser. No. 884,704, May 18, 1992, abandoned, which is a continuation of Ser. No. 678,860, Apr. 1, 1991, Pat. No. 5,113,843. This application Aug. 19, 1993, Ser. No. 109,809

The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.

Int. Cl.[5] F24C *1/14*

U.S. Cl. 126—77 **33 Claims**

1. A combustor, comprising:

a firebox defined by a base wall, a top wall, a front wall, a rear wall, and side walls extending between the base wall and the top wall;

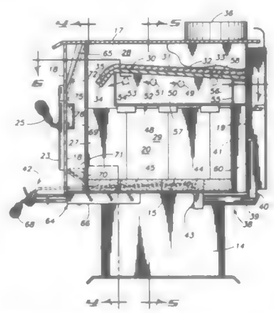
an opening along the front wall for enabling fuel to be loaded into the firebox;

a baffle in the firebox, substantially spanning the distance between the side walls, leading forwardly from the rear wall, and elevationally dividing the interior of the enclosure into a lower fuel combustion chamber below the baffle and an upper exhaust chamber above the baffle;

wherein the baffle includes a free edge forming an exhaust passage adjacent the front wall of the firebox, the passage openly connecting the fuel combustion chamber and the exhaust chamber;

a first air supply means for delivering primary combustion air to the combustion chamber;

a second air supply distributor for delivering air to support combustion of unburned gases within an area under the baffle including three tertiary air supply tubes spaced apart below the baffle and located between the free edge



of the baffle and the rear wall of the firebox, each tertiary air supply tube including a tertiary air delivery opening therein oriented toward the free baffle edge;

side tertiary chambers at opposed ends of the three tertiary air supply tubes for supplying air to the three tertiary air supply tubes; and

at least one delivery duct with an end opening outside the firebox and another end opening into at least one of the side tertiary chambers.

5,341,795

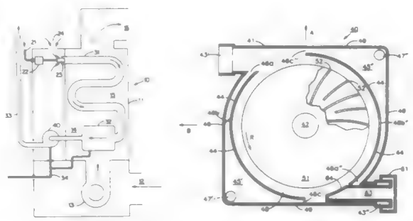
INDUCER FOR CONDENSING FURNACE

Rudy S. Chou, Liverpool, N.Y.; Michael J. Larsen, Danville, Ind.; Rengasamy Ramshankar, Liverpool, N.Y.; Larry D. Rieke, Zionsville, and Timothy J. Waterman, Carmel, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 30, 1993, Ser. No. 83,574

Int. Cl.[5] F24H *3/02;* **F01B** *31/18*

U.S. Cl. 126—110 R **8 Claims**



1. An inducer (40) for an induced draft condensing hot air furnace (10) capable of operation when installed in more than one orientation comprising:

an inducer housing (41);

a volute (48), formed by an inner scroll wall (44), located within said inducer housing;

a centrifugal impeller (51) within said volute, said impeller having a horizontal axis of rotation when said inducer is in normal operation;

a first and a second discharge outlet (43), in fluid flow communication with said volute through openings in said inner scroll wall, said outlets being arranged with respect to each other such that fluid discharges from said first outlet in a direction that is in the same plane but 180° from the direction that fluid discharges from said second outlet;

a first and a second drain cavity (45) within said housing, each said cavity having

an inlet (46) that is in fluid flow communication with said volute; and

a drain outlet (47) for conducting fluid from said cavity out of said housing; and

a tuner plug (61) capable of installation in one of said discharge outlets so that, upon installation, said discharge outlet is blocked and fluid flow is possible only through the other, or active, said discharge outlet.

5,341,796

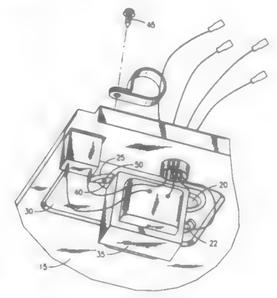
TURN IN PLACE MOUNTING

Scott A. Beck; Rex R. Mills, both of Indianpolis, and Timothy J. Waterman, Carmel, all of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 26, 1993, Ser. No. 143,451

Int. Cl.[5] F24H *3/02*

U.S. Cl. 126—110 R **6 Claims**



1. In a furnace of the type having a transformer for stepping down line voltage (115 VAC) to control voltage (24 VAC), wherein the furnace has an enclosed housing therein, the housing having a wall completely enclosed within the furnace wherein said wall has an inner and outer surface; and the blower is secured within the housing to the inner surface of said wall, the furnace including,

at least one retaining member extending from the inner surface of said wall, said at least one retaining member engaging a first flange on the transformer to rotatably support said first flange;

a fastenable support member extending from said wall so that upon rotation of the transformer said fastenable support member engages a second flange of said transformer to further support the transformer; and

fastening means for securing said fastenable retaining member to said second flange.

5,341,797

LIQUID HEATING APPARATUS

Noboru Maruyama, 2-26-14 Shirasagi, Nakano-ku, Tokyo, Japan

Filed Jul. 19, 1993, Ser. No. 94,493

Claims priority, application Japan, Jul. 22, 1992, 4-194399; Aug. 11, 1992, 4-214267

Int. Cl.[5] F24H *1/00;* **F22B** *5/00*

U.S. Cl. 126—373 **9 Claims**

1. A submersible heat exchanger in a liquid-containing tank having a bottom wall and a side wall, said submersible heat exchanger comprising:

a combustion chamber having top, bottom and side walls;

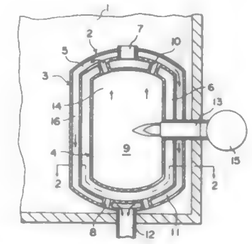
a liquid chamber disposed concentrically about the combustion chamber and having top, bottom and side walls;

a combustion gas descending chamber disposed concentrically about the liquid chamber and having an outer surface and top, bottom and side walls;

a draft tube disposed through the top wall of the combustion chamber and the top wall of the combustion gas descending chamber so as to provide communication therebetween;

an exhaust tube disposed between the bottom wall of the tank and the bottom wall of the combustion gas descending chamber so that the combustion gas descending chamber is in communication with the atmosphere;

a liquid inlet tube disposed between the bottom wall of the



combustion gas descending chamber and the bottom wall of the liquid chamber so that the liquid in the tank is in communication with the liquid chamber;

a liquid outlet tube disposed between the top wall of the liquid chamber an the top wall of the combustion gas descending chamber so that the liquid chamber is in communication with the liquid in the tank; and

wherein the combustion gas descending chamber is disposed in a spaced relation with the bottom wall and side wall of the tank so that liquid contained in the tank may flow freely into the liquid inlet tube and over the outer surface of the combustion gas descending chamber.

5,341,798

RETRACTOR DEVICE FOR HUMAN OR ANIMAL TISSUE

Pierre-Alain Grounauer, Rue de l'Ale 38, CH-1003 Lausanne, Switzerland

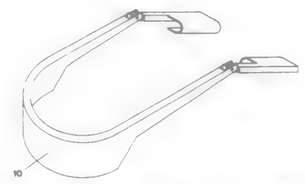
Continuation of Ser. No. 794,565, Nov. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 397,446, Jul. 21, 1989, Pat. No. 5,070,860. This application Dec. 2, 1992, Ser. No. 985,359

Claims priority, application Switzerland, Dec. 4, 1987, 4735/87-0

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] A61B *17/02*

U.S. Cl. 128—20 **4 Claims**



1. A retractor device for human or animal tissues, and more particularly for retracting upper and lower eyelids to expose the underlying eyeball for surgery, comprising:

a pair of retracting arms formed from an elastic, single-piece element that has been configured into a U-shape, said pair

VOL 1165 ISS 5 AG 30 1994 UMI

of retracting arms each having corresponding end portions;

a pair of corresponding spoons, each having a first curvature adapted to the shape of an eyeball and a second curvature adapted to the shape of an eyelid, articulatingly mounted to the end portions of said pair of retracting arms to pivot about axes that are in substantially perpendicular relationship with the end portions of said retracting arms whereby said second curvatures of said corresponding spoons raise the eyelids away from the eyeballs as the end portions of said pair of retracting arms are being biased into retracted positions under the influence of the elastic, single-piece element.

5,341,799
URETHANE POLYMERS FOR PRINTING PLATE COMPOSITIONS

Charles C. Fifield, Landenberg, Pa.; Rudolph L. Pohl, and Wako Yokoyama, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

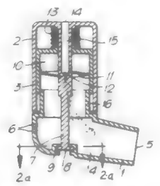
Filed Dec. 23, 1991, Ser. No. 814,986
Int. Cl.[5] C08G *18/08, 18/10, 18/16*
U.S. Cl. 528—49 **26 Claims**

1. A urethane polymer comprising the reaction product of (a) an isocyanate-terminated urethane polymer that is the reaction product of a mixture comprising an aliphatic diol, a diol having acidic functionality and an excess of an aliphatic, cycloaliphatic or aromatic diisocyanate and (b) a mono- or dihydroxy (meth)acrylate, said aliphatic diol comprising greater than 50% of the reaction mixture, based on the total weight of reactants, and said polymer having free acidic groups only on the polymer backbone and (meth)acrylate residues only at the terminals of the polymer.

5,341,800
MEDICAMENT INHALATION DEVICE AND FORMULATION

Andrew R. Clark, Loughborough, and John L. Hart, Bramcote, both of England, assignors to Fisons plc, Ipswich, United Kingdom

Division of Ser. No. 759,711, Sep. 12, 1991, Pat. No. 5,176,132, which is a continuation of Ser. No. 531,254, May 31, 1990, abandoned. This application Jun. 11, 1992, Ser. No. 897,246
Claims priority, application United Kingdom, May 31, 1989, 8912503; Jun. 10, 1989, 8913392
Int. Cl.[5] A61M *15/00;* **B65D** *83/06;* **A61K** *9/16*
U.S. Cl. 128—203.15 **1 Claim**



1. A method of administering a powdered inhalation medicament from an inhalation device comprising the steps of:

obtaining a tightly compacted body of powdered inhalation medicament having a predetermined shape and including an active ingredient having a particle size of from 1 to 10 microns, the degree of compaction being sufficient to hold said powdered inhalation medicament together solely due to the compaction such that said tightly compacted body will retain its shape and structural integrity upon handling;

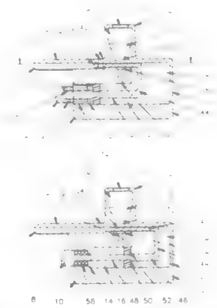
placing said tightly compacted body in said inhalation device;

abrading said tightly compacted body in said inhalation device so as to sequentially obtain a plurality of unit doses of said powdered inhalation medicament from a single tightly compacted body.

5,341,801
INHALER

Kurt Zechner, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Nov. 30, 1992, Ser. No. 983,012
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1991, 4139806
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—203.15 **12 Claims**



1. An inhaler for delivering metered doses of a particulate drug, the inhaler comprising

a housing having an air inlet and an air outlet passage communicating with the air inlet for entraining the particulate drug in a stream of air traveling through said housing;

a drug reservoir attached to the housing to contain multiple doses of the particulate drug, the drug reservoir having an air permeable portion that permits air flow into the drug reservoir but prevent drug escape;

a drug transporting means in the housing that has a metering chamber of volume corresponding to a desired dose of the drug, the drug transporting means being operative between a load position, in which it communicates with the drug reservoir to receive in its metering chamber drug from the drug reservoir, and a release position in which it releases drug transported from the metering chamber into the air outlet passage;

a vacuum generating means that creates a partial vacuum in the metering chamber of the drug transporting means when it is in its load position to draw drug into the metering chamber from the drug reservoir; and

an acutator means connected to the drug transporting means and the vacuum generating means for causing movement of the drug transporting means to its load position and for simultaneously causing the vacuum generating means to create a partial vacuum.

5,341,802
ENDOTRACHEAL TUBE STABILIZING DEVICE

John D. Calebaugh, 203 Via Serena, Rancho Santa Margarita, Calif. 92688

Filed Jan. 11, 1993, Ser. No. 3,092
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.17 **12 Claims**

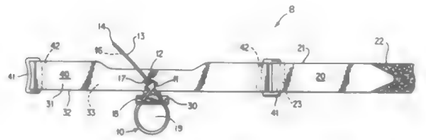
1. A device for stabilizing an endotracheal tube in a patient, comprising:

a flexible head assembly defined by a substantially flat strip having an adhesive backing surface for adhering to a patient's face and having opposed lateral ends secured to

rings, said head assembly including a centrally extending attachment portion defining a pair of slits;

a tube retaining unit formed by a thin elongated tab having a tapered end and a releasable lock on an end opposite said tapered end, said tube retaining unit being positioned centrally with respect to said head assembly by inserting said tapered end of said tube retaining unit through said pair of slits in said attachment portion of said head assembly, said retaining unit forming an adjustable loop by inserting said tapered end through a slot in said lock, said loop being adjustable to firmly hold and retain said endotracheal tube in a substantially fixed position with respect to said head assembly; and

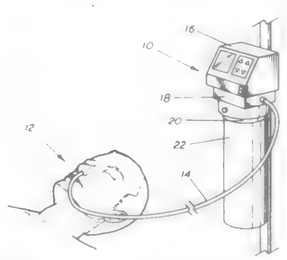
a neckband having hook and loop attachment surfaces for connecting to said rings, said neckband passing around the patient's head adding additional stabilization of the endotracheal tube.



5,341,803
APPARATUS AND METHOD FOR MONITORING GASTRIC FLUID PH

Michael S. Goldberg, 964 Crest Rd., Del Mar, Calif. 92014, and Charles R. Horres, Jr., 13071 Via Grimaldi, Del Mar, Calif. 92014

Filed Jun. 22, 1993, Ser. No. 81,468
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—632 **18 Claims**



1. A device for monitoring the pH value of the gastric contents of a patient which comprises:

a body;

a suction means for aspirating gastric contents from the patient to said body;

a cavity on said body containing a cleansing fluid;

a cavity on said body containing a calibration fluid;

an extracorporeal sensor means for generating a signal indicative of the pH value of the aspirated gastric contents;

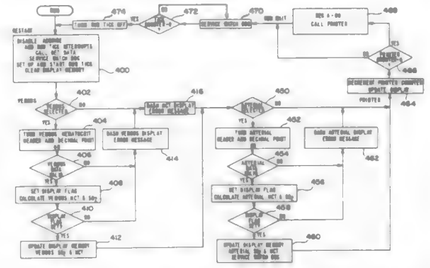
means for selectively placing said sensor means in contact with one of said cavity containing said cleansing fluid to clean said sensor means, said calibration fluid to calibrate said cavity containing said sensor means, or the aspirated gastric contents to generate said signal; and

electronic means connected to said sensor means for evaluating said signal to ascertain the pH value of the aspirated gastric contents.

5,341,804
SYSTEM FOR DISABLING OXIMETER IN PRESENCE OF AMBIENT LIGHT

Eric J. Fogt, Maple Grove; James F. Kelley, Coon Rapids, both of Minn.; Ralph M. Kerns, Laguna, Calif.; Timothy J. Duffy, Anaheim, Calif., and David J. Draska, Murrietta, Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 770,672, Oct. 3, 1991, Pat. No. 5,282,466. This application Nov. 18, 1992, Ser. No. 977,978
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **7 Claims**



1. A method for measuring a selected parameter of blood as it flows through an extracorporeal blood circuit, the method utilizing a medical device operative to provide light to blood passing through the blood circuit at one or more wavelengths depending upon the parameter being measured and to generate an electrical signal based upon the amount of light reflected or transmitted back to the device, the magnitude of the signal being used in the measurement of the selected parameter, the method comprising the steps of:

a. connecting a known reflective standard to the device;

b. providing light from the device to the reflective standard at a first wavelength used in measurement of the parameter;

c. measuring the amount of light reflected at the first wavelength by generating an electrical signal indicative of the amount of light reflected;

d. determining a normalization factor based upon the magnitude of the electrical signal generated from the reflected light at the first wavelength in relationship to the magnitude of an expected electrical signal which is a known constant for the reflective standard at the first wavelength;

e. storing the normalization factor in a manner allowing it to be recalled during use of the device for measurement of the selected blood parameter;

f. repeating steps b through e for each wavelength used in measurement of the parameter such that a different normalization factor is calculated and stored for each wave length;

g. connecting the device to the extracorporeal blood circuit for measurement of the selected parameter;

h. providing light from the device to the blood in the circuit at each wavelength used in the measurement of the parameter;

i. measuring the amount of light reflected at each wavelength used in the measurement of the parameter by generating electrical signals indicative of the amount of light reflected at each wavelength, the magnitude of the electrical signals being indicative of the amount of the selected parameter of blood being measured; and

i. adjusting the measurements generated in step i. for each wave length by the appropriate normalization factor for each wave length to provide a corrected measurement of the selected parameter of blood.

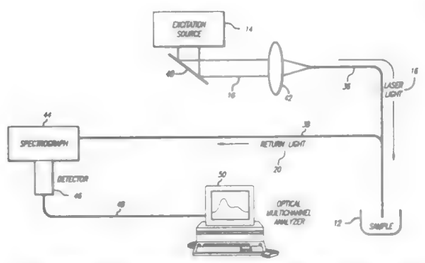
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,805

GLUCOSE FLUORESCENCE MONITOR AND METHOD

Marigo Stavridi, and Warren S. Grundfest, both of Los Angeles, Calif., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.

Filed Apr. 6, 1993, Ser. No. 43,580
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—633 19 Claims



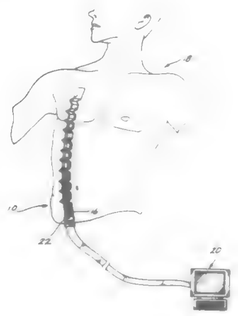
1. Apparatus for determining the concentration of glucose in a sample, comprising:
a light source that emits excitation light that is directed at a sample to produce return light from the sample, such return light including fluorescent light produced by any glucose present in the sample;
a sensor that monitors the return light and generates a glucose fluorescence signal indicative of the intensity of return light within a wavelength band associated with the direct fluorescence of glucose and generates a reference signal indicative of the intensity of return light within a reference wavelength band; and
a processor that processes the glucose fluorescence signal and the reference signal to determine the concentration of glucose in the sample.

5,341,806

MULTIPLE ELECTRODE STRIP

Peter D. Gadsby, Duvall; David S. Paeth, Seattle; Stephen W. Gross, Snohomish, and Thomas D. Lyster, Bothell, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 687,302, Apr. 18, 1991, Pat. No. 5,191,886. This application Mar. 23, 1992, Ser. No. 853,006
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] A61B 5/0402
U.S. Cl. 128—640 33 Claims



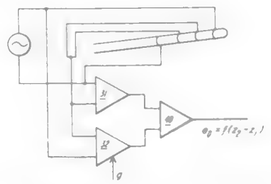
1. An electrode strip for placement on a body, comprising:
a substantially inextendible substrate having a plurality of electrode sites defined on the substrate and a region of extensibility defined in the substrate between a pair of adjacent electrode sites; and
conductive means for providing an electrical path to each electrode site.

5,341,807

ABLATION CATHETER POSITIONING SYSTEM

Paul C. Nardella, North Easton, Mass., assignor to American Cardiac Ablation Co., Inc., Taunton, Mass.

Filed Jun. 30, 1992, Ser. No. 906,529
Int. Cl.[5] A61B 5/04
U.S. Cl. 128—642 13 Claims



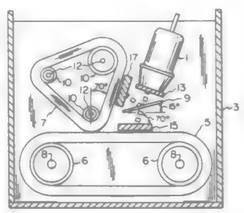
1. A system for detecting the relative disposition of a catheter assembly inserted along a vessel of a patient, wherein the catheter has a plurality of electrodes spaced successively along its length, such system comprising
signal applying means adapted to be coupled to said catheter assembly for applying a sensing signal for propagation through tissue extending in a region located about a first pair of electrodes and about a second pair of electrodes which are disposed along said catheter, to produce a sensing output of each pair of electrodes corresponding to a measure of tissue impedance pathways between the electrodes of such pair, and
means for differently combining the sensing output simultaneously produced by each of the two electrode pairs into a single differential signal indicative of the disposition of said catheter in said vessel with respect to adjacent tissue.

5,341,808

DOPPLER ULTRASOUND CLUTTER AND SENSITIVITY PHANTOM

Daniel W. Rickey, and Aaron Fenster, both of London, Canada, assignors to University Hospital (London) Development Corporation, Ontario, Canada

Filed May 27, 1993, Ser. No. 67,995
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—660.01 16 Claims



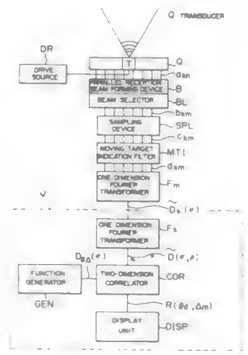
1. Apparatus for generating beams for calibrating a clinical Doppler instrument having a probe generating a beam, said apparatus comprising:
(a) a fluid-filled tank into which said probe is immersed;
(b) a first beam scattering means positioned in said tank;
(c) a second beam scattering means positioned in said tank;
(d) a beam splitter positioned in said tank intermediate said probe and said first and second beam scattering means, said beam splitter being oriented at a predetermined angle relative to said probe and to respective ones of said first and second beam scattering means for splitting and directing a beam generated by said probe so that said beam is reflected off both of said first and second beam scattering means at an identical angle, whereby reflected portions of said beam reflected off of said first and second beam scattering means may be monitored.

5,341,809

ULTRASONIC FLOWMETER

Kageyoshi Katakura, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 575,572, Aug. 31, 1990, abandoned. This application Mar. 4, 1992, Ser. No. 845,949
Claims priority, application Japan, Mar. 4, 1991, 3-062719
Int. Cl.[5] A61B 8/06
U.S. Cl. 128—661.09 36 Claims



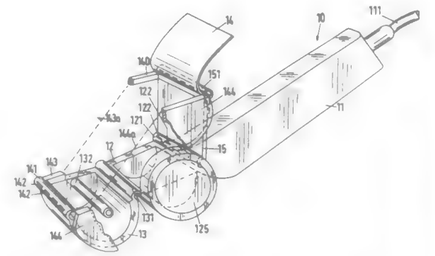
1. An ultrasonic velocity analyzing device comprising:
a transducer including an array of elements;
means for driving repeatedly part of said transducer elements in a prescribed interval thereby to repeatedly transmit an ultrasonic wave to a target;
a parallel reception beam forming means for phase adjusting said signals from said transducer elements and for producing parallel reception signals derived from reception beams with different directivities;
a sampling means for sampling each of said parallel reception signals and for storing said sampled signals;
filtering means for performing moving target indication through a differential processing across signals having a certain time duration since transmission;
a first one-dimension Fourier transform means, including a plurality of outputs, for performing a Fourier transformation with respect to a direction of alignment of the reception beams; and
a second Fourier transform means including a plurality of outputs for performing a Fourier transformation sequentially for the outputs of said first Fourier transform means with respect to a direction of repetitive transmission,
wherein lateral velocity and axial velocity of a moving object in said target are obtained from a two-dimensional distribution of the outputs of said second Fourier transform means.

5,341,810

STERILE PUNCTURING DEVICE FOR BLOOD VESSELS WITH A NON-STERILE ULTRASOUND PROBE, AND APPARATUS FOR PREPARING THE DEVICE

Eric Dardel, Seuzach, Switzerland, assignor to Sulzer Medizinaltechnik AG, Winterthur, Switzerland

Filed Oct. 28, 1992, Ser. No. 967,368
Claims priority, application Switzerland, Oct. 29, 1991, 03157/91
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—662.05 15 Claims



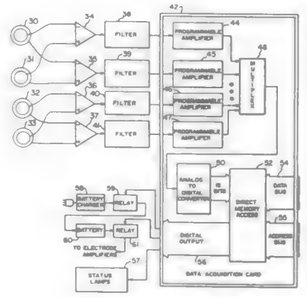
1. Apparatus for preparing a sterile puncturing device for blood vessels in which a non-sterile ultrasound probe can be used, comprising a fluid-tight bag forming a wall, a holder in the bag including a capsule for the ultrasound probe, and an entrance lock in the bag wall for introducing the ultrasound probe into the capsule, the entrance lock comprising a bag opening and a frame attached to the bag wall, a releasable first lid exteriorly connected with the frame for closing the bag opening, and a second lid interiorly connected with the frame for closing the bag opening following the introduction of the ultrasound probe.

5,341,811

METHOD AND APPARATUS FOR OBSERVATION OF VENTRICULAR LATE POTENTIALS

Gerald G. Cano, Pittsburgh, Pa., assignor to Allegheny-Singer Research Institute, Pittsburgh, Pa.

Filed Mar. 26, 1991, Ser. No. 675,996
Int. Cl.[5] A61B 5/0452
U.S. Cl. 128—696 42 Claims



42. An apparatus for detecting low level biophysical signals of a cyclic nature at the surface of a patient comprising:
(a) means for acquiring two or more biophysical signals at a plurality of external locations on the surface of a patient;
(b) means for bandpass filtering the surface biophysical signals;
(c) a means for digitizing the acquired biophysical signals by

VOL 1165 ISS 5 AG 30 1994 UMI

continuous sampling at a rate equal to or greater than the Nyquist rate;

(d) a means for storing the digitized biophysical signals;

(e) a means for processing the digitized biophysical signals to reduce low frequency signal components;

(f) a means for selecting a reference signal with the remaining biophysical signals referred to as input signals and a means for selecting a filter window in a biophysical cycle from one or more of the digitized biophysical input signals and defining filter intervals within said filter window;

(g) a means for calculating a feedback coefficient u_i associated with an adaptive filter algorithm for each filter interval within a filter window in a cycle of the biophysical signal from one or more of the digitized biophysical input signals;

(h) a means for initializing a bias weight associated with an adaptive filtering algorithm for each filter interval by computing an initial value for the bias weight associated with the filter interval;

(i) a means for thereafter adaptively filtering in time-sequenced manner selected filter intervals of the input signals; and

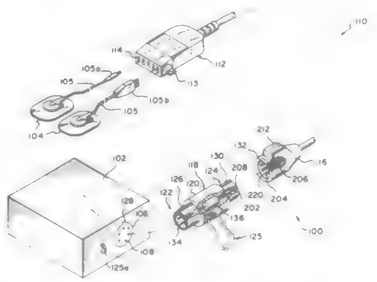
(j) a means for displaying or storing the results of the adaptive filtering step.

5,341,812

ELECTROCARDIOGRAPH MONITOR SYSTEM AND ADAPTOR

Michael J. Allaire, and Jeffrey W. Stone, both of Cincinnati, Ohio, assignors to NDM Acquisition Corp., Minneapolis, Minn.

Filed May 3, 1993, Ser. No. 56,714
Int. Cl.[5] A61N *5/04*
U.S. Cl. 128—696 **6 Claims**



1. An adaptor for interconnecting an electrocardiograph apparatus and an electrocardiograph cable including a cable connector connected at one end thereof, said adaptor comprising:

machine coupling means for electrically interconnecting with the electrocardiograph apparatus;

circuit means, electrically connected to said machine coupling means, for conditioning electrical signals so that said electrical signals may be properly received by the electrocardiograph apparatus;

cable coupling means, electrically connected to said circuit means, for electrically interconnecting the cable connector and said circuit means whereby the electrocardiograph apparatus properly receives said electrical signals from the electrocardiograph cable; and

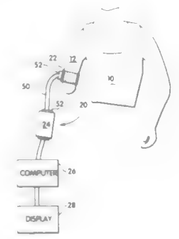
attachment means for mechanically securing said adaptor to the electrocardiograph apparatus.

5,341,813

PROSTHETICS ELECTRODE ARRAY DIAGNOSTIC SYSTEM

Peter R. Teare, Westborough; William J. Hanson, Bolton, and Matthijs Smits, Brookline, all of Mass., assignors to Liberty Mutual Insurance Co., Boston, Mass.

Filed Mar. 19, 1993, Ser. No. 33,849
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—733 **22 Claims**



1. A method for determining an optimal position for a myoelectrode on a first muscle of a patient, the myoelectrode being coupled to a research device or to a myoelectric prosthetic device, said method comprising:

positioning a plurality of electrodes over the surface of the first muscle, the number of electrodes being sufficient to cover a wide area of the first muscle so that the muscle can be tested without repositioning the electrodes;

receiving input signals from the electrodes when the patient contracts the first muscle;

sampling at least some of the input signals during the contraction of the first muscle;

providing output signals from the sampled electrodes;

displaying the output signals; and

determining where to position the myoelectrode on the first muscle based, at least in part, on the displayed output signals.

5,341,814

METHOD FOR MEASURING THE TEMPERATURE OF A MATERIAL BY USING MICROWAVE RADIATION

Jean-Claude Van De Velde, Mons-En-Baroeul, and Eugéne Constant, Villeneuve D'Ascq, both of France, assignors to Centre Natinal De La Recherche Scientifique, Paris, France

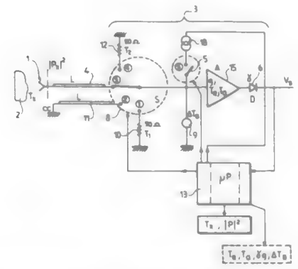
PCT No. PCT/FR92/00080, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO92/14164, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 29, 1992, Ser. No. 930,425
Claims priority, application France, Feb. 1, 1991, 1-344
Int. Cl.[5] G01J *5/10;* **A61B** *10/00*
U.S. Cl. 128—736 **20 Claims**

20. A device for measuring the temperature T_x of a given material or object, using microwave radiation, comprising:

an antenna for receiving signals;

means for processing the received signals, comprising a direct amplification microwave frequency receiver, followed by a square law detector and preceded by a microwave frequency multi-channel switch; and

a selectable intercalary electrical line having a length L, of a given impedance as a function of the input impedance of said processing means electrically connecting said antenna and said processing means wherein said length L of said intercalary electrical line is selected to be very large in relation to the wavelength of the signals processed so as



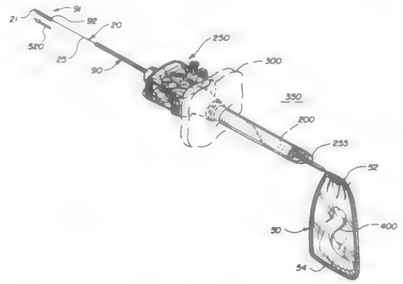
render the correlation voltage negligible with respect to the signal voltage.

5,341,815

ENDOSCOPIC SURGICAL POUCH

Mark A. Cofone, Glen Gardner, and Lee P. Bendel, Lebanon, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Mar. 25, 1993, Ser. No. 37,055
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—749 **39 Claims**



1. An endosurgical pouch device comprising:

(a) a longitudinal tubular member having a longitudinal passage therethrough, a distal end, and a proximal end;

(b) a strand having a distal loop means, said loop means having an opening secured with cinch means, the strand having a proximal free end portion, said free end portion slidably mounted within the tubular member, said cinch means configured in a manner so as to allow movement of the free end portion proximally and to prevent the loop portion from loosening when tightened;

(c) a surgical pouch having an open end therein, said pouch attached along substantially the entire perimeter of said open end thereof to said loop portion of said strand;

(d) means for pulling said free end portion of said strand proximally so as to continually reduce the opening of the loop portion thereby continually closing said open end of said surgical pouch;

(e) means for automatically unfurling said pouch when the pouch is inserted furled into a body cavity, said unfurling means mounted in the pouch and wherein said unfurling means comprises a shape memory effect metal insert; and

(f) means for automatically opening said open end of said pouch when the pouch is inserted into a body cavity said automatic opening means mounted to the pouch, wherein said opening means compresses said distal loop means made from a shape memory effect metal,

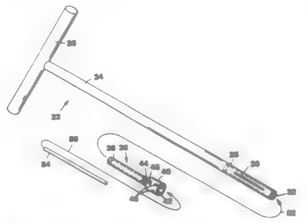
wherein said cinch means abuts the distal end of the tubular member when said free end portion of said strand is pulled proximally, and the passage through the distal end of the tubular member has a cross-section effective to prevent said cinch means from passing through said tubular sleeve when said free end portion of said strand is pulled proximally.

5,341,816

BIOPSY DEVICE

William C. Allen, 4801 Vineyard Way, Rte. 3, Columbia, Mo. 65203

Continuation of Ser. No. 869,209, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 432,132, Nov. 6, 1989, abandoned. This application Dec. 7, 1992, Ser. No. 989,476
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **20 Claims**



1. A biopsy device comprising:

a biopsy extracting member having a hollow interior portion and a substantially smooth generally cylindrical exterior whereby it may closely slidingly fit within a generally cylindrical cannula; and

a biopsy specimen holder removably attached to one end of said biopsy extracting member, said specimen holder including an elongated tubular specimen receiving portion which is open at both ends, a portion which fits within and engages said extracting member, and a cutting portion which extends from said one end of said biopsy extracting member;

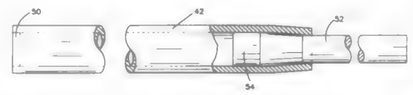
whereby when said specimen holder is detached from said biopsy extracting member a pusher member having an elongated generally cylindrical shape and being sized to closely slidingly fit within said specimen receiving portion of said specimen holder may be used to remove any biopsy specimen contained within said specimen holder without opening said specimen holder.

5,341,817

ELONGATED GUIDEWIRE FOR USE IN DILATION PROCEDURES

Fernando M. Viera, Hialeah, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Dec. 14, 1992, Ser. No. 990,069
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **5 Claims**



1. A guidewire for insertion into a subject blood vessel, said guidewire comprising:

a flexible tip;

an elongated flexible body having a distal end for supporting said tip and defining a central passageway having a first portion which extends through the body with a substan-

VOL 1165 ISS 5 AG 30 1994 UMI

tially uniform inner diameter and having a second portion which tapers uniformly to an opening with a lesser inner diameter at a proximal end of the body; and

an elongated extension for reciprocal movement relative to said body and having a central portion dimensioned to fit through the opening in said body, a distal end portion dimensioned to fit within the central passageway of said body and to engage said second portion of said body to limit relative movement in one direction between said extension and said body and an intermediate portion between said central portion and said end portion, said intermediate portion is tapered for frictional engagement with said second portion of said body over a circumferential extent and an axial extent to inhibit separation of said extension and said body.

5,341,818

GUIDEWIRE WITH SUPERELASTIC DISTAL PORTION

Robert M. Abrams, Carlsbad; Randy S. Chan, San Jose; Janet W. Burpee, Santa Clara, and Clifford Teoh, Daly City, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Dec. 22, 1992, Ser. No. 994,679
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **24 Claims**



1. An intravascular guidewire having proximal and distal ends, comprising:

a) an elongated high strength proximal portion having proximal and distal ends;

b) a distal portion having proximal and distal ends formed of a superelastic alloy in an austenite phase at body temperature, which transforms to a martensite phase when subjected to stress; and

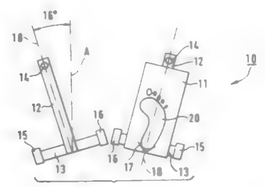
c) means for connecting the distal end of the proximal portion and the proximal end of the distal portion, which is formed at least in part of a superelastic alloy in an austenite phase which transforms to a martensite phase when subjected to stress.

5,341,819

METHOD AND DEVICE FOR THE SELECTION OF AN INSOLE AND/OR OF A SHOE THAT ADJUSTS THE POSTURE OF THE FOOT

Tuomo Hyvärinen, Orimattila, Finland, assignor to Karhu-Titan OY, Finland

Filed Apr. 15, 1992, Ser. No. 869,337
Claims priority, application Finland, Apr. 16, 1991, 911830
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—779 **15 Claims**



1. A method for selecting an insole and/or a show that adjusts the posture of a foot and/or for determination of the biomechanical mode of operation of the foot of a human subject, comprising

placing a foot of the subject along a symmetry axis of a measurement base support on a rigid base,

providing measurement means on said rigid base at equidistant, symmetrical locations on both sides of the symmetry axis,

providing said measurement base with an articulated joint structured and arranged to pivot said measurement base about the symmetry axis in response to pronation or supination of a foot being placed on said measurement base,

providing a pair of said measurement bases to constitute a right and left measurement base for the corresponding feet of the subject,

measuring a load applied by the respective foot to said right and left measurement bases in relation to the symmetry axis of said right and left measurement bases, said load being measured on both sides of said symmetry axis of said right and left measurement bases via said measurement means; and

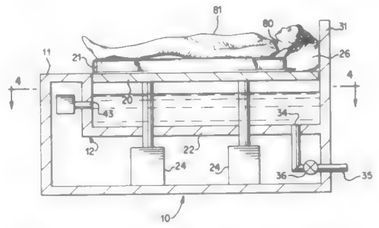
carrying out said measurement of the load applied to said right and left measurement bases when the subject stands on both of said right and left measurement bases with the subject's legs in a straight posture position, each of said measurements being used to determine the extend of supination or pronation of the respective foot placed on said right and left measurement bases.

5,341,820

PATIENT TREATMENT APPARATUS INCLUDING A MATTRESS AND A TREATMENT CHAMBER, AND METHOD FOR TREATMENT OF THE PATIENT

Anthony Hammett, The Tree Tops, Long Street, Attard, Malta

Filed Nov. 30, 1992, Ser. No. 983,484
Int. Cl.[5] A61G *15/00*; A47K *3/12*
U.S. Cl. 128—845 **16 Claims**



1. A treatment apparatus for a patient, comprising:

a treatment chamber

a mattress,

means for moving said mattress vertically between a lower position within said chamber and an upper position above said chamber,

means for introducing water in said chamber and removing water from said chamber, and

means for blowing air into said chamber when said mattress is in said lower position for drying a patient on said mattress, in the absence of water in said chamber.

5,341,821

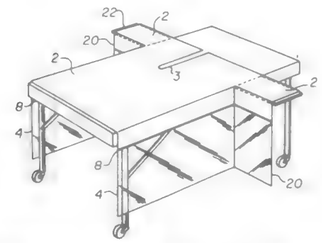
SURGICAL DRAPE AND METHOD OF MAKING A SURGICAL DRAPE

Henry DeHart, Columbus, Miss., assignor to Boundary Healthcare Products Corporation, Columbus, Miss.

Filed Dec. 30, 1991, Ser. No. 814,474
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—849 **11 Claims**

1. A drape for performing a surgical procedure on a patient's body, which comprises:

a nonwoven and nontransparent sheet portion for placement on a surgical table, said sheet portion having a first and second side edge; and



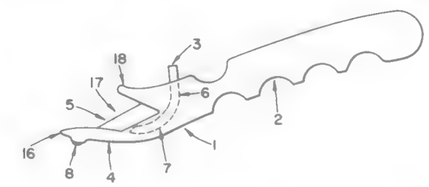
a transparent side portion connected to at least one of said first and second side edges of said sheet portion for allowing viewing of an area beneath said table wherein said sheet portion is T-shaped.

5,341,822

BANDAGE CUTTER AND REMOVER

John A. Farr, P.O. Box 158, New Creek, W. Va. 26743, and R. Dwight Leatherman, Rte. #5 Box 171, Keyser, W. Va. 26726

Filed Apr. 26, 1993, Ser. No. 51,698
Int. Cl.[5] A61B *19/00*; B26B *5/00*
U.S. Cl. 128—898 **9 Claims**



9. A method for cutting a bandage comprising the steps of selecting a cutter having a handle, a guide foot, a mouth with a cavity and a blade ejector in said cavity, selecting a sterile blade unit having a blade, a cap for said blade, and legs including means to lock said blade unit into said cutter; holding the blade unit by the cap and pushing said cap into said cutter mouth until it locks in place within the cavity, providing a nose end on said guide foot and providing an enlarged area on the bottom of said guide foot near the nose end, placing the nose end under the bandage, pushing downward on the handle until the cutter rests only on the enlarged area, then moving the instrument forward to move the blade into the bandage, and pivoting the cutter from side to side to guide around tender or sore parts of a body, continuing the movements until the bandage has been severed; turning the bandage cutter instrument over a disposal and engaging said blade ejector to eject said blade unit, thereby minimizing chances of contamination.

5,341,823

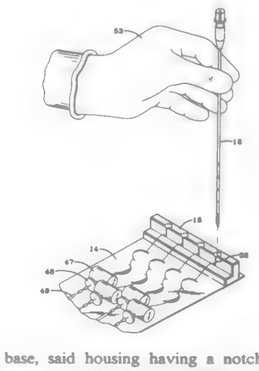
METHOD FOR LOADING A T-SHAPED TENSION DEVICE INTO A SLOTTED NEEDLE

Edgar G. Manosalva, Columbus; Jeffrey R. Ross, Dublin, and Donald J. Goldhardt, Grove City, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 38,751, Mar. 26, 1993, Pat. No. 5,307,924.
This application Nov. 8, 1993, Ser. No. 148,228
Int. Cl.[5] A61B *19/00*; A61M *31/00*
U.S. Cl. 128—898 **1 Claim**

1. A method of loading a T-fastener into a slotted needle, said method comprising the steps of:

(a) providing (i) a slotted needle having a bore therethrough and a longitudinally extending notch therein at a sharp end of the needle, and (ii) an assembly of a T-fastener and a device for loading a T-fastener into a needle, said T-fastener comprising a "T" head and a suture attached thereto, said device comprising a generally planar base and a housing attached thereto, said housing having a recess therein which contains the "T" head of the T-fastener, said recess having a longitudinal axis, a first end and a second end, the first end of said recess being open at a top surface of the housing and the second end of said recess being a solid surface of the housing, the longitudinal axis of the recess and the "T" head of the "T" fastener both being oriented generally vertically with respect to



said base, said housing having a notch therein which communicates with said recess and is generally parallel to the longitudinal axis of said recess, the suture of said T-fastener extending through said notch and being secured to said generally planar base by means for securing; and

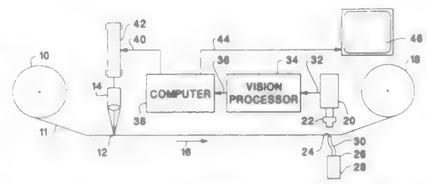
(b) loading said T-fastener into said needle by sliding the sharp end of said needle into the recess in said housing and over said "T" head of said T-fastener, such that said "T" head is disposed within the bore of the needle and said suture extends through the slot in such needle, and placing tension on said suture and removing the needle and T-fastener from said recess.

5,341,824

METHOD AND APPARATUS FOR INSPECTING AND CONTROLLING TIPPING PAPER PERFORATION

Thomas A. Fletcher, Chesterfield, and H. Cary Longest, Jr., Midlothian, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 29, 1992, Ser. No. 998,034
Int. Cl.[5] A24C *5/34, 5/00*
U.S. Cl. 131—281 **25 Claims**



1. An apparatus for controlling a tipping paper perforator comprising:

VOL 1165 ISS 5 AG 30 1994 UMI

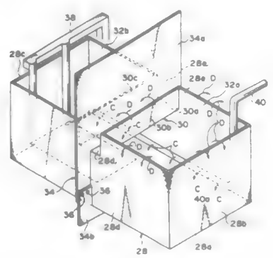
strobe light for intermittently illuminating a portion of perforated tipping paper continuously moving in the apparatus;
camera means for providing image data for perforations in the portion of the tipping paper illuminated by the strobe light;
vision processing means for determining the area of perforations in the tipping paper; and
means for calculating a pressure drop of the paper using the area determined for the perforations in the tipping paper and for producing a control signal for controlling the perforator responsive to the calculated pressure drop.

5,341,825

LIQUID OVERFLOW TANK COMBINED WITH PARTITION ISOLATING TWO CHAMBERS

Satoshi Kobayashi, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 776,070, Oct. 16, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,224
Claims priority, application Japan, Oct. 16, 1990, 2-275314
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—61 7 Claims



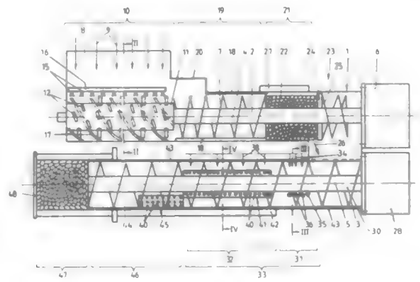
1. An overflow tank continuously supplied with a liquid for rinsing an article with the liquid, said overflow tank comprising:
a partition member isolating two adjacent chambers from each other; and
a tank body having two opening sections and a groove section located between said two opening sections, said tank body being incorporated in said partition member in such a manner that said opening sections are opened at said two chambers, respectively, whereby the article can be transferred from one of said chambers to the other chamber through said tank body as it is rinsed with the liquid, each of said two opening sections being defined by a continuous peripheral edge which is disposed entirely in a single horizontal plane,
said groove section being defined by a bottom wall portion and opposed sidewall portions extending from sides of said bottom wall portion, said bottom wall portion being positioned at a level lower than a level of each said peripheral edge, for causing an overflow of liquid to occur all over each said peripheral edge, thereby preventing a gathering of pollutant substance at said opening sections.

5,341,826

APPARATUS FOR COMPRESSING AND WASHING CONTAMINATED RAKED-OFF OR SCREENED MATERIAL, PARTICULARLY IN SEWAGE TREATMENT PLANTS

Hans G. Huber, Berching, and Anton Neger, Beilngries, both of Fed. Rep. of Germany, assignors to Hans Huber GmbH, Berching, Fed. Rep. of Germany

Filed Apr. 6, 1993, Ser. No. 43,658
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1992, 4211657
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—65 20 Claims



1. Apparatus for compressing and washing contaminated raked-off or screened material, particularly in sewage treatment plants, with a screw conveyor device having a housing with fed hopper, therein a shaft mounted horizontally on bearings and provided with a drive, and a conveyor helix arranged on the shaft, and with a washing zone and washer nozzles arranged therein for the supply of wash water, as well as compacting zones, constructed without conveyor helices, arranged both before and after the washing zone, characterized in that the washing zone (**33**) is divided into two sections (**31, 32**) adjacent to each other, in each of which a defined water level (**35, 39**), occupying approx. ¼ to ½ of the height of the cross-section of the housing (**1**), prevails, that the washer nozzles (**34, 36**) are located both above and below the water level (**35**) in the first section (**31**) of the washing zone (**33**), and that in the second section (**32**) of the washing zone (**33**), the housing for the screw conveyor device is provided with openings (**40**) arranged laterally to define the water level.

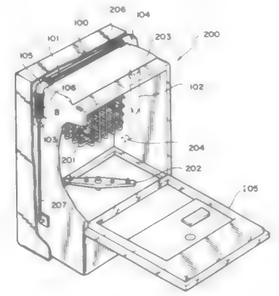
5,341,827

DRYING DUCT OF DISHWASHER

Shin-Yong Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 888,590, May 27, 1992, Pat. No. 5,277,210. This application Nov. 10, 1993, Ser. No. 149,794
Claims priority, application Rep. of Korea, May 27, 1991, 91-8681
Int. Cl.[5] A47L *15/48;* F28B *3/08*
U.S. Cl. 134—107 6 Claims

1. An air duct for connection with a dishwashing unit to conduct hot moist air therefrom, comprising a flexible hollow tube having first and second open ends for communicating



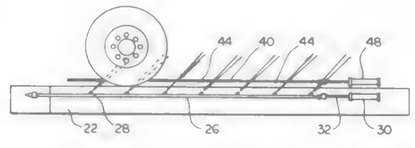
with said dishwashing unit, and an air outlet disposed intermediate said first and second ends.

5,341,828

TRUCK TIRE WASHING

John H. Ferguson, Sr., P.O. Box 116, Linwood, N.C. 27299

Filed Feb. 5, 1993, Ser. No. 13,959
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—123 23 Claims



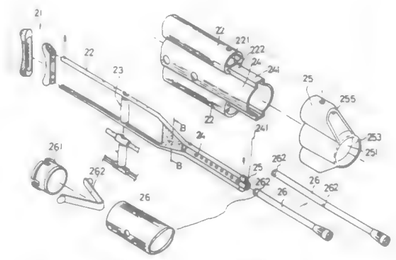
12. An apparatus for washing tires mounted on a vehicle, the tires having tread faces and side walls comprising
a vehicle supporting frame to support a vehicle as it passes over said frame including a right portion to support right-side tires on a vehicle and a left portion to support left-side tires on a vehicle,
a plurality of nozzles connected to a pressurized supply of a cleaning liquid and oriented to direct pressurized cleaning liquid toward the tires of the vehicle as the vehicle passes over said frame, said plurality including
right-side and left-side, upwardly-directed nozzles to direct cleaning liquid upward at a tread faces of right and left tires, respectively as the vehicle passes over said frame, said upwardly directed nozzles being also forwardly directed in the direction of motion of the vehicle as the vehicle passes over said frame and mounted in said frame for reciprocation fore-and-aft in the direction of motion of the vehicle as the vehicle passes over said frame,
inner and outer laterally-directed nozzles mounted inwardly and outwardly of the left and right tires, respectively, for reciprocation fore-and-aft in the direction of motion of the vehicle as the vehicle passes over said frame, said inner and outer laterally-directed nozzles also being directed toward the respective inner and outer sidewalls of the tire and forward in the direction of motion of the vehicle as the vehicle passes over said frame,
final rinse nozzles downstream of said upwardly directed nozzles and said laterally-directed nozzles in the direction of motion of the vehicle mounted for pivoting oscillation to spray cleaning liquid against outer sidewalls of the tires, and
at least one oscillator attached to said upwardly-directed nozzles and said laterally directed nozzle to oscillate said nozzles fore-and-aft in the direction of motion of the vehicle.

5,341,829

ADJUSTABLE FOREARM CRUTCHES

Fang-Jung Hsiao, No. 380-8, Hsinchuotze, Lung-Chiang Li, Pu Tai, Chia Yi Hsien, and Ming-Lung Hsieh, No. 208, Chung Cheng Rd., Jen Te Li, Hsueh Chia Chen, Tainan Hsien, both of Taiwan

Filed Jul. 20, 1993, Ser. No. 93,625
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—68 3 Claims



1. An adjustable forearm crutch comprising:
an armpit section, a fork support, a grip a fixing tube having a projecting section, a sleeve member having a first through hole and second through holes and an adjusting tube, wherein said fork support has a central reinforcing rib and a C-shaped cross-section, said reinforcing rib and adjacent walls of said fork support defining a recess for receiving said projecting section of said fixing tube, said fork support and fixing tube being respectively inserted in said second through holes of said sleeve member, a stop flange being formed in said second through holes of said sleeve member for fixing and restricting said fork support from extending outside said sleeve member, said grip having a central shaft rod two ends of which are plugged with two plug member, each of said plug member having an outer guide section suitable to be slidably fitted in said recess of said fork support, said first through hole of said sleeve member for receiving said fixing tube being formed with an annular groove around an entrance end which provides a resilient clamping effect, an arched face being formed on an inner side of said entrance end of said first through hole, an entrance end of said adjusting tube being fitted with a tube plug one end of which is cut into several equal sections to provide a resilient clamping effect when inserted in said first through hole.

5,341,830

COVER ASSEMBLY AND METHOD FOR COVERING UNDERSINK PIPING

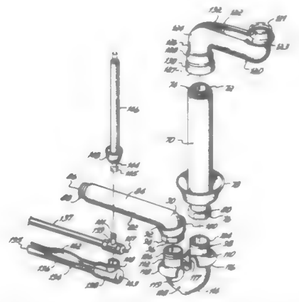
John A. Helmsderfer, Cincinnati, Ohio, and T. Michael McRoberts, Glastonbury, Conn., assignors to Brocar Products, Inc., Cincinnati, Ohio

Filed Oct. 29, 1993, Ser. No. 146,999
Int. Cl.[5] F16L *7/00, 9/22*
U.S. Cl. 137—15 51 Claims

32. A method of insulating undersink piping including a P-trap drain assembly with multiple shaped pipe sections, the method comprising:
providing shaped cover pieces of material, placing said shaped cover pieces of material around separate, shaped pipe sections of a P-trap assembly, at least one of said shaped cover pieces having a flexible collar at one end thereof;

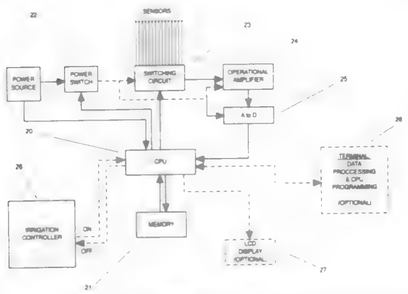
VOL 1165 ISS 5 AG 30 1994 UMI

folding back the flexible collar of the shaped cover piece;
assembling pipe sections having cover pieces thereon together into a P-trap assembly with said folded back flexible collar adjacent a juncture between two pipe sections;



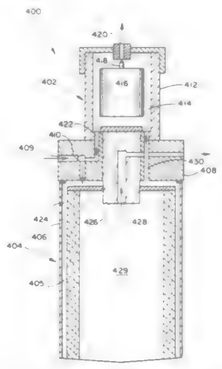
folding said flexible collar forward to cover part of said juncture when the pipe sections are secured together;
whereby to provide an insulative covering of the P-trap assembly at the pipe juncture.

5,341,831
METHOD AND APPARATUS FOR IRRIGATION CONTROL
Benjamin Zur, Kiryat-Tivon, Israel, assignor to Technion Research and Development Foundation Ltd., Haifa, Israel
Filed May 4, 1992, Ser. No. 878,094
Claims priority, application Israel, May 2, 1991, 098027
Int. Cl.[5] A01G *25/16*
U.S. Cl. 137—78.3 **27 Claims**



1. A method of controlling an irrigation cycle of an area comprising the steps of:
starting irrigation of said area at a known application rate,
measuring a downward directed advance of a wetting front at predetermined time intervals by means of at least two wetness sensing elements positioned in spaced apart relationship at progressing depth,
conveying signals corresponding to the advance of the wetting front from said wetness sensing elements to a processor, and
conveying a signal from said processor to an irrigation controller to stop irrigation as soon as the wetting front has advanced to a depth Zi.

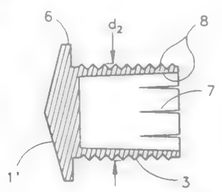
5,341,832
DEVICE AND METHOD FOR THE COMBUSTION OF WASTE OIL
Harry D. Foust, 1190 CTH 6, LaCrescent, Minn. 55947
Continuation-in-part of Ser. No. 695,438, May 3, 1991, Pat. No. 5,149,260, which is a continuation of Ser. No. 345,953, May 1, 1989, abandoned. This application Sep. 21, 1992, Ser. No. 947,754
Int. Cl.[5] B01D *19/00*
U.S. Cl. 137—202 **4 Claims**



1. A vapor eliminating device for eliminating gaseous components from a circulating liquid, comprising:
a center block having a float housing secured to a top surface thereof defining a float chamber, and a second housing secured to a bottom surface thereof defining a second interior, and the second housing interior having a filter element therein, the filter element separating the second housing into an space interior of the filter element and an annular space between the filter element and the second housing, and the block also having a first liquid flow channel and a second liquid flow channel therein, each liquid flow channel providing for separate fluid communication between the float chamber and the annular space of the second housing, the block also having a liquid flow inlet channel and a liquid flow outlet channel, the inlet channel connected to a liquid inlet line for providing supply of the circulating liquid to the first flow channel, and the inlet channel having venturi means for providing a suction immediately downstream thereof in the first flow channel so that a circulation of the liquid is created from the float chamber to the annular space through the first flow channel and from the annular space back to the float chamber through the second flow channel, the float chamber having a float therein and the float having means for releasably sealing with aperture means in the float housing as a function of the amount of liquid in the float chamber so that any gas trapped in the float chamber can be released through the aperture when a relatively low volume of liquid is held within the float chamber and so that the aperture is closed when a relatively high volume of liquid is held within the float chamber, and
the liquid outlet channel providing for fluid communication of the liquid from the interior space to a fluid outlet line.

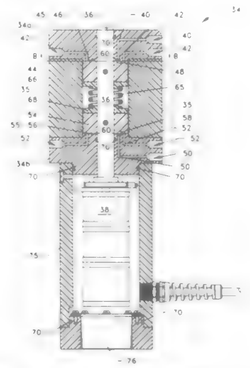
5,341,833
TIRE VALVE CAP
Don Davis, 19622 Lanark, Reseda, Calif. 91335
Filed Jul. 30, 1992, Ser. No. 921,712
Int. Cl.[5] F16L *55/115*
U.S. Cl. 137—232 **1 Claim**

1. A valve cap for use in a flush mounted valve which has been mounted in a wheel rim adapted for mounting a tubeless tire comprising:
a) a partially hollowed, externally threaded body adapted for insertion into an internally threaded opening in said flush mounted valve including thin tapering walls provided with a number of slits to produce a collet-like spring action when the cap is inserted;
b) sealing means in said body;



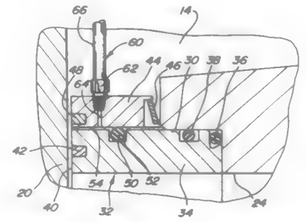
c) a solid head at one end of said threaded body shaped to facilitate tightening of said cap after insertion in the flush mounted valve whereby said cap serves to close off said opening in the valve against any externally encountered debris and also seals the valve against internally occurring leakage said leakage serving to increase said spring action and intensify the sealing properties of the thread to thread contact between the cap and the inside of the valve.

5,341,834
MULTIPORT VALVE FOR FLUID TRANSFER SYSTEMS
Kenneth W. Doherty, West Falmouth; Susumu Honjo, Falmouth, and John D. Billings, North Falmouth, all of Mass., assignors to McLane Research Laboratories, Inc., Monument Beach, Mass.
Filed Sep. 16, 1993, Ser. No. 122,384
Int. Cl.[5] B01D *27/10;* **F16K** *11/074*
U.S. Cl. 137—599.1 **20 Claims**



1. A multiport valve for delivering fluid to a plurality of separate fluid sampling sites having respective fluid sampling inlets and outlets comprising:
a first multiport valve head having a fluid intake port, a plurality of at least three different outlet ports coupled respectively to fluid sampling inlets of the fluid sampling sites, said outlet ports being arranged in a generally circular configuration, and a valve head first distributor bearing against the first multiport valve head for coupling the fluid intake port to different successive outlet ports for delivering fluid to selected fluid sampling sites at selected fluid sampling inlets, said first distributor substantially sealing the other fluid sampling inlets;
a second multiport valve head having a fluid exhaust port, a plurality of at least three separate fluid inlet ports coupled respectively to fluid sampling outlets from the fluid sampling sites, said inlet ports being arranged in a generally circular configuration, and a valve head second distributor bearing against the second multiport valve head for coupling the exhaust port to different successive inlet ports for exhausting fluid from selected fluid sampling sites at selected fluid sampling outlets, said second distributor substantially sealing the other fluid outlets to minimize leakage from the other fluid sampling sites;
and motor means coordinating the first and second distributors for delivering fluid to and exhausting fluid from the respective fluid sampling sites in a time series sequence.

5,341,835
LUBRICATION SYSTEM FOR VALVE SEAT OF A GATE VALVE
William W. Lanning, II, Sugar Land, Tex., assignor to Foster Valve Corporation, Houston, Tex.
Filed Dec. 14, 1992, Ser. No. 989,619
Int. Cl.[5] F16K *3/36*
U.S. Cl. 137—246.22 **11 Claims**



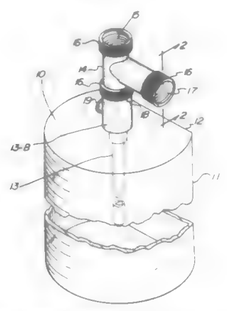
1. In a gate valve including a valve body having a valve chamber therein and pair of flow passages extending therethrough at opposite sides of the flow chamber, a gate member reciprocally movable within said valve chamber between an open and a closed position, said gate member having a flow port therethrough which is selectively aligned with the flow passages to open said gate valve, and seal means for preventing flow of fluid along the surface of the gate member, said seal means including a primary seal seat member and a secondary seal seat member slidably mounted on said primary seal seat member in proximity to the gate member within a recess formed in said flow passages, the improvement comprising:
a lubrication system communicating between the exterior of the valve body and said seal means to provide a continuous supply of lubricant to said seal means, said secondary seal seat member having a lubricant passageway to which lubricant is supplied directing lubricant between said primary and secondary seal seat members, said lubricant selectively supplied under a predetermined pressure threshold to test the integrity of the primary seal seat member and the secondary seal seat member of the seal means.

5,341,836
HANDS FREE WEED & FEED
Terrance M. Doherty, 4621 S. 84th St., Greenfield, Wis. 53228
Filed Jun. 1, 1993, Ser. No. 69,735
Int. Cl.[5] B01F *5/04*
U.S. Cl. 137—268 **3 Claims**

1. A liquid fertilizer dispensing device comprising:
a semi-cylindrical, transparent container having a straight side, a top wall, and an interior, said straight side being operable to engage a surface to support said container adjacent said surface, said top wall having an entry port

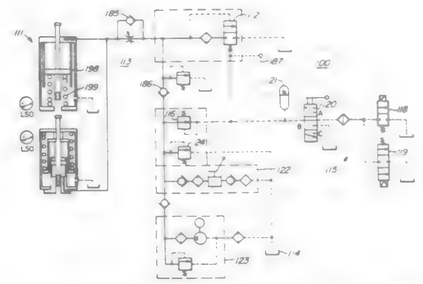
VOL 1165 ISS 5 AG 30 1994 UMI

extending therethrough, said container being operable to contain a liquid fertilizer solution;
a feeder tube extending from said interior of said container through said top wall exteriorly of said container;
a valve coupled to said feeder tube and in fluid communication through said feeder tube with said interior of said container;
a T-fitting having a base end in fluid communication with said feeder tube, an entrance end with an entrance threaded collar operable to engage and fasten to a conventional exterior water faucet, and an exit end with an exit threaded collar operable to engage and fasten to a conventional water hose, said T-fitting facilitating fluid flow from



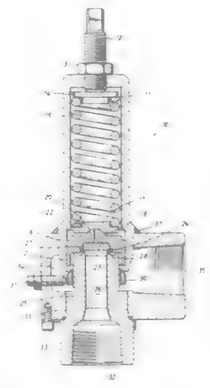
said entrance end to said exit end and past said feeder tube such that a venturi-effect vacuum is created to draw said liquid fertilizer solution from said container, whereby said liquid fertilizer solution is mixed with said fluid flow;
a closure cap removably coupled to said container for sealing said entry port; and
a perforated capsule removably contained within said container, said capsule having a plurality of perforations therethrough and a removable, press-fit lid to permit the enclosure of granulated fertilizer within said capsule, such that said granulated fertilizer will mix with said solution upon being positioned through said entry port and into said container.

5,341,837
TWO LINE PILOT VALVE
Clarence W. Johnson, Calgary, Canada, assignor to Barber Industries Ltd., Calgary, Canada
Filed Feb. 8, 1993, Ser. No. 14,554
Int. Cl.[5] F16K *17/00*
U.S. Cl. 137—458 **16 Claims**



1. A two-line pilot valve to operatively sense the pressure in a flowline, said pilot comprising a body operable to be mounted to a base housing, a pushrod movable within said base housing and body, an inlet port and an outlet port, a first poppet sleeve mounted on said pushrod, a first poppet sleeve shoulder on the inside circumference of said first poppet sleeve operable to interact with a first pushrod flange on the outside circumference of said pushrod, a spring operable on said first poppet sleeve to urge said first poppet sleeve shoulder into a contacting relationship with said first pushrod flange, a first core ring mounted about said pushrod, a first o-ring mounted on said first core ring and being operable to simultaneously contact one end of said first poppet sleeve and the inside circumference of said body, an inlet port operable to admit fluid to a circumferential cavity surrounding said poppet sleeve and defined on one end by said first o-ring of said core ring and at the opposite end by a seal between said body and said first poppet sleeve, said outlet port communicating with said inlet port to thereby exhaust fluid through said pilot valve when said first poppet sleeve is out of contact with said first o-ring of said first core ring.

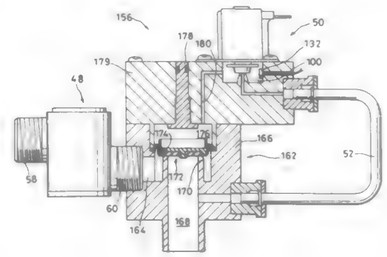
5,341,838
DIRECT SPRING PRESSURE OPERATED VALVE
Walter W. Powell, 13911 Emerald Forest, Sugarland, Tex. 77478
Continuation of Ser. No. 822,891, Aug. 23, 1993. This application Aug. 23, 1993, Ser. No. 109,968
Int. Cl.[5] F16K *17/08*
U.S. Cl. 137—478 **17 Claims**



1. A relief valve comprising:
(a) a valve housing defining an inlet and an outlet;
(b) a valve seat positioned within said valve housing between said inlet and said outlet;
(c) a valve member coacting with said valve seat to close said valve seat and thereby shutoff communication between said inlet and said outlet, said valve member having a front side facing said valve seat and a back side;
(d) means urging said valve member into seated closure on said valve seat;
(e) said valve member being relatively moveable responsive to said urging means and to inlet pressure coacting on the front said of said valve member;
(f) a closed bonnet positioned to hold pressure acting on the back side of said valve element;
(g) said valve member having a central seating surface;
(h) an outer annular fixed sleeve attached to said housing and surrounding said valve member and defining an encircling flow area, wherein the flow area is the sole communication to said outlet from said inlet past said valve seat and said valve member;
(i) an adjustable flow control means comprising a moveable

obstruction to control the flow through said flow are and to thereby create a back pressure within said bonnet; and
(j) said sleeve being spaced slightly from said flow control means to provide a restricted passage therebetween so that back pressure created within said bonnet bleeds through said restricted passage on closure of said valve member.

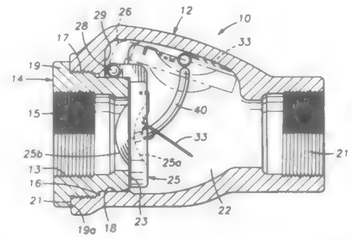
5,341,839
WATER FLOW CONTROL SYSTEM
Hiroshi Kobayashi; Ryosuke Hayashi; Shoji Inokuchi, and Yukihiro Muroya, all of Kita, Japan, assignors to Toto Ltd., Fukuoka, Japan
Filed Jun. 15, 1993, Ser. No. 76,887
Claims priority, application Japan, Jun. 15, 1992, 4-180400
Int. Cl.[5] F16K *31/40;* **G05D** *16/08*
U.S. Cl. 137—505.13 **7 Claims**



1. A water flow control system comprising:
a conduit for water having an inlet and an outlet, said inlet being adapted to be connected to a source of water under a primary water pressure;
a solenoid valve of the non-latching type disposed in said conduit to control flow of water through said conduit;
a pressure control valve disposed in said conduit upstream of said solenoid valve for reducing the primary pressure and for delivering to said solenoid valve a flow of water under a secondary pressure, inclusive of the static pressure, having a predetermined pressure level generally lower than the primary pressure at said inlet; and,
electric control means for controlling said solenoid valve, said electric control means being operable to energize said solenoid valve with an electric current having a first intensity when the opening movement of said solenoid valve is to be initiated and being operable to energize said solenoid valve with an electric current having a second intensity lower than said first intensity when said solenoid valve is to be maintained in its open state.

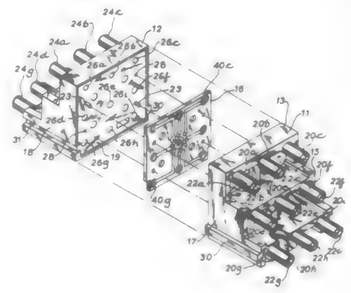
5,341,840
BONNETLESS SWING CHECK VALVE
Ronald J. Manson, The Woodlands, and Charles C. Partridge, Houston, both of Tex., assignors to Tom Wheatley Valve Company, Houston, Tex.
Filed Nov. 12, 1993, Ser. No. 150,999
Int. Cl.[5] F16K *15/03*
U.S. Cl. 137—527.8 **6 Claims**

1. A bonnetless check valve comprising a valve body having a valve chamber and valve inlet and valve outlet ports communicating with said valve chamber to define a flow passage through said valve, said valve body being formed of first and second body members wherein said first body provides said valve chamber and said valve outlet port and said second body member has an end portion threadedly joined to said first body member and extending into said valve chamber, said second body member having a bore opening therethrough extending from said valve inlet port through said end portion;
a valve sealing surface provided on the end of said second body member which extends into the valve chamber, said valve sealing surface having an annular planar configuration in surrounding relation to said flow passage and in a normally protected position with respect to the flow of fluid through the valve;
a valve clapper element;
a clapper shaft connected to said clapper element by a clapper arm, said valve chamber having walls defining said valve chamber being provided with slots formed in said



walls at opposite sides of the valve flow passage and adapted to receive the end portions of the clapper shaft therein, said shaft being axially rotatable, supported on said end portion of the second body member and restrained by said joined body members whereby said valve clapper element is pivotally moveable in the valve chamber between a first valve closed position wherein the clapper element closes the flow passage and a second valve open position wherein the clapper element is in an unobstructing position with respect to the flow passage.

5,341,841
FLUID DISTRIBUTION DEVICE
Joseph H. Schaefer, Grafton, Wis., assignor to Acute Ideas, Inc., Grafton, Wis.
Filed Oct. 19, 1993, Ser. No. 139,244
Int. Cl.[5] F15D *1/14*
U.S. Cl. 137—561 A **11 Claims**



1. A device for distributing fluid from a single inlet to a multiplicity of outlets comprising:
a first member having a first side with at least one inlet port on the first side;
a passage extending from the inlet port to a second side of the first member;
a second member having a first side;
a plurality of port passages extending between the first side and a second side of the second member;
a third member placed between the second sides of the first and second members;

VOL 1165 ISS 5 AG 30 1994 UMI

a passage in the third member communicating with the inlet port of the first member;

a plurality of passages in the third member communicating with the passage in communication with the inlet port at one side, the plurality of passages extending through the third member from the one side to another side and connected to channel portions extending over the other side of the third member, the plurality of passages communicating with the port passages of the second member by means of the channel portions.

5,341,842

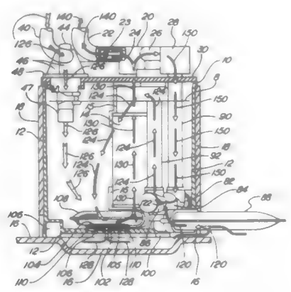
BOTTOM MOUNT FUEL TANK MODULE FOR AN AUTOMOBILE

Ming-Niu Chih, Dearborn Heights, Mich., and Michael H. Johnston, Bloomington, Ind., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 12, 1993, Ser. No. 89,200

Int. Cl.[5] F02M *37/04*

U.S. Cl. 137—574 **9 Claims**



1. A fuel delivery module for supplying fuel to an automobile engine from a fuel tank comprising:

a reservoir;

a reservoir cap attachably enclosing said reservoir and having spaces to allow fuel overage to flow from the reservoir to the tank;

a fuel pump within said reservoir having a fuel pump outlet passing through the cap;

a manifold attached to said cap exteriorly of said reservoir for receiving high pressure fuel flow from the fuel pump outlet, said manifold having an engine fuel delivery conduit for routing a first portion of said high pressure fuel flow to said engine, and a connecting conduit which routes a second portion of said high pressure fuel to conduit means passing through said cap and in fluid communication with a jet pump fuel inlet conduit; and

a jet pump having a fuel intake chamber in communication with said jet pump fuel inlet conduit for receiving the second portion of high pressure fuel and routing said second portion past a venturi opening to draw fuel from the fuel tank into a fuel outlet chamber, through a vertically positioned reservoir outlet conduit within said reservoir, and into said reservoir with said reservoir outlet conduit arranged such that said reservoir outlet conduit is above a fuel inlet to said fuel pump, said reservoir remaining filled to a minimum height of said conduit outlet when said fuel pump and said engine cease operating.

5,341,843

PLUMBING AND HEATING PIPE SYSTEM FOR WATER SUPPLY PURPOSES, MADE EITHER COMPLETELY OR MAINLY OF PLASTIC MATERIAL, ESPECIALLY OF POLYPROPYLENE

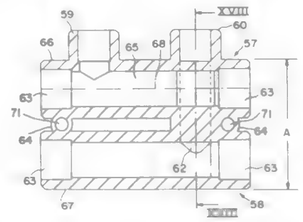
Karl Rafeld, Biessenhofen-Ebenhofen, Fed. Rep. of Germany, assignor to Rafeld Kunststofftechnik GmbH u. Co. KG., Biessenhofen-Ebenhofen, Fed. Rep. of Germany

Division of Ser. No. 792,316, Nov. 14, 1991. This application Jul. 9, 1993, Ser. No. 89,718

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1990, 9015675[U]; Apr. 24, 1991, 9105038[U]; Apr. 26, 1991, 9105171[U]; May 10, 1991, 9105823[U]; May 10, 1991, 9105824[U]

Int. Cl.[5] F16L *3/00, 33/00*

U.S. Cl. 137—343 **20 Claims**



1. Plumbing and heating pipe system for water supply purposes, made substantially of plastic material, including shut-off valves of plastic material having a plastic-sheathed metallic valve seat for installation in pipelines, and including two serially disposed pipe connecting sleeve pieces and an internally threaded valve body receptacle therebetween to form said valve seat, the valve body adapted to be screwed into the internal screw thread of said valve body receptacle, the improvement comprising that the metallic valve body receptacle is a rotary body of cylindrical contour which is provided on a portion of its cylindrical outer surface with flow bores which extend transversely to its longitudinal axis and can be closed by means of the valve body, while on other portions of its cylindrical outer surface it is provided with anti-twist means and with sealing members against leakage of fluid from the pipe connecting sleeve pieces.

5,341,844

CRASH PROOF SOLENOID CONTROLLED VALVE WITH MANUAL OVERRIDE VALVE

Lloyd G. Wass, 1670 Blackhawk Cove, Eagan, Minn. 55122, and Michael R. Baird, 54 New Market Dr., Delaware, Ohio 43015

Continuation of Ser. No. 880,568, May 8, 1992, Pat. No. 5,193,580, which is a continuation-in-part of Ser. No. 707,584, May 30, 1991, Pat. No. 5,197,710. This application Mar. 29, 1993, Ser. No. 39,935

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] F16K *31/06, 11/24*

U.S. Cl. 137—613 **33 Claims**

1. A valve for controlling flow of compressed gas from an interior of a pressure vessel, the valve comprising:

a head having an outlet port;

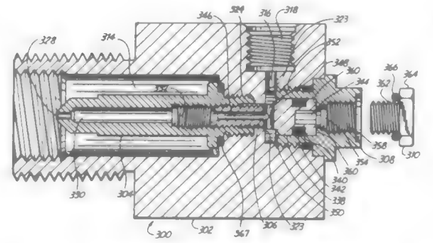
a neck connected to the head and having external threads for insertion into and connection to an opening in the pressure vessel;

a flow path extending within the neck and the head for connecting the outlet port to the interior of the pressure vessel;

a first valve seat positioned along the flow path;

a first seal which is movable between a first position in which the first seal engages the first valve seat to block the flow path and a second position in which the first seal is spaced from the first valve seat;

means for biasing the first seal toward the first position; and



a solenoid connected to the neck for moving the first seal toward the second position in response to a control signal.

5,341,845

CONTROL CARTRIDGE FOR A SINGLE-LEVER MIXER FITTING

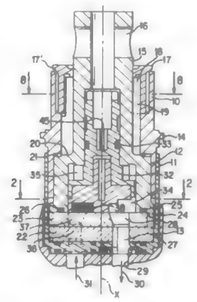
Heinz Graber, Oberkulm, Switzerland, assignor to KWC AG, Unterkulm, Switzerland

Continuation of Ser. No. 9,746, Jan. 27, 1993, abandoned. This application Jul. 3, 1993, Ser. No. 104,637

Claims priority, application Switzerland, Feb. 25, 1992, 00572/92

Int. Cl.[5] F16K *11/00*

U.S. Cl. 137—625.41 **30 Claims**



1. A control cartridge for a single-lever mixer fitting having a cold water connection, a hot water connection and an outlet connection disposed in a housing comprising: a first control disk fixed to the housing, a second control disk movably disposed in the housing relative to the first control disk, and an actuating element attached to the second control disk, said first control disk having a first inlet aperture for communicating with the cold water connection, a second inlet aperture for communicating with the hot water connection, and an outlet aperture for communicating with the outlet connection, the second control disk having an inlet aperture and an outlet aperture, said second control disk disposed in the housing so as to be rotatable solely about a center axis, both the first and second inlet apertures of the first control disk and the inlet aperture of the second control disk disposed on a first common circular line, the outlet apertures of the first and second control disks disposed on a second common circular line and distributed on said first and second disks so that when the second control disk is rotated in an opening direction from a closed position, successively one of the first and second inlet apertures in the first disk is uncovered due to movement of the inlet aperture in the second disk until water flow through said one inlet aperture is freed up to a maximum water-flow volume, after which the other of the first and second inlet apertures in the first disk is additionally uncovered, and then said one of the first and second inlet apertures in the first disk is covered by the second disk until water flow through said one inlet aperture is throttled down to approximately zero water-flow volume.

5,341,846

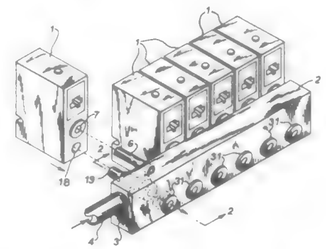
VALVE STACK ASSEMBLY

Norman S. Framberg, Glenview, Ill., assignor to Mead Fluid Dynamics, Inc., Chicago, Ill.

Filed Nov. 22, 1993, Ser. No. 156,088

Int. Cl.[5] F16K *11/00*

U.S. Cl. 137—884 **16 Claims**



1. In a valve stack assembly, a manifold having an inlet channel connected to a source of fluid, a plurality of first tubes each having an inner end communicating with said channel and each having an outer end projecting outwardly of the manifold, a plurality of valves each having an inlet passage connected to the projecting end of one of said tubes, a collet disposed the inlet passage of each valve and having a central opening to receive the tube, each collet being constructed and arranged such that the tube can be freely inserted in the collet but cannot be freely withdrawn, and release means associated with each collet for releasing engagement of the collet with said tube on inward axial movement of said collet relative to said valve.

5,341,847

UNDERWATER CLEANING APPARATUS

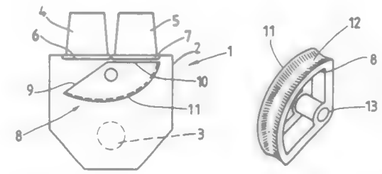
George V. Rissik, 66 Goethe Road, Lombardy East, Transvaal Province, and Wilbraham C. K. Vickers, 21 Lucas Road, Eastleigh, Edenvale, both of South Africa

Filed Oct. 25, 1993, Ser. No. 143,196

Claims priority, application South Africa, Aug. 12, 1993, 93/5867

Int. Cl.[5] F16K *11/052*

U.S. Cl. 137—875 **7 Claims**



1. Underwater cleaning apparatus including a chamber having an inlet on one side thereof; a pair of outlets on the other side of the chamber and communicating with a pair of passages; a pair of valve seats for the outlets and having their axes in the same plane; and a valve closure arrangement for the

VOL 1165 ISS 5 AG 30 1994 UMI

valve seats, the valve closure arrangement including a body mounted in the chamber to pivot about an axis perpendicular to the plane through the axes of the valve seats and including a closure for each seat with the closures disposed relative to each other and parallel to the pivotal axis such that the closures are adapted to close the valve seats alternately on oscillation of the valve body about its axis; and a curved surface connecting the closures, the curved surface being concavely profiled at least at the areas adjacent the closures.

5,341,848

FLOW CONDITIONER

Elizabeth M. Laws, Salford, England, assignor to Salford University Business Services Limited, Horwich, United Kingdom

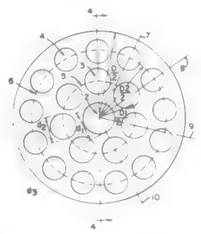
PCT No. PCT/GB90/01124, § 371 Date Mar. 6, 1992, § 102(e) Date Mar. 6, 1992, PCT Pub. No. WO91/01452, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 20, 1990, Ser. No. 809,519

Claims priority, application United Kingdom, Jul. 20, 1989, 8916629; Nov. 15, 1989, 8925851

Int. Cl.[5] F15D *01/02*

U.S. Cl. 138—44 **13 Claims**



1. A flow conditioner comprising an apertured circular plate intended to be placed in a conduit in an orientation substantially perpendicular to the axis of the conduit, wherein the apertures are circular and are arranged in an inner array of apertures adjacent a central aperture and an outer array of apertures adjacent the inner array said inner array including n apertures said outer array including m apertures, the plate having a diameter D, the centers of the apertures of the inner and outer arrays being located on circles of diameter D_1 and D_2 respectively, the central aperture having a diameter d_1, the apertures of the inner and outer arrays having diameters d_2 and d_3 respectively, and the array radii and aperture diameters being related in accordance with:

$$nd_2 D_2 > md_3 D_1,$$

the center of the central aperture and the centers of the circular arrays coincide with the center of the circular plate, the apertures in each circular array are equally spaced apart around the center of the plate, all the apertures in any one circular array are of substantially the same diameter, and the size and number of apertures in the circular arrays are such that the impedance to flow presented by the plate increases with the radius on which a given array of apertures is arranged.

5,341,849

FUEL SYSTEM CONDUIT

Warren Mang, Haddonfield, N.J., assignor to Markel Corporation, Norristown, Pa.

Filed Nov. 5, 1991, Ser. No. 788,208

Int. Cl.[5] F16L *11/00*

U.S. Cl. 138—133 **18 Claims**

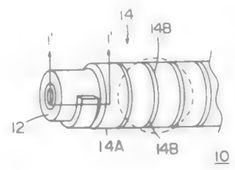
1. An improved fuel system conduit for transporting fuel and/or fuel vapors in an automobile comprising:

an inner tubular liner having a central chamber for contacting and containing the fuel and/or fuel vapor, said inner tubular liner comprising a thin-walled tubular liner, having a wall thickness of from about 5 to about 25 mils formed of fluorocarbon resin and having a circular cross sectional configuration; and

a protective cover for said liner comprising:

a metallic ribbon tightly wrapped in a helical configuration around said inner liner such that said inner liner is protected from kinking upon the application of bending stresses to said conduit, said ribbon having a generally rectangular cross-sectional configuration; and

an outer plastic sheath substantially covering said metallic ribbon.



5,341,850

HEDDLE FRAME LEVELLING APPARATUS FOR A ROCKING LEVER CAM DRIVE

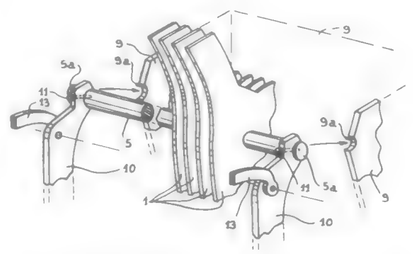
Jean-Paul Froment, Doussard, and Jean-Pierre Pages, Faverges, both of France, assignors to S.A. des Etablissements Staubli, Faverges, France

Filed Jul. 6, 1993, Ser. No. 86,034

Claims priority, application France, Jul. 10, 1992, 92 08898; Sep. 18, 1992, 92 11358

Int. Cl.[5] D03C *5/02*

U.S. Cl. 139—79 **10 Claims**



1. In a weaving machine having a cam mechanism for forming a shed wherein the cam mechanism includes rocking levers connected to heddle frames, the rocking levers being supported on a pivot pin which is carried by eccentric assemblies so as to be shiftable relative to a frame portion of the machine from a first position wherein the rocking levers are engageable with cam means to a second position adjacent a stop, the improvement comprising said stop being defined by a fixed bearing surface associated with the frame portion, means for elastically urging the pivot pin against said fixed bearing surface when in said first position, and maneuvering means for controlling movement of the eccentric assemblies.

5,341,851

LOOM HAVING AT LEAST TWO SECTIONAL WARP BEAMS

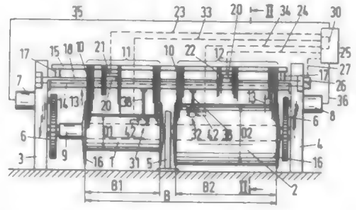
Klaus Berktold, Rüti, and Ernst Eberhard, Wolfhausen, both of Switzerland, assignors to Sulzer Reuti AG, Reuti, Switzerland

Filed Jun. 4, 1993, Ser. No. 71,644

Claims priority, application European Pat. Off., Jun. 5, 1992, 92810434.8

Int. Cl.[5] D03D *49/06*

U.S. Cl. 139—103 **8 Claims**



1. A loom comprising at least two sectional warp beams about which warp threads are wound and from which warp threads are run off during weaving; tensioning means for guiding the warp threads being run off; first sensing means for each sectional warp beam for detecting tension in the warp threads being run off the beams; control equipment operatively coupled with the first sensing means for regulating a rate or rotation of the warp beams when warp threads are run off; second sensing means provided for each warp beam for detecting a length of warp thread being run off the associated sectional warp beam for a given advance of warp thread from the beam during weaving, the second sensing means generating a control signal reflecting said length of warp thread run off during said given advance; and means for feeding the control signal from the second sensing means to the control equipment; the control equipment being adapted to influence the rate of rotation of the section warp beams in dependence on said control signal for maintaining constant the length of warp thread being run off the warp beams during the given advance of the warp threads.

5,341,852

TAKER GRIPPER FOR LOOM USE

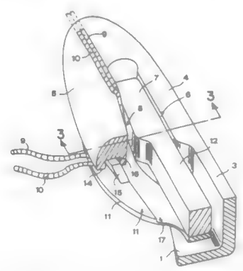
Luciano Corain; Gianni Maitan, both of Venice, and Giulio Bortoli, Schio, all of Italy, assignors to Nuovopignone Industrie Meccaniche e Fonderia SpA, Florence, Italy

Filed May 14, 1993, Ser. No. 62,291

Claims priority, application Italy, May 22, 1992, MI 92/A/001240

Int. Cl.[5] D03D *47/20*

U.S. Cl. 139—448 **4 Claims**



1. A weft taker gripper for loom use, comprising a gripper body having at least one end and at least two sides provided at said one end with a hook having at least one face cooperating with a movable wedge with which it defines on one of said sides a narrow V recess into which a first weft portion to be clamped is inserted in order to form a weft gripping and clamping member of the wedge type, said gripper body further having in series with said hook along the path of the weft within the gripper an elastic blade bearing against said hook to engage a second weft portion therebetween to form a weft gripping and clamping member of the elastic type, wherein the weft is gripped and clamped at said two portions by the independent actions of the series arranged wedge type and elastic type weft gripping and clamping members.

5,341,853

METHOD FOR DESTROYING AEROSOL CANS

Francois Nugues, 11 Rue du Hainaut, Andresy, France 78570 , and Pierre H. Robic, 7 Rue de Boussois, Epinay sur Seine,, France 93800

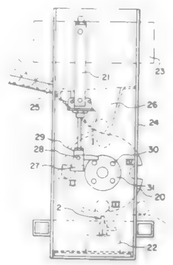
PCT No. PCT/FR90/00150, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO90/10507, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 6, 1990, Ser. No. 601,826

Claims priority, application France, Mar. 6, 1989, 89 02917

Int. Cl.[5] B65B *31/00;* **B67C** *3/00*

U.S. Cl. 141—7 **11 Claims**



1. Method for destroying aerosol cans including the steps of:

a) providing a machine including feeding means for feeding aerosol cans into a rotary drum having at least one recess sized to receive an aerosol can, said at least one recess being alignable with said feeding means in one position of said drum and said at least one recess being rotatably movable to a second position in alignment with a reciprocable needle having a hollow body and a sealing device surrounding said hollow body for sealing around a can opening to be formed in said aerosol can be said needle;

b) rotating said drum to said first position of said at least one recess and causing said at least one recess to receive an aerosol can;

c) rotating said drum to said second position of said at least one recess;

d) reciprocating said needle to pierce through said aerosol can to form said can opening while concurrently sealing about said can opening with said sealing device;

e) draining all fluid from said aerosol can;

f) withdrawing said needle from said can opening; and

g) rotating said drum to a position where said aerosol can is discarded.

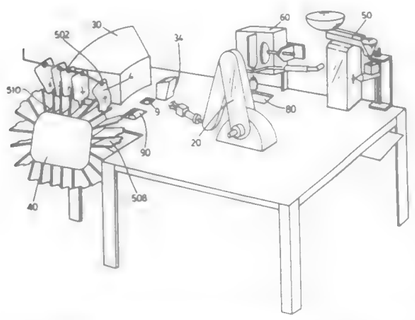
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,854

ROBOTIC DRUG DISPENSING SYSTEM

Bohuslav J. Zezulka, Kelowna; Henry H. Voss, North Vancouver, and Anne M. Fincati, Calgary, all of Canada, assignors to Alberta Research Council, Alberta, Canada

PCT No. PCT/CA90/00066, § 371 Date Oct. 16, 1991, § 102(e) Date Oct. 16, 1991, PCT Pub. No. WO90/09776, PCT Pub. Date Sep. 7, 1990
PCT Filed Feb. 27, 1990, Ser. No. 761,869
Claims priority, application Canada, Sep. 28, 1989, 613,929
Int. Cl.[5] A61J *1/00*; B01F *13/00*
U.S. Cl. 141—1 41 Claims



1. An automated robotic dispensing system for introducing a unit drug dose from a vial having a top diaphragm pierceable by a needle into a container of solute therefor, comprising:

a filling station enclosed in a filtered environment, the filling station comprising a manipulating robot, a vial dispenser, a container dispenser, at least a needle pick-up location of a needle dispenser, a processing unit, a loading location of an output for processed containers, and a discard location;

the robot being programmed to:

(a) receive a said vial containing a said unit drug dose from a vial pick-up location of the vial dispenser and deliver it to a vial reception location of the processing unit;

(b) receive a said container from the container dispenser at a container pick-up location and deliver the container to a container reception location of the processing unit;

(c) receive a said needle from the needle dispenser at the needle pick-up location and deliver the needle to a needle holder of the processing unit;

(d) receive the processed container from the processing unit and deliver it to the output;

(e) receive the empty vial from the processing unit and deliver it to the output; and

(f) receive the used needle from the processing unit and discard it to a discard location;

the vial dispenser being adapted to hold a plurality of vials each containing a said drug dose and to deliver them sequentially to the vial pick-up location;

the container dispenser being adapted to hold a plurality of containers each container containing solute for the drug dose and to deliver them sequentially to the container pick-up location;

the needle dispenser being adapted to hold a plurality of double-ended needles and to deliver them sequentially to the needle pick-up location;

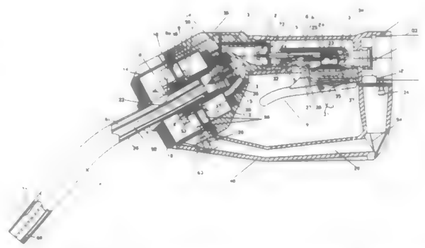
the processing unit including means for moving a said vial, a said needle and a said corresponding container into fluid communication through the needle, and means for flowing fluid from the container to the vial and vice-versa to dissolve the unit drug dose and transfer the solution to the container.

5,341,855

VAPOR RECOVERY NOZZLE

Joshua E. Rabinovich, 15 Voss Terr., Newton, Mass. 02159

Continuation-in-part of Ser. No. 893,335, Jun. 3, 1993. This application Jun. 7, 1993, Ser. No. 72,007
Int. Cl.[5] B67D *5/40*
U.S. Cl. 141—59 18 Claims



1. A vapor recovery nozzle apparatus comprises a connector for connecting a two-passage hose, a fluid inlet, a fluid inlet chamber connected to the fluid inlet, a fluid control valve in the fluid inlet chamber for controlling flow of fluid from the fluid inlet chamber, a fluid inlet channel leading-from the valve, tangential inlet ports leading from the fluid inlet channel, a turbine chamber connected to the ports, a fluid delivery channel leading from the turbine chamber, a fluid check valve connected to the fluid delivery channel, a spout, a fluid conduit in the spout leading from the check valve for conducting fluid into a tank filler neck, a vapor recovery conduit connected to the spout parallel to the fluid conduit, a vapor impeller chamber connected to the vapor conduit, a vapor impeller mounted for rotating within the vapor impeller chamber, a fluid turbine rotating within the fluid turbine chamber, and a rotation coupling connected between the fluid turbine and the vapor impeller for causing the vapor impeller to rotate upon rotation of the fluid turbine, a vapor outlet connected to the vapor impeller chamber, a vapor channel connected to the vapor outlet, a check valve connected to the vapor channel, the vapor channel connected to the connector for conducting vapor from the vapor channel into a vapor recovery passage in a hose.

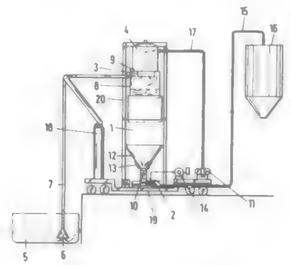
5,341,856

ARRANGEMENT FOR CONVEYING DUST-LIKE BULK GOODS, PARTICULARLY CEMENT, BY MEANS OF SUCTION AND PRESSURE

Gerhard Appenzeller, Seevetal, Fed. Rep. of Germany, assignor to Ibau Hamburg Ingenieurgesellschaft Industriebau mbH, Hamburg, Fed. Rep. of Germany

Filed Jun. 11, 1993, Ser. No. 75,735
Claims priority, application European Pat. Off., Jun. 13, 1992, 92109963.6
Int. Cl.[5] B65B *1/08, 1/16*
U.S. Cl. 141—67 5 Claims

1. An arrangement for transferring dust-like bulk goods, particularly cement, from an unloading location, such as a ship, to a silo, the arrangement comprising a receiving container, the receiving container comprising a plurality of telescopically extendable container segments, the container segments including a top container segment and a bottom container segment, a negative pressure producing apparatus for continuously supplying the bulk goods being connected to the receiving container, a screw-type pump mounted at the bottom container segment for continuously discharging the bulk goods from the receiving container, such that the bulk goods travel through the receiving container by gravity, and a positive pressure producing apparatus for conveying the bulk goods from the



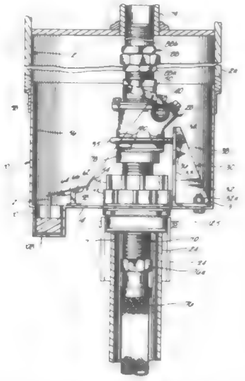
screw-type pump to the silo, wherein all components of the arrangement are mounted on a road-travelling vehicle.

5,341,857

GASOLINE CONTAINMENT SYSTEMS WITH LEAK-RESISTANT PLASTIC FITTINGS

Sergio M. Bravo, 2872 Tigertail Dr., Los Alamitos, Calif. 90720

Continuation-in-part of Ser. No. 836,787, Feb. 14, 1992. This application Feb. 12, 1993, Ser. No. 17,655
Int. Cl.[5] B65B *1/04, 3/04*; B67C *3/02*
U.S. Cl. 141—88 13 Claims



1. An apparatus for reducing pollution associated with gasoline handling equipment and a gasoline supply pipe leading to such equipment, comprising:

containment means for collecting gasoline spilling from the gasoline handling equipment, the containment means having an aperture defined therein;

a gasoline supply pipe passing through the aperture in the containment means and leading to the gasoline handling equipment; and

a hollow fitting for sealing the aperture and fixing the supply pipe with respect to the box, the fitting comprising:

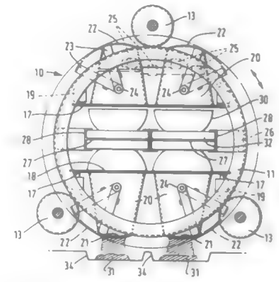
an annular main body, the main body having a seating portion for seating the deformable element, an annular deformable sealing element received in said seating portion and an annular clamping piece for threading onto the seating portion of the main body for camming the deformable sealing element radially inward, against the supply pipe disposed through the hollow fitting, and a nut threaded onto an exterior of the main body between the clamping piece and the containment means, and there is one gasket disposed between a portion of the main body and the containment means and a further gasket disposed between the nut and the containment means, wherein the nut is threaded onto the main body to sealingly fix the containment means between the gaskets.

5,341,858

APPARATUS AND PROCESS FOR TRANSFERRING PRODUCTS

Lars G. A. Wadell, Aengelholm, Sweden, assignor to Nestec S.A., Vevey, Sweden

Filed Mar. 17, 1993, Ser. No. 32,625
Claims priority, application European Pat. Off., Apr. 6, 1992, 92105898.8
Int. Cl.[5] B65B *43/42*; B67C *3/00*
U.S. Cl. 141—173 16 Claims



1. An apparatus for transferring products comprising:

a frame comprising first and second spaced-apart side members, each side member being configured to encompass an opening about a central axis, and comprising a plurality of longitudinally extending connecting members which are spaced apart one from another and extend between and connect the side members so that the first and second side members form first and second frame sides which have an opening disposed about the central axis of each side member and so that the connecting members are disposed between the side members so that the frame has an interior hollowed about a frame central axis coincident with the central axis of each side member and so that the frame has openings between the connecting members;

means for rotating the frame so that the frame is rotated about the frame central axis disposed horizontally;

a guide member which extends longitudinally within the interior hollow of the frame from side to side parallel to the frame central axis and is connected to the frame, for slidably containing and guiding an open-topped bowl through the frame interior side to side;

means for feeding an open-topped bowl to the first frame side and to the guide member so that the bowl is fed to the guide member in an upright open-top position suitable for containing a product therein;

means for covering and for uncovering an open top of an open-topped bowl contained in the guide member first to fix and then subsequently to release the bowl in and from the guide member and for, upon rotation of the frame, wherein a bowl containing a product therein rotates with the guide member from an upright to an inverted position, containing a product during the rotation and for releasing the contained product when the bowl is in an inverted position; and

means for removing a bowl from a side of the frame.

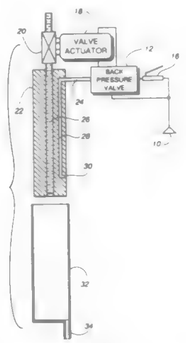
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,859

DISPENSING CARTRIDGE FILLING SYSTEM

William E. Howseman, Jr., 150 E. Los Angeles Ave. #205, Moorpark, Calif. 93021

Filed Oct. 25, 1993, Ser. No. 140,562
Int. Cl.[5] B65B *1/30*
U.S. Cl. 141—198 6 Claims



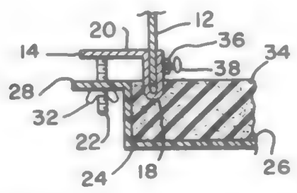
1. Apparatus for accurately filling tubular cartridges with fluids comprising:
an mandrel adapted for a sliding fit within a tubular cartridge, said mandrel having first and second ends, a longitudinal fluid passage therethrough and an air passage parallel to said fluid passage, said air passage extending from said first end and terminating in a radial opening through a side wall near the second end of said mandrel;
a fluid valve in series between a source of fluid and said fluid passage at the first end of said mandrel;
control means including a control valve coupled to said fluid valve and to said air passage for closing said fluid valve whenever air passes through said air passage and for enabling said manually operable means when said air passage becomes blocked.

5,341,860

COVER SEAL UNIT, FOR AN AIR CONDITIONER HAVING A PERIPHERAL FRAME

Robert I. Klein, 1112 Park Ave., New York, N.Y. 10128

Filed Aug. 11, 1993, Ser. No. 104,575
Int. Cl.[5] A47B *81/00*
U.S. Cl. 150—165 14 Claims



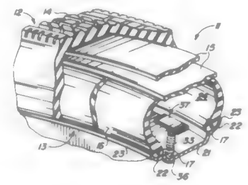
11. A cover seal unit, for an air conditioner having a peripheral frame, comprising:
an imperforate cover; and
means for slidably engaging the frame of an air conditioner; wherein
said cover and said frame engaging means comprise means cooperative for clamping said cover to said frame engaging means;
said frame engaging means comprises a plurality of clamps;
each said clamp comprises (a) a U-shaped limb, and (b) a ledge extending substantially perpendicularly from said limb; and
each arm of each said limb has a bolt hole formed therethrough, and an internally-threaded nut secured thereto in throughgoing alignment with said bolt hole.

5,341,861

VEHICLE SAFETY SUPPORT SYSTEM

Robin Forte, 7353 S. Washington Cir., Littleton, Colo. 80122

Division of Ser. No. 758,130, Sep. 12, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 9,065
Int. Cl.[5] B60C *17/04*
U.S. Cl. 152—158 19 Claims



1. A vehicle safety support system comprising:
a rim having an annular drop center portion straddled by a pair of radially outwardly projecting flange portions, each of said flange portions having an annular edge of greater diameter than a minimum diameter of said drop center portion;
a pneumatic tire mounted on said rim and comprising a pair of annular bead portions each sealably seated on a different one of said flange portions; and said drop center portion and an inner surface of said tire defining an annular cavity; and
a plurality of elements circumferentially spaced apart along said drop center portion; each said element comprising an inner portion supported by said drop center portion and an outer portion movable between an inactive position in which said outer portion is disposed radially within and between said annular edges and an active position in which said outer portion projects into said cavity radially outside said annular edges.

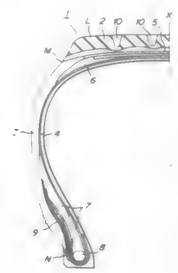
5,341,862

FLAME-RETARDANT RUBBER TIRES

Takatsugu Hashimoto; Keizo Akutagawa; Kazuo Yagawa, all of Kodaira; Makoto Tanaka, Higashimurayama; Junichi Yamagishi, Kodaira, and Kazuo Hachiya, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,519
Claims priority, application Japan, Nov. 14, 1991, 3-299017; Nov. 15, 1991, 3-300390; Nov. 15, 1991, 3-300606; Jan. 29, 1992, 4-013990; Apr. 27, 1992, 4-131409
Int. Cl.[5] B60C *1/00*
U.S. Cl. 152—209 R 2 Claims

1. A flame-retardant rubber tires comprising: an outer rubber body portion consisting essentially of a tread rubber layer, a sidewall rubber layer extending inward from each side edge of the tread rubber layer toward the vicinity of a bead portion in radial direction and a rubber chafer layer arranged in the vicinity of the bead portion, and a reinforcing body located inside the outer rubber body portion, at least a portion of the outer rubber body portion comprised of one or more flame-retardant rubber layers having an oxygen index (O.I.) in the range of 19.8 to 27.5, and an absolute value of total (O.I.) $\times S \times V \times U$ values of the flame-retardant rubber layers is not less than 10 as a flame retardance when S is a ratio of surface area of the flame-retardant rubber layer to a full surface area of the outer rubber body portion, V (kg) is a weight of the flame-retardant rubber layer and U is a ratio of weight (kg) of the flame-retardant rubber layer to total weight (kg) of the outer rubber body portion.



5,341,863

TIRE WITH TREAD COMPOSITION

Paul H. Sandstrom, Tallmadge, and Raymond B. Roennau, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 17, 1993, Ser. No. 62,263
Int. Cl.[5] C08L *7/00, 9/00, 23/06*
U.S. Cl. 152—209 R 5 Claims

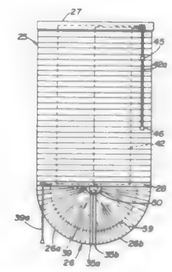
1. A pneumatic rubber tire having a sulfur cured, diene rubber-based thread which is comprised of a blend, based on 100 parts by weight of sulfur curable diene rubber-based elastomers, of (A) 100 parts by weight of at least one sulfur vulcanizable diene based rubber, and (B) about 5 to about 15 parts by weight low density polyethylene (LDPE) having a density of about 0.91 to 0.918 gm/cc, a melt index of about 0.2 to about 20 and a crystalline melt point in a range of about 104° C. to about 115° C. wherein the said LDPE is mixed with the said rubber at a temperature of about 120° C. to about 170° C. prior to sulfur vulcanizing the blend.

5,341,864

ADJUSTABLE EXPANDABLE AND COLLAPSIBLE SHADE

John D. Rupel, Verona, and Paul F. Josephson, Madison, both of Wis., assignors to Springs Window Fashions Division, Inc., Middleton, Wis.

Continuation-in-part of Ser. No. 951,151, Sep. 25, 1992, Pat. No. 5,207,257. This application Apr. 26, 1993, Ser. No. 53,085
Int. Cl.[5] E06B *9/06*
U.S. Cl. 160—84.1 B 21 Claims



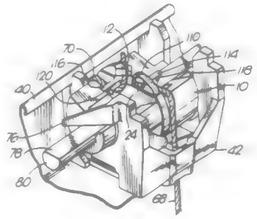
1. An adjustable shade comprising: a pleated expandable and collapsible main shade having upper and lower ends generally paralleling pleats in the main shade and side edges transverse to the pleats in the main shade, an elongated upper head rail and an elongated lower rail respectively attached to upper and lower ends of the main shade and extending generally parallel to pleats in the main shade, a pleated expandable and collapsible auxiliary shade having first and second ends generally paralleling pleats in the auxiliary shade and first and second side edges transverse to pleats in the auxiliary shade, means mounting first and second ends of the auxiliary shade on the lower rail with the first and second ends of the auxiliary shade in endwise aligned relation, means limiting expansion of the first side edge of the auxiliary shade such that the auxiliary shade extends downwardly in inverted fan configuration from the lower rail with the first side edge of the auxiliary shade at the center of the fan configuration, and lift cords attached to said lower rail and extending upwardly to said upper headrail for raising and lowering the lower rail, the auxiliary shade being raised and lowered with the lower rail.

5,341,865

TILTER MECHANISMS FOR A VENETIAN BLIND

Donald E. Fraser, Owensboro, and Richard N. Anderson, Whitesville, both of Ky., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

Continuation of Ser. No. 832,744, Feb. 7, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 43,978
Int. Cl.[5] E06B *9/26*
U.S. Cl. 160—176.1 7 Claims



1. A tilt roll mechanism for a venetian blind comprising, in combination:
a) a ladder lace comprising two laterally spaced elongate flexible cords and a plurality of longitudinally spaced, transversely extending rungs joining said elongate flexible cords;
b) a one-piece body mounted on a support;
c) means on said body adapted to mount said body on said support for rotation about an axis;
d) a peripheral surface on said body about which an end portion of each said elongate flexible cords is at least partly wound, each said elongate flexible cord engaging a portion of said periphery surface on opposing sides of said axis, whereby rotation of said body causes opposite longitudinal movement of said elongate flexible cords, and these tilting of said rungs;
e) at least one pair of generally radially outwardly extending jaws formed integrally on said body, each pair adapted to retainingly engaging one of said elongate flexible cords; and
f) at least one pair of generally axially extending arms formed integrally on said body, around which each of said elongate flexible cords are redirected and engaged by said at least one pair of jaws; the end of each respective said elongate flexible cord being redirected back toward it's said opposing side of said axis.

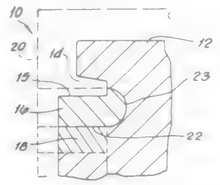
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,866

METHOD FOR THE INCORPORATION OF A COMPONENT INTO A PISTON

Robert Munro, Lymington, England, assignor to AE Piston Products Limited, Bradford, England

Division of Ser. No. 565,368, Aug. 10, 1990, Pat. No. 5,094,149.
This application Nov. 22, 1991, Ser. No. 796,436
Claims priority, application United Kingdom, Aug. 26, 1989, [illegible]19466
Int. Cl.[5] B22D *19/00, 19/04*
U.S. Cl. 164—98 10 Claims



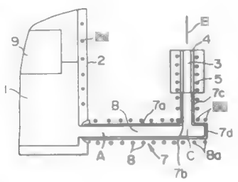
1. A method for the incorporation of a component into a piston, the method comprises the steps of forming and joining a porous body to the component by sintering a metal powder to the component, placing the porous body and component into a piston casting die, pouring molten metal into the die such that said porous body becomes infiltrated with said molten metal and allowing said molten metal to solidify.

5,341,867

ELECTROMAGNETIC LEVITATION TYPE CONTINUOUS METAL CASTING APPARATUS

Masahiko Yamada; Yuji Harada, and Hidemi Shigetoyo, all of Kanagawa, Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 906,009, Jun. 26, 1992, Pat. No. 5,244,034, which is a continuation of Ser. No. 619,866, Nov. 29, 1990, abandoned. This application Aug. 25, 1993, Ser. No. 112,693
Claims priority, application Japan, Nov. 30, 1989, 1-313682; Nov. 30, 1989, 1-313683; Nov. 30, 1989, 1-313684
Int. Cl.[5] B22D *27/02, 11/10*
U.S. Cl. 164—502 1 Claim



1. In an electromagnetic levitation continuous metal casting apparatus including a molten metal storing furnace for holding and storing a molten metal; a casting vessel for upwardly receiving and holding said molten metal in the form of an upwardly moving molten metal column; cooling means adjacent to and in heat exchange relationship with said casting vessel and disposed around the outer periphery thereof for cooling and solidifying said upwardly moving molten metal column; alternating electromagnetic levitation and containment field generation means adjacent to and disposed around the outer periphery of said casting vessel for generating an alternating electromagnetic levitation and containment field, said alternating electromagnetic levitation and containment field serving to electromagnetically levitate and contain said upwardly moving molten metal column within said casting vessel; the improvement comprising:

a tube-shaped molten metal supply path for supplying said molten metal to be cast from said molten metal storing furnace to said casting vessel, said tube-shaped molten metal supply path having:

(a) a horizontal section extending from said molten metal storing furnace,

(b) a vertical section disposed for upwardly supplying said molten metal into said casting vessel,

(c) a bend section intermediate said horizontal and vertical sections, and

(d) an appendix section having a predetermined length disposed on the side of said bend section opposite said horizontal section;

first high frequency electromagnetic heating means disposed on the outer periphery of said horizontal and vertical sections of said tube-shaped molten metal supply path; and

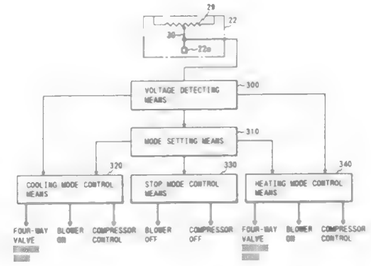
second, independent high frequency electromagnetic heating means disposed on the outer periphery of and along said length of said appendix section, said length of said appendix section predetermined to permit said second high frequency electromagnetic heating means to heat said bend section and to maintain the temperature of molten metal flowing through said bend section above its solidification temperature.

5,341,868

OPERATING DEVICE FOR AIR-CONDITIONER

Futoshi Nakata, Konan, Japan, assignor to Zexel Corporation, Japan

Filed Dec. 23, 1992, Ser. No. 996,109
Claims priority, application Japan, Feb. 7, 1992, 4-056688
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—11.1 8 Claims



1. A control device for a climate control system which includes a heat exchange system including a heat exchanger, comprising:

shifting means including one terminal for selectively shifting the heat exchanger into one of a cooling mode, a stop mode and a heating mode, while also controlling a temperature of air output by the system within said modes, based on a position of said one terminal, wherein said heat exchange system includes means for cooling air passing therethrough when said heat exchanger is shifted into said cooling mode and for heating the air passage therethrough when said heat exchanger is shifted into said heating mode, and

wherein said terminal further comprises a resistor element to which a predetermined voltage is applied at both ends thereof, and means for mounting said terminal to be movable on and along the resistor element for outputting a voltage corresponding to its position on the resistor element, and

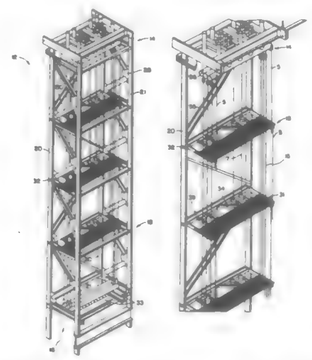
wherein said control device further comprises control means for setting a revolution number of a compressor in each of the cooling and heating modes, based on the voltage output from the terminal.

5,341,869

TOP SUPPORTED HIGH TEMPERATURE HEATING SURFACE MODULE WITH PERMANENT STRUCTURAL FRAME

Raymond G. Kidaloski, Canal Fulton, and Roger A. Detzel, Norton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 15, 1993, Ser. No. 92,307
Int. Cl.[5] F22B *37/24*
U.S. Cl. 165—67 13 Claims



1. An arrangement for containing a top supported heating unit therein, the arrangement comprising:

a top;

a bottom opposite the top;

two vertical members connected to the top and the bottom, the vertical members spaced a distance from each other;

at least one level rotatably connected between the vertical members;

a plurality of support rods connected to the top and the level; and

temporary support means removably attached to the top, the vertical members and the bottom, the heating unit extending between the top and the bottom through the level and confined by the vertical members and the support rods.

5,341,870

EVAPORATOR OR EVAPORATOR/CONDENSER

Gregory G. Hughes, Milwaukee; Leon A. Guntly, Racine, both of Wis.; John B. Welker; David Hill, both of Granger, Ind.; C. James Rogers; Jerome P. Henkes, both of Racine, Wis., and Michael J. Reinke, Franklin, Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Continuation-in-part of Ser. No. 850,338, Mar. 11, 1992, Pat. No. 5,279,360, which is a continuation-in-part of Ser. No. 620,729, Dec. 3, 1990, which is a division of Ser. No. 141,628, Jan. 7, 1988, Pat. No. 4,998,580, which is a continuation-in-part of Ser. No. 902,567, Sep. 5, 1986, which is a continuation-in-part of Ser. No. 783,087, Oct. 2, 1985, abandoned. This application Jan. 21, 1993, Ser. No. 7,080
Int. Cl.[5] F28D *1/047*
U.S. Cl. 165—110 3 Claims

1. An evaporator or evaporator/condenser for use in refrigeration or heat pump systems comprising:

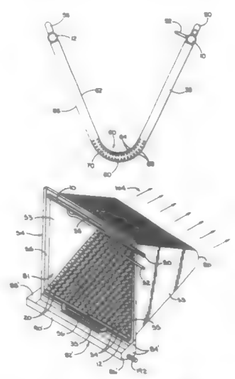
first and second spaced, pressure resistant headers;

a plurality of elongated tubes of flattened cross-section extending in parallel, spaced relation between and in fluid communication with said headers;

serpentine fins extending between and bonded to adjacent ones of said tubes;

said tubes and fins, between said headers defining a non-planar configuration having a generally horizontal apex;

said headers defining an upright plane and said apex extending laterally away from said plane; and



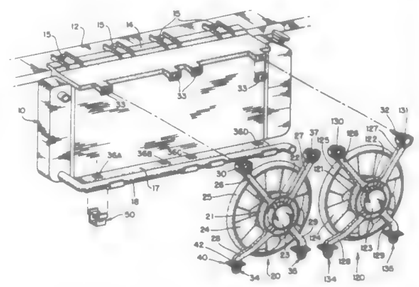
an upwardly opening condensate trough aligned with said plane and mounted below one of said headers.

5,341,871

ENGINE COOLING FAN ASSEMBLY WITH SNAP-ON RETAINERS

Sean R. Stelzer, Farmington Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 21, 1993, Ser. No. 78,334
Int. Cl.[5] F04D *29/64*
U.S. Cl. 165—121 8 Claims



1. An engine cooling fan assembly comprising:

(a) a mounting bracket having outwardly extending legs;

(b) a motor mounted to a central hub of the mounting bracket;

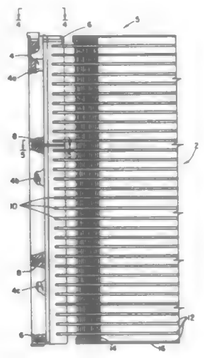
(c) a fan attached to and driven by the motor;

(d) a formed end on at least one leg of the mounting bracket having a ramp, a resilient grommet retained by flange means and a recess between the ramp and grommet; and

(e) a retainer removably snapped onto each end, wherein the retainer includes barb means received in the recess to secure the retainer to the end.

VOL 1165 ISS 5 AUG 30 1994 UMI

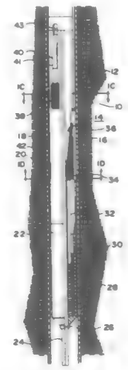
5,341,872
HEAT EXCHANGER AND MANIFOLD THEREFOR, AND METHOD OF ASSEMBLY THEREOF
Carlo V. Mercurio, Clinton Township, Macomb County, Mich., assignor to Valeo Engine Cooling Inc., Rochester Hills, Mich.
Filed May 19, 1993, Ser. No. 64,762
Int. Cl.[5] F28F *9/06*
U.S. Cl. 165—173 **3 Claims**



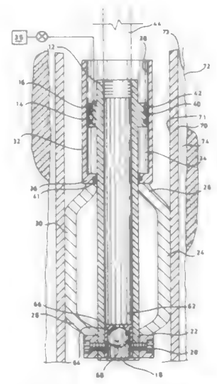
1. A heat exchanger manifold comprising:
a tubular housing having a header part in the form of an elongate member defining a plurality of apertures therein at which end portions of heat exchange tubes are connectable, and a tank part having an elongate member which is non-unitarily formed with said header part, which cooperates to define a tubular housing with said header part and is joined thereto at longitudinal engagement surfaces of the tank and header parts;
a plurality of wall members dimensioned to fit transversely within said housing;
an elongate locating said fitted within said tubular housing and supporting said wall members in said transverse relation within said tubular housing;
wherein said locating rail is adapted to snap-fit onto said tank part.

5,341,873
METHOD AND APPARATUS FOR DEVIATED DRILLING
Thurman B. Carter, Pearland, and Mark W. Schnitker, Friendswood, both of Tex., assignors to Weatherford U.S., Inc., Houston, Tex.
Filed Sep. 16, 1992, Ser. No. 945,669
Int. Cl.[5] E21B *23/00*
U.S. Cl. 166—117.5 **22 Claims**

1. A whipstock assembly, comprising:
a tapered guide surface; and
a setting section operatively coupled to said taper guide surface, said setting section comprising,
a housing assembly,
a contact pad extending from said housing assembly, and
a radially moveable member, said radially moveable member coupled to said housing on the longitudinally opposite side of said contact pad from said tapered guide surface, said radially movable member movable in a direction generally perpendicular to a pivot axis established by said contact pad.



5,341,874
RETRIEVABLE PACKER
Christopher C. Wilson, 129 Cliff Dr., Gray, Tenn. 37615
Filed Sep. 25, 1992, Ser. No. 951,225
Int. Cl.[5] E21B *23/06, 33/128*
U.S. Cl. 166—196 **21 Claims**

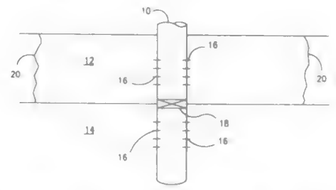


1. A packer for isolating a selected depth of a borehole having a wall, said packer comprising:
a body member having a first end and a second end, said body member defining a passage therethrough for fluid communication and including a piston having a piston head;
a cylinder slidably receiving said piston head, said cylinder defining a shoulder proximate said piston had and defining a chamber between said piston head and said shoulder, said chamber being sealed from communication with said passage of said body member;
a sealing member carried by said body member having an upper end proximate said shoulder of said cylinder;
a pressurized fluid source for injecting a pressurized fluid into said chamber to cause expansion of said chamber thereby forcing said cylinder downward such that said shoulder of said cylinder is forced against said upper end of said sealing member causing expansion of said sealing member against said wall of said borehole;
a fluid delivery tube removably connected to said first end of said body member for delivering a second fluid to said passage of said body member; and,
a valve assembly carried by said body member proximate said second end to prevent back flow from exterior of said body member into said body member.

5,341,875
INJECTION OF PHOSPHORUS NUTRIENT SOURCES UNDER ACID CONDITIONS FOR SUBTERRANEAN MICROBIAL PROCESSES
Gary E. Jenneman, and Bennett Clark, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 22, 1992, Ser. No. 994,859
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—246 **6 Claims**

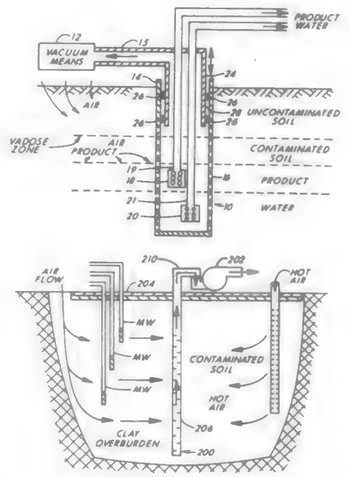
1. In a process for injecting microbial nutrients into a subterranean formation wherein microorganisms are provided a phosphorus nutrient source, the improvement which comprises introducing as said phosphorus nutrient source a solution of an inorganic phosphate wherein said inorganic phosphate solution is acidified by the addition of an acid in an amount sufficient to achieve a pH in the range of about 1.0 to about 5.5, and then injected into said formation.

5,341,876
BELOW FRACTURE PRESSURE PULSED GEL INJECTION METHOD
James L. Burns, The Woodlands; Bryan J. Dicus, Ardmore; Jayanthi K. Jasti, Plano; Jerry J. Kendall, The Woodlands; Jose L. Olmos, The Woodlands, and Luis G. Zambrano, The Woodlands, all of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed May 10, 1993, Ser. No. 59,149
Int. Cl.[5] E21B *33/138, 43/22*
U.S. Cl. 166—263 **5 Claims**



1. A method for injecting a predetermined volume of gel into a thief zone comprising:
(a) injecting a solidifiable gel mixture into a high permeability or thief zone at a constant rate until the formation fracture pressure limit is reached;
(b) ceasing injection of the gel into the thief zone once the formation fracture pressure limit has been reached but not exceeded for a time sufficient to cause the wellbore or borehole bottom pressure to decline and stabilize; and
(c) injecting thereafter the gel into said thief zone for a time sufficient to cause the predetermined volume of gel to be placed into said thief zone.

5,341,877
METHOD AND APPARATUS FOR IN SITU REMOVAL OF A SPILLED FLUID FROM THE EARTH'S SUBSURFACE
Abdul S. Abdul, Troy; Thomas L. Gibson, Utica, and William A. Glasson, Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 758,137, Sep. 12, 1991, Pat. No. 5,180,013. This application Sep. 4, 1992, Ser. No. 941,291
Int. Cl.[5] E21B *43/18, 43/14, 43/24*
U.S. Cl. 166—272 **21 Claims**



1. A method for extracting a spilled fluid from a subsurface of earth, the fluid having a component volatilizable to a vapor and a relatively less volatile liquid component, the fluid being immiscible with and lighter than water and occupying a fluid zone overlying groundwater, thus producing air/fluid and fluid/water interfaces, the underlying water occupying a groundwater zone displaced downward by the fluid relative to an unstressed water table, comprising:
a) penetrating through the fluid zone and at least partially through the groundwater zone to provide a bore in communication with the fluid and groundwater zones;
b) extracting an amount of liquid component of the fluid from the fluid zone through the bore, the amount selected to maintain contact between at least a portion of the liquid being extracted through the bore and at least a portion of the liquid remaining in the fluid zone;
c) separately extracting an amount of water from the groundwater zone through the bore to prevent movement of water upward into the fluid zone and to provide a head of liquid above the fluid/water interface adjacent the bore sufficient to cause gravity drainage of the liquid from the fluid zone in a direction generally toward the bore while maintaining a major portion of the fluid/water interface and any unstressed portions of the water table at levels closely adjacent the levels occupied prior to commencing any extraction of the liquid and the water, to prevent further spread of the liquid; and
d) applying a vacuum through the bore and then to one or more selected portions of the subsurface lateral of the bore to volatilize the volatilizable component to a vapor and to induce movement of the vapor and liquid components of the fluid into the bore for extraction through the bore.

VOL 1165 ISS 5 AG 30 1994 UMI

5,341,878

FATTY ACID SALTS AS STEAM FOAMING AGENTS

William T. Osterloh, Missouri City, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 24, 1992, Ser. No. 996,741
Int. Cl.[5] E21B *43/24, 43/22*
U.S. Cl. 166—272 **25 Claims**

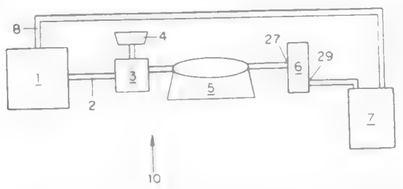
1. A method of recovering hydrocarbons from an underground hydrocarbon formation penetrated by at least one injection well and at least one production well, which comprises:
injecting steam through an injection well into the formation;
injecting through the injection well into the formation an aqueous solution having a salinity greater than about 1% and a pH of about 8 to about 12 comprising about 0.1% to about 5% by weight of a fatty acid salt having about 10 to about 24 carbon atoms; and
injecting steam through the injection well into the formation to sweep hydrocarbons towards a production well for recovery.

5,341,879

FINE FILTRATION SYSTEM

William B. Stone, 3401 E. 84th Pl., Tulsa, Okla. 74137

Filed Mar. 23, 1993, Ser. No. 36,186
Int. Cl.[5] E21B *43/267*
U.S. Cl. 166—278 **2 Claims**



1. An improved method of gravel packing or fracturing a subterranean well, wherein a particle/liquid mixture is forced into or against a formation by a high pressure, high volume pump, the improvement comprising:
filtering said particle/liquid mixture after it has passed through said high pressure, high volume pump to effectuate removal of fines created by said pump.

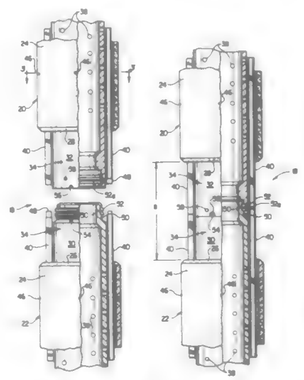
5,341,880

SAND SCREEN STRUCTURE WITH QUICK CONNECTION SECTION JOINTS THEREIN

Egil Thorstensen, Stavanger, and Karluf Hagen, Randaberg, both of Norway, assignors to Halliburton Company, Houston, Tex.

Filed Jul. 16, 1993, Ser. No. 92,689
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—278 **17 Claims**

1. A sand screen structure for separating particulate material from formation fluid in a well, comprising:
a plurality of generally tubular axial filter sections coaxially disposed in an end-to-end orientation, with facing end portions of each axially adjacent pair of said filter sections being in a telescoped relationship; and
cooperating means on each pair of telescoped end portions for releasably joining them in an axially snap-fitted relationship, said cooperating means being operative to substantially preclude relative axial and rotational movement between each telescoped pair of said end portions.



5,341,881

CEMENT SET RETARDING ADDITIVES, COMPOSITIONS AND METHODS

Klein A. Rodrigues, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 14, 1993, Ser. No. 4,325
Int. Cl.[5] E21B *33/13*
U.S. Cl. 166—293 **8 Claims**

1. A method of cementing a subterranean zone penetrated by a well bore comprising the steps of:
forming a pumpable set retarded cement composition comprised of hydraulic cement, sufficient water to form a pumpable slurry and a set retarding additive comprising a copolymer consisting essentially of monomer units formed from a first monomer selected from the group consisting of acrylic acid and methacrylic acid and a second monomer selected from the group consisting of acrylamide, methacrylamide, N,N-dimethylacrylamide, N-methylacrylamide, N-isopropylacrylamide and N-(hydroxymethyl) acrylamide;
pumping said composition into said zone by way of said well bore; and
allowing said cement composition to set.

5,341,882

WELL DRILLING CUTTINGS DISPOSAL

Arthur H. Hale, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 10, 1993, Ser. No. 15,185
Int. Cl.[5] B09B *3/00;* **E21B** *21/06, 33/14*
U.S. Cl. 166—293 **16 Claims**

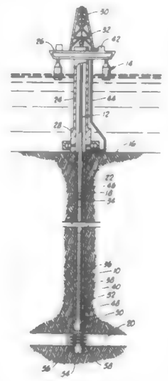
1. A method for disposing of drilling cuttings comprising:
decanting drilling fluids used during well drilling from cuttings attained during well drilling to concentrate said cuttings;
then combining the cuttings with granulated water-quenched blast furnace slag to form a slurry;
injecting the slurry into an annulus; and
allowing the slurry to harden to form a solidified wellbore cement surrounding a well casing.

5,341,883

PRESSURE TEST AND BYPASS VALVE WITH RUPTURE DISC

Paul D. Ringgenberg, Carrollton, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Jan. 14, 1993, Ser. No. 4,337
Int. Cl.[5] E21B *34/10*
U.S. Cl. 166—324 **20 Claims**



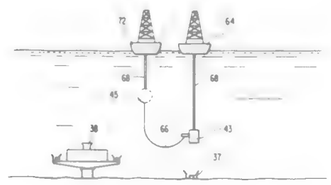
1. An apparatus for use in a well bore comprising:
housing means for defining a central opening therein and a port therein in communication with said central opening;
mandrel means for close sliding engagement in said central opening;
first valve means for allowing fluid flow through said central opening when in an open position and for preventing fluid flow through said central opening when in a closed position;
second valve means for allowing communication between said central opening and a well annulus when in an open position and preventing communication between said central opening and the well annulus when in a closed position; and
pressure responsive means for sliding said mandrel means and thereby substantially simultaneously actuating said first and second valve means between said open and closed positions thereof in response to a pressure in said well annulus.

5,341,884

SUBSEA PRODUCTION METHOD FOR LINE CONNECTION BETWEEN A MANIFOLD AND ADJACENT SATELLITE MELLS

José E. Silva, Rio de Janeiro, Brazil, assignor to Petroleo Brasileiro S.A., Rio de Janeiro, Brazil

Division of Ser. No. 775,900, Oct. 15, 1991, Pat. No. 5,255,744.
This application Jul. 16, 1993, Ser. No. 91,988
Int. Cl.[5] E21B *43/013*
U.S. Cl. 166—347 **2 Claims**



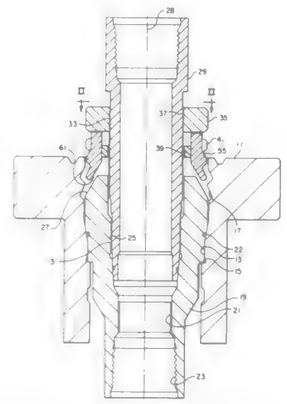
1. A method for making a line connection between a manifold and an adjacent satellite well by means of an interconnection line comprising:
suspending a wet Christmas tree from a first rig and connecting one extremity of a connection line to said wet Christmas tree;
suspending a connection terminal from a second rig and connecting a second extremity of said connection line to said connection terminal;
moving said second rig towards said manifold;
lowering said wet Christmas tree onto the head of a satellite well simultaneously with lowering of said connection terminal; and
coupling said connection terminal to said manifold and coupling said wet Christmas tree to said satellite well.

5,341,885

INTERNAL TUBING HANGER LOCKDOWN

Charles D. Bridges, Cypress, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Sep. 27, 1993, Ser. No. 127,217
Int. Cl.[5] E21B *23/02*
U.S. Cl. 166—382 **19 Claims**



17. A method of locking a tubing hanger in a wellhead assembly having a housing which has an axial bore, the tubing hanger having an axially extending bore, comprising:
providing an internal profile in the bore of the housing;
providing a conical cam surface on an upper exterior portion of the tubing hanger;
securing a landing sub into the bore of the tubing hanger;
providing a set of segmented dogs, mounting the dogs to a carrier ring assembly, and securing the carrier ring assembly to the landing sub in an upper position relative to the tubing hanger;
lowering the tubing hanger into the bore of the wellhead housing with the landing sub; then
moving the carrier ring assembly and the dogs to a lower position relative to the tubing hanger, causing the dogs to slide down the cam surface into the profile of the housing.

VOL 1165 ISS 5 AG 30 1994 UMI

5,341,886

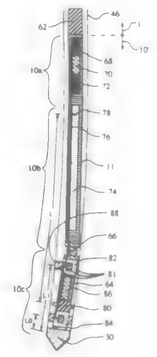
SYSTEM FOR CONTROLLED DRILLING OF BOREHOLES ALONG PLANNED PROFILE

Bob J. Patton, 2436 Monaco La., Dallas, Tex. 75233

Continuation of Ser. No. 823,592, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 505,789, Apr. 6, 1990, abandoned, which is a continuation of Ser. No. 455,255, Dec. 22, 1989, Pat. No. 5,220,963. This application Jul. 27, 1993, Ser. No. 97,726

Int. Cl.[5] E21B *7/04, 44/00*

U.S. Cl. 175—24 **15 Claims**



1. A system for directional drilling of a borehole along a desired path with respect to a subterranean target, comprising:

downhole means for three dimensional controlled drilling of a borehole along a planned path into said target, comprising:

a drill string;

a drill bit carried on said drill string;

means for rotating said drill bit;

downhole means for detecting the location of a subterranean target; and

means positioned in said borehole for receiving, storing and updating a planned path for said borehole;

a compliant subassembly in said drill string, said compliant subassembly comprising a portion of said drill string having a substantially greater known compliance than the other portions of said drill string, said compliant subassembly facilitating changes in the direction of drilling of said borehole;

sensing means for measuring strains in said compliant subassembly and for producing data signals corresponding to said strain measurements; and

means responsive to said data signals for changing the orientation of said drill bit in cooperation with movement of said compliant subassembly to change the direction of drilling of said borehole to correspond to said planned path for said borehole.

5,341,887

DIRECTIONAL MULTI-BLADE BORING HEAD

Arthur D. Deken, and Cody L. Sewell, both of Perry, Okla., assignors to The Charles Machine Works, Inc., Perry, Okla.

Continuation-in-part of Ser. No. 857,167, Mar. 25, 1992, Pat. No. 5,242,026. This application May 25, 1993, Ser. No. 67,298

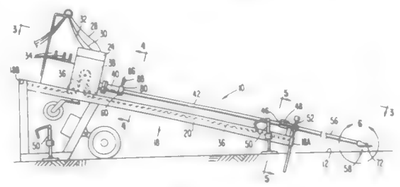
Int. Cl.[5] E21B *10/00*

U.S. Cl. 175—62 **22 Claims**

1. A directional multi-blade boring head for a boring machine, the boring machine capable of axially advancing and rotating a drill string about an axis of rotation underground, the drill string ending in the directional multi-blade boring head, said directional multi-blade boring head comprising:

a body having a central axis of rotation;

a blade assembly mounted on the body having a first blade defining a deflecting surface at an oblique angle to the central axis of rotation of the body and a second blade defining a deflecting surface at an oblique angle to the central axis of rotation of the body, the first and second blades extending at an angle relative to each other;



at least one additional blade extending from the blade assembly between the deflecting surfaces;

the deflecting surfaces of a first and second blade deflecting the boring head as the boring machine advances the drill string without rotation and the directional multi-blade boring head drilling a relatively straight borehole as the boring machine advances the drill string with rotation.

5,341,888

DRILLING TOOL INTENDED TO WIDEN A WELL

Rene Deschutter, Linkebeek, Belgium, assignor to Diamant Boart Stratabit S.A., Brussels, Belgium

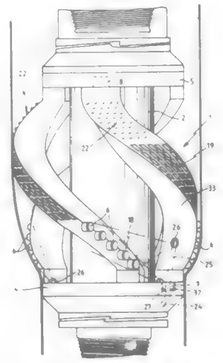
PCT No. PCT/BE90/00069, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO91/09202, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 12, 1990, Ser. No. 861,868

Claims priority, application Belgium, Dec. 19, 1989, 8901355

Int. Cl.[5] E21B *10/44*

U.S. Cl. 175—323 **17 Claims**



1. Drilling tool (1) intended to widen a drilling well comprising a hollow cylindrical body (2) bordered at its ends by a first and second fixed flange (4, 5), each flange being provided with threaded joints for connecting it to a set of drill pipes, characterised in that it bears at least one curved arm (3) resting at a first end on the first fixed flange (4) so as to be able to turn on itself by a fraction of a turn around an axis (AA'), under the control of a tool opening mechanism (10), while the other end of the arm slides along a guide member (21) provided in the second flange (5).

5,341,889

RING CLAMP FOR A CUTTER RING IN A TUNNEL DRILLING MACHINE

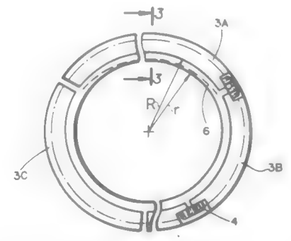
Stein Narvestad, Oslo, Norway, assignor to Stein Narvestad A.S., Oslo, Norway

PCT No. PCT/NO91/00055, § 371 Date Oct. 21, 1992, § 102(e) Date Oct. 21, 1992, PCT Pub. No. WO91/15653, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 5, 1991, Ser. No. 940,880

Int. Cl.[5] E21B *10/12;* **E21C** *25/18*

U.S. Cl. 175—373 **7 Claims**



1. A ring clamp for securing a cutter ring to a cutter ring in a tunnel boring machine, the cutter ring comprising at least two segments having a dovetail shaped base and a ring clamp having a corresponding wedge shape comprising at least two segments whereby the segments are secured to the roll by means of bolts, wherein the curvature of the segments is different from the curvature of a groove in which the segments of the ring clamp are secured.

5,341,890

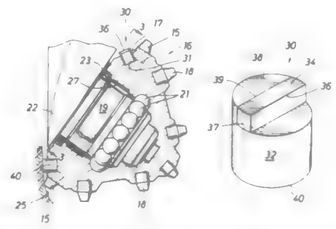
ULTRA HARD INSERT CUTTERS FOR HEEL ROW ROTARY CONE ROCK BIT APPLICATIONS

Chris E. Cawthorne, The Woodlands; Gary Portwood, Katy, and Michael A. Siracki, Spring, all of Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Jan. 8, 1993, Ser. No. 2,295

Int. Cl.[5] E21B *10/16, 10/50*

U.S. Cl. 175—374 **21 Claims**



1. A rotary cone rock bit for drilling boreholes in an earthen formation, one or more rotary cones rotatively retained on a bearing connected to said rock bit forms a circumferential heel row with extended shaped cutters spaced within said heel rows, said shaped cutters being tungsten carbide bodied inserts having a first base end and a cutter end, said second cutter end consisting of a polycrystalline diamond bonded to a tungsten carbide substrate that is subsequently metalurgically attached to said second cutter end of said body, said second cutting end of said body serves as a backup support for said substrate, said diamond forming said cutting edge, said cutting edge forming a substantially straight line across said cutter end, said cutting edge being oriented with a side rake angle with respect to a radial orientation from an axis of said cone, the cutting edge alignment serves to direct debris away from the bearing surfaces, each of said shaped cutters shear a borehole wall formed by said formation as said rotary cone rotates against a bottom of said borehole, said shaped cutters serve to maintain the borehole diameter.

5,341,891

MOTOR-DRIVEN POWER STEERING APPARATUS AND METHOD

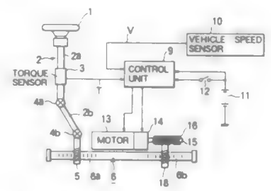
Shunichi Wada; Tadayuki Hara; Yasuo Naito; Shinichi Kohge, and Kazuhisa Nishino, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 946,598

Claims priority, application Japan, Sep. 26, 1991, 3-247914

Int. Cl.[5] B62D *5/00*

U.S. Cl. 180—79.1 **10 Claims**



1. A motor-driven power steering apparatus for a vehicle comprising:

a steering system transmitting a steering force applied to a steering wheel by a driver of the vehicle to steerable road wheels of the vehicle;

a vehicle speed sensor for sensing the speed of the vehicle at which the vehicle is travelling;

a torque sensor for sensing a steering torque applied to said steering wheel by the driver;

an electromagnetic clutch;

a motor coupled via said electromagnetic clutch to said steering system for generating an assisting torque which assists a driver's induced steering motion of said steering system;

motor current sensing means for sensing a motor current flowing through said motor;

clutch current sensing means for sensing a clutch current flowing through said electromagnetic clutch;

motor control means for controlling a motor current supplied to said motor based on the vehicle speed and the steering torque; and

clutch control means for controlling a clutch current supplied to said electromagnetic clutch based on the vehicle speed in such a manner that it sets the clutch current to a first predetermined clutch current level so as to place said electromagnetic clutch into a substantially engaged state when the vehicle speed is less than a first predetermined vehicle speed, and to a second predetermined clutch current level which is less than said first predetermined clutch current level so as to place said electromagnetic clutch into a partially engaged state when the vehicle speed is equal to or greater than the first predetermined vehicle speed.

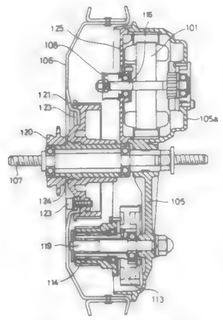
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,892

MOTOR AND PEDAL DRIVEN BICYCLE

Yasuo Hirose, Himeji, and Yukifumi Yamaguchi, Kasai, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 10, 1993, Ser. No. 28,825
Claims priority, application Japan, Mar. 19, 1992, 63839; Nov. 30, 1992, 320751
Int. Cl.[5] B62K *11/10*
U.S. Cl. 180—220 17 Claims



1. A motor and pedal driven bicycle, comprising:
a motor driving unit for imparting driving power to a wheel;
said driving unit including a disc-like casing having a space formed therein and dividable into two portions;
said driving unit further including a battery powered wheel driving motor;
a speed reducer coupled to said battery powered wheel driving motor, said speed reducer including means for reducing a revolution speed of said battery powered wheel driving motor;
said disc-like casing including a fixed portion and a rotatable portion;
said fixed portion being secured to a hub spindle of said wheel;
said rotatable portion being disposed on a hub shell, said hub shell being rotatably mounted on said hub spindle, whereby said rotatable portion is rotatable about said hub spindle along with said hub shell;
at least one of said battery powered wheel driving motor and said speed reducer is provided on an inside of said fixed portion of said disc-like casing; and
said battery powered wheel driving motor and at least a part of said speed reducer are both provided at a location lower than said hub spindle.

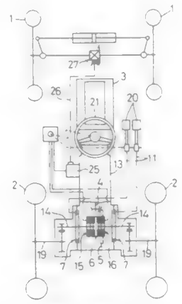
5,341,893

FOUR WHEEL DRIVE WORKING VEHICLE HAVING TRANSMISSION CLUTCHES SEPARATELY OPERABLE FOR DRIVING RIGHT AND LEFT REAR WHEELS

Tetsu Fukui; Yoshimi Oota, and Shigekazu Hasegawa, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Jun. 5, 1992, Ser. No. 893,659
Claims priority, application Japan, Dec. 13, 1991, 3-329389
Int. Cl.[5] B60K *17/354*
U.S. Cl. 180—245 5 Claims

1. A four wheel drive working vehicle comprising:
an engine;
front wheels and rear wheels;
front wheel steering means for steering said front wheels;
a front differential connected to said front wheels;
change speed means for changing speed of power received from said engine, and transmitting the power to said front differential and to said rear wheels;
a first clutch for controlling power transmission from said change speed means to a righthand one of said rear wheels;
a second clutch for controlling power transmission from said change speed means to a lefthand one of said rear wheels; and
clutch control means for controlling said first and second clutches, said clutch control means being interlocked to said front wheel steering means to disengage one of said first and second clutches corresponding to one of said rear wheels lying on the inside of a turn when said front wheels are steered in excess of a first predetermined angle,



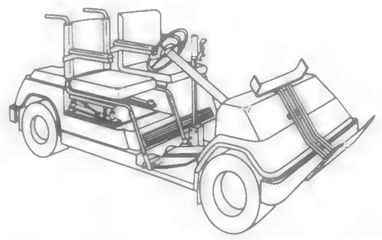
wherein said rear wheel lying on the inside of the turn is placed in a nondriven, free rotation state by the disengagement of said corresponding clutch, wherein said change speed means includes a front wheel speed changer for selectively producing a first mode to drive said front wheels and said rear wheels at substantially the same speed, and a second mode to drive said front wheels faster than said rear wheels, and front wheel speed control means for switching said front wheel speed changer from said first mode to said second mode when said front wheels are steered in excess of a second predetermined angle.

5,341,894

GOLF CART FOR AMBULATORY DISADVANTAGED GOLFERS

John E. Van Gorder, Jr., 11249 Marilyn Way, Mokena, Ill. 60448; Gary A. Piotrowski, and Barnard Piotrowski, Jr., both of 216 N. Marquette Rd., Spring Valley, Ill. 61362

Filed Apr. 22, 1993, Ser. No. 50,970
Int. Cl.[5] B60K *1/00*
U.S. Cl. 180—271 17 Claims



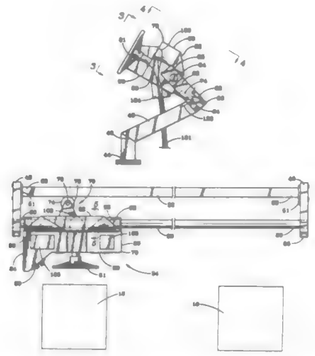
1. A golf cart for use by an ambulatory disadvantaged golfer comprising:
A) a frame unit that includes a front end, a rear end, a left side and a right side;
B) a drive means mounted on the frame unit for moving the golf cart, said drive means including a single hand controllable lever arm for controlling acceleration and braking of the golf cart;
C) a steering mechanism on the frame unit;
D) an ignition circuit connecting said drive means to a power source;
E) a seat unit adjacent to said steering mechanism and including
(1) a seat having a back element and a seat element,
(2) a rotational unit attached to the frame unit and including a motor, a gear assembly connected to the motor and to the seat element, control means connecting said motor to the power source for activating said motor to rotate said seat unit between a drive orientation facing toward the front end of the frame unit and a playing position facing toward the right side of the frame unit, said seat facing forward in said drive orientation and facing sideways in said playing orientation, stop means for stopping rotation of said seat, and
(3) seat adjustment means on said seat for tilting said seat toward the frame unit side, moving the seat toward the frame side and adjusting the height of the seat element with respect to ground level; and
F) control means connected to said seat adjustment means and to said rotational unit to disable said seat adjustment means while said rotational unit is activated and to disable said ignition circuit when said seat is not in said drive orientation and for disabling said seat adjustment means when said seat is not in said playing orientation, and for disabling said rotational unit when said adjustment means is operating.

5,341,895

MOVABLE CONTROL CONSOLE

Eugene Y. Grinberg, Shippensburg, and Charles E. Gullan, Chambersburg, both of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 18, 1993, Ser. No. 32,887
Int. Cl.[5] B60K *26/00*
U.S. Cl. 180—326 17 Claims



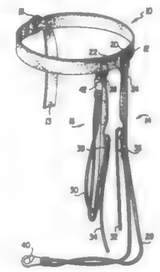
1. A movable instrument console for a mobile construction machine, the machine having a length extending between a front end and a back end and a width extending between a pair of side surfaces, comprising:
a. support rail means for supporting an instrument console thereon;
b. means for connecting said support rail means to the machine, adjacent one end of the machine;
c. said support rail means being positioned to extend widthwise of the machine and spaced above a machine operator's platform;
d. said instrument console being movable side-to-side along said support rail means between either side of the machine;
e. said instrument console being pivotable about said support rail means to position a front panel on said console to face upwardly;
f. locking means for locking said instrument console in place and for unlocking said instrument console for movement; and
g. means on said instrument console for receiving one end of flexible control elements from the machine.

5,341,896

SAFETY HARNESS FOR TREE CLIMBERS

Joseph A. Amacker, 1212 Main St., Delhi, La. 71232

Continuation-in-part of Ser. No. 818,118, Jan. 8, 1992, abandoned. This application Jan. 6, 1993, Ser. No. 1,754
Int. Cl.[5] A62B *35/00*
U.S. Cl. 182—9 8 Claims



1. A safety harness comprising:
a strap adapted to encircle the waist of a wearer;
means for coupling said strap about the waist of the wearer; and
a first and a second lanyard connected to said strap, each said lanyard adapted to encircle a tree, each said lanyard independently connectable to and disconnectable from said strap at independent positions on said strap located substantially adjacent each other and at the front of the wearer, and each said lanyard having an adjustable loop for encircling the tree, said loop formed by a free end passed through an Indian knot in the form of a tubular slip collar integrally formed with said lanyard at a midsection of said lanyard, said free end to be engaged by said slip collar when said lanyard is placed in tension.

5,341,897

COLLAPSIBLE AND RETRACTABLE STEP APPARATUS

Charles E. Gross, 1030 Whippingham Parkway, Carrollton, Va. 23314

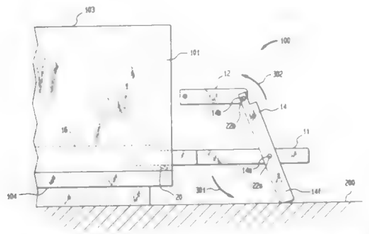
Filed Nov. 5, 1993, Ser. No. 147,304
Int. Cl.[5] A47B *77/10*
U.S. Cl. 182—88 20 Claims

1. A step apparatus extendable from and in combination with a shelf that resides a vertical distance above a floor, comprising:
a first step defining a first horizontal surface;
a second step defining a second horizontal surface;
a support and suspension leg unit free at a first end thereof and rotationally secured at a second end thereof to said second step, said leg unit further rotationally secured to said first step at a location between said first and second ends;
said leg unit positioning and supporting said first and second steps in a first configuration in which said first and second

VOL 1165 ISS 5 AG 30 1994 UMI

horizontal surfaces lie adjacent one another in a non-overlapping fashion;

said leg unit rotatable about said location between said first and second ends for positioning and supporting said first and second steps in a second configuration in which said leg unit is in a substantially vertical orientation with respect to said floor, said first end resting on said floor such that said leg unit supports said first step, said second end



suspending said second step above said first step, said second step rotatable about said second end such that said leg unit supports said second step substantially parallel to said first step; and

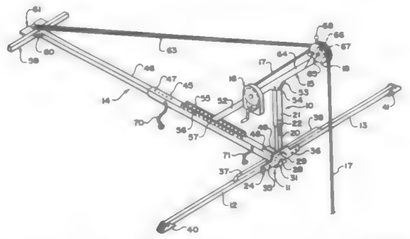
a mounting unit secured with respect to said shelf for operatively receiving said first and second steps and said leg unit in said first configuration and for supporting said first step in said second configuration.

5,341,898

FOLDABLE BOOM FOR MOUNTING ON A ROOF OF A BUILDING

Morris Baziuk, Box 53, Group 6, R.R.#1, Winnipeg, Manitoba, Canada R3C 4A3

Filed Aug. 20, 1993, Ser. No. 109,534
Int. Cl.[5] E04G *3/10*; B66C *23/00*
U.S. Cl. 182—142 **17 Claims**



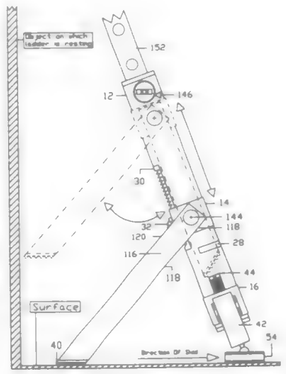
1. A foldable boom for mounting on a roof of a building comprising a main post, base means at a base end of the post for resting on the roof, support means at an upper end of the post for supporting a support cable to be suspended over an edge of the roof, counter balance means connected to the posts and extending therefrom in a direction generally transverse to the edge so as to extend across the roof away from the edge, the base means including a base coupling member and a pair of arms, each arm extending from the base end of the post in a direction transverse to the counter balance means and each arm being connected to the base coupling member for pivotal movement relative thereto about a horizontal axis transverse to the respective arm so as to be foldable from a first position in which the arms lie along the edge each on a respective side of the post to a second position in which the arms lie alongside the post, means mounting the post on the base coupling member for pivotal movement relative to the base coupling member and relative to the arms about a horizontal axis longitudinal to the counter balance means and means for locking the post at each of a plurality of predetermined angles relative to the base coupling member.

5,341,899

ANTI-SKID AND LEVELING DEVICE FOR LADDERS

Michael J. Casamento, 202 Maple St., W. Hempstead, N.Y. 11552

Filed Feb. 3, 1994, Ser. No. 190,904
Int. Cl.[5] E06C *1/16*
U.S. Cl. 182—205 **15 Claims**



1. An anti skid and leveling device for ladders, comprising:
(a) a guide rail;
(b) an upper carriage affixed to said guide rail;
(c) a means for providing the free movement of said upper carriage along the longitudinal axis of said guide rail;
(d) a brace affixed to said upper carriage;
(e) a means for rotatably attaching said brace to said upper carriage;
(f) a means for automatically retaining said upper carriage in a stationary position at various points along the longitudinal axis of said guide rail;
(g) a lower carriage affixed to said guide rail;
(h) a means for providing the free movement of said lower carriage along the longitudinal axis of said guide rail;
(i) a means for automatically retaining said lower carriage in a stationary position at various points along the longitudinal axis of said guide rail;
(j) a foot attached to said lower carriage;
(k) a means for attaching said foot to said lower carriage;
(l) a footpad attached to said foot;
(m) a means for swiveling said footpad;
(n) a means for attaching said footpad to said foot;
(o) a means for setting the optimum incline angle of said ladder.

5,341,900

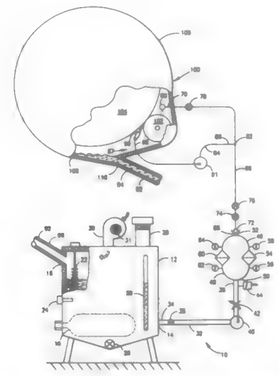
OPEN GEAR SET LUBRICATION SYSTEM

Dale J. Hikes, Gettysburg, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 797,845, Nov. 26, 1991. This application Dec. 18, 1992, Ser. No. 991,889
Int. Cl.[5] F01M *9/00*
U.S. Cl. 184—6.12 **11 Claims**

1. A recirculatory lubrication system for applying a film of lubricant to an open gear set having a pinion gear and a bull gear in meshing engagement with the pinion gear, the open gear set at least substantially enclosed by a gear set cover having a lower portion for collecting lubricant therein, comprising:

(a) a lubricant reservoir having a lubricant supply port and a lubricant return port;
(b) a lubricant supply line, said supply line having a first end in fluid communication with said supply port of said reservoir and a second end;
(c) a lubricant distribution header having a first end and a second end, said first end of said header in fluid communication with said second end of said supply line, said header having a plurality of lubricant feed orifices positioned along the length of said header, said feed orifices effective in applying the film of lubricant onto the gear set;
(d) a first lubricant return line having a first end and a second end, said first end in fluid communication with the lower portion of the gear set cover;
(e) a filter assembly, said filter assembly including an inlet and an outlet, said inlet of said filter assembly in fluid



communication with said second end of said first lubricant return line, said filter assembly having at least one filter element positioned therein for removing particles entrained in the lubricant;
(f) a second lubricant return line having a first end and a second end, said first end in fluid communication with said outlet of said filter assembly and said second end in fluid communication with said lubricant return port of said reservoir;
(g) a heater positioned within said reservoir to heat the lubricant within said reservoir; and
(h) a blower in communication with said reservoir to raise the prevailing pressure within said reservoir above ambient pressure to prevent airborne dust from entering said reservoir and the open gear set during operation of the system.

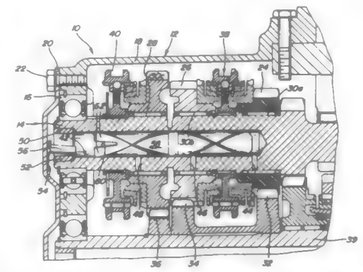
5,341,901

FLUTED INSERT FOR LUBRICATION SYSTEMS IN POWER TRANSMISSION DEVICES

Wayne E. Mueller, Milford, and Wayne R. Coffey, Howell, both of Mich., assignors to New Venture Gear, Inc., Troy, Mich.

Filed Mar. 18, 1993, Ser. No. 33,115
Int. Cl.[5] F01M *9/00*
U.S. Cl. 184—6.12 **2 Claims**

1. A lubrication system for a power transfer device having a housing, a shaft rotatably disposed within said housing, a number of drive elements supported on said shaft for relative rotation with respect thereto, an axial bore formed in the shaft, and radial passages formed in said shaft adjacent to the drive elements and in fluid communication with the axial bore, the improvement comprising a rotor comprising a flat piece of material having first and second ends and a width approximately that of the axial bore, the first and second ends being formed into helices disposed within the axial bore and secured for rotation with the shaft for drawing lubrication along said



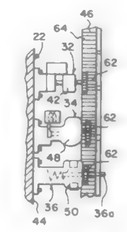
axial bore, whereby an increased amount of said lubrication is discharged through the radial passages.

5,341,902

ENERGY SAVER ELEVATOR

Rene A. Ruiz, Sr., 8419 Bellaire Blvd., Houston, Tex. 77036, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Mar. 8, 1993, Ser. No. 27,458
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—19 **2 Claims**



1. An energy saver elevator which comprises:
a) an elevator car;
b) an elongated cable connected to said elevator car;
c) a counterweight connected to said elongated cable;
d) DC power battery source for normal conditions;
e) an auxiliary DC power source;
f) means powered by said DC power source during normal conditions and by said auxiliary DC power source during emergency conditions, when said battery power source is discharged;
g) means for recharging said normal DC power source by the motion of said elevator car; and
h) means for stopping said elevator car; wherein said normal DC power source includes a plurality of batteries, which can be located in the bottom of said elevator car and; wherein a propelling means is an electric motor system, which is located between a center spar on said elevator car and a vertical center box channel, to raise and power said counterweight; wherein said recharging means is a generator system with an extending pinion located between said center spar on said elevator car and a stationary rack in the form of said vertical center box channel; whereby said pinion is driven by said rack when said car is in motion.

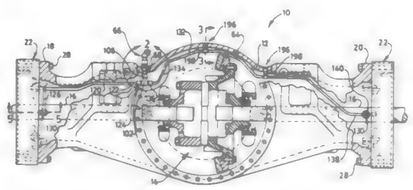
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,903

FLUID CONDUIT ARRANGEMENT

Mark E. Tietje, Batavia, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Aug. 31, 1992, Ser. No. 937,069
Int. Cl.[5] F16D *55/02*
U.S. Cl. 188—71.6 8 Claims



1. A fluid conduit assembly, comprising:

an axle housing having a pair of opposing end portions and a plurality of drive components housed therein for relative rotation therewithin;

a pair of brake assemblies, each of which is secured to an opposing end portion of the axle housing, said brake assemblies being selectively actuatable to brake the rotation of said drive components;

a fluid conduit assembly located within the axle housing and having a pair of opposing end portions that are engaged with the respective brake assemblies, said fluid conduit assembly being positioned entirely within the axle housing; and

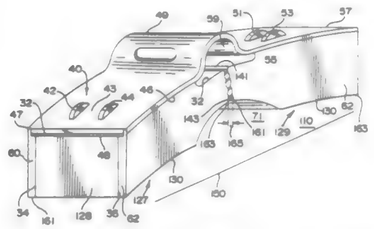
means for connecting the conduit assembly to a source of pressurized fluid located externally of the axle housing, said connecting means engaging said axle housing at a single location to provide communication of pressurized fluid to the brake assemblies for selective actuation thereof.

5,341,904

RAILROAD BRAKE SHOE

C. Dale Christie, Naperville, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 724,733, Jul. 2, 1991, Pat. No. 5,234,082. This application Mar. 26, 1993, Ser. No. 39,594
Int. Cl.[5] F16D *59/00*
U.S. Cl. 188—251 R 17 Claims



1. A tread brake shoe for a railroad car wheel having a wheel tread and a wheel flange, which brake shoe is mountable on a brake head and, at a reference position, is engageable with said wheel tread to brake and retard a railroad car, said brake shoe comprising:

a metal backing with a generally longitudinal axis, a radius of curvature, an upper surface and a lower surface;

a shoe body having a first subassembly and a second subassembly,

each of said first and second subassemblies having a core, a second longitudinal axis, a first end, a second end, a first lateral sidewall and a second lateral sidewall,

said first and second subassemblies secured to said metal backing lower surface with general alignment of said first and second subassembly second longitudinal axes, said aligned second axes generally aligned with said metal-backing longitudinal axis, and,

at least one lateral member for each of said first and second subassemblies, said lateral member mounted on said respective subassembly lateral sidewall;

each of said first and second subassembly cores being a first composition material with a first dynamic coefficient of friction,

each said core having a tread-engaging surface, a bonding surface, a first lateral sidewall and a second lateral sidewall, which first and second lateral sidewalls of each said core are generally parallel,

one of said first subassembly first and second lateral sidewalls generally aligned with one of said second subassembly first and second lateral sidewalls, and the other of said first subassembly sidewalls generally aligned with the other of said second subassembly first and second sidewalls,

said first and second subassembly tread-engaging surfaces having a second radius of curvature about concentric with said metal-backing radius of curvature, said tread-engaging surfaces generally aligned along said second radius of curvature;

each of said first and second subassemblies having a cross-section approximately transverse to said second longitudinal axis with said at least one lateral member is of a second composition material with a second dynamic coefficient of friction less than said first dynamic coefficient of friction,

said at least one lateral member of each of said first and second subassembly secured to the respective aligned and parallel sidewalls of the first and second subassemblies, which aligned and parallel said at least on lateral member on said first and second subassemblies provide a wearing side to said brake shoe;

said core and said lateral member of each of said first and second subassembly cooperating to define a first laminate arrangement in a first cross-sectional core direction;

means for bonding secured to said metal-backing lower surface,

each said first and second subassembly secured to said means for bonding at the respective bonding surface, said means for bonding cooperating with said core to define a second laminate arrangement in a second core cross-sectional direction approximately normal to said core first cross-sectional direction,

said first composition material operable to contact and grip said railroad car wheel tread to brake and retard said railroad car, and said at least one lateral member of said second composition material operable to engage said wheel flange and inhibit flange contact with said first composition material to reduce flange temperature increases at engagement of said brake shoe body with said flange at lateral displacement of said brake-shoe body from said reference position in alignment with said wheel tread to said flange engagement at a brake-shoe overriding position.

5,341,905

SHOCK ABSORBER WITH VARIABLE DAMPING FORCE

Fu-Chung Lu, Kaohsiung Hsien, Taiwan, assignor to Kai Fa Industry Co., Ltd., Kaohsiung Hsien, Taiwan

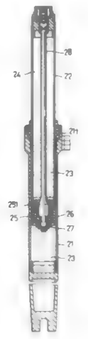
Filed Jul. 14, 1993, Ser. No. 91,619
Int. Cl.[5] F16F *9/44*
U.S. Cl. 188—320 3 Claims

1. A shock absorber with variable damping force, comprising:

an outer tube with a closed bottom end and an open top end, said outer tube being filled with hydraulic fluid;

an inner tube with an open bottom end that extends into said outer tube via said open top end of said outer tube, said inner tube having an open top end provided with a eover and a knob mounted rotatably on said cover, said inner tube containing hydraulic fluid and high pressure air therein;

a piston secured to said inner tube in said open bottom end of said inner tube, said piston being formed with a central through hole and a plurality of angularly spaced, circumferentially aligned and axially extending fluid passages which serve to communicate fluid between inner and outer tubes, said pins to further having a bottom surface which is formed with a first angular groove, a second annular groove that is concentric with said first annular groove, and an annular wall that separates said first and second annular grooves and that is formed with a notch to communicate said first and second annular grooves, said fluid passages extending into said first annular groove, said



second annular groove having a depth that increases gradually from one side of said notch to an opposite side of said notch;

a control rod disposed inside said inner tube, said control rod having a top end that is connected to said knob and a bottom end that extends through said central through hole of said piston; and

an annular valve piece connected axially to said bottom end of said control rod, said valve piece being adjacent to said bottom surface of said piston and being formed with a plurality of circumferentially aligned and angularly spaced fluid holes and a fluid slot which is aligned with said second annular groove;

said knob being rotated so as to rotate therewith said control rod and said valve piece in order to align respectively said fluid holes in said valve piece with said fluid passages and in order to locate said fluid slot at a desired depth of said second annular groove so as to control a fluid flow rate through said fluid passages when said outer tube moves upwardly relative to said inner tube during a cushioning action.

5,341,906

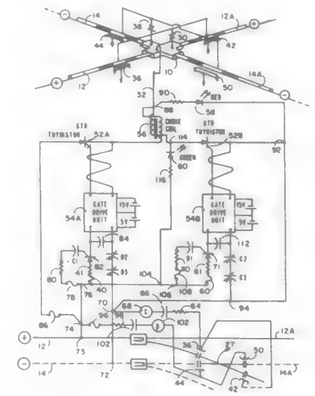
CONSTANT CURRENT WIRE CROSSING APPARATUS FOR OVERHEAD ELECTRICALLY OPERATED VEHICLES

Paul F. White, 70 Elmwood Rd., Wellesley, Mass. 02181

Filed Oct. 15, 1993, Ser. No. 137,304
Int. Cl.[5] B60M *1/14*
U.S. Cl. 191—37 7 Claims

1. In an overhead electrically operated vehicle system having crossing points of electrical wires of opposite polarity wherein said wires are separated from each other by a crossing unit and an insulator disposed between each of said wires and said unit, said vehicle having a current collector for withdrawing power from said wires, the improvement which comprises:

conducting strips attached to each of said insulators, respectively, and positioned to communicate with said current collector on passage of said vehicle and of a length sufficient to allow successive simultaneous contact first by said collector with said wires and said strips and then with said strips and said crossing unit.

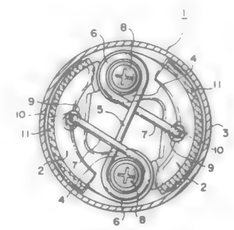


5,341,907

CENTRIFUGAL CLUTCH

Yoetsu Yokocho, Ome, and Fujio Kobayashi, Hachioji, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,029
Claims priority, application Japan, Apr. 20, 1992, 4-025210[U]
Int. Cl.[5] F16D *13/14, 43/18*
U.S. Cl. 192—75 3 Claims



1. A centrifugal clutch comprising; a clutch drum; a pair of clutch shoes each respectively pivoted at one end thereof to pivots of a drive member; and a spring consisting of a single spring wire member and including a pair of ring-shaped sections and a pair of a respective one of clutch shoe holding sections each being connected to a portion of said clutch shoes spaced from said one end, said pair of clutch shoe holding sections extending parallel to each other and in opposite directions from each of said ring-shaped sections.

VOL 1165 ISS 5 AG 30 1994 UMI

5,341,908

METHOD AND APPARATUS FOR TESTING COINS

David M. Furneaux, Maidenhead, United Kingdom, assignor to Mars Incorporated, McLean, Va.

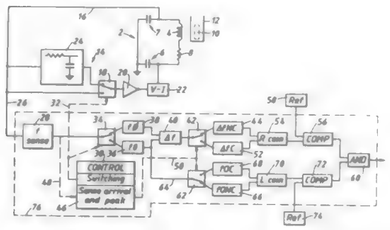
PCT No. PCT/GB91/00680, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/17527, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 29, 1991, Ser. No. 946,326

Claims priority, application United Kingdom, May 10, 1990, 9010507

Int. Cl.[5] G07D *5/08*

U.S. Cl. 194—317 16 Claims



1. A method of testing coins using an oscillating tuned circuit which includes an inductor, three parameters of the tuned circuit being interdependent, namely:

a) the effective resistance in the circuit

b) the phase of a signal in the circuit, and

c) the frequency of oscillation of the circuit, the method comprising imposing a change in said phase when a coin is adjacent to the inductor, deriving from the resulting frequency change a value dependent on the effective resistance in the tuned circuit as influenced by the coin, and using the derived value in a coin acceptability check,

characterised by causing the coin to move past the inductor during said phase change and the resulting frequency change.

5,341,909

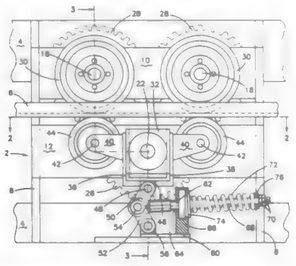
LINEAR WHEEL ESCALATOR HANDRAIL DRIVE

Hermann W. Ahls, Obernkirchen, and Alfons Von Herz, Stadthagen, both of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Aug. 30, 1993, Ser. No. 114,018

Int. Cl.[5] B66B *23/02*

U.S. Cl. 198—335 9 Claims



1. A handrail drive assembly in combination with an escalator or a moving walkway passenger conveyor, said drive assembly comprising:

a) a plurality of powered drive rollers positioned along a path of travel of the handrail for driving engagement with the handrail;

b) at least one powered drive shaft for providing drive power to the drive assembly;

c) means operably connecting each said drive shaft to more than one of said drive rollers so that each said drive shaft powers at least two of said drive rollers;

d) a plurality of reaction rollers positioned along said path of travel of the handrail, each of said reaction rollers cooperating with a respective drive roller to provide a plurality of drive nips through which the handrail passes;

e) a single spring means for providing a nip pressure bias force for each nip in said drive assembly; and

f) flexible means interconnecting said spring means and said reaction rollers, said flexible means being operable to transfer said bias force from said spring means to each of said reaction rollers;

wherein said reaction rollers are mounted on a common support which support is movable toward and away from the handrail.

5,341,910

APPARATUS FOR TURNING FLAT OBJECTS

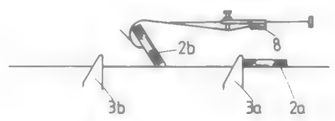
Hartmut K. Sauer, Himmelstadt, Fed. Rep. of Germany, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed Sep. 24, 1993, Ser. No. 126,535

Claims priority, application Switzerland, Oct. 29, 1992, 3372/92

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—403 22 Claims



1. An apparatus for turning flat objects (*2a*, *2b*) such as notes of value parcels, said apparatus comprising:

a conveyor track (**1**) having a turning zone and disposed in a plane of conveyance;

a plurality of slides (*3a*, *3b*, *3c*) for transporting said objects uniformly as conveyed material along said track at a speed of conveyance in a direction of conveyance, said objects being spaced at a preselected distance along said conveyor track, and each having a rear edge, a front edge, an object length defined between said front and rear edges and an object height;

an advancement member;

drive means for moving said advancement member approximately in parallel to said conveyor track to accelerate said objects along said turning zone relative to said speed of conveyance, said advancement member being moved periodically forward in a first movement from a starting position to an end position and in a second movement back to said starting position during a period of motion defined by the quotient of said preselected distance and said speed of conveyance; and

turning means for turning one of said objects in said turning zone, said turning means including a first fixed stop (**6**) protruding above said plane of conveyance, said first fixed stop having a stop height smaller than said object height and a first face pointing in a first direction opposite said conveyance direction, said first face including an upper region (*6a*) inclined toward said conveyance direction;

wherein said advancement member includes a spring bar (**5**) having a bent section (*5b*) reaching down to said conveyor track (**1**) and having a concave section pointing in said direction of conveyance and terminating in a first end (*5c*), said first end during said first movement being arranged to grip the rear edge of one object; and

wherein said first stop cooperates with said advancing means to raise the rear edge of said one object when said front edge of said one object impacts against said first stop, to guide said rear end within said bent section (*5b*), and tilt said one object over said first stop to turn and deposit said one object on said conveyor track (**1**).

5,341,911

METHOD AND DEVICE FOR FEEDING A SUCCESSION OF REELS TO A PICKUP STATION

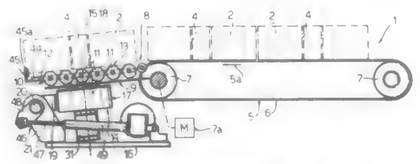
Antonio Gamberini, Bologna; Marco Brizzi, Zola Predosa, and Salvatore Carboni, Bologna, all of Italy, assignors to G. D. Societa' per Azioni, Bologna, Italy

Filed Jun. 9, 1993, Ser. No. 73,597

Claims priority, application Italy, Jun. 23, 1992, BO92A 000253

Int. Cl.[5] B65G *47/244*

U.S. Cl. 198—409 10 Claims



1. A method of feeding a succession of reels of strip material to a pickup station, said method comprising the steps of:

feeding the reels successively, and laid flat, onto a low-friction supporting surface adjacent to said pickup station;

centering the reels on the supporting surface into a supporting position coaxial with an axis substantially perpendicular to the supporting surface;

raising the reels off said supporting surface in a direction substantially parallel to said axis; and

rolling the raised reels over into an on-edge pickup position in said pickup station.

5,341,912

APPARATUS FOR TURNING (CIGARETTE) PACKS

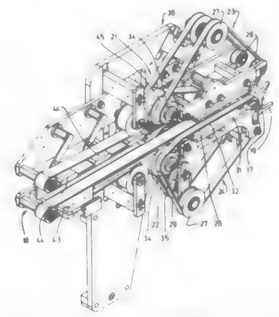
Heinz Focke, Verden, and Hans-Jürgen Bretthauer, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Apr. 22, 1993, Ser. No. 50,777

Claims priority, application Fed. Rep. of Germany, May 4, 1992, 4214321

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—415 7 Claims



1. In an apparatus for turning elongated cuboid packs (**10**) which are transported in a conveying direction along a pack track (**18**) in spaced relationship and with their longitudinal dimension directed transversely relative to the conveying direction, and which are turned by conveyor belts which are driven at different speeds and laterally engage the packs, the improvement wherein:

a) said apparatus comprising a plurality of upper and lower pack-conveying conveyor belts which engage each pack at pack faces thereof that are directed vertically upwardly and downwardly, respectively;

b) said plurality of conveyor belts comprises two upper and two lower pack-conveying conveyor belts that also function as upper and lower pack-turning belts (**21**, **22**, **23**, **24**), said pack-turning belts being disposed in such a manner that they engage the upwardly and downwardly directed pack faces at two respective opposite sides regions thereof;

c) said upper and lower turning belts (**21**, **22**, **23**, **24**) are oppositely located and convey the packs (**10**) by engaging opposite elongated longitudinal sides (**13**, **14**) thereof that face upwardly and downwardly, each pack being turnable about a vertical axis thereof;

d) said turning belts (**21**, **22**, **23**, **24**) have conveying strands (**25**, **26**) which engage the packs (**10**), said apparatus comprising means for moving said conveying strands at different speeds;

e) said plurality of conveyor belts also comprises a pair of additional upper and lower conveyor belts (**37**, **38**) which do not turn the packs and which exclusively convey the packs in the conveying direction at least in a region which adjoins said turning belts (**21** . . . **24**); and

f) for completing the turning of the packs (**10**), said apparatus further comprises lateral guide means disposed in the region of said additional conveyor belts (**37**, **38**).

5,341,913

DEVICE FOR FORMING PILES OF ARTICLES, PARTICULARLY FOR AUTOMATIC PACKAGING PLANTS

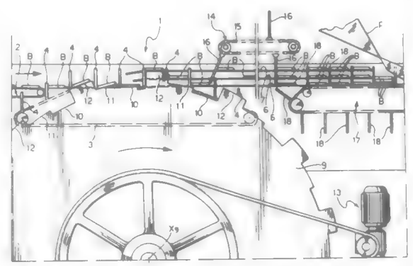
Renzo Francioni, Prato Sesia, Italy, assignor to Cavanna S.p.A., Prato Sesia, Italy

Filed Jul. 2, 1992, Ser. No. 907,527

Claims priority, application Italy, Jul. 4, 1991, TO91A000521

Int. Cl.[5] B65G *57/32*

U.S. Cl. 198—418.4 12 Claims



1. A device for forming, from an input flow of articles, an output flow of piles of articles in which each pile includes a predetermined number of superposed articles, the device including:

a number of superposed sliding planes at least equal to the predetermined number, and

means for diverting the input flow of articles in order to divide the input flow of articles into respective output flows of articles, each on a respective superposed sliding plane, wherein the diverting means include at least one wheel formation rotatable about an axis of rotation, the periphery of which formation has segments which are arranged in a cyclic sequence at different radial distances from the axis of rotation of the wheel formation, the number of segments in each sequence being equal to the predetermined number and the distance of each segment of the

VOL 1165 ISS 5 AG 30 1994 UMI

sequence from the axis of rotation of the wheel formation being substantially equal to the distance between that axis of rotation and the plane in which the respective output sliding plane is located, and

entrainment means for supplying the input flow of articles to the periphery of the at least one wheel formation so that each article cooperates with a respective segment in order to be transferred to a respective output sliding plane, said entrainment means including a conveyor with entrainment formations articulated thereto to maintain a desired planar orientation of the entrainment formations between successive pairs of which each of the articles is entrained.

5,341,914

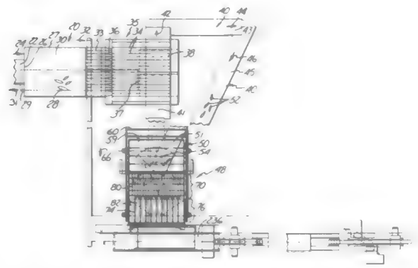
DEVICE FOR FEEDING CORN

Jimmy A. DeMars, Hugo, Minn.; Virgil Ruhter, Jr.; John Warner, both of Buhl, Id., and William G. Schmidt, Maple Grove, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 744,708, Aug. 12, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,484

Int. Cl.[5] B65G *47/30*

U.S. Cl. 198—418.6 **37 Claims**



1. A device for depositing a plurality of elongated objects transversely onto a receiving conveyor, comprising:

delivery means for delivering a substantially continuous stream of elongated objects substantially end-to-end in a plurality of lanes;

suspending means for suspending a leading group of spaced apart elongated objects exiting said delivery means directly above a receiving conveyor;

means for aligning in a direction transverse to a direction of travel of the objects in the lanes the leading group of elongated objects as the objects exit the lanes, and for transferring the aligned group of objects to said suspending means at substantially the same time wherein each group includes up to one object exiting each lane, the means for aligning the leading group of elongated objects, and for transferring the aligned group of objects to said suspending means including an eccentric conveyor, the eccentric conveyor comprising a frame and a plurality of eccentric pulleys rotatably mounted to the frame; and

means for transferring the suspended group of elongated objects to the receiving conveyor having a receiving surface which moves in a direction substantially transverse to a direction of travel of the elongated objects in the lanes.

5,341,915

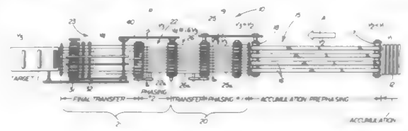
ARTICLE PHASING, TRANSFER AND SQUARING SYSTEM FOR PACKAGING LINE

Joseph R. Cordia, Lilburn; Bruce H. Dalrymple, Loganville; William G. Hennig, Social Circle; Robert W. McReady, Snellville, and John J. Metraw, Ellenwood, all of Ga., assignors to Kliklok Corporation, Decatur, Ga.

Filed Nov. 6, 1992, Ser. No. 972,607

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—460 **4 Claims**



1. A conveyor system for phasing and controlling the flow of closely spaced articles along a flow path to a target conveyor having defined moving segments at precise intervals, comprising:

supply conveyor means to establish the flow of articles so as to be substantially sufficient to match the number of said segments;

a phasing conveyor receiving the closely spaced articles in the flow path;

sensor means adjacent said phasing conveyor for detecting each one of said articles in a segment along the flow path;

a variable speed motor for driving said phasing conveyor;

a controller responsive to said sensor means for adjusting said motor to vary the speed of said phasing conveyor in order to phase each said article to match its defined segment upon a transfer conveyor means; and

said transfer conveyor means operating at a faster but substantially constant speed downstream of said phasing conveyor to accelerate each article to both establish a gap or segment upon said transfer conveyor and to match the speed of each article for positioning in the corresponding segment of said target conveyor;

said phasing conveyor and said transfer conveyor means each comprising a plurality of endless belts extending longitudinally along said flow path, a common support shaft including alternate drive and idler roller sections for said belts, respectively; said belts for said phasing and transfer conveyors being trained around the roller sections so that the operative runs are interdigitated to provide a substantially smooth conveying surface and a second support shaft including drive roller sections downstream of said common support shaft driven by a substantially constant speed motor for driving the transfer belts;

whereby the articles along said flow path are phased, gapped and speed controlled so as to be assured of filling substantially every segment of said target conveyor.

5,341,916

CONTROLLED SPACING INDUCTION

Martin R. Doane, Ada, James P. Kohls, Belmont; Ahmad Khodor, Grand Rapids; all of Mich., assignors to Rapistan Corporation, Grand Rapids, Mich.

Continuation of Ser. No. 36,226, Mar. 24, 1993, Pat. No. 5,267,638, which is a continuation of Ser. No. 743,506, Aug. 9, 1991, which is a continuation-in-part of Ser. No. 597,103, Oct. 12, 1990, Pat. No. 5,038,911, which is a continuation of Ser. No. 352,002, May 15, 1989, which is a continuation-in-part of Ser. No. 311,826, Feb. 16, 1989, abandoned. This application Jul. 22, 1993, Ser. No. 95,933

Int. Cl.[5] B65G *47/26*

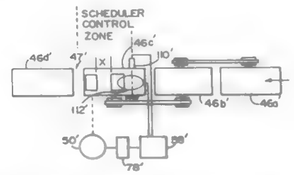
U.S. Cl. 198—460 **35 Claims**

1. A method of inducing single-file product in order to provide desired spacing between product comprising:

conveying product through a control zone that is of a length to include more than one product at a time in said control zone;

monitoring movement of a product through said control zone and determining an estimated time of arrival of that product at a discharge portion of said control zone if that product is conveyed at a present speed;

for a product closest to said discharge portion determining a desired time of arrival at said discharge portion in order



for that product closest to said discharge portion to be optimally spaced from a downstream product;

effecting a speed change of product in said control zone in order to cause the estimated time of arrival of that product closest to said discharge portion to approach the desired time of arrival of that product; and

adjust the estimated time of arrival of other product in said control zone as a function of speed changes that have occurred while that other product is in said control zone.

5,341,917

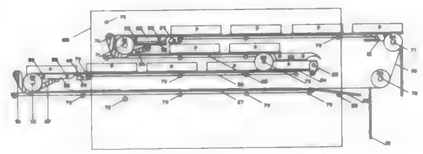
TIMED RETENTION CONVEYING APPARATUS

Ion Manea, 13407-48th Ave. S., Tukwila, Wash. 98168, and Dallas D. Hanes, 6535 S. Admiralty Way, Freeland, Wash. 98249

Filed Oct. 19, 1992, Ser. No. 962,675

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—475.1 **5 Claims**



1. A timed retention conveying apparatus having a plurality of rigid surfaces in an endless belt configuration, with a connected supporting framework, capable of traversing a plurality of levels with the improvement characterized in that, the horizontal orientation of said rigid surfaces is maintained for transporting indexed items on said rigid surfaces, the items original indexing is maintained until the items reach an unloading point and said unloading point is invertible with the loading point, the apparatus comprising:

(a) a means of coupling rotational energy from a motor to the conveying apparatus at more than one point to maintain timing and consistency of energy transmission,

(b) a means of maintaining the horizontal orientation of said rigid surfaces by,

(c) a means of hinging said rigid surfaces so said rigid surfaces then have a hinged end and a free end and by,

(d) a rotational energy connecting means for changing a horizontal movement of the rigid surface to a vertical movement of said rigid surface at a first location independent of travel direction and by,

(e) a reciprocating means for changing the horizontal movement of said rigid surface to a vertical movement of said rigid surface at a second location independent of travel direction.

5,341,918

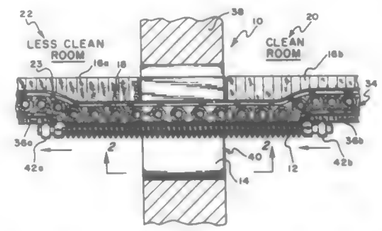
ARTICLE TRANSFER DEVICE

William J. Covert, P.O. Box 365, Berlin, N.J. 08009

Filed Apr. 16, 1993, Ser. No. 46,944

Int. Cl.[5] B65G *33/26*

U.S. Cl. 198—659 **13 Claims**



1. An automated conveying device for transporting individual articles of a plurality of different sizes and shapes from a first to a second location, said device comprising a flexible body portion having means for automatically conforming to the size and shape of each individual article and transporting said individual article to said second location said conveying device being in the form of a screw adapted to be rotated and comprising a plurality of connected flights comprising said conforming means whereby said screw does not have to be changed or adjusted when the size or shape of the articles change, said flights automatically flexing away from or toward each other to accommodate different size articles.

5,341,919

PIPE CONVEYOR

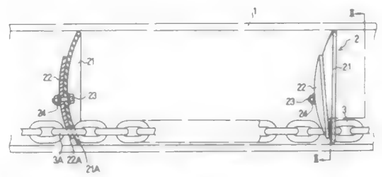
Katsuo Mizuno, 3-22, Shirahama-cho, Chigasaki-shi, Kanagawa-ken, Japan

Filed Oct. 29, 1992, Ser. No. 968,576

Claims priority, application Japan, Oct. 29, 1991, 3-283167

Int. Cl.[5] B65G *19/14*

U.S. Cl. 198—716 **3 Claims**



1. A pipe conveyor comprising a conveyor pipe, a plurality of blades each having a similar sectional configuration to that of said pipe, and an endless link chain for linking said blades at suitable intervals and capable of circulating, substances delivered into said pipe being conveyed by said blades which are moved within said pipe in accordance with the circulation of said endless link chain, each of said blades comprising an elastic blade having an outer diameter no greater than an inner diameter of said pipe, and a support body secured to a rear surface of said elastic blade and adapted to support the same, wherein the elastic blade is concave and the support body is concave and of the same curvature as the elastic blade.

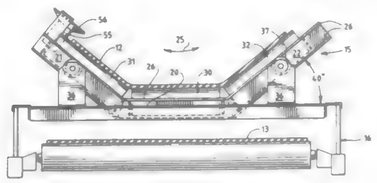
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,920

LOAD SENSITIVE CONVEYOR TRAINING APPARATUS

Shirley D. Riffe, Crab Orchard, W. Va., assignor to Long-Airdox Company, Oak Hill, W. Va.

Filed May 12, 1993, Ser. No. 60,893
Int. Cl.[5] B65G *15/08*
U.S. Cl. 198—825 12 Claims



1. An improved belt supporting and guiding apparatus for use in a conveyor system having a base frame and a continuous belt to move material in a horizontal plane along a non-linear path from a loading site to a discharge site, said supporting apparatus comprising:

(a) a second frame mountable for rotation on the base frame and having a center portion and left and right side portions which extend upwardly and outwardly from the center portion, and wherein said second frame center portion and left and right side portions comprise (i) substantially linear main body parts having longitudinal and transverse dimensions; and (ii) a flange that extends outwardly from the main body part of each of the second frame portions in a direction substantially normal to the direct of the transverse dimension thereof;

(b) rollers mounted for rotation within the second frame to receive the continuous belt; and

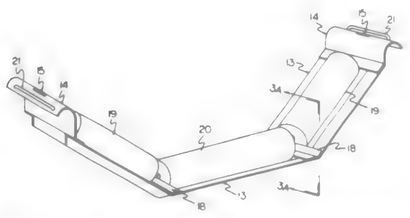
(c) means movably connecting the base frame to the second frame at locations on the left and right side portions thereof so that variation in longitudinally directed belt tension will cause the second frame to rotate on the rollers about an instant center whose spatial location changes constantly during rotation of said second frame.

5,341,921

CATENARY RIGID TOP TROUGHING ASSEMBLY

Edward N. Kokolis, 1502 Woodland Rd., Indiana, Pa. 15701, assignor to Edward N. Kokolis, Indiana, Pa.

Continuation-in-part of Ser. No. 944,273, Sep. 14, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 103,092
Int. Cl.[5] B65G *15/08*
U.S. Cl. 198—825 1 Claim



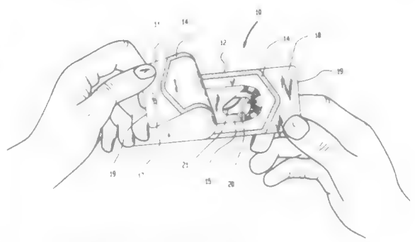
1. A conveyor apparatus comprising of a frame structure means for moving a flexible conveyor belt across said structure means, a plurality of belt supporting catenary rigid top troughing assemblies longitudinally spaced along the length of the belt engaging and supporting said belt to a generally trough shaped support, with each of said catenary rigid top troughing assemblies consisting of a pair of formed cross members, which defines the shape of the trough, a pair of saddles attached at either end to provide a means to affix said cross members securely to an existing support of siderails; said saddles are provided with slotted holes to provide training, handles to aid in the ease of installation, and an attach point for a roller mounting bracket; two center supports span between said cross members with two roller mounting brackets attached to each support, positioning three rollers onto a desired inline troughing shape.

5,341,922

PEELABLE FOIL SUTURE PACKAGING

Robert Cerwin, Pipersville, Pa.; Cheryl Trew, Somerset, and Robert J. Gibbs, Flemington, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Feb. 24, 1993, Ser. No. 21,814
Int. Cl.[5] A61B *17/06*
U.S. Cl. 206—63.3 33 Claims



1. A suture package comprising

a first laminate comprising a first foil section laminated on a first side with a first polymer coating to form a material substantially impervious to moisture;

a second laminate comprising a second foil section laminated on a first side with a second polymer coating to form a material substantially impervious to moisture;

wherein said first laminate and said second laminate are sealed together to form a substantially moisture impervious seal and enclose a suture between the first laminate and the second laminate and within the seal;

wherein the first section and the second section each comprised a flap for grasping the package to peel said first section and said second section from each other;

wherein said package may be opened to enable transferring of the suture to a desired area;

wherein the first polymer coating and second polymer coating are heat-sealable polymers;

wherein said first laminate and said second laminate are heat sealed together; and

wherein the second polymer coating is peelable from the second foil section when the second polymer coating is heat sealed with the first polymer coating.

5,341,923

PREMIUM PACKAGE

James D. Arasim, Racine, Wis., assignor to Westerm Publishing Co., Inc., Racine, Wis.

Filed Feb. 5, 1993, Ser. No. 14,360
Int. Cl.[5] B65D *5/10, 5/54*
U.S. Cl. 206—214 6 Claims

1. A premium package having an easily removable premium panel secured thereto and disposed therein, comprising a parallelepiped carton defining an interior void and having

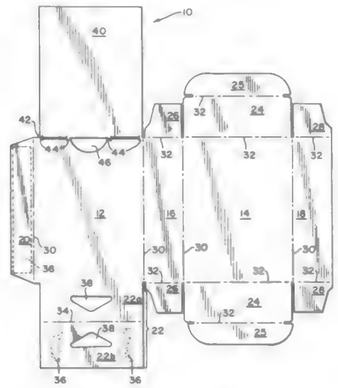
(A) a pair of opposed major side panels,

(B) a pair of opposed minor side panels connecting said major side panels, and

(C) at one end of said carton

(i) a major end panel secured to one of said major side panels and defining a tuck flap, said major end panel being movable between a closed position wherein it closes said one end of said carton and an open position wherein it enables access to said carton void, and

(ii) a removable premium panel secured to the other of said major side panels by a line of weakness and disposed within said carton void, being secured at one end thereof to one end of said other major side panel by said line of weakness, said one end of said other major side panel defining a finger cutout, thereby enabling said one end of said premium panel to be grasped by fingers on both sides thereof when said one major end panel is in said open position.

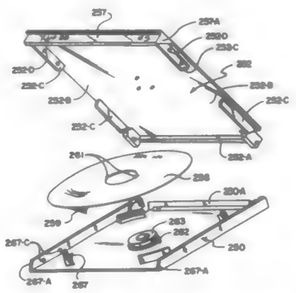


5,341,924

MEDIA STORAGE APPARATUS

James V. Morrone, P.O. Box 26, Essex Station, Boston, Mass. 02112

Continuation-in-part of Ser. No. 206,033, Jun. 13, 1988, Pat. No. 5,135,106, which is a continuation-in-part of Ser. No. 756,716, Jul. 18, 1985, Pat. No. 4,714,157, which is a continuation-in-part of Ser. No. 785,154, Oct. 7, 1985, Pat. No. 4,750,611, which is a continuation-in-part of Ser. No. 131,358, Dec. 10, 1987, abandoned. This application Sep. 7, 1989, Ser. No. 404,164
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—232 13 Claims



1. A storage case for a disc-type media comprising a base and cover and means securing the base and cover together but permitting opening and closing thereof, said cover having a shoulder defining an opening for receiving an angled identification card, said card comprising first and second adjacent portions disposed substantially at a right angle to each other, said card being located in and held in said opening in such a manner that an edge of said first portion of the card abuts said shoulder and the card and cover are juxtaposed.

3. A storage case for a disc-type media comprising a base and cover and means securing the base and cover together but permitting opening and closing thereof, said cover including a front wall having a ledge shoulder defining an opening for receiving an identification and an identification securing part.

8. A storage case for a disc-type media comprising a base and a cover and means securing said base and said cover together but permitting opening and closing thereof, wherein said cover is transparent, wherein said base has a bottom wall with indicia thereon and viewable through said transparent cover when the media disc is removed.

9. A storage case for a disc-type media comprising a base and a cover and means securing said base and said cover together toward the rear of said base and said cover but permitting opening and closing thereof, said base having angular portions which aid in forming a seal for said storage case between said base and said cover while said case is in the closed position said base angular portions each sloping upwards from the front towards the rear of said base, said cover having corresponding angular portions mating with but sloped oppositely of said base angular portions.

10. A storage case for a disc-type media comprising a base and cover and means securing said base and said cover together but permitting opening and closing thereof,

said base having a centrally located raised surface upon which the stored media rests while maintaining the media a distance above the base,

said centrally located raised surfacr being absent of any retaining means restricting the stored media from side movement,

said base further including retaining means between which the stored media rests,

said retaining means restricting side movement of the store media away from said centrally located raised surface upon which the media rests,

said base being configured to not interfere with said retaining means,

said base further including open rearward sections on either side thereof to receive a part of the cover that is connected to said securing means which permits opening and closing of said storage case,

said open rearward sections located inside of base side walls and having a portion of the base on both sides of the said open sections,

said base further including a section for engaging a portion of said cover of said storage case so as to limit the rearward position of said cover while said case is in the open position thereof,

said cover including centrally located means on the inner surface side thereof which serves to hold the stored media in place between the said centrally located raised surface in said base upon which the stored media rests and the said centrally located means in the cover,

said centrally located cover means keeping the stored media a distance below the said inner surface side of the cover while said storage case is in the closed position thereof, and

said cover further including means which correspond with means of said base in securing the front section of said cover closed.

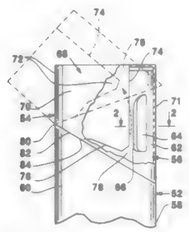
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,925

CIGARETTE HARDPACK HAVING ROUNDED CORNERS AND LID RETAINING FLAPS

J. Jerome Fleenor, Midlothian, and Duane C. Wilder, Chesterfield, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jul. 30, 1993, Ser. No. 99,324
Int. Cl.[5] B65D *85/10*
U.S. Cl. 206—268 **3 Claims**



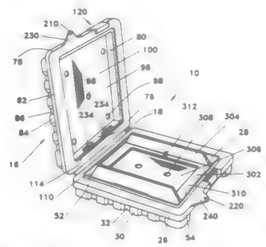
1. A cigarette hard pack comprising a pack portion and a lid portion formed of one piece with said pack portion and pivotable relative thereto about a rear hinge axis, an inner frame disposed in said pack portion and projecting upwardly beyond an upper end thereof so as to be opened and closed by said lid portion, said pack and lid portions including rounded vertical front corners, and said inner frame including rounded vertical front corners mating with said front corners of said pack and lid portions, said lid portion including a pair of side walls comprised of interengaged inner and outer panels, each of said front corners of said inner frame including a retention flap formed of one piece therewith and extending laterally outwardly so that an outer end of said retention flap bears frictionally against an inner face of an outer panel of a respective side wall when said lid is in a closed state, each inner panel including intersecting front and bottom edges, said front edge disposed behind a respective retention flap and sufficiently distant therefrom that said front edge avoids making contact with the retention flap during opening and closing of said lid portion.

5,341,926

CONTAINER FOR CARRYING AND TRANSPORTING COMPUTER TAPE CARTRIDGES

David G. Leben, 6115 E. 8th St., Wichita, Kans. 77218

Filed Aug. 30, 1993, Ser. No. 113,174
Int. Cl.[5] B65D *43/22, 85/575*
U.S. Cl. 206—307 **5 Claims**



1. An improved container for transporting computer tapes comprising a container base having a base bottom, a pair of base hollow upright side walls integrally secured to said base bottom, and a pair of base end walls integrally secured to said base bottom and to said base side walls, each of said base hollow upright side walls having a base outside wall and a base inside wall with said base outside wall having a structure defining a plurality of hollow dome-shaped protrusions spaced by an abridging outside wall member, and said base bottom having a base outside wall and a base inside wall having a structure defining a plurality of hollow flat dome-shaped ridges spaced by an abridging base inside wall member; and a container lid pivotally secured to said container base; at least one protruding foot member bound to said base outside wall; said container lid additionally has a structure defining a top recess; said container lid has a container top, a pair of top hollow side walls integrally secured to said container top, and a pair of top end walls integrally secured to said container top and to said top side walls, each of said top side walls having a top side outside wall and a top side inside wall with said top side outside wall having a structure defining a plurality of top hollow flat dome-shaped protrusions spaced by a top abridging side outside wall member, and said container top having a top outside wall and a top inside wall having a structure defining a plurality of top hollow flat dome-shaped ridges spaced by a top abridging inside wall member; and a caddy disposed in said container for engaging a small computer tape cartridge comprising a caddy base secured to a pair of caddy side walls, a pair of caddy end walls secured to said caddy base and said pair of caddy side walls, a floor recess formed out of said caddy base, and a dome shaped recess formed from said floor recess.

4. An improved container for transporting computer tapes comprising a container base having a base bottom, a pair of base hollow upright side walls integrally secured to said base bottom, and a pair of base end walls integrally secured to said base bottom and to said base side walls, each of said base hollow upright side walls having a base outside wall and a base inside wall with said base outside wall having a structure defining a plurality of hollow dome-shaped protrusions spaced by an abridging outside wall member, and said base bottom having a base outside wall and a base inside wall having a structure defining a plurality of hollow flat dome-shaped ridges spaced by an abridging base inside wall member; and a container lid pivotally secured to said container base; a closure assembly formed from one of said base end walls and one of said top end walls, said closure assembly comprising a latch member having a pair of latch ends, said one base end wall having a base closure ledge formed therefrom and said one top end wall having a top closure ledge formed therefrom; said latch member is frictionally engaged to said base closure ledge and said top closure ledge, and wherein said top closure ledge comprises a flared section for slidably engaging said latch member; and additionally comprising a caddy disposed in said container for engaging a small computer tape cartridge comprising a caddy base secured to a pair of caddy side walls, a pair of caddy end walls secured to said caddy base and said pair of caddy side walls, a floor recess formed out of said caddy base, and a dome-shaped recess formed from said floor recess.

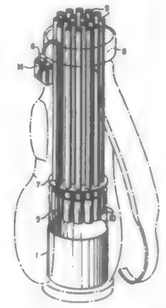
5,341,927

GOLF GRIP HEATER FOR GOLF BAG

Vincent E. Coyner, 1402 Pine Grove Rd., Capitol Heights, Md. 20743

Filed Feb. 5, 1993, Ser. No. 13,954
Int. Cl.[5] A63B *55/00;* **H05B** *3/06*
U.S. Cl. 206—315.3 **13 Claims**

1. In combination with a golf bag having an upper opening, a bottom, and a central axis, said golf bag being adapted to receive golf clubs with grips, a heater for heating the grips of the golf clubs, said heater comprising a flexible electrical heating element adapted to be removably inserted in and removed from the golf bag through the upper opening thereof.

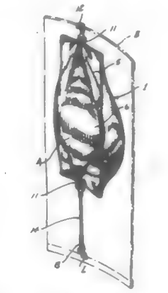


5,341,928

ADD-ON POCKET FOR GOLF BAGS

Allan L. Jones, Redmond, and Lane James, Brier, both of Wash., assignors to J&J Sports Products, Redmond, Wash.

Filed May 14, 1993, Ser. No. 62,077
Int. Cl.[5] A63B *71/00, 57/00;* **A45C** *7/00*
U.S. Cl. 206—315.5 **7 Claims**



1. An add-on pocket for a golf bag comprising a body of flexible sheet material having a front, a back, opposite ends, and opposite sides, said sides being devoid of pleats and being formed by creases between said front and back, said front having an opening for access to the interior of said body, said front and back having opposite end margins adjacent to said opposite ends of said body which margins are secured together for normally maintaining said body in a flat creased condition, said back having at least one pleat for expansion of the central portion of said body from a flat, empty condition to an expanded, article-containing condition, and a pair of fasteners carried by said body adjacent to said opposite ends, respectively, and connected to each other only through the flexible sheet material of said body with no rigid interconnection or reinforcement.

5,341,929

KEYBOARD TRAY ASSEMBLY

Ronald J. Stefancin, Jr., 30412 Center Ridge Rd., Westlake, Ohio 44145

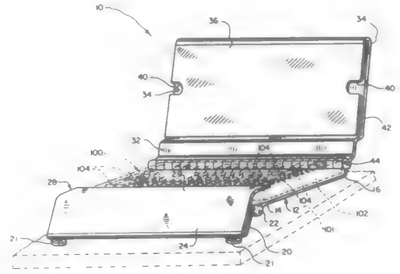
Filed May 13, 1993, Ser. No. 60,522
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—320 **9 Claims**

1. A tray assembly for holding a keyboard on an essentially horizontal surface, the keyboard having a frame, keys projecting upward from the frame, and a frontal piece of the frame nearest the user, said tray comprising:

a platform having first and second ends and sufficient dimensions to support the keyboard frame;

a leg associated with said first end to elevate the first end of the platform from said horizontal surface; the leg formed from a contiguous segment of the platform, said segment bent downward toward the horizontal surface;

a clasp near the first end, the clasp having upper and lower surfaces; the clasp formed from a portion contiguous with said leg curved upon itself to extend upward, said portion essentially parallel with the leg, and an end portion contiguous with the upward extending portion; said end portion bent to project above the platform and disposed to receive and retain said frontal piece of the keyboard between said platform and said lower surface of the clasp formed by the end portion; said upper surface of the clasp adapted to form a hand support;



means for adjusting the length of said leg to vary height of the first end of the platform and a slope of said keyboard; and,

a copy stand having a connector arm, a backplate and a coverplate; said connector arm interconnecting said second end of the platform and said backplate; said connector arm and backplate positioned to extend upward from the horizontal surface; and the backplate curved upon itself to form a portion contiguous with the backplate to extend downward essentially parallel to said backplate to form the coverplate; said backplate and coverplate having a space therebetween to receive a document.

5,341,930

PACKAGE HAVING SEPARABLE OVERLAY

May C. Counts, Florence, Ala., and Harry Zimmerman, Jr., Kenova, W. Va., assignors to Anco Collector Supplies, Inc., Florence, Ala. and Zim's Bagging Company, Inc., Pritchard, W. Va.

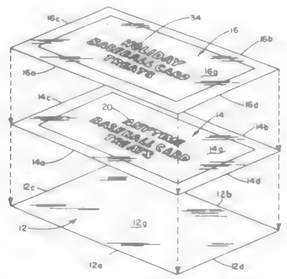
Division of Ser. No. 944,195, Sep. 11, 1992, Pat. No. 5,242,365.
This application Jun. 14, 1993, Ser. No. 76,359
Int. Cl.[5] B65D *65/40*
U.S. Cl. 206—459.5 **7 Claims**

1. A mass produced package having a separable overlay portion, the package comprising:

a plurality of layered sheets of flexible material having printed information thereon for outward display on said package, each one of said plurality of layered sheets having an interior surface, and an exterior surface for display of information thereon and a plurality of edges forming a perimeter, at least a portion of the perimeter of each one of said plurality of layered sheets being connected to a corresponding portion of the perimeter of an immediately adjacent layered sheet, and the entire perimeter of one of said plurality of layered sheets being continuously inseparably connected along the entire perimeter of at least one adjacent sheet of said plurality of layered sheets when said

VOL 1165 ISS 5 AG 30 1994 UMI

package is filled with goods, to thereby provide said package with containment function, and wherein an outermost one of said plurality of layered sheets is adapted for quick, facile removal from the remainder of said plurality of layered sheets without disrupting the containment function of said package, to thereby provide a means for altering the information outwardly displayed on said package, wherein said outermost layered sheet which is adapted for quick, facile removal is provided on the exterior surface thereof with information of a special nature and a layered



sheet which is immediately adjacent thereto is provided on the exterior surface thereof with information of a general nature which is hidden from view by said outermost layered sheet, so that removal thereof alters the outward appearance of said package to thereby permit said package to be adaptable from one for merchandising goods in relation to something of a specific nature to one for merchandising goods in relation to information of general nature, to thereby permit the retailer to realize extended profitable use of said package.

5,341,931

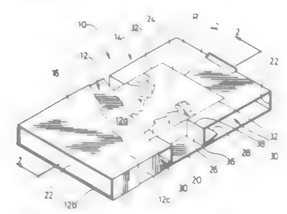
PACKAGE LINER FOR RECTANGULAR OBJECT

Gerhard W. Prochaska, 1 Appleby Court, Islington, Ontario, Canada M9B 5A1 , and Edwin F. Southam, 155 Balliol St. P.H.2, Toronto Ontario, Canada M4S 1C4

Filed Jun. 22, 1993, Ser. No. 79,567

Int. Cl.[5] B65D *85/30, 81/02*

U.S. Cl. 206—485 **10 Claims**



1. A packaging liner for use in association with objects of pre-determined length, breadth and depth, for holding at least one said object in a secure manner, and comprising:

a back panel defining a length greater than the length of a said object, the length defining a longitudinal direction of the liner and defining a width greater than the width of said object and equal to the length of said object, the width defining a transverse direction of the liner;

an end panel on each end of said back panel;

a partial panel connected to each said end panel, and adapted to overlie portions of said back panel and defining a free end;

a glue flap on said free end of each of said partial panels, and adapted to be glued in a pre-determined locations to said back panel, whereby to secure said partial panels in said overlying relation over said back panel;

two parallel spaced apart transverse chambers defined by respective partial panels, and said back panel,

each of said transverse chambers being shaped and dimensioned to receive a respective said object therein;

foldable panel portions in each of said partial panels, each said foldable panel portion being adapted to be folded into its respective one of said chambers to define an open-sided recess, each of said recesses defining a transverse direction dimension equal to the width of a said object, and defining a longitudinal direction dimension less than that of a said object, whereby portions of one said object may be received in respective said open-sided recesses, and secured therein lengthwise with respect to said back panel, and,

transverse fold lines in said foldable panel portions defining fold bottom walls, and fold end walls, said fold end walls being connected to said partial panels, and said fold bottom walls being secured to said back panel.

5,341,932

AQUEOUS FORMULATIONS

Chi-yu R. Chen, Raleigh, and Paul J. Weber, Durham, both of N.C., assignors to Rhone-Poulenc AG Company, Research Triangle Park

Continuation of Ser. No. 805,857, Dec. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 740,985, Aug. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 715,515, Jun. 14, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 47,039

Int. Cl.[5] B65D *30/03, 85/82*

U.S. Cl. 206—524.7 **43 Claims**

1. A containerization system comprising a water soluble or water dispersible bag containing a composition which is either a liquid or a gel, the liquid or gel comprising:

a hazardous product which is an agrochemical selected from the group consisting of a pesticide, a plant protection agent, an adjuvant including penetrating agents, synergists, antidotes, sticking agents, spreaders, activators, compatibility agents, a herbicide, an insecticide, a fungicide, an acaracide or a nematocide; more than 5% and less than 90% of water; and

an effective amount of electrolytes sufficient to provide or improve the insolubility in the composition of the film constituting the wall of the water soluble bag, and wherein the electrolyte is homogeneously present throughout the entire composition.

5,341,933

DISPENSING DEVICE

Barry L. Willows, Cape Town, South Africa, assignor to Roger C. Kriel, Cape Province, South Africa

Filed Feb. 12, 1993, Ser. No. 16,944

Claims priority, application South Africa, Feb. 12, 1992, 92/1019

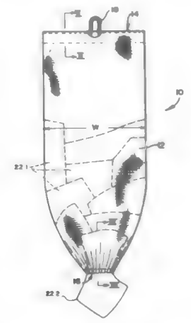
Int. Cl.[5] B65D *33/28*

U.S. Cl. 206—554 **8 Claims**

1. A combination of a storage and dispensing device having plastic bags therein, comprising:

a dispensing device comprising an open-ended tube of flexible sheet material having an entry opening at the top for insertion of said plastic bags into the tube, and a dispensing opening at the bottom of said tube for withdrawal of said plastic bags, the tube being elastically stretchable around the dispensing opening; and

a plurality of plastic bags stuffed into the entry opening of the tube whereby the bags can be held within the tube and



eventually an individual bag can be withdrawn from the dispensing opening.

5,341,934

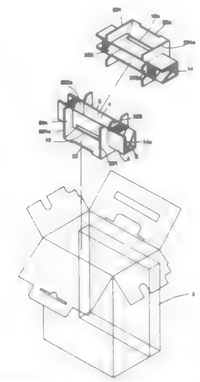
SHOCK-ABSORBING, COMPRESSION-PROTECTIVE PACKING DEVICE FOR CARTONS

Kun T. Hsu, Taipei, Taiwan, assignor to Chicony Electronics Co., Ltd., Taipei, Taiwan

Filed Aug. 31, 1993, Ser. No. 113,669

Int. Cl.[5] B65D *81/02*

U.S. Cl. 206—591 **2 Claims**



1. A shock-absorbing compression-protective packing device fastened inside a carton to keep a product against shock waves, comprising:

a product carrier made of a substantially rectangular first corrugated board comprising two transverse slots (**11**; **11***a*) across two longitudinal intermediate folding lines (**1***b*), two longitudinal slots (**12**, **12***a*) spaced between the transverse slots (**11**, **11***a*) and respectively disposed along the longitudinal intermediate folding lines (**1***b*) on an outer side of the first board, a middle portion (B) defined between the longitudinal intermediate folding lines (**1***b*), a first side portion (A) and a second side portion (C) disposed on two opposite edges of the middle portion (B) on the longitudinal intermediate folding lines (**1***b*), two fastening strips (**13**; **13***a*) extended outward from two diagonal corners of the first board in reversed directions, two projecting flaps (**14**; **14***a*) extended outward from the other two diagonal corners of the first board in reversed direction, two opposite longitudinal laterally located folding lines (**1***a*) respectively each disposed between the side portions (A; C) and the fastening strips (**13**; **13***a*) and projecting flaps (**14**; **14***a*), a series of U-notches (**141**; **141***a*) respectively made on the projecting flaps (**14**; **14***a*) and symmetrically disposed along two opposite sides thereof, and transverse folding lines (**1***c*) respectively made on the projecting flaps (**14**; **14***a*), the fastening strips (**13**; **13***a*) and projecting flaps (**14**, **14***a*) being respectively folded up along the longitudinal laterally located folding lines (**1***a*), then the projecting flaps (**14**; **14***a*) being respectively folded up along the transverse folding lines (**1***c*) and formed into a corrugated configuration, and then the first and second side portions (A;C) being respectively folded up along the longitudinal intermediate folding lines (**1***b*); and

a base made of a second corrugated board comprising two transverse slots (**22**; **22***a*) and two longitudinal slots (**21**; **21***a*) respectively spaced along the four sides of a rectangle, two transverse folding lines (**2***a*) respectively passing through the length of the transverse slots (**22**; **22***a*) two longitudinal folding lines (**2***b*) respectively passing through the length of the longitudinal slots (**21**; **21***a*), two transverse flaps (**23**; **23***a*) and two longitudinal flaps (**24**; **24***a*) respectively extended outwards from the four sides of the rectangle defined between the slots (**21**; **21***a*; **22**; **22***a*), each transverse flap (**23** or **23***a*) comprising two transverse cuts (**231** and or **231***a*) and a projecting strip (**232** or **232***a*) between the cuts (**231** or **231***a*), the longitudinal flaps (**24**; **24***a*) and the transverse flaps (**23**; **23***a*) being respectively folded up along the transverse folding lines (**2***a*) and the longitudinal folding lines (**2***b*), permitting the longitudinal flaps (**24**; **24***a*) to be collapsed into a horizontal position and abutted to each other and the transverse flaps (**23**; **23***a*) disposed in a vertical position at two opposite sides by the collapsed longitudinal flaps (**24**; **24***a*), the longitudinal flaps (**24**; **24***a*) and the transverse flaps (**23**; **23***a*) being respectively folded up along the transverse folding lines (**2***a*) and the longitudinal folding lines (**2***b*), permitting the longitudinal flaps (**24**; **24***a*) to be collapsed into a horizontal position and abutted to each other and the transverse flaps (**23**; **23***a*) disposed in a vertical position at two opposite sides by the collapsed longitudinal flaps (**24**; **24***a*).

whereby the projecting strips (**232**) of the base are respectively inserted into the transverse slots (**11**; **11***a*) of the product carrier so that an open storage chamber (**4**) is defined within the middle portion (B) and first and second side portions (A;C) of the product carrier and the projecting strips (**232**; **232***a*) of the base for keeping storage items.

5,341,935

METHOD OF SEPARATING RESOURCE MATERIALS FROM SOLID WASTE

Tobin Djerf, and Gwen Damico, both of Tyler, Tex., assignors to Evergreen Global Resources, Inc., Tyler, Tex.

Filed Apr. 29, 1993, Ser. No. 61,285

Int. Cl.[5] B03B *9/06*

U.S. Cl. 209—3 **13 Claims**

1. A method of separating resource materials of preselected composition from a heterogenous mixture of materials, with the materials in such mixture in the form of dry, loose particles of uniform size and configuration, comprising the steps of

introducing the heterogenous mixture of materials to a first fluid flow separator assembly and passing separation fluid through said first fluid flow separator assembly in streams of predetermined flow rates and velocities so as to divide such mixture of materials into a first stream of particles of highest density, a first stream of particles of lowest density, and a first stream of particles of intermediate density;

combining said first stream of particles of highest density and said first stream of particles of intermediate density into a first combined stream;

VOL 1165 ISS 5 AG 30 1994 UMI

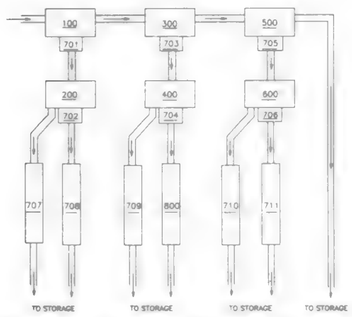
introducing said first combined stream into a second fluid flow separator assembly and passing separation fluid through said second fluid flow separator assembly in streams of predetermined flow rates and velocities so as to entrain divide said first combined stream into a second stream of particles of highest density, a second stream of particles of lowest density, and a second stream of particles of intermediate density;

combining said second stream of particles of highest density and said second stream of particles of intermediate density into a second combined stream;

introducing said first stream of particles of lowest density to a third fluid flow separator assembly and passing separation fluid through said third fluid flow separator assembly in streams of predetermined flow rates and velocities so as to entrain divide such mixture of materials into a third stream of particles of highest density, a third stream of particles of lowest density, and a third stream of particles of intermediate density;

combining said third stream of particles of highest density and said third stream of particles of highest density and intermediate density, respectively, into a third combined stream;

introducing said third combined stream into a fourth fluid flow separator assembly and passing separation fluid through said fourth fluid flow separator assembly in streams of predetermined flow rates and velocities so as to



entrain divide said first combined stream into a fourth stream of particles of highest density, a fourth stream of particles of lowest density, and a fourth stream of particles of intermediate density;

combining said fourth stream of particles of highest density and said fourth stream of particles of intermediate density into a fourth combined stream;

introducing said third stream of particles of lowest density to a fifth fluid flow separator assembly and passing separation fluid through said fifth fluid flow separator assembly in streams of predetermined flow rates and velocities so as to entrain divide such mixture of materials into a fifth stream of particles of highest density, a fifth stream of particles of lowest density, and a fifth stream of particles of intermediate density;

combining said fifth stream of particles of highest density and said fifth stream of particles of highest density and intermediate density, respectively, into a fifth combined stream;

introducing said fifth combined stream into a sixth fluid flow separator assembly and passing separation fluid through said sixth fluid flow separator assembly in streams of predetermined flow rates and velocities so as to divide said first combined stream into a sixth stream of particles of highest density, a sixth stream of particles of lowest density, and a sixth stream of particles of intermediate density;

combining said sixth stream of particles of highest density and said sixth stream of particles of intermediate density into a sixth combined stream;

routing said fifth stream of particles of lowest density for use or storage of such materials;

introducing said second combined stream, from said second fluid flow separator assembly, to a first secondary stage separator assembly and dividing said second combined stream into a plurality of final particle streams each including particles having densities within a preselected discrete range, and routing each of said final particle streams from said first secondary stage separator assembly for use or storage;

introducing said fourth combined stream, from said fourth fluid separator assembly, to a second secondary stage separator assembly and dividing said fourth combined stream into a plurality of final particle streams each including particles having densities within a preselected discrete range, and routing each of said final particle streams from said second secondary stage separator assembly for use or storage;

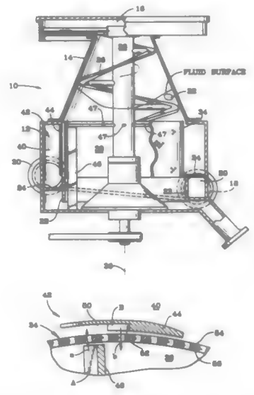
introducing said sixth combined stream, from said sixth fluid flow separator assembly, to a third secondary stage separator assembly and dividing said sixth combined stream into a plurality of final particle streams each including particles having densities within a preselected discrete range, and routing each of said final particle streams from said third secondary stage separator assembly for use or storage.

5,341,936

SCREENING DEVICE FOR A FIBER SLURRY, AND A BACKWASH MEANS THEREFOR

Douglas L. G. Young, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jul. 12, 1993, Ser. No. 89,532
Int. Cl.[5] B03B *7/00*; B07B *1/22*
U.S. Cl. 209—17 **12 Claims**



1. A screening device for a fiber slurry, comprising:

a screen having first and second opposite surfaces;

first means, mounted in an adjacency to one of said screen surfaces, for causing slurry to surge through said screen from said one surface and exit onto the other of said surfaces; and

second means, mounted in an adjacency to said other surface, for causing slurry to surge through said screen from said other surface for exiting thereof onto said one surface; and wherein

said first and second means are in juxtaposition, and straddle said screen therebetween; and

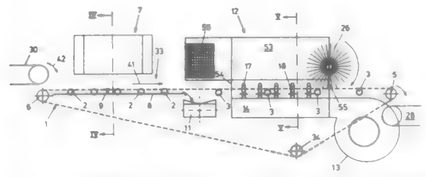
said first means further comprises means for causing said slurry to impinge against said second means.

5,341,937

APPARATUS FOR SEPARATING RECYCLABLE WASTE

Dirk J. Vos, Veendam, Netherlands, assignor to Machinefabriek Bollegraaf Appingedam B.V., Appingedam, Netherlands

Filed Dec. 16, 1992, Ser. No. 991,439
Int. Cl.[5] B03C *1/30*
U.S. Cl. 209—38 **32 Claims**



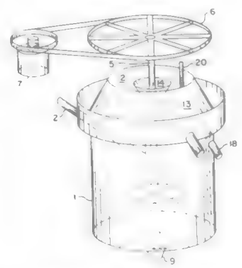
1. An apparatus for separating recyclable waste comprising a conveyer belt transport track along which a conveyer belt extends, the conveyer belt transport track including a first and a second section, collecting means under the first section of the conveyer belt transport track, belt guides positioned along the first section of the conveyer belt transport track, the conveyer belt being provided with openings and at least one of mutually contacting surfaces of the conveyer belt and the belt guides being profiled such that movement of the conveyer belt along the conveyer belt transport track causes a portion of the belt passing the guides to shake in a direction substantially transverse to the conveyer belt transport track, and magnetic separating means above the second section of the conveyer belt transport track.

5,341,938

METHOD OF SEPARATING MATERIALS IN A FLOTATION REACTOR

Ulises M. Valenzuela, and Guillermo Moguel, both of Col. Los Morales Polanco, Mexico, assignors to Servicios Corporativos Frisco, S.A. de C.V., Mexico City, Mexico

Division of Ser. No. 672,499, Mar. 20, 1991, Pat. No. 5,234,112.
This application May 13, 1993, Ser. No. 62,360
Int. Cl.[5] B03D *1/02, 1/14, 1/16*
U.S. Cl. 209—164 **9 Claims**



1. A method of separating desired material from sterile or undesired material comprising the steps of:

forming a slurry of material having portions of desired and undesired material to be separated;

introducing the slurry into a reactor chamber having a lower part, a middle part, and an upper part aligned along a central axis, the upper part having a vertically narrowing section, along the central axis thereof;

generating a foam external of the reaction chamber, said foam comprised of bubbles of a controlled size;

introducing the foam into the lower part of the reactor chamber;

dispersing the slurry into the foam by passing the slurry and foam through a rotatable member in the lower part of the reactor chamber such that the foam is substantially homogeneously dispersed into the slurry as the foam in contact with the aforesaid slurry ascends through the middle part of the reactor chamber to the upper part thereof for a sufficient time to permit particles of the desired material in the slurry to adhere to the bubbles in the foam; and

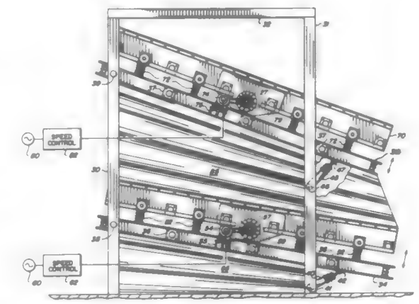
providing a controlled stream of water to the foam in the upper part of the reactor chamber in the vertically narrowing section to cause separation of undesired material from the particles of the desired material.

5,341,939

MULTIPLE DECK VIBRATING SCREEN APPARATUS

David J. Aitchison, Tempe, and Donald C. Dunn, Mesa, both of Ariz., assignors to Corrosion Engineering, Inc., Mesa, Ariz.

Filed Feb. 22, 1993, Ser. No. 20,359
Int. Cl.[5] B07B *1/28*
U.S. Cl. 209—319 **10 Claims**



1. A vibrating screen apparatus for material screening including in combination:

a frame;

at least first and second elongated vibrating screen decks having first and second sides and first and second ends;

first and second pivot means for pivotally mounting the first ends of said first and second vibrating screen decks, respectively, on said frame, with said first vibrating screen deck located above said second vibrating screen deck;

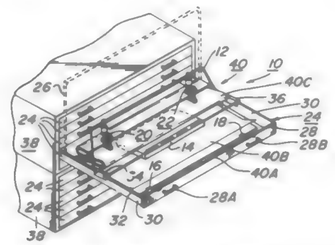
first and second means coupled with first and second said vibrating screen decks, respectively, for rotating said first and second vibrating screen decks about said first and second pivot means for varying the angle of said first and second vibrating screen decks relative to said frame;

means for vibrating said first and second vibrating screen decks; and

flexible curtain members extending between the first sides and the second sides, respectively, of said first and second vibrating screen decks to ensure that material falling through said first vibrating screen deck drops onto said second vibrating screen deck.

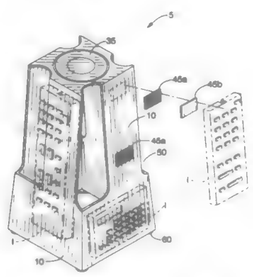
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,940
APPARATUS FOR THE RETRIEVAL AND REFILING OF DOCUMENTS IN FLAT FILE STORAGE DRAWERS
Ralph M. Pidcock, 2614 Greenleaf St., Allentown, Pa. 18104
Filed Aug. 10, 1993, Ser. No. 105,848
Int. Cl.[5] B07C *7/04*
U.S. Cl. 209—702 **10 Claims**



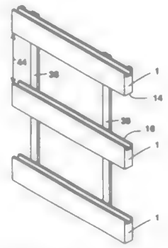
1. A portable arrangement for extracting at least one sheet from a plurality of sheets stacked in a flat storage drawer, having a predetermined width and runners thereon, said arrangement comprising:
(a) an upright rack having opposite feet that are interconnected by a crossbar;
(b) a sheet separator with a tapered front portion and having means for being mounted on at least one transverse spanning member which in turn has means for slidably coupling to said runners;
(c) first clamping means comprising at least one member having a surface for clampingly engaging at least one sheet located below the sheet desired to be extracted; and
(d) second clamping means comprising at least one member having a surface for clampingly engaging at least one sheet located above the sheet desired to be extracted, said second clamping means having a body with one of its ends connected so as to permit detachable hanging from said crossbar.

5,341,941
COMBINED STORAGE AND EXERCISE-THERAPY APPARATUS
Thomas W. Marlor, 10000 Southern Mill Pl., Grass Valley, Calif. 95949
Filed Jun. 28, 1993, Ser. No. 82,997
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 **15 Claims**



1. A storage apparatus for holding an item, comprising:
a) a plurality of supporting side walls, wherein each of said supporting side walls has a top border, a bottom border, and first and second side borders, wherein said first side border of each said side wall is secured to at least a portion of said second side border of another said side wall;
b) an upper platform secured to said side wall top borders;
c) means for releasable securing said item to said apparatus; and
d) first means for grasping said apparatus, wherein said first means for grasping said tower comprises a plurality of side apertures formed in said supporting side walls.

5,341,942
APPARATUS FOR SUPPORTING AND DISPLAYING OBJECTS
William D. James, Jr., 2305 Tenbrook Rd., Arnold, Mo. 63010
Filed Mar. 25, 1993, Ser. No. 37,312
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—40 **11 Claims**

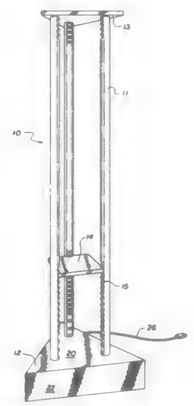


1. A support and display apparatus for supporting and displaying a disc-like object of predetermined size and shape, said support and display apparatus comprising:
at least first and second elongated structural members, each having a width, a length, a thickness, a front face, a rear surface, a top surface and a bottom surface and having a substantially uniform generally rectangular cross-section,
a uniform continuous groove formed in the top surface of said at least first and second structural members, said groove having a bottom surface defining the depth of said groove measured from the top surface of the structural member in which it is formed,
said at least first and second structural members being joined together, with a top surface of one of said at least first and second structural members being in spaced vertically opposed relation with the bottom surface of another of said at least first and second structural members, by at least one joining member contacting at least a portion of one of their front face and rear surface, and
the distance between a bottom surface of said one of said at least first and second structural member and a bottom surface of a groove formed in the vertically opposed top surface of an adjoining one of said at least first and second structural members being at least equal to the vertical dimension of a disc-like object to be supported and displayed.

5,341,943
DECORATIVE STAND FOR COMPACT DISCS
Richard J. Fraser, 123 S. G St., Hamilton, Ohio 45013
Filed Apr. 6, 1993, Ser. No. 43,224
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—40 **14 Claims**

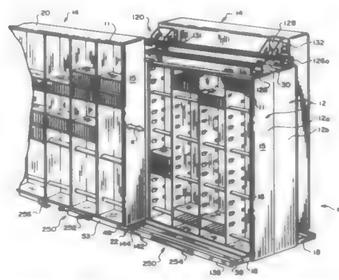
1. A decorative stand for holding compact disc cases in a manner facilitating their placement and removal from the stand, comprising:
(a) a set of at least three translucent rods, each said rod having a series of notches in a side wall thereof to receive an edge of the compact disc case, said rods arranged together so that the notches cooperate to slidably receive three edges of each compact disc case;
(b) a housing to hold a lower end of each of the rods in a upright fashion and to illuminate the rods, said housing

having (i) a top wall with a set of holes to receive the ends of the rods and to maintain said rods in the arranged pattern, (ii) holding means within the housing to hold the rods off a bottom wall of the housing, and (iii) illumination



means mounted within the housing and below the rods such that light is transmitted through the rods to provide a pleasing appearance; and
(c) a cap attached to an upper end of each of the rods as an aid in stabilizing the rods.

5,341,944
MODULAR LIBRARY SYSTEM WITH STATIONARY AND MOBILE RACKS FOR STORAGE OF COMPUTER CATRIDGES
Richard M. Latino, Sterling, Mass., assignor to Wright Line, Inc., Worcester, Mass.
Filed Jan. 14, 1993, Ser. No. 4,457
Int. Cl.[5] A47F *5/00*
U.S. Cl. 21—162 **2 Claims**


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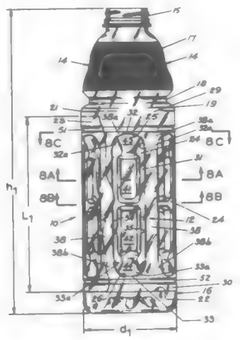
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,946

HOT FILL PLASTIC CONTAINER HAVING REINFORCED PRESSURE ABSORPTION PANELS

Dwayne G. Vailliencourt, Manchester, Mich., and Theodore F. Eberle, Jr., Kapellen, Belgium, assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Mar. 26, 1993, Ser. No. 39,595
Int. Cl.[5] B65D *1/02, 1/42, 23/08*
U.S. Cl. 215—1 C **29 Claims**



11. A thin-walled container formed from a plastic material and adapted to contain a liquid at a temperature elevated above room temperature, said container comprising: an upper portion which includes a sealable closure receiving portion; a lower portion including a base closing the bottom of the container; and a sidewall extending between said upper portion and said lower portion, said sidewall being generally tubular in shape and including a plurality of elongated vertically oriented vacuum panels which are adapted to flex inwardly upon a lowering of internal pressure during cooling of said liquid, each of said vacuum panels having an upper edge and a lower edge, an elongated outwardly projecting portion extending between and spaced from said upper and lower edges of said vacuum panel and oriented vertically within said vacuum panel, and a transverse rib dividing said outwardly projecting portion into upper and lower panel portions, said vacuum panel including a first outward projecting connecting portion extending between an upper edge of said upper panel portion and said upper edge of said vacuum panel and connecting said upper edge of said upper panel portion to said sidewall along said panel upper edge, and a second outwardly projecting connecting portion extending between a lower edge of said lower panel portion and said lower edge of said vacuum panel and connecting said lower edge of said lower panel portion to said sidewall along said lower edge of said vacuum panel.

5,341,947

TAMPER-EVIDENT DEVICE FOR CONTAINER CLOSURES

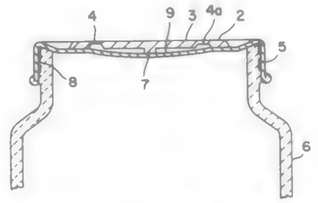
Meinrad Rossé, La Tour-De-Peilz, and Jean Servaux, Chavornay, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Aug. 26, 1991, Ser. No. 750,099
Claims priority, application Switzerland, Sep. 12, 1990, 2937/90
Int. Cl.[5] B65D *41/32*
U.S. Cl. 215—230 **9 Claims**

1. A tamper-evident container having an interior maintained under a partial vacuum comprising:

a container, which is rigid under a partial vacuum and which has an opening, and a closure cap which closes the container opening to keep an interior of the container under a partial vacuum, which has a cap portion having a container interior closing surface which covers the container opening and which is opposed by an outer cap surface and which has a central portion which is elastically deformable under effects of changes in pressure; and

a tamper-evident device positioned on the closure cap outer surface which comprises a ring element bonded to the cap outer surface, an insert panel element, the insert panel element being centrally disposed with respect to the ring



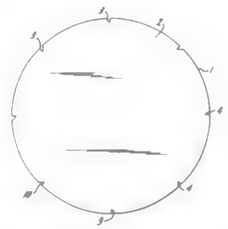
element and having an edge displaced from and surrounded by an edge of the ring element, and at least two lugs which connect the ring element and the insert panel element so that upon opening and pressurization of the container, the deformable cap portion lifts the insert panel element so that at least one of the lugs connecting the ring and insert element breaks.

5,341,948

TAMPER EVIDENT SEAL

Stephen A. Gaeta, Bloomfield, N.J., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Jun. 5, 1992, Ser. No. 894,492
Int. Cl.[5] B65D *41/00*
U.S. Cl. 215—232 **6 Claims**



1. A tamper evident seal comprising a sheet of directionally oriented material with the peripheral portion having a plurality of V-shaped notches each having two sides, wherein one side of the V-shaped notch is cut on the perpendicular to the periphery of the seal and the second side of the V-shaped notch is placed at an angle of from about 40° to about 50° from the perpendicular side, wherein the V-shaped notches are positioned so that the perpendicular side of the notch alternates from notch to notch.

5,341,949

PRESS-ON PRY-OFF CLOSURE

Thomas H. Hayes, Lancaster, Ohio, assignor to Anchor Hocking Packaging Co., Lancaster, Ohio

Continuation of Ser. No. 694,149, May 1, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,284
Int. Cl.[5] B65D *41/48*
U.S. Cl. 215—253 **13 Claims**

1. A sealed package comprising a container and a press-on, pry-off composite closure for said container, said closure comprising:

a shell having a top opening;

an insert disk in said shell and having sealing means forming a seal around the mouth of said container;

said shell having inwardly projecting means below said disk for lifting said disk and for engaging beneath a rib on said container to hold said shell on said container;

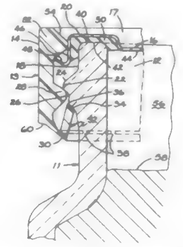
said disk being retained in said shell between said inwardly projecting means and a top lip above an edge of the disk;

the disk being axially movable with respect to said shell between said inwardly projecting means and said lip;

means other than said closure holding said insert disk in sealing engagement on said container;

said shell having annular breakable tamper-evidencing means which is retained beneath an external shoulder on said container;

said shell being elastically disengageable from said container by pressing the shell upwardly at a point on its circumference to pry said inwardly projecting means over said rib, such upward pressing of said shell moving said tamper-



evidencing means against said shoulder and breaking said tamper-evidencing means around at least a portion of the circumference thereof, before said inwardly projecting means has been pried over said rib,

said closure providing for upward movement of said shell between such breaking of said tamper-evidencing means and the point at which said inwardly projecting means has been pried over said rib,

said closure providing for further upward movement of said shell between the point at which at least a portion of said inwardly projecting means has been pried over said rib and the point at which said inwardly projecting means engages and lifts said disk, such movement thereby at least partially separating in time the events of breaking said tamper-evidencing means, prying of said inwardly projecting means over said rib, and lifting said disk, such separation thereby reducing the total force required for said events and facilitating the opening of said container.

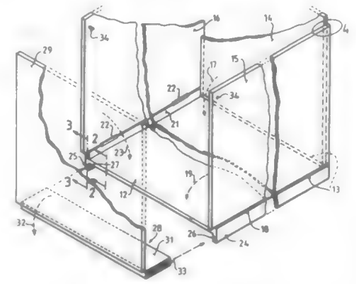
5,341,950

TRANSPORT CONTAINER

Dirk-Peter Sinz, Kaiser-Friedrich-Promenade-155, 6380 Bad Hamburg, Fed. Rep. of Germany

Filed Feb. 9, 1993, Ser. No. 15,210
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, 4204397
Int. Cl.[5] B65D *7/24*
U.S. Cl. 220—6 **41 Claims**

1. Transport container, including a base panel and wall panels pivotably mounted on its peripheral edges of the said base panel, such that the said wall panels can be folded in, parallel to the base panel, into an inoperative position in which a first wall panel lies directly on the base panel and a second wall panel lies between the first and a third wall panel, and with arresting devices on the wall panels, in order to mutually arrest these in their operative position, unfolded perpendicularly with respect to the base panel, characterized in that a fourth wall panel unit (**29**) is pivotably mounted on a slide member (**28**), which slide member is displaceably guided beneath and parallel to the base panel (**12**), such that the fourth wall panel unit (**29**) is pivotable out of its operating position folded up perpendicularly to the base panel into an intermediate position directed parallel to the base panel and is then



displaceable in common with the slide member (**28**) into a stowage position lying beneath and parallel to the base panel (**12**).

5,341,951

AIR-FILTERING HYDRAULIC RESERVOIR BREATHER CAP

Eric Springston, Greene, N.Y., assignor to The Raymond Corporation, Greene, N.Y.

Filed Apr. 30, 1993, Ser. No. 56,694
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—371 **3 Claims**

1. A breather cap for an oil reservoir, said breather cap being positioned over an oil reservoir outlet having the shape of a cylindrical bore, said breather cap receiving high-velocity air containing suspended droplets of oil, said breather cap separating the oil from said air, which is then vented to the atmosphere, said breather cap comprising:

a housing defining an outer shell of said breather cap, said housing being separated into two portions, comprising an upper portion and a lower portion;

cylindrical attachment means disposed within a central portion of said housing for affixing said breather cap to said oil reservoir outlet, said cylindrical attachment means comprising a cylindrical coil spring for providing a compressive biasing between said outlet and said housing for maintaining a snug fit therebetween;

an inverted, cup-shaped deflection means having a substantially flat, disc-like mid-section disposed within a mid-portion of said housing over said oil reservoir outlet, said inverted, cup-shaped deflection means delineating said upper portion of said breather cap from said lower portion, said inverted, cup-shaped deflection means for receiving and slowing said high-velocity air containing said suspended droplets of oil, said high-velocity air impinging upon said substantially flat, disc-like mid-section and being caused to slow its velocity, thereby causing said suspended droplets of oil to separate therefrom, deposit, and aggregate upon said substantially flat, disc-like section, said oil droplets thereafter dripping back into said oil

VOL 1165 ISS 5 AUG 30 1994 UMI

reservoir, and the substantially oil-free air then flowing to a periphery of said substantially flat, disc-like section, and thereafter rising upwards into said upper portion of said housing;

means defining a narrow, annular passage disposed between said housing and said inverted, cup-shaped deflection means, wherein said substantially oil-free air is caused to rise upwards into said upper portion of said housing after twice changing flow direction;

filtering means disposed within said cylindrical attachment means for assisting in the separation of said suspended droplets of oil from said high-velocity air prior to the impinging thereof upon said substantially flat, disc-like mid-section; and

venting means supported in said upper portion of said housing for allowing said substantially oil-free air to flow out of and vent from said housing.

5,341,952

RIGID CONTAINER FOR INTERCHANGEABLE FLEXIBLE PACKS

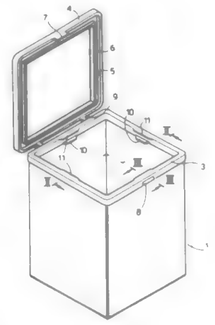
Luigi Goglio, Via Frua, 11-20146, Milano, Italy

Filed May 21, 1993, Ser. No. 64,652

Claims priority, application Italy, May 29, 1992, MI9-IU000546

Int. Cl.[5] B65D *5/42*

U.S. Cl. 220—408 **19 Claims**



1. A rigid container comprising:

an interchangeable flexible pack; and

a substantially parallelepiped-shaped box comprising:

an upper edge comprising a plurality of means for supporting the interchangeable flexible pack and a plurality of means for blocking the interchangeable flexible pack and

a closable lid

wherein the interchangeable flexible pack has a parallelepiped-shape that will fit in the box and comprises a plurality of means for engaging with the means for supporting and the means for blocking.

5,341,953

PARTITIONED CEREAL BOWL

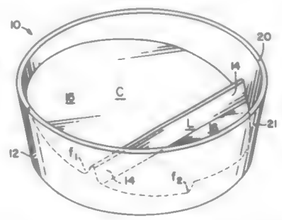
Mary C. Forester, P.O. Box 89, Ghent, N.Y. 12075

Filed Sep. 7, 1993, Ser. No. 117,731

Int. Cl.[5] B65D *21/02*

U.S. Cl. 220—575 **2 Claims**

1. An open container for holding a dry, particulate breakfast cereal and a liquid in a set apart relationship so that a user may selectively moisten said cereal in said liquid during consumption, said container comprising in combination: a unitary, single bowl having an upper rim that is completely contained within a horizontal plane, that is separated into a first portion and a second portion by a chordwise-disposed, solid partition, having a generally triangular cross-section, so that said first portion comprises a first minor basin of greater depth than said second portion, having a bottom, said first portion featuring at the base thereof an arcuate circumferentially-disposed trough that is receptive of a radiused tip of a spoon instrument and said second portion comprising a second minor basin which features a sloped bottom that is at a higher elevation than the bottom of said first portion terminating at said partition and featuring means for facilitating cereal movement by said spoon instrument over said partition and into said first portion, said means comprising a side of said partition facing said second portion being upwardly sloping in the direction of said first portion.



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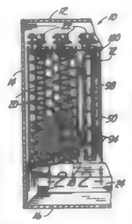
PRODUCT DISPENSER FOR A VENDING MACHINE

Bruce A. Smith, P.O. Box 28, Bonaparte, Iowa 52620

Filed Mar. 15, 1993, Ser. No. 30,915

Int. Cl.[5] G07F *11/00*

U.S. Cl. 221—85 **20 Claims**



1. In a vending machine having a cabinet including a transparent panel and a discharge chute for dispensing products from the machine, a number of product dispensers mounted in horizontal arrangement on shelves within the cabinet, each of the product dispensers having a discharge end being in communication with the discharge chute and being disposed adjacent the transparent panel, and a drive operably attached to each product dispenser, at least one of the product dispensers comprising:

a conveyor including a drive pulley operably attached to the drive, a continuous belt disposed about and driven by the drive pulley, dividers attached to and extending out from the belt and spaced along the belt at predetermined intervals forming a number of product cavities;

each of the dividers comprising a sheet of flexible transparent material, whereby a product disposed within the product cavity adjacent the transparent panel can be seen by the user through the transparent divider.

5,341,955

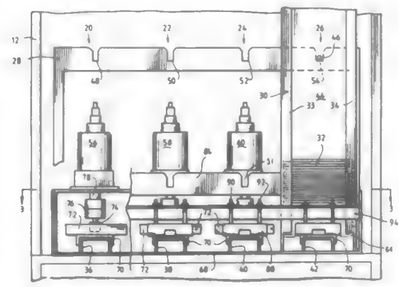
APPARATUS FOR DISPENSING TICKETS

Michael C. Brown, Kilsyth, Australia, assignor to Lottery Enterprises, Inc., San Diego, Calif.

Continuation of Ser. No. 828,676, Jan. 31, 1992, abandoned. This application Apr. 16, 1993, Ser. No. 49,635

Int. Cl.[5] B65H *1/00*

U.S. Cl. 221—197 **12 Claims**



1. A dispenser device for dispensing articles comprising cards or tickets of intrinsic value, said device comprising, in combination, a housing, a frame in said housing, at least one dispensing mechanism mounted on said frame, a plurality of guideways, each for one of a plurality of elongated article-holding chutes and each guiding one of said chutes into a dispensing position with relation to said dispensing mechanism, and a holding device responsive to insertion of one of said chutes into one of said guideways for holding said chute in said dispensing position, in which said dispensing mechanism includes a drive member for sliding one of said articles from the bottom of each of a plurality of stacks in said chutes, and a barrier device defining a relatively narrow exit gap in the path of travel of said article to limit the number of articles dispensed, whereby said chutes can be readily inserted and removed for replenishing said articles.

5,341,956

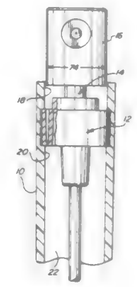
METHOD FOR ASSEMBLING A DISPENSING CONTAINER

Owen F. Van Brocklin, Bristol, Conn., assignor to Risdon Corporation, Naugatuck, Conn.

Continuation of Ser. No. 972,164, Nov. 5, 1992, Pat. No. 5,277,340. This application Dec. 16, 1993, Ser. No. 168,854

Int. Cl.[5] B67B *7/00*

U.S. Cl. 222—1 **3 Claims**



1. A method for the assembly of a dispensing pump and container of the type having a reservoir including an opening, said reservoir including a tubular passage between the opening and a liquid storage area inside the reservoir, a pump mechanism for pumping liquid from the reservoir, an actuator button having a diameter slightly less than the diameter of the opening, and a means for sealing the pump with respect to the reservoir, the method comprising:

forming the reservoir in a single integral part having an exterior surface being smooth and unbroken;

assembling the actuator, the pump mechanism and the sealing means into a subassembly; and

inserting the subassembly into to the opening a predetermined distance to locate said sealing means and said pump completely internal of said actuator button and reservoir wherein only the actuator button and the reservoir are visible external to said dispensing pump and container.

5,341,957

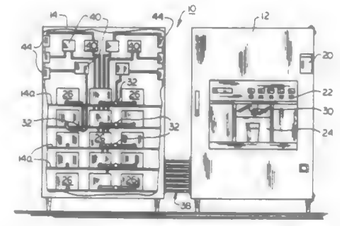
CUP-TYPE VENDING SYSTEM AND METHOD FOR DISPENSING BEVERAGES

Sean S. Sizemore, 1509 Salem Lake Rd., Winston-Salem, N.C. 27107

Filed Jan. 8, 1993, Ser. No. 2,268

Int. Cl.[5] B67D *5/10*

U.S. Cl. 222—2 **9 Claims**



1. A beverage vending system for successively outputting beverages into cups comprising:

a) a vending machine having a currency input device and for automatically mixing and outputting a beverage into a cup in response to an operator's payment and selection of a beverage;

b) a disposable container of beverage syrup connected to a supply conduit for continuously supplying syrup to the vending machine, said container being of a type that include both syrup and air;

c) a dispensing system for drawing syrup from the disposable container and selectively dispensing a pre-defined amount of syrup through an output nozzle and into said cup, the dispensing system including:

1) a first pumping stage including a first pump for drawing the syrup from the disposable container and pumping the syrup downstream through a feed conduit under pressure towards the output nozzle,

2) a vent valve disposed in said feed conduit for removing air as the syrup moves through the feed conduit;

3) a second pumping stage disposed downstream of the first pumping stage and before the output nozzle, and the second pumping stage including a second pump for drawing a selected amount of syrup from said feed conduit and then discharging the selected amount through the output nozzle and into a cup.

5,341,958

POWER OPERATED CAULKING TOOL

John J. Bayat, and Daniel J. Bayat, both of 3501 Cashill Blvd., Reno, Nev. 89509

Filed Dec. 24, 1992, Ser. No. 996,758

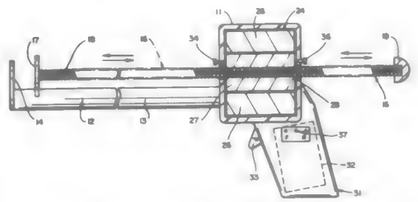
Int. Cl.[5] B67D *5/08*

U.S. Cl. 222—63 **8 Claims**

1. A caulking tool for use with a tube of material having an elongated body with a nozzle at one end thereof and an axially

VOL 1165 ISS 5 AUG 30 1994 UMI

movable piston-like member for driving the material through the nozzle, comprising a cradle-like holder for holding the body of the tube in a predetermined position, an elongated threaded shaft movable axially of the holder, means constraining the shaft against rotation relative to the holder, a housing affixed to the holder, with the shaft passing through the housing, power operated drive means engaged with the shaft within



the housing for advancing the shaft axially of the holder to drive the piston-like member in a forward direction toward the nozzle to expel the material from the tube, means responsive to movement of the shaft to a predetermined position in the forward direction for conditioning the drive means to reverse the direction of shaft travel, and means responsive to movement of the shaft to a predetermined position in the reverse direction for deenergizing the drive means.

5,341,959

BAG EMPTYING ARRANGEMENT

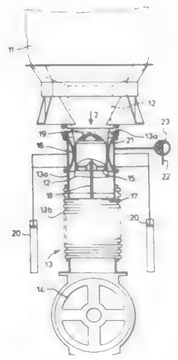
Peter J. Ellis, Salford, Great Britain, assignor to Bagfilla Overseas Limited, Derbyshire, England

Filed Jun. 28, 1993, Ser. No. 82,795

Claims priority, application United Kingdom, Jul. 1, 1992, 9214015

Int. Cl.[5] B65D *33/00*

U.S. Cl. 222—105 **7 Claims**



1. Apparatus for emptying a bag containing dry bulk material and having a lowermost spout comprising

a) a downwardly extending tube having an upper end portion into which the spout is insertable,

b) a valve at a lower end portion of the tube for controlling material flow therethrough,

c) a spider within the tube lower end portion,

d) a rod extending upwardly from the spider,

e) an inner annulus on the rod within and spaced from the tube upper end portion to be within the spout inserted in the tube upper end portion, and

f) pinch means within the tube upper end portion for selectively pinching the spout against the annulus to seal the spout to the tube.

5,341,960

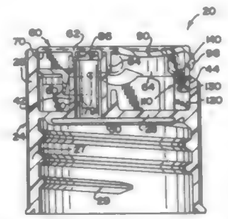
TOGGLE-ACTION DISPENSING CLOSURE WITH CAPTURE STRUCTURE FOR SEVERABLE ACTUATION-PREVENTION ABUTMENT

Dieter Lay, Oconomowoc, Wis., assignor to AptarGroup, Inc., Crystal Lake, Ill.

Filed Dec. 17, 1993, Ser. No. 169,514

Int. Cl.[5] B67D *5/32*

U.S. Cl. 222—153 **12 Claims**



7. In a toggle-action dispensing closure for an opening to a container wherein said closure includes:

a body for engaging said container over said opening and defining a discharge aperture communicating with said opening; and

an actuator pivotally mounted on said body for occluding flow from said container through said discharge aperture when said actuator is in a closed non-dispensing position and for permitting flow from said container when force is applied to said actuator to tilt said actuator to an open dispensing position, said body having a severable abutment under said actuator but disengaged from said actuator when said actuator is in said non-dispensing position, and said actuator having a shearing wall located adjacent the periphery of the actuator for confronting said abutment when said actuator is in said non-dispensing position to prevent tilting of said actuator to said dispensing position in response to said actuator being subjected to a force less than a predetermined force, but said shearing wall shearing said abutment from said body when said actuator is subjected to at least said predetermined force so that thereafter said actuator can be tilted to said dispensing position in response to the application of force less than said predetermined force, the improvement comprising:

a pair of spaced-apart depending walls extending below said actuator and defining a pair of spaced-apart retaining surfaces for sliding into engagement with said abutment when said actuator is subjected to at least said predetermined force to tilt the actuator to the open dispensing position and shear off said abutment whereby by the sheared off abutment is gripped between said retaining surfaces.

5,341,961

COFFEE DISPENSER WITH AGITATOR

Leonard P. Haussam, 6801 50th Ave. N., Crystal, Minn. 55428

Filed Dec. 11, 1991, Ser. No. 879,752

Int. Cl.[5] G01F *11/00*

U.S. Cl. 222—217 **5 Claims**

1. A ground coffee dispenser comprising

a hopper for storing a supply of ground coffee to be dispensed,

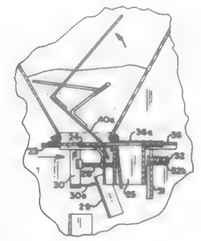
said hopper having a bottom discharge opening with side walls sloping downwardly to the discharge opening,

an agitator pivotally mounted in the hopper and having a spring-loaded arm portion swinging downwardly through

the said discharge opening during the discharge of coffee therethrough, and including a spring to urge the arm portion downwardly,

a slide closure plate having an open discharging position and a closed position for normally closing the discharge opening to support the lower end of the spring-loaded agitator arm portion riding on the top surface of the plate when the same is in closed position,

a batch measuring compartment aligned with the hopper discharge opening to receive a measured batch of coffee therethrough and having a discharge trap door at the



bottom thereof for closing the compartment when the closure plate is in said open position, but swinging down into open dumping position when the slide closure plate is moved into said closed position,

means for activating said closure plate to slide the same into said open position for discharging material through said opening and associated with said agitator to permit the spring to oscillate the arm portion downwardly into the opening whenever the closure plate is shifted from said closed position to said open position to agitate the coffee and ensure the free flowing action of the coffee through the opening when the closure plate is in said open position.

5,341,962

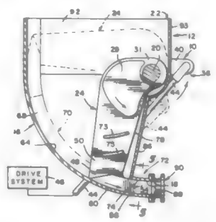
SWING ARM FEEDER

Peter F. Way, Topsfield, Mass., and William L. Petitjean, Fall City, Wash., assignors to Cadence Environmental Energy, Inc., Michigan City, Ind.

Filed Feb. 17, 1993, Ser. No. 18,894

Int. Cl.[5] G01F *11/24*

U.S. Cl. 222—248 **26 Claims**



1. A feeder for discharging a load of material to a place outside the feeder, the feeder comprising

hopper means for holding a supply of material, the hopper means being formed to include an interior region containing the supply of material and a discharge outlet, the hopper means further including an inclined trough located in a bottom portion of the interior region, the inclined trough being formed to include a curved material-receiving channel having a curved floor and communicating with the interior region of the hopper and the discharge outlet of the hopper,

a ram movable in the curved material-receiving channel and on the curved floor between a raised position away from the discharge outlet and a lowered position adjacent to the discharge outlet, and

means for moving the ram on the curved floor from its raised position to its lowered position to discharge a load of material lying in the curved material-receiving channel out of the hopper through the discharge outlet to a place outside the feeder, the moving means including a swing are positioned in the interior region and coupled to the ram and means for pivoting the swing arm in the interior region about a pivot axis to move the ram in the curved material-receiving channel and on the curved floor between the raised and lowered positions, the curved floor having a center of curvature and being curved and oriented to position the center of curvature on the pivot axis of the pivoting means.

5,341,963

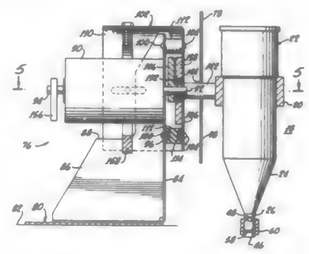
APPARATUS FOR DISPENSING DRY PARTICLES

Steven C. Mott, and Craig A. Wright, both of San Diego, Calif., assignors to Horiba Instruments, Inc., Irvine, Calif.

Filed Jan. 27, 1993, Ser. No. 9,887

Int. Cl.[5] B67D *5/64*

U.S. Cl. 222—287 **10 Claims**



1. Apparatus for dispensing particulates comprising:

sample cup means for defining a sample chamber into which a bulk sample of said particulates is receivable;

said sample cup means also defining at least one window having an upper and a lower edge and opening outwardly of the sample cup chamber;

means defining a ledge extending substantially horizontally outwardly of the window and ending at a drop-off edge; and

means for selectively vertically moving and retaining said means defining a ledge intermediate the window edges so that particulates may repose on the ledge;

whereby, in the absence of vibration the particulates lay on the ledge with an angle of repose characteristic of the particulate bulk, and when vibration is applied to the apparatus, particulates drizzle over the drop-off edge of the ledge means.

5,341,964

CARTRIDGE BIAS ASSEMBLY FOR DISPENSING DEVICE

Gary E. Medved, Lyndhurst, Ohio, assignor to Milbar Corporation, Chagrin Falls, Ohio

Filed Aug. 12, 1993, Ser. No. 105,389

Int. Cl.[5] G01F *11/00*

U.S. Cl. 222—327 **11 Claims**

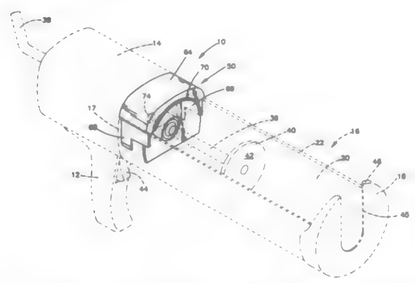
1. A dispensing device, comprising:

a frame configured to receive and support a cartridge containing a viscous product, said frame including a front yoke configured and positioned to receive and align a nozzle at one end of the cartridge, and sidewalls defining an aperture configured and positioned to receive the cartridge and support a body of the cartridge,

VOL 1165 ISS 5 AG 30 1994 UMI

a cartridge biasing assembly integral with said frame configured and positioned to bias the cartridge toward the front yoke of said frame,

said cartridge biasing plate including a biasing plate configured and positioned to engage another end of said cartridge and urge the other end of the cartridge forwardly toward the front yoke of the frame,



said biasing plate including a flange extending outwardly around at least a portion of the periphery of said plate, said flange being configured and positioned to surround a portion of the rear end of the cartridge and prevent the cartridge end from raising up in the frame,

a plunger having a plunger shaft and plunger plate for dispensing the viscous product from the cartridge, and

a drive assembly including a handle and a trigger for advancing said plunger.

5,341,965

PLASTIC SPRING ASSEMBLY FOR TRIGGER SPRAYER

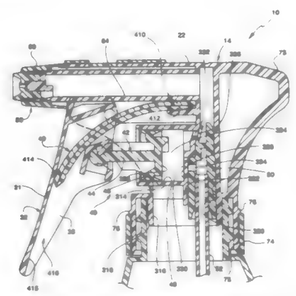
Wilhelmus J. J. Maas, and Petrus L. W. Hurkmans, both of Someren, Netherlands, assignors to AFA Products, Forest City, N.C.

Continuation of Ser. No. 840,766, Feb. 24, 1992, Pat. No. 5,228,602. This application Jul. 14, 1993, Ser. No. 91,994

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] B67D *5/00*

U.S. Cl. 222—340 **5 Claims**



1. A trigger operated pumping mechanism for a fluid dispensing device, said pumping mechanism comprising:

a body extending rearwardly from a discharge end of the fluid dispensing device toward a hand gripping formation of the fluid dispensing device;

said body having a hollow cylinder therein extending to a rear wall;

a piston received in said cylinder;

a trigger movably mounted to said body and having a front side and a back side, and being coupled to said piston; and

biasing means for biasing said trigger away from said body to bias said piston coupled to said trigger out of said cylinder, said biasing means including non-metal, noncoiled, elongate spring means having opposite ends and being positioned between said body and said trigger; and,

said spring means extending rearwardly from said trigger toward the hand gripping formation and having one end of said spring means positioned adjacent to and acting against said trigger the said other end of said spring means being positioned rearwardly of said trigger adjacent said body at a location which is closer to said rear wall of said cylinder than to said trigger.

5,341,966

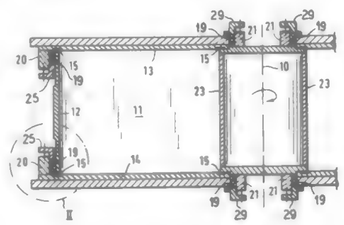
CELLULAR WHEEL SLUICE FOR PRESSURE VESSELS

Wilhelm Blankmeiser, Essen, and Peter Spuerck, Bruehl, both of Fed. Rep. of Germany, assignors to Kloeckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Dec. 10, 1992, Ser. No. 988,978

Int. Cl.[5] G01F *11/00*

U.S. Cl. 222—370 **11 Claims**



1. A cellular rotary sluice for discharging material from a pressure vessel while reducing pressure with the sluice comprising in combination:

a cell housing rotatable about a vertical axis and having partially opened cells;

top and bottom sealing plates covering cells in the housing and arranged for providing a material admission opening in the top plate and a material discharge opening in the bottom plate offset from the admission opening;

a vertical inner edge member of the housing in sealing relationship at an upper edge and at a lower edge with the top plate and the bottom plate at an inner edge of the plates;

an outer vertical edge member of the housing in sealing relationship at an upper and a lower edge with the top and bottom plates at an outer edge thereof;

an inner ring at the inner edge of the top plate and at the inner edge of the bottom plate;

an outer ring at the outer edge of the top plate and at the outer edge of the bottom plate;

a first inner seal element between said inner ring and said top plate;

a second inner seal element between said inner ring and said bottom plate;

a first outer seal element between said outer ring and said vertical outer edge member adjacent said top plate;

and a second outer seal element between said outer ring and said vertical outer edge member adjacent said bottom plate so that relative rotation can occur between the plates and vertical edge members preventing the escape of material from the housing between the plates and the vertical edge members.

5,341,967

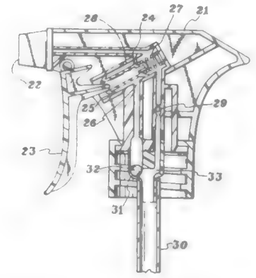
TRIGGER SPRAYER FOR UPRIGHT OR INVERTED DISPENSING WITHOUT LEAKAGE

Scott A. Silvenis, Midland, Mich., assignor to Dowbrands Inc., Indianapolis, Ind.

Filed May 26, 1993, Ser. No. 67,762

Int. Cl.[5] B67D *5/40*

U.S. Cl. 222—376 **3 Claims**



1. A trigger sprayer dispenser having a capacity to operate upright or inverted without leaking comprising a by pass chamber having an upper portion and lower portion when the sprayer is in an upright position which comprises; (i) a sprayer vent orifice in the upper portion of the chamber in communication with a sprayer vent, (ii) a flow check means which will freely move with gravity from the lower portion of the chamber when the dispenser is in an upright position to the upper portion of the chamber when the dispenser is in an inverted position, (iii) a by pass orifice in communication with the dip tube at the lower portion of the by pass chamber and (iv) a dispenser by pass orifice in communication with the dispenser and the by pass chamber, in the lower portion of the chamber just above the flow check means when the dispenser is in the upright position, wherein said flow check means seals against said sprayer vent orifice when said trigger sprayer dispenser is inverted to prevent leakage of fluid through the sprayer vent.

5,341,968

SPRAY CAN INCORPORATING A DISCHARGE PRESSURE REGULATING SYSTEM

Alfons Vandoninck, Deurne, Belgium, assignor to Belgium Spray Accessory Factory, Opglabbeek, Belgium

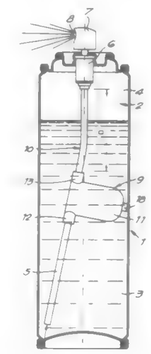
Filed Aug. 29, 1993, Ser. No. 108,797

Claims priority, application Belgium, Aug. 19, 1992, 09200727

Int. Cl.[5] B65D *83/32, 83/70*

U.S. Cl. 222—396 **10 Claims**

1. A spray can comprising a reservoir for storing a dispensable medium, a riser pipe having a first, open end extending into the reservoir, a first valve connected to a second end of the riser pipe and a pressure regulator interposed between the first and second ends of said riser pipe for maintaining the



pressure of a medium within a portion of said riser pipe between said pressure regulator and said first valve constant.

5,341,969

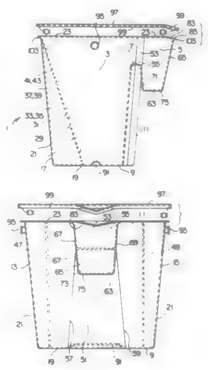
CONTAINER ACCOMMODATING PAINT, ROLLER AND BRUSH AND LID THEREFOR

Carl A. Accardo, Mauston, Wis., and Kenneth J. Marks, Lake Bluff, Ill., assignors to Accamark Partnership, McHenry, Ill.

Continuation of Ser. No. 5,813, Jan. 19, 1993, abandoned. This application Sep. 2, 1993, Ser. No. 115,108

Int. Cl.[5] A47G *19/14*

U.S. Cl. 222—465.1 **37 Claims**



1. A container comprising:

(A)a first open receptacle comprising:

(1) a first bottom wall,

(2) a first front wall,

(3) two first side walls,

(4) a first rear wall,

each of said first front wall, first side walls and first rear wall fixedly attached at its lower edge to an edge of said first bottom wall and at its side edges to a side edge of an adjacent first wall to form said first open receptacle for holding a quantity of liquid;

said first rear wall (A) (4) forming an upper edge continuous with and perpendicular to the upper edge of each first side wall and with said upper edge in a plane parallel to the

VOL 1165 ISS 5 AG 30 1994 UMI

plane of said first bottom wall, said first rear wall comprising:

(a) two quadrilateral, support panels of equal size, one of said support panels adjoining each first side wall;

(b) a central, quadrilateral panel, of sufficient width to accommodate the roller of a paint roller, the edge of said panel adjoining said first bottom wall sufficiently inset from the continuous upper edge of said first rear wall to form an incline between the edge adjoining said first bottom wall and said upper edge; and

(c) two triangular support panels, each adjacent to said quadrilateral support panels with a side edge of each fixedly attached to an adjoining edge of a quadrilateral support panel and an edge fixedly attached to an edge of said central, quadrilateral panel;

said first front wall (A) (2) forming an upper edge continuous with the upper edge of the adjacent first side wall and with said upper edge in a plane parallel to the plane of said first bottom wall and forming, inside said first open receptacle, an obtuse angle with the upper edge of the adjacent first side wall, said first front wall comprising:

(a) two quadrilateral, support panels of equal size, one of said support panels adjoining each first side wall forming an obtuse angle therewith, inside said first open receptacle;

(b) a central, quadrilateral panel the edge of which adjoining said first bottom wall is parallel to the bottom edge of said central, quadrilateral panel of said first rear wall and inset from a plane that includes the edges at which said support panels adjoin said first front wall, said central, quadrilateral panel sized so that an opening is formed between its upper edge and the plane containing the upper edges of said first side walls; and

(c) two transition moldings, each transition molding joining an edge of said central, quadrilateral panel to an edge of a quadrilateral, support panel and each transition molding sized along with the upper edge of said central, quadrilateral panel, to form;

(B) a continuous, transition panel, said continuous, transition panel in a plane parallel to said first bottom wall and sized to close the inset area formed between said transition moldings at their upper edge,

(C) a second open receptacle comprising:

(1) a second bottom wall,

(2) a second front wall,

(3) two second side walls,

(4) a second rear wall,

each of said second front wall, second side walls and second rear wall fixedly attached at its lower edge to an edge of said second bottom wall and at its side edges to a side edge of an adjacent second wall to form said second open receptacle,

said second rear wall (C) (4) fixedly attached to an edge of said continuous, transition panel and sized so that said second open receptacle has sufficient depth to retain a quantity of liquid;

said second side walls (C) (3), each forming an upper edge continuous with the upper edge of the adjacent quadrilateral, support panel of said first open receptacle and with said upper edge in a plane parallel to the plane of said first bottom wall, said second side walls sized to mate in fixed attachment with said second front wall, said second rear wall and said second bottom wall;

said second bottom wall (C) (1) in a plane parallel to the plane of said first bottom wall; and

said second front wall (C) (2) comprising a quadrilateral panel molded in fixed attachment at one edge with said second bottom wall and at the edges adjacent thereto in fixed attachment with said second side walls with the remaining edge forming an equal, obtuse angle with the upper edge of each of said side walls inside said second open receptacle thereby forming a spout for pouring.

5,341,970

ACOUSTIC CEILING PATCH SPRAY

John R. Woods, 22647 Ventura Blvd., Suite 307, Woodland Hills, Calif. 91365

Filed Feb. 19, 1993, Ser. No. 19,419

Int. Cl.[5] B65D *83/00*

U.S. Cl. 222—394 **1 Claim**

1. In a dispensing means for applying a hardenable flowable liquid to the surface of a patch surrounded by an acoustic ceiling material having an irregular surface texture comprising the combination of:

a hand-held, fluid-tight container having a quantity of hardenable substance intended to be dispensed;

means having a finger-operated discharge nozzle carried on said container for selectively releasing said hardenable substance in the form of a spray;

said hardenable substance comprising a mixture of a base substance, a filler substance, an adhesive binder, an aggregate and a pressurized carrier of compressed gaseous characteristics;

said hardenable fluid further characterized as having a bumpy, irregular surface texture after curing that is matched with and compatible with the surrounding acoustic ceiling material;

said base substance is chosen from the group selected from water, solvent or water combined with an alcohol solvent and said carrier is an aerosol;

said binder is chosen from a natural polymer;

said filler is chosen from clay, silica or limestone; and

said aggregate is chosen from the group consisting of:

a. a closed cell polystyrene foam

b. cork

c. perlite.

5,341,971

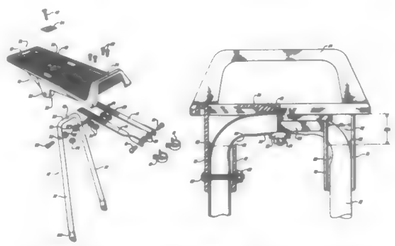
COMPOSITE BICYCLE RACK

Dixon Newbold, Glocester, R.I., and Ian Gilley, West Boylston, Mass., assignors to Bell Sports, Inc., Providence, R.I.

Continuation of Ser. No. 713,741, Jun. 11, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 95,037

Int. Cl.[5] B62J *7/00*

U.S. Cl. 224—39 **58 Claims**



1. A bicycle rack for attachment to a bicycle having a bicycle frame, the rack adapted to be supported substantially above a wheel of the bicycle in a use position, comprising:

a rack shelf defining a platform and having at least one leg channel extending downwardly from the platform, said leg channel being defined by a side wall extending along a length of the platform and a front wall extending from said side wall at least partially across a width of the platform; and

a substantially U-shaped support member detachably locked to the rack shelf, the support member having two support legs connected by a center beam, whereby the center beam engages a bottom surface of the platform and the support legs engage at least one of said walls defining the leg channel.

5,341,972

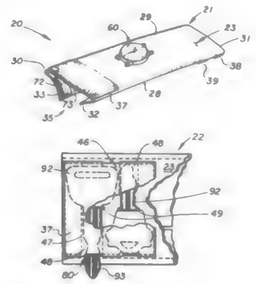
WRIST WATCH WALLET

R. Benton Jacks, P.O. Box 69445, Seattle, Wash. 98168

Filed Aug. 12, 1993, Ser. No. 106,398

Int. Cl.[5] A45C *15/08*

U.S. Cl. 224—165 **12 Claims**



1. A wrist watch wallet, comprising:

a. an elongated main band made of flexible material, said main band having a front panel with an outside surface and an inside surface, said main band having a first end and an opposite second end, said second end being closed to form a full-length main pocket inside said main band, said main band having a top rear flap and a bottom rear flap which converge to form a full-length longitudinally aligned opening into said main pocket, said first end of said main band being unattached thereby creating a transversely aligned opening into said main pocket;

b. a pair of primary hook and loop connector pads disposed on opposite sides of said main band near said first and second ends of said main band, each said connector pad having an upper and lower edge, said pair of primary hook and loop connector pads being capable of interconnecting when said main band is wrapped around a wrist of a user;

c. a timepiece attached to the front panel of said main band with a timepiece attachment means, said timepiece having a body with opposite pairs of lugs located thereon, and;

d. a rigid insert member disposed inside said main band along said second end, said insert member being capable of improving interconnection between said primary hook and loop connector pads.

5,341,973

ANATOMIC LOW PROFILE PACK SYSTEM WITH QUICK RELEASE FIRE SHELTER

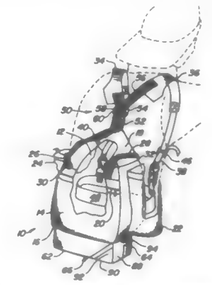
Kerry G. Dawes, and Robert J. Early, both of Palo Cedro, Calif., assignors to Eagle Gear, Redding, Calif.

Division of Ser. No. 801,756, Dec. 3, 1991, abandoned. This application Apr. 2, 1993, Ser. No. 41,945

Int. Cl.[5] B65D *83/00*; **B65G** *59/00*

U.S. Cl. 224—196 **8 Claims**

1. In a pack system having a backpack and means for mounting said backpack on a wearer, wherein the improvement comprises a pouch adapted for containing a separate structure to be deployed, said pouch being mounted on said backpack and including a discharge opening therein, closure means for selectively closing said opening and release means for opening said closure means and ejecting said separate structure from said discharge opening.



5,341,974

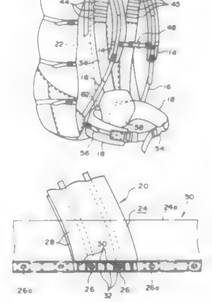
BACK BAG

Doug Robinson, Aptos, Calif., and Isamu Tatsuno, Osaka, Japan, assignors to Mont-Bell Co., Ltd., Osaka, Japan

Filed Jun. 19, 1992, Ser. No. 901,096

Int. Cl.[5] A45F *3/04*

U.S. Cl. 224—215 **6 Claims**



1. A back bag comprising:

a bag portion;

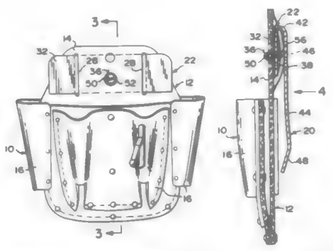
a pair of shoulder straps provided on a body-contact side of said bag portion and adapted to be hung from the user's shoulders; and

a hip belt extending from a lower portion of the body-contact side of said bag portion to surround the user's hip bone, said hip belt comprising a left belt and a right belt connected by connecting means for adjusting an angle at which said right and left belts are connected and for adjusting the length of said hip belt, whereby said hip belt is adjustable in conformity with the geometry of the user's hip bone, and wherein said hip belt is plastically deformable at least in the widthwise direction thereof in conformity with the geometry of the user's hip bone by application of a force falling within a predetermined range, said hip belt having a thin board frame body made of a synthetic resin, wherein said frame body includes at least one bore extending through said frame body in the widthwise

VOL 1165 ISS 5 AG 30 1994 UMI

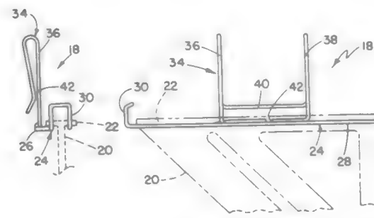
direction thereof, and a soft metallic member is received in said bore.

5,341,975
COMBINATION TOOL POUCH AND CLIP ASSEMBLY
Ilie Marineacu, 25-29 32nd St., Apt. 2B, Astoria, N.Y. 11102
Filed May 24, 1993, Ser. No. 65,483
Int. Cl.[5] F41C *33/02*; **A45F** *3/04*
U.S. Cl. 224—252 **3 Claims**



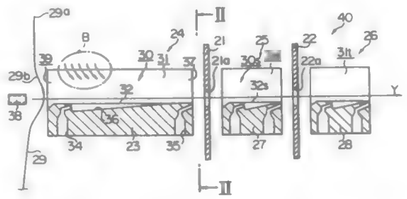
1. A combination tool pouch and clip assembly which comprises:
a) a tool pouch having a rear wall with an upper portion of said rear wall extending above a plurality of pockets which hold various tools therein;
b) a clip assembly; and
c) means for retaining said clip assembly behind said upper portion of said rear wall, so that said clip assembly can be quickly placed upon and removed from a waist belt and locations on a garment worn by a person using said tool pouch, wherein said retaining means includes:
i) said upper portion of said rear wall having a pair of spaced apart vertically extending belt slots and a central aperture between said belt slots;
ii) a slightly curved rectangular plate having a central aperture, whereby said plate can be inserted through said belt slots, with said central aperture in said plate in alignment behind said central aperture in said upper portion of said rear wall; and
iii) means for fastening said clip assembly behind said plate via said central aperture in said upper portion of said rear wall and said central aperture in said plate.

5,341,976
SPEED SQUARE HOLDER
Donald C. Rider, P.O. Box 702, Breckenridge, Colo. 80424
Filed May 26, 1992, Ser. No. 889,068
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—269 **19 Claims**



1. A holder for suspending a carpenter's triangular speed square from a belt, said speed square having a flange on an edge thereof, said holder comprising:
support means including an elongated, rectangular slot having opposed short ends and an open upper portion extending the length thereof for receiving the speed square and engaging the speed square's flange;
retaining means disposed on each of the opposed short ends of the slot in said support means for engaging the opposed ends of the speed square's edge flange when the speed square and holder are positioned in an inclined orientation to prevent separation of the speed square from the holder; and
attachment means coupled to said support means for suspending the holder and speed square from a belt, wherein said support means, said retaining means and said attachment means form an integral structure comprised of a single piece of a thin, wire-like elongated member.

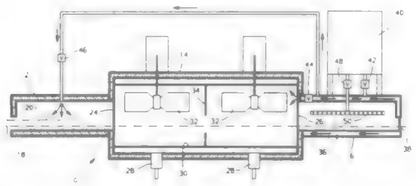
5,341,977
YARN DRAWING-IN NOZZLE
Yoshihide Nishimura, Ehime, Japan, assignor to Teijin Seiki Company Limited, Osaka, Japan
Continuation of Ser. No. 639,736, Jan. 10, 1991, abandoned, which is a continuation of Ser. No. 340,039, Apr. 18, 1989, abandoned. This application Feb. 8, 1993, Ser. No. 14,557
Claims priority, application Japan, Aug. 17, 1988, 63-205061
Int. Cl.[5] D01H *5/28*
U.S. Cl. 226—97 **18 Claims**



1. A yarn drawing-in nozzle for drawing a yarn through an eye of a drawn-through member, comprising:
an insertion nozzle provided on an upstream side of said drawn-through member and injecting first compressed air along a yarn-drawing direction; and
a compression nozzle provided between said insertion nozzle and said drawn-through member and having a block, the block being formed with a guide passage to which said first compressed air is injected and into which said yarn with its distal end is inserted and through which said yarn is drawn through said eye with the aid of said first compressed air injected along said yarn-drawing direction, the block being further formed with an injection nozzle open into said guide passage at a predetermined angle with respect to said yarn-drawing direction for injecting second compressed air to said guide passage at said predetermined angle to provide a forwarding action on said yarn in said guide passage.

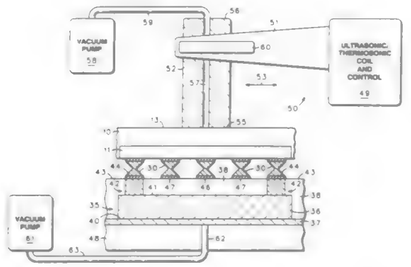
5,341,978
BRAZE FURNACE WITH IMPROVED INERT GAS SYSTEM
Gary A. Halstead, and Brian L. Barten, both of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 16, 1993, Ser. No. 106,897
Int. Cl.[5] B23K *3/00*
U.S. Cl. 228—42 **3 Claims**

1. A braze furnace for brazing workpieces in a controlled inert gas environment of the type having an aligned series of chambers, comprising,
a braze chamber within which workpieces are received and heated to a suitable brazing temperature,
a final cooling chamber within which heated workpieces are received from said braze chamber having walls providing a hollow plenum that is heated by heat emitted from said workpieces to a temperature above the vaporization temperature of said inert gas,
a stored source of inert gas stored in cooled liquid form,
first valve means to meter liquid inert gas from said stored source into said plenum to vaporize it to gaseous form and to cool said cooling chamber, and,



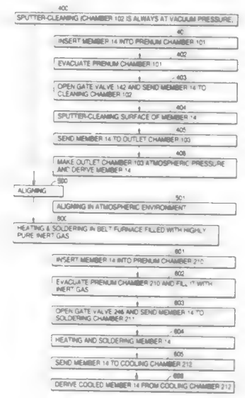
second valve means to meter inert gas in vaporized form from said plenum into said braze chamber,
whereby, heated workpieces are cooled by said inert gas at the same time that liquid inert gas is vaporized by said heated workpieces.

5,341,979
METHOD OF BONDING A SEMICONDUCTOR SUBSTRATE TO A SUPPORT SUBSTRATE AND STRUCTURE THEREFORE
Debabrata Gupta, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 3, 1993, Ser. No. 115,616
Int. Cl.[5] H01L *21/607*
U.S. Cl. 228—111 **15 Claims**



1. A method of bonding a semiconductor substrate to a support substrate, comprising the steps of: providing the support substrate, wherein the support substrate has a first principal surface and at least one contact structure on the first principal surface;
providing the semiconductor substrate, wherein the semiconductor substrate has a first major surface, a second major surface, and at least one bonding pad on the first major surface, the at least one bonding pad corresponding to the at least one contact structure; covering the at least one bonding pad and a portion of the first major surface with a first layer of photoresist;
forming an opening in the first layer of photoresist, wherein the opening has a mouth and exposes the at least one bonding pad; narrowing the mouth of the opening;
coating the first layer of photoresist with a second layer of photoresist, wherein coating the first layer of photoresist fills the narrowed mouth of the opening;
re-opening the opening, wherein the reopened opening has an hourglass shape;
filling the hourglass shaped opening with an electrically conductive material;
removing the first and the second layers of photoresist, wherein an hourglass shaped bump is formed on the at least one bonding pad; and
bonding the electrically conductive material filling the hourglass shaped opening to the at least one contact structure.

5,341,980
METHOD OF FABRICATING ELECTRONIC CIRCUIT DEVICE AND APPARATUS FOR PERFORMING THE SAME METHOD
Toru Nishikawa, Fujisawa; Ryobei Satoh, Yokohama; Masahide Harada, Fujisawa; Tetsuya Hayashida, Tokyo, and Mitugu Shirai, Hatano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 656,465, Feb. 19, 1991, abandoned. This application May 29, 1992, Ser. No. 890,255
Claims priority, application Japan, Feb. 19, 1990, 2-36033
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—205 **34 Claims**



23. A fluxless bonding method for bonding connecting members of an integrated circuit, comprising the steps of:
removing at least one of oxide film and contamination film on at least one of said connecting members and a solder material;
aligning said connecting members is an oxidizing atmosphere; and
heating said solder material in a non-oxidizing atmosphere to melt it.

5,341,981
USE OF A CADMIUM-FREE SILVER ALLOY AS BRAZING SOLDER (III)
Wolfgang Weise, Frankfurt am Main; Alexander Voelcker, Rodenbach; Dieter Kaufmann, Birstein-Kirchbracht; Willi Malikowski, Aschaffenburg; Joerg Beuers, Gelnhausen, and Harald Krappitz, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Sep. 1, 1993, Ser. No. 114,615
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1992, 4229189; May 7, 1993, 4315188
Int. Cl.[5] B23K *35/30*
U.S. Cl. 228—262.9 **12 Claims**

1. A cadmium-free silver alloy brazing solder comprising 45 to 80 wt. % silver, 5 to 13 wt. % copper, 10 to 25 wt. % gallium, and 8 to 20 wt. % zinc.

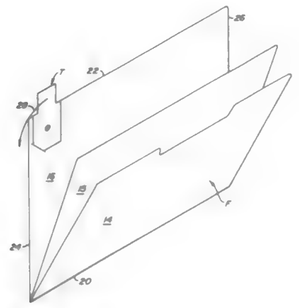
VOL 1165 ISS 5 AG 30 1994 UMI

5,341,982

FILE FOLDER HAVING HORIZONTAL AND VERTICAL STOWAGE

Charles S. Syers, Box 1879 St. Matthew St., San Mateo, Calif. 94401

Filed Jun. 16, 1993, Ser. No. 77,984
Int. Cl.[5] B65D 27/00; B42F 21/00
U.S. Cl. 229—1.5 R 4 Claims



1. In a file folder having:
at least front and rear file sides having first and second adjacent edges for supporting said file during storage and respective third and fourth edges respectively opposite said first and second edges;
hinge means joining said file sides along a said first edge thereof for permitting said file sides to open and close relative to one another for storing file contents between said file sides; and,
a tab positioned at an edge of said file selected from said third and fourth edges of said file;
the improvement to said tab comprising:
a tab body having an identification and content display portion, a mounting portion including a defined corner;
pivot means for mounting said mounting portion of said tab body at a corner of one of said file sides between third and fourth edges, said pivot means permitting rotation of said tab with respect to said file side and juxtaposed to said third and fourth edges to enable said content display portion to protrude selectively beyond either edge of said file selected from said third and fourth edge for the display of file identification and content information from either of said third and fourth edges; and,
at least one notch acting between said mounting portion of said tab at said defined corner and said file side for enabling said tab to be locked with respect to said at least one of said third and fourth file edge to inhibit rotation of said tab.

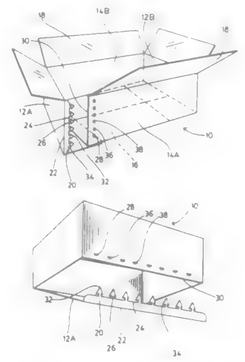
5,341,983

LOCKING JOIN FOR BOXES

Stephen E. McGrath, 64 Carl Crescent, Scarborough, Ontario, Canada

Continuation-in-part of Ser. No. 955,135, Dec. 22, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 107,573
Int. Cl.[5] B65D 5/42
U.S. Cl. 229—98.2 8 Claims

1. In a carton formed of resilient plastics material, a mechanical joint between first and second plastics material panels;
the first panel having a first edge and a first margin bordering said first edge, a plurality of aligned, spaced apart slots being provided in the margin parallel to the first edge, each the said slots each having a prechosen length;
the second panel having a second edge and having a corresponding plurality of tabs projecting from the second edge;
each one of said tabs having a neck portion and a tab head, each one of said tab heads having a leading insertion tip having a width less than said prechosen length, and said each one of said tab heads having a trailing non-return edge having a length greater than said prechosen length;



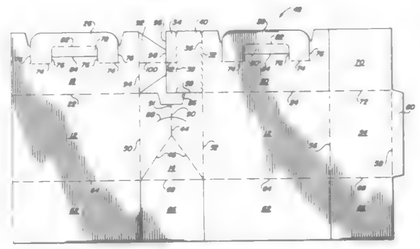
said tabs being engaged in said slots with the neck portions extending through the slots so that the tab heads lie flush with one side of the first margin and the second edge lies against another surface of the first margin.

5,341,984

CARTON WITH RECLOSABLE SIDE POUR OPENING

James C. Fogle, Marietta, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Sep. 29, 1993, Ser. No. 128,922
Int. Cl.[5] B65D 5/70
U.S. Cl. 229—215 19 Claims



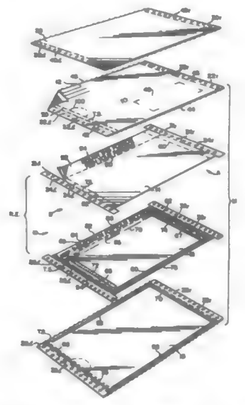
1. A carton for packaging pourable material, comprising:
side panels connected to end panels, a top panel and a bottom panel;
an opening in an upper portion of one of the end panels through which pourable material packaged in the carton may be poured;
a closure flap movable from closed position to open position, the closure flap covering the pouring opening when in closed position and being spaced from the opening when in open position;
an end flap overlying the closure flap for maintaining the closure flap in closed position until disabled; and
means for maintaining the closure flap in closed position after the closure flap has been moved from open to closed position.

5,341,985

BUSINESS FORM ASSEMBLY WITH INTEGRATED MAILER AND RETURN ENVELOPE

Michael A. Peterson, Jerome, Id., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jan. 19, 1993, Ser. No. 5,308
Int. Cl.[5] B65D 27/06
U.S. Cl. 229—305 16 Claims



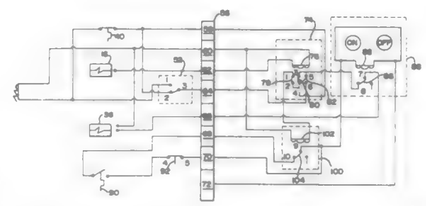
1. A multi-ply business form assembly including an integrated mailer and return envelope comprising:
generally rectilinear first, second, third and fourth plies in registration with one another, each ply having a first margin in registration with the first margins of others of said plies, said registering first margins having a plurality of registering spaced feed holes;
each of said plies having a line of marginal perforations extending adjacent the first registering margins and in registration with one another enabling removal of the registering first margins from the assembly to define a mailer having first, second, third and fourth generally orthogonally related edges, said first and third edges lying generally parallel to one another and said second and fourth edges lying generally parallel to one another;
each of said plies having a second line of perforations inset from and generally parallel to said marginal perforations, said second lines of perforations lying in registration with one another and defining a tear strip along said first edge of said mailer;
each said second and third plies having a third line of perforations inset from said third edge of said mailer and generally parallel thereto, said third line of perforations in said second and third plies lying in registration one with the other and generally parallel to said second line of perforations;
said first ply constituting a top ply of the mailer and having an address portion;
said second ply constituting one of a back or face sheet of the return envelope;
said third ply constituting another of said back or face sheet of the return envelope;
said fourth ply constituting a bottom ply of the mailer;
lines of adhesive between said second and third plies adjacent said first, second and third edges of said mailer, two of said lines of adhesive lying generally parallel to one another adjacent said first and third edges, respectively, and inset from said second and third lines of perforations, respectively;
a fold line along one of said second and third plies extending between said first and third edges of said mailer and spaced inwardly of said second and fourth edges of said mailer to define a return envelope flap between said fold line and said fourth edge, said parallel lines of adhesive extending from adjacent said second edge toward said fourth edge and terminating adjacent said fold line such that said second and third plies form the return envelope;
an adhesive carried by said flap for sealing said return envelope upon folding said flap over another of said second and third plies, said another of said second and third plies including a line of weakening extending between said first and third edges and generally in registration with said fold line or spaced between said fold line and said second edge to define a removable record stub; and
means for securing said first and fourth plies directly to one another with the second and third plies therebetween.

5,341,986

CONTROL CIRCUIT AND DEVICE FOR HUMIDIFYING AIR IN A HEATING SYSTEM

Mark A. Galba, 4501 Prescott Ave., Apartment 2-B, Lyons, Ill. 60534, and Gus N. Gallas, 8943 W. Sandra La., Hickory Hills, Ill. 60457

Filed Oct. 21, 1993, Ser. No. 140,666
Int. Cl.[5] F24F 6/00
U.S. Cl. 236—11 15 Claims



1. A control circuit for a heating and humidification system which system includes a furnace, a fan, a thermostat, and a humidistat, said control circuit including:
input means for receiving a humidity increase signal from said humidistat;
pulse means for providing a pulsed output of water in response to said humidity increase signal;
control means adapted to be connected to said input means, said pulse means, the fan, and the furnace for controlling and energizing said pulse means in response to said humidity increase signal, said control means having a unison mode operable to energize said pulse means during the energization of the furnace and fan, a by-pass mode operable to energize said pulse means and the fan during the deenergization of the furnace, and a stand-by mode operable during said by-pass mode to deenergize said pulse means and the fan and to energize the furnace.

5,341,987

TEMPERATURE CONTROL FLOW VALVE

Rand H. Ackroyd, Methuen, Mass., assignor to Watts Investment Company, Wilmington, Del.

Filed Nov. 9, 1992, Ser. No. 973,265
Int. Cl.[5] G05D 23/13
U.S. Cl. 236—12.21 21 Claims

1. A temperature control flow valve comprising
a body, said body defining a first conduit having a cold water inlet adapted for attachment to a source of cold water, a second conduit having a hot water inlet adapted for attachment to a source of hot water, at least a first mixing chamber, said first conduit having a cold water outlet for flow of cold water into said first mixing chamber, and said second conduit having a hot water outlet for flow of hot water into said first mixing chamber, and a mixed water outlet adapted for attachment to a conduit

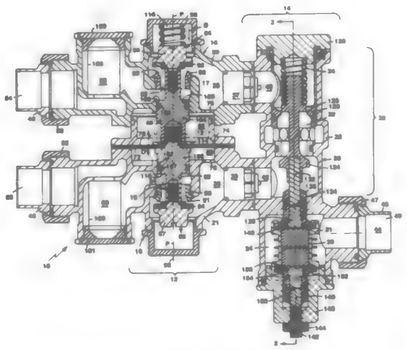
VOL 1165 ISS 5 AG 30 1994 UMI

system for delivery of mixed water to one or more points of use;

a cold water pressure regulator adapted to control the pressure of cold water flowing toward said cold water outlet, said cold water pressure regulator comprising a cold water valve element disposed for movement relative to an opposed cold water valve seat in a manner to regulate the flow of cold water through a cold water valve opening;

a hot water pressure regulator adapted to control the pressure of hot water flowing toward said hot water outlet, said hot water pressure regulator comprising a hot water valve element disposed for movement relative to an opposed hot water valve seat in a manner to regulate the flow of hot water through a hot water valve opening;

means for balancing the pressure of hot water flowing toward said hot water outlet with the pressure of cold water flowing toward said cold water outlet, said means for balancing comprising a moveable element disposed in a chamber defined by said body, a first surface of said moveable element in contact with said cold water conduit, and a second, opposite surface of said moveable element in contact with said hot water conduit, means connecting



said moveable element with said hot water valve element and with said cold water valve element, and means for biasing said cold water valve element toward said cold water valve seat, said moveable element adapted to move in reaction to variation in a ratio of pressure in said cold water conduit to pressure in said hot water conduit, movement of said moveable element resulting in movement of said hot water valve element relative to said hot water valve seat and in movement of said cold water valve element relative to said cold water valve seat;

a mixing valve assembly comprising a mixing valve element disposed in said first mixing chamber, said mixing valve element adapted for movement within said first mixing chamber in a manner to adjust the ratio of hot water and cold water flowing into said first mixing chamber; and

a thermostat element connected with said mixing valve element, said thermostat element adapted to react to change of temperature of the mixed water in a manner to adjust the position of said mixing valve element in said first mixing chamber, thereby to maintain the temperature of mixed water below a predetermined maximum temperature.

5,341,988

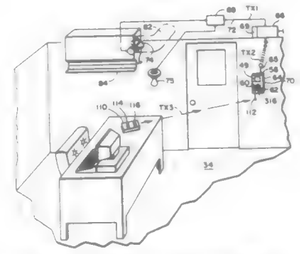
WIRELESS AIR BALANCING SYSTEM

Alan D. Rein, Shoreview, Minn., and David M. Foye, La Crosse, Wis., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 770,055, Oct. 1, 1991. This application May 27, 1993, Ser. No. 68,021

Int. Cl.[5] F24F *7/00*

U.S. Cl. 236—49.3 **13 Claims**



1. A hierarchical control system comprising:

a first central receiver;

a first communications medium operably connecting the first central receiver to at least one controller;

a controller operably connected to the first central receiver by the first communications medium;

first means for sensing conditions;

a second communication medium;

means for transmitting the sensed conditions from the first sensing means to the first central receiver via the second communications medium, the first central receiver including means for receiving transmissions on the second communications medium and means for retransmitting the transmissions on the first communications medium;

a third communications medium;

third means for sensing conditions, the third means including means for transmitting the sensed conditions on the third communications medium;

wherein the first sensing means includes means for receiving sensed conditions transmitted on the third communications medium, and means for retransmitting transmissions from the third communications medium on the second transmissions medium;

wherein the third sensing means includes means for registering indications of personal discomfort, and wherein the controller includes means for responding to the indications of personal discomfort; and

wherein responding means includes means for rebalancing a localized portion of an air distribution system.

5,341,989

ELECTROSTATIC POWDER SPRAY GUN WITH HOSE PURGE ADAPTOR

Terrence M. Fulkerson, Parma, and Robert R. Paliante, Amherst, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Feb. 16, 1993, Ser. No. 17,844

Int. Cl.[5] B05B *5/025, 15/02, 9/01*

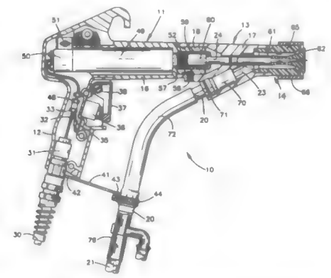
U.S. Cl. 239—3 **14 Claims**

1. A method for electrostatic powder spraying, which comprises the steps of:

attaching a hand-held electrostatic spray gun having a handle to a supply of powder using a hose line;

placing within the hose line below the handle a purge adapter connected to a supply of purge gas;

spraying objects with powder from the power supply using the gun; and



purging the hose line and the gun of accumulations of powder before the accumulations build-up.

5,341,990

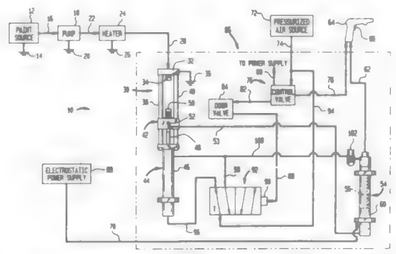
APPARATUS AND METHOD FOR DISPENSING ELECTRICALLY CONDUCTIVE COATING MATERIAL INCLUDING A PNEUMATIC/MECHANICAL CONTROL

Ronald D. Konieczynski, North Royalton, Ohio, assignor to Nordson Corporation, Westlake, Ohio

Filed Jun. 11, 1993, Ser. No. 76,302

Int. Cl.[5] B05B *5/16*

U.S. Cl. 239—3 **21 Claims**



1. Apparatus for supplying and dispensing electrically conductive coating material, comprising:

a coating dispenser having an actuator which is movable to an operating position to initiate discharge of coating material therefrom, said coating dispenser employing pressurized air in the operation thereof;

holding means for receiving coating material, and for transmitting the coating material to said coating dispenser;

voltage block means including a first coupling element movable in response to operation of a pneumatic actuator to a first position at which coating material is transmitted from a source of coating material to said holding means, and to a second position at which said holding means is electrically isolated from the source of coating material;

a high voltage electrostatic power supply means for applying an electrostatic charge to the coating material which is discharged from said coating dispenser;

a control valve, connected to a source of pressurized air, which is operative in response to movement of said coating dispenser actuator to said operating position, to:

(i) transmit pressurized air to said coating dispenser; and

(ii) transmit pressurized air to said pneumatic actuator of said voltage block means to cause said first coupling element thereof to move to said second position.

5,341,991

METHOD AND APPARATUS FOR ATOMIZING LIQUIDS

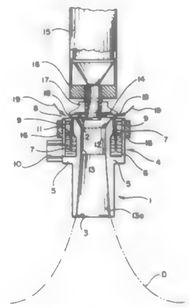
Folke C. G. Ericsson, Uppsala, Sweden, assignor to Mitab Montage & Industriteknik AB, Forsbacka, Sweden

Continuation of Ser. No. 772,364, Nov. 6, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 44,095

Claims priority, application Sweden, Sep. 7, 1987, 8703464

Int. Cl.[5] B05B *7/30*

U.S. Cl. 239—8 **17 Claims**



1. A method of atomizing a liquid, comprising the steps of:

causing a first gaseous medium to be sucked into and mixed with a flowing second gaseous medium with a mixing area by means of an ejector action; and

causing the first gaseous medium to entrain a liquid medium, said liquid medium being caused by said ejector action to be sucked, along with the first gaseous medium from outside the mixing area into the flow path of the second gaseous medium to thereby mix the liquid medium with, and atomize the liquid medium in, the first and second gaseous media within the mixing area.

5,341,992

CONTAINER

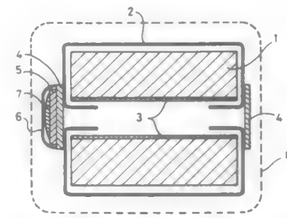
Derek A. Bishopp, Woodbridge, England, assignor to The Beautiful Bouquet Company Limited, England

Continuation-in-part of Ser. No. 678,964, Apr. 22, 1991, abandoned. This application Jul. 29, 1992, Ser. No. 922,359

Claims priority, application United Kingdom, Oct. 22, 1988, 8824799.4; Dec. 3, 1988, 8828288.4

Int. Cl.[5] A61L *9/04*

U.S. Cl. 239—34 **14 Claims**



9. A generally planar volatile material releasing means adapted selectively to release a volatile material to the environment of the means by volatilization of the volatile material, characterised in that it comprises:

a. a generally planar vapour impermeable first layer to which a fluid consisting essentially of a liquid volatile material has been applied to a selected area of one face thereof; and

VOL 1165 ISS 5 AG 30 1994 UMI

b. a vapour impermeable second layer applied directly and without an intermediate layer over at least the said selected area of the first layer and removably secured to said first layer around at least the periphery thereof so as to form with the first layer a vapour impermeable enclosure for the fluid volatile material, whereby release of the volatile material from the first layer can be achieved by removing part or all of the said second layer to expose the area of the first layer carrying the fluid volatile material directly to the environment of the article so as to allow volatilization of the volatile material.

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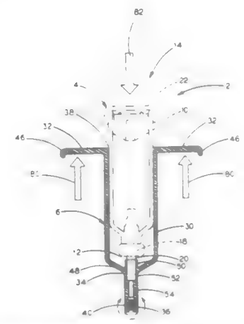
TOPICAL SPRAYER WITH REMOTELY ACTUATED SPRAY TIP

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Hills Technology Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 747,299, Aug. 19, 1991, abandoned. This application Dec. 21, 1992, Ser. No. 995,556

Int. Cl.[5] B05B *9/047*

U.S. Cl. 239—331 **3 Claims**



1. A hand held fluid spray mechanism for topical application of contained fluid medications, said spray mechanism comprising:

a spray subassembly having:

a receiving chamber for receiving and holding said fluid medication;

a top for sealing said spray subassembly for maintaining said fluid medications within said receiving chamber;

a pump mounted to said top having an inlet communicated to said receiving chamber, an outlet protruding from said top, and operative upon compression of said outlet toward said top to pump said fluid medications from said inlet to said outlet under pressure;

means for providing a free floating piston slideably in liquid tight contact with the interior of said container and capturing the fluid between the piston and the top of said container;

a spray head adapter having:

a defined receiving concavity having an opening for detachably receiving and holding said spray subassembly;

a spray tip for atomizing fluid medications discharged under pressure from said outlet of said pump; and,

an outlet mounting defining a receiving aperture for permitting said outlet of said pump of said spray subassembly to pump fluid medication through said top to discharge fluid medication under pressure;

a flow passage between said outlet mounting and said spray tip for permitting flow of said fluid medication under pressure from said spray subassembly to said spray tip for atomization of said contained fluid medications; and,

at least one finger ledge mounted adjacent said defined receiving concavity for permitting said spray subassembly to be depressed into said receiving concavity at said outlet mounting whereby said pump causes discharge to said spray tip to atomize said fluid medication.

5,341,994

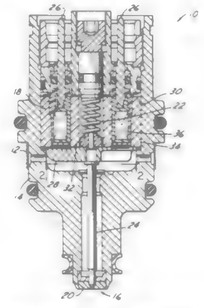
SPOKED SOLENOID ARMATURE FOR AN ELECTROMECHANICAL VALVE

Russell J. Wakeman, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Jul. 30, 1993, Ser. No. 99,755

Int. Cl.[5] F02M *51/00;* **F16K** *31/02*

U.S. Cl. 239—585.5 **7 Claims**



1. An electromechanical fuel injector having a solenoid actuating system for opening and closing a valve having a cylindrical solenoid frame member having an inner tubular member and an outer tubular member radially displaced from each other and joined together at a one end forming a closed end; coil means located in said outer tubular member surrounding said inner tubular member and extending substantially the full depth of said frame member from the open end to the closed end forming a stator member wherein each of said tubular members form outer and inner concentric pole piece members, respectively, at said open end; a valve means; elongated needle means having a valve member at one end and extending axially from said valve seat means toward said stator; and bias means located in said inner tubular member of said solenoid member to bias said elongated needle means against said valve seat; the electromechanical fuel injector comprising:

a magnetic disk means having a central aperture and substantially enclosing said coil means at said open end, said disk is connected to said outer concentric pole piece member providing a magnetic path to magnetically locate said outer concentric pole piece member adjacent to the inner diameter of said central aperture; and armature means secured to said elongated needle means at the end opposite said valve member, said armature means being a spoked member with a central hub and a concentric ring connected to said hub by means of a plurality of spokes having passageways therebetween, the axial cross section of said armature means from said hub to said ring being "J" shaped forming inner and outer working gap surfaces on said hub and said ring, respectively, with said hub surface axially displaced from said ring surface, said inner working gap surface of said hub being magnetically coupled to said inner concentric pole piece member and said outer working gap surface of said ring being magnetically coupled to said magnetically relocated outer concentric pole piece member providing dual working gaps, said armature means being magnetically attracted to said pole piece members when said coil means is actuated to axially displace said valve member from said valve seat.

5,341,995

RELOCATABLE IRRIGATOR

Alfred T. Leatch, Peak Crossing to Warrill View Rd., Harrisville QLD 4307, Australia

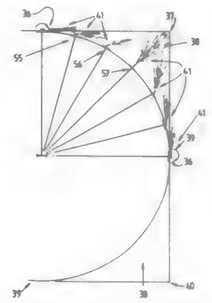
PCT No. PCT/AU91/00355, § 371 Date Feb. 10, 1993, § 102(e) Date Feb. 10, 1993, PCT Pub. No. WO92/02124, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 9, 1991, Ser. No. 969,149

Claims priority, application Australia, Aug. 10, 1990, PK1691

Int. Cl.[5] B05B *3/18*

U.S. Cl. 239—729 **9 Claims**



1. A relocatable irrigator configurable between irrigation and transport modes of operation, the irrigator comprising a master carriage and a plurality of slave carriages including articulated coupling means by which adjacent slave carriages are coupled together and respective pipeline spans bridging between adjacent carriages defining a spray line, each slave carriage including a steerable wheel assembly and a steering mechanism operable from the master carriage in order to actively and remotely steer the wheel assemblies between irrigation and transport positions under remote control, wherein the spray delivered to a corner is progressively guided from a forward direction generally tangential to the direction of travel of an outermost carriage through an outward radial direction to a reverse direction generally tangential to the direction of travel of the outermost carriage.

5,341,996

APPARATUS FOR SEPARATING COMPONENTS OF RUBBER VEHICLE TIRES

Darrel Rutherford, Sr., Hamilton, Ohio, assignor to D&R Recyclers, Inc., Hamilton, Ohio

Filed Mar. 18, 1993, Ser. No. 33,583

Int. Cl.[5] B02C *23/18, 23/00;* **B26F** *3/00*

U.S. Cl. 241—69 **14 Claims**

1. An apparatus for separating components of rubber vehicle tires comprising;

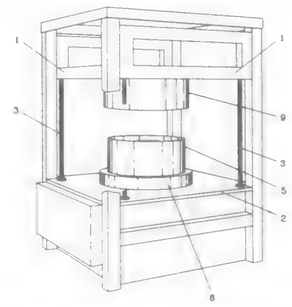
a) an upper platform having securely attached thereto at least one downwardly directed nozzle for passing high-pressure fluid therethrough; and

b) a lower platform having said rubber vehicle tire located horizontally substantially on the central portion of the upper surface of said lower platform, said lower platform located below said upper platform and substantially parallel therewith, and wherein said lower platform has a plurality of holes therethrough, said holes having size and location permitting said fluid and fragmented components of said tire to pass while retaining on the upper surface of said lower platform the substantially unfragmented components of said tire; and

c) a means for varying the separation between said upper and said lower platforms;

d) a means for directing said high-pressure fluid onto substantially all regions of said tire;

e) a means for rotating the tire containing central portion of said lower platform and said tire thereon about a vertical



axis of rotation passing substantially through the center of said tire.

5,341,997

TWO-WIRE STATOR WINDING MACHINE

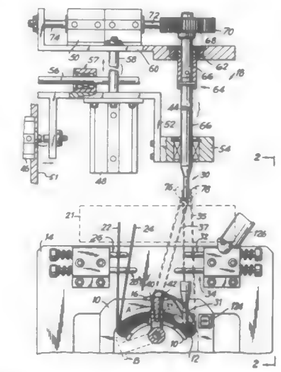
Sabatino Luciani, Florence, Italy, assignor to Axis USA, Inc., Marlborough, Mass.

Continuation of Ser. No. 626,196, Dec. 12, 1990, Pat. No. 5,193,755. This application Dec. 21, 1992, Ser. No. 994,336

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] B65H *81/06*

U.S. Cl. 242—1.1 R **32 Claims**



1. Apparatus for winding a workpiece with a coil of wire made up of separate first and second wires wound on said workpiece simultaneously so that said first and second wires are intertwined with one another in said coil, said coil being wound around a structure on said workpiece which is formed between two substantially parallel, laterally spaced slots in said workpiece, said apparatus comprising:

a wire outlet structure for dispensing said first and second wires so that said first wire is dispensed along a first predetermined path and said second wire is dispensed along a second predetermined path, both of said first and second paths leading to the same slot at substantially the same time so that both of said first and second wires are deposited in the same slot at substantially the same time;

wire holding means for holding said first and second wires adjacent said workpiece; and

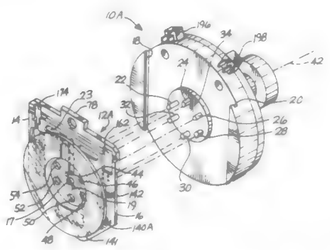
VOL 1165 ISS 5 AG 30 1994 UMI

a lead pull assembly for engaging said first and second dispensed wires adjacent a first side of said workpiece and for enabling said wire holding means to hold said first and second wires, wherein said lead pull assembly includes a lead pull member adapted to be oriented in (1) a first position for engaging said first dispensed wire along said first predetermined path and (2) a second position different from said first position for engaging said second dispensed wire along said second predetermined path.

5,341,998
PIN HUB FOR WIRE REEL

Dan A. Cross, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 892,275, Jun. 2, 1992, abandoned. This application Dec. 3, 1993, Ser. No. 162,534
Int. Cl.[5] B65H *79/00*
U.S. Cl. 242—47 **8 Claims**

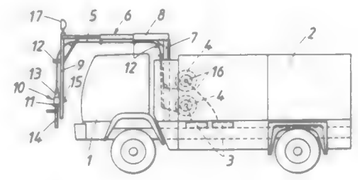


1. Apparatus for winding wire segments onto wire reels, comprising the combination of:
a plurality of wire reels; each said reel having opposite flanges; said flanges having connected together center portions, axially spaced apart radially outer portions, and a plurality of circumferentially spaced openings extending through said outer portions and one of said flanges including mounting portions;
a drive mechanism; and
a hub member mounted on said drive mechanism to be rotated thereby about a drive axis; said hub member having a forward portion with engagement portions configured to engage said mounting portions to mount one of said reels to said forward portion, and a plurality of pin members with end portions that are extendible and retractable relative to said forward portion between a retracted position in which said pin members are positioned axially rearwardly of a forward surface of said forward portion to permit mounting of said reel onto said forward portion by engagement of said mounting portions by said engagement portions and removal of said reel with a wire segment wound thereon from said forward portion by disengagement of said mounting portions and said engagement portions, and an extended position in which said end portions project forwardly from said forward portion to extend through said openings in said flanges of said reel and define a winding space between said outer portions of said flanges.

5,341,999
FIRE BRIGADE TRUCK

Franz Hochdanninger, Lauffen, and Helmut Peherstorfer, Hartkirchen, both of Austria, assignors to Rosenbauer International Aktiengesellschaft, Leonding, Austria

Filed May 3, 1993, Ser. No. 56,177
Claims priority, application Austria, May 7, 1992, A928/92
Int. Cl.[5] B65H *75/42*
U.S. Cl. 242—397.1 **9 Claims**



1. In a fire brigade truck for technical operations, comprising
a plurality of energy sources,
a truck body,
a plurality of energy supply lines connected to respective ones of said energy sources and provided each with a fitting for detachably mounting an implement, and
a plurality of reels, which are accommodated in said body and associated with respective ones of said supply lines and each of which is operable to wind up the associated supply line,
the improvement residing in that
said truck is provided with a boom structure comprising a pole, a boom, which is mounted on said pole and extends above said body and is pivotally movable about a vertical axis and has a free end, and an arm, which depends from said free end of said boom and carries a supply head adapted to be disposed on such a level that is can conveniently be reached by a person standing on the ground,
each of said supply lines extends from the associated reel to said pole and along said pole, boom, and arm to said supply head,
said supply head comprises a plurality of holders for detachably retaining respective ones of said supply lines adjacent to said fittings, and
said boom structure is provided with means for guiding each of said supply lines along said pole, boom, and arm so that each of said supply lines is adapted to be extended from the associated holder to a desired operational location.

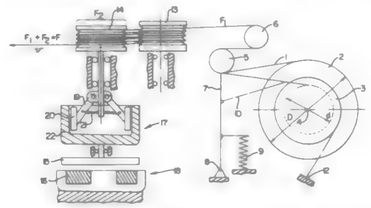
5,342,000
STRAND BRAKING APPARATUS

Dietrich Berges, Marienheide; Robert Führer, and Harald Lentz, both of Remscheid, all of Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Jan. 30, 1991, Ser. No. 647,806
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1990, 4003086; Jun. 20, 1990, 4019585; Dec. 17, 1990, 4005073
Int. Cl.[5] B65H *59/16, 59/04, 59/06*
U.S. Cl. 242—155 M **13 Claims**

1. An apparatus for imparting a braking force to an advancing strand and comprising
first braking means for imparting a brake force to the advancing strand which is controlled as a function of the tension of the advancing strand, and
magnetically actuated second braking means for imparting a braking force to the advancing strand which is controlled as a function to the movement of the advancing strand, said second braking means comprising a rotatable roll about which the advancing strand is adapted to be wound,

a speed controlled clutch having a drive end connected to said roll and an opposite non-drive end, and a movement

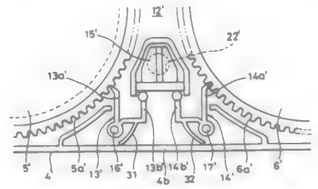


controlled braking means connected to the non-drive end of said clutch.

5,342,001
TAPE CASSETTE HAVING A REEL-LOCKING OR LID-LOCKING DEVICE

Toshikazu Konno, Miyagi, Japan, assignor to Sony Corporation, Japan

Filed Feb. 11, 1993, Ser. No. 16,564
Claims priority, application Japan, Feb. 28, 1992, 4-079368
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—338.3 **10 Claims**



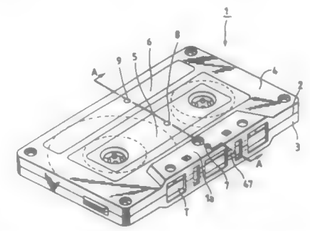
1. A tape cassette having a cassette casing which rotatably accommodates tape reels for winding a tape and accommodates a reel locking member for preventing rotation of the reels when the tape cassette is not in use, wherein the reel locking member is unitarily formed with a spring portion for spring-biasing the reel locking member in its locking direction whereby the reel locking member prevents rotation of the reels, and wherein the reel locking member is made of shape memory resin which recovers its original configuration at a predetermined temperature.

5,342,002
MAGNETIC TAPE CASSETTE AND METHOD FOR MANUFACTURING MAGNETIC TAPE CASSETTE

Kiyoo Morita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 834,357, Feb. 12, 1992. This application Dec. 3, 1992, Ser. No. 984,779
Claims priority, application Japan, Apr. 17, 1991, 3-110853
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—347 **9 Claims**

1. A magnetic tape cassette including a combination of upper and lower half cases each including a window part and a main body half, said main body half including a trapezoidal portion on a top side of said main body half extending along a length thereof and defining a portion of said cassette having an increased thickness relative to said main body half, said magnetic tape cassette being manufactured by the method comprising the steps of:
providing a mold having a first injection space defining said main body half and a second injection space defining said window part;
providing a first valve gate communicating with said first injection space in said mold at a position of said trapezoidal portion of said main body half;
injecting a first resin into said first injection space through said first valve gate, said first valve gate leaving a gate mark in said trapezoidal portion;
providing a second valve gate communicating with said second injection space in said mold at a position corresponding to the position of the window part; and

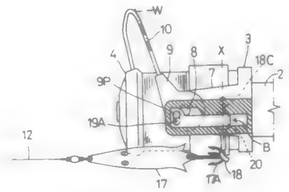


injecting a second resin into said second injection space through said second valve gate, said second valve gate leaving a gate mark in said window part,
wherein said gate marks left by said first and second valve gates have no projections, and portions of said main body half and said window part adjacent said gate marks are consistent in color with other portions of said main body half and said window part.

5,342,003
SPINNING REEL

Kenichi Sugawara; Takeshi Ikuta, and Osamu Yoshikawa, all of Sakai, Japan, assignors to Shimano Inc., Osaka, Japan

Filed Oct. 4, 1991, Ser. No. 771,226
Claims priority, application Japan, Oct. 9, 1990, 2-106077[U]; Oct. 9, 1990, 2-106078[U]; Nov. 20, 1990, 2-122194[U]
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—231 **2 Claims**



1. A spinning reel comprising:
a reel body;
a pair of arms including a first arm and a second arm formed on a rotor disposed at a forward portion of said reel body;
an oscillatable arm attached to at least one of said first and second arms;
a bail arm extending from said oscillatable arm, said bail arm being switchable between a line winding position and a line freeing position; and
a bait engaging element formed on said oscillatable arm, said bait engaging element operating to prevent a bait engaged therewith from moving in a forward direction when said bail arm is set to said line winding position, and for allowing said bait to move in said forward direction when said bail arm is set to said line freeing position.

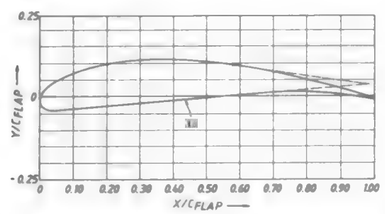
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,004

AIRFOIL TRAILING FLAP

Percy J. Bobbitt, Newport News, Va., assignor to Eagle Aerospace, Inc., Houston, Tex.

Filed Oct. 2, 1992, Ser. No. 955,678
Int. Cl.[5] B64C 9/22
U.S. Cl. 244—212 13 Claims



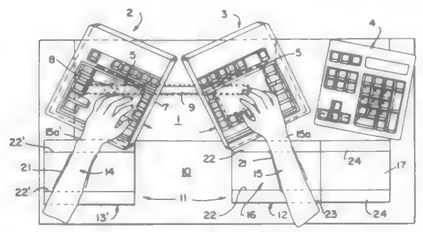
1. An improved trailing flap for a conventional airfoil, the improved trailing flap comprising a flap whose upper and lower trailing surfaces combine to provide substantial flap camber and an effective flap angle of at least five degrees, and whose trailing edge is displaced, by on the order of at least three tenths of one percent of the airfoil chord, relative to the plane defined by the lower surface of a prior conventional flap of the airfoil, thereby establishing a more evenly distributed lift over the airfoil chord and an increase in lift for a given angle of attack resulting in a reduction in drag per lift.

5,342,005

ARM SUPPORT APPARATUS FOR KEYBOARD AND OTHER APPARATUS REQUIRING REPETITIVE HAND OPERATION

Jeffrey P. Szmanda, Milwaukee, and William J. Szmanda, Menomonee Falls, both of Wis., assignors to Health Care Keyboard Co., Inc., Menomonee Falls, Wis.

Filed Nov. 5, 1992, Ser. No. 972,253
Int. Cl.[5] B68G 5/00
U.S. Cl. 248—118 21 Claims



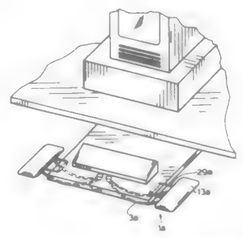
1. A forearm support apparatus for a keyboard operator aligned with a keyboard comprising an arm support assembly having first and second forearm support units spaced for alignment with left and right forearms of the operator, each of said units being formed with a top wall engagable by the forearm of the keyboard operator, said top walls of said support units being constructed with an incline support extending inwardly toward each other and thereby support the forearms in corresponding relationship and supporting the forearms against lateral outward displacement.

5,342,006

ARM REST

Tice: Mary, R.R. #1, Zephyr, Ontario, Canada L0E 1T0

Filed Jan. 19, 1993, Ser. No. 5,778
Int. Cl.[5] B43L 15/00
U.S. Cl. 248—118 7 Claims



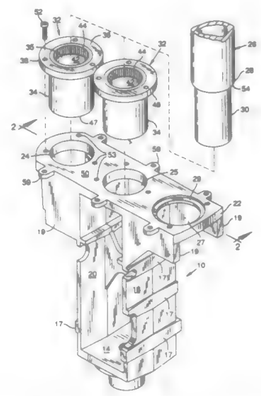
1. A desk fittable arm rest comprising a support frame and an elongated cushion on an upper surface of said frame, said frame having an undersurface provided with a desk edge stop located part way along said frame whereby part of said frame and part of said cushion from a desk top engaging overhang portion above and forwardly of said desk edge stop, and a cantilever which is attached to said frame at said desk edge stop, said cantilever extending below and forwardly of said frame to define a desk top fitting gap between said cantilever and said frame and said cantilever having a length and a curvature which makes said cantilever sufficiently flexible to provide up and down shock absorber movement of said arm rest when under load.

5,342,007

FRAME FOR POST-SUPPORTED DENTAL EQUIPMENT

Pierre M. LaPlante, Newberg, Oreg., assignor to A-Dec, Inc., Newberg, Oreg.

Filed Feb. 11, 1993, Ser. No. 16,988
Int. Cl.[5] A47F 5/02
U.S. Cl. 248—131 10 Claims



1. A frame to which may be mounted posts that support dental equipment:

a base;

a plate attached to the base, the plate having two openings; and

a hub, configured to fit in one of the openings and attached to the plate to prevent movement of the hub relative to the plate for rotatably supporting relative to the frame an end of a post so that a component of dental equipment supported by the post may be located in either selected one of the two openings.

5,342,008

ATTACHMENT FOR A LADDER

Derek J. Kay, 85 Railway Road, Urmston, Manchester, M31 1YD, Great Britain

Filed Jul. 13, 1993, Ser. No. 90,952
Int. Cl.[5] A47G 29/02
U.S. Cl. 248—238 12 Claims



1. A ladder attachment assembly for a hinged ladder having opposed sides, each side having first and second limbs diverging downward from upper portions thereof, said first limbs paralleling each other and said second limbs paralleling each other, at least said first limbs having a flight of steps supported therebetween, said second limbs comprising a support diverging from said flight of steps, said attachment assembly comprising a pair of brackets, each said bracket having spaced apart divergent first and second channel means for engagement around the diverging first and second limbs of said hinged ladder at respective sides thereof, each said bracket having a support portion extending beyond the first channel means in a direction away from the second channel means, a platform for tools, materials and the like dimensioned to extend across the support portions of both of the brackets for support thereon, when the latter are mounted on the hinged ladder, and means for securing said platform to both said support portions.

5,342,009

HOLDING DEVICE FOR DRINK CONTAINERS

Heinz Lehner, Lauf, Fed. Rep. of Germany, assignor to EuWe Eugen Wexler GmbH, Fed. Rep. of Germany

Filed Jul. 22, 1993, Ser. No. 96,475
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1992, 4224700
Int. Cl.[5] A47F 5/00
U.S. Cl. 248—311.2 8 Claims

1. A holding device for drink containers in particular for installing in vehicles comprising

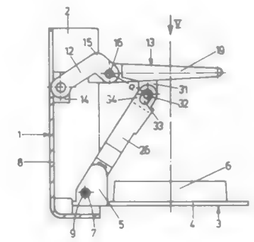
a fastening panel (1),

a bearing axle (9) on the fastening panel (1),

a tray (3) pivotably supported on the bearing axle (9) to pivot between a folded-out and a retracted position for receiving the bottom of the drink container, and

a holder (13), which is substantially at least partially annularly shaped and which grasps the side wall of the drink container, which holder (13) is supported above the tray (3) on the fastening panel (1) to pivot between a folded-out position for holding the drink container and a retracted position, whereby in its retracted position the holder is covered by the tray like forming a lid,

at least one connecting lever (26) connecting the tray (3) and the holder (13) with each other in such an articulated manner that with the retracting and folding out movement, respectively, of the tray (3) the holder (13) is automatically movable into its retracted and folded-out position, respectively, wherein the tray (3) and the at least one connecting lever (26) are pivotably supported on the common bearing axle (9) and comprise a releasable pivot locking means (29, 30) between them for releasably coupling said tray (3) and connecting lever (26) in order to retract holder (13) automatically with or separately from the tray (3).

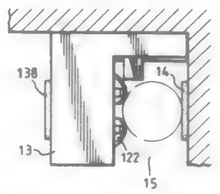


5,342,010

CLAMPING DEVICE FOR AN ELONGATED PIECE

Chiu-Feng Huang, Taipei Hsien, Taiwan, assignor to Yamchen Industrial Co., Ltd., Taipei Hsien, Taiwan

Filed Sep. 27, 1993, Ser. No. 127,312
Int. Cl.[5] A47G 1/10
U.S. Cl. 248—316.3 16 Claims



1. A clamping device for an elongated piece, including a stationary unit, a guide unit spaced apart from said stationary unit at a predetermined distance, a movable unit mounted movably on said guide unit, and a bias unit interconnecting said guide unit and said movable unit so as to bias said movable unit to move toward said stationary unit, thereby holding said elongated piece between said stationary unit and said movable unit, wherein the improvement comprises:

said guide unit including a guide block and a rack member mounted securely on a top surface of said guide block; and

said movable unit including a sheave which has two wheel portions and a pinion portion that is located between said wheel portions and that engages said rack member so as to guide said wheel portions of said sheave to move on said guide unit.

5,342,011

FLUID CONTAINER ATTACHMENT ADAPTOR FOR AN AMBULATORY FLUID DELIVERY SYSTEM

Leland H. Short, Morrow, Ohio, assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Jan. 19, 1993, Ser. No. 6,300
Int. Cl.[5] A47H 1/10
U.S. Cl. 248—318 3 Claims

1. The combination of a fluid container attachment adaptor and a support device, said support device comprising:

means for receiving a fluid delivery set and a pump, the fluid delivery set including a fluid container and a tube for connection to the pump, said means for receiving includ-

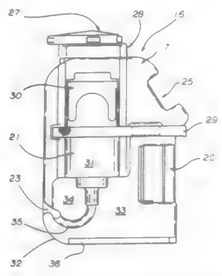
VOL 1165 ISS 5 AG 30 1994 UMI

ing means for holding the pump in fixed position relative to said support device, and means for preventing kinking or occlusion of the tube,

said support device also including compartment means for receiving the fluid container and clamp means,

said adaptor comprising:

body means securable to said support device by said clamp means, and



attachment means for securing-the fluid container to said adaptor,

whereby, securing said adaptor in said clamp means of said support device and securing the fluid container to said adaptor by said attachment means, allows the fluid container to be properly positioned for operation within said support device.

5,342,012

HEIGHT ADJUSTING MECHANISM FOR SWIVEL CHAIR

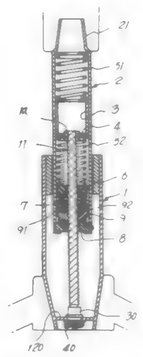
Chang-Keun Ryu, No. 1-168, Kan Sok-3 dong, Nam Dong-ku, Inchon, Rep. of Korea

Filed Jan. 25, 1993, Ser. No. 8,664

Claims priority, application Rep. of Korea, Jan. 28, 1992, 1992-1231; Jun. 5, 1992, 1992-9923; Dec. 29, 1992, 1992-27099

Int. Cl.[5] A47C *3/00*

U.S. Cl. 248—406.2 **10 Claims**



5. A height adjusting mechanism for a swivel chair including a column having a supporting pillar pipe and a cylinder pipe telescopically coupled to each other and movable between an extended and a contracted position, the supporting pillar pipe and cylinder pipe being located between a leg and a seating plate of the chair, the cylinder pipe having therein a bushing, a washer, a second spring and a roller seat, the cylinder pipe further including a clutch unit including recesses and projections movable relative to each other between a coupling position and a released position according to the load provided from the seating plate, a screw shaft being located in the supporting pillar pipe and the cylinder pipe and passing through the bushing, washer, spring, sleeve and roller seat within the cylinder pipe; and the recesses of the clutch unit have the vertical portions and slanted portions arranged so that the clutch unit is released allowing free rotation of the swivel chair when an exterior force above a predetermined amount is applied to the projection of the clutch unit.

5,342,013

SEAT SLIDING DEVICE FOR VEHICLE

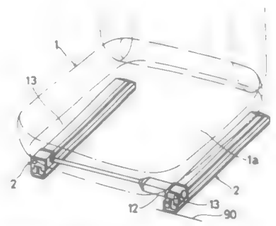
Sadao Ito, Anjo, and Hiroshi Nawa, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 28, 1993, Ser. No. 68,528

Claims priority, application Japan, May 29, 1992, 4-138719

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—429 **10 Claims**



1. A seat sliding device comprising:

a pair of laterally spaced lower rails for mounting on a vehicle body floor, each of the lower rails having sidewalls defining a channel;

a pair of upper rails adapted to carry a seat cushion, each of the upper rails being slidably mounted at an engaging portion to a corresponding one of the spaced lower rails, each of the upper rails having sidewalls defining a channel therebetween above the engaging portion;

a screw shaft positioned in one of the channels;

a nut member threadably mounted to the screw shaft and secured to one of the upper and lower rails; and

a bearing member supporting rotatably the screw shaft, the bearing member being elastically fit and frictionally engaging the sidewalls within the channel of the other of the upper and lower rails to secure the bearing member to said other of the upper and lower rails.

5,342,014

DISPLAY SYSTEM

Malcolm A. Wilson, P.O. Box 445, Hyannis, Mass. 02601

Continuation of Ser. No. 940,592, Sep. 4, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,541

Int. Cl.[5] A47G *1/16*

U.S. Cl. 248—476 **9 Claims**

1. A display system for displaying hanging art work on walls, the display system comprising:

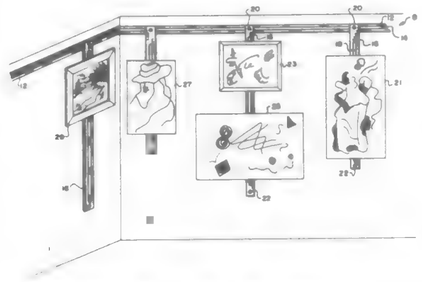
A. one or more horizontal brackets for attachment to the walls, each of the horizontal brackets including a recessed track with a center opening;

B. one or more vertical display units for attachment to the horizontal brackets, each of the vertical display units including:

i. a display unit attachment mechanism, which fits into and is retained within the recessed track of a horizontal bracket and extends outwardly from the track through the center opening, the attachment mechanism sliding horizontally along the track to position the vertical display unit in a desired position, and

ii. an elongated vertical member with an integral track, the elongated vertical member removably attaching to the display unit attachment mechanism and hanging vertically therefrom, and

c. one or more support mechanisms attached to the track of the vertical member, each support mechanism supporting one art work and moving independently along the track to position the work vertically on the vertical member, each of the support mechanisms including:



i. attachment means for removably attaching to and slideably moving within the track of the vertical member, and

ii. a J-shaped member for supporting an art work suspended therefrom, the J-shaped member attaching to and moving with the attachment means to adjust the vertical position of the art work along the track of a vertical member.

5,342,015

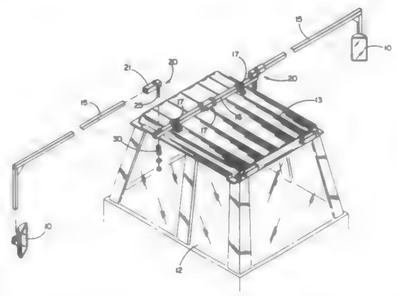
APPARATUS FOR MOUNTING REAR VIEW MIRRORS ON A TRACTOR

Paul Burton, Lee, Ill., and Steven D. Brownlee, c/o Farmer's Factory Co, County Line Rd. South Box 122, Lee, Ill. 60530, assignors to Steven Brownlee, Amboy, Ill. and Farmer's Factory Company, Lee, Ill.

Filed May 11, 1993, Ser. No. 59,298

Int. Cl.[5] B60R *1/02*

U.S. Cl. 248—478 **13 Claims**



1. Rear view mirror apparatus for a roofed tractor or the like, said apparatus comprising mounting bar means adapted to be secured to the roof of the tractor and having portions projecting laterally from opposite sides of the roof, a laterally extending tube disposed in vertically spaced relation with each mounting bar portion, elongated mirror supporting arms each having an inboard end portion telescoped slidably into each tube and having an outboard end portion, a rear view mirror secured to the outboard end portion of each supporting arm, means for locking each supporting arm in its respective tube and selectively releasable to permit the supporting arm to slide inwardly and outwardly within the tube and thereby enable adjustment of the lateral spacing of the mirror from the tractor, and means interconnecting each tube and the respective mounting bar portion, said interconnecting means normally locking each tube to the respective mounting bar portion but yielding and permitting the tube to swing either forwardly or rearwardly relative to the mounting bar portion when a forward or rearward force exceeding a predetermined magnitude is exerted on the respective mirror supporting arm.

5,342,016

DEVICE FOR SUPPORTING, ON A FIXED FRAMEWORK, A MASS WHICH IS CANTILEVERED OUT FROM A MOVING ELEMENT

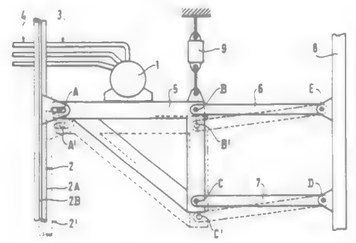
Jean-Jacques Marsault, Bures-sur-Yvette; Michel Barbotte, Palaiseau, and Jean-Pierre Baudel, Asnieres, all of France, assignors to Stein Industrie, Velizy-Villacoublay, France

Filed Dec. 22, 1992, Ser. No. 995,158

Claims priority, application France, Dec. 23, 1991, 91 16027

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—610 **4 Claims**



1. A support device for supporting on a stationary framework a mass which is cantilevered-out from a moving element, said device comprising: a rigid stand supporting said mass and connected to the stationary framework via two parallel arms of equal length and situated at two different heights, each of the two parallel arms being hinged at one of one end thereof to a corresponding point on the stand and at another end thereof to a corresponding point on the stationary framework, and the rigid stand being placed on the moving element via a connection that slides horizontally.

5,342,017

DAMPED CANTILEVERED SUPPORT ARM ASSEMBLY

Paul E. McCalmont, Cincinnati, Ohio; Richard A. Curless, and Miles E. Loretta, Jr., both of Greer, S.C., assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sep. 30, 1992, Ser. No. 954,527

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—632 **25 Claims**

24. A damped, cantilevered support arm assembly for a monitoring device which is to be substantially rigidly attached to a mounting surface of a first structure for relative movement with respect to a second structure along a longitudinal axis of a machine, said assembly comprising:

a cantilevered support arm having a proximal end and a distal end;

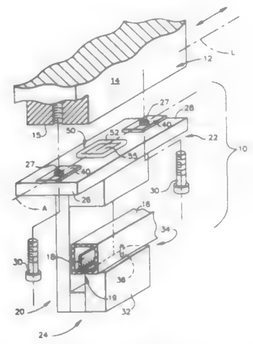
a base member connected to said support arm adjacent said proximal end;

means for attaching said base member to the mounting surface of said first structure and for providing substantial rigidity of said cantilevered support arm in a direction substantially parallel with said longitudinal axis;

a plurality of shims located between said base member and said first structure to provide limited effective freedom of

VOL 1165 ISS 5 AG 30 1994 UMI

movement of said support arm in a direction substantially normal to said longitudinal axis; and



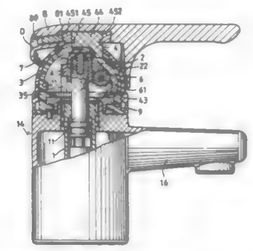
damping means mounted adjacent said base member for reducing the response of said support arm to movement in a direction normal to said movement along said longitudinal axis.

5,342,018

SINGLE-HANDLE FAUCET

Robin Wu, Hsinchu Hsien, Taiwan, assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed May 18, 1993, Ser. No. 63,257
Int. Cl.[5] F16K *31/54*
U.S. Cl. 251—250 4 Claims



1. A single-handle faucet including a hollow faucet body which is formed with a spout, an upright water pipe provided inside said faucet body, and a cartridge stem extending slidably into said upright water pipe and being movable between a first position, in which water flow from said water pipe to said spout is permitted, and a second position, in which water flow from said water pipe to said spout is not permitted, wherein the improvement comprises:

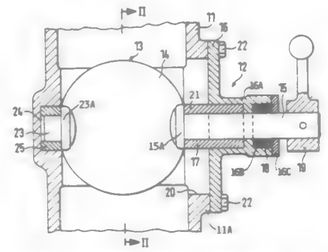
said faucet body having an open top and said single-handle faucet including: a substantially dome-shaped cover unit which is mounted on said open top of said faucet body and which has an apex that is formed with a curved slit; a driving piece having a pair of opposite pivot arms which extend downwardly through said cover unit via said curved slit and which have lower ends pivoted to said cover unit, said driving piece further having a curved extension which extends downwardly through said cover unit via said curved slit and which is in sliding contact with an inner wall surface of said cover unit, said curved extension being formed with a toothed inner surface; a driven piece which is connected to a topmost end of said cartridge stem and which has a rack formed on one side of said cartridge stem; a pinion mounted rotatably within said cover unit and interengaging said rack of said driven piece and said toothed inner surface of said curved extension; and a lever having one end extending above said apex of said cover unit, said driving piece being connected to said one end of said lever, said lever being operable so as to move said curved extension along said curved slit in order to move said cartridge stem between said first and second positions.

5,342,019

THROTTLE FLAP CONSTRUCTION FOR AN EXHAUST GAS DUCT OF AN INTERNAL COMBUSTION ENGINE

Hermann Braun, Friedrichshafen, and Georg Ruetz, Immenstaad, both of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 27, 1993, Ser. No. 113,214
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1992, 4229299
Int. Cl.[5] F16K *1/22*
U.S. Cl. 251—305 5 Claims



1. A throttle flap construction, comprising a flow duct (11) having a duct wall, a substantially radially facing axially extending slot (20) in said duct wall, a flap disk (14) fitting through said slot (20), a drive shaft (15) connected to said flap disk (14) to form a closure unit, a cover (16) for covering said slot (20), means connecting said cover to said duct, a first mounting bearing (17) for mounting said drive shaft (15) in said cover (16) so that a free end of said drive shaft extends outside said first bearing (17) when said flap disk (14) is inside said duct (11), means connected to said free end of said drive shaft (15) for rotating said flap disk inside said duct (11) from the outside of said duct, and a second mounting bearing (23, 25) in said duct wall opposite said first mounting bearing, said second mounting bearing holding said flap disk (14) in axial alignment with said drive shaft.

5,342,020

SPEED CONTROLLER FOR DRILLING RIG TRAVELING BLOCK

Richard J. Stone, P.O. Box 1367, Stafford, Tex. 77497

Filed May 3, 1991, Ser. No. 695,529
Int. Cl.[5] B66D *1/48*
U.S. Cl. 254—269 56 Claims

1. In an oil drilling rig of a type including

a derrick,

a traveling block, suspended form the derrick by a line connected to an anchor, facilitating upward and downward movement of a drill string and associated equipment into and out of a well bore, and

a prime mover including a rotatable drum on which the line, from which the traveling block is suspended, is wound,

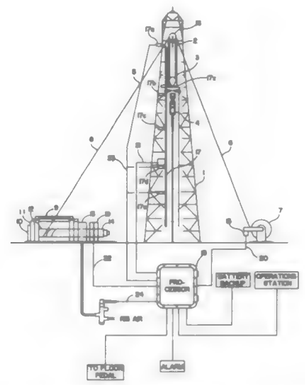
the improvement in speed control apparatus, comprising

means for controlling the traveling block, including

means for controlling the rotatable drum of the prime mover,

means for producing a position signal representative of the position of the traveling block along its normal travel;

processor means, electrically connected to the rotatable drum controlling means and the position signal producing means, preprogrammed with instructions for automatically slowing the traveling block as it approaches an upper limit by utilizing a deceleration means connected to the prime mover to control the speed of the traveling block, including



means for calculating a speed signal from changes in said position signal, said speed signal being representative of the vertical speed of the block,

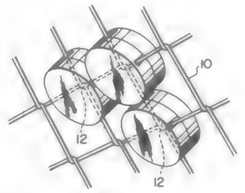
speed reduction control means utilizing said speed and position signals to produce a slowdown electrical signal for the deceleration means for controlling the prime mover to reducibly control the rate of travel of the traveling block.

5,342,021

DECORATIVE FORM FOR CHAIN LINK FENCES

David Watson, 5987 Wiltshire St., Vancouver, B.C. V6M 3L8, Canada

Filed Aug. 19, 1993, Ser. No. 108,444
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—1 11 Claims



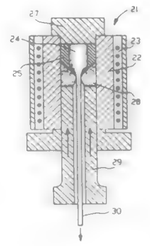
1. A decorative form for a chain link fence of the type having post-supported interwoven wires producing a matrix of wire lengths extending between wire cross-over centers, the form to be used with other similar forms to produce a decorative pattern over an area of the chain link fence, the form comprising a pair of sections, each having a face with circumscribing sides and interlocking means to secure the sections together along edges of their sides, the sections, when secured together over a cross-over center, producing a form with a hollow interior and having opposed faces with sides extending therebetween, the sides of the form having slots, when the form is so seated, located as to be seated over corresponding portions of the wire lengths extending outwardly from that center.

5,342,022

METHOD OF MAKING INFRARED CRYSTALLINE FIBER

Vjacheslav G. Artjushenko, Moscow, Russian Federation; Wolfgang Neuberger, Bonn, Fed. Rep. of Germany; Alexey O. Nabatov, and Eugene F. Kuzin, both of Moscow, Russian Federation, assignors to CeramOptec, Inc., Enfield, Conn.

Continuation-in-part of Ser. No. 980,289, Nov. 23, 1992, Pat. No. 5,309,543. This application Feb. 4, 1993, Ser. No. 13,648
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.21 4 Claims



1. A process for extruding an optical silver halide fiber, which comprises:

providing a silver halide preform including top, bottom and lateral surfaces;

placing said preform within a cylindrical extrusion chamber comprising an extrusion die;

applying force to said preform while holding said preform in a fixed position wherein said silver halide flows through said extrusion die to produce a silver halide fiber wherein said force is provided by moving said extrusion die and a plunger within said cylindrical extrusion chamber in a direction opposite to said silver halide flow direction thereby reducing friction of said silver halide on said cylindrical chamber and reducing turbulence in said silver halide flow, said silver halide preform has a predetermined shape and cross section, and said plunger has a hollow portion having a cross section which is smaller than the cross section of said preform thus reducing contamination by impurities from lateral surfaces of said preform in the resulting silver halide fiber.

5,342,023

HYDRAULIC CONTROL DEVICE FOR ACTIVE SUSPENSION SYSTEM

Nobuharu Kuriki; Seiji Ohsaki; Hideaki Shibue, and Yoshiki Noro, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,987
Claims priority, application Japan, Aug. 6, 1991, 3-220986
Int. Cl.[5] B60G *17/00*
U.S. Cl. 267—64.17 16 Claims

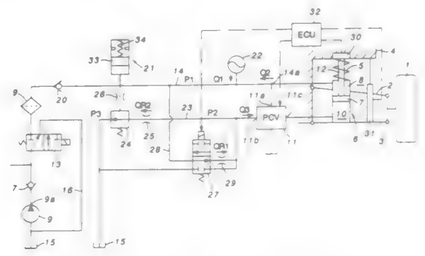
1. A hydraulic control device for an active suspension system employing a pressure source, and a linear hydraulic cylinder including a piston connected in parallel with a spring between a wheel and a vehicle body, said piston having two pressure receiving surfaces of different areas facing two chambers separated by said piston in said cylinder, said hydraulic control device comprising:

conduit means for supplying output pressure from said pressure source substantially continuously and directly to one of said two chambers corresponding to a smaller one of said pressure receiving surfaces of said piston during normal operation of the pressure source;

VOL 1165 ISS 5 AG 30 1994 UMI

a control valve connected between said pressure source and the other of said two chambers for controlling the pressure in said other chamber to allow said chamber to operate as a powered actuator for said active suspension system;

means for reducing the pressures of said two chambers to a level near the atmospheric pressure when the operation of the pressure source becomes abnormal;



switch valve means provided in a bypass passage between said two chambers for selectively communicating said two chambers with each other;

flow restricting means provided in said bypass passage; and

a storage container connected to said bypass passage capable of accommodating an amount of actuating oil corresponding to a capacity of said cylinder.

5,342,024

AUTOMATIC FLUSHING DEVICE FOR URINAL

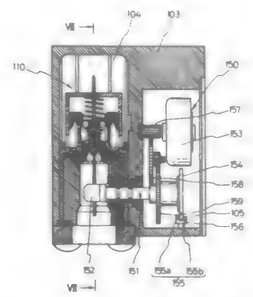
Dong J. Kim, 1302-1301, Jugong Apartment, Chelsandong, Kwangmyungshi, Kyunggido, Rep. of Korea

Filed Mar. 26, 1993, Ser. No. 37,387

Claims priority, application Rep. of Korea, Apr. 9, 1992, 92-5854

Int. Cl.[5] F16K *31/04, 31/12*

U.S. Cl. 251—40 **11 Claims**



1. An automatic flushing device for a urinal, said flushing device comprising:

a) a sensor for detecting approaching and departing users;

b) a control circuit board for controlling flushing;

c) a housing having a first chamber and a second chamber, said first chamber having an inlet socket and an outlet socket connected to said fist chamber;

d) a valve member positioned in said first chamber and comprising:

ee) a sleeve with an upper portion of a first diameter and a lower portion of a second diameter, said first diameter smaller than said second diameter, said upper portion having a top connected thereto and said lower portion having an inlet ports and said top having a small inlet hole;

ff) a piston slidably connected within said upper portion of said sleeve, said piston comprising an upper piston sections with a plurality of inlets and a lower piston section having an outlet;

gg) a relief valve mounted within said outlet of said piston;

hh) a truncated conical spring biasing said relief valve into a closed position within said outlet of said piston;

ii) an actuator pin fixedly connected to said relief valve;

jj) a coil spring positioned between said upper piston section and said top of said sleeve for biasing said piston into a downward direction;

kk) a bushing connected within said lower portion of said sleeve and providing an abutment for limiting a downward movement of said piston; and

l) a valve drive comprising:

mm) a small motor with a drive shaft;

nn) a camshaft with a first and a second end with a cam connected to said first end, said actuator pin of said valve actuated by said cam;

oo) a gear system connected between said drive shaft of said motor and said camshaft;

pp) a sensor element connected to said second end of said camshaft, said sensor element being butterfly-shaped and having wings, said wings being symmetrical to one another and each encompassing an arc section of 90 degrees, wherein between said wings open areas remain that have the same shape as said wings;

qq) a photo interrupter with a sensor unit for cooperating with said wings of said sensor element.

5,342,025

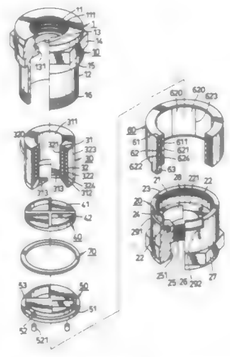
MAGNETIC CONTROL-TYPE FLOW CONTROL VALVE

Shao-Ken Hwang, No. 338, Lung-Nan Rd., Chung-Liao Hsiang, Nantou Hsien, Taiwan

Filed Jan. 5, 1994, Ser. No. 177,584

Int. Cl.[5] F16K *31/08*

U.S. Cl. 251—65 **7 Claims**



1. A magnetic control-type flow control valve, comprising:

a metal tube unit with a top end portion, a bottom end portion and an intermediate portion between said top and bottom end portions, said intermediate portion having an outer wall surface that is formed with an annular recess;

a driven magnet ring disposed rotatably in said intermediate portion of said metal tube unit, said driven magnet ring having a bottom end and an outer peripheral wall with a first polarity;

a rotatable circular valve piece disposed in said intermediate portion of said metal tube unit and connected to said bottom end of said driven magnet ring, said rotatable valve piece having a bottom surface and being formed with a pair of diametrically opposite first openings;

a stationary circular valve piece secured in said bottom end portion of said metal tube unit, said stationary valve piece having a top surface in tight contact with said bottom surface of said rotatable valve piece and being formed with a pair of diametrically opposite second openings; and

a driving magnet ring sleeved on said outer wall surface of said intermediate portion of said metal tube unit in said annular recess, said driving magnet ring having an inner peripheral wall with a second polarity opposite to said first polarity, said driving magnet ring being rotatable to rotate said driven magnet ring therewith so as to rotate correspondingly said rotatable valve piece relative to said stationary valve piece between a first position, wherein said first and second openings are aligned, and a second position, wherein said rotatable valve piece covers completely said second openings.

5,342,026

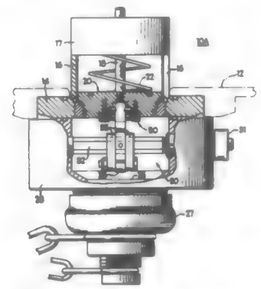
VALVE INCLUDING RESILIENT MOUNT FOR PIN

Robert H. Dean, Evanston, Ill., assignor to Midland Manufacturing Corp., Skokie, Ill.

Filed Jun. 17, 1993, Ser. No. 77,275

Int. Cl.[5] F16K *25/00, 31/524*

U.S. Cl. 251—85 **20 Claims**



13. In a valve having a valve member movable between open and closed conditions and an actuating member having an end directly coupled to the valve member by a coupling pin for operating the valve member, wherein the pin has an axis extending between opposite ends thereof and the actuating member is connected to the pin intermediate its ends, so that operation of the valve member applies forces to the pin in a direction perpendicular to the axis, the improvement comprising: a first support member fixed to the valve member, a second support member disposed in engagement with the pin adjacent to its opposite ends and movable relative to the valve member and to said first support member, and resilient means disposed between said first and second support members and urging them apart, said resilient means accommodating movement of said second support member toward said first support member thereby to accommodate translational movement of the pin in response to the forces exerted thereon by the actuating member.

5,342,027

DAMPER POSITION CONTROL DEVICE FOR AUTOMOTIVE AIR CONDITIONING SYSTEM

Toshimasa Kawabata, Isesaki, Japan, assignor to Sanden Corporation, Isesaki, Japan

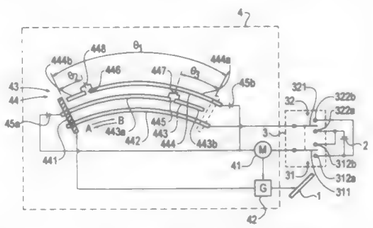
Filed Jul. 16, 1993, Ser. No. 92,522

Claims priority, application Japan, Jul. 24, 1992, 4-198050

Int. Cl.[5] F16K *31/02*

U.S. Cl. 251—129.13 **14 Claims**

1. In an automotive air conditioning system including a rotatable air mix damper for controlling the mixture of cool air and heated air and, thereby, controlling the temperature of air blown into a passenger compartment by said automotive air conditioning system and a damper position control device for controlling the rotation of said air mix damper; said damper position control device including a motor actuator for rotating said air mix damper in forward and reverse directions, an electric power source, and an electric power source switch device; said motor actuator including a motor and a gear which is operatively connected to a drive shaft of said motor and said air mix damper and which rotates said air mix damper in the forward and reverse directions into a plurality of operating angles; and a rotation control device including a regulator which governs upper and lower rotational limits of the drive shaft of said motor and said gear, said regulator including at least three fixed contacts one of which is longer than the others of said fixed contacts and each of which is parallel to the other



fixed contacts and is coupled with said electric power source and said electric power source switch device, and a movable contact which is in contact with at least two of said fixed contacts and which cycles along said fixed contacts in accordance with the rotations of the drive shaft of said motor and said gear and which regulates the operating angles of said air mix damper by contact with said at least two of said fixed contacts, an improvement comprising:

at least one gap disposed at a fixed position in each of said others of said fixed contacts, such that said at least one gap divides said others of said fixed contacts into at least two fixed contact segments; wherein said at least one gap further comprises

a short-circuit switch device which, when closed, short-circuits said at least two segments and when open, isolates said segments on either side of said at least one gap.

5,342,028

EXPANDING VALVE ASSEMBLY

Venkatesh R. Nevrekar, 6 Castlerock Pl., Shawnee, Okla. 74801

Continuation-in-part of Ser. No. 639,917, Jan. 10, 1991, Pat. No. 5,205,535, which is a continuation-in-part of Ser. No. 437,896, Nov. 17, 1989, abandoned. This application Mar. 5, 1993, Ser. No. 26,997

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] F16K *1/22*

U.S. Cl. 251—163 **7 Claims**

1. A turning mechanism for a rotary valve having a valve body with a fluid flow passageway therethrough, and a closure assembly rotatably disposed in the valve body to selectively open and to close the fluid flow passageway, the turning mechanism comprising:

a stem connected to the closure assembly;

turning means supported by the valve body and rotatable about the stem for selectively rotating the stem;

coupling means interconnecting the turning means and the stem for coupling the turning means and the stem so that free uncoupled rotation of the turning means about the stem occurs during a limited free-travel interval of the turning means thereabout and so that coupled rotational movement of the turning means and the stem occurs fol-

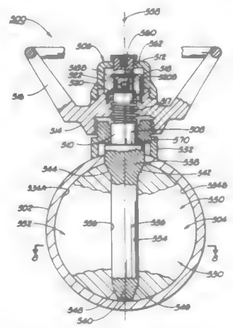
VOL 1165 ISS 5 AG 30 1994 UMI

lowing such limited free-travel interval, the turning means comprising a hub rotatably supported by the valve body and wherein the coupling means comprises:

a lug member supported by the stem;

a first bias means supported by the hub for contacting the lug member and imparting rotational movement of the hub to the stem in a selected rotational direction thereof; and

a second bias means supported by the hub for contacting the lug member and imparting rotational movement of



the hub to the stem in the opposite rotational direction thereof, the first bias means and second bias means disposed to selectively provide no biasing contact with the lug member during the limited free-travel interval of the hub; and

connecting means interconnecting the turning means and the stem for imparting selected axial movement to the stem in response to rotational movement of the turning means during the limited free-travel interval of the turning means.

5,342,029

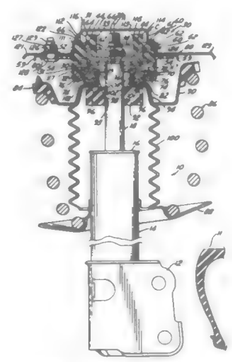
SUSPENSION STRUT UPPER MOUNT

Robert L. Carter, Gibraltar, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 30, 1993, Ser. No. 129,479

Int. Cl.[5] B60G *15/00*

U.S. Cl. 267—220 **6 Claims**



1. An upper mounting assembly for a suspension telescoping shock absorber strut operatively connected between sprung and unsprung masses of a vehicle about a vertically disposed principal axis of the shock absorber, the strut provided with a piston rod adapted for reciprocal movement along the strut axis, means for connecting the mounting assembly to the vehicle sprung mass and means for connecting an upper end of the piston rod to the mounting assembly, the upper mounting assembly comprising:

a composite isolator mount having a central inner metal cup formed with a bottom wall and an upstanding side wall concentrically disposed about the principal axis whereby an elastomeric ring surrounds said side wall with said side wall embedded therein;

said ring having an upper radially outer upper periphery defining an annular end face and an upper radially inner periphery defining an annular upstanding jounce collar, said ring having a lower outer periphery formed with an integral concentrically depending tubular extension of conforming radial extent relative to said upper end face, said ring having a lower inner periphery formed with an integral radially inwardly extending rebound collar bonded to an underside of said cup bottom wall;

said cup bottom wall formed with a central hole adapted to receive therethrough the piston rod upper end for attachment to said cup bottom wall, said cup side wall having its upper end terminating in jounce stop means;

said mounting assembly further comprising an outer housing concentrically disposed about the principal axis defined by upper and lower one piece metal closures, said upper closure having a cylindrical outer wall for concentrically surrounding said ring in a radially press-fit manner, said outer wall lower end terminating in a radially outwardly extending flanged brim, said outer wall formed with an upper cap portion defined by a radially inwardly extending shoulder and an axially upwardly extending riser terminating in a radially inwardly extending cap web defining a central access aperture;

said lower closure having a circular disc concentrically disposed about said axis bordered by a U-sectioned annular channel defined by interior and exterior axially extending channel walls joined by a radially extending bight wall, said exterior channel wall of predetermined diameter equal to said upper closure outer wall, said channel exterior wall terminating at its upper end in a radially outwardly extending terminal flange, whereby upon an upper surface of said terminal flange being secured in flatwise engagement with an undersurface of said flanged brim;

said composite mount configured and sized such that upon being enclosed in said assembled housing with said ring upper end face abuting an interior portion of said upper closure internal shoulder and said ring tubular extension being sized and configured for press-fit reception in said lower closure channel with a free lower end face of said extension is in abutting contact with said bight wall;

whereby with said upper closure flange brim and said lower closure terminal flange affixed in flatwise abutment said ring is axially compressed in a pre-loaded manner such that said jounce and rebound collars are axially spaced a predetermined extent from an underside of said cap ring and an underside of said disc, respectively, with said piston rod in its neutral mode.

5,342,030

TRUSS JIGGING SYSTEM

Peter W. Taylor, Wauchope, Australia, assignor to Multinail Truss System Pty., Ltd., New South Wales, Australia

Filed Jun. 29, 1993, Ser. No. 82,964

Claims priority, application Australia, Nov. 16, 1992, PL5882

Int. Cl.[5] B30B *3/02*

U.S. Cl. 269—37 **8 Claims**

1. A truss assembly apparatus comprising:

an assembly table comprising two parallel spaced apart tracks extending along two opposed sides of said table, and

a plurality of upwardly open channels extending, parallel to each other, between said two parallel spaced apart tracks;

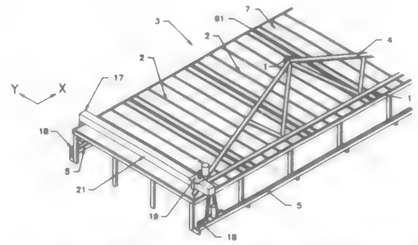
jig bobbins located in said upwardly open channels and adapted to slide therealong;

locking means, located on each jig bobbin, adapted to releasably secure the respective jig bobbin at any position along its respective upwardly open channel;

a gantry, bridging said tracks and adapted to travel along said tracks;

a gantry carriage adapted to travel across said gantry, between said tracks;

engaging means, located on said gantry carriage, adapted to individually engage said jig bobbins and to operate said locking means of said jig bobbin;



store means adapted to store positional information, designating the position of each jig bobbin for a predetermined truss design; and

operating means adapted to act on said positional information received from said store means, to move said gantry along said track and said carriage across said gantry;

whereby, in use, said operating means moves said engaging means to individually engage respective jig bobbins and to unlock its locking means and to move the respective jig bobbin to a required position where said locking means is activated, and said engaging means then disengages from said jig bobbin, leaving said jig bobbin in its position for a predetermined truss design.

5,342,031

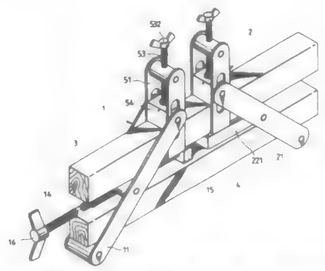
HAND-SCREWED CLAMP FIXTURE WITH MULTI-DIRECTIONAL OPENING

Ai Yu-Fang, 3F, No. 8, Lane 261, Fu Yuan St., Taipei, Taiwan

Filed Oct. 25, 1993, Ser. No. 140,529

Int. Cl.[5] B23Q *3/02*

U.S. Cl. 269—134 **1 Claim**



1. A hand-screwed clamp fixture with multi-directional opening mainly comprises:

a front clamping head;

a rear clamping base;

a top pressing plate;

a bottom pressing plate; and

two lock clamping bases;

wherein the front clamping head is mainly made up of two side plates which are substantially flat and long, each of the side plates has three holes which are provided at both ends and at the center of the side plates, these three holes are respectively provided for the insertion and riveting of the stud shaft of the lock clamping base, the central stud shaft and the lower stud shaft while the central stud shaft is provided with a screw hole for a bolt to screw in, the front end of the bolt has a pushing block, the rear end of the bolt has a wing nut which is an integral part of the bolt and when the wing nut is turned to rotate, it can either screw the bolt into or out of the screw hole of the central stud shaft;

said rear clamping base is similar to the front clamping head, it also consists of two side plates, which are provided for the positioning of three stud shafts: a stud shaft of the lock clamping base, a central stud shaft and a lower stud shaft, the central stud shaft is inserted with an inverted U-shaped blocking base for holding the objects to be clamped;

said top pressing plate is designed to have an appropriate thickness, the width of the top pressing plate is made to fit into the front clamping head and the rear clamping base;

said bottom pressing plate is quite similar to the top pressing plate and is designed to have an appropriate width, the width of the bottom pressing plate is also made to fit into the front clamping head and the rear clamping base;

each of the two lock clamping bases is made up of a bracket, a stud shaft, a screw bolt and a holding block wherein:

the bracket is formed into a "U" shape having a pivotal connecting hole on each side of its two side walls, the central portions of the side plates are provided with adjustment slots;

the stud shaft, having a protruded member at each end, is made to squeeze and secure into the pivotal connecting holes of the bracket, the stud shaft is provided with a screw hole which is used for the screw bolt to feed through, one end of the screw bolt has a cotter-pin hole for securing a wing nut in place;

said holding block is designed to have an appropriate size and shape, the bottom of the holding block is a flat and rough surface, the top of the holding block is provided with a positioning hole for the insertion of the screw bolt, one side of the holding block is provided with a cotter-pin hole for accommodating a cotter pin, moreover, the holding block is also provided with a feed-through hole in the lateral direction, the feed-through hole is designed to allow the insertion of a movable shaft, the two ends of the movable shaft also fed through the adjustment slots of the bracket, thereby the movable shaft is movably mounted on the holes located at the front of the two side plates of the front clamping head.

5,342,032

APPARATUS FOR WIRE-STAPLING MULTI-COMPONENT PRINTED PRODUCTS

Jacques Meier, Büretswil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Nov. 18, 1992, Ser. No. 978,129

Claims priority, application Switzerland, Dec. 13, 1991, 03 698/91-8

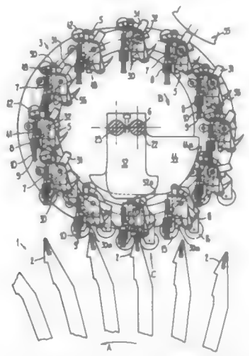
Int. Cl.[5] B27F *7/17*; B41L *43/12*

U.S. Cl. 270—37 **18 Claims**

1. Apparatus for wire-stapling multi-component printed products comprising: saddle-shaped supports arranged parallel to each other and moving in a closed orbit or path and extending approximately at right angles to their orbital movement (A), said orbit or path passing through a stapling zone (C) and being disposed at one side of the stapling zone; at least one stapling system with a number of stapling heads for placing wire staples in position, the stapling heads being designed and located to encounter the supports within the stapling zone (C), and moving in a closed orbit which is circular outside of the stapling zone at approximately the same speed as the supports; the stapling heads being placed at intervals behind one another

VOL 1165 ISS 5 AG 30 1994 UMI

in the direction of their movement (B), which intervals correspond with the intervals between adjacent supports, and the stapling heads also being resiliently mounted on carriers movable in a closed circular orbit at the side of the stapling zone



opposite from the closed orbit of the saddle-shaped supports so that when the stapling heads encounter the respective supports in the stapling zone (C), the supports force the stapling heads resiliently out of their otherwise circular orbit and inwardly with respect to the closed circular orbit of the carriers.

5,342,033

CONTROL METHOD FOR SHEET DISCHARGER WITH STAPLER

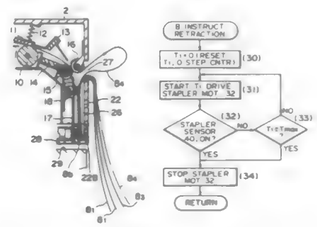
Masakatsu Iwata, and Takeyoshi Kobashi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 953,288, Sep. 30, 1992, which is a continuation of Ser. No. 583,005, Sep. 17, 1990, abandoned, which is a continuation of Ser. No. 228,442, Aug. 5, 1988, abandoned. This application Oct. 7, 1993, Ser. No. 133,215

Claims priority, application Japan, Aug. 7, 1987, 62-196436; Aug. 7, 1987, 62-196437; Aug. 7, 1987, 62-196438; Aug. 7, 1987, 62-196439; Aug. 7, 1987, 62-196440; Aug. 7, 1987, 62-196441; Aug. 7, 1987, 62-196442; Aug. 19, 1987, 62-206125; Aug. 27, 1987, 62-214052; Aug. 27, 1987, 62-214053; Oct. 20, 1987, 62-265137

Int. Cl.[5] **B42B** *2/00;* **G03G** *21/00;* **B21J** *15/28*

U.S. Cl. 270—53 **4 Claims**



1. A method of controlling a sheet material discharging apparatus with sheet material binding means, comprising the steps of:

accommodating each of plural sheet materials sequentially discharged from the sheet material discharging apparatus with at least one edge of the plural sheet materials controlled so as to be aligned; and

operating the sheet material binding means to bind, at a position where the sheet materials are accommodated by said accommodating step, two or more of the plural sheet materials discharged by the discharging apparatus, the sheet materials being aligned and overlaid with one another,

wherein during discharge of sheet materials which together constitute a set of sheet materials, the binding means operates to bind the set of sheet materials without waiting for a trailing edge of the last one of the sheet materials of the set to be discharged, once a leading edge of the last one of the sheet materials is discharge and aligned in said accommodating step.

3. A method of controlling a sheet material discharging apparatus with sheet material binding means, comprising the steps of:

accommodating each of plural sheet materials sequentially discharged from the sheet material discharging apparatus;

operating the sheet material binding means to bind, at a position where the sheet materials are accommodated by said accommodating step, two or more of the plural sheet materials discharged by the discharging apparatus, the sheet materials being aligned and overlaid with one another;

detecting a resetting of the binding means to a stand-by state; and

permitting the operation of the discharging operation when the resetting is not detected within a predetermined period after operation of the binding means is instructed.

5,342,034

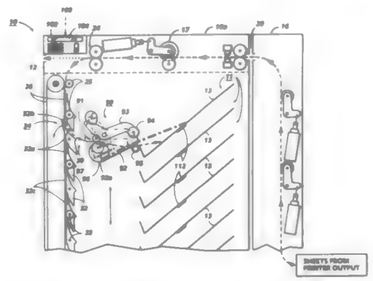
MAILBOX/COMPILER ARCHITECTURE

Barry P. Mandel, Fairport, and Richard A. Van Dongen, Newark, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 27, 1993, Ser. No. 54,943

Int. Cl.[5] **B42C** *1/12;* **B65H** *31/32*

U.S. Cl. 270—53 **16 Claims**



1. In a sheet output mailboxing system for the sheets outputted by a printer, with an arrayed plurality of mailbox bins for collecting such output sheets therein in job sets, the improvement comprising;

a compiling unit having a partial compiling shelf for compiling a job set of plural said output sheets thereon,

bin locator means for providing relative movement between said array of mailbox bins and said compiling unit in a defined path, such that said compiling unit is selectably locatable closely adjacent to a selected one of said mailbox bins,

sheet feeding means for sequentially feeding said output sheets from said printer to said compiling unit,

compiling means for stacking said output sheets on said partial compiling shelf of said compiling unit as a compiled job set with a portion of said compiled job set located on said partial compiling shelf of said compiling unit and another portion of said same compiled job set extending substantially into said selected one said closely adjacent mailbox bin,

stapling means for stapling said compiled job set of output sheets,

set ejection means for ejecting said stapled compiled copy set of output sheets off of said partial compiling shelf and completely into said selected one-said closely adjacent mailbox bin, so that the job set of stapled output sheets is entirely supported in said selected one said mailbox bin,

said mailbox bins being adapted to receive and stack plural such ejected stapled job sets of output sheets therein from said compiling unit,

and said compiling and ejecting means being adapted to compile and eject subsequent stapled job sets on top of prior job sets in the same said mailbox bins.

5,342,035

PAPER FEED APPARATUS FOR SHEET-FED PRESS

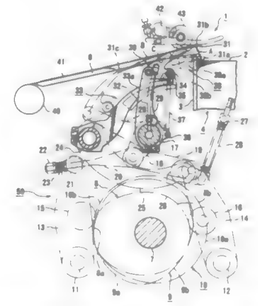
Hiroyuki Sugiyama, and Tetsuya Takeuchi, both of Ibaragi, Japan, assignors to Komori Corporation, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 53,145

Claims priority, application Japan, May 8, 1992, 4-142067

Int. Cl.[5] **B65H** *5/08*

U.S. Cl. 271—11 **3 Claims**



1. A paper feed apparatus for a sheet-fed press, comprising:

a paper stack unit for stacking paper sheets on a paper stack plate thereof;

a suction port member for drawing a leading end portion of a paper sheet stacked on said paper stack unit, said suction port member being movable between a suction position at which the leading edge portion of the paper sheet is engaged on said stack, an upper position above the suction position and a retreat position before the suction position and after the upper position in a paper feeding direction of the paper sheet, the traveling path of the suction port member from the retreat position to the suction position disposed at the position lower than that from the upper position to the retreat position, and at a portion lower than the sheet transport path of the paper convey means;

driving means for moving said suction port member cyclically from the retreat position to the suction position, and then to the upper position in that order; and

paper convey means, disposed within a forward path of said suction port member, for drawing the paper sheet released by said suction port member and feeding the paper sheet in the paper feeding direction, a convey speed of said paper convey means being substantially the same as a moving speed of said suction port member from the upper position to the retreat position,

wherein said suction port member draws the paper sheet at the suction position subsequently releases the paper sheet drawn at the initial period of a movement thereof from the upper position to the retreat position to transfer the paper sheet released to said paper convey means, and subsequently retreats downward from a paper convey path of the paper sheet in a last period of the movement thereof from the upper position to the retreat position.

5,342,036

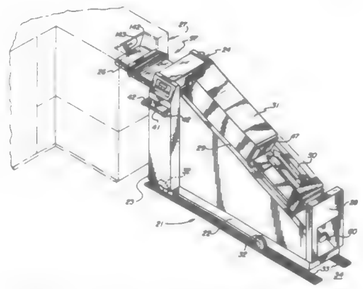
HIGH CAPACITY SHEET FEEDERS FOR HIGH VOLUME PRINTERS

Roman M. Golicz, Clinton, Conn., assignor to Roll Systems, Inc., Burlington, Mass.

Continuation-in-part of Ser. No. 775,200, Oct. 9, 1991, Pat. No. 5,167,408. This application Nov. 12, 1992, Ser. No. 975,508

Int. Cl.[5] **B65H** *5/22*

U.S. Cl. 271—3.1 **44 Claims**



1. A high speed sheet feeder for directing sheets to a host utilization device having a stack feed elevator platform accessed by a drawer, the sheet feeder comprising:

a floor-supported feed ramp for supporting a stack of sheets;

a feeder singulator for deshingling sheets from the stack;

a feed tray remote from the feeder singulator for receiving sheets from the feeder singulator, the feed tray including a space for forming a second stack of sheets therein and the feed tray further including an opening proximate the second stack so that sheets can be removed from a top of the second stack and the feed tray being supported by the stack feed elevator platform when the feed tray is positioned through the port; and

the feed tray having perimeter edges that are sized to enable the tray to pass through a port in the drawer of the utilization device so that the second stack of sheets is positioned proximate a utilization device singulator that is located adjacent the drawer and the feed tray including a support bracket that interconnects the feed tray to the feed ramp, the feed tray being mounted on the support bracket so as to be movable toward and away from the utilization device singulator by movement of the stack feed elevator platform when the feed tray is positioned through the port.

5,342,037

FEED ROLL WEAR COMPENSATION SCHEME

Kathleen M. Martin, Hamlin, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1993, Ser. No. 168,288

Int. Cl.[5] **B65H** *1/08, 3/06*

U.S. Cl. 271—111 **4 Claims**

4. In a reproduction system adapted to make copies of page image information by transferring the page image information to copy sheets fed from a copy sheet feeder, the improvement of roll wear compensation in the copy sheet feeder characterized by:

a nudger roll and a feed roll, said feed roll forming a nip with a retard roll;

a motor for driving said nudger roll and feed roll;

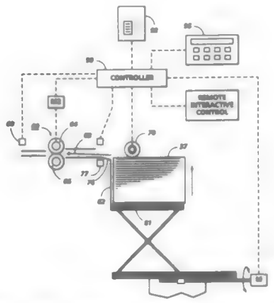
an elevator adapted to maintain normal force of said nudger roll against the sheet stack;

a first sensor means positioned downstream of said nudger

VOL 1165 ISS 5 AG 30 1994 UMI

roll and upstream of said feed roll and a second sensor downstream of said feed roll for signaling the arrival time of a copy sheet at each of said first and second sensor means; and

a controller for calculating the time of travel of the copy sheet between said nudger roll and said first sensor and between said first sensor and said second sensor, measuring the diameter of both said nudger roll and said feed roll,



comparing said measured diameters of said nudger roll and said feed roll with nominal diameters stored in a lookup table, and adjusting the nominal height of said elevator when the diameter of said nudger roll is less than a predetermined diameter and adjusting the roll speed of said feed roll when the diameter of said feed roll is less than a predetermined diameter in order to minimize sheet misfeeds and prevent tearing of copy sheets during transport through a paper path.

5,342,038

APPARATUS FOR GATHERING INDIVIDUAL SHEETS INTO A BUNDLE

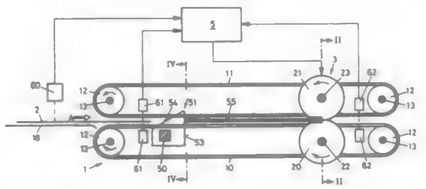
Walter Suter, Inglikerstrasse 39, CH-8142 Uitikon-Waldegg, Switzerland

Filed Apr. 5, 1993, Ser. No. 43,219

Claims priority, application Switzerland, May 15, 1992, 1566/92

Int. Cl.[5] B65H *43/04*

U.S. Cl. 271—198 **9 Claims**



1. An apparatus for gathering individual sheets (2) of paper into a bundle or stack (55) of multiple sheets, and for discharging the bundle, said apparatus comprising:

a) feed means (1) for feeding the sheets in a conveying direction (A);

b) a pair of transport rollers (3), including a first roller (20) and a second roller (21), opposite said first roller, wherein the circular cylindrical outer circumference of at least the first roller defines a first wedge-shaped recess (26) with a first stop shoulder (28) for the front edge of incoming sheets which are supplied by the feed means, and which lies in a plane containing the axis of the first roller (20), said plane being approximately perpendicular to the conveying direction when the first roller is in a rest position;

c) drive means (b), having a drive shaft (22) fixedly connected to at least the first roller for rotation therewith; and

d) a controller (5) for activating the drive means in response to input signals such that the first roller rotates out of its rest position to discharge a bundle of sheets, and subsequently returns to and is halted at the rest position,

e) wherein the feed means is formed by a plurality of continuous, rotational, lower and upper cords (10, 11), and the rollers are arranged between the cords, and further comprising:

f) at least one rear edge stop (51) projecting above the upper cords, arranged between the cords, having a stop face (53) facing the pair of transport rollers (3) and lying perpendicular to the conveying direction, and defining an abutting surface (54) which is sloped in the conveying direction for lifting an infed sheet above sheets already resting against the stop shoulder.

5,342,039

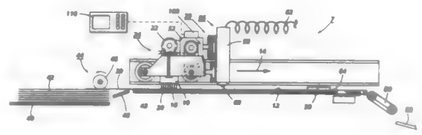
SHEET HANDLING DEVICE AND METHOD FOR TRANSPORTING SHEETS

Michael Carlotta, Sodus, and David G. Anderson, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1992, Ser. No. 992,199

Int. Cl.[5] B65H *9/00*

U.S. Cl. 271—236 **1 Claim**



1. A sheet transport for transporting sheets across a surface comprising:

a lateral registration member forming a side guide for sheets translated on the surface;

an elongated member including a multiplicity of fibers extending outwardly therefrom with said fibers forming a sheet receiving area with the surface;

means for moving said elongated member across the surface so as to translate a sheet in the sheet receiving area across the surface; said extending fibers are oriented substantially in the direction of sheet translation across the surface at an angle ranging from about 5° to about 12° in the direction of said lateral registration member; and

clamping means for selectively and releasably securing sheets to the surface, said clamping means includes a lead edge registration member for engaging and registering a leading edge of sheets transported across the surface.

5,342,040

TURNING DEVICE FOR SHEETS OF PAPER IN A FEED WELL

Wilhelm Markgraf, Tennenbronn, Fed. Rep. of Germany, assignor to Mathias Bauerle GmbH, St. Georgen, Fed. Rep. of Germany

Filed Jul. 16, 1993, Ser. No. 93,098

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1992, 9209615[U]

Int. Cl.[5] B65H *9/16*

U.S. Cl. 271—251 **13 Claims**

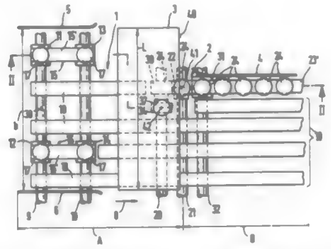
1. A device for turning a sheet, the device comprising:

first feed means for feeding the sheet in a first orientation and in a feed direction;

a drive roller positioned downstream of said first feed means and on one side of the sheet, said drive roller having a rotating surface positioned adjacent the one side of the sheet and moving in said feed direction;

a drive pressure ball positioned on another side of the sheet opposite said one side, said drive pressure ball is biased against the sheet and said rotating surface of said drive roller;

a stopping roller positioned downstream of said drive roller on the one side of the sheet and spaced from said drive roller in a lateral direction perpendicular to said feed direction, said stopping roller having a rotating surface positioned adjacent the one side of the sheet;



a stopping pressure ball positioned on the another side of the sheet, said stopping pressure ball is biased against the sheet and said rotating surface of said stopping roller with a force less than a force of said drive pressure ball biased against the sheet;

second feed means positioned downstream of said stopping roller and for feeding the sheet in a second orientation and in said feed direction.

5,342,041

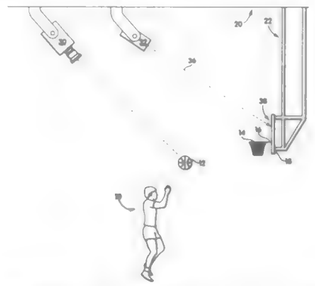
GUIDING SYSTEM FOR ATHLETES

Aaron Agulnek, and Martin Agulnek, both of 107 Brook Rd., Sharon, Mass. 02067

Filed Feb. 5, 1993, Ser. No. 14,404

Int. Cl.[5] A63B *69/00*

U.S. Cl. 273—1.5 A **14 Claims**



1. An apparatus for use by ball players who are engaged in an exercise of directing a ball at a desired location comprising:

a video camera which detects a position of the ball and provides a signal responsive thereto;

circuitry which receives the signal from the video camera, determines a target location indicating where a player should direct the ball to cause the ball to arrive at the desired location, based on the position of the ball, and provides an output signal; and

an illumination system which receives the output signal from the circuitry and provides to the player a visual indication of the target location where the player should direct the ball, based on the received output signal,

wherein the ball, upon illumination, emits a particular spectrum, the apparatus further comprising a filter to filter an image received from the video camera, said filter for enhancing the spectrum emitted by the ball.

5,342,042

BALL LOCATION SYSTEM

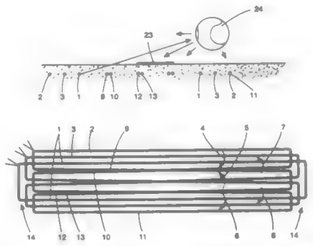
Bruce H. Candy, Basket Range, and John R. Baxter, Salisbury Heights, both of Australia, assignors to Caldone Pty. Limited, Camden Park, Australia

Continuation of Ser. No. 458,669, Feb. 16, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 837,085

Claims priority, application Australia, Jun. 30, 1987, PI2801

Int. Cl.[5] A63C *19/06*

U.S. Cl. 273—31 **14 Claims**



1. A ball location assessment apparatus for installation beneath a surface of a playing court, said apparatus including at least one transmit coil and at least one receive coil wherein said at least one transmit coil and said at least one receive coil are selectively aligned so as to be in a mutually adjacent and overlapping position to one another beneath a pre-designated portion of said surface, each receive coil being provided for detecting the presence of a magnetically permeable ball, the orientation of said at least one receive coil relative to said at least one transmit coil being such that the at least one receive coil is substantially electrically nulled so that the net induced electro-motive force across the at least one receive coil is substantially zero with respect to alternating magnetic fields emitted from said at least one transmit coil.

5,342,043

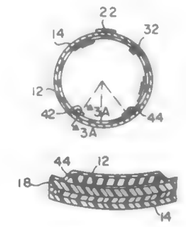
SPLIT WEIGHT BLADDER FOOTBALL

Joseph F. Baltronis, Agawam, and Thomas J. Kennedy, Chicopee, both of Mass., assignors to Lisco, Inc., Tampa, Fla.

Filed Aug. 30, 1993, Ser. No. 112,919

Int. Cl.[5] A63B *41/00*

U.S. Cl. 273—65 EC **16 Claims**



2. A football comprising a generally elliptical bladder, generally oval panels seamed thereover, lacing components along one seam and at least two spaced apart counterweights secured to the bladder at locations spaced a predetermined distance from a location diametrically opposite said lacing components and equal to the weight of said lacing components, said prede-

VOL 1165 ISS 5 AG 30 1994 UMI

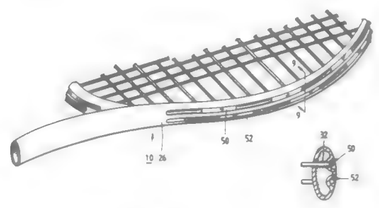
termined distance being such that there is no abatement of punting or kicking efficiency while still allowing a true spiral pass to be thrown.

5,342,044

GAME RACKET

Chin-San You, No. 6, Lane 477, Sec. 2 Feng-Shyn Rd., Feng Yuan City, Taichung Hsien, Taiwan

Filed Jul. 19, 1993, Ser. No. 92,819
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 D 1 Claim



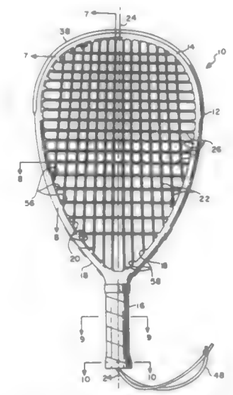
1. A game racket comprising:
an elongated handle;
a head frame at an end of said handle forming a closed oval area, said head frame having an outer peripheral surface engaged to an inner peripheral surface which defines said oval area;
a cross-section through said outer peripheral surface and said inner peripheral surface being oval;
a plurality of string holes disposed in said head frame such that said string holes are grouped as a first set of string holes and a second set of string holes,
at least one string threaded through said string holes and extending across said oval area in a crisscross and interlaced pattern to form a string surface within said oval area;
said first set of string holes having axes located in a first plane parallel to and above said string surface, and said second set of string holes having axes situated in a second plane parallel to and below said string surface;
wherein each of said second set of string holes is respectively located below a center portion between two adjacent string holes of said first set of string holes;
a first groove in said first plane and on said head frame having a substantially semi-circular wall located below said outer peripheral surface;
a second groove in said second plane and on said head frame having a substantially semi-circular wall located below said outer peripheral surface;
said first groove and said second groove each having a length substantially equal to a length of said outer peripheral surface to protect the stringing and reinforce the structural strength of the frame against impacts with the playing surface;
said first set of string holes located in said first groove;
said second set of string holes located in said second groove;
wherein said string is threaded through said head frame such that said string enters and departs two adjacent string holes of said first set of string holes or said second set of string holes, and that said string has a string section bridging said two adjacent string holes so as to be received within said substantially semi-circular wall of either said first groove or said second groove.

5,342,045

REVERSE SUNBURST STRING PATTERN FOR RACQUETBALL RACKETS

Brian P. Feeney, Enfield, Conn., assignor to LISCO, Inc., Tampa, Fla.

Filed Dec. 20, 1993, Ser. No. 169,022
Int. Cl.[5] A63B *51/00*
U.S. Cl. 273—73 D 7 Claims



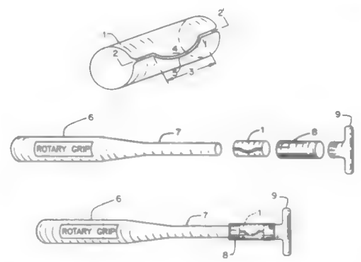
1. A new and improved racquetball racket with a reverse sunburst string pattern comprising, in combination:
a frame formed with an oval cross sectional configuration and shaped to have its free ends extend parallel to form a handle, with its central extent in a general loop shaped configuration to constitute a head and two intermediate portions forming angled beams therebetween to couple the handle and head, the frame having an axis centrally disposed through the center of the handle and head, the head being formed with a plurality of spaced apertures extending through its periphery;
a first string positioned through first selected apertures in the head to form cross strings perpendicular to the axis and parallel with each other, the cross strings being spaced from adjacent cross strings a distance greater at the end adjacent the handle than at the opposite end with such spacing decreasing with distance away from the handle in such direction;
a second string threaded through second selected apertures in the head to form main strings nearly parallel to, but offset from, the axis, each main string being positioned at a small angle with respect to the axis and with the main strings further remote from the center line being at a successively greater angle than the angle of the strings adjacent to the axis with the angle between adjacent strings increasing with the distance away from the axis, the main strings being spaced more widely apart adjacent to the handle than at the end remote therefrom, the main strings and cross strings constituting a planar string bed;
a bumper strip located on the radially exterior surface of the head at the end thereof remote from the handle;
grommet strips located on the radially exterior surface of the frame on opposite sides thereof;
a pallet formed on the ends of the frame at the handle to facilitate proper sizing at the discretion of the user and with a spiral wrap grip thereover and with a butt cap thereover; and
a tie string secured to the handle at its end thereof and with an aperture in the butt cap for the passage of the tie string therethrough.

5,342,046

INTERLOCKING RIGID, SPLIT GRIP FOR SOFTBALL AND BASEBALL BATS

Albert R. Erb, Ortley Beach, N.J., assignor to Rotary-Grip ™, Inc., Island Heights, N.J.

Filed Apr. 26, 1993, Ser. No. 53,519
The portion of the term of this patent subsequent to Jul. 30, 2008, has been disclaimed.
Int. Cl.[5] A63B *59/06*
U.S. Cl. 273—72 R 7 Claims



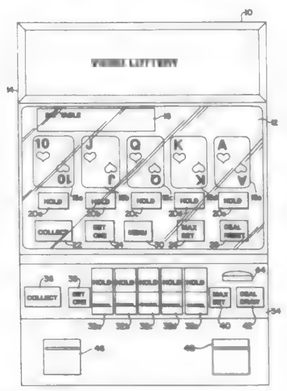
1. A baseball or softball bat used for playing baseball or softball in a swingable manner comprising in order a hitting end and a handle end, said handle end being grippable by both hands of the user thereof, said handle end also having a knob end and a flexible gripping sleeve applied thereon, and wherein a swing enhancing device is placed over said handle end and under said gripping sleeve, said device comprising a thick, long tubed element of a slippable plastic, said element having a longitudinal split to provide ends in a longitudinal direction, said device designed to fit under one of the hands of said user, the improvement comprising an interlocking tab provided along said longitudinal split.

5,342,047

TOUCH SCREEN VIDEO GAMING MACHINE

Raymond Heidel, and Richard E. Snider, both of Henderson, Nev., assignors to Bally Gaming International, Inc., Las Vegas, Nev.

Filed Apr. 8, 1992, Ser. No. 864,959
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—85 CP 12 Claims



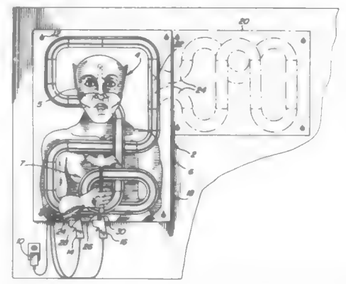
1. A video gaming machine comprising:
a housing;
a plurality of game control buttons mounted on said housing;
a plurality of machine control buttons mounted on said housing;
control means, including a memory containing a plurality of games, responsive to said game control buttons and machine control buttons for controlling the gaming machine; and
a touch screen video display operatively connected to said control means for displaying said games wherein said games include displays of game controls and machine controls for operating said games;
wherein said control means is responsive to either one of said game buttons and said displayed game controls to control at least a first one of said games.

5,342,048

WALL MOUNTED SLOT CAR TRACK WITH MOVING ACCESSORIES

Lawrence T. Jones, Westlake Village, and Richard L. May, Manhattan Beach, both of Calif., assignors to California R & D Center, Westlake Village, Calif.

Filed Feb. 5, 1993, Ser. No. 14,322
Int. Cl.[5] A63F *9/14*
U.S. Cl. 273—86 B 21 Claims



1. A combination decorative wall poster and vertical vehicle toy set, comprising:
a wall having a vertical surface;
a substrate having colorful indicia for providing decorative designs for a child's room on a front surface and having a substantially planar rear surface;
means for hanging the substrate vertically on the wall as a decorative wall poster with the rear surface of the substrate being parallel to the vertical surface of the wall;
a kinetic decorative mobile extending from the substrate and having at least one movable means that is aligned for movement in a plane, substantially parallel to the wall;
at least one track member extending across the front surface of the substrate to form a continuous path, the continuous path extending beneath the movable means position, the track member includes two pairs of rails extending across the front the substrate adjacent the mobile, each pair of rails having an elongated opening with retention flanges positioned between the rails;
a pair of toy vehicles, mounted for translating across the track member, the track member being arranged on the substrate to permit the toy vehicles to contact the mobile as it travels along the track member to cause a kinetic movement of the movable means, a first toy vehicle is mounted on one set of rails, and a second toy vehicle is mounted on the other set of rails, each toy vehicle including a non-articulated chassis and a first retainer member that interlocks with the retention elongated opening to maintain the toy vehicle operative in a vertical plane, wherein each toy vehicle can contact the mobile to cause a kinetic movement of the movable means;

VOL 1165 ISS 5 AG 30 1994 UMI

a second retainer member is mounted on the chassis displaced from the first retainer member and extending into the elongated opening; and

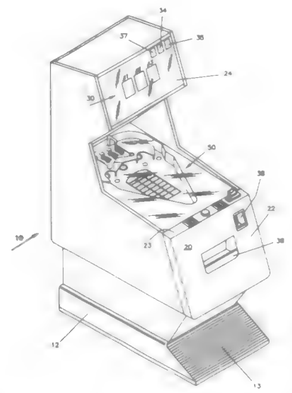
means for driving the toy vehicles along the track member, including, on each toy vehicle, drive wheels and electrical motor with magnetic field pieces forming a magnetic attraction with its set of rails, the interlocking of the first retainer member and the retention flanges permit sufficient clearances to enable the drive wheels to drive the toy vehicle across the substrate without interference while prohibiting the magnetic field pieces from losing their magnetic attraction whereby adequate traction of the drive wheels is maintained with the substrate in both a static and translating mode of operation during a vertical alignment of the toy vehicle on the substrate.

5,342,049

GAMING MACHINE WITH SKILL FEATURE

Michael Wichinsky, 2575 S. Highland Dr., Las Vegas, Nev. 89109; Leroy H. Gutknecht, 5673 Annie Oakley, Las Vegas, N.Y. 89120, and Claude A. Fernandez, 5028 S. Rainbow Blvd., #202, Las Vegas, Nev. 89118

Filed Mar. 3, 1993, Ser. No. 25,985
Int. Cl.[5] A63F *7/00*
U.S. Cl. 273—119 R **8 Claims**



1. A gaming machine that includes both random features and skill features comprising:

a) a cabinet having a lower section and an upper section;

b) a playing surface located in the lower section and including a plurality of playfield targets;

c) a reciprocating ball shooter mounted in the lower section adjacent to the playing surface and a ball sized to fit in the ball shooter;

d) a reel slot machine located in the upper section including a plurality of reels, each reel having symbols located thereon;

e) means for receiving coins for initially activating the gaming machine;

f) means for activating the spinning of the reels and means for displaying at least one symbol on each of the reels on a pay line when the reels stop spinning;

g) means for paying the player when the symbols displayed on the pay line comprise a winning combination;

h) means for activating the ball shooter to shoot the ball across the playing surface;

i) means for respinning at least one of the reels of the reel slot machine when the ball activates one of the playfield targets so that a new random selection of a symbol on the reel is achieved, the means for respinning at least one of the reels of the reel slot machine comprising a skill hole located on the playing surface, and

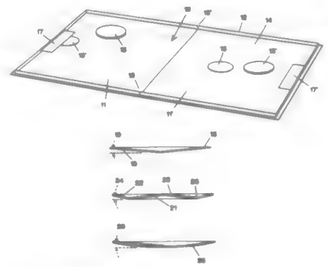
j) means for paying the player for any amounts resulting from a winning combination on the pay line after one or more of the reels are respun.

5,342,050

BOARD GAME WITH AIR-CUSHIONED FLOATING PUCKS

Robert C. Thompson, Palo Alto, Calif., assignor to Monneret Jouets, Loue-le-Saunier, France

Filed Aug. 17, 1992, Ser. No. 931,015
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—126 R **15 Claims**



1. A game, comprising:

a horizontal surface;

a thin puck having a bottom surface that may be juxtaposed with said horizontal surface, and adapted for being given a sufficient velocity across said horizontal surface that air rushing against said bottom surface lifts said puck completely off said horizontal surface, whereby said puck travels on a thin cushion of air across said horizontal surface at high speed without frictional engagement between said horizontal surface and said puck;

a bat for striking said puck;

a raised border forming a perimeter around said horizontal surface for containing said puck within said horizontal surface; and

a goal disposed above said horizontal surface within the perimeter formed by said raised border, said goal being adapted for catching said puck between said goal and said horizontal surface if said puck enters into a space between said goal and said horizontal surface.

5,342,051

APPARATUS AND METHOD FOR TRACKING THE FLIGHT OF A GOLF BALL

David B. Rankin, Lowell, Mass.; Edgar P. Roberts, Jr., and James W. Kluttz, both of Winston-Salem, N.C., assignors to Accu-Sport International, Inc., Winston-Salem, N.C.

Filed Oct. 30, 1992, Ser. No. 968,994
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—185 A **23 Claims**

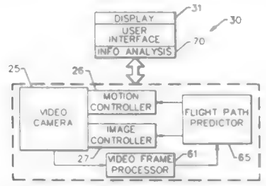
1. An apparatus for tracking a golf ball during actual flight, comprising;

a video camera for producing data representative of video images of a golf ball;

processing means connected to receive data from said video camera for determining the golf ball image position within a video frame of said camera;

predicting means responsive to said video frame processing means for predicting the flight path of the golf ball in response to data from said video frame processing means; and

motion control means responsive to said predicting means for controlling the movement of said camera to thereby track the golf ball during actual flight, said motion control means including means for mounting said camera for movement during actual flight of the golf ball.

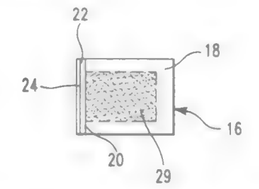


5,342,052

CAVITY PUTTER

Peter Costa, Bloomington, N.Y., assignor to Joseph B. Taphorn, Poughkeepsie, N.Y., a part interest

Filed Feb. 25, 1993, Ser. No. 22,445
Int. Cl.[5] A63B *69/36, 53/04*
U.S. Cl. 273—167 H **8 Claims**



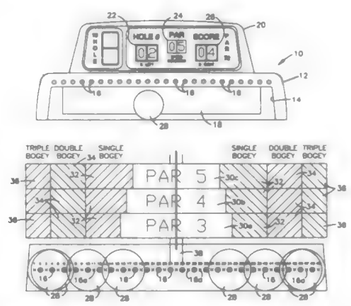
1. A method for making a golf putter, comprising securing tautly a layer of yieldable supple sheet material across the vertical open face of a box having an internal cavity therein, filling said cavity behind said layer of material with a displaceable liquid or granular material, and securing a shaft to said box.

5,342,053

GOLF PUTTING APPARATUS

Clinton L. Smith, R.R. 2, Box 172-14, Ozark, Mo. 65721

Filed Nov. 16, 1993, Ser. No. 152,685
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—185 R **21 Claims**



1. Golf ball putting apparatus comprising:

means for providing a path along which a ball may be putted, said path having a predetermined width dimension;

means for resolving the width dimension of said path into a pre selected number of equally spaced resolution points connected by segments each extending substantially the same distance;

means for defining at one end of the path a target zone for the ball representative of a golf cup and having a width dimension coinciding with a selected number of adjacent segments;

means for defining on opposite sides of said target zone a pair of bogey zones each having a width coinciding with a selected number of adjacent segments;

means for defining adjacent to each bogey zone at least one multiple bogey zone having a width coinciding with a selected number of adjacent segments; and

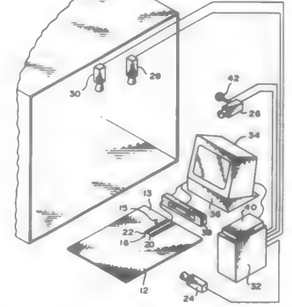
means for sensing the resolution point most closely coinciding with the center of a ball rolling to said one end of the path to determine whether the center of the ball is within the target zone or one of the bogey or multiple bogey zones.

5,342,054

GOLD PRACTICE APPARATUS

Philip L. Chang, San Bruno; Gary S. Flood, Saratoga; Kent W. Kirkes, Palo Alto, and Edwin R. Smith, San Jose, all of Calif., assignors to Timecap, Inc., Sunnyvale, Calif.

Filed Mar. 25, 1993, Ser. No. 37,089
Int. Cl.[5] G06F *15/44*
U.S. Cl. 273—186.1 **18 Claims**



1. An apparatus for recording and providing instant playback of video images of a golfer's swing comprising:

a) a hitting area for receiving a golf ball to be driven;

b) video camera means positioned near and aimed at said hitting area for obtaining video images of a golfer during a swing at a ball on said hitting area;

c) digital video image processing and storage means for receiving and storing video images from said video camera means;

d) means responsive to the placement of a ball on said hitting area to initiate processing and storage of video images from said video camera means by said video image processing and storage means;

e) display means connected to said digital video image processing and storage means for instantly displaying stored video images of a golfer's swing; and

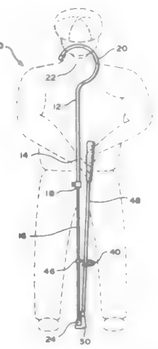
f) input means connected to sad digital video image processing and storage means for controlling operation of said apparatus;

g) wherein said means to initiate storage of video images responsive to placement of a ball on said hitting area comprises second video camera means aimed at said hit-

VOL 1165 ISS 5 AG 30 1994 UMI

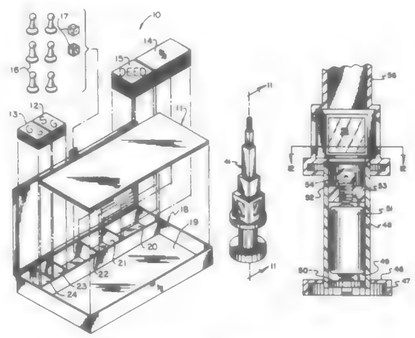
ting area, and image processing software in said video image processing and storage means for analyzing images obtained by said second video camera means and determining therefrom if a golf ball has been positioned on said hitting area, and means to initiate the storage of video images if it is determined that a golf ball has been placed on the hitting area.

5,342,055
GOLF PUTTING TRAINING DEVICE
Mark J. Diley, 18540 Queen Elizabeth Dr., Brookeville, Md. 20833
Filed Nov. 9, 1993, Ser. No. 149,539
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.2 **11 Claims**



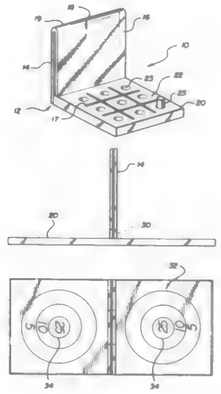
1. A device for use with a golf putter having a putter head and a shaft;
said device for determining the position of a golfer's hands during the execution of a putting stroke along a preselected path and for maintaining the putter head in a precise relationship on that path with respect to the golfer to develop a repetitive stroke comprising:
a neck engaging member;
an elongated rod having first and second ends, said first end connected to the neck engaging member;
the length of the elongated rod defining the radius of the arc of motion of the putter relative to the golfer;
a quick release connector for releasably connecting the second end of the rod to the putter head; and,
an indicator attachable to the elongated rod for determining the position of the golf putter shaft relative to the central pivot point defining the radius of arc of motion of the putter, said indicator being an elongated loop having elongated sides;
a fixed end of said loop attached to said rod and a free end of said loop forming an opening with respect to the fixed end whereby the opening is structured to receive the putter head shaft when the device is used, said putter shaft being centrally positioned relative to the elongated sides of the indicator loop and whereby said putter shaft maintains its position relative to the indicator loop during the execution of a proper golf putting stroke and whereby the shaft moves to either one of said elongated sides of said indicator loop when an improper putting stroke is made.

5,342,056
BOARD GAME APPARATUS
Lamia A. A. Ajaji, P.O. Box 38535, Dahran, Doha Camp, Saudi Arabia 31942
Filed Sep. 3, 1992, Ser. No. 939,655
Int. Cl.[5] A63F *3/00, 9/18*
U.S. Cl. 273—237 **1 Claim**



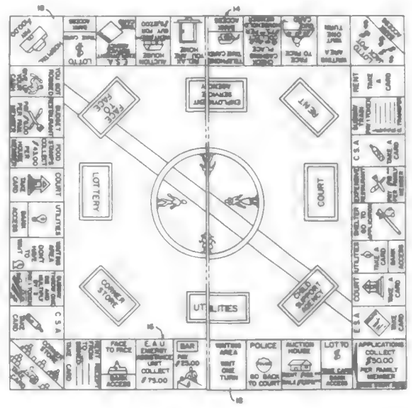
1. A board game apparatus, comprising,
a foldable game board, and
a deck of first cards having a plurality of first question cards for use by individual players, and a deck of second cards having a plurality of second question cards for use by groups of said second players, and
simulated dollar denominations, and
a plurality of property deeds, and
a plurality of movement tokens one for each player for movement along the game board path, and
a dice pair, and
a housing container, the housing container including a first compartment, wherein the first compartment is arranged to receive said game board, and a second compartment, wherein the second compartment is arranged to receive said simulated dollar denominations, and
a third compartment wherein the third compartment is arranged to receive the property deeds, and
a fourth compartment to receive said tokens and said dice pair, and
a fifth compartment to receive said deck of first cards, and
a sixth compartment to receive said deck of second cards, and
the game board includes a continuous game path directed about a periphery of the game board, the game path includes a plurality of adjacent spaces, wherein one of said spaces includes a start space to initiate play of said game, and a plurality of debit spaces to direct individual players to pay predetermined penalties, and at least one credit space to direct players to receive a reward, and a plurality of singles play spaces to direct players to select a first question card of said deck of said first cards, and a plurality of doubles play spaces in said game path to direct a player to receive a second question card of said deck of second cards when players play as said group, and
said game path includes a plurality of property spaces to include a plurality of castle property spaces and a plurality of sky scraper property spaces, and each of said property spaces is associated with one of said property deeds, wherein a player obtains a property through one of said property spaces, said player receives an associated property deed relative to respective property space, and
a plurality of acquisition tokens each acquisition token having a figure simulating a property represented on one of said property spaces, to visually indicate acquisition of said property, said acquisition tokens representing each of said plurality of property spaces, and each acquisition token includes a hollow base, the hollow base having a hollow base cavity, with an on/off switch directed within said hollow base cavity, and a pedestal housing orthogonally mounted on said hollow base, said pedestal housings having a housing cavity, the housing cavity including a battery, and an illumination bulb web mounted within said pedestal housing above said battery, and said illumination bulb web mounting an illumination bulb, and the illumination bulb, the battery, and the on/off switch arranged in electrical communication relative to one another to effect selective illumination of said illumination bulb, and a translucent lens mounted within an upper distal end of said pedestal housing above said illumination bulb, wherein said translucent lens is of a predetermined coloration, and said figure simulating said property mounted fixedly to an upper distal end of said pedestal housing over said translucent lens, and said figure simulating said property includes a transparent window, and the transparent window is in optical communication with said illumination bulb to direct illumination of said illumination bulb through said translucent lens and said window to permit visual indication of acquisition of said property.

5,342,057
INTERACTIVE, TABLETOP SIGNAGE ASSEMBLY
Paul O. Sorkoram, 26920 M-60, Mendon, Mich. 49072-0428
Filed Feb. 1, 1993, Ser. No. 11,729
Int. Cl.[5] A63F *3/00;* **G09F** *23/14, 23/08, 23/06*
U.S. Cl. 273—239 **14 Claims**



1. An interactive, tabletop signage assembly comprising:
an L-shaped holder for displaying an insert carrying a message to be read by an observer, said holder including an upright for releasably receiving said insert and including an upright for releasably receiving said insert and displaying opposed faces thereof, and a base perpendicular to said upright for supporting said upright on a surface of a table; and
means attached to said base for interactively engaging said observer with said holder such that the observer's attention is drawn to the message. wherein the upright is formed of two opposed sheets of transparent, polymeric material substantially coextensive with said insert and spaced apart from each other so as to receive and retain said insert such that both faces of said insert are visible.

5,342,058
RED TAPE A GAME OF SKILL AND CHANCE
Rafael Giovannetti, 10925 Brittanyln Apt. 30, Tampa, Fl. 33612
Filed Jul. 21, 1993, Ser. No. 94,237
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 **4 Claims**



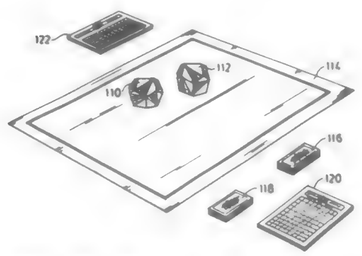
1. A red tape game of skill and chance which comprises:
a) a game board having a continuous path around its perimeter divided into consecutive spaces defining playing positions, in which some playing positions bear instructions representing amounts of money to be paid and received during the game;
b) a plurality of sets of different identified playing pieces, in which at the start of the game three said playing pieces of the same set represents a family for each of the game players, said playing pieces being of a size to fit within the playing positions;
c) a pair of dice for producing a random count to determine the magnitude of movement for said playing pieces along the playing positions;
d) play money of different denominations for distribution of part thereof to each player;
e) a bank account book for each player, so that each player can keep a written record of money deposited into and withdrawn from a bank account during the game;
f) a plurality of tokens for purchase by each player, so as to ride on a subway during the game; and
g) a plurality of situation cards, each having instructions thereon, so that when a player lands on a playing position indicating a pick of one said situation card, the player will follow the instructions.

5,342,059
BOWLING BOARD GAME APPARATUS
Steven W. Briem, 17 Sherry Dr., Syracuse, N.Y. 13219, and Joseph A. Figliomeni, 5689 Stevens Dr., Cicero, N.Y. 13039
Filed Sep. 28, 1993, Ser. No. 128,585
Int. Cl.[5] A63F *3/00, 9/04*
U.S. Cl. 273—277 **11 Claims**

1. An apparatus for playing a board game in which players roll dice and draw cards to simulate the action of bowling in a bowling alley and in which the object of play is to score the highest point total after ten frames of play, said apparatus comprising:
a first deck of cards, each of the cards of said first deck having a first common indicia on its back side and each of the cards of said first deck having an action command on the face side thereof;

a second deck of cards, each of the cards of said second deck having a second common indicia on its back side and each of the cards of said second deck having a percentage number on the face side thereof;

a first die having a plurality of sides, some of the sides of said first die having indicia indicating a number of pins knocked down after a roll of said first die and the remaining sides of said first die having said first common indicia



indicating that a player is to draw a card from said first deck of cards; and

a second die having a plurality of sides, some of the sides of said second die having indicia indicating that the player rolled a spare, or a miss, and the remaining sides of said second die having said second common indicia indicating that a player is to draw a card from said second deck of cards.

5,342,060

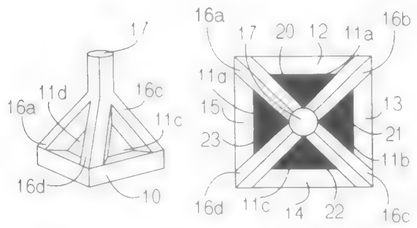
BOARD GAME PLAYING PIECE AND METHOD OF PLAY

Steven C. Barkus, 234 Newhouse La., Round Lake Park, Ill. 60073

Filed Jul. 14, 1993, Ser. No. 91,310

Int. Cl.[5] A63F *7/00*

U.S. Cl. 273—288 **2 Claims**



1. A set of individual four sided playing pieces of identical geometrical shape with a surface recessed within each of the four sides of said playing pieces upon which a single indicia is located, thereby making said indicia visible to not more than one player position at a time when a side of the piece faces a player position, with said single indicia being one of a set of four distinct indicia, with each of said indicia being represented only one time on each of said individual playing pieces, with said set of individual playing pieces being comprised of six different types distinguished by the position of said indicia in relation to one another on said individual playing pieces, thereby creating a unique pattern of said indicia visible to each player when said playing pieces are distributed on a flat surface.

5,342,061

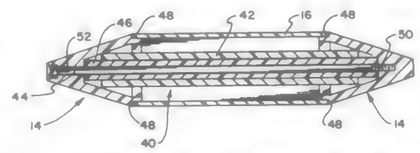
SIMULATED BASEBALL GAME

Eudell Watts, III, 9101 33rd St. West, Rock Island, Ill. 61201

Filed Jul. 19, 1993, Ser. No. 99,904

Int. Cl.[5] A63B *67/00*

U.S. Cl. 273—341 **7 Claims**



1. For use in a new and improved simulated baseball game, comprising:

a projectile assembly, said projectile assembly adapted to be hit by a baseball bat and including at least one end portion and a middle portion, said middle portion including a substantially constant height, and said at least one end portion including a variable height decreasing in a distal direction from said middle portion,

further including:

a removable and replaceable weight assembly located in an interior portion of said projectile assembly.

5,342,062

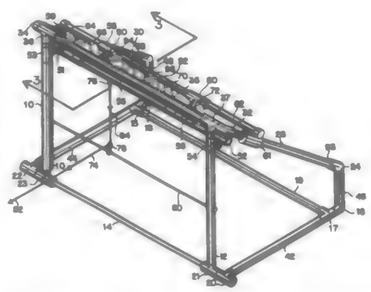
GALLERY, SILHOUETTE, AND TARGET SYSTEM WHICH IS EASILY RESETTABLE, COLLAPSIBLE, AND PORTABLE

Alan G. Lance, Meridian, Id., assignor to Lance Land & Livestock Ltd., Meridian, Id.

Filed Dec. 17, 1992, Ser. No. 991,960

Int. Cl.[5] F41J *5/18*

U.S. Cl. 273—391 **8 Claims**



1. A multiple option target for use with pellet shooting air and CO_2 rifles, including, in combination:

a. a pair of upstanding frame pieces between which extends an intermediate horizontal cross bar mounted at each of said frame pieces,

b. a plurality of target support posts rotatably secured to said intermediate cross bar,

c. a reset moment arm member joined to a target reset bracket, both of which are rotatably mounted on said intermediate cross bar, and

d. an upper horizontal cross bar mounted above said intermediate horizontal cross bar, wherein a pull force on said reset moment arm member will cause said target reset bracket to rotate and thereby urge said target support posts against said upper horizontal cross bar member to bring said target support posts to an upright position against said upper cross bar in preparation for a target practice session.

5,342,063

APPARATUS FOR A BALL GAME

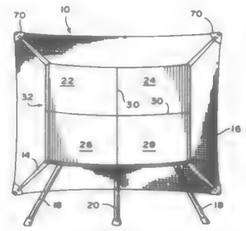
Brendan J. O'Brien, 89 Ronald Avenue, Linbro Park, Sandton, Transvaal, South Africa, and Michael A. Ross, P.O. Box 370, York Beach, Me. 03909

Filed May 11, 1993, Ser. No. 59,334

Claims priority, application South Africa, May 12, 1992, 92/3402

Int. Cl.[5] A63B *63/00*

U.S. Cl. 273—396 **5 Claims**



1. Apparatus for a ball game which includes a plurality of rigid sections which interengage with one another to form a member of rectangular outline which has an arcuate ball returning surface, a plurality of rods each of which is engaged with, and projects outwardly from, a respective section, and sheet material which is engaged under tension with outer ends of the respective rods to assist in maintaining the sections interengaged; the sections being identical and each section being of rectangular outline with a first pair of opposed sides which have complementary fixing formations and a second pair of opposed sides which comprise an outer side, and an inner side with securing formations.

5,342,064

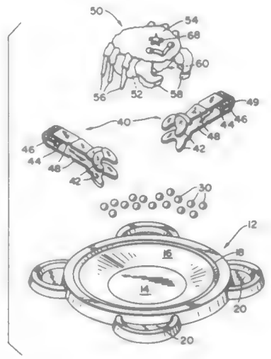
ACQUISITION GAME

Craig Williamson; Mark Luecke; John R. Wildman, all of North Riverside, and Dennis J. O'Patka, Chicago, all of Ill., assignors to Western Publishing Co., Inc., Racine, Wis.

Filed Oct. 25, 1993, Ser. No. 142,585

Int. Cl.[5] A63F *9/00*

U.S. Cl. 273—447 **10 Claims**



1. An acquisition game comprising:

(A) a generally concave playing field defining a nadir;

(B) a plurality of movable game pieces removably disposed on said field for movement thereabout;

(C) a plurality of acquisition means for removing at least one of said game pieces at a time from said field, said acquisition means also being for moving said game pieces and an interposing member about said field;

(D) an interposing member removably disposed on said field for movement thereabout when said interposing member vibrates, said interposing member being substantially greater in size than any of said game pieces and defining passages therethrough configured and dimensioned to enable movement of said game pieces through said passages so that said interposing member impedes access of said acquisition means to at least those of said game pieces in said passages; and

(E) means for vibrating said interposing member.

5,342,065

INFLATABLE SEAL ARRANGEMENT

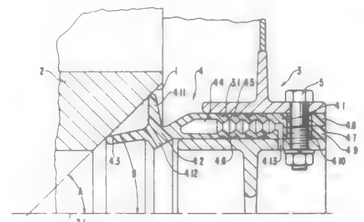
Hans-Jürgen Blanke, Seefeld, Fed. Rep. of Germany, assignor to Klüber Lubrication München KG, Munich, Fed. Rep. of Germany

Filed Jun. 15, 1992, Ser. No. 898,518

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4119954

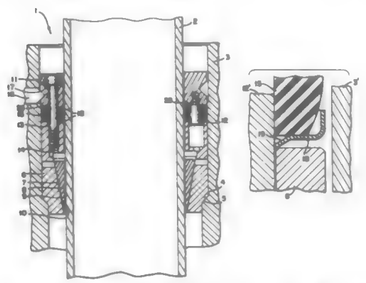
Int. Cl.[5] F16J *15/46*

U.S. Cl. 277—34 **16 Claims**


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VOL 1165 ISS 5 AG 30 1994 UMI

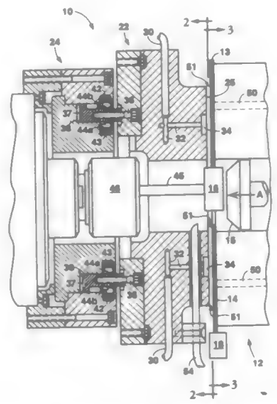
said elastomer seal element has a central opening along a central axis therethrough;
said elastomer seal element has a plurality of circumferentially spaced through holes surrounding said central opening;
said sealing device comprises a generally flat annular ring having a center opening and a plurality of open-ended truncated cone portions defining a plurality of through holes in said seal device which corresponds to the through holes in said elastomer seal element;
each said truncated cone portion is serrated having radially spaced segments and gaps therebetween when said sealing device is in a nonenergized state;
said sealing device having inside and outside diameters approximately equivalent to inside and outside diameters of said elastomer seal element;
said sealing device is adapted to be positioned against radial end surfaces of said elastomer seal element such that a pair of said sealing devices are positioned on each radial end



surface, respectively, to form an annular sealing assembly therewith, such that said plurality of holes of each said sealing device and said truncated cone portions are aligned to receive a bolt or pin member therethrough and to form a seal therewith upon deformation of said elastomer element and each said truncated cone portion in response to compression of said sealing assembly;
said annular sealing assembly is positioned in an annular gap between said well casing and said casing head, such,that upon energization said sealing assembly is compressed along a direction parallel to said central axis causing said elastomer seal element to deform and to be guided radially by said sealing devices in radially inward and outward directions such that the truncated cone portion of each sealing device is flexed into a position wherein said cone portion is generally co-planar with the remainder of said generally flat annular ring and said annular sealing assembly contacts said well casing and said casing head forming a seal therebetween.

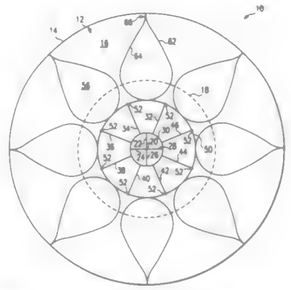
5,342,067
METHOD AND APPARATUS FOR MACHINING SUBSTRATE PLATES FOR MAGNETIC MEMORY DISKS
Meryle D. Adler, Corning, and Harold G. Shafer, Jr., Rock Stream, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.
Filed Aug. 9, 1993, Ser. No. 103,709
Int. Cl.[5] B25B *11/00*
U.S. Cl. 279—3 **24 Claims**

1. An apparatus for retaining, during processing, a disk-like structure having opposed major surfaces, comprising:
a chuck having a surface for contacting at least a portion of one of the major surfaces of said structure; and
a means for applying a flow of fluid to the other major surface of said structure, said flow of fluid sufficient to retain said structure against the contacting surface of said chuck during processing, said chuck contacting only the



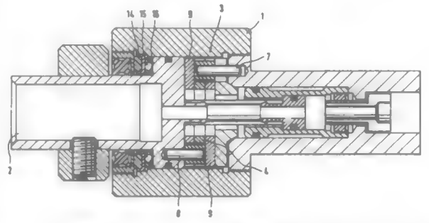
major surface of said disk-like structure, thereby exposing the entire peripheral edge of said structure for processing.

5,342,068
LAMINAR FLOW VACUUM CHUCK
Jeffrey L. Large, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 26, 1993, Ser. No. 112,744
Int. Cl.[5] B25B *11/00*
U.S. Cl. 279—3 **18 Claims**



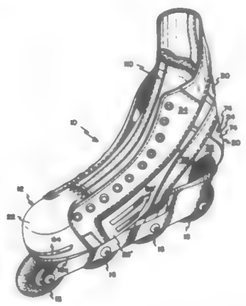
1. A vacuum chuck for holding and supporting wafers of varying diameter comprising, in combination:
a wafer support for supporting a wafer and having an upper surface and a perimeter, said upper surface being at least as large as the wafer to be supported;
a plurality of interconnected grooves disposed in said upper surface with a plurality of vacuum ports disposed in said grooves, said grooves extending to said perimeter of said wafer support, said grooves being of a size and shape and said vacuum ports being positioned in said grooves to provide a plurality of ports to ambient which varies in number as a function of wafer size and causes the hold down force on the wafer to increase with wafer size.

5,342,069
TOOL HOLDER FOR MACHINE TOOLS
Adolf Wellach, Kieskamper Weg 32, D-4411 Ahaus-Wessum, Fed. Rep. of Germany
PCT No. PCT/EP92/01893, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO93/03875, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 19, 1992, Ser. No. 39,285
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1991, 4127484
Int. Cl.[5] B23B *31/02*
U.S. Cl. 279—16 **17 Claims**



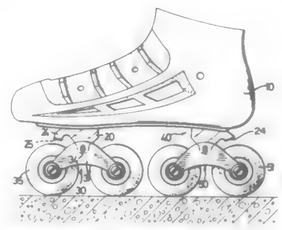
1. Tool holder for a tool of a machine too, said tool holder comprising:
a mounting portion associated with the machine tool and a mounting portion associated with the tool which define an axial direction, and
a coupling device which rotationally fixedly connects the mounting portions together with a radial clearance and which is supported via rolling bodies in the form of rollers in the axial direction both towards the machine tool and also towards the tool and has a coupling disc, which is movable radially to the axial direction, with at least two slots extending perpendicularly to one another and radially to the axial direction, a carrier directed in the axial direction on the one mounting portion engaging in the one slot and a carrier directed in the axial direction on the other mounting portion engaging in the other slot.

5,342,070
IN-LINE SKATE WITH MOLDED JOE BOX
Douglas R. Miller, Eden Prairie; Timothy J. Wiener, Minnetonka, both of Minn., and Gregory J. Collins, Toronto, Canada, assignors to Rollerblade, Inc., Minnetonka, Minn.
Filed Feb. 4, 1993, Ser. No. 13,567
Int. Cl.[5] A63C *17/06*
U.S. Cl. 280—11.22 **5 Claims**



1. An in-line skate comprising:
a boot for receiving skater's foot, said boot including a sole;
a frame secured to said sole, said frame carrying a plurality of linearly aligned rollers;
said boot further including a boot upper secured to said sole, said upper having:
a rigid, abrasive resistant molded toe box secured to said sole at a toe end thereof, said toe box having walls including a forward wall, a top wall and side walls defining a toe box cavity sized to receive the toes of said skater's foot, said side walls and top walls terminating at a left wall edge having a first outer recess area, a right wall edge having a second outer recess area and a top wall edge;
said boot including a flexible, sewn portion including a heel, a right side wall and a left side wall with said heel and right and left side walls having a common bottom perimeter, said right and left side walls of said sewn portion secured to said right and left wall edges with said right and left side walls received within said second and first recessed areas, respectively, and said bottom perimeter secured to said sole.

5,342,071
IN-LINE ROLLER SKATE BRAKE ASSEMBLY
Mike Soo, No. 430, Chung Shan Rd., Jen Teh Hsiang, Tainan Hsien, Taiwan
Filed May 6, 1993, Ser. No. 58,878
Int. Cl.[5] A63C *17/14*
U.S. Cl. 280—11.22 **7 Claims**



1. An in-line roller skate comprising:
a base with a bottom side;
a front wheel means;
a rear wheel means;
a front brake means with an upper side thereof secured to a front of said bottom side of said base and a lower side thereof pivotally mounted to said front wheel means, said front brake means comprising a brake member at a front thereof for contacting with a frontmost wheel of said roller skate during braking;
a rear brake means with an upper side thereof secured to a rear of said bottom side of said base and a lower side thereof pivotally mounted to said rear wheel means, said rear brake means comprising a brake member at a rear thereof for contacting with a rearmost wheel of said roller skate during braking;
each of said front and rear wheel means including a bridge member having first and second forked ends to which wheels of said roller skate are mounted and a mediate portion for mounting an associated front or rear brake means, said mediate portion defining a compartment for receiving said lower side of an associated front or rear brake means, and hole means to pivotally mount said lower side of an associated front or rear brake means in said mediate portion.

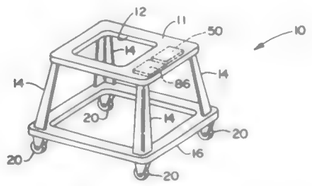
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,072

BABY WALKER HAVING SAFETY INTERLOCK

Romeo Prasad, 10 Warren La., Windsor, Conn. 06095

Filed Feb. 16, 1993, Ser. No. 18,064
Int. Cl.[5] B62B 7/04
U.S. Cl. 280—87.051 7 Claims



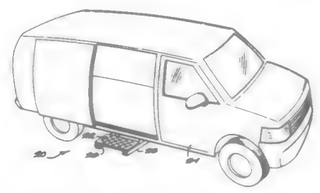
1. A walker for an infant or incapacitated adult which comprises:
- a frame work dimensioned and configured for placement around the user having an upper member dimensioned to enable the user to support him or herself and a lower member
- encircling the legs of the user, said upper and lower members being disposed in spaced relationship;
- a plurality of wheels carried on said second member at spaced parts thereof, said wheels being caster wheels;
- means for locking said wheels responsive to passage of said walker into a predetermined zone of danger, said means for locking includes a means contacting the circumference of each of said wheels and a plurality of holes in the circumference of each wheel and a pin dimensioned and configured for engaging said holes.

5,342,073

RETRACTABLE STEP FOR MOTOR VEHICLES

Ray L. Poole, Rte. 3 Box 364, Florence, S.C. 29505

Filed Mar. 12, 1993, Ser. No. 30,663
Int. Cl.[5] B60R 3/02
U.S. Cl. 280—166 20 Claims



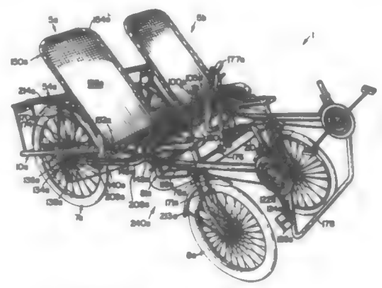
1. Apparatus for use with a motor vehicle, said apparatus comprising:
- a step;
- at least one rod for carrying said step, said at least one rod moving said step horizontally between a retracted position and an extended position;
- an outer support mounted to said motor vehicle;
- an outer guide carried by said outer support;
- an inner support mounted to said motor vehicle;
- an inner guide carried by said inner support, said at least one rod slidably carried by said outer and inner guides so that said at least one rod moves said step horizontally between said retracted position and said extended position;
- an outer guide stop carried by said at least one rod, said outer guide stop engaging said outer guide when said rod is in said retracted position to prevent said at least one rod from moving said step toward said extended position; and
- inner guide stop carried by said at least one rod, said inner guide stop engaging said outer guide when said at least one rod is in said extended position to prevent said at least one rod from moving said step toward said retracted position.

5,342,074

DUAL RECUMBENT VEHICLE

Keith L. Amdahl, Blaine, and James M. Muellner, White Bear Lake, both of Minn., assignors to Just Two Bikes, Inc., White Bear Lake, Minn.

Filed Apr. 21, 1993, Ser. No. 50,863
Int. Cl.[5] B62K 13/06
U.S. Cl. 280—209 23 Claims



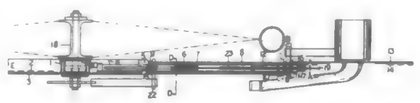
1. A dual recumbent vehicle, comprising:
- (a) a pair of recumbent bicycles, each bicycle having an operator-controlled steering assembly, an operator-controlled drive assembly, and a recumbent seat operatively connected to a frame structure, the frame structure having a first and a second side and a forward and a rear end;
- (b) means for interconnecting the pair of bicycles in a side-by-side relationship comprising:
  - (i) cross-bracing means for operatively connecting one of the pair of bicycles on its first side to the other of the air of bicycles on its second side; and
  - (ii) steering coupling means for coupling the steering assemblies of the bicycles such that the steering assemblies operate in unison; and
- (c) vertical support means for balancing the dual recumbent vehicle in a vertical position with the forward ends of the frame structures of the pair of bicycles positioned generally above the rear ends, the vertical support means comprising at least three vertical support members extending generally toward the rear ends of the frame structures, each vertical support member having an end arranged and configured such that the ends of the vertical support members will support and balance the dual recumbent vehicle in the vertical position.

5,342,075

VARIABLE SPEED DRIVE FOR A BICYCLE

David Williams, 7533 Briar Rose, Houston, Tex. 77063

Filed Nov. 23, 1992, Ser. No. 980,571
Int. Cl.[5] F16H 1/12
U.S. Cl. 280—236 10 Claims



1. A variable speed drive for a bicycle having a frame comprising:
- a forward support disc permanently fixed to a bicycle crank rotatably mounted on said bicycle frame,

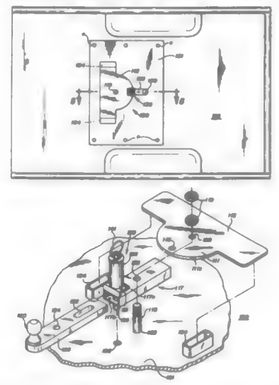
- said forward support disc supporting a forward face gear,
- a forward axially floating pinion shaft operatively connected to said forward face gear for transferring torque therebetween, said forward pinion shaft having a hole extending along a centerline thereof,
- an aft support disc permanently fixed to a freewheel mechanism of said bicycle, said aft support disc supporting an aft face gear,
- a bicycle aft axially floating pinion shaft operatively connected to said aft face gear for transferring torque therebetween,
- rotational means comprising a sleeve shaft coaxial with and operatively connecting said forward and aft pinion shafts for transferring axial rotational motion therebetween,
- a support means connected to said frame having a plurality of anti-friction bearings coaxial with and supporting said rotational means.
- a control cable means for attachment to a speed control lever, said control cable means having one end attached to said aft pinion shaft for axially positioning said aft pinion shaft with respect to said aft face gear, said control cable means extending along a centerline of said rotational means and through said forward pinion shaft hole, and
- a positioning means connected to said support means and said forward pinion shaft for axially positioning said forward pinion shaft with respect to said forward face gear.

5,342,076

GOOSENECK TRAILER HITCH

Jackie J. Swindall, 9441 W. University, Odessa, Tex. 79764

Continuation-in-part of Ser. No. 13,081, Feb. 3, 1993, Pat. No. 5,288,095. This application Aug. 4, 1993, Ser. No. 101,858
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] B60D 1/00
U.S. Cl. 280—479.2 8 Claims



1. An improved gooseneck trailer hitch which swivels and extends and retracts for coupling a pulling vehicle having a frame and a bed with a gooseneck trailer to be towed comprising:
- a tubular housing having a top wall, a spaced apart bottom wall, and a pair of spaced apart and opposing side walls,
- the tubular housing having a first bore at one end located in the top wall and a second bore located in the bottom wall, said first bore and said second bore being coaxially aligned respective to each other,
- a first aperture in said top wall intermediate said first bore and the other end of said top wall, and a second aperture in said bottom wall intermediate said second bore and the other end of said bottom wall, said first aperture and said second aperture being coaxially aligned with respect to each other,
- an anchor plate for securing the gooseneck trailer hitch in the bed of a vehicle, said anchor plate having an aperture and mounting bore longitudinally aligned therein,
- a guide plate having a partial semicircular periphery and a mounting hole corresponding to the mounting bore in said anchor plate, the guide plate having an aperture near the periphery thereof,
- the tubular housing attached to the anchor plate and the guide plate by a trunnion for relative rotation of said tubular housing along the partial semicircular periphery of the guide plate,
- a safety member secured to the top wall of said tubular housing and extending above said semicircular periphery of the guide plate, said safety member having an aperture therein in alignment with said aperture in the top wall of said tubular housing,
- a slide bar having a guide slot at one end and a vehicle coupler at the other end, having an aperture therein intermediate said guide slot and said vehicle coupler, said slide bar retained partly within said tubular housing by the trunnion extending through said guide slot thereby facilitating relative movement between said slide bar and said tubular housing, and
- a retractable pin biased in engagement with and through the apertures in said safety member, the guide plate and said slide bar for releasably locking said trailer hitch in a trailer towing position.

5,342,077

SNOW SURFBOARD HAVING ASYMMETRIC CHARACTERISTICS

Roger Abondance, La Murette, France, assignor to Skis Rossignol S.A., Voiron, France

Filed Jul. 30, 1991, Ser. No. 738,379
Claims priority, application France, Jul. 30, 1990, 90 09921
Int. Cl.[5] A63C 5/06
U.S. Cl. 280—602 20 Claims



1. A snow surfboard having asymmetric characteristics, comprising a gliding board having an upper surface constituting means for supporting a person thereon oriented askew relative to the length of said board, said board being totally symmetric with respect to its median longitudinal axis, said board having a back side and a front side, the distance between which constitutes a width of said board, but wherein, in order to give it asymmetric behavior characteristics, said gliding board is provided with a vibration absorption device composed of at least one vibration absorption element (7, 8), said vibration absorption device (7, 8) having a relatively small mass and being positioned asymmetrically with respect to a median longitudinal axis (12) of said surfboard and extending only art way across the width of said board, so that absorption created by said absorption device is preponderantly on said back side (4) of said surfboard.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,078

SUPPORT PLATE FOR A SAFETY SKI BINDING

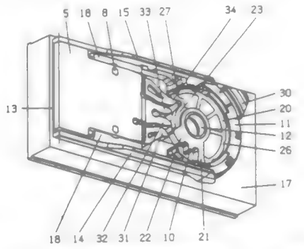
Premek Stepanek, Garmisch-Partenkirchen; Ludwig Wagner, Farchant, and Johannes Schuhbaner, Weilheim, all of Fed. Rep. of Germany, assignors to Marker Deutschland GmbH, Eschenlohe, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 715,598, Jun. 14, 1991. This application Dec. 27, 1991, Ser. No. 815,336

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1990, 9017486

Int. Cl.[5] A63C *5/07*

U.S. Cl. 280—602 24 Claims



1. A system for changing the stiffness of a ski, said system comprising:

a support member having a fixed end portion attachable to the ski and a free end portion movable longitudinally along the ski as the ski bends;

a set of resilient finger members extending from the free end portion of the support member and being engageable in the direction of longitudinal movement to add stiffness to the ski against bending; and

adjustable stop means attached to the ski and being fixed relative to the support member, said stop means having multiple stopping sections and means for moving said stop means for selectively presenting at least one or more stopping sections into the paths of said resilient finger members for engaging said finger members and controlling the stiffness of the ski.

5,342,079

CONTROL APPARATUS FOR VEHICLE SUSPENSION MECHANISM

Shuuichi Buma, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 26, 1993, Ser. No. 37,400

Claims priority, application Japan, Mar. 27, 1992, 4-071141

Int. Cl.[5] B60G *11/26*

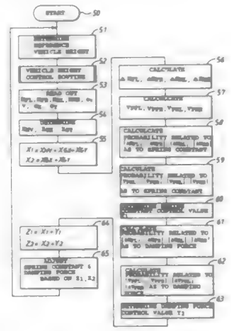
U.S. Cl. 280—707 4 Claims

1. An electric control apparatus for a vehicle suspension mechanism of which the spring constant and damping force can be controlled independently to one another, comprising:

first detection means for detecting a vertical displacement amount of the vehicle body relative to a reference vehicle height and for producing a first signal indicative of the detected vertical displacement amount;

second detection means for detecting a vertical velocity vector of the vehicle body and for producing a second signal indicative of the detected vertical velocity vector;

control means responsive to the first and second signals for increasing the spring constant of the suspension mechanism and decreasing the damping force of the suspension mechanism in accordance with an increase of the vertical displacement amount of the vehicle body and for decreasing the spring constant of the suspension mechanism and increasing the damping force of the suspension mechanism



in accordance with an increase of the vertical velocity vector of the vehicle body.

5,342,080

VEHICLE HEIGHT CONTROL SYSTEM

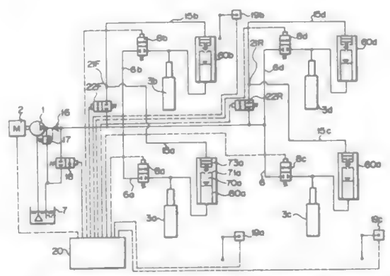
Hiromi Machida, Kanagawa, Japan, assignor to Tokico, Ltd., Kanagawa, Japan

Division of Ser. No. 936,832, Aug. 28, 1992, Pat. No. 5,288,102. This application Aug. 25, 1993, Ser. No. 111,474

Claims priority, application Japan, Aug. 30, 1991, 3-245069; Jun. 26, 1992, 4-193451

Int. Cl.[5] B60G *17/04*; F16F *9/342*

U.S. Cl. 280—706 2 Claims



1. A vehicle height control system in which oil under pressure that is generated by a pump is charged into and discharged from a cylinder provided for each wheel through a charge-discharge valve, thereby effecting vehicle height control, comprising:

a gas spring having two gas chambers and connected to said cylinders; and

a pilot-controlled directional control valve having a pilot chamber and provided on said gas spring so as to selectively communicate and cut off from each other said gas chambers, said directional control valve being drivable in response to charging and discharging of oil under pressure through a pilot line which is connected at one end thereof to said pilot chamber to said directional control valve and at the other end thereof to a passage connecting said charge-discharge valve and said pump.

5,342,081

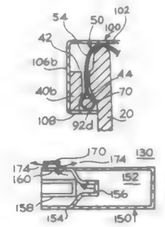
AIR BAG MODULE WITH TOP MOUNTED BAG

William Rogerson, Rochester, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Apr. 30, 1993, Ser. No. 55,648

Int. Cl.[5] B60R *21/20, 21/26*

U.S. Cl. 280—728 A 7 Claims



1. An air bag module (**10**) comprising a housing (**12**) having a walled portion (**20,22,30,32**) defining an opening (**14**), the walled portion including a plurality of bosses generally about at least part of the opening (**14**), each boss (**40***a–d*) comprising at least one slit (**42**);

an air bag (**50**) including an inlet portion (**52**), the air bag proximate ends of the inlet portion being formed with looped portions, each looped portion being inserted within a designated slit (**42**) in a corresponding boss (**40***a–d*);

first means inserted within each looped portion of the air bag, for preventing the looped portion from sliding out of the designated slit;

a cover (**100**) including a top (**102**), side walls (**106**) about the top and a lip portion (**108**) extending inwardly from at least one side wall (**106**), the cover (**80**) fitted to the housing supporting each looped portion and first means within a corresponding slit.

5,342,082

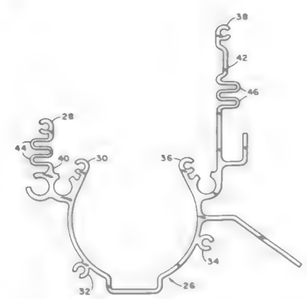
AIRBAG REACTION CANISTER HAVING SOFTENED EDGES

Thomas M. Kriska, Kaysville; Donald R. Lauritzen, Hyrum, and Larry D. Rose, Layton, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed May 28, 1993, Ser. No. 69,095

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—728 A 4 Claims



1. In an automotive airbag reaction canister comprising a trough-shaped sidewall having first and second edges and an end plate mounted to each end of the sidewall to form a housing for an airbag and inflator, said canister being adapted for installation behind, and adjacent to, an automotive panel, the improvement which comprises:

corrugations formed in said sidewall adjacent each of said first and second edges, said corrugations being characterized by a plurality of substantially parallel adjacent planar surfaces separated by substantially semi-cylindrical portions of said sidewall, whereby said side wall is weakened and collapsible upon impact by forced displacement of said panel.

5,342,083

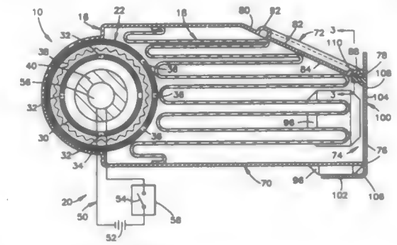
VEHICLE OCCUPANT RESTRAINT APPARATUS

David P. Gentile, Fraser; Jeffrey C. Synor, Utica, and Chien H. Lee, Rochester Hills, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jun. 10, 1993, Ser. No. 74,799

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 A 11 Claims



1. Apparatus comprising:

a housing having a deployment opening, a movable part, and means for defining a first locking surface which moves with said movable part;

an inflatable air bag having a stored condition in which said air bag is contained within said housing, said air bag having an inflated condition in which said air bag extends outward through said deployment opening;

inflating means including a source of fluid for inflating said air bag from said stored condition to said inflated condition, said inflating means expanding said air bag and moving said air bag into contact with and forcefully against said movable part of said housing to move said movable part of said housing when said air bag is inflating; and

a door having a closed position in which said door extends across said deployment opening and an open position in which said door does not extend across said deployment opening;

said door having means for defining a second locking surface that engages said first locking surface when said door is in said closed position, said first and second locking surfaces establishing a mechanical interlock between said door and said housing when said second locking surface is engaged with said first locking surface, said mechanical interlock securing said door in said closed position and being releasable to release said door for movement from said closed position, said first locking surface being moved out of engagement with said second locking surface to release said mechanical interlock upon movement of said movable part of said housing by said air bag.

5,342,084

RETENTION STRUCTURE FOR A FLANGE BASED INFLATOR OF AN AIRBAG RESTRAINT ASSEMBLY

Larry D. Rose, Layton, and Donald R. Lauritzen, Hyrum, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jul. 2, 1993, Ser. No. 86,718

Int. Cl.[5] B60R *21/22*

U.S. Cl. 280—728A 13 Claims

1. An airbag restraint inflator assembly comprising:

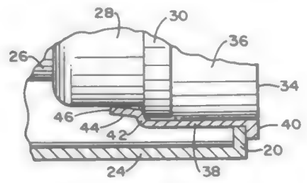
a reaction can having a mounting means providing an open-

VOL 1165 ISS 5 AG 30 1994 UMI

ing in a first end wall thereof, said opening adapted to receive and position an inflator within a cavity of said reaction can;

an inflator, shorter in dimension than the reaction can, and having a generally cylindrical housing with a radially outwardly extending flanged base on a first end thereof;

said reaction can mounting means being a generally open, right circular cylindrical shaped tube formed by a circular



sidewall, said sidewall terminating at one end thereof with a radially extending mounting flange having an outer diameter greater than a diameter of said first end wall opening and terminating in an inwardly tapered conical flange on the other end of said sidewall;

said mounting means being located in said reaction can first end wall with said inwardly tapered conical flange engaging and holding the inflator housing by biased radial compression force.

5,342,085

AIR BAG APPARATUS FOR AUTOMOTIVE VEHICLE

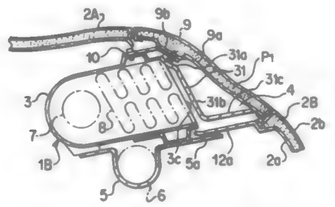
Isao Hirashima; Tetsuya Umeki; Hiroshi Maeta, and Shigefumi Kohno, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 19, 1991, Ser. No. 809,444

Claims priority, application Japan, Dec. 19, 1990, 2-401056[U]; Jan. 31, 1991, 3-011294; Jan. 31, 1991, 3-011297

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—728 B **10 Claims**



1. In combination, an air bag apparatus for an automotive vehicle and an instrument panel having a panel opening behind which said air bag apparatus is disposed comprising:

an upper instrument panel portion extending substantially horizontally;

a lower instrument panel portion extending downward at an angle relative to said upper instrument panel portion, said instrument panel including a panel opening defined in a portion thereof between said upper instrument panel portion and said lower instrument panel portion;

an air bag disposed, when folded, behind the instrument panel;

gas generator means disposed behind the instrument panel for generating a pressurized gas to inflate said air bag;

an air bag container for housing said air bag and said gas generator means, said air bag container having an air bag container opening, said air bag expanding horizontally into the automotive vehicle through the air bag container opening and the panel opening when the automotive vehicle is subjected to a collision;

lid means for covering the panel opening, said lid means having an outer surface which is inclined with respect to both said upper instrument panel portion and said lower instrument panel portion and located therebetween, said lid means having a profile matching an outer profile of the instrument panel, said lid means being capable of opening upwards to uncover the panel opening;

at least one hinge member mounting said lid means on said air bag container for swinging movement; and

gas distribution control means for (a) bringing said air bag, during inflation and expansion, into contact with a lower portion of said lid means disposed below a laterally extending line passing through a center of gravity of said lid means no later than it is brought into contact with an upper portion of said lid means disposed above said laterally extending line, (b) causing said air bag to apply a substantially uniform pressure over a whole inner surface area of said lid means and (c) pivoting said lid means upwards about the at least one hinge member.

5,342,086

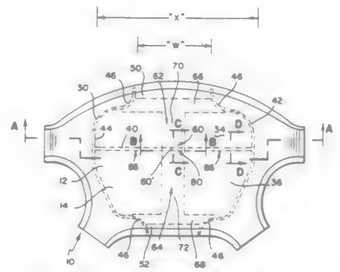
CLOSURE FOR AN INFLATABLE RESTRAINT SYSTEM

Bradley D. Harris, Farmington, and Quin Soderquist, South Weber, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed May 3, 1993, Ser. No. 56,558

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—728 B **17 Claims**



6. A closure having a selected initial opening site for an air bag deployment opening of an air bag assembly adapted to be integrated into a vehicle with the assembly including a housing for accommodating a collapsed inflatable air bag wherein the closure comprises a homogeneous plastic material and includes:

a) a mounting portion securable to the housing,

b) a substantially flat face portion defining therein weakened tear ways of substantially uniform thickness which tear and form, under the influence of inflating of the air bag, release doors extending substantially across the width of said face portion with said selected initial opening site being adjacent a first side of at least a first of said release doors, and

c) a hinge portion of a width substantially less than the width of said doors and joining said at least a first of said release doors with said mounting portion after the formation of said doors, said hinge portion being joined to said at least a first of said release doors at a side opposite said first side,

said closure additionally includes a first stress concentration feature whereby, under the influence of the inflating bag, an initial opening in said face portion is formed, said feature comprising at least one reinforcing rib extending the length of said at least a first of said doors from the initial opening site to the hinge portion joining said door with said mounting portion.

5,342,087

AIR BAG FOR VEHICLE SAFETY DEVICE

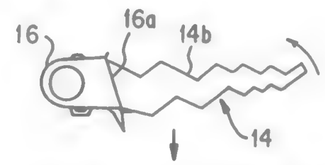
Yoshio Oda, Kure, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 795,884, Nov. 22, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 98,258

Claims priority, application Japan, Nov. 27, 1990, 2-323749

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—728 R **5 Claims**



1. A safety air bag device, for installation behind a dash panel of an automotive vehicle, comprising:

a housing having an opening provided behind the dash panel;

a gas generator installed in said housing for generating a pressurized gas when the automotive vehicle undergoes a collision; and

an air bag, including a pair of opposite side portions and a pair of upper and lower surfaces extending between said opposite side portions, installed in said housing and inflatable by the pressurized gas generated by said gas generator to expand through the opening in the housing and into an interior of the automotive vehicle so that a width of said air bag is larger than a width of the opening, said air bag being folded first, in zigzag fashion, into lengthwise pleat-folds extending in a lengthwise direction of said air bag, each of said opposite side portions of said air bag including a plurality of said lengthwise pleat-folds located between said upper and lower surfaces, said lengthwise pleat-folds reducing the width of said air bag so that it is almost equal to a transverse width of the opening when said air bag is deflated and flattened, said air bag then being folded into a plurality of transverse pleat-folds disposed between a rear end of said air bag and a front end of said air bag, each of said transverse pleat-folds extending in a transverse direction, and completely across one of the upper and lower surfaces, of said air bag.

5,342,088

DEPLOYMENT DOOR PATTERNS FOR AN AIR BAG SAFETY SYSTEM

David J. Bauer, West Bloomfield, Mich., assignor to Tip Engineering Group, Farmington Hills, Mich.

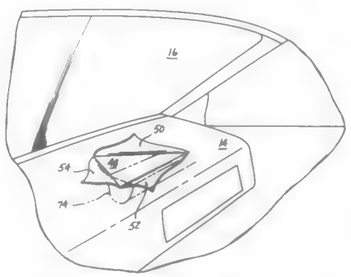
Filed Oct. 5, 1993, Ser. No. 132,298

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 B **11 Claims**

1. An air bag deployment door construction for passenger carrying vehicle having a passenger compartment defined by trim structure equipped with an air bag safety system including an air bag receptacle stowed behind an interior trim structure, with a deployment opening formed in said interior trim structure upon activation of said air bag system;

said air bag deployment construction formed by a plurality of generally triangular door substrate panels each hinged along one side of said triangular shape to said trim structure, said door substrate panels interfit together with the remaining sides of each of said triangular door substrate panels contiguous with next adjacent door substrate panels to close off said deployment opening when said door substrate panels are hinged to a closed position, said generally triangular door substrate panels not all of the same size and arranged in an asymmetrical pattern.



5,342,089

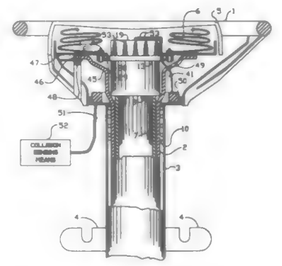
COMBINED AIR BAG DEVICE AND STEERING COLUMN FOR VEHICLES

Michael F. Fink, and Larry D. Hoagland, both of Hamilton County, Ind., assignors to Ideatech, Inc., Fishers, Ind.

Filed Jan. 13, 1993, Ser. No. 3,584

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—731 **12 Claims**



1. For use in a vehicle having a steering wheel to communicate steering directions to a steering mechanism, and having collision-sensing means mounted thereon to rapidly generate a signal in response to a collision, a combined air bag device and steering column comprising:

(a) a hollow tubular steering column having an upper end and a lower end, said upper end adapted to be connected to said steering wheel and said lower end adapted to be connected to said steering mechanism, whereby rotation of said steering wheel is communicated through said steering column to said steering mechanism to control the direction of travel of said vehicle,

(b) an elongated tubular reservoir positioned within said hollow tubular steering column, said reservoir containing prior to collision a pressurized fluid and having an outlet at the upper end thereof, said tubular reservoir being removable from said steering column longitudinally thereof, the lower end of said tubular reservoir being free of any connection to said steering mechanism,

(c) an inflatable cushion mounted on said steering wheel and having an inlet, said inflatable cushion being inflated by pressurized fluid from said reservoir in the event of said collision to protect the driver of said vehicle from injury,

(d) closure means interposed between the outlet of said reservoir and the inlet of said inflatable cushion and pre-

VOL 1165 ISS 5 AG 30 1994 UMI

venting the passage of pressurized fluid from said reservoir to said inflatable cushion,

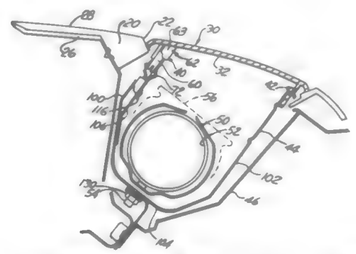
(e) opening means to rapidly open said closure means in response to a signal generated by said collision-sensing means thereby to rapidly inflate said inflatable cushion.

5,342,090

PASSENGER AIR BAG MODULE WITH MEANS FOR RETAINING AN AIR BAG DEPLOYMENT DOOR TO A HOUSING

Greg Sobczak, New Baltimore, and Mark R. Sturza, Mt. Clemens, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 968,707, Oct. 30, 1992, abandoned.
This application Jul. 8, 1993, Ser. No. 89,062
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—732 13 Claims



1. An assembly for an air bag (56) adapted to fit within an opening (22) of a vehicle part (20) comprising:

a housing (44) comprising: a first wall (100) and an opposite second wall (102), a flexible wall member (106) secured to the first wall (100) defining a space (150) therebetween, one of the first wall (100) and flexible wall member (106) including a plurality of first tabs (112) extending into the space (150), the second wall (102) including a plurality of locating tabs (120) and latching tabs (122;124) extending outwardly therefrom;

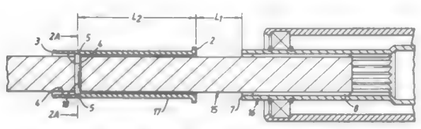
cover means (30, 40, 42) for enclosing the housing including first means, received in the space (150), including a hinge portion (40) engagable with the first tabs (112) to provide a snap connection therebetween and a seam portion (42) including second means (76, 82) engageable with the locating tabs and third means (76;84) being latched by said latching tabs to secure the seam portion to the housing, the seam portion including a tear seam (80) which tears apart in response to deployment forces generated by an inflating air bag.

5,342,091

ENERGY ABSORBING STEERING ASSEMBLY

Michael T. Hancock, Warwickshire, England, assignor to The Torrington Company, Torrington, Conn.

Filed Jun. 7, 1993, Ser. No. 73,214
Claims priority, application United Kingdom, Jul. 29, 1992, 9215995; Sep. 18, 1992, 9219760
Int. Cl.[5] B62D *1/11*
U.S. Cl. 280—777 10 Claims



1. An energy absorbing assembly comprising:

a steering column structure mountable to a breakaway mounting, the steering column structure including an inner steering shaft and an outer shaft drivably coupled to the inner steering shaft and axially slidable with respect to the inner steering shaft; and

an energy absorbing means for absorbing energy from crash induced forces on the steering column structure, the energy absorbing means being mounted on the inner steering shaft, the energy absorbing means comprising: a tube mounted about the inner steering shaft and a pin extending outward of the inner steering shaft, the pin having a length as to form an interference fit within an initial part of the tube, the pin being free floating within the inner steering shaft.

5,342,092

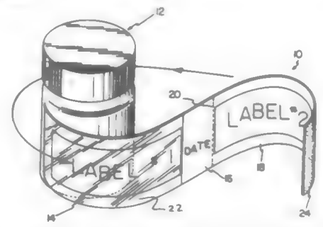
Patent Not Issued For This Number

5,342,093

WRAP AROUND LABEL

William C. Weernink, Savage, Minn., assignor to Tursso Companies, Inc., St. Paul, Minn.

Filed Feb. 11, 1993, Ser. No. 16,785
Int. Cl.[5] B42D *15/00*
U.S. Cl. 285—81 9 Claims



1. An elongated strip-like label for being wrapped around a container, the label comprising:

a first portion having a front surface and a back surface;

a second portion coupled to the first portion, the second portion having a front surface and a back surface;

a release coating covering the front surface of the first portion; and

an adhesive coating covering the back surface of the first portion and the back surface of the second portion for adhering the back surface of the first portion to the container and for adhering the back surface of the second portion to the release coating on the front surface of the first portion so that the second portion may be peeled away from the first portion to expose the front surface of the first portion.

5,342,094

CHECKING AND STATEMENT SYSTEM

Thomas S. Duck, Tucson, Ariz., assignor to Canard Resources Inc., Tucson, Ariz.

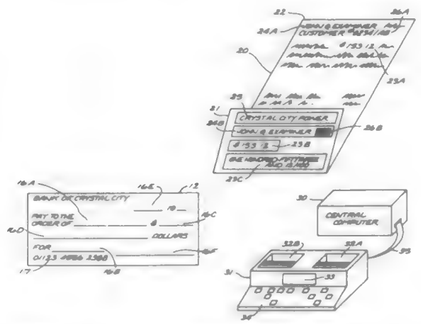
Filed Aug. 6, 1993, Ser. No. 103,079
Int. Cl.[5] B42D *15/10*
U.S. Cl. 283—81 20 Claims

1. A checking system comprising:

a blank check having front and back surfaces, said front surface having a plurality of indicia imprinted thereon, said plurality of indicia being imprinted in predetermined portions of said front surface of said check defining a date portion and a signature portion and further defining at least two separate and different label portions thereon;

a corresponding statement having front and back surfaces, said front surface of said statement having a plurality of information indicia imprinted thereon in predetermined areas, said information indicia corresponding to said plurality of indicia on said check, said front surface of said statement further including at least two separate label areas, each of said label areas detachably holding a corresponding label thereon;

at least two separate and different labels, each of said labels being essentially substantially smaller than said check and said statement and having front and back sides, each of said back sides of said labels having an adhesive coating thereon, each of said front sides of said labels having printed indicia thereon, said printed indicia on each of said labels comprising alphabetical, numerical, or bar-code representations, said at least two labels being initially adhesively attached to said label areas of said front surface of said statement; and,



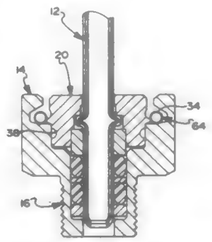
wherein said date and signature portions provided on the front surface of said blank check are completed by a user, said at least two separate and different labels are removed from said statement by said user and each of said back sides of said labels are then permanently adhered within respective one of said separate and different label portions on said front surface of said blank check, said different printed indicia on said front sides of each of said at least two labels correlating with each other and providing essential indicia on said respective label portions of said check, thereby creating a completed negotiable check.

5,342,095

HIGH PRESSURE QUICK CONNECTOR

Gary Klinger, Allen Park, and Duane Postbriand, Metamora, both of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 29, 1992, Ser. No. 954,719
Int. Cl.[5] F16L *37/22, 35/00*
U.S. Cl. 285—18 15 Claims



1. A high pressure quick connect comprising:

a tube having an upset adjacent one end thereof;

a male locking assembly positioned about said tube, said male locking assembly including a cavity enclosing said upset and a contoured outer surface defining spaced recessed groove wherein said recessed grooves are separated by a flange means;

an expandable annular locking ring mounted about said contoured outer surface, said flange means allowing said locking ring to slide between said spaced recessed grooves, wherein said flange means is adapted to act upon said annular locking ring as said tube is urged from said female member;

a female member having an internal bore adapted to receive said male locking assembly, said internal bore of said female member having a retainer groove;

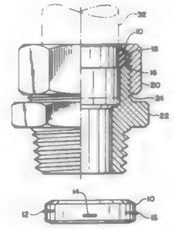
whereby, one of said recessed grooves is adjacent said retainer groove upon full insertion of said male locking assembly into said female member with said expandable annular locking ring being operatively trapped between said one recessed groove and said retainer groove to prevent said male locking assembly from being withdrawn from said female member wherein said flange means is in surface contact with said annular locking ring and said mating contact forces said annular locking ring outwardly into engagement with said retainer groove upon attempted withdrawal of said tube from said female member.

5,342,096

CONNECTOR WITH CAPTIVE SEALING RING

Walter W. Bachle, Harwinton, and Raymond Chase, Terryville, both of Conn., assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 15, 1991, Ser. No. 792,997
Int. Cl.[5] F16L *55/00, 57/00*
U.S. Cl. 285—23 32 Claims



17. A seal apparatus which comprises:

a generally annular member having an outer surface and an inner surface and a plurality of tabs extending generally radially at axially spaced parts of at least one of said surfaces, said tabs being disposed to engage axially spaced portions of an associated helically shaped threaded surface, said tabs extending radially outward from said annular member, said apparatus including means for deforming said annular member intermediate said tabs, said means for deforming including said tabs.

5,342,097

QUICK DISCONNECT MULTI-LINE CONNECTOR IN A DENTAL SYSTEM

Richard W. Hanson, Sherwood, Oreg., assignor to MDT Corporation, Torrance, Calif.

Filed Jan. 19, 1993, Ser. No. 6,056
Int. Cl.[5] F16L *34/00*; A61C *19/00*
U.S. Cl. 285—25 10 Claims

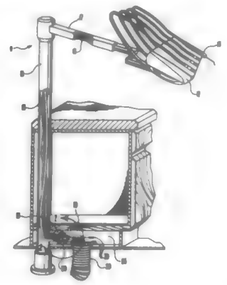
1. A connector in combination with a multi-line dental utility delivery system in which a source for utilities is separated from a handpiece control head by secondary supply lines fed through a hollow post, said connector comprising:

a first body member having a first planar mating surface at one side of said first body member, a plurality of spaced apart fittings projecting from a first exterior surface at the opposite side of said body member, a passage through

VOL 1165 ISS 5 AG 30 1994 UMI

each fitting continuing through said body member to said first planar surface;

a second body member having a second planar surface at one side of said second body member, a plurality of spaced apart fittings projecting from a second exterior surface at the opposite side of said second body member, a passage through each fitting continuing through said second body member to said second planar surface; and



connection means for releasably holding said first and second planar surfaces in juxtaposed relationship with said fittings of said first body member projecting in the opposite direction of said fittings of said second body member, and with said passages through each fitting of said first body member aligned with a passage through a fitting of said second body member;

said first body member being configured and sized to permit its travel from end to end through the hollow interior of said post.

5,342,098

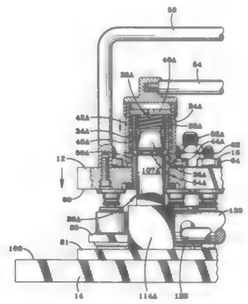
MULTIPLE COUPLING DEVICE

Steve Wilkins, Union City, Pa., assignor to Snap-Tite, Inc., Union City, Pa.

Filed Jan. 21, 1993, Ser. No. 6,822

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—26 **21 Claims**



1. A device for coupling a plurality of individual couplings, said individual couplings including male coupling components and complementary female coupling components, comprising:

a nipple plate having a plurality of said individual male coupling components;

a frame plate having a plurality of said individual female coupling components adapted to receive and be coupled with said male coupling components;

means for locking said frame and nipple plates together prior to said individual male and female coupling components being coupled together; and

means for coupling and uncoupling said male and female coupling components while said nipple and frame plates are locked together.

5,342,099

FLUID COUPLING WITH CONDITION INDICATOR

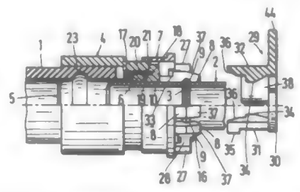
Frank Bahner, Offenbach, and Stephan Mann, Bieber, both of Fed. Rep. of Germany, assignors to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 11,677

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1992, 4205661

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—93 **18 Claims**



1. A device for separably coupling an end of a first conduit with an end of a second conduit, comprising:

a tubular connecting member having a first end portion engageable with the end of the first conduit and a second end portion separably engageable with the end of the second conduit;

form-locking means on said second end portion for partly establishing a form-locking connecting between said tubular member and the second conduit upon movement of said tubular member and the end of the second conduit to predetermined positions relative to each other;

a locking element movable relative to said tubular member between operative and inoperative positions, wherein said locking element terminates and prevents said form-locking connection;

an indicator; and

affixing means on said indicator for separably affixing said indicator to said tubular member; and

displacement means on said locking element for displacing said indicator relative to said tubular member in response to movement of said locking element to said operative position.

5,342,100

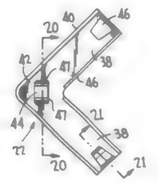
ANGLE PLATES FOR TRANSVERSE DUCT FLANGES

William V. Goodhue, 57 Pojac Point, North Kingstown, R.I. 02852

Division of Ser. No. 21,453, Feb. 23, 1993, Pat. No. 5,283,944. This application Nov. 12, 1993, Ser. No. 151,022

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—363 **7 Claims**



1. An angle plate for joining together channel shaped flanges at an end of a duct, said angle plate including two legs joined together in angular relation by an integral corner and config-

ured to permit stacking of a plurality of plates in order that said legs of adjacent plates are in line and facing in the same direction, said angle plate being improved by each of said legs and said corner having projections projecting therefrom in a common direction and being of a height to hold adjacent plates parallel and spaced, thereby preventing nesting and permitting sliding single plates off the bottom of a stack of plates.

5,342,101

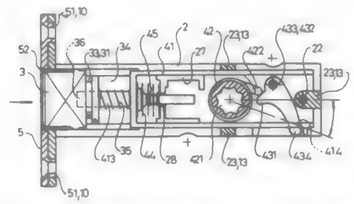
LOCK LATCH

Nan C. Shih, 116, Changtsao Rd., Changhua City, Taiwan 500

Filed Jun. 11, 1993, Ser. No. 74,609

Int. Cl.[5] E05C *1/12*

U.S. Cl. 292—165 **4 Claims**



1. A door latch assembly comprising an elongate latch housing having one end with a face plate, a latch tongue in said housing, spring means in the housing urging the latch tongue to project from said one end of the housing, an actuating mechanism in said housing for withdrawing the latch tongue into the housing against the force of the spring means, the actuating mechanism including an actuating plate, connector means between the plate and the latch tongue, an actuator wheel rotatably mounted in said housing about a doorknob axis perpendicular to a longitudinal axis of the housing, means on said actuator wheel for attaching a doorknob to rotate the actuator wheel about the doorknob axis, a projecting tooth formed on said actuator wheel, and a pulling lever pivotally mounted in said housing on a pivot axis parallel to said doorknob axis, said pulling lever having a projection to be engaged by said tooth when the actuator wheel is rotated in one direction, said lever further having a lever arm longer than said tooth engaging in an aperture in the actuating plate so that rotation of the actuator wheel in said one direction from a rest position provides pivotal motion of the lever through engagement of said tooth and said projection effective to cause said lever arm to move the actuating plate lengthwise in the housing and withdrawn the latch tongue into the housing against the force of the spring means, and so that release of the actuator wheel enables the spring means to return the actuator plate and latch tongue, the lever and the actuator wheel to the rest position.

5,342,102

LATCH ASSEMBLY FOR SLIDING DOOR

Kazuhide Takimoto, Tokyo, Japan, assignor to Takigen Manufacturing Co. Ltd., Tokyo, Japan

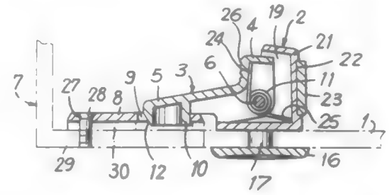
Continuation of Ser. No. 61,486, May 13, 1993, abandoned. This application Feb. 9, 1994, Ser. No. 193,722

Claims priority, application Japan, May 29, 1992, 4-043292[U]

Int. Cl.[5] E05C *3/14*

U.S. Cl. 292—228 **5 Claims**

1. A latch assembly for a sliding door, comprising a casing secured to a sliding door, said casing including a pair of spaced-apart bearing walls connected together by a connecting wall and having an L-shaped latch member including a finger application arm and a latch arm pivoted by a transversal pivotal pin to said casing between said bearing walls at an intersection between the finger application arm and the latch arm; and a striker secured to a stationary frame and having a circular hole, said latch arm having a free end portion provided on the back side thereof with a latch projection capable of being engaged in and disengaged from said circular hole of said striker, said L-shaped latch member being rotationally biased in the latching direction by a torsion spring located between said bearing walls and around the pivotal pin, said latch projection being provided on a front edge face thereof with an inclined cam face for riding on said striker, said latch projection having a circular sectional profile having a smaller diameter than the diameter of said circular hole, whereby reliable engagement between said latch member and said striker can be achieved.



5,342,103

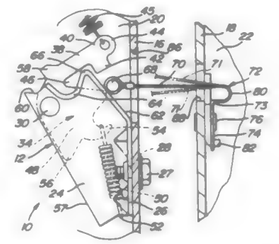
STRIKER BAR ASSEMBLY

Omar Tame, West Bloomfield, Mich., and John Franks, Rockford, Ill., assignors to Modern Metal Products, Inc., Rockford, Ill.

Filed Apr. 22, 1993, Ser. No. 50,795

Int. Cl.[5] E05B *15/02*

U.S. Cl. 292—341.17 **19 Claims**



1. A self-aligning striker bar assembly for use with a latch in latching first and second bodies together which are movable relative to one another between latched and unlatched positions, the latch being mounted to one of the bodies and having a guide surface and means for releasably engaging said striker bar assembly when in the latched position, said striker bar assembly comprising:

a mounting bracket including means for securing said striker bar assembly to the other of the bodies;

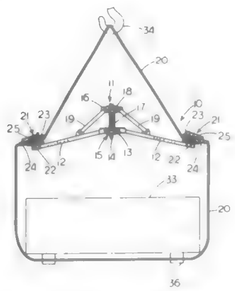
a striker plate including portions defining a cross bar, said cross bar adapted to coact with the engaging means of the latch to latch the first and second bodies together, said striker plate being movably connected to said mounting bracket to permit a limited degree of relative movement therebetween, said striker plate and cross bar being movable between extreme positions of deflection and having a generally central position therebetween; and

means for biasing said striker plate substantially into said central position while permitting movement between said extreme positions of deflection, said biasing means including first and second spring members coacting between said mounting bracket and said striker plate, said first and second spring members acting in opposite senses to return

VOL 1165 ISS 5 AG 30 1994 UMI

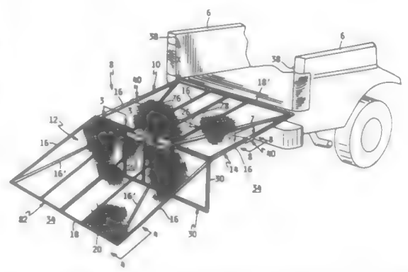
said striker plate and said cross bar to said central position after being rotated therefrom.

5,342,104
AUTOMATIC LIFTING ANGLE ADJUSTER FOR LIFTING WIRE ROPE
Masanori Sato, Kawachinagano; Kazuyoshi Goto, Kitakyushu; Katsuyuki Hiyama, Hikari, and Yoshinobu Chaen, Sakai, all of Japan, assignors to Sankyu Inc., Kitakyushu, Japan
Division of Ser. No. 690,888, Jul. 23, 1991, Pat. No. 5,207,795. This application Feb. 16, 1993, Ser. No. 18,795
Claims priority, application Japan, Oct. 16, 1989, 1-122533; Apr. 20, 1990, 2-42870
Int. Cl.[5] B66C 1/12
U.S. Cl. 294—74 3 Claims



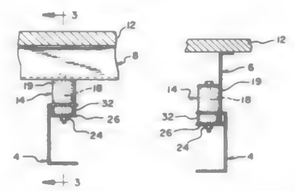
1. An automatic lifting angle adjuster for lifting wire rope, comprising:
an expanding driving means disposed at a center of the automatic lifting adjuster;
four arm members radially connected to said expanding driving means;
fixing means of which is placed at the top end portion of each of the arm members so as to fix the lifting wire rope, by which the opening lateral angle between the arm members is increased at the time of hooking work and the opening lateral angle between the arm members is decreased at the time of lifting, wherein said expanding driving means comprises:
a sliding member having four lower brackets to each of which a base end of each said radially-projecting arm member is attached so that it may rotate along a vertical surface thereof while holding a vertical shaft at the center thereof;
a receiving member having four upper brackets each of which rotates around said vertical shaft so as to be in the same direction as that of each counterpart of the four lower brackets which are attached to said sliding member, holding said vertical shaft at the center thereof and, at the same time, being disposed above said sliding member via a compression spring inserted through and held by the vertical shaft; and
linking member which connects each of the upper brackets of said receiving member and each of said arm members at a predetermined position, wherein said four lower brackets are attached in pairs to members which are independently rotatably attached to said vertical shaft and wherein said brackets in each said pair of brackets are located on opposite sides of said vertical shaft such that adjustment of the opening lateral angle between each of the arm attached to each corresponding bracket is adjustable by a lateral movement of only one of said arms.

5,342,105
RAMP AND ENDGATE FOR PICKUP TRUCK
Mark R. Miles, 6865 Buckingham Rd., Woodbury, Minn. 55125
Filed Jun. 8, 1993, Ser. No. 73,748
Int. Cl.[5] B62D 25/00
U.S. Cl. 296—61 20 Claims



1. A combination endgate and ramp structure for pickup trucks, which comprises:
front and rear sections pivotally secured together for relative pivotal movement therebetween about a first transverse pivot axis, means pivotally mounting the front section to a rear end portion of a truck box to permit movement of the front and rear sections about a second transverse pivot axis between an elevated gate forming position and a lowered ramp forming position, the sections when in their elevated gate forming position being folded up to be disposed in an adjacent face-to-face relationship and when in their lowered ramp forming position being disposed end-to-end extending downwardly and rearwardly from the truck box, and means carried on one of the sections for releasably locking the front and rear sections in their elevated gate forming position, the locking means being cooperable with a portion of a locking mechanism located on the truck box, the locking means being vertically adjustable along the one section whereby the position of the locking means on the one section may be vertically adjusted to adjust to different elevational positions of the locking mechanism portion on the truck box.

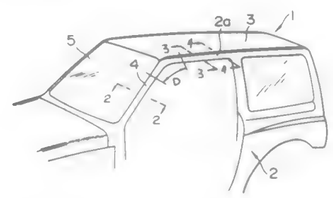
5,342,106
SHOCK-ABSORBING VEHICLE FRAME/CHASSIS MOUNTING SYSTEM
Carl J. Fischer, Nappanee, Ind., assignor to Four Winds International Corporation, Elkhart, Ind.
Continuation-in-part of Ser. No. 873,723, Apr. 27, 1992, abandoned. This application Nov. 25, 1992, Ser. No. 982,218
Int. Cl.[5] B62D 24/04
U.S. Cl. 296—204 6 Claims



6. A vehicle suspension system means for connecting a chassis having spaced longitudinal side rails, and an overlying support frame including spaced longitudinal frame rails spanned by transverse frame cross rails for absorbing forces generated during road travel, said suspension means comprising

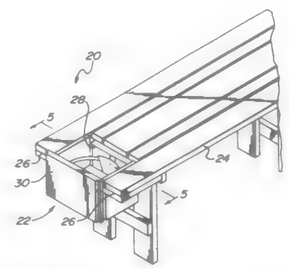
upper barrel shaped bushings,
vertically aligned lower cylindrical bushings,
spacer bars connected to said support frame, each of said upper bushings located between one of said spacer bars and said chassis, said lower bushings located below portions of said chassis, said upper bushings being barrel shaped, the circumference of the upper and lower ends of said upper bushings being less than the circumference at the center of said upper bushings, said spacer bars being Z like-shaped in cross-section, some of said spacer bars oriented longitudinally along said chassis side rails and said other spacer bars longitudinally oriented along said transverse frame cross rails, and
fasteners each of which interconnect one of said spacer bars, said upper bushings and said lower bushings to said chassis.

5,342,107
VEHICULAR ROOF DRIP MOULDING
Tomohide Saji; Yoshihisa Inoue, both of Shizuoka, and Asajiro Kii, Hiroshima, all of Japan, assignors to Suzuki Motor Corporation, Shizuoka and Nishikawa Rubber Co., Ltd., Hiroshima, both of Japan
Filed Mar. 28, 1989, Ser. No. 329,587
Claims priority, application Japan, May 13, 1988, 63-116075
The portion of the term of this patent subsequent to May 30, 2008, has been disclaimed.
Int. Cl.[5] B60J 5/04
U.S. Cl. 296—210 5 Claims



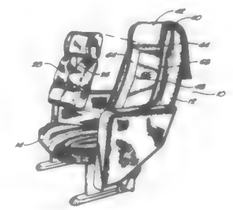
1. A vehicular roof-drip moulding for connection to a side body having a flange portion, the side body varying in height along the length of the side body, comprising:
a substantially U-shaped clamp portion, clamp-fitted onto the flange portion of the side body; a pressure contact portion extending from one side part of said clamp portion and coming in pressure contact with said side body under the effect of a resilient force of the clamp portion; and another side part of said clamp portion having a depending contact part, said depending contact part having a first length with a first sectional height, having a second length with a second sectional height, the sectional height of the first length being greater than the sectional height of the second length and an intermediate length having a sectional height which diminishes from said first sectional height to said second sectional height between said first length and said second length, said sectional height of said intermediate length varying in correspondence to the varying height of the side body along the length of the side body; and, a lip part connected to said depending contact part along a portion of said depending contact part.

5,342,108
CONVERTIBLE TABLE
John Housekeeper, 855 Gettysburg Dr., Lansdale, Pa. 19446
Filed Aug. 4, 1993, Ser. No. 101,647
Int. Cl.[5] A47B 85/04
U.S. Cl. 297—125 13 Claims



1. A convertible table comprising:
(a) top panel having a planar top surface and a recess therein;
(b) removable seat means comprising a first support member and a second support member fixedly secured to said first support member, said first support member having a seat surface, said second support member having a front surface and a planar rear surface, said seat means being arranged for selective positioning in first and second orientations within said recess; and
(c) coupling means for slidably mounting said seat means within said recess in said first orientation, whereupon said planar rear surface of said seat means faces upward and is flush with said planar top surface of said top panel, said coupling means being releasable for enabling said seat means to be slid out of said recess, rotated to said second orientation and slidably mounted within said recess in said second orientation, whereupon said seat surface is located below said top panel but facing upward to support the buttocks of a child, and with said front surface of said second support member being directed at an angle to said seat surface to form a support for the back of said child.

5,342,109
SEAT HAVING LIFE JACKET CONTAINED THEREIN
David L. Berry; J. Edward Johnson, and Marshall J. Aggen, all of Marysville, Wash., assignors to Turnbull, Inc., Marysville, Wash.
Filed Aug. 2, 1993, Ser. No. 100,378
Int. Cl.[5] A47C 7/62
U.S. Cl. 297—191 18 Claims



11. A seat comprising:
a frame;
a foam material affixed to said frame, said foam material having a cavity formed therein, said cavity having an area with a sufficient size so as to receive a life jacket therein;
a covering material extending over said frame and said foam material, said covering material having a flap extending

VOL 1165 ISS 5 AG 30 1994 UMI

over said cavity in said foam material, said flap having an edge removably affixed to said covering material; and

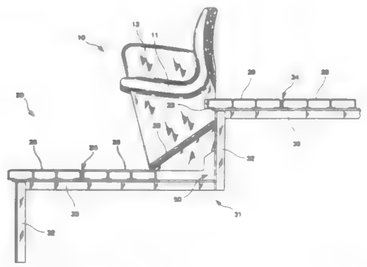
a life jacket fitted within said cavity of said foam material.

5,342,110

STADIUM CHAIR SEATING SYSTEM

Bruce C. Merrick, Goshen, Ky., assignor to Dant Corporation, Louisville, Ky.

Filed Jul. 6, 1992, Ser. No. 908,976
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—232 12 Claims



1. A tiered stadium seating structure having a closed deck, comprising:

all understructure having a plurality of interconnected tiered risers and horizontally extending runners defining an open framework;

a plurality of floorboards supported upon and extending transversely across said horizontally extending runners, said floorboards only partially enclosing said open framework so as to define an unenclosed space between adjacent levels of said floorboards; and

a plurality of identically formed chair modules, each said chair module having a one-piece molded plastic construction and integrally including

a back,

a seat rigidly connected to and formed with said back, an armrest, and

a seat support extending downwardly from said seat, wherein each of said chair modules is mounted directly to adjacent ones of said floorboards extending forwardly of and behind said chair modules, said chair modules enclosing said unenclosed space between adjacent levels of said floorboards.

5,342,111

RETRACTABLE SEAT

Harlan W. Charles, Harper Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1992, Ser. No. 994,156
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—232 5 Claims

1. A vehicle auxiliary seat for spanning a space between first and second adjacent structures comprising:

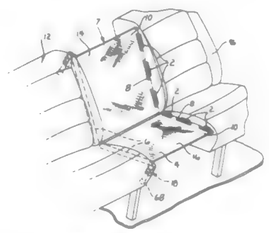
sheet means providing a seating surface, the sheet means having a first free end;

first roll means storing the sheet means;

means of rotatively mounting the first roll means with the first structure;

means to removably connect the first free end of the sheet means with the second structure;

ratchet means to tension the sheet means to a desired tension by rotating the roll means, the ratchet means having a telescopically extendable handle; and



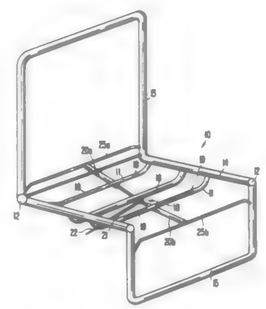
means to lock the tension in the sheet means imparted by the ratchet means.

5,342,112

ASSEMBLY FOR A CHAIR WITH ADJUSTABLE SEAT BACK AND LEG-REST

Alessandro Padovan, Via Fratte 61, 33082 Azzano Decimo (PN), Italy

Filed Mar. 8, 1993, Ser. No. 27,475
Claims priority, application Italy, Mar. 24, 1992, 92A000044
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—362.13 4 Claims



1. An assembly for a chair with adjustable seat back and leg rest comprising:

a seat frame comprising at its lower portion at least two reinforcing cross members adapted to rest on and be fastened to a basic carrying structure, said seat frame including a first connecting strut extending between first and second sides of said seat frame;

a seat back frame connected to a fist end of said seat frame by a hinge thereby enabling said seat back frame to rotate in relation to said seat frame, said seat back frame including a second connecting strut extending between first and second sides of said seat back frame;

a leg-rest frame connected to a second end of said seat frame by a hinge thereby enabling said leg-rest frame to rotate in relation to said seat frame said leg-rest frame including a third connecting strut extending between first and second sides of said leg-rest frame;

a first positioner jack including a first valve for controlling extension of said first positioner jack, said first valve being provided on an actuation device and said first positioner jack being provided between said first connecting strut and said second connecting strut;

a second positioner jack including a second valve for controlling extension of said second positioner jack, said second valve being provided on said actuation device and said second positioner jack being provided between said first connecting strut and said third connecting strut; and

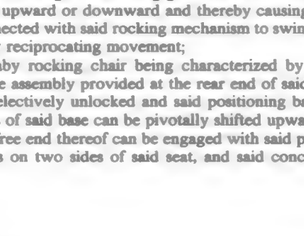
an actuation lever provided on said actuation device, said actuation lever being movable between a first inactive position and second and third positions respectively cooperating with said first and second valves for altering inclination of said seat back frame and said leg-rest frame with respect to said seat frame.

5,342,113

MULTI-PURPOSE BABY ROCKING CHAIR

Chung-Tien Wu, 3rd Fl., No. 6, Lane 51, Hua-Mei St., Taichung City, Taiwan

Filed Jan. 4, 1994, Ser. No. 176,939
Int. Cl.[5] A47C *3/02*
U.S. Cl. 297—260 5 Claims



1. A multi-purpose baby rocking chair, comprising:

a base which is a substantially rectangular-shaped body equipped with wheels at a bottom thereof and has a positioning bar pivotally fixed at each side thereof, a brake assembly disposed at a rear end thereof to selectively lock said baby rocking chair when the same is used as a rocking chair and in a rocking state or unlock said baby rocking chair when the same is used as a handcart, a pivot assembly provided near an upper front thereof, and a spring connected to a top portion thereof;

a seat having a horizontal portion pivotally connected to said pivot assembly on said base and an inclined back portion extending upward and outward from the horizontal portion, said back portion being provided with a retractable push bar which is normally concealed inside said back portion when it is not in use, and a positioning hole at each side thereof for receiving one free end of said positioning bars at two sides of said base body; and

a rocking mechanism in which a DC motor powered by a chargeable battery is used to produce rotating torque so as to turn a driving gear connected to one end of a driving shaft, said driving shaft connecting at another end thereof a rotary arm, and said rotary arm being connected at its another end to a lower end of a coupling, an upper end of said coupling being fitted into a lower end of a rotating sleeve, said rotating sleeve having an upper end provided with internal threads for an externally threaded core member to screw thereinto, and said core member having a threaded hole provided at a top portion thereof so that said entire rocking mechanism is fixedly screwed to the bottom side of said seat by means of screw and nut engaging with said top threaded hole of said rocking mechanism; and said rotary arm being repeatedly pulled by said motor through said driving gear and said driving shaft to turn upward or downward and thereby causing said seat connected with said rocking mechanism to swing in vertically reciprocating movement;

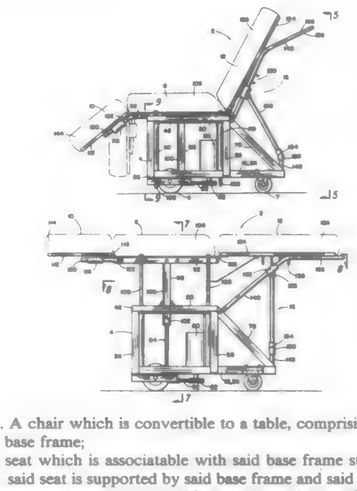
said baby rocking chair being characterized by that said brake assembly provided at the rear end of said base can be selectively unlocked and said positioning bars at two sides of said base can be pivotally shifted upward so that the free end thereof can be engaged with said positioning holes on two sides of said seat, and said concealed and retractable push bar of said seat can be pulled outward so that said baby rocking chair functions like a handcart.

5,342,114

CONVERTIBLE ROLLING CHAIR AND CHANGING TABLE FOR ADULT

Olive L. Burke, R.R. 1, Box 459A, Sapulpa, Okla. 74066, and Jesse G. Lewis, 204 N. Vancouver Ave., Tulsa, Okla. 74127

Continuation-in-part of Ser. No. 829,435, Feb. 3, 1992, abandoned. This application Feb. 16, 1993, Ser. No. 17,739
Int. Cl.[5] A61G *7/015*
U.S. Cl. 297—344.2 14 Claims



1. A chair which is convertible to a table, comprising:

a base frame;

a seat which is associatable with said base frame such that said seat is supported by said base frame and said seat can be raised and lowered with respect to said base frame;

raising and lowering means for raising and lowering said seat with respect to said base frame;

a chair back which is pivotably associated with said seat; and

a chair back support means, associated with said base frame, for supporting said chair back,

wherein, when said seat is raised with respect to said base frame the chair back is rotated rearwardly from an inclined position to a substantially horizontal position, said support means being operable for supporting said chair back when said chair back is in said substantially horizontal portion.

5,342,115

ARM REST FOR MOTOR VEHICLE SEATS

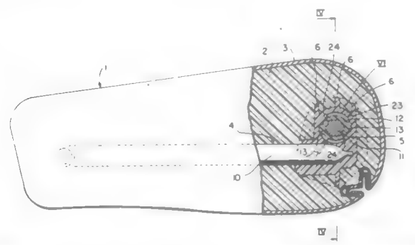
Emilio De Filippo, Bruzolo, Italy, assignor to Gestind-M.B. "Manifattura Di Bruzolo" S.p.A., Bruzolo, Italy

Filed Mar. 9, 1993, Ser. No. 28,118
Claims priority, application Italy, May 21, 1992, 000436 A/92; May 25, 1992, 000441 A/92; Jun. 16, 1992, 000514 A/92
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—411.32 8 Claims

1. An arm rest for motor vehicle seats having a backrest with lateral sides, comprising an elongated body and a load bearing structure incorporated in the body and including swinging mounting means of the arm rest comprising a connecting element adapted to be fixed relative to a lateral side of the backrest, a tubular end portion of the load bearing structure oriented transverse to the body, and a shaft coaxially inserted within said tubular end portion and having one end projecting from the body and secured to said connecting element in order to allow rotation on said shaft of said tubular end portion

VOL 1165 ISS 5 AG 30 1994 UMI

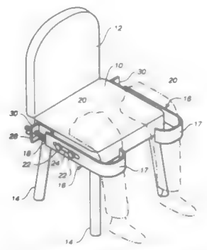
between a raised position and a lowered position of the arm rest, and stop means for stopping rotation of the arm rest in said raised and lowered positions, wherein said tubular end portion has an elastically deformable conformation in a radial direction and is formed interiorly with a pair of opposed axial ribs and with a pair of longitudinal recesses placed on opposite sides of and adjacent to each of said ribs, and wherein the seat is provided externally with a pair of opposed rigid axial projections cooperating with said axial ribs so as to constitute said stop means; said axial projections of the shaft having an outer radial dimension which is substantially equal to the inner radial dimension of said longitudinal recesses of the tubular end portion of the load bearing structure and which is substantially greater than the inner radial dimension of said tubular end portion between the longitudinal recesses adjacent to each other.



5,342,116
PROGRAMMER'S ANTI-SLUMP CHAIR WITH KNEE SUPPORT

Charles A. Walton, 19115 Overlook Rd., Los Gatos, Calif. 95030

Filed Sep. 30, 1992, Ser. No. 954,569
Int. Cl.[5] A47C *31/00*
U.S. Cl. 297—466 20 Claims



1. A device for prevention of slumping by a user, said user having a back and knees and sitting in a chair having a back and a seat having a back edge supporting said chair back, a front edge adjacent to knees of said user and two side edges, said device comprising:

a pair of restraint means, each having a secured end and a bow shaped end for engaging a front of one of said user's knees; said secured ends adjustably secured to said side edges of said seat;

support means for adjustably securing said secured ends of one of said brace means to said chair seat;

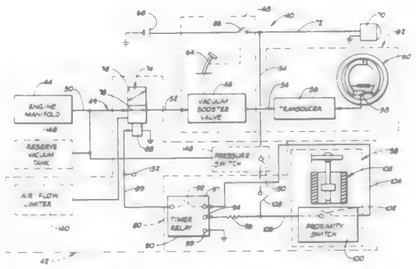
each said support means having means for mounting said respective restraint means to slide parallel and in proximity to a respective one of said side edges of said chair; and

each said restraint means and said respective securing means constructed in operable combination with one another to provide that a user sitting in said chair with the knees restrained by said restraint means be permitted to restrain the knees by adjusting said support means to move said restraint means to a location where said user's back is supported against said back of said chair thereby preventing slump.

5,342,117
BRAKE PULSING APPARATUS

Thomas D. Price, 8006 E. Rockcreek Rd., Norman, Okla. 73071, and James C. Roberts, 7716 S. Ranch Rd., El Reno, Okla. 73036

Continuation-in-part of Ser. No. 916,904, Jul. 20, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 82,039
Int. Cl.[5] B60T *13/74*
U.S. Cl. 303—3 24 Claims



1. In a vehicle brake system of the type comprising:

a brake assembly responsive to a fluid pressure brake signal for retarding rotation of wheels of the vehicle;

brake signal source means for providing the brake signal;

a brake signal conduit for providing a signal path along which the brake signal can be transmitted from the brake signal source means to the brake assembly; and

brake operating means mounted within the brake signal conduit for blocking the brake signal in a non-actuated state of the brake operating means and transmitting the brake signal in an actuated state of the brake operating means, the improvement wherein the brake system further comprises a brake pulsing apparatus operable from a source of electrical power comprising:

brake signal interruption means positioned within said brake signal conduit for interrupting the transmission of the brake signal in response to reception of an electrical interrupt signal;

timer means, connected to the brake signal interruption means and to said source of electrical power, for repetitively providing said electrical interrupt signal to the brake signal interruption means in response to reception of an electrical enable signal by the timer means and electrical power from said source of electrical power; and

an accelerometer comprising:

a normally closed proximity switch connected to the timer means and connected to said source of electrical power for providing said electrical power enable signal to the timer means in the normally closed condition of the proximity switch; and

a pendulum, comprising:

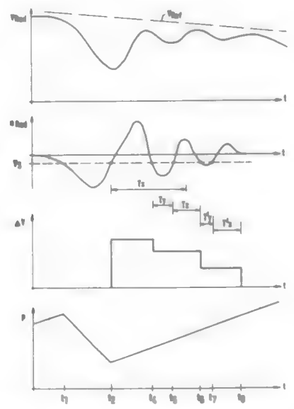
a depending member; and

means for pivotably supporting the depending member above the proximity switch for opening the proximity switch at such times that the depending member is axially aligned with the proximity switch.

5,342,118
ANTI-LOCK BRAKING METHOD TO RETARD THE WHEELS OF A VEHICLE

Wolfgang Kampfmann, Moselkern; Hubert Schmitt, Ochtendung, and Dieter Voges, Koblenz, all of Fed. Rep. of Germany, assignors to Lucas Industries public limited company, West Midlands, United Kingdom

Filed Apr. 30, 1993, Ser. No. 39,439
Int. Cl.[5] B60T *8/66*
U.S. Cl. 303—97 1 Claim



1. An anti-lock braking method to retard wheels of a vehicle, wherein

(a) dynamic wheel behavior is measured and slip as well as variations of rotational speed are determined on the basis thereof;

(b) signals thus obtained serve for a reduction of brake pressure, for maintaining it constant, or for a renewed rise thereof when associated threshold values are exceeded;

(c) respective renewed accelerations of the wheels are measured during successive control cycles of anti-lock protection;

(d) a basic threshold value is increased at the beginning of the renewed rise of the brake pressure to prevent initiation of undesired control operations due to oscillations of an axle or to prohibit a reduction in brake pressure for a given period of time;

(e) a raised threshold value is returned to the basic threshold value within a control cycle, characterized in that

(f1) the raised threshold value ($V_S + \Delta V$) is maintained for a given period of time (T_X) and then lowered once more to its basic value (V_S) if no wheel retardation (a_{Rad}) failing to reach a comparative value (V_S) in respect of retardation is measured during the given period of time (T_X), the given period of time (T_X), being somewhat longer than one oscillation period of the vehicle axle,

(f2) (a) in case the wheel retardation (a_{Rad}) again drops below the comparative value (V_S) within the given period of time (T_X), this diminuation does not cause a reduction in brake pressure,

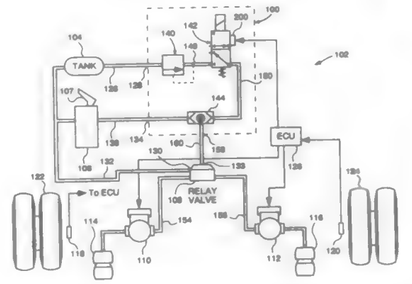
(b) a period of time (T_y) being measured during which the deceleration of the retarded wheel (a_{Rad}) lies below the comparative value (V_S), and

(f3) in case this measured period of time (T_y) is shorter than a predetermined period of time (T_{ymax}), reduction of the brake pressure continues to be precluded for an additional period of time ($T_y + T_z$) which is at least as long as one oxcillation period of the vehicle axle.

5,342,119
TRACTION CONTROL SYSTEM VALVE

G. Fred Smith; LaVerne A. Caron, and James A. Beverly, all of Kalamazoo, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 28, 1992, Ser. No. 997,345
Int. Cl.[5] B60T *11/28, 13/26*
U.S. Cl. 303—113.2 15 Claims



1. A valve, for use with a vehicular air brake system including an electronic control unit, for controlling air flow from a pressurized air supply to the brake system during two modes of vehicle operation, the valve comprising:

a valve body;

a regulator assembly internal to the valve body in fluid communication with the pressurized air supply, the regulator assembly for pressure-regulating the air supplied to the brake system during one of the two modes of operation;

a solenoid valve internal to the valve body for receiving pressure-regulated air from the regulator assembly, the solenoid valve being controlled by the electronic control unit during the two modes of operation; and

a single double-check valve internal to the valve body in fluid communication with the solenoid valve and the pressurized air supply, the double-check valve allowing the pressure-regulated air to flow from the solenoid valve to the brake system during the one mode of operation, and allowing the pressurized air to flow from the pressurized air supply through a treadle valve to the brake system during the other mode of operation.

5,342,120
ROAD VEHICLE HYDRAULIC SERVICE-BRAKE SYSTEM AND ACTIVATION PROCESS

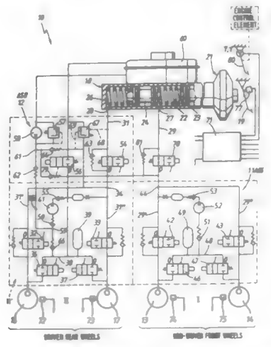
Richard Zimmer, Fellbach; Wolfgang Gautsch, Könges; Armin Müller, Backnang, and Rainer Freitag, Nürtingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Continuation of Ser. No. 795,864, Nov. 22, 1991, abandoned. This application Oct. 25, 1993, Ser. No. 140,973
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1990, 4037468
Int. Cl.[5] B60T *8/34*
U.S. Cl. 303—113.2 17 Claims

1. A brake system for activating a vehicle hydraulic service-brake system, comprising a vehicle anti-lock system operable in accordance with a return-flow principle, a drive-slip control device operable in accordance with a differential brake principle, wheel brakes of driven vehicle wheels constituting a first brake circuit, wheel brakes of non-driven vehicle wheels constituting a second brake circuit, a return pump operatively arranged in the anti-lock system to function as an auxiliary pressure source for a drive-slip control mode and operatively associated with the first brake circuit of the driven vehicle wheels, a pre-charge pump configured to work at a low outlet-

VOL 1165 ISS 5 AG 30 1994 UMI

pressure level for supplying an inlet of the return pump with brake fluid from a reservoir of the service-brake system, a brake-light switch configured as a position-sensitive switch member to transmit an output signal as the brake pedal of the brake system is shifted out of a basic position, and an electronic control unit configured and operatively connected with the brake system and with vehicle wheel-speed sensors to detect, via output signals from the sensors, occurrence of at least one of the output signal of the brake-light switch and development and then commencement of a vehicle operational situation requiring the drive-slip control mode, and to trigger an output signal activating the pre-charge pump and controlling a drive-slip control-function control valve into a blocking position, at least for a time period sufficient for generating maximum outlet



pressure of the pre-charge pump and corresponding at least to a period of time after which, in the event of a brake actuation taking place with average pedal force and speed of pedal adjustment, the wheel brakes are applied, wherein an isolating valve is operatively arranged for shutting off a portion of a main brake-line of the second brake circuit which leads to a branch point thereof, for at least the time period, from a delivery outlet of a brake unit assigned to the second brake circuit, and a delivery outlet of a low pressure pump is connected to the branch point of the second brake circuit, by way of the portion of the main brake-line connecting the branch point to the isolating valve, via a non-return valve which is loaded in an opening direction by a relatively higher pressure at the delivery outlet of the low-pressure pump than in this portion of the main brake-line.

5,342,121

ANTISEPTIC CONTAINMENT FOR BIOHAZARDOUS MATERIAL

Brian Koria, 433 S. Seventh St., #2304, Minneapolis, Minn. 55415

Continuation of Ser. No. 614,902, Nov. 16, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 29,285

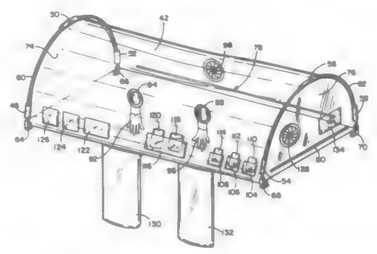
Int. Cl.[5] A61G *11/00*

U.S. Cl. 312—1 **25 Claims**

1. A flexible, self-supportable impermeable containment apparatus forming an enclosed chamber and having an opening for introducing and removing materials, for the storage, manipulation and transport of biohazardous materials, comprising:

(a) an elongated flexible plastic sheet having a longitudinal seam extending along the length dimension thereof for forming said sheet into a tubular enclosure about said biohazardous material, said enclosure having an outer surface and a first and second closed end, an elongated generally planar bottom surface and an elongated curved transparent upper surface extending thereabove, said enclosure including at least one tubular plastic sleeve means for inserting arms therein positioned on said first end, said enclosure further including a pair of coupling members one disposed on each opposing side thereof closely proximate said planar bottom surface;

(b) self-supporting, removable, tubular support means for maintaining said tubular enclosure in an expanded tent-like state by supporting said enclosure curved upper surface at a midsection thereof above said elongated bottom



surface to define the enclosed chamber, said self-supporting tubular support means having opposing ends each adapted to couple to one of said enclosure coupling members to further support the enclosure in the tent-like state;

(c) at least one access means for inserting and removing materials, formed through said sheet; and

(d) means for selectively opening and closing said access means.

5,342,122

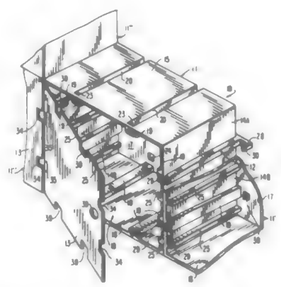
DISPLAY AND STORAGE HOLDER FOR TAPE CASSETTES

Edward A. Gordon, Dothan, Ala., assignor to Sony Electronics Inc., Park Ridge, N.J.

Filed Jul. 20, 1992, Ser. No. 915,526

Int. Cl.[5] A47B *81/00;* **F16B** *12/00*

U.S. Cl. 312—9.48 **13 Claims**



1. A display and storage holder for tape cassettes comprising:

a box-like housing having opposite side, top and bottom walls and a back panel, and being open at a front thereof for receiving therethrough a plurality of tape cassettes;

a plurality of connectors removably extending across at least said side walls from said back panel to said front, each connector having front and back end portions engageable with said housing for securing one of said connectors thereto,

a door panel separate from said box-like housing and having side edges and top and bottom edges dimensioned to extend across said front of the housing;

coupling means on said front end portions of the connectors;

means on said door panel adjacent a first of said side edges and which are engageable with said coupling means on said connectors for defining a hinge for said door panel; and

means on said door panel adjacent a second of said side edges and which are engageable with said coupling means on said connectors for defining a detent latch to hold said door panel in a closed position.

5,342,123

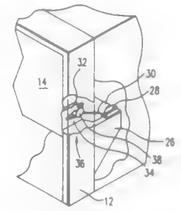
DETENTED FRAME DOOR ASSEMBLY

Phill D. Cole, Richmond, Ky., and David E. Southworth, Wake Forest, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 3, 1992, Ser. No. 924,289

Int. Cl.[5] A47B *88/18;* **E05C** *3/02*

U.S. Cl. 312—319.2 **5 Claims**



1. A detented bi-stable closure assembly and container comprising:

a container having at least four sides and one open side;

a bezel assembly attached to said container to surround said one open side;

said bezel assembly comprising:

a closure covering said one open side;

at least an opening granting access to said open side of said container;

a frame engaged with said container;

said closure supported by said frame and pivotable between an open and a closed position, thereby opening and closing said opening, said frame defining at least said opening granting access to said open side of said container;

at least a pair of pivot shafts coaxially disposed on said frame and forming an axis of pivot for said closure;

detent means for detenting said closure comprising a leaf spring formed into a mounting portion and a curved portion having at least an external curved surface;

support means for supporting said detent means;

a pair of bifurcated arms extending from said closure;

each bifurcated arm having two branches defining a pivot surface therebetween, each said surface matingly engaged with one of said pivot shafts and moveable with respect thereto;

an extension formed onto one of said branches of each of said bifurcated arms and engaging said external curved surface when said closure occupies a closed position relative to said opening,

thereby maintaining said closure in a closed position.

5,342,124

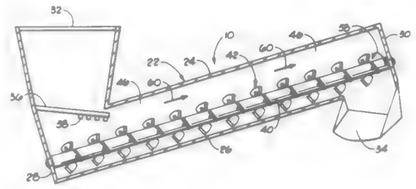
MIXER HAVING BLADES ARRANGED IN A DISCONTINUOUS HELICAL PATTERN

George W. Swisher, Jr., Oklahoma City, Okla., assignor to CMI Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 17,661, Feb. 12, 1993, abandoned. This application Jan. 11, 1994, Ser. No. 180,000

Int. Cl.[5] B28C *5/16*

U.S. Cl. 366—66 **20 Claims**



18. A mixer comprising:

an elongated housing having an inlet end, a discharge end, an upper wall and a lower wall;

a rotatable shaft extending from the inlet end to the discharge end of said housing;

a plurality of blades mounted to said shaft to extend radially from said shaft at a uniform distance from said shaft, said blades being spaced apart along the length of said shaft to outline a uniform, helical path around said shaft, each one of said blades having a convex outer end, a concave inner end and substantially straight sides, each one of said blades also being arched from side to side;

inlet means for introducing material into said housing;

means for introducing liquid into said housing; and

discharge means for removing material from the discharge end of said housing.

5,342,125

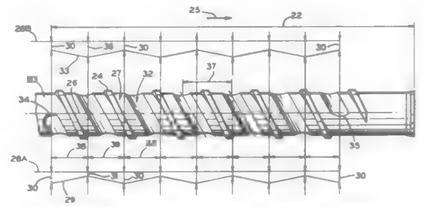
FEEDSCREW FOR INJECTION MOLDING AND EXTRUSION

Jeffrey A. Myers, Saline, Mich., assignor to Great Lakes Feedscrews, Inc., Tecumseh, Mich.

Filed May 14, 1992, Ser. No. 882,699

Int. Cl.[5] B01F *7/08*

U.S. Cl. 366—89 **15 Claims**



1. A feedscrew for a plastic material mixing apparatus comprising:

an elongated body having a generally circular cross section and a longitudinal axis;

a generally helical thread formed on at least a section of said body extending outwardly from said longitudinal axis and having a land of a predetermined diameter;

a first channel formed along a predetermined length of said section of said body by said thread, said first channel varying in depth between a first maximum depth below said land and a first minimum depth below said land; and

a second channel formed along said predetermined length of said section of said body in said first channel, said second channel varying in depth between a second minimum

VOL 1165 ISS 5 AG 30 1994 UMI

depth below said land and a second maximum depth below said land, said first maximum depth and said second minimum depth being at a first predetermined point along said longitudinal axis, said first minimum depth and said second maximum depth being at a second predetermined point along said longitudinal axis and said first maximum depth being equal to said second minimum depth.

5,342,126

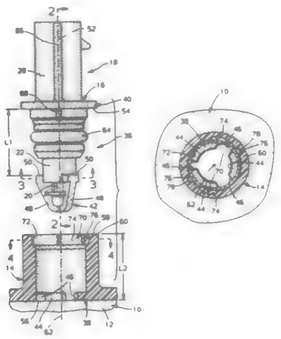
TWIST LOCK ATTACHMENT FOR A THERMAL PROBE

Jeffrey W. Heston, Warren; Marc D. Polanka, Solon, both of Ohio; Jeffrey A. Rock, West Henrietta, and Scott A. Geiger, Rochester, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 87,564, Jul. 9, 1993, abandoned. This application Nov. 15, 1993, Ser. No. 151,638

Int. Cl.[5] G01K *1/14, 13/02*

U.S. Cl. 374—208 **5 Claims**



1. In combination with

a structural member having a fluid medium chamber and a cylindrical socket, and

a thermal probe having a plastic shell adapted for disposition in said socket to monitor the temperature of a fluid medium in said fluid medium chamber,

a twist lock comprising:

means on said structural member defining an annular shoulder between said fluid medium chamber and said socket having an inside diameter and a circumferential array of a plurality of notches open through said inside diameter,

means defining on said shell a plurality of radial legs each having thereon a hook and arranged in an angular array around said shell corresponding to said circumferential array of notches in said annular shoulder so that an unlocked position of said shell relative to said socket is defined by angular registry between said circumferential array of notches and said angular array of radial legs,

means on said socket and on said shell operative to limit penetration of said shell into said socket such that in said unlocked position of said shell said hooks are disposed in said fluid medium chamber closely adjacent the plane of a planar surface of said annular shoulder so that when said shell is manually rotated in said socket from said unlocked position to a locked position said planar surface captures said hooks and prevents dislodgement of said shell from said socket, and

cam and lug means on said shell and on said socket affording tactile representation of the progress of said shell toward said locked position and of achievement of said locked position during manual rotation of said socket from said unlocked to said locked position and retaining said shell in said locked position.

5,342,127

LINEAR MOTION ROLLING GUIDE UNIT

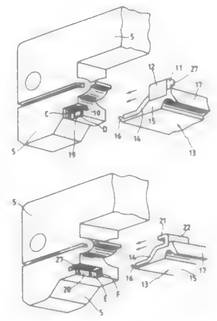
Norimasa Agari, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1993, Ser. No. 162,255

Claims priority, application Japan, Dec. 10, 1992, 4-090442[U]

Int. Cl.[5] F16C *29/06*

U.S. Cl. 384—15 **5 Claims**



1. A linear motion rolling guide unit comprising:

a track rail having first raceway grooves formed on longitudinally extending side wall surfaces thereof;

a casing slidable relative to the track rail and having second raceway grooves formed at positions facing the first raceway grooves;

end caps mounted to the longitudinal ends of the casing;

rolling elements circulating through raceways formed between the first raceway grooves and the second raceway grooves;

under seals having seal portions for sealing the casing, the end caps and the track rail, the under seals each including a core member and a seal member secured to the core member and having lip portions;

insertion grooves formed on an inner lateral side of the end caps facing the track rail and on a far longitudinal side with respect to the casing, the insertion grooves extending in the lateral direction; and

locking portions provided to the longitudinal ends of the core member and extending upwardly, the locking portions being adapted to fit laterally into the insertion grooves in the end caps to mount the under seal to the end caps.

5,342,128

PIVOT BEARING

Walter Gruber, Weinheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany

Filed Mar. 9, 1993, Ser. No. 28,417

Claims priority, application Fed. Rep. of Germany, May 2, 1992, 4216557

Int. Cl.[5] F16C *23/04, 33/74*

U.S. Cl. 384—203 **12 Claims**

1. Pivot bearing comprising

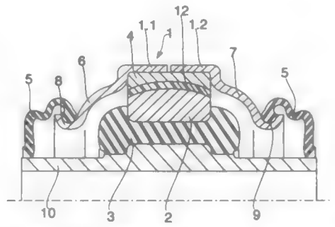
a mounting rod having an axis,

an annular rubber cushion mounted coaxially about said mounting rod,

a annular body mounted on said annular rubber cushion and having a spherical outside surface,

a guiding ring having a spherical inside surface which cooperates with said spherical outside surface of said annular body to permit rotational movement, and an outside surface,

a case coaxially surrounding said guiding ring, said case comprising a first case portion and a second case portion, each portion comprising a tubular portion fit over the outside surface of the guiding ring, an abutment flange which limits rotational movement of the mounting rod in



the guiding ring, and an intermediate portion extending radially inward form said tubular portion to said abutment flange, each said intermediate portion having a concave surface facing said rubber cushion, and

bellows means extending between said case and said mounting rod.

5,342,129

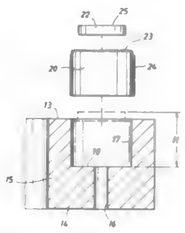
BEARING ASSEMBLY WITH SIDEWALL-BRAZED PCD PLUGS

Thomas M. Dennis, Houston, and Mahlon D. Dennis, Kingwood, both of Tex., assignors to Dennis Tool Company, Houston, Tex.

Filed Mar. 30, 1992, Ser. No. 860,045

Int. Cl.[5] F16C *17/04, 33/04;* **E21B** *10/22*

U.S. Cl. 384—420 **15 Claims**



1. A bearing assembly comprising:

(a) a metal ring having upper and lower ring faces;

(b) a plurality of holes formed in said upper face extending into said ring to define a plurality of support shoulders and upstanding cylindrical sidewalls adjacent to said shoulders;

(c) cylindrical plugs supporting PCD bearing surfaces at an exposed end thereof, wherein said plugs and said PCD bearing surfaces form assemblies of uniform height;

(d) braze material formed on the side of said plugs, wherein said braze material joins said plugs solely to the sidewalls of said holes to position said PCD bearing surfaces in an exposed ring for bearing a load therein; and

(e) wherein said plugs are vertically positioned and supported by sitting directly on said shoulders with none of said braze material interposed such that said PCD surfaces are at a common height supported on said shoulders.

7. A replacement plug for use in a bearing assembly having a ring which supports plural plugs wherein said replacement plug comprises an elongate plug body having two ends and having a cylindrical shape, and a PCD surface attached to an exposed end thereof, wherein said PCD surface is confined within a circle and has sufficient surface area to define a diametric strip thereacross within said circle, wherein said diametric strip is between two parallel lines.

5,342,130

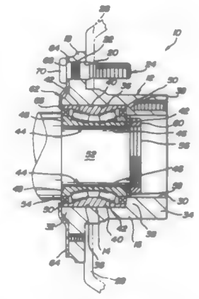
BEARING RETAINER RING

Stanley Kulczycki, Sterling Heights, Mich., assignor to The Budd Company, Troy, Mich.

Filed Oct. 1, 1992, Ser. No. 955,104

Int. Cl.[5] F16C *19/38*

U.S. Cl. 384—585 **5 Claims**



1. A wheel hub assembly for a non-driven axle comprising:

a hub including a generally cylindrical main body and a central bore extending therethrough, a portion of said central bore defining a bearing seat, said hub also including a wheel mounting flange extending radially outward from said main body, said wheel mounting flange having wheel mounting bores defined therein and having opposing faces;

wheel mounting studs disposed within said wheel mounting bores having enlarged heads on one opposing face of said wheel mounting flange and a threaded shaft extending from the other opposing face;

a bearing having an inner race and an outer race, said bearing being positioned within said central bore in engagement with said bearing seat; and

a bearing retainer ring including a mounting portion having at least one ring mounting bore corresponding to one of said wheel mounting bores, said bearing retainer ring being secured to said wheel mounting flange by at least one of said wheel mounting studs extended through both said ring mounting bore and said corresponding wheel mounting bore with said bearing retainer ring being disposed between said enlarged head of said at least one of said wheel mounting studs and said wheel mounting flange, said bearing retainer ring also having a retaining portion directly engaging said bearing, said retaining portion acting upon said bearing and providing a preload onto said bearing to assist in retaining said bearing in said bearing seat whereby said bearing is axially retained in said wheel hub assembly by application of a positive retention load solely by the addition of said bearing retainer ring to said wheel hub.

5,342,131

TENSION BALANCER DEVICE FOR INK RIBBON

Takeshi Nakajima; Kazuhide Shiratori, and Masahiro Uehara, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Apr. 19, 1993, Ser. No. 47,275

Claims priority, application Japan, Apr. 24, 1992, 4-129734; May 25, 1992, 4-156188

Int. Cl.[5] B41J *3/02*

U.S. Cl. 400—120.01 **11 Claims**

1. A tension device for an ink ribbon adapted for a printer for thermally transferring an image onto the printing paper while

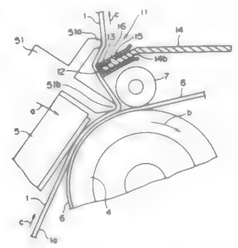
VOL 1165 ISS 5 AG 30 1994 UMI

moving the ink ribbon together with the printing paper, said printer including:

a platen for moving a piece of printing paper wound around the platen; and

a thermal head for pressingly contacting the ink ribbon, interposed between a supply reel and a take-up reel, against the printing paper on an outer circumference of the platen;

said tension device comprising:



a tension applying means contacting at its end face with said ink ribbon over a full width of said ink ribbon for applying tension to said ink ribbon, said tension applying means being substantially in the form of a plate;

wherein at least one projection is provided on said end face of said tension applying means, and said tension applying means is supported rotatably about a pivot axis, arranged on a transversal center of said ink ribbon, which extends in a direction substantially perpendicular to said ink ribbon.

5,342,132

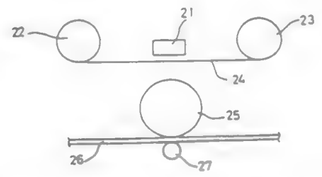
METHOD FOR TRANSFERRING HOT-MELT INK TO A RECORDING MEDIUM

Hideshi Tanaka, Yokohama; Itsuo Takanashi, Kamakura; Shigeaki Tada, Hiratsuka, and Toshinori Takahashi, Kawasaki, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Division of Ser. No. 990,695, Dec. 15, 1992, Pat. No. 5,277,501. This application Oct. 5, 1993, Ser. No. 132,048

Int. Cl.[5] B41J *3/02*

U.S. Cl. 400—120.18 **1 Claim**



1. A method for thermally transferring an ink pattern to a recording medium, comprising the steps of:

preparing an ink sheet having at least a transparent hot-melt material frame layer and a hot-melt and/or hot-sublimable ink frame layer thereon;

thermally transferring the transparent hot-melt material frame layer onto a surface of a platen roller;

thermally producing an ink pattern on the transferred transparent hot-melt frame layer on the platen roller by heating the transparent hot-melt and/or hot-sublimable ink frame layer with a thermal head; and

thermally transferring said ink pattern produced on said transparent hot-melt material layer to the recording medium together with said transparent hot-melt frame layer.

5,342,133

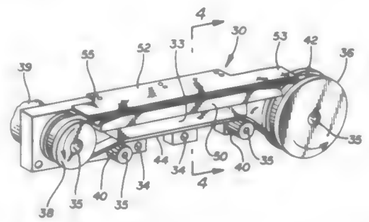
PAPER MOVING SYSTEM FOR A PRINTER/PLOTTER

Brian P. Canfield, San Diego, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 23, 1992, Ser. No. 997,258

Int. Cl.[5] B41J *13/08*

U.S. Cl. 400—635 **18 Claims**



1. A paper moving assembly for moving paper or other print media through a print zone of a computer driven printer/plotter, said print zone being defined in an X direction by the direction of movement of paper or other print medium and in the Y direction by the direction of movement of a printer carriage, said assembly comprising:

a) a mounting block and means for supporting said mounting block on said printer/plotter proximate said print zone;

b) a first belt roller and means for supporting said first belt roller on said printer/plotter proximate said print zone;

c) a media feed belt roller and means for supporting said media feed belt roller proximate said print zone;

d) a media drive belt trained around said first roller and said feed roller and having a stretch moveable parallel to a path of movement of the paper or other print media;

e) a shim plate fixedly attached to said mounting block, said shim plate extending parallel to said stretch of belt and defining a paper gripping path between said shim plate and said belt for gripping an edge of the paper adjacent the print zone for moving the paper therethrough;

f) a belt biasing rail supported on said mounting block, said rail supporting said stretch of belt;

g) means for biasing said rail and supported stretch of belt toward said shim plate; and

h) means for rotating at least one of said rollers to drive said belt.

5,342,134

LIPSTICK ARTICLE

Michael H. Lombardi, and John Vaccaro, both of Stamford, Conn., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Division of Ser. No. 720,112, Jun. 24, 1991, Pat. No. 5,197,814. This application May 21, 1992, Ser. No. 887,215

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] A45D *40/04*

U.S. Cl. 401—78 **6 Claims**

1. A lipstick article comprising:

(i) a lipstick with a water content of from about 0.5 to about 30% by weight;

(ii) a package base;

(iii) an elongated cylindrical inner body having a lower portion received in said package base and said lipstick being received in said inner body;

(iv) a means for elevating and retracting said lipstick within said inner body, said means being formed therewithin, and said inner body including a cup bearing said lipstick, said cup having at least one aperture in a bottom thereof, and further comprising a means below said aperture for sealing said aperture when said cup is in a retracted position;

(v) a hollow elongated cap formed with an outer wall fitting over and covering said inner body; and

(vi) a hollow elongated plug sleeve inserted within said cap, stretching more than halfway along a length of said cap outer wall and formed of a material more flexible than a



material forming said cap, said plug sleeve sealingly contacting an outer wall of said inner body to prevent evaporation of said water from said lipstick and said plug sleeve having a water vapor transmission rate at 37.8° C./24 hours of at most 5 g-mm/mm^2 under ASTM Method E-96-E.

5,342,135

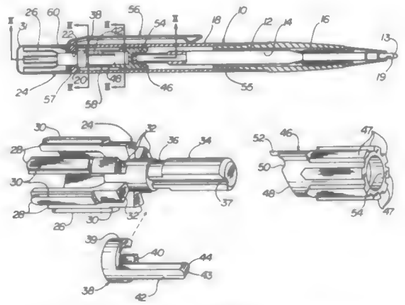
WRITING INSTRUMENT HAVING ADVANCE-RETRACT MECHANISM

William E. Tucker, Attleboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 17, 1993, Ser. No. 107,519

Int. Cl.[5] B43K *24/06*

U.S. Cl. 401—116 **21 Claims**



1. A writing instrument comprising

a cylindrical barrel member having a front opening and a rear wall with an opening formed therein

an elongated writing assembly having a writing tip at the forward end thereof adjacent said front opening in said barrel;

a plunger assembly having

a rotatable knob disposed adjacent the outer surface of said rear wall of said barrel and an elongated drive portion extending into said barrel, said elongated drive portion including a circular groove formed on the outer surface thereof;

a ring disposed on said elongated drive portion adjacent the inner surface of said rear wall and retained against axial movement along said drive portion, said ring having a forwardly facing surface rotatable through rotation of said rotatable knob and an inner surface formed for interfitting engagement within said drive portion groove;

a slidable actuator element disposed within said barrel having a forward facing surface contacting said writing assembly and a rearwardly facing surface contacting said ring rotatable surface whereby rotation of said knob is effective to move said actuator element axially and thereby move said writing tip axially relative to said barrel front opening.

5,342,136

WRITING INSTRUMENT WITH EXCHANGEABLE INK REFILL

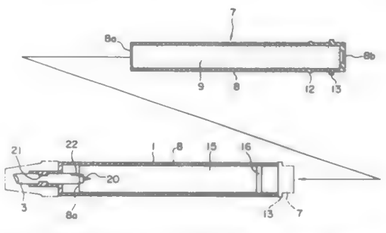
Masaaki Fukami, Hachioji, Japan, assignor to Kabushiki Kaisha Allco, Tokyo, Japan

Filed May 17, 1993, Ser. No. 63,207

Claims priority, application Japan, May 22, 1992, 4-034211[U]; Nov. 13, 1992, 4-078246[U]

Int. Cl.[5] B43K *8/02, 8/06*

U.S. Cl. 401—135 **5 Claims**



1. An ink storing type writing instrument comprising:

a pen barrel having front and rear ends and a hollow with a cylindrical internal wall;

a rigid felt writing tip fixedly attached to the front end of the pen barrel and having a rear end protruding axially into said hollow, said rear end of the tip having on an outer surface thereof a vent groove extending axially of the tip;

a hard pointed member securely inserted axially into said rear end of the writing tip and having a rear pointed end projecting rearwardly;

a cylindrical refill having a closed front end formed of a thin film and a closed rear end and containing a wadding impregnated with ink, said refill having stopper means and being replaceably fitted in said hollow of the pen barrel through the rear end of the writing tip; and

said stopper means being in abutting relation with the pen barrel to place the refill in a predetermined axial position where said pointed member pierces said thin film of the refill and is positioned entirely within the refill and where said rear end of the writing tip is partly located in said refill for receiving ink supply from within the refill and for causing the vent groove to be disposed partly within the refill for venting operation.

5,342,137

SWING ARM

Chih-Wen Peng, No. 9, Lane 1, Chung Hsing Road, Wu Ku Hsiang, Taipei Hsien, Taiwan

Filed Jan. 11, 1993, Ser. No. 2,978

Int. Cl.[5] F16D *3/10*

U.S. Cl. 403—164 **4 Claims**

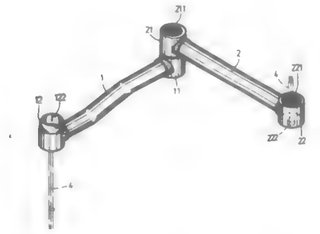
1. A swing arm comprising:

a) a bottom curved tube having two opposite ends, first and second fittings connected to the two opposite ends, the first fitting including a bottom staking step and an inner thread below the bottom staking step, the second fitting including a top chamber and an inner thread below the top chamber;

VOL 1165 ISS 5 AG 30 1994 UMI

b) a top straight tube having two opposite ends, first and second fittings connected to the two opposite ends, the first fitting including a bottom staking step and an inner thread above the bottom staking step, the second fitting including an external stop knob at the bottom thereof and an internal thread above the external stop knob;

c) a connecting device connecting the first fitting of the bottom curved tube to the first fitting of the top straight tube, the connecting device including a T-shaped hollow rivet extending through the staking steps of the first fittings for permitting the top straight tube to be swiveled relative to the bottom curved tube and detachable engagement of the external stop knob of the second fitting of the



top straight tube within the chamber of the second fitting of the bottom curved tube, the hollow rivet including two heads on two opposite ends thereof, each head being positioned between the staking step and the inner thread of the first fittings, two first washers wherein each first washer being disposed between each said head and each said staking step of the first fittings, two recesses wherein one recess being formed at the top of the first fitting of the bottom curved tube and other recess being formed at the bottom of the first fitting of the top straight tube, and two second washers wherein each second washer being disposed within each recess and the second washers being in engagement with each other.

5,342,138

CONNECTORS FOR STRUCTURAL MEMBERS

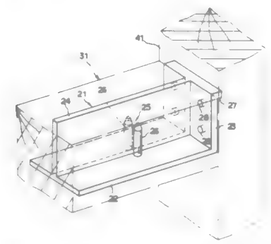
Rikuro Saito, Hamakita, and Kiyoyuki Yagi, Hamamatsu, both of Japan, assignors to Nitto Mokuzai Sangyo Kabushiki Kaisha, Hamakita, Japan

Filed Oct. 9, 1992, Ser. No. 959,265

Claims priority, application Japan, Dec. 27, 1991, 3-347476; Jan. 13, 1992, 4-003777; Jan. 17, 1992, 4-006713

Int. Cl.[5] B25G *3/00*

U.S. Cl. 403—189 **65 Claims**



1. A connector for connecting together a first structural member having a predetermined cut portion provided therein and a second structural member, comprising:

a first plate;

a second plate attached substantially perpendicularly to the first plate, said second plate being fitted into said predetermined cut portion of the first structural member;

a third plate connected to the second structural member and attached to one end of the first plate at a predetermined angle; and

a securing mechanism for securing the first structural member to the connector, said securing mechanism comprising at least one round rod member disposed on opposite sides of the second plate, each said round rod member being mounted at one end thereof to the first plate and standing substantially perpendicularly therefrom and having a height less than a height of the second plate, wherein said round rod members are respectively closely fitted into recesses formed in the first structural member.

5,342,139

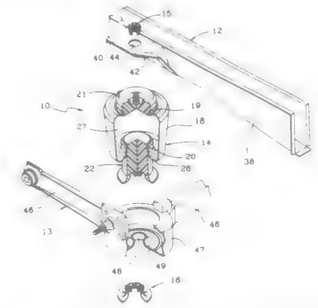
SNAP MOUNTED ATTACHMENT DEVICE

Keith E. Hoffman, Atlanta, Ind., assignor to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Sep. 30, 1992, Ser. No. 953,913

Int. Cl.[5] B25G *3/00*

U.S. Cl. 403—405.1 **16 Claims**



1. A one-piece attachment device for mounting a fluid actuated member on a support component, wherein such support component is formed with a mounting aperture, said device including:

a plurality of circumferentially spaced upstanding flexible first fingers, each having a free outer end with a camming surface and a retaining surface being provided thereon, said retaining surfaces lying in a first imaginary circle;

a plurality of circumferentially spaced second fingers each having a flexible free outer end, said second fingers being upstanding in the same direction as the first fingers and extending inwardly toward each other, with said free outer ends lying in and defining a second imaginary circle concentric with and located within the first imaginary circle and forming a circular opening therebetween;

said plurality of first fingers being means for flexing inwardly and passing through an aperture of a support component when inserted therethrough, with said retaining surfaces being means for engaging said support component to secure said attachment device on said support component; and

said free outer ends of the plurality of second fingers being means for engaging a mounting component of said fluid actuated member when such a component is inserted through the opening defined by said second fingers, said second fingers being means for securing said fluid actuated member on said support component, after said attachment device has been mounted thereon.

5,342,140

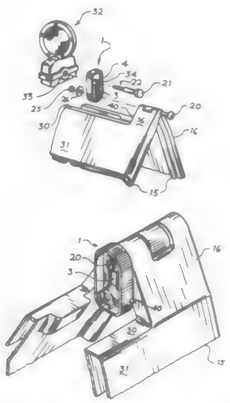
FLASHER LIGHT MOUNTING ASSEMBLY FOR TRAFFIC BARRICADES

Geoffrey M. Glass, Rolling Meadows, Ill., assignor to Plasticade Products Corporation, Rolling Meadows, Ill.

Filed Jun. 30, 1993, Ser. No. 85,345

Int. Cl.[5] E01F *13/00*

U.S. Cl. 404—9 **13 Claims**



1. In a traffic barricade assembly wherein the barricade includes a pair of generally planar panels having upper cross-bars and opposed hinge members extending upwardly from the cross-bars, the opposed hinge members being hinged together with a hinge bolt and the cross-bars forming a saddle for a flasher light unit, the flasher light unit being fastened to the hinge bolt by a bracket and a fastening bolt, an improvement wherein:

said bracket includes a base and longitudinally extending side walls upstanding from said base;

a longitudinally extending slot through one end of said base and an aperture through the other end of said base;

said hinge bolt extending through said slot;

means on the end of said hinge bolt for releasably holding said bracket base against said hinge members; and

protrusions formed on each of said hinge members for holding said bracket in vertical position.

5,342,141

MOVABLE SURFACE PAVING APPARATUS AND METHOD FOR USING THE SAME

Darrell R. Close, P.O. Box 556, Sutter, Calif. 95982

Filed Mar. 10, 1993, Ser. No. 28,985

Int. Cl.[5] E01C *3/00, 23/06*

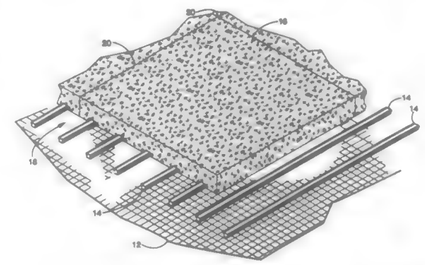
U.S. Cl. 404—28 **13 Claims**

5. An apparatus for paving a surface, comprising:

(a) a flexible underlayment material;

(b) a plurality of compressible ribs fastened to and extending upward from said underlayment material; and

(c) a paving material having a plurality of grooves, wherein said grooves detachably receive and compress said ribs,



and wherein said grooves frictionally couple said paving material to said underlayment material.

5,342,142

ANGULAR PAVING STONE FOR PAVING AREAS

Günther Barth, Bühlertal; Fritz von Langsdorff, and Harald von Langsdorff, both of Rastatt, all of Fed. Rep. of Germany, assignors to F. von Langsdorff Licensing Limited, Mississauga, Canada

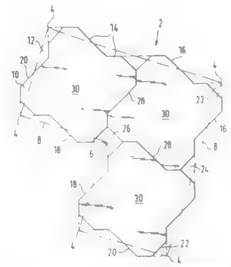
PCT No. PCT/EP90/00526, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO90/12152, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 3, 1990, Ser. No. 768,300

Claims priority, application European Pat. Off., Apr. 4, 1989, 89105898.4

Int. Cl.[5] E01C *5/02*

U.S. Cl. 404—41 **10 Claims**



1. An angular paving stone (2) of solidifying material for paving areas, comprising two outer sides (16), two inner sides (18) and two face sides (20),

characterized in that quarter recesses (22) are provided at the five outer corners (4) of the angular paving stone (2) where the two outer sides (16) meet and outer sides (16) meet face sides (20) and inner sides (18) meet face sides (20);

that half recesses (24) are provided at the center of the outer sides (16) of the angular paving stone (2);

and in that a three-quarter recess (26) is provided at the inner corner (6) of the angular paving stone (2) where the two inner sides (18) meet;

the quarter recesses (22), the half recesses (24) and the three-quarter recess (26) being provided such that, when like angular paving stones (2) are laid adjacent thereto, full recesses (38) are formed at all locations by mutual supplementation for discharging water into the layer located underneath.

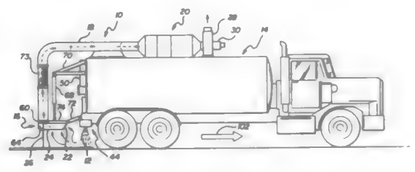
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,143

SYSTEM AND METHOD FOR CONTROLLING EMISSIONS CREATED BY SPRAYING LIQUIDS FROM MOVING VEHICLES

John Corcoran, Los Angeles; Joseph W. Hower, Long Beach, and William A. Moseley, Redondo Beach, all of Calif., assignors to Manhole Adjusting Contractors Inc., Monterey Park, Calif.

Continuation of Ser. No. 748, Jan. 5, 1993, Pat. No. 5,297,893. This application Dec. 8, 1993, Ser. No. 163,937
The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.
Int. Cl.[5] B01D *45/00*; E01C *23/00*
U.S. Cl. 404—72 12 Claims



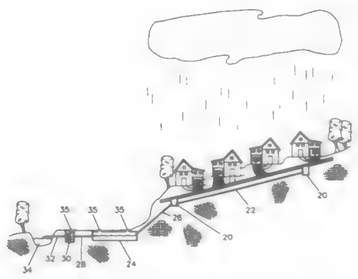
1. A system for controlling emissions created by spraying a heated liquid paving composition from at least one nozzle of a moving vehicle onto a pavement surface, comprising:
a vacuum hood positionable adjacent said at least one nozzle and above said pavement surface, said vacuum hood having at least one inlet and at least one outlet;
a mechanism communicating with said at least one outlet to create a partial vacuum within the vacuum hood and draw air containing said emissions through said at least one inlet; and
apparatus for receiving said air and extracting said emissions therefrom.

5,342,144

STORMWATER CONTROL SYSTEM

Edward J. McCarthy, 14816 SE. 116th St., Renton, Wash. 98059

Filed Nov. 2, 1992, Ser. No. 970,476
Int. Cl.[5] E02B *7/20, 13/00*
U.S. Cl. 405—39 26 Claims



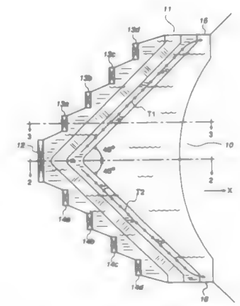
1. A stormwater flow control system, comprising:
at least one stormwater detention reservoir;
an outflow conduit from said stormwater detention reservoir for conveying water from said stormwater detention reservoir to a runoff channel;
an adjustable flow restrictor mechanism in said outflow conduit for controlling the flow rate through said outflow conduit, said flow restrictor mechanism having an adjustable opening through which water can flow from said detention reservoir to said runoff channel;
an actuator connected to said adjustable flow restrictor for adjusting said opening size in said adjustable flow restrictor mechanism to any of a multitude of possible positions between fully opened and fully closed to achieve the desired optimal flow rate out of the detention reservoir;
at least one sensor for sensing conditions indicative of stormwater inflow to said stormwater detention reservoir;
a microcontroller programmed to produce signals in response to signals from said sensor and an internal program to control said actuator to adjust said flow restrictor mechanism to release stormwater from said stormwater detention reservoir at an optimal rate under said conditions.

5,342,145

SYSTEM FOR PRODUCING SURFING WAVES FOR TUBE RIDING OR WIND SURFING

Albert D. Cohen, 7 Wagstaff Court, Brighton 3186 Melbourne, Australia

Filed Apr. 21, 1993, Ser. No. 51,457
Int. Cl.[5] E02B *3/00*; E04H *3/18*
U.S. Cl. 405—79 16 Claims



1. A method of producing plunging waves for surfing in a body of water, comprising
forming a reef at the bottom of said body of water, the offshore side of said reef forming a wave-breaking surface which inclines upwardly toward the shore at a substantially constant predetermined angle, and
generating waves on the offshore side of said reef and propagating toward the shore, said waves having a steepness sufficient to cause the waves to break in a plunging mode as the waves traverse said inclined wave-breaking surface, said inclined wave-breaking surface extending across the wave front and inclining upwardly toward the shore at said substantially constant predetermined angle to produce a continuous plunging wave along said inclined wave-breaking surface as the waves traverse said inclined wave-breaking surface.

5,342,146

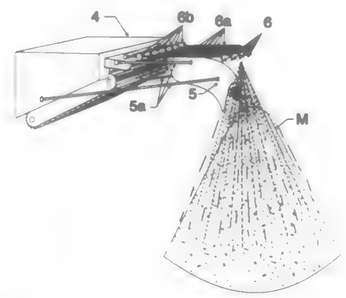
METHOD AND APPARATUS FOR TREATMENT OF CONTAMINATED SOIL PARTICLES

George A. Cooper, San Antonio, Tex., assignor to Cooper Equipment Company, San Antonio, Tex.

Continuation-in-part of Ser. No. 2,760, Jan. 12, 1993, Pat. No. 5,271,694. This application Sep. 14, 1993, Ser. No. 121,278
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] B09B *3/00*; E02D *3/12*
U.S. Cl. 405—128 13 Claims

1. The method of treating contaminated soil with an aqueous solution of decontaminating agents comprising:
breaking the contaminated soil into particles of substantially uniform maximum size;

forming a downwardly directed stream of contaminated soil particles impinging onto a selected surface in a manner to build a growing cone shaped mass of contaminated soil particles; and
concurrently directing a spray of an aqueous solution of decontaminating agents into said stream in a direction substantially parallel to and within said stream of contaminates soil particles, whereby a portion of said aqueous spray moistens said particles by contact therewith and the remainder of said aqueous spray contacts the upper portions of said growing pile to produce moistening of said growing pile and assist in rolling of newly deposited particles down the sides of said cone shaped mass to expose more of each particle's surface area to contact by said aqueous solution of decontaminating agents.

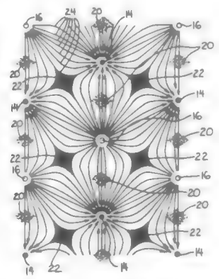


5,342,147

METHOD OF RECOVERING SUBSURFACE CONTAMINANTS

Frederick C. Payne, Charlotte, and Galen L. Kilmer, Woodland, both of Mich., assignors to ETG Environmental, Inc.-MWR Division, Lansing, Mich.

Filed Sep. 24, 1993, Ser. No. 125,782
Int. Cl.[5] B09B *1/00, 3/00*
U.S. Cl. 405—128 7 Claims



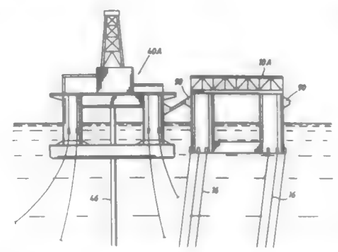
1. A method of recovering contaminants entrained in subsurface soils comprising the steps of:
a) establishing a plurality of vacuum withdrawal wells terminating in such subsurface soils adjacent said contaminants;
b) establishing a plurality of air injection wells peripherally spaced from said vacuum withdrawal wells;
c) injecting air into said subsurface soils through said air injection wells;
d) drawing air and contaminants out of said subsurface soils through said vacuum withdrawal wells to create a zone of reduced air pressure adjacent the withdrawal wells; and
e) after a predetermined time injecting air into said subsurface soils through at least one of said vacuum withdrawal wells, and drawing air out of said subsurface soils through at least one of said air injection wells wherein subsurface soil air flow is redirected to distribute air into previously untreated subsurface zones.

5,342,148

METHOD AND SYSTEM FOR DEVELOPING OFFSHORE HYDROCARBON RESERVES

David A. Huete, Spring; Lee K. Brasted, Kingwood, and George Rodenbusch, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 919,629, Jul. 24, 1992, Pat. No. 5,195,848, which is a continuation of Ser. No. 624,864, Dec. 10, 1990, abandoned. This application Mar. 23, 1993, Ser. No. 35,849
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—223.1 9 Claims



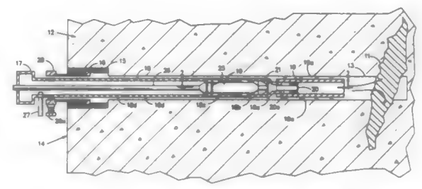
1. A docking apparatus for joining first and second offshore structures, comprising:
a means for maneuvering the relative position of the first and second structures;
a docking frame member mounted to pivot vertically and extend outwardly from the first structure;
a corresponding docking support mounted on the second structure adapted to receive the docking frame member in a connection that accommodates two degrees of freedom, vertical and horizontal pivoting actions;
a strut mounted on and extendable from the first structure; and
a corresponding connection point on the second structure adapted to receive the strut in a vertically pivotable engagement.

5,342,149

LONG HOLE CHEMICAL GROUT INJECTOR SYSTEM

Howard W. McCabe, and William E. McCabe, both of Idaho Falls, Id., assignors to McCabe Brothers, Inc., Idaho Falls, Id.

Filed Aug. 31, 1992, Ser. No. 937,177
Int. Cl.[5] E02D *3/12*
U.S. Cl. 405—269 24 Claims



1. A chemical grout injection system for sealing a crack in a structure, access to said crack being provided by at least one hole formed in said structure, said system comprising:

VOL 1165 ISS 5 AG 30 1994 UMI

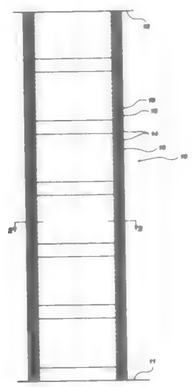
pipe means in sections of predetermined lengths and including means for assembling at least two of said sections together to form a lining for said hole to a predetermined depth;
path defining means for forming at least two chemically separate paths within said pipe means;
valve means attached to each of said chemically separate paths at said predetermined depth;
means for inserting said path defining means into said lining;
means for securing said path defining means at a predetermined location in said lining; and
means for removing said path defining means from said lining;
whereby grout is formed from at least two chemically reactive components as they combine at said predetermined depth for filling said crack.

5,342,150

COLLAPSIBLE CRIB MINING SUPPORT COLUMN

Chris D. Kitchen, Springville, Utah, assignor to Mountainland Support, Inc., Provo, Utah

Filed Feb. 26, 1993, Ser. No. 23,618
Int. Cl.[5] E21D *11/00*
U.S. Cl. 405—288 **6 Claims**



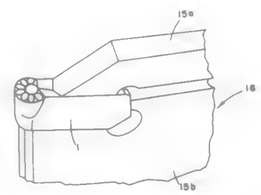
1. A collapsible crib for a mine roof support column, comprising in combination:
a double-walled vertical support structure having a hollow center and an upper surface and a lower surface, said double wall having an outer wall and an inner wall in spaced-apart relationship with each other;
an adjustable locking device for interlocking a plurality of cribs in vertical relationship one with another compromising a slideably mounted inner sleeve disposed along the inner surface of the inner wall of the double-walled vertical support structure, and adapted to move upwardly to interlock with a cooperating receptacle in the lower surface of the double-walled vertical support structure; and
a composite material filling the aperture between the inner and outer walls of said double wall, said composite material comprising a combination of a urethane formable material and a rock aggregate.

5,342,151

CUTTING INSERT HAVING A CIRCULAR CUTTING EDGE WITH A CHIP FORMER

Jacob Friedmann, Kfar Havradim, Israel, assignor to Iscar Ltd., Migdal Tefen, Israel

Filed Jan. 19, 1993, Ser. No. 6,214
Claims priority, application Israel, Jan. 20, 1992, 100703
Int. Cl.[5] B23B *27/08, 27/22*
U.S. Cl. 407—116 **13 Claims**



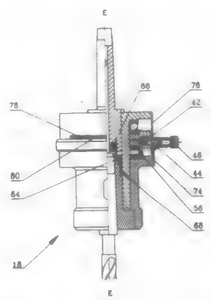
1. A metal cutting tip having an upper face and a curved relief face defining between them a substantially circular cutting edge; a chip former located in said upper face and comprising a plurality of substantially radially directed recesses formed in said upper face and respectively extending from and merging smoothly with, a land surface adjacent to and coextensive with said cutting edge to, and merging smoothly with, a substantially centrally located deflector wall; adjacent recesses intersecting at substantially radially directed rectilinear ridges, each ridge merging smoothly at one end thereof with a component rake surface extending smoothly from said land surface and at an opposite end thereof, with said deflector wall, and wherein each of said recesses defines a single curved surface extending from said land surface to said deflector wall.

5,342,152

METHOD AND APPARATUS FOR FORMING INTERMITTENT CHIPS WHILE MACHINING HOLES WITH A ROTATING TOOL

Ludwik A. Medeksza, 3175 W. 42nd St., Erie, Pa. 16506

Continuation-in-part of Ser. No. 596,041, Oct. 11, 1990, Pat. No. 5,113,728. This application May 14, 1992, Ser. No. 882,846
Int. Cl.[5] B23B *47/22*
U.S. Cl. 408—1 R **21 Claims**



1. A method for generating intermittent chips when machining a hole in a stationary workpiece on a machine with a rotating tool having one or more cutting edges, comprising the steps of:
(I) rotating the tool about an axis of rotation coinciding with the centerline of a machined surface to be produced;
(II) causing the tool to achieve strictly determined and controlled positions along its feed advance path in response to the tool angular positions when cutting, so that

(*a*) a tool nose path described on the machined surface of the workpiece is wavy and has a constant wave amplitude A and wave length λ, said wave amplitude A and wave length λ being capable of adjustment,
(*b*) a distance p between neutral lines of any two consecutive tool nose path coils, produced by a given tool nose, is constant but adjustable, said distance p being capable of adjustment, and
(*c*) a phase ϕ is produced between waves of any two consecutive tool nose path coils produced by a given tool nose, that is equal to $2\pi[N-I(N)]$, where N is a selected number of waves of said wavy tool nose path per circumference of the machine surface of said hole and I(N) is the integer part of said N;
(III) controlling said wave amplitude A according to the inequality

$$A \geq \left| \frac{p}{2\pi} \operatorname{cosecant} \left(\frac{N}{n} \pi \right) \right|$$

where p is said constant distance, N is said selected number of waves, and n is the number of major cutting edges in the tool, whereby the undeformed chip thickness varies periodically and reduces to zero in each period of its variation, thereby generating intermittent chips, or causing in some materials chip breakage when said amplitude is slightly less than that resulting from said inequality; and
(IV) adjusting said amplitude A and said phase ϕ in any combination to achieve a desired surface finish and tool life.

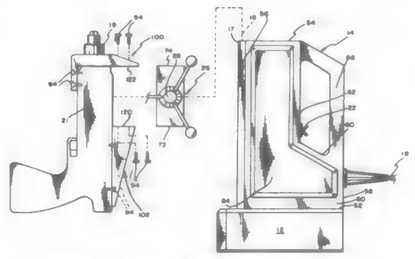
2. An apparatus for forming intermittent chips when machining a hole in a stationary workpiece with a rotating tool, comprising:
tool drive means for causing rotation of the tool;
tool feed drive means for overcoming forces resisting machining the workpiece which act along the tool feed advance path and for driving said tool so that a tool nose path is wavy and has an amplitude A which is based on the number of major cutting edges in the tool, said tool nose path being capable of adjustment, and
feed control means in operative communication with said tool feed drive means for causing the tool to achieve strictly determined and controlled positions along said tool feed advance path in response to the angular positions of the rotating tool when cutting.

5,342,153

PORTABLE DRILL SUPPORT WITH A WORK SURFACE ENGAGING BASE

Edward L. Dobkins, 2500 E. 40th, Hutchinson, Kans. 67502

Filed May 14, 1993, Ser. No. 61,085
Int. Cl.[5] B23B *45/14*
U.S. Cl. 408—1 R **19 Claims**



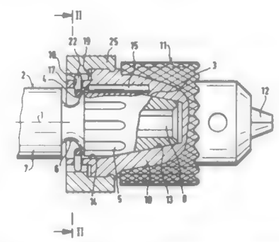
17. A method for drilling comprising the steps of:
(a) providing a drill support comprising a body, a saddle member for securing a drill to said body, and a drill having a chuck;
(b) disposing the drill on said saddle member of the drill support such that the drill is in a generally vertical position with the chuck of the drill pointed in a downward direction;
(c) drilling with said drill;
(d) stopping;
(e) removing said drill from the saddle member;
(f) re-disposing the drill on the saddle member such that the drill is in a generally vertical position with the chuck of the drill pointed in an upward direction;
(g) drilling with the drill.

5,342,154

HAND MACHINE TOOL WITH TOOL HOLDER

Peter Holzer, Solothurn, Switzerland, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 18, 1993, Ser. No. 33,137
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1992, 9203627
Int. Cl.[5] B23B *31/02*
U.S. Cl. 408—240 **11 Claims**



1. A hand machine tool, comprising a rotatable spindle having a longitudinal axis and provided with a cone and a ring surface extending at an angle to said longitudinal axis; a tool holder having a conical opening which surrounds said cone; torque-transmitting elements provided between said spindle and said tool holder and formed as form-locking elements which connect said tool holder with said spindle for torque-transmission therebetween; and locking means separate from said torque-transmitting elements and cooperating with said ring surface of said spindle exclusively for locking said tool spindle, said locking means being formed as spring wire members.

5,342,155

SPINDLE EXTENSION WITH SELF-CONTAINED PULL-STUD DRAW BAR ASSEMBLY

Hugh Harroun, Holly, Mich., assignor to Harroun Enterprises, Fenton, Mich.

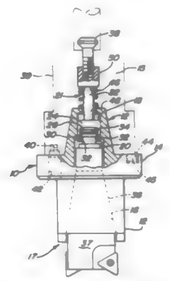
Filed May 26, 1993, Ser. No. 67,641
Int. Cl.[5] B23C *5/26*
U.S. Cl. 409—131 **23 Claims**

1. A machine for drilling and milling operations comprising:
a spindle adapted to provide rotation for a tool, said spindle having a spindle first axial end positioned within the machine, and a spindle second axial end having an internal portion adapted to receive a tool holder, said spindle second end being accessible from outside said machine;
a pulling force means within said machine;
a spindle extension removably attached to said spindle, said spindle extension having a flange nonrotatably connected to said spindle and a generally cylindrical sleeve originating near an extension first axial end and terminating at an extension second axial end, said extension second axial end

VOL 1165 ISS 5 AG 30 1994 UMI

being adapted to receive a tool holder and having a drive means to drive the tool holder; and

a pull stud draw bar assembly, said assembly having a draw bar partially disposed and axially movable within said spindle extension, said assembly having a pull sleeve at one end of said draw bar to hold a tool, said assembly having a stud member connected to said draw at an end axially opposite from said pull sleeve and received in said internal portion of said spindle second end, said assembly having an adjustable length, said pulling force means pulling said stud member away from said extension second end.



23. A method of milling with a spindle extension comprising the steps of:

(A) testing the force from a host machine draw bar to thereby determine a relationship between the force from the machine draw bar and a distance the draw bar moves within the host machine;

(B) determining a desired length of a pull stud draw bar assembly within a spindle extension based on the tested force and relationship determined in step (A); and

(C) adjusting the length of the pull stud draw bar assembly based on the desired length determined in step (B).

5,342,156

MACHINE TOOL HAVING PARTITION PLATES FOR PREVENTING SPLASH OF CUTTING FLUID

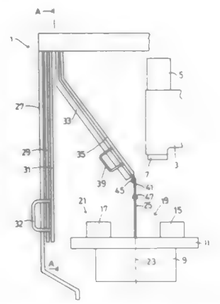
Haruki Baba, Iwakura, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 22, 1993, Ser. No. 35,058

Claims priority, application Japan, Apr. 23, 1992, 4-104506

Int. Cl.[5] B23Q *11/08*

U.S. Cl. 409—134 **14 Claims**



1. In a machine tool including a table rotatable about an axis, said table having a work position for machining a workpiece and a standby position for preliminarily setting another workpiece, and a supporting member provided over said table, the improvement comprising:

a first partition plate fixedly mounted on said table in the vicinity of the axis, for separating the work position from the standby position; and

a second partition plate fixed to said supporting member and extending toward said first partition plate on substantially the same plane, said second partition plate having a forked member so formed as to straddle said first partition plate with a gap defined therebetween.

5,342,157

IMPACT-TYPE EXPANSIBLE PLUG FOR ANCHORING IN A CYLINDRICAL DRILLED HOLE

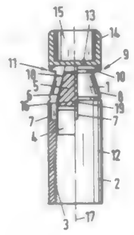
Artur Fischer, Tumlingen/Waldachtal, Fed. Rep. of Germany, assignor to fischerwerke Artur Fischer GmbH & Co. KG, Waldachtal, Fed. Rep. of Germany

Filed Jul. 9, 1993, Ser. No. 89,768

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1992, 4226011

Int. Cl.[5] F16B *13/06*

U.S. Cl. 411—60 **8 Claims**



1. An impact-type expansible plug for anchoring in a cylindrical drilled hole of a concrete part and the like, comprising an expansion sleeve provided with at least one longitudinal slot and expandable in a drilled hole, said expansion sleeve having a conically narrowing internal bore; and an expansion mandrel drivable into said conically narrowing internal bore of said expansion sleeve, said expansion sleeve having a forward end provided with an annular collar having a radially directed circumferential cutting edge, said expansion sleeve having a portion tapering toward said annular collar, said expansion mandrel having a conical extension which during an expanding process engages in said conically narrowing internal bore of said expansion sleeve, said conical extension having an outer surface which extends at a flatter angle relative to a central axis of said expansion mandrel than said conically narrowing internal bore of said expansion sleeve in an unexpanded state.

5,342,158

HANDLING AND DEPLOYING RADIOACTIVE SOURCES

Chris A. Isaacson, Poway, Calif., assignor to Gamma-Metrics, San Diego, Calif.

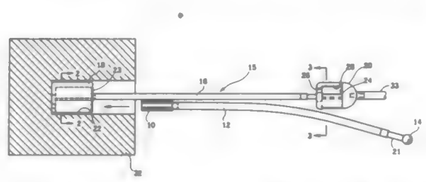
Continuation-in-part of Ser. No. 954,306, Sep. 30, 1992, abandoned. This application Jan. 27, 1993, Ser. No. 9,800

Int. Cl.[5] B65G *65/00*; **G21C** *19/00*

U.S. Cl. 414—146 **15 Claims**

1. An apparatus for handling a plurality of radioactive sources respectively mounted at one end of a plurality of rods, wherein a coupler is disposed at the other end of each rod, the apparatus comprising

a shaft having a canister defining a plurality of compartments at one end of the shaft for respectively receiving a plurality of said mounted radioactive sources, and a clip at another position on the shaft defining a plurality of chambers for respectively receiving a plurality of said couplers, such that the mounted radioactive sources are restrained



to remain in the compartments when the couplers are received in said chambers.

5,342,159

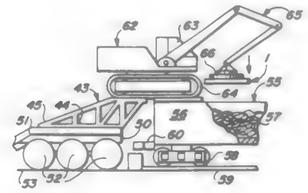
ACCESS AND SUPPORT APPARATUS FOR LOADING AND UNLOADING GONDOLA CARS

Bobby G. Warren, Jr., Rte. 1 Box 337, Sibley, La. 71073, and James D. Davis, Rte. 2, Box 535, Minden, La. 71055

Division of Ser. No. 963,604, Nov. 30, 1992, which is a division of Ser. No. 678,229, Apr. 1, 1991, Pat. No. 5,183,369. This application Sep. 7, 1993, Ser. No. 188,392

Int. Cl.[5] B65G *67/02*

U.S. Cl. 414—339 **4 Claims**



1. In an open top gondola railroad car and a crane-type crawler having parallel tracks and an electromagnet for unloading the open top gondola railroad car, the improvement comprising fixed pallet for positioning on the top edges of upwardly-extending sides defining the open top of the gondola railroad car and supporting the crane-type crawler, said fixed pallet comprising a frame characterized by a pair of spaced spanning members, at least two-cross members connecting said spanning members in spaced relationship and a flat top plate spanning said frame substantially equidistant from the ends of said spanning members, for supporting the crane-type crawler, a pair of guides upward-standing from said top plate in spaced relationship for guiding the tracks of the crane-type crawler over said fixed pallet and a web radius provided in said guides for accommodating said electromagnet.

5,342,160

OPENER FOR IRRADIATION CAPSULE

Shigeji Nakajima, Ibaraki, Japan, assignor to Nakajima Seisakusho Co., Ltd., Ibaraki, Japan

Filed Nov. 17, 1992, Ser. No. 978,153

Claims priority, application Japan, Nov. 19, 1991, 3-303544

Int. Cl.[5] B23B *3/00*

U.S. Cl. 414—412 **1 Claim**

1. An opener for a capsule to be irradiated comprising:

a holding mechanism for holding the capsule during cutting thereof;

a cutting mechanism including a plurality of roller cutter rotatably mounted on a cutter holder, said roller cutter being rotated around the capsule about a central axis of the capsule and displaceable radially of the capsule for cutting the capsule; and

a casing containing therein said capsule, said holding mechanism and said cutting mechanism;

said holding mechanism including:

a pair of clamp members symmetrically disposed around said capsule and supported for movement toward and from one another so as to clamp said capsule therebetween;

biasing members for urging the respective clamp members against said capsule;

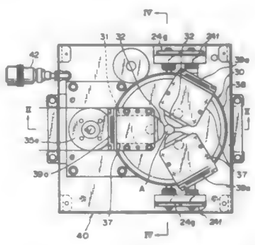
a resilient member disposed between said clamp member and said biasing member;

a biasing member drive mechanism for displacing said biasing members;

and

a switch means for de-energizing a drive source of said drive mechanism when said resilient member is compressed to narrow beyond a predetermined distance between said clamp member and said biasing member;

said cutting mechanism including:



a first gear and a second gear supported for rotation about the central axis of said capsule at speeds slightly different with each other;

a gear drive mechanism for rotatively driving said two gears;

a plurality of support members carried by one of the two gears which has number of teeth less than that of the other gear and substantially equally spaced apart from one another in the circumferential direction of said one gear, said support members carrying said cutter holder for said cutter roller so as to be displaceable radially of said capsule;

a drive gear disposed on said other gear having number of teeth larger than that of said one gear; and

a radial displacement mechanism including a driven gear meshed with said drive gear, said radial displacement mechanism adapted to translate a rotational movement from said driven gear into a linear movement so as to displace said cutter holder radially of said capsule.

5,342,161

HOLDER CHANGER

Kouji Shimoichi, and Hideyuki Furumoto, both of Hiroshima, Japan, assignors to Hirotec Corporation, Hiroshima, Japan

Filed Oct. 30, 1992, Ser. No. 969,457

Claims priority, application Japan, Apr. 14, 1992, 4-31981[U]

Int. Cl.[5] B25J *15/00*; **B21D** *37/04*

U.S. Cl. 414—416 **9 Claims**

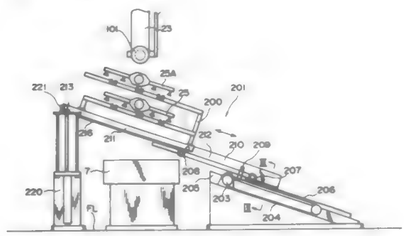
1. A holder changer apparatus for changing a holder means for transporting raw works to a press and for removing machined works from said press, said apparatus comprising:

an elevator means adjacent to said press for delivering a plurality of said holder means from a standby position remote from said press to an extended and elevated position proximate said press;

robot means mounted on said press for selectively receiving

VOL 1165 ISS 5 AG 30 1994 UMI

at least one of said plurality of said holder means from said elevator means;

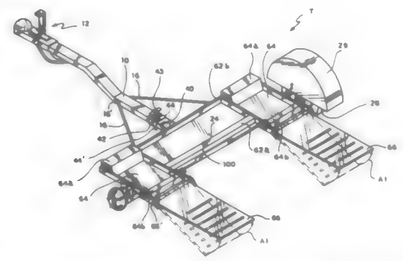


a fixing portion provided on said robot means, for removably carrying said holder means.

5,342,162
TOW DOLLY

Larry Robinette, 15 Santuck St., Greenville, S.C. 29611, and Carl Gibson, 155 Edith Dr., Taylors, S.C. 29687

Filed Apr. 30, 1993, Ser. No. 54,574
Int. Cl.[5] B60P *1/28*
U.S. Cl. 414—483 8 Claims



1. A dual tiltable tow dolly for receiving the wheels of a vehicle and allowing the vehicle to be towed comprising:

a) a main longitudinal frame member having one end adapted to be removably attached to a towing vehicle and the other end configured to act as a horizontal pivot point;

b) a first tiltable member including:

a main lateral brace having a vertical pivot point and including a pair of wheel receiving support members and a generally U-shaped channel adapted to fit over said longitudinal frame member and including a horizontal pivot axis, said U-shaped member having means to releasably engage said longitudinal frame member, wherein said releasable engagement means is a sleeve adapted and configured to be slidable along said longitudinal frame member and over said U-shaped channel to hold both in a fixed, proximal relationship;

a pair of tie rods , each of said tie rods having a swivel connection to said longitudinal frame member and another swivel connection to said wheel receiving support members;

a plurality of rotatably mounted wheels proximate said wheel receiving support members such that said lateral brace is movably supported above the ground;

horizontal pivoting engagement means on said U-shaped channel adapted to engage with said horizontal pivot point on said end of said longitudinal frame member and, thus permitting vertical rotation about said horizontal pivotal engagement point; and

c) a second tiltable member including:

cross bracing having a vertical pivoting engagement means adapted to engage with said vertical pivot point on said lateral brace, wherein said vertical pivot point facilitates the turning of said tow dolly with said towing vehicle during a turning maneuver;

a pair of wheel receiving means including ramp travel stops; and

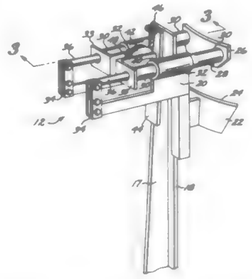
a pair of ramps, adjustably engageable with said wheel receiving means, such that said ramps can be fixed in a predetermined relationship with said wheel receiving means; thus,

a vehicle to be towed can be loaded on said dolly, selectively, by either releasing said engagement means between said U-shaped member and said longitudinal brace to tilt said first and said second tiltable members so that said pair of ramps contact the ground, or the vehicle can be loaded by adjusting said pair of ramps in relation with said wheel receiving means such that said ramps contact the ground.

5,342,163
DRUM GRASPING DEVICE

Garnet R. Yost, Alberta, Canada, assignor to Chemonics Industries, Inc., Phoenix, Ariz.

Filed Mar. 1, 1993, Ser. No. 22,694
Int. Cl.[5] B66F *9/18*
U.S. Cl. 414—607 6 Claims



1. A device for grasping a storage drum having disposed near its top edge a circumferential lip that protrudes radially outwardly and axially upwardly, comprising:

a lifting arm for engaging the outwardly protruding portion of the lip from below and applying an upward lifting force thereto;

a holding arm for engaging the axially upwardly protruding portion of said lip from within; and

a mechanism for shifting the holding arm toward the lip as a function of the force applied to the lip by the lifting arm;

said lifting arm being slidably disposed about a vertical support member having an upper end and wherein the position of the holding arm is shiftable relative the lifting arm on a horizontal plane, said lifting arm being biased upwardly along the vertical support member and said holding arm being biased away from the lifting arm; and

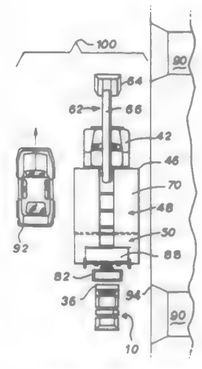
said vertical support member including a surface that gradually diverges therefrom, and further comprising:

a guide member that is fixed with respect to the vertical position of the lifting arm, is directly linked to the horizontal position of the holding arm and that engages said diverging surface whereby the horizontal position of the holding arm is adjusted as a function of the vertical position of the lifting arm.

5,342,164
WASTE COLLECTION METHOD

Russell C. Kinney; Donald C. Kinney, both of Hartland; Lyle Paullin, Oconomowoc; Richard Paullin, Hartland; Jeffrey W. Parrott, Pewaukee, and Donald Smith, Oconomowoc, all of Wis., assignors to Expert Disposal Service, Inc., Hartland, Wis.

Continuation of Ser. No. 706,921, May 29, 1991, Pat. No. 5,252,020. This application Mar. 4, 1993, Ser. No. 27,296
Int. Cl.[5] B65F *3/02*
U.S. Cl. 414—786 8 Claims



1. A method for collecting mixed trash and recyclable waste separated from the mixed trash from several pick up locations and transporting the mixed trash and recyclable waste to final delivery destinations, the method comprising the steps of:

a) parking a garbage truck having a mixed trash container;

b) parking a recyclable waste collection vehicle having a recyclable waste container;

c) driving a motorized satellite vehicle to one or more pick up locations, the motorized satellite vehicle having a mixed trash bin with a volume smaller than the mixed trash container on the garbage truck and a recyclable waste bin with a volume smaller than the recyclable waste container on the recyclable waste collection vehicle;

d) manually loading mixed trash at each pick up location into the mixed trash bin, and recyclable waste at each pick up location into the recyclable waste bin;

e) driving the motorized satellite vehicle to the parked garbage truck, and mechanically transferring mixed trash from the mixed trash bin on the satellite vehicle into the mixed trash container on the garbage truck;

f) driving the motorized satellite vehicle to the parked recyclable waste collection vehicle, and mechanically transferring recyclable waste from the recyclable waste bin on the satellite vehicle into the recyclable waste container on the recyclable waste collection vehicle;

g) repeating steps c) through f) to collect mixed trash in the mixed trash container on the garbage truck and recyclable waste in the recyclable waste container on the recyclable waste collection vehicle;

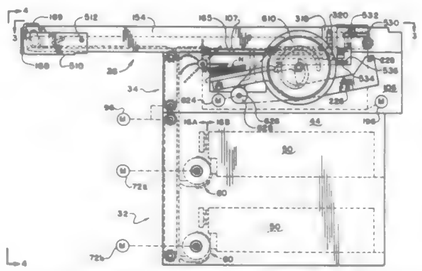
h) transporting mixed trash collected in the mixed trash container on the garbage truck to a final delivery destination for the mixed trash by driving the garbage truck to the final delivery destination for the mixed trash; and

i) transporting recyclable waste collected in the recyclable waste collection vehicle to a final delivery destination for the recyclable waste by driving the recyclable waste vehicle to the final delivery destination for the recyclable waste.

5,342,165
SHEET HANDLING APPARATUS

Harry T. Graef, Bolivar; Damon J. Blackford, Akron, and Timothy R. Crewe, Alliance, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Division of Ser. No. 765,471, Sep. 25, 1991, Pat. No. 5,240,368, which is a continuation of Ser. No. 445,564, Dec. 4, 1989, abandoned. This application Jun. 15, 1993, Ser. No. 77,187
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] B65H *31/02*
U.S. Cl. 414—788.9 23 Claims



1. A device for handling and feeding sheet media comprising:

a plurality of elongated side-by-side parallel rails defining a linear path along which said sheets are to be driven, each of said rails including an upper surface lying in a common plane extending along said linear path;

at least three spaced-apart side-by-side, endless drive belts having an outer frictional surface, each of said drive belts having a portion thereof extending along said surface means wherein said frictional surfaces are disposed opposing and generally parallel to said surface means, said portions of said drive belts being parallel to and juxtaposed with said elongated rails to define an undulating passage therebetween to confine said sheet between said frictional surfaces of said drive belts and said upper surfaces of said rails;

stacking means comprised of a plurality of elongated side-by-side parallel surfaces lying in a common plane, said stacking means being movable between a first position for stacking sheets of said sheet media and a second position wherein said elongated side-by-side parallel surfaces on said stacking means are aligned along said path with said upper surfaces of said rails and are co-planar therewith; and

belt drive means for simultaneously driving said belts.

5,342,166
CERAMIC GAS-TURBINE NOZZLE WITH COOLING FINE HOLES AND METHOD FOR PREPARING THE SAME

Mitsuru Hattori, Ama, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Mar. 29, 1993, Ser. No. 38,808
Claims priority, application Japan, Apr. 6, 1992, 4-083857
Int. Cl.[5] F01D *5/18*
U.S. Cl. 415—115 4 Claims

1. A ceramic gas-turbine nozzle, comprising:

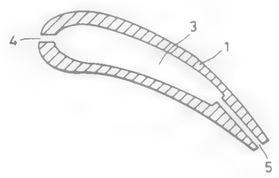
at least one blade portion defining a hollow cavity in an interior thereof, and fine cooling holes formed through said blade portion to communicate said hollow cavity with an exterior of said nozzle; and

shroud portions integrally joined with said at least one blade portion, each of said shroud portions having at least one

VOL 1165 ISS 5 AG 30 1994 UMI

through hole formed therethrough in communication with said hollow cavity;

said ceramic gas-turbine nozzle having a profile degree no



greater than 1.0% relative to a length of said blade portion, said fine cooling holes having a roundness no greater than 0.3 mm and a straightness no greater than 1% relative to the length of said blade portion.

5,342,167

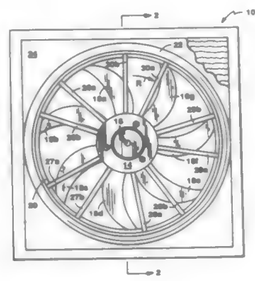
LOW NOISE FAN

Todd D. Rosscan, Ann Arbor, Mich., assignor to Airflow Research and Manufacturing Corporation, Watertown, Mass.

Filed Oct. 9, 1992, Ser. No. 959,250

Int. Cl.[5] F04D *29/66*

U.S. Cl. 415—119 4 Claims



1. A fan comprising:

a hub rotatable on an axis;

blades secured to said hub, each blade extending radially outward from said hub to a blade tip;

an inner ring coaxial with said axis having a portion axially offset from said hub;.

a shroud disposed around said blade tips;.

stators extending radially from said inner ring to said shroud, a first one of the stators being angularly spaced from a second one of the stators so that a first acoustic wave generated by one of the blades passing over the first one of the stators is substantially cancelled by a second acoustic wave generated by said one of the blades passing over the second one of said stators, wherein said stators comprise pluralities of paired first and second stators, each pair comprising one of the plurality of first stators and a corresponding one of the plurality of second stators, the plurality of first stators being leading stators and the plurality of second stators being trailing stators, the leading and trailing stator of each pair angularly spaced from each other by a first distance, the trailing stator of each pair of stators being angularly spaced by a second distance from a leading stator of an adjacent stator pair, said first and second distances being different from one another and selected so that acoustic waves generated by a fan blade passing over the leading and trailing stators of each pair have a phase difference of 180°.

5,342,168

ADJUSTABLE RADIAL-FLOW DIFFUSER

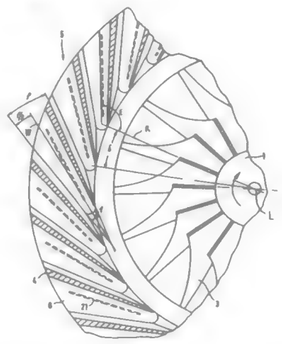
Albrecht Weigel, Germering, and Uwe Schmidt-Eisenlohr, München, both of Fed. Rep. of Germany, assignors to MTU Motoren- Und Turbinen-Union GmbH, Fed. Rep. of Germany

Filed Jul. 26, 1993, Ser. No. 96,309

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1992, 4225126

Int. Cl.[5] F01D *17/14*

U.S. Cl. 415—148 14 Claims



1. An adjustable radial flow diffuser for a radial flow compressor, comprising:

adjusting elements having diffuser blades, said adjusting elements being arranged in a diffuser annulus uniformly distributed along the diffuser circumference with a constant angular pitch δ, said adjusting elements further being swivellable about an adjusting axis V parallel to the longitudinal axis of the compressor for changing the narrow cross-section between the adjacent diffuser blades,

wherein said adjusting elements have one of a substantially U-shaped and H-shaped cross-section with sector-shaped plates that are mounted on both sides of a blade root to form the legs and the diffuser blade forming said one web of the cross-section.

5,342,169

AXIAL FLOW TURBINE

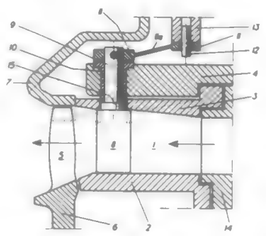
Ferdinand Müller, Aibbruck-Buch, Fed. Rep. of Germany, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Apr. 5, 1993, Ser. No. 42,528

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213709

Int. Cl.[5] F01D *25/00*

U.S. Cl. 415—160 1 Claim



1. An axial flow turbine comprising:

at least one row of individually adjustable guide vanes and at least one row of rotor blades, each guide vane including a

vane blade mounted by a collar on a rotatable adjusting shaft, the shaft being supported in a casing:

an exchangeable vane carrier having an aperture through which the collar is positioned to support the vane blade in a flow duct; and,

an exchangeable cover, against which tips of the rotor blades seal, wherein, to change the flow duct for a different mass flow, in addition to changing the height of the rotor blades and the vane blades, the collar is changed so that a total length of the vane blade, collar and shaft remains constant, and, only the vane carrier and the cover are exchanged, with otherwise unaltered machine geometry, to match the duct contour to the changed heights of blading.

5,342,170

AXIAL-FLOW TURBINE

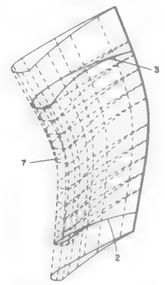
Peter Elvekjaer, Baden, and Walter Schreiber, Nussbaumen, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Jun. 29, 1993, Ser. No. 83,265

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1992, 4228879

Int. Cl.[5] F01D *9/02*

U.S. Cl. 415—192 5 Claims



1. An axial-flow turbine with at least one row of bowed guide vanes and at least one row of rotor blades, wherein the bowing of the guide vanes over the height of the vane is selected at right angles to a vane chord and wherein the guide vanes are tapered in their radial extent.

5,342,171

IMPELLER BLADE WITH REDUCED STRESS

Michael J. Stanko, Grand Island, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

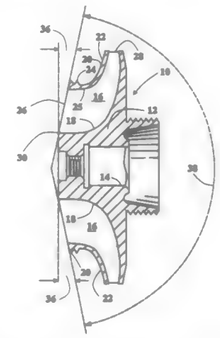
Continuation-in-part of Ser. No. 872,345, Apr. 23, 1992, abandoned. This application Sep. 29, 1993, Ser. No. 128,503

Claims priority, application Thailand, Apr. 8, 1993, 018679; Indonesia, Apr. 20, 1993, 93-005883; Argentina, Apr. 22, 1993, 324798; Brazil, Apr. 22, 1993, PI9301625; Canada, Apr. 22, 1993, 2094624; Chile, Apr. 22, 1993, 93-00436; China, Apr. 22, 1993, 93-104927; European Pat. Off., Apr. 22, 1993, 93106559; Japan, Apr. 22, 1993, 5-117598; Rep. of Korea, Apr. 22, 1993, 93-06762; Mexico, Apr. 22, 1993, 93-02366

Int. Cl.[5] F04D *29/18*

U.S. Cl. 415—228 10 Claims

1. A radial flow turbine blade with reduced stress and increased useful life comprising a surface for fluid engagement having a blade hub, an outer shroud and an edge defining, in part, an outlet opening for axial fluid flow, said edge extending from said blade hub to the outer radial extremity of said shroud, and at least at its outer radial extremity being spaced



axially into the blade at an angle of about 0.5° to about 8° from the radial line through said edge at the hub of said blade.

5,342,172

COOLED TURBO-MACHINE VANE

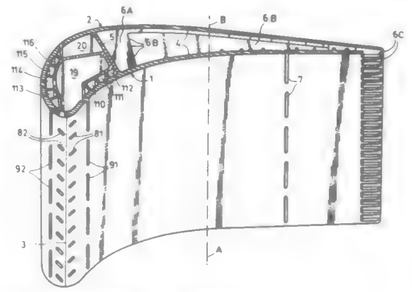
Xavier G. A. Coudray, Fontainebleau; Miachaël F. L. Derrien, Savigny Le Temple, and Philippe M. P. Pichon, Fontainebleau, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France

Filed Mar. 25, 1993, Ser. No. 36,685

Claims priority, application France, Mar. 25, 1992, 92 03583

Int. Cl.[5] F01D *5/18*

U.S. Cl. 416—97 R 6 Claims



1. A turbo-machine vane, comprising:

an outer wall defining a hollow interior,

a plurality of internal walls dividing said hollow interior into a plurality of internal cavities for the flow of a cooling fluid, and said outer wall having a plurality of openings for communicating at least some of said internal cavities with the exterior of said vane, said vane having a foot end and a head end and defining a longitudinal axis between said foot end and said head end, and said outer wall defining an intrados face, an extrados face and a leading edge portion of said vane separating said intrados face and said extrados face, said leading edge portion having a central line on which tangents to said outer wall and lying in planes perpendicular to said longitudinal axis of said vane are perpendicular to the principal direction of the flow of gases which, in use, come into contact with said vane, wherein said plurality of openings include two first rows of openings in said leading edge portion of said vane on

VOL 1165 ISS 5 AG 30 1994 UMI

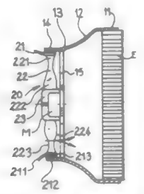
opposite sides of said central line and substantially parallel to said central line, the orientation of each opening in said two first rows being such as to direct cooling fluid which flows through said opening from said interior of said vane away from said central line relative to said rows, and each said opening of said two first rows having a cross-section of an oblong shape arranged at an angle relative to said central line, wherein said plurality of internal cavities include a first longitudinal cavity in the region of said leading edge of said vane and in direct communication with said openings of said two first rows of openings, a first series of longitudinal ducts adjacent and defined partly by the portion of said outer wall defining said intrados face of said vane, and a second series of longitudinal ducts adjacent and defined partly by the portion of said outer wall defining said extrados face of said vane wherein each opening in said two first rows of openings is oriented relative to said longitudinal axis of said vane such that the inner end of each of said openings is closer to said foot of said vane than the respective outer end of each of said openings such that cooling fluid which flows through said openings is directed away from said foot toward said head of said vane and wherein the cross-section of each of said openings in said first two rows of openings increases uniformly in side from the inner end of said opening to the outer end thereof.

5,342,173

COWL FOR FAN AND ITS APPLICATION TO A VEHICLE MOTORIZED FAN UNIT

Jean-Claude Vera, Valentigney, France, assignor to ECIA-Equipements et Composants Pour l'Industrie Automobile, Audincourt, France

Filed Nov. 6, 1992, Ser. No. 972,536
Claims priority, application France, Nov. 7, 1991, 91 13755
Int. Cl.[5] F04D *29/68*
U.S. Cl. 416—169 A **8 Claims**



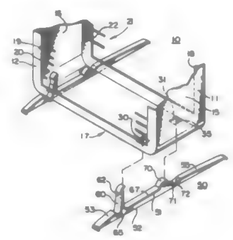
1. An improved cowl for a fan, comprising a stationary part formed by a diffuser (**10**) which has an entrance section followed by an exit section disposed in a downstream direction relative to air flow from said entrance section to said exit section, and which also has in the following order in an upstream direction; a fastening base (**11**), a nozzle-funnel (**12**) located in said exit section, a connection zone (**13**), a cylindrical skirt (**14**) located in said entrance section and joined to said nozzle-funnel (**12**) by said connection zone (**13**), and a moving part (**20**) rotatable about an axis (**200**), which moving part (**20**) has a peripheral profiled annular hoop (**21**) which is intended to be rigidly connected to the blade (**22**) tips (**221**) of a helix which is mounted coaxially in said skirt (**14**) so as to be able to rotate therein, wherein, taking as references the direction of flow and the axis (**200**), said hoop (**21**) is delimited by an inner wall (**2101**), an outer wall (**2102**) and a rear section (**2103**), wherein said connection zone (**13**) is delimited by an inner surface (**131**) with an upstream limit (**1310**), and wherein said rear section (**2103**) of the hoop (**21**) is situated in a plane (P) which is perpendicular to said axis (**200**) and which passes practically through said upstream limit (**1310**) of said internal surface (**131**) of the connection zone (**13**).

5,342,174

FOOT FOR FANS

Charles Litvin, West Chester, Pa., assignor to Lasko Metal Products, Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 970,497, Nov. 2, 1992. This application Feb. 16, 1994, Ser. No. 197,751
Int. Cl.[5] B64C *11/16*
U.S. Cl. 416—246 **2 Claims**



1. A box fan intended to be placed on a fixed surface such as a floor, which includes an upright housing with top, bottom, front, side and rear panels, the front and rear panels having openings for air inlet and outlet, an electric motor and fan blades mounted in said housing for blowing air, the improvement for elevating and stabilizing said fan with respect to the fixed surface which comprises

at least one pair of openings in the bottom panel of said housing

at least one foot means for engagement with said housing

said foot means includes an integral upright means extending therefrom at a substantially 90-degree right angle thereto

said at least one pair of openings are at least one pair of spaced front and rear slots in said bottom panel

said foot means has a body which extends past said front panel and said rear panel and selectively supports said bottom panel of said housing

said foot upright means is a flexible upright finger which extends through said one of said front slots

said front slot has a front rim

said finger has an indentation to engage said rim of said one of said front slots to elevate and retain said fan in an elevated position above said surface

said rear slot has a front rim and

said body has a rearwardly extending catch which is intended to engage with said front rim of said one of said rear slots retaining the foot means therein and permitting said housing to pivot thereabout.

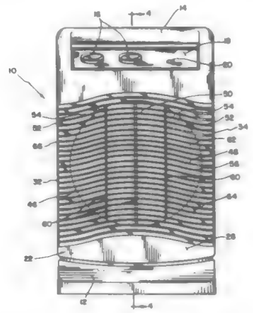
5,342,175

GRILL

Noel T. Patton, Hong Kong, Hong Kong, assignor to Patton Electric Company, Inc., New Haven, Ind.

Filed Mar. 25, 1993, Ser. No. 37,038
Int. Cl.[5] F04D *29/70*
U.S. Cl. 416—247 R **18 Claims**

1. A grill having a flat plane outer surface giving the appearance of having depth beyond the flat plane outer surface, said grill comprising a plurality of elongate ribs spaced apart from each other and defining a plurality of slots therebetween, each of said ribs having an outer surface defining said grill flat plane outer surface and wherein each of said ribs are similarly shaped with a peak extending upwardly from portions located on the right and left sides of said peak, said peak and portions below said peak connected via curvilinear regions and, wherein said rib portions are substantially straight and said peak is centered



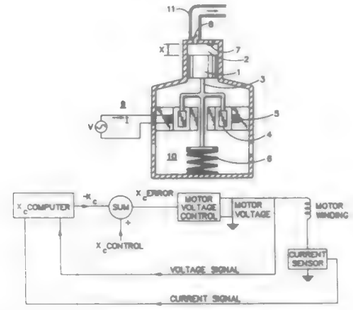
therebetween, said curvilinear regions on the left and right sides of said central peak being mirror images of one another.

5,342,176

METHOD AND APPARATUS FOR MEASURING PISTON POSITION IN A FREE PISTON COMPRESSOR

Robert W. Redlich, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Apr. 5, 1993, Ser. No. 42,662
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—212 **4 Claims**



1. An improved gas or vapor compressor including a control apparatus and a free piston linked to a spring and reciprocating in a cylinder in alternating suction and pressure phases, the piston during reciprocation having an alternating component of displacement, a velocity, an acceleration and an end displacement of the piston's excursion in the cylinder, the piston being driven in reciprocation by an electromagnetic linear motor drivingly linked to the piston, the linear motor including a magnet and a winding having an associated resistance and inductance, the motor having input terminals and a characteristic electro/mechanical transfer constant, the motor being driven by an alternating voltage applied to and a current forced through the input terminals of the motor winding, wherein the improvement is a feedback control apparatus comprising:

(a) a voltage detector circuit connected to said winding input terminals for detecting the voltage applied to the winding as a function of time;

(b) a current detector circuit connected to said winding for detecting the current through the winding as a function of time;

(c) a command signal input for inputting a command signal representing a selected, required end displacement;

(d) a computing circuit generating a signal representing a measured value of said end displacement and comparing said measured value signal to said command signal to generate an error signal by:

(i) computing the velocity of the reciprocating piston as a function of time from the detected voltage and current in accordance with the equation:

$$v=(1/\alpha)(V-L(dI/dt)-IR);$$

wherein

α is said transfer constant

V is said voltage

I is said current

R is said winding resistance

L is said winding inductance

t is time;

(ii) integrating the computed velocity as a function of time to compute the alternating component of displacement of said piston as a function of time;

(iii) differentiating the computed velocity as a function of time to compute the acceleration of the piston as a function of time;

(iv) detecting the alternating component of displacement resulting from step (ii) when the computed velocity is zero;

(v) simultaneously during said suction phase detecting the alternating component of displacement resulting from step (ii), the acceleration resulting from step (iii) and the current detected from said current detector;

(vi) computing the displacement of the reciprocating piston at the end of its excursion in accordance with the equation:

$$X_c=x_i-x_o+(\alpha/K)I_o-(M/K)A_o;$$

wherein:

X_c is said end displacement

x_i is the alternating displacement when the velocity is zero

x_o is the simultaneously detected alternating displacement

A_o is the simultaneously detected acceleration

I_o is the simultaneously detected current

M is the mass of the reciprocating body

K is the spring constant of the spring;

(vii) comparing said command signal to the computed end displacement signal X_c to generate an error signal; and

(e) a motor voltage control circuit having an input connected to receive said error signal and having an output connected to said motor winding for changing the voltage applied to the motor winding in response to said error signal in a direction minimizing the error signal.

5,342,177

TIRE AUTOMATIC PNEUMATIC PUMP DEVICE

Chen-Kuang Cheng, No. 3, Alley 14, Lane 85, Dingchou Rd., Sec. 4, Taipei, Taiwan

Filed Apr. 1, 1992, Ser. No. 861,909
Int. Cl.[5] F04B *17/06*
U.S. Cl. 417—233 **5 Claims**

1. An automatic pump for a pneumatic tire mounted on a rim having a hub attached to and rotatable with respect to a stationary axle, comprising:

a) an eccentric drive cam fixedly attached to the stationary axle;

b) a pneumatic pump assembly attached to the hub so as to rotate therewith, the pneumatic pump assembly comprising:

i) a hollow pneumatic cylinder attached to the hub;

ii) a first piston slidably located within the pneumatic

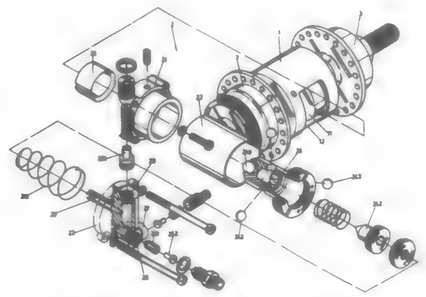
VOL 1165 ISS 5 AG 30 1994 UMI

cylinder, the first piston defining a recess in a first end and having a second end;

iii) a second piston slidably located in the recess of the first piston;

iv) biasing means to normally bias the first piston into contact with the drive cam such that rotation of the pump assembly causes the cam to reciprocate the first piston within the pneumatic cylinder thereby compressing air within the pneumatic cylinder; and,

v) latching means actuated by relative movement between the first and second pistons to latch the first piston in a position out of contact with the drive cam thereby preventing reciprocation of the first piston;



c) means defining a first air flow passage between the pneumatic cylinder and the tire;

d) first valve means located in the first air flow passage and comprising a one way valve to allow air compressed by the first piston to flow from the pneumatic cylinder into the tire, but prevent flow in the reverse direction;

e) means defining a second air flow passage between the first air flow passage and the second piston; and,

f) second valve means permitting air flow from the tire to the second piston such that, when the tire pressure reaches a predetermined level, the second piston moves relative to the first piston to activate the latching means, thereby preventing additional compressed air from being supplied to the tire.

5,342,178

COOLANT GAS GUIDING MECHANISM IN COMPRESSOR

Kazuya Kimura; Hiroaki Kayukawa; Shigeyuki Hidaka, and Yoshihiro Fujisawa, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 963,850, Oct. 20, 1992. This application Jan. 28, 1993, Ser. No. 10,595

Claims priority, application Japan, Jan. 29, 1992, 4-014248

Int. Cl.[5] F04B *1/14*

U.S. Cl. 417—269 **12 Claims**

1. A coolant gas guiding mechanism in a compressor, for compressing and discharging the coolant gas supplied from an external coolant circuit, said mechanism comprising;

a casing;

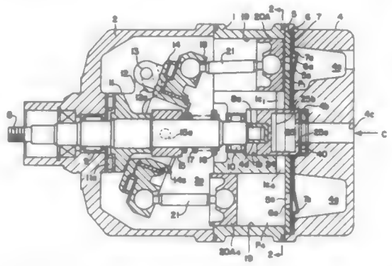
a rotary shaft disposed in said casing;

a plurality of cylinder bores disposed around said rotary shaft;

a plurality of pistons mounted for reciprocating movement within the respective of said cylinder bores;

a working chamber defined by each piston in its corresponding cylinder bore; and

a rotary valve disposed coaxially and connected for rotation with the rotary shaft and having a hollow central suction chamber and an inlet through which the coolant gas is introduced into said central suction chamber from an external coolant circuit, and an outlet from said central suction chamber communicating concurrently with a selected plurality, but fewer than all of said working



chambers in synchrony with the reciprocating movements of said pistons for supplying the coolant gas to the working chamber.

5,342,179

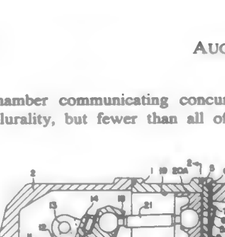
COMPRESSOR SHOCK ABSORBING MOUNT ASSEMBLY

Nelik I. Dreiman, Tipton, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Mar. 5, 1993, Ser. No. 27,238

Int. Cl.[5] F04B *35/04*

U.S. Cl. 417—363 **6 Claims**



1. A compressor comprising:

a housing;

a motor compressor unit disposed within said housing, said motor compressor unit including a crankcase;

a shock mount bracket attached to said housing;

a plurality of shock mount units attached between said bracket and said crankcase, each said shock mount unit including a coil spring to damp vertical movement of said motor compressor unit and a flat spring to damp horizontal movement of said compressor unit, said flat spring always in sliding contact with said bracket, whereby lateral oscillations and sound transmission through the housing are reduced.

5,342,180

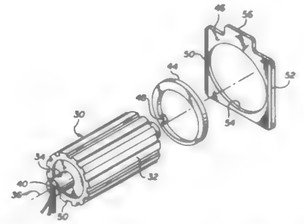
PUMP MECHANISM HAVING A DRIVE MOTOR WITH AN EXTERNAL ROTOR

Adib G. Daoud, San Diego, Calif., assignor to IVAC Corporation, San Diego, Calif.

Filed Nov. 17, 1992, Ser. No. 977,826

Int. Cl.[5] F04B *43/08, 17/00*

U.S. Cl. 417—412 **18 Claims**



1. Apparatus for applying a force to a fluid container to cause fluid in the container to move from one position to another, comprising:

an electric motor comprising a stator and a rotor, the rotor providing rotational motion and being located such that it rotates about the stator;

a drive device positioned on the outer surface of the rotor and rotating with the rotor for providing a rotational drive force; and

a follower disposed in contact with the drive device and mounted in relation thereto so as to translate the rotational drive force of the drive device into a linear drive force, the follower having a contact surface and the follower being located so as to apply the linear drive force against the fluid container with the contact surface to move the fluid.

5,342,181

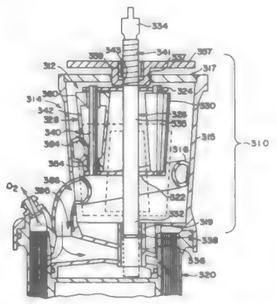
SINGLE ROLLER BLOOD PUMP AND PUMP/OXYGENATOR SYSTEM USING SAME

Robert B. Schock, Sparta, and Boris Leschinsky, Waldwick, both of N.J., assignors to Datascope Investment Corp., Montvale, N.J.

Continuation of Ser. No. 898,673, Jun. 15, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 88,573

Int. Cl.[5] F04B *43/08*

U.S. Cl. 417—476 **28 Claims**



1. A roller pump, comprising:

a housing forming an elongated chamber having a substantially circular cross-section;

a rotor assembly having a single drive roller, said rotor assembly being disposable within said housing and arranged for coaxial rotation within said chamber; and

a flexible tube having a proximal end, a distal end and a wall forming a substantially uniform lumen therethrough, said tube being arranged in a helical turn, disposed within said chamber substantially contiguous with an interior surface of said housing, and having a tapered portion formed at an overlapping portion of the helical turn, wherein, in an uncompressed state, said tapered portion has a volume per unit length that varies in a direction from the proximal end to the distal end, and wherein rotation of said rotor assembly rotatably advances said drive roller to progressively occlude said tube in a direction from the proximal end to the distal end to pump a fluid therethrough.

5,342,182

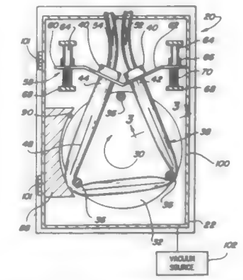
SELF REGULATING BLOOD PUMP WITH CONTROLLED SUCTION

Jean P. Montoya; Scott I. Merz, and Robert H. Bartlett, all of Ann Arbor, Mich., assignors to The Regents of the University of Michigan and Constitutional Corporation of the State of Michigan, Ann Arbor, Mich.

Division of Ser. No. 926,961, Aug. 7, 1992, Pat. No. 5,281,112, which is a continuation-in-part of Ser. No. 841,349, Feb. 25, 1992, Pat. No. 5,222,880. This application Dec. 2, 1993, Ser. No. 161,128

Int. Cl.[5] F04B *43/08;* F16L *11/08*

U.S. Cl. 417—477 R **16 Claims**



1. A peristaltic pump for pumping a fluid comprising:

a frame;

a plurality of rollers;

carrier means for carrying said rollers in spaced apart relation along a predetermined path, said carrier means being mounted to said frame;

drive means for driving said carrier means and causing said rollers to move along said predetermined path;

a flexible conduit having a wall, an inlet end, an outlet end and a passageway being defined therethrough, said conduit being mounted about said rollers whereby said conduit cooperates along part of its length with said rollers without use of a stator to thereby transmit fluid through said conduit by peristaltic movement; and

vacuum means for creating at least a partial vacuum exteriorly about the entire length of said conduit which during operation of said peristaltic pump induces negative pressures within said conduit capable of drawing fluid into said conduit through said inlet end and allowing said peristaltic pump to operate as a suction pump, said vacuum means including a housing forming an air-tight enclosure enclosing said conduit therein, said housing also protectively enclosing said rollers and said carrier means.

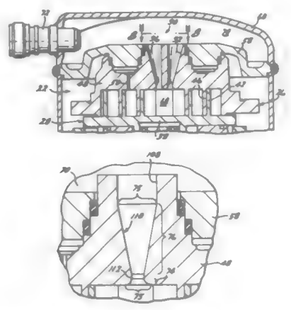
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,183

SCROLL COMPRESSOR WITH DISCHARGE DIFFUSER

Alexander P. Rafalovich, Dayton; Mark Bass, Sidney, and Jean-Luc Caillat, Dayton, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Jul. 13, 1992, Ser. No. 912,897
Int. Cl.[5] F04C *18/04*
U.S. Cl. 418—15 20 Claims



1. A scroll-type compressor comprising:
a first scroll member having a first spiral wrap thereon;
a second scroll member having a second spiral wrap thereon, said first and second scroll members being mounted for orbiting movement with respect to one another, said first and second wraps being mounted in opposing and interfitting relationship, whereby said orbiting movement will cause said first and second wraps to define at least one fluid pocket moving from a radially outer position at suction pressure to a radially inner position in a discharge pressure chamber at discharge pressure; and
more than one discharge passage for communicating with said discharge pressure chamber, said passages each having an inner surface defining a converging entrance portion with a cross-section which progressively decreases in a forward flow direction, and a diverging exit portion with a cross-section which progressively increases in said flow direction, whereby said discharge passages reduce discharge pressure losses of a working fluid flowing through said passage without causing significant separation of said working fluid from said inner surface.

10. A scroll-type compressor comprising:
a first scroll member having a first spiral wrap thereon;
a second scroll member having a second spiral wrap thereon, said first and second scroll members being mounted for orbiting movement with respect to one another, said first and second wraps being mounted in opposing and interfitting relationship whereby said orbiting movement will cause said first and second wraps to define at least one fluid pocket moving from a radially outer position at suction pressure to a radially inner position in a discharge pressure chamber at discharge pressure; and
a discharge passage communicating with said discharge pressure chamber, said passage having a converging entrance portion with a cross-section which progressively decreases in a forward flow direction, a diverging exit portion with a cross-section which progressively increases in said flow direction, and a tail pipe having a substantially constant cross-section which communicates with said diverging exit portion, whereby discharge pressure losses are minimized.

14. A scroll-type compressor comprising:
a first scroll member having a first spiral wrap thereon;
a second scroll member having a second spiral wrap thereon, said first and second scroll members being mounted for orbiting movement with respect to each other, said first and second wraps being mounted in opposing and interfitting relationship, whereby said orbiting movement will cause said first and second wraps to define at least one fluid pocket moving from a radially outer position at suction pressure to a radially inner position in a discharge pressure chamber at discharge pressure; and
a diverging discharge diffuser for communicating with said discharge pressure chamber, said diffuser having a diverging passage with a cross-section which progressively increases in a forward flow direction, said passage diverging at an included angle substantially within the range of 5 degrees to 20 degrees and defining an exit perimeter, said diffuser having a tail pipe with a substantially constant cross-section having an entry perimeter which communicates with, and substantially matches, said exit perimeter of said diverging passage, wherein an exit of said tail pipe communicates with an expansion chamber, whereby discharge pressure losses are reduced.

17. A scroll-type compressor comprising:
a first scroll member having a first spiral wrap thereon;
a second scroll member having a second spiral wrap thereon, said first and second scroll members being mounted for orbiting movement with respect to each other, said first and second wraps being mounted in opposing and interfitting relationship, whereby said orbiting movement will cause said first and second wraps to define at least one fluid pocket moving from a radially outer position at suction pressure to a radially inner position in a discharge pressure chamber at discharge pressure;
a discharge passage communicating with said discharge pressure chamber, said passage having an inner surface defining a converging entrance portion with a cross-section which progressively decreases in a forward flow direction, and a diverging exit portion with a cross-section which progressively increases in said flow direction, whereby said discharge passage reduces discharge pressure losses of a working fluid flowing through said passage; and
an intermediate portion disposed between said entrance portion and said exit portion, said intermediate portion having a constant cross-section.

5,342,184

SCROLL MACHINE SOUND ATTENUATION

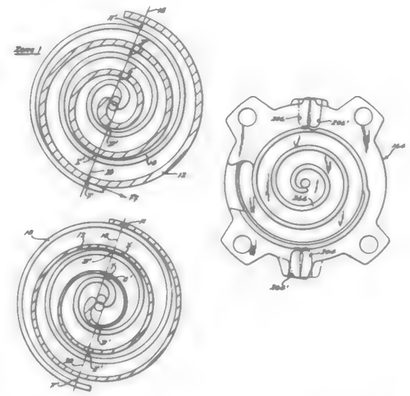
Robert J. Comparin, Troy; Harry B. Clendenin, Sidney; Kent E. Logan, Englewood; Mark Bass; Steven C. Fairbanks, both of Sidney, and Jean-Luc Caillat, Dayton, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed May 4, 1993, Ser. No. 57,302
Int. Cl.[5] F01C *1/04*; B23P *15/00*
U.S. Cl. 418—55.2 115 Claims

1. A scroll machine having improved sound attenuation, comprising:
(a) first and second scroll members each having a spiral wrap disposed thereon, said scroll members being mounted for relative orbital movement therebetween with said wraps intermeshed with one another;
(b) means for causing one of said scroll members to orbit with respect to the other scroll member so that said wraps create pockets of progressively changing volume;
(c) anti-rotation means for preventing relative rotational movement between said scroll members, said anti-rotation means causing said first and second scroll members to be maintained in a misaligned relationship from the normal angular alignment of a nominal scroll machine by an angular amount providing an initial swing radius bias which results in an additional moment on said scroll members caused by the contact forces between said wraps.

47. A method of fabricating a scroll machine having improved sound attenuation wherein the machine comprises first and second scroll members each having a spiral wrap disposed thereon, said scroll members being mounted for relative orbital movement therebetween with said wraps intermeshed with one another to define a scroll set, so that said wraps will create pockets of progressively changing volume in response to said orbital movement, said method comprising the following steps: accurately controlling initial swing radius bias (dR_{ti}) and generating radius bias (dR_g) during fabrication of the respective components of the machine to maintain a targeted relationship between dR_{ti} and dR_g which results in an additional moment on the scroll members caused by the contact forces between the wraps during operation of the machine; and assemblying the machine in such a way as to maintain the targeted dR_{ti} and dR_g.

109. A method of fabricating a scroll machine having improved sound attenuation wherein the machine comprises first and second scroll members each having a spiral wrap disposed



thereon, said scroll members being mounted for relative orbital movement therebetween with said wraps intermeshed with one another to define a scroll set, so that said wraps will create pockets of progressively changing volume in response to said orbital movement, said method comprising the following steps: accurately controlling generating radius bias (dR_g) during fabrication of the respective components of the machine to maintain a targeted value of dR_g which results in an additional moment on the scroll members caused by the contact forces between the wraps during operation of the machine; and assemblying the machine in such a way as to maintain the targeted dR_g.

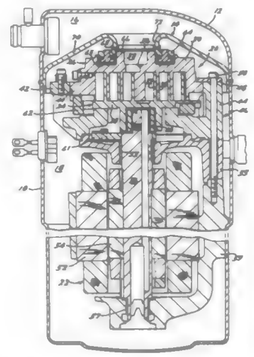
5,342,185

MUFFLER PLATE FOR SCROLL MACHINE

Gary J. Anderson, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Jan. 22, 1993, Ser. No. 7,652
Int. Cl.[5] F01C *1/04*, *19/00*
U.S. Cl. 418—55.4 20 Claims

1. A scroll machine, comprising:
a hermetic shell;
a first scroll member disposed in said shell and having a first spiral wrap;
a second scroll member disposed in said shell and having a second spiral wrap, said spiral wraps being mutually intermeshed;
means for causing said scroll members to orbit with respect to one another, whereby said wraps create at least one enclosed space of progressively changing volume between a suction pressure region and a discharge pressure region;
a muffler plate having a frusto-conical portion and defining a muffler chamber and a main chamber in said shell each being at a different pressure during normal operation, said muffler plate having a tubular portion defining a face directed toward one of said scroll members; and
a seal disposed between said face and said one of said scroll members, said frusto-conical portion and said tubular portion of said muffler plate reducing distortion of said



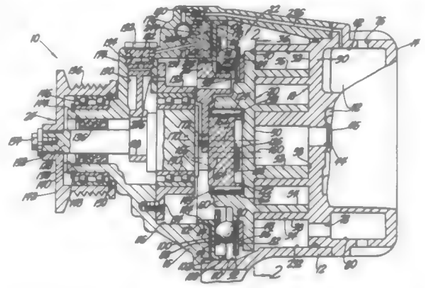
face and thereby reducing fluid leakage between said muffler chamber and said main chamber.

5,342,186

AXIAL ACTUATOR FOR UNLOADING AN ORBITAL SCROLL TYPE FLUID MATERIAL HANDLING MACHINE

James C. Swain, Columbus, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 2, 1993, Ser. No. 71,165
Int. Cl.[5] F01C *1/02*
U.S. Cl. 418—55.5 1 Claim



1. A scroll type fluid material handling machine with a housing that has a fluid inlet, a fluid outlet, a fluid inlet chamber, and a fluid outlet chamber; a stationary scroll with an end plate and a wrap having inside and outside flanks and an axial tip mounted in the housing; an orbital scroll with an end plate and a wrap having inside and outside flanks and an axial tip mounted in the housing; a drive assembly for driving the orbital scroll in a generally circular orbit including a crankshaft rotatably mounted in the housing for rotation about an axis; an annular piston mounted in the housing for movement parallel to the axis about which the crankshaft rotates; a ball coupler including an aperture ring with a plurality of ball apertures connected to the orbital scroll, an aperture ring with a plurality of ball apertures connected to the annular piston, a plurality of thrust balls each of which is in a ball aperture in the aperture ring connected to the orbital scroll and in a ball aperture in the aperture ring attached to the annular piston; and a control system operable to supply fluid to move the annular piston

VOL 1165 ISS 5 AG 30 1994 UMI

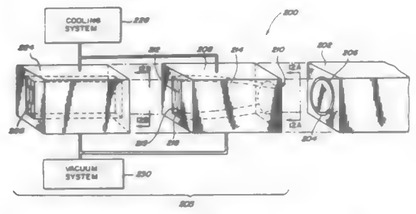
toward the thrust balls and thereby move the axial tips of the wrape into sealing contact with the scroll end plates and operable to discharge fluid to allow the annular piston and the orbital scroll to move axially away from the stationary scroll.

5,342,187

EXTRUSION SYSTEM HAVING AFTER/FORMER MEANS FOR RESHAPING TUBE OF EXTRUDANT

Harout Ohanesian, Northridge, Calif., assignor to U.S. Polymers, Inc., Commerce, Calif.

Filed Oct. 27, 1992, Ser. No. 966,936
Int. Cl.[5] B29C *47/90*
U.S. Cl. 425—70 6 Claims



1. A device for forming an extruded tube having a desired cross-sectional shape, said device comprising:

means for extruding a tube of extrudant, said tube having an initial cross-sectional shape, said initial cross-sectional shape being different form said desired cross-sectional shape; and

after-former means for converting said tube of extrudant form said initial cross-sectional shape to said desired cross-sectional shape, wherein said after-former means comprises:

a conversion conduit for receiving said tube of extrudant, said conversion conduit being substantially conical and having

an entry aperture of substantially the same size and cross-sectional shape as the tube of extrudant and positioned to directly receive the tube of extrudant without prior modification, and

an exit aperture having the desired cross-sectional shape, said entry aperture and said exit aperture each having peripheries of substantially the same perimeter, said substantially conical conversion conduit connecting the periphery of said entry aperture to the periphery of said exit aperture; and

means for maintaining said tube of extrudant against inner walls of said substantially conical conversion conduit such that, as the tube of extrudant passes through said substantially conical conversion conduit, the cross-sectional shape of the tube of extrudant is smoothly transformed from the initial cross-sectional shape to the desired cross-sectional shape.

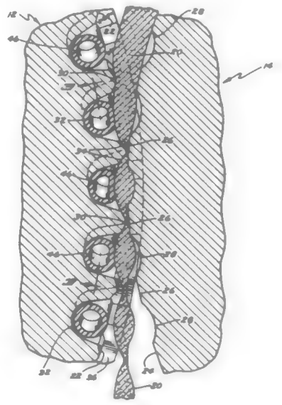
5,342,188

DEVICE FOR CRIMPING AND CUTTING DOUGH ROPE

Craig E. Zimmermann, Waconia, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Feb. 8, 1993, Ser. No. 14,919
Int. Cl.[5] A21C *11/04*
U.S. Cl. 425—235 20 Claims

1. Device for crimping and cutting dough advancing in a longitudinal direction into longitudinal lengths comprising, in combination: a cutter having a periphery including a plurality of blades, with the blades being circumferentially spaced around the periphery of the cutter and defining a plurality of grooves circumferentially spaced around the periphery; an anvil, with at least one of the blades of the cutter abutting with the anvil to crimp and cut the dough therebetween while the remaining blades of the cutter are spaced from the anvil; and means for removing the dough from the grooves of the cutter after the dough has been crimped and cut by the blades comprising a compressible element located in each of the grooves of the cutter, with each compressible element being compressible inside the groove from a natural condition to a compressed



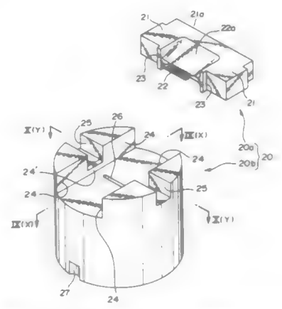
condition with the dough compressing the compressible element in the groove to the compressed condition when the dough is being crimped and cut by the blades abutting with the anvil and with the compressible element expanding to the natural condition and forcing the longitudinally cut lengths of dough from the groove when the blades separate from the anvil.

5,342,189

EXTRUSION DIES

Akira Inamura, Susono; Masafumi Kaneko, Tokyo, and Nobuyuki Hasegawa, Susono, all of Japan, assignors to Mitsubishi Aluminum Co., Ltd., Tokyo, Japan and Thermalex, Inc., West Montgomery, Ala.

Filed Oct. 1, 1992, Ser. No. 955,057
Int. Cl.[5] B29C *47/00*
U.S. Cl. 425—461 30 Claims



1. An insert type extrusion die comprising a plate-shaped male section coupled with a cylinder shaped female section held detachably in a die holder, for extruding a billet which is extruded by entering a die cavity from an entry-side to an exit-side of said die, said male section having a protrusion part,

and said female section having a die cavity into which said protrusion part of said male section is insertingly disposed:

wherein said protrusion part of said male section is formed integrally with a male section main body and with an alignment part for aligning and locking the position of said male section with respect to said female section; and

said female section includes said die cavity disposed on a billet chamber for holding an extrusion billet; an exit region disposed at the exit-side of said die cavity and communicating therewith; and a receiving groove for aligning and holding said male alignment part of said male section;

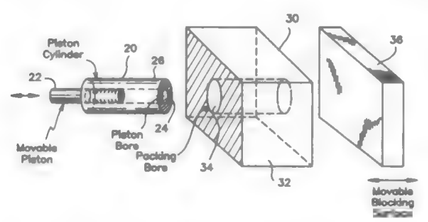
said male section further including a support region extending from said alignment part and in a direction from said entry-side toward said exit-side such that when said receiving groove receives said male alignment part, said support region extends into said female section immediately adjacent to a wall of said female section, whereby said male alignmeat part and said support region prevent relative movement between said male section and said female section.

5,342,190

APPARATUS FOR EMPLACING VISCOUS MATERIAL IN A CAVITY

James R. Salter, The Woodlands, Tex., assignor to Optex Biomedical, Inc., The Woodlands, Tex.

Filed Jul. 22, 1992, Ser. No. 918,651
Int. Cl.[5] B29C *31/06*
U.S. Cl. 425—469 9 Claims



1. In a system for installing an amount of a thick chemical indicator complex comprising liquid chemical indicating substance immobilized on solid particles in a microscopic cavity extending through a fiber optic in a biosensor, the cavity having a cavity volume, wherein the improvement comprising

a block with a block bore therein for holding said thick chemical indicator complex,

a material handling assembly having means for partially inserting said assembly into the block bore, the material handling assembly having a body with a body bore therethrough and a piston movably positioned in the body bore,

the piston having means moving the piston for vacating a portion of the body bore so that upon insertion of the material handling assembly into the block bore an amount of the chemical indicator complex enters the vacated portion of the body bore, and

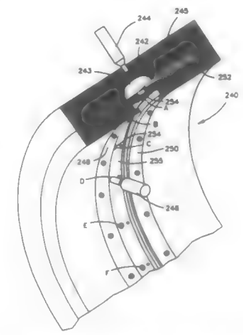
the piston having means moving the piston for expelling the amount of the chemical indicator complex into the cavity at a pressure sufficiently low to prevent the liquid chemical indicating substance from separating from the solid particles.

5,342,191

PLASTICS INJECTION MOLDING DEVICE WITH MULTIPOSITIONING CONSTRUCTION FOR GAS ASSISTED MOLDING

Suresh D. Shah, Rochester Hills, and David G. Hiavaty, Allen Park, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1992, Ser. No. 955,767
Int. Cl.[5] B29C *45/26*
U.S. Cl. 425—533 13 Claims



1. A tool for a gas assisted plastics injection molding apparatus having plastics injector means associated therewith for injecting a short shot of plastics into said tool and having a gas injector associated therewith for injecting pressurized assist gas into said tool, said tool comprising a body having a cavity therein for receiving a short shot of plastics material from the plastics injector means, a support strip operatively mounted in said body having a plurality of discrete gas conducting plugs supported therein, each of said plugs being defined by a body member having an injection gas entrance and an injection gas exit at opposing end portions thereof, each of said plugs supported in said support strip extending completely through the support strip, said injection gas exit of each of said plugs being in communication with said cavity, each of said plugs having a plurality of gas passageways operatively connecting said injection gas entrance to said injection gas exit, said passageways being dimensioned so as to transmit the molecules of assist gas from the gas injector into said cavity and to inhibit the entrance of plastics material therein and the clogging thereof, said plugs being spaced from one another at distances along said strip for alignment of the gas injector with any selected one of said plugs to effect the supply of assist gas therein to force the short shot of plastics material against the wall of the cavity to thereby form a molded part.

5,342,192

COOKING BURNER

Hideo Hirano, Nagoya, Japan, assignor to Meito Corporation, Nagoya, Japan

Filed Jul. 15, 1993, Ser. No. 91,599
Int. Cl.[5] F23Q *9/00*
U.S. Cl. 431—284 2 Claims

1. A burner for feeding a mixture of combustible gas and combustion air from an inner mixing tube to a gas head so as to inject the mixture of gases from a plurality of flame holes of the gas head, comprising:

said inner mixing tube, with an upper end, for mixing combustible gas and combustible air;

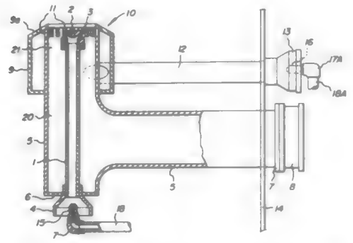
said gas head being fitted on the upper end of said inner mixing tube and having said plurality of inner flame holes;

an air inlet tube, with a upper end and an outer side, arranged concentrically outside of said inner mixing tube

VOL 1165 ISS 5 AG 30 1994 UMI

and having a plurality of outer flame holes in the circumference of the upper end thereof;

means for blowing additional air into said air inlet tube, whereby the additional air fed from said air inlet tube is blown between said outer flame holes and said inner flame holes;



a gas head tube fixed on the outer side of the upper end portion of said air inlet tube; and

an outer mixing tube extending from said gas head tube for mixing further combustion gas and further combustion air.

5,342,193

Patent Not Issued For This Number

5,342,194

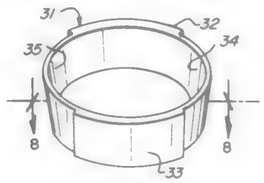
DENTAL IMAGING MATRIX BAND FOR MAKING OR SETTING CROWNS AND BRIDGES ON PREPARED TEETH

Richard L. Feldman, 11 Wintergreen Dr., Easton, Conn. 06612

Continuation-in-part of Ser. No. 893,061, Jun. 3, 1992, Pat. No. 5,248,258. This application May 27, 1993, Ser. No. 67,819

Int. Cl.[5] A61C *5/04*

U.S. Cl. 433—39 **16 Claims**



1. A dental imaging matrix band comprising

an elongated metallic blank of relatively thin flexible sheet material having a height corresponding at least substantially to the height of a tooth extending beyond the gum line,

said blank being sufficiently long and flexible for encircling at least one prepared tooth,

said blank having opposed ends,

means for securing the opposed ends to encircle the prepared tooth,

said band having a buccal and lingual side,

said buccal and lingual sides of said band having a thickness greater than the thickness of said opposed ends interconnecting said thickened buccal and lingual sides.

5,342,195

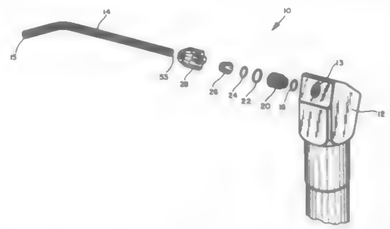
DENTAL SYRINGE TIP AND ADAPTOR

Warren Davis, 3026 Sullivan Ave., Rosemead, Calif. 91770; David Wasserman, 2095 Mohigan Way, Las Vegas, Nev. 89109, and Richard R. Mathews, 7950 S. Alameda St., Huntington Park, Calif. 90255

Continuation of Ser. No. 596,987, Oct. 11, 1990, Pat. No. 5,192,206, which is a continuation-in-part of Ser. No. 351,431, May 12, 1989, Pat. No. 5,049,071, which is a continuation-in-part of Ser. No. 241,081, Sep. 6, 1988, abandoned. This application Jan. 13, 1993, Ser. No. 4,098

Int. Cl.[5] A61G *17/02;* **A61C** *1/10, 1/12*

U.S. Cl. 433—80 **12 Claims**



1. A syringe tip comprising an elongated cylindrical rigid plastic member having a first central water passageway throughout the entire length of the cylindrical member, said first central water passageway being generally circular in cross-section, and a plurality of second air passageways disposed in a regular pattern circumferentially about the first central water passageway, said second air passageways extending substantially the entire length of the tip and the combined cross-sectional areas of the second air passageways being at least 30% of the total cross-sectional area that would result if the second air passageways were a single continuous annulus completely surrounding the central water passageway.

5,342,196

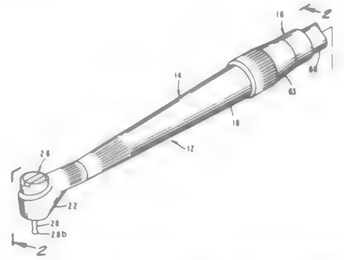
DENTAL HAND PIECE

Gregory L. Van Hale, 247 W. Glenoaks, Glendale, Calif. 91202

Filed Mar. 1, 1993, Ser. No. 24,375

Int. Cl.[5] A61C *17/02, 17/06*

U.S. Cl. 433—82 **10 Claims**



1. An aspirating dental hand piece system comprising:

(a) an elongated first handle member including:

(i) an outer wall defining an interior space having first and second ends, said first end terminating in a downwardly depending shroud having an open mouth;

(ii) a gas driven motor connected to said outer wall proximate said first end of said interior space;

(iii) a work tool rotatably driven by said motor, said work tool having a shank portion extending from said open mouth of said shroud;

(iv) cooling means, including a source of cooling fluid, for directing a cooling fluid outwardly of said open mouth of said shroud toward said shank portion, said cooling means comprising a spray jet disposed within said shroud and a fluid conduit disposed within said shroud and a fluid conduit disposed within said interior space of said first handle member, one end of said fluid conduit being in communication with said spray jet and the other end being in communication with said source of cooling fluid;

(v) a divider wall connected to said outer wall for dividing said interior space of said first handle member into first and second portions, said second portion being in communication with said shroud; and

(vi) vacuum means including a vacuum source for producing a vacuum within said second portion tending to urge said cooling fluid to flow inwardly into said second portion; and

(b) an elongated second handle member removably connected to said first handle member, said second handle having an outer wall defining an interior space and connector means for interconnecting said first and second handle members.

5,342,197

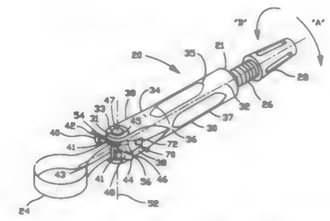
DENTAL MATRIX RETAINER CLAMP

Volker W. Stein, Aurora, and Robert G. Dickie, Newmarket, both of Canada, assignors to Innovadent Technologies Ltd., Newmarket, Canada

Filed Jan. 19, 1994, Ser. No. 182,822

Int. Cl.[5] A61C *5/04*

U.S. Cl. 433—155 **13 Claims**



1. A disposable dental matrix retainer clamp for holding a matrix band, said retainer clamp comprising:

a main body element having a generally centrally located first longitudinal axis and first and second opposed lateral sides;

a head element having a first end, a second end, a generally centrally located second longitudinal axis extending from said first end to said second end, an anterior surface having a guide slot centrally located therein through which the matrix band is adapted to extend, and a pivot axis perpendicular to said first longitudinal axis and located mid-way between said first and second opposed lateral sides;

wherein said head element is movably mounted on said main body element by way of a mounting means for angularly variable movement about said pivot axis and with respect to said main body element between a first locked position, a second locked position, and an intermediate position therebetween;

a first detent portion on one of said head element and said main body element and a first protruding portion on the other of said head element and said main body element, said first detent portion and said first protruding portion adapted for co-operating interference fit with one another so as to thereby form a first locking means that is adapted to lock said head element in said first locked position when said first end of said head element is disposed toward said first lateral side of said main body element; and

a second detent portion on one of said head element and said main body element and a second protruding portion on the other of said head element and said main body element, said second detent portion and said second protruding portion adapted for co-operating interference fit with one another so as to thereby form a second locking means that is adapted to lock said head element in said second locked position when said second end of said head element is disposed toward said second lateral side of said main body element.

5,342,198

DENTAL LASER

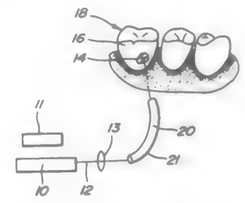
Arthur Vassiliadis, Mountain View, Calif.; William D. Myers, Birmingham, and Terry D. Myers, Farmington Hills, both of Mich., assignors to American Dental Technologies, Inc., Troy, Mich.

Continuation of Ser. No. 343,399, Apr. 25, 1989, Pat. No. 5,257,935, which is a continuation-in-part of Ser. No. 167,739, Mar. 14, 1988, abandoned. This application May 10, 1993, Ser. No. 58,170

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[5] A61C *5/00, 1/00, 3/00*

U.S. Cl. 433—215 **15 Claims**



1. Apparatus for removing dental enamel, dentin and/or soft tissue, sterilization in a mouth and/or for endodontic applications at a target site comprising:

a laser,

means for activating said laser so that said laser produces a pulsed output having a wavelength of between 1.5 and 3.5 microns, a beam diameter at the target site in the range of 10–5000 microns, and an energy of 0.1 millijoules to five joules,

means for delivering said pulse to dental enamel, dentin and/or soft tissue and/or sterilization site and/or endodontic treatment area to thereby eradicate the dental enamel, dentin and/or soft tissue and/or sterilization and/or perform endodontic procedures.

5,342,199

CYLINDRICAL DENTAL IMPLANT

Edward S. Gillespie, Ardmore, Okla., assignor to Imtec Corporation, Ardmore, Okla.

Filed Oct. 8, 1993, Ser. No. 134,344

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—173 **9 Claims**

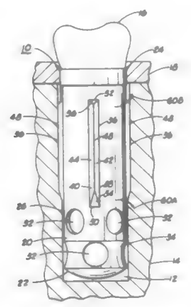
1. A dental implant for anchoring a dental prosthesis in a hole formed in a jawbone, comprising:

a cylindrical member having a first end, a second end and an outer peripheral surface, the first end being adapted to be inserted into the hole and the second end being adapted to receive the prosthesis; and

at least one wedge member radially extending from the cylindrical member and having a base portion connected to the outer peripheral surface of the cylindrical member and a tapered portion having a first planar face and a

VOL 1165 ISS 5 AG 30 1994 UMI

second planar face, the first planar face and the second planar face being angled toward one another such that the intersection of the first planar face and the second planar face defines a thin longitudinally extending edge, the



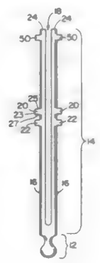
wedge member further comprising a first end portion angled to facilitate insertion of the wedge member into the hole, the first end portion comprising a planar face extending between the first and second planar faces of the tapered portion and the base portion.

5,342,200

DENTAL POST AND BUR CONSTRUCTION

Paul R. Chalifoux, 6 Wellesley Ave., Wellesley, Mass. 02181

Continuation-in-part of Ser. No. 739,670, Aug. 3, 1991, Pat. No. 5,277,583. This application Jun. 10, 1992, Ser. No. 896,388
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] A61C *5/08*
U.S. Cl. 433—220 **35 Claims**



1. A dental post for insertion into a bore of a tooth which comprises:

a bottom section,

a stem attached to said bottom section having at least one slot extending lengthwise through said stem to form a plurality of spaced apart legs said legs being substantially parallel to each other and being free of a prestress force,

at least one of said legs having a wing section extending radially from an outside surface of said legs a distance to fit within an indentation in a wall of said bore in the absence of a force on said legs,

each of said wing sections having cutting surfaces adapted to form indentations in said wall when said dental post is rotated or oscillated in contact with said wall,

each of said legs having a length such that a free end of said leg extends beyond a top surface of a tooth when inserted into a bore in said tooth,

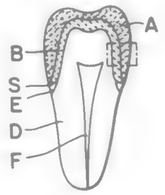
and said legs being movable relative to each other when subjected to a compression force at said free ends such that said wings are removed from an indentation in said wall.

5,342,201

METHOD OF MANUFACTURING CERAMIC ARTIFICAL TOOTH RESTORATIONS

Agneta Oden, Stocksund, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Jun. 22, 1993, Ser. No. 79,607
Claims priority, application Sweden, Jun. 23, 1992, 9201927-2
Int. Cl.[5] A61C *5/10, 5/08*
U.S. Cl. 433—223 **8 Claims**



1. A method for making artificial tooth restorations comprising a ceramic and comprising a densely sintered, high-strength core and dental porcelain atop the core comprising:

(a) registering the surfaces of a tooth to be restored or artificial abutments and their mutual relationship with a three-dimensional optical or mechanical reading method directly in the mouth or a model thereof;

(b) reproducing the registered surfaces in a body by a computer-controlled milling machine at a size enlarged to compensate for shrinkage of the ceramic material to be used for the artificial tooth restoration during sintering and for any gap required for cement;

(c) forming a ceramic powder mixture against the reproduced surfaces to form artificial tooth restoration precursors having inner surfaces which will fit against the said surfaces of a tooth to be restored or artificial abutments;

(d) sintering the said artificial tooth restorations; and

(e) applying a dental porcelain to the outer surface of the core.

5,342,202

METHOD FOR MODELLING CRANIO-FACIAL ARCHITECTURE

Marie-Josèphe Deshayes, 18, rue Pasteur, 14300 Caen (Calvados), France

Filed Jul. 13, 1993, Ser. No. 90,654
Int. Cl.[5] G09B *23/28;* **A61C** *19/04, 5/00*
U.S. Cl. 434—270 **5 Claims**

1. Process for modelling the cranio-facial architecture from a lateral cephalometric X-ray by determining the bony points and plotting straight lines for analysis, characterised in that a lateral X-ray of the cranium to be analysed is taken and:

the following points P1, P2, P3 . . . P16, P17, P18, P19 are determined on the X-ray;

the straight line D1 passing through points P1, P2, the straight line D2 passing through points P3, P4, and the straight line D3 passing through points P1, P3 are plotted;

point P15 is determined as the intersection between the straight line D3 and the posterior cranial contour;

point P16 is determined as the base of the line taken through the point P15 and perpendicular to the straight line D1;

the angle $\widehat{(P3, P11, P12)}$ is compared with 180°;

the sectors $\widehat{(P3, P11)}$ and $\widehat{(P11, P12)}$ are compared;

the sectors $\widehat{(P1, P5)}$ and $\widehat{(P16, P5)}$ are compared;

the straight line D4 passing through point P9 and tangential to the cranial contour at point P14 is plotted;

the straight line D5 parallel with the straight line D3 passing through point P9 is plotted;

the angle γ between the straight lines (D5, D4) is measured;

the algebraic sign (positive or negative) of the angle γ is determined;

the diagram is classified as a cranial flexion model if

$\widehat{(P3, P11, P12)} < 180°$

$\overline{(P3, P11)} < \overline{(P11, P12)}$

$\overline{(P1, P5)} < \overline{(P16, P5)}$

γ positive

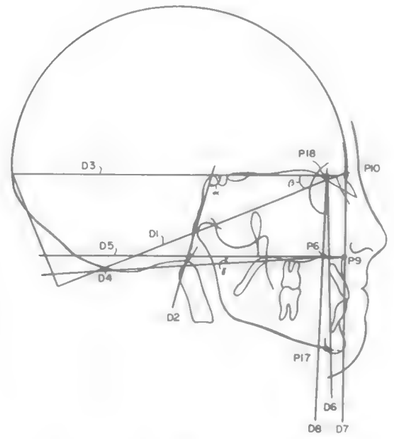
and is a cranial extension model if

$\widehat{(P3, P11, P12)} > 180°$

$\overline{(P3, P11)} > \overline{(P11, P12)}$

$\overline{(P1, P5)} > \overline{(P16, P5)}$

γ negative



the above points being defined as follows:

P1: point M—naso fronto maxillary

P2: point CT—temporo condyle

P3: point Clp—upper and posterior clinoid process

P4: point Od—posterior odontoid

P5: point Cp—posterior condyle

P6: point Np—naso palatine

P7: point Br—bregma

P8: point Pts—upper pterygoid

P9: point ENA—anterior nasal spine

P10: point Na—nasion

P11: point SSO—spheno basilar symphysis

P12: Ba—basion

P13: point O_a—upper odontoid

P14: point O_b—lower occiput

P15: intersection of the cranial contour and the extension of the straight line passing through points P1 and P3;

P16: base of the line taken through point P15 and perpendicular to the straight line passing through points P1 and P2;

P17: point M_e—menton

P18: point F_M—maxillo frontal

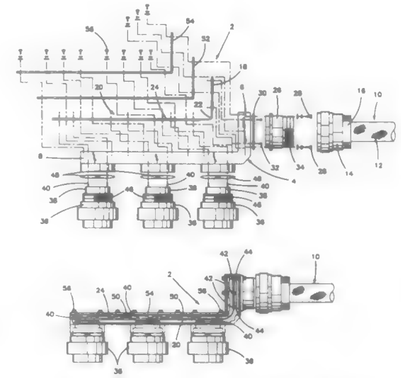
P19: point P_{tt}—posterior nasal spine.

5,342,203

LOW PROFILE BACKSHELL/WIRING INTEGRATION AND INTERFACE SYSTEM

Frederick A. Perretta, and Joseph S. Yednasty, both of Huntington, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 25, 1993, Ser. No. 67,454
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—76 **14 Claims**



1. An interface system for interconnecting individual conductor wires to multi-conductor bundle harnesses in a grounded environment, said system comprising:

a) an ambient-EMI shielding housing which is grounded to said grounded environment;

b) a multi-conductor bundle harness having an outer EMI shielding; and a plurality of conductor wires shielded from ambient EMI by said outer shielding, and said conductor wires being shielded from inter-conductor EMI by inner individual EMI shields;

c) a conductor housing mounted on said shielding housing, said conductor housing including means forming a plurality of signal-conducting connectors therein;

d) circuit board means mounted in said shielding housing, said circuit board means having a first array of conductive sockets, and a second array of conductive sockets; a plurality of conductive paths in said circuit board means operable to connect each of said conductive sockets in said first array with at least one of said conductive sockets in said second array, each of said conductive paths being shielded from inter-conductor path EMI;

e) means connecting each of said conductive wires with an associated one of said conductive sockets in said first array; and

f) means connecting each of said signal-conducting connectors with an associated one of said conductive sockets in said second array.

5,342,204

LOW VOLTAGE BUSBAR LIGHTING APPARATUS

Mathias Och, Erlen, Switzerland, assignor to Herma AG, Zug, Switzerland

Continuation of Ser. No. 499,373, Jul. 18, 1990, abandoned. This application Jun. 24, 1993, Ser. No. 82,241
Claims priority, application Switzerland, Sep. 19, 1988, 3489/88; PCT Int'l Appl., Aug. 24, 1989, PCT/CH89/00152
Int. Cl.[5] H01R *25/14*
U.S. Cl. 439—39 **3 Claims**

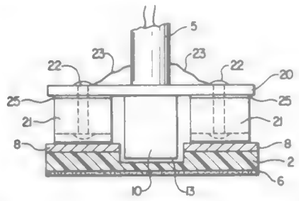
1. A low voltage busbar lighting apparatus comprising:

a busbar, said busbar including an insulative support, an adhesive film formed along the base of said insulative

VOL 1165 ISS 5 AG 30 1994 UMI

support, a first and a second longitudinal steel strip being mounted one across from the other on the top surface of said insulative support, and said insulative support having a central longitudinal cavity interposed between said first and second steel strips;

a lamp base for mounting on said busbar, said lamp base including a base plate, a first permanent magnet secured to said base plate for engagement with said first steel strip of said busbar, a second permanent magnet secured to said base plate for engagement with said second steel strip of



said busbar, a means for electrically connecting a lamp to said first and second steel strips of said busbar, and a central block secured to said base plate between said first and second permanent magnets and adapted to fit within the central longitudinal cavity of said insulative support of said busbar;

wherein said busbar attaches to a building structure by said adhesive film; and

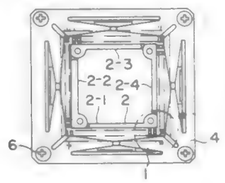
wherein said lamp base is secured to said busbar by the magnetic force developed between said first and second permanent magnets and said first and second steel strips.

5,342,205

ELECTRIC CONNECTOR IN WHICH A PLURALITY OF CONTACT MEMBERS CAN BE READILY ASSEMBLED TO AN INSULATOR

Osamu Hashiguchi, Tokyo, Japan, assignor to Japan Aviation Electronics Industry, Limited, Japan

Continuation of Ser. No. 838,535, Feb. 19, 1992, abandoned.
This application Apr. 12, 1993, Ser. No. 47,037
Claims priority, application Japan, Feb. 20, 1991, 3-014610[U]
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 **8 Claims**



1. An electric connector for electrically connecting a first circuit member to a second circuit member, said first and second circuit members being held in a space parallel relationship, said first and said second circuit members having a plurality of first contact pads confronting a plurality of second contact pads, respectively, said connector comprising:

an insulator plate extending in a predetermined direction parallel to and between said first and said second circuit members, said insulator plate defining a plurality of through holes, each of said through holes extending through said insulator plate in a direction perpendicular to said parallel relationship,

a plurality of internal projections which are formed integral with said insulator plate and placed in said through holes, respectively; and

a plurality of contact members made of a conductive plate-shaped member, each of said contact members being shaped by bending said plate-shaped member to be inserted into an individually associated one of said through holes by sliding said contact member in said direction perpendicular to said parallel relationship;

each of said contact members comprising:

a holding portion for elastically holding each of said contact members by its snapping over an individually associated one of said internal projections, each of said contact members being removable from its individually associated one of said through holes by sliding in said direction perpendicular to said parallel relationship with an elastical deformation of said holding portion for enabling it to escape from said internal projection;

a first terminal portion integral with said holding portion for being brought into contact with an individually associated one of said first contact pads; and

a second terminal portion integral with said holding portion for being brought into contact with an individually associated one of said second contact pads when said contact member is napped over said projection,

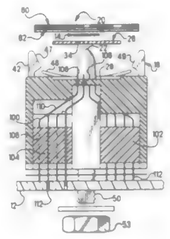
said holding portion having a pair of bent portions which are opposite to each other in the direction perpendicular to said parallel relationship and elastically holds therebetween said individually associated one of the internal projections.

5,342,206

SOCKET FOR DIRECT ELECTRICAL CONNECTION TO AN INTEGRATED CIRCUIT CHIP

Dimitry G. Grabbe, Middletown, and Iosif Korsunsky, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 15, 1993, Ser. No. 92,149
Int. Cl.[5] H01R *23/68*
U.S. Cl. 439—71 **20 Claims**



1. A socket for electrically connecting to and disconnecting from the bond pads of an integrated circuit chip, said bond pads being spaced in a specific pattern, said socket comprising:

(a) a chip holder for holding said chip in a desired position;

(b) a housing;

(c) contact members in said housing, one end of each said contact member having a contact tip adapted for electrically contacting a respective bond pad of said chip;

(d) a guide plate associated with said housing for positioning said contact tips to correspond with said specific pattern of said bond pads;

(e) means for aligning said guide plate and said chip holder so that said contact tips are in registry with said bond pads; and

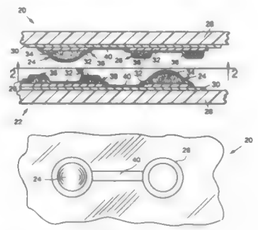
(f) a latching member for releasably securing said chip holder to said housing so that each said contact tip electrically contacts its respective said bond pad, said latching member includes a pair of opposed resilient arms having inwardly facing camming surfaces thereon arranged to engage opposite sides of said chip holder so that as said holder is urged toward said secured engagement therewith said arms are cammed apart until said holder passes said camming surfaces and then said arms elastically move toward each other thereby latching said chip holder in said secured engagement with said housing.

5,342,207

ELECTRICAL INTERCONNECTION METHOD AND APPARATUS UTILIZING RAISED CONNECTING MEANS

Mohi Sobhani, Encino, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 14, 1992, Ser. No. 990,475
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—74 **11 Claims**



1. An electrical connector adapted to interconnect with a mating electrical connector comprising:

a substrate;

electrically conductive material on said substrate having sites defining positions of electrical interconnections;

electrically insulative projections comprising walls of substantially inelastic dielectric material affixed to and projecting from said sites; and

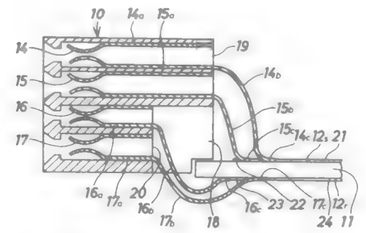
an electrically conductive layer on and supported by each of said projections and on and electrically coupled to said electrically conductive material adjacent thereto, said conductively layered walls formed as conductively layered enclosures which are sized and shaped to mate and electrically interconnect with a plurality of conductively layered projections formed on said mating electrical connector.

5,342,208

PACKAGE CONNECTOR APPARATUS

Tetsuya Kobayashi; Kenjiro Katabuchi, and Yumiko Suzuki, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Feb. 16, 1993, Ser. No. 17,860
Claims priority, application Japan, Feb. 19, 1992, 4-069684
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—79 **1 Claim**



1. A package connector apparatus, comprising:

a printed circuit board having a plurality of wiring patterns formed on each of the opposite first and second faces thereof;

a connector body securely mounted on said first face of said printed circuit board with a portion thereof received at an end portion of said first face of said printed circuit board such that a center of said connector body is displaced to the first face side of said printed circuit board and said connector body does not extend farther than said second face of said printed circuit board so that one of two surfaces thereof may be included in the range of thickness of said printed circuit board, said connector body having first and second faces formed thereon in such a manner as to extend perpendicularity to a plane of said connector body in an offset relationship from each other in a direction along the plane of said printed circuit board so as to define an elongated recess between them, said first face of said connector body being located farther than said second face of said connector body from the plane of said printed circuit board; and

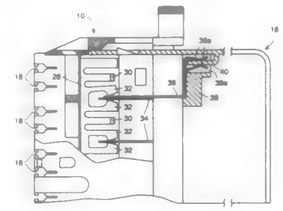
a plurality of contacts each having an elongated casing portion mounted on said connector body and protruding from said first and second faces of said connector body, those of said contacts which protrude from said first face of said connector body extending to said first of said printed circuit board so as to be connected to the wiring patterns on said first face of said printed circuit board while the other contacts protruding from said second face of said connector body extend in a flattened U-shaped configuration through and from said recess of said connector body to said second face of said printed circuit board so as to be connected to the wiring patterns on said second face of said printed circuit board.

5,342,209

CONNECTOR STRIP ASSEMBLY WITH GROUND CONNECTION

William V. Carney, Oyster Bay, and Michael Fasano, Huntington, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Jun. 28, 1993, Ser. No. 83,978
Int. Cl.[5] H01R *4/66*
U.S. Cl. 439—92 **12 Claims**



1. A connector strip assembly comprising at least one connector strip made up of an elongated insulative block containing a plurality of closely spaced connectors and a ground strip extending inside said block,

a mounting structure on which said connector strip is mounted, said mounting structure comprising a pair of spaced apart, elongated rails, said connector strip extending across and being removably mounted on the upper edges of said rails,

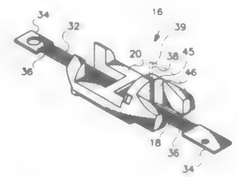
at least one of said rails being electrically conductive and having a flange extending out from said rail behind said connector strip, and

an electrically conductive clip mounted on the bottom of said connector strip and connected to said ground strip inside said connector strip, said clip being positioned on said connector strip such that it engages and makes electri-

VOL 1165 ISS 5 AG 30 1994 UMI

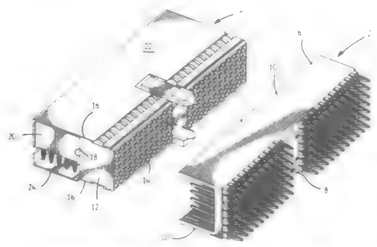
cal contact with said flange when said connector strip is mounted on said rails.

5,342,210
CONNECTOR FOR A BAR CODE SCANNER
David R. Trine, Seattle, and David W. Gilpin, Everett, both of Wash., assignors to Intermec Corporation, Everett, Wash.
Continuation of Ser. No. 859,043, Mar. 26, 1992, abandoned. This application Mar. 4, 1993, Ser. No. 26,265
Int. Cl.[5] H01R *13/652*
U.S. Cl. 439—95 11 Claims



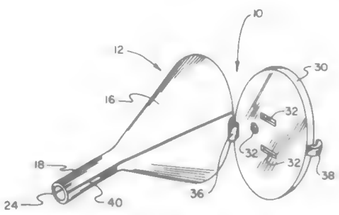
10. A method of constructing a contact assembly for a bar code scanner connector, comprising:
retaining a wire assembly in a wire support member, the wire assembly including a tab end connecting a plurality of wires together;
breaking off the tab end
bending one of the plurality of wires radially outward from the wire support member; and
placing a scanner casing over the wire support member such that the scanner casing contacts the wire that was bent up.

5,342,211
SHIELDED BACK PLANE CONNECTOR
Johannes M. Broeksteeg, Hertogsingel, Netherlands, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Mar. 8, 1993, Ser. No. 28,035
Claims priority, application United Kingdom, Mar. 9, 1992, [illegible]
Int. Cl.[5] H01R *13/658*
U.S. Cl. 439—108 18 Claims



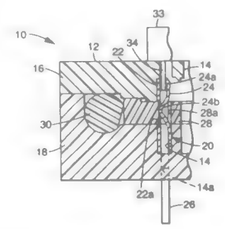
1. An electrical connector having a front housing portion and a plurality of terminal subassemblies fixed to said front housing, the terminal subassemblies comprising a front mating contact portion positioned in said front housing portion, an intermediate portion moulded in an insulative web of material, and a rear contact portion extending from said web of material and adapted for mating with further conductors, and a shield portion positioned intermediate each said web, said connector being characterized in that:
said web includes a reduced thickness section of insulative material therein, said material being disposed on both sides of said intermediate portions of said contact thereby forming a thin membrane of said insulative material over a substantial portion of said intermediate portions of said contacts, thereby forming a pocket of air between said intermediate portions and said shield portion;
whereby impedance is increased along the intermediate portions of said contacts, interiorly of said shields.

5,342,212
ELECTRICAL PLUG PROTECTIVE APPARATUS
Joseph N. Francis, 2051 Midnight St., Port Charlotte, Fla. 33948
Filed May 3, 1993, Ser. No. 55,275
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—149 10 Claims



1. A new and improved electrical plug protective apparatus, comprising:
a first funnel-shaped protective member for an electrical plug, said first funnel-shaped protective member including a cone-shaped portion and a tubular portion connected to said cone-shaped portion, said cone-shaped portion for protecting the electrical plug, and said tubular portion for protecting a region of a conductor that is connected to a backside of the electrical plug, said first funnel-shaped protective member including separation assembly means, extending longitudinally along said cone-shaped portion and said tubular portion, for permitting said first funnel-shaped protective member to be opened for applying said first funnel-shaped protective member to the electrical plug and the conductor or for removing said first funnel-shaped protective member from the electrical plug and the conductor,
further including:
a door for applying to said first aperture of said cone-shaped portion.

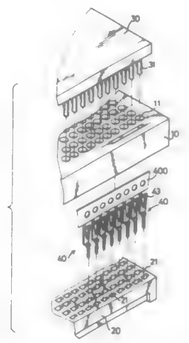
5,342,213
IC SOCKET
Masahiko Kobayashi, Sagamihara, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 8, 1993, Ser. No. 73,932
Claims priority, application Japan, Jun. 9, 1992, 4-149140
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—268 5 Claims



1. An IC socket comprising a socket body having a surface

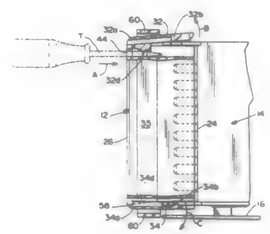
and a plurality of holes arranged on said surface at a predetermined pattern, a contact arranged in each of the holes and comprising a first substantially fixed contact element and a second elastically deformable contact element for holding therebetween a lead pin of an IC device, and an actuator for moving the second contact element of said contact, wherein said second contact element comprises at an intermediate point thereof, an engaging means for engaging with said actuator, and a contacting means at a position on the side of said second contact element spaced from said intermediate point for contacting a lead pin of an IC device, and wherein said second contact element is arranged close to said first contact element and said actuator causes said second contact element to be spaced at one end from said first contact element when the IC device is inserted in the IC socket, and wherein said first and second contact elements comprise oppositely disposed metal elements; said second contact element and said actuator being located on opposite sides of said first contact element; said first contact element having a cavity at a position facing the second contact element; said second contact element and said actuator being able to engage with each other via the cavity of said first contact element.

5,342,214
IC SOCKET
Feng-Chien Hsu, 1st Fl., No. 121, Yun Ho St., Ta An Dist., Taipei, Taiwan
Filed Nov. 1, 1993, Ser. No. 146,585
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—342 3 Claims



1. An IC socket comprising a cover slidably engaged to a base, said cover having a plurality of holes formed therethrough for receiving a corresponding number of IC pins, said base having a plurality of slots each of which corresponds to one of said holes of said cover and is retained in communication with said corresponding hole when said cover is manually slid on said base, and a plurality of conductive plate means each respectively positioned in a corresponding slot of said base, the improvement comprising:
each of said conductive plate means being substantially a fork comprising a first upper plate and a second upper plate, both intersected at a lower flat intersection portion thereof, a shoulder extended outwardly and substantially perpendicular to said flat intersection portion and bent downward as a lower plate, said second upper plate having a top portion curved and extended to said first upper plate thus forming a guiding portion, said first upper plate and said second upper plate being substantially flat and not co-planer, thus when said IC pins are originally inserted into said slots, said IC pins are in loose contact with said left upper plate, after then, said IC pins are further manually pulled by said cover to be in close contact with said top portion of said second upper plate;
two protrusions being formed in two opposite inner peripheries of each of said slots for abutting against two side portions of said intersection portion of each of said conductive plate means thereby preventing each of said conductive plate means from moving in said slot and for blocking gaseous soldering flue from coating the top portion of said second upper plate of said conductive plate means.

5,342,215
RELEASABLE LATCHING SYSTEM FOR ELECTRICAL CONNECTORS
Raymond A. Silbernagel, Naperville, and Edward S. Sommer, Addison, both of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Jun. 21, 1993, Ser. No. 80,262
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—357 11 Claims



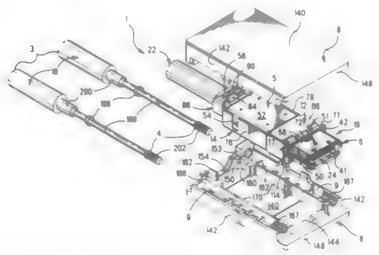
1. A releasable latching system for an electrical connector assembly which includes a first connector having a front mating face and rear face, a second connector having a front mating face for interfacing with the front mating face of the first connector, a latch arm extending forwardly from the rear face of the first connector and including a forward latch portion thereon for latching engagement with a complementary latch means associated with the second connector, wherein the improvement comprises an aperture in the rear face of the first connector through the latch arm and into which a tool can be inserted in engagement with the latch arm to move the forward latch portion out of latching engagement with the latch means associated with the second connector.

5,342,216
JACKSCREW MECHANISM
Wayne S. Davis, Harrisburg; Robert N. Whiteman, Jr., Middletown, and Michael E. Shirk, Grantville, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Continuation of Ser. No. 7,938, Jan. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 955,554, Oct. 1, 1992, abandoned, and a continuation-in-part of Ser. No. 4,859, Jan. 15, 1993. This application Aug. 10, 1993, Ser. No. 104,519
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—362 20 Claims

1. A kit of parts for a jackscrew mechanism comprising: first and second cover parts adapted with an interior to encircle an electrical connector, jackscrew receiving passages in the cover parts, locking structure on the cover parts adapted to lock the cover parts together prior to receiving separate jackscrews in

VOL 1165 ISS 5 AG 30 1994 UMI

the passages, a locking finger in each of the passages adapted to lock behind a collar on a respective jackscrew, and jackscrews,



each jackscrew having a front threaded section and a projecting collar and a knob.

5,342,217

ELECTRIC SWITCH UNIT, IN PARTICULAR FOR AUTOMOTIVE VEHICLES

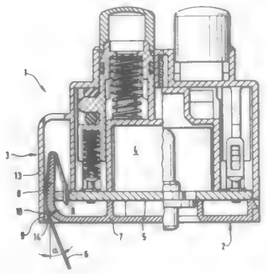
George Hofmann, Heilbronn-Horkheim, Fed. Rep. of Germany, assignor to SWF Auto-Electric GmbH, Fed. Rep. of Germany

Filed May 27, 1993, Ser. No. 68,469

Claims priority, application Fed. Rep. of Germany, May 30, 1992, 4217976

Int. Cl.[5] H01R *13/58*

U.S. Cl. 439—459 **9 Claims**



1. An electric switch unit for automotive vehicles with a housing formed of a housing cover part and a functional housing part, said electric switch having an electric unit accommodated therein and a flat cable attached to said housing, said flat cable wrapped within said housing and wrapped around a strain relief, comprising:

a fin-shaped wall connected to said housing cover having an extended shape in a direction transverse to the extension of said flat cable and around which said flat cable is wrapped, said functional housing part having projections at the exit of said flat cable from said housing, said projections having a slanted surface for controlling the cable exit from said housing to a predetermined angle,

wherein said fin-shaped wall is connected to the bottom of said housing cover by a radius,

wherein said flat cable extends in approximately a straight line path from a circuit board to an end of said fin-shaped wall wrapping therearound and remaining in contact therewith at the exit from said housing where said cable is in tangential contact with said radius.

5,342,218

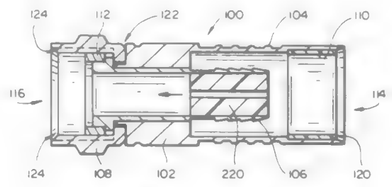
COAXIAL CABLE CONNECTOR WITH MANDREL SPACER AND METHOD OF PREPARING COAXIAL CABLE

Corey McMills, Los Altos, and John S. Mattis, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 673,717, Mar. 22, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 994,061

Int. Cl.[5] H01R *9/07*

U.S. Cl. 439—578 **14 Claims**



1. A coaxial cable connector for forming a connection to a flexible coaxial cable having at least one outer shielding layer of conductive braiding material, the coaxial cable is prepared to have an exposed center conductor and a substantially perpendicular ±45° angle of cable materials away from the center conductor by the removal of the inner and outer dielectric and the outer shielding material, the center conductor comprises a section of the connector capable of forming a contact to a cable splice or cable tap port and a section opposite thereto including a tubular mandrel for contacting the cable, the tubular mandrel including a centrally located dielectric conductor guide/-spacer capable of fitting within the mandrel, the guide/spacer capable of moving through the tubular mandrel towards the section of the connector contacting the cable splice or cable tap port upon the insertion of the cable conductor through the guide/spacer and into the connector, the dielectric conductor guide/spacer includes a conical entrance for the cable conductor to facilitate the passage of the central conductor therethrough and a beveled surface opposite thereto on a peripheral portion of the dielectric conductor guide/spacer to assist insertion into the tubular mandrel; and a securing means for securing the cable around the tubular mandrel.

5,342,219

TERMINAL-LOCKING CONSTRUCTION

Shinya Onodera, Tokyo, and Toshiharu Kawashima, Shizuoka, both of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,195

Claims priority, application Japan, Mar. 10, 1992, 4-011817[U]; Mar. 11, 1992, 4-012049[U]

Int. Cl.[5] H01R *13/40*

U.S. Cl. 439—595 **13 Claims**

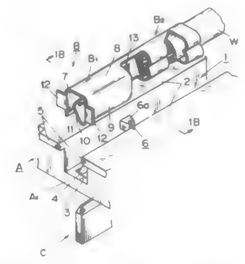
1. A terminal-locking construction comprising:

a housing having a groove-like terminal-receiving cavity formed therein;

a terminal retained within said terminal-receiving cavity, said terminal having a first engagement portion at a longitudinal end thereof and a second engagement portion at a longitudinally intermediate position thereof;

a third engagement portion formed externally at one longitudinal open end of said terminal-receiving cavity, said third engagement portion engaging said first engagement portion; and

a fourth engagement portion formed at a longitudinally intermediate position of said terminal-receiving cavity, said fourth engagement portion engaging said second engagement portion; whereby, when assembling, said first engagement portion of said terminal is first engaged with said third engagement portion and thereafter said terminal is pivotally rotated about an engagement between said first and third engagement portions into said terminal-receiving cavity until said second engagement portion engages said fourth engagement portion.



5,342,220

ELECTRICAL CONNECTOR WITH ELECTROSTATIC DISCHARGE PROTECTION

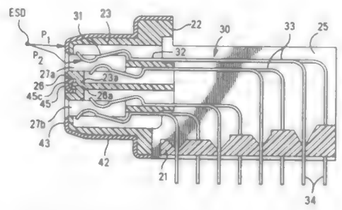
Hiromitsu Kodama, Yokohama, Japan, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 17, 1992, Ser. No. 900,048

Claims priority, application Japan, Jul. 3, 1991, 3-188327

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—607 **5 Claims**



1. A shielded electrical connector, comprising:

a dielectric housing having slots extending along a front surface and toward a rear surface of said housing;

electrical contacts secured in said housing and having contact sections disposed along said slots spaced from said front surface; and

a metal shield on said housing covering said front surface and having slits in communication with said slots whereby an area around the slits provides a path for an electrostatic charge to ground instead of to the contact sections, said dielectric housing further includes a transverse groove with a forwardly directed projection therein, and said metal shield includes a cross piece disposed in said groove and having an inner bent surface which at least partially encloses said projection.

5,342,221

KEYING SYSTEM FOR ELECTRICAL CONNECTORS

Bruce A. Peterson, Schaumburg, Ill., assignor to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 1,871, Jan. 8, 1993, abandoned. This application Oct. 20, 1993, Ser. No. 139,628

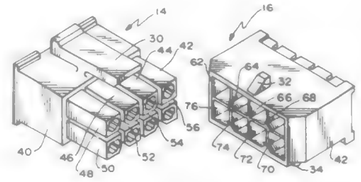
Int. Cl.[5] H01R *13/64*

U.S. Cl. 439—677 **4 Claims**

1. A keying system for a plurality of electrical connectors having different numbers of terminals, comprising:

a plurality of male connectors each having an elongate housing with a plurality of silos projecting from the housing in only two parallel rows longitudinally of the housing, the silos of first and second rows of said parallel rows, each having generally rectangular cross-sections defining opposite first and second sides running longitudinally along the housing, the first sides of the silos of each row being in a common line generally parallel to said rows, and a plurality of terminals mounted within the housing of said male connectors with contact portions of the terminals projecting into the silos;

a plurality of female connectors each having an elongate housing with a plurality of receptacles in only two rows for mating with the silos of the male connectors, the receptacles of first and second rows having generally rectangular cross-sections defining opposite first and second sides running longitudinally along the housing, the first sides of the receptacles of each row being in a common line generally parallel to said rows, and a plurality of terminals mounted in the housing of said female connectors with contact portions located in the receptacles for mating with the terminals of the male connectors;



said mating male and female connectors being provided in sets of connectors with a male and female connector in each set, there being at least four sets of said mating connectors, each set of said connectors being adapted for mounting at least two pairs of mating terminals, with number of mating terminals in any given set of connectors being different from the number of any other set of connectors, and the number of mating terminals in the at least four sets of mating connectors increasing in a predetermined progression such that the connectors have increasing lengths as a function of the number of mating terminals on the respective connectors; and

at least some of said silos of the male connectors and said receptacles of the female connectors including flattened corners only on said second sides thereof such that either connector in any given said set of connectors cannot mate with a connector of any other set thereof.

5,342,222

EARTH END ATTACHING MEMBER IN A FORMED PROTECTOR FOR A WIRE HARNESS

Toshiharu Tanaka, Mie, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed May 11, 1993, Ser. No. 59,355

Claims priority, application Japan, Jun. 23, 1992, 4-049801[U]

Int. Cl.[5] H01R *9/22*

U.S. Cl. 439—708 **3 Claims**

1. An earth end attaching member in a formed protector for a wire harness, on which earth terminals of earth leads are lapped and secured, comprising:

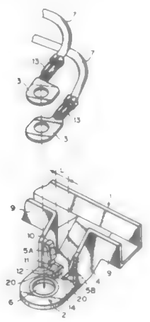
a pair of engaging plates integrally formed on said member in spaced and opposed positions; and

a pair of cantilever like elastic engaging parts, each part being provided on the opposing wall of each engaging plate so that a base end thereof is disposed at an upper position and a free end thereof is directed downwardly, each part having an elastic latch portion provided on the free end;

a spaced distance allowing said earth terminals parallel to

VOL 1165 ISS 5 AG 30 1994 UMI

said member to be passed therethrough by elastically deforming said parts being defined between said parts;



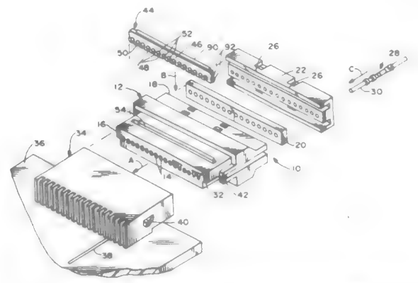
said latch portion engaging with a side of said earth terminals-lapped on said member.

5,342,223

ELECTRICAL CONNECTOR WITH TERMINAL POSITION ASSURANCE DEVICE

Lawrence E. Geib, Bartlett, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Nov. 12, 1993, Ser. No. 151,323
Int. Cl.[5] H01R *13/436*
U.S. Cl. 439—752 9 Claims



1. In an electrical connector which includes housing means having a plurality of terminal-receiving passages extending between a forward mating end of the housing means and a rear end thereof,

a plurality of terminals received in the passages,

primary lock means operatively associated between the housing means and the terminals for locking the terminals in the passages, and

a terminal position assurance device mounted on the housing means for movement between first and second positions only when all of the terminals are properly positioned in their respective passages,

wherein the improvement comprises:

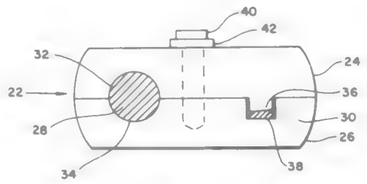
said terminal position assurance device being mounted on the housing means for movement to a third position and including means for moving said primary lock means to an unlocking condition in response to moving the terminal position assurance device to the third position thereby allowing removal of the terminals, and said terminal position assurance device includes secondary latch means for engaging and locking the terminals in the passages when the terminal position assurance device is in its second position.

5,342,224

PARALLEL STREET LIGHT TAP CONNECTOR

John Lefavour, Litchfield, N.H., assignor to Burndy Corporation, Norwalk, Conn.

Continuation of Ser. No. 982,411, Nov. 27, 1992, abandoned, which is a continuation of Ser. No. 792,110, Nov. 14, 1991, abandoned. This application Nov. 19, 1993, Ser. No. 158,039
Int. Cl.[5] H01R *4/44*
U.S. Cl. 439—781 2 Claims



1. A tap connector for connecting and coupling two parallel conductors, one of said conductors having a first diameter and the second of the conductors having a second diameter less than the first diameter comprising:

an upper body portion provided with a bottom surface, a top surface and two end surfaces, said bottom surface provided with a top concave seat extending substantially the entire width of said bottom surface from said one end surface to said second end surface, said bottom surface further provided with a tongue member, parallel to and equal in length to said top concave seat, said tongue member provided with two side surfaces and a bottom planar surface extending completely between said two side surfaces of said tongue member, said bottom planar surface angled slightly with respect to the horizontal at a single constant angle for the entire distance between said two side surfaces of said tongue member;

a lower body portion provided with a top surface, a bottom surface and two end surfaces, said top surface of said lower body portion provided with a bottom concave seat extending substantially the entire width of said top surface from said one end surface to said second end surface of said lower body portion, said bottom concave seat opposed to said top concave seat, said top surface of said bottom portion additionally provided with a groove parallel to said bottom concave seat extending between said end surfaces of said bottom body portion opposed to said tongue member, said groove provided with two side surfaces and a bottom planar surface provided between said two side surfaces of said groove;

a fastening means for fastening said upper body portion to said lower body portion with the conductor having the first diameter provided between said top concave seat and said bottom concave seat, and the conductor having the second diameter provided between said tongue member and said groove; and

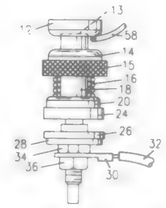
wherein said groove and said tongue member acting to prevent rotation of said upper body, when said upper body is fastened to said lower body by said fastening means.

5,342,225

ELECTRICAL CONNECTOR FOR PYROTECHNIC APPLICATIONS

Raymond C. Farr, Azusa, Calif., assignor to The Walt Disney Company, Burbank, Calif.

Filed Jun. 2, 1993, Ser. No. 71,667
Int. Cl.[5] H01R *4/48*
U.S. Cl. 439—817 2 Claims



1. An apparatus for connecting the fuse of a pyrotechnic projectile to a firing control system, the apparatus comprising:

a one piece tube and flange having an upper end and an opposed flanged lower end;

a spring sized to fit over the upper end of the tube and flange;

a clamp having an upper side and a lower side and further having an opening adapted to fit over the upper end of the tube and flange;

a conductor pin having an upper end and an opposed lower end, said upper end having a head, said lower end sized to fit within said tube and flange; and

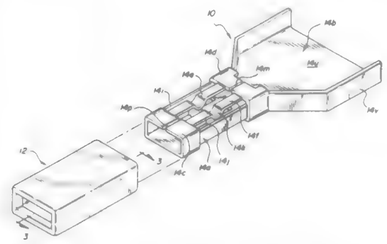
a groove in said head of said conductor pin, said groove sized to receive said upper end of said tube.

5,342,226

FEMALE BLADE TERMINAL

Earl J. Hayes, Northville, and Christopher J. Volpe, Ferndale, both of Mich., assignors to Electro-Wire Products, Inc., Troy, Mich.

Filed Jun. 21, 1993, Ser. No. 78,639
Int. Cl.[5] H01R *13/11*
U.S. Cl. 439—845 15 Claims



1. An electrical female blade terminal formed from a single piece of conductive sheet material of a given thickness and including a front cage structure, which includes a plurality of longitudinally extending parallel beam portions and is adapted to slidably receive a male blade terminal, and a rear connector structure for electrical connection to a further conductive member, characterized in that:

the beam portions have a reduced thickness less than said given thickness; and

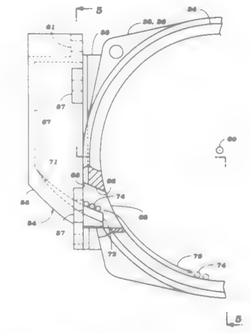
the cage portion includes front and rear annular collar portions of said given thickness with the reduced thickness beam portions extending between the annular collar portions.

5,342,227

WATER JET PROPULSION UNIT

Noboru Suganuma, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 16, 1993, Ser. No. 48,477
Claims priority, application Japan, May 27, 1992, 4-160300
Int. Cl.[5] B63H *11/00*
U.S. Cl. 440—38 8 Claims



1. A water jet propulsion unit for a watercraft comprising a water inlet portion defining a water inlet through which water may be drawn from the body of water in which the watercraft is operating, an impeller portion containing an impeller for pumping water and a discharge nozzle portion through which water pumped by said impeller is discharged for propelling the watercraft, a separator device for separating foreign particles from said water, an inlet opening communicating said separator device with a side of said jet propulsion unit for receiving a portion of the water pumped by said impeller and returning the separated particles to said jet propulsion unit, and outlet opening for receiving the water from which particles have been separated, and means defining a flow path from said inlet opening to said outlet opening including a horizontally extending portion terminating at a wall disposed in confronting relation to said inlet opening to turn and redirect the flow of water from said horizontally extending portion vertically along said side of said jet propulsion unit for reducing the velocity of water and particles passing through said inlet opening.

5,342,228

MARINE DRIVE ANODE

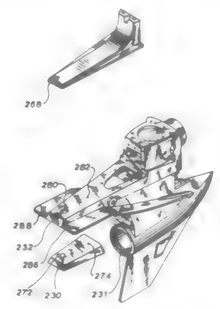
Phillip D. Magee; Edward C. Eick, and Gary L. Meisenburg, all of Stillwater, Okla., assignors to Brunswick Corporation, Lake Forest, Ill.

Continuation-in-part of Ser. No. 889,495, May 27, 1992, Pat. No. 5,230,644, and a continuation-in-part of Ser. No. 889,530, May 27, 1992, Pat. No. 5,249,995. This application Jun. 28, 1993, Ser. No. 83,980
Int. Cl.[5] B63H *21/24*
U.S. Cl. 440—76 19 Claims

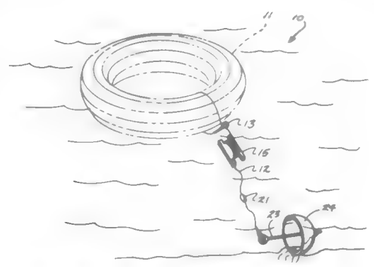
1. A marine drive for propelling a boat comprising a housing having a lower torpedo portion with at least one propeller shaft driving at least one propeller, an anode mounted to said housing above said propeller, said anode having a volume greater than 20 cubic inches, said housing have an anode-

VOL 1165 ISS 5 AG 30 1994 UMI

mounting section extending rearwardly therefrom above said propeller, said anode-mounting section having a cavity opening downwardly toward said propeller and receiving said anode therein.

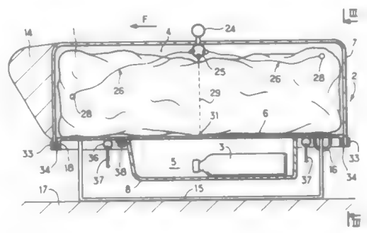


5,342,229
FLOAT TUBE ANCHOR APPARATUS
Leonard A. Whitt, 330 Park Ave., Vista, Calif. 92084
Filed Jun. 14, 1993, Ser. No. 75,604
Int. Cl.[5] B63B *21/52*
U.S. Cl. 441—6 3 Claims



1. A float tube anchor apparatus, comprising,
a support cable, the support cable having a first end spaced from a second end, and
a hook member mounted to the first end, the hook member including a latch plate means for selective securement to the hook member for forming a closed loop within the hook member, and
a semi-spherical anchor dish having an annular periphery, including an anchor rod, with the anchor rod having a rod first end spaced from a rod second end, the rod first end including a guide loop, with the rod second end fixedly mounted to the anchor dish medially of the anchor dish, with the anchor dish having a concave interior surface and facing relationship relative to the guide loop, and the cable second end secured to the guide loop, and
a spool member, with the support cable wound about the spool member intermediate the cable first end and the cable second end, and a ballast weight mounted to the support cable intermediate the spool member and the cable second end, and
the spool member includes a central body plate, having a plate first end spaced from a plate second end, with respective first and second parallel legs mounted to the plate first end, and third and fourth parallel legs mounted to the plate second end, and
the first leg includes a first leg channel, and the third leg having a third leg channel, with the first leg channel and the third leg channel arranged in a spaced parallel relationship relative to one another, with the first leg including a first channel slot directed into the first leg in communication with the first leg channel, the third leg having a second channel slot directed into the third leg channel, and a first split sleeve rotatably mounted within the first leg channel, and a second split sleeve rotatably mounted within the third leg channel, with the cable arranged through the first leg channel and the third leg channel received within the first split sleeve and the second split sleeve, the first split sleeve having a first sleeve slot arranged for rotatable displacement relative to the first channel slot, and the second split sleeve having a second sleeve slot arranged for displacement relative to the second channel slot.

5,342,230
WATER SURVIVAL DEVICE
Olivier Louis, Marseille, France, assignor to Unitor A/S, Kolbotn, Norway
PCT No. PCT/FR91/00660, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO92/03333, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 9, 1991, Ser. No. 983,551
Claims priority, application France, Aug. 24, 1990, 90 10796
Int. Cl.[5] B63B *35/58*
U.S. Cl. 441—42 16 Claims

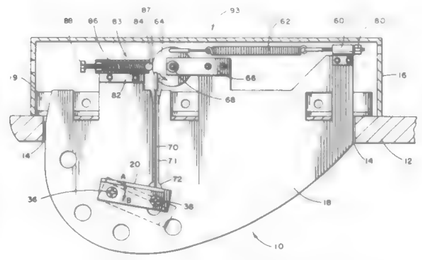


1. Water survival device of the inflatable liferaft type packed in a container and equipped with survival material comprising one pressurised gas bottle, said water survival device comprising:
a planar rigid watertight partition,
a top lid fixed on a peripheral edge of said watertight partition and defining with said watertight partition a first waterproof compartment containing said liferaft,
a bottom lid fixed under said watertight partition, and defining with said watertight partition a second waterproof compartment containing said survival material, so that said second waterproof compartment can be dismantled without opening said first waterproof compartment, and wherein said liferaft when inflated comprises a floor comprising a flexible section and a rigid central section, said rigid central section of said floor being constituted by said watertight partition.

5,342,231
SELF ADJUSTING WATER SKI ASSEMBLY
John A. Henns, 4611 Sloewood Dr., Tangerine, Fla. 32777
Continuation-in-part of Ser. No. 45,551, Apr. 8, 1993. This application May 5, 1993, Ser. No. 57,305
Int. Cl.[5] B63B *35/81*
U.S. Cl. 441—79 6 Claims

1. An automatically adjusting water ski fin and wing assembly comprising:
a fin having one end connected to a rear portion of a water ski and having another end extending away from a lower surface of the rear portion of the water ski;
a wing extending outward from either side of said fin;

a pivot pin connecting said wing to said fin; and
means for permitting said wing to rotate about said pivot in response to the speed of the fin through the water, and for preventing said wing from rotating about said pivot in a first direction until the speed of the fin through the water exceeds a first predetermined velocity, said permitting means preventing said wing from rotating about said pivot in a second direction opposite said first direction until the speed of the fin through the water falls below a second predetermined velocity, wherein said second predetermined velocity is less than the first predetermined velocity.

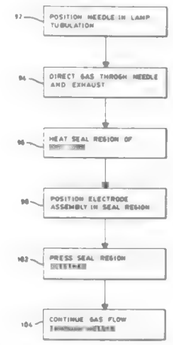


5,342,232
SWIM TRAINING DEVICE
James P. Bardot, 302 Cozumel, Laguna Beach, Calif. 92651
Filed Apr. 30, 1993, Ser. No. 54,435
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—115 6 Claims



1. A swim training device arranged to be worn about the upper torso of a swim trainee comprising:
a pair of buoyancy units defining a front and rear pouch, each formed by a first and second cover sheet that defines a storage compartment;
a plurality of floatational cells removably stored in each of said storage compartments so as to sequentially control the buoyancy of each of said buoyancy units, the number of floatational cells being concealed from the swim trainee; and
means for attaching said pair of buoyancy units to each other, said attaching means further defining means for securing said training device about the body of the wearer thereof;
wherein said first cover sheet includes a concealed opening therein which is located in said pouch so as to engage the body of the swim trainee, and wherein said second cover sheet is located outwardly of said pouch; and
wherein said first cover sheet is formed from a nonstretchable material, and wherein said second cover sheet is formed from a stretchable elastic material, whereby the pouch adjustably conforms to the number of flotation cells stored therein.

5,342,233
METHODS FOR REMOVING CONTAMINANTS FROM ARC DISCHARGE LAMPS
Philip B. Newell, Carlisle, Mass., assignor to Osram Sylvania Inc., Danvers, Mass.
Continuation of Ser. No. 693,899, May 1, 1991, Pat. No. 5,176,558. This application Sep. 3, 1992, Ser. No. 939,339
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] H01J *9/32, 9/38*
U.S. Cl. 445—6 13 Claims



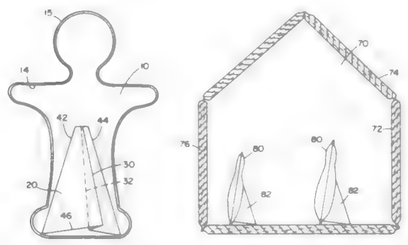
1. A method for removing contaminants from an elongated arc tube having a lamp tubulation and having electrodes mounted therein on opposite sides of said tubulation, said method comprising the steeps of:
inserting a removable metallic conduit in the form of a needle extending longitudinally through said lamp tubulation for forming a first gas flow passage;
introducing a gas into said arc tube through said removable metalic conduit extending through said lamp tubulation;
simultaneously with introducing said gas, heating said arc tube for vaporizing contaminants including water present in said arc tube,
simultaneously with introducing said gas, exhausting the gas from said arc tube through a second gas flow passage extending through said lamp tubulation, said second gas flow passage being separated from said first gas flow passage and comprising an annular space between said removable metallic conduit and a wall of said lamp tubulation whereby gas flows in a stream through said first gas flow passage into said arc tube and then flows from said arc tube only through said second gas flow passage, said steps of introducing the gas and exhausting the gas are performed at about atmospheric pressure;
cooling said arc tube while continuing said gas flow;
removing said metallic conduit, dosing said arc tube with chemicals through said tubulation, and backfilling said arc tube prior to sealing said arc tube.

5,342,234
FREE-STANDING STUFFED TOY
Stuart J. Bloom, Lexington, Mass., assignor to Pockets of Learning, Sudbury, Mass.
Continuation of Ser. No. 875,225, Apr. 28, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 90,249
Int. Cl.[5] A63H *3/14*
U.S. Cl. 446—327 6 Claims

1. A stuffed figure comprising:
a front surface;
a rear surface opposite the front surface;
a base; and
a fabric pocket sewn to said rear surface, the pocket substan-

VOL 1165 ISS 5 AG 30 1994 UMI

tially enclosing a region between the pocket and the rear surface except for an opening located near the base of said stuffed figure, the pocket being extendable from said rear surface, such that the extended pocket supports the stuffed figure in an upright position, and such that the pocket also provides an enclosure between the pocket and the rear surface for a person's finger enabling the stuffed figure to serve as a finger puppet, wherein said pocket has two sides



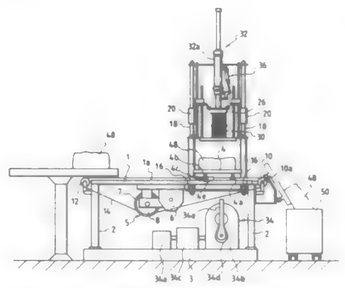
sewn to said rear surface at a first acute angle relative to each other such that an opening is formed between the sewn sides, said pocket being folded along a first bisecting line approximately bisecting the first acute angle formed by said sewn sides, and again folded along a second bisecting line, the fold along the second bisecting line approximately bisecting a second acute angle formed between said first bisecting line and one of said sewn sides.

5,342,235

MEAT PROCESSING MACHINE

Yasushi Watanabe, Hokkaido, Japan, assignor to Nikko Tokki Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 971,578
Int. Cl.[5] A22C *9/00*
U.S. Cl. 452—141 **6 Claims**



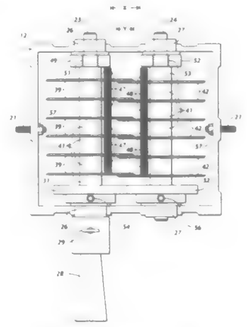
1. A meat processing machine comprising:
a base stand;
a movable stand movable on said base stand with a block of meat set thereon;
a supporting stand provided above said base stand in such a manner that said supporting stand is vertically movable;
a plurality of needle connecting members coupled to said supporting stand, said needle connecting members being arranged in a direction perpendicular to a direction of movement of said movable stand;
a plurality of needles extended downwardly from each of said needle connecting members;
first reciprocating means for reciprocating at least one of said needle connecting members in a direction perpendicular to a direction of movement of said movable stand;
second reciprocating means for reciprocating said supporting stand in said direction perpendicular to said direction of movement of said movable stand; and
horizontal drive means for selectively driving said movable stand horizontally forwards and backwards, said horizontal drive means provided on a lower surface of said base stand.

5,342,236

MEAT CUTTER

Milan Repisky, Roswell, and Anton Tur, Marietta, both of Ga., assignors to Milton Industries, Inc., Atlanta, Ga.

Filed May 12, 1993, Ser. No. 60,865
Int. Cl.[5] A22C *17/00*
U.S. Cl. 452—149 **13 Claims**



1. A food slicing machine comprising, a first frame member having side walls and a second frame member having side walls adapted to be superposed on said first frame member, said second frame member having a top surface and an aperture therein;
said first and second frame members together defining a plurality of apertures in the side walls thereof;
first and second parallel shafts mounted in said apertures and extending between opposed side walls;
an array of a plurality of first spaced cutting discs mounted on said first shaft;
first means for maintaining said first discs in a first spaced relationship;
a second array of a plurality of second spaced cutting discs mounted on said second shaft;
second means for maintaining said second discs in a second spaced relationship;
said first and second arrays defining a cutting region;
each of said second discs on said second shaft being offset from a corresponding first disc on said first shaft a distance of from the thickness of a disc to twice the thickness of a disc and forming a disc pair with said corresponding first disc for forming a single cut by said pair in the food being sliced, each of said disc pairs thus formed being spaced from adjacent disc pairs a distance substantially greater than the distance between the discs forming a pair and substantially equal to the desired thickness of the slices to be cut in the food;
first and second food guide means extending substantially normal to the axes of said first and second shafts and extending into the spaced between disc pairs, said first guide means being spaced from said second guide means a distance defining the maximum allowable thickness of food to be cut;
the diameter of each of the discs in a disc pair and the spacing of said first and second shafts being such that the discs in each disc pair overlap a distance equal to or greater than one-half the spacing between said first and second guide means;

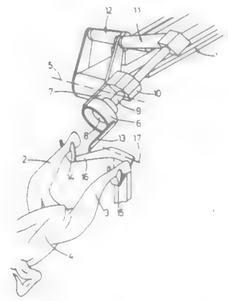
means for altering the spacing between said first and second guide means; and
means for rotating said first and second shafts to cut the food.

5,342,237

APPARATUS FOR DRESSING A SLAUGHTERED BIRD

Albert Kolkman, Oostzaan, Netherlands, assignor to Machinefabriek Meyn B.V., Oostzaan, Netherlands

Filed Jun. 17, 1993, Ser. No. 78,618
Claims priority, application Netherlands, Jun. 30, 1992, 9201167
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—174 **10 Claims**



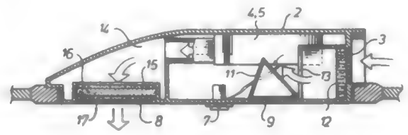
1. An apparatus for dressing a slaughtered bird, said apparatus comprising an actuable cutting device configured for making cuts in the chest skin of a slaughtered bird, and an actuable locating device in operable configuration with said cutting device, said locating device configured to engage the leg of the slaughtered bird and to move the hock joint of the leg into the cut made by said cutting device.

5,342,238

AIR FILTERING APPARATUS

Hans Segerpalm, August Sodermans Vag 4, S-126 54 Hägersten, and Ante Eklund, Rolsta Frolunda, S-186 95 Vallentuna, both of Sweden

PCT No. PCT/SE91/00394, § 371 Date Oct. 29, 1992, § 102(e) Date Oct. 29, 1992, PCT Pub. No. WO91/19617, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 4, 1991, Ser. No. 955,895
Claims priority, application Sweden, Jun. 19, 1990, 9002179-1
Int. Cl.[5] B60H *3/06*; B60J *7/08*
U.S. Cl. 454—136 **5 Claims**



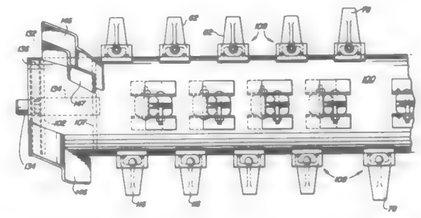
1. An automotive vehicle interior air-filtering arrangement, comprising: a coarse filter (12), a fan unit (4, 5), and a fine-filtering unit (15–17), wherein said arrangement is disposed in a unit adapted to be mounted to a roof of the vehicle in the manner of a conventional, openable roof hatch (2); said hatch having, when closed, a rear part projecting upwardly above a roof of the vehicle and which includes an ambient air intake opening (3) in which said coarse filter is mounted; said hatch also including an interior air intake opening (9) communicating with the vehicle interior, means (11) for closing the ambient air intake opening and the interior air intake opening to desired extents, and at least one outlet opening (8) through which filtered air is blown by the fan unit into the vehicle interior.

5,342,239

OPERATION PARAMETERS FOR AN AXIAL SEPARATOR

Neil L. West; James W. Hall, both of Bettendorf, Iowa; Mark F. Stickler, Silvis, and Richard L. Day, Port Byron, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed May 10, 1991, Ser. No. 698,761
Int. Cl.[5] A01F *7/06*
U.S. Cl. 460—69 **4 Claims**



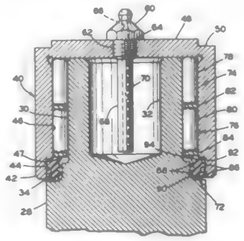
1. An agricultural combine for harvesting and threshing a crop in a field, the combine comprising:
a supporting structure;
a transverse threshing cylinder and concave mounted to the supporting structure for threshing a harvested crop;
an axial separator is mounted to the supporting structure for receiving a threshed crop from the transverse threshing cylinder and concave for further separating the grain and chaff from the straw of the crop, the axial separator is provided with a rotor and a casing housing the rotor, the rotor is provided with fixed separator teeth and fixed infeed teeth that extend radially outward from the rotor, said infeed teeth being shorter than said separator teeth, the rotor is rotated in the casing so that the tip speed of the infeed teeth is greater than or equal to 11.8 m/sec and the tip speed of the separator teeth is less than or equal to 20.9 m/sec.

5,342,240

HIGH CAPACITY UNIVERSAL JOINT

Philip J. Mazziotti, Toledo, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

Continuation of Ser. No. 378,835, Jul. 12, 1989, abandoned. This application Aug. 20, 1990, Ser. No. 569,847
Int. Cl.[5] F16D *3/41*
U.S. Cl. 464—11 **3 Claims**



1. A universal joint comprising a cross, four cups, and two yokes, said cross having a main body and four legs extending outwardly therefrom and terminating in four trunnions of one

VOL 1165 ISS 5 AG 30 1994 UMI

diameter, each of said trunnions having a central, deep recess in an outer end thereof, said legs having cylindrical portions at the inner ends of said trunnions of a larger diameter than said one diameter, each of said cups having at least one recessed locating surface in a peripheral portion of a closed end of said cup, said cup having a first cylindrical inner portion of one diameter adjacent an open end and a second cylindrical portion of smaller diameter away from the open end, with an annular internal shoulder formed between said two portions and facing the open end, each of said yokes having two arms, each with a bore therethrough, an outer surface of each of said arms having a locating surface adjacent the corresponding bore, a lubricant fitting affixed to a central portion of the closed end of each of said cups and having a lubricant passage extending therethrough, a standpipe extending through a substantial portion of said deep recess and terminating short of the inner end thereof, said standpipe being substantially smaller in transverse cross section than said deep recess, and having a central passage communicating with said lubricant passage, two rows of roller bearings between each of said cups and the corresponding trunnion, an annular separator between said rows of bearings, an annular retainer adjacent the row of bearings closer to the open end of the cup, a resilient seal in said first cylindrical portion, said seal having thin lips engaging said cup and said cross and having a larger resilient lip extending toward and into contact with said retainer to urge said rows of bearings toward the closed end of the cup, said cylindrical portion of each of said legs being positioned to contact said resilient seal, and fastener means holding said cups in said yoke arms with said recessed locating surfaces of the cups in coplanar relationship with the locating surfaces of said yoke arms.

5,342,241

TORQUE LIMITING COUPLING WITH DRIVING MEMBERS AND SWITCHING CAMS HAVING COMPLEMENTARY FACES

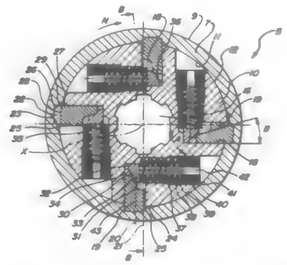
Klaus Kämpf, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 975,601

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 4137829

Int. Cl.[5] F16D *7/04*

U.S. Cl. 464—37 **9 Claims**



1. A torque limiting coupling for driving agricultural implements or machinery comprising:

a coupling hub and a coupling sleeve relatively rotatably supported thereon;

driving members movably arranged in inwardly directed, circumferentially distributed recesses of said coupling hub, said driving members including heads which, in the torque transmitting position, each engage a corresponding recess in the opposed inner face of the coupling sleeve and in a switched-off position, disengage therefrom, the torque transmitting face of the heads extending parallel to a rotational axis of the coupling sleeve and coupling hub, a base of the driving members being provided with two switching faces one switching face providing support in the torque transmitting position, and the other switching face providing support in the switched-off position;

a switching cam including at least first and second adjacent switching faces loading said driving members, said cam being spring-loaded in the direction of the torque transmitting position and movable transversely relative to the respective driving member arranged in the recesses in the coupling hub, one of the switching faces of the cam and driving members, which serve torque transmitting purposes, extending at an angle relative to the central axis of the respective driving member, said angle being greater than the angle of the second switching face for the switched-off position, and the switching faces being designed so as to correspond to one another, and said torque transmitting face and the switching faces of the driving members being arranged so as to circumferentially extend in the same direction.

5,342,242

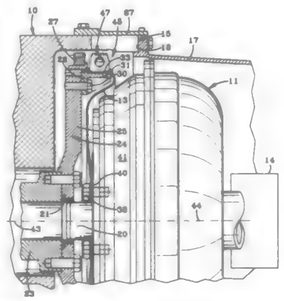
ENGINE/TRANSMISSION ROTARY CONNECTION

Barry L. Ladd, Zionsville, and Michael B. Pociask, Plainfield, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1993, Ser. No. 15,724

Int. Cl.[5] F16D *3/50*

U.S. Cl. 464—98 **4 Claims**



1. A rotating drive connection between an engine output member and a transmission input member, said connection comprising:

a flex plate having an inner hub portion secured for rotation with one of said output member and said input member;

an outer axially extending, annular rim on said flex plate;

an annular drive wall disposed on the other of said output member and said input member disposed radially inwardly of and circumferentially abutting said rim; and,

clamp means having an annular band portion disposed circumjacent said rim; and,

tightening means for tightening said annular band portion about said rim for frictionally securing said rim with said annular drive wall.

5,342,243

UNIVERSAL JOINT YOKE

Dinesh Seksaria, Murrysville, and Charles I. Fuller, Monroeville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 26, 1992, Ser. No. 858,047

Int. Cl.[5] F16D *3/26, 3/40*

U.S. Cl. 464—134 **17 Claims**

1. A universal joint yoke comprising:

a generally cylindrical tubular body having an outer surface, an inner surface and a connecting surface disposed between said outer surface and said inner surface;

said tubular body connecting surface being generally oriented in a plane which is generally perpendicular to the axis of said tubular body;

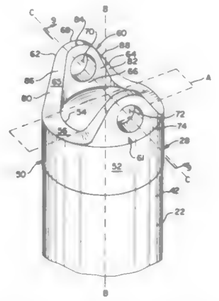
a pair of ears projecting generally axially from one end of said tubular body;

said ears having an outer surface, an inner surface and a connecting surface disposed between said outer surface and said inner surface;

said ears having a base disposed adjacent said tubular body and a distal end disposed opposite said base;

each of said ears defining a hole, said holes being substantially aligned along a common axis;

each of said ear connecting surfaces having a pair of lower portions adjacent said base, an upper portion adjacent said distal end and a pair of transition portions connecting said lower portions to said upper portion;



said lower portions are oriented such that a generally straight line drawn in said tubular body connecting surface plane goes through (i) a point at the junction of said ear outer surface and said ear connecting surface; (ii) a point at the junction of said ear inner surface and said ear connecting surface; and (iii) a point on said axis of said tubular body;

said upper portion is oriented such that a generally straight line drawn between (i) a point on the junction of said ear outer surface and said ear connecting surface and (ii) a point at the junction of said ear inner surface and said ear connecting surface is generally parallel to said common axis; and

said ear connecting surface at said base has a greater radial thickness than the radial thickness of said ear connecting surface at said ear distal end.

5,342,244

HUMAN-POWERED GYROSCOPE

Kevin R. Nelson, 1615 E. 2nd St., North Platte, Nebr. 69101

Filed Jan. 8, 1993, Ser. No. 2,187

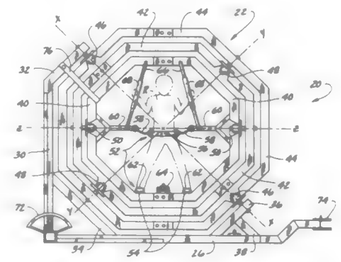
Int. Cl.[5] A63G *1/12*

U.S. Cl. 472—14 **18 Claims**

1. A human-powered gyroscope comprising,

a frame for supporting the gyroscope,

a ring assembly comprising an inner ring, an intermediate ring and an outer ring concentrically disposed with each other, the outer ring being mounted on the frame for rotation relative to the frame about a first axis extending generally diametrically of the outer ring, the intermediate ring being mounted on the outer ring for rotation relative to the outer ring about a second axis extending generally diametrically of the intermediate ring, and the inner ring being mounted on the intermediate ring for rotation relative to the intermediate ring about a third axis of rotation extending generally diametrically of the inner ring, two of



said axes of rotation being oriented obliquely with respect to the other of said axes of rotation, and

means for supporting a human rider on the ring assembly.

5,342,245

BOUNCING SWING

Ted J. Webb, Jr., 909 Adeline St., Hattiesburg, Miss. 39401

Filed Jul. 27, 1992, Ser. No. 919,228

Int. Cl.[5] A63G *9/00*

U.S. Cl. 472—118 **20 Claims**



1. A swing, comprising:

a) a seat;

b) a tube connected to said seat for movement therewith;

c) an extension spring having an upper end and a lower end;

d) said lower end of said extension spring being connected to a portion of said tube substantially adjacent to said seat for resiliently supporting said seat; and

e) an elongated member connected to said upper end of said spring.

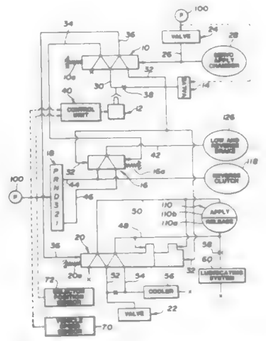
VOL 1165 ISS 5 AUG 30 1994 UMI

5,342,246

AUTOMATIC TRANSMISSION CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

Kyosuke Mori, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Jul. 21, 1993, Ser. No. 89,527
Claims priority, application Japan, Aug. 12, 1992, 4-236483
Int. Cl.[5] F16H 61/00
U.S. Cl. 474—1 6 Claims



1. A control system for an automatic transmission of an automotive vehicle comprising:

a reverse frictional element of the automatic transmission, said reverse frictional element serving to selectively establish a reverse mode in the automatic transmission for allowing the vehicle to move backward when a selector lever is placed in a reverse position;

first valve means having valve positions which are switched for modifying hydraulic pressure supplied to a preselected element of the automatic transmission to control given operation of the automatic transmission;

second valve means for selectively establishing and blocking fluid communication between a first pressure line connected to a pressure source and a second pressure line connected to said first valve means;

third valve means for modifying a level of hydraulic pressure supplied from the first pressure line to the second pressure line through said second valve means for switching the valve positions of said first valve means;

manual selector valve means having an R-range port which provides hydraulic pressure of a preselected level to said reverse frictional element when the selector lever is placed in the reverse position and a drain port which drains the hydraulic pressure from said reverse frictional element;

forward speed holding valve means having a first valve position communicating between a third pressure line connected to the reverse frictional element and a fourth pressure line connected to the R-range port of said manual selector valve means for supplying the hydraulic pressure to said reverse frictional element to establish the reverse mode of the automatic transmission and a second valve position communicating between the third pressure line and a fifth pressure line connected to the drain port of said manual selector valve means for draining the hydraulic pressure from said reverse frictional element to release the reverse mode;

a sixth pressure line communicating between the first pressure line and said forward speed holding valve means through said second valve means when the selector lever is shifted to the reverse position;

vehicle speed sensor means for monitoring vehicle speed to provide a signal indicative thereof;

selector lever position sensor means for detecting a position of the selector lever of the automatic transmission and providing a signal indicative thereof; and

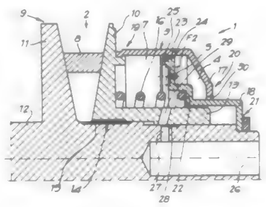
control means responsive to the signals from said vehicle speed sensor means and said selector lever position sensor means to provide a first control signal to said third valve means for modifying the hydraulic pressure in said sixth pressure line to a first level so that said forward speed holding valve means assumes the first valve position when vehicle forward speed is lower than a preselected value and the selector lever is placed in the reverse position for establishing the reverse mode of the automatic transmission and a second control signal to said third valve means for modifying the hydraulic pressure in said sixth pressure line to a second level so that said forward speed holding valve means assumes the second valve position when vehicle forward speed is higher than the preselected value and the selector lever is shifted to the reverse position for preventing the automatic transmission from shifting to the reverse mode when the vehicle is traveling forward at a speed higher than the preselected value.

5,342,247

TRANSMISSION UNIT FOR MOTOR VEHICLES

Frank Adriaenssens, Korbeek-Dijle, Belgium, assignor to Volvo Car Sint-Truiden, naamloze vennootschap, Sint-Truiden, Belgium

Filed Jan. 4, 1993, Ser. No. 147
Claims priority, application Belgium, Jan. 20, 1992, 09200056
Int. Cl.[5] F16H 59/00
U.S. Cl. 474—16 12 Claims



1. Transmission unit comprising:

a continuously variable transmission;

a hydraulic cylindrical/piston unit including a wall and a piston chamber at least partially defined by the wall, the hydraulic cylinder/piston unit setting a transmission ratio of the continuously variable transmission;

a pressure compensation chamber which is separated from the piston chamber by the wall and which works in conjunction with the hydraulic cylinder/piston unit; and

a passage organ having a plug-shaped body and at least one passageway extending at least partially along an outer surface of the passage organ, wherein the plug-shaped body is fixedly mounted in the wall to move therewith and the at least one passageway operatively connects the pressure compensation chamber with the piston chamber.

5,342,248

AUXILIARY EQUIPMENT DRIVE SYSTEM

Taiji Matsubara, Higashihiroshima, and Naoyuki Yamagata, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 20, 1993, Ser. No. 109,484
Claims priority, application Japan, Aug. 20, 1992, 4-245918
Int. Cl.[5] F16H 59/00
U.S. Cl. 474—69 10 Claims

1. A drive system for driving an auxiliary equipment of an automobile engine by an engine crankshaft through a torque transfer mechanism having an interim shaft, said drive system comprising:

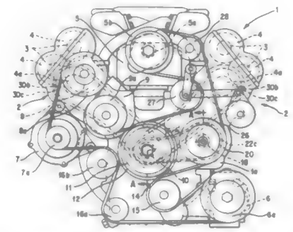
first power transfer means for transferring an output torque of said crankshaft to said interim shaft at all time;

second power transfer means, which is comprised by a crank pulley mounted for relative rotation on said crankshaft, an interim pulley mounted for relative rotation on said interim shaft, an input pulley related to said auxiliary equipment, and a belt operationally coupling all of said pulleys, for transferring an output torque of said crankshaft to said auxiliary equipment;

first electrically operated clutch means, disposed between said crankshaft and said crank pulley, for connecting and disconnecting a transfer of power between said crankshaft and said crank pulley;

second electrically operated clutch means, disposed between said interim shaft and said interim pulley, for connecting and disconnecting a transfer of power between said interim shaft and said interim pulley; and

transfer path changing means for causing said first clutch



means to disconnect said transfer of power between said crankshaft and said crank pulley and said second clutch means to connect transfer of power between said interim shaft and said interim pulley so as to create a first transfer path through which said output torque of said crankshaft is transferred to said auxiliary equipment via said interim shaft and said second power transfer means when said engine operates in a region of low loads and low speeds of rotation, and causing said first clutch means to connect said transfer of power between said crankshaft and said crank pulley and said second clutch means to disconnect transfer of power between said interim shaft and said interim pulley so as to create a second transfer path, which has a power transfer ratio different from that of said first transfer path through which said output torque of said crankshaft is transferred to said auxiliary equipment via said crank pulley and said second power transfer means when said engine operates in a region of high loads and high speeds of rotation.

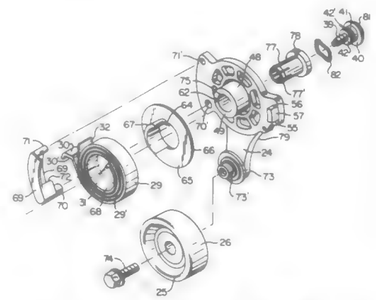
5,342,249

BELT TENSIONING SYSTEM AND METHOD OF MAKING

David E. Gardner, Royal Oak, and David B. Novak, Ann Arbor, both of Mich., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 947,317, Sep. 18, 1992, Pat. No. 5,277,667.
This application Aug. 20, 1993, Ser. No. 109,792
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] F16H 7/12
U.S. Cl. 474—135 20 Claims

1. In a belt tensioning system comprising a support means having an abutment means, an endless transmission belt construction carried by said support means and arranged to move in a certain path relative to said support means, an arm pivotally mounted to said support means, a pulley rotatably carried by said arm and being in engagement with said belt construction, and a wound coiled spring having opposed ends one of which is operatively interconnected to said abutment means of said support means and the other of which is operatively interconnected to said arm whereby the force of said wound coiled spring tends to pivot said arm in a direction that urges said purely against said belt construction with a force that tensions said belt construction, said arm having a shoulder means for being engaged by said one of said opposed ends of said wound coiled spring by the force of said wound coiled spring so as to permit removal of said arm and said wound coiled spring as a self-contained unit from said support means when said arm is pivoted to a certain position where said shoulder means of said



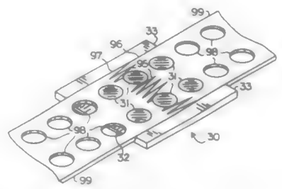
arm engages said one end of said wound coiled spring and effectively moves said one end of said wound coiled spring out of contact with said abutment means of said support means, said wound coiled spring comprising a helical spring having said opposed ends thereof comprising an inner end and an outer end, the improvement wherein said one end of said wound coiled spring comprises said outer end thereof and wherein said shoulder means of said arm is disposed rotationally outboard of said abutment means of said support means.

5,342,250

PROCESS FOR THE MANUFACTURE OF AN ENDLESS TRANSFER BELT

Ronald W. Sanders, 9803 Creekfront Rd., #806, Jacksonville, Fla. 32256

Filed Aug. 31, 1993, Ser. No. 114,487
Int. Cl.[5] F16G 3/10, 3/16
U.S. Cl. 474—249 9 Claims



1. A process for the manufacture of an endless looped transfer belt having at least one layer of thermoplastic material and having a repetitive pattern of apertures, comprising the steps of:

(A) providing an aperture punching apparatus, a splice cutting apparatus and a belt joining apparatus;

said aperture punching apparatus comprising a number of cutting blades positioned in a repetitive center to center pattern to create a number of apertures in a belt, and a number of indexing posts which are dimensioned equal to and positioned in the same repetitive center to center pattern relative to said cutting blades, whereby the relative center to center distances and longitudinal and lateral spacing between said indexing posts match said relative

VOL 1165 ISS 5 AUG 30 1994 UMI

center to center distances and longitudinal and lateral spacing of said cutting blades;

said splice cutting apparatus comprising a number of registration posts fixedly mounted to either side of a cutting surface, whereby said registration posts are dimensioned equal to and positioned in the same pattern relative to said apertures, whereby the relative center to center distances and longitudinal and lateral spacing between said registration posts match said relative center to center distances and longitudinal and lateral spacing of said apertures;

said belt joining apparatus comprising a number of dimensioning plugs, whereby said dimensioning plugs are dimensioned equal to and positioned in the same pattern relative to said apertures, whereby the relative center to center distances and longitudinal and lateral spacing between said dimensioning plugs match said relative center to center distances and longitudinal and lateral spacing of said apertures;

(B) placing said belt in said aperture punching apparatus and creating a first set of apertures;

(C) advancing said belt such that a number of said apertures are mounted onto said indexing posts of said aperture punching apparatus;

(D) creating a second set of apertures, and repeating said steps of advancing said belt, mounting said belt on said indexing posts and creating additional sets of apertures;

(E) cutting said belt to create a first end and a second end, positioning said first end of said belt on said splice cutting apparatus by mounting a number of said apertures on said registration posts;

(F) positioning said second end of said belt on said splice cutting apparatus so as to overlap said first end in the opposite direction by mounting a number of said apertures on said registration posts;

(G) cutting a splice joint through both said first end and said second end of said belt;

(H) positioning said first end of said belt onto one side of said belt joining apparatus by mounting a number of apertures on some of said dimensioning plugs;

(I) positioning said second end of said belt onto said belt joining apparatus from the opposite side by mounting a number of apertures on the remaining said dimensioning plugs, such that the splice joint cut into said first end mates with the splice joint cut into said second end;

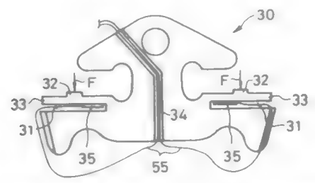
(J) joining said first end to said second end by melting said thermoplastic layer by heat and pressure to create an endless belt.

5,342,251

METALLIC BLOCK FOR DETECTING FORCE OPERATING ON METALLIC V-BELT AND SYSTEM FOR DETECTION OF OPERATING FORCE USING THE SAME

Shigeru Kanehara, Shibuya, and Masashi Nakaoka, Asaki, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1993, Ser. No. 69,090
Claims priority, application Japan, Jun. 16, 1992, 4-181692
Int. Cl.[5] F16E *1/22*
U.S. Cl. 474—242 **9 Claims**



1. A metallic block for the detection of a force operating on a metallic V-belt including endless belt-like supporting straps and a multiplicity of metallic blocks supported along said straps and passing around a driving pulley and a driven pulley, at least one of said multiplicity of metallic blocks comprising:

a notch formed in a part thereof; and

a strain gauge attached to said notch and intended to detect an external force applied to said metallic block,

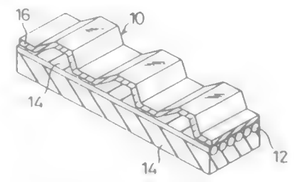
said force operating on said metallic V-belt being detected based on said external force.

5,342,252

TOOTHED BELT

Toru Fujiwara, Tokorozawa, and Yoshinori Itoh, Hanno, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Oct. 6, 1993, Ser. No. 132,387
Claims priority, application Japan, Oct. 13, 1992, 4-077172[U]
Int. Cl.[5] F16G *1/10*
U.S. Cl. 474—266 **1 Claim**



1. A toothed belt comprising an elongated element of rubber disposed in a loop and having embedded tensile reinforcing bodies and a tooth cloth covering at least a single surface of said rubber element, wherein the tooth cloth has a weft extending in the direction of elongation of the rubber element and a warp extending in the direction of the width of the rubber element, and wherein the weft has a wooly finish and, before the tooth cloth is affixed to the rubber element, its weft exhibits an elongation percentage of at least 70% under stretching in the weft direction when subjected to a force of 1 kgf/cm, and the product of the elongation percentage (%) and the breaking strength (kgf/3 cm) of the weft is at least 16,000.

5,342,253

AUTOMATIC TRANSMISSION CONTROL SYSTEM

Tatsutoshi Mizobe; Hidehiko Mishima, both of Hiroshima; Kazunori Enokido, Aki, and Toshihisa Marusue, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

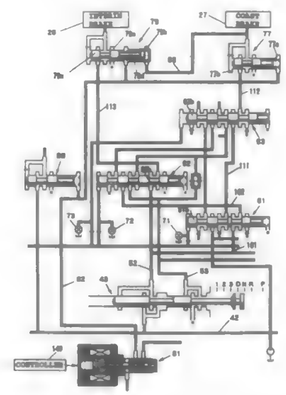
Filed Feb. 1, 1993, Ser. No. 12,482
Claims priority, application Japan, Jan. 31, 1992, 4-046288
Int. Cl.[5] F16H *61/06*
U.S. Cl. 475—128 **4 Claims**

1. A hydraulic control system for controlling an automatic transmission of a vehicle including frictional coupling elements which are selectively coupled and uncoupled so as to shift the automatic transmission into desired gears, said hydraulic control circuit comprising:

a solenoid valve for regulating a line pressure to provide a control pressure in accordance with vehicle driving conditions;

a regulating valve for reducing said line pressure in accordance with said control pressure to provide a coupling pressure by which a specific one of said frictional coupling elements is coupled; and

control means, which is activated by a coupling pressure higher than a specified level by which another one of said frictional coupling elements is coupled, for enabling said regulating valve to provide said coupling pressure for said



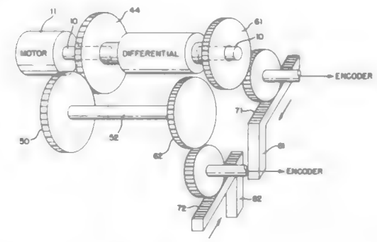
specific frictional coupling element independently from said control pressure when being activated.

5,342,254

END-OF-ARM TOOLING DEVICE

Daniel J. Sula, Niles, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1992, Ser. No. 925,939
Int. Cl.[5] B25J *15/00*
U.S. Cl. 475—230 **1 Claim**



1. An end-of-arm tooling device for a robot for interacting with a workpiece comprising:

power means providing a first torsional input;

at least one input shaft powered by the power means;

a cross shaft connected to the input shaft, the cross shaft having rotatably attached thereto first and second bevel planet gears;

a first bevel output sun gear concentrically fitted over the input shaft meshed with the first and second bevel planet gears;

a second bevel output sun gear concentrically fitted over the input shaft meshed with the first and second bevel planet gears;

a first jaw means torsionally associated with the first bevel output sun gear to interact with the workpiece; and

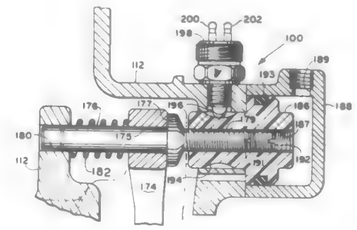
a second jaw means torsionally associated with the second bevel output sun gear to interact with the workpiece.

5,342,255

LOCKING MECHANISM FOR DRIVING AXLE DIFFERENTIAL

Steven G. Slesinski, Kalamazoo, and Bruce A. Muselin, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 16, 1992, Ser. No. 976,626
Int. Cl.[5] F16H *1/44*
U.S. Cl. 475—231 **5 Claims**



1. An adjustable locking mechanism for a drive axle differential comprising:

(a) an axle carrier having a drive pinion journalled thereon and a differential carrier driven by said pinion and having oppositely directed axle shaft journalled therein with each shaft having a side gear drivingly attached thereto and engaged by a pair of power dividing spider gears journalled on said case;

(b) means defining curvic clutching surfaces on said carrier and rotatable therewith;

(c) an annular clutching member drivingly disposed on one of said axle shafts and axially movable thereon for engaging and disengaging said curvic clutch surfaces;

(d) an actuator member movably disposed with respect to said housing and operable, upon movement between a first and second position, to effect said engaging and disengaging of said clutching member;

(e) pressure-responsive means operably connected to said actuator member for, in response to an air pressure signal, effecting movement of said actuator member;

(f) means for adjusting the connection of said pressure-responsive means with said actuator member comprising a push-rod rotatably received through an aperture in said member and threadedly engaging said pressure-responsive means wherein said means for adjusting the connection extends through a housing, said housing encloses said adjustable locking mechanism and said means for adjusting is adjustable from outside of said housing.

5,342,256

DIFFERENTIAL GEAR SYSTEM

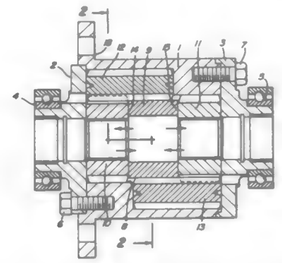
Peter Amborn, Neunkirchen-Seelscheid, and Wolfgang Hildebrandt, Lohmar, both of Fed. Rep. of Germany, assignors to Viscodrive GmbH, Lohmar, Fed. Rep. of Germany

Continuation of Ser. No. 690,536, Apr. 23, 1991, Pat. No. 5,194,054. This application Dec. 16, 1992, Ser. No. 991,109
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1990, 4013202
Int. Cl.[5] F16H *1/42*
U.S. Cl. 475—252 **12 Claims**

1. A differential gear system for use in the driveline of a motor vehicle, comprising a differential carrier that rotates in bearings of a differential housing and is driven via a drive gear tooth configuration; two axle shaft gears rotate in the differential carrier and are coaxial relative to each other; and at least two compensating gears are eccentrically supported in, and rotating with, the differential carrier, one of the compensating gears is meshed with one of said axle shaft gears, and the other compensating gear of the compensating gears is meshed with

VOL 1165 ISS 5 AG 30 1994 UMI

the other axle shaft gear, while engaging each other at least indirectly, and where the axle shaft gears have a tooth design which, when under torque, generates an axial thrust, said axle shaft gears being supported inside a clear passage of the differential carrier; surfaces of the axle shaft gears which are subjected to loads with transmission of torque from the wheels to the driveline are arranged towards the center of the differential



cage; and the axle shaft gears surfaces and/or surfaces in contact with said axle shaft gears which are subjected to loads with transmission of torque from the wheels to the driveline are provided with free floating first friction-reducing means positioned between said axle shaft gears and said surfaces in contact with said axle shaft gears, while the axle shaft gears are mutually supportive, either directly, or by means of intermediate elements.

5,342,257

PLANETARY GEAR TRANSMISSION

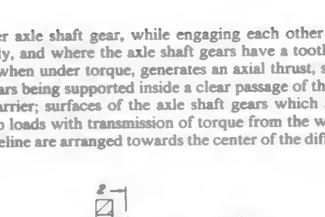
Takashi Hotta; Yukio Morita; Yoichi Kojima; Kimihiko Kikuchi; Tsunefumi Niiyama; Yorinori Kumagai, and Hiroshi Nakayama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 757,005, Sep. 9, 1991, abandoned. This application Sep. 15, 1993, Ser. No. 121,670

Claims priority, application Japan, Sep. 14, 1990, 2-245167

Int. Cl.[5] F16H *3/62*

U.S. Cl. 475—275 **71 Claims**



1. A planetary gear transmission comprising:

an input member;

first, second, and third planetary gear trains arranged coaxially with each other and each having elements including a sun gear, a carrier, and a ring gear, two of the elements of each of said first, second, and third planetary gear trains being directly or disengageably coupled to elements of the other planetary gear trains;

an output member;

three clutch means and two brake means for selectively establishing a power transmitting path from said input member to said output member through said first, second, and third planetary gear trains;

said first planetary gear train comprising a double-pinion planetary gear train, one of the sun gear and the carrier of said first planetary gear train being fixedly coupled to the input member and the other of the sun gear and the carrier of said first planetary gear train being nonrotatably fixed;

at least one of said second and third planetary gear trains comprising a double-pinion planetary gear train; and

said elements of the first, second, and third planetary gear trains being corotatably coupled into first, second, third, fourth, and fifth rotational members for establishing five forward speeds and one reverse speed through the transmission by selectively engaging two of said three clutch means and two brake means at a time, said third and fifth rotational members being coupled to said input member, and said fourth rotational member being coupled to said output member.

5,342,258

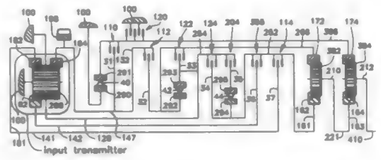
COMBINATIONAL INCREMENTALLY VARIABLE TRANSMISSIONS AND OTHER GEARING ARRANGEMENTS ALLOWING MAXIMUM KINEMATIC DEGREES OF FREEDOM

Mark J. Egyed, Ossining, N.Y., assignor to Motion Sciences Inc., Ossining, N.Y.

Filed Aug. 16, 1991, Ser. No. 748,958

Int. Cl.[5] F16H *57/10*

U.S. Cl. 475—281 **15 Claims**



1. An input arrangement to introduce a reaction stator into an interior of a power transmission having a plurality of power transmitting paths, comprising:

first and second substantially coaxial power transmitting structures each disposed to permit individual selective coupling to at least one of said power transmitting paths;

a mechanical reference frame (**100**);

a reaction stator (**128**) coupled to said mechanical reference frame at a first axial location and positioned radially between said substantially coaxial power transmitting structures so as to permit selective coupling of said reaction stator to at least one said power transmitting path at a second axial location;

means for selectively coupling said reaction stator to said power transmitting path at said second axial location, said reaction stator further positioned so as to permit said means for selectively coupling to be substantially located within the interior of at least one of said power transmitting paths, thereby allowing said reaction stator to provide a reaction force to at least one said power transmitting path in said power transmission using said means for selectively coupling at a location other than proximate the mechanical reference frame.

5,342,259

STARTING BLOCK

Ian J. Crichton, P.O. Box 1111, Springs, Transvaal Province, South Africa

Filed Mar. 1, 1993, Ser. No. 24,507

Claims priority, application South Africa, Mar. 6, 1992, 92/1710

Int. Cl.[5] A63K *3/02*

U.S. Cl. 482—19 **5 Claims**

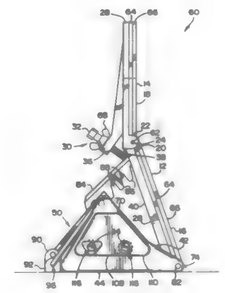
1. A starting block which includes

a base member mountable on a substrate;

a substantially planar foot-support means pivotally mounted via an operatively lower edge to the base member;

a substantially planar heel-support, arranged at an operatively upper edge of the foot-support means, for supporting a user's heel, the heel-support portion being angularly adjustably arranged relative to the foot-support means; and

an adjustment means for effecting angular adjustment of the



heel-support portion relative to the foot-support means, the adjustment means comprising an adjustment screw receivable in a threaded opening defined in an extension flange of the heel-support portion, the extension flange extending beyond an operatively bottom edge of the heel-support portion so that the adjustment screw abuts against a rear surface of the foot support means.

5,342,260

BUMPER ATTACHMENT ASSEMBLY FOR LATERAL MOVEMENT TRAINER

Max C. Markland, Gresham, Oreg., assignor to Joshua Group Ltd., Portland, Oreg.

Filed Aug. 6, 1992, Ser. No. 925,988

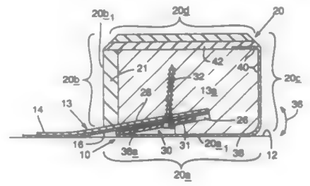
Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—51 **9 Claims**

1. An improved lateral movement trainer comprising:

an elongate slideboard;

opposing one-piece bumpers, each being attached to a, corresponding end of the slideboard, wherein each bumper includes an inner region with an impact surface, outer and top regions, and a bottom region that includes a bottom surface, and wherein each bumper is formed with a groove for receiving a corresponding end the slideboard with the groove being formed at an angle that slopes upwardly with respect to the bottom surface and away from the impact surface; and



slideboard-fastening structure positionable adjacent the groove of each bumper, and being operative to fasten a corresponding end of the slideboard to the bottom region.

5,342,261

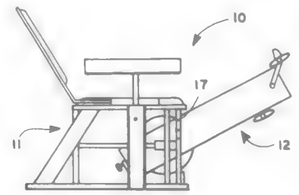
ADJUSTABLE CYCLING APPARATUS

Gary Johnston, P.O. Box 183, Cowarts, Ala. 36321

Continuation-in-part of Ser. No. 710,541, May 6, 1991, Pat. No. 5,292,294, and a continuation-in-part of Ser. No. 748,034, Aug. 2, 1991, abandoned. This application Oct. 5, 1993, Ser. No. 131,396

Int. Cl.[5] A63B *23/05*

U.S. Cl. 482—57 **9 Claims**



1. An adjustable cycling apparatus which comprises;

a structural frame unit comprising a rigid frame, an adjustable seat mounted on said rigid frame, and an assembly support; and

VOL 1165 ISS 5 AG 30 1994 UMI

a pedal mechanism assembly unit having a pedal assembly and having an attachment means wherein said assembly unit is slidably and pivotally coupled to said assembly support of said structural frame unit such that the pedal assembly of said pedal mechanism assembly unit can be positioned at various horizontal, angled, and vertical levels, with at least a portion of said pedal mechanism assembly unit being positioned within said structural frame unit during normal operation of said apparatus;

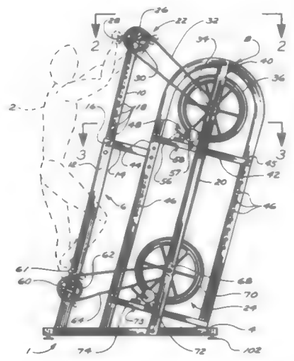
whereby said apparatus may be used to participate in defined lower body exercise cycling routines while in a seated position.

5,342,262

VERTICALLY-DISPOSED EXERCISE MACHINE

Mark D. Hansen, 1524 E. Hampton St., Tucson, Ariz. 85719

Filed Sep. 13, 1993, Ser. No. 122,003
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—62 15 Claims



1. An exercise machine adapted for use by a person who is in a standing position, said machine comprising:

a base;

a frame that extends upwardly from said base;

an adjustable length crankset support means attached to said base;

a first crankset rotatably secured to a bottom portion of said crankset support means;

first and second pedals that extend outwardly from said first crankset and are connected to a crankshaft of said crankset;

a second crankset rotatably secured to an upper portion of said crankset support means and located above the first crankset;

first and second handles that extend outwardly from said second crankset and are connected to a crankshaft of said second crankset;

a first flywheel rotatably attached to said frame, said flywheel being spaced from said first crankset and operatively connected to said first crankset by a connector means;

a second flywheel rotatably attached to said frame and by a first attachment means, said flywheel being spaced from said second crankset and operatively connected to said second crankset by a connector means;

said first attachment means having an adjustment means for allowing said second flywheel to be vertically adjustable on said frame;

a first adjustable resistance means operatively connected to the frame and capable of acting on the first flywheel to change the facility with which said flywheel may be rotated; and

a second adjustable resistance means operatively connected to the frame, said second adjustable resistance means being capable of acting on the second flywheel to change the facility with which said flywheel may be rotated.

5,342,263

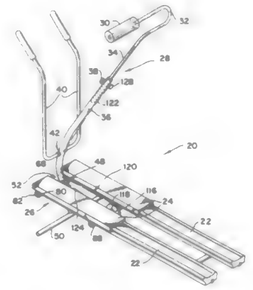
Patent Not Issued For This Number

5,342,264

AEROBIC EXERCISE DEVICE

Joel D. Gordon, 3311 Woodvalley Dr., Baltimore, Md. 21208

Filed Feb. 23, 1993, Ser. No. 21,064
Int. Cl.[5] A63B *69/18*
U.S. Cl. 482—70 19 Claims



1. An aerobic exercise device comprising:

a pair of generally parallel tracks;

a platform mounted on each of the tracks, each platform being independently reciprocable along the track to which the platform is mounted, each of the platforms having a home position on the tracks, the platforms being moved in a first direction by a user away from the home positions, the platforms being engaged and disengaged by the user during operation of the aerobic exercise device for orbital type user foot motion; and

elastic means for independently moving each of the platforms in at least a second direction when the platform is disengaged by the user, the second direction being opposite the first direction whereby the platform is momentarily returned beyond the home position after the user moves the platform and then disengages the platform.

5,342,265

MOGOL SKIING SIMULATING EXERCISE APPARATUS WITH VARIABLE RESISTANCE

Kevin Creelman, 104 Center St. Suite 100, Kodiak, Ak. 99615, and Terry G. Jacobs, NE. 18911 N. Shore Rd., Tahuya, Wash. 98588

Filed Feb. 23, 1993, Ser. No. 21,138
Int. Cl.[5] A63B *69/18*
U.S. Cl. 482—71 10 Claims

1. An exercise apparatus comprising:

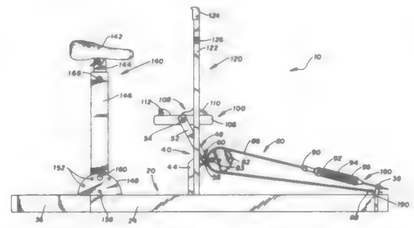
a base;

a crank assembly rotatably supported by said base, said crank assembly including a plurality of unidirectional bearings joining said crank assembly to said base, said unidirectional bearings limiting a rotation of said crank assembly to a single direction;

a platform, rotatably engaged with said crank assembly, for supporting a user;

a biasing assembly, operatively coupled to said crank assembly and said base, for applying a rotational force to said crank assembly, said rotational force being variable in accordance with a position of said crank assembly;

said biasing assembly including:



a spring for producing the rotational force being applied to said crank assembly;

a sprocket for applying the rotational force to said crank assembly, said sprocket rotatably engaging said crank assembly; and

a chain for delivering the rotational force from said spring to said sprocket, said chain having a first segment engaging said sprocket and a second segment connected to said base by said spring; and

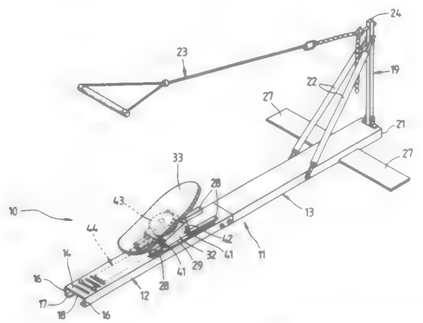
a handle for a user to grasp, said handle being secured to said base.

5,342,266

SLALOM SKI TRAINER

Robert M. Dailey, Birmingham, Ala., assignor to Dailey Sports, Inc., Birmingham, Ala.

Filed Apr. 5, 1993, Ser. No. 42,625
Int. Cl.[5] A63B *69/18, 22/14*
U.S. Cl. 482—71 22 Claims



1. A water-ski training and exercise apparatus for simulating the isometric phases of slalom water-skiing and for toning certain muscle groups associated with engaging in such activity, said apparatus comprising:

(a) a generally horizontally disposed base member having a ski board mounted thereto;

(b) pitch varying means, connected between said base member and said ski board, for varying the angular pitch of said board defining an inclined plane for each angular pitch achieved;

(c) rotational attachment means, connected between said pitch varying means and said ski board, for rotatably mounting said ski board to said pitch varying means for rotation about an axis normal to said defined inclined plant; and,

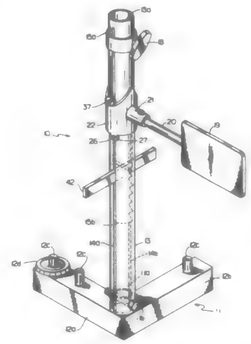
(d) sliding means, connected to said base member, for slidingly mounting said ski board to said base member.

5,342,267

STRIKING DEVICE

Ronald L. Adams, 809 Cheryl Sue Dr., and James E. Blomquist, 840 Christy Dr., both of Riverton, Wyo. 82501

Filed Jul. 19, 1993, Ser. No. 93,475
Int. Cl.[5] A63B *64/34*
U.S. Cl. 482—83 24 Claims



1. A striking device useful for training, comprising:

(a) base means;

(c) main post means attached at one end thereof to said base means and extending generally in an upward direction therefrom;

(c) insert post means adapted for insertion in said main post means, said insert post means able to be disposed within said main post means along a longitudinal axis thereof;

(d) means to secure said insert post means where desired along said longitudinal axis;

(e) arm housing means adapted to fit over said main post means, said arm housing means having cam surface means attached at a first housing end and having bearing surface means at a second housing end thereof;

(f) said cam surface means having two peaks and two valleys with each of said two peaks being disposed at opposite sides of said first housing end and each of said two valleys being disposed between each of said two peaks and at opposite sides thereof;

(g) arm means attached to said arm housing means and extending a predetermined distance therefrom;

(h) striking surface means attached to said arm means at an end of said arm means opposite to where said arm means is attached to said arm housing means;

(i) cam follower means having a first cam follower means end and a second cam follower means end, said cam follower means including means to maintain cooperation of said cam follower means with said insert post means wherein said means to maintain cooperation of said cam follower means with said insert post means includes bearing means attached to said cam follower means and said insert post means includes insert post slot means, said insert post slot means being adapted for cooperation with said bearing means;

(j) spring means attachable to said insert post means at one end of said spring means and attached to said cam follower means at the remaining end of said spring means,

VOL 1165 ISS 5 AG 30 1994 UMI

said spring means applying a force sufficient to maintain said cam follower means in a position of cooperation with said cam surface means and to cause said cam follower means to apply a force sufficient to rotate said arm housing means to a first striking position wherein said first cam follower means end is disposed substantially in a position of cooperation with one of said two valleys and said second cam follower means end is disposed substantially in a position of cooperation with a remainder of said two valleys; and

(k) support axle means passing through a pair of holes provided in said insert post means, said support axle means providing means for maintaining said arm housing means in a relative position of cooperation with respect to said insert post means;

whereby when said striking surface means is struck by a force that is insufficient to rotate said arm means in excess of ninety degrees with respect to said main post means, said cam follower means is able to apply a force to said cam surface means sufficient to rotate said arm housing means back to said first striking position, and when said striking surface means is struck by a force that is sufficient to rotate said arm means in excess of ninety degrees with respect to sad main post means, said cam follower means is able to apply a force to said cam surface means sufficient to rotate said arm housing means to a second striking position wherein said first cam follower means end is disposed substantially in a position of cooperation with said remainder of said two valleys and said second cam follower means end is disposed substantially in a position of cooperating with said one of said two valleys, and said arm housing means is maintained in the same position with respect to said longitudinal length of said main post means when said arm means is rotated from said first striking position to said second striking position.

5,342,268

EXERCISE DEVICES

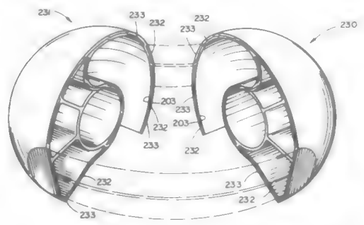
Scott Caruthers, Millersville, Md., assignor to DAR Products Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 470,616, Jan. 26, 1990, Pat. No. 5,139,472, which is a continuation-in-part of Ser. No. 241,297, Sep. 9, 1988, Pat. No. 4,896,880, which is a continuation-in-part of Ser. No. 94,794, Sep. 14, 1987, Pat. No. 4,813,669. This application May 29, 1992, Ser. No. 890,943

The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.

Int. Cl.[5] A63B *21/075*

U.S. Cl. 482—108 **11 Claims**



1. An exercise device comprised of a housing including a pair of complementary diametrically-opposed housing portions, the housing having a weight means disposed therein, and further having an opening formed therein, the opening being bounded by an outer wall having a concave portion and an inner wall having a convex portion, whereby the hand of the user may be inserted through the opening in the housing to be received in the exercise device with the user's hand disposed between the inner and outer walls, such that at least the fingers of the user's hand rest substantially on the convex portion of the outer wall, whereby a forceful grip is not required by the user during use of the device, so that the necessity for employing the user's conjunctive adjoining muscles is substantially avoided, and whereby the user's targeted muscle is substantially strengthened, the inner wall and the outer wall of the housing portions having respective peripheral edges along which the housing portions mate, the inner wall of each housing portion having a plurality of ribs formed thereon, so that each of the ribs on one of the housing portions is positioned opposite a respective rib on the other of the housing portions, a plurality of the ribs formed on the one of the housing portions having a respective nipple formed thereon extending towards the other of the housing portions, and a plurality of the ribs formed on the other of the housing portions having a respective hole formed therein, whereby when the respective peripheral edges of the inner walls of the housing mate, the nipples formed on the ribs of the one of the housing portions are received in the respective holes formed in the ribs of the other of the housing portions, so that the diametrically-opposed housing portions are keyed to one another.

5,342,269

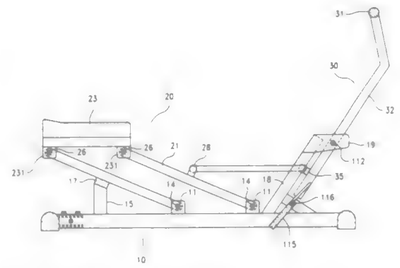
ARM OSCILLATING EXERCISER

Richard Huang, and Lien F. Lin, both of P.O. Box 82-144, Taiwan, Taiwan

Filed Jan. 4, 1994, Ser. No. 177,753

Int. Cl.[5] A63B *21/04*

U.S. Cl. 482—95 **2 Claims**



1. An arm oscillating exerciser comprising:

a base provided with a first pair of lugs and a second pair of lugs;

a pole fixedly mounted on said base and having an inclined top;

a main support fixedly mounted on said base and formed with a fork-like member at the top end and a slot at the intermediate portion;

an oscillating rod pivotally connected with the fork-like member of said main support;

an elongated axle inserted through the lower portion of said main support and provided with a pedal at both ends;

a front supporting rod pivotally connected with a seat at one end and pivotally connected with the first pair of lugs of said base;

a rear supporting rod pivotally connected with said seat at one end and pivotally connected with the second pair of lugs of said base; and

a linking rod pivotally connected with said front supporting rod at one end and pivotally connected with said oscillating rod at another end.

5,342,270

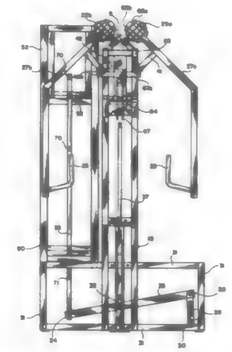
EXERCISE MACHINE FOR UPPER TORSO

Arthur A. Jones, 1155 NE. 77th St., Ocala, Fla. 32670

Continuation-in-part of Ser. No. 947,284, Sep. 15, 1992, and a continuation-in-part of Ser. No. 145, Jan. 4, 1993, Pat. No. 5,304,107. This application Feb. 22, 1993, Ser. No. 20,807

Int. Cl.[5] A63B *21/062*

U.S. Cl. 482—98 **21 Claims**



1. A machine for exercising the human body comprising in combination, a movement arm to be moved in generally forward and rearward directions about an axis upon exercising muscles of the body, said axis extending at an acute angle to both a horizontal and vertical plane, said vertical plane extending in said forward and rearward directions, a weight connectable to the movement arm to oppose movement of the movement arm about said axis in one direction, and drive transmission means between said weight and said movement arm including a lever located below and pivotally connected to the weight to lift the weight when the movement arm moves in said one direction, and a link pivotally connected to said lever and pivotally mounted to a fixed support to rotate relative to the fixed support to allow the lever to undergo translatory movement relative to the fixed support and a drive member connected to the movement arm and to the lever at a location between the weight and the link.

5,342,271

SOUND ABATING STACK PLATE SYSTEMS

Terry L. Long, 1722 Sturbridge Dr., Sewickley, Pa. 15143

Filed Dec. 13, 1993, Ser. No. 165,177

Int. Cl.[5] A63B *21/062*

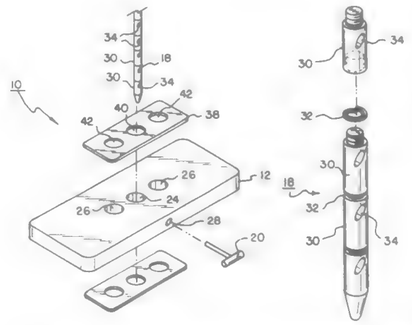
U.S. Cl. 482—98 **6 Claims**

1. A system for abating noise associated with the use of weight stack plates comprising:

a stack of plates for a weight lifting machine, each plate having a central vertical hole therethrough and supplemental guide holds therethrough and a horizontal hole from one edge to the center vertical hole perpendicular to the central vertical hole;

elastomeric material operatively associated with at least the upper and lower surfaces of the plates of the stack to abate noise normally associated with the movement of the plates; and

a pin positioned vertically through the center holes of the plates of the stack, the pin being formed of a plurality of axially aligned segments coupleable one to another, along a common axis with spacers associated with each segment corresponding to the thickness of the elastomeric material between adjacent plates, the pin being formed to have a



horizontal hole in each segment aligned with the horizontal holes of the plates.

5,342,272

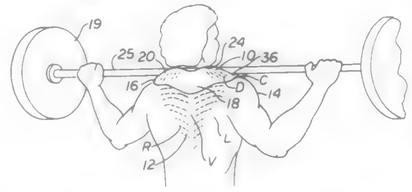
LOAD DISTRIBUTION DEVICE FOR WEIGHT LIFTING

Mark D. Pittroff, 4081 Creek Rd., Cincinnati, Ohio 45241

Filed Jan. 25, 1993, Ser. No. 8,647

Int. Cl.[5] A63B *21/065*

U.S. Cl. 482—106 **7 Claims**



1. A weight lifting device to help support a barbell used by a weight lifter by the barbell's bar, said device comprising:

a laterally extending one-piece body having a top portion and made of a hard material,

a bar support means for supporting the bar, said bar support means attached to said body,

a weight distribution means including a lobe centrally disposed and longitudinally extending downward from a back of said body, said lobe has an inwardly convex surface adapted to conform to the contour of the valley formed by the left and right trapezius upper back muscles of the user, and curved projections depending downwardly and outwardly from said top portion, said projections are adapted to straddle the user's neck and are sufficiently concavely curved inward from the front to back so as not to engage the deltoid muscles during exercising.

5,342,273

ISOKINETIC EXERCISE HOOP

Mathew E. Plendl, 6242 W. 6th St., Los Angeles, Calif. 90048, and Vita M. Lucia, 503 N. Hillcrest Rd., Beverly Hills, Calif. 90210

Filed Feb. 17, 1994, Ser. No. 197,925

Int. Cl.[5] A63B *21/02*

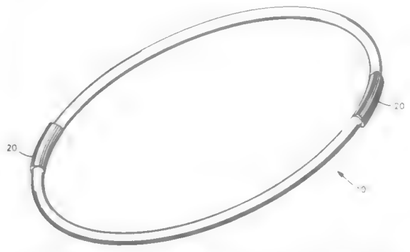
U.S. Cl. 482—126 **9 Claims**

1. A hoop exercise and strength building device usable by a person comprising:

a hoop naturally conforming to a circular shape, of a diame-

VOL 1165 ISS 5 AG 30 1994 UMI

ter defined as the approximate distance measured between the elbows of the person's outstretched colinearly positioned arms, the hoop being of an elastic, resilient material, of a nature such that when a force on the hoop causes the hoop to assume a non-circular shape is removed, the hoop will immediately resume the circular shape; and a pair of handles attached to the hoop at diametrically opposing positions, each handle for grasping with one of the



person's hands in preparation for exercising with the device;

the hoop having a spring constant in diametric compression of approximately 0.4 to 1.6 pounds per inch and a spring constant in diametric expansion of approximately 1.3 to 3.7 pounds per inch whereby the device provides appropriate resistance for exercising muscle groups of the person over a range of motion.

5,342,274

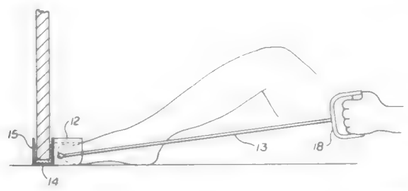
MULTI-PURPOSE EXERCISE DEVICE

Richard E. Hunker, Westwood Apartments 429 190 16, Frankfort, Ky. 40604

Filed Dec. 7, 1992, Ser. No. 986,447

Int. Cl.[5] A63B *23/02*

U.S. Cl. 482—140 **9 Claims**



1. An exercise device for use by an individual to strengthen and condition different muscles in a variety of exercises, said device comprising:

(a) a base for ready positioning on a door in a manner which provides a secure anchor for use of the exercise device without structurally damaging the door, said base having a U-shape channel dimensioned to slide along a free edge of the door;

(b) two arch-shaped receptacle members extending from the base, each said receptacle member having three holes near an outside edge thereof through which a cord can pass and wherein said receptacle member is capable of receiving a front portion of the individual's foot to restrain it during selected exercises;

(c) two plastic plates, each said plastic plate being positioned on an inside surface of each receptacle member, wherein each said plastic plate has a set of holes which are in alignment with the holes in the receptacle member such that the plate serves to protect the cord from abrasive ware and the holes are used to receive the cord end in a looping manner to temporarily hold the cord end during use of the exercise device; and

(d) two flexible cords, each said cord being removably attached to each arch-shaped receptacle member, wherein each said cord has a handle at a terminus for gripping by the individual and serving as an aid in performing an exercise.

5,342,275

TOOL BREAKAGE DETECTING METHOD

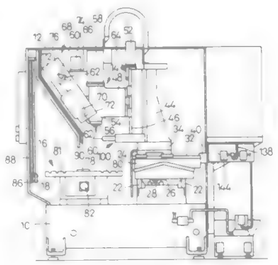
Shugo Yanase, Nagoya, and Haruki Baba, Iwakura, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Jepan

Filed Mar. 22, 1993, Ser. No. 35,059

Claims priority, application Japan, May 2, 1992, 4-140073

Int. Cl.[5] B23Q *3/157*

U.S. Cl. 483—1 **16 Claims**



1. A tool breakage detecting method in a machine tool including a rotary spindle having one end for holding a tool, a tool magazine for accommodating a plurality of different types of tools, and a moving device for moving said spindle along a moving path including at least an axial moving path parallel to a rotation axis of said spindle to a tool changing position where said tool held by said spindle is changed with one of said tools accommodated in said tool magazine, said tool breakage detecting method comprising the steps of:

locating a breakage detecting device having a sensing element movable in a direction intersecting said axial moving path under the condition where a position of said breakage detecting device in a direction parallel to said axial moving path is unchanged;

stopping said spindle in the course of movement of said spindle along said axial moving path for changing of said tools, at a position where a tip portion of said tool held by said spindle is to be located at an intersection between a locus of movement of said sensing element and said axial moving path if said tool held by said spindle is not broken;

moving said sensing element from a position remote from said axial moving path to a position where said sensing element is to come into contact with said tip portion of said tool if said tool held by said spindle is not broken; and

judging that said tool held by said spindle is broken if said sensing element does not come into contact with said tip portion of said tool.

5,342,276

TURRET PUNCH PRESS WITH A DIE EXCHANGING DEVICE

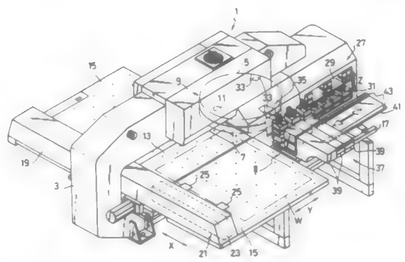
Takayuki Fujiwara, Kanagawa, and Shigeru Ito, Tokyo, both of Japan, assignors to Amada Company, Limited, Kanagawa, Japan

Filed Apr. 26, 1991, Ser. No. 692,174

Claims priority, application Japan, May 1, 1990, 2-111799; Jul. 13, 1990, 2-183986; Aug. 3, 1990, 2-205233; Aug. 9, 1990, 2-209118

Int. Cl.[5] B23Q *3/155*

U.S. Cl. 483—29 **9 Claims**



1. A turret punch press comprising:

a turret having a plurality of die set attaching areas adapted to attachably and removably support die sets;

a die set storage section positioned close to said turret for storing a plurality of die sets;

a plurality of carriages for supporting said plurality of die sets, mounted on a guide rail provided in the turret punch press, and means for freely moving and firmly supporting respective said plurality of die sets on said guide rail; and

an automatic die set exchanging device for exchanging die sets, wherein said automatic die set exchanging device comprises a plurality of die set carrying sections which are adapted to move between a die set exchanging position of said turret and said die set storage section in order to exchange die sets.

5,342,277

ROLL WITH SEPARATE SHELL AND ROLL CORE

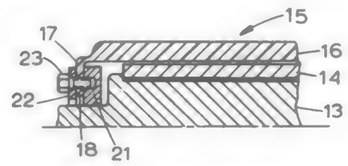
Karl Steiner, Herbrechtingen, and Uwe Matuschczyk, Geislingen, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Nov. 9, 1992, Ser. No. 973,705

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1991, 4136758

Int. Cl.[5] B21B *13/02*

U.S. Cl. 492—56 **18 Claims**



1. A roll comprising an axially extending roll core and an axially extending roll shell, said roll shell having axial ends and being formed of an elastomeric material and separated from the roll core, wherein the thickness of said roll shell is substantially reduced at the axial ends of the roll shell or at annular transition regions spaced from and near said axial ends of the roll shell, the substantial reduction in thickness provided in said roll shell being at least 2 mm.

5,342,278

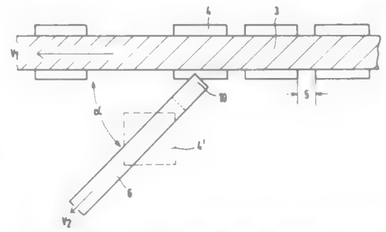
APPARATUS FOR THE ON-LINE CONTROL OF FOLDING BOX BLANKS

Fritz Kurandt, Berlin, Fed. Rep. of Germany, assignor to System Kurandt GmbH, Berlin, Fed. Rep. of Germany

Filed Feb. 4, 1993, Ser. No. 13,645

Int. Cl.[5] B31B *1/94, 3/62;* **B65H** *29/62*

U.S. Cl. 493—16 **15 Claims**



1. A device for the on-line control and automatic ejection of faulty folding box blanks moving in a linear direction at a speed V_1 along a conveyor plane on a linear conveyor system by at least one ejector positioned laterally of the linear conveyor system and engageable with the faulty blank to be ejected in order to remove an undesired blank from the linear conveyor system comprising:

a linear conveyor system for moving the blanks in a linear direction alone a conveying plane at a speed V_1; a linear ejector (**6**) conveyor positioned substantially in the conveying plane and at an acute angle x to the conveying direction and moving at a speed V_2; and wherein the speed V_1 of the blank on the conveyor and the speed V_2 of the ejector conveyor are substantially related to the acute angle $\propto$ by the relationship:

$$V_1 = V_2 \cos \propto$$

So as to provide that the blanks to be ejected continue to have a speed V_1 in the linear direction as the blanks are ejected.

5,342,279

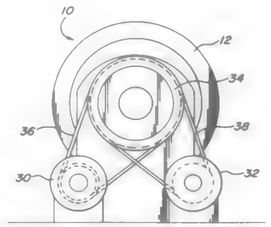
DECANTER CENTRIFUGE HAVING DUAL MOTOR DRIVE

Joseph L. Cooperstein, Philadelphia, Pa., assignor to Alfa Laval Separation Inc., Warminster, Pa.

Filed Aug. 18, 1992, Ser. No. 931,758

Int. Cl.[5] B04B *9/10*

U.S. Cl. 494—9 **10 Claims**



1. A decanter centrifuge comprising: a bowl mounted for rotation about a central longitudinal axis, means for rotating the bowl including a first and second motor which combine to

VOL 1165 ISS 5 AG 30 1994 UMI

rotate the bowl during a least a portion of the centrifuge operation, a conveyor coaxially mounted within the bowl, means for rotating the conveyor at a differential speed with respect to the bowl, and control means for initiating the operation of the first and second motor during initial start up of the bowl and for disconnecting the second motor during operation upon the bowl reaching desired operational speed.

5,342,280

SYSTEM FOR MANAGEMENT OF BODY ROTATION OF CENTRIFUGE

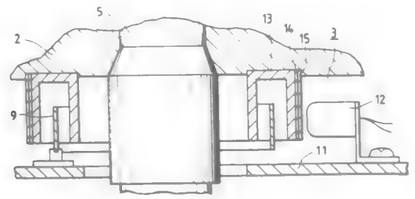
Yoshitaka Niinai; Akio Nagata; Norihisa Sagawa, all of Katsuta; Shigeru Shinohara, Mito; Eiji Nakayama, Katsuta; Mitsutoshi Yotsuyanagi, Katsuta; Hiroshi Hayasaka, Katsuta, and Kazuyoshi Tokunaga, Katsuta, all of Japan, assignors to Hitachi Koki Company Limited, Tokyo, Japan

Continuation of Ser. No. 623,852, Dec. 7, 1990, abandoned. This application Aug. 17, 1993, Ser. No. 107,428

Claims priority, application Japan, Dec. 8, 1989, 1-319371; Sep. 29, 1990, 2-262876; Oct. 12, 1990, 2-107000[U]; Oct. 12, 1990, 2-107002[U]; Oct. 12, 1990, 2-107003[U]; Oct. 26, 1990, 2-290520; Oct. 26, 1990, 2-290521; Oct. 26, 1990, 2-290522

Int. Cl.[5] B04B *15/00*

U.S. Cl. 494—10 **12 Claims**



1. A management system for use in a centrifuge equipped with a detachable rotor which is rotatable so as to separate density-different samples by a centrifugal force due to the rotation, said management system comprising:

detection means for monitoring the rotation of said rotor so as to detect rotational operating conditions of said rotor; and

data storing means, provided on said rotor, for storing data indicative of said rotational operating conditions, said data storing means being arranged so that said data is read out and altered based on said detected rotational operating conditions, and the altered data written into said data storing means.

5,342,281

APPARATUS AND METHOD FOR WET-MECHANICAL PROCESSING OF SOLIDS

Karl-Heinz Unkelbach, Cologne; Gunther Arhelger, Roesrath, and Rolf Buettner, Cologne, all of Fed. Rep. of Germany, assignors to Kloeckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Jan. 29, 1993, Ser. No. 11,287

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 4202778; Mar. 13, 1992, 4208104

Int. Cl.[5] B04B *1/20*

U.S. Cl. 494—53 **12 Claims**

1. An apparatus for the wet-mechanical separation of solids within a parting liquid into floats and sinks according to their density comprising:

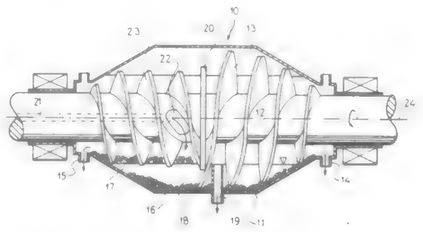
a container provided with at least one opening for the admission of said solids to be separated and at least one separate opening for the discharge of said sinks, at least one separate opening for the discharge of said floats and at least one separate opening for the discharge of said parting liquid;

means for imparting a centrifugal force about an axis on said solids and parting fluid within said container;

a discharge means for separating said solids arranged in said container comprising a screw conveyor with a set of helices for engaging said floats and another set of helices for engaging said sinks;

a diaphragm plate arranged axially between the admission opening for said solids to be separated and said discharge opening for said sinks;

said screw conveyor being divided such by said diaphragm plate that one part of said screw conveyor conveys said sinks to said sinks discharge opening with its helices and another



part of said screw conveyor conveys said floats to said floats discharge opening with its helices;

said discharge opening for said parting liquid arranged axially between said diaphragm plate and said discharge opening for said sinks;

a radial dimension of an outside edge of said diaphragm plate from an axis of said container being greater than a radial spacing of said discharge opening for said floats from said axis of said container; and

a radial dimension of an outside edge of said helices for engaging said sinks being greater than a radial dimension of an outside edge of said helices for engaging said floats.

5,342,282

CENTRIFUGE INCLUDING A ROTOR DRIVESHAFT WITH AN ELASTIC DAMPING SEAL AND CORRESPONDING SHAFT

Jean-Claude Letourneur, Pornichet, France, assignor to Jouan, Saint Nazaire, France

Filed Jul. 23, 1993, Ser. No. 95,228

Claims priority, application France, Aug. 4, 1992, 92 09667

Int. Cl.[5] B04B *9/04*

U.S. Cl. 494—82 **10 Claims**

1. A centrifuge, comprising:

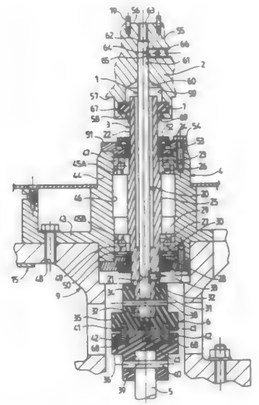
a rotor driveshaft comprising a flexible shaft surrounded by a sheath, said flexible shaft and said sheath both being rotationally secured at a first end and being rotatable about an axis, a second end of said flexible shaft extending beyond a second end of said sheath;

a head adapted to receive a rotor of the centrifuge, said head being rotationally secured to said second end of said flexible shaft;

means for damping and limiting a radial displacement of said flexible shaft with respect to said sheath, said damping and limiting means comprising an annular seal made from an elastic material, said annular seal being axially arranged about said flexible shaft and said sheath at a same level as and close to said head; and

a skirt formed on said head and surrounding said second end of said sheath, said skirt having an internal annular groove for receiving said damping and limiting means, said skirt including a lower transverse wall limiting said annular groove, said lower transverse wall being pierced with a bore which radially limits an offset of the flexible shaft with respect to the sheath, said damping and limiting

means being arranged between said skirt and said sheath, said annular seal having a lip extending axially with re-



spect to the shaft into said bore and arranged radially between said skirt and said sheath.

5,342,283

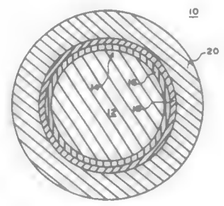
ENDOCURIETHERAPY

Roger R. Good, 302 Forest Dr., Bellevue, Nebr. 68005

Filed Aug. 13, 1990, Ser. No. 565,714

Int. Cl.[5] A61N *5/00*

U.S. Cl. 600—8 **55 Claims**



1. A one-piece substantially spherical seamless multilayered radioactive seed, comprising:

a microsphere including a central sphere and a layer section with no substantial voids between the central sphere and the layer section;

said layer section including at least two layers concentric with the central sphere; said layer section being in intimate contact with the outer surface of the central sphere;

a first layer of said at least two layers being an outer non-radioactive layer;

at least one of said central sphere and layer section including radioactive material, wherein said microsphere has a therapeutic amount of radioactivity; and

said microsphere having an outside diameter no greater than 1 millimeter.

5,342,284

SOFT BRUSH GUM STIMULATOR

J. Robert Lemon, Charlotte; William T. Evans, and Robert E. Christian, both of Batesville, all of Ark., assignors to Professional Dental Technologies, Inc., Batesville, Ark.

Continuation of Ser. No. 854,329, Mar. 19, 1992, Pat. No. 5,205,302, which is a division of Ser. No. 585,479, Sep. 19, 1990, Pat. No. 5,109,563. This application Feb. 8, 1993, Ser. No. 14,790

Int. Cl.[5] A61H *7/00;* **A61C** *3/00*

U.S. Cl. 601—141 **5 Claims**



1. A gum stimulator comprising a handle, a removable non-rotational brush disposed on an end of the handle, the brush having a thin flat bottom plate and having a high density of from about 1000 to 5000 soft fibers for gum stimulation, extending upwardly from the bottom plate and being unsupported around the sides thereof, and means for attaching the brush to the handle, the attachment means comprising a immovable shaft permanently embedded in either one of the handle or brush and a shaped mating receptacle formed in the other of the brush or handle for accepting the shaft therein with a socket fit, the handle having a planar gripping portion adjacent to the end containing the immovable non-rotatable brush, and having a first angle portion and a second angle portion disposed therebetween such that the end containing the non-rotational brush is disposed at an angle relative to the planar gripping portion.

5,342,285

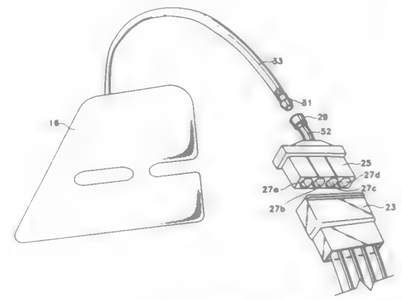
ADAPTER FOR DEVICES FOR APPLYING COMPRESSIVE PRESSURE TO THE LIMBS

John F. Dye, Bridgewater, Mass., assignor to The Kendall Company, Mansfield, Mass.

Filed Jun. 19, 1992, Ser. No. 901,044

Int. Cl.[5] A61H *1/00*

U.S. Cl. 601—151 **4 Claims**



1. A device for providing pressurized fluid for delivery to an elongated compression sleeve for applying compressive pressure to the leg through a single conduit in fluid communication with a single chamber within the sleeve, the device comprising, in combination,

a source of pressurized fluid, the source having at least three outlet ports for emitting pressurized fluid to multiple conduits, each of which conduits is in fluid communica-

VOL 1165 ISS 5 AG 30 1994 UMI

tion with a separate compression chamber within the sleeve;

an adapter for converting the source to one for use with sleeves having a single conduit for receiving pressurized fluid, the adapter comprising a housing having a trailing end for receiving pressurized fluid and a leding end for emitting the pressurized fluid to the single conduit, the trailing end of the housing having at least three ports each of which is adapted to mate in fluid communication with one of the outlet ports in the source of pressurized fluid, means within the housing for receiving fluid emitted through the ports at the trailing end of the housing, a lumen having a trailing end and a leading end, the trailing end of the lumen being in fluid communication with the means within the housing for receiving pressurized fluid, the leading end of the lumen extending through the leading end of the housing and having an opening through which pressurized fluid emanating from the source may be received by a single conduit system to the sleeve;

an elongated compression sleeve for applying compressive pressure to a patient's leg, the sleeve having a single conduit for delivering pressurized fluid to the sleeve, the conduit being in fluid communication with the leading end of the lumen extending through the housing; and

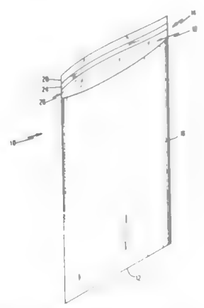
means for releasably securing the adapter in fluid communication with the source with the ports in the trailing end of the housing in fluid communication with outlet ports in the source.

5,342,286

WATERPROOF COVERING

Joseph L. Kelly, Weems, Va., and Robert S. Jenkins, Boston, Mass., assignors to Kellcover, Inc., Charlestown, Mass.

Filed Jun. 1, 1992, Ser. No. 171,121
Int. Cl.[5] A61F *13/00*
U.S. Cl. 602—3 **8 Claims**



1. A waterproof covering for an extremity comprising:

a sack-like member of water impervious material having a front panel and a back panel, said front and back panel interconnected to form a closed bottom, an open top and opposing edges, said front and back panels being upstanding to define said open top for receiving said extremity; said back panel including a lip as an integral part thereof, said lip extending upwardly from and beyond the open top such that free opposing ends of said lip are aligned with respective said opposing edges of said sack-like member so that said lip is between said opposing edges; an adhesive strip extending laterally across the length of said lip; removable means covering said strip for protecting said adhesive; and

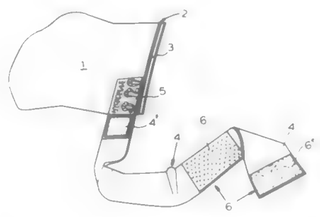
a perforation line formed in said lip and having a length less than the length of said lip to form an integral tie member having a free end as one of said free opposing ends of said lip and a securing tie member segment integral with said tie member and said back panel, said adhesive strip extending the length of said tie member and securing segment.

5,342,287

WATERTIGHT WOUND PROTECTOR

Justin Jernoia, Weststrasse 57, 5600 Wuppertal 1, Fed. Rep. of Germany

Filed Apr. 28, 1993, Ser. No. 54,858
Claims priority, application Fed. Rep. of Germany, May 2, 1992, 9205982; Sep. 16, 1992, 9212449
Int. Cl.[5] A61F *13/00*
U.S. Cl. 602—3 **10 Claims**



1. A protector for a wound on a body part, the protector comprising:

a pouch of a relatively thick waterproof material having at least one open end having an edge and a predetermined width at the open end, whereby the body part with the wound can be inserted into the pouch with the body part extending through the open end and past the edge, the edge of the pouch being integrally formed with an annular lip of a relatively thin waterproof material;

an elastic strap having

an inner end permanently attached to the pouch adjacent the edge,

an outer end,

a length equal to at least twice the width of the open end, and

a pair of opposite faces; and

a pair of closure parts attached to respective faces of the strap, spaced apart along the strap, and capable of being releasably attached to each other, whereby the strap can be wound around the lip and edge to press the lip and the edge against the body part and can be secured together by means of the closure parts to maintain the edge and lip pressed against the body part.

5,342,288

TRACTION SPLINT

Roger Lee, 9533 Sunnyside Ave., Ben Lomond, Calif. 95005, and Paul Martin, 38 Puffin Ct., Campbell, Calif. 95008

Filed Aug. 3, 1992, Ser. No. 924,193
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—5 **5 Claims**

1. A traction splint comprising:

A. a frame having parallel side members, each of said side members comprising:

(a) a tube,

(b) a rod telescopically received by said tube for adjusting the extent of said rod, and

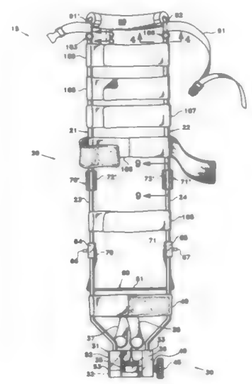
(c) a releasable locking device receiving said rod and said tube for releasably retaining the adjusted extent of said rod;

B. an ischial pad disposed generally transversely of said side members, said ischial pad having oppositely directed ends; and

C. pivotal means interconnecting each end of said ischial pad, said pivotal means interconnecting said ends of said ischial pad to said side members, respectively, for angularly positioning said ischial pad relative to said frame, said pivotal mean selectively limiting the angular positioning of said ischial pad relative to said frame,

D. each of said tubes having one end adjacent said ischial pad, said pivotal means joining the ends of said ischial pad to adjacent ends of said tubes, respectively, for adjusting simultaneously the extent of one or more of said rods and the angle of said ischial pad relative to said frame while at least one of said releasable locking devices enables the extent of one or more of said rods to be adjusted, each of said tubes having an axis and each of said pivotal means comprising:

(a) a tubular pivotal member attached to one end of said



ischial pad, said tubular pivotal member having an axis disposed at right angles to the axis of the tube adjacent said one end of said ischial pad, and

(b) a tubular member fixed to one end of said tube adjacent said one end of said tubular pivotal member, said tubular member having an axis coextensive with the axis of said tubular pivotal member, said tubular pivotal member and said adjacent tubular member having perimetric confronting ends,

(c) said tubular pivotal member and said adjacent tubular member at the perimetric confronting ends thereof being formed with interposed ridges and grooves for selectively limiting the angular positioning of the ischial pad relative to said frame.

5,342,289

HYPEREXTENSION ORTHESIS WITH MOVABLE FRONT PAD

Kurt Munny, Hauptstrasse 239, D-5060 Bergisch Gladbach 2, Fed. Rep. of Germany

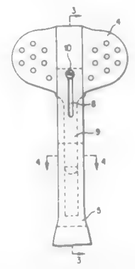
PCT No. PCT/EP90/01428, § 371 Date Jun. 10, 1992, § 102(e) Date Jun. 10, 1992, PCT Pub. No. WO91/03216, PCT Pub. Date Mar. 21, 1991
PCT Filed Aug. 27, 1990, Ser. No. 829,064
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1989, 3928628
Int. Cl.[5] A61F *5/00, 5/24, 5/28*
U.S. Cl. 602—19 **7 Claims**

1. A hyperextension orthesis comprising:

a sternal pad;

a base plate, an abdominal rod extending downwards therefrom with a symphysis pad, branches extending to both sides with locking elements, and an upwardly extending chest rod at whose end an oblong hole is provided for engagement of a screw for securing the sternal pad, said hyperextension orthesis further including a slide sleeve formed on said chest rod;

wherein the sternal pad has a groove for receiving the chest rod and an elongate tongue extending out from a lower end of the sternal pad, for movable engagement in said



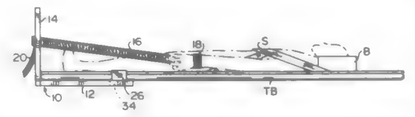
slide sleeve formed on the chest rod at a distance from the oblong hole.

5,342,290

APPLIANCE FOR IMPROVED RADIOGRAPHIC VISUALIZATION OF THE CERVICAL SPINE

Stephen C. Schuellein, 6904 Manatee Ave. West Apt. 14A, Bradenton, Fla. 34209

Filed Apr. 2, 1993, Ser. No. 42,280
Int. Cl.[5] A61H *1/02*
U.S. Cl. 602—36 **7 Claims**



1. An appliance for facilitating the visualization in lateral projection for radiographic exposure of the complete cervical spine region of a traumatized patient resting on an elongated portable carrier, which comprises a traction board comprising a planar generally rigid base plate adapted to fit in operative relation beneath an overlying distal end portion of the portable carrier with the pedal extremities of such patient in superposed relation thereto, a traction plate rigidly fixed along a lower edge thereof to an end edge of said base plate in upstanding relation to said base plate, said traction plate projection generally perpendicularly above the base plate to terminate in an upper edge spaced from the plane of said base plate for generally abutting contact with an end of the portable carrier, said traction plate having a guide opening therein situated adjacent each of two opposite side edges thereof intermediate its lower and upper edges thereof, and means on said traction board for engaging an overlying portion of the portable carrier to maintain the same in operative relation; a pair of flexible substantially non-extensible traction straps each adapted to pass freely through one of said guide openings in said traction plate, each such strap having at an end thereof remote from said traction late and adjustable loop for engaging a wrist of the patient; and strap attachment means for each of said traction straps for anchoring to the face of said traction board remote from the patient the end of each of said traction straps opposite the wrist loop, said attachment means comprising cooperating hook-and-loop fastening strips, one of which is mounted on said remote face of said traction plate in general alignment with the corresponding guide opening and the other is carried on the opposite end of the traction strap, whereby with the wrist loop of each said traction strap engaging a wrist of the patient and the opposite end of said strap passed through the guide opening in said traction plate on the same side as the wrist engaged thereby, traction force can be applied individually to the straps

VOL 1165 ISS 5 AG 30 1994 UMI

sufficient to retract the patient's shoulders toward the patient's feet out of lateral coincidence with the cervical spine region, and the opposite ends of said straps can be separately anchored by the fastening strips therefor to said remote traction plate face to maintain the applied traction force and the retraction of the patient's shoulders while the cervical spine region is radiographically exposed.

5,342,291

PRINTED WOVEN FIBER MATERIALS AND METHOD

Matthew T. Scholz, Woodbury; Michael D. Delmore, Moundsview, and Daniel W. Davis, Hugo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 29, 1991, Ser. No. 751,725
Int. Cl.[5] A61L *15/00*
U.S. Cl. 602—41 **35 Claims**



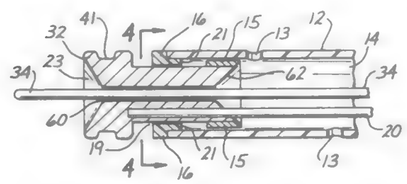
1. A casting tape comprising:
a fiberglass substrate;
an ink printed on said fiberglass substratein a preselected pattern, said ink comprising pigment particles in a binder, said binder serving to bind said pigment particles to an outer surface of said fiberglass substrate such that said pigment particles do not migrate; and
a curable resin coated on said fiberglass substrate and over said preselected pattern of ink, said pigment particles and binder being relatively insoluble in said curable resin.

5,342,292

ULTRASONIC ABLATION DEVICE ADAPTED FOR GUIDEWIRE PASSAGE

Henry Nita, Lake Forest, and Russell Pflueger, Laguna Niguel, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 787,292, Nov. 4, 1991, abandoned. This application May 24, 1993, Ser. No. 67,246
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **43 Claims**



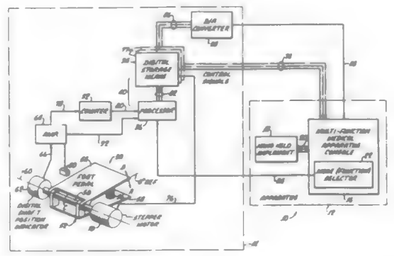
1. An ultrasonic device for removing obstructions from blood vessels, said device comprising:
a guidewire;
an elongate flexible catheter having a proximal end, a distal end, and a lumen extending longitudinally therethrough;
an ultrasound transmission member extending longitudinally through the luemn of the flexible catheter, said ultrasonic transmission member having a distal end and a proximal end;
a distal head formed on the distal end of said ultrasound transmission member and extending at least partially beyond the distal end of the catheter; and
a guidewire passage aperture extending through said distal head in axial alignment with the lumen of said catheter, wherein said guidewire may be passed through said aperture and thrugh the lumen of said catheter such that said guidewire is spaced apart from said ultrasound transmission member within the lumen.

5,342,293

VARIABLE VACUUM/VARIABLE FLOW PHACOEMULSIFICATION METHOD

Frank Zanger, Hayward, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Jun. 22, 1993, Ser. No. 81,435
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **8 Claims**



1. In a process for cataractous lens removal, a method for operating phacoemulsifier apparatus having a vacuum pump and a fluid irrigation pump in order to simultaneously control vacuum, for aspiration, and fluid flow, for irrigation, to a phacoemulsifier handpiece, said method comprising:
selecting a vacuum limit for aspiration;
selecting a fluid flow limit for irrigation;
assigning a linear relationship between a remotely disposed control lever and vacuum provided to the handpiece by the vacuum pump between zero and the vacuum limit;
supplying vacuum to the handpiece by actuating the control lever; and
controlling the fluid flow to the handpiece linearly in response to the level of vacuum provided to the handpiece so that as more vacuum is provided, less fluid flow than the fluid flow limit is provided to the handpiece.

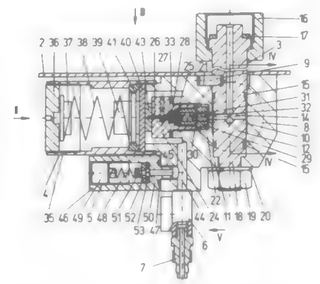
5,342,294

GAS CONNECTION DEVICE FOR INSUFFLATION EQUIPMENT

Peter P. Wiest, Hessenallee 8, D-1000 Berlin 19, and Richard Korejwo, Borstellstr. 36, D-1000 Berlin 41, both of Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 922,812
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—26 **7 Claims**

1. Insufflation equipment comprising:
an integral main body defining a cylindrical main channel, a first transverse channel, a second transverse channel and an outlet channel, said first and second transverse channels being in communication with said cylindrical main channel;
a connection port having an external cylindrical shape insertable axially into and in communication with said cylindrical main channel, said connection port being replaceably connected to said integral main body, said connection port having an external end with a connecting means for connecting to a fluid supply and an internal end with fixing means for connecting and separating said connection port with said integral main body, said connection port defines a blind hole axially leading from said external end and stopping inside said connection port, said connection port also defines a through-hole radially passing through said external cylindrical shape of said connection port and being in communication with said blind hole, said through-hole also being in communication with said cylindrical main channel, said connection port including seal means for sealing an interface between said external cylindrical shape and said integral main body, said sealing means sealing an area around said through-hole;



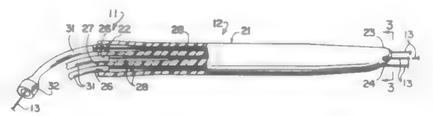
a pressure reducer connected to said integral main body and having one portion in communication with said first transverse channel and having another end in communication with said outlet channel;
a safety valve connected to said integral main body and in communication with said outlet channel;
a solenoid valve connected to said integral main body and in communication with said outlet channel;
a gas outlet port connected to said solenoid valve, said solenoid valve opening and closing communication between said outlet channel and said gas outlet port;
said pressure reducer, said safety valve and said solenoid valve are interconnected by said outlet channel;
a manometer connected to said integral main body and in communication with said second transverse channel.

5,342,295

CATHETER ASSEMBLY, CATHETER AND MULTI-PORT INTRODUCER FOR USE THEREWITH

Mir A. Imran, Palo Alto, Calif., assignor to Cardiac Pathways Corporation, Sunnyvale, Calif.

Filed Sep. 24, 1993, Ser. No. 126,314
Int. Cl.[5] A61M *3/00, 31/00, 5/178, 5/00*
U.S. Cl. 604—43 **16 Claims**



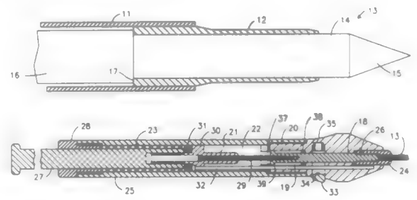
6. A multi-port introducer for use in performing a medical procedure within a region of the body of a patient with a plurality of catheters to be used in conjunction therewith comprising a body having proximal and distal extremities, the body having a length so that it can extend from the exterior of the body to the region within the body, a plurality of separate spaced-apart lumens disposed in the body and extending from the proximal extremity to the distal extremity, said body having ports therein in the proximal extremity in communication with the lumens and having openings in the distal extremity in communication with the lumens, said ports, said lumens and said openings being sized whereby a plurality of individual catheters can be introduced into and retained at the same time in the region of the body through the separate, spaced-apart lumens in the multi-port introducer.

5,342,296

METHOD FOR DRAINING ANTRUM

Jan-Ove Persson, Havrevägen; Lars Lejdeborn, Västergöksvägen, and Olle Berg, Elfviksvägen, all of Sweden, assignors to ATOS Medical AB, Horby, Sweden

Filed Nov. 23, 1992, Ser. No. 952,618
Claims priority, application Sweden, May 23, 1990, 9001857-3
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—49 **8 Claims**



1. A method for inserting a drainage means into an antrum, comprising the steps of:
securing the trailing end of a needle having a drainge means in a needle holder;
slidably mounting said needle holder so that it can slide along its longitudinal axis of symmetry between a retracted position and an extended position, the distance between said retracted and extended positions being the operating travel range of said needle holder and hence of said needle;
positioning a hammer means in spaced apart relation to a trailing end of the needle holder when the needle holder is in its retracted position;
positioning a bias means in trailing relation to the hammer means and loading said bias means so that it urges said hammer means to strike said needle holder;
restraining said bias means; and
abruptly releasing said bias means so that said bias means drives said hammer means into striking engagement with said needle holder and hence said needle;
said needle holder being abruptly displaced from its retracted position to its extended position upon being struck by said hammer means;
whereby the operating travel range of said needle holder determines the length of travel of said needle and thus the depth of penetration of said needle and drainge means into said antrum when said needle holder is struck.

5,342,297

BAILOUT RECEPTACLE FOR ANGIOPLASTY CATHETER

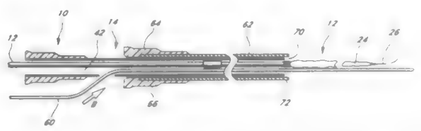
G. David Jang, 636 Golden West Dr., Redlands, Calif. 92373

Filed Jul. 10, 1992, Ser. No. 911,779
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—53 **31 Claims**

5. A bailout system for procedures involving angioplasty catheters, comprising:
a guiding catheter;
a receptacle of a substantially constant diameter extending logitudinally through the guiding catheter, comprising an elongate tubular shaft having a lumen extending longitudinally therethrough from a proximal end to a distal end;
a balloon angioplasty catheter extending through said lu-

VOL 1165 ISS 5 AG 30 1994 UMI

men, said angioplasty catheter and said receptacle each adapted to slide longitudinally with respect to each other; and



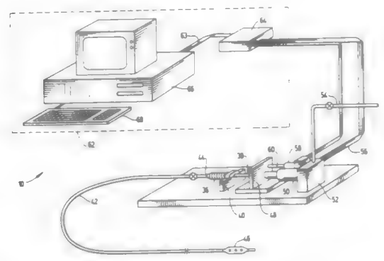
a longitudinally movable guidewire extending through said lumen, wherein said guidewire is outside of said angioplasty catheter along the entire length of the catheter.

5,342,298

AUTOMATED FLUID PRESSURE CONTROL SYSTEM

Mary B. Michaels, Sunnyvale; Janine C. Robinson, Half Moon Bay; John P. Claude, San Carlos, and Donald L. Alden, Sunnyvale, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Jul. 31, 1992, Ser. No. 923,063
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—65 **21 Claims**



1. An apparatus for providing fluid at a predetermined pressure to the walls of a delivery site internal to the body of a patient, the apparatus comprising:

an inflatable delivery device which when inflated, contacts the walls of the delivery site, the delivery device having at least one aperture which is positioned in contact with the wall of the delivery site when the delivery device is inflated and through which the fluid will flow into the wall;

a reservoir containing the fluid;

a conduit connected between the reservoir and the delivery device to conduct the fluid therebetween;

driving means for varying the pressure of the fluid;

a pressure sensor means for automatically sensing the pressure of said fluid and for providing a sensed pressure signal representative of the sensed pressure;

a volume detector which detects the volume of the fluid delivered and provides a volume signal representative of the detected volume delivered; and

a controller which automatically receives the sensed pressure signal, automatically compares the sensed pressure signal to a target pressure signal representative of the predetermined pressure, automatically provides a pressure error signal representative of the difference between the sensed pressure signal and the target pressure signal, and automatically controls the driving means to vary the pressure of the fluid in accordance with the error signal to attain the predetermined pressure;

wherein the controller compares the volume signal to a target volume signal representative of a predetermined volume of fluid to be delivered and controls the pneumatic driver to cease delivery of the fluid when the volume signal and the target volume signal are equal.

5,342,299

STEERABLE CATHETER

Phillip J. Snoke, Atlanta; David S. Rowley; David G. Lincoln, both of Smyrna, and Kirk W. Charles, Austell, all of Ga., assignors to Catheter Imaging Systems, Atlanta, Ga.

Filed Jul. 6, 1992, Ser. No. 908,403
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **22 Claims**



1. A catheter for use in body vessels or cavities, comprising:

a housing having an upper surface and a lower surface and being of such a size as to be readily held in the hand of a user;

elongate tube means having a proximal end connected to said housing and extending outwardly therefrom and being formed of a material having sufficient stiffness to maintain said elongate tube means in a substantially straight condition in the absence of an external force applied thereto, said elongate tube means having a flexible distal end portion and a pair of lumen longitudinally extending from said distal end portion to said proximal end;

a pair of access ports positioned within said upper surface of said housing for accessing said lumens of said elongate tube means;

means positioned within said housing for connecting said access ports to said lumens of said elongate tube means, said connecting means includes a piping connector having a plurality of openings therein, said openings connecting said pair of access ports positioned in said upper surface of said housing with said lumens of said elongate tube means;

guide wires having proximal ends positioned within and connected to said housing and extending outwardly therefrom through said elongate tube means, distal ends of said guide wires being connected to said flexible distal end portion of said elongate tube means; and

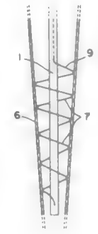
guide wire control means carried by said housing and cooperating with proximal end portions of said guide wires for controlling the angular attitude of said flexible distal end portion of said elongate tube means, said guide wires and control means cooperating to limit the angular attitude of said flexible distal end portion of said elongate tube means to angular adjustments in a common plane extending generally parallel to said upper surface of said housing and wherein the angular adjustment of said flexible distal end portion of said elongate tube means in all other planes if obtained by rotation of the user's hand so that more control of the attitude of said flexible distal end portions of the elongate tube means is obtained during use of the catheter.

5,342,300

STEERABLE STENT CATHETER

Christodoulos I. Stefanadis, Tepeleniou 9, Palaio Psihiko, Athens 15452, and Pavlos K. Tovtouzas, Karaoli & Thimitriou, 24 Cholargos, Athens 15561, both of Greece

Filed Mar. 12, 1993, Ser. No. 30,674
Claims priority, application Greece, Mar. 13, 1992, 920100104
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **2 Claims**



1. A vascular catheter suitable for transluminal endoprosthesis which comprises:

an elongated, flexible, hollow shaft; and

a steering wire for said shaft;

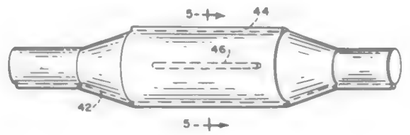
said steering wire extending along the hollow shaft and being secured to the distal end portion of the shaft, a distal portion of the steering wire being coiled around the shaft so that a forwardly movement of the steering wire along the longitudinal axis of the shaft increases the outside diameter of the coiled wire portion and a rearwardly movement of the wire along the longitudinal axis of the shaft reduces the outside diameter of the coiled wire portion; said steering wire having a coiled portion and a straight portion, and the straight portion being situated inside the hollow shaft.

5,342,301

MULTI-LUMEN BALLOONS AND CATHETERS MADE THEREWITH

Mark A. Saab, Lowell, Mass., assignor to Advanced Polymers Incorporated, Salem, N.H.

Filed Aug. 13, 1992, Ser. No. 929,305
Int. Cl.[5] A61H *29/00*
U.S. Cl. 604—96 **30 Claims**



1. Medical apparatus for use as or in combination with a balloon catheter, said apparatus comprising: (a) a very thin-walled, flexible, high strength, substantially inelastic balloon, said balloon comprising an inflatable interior and balloon wall means, said balloon also being readily inflatable under fluid pressure and readily collapsible under vacuum; (b) at least one adjacent lumen located externally of the maximum realizable dimension of said inelastic balloon and adjacent to said balloon wall means when said balloon is fully inflated and undeformed; and (c) single-layer, integrally formed wall means comprising a portion of said balloon and adjacent to said balloon wall means wall means and separating the interior of said balloon and adjacent to said balloon wall means from the interior of said adjacent lumen, at least some of said integrally formed wall means having a thickness of less than 0.0015 inches.

5,342,302

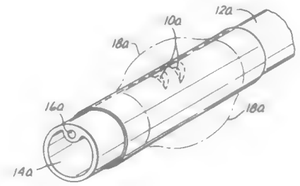
Patent Not Issued For This Number

5,342,303

BALLOON CATHETERS, SCOPES AND RELATED MEDICAL DEVICES HAVING NON-OCCLUDING BALLOON INFLATION-DEFLATION APERTURES

Kambiz Ghaerzadeh, Costa Mesa, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Filed Oct. 6, 1993, Ser. No. 132,603
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **16 Claims**



1. An elongate catheter device having an inflatable balloon mounted thereon, said device comprising:

a. an elongate catheter body having a proximal end, a distal end, and an outer surface;

b. at least one balloon inflation-deflation lumen extending longitudinally through at least a portion of said catheter body;

c. an inflatable balloon mounted on said elongate catheter body at a location between the proximal end, distal ends thereof;

d. a balloon inflation-deflation aperture to permit flow of balloon inflation flow of balloon inflation fluid between said balloon inflation-deflation lumen and said balloon;

e. said balloon inflation-deflation aperture having at least one angular corner formed therein to deter said balloon from fully blocking said balloon inflation-deflation aperture.

5,342,304

INFLATION DEVICE FOR DILATATION CATHETERS

Christopher A. Tacklind; Vae E. Sun, both of Palo Alto, and Nelson S. Au, Foster City, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

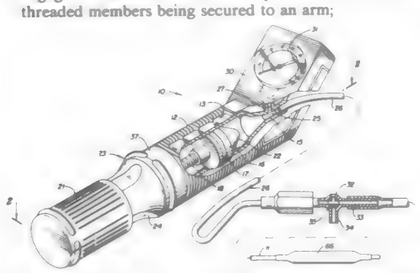
Continuation of Ser. No. 742,215, Aug. 6, 1991, abandoned, which is a continuation of Ser. No. 494,734, Mar. 16, 1990, abandoned. This application Oct. 12, 1993, Ser. No. 134,872
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—99 **17 Claims**

1. A fluid injecting device comprising;

(a) an elongated housing having an inner bore extending therein;

VOL 1165 ISS 5 AG 30 1994 UMI

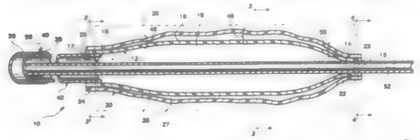
(b) a piston slidably disposed within the bore of the housing;
(c) an elongated piston rod having one end secured to the piston and one end extending out of the housing and an intermediate section with threads on the exterior thereof;
(d) a plurality of opposed threaded members adapted to engage the threaded section of the piston with each of said threaded members being secured to an arm;



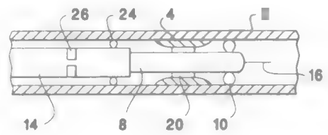
(e) means to move the arms to which the threaded members are secured so as to move the opposed threaded members to a first position with the threads thereon engaged with the threads on the piston rod so that longitudinal movement of the piston within the bore is effected by rotating the piston rod; and
(f) means to move the arms to which the threaded members are secured to move the opposed threaded members to a second position spaced away from the piston rod with the threads thereon disengaged from the threads on the piston rod, so that longitudinal movement of the piston within the bore is capable of being effected by pushing or pulling on the piston rod.

5,342,305
VARIABLE DISTENTION ANGIOPLASTY BALLOON ASSEMBLY
Robert S. Shonk, Davie, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.
Filed Aug. 13, 1992, Ser. No. 929,671
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—101 **17 Claims**

1. A variable distention angioplasty balloon assembly, for insertion into a blood vessel, comprising:
an inner elongated, inflatable balloon having a distal portion, a proximal portion and an intermediate portion therebetween and defining therein a first chamber, said inner balloon having a first Young's modulus;
an outer elongated, inflatable balloon having a distal portion, a proximal portion and an intermediate portion therebetween positioned around said inner balloon and defining between the balloons a second chamber, said outer balloon having a second Young's modulus, said inner balloon being substantially enclosed by said outer balloon, and said first Young's modulus of the inner balloon is less than the second Young's modulus of the outer balloon; and
said first chamber of said inner balloon and said second chamber of said outer balloon define a variable dilation structure for dilating an anatomical stricture, said dilation structure with variable characteristics having a first diameter and pressure characteristic curve defined by a first rate of radial expansion dependent upon the Young's modulus of said inner balloon and a second diameter and pressure characteristic curve defined by a second rate of radial expansion dependent upon the combined Young's modulus of said inner balloon and said outer balloon.

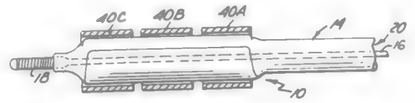


5,342,306
ADJUSTABLE CATHETER DEVICE
T. Anthony Don Michael, 4109 Sill Pl., Bakersfield, Calif. 93306
Filed May 26, 1993, Ser. No. 67,119
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—101 **5 Claims**



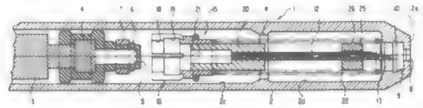
1. Apparatus for performing medical treatments in a physiologic passage, comprising:
a catheter insertable into the physiologic passage, said catheter having a distal end, a proximal end, a first lumen extending from said proximal end and means for permitting bidirectional flow of a fluid between said first lumen and a region surrounding said catheter at a first location spaced from said distal end;
a first balloon carried by, and extending radially outwardly from, said catheter at a second location between said distal end and said first location, said first balloon being inflatable for inhibiting fluid flow through the physiologic passage and around said catheter; and
control means including a second balloon surrounding said catheter in a region between said proximal end and said first location, said control means being movable for varying the spacing between said first and second balloons and being operative, upon inflation of said second balloon, to inhibit fluid flow through the physiologic pressure and around said catheter,
wherein said catheter is provided with means defining a bypass flow passage extending along a portion of the length of said catheter and communicating with regions surrounding said catheter at third and fourth locations along the length of said catheter such that when said catheter is in a passage, said third and fourth locations are positioned upstream and downstream, respectively, of the region enclosed by said balloons, and said control means comprise a tubular member surrounding said catheter and carrying said second balloon, said tubular member having an opening defining a passage in fluid flow communication with said bypass flow passage.

5,342,307
DILATATION CATHETER WITH TRI-FOLD BALLOON
Charles L. Euteneuer, St. Michael, and Peter T. Keith, Edina, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.
Division of Ser. No. 341,430, Apr. 21, 1989, Pat. No. 5,147,302.
This application Sep. 14, 1992, Ser. No. 944,453
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—103 **8 Claims**



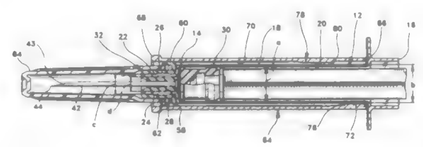
1. A dilatation balloon catheter comprising:
a shaft having an inflation lumen therethrough;
an inflatable balloon supported at a distal end of the shaft and in fluid communication with the inflation lumen, the balloon including at least three folded and wrapped wings to provide a low profile balloon configuration to effectively cross a lesion, where upon deflation of the balloon the reformation of at least three folded and wrapped wings allow for further advancement of the catheter across another lesion or for withdrawal of the catheter from a patient after treatment.

5,342,308
SINGLE-USE SYRINGE WITH RETRACTABLE NEEDLE
Vittorio Boschetti, Brebbia, Italy, assignor to BRIEF S.r.l., Milan, Italy
PCT No. PCT/EP89/01408, § 371 Date Jul. 10, 1991, § 102(e) Date Jul. 10, 1991, PCT Pub. No. WO90/00614, PCT Pub. Date Jun. 14, 1990
PCT Filed Nov. 20, 1989, Ser. No. 721,487
Claims priority, application Italy, Dec. 1, 1988, 22810 A/88
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **14 Claims**



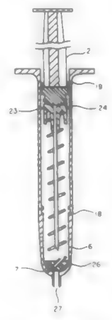
1. A single-use syringe comprising a tubular body, a plunger slidable in sealed relationship within said tubular body, a needle mounted in said tubular body at a first axial end thereof and being movable between a first, safe position and a second, working position whereat said needle is retracted into and extended from said body, respectively, through an opening of the body, a first socket formed in said tubular body, needle guide means carried by said needle and received in said first socket for guiding said needle through said opening, an expansible and contractible retaining member attached to one end of the needle extending inside said tubular body, spring biasing said retaining member and said needle toward said retracted safe position, at least one step defined in said tubular body at a set distance from said first end, said step being overridden by said retaining member as said needle is moved from the first to the second position, an expander device for expanding the retaining member carried removably on said plunger and received and held in a second socket formed in said retaining member so as to expand said retaining member upon overriding the step to hold the needle in the working position with said retaining member abutted against the step, means on said plunger for dislodging the expander device from said socket means on completion of a working stroke of the plunger so as to disengage the retaining member from the step and allow said spring to return the needle to the first retracted position, and means for misaligning said needle, upon return to said first retracted position, with respect to said opening wherein reuse of said syringe is prevented.

5,342,309
SYRINGE HAVING SAFETY SHIELD
Roderick J. Hausser, Verona, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Mar. 5, 1993, Ser. No. 26,881
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **23 Claims**



1. A syringe assembly comprising:
a hypodermic syringe having a syringe barrel with opposed proximal and distal ends, and a fluid-receiving chamber therein, said distal end defining a tip having a passage extending therethrough and communicating with said chamber;
a needle hub securely mounted to said tip of said syringe barrel and having a needle cannula affixed thereto for communicating with said fluid-receiving chamber, said needle hub comprising a proximally facing stop surface projecting radially outwardly beyond portions of said syringe barrel adjacent said tip, and at least one deflectable locking wall projecting distally and outwardly from said hub, and said locking wall including a substantially annular distally facing locking surface; and
a safety shield mounted over said syringe barrel for telescoping movement from a proximal position where said needle cannula is exposed to a distal position where said safety shield protectively surrounds said needle cannula, said safety shield including at least one stop block projecting inwardly therefrom, said stop block being engageable with said stop surface of said needle hub for preventing removal of said safety shield from said syringe barrel, said safety shield further comprising at least one locking tooth dimensioned and disposed to generate inward deflection of said locking wall of said hub during said telescoping movement of said safety shield from said proximal position toward said distal position, said locking tooth being spaced distally from said stop block a sufficient distance to enable engagement of said stop surface and said locking surface of said hub between said stop block and said locking tooth of said safety shield, and said locking tooth being configured to engage said deflectable locking wall to prevent proximal movement of said safety shield from its distal position.

5,342,310
SYRINGE WITH NEEDLE-HANGARING MECHANISM
Ukio Ueyama, Kobe, and Shinichi Koni, Takarazuka, both of Japan, assignors to Nihon Chemical Research Co., Ltd., Kobe, Japan
Filed Aug. 24, 1993, Ser. No. 111,008
Claims priority, application Japan, Oct. 31, 1992, 4-316431
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **5 Claims**



1. A syringe with needle-hangaring mechanism comprising a barrel, a plunger, a needle, a first needle holding stopper, a second needle hole stopper, a spring connecting said first needle holding stopper and said second needle hole stopper and a lock mechanism provide between said barrel and said first needle holding stopper,
said barrel comprising a forward part having a smaller inside diameter and a rear part having a larger diameter, said two

VOL 1165 ISS 5 AG 30 1994 UMI

parts being connected with each other at a connecting point having an diameter difference,

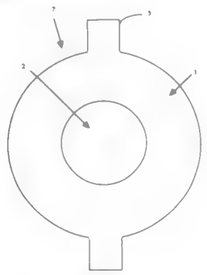
said lock mechanism functioning, in combination with said spring and said first needle hole stopper, such that it holds said first needle holding stopper, until completion of injection, so that said first needle holding stopper is pushed up into said rear part of said barrel, and that it is released when said plunger is further pressed after completion of the injection, so that, by force of said spring, said first needle holding stopper is pushed up, thereby hangaring said needle in said barrel, and said first needle hole stopper is moved to stopper the needle hole on the barrel end.

5,342,311

SKIN SHIELD FOR PROTECTION AGAINST ACCIDENTAL NEEDLE PUNCTURE

John G. Dirina, 3828 Norbrook Dr., Columbus, Ohio 43220-4705

Filed Jun. 3, 1993, Ser. No. 70,779
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—116 **3 Claims**



1. A skin shield, comprising a substantially flexible, contour conforming, penetration resistant plate having an opening formed through a central region of the plate, wherein the plate is a planar, annular disc, wherein at least two finger tabs are attached to the outer edge of the disc, extending radially outwardly from, and co-planar to, the annular disc.

5,342,312

Patent Not Issued For This Number

5,342,313

FLUID PUMP FOR A FLEXIBLE, VARIABLE GEOMETRY RESERVOIR

Robert E. Campbell, Chicago, Ill.; Andre A. Kulisz, and Valery Migachyov, both of St. Paul, Minn., assignors to Infusion Technologies Corporation, Minnetonka, Minn.

Filed Nov. 2, 1992, Ser. No. 970,104
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—153 **22 Claims**

1. An infusion pump for delivering a controlled rate of an intravenous fluid from a reservoir to a patient, the infusion pump comprising:

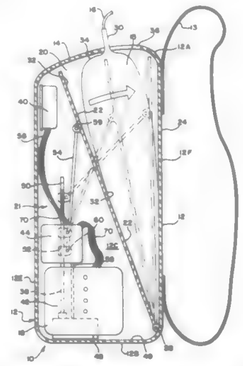
a flexible, variable geometry reservoir containing intravenous fluid and having an outlet to allow the exit of fluid therefrom when the volume V of the reservoir is reduced;

a chamber containing the reservoir and having initial volume greater than the reservoir, the chamber having volume σ which can be reduced;

means for reducing the chamber volume incrementally by $d\sigma$ and the volume of the reservoir therein incrementally by dV which is associated with $d\sigma$ at specific chamber volume σ; and

programmable controller having a memory, the controller communicating with the chamber volume reducing means to control the rate of reduction of the chamber volume, wherein the controller, upon actuation, reduces the chamber volume according to the formula

$$d\sigma = dV \cdot S_\sigma$$



where S_σ is the previously determined relationship of reservoir volume reduction to chamber volume reduction at chamber volume σ, and wherein the controller controls $d\sigma$ by determinations from values of dV and S_σ contained in the controller memory.

5,342,314

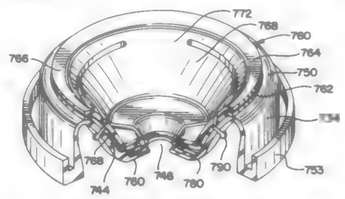
Patent Not Issued For This Number

5,342,315

TROCAR SEAL/PROTECTOR ASSEMBLIES

C. Daniel Rowe, Batavia; Leslie R. Ashmore, Maineville; Chad C. Carroll, East Canton; Richard F. Schwemberger, Cincinnati; Norman F. Schuler, West Chester, all of Ohio, and John M. Collins, Ipswich, Mass., assignors to Ethicon, Inc., Cincinnati, Ohio

Filed Apr. 12, 1993, Ser. No. 46,089
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—167 **48 Claims**



1. A trocar assembly for providing communication into an anatomical cavity, comprising:

(a) a trocar tube defining an interior lumen having an open distal end portion and an open proximal end portion and further defining a long axis for accommodating axial movement of an elongate instrument of lesser cross-sectional dimension therethrough;

(b) a housing adjoining said proximal end portion of said trocar tube defining a chamber having open distal end portion and a proximal end portion that communicate with said lumen and permit axial movement of an elongate instrument therethrough;

(c) an elastomeric seal member positioned in said chamber for sealing said proximal end portion of said chamber, said seal member having an opening formed therein for permitting an elongate instrument to pass therethrough in sealing engagement therewith; and

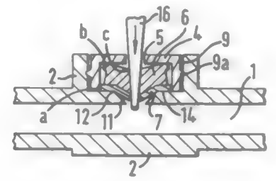
(d) a seal/protector assembly positioned in said chamber adjacent to and proximally of said seal member in a facing relationship thereto for protecting said seal member as an elongate instrument moves axially through said seal member, said seal/protector assembly including at least two protector members positioned adjacent to and in alignment with one another along said long axis, each of said protector members having an integrally formed annular collar portion and at least one leaf portion formed integrally with said collar portion defining a living hinge portion at the intersection thereof about which said leaf portion is able to pivot distally and proximally, said leaf portions defining an opening therethrough in axial alignment with the opening in said seal member such that axial movement of an elongate instrument into contact with said leaf portions causes said leaf portions to pivot distally and thereby increase the size of the opening formed in said protector members to permit an elongate instrument to pass therethrough and then through the opening in said seal member without causing damage to said seal member.

5,342,316

RESEALABLE SAMPLING PORT

Henry G. Wallace, Whitehall Road, Colchester, essex CO2 8JH, United Kingdom

Continuation of Ser. No. 834,467, Feb. 12, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 107,906
Claims priority, application United Kingdom, Feb. 14, 1991, 9103122; Jul. 3, 1991, 9114341
Int. Cl.[5] A61M *5/00, 31/00*
U.S. Cl. 604—167 **12 Claims**



8. A sealing assembly sealing a resealable sampling port for use with a syringe, the sealing assembly mounted in a housing having a chamber of a first diameter, said sealing assembly comprising:

a resealable diaphragm; and

a sealing annulus retained in said housing between a retaining cap and the diaphragm, and within said chamber,

wherein the sealing assembly has a diameter less than the first diameter, thereby defining an annular space between the assembly and the chamber, and forming a laterally slidable and expandable seal,

whereby when the syringe passes into the assembly a cantilever action of the sealing annulus against the diaphragm, the housing and the retaining cap seals the resealable sampling port.

5,342,317

INTRAVENOUS NEEDLE ANCHORS

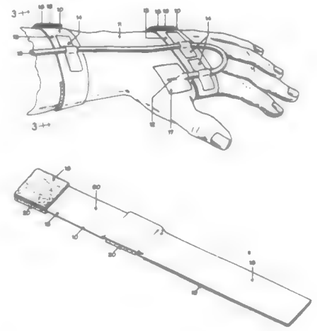
Harry M. Claywell, 7044 W. Sunnyside, Peoria, Ariz. 85345

Continuation-in-part of Ser. No. 887,678, May 22, 1992, abandoned. This application Oct. 8, 1993, Ser. No. 134,208
Int. Cl.[5] A61M *25/02*
U.S. Cl. 604—179 **13 Claims**

1. An anchor band useful for administering I.V. therapy comprising:

a band of material having a first end and a second end, an inside surface and an outside surface and a length sufficient to permit said band to overlappingly encompass a patients body part adjacent a site at which I.V. therapy is to be administered;

said band made of a soft cloth type material being thin and producing the result of a flush with the skin taping surface and to avoid elevation or deviation of the inserted I.V. needle;



a pair of resilient pads affixed to said inside surface of said band in a specifically selected, spaced apart relationship key to providing the flush with the skin relationship of said band;

said resilient pads being generally diametrically opposite one another when said band encompasses said body part adjacent said I.V. therapy site.

5,342,318

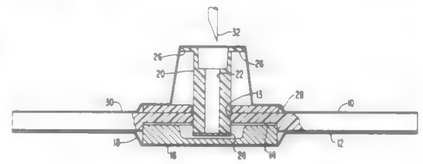
Patent Not Issued For This Number

5,342,319

TRANSDERMAL INJECTION APPLIANCE

Robert L. Watson, 1600 Singletree Way, Bowling Green, Ky. 42103, and Robert C. Shober, Jr., P.O. Box 143, Alvaton, Ky. 42122

Filed Aug. 17, 1993, Ser. No. 109,935
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—180 **12 Claims**



1. A transdermal injection appliance comprising the combination of

a pad impregnated with a disinfectant solution;

a body including adhesive means for holding said pad on skin of a patient;

means defining a guide passage through said body for an injection needle; and

a membrane puncturable by said needle closing said passage, said membrane being self-sealing so that an opening through the membrane formed by the needle is closed as soon as the needle is extracted, thereby preventing the escape of blood.

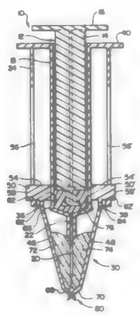
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,320

HYPODERMIC SYRINGE HAVING SHIELDING TO PREVENT ACCIDENTAL INJURY FOLLOWING USE

Robert W. Cameron, 1333 Lincoln, Bellingham, Wash. 98226

Filed Jan. 15, 1993, Ser. No. 5,019
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **12 Claims**



1. A hypodermic syringe having protective shielding for preventing injury due to pricking of persons after use, said syringe comprising:

a tubular sleeve;

a hypodermic syringe in fluid communication with said sleeve and extending longitudinally from a lower end thereof;

a plunger positioned for longitudinal movement in said tubular sleeve for injecting fluid from said sleeve through said syringe;

shield means mounted to said sleeve for longitudinal movement, said shield means comprising first and second clamshell halves, said clamshell halves being spread apart from one another on opposite sides of said tubular sleeve in a retracted position, and being extended from said lower end of said tubular sleeve in an extended position so that leading edge portions of said clamshell halves cover a tip portion of said syringe; and

manually operable means for extending said shield means from said retracted position, in which said shield means is withdrawn from said hypodermic syringe so as to expose a tip portion thereof, to said extended position, in which said shield means is positioned around said hypodermic syringe so as to cover said tip portion thereof;

said manually operable means for extending said clamshell halves comprising button means mounted to upper end portions of said clamshell halves, said button means having at least one end portion which is configured to be engaged by a finger of an operator so as to enable said operator to exert longitudinal force on said clamshell halves towards said extended position.

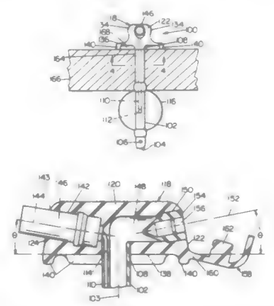
5,342,321

LOW PROFILE GASTROSTOMY CATHETER

Laurence A. Potter, Flemington, N.J., assignor to Teleflex, Inc., Plymouth Meeting, Pa.

Filed May 18, 1993, Ser. No. 63,509
Int. Cl.[5] A61M *25/04*
U.S. Cl. 604—174 **17 Claims**

1. A gastrostomy catheter for implantation through a stoma in the abdominal and stomach walls of a patient, said catheter comprising a feeding tube for passage of fluids therethrough, inflatable means positioned about said feeding tube for securing said feeding tube within the stomach of a patient when inflated, a body attached to said feeding tube engagable by one's fingers to enable manipulation of said feeding tube and to permit removal of said feeding tube from implantation without contacting one'fingers with a portion of the patient's abdominal wall adjacent the stoma, said body including a base surrounding said feeding tube having a surface positionable overlying the region of the stoma within the patient, and a pair of passageways within said body in respective communication with



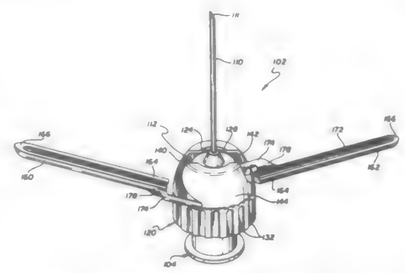
said feeding tube for the passage of fluids therethrough and said inflatable means for the passage of a fluid thereinto for inflating said inflatable means, said passageways each arranged at an inclined angle to said surface of said body to facilitate connection to a fluid supply and a fluid source without interference with the abdominal wall of a patient.

5,342,322

NEEDLE COVER ASSEMBLY FOR SYRINGES

Rasa N. Nathan, 214 N. Elm Dr., Beverly Hills, Calif. 90210, and Paul Thomas, San Pedro, Calif., assignors to Rasa N. Nathan, Beverly Hills, Calif.

Continuation-in-part of Ser. No. 63,946, May 20, 1993. This application Dec. 6, 1993, Ser. No. 162,240
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **13 Claims**



1. A needle cover assembly used in conjunction with a hollow hub member, the hollow hub member having a bottom end connectable to a syringe and a top end connected to a hypodermic needle with a tip, the assembly comprising:

a. a rotatable collar member having a bottom rim, a top rim with a central opening, and a circumferential sidewall, the circumferential sidewall having a knurled exterior surface, an interior surface with an annular locking groove located adjacent to the bottom rim, a first smooth curve shaped channel, and an opposite second smooth curve shaped channel, each smooth curve shaped channel beginning at the top rim and extending downwardly to a midsection of the rotatable collar member;

b. a frustum shaped base member having a bottom end, a top end with a circular flange projecting inwardly, a circumferential sidewall, and a hollow chamber therethrough, the circumferential sidewall having two small exterior voids located at locations opposite to each other and adjacent to the bottom end and a protruding sidewall adjacent to the bottom end;

c. said circumferential sidewall of said frustum shaped base member further having two vertical exterior plane surfaces located at locations opposite to each other and each above a respective one of said two small exterior voids, each vertical exterior plane surface having an acute angle defined by a vertical edge and an inclined edge;

d. an elongated cover member having a first half and an opposite unequal second half, each half having a bottom end and a top end, the top end of the first half being arc shaped, the top end of the second half being complementary to the arc shaped top end of the first half, to form a hollow chamber enclosing said hypodermic needle;

e. said first half of said elongated cover member having a greater arc than said unequal second half of said elongated cover member such that said top end of said first half covers said tip of said hypodermic needle when in the closed position;

f. said unequal second half of said elongated cover member having an arc shaped inner shell similar to said first half of said cover member, the arc shaped inner shell having reduced dimensions such that the arc shaped inner shell is completely enclosed by said first half of said cover member when in the closed position and the arc shaped inner shell also covers said tip of said hypodermic needle for double protection; and

g. two L-shaped arms each having a bottom end and a top end, each top end integrally molded to a respective one of said bottom ends of said first and second halves of said cover member, each bottom end having a projecting boss for engaging with a respective one of said two small exterior voids of said circumferential sidewall of said frustum shaped base member, where said rotatable collar member can be snapped onto said frustum shaped base member such that said annular locking groove of said rotatable collar member engages with said protruding sidewall of said frustum shaped base member for securing said rotatable collar member and said first and second halves of said cover member to said frustum shaped base member;

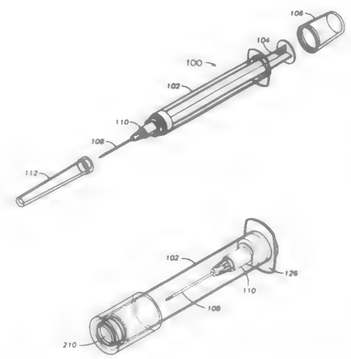
h. whereby said hollow hub member is press-fitted through said hollow chamber of said frustum shaped base member such that said hypodermic needle projects through said top end of said frustum shaped base member and said circular flange prevents said top end of said hollow hub member from extending above said top end of said frustum shaped base member, and when rotating said rotatable collar member, said L-shaped arms of said first and second halves of said elongated cover member are allowed to travel downwardly along said first and second smooth curve shaped channels respectively such that said incline edges of said frustum shaped base member can stop the downward movements of said first and second halves of said cover member, and thereby said cover member is open to expose said hypodermic needle, and when said rotatable collar member is rotated back, said L-shaped arms of said first and second halves of said cover member are allowed to travel upwardly along said first and second smooth curve shaped channels respectively such that said vertical edges of said frustum shaped base member can stop the upward movements of said first and second halves of said cover member, and thereby cover said hypodermic needle.

5,342,323

RETRACTABLE NEEDLE SYRINGE AND CAPPING SYSTEM

Michael L. Haining, 6731 Ashmore, Houston, Tex. 77069

Continuation-in-part of Ser. No. 703,273, May 20, 1991, Pat. No. 5,152,750. This application Oct. 5, 1992, Ser. No. 957,273
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—195 **6 Claims**



1. A hypodermic syringe having a retractable needle, comprising:

a hollow cylindrical barrel open at both ends and having an inwardly projecting lip at the lower end and finger flanges at the upper end, said barrel having a ridge extending above said finger flanges;

a rigid cylindrical needle carrier mounted within said barrel and seated on said lip and retained in place by frictional sealing engagement between the outer diameter of said needle carrier and the inner wall of said barrel, said needle carrier having an extension protruding through the opening at the lower end of said barrel;

a hypodermic needle mounted on said extension;

a plunger slidably mounted in said barrel through the upper open end and defining a fluid chamber between said carrier and said plunger;

a central bore through said carrier and extension for fluid communication between said needle and said chamber;

an enlarged bore in said carrier near said chamber and coaxial with said central bore;

a shaft extending from the lower end of said plunger;

a hub on the lower end of said shaft adapted to lock into said enlarged bore; and

a hollow cylindrical cap removably secured about said ridge above said finger flanges to prevent depression of said plunger prior to use, said cap having securing means to secure said cap about said lower end when said needle and carrier have been retracted into said barrel.

5,342,324

NEEDLE DEVICE

Elton M. Tucker, Medfield, Mass., assignor to Device Labs, Inc., Medway, Mass.

Filed Jan. 8, 1993, Ser. No. 2,437
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—264 **13 Claims**

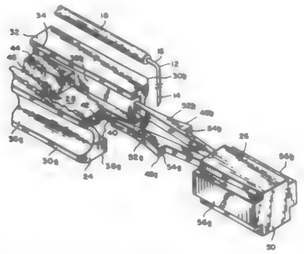
1. A needle device comprising:

a rigid tubular needle assembly having an insertion section disposed angularly with respect to an inlet section, and

a housing enclosing said angularly disposed sections with the end of said insertion section protruding exteriorly from said housing, said housing having internal angularly disposed confinement means coacting in engagement with

VOL 1165 ISS 5 AG 30 1994 UMI

said angularly disposed inlet and insertion sections to immobilize said needle assembly in relation to said housing, said housing being subdivided into multiple releasably



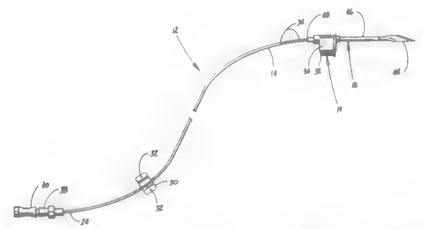
coupled components which may be separated one from the other to accommodate removal of said housing from said needle, said confinement means being located at interfaces between said components.

5,342,325

INTRODUCER NEEDLE AND CATHETER ASSEMBLY

Warren D. Lua, Battle Creek; Paul F. Rom, Kentwood, and William M. Booth, Paw Paw, all of Mich., assignors to DLP, Incorporated, Grand Rapids, Mich.

Filed Dec. 7, 1992, Ser. No. 986,527
Int. Cl.[5] A61M *27/00*
U.S. Cl. 604—272 **29 Claims**



1. A needle for inserting a catheter through body tissue comprising:
- an elongate body having a hollow portion, a proximal end, and a distal end opposite to the proximal end;
- the distal end comprising a sharpened tip;
- the proximal end of the body being open and in communication with the hollow portion for receiving an end of a catheter in the hollow portion; and
- a longitudinal bend formed in the elongate body for releasably holding within the hollow portion an end of a catheter received therein.

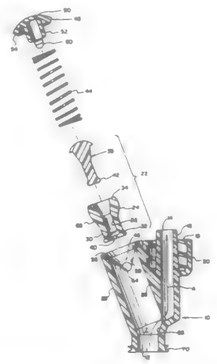
5,342,326

CAPLESS MEDICAL VALVE

Peter Peppel, Nazareth, and Kenneth C. Raines, Bethlehem, both of Pa., assignors to B. Braun Medical, Inc., Bethlehem, Pa.

Filed Sep. 22, 1993, Ser. No. 124,640
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—284 **17 Claims**

1. A capless medical valve comprising
- a housing defining an inlet, an outlet, and a valve bore having an axis oblique to said inlet, said inlet, outlet and valve bore meeting at a common transition zone bounded by a transition surface,
- a valve member confined within the valve bore, said member having a spherical head and a generally cylindrical stem sized to fit within said inlet and extending from the head toward said transition zone,
- wherein the stem of the valve member has a diameter substantially less than the diameter of the spherical head, to provide clearance enabling the valve member to turn from



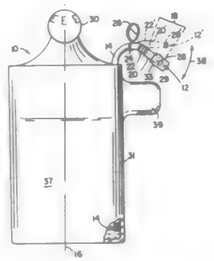
an orientation aligned with said valve bore when the valve is open to a position aligned with said inlet when the valve is closed, and
- means for biasing the valve member toward said inlet, whereby the valve is normally closed by sealing contact between said spherical head and said transition surface, but can be opened by mechanically forcing said valve member off its seat by inserting a syringe tip or fitting into the inlet.

5,342,327

EYE BOTTLE

David L. Epstein, 14 Glezen La., Wayland, Mass. 01778

Continuation of Ser. No. 15,320, Feb. 9, 1993, abandoned, which is a continuation of Ser. No. 626,676, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 310,480, Feb. 13, 1989, Pat. No. 5,020,526. This application Jul. 21, 1993, Ser. No. 95,807
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—295 **6 Claims**



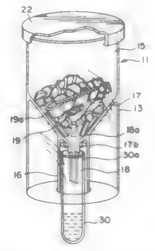
1. An eye drop dispenser for dispensing a liquid into an eye of a human comprising a resiliently deformable bottle, said bottle comprising an internal tube portion extending into said bottle and, an external flexible, open-ended tube portion extending outwardly from said bottle and being in fluid communication with said internal tube portion, said bottle having means for causing the liquid in said bottle to pass through said internal tube portion and out the end of said external tube portion when said bottle is squeezed and said external flexible tube portion and said internal tube portion being dimensioned and arranged to cause the fluid to flow dropwise, and said external flexible tube portion having means for causing said flexible external tube portion to be bent into a desired position when a moving force is applied and to remain in said position after the force is removed, allowing said liquid to be dispensed while said bottle is in a substantially upright position.

5,342,328

MEDICAL BODY FLUID SAMPLER DEVICE AND METHOD

Michael D. Grossman, 6215 S. Iola Ct., Englewood, Colo. 80111; Jerome M. Eder, 21663 Ulmus Dr., Woodland Hills, Calif. 91364; Jewelanne Hurley, P.O. Box 10604, Burbank, Calif. 91510; Bernard Siegel, 838 N. Doheny Dr., Suite 805, West Hollywood, Calif. 90069; Kenneth Adelberg, and Marvin Adelberg, both of 16821 Oak View Dr., Encino, Calif. 91436

Filed Mar. 22, 1993, Ser. No. 35,282
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—317 **7 Claims**



1. A method for obtaining a blood sample from the umbilical cord of a newly born infant comprising the steps of:
- clamping off a section of said cord having a predetermined length with a pair of clamps clamped to the opposite ends of said section,
- separating the clamped section from the main section of the umbilical cord,
- placing said section of cord in a container having a closed discharge port in the bottom thereof,
- removing one of said clamps from the section to permit the blood to drain from said cord into said container,
- forming a sealed connection between said container and a second container, and
- transferring the blood to said second container through said discharge port, said second container having means thereon for effecting the opening of said port.

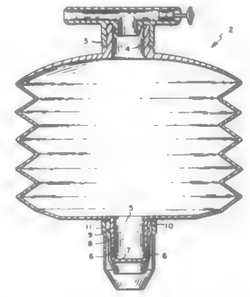
5,342,329

PORTABLE DISPOSABLE DEVICE FOR POST-SURGICAL SUCTION

Raul J. Croquevielle, Santiago, Chile, assignor to Inmed Ltda., Chile

Filed Sep. 17, 1992, Ser. No. 946,943
Claims priority, application Chile, Oct. 11, 1991, 978-91
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—319 **9 Claims**

1. A portable, closed circuit, disposable device for post operatory surgical suction comprising a bellows-shaped body receptacle for suctioned fluids, said bellows-shaped body having an upper surface and a lower surface, a threaded neck located on the upper surface of said bellows-shaped body suitable to receive a threaded cap, a suction tube system comprising a check valve connected through said cap into the bellows-shaped body, said lower surface of the bellows-shaped body comprising a cannula having a side wall and a lower end wall extending from said side wall, said side wall of said cannula being provided with at least one opening located in a position proximate to said lower end wall of said cannula, and



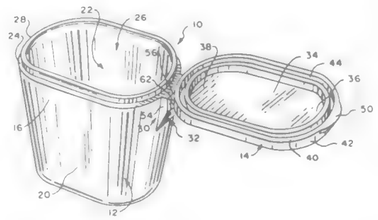
wherein an elastic tube, with a longer extension than said cannula, is placed in said cannula to thereby close the at least one opening of said cannula, and wherein a tube of rigid or semi-rigid material is placed on said cannula.

5,342,330

ASSEMBLIES FOR COLLECTING URINE AND OTHER BODY FLUIDS

Patricia B. Kane, 4529 Hitching Post Trial, Rockford, Ill. 61101, and June G. Halvorson, 4068 Caraway Ct., Loves Park, Ill. 61111

Continuation of Ser. No. 694,364, May 1, 1991, abandoned. This application Dec. 1, 1992, Ser. No. 983,244
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—329 **10 Claims**



1. An assembly for collecting urine and other body fluids comprising:
- a container haivng a chamber with an opening for receiving fluid and having a first buttress extending laterally from a surface thereof,
- a lid for the container that, when located in a first position, overlies the opening, said lid having a second buttress aligned with said first buttress, and
- means for supporting the weight of the container and body fluids contained therein, said means comprising a hinge attaching the lid to the container for movement by the user in a first direction toward the first position to close the container and in a second direction away from the first position to open the container, the hinge connecting the outermost edges of said first and second buttress and causing them to pivot into abutting contact with each other to brace the lid against movement in the second direction beyond a preselected second position in which the lid forms a outwardly extending handle that supports

VOL 1165 ISS 5 AG 30 1994 UMI

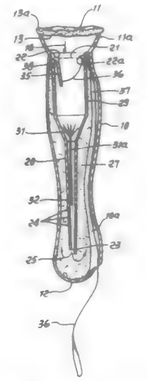
the weight of the container and its contents in a fixed upright attitude during use.

5,342,331

TOXICITY RESISTANT TAMPON STRUCTURE

Arthur L. Silber, 543 Dobbins Ave., San Gabriel, Calif. 91775; Raymond C. Ng, 1737 Oak Grove, San Marino, Calif. 91108, and James C. Caillouette, 685 Oak Knoll Cir., Pasadena, Calif. 91106

Filed Jan. 11, 1993, Ser. No. 2,642
Int. Cl.[5] A61F *13/20, 13/34*
U.S. Cl. 604—330 **12 Claims**



1. A flow-controlling tampon, comprising
a) a generally upright enlongated sheath structure having an open upper end and a closed lower end, said upper end sized to fit about the cervix,
b) an inner, elongated, flow-control tube extending generally upright within said sheath, said tube having an upper open end to receive flow via said upper open end of the sheath, and said flow-control tube having lower opening means to pass flow from the tube into the lower interior of the sheath to gradually collect upwardly from said lower interior of the sheath, and about the control tube,
c) there being moisture absorbent fill material in the lower interior of the sheath and extending about said tube,
d) said sheath including a funnel-shaped upper portion defining said open upper end of the sheath, said funnel-shaped upper portion having a looping upper edge to fit about the cervix,
e) and including a closure flap having hinge support within the sheath and proximate the uppermost extent of said tube, and a withdrawal string attached to said flap to urge the flap in tube-closing direction when the string is pulled downwardly, the flap normally extending within the sheath in a position wherein the flap does not obstruct flow in the tube.

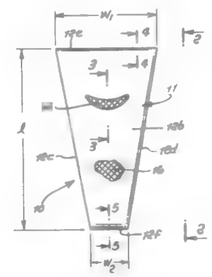
5,342,332

MALE DISPOSABLE INCONTINENCE DEVICE

Alton D. Wheeler, 3940 Fox Meadow La., Pasadena, Tex. 77504

Filed Jul. 26, 1993, Ser. No. 96,296
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—349 **8 Claims**

1. In a male, disposable, incontinence device, the combination comprising:
a) a generally delta-shaped package, including an outer, flexible sheet forming a protective container, said sheet defining a front wall and a rear wall, there being a penile first slit in said rear wall,
b) and absorbent material in said container to overlie said slit, and to absorb urine leaked within the container via said slit,
c) said absorbent material forming a pouch having front and rear walls, and including a second penile slit in said rear wall and in registration with said first slit,



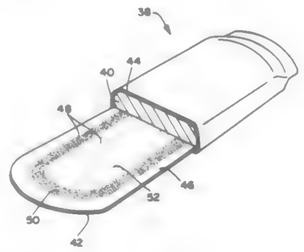
d) said slits having U-shape and being convex downwardly toward the closed lower end of the package,
e) said slits having top and bottom edges with a gap therebetween, said gap having crescent shape.

5,342,333

ABSORBENT ARTICLE CONTAINING AN ANHYDROUS DEODORANT

Richard W. Tanzer; Mary A. Bruemmer, and Anthonette A. Gossens, all of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 685,363, Apr. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 428,085, Oct. 27, 1989, Pat. No. 5,037,412, which is a continuation-in-part of Ser. No. 354,337, May 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 213,399, Jun. 30, 1988, abandoned. This application Feb. 18, 1993, Ser. No. 20,027
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—359 **15 Claims**



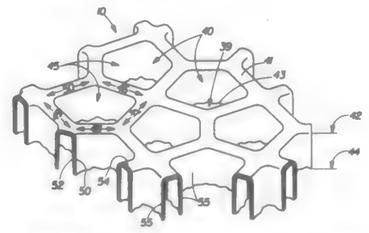
1. An absorbent article comprising;
a) an absorbent having a first surface and a second surface aligned approximately opposite to said first surface;
b) a liquid-impermeable baffle positioned adjacent to at least said second surface of said absorbent;
c) a fluid-permeable cover positioned adjacent to at least said first surface of said absorbent; and
d) deodorizing means for absorbing malodors emanating from said absorbent, said deodorizing means being an anhydrous mixture of odor absorbing particles including basic odor absorbing particles in the form of sodium bicarbonate and pH neutral odor absorbing particles in the form of a zeolite wherein a substantial amount of said sodium bicarboante particles have a size of between about 25 and 250 micrometers and a substantial amount of said zeolite particles have a size of less than about 20 micrometers, and wherein a substantial portion of said mixture is positioned in the outer 50 percent of the total surface area of said article.

5,342,334

COEXTRUDED THREE-DIMENSIONAL FLUID-PERVIOUS PLASTIC WEB

Hugh A. Thompson, Fairfield, and Fred M. Langdon, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 2, 1993, Ser. No. 42,345
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—366 **22 Claims**



1. An absorbent article including a fluid pervious topsheet, a fluid impervious backsheet joined to said topsheet, and an intermediate layer positioned between said topsheet and said backsheet, said topsheet comprising: a resilient, three-dimensional, macroscopically expanded, apertured, fluid pervious web including a first polymeric film material which exhibits a first melting point temperature and a second polymeric film material bonded to said first polymeric material to form a laminate, said laminate having a thickness, said second polymeric material exhibits a melting point temperature which is less than said first melting point temperature, said web having first and second surfaces spaced apart by a distance greater than the thickness of said laminate, said web having a plurality of capillaries extending from said first surface to said second surface, said capillaries being defined by a plurality of sidewall portions interconnected to one another intermediate said first and said second surfaces and terminating in said second surface, such that when said web is heated to a temperature between said first melting point temperature and said second melting point temperature said second polymeric material of said sidewall thermally bonds to said intermediate layer.

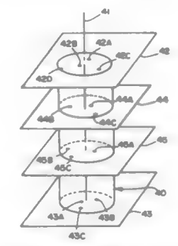
5,342,335

NONWOVEN WEB OF POLY(VINYL ALCOHOL) FIBERS

Hannong Rhim, Roswell, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 810,470, Dec. 19, 1991, abandoned. This application Dec. 22, 1993, Ser. No. 172,018
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—367 **28 Claims**

1. A nonwoven web comprised of substantially continuous poly(vinyl alcohol) fibers, in which:
A. said poly(vinyl alcohol) has a molecular weight of from about 30,000 to about 186,000 and a degree of hydrolysis of from about 71 to about 99 percent;
B. said fibers have a means fiber diameter in a range of from about 0.1 to about 10 μm, are substantially free of shot, and are substantially continuous in that they are of a length such that they can be regarded as continuous in comparison with their diameters; and



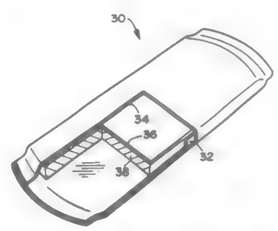
C. said web is substantially uniform on a scale of from about 0.4 to about 1.9 cm^2 of web area.

5,342,336

ABSORBENT STRUCTURE FOR MASKING AND DISTRIBUTING A LIQUID

Randy E. Meirowitz, Neenah; Sriram P. Anjur; Robert J. Phelan, both of Appleton, and Kim T. Tang, Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 810,259, Dec. 19, 1991, abandoned. This application Mar. 16, 1992, Ser. No. 852,848
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—378 **27 Claims**



1. A structure for absorbing and transporting a liquid, said structure comprising:
a) a nonwoven masking layer, said masking layer comprising;
1) from greater than 0 to about 90 weight percent, based on total masking layer weight, of a shaped fiber, said shaped fiber defining a notch, said notch defining an angle alpha such that

$$\text{alpha} < 180° - 2\theta$$

wherein θ is the contact angle between a liquid and said shaped fibers; and
2) from less than 100 to about 10 weight percent, based on total masking layer weight, of a nonshaped fiber; and
b) a nonwoven distribution layer, said distribution layer comprising:
1) from 100 to about 10 weight percent, based on total distribution layer weight of a shaped fiber, said shaped fiber defining a notch, said notch defining an angle alpha such that

$$\text{alpha} < 180° - 2\theta$$

wherein θ is the contact angle between a liquid and said shaped fibers; and
2) from 0 to about 90 weight percent, based on total distribution layer weight, of a nonshaped fiber; wherein said

VOL 1165 ISS 5 AG 30 1994 UMI

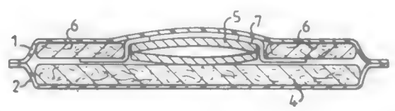
distribution layer comprises at least about 10 weight percent more shaped fibers than said masking layer.

5,342,337

DISPOSABLE ABSORBENT ARTICLE WHICH COMPRISES A HOSE-LIKE ABSORPTION BODY

Bo Runeman, Partille, and Peter Rönnberg, Mölndal, both of Sweden, assignors to Molnlycke AB, Sweden

Continuation of Ser. No. 773,969, Nov. 15, 1991, abandoned. This application Jan. 7, 1993, Ser. No. 1,923
Claims priority, application Sweden, May 16, 1989, 8901739
Int. Cl.[5] A61F *13/46*
U.S. Cl. 604—378 **20 Claims**



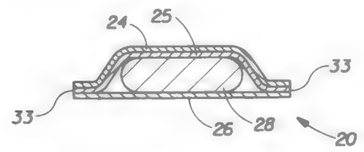
1. A disposable absorbent article, that includes a crotch part which lies in the region of the crotch of the body of the wearer when the article is worn, said article comprising an inner liquid-permeable casing sheet which lies nearest the body of the wearer when the article is worn, an outer liquid-impermeable casing sheet and an absorbent pad enclosed between said inner and outer casing sheets, the absorbent pad, at least within the crotch part of the absorbent, including a hollow first body comprised of a shape-stable material of very high liquid-permeability, the hollow first body being centrally positioned and extending in the longitudinal direction of the article, said hollow first body bordering on the inner casing sheet and being surrounded by absorbent material on at least the side thereof remote from the inner casing sheet, two liquid barriers positioned on respective sides of the hollow first body and bordering on said hollow first body, said two liquid barriers having a liquid permeability substantially less than the permeability of the hollow first body to prevent lateral flow of liquid from the hollow first body, and including at least one absorbent side body positioned so that one of the liquid barriers is disposed between the hollow first body and the at least one side body.

5,342,338

DISPOSABLE ABSORBENT ARTICLE FOR LOW-VISCOSITY FECAL MATERIAL

Donald C. Roe, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 11, 1993, Ser. No. 76,713
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—383 **16 Claims**



1. A disposable absorbent article for being worn by a wearer, said disposable absorbent article comprising:

a liquid pervious first topsheet, said first topsheet having a trans-topsheet penetration of at least about 0.25 grams per square inch;

an absorbent core intermediate said first topsheet and said backsheet;

a secondary topsheet intermediate said first topsheet and said core, said secondary topsheet having two major faces, a first major face oriented towards said first topsheet and a second major face oriented towards said core, wherein less than fifty percent of the surface area of said first major surface of said secondary topsheet is bonded to said first topsheet and at least fifty percent of the surface area of said second major surface of said secondary topsheet is bonded to said core, said secondary topsheet having a trans-topsheet penetration less than about 0.20 grams per square inch; and

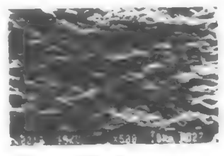
a liquid impervious backsheet at least partially peripherally joined to one of said first topsheet and said secondary topsheet.

5,342,339

PRESSURE-SENSITIVE ADHESIVE CLOSURE FOR DISPOSABLE DIAPER

Theresa L. Carpenter; Alan J. Sipinen, and Stephen W. Bany, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 390,284, Aug. 7, 1989, abandoned, which is a division of Ser. No. 118,319, Nov. 6, 1987, Pat. No. 4,681,635. This application May 16, 1991, Ser. No. 702,447
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—385.1 **5 Claims**



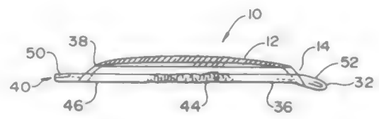
1. A diaper comprising an impermeable matte-surfaced outer sheet that covers an inner absorbent layer; adhesive closure tabs attached to corners of the outer sheet; and a matte-surfaced polyolefin film applied onto the outer sheet and covering and reinforcing the fastening area of the diaper to which the closure tabs are adhered in fastening the diaper around a wearer; the closure tabs adhering to the matte surface of the film with a Mean Peel Force of at least 175 N/m at a speed of either 30 centimeters per minute or 1250 centimeters per minute, and the Mean Peel Force at a peel speed of 1250 centimeters per minute being at least 80 percent of the Mean Peel Force at a peel speed of 30 centimeters per minute.

5,342,340

REUSABLE DIAPER

Conrad M. Kichefski; Mary B. Madryga, both of Minneapolis; Kurt R. Madryga, Burnsville; Christopher G. Struble, Deephaven, and Kathleen A. Madryga, Burnsville, all of Minn., assignors to New World Diaper Service, Minneapolis, Minn.

Filed Oct. 27, 1992, Ser. No. 967,223
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—385.1 **10 Claims**



1. A reusable undergarment for control of incontinence adapted to be placed around user's waist and legs comprising:

an inner liner means of absorbent material for absorbing liquid, said inner liner means presenting a front margin and a rear margin;

an outer shell comprised of liquid impervious material, said outer shell presenting a front edge and a back edge; and

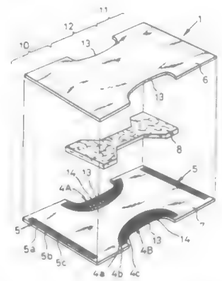
front and rear liquid impervious underfacing extending generally along and substantially coextensive with the width of said inner liner front margin and said inner liner rear margin respectively for operably, fixedly securing the inner liner means to the outer shell inboard of the front and back edges thereof whereby said inner liner means is operably coupled to and maintained in liquid transfer isolation from, said front edge and said back edge of said outer shell.

5,342,341

DISPOSABLE GARMENTS AND METHOD FOR ATTACHMENT OF ELASTIC MEMBERS AROUND LEG-HOLES THEREOF

Takamitsu Igaue, Kawanoe; Hironori Nomura; Hirofumi Ohnishi, both of Iyomishima; Yoshinori Matsura, Kanonji; Tohru Sasaki, Kawanoe; Taiji Shimakawa, Kanonji, and Hiroki Yamamoto, Kagawa, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Filed Sep. 9, 1991, Ser. No. 756,226
Claims priority, application Japan, Sep. 13, 1990, 2-243417; Apr. 17, 1991, 3-113986
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.2 **2 Claims**



2. In a disposable garment which is adapted to contain liquid excretions comprising a topsheet (**6**), a backsheet (**7**), an absorbent core (**8**), a waist opening, two leg openings each leg opening having a top and a bottom, and elastic members surrounding said leg openings, the improvement comprising that said elastic members consist of a plurality of threadlike elastic elements (*4a*, *4b*, *4c*) that are each in the shape of an arc and which are disposed in a side-by-side spaced apart relationship with the spacings between adjacent arcuate elastic elements (*4a*, *4b*, *4c*) being gradually reduced from the bottom of each leg opening to the top of each leg opening.

5,342,342

DISPOSABLE DIAPERS

Hideaki Kitaoka, Funabashi, Japan, assignor to Uni-Charm Corporation, Ehime, Japan

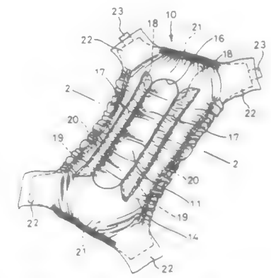
Filed Mar. 15, 1993, Ser. No. 31,484
Claims priority, application Japan, Apr. 6, 1992, 4-084050
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.2 **3 Claims**

1. A disposable diaper comprising:

(a) a liquid-permeable first topsheet (**11**) having lateral sides, a liquid-permeable backsheet (**12**), and a liquid-absorbent core (**13**) sandwiched between said first topsheet (**11**) and said backsheet (**12**),

(b) a liquid-resistant second topsheet (**14**) bonded along its outer periphery to said first topsheet (**11**), said second topsheet (**14**) having a central opening (**16**) that exposes a portion of said underlying topsheet (**11**), said openings (**16**) having spaced apart lateral sides and spaced apart end sections,

(c) a pair of folded back flap members (**17**) extending outwardly from the lateral sides of said opening (**16**), each flap member (**17**) comprising a portion of said second topsheet (**14**) that is folded outwardly with respect to said opening (**16**) toward the lateral sides of said first topsheet (**11**) to thereby form a foldline, said flap member (**17**) having outer side edges and spaced apart end portions, said spaced apart end portions being bonded to said second topsheet (**14**) in areas of the second topsheet (**14**) which are spaced outwardly from said end sections of said opening (**16**),



(d) a first elongated elastic member (**19**) in a stretched condition bonded to the outer side edge of each flap member (**17**) and to the portion of the second topsheet (**14**) beneath each flap member (**17**) so that said flap members (**17**) will lift away from said first topsheet (**11**) under contraction of said first elastic members (**19**) to thereby form a pocket above said first topsheet (**11**) and beneath said flap members (**17**), and

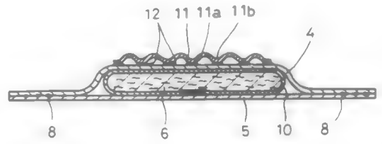
(e) said flap members (**17**) forming spaced apart side walls that slope from the outer side edges of each flap member (**17**) downwardly to said central opening between said flap members (**17**).

5,342,343

DISPOSABLE TRAINING PANTS

Hideaki Kitaoka, Funabashi, and Tohru Sasaki, Kawanoe, both of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Continuation of Ser. No. 95,336, Jul. 23, 1993, abandoned, which is a continuation of Ser. No. 933,224, Aug. 21, 1992, abandoned. This application Feb. 25, 1994, Ser. No. 202,007
Claims priority, application Japan, Aug. 28, 1991, 3-242776
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.2 **5 Claims**



1. Disposable training pants for babies that have a waist opening, a pair of leg openings and stretchable elastic members surrounding said waist and leg openings, said pants comprising

(a) a liquid-permeable topsheet (**4**),

(b) a liquid-impermeable backsheet (**5**),

(c) a liquid absorbent core (**6**) sandwiched between said topsheet (**4**) and said backsheet (**5**), and

VOL 1165 ISS 5 AG 30 1994 UMI

(d) a moistness holding sheet (11)

(i) that is intermittently bonded to said topsheet (4) over a central portion of the topsheet (4) except for peripheral portions thereof which extend outwardly from the peripheral edges of said absorbent core so that the moistness holding sheet (11) has a plurality of raised portions extending above said topsheet (4) that are adapted to contact a baby's skin, and

(ii) that has a wetting characteristics higher than that of said topsheet (4)

whereby when there is a liquid excretion into the training pants said raised portions of said moisture holding sheet (11) will retain a part of the liquid excretion and by being in contact with a baby's skin will make the baby aware of its own excretion.

5,342,344

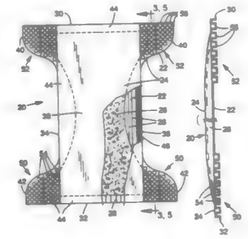
DISPOSABLE DIAPER WITH REFASTENABLE MECHANICAL FASTENING SYSTEM

E. Peter Lancaster, Gig Harbor, and Richard H. Young, Renton, both of Wash., assignors to Paragon Trade Brands, Inc., Federal Way, Wash.

Division of Ser. No. 677,606, Mar. 7, 1991, Pat. No. 5,269,776, which is a continuation of Ser. No. 328,493, Mar. 24, 1989, abandoned. This application Aug. 31, 1993, Ser. No. 114,513

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—387 1 Claim



1. A disposable absorbent garment comprising:

an outer layer of a liquid impervious material;

a nonwoven liquid pervious inner layer;

an absorbent layer sandwiched and encased between the inner and outer layers, the sandwiched layers having opposed first and second laterally extending waist edges with a crotch region therebetween, and two opposed side margins extending generally in an axial direction between the first and second waist edges, the first and second waist edges for extending along the respective first and second waist portions of a wearer;

resiliently deformable gripping connectors extending from each of the side margins along the second waist edge;

target connectors located along the first waist edge of the outer layer, the target connectors integrally formed by deformation of the liquid impervious material of the outer layer and adapted to engage the gripping connectors, said target connectors projecting outwardly from the outer layer and adapted each to receive at least one of said gripping connectors by pressing the gripping connectors substantially perpendicularly toward the outer layer adjacent said first waist edge to interengage the gripping and target connectors, said gripping and target connectors being sized such that upon interengagement, at least one of said gripping and target connectors are deformed and said gripping and target connectors resiliently grip one another to maintain interconnection;

wherein each of the gripping connectors comprises a throat which extends through the inner and outer layers and has a first cross-sectional dimension;

wherein each of the target connectors comprises a projection having a second cross-sectional dimension, the second cross-sectional dimension being slightly larger than said first cross-sectional dimension, the target and gripping connectors being alignable such that the first and second cross-sectional dimensions substantially coincide upon interengagement of the gripping and target connectors, whereby upon interconnection of a gripping connector with a target connector, said throat deforms by expansion of the first cross-sectional dimension to admit the target connector, and thereafter the gripping connector throat contracts resiliently to grip the admitted target connector and secure the interconnection;

wherein the projection of each of the target connectors has a distal end portion and a middle portion spaced inwardly from the distal end portion, the distal end portion having said second cross-sectional dimension and the middle portion having a cross-sectional dimension substantially equal to said first cross-sectional dimension, the middle portion having a length which extends through the throat of a gripping connector when said target and gripping connectors are coupled together so said distal end portion of the target connector is positioned beyond the throat of the gripping connector;

wherein the gripping connectors are arranged in at least two rows, with each row parallel to the second waist edge, the gripping connector rows spaced a first distance apart, the gripping connectors within each row spaced a second distance apart; and

wherein the target connectors are arranged in at least two rows, with each row substantially parallel to the first waist edge, the target connector rows being spaced to engage said gripping connectors, whereby the gripping and target connectors are easily aligned for interconnection.

5,342,345

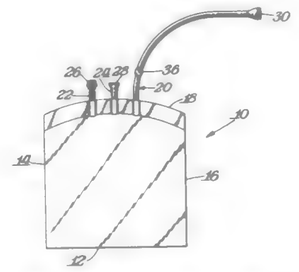
SOLUTION BAG WITH PLASTIC CONNECTING TUBE

Dudley W. C. Spencer, Wilmington, Del., assignor to Denco, Inc., Wilmington, Del.

Filed Jan. 4, 1993, Ser. No. 95

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—408 12 Claims



1. In a solution bag for containing consumables, said bag being made of a plastic material having closed peripheral edges including an access edge, an elongated plastic discharge tube mounted to said access edge and communicating with the interior of said bag whereby the contents of said bag may flow through said discharge tube to a dispensing site, said discharge tube having a terminal end remote from said access edge, said terminal end having a terminal seal to close said discharge tube, the improvement being in that said discharge tube includes a safety seal at a location between said access edge of said bag and said terminal seal to prevent flow of the consumable completely through said discharge tube until the seal of said safety seal is broken, said safety seal being formed by welding said tube closed at said location of said safety seal, said safety seal being integral with said discharge tube, and said safety seal being openable under external finger pressure.

5,342,346

FLUID CONTAINER

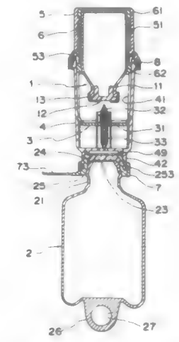
Minoru Honda, Otsu; Masanobu Iwasa, Osaka; Tetuzi Miyamoto, Otsu; Koji Ikeda, Osaka, and Toshihiro Kikuchi, Suita, all of Japan, assignors to Nissho Corporation, Osaka, Japan

Filed Apr. 9, 1993, Ser. No. 44,481

Claims priority, application Japan, Apr. 10, 1992, 4-118036; Apr. 24, 1992, 4-132023

Int. Cl.[5] A61B *19/00*; A61M *5/32*

U.S. Cl. 604—413 22 Claims



11. The fluid container according to claim 10, wherein the second engaging means of said vial guide being at least one projection formed on said outer wall close to the open end thereof and engaged with a vertical guide groove provided on said inner wall surface of said guide capsule.

5,342,347

DRUG CONTAINER AND DUAL CONTAINER SYSTEM FOR FLUID THERAPY EMPLOYING THE SAME

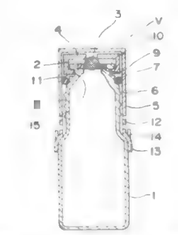
Toshihiro Kikuchi, Suita; Koji Ikeda, Osaka, and Hitoshi Futagawa, Kusatsu, all of Japan, assignors to Nissho Corporation, Osaka, Japan

Filed Aug. 12, 1992, Ser. No. 928,455

Claims priority, application Japan, Aug. 29, 1991, 3-244562

Int. Cl.[5] A61J *1/00*

U.S. Cl. 604—415 11 Claims



1. A dual container system for fluid therapy comprising first and second containers separate from one another,

said first container containing a dose of a drug and including a bottle-shaped container body provided with a connecting means and a first sealing member on the outside wall of a mouth portion thereof and with an annular seat on the inside wall of the mouth portion thereof, means for sealing the open end of the container body, and a cover member for covering at least said sealing means and a mouth portion of said container body, said sealing means comprising an annular packing of an elastomeric material having an inside diameter smaller than that of the seat of said container body and being held on the seat of said container body, a spherical closing member having a diameter larger than the inside diameter of the packing but smaller than the inside diameter of the seat and being held on the packing to close the bore of said packing, and a cap-like holder fitted on the mouth portion of the container body to hold the spherical closing member in place;

said second container including a dose of a solvent of diluent and comprising a solvent container having first and second mouth portions at opposing ends, respectively, and being closed at the first mouth portion thereof by a rubber stopper, and a cylindrical connecting member for connecting the solvent container to said first container, said cylindrical connecting member being connected at one end thereof to the second mouth portion of said solvent container and sealed at the opposite end by a second sealing member.

5,342,348

METHOD AND DEVICE FOR TREATING AND ENLARGING BODY LUMENS

Aaron V. Kaplan, 3477 Thomas Dr., Palo Alto, Calif. 94303

Filed Dec. 4, 1992, Ser. No. 985,382

Int. Cl.[5] A61K *9/22*

U.S. Cl. 604—891.1 24 Claims



1. An endovascular stent comprising:

a tubular structure having an initial diameter, said structure being composed of a first material expandable from the initial diameter to an enlarged diameter;

a delivery matrix including at least one filament which is interlaced with the tubular structure and expandable therewith from said initial diameter to said enlarged diameter; and

a bioactive substance releasably contained within the filament of the delivery matrix, wherein the filament is composed of a second material which is porous and/or which will degrade over time in a vascular environment to release the bioactive substance.

5,342,349

APPARATUS AND SYSTEM FOR COORDINATING A SURGICAL PLUME EVACUATOR AND POWER GENERATOR

David W. Kaufman, Salt Lake City, Utah, assignor to Sorenson Laboratories, Inc., Salt Lake City, Utah

Filed Aug. 18, 1993, Ser. No. 108,396

Int. Cl.[5] A61M *1/00*; A61B *17/36*

U.S. Cl. 606—1 12 Claims

1. A system, comprising:

an electrically operable surgical power generator including:

(a) an encasement defining the interior of said generator;

(b) fluid communication means formed in a base of said encasement for communicating fluid to said interior;

VOL 1165 ISS 5 AG 30 1994 UMI

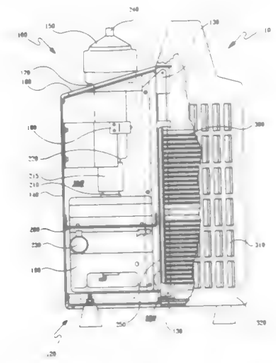
(c) heat sink structure for transfer of heat generated by said generator away from said generator; and

(d) heat vents formed in said encasement proximal said heat sink structure;

a surgical plume evacuator including:

(a) an electrically operable motor;

(b) vacuum pump means driven by said motor and having a negative pressure port and a positive pressure port;



(c) a surgical plume filter having a distal opening in fluid communication with said negative pressure port and having a proximal opening; and

(d) a housing defining a space outside of which said proximal opening is located and inside of which said positive pressure port is located; and

attachment means for securing said generator and said evacuator together, whereby said space and said base are in substantially fluid-tight relation except for said fluid communication means and said positive pressure port.

5,342,350

METHOD OF ENDOSCOPICALLY TREATING LITHIASES WITH A MULTICHANNEL PROBE SUITABLE FOR DRAINING THE TREATED LITHIASES

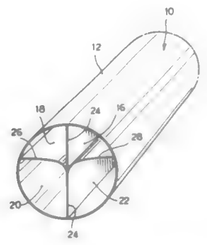
Jean Amiel, Villa "Christiane"–11, avenue du Cap de Nice, 06300 Nice, France

Filed Feb. 15, 1991, Ser. No. 655,601

Claims priority, application France, Feb. 16, 1990, 90 02219; Feb. 19, 1990, 90 01981

Int. Cl.[5] A61M *5/02*

U.S. Cl. 606—2.5 **6 Claims**



1. A method of endoscopically treating inorganic deposits in ducts utilizing a self-supporting elongated hollow flexible tube having a proximal end and a distal end and a longitudinal axis, the tube divided into at least three channels extending along the longitudinal axis of the tube, comprising;

inserting the distal end of the tube into a lumen of the duct and advancing the tube to the inorganic deposit;

inserting a laser optical fiber for transmitting laser radiation into one of the channels of the tube and advancing the laser optical fiber to the inorganic deposit;

inserting an observation optical fiber for transmitting light radiation into one of the channels of the tube and advancing the observation optical fiber to the region of the distal end of the tube;

selectively injecting an irrigation medium into one of the channels of the tube;

destroying the inorganic deposit by applying laser radiation to the laser optical fiber while visually monitoring the treatment through the observation optical fiber;

withdrawing the laser optical fiber and the observation optical fiber at the conclusion of treatment;

stopping injection of the irrigation medium;

maintaining the tube in the body lumen of the duct for draining the treated lithiases prior to withdrawing the tube; and

withdrawing the tube.

5,342,351

BEAM POSITIONING DEVICE FOR AN OPHTHALMOLOGICAL INSTRUMENT

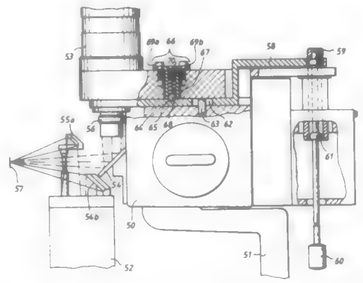
Erich Blaha, Essingen; Martin Poxleitner, Konigsbrunn, and Gerhard Hanemann, Oberkochen, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Aug. 4, 1993, Ser. No. 102,086

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1992, 4227390

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—4 **16 Claims**



16. A laser beam positioning device for an ophthalmological instrument having a target plane, comprising

a radiation source for producing a laser beam,

first optical means for focusing or dimensioning said laser beam,

deflecting means for deflecting said laser beam into said target plane,

optical observation means defining at least one observation beam path for viewing said target plane,

second optical means defining a slit projection beam path for focusing a slit into said target plane,

displacement means for defined displacement of at least one of said first optical means relative to said deflecting means perpendicularly to said laser beam,

said displacement means comprising a displacement element connected to at least one of said first optical means, at least one bearing means movably mounted to said displacement element, an operating means connected to said bearing means for defined positioning of said displacement element in a horizontal plane and adjustment means for precise adjustment of said first optical means,

said adjustment means comprising means for adjustment of a reproducible null position of said displacement element.

5,342,352

LASER DEBRIDEMENT OF WOUNDS

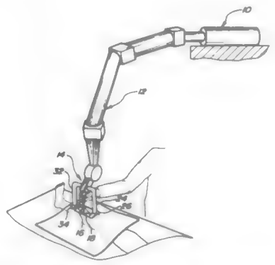
Peter A. Franken, 2105 E. 4th St., Tuscon, Ariz. 85721, and Alan E. Hill, 17 Elarco Rd., Albuquerque, N. Mex. 87123

Continuation-in-part of Ser. No. 679,421, Apr. 2, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 43,274

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] A61B *5/00*

U.S. Cl. 606—9 **9 Claims**



1. The method of debridement of eschar from a burn wound comprising the steps of:

producing a pulsed laser beam with individual pulses sufficiently energetic to ablate a layer of eschar, said laser beam having an average power of at least one hundred joules per second, each pulse having a time duration short enough to avoid deleterious heat penetration and long enough so that it does not cause breakdown of the atmosphere,

and causing said beam to impinge upon said layer of eschar at an angle of incidence ranging from zero degrees to about thirty degrees, said angle of incidence being measured from a direction perpendicular to said eschar layer.

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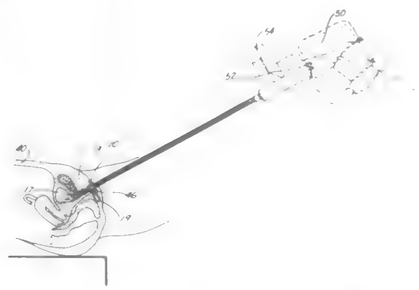
SYSTEM FOR LASER TREATMENT OF THE FEMALE URETHRA AND BLADDER

Paul M. Allen, P.O. Box 1345, Pascagoula, Miss. 39568

Continuation of Ser. No. 609,903, Nov. 5, 1990. This application May 6, 1992, Ser. No. 879,954

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—14 **6 Claims**



1. A kit for conducting laser treatment of the female urethra and bladder, the kit comprising:

a) a source for producing a laser beam;

b) an operating microscope comprising a lens portion for magnifying the area to be viewed and a means for receiving and focusing the laser beam from the laser beam source into the area of the bladder or urethra to be treated;

c) a cystoscope member comprising a shaft portion having a continuous bore therethrough, at least a portion of the shaft insertable into the urethra of a patient, to define a single passage through the continuous bore for viewing the area to be treated, and to transmit the focused laser beam through the shaft bore to the area of the urethra or bladder to be treated; and

d) means positioned on the interior wall of the shaft of the bore of the cystoscope for reducing refraction of the laser beam as it travels through the bore of the shaft;

the laser beam source and the operating microscope including the lens portion for magnifying the area to be viewed and the means for receiving and focusing the laser beam from the laser beam source positioned at a remote location from the cystoscope during transmission of the focused laser beam to the area to be treated.

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Patent Not Issued For This Number

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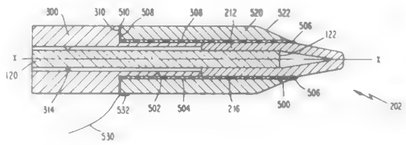
ENERGY DELIVERING CAP ELEMENT FOR END OF OPTIC FIBER CONVEYING LASER ENERGY

Gary Long, Cincinnati, Ohio, assignor to Laser Centers of America, Cincinnati, Ohio

Filed Oct. 19, 1992, Ser. No. 963,206

Int. Cl.[5] A61B *18/36*

U.S. Cl. 606—27 **23 Claims**



1. A cap-like energy-delivery tip element, suitable for use with a laser surgical tool, shaped and sized to permanently fit to and enclose a distal end portion and an energy-emitting end surface of an optic fiber transmitting energy from an optic energy source, comprising:

a hollow closed end portion having an outer energy-delivery surface of predetermined shape and size; and

a generally cylindrical open portion contiguous with said hollow closed end portion, shaped and sized to closely receive therein and permanently attach to the distal end portion and energy-emitting end face of the optic fiber,

whereby an inner surface of the closed end portion of the tip element receives energy emitted from the energy-emitting end surface of the optic fiber,

wherein said tip element is molded from a material comprising particles which before said molding are within a size range 0.15–2.0 μm,

at least said closed end portion of said tip element comprises an opaque material which absorbs said received optic energy and converts the same to thermal energy, whereby said outer energy-delivery surface thereof is heated to a predetermined high temperature, said opaque material being electrically conductive, and

said tip element is electrically conductive, and comprises

voltage application means connected to said electrically conductive tip element to enable controlled provision of a predetermined first voltage thereto.

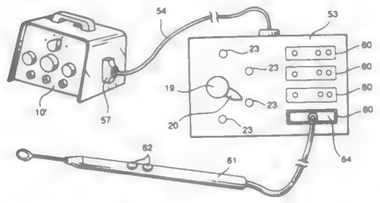
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,356

ELECTRICAL COUPLING UNIT FOR ELECTROSURGERY

Alan G. Ellman, and Jon C. Garito, both of 1135 Railroad Ave., Hewlett, N.Y. 11577

Filed Dec. 2, 1992, Ser. No. 984,348
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—32 **8 Claims**



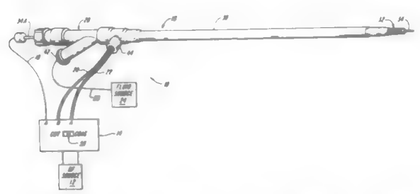
1. In combination:
(a) non-sterile electrosurgical apparatus having an output,
(b) a sterile coupling unit having an input and plural connectors outputs,
(c) a sterile electrosurgical handpiece,
(d) a first cable connecting the electrosurgical apparatus output to the coupling unit's input,
(e) a second cable connecting a coupling unit output to the electrosurgical handpiece,
(f) means on the coupling unit for selectively connecting an input to one of its outputs.

5,342,357

FLUID COOLED ELECTROSURGICAL CAUTERIZATION SYSTEM

Paul C. Nardella, North Easton, Mass., assignor to American Cardiac Ablation Co., Inc., Taunton, Mass.

Filed Nov. 13, 1992, Ser. No. 975,801
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—40 **9 Claims**



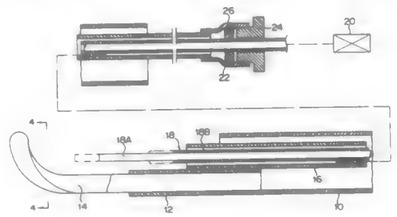
1. A method for controlling the temperature of an energy delivering, cauterizing electrode, comprising:
providing an elongate electrosurgical probe member having disposed at a distal portion of an outer surface thereof at least one energy delivering cauterization electrode, the probe member having a fluid delivering lumen associated therewith and being in electrical communication with an electrosurgical generator unit;
delivering electrosurgical energy from the generator unit through the probe member to the energy delivering electrode and adjacent tissue;
measuring the temperature of the energy delivering electrode and generating a signal representative thereof;
comparing the measured temperature of the energy delivering electrode to a predetermined maximum temperature value and generating a signal representative of the difference between the measured temperature and the predetermined temperature;
passing a fluid through the lumen at a selected flow rate to regulate the temperature of the energy delivering electrode; and
adjusting the rate of flow of the fluid through the lumen of the probe member based on the difference between measured temperature and the predetermined temperature to maintain the measured temperature at or below the predetermined temperature.

5,342,358

APPARATUS FOR OPERATION BY LASER ENERGY

Norio Daikuzono, Ichihara, Japan, assignor to S.L.T. Japan Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1993, Ser. No. 2,769
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—45 **14 Claims**



1. An apparatus for performing a laser-energy powered surgical operation on the tissue of a living body while contacting a blade with the tissue, comprising:
a holding portion to be held by an operator;
a blade which is integral with the holding portion, the blade being made of a material which generates heat on exposure to laser energy emitted at the blade and which does not transmit the laser energy therethrough; and
an optical fiber held by the holding portion for emitting laser energy from a front end surface to the blade,
wherein said blade is positioned in such a manner that a part thereof is located in an area irradiated by the laser energy emitted from said optical fiber, and wherein said optical fiber is held so that the laser energy emitting front end surface thereof is movable toward and away from said blade while said optical fiber is held by said holding portion.

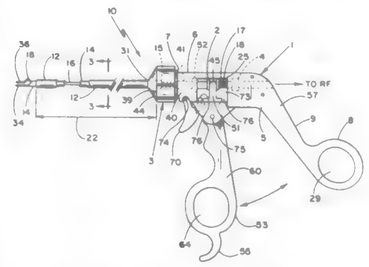
5,342,359

BIPOLAR COAGULATION DEVICE

Mark A. Rydell, Golden Valley, Minn., assignor to Everest Medical Corporation, Minneapolis, Minn.

Filed Feb. 5, 1993, Ser. No. 13,832
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—51 **7 Claims**

1. A bipolar coagulation instrument comprising:
(a) a first, elongated, non-conductive, outer tube having a proximal end and a distal end;
(b) a second, elongated, electrically conductive, central tube coaxially disposed within the outer tube and extending distally beyond said distal end of said outer tube, said central tube having a proximal and adapted for communication with an energy source and a distal end portion, with said distal end portion comprising a floor portion only which functions as a first jaw of the instrument;
(c) a third, elongated, non-conductive, inner tube coaxially disposed within the central tube and translationally movable within said central tube;
(d) an electrically conductive lead member coaxially disposed within the inner tube and extending distally therefrom the same distance as said central tube extends distally from said distal end of said outer tube, said lead member having a proximal end adapted for communication with an energy source and a distal end portion, with said distal end portion configured into a first shaped zone angled upwardly from an immediately proximal longitudinal axis of the lead member to thereby form an upward ramp, a second shaped zone angled downwardly from the first



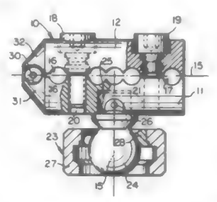
shaped zone, and a third shaped zone angled forwardly from the second shaped zone to be substantially parallel with the longitudinal axis of the lead member immediately proximal to the first shaped zone to thereby function as an opposing second jaw to the first jaw; and
(e) a handle member comprising means for translationally moving the inner tube to thereby force the second jaw against the first jaw and thereafter release the second jaw from the first jaw.

5,342,360

CLAMPING COUPLING FOR AN EXTERNAL FIXATOR

Giovanni Faccioli, Monzambano, and Daniele Venturini, Verona, both of Italy, assignors to Orthofix S.r.l., Bussolengo, Italy

Continuation-in-part of Ser. No. 86,156, Jul. 1, 1993, Pat. No. 5,292,322, said Ser. No. 180,859, is a continuation-in-part of Ser. No. 788,136, Nov. 5, 1991, abandoned. This application Jan. 13, 1994, Ser. No. 180,859
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—59 **7 Claims**



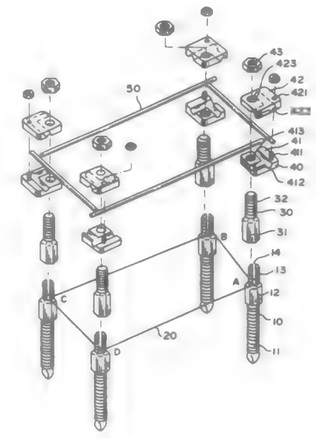
1. A clamping coupling for an external fixator, comprising:
two elongate half shells having confronting separable portions that are grooved for the reception of bone screws or bone pins, clamp bolts removable attached to said shells and clamping said shells together for fixed retention of bone screws or bone pins in said grooves, a pinned connection for said half shells at one end of each of said half shells, a ball-joint component fixedly attached to one of said half shells at a fixed distance from the pinned connection of said half shells, and means for rotatably and releasably coupling said ball-joint component to an external fixator.

5,342,361

DUAL TIER SPINAL LOCKING AND RETRIEVING SYSTEM AND INSTRUMENTATION FOR ADMINISTERING SUCH SYSTEM PERCUTANEOUSLY

Hansen A. Yuan, 5066 Pine Valley Dr., Fayetteville, N.Y. 13066, and Chih-I Lin, 813 S. Golden Pardos Dr., Diamond Bar, Calif. 10765

Filed Jan. 14, 1993, Ser. No. 4,608
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—61 **9 Claims**



1. A dual-tier spinal locking and retrieving system comprising:
a plurality of spinal pins, each of said spinal pins including a longitudinally extending lower portion adapted to be fastened into a vertebra, a middle portion having a stop portion which limits the degree to which said lower portion can be fastened within a vertebra and an upper portion defining an externally threaded first receiving portion, the first receiving portion of at least two of said plurality of spinal pins including an opening defining a lower auxiliary locking mount;
at least one lower auxiliary locking member interconnecting the lower auxiliary locking mounts of said at least two of said plurality of spinal pins;
a plurality of connecting members, each of said connecting members including a second receiving portion threadably attached to the first receiving portion of a respective one of said plurality of spinal pins with the connecting members attached to said at least two of said plurality of pins securing said at least one lower auxiliary locking member between said at least two of said plurality of spinal pins, each of said connecting members further including a third receiving portion that is longitudinally spaced from said second receiving portion thereof;
a plurality of clamping units, each of said clamping units being secured to a respective one of said third receiving portions; and
at least one upper auxiliary locking member extending between the connecting members attached to said at least two of said plurality of spiral pins through respective ones of said plurality of clamping units, said at least one upper auxiliary locking member being longitudinally spaced from said at least one lower auxiliary locking member so as to define a dual-tier locking arrangement.

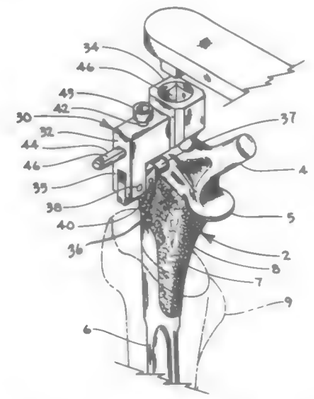
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,362

SYSTEM AND INSTRUMENTATION FOR TORSIONALLY TESTING FEMORAL RASP AND HIP STEM IMPLANT INCLUDING MOTION INDICATOR

Roger R. Kenyon; Mark D. Landes; Donna L. Campana, all of Warsaw; Perry A. Geremakis, South Bend; Ted L. Dock, and Jeffrey M. Oudria, both of Warsaw, all of Ind., assignors to Zimmer Inc., Warsaw, Ind.

Filed Aug. 29, 1991, Ser. No. 751,907
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—79 6 Claims



1. A system for preparing a medullary canal of a bone to accept a prosthetic implant and for torsionally testing a junction between the bone about the prepared medullary canal and a device inserted into said canal and for visually indicating movement between said device inserted into said canal and said canal when said device is torsionally loaded; said system comprising;

a rasp means having a body with a plurality of teeth for scraping engagement with the side walls of said medullary canal to remove a quantity of bone stock from said walls as said rasp means is inserted into said canal, said rasp means further including a handle removably connected to said rasp body;

a rasp adapter connectable to said rasp body and including a shaft extending outwardly from said adapter and a socket for accommodating a drive member of a torquing device;

an indicator means for connection to said shaft of said rasp adapter for indicating relative movement between said bone and the body of said rasp when said rasp is inserted into said intramedullary canal and torque force is applied to said body by a torquing device connected to said rasp adapter at said socket;

a prosthetic implant having a distal portion for seating within said intramedullary canal of the bone and a proximal portion for extending outwardly of said canal when said distal portion is seated within said canal;

an implant adapter connectable to said proximal portion of said implant when said distal portion of said implant is seated within said canal, said implant adapter including a socket accommodating the drive of a torquing device and a shaft for connection of said indicator means;

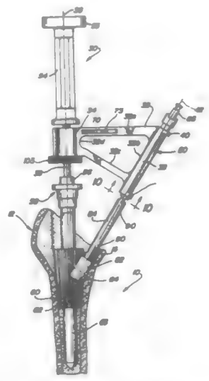
said indicator means being connectable to said shaft of said implant adapter for indicating relative movement between said implant and said canal when said distal end of said implant is seated within said canal and the torquing device is connected to the socket of said implant adapter and torque force is applied.

5,342,363

MEDICAL INSTRUMENT AND PROCEDURE

Marc E. Richelsoph, Cordova, Tenn., assignor to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Nov. 30, 1992, Ser. No. 984,066
Int. Cl.[5] A61F *2/54;* A61B *19/00*
U.S. Cl. 606—79 14 Claims



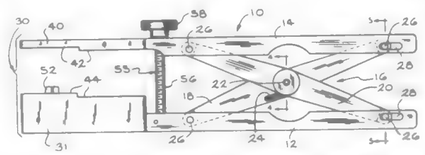
1. A medical instrument for preparing a proximal end of a femur to receive a prosthesis having an attached anti-rotation lug, the femur having a partially prepared canal with a countersunk frustoconical seat for receiving a trochanteral portion of the prosthesis, the instrument comprising: a frame having two spaced frame portions; a post attached to one of the frame portions and defining a reference axis; a tool guide attached to the other of the frame portions and defining a cutting axis fixed at a precise angle with respect to the reference axis; and fixture means extending from the post configured to attach to the countersunk frustoconical seat in the partially prepared canal in the femur to locate the reference axis in relation to the prepared canal so that the tool guide and the cutting axis are set at the precise angle for guiding a rotary cutting tool in the partially prepared canal to accommodate the anti-rotation lug of the prosthesis when implanted in the femur with the trochanteral portion of the prosthesis seated in the countersunk frustoconical seat.

5,342,364

PATELLAR IMPLANT STEM TRIMMER

W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio

Filed May 17, 1993, Ser. No. 62,793
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—79 16 Claims



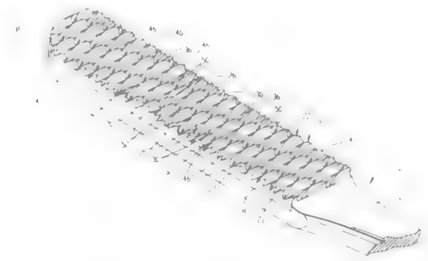
1. A tool for use in adapting a patellar prosthesis, having a body portion and a stem portion extending from the body portion, to fit a specified human patella by trimming the stem of the patellar prosthesis comprising: a prosthesis retention member having a seat member and a separate cap member intended to engage with said seat member, said seat member including at least one cavity defining a centerline axis for receiving the prosthesis and orienting the prosthesis such that the stem extends away from said cavity along said centerline axis, said cap member including an aperture centered on said centerline axis for receiving the stem as said cap member is engaged with said seat member, a means for maintaining such centerline axis orientation between said cavity and said aperture as said cap member and said seat member are moved from a position of disengagement to a position of engagement, whereby the patellar prosthesis is securely retained within said retention member and a portion of the stem extends through said aperture and is exposed for trimming and removal.

5,342,365

SURGICAL RASP

Joel N. Waldman, Kansas City, Mo., assignor to Padgett Instruments, Inc., Kansas City, Mo.

Filed Jul. 19, 1993, Ser. No. 92,990
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—85 3 Claims



1. A surgical rasp comprising a handle having a longitudinal axis and an insert rigidly affixed to the handle at one end thereof, said insert presenting a cutting surface having a plurality of teeth thereon, wherein the improvement comprises:

a plurality of teeth defining said cutting surface, said teeth being arranged in adjacent parallel rows oriented transversely to the longitudinal axis and in adjacent parallel ranks oriented at an angle to said rows,

said teeth presenting a first smoothly concave cutting face oriented substantially perpendicular to said longitudinal axis and defined by an arcuate concave trough in said insert parallel to and separating said rows, a second smoothly convex trailing face in opposition to said first face, a third smoothly concave side face oriented at an obtuse angle to said first face, said third face being substantially a mirror image of said first face and defined by a transverse arcuate concave groove in said insert parallel to and separating said ranks, and a fourth smoothly convex side face oriented at all obtuse angle to said second face, said fourth face being substantially a mirror image of said second face,

said first face and said third face each including a concave cutting crest extending forwardly toward its respective trough and groove,

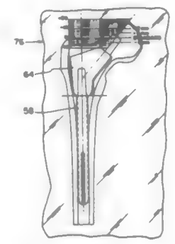
said first face, second face, third face and fourth face extending upwardly to converge and terminate in an uppermost apex with the first face and third face being substantially continuously concave from a base of each trough and groove to the apex and the second face and the fourth face being substantially continuously convex from the base of each trough and groove to the apex.

5,342,366

SURGICAL INSTRUMENTS FOR HIP REVISION

Leo A. Whiteside, Chesterfield, Mo., and Roy C. Wiley, Warsaw, Ind., assignors to Biomet, Inc., Warsaw, Ind.

Filed Feb. 19, 1992, Ser. No. 838,528
Int. Cl.[5] A61F *5/04;* A61B *17/56*
U.S. Cl. 606—86 5 Claims



1. A set of surgical instruments for use in implanting a hip prosthesis in a host femur having a neck portion, said hip prosthesis including a diaphyseal segment and a metaphyseal segment, said set of surgical instruments comprising:

a distal canal reamer operable to ream a cavity in said host femur for receiving said diaphyseal segment of said hip prosthesis;

a metaphyseal reamer operable to ream a cavity in said host femur for receiving a portion of said metaphyseal segment;

a femoral neck reamer operable during lateral displacement thereof to ream said neck portion of said host femur for receiving a portion of said metaphyseal segment said femoral neck reamer having an outer sleeve; and

a femoral neck cutting guide operable to be used in conjunction with said femoral neck reamer to ream said neck portion, said femoral neck cutting guide including a medially extending alignment arm being operable to guide lateral displacement of said femoral neck reamer.

5,342,367

ROTATIONALLY AND ANGULARLY ADJUSTABLE TIBIAL CUTTING GUIDE AND METHOD OF USE

Joseph M. Ferrante; Alfred J. Fichera, both of Cordova, Tenn., and Leo A. Whiteside, Chesterfield, Mo., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

Division of Ser. No. 838,093, Feb. 20, 1992. This application Sep. 14, 1993, Ser. No. 120,937
Int. Cl.[5] A61F *5/00, 2/32*
U.S. Cl. 606—86 1 Claim

1. A method of ostectomying the proximal tibial surface comprising the steps of:

resecting a small amount of the superior proximal surface of the tibia to form an approximately planar surface which is approximately transverse to the central long axis of the tibia;

determining the approximate location on the superior proximal surface of the tibia which corresponds to the central long axis of the tibia;

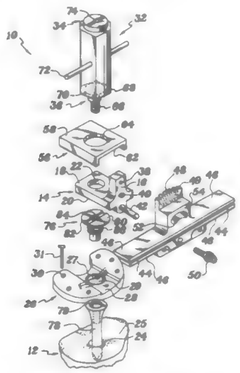
advancing a reamer guide through said superior proximal surface at the location along the interior of the tubular shaft of the tibia for a sufficient distance to enable the central long axis of said reamer to correspond with the central long axis of the tibia;

modifying the proximal surface of the tibia through the use of a plateau planar until said surface is smooth;

trimming any remaining bone from the proximal surface of the tibia to present a smooth, flat surface on which a proximal tibial prosthesis can be affixed;

VOL 1165 ISS 5 AG 30 1994 UMI

installing a tibial cutting guide including a tibial trial stem and a tibial trial base on the proximal surface at the tibia;



performing resection of the medial-lateral surface of the tibia using the tibial cutting guide; and

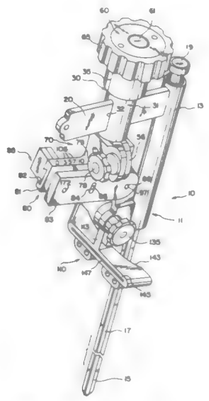
removing the tibial cutting guide.

5,342,368

INTRAMEDULLARY UNIVERSAL PROXIMAL TIBIAL RESECTOR GUIDE

Thomas D. Petersen, 9680 Alto Dr., La Mesa, Calif. 92041

Filed Jul. 8, 1992, Ser. No. 910,568
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—88 13 Claims



1. A proximal tibial resector guide, comprising:

a) an intramedullary rod with a longitudinal axis and having a distal end adapted to be inserted within an intramedullary canal of a tibia, and a proximal end;

b) a bar fixedly attached to said proximal end of said intramedullary rod and extending away therefrom in a direction perpendicular to said axis;

c) a support structure slidably mounted on said bar for movements toward and away from said rod to provide adjustability of said guide in an anterior-posterior direction, said support structure carrying a saw guide having a saw guide slot and said support structure further including:

i) posterior slope adjustment means for adjusting the posterior slope of said saw guide slot;

ii) medial-lateral adjustment means for adjusting the orientation of said saw guide slot in the medial-lateral direction;

iii) vertical adjustment means for infinitely adjusting vertical position of said saw guide with respect to said bar, said vertical adjustment means including an elongated vertically disposed sleeve having diametrically opposed slots receiving said bar, said sleeve having an internal passage slidably receiving an elongated threaded support rod, said elongated sleeve having a recess slidably receiving an actuator sleeve having an internal threaded passage threadably receiving said support rod, whereby rotations of said actuator sleeve result in reciprocation of said support rod and infinite adjustment of said vertical position of said saw guide; and

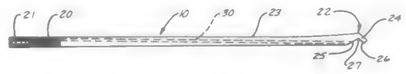
iv) coupling means for detachably coupling said saw guide to said posterior slope adjustment means.

5,342,369

SYSTEM FOR REPAIR OF BANKART LESIONS

Douglas T. Harryman, II, Bellevue, Wash., assignor to The Board of Regents of the University of Washington, Seattle, Wash.

Filed Sep. 11, 1992, Ser. No. 943,814
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—96 8 Claims



1. A guide, for a drill implement, for use during arthroscopic repair, through an arthroscopic cannula, of a Bankart lesion adjacent to the rim of the glenoid cavity of a human shoulder, said guide comprising an elongated unitary shaft for insertion through the arthroscopic cannula and having a proximate end and a distal end, said shaft having a recess opening transversely of the length of said shaft, said recess having a first face adjacent to said distal end of said shaft and a second face farther from said distal end of said shaft, said recess being sized and positioned for hooking over the rim of the glenoid cavity in the area of the lesion, said shaft having a longitudinally extending bore opening into said recess through said second face, said bore having an axis bridging across said recess, for reception of the drill implement through said bore to drill through the portion of the rim received in said recess, said distal end portion of said shaft having a substantially planar beveled face forming said second surface of said recess for fitting substantially flush against the interior margin of the glenoid cavity adjacent to the glenoid rim, said bore of said shaft opening through said substantially planar beveled surface adjacent to the periphery of said shaft.

5,342,370

METHOD AND APPARATUS FOR IMPLANTING AN ARTIFICAL MESHWORK IN GLAUCOMA SURGERY

Gabriel Simon; Jean-Marc Legeais; William Lee, and Jean-Marie Parel, all of Miami, Fla., assignors to University of Miami, Miami, Fla.

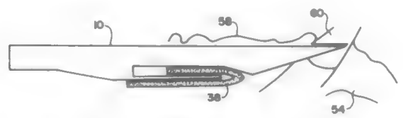
Filed Mar. 19, 1993, Ser. No. 34,870
Int. Cl.[5] A61F *9/00;* A61B *17/00*
U.S. Cl. 606—107 13 Claims

1. A method of treating the eye for glaucoma comprising the steps of:

a) providing a cutting tool having a blade, a handle and a carrying portion;

b) mounting a filtering member to the carrying portion;

c) inserting the cutting tool with the filtering member mounted thereto through a cornea of an eye of a patient and partially into the anterior chamber of the eye by causing the cornea with said blade; and



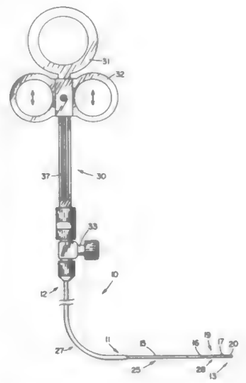
d) withdrawing the cutting tool from the resulting incision while disengaging the filtering member from the cutting tool, whereby the filtering member is retained in the incision.

5,342,371

HELICAL SURGICAL SNARE

Lawrence H. Welter, Oakland, Calif.; Scott D. Downey, and Todd A. Hall, both of Bloomington, Ind., assignors to Cook Incorporated, Bloomington, Ind.

Filed Nov. 24, 1993, Ser. No. 158,008
Int. Cl.[5] A61B *19/00*
U.S. Cl. 606—113 20 Claims



1. A helical surgical snare (**10**) comprising:

an elongated member (**11**) having a proximal end (**12**), a distal end (**13**), a passage (**14**) extending longitudinally therein, an exterior surface (**15**), and a first side port (**16**) positioned in said exterior surface proximate said distal end and communicating externally and with said passage; and

a filament (**17**) extending through and movable within said passage and said first side port, having a distal end (**18**) attached to said elongated member, being wrapped around said exterior surface and forming a helical snare loop (**14**) external to said elongated member, said loop opening when said filament is moved through said first side port and away from said exterior surface of said elongated member, said loop closing when said filament is moved through said first side port and toward said exterior surface of said elongated member.

5,342,372

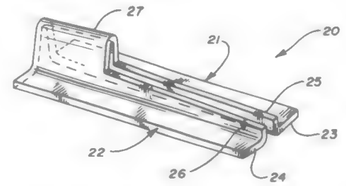
Patent Not Issued For This Number

5,342,373

STERILE CLIPS AND INSTRUMENT FOR THEIR PLACEMENT

David Stefanchik, Mason, and Edward J. Biehle, IV, Westchester, both of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Filed Sep. 14, 1992, Ser. No. 944,584
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—142 14 Claims



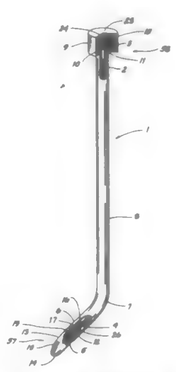
1. sterile clip for ligating a vessel in a mammal, said clip comprising a pair of right angle members, each right angle member comprising a pair of legs disposed at right angles to each other, one leg of each of said right angle member being in substantially the same plane and the other leg of each right angle member being in close proximity to and in facing relationship with each other, and a connecting member joining said right angle members said connecting member restricting separation of said right angle members.

5,342,374

SUTURE GUIDING DEVICE AND METHOD OF USE

Shaw P. Wan, 603 Lariat La., Rolla, Mo. 65401, and Rosendo Martinez, 790 Prigge Rd., St. Louis, Mo. 63138

Filed Dec. 17, 1992, Ser. No. 992,494
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—148 22 Claims

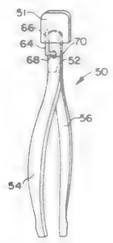


1. A suture guiding device comprising a bent tubular shaft having opposite ends which are distal and proximal relative to a person holding the device for use in a suturing procedure, the distal end of the shaft being adapted to be inserted into a patient during said procedure, a suture guide mounted at the distal end of the shaft for rotation relative to the shaft about an axis extending endwise with respect to the shaft, said guide having a guide surface configured for guiding a curved suture needle in a desired direction as the needle is pushed along the surface, a hand-operable control device comprising a control knob rotatably mounted on said shaft generally adjacent its proximal end, and means interconnecting said guide and said control device comprising a flexible shaft inside said bent

VOL 1165 ISS 5 AG 30 1994 UMI

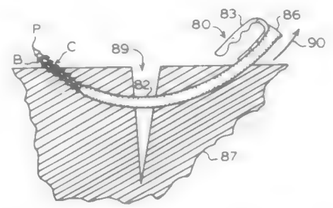
tubular shaft connected at one end to said control knob and at its other end to said guide whereby hand-operation of said control knob causes said flexible shaft and said guide to rotate to selectively adjust the suture-guiding position of said guide surface.

5,342,375
NEEDLE GRIPPING APPARATUS
Gerald M. Lemole, 404 Tomlinson Rd., Huntingdon Valley, Pa. 19006
Filed Jan. 27, 1993, Ser. No. 9,624
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **16 Claims**



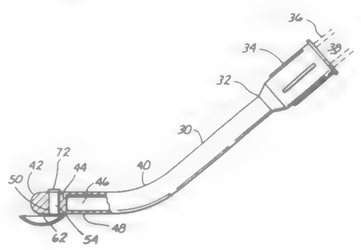
1. An apparatus for capturing, and manipulating the movement of, a surgical needle passing through the tissue wall of a patient, said apparatus comprises:
(a) a removable gripping means, said gripping means being designed to slide onto and off of a means for manipulating the movement of the gripping means in a controlled manner, said gripping means being designed to rest against a portion of a patient's tissue wall, and said gripping means being comprised of a material which can be penetrated by, and grip, the pointed end portion of a surgical needle, after the needle's pointed end portion passes through said tissue wall,
(b) a means for manipulating said removable gripping means in a controlled manner, said manipulating means having a ledge surface or an opening defined thereon or therein, and
(c) a latching member designed to permit said removable gripping means to be secured to, and removed from said manipulating means, wherein one end of said latching member is embedded into said removable gripping means, and wherein the other end of said latching member is hook-shaped, said latching member being movable between a locked and an unlocked relationship with said manipulating means' ledge surface or opening, said latching member being comprised of a flexible and resilient material, which is different from that material from which said removable gripping means is made, and said latching member, when in the locked relationship, prevents said gripping means from sliding off of said manipulating means when said gripping means is subjected to the pulling action encountered in a suture gripping procedure, and, when in the unlocked relationship, permits said gripping means to be slid off of said manipulating means when said gripping means is subjected to the pulling action encountered in a suture gripping procedure.

5,342,376
INSERTING DEVICE FOR A BARBED TISSUE CONNECTOR
Gregory L. Ruff, Durham, N.C., assignor to Dermagraphics, Inc., Durham, N.C.
Filed May 3, 1993, Ser. No. 55,870
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—151 **18 Claims**



1. A device for insertion into tissue, comprising:
a barbed tissue connector having an elongated body and a plurality of axially spaced barbs projecting from said elongated body, and extending along a substantial portion of the length of said elongated body said barbs being configured such that they are yieldable in the direction of said elongated body and are generally rigid in the opposite direction; and
a tubular body having an interior of a size sufficient to receive the barbed tissue connector, said tubular body having a leading end having an opening therein and a trailing end having an opening therein, and said opening in said leading end being sufficiently large to permit said connector to be extracted therefrom.

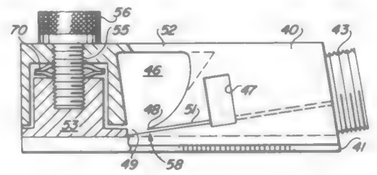
5,342,377
ROTATING BLADE CAPSULOTOMY INSTRUMENT AND METHOD OF PERFORMING A CAPSULOTOMY
Howard E. Lazerson, 935 Glenhaven Dr., Pacific Palisades, Calif. 90277
Continuation-in-part of Ser. No. 992,610, Dec. 18, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 52,795
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—166 **18 Claims**



1. An instrument for performing a capsulotomy whereby an opening is cut into the wall of the anterior capsule of a human eye, said instrument comprising:
handle means;
a probe, said probe being formed as a thin rigid elongated cylindrical element having a first base end and a second closed end, said first base end being adapted for coupling to the handle means and said probe being transversely orificed perpendicularly to its axis, and inwardly of, but adjacent to, the second closed end of the probe;
an axle rotatably mounted on the second closed end of said element through said transverse orifice and co-axially

with said orifice, said axle having a first end and a second end, said first end being secured against withdrawal through the orifice, and said second axle end projecting from said orifice,
a rotatable cutter element, said cutter element comprising a thin, downwardly projecting rigid arcuate sharp blade, said blade having a base portion with a first leading end and a second trailing end, and a cutting edge section, said blade cutting edge section being convexly curved away from said base portion for a full distance between said first and second ends of said base portion, and said base portion being secured to the second projecting end of said axle along a portion of said base portion closer to the first leading end of the blade than to its second trailing end, whereby the blade is eccentrically mounted so that upon application of the leading edge of the blade to a surface to be cut in a predetermined path, the blade rotates about the axis of the axle to cause the trailing end of the blade to follow said predetermined path.

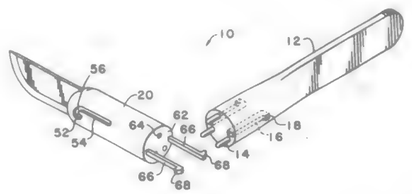
5,342,378
SECTIONING DEVICE FOR LAMELLAR SURGERY
Clarence E. Giraud, Mesa, and Russell G. Koepnick, Phoenix, both of Ariz., assignors to Micro Precision Instrument Company, Mesa, Ariz.
Continuation of Ser. No. 775,178, Oct. 11, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 110,323
Int. Cl.[5] A61F *9/00*
U.S. Cl. 606—166 **10 Claims**



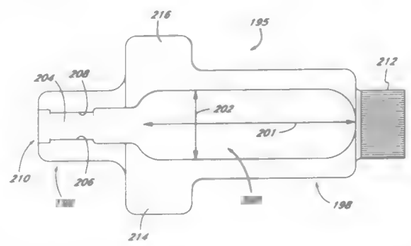
1. A keratome for making single or consecutive lamellar slices of human tissue, particular in the cornea of a human eye, said keratome comprising:
an elongated, unitary body having a front portion and a rear portion defining a chamber therebetween for receiving said slices, said chamber including a curved surface;
an adjustable plate in said front portion, said adjustable plate having a planar surface facing outwardly from said body;
means connected to said front portion for moving said adjustable plate in a direction perpendicular to said planar surface to adjust the thickness of a slice;
a slot extending from side to side through said rear portion, wherein said slot defines a plane at an angle of less than fifteen degrees and greater than zero degrees relative to said planar surface;
a blade in said slot, said blade
(a) being movable from side to side in said slot,
(b) having a cutting edge extending from said body past said planar surface, and
(c) being approximately tangential to said curved surface.

5,342,379
SAFETY SCALPEL
Fredric G. Volinsky, 11 Church St., Apt. 514, Salem, Mass. 01970
Filed Jun. 1, 1993, Ser. No. 69,526
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **2 Claims**

1. A safety scalpel assembly which comprises:
a handle which includes a facing surface, the facing surface of the handle characterized by locating pins and further characterized by guide tracks, which guide tracks terminate in locking apertures;
a cartridge having an elongated slot formed therein, a rear wall formed in the cartridge and aligned with the slot to limit the movement of a scalpel slidably received in the slot, the scalpel having a blade and a shank, said movement being solely within the cartridge, the scalpel adapted to be fully recessed in the cartridge when the scalpel is in a retracted position and to extend from the cartridge when the scalpel is in an extended position, a track formed in the wall of the housing, means to bias the scalpel to its retracted position within the slot, means to move the scalpel from its retracted position to its extended position, said means to move secured to the scalpel and extending into he track and travelling along the track, means to lock the scalpel in its extended position; and
the cartridge having a facing surface, which abutts to the facing surface of the handle and wherein the facing surface of the cartridge is characterized by locator holes and locking members, the pins of the handle received in the holes and the locking members releasably engaged in the locking apertures of the handle when the handle is secured to the cartridge.



5,342,380
ULTRASONIC KNIFE
Larry L. Hood, 25652 Nottingham Ct., Laguna Hills, Calif. 92653
Continuation of Ser. No. 839,411, Feb. 20, 1992, Pat. No. 5,261,922. This application Apr. 29, 1993, Ser. No. 55,042
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—169 **14 Claims**



1. A blade carrier for handling an ultrasonic surgical blade in a sterile environment while minimizing the risk of inadvertent blade stick, said ultrasonic blade of the type comprising a generally planar body extending from a shaft which has a pair of opposing wrenching flats, said blade carrier comprising:
a blade tip end defining a blade cavity which is configured to receive the blade planar body; and
a blade connector end comprising a pair of generally opposing surfaces interconnected by a hinge region, said opposing surfaces and said hinge region forming an open channel configured to receive a portion of the blade shaft with the opposing surfaces contacting the wrenching flats of

VOL 1165 ISS 5 AG 30 1994 UMI

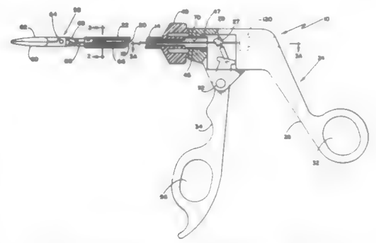
the blade shaft, said blade connector end being constructed of a material having sufficient resilience such that rotation of the blade carrier will rotate the blade contained therein until a predetermined torque is applied, whereby said opposing surfaces of said open channel deflect outwardly and cam off the wrenching flats to release the blade when said predetermined torque is applied to the blade carrier.

5,342,381

COMBINATION BIPOLAR SCISSORS AND FORCEPS INSTRUMENT

Kevin K. Tidemand, Maple Grove, Minn., assignor to Everest Medical Corporation, Minneapolis, Minn.

Filed Feb. 11, 1993, Ser. No. 16,327
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—174 6 Claims



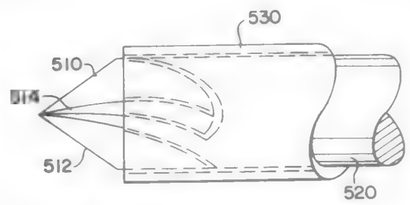
1. A hand operable, bipolar, combination scissors and forceps instrument comprising two interfacing blade members wherein at least one blade member is pivotable in relation to the other blade member, and further wherein each blade member is shaped to cooperate with the other blade member to thereby form a distal forceps portion and a proximal scissors portion, each blade member being a metal electrode to which current can flow and having a ceramic insulator layer secured to the scissors portion thereof, whereby the ceramic insulator layer of one blade member interfaces with the ceramic insulator layer of the other blade member for electrically insulating one another along their entire lengths and wherein the interfacing ceramic layers each have a beveled cutting edge.

5,342,382

SURGICAL TROCAR

Ronald J. Brinkerhoff, Amelia; Earl J. Mills, Cincinnati; Harry C. Parkhurst, Cincinnati, and Martin Madden, Cincinnati, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 641,379, Jan. 15, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 49,245
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—184 10 Claims



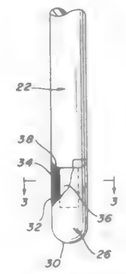
1. A trocar comprising:
a laparoscopic cannula;
an obturator having a sharpened tip for entry into said cannula;
means for moving said sharpened tip between an extended position and a retracted position relative to said cannula;
means for rotating said sharpened tip within said cannula when said tip moves between said extended position and said retracted position;
latch means for releasably maintaining said tip in said extended position; and
spring means for retracting said tip from said extended position to said retracted position responsive to a release of said latch means.

5,342,383

SOFT TIP OBTURATOR

Joseph J. Thomas, Berwyn, Pa., assignor to Thomas Medical Products, Inc., Malvern, Pa.

Filed Mar. 27, 1992, Ser. No. 858,922
Int. Cl.[5] A61B *17/00*; A61M *5/178, 25/00*
U.S. Cl. 606—190 26 Claims



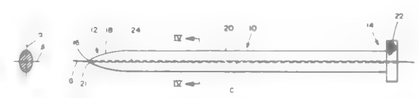
1. An obturator for use with an access device located within a lumen extending into the cardiovascular system of a living being, said obturator comprising a shaft in the form of an elongated solid rod-like element having a distal end, said rod-like element being formed of a first material having a first durometer, said distal end comprising a tip located thereon, said rod-like element and said tip are each the same outside diameter, said tip being of a fixed shape and being formed of a second material having a second durometer and said tip comprising radiopaque means, said second durometer being substantially lower than said first durometer, wherein when said obturator is located within said access device, said tip extends outwardly therefrom, said rod-like element of said obturator being maintainable in a desired position within said access device to provide support thereto when said access device is located within said lumen, while said tip minimizes trauma to said lumen.

5,342,384

SURGICAL DILATOR

David J. Sugarbaker, Brookline, Mass., assignor to Brigham & Women's Hospital, Boston, Mass.

Filed Aug. 13, 1992, Ser. No. 929,311
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—191 15 Claims



1. In a medical dilator for stretching an incision in muscle or tissue including a rod having a distal end, a proximal end, and a central axis extending from the proximal end to the distal end,

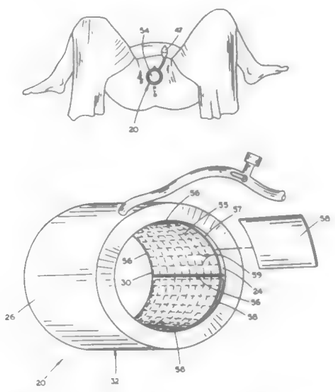
a smooth convex tip being located at the distal end continuous with a portion of the rod of progressively increasing girth leading to an intermediate portion, the intermediate portion having the largest girth along the rod,
the cross sectional area of the intermediate of the rod being oval and having a major and a minor axis at right angles with the central axis and with each other to induce more stretching in the direction of the major axis than in the direction of the minor axis and the dimensions of the minor axis and the major axis being constant measured along the length of the intermediate portion.

5,342,385

FLUID-EXPANDABLE SURGICAL RETRACTOR

Robert A. Norelli, 2412 N. Lehman Rd., Peoria, Ill. 61604; Edward H. Jelinek, 9930 Harney Pkwy. South, Omaha, Nebr. 68114, and George E. Cullan, 110 W. 22nd Ave., Hutchinson, Kans. 67502

Continuation of Ser. No. 650,771, Feb. 5, 1991, abandoned. This application Aug. 14, 1992, Ser. No. 914,712
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—193 8 Claims



1. A fluidly-expandable retractor, comprising:
a hollow, generally annular member with longitudinal forward and rearward ends, having inner and outer annular walls fluidly sealed together at their forward and rearward ends to form a bladder;
a generally inelastic fiber matrix laminated to the inner annular wall of said bladder to prevent elastic expansion of said inner annular wall but permit elastic expansion of said outer annular wall; and
means for distending said bladder fluidly connected to said bladder.

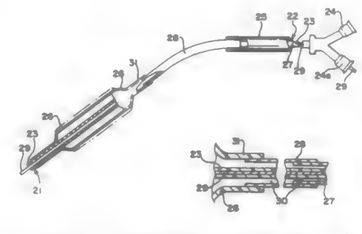
5,342,386

CATHETER WITH MULTIPLE FLEXIBILITIES ALONG THE SHAFT

Thomas Trotta, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Oct. 26, 1992, Ser. No. 967,520
Int. Cl.[5] A61M *25/00*
U.S. Cl. 606—194 11 Claims

1. A medical device balloon catheter comprising:
a catheter body which is an elongated tube having a given stiffness, said catheter body having a proximal end and a distal end;
a medical device balloon member with a balloon portion having a non-distended, collapsed profile and a distended, expanded profile which develops upon the application of fluid pressure internally of the balloon, said balloon member having a proximal end leg portion and a distal end leg portion which do not expand upon said application of fluid pressure internally of the balloon;
a thin-walled, flexible connecting tube which exhibits neither the collapsed profile nor the expanded profile that develops in the medical device balloon member of the catheter, said connecting tube being secured between said distal end of the catheter body and said proximal end leg portion of the balloon member, said connecting tube thereby spacing said balloon member from said catheter body, said connecting tube having been radially expanded to impart its thin-walled and flexible characteristics thereto, the connecting tube having a stiffness less than said given stiffness of the catheter body while having a burst pressure of not less than about 400 psi;
said thin-walled flexible connecting tube is made from a polymer selected from the group consisting of nylons,



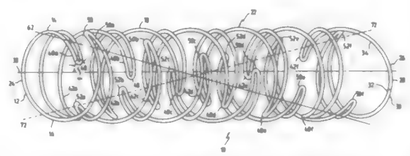
polyamides, polyetheramides and blends of polyetheramides with other polyamide types of materials;
means for manipulating the balloon catheter into and through a body vessel to position the balloon member at a selected location within the body vessel;
means for imparting fluid pressure interiorly of the balloon to distend and expand the balloon member;
an inner tube which is an elongated tube having a proximal end and a distal end, the inner tube being substantially co-axially positioned within said catheter body, said thin-walled, flexible connecting tube, and said medical device balloon member;
said distal end of the inner tube being secured to said distal end leg portion of the balloon member; and
said means for imparting fluid pressure internally of the balloon member includes a passageway between the outer surface of said inner tube and the combined inner surfaces of said catheter body, said thin-walled, flexible connecting tube, and said medical device balloon.

5,342,387

ARTIFICIAL SUPPORT FOR A BLOOD VESSEL

David P. Summers, Montgomery, Tex., assignor to American BioMed, Inc., The Woodlands, Tex.

Filed Jun. 18, 1992, Ser. No. 900,896
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—198 21 Claims



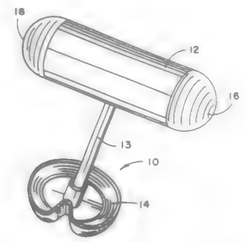
17. A stent having a compressed position for deployment in a blood vessel and an expanded position for supporting the blood vessel, comprising:

VOL 1165 ISS 5 AG 30 1994 UMI

a wire bent into a plurality of successive arcs, adjacent arcs being joined by cusps, said arcs defining a substantially cylindrical coil;
said wire reversing direction at each cusp;
each of said arcs describing less than 540° when the stent is in its compressed position; and
said wire forming a closed loop without crossing itself at any point.

5,342,388
METHOD AND APPARATUS FOR SEALING LUMINAL TISSUE

Sonia Toller, 4732 Hollyberry Dr., Orlando, Fla. 32812
Filed Mar. 25, 1993, Ser. No. 37,073
Int. Cl.[5] A61B *17/12*
U.S. Cl. 606—201 5 Claims

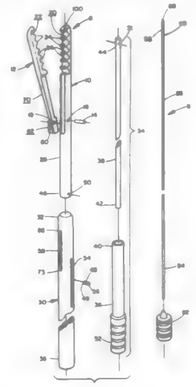


1. An apparatus for applying pressure to luminal tissue above a femoral artery puncture site after completion of a cannulated procedure, the apparatus comprising:
an elongated substantially cylindrically shaped handle having a first and second end, said cylindrical handle weighing at least about one pound;
an elongated rod extending outward from said handle between said first and second end; and
a disk removably connected to said elongated rod at a distal end from said handle and adapted to rest on a body such that when pressure is applied to said handle, said disk depresses the luminal tissue, said disk including a notch extending from the periphery of the disk towards a center portion of said disk, said notch having its largest width at said periphery, said disk having a substantially flat bottom such that said handle can be supported in the upright position when said disk rests on a flat surface.

5,342,389
TISSUE MANIPULATOR

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.
Filed Apr. 28, 1992, Ser. No. 874,934
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—205 25 Claims

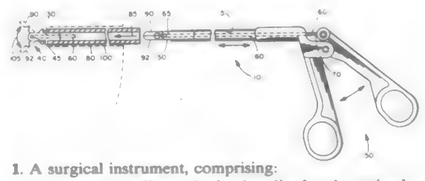
1. An endoscopic tissue manipulator comprising:
an elongate body having a distal end, a proximal end, and a longitudinal axis;
first and second jaws at the distal end of the body, said jaws having opposed jaw surfaces, said jaws being movable between open and closed positions, the first jaw being pivotally mounted to the second jaw at a pivot point;
a jaw driver operably coupled to the jaws and including a jaw driver element at the proximal end of the body which can be actuated by a user to move the jaws between the open and closed positions;
the opposed jaw surfaces having troughs and peaks arranged along said longitudinal axis, said jaw surfaces configured so that one or more peaks of said jaw surfaces are at least partially housed within corresponding troughs of said jaw surfaces when said jaws are in the closed position;
said jaw surfaces defining a gap therebetween when said jaws are in the closed position, said gap sized so to minimize damage to tissue captured between the jaw surfaces; and



said jaw surfaces having portions which contact the tissue, said portions having curved surface portions with a minimum radius of curvature chosen to minimize tissue damage, the jaw surfaces being complementary-shaped surfaces; the jaw driver including an elongate drive connector connecting the jaw driver element and the second jaw.

5,342,390
THUMB-ACTIVATED ACTUATING MEMBER FOR IMPARTING RECIPROCAL MOTION TO A PUSH ROD OF A DISPOSABLE LAPAROSCOPIC SURGICAL INSTRUMENT

Charles R. Slater, Fort Lauderdale, and Thomas O. Bales, Jr., Coral Gables, both of Fla., assignors to Symbiosis Corporation, Miami, Fla.
Continuation of Ser. No. 682,203, Apr. 4, 1991, Pat. No. 5,133,735, which is a continuation-in-part of Ser. No. 521,766, May 10, 1990, Pat. No. 5,133,727. This application Jul. 24, 1992, Ser. No. 919,210
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—205 11 Claims

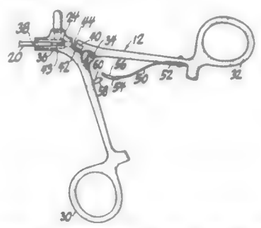


1. A surgical instrument, comprising:
a) an elongated hollow tube having distal and proximal end portions and a longitudinal axis;
b) a reciprocally movably push rod having proximal and distal end portions, wherein said push rod extends movable through said tube;
c) a pivotal end effector operatively coupled to said push rod and said tube;
d) a housing fixedly engaging said tube; and
e) an actuating means for actuating said end effector, said actuating means having a lever engaging said push rod and a first pivot member engaging said lever and said housing, said pivot member pivotally engaging said lever relative to said housing, wherein

said lever includes an external surface having serrations thereon and a first handle, and said actuating means actuates said end effector upon manipulation of said serrations, and also actuates said end effector upon manipulation of said first handle.

5,342,391
CLEANABLE ENDOSCOPIC SURGICAL INSTRUMENT

David L. Foshee, Cary, and Robert S. Lynch, Durham, both of N.C., assignors to Linvatec Corporation, Largo, Fla.
Filed Oct. 6, 1992, Ser. No. 957,336
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—205 3 Claims



2. An endoscopic surgical instrument comprising:
a handle means comprising a pair of handle portions movable relative to one another between a closed position and an open position;
biasing means for biasing said handle portions to a normally open position;
releasable latch means interposed between said handle portions for selectively latching said biasing means to, in normal use, prevent motion of said handle portions beyond a normal range of motion between said normally open position and a normally closed position;
an elongated tubular shaft having a distal end and a proximal end, the latter secured to said handle means;
an elongated working element slidably and removably mounted within said shaft, said working element having a distal end and a proximal end;
means for releasably securing said handle means to said proximal end of the working element, said securing means adapted to enable said working element to be disengaged from said securing means and pulled distally from the distal end of said tubular shaft when said releasable latch means is actuated to enable motion of said handle portions beyond said normal range of motion; and
means for selectively unlatching said releasable latch means to enable motion of said handle portions beyond said normal range of motion and into a predetermined disassembly position wherein said working element may be disengaged.

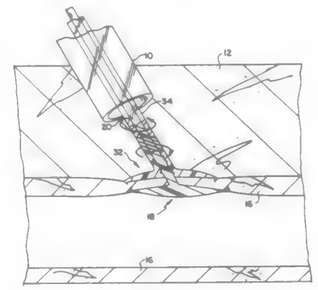
5,342,392

Patent Not Issued For This Number

5,342,393
METHOD AND DEVICE FOR VASCULAR REPAIR

Richard S. Stack, Durham, N.C., assignor to Duke University, Durham, N.C.
Filed Aug. 27, 1992, Ser. No. 935,900
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—213 22 Claims

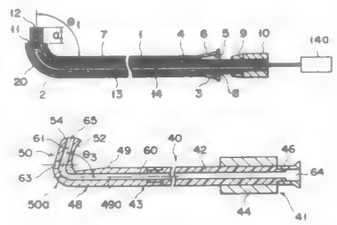
1. A device for sealing a perforation or incision in a duct or hollow organ comprising:
an inner rivet member including a plate portion having first and second side faces and a stem portion extending from the second side face of said plate portion, said rivet member being made at least in part of a material that is bio-resorbable; and
an outer rivet member including a plate portion having first and second side faces and a stem portion extending from said second side face of said plate portion in a direction



away from said inner rivet member; said outer rivet member having a central bore extending from said first side face of said plate through the stem portion of said outer rivet member for sleevelike coupling with said inner rivet member stem, said outer rivet member being made at least in part of a material that is bio-resorbable.

5,342,394
APPARATUS FOR BLOCKING A VEIN BRANCH AND METHOD OF BLOCKING A VEIN BRANCH

Kiyotaka Matsuno; Masahiro Kawashima, and Akio Nakada, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 644,110, Jan. 18, 1991, abandoned. This application Nov. 20, 1992, Ser. No. 979,439
Claims priority, application Japan, May 16, 1990, 2-50302[U]; Aug. 6, 1990, 2-207816; Oct. 25, 1990, 2-287858
Int. Cl.[5] A61B *17/08*; A61D *1/00*
U.S. Cl. 606—213 17 Claims



1. An apparatus for blocking a vessel branch, comprising:
an outer tube having a tubular passage therethrough, said tubular passage having an opening at a distal end of said outer tube and an opening at a proximal end of said outer tube, and said outer tube having a bent distal end portion which is bent at an angle of from 60° to 120°;
an inner tube slidably inserted in the tubular passage of said outer tube so as to have a portion which is projected from and retracted from the opening at the distal end of said tubular passage, said inner tube being made of a flexible material, and said inner tube having a storing portion at a distal end thereof;
a blocking member contained in said storing portion of said inner tube;

VOL 1165 ISS 5 AG 30 1994 UMI

means for pushing out said blocking member from said storing portion into a vessel branch; and

cutting means provided on a rear side of said bent distal end portion of said outer tube, for cutting a venous valve of a vein.

5,342,395

ABSORBABLE SURGICAL REPAIR DEVICES

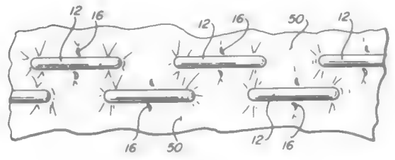
Peter K. Jarrett, Southbury, Conn.; Donald J. Casey, Mars, Pa., and Louis Rosati, Norwalk, Conn., assignors to American Cyanamid Co., Wayne, N.J.

Continuation-in-part of Ser. No. 799,521, Nov. 27, 1991, which is a continuation-in-part of Ser. No. 548,802, Jul. 6, 1990, Pat. No. 5,080,665. This application Jan. 13, 1992, Ser. No. 819,701

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[5] C08J 3/10; A61B 17/00

U.S. Cl. 606—219 9 Claims



1. A load-bearing, bioabsorbable surgical repair device comprising a tissue fixation device manufactured from a block copolymer having a hard and a soft phase, said hard phase of said copolymer having a plurality of first linkages consisting essentially of about 85 weight percent of the copolymer of lactic acid ester and said soft phase having a plurality of second linkages comprising about 15 weight percent of the copolymer of ϵ-caprolactone.

5,342,396

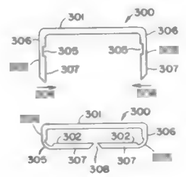
STAPLES

Melvin S. Cook, 8 Saddle Ridge Rd., Hohokus, N.J. 07423

Filed Mar. 2, 1993, Ser. No. 24,501

Int. Cl.[5] A61B 17/064

U.S. Cl. 606—219 11 Claims



1. A stapling arrangement comprising:

a staple, the staple including;

a crown having a crown length;

at least two legs, each leg having an end, each of said legs being substantially perpendicular to said crown, each of said legs including at least one deformation zone, each deformation zone being defined as a first portion of said staple leg that is more susceptible to bending than adjacent portions of said staple leg, each leg having a second portion adjacent to said deformation zone and located between said deformation zone and said end of said staple leg, and a third portion adjacent to said deformation zone and located between said deformation zone and said crown of said staple, each of said second and third portions having a length, the length of said second portion of a first leg of said at least two legs and the length of said second portion of a second leg of said at least two legs, when added together, equaling substantially the crown length of the crown of the staple;

a staple pusher, for pushing said staple into tissue to be stapled, said staple pusher being arranged to provide a force on said crown of said staple;

an anvil, the anvil including at least one channel arranged to make contact with said end of said legs and to bend the first portion of said first leg until the second portion of said first leg forms substantially a right angle with respect to the third portion of said first leg, and to bend the first portion of said second leg until the second portion of said second leg forms a substantially right angle with respect to the third portion of said second leg; and

the stapling arrangement inhibiting further bending of said first and second legs after said right angle is formed in each of said at least two legs.

9. A method of inserting a surgical staple into tissue, the surgical staple comprising a crown having a length and at least two legs, each of said at least two legs including an end, each of said legs further including at least one deformation zone, each deformation zone being defined as a first portion of said staple leg that is more susceptible to bending than adjacent portions of said staple leg, each leg having a second portion adjacent to said deformation zone and located between said deformation zone and said end of said staple leg, and a third portion adjacent to said deformation zone and located between said deformation zone and said crown of said staple, each of said second and third portions having a length, the length of said second portion of a first leg of said at least two legs and the length of said second portion of a second leg of said at least two legs, when added together, equaling substantially the crown length of the crown of the staple, the method comprising the steps of:

positioning a staple pusher on a first side of tissue to be stapled;

positioning an anvil on a second side of tissue to be stapled;

forcing said staple pusher against said crown of said staple, thereby pushing said ends of said legs through said tissue to be stapled and forcing said ends of said legs of said staple against said anvil;

continuing to force said ends of said legs against said anvil until a substantially right angle is formed on said second side of said tissue between said second portion of said first leg and said third portion of said first leg and a substantially right angle is formed on said second side of said tissue between said second portion of said second leg and said third portion of said second leg and until said staple forms a substantially closed rectangle, which rectangle substantially encloses the tissue being stapled; and

preventing the further deformation of staples after substantially right angles are formed in said first leg and said second leg.

5,342,397

CUTTING EDGE AND TAPERCUT NEEDLES HAVING A BLUNT TIP

Ronald Guido, Annandale, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Oct. 18, 1993, Ser. No. 138,679

Int. Cl.[5] A61B 17/00

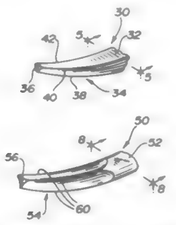
U.S. Cl. 606—222 15 Claims

1. A surgical needle comprising:

a body portion,

a blunt tip, and

a cutting portion disposed between and contiguous with said body portion and said blunt tip, said cutting portion having at least one cutting edge extending from said blunt tip to said body portion, said blunt tip blending smoothly with an outer surface of a distal end of said cutting portion such that said blunt tip has no sharp edges or discontinuities.



5,342,398

PACIFIER WITH INTERNAL KNURLED TEETHING MEMBER

Ping-Chang Sun, 2nd Fl.-3, No. 35, Lin Teh St., Ling Ya Dist., Kaohsiung, Taiwan

Filed Aug. 9, 1993, Ser. No. 104,329

Int. Cl.[5] A61J 17/00

U.S. Cl. 606—235 1 Claim

1. A pacifier comprising a hollow nipple member having an inner wall and a ring member including a ring with an insert rod; said hollow nipple member and said ring member being secured together such that said insert rod projects into said hollow nipple member, said insert rod having a gum massaging surface spaced from said inner wall including a plurality of knurls, each two adjacent said knurls having a recess therebetween.

5,342,399

IMPLANTABLE DEFIBRILLATOR SYSTEM HAVING A SMALL CAPACITANCE VALVE

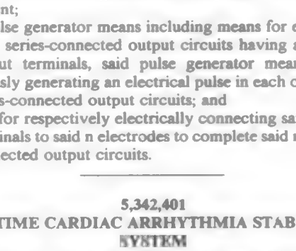
Mark W. Kroll, Minnetonka, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Filed Dec. 17, 1991, Ser. No. 808,722

Int. Cl.[5] A61N 1/39

U.S. Cl. 607—5 8 Claims

1. An improved implantable defibrillator system for producing a capacitor-discharge defibrillation pulse, the implantable defibrillator system being a self-contained human implantable device including a pulse-generating capacitor means for storing an electrical charge, means for internally charging the pulse-generating capacitor means, and means for selectively discharging the electrical charge in the pulse-generating capacitor through electrodes implanted in a human patient in response to a sensing of a myocardial fibrillation in the human patient, the improvement comprising:



the pulse-generating capacitor means having an effective capacitance value in the range of 20–100 microfarads.

5,342,400

DEFIBRILLATOR/CARDIOVERTER

Jakub Hirschberg, Taeby, and Martin Obel, Danderyd, both of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 24, 1992, Ser. No. 856,688

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1991, 4110402

Int. Cl.[5] A61N 1/39

U.S. Cl. 607—5 8 Claims

1. A defibrillator/cardioverter comprising:

pulse generator means for generating electrical pulses;

a plurality of n electrodes, n being greater than or equal to three, for delivering said electrical pulses to the heart of a patient;

said pulse generator means including means for establishing n−1 series-connected output circuits having a total of n output terminals, said pulse generator means simultaneously generating an electrical pulse in each of said n−1 series-connected output circuits; and

means for respectively electrically connecting said n output terminals to said n electrodes to complete said n−1 series-connected output circuits.

5,342,401

REAL TIME CARDIAC ARRHYTHMIA STABILIZING SYSTEM

Mark L. Spano, Laurel, Md.; William L. Ditto, Wooster, Ohio; Alan Garfinkel, Venice, and James N. Weiss, Encino, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Aug. 19, 1992, Ser. No. 930,945

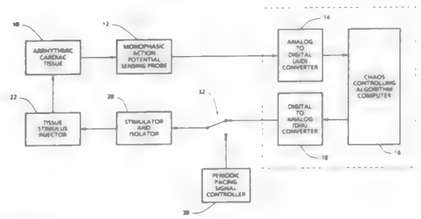
Int. Cl.[5] A61N 1/00

U.S. Cl. 607—5 9 Claims

1. In a method of treating pulsating behavioral activity by monitoring interbeat intervals of said activity to detect a chaos system and intervening to effect a shift in status of the chaos system from movements of system state points along an unstable manifold to movements along a stable manifold, including the steps of: performing real time calculation during said moni-

VOL 1165 ISS 5 AG 30 1994 UMI

toring of the interbeat intervals to determine changes in the status of the chaos system from data obtained by said monitoring of the interbeat intervals; and deriving from said real time calculation a waiting time for delaying said intervening in



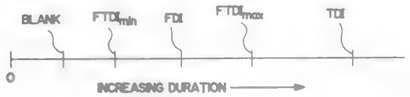
accordance with a chaos behavior controlling algorithm; said delayed intervening including injecting stimulus pulses causing said shift in the status of the chaos system tending to shorten certain of the interbeat intervals.

5,342,402

METHOD AND APPARATUS FOR DETECTION AND TREATMENT OF TACHYCARDIA AND FIBRILLATION

Walter H. Olson, North Oaks, and David K. Peterson, Mounds View, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 29, 1993, Ser. No. 10,906
Int. Cl.[5] A61N *1/00*; A61B *5/04*
U.S. Cl. 607—5 **14 Claims**



1. An apparatus for detection and treatment of arrhythmias, comprising:

means for sensing depolarizations of a patient's heart;

means for measuring intervals separating successive depolarizations of said patient's heart;

means for defining first and second adjacent, non-overlapping interval ranges and for defining a third interval range overlapping said first and second interval ranges;

means for determining numbers of said measured intervals falling within said first, second and third interval ranges;

first means for detecting an arrhythmia when the number of said measured intervals falling within said first interval range equals a first predetermined value;

second means for detecting an arrhythmia when the number of said intervals within said second interval range equals a second predetermined value;

means responsive to the detection of the arrhythmia by said first detecting means, for identifying the arrhythmia detected, comprising means for determining a number of said intervals falling within said third interval range within a series of said measured intervals preceding detection of said arrhythmia by said first detecting means and for identifying occurrence of a first arrhythmia in response to said number of intervals occurring within said series of intervals and falling within said third predetermined interval range being less than a third predetermined value and for identifying a second arrhythmia in response to said number of intervals occurring within said series of intervals and falling within said third interval range being greater than or equal to said third predetermined value;

means for delivering at least two types of arrhythmia therapies; and

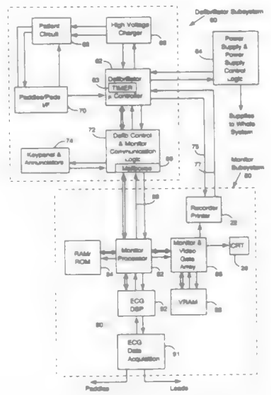
means responsive to said identifying means for selecting and triggering delivery of one of said arrhythmia therapies.

5,342,403

INTEGRATED DEFIBRILLATOR/MONITOR ARCHITECTURE WITH DEFIBRILLATOR-ONLY FAIL-SAFE MODE OF OPERATION

Daniel J. Powers, McMinnville; Judith Cyrus, Newberg, both of Oreg.; Steve Kootstra, Roseville, Calif.; Art Burkhalter, Monmouth, Oreg.; J. Daren Bledsoe, McMinnville, Oreg.; David C. Shultheis, McMinnville, Oreg., and Dan Jordan, McMinnville, Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Apr. 9, 1993, Ser. No. 46,280
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 **20 Claims**



1. An integrated defibrillator/monitor system for treating a cardiac patient comprising:

a monitor subsystem for acquiring ECG data from the patient;

a defibrillator subsystem for delivering a shock to the patient;

communication means disposed in the defibrillator subsystem and coupled to the monitor subsystem for communication therebetween;

means disposed in the defibrillator subsystem and coupled to the communication means for detecting a monitor subsystem failure; and

means in the defibrillator subsystem for switching to a defibrillator-only mode of operation in response to the monitor subsystem failure.

5,342,404

IMPLANTABLE MEDICAL INTERVENTIONAL DEVICE

Eckhard Alt, Ottobrunn; Marcus Matula, Munich, and Edgar Mestre, Munich, all of Fed. Rep. of Germany, assignors to Intermedics, Inc., Angleton, Tex.

Filed Apr. 3, 1992, Ser. No. 863,092
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—6 **29 Claims**

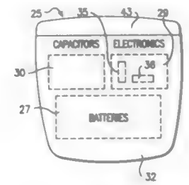
1. An implantable medical interventional device for treatment of pathologic tachycardias, comprising:

first sensor means adapted to detect cardiac activity of the patient in which the interventional device is implanted for producing a first electrical signal representative of such cardiac activity including heart rate of the patient,

second sensor means adapted to detect movement and lack of movement indicative of physical activity and inactivity of the patient for producing a second electrical signal representative of the patient's activity status,

generator means for selectively generating electrical waveforms to be applied to the patient's heart to break a pathologic tachycardia, and

control means setting a predetermined heart rate and responsive to said first and second electrical signals as complementary criteria for distinguishing a heart rate of the patient exceeding the predetermined rate during a period of physical activity by the patient indicative of a pathologic tachycardia requiring treatment from a physiologic tachycardia attributable to patient activity, and including activation means responsive to a decision by said control means that the patient is experiencing a pathologic tachycardia for triggering said generator means to generate an electrical waveform having characteristics selected to break the tachycardia.

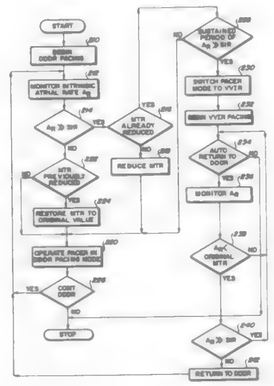


5,342,405

SYSTEM AND METHOD FOR SELECTING A MODE OF OPERATION OF A DUAL-CHAMBER PACEMAKER

James L. Duncan, Alpharetta, Ga., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Division of Ser. No. 740,554, Aug. 5, 1991, Pat. No. 5,269,299. This application Nov. 19, 1992, Ser. No. 979,132
Int. Cl.[5] A61N *1/368*
U.S. Cl. 607—17 **10 Claims**



10. In a rate-responsive, dual-chamber pacemaker configured to operate in at least the DDDR and VVIR modes of operation, a system for selecting the mode of operation of a pacemaker comprising:

means for defining a physiological pacing rate;

control means for generating timing signals indicative of when an atrial and/or ventricular stimulation pulse should be generated by said pacemaker in order to maintain said physiological pacing rate;

sensing means coupled to said control means for detecting P-waves for sensing atrial activity, indicating intrinsic atrial activity, and for detecting R-waves for sensing ventricular activity indicating intrinsic ventricular activity, said control means generating the timing signals needed to generate atrial and/or ventricular stimulation pulses on demand as needed in the absence of intrinsic P-waves and/or R-waves;

stimulation pulse generating means coupled to said control means for generating said atrial and/or ventricular stimulation pulses in response to said timing signals;

means for defining a maximum rate at which said pacemaker is allowed to generate said atrial and/or ventricular stimulation pulses on demand;

rate determining means for detecting the time interval between successive P-waves for determining an intrinsic atrial rate;

comparison means for determining if said sensed intrinsic atrial rate exceeds said physiological pacing rate; and

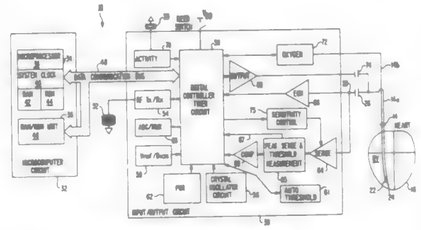
means responsive to said comparison means for selecting a mode of operation of said pacemaker when the sensed, intrinsic atrial rate exceeds the physiological pacing rate by a predetermined value.

5,342,406

OXYGEN SENSOR BASED CAPTURE DETECTION FOR A PACER

David L. Thompson, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 7, 1992, Ser. No. 957,979
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—22 **11 Claims**



1. An apparatus adapted to be implanted within a patient for detecting an evoked response of cardiac tissue evoked by a pacing pulse, comprising:

a pulse generator for generating pacing pulses;

means for applying said pacing pulses to the heart;

sensing means for measuring the oxygen saturation of said patient and for generating an electrical signal representative of said oxygen saturation level;

a monitoring circuit means coupled to said sensing means for monitoring said electrical signal provided from said sensing means, for detecting the occurrence of a cardiac evoked response;

a capture detect timer defining a capture detect window after the generation of a pacing pulse by said pulse generator; and

capture detect logic means responsive to said monitoring circuit means and said capture detect timer for detecting the occurrence of said evoked response occurring within said capture detect window.

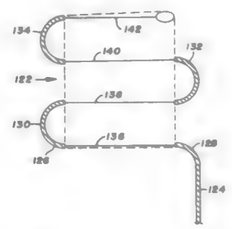
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,407

BODY IMPLANTABLE DEFIBRILLATION SYSTEM

Roger W. Dahl, Andover; David K. Swanson; Stephen J. Hahn, both of Roseville; Douglas J. Lang, Arden Hills, and John E. Heil, St. Paul, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Division of Ser. No. 533,886, Jun. 6, 1990, Pat. No. 5,203,348. This application Jul. 13, 1992, Ser. No. 912,924
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—129 4 Claims



1. A body implantable defibrillation electrode assembly, including:

an electrically conductive lead having a proximal end and a distal end;

a defibrillation pulse generating means coupled to the proximal end of the lead; and

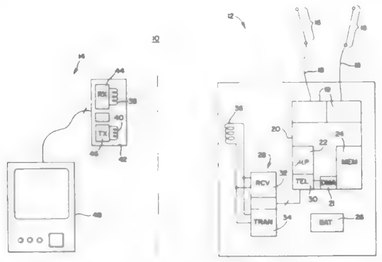
an electrode at the distal end of the lead, said electrode having a nominal width and a length at least ten times its nominal width, said electrode arranged in a serpentine configuration with a plurality of linear length-portions of the electrode disposed in side-by-side alignment and in substantially parallel, spaced apart relation, with the separation between adjacent length-portions in a direction perpendicular to the length-portions, being at least 1.5 cm, each of said length-portions being free of electrically insulative material at and along its periphery over the entire length and periphery of the length-portion.

5,342,408

TELEMETRY SYSTEM FOR AN IMPLANTABLE CARDIAC DEVICE

Paul E. deCoriolis, Bellevue; Craig S. Siegman, Redmond, and Joseph M. Bocek, Seattle, all of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Jan. 7, 1993, Ser. No. 1,330
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—32 63 Claims



1. A cardiac device which monitors activity of a human heart, or provides therapy to the human heart, or both, said cardiac device being implantable beneath the skin of a patient and comprising:

at least one electrode for sensing activity of the heart or providing therapy to the heart;

circuit means coupled to said at least one electrode for providing therapy or monitoring the activity of the heart sensed by said at least one electrode, said circuit means including data generating means for generating data indicative of said monitored activity or therapeutic activity in accordance with received command transmissions; and

telemetry means for communicating with a non-implanted external receiver and transmitter, said telemetry means including

receiving means for receiving said command transmissions from said non-implanted external transmitter, said command transmissions conforming to a first protocol and said command transmissions being selectively transmitted at two or more rates in accordance with said first protocol; and

transmitting means for transmitting information including said data to said non-implanted external receiver in accordance with a second protocol, said information transmissions being selectively transmitted at one or more rates in accordance with said second protocol,

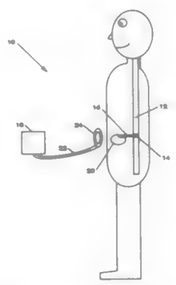
said first protocol being different from said second protocol.

5,342,409

POSITION-RESPONSIVE NEURO STIMULATOR

Keith R. Mullett, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 490,065, Mar. 7, 1990, Pat. No. 5,031,618. This application Jun. 3, 1991, Ser. No. 683,056
The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—46 4 Claims



1. A neurological stimulation device comprising:

a. means for sensing the position of a patient and determining whenever said patient is generally erect and whenever said patient is generally supine; and

b. means for stimulating said patient with a series of pulses; and

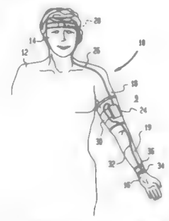
c. means for automatically altering said means for stimulating in response to said means for sensing the position of said patient by decreasing the amplitude of said pulses whenever said patient is in a generally supine position.

5,342,410

APPARATUS AND METHOD FOR INCREASING THE AMPLITUDE OF P300 WAVES IN THE HUMAN BRAIN

Eric Braverman, 844 Rte. 518, Skillman, N.J. 08558

Continuation-in-part of Ser. No. 593,067, Oct. 5, 1990, Pat. No. 5,163,446. This application Sep. 16, 1991, Ser. No. 759,945
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—58 16 Claims



1. A system for providing electrical stimulation to a human being and thereby increasing amplitude of P300 wave activity in a brain of said human being, said human being having a forehead and a wrist, said system comprising:

a source for generating a substantially periodic electrical waveform;

a first electrode means for connecting said source to the forehead of said human being; and

a second electrode means for connecting said source to the wrist of said human being.

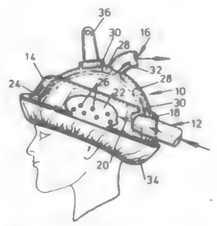
Claim 15 at line 10 after the term "being" the phrase—wherein said source produces said substantially periodic waveform having an amplitude in a range of approximately 0.1 to 400 mA, a frequency in a range of 50 to 300 Hz and a pulse width of greater than 0.2 milliseconds and less than 2.0 milliseconds.

5,342,411

SCALP COOLING DEVICE

Kenneth J. Maxted, Glasgow, Scotland, and Neville Mountford, Lincoln, England, assignors to Greater Glasgow Health Board, Glasgow, Scotland

Continuation of Ser. No. 585,076, Nov. 14, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 17,344
Claims priority, application United Kingdom, Apr. 16, 1988, 8809029.8
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—107 8 Claims



2. Scalp cooling apparatus comprising:

(a) a helmet arranged to be fitted over the scalp of a subject defining air inlet means and air outlet means and for defining an air passage between the helmet and the scalp between said air inlet means and said air outlet means;

(b) cooling means for cooling a volume of air;

(c) fan means for supplying said cooled volume of air to said helmet air inlet means;

(d) chamber means for receiving warmed air from said helmet air outlet means and recirculating air through said cooling means;

(e) means coupled to the chamber means for reducing the moisture content entrained in said air prior to said warmed air being recirculated through said cooling means; and

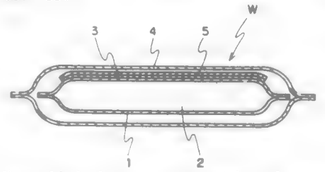
(f) biasing means external to the helmet for biasing the helmet into gentle contact with the scalp during patient movements.

5,342,412

DISPOSABLE BODY WARMER

Akio Ueki, Osaka, Japan, assignor to Kiribai Chemical Industry Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 793,445, Jan. 7, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 111,909
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—114 4 Claims



1. A disposable body warmer comprising a heat-generating agent which oxidizes and generates heat by the presence of air, a flat bag having two opposed surfaces containing the heat-generating agent and an airtight bag containing the flat bag, wherein at least one surface of the flat bag is made air permeable so that pressure in the flat bag is reduced by an exothermic reaction of the heat-generating agent, a self-adhesive layer is provided on either surface of the flat bag, and the heat-generating agent contains high performance activated carbon having an iodine adsorption of 800 to 1200 mg/g and a methylene blue decoloring power of 100 to 300 mg/g.

5,342,413

MEDICAL ELECTRODE ARRANGEMENT

Jakub Hirschberg, Taeby; Heinz Neubauer, Jaerfaella; Nina Gilljam, Farsta; Staffan Bowald, Almunge, and Ulf Lindegren, Enskede, all of Sweden, assignors to Siemens-Elema AB, Solna, Sweden

Filed May 19, 1993, Ser. No. 63,555
Claims priority, application Sweden, May 21, 1992, 9201600
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—126 12 Claims



1. A medical electrode arrangement for in vivo delivery of electrical energy to tissue, comprising:

a catheter containing an electrical lead and having a channel therein;

a thin, flexible, planar electrode having at least one partially exposed electrically conductive element therein electrically connected to said lead and defining a broad electrode surface; and

fixing means for attaching said electrode to tissue including a fixing element adapted to penetrate said tissue and

VOL 1165 ISS 5 AG 30 1994 UMI

mounted on said electrode for movement independently of said electrode, and stylet means, receivable in said channel of said catheter and releasably mechanically engageable with said fixing element, for moving said fixing element between a retracted position and an advanced position wherein said fixing element protrudes from said electrode surface.

5,342,414

TRANSVENOUS DEFIBRILLATION LEAD

Rahul Mehra, Stillwaer, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jul. 1, 1993, Ser. No. 86,289

Int. Cl.[5] A61N *1/05*

U.S. Cl. 607—127 **5 Claims**

1. An implantable defibrillation lead, comprising:

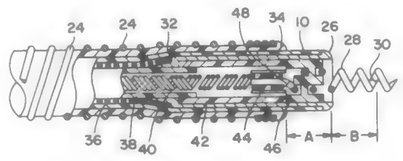
an elongated lead body having a proximal end and a distal end;

first, second and third mutually insulated conductors located within said lead body;

first, second and third electrical connectors, each coupled to one of said first, second and third mutually insulated conductors;

an elongated defibrillation electrode having proximal and a distal end, mounted to said lead body such that the distal end of said defibrillation electrode is located about one centimeter or less from the distal end of said lead body; and

first and second sensing electrodes, mounted to said lead body, distal to the distal end of said defibrillation electrode; and having an interelectrode spacing of about 0.5 centimeter;



wherein said first sensing electrode comprises a helical electrode extending from the distal end of said lead body, said helical electrode provided with an insulative coating extending to a point distal to the distal end of said lead body, and wherein said second sensing electrode comprises an electrode mounted to the distal end of said lead body, distal to the distal end of said defibrillation electrode.

5,342,415

OZONE DECOLORIZATION OF GARMENTS

Eric Wasinger, 551 Boyd St., Wichita, Kans. 67212, and David Hall, Auburn, Ala. 36830, assignors to Eric Wasinger, Wichita, Kans.

Division of Ser. No. 560,357, Jul. 31, 1990, Pat. No. 5,118,322. This application Oct. 10, 1991, Ser. No. 776,609

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] D06L *3/14, 3/04*

U.S. Cl. 8—111 **2 Claims**



1. A method for decolorizing an ice washed dyed cellulosic garment having an undesirable oxidizable coloring agent obtained by prior treatment with potassium permanganate which comprises the steps of contacting said garment in the presence of moisture and ozone in a vapor phase in a chamber at a temperature of about 40° to 100° C. for a period of time to decolorize said coloring agent and terminating contact with ozone prior to any degradation of said garment or the dye on the garment.

5,342,416

BLUE DYE COMPOSITION

Chun Yoon; Han-Chul Song, and Tae-Gab Kwon, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

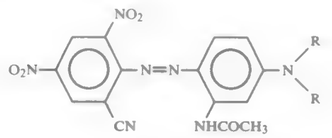
Filed Dec. 28, 1992, Ser. No. 997,228

Claims priority, application Rep. of Korea, Feb. 18, 1992, 92-2388

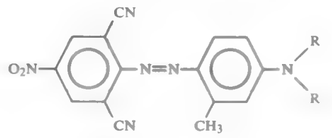
Int. Cl.[5] C09B *29/00*

U.S. Cl. 8—639 **2 Claims**

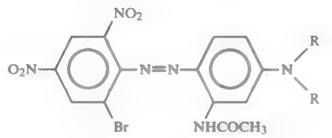
1. A blue dye composition which comprises 40 to 70 wt % of a compound of formula (I), 20 to 50 wt % of a compound of formula (II), 3 to 15 wt % of a compound of formula (III), 2 to 5 wt % of a compound of (IV) and 0 to 3 wt % of a compound of formula (V):



(I)

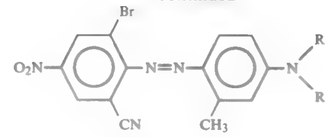


(II)

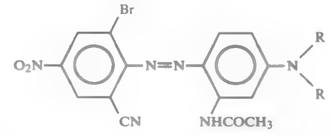


(III)

-continued



(IV)



(V)

wherein each of said R's, which may be the same or different, represents a C_{1-4} alkyl group.

5,342,417

METHOD OF TREATING CATIONIC DYEABLE NYLON FIBERS TO INHIBIT COLD WATER BLEED

Joseph A. Pacifici, 1609 Northlake Dr., Anderson, S.C. 29625, and Daniel G. Sims, 222 Sugar Creek Rd., Greer, S.C. 29650

Filed Dec. 16, 1992, Ser. No. 991,327

Int. Cl.[5] D06P *3/00;* **D06M** *23/00, 101/00*

U.S. Cl. 8—685 **15 Claims**

13. A method of dyeing cationic dyeable nylon fibers wherein the fibers are dyed with an acid or premetallized acid dye and then treated with a nylon fixing agent and with a cotton fixing agent.

5,342,418

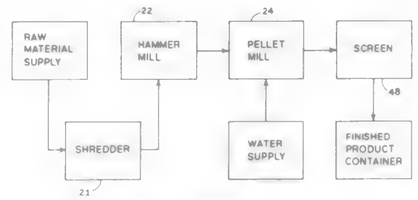
METHOD OF MAKING PELLETIZED FUEL

Albert H. Jesse, 113 Wenban Ave., Neenah, Wis. 54956

Continuation of Ser. No. 514,439, Apr. 25, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 20,447

Int. Cl.[5] C10L *7/00*

U.S. Cl. 44—589 **6 Claims**



1. A method of making pelletized fuel in the form of elongated pellets having an axial length,

said method comprising the steps of:

(a) selecting as elements of said pelletized fuel to make the composition thereof,

(i) about 60% to about 90% by weight, on a dry basis, of a cellulosic fiber element, said cellulosic fiber element comprising at least about 10% by weight, on an overall basis, of a first cellulosic fiber component having a first density, and no more than about 90% by weight of a second cellulosic fiber component having a second density greater than said first density, and

(ii) about 10% to 40% by weight, on a dry basis, of a thermoplastic resin element,

said composition of said fuel comprising less than about 15% by weight water on an overall basis;

(b) feeding said elements through size reducing apparatus adapted to reduce the size thereof to length and width

VOL 1165 ISS 5 AUG 30 1994 UMI

dimensions of about 0.2 times to about 8 times the cross section of the fuel pellets to be made therefrom; and

(c) feeding said size-reduced elements through a pellet mill, including forcing said elements through die holes in a pelletizing die, to form pellets of said fuel, said pellets comprising bonded layers of said elements disposed transverse to the axial lengths of said pellets, said transverse layers extending across an entire transverse dimension of said pellets and with said layers randomly enfolded with and overlapping each other.

5,342,419

ABRASIVE COMPOSITES HAVING A CONTROLLED RATE OF EROSION, ARTICLES INCORPORATING SAME, AND METHODS OF MAKING AND USING SAME

Louis D. Hibbard, Eagan, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 31, 1992, Ser. No. 999,097
Int. Cl.[5] B24D *11/00*
U.S. Cl. 51—308 9 Claims

1. A coated abrasive exhibiting controlled erosion of its abrasive surface, the coated abrasive comprising:

(a) a backing having a front and a back surface; and

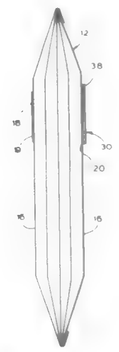
(b) attached to at least one of said front or said back surface, in an array having a non-random pattern, a plurality of precisely shaped abrasive composites, each of the abrasive composites comprising abrasive particles dispersed in a binder, the binder comprising an addition polymerized resin having clay particles dispersed therein.

5,342,420

OPTIONAL DEODORANT DISPENSER FOR VACUUM CLEANER

Mark D. Bosses, Montvale, N.J., assignor to Home Care Industries, Inc., Clifton, N.J.

Filed Nov. 12, 1993, Ser. No. 152,284
Int. Cl.[5] B01D *46/02*
U.S. Cl. 55—279 10 Claims



1. A dust and dirt collecting apparatus for a vacuum cleaner, comprising:

(A) a porous bag defining a dust and dirt collecting enclosure;

(B) releasing means disposed on an outer surface of said bag for releasing an active agent into air passing through the vacuum cleaner; and

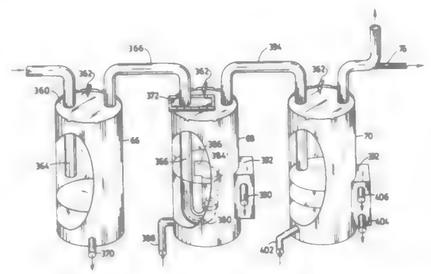
(C) means associated with said releasing means and switchable from a first condition blocking release of the active agent by said releasing means to a second condition enabling release of the active agent by said releasing means.

5,342,421

PYROLYTIC GAS TREATMENT SYSTEM

Fred A. Breu, N. Canton, Ohio, assignor to Wayne Technology, Inc., Rochester, N.Y.

Division of Ser. No. 775,169, Oct. 11, 1991, Pat. No. 5,258,101, which is a continuation-in-part of Ser. No. 494,256, Mar. 14, 1990, Pat. No. 5,082,534. This application Aug. 16, 1993, Ser. No. 107,104
Int. Cl.[5] B01D *5/00, 47/02*
U.S. Cl. 55—222 4 Claims



1. A system for condensing and scrubbing hot gases resulting from a pyrolytic conversion process and separating the condensate in accordance with the volatility thereof, said system comprising first, second and third vertical tanks having tops and bottoms, which comprises a first pipe for delivering and discharging said gases into said first tank, said first pipe entering said first tank at the top thereof and extending downwardly into said first tank, whereby to condense liquid of a volatility of tar oil on the bottom of said first tank, a second pipe extending into the top of said first tank substantially above the downward extension of said first pipe therein, said second pipe extending through the top of said second tank and substantially to the bottom thereof and having an upwardly turning elbow section in the vicinity of said bottom of said second tank, said elbow section having an upwardly turned end, an upwardly extending sleeve paralleling said second pipe and having a lower end extending over the upwardly turned end of said elbow section and an upper end bent toward said second pipe above said elbow, said second tank being filled with water to a level above the upwardly turned end of said elbow section, said sleeve and upwardly turned elbow section defining a region of below atmospheric pressure to draw the water up through said sleeve and form a spray projected against said second pipe, whereby to condense liquid of a volatility of medium oil in said second tank, a third pipe between said second and third tanks, said third pipe extending into the top of said second tank a distance substantially above the downwardly extension of said second pipe therein, said third pipe also extending into the top of said third tank, said third tank having water therein whereby liquid having a volatility of light oil is condensed therein, and mean for exhausting uncondensed gases from said third tank through the top thereof.

5,342,422

APPARATUS FOR SEPARATING PARTICLES, IN PARTICULAR OIL OR FAT PARTICLES

Peter Wimböck, Reit im Winkl, Fed. Rep. of Germany, assignor to Wimböck Besitz GmbH, Reit im Winkl, Fed. Rep. of Germany

Filed Nov. 30, 1993, Ser. No. 159,425
Claims priority, application European Pat. Off., Mar. 2, 1993, 93 103 296.5
Int. Cl.[5] B01D *45/06*
U.S. Cl. 55—444 12 Claims

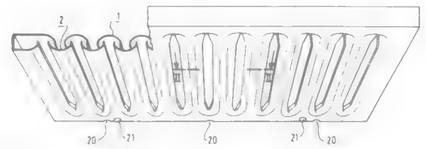
1. Apparatus for separating particles, in particular oil or fat particules, out of an airstream flowing through the apparatus, including

a plurality of lamellas (1,2) respectively substantially U-shaped in cross section and respectively arranged in two parallel opposing spaced adjacent rows,

the lamellas (1,2) of both rows facing one another with their concave hollows and being offset with respect to one another in such a manner that the edges of two adjacent lamellas (1,2) of the one row lie opposite the concave hollow of a lamella (1,2) of the other row,

the lamellas (1,2) respectively of each row being formed from a sheet, and

the sheets of both rows being positioned at a distance from one another which corresponds to the total structural height (H) of the apparatus,



characterized in that

each lamella (1,2) as seen in cross section consists of:

a circular arcuate piece extending over approximately 120° to 130° in its middle region with a radius (R) which is approximately ⅔ of the total structural height (H),

at its edge regions adjoining the middle region to both sides, respectively of parallel bent longitudinal edges (1*a*, 2*a*), the height (h) of which is 3/20 to 6/20 of the total structural height (H), and

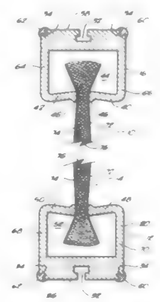
the inside width of an inlet channel (W) formed by the longitudinal edges of two adjacent lamellas of one row being approximately ⅔ of the total structural height (H).

5,342,423

AIR FILTER FOR AN HVAC SYSTEM AND METHOD OF MANUFACTURING SAME

Andrew A. Taft, P.O. Box 1583, Houston, Tex. 77251

Filed Mar. 1, 1993, Ser. No. 24,309
Int. Cl.[5] B01D *46/02*
U.S. Cl. 55—483 9 Claims



1. An air filter apparatus for an HVAC system comprising:

a frame having a channel area formed therein, said frame having legs extending into said channel area; and

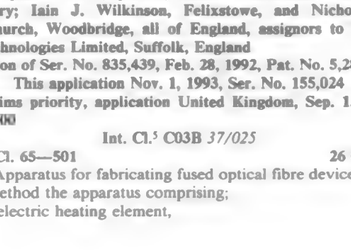
a filter material having a portion received within said channel area, said filter material extending across said frame, said filter material being of a flexible fibrous material, said legs of said frame extending so as to compressively engage the portion of the filter material so as to retain the filter material within the channels of the frame, said frame having a generally U-shaped cross-section, said channel area formed within said U-shaped cross-section, said legs extending inwardly from each of the outer ends of said U-shaped cross-section, each of said legs having an abutment surface formed on an inward edge of each of said legs, said abutment surface in compressive contact with said filter material.

5,342,424

METHOD OF FORMING COMPOSITE OF GLASS FIBERS OF VARIOUS FILAMENT DIAMETERS INTO A FIBROUS MAT

Jack R. Pfeffer, 4295 Country Club Dr., Bakersfield, Calif. 93306

Filed Aug. 9, 1993, Ser. No. 103,527
Int. Cl.[5] C03B *37/06*
U.S. Cl. 65—450 17 Claims



1. In the method of forming a fibrous composite, the steps that include

a) forming first and second groups of glass fibers extending in layered side-by-side relation, one group formed by progressive build-up directly on top of the other,

b) passing gas through said layered groups of fibers simultaneously to effect controlled reduction in overall thickness of the two groups of fibers, and to compress the groups into adjacent layers of controlled thickness,

c) wherein the two groups of fibers define a zone of intermingling of fibers of the two groups, and including the step of effecting bonding of intermingling fibers in said zone,

d) said bonding being effected by coating fibers in said zone with synthetic resin, and curing said resin coating and said fibers in said zone, at least in part during passing of gas through said fibers,

e) said gas passage through said groups of fibers being effected to cause said first and second layers to have particle retention relative capacities of about 95 and 85 respectively when a particulate carrying gas stream is passed into said second layer and then into said first layer,

f) and providing a porous, flexible, thin, support layer, and supporting said first and second groups of fibers on said support layer while gas is passed through both said groups and said support layer.

5,342,425

FABRICATION OF FUSED FIBRE DEVICES

Christopher J. Rowe, Ipswich; David B. Mortimore, Trimley St Mary; Iain J. Wilkinson, Felixstowe, and Nicholas E. Achurch, Woodbridge, all of England, assignors to BT&D Technologies Limited, Suffolk, England

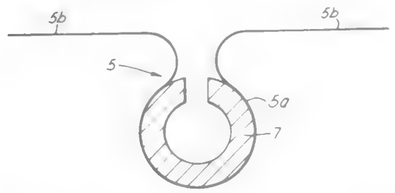
Division of Ser. No. 835,439, Feb. 28, 1992, Pat. No. 5,288,301. This application Nov. 1, 1993, Ser. No. 155,024
Claims priority, application United Kingdom, Sep. 1, 1989, [illegible]
Int. Cl.[5] C03B *37/025*
U.S. Cl. 65—501 26 Claims

1. Apparatus for fabricating fused optical fibre devices with the method the apparatus comprising;

an electric heating element,

VOL 1165 ISS 5 AG 30 1994 UMI

a heat-distributing material disposed in intimate contact with the heating element,
an elongate heating chamber for an optical fibre arrangement being defined within the heating element and the heat distributing material,
means for passing electric current through the heating element, and
means for supplying and maintaining an inert atmosphere within the heating chamber,



wherein the insert extends substantially the entire length of the heating chamber so that, in use, the heating chamber attains a substantially uniform temperature, and
wherein the combined thermal capacity of the heating element and the insert is such that an optical fibre device placed within the heating chamber is heated to fusion temperature within 1 to 30 seconds.

5,342,426

MAKING GLASS SHEET WITH DEFECT-FREE SURFACES AND ALKALI METAL-FREE SOLUBLE GLASSES THEREFOR

William H. Dumbaugh, Jr., Painted Post, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Jul. 16, 1993, Ser. No. 92,474
Int. Cl.[5] C03C *23/00*
U.S. Cl. 65—23 **6 Claims**

1. A method for preparing a glass sheet having surfaces which are essentially defect-free and equivalent in smoothness to polished glass surfaces which comprises the steps of:
(a) two alkali metal free glass forming batches of different compositions are melted, one batch is for a first glass exhibiting a strain point higher than 600° C. which is relatively insoluble in an acid solution and the second batch is for a second glass consisting essentially, expressed in terms of cation percent on the oxide basis, of

SiO_2	23–40	B_2O_3	0–36	SrO and/or BaO 0–5
Al_2O_3	15–43	MgO	0–7	ZnO 0–5
CaO	5–25			MgO + SrO + BaO + ZnO 0–10

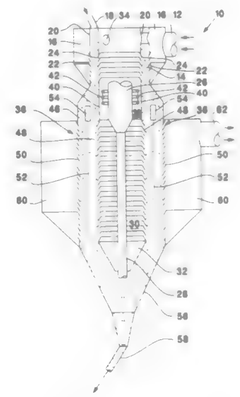
said second glass being at least 1000 times more soluble in the same acid solution and exhibiting
(1) a linear coefficient of thermal expansion from its setting point to room temperature within about 5×10^{-7}/°C. of that of said first glass;
(2) a strain point higher than 600° C. and relatively close to the strain point of said first glass; and
(3) a linear coefficient of thermal expansion over the temperature range 0°–300° C. between $20–60\times10^{-7}$/°C.;
(b) the molten batches are brought together simultaneously while in the molten state to form a laminated sheet wherein said first glass is essentially completely enclosed within said second glass;
(c) said laminated sheet is cooled to solidify each glass present in molten form; and thereafter
(d) said laminate is contacted with an acid solution to dissolve away said second glass whereby the surface of said first glass from which said second glass has been removed is rendered essentially defect-free and is equivalent in smoothness to a polished glass surface.

5,342,427

APPARATUS FOR CULLET PREHEATING AND POLLUTING EMISSION REDUCTION IN THE GLASS MANUFACTURING PROCESS

Jeffery C. Alexander, Newbury, Mass., assignor to Edmeston AB, Vastra Frolunda, Sweden

Division of Ser. No. 998,036, Dec. 29, 1992. This application Apr. 29, 1993, Ser. No. 53,695
Int. Cl.[5] C03B *3/02*
U.S. Cl. 65—27 **11 Claims**



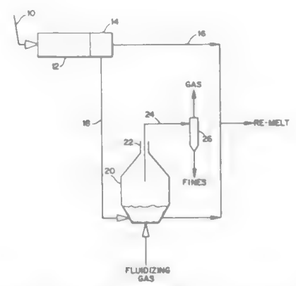
1. An apparatus for reducing particulate pollution emissions from glass furnace exhaust gases, comprising:
(a) a first confinement for a first moving bed of raw cullet having impurities adhered to its surface, including moisture and fine glass dust material, said first confinement being free of a means for imposing an electrical charge;
(b) means for passing hot glass furnace exhaust gases through the first moving bed, including an inlet for receiving said exhaust gases from a glass furnace, said inlet directing said exhaust gases directly to the first moving bed, the exhaust gases containing particulate pollution and condensible acid-generating materials, the velocity of the exhaust gases through the first bed being such that the exhaust gases are cooled to a temperature above their acid dew point, wherein at least a portion of the moisture and fine glass dust material from the cullet is entrained in the exhaust gases passing through the first moving bed and wherein the first moving bed is heated by the exhaust gases to a temperature above the acid dew point of the exhaust gases;
(c) an electrostatic ionizer adjacent an exit from the first confinement means for electrostatically ionizing the dust particles in the cooled exhaust gases after they exit the first moving bed;
(d) a second confinement for a second moving bed formed with the cleaned, preheated cullet from the first moving bed, said second confinement being contiguous with said first confinement means;
(e) an electric polarizer for electrically polarizing the second bed of cullet,
(f) means for passing the cooled exhaust gases through the electrically polarized second moving bed and depositing at least a portion of the electrostatically ionized particulate pollution and dust material in the cooled exhaust gases onto the second bed, thereby forming cleaned exhaust gases;
(g) means defining a first outlet for discharging the cleaned exhaust gases from the apparatus; and
(h) means defining a second outlet for discharging the second bed of cullet, including the deposited particulate pollution and dust material, to a glass melting furnace.

5,342,428

SEPARATION OF FREE LEAD FROM ALUMINUM BEVERAGE CANS

John O. Cook, Muscle Shoals, and Ray D. Peterson, Florence, both of Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed Aug. 13, 1993, Ser. No. 106,171
Int. Cl.[5] C22B *7/00*
U.S. Cl. 75—401 **14 Claims**



1. A method of removing free lead form a mixture of materials including lead an recyclable aluminum alloy materials, said method comprising the steps of:
a. providing a first particle stream including aluminum alloy particles and lead particles obtained by shredding used aluminum alloy cans and lead-containing materials;
b. dividing the first particle stream into second and third particle streams, the second particle stream containing those particles from the first particle stream having a particle size smaller than a first particle size and the third particle stream containing those particles from the first particle stream having a particle size greater than the first particle size;
c. fluidizing the second particle stream within a fluidized bed that is operated at a fluidizing gas velocity sufficient to separate from the second particle stream fines having a particle size less than a second particle size while allowing larger particles to remain within the bed, wherein the second particle size is smaller than the first particle size;
d. collecting the fines separated from the second particle stream by the fluidizing gas; and
e. collecting the larger particles that remain within the fluidizing bed.

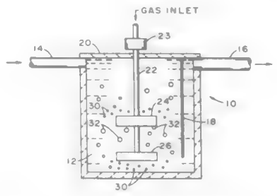
5,342,429

PURIFICATION OF MOLTEN ALUMINUM USING UPPER AND LOWER IMPELLERS

Ho Yu, Murrysville, and Judith G. Stevens, McMurray, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 5, 1993, Ser. No. 57,156
Int. Cl.[5] C22B *21/06*
U.S. Cl. 75—680 **6 Claims**

1. A method of gas fluxing molten aluminum, said method comprising:
(a) locating upper and lower rotatable dispersers in said body of molten aluminum;
(b) adding a fluxing gas to said molten aluminum in the region of the lower disperser, said fluxing gas and molten aluminum having an initial interfacial area between them; and
(c) rotating said upper and lower dispersers in an rpm range of from about 50 to 500 to disperse said gas in a manner



that is effective to increase substantially the removal of impurities in the molten aluminum by virtue of a substantial increase in the interfacial area of the fluxing gas and molten aluminum.

5,342,430

PASSIVATION OF METHYLCHLOROSILANE FINES

Teresa A. Grocela-Kathe, 183 Pawling Ave., Troy, N.Y. 12180, and Ray W. Shade, 19 El Dorado Dr., Clifton Park, N.Y. 12065

Filed Jul. 28, 1993, Ser. No. 98,547
Int. Cl.[5] C01G *3/00*
U.S. Cl. 75—746 **14 Claims**

1. A process for passivating the fines exiting the reactor train for the manufacture of organohalosilanes and alkoxyhalosilanes comprising the steps, in order of:
(a) contacting said fines with an aqueous medium comprising water and a polyalkylene ether surfactant selected from the group consisting of: alkyloxy(polyethyleneoxy-propyleneoxy)isopropanol and polyglycolether-carboxylic acid; wherein the concentration of said surfactant ranges from about 0.5 to about 5.0 weight percent in said aqueous medium such that the pH of the aqueous medium is below about seven;
(b) reacting said fines with said aqueous medium to produce hydrogen for a period of time ranging from about 0.25 to about 3.0 hours at a temperature ranging from about 20° C. to about 100° C. such that the additional production of hydrogen is essentially zero;
(c) adding a binding agent selected from the group consisting of acid washed calcium lignosulfonate, calcium lignosulfonate, ammonium lignosulfonate, montmorillonite, and bentonite; and
(d) removing water from the mixture of fines, binder, and the aqueous medium of step (c).

5,342,431

METAL OXIDE MEMBRANES FOR GAS SEPARATION

Marc A. Anderson; Elizabeth T. Webster, both of Madison, Wis., and Qunyin Xu, Plainsboro, N.J., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 756,395, Sep. 9, 1991, Pat. No. 5,269,926, and a continuation-in-part of Ser. No. 654,150, Feb. 11, 1991, Pat. No. 5,169,576, which is a division of Ser. No. 425,668, Oct. 23, 1989, abandoned. This application Dec. 7, 1992, Ser. No. 987,891
Int. Cl.[5] B01D *53/22*
U.S. Cl. 95—45 **1 Claim**

1. A process for separating gases, comprising the steps of:
(a) providing a microporous metal oxide ceramic membrane performed in the pores of a porous support and having pores averaging less than 40 Angstroms in diameter;
(b) exposing a mixture of gases of various molecular size and shape against one side of the permformed microporous

VOL 1165 ISS 5 AG 30 1994 UMI

ceramic membrane under conditions which favor the flow of gases through the membrane;

(c) excluding one or more species of gas from passage through the membrane because of the size of the pores of the microporous ceramic membrane; and

(d) recovering at least one partially purified gas which has passed through the membrane.

5,342,432

COMPOSITE MEMBRANE, PROCESS FOR ITS PRODUCTION AND ITS USE

Michael Haubs, Bad Kreuznach, and Werner Prass, Mainz, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/02021, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO91/09669, PCT Pub. Date Jul. 11, 1991

PCT Filed Nov. 26, 1990, Ser. No. 867,218

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942867; Feb. 27, 1990, 4006139

Int. Cl.[5] B01D *53/22*

U.S. Cl. 95—47 **6 Claims**

A composite membrane for gas separation having a three-layer structure, constructed from

A) a supporting membrane layer made of porous polymer,

B) a nonporous, gas-permeable intermediate layer made of an amorphous polymer having a high gas permeability,

C) a permselective layer of regularly arranged organic molecules having a layer thickness of 3 to 100 nm,

the layers (A) and (C) enclosing the intermediate layer (B), wherein the permselective layer (C) is constructed from regularly arranged polymeric amphiphilic molecules which contain one or two alkyl chains each having 7 to 25 carbon atoms per polar hydrophilic group and have a molecular weight of more than 5000.

5,342,433

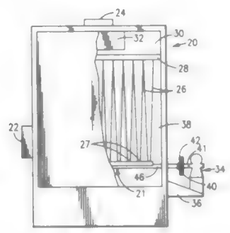
DUST COLLECTOR WITH BIMODAL SHAKER

Leo Avondoglio, Ivoryton, Conn., assignor to Aercology, Inc., Old Saybrook, Conn.

Filed May 10, 1993, Ser. No. 58,268

Int. Cl.[5] B01D *46/04*

U.S. Cl. 95—282 **16 Claims**



1. A method of removing adhered particulate from a filter bag comprising the steps of:

providing an apparatus which comprises a filter bag hanging vertically inside a dust collector, the filter bag having a fixed open upper end, a length, and a closed lower end;

first, raising the filter bag closed lower end a first vertical distance, then dropping the closed lower end, to discharge a portion of particulate adhered thereto;

second, raising the filter bag lower end a second vertical distance which is less than the first vertical distance, then dropping the lower end, to discharge additional particulate; and,

third, repeating the first and second steps until a desired amount of adhered particulate is removed.

5,342,434

GAS PERMEABLE COATED POROUS MEMBRANES

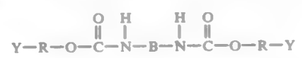
Huey S. Wu, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 990,310, Dec. 14, 1992, Pat. No. 5,286,279. This application Jul. 30, 1993, Ser. No. 100,506

Int. Cl.[5] B01D *53/22, 69/12*

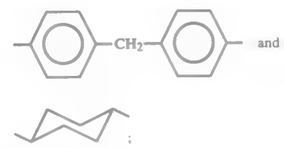
U.S. Cl. 96—13 **11 Claims**

1. A flexible gas permeable material which comprises a flexible, porous material having passageways through the material, and which has a coating on at least a portion of the passageways, of a composition having the formula:



wherein

B is selected from the class consisting of



and

R is $(—CH_2—)_x$ wherein x is a cardinal number of 1–4; and

Y is C_nF_{2n+1} or



where n is a cardinal number of 3–20 and R^1 is H or alkyl of 1–4 carbon.

5,342,435

SCRATCH REMOVER AND DESENSITIZER COMPOSITION FOR USE WITH LITHOGRAPHIC PRINTING PLATES

John E. Walls, Fort Collins, Colo., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 25, 1992, Ser. No. 951,065

Int. Cl.[5] C09K *3/18*

U.S. Cl. 106—2 **10 Claims**

1. A scratch remover and desensitizer composition useful in treating scratches in non-image areas of lithographic printing plates and desensitizing such scratched areas so they will not accept ink, said composition comprising:

(1) about 0.5 to about 15 weight percent of an alkali metal silicate having an SiO_2 to M_2O ratio of at least two to one, wherein M represents an alkali metal;

(2) about 0.1 to about 12 weight percent of a phosphate of the formula M_3PO_4 wherein M represents an alkali metal;

(3) about 1 to about 40 weight percent of an organic solvent having a boiling point at atmospheric pressure in the range of from 95° C. to 210° C.;

(4) about 0.01 to about 4 weight percent of a nonionic surfactant; and

(5) about 30 to about 98 weight percent of water.

5,342,436

COMPOSITION FOR PROTECTING AND SEALING ARTICLES

John K. Thrasher, 2614 Hadley Rd., Camby, Ind. 46113

Filed Mar. 11, 1993, Ser. No. 29,703

Int. Cl.[5] C09G *1/08;* **C09D** *101/28, 191/06, 191/08*

U.S. Cl. 106—10 **9 Claims**

1. A new and improved composition useful as a protective sealant for articles comprising the following mixture:

a paraffin wax dispersed in mineral oil to form a paraffin wax in oil dispersion, and

an extender for said paraffin wax in mineral oil dispersion, said extender being selected from the group consisting of ethanol, isopropyl alcohol, cetosteryl alcohol, and propylene glycol.

5,342,437

GEL-FREE PAINT CONTAINING ZINC PYRITHIONE CUPROUS OXIDE AND CARBOXYLIC ACID

David F. Gavin; Rahim Hani, both of Cheshire; Craig Waldron, Waterbury, and Douglas A. Farmer, Jr., Madison, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 15, 1993, Ser. No. 138,165

Int. Cl.[5] C09D *5/14*

U.S. Cl. 106—18.33 **16 Claims**

1. A paint or paint base composition characterized by enhanced biocidal efficacy and gelation resistance wherein the paint or paint base contains wood rosin and a biocide comprising cuprous oxide and zinc pyrithione, and the paint or paint base further comprises a carboxylic acid selected from the group consisting of oxalic acid and carboxylic acids of the formula $(HOOC)_nRCOOH$ where n is 0 or 1 and R is C_1 to C_{20} alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, cycloalkynyl, aryl, aralkyl, and combinations thereof, and said zinc pyrithione being present in an amount of between about 1% and about 25% and said cuprous oxide being present in an amount of between about 20% and about 70%, the total amount of said zinc pyrithione plus said cuprous oxide being between about 20% and about 80% based upon the total weight of the paint or paint base, said carboxylic acid being present in an amount of between 0.3 to 15% based upon the total weight of the paint or paint base composition and said wood rosin being present in an amount of between about 1% and 20% based upon the total weight of the paint or paint base.

5,342,438

REMEDIAL WOOD PRESERVATIVE

Michael H. West, Rte. 2, Box 253F, Senatobia, Miss. 38668

Continuation-in-part of Ser. No. 13,433, Feb. 4, 1993, abandoned. This application Jan. 24, 1994, Ser. No. 184,939

Int. Cl.[5] C09D *15/00;* **C09K** *15/32*

U.S. Cl. 106—18.3 **3 Claims**

1. A non-water dilutable remedial wood preservative composition containing ¼ to 10 parts copper derived from amine-inorganic copper complexes, combined with at least one sodium salt selected from the group consisting of sodium borate and sodium fluoride in a ratio of 2 to 120 parts of the sodium salt for each part of copper in the preservative.

5,342,439

BLEED RESISTANCE OF DYES BY COUNTER-ION SUBSTITUTION

Hiang P. Lauw, Corvallis, Oreg., assignor to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Sep. 24, 1993, Ser. No. 126,468

Int. Cl.[5] C09D *11/02*

U.S. Cl. 106—22 H **19 Claims**

1. A thermal ink-jet ink comprising:

(a) about 0.5 to 40 wt % of a low vapor pressure solvent;

(b) about 0.1 to 8 wt % of a sulfonate or carboxylate dye provided with an amine-containing counter-ion having a formula given by



where m ranges from 1 to 3, n ranges from 3 to 6, and R is a hydrophilic substituent or cycloaliphatic or aromatic group with a hydrophilic substituent, said amine-containing counter-ion replacing any cation previously associated with said dye; and

(c) water.

5,342,440

BLACK-TO-COLOR BLEED CONTROL IN THERMAL INK-JET PRINTING

Palitha Wickramanayake, Corvallis, Oreg., assignor to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Oct. 26, 1992, Ser. No. 967,082

Int. Cl.[5] C09D *11/02*

U.S. Cl. 106—22 R **15 Claims**

1. A set of ink-jet inks for thermal ink-jet printing, comprising black, yellow, magenta, and cyan inks, wherein said yellow, magenta, and cyan inks include water-soluble dyes and wherein said black ink comprises at least one water-insoluble dye in a microemulsion.

5,342,441

BIOLOGICALLY COMPATIBLE HARDENING MATERIAL FOR DENTAL OR MEDICAL APPLICATIONS

Yoshinobu Mandai; Kohji Nagatomi; Kazuhiko Minamigawa, and Fumihito Sugihara, all of Yao, Japan, assignors to Nitta Gelatin Inc., Osaka, Japan

Filed Jun. 22, 1992, Ser. No. 902,024

Claims priority, application Japan, Jun. 26, 1991, 3-154940

Int. Cl.[5] A61K *6/02*

U.S. Cl. 106—35 **9 Claims**



1. A hardenable, biocompatible composition for repairing living tissue comprising

a powder component containing $Ca_4P_2O_9$ and at least one of $CaHPO_4$ and $CaHPO_4.2H_2O$ at a molar ratio of Ca:P of 1.16–.1.95; and

a liquid component containing a secondary phosphate ion in a concentration of 1 mM to 2 M as a secondary phosphate and an organic acid ion in a concentration of 1 mM to 2 M as an organic acid or as a total of an organic acid and its salt, wherein a weight ratio of the powder component: the liquid component is 0.5–4.0.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,442

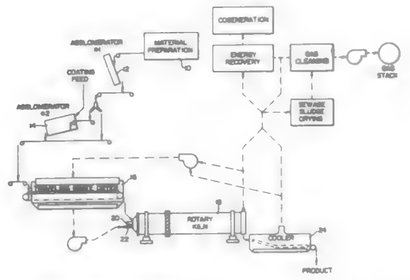
LIGHTWEIGHT AGGREGATE FROM FLYASH AND SEWAGE SLUDGE

Timothy M. Nechvatal, Waukesha, and Glenn A. Heian, Franklin, both of Wis., assignors to Wisconsin Electric Power Company, Milwaukee, Wis.

Continuation of Ser. No. 763,842, Sep. 23, 1991, abandoned, which is a division of Ser. No. 640,184, Jan. 11, 1991, Pat. No. 5,057,009. This application Feb. 2, 1993, Ser. No. 19,812

Int. Cl.[5] C04B *16/08*

U.S. Cl. 106—409 **3 Claims**



1. A lightweight aggregate consisting of a porous nodular heat-hardened agglomerate of 35–80% by dry weight of flyash and 20–65% by dry weight of uncombusted sewage sludge having an organic content.

5,342,443

METHOD FOR BLEACHING KAOLIN CLAY

Ellen S. Forbus, Macon; George E. Gantt, Milledgeville; Mitchell J. Willis, and Raymond H. Young, both of Macon, all of Ga., assignors to Engelhard Corporation, Iselin, N.J.

Filed Apr. 6, 1993, Ser. No. 43,249

Int. Cl.[5] C04B *14/04*

U.S. Cl. 106—488 **8 Claims**

1. In a method for oxidative bleaching gray kaolin clay with ozone, the improvement which comprises: adding about 0.25 to about 5 pounds of sodium silicate per ton clay and about 0.25 to about 10 pounds of sodium hypochlorite per ton clay to a dispersed aqueous slurry of gray kaolin clay and within an hour of adding said sodium hypochlorite incorporating a bleach-effective quantity of ozone into said slurry and recovering bleach kaolin clay.

5,342,444

DYESTUFFS AND THEIR USE FOR MASS-COLORATION OF PLASTICS

Horst Harnisch, Much, and Peter Roschger, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

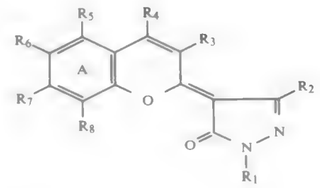
Filed Jul. 24, 1992, Ser. No. 919,657

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1991, 4126244

Int. Cl.[5] C08K *5/23*

U.S. Cl. 106—493 **11 Claims**

1. Process for the mass-coloration of plastics comprising incorporating a dyestuff a) in the starting materials for production of the plastic, or b) in the melted plastic composition, characterised in that the dyestuff has the following formula



in which

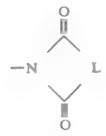
R_1 denotes alkyl, aralkyl, aryl or heterocyclyl, it being possible for these radicals to be substituted or unsubstituted,

R_2 denotes alkyl, aralkyl, aryl, heterocyclyl, alkoxycarbonyl, dialkylcarbamoyl, alkoxyacyloxy, or a radical of the formula $—NZ_1Z_2$, it being possible for these radicals to be substituted or unsubstituted, or denotes chlorine, bromine, cyano, hydroxyl,

Z_1 denotes hydrogen, alkyl, aralkyl, aryl, cycloalkyl or a heterocyclic radical and

Z_2 denotes an acyl radical or

Z_1 and Z_2 together with the joint N atom form the radical



L is 1,2-phenylene, 1,2-, 2,3- or 1,8-naphthylene, 1,2-cyclohex-1-enylene, ethylene or vinylene,

R_3 denotes hydrogen, alkyl, aryl, halogen, hydroxyl, alkoxy, cyano, alkoxycarbonyl, formyl, dialkylcarbamoyl, alkylsulphonyl, arylsulphonyl, dialkylaminosulphonyl,

R_4 denotes hydrogen, alkyl, aryl, hydroxyl, alkoxy, halogen, cyano, alkoxycarbamoyl, alkylsulphonyl, arylsulphonyl,

R_5 to R_8, identical or different, denote hydrogen, alkyl, aryl, heterocyclyl, alkoxy, aryloxy, hydroxyl, amino, mono- or disubstituted amino, such as, for example, alkylamino, dialkylamino, alkylsulphonyl, arylsulphonyl, dialkylsulphonamido, halogen, or together with an adjacent radical denote a fused-on aromatic or heterocyclic ring.

5,342,445

HYDRAULIC COMPOSITIONS AND HIGH-STRENGTH COMPOSITE MATERIALS

Masayuki Kiyomoto, Omiya; Akira Kajikawa, Funabashi; Toru Murakado, Yono; Hiroshi Sakurai, Iruma; Motokazu Mano, Urawa, and Kazutika Sizume, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 621,801, Dec. 4, 1990, abandoned. This application Mar. 9, 1993, Ser. No. 28,638

Claims priority, application Japan, Dec. 8, 1989, 1-317688; Dec. 26, 1989, 1-335188

Int. Cl.[5] C04B *7/14*

U.S. Cl. 106—789 **10 Claims**

1. A hydraulic composition comprising blast furnace slag powder;

1 to 15% by weight based on the blast furnace slag powder of at least one water-soluble polymer having a molecular weight over 10,000 selected from the group consisting of poly(meth)acrylate, poly(meth)acrylamide, a copolymer of (meth)acrylic acid and (meth)acrylamide, carboxymethyl cellulose, and hydroxypropyl methyl cellulose, provided that when the water soluble polymer is selected from the group consisting of poly(meth)acrylate, poly(meth)acrylamide, and a copolymer of (meth)acrylic acid and (meth)acrylamide, its molecular weight is greater than 100,000;

and

0.1 to 5% by weight based on the blast furnace slag powder of an alkaline substance selected from the group consisting of sodium hydroxide, potassium hydroxide, sodium carbonate, potassium carbonate, sodium silicate, and sodium metasilicate.

5,342,446

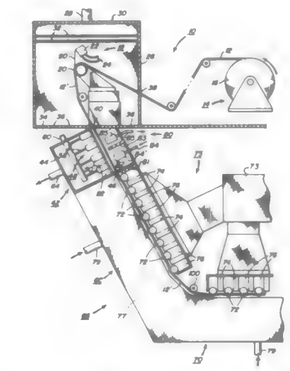
APPARATUS FOR COATING A CONTINUOUS WEB

Ronald Jongsma, Spencerport; Larry R. Lammes, Rochester; Gifford J. Lewis, Rochester, and Robert A. Wahlers, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 703,447, May 21, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 3,215

Int. Cl.[5] B05C *9/12, 15/00;* **F26B** *21/08*

U.S. Cl. 118—65 **4 Claims**



1. Apparatus for coating a continuous web with liquid photographic materials, comprising:

means for supplying a continuous web continuously;

a coating station including means for positioning the continuous web and means for applying a layer of the liquid materials in liquid form to the web positioned by positioning means;

a chilling zone in which the liquid materials on the web are chilled and having an upstream end at which the coated web enters the chilling zone;

isolation means between said coating station and said chilling zone and contiguous with said coating station and said chilling zone for ensuring that atmosphere traveling with the coated web into the chilling zone has a dew point below the temperature it encounters in the upstream end of said chilling zone

said isolation means comprising:

a first plurality of parallel spaced apart ducts;

a second plurality of parallel spaced apart ducts adjacent said first plurality of spaced apart ducts;

means for supplying air to said first plurality of spaced apart ducts wherein said first plurality of ducts direct air towards the continuous web;

means for withdrawing air through said second plurality of spaced apart ducts wherein said second plurality of ducts withdraws air away from the continuous web, the air being directed and withdrawn at such a velocity to ensure that liquid materials on the continuous web are undisturbed; and

means for moving the continuous web continuously through said coating station, said isolation means and said chilling zone.

5,342,447

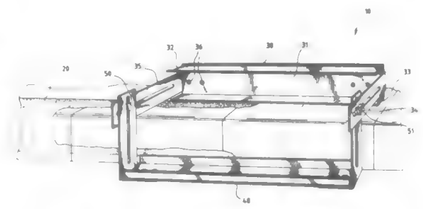
PAINT GUIDE

Alexander S. Nudo; Timothy Nudo, and Patrick R. Nudo, all of Springfield, Ill., assignors to Nudo Products, Inc., Springfield, Ill.

Filed Apr. 22, 1993, Ser. No. 52,070

Int. Cl.[5] B05C *11/00*

U.S. Cl. 118—504 **3 Claims**



1. A paint guide which is adjustable to define an area for painting on flat surfaces or on outside comer surfaces, the paint guide comprising:

(a) a first frame having a horizontal rectangular planar base with a vertical flange along each longitudinal side, the frame also having a vertical upright member having a height equal to or greater than the width of the base at each latitudinal side of the base in between the two flanges so that, when the frame is placed on its side on a horizontal flat surface with the flanges horizontal, one of the flanges makes close contact with the surface while the other flange and the two upright members make no contact with the surface;

(b) a second frame having a horizontal rectangular planar base with a vertical flange along each longitudinal side, the frame also having a vertical upright member having a height equal to or greater than the width of the base at each latitudinal side of the base in between the two flanges so that, when the frame is placed on its side on a horizontal flat surface with the flanges horizontal, one of the flanges makes close contact with the surface while the other flange and the upright members make no contact with the surface; and

(c) releasable fastening means for connecting the two upright members of the first frame to the corresponding two upright members of the second frame in an overlapping relationship so that the angle between the two bases can be adjusted throughout the range from perpendicular to parallel and also so that the distance between the two bases can be adjusted.

5,342,448

APPARATUS FOR PROCESSING A SAMPLE USING A CHARGED BEAM AND REACTIVE GASES

Yuuichi Hamamura, Yokohama; Satoshi Haraichi, Tsukuba; Akira Shimase; Junzou Azuma, both of Yokohama; Fumikazu Itoh, Fujisawa; Toshio Yamada, Hamura; Yasuhiro Koizumi, Sayama, and Michinobu Mizumura, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,842

Claims priority, application Japan, Mar. 31, 1992, 4-076590

Int. Cl.[5] H01J *37/30*

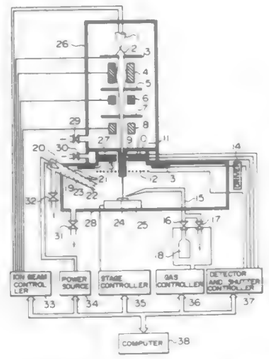
U.S. Cl. 118—723 FI **14 Claims**

1. A system for processing a sample using a charged beam and reactive gases, comprising:

first evacuation means for evacuating a sample chamber for accommodating a sample;

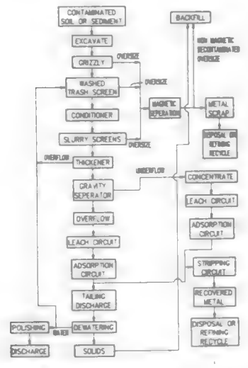
VOL 1165 ISS 5 AG 30 1994 UMI

a stage for mounting said sample;
a charged beam source for emitting a charged beam;
a charged beam optical system for applying said charged beam emitted from said charged beam source toward said sample;
reactive gas supplying means for introducing reactive gases used to process a surface of said sample in cooperation with said charged beam;



a charged particle detector for detecting charged particles emitted from said surface of said sample to observe a desired part of said surface of said sample;
openable shielding means able to be shut to shield said charged particle detector from said reactive gases;
means for driving said shielding means to open and shut said openable shielding means; and
second evacuation means partitioned by said openable shielding means, for accommodating said charged particle detector.

5,342,449
PROCESS FOR THE DECONTAMINATION OF TOXIC, HEAVY-METAL CONTAINING SOILS
Bruce E. Holbein, 44 Shadybrook Crescent, Guelph, Ontario, Canada N1G 3G5 , and Denis K. Kidby, 7 Nelson Street, Belwood, Ontario, Canada N0B 1J0
Filed Dec. 9, 1991, Ser. No. 804,065
Claims priority, application Australia, Dec. 21, 1990, PK3822
Int. Cl.[5] C22B *3/00*
U.S. Cl. 134—2 **64 Claims**



1. In a process for the decontamination of a contaminated soil aggregate so as to obtain a soil product having a metal content lower than that of the contaminated soil aggregate, said contaminated soil aggregate comprising at least one metal selected from the group comprising Pb, Ni, Cu, Cd, Zn, Hg, Ag, Au, Pt, and Pd, said process including the step of separating metal from said contaminated soil aggregate, the step of
contacting said contaminated soil aggregate with an aqueous lixiviant for separating metal, present in said contaminated soil aggregate, from said contaminated soil aggregate, said lixiviant comprising an organic acid component, said organic acid component comprising one or more carboxylic acids,
and wherein said metal separated by said lixiviant from said contaminated soil aggregate comprises at least one metal selected from the group comprising Pb, Ni, Cu, Cd, Zn, Hg, Ag, Au, Pt, and Pd.

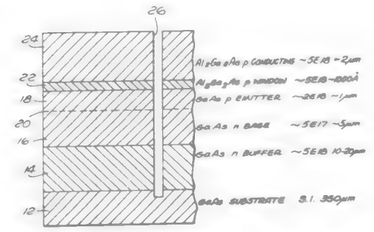
5,342,450
USE OF NONCORROSIVE CHEMICAL COMPOSITION FOR THE REMOVAL OF SOILS ORIGINATING FROM AN ANIMAL OR VEGETABLE SOURCE FROM A STAINLESS STEEL SURFACE
John R. Cockrell, Jr.; Gerald E. La Cosse, both of Greensboro, and D. Michael Cates, High Point, all of N.C., assignors to Kay Chemical Company, Greensboro, N.C.
Continuation of Ser. No. 449,329, Dec. 11, 1989, abandoned, which is a continuation of Ser. No. 301,590, Jan. 26, 1989, abandoned. This application Apr. 22, 1993, Ser. No. 50,989
Int. Cl.[5] B08B *3/08, 3/10*
U.S. Cl. 134—3 **51 Claims**

47. A method for boiling out from a stainless steel fryer a charred, polymeric, difficulty removable soil originating from an animal or vegetable source comprising the steps of:
introducing into the fryer water and a quantity of a noncorrosive chemical composition comprising an amount of an acidic agent such that the composition has an acid pH, said quantity of the composition being effective to ultimately essentially chemically remove said soil from at least 51% of the fryer surface in a boiling out step; and
boiling out said soil from the fryer with said water and said quantity of noncorrosive chemical composition, said soil being otherwise ultimately essentially chemically removable from at least 51% of said surface under boiling out conditions, at a temperature at which said boiling out step is conducted, only by contacting the fryer surface with at least one corrosive chemical composition.

5,342,451
SEMICONDUCTOR OPTICAL POWER RECEIVER
Gary Virshup, Cupertino, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Continuation-in-part of Ser. No. 537,483, Jun. 7, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 844,149
Int. Cl.[5] H01L *31/05, 31/068, 31/0304*
U.S. Cl. 136—244 **50 Claims**

23. A semiconductor optical power receiver comprising:
a substrate of a first semiconductor material having substantially intrinsic conductivity;

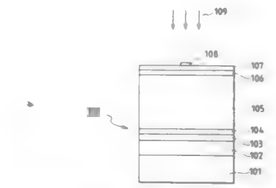
a plurality of spaced-apart buffer layers of said first semiconductor material of a first conductivity type disposed on said substrate;
a plurality of base layers of said first semiconductor material of said first conductivity type, each of said base layers being disposed on a respective one of said spaced-apart buffer layers;
a plurality of emitter layers of said first semiconductor material of a second conductivity type opposite said first conductivity type, each of said emitter layers being disposed on a respective one of said base layers to form a junction region therebetween and having an emitter layer energy band gap;
a plurality of window layers of a first alloy of a second semiconductor material of said second conductivity type, each of said window layers being disposed on a respective one of said emitter layers, said second semiconductor material being transparent to selected wavelengths of radiation;



a plurality of conducting layers of a second alloy of said second semiconductor material of said second conductivity type, each of said conducting layers being disposed on a respective one of said window layers and having conducting layer band gaps no greater than approximately 0.3 eV higher than the emitter layer band gap;
a plurality of first electrical contacts, each of said first contacts being in electrical communication with a respective one of said base layers;
a plurality of second electrical contacts, each of said second contacts being disposed on a respective one of said conducting layers in electrical communications with one of said emitter layers; and
means for electrically connecting in series each one of said first electrical contacts with a respective one of said second electrical contacts, said optical power receiver developing a voltage between a remaining unconnected one of said first electrical contacts and a remaining unconnected one of said second electrical contacts in response to said selected wavelengths of radiation being incident on said conducting layers.

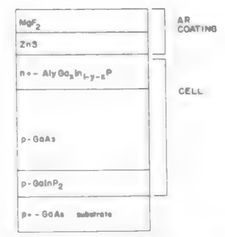
5,342,452
PHOTOVOLTAIC DEVICE
Keishi Saito, and Tatsuyuki Aoike, both of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 23, 1992, Ser. No. 949,692
Claims priority, application Japan, Sep. 25, 1991, 3-245803; Dec. 12, 1991, 3-351521
Int. Cl.[5] H01L *31/0224, 31/075*
U.S. Cl. 136—256 **25 Claims**

1. A photovoltaic device comprising:
a conductive member;
a semiconductor layer formed on said conductive member, made of a non-single-crystal semiconductor material containing at least silicon atoms; and
a transparent electrode stacked on said semiconductor layer, wherein said transparent electrode is made of conductive oxide containing carbon atoms, and said carbon atoms are contained



in larger quantities in the portion of said transparent electrode adjacent to said semiconductor layer.

5,342,453
HETEROJUNCTION SOLAR CELL
Jerry M. Olson, Lakewood, Colo., assignor to Midwest Research Institute, Kansas City, Mo.
Filed Nov. 13, 1992, Ser. No. 976,191
Int. Cl.[5] H01L *31/072*
U.S. Cl. 136—262 **20 Claims**



1. A high-efficiency single heterojunction solar cell comprising:
(a) a substrate;
(b) an absorber layer comprising GaAs supported by said substrate; and
(c) an emitter layer in contact with said absorber layer; wherein said emitter layer comprises $Al_yGa_xIn_{1-y-x}P$, where x+y is in the range of 0.47 to 0.57; and wherein said emitter layer has a band gap energy of at least 1.8 eV;
wherein said absorber layer and said emitter layer are of opposite conductivity types.

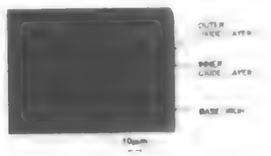
5,342,454
METHOD OF PRODUCING GRAIN ORIENTED SILICON STEEL SHEET HAVING LOW IRON LOSS
Yasuyuki Hayakawa; Ujihiro Nishiike; Bunjiro Fukuda, all of Chiba; Masataka Yamada; Yoshiaki Iida, both of Kobe; Fumihiko Takeuchi, and Michiro Komatsubara, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Japan
Filed Aug. 18, 1992, Ser. No. 931,682
Claims priority, application Japan, Aug. 20, 1991, 3-231054; Jun. 26, 1992, 4-191334
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—113 **15 Claims**

1. A method of producing a grain oriented silicon steel sheet having a low iron loss, comprising the steps of:
hot rolling a silicon steel slab containing 2.0 to 4.0% by weight of Si, and an inhibitor-forming component of at least one element selected from the group consisting of S and Se, thereby obtaining a hot rolled steel sheet having an oxide layer on its surface;
cold rolling said hot rolled steel sheet having said oxide layer

VOL 1165 ISS 5 AG 30 1994 UMI

into a cold rolled steel sheet having a final thickness, said cold rolling comprising either cold rolling performed one time or cold rolling performed a plurality of times with intermediate annealing intervening therebetween;

decarburizing said cold rolled steel sheet; and



after coating the surface of the decarburized cold rolled steel sheet with an annealing separation agent mainly comprising MgO, subjecting the cold rolled steel sheet to secondary recrystallization annealing and then purification annealing.

5,342,455

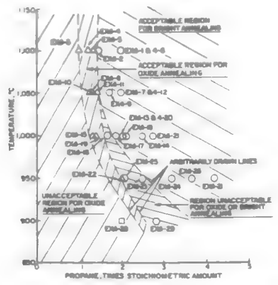
IN-SITU GENERATION OF HEAT TREATING ATMOSPHERES USING A MIXTURE OF NON-CRYOGENICALLY PRODUCED NITROGEN AND A HYDROCARBON GAS

Brian B. Bonner, Nesquehoning; Diwakar Garg, Macungie; Donald P. Eichelberger, Allentown, and Donald J. Bowe, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 787,982, Nov. 5, 1991, Pat. No. 5,259,893, which is a continuation-in-part of Ser. No. 727,806, Jul. 8, 1991, Pat. No. 5,221,369. This application Oct. 26, 1992, Ser. No. 966,967

Int. Cl.[5] C21D *1/00*

U.S. Cl. 148—208 **10 Claims**



1. A method of generating an in-situ atmosphere inside furnace used for performing brazing of metals, sealing of glass to metals, sintering metal and ceramic powders, or non-ferrous metal and alloy annealing processes wherein said process comprises the steps of:

heating said furnace to a temperature above 700° C.;

injecting into a hot zone of the said furnace gaseous nitrogen generated by a non-cryogenic means containing up to 5% by volume oxygen together with a hydrocarbon gas, said hydrocarbon gas injected into said furnace with a flow rate varying from above about 1.5 times the stoichiometric amount required for a complete conversion of oxygen to a mixture of moisture and carbon dioxide, in a manner to permit said reaction of oxygen and said hydrocarbon gas to be essentially complete prior to said mixture contacting parts being subjected to a given process; and

exposing said parts to said temperature and said atmosphere for a time sufficient to complete said process.

5,342,456

PROCESS FOR COATING METAL SURFACES TO PROTECT AGAINST CORROSION

Shawn E. Dolan, Sterling Heights, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 752,707, Aug. 30, 1991, abandoned. This application Apr. 13, 1993, Ser. No. 47,243

Int. Cl.[5] C23C *22/34*

U.S. Cl. 148—247 **10 Claims**

1. A process for forming a protective coating on the surface of a metal substrate selected from the group consisting of iron, steel, galvanized iron and steel, aluminum and its alloys that contain at least 50 atomic percent aluminum, and zinc and those of its alloys that contain at least 50 atomic percent zinc, said process comprising steps of:

(I) covering said surface with a layer of an aqueous acidic liquid composition consisting essentially of water and:

(A) from 0.015 to 0.75 M/kg of a component of actions, each of said anions consisting of (i) at least four fluorine atoms and (ii) at least one atom of an element selected from the group consisting of titanium, zirconium, hafnium, silicon, and boron and, optionally, (iii) one or more oxygen atoms;

(B) a component of cations of cations of elements selected from the group consisting of cobalt, magnesium, manganese, zinc, nickel, tin, zirconium, iron, aluminum and copper; the ratio of the total number of cations of this component to the total number of anions of component (A) being at least about 3:5; and

(C) sufficient free acid to give the composition a pH in the range from about 0.5 to about 5.0; and, optionally,

(D) a composition that will form an organic film upon drying in place, said aqueous acidic liquid composition containing no more than about 0.001 w/o of hexavalent chromium, no more than about 0.10 w/o of phosphate anions, no more than about 0.10 w/o of nitrates and other oxidizing agents (the others being measured as their oxidizing stoichiometric equivalent as nitrate), and no more than about 0.35 w/o of each of silica; silicates that do not contain at least four atoms of fluorine per atom of silicon; ferricyanide; ferrocyanide; anions containing molybdenum or tungsten; sulfur containing anions that are not oxidizing agents; alkali metal and ammonium cations; pyrazole compounds; sugars; gluconic acid and its salts; glycerine; c-glucoheptanoic acid and its salts; and myoinositol phosphate esters and salts thereof; and

(II) drying in place, without intermediate rinsing, said layer of an aqueous acidic liquid composition, to form a conversion coating on the substrate; and

(III) without any intermediate contact of said conversion coating with any rinse liquid containing more than 0.01 w/o of hexavalent chromium, applying a protective coating including an organic binder over the dried conversion coating formed in step (II).

5,342,457

METHOD FOR THE PRODUCTION OF A SWITCH DIAMOND

Johannes Blumauer, Zeltweg, Austria, assignor to Voest-Alpine Eisenbahnsysteme Gesellschaft m.b.H.

Filed Apr. 3, 1992, Ser. No. 863,057

Claims priority, application Austria, Apr. 5, 1991, 729/91

Int. Cl.[5] C21D *9/00*

U.S. Cl. 148—534 **8 Claims**

1. A method for the production of a switch diamond for rail switches and double crossovers with a switch diamond point out of carbon steel and connector rails, comprising the steps of:

rolling a switch diamond point in a cross-cut that exceeds its final dimension, at least in an area that wheels roll over;

submitting the switch diamond point to a heat treatment by which the switch diamond point is transformed over its total cross-section into a homogenous fine pearlite structure;

subsequently tempering the switch diamond point and at least in the area of the switch point that wheels roll over, removing 1 to 5 mm of wheel zone texture different from the homogenous fine pearlite texture; and afterwards

welding the switch diamond point to the connector rails at a welding spot.

5,342,458

ALL BETA PROCESSING OF ALPHA-BETA TITANIUM ALLOY

Roy E. Adams, Henderson; Warran M. Parris, Las Vegas, and Paul J. Bania, Boulder City, all of Nev., assignors to Titanium Metals Corporation, Denver, Colo.

Division of Ser. No. 737,019, Jul. 29, 1991, Pat. No. 5,219,521. This application Mar. 18, 1993, Ser. No. 33,587

Int. Cl.[5] C22C *14/00*

U.S. Cl. 148—670 **8 Claims**

1. A method for producing a hot-worked alpha-beta titanium-base alloy article having a good combination of strength, creep resistance and ductility with a relative low-cost alloy composition and low-cost processing with improved product yields, said method comprising producing a titanium-base alloy consisting essentially of, in weight percent, 5.5 to 6.5 aluminum, 1.5 to 2.2 iron, 0.07 to 0.13 silicon, and balance titanium and hot-working of said alloy solely at a temperature above the beta transus temperature of said alloy.

5,342,459

ALUMINUM ALLOY EXTRUDED AND COLD WORKED PRODUCTS HAVING FINE GRAIN STRUCTURE AND THEIR MANUFACTURE

Thomas J. Klemp; David W. Hohman, and Richard A. Schuster, all of Massena, N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 18, 1993, Ser. No. 32,927

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—690 **39 Claims**

1. The method of producing an improved elongate aluminum alloy product comprising:

providing an alloy consisting essentially of about 0.5 to 1.3% magnesium, about 0.4 to 1.2% silicon, about 0.65 to 1 2% copper, about 0. 1 to 1% manganese, the balance substantially aluminum and incidental elements and impurities;

extruding a body of said alloy within about 400° to about 750° F. at an extrusion ratio of at least 5 to 1;

solution heat treating at a temperature of at least about 990° F. and then quenching;

before or after or both before and after solution heat treating, cold working said alloy.

5,342,460

OUTER LEAD BONDING APPARATUS

Wataru Hidese, Chikushino, Japan, assignor to Matsushita Electric Industrial Co., Ltd, Osaka, Japan

Continuation of Ser. No. 890,307, May 27, 1992, abandoned, which is a continuation of Ser. No. 536,144, Jun. 11, 1990, abandoned. This application Nov. 12, 1993, Ser. No. 152,063

Claims priority, application Japan, Jun. 13, 1989, 1-151496

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—64 **9 Claims**

1. A method of bonding outer leads of devices to electrodes of substrates comprising the steps of:

arranging a plurality of devices at predetermined respective positions at a device supply section;

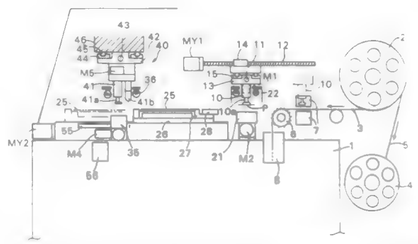
picking up the devices from the device supply section using a sub-transfer head assembly;

checking the picked up devices for positional deviation from a plurality of first predetermined position using a sub-monitoring camera;

moving the sub-transfer head assembly in a first predetermined direction using a sub-transfer driving means for adjusting the location of the devices picked up by the sub-transfer head assembly on the basis of the result of the checking by the sub-monitoring camera;

placing the devices on a transfer table means and moving the transfer table means in a second predetermined direction toward a main transfer head assembly which includes a plurality of suction nozzles for maintaining the devices under suction and a thermal compression means for bonding the outer leads of the devices to the substrates;

picking up the devices from the transfer table means using the main transfer head assembly;



checking the devices picked up by the main transfer head assembly for positional deviation from a plurality of second predetermined positions using a main monitoring camera;

moving the main transfer head assembly in a third predetermined direction on the basis of the result of the checking by the main monitoring camera using a main transfer driving means;

checking the electrodes of the substrates for positional deviation from a predetermined position using a substrate monitoring camera;

moving the substrates in a fourth predetermined direction on the basis of the result of the checking by the substrate monitoring camera using a substrate driving means; and

placing the devices on the substrates and bonding the outer leads of the devices to the electrodes of the substrates.

5,342,461

HIGH SPEED CONTINUOUS CONVEYOR PRINTER/APPLICATOR

William J. Murphy, South Acworth, assignor to Imtec, Inc., Bellows Falls, Vt.

Filed Apr. 14, 1992, Ser. No. 868,332

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—64 **9 Claims**

1. Apparatus for applying printed labels on moving objects, comprising

means for detecting one of said moving objects;

first means for receiving one of said printed labels corresponding to said detected moving object;

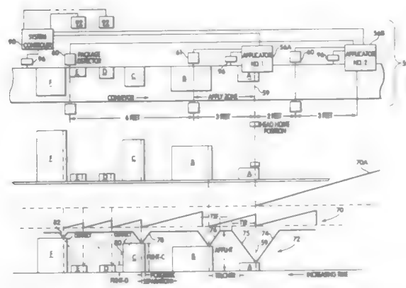
means for determining the first cycle time of application of said received label on said detected moving object;

means for determining the time available to apply said received label on said detected moving object;

means for providing an apply enable signal when said time available is at last equal to said first cycle time, and for providing a reject signal when said first cycle time exceeds said first available time;

VOL 1165 ISS 5 AG 30 1994 UMI

means for ejecting said received labels according to said eject signal; and



first means for applying said received label on said detected object according to said apply enable signal.

5,342,462

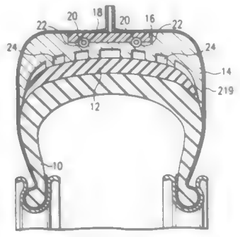
METHOD AND APPARATUS FOR RETREADING A TIRE

Michael J. King, Concord; Robert A. Flynn, San Francisco, and Henry Torrez, San Leandro, all of Calif., assignors to Oliver Rubber Company, Oakland, Calif.

Continuation of Ser. No. 908,228, Jul. 2, 1992, abandoned. This application Jul. 23, 1993, Ser. No. 96,738

Int. Cl.[5] B29C *35/00*; B29D *30/08, 30/54*

U.S. Cl. 156—96 **16 Claims**



14. A method for retreading a prepared tire carcass including the steps of:

encircling the prepared tire carcass with a strip of uncured rubber;

encircling the uncured rubber and the prepared tire carcass with a rigid segmented tread mold including retaining means having at least one tension spring encircling said rigid segmented mold, to allow radial expansion of said rigid segmented mold and contraction of said rigid segmented mold about the prepared tire carcass;

placing an elastic pressure envelope around said retaining means, said rigid segmented mold and the prepared tire carcass to resiliently hold the rigid segmented mold in encircling relationship with said uncured rubber and forcing said rigid segmented mold into said uncured rubber;

applying pressure to the elastic pressure envelope to force said rigid segmented mold into said uncured rubber; and

curing said uncured rubber.

5,342,463

PROCESS FOR PRODUCING SHAPED ARTICLES BY STARTING FROM REINFORCED THERMOPLASTIC SHEETS

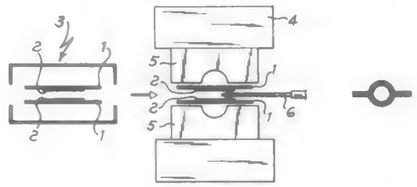
Antonio Addeo, Novara; Mario Vitali, and Roberto Bonari, both of Milan, all of Italy, assignors to Centro Sviluppo Settori Impiego S.r.l., Milan, Italy

Filed Oct. 27, 1992, Ser. No. 967,284

Claims priority, application Italy, Oct. 28, 1991, MI91 A 002954

Int. Cl.[5] B32B *31/04*

U.S. Cl. 156—156 **4 Claims**



1. A process for transforming reinforced thermoplastic sheets (RTS), which become porous in the molten state, into a double-shell box-shaped manufactured article by heating and subsequently molding the sheets, said process comprising the following steps:

a. overlaying the sheets with a pair of barrier films to render the sheets gas-tight;

b. charging the sheets between two half molds with the sheets facing each other and having the barrier films therebetween;

c. clamping together both half-molds; and

d. forcing the sheets to conform against said half-molds by using either compressed air which is fed between said two barrier films or vacuum which is applied to the half-molds, allowing the sheets to bond or weld to each other, whereby to obtain the double-shell box-shaped manufactured article.

5,342,464

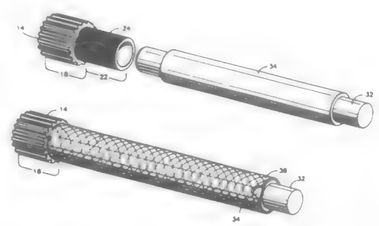
BONDING OF THERMOPLASTIC COMPOSITE STRUCTURES TO METAL STRUCTURES

Allen J. McIntire, Ansonia, and Geoffrey C. Davis, Madison, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 24, 1992, Ser. No. 873,902

Int. Cl.[5] F16C *3/00*; B65H *81/00*

U.S. Cl. 156—172 **6 Claims**



1. A method for bonding a metallic fitting having a splined portion and a mating surface to a thermoplastic composite shaft to form a drive shaft for transmitting longitudinal and rotational loads of predetermined magnitude, comprising the steps of:

knurling the mating surface of the metallic fitting to form knurls having a predetermined depth dependent upon the predetermined magnitude of the longitudinal and rotational loads to be transmitted by the drive shaft and the surface area of the knurled mating surface;

molding a layer of thermoplastic material having a thickness at least as great as the predetermined depths of the knurls over the knurled mating surface of the metallic fitting to produce a bonding surface overlaying the knurled mating surface;

laying up a plurality of thermoplastic composite laminates over the bonding surface wherein the layed-up thermoplastic composite laminates define the thermoplastic composite shaft; and

applying heat and pressure to fuse the layed-up thermoplastic composite laminates to the bonding surface and to form the thermoplastic composite shaft.

5,342,465

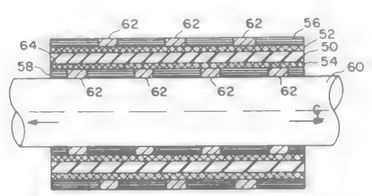
VISCOELASTIC DAMPING STRUCTURES AND RELATED MANUFACTURING METHOD

Allen J. Bronowicki, Laguna Niguel, and Abner Kaplan, Rancho Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 676,018, Mar. 27, 1991, Pat. No. 5,232,073, which is a division of Ser. No. 510,347, Apr. 17, 1990, Pat. No. 5,030,490, which is a continuation-in-part of Ser. No. 282,728, Dec. 9, 1988, abandoned. This application Sep. 28, 1992, Ser. No. 952,012

Int. Cl.[5] B32B *5/00, 7/00*

U.S. Cl. 156—175 **4 Claims**



1. A method for fabricating a tubular viscoelastic damping structure, comprising the steps of:

placing annular spacers on a cylindrical mandrel;

forming an inner segmented layer on the mandrel in segment regions between the spacers;

forming an inner sandwich portion comprising multiple continuous layers including viscoelastic material and elastic material over the inner segmented layer;

curing the resulting structure of inner segmented layer and inner sandwich portion;

forming an outer segmented layer over the sandwich portion, wherein the outer segmented layer has segments that partially overlap the segment regions of the inner segmented layer;

curing the entire structure; and

removing the mandrel and the annular spacers.

5,342,466

DEVICE FOR APPLYING A STRIP OF SEALANT TO A SURFACE

Carson J. Eidson, Jonesborough, Tenn., assignor to Don A. Harry, Jr. and Eugene O. Lilly, both of Abingdon, Va.

Continuation of Ser. No. 721,237, Jun. 26, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 985,436

Int. Cl.[5] B32B *31/00*

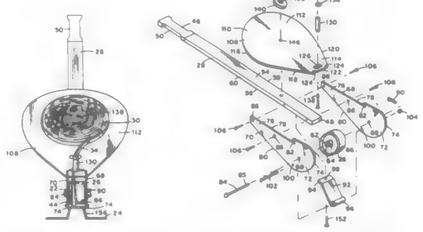
U.S. Cl. 156—179 **3 Claims**

1. An applicator for applying a lap sealant tape along a rib of a ribbed proof panel wherein the lap sealant tape is wound about a hollow core into a roll having two opposite side faces and has a side which is covered by a strip of release paper for preventing the windings of the tape from adhering to one another within the roll, the tape further including an end which can be pulled from the remainder of the roll to unwind the tape therefrom, the applicator comprising:

an elongated shaft having a forward end portion and a rearward end portion, the rearward end adapted to be grasped by a user for pushing the applicator along the rib of a ribbed roof panel;

a roller having a periphery and which is journaled to the shaft at the forward end thereof so that as the applicator is pushed along the rib of the roof panel, the periphery of the roller rolls along the surface of the roof panel rib;

a pair of side plates arranged in parallel relation on opposite sides of the roller adjacent to the forward end of the elongated shaft for positioning on opposite sides of the rib of the roof panel for capturing the rib between the side plates when the roller is positioned upon the surface of the rib so that when the applicator is pushed therealong, the side plates maintain the roller upon the rib and guide the movement of the roller along the rib, each one of said side plates having a forward section provided with a rounded edge having a greater diameter than does the roller periphery so that the rounded edges of the forward sections are positioned radially outwardly of the roller periphery, said side plates being positionable on opposite sides of the rib to facilitate guiding of the roller along the rib and maintenance of the tape along a straight line in the center of the upper surface of the rib;



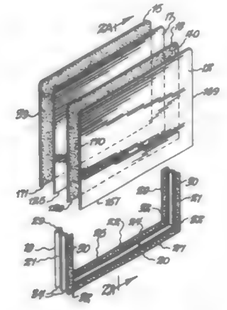
a platform attached to the elongate shaft adjacent the forward end thereof for providing a planar support surface upon which the roll of sealant tape is positionable so that when the roll is positioned upon the platform, one side face of the roll slidably engages the support surface;

a hub associated with the platform providing a protuberance extending from the plane of the support surface and which is accepted by the hollow core of the tape roll when the tape roll is place upon the support surface as aforesaid for maintaining the tape roll upon the platform and so that the tape roll is permitted to be rotated about the hub with said one side face of the roll slidably engaging the support surface; and a post attached to the platform so that the sides of the post extend at generally a right angle from the plane of the support surface so that when the tape roll is placed upon the support surface as aforesaid, the end of the sealant tape is directed in sequence past one side of the post and over the periphery of the roller to the surface of the roof panel rib so that the release paper covering one side of the tape engages the one post side and the roller periphery and the end of the tape is adhesively secured to the roof panel surface, and the roller is pushed along the roof panel rib so that the side plates are moved along opposite sides of the roof panel rib, the tape is unwound from the roll, is moved past the post and across the roller periphery as the tape roll rotates about the hub, and is pressed into engagement with the surface of the roof panel rib beneath the roller periphery.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,467
METHOD OF FABRICATING A FIVE-PIECE EXPANDING POCKET

Thomas J. Corey, 481 Delaware Ave., Buffalo, N.Y. 14202
Division of Ser. No. 805,310, Dec. 10, 1991, Pat. No. 5,201,983.
This application Jan. 21, 1993, Ser. No. 6,769
Int. Cl.[5] B32B *31/04*; B31F *5/04*
U.S. Cl. 156—227 2 Claims

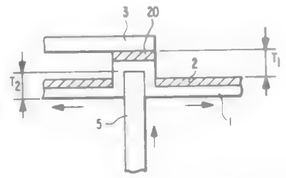


1. A method of fabricating a five-piece expanding pocket comprising the steps of cutting front and rear inner panels to size with each of said front and rear inner panels having a bottom edge and side edges, cutting front and rear outer panels to size, cutting and scoring a gusset having a central portion and outer end portions and opposite edge portions on said central portion and said outer end portions, applying cohesive glue to both sides of said opposite edge portions of said gusset, applying cohesive glue to outer sides of said front and rear inner panels, applying cohesive glue to inner sides of said front and rear outer panels, aligning said front and rear inner panels with said outer sides thereof facing away from each other, pressing said edge portions of said central portion of said gusset against said outer sides of said front and rear inner panels along said bottom edge thereof, bending said outer end portions of said gusset relative to said central portion so as to cause them to lie along said side edges, pressing said edge portions of said outer end portions of said gusset against said outer sides of said front and rear inner panels along said side edges thereof, aligning said outer front and rear panels with said inner front and rear panels, respectively, pressing said inner sides of said outer front and rear panels against said outer sides of said inner front and rear panels, respectively, to bond said panels and said gusset to form a completed five-piece expanding pocket, heating said completed five-piece expanding pocket to reactivate said cohesive glue on all of said surfaces thereof, and pressing said five-piece expanding pocket to firmly secure said front inner and outer panels to each other and firmly secure said rear inner and outer panels to each other and firmly secure said outer edge portions of said gusset between said front inner and outer panels and between said rear inner and outer panels.

5,342,468
JOINT FORMING SHEET OR TAPE AND METHOD FOR JOINT FORMATION USING THE SAME

Shozo Kawazoe, and Hidehito Okano, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan
Filed Sep. 2, 1992, Ser. No. 939,946
Claims priority, application Japan, Sep. 3, 1991, 3-253060
Int. Cl.[5] H01R *43/00*
U.S. Cl. 156—233 17 Claims

11. A method for forming an electrical joint, comprising putting a joint forming sheet or tape comprising a substrate having an easy release surface having a contact angle with water of at least 50°, having provided on said easy release surface thereof an inorganic thin layer, the interfacial adhesive force of said inorganic thin layer to said substrate easy release surface being greater than the tensile strength of said thin layer, on a part on which an electrical joint is to be formed in such a manner that said inorganic thin layer faces said part, pressing said joint forming sheet from the back side thereof to cause the substrate to be partially deformed and to cause the

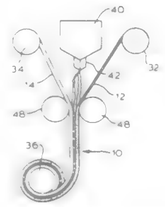


inorganic thin layer at the pressed part to be cut and transferred to said part,

wherein said substrate having an easy release surface has an elongation in the transverse direction greater than that in the machine direction.

5,342,469
METHOD OF MAKING A COMPOSITE WITH DISCONTINUOUS ADHESIVE STRUCTURE

Carl A. Bodford, Charlottesville; Stephen O. Chester, Staunton, and Rahul K. Nayak, Waynesboro, all of Va., assignors to Poly-Bond, Inc., Waynesboro, Va.
Filed Jan. 8, 1993, Ser. No. 2,421
Int. Cl.[5] B32B *31/06*
U.S. Cl. 156—244.22 11 Claims



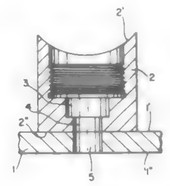
1. A method of forming a composite comprising the steps of:

(A) providing first and second substrates;

(B) applying to at least one of the first and second substrates an adhesive structure which is discontinuous across the width of the one substrate, the adhesive structure comprising an array of substantially linear, primarily unbroken and elongated filaments of adhesive of a substantially uniform diameter, said diameter being about 3 to 100 microns, the adhesive structure having a thickness which does not vary more than plus or minus 2%, and securing the other of the first and second substrates to the adhesive structure to form a composite, all without significantly modifying the desired properties of either of the first and second substrates.

5,342,470
METHOD AND APPARATUS FOR WELDING OF PLASTIC PIPE ELEMENTS

Giovanni Meirana, Borghetto S. Spirito, Italy, assignor to MKM S.R.L., Albenga, Italy
PCT No. PCT/IT90/00048, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991, PCT Pub. No. WO90/14941, PCT Pub. Date Dec. 13, 1990
PCT Filed May 7, 1990, Ser. No. 784,436
Claims priority, application Italy, May 18, 1989, 47967 A/89
Int. Cl.[5] B29C *27/02*
U.S. Cl. 156—304.2 8 Claims



1. A process for welding an end of a pipe fitting to a manifold pipe, comprising the steps of:

(a) providing a manifold pipe formed of a plastic, melt-weldable material and having a circumference;

(b) forming a hole through the circumference of the manifold pipe and deoxidizing the manifold pipe in the area to be melt-welded around the hole;

(c) providing a pipe fitting formed of a plastic, melt-weldable material, the pipe fitting having an end for welding to the manifold pipe around the hole, the welding end being concave and having an elliptical outer transverse cross-section complementary in shape to the circumference of the manifold pipe, the welding end being raised and having a reduced thickness along the minor axis of the transverse cross-section and being depressed and having an increased thickness along the major axis of the transverse cross-section;

(d) providing a welding tool comprising:

a heat-conductive plate having planar, opposed first and second faces, and means for heating the first and second faces;

a first element formed of a heat conductive material and having a melting surface at one end, a back surface at an opposite end, and an inner axial cavity, the melting surface of the first element being substantially identical in shape to the welding end of the pipe fitting, the back surface being planar for mating contact with the first face of the plate;

a central member provided in the axial cavity of the first element and extending outwardly of the melting surface of the first element, the central member having an outer diameter corresponding to the diameter of the hole in the manifold pipe and being formed of a non-conducting material;

a second element separate from the first element and formed of a heat conductive material and having a melting surface at one end and a back surface at an opposite end, the melting surface of the second element being complementary in shape to the melting surface of the first element and to the end of the pipe being heat welded to the manifold pipe, and the back surface of the second element being planar for mating contact with the second face of the plate; and

a fastener fastening the first and second elements to the first and second faces, respectively, of the plate;

(e) heating the first and second elements by heating the plate;

(f) bringing the melting surface of the heated first element into contact with the circumference of the manifold pipe at the hole while aligning the melting surface of the first element relative to the hole by inserting the central member in the hole, and bringing the melting surface of the heated second element into contact with the welding end of the pipe fitting;

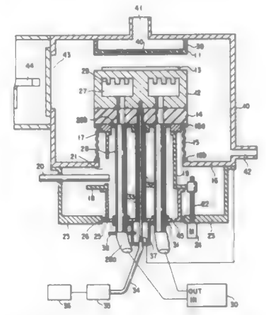
(g) heating the circumference of the manifold pipe at the hole and the welding end of the pipe fitting with the first and second elements, respectively, without pressing, until incipient melting of the manifold pipe at the hole and the welding end of the pipe fitting occurs, to define to melted surfaces;

(h) bringing the melted surfaces into contact with each other under pressure; and

(i) allowing the melted surfaces to solidify.

5,342,471
PLASMA PROCESSING APPARATUS INCLUDING CONDENSATION PREVENTING MEANS

Kazuo Fukasawa, Kofu, and Masachika Suetsugu, Yamanashi, both of Japan, assignors to Tokyo Electron Yamanashi Limited, Nirasaki, Japan
Filed Apr. 20, 1992, Ser. No. 870,827
Claims priority, application Japan, Apr. 22, 1991, 3-090401
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—345 25 Claims



1. A plasma processing apparatus, comprising:

a pair of electrodes installed in parallel with each other in a chamber, with an object to be processed being placed on one electrode thereof;

radiofrequency applying means for applying radiofrequency power to a space between the pair of electrodes and having a connecting portion;

cooling means for cooling the object to be processed;

gas introducing means for supplying a drying gas to the chamber; and

condensation preventing means installed at a portion of the camber to be in contact with outer atmosphere,

wherein said connection portion is located in the condensation preventing means and outside of the chamber.

5,342,472
PLASMA PROCESSING APPARATUS

Issei Imahashi, and Nobuo Ishii, both of Yamanashi, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan
Filed Aug. 12, 1992, Ser. No. 928,428
Claims priority, application Japan, Aug. 12, 1991, 3-228270
Int. Cl.[5] H05H *1/00*
U.S. Cl. 156—345 15 Claims

1. An apparatus for generating a plasma by an electron cyclotron resonance and processing a substrate by using this plasma, comprising:

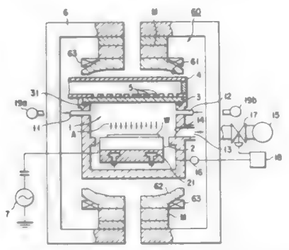
a processing chamber;

means for setting said chamber in a vacuum atmosphere;

a support table disposed in said chamber, said support table

VOL 1165 ISS 5 AG 30 1994 UMI

having a support surface for supporting the substrate, and said chamber defining a discharge space above said support surface;
gas supplying means for supplying a processing gas to be converted into the plasma in said chamber;
first and second magnetic poles respectively located on upper and lower sides of the discharge space, and both located outside said chamber, in order to form a magnetic field in the discharge space;
means for adjusting the strength of the magnetic field;
a microwave transmission window formed in said chamber to oppose the discharge space;
a first conductive plate arranged on said microwave transmission window outside said chamber,



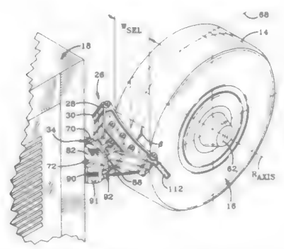
a plurality of slits formed in said first conductive plate and serving as microwave inlet ports;
a dielectric plate adjoining said first conductive plate;
a second conductive plate adjoining said dielectric plate with no gap therebetween; and
microwave supply means for supplying a microwave to said first conductive plate, and comprising a coaxial line constituted by a central conductor and an outer conductive pipe, an end of said central conductor being guided to a central portion of an upper surface of said dielectric plate without contacting said second conductive plate so as to form transmission paths of the microwave from the central portion to peripheral portions in said dielectric plate.

5,342,473

APPARATUS FOR APPLYING HOT CUSHION GUM TO A TIRE CARCASS

Donald S. Bibona, Orange; Michael J. Allen, El Toro, both of Calif., and Jean C. Girard, Copley, Ohio, assignors to NRM Steelastic, Inc., Akron, Ohio

Filed Aug. 20, 1991, Ser. No. 747,809
Int. Cl.[5] B29D *30/56*
U.S. Cl. 156—394.1 **15 Claims**



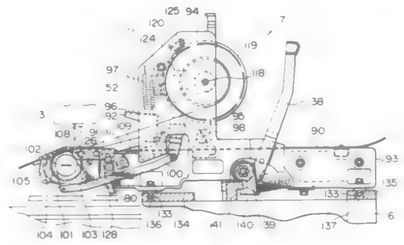
1. Apparatus for applying hot cushion gum in a layer of predetermined thickness and width to the crown surface of a tire carcass having a sagittal plane, said apparatus comprising:
means for rotating the carcass;
extrusion means for dispensing hot cushion gum;
die means;
an internal passage within said die means for conducting hot cushion gum from said extrusion means and forming a strip having a predetermined overall width;
means for selectively angularly disposing said die means relative to the sagittal plane of the tire carcass to determine the width of the strip as it is applied to the crown surface of the tire carcass from said die means.

5,342,474

PARTS FEEDER

Masayuki Mohara, Ohizumi, and Takahiro Kitajima, Ohta, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 17, 1992, Ser. No. 992,039
Claims priority, application Japan, Dec. 19, 1991, 3-336897
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—584 **4 Claims**



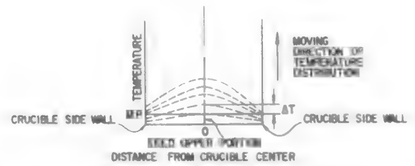
1. A parts feeder, comprising:
a feed table having an upper surface;
means for moving said feed table horizontally;
a plurality of parts feed units arranged on the upper surface of said feed table, each of said parts feed units including
a carrying tape carrying parts arranged on one surface of the carrying tape, a cover tape attached to the one surface of the carrying tape and covering the parts, means for peeling the cover tape from the carrying tape, means for dispensing the carrying tape to a position of a dispensation of the parts in the part feed unit while the peeling means peels the cover tape from the carrying tape, and a shutter shutting a space above the position of the dispensation of the parts to prevent the parts from escaping from the position of the dispensation of the parts;
a sucker means for sucking the parts at a position of a suction of the parts via the respective position of the dispensation of the parts in a parts feed unit positioned at the position of the suction of the parts by said feed table;
each of the said parts feed units including a tape feed drive driving the tape dispensing means and shutter drive separate from the tape feed drive, the shutter drive driving the shutter;
tape feed drive means, provided outside the parts feed units, for driving the tape feed drive of the parts feed unit positioned at a position other than the position of the suction of the parts such that the parts feed unit at the position other than the position of the suction of the parts feeds a part before that parts feed unit moves to the position of the suction of the parts; and
shutter drive means, positioned outside the parts feed units, for driving the shutter drive of the parts feed unit which has been positioned at the position of the suction of the parts by said feed table, to cause the shutter to open said space, said shutter drive means outside the parts feed units causing the shutter to shut said space after the sucker has sucked the part out of the parts feed unit at the position of the suction of the parts.

5,342,475

METHOD OF GROWING SINGLE CRYSTAL OF COMPOUND SEMICONDUCTOR

Seikoh Yoshida, and Toshio Kikuta, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 893,333
Claims priority, application Japan, Jun. 7, 1991, 3-163705
Int. Cl.[5] C30B *21/06*
U.S. Cl. 117—83 **14 Claims**



1. A method of growing a single crystal of a compound semiconductor, in which a compound semiconductor material is loaded in a vertical crucible and the compound semiconductor material is converted into a single crystal by utilizing a seed disposed in the center of the bottom portion of the vertical crucible, said method comprising the steps of:
using a crucible having a substantially flat bottom as said vertical crucible, said flat bottom having a central portion at an angle Θ falling within a range between −10° and +10° with a horizontal plane,
producing a melt by melting the compound semiconductor material,
causing said melt to have a temperature distribution such that an isotherm of said melt is convex with a drift toward the melt side,
rapidly lowering the temperature by 6° to 10° C. of that portion of the melt of the compound semiconductor material which is proximate to and in the vicinity of said seed in the initial stage of the crystal growth to a supercooled state so as to permit a crystal growth from said seed on the substantially horizontal plane without allowing the crystal to grow in a vertical direction, until reaching a desired diameter of a crystal; and
crystallizing the compound semiconductor material in a molten state while maintaining a temperature gradient such that the temperature of said melt is gradually increased from the lower portion toward the upper portion so as to obtain a single crystal of the compound semiconductor.

5,342,476

REDUCTION OF POLYCIDE RESIDUES THROUGH HELIUM BACKSIDE PRESSURE CONTROL DURING DRY ETCHING

John L. Cain, Schertz, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 21, 1993, Ser. No. 7,348
Int. Cl.[5] B44C *1/22*
U.S. Cl. 136—643 **18 Claims**

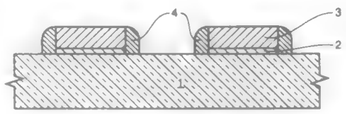
1. A method for reducing the degree of underetching and particulate formation occurring during dry non-isotropic etching of a polycide layer on the surface of a silicon wafer which comprises:
(a) placing a patterned resist layer over the polycide layer found on the surface of the silicon wafer so as to define areas where the polycide layer is exposed and areas where the polycide layer is covered by the resist layer;
(b) placing the silicon wafer prepared in (a) above into a wafer holder which holder has heating/cooling means in addition to or alternative to helium backside cooling;
(c) removing the exposed polycide layer from the surface of the silicon wafer by dry non-isotropic etching optionally employing backside cooling with a helium gas flow to the backside of the wafer holder wherein the helium gas flow is adjusted to maintain a backside pressure of from 0 to about 3 torr; and
(d) removing the resist layer.

5,342,477

LOW RESISTANCE ELECTRODES USEFUL IN FLAT PANEL DISPLAYS

David A. Cathey, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Filed Jul. 14, 1993, Ser. No. 92,311
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—643 **19 Claims**



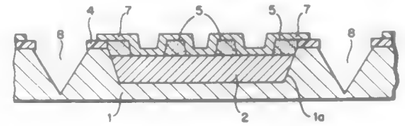
1. A method to form low resistance electrodes, the method comprising the following steps of:
patterning an electrode superjacent a substrate, said electrode having a length; and
disposing a low resistant material along said length of said electrode, said electrode and said low resistant material being combined with a substantially transparent conductive material in a flat panel display, said conductive material having a high resistance.

5,342,478

SELF-ALIGNED V-GROOVES AND WAVEGUIDES

Anthony D. Welbourn, Suffolk, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB91/01699, § 371 Date May 6, 1993, § 102(e) Date May 6, 1993, PCT Pub. No. WO92/06394, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 2, 1991, Ser. No. 50,212
Claims priority, application United Kingdom, Oct. 9, 1990, 9021944.5
Int. Cl.[5] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **25 Claims**



1. A method of forming at least one V-groove in alignment with at least one planar waveguide on a silicon substrate, the method comprising the steps of:
simultaneously forming a core for the at least one waveguide and a respective window for the at least one V-groove, covering the at least one core with a protective layer, and forming the at least one V-groove through the respectively corresponding window.

5,342,479

Patent Not Issued For This Number

VOL 1165 ISS 5 AUG 30 1994 UMI

5,342,480

METHOD OF MANUFACTURING A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

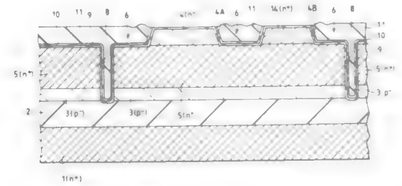
Hirotaka Nishizawa, Kokubunji; Seiichiro Azuma, Ohme; Takayuki Yoshitake, Fussa; Kazuo Tanaka, Tokyo; Mikinori Kawaji, Hino; Sinmei Hirano, Iruma; Toshio Yamada, Hamura, and Yasusi Sekine, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi VLSI Engineering Corp., Kodaira, both of Japan

Filed Jun. 1, 1993, Ser. No. 69,844

Claims priority, application Japan, Jun. 5, 1992, 4-145192

Int. Cl.[5] H01L *21/306*; **B44C** *1/22*

U.S. Cl. 156—648 **4 Claims**



1. A method of manufacturing a semiconductor integrated circuit device of forming grooves to a main surface of a non-active region of a semiconductor substrate or semiconductor layer, forming island regions each defined at the periphery thereof by said grooves to a main surface of an active region of said semiconductor substrate or semiconductor layer and insulating and isolating said island regions from each other by a burying material buried in said grooves, comprising:

(a) a step of forming grooves to the main surface of the non-active region of said semiconductor substrate or said semiconductor layer, each groove extending from the surface to the direction of the depth thereof and forming island regions each defined at the periphery thereof with said grooves, to the main surface of the active region of said semiconductor substrate or said semiconductor layer,

(b) a step of forming a burying material and a first mask having an etching rate greater as compared with that of the burying material successively over the entire surface of the semiconductor substrate or the semiconductor layer including areas on the upper surface of said island regions, on the lateral sides and the bottoms of said grooves, such that the film thickness is made virtually uniform for each of the surfaces,

(c) a step of forming a second mask on the surface of said first mask, through which the region on each of said island regions is opened and in which the end of the opening is situated from the end of said island region to the outside of said island region within a distance 0.7 times of the film thickness for the sum of the burying material and the first mask, and

(d) a step of applying isotropic etching successively to each of said first mask and said burying material by using said second mask as an etching mask, under a condition in which the etching rate for the first mask is greater as compared with that for the burying material.

5,342,481

DRY ETCHING METHOD

Shingo Kadomura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,324

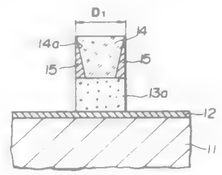
Claims priority, application Japan, Feb. 15, 1991, 3-042414

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—659.1 **8 Claims**

1. A dry etching method for etching a layer of a material using a resist pattern having an inclined sidewall section formed by a pattern width decreased from a top surface towards a bottom surface along a film thickness of the pattern, comprising:

forming discharge reaction products and allowing the discharge reaction products to be deposited on said inclined



sidewall surface for shaping said sidewall section of the mask so that said sidewall section will be substantially perpendicular to said layer, and

subsequently plasma etching said layer.

5,342,482

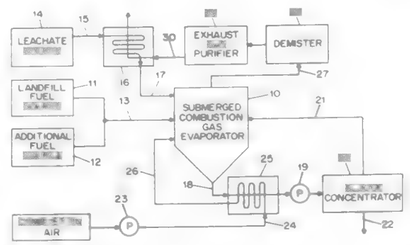
LEACHATE EVAPORATION SYSTEM

Bernard F Duesel, Jr., R.D. #3 Box 289, Goshen, N.Y. 10924

Filed Jun. 12, 1992, Ser. No. 898,921

Int. Cl.[5] B01D *1/14*

U.S. Cl. 159—DIG. 2 **13 Claims**



1. A leachate treatment system comprising a leachate source, submerged combustion gas evaporator means, means for supplying leachate from the leachate source to the submerged combustion means, fuel supply means for supplying fuel to generate hot combustion gases for the evaporator means, air supply means for supplying combustion air under pressure to generate pressurized hot combustion gases for the evaporator means, distributor means for distributing hot combustion gases into a body of leachate in an evaporation zone within the evaporator means, means defining a quiescent zone spaced from the evaporation zone within the evaporator means, leachate concentrate and sludge removal means for removing sludge and concentrated leachate from the quiescent zone of the evaporator means, and exhaust gas removal means for removing exhaust combustion gases under pressure from a region above the evaporation zone in the evaporator means.

5,342,483

PROCESS FOR DEINKING PAPER USING WATER-SOLUBLE ALCOHOLS

Jiann-Yang Hwang, Houghton, Mich., assignor to Magnetic Separation Engineering, Inc., Indianapolis, Ind.

Filed Dec. 10, 1992, Ser. No. 988,718

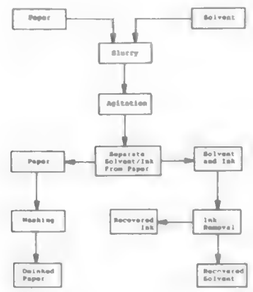
Int. Cl.[5] D21C *5/02*

U.S. Cl. 162—5 **11 Claims**

1. A process for deinking wastepaper, comprising the steps of:

(a) combining a water-miscible organic solvent selected from the group consisting of methanol, ethanol, isopropanol and 1-butanol with paper having ink thereon to create a solvent/paper slurry;

(b) agitating the solvent/paper slurry to assist in releasing ink from the paper;



(c) separating the solvent, with ink dissolved therein, from the paper; and

(d) repeating steps (a) through (c) until the desired amount of ink has been removed from the paper.

5,342,484

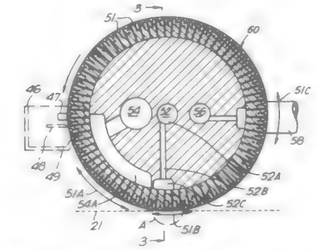
METHOD AND APPARATUS FOR MAKING BANDED SMOKING ARTICLE WRAPPERS

Edwin L. Cutright, Powhatan; G. Robert Scott, Midlothian, and Howard W. Vogt, Providence Forge, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 16, 1993, Ser. No. 31,946

Int. Cl.[5] D21H *15/00*

U.S. Cl. 162—139 **37 Claims**



1. A method of applying a fluidized material to a substrate to alter burn rate characteristics of the substrate, said method comprising the steps of:

providing said substrate, said substrate comprising a continuous web comprising paper;

providing said fluidized material, sad fluidized material comprising a slurry for altering burn rate characteristics of said paper web;

moving said substrate along a path;

providing a cylindrical surface having alternating regions of mesh material separated by regions of solid material and having an axis of rotation extending generally across said path, said surface being disposed generally tangent to said path;

applying the fluidized material to said cylindrical surface;

providing a vacuum on an underside of said mesh material so as to allow said fluidized material to adhere to said alternating regions of mesh material;

rotating said cylindrical surface so that the adhered fluidized material is positioned adjacent said substrate; and

providing pressure on the underside of said means material to release said adhered fluidized material from said mesh material, whereby said released fluidized material attaches to said substrate.

5,342,485

PROCESS FOR PREPARING ULTRA-WHITE ALUMINA TRIHYDRATE

Bernard F. Armbrust, Jr., Saline County, Ark., assignor to Reynolds Metals Company, Richmond, Va.

Filed Aug. 5, 1992, Ser. No. 926,268

Int. Cl.[5] D21H *17/67*

U.S. Cl. 162—181.5 **20 Claims**

12. In a papermaking process wherein a titanium dioxide pigment is added to a pulp to increase the whiteness, brightness and opacity of a resulting paper product, the improvement comprising adding a preblended pigment mixture of titanium dioxide and an alumina trihydrate composition to the pulp, wherein the alumina trihydrate composition is substituted for a portion of the titanium dioxide at a weight ratio of substantially 1:1, and wherein the alumina trihydrate composition has a G.E. brightness of at least about 98% and is in the form of flat platelets having a ratio of thickness to diameter of about 0.2.

5,342,486

ENDLESS BELT FOR EXTENDED NIP DEWATERING PRESSES

John Jeffery, Blackburn; Leslie Y. Kaniuka, Bolton, and Ian C. Sayers, Preston, all of England, assignors to Scapa Group PLC, Blackburn, England

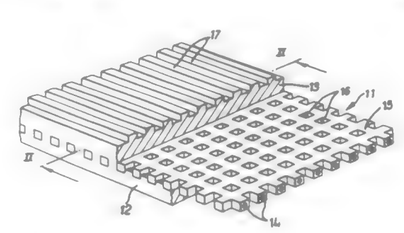
PCT No. PCT/GB91/01104, § 371 Date Nov. 17, 1992, § 102(e) Date Nov. 17, 1992, PCT Pub. No. WO92/02677, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 5, 1991, Ser. No. 946,459

Claims priority, application United Kingdom, Jul. 28, 1990, 9016619

Int. Cl.[5] D21F *3/02*

U.S. Cl. 162—358.4 **10 Claims**



1. An extended nip press belt having a longitudinal running direction for the press-section of a papermaking machine, the belt comprising an apertured membrane having two opposite faces and an impermeable coating layer on at least one face thereof, the material of the coating layer at said at least one face engaging the apertures in said membrane and extending at least to the plane of the face of the membrane opposite said at least one face, the membrane including reinforcing yarns in the longitudinal running direction of the belt.

5,342,487

DISTILLATION PROCESS

Christine McDade, North Wales; Makarand D. Phadke, Warminster, and William D. Weir, Levittown, all of Pa., assignors to Rohm and Haas Compnay, Philadelphia, Pa.

Filed Oct. 8, 1991, Ser. No. 773,185

Int. Cl.[5] B01D *3/34*

U.S. Cl. 203—6 **9 Claims**

1. A method comprising reducing formation of diacrylates or dimethacrylates during the distillation of hydroxylakyl

VOL 1165 ISS 5 AG 30 1994 UMI

acrylates or hydroxyalkyl methacrylates from a reaction mixture produced by the iron catalyzed reaction of an acrylic or a methacrylic acid with an alkylene oxide by conducting the distillation in the presence of an amount of from about 1 to about 5 weight percent consisting essentially of at least one of a catalyst deactivating additive selected from:

a. substituted or unsubstituted C_4–C_{20} alkyl or C_7–C_{20} aralkyl mono-, di-, or tricarboxylic acids, anhydrides of the mono, di, or tricarboxylic acids or mixed anhydrides of the mono, di, or tricarboxylic acids, wherein the substituent is selected from one to four C_1–C_4 alkoxy, C_1–C_4 alkyl, halo, or aryl;
b. substituted C_6–C_{10} aryl mono, di-, or tricarboxylic adds, anhydrides of the mono, di, or tricarboxylic acids, or mixed anhydrides of the mono, di, or tricarboxylic acids, wherein the substituent is selected from C_1–C_4 alkoxy, C_1–C_4 alkyl, halo or aryl;
c. substituted or unsubstituted C_3–C_{10} vicinal diols, wherein the substituent is selected from one to four hydroxy, C_1–C_4 alkoxy, C_1–C_4 alkyl, halo, or aryl;
d. substituted or unsubstituted o-substituted phenols wherein the substituent is selected from one to four C_1–C_4 alkoxy, C_1–C_4 alkyl, halo, or aryl, and wherein the o-substituent is selected from hydroxy, hydroxymethyl, or carboxymethyl;
e. substituted or unsubstituted o-substituted polyaromatic alcohols wherein the substituent is selected from one to four C_1–C_4 alkoxy, C_1–C_4 alkyl, halo, or aryl, and wherein the o-substituent is selected from hydroxy, hydroxymethyl, carboxy, or carboxymethyl;
f. substituted or unsubstituted diglycolic anhydrides wherein the substituent is selected from one to four C_1–C_4 alkoxy, C_1–C_4 alkyl, halo, or aryl; and,
g. polyacrylic acids.

5,342,488

SEPARATION OF 1,4-BUTANEDIOL FROM HYDROGENATION MIXTURES

Hans-Juergen Gosch, Bad Durkheim; Harald Rust, Neustadt; Rolf Fischer, Heidelberg; Claus Hechler, Mannheim, and Rolf Pinkos, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 17, 1993, Ser. No. 18,496

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1992, 4205471

Int. Cl.[5] B01D *3/00;* C07C *27/00*

U.S. Cl. 203—80 **2 Claims**

1. A process for the separation of 1,4-butanediol from a mixture obtained by the catalytic hydrogenation of maleates, fumarates, and/or succinates, which mixture also contains tetrahydrofuran, water, C_1–C_4 alcohols, succinic diesters, hydroxybutyrates, alkylhydroxyalkyl succinates, gamma-butyrolactone or butyrates, in addition to 1,4-butanediol, comprising the following steps:

a) separating, in a first column having an actual number of plates of from 20 to 70 and operated at a top pressure of from 50 to 1100 mbar and a top temperature of from 40° to 120° C., the C_1–C_4 alcohols, water and tetrahydrofuran, as overhead product,
b) feeding the bottom product of the first column into a second column having an actual number of plates of from 30 to 90 and withdrawing the overhead product consisting of alcohol and butyrate and obtained at a top pressure of from 45 to 250 mbar and a top temperature of from 45° to 120° C., and withdrawing the gamma-butyrolactone and butyrates through a side outlet, and feeding the bottom product to a phase separator,
c) feeding the 1,4-butanediol-enriched bottom phase of the liquid two-phase mixture coming from the phase separator to a third column having an actual number of plates of from 30 to 90, alcohol being distilled off as overhead product at a top pressure of from 45 to 250 mbar and a top temperature of from 45° to 120° C., and an azeotrope comprising the 1,4-butanediol and succinic diesters is withdrawn as a sidestream and recycled to the phase separator while the 1,4-butanediol is removed together with the alkylhydroxyalkyl succinates, hydroxybutyrates and high-boiling fractions as bottoms, and
d) separating the alkylhydroxyalkyl succinates-enriched top phase in the phase separator.

5,342,489

METHOD OF MEASURING OXYGEN ACTIVITIES IN SLAG

Masanori Iwase, Kyoto; Ryuji Fujiwara, Hirakata, and Ryo Mochizuki, Osaka, all of Japan, assignors to Yamari Electronite Kabushikigaisha, Osaka, Japan

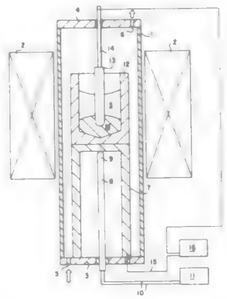
PCT No. PCT/JP90/01324, § 371 Date Jun. 17, 1991, § 102(e) Date Jun. 17, 1991, PCT Pub. No. WO91/06003, PCT Pub. Date May 2, 1991

PCT Filed Oct. 15, 1990, Ser. No. 690,892

Claims priority, application Japan, Oct. 17, 1989, 1-271033

Int. Cl.[5] G01N *27/417*

U.S. Cl. 204—153.18 **8 Claims**



1. A method of measuring the oxygen activity of a slag from molten iron or steel, the method comprising the steps of: melting in an inert atmosphere a specific metal which does not alloy with iron, does not produce an oxide and which has a larger specific gravity than the slag which is being measured for oxygen activity, the metal being selected from the group consisting of copper and silver, together with said slag in a steel crucible; immersing a solid electrolyte in the form of a tube having a closed end and having a reference electrode provided therewith in said specific metal and bringing a contact electrode into contact with said specific metal so as to form an electric closed circuit between said reference electrode and said contact electrode through said specific metal; and measuring the oxygen activity of said specific metal from measured values from said electric closed circuit, and correlating the oxygen activity of the specific metal to the oxygen activity of the slag.

5,342,490

ELECTROLYTIC DETECTION OF SULFUR

Alfred B. P. Lever, 4700 Keele St., North York, Canada M3J 1P3 ; Yu-Hong Tse, North York, Canada, and Pavel Janda, Prague, Czechoslovakia, assignors to Alfred B. P. Lever, Ontario, Canada

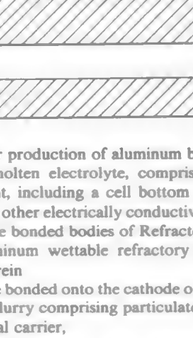
Filed Jun. 10, 1992, Ser. No. 896,320

Int. Cl.[5] G01N *27/333*

U.S. Cl. 204—153.19 **19 Claims**

1. A process for determining the concentration of sulfur in an aqueous sample including an oxidizable sulfur-containing compound, the process comprising the steps of:

feeding the aqueous sample into an electrolytic cell comprising a reference electrode and an indicator electrode coated with a macrocyclic compound;
feeding an oxidant into the electrolytic cell;



allowing the oxidizable sulfur-containing compound to equilibrate with the macrocyclic compound to produce a potential; and
measuring the potential.

5,342,492

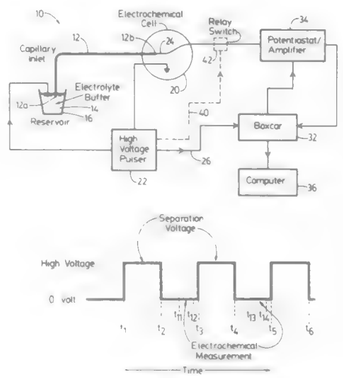
SYSTEM FOR ELECTROKINETIC SEPARATION AND DETECTION WHERE DETECTION IS PERFORMED AT OTHER THAN SEPARATION ELECTRIC FIELD

Rajeev Dadoo; Richard N. Zare, both of Stanford, Calif., and Luis A. Colon, Williamsvile, N.Y., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 1, 1993, Ser. No. 115,466

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—180.1 **22 Claims**



1. A method for electrokinetic separation and detection, comprising:

introducing a sample to be separated into a capillary tube;
applying an electrical potential across a portion of the capillary tube to cause electrokinetic separation of the sample into its components, said applying step being such that magnitude of the electrical field in a section of the tube is intermittently below a predetermined value for a plurality of time periods, and is above said predetermined value at other time periods; and
intermittently measuring at least one electrochemical parameter of the separated components during said plurality of time periods.

5,342,491

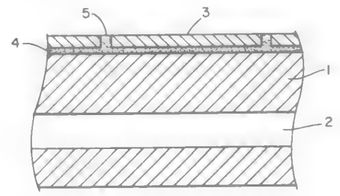
BONDING OF BODIES OF REFRACTORY HARD MATERIALS TO CARBONACEOUS SUPPORTS

Jainagesh A. Sekhar, Cincinnati, Ohio, assignor to Moltech Invent S.A., Luxembourg

Division of Ser. No. 28,359, Mar. 9, 1993. This application May 21, 1993, Ser. No. 65,581

Int. Cl.[5] C25C *3/06;* **C25B** *11/12*

U.S. Cl. 204—243 R **16 Claims**



1. In a cell for production of aluminum by electrolysis of a cryolite-based molten electrolyte, comprising a cathode or other component, including a cell bottom cathode, made of carbonaceous or other electrically conductive refractory material, to which are bonded bodies of Refractory Hard Material (RHM) or aluminum wettable refractory materials, an improvement wherein

said bodies are bonded onto the cathode or other component by a dried slurry comprising particulate preformed RHM in a colloidal carrier,
said carrier being selected from the group consisting of colloidal alumina, colloidal yttria, colloidal ceria and mixtures thereof.

5,342,493

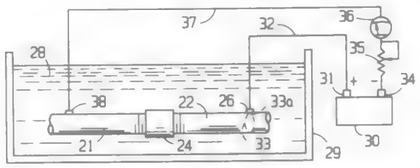
CORROSION CONTROL OF DISSIMILAR METALS

Robert S. Boiko, P.O.Box 544, Northbrook, Ill. 60065-0544

Continuation of Ser. No. 506,698, Apr. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 326,361, Mar. 21, 1989, abandoned. This application Jan. 22, 1993, Ser. No. 8,070

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—196 **16 Claims**



1. A corrosion inhibiting system comprising a metal structure which includes joined dissimilar metals generally cylindrical in shape in contact with an electrolyte, the metal structure including a first portion of a more noble metal and a second portion of a less noble metal, the less noble metal including a surface portion having a predetermined cylindrical shape, said

VOL 1165 ISS 5 AG 30 1994 UMI

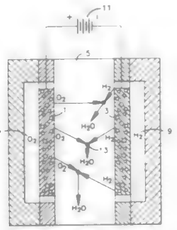
first and second dissimilar metal portions being joined together electrically and mechanically, defined a metallic junction area, said system comprising: an anode electrode located in the electrolyte and positioned close to said surface portion of the less noble metal, said anode electrode being substantially in the form of a loop defining a plane perpendicular to the longitudinal axis of the metal structure, the anode loop being by the less noble metal and being equidistantly spaced from a portion thereof, whereby a direct negative current path is provided through said metal structure to said anode electrode, said current path extending from the more noble metal to the less noble metal, and through the electrolyte to said anode electrode, and circuit means including first electrical conductor means connecting said anode electrode to a positive output terminal of a source of non-pulsating direct current and second electrical conductor means connecting the more noble metal to a negative output terminal of said source of non-pulsating direct current for causing a neutralizing current to flow through said direct negative current path from the more noble metal to the less noble metal in the metal structure to inhibit the normal flow of corrosion current formed locally between said first and second dissimilar metal portions, said circuit means including means for establishing a preselected amplitude for said neutralizing current.

5,342,494

HIGH PURITY HYDROGEN AND OXYGEN PRODUCTION AND APPARATUS THEREFOR

Eric M. Shane, Simsbury, and James F. McElroy, Suffield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 5, 1993, Ser. No. 26,938
Int. Cl.[5] C25B *13/04, 13/08*
U.S. Cl. 204—252 **5 Claims**



2. A catalyst impregnated fluorocarbon ion exchange membrane having a surface area and a thickness, which is formed in a method comprising:

a. conditioning the ion exchange membrane by exchanging hydrogen ions in the membrane with replacement cations;

b. exchanging said replacement cations with platinum catalyst ions;

c. converting said platinum catalyst ions to platinum metal, wherein steps "a" through "c" serve to impregnate the membrane with metal in an amount up to about 0.086 grams per square foot per millimeter of membrane;

d. repeating steps "a" through "c" at least once to form a multiply impregnated membrane;

e. exchanging any remaining replacement cations in said multiply impregnated membrane with hydrogen; and

f. equilibrating said multiply impregnated membrane, wherein the platinum metal is present in the form of discrete and isolated particles within the membrane.

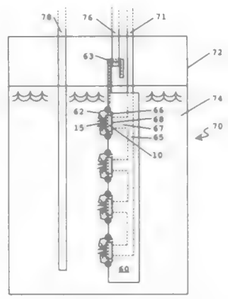
3. An improved electrolysis cell for producing high purity oxygen and hydrogen gases, said electrolysis cell having an anode catalyst, a cathode catalyst, an anode chamber and a cathode chamber, wherein said improvement comprises said catalyst impregnated ion exchange membrane of claim 2.

5,342,495

STRUCTURE FOR HOLDING INTEGRATED CIRCUIT DIES TO BE ELECTROPLATED

Francisca Tung, Los Gatos, and Victor H. Okumoto, San Francisco, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 3, 1993, Ser. No. 12,719
Int. Cl.[5] C25D *17/08*
U.S. Cl. 204—297 R **8 Claims**



1. A structure for holding a plurality of individual integrated circuit die while electroplating conductive bumps over bond pads of said plurality of individual integrated circuit die, wherein each of said plurality of individual integrated circuit die has a surface upon which bond pads have been formed, and upon said surface an oxidized barrier metal layer has been formed, and upon said oxidized barrier metal layer an adhesion metal layer has been selectively formed over said bond pads of said individual integrated circuit die, said structure comprising:

a plurality of holding means, each holding means for holding one of said plurality of individual integrated circuit die; and

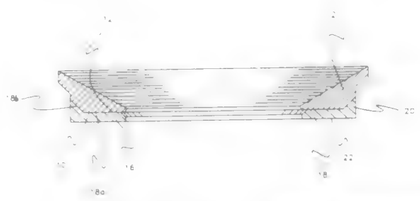
a plurality of contact pins, wherein each of said plurality of contact pins is adapted to make electrical contact with the barrier metal layer of one of said plurality of individual integrated circuit die being held in one of said plurality of holding means.

5,342,496

METHOD OF WELDING SPUTTERING TARGET/BACKING PLATE ASSEMBLIES

David E. Stellrecht, Columbus, Ohio, assignor to Tosoh SMD, Inc., Grove City, Ohio

Filed May 18, 1993, Ser. No. 63,521
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.12 **21 Claims**



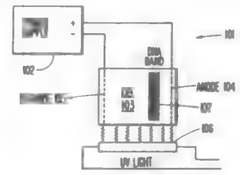
16. In a target assembly of the type wherein a disk-shaped target is provided with an annular side wall member of a sufficient height adapted for contacting a water jacket of a cathodic sputtering apparatus, a target face surface comprising coating material for sputtering, and a bottom side surface opposite from said target face surface, the improvement comprising a retaining member and a friction weld bonded layer interposed between said target and said retainer member and bonding said target bottom surface to said retainer member.

5,342,497

ELECTROPHORESIS SYSTEM

Frank Cathel, Descanso, and Robert Leshofs, San Diego, both of Calif., assignors to Stratagene Cloning Systems, La Jolla, Calif.

Continuation of Ser. No. 498,201, Mar. 23, 1990, Pat. No. 5,055,172. This application Apr. 8, 1991, Ser. No. 682,589
The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—299 R **26 Claims**



1. An electrophoresis system for separating charged chemical substances, comprising

means for applying an electrical potential to a mixture of said charged chemical substances;

first means for generating a first control signal indicating an electrical supply parameter;

second means for generating a second control signal indicating a choice of level of supply;

third means for generating a constant level of supply of said electrical potential as indicated by said first control signal and second control signal, comprising a flyback transformer having a characteristic frequency exceeding about 20 kilohertz and having at least one primary winding and at least one secondary winding with opposite polarity and having a ferrite core with an air gap.

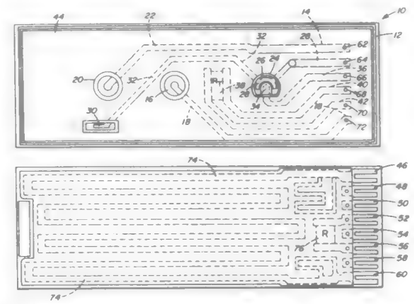
5,342,498

ELECTRONIC WIRING SUBSTRATE

Jeffrey A. Graves, 31832 Via Flores, San Juan Capistrano, Calif. 92675; Marshall L. Sherman, 875 Nolbey St., Cardiff, Calif. 92007; Matthew J. Leader, 48 Oakcliff Dr., Laguna Niguel, Calif. 92677, and Kee V. Sin, 7181 Sunfish Ct., Lino Lakes, Minn. 55014

Continuation-in-part of Ser. No. 721,030, Jun. 26, 1991, abandoned. This application Jun. 26, 1992, Ser. No. 905,254
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—406 **31 Claims**

1. An improved electronic wiring board having a nonconducting substrate, temperature sensor and at least one analyte sensor supported, in close relation, one to the other, on the same side of said substrate and a heater, also supported on the substrate, and located on another side of said substrate from the temperature sensor and analyte sensor to provide heat in response to temperature sensed by said temperature sensor to at least the region where said temperature sensor and said analyte sensor are positioned on said substrate to thereby control the temperature of said region of said board within a narrow distribution of temperatures, and connecting means supported on said substrate for connecting said board to an external electrical source.

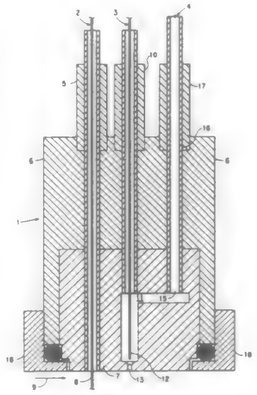


5,342,499

MONITORING AND CONTROL OF PROCESS STREAMS AT ELEVATED TEMPERATURES

Vaclav G. Zboril, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Division of Ser. No. 829,845, Jan. 31, 1992, Pat. No. 5,213,668. This application Mar. 25, 1993, Ser. No. 53,623
Claims priority, application United Kingdom, Feb. 4, 1991, 9102371
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—409 **3 Claims**



1. An apparatus for the monitoring and control of concentration of an ion at a temperature of at least 100° C., comprising:

(a) a first electrode and a second electrode, said first and second electrodes being identical and capable of detecting an ion at said temperature;

(b) said first electrode being positioned in a first fluid flow passage such that a solution flowing through said first fluid flow passage will be in continuous contact with said first electrode;

(c) said second electrode being positioned in a second fluid flow passage such that a solution flowing through said second fluid flow passage will be in continuous contact with said second electrode; and

VOL 1165 ISS 5 AG 30 1994 UMI

(d) means for connecting said first and second fluid flow passage such that

(1) a solution flowing through said first fluid flow passage is contacted with a fluid flowing through said second fluid flow passages, and

(2) said second fluid flow passage is constructed such that the fluid flow rate therein is at least 50 times lower than the fluid flow rate in said first fluid flow passage.

5,342,500

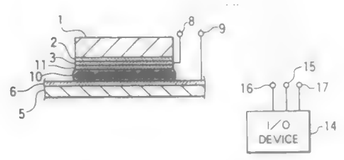
INTERFACIAL COMPONENT DETECTION APPARATUS

Kazuhiko Inanaga; Hitoshi Ota; Shiro Yamauchi, and Takashi Kawabata, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 773,208, Oct. 8, 1991, abandoned. This application Oct. 12, 1993, Ser. No. 135,425

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—421 **24 Claims**



1. An interfacial component detection apparatus comprising:

a first solid portion;

a second solid portion disposed in proximity to and supported for movement relative to the first solid portion and separated from the first solid portion by an interfacial layer;

first and second electrodes disposed on the first solid portion opposite the second solid portion and spaced apart from one another;

a solid electrolytic layer disposed on the first and second electrodes between the electrodes and the interfacial layer; and

sensing means electrically connected to the first and second electrodes for applying an electrical signal across the first and second electrodes and for detecting electrical signals from said electrodes, thereby sensing a component of the interfacial layer.

5,342,501

METHOD FOR ELECTROPLATING METAL ONTO A NON-CONDUCTIVE SUBSTRATE TREATED WITH BASIC ACCELERATING SOLUTIONS FOR METAL PLATING

Kiyoshi Okabayashi, Kitakoiwa, Japan, assignor to Eric F. Harnden, Redlands, Calif.

Continuation-in-part of Ser. No. 718,186, Jun. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 440,661, Nov. 21, 1989, Pat. No. 5,071,517. This application Oct. 30, 1992, Ser. No. 968,853

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] C25D *5/00*

U.S. Cl. 205—50 **20 Claims**

13. A method for directly electroplating a metal onto the surface of a non-conducting substrate, said method comprising the step of:

passing a current between two electrodes immersed in an electrolyte containing dissolved plating metal, one of said electrodes being said substrate, said substrate having at least a portion of its surface coated with a substantially uniform conducting layer of catalytic metal, the coated surface having been treated with a basic accelerating solution comprising copper ions.

5,342,502

METHOD OF PREPARING SILICON CARBIDE PARTICLES DISPERSED IN AN ELECTROLYTIC BATH FOR COMPOSITE ELECTROPLATING OF METALS

Yu-Min Peng; Jih-Wen Wang, both of Hsinchu; Chun-Ying Liue, Tau-Yung, and Shinn-Horng Yeh, Kaohsiung, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation of Ser. No. 941,559, Aug. 31, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 140,819

Int. Cl.[5] C25D *15/00;* **B05D** *1/18;* **C04B** *35/56;* **C01B** *31/36*

U.S. Cl. 205—109 **4 Claims**



1. A method for treating silicon carbide particles wherein after said treatment said silicon carbide particles are dispersed in an electrolytic bath for both composite electroplating and electroless plating of metals, said treatment comprising steps of:

1) washing silicon carbide particles with an organic solvent;

2) washing said silicon carbide particles of step (1) with an organic acid;

3) grinding said silicon carbide particles of step (2) and

4) heating the ground silicon carbide particles of step (3) in a nickel-containing solution to boiling for a predetermined period of time.

5,342,503

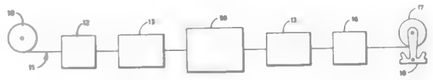
METHOD FOR HIGH SPEED CONTINUOUS WIRE PLATING

Tom E. Byler, Pittsfield; Robert S. Orbanic, Warren, and Kimberly J. Suchar, Waterford, all of Pa., assignors to Osram Sylvania Inc., Danvers, Mass.

Continuation of Ser. No. 431,798, Nov. 6, 1989, Pat. No. 5,176,808. This application Sep. 24, 1992, Ser. No. 999,804

Int. Cl.[5] C25D *7/06, 21/10*

U.S. Cl. 205—138 **1 Claim**



1. A method for high speed continuous wire plating, comprising the steps of:

a) pumping a highly concentrated plating solution into an enclosed plating cell such that a minimum of 50 lb/in^2 pressure is achieved within said cell;

b) providing an electrical potential between an anode and a cathode sufficient to maintain current densities of at least 200 amps per square foot;

c) passing a wire to be plated through said cell such that said wire first contacts said cathode and thereby becomes negatively charged, said wire next passing through said anode through which said solution is also flowing at a high velocity such that electrodeposition of metal ions from said anode onto said wire is achieved at rapid rate;

d) passing said wire from said plating cell through rinsing, drying and collecting means.

5,342,504

PALLADIUM-NICKEL ALLOY PLATING SOLUTION

Tomio Hirano, and Masaaki Tsukamoto, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 30,869

Claims priority, application Japan, Mar. 30, 1992, 4-073731

Int. Cl.[5] C25D *3/56*

U.S. Cl. 205—257 **6 Claims**

1. A palladium-nickel alloy plating solution comprising a water-soluble palladium salt, a water-soluble nickel salt, ammonia and an ammonia salt in combination with 3-pyridine sulfonic acid, these ingredients being dissolved in water, whereby a palladium-nickel alloy with improved quality can be obtained in a broad range of electric densities.

5,342,505

USE OF POLYALKENYL SUCCINIMIDES-GLYCIDOL REACTION PRODUCTS AS ANTIFOULANTS IN HYDROCARBON PROCESS MEDIA

David R. Forester, Conroe, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

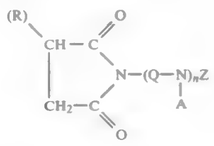
Filed Feb. 25, 1993, Ser. No. 24,115

Int. Cl.[5] C10G *9/16*

U.S. Cl. 208—48 AA **11 Claims**

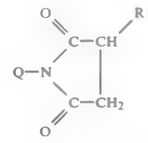
1. A method of inhibiting fouling deposit formation in a liquid hydrocarbonaceous medium during heat treatment processing thereof at temperatures of about 200°–550° C.,

wherein, in the absence of such antifouling treatment, fouling deposits are normally formed as a separate phase within said liquid hydrocarbonaceous medium impeding process throughput and thermal transfer, said method comprising adding to said liquid hydrocarbonaceous medium, an antifouling amount of a reaction product of a polyalkenylsuccinimide having the formula



(III)

wherein R is an aliphatic alkyl or alkenyl moiety having at least about 50 carbon atoms and less than about 200 carbon atoms, Q i a divalent aliphatic radical, n is a positive integer, A is hydrocarbyl, hydroxyalkyl or hydrogen, Z is H or



with glycidol, said liquid hydrocarbonaceous medium comprising petroleum hydrocarbons and petrochemicals.

5,342,506

REFORMING USING A PT-LOW RE CATALYST IN THE LEAD REACTOR

William C. Baird, Jr.; George A. Swan, III, both of Baton Rouge, La.; Joseph P. Boyle, Sarnia, Canada, and Eduardo Mon, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 814,659, Dec. 30, 1991, Pat. No. 5,221,465. This application Dec. 30, 1992, Ser. No. 998,196

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[5] C10G *35/85*

U.S. Cl. 208—65 **10 Claims**

1. A process for reforming a naphtha feedstream to obtain an improved C_5+ liquid yield, which process comprises conducting the reforming in a reforming process unit comprised of a plurality of serially connected reactors inclusive of one or more lead reactors and a tail reactor, each of said reactors containing a platinum-containing catalyst, the naphtha flowing in sequence from one reactor of the series to the next downstream reactor and contacting said catalyst at reforming conditions, including pressures from about 100 to 200 psig and temperatures form about 700° to 1000° F. in the lead reactor, and pressures from about 100 to 700 psig and temperatures from about 800° to 1050° F. in the tail reactor wherein:

(a) the lead reactor contains a catalyst comprised of about 0.1 to 1 wt. % Pt and about 0.01 to 0.1 wt. % Re on an inorganic oxide support; and

(b) the tail reactor contains a catalyst comprised of about 0.1 to 1 wt. % Pt, from about 0.1 wt. % to about 1.0 wt. % Ir, and from about 0.02 wt. % to about 0.4 wt. % Sn, based on the total weight of the catalyst (dry basis), uniformly dispersed throughout a particulate solid support.

5,342,507

MILD HYDROCRACKING PROCESS EMPLOYING CATALYSTS CONTAINING DEALUMINATED Y-ZEOLITES

Pei-Shing E. Dai; Charles N. Campbell, II, both of Port Arthur; Bobby R. Martin, and David E. Sherwood, Jr., both of Beaumont, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 897,165, Jun. 11, 1992, abandoned. This application Apr. 16, 1993, Ser. No. 46,706

The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.

Int. Cl.[5] C10G *47/02*

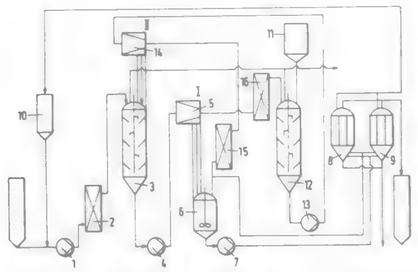
U.S. Cl. 208—111 **7 Claims**

1. A process for mild hydrocracking of a hydrocarbon feedstock having a substantial proportion of components boiling below about 1000° F., said process comprising contacting said hydrocarbon feedstock under conditions of elevated temperature and a hydrogen pressure of less than about 1500 psig with a particulate catalyst comprising about 1.0 to about 6.0 wt. % of an oxide of a Group VIII metal; about 12.0 to about 25.0 wt. % of an oxide of molybdenum and 0 to about 5.0 wt. % of an oxide of phosphorus all supported on a porous support comprising (1) a matrix selected from the group consisting of precipitated alumina and silica-alumina containing about 1.0 to about 3.0 wt. % of silica and (2) about 5.0 to about 35 wt. %, based on the weight of the support, dealuminated Y-zeolite having a silica to alumina mole ratio of 10 to 32, a unit cell size of 24.29 to 24.48, in such a manner that the molybdenum gradient of the catalyst ranges from about 1 to about 10, said conditions being such as to yield about a 10 to about a 60 Vol % conversion of the hydrocarbon feedstock boiling above 650° F. to hydrocarbon products boiling at or below 650° F., wherein the said catalyst is further characterized by having a total surface area of about 200 to about 350 m^2/g and a total pore volume of about 0.55 to about 0.75 cc/g, with a pore volume distribution such that micropores having diameters less than 100 Å constitute less than 40% pores having diameters of 100–160 Å constitute about 10 to about 55%, pores having diameters greater than 160 Å constitute about 25 to about 55%,

VOL 1165 ISS 5 AG 30 1994 UMI

macropores having diameters greater than 250 Å constitute about 15 to about 45% of the total pore volume.

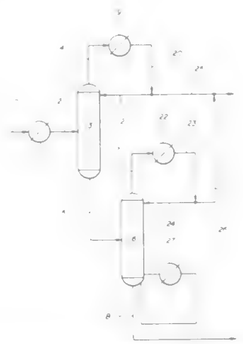
5,342,508
METHOD OF ADSORPTIVE PURIFICATION OF VEGETABLE AND/OR MINERAL OILS AND FATS
Peter Transfeld, Magdeburg, Fed. Rep. of Germany, assignor to Ohmi Forschung und Ingenieurstechnik GmbH, Magdeburg, Fed. Rep. of Germany
Filed Jul. 20, 1992, Ser. No. 916,505
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1991, 4124331
Int. Cl.[5] C10G *25/00, 25/06*
U.S. Cl. 208—299 **11 Claims**



7. A method of purifying a liquid containing pigmentations and dirt contaminants and selected from the group which consists of vegetable oils, mineral oils, fats and mixtures thereof, said method comprising the steps of:
(a) contacting said liquid with a solid adsorbent capable of bleaching the liquid and adsorbing said contaminants therefrom for a time and at a temperature in counterflow and in a plurality of stages with separation of phases including an initial stage at which a contaminated adsorbent is recovered and a final stage at which a purified liquid is recovered;
(b) mixing at least some of said contaminated adsorbent recovered in step (a) with at least part of the purified liquid recovered in step (a) to form a mash; and
(c) feeding said mash to a filter and depositing solids from sad mash on said filter while filtering purified liquid through said filter.

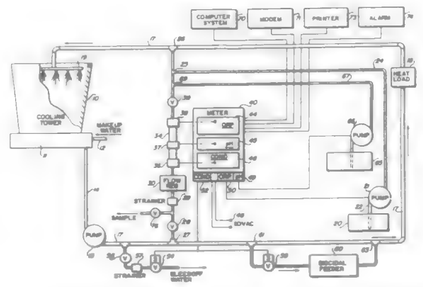
5,342,509
FOULING REDUCING DUAL PRESSURE FRACTIONAL DISTILLATOR
Sheri R. Snider; David A. Bamford; Rimas V. Vebeliunas; Roy T. Halle, and Robert D. Strack, all of Houston, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.
Filed Sep. 24, 1992, Ser. No. 950,622
Int. Cl.[5] C10G *7/02*
U.S. Cl. 208—351 **11 Claims**

1. A method for the fractionation of a mixture of cracked hydrocarbons produced by a cracking unit containing foulant precursors which reduces polymer fouling, comprises the steps of:
(a) partially vaporizing said mixture in a preheater operating at 7 to 20 Bar G;
(b) separating said mixture of cracked hydrocarbons which is at least partially vaporized in a high pressure fractional distillation column operating at 6 to 20 Bar G wherein said mixture is separated into high pressure fractional distillation light components (b1) and high pressure fractional distillation heavy components (b2) diminished in foulant precursors without further heating of the high pressure heavy components (b2);
(c) separating said high pressure factional distillation heavy components (b2) in a low pressure fractional distillation column operating at about 2 Bar G into a low pressure fractional distillation tops stream (c1) and a low pressure fractional distillation bottoms stream (c2) with a diminished quantity of foulant precursors; and



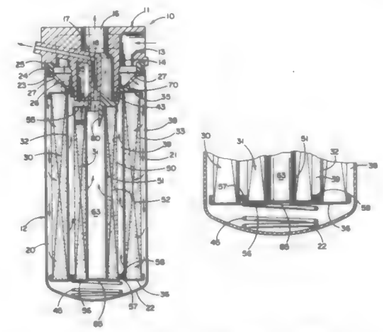
(d) combining said high pressure fractional distillation light components (b1) with the low pressure fractional distillation tops stream (c1) to produce a light fraction containing the increased amount of foulant precursors.

5,342,510
WATER CONTROL SYSTEM USING OXIDATION REDUCTION POTENTIAL SENSING
Todd R. Eden, Scottsdale, and Jerome H. Ludwig, Paradise Valley, both of Ariz., assignors to h.e.r.c. Incorporated, Phoenix, Ariz.
Continuation-in-part of Ser. No. 59,514, May 17, 1993, Pat. No. 5,268,092, which is a continuation of Ser. No. 829,762, Feb. 3, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 99,737
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[5] B01D *17/12*
U.S. Cl. 210—96.1 **11 Claims**



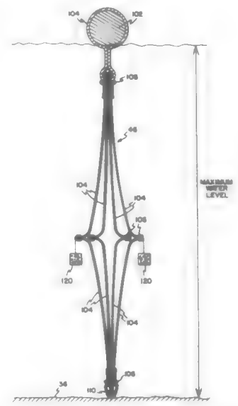
1. An automatic control system adapted for controlling scale formation in a water circulating system comprising:
first sensing means for measuring the oxygen reduction potential (ORP) of the circulating water containing a soap having a 1:1 stoichiometric equivalent of an organic acid and ammonia in the water for controlling scale formation in said system and
supply means for automatically supplying said soap in response to a predetermined ORP measured by said first sensing means substantially corresponding to a pH higher or lower than a selected range for controlling said scale.

5,342,511
OIL FILTER WITH INNER AND OUTER COAXIAL FILTER ELEMENTS
Gene W. Brown, and Troy McConaughey, both of Kearney, Nebr., assignors to Baldwin Filters, Inc., Kearney, Nebr.
Filed Jul. 6, 1993, Ser. No. 85,911
Int. Cl.[5] B01D *27/08, 27/10*
U.S. Cl. 210—137 **11 Claims**



11. An oil filter cartridge comprising a canister having an open end and an opposite closed end, an end plate on the open end of said canister, a first tubular filter disposed in said canister in radially spaced relation therewith, there being a first annular flow chamber between said canister and said first filter, a second tubular filter telescoped into and coaxial with said first filter and located in radially spaced relation with said first filter, said second filter having opposite first and second ends, there being a second annular flow chamber between said first and second filters, said second filter having filter media defining a hollow interior chamber free of any filter media and communicating with said second flow chamber by way of said media, said interior chamber extending continuously from said first end to said second end of said second filter, inlet means for admitting oil into said canister, means for preventing unfiltered oil from said inlet means from flowing directly into the interior of said first filter whereby such oil is forced to flow into said first flow chamber and through said first filter to said second flow chamber, means for permitting oil in said second flow chamber to flow out of said canister, means for preventing oil in said seocnd flow chamber from flowing directly to the interior chamber of said second filter whereby such oil is forced to flow through said second filter to the interior thereof by way of said filter media, and means for permitting oil in the interior chamber of said second filter to flow out of said canister, said second filter having an end cap at said second end located adjacent the closed end of said canister, said end cap including a portion adjacent said hollow interior chamber, and a constantly open and unrestricted warm-up orifice formed through said portion of said end cap for establishing direct communication between said first flow chamber and the interior chamber of said second filter whereby unfiltered oil from said inlet means may flow directly to the interior chamber of said second filter and bypass the filter media thereof.

5,342,512
FLOATING AQUATIC PLANT TREATMENT SYSTEM WITH POROUS SYSTEM
Viet H. Ngo, Minneapolis; Warren D. Poole, St. Paul; Sean J. Hancock, Eagan, and Timothy T. France, Oakdale, all of Minn., assignors to The Lemna Corporation, Mendota Heights, Minn.
Division of Ser. No. 323,022, Mar. 17, 1989. This application Feb. 11, 1993, Ser. No. 17,340
The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.
Int. Cl.[5] C02F *3/32*
U.S. Cl. 210—151 **9 Claims**



1. A wastewater treatment system baffle, the system having a channel through which wastewater flows, the baffle comprising:
flotation means along a top edge portion of the baffle to maintain the top edge portion of the baffle along the surface of the wastewater;
porous baffle material extending substantially across the entire channel; and
ballast means for maintaining a bottom edge portion of the baffle at substantially the bottom of the channel.

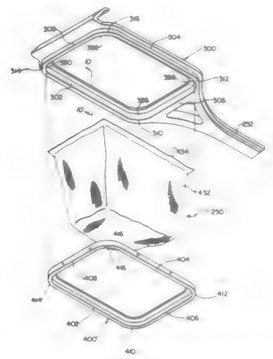
5,342,513
MULTIPURPOSE POOL SKIMMER
Edward L. Wall, Rte. 1, Box 49, Chickasaw County, Manatee, Miss. 39751, and Frank L. Wall, 415 Wilkins-Wise Rd., Columbus, Miss. 39701, assignors to Edward L. Wall, Manatee and Frank Lee Wall, Columbus, both of Miss.
Filed Dec. 10, 1992, Ser. No. 988,838
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] E04H *4/16*
U.S. Cl. 210—169 **25 Claims**

19. A multipurpose pool skimmer tool comprising:
a handle having a first end and a second end;
a rectangular frame extending from said first end of said handle, said frame having a generally linear outer end and an inner end generally opposite said outer end, and said frame being joined to said first end of said handle along said inner end;
a grip extending from said second end of said handle, said grip having opposed inner and outer ends and being joined to said second end of said handle at said inner end; and
a strainer basket attached to said rectangular frame;
said handle having a basket handle hook formed along substantially the entire length of said outer end thereof;

VOL 1165 ISS 5 AG 30 1994 UMI

said grip having a well lid hook extending outwardly from said outer end thereof; and

said strainer basket having opposed inner and outer sides,



first and second opposed sides joining said inner and outer sides, a bottom, four radial corners joining said sides to said bottom, and perforations in said sides and said bottom.

5,342,514

ELECTRICAL FILTER

Andrew D. Turner, Abingdon; Stanley D. Derham, Swindon, and Peter C. Lovegrove, Didcot, all of Great Britain, assignors to United Kingdom Atomic Energy Authority, Didcot, Great Britain

Filed Jun. 7, 1993, Ser. No. 72,846

Claims priority, application United Kingdom, Jun. 20, 1992, 9213135.8

Int. Cl.[5] B01D *29/62, 35/06*

U.S. Cl. 210—193 **9 Claims**

causing an electric current to flow between a selected cathode module and at least one adjacent anode sheet.

5,342,515

CHROMATOGRAPHIC COLUMN

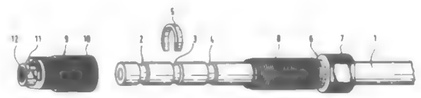
Edmund Radmacher, Duren, Fed. Rep. of Germany, assignor to Macherey, Nagel & Co., Duren, Fed. Rep. of Germany

Continuation of Ser. No. 16,829, Feb. 12, 1993, abandoned. This application Oct. 29, 1993, Ser. No. 143,387

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, 9201885[U]

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **8 Claims**



1. Chromatographic column with a separation column which is equipped on at least one side with an end threading mechanism for connecting a capillary, a precolumn or another separation column, whereby the end threading mechanism has a support nut surrounding the column tube and a coupling nut, and the support nut is supported towards the corresponding end of the separation column at a stop part which is held in a recess at the separation column,

characterized in that the separation column (**1**, **18**) has on at least one end several axially consecutive recesses (**2**, **3**, **4**, **19**, **20**, **21**), each of which accepts the stop part (**5**, **22**).

5,342,516

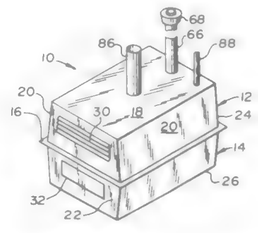
BIOLOGICAL WASTE CONVERSION SYSTEM

Alexander L. Rachak, 5004 E. County Rd. 66, Wellington, Colo. 80549

Filed Apr. 17, 1992, Ser. No. 870,673

Int. Cl.[5] C02F *3/02*

U.S. Cl. 210—218 **17 Claims**



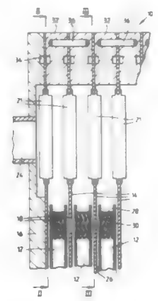
1. A biological organic waste conversion system comprising, in combination:

a) a tank having a chamber defined by lateral side panels, front and rear panels, a top panel and a bottom,

b) a waste inlet defined in said top panel in communication with said tank chamber having an outlet located between said tank lateral sides,

c) an air inlet in communication with said tank chamber adjacent said top panel,

d) a pair of lateral waste confining baffles located within said tank chamber, each baffle being disposed adjacent to a tank side panel and defining an air passage therewith, each baffle having an upper edge spaced from said top panel and an open lower edge spaced from the tank bottom whereby chamber air may flow over a baffle upper edge, between a baffle and the adjacent tank side panel and exit below the baffle lower edge, and



1. A filter comprising a plurality of cathode modules, each cathode module comprising two electrically conducting flat sheets of filter medium spaced apart to define between them a filtrate chamber, electrically conductive mesh components within the filtrate chamber to support the filter medium, and a frame around the periphery of the cathode module; each cathode module being located between two flat anode sheets of electrically conducting material so as to define, between the cathode module and the adjacent anode sheets, flow channels for a liquid to be treated; electrically insulating means to support the cathode modules relative to the anode sheets; inlet and outlet means for the liquid to be treated, communicating with the said flow channels, and an outlet duct for filtrate from each filtrate chamber; and electrical supply means for periodically

e) an elongated ventilation duct located within said tank chamber intermediate said side panels and lateral baffles adjacent said tank bottom and having a duct inlet along its length in communication with air flowing under said baffles' lower edges and an outlet exhaust vent defined in said ventilation duct in communication with the atmosphere eterior of said tank chamber, whereby solid waste discharged into said tank chamber accumulates between said baffles and above said ventilation duct and is exposed to air entering said tank chamber through said air inlet passing over said baffles's upper edges and under said baffles' lower edges and through said ventilation duct inlet.

5,342,517

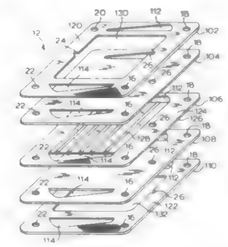
FILTRATION CASSETTE ARTICLE, AND FILTER COMPRISING SAME

Henry B. Kopf, 108 Coatbridge Clr., Cary, N.C. 27511

Continuation-in-part of Ser. No. 760,339, Sep. 16, 1991, Pat. No. 5,232,589, which is a division of Ser. No. 364,616, Jun. 6, 1989, Pat. No. 5,049,268, which is a continuation-in-part of Ser. No. 235,046, Aug. 22, 1988, Pat. No. 4,867,876, which is a continuation-in-part of Ser. No. 104,177, Oct. 2, 1987, Pat. No. 4,882,050. This application Jan. 12, 1993, Ser. No. 3,518

Int. Cl.[5] B01D *25/12, 61/00, 71/02, 71/06*

U.S. Cl. 210—228 **13 Claims**



1. A filtration cassette comprising a multilaminate array of sheet elements of generally rectangular and generally planar shape with main top and bottom surfaces, wherein the sheet elements include."

a first foraminous permeate sheet of screen or mesh material, having (i) a polygonal-shaped distribution basin open at each of opposite end portions of the sheet defining respective inlet and outlet passages, each distribution basin being bounded by generally linear side edges defining corners of the basin at respective intersections of the side edges, and (ii) a permeate passage opening at side portion of the sheet;

a first sheet of filter material having (i) a polygonal-shaped distribution basin opening at each of opposite end portions of the sheet defining respective inlet and outlet passages, each distribution basin being bounded by generally linear side edges defining corners of the basin at respective intersections of the side edges, and (ii) a permeate passage opening at a side portion of the sheet, wherein the foraminous permeate sheet is bonded to the first sheet of filter material at their respective end and side portions, with their basin openings and permeate passage openings in register with one another and the basin openings being circumscribingly bonded at respective end portions of the first sheet of filter material and the first foraminous permeate sheet, and with a central portion of the first sheet of filter material and the foraminous permeate sheet being unbonded so as to define a central portion of the permeate channel of the foraminous permeate sheet communicating with the permeate passage in the first sheet of filter material and the foraminous permeate sheet;

a foraminous retentate sheet of screen or mesh material, having (i) a polygonal-shaped distribution basin opening at each of opposite end portions of the sheet defining respective inlet and outlet passages, each distribution basin being bounded by generally linear side edges defining corners of the basin at respective intersections of the side edges, (ii) a permeate passage opening at a side portion of the sheet, and (iii) a central flow channel of generally rectangular character, extending between and communicating with the distribution basin openings defining the inlet and outlet passages of the foraminous retentate sheet, wherein the foraminous retentate sheet is bonded to the first sheet of filter material at their respective end and side portions, on an opposite side of the first sheet of filter material than the first foraminous permeate sheet, with their basin openings and permeate passage openings in register with one another and the permeate passage opening of the foraminous retentate sheet being circumscribingly bonded to the first sheet of filter material, and with a central portion of the first sheet of filter material and the foraminous retentate sheet being unbonded to permit permeate contacting the foraminous retentate sheet to flow through the first sheet of filter material to the foraminous permeate sheet;

a second sheet of filter material having (i) a polygonal-shaped distribution basin opening at each of opposite end portions of the sheet defining respective inlet and outlet passages, each distribution basin being bounded by generally linear side edges defining corners of the basin at respective intersections of the side edges, and (ii) a permeate passage opening at a side portion of the sheet, wherein the foraminous retentate sheet is bonded to the second sheet of filter material at their respective end and side portions, on an opposite side of the foraminous retentate sheet than the first sheet of filter material, with their basin openings and permeate passage openings in register with one another and the permeate passage opening of the foraminous retentate sheet being circumscribingly bonded to the second sheet of filter material, and with a central portion of the second sheet of filter material and the foraminous retentate sheet being unbonded to permit permeate contacting the foraminous retentate sheet to flow through the second sheet of filter material; and

a second foraminous permeate sheet of screen or mesh material, having (i) a polygonal-shaped distribution basin opening at each of opposite end portions of the sheet defining respective inlet and outlet passages, each distribution basin being bounded by generally linear side edges defining corners of the basin at respective intersections of the side edges, and (ii) a permeate passage opening at a side portion of the sheet wherein the second foraminous permeate sheet is bonded to the second sheet of filter material at their respective end and side portions, on an opposite side of the second sheet of filter material than the foraminous retentate sheet, with their basin openings and permeate passage openings in register with one another and the basin openings being circumscribingly bonded at respective end portions of the second sheet of filter material and the second foraminous permeate sheet, and with a central portion of the second sheet of filter material and the second foraminous permeate sheet being unbonded so as to define a central portion permeate channel of the second foraminous permeate sheet communicating with the permeate passage in the second sheet of filter material and the second foraminous permeate sheet;

wherein the foraminous retentate sheet of screen or mesh material on each face thereof comprises a series of transversely spaced-apart, longitudinally extending ribs, each extending outwardly from the foraminous retentate sheet to an outer extremity, with the first and second sheets of filter material additionally bonded to the foraminous retentate sheet at rib extremities on respective sides thereof.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,518

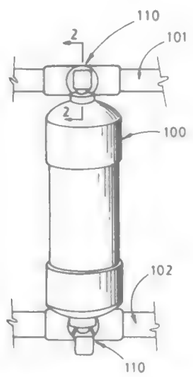
FILTRATION SYSTEM AND MOUNT FOR BEVERAGE DISPENSERS AND AUTOMATIC BEVERAGE BREWING MACHINES

Mark A. Posner, and Al McQueen, both of Los Angeles, Calif., assignors to Iraco Filtration Systems, Inc., Santa Monica, Calif.

Continuation of Ser. No. 819,870, Jan. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,979, Apr. 19, 1991, Pat. No. 5,108,598, which is a continuation-in-part of Ser. No. 480,025, Feb. 14, 1990, Pat. No. 5,092,999. This application Jun. 25, 1993, Ser. No. 82,679

Int. Cl.[5] B01D *35/02*

U.S. Cl. 210—232 24 Claims



14. Beverage dispenser filtration cartridge system, comprising:

a. a coffee/tea brewing machine having means for defining a flow path for accepting tap water at an input, the flow path having two quick connect/disconnect means and the brewing machine providing enhanced beverage-styled water for consumption at an output, the flow path being disposed between the brewing machine's input and the output;

b. a filter cartridge having two quick connect/disconnect means, the cartridge providing through flow treatment of fluid flowing through the flow path, the cartridge having an inlet fluid filter coupling at one end of the filter cartridge and an outlet fluid filter coupling at an opposite end of the cartridge, the inlet coupling providing detachable fluid access to a first conduit along the flow path within the beverage dispenser and the outlet coupling providing detachable fluid access to a first conduit along the flow path within the beverage dispenser and the outlet coupling providing detachable fluid access to a second conduit along the flow path within the beverage dispenser, the filter cartridge being detachably mountable and replaceable to the flow path;

c. a coffee/tea brewing machine wherein the inlet and outlet couplings are quick-disconnect couplers, and the cartridge's in-line disconnect couplers, and the cartridge's in-line orientation is in a plane of installation such that the cartridge can be installed and removed with a motion substantially perpendicular to the plane of installation; and

d. a coffee/tea brewing machine wherein the inlet and outlet couplings are quick-disconnect couplers, and the catridge's in-line orientation is in a plane of installation such that the cartridge can be installed and removed with a motion substantially perpendicular to the plane of installation.

5,342,519

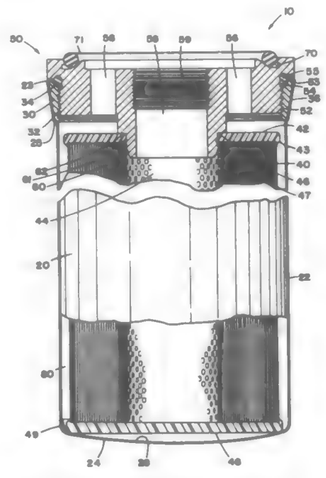
FLUID FILTER CARTRIDGE WITH REPLACEABLE FILTER ELEMENT

Francis A. Friedmann, South St. Paul, and Wayne M. Wagner, Apple Valley, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jul. 30, 1993, Ser. No. 99,906

Int. Cl.[5] B01D *35/30*

U.S. Cl. 210—232 10 Claims



1. A reusable fluid filter cartridge, comprising:

(a) a housing having an annular peripheral wall, a closed end, and an open end;

(b) an annular collar disposed in said open end of said housing, said annular collar having internal threads and peripheral sealing surface means adjacent said internal threads;

(c) means for securing said annular collar to said housing at said open end;

(d) a replaceable filter element disposed in said housing to define a fluid inlet chamber between said filter element and said housing, said filter element having a hollow cylindrical core which opens to a first end of said filter element, permitting filtered fluid to flow therefrom, and having a closed second end, said filter element having an outer diameter that is smaller than an inner diameter of both said housing and said collar to permit removal of said filter element through the open end of said housing; and

(e) a mounting head assembly having:

(i) external threads for mating with said internal threads of said annular collar;

(ii) an annular channel adjacent said external threads;

(iii) a sealing ring disposed in said annular channel, said sealing ring creating a first seal in cooperation with said peripheral sealing surface means of said annular collar when said external threads of said mounting head assembly are threaded into said internal threads of said annular collar;

(iv) fluid inlet means extending through said mounting head assembly in fluid communication with said fluid inlet chamber; and

(v) a tubular filter attachment member extending into said open first end of said filter element, said filter attachment member having a fluid outlet port in fluid communication with said hollow cylindrical core and an outer surface sealingly engaging said open first end.

5,342,520

FILTER FOR A ROCKDRILL

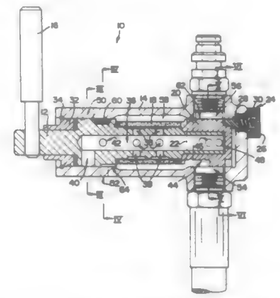
Leland H. Lyon, Roanoke, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 22, 1992, Ser. No. 902,222

Claims priority, application South Africa, Apr. 29, 1992, 93/3130

Int. Cl.[5] B01D *35/02*

U.S. Cl. 210—251 10 Claims



1. A filter for a rockdrill operable by a fluid under pressure for filtering the fluid to remove solid contaminants therefrom, the filter including:

a housing forming part of a rockdrill;

a control element in the housing movable relative to the housing;

the control element having a first passage providing communication between a supply inlet port in the housing at a source of fluid under pressure and a drill supply port in the housing, said supply port communicating with a drive element of the rockdrill;

the control element having a second passage providing communication between the supply inlet port and vent outlet port in the housing to the atmosphere;

a filter element on the control element interposed in the first and second passages which filters solid contaminants from a contaminated fluid passing therethrough;

the control element being positionable in a filtering mode position in which fluid under pressure flows in a first direction from the supply inlet port through the filter element to the drill supply port; and

the control element being positionable in back-flushing mode position in which the fluid under pressure flows from the supply inlet port in a reverse direction through the filter element to the vent outlet port.

5,342,521

REVERSE OSMOSIS OR NANOFILTRATION MEMBRANE AND ITS PRODUCTION PROCESS

Colette Bardot, Villeurbanne; Maurice Carles, Pierrelatte; René Desplantes, Espeluche, and Luc Shrive, Pont St Esprit, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

PCT No. PCT/FR91/00826, § 371 Date Apr. 21, 1993, § 102(e) Date Apr. 21, 1993, PCT Pub. No. WO92/06775, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 21, 1991, Ser. No. 39,264

Claims priority, application France, Oct. 22, 1990, 90 13031

Int. Cl.[5] B01D *71/02*

U.S. Cl. 210—490 10 Claims

1. A reverse osmosis or nanofiltration membrane, comprising:

a porous inorganic material support coated on one face with a first mesoporous, inorganic material layer having a mean pore radius below 10 nm and a second active layer located on the first mesoporous layer and having a thickness of 0.1–1 μm, prepared from an organomineral or organic polymer selected from the group consisting of sulfonated polysulfones, polybenzimidazalones, polyvinylidene fluorides having diaminoethyl methacrylate grafted thereon and perfluorine ionomers.

5,342,522

METHOD FOR THE TREATMENT OF SEWAGE

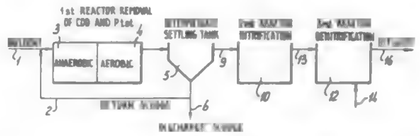
Eric H. Marsman, Warnsveld; Garardus J. F. M. Vlekke, Apeldoorn; Leonardus G. C. M. Urlings, Hoevelaken, and Berend A. H. Reitsma, Deventer, all of Netherlands, assignors to Tauw Milieu B.V., Deventer, Netherlands

Filed Nov. 16, 1992, Ser. No. 977,200

Claims priority, application Netherlands, Nov. 18, 1991, 9101917

Int. Cl.[5] C02F *3/30*

U.S. Cl. 210—605 10 Claims



1. Method for the treatment of sewage, wherein the treatment is carried out with the aid of three types of biomasses, said method comprising:

a) biologically removing phosphate in a first step and, at the same time, reducing the chemical and biological oxygen demand in a highly loaded activated sludge system,

b) converting ammonium to nitrate in a second step by biological nitrification, and

c) carrying out in a third step, a denitrification using a carbon source, wherein the order of the second and the third step is exchangeable.

5,342,523

MISCELLANEOUS DRAIN WATER PURIFYING METHOD AND MISCELLANEOUS DRAIN WATER PRUIFYING DEVICE

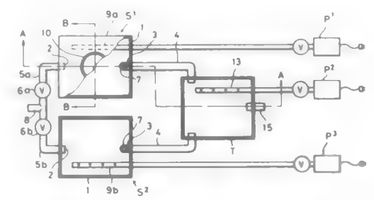
Hiroshi Kuwashima, 543-5,Ooaza Amori, Nagano-shi, Nagano-ken, Japan

Filed Apr. 6, 1993, Ser. No. 43,834

Claims priority, application Japan, Apr. 11, 1992, 4-117921

Int. Cl.[5] C02F *3/30*

U.S. Cl. 210—605 5 Claims



1. A drain water purifying method wherein a plurality of separator tanks, each comprising a vessel having a drain water inlet port and flow outlet port equipped with a means for retaining floating substances and settled sludge are installed in parallel, the respective flow inlet ports of the plurality of separator tanks being connected to a drain water source and the respective flow outlet ports being connected to a decomposition tank equipped with an aeration device, the method comprising linking the inlet of one of said separator tanks to the drain water source and the outlet to the decomposition tank

VOL 1165 ISS 5 AG 30 1994 UMI

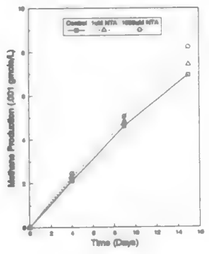
and carrying out a purifying treatment process comprising separation and aerobic decomposition in the linked separator and decomposition tank while disconnecting drain water flow to at least one other separator tank, and performing a decomposition treatment for sludge and floating substances retained in the disconnected separator tank.

5,342,524

PERFORMANCE OF ANAEROBIC DIGESTERS

James L. Gaddy, 2207 Tall Oaks Dr., Fayetteville, Ark. 72703

Filed May 24, 1991, Ser. No. 705,725
Int. Cl.[5] C02F *3/28*
U.S. Cl. 210—610 16 Claims



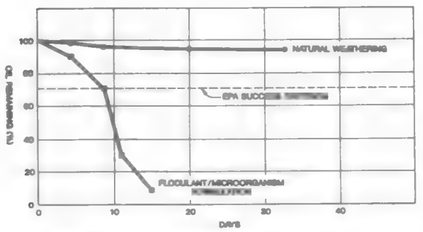
1. A method for improved performance of anaerobic solids digesters comprising the addition of at least one chelating agent to a solid substrate for solubilizing solid nutrients to enhance bacterial growth.

5,342,525

METHOD FOR AIDING MICROBIAL DEGRADATION OF SPILLED OIL

Farrell D. Rowsell, 2665 Belcastro St., Las Vegas, Nev. 89117

Continuation-in-part of Ser. No. 784,458, Oct. 28, 1991, Pat. No. 5,176,831. This application Jun. 11, 1992, Ser. No. 897,373
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] C02F *1/28, 3/34*
U.S. Cl. 210—611 68 Claims



1. A process for flocculating and degrading oil associated with an oil-contaminated portion of a natural body of water, said process comprising:

(1) adding to said oil-contaminated portion of water a flocculant/microorganism mixture comprising a flocculant comprised of an amine-substituted clay formed by reacting a water swelling clay with an amine compound selected from the group consisting of a primary amine salt, a secondary amine salt, a tertiary amine salt or a quaternary ammonium salt and at least one microorganism species having the ability to digest oil; and

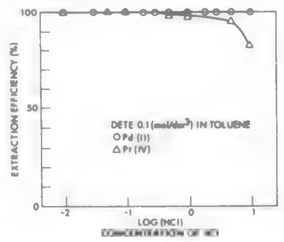
(2) adding said flocculant/microorganism mixture to said oil-contaminated portion of water in amounts sufficient to promote formation of buoyant, quasi-solid organoclay oil flocculate clumps which float in the water and which have average diameters greater than about one tenth of an inch and allowing the microorganisms to digest an oil component of said clumps.

5,342,526

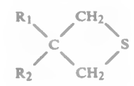
EXTRACTION AGENT FOR PALLADIUM AND PLATINUM AND PROCESS OF EXTRACTING SAME

Katsutoshi Inoue; Kazuharu Yoshizuka, both of Saga; Yoshinari Baba, Fukuoka, and Masato Tazaki, Kumamoto, all of Japan, assignors to Tanaka Kikinzoku Kogyo K.K., Japan

Filed Nov. 12, 1992, Ser. No. 975,268
Int. Cl.[5] B01D *11/04*
U.S. Cl. 210—634 3 Claims



1. A method for recovering palladium and/or platinum from a solution containing palladium and/or platinum, comprising the step of extracting the palladium and/or platinum with an extraction agent for the palladium and/or platinum, comprising a material having a following general formula (wherein R1 and R2 designate alkyl groups having a straight chain or a side chain consisting of 1 to 6 carbon atoms)



5,342,527

METHOD FOR THE CALIBRATION OF A PAIR OF SENSORS PLACED IN A DIALYSIS CIRCUIT

Jacques Chevallet, Serezin Du Rhone, and Bernard Bene, Irigny, both of France, assignors to Hospal Industrie, France

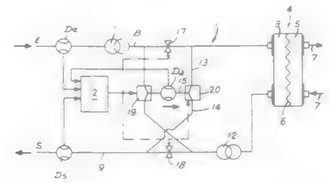
Filed Jun. 29, 1993, Ser. No. 82,928
Claims priority, application France, Jun. 30, 1992, 9208287
Int. Cl.[5] B01D *61/32*; G01F *25/00*
U.S. Cl. 210—646 10 Claims

1. A method for calibrating intake and outlet sensors in a dialysis circuit including a haemodialyzer having an intake side and an outlet side, the intake sensor mounted at an intake portion of the circuit on the intake side of the haemodialyzer, and the outlet sensor mounted at an outlet portion of the circuit on the outlet side of the haemodialyzer, the method comprising the steps of:

controlling flow of liquid to bypass the haemodialyzer, determining an initial response factor for each of the intake and outlet sensors, and calculating an initial calibration coefficient;

correcting the initial calibration coefficient, the step of correcting including performing at least one of a first step and a second step,

the first step including placing an auxiliary sensor of a same type as the intake and outlet sensors in series with the intake sensor, controlling the flow of liquid to flow through the haemodialyzer, determining first response factors for the intake and auxiliary sensors, and calculating an intake auxiliary calibration coefficient for the intake sensor based on the first response factors for the intake and auxiliary sensors;



the second step including placing the outlet sensor in series with the auxiliary sensor, controlling the flow of liquid to flow through the haemodialyzer, determining second response factors for the outlet and auxiliary sensors, and calculating an outlet auxiliary calibration coefficient for the outlet sensor based on the second response factors for the outlet and auxiliary sensors; and

updating the initial calibration coefficient based upon at least one of the intake auxiliary calibration coefficient and the outlet auxiliary calibration coefficient.

5,342,528

WATER-PURIFYING MATERIAL, A PROCESS FOR MANUFACTURING THE SAME AND A PROCESS FOR PURIFYING WATER

Kiyoshi Adachi, Kobe; Yasuaki Uda, Nara, and Masayuki Suzuki, Kizu, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 1, 1993, Ser. No. 41,186
Claims priority, application Japan, Apr. 9, 1992, 4-088789
Int. Cl.[5] C02F *1/28, 1/50*
U.S. Cl. 210—668 12 Claims

1. A process for purifying water which comprises contacting the water with a water-purifying material comprising (1) an activated carbon having (a) silver and/or an inorganic silver compound and (b) a water-soluble alkaline earth metal salt supported thereon and (2) a bone-char.

5,342,529

PROCESS FOR MECHANICAL TREATMENT OF MEDIA IN LIQUID TO THIN-SLURRY FORM

Dieter Gabor, Im Holzgarten 2/1, DE-7143 Vaihingen/Enz, Fed. Rep. of Germany

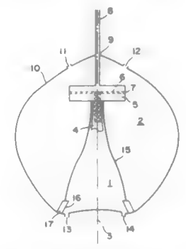
PCT No. PCT/DE91/00087, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO91/11251, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 30, 1991, Ser. No. 916,103
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1990, 4002614
Int. Cl.[5] B01D *1/16*
U.S. Cl. 210—741 17 Claims

1. A process for mechanical treatment of media in liquid to thin-slurry form, in particular water, wastewater and a water and cement mixture, comprising the steps of

pumping the medium by suction from a supply container into a spraying apparatus,

nebulizing the medium to be treated by the spraying apparatus, whereby liquid components of the medium can temporarily change to a gaseous phase, and

collecting the medium sprayed therefrom and returning same to the spraying apparatus for spraying as often as needed until a desired outcome of treatment is attained.



11. The process as defined by claim 1, comprising the further step of varying the pressure conditions along the delivery conduits of the medium to the spraying apparatus.

5,342,530

CLAY STABILIZER

Carl W. Aften, Richmond, and Robert K. Gabel, Houston, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 792,143, Nov. 12, 1991, Pat. No. 5,152,096, which is a division of Ser. No. 661,429, Feb. 25, 1991, Pat. No. 5,099,923. This application May 4, 1992, Ser. No. 877,763
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] E21B *43/26*
U.S. Cl. 252—8.551 43 Claims

30. A composition suitable as an additive in a downhole fluid for inhibiting clay swelling in a down-hole formation, comprising an aqueous solution of:

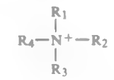
A. A quaternary amine-based cationic polyelectrolyte;

B. A mixture of at least one salt from each of groups i and ii below:

i. a salt having the structural formula of Formula I:

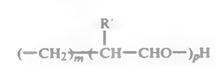
$$X^+ Y_n^-$$ Formula I

wherein X^+ is the salt cation which may be a choline cation or a quaternary ammonium salt cation of the structural formula of Formula II:



Formula II

wherein R_1, R_2, R_3, and R_4 are independently hydrogen, a $C_{1\text{-}20}$ alkyl, a $C_{1\text{-}10}$ alkylol radical or a radical of the structure of Formula III:



Formula III

wherein m is a number from 0 to about 10, p is a number from 1 to about 5, and R′ is either hydrogen or methyl, provided that the total number of carbons in the radical of Formula III do not exceed 20,

provided that R_1, R_2, R_3 and R_4 are not all hydrogen, and mixtures thereof; and

wherein Y_n^- is the salt anion which may be a monovalent inorganic anion or an organic carboxylic acid anion from a $C_{2\text{-}6}$ organic carboxylic acid, and mixtures thereof, and n is 1; and,

ii. a divalent metal salt having the formula:

VOL 1165 ISS 5 AG 30 1994 UMI

$A^+ B_q^-$

where A is a divalent metal ion and B is a monovalent inorganic anion and q is 2.

5,342,531

POLYALKYLENE GLYCOL LUBRICANT COMPOSITIONS

David K. Walters, Camberley, and Rodney I. Barber, Bracknell, both of England, assignors to Ethyl Petroleum Additives Limited, Bracknell, England

Continuation of Ser. No. 707,098, May 29, 1991, abandoned. This application May 27, 1993, Ser. No. 67,593
Int. Cl.[5] C10M *169/04*
U.S. Cl. 252—32.5 21 Claims

1. A lubricant composition comprising a major proportion of polyalkylene glycol of lubricating viscosity and a minor proportion, dissolved therein, of (a) at least one sulfur-containing antiwear or extreme pressure agent, and (b) the combination of the components, (i) at least one amine salt of at least one partially esterified monothiophosphoric acid, and (ii) at least one amine salt of at least one partially esterified phosphoric acid, said combination and its components being present in an amount sufficient to insure that the lubricant composition remains clear, at ambient temperature, for at least three weeks after its formation.

5,342,532

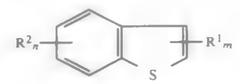
LUBRICATING OIL COMPOSITION COMPRISING ALKYLNAPHTHALENE AND BENZOTHIOPHENE

Mitsuhiko Takei, Yokohama; Toshio Yoshida, Kawasaki; Yoshiaki Nagai, Tokyo, and Koji Masamizu, Kawasaki, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 949,136
Int. Cl.[5] C10M *135/34, 105/06*
U.S. Cl. 252—45 14 Claims

1. A lubricating oil composition which comprises an alkylnaphthalene having one or two alkyl groups each having from 8 to 30 carbon atoms, and at least one member selected from the group consisting of benzo(b)thiophene and derivatives thereof represented by the following general formula (1)

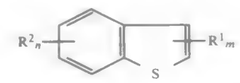
(1)



wherein each R^1 and R^2 independently represent a monovalent hydrocarbon group having from 8 to 30 carbon atoms, m is an integer of from 0 to 2, and n is an integer of from 0 to 4.

11. A process for preparing a lubricating oil composition which comprises reacting an alkylating agent with naphthalene in a molar ratio of 2:1 to 6:1 to obtain an alkylnaphthalene having one or two alkyl groups each having from 8 to 30 carbon atoms, the reaction being effected in 0.01 to 5 parts by weight of at least one member selected from the group consisting of benzo(b)thiophene and derivatives thereof represented by the following general formula (1)

(1)



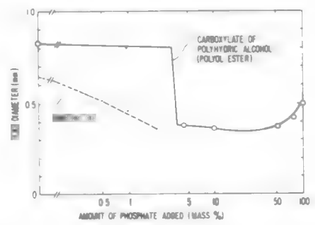
wherein each R^1 and each R^2 independently represent a monovalent hydrocarbon group having from 8 to 30 carbon atoms, m is an integer of from 0 to 2, n is an integer of from 0 to 4 per 100 parts by weight of naphthalene, and collecting the resultant alkylating agent, naphthalene and benzo(b)thiophene or benzo(b)thiophene derivative reaction product.

5,342,533

REFRIGERATOR OIL COMPOSITION

Yasuo Kondo; Yukiharu Beppu, and Kazuo Tagawa, all of Kanagawa, Japan, assignors to Mitsubishi Oil Co., Ltd. and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 940,196
Claims priority, application Japan, Sep. 3, 1991, 3-250524
Int. Cl.[5] C09K *5/04;* C10M *105/32*
U.S. Cl. 252—68 5 Claims



1. A refrigerator oil composition for compressors using hydrofluorocarbons as a refrigerant, said composition consisting essentially of (a) a base oil component of a dibasic acid diester and/or a carboxylate of a polyhydric alcohol and (b) a phosphate and/or a phosphite, the content of which is from 5.0 to 90.0% by mass of a dibasic acid diester and/or a carboxylate of a polyhydric alcohol in the base oil component.

5,342,534

HARD SURFACE CLEANER

Catherine J. Skrobala, Elmwood Park; Keith J. Edgett, Ridgewood, both of N.J., and Paul A. Siracusa, Middletown, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,022
Int. Cl.[5] C11D *1/66, 3/48*
U.S. Cl. 252—91 5 Claims

1. A pre-moistened wiping article comprising a flexible substrate carrying a liquid composition consisting of an aqueous solution of:
(a) from about 5 to about 15 weight % of a monohydric aliphatic alcohol having from 1 to about 6 carbon atoms;
(b) from about 0.00015 to about 0.0045 weight % of a water soluble preservative selected from the group consisting of glutaraldehyde, formaldehyde, 2-bromo-2-nitopropane-1,3-diol, 5-chloro-2-methyl-4-isothiazolin-3-one, 2-methyl-4-isothiazoline-3-one, and mixtures thereof;
(c) from about 0.01 to about 1 weight % of an alkyl polyglycoside,
wherein said weight percentages represent active ingredient percentages based on the total weight of the liquid composition and the balance of said liquid composition is water.

5,342,535

COMPOSITIONS CONTAINING KURROLL'S SALT

Jose E. Ramirez, Trumbull, and Mohan Vishnupad, Monroe, both of Conn., assignors to Imaginative Research Associates Inc., Bridgeport, Conn.

Continuation of Ser. No. 748,042, Aug. 21, 1991, abandoned. This application Apr. 21, 1993, Ser. No. 51,568
Int. Cl.[5] C11D *3/06*
U.S. Cl. 252—135 12 Claims

1. A composition useful as a pharmaceutical, personal care or household product comprising a mixture of:
i) potassium Kurroll's salt,
ii) a solubilizing agent, and

iii) at least one functional ingredient,
said mixture being substantially free of water.

5,342,536

NAIL POLISH REMOVER WITH GELATIN

Philip E. Miner, Newtown, and Walter Rose, New Haven, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Dec. 17, 1992, Ser. No. 992,513
Int. Cl.[5] C09D *9/00;* B08B *7/00*
U.S. Cl. 252—162 5 Claims

1. A nail polish removing composition comprising:
(i) from about 50% to about 99.5% of acetone;
(ii) from about 0.00001% to about 5% by weight of gelatin;
(iii) from about 0.1% to about 10% by weight of glycerin;
(iv) from about 0.1% to about 25% by weight of water, and wherein the gelatin is stably suspended with the aid of glycerin in the acetone.

5,342,537

RAPID COOLING SYSTEM CLEANING FORMULATIONS

John J. Conville, Canton; James T. Lyon, Novi, and Turcotte, Woodhaven, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Nov. 24, 1992, Ser. No. 980,852
Int. Cl.[5] C11D *3/37, 3/33, 3/60*
U.S. Cl. 252—174.24 6 Claims

1. An aqueous automotive cooling system cleaning composition consisting essentially of:
(A) a metal-cleaning effective amount of a tetrasodium salt of ethylenediamine tetraacetic acid;
(B) between about 0.01 to about 25.0 percent by weight of a polycarboxylate additive which is at least one of (i) a secondary alcohol modified polyacrylic acid, and (ii) a sodium salt of a copolymer of acrylic acid and maleic acid;
(C) between about 0.01 to about 50 percent by weight of an alkoxylated alcohol-based nonionic surfactant; and
(D) an acid in a sufficient amount to provide an effective composition pH of about 9.

5,342,538

LIQUID SUSPENSION OF POLYETHYLENE OXIDE FOR USE IN TREATING PAPER AND PULP WASTEWATER

Daniel K. Chung, Burlington, and Steven B. Warrick, Ancaster, both of Canada, assignors to Nalco Canada, Inc., Burlington, Canada

Continuation-in-part of Ser. No. 716,075, Jun. 17, 1991, Pat. No. 5,173,208. This application Sep. 9, 1992, Ser. No. 942,514
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[5] C09K *3/00;* C02F *5/10*
U.S. Cl. 252—180 8 Claims

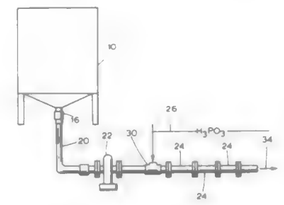
1. A flocculating agent which comprises:
a particulate polyethylene oxide having a molecular weight of about 100,000 to about 20,000,000 present in an amount of between about 20 to about 35% by weight;
an inert liquid vehicle comprising a mixture of a glycol which is present in an amount between about 25 to about 30% by weight, and glycerine which is present in an amount of between about 30 to about 40% by weight, wherein the specific gravity of said polyethylene oxide is approximately the same as the specific gravity of said inert liquid vehicle;
a suspension agent selected from the group consisting of polymeric fatty acid esters, stearic monoethanolamide, N,N'-ethylene bis stearamide, polyacrylic acid, polyacrylate, glycerol mono-oleate, polyoxyethylene lauryl ether and aluminum stearate which is capable of reducing the viscosity of said flocculating agent and which is present in an amount between about 0.2 to about 1.0% by weight; and
an acidic compound selected from the group consisting of NaHSO, and aluminum chlorhydrol which is capable of lowering the pH of said flocculating agent to a range between about 5 to about 7 and which is present in an amount between about 2 to about 20% by weight, wherein said flocculating agent has a viscosity in the range between about 1800 to about 5900 cps.

5,342,539

POLYACRYLAMIDE-PHOSPHONATE FLOCCULANTS AND METHODS OF MAKING

Leo E. Nagan, Mercer Island, Wash., assignor to Diatec Polymers, doing business as Diatec Environmental, Batavia, Ill., a part interest

Filed Feb. 8, 1993, Ser. No. 14,845
Int. Cl.[5] C02F *1/56;* C08F *20/56, 6/06*
U.S. Cl. 252—180 17 Claims



1. A composition in an aqueous medium comprising an anionically modified acrylamide polymer formed by reacting an acrylamide polymer with phosphorous acid, said modified polymer having at least 5 mole percent phosphonate groups based on the acrylamide content of the acrylamide polymer and having a molecular weight of at least about 40,000, the pH of said composition being adjusted to at least about 7.7.

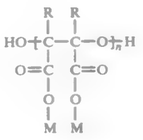
5,342,540

COMPOSITIONS FOR CONTROLLING SCALE FORMATION IN AQUEOUS SYSTEM

Libardo A. Perez, Morrisville, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 827,246, Jan. 28, 1992, Pat. No. 5,248,438. This application Mar. 29, 1993, Ser. No. 38,777
Int. Cl.[5] C02F *5/10*
U.S. Cl. 252—181 1 Claim

1. A composition for inhibiting the deposition of scale in aqueous systems comprising a polyepoxysuccinic acid of the general formula



wherein n ranges from about 2 to 50, M is hydrogen or a water soluble cation and R is hydrogen, C 1-4 alkyl or C 1-4 substituted alkyl; an acrylic acid copolymer selected from the group consisting of acrylic acid and (meth)acrylic acid/allyl ether copolymers; and a lanthanide ion.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,541

PURIFIED HYDROXY-FUNCTIONAL POLYETHER COMPOUNDS

Johnny Chavez, Jr., Lake Jackson; Andrew S. Farnum, Angleton; Vaughn M. Nace, Lake Jackson; Raymond A. Plepys, Lake Jackson; Randall K. Whitmire, Lake Jackson; Van A. Kent, Lake Jackson; Paul D. Bettge, Lake Jackson, and Hans R. Friedli, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 29, 1989, Ser. No. 329,923

The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—182.27 **14 Claims**

1. A process for reducing the concentration of propenyl ethers in a hydroxy-functional polyether having oxypropylene units by a process comprising the steps of:

(1) contacting the polyether with an acidic ion exchange resin, wherein the ion exchange resin has exchange groups having acid functionality, for a time and at a temperature sufficient for the conversion of at least some of the propenyl ethers to propionaldehyde and in the presence of sufficient water for the conversion; and thereafter

(2) treating the polyether with an epoxy compound in an amount sufficient to reduce the acidity of the polyol.

5,342,542

PROCESS FOR INCREASING THE BLEACHING EFFICIENCY OF PERSALTS BY USING A PARTIALLY ACETYLATED SUCROSE AS A BLEACH ACTIVATOR

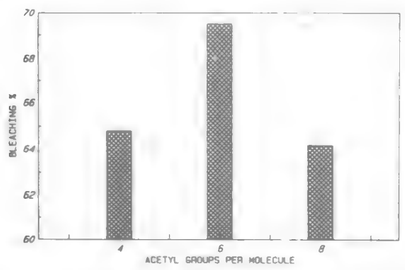
Fulvio Burzio, Milan, Italy; Roland Beck, Vilvoorde, Belgium, and Julio Mentech, Villeurbanne, France, assignors to Ausimont S.p.A., Milan, Italy

Filed Dec. 26, 1991, Ser. No. 814,109

Claims priority, application European Pat. Off., Dec. 28, 1990, 90125749.3

Int. Cl.[5] C01B *3/00*

U.S. Cl. 252—186.39 **8 Claims**



1. Process for increasing the bleaching efficiency of an inorganic persalt or peroxide by adding to said persalt (peroxide) an activating agent comprising acetylated sucrose, the average acetylation degree of said acetylated sucrose being from 4.5 to 7.0, wherein the molar ratio of acetylated sucrose to persalt (peroxide) is from 10:90 to 50:50.

5,342,543

NEUTRALIZING ABSORBENT FOR ACIDS AND BASES

Clarence H. Morris, and James K. Cook, both of Arlington, Tex., assignors to Data Medical Associates, Inc., Arlington, Tex.

Continuation of Ser. No. 705,765, May 28, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,915

Int. Cl.[5] C09K *3/32;* **B01J** *20/00*

U.S. Cl. 252—190 **12 Claims**

1. A homogeneous dry powdered absorbent composition suitable for absorbing and neutralizing acids which are in liquid form, comprising:

a) a sufficient amount of a superabsorbent powder to provide said absorbent composition with a total liquid absorption capacity of about 20 times the total dry weight of said



absorbent composition and which forms a gel upon contact with a liquid; and

b) a dry powdered neutralizing chemical for neutralizing said acids such that the absorbent composition forms a gel of about neutral pH upon contact with said acids.

5,342,544

LIQUID CRYSTAL COMPOSITION

Tomijiro Naito, Tokyo; Yumiko Sato, Saitama; Toshiro Yukinari, Yamanashi; Toshihiro Shibata, Saitama; Masaki Kimura, Saitama, and Yukari Shinada, Saitama, all of Japan, assignors to Asahi Denka Kogyo Kabushiki Kaisha and Citizen Watch Co., Ltd., both of Tokyo, Japan

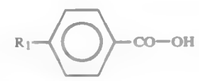
Filed Oct. 26, 1992, Ser. No. 968,152

Int. Cl.[5] C09K *19/06, 19/30, 19/12*

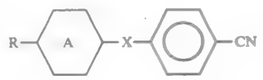
U.S. Cl. 252—299.6 **9 Claims**

1. A nematic liquid crystal composition comprising at least one member selected from 4-alkyl- or 4-alkoxy-benzoic acids represented by the following general formula (I):

(I)



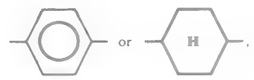
wherein R_1 stands for an alkyl or alkoxy group having 1 to 12 carbon atoms, and further comprising at least one aromatic nitrile compound of the formula



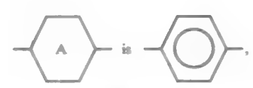
wherein



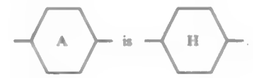
stands for



X stands for —CO—O— or a direct bond, and R stands for an alkyl or alkoxy group having 1 to 12 carbon atoms when



and R stands for an alkyl group having 1 to 12 carbon atoms when



5,342,545

POLYMER DISPERSION TYPE LIQUID CRYSTAL DISPLAY ELEMENT AND REFLECTION TYPE LIQUID CRYSTAL DISPLAY DEVICE

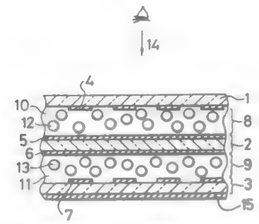
Nobuaki Yamada, Higashiosaka; Toshiyuki Hirai, Tenri; Noriaki Onishi, Osaka, and Shuichi Kohzaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 31, 1992, Ser. No. 999,138

Claims priority, application Japan, Mar. 6, 1992, 4-049601

Int. Cl.[5] C09K *19/00;* **G02F** *1/13, 1/1347*

U.S. Cl. 252—299.01 **11 Claims**



1. A polymer dispersion type liquid crystal display element comprising:

two layers of polymer dispersion type liquid crystal layers which comprise a polymer and liquid crystal drops positively dispersed in dielectric anisotropy in said polymer;

at least said two layers overlaid one over another for controlling the light scattering and transmission electrically with a range of thickness for said polymer dispersion type liquid crystal layers comprising 5 μm to 18 μm; and

a transparent support element for scattering light interposed between said polymer dispersion type liquid crystal layers with a range of thickness for said transparent support element for scattering light comprising 10 μm to 10 mm.

5,342,546

1,4-SUBSTITUTED DIHYDROBENZENE DERIVATIVES

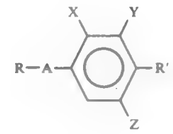
Hisato Sato; Tomijiro Naito, both of Tokyo, and Yasunobu Tuji, Sayama, all of Japan, assignors to L.C.C. Consultants Co., Ltd. and Citizen Watch Co., Ltd., both of Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,634

Int. Cl.[5] C09K *19/06, 19/52;* **G02F** *1/13*

U.S. Cl. 252—299.6 **2 Claims**

1. A liquid crystal composition comprising a 1,4-substituted dihydrobenzene derivative represented by the following formula (I):



(I)

wherein A means a 1,4-dihydrophenylene group, R denotes a hydrogen atom or a C_{1-10} alkyl, cyclohexyl or trans-4-C_{1-10} alkylcyclohexyl group, R′ represents a hydrogen or halogen atom, a trifluoromethyl, trifluoromethoxy, cyano, C_{1-10} alkyl, C_{1-10} alkoxy or carboxyl group or a group —COO—B—R″, said B standing for an unsubstituted or halogen-substituted 1,4-phenylene or 1,4-cyclohexenylene group and said R″ representing a halogen atom or a cyano, C_{1-10} alkyl or C_{1-10} alkoxy group, and X, Y and Z individually means a hydrogen or halogen atom, with the proviso that:

R′ is other than a hydrogen or chlorine atom or a cyano or methyl group when R is a hydrogen atom and X, Y and Z are each a hydrogen atom,

R′ is other than a hydrogen atom when R is a C_{1-10} alkyl group and X, Y and Z are each a hydrogen atom, and

X, Y and Z are each other than a chlorine atom when R is a hydrogen atom and R′ is a hydrogen atom.

5,342,547

AGENTS FOR CONTROLLING UNDERWATER FOULING ORGANISMS

Kazumi Konya; Nobuyoshi Shimizu, and Wataru Miki, all of Shimizu, Japan, assignors to Marine Biotechnology Institute Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1993, Ser. No. 3,593

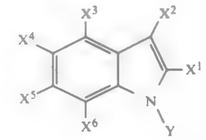
Claims priority, application Japan, Jan. 14, 1992, 4-005065; Nov. 16, 1992, 4-305519

Int. Cl.[5] C09D *5/14*

U.S. Cl. 252—380 **9 Claims**

1. A method for preventing the attachment of underwater fouling organisms on a surface comprising:

treating the surface with an underwater anti-fouling composition comprising at least one indole compound represented by the Formula (1):



wherein Y is selected from the group consisting of hydrogen, lower alkyl and phenyl; and wherein X^1, X^2, X^3, X^4, X^5 and X^6 are independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, nitro, cyano, cyano lower alkyl, halogenated lower alkyl, substituted or unsubstituted phenyl, aralkyl, aralkyloxy, lower alkoxycarbonyl, aliphatic lower acyl, aliphatic lower acyloxy, lower alkoxycarbonyl-lower alkyl, aromatic acyl, lower-cycloalkylamino-lower alkyl, nitrovinyl, pyridyl lower alkyl, carbamoyl lower alkyl, carbamoyl, diallylamino lower alkyl and di-lower-alkylamino-lower alkyl.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,548

METHODS FOR INHIBITING THE CORROSION AND DEPOSITION OF IRON AND IRON-CONTAINING METALS IN AQUEOUS SYSTEMS

William J. Yorke, Newtown, and Edmund J. Bockowski, Furlong, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Sep. 23, 1993, Ser. No. 125,999
Int. Cl.[5] C23F *11/00*
U.S. Cl. 252—391 **4 Claims**

1. A method for inhibiting the corrosion of iron and iron containing metal surfaces in contact with a cooling water system comprising adding a corrosion inhibiting amount of trisodium salt of 2,4,6-trimercapto-s-triazine (TMT) to said cooling water system.

5,342,549

HARD SURFACE LIQUID DETERGENT COMPOSITIONS CONTAINING HYDROCARBYL-AMIDOALKYLENEBETAINE

Daniel W. Michael, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 847,848, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 628,066, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 471,908, Jan. 29, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,590
Int. Cl.[5] C11D *1/94, 3/34;* B08B *3/02*
U.S. Cl. 252—546 **20 Claims**

1. An aqueous hard surface detergent composition consisting essentially of: (a) from about 0.02% to about 5.0% by weight of the composition of hydrocarbylamidoalkylenebetaine detergent surfactant having the formula:

$$R—C(O)—N(R^2)—(CR^3_2)_n—N(R^2)_2{}^{(+)}—(CR^3_{2n}—C(O)O^{(-)}$$

wherein each R is an alkyl group containing from about 10 to about 18 carbon atoms, each (R^2) is selected from the group consisting of hydrogen, methyl, ethyl, propyl, hydroxy substituted ethyl or propyl and mixtures thereof, each (R^3) is selected from the group consisting of hydrogen and hydroxy groups, and each n is a number from 1 to about 4; with no more than about one hydroxy group in any (CR^3_2) moiety; (b) from about 0.5 % to about 20% by weight of the composition of organic solvent having the formula $R^1O—(R^2O—)_mH$ wherein each R^1 is an alkyl group which contains from about 3 to about 8 carbon atoms, each R^2 is selected from the group consisting of ethylene or propylene, and m is a number from 1 to about 3; (c) buffering system to provide a pH of from about 7 to about 12; and (d) the balance being an aqueous solvent system, optionally comprising non-aqueous polar solvent selected from the group consisting of: methanol, ethanol, isopropanol, ethylene glycol, propylene glycol, and mixtures thereof, the level of non-aqueous polar solvent, when present, being from about 0.5% to about 40% by weight of the composition, and the level of water being from about 50% to about 99% by weight of the composition, and said composition being substantially free of materials that deposit on the surface being cleaned and cause unacceptable spotting/filming.

5,342,550

SOLID DELIVERY SYSTEMS FOR TOILET TANKS, URINALS AND CONDENSATE WATER

John J. Burke, Farmington Hills, and Joanne P. MacDonald, Plymouth, both of Mich., assignors to BASF Corp., Parsippany, N.J.

Filed Mar. 17, 1992, Ser. No. 852,467
Int. Cl.[5] C11D *1/68, 1/70, 3/32, 3/37*
U.S. Cl. 252—548 **6 Claims**

1. A solid block, controlled release composition, consisting essentially of:

a) from about 5 to about 40% by weight of a fatty alkanolamide having a carbon chain length of about 9 to about 18;

b) from about 15 to about 60% by weight of at least one surfactant selected from the group consisting of:

i) oxyalkylated primary aliphatic alcohols having the formula:

$$CH_3(CH_2)_n O(C_2H_4O)_m H$$

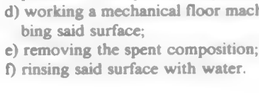
wherein m is an integer which results in an alkyl chain whose length is from about 15 to about 17 carbon atoms and m is a number from about 27 to about 55,

ii) block copolymer surfactants of the formula:

$$HO(CH_2CH_2O)_a(\underset{\displaystyle CH_3}{\underset{|}{CHCH_2}}O)_b(CH_2CH_2O)_c H$$

having a molecular weight range of from about 7,700 to about 14,600 and being comprised of from about 70 to about 80 percent by weight oxyethylene wherein a has a value of from about 61 to about 133, b has a value of from about 39 to about 65, and c has a value of from about 61 to about 133, and

iii) alkyl phenol ethoxylates of the formula:



wherein R equals C_9 and x is from about 50 to about 100;

c) from about 20 to about 70% by weight of at least one polyethylene glycol selected from the group consisting of polyethylene glycols having a molecular weight within the range of from about 1450 to about 8000; and

d) from about 20 to about 50 percent of at least one binding agent.

5,342,551

NONCAUSTIC FLOOR FINISH REMOVER

Thomas Ruckle, Bel Air, Md., assignor to Cello Corporation, Harve de Grace, Md.

Filed Nov. 4, 1992, Ser. No. 971,729
Int. Cl.[5] C11D *3/30, 3/43;* B08B *1/00, 3/08*
U.S. Cl. 252—548 **12 Claims**

1. A floor finish remover composition comprising 3.0–8.8 wt % of monoethanolamine citrate, and an effective coupling amount of at least one coupler and an effective solubilizing amount of at least one solvent, said composition containing a sufficient amount of alkali to raise the pH, wherein the pH of said composition is between about 8.7 and about 10.0.

9. A method of use of the composition of claim 1 comprising:

a) dilution of the composition with 3–5 parts by weight of water;

b) spreading diluted composition on the surface to be stripped;

c) waiting 3–5 minutes, but not so long as to allow the composition to completely evaporate;

d) working a mechanical floor machine over or hand scrubbing said surface;

e) removing the spent composition; and

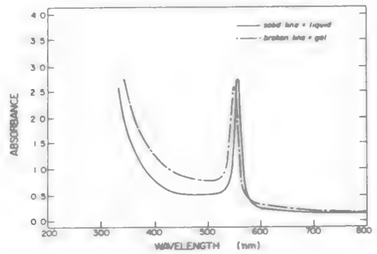
f) rinsing said surface with water.

5,342,552

NARROW BAND RADIATION FILTER FILMS

Hans P. Panzer, Stamford, and Lino Giovanni, Shelton, both of Conn., assignors to CYTEC Technology Corp., Wilmington, Del.

Filed Oct. 23, 1990, Ser. No. 601,544
The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.
Int. Cl.[5] F21V *9/00;* G02B *5/24*
U.S. Cl. 252—582 **16 Claims**



1. A narrow band radiation filter comprising a crystalline colloidal array of charged particles of a copolymer of styrene and a comonomer selected from the group consisting of 1-sodium-1-allyloxy-2-hydroxylpropane sulfonate; styrene sulfonate; 2-acrylamido-2-methylpropane sulfonate; 3-sulfopropyl methacrylate potassium salt and vinyl sulfonate fixed in a self-supporting film of polymeric hydrogel wherein said hydrogel film is a copolymer comprising acrylamide, an optional water-soluble comonomer selected from the group consisting of vinyl pyrrolidone and hydroxyethylmethacrylic acid ester and N,N-methylenebisacrylamide, the ratio of acrylamide and optional water soluble comonomer to N,N-methylenebisacrylamide ranging from about 1:8 to about 1:12 on a weight basis and containing a simple sugar, polyhydric alcohol or mixtures thereof.

5,342,553

PROCESS OF MAKING ZINC BORATE AND FIRE-RETARDING COMPOSITIONS THEREOF

David M. Schubert, Los Angeles, Calif., assignor to U. S. Borax Inc., Valencia, Calif.

Filed Nov. 22, 1991, Ser. No. 796,289
Int. Cl.[5] C09K *21/02;* C01B *35/12*
U.S. Cl. 252—609 **11 Claims**

1. The method of producing a crystalline zinc borate of the formula $4ZnO.B_2O_3.H_2O$ which comprises reacting zinc borate of the formula $2ZnO.3B_2O_3.3.5H_2O$ with zinc oxide in boiling water.

5,342,554

VINYL-TERMINATED POLYESTERS AND POLYCARBONATES FOR FLEXIBILIZING AND IMPROVING THE TOUGHNESS OF COMPOSITIONS FROM UNSATURATED POLYESTERS AND FIBER REINFORCED PLASTICS MADE FROM THEM

Douglas S. McBain, Norton; Kevin P. LaJudice, Akron, and Earl G. Melby, Uniontown, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Jan. 7, 1993, Ser. No. 1,355
Int. Cl.[5] C08L *67/06, 67/07, 63/10*
U.S. Cl. 523—466 **25 Claims**

1. A polymer resin composition comprising:

a) an unsaturated polyester resin or vinyl ester resin, said unsaturated polyester resin being derived from a condensation reaction of diols having 2 to 12 carbon atoms and dicarboxylic acids or their anhydrides having 3 to 12 carbon atoms and provided that at least 50 mole percent of the dicarboxylic acids and their anhydrides contain ethylenical unsaturation, said vinyl ester resin being derived from a reaction of epoxy resins of 2,2'-bis(hydroxyphenyl)propane with acrylic or methacrylic acids,

b) ethylenically unsaturated monomers, and

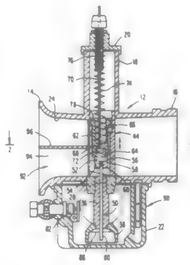
c) about 1 to about 50 parts by weight of a vinyl-terminated polyester or vinyl-terminated aliphatic polycarbonate or mixtures thereof per 100 parts by weight of a and b, said vinyl-terminated polyester and said vinyl-terminated aliphatic polycarbonate being substantially free of internal unsaturation reactive in free radical crosslinking reactions of unsaturated polyesters and having an average molecular weight from about 500 to less than 2,000.

5,342,555

CARBURETOR

William H. Edmonston, 19215 Tonkawan Rd., Apple Valley, Calif. 92307

Filed Apr. 13, 1993, Ser. No. 45,393
Int. Cl.[5] F02M *9/06*
U.S. Cl. 261—44.3 **6 Claims**



1. A carburetor, comprising

(a) a body having an air inlet end, an air outlet end, and a throat extending therethrough from said inlet end to said outlet end;

(b) a fuel supply tube connected with said body and having an outlet in communication with said throat;

(c) a throttle slide member movably mounted within said body intermediate said inlet and outlet ends thereof for substantially transverse movement across said throat to vary an unblocked portion thereof; and

(d) a metering rod extending downwardly into said fuel supply tube to control the supply of fuel therethrough; and

(e) elongated crossed-element air straightening means mounted in said throat and extending substantially from said inlet end to said slide member, said air strightening means being constructed to define a plurality of elongated channels to straighten and accelerate air flow from said inlet end to said metering rod, wherein said channels extend in substantially parallel relation from said inlet end to said metering rod.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,556

MICROCAPSULES MADE OF ISOCYANATES WITH GROUPS CONTAINING POLYETHYLENE OXIDE

Harro Träubel, Leverkusen; Jürgen Weisser, Dormagen, and Helmut Reiff, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 8, 1992, Ser. No. 941,491

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1991, 4130743

Int. Cl.[5] **A01N** *25/28;* **B01J** *13/16*

U.S. Cl. 264—4.7 **13 Claims**

1. A process for the preparation of microcapsules, in which the material to be encapsulated and a polyisocyanate are dissolved in a hydrophobic solvent, this hydrophobic mixture is continuously or discontinuously emulsified in water and then a polyamine is added which is capable of reacting with the isocyanate, comprising that the polyisocyanate used consists exclusively of a reaction product of an isocyanate having a functionality of 2 or more with a monohydric polyethylene oxide alcohol.

5,342,557

PROCESS FOR PREPARING POLYMER PARTICLES

John Kennedy, Stratford, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Nov. 27, 1990, Ser. No. 618,652

The portion of the term of this patent subsequent to Sep. 2, 2009, has been disclaimed.

Int. Cl.[5] **B29B** *9/00, 9/02, 9/10, 9/12*

U.S. Cl. 264—8 **27 Claims**

24. A process for preparing particles of bioabsorbable polymer, comprising:

a) heating to a temperature of from about 60° to about 300° C., a polymer derived from monomers selected from the group consisting of glycolic acid, lactic acid, dioxanone, e-caprolactone and trimethylene carbonate and having an inherent viscosity between about 0.5 and about 0.6 dl/g when measured at a temperature of about 30° C. in chloroform or hexafluoroisopropanol to form a molten or flowable mass;

b) dividing the molten or flowable mass of thus-heated polymer into particles, wherein the polymer is divided by being applied onto a rotary atomizer upon whose surface the molten polymer breaks up into particles which are thrust away from the axis of the rotary atomizer; and

c) solidifying the thus-divided particles to form solidified polymer particles of average particle size of about 0.1 to about 3 mm;

whereby substantially no fibers are formed among the solidified particles.

5,342,558

BLOW MOLDING PROCESS FOR THE MANUFACTURE OF POLYETHYLENE TEREPHTHALATE CONTAINERS

Gerard Denis, Turretot, and Paul La Barre, Sainte Adresse, both of France, assignors to Sidel, Le Havre Cedex, France

Continuation of Ser. No. 654,701, Feb. 13, 1991, Pat. No. 5,229,042. This application Mar. 19, 1993, Ser. No. 34,865

Claims priority, application France, Feb. 13, 1990, 90 01688

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] **B29C** *49/18, 49/64, 49/68*

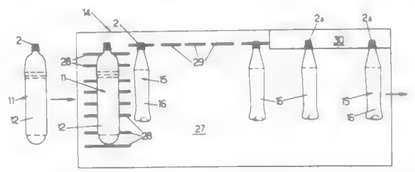
U.S. Cl. 264—25 **35 Claims**

1. A process for the manufacture of a polyethylene terephthalate (PET) container capable of withstanding, without appreciable deformation, relatively severe thermal conditions encountered during processing by filling with a hot liquid or pasteurization of the contents of the container comprising, in succession:

(a) in a first mold, blow molding the heated body of an amorphous PET preform comprising a body and a neck section to form an intermediate container whose body has dimensions greater than the dimensions of the final PET container to be formed;

(b) transferring the intermediate container to a heating station and heating only the body of the intermediate container to a temperature of about 160° to about 240° C. for a period of about 3 to about 30 seconds, wherein the body shrinks rapidly and an intermediate container having a contracted body is obtained;

(c) after the period in step (b), heating the neck section under the temperature conditions in step (b) while the intermediate container continues to be heated for a period of at least



about 30 seconds and for a total heating period, inclusive of the 3 to 30 seconds period in step (c), of up to about 5 minutes to effect crystallization of the neck section and to increase the crystallinity of the contracted intermediate container body;

(d) after crystallization of the neck section, slowly cooling the neck section alone while the heating of the contracted intermediate container body continues;

(e) in a second mold, blow molding the heated contracted body of the intermediate container obtained at the end of step (d) to its final shape and dimensions.

5,342,559

METHOD OF CONTROLLING ELECTRICALLY OPERATED INJECTION MOLDING MACHINE

Masao Kamiguchi, and Minoru Kobayashi, both of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

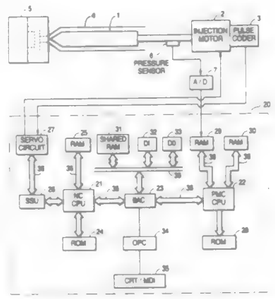
PCT No. PCT/JP92/00102, § 371 Date Oct. 5, 1992, § 102(e) Date Oct. 5, 1992, PCT Pub. No. WO92/13701, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 3, 1992, Ser. No. 934,517

Claims priority, application Japan, Feb. 6, 1991, 3-34985

Int. Cl.[5] **B29C** *45/76*

U.S. Cl. 264—40.1 **2 Claims**



1. A method of controlling an electrically operated injection molding machine having a screw axially driven by a servomotor for the control of injection, dwell, and back pressure, and including an injection process, a dwell process, and a metering process,

said injection process comprising the step of:

controlling a speed of said servomotor to correspond to a set injection speed set in accordance with a screw position;

said dwell process comprising the steps of:

detecting a pressure applied to a resin;

determining a difference between a set dwell pressure and said detected pressure; and

issuing a movement instruction based on said determined difference to a servo circuit for controlling said servomotor to drive said screw to a screw position, to thereby perform a feedback control in such a manner that a pressure applied to the resin corresponds to the set dwell pressure;

said metering process comprising the steps of:

detecting a pressure applied to the resin;

determining a difference between a set back pressure and said detected pressure; and

issuing a movement instruction based on said determined difference to a servo circuit for controlling said servomotor to drive said screw to a screw position, to thereby perform a feedback control in such a manner that a pressure applied to the resin corresponds to said set back pressure.

5,342,560

METHOD FOR THE PRODUCTION OF FOAMED POLYSTYRENE FILMS

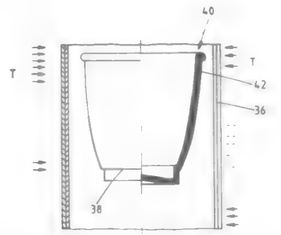
Wilfried Sturm, Düsseldorf, Fed. Rep. of Germany, and John Fumei, Oldsmar, Fla., assignors to Gerro Plast GmbH, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 671,409, Mar. 19, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 982,066

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1990, 4011003

Int. Cl.[5] **B29C** *67/22*

U.S. Cl. 264—45.9 **20 Claims**



1. A method for the production of a multi-layer laminate of a foamed polystyrene film with a co-extruded unfoamed film, for further working into labels or shaped bodies utilizing the shrinkability of the films, wherein the foamed film is formed of a polystyrene resin composition, together with nitrogen as expansion agent and a pore-former, and wherein the material that is foamed by the nitrogen and pore-former and the unfoamed material are extruded concurrently from the nozzle of an extruder and are stretched prior to a cooling below the softening point,

wherein the method comprises steps of

forming the expansion agent exclusively of nitrogen; and

dispensing the nitrogen into the polystyrene resin composition within the extruder, the dispensing of the nitrogen being accomplished per kilogram of foamed film in an amount of standard liters equal numerically to a fraction 1/30 to 1/50 of the weight per unit area of the film (measured in grams per square meter) in combination with a (chemically) decomposable powdered mixture, the stiffness/surface-nature of the film being controlled by the expansion ratio.

5,342,561

THERMOPLASTIC PROCESSING OF UNPLASTIFIABLE POLYMERS

Hans-Josef Sterzel, Dannstadt-Schauernheim, and Marion Meyer, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 27, 1992, Ser. No. 888,719

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1991, 4118277

Int. Cl.[5] **B29C** *67/20*

U.S. Cl. 264—49 **10 Claims**

1. A process for the thermoplastic processing and sintering of an unplastifiable polymer, which comprises dispersing the unplastifiable polymer in powder form in a melt of a polyacetal or a mixture of polyacetals, cooling the resulting mixture, granulating it, forwarding the granules to a thermoplastic processing stage, injection or extrusion molding, exposing the molding to an atmosphere which contains an acidic gas, thereby depolymerizing the polyacetal, enveloping the remaining porous molding on all sides in a gas/liquid-impermeable film, heating in an autoclave, and isostatically sintering the molding with pressure from all sides to form the finished article.

5,342,562

REACTION PROCESSING OF A1N/SIC COMPOSITES AND SOLID SOLUTIONS

Craig P. Cameron, Ellicott City, Md., and Roy W. Rice, Alexandria, Va., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Mar. 21, 1991, Ser. No. 675,360

Int. Cl.[5] **C04B** *33/32*

U.S. Cl. 264—63 **5 Claims**

1. A method of forming a sintered ceramic shape consisting essentially of an AlN-SiC composite, said method comprising:

a) combining silicon nitride, elemental aluminum, and a source of carbon, said carbon source being selected from the group consisting of elemental carbon, carbonizable binders, and mixtures thereof, to form a mixture;

b) compacting said mixture to form a shape;

c) heating said shape whereby said mixture reacts to form an AlN-SiC composite, said reacting including the reaction: $Si_3N_4 + 4\ Al + 3C \rightarrow 4\ AlN + 3\ SiC$; and

d) densifying said reacted shape.

5,342,563

METHODS OF PREPARING SINTERED SHAPES AND GREEN BODIES USED THEREIN

Robert E. Quinn, Cleveland, and W. Miachel Burk, Chardon, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Nov. 22, 1991, Ser. No. 796,494

Int. Cl.[5] **C04B** *35/64*

U.S. Cl. 264—63 **17 Claims**

1. A method for preparing sintered shapes, comprising the steps of:

(1) forming a green body from a mixture comprising (A) a major amount of at least one inorganic powder, and (B) from about 0.05% to about 30% by weight of the inorganic powder of at least one reaction product of an ethanolamine or a propanolamine with a hydrocarbyl-substituted succinic acrylating agent; and

(2) sintering the body.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,564

RAPID SINTERING METHOD FOR PRODUCING ALUMINA-TITANIUM CARBIDE COMPOSITES

George C. Wei, Weston, and John Walsh, Milford, both of Mass., assignors to Valenite Inc., Madison Hts., Mich.

Filed Dec. 31, 1992, Ser. No. 999,254
Int. Cl.[5] C04B *35/10, 35/52*
U.S. Cl. 264—63 **12 Claims**



1. A method of making a sintered ceramic body comprising the steps of:

preparing a ceramic green body from a powder mixture comprising aluminum oxide, or a precursor thereof, and a hard refractory material selected from the group consisting of titanium carbide and titanium carbonitride, or a precursor thereof, in a weight ratio selected to produce in said sintered ceramic body a weight ratio of aluminum oxide to hard refractory material of about 40:60 to about 95:5, and further comprising an effective amount of a densification aid, and titanium dioxide in an amount selected to produce in said sintered ceramic body a weight ratio of titanium dioxide to aluminum oxide plus hard refractory material of 0:100 to about 2:98;

rapid sintering said green body by heating in a sintering atmosphere by a non-contaminating heating means to a sintering temperature of about 1800°–1920° C. for a time sufficient to densify said green body to a density of at least about 4.20 g/cc, wherein the heating rate above about 800° C. is between about 120° C./min and the rate at which said green body experiences thermal shock, and said sintering atmosphere is selected from the group consisting of argon-hydrogen and nitrogen-hydrogen in a molar ratio of argon or nitrogen to hydrogen of about 92:8 to 100:0;

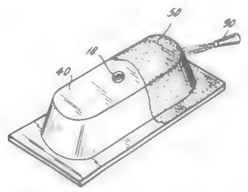
introducing carbon monoxide to said sintering atmosphere during said sintering step only after said sintering temperature exceeds about 1400° C., wherein the amount of said carbon monoxide introduced is selected to inhibit reaction between said aluminum oxide and said hard refractory material.

5,342,565

METHOD FOR MANUFACTURING SIMULATED GRANITE

Jacob Goren, 100 Winston Dr., Cliffside Park, N.J. 07010

Continuation of Ser. No. 761,643, Sep. 18, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 74,156
Int. Cl.[5] B28B *1/16, 1/32;* **B29C** *41/08, 41/22*
U.S. Cl. 264—74 **19 Claims**



1. A method for manufacturing a simulated granite product, comprising the steps of:

a) applying a substantially clear, hardenable resin onto a mold to form a first, protective layer of the granite product;

b) spraying a composition comprising:

i) a substantially clear, hardenable resin; and

ii) a material selected from the group consisting of crushed natural granite, crushed synthetic granite and mixtures thereof; onto the layer formed in step a) to form a simulated appearance of granite in the granite product, wherein the composition is efficiently and uniformly sprayed with a modified spray gun having discharge holes redrilled to about ¼ inch in diameter, and with a trigger valve deactivated by removing a needle therefrom, the trigger valve being replaced by a ¼ inch valve attached at an ingress point of the spray gun to control flow of the composition into the spray gun; and

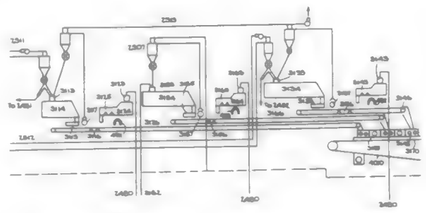
c) applying a backing material to the composition sprayed onto the layer in the mold in step b) to produce the simulated granite product.

5,342,566

METHOD OF MANUFACTURING FIBER GYPSUM BOARD

Karl K. Schäfer, Gengenbach; Gerhard M. Melzer, Lautertal; Jörg Scriba, Ortenberg, all of Fed. Rep. of Germany; Suda G. Bhagwat, Double Oak, Tex., and James Eisses, Coeur D'Alene, Id., assignors to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany and Lousiana Pacific Corporation, Portland, Oreg.

Filed Aug. 23, 1990, Ser. No. 572,758
Int. Cl.[5] B28B *1/52;* **B28C** *5/40;* **B32B** *31/20*
U.S. Cl. 264—102 **72 Claims**



1. A method of producing gypsum fiber board comprising the steps of:

mixing in preliminary mixing step a predetermined amount of fibers, an absorbent for restricting the adhesion of the fibers to one another to inhibit balling of the fibers, and water to form a mixture of wetted, loose fibers and absorbent;

mixing in a final mixing step the wetted fibers and absorbent with a predetermined amount of dry calcined gypsum to form a mixed composition;

wherein an accelerator additive is added to one of the fibers, absorbent, water and gypsum to speed the setting of the gypsum of the mixed composition;

laying the mixed composition into a matt having a substantially uniform consistency;

compressing the matt to form a board composed of bonded fibers and gypsum; and

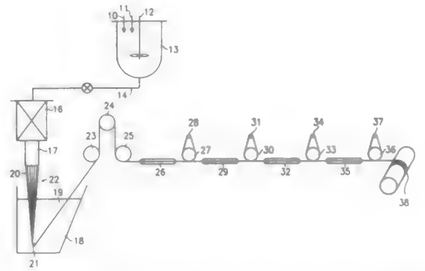
drying the board to provide a finished board.

5,342,567

PROCESS FOR PRODUCING HIGH TENACITY AND HIGH MODULUS POLYETHYLENE FIBERS

Wei-Liang Chen, Hsinchu; Dah-Ming Lee, Keelung; Lien-Tai Chen, Tainan, and Ming-Tao Yeh, Taipei Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 8, 1993, Ser. No. 89,177
Int. Cl.[5] D01F *6/04;* **D02J** *1/22*
U.S. Cl. 264—203 **13 Claims**



1. A process for making high tenacity and high modulus polyethylene fibers which comprises the following steps:

(a) preparing a 2–20wt % polyethylene solution containing a polyethylene polymer dissolved in a first solvent selected from the group consisting of cycloalkane, cycloalkene, their derivatives, and mixtures thereof, said first solvent having a boiling point above 100° C., and said polyethylene polymer having a weight average molecular weight between 2×10^5 and 4×10^6;

(b) extruding said polyethylene solution through a spinneret at a temperature above 120° C. to form a gel fiber therefrom;

(c) extracting said first solvent from said gel fiber with a second solvent selected from the group consisting of methanol, ethanol, ether, acetone, cyclohexanone, 2-methylpentanone, dichloromethane, n-hexane, heptane, trichlorotrifluroethane, and dioxane, and mixtures thereof, said second solvent being able to readily replace said first solvent without causing significant changes in said gel fiber structure; and

(d) stretching said gel fiber directly after the extraction step and without an intermediate winding step between said stretching step and said extraction step, at a stretching ratio of at least 10 to 1.

5,342,568

METHOD FOR PRESTRESSING CONCRETE

Tsutomu Yokota, Inagi, Japan, assignor to Oriental Construction Company, Tokyo, Japan

Filed May 3, 1993, Ser. No. 56,638
Claims priority, application Japan, May 21, 1992, 4-152988
Int. Cl.[5] E04C *3/26, 5/08*
U.S. Cl. 264—228 **1 Claim**

1. A method for introducing a prestress into concrete using a hollow steel rod, comprising the steps of:

ensleeving a steel rod within a hollow steel rod;

screw threadedly engaging a bearing plate and a first end of a holding cylinder successively with a screw means mounted on a trailing end of said hollow steel rod;

screw threadedly engaging a second end of said holding cylinder with a screw means mounted on a trailing end of said steel rod, said trailing end of said steel rod projecting from said trailing end of said hollow steel rod;

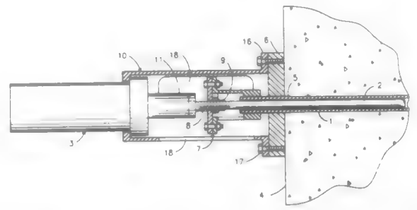
providing a jack means;

rigidly interconnecting said jack means and said bearing plate with a rigid support member;

engaging a ram means of said jack to said trailing end of said steel rod; and

employing said jack means to amply a tensile force to said hollow steel rod;

said steel rod serving as a reaction support means when said tensile force is applied to said hollow steel rod;



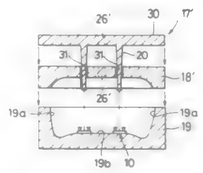
said steel rod and said hollow steel rod being embedded within said concrete during casting and curing of said concrete, said application of tensile force to said hollow steel rod thereby prestressinq said concrete.

5,342,569

METHOD OF ATTACHING A FASTENING TAPE TO A MOLDED ARTICLE

Ryuichi Murasaki, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,536
Claims priority, application Japan, Mar. 23, 1992, 4-064706
Int. Cl.[5] B29C *39/00*
U.S. Cl. 264—259 **2 Claims**



1. A method of attaching a fastening tape to an article to be molded in a mold comprising a core mold and a cavity mold having a flat bottom wall, said tape having a gripping element on one side and an anchoring element on the other side, the method comprising the steps of:

(i) positioning said tape in said mold at selected locations with the gripping element on said one side facing toward said bottom wall;

(ii) applying pressure with a projection on the core mold to said tape with the gripping element on said one side held flat against said bottom wall to form a liquid-tight seal therebetween;

(iii) closing said mold and filling the same with a molding material in a liquid phase to be anchored by said anchoring element;

(iv) curing said molding material; and

(v) removing the molded article from said mold with said gripping element exposed to view.

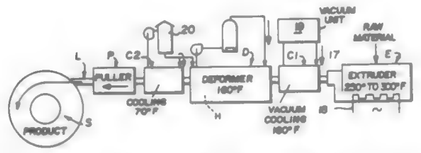
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,570

METHOD AND APPARATUS FOR DEFORMING REFORMABLE TUBULAR PIPE LINERS

Patrick R. Ledoux, and Luc R. Fourgaut, both of New Orleans, La., assignors to Pipe Liners, Inc., St. Rose, La.

Continuation of Ser. No. 389,693, Aug. 4, 1989, abandoned, which is a division of Ser. No. 77,883, Jul. 27, 1987, Pat. No. 4,863,365. This application Aug. 9, 1990, Ser. No. 564,708
Int. Cl.[5] B29C *49/26*
U.S. Cl. 264—566 20 Claims



1. A method for producing a deformed pipe liner from an extruded tubular cross-section for insertion into a pipe line and reformation substantially to said extruded tubular cross-section, comprising the steps of:

(a) extruding plastic material at a raised temperature into an initial elongated tubular cross-section having a predetermined outside diameter and an elongated axis;

(b) collapsing the tubular cross-section, while maintaining the tubular cross-section at a reduced shape enabling deformation temperature above ambient temperature and below said raised temperature, by depressing one side thereof generally diametrically toward an opposite side thereof and toward said axis along a plane of bilateral symmetry on opposite sides of which side sections of the tubular cross-section bend into double-wall configurations;

(c) during collapsing, backing the opposite side of the tubular cross-section along the plane of bilateral symmetry, thereby reducing the cross-sectional configuration of said tubular cross-section for insertion into the pipe line and reformation therein substantially to its initially extruded tubular cross-section;

(d) disposing a rail along the plane of bilateral symmetry inwardly of the distal ends of said side sections to maintain the liner in the collapsed cross-section; and

(e) reducing the temperature of the collapsed cross-section about the rail;

whereby, as a result of carrying out steps (b)–(e), the collapsed cross-section is maintained solely by the plastic material of the liner.

13. An apparatus for producing a deformed pipe liner from an extruded tubular cross-section of plastic material comprising:

at least one rotatable back-up roller disposed on an axis parallel to an axis of, and generally in opposition to, at least one rotatable shaping roller;

the back-up roller having a curved concave spool-shaped periphery centered at a plane of bilateral symmetry and adapted to engage a back-up portion of the tubular cross-section;

the shaping roller having a periphery non-complementary in shape to the periphery of said back-up roller and including a curved convex fold initiating and fold shaping peripheral surface at said plane of bilateral symmetry so that when said tubular cross-section passes generally between said back-up and shaping rollers, a deformable portion of the tubular cross-section is depressed diametrically toward the back-up portion thereof and along the plane of bilateral symmetry, so that opposite side sections of the tubular cross-section bend into double-wall configurations with a fold thereof juxtaposed to said opposite back-up portion of the tubular cross-section;

such that the cross-sectional configuration of the tubular cross-section is altered and reduced; and

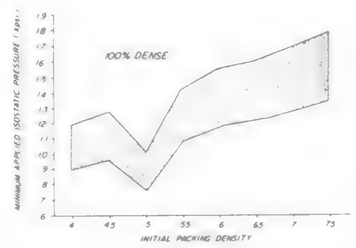
a rail disposed generally along said plane of bilateral symmetry downstream of said back-up and shaping rollers and between said side sections.

5,342,571

METHOD FOR PRODUCING SPUTTERING TARGET FOR DEPOSITION OF TITANIUM, ALUMINUM AND NITROGEN COATINGS, SPUTTERING TARGET MADE THEREBY, AND METHOD OF SPUTTERING WITH SAID TARGETS

Mark B. Dittmar, Grove City, and Paul E. Scheiderer, Johnstown, both of Ohio, assignors to Tosoh SMD, Inc., Grove City, Ohio

Filed Feb. 19, 1992, Ser. No. 838,575
Int. Cl.[5] B22F *3/02, 3/10, 3/12*
U.S. Cl. 419—13 20 Claims



1. Method of making a dual phase sputter target consisting essentially of TiN particles uniformly dispersed in an Al matrix comprising

a) mixing TiN and Al powders in an amount necessary to provide a dual phase blend wherein said Al powder is present in an amount of at least 40% by volume based upon the total volume of Al powder and TiN powder present;

b) densifying said blend to at least about 90% of the theoretical density for said blend; and

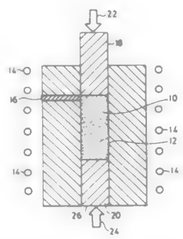
c) forming said densified blend into a desired shape.

5,342,572

COMBUSTION SYNTHESIS PROCESS UTILIZING AN IGNITABLE PRIMER WHICH IS IGNITED AFTER APPLICATION OF PRESSURE

Gregory C. Stangle, Alfred, and William C. Williams, Wellsville, both of N.Y., assignors to Alfred University, Alfred, N.Y.

Continuation-in-part of Ser. No. 54,753, Apr. 27, 1993. This application Sep. 27, 1993, Ser. No. 127,331
Int. Cl.[5] B22F *1/00*
U.S. Cl. 419—45 19 Claims



1. A process for producing a dense composite material by combustion synthesis, wherein said composition consists of from about 55 to about 99 volume percent of a matrix and from about 1 about 45 volume percent of reinforcing agent and

contains only of a first phase and a second phase, wherein said matrix is an intermetallic compound selected from the group consisting of a metal aluminide and a metal silicide, and wherein said composition has a density of at least about 95 percent of its theoretical density; comprising the steps of sequentially:

(a) selecting a first elemental material from the group consisting of lithium, titanium, zirconium, hafnium, unnilquadium, vanadium, niobium, tantalum, unnilpentium, chromium, molybdenum, tungsten, unnilseptium, nickel, palladium, platinum, cobalt, copper, and germanium;

(b) selecting a second elemental material from the group consisting of aluminum and silicon;

(c) mixing said first elemental material, said second elemental material, and reinforcing agent, thereby providing a reaction mixture;

(d) charging said reaction mixture to a die;

(e) charging an ignitable primer into said die;

(f) applying a uniaxial pressure of from about 500 to about 5,000 pounds per square to said reaction mixture within said die; and

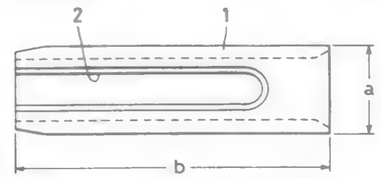
(g) heating said reaction mixture within said die to a temperature of from about 250 to about 600 degrees Centigrade, thereafter igniting said ignitable primer within said die, and thereafter igniting said reaction mixture within said die, wherein, prior to, during, and subsequent to the time said reaction mixture has been ignited, said uniaxial pressure of from about 500 to about 5,000 pounds per square inch is applied to said reaction mixture within said die.

5,342,573

METHOD OF PRODUCING A TUNGSTEN HEAVY ALLOY PRODUCT

Yoshinari Amano; Masahiro Omati, and Junzo Matsumura, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 20, 1992, Ser. No. 920,564
Claims priority, application Japan, Apr. 23, 1991, 3-119285; Apr. 23, 1991, 3-119286; Apr. 23, 1991, 3-119288; May 15, 1991, 3-139701; Feb. 12, 1992, 4-58891; Mar. 19, 1992, 4-93583; Mar. 19, 1992, 4-93584
Int. Cl.[5] B22F *3/16*
U.S. Cl. 419—38 12 Claims



1. A method of producing a tungsten heavy alloy product, comprising the steps of:

mixing and grinding tungsten powder having a particle size of not more than 20° μm and at least one member selected from the group consisting of nickel powder, iron powder and copper powder having a particle size of 1–5 μm to produce a mixed powder;

mixing the mixed powder with, as organic binder, wax and polyethylene in a volume ratio of wax to polyethylene within the range of 1:1 to 4:1, wherein the proportion of the organic binder to the mixed powder is 30 to 50% by volume;

kneading the resultant mixture;

injection molding the kneaded mixture into moldings of a predetermined configuration;

then removing the organic binder from the moldings by heating the moldings in vacuum or in non-oxidizing gas up to 300° C. at a heating-up rate of 20° to 50° C./hr, and then keeping the injection moldings in hydrogen gas at a temperature of 600° to 800° C.; and

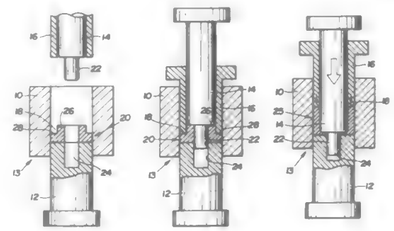
subsequently sintering the moldings in hydrogen gas in a temperature range of from the melting point of a bond phase of nickel, iron or copper to +50° C. relative to the melting point, to obtain the tungsten heavy alloy product, containing not more than 0.02 wt % residual carbon.

5,342,574

METHOD FOR PRODUCING ANISOTROPIC RARE EARTH MAGNET

Yasuaki Kasai, Nagoya; Hiyoshi Yamada, Iwakura, and Norio Yoshikawa, Nagoya, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 6, 1993, Ser. No. 42,772
Claims priority, application Japan, Apr. 9, 1992, 4-116812
Int. Cl.[5] B22F *5/00*
U.S. Cl. 419—61 4 Claims



1. A method for producing an anisotropic rare earth magnet, which comprises charging a compacted material of a rare earth magnet into a cylindrical die of a mold and plastically deforming the compacted material into a magnet material having magnetic anisotropy and a ring-shaped section by pressing and extruding said compacted material into a molding cavity formed between a punch and the cylindrical die of the mold, wherein said compacted material has a center part to be contacted by and end face of the punch higher than an outer peripheral part facing said molding cavity so as to be formed with difference in height between said center and outer peripheral parts of the compacted material.

5,342,575

PROCESS FOR PRODUCING BILLET OF POWDERY ALLOY BY SPECIAL ARRANGEMENT OF POWDERS

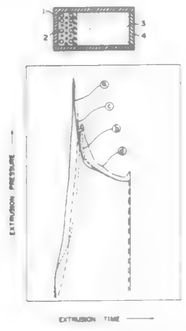
Yoshitaka Nagai, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 93,867
Claims priority, application Japan, Aug. 11, 1992, 4-214280; Aug. 11, 1992, 4-214281
Int. Cl.[5] B22F *1/00;* B21C *23/00*
U.S. Cl. 419—67 18 Claims

1. A process for producing a billet of powdery alloys which

VOL 1165 ISS 5 AG 30 1994 UMI

comprises densely packing a powdery metal or alloy readily plastically deformable and then a powdery alloy difficult to



plastically deform in that order in a can, sealing hermetically the can and thereafter degassing the can.

5,342,576

MAGNESIUM MANGANESE ALLOY

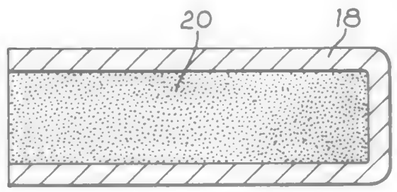
Derek J. Whitehead, Poynton, Great Britain, assignor to Castex Products Limited, Stockport, Great Britain

Filed Oct. 25, 1991, Ser. No. 782,810

Claims priority, application United Kingdom, Oct. 25, 1990, 9023270

Int. Cl.[5] C22C *23/00*

U.S. Cl. 420—413 5 Claims



1. A pellet for administration to a ruminant by deposition into a rumeno-reticular sac, comprising a core comprising a biologically active material and an outer sheath having a lateral external surface between two ends, and formed of a magnesium alloy consisting essentially of, by weight:

at least 90% magnesium;
up to 1% zinc;
about 0.4 to 2% manganese;
up to 1% aluminum;
up to 1% silicon;
up to 0.03% iron;
up to 0.002% beryllium; and
up to 0.5% zirconium,
said lateral external surface being resistant to corrosion by rumen juices by means of an anodic film which forms on the surface upon exposure to rumen juices.

5,342,577

HIGH TEMPERATURE ALLOY FOR MACHINE COMPONENTS BASED ON DOPED TIAL

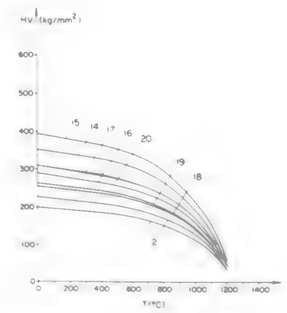
Mohamed Nazmy, Fislsibach, and Markus Staubli, Dottikon, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Division of Ser. No. 981,479, Nov. 25, 1992, Pat. No. 5,286,443, which is a division of Ser. No. 695,406, May 3, 1991, Pat. No. 5,207,982. This application Nov. 3, 1993, Ser. No. 145,227

Claims priority, application Switzerland, May 4, 1990, 1523/90; May 4, 1990, 1524/90; May 11, 1990, 1616/90

Int. Cl.[5] C22C *14/00*

U.S. Cl. 420—418 6 Claims



1. A high temperature alloy for a component subjected to high mechanical stress in thermal equipment, based on doped TiAl, having the composition $Ti_xEl_6Me_zAl_{1-(x+y+z)}$, in which El=Ge and Me=Co, Cr, Hf, Mn, Mo, Nb, Pd, Ta, V, W, Y and/or Zr and

0.46	≦	x	≦ 0.54
0.001	≦	y	≦ 0.02
0.01	≦	z	≦ 0.04 if Me is an individual element,
0.46	≦	(x + y + z)	≦ 0.54.

5,342,578

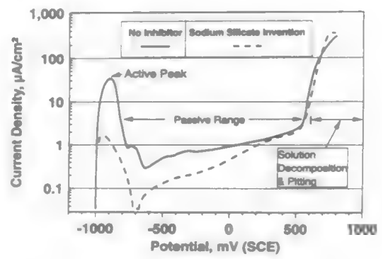
CORROSION INHIBITION OF AMMONIA-WATER ABSORPTION CHILLERS

Arun K. Agrawal, Columbus, and Barry Hindin, Reynoldsburg, both of Ohio, assignors to Gas Research Institute, Chicago, Ill.

Filed Feb. 23, 1993, Ser. No. 21,494

Int. Cl.[5] C23F *11/06*

U.S. Cl. 422—13 7 Claims



1. A method of inhibiting corrosion of an apparatus employing ammonia-water absorption cycles comprising:

(a) charging the apparatus with a solution of ammonia and water and
(b) dissolving in said solution a silicon compound.

5,342,579

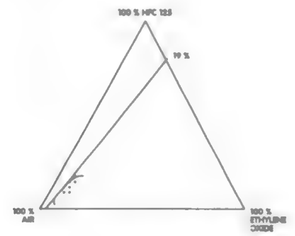
STERILANT MIXTURE

Stephen A. Conviser, Pelham, N.Y., and Claude C Woltz, Jr., Somerville, N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 588,199, Sep. 26, 1990, Pat. No. 5,039,485. This application Jun. 7, 1991, Ser. No. 711,998

Int. Cl.[5] A01N *29/00*

U.S. Cl. 514—475 6 Claims



1. A sterilant mixture comprising from 14 to 25 mole percent ethylene oxide and from 75 to 86 mole percent 1,1,2,2,2-pentafluoroethane.

5,342,580

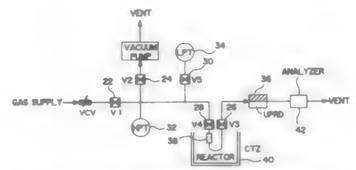
APPARATUS AND METHOD FOR MEASURING THE AMOUNT OF GAS ADSORBED ON OR DESORBED FROM A SOLID AND REACTIONS OF A GAS WITH A SOLID

Alan Brenner, 679 West Chester, Grosse Pointe Park, Mich. 48230

Filed Apr. 17, 1990, Ser. No. 510,505

Int. Cl.[5] G01N *7/02*

U.S. Cl. 422—92 40 Claims



3. A laboratory apparatus for performing temperature programmed characterization at pressures near 1 atm, comprising;

a combination of a first valve and variable conductance valve receiving gas from a gas supply;
reacting means downstream from and in fluid communication with said combination of said first valve and said variable conductance valve, for reacting a solid sample with said gas from said gas supply received via said combination of said first valve and said variable conductance valve;
vacuum means comprising a vacuum pump with a rated ultimate vacuum of less than about 0.01 torr and operable to evacuate said reacting means said vacuum means being downstream from and in fluid communication with said combination of said first valve and said variable conductance valve and in fluid communication with said reacting means;
a second valve means downstream from and in fluid communication with the combination of said first valve and said variable conductance valve and operable to isolate said vacuum means from said reacting means;
a third valve means downstream from said reacting means and operable to cut off gas emanating from said reacting means;
gas analyzer means downstream from and in fluid communication with, said third valve means and operable to measure at least one parameter of said gas and to discharge said gas emanating from said third valve means;
heat transfer means operable to add or remove from said reacting means; and temperature controlling means operable to control the temperature of said heat transfer means and operable to vary temperature control with respect to time in predetermined manner.

5,342,581

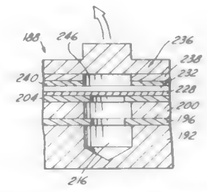
APPARATUS FOR PREVENTING CROSS-CONTAMINATION OF MULTI-WELL TEST PLATES

Ashok R. Sanadi, 2704 Arlington Blvd., Apt. 2, Arlington, Va. 22204

Filed Apr. 19, 1993, Ser. No. 49,171

Int. Cl.[5] B01L *11/00*

U.S. Cl. 422—101 3 Claims



1. An assembly for simultaneously confining multiple samples in separate chambers, comprising:

a plate defining a plurality of containment wells, each well having an opening at a principal surface of said plate;
a resilient gasket disposed on and extending over the majority of said principal surface of said plate and closing said openings of said wells; and
a lid disposed on said resilient gasket having means for compressing said resilient gasket on said principal surface of said plate to hermetically seal said wells and to prevent said samples from flowing from one well to another between said lid and said principal surface of said plate.

5,342,582

APPARATUS FOR REPROCESSING SPECIAL WASTE

Klaus Horn, Hofheim am Taunus; Juergen Lingnau, Mainz-Laubenheim, and Horst Weiler, Kiedrich, all of Fed. Rep. of Germany, assignors to Morton International, Inc., Chicago, Ill.

Filed Apr. 5, 1993, Ser. No. 42,582

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1992, 4212118

Int. Cl.[5] A61L *2/00;* B02B *7/02;* B02C *19/00;* C08F *2/48*

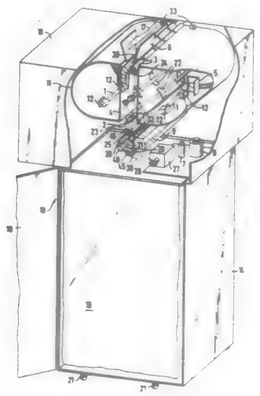
U.S. Cl. 422—105 13 Claims

1. An apparatus for reprocessing photopolymerizable scrap material to produce domestic waste, comprising:

a housing equipped with means for receiving strips of photopolymerizable scrap material;
at least one UV emitter means arranged in the housing to irradiate said photopolymerizable scrap material and effect complete polymerization of said material so that it is insoluble and inert and suitable for disposal as normal waste;
a chopper arranged in the housing to comminute said photopolymerizable. scrap material into fine particles; and
an ionizing means mounted in the housing interior in the

VOL 1165 ISS 5 AG 30 1994 UMI

vicinity of the chopper and being connected to a high frequency voltage source for ionizing the air in the housing to cause electrostatic charges to be conducted away from the comminuted particles so as to prevent said particles from adhering to the housing interior.



5,342,583

PATIENT'S STOOL AND URINE DISPOSING APPARATUS

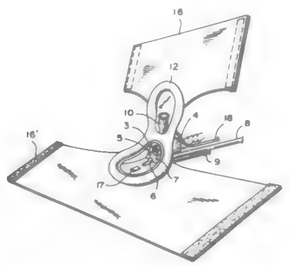
Jong E. Son, Sekyeong 3cha Apt. 301-609, 845-1, Hupyeong 1 Dong, Chuncheon City, Kangwon-Do, Rep. of Korea

Filed Oct. 22, 1992, Ser. No. 964,857

Claims priority, application Rep. of Korea, Oct. 24, 1991, 10741

Int. Cl.[5] G05B *7/00*

U.S. Cl. 422—107 19 Claims



1. A patient's stool and urine disposing apparatus, comprising:

a panty cloth including fastening means for securing the cloth to a patient and having a disposal aperture;

sealing means having an aperture corresponding to said disposal aperture;

a disposing device engaging said cloth disposal aperture and said sealing means aperture to secure said disposing device to said panty cloth and sealing means, said disposing device including: a) a cavity connected to said apertures for receiving a patient's stool and urine; b) a motor-driven crushing means in said cavity for crushing a patient's stool; c) at least one supply hole for directing cleansing water and drying air into said cavity and toward a patient; d) a waste outlet for removing crushed stool and urine from said cavity; and e) sensor means responsive to water in said cavity for activating said motor-driven crushing means and for supplying water and air to said cavity through said supply hole.

5,342,584

AIR FRESHENER DEVICE AND CARTRIDGE WITH BATTERY

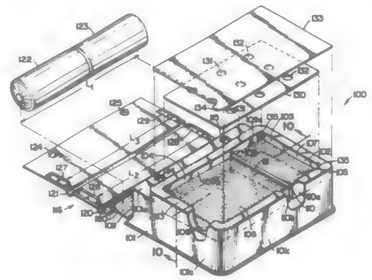
Barbara L. Fritz, Burnsville; John T. Olson, Chisago City; Stephen A. Morganson, Eagan, all of Minn., and William E. Sullivan, Blythewood, S.C., assignors to Ecolab Inc., St. Paul, Minn.

Continuation of Ser. No. 703,147, May 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 406,724, Sep. 13, 1989, abandoned. This application Feb. 23, 1993, Ser. No. 22,800

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[5] A61L *9/12*

U.S. Cl. 422—124 26 Claims



1. A cartridge for use in a dispenser, said cartridge comprising:

(a) a housing;

(b) a tray having a first compartment and a second compartment, said first and second compartments having an open top, said tray operatively connected to said housing;

(c) a first fragrance product having an outer surface area and having a first volatility positioned in said first compartment, said first compartment exposing less than all of the surface area of said first fragrance product;

(d) a first fragrance product having an outer surface and having a second volatility positioned in said second compartment, said compartment exposing less than all of the surface area of said second fragrance product;

(e) a fragrance diffuser operatively connected to said tray and positioned over said compartments, said diffuser having a first set of openings positioned over said first compartment and a second set of openings positioned over said second compartment;

(f) a removable cover operatively connected to said tray to seal said open tops, said removable cover is operably connected to said tray to be operably removed to expose both said first and second sets of openings, thereby allowing said first and second fragrance products to simultaneously exit from said first and second sets of openings respectively;

(g) a battery cover, said battery cover having a first side operatively connected to said housing and a second side having means for connecting said second side to said housing after a battery is enclosed in said cover;

(h) a battery supported by said battery cover, said battery positioned to contact the electrical connection means when said cartridge is inserted in said cavity;

(i) said battery cover comprises: (i) a base member operatively connected to said housing, said base member providing a support base to said battery; (ii) a side member operatively connected to said base member; and (iii) a top member, having first and second sides, said first side operatively connected to said side member and said second side operatively connected to said housing; and

(j) lock means to retain said battery after said battery cover is closed.

5,342,585

APPARATUS FOR MAKING MULTIPLE SYNTHESIS OF PEPTIDES ON SOLID SUPPORT

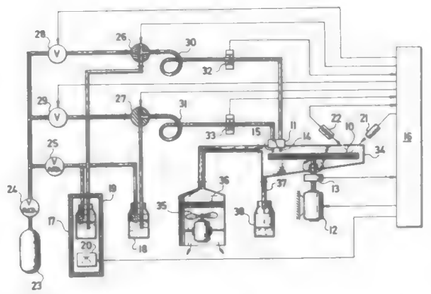
Michal Lebl, Praha, Czechoslovakia; Jutta Eichler, Berlin, Fed. Rep. of Germany; Vít Pokorny, Praha, Czechoslovakia; Jirí Jehnicka, Praha, Czechoslovakia; Petr Mudra, Praha, Czechoslovakia; Karel Zenísek, Praha, Czechoslovakia; Alena Stierandová, Cerveny Kostelec, Czechoslovakia; Jan Kalousek, and Jan Bolf, both of Praha, Czechoslovakia, assignors to Academy of Sciences of the Czech Republic, Praha, Czechoslovakia

Division of Ser. No. 645,121, Jan. 24, 1991, Pat. No. 5,202,418. This application Dec. 14, 1992, Ser. No. 989,764

Claims priority, application Czechoslovakia, Feb. 2, 1990, PV 505-90

Int. Cl.[5] G01N *21/00*

U.S. Cl. 422—131 11 Claims



6. An apparatus for performing a multiple synthesis of peptides, comprising:

a planar carrier on a disk, said carrier divided into a plurality of individual compartments, each compartment containing an inert porous material, a circular path being defined around said disk, said compartments being circumferentially spaced along said circular path, a functional group for peptide synthesis being anchored onto the inert porous material of each compartment to form a plurality of individual functionalized compartments;

at least one reservoir containing an activated agent for peptide synthesis and a wash reservoir containing washing solution;

a dosing head arranged at a fixed location adjacent said circular path, the dosing head including means for selectively drawing and dispensing said activated agent from said at least one reservoir or said washing solution from said wash reservoir; and

means for rotating the disk so that selected ones of the individual compartments are positioned to selectively receive said activated agent or washing solution directly by the dosing head.

5,342,586

COMBUSTION EFFICIENCY ENHANCING APPARATUS OF LIQUID FUEL

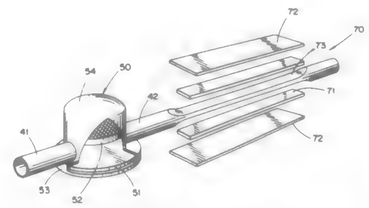
Jong H. Park, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 17, 1992, Ser. No. 945,872

Claims priority, application Rep. of Korea, Sep. 17, 1991, 91-15241[U]

Int. Cl.[5] F02P *1/00*; F15C *1/04*; F02M *33/00*

U.S. Cl. 422—211 8 Claims



1. A combustion efficiency enhancing apparatus of liquid fuel, comprising:

a body;

means for generating microwave energy in said body in order to divide the liquid fuel into particles;

a catalyst disposed in said body;

means for compressing the particles discharged from said body; and

means for forming a magnetic field, the magnetic field ionizing the particles discharged from said body.

5,342,587

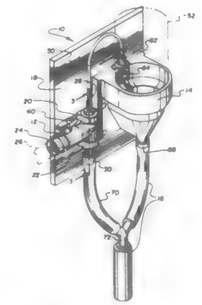
DETERGENT DISPENSER FOR USE WITH SOLID CAST DETERGENT

Timothy E. Laughlin, Edina; William H. Scepanski, Bloomington, and Kenneth P. Gruber, St. Paul, all of Minn., assignors to Sunburst Chemicals, Inc., Minneapolis, Minn.

Filed Sep. 24, 1992, Ser. No. 950,932

Int. Cl.[5] B01D *11/02*

U.S. Cl. 422—266 8 Claims



1. A detergent dispenser adapted for receiving water from a source and for delivering a ready to use solution of detergent and water to a container, the detergent dispenser having a dispenser bowl constructed and arranged to receive a cast solid detergent therein and including a water jet disposed in the dispenser bowl to direct a spray of water onto the detergent to

VOL 1165 ISS 5 AG 30 1994 UMI

dissolve the detergent and thereby produce a concentrated solution of detergent and water, wherein the improvement comprises;

fitting means for distributing the water received from the source within the dispenser, having an inlet and a first and a second outlet, the inlet being operably fluidly coupled to the second end of the water source and wherein the fitting means has a bifurcated passageway defined therein, with a respective branch of the bifurcated passageway fluidly coupled to the inlet, the first outlet and the second outlet thereby connecting the inlet and the first and second outlets in fluid communication;

first conduit means for conveying water from the first fitting means to the water jet, having a first conduit means first end operably coupled to the first outlet of the fitting means and first conduit means second end operably coupled to the water jet thereby providing said water spray from said water jet to produce said concentrated solution;

second conduit means for conveying said concentrated solution from the dispenser bowl, the second conduit means having a second conduit means first end operably coupled to the dispenser bowl and a second conduit means discharge end;

third conduit means for conveying water from the fitting means to the second conduit means, having a third conduit means first end operably coupled to the second outlet of the fitting means and conveying water therefrom and a third conduit means second end intercepting and in fluid communication with the second conduit means, the water mixing with and diluting the concentrated solution in the third conduit means;

the third conduit means second end providing a discharge port for the diluted detergent solution; and

preset restricter means operably fluidly disposed in the fitting means for selectively parting the water entering said fitting means inlet and directing a portion of the water to said first outlet and diverting the remaining portion of the water to said second outlet in a desired ratio.

5,342,588

METER SUPPORT MATRIX FOR A CATALYTIC REACTOR

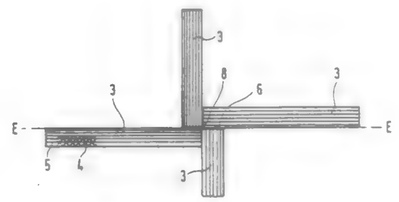
Bohumil Humpolik, Ludwigsburg, Fed. Rep. of Germany, assignor to Emitec Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Continuation of Ser. No. 699,939, May 14, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 4,185

Claims priority, application Fed. Rep. of Germany, May 21, 1990, 4016276

Int. Cl.[5] B01J *21/04;* **B01D** *50/00*

U.S. Cl. 422—311 **27 Claims**



1. A metal support matrix for a catalytic reactor for exhaust emission control, comprising:

at least two distinct stacks including a plurality of layers of sheet metal strips, each of said stacks having substantially parallel sides a central end and an outer free end, said sheet metal strips of said layers having central free ends disposed at said central ends of said stacks, and

a jacket encompassing said stacks, wherein said stacks are arranged in a twisting pattern and said central free ends of said sheet metal strips of one of said stacks transversely abut one of said sides of another of said stacks and said outer free ends of said stacks fixedly contact said jacket.

5,342,589

PROCESS FOR CONVERTING CHROMIUM DIOXIDE MAGNETIC PIGMENT PARTICLES INTO NONMAGNETIC CHROMIUM (III) OXIDE

Peter D. Tsakanikas, Tucson, Ariz., and Joseph M. Osborne, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 22, 1992, Ser. No. 948,670

Int. Cl.[5] C01G *37/02*

U.S. Cl. 423—53 **10 Claims**

1. A process for converting chromium dioxide magnetic particles into chromium (III) oxide, comprising the steps of:

a) providing a chromium dioxide-based magnetic recording medium comprising chromium dioxide magnetic particles dispersed in an organic matrix;

b) in a first heating step, heating a feed consisting essentially of said chromium dioxide-based magnetic recording medium, wherein said first heating step occurs in the presence of oxygen under conditions sufficient to convert the medium into an admixture comprising chromium oxide and carbon; and

c) in a second heating step, heating the admixture under conditions such that substantially all of the chromium oxide in the admixture is converted into green chromium (III) oxide which is then recovered.

5,342,590

METHOD OF MAKING ALKALI METAL STANNATES

David J. Randall, London, England, assignor to Alcan International Limited, Montreal, Canada

Filed Feb. 24, 1992, Ser. No. 807,870

Claims priority, application United Kingdom, Jul. 21, 1990, 8916673.0

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] C01C *19/02*

U.S. Cl. 423—89 **7 Claims**

1. A method of making an alkali metal stannate which method comprises heating a mixture of mineral tin oxide with a solution of alkali under pressure.

5,342,591

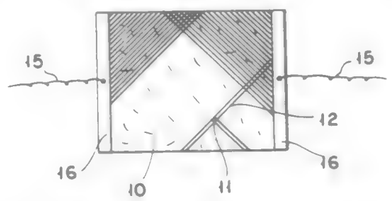
CATALYTIC METHOD

William C. Pfefferle, 51 Woodland Dr., Middletown, N.J. 07748

Division of Ser. No. 273,343, Nov. 18, 1988, Pat. No. 5,051,241. This application Feb. 26, 1991, Ser. No. 661,386

Int. Cl.[5] B01D *53/36*

U.S. Cl. 423—210 **12 Claims**



1. The method of controlling automotive emissions during less than about five seconds of initial engine operation wherein

engine exhaust gases are contacted with a microlith catalytic element having flow channels with flow paths less than about two millimeters and having a ratio of channel length to channel diameter of less than about five to one.

5,342,592

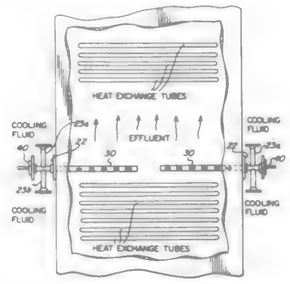
LANCE-TYPE INJECTION APPARATUS FOR INTRODUCING CHEMICAL AGENTS INTO FLUE GASES

Jeremy D. Peter-Hoblyn, Cornwall, and Francois X. Grimard, London, both of Great Britain, assignors to Fuel Tech Europe Ltd., London, United Kingdom

Filed Feb. 27, 1991, Ser. No. 659,324

Int. Cl.[5] C01B *21/00, 17/00*

U.S. Cl. 423—235 **15 Claims**



1. A process for reducing pollutants comprising nitrogen oxides or sulfur oxides in a combustion effluent, the process comprising:

(a) providing an apparatus which comprises:

(i) a lance at least partially extending into the effluent, said lance comprising a cooling jacket having an interior wall which defines an axial interior conduit and an axially circumferential exterior conduit defined as the space between said interior wall and an exterior wall of said jacket, and at least one orifice through said interior wall and said exterior wall;

(ii) an injection shaft disposed within said interior conduit of said jacket, said shaft comprising coaxial inner and outer conduits, said inner conduit defined by an inner tube of said shaft and said outer conduit defined as the space between said inner tube and an outer wall of said shaft, said shaft further comprising at least one port through said outer wall corresponding in location to and in register with said at least one orifice of said jacket; and

(iii) at least one injector disposed within said shaft such that chemical agents flowing through said inner conduit are injected through said port of said shaft and said orifice of said jacket, wherein said at least injector is adapted such that atomization fluid flowing through said outer conduit of said shaft is forced by said at least one injector to impinge on the chemical agents being injected;

(b) introducing a cooling fluid through said exterior conduit of said jacket;

(c) introducing an atomization fluid through said outer conduit of said shaft; and

(d) introducing a nitrogen oxides- or sulfur oxides-reducing chemical agent which comprises ammonia, urea, hexamethylenetetramine, oxygenated hydrocarbons, ammonium salts of organic acids having a carbon-to-nitrogen ratio of greater than 1:1, heterocyclic hydrocarbons having at least one cyclic oxygen, sugar, molasses, 5- or 6-membered heterocyclic hydrocarbons having at least one cyclic nitrogen, hydroxy amino hydrocarbons, amino acids, proteins or monoethanolamine through said inner conduit of said shaft so as to be injected by said injector into said effluent, which is at a temperature of about 1200° F. to about 2100° F.

5,342,593

PROCESS FOR ABSORPTION OF SULFUR COMPOUNDS FROM FLUIDS

Steven H. Christiansen, Richwood; Dane Chang, Houston, and David A. Wilson, Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 569,091, Aug. 16, 1990, abandoned. This application Aug. 10, 1992, Ser. No. 927,584

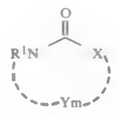
The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[5] B01D *53/34*

U.S. Cl. 423—242.6 **29 Claims**

1. A process for removing SO_2 from a fluid containing SO_2 comprising contacting the SO_2 with an aqueous solution of at least one compound represented by Formula I:

Formula I



wherein X is —O—, —NR[1]—, or —N═; each Y is independently —(CR[2]$_2$)—, —(C═O)—, —O—, NR[1]—, —N═, or —C(R[2])═; each R[1] or R[2] is independently hydrogen; an alkyl group; a hydroxyalkyl group; an aldehyde group; a carboxylic acid or salt group; or an alkyl group containing an aldehyde group, a carboxylic acid or salt group, ketone, carboxylic ester, ether, or sulfoxide group; and m is an integer and wherein the compound is a hydantoin, triazinone, 2,4-pyrimidinedione or oxazolidone, such that SO_2 is absorbed into the aqueous solution.

5,342,594

FLUIDIZED BED PROCESS FOR SO_x REMOVAL

Pertti J. Sarkomaa, Lappeenranta, Finland, assignor to Rauma-Repola Oy, Kaarina, Finland

Continuation of Ser. No. 705,958, May 28, 1991, abandoned, which is a division of Ser. No. 302,146, Jan. 27, 1989, abandoned, which is a continuation of Ser. No. 93,781, Sep. 8, 1987, abandoned, which is a continuation of Ser. No. 774,604, Aug. 14, 1985, abandoned. This application Jun. 18, 1992, Ser. No. 899,587

Claims priority, application Finland, Mar. 20, 1984, 841126

Int. Cl.[5] B01D *53/34*

U.S. Cl. 423—244.08 **2 Claims**

1. A method of purifying and cooling hot, unclean gases containing impurities including sulphur oxides comprising the steps of:

(a) passing hot, unclean gases having gaseous sulphur oxide-containing impurities into a mixing chamber provided in a lower end of a fluidized bed reactor and mixing said hot, unclean gases therein with a solid process material comprising $CaCO_3$ such that the gaseous sulphur oxide-containing impurities react with said $CaCO_3$ to form a solid impurity reaction product thereof;

(b) causing said unclean gases and said solid process material along with said solid impurity reaction product to rise in the reactor to a collection space while simultaneously cooling said unclean gases, said process material and said solid impurity reaction product within a cooled region of the reactor;

(c) passing said unclean gases, said solid process material and solid impurity reaction product from said collection space tangentially to a circumferential surface of a first horizontal cyclone separator;

(d) separating said solid process material and said solid impu-

VOL 1165 ISS 5 AG 30 1994 UMI

rity reaction product from said unclean gases to provide purified gases, and removing said purified gases from at least one end of the first horizontal cyclone separator; and

(e) returning separated solid impurity reaction product and solid process material to said mixing chamber for mixing with hot unclean gases in accordance with step (a).

5,342,595

PROCESS FOR OBTAINING A GEOPOLYMERIC ALUMINO-SILICATE AND PRODUCTS THUS OBTAINED

Joseph Davidovits, 16 rue Galilée , Saint Quentin F-02100; Michel Davidovics, 5 Route de Villers, Pont Ste Maxence F-60700, and Nicolas Davidovits, 6 rue Brison, Roanne F-42300, all of France

PCT No. PCT/FR91/00177, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO91/13830, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 5, 1991, Ser. No. 923,797

Claims priority, application France, Mar. 7, 1990, 90 02853; Jan. 3, 1991, 91 00027

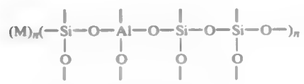
Int. Cl.[5] C01B *33/26*

U.S. Cl. 423—328.1 **20 Claims**

1. A method for obtaining an alumino-silicate geopolymer whose composition expressed in terms of oxides and in fully hydrated form is:

$$yM_2O:Al_2O_3:xSiO_2:wH_2O$$

where M_2O is K_2O and/or Na_2O, "w" has a value at most equal to 3, "x" has a value comprised between 5.5 and 6.5, "y" has a value comprised between 1.0 and 1.6, the said geopolymer belonging essentially to the family of alkaline poly(sialate-disiloxo,(M)-PSDS having the formula



where "M" is at least one alkaline cation and "n" the polymerization degree, wherein the method consists of reacting:

a) an aqueous solution of alkaline silicate having a molar ratio $SiO_2:M_2O$ between $SiO_2:M_2O$ 4.0:1 and 6.6:1 the concentration of which is over 60% wt and where the initial viscosity at 20° C. is 200 centipoises, then increases but does not exceed 500 centipoises within 5 hours at 20° C.;

b) an alumino-silicate oxide (Si_2O_5,Al_2O_2) in which the Al cation is in coordination (IV-V), as determined by the MAS-NMR spectrum for ^{27}Al, the said oxide being in such a quantity that the molar ratio $Al_2O_3:SiO_2$ is $Al_2O_3:SiO_2$ 1:5.5 and 1:6.5, and then allowing the said geopolymeric resin to cure.

5,342,596

PROCESS FOR MAKING THETA-1 ZEOLITE

Sami A. I. Barri, London; Philip Howard, St. Margarets Twickenham, and Clive D. Telford, Ascot, all of United Kingdom, assignors to The British Petroleum Company Limited, London, United Kingdom

Filed Dec. 29, 1981, Ser. No. 335,557

Claims priority, application United Kingdom, Jan. 8, 1981, 8100532

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—710 **5 Claims**

1. A process for producing a crystalline aluminosilicate having the following composition in terms of the mole ratios of the oxides:

$$0.9\pm0.2\ M_2O_n:Al_2O_3:xSiO_2:yH_2O$$

wherein M is at least one cation having the valence n, x is at least 10 and y/x is between 0 and 25, said aluminosilicate in the calcined hydrogen form having an x-ray diffraction pattern substantially as set forth in Table 1 of the specification, which process comprises mixing a source of silica, a source of alumina, a source of alkali metal(s), water and diethanolamine until a homogeneous gel is formed, wherein in the mixture the silica to alumina mole ratio is greater than 40:1, the free alkali metal(s) hydroxide to water mole ratio is greater than 2×10^{-3}:1, the mole ratio of silica to alkali metal(s) oxide or hydroxide is in the range 1:1 to 20:1 and the mole ratio of water to silica is in the range of 4:1 to 50:1, and crystallising the mixture at a temperature above 70° C., for a period of at least 2 hours.

5,342,597

PROCESS FOR UNIFORMLY MOISTURIZING FUMED SILICA

Donald E. Tunison, III, Champaign, Ill., assignor to Cabot Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 614,782, Nov. 14, 1990, abandoned. This application Aug. 6, 1993, Ser. No. 103,269

Int. Cl.[5] C01B *33/18*

U.S. Cl. 423—335 **11 Claims**

11. A process for treating fumed silica having a B.E.T. surface area between about 50 m^2/g to 450 m^2/g comprising:

combining a quantity of a hydrophobic fumed silica with up to 95% by weight water and agitating said combination of said hydrophobic fumed silica and water to form dry water;

calculating a quantity of said dry water necessary to achieve a desired moisture level in a quantity of hydrophilic fumed silica; and

introducing said calculated quantity of said dry water to said quantity of hydrophilic fumed silica to form a hydrophilic fumed silica dispersion and agitating to effect uniform water distribution throughout said dispersion.

5,342,598

PRECIPITATED SILICA PARTICULATES HAVING CONTROLLED POROSITY

Jacques Persello, Saint Andre de Corcy, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 547,227, Jul. 3, 1990, abandoned. This application Jan. 24, 1992, Ser. No. 826,217

Claims priority, application France, Jul. 3, 1989, 89 08874

Int. Cl.[5] C01B *33/12*

U.S. Cl. 423—339 **15 Claims**

1. Precipitated silica particulates having a BET specific surface area ranging from 20 to 300 m^2/g, a CTAB specific surface area ranging from 10 to 200 m^2/g, an oil uptake (DBP) ranging from 80 to 400 $cm^3/100$ g, a pore volume ranging from 1 to 10 cm^3/g and a mean pore diameter ranging from 10 to 40 nm.

5,342,599

SURFACE STABILIZED SOURCES OF ISOCYANIC ACID

Ralph J. Slone, Columbus, Ind., assignor to Cummins Power Generation, Inc., Columbus, Ind.

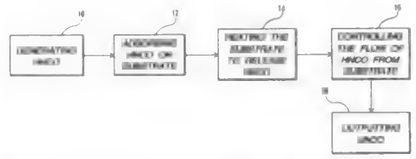
Continuation-in-part of Ser. No. 582,477, Sep. 14, 1990, abandoned. This application Dec. 11, 1990, Ser. No. 626,059

Int. Cl.[5] C01C *3/14*

U.S. Cl. 423—365 **13 Claims**

1. A method of storing HNCO in stable form comprising the steps of contacting a substrate with gaseous HNCO at a temperature above about 450° F., and maintaining the temperature above about 450° F. until HNCO is bonded to the substrate.

8. A method of storing HNCO in stable form comprising the steps of contacting a substrate with liquid HNCO at a temperature below ambient temperature, and subsequently causing the



temperature to move toward ambient temperature until a desired quantity of HNCO is bonded to the substrate.

5,342,600

PRECIPTATED CALCIUM CARBONATE

Ian S. Bleakley, and Thomas R. Jones, both of St. Austell, United Kingdom, assignors to ECC International Limited, United Kingdom

Continuation-in-part of Ser. No. 767,039, Sep. 26, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 974,955

Claims priority, application United Kingdom, Sep. 27, 1990, 9021072.5

Int. Cl.[5] C01F *11/18*

U.S. Cl. 423—432 **10 Claims**

1. A process of preparing precipitated calcium carbonate comprising the following steps:

(a) slaking quicklime in an aqueous medium;

(b) subjecting said medium to continuous agitation during said slaking;

(c) passing a suspension of calcium hydroxide obtained in step (b) through a sieve having an aperture size in the range from 40 to 70 microns;

(d) subjecting the suspension which passes through the sieve to high energy, high shear agitation with an impeller having a peripheral speed of 40–70 m/sec, so as to convert the calcium hydroxide into a finely dispersed condition;

(e) terminating said high energy, high shear agitation on achieving a suspension of finely dispersed slaked lime;

(f) carbonating said finely dispersed slaked lime of said suspension by passing therethrough sufficient of a gas comprising carbon dioxide to cause the pH of the suspension to fall to neutral;

(g) during said carbonation of step (f), subjecting said suspension to continuous agitation to maintain the suspension with an impeller having a peripheral speed of 200–700 cm/sec, said agitation being of relatively lower energy and shear compared with the high energy, high shear agitation of step (d); and

(h) separating precipitated calcium carbonate formed in step (g) from the aqueous medium in which it is suspended.

5,342,601

PROCESS FOR PRODUCING CHLORINE DIOXIDE

David W. Cawlfield, and Sudhir K. Mendiratta, both of Cleveland, Tenn., assignors to Olin Corporation, Stamford, Conn.

Continuation of Ser. No. 703,432, May 17, 1991, abandoned. This application Aug. 5, 1992, Ser. No. 925,006

Int. Cl.[5] C01B *11/02*

U.S. Cl. 423—478 **21 Claims**

1. A process for producing chlorine dioxide which comprises the step of:

heating a reaction mixture comprising an aqueous solution containing hydrogen ions, chlorate ions, and perchlorate ions in presence of an oxygen-evolving catalyst in solid form in absence of an added reducing agent to produce chlorine dioxide and oxygen gas;

wherein a source of the chlorate ions is a solution of chloric acid and a molar ratio of the perchlorate ions to the chlorate ions is at least about 0.5:1; and

wherein said catalyst contains a metal or metal oxide wherein the metal is cobalt, iridium, iron, nickel, palladium, platinum, osmium, rhodium, ruthenium, mixtures thereof or alloys thereof.

5,342,602

PROCESS FOR REDUCING THE CARBON CONTENT OF AQUEOUS HYDROGEN PEROXIDE SOLUTIONS

Gerhard Zimmer, Konigstein; Heike Kinz, Hanau, and Elfriede Sextl, Geiselbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 1, 1993, Ser. No. 159,578

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1992, 4240370

Int. Cl.[5] C01B *15/01*

U.S. Cl. 423—584 **11 Claims**

1. A process for reducing the carbon content in an aqueous hydrogen peroxide solution which contains carbon compounds, said process comprising contacting said aqueous hydrogen peroxide solution with a solid adsorption agent and then optionally separating the loaded solid adsorption agent, wherein said solid adsorption agent is a dealuminised H-Y-zeolite with a (SiO_2/Al_2O_3) ratio equal to or greater than 20 or a H-mordenite with a (SiO_2/Al_2O_3) ratio of at least 20.

5,342,603

PROCESS FOR THE MANUFACTURE OF HYDROGEN PEROXIDE

Veronique Deremince, Wavre, and Claude Vogels, Lasne, both of Belgium, assignors to Interox International, Brussels, Belgium

Filed Dec. 14, 1992, Ser. No. 990,198

Claims priority, application Belgium, Dec. 12, 1991, 09101132

Int. Cl.[5] C01B *15/023*

U.S. Cl. 423—588 **7 Claims**

1. Process for the manufacture of hydrogen peroxide in three main stages consisting, in a first stage, in hydrogenating an organic solution of alkylanthraquinones and/or of tetrahydroalkylanthraquinones, in oxidising by means of air, oxygen or oxygen-enriched air, in a second stage, the organic solution arising from the first stage and, in a third stage, in extracting by means of water the hydrogen peroxide formed in the second stage, according to which the first, hydrogenation, stage is carried out in the presence of a catalyst made of metallic palladium supported on alumina, characterised in that the alumina of the support of the hydrogenation catalyst has been subjected to a halogenation treatment prior to fixing the palladium.

5,342,604

COMPLEXES POSSESSING ORTHO LIGATING FUNCTIONALITY

David A. Wilson, Richwood; Joseph R. Garlich; R. Keith Frank, both of Lake Jackson; Kenneth McMillan, Richwood, and Jaime Simon, Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

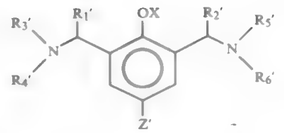
Continuation-in-part of Ser. No. 421,452, Oct. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 265,158, Oct. 31, 1988, abandoned. This application Jun. 17, 1992, Ser. No. 900,808

Int. Cl.[5] A61K *43/00, 49/02;* **C07F** *3/00, 5/00*

U.S. Cl. 424—1.65 **8 Claims**

1. A complex comprising a chelant possessing ortho ligating functionality having the formula

VOL 1165 ISS 5 AG 30 1994 UMI



III

wherein Z' is selected from the group consisting of hydrogen, NH_2, NO_2, $NHC(O)CH_3$ or $N(R')_2$, where R' is hydrogen and C_1–C_3 alkyl;
X is selected from the group consisting of hydrogen, C_1–C_3 alkyl and CR_3R_4COOH;
R_3 and R_4 are independently selected from the group consisting of hydrogen, C_1–C_3 alkyl and COOH;
R'_1 and R'_2 each are independently selected from the group consisting of hydrogen and COOH, with the proviso that at least one is COOH;
R'_3, R'_4, R'_5 and R'_6 are independently selected from the group consisting of hydrogen and CR_3R_4COOH, with the proviso that at least three are CR_3R_4COOH; or
a pharmaceutically acceptable salt thereof; and complexed with a radionuclide metal ion selected from the group consisting of ^{153}Sm, ^{166}Ho, ^{90}y, ^{149}pm, ^{159}Gd, ^{0}La, ^{177}Lu, ^{175}Yb, ^{47}Sc and ^{142}Pr.

5,342,605

POLYMERIC X-RAY COMPOSITIONS CONTAINING IODINATED POLYMERIC BEADS

Carl R. Illig, Phoenixville, Pa., assignor to Sterling Winthrop Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 877,690, May 1, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 54,119
Int. Cl.[5] A61K *49/04, 31/715, 31/075*
U.S. Cl. 424—5 **1 Claim**

1. A method of carrying out x-ray examination of the gastrointestinal tract of a patient, said method comprises the oral or rectal administration to the patient an x-ray contrast composition designed for depositing a thin, flexible film membrane onto the mucosal lining of the nutrient absorbing inner surface of the intestine of a patient to form a barrier between said nutrient absorbing inner surface and the content of said intestine, said flexible film membrane to remain bound to said mucosal lining until eliminated by normal cell turnover comprising based on w/v;

(a) of from about 0.001 to about 25% of a polymeric material capable of forming a film membrane on the gastrointestinal tract in the pH range of form about 5 to 8, said polymeric material being selected from the group consisting of:
dermatan sulfate,
hepatosulfate,
hyabromic acid,
heparin,
chitin,
polyvinylpyrrolidone,
polyvinyl alcohol and
ethylene oxide;
(b) of from about 0.1 to about 20% of a divalent cation to potentiate the binding of said flexible film membrane to said mucosal lining selected from the group consisting of Ca^{++}, Mg^{++}, Zn^{++} and Ba^{++}; and
c) of from about 5 to about 95% of an iodinated polymeric, water-insoluble beads having a particle size of from about 0.01 to about 1000μ wherein said iodinated polymeric beads comprise a polymer containing repeating units of the formula (I)



I

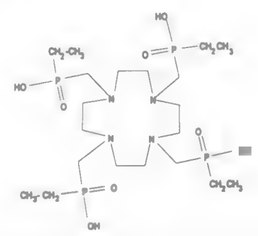
wherein
A is a repeating organic unit in the backbone chain of the polymer; and
X is an organic moiety containing an iodinated aromatic group and a hydrophilic group, said moiety having an iodine content within the range of from about 40 to about 80 weight percent based on the molecular weight of X, in a liquid pharmaceutically acceptable carrier comprising:
a surfactant selected from the group consisting of
cetyltrimethyl ammonium bromide,
dodecyl ammonium bromide,
sodium lauryl sulfate,
sodium heptadecyl sulfate,
alkyl benzene sulfonic acid,
sodium butylnaphthalene sulfonate,
sodium butylnaphthalene sulphosucinate,
carboxylic esters,
carboxylic amides,
ethoxylated alkylphenols,
ethoxylated aliphatic alcohols,
sorbitan esters,
polyoxyethylene alkyl ethers and
polyoxyethylene sorbitan fatty acid esters; and
exposing the gastrointestinal tract containing said x-ray contrast composition to x-rays to form an x-ray image pattern corresponding to the presence of said x-ray contrast composition, and visualizing said image pattern.

5,342,606

POLYAZAMACROCYCLIC COMPOUNDS FOR COMPLEXATION OF METAL IONS

A. Dean Sherry, Dallas; Istvan Lazar, Richardson, both of Tex.; Erno Brucher, Debrecen, Hungary, and Ravichandran Ramasamy, Dallas, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 357,193, May 25, 1989, abandoned, and Ser. No. 291,053, Dec. 28, 1988, Pat. No. 4,983,376, which is a continuation-in-part of Ser. No. 007,729, Jan. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 662,075, Oct. 18, 1984, Pat. No. 4,639,365. This application Nov. 19, 1990, Ser. No. 615,619
The portion of the term of this patent subsequent to Jan. 27, 2004, has been disclaimed.
Int. Cl.[5] A61K *49/00;* **C07D** *255/02*
U.S. Cl. 424—09 **5 Claims**



1. A polyazamacrocyclic compound-metal complex having the formula



where

x is 2, 3 or a combination of p 2(s) and q 3(s) where p+q=y;
y is 4;
R is $(CH_2)_zP(=0)R^1R^2$;
R^1 is R^3 or OR^3 where R^3 is alkyl, cycloalkyl or aryl;
R^2 is H or alkyl; and
z is 1 to 3;
r is 2 or 3; and
M is a metal ion.

5,342,607

RECEPTOR MEDIATED ENDOCYTOSIS TYPE MAGNETIC RESONANCE IMAGING CONTRAST AGENTS

Lee Josephson, Arlington, Mass., assignor to Advanced Magnetics, Inc., Cambridge, Mass.

Division of Ser. No. 771,876, Oct. 3, 1991, Pat. No. 5,284,646, which is a continuation of Ser. No. 384,991, Jul. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 228,640, Aug. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 67,586, Jun. 26, 1987, Pat. No. 4,827,945, which is a continuation-in-part of Ser. No. 882,044, Jul. 3, 1986, Pat. No. 4,770,183. This application Aug. 3, 1992, Ser. No. 924,121
Int. Cl.[5] A61B *5/055;* **A61K** *33/26, 31/715*
U.S. Cl. 424—9 **19 Claims**

1. A method for obtaining an enhanced MR image of an organ or tissue of an animal or human subject which comprises:

(a) administering to such a subject an effective amount of a colloidal biodegradable superparamagnetic contrast agent in a physiologically acceptable medium such that an image-enhancing amount of such contrast agent can be internalized by selected cells of a tissue or organ by receptor mediated endocytosis, said contrast agent comprising (1) biodegradable superparamagnetic metal oxide particles, physically or chemically joined with (2) a ligand, wherein such metal oxide particles
comprise one or more individual biodegradable superparamagnetic metal oxide crystals, and
are capable of being biodegraded in such subject, as evidenced by a return of proton relaxation rates of an affected organ or tissue to preadministration levels, within 30 days of administration; and
wherein such ligand
is a macromolecule selected from the group consisting of: (i) a low density lipoprotein, (ii) a serum protein, (iii) transferrin, (iv) a hormone, (v) a monosaccharide, (vi) a polysaccharide, (vii) insulin and (viii) a macromolecule species conjugate, which macromolecular species conjugate comprises two macromolecular species conjugated together, a first macromolecular species which is selected from one of the foregoing macromolecules, (i) through (viii), and a second macromolecular species, such second macromolecular species being physically or chemically joined with the metal oxide particles,
is recognized by a receptor other than an asialoglycoprotein receptor, and
is internalized, thereby permitting said metal oxide particles to be internalized, by selected cells of said organ or tissue by receptor mediated endocytosis; and
(b) recording such MR image.

5,342,608

GAS CONTAINING CONTRAST AGENT PARTICLES HAVING EXTERNAL MAGNETIC LAYER

Tadashi Moriya, Hachioji; Masahiro Seki, Tokyo, and Toshiomi Nakamura, Yokohama, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 19, 1993, Ser. No. 34,744
Claims priority, application Japan, Mar. 19, 1992, 4-092425
Int. Cl.[5] A61B *8/08;* **C04B** *35/26;* **A61K** *9/16*
U.S. Cl. 424—9 **16 Claims**

1. A contrast medium for ultrasonic diagnosis, which comprises an aqueous medium and gas-encapsulated particles each having a ferrite magnetic layer on the surface thereof contained in the aqueous medium.

5,342,609

MICROFLUIDIZATION OF CALCIUM/OXYANION-CONTAINING PARTICLES

Linda Meeh, St. Louis, and William P. Cacheris, Florissant, both of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 948,540, Sep. 22, 1992, which is a continuation-in-part of Ser. No. 784,325, Oct. 22, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 38,329
Int. Cl.[5] A61B *5/055;* **A61K** *33/42, 33/32*
U.S. Cl. 424—9 **41 Claims**

1. A method of preparing a calcium/oxyanion-containing particle for use in medical diagnostic imaging of body organs and tissues comprising the steps of:

(a) obtaining calcium/oxyanion-containing particles having the following general formula:

$$Ca_nM_mX_rY_s$$

wherein M is a paramagnetic metal ion or stoichiometric mixture of paramagnetic metal ions, X is a simple anion, Y is an oxyanion, tetrahedral oxyanion, carbonate, or mixtures thereof, n is from 1 to 10, m is from 1 to 10, s is ≧1, and r is adjusted as needed to provide charge neutrality; and
(b) passing the calcium/oxyanion-containing particles through a microfluidizer.

5,342,610

BENZOPHENONE DERIVATIVE, ULTRAVIOLET ABSORBENT AND EXTERNAL PREPARATION FOR SKIN

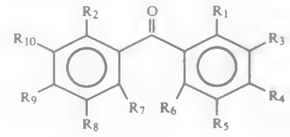
Mikiko Katoh; Keiichi Uehara, and Sadaki Takata, all of Yokohama, Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,901
Claims priority, application Japan, Oct. 21, 1991, 3-301076; Sep. 4, 1992, 4-262962
Int. Cl.[5] F61K *7/42;* **C07H** *15/24*
U.S. Cl. 424—59 **9 Claims**

1. Benzophenone derivative expressed by the following general expression (1):

$$A\{C-B)_n \quad (1)$$

wherein A in the above general expression (1) is a residual group having 4 or more carbon atoms obtained by removing one hydroxyl group from sugar or sugar alcohol, n is 1 to 3, and
B is a benzophenone group shown by the following general expression (2)



(2)

wherein R_1 through R_{10} each is expressed by hydrogen, hydroxyl group, an alkoxy group having 1 to 4 carbon atoms, or the aforesaid binder C, and at least one of them is the binder C, and
C is —O—R, O is oxygen, R is 1 to 4 carbon atoms, or 1 mole of glycerin with one hydroxyl group herein bound to A and another hydroxyl group to B.

VOL 1165 ISS 5 AUG 30 1994 UMI

5,342,611

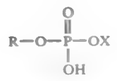
HAIR CLEANSING COMPOSITION

Takashi Komori, Sakura; Yoshiyuki Eshita, Chiba; Tsuyoshi Ohtomo, Minamisaitama, and Hajime Hirota, Tokyo, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Division of Ser. No. 712,416, Jun. 10, 1991, Pat. No. 5,211,941.
This application Dec. 21, 1992, Ser. No. 994,388
Claims priority, application Japan, Jun. 11, 1990, 2-152191; Jun. 11, 1990, 2-152192
Int. Cl.[5] A61K *7/06*
U.S. Cl. 424—70 6 Claims

1. A hair cleansing composition comprising:

(a-1) 0.05 to 5% by weight of a salt of a monoalkyl phosphate represented by the following formula (I):



(I)

wherein R represents a β-branched alkyl group having 8 to 36 carbon atoms and X represents an alkali metal, a basic amino acid or an organic base,

(a-2) 0.1 to 25% by weight of a surfactant having no phosphoric residue in the structure thereof and a solubility of 1% by weight or more in purified water at 25° C., selected from the group consisting of (1) nonionic surfactants selected from the group consisting of monoglycerides, sorbitan fatty acid esters, sucrose fatty acid esters, polyglycerol fatty acid esters, alkanol amides, amine oxides, polyoxyethylene alkyl ethers, polyethylene glycol fatty acid esters, polyoxyethylene sorbitan fatty acid esters, polyoxyalkylene derivatives of propylene glycol, polyoxyethylene glycerol fatty acid monoesters, polyoxyethylene propylene glycol fatty acid monoesters, polyoxyethylene hydrogenated caster oils, polyoxyethylene fatty acid amides, polyoxyethylene alkylamines and alkyl saccharides; (2) anionic surfactants selected from the group consisting of alkyl sulfates, alkyl ether sulfates, fatty acid soaps, ether carboxylic acids and salts thereof, alkane sulfonic acid salts, α-olefin sulfonic acid salts, sulfonic acid salts of higher fatty acid esters, dialkyl sulfosuccinates, monoalkyl sulfosuccinates, polyoxyethylene monoalkyl sulfosuccinate, sulfonic acid salts of higher fatty acid amides, sulfuric acid ester salts of glycerol fatty acid esters, sulfuric acid ester salts of higher fatty acid alkylolamides, and acylated amino acid salts; (3) cationic surfactants selected from the group consisting of alkyl trimethyl ammonium salts, dialkyl dimethyl ammonium salts, alkyl dimethyl benzyl ammonium salts, alkyl pyridinium salts and alkyl isoquinolinium salts; and (4) amphoteric surfactants selected from the group consisting of imidazolines, amido amino acid salts, alkyl betains, and alkyl sulfobetains;

(b) 0.5 to 40% by weight of an alcohol, which is one or more members selected from the group consisting of ethanol, glycerol, ethylene glycol, diethylene glycol, triethylene glycol, hexanediol, butylene glycol, heptanediol, propylene glycol, sorbitol, maltitol and polyethylene glycol;

(c) 0.5 to 50% by weight of water; and

(d-1) 50 to 98% by weight of a silicone oil, based on the total weight of the composition;

and said composition has a viscosity of 10,000 cs or more at 25° C. and is a transparent or translucent gel.

5,342,612

COMPOSITIONS FOR THE TREATMENT OF MAMMALIAN DISEASES

Michael J. Daley, Yardley, Pa.; William D. Steber, Ledgewood; Gary J. Furda, Trenton, both of N.J.; Paul A. Johnston, Langhorne, and Elizabeth R. Oldham, Newtown, both of Pa., assignors to American Cyanamid Company, Wayne, N.J.

Filed Dec. 20, 1991, Ser. No. 812,894
Int. Cl.[5] A61K *45/05*
U.S. Cl. 424—85.1 1 Claim

1. A therapeutic composition which comprises a potentiating or safening amount of an aqueous surfactant in combination with a tumor necrosis factor, wherein the surfactant is a sterol, n-dodecylglucosid, decanoyl-n-methylglucamid, dodecyl B-D-maltosid or octanoyl-n-methylglucamid.

5,342,613

PHARMACEUTICAL COMPOSITIONS AND USE THEREOF IN THE TREATMENT OF PSORIASIS

Patrick J. Creaven, Eggertsville, N.Y.; Kazuyoshi Hori, Fuji, and Hiroshi Ishimaru, Tokyo, both of Japan, assignors to Health Research Inc., Buffalo, N.Y.

Continuation of Ser. No. 704,686, May 17, 1991, abandoned, which is a continuation of Ser. No. 290,497, Dec. 27, 1988, abandoned. This application Oct. 8, 1992, Ser. No. 958,595
Int. Cl.[5] A61K *37/02*
U.S. Cl. 424—85.1 3 Claims

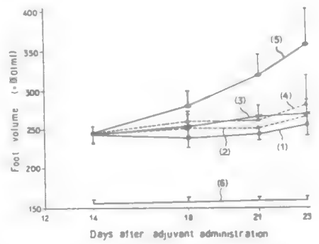
1. A method for treating noncontagious psoriasis, comprising intraveneously administering a pharmaceutical composition, consisting essentially of an effective anti-psoriatic amount of tumor necrosis factor and at least one pharmaceutically acceptable carrier or diluent, to a patient having psoriasis.

5,342,614

METHOD OF TREATING ARTHRITUS OR INFLAMMATION WITH IL-1β OR DERIVATIVES THEREOF

Satoru Nakai, and Yoshikatsu Hirai, both of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 24,386, Mar. 10, 1987, which is a continuation-in-part of Ser. No. 810,776, Dec. 19, 1985, Pat. No. 4,898,818. This application Mar. 26, 1990, Ser. No. 498,775
Claims priority, application Japan, Dec. 21, 1984, 59-271207; Jun. 24, 1985, 60-138280; Jun. 24, 1985, 60-138281; Oct. 3, 1985, 60-220882; Mar. 14, 1986, 61-057885; Jun. 20, 1986, 61-145830; Jul. 9, 1986, 61-161184; Aug. 27, 1986, 61-200324
Int. Cl.[5] A61K *37/02*
U.S. Cl. 424—85.2 3 Claims



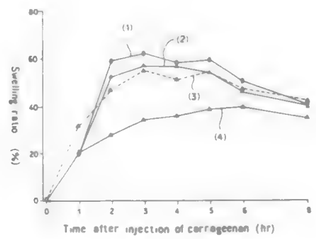
1. A method for the treatment of a patient afflicted with arthritis or inflammation comprising administering to said patient a pharmaceutically effective amount of interleukin-1-β.

5,342,615

METHOD FOR TREATING ARTHRITIS OR INFLAMMATION WITH IL-1α OR DERIVATIVES THEREOF

Satoru Nakai, and Yoshikatsu Hirai, both of Takushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 23,373, Mar. 9, 1987, Pat. No. 5,008,374.
This application Jul. 30, 1990, Ser. No. 559,233
Claims priority, application Japan, Mar. 14, 1986, 61-57885; Jun. 3, 1986, 61-129759; Jun. 25, 1986, 61-148393; Jul. 8, 1986, 61-160250; Aug. 27, 1986, 61-200323
Int. Cl.[5] A61K *37/02*
U.S. Cl. 424—85.2 6 Claims



1. A method for the treatment of a pateint afflicted with arthritis or inflammation comprising administering to said patient a pharmaceutically effective amount of interleukin-1α.

5,342,616

METHOD OF ADMINISTERING TISSUE PLASMINOGEN ACTIVATOR

Adam F. Cohen, EN Oegstgeest, Netherlands, assignor to The Wellcome Foundation Limited, London, England

Continuation of Ser. No. 831,641, Feb. 7, 1992, abandoned, which is a continuation of Ser. No. 367,857, Jun. 19, 1989, abandoned. This application Dec. 16, 1992, Ser. No. 994,083
Claims priority, application United Kingdom, Jun. 20, 1988, 8814604.2
Int. Cl.[5] A61K *37/547*
U.S. Cl. 424—94.64 8 Claims

1. A method for the treatment of a human being with a thrombotic disorder wherein t-PA, having the amino acid sequence set forth in FIG. 1 or an amino acid sequence that is at least 90% homologous with that set forth in FIG. 1, is administered by direct injection into a peripheral vein to the human being as a serial bolus injection of at least 25 MU of t-PA per injection.

5,342,617

WATER-BASED HUMAN TISSUE LUBRICANT

Marvin H. Gold, Sacramento, Calif., assignor to Medical Polymers,Inc., Austin, Tex.

Continuation of Ser. No. 758,174, Sep. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 621,305, Dec. 3, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 24,098
Int. Cl.[5] A61K *31/74*
U.S. Cl. 424—405 5 Claims

1. A composition for lubricating body tissue consisting of:

from about 0.2 to about 10 weight percent, based on total weight of the composition, of a polyethylene oxide, wherein the molecular weight of the polyethylene oxide ranges from about 100,000 to about 5,000,000;

from about 5 to about 9 weight percent, based on total weight of the composition, of a humectant polyol solvent, selected from the group consisting of glycerol, propylene glycol, and sorbitol; and

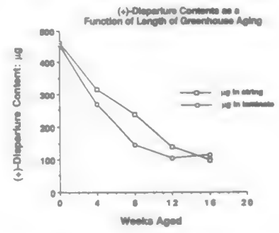
water.

5,342,618

PVC/TWINE DISPENSER FOR (+)-DISPARLURE

Barbara A. Leonhardt, Potomac; E. David DeVilbiss, Silver Springs, both of Md., and Victor C. Mastro, Cotuit, Mass., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 26, 1991, Ser. No. 765,732
Int. Cl.[5] A01N *25/34*
U.S. Cl. 424—409 5 Claims



1. A dispenser comprising a flexible support of multi-stranded material selected from the group consisting of twine, string, thread, and cord, having coated thereon a mixture of PVC and the pheromone (7R,8S)-cis-7,8-epoxy-2-methyloctadecane, or (+-disparlure, in an amount sufficient to lure gypsy moths.

5,342,619

POLYURETHANE INSECTICIDAL EAR TAG, METHODS OF USE AND PREPARATION

Rudolf J. Krzewki, St. Joseph, and Stanley Ackers, Kansas City, both of Mo., assignors to Fermenta Animal Health Company, Kansas City, Mo.

Continuation of Ser. No. 841,836, Feb. 26, 1992, abandoned.
This application Mar. 2, 1993, Ser. No. 24,905
Int. Cl.[5] A01N *25/10*
U.S. Cl. 424—411 14 Claims

1. A device for protecting animals from insects, said device comprising:

20% to 70% by weight of an ectoparasiticidal active organophosphate compound; and

30% to 80% by weight of a quantity of a polymer which is the reaction product of 20% to 40% by weight 4,4'-diphenylmethane diisocyanate, 50% to 70% by weight polytetramethylene glycol and 2% to 10% by weight 1,4-butanediol,

wherein said reaction product has a number average molecular weight of not less than about 90,000.

5,342,620

USE OF BORATE-POLYOL COMPLEXES IN OPHTHALMIC COMPOSITIONS

Masood Chowhan, Arlington, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 879,435, May 6, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 118,833
Int. Cl.[5] A61K *9/08*
U.S. Cl. 424—422 15 Claims

1. A method of preparing an aqueous ophthalmic composition, comprising the steps of preparing a water-soluble borate-polyol complex by mixing borate and a polyol together in a aqueous solvent and adding polyvinyl alcohol thereto, wherein the water-soluble borate-polyol complex is present at a concentration between about 0.5 to about 6.0 wt %.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,621

ANTITHROMBOGENIC SURFACE

Robert P. Eury, Cupertino, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Sep. 15, 1992, Ser. No. 945,107
Int. Cl.[5] A61F *2/00*; A61K *17/00*
U.S. Cl. 424—423 14 Claims

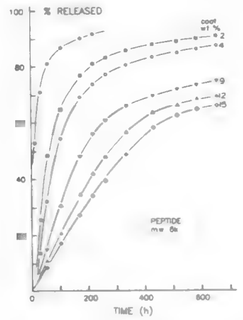
1. An antithrombogenic material comprising:
heparin, an anticoagulation agent, complexed with phosphatidylcholine, a cell membrane mimicking substance, so as to be releasably associated therewith, incorporated within a biomedical polymer.

5,342,622

SUBDERMAL BIOCOMPATIBLE IMPLANTS

Alan H. Williams, Mount Duneed Via Belmont; Linton D. Staples, East Kew; William J. Thiel, Brighton; Richard C. Oppenheim, Kew, and Iain J. Clarke, Malvern East, all of Australia, assignors to The State of Victoria; Victorian College of Pharmacy Ltd. and Monash Medical Centre, Victoria, Australia

Continuation of Ser. No. 166,962, Mar. 30, 1988, abandoned.
This application Oct. 31, 1990, Ser. No. 605,158
Claims priority, application Australia, May 16, 1986, PH 05932/86; May 16, 1986, PH 05933/86
Int. Cl.[5] A61F *2/02*; A61K *9/28, 9/32, 9/14*
U.S. Cl. 424—425 15 Claims



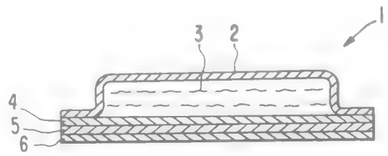
1. A pharmaceutical or veterinary implant for continuous parenteral release of a biologically active peptide or protein by subdermal implantation; said implant comprising a biologically active peptide or protein which exhibits a loss of biological activity in the digestive tract of an animal and an excipient encased within a polymeric coating of an addition polymer substantially free of ionizable groups; said polymeric coating being permeable to said biologically active protein or peptide whereby said coating constitutes a release rate limiting barrier to said biologically active protein or peptide and said polymeric coating being non-rupturing, non-soluble at normal physiological pH and non-degradable over the useful life of the implant; and wherein all of the components of the implant are biocompatible; said implant being made by a process which includes the steps of forming a mixture containing the biologically active peptide or protein and the excipient; forming a pellet from said mixture and applying a coating of a polymer around said pellet to encase said pellet with said polymer; said polymer which is applied to the pellet is a permeable addition polymer substantially free of ionizable groups and at normal physiological pH is non-rupturing, non-soluble and non-degradable over the useful life of the implant, whereby said polymeric coating which encases said pellet constitutes a release rate limiting barrier for said biologically active peptide and biologically active protein.

5,342,623

SUBSATURATED TRANSDERMAL THERAPEUTIC SYSTEM HAVING IMPROVED RELEASE CHARACTERISTICS

David J. Enscore, Sunnyvale; Patricia S. Campbell, Palo Alto; James L. Osborne, Mountain View; Melinda K. Smart, Sunnyvale, and Su I. Yum, Los Altos, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 284,283, Dec. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 906,730, Sep. 12, 1986, Pat. No. 4,908,027. This application Jun. 18, 1993, Ser. No. 80,645
The portion of the term of this patent subsequent to Apr. 2, 2008, has been disclaimed.
Int. Cl.[5] A61F *13/02*
U.S. Cl. 424—448 15 Claims



1. A medical device utilizing an in-line adhesive for the transdermal administration of an agent that is a solvent for said adhesive, said device being adapted to deliver said agent throughout a predetermined administration period said device comprising, in combination:
a) an agent reservoir comprising said agent dissolved in a solvent at a concentration less than saturation and at an initial equilibrated agent loading sufficient to prevent the activity of said agent in said solvent from decreasing by more than 75% during said administration period;
b) agent release rate controlling means disposed in the path of agent migration from said reservoir to the skin, said rate controlling means being permeable to said agent and substantially impermeable to said solvent; and
c) adhesive means disposed in the path of agent migration from said release rate controlling means to the skin, said adhesive being soluble in said agent the initial equilibrated concentration of said agent in said reservoir being at a level at which the adhesive maintains adhesive properties.

5,342,624

DISPENSING DEVICE

Marion E. McNeill; Abdul Rashid, and Howard N. E. Stevens, all of Glasgow, Scotland, assignors to British Technology Group Ltd., London, United Kingdom

Continuation of Ser. No. 743,402, Aug. 14, 1991, abandoned.
This application Mar. 8, 1993, Ser. No. 29,319
Claims priority, application United Kingdom, Feb. 16, 1989, 8903566.1; Sep. 19, 1989, 8921155.1
Int. Cl.[5] A61K *9/48*
U.S. Cl. 424—451 23 Claims

1. A pulsed release device which comprises a capsule containing at least one active material, said capsule comprising a female piece and a plug interpenetrating said female piece and being disengageable from said female piece, said plug being formed from a water-swellable material which swells so as to disengage from said female piece upon exposure to an aqueous medium, said plug disengaging from said female piece after a time delay of at least about half an hour after exposure to said aqueous medium, said female piece being constructed so as to be impermeable to the passage of water, said active material being selected from the group consisting of medical, veterinary, horticultural and agricultural materials.

5,342,625

PHARMACEUTICAL COMPOSITIONS COMPRISING CYCLOSPORINS

Birgit Hauer, Lahr; Armin Meinzer, Freiburg/Munzingen; Ulrich Posanski, Freiburg, all of Fed. Rep. of Germany, and Friedrich Richter, Schönbühl-Urtenen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 680,211, Apr. 4, 1991, abandoned, which is a continuation of Ser. No. 406,656, Sep. 13, 1989, abandoned. This application Dec. 15, 1992, Ser. No. 990,734
Claims priority, application United Kingdom, Sep. 16, 1988, 8821754; Feb. 9, 1989, 8902900; Feb. 9, 1989, 8902903
Int. Cl.[5] A61K *9/66, 9/107, 37/02*; C07K *7/64*
U.S. Cl. 424—455 26 Claims

1. A pharmaceutical composition comprising a cyclosporin as active ingredient,
1) a hydrophilic phase component comprising
1.1) a pharmaceutically acceptable di- or partial-ether of the formula

$$R_1—[O—(CH_2)_2]_x—OR_2$$

wherein R_1 is C_{1-5}alkyl or tetrahydrofurfuryl, R_2 is hydrogen, C_{1-5}alkyl or tetrahydrofurfuryl, and X is an integer from 1 to 6, or
1.2) 1,2-propylene glycol;
2) a lipophilic phase component; and
3) a surfactant;
wherein said composition is a microemulsion pre-concentrate, which upon dilution with water to a ratio of 1:1 parts by weight pre-concentrate to water or more of said water, is capable of providing an oil-in-water microemulsion having average particle size of less than about 1,000 Å.

5,342,626

COMPOSITION AND PROCESS FOR GELATIN-FREE SOFT CAPSULES

Philip E. Winston, Jr.; Frank J. Miskiel, and Raymond C. Valli, all of San Diego, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 27, 1993, Ser. No. 53,578
Int. Cl.[5] A61K *9/62*
U.S. Cl. 424—461 5 Claims

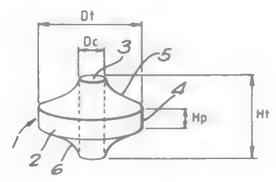
1. A gelatin-free soft capsule comprising from 1 to 10 weight percent of a gum-blend composition which comprises a gellan gum: (carrageenan gum/mannan gum) wherein the gellan gum concentration ranges from about 0.1 to 50 weight percent and the ratio of carrageenan/mannan gum ranges from 3:1 to 1:3 and one or more gelling salts.

5,342,627

CONTROLLED RELEASE DEVICE

Sham K. Chopra; Avinash K. Nangia; David Lee, and Thomas P. Molloy, all of Mississauga, Canada, assignors to Glaxo Canada Inc., Mississauga, Canada

Filed Nov. 12, 1992, Ser. No. 975,079
Claims priority, application United Kingdom, Nov. 13, 1991, 9124106; Nov. 13, 1991, 9124108; Mar. 12, 1992, 9205463
Int. Cl.[5] A61K *9/22, 9/28*
U.S. Cl. 424—473 15 Claims



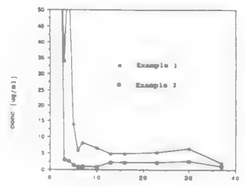
1. A device for the release of at least one active substance into a fluid medium by dissolution of said active substance in said medium, said device comprising a covering, which is impermeable to said active substance and to said fluid or is swellable or slowly soluble in said fluid, having at least one aperture therein and defining a shaped cavity, said cavity being filled by a shaped core comprising said active substance, and wherein:
a) said active substance is uniformly disposed in said core and whereby on exposure of the device to said fluid medium a surface of said core is exposed to said fluid medium via said aperture and dissolution of said surface by said fluid medium causes a change in at least one dimension of the area of said surface whilst the surface area of said exposed surface remains substantially constant over at least 50% of the total dissolution time of said core, said device being axially symmetrical, with said aperture being peripherally disposed so that the exposed surface of active substance core is cylindrical or part of a cylinder in shade; or
b) said active substance is disposed in a matrix of an inert excipient insoluble in said fluid, said device being axially symmetrical, with said aperture being peripherally disposed so that the release surface of core which is exposed through said aperture is cylindrical or part of a cylinder in shape, whereby to allow substantially constant release of said active substance over at least part of the dissolution time.

5,342,628

DRUG DIFFUSION POLYMER SYSTEM AND METHOD

George J. Picha, Independence, Ohio, assignor to Applied Medical Research, Inc., Independence, Ohio

Filed Oct. 11, 1990, Ser. No. 595,965
Int. Cl.[5] A61K *9/20*
U.S. Cl. 424—484 30 Claims



1. A composition for administering a drug continuously to an aqueous body environment during a prolonged period of time at a controlled rate comprising a solid drug and a matrix expander substantially homogeneously dispersed in a polymeric matrix, said matrix expander being substantially insoluble in water but sufficiently water swellable to cause the ingress of water within the polymer matrix for dissolving and diffusing said drug into said aqueous body environment, said polymeric matrix comprising a polymerized or cured continuous phase which is sufficiently liquid impermeable and hydrophobic to assure that drug release is substantially regulated by said matrix expander swelling, said matrix expander being sufficiently water insoluble to provide drug diffusion without dissolution of said matrix expander sufficient to materially affect the rate of drug diffusion, and said drug diffusion along and/or through said matrix expander and into said body environment without forming interconnected voids or porosity in said polymeric matrix.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,629

PRESERVATION OF WOOD CHIPS

Roger A. Brown, Chino Hills; Richard L. Pilling, and Donald C. Young, both of Fullerton, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Jun. 28, 1991, Ser. No. 722,853
Int. Cl.[5] A01N *59/06, 59/02*
U.S. Cl. 424—696 5 Claims

1. A method of preserving cellulosic particles comprising:

forming a solution of a thiocarbonate selected from the group consisting of alkali metal and alkaline earth metal trithiocarbonate and tetrathiocarbonate, and combinations thereof, wherein said solution contains a sulfide that is soluble in said solution and that has the formula A_aS_b wherein A is selected from the group consisting of sulfonium cation, phosphonium cation, alkali metal and alkaline earth metal, and a and b are selected to provide charge balance, and combinations thereof, the concentration of said sulfide being sufficient to increase the stability of said thiocarbonate in said solution; and

applying a sufficient amount of the solution to a volume comprising at least three cubic feet of cellulosic particles to prevent a temperature rise within the volume of the cellulosic particles of more than 25° F. for at least 20 days.

5,342,630

ENVIRONMENTALLY SAFE PESTICIDE COMPOSITIONS

Keith A. Jones, Yardley, Pa., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jul. 1, 1992, Ser. No. 907,050
Int. Cl.[5] A01N *37/02, 37/06, 59/00*
U.S. Cl. 424—717 4 Claims

1. An aqueous pesticide formulation having an ingredient content which comprises (1) potassium bicarbonate; (2) a fatty acid salt ingredient comprising oleic acid, stearic acid and palmitic acid potassium salts; and (3) sorbitol compatibility enhancing ingredient; wherein the content of fatty acid salt ingredient is between about 0.1–30 weight percent, based on the formulation weight; the content of potassium bicarbonate is between about 0.05–1.5 parts by weight per part of fatty acid salt ingredient, and the content of sorbitol compatibility enhancing ingredient is between about 0.5–20 weight percent, based on the weight of fatty acid salt ingredient and potassium bicarbonate; and wherein the formulation exhibits effective insecticidal activity when applied to plant foliage having insect infestation.

5,342,631

WAX-FREE CHEWING GUM INCLUDING SPECIAL OLIGOSACCHARIDE BINDERS

Robert J. Yatka, Orland Park, Ill.; Michael A. Reed, Merrillville, Ind., and Kevin B. Broderick, Berwyn, Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Dec. 29, 1992, Ser. No. 996,914
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 51 Claims

1. A petroleum wax-free chewing gum, comprising:

a petroleum wax-free gum base,

water soluble chewing gum ingredients, and

about 5–90% by weight of the chewing gum, of a noncariogenic oligosaccharide based binder system which includes at least about 35% of at least one noncariogenic oligosaccharide by weight of the binder system;

wherein the binder system cuases the chewing gum to at least retain the chew characteristics of a chewing gum having wax.

5,342,632

TREATMENT OF COCOA BEANS FOR IMPROVING FERMENTATION

Ulrich Bangerter, Singapore, Singapore; Beng H. Beh, Banting Selangor, Malaysia; Alfred B. Callis, Norwich, Great Britain, and Ian J. Pilkington, Banting Selangor, Malaysia, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 646,142, Jan. 25, 1991, abandoned. This application Oct. 15, 1993, Ser. No. 138,614
Claims priority, application European Pat. Off., Feb. 12, 1990, [illegible]
Int. Cl.[5] A23G *1/02*
U.S. Cl. 426—45 17 Claims

1. A process for treating cocoa beans comprising passing fresh cocoa beans dynamically through a depulper apparatus for removing and separating a portion of the pulp content of the fresh beans from the fresh beans in an amount of from 10% to 30% by weight based upon the weight of the fresh beans to provide partially depulped beans, drying the partially depulped beans to obtain partially dried depulped beans having a weight which is from 50% to 75% by weight of the weight of the fresh beans and then fermenting the partially dried depulped beans.

5,342,633

PROCESS FOR THE PRODUCTION OF EGG YOLK WITH REDUCED CHOLESTEROL CONTENT

Jan Cully, Garching, and Heinz-Rüdiger Vollbrecht, Altenmarkt, both of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Continuation of Ser. No. 755,489, Sep. 5, 1991, abandoned. This application Sep. 13, 1993, Ser. No. 120,309
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1990, 4029287
Int. Cl.[5] A23J *3/00;* A23L *1/32*
U.S. Cl. 426—47 28 Claims

1. In the method of reducing the cholesterol content of egg yolk, wherein the egg yolk is admixed with water whereby the egg yolk emulsion separates into a liquid plasma phase and a solid granula phase, the plasma phase is separated from the granula phase, cholesterol and cholesterol esters contained in the liquid plasma phase are selectively complexed with β-cyclodextrin, the complexed β-cyclodextrin is separated from the liquid plasma phase, the water is removed from the liquid plasma phase, and residual β-cyclodextrin present in the plasma phase is enzymatically decomposed, the improvement which comprises recovering the β-cyclodextrin by treatment of the complexed β-cyclodextrin with water, with an alcohol or with a mixture of water and an alcohol, recombining the solid granula phase with the treated liquid plasma phase and recycling the recovered β-cyclodextrin into the process for further selectively complexing cholesterol and cholesterol esters contained in the liquid plasma phase.

5,342,634

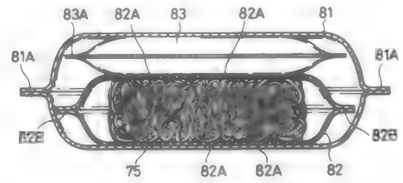
ENCASED INSTANTLY COOKABLE PASTA

Susumu Murata, Takatsuki; Masako Sano, Osaka; Yasuo Takeuchi, Tokyo; Masayuki Fujihara, Gunma; Hisahiko Yokoo, Takasaki; Kenjiro Nakanishi; Tetsuo Miura, both of Takatsuki, and Yoshio Shimizu, Gunma, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Continuation of Ser. No. 722,611, Jun. 26, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,302
Claims priority, application Japan, Jul. 3, 1990, 2-71359
Int. Cl.[5] A23L *1/16. 1/162;* B65D *81/34*
U.S. Cl. 426—113 6 Claims

1. Encased instantly cookable pasta, comprising:

instantly cookable pasta strips of a predetermined shape formed by shaping and drying a mixture containing wheat flour as a major component said pasta formed of a dough mixture including a mixture of a steam cooked first dough portion and a non-steamed uncooked second dough portion as ingredients in which the steam cooked first dough portion of the dough mixture is steam cooked prior to mixing with said non-steamed uncooked second dough portion and prior to formation of said mixture into said predetermined shape, and wherein said steam cooked first dough portion is 5–90% of said dough mixture, with the remainder of the dough mixture being the non-steamed uncooked second dough portion, wherein the instantly cookable pasta strips are formed by first preparing raw dough of a starting mixture containing wheat flour as a major component and having a predetermined water content, dividing the raw dough of the starting mixture into the first dough portion which is to be the steam cooked portion and which is 5–90% of the dough mixture, and with the remainder of the starting mixture constituting the second dough portion as the non-steamed uncooked second dough portion, preliminarily steam-cooking the first dough portion, mixing the steam-cooked first dough portion with the non-steamed uncooked second dough portion, forming the resulting mixture into raw pasta strips of the predetermined shape, subjecting the raw pasta strips to a primary steam-cooking treatment, subjecting the primarily cooked pasta strips to a secondary steam-cooking treatment, and drying the secondarily cooked pasta strips, and further wherein forming of the instantly cookable pasta strips includes loosely separating the individual pasta strips from each other at a point between one of: (a) the primary and secondary steam-cooking treatments, and (b) the secondary steam-cooking treatment and drying step; and



a casing of a bag-like shape enshrouding said pasta strips and formed of a heat-resistant and water-permeable material.

5,342,635

PUFFED EDIBLE FOAMS AND HIGH INTENSITY MICROWAVE METHOD OF PREPARATION

Edward C. Schwab, New Brighton; Kristin L. Thomas, Rosemount; George E. Brown, Edina, and Terry R. Harrington, Albertville, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed May 12, 1993, Ser. No. 60,782
Int. Cl.[5] A23L *1/00;* H05B *6/00*
U.S. Cl. 426—241 40 Claims

1. A process for providing a puffed edible foam, comprising the steps of:

A. providing a quantity of an homogeneous edible foam comprising:

1. about 5% to 70% by weight (dry basis) of the foam of a first flavor characterizing ingredient;

2. sufficient amounts of an undenatured proteinaceous whipping agent sufficient to provide the foam to a density of 0.1 to 0.6 g/cc (dry weight basis) having a heat setting temperature;

3. about 0% to 55% by weight (dry basis) of the composition of a nutritive carbohydrate sweetening agent; and

4. about 5% to 35% by weight moisture;

B. heating the foam with a intensity microwave field having a field strength of 110 V/cm for a sufficient time to reach a temperature above the heat setting temperature of the whipping agent to form a heat set foam; and

C. drying the heat set foam to a moisture content of about 1% to 6% to form a puffed dried edible foam.

5,342,636

PROCESS FOR MODIFYING A FIBROUS BULKING AGENT

Amarjit S. Bakshi, 5520 De La Croix Way, Yorba Linda, Calif. 92687, and Lakbo L. Khatri, 709 Deer Skin Lane, Walnut, Calif. 91789

Filed May 5, 1992, Ser. No. 878,769
Int. Cl.[5] A23P *1/-08;* A23L *1/48*
U.S. Cl. 426—302 8 Claims

1. A process for reducing the oil binding capacity of a solid fibrous bulking agent, comprising the steps of:

combining the bulking agent and an additive consisting essentially of at least one water soluble sugar and at least one water soluble protein in water to form a mixture;

agitating the mixture to form a slurry, whereby the bulking agent is coated with the additive;

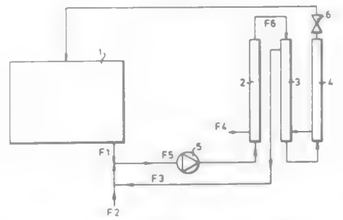
drying the slurry to yield a modified bulking agent having a reduced oil binding capacity.

5,342,637

METHOD FOR CONDITIONING THE ATMOSPHERE IN A STORAGE CHAMBER FOR ORGANIC HARVESTED PRODUCE

Arnoldus P. M. Kusters, Etten Leur, and Johannes M. De Bont, Oosterhout, both of Netherlands, assignors to Delair Droogtechniek en Luchtbehandeling B.V., An Etten Leur, Netherlands

Filed Jan. 8, 1993, Ser. No. 2,403
Claims priority, application Netherlands, Jan. 10, 1992, 9200039
Int. Cl.[5] A23B *7/00*
U.S. Cl. 426—312 8 Claims



1. A method for conditioning the atmosphere in a storage chamber containing organic harvested produce comprising the steps of:

(a) storing organic harvested produce in a storage chamber under a first atmospheric condition;

(b) drawing an atmospheric stream from the storage chamber;

(c) drawing an air stream;

(d) mixing said atmospheric stream and said air stream to provide a mixed stream;

(e) feeding said mixed stream to a first separation module;

(f) separating said mixed stream in said first separation module into a first permeate stream and a first retentate stream;

(g) feeding said first retentate stream to a second separation module;

(h) separating said first retentate stream in said second separation module into a second permeate stream and a second retentate stream;

(i) feeding said second retentate stream to a third separation module;

(j) separating said second retentate stream into a third permeate and a third retentate stream; and

VOL 1165 ISS 5 AG 30 1994 UMI

(k) passing said third retentate stream to said storage chamber so as to modify the first atmospheric condition.

5,342,638

PROCESS FOR TRANSFERRING COFFEE AROMAS TO AN OIL

Peter Koch, Orbe, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Jul. 14, 1992, Ser. No. 913,134

Claims priority, application Switzerland, Aug. 7, 1991, 2340/91

Int. Cl.[5] A23F *5/48*

U.S. Cl. 426—386 **7 Claims**

1. A process for transferring coffee aromas to an oil comprising:

transporting a condensation product frost of carbon dioxide charged with coffee aromas and water into a heat-regulated enclosure having a lower part for containing an oil bath and having an upper part for containing the frost and for venting sublimed carbon dioxide;

regulating a temperature of the oil bath at a temperature above a freezing point of the oil and regulating a temperature in the enclosure above the oil bath so that during introduction of the frost into the enclosure, a layer of frost is formed and maintained above the bath, carbon dioxide of the frost is sublimated and water of the frost is melted;

venting carbon dioxide sublimated from the frost from the enclosure upper part, removing aroma- and water-laden oil bath from the enclosure lower part, and adding oil to the bath to replace the oil removed from the enclosure, while introducing frost into the enclosure and regulating the temperatures; and

separating the bath removed from the enclosure to obtain separated aroma-laden oil and aroma-laden water components.

5,342,639

MAKING DRY COFFEE AROMA GAS WITH IMPROVED AROMA CHARACTERISTICS

Alice M. Cormaci, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 18, 1993, Ser. No. 154,902

Int. Cl.[5] A23F *5/46*

U.S. Cl. 426—386 **12 Claims**

1. A process for making dry coffee aroma gas with improved aroma characteristics, which process comprises the steps of:

(a) passing a stream of moisture-containing coffee aroma gas through a desiccant bed of calcium sulfate granules, wherein said granules initially contain less than about 0.5% adsorbed moisture by dry weight of said granules;

(b) discontinuing the stream of moisture-containing coffee aroma gas after the adsorbed moisture content of the calcium sulfate granules increases from less than about 0.5% to at least about 4.3% by dry weight of said granules, but before the moisture content of the stream of desiccant-treated coffee aroma gas exiting the desiccant bed exceeds about 1000 ppm; and

(c) collecting and combining all of the desiccant-treated coffee aroma gas from step (a) which exits the desiccant bed until the stream of moisture-containing coffee aroma gas is discontinued in step (b);

wherein the collected and combined desiccant-treated coffee aroma gas contains between about 10 and about 200 ppm of moisture and does not exhibit an unbalanced and excessively musty aroma.

5. A process for making dry aromatized coffee oil with improved aroma characteristics, which process comprises the steps of:

a) passing a stream of moisture-containing coffee aroma gas through a desiccant bed of calcium sulfate granules, wherein said granules initially contain less than about 0.5% adsorbed moisture by dry weight of said granules;

b) discontinuing the stream of moisture-containing coffee aroma gas after the adsorbed moisture content of the calcium sulfate granules increases from less than about 0.5% to at least about 4.3% by dry weight of said granules, but before the moisture content of the stream of desiccant-treated coffee aroma gas exiting the desiccant bed exceeds about 1000 ppm; and

c) condensing and combining all of the desiccant-treated coffee aroma gas exiting the desiccant bed with cryofied particles of an aroma carrier oil to form a cryofied particle mass containing not more than about 0.1% by weight of moisture and comprising condensed, carbon dioxide-containing, desiccant-treated, coffee aroma gas and cryofied aroma carrier oil, the cryofied particle mass being maintained at a temperature sufficiently low to maintain the carbon dioxide-containing, desiccant-treated, coffee aroma gas in condensed form; then

d) equilibrating the cryofied particle mass of step (c) by subjecting said cryofied particle mass to a surrounding temperature of between about −109° and about 100° F. until the temperature within the particle mass increases to between about −109° and about −105° F., to thereby remove substantially all of the carbon dioxide from said cryofied particle mass; and then

e) melting the resulting carbon dioxide-free, cryofied particle mass of step (d) by subjecting said particle mass to a temperature of between about 60° and about 110° F. for a period of time sufficient to liquefy said particle mass;

wherein the liquefied particle mass is an aromatized coffee oil containing less than about 0.1% moisture and exhibits no excessively musty aromas.

5,342,640

PROCESS AND APPARATUS FOR PEELING FOOD PRODUCTS SUCH AS FISH, FRUITS OR VEGETABLES

Herve Roussel, Olonne-sur-Mer; Jean-Jacques Hermant, Cholet, and Lionel Dalla-Serra, Heric, all of France, assignors to Protion Societe Anonyme, Angers Cedex, France

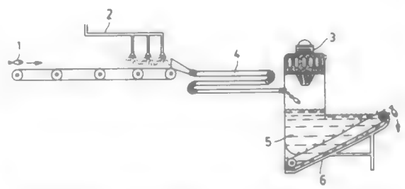
PCT No. PCT/FR91/00754, § 371 Date Mar. 18, 1993, § 102(e) Date Mar. 18, 1993, PCT Pub. No. WO92/05704, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 26, 1991, Ser. No. 30,115

Claims priority, application France, Sep. 28, 1990, 90/12026

Int. Cl.[5] A23L *1/00*; A23N *7/00*

U.S. Cl. 426—479 **10 Claims**



1. Process for peeling food products having a skin and selected from the group consisting of fish, fruits, and vegetables which comprises: subjecting the skin to a superficial treatment, displacing the food products in frictional contact with a rough wall, said rough wall being the internal wall of a conduit forming guide means for the product to be peeled, and generating an airflow by compression or depression within the interior of said conduit, whereby the skin of the food products is peeled.

5,342,641

FOOD ADDITIVE COMPRISING WATER-SOLUBLE HEMICELLULOSE

Kenji Masutake, Kawanishi; Hirokazu Maeda, Ibaraki; Toshimasa Kawamata, Koshigaya; Masatoshi Miyamae, Sakai; Kenji Taguchi, Matsudo; Yoshiaki Yonemitsu, Osaka; Masahiro Yoshizaki, Toyonaka, and Tomoyuki Toyama, Higashiosaka, all of Japan, assignors to Fuji Oil Co., Ltd. and San-Ei Chemical Industries, Ltd., Japan

Filed Jun. 29, 1992, Ser. No. 905,733

Claims priority, application Japan, Jul. 2, 1991, 3-189197; Jul. 2, 1991, 3-189198; Jul. 2, 1991, 3-189199; Dec. 21, 1991, 3-361565

Int. Cl.[5] A23L *1/0534*

U.S. Cl. 426—549 **12 Claims**

1. A food additive comprising a water soluble hemicellulose wherein the constituent sugar components of the hemicellulose are rhamnose, fucose, arabinose, xylose, galactose, glucose and uronic acid, and an average molecular weight of the hemicellulose is 50,000 to 1,000,000.

5,342,642

PIE OR PASTRY CRUST

Katherine L. Moore, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 495,872, Mar. 19, 1990, abandoned, and a continuation-in-part of Ser. No. 715,945, Jun. 14, 1991, Pat. No. 5,221,546. This application May 11, 1992, Ser. No. 880,798

Int. Cl.[5] A21D *13/08*

U.S. Cl. 426—556 **11 Claims**

1. A pie crust product comprising from about 20 to about 140 layers, said layers comprising two phases, a first phase comprising:

(1) from about 20% to about 45% shortening;

(2) from about 55% to about 80% ungelatinized starch;

(3) from 0% to about 5% polyol; and

a second phase comprising:

(1) from about 20% to about 80% flour having from about 3% to 14% protein;

(2) from about 10% to about 30% water;

(3) from about 10% to about 30% oil mixed with from about 1% to about 5% hardstock;

(4) from about 0.5% to about 2% salt; and

(5) from 0% to about 5% polyol wherein said product is from about 0.25 cm to about 0.5 cm thick and wherein said product has discrete regions of first phase product and discrete regions of developed gluten; said product when baked is characterized by an Instron curve having at least 3 distinct peaks and an area of least 30 gm/cm.

5,342,643

PROTEIN/ALKYLENE GLYCOL ALGINATE COMPLEX AS AN EMULSIFIER AND STABILIZER

Peter A. Wolf, Valhalla, N.Y.; Kenneth Clare, deceased, late of Vista, Calif. by Jean Clare, executor , and Kun P. Kuo, Katonah, N.Y., assignors to PepsiCo Inc., Purchase, N.Y.

Filed Oct. 16, 1991, Ser. No. 777,118

Int. Cl.[5] A23L *2/00*

U.S. Cl. 426—590 **11 Claims**

1. A method for emulsifying and stabilizing beverage produces comprising;

(a) mixing a complex of protein and alkylene glycol alginate with a predetermined amount of flavor oil to form a flavored solution;

(b) acidifying said flavored solution to cause the formation of a pre-emulsion bipolymeric complex;

(c) homogenizing said pre-emulsion complex to form a stable oil-in-water emulsion;

(d) adding said stable oil-in-water emulsion to a syrup base to form a flavoring complex; and

(e) adding said flavoring complex to a finished beverage product.

5,342,644

PRODUCTION OF TEMPERED CONFECTIONERY

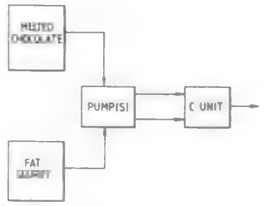
Frederick W. Cain, Voorburg, Netherlands; Dryck J. Cebula, Bedford, and Neil G. Hargreaves, Billericay, both of Great Britain, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Jul. 1, 1992, Ser. No. 907,093

Claims priority, application European Pat. Off., Jul. 3, 1991, 91306028.1

Int. Cl.[5] A23G *1/00*

U.S. Cl. 426—660 **10 Claims**



1. Process for the production of tempered confectionery by external addition of seeds, the process comprising continuously adding a slurry of fat seeds to a liquid confectionery composition, wherein a throughput W of the fat seed slurry is continuously mixed with a liquid confectionery composition to attain a mixture, and continuously working the mixture to attain the tempered confectionery,

in which process the concentration of seeds (F) and the concentration of fat (f_2), both in the final product, are controlled by the fat level (f_1) in the starting confectionery composition and the concentration of seeds (S) in the fat slurry in such a way that W; F; f_1; W_1; f_2; W_2 and S behave according to the following equations:

$$F = \frac{S(f_2 W_2 - f_1 W_1)}{f_2 W_2} \quad \text{and} \quad W = (f_2 W_2 - f_1 W_1)$$

wherein:

$0.005 < F < 0.20$

$f_1 > 0.26$

$f_2 > 0.70$

$0.01 < S < 0.60$

wherein:

f_1 = weight fraction of fat in starting material;

W_1 = throughput of starting material (weight units/time unit);

f_2 = weight fraction of fat in final product;

W_2 = throughput of final product (weight units/time unit);

S = weight fraction of seeds in the slurry;

F = weight fraction of seeds in fat phase of final product;

W = throughput of slurry added (weight units/time unit).

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,645

METAL COMPLEX/CYANOACRYLATE COMPOSITIONS USEFUL IN LATENT FINGERPRINT DEVELOPMENT

John F. Eisele, Lakeland; Terrance P. Smith, Woodbury, and Michael C. Palazzotto, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 15, 1993, Ser. No. 121,699
Int. Cl.[5] A61B *5/117*
U.S. Cl. 42.7—1 29 Claims

1. A cartridge comprising a housing with a chamber therein and an outlet from said chamber, said chamber containing a thermally stable porous or fibrous support impregnated with both:

a) a cyanoacrylate ester, and

b) a volatile, emissive lanthanide or actinide metal-complex having β-diketone ligands.

5,342,646

METHOD FOR MAKING CARRIER SYSTEMS FOR BIOLOGICALLY ACTIVE MATERIALS

Wolfgang Kleese; Dieter Kraemer, both of Mainz; Hans-Ulrich Petereit, Darmstadt; Klaus Lehmann, Rossdorf, and Werner Siol, Darmstadt-Eberstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 745,155, Aug. 15, 1991, abandoned.
This application Nov. 19, 1992, Ser. No. 979,425
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1990, 4026992
Int. Cl.[5] B05D *7/00, 1/12;* A61K *9/16*
U.S. Cl. 427—2.1 21 Claims

1. A method for making a carrier for the covalent bonding thereto of a biologically active material, which method comprises coating a solid support with a dispersion of a film-forming polymer and with another dispersion of a non-film-forming polymer, at least one of the polymers including a monomer having at least one functional group capable of covalently bonding with the biologically active material.

5,342,647

SPRAYED ADHESIVE DIAPER CONSTRUCTION

Timothy R. Heindel, Neenah, Wis.; Michael J. Garvey, Cordova, Tenn.; Daniel W. Dick, Paris, Tex.; Richard F. Keller, Hortonville, Wis.; Mary P. Jordan, Neenah, Wis., and Alan F. Schleinz, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

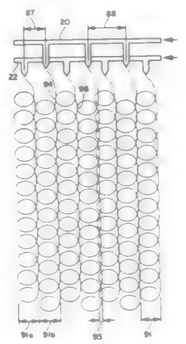
Division of Ser. No. 207,682, Jun. 16, 1988, Pat. No. 4,949,668.
This application Jul. 2, 1990, Ser. No. 532,309
Int. Cl.[5] B05D *1/02*
U.S. Cl. 427—2.31 29 Claims

1. A method for depositing a pattern of material onto a substrate, comprising:

a. forming a first stream of a selected material through a first nozzle and at least a second stream of a selected material through a second nozzle;

b. directing a plurality of gas streams, which have selected velocities and are arranged to entrain said material streams to impart a swirling motion to each of the material streams as it moves toward said substrate; p1 c. moving said substrate relative to said supplying means along a selected machine direction;

d. controlling said streams of material and said gas streams to direct each of said material streams in a selected path toward said substrate and deposit said material thereon to form adjacent semi-cycloidal patterns of said material on said substrate, thereby regulating a selected cross-directional positioning of one or more of said semi-cycloidal patterns with a variance of not more than about plus or



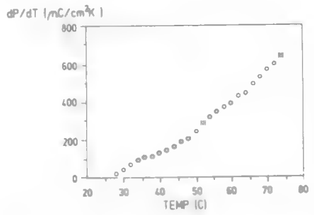
minus 0.125 inch relative to said selected postioning along said cross-direction.

5,342,648

METHOD FOR FORMING AMORPHOUS FERROELECTRIC MATERIALS

John D. MacKenzie; Ren Xu, both of Los Angeles, and Yuhuan Xu, Santa Monica, all of Calif., assignors to The Regents of the Universty of California, Oakland, Calif.

Continuation of Ser. No. 694,140, May 1, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 949,744
Int. Cl.[5] B05D *5/12;* C04B *35/46*
U.S. Cl. 427—126.3 14 Claims



1. A method for forming an amorphous material having reversible spontaneous electric polarization, the method comprising the steps of:

preparing an anhydrous solution containing at least one precursor compound for the material;

maintaining the anhydrous solution free of water until the solution is exposed to a substrate;

exposing the solution to a substrate in the presence of water vapor and thereby simultaneously depositing a film on the substrate, hydrolyzing the precursor compound, polycondensing the hydrolyzed precursor compound and removing solvent from the anhydrous solution to thereby form condensed amorphous solid material; and

heating the condensed amorphous material at a sufficient temperature for stabilizing its amorphous structure and an insufficient temperature for crystallization.

5,342,649

COATED BASE PAPER FOR USE IN THE MANUFACTURE OF LOW HEAT THERMAL PRINTING PAPER

Steven D. Sarokin, Green Bay, Wis., assignor to International Paper Company, Purchase, N.Y.

Filed Jan. 15, 1993, Ser. No. 5,029
Int. Cl.[5] B41M *3/12, 5/40*
U.S. Cl. 427—150 11 Claims

1. A method of manufacturing a thermal printing paper useful in relatively low heat thermal printing operations, consisting essentially of the steps of:

providing a paper sheet having opposite essentially flat parallel surfaces,

applying to a surface of the paper sheet a base coating of substantially uniform thickness comprising hollow gas-containing spherical particles, a filler of pigment-providing clay or clay component particles, and a binder, said base coating being applied to the surface of the paper sheet in an amount sufficient to provide a dry coating weight in the range of about 2 to 10 lbs per 3000 ft^2,

calendaring the coated paper at a nip pressure of less than about 1200 pli to increase the smoothness of the base coating to from about 0.6 to about 1.6 microns as measured by the Parker Print Surf technique at 10 KgF using a neoprene backing, and

applying a thermosensitive recording layer on the base coating after the coated paper is calendared to provide a composite consisting essentially of a paper sheet with the base coating between the paper sheet and the thermosensitive recording layer, wherein the resulting composite, upon the application of heat to discrete areas of the thermosensitive recording layer by a low energy thermal printer, develops a visible image in the discrete areas having improved image density as compared to similar coated paper which does not contain the spherical particles.

5,342,650

HEAT RESISTANT SILICATE COATED FABRICS FOR INSULATING DRIVER AGAINST HIGH HEAT SOURCES

Howard J. Daly, III, Pewaukee, Wis., assignor to D & H Heat Technology, Olmsted Falls, Ohio

Filed Nov. 19, 1992, Ser. No. 978,821
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—178 8 Claims

1. A process for forming a heat insulation barrier fabric composite, the process steps comprising:

supplying inorganic fibers woven together to form a fabric sheet;

applying a silicate coating layer to the woven fabric, where the silicate coating layer comprises a silicate powder and polysiloxane polymer and contains on a weight basis between about 15% and 85% of said polysiloxane polymer;

partially heat curing the applied silicate coating layer at temperatures for time sufficient and with pressure sufficient that the applied silicate coating penetrates the surface of the woven fabric to provide a partially cured composite of woven fabric and partially cured silicate coating;

decompressing the partially cured composite to loosen the woven fabric fibers and substantially eliminate compression of the fabric fibers;

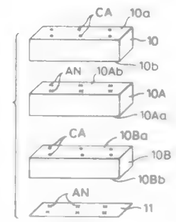
heat curing the partially cured woven fabric composite at temperatures for time sufficient to completely cure the woven fabric composite and provide a non-compressed heat insulating barrier fabric composite.

5,342,651

METHOD FOR MANUFACTURING MODIFIED WOOD

Hiroaki Usui; Shozo Hirao; Satoru Konishi; Hiroyuki Ishikawa; Kenji Oonisi, and Arihiro Adachi, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 797,068, Nov. 25, 1991, abandoned.
This application Sep. 28, 1993, Ser. No. 127,376
Claims priority, application Japan, Nov. 27, 1990, 3-213989
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—209 11 Claims



1. A method for impregnating wood, comprising the steps of:

(a) providing a plurality of wood pieces containing a solvent in which are soluble two compounds which chemically react to form an insoluble reaction product;

(b) stacking the wood pieces and providing a layer of one or the other of said two compounds between each of the stacked wood pieces in alternating fashion, such that one side of each wood piece is contacted with one of said compounds and the other side of each wood piece is contacted with the other of said compounds;

(c) reacting the two compounds within the wood to form the insoluble reaction product; and

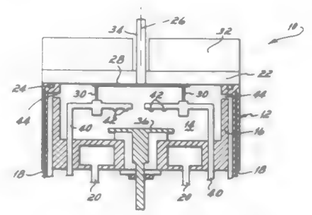
(d) curing the wood pieces to fix the insoluble reaction product therein.

5,342,652

METHOD OF NUCLEATING TUNGSTEN ON TITANIUM NITRIDE BY CVD WITHOUT SILANE

Robert F. Foster, Weston, Mass., and Damodaran Srinivas, Tempe, Ariz., assignors to Materials Research Corporation, Orangeburg, N.Y.

Filed Jun. 15, 1992, Ser. No. 898,565
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—253 20 Claims



1. A method of nucleating tungsten in a tungsten CVD process performed in a vacuum chamber without the use of silane to deposit elemental tungsten onto a substrate, the method comprising the steps of:

injecting hydrogen into the chamber and bringing the chamber to a pressure and temperature sufficient to produce a hydrogen dissociation reaction at the substrate before the introduction of WF_6 into the chamber; and

then injecting WF_6 into the chamber in a ratio with H_2 and

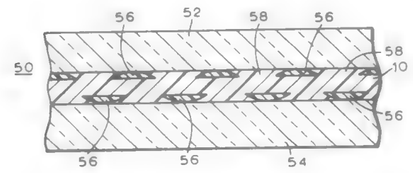
VOL 1165 ISS 5 AG 30 1994 UMI

at a pressure and temperature to produce a reduction reaction resulting in tungsten deposition onto the substrate.

5,342,653
METHOD OF PRODUCING POLYVINYL BUTYRAL SHEET HAVING A DESIRED LEVEL OF GLASS ADHESION

Robert H. M. Simon, and Peter H. Farmer, both of Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

PCT No. PCT/US90/07566, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993
PCT Filed Dec. 20, 1990, Ser. No. 70,370
Int. Cl.[5] B05D *5/08*
U.S. Cl. 427—256 **3 Claims**



1. A method of producing plasticized partial polyvinyl butyral sheet having a desired level of potential adhesion to glass which comprises:
i) providing partial polyvinyl butyral resin having a high affinity for adhesion to glass when in sheet form under conditions of temperature and pressure sufficient to laminate such sheet to glass;
ii) mixing the resin with plasticizer to form a heat-shapable formulation;
iii) extruding the formulation to form a sheet; and
iv) applying a multiplicity of spaced anti-adhesion projections to the surface of the sheet to an extent effective to reduce the high adhesion of the sheet to glass between projections.

5,342,654
SURFACE ROUGHENING OF RESIN MOLDED ARTICLES FOR METALLIZING

Tomoyoshi Koizumi, and Yukio Ichikawa, both of Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,467
Claims priority, application Japan, Jun. 19, 1991, 3-147288
Int. Cl.[5] B05D *3/10*
U.S. Cl. 427—307 **3 Claims**

1. A method for roughening the surface of a resin molded article to make it susceptible to metallizing, which comprises contacting a resin molded article, wherein at least the surface of the article to be toughened comprises 100 parts by weight of a polyphenylene sulfide resin and from 30 to 100 parts by weight of a polyphenylene sulfide ketone resin, with a solvent capable of dissolving a polyphenylene sulfide ketone resin more than a polyphenylene sulfide resin.

5,342,655
SOLID FILM LUBRICANT

Kent G. Roller, Boulder; Bradley A. Scott, Louisville, and Timothy C. LeBlanc, Niwot, all of Colo., assignors to Ball Corporation, Ind.

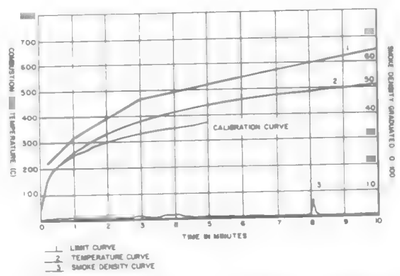
Filed Feb. 17, 1993, Ser. No. 18,726
Int. Cl.[5] B05D *3/02, 1/00;* **C10M** *105/76;* **F01M** *1/00*
U.S. Cl. 427—372.2 **14 Claims**

1. A method for lubricating first and second interfaceable surfaces, comprising the steps of:
selecting a binder comprising a copolymer of vinyl chloride and chlorotrifluoroethylene;
incorporating said binder into a solid film lubricant;
applying said solid film lubricant to at least said first surface, wherein when said first and second surfaces are interfacing, said lubricant and said second surface have interlocking asperities and cavities; and
moving said first surface relative to said second surface, wherein said asperities of said solid film lubricant bend to provide an acceptable wear life.

5,342,656
FLAME RETARDING AND SMOKE RETARDING MIXTURE

Arve Valso, Andreasflata 3, N-7300 Orkanger, Norway

PCT No. PCT/NO90/00106, § 371 Date Jan. 2, 1992, § 102(e) Date Jan. 2, 1992, PCT Pub. No. WO91/00326, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 25, 1990, Ser. No. 855,011
Claims priority, application Norway, Jul. 3, 1989, 892737
Int. Cl.[5] B32B *27/00;* **C09K** *21/02, 21/10*
U.S. Cl. 427—394 **5 Claims**

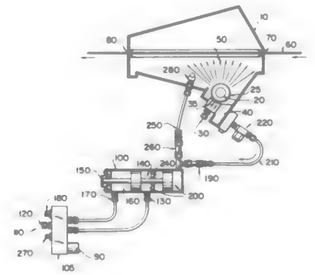


1. A method of applying a flame and smoke retarding aqueous solution consisting essentially of: 70–96 weight % ammonium sulphate and ammonium phosphates wherein the ammonium phosphates are selected from the group consisting of monoammonium dihydrogen phosphate and diammonium hydrogen phosphate, the weight % of ammonium phosphates is greater than the weight % of ammonium sulphate, 1–20 weight % $NaHCO_3$, 1–10 weight % EDTA, and water in an amount resulting in an aqueous solution comprising 11–45 weight % solids on the basis of the total weight of the solution, the method comprising the steps of impregnating a water absorbent porous material, such as wood, rayon, cotton, wool and similar textile materials in the solution to obtain saturation and then drying the impregnated material to remove the water so as to leave the components of the flame and smoke retarding composition within the materials to reduce their ability to support a flame and produce smoke when a heat source is applied.

5,342,657
APPARATUS AND METHOD FOR APPLYING FLUID TO A MOVING CONTINUOUS WEB

Joseph F. Budjinski, Quinton; Steven M. Campbell, Richmond, and E. Theodore Ward, Hampton, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,616
Int. Cl.[5] A24D *3/00*
U.S. Cl. 427—424 **7 Claims**



1. An apparatus for applying a fluid to a moving continuous web comprising:
a spray chamber;
a spray means mounted within said spray chamber, said spray means comprising an applicator brush, said applicator brush comprising a plurality of bristles;
a fluid reservoir adjacent to said spray means within said spray chamber;
a first conduit;
a storage chamber connected to said fluid reservoir by said first conduit, said first conduit being capable of conveying fluid from said fluid reservoir to said storage chamber, said storage chamber sized to receive an amount of fluid from said fluid reservoir such that the level of fluid remaining in said fluid reservoir is below the bristles of said applicator brush;
a second conduit for conveying fluid from said storage chamber to said spray chamber; and
a switch system means for drawing fluid from said fluid reservoir into said storage chamber through said first conduit when said applicator brush is stopped and for forcing substantially all fluid in said storage chamber from said storage chamber, through said second conduit and to said fluid reservoir when said applicator brush is started.

5,342,658
ABRASION RESISTANT SILICONE COATING COMPOSITION

Young J. Hong; Jin B. Kim, and Jong K. Yeo, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

Filed Dec. 28, 1992, Ser. No. 997,207
Claims priority, application Rep. of Korea, Dec. 30, 1991, 91-25497
Int. Cl.[5] C08G *77/08, 77/16;* **C08J** *3/28*
U.S. Cl. 427—515 **11 Claims**

1. An ultraviolet light curable coating composition, which comprises:
(A) an aqueous-alcoholic base resin dispersion containing, based on the weight of the total solids present in the base resin dispersion,
(a) 5 to 75% by weight of a colloidal silica and
(b) 25 to 95% by weight of a partial condensate of a silanol of formula:

$$R\,Si(OH)_3$$

wherein
R is a C_{1-6} alkyl, C_{6-20} aryl or hydroxy group; and
(B) per 100 parts by weight of the toal solids of the dispersion, 0.001 to 0.02 part by weight of an ultraviolet light curable catalyst of formula:

$$Ar_3\,S^+MX_n^-$$

wherein Ar_3 is a triphenyl, tri(4-methoxy)phenyl, tri(3,5-dimethyl-4-hydroxyphenyl), diphenyl-2,5-dimethylphenyl or tri(4-methyl) phenyl group; and MX_n^- is a metallic halide anion wherein the pH of said composition ranges from 1.5 to 3.

5,342,659
METHOD OF GRAFTING POLYMERIZABLE MONOMERS ONTO SUBSTRATES

Carl Horowitz, Brooklyn; Mohan Sanduja, Flushing, and Paulose Thottathil, New Hyde Park, all of N.Y., assignors to Polymer Research Corp. of America, Brooklyn, N.Y.

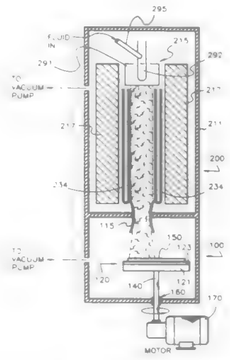
Continuation-in-part of Ser. No. 780,102, Oct. 21, 1991, Pat. No. 5,232,748. This application Mar. 12, 1993, Ser. No. 31,118
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—553 **17 Claims**

1. A method of grafting a polymer onto a nonmetallic substrate which comprises:
directly contacting a non-metallic substrate without pretreatment or pretreated only with an alkali metal hydroxide with a polymerizable composition including monomers or prepolymers and a catalyst and being adapted to be activated to polymerization into a resulting polymer; and
curing the polymerizable composition by applying microwave, laser or ultrasonic energy to cause polymerization of the monomers or prepolymers and same onto the substrate thus binding the resulting polymer intimately to the substrate.

5,342,660
METHOD FOR PLASMA JET DEPOSITION

Gordon L. Cann, and Cecil B. Shepard, Jr., both of Laguna Beach, Calif., assignors to Celestech, Inc., Irvine, Calif.

Filed May 10, 1991, Ser. No. 698,538
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—577 **16 Claims**



1. A method for depositing synthetic diamond, comprising the steps of:
producing a plasma beam containing a carbonaceous gas and hydrogen gas;
providing a substrate having a surface in the path of said

VOL 1165 ISS 5 AG 30 1994 UMI

beam, the area of said surface being larger than the cross-sectional area of said beam impinging on said surface; and spinning the substrate with respect to said beam to control temperature variation on said surface as the beam deposits said synthetic diamond on said surface.

5,342,661

FOLDING ARTIFICIAL CHRISTMAS TREE

Donald R. Wilcox, II, Box 722, Clendenin, W. Va. 25045

Filed Jul. 20, 1992, Ser. No. 915,328

Int. Cl.[5] A47G *33/06*

U.S. Cl. 428—18 **5 Claims**



1. A folding artificial Christmas tree, comprising,

a base tube and an extension tube, the base tube having a base tube lower end and a base tube upper end, the extension tube including an extension tube lower end and an extension tube upper end, with the base tube upper end slidably receiving the extension tube lower end therewithin in a coaxially aligned relationship, and a support stand, the support stand having a cylindrical collar, and the cylindrical collar including a plurality of leg members extending downwardly relative to the cylindrical collar and projecting exteriorly of the cylindrical collar, and the base tube lower end received within the cylindrical collar, and

the extension tube upper end having an upper end opening and a central rod, the central rod mounted in the upper end opening and being coaxially aligned with the base tube and the extension tube, with the central rod having a matrix of central rod bristles mounted coextensively thereabout, and

a plurality of bracket pairs, with at least one bracket pair mounted about the base tube, and at least one bracket pair mounted about the extension tube, wherein each bracket pair includes a first bracket member and a second bracket member, and a plurality of branch rods, with one branch rod of said plurality of branch rods pivotally mounted to each said first bracket member and said second bracket member, and

the first bracket member and the second bracket member are oriented in a mirror image configuration relative to one another, and

the base tube includes a row of base tube apertures and a first lock pin directed through one of said base tube apertures above the support collar, and the extension tube includes a row of extension tube apertures oriented parallel to the base tube apertures, and a second lock pin directed through one of said extension tube apertures above the base tube to position the extension tube relative to the base tube.

5,342,662

MULTILAYERED CONTAINER

Akimasa Aoyama; Tetsuya Katayama; Takeshi Moritani; Junnosuke Yamauchi, and Satoshi Hirofuji, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 486,560, Feb. 27, 1990, Pat. No. 5,194,474.

This application Nov. 16, 1992, Ser. No. 977,104

Claims priority, application Japan, Mar. 8, 1989, 1-57581

Int. Cl.[5] B29D *22/00*

U.S. Cl. 428—34.8 **5 Claims**

1. A multilayered container having a layer formed from a composition comprising a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 20 to 80 mol % and a saponification degree of vinyl acetate component of at least 95 mol %, said composition containing 20 to 200 ppm of an alkali metal acetate, as converted to alkali metal, not more than 10 ppm of alkaline earth metals, 30 to 250 ppm of acetic acid, and 5 to 500 ppm as converted to phosphate ion of phosphoric acid or an alkali metal hydrogenphosphate, and having a content ratio of acetic acid/alkali metal acetate of 0.1 to 1 and the flow characteristic that the extrusion rate does not substantially increase for at least 10 hours in the relationship between the heating time and the extrusion rate with a capillary rheometer (Koka Flow Tester) at at least one temperature 10° to 80° C. above the melting point.

5,342,663

PREFORM FOR MAKING A PLASTIC CAN BODY

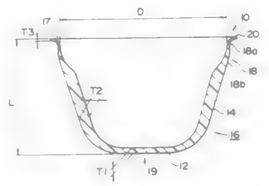
Kazuyuki Yokobayashi, Ueda, Japan, assignor to Nissei ASB Machine Co., Ltd., Nagano, Japan

Filed Oct. 22, 1991, Ser. No. 780,351

Claims priority, application Japan, Oct. 26, 1990, 2-289420

Int. Cl.[5] B65D *23/00*

U.S. Cl. 428—35.7 **2 Claims**



1. A plastic cylindrical preform for making a plastic can body by a biaxial stretch blow molding process, the preform having a vertical length, the preform comprising:

(a) an opening at the top of said preform, a diameter of said opening being larger than the vertical length of said preform;

(b) a body having a bottom wall and a side wall;

(c) a flange extending outwardly to a preset length from said side wall, said flange to be seamed with a lid, said flange having a thickness of one-third or less of the largest thickness of said side wall; and

(d) a shoulder which connects said flange and said side wall, an upper part of said shoulder near said flange having a same thickness as said flange and having a curve of a preset radius, the rest of said shoulder having a gradually reduced thickness toward said upper part, and said upper part to be seamed with the lid.

5,342,664

ALLOYS MADE FROM PARTLY CRYSTALLINE AND AMORPHOUS POLY (ARYL ETHER KETONE) COMPOUNDS

Hans-Otto Drotloff, Frankfurt am Main, and Otto Herrmann-Schönherr, Bensheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/02280, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO92/10542, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 2, 1991, Ser. No. 50,056

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4039924

Int. Cl.[5] C08L *71/10*

U.S. Cl. 428—36.9 **18 Claims**

1. Polymer alloy comprising

a) 60 to 98% by weight of at least one partly crystalline poly(aryl ether ketone) having a intrinsic viscosity of 0.2 to 5.0 dl/g and

b) 40 to 2% by weight of at least one other poly(aryl ether ketone) which is amorphous, has no melting point and only a glass transition temperature, and has a intrinsic viscosity of 0.2 to 3.0 dl/g, the weights being based in each case on the total amounts of components (a) plus (b) in the alloy, the intrinsic viscosity of the partly crystalline poly(aryl ether ketone) being measured in 96% strength sulfuric acid at 25° C. and the intrinsic viscosity of the amorphous poly(aryl ether ketone) being measured in N-methylpyrrolidone at 25° C. if the poly(aryl ether ketone) is soluble in N-methylpyrrolidone or in 96% strength sulfuric acid at 25° C. if the poly(aryl ether ketone) is not soluble in N-methylpyrrolidone.

5,342,665

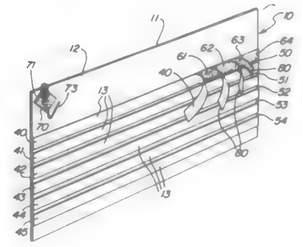
BULLETIN BOARD WITH ADHESIVE ATTACHMENT STRIPS FOR MOUNTING ITEMS THEREON

Daniel S. Krawitz, 3001 Chapel Hill Rd., Orange, Calif. 92667

Filed Sep. 7, 1993, Ser. No. 117,297

Int. Cl.[5] B32B *33/00*

U.S. Cl. 428—40 **12 Claims**



1. A bulletin board for adhesively attaching items thereto in a generally vertical position, comprising:

a.) a flexible support member defining non-tacky front and rear sides;

b.) a plurality of separated longitudinal strips, each strip comprising two or more superimposed tacky element portions defining raised sides each of said tacky elements is covered with at least one layer of flexible plastic film of equal or greater tackiness in successive layers, and a tear strip covering said tacky element portions, each of said longitudinal strip being affixed at selected spacings to the front of the support member along the tacky element portion, each tear strip covering and sealing one or more corresponding tacky element portions prior to use, and being completely or partially removable to expose a tacky area for securing and replacing items thereto, and during removal of an item, tear strip, or tacky element, forces of tension applied perpendicularly to the surface of a tacky element are transmitted to the front side of the support member, without delaminating the tacky element portions from each other or from the front side of the support member.

5,342,666

INJECTION MOLDED PLASTIC ARTICLE WITH INTEGRAL WEATHERABLE PIGMENTED FILM SURFACE

Thomas M. Ellison, Charlotte, and Brian M. Keith, Waxhaw, both of N.C., assignors to Rexham Industries Corp., Matthews, N.C.

Continuation of Ser. No. 410,662, Sep. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 924,295, Oct. 28, 1986, abandoned. This application Oct. 1, 1992, Ser. No. 955,317

The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.

Int. Cl.[5] B60R *13/00;* **B32B** *3/10, 3/00*

U.S. Cl. 428—46 **7 Claims**



1. A shaped article having a contoured decorative outer surface, comprising a molded polymer substrate having a contoured three-dimensional outer surface and a preformed decorative sheet material adhered to and conforming to said contoured three-dimensional outer surface, said decorative sheet material having regions thereof which have been subjected to an elongation of about 25% or more, and said sheet material comprising a substantially molecularly unoriented liquid-cast weatherable polymer film comprising an alloy of a polyvinylidene fluoride polymer and an acrylic polymer, and a bonding layer formed of a thermoplastic polymer different from said cast polymer film, said bonding layer being adhered to the inner surface of said cast polymer film by an adhesive layer between said bonding layer and said cast polymer film, and said bonding layer also being adhered to said contoured three-dimensional outer surface of said substrate, said cast polymer film having pigments therein providing color to the outer surface of said article, and said bonding layer comprising a polyolefin polymer.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,667

Patent Not Issued For This Number

5,342,668

MAGNETIC RECORDING MEDIUM HAVING IMPROVED ELECTROMAGNETIC CONVERSION CHARACTERISTICS AND DURABILITY

Fumio Echigo; Masahiro Saida; Naoko N. F. Mizuno; Hideo Hatanaka, and Yoshio Esoki, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 24, 1991, Ser. No. 690,489
Claims priority, application Japan, Apr. 24, 1990, 2-108415
Int. Cl.[5] B32B *3/02, 5/16;* **G11B** *5/66*
U.S. Cl. 428—64 **3 Claims**



1. A magnetic recording medium which comprises a support and a magnetic layer formed on opposite sides of the support and comprised of a ferromagnetic fine powder and a non-magnetic powder of an abrasive both dispersed in a resin binder, said non-magnetic powder consisting essentially of a first alumina powder having an average particle size of from 0.01 to 1.0 μm and a second alumina powder having an arborescent structure and an average particle size of from 0.03 to 2.0 μm, the first and second alumina powders being present at a mixing ratio by weight of 8:2 to 2:8 wherein said first alumina powder has an average particle size smaller than said second alumina powder.

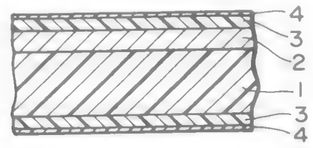
5,342,669

OPTICAL INFORMATION RECORDING MEDIUM

Tadao Yoshikawa; Kyoko Okamoto, and Tokuo Ikari, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 27, 1992, Ser. No. 858,869
Claims priority, application Japan, Apr. 2, 1991, 3-069962
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 **8 Claims**

1. An optical information recording medium having one or more sides, wherein one or more separate hardening coats and one or more separate antistatic coats are provided on at least



one side of the optical information recording medium, said antistatic coats being located on the hardening coats.

5,342,670

PROCESS FOR SIMULATING A CHAOTIC PATTERN ON A SURFACE BY APPLYING TO THE SURFACE A NONUNIFORM MULTILAYERED COATING

Rafael Dominguez, and Tina M. Dominguez, both of 6350 Thomas St., Hollywood, Fla. 33024

Filed Dec. 9, 1993, Ser. No. 164,445
Int. Cl.[5] B32B *3/00;* **B05D** *5/06*
U.S. Cl. 428—161 **11 Claims**

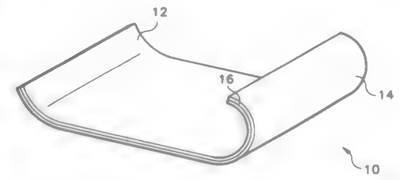
1. A process for simulating chaotic patterns on the surface of articles by creating thereupon a nonuniform multilayered coating comprising the sequential steps:
a) applying a base coat of dark color to said surface;
b) allowing said base coat to dry;
c) applying an iridescent coat to said base coat;
d) applying a flexible sheet to said iridescent coat before said iridescent coat is dry;
e) immediately removing said flexible sheet;
f) allowing the remaining iridescent coat to dry;
g) applying a translucent color coat;
h) allowing said translucent color coat to dry; and
i) applying a clear coat;
wherein said flexible sheet is deformable in three dimensions and deforms in situ without any change in temperature.

5,342,671

ENCODED DYE RECEIVER

Stanley W. Stephenson, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1992, Ser. No. 894,680
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **7 Claims**



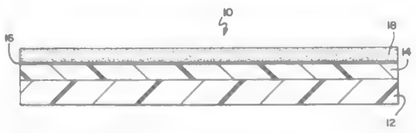
1. A dye receiver sheet for receiving an image according to a thermal dye transfer process in which a dye donor sheet is imagewise heated to transfer dye to said dye receiver sheet, said dye receiver sheet comprising:
a base having first and second sides, and an image region within which an image can be received;
at least one layer on said first side adapted to receive an image within said image region according to a thermal dye transfer process; and
a transparent magnetic layer on said second side, said transparent magnetic layer being at least partially within said image region.

5,342,672

HOLOGRAPHIC THERMAL TRANSFER RIBBON

Edward J. Killey, Racine, Wis., assignor to Weber Marking Systems, Inc., Arlington Heights, Ill.

Filed Sep. 14, 1992, Ser. No. 944,494
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—195 **8 Claims**



1. A holographic thermal transfer ribbon for enabling the transfer of a hologram onto a substrate using a thermal transfer demand printer, comprising:
a. a holographic hot stamp foil, said holographic hot stamp foil having a foil layer side and a heat-sealing layer side;
b. a supplemental thermoplastic polymer layer overlaid upon the heat-sealing layer side of said holographic hot-stamp foil; and
c. a silicone layer overlaid on said foil layer side.

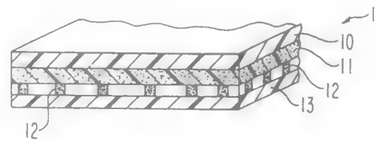
5,342,673

STERILIZABLE PACKAGING MATERIAL

Jane Bowman, Handover, Mass.; Ed Daniel, Landenberg, Pa.; Bob Henn, Wilmington, Del.; Jennifer Levy, Newark, Del., and Neville Vakharia, New Castle, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Feb. 23, 1993, Ser. No. 21,418
Int. Cl.[5] B32B *27/14*
U.S. Cl. 428—198 **4 Claims**

1. A packaging material that is and steam-permeable, heat-resistant, and bacteria-impermeable, which comprises a biocompatible flexible laminated composite sheet having the following layers:
a) a heat resistant polymeric nonwoven sheet bonded to
b) a microporous membrane layer that is bacteria-impermeable,
c) a grid patterned adhesive on the surface of the membrane layer that is opposite the sheet, which adhesive
i) flows under sealing conditions to form a continuous seal around the perimeter of the sheet, and,
ii) is substantially non-flowable or degradable when held at 140° C. for 7 hours, and



iii) adheres the microporous membrane, to,
d) a thin, porous, heat-stable nonwoven, that has open passageways,
said layers selected such that the laminate has an air-permeability of between 5 and 150 Gurley seconds,
said laminate, when sealed to a container or itself, having a peel strength of between 1 to 5 pounds per linear inch, and exhibiting cohesive failure of the adhesive when peeled from an adherend.

5,342,674

CERAMIC COMPOSITION AND CERAMIC CIRCUIT BOARD

Hirayoshi Tanei, and Shoichi Iwanaga, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,219
Claims priority, application Japan, Mar. 10, 1992, 4-051298
Int. Cl.[5] B32B *3/00;* **C03C** *1/00*
U.S. Cl. 428—209 **6 Claims**

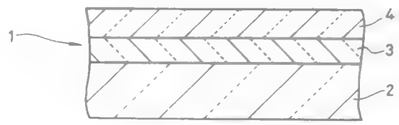
1. A ceramic composition which comprises 55–70 vol % of a borosilicate glass, 5–30 vol % of alumina as filler, 5–35 vol % of cordierite and 0–20 vol % of quartz glass.

5,342,675

HEAT-SCREENING GLASS

Hiroaki Kobayashi, Tsukuba; Takashi Muromachi, Kawasaki, and Jun Kawaguchi, Yokohama, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Feb. 10, 1992, Ser. No. 833,558
Claims priority, application Japan, Feb. 21, 1991, 3-049104
Int. Cl.[5] C03C *17/34*
U.S. Cl. 428—216 **4 Claims**



1. A heat-screening glass comprising a transparent sheet glass and a heat-screening film and a protective film coated one over the other on said sheet glass, said protective film comprising silicon oxynitride represented by the formula SiO_xN_y where x ranges from 0.65 to 1.25 and y ranges from 0.05 to 0.67, said protective film having a thickness of from 5–100 nm and being transparent to wavelengths of visible light, and said heat-screening film having a thickness of from 1–10 nm,

VOL 1165 ISS 5 AG 30 1994 UMI

wherein said heat screening glass is transparent to wavelengths of visible light.

5,342,676

GLASS SUBSTRATE PROVIDED WITH A LOW EMISSIVITY FILM

Georges Zagdoun, La Garenne Colombes, France, assignor to Saint-Gobain Vitrage International, Courbevoie, France

Filed Nov. 24, 1992, Ser. No. 981,083
Claims priority, application France, Nov. 26, 1991, 91 14569
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—216 14 Claims

1. A product, comprising:
a glass substrate;
a conducting, low-emissivity transparent functional film on a first face of said glass substrate, having a refractive index of about 2 and a physical thickness of 200 to 400 nm, said functional film consisting of at least one doped metal oxide selected from the group consisting of indium oxide doped with tin, zinc oxide doped with indium, zinc oxide doped with fluorine, zinc oxide doped with aluminum, zinc oxide doped with tin, and tin oxide doped with fluorine;
an outer coating on said functional film having a refractive index less than that of the functional film, the optical thickness of the outer coating being about one-quarter of the mean wavelength centered on 550 nm; and
an intermediate coating disposed between the functional film and the glass substrate which has a refractive index less than that of the functional film and an optical thickness of between 50 and 100 nm.

5,342,677

COMPOSITES WITH POLYETHER KETONE YARN

André Rötgers, Bobingen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 27, 1993, Ser. No. 68,055
Claims priority, application Fed. Rep. of Germany, May 27, 1992, 4217475
Int. Cl.[5] B32B *25/02, 27/02, 27/28*
U.S. Cl. 428—222 7 Claims

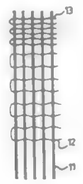
1. A composite containing as the matrix a polymeric organic compound and as the reinforcing material a polyether ketone single, folded or cabled yarn or a fabric formed from such single, folded or cabled yarn, wherein the polyether ketone single, folded or cabled yarn exhibits crimp.

5,342,678

METHOD OF TYRE CORD SHEET CONSTRUCTION

George A. Ingus, 99 West Heath Road, London NW3 7TN, England

PCT No. PCT/GB91/00218, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992, PCT Pub. No. WO91/12361, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 13, 1991, Ser. No. 916,828
Int. Cl.[5] B05D *1/18*
U.S. Cl. 428—229 10 Claims



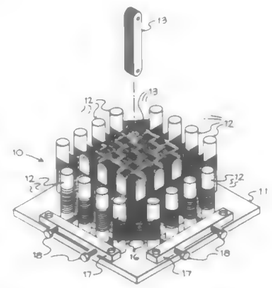
1. A method of stabilising the lateral (weft) dimension of the tabby or splicing header of a tyre cord sheet against shrinkage during processing including the application of longitudinal tension and dipping in an aqueous latex bath, hot-air drying and heat setting, by using weft strands in the tabby which are structually different from those in the tyre cord sheet and which are selected to resist shrinkage, characterised in that the weft strands are formed of a resilient, stiff yarn, a stiffness of the yarn being such that lateral shrinkage of the tabby during said processing is about the same as that of the tyre cord sheet itself.

5,342,679

GRID STRUCTURES

Tak Aochi, Morgan Hill, and Robert J. Pyle, Campbell, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 286,120, Dec. 19, 1988. This application Oct. 31, 1989, Ser. No. 430,462
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—257 14 Claims



1. A grid structure made from a composite material substantially consisting of filamentary material embedded in a matrix, said filamentary material extending three-dimensionally in at least three different directions in said matrix, said grid structure being fabricated by a process comprising the steps of:
a) arranging filamentary material according to a predetermined pattern to define interstices for said grid structure, said filamentary material consisting of fibrous filaments extending so as to define cross-sectional configurations for said interstices, substantially all fibrous filaments that extend in a particular one of said directions according to said predetermined pattern maintaining a generally constant separation from each other over an extent that is longer than a plurality of said interstices;
b) covering each one of a plurality of mandrels individually with filamentary material consisting of fibrous filaments, said mandrels conforming in cross-sectional configuration to said interstices defined by said predetermined pattern, said fibrous filaments of said filamentary material covering said mandrels being arranged on said mandrels so as to extend predominantly transversely with respect to said fibrous filaments of said filamentary material arranged to define said interstices when said mandrels are inserted into said interstices;
c) inserting said mandrels covered with said filamentary material into corresponding interstices defined by said predetermined pattern;
d) causing said filamentary material arranged to define said interstices and said filamentary material covering said mandrels in said corresponding interstices to be impregnated with a matrix material;
e) applying compressional forces to said filamentary material impregnated with said matrix material between adjacent mandrels, said compressional forces being substantially entirely perpendicular to said fibrous filaments of said filamentary material covering said mandrels when said mandrels have been inserted into said corresponding interstices:

f) curing said matrix material that has impregnated said filamentary material, thereby forming an integral structure made of said composite material consisting of said filamentary material embedded in said matrix; and
g) removing said mandrels from said interstices.

5,342,680

GLASS MAT WITH REINFORCING BINDER

Brian G. Randall, Stone Mountain, Ga., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Continuation of Ser. No. 432,122, Nov. 6, 1989, abandoned, which is a division of Ser. No. 141,998, Jan. 6, 1988, Pat. No. 4,879,173. This application Oct. 15, 1993, Ser. No. 137,695
Int. Cl.[5] B32B *15/00*
U.S. Cl. 428—285 5 Claims

1. A gypsum board faced with a fibrous mat having a predetermined thickness comprising glass fibers bound together with an adhesive and including also a reinforcing resinous binder extending but part-way through the thickness of the mat into the interstices thereof, the amount of reinforcing resinous binder being at least about 3 g/m^2 of mat.

5,342,681

ABSORBING, LOW REFLECTING COATING FOR VISIBLE AND INFRARED LIGHT

Frank C. Sulzbach, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 28, 1992, Ser. No. 937,254
Int. Cl.[5] B32B *5/14*
U.S. Cl. 428—310.5 14 Claims



1. A light absorbing, low reflectance film comprising:
(a) a substrate; and
(b) a porous layer containing aluminum and nitrogen disposed over said substrate, said layer comprising a first region of elemental aluminum contacting said substrate, said elemental aluminum having a thickness of up to about ten atomic layers and a region extending from said elemental aluminum in a direction away from said substrate having the composition Al_xN_y with the value of y commencing with the value zero and gradually increasing relative to the value of x in the direction of stoichiometry to provide a stable form of Al_xN_y.

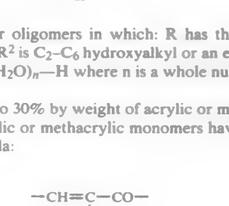
5,342,682

METHOD OF MOLDING OPTICAL RECORDING DRUMS

Peter J. Vogelgesang, Roseville, and Wayne M. Wirth, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 583,668, Sep. 17, 1990, Pat. No. 5,096,627. This application Oct. 24, 1991, Ser. No. 781,924
Int. Cl.[5] B32B *18/00*
U.S. Cl. 428—325 2 Claims

1. A cylindrical rotatable optical recording drum for use in erasable optical recording comprising:
an outer cylindrical surface on which reading and writing can be performed; and
a core including an inner core layer comprising hollow spheres mixed with a resin, wherein the radially outer surface of the inner core layer has a higher ratio of resin to



spheres than the radially inner surface of the inner core layer.

5,342,683

WATER SPREADING FILMS OR PLATES CONSISTING OF ACRYLIC POLYMERS AND PROCESS FOR THEIR PREPARATION

Marco Rigamonti; Franco Marciandi, and Massimo Cesana, all of Milan, Italy, assignors to Elf Atochem Italia S.r.l., Milan, Italy

Filed May 25, 1993, Ser. No. 67,295
Claims priority, application Italy, May 27, 1992, MI92 A 001300
Int. Cl.[5] C09K *3/18;* C09D *4/02, 5/00;* B32B *5/16*
U.S. Cl. 428—331 11 Claims

1. Articles, films, and plates having water-spreading and antifogging characteristics, said articles, films and plates comprising a transparent acrylic support having a crosslinked, U.V. polymerized coating, said coating comprising the following components:
(a) from 50 to 70% by weight of acrylic monomers having the formula:

$$CH_2=\underset{\displaystyle R}{\underset{|}{C}}-COOR^1 \qquad (I)$$

in which: R is H or CH_3; R^1 is selected from the group consisting of C_1–C_{12} alkyl, C_4–C_{12} cycloalkyl, polycycloalkyl and alkylidene having from 7 to 14 carbon atoms;
(b) from 10 to 30% by weight of monomers having the formula:

$$CH_2=\underset{\displaystyle H}{\underset{|}{C}}-COOR^2 \qquad (II)$$

or of their oligomers in which: R has the above stated meaning; R^2 is C_2–C_6 hydroxyalkyl or an ethoxylic group $(CH_2—CH_2O)_n—H$ where n is a whole number from 1 to 10;
(c) from 10 to 30% by weight of acrylic or methacrylic acid or of acrylic or methacrylic monomers having a group of the formula:

$$-CH=\underset{\displaystyle R}{\underset{|}{C}}-CO- \qquad (III)$$

or their dimers, in which R has the above defined meaning;
(d) from 1 to 10% of a crosslinking agent consisting of one or more acrylic or methacrylic esters of a polyfunctional alcohol;
(e) from 0.01 to 3% by weight of hydrophilic colloidal metal oxides or hydrophilic colloidal silica; and

VOL 1165 ISS 5 AG 30 1994 UMI

(f) from 0 to 0.06% by weight of a U.V. polymerization initiator, the sum of a)+b)+c)+d)+e)+f) being 100%.

5,342,684

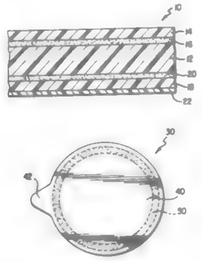
POLYMERIC DIE-CUTTABLE LIDDING MATERIALS

Dennis L. Carespodi, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation-in-part of Ser. No. 746,257, Aug. 15, 1991, abandoned. This application May 21, 1993, Ser. No. 65,726

Int. Cl.[5] **B32B** *3/26, 7/02, 7/12*

U.S. Cl. 428—347 **18 Claims**



1. A non-foil lidding laminate comprising:

a core layer comprising a void-bearing opalescent oriented polypropylene film having a thickness in the range of about 1.5 to about 7.0 mils;

first and second outer balance layers having substantially the same thickness laminated to the opposite sides of the core layer, said first and second outer balance layers each comprising a nonvoid-bearing polyethylene terephthalate film having a thickness in the range of about 0.25 mils to about 1.5 mils, such thickness being sufficient to balance said core layer to prevent curling of said lidding laminate.

5,342,685

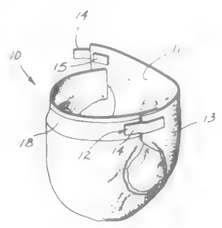
HOT-MELT-COATABLE ADHESIVES

Ramsis Gobran, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 18, 1992, Ser. No. 885,283

Int. Cl.[5] **B32B** *7/12;* **C08L** *9/00;* **A61F** *13/15*

U.S. Cl. 428—355 **7 Claims**



1. A diaper comprising an outer backsheet layer and an inner liquid-permeable facing or sheet, the outer backsheet layer formed of a low surface energy, thin plastic outer film and/or a nonwoven, the outer backsheet layer or inner facing or sheet having a tape adhered thereto comprising a backing film and an adhesive layer, the adhesive layer comprising 100 parts of an elastomeric phase and a tackifying phase, the adhesive having a CMTg value of less than about −10° C., the elastomeric phase comprised of from about 78 to 98 parts of a diblock A-B type block copolymer portion of which the B block is comprised predominately of 1,3-butadiene, and the A block is comprised predominately or monoalkenyl arene, and about 2 to 22 parts of a multiblock elastomer portion, of the elastomeric phase, comprising an A-B type block copolymer of at least three blocks, the B block comprised of 1,3-butadiene, the A block comprised of monoalkyl arene, the tackifying phase comprised of from 80 to 140 parts of a solid tackifying resin and 5 to 35 parts of a liquid tackifier.

5,342,686

SUPERABSORBENT-COATED ARAMID YARN AND A PROCESS FOR MANUFACTURING SUCH A YARN

Herman J. Guersen, Rozendaal, and Stephanus Willemsen, Rheden, both of Netherlands, assignors to Akzo Nobel nv, Arnhem, Netherlands

Division of Ser. No. 781,784, Oct. 23, 1991, Pat. No. 5,264,251. This application Sep. 1, 1993, Ser. No. 115,945

Claims priority, application Netherlands, Oct. 26, 1990, 9002337

Int. Cl.[5] **D02G** *3/00*

U.S. Cl. 428—378 **6 Claims**

1. An aramid yarn provided with a superabsorbent material, in an amount of about 0.3 wt % to 10 wt %, based on the weight of the yarn, and having a swelling value of at least about 60.

5,342,687

CORELESS TWIST-TIES

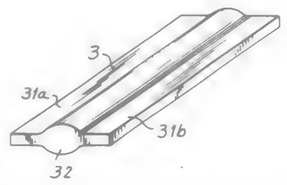
Yoshio Iwai; Kazuyuki Takahashi; Takeshi Hirota; Tomoji Abe, and Isao Imanishi, all of Osaka, Japan, assignors to Kyowa Limited, Osaka, Japan and Clements Industries, S. Hackensack, N.J.

Division of Ser. No. 593,213, Oct. 5, 1990, Pat. No. 5,154,964. This application Oct. 13, 1992, Ser. No. 960,676

Claims priority, application Japan, Oct. 6, 1989, 64-262773

Int. Cl.[5] **B32B** *5/16;* **B65D** *77/10*

U.S. Cl. 428—402 **7 Claims**



1. A wireless twist-tie having a cross-section of uniform composition which can be deformed from a ribbon into a releasable closure, comprising polymeric material extruded from polymeric resin and including an effective amount of glass beads having a particle size of less than about 60 μm for enhancing the flexibility and plasticity of the tie to permit twisting and untwisting of the tie as well as for enabling the tie to remain in the form of a tight closure.

5,342,688

INK-RECEPTIVE SHEET

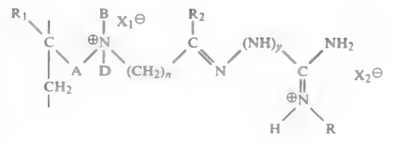
Jonathon P. Kitchin, St. Paul, Minn.; Alan G. Miller, Austin, Tex.; Mahfuza B. Ali, Mendota Heights, and Omar Farooq, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 12, 1993, Ser. No. 30,811

Int. Cl.[5] **B32B** *5/16*

U.S. Cl. 428—402 **15 Claims**

1. An ink-receptive sheet comprising a transparent substrate bearing on at least one major surface thereof, an ink-receptive layer comprising an imaging polymer and from about 1 to about 15 parts of at least one polymeric mordant comprising a guanidine functionality having the following general structure:

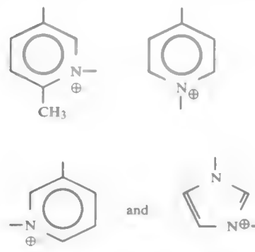


wherein

A is selected from the group consisting of a COO-alkylene group having from about 1 to about 5 carbon atoms, a CONH-alkylene group having from about 1 to about 5 carbon atoms, —COO—$(CH_2CH_2O)n$—CH_2— and —CONH—$(CH_2CH_2O)n$—CH_2—, wherein n is from about 1 to about 5;

B and D are separately selected from the group consisting of alkyl group having from about 1 to about 5 carbon atoms;

or A, B, D and N are combined to form a heterocyclic compound selected from the group consisting of



and



R_1 and R_2 are independently selected from the group consisting of hydrogen, phenyl, and an alkyl group containing from about 1 to about 5 carbon atoms;

R is selected from the group consisting of hydrogen, phenyl, benzimidazolyl, and an alkyl group containing from about 1 to about 5 carbon atoms,

y is selected from the group consisting of 0 and 1, and

X_1 and X_2 are anions.

5,342,689

THERMOPLASTIC MICROSPHERES

George E. Melber, Buffalo; Leon E. Wolinski, Cheektowaga, both of N.Y., and William A. Oswald, Darien, Ill., assignors to Pierce & Stevens Corporation, Buffalo, N.Y.

Division of Ser. No. 490,332, Mar. 8, 1990, Pat. No. 5,180,752. This application Oct. 23, 1992, Ser. No. 965,030

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] **B01J** *13/22;* **C08J** *9/16, 9/224*

U.S. Cl. 428—402.22 **5 Claims**

1. A dry, free-flowing expanded microsphere product comprising thermoplastic microspheres expanded to a density of less than about 0.03 g/cm^3 and a thermally bonded coating of an adherent surface barrier coating material.

5,342,690

RETICULAR GLASS SURFACE

Dennis R. Platts, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 20, 1992, Ser. No. 979,036

Int. Cl.[5] **B32B** *17/00*

U.S. Cl. 428—410 **7 Claims**

1. A glass article, having ion implanted element ions selected from the group consisting of yttrium, zirconium, niobium and mixtures thereof in a surface region thereof and a reticular surface, said element ions having a concentration from about 10^{12} ions/cm^2 to about 10^{18} ions/cm^2.

5,342,691

POLYESTER-POLYCARBONATE SUBSTRATE COATED WITH UV PROTECTING LAYER

Jens-Dieter Fischer, Bickenbach, and Werner Siol, Darmstadt-Eberstadt, both of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 751,960, Aug. 29, 1991, Pat. No. 5,239,001. This application Mar. 18, 1993, Ser. No. 34,387

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1990, 4030553

Int. Cl.[5] **B32B** *27/36, 27/30*

U.S. Cl. 428—412 **7 Claims**

1. A coated substrate comprising:

A) 0.1–99.9 wt. % of a polyester-polycarbonate mixture comprised of:

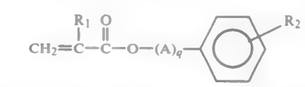
a.1) 0.1–99.9 parts by weight (pbw) of a polyester, and

a.2) 99.9–0.1 pbw of a polycarbonate; and

a layer comprised of D) 99.9–0.1 wt.% of:

a copolymer comprised of

d.1) 99–50 pbw of units of amonomer of formula I



(I)

where R_1 represents hydrogen or methyl, R_2 represents hydrogen, a C_{1-6} alkyl group or a group —$(CH_2)_n$—QR_3, where n represents zero or a number in the range of 2–6, and Q represents oxygen or a group —NR_4, and

R_3 and R_4 each independently represent hydrogen or a C_{1-4} alkyl; and

A represents a C_{1-4} alkylidene group or a group —$(CH_2)_m$—O—,

where m is a number from 2 to 6, and

q is zero or 1;

d.2) 1–50 pbw of units of a comonomer with UV-absorbing groups,

or a mixture comprised of:

d.3) 99–50 pbw of a polymer comprising units of a monomer of formula I as described above, and

d.4) 1–50 pbw of units of a low molecular weight UV-absorber; or a mixture of the d.1/d.2 copolymer with d.3 and d.4.

5,342,692

LIPID-PROTEIN COMPOSITIONS AND ARTICLES AND METHODS FOR THEIR PREPARATION

Hans O. Ribi, Atherton, Calif., assignor to Biocircuits Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 697,219, May 7, 1991, abandoned, which is a continuation of Ser. No. 321,962, Mar. 10, 1989, Pat. No. 5,087,952. This application Mar. 30, 1993, Ser. No. 41,278

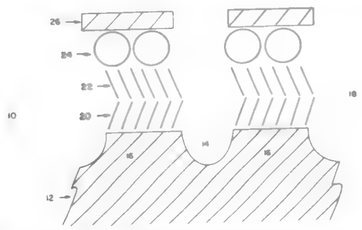
Int. Cl.[5] **B32B** *7/04*

U.S. Cl. 428—420 **6 Claims**

1. An article comprising a solid support, at least one addition polymerized surfactant monolayer having polymeric strands in a substantially ordered array coated thereon, said surfactant monolayer(s) having been polymerized from surfactant mono-

VOL 1165 ISS 5 AG 30 1994 UMI

mers having an aliphatic chain comprising a polymerizable functionality, and an ordered protein layer being capable of



producing an optical diffraction pattern bound to said surfactant monolayer(s).

5,342,693

MULTIFUNCTIONAL THROMBO-RESISTANT COATING AND METHODS OF MANUFACTURE

Suzanne Winters, Salt Lake City; Kenneth A. Solen, Orem; Clifton G. Sanders, Salt Lake City; J. D. Mortensen, Sandy, and Gaylord Berry, Salt Lake City, all of Utah, assignors to Cardiopulmonics, Inc., Salt Lake City, Utah

Continuation of Ser. No. 823,271, Jan. 21, 1992, abandoned, which is a division of Ser. No. 215,014, Jul. 5, 1988, Pat. No. 5,262,451, which is a continuation-in-part of Ser. No. 204,115, Jun. 8, 1988, Pat. No. 4,850,958. This application Mar. 22, 1993, Ser. No. 35,426

Int. Cl.[5] **B32B** *27/06;* **A01N** *1/00*

U.S. Cl. 428—447 **6 Claims**

1. A gas permeable membrane for effecting extrapulmonary blood gas exchange, the membrane comprising a gas permeable substrate which is coated with a polyfunctional thrombo-resistant composition comprising a siloxane surface which is permeable to a gas onto which a plurality of at least two different bioactive molecules are covalently bonded, the at least two different bioactive molecules being covalently bonded to the siloxane surface and away from the siloxane surface through a plurality of poly(ethylene oxide) chains without precluding the gas permeability of the substrate, said bioactive molecules being capable of counteracting specific blood-material incompatibility reactions.

5,342,694

TREATING AN AUTODEPOSITED COATING WITH AN ALKALINE MATERIAL

Bashire M. Ahmed, Ambler, and Ronald W. Broadbent, Ardsley, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 144,467, Jan. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 910,355, Sep. 22, 1986, abandoned, which is a continuation of Ser. No. 635,968, Jul. 31, 1984, abandoned, which is a continuation-in-part of Ser. No. 517,133, Jul. 25, 1983, abandoned, and a continuation-in-part of Ser. No. 629,924, Jul. 11, 1984, Pat. No. 4,562,098. This application Jun. 3, 1988, Ser. No. 202,117

Int. Cl.[5] **B32B** *15/08;* **B05D** *3/04*

U.S. Cl. 428—461 **39 Claims**

1. In a process for forming an autodeposited coating on a metallic surface in which an uncured form of the coating is formed by contacting the metallic surface with an autodepositing composition until the coating is formed, and thereafter contact between the coated surface and the autodepositing composition is terminated, the improvement comprising thereafter contacting the uncured form of said coating with an alkaline material and thereafter curing the thus treated coating.

5,342,695

LAMINATED FILMS

Iwao Tsurutani, Chiba; Takafumi Manabe, Sakai; Ikuo Emoto, Sakai; Isao Nagayasu, Sakai, and Yoshitaka Okada, Sakai, all of Japan, assignors to Ube Rexene Corporation, Tokyo and Ube Industries, Ltd., Ube, both of Japan

Filed Sep. 18, 1992, Ser. No. 946,075

Claims priority, application Japan, Sep. 20, 1991, 3-241238; May 14, 1992, 4-121760; Jun. 18, 1992, 4-159503

Int. Cl.[5] **B32B** *27/08*

U.S. Cl. 428—516 **9 Claims**

1. A laminated film having two outermost layers, the laminated film comprising,

a non-fibrous layer A containing a resin composition comprising (i) 20–100% by weight of an amorphous polyolefin containing at least one component, in an amount of at least 50% by weight in said amorphous polyolefin, selected from the group consisting of propylene and butene-1 and (ii) 80–0% by weight of a crystalline polypropylene, and

a layer B_3 containing a crystalline polypropylene and an ethylene (co)polymer resin having polarity,

wherein at least one of the two outermost layers is the layer B_3.

5,342,696

BLANK FOR THE PRODUCTION OF A DENTAL MOULD PART

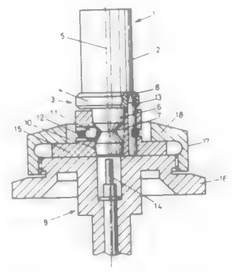
Stefan Eidenbenz, Winkel, and Claude Nowak, Wettingen, both of Switzerland, assignors to Mikrona Technologie A.G., Spreitenbach, Switzerland

Filed Nov. 8, 1991, Ser. No. 774,097

Claims priority, application Switzerland, Oct. 10, 1990, 3264/90

Int. Cl.[5] **A61C** *13/083*

U.S. Cl. 428—542.8 **8 Claims**



1. A blank (1) for the production of a dental mould part, comprising a blank body (2) of dental restoration material and a support (3) to which the blank body (2) is securely connected, the support having, on a side facing away from the blank body, an anchoring part so that the blank (1) is anchorable to a holding device (9) having a receiving opening, the anchoring part having at least one conical section which is essentially rotationally symmetrical about a support axis (5) intersecting the blank body (2) and which widens in a direction of the body, for making contact with at least part of a receiving opening (10) of the holding device (9).

5,342,697

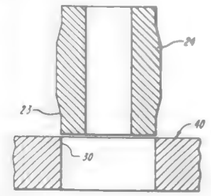
CONNECTED ARTICLES

Richard D. Helle, 11 Bear Hill Rd., Rutland, Mass. 01543

Continuation of Ser. No. 762,390, Sep. 19, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 124,576

Int. Cl.[5] **B22F** *5/00*

U.S. Cl. 428—547 **10 Claims**



1. In combination,

a first article of compressed powder metal having a main body portion having an exterior surface and a plurality of protuberances projecting outwardly from said exterior surface, said main body being of greater density than said protuberances; and,

a second article having an aperture therein arranged to receive said first article, the dimensions of said aperture being substantially the same as that of said main body of said first article,

said first article being inserted into said aperture such that said protuberances form an interference fit with said aperture.

5,342,698

SLIDE BEARING

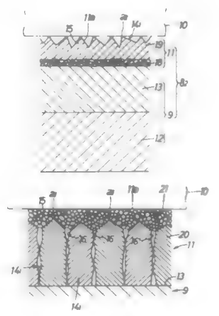
Yoshikazu Fujisawa; Makoto Tsuji; Takeshi Narishge; Takahiro Gunji, and Kazuhisa Okamoto, all of Saitama, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,379

Claims priority, application Japan, Jun. 11, 1991, 3-165194; Jul. 12, 1991, 3-197434; Jul. 12, 1991, 3-197435; Jul. 18, 1991, 3-202189; Jul. 18, 1991, 3-202198

Int. Cl.[5] **F16C** *33/12*

U.S. Cl. 428—612 **11 Claims**



1. A slide member, comprising:

a base member; and

a surface layer made of an alloy formed on the base member, wherein said surface layer includes a plurality of columnar crystals extending in proximity to one another from a side of said base member, the columnar crystals belonging to a cubic system and having (h00) planes by Miller indices that are directed so as to define a slide surface for a mating member, the percent area A of said (h00) planes in said slide surface being set in a range of $A \geqq 50\%$.

5,342,699

STEEL SUBSTRATE FOR REINFORCEMENT OF ELASTOMERS

Marc DeWitte, Moen, and Walther Van Raemdonck, Zwevegem, both of Belgium, assignors to N. V. Bekaert S.A., Zwevegem, Belgium

Filed Nov. 1, 1991, Ser. No. 781,179

Claims priority, application Belgium, Jul. 21, 1989, 89201917.5

Int. Cl.[5] **B32B** *15/06;* **D07B** *1/06;* **B60C** *9/00*

U.S. Cl. 428—625 **24 Claims**

1. A reinforcing substrate with improved adhesion retention to elastomeric polymers comprising a plurality of filaments wherein at least one of said filaments is a steel wire covered at least in part by a layer of an alloy consisting of, apart from impurities, between 4.2 and 6.5 wt. % of aluminum, a wetting element which is present in an amount less than 0. 1% sufficient to stimulate the wetting ability of the alloy when liquid to the substrate, and the balance zinc.

5,342,700

STEEL WIRE HAVING A STRUCTURE OF A STRAIN-HARDENED LOWER BAINITE TYPE AND METHOD FOR PRODUCING SUCH WIRE

Jean-Claude Arnaud, Tourtoule, and Bernard P. Prudence, Saint Maurice Sur Allier, both of France, assignors to Compagnie Generale Des Etablissements Michelin-Michelin & Cie, Cedex, France

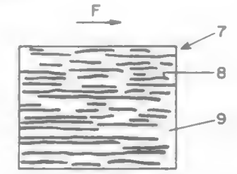
PCT No. PCT/FR90/00920, § 371 Date Jun. 17, 1992, § 102(e) Date Jun. 17, 1992, PCT Pub. No. WO91/09933, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 18, 1990, Ser. No. 861,846

Claims priority, application France, Dec. 22, 1989, 89 17227

Int. Cl.[5] **B22B** *15/06;* **B60C** *9/00;* **C21D** *8/06*

U.S. Cl. 428—625 **21 Claims**



1. A metal wire characterized by the following features:

(a) it is formed, at least in part, of a steel having a carbon content of at least 0.1% and at most 0.6% and a boron content of less than 8 ppm (parts per million);

(b) the steel of the wire has a structure strain-hardened lower bainite;

(c) the diameter of the wire varies from 0.10 to 0.40 mm;

(d) the resistance to rupture of the wire is at least 2800 MPa and;

(e) the elongation at rupture of the wire is at least 0.4%.

5,342,701

TRANSITION METAL OXIDE FILMS AND GAS SENSORS THEREOF

Bijan K. Miremadi, Coquitlam; Ravi C. Singh, Surrey; Stanley R. Morrison, Burnaby, and Konrad Colbow, West Vancouver, all of Canada, assignors to 410261 B.C. Ltd., West Vancouver, Canada

Filed Mar. 30, 1992, Ser. No. 860,068

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—701 **3 Claims**

1. A sensor for reducing agents comprising:

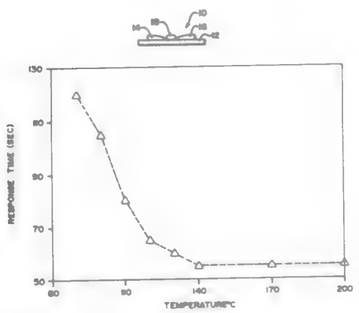
an insulating substrate;

a pair of electrical contacts spaced-apart on the substrate;

a film on the substrate between the contacts, the film having the formula MO_z wherein M is selected from the group consisting of molybdenum, tungsten and titanium, O is

VOL 1165 ISS 5 AUG 30 1994 UMI

oxygen and z is 3 when M is molybdenum or tungsten and 2 when M is titanium, the film being a plurality of single



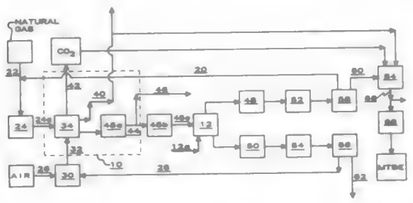
molecular thickness layers which are oriented so their basal planes are parallel.

5,342,702

SYNERGISTIC PROCESS FOR THE PRODUCTION OF CARBON DIOXIDE USING A COGENERATION REACTOR

Norman J. MacGregor, Kincardine, Canada, assignor to Integrated Energy Development Corp., Kincardine, Canada

Filed Jan. 5, 1993, Ser. No. 945
Int. Cl.[5] H01M 8/00, 8/18
U.S. Cl. 429—13 21 Claims



1. A synergistic cogeneration process for the production of carbon dioxide, oxygen and hydrogen comprising the steps of:
(a) preparing a feed stream comprising an organic combustible fuel and hydrogen;
(b) introducing said feed stream and air into a cogeneration reactor for combusting said feed stream and producing steam, electricity and stack gases containing carbon dioxide, said reactor having a generator and means for combusting said feed stream drivingly connected to said generator via shaft means;
(c) using electricity to electrolyze water to produce hydrogen and oxygen;
(d) recovering said hydrogen from step (c) and recycling at least a portion of said hydrogen to step (a) for preparation of said feed stream; and,
(e) recovering said carbon dioxide from said stack gases.

5,342,703

SOLID ELECTROLYTE TYPE FUEL CELL AND METHOD FOR PRODUCING THE SAME

Shinji Kawasaki, Nagoya; Shigenori Ito, Kasugai, and Katsuki Yoshioka, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jul. 15, 1992, Ser. No. 913,490
Claims priority, application Japan, Jul. 19, 1991, 3-203692; Feb. 3, 1992, 4-46344
Int. Cl.[5] H01M 8/12
U.S. Cl. 429—30 4 Claims

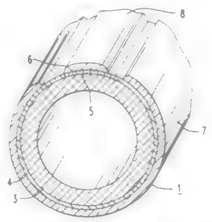
1. A solid electrolyte fuel cell comprising:
an air electrode substrate comprising a perovskite series complexed oxide represented by $(La_{1-y}A_y)MO_3$, wherein A is at least one alkaline earth metal, M is manganese or cobalt, and y is $0 \leqq y \leqq 0.4$;
a zirconia solid electrolyte film formed on said air electrode substrate and containing manganese or cobalt present as a solid solute in a region of said film substantially adjacent an interface between said film and said air electrode substrate, while substantially no highly resistive layer made of a compound containing lanthanum and zirconium is present at said interface; and
a fuel electrode film formed on said solid electrolyte film at a surface opposite to said air electrode substrate.

5,342,704

METHOD OF MAKING AN AIR ELECTRODE MATERIAL HAVING CONTROLLED SINTERABILITY

Theodore R. Vasilow, Penn Township, Westmoreland County; Lewis J. H. Kuo, Monroeville, and Roswell J. Ruka, Churchill Boro, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 875,860, Apr. 29, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,218
Int. Cl.[5] H01M 8/10
U.S. Cl. 429—31 8 Claims



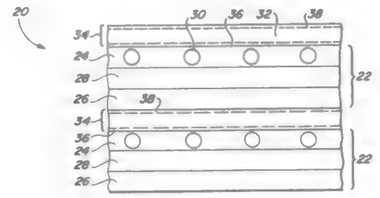
1. A method of making a porous ceramic electrode structure comprising the steps of:
A) admixing:
1) lanthanum manganite doped with an element selected from the group consisting of calcium, strontium, chromium, and mixtures thereof, and
2) cerium additive powder selected from the group consisting of cerium oxide, cerium carbonate, cerium nitrate, cerium acetate, cerium oxalate, and mixtures thereof, where cerium is present in the admixture in the range of from 0.02 mole to 0.04 mole per mole of doped lanthanum manganite;
B) shaping the admixture into an electrode structure;
C) sintering the shaped structure in air to form a porous, solid electrode, where the shaped structure maintains a porosity over 20% through the sintering step.

5,342,705

MONOLITHIC FUEL CELL HAVING A MULTILAYER INTERCONNECT

Nguyen Q. Minh, Fountain Valley, Calif., and Timothy R. Armstrong, Pasco, Wash., assignors to Allied-Signal, Inc., Morris Township, Morris County, N.J.

Filed Jun. 4, 1993, Ser. No. 71,791
Int. Cl.[5] H01M 8/10
U.S. Cl. 429—32 9 Claims



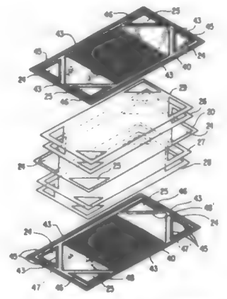
1. A fuel cell, comprising:
a pair of electrodes, including
an anode layer, and
a cathode layer;
a solid electrolyte layer disposed between the anode layer and the cathode layer; and
interconnect means for providing an electrical connection located adjacent to one of the electrodes but not adjacent to the solid electrolyte, the interconnect means including an interconnect layer comprising a mixture of an electrical conductor phase and a matrix material that is chemically compatible with the electrical conductor phase and sinterable in an oxidizing atmosphere at a temperature of less than about 1500° C., said matrix material acting as a support that holds the electrical conductor phase together.

5,342,706

FULLY INTERNAL MANIFOLDED FUEL CELL STACK

Leonard G. Marianowski, Mount Prospect, and Randy J. Petri, Crete, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 724,422, Jul. 2, 1991, Pat. No. 5,227,256, which is a continuation-in-part of Ser. No. 505,293, Apr. 10, 1990, Pat. No. 5,045,413, and a continuation-in-part of Ser. No. 517,227, May 1, 1990, Pat. No. 5,077,148, said Ser. No. 505,293, and a continuation-in-part of Ser. No. 517,227, is a continuation-in-part of Ser. No. 346,666, May 3, 1989, Pat. No. 4,963,442. This application Jul. 12, 1993, Ser. No. 90,427
The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.
Int. Cl.[5] H01M 8/10, 8/14
U.S. Cl. 429—35 35 Claims



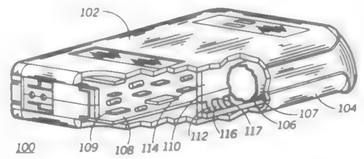
1. In a fuel cell stack comprising a plurality of fuel cell units, each said fuel cell unit comprising an anode and a cathode, an electrolyte in contact on one side with the electrolyte facing face of said anode and in contact on the opposite side with the electrolyte facing face of said cathode, and a separator plate separating said cell units between an anode and cathode forming an anode chamber between the anode facing face of said separator plate and said anode and forming a cathode chamber between the opposite cathode facing face of said separator plate and the separator facing face of the cathode of an adjacent said fuel cell unit, said anode chamber in gas communication with a fuel gas supply and outlet and said cathode chamber in gas communication with an oxidant gas supply and outlet the improvement comprising:
said electrolytes comprising an ion exchange membrane;
said electrolytes and said separator plates extending to the peripheral edge of said fuel cell stack;
said separator plates having a flattened peripheral wet seal structure extending to contact less than about 1 inch width of said electrolytes on each face of said separator plates completely around their periphery, forming a peripheral wet seal less than about 1 inch width under cell operating conditions;
said electrolytes and said separator plates each having a plurality of aligned perforations, said perforations in said separator plates being surrounded by a flattened manifold wet seal structure extending to contact less than about 1 inch width of said electrolyte on each face of said separator plate, forming a manifold wet seal less than about 1 inch width under cell operating conditions to form a plurality of gas manifolds extending through said cell stack; and
conduits through said extended manifold wet seal structure providing fuel gas communication between one set of said manifolds and said anode chambers on one face of said separator plates and conduits through said extended manifold wet seal structure providing oxidant gas communication between a second set of said manifolds and said cathode chambers on the other face of said separator plates, thereby providing fully internal manifolding of fuel and oxidant gases to and from each said unit fuel cell in said fuel cell stack.

5,342,707

BATTERY PINNED ENCLOSURE SNAP WALL

Dwight D. Brooks, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 30, 1992, Ser. No. 921,672
Int. Cl.[5] H01M 2/10, 2/04; H04B 1/16, 1/08
U.S. Cl. 429—97 11 Claims



1. A latching means for use in a latch system for an enclosure comprising first and second enclosure structures, the latching means comprising:
a holding compartment for holding a battery of predetermined size and shape;
a latch member adjacent to the holding compartment for engaging with a hook formed in the second enclosure structure to latch together the first and second enclosure structures; and
a flexible extender member coupled between the first enclo-

VOL 1165 ISS 5 AG 30 1994 UMI

sure structure and the latch member for extending the latch member into the second enclosure structure,

wherein the flexible extender member and the latch member are constructed such that, in the absence of a deflecting force against the latch member in a direction to deflect the latch member away from the hook, the latch member remains engaged with the hook when the battery is not in the holding compartment, and

wherein mechanical interference between the battery and the latch member further prevents the latch member from disengaging from the hook, even in the presence of a deflecting force against the latch member, when the battery is in the holding compartment.

8. A latch system for an enclosure, the latch system comprising:

a first enclosure structure comprising a flexible latching means;

a second enclosure structure comprising a hook for coupling the second enclosure structure to the first enclosure structure; and

a holding compartment within the first and second enclosure structures and adjacent to the flexible latching means for holding a battery of predetermined size and shape,

wherein the flexible latching means comprises:

a latch member for engaging with the hook to latch together the first and second enclosure structures; and

a flexible extender member coupled between the first enclosure structure and the latch member for extending the latch member into the second enclosure structure, and

wherein the flexible extender member and the latch member are constructed such that, in the absence of a deflecting force against the latch member in a direction to deflect the latch member away from the hook, the latch member remains engaged with the hook when the battery is not in the holding compartment, and

wherein mechanical interference between the battery and the latch member further prevents the latch member from disengaging from the hook, even in the presence of a deflecting force against the latch member, when the battery is in the holding compartment.

9. A selective call receiver comprising:

a printed circuit board comprising selective call receiver circuits for receiving selective call messages and for presenting the received selective call messages to a user;

a housing providing a first cavity for enclosing the printed circuit board and a second cavity for enclosing a battery; and

a latch system for the housing, the latch system comprising:

a first housing section comprising a flexible wall adjacent to the second cavity, the flexible wall comprising a snap latch; and

a second housing section comprising a hook for engaging the snap latch for coupling the second housing section to the first housing section;

wherein the snap latch comprises:

a latch member having an aperture for engaging with the hook to latch together the first and second housing sections; and

a flexible extender member coupled between the first housing section and the latch member for extending the latch member into the second housing section, and

wherein the flexible extender member and the latch member are constructed such that, in the absence of a deflecting force against the latch member in a direction to deflect the latch member away from the hook, the latch member remains engaged with the hook when the battery is not in the holding compartment, and

wherein mechanical interference between the battery and the latch member further prevents the latch member from disengaging from the hook, even in the presence of a deflecting force against the latch member, when the battery is in the holding compartment.

5,342,708

SEPARATOR FOR AN ALKALINE STORAGE CELL

Anthony Green; Patrice Champalle, both of Le Bouscat, and Jean-Louis Liska, Bordeaux, all of France, assignors to Saft, Romainville, France

PCT No. PCT/FR91/00792, § 371 Date Jun. 9, 1992, § 102(e) Date Jun. 9, 1992, PCT Pub. No. WO92/07389, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 11, 1991, Ser. No. 859,718

Claims priority, application France, Oct. 12, 1990, 90 12621

Int. Cl.[5] H01M 2/16

U.S. Cl. 429—145 7 Claims



1. A separator for an alkaline storage cell, the separator being constituted by two sheets of polypropylene, polyamide, or polyethylene felt having a thickness lying in the range 0.1 mm to 0.4 mm, and having a weight lying in the range 10 g/m^2 to 100 g/m^2, together with an intermediate sheet interposed between said two felts, the separator being characterized by the fact that said intermediate sheet is plane, has a thickness lying in the range 0.1 mm to 0.4 mm, is made of a sintered polymeric material selected from the group consisting of polyvinyl chloride, polyethylene and a copolymer based on polyvinyl chloride, has a porosity of not less than 30%, has pores of a diameter lying in the range of 10 μm to 100 μm, and has a weight lying in the range 100 g/m^2 to 400 g/m^2.

5,342,709

BATTERY UTILIZING CERAMIC MEMBRANES

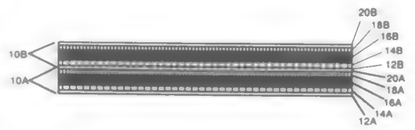
Mark S. Yahnke, Berkeley, Calif.; Golan Shlomo, Haifa, Israel, and Marc A. Anderson, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 717,789, Jun. 18, 1991, Pat. No. 5,208,121. This application May 3, 1993, Ser. No. 56,452

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] H01M 2/16

U.S. Cl. 429—162 24 Claims



1. A film battery comprising

a cathode surface of conductive material;

an anode surface of conductive material;

a separator formed of a porous metal oxide ceramic material having a mean pore diameter of less than about 100 Angstroms, the separator impregnated with an electrolyte.

5,342,710

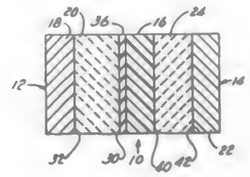
LAKYER FOR STABILIZATION OF LITHIUM ANODE

Rene Koksbang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Mar. 30, 1993, Ser. No. 40,228

Int. Cl.[5] H01M 6/18, 4/58

U.S. Cl. 429—192 9 Claims



1. In a battery having a negative electrode having an active material which comprises metallic lithium and an electrolyte separator comprising a solid matrix material and an electrolyte having a salt of lithium, the negative electrode having a major surface facing the matrix material, the improvement comprising: a layer disposed between the solid matrix material and the major surface of the negative electrode; said layer comprising a polyvinylpyridine or a polyvinylquinoline polymer; and iodine complexed with said polymer for reducing passivation of said lithium-containing negative electrode.

5,342,711

RECHARGEABLE BATTERY WITH NONAQUEOUS ELECTROLYTE

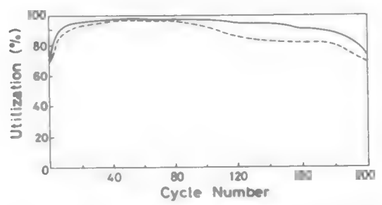
Hikari Tamura, and Shunichi Higuchi, both of Minoo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,633

Claims priority, application Japan, Mar. 11, 1992, 4-88072; Mar. 11, 1992, 4-88074

Int. Cl.[5] H01M 4/52

U.S. Cl. 429—197 2 Claims



1. A rechargeable battery with a nonaqueous electrolyte, comprising a cathode composite, an anode active material and a nonaqueous electrolyte, said cathode composite containing as a cathode active material a composition comprising an aniline-containing FeOOH having a density of 2.2 to 2.4 g/cm^3 in the form of a powder which shows peaks at 2γ of 14°, 27° and 44° as analyzed by X-ray diffractometry with CuKα radiation, wherein said composition comprises sufficient amorphous FeOOH that its structure does not substantially change during use, said anode active material comprising a lithium ion doped compound, said nonaqueous electrolyte comprising a solution prepared by dissolving a fluorine compound selected from the group consisting of lithium hexafluoroarsenate, lithium hexafluorophosphate and lithium trifluoromethanesulfonate in a solvent mixture comprising ethylene carbonate and ether in a volume ratio of 2:1 to 1:2 in a concentration of 1.0 to 1.5 mol/dm^3.

5,342,712

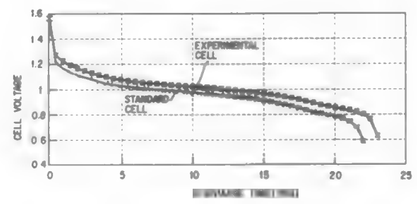
ADDITIVES FOR PRIMARY ELECTROCHEMICAL CELLS HAVING MANGANESE DIOXIDE CATHODES

Jola E. Mieczkowska, Crawley, and Simon P. Markfort, West Sussex, both of England, assignors to Duracell Inc., Bethel, Conn.

Filed May 17, 1993, Ser. No. 61,976

Int. Cl.[5] H01M 4/62

U.S. Cl. 429—224 13 Claims



1. A primary electrochemical cell comprising an anode active material, an aqueous alkaline electrolyte solution, a separator and a cathode comprising manganese dioxide, said cathode further comprising anatase titanium dioxide.

5,342,713

PHASE SHIFTING MASK

Hiroshi Ohtsuka; Kazutoshi Abe, both of Tokyo, and Takashi Taguchi, Kurokawa, all of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

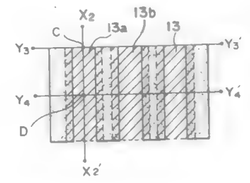
PCT No. PCT/JP91/00817, § 371 Date Dec. 18, 1992, § 102(e) Date Dec. 18, 1992, PCT Pub. No. WO91/20018, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 19, 1991, Ser. No. 949,824

Claims priority, application Japan, Jun. 21, 1990, 2-161239

Int. Cl.[5] G03F 9/00

U.S. Cl. 430—5 14 Claims



1. A phase shifting mask comprising:

a transparent base member having a surface;

shading layers capable of intercepting light, formed selectively on the surface of the base member; and

first and second phase shifting layers formed alternately on the surface of the base member between the adjacent shading patterns to create a phase difference between light transmitted therethrough,

wherein the phase difference between light transmitted through the first phase shifting layers and light transmitted through the base member is approximately on odd multiple of 90°, the phase difference between light transmitted through the second phase shifting layers and light transmitted through the base member is approximately 90° added to a multiple of 180°, and the phase difference between light transmitted through the first phase shifting layers and light transmitted through the second phase shifting layers is approximately an odd multiple of 180°.

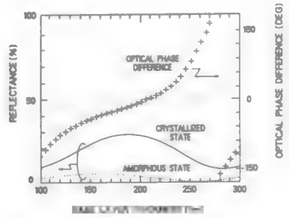
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,714

METHOD FOR RECORDING, ERASING AND REPRODUCING DATA ON AN OPTICAL DATA RECORDING MEDIUM

Tatsunori Ide, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 993,852
Claims priority, application Japan, Dec. 20, 1991, 3-337361
Int. Cl.[5] G11B 7/00
U.S. Cl. 430—19 1 Claim



1. A method for recording, erasing and reproducing data on an optical data recording media which can be set to states of high and low optical reflectance or transmittance, said recording media comprising a substrate having guide grooves formed therein, said guide grooves being defined by concave and convex portions of said substrate, a width of one of said concave and convex portions being smaller than the diameter of a laser beam spot used for recording and erasing, said method comprising the steps of:

temporarily setting a recording layer of said media to a state of high reflectance when the variations of the reflectance is to be detected, and to a state of high transmittance when the variations of the transmittance is to be detected;

detecting variations of the reflected light intensity as signals; and

effecting at least one of recording and erasing operations using the concave portions when an optical phase change upon a physical phase transition from a state of higher reflectance to a state of lower reflectance is positive, and using the concave portion when the optical phase change upon the physical phase transition from a state of a higher reflectance to a state of a lower reflectance is negative.

5,342,715

COLOR PRINTER HAVING REDUCED FIRST COPY OUT TIME AND EXTENDED PHOTORECEPTOR LIFE

Venhatesh H. Kamath, and Lam F. Wong, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 23, 1993, Ser. No. 51,709
Int. Cl.[5] G03G 5/12
U.S. Cl. 430—44 7 Claims

1. An electrophotographic printing machine which incorporates a photoreceptor belt which moves along a preselected path in a process direction, said belt having a seam extending across the width thereof, said color images formed in overlying registration to form a composite color image,

means for forming a plurality of targets on the surface of said belt, each of said targets associated with one of said belt pitches, one of said targets having a size different from the other targets, said one of said targets further associated with identification of said seam,

means for sensing said targets and for generating output signals representing detection of said targets, and

control means response to said output signals for maintaining the overlying registration of said color images and for preventing said images from overlying said seam.

5,342,716

ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE PRECURSOR

Eiichi Kato, and Seishi Kasai, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

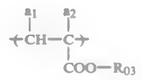
PCT No. PCT/JP92/00188, § 371 Date Oct. 22, 1992, § 102(e) Date Oct. 22, 1992, PCT Pub. No. WO92/15048, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 21, 1992, Ser. No. 946,320
Claims priority, application Japan, Feb. 22, 1991, 3-78711; Mar. 19, 1991, 3-78175; Apr. 2, 1991, 3-94886; May 31, 1991, 3-156[illegible]
Int. Cl.[5] G03G 5/05
U.S. Cl. 430—49 8 Claims

1. An electrophotographic lithographic printing plate precursor comprising a conductive support having provided thereon at least one photoconductive layer containing photoconductive zinc oxide, a spectral sensitizing dye and a binder resin, characterized in that the binder resin of the photoconductive layer comprises at least one resin (A) described below and the photoconductive layer further contains at least one non-aqueous solvent dispersed resin grain (L) described below having a grain diameter equivalent to or smaller than the maximum grain diameter of the photoconductive zinc oxide grain;

said at least one resin (A) having a weight average molecular weight of from 1×10^3 to 2×10^4 and containing at least 30% by weight of a polymer component corresponding to a repeating unit represented by formula (I) described below and from 0.5 to 15% by weight of a polymer component having at least one polar group selected from the group consisting of $-PO_3H_2$, $-SO_3H$, $-COOH$,



(wherein R_{01} represents a hydrocarbon group or $-OR_{02}$ (wherein R_{02} represents a hydrocarbon group)) and a cyclic acid anhydride-containing group;



(I)

wherein a_1 and a_2 each represents a hydrogen atom, a halogen atom, a cyano group or a hydrocarbon group; and R_{03} represents a hydrocarbon group;

said at least one non-aqueous solvent dispersed resin grain (L) being obtained by subjecting, to a dispersion polymerization reaction in a non-aqueous solvent, a monofunctional monomer (C) which is soluble in the non-aqueous solvent but becomes insoluble in the non-aqueous solvent by being polymerized and contains at least one functional group capable of forming at least one carboxy group upon decomposition, in the presence of a dispersion stabilizing resin which is soluble in the non-aqueous solvent, wherein the dispersion polymerization reaction is conducted under condition that the dispersion stabilizing resin contains a repeating unit having a silicon and/or fluorine atom-containing substituent and/or that a monofunctional monomer (D) which is copolymerizable with the monofunctional monomer (C) and which has a silicon and/or fluorine atom-containing substituent is additionally coexistent.

5,342,717

CHARGING COMPONENT FOR ELECTROPHOTOGRAPHIC PROCESS CONTAINING A PROTECTIVE LAYER OF CONDUCTIVE CARBON BLACK PARTICLES IN POLYETHER-ESTER-AMIDE BLOCK COPOLYMER

Der-Tarng Su, Hsinchu; Wen-Jer Chen, Kaohsiung; Jeng-Yue Wu, Hsinchu, and Ming-Chu Wu, Kaohsiung, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

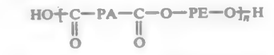
Filed Feb. 3, 1993, Ser. No. 12,913
Int. Cl.[5] G03G 13/02
U.S. Cl. 430—55 14 Claims

1. A charging component for use in electrophotographic process comprising:

(a) a metal core;

(b) a conductive polymer base layer adjacent to and radially outwardly of said metal core; and

(c) a protective surface layer adjacent to and radially outwardly of said conductive polymer base layer, wherein said protective surface layer comprising conductive carbon black particles dispersed in a polyether-ester-amide block copolymer represented by the following structure:



wherein n is an integer; PA is a polyamide chain selected from the group consisting of Nylon 4-6, Nylon 6-9, Nylon 6-10, Nylon 6-12, Nylon 6, and Nylon 12; and PE is a polyether chain selected from the group consisting of polyether diol, polypropyl glycol, polyethylene glycol, polytetramethylene glycol, polycaprolactone diol, and polycarbonate diol.

5,342,718

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR WITH OVERLAYER OF POLYOL-CURING POLYURETHANE RESIN

Shinji Nousho, Numazu; Mitsuru Seto, Yamakita; Junichiro Hashimoto, Susono, and Takashi Rokutanzono, Numazu, all of Japan, assignors to RICOH Company, Ltd., Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 917,992
Claims priority, application Japan, Jul. 24, 1991, 3-184441
Int. Cl.[5] G03G 5/147
U.S. Cl. 430—58 19 Claims

1. An electrophotographic photoconductor comprising:

(1) an electroconductive support,

(2) a photoconductive layer formed on said electroconductive support, and

(3) a protective layer formed on said photoconductive layer comprising a polyol-curing urethane resin, which satisfies the condition of $b/a \leqq 0.2$, wherein a is the absorbance at 2920 cm^{-1} and b is the absorbance at 2260 cm^{-1} in an IR spectrum of said protective layer.

13. The electrophotographic photoconductor as claimed in claim 1, wherein said photoconductive layer comprises a charge generation layer and a charge transport layer.

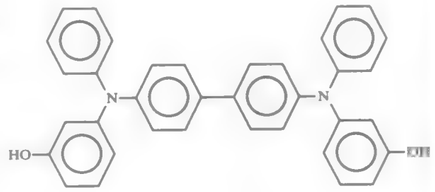
5,342,719

IMAGING MEMBERS HAVING A HYDROXY ARYL AMINE CHARGE TRANSPORT LAYER

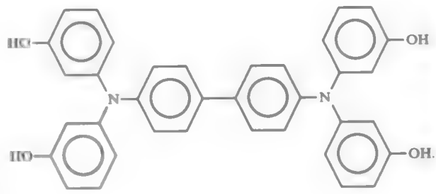
Damodar M. Pai, Fairport; John F. Yanus, Webster; Paul J. DeFeo, Sodus Point, all of N.Y.; Alan E. J. Toth, Burlington, Canada; Walter Mychajlowskij, Georgetown, Canada, and Zoran Popovic, Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 1, 1993, Ser. No. 24,127
Int. Cl.[5] G03G 5/05
U.S. Cl. 430—59 25 Claims

1. An imaging member comprising a supporting substrate, a photogenerating layer and a charge transport layer, said charge transport layer comprising charge transporting molecules dispersed in a polymeric binder and wherein said transport layer contains a hydroxy derivative of said charge transport molecules; and wherein said hydroxy derivative is an aryl amine selected from the group consisting of



and



5,342,720

COLOR PROOFING ELEMENT AND PROCESS FOR MAKING THE SAME

Gregory L. Zwadlo, Ellsworth, Wis., and Roger I. Krech, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 28, 1993, Ser. No. 54,867
Int. Cl.[5] G03G 5/147
U.S. Cl. 430—66 10 Claims

1. A proofing element consisting essentially of:

(a) a photoconductive layer on an electrically conductive substrate; and

(b) overlaying the photoconductive layer, a removable dielectric layer consisting essentially of: a coalesced film of thermoplastic polymeric resinous particles which have steric stabilizer groups adhered to the surfaces of said polymeric particles, said steric stabilizer groups being in coordinated association with a charge directing moiety and said charge directing moiety having a charge dissipating agent in association therewith.

5,342,721

SILICONE RESIN COMPOSITION FOR USE AS A CARRIER COATING

Shoji Akamatsu, Chiba Prefecture, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 949,612
Claims priority, application Japan, Sep. 30, 1991, 3-278225
Int. Cl.[5] G03G 9/00
U.S. Cl. 430—108 6 Claims

1. A carrier for use in electrophotographic processes, said carrier comprising a particulate material coated with a silicone resin composition comprising the reaction product of

(A) an aminoalkyl-containing organopolysiloxane of the general formula

$(R^1SiO_{3/2})_m(R^1_2SiO)_n$

where at least one R^1 represents an aminoalkyl group and the remaining R^1 are identical or different monovalent hydrocarbon radicals, m and n are positive numbers, and

VOL 1165 ISS 5 AG 30 1994 UMI

(B) an organopolysiloxane containing haloalkyl or epoxy-containing organic groups and represented by the formula

$(R^2SiO_{3/2})_p(R^2_2SiO)_hd\ q$

where at least one R^2 is selected from the group consisting of haloalkyl and epoxy-containing organic groups, the remaining R2 are identical or different monovalent hydrocarbon radicals, and p and q are positive numbers.

5,342,722

TONER RESIN COMPOSITION AND PROCESS FOR PREPARING SAME

Hirokazu Ito; Masahiro Itoh; Motoshi Inagaki, all of Toyohashi; Syuji Takahiro, Kasugai, and Keiji Yoshida, Nagoya, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed May 6, 1992, Ser. No. 878,910
Int. Cl.[5] G03G *9/00, 9/13*
U.S. Cl. 430—109 **24 Claims**

1. A toner resin composition comprising a uniform dispersion of 5 to 40% by weight of a linear polyester (A) having a weight average molecular weight of 3,000 to 20,000 and 50 to 95% by weight of a styrene-acrylic copolymer (B), wherein said styrene-acrylic copolymer (B) is comprised of 10 to 25% by weight of a high molecular weight polymer (B1) having a weight average molecular weight of 500,000 to 1,100,000 and 75 to 90% by weight of a low molecular weight polymer (B2) having a weight average molecular weight of 5,000 to 100,000, said high molecular weight polymer (B1) is comprised of a styrene component (b-1) and an acrylic ester and/or methacrylic ester component (b-2), and said low molecular weight polymer (B2) is comprised of a styrene component (b-1), an acrylic ester and/or methacrylic ester component (b-2), 0.3 to 3 parts by weight, per 100 parts of the total weight of said component (b-1) and component (b-2), of an α-methyl styrene dimer (b-3) and 0.5 to 30 parts by weight, per 100 parts by weight of said polyester (A), of a glycidyl methacrylate component (b-4).

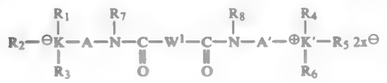
5,342,723

BISCATIONIC ACID AMIDE AND ACID IMIDE DERIVATIVES AS CHARGE CONTROLLERS

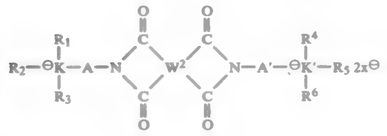
Hans-Tobias Macholdt, Darmstadt; Siegfried Schiebler, Bad Soden am Taunus; Jörg Gitzel, Hattersheim am Main, and Erwin Dietz, Kelkheim/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP90/02207, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO91/10172, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 17, 1990, Ser. No. 863,296
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1989, 3943048; Sep. 5, 1990, 4028122
Int. Cl.[5] G03C *9/08;* **C07F** *5/06, 7/02, 11/00*
U.S. Cl. 430—110 **10 Claims**

1. Method of using biscationic acid and acid imide derivatives of the general formula (I) and/or (II) and/or (III)

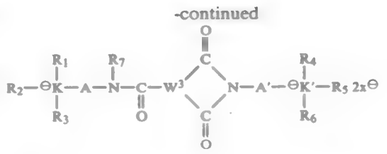


(I)



(II)

-continued



(III)

in which R_1 to R_8 independently of one another are each a hydrogen atom or a hydrocarbon radical, which can be interrupted by hetero atoms, and in which the radicals R_1 and R_2, or R_4 and R_5, independently of one another, incorporating K or K′, can be closed together to form a ring system, and in the case where R_1 or R_2, or R_4 or R_5 in this connection form a double bond to K or K′, R_3 and R_6 have no meaning, and/or in which one of the radicals R_1, R_2 or R_3 can be closed together with R_7, or one of the radicals R_4, R_5 or R_6 can be closed together with R_8 to form an aliphatic bridge of 2 to 5 carbon atoms, and in which A and A′ and W^1, W^2 and W^3 independently of one another are each a bridge member based on a hydrocarbon, which can be interrupted by hetero atoms, and in which W^1 is a divalent, W^2 a tetravalent and W^3 a trivalent bridge member, and in which W^1 can also be a direct bond and K and K′ independently of one another can each be a nitrogen, phosphorus, arsenic or antimony atom, and the anion $X^{\ominus}$ is the stoichiometric equivalent of one or more organic or inorganic, mixed or non-mixed anions, it also being possible for the compound to be present as a mixed crystal with various cations of the general formulae (I) to (III), individually or in combination comprising using said derivative as charge controllers for toners and developers which are used for electrophotographic copying or multicopying of originals and for printing electronically, optically or magnetically stored data or in color proofing, or as charge controllers for powders and powder paints.

5,342,724

TONER MANUFACTURE USING CHAIN TRANSFER POLYESTERS

John C. Wilson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1992, Ser. No. 867,307
Int. Cl.[5] G03G *9/08, 9/13*
U.S. Cl. 430—114 **38 Claims**

1. A method of making polymeric toner particles comprising the steps of:

heating a diacid and a diol under conditions effective to form a chain transfer polyester, wherein either said diacid or said diol contain a disulfide moiety;

reacting one or more vinyl monomers with said chain transfer polyester in the presence of an initiator under conditions effective to produce a block copolymer having polyester blocks and polyvinyl blocks, wherein said polyester blocks and said polyvinyl blocks are linked together by a sulfide group previously constituting the disulfide moiety; and

reducing said block copolymer to a particulate form to a size suitable for use as an electrographic toner.

5,342,725

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

Eiichi Kato, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

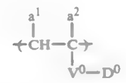
Filed Jun. 22, 1993, Ser. No. 79,557
Claims priority, application Japan, Jun. 23, 1992, 4-187327; Jun. 25, 1992, 4-190172
Int. Cl.[5] G03G *9/13, 9/135*
U.S. Cl. 430—115 **11 Claims**

1. A liquid developer for electrostatic photography comprising at least resin grains dispersed in a non-aqueous solvent having an electric resistance of at least 10^9 Ωcm and a dielectric

constant of not higher than 3.5, wherein the dispersed resin grains are polymer resin grains obtained by polymerizing a solution containing (1) at least one monofunctional monomer (A) which is soluble in the non-aqueous solvent but becomes insoluble therein by being polymerized, (2) at least one monofunctional macromonomer (MA) having a number average molecular weight of not more than 1×10^4 and having a polymerizable double bond group represented by the general formula (II) shown below bonded to only one terminal of the main chain of a polymer composed of a repeating unit represented by the general formula (I) shown below, or at least one oligomer (B) having a number average molecular weight of not more than 1×10^4 and having at least one polar group selected from a carboxy group, a sulfo group, a hydroxy group, a formyl group, an amino group, a phosphono group and

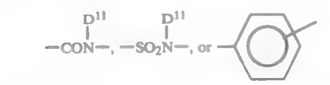


(wherein G^1 represents a hydrocarbon group or $—OG^2$ (wherein G^2 represents a hydrocarbon group) bonded to only one terminal of the main chain of a polymer composed of a repeating unit represented by the general formula (I) shown below, (3) at least one polyfunctional monomer (D) having at least two polymerizable functional groups which are copolymerizable with the monofunctional monomer (A), and (4) at least one dispersion-stabilizing resin (P) soluble in the non-aqueous solvent, which is a polymer containing a repeating unit represented by the general formula (III) shown below and the main chain of the polymer is partially crosslinked;



(I)

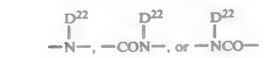
wherein V^0 represents —COO—, —OCO—, $—CH_2)_rCOO—$, $—CH_2)_rOCO—$, —O—, $—SO_2—$, —CONHCOO—, CONHCONH—,



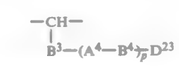
(wherein D^{11} represents a hydrogen atom or a hydrocarbon group having from 1 to 22 carbon atoms; and r represents an integer of from 1 to 4); a^1 and a^2, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, —COO—D^{12}, or —COO—D^{12} bonded via a hydrocarbon group (wherein D^{12} represents a hydrogen atom or a hydrocarbon group); and D^O represents a hydrocarbon group having from 1 to 22 carbon atoms or a substituent selected from the substituents represented by the following general formula (IV):

$$—(A^1—B^1)_m(A^2—B^2)_nD^{21} \quad \text{(IV)}$$

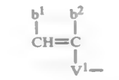
wherein D^{21} represents a hydrogen atom or a hydrocarbon group having from 1 to 22 carbon atoms; B^1 and B^2, which may be the same different, each represents —O—, —CO—, $—CO_2—$, —OCO—, $—SO_2—$,



(wherein D^{22} has the same meaning as D^{21} defined above%; A^1 and A^2, which may be the same or different, each represents a hydrocarbon group having from 1 to 18 carbon atoms which may be substituted and which may contain an intervening group represented by the following formula in the main chain of the hydrocarbon group;

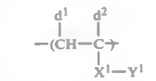


(wherein B^3 and B^4, which may be the same or different, each has the same meaning as B^1 and B^2; A^4 represents a hydrocarbon group having from 1 to 18 carbon atoms; and D^{23} has the same meaning as D^{21} defined above); m, n and p, which may be the same or different, each represents an integer of from 0 to 4, provided that m, n and p cannot be 0 at the same time;



(II)

wherein V^1 has the same meaning as V^0 defined in the general formula (I); and b^1 and b^2, which may be the same or different, each has the same meaning as a^1 or a^2 defined in the general formula (I);



(III)

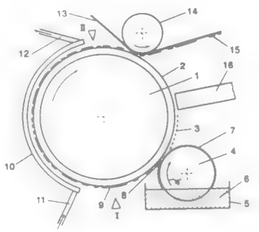
wherein X^1 represents —COO—, —OCO—, $—CH_2OCO—$, $—CH_2COO—$, —O— or $—SO_2—$; y^1 represents an aliphatic group having from 6 to 32 carbon atoms; and d^1 and d^2, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group having from 1 to 8 carbon atoms, —COO—Z^1 or —COO—Z^1 bonded via a hydrocarbon group having from 1 to 8 carbon atoms (wherein Z^1 represents a hydrocarbon group having from 1 to 22 carbon atoms).

5,342,726

METHOD OF TRANSFER OF IMAGE DEPOSITS FROM FERRO ELECTRIC RECORDING MEMBER SURFACES

Luis Lima-Marques, Henley Beach, Australia, assignor to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Aug. 20, 1991, Ser. No. 747,688
Claims priority, application Australia, Aug. 23, 1990, PK1911
Int. Cl.[5] G03G *13/16*
U.S. Cl. 430—126 **10 Claims**



1. A method for the transfer of toned image deposits from a recording surface of a ferro-electric recording member (2) to a surface of a receiving member (13) at a transfer station, wherein the ferro-electric member has a latent image (3) re-

VOL 1165 ISS 5 AG 30 1994 UMI

corded on said recording surface in the form of polarized ferro-electric domains,

comprising the steps of

providing a source of supply (6, 4, 7) of toner particles dispersed in a liquid, said toner particles being at a first temperature,

at a toner application station, physically applying the toner particles dispersed in the liquid onto the recording surface having said polarized domains of the ferro-electric recording member (2) via a gap (8) between said recording surface of the ferro-electric recording member (2) and the source of supply (6, 4, 7) of said liquid-dispersed toner particles, for

toning the latent image on said ferro-electric surface by attraction thereto of said toner particles, to form toned image deposits on said recording surface of the ferro-electric recording member (2) thereon, at said first temperature;

cooling said recording surface of the ferro-electric recording member (2) containing said toned image deposits to a second, and lower temperature, to thereby establish a lower temperature of said recording surface than said first temperature by positioning a cooling means (10, 11) in close proximity to said toned ferro-electric recording member (2) at a position (I) following the toner applying step at the toner application station; and

immediately thereafter transferring said toned image deposits at a transfer station from said cooled recording surface of said ferro-electric recording member (2) to the receiving member (13) by contact of said receiving member with said cooled recording surface of said ferro-electric recording member (2), and

wherein said cooling step comprises lowering the temperature by at least 0.3° C., whereby said second temperature will be lower by at least 0.3° C. than said first temperature.

5,342,727

COPOLYMERS OF 4-HYDROXYSTYRENE AND ALKYL SUBSTITUTED-4-HYDROXYSTYRENE IN ADMIXTURE WITH A PHOTOSENSITIZER TO FORM A PHOTOSENSITIVE COMPOSITION

Richard Vicari, Chatham; Douglas J. Gordon, Somerville, both of N.J.; William D. Hinsberg, Fremont, Calif.; Dennis R. McKean, San Jose, Calif.; Carlton G. Willson, San Jose, Calif., and Ralph Dammel, Klein-Winternheim, Fed. Rep. of Germany, assignors to Hoechst Celanese Corp., Somerville, N.J. and IBM Corp., Armonk, N.Y.

Continuation of Ser. No. 535,078, Jun. 8, 1990, abandoned, Continuation-in-part of Ser. No. 260,841, Oct. 21, 1988, abandoned. This application Dec. 20, 1991, Ser. No. 812,878

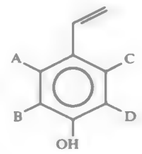
Int. Cl.[5] G03F *7/021, 7/09*

U.S. Cl. 430—157 **18 Claims**

1. A photosensitive composition which comprises in admixture:

a photosensitizer in an amount sufficient to provide an imagewise differentiation when the composition is coated on a substrate and imagewise exposed to actinic radiation; and a binder in an amount sufficient to bind the composition ingredients into a substantially uniform admixture, wherein said binder comprises:

a copolymer of (a) an unsubstituted 4-hydroxystyrene monomer and (b) a substituted 4-hydroxystyrene monomer of the formula



wherein A, B, C and D are independently H or C_1 to C_4 alkyl and wherein at least one of B and D is C_1 to C_4 alkyl; and wherein said copolymer has a molecular weight of from about 800 to about 100,000; and wherein the mol ratio of monomer (a) to monomer (b) ranges from about 3:1 to about 1:3.

5,342,728

STABILIZERS FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

Richard P. Henzel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 18, 1992, Ser. No. 931,806

Int. Cl.[5] B41M *5/26*

U.S. Cl. 430—200 **9 Claims**

4. In a process of forming a thermal dye transfer image comprising:

a) contacting at least one dye-donor element comprising a support having on one side a dye layer comprising an image dye in a polymeric binder, said binder being non-transferably by heat and consisting of a cellulose derivative, a polycarbonate, polyvinyl acetate, poly(styrene-co-acrylonitrile), a polysulfone or a poly(phenylene oxide), with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

b) imagewise-heating said dye-donor element; and

c) transferring a dye image to said dye-receiving element to form said thermal dye transfer image,

the improvement wherein said dye layer also contains an epoxide compound which acts as a dye stabilizer, other than said binder, in an amount of up to about 25% by weight of said binder, and either a) an infrared-absorbing material is contained in said dye layer or a layer associated therewith, or b) the other side of the support has a slipping layer thereon.

5,342,729

DYE FIXING ELEMENT WITH PROTECTIVE LAYER CONTAINING BORATE COMPOUND

Toshiaki Aono, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 10, 1992, Ser. No. 988,896

Claims priority, application Japan, Dec. 10, 1991, 3-349734

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—203 **12 Claims**

1. A dye fixing element comprising,

a support having thereon (i) a dye fixing layer and (ii) a base precursor capable of complexing with metallic ions constituting a difficulty soluble metal salt compound in the presence of water as a medium,

said dye fixing layer having a protective layer on the side thereof opposite said support,

said protective layer comprising a borate compound and a hydrophilic or water-soluble polymer selected from the group consisting of polysaccharides and derivatives thereof and homopolymers and copolymers comprising monomer units of vinyl alcohol, acrylic acid, salts of acrylic acid, methacrylic acid or salts of methacrylic acid,

wherein the dye fixing layer is capable of receiving and having fixed thereto a diffusive dye produced or released by development of a light-sensitive element comprising (i) a light-sensitive silver halide, (ii) a hydrophilic binder, (iii) a difficulty soluble metal salt compound, and (iv) a dye providing compound which releases a diffusive dye in correspondence to or counter correspondence to an imagewise exposure in the presence of a base or base precursor after or simultaneously with the imagewise exposure of the light-sensitive element,

and wherein the borate compound is present in the protective layer in an amount sufficient to inhibit contact dye transfer.

5,342,730

DYE RELEASING COUPLERS FOR COLOR DIFFUSION TRANSFER ELEMENTS WITH DYE BARRIER LAYERS

Thomas R. Welter, Webster, and John Texter, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 28, 1992, Ser. No. 952,444

The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—213 **50 Claims**

1. A photographic color diffusion transfer element comprising a single dimensionally stable support, wherein said support comprises an opaque and light reflecting layer, and coated thereon in reactive association and in sequence (1) a mordant layer for binding diffusible dyes, (2) a stripping layer, (3) one or more layers comprising radiation sensitive silver halide and a diffusible-dye forming coupler, and (4) a barrier layer comprising a polymer that (a) allows the passage of solutions for processing said element when said element is contacted with an external processing bath, (b) impedes the diffusion out of said element of the diffusible dye formed from said diffusible-dye forming coupler, and (c) contains from about 1×10^{-5} to about 4×10^{-3} moles/gram of ion forming functional groups such that the barrier layer reflects diffusible dye, and wherein said diffusible-dye forming coupler is of the structure

Cp-L-Dye

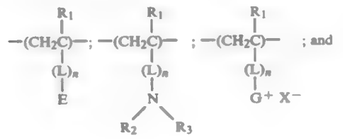
wherein

Cp is a coupler radical selected from the group comprising cyan dye forming radicals, magenta dye forming radicals, yellow dye forming radicals, black dye forming radicals, and colorless product forming radicals, said Cp being substituted in the coupling position with a divalent linking group, L;

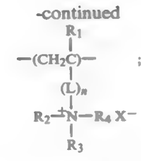
Dye is a dye radical exhibiting selective absorption in the visible spectrum and contains a solubilizing group;

and where said -L-Dye group couples off upon reaction of said coupler radical with the oxidation product of a primary amine developing agent.

9. An element as described in claims 1 or 3, wherein said mordant layer comprises polymer comprising vinyl monomer units having tertiary amino groups or quaternary ammonium groups and wherein said vinyl monomer units are selected from the group consisting of:



-continued



;

wherein R_1 is a hydrogen atom or a lower alkyl group having 1 to 6 carbon atoms; L represents a divalent linking group having 1 to 20 carbon atoms; E represents a hetero ring containing a carbon-nitrogen double bond; n is 0 or 1; R_2, R_3, and R_4 are the same or different and each represents an alkyl group having 1 to 12 carbon atoms or an aralkyl group having 7 to 20 carbon atoms; G^+ represents a hetero ring which is quaternized and contains a carbon-nitrogen double bond; X^- represents a monovalent anion; and R_2 and R_3, R_3 and R_4, or R_2 and R_4 may form, together with the adjacent nitrogen atom, a cyclic structure.

5,342,731

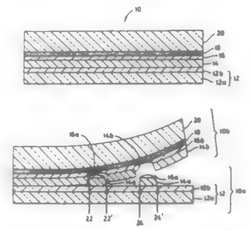
LAMINAR THERMAL IMAGING MEDIUM ACTUATABLE IN RESPONSE TO INTENSE IMAGE-FORMING RADIATION UTILIZING POLYMERIC HARDENABLE ADHESIVE LAYER THAT REDUCES TENDENCY FOR DELAMINATION

Neal F. Kelly, Woburn, and Eugene L. Langlais, Norfolk, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 21, 1990, Ser. No. 616,853

Int. Cl.[5] G03F *7/34*

U.S. Cl. 430—253 **12 Claims**



1. A laminar thermal imaging medium, actuatable in response to intense image-forming radiation for production of an image, said laminar medium comprising in order:

a first sheet transparent to said image-forming radiation and having at least a surface zone or layer of polymeric material heat-activatable upon exposure of said thermal imaging medium to brief and intense radiation;

a layer of porous or particulate image-forming substance having cohesivity in excess of its adhesivity for said polymeric heat-activatable layer;

a second sheet covering said layer of porous or particulate image-forming substance and adhesively laminated directly or indirectly to said image-forming substance by an adhesive layer;

said medium being capable of absorbing said brief and intense radiation at or near the interface of said heat-activatable polymeric material and said layer of porous or particulate image-forming substance and of converting absorbed radiation into heat;

said heat-activatable polymeric material being activatable by said heat for attachment, firmly to said first sheet, of portions of said layer of image-forming substance exposed to said brief and intense radiation, said exposed and firmly attached portions, on separation of said first and second

VOL 1165 ISS 5 AG 30 1994 UMI

sheets after said exposure, providing a first image, in said image-forming substance on said first sheet;

said second sheet, upon separation of said first and second sheets after said exposure, carrying therewith a second image, in unexposed portions of said image-forming substance;

said adhesive layer being a polymeric hardenable adhesive layer, said hardenable adhesive layer being capable in its unhardened condition of reducing the tendency for said laminar thermal imaging medium to delaminate on application of physical stresses to said medium and being hardenable, by reaction curing of components thereof or by radiation curing on exposure to actinic radiation, to a layer of sufficient hardness to provide a durable base for said image carried on said second sheet.

5,342,732

PHOTOGRAPHIC HIGH CONTRAST SILVER HALIDE MATERIALS

Philip J. Coldrick, Hayes, and Julia Pich, Richmansworth, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP92/00335, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/15042, PCT Pub. Date Sep. 3, 1992

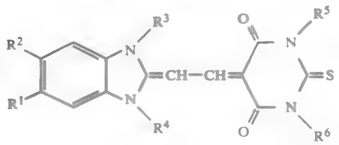
PCT Filed Feb. 18, 1992, Ser. No. 941,083

Claims priority, application United Kingdom, Feb. 20, 1991, 9103560; Mar. 1, 1991, 9104385

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 **7 Claims**

1. A photographic element comprising a support bearing a layer of a silver halide emulsion comprising at least 50% silver chloride which contains in or adjacent said emulsion layer a hydrazide nucleating agent and an amine booster, the combination of which is capable of providing high contrast images; said emulsion being sensitized with a dye of the general formula:



wherein

each of R^1 and R^2 are individually hydrogen, methyl, ethyl, propyl, butyl sulfoethyl, sulfopropyl, Cl, Br, CN or CF_3,

R^3 is an alkyl or substituted alkyl group,

R^4 is a sulfoalkyl group,

R^5 and R^6 are individually an alkyl or substituted alkyl group, and

said dye includes any necessary counter-ion;

said amine booster being an amino compound which:

(1) comprises at least one secondary or tertiary amino group,

(2) contains within its structure a group comprised of at least three repeating ethyleneoxy units, and

(3) has an n-octanol/water partition coefficient (log P) of at least one, wherein log P is defined by the formula:

$$\log P = \log \frac{[X]_{octanol}}{[X]_{water}}$$

wherein X is the concentration of said amino compound.

5,342,733

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Satoshi Kanetake; Tomokazu Yasuda; Yuzou Muramatsu, and Takashi Naoi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

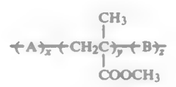
Filed Apr. 23, 1993, Ser. No. 52,268

Claims priority, application Japan, Apr. 23, 1992, 4-129316

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 **6 Claims**

1. A silver halide photographic material having provided on a support at least one light-sensitive silver halide emulsion layer and at least one light-sensitive surface layer, in which the non-light-sensitive surface layer contains an organic polymer represented by formula (I) and having a mean grain size of 1.0 μm or more, the polymer being produced by suspension polymerization:



(I)

where

A represents a repeating unit obtained by polymerization of at least one monomer having two or more copolymerizable ethylenic unsaturated groups;

B represents a repeating unit obtained by polymerization of at least one monomer having one copolymerizable ethylenic unsaturated group; and

x, y and z each representing a weight percentage, x is a number of from 5 to 15, y is a number of from 70 to 93, and z is a number of from 0 to 25.

5,342,734

DEEP UV SENSITIVE PHOTORESIST RESISTANT TO LATENT IMAGE DECAY

Richard M. Lazarus, Mission Viejo, Calif.; John J. Grunwald, Ramat-gan, Israel; Chava Gal, Ramot Hashavim, Israel, and Shulamit Hirsch, Tel-Aviv, Israel, assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 842,846, Feb. 25, 1992, abandoned. This application May 13, 1992, Ser. No. 882,207

Int. Cl.[5] G03C *1/492*

U.S. Cl. 430—270 **20 Claims**

1. A positive working photoresist composition comprising, in admixture:

a polymer insoluble in water but normally soluble in an aqueous alkaline medium;

a photoinitiator which generates an acid upon exposure to actinic radiation; and

a mixed carbonate ester of tertiary butyl alcohol and a polyhydric phenol which is an acid labile compound which inhibits the dissolution of the normally soluble polymer in said alkaline medium.

5,342,735

PHOTORESIST COMPOSITIONS CONTAINING A COPOLYMER OF AN ALIPHATIC POLYCYCLIC MONOMER HAVING ALPHA, BETA-UNSATURATED NITRILE WITH ANOTHER POLYMERIZABLE MONOMER

Koji Nozaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

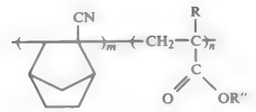
Filed Jun. 10, 1993, Ser. No. 74,755

Claims priority, application Japan, Jun. 10, 1992, 4-150645; Jun. 30, 1992, 4-173129

Int. Cl.[5] G03C *1/70*

U.S. Cl. 430—270 **5 Claims**

1. A resist composition comprising a polymer material and an acid generator, wherein the polymer is a copolymer of 2-norbornene-2-carbonitrile with an acrylate or methacrylate derivative having the following formula:



wherein R is hydrogen or methyl group;

R'' is a tert-butyl group or a tetrahydropyranyl group; and

m and n are integers greater than zero.

5,342,736

METHOD OF WET ETCHING OF POLYIMIDE

Ker-Ming Chen, Hsinchu; Tsung-Hsiung Wang; Shing-Shing King, both of Taipei, and Tzong-Ming Lee, Tainan, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Jan. 16, 1992, Ser. No. 821,632

Int. Cl.[5] G03C *1/93*

U.S. Cl. 430—323 **5 Claims**



1. A method of wet etching a polyimide comprising the steps of:

(a) cleaning a substrate for coating;

(b) coating a polyamic acid varnish onto said cleaned substrate;

(c) thermal curing the polyamic acid varnish to form a polyimide layer on the substrate;

(d) coating a polyamide-imide varnish onto the polyimide layer formed in step (c);

(e) curing the polyamide-imide varnish to form a polyamide-imide layer on the polyimide layer, said polyamide-imide and said polyimide having different etching rates under the action of a wet etchant;

(f) coating a layer of photoresist onto the coated substrate;

(g) masked exposing;

(h) image developing the photoresist on said substrate to selectively remove the photoresist to produce at least one unprotected portion over the polyimide and polyamide-imide layers; and

(i) wet etching the at least one unprotected portion of the polyimide and polyamide-imide layers using said wet etchant to form a staircase pattern on the substrate.

5,342,737

HIGH ASPECT RATIO METAL MICROSTRUCTURES AND METHOD FOR PREPARING THE SAME

Jacque H. Georger, Jr., Marlboro, Mass.; Martin C. Peckerar, Silver Spring; Milton L. Rebbert, Elkridge, both of Md.; Jeffrey M. Calvert, Alexandria, and James J. Hickman, McLean, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C. and Geo-Centers, Inc., Newton Centre, Mass.

Filed Apr. 27, 1992, Ser. No. 874,403

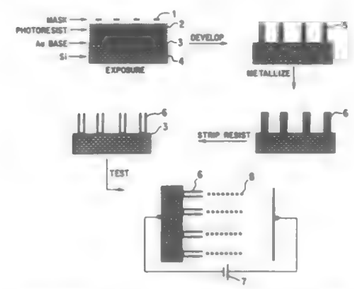
Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—324 **8 Claims**

1. A method for preparing a high aspect ratio metal microstructure, comprising:

(i) forming a layer of a photoresist on a substrate;

(ii) exposing said layer to actinic radiation in an imagewise manner to obtain an exposed layer and developing said exposed layer to obtain a surface which comprises an area having no remaining photoresist and an area covered with photoresist, wherein the photoresist, remaining in said area covered with photoresist, is characterized by having a top surface and exposed sides; and



(iii) metallizing to form a layer of metal on said exposed sides of said photoresist, wherein said metal is selected from the group consisting of Ni, Pd, Cu, Pt, Au, NiB, NiP, and permalloy.

5,342,738

RESIST FILM DEVELOPING METHOD AND AN APPARATUS FOR CARRYING OUT THE SAME

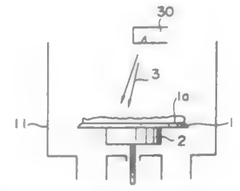
Rikio Ikeda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 4, 1992, Ser. No. 894,295

Claims priority, application Japan, Jun. 4, 1991, 3-132852; Jun. 11, 1991, 3-139228; Jul. 29, 1991, 3-211474

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—325 **17 Claims**



1. A method of developing an exposed resist film formed over a major surface of a substrate, said method comprising:

holding the substrate carrying the resist film in contact with a supporting surface of a supporting member, said supporting surface having an area smaller than the surface area of the substrate;

supplying a developer onto the resist film so that the developer is retained in a developer puddle by surface tension on the surface of the resist film to develop the resist film;

separating the substrate carrying the resist film from the supporting member during the progress of the development of the resist film for preventing temperature variations in the resist film.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,739

METHOD OF PREPARING A NEGATIVE PATTERN UTILIZING PHOTOSENSITIVE POLYMER COMPOSITION CONTAINING QUINONEDIAZIDE COMPOUND AND A POLY(AMIDO)IMIDE PRECURSOR

Kouichi Katou; Hirotoshi Maeda, both of Yokohama, and Kouichi Kunimune, Chiba, all of Japan, assignors to Chisso Corporation, Osaka, Japan

PCT No. PCT/JP92/00201, § 371 Date Oct. 22, 1992, § 102(e) Date Oct. 22, 1992, PCT Pub. No. WO92/15045, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 25, 1992, Ser. No. 938,139

Claims priority, application Japan, Feb. 25, 1991, 3-053288

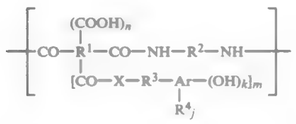
Int. Cl.[5] G03F *7/023*

U.S. Cl. 430—325 **5 Claims**

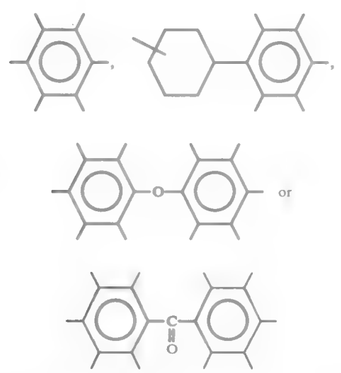
1. A method of preparing a negative type pattern of a polyimide film which comprises:

applying to a substrate a sufficient amount of a photosensitive polymer composition to form a negative type pattern, said photosensitive polymer composition comprising a mixture of a poly(amido) imide precursor containing a repeating unit represented by the following formula (I), at least one kind of quinonediazide compound and an organic solvent:

(I)



wherein R^1 is a trivalent or a tetravalent carbocyclic aromatic group or heterocyclic group; R^2 is an aliphatic group having at least two carbon atoms, an alicyclic group, an aromatic aliphatic group, a carbocyclic aromatic group, a heterocyclic group or a polysiloxane group; X is —O— or NR^5—, where R^5 is a hydrogen atom or a monovalent organic group having 10 or less carbon atoms; R^3 is a divalent organic group; R^4 is a hydrogen atom or a monovalent organic group having 20 or less carbon atoms; Ar is a hexavalent or decavalent organic group represented by the formula



k is an integer of $1 \leqq k \leqq 5$, and $j+k+1$ is equal to the valence of At; m is independently 1 or 2; n is independently 0 or 1 and the values of m and n are in the range of $1 \leqq m+n \leqq 2$;

prebaking the composition at 50°–130° C.;

irradiating the composition through a mask with actinic radiation to form an irradiated composition;

developing the irradiated composition with a developing solution comprising a basic solution of a basic substance in a solvent comprising 0 to 10 parts by weight of water and 100 to 90 parts by weight of a water-soluble organic solvent to remove unexposed portions of the composition and form a negative type pattern;

rinsing and drying the pattern; and

post-baking the pattern at 200°–500° C.

5,342,740

METHOD OF PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masatoshi Goto, and Takatoshi Ishikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 2, 1991, Ser. No. 769,684

Claims priority, application Japan, Oct. 2, 1990, 2-264451

Int. Cl.[5] G03C *7/46, 7/00, 5/38*

U.S. Cl. 430—393 **15 Claims**

1. A method of processing an imagewise exposed silver halide color photographic material, said photographic material comprising a support having thereon a photosensitive silver halide emulsion layer containing a silver halide emulsion having a silver chloride content of at least 80 mol %,

comprising the steps of color developing the photographic material in a color developing solution, and then bleach-fixing in a bleach-fixing solution,

further comprising replenishing the bleach-fixing solution by adding thereto a bleach-fixing replenisher,

said bleach-fixing replenisher comprising

(a) a regenerating agent containing ammonium ions and

(b) overflow solution from the bleach-fixing tank,

wherein the solids content of the regenerating agent is at least 70 wt % of the total weight of the regenerating agent, the ammonium ion content is 75 mol % or more of the total cation content of the regenerating agent, and 90% or more of the overflow solution is returned to the bleach-fixing solution.

5,342,741

METHOD OF PROCESSING SILVER HALIDE PHOTOGRAPHIC MATERIAL AND COMPOSITION FOR PROCESSING

Kiyoshi Morimoto; Shin-ichi Morishima, and Hiroshi Hayakawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 9, 1993, Ser. No. 87,886

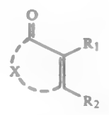
Claims priority, application Japan, Jul. 10, 1992, 4-206281

Int. Cl.[5] G03C *5/29*

U.S. Cl. 430—490 **12 Claims**

1. A method of processing an imagewise exposed silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer, comprising developing in a developing bath and fixing in a fixing bath, wherein the developing bath contains developer containing at least one compound represented by formulae (A) and (B):

(A)



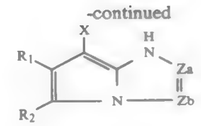
where

R_1 and R_2 each represent a hydroxyl group, a substituted or unsubstituted amino group, an acylamino group, an alkylsulfonylamino group, an arylsulfonylamino group, an alkoxycarbonylamino group, a mercapto group or an alkylthio group; and

X represents a group of atoms selected from carbon and nitrogen which forms a 5-membered or 6-membered ring together with the two vinyl carbons substituted by R_1 and R_2, respectively, and the carbonyl carbon of formula (A);

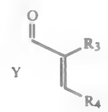
-continued

(II)



wherein Za represents—$C(R_3)$= and Zb represents —N=; R_1 and R_2 each represents an electron attractive group having a Hammett's substituent constant σ_p of 0.2 or more and the sum of the σ_p values of R_1 and R_2 is 0.65 or more; R_3 represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; the group represented by R_1, R_2, R_3 or X may be a divalent group and combine with a polymer which is higher than a dimer and which has a high molecular chain to form a homopolymer or a copolymer;

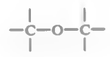
(B)



where

R_3 and R_4 each represent a hydroxyl group, a substituted or unsubstituted amino group, an acylamino group, an alkylsulfonylamino group, an arylsulfonylamino group, an alkoxycarbonylamino group, a mercapto group or an alkylthio group; and

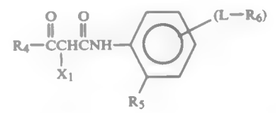
Y represents a group of atoms selected from carbon, nitrogen and oxygen containing at least one



bond, and

Y forms a 6-membered ring together with the two vinyl carbons substituted by R_3 and R_4, respectively, and the carbonyl carbon of formula (B), provided that both R_3 and R_4 are not hydroxyl groups, and when R_1, R_2, R_3 or R_4 represents an amino group, the compound may be in the form of an acid addition salt.

(III)



wherein R_4 represents an aryl group or a tertiary alkyl group; R_5 represents a fluorine atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a dialkylamino group, an alkylthio group, or an arylthio group; L represents —O—*, —COO—*, —NHCO—*, —$NHCOCHR_7$—*, —$NHCO(CH_2)_m$—*, —CONH—*, —$CONH(CH_2)_m$—*, —$CONHCHR_7$—*, —$SO_2NR_7(CH_2)_m$—*, —$NHSO_2$—*, or —$NHSO_2(CH_2)_m$—*; R_7 represents a hydrogen atom or an alkyl group; * represents the bonding direction to R_6; m represents an integer of 1 to 4; R_6 represents a halogen atom, an unsubstituted alkyl group, an unsubstituted aryl group, an unsubstituted alkoxy group, an unsubstituted aryloxy group, an alkyl-substituted aryl group, an alkoxy-substituted aryl group, an alkyl-substituted aryloxy group, or an aralkyloxy group; X_1 represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; and r represents an integer of 0 to 4, provided that when r is plural, the plural L-R_6 groups are the same or different.

5,342,742

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL COMPRISING A PYRROLOTRIAZOLE CYAN COUPLER AND A SPECIFIC YELLOW COUPLER

Hideaki Naruse; Makoto Suzuki, and Takehiko Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 982,573

Claims priority, application Japan, Nov. 27, 1991, 3-335892

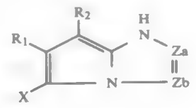
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—503 **15 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a yellow dye-forming coupler, a silver halide emulsion layer containing a magenta dye-forming coupler, and a silver halide emulsion layer containing a cyan dye-forming coupler, wherein the silver halide emulsion layer containing the cyan dye-forming coupler contains at least one cyan dye-forming coupler represented by formula (I) or (II) and the silver halide emulsion layer containing the yellow dye-forming coupler contains at least one yellow dye-forming coupler represented by formula (III):

(I)



5,342,743

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takahiro Goto, and Nobuaki Inoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 30, 1992, Ser. No. 906,472

Claims priority, application Japan, Jul. 1, 1991, 3-185773; Jul. 4, 1991, 3-189594

The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.

Int. Cl.[5] G03C *1/09, 1/83*

U.S. Cl. 430—507 **5 Claims**

1. A silver halide photographic material comprising a support having provided thereon at least one light-sensitive silver halide emulsion layer and having provided thereon farther from the support than the emulsion layer a light-insensitive hydrophilic colloid layer comprising a solid dye which is dispersed in the form of fine particles, wherein silver halide grains contained in the light-sensitive emulsion layer have an average grain size of 0.15 μm or less and a silver chloride content of 70% mole% or more and contain therein at least 1×10^{-7} mole per mole of silver of a transition metal selected from the elements of groups V to VIII of the Periodic Table.

VOL 1165 ISS 5 AG 30 1994 UMI

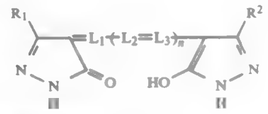
5,342,744

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Koji Wariishi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1993, Ser. No. 124,586
Claims priority, application Japan, Sep. 25, 1992, 4-256630
Int. Cl.[5] G03C *1/825*
U.S. Cl. 430—522 **18 Claims**

1. A silver halide photographic material, comprising a hydrophilic colloid layer comprising at least one compound represented by formula (I) in the form of a solid fine particle dispersion:



(I)

wherein n represents 0, 1 or 2;

when n is 0 or 1: R_1 and R_2 each represents a hydrogen atom, a halogen atom, NR_3COOR_4, $NR_5SO_2R_4$, or $NR_3CSNR_3R_6$, wherein R_3 and R_6 each represents a hydrogen atom, an alkyl group an aryl group, or a heterocyclic group; R_4 and R_5 each represents an alkyl group, an aryl group, or a heterocyclic group; or R_3 and R_4, R_4 and R_5, or R_3 and R_6 may combine to form a 5- or 6-membered ring;

when n is 2: R_1 and R_2 each represents NR_7COOR_8, $NR_9SO_2R_8$, $NR_7CXNR_7R_{10}$, SOR_8, or SR_8, wherein R_7 and R_{10} each represents a hydrogen atom, an alkyl group, an aryl group, or a heterocyclic group; R_8 and R_9 each represents an alkyl group, an aryl group, or a heterocyclic group; or R_7 and R_8, R_8 and R_9, or R_7 and R_{10} may combine to form a 5- or 6-membered ring;

X represents an oxygen atom or a sulfur atom; and

L_1, L_2 and L_3 each represents a methine group, and L_1, L_2 and L_3 may be combined to form a 5- or 6-membered ring, provided that R_1, R_2, L_1, L_2 and L_3 do not include a group having a proton capable of being ionized.

5,342,745

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Akiyoshi Tai, and Shun Takada, both of Odawara, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 136,469
Claims priority, application Japan, Oct. 21, 1992, 4-283035
Int. Cl.[5] G03C *1/775*
U.S. Cl. 430—538 **13 Claims**

1. A silver halide photographic light-sensitive material comprising a base paper support coated with a hydrophilic polymer as a peeling agent, and having thereon, a polyolefin resin layer, and at least one silver halide emulsion layer, wherein the hydrophilic polymer is coated on the side on which the silver halide emulsion layer is provided, and a peel strength between the base paper support and the polyolefin resin layer is within the range of 30 to 160 g in weight per inch, and a maximum color transmission density is not less than 2.0 when the silver halide light-sensitive material is subjected to a color developing.

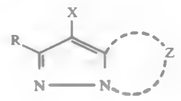
5,342,746

METHOD FOR THE FORMATION OF COLOR PHOTOGRAPHIC MATERIALS WITH HIGH COUPLING REACTIVITY AND REDUCED COLOR DEVELOPER PH SENSITIVITY

Paul L. Zengerle, Rochester; Richard K. Rothrock, Naples, and Chris Johnson, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 816,020, Dec. 30, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 975,249
Int. Cl.[5] G03C *7/38, 1/38*
U.S. Cl. 430—546 **15 Claims**

1. A silver halide light-sensitive photographic material comprising: a support and provided thereon a plurality of light-sensitive layers including a green-sensitive layer comprising a magenta coupler having the formula:



wherein Z represents a group of atoms forming a nitrogen-containing heterocyclic ring; X represents a hydrogen atom or a substituent capable of splitting off by a reaction with an oxidation product of a developer and R represents a hydrogen atom or a substituent; and a coupler solvent having the formula:

R′—OH

wherein R′ represents an aliphatic hydrocarbyl radical having from 8 to 32 carbon atoms and at least one double-bond linking adjacent aliphatic carbon atoms.

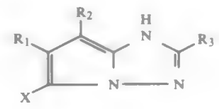
5,342,747

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL COMPRISING A PYRROLOTRIAZOLE CYAN COUPLER AND A SPECIFIC LIPOPHILIC COMPOUND

Masakazu Morigaki; Yasuhiro Yoshioka, and Nobuo Seto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

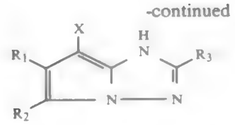
Filed Nov. 27, 1992, Ser. No. 982,775
Claims priority, application Japan, Nov. 27, 1991, 3-335811
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/08, 7/26, 7/32*
U.S. Cl. 430—551 **16 Claims**

1. A silver halide color photographic material comprising on a support at least one silver halide emulsion layer, wherein said at least one silver halide emulsion layer comprises at least one cyan coupler represented by formula (I-a) or (II-a), and at least one lipophilic compound represented by formula (A), (B) or (C) which chemically bonds to an aromatic primary amine color developing agent at a pH of 8 or less to form a substantially colorless product and/or at least one lipophilic compound represented by formula (D) which chemically bonds to an oxidation product of an aromatic primary amine color developing agent at a pH of 8 or less to form a substantially colorless produce:



(I-a)

-continued



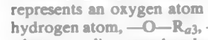
(II-a)

wherein R_1 and R_2 each represents an electrophilic group whose Hammett's substituent constant σ_p is 0.20 or more, with the proviso that the sum of σ_p of R_1 and R_2 is 0.65 or more; R_3 represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group which can be eliminated upon a coupling reaction with an oxidation product of an aromatic primary amine color developing agent; and R_1, R_2, R_3 or X may be a divalent group which is bonded to a dimer or higher polymer or high molecular chain to form a single polymer or copolymer;



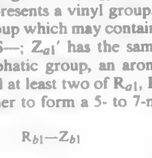
(A)

wherein L_{a1} represents a single bond, —O—, —S—, —CO— or —N(R_{a2})—; R_{a1} and R_{a2} are the same or different and each represents an aliphatic group, an aromatic group or a heterocyclic group; R_{a2} also represents a hydrogen atom, an acyl group, a sulfonyl group, a carbamoyl group or a sulfamoyl group; Z_{a1} represents an oxygen atom or a sulfur atom; Z_{a2} represents a hydrogen atom, —O—R_{a3}, —S—R_{a4}, —L_{a2}—C(=Z_{a1}′)R_{a5} or a heterocyclic group bonded to the rest of the compound via a nitrogen atom; R_{a3} and R_{a4} are the same or different and each represents a vinyl group, an aromatic group or a heterocyclic group which may contain substituents; L_{a2} represents —O— or —S—; Z_{a1}′ has the same meaning as Z_{a1}; R_{a5} represents an aliphatic group, an aromatic group or a heterocyclic group; and at least two of R_{a1}, R_{a2} and Z_{a2} may be connected to each other to form a 5- to 7-membered ring;



(B)

wherein R_{b1} represents an aliphatic group; and Z_{b1} represents a halogen atom;



(C)

wherein Z_{c1} represents a cyano group, an acyl group, a formyl group, an aliphatic oxycarbonyl group, an aromatic oxycarbonyl group, a carbamoyl group, a sulfamoyl group or a sulfonyl group; R_{c1}, R_{c2} and R_{c3} are the same or different and each represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group or Z_{c1}; and at least two of R_{c1}, R_{c2}, R_{c3} and Z_{c1} may be connected to each other to form a 5- to 7-membered ring;



(D)

wherein R_{d1} represents an aliphatic group or an aromatic group; Z_{d1} represents a mercapto group or —SO_2Y; and Y represents a hydrogen atom, or an atom or atom group which forms an inorganic or organic sale, —NHN=C(R_{d2})R_{d3}, —N(R_{d4})—N(R_{d5})—SO_2R_{d6}, —N(R_{d7})—N(R_{d8})—COR_{d9} or —C(R_{d10})(OR_{d11})—COR_{d12} in which R_{d2} and R_{d3} are the same or different and each represents a hydrogen atom, an aliphatic group, an aromatic group or a heterocyclic group, R_{d2} and R_{d3} may be connected to each other to form a 5- to 7-membered ring, R_{d4}, R_{d5}, R_{d7} and R_{d8} are the same or different and each represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an aliphatic oxycarbonyl group, a sulfonyl group, a ureide group or a urethane group, with the proviso that at least one of R_{d4} and R_{d5} and at least one of R_{d7} and R_{d8} are hydrogen atoms, R_{d6} and R_{d9} each represents a hydrogen atom, an aliphatic group, an aromatic group or a heterocyclic group, R_{d6} also represents an aliphatic amino group, an aromatic amino group, an aliphatic oxy group, an aromatic oxy group, an acyl group, an aliphatic oxycarbonyl group or an aromatic oxycarbonyl group, at least two of R_{d4}, R_{d5} and R_{d6} may be connected to each other to form a 5- to 7-membered ring, at least two of R_{d7}, R_{d8} and R_{d9} may be connected to each other to form a 5- to 7-membered ring, R_{d10} represents a hydrogen atom, an aliphatic group, a aromatic group, a halogen atom, an acyloxy group or an sulfonyl group, R_{d11} represents a hydrogen atom or a hydrolyzable group, and R_{d12} represents a hydrogen atom, an aliphatic group, an aromatic group or a heterocyclic group.

5,342,748

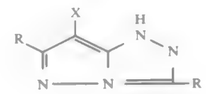
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL FOR PRINTING USE

Masanobu Miyoshi; Makoto Kajiwara, and Makoto Onodera, all of Odawara, Japan, assignors to Konica Corporation, Japan

Continuation of Ser. No. 51,606, Apr. 23, 1993, abandoned, which is a continuation of Ser. No. 839,922, Feb. 21, 1992, abandoned, which is a continuation of Ser. No. 366,302, Jun. 13, 1989, abandoned, which is a continuation of Ser. No. 218,448, Jul. 11, 1988, abandoned, which is a continuation of Ser. No. 850,586, Apr. 10, 1986, abandoned. This application Nov. 23, 1993, Ser. No. 158,354
Claims priority, application Japan, Apr. 20, 1985, 60-84759
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—558 **5 Claims**

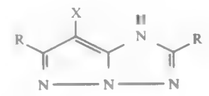
1. A color photographic light-sensitive material which comprises a reflective support and a blue sensitive silver halide emulsion layer, a green sensitive silver halide emulsion layer, and a red sensitive silver halide emulsion layer, said green sensitive silver halide emulsion layer comprising a magenta coupler and a monodispersed silver chlorobromide emulsion; wherein said monodispersed silver chlorobromide emulsion has an $S/\bar{r}$ ratio of not more than 0.22, wherein S is a statistical standard deviation of grain size and $\bar{r}$ is an average grain size, said magenta coupler being represented by Formula II or III

Formula [II]



or

Formula [III]



wherein the R's, which may be the same or different, represent hydrogen or a substituent, and X represents a substituent capable of splitting off through a reaction thereof with oxidation products of a color developing agent.

VOL 1165 ISS 5 AG 30 1994 UMI

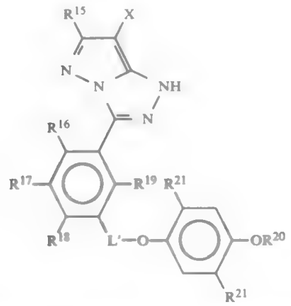
5,342,749

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Kei Sakanoue, and Keizo Kimura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 796,358, Nov. 22, 1991, abandoned. This application Dec. 21, 1993, Ser. No. 170,632
Claims priority, application Japan, Nov. 22, 1990, 2-319738
Int. Cl.[5] G03C 7/38
U.S. Cl. 430—558 3 Claims

1. A silver halide color photographic material comprising a support having thereon at least one silver halide emulsion layer and containing a 1H-pyrazolo[5,1-c]-1,2,4-triazole coupler represented by formula (I-11):



(I-11)

wherein R^{20} represents an aryl group or an alkyl group which has 20 carbon atoms or less; R^{21} represents a hydrogen atom or an alkyl group; R^{15}, R^{16}, R^{17}, R^{18} and R^{19} which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a heterocyclic group, a cyano group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, an acyloxy group, a carbamoyloxy group, a silyloxy group, a sulfonyloxy group, an acylamino group, an anilino group, a ureido group, an imido group, a sulfamoylamino group, a carbamoylamino group, an alkylthio group, an arylthio group, a heterocyclic thio group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, a sulfonamido group, a carbamoyl group, an acyl group, a sulfamoyl group, a sulfonyl group, a sulfinyl group, an alkoxycarbonyl group or an aryloxycarbonyl group; L' represents a divalent linking group which has at least 1 carbon atoms; and X represents a substituent which is eliminated after a coupling reaction with an oxidation product of a primary aromatic amine developing agent.

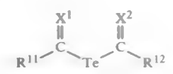
5,342,750

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING A TELLURIUM COMPOUND

Hirotomo Sasaki; Tora Fujimori; Hiroyuki Mifune, and Kimiyasu Morimura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 23, 1993, Ser. No. 51,691
Claims priority, application Japan, Apr. 24, 1992, 4-129787
Int. Cl.[5] G03C 1/06, 1/005, 1/494
U.S. Cl. 430—603 17 Claims

1. A silver halide photographic material which comprises a silver halide emulsion layer provided on a support, wherein the silver halide emulsion layer contains a tellurium compound represented by the formula (I):



(I)

in which each of R^{11} and R^{12} independently is $—OR^{13}$, $—NR^{14}R^{15}$, $—SR^{16}$ or hydrogen; R^{11} and R^{12} may be combined with each other to form a heterocyclic ring; each of X^1 and X^2 independently is oxygen, sulfur or $=NR^{17}$; each of R^{13}, R^{14}, R^{15}, R^{16} and R^{17} independently is an alkyl group, an alkenyl group, an alkynyl group, an aralkyl group, an aryl group, a heterocyclic group or hydrogen; R14 and R15 may be combined with each other to form a heterocyclic ring; and each of the alkyl group, the alkenyl group, the alkynyl group, the aralkyl group, the aryl group and the heterocyclic group may have one or more substituent groups.

5,342,751

SILVER HALIDE PHOTOSENSITIVE MATERIAL

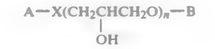
Shingo Nishiyama; Yasuo Mukunoki, and Masakazu Yoneyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 614,416, Nov. 13, 1990, abandoned. This application Jun. 8, 1992, Ser. No. 895,456
Claims priority, application Japan, Nov. 14, 1989, 1-295621
Int. Cl.[5] G03C 1/06
U.S. Cl. 430—637 12 Claims

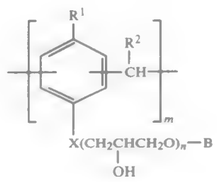
1. A silver halide photosensitive material comprising a support having thereon a photosensitive layer, said photosensitive layer comprising at least one silver halide emulsion layer,

wherein said photosensitive material has a total silver coating amount of silver halide of 2.5 g/m^2 or less, and

wherein said photosensitive material contains a surfactant containing a (poly)glycerol group represented by formula (I) or formula (II):

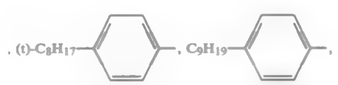


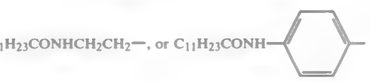
(I)



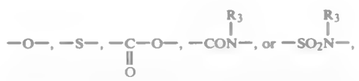
(II)

wherein A represents an unsubstituted alkyl group, an alkenyl group, an aralkyl group;





X represents



wherein R_3 represents either an alkyl group having 1 to 10 carbon atoms or

and wherein —O— and —S— to

can be bonded via an alkylene oxide chain; B represents a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a phenyl group, or another monovalent group having an anionic substituent, and any of the alkyl group, phenyl group or monovalent group may contain an alkylene oxide chain; R^1 and R^2, which may be the same or different, each represents an alkyl group; m is 2 to 50; and n is 2 to 50.

5,342,752

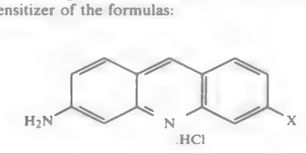
METHOD OF INACTIVATION OF VIRAL BLOOD CONTAMINANTS USING ACRIDINE DERIATIVES

Matthew S. Platz, Columbus, Ohio; Raymond P. Goodrich, Jr., Pasadena, Calif., and Victoria A. Wong, Cary, N.C., assignors to Cryopharm Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 510,234, Apr. 16, 1990. This application Apr. 16, 1991, Ser. No. 686,334
Int. Cl.[5] A01N 1/02
U.S. Cl. 435—2 7 Claims

1. A method of reducing parasitic contamination in blood matter comprising red blood cells, platelets, blood plasma protein fractions or mixtures thereof comprising the steps of:

(a) contacting said blood matter in vitro with a chemical sensitizer of the formulas:



(I)

(b) exposing said blood matter and chemical sensitizer to radiation of sufficient energy and wavelength for a period of time sufficient to cause said sensitizer to substantially inactivate the parasitic contamination in said blood matter.

5,342,753

BLOOD COLLECTING TUBE WITH BLOOD FACTOR ANTIBODIES AS ANTICOAGULANT

William I. Smith, Jr., 1061 Lindendale Dr., Mt. Lebanon, Pa. 15243

Continuation-in-part of Ser. No. 366,735, Jun. 15, 1989, abandoned. This application Dec. 26, 1991, Ser. No. 814,726
Int. Cl.[5] A01N 1/02; A61K 39/00, 37/04; A61B 5/14
U.S. Cl. 435—2 1 Claim

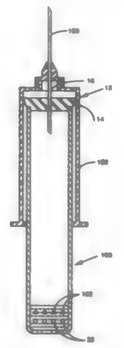
1. An apparatus for containing blood from a patient comprising:

a blood container means having disposed therein antibody to blood coagulation factors for resisting coagulation of said blood;

a needle;

holder means to hold said needle, said holder means being operatively associated with said blood container means, whereby said needle draws said blood from said patient and deposits the same into said blood container means such that blood coagulant factors in said blood will be inhibited so that said blood sample will be uncoagulated;

said blood coagulation factor antibody is a combination of blood factor antibody to the intrinsic pathway and a blood factor antibody to the common pathway; and



said combination is antibody to blood Factor VIII; antibody to blood Factor IX; and antibody to blood Factor X.

5,342,754

PRESERVED, NON-INFECTIOUS CONTROL CELL FOR USE IN THE IDENTIFICATION OF A DISEASE THROUGH BLOOD TESTING

John A. Maples, Davie; Robert H. Raynor, Miramar; Olavi Siiman, Davie; Melissa J. Stiglitz, North Miami Beach, and Stephen F. Healy, Jr., Miami, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Filed Sep. 14, 1992, Ser. No. 944,678
The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.
Int. Cl.[5] A01N 1/02; G01N 31/00
U.S. Cl. 435—2 3 Claims

1. Control cells comprising leukocyte cells which have been lyophilized with an isotonic trehalose solution, said control cells reflecting the type, number and physiochemical properties of leukocyte cells in the blood of a mammal having a disease, which disease has as one of its manifestations a change in the type, number and physiochemical properties of the leukocyte cells in the blood of said diseased mammal, said control cells further identified as being normal mammalian leukocyte cells in which:

(a) at least one specific subset of normal leukocyte cells has been artificially depleted to a count below that present in a normal leukocyte cell sample, or

(b) at least one specific subset of normal leukocyte cells which has been artificially increased to a count above that present in a normal leukocyte cell sample, or

(c) at least one specific subset of cells, not present in a normal leukocyte cell sample, has been added to said normal leukocyte sample,

in order that the control cells which result from the lyophilization of (a), (b) or (c) have a leukocyte cells distribution similar to that of the diseased mammal.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,755

METHOD FOR THE DETECTION OF ANTI-STREPTOKINASE ANTIBODIES

Stanley J. Podlaseck, McLean, Va., and Richard A. McPherson, Solana Beach, Calif., assignors to Georgetown University, Washington, D.C.

PCT No. PCT/US90/03080, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO90/15153, PCT Pub. Date Dec. 13, 1990

Continuation-in-part of Ser. No. 360,822, Jun. 2, 1989, abandoned. This PCT application May 30, 1990, Ser. No. 777,319

Int. Cl.[5] C12Q *1/00, 1/56;* G01N *33/53, 33/564*

U.S. Cl. 435—7.1 9 Claims

1. A method for the detection and/or quantitation of anti-streptokinase antibodies in a biological sample wherein said sample comprises lactate dehydrogenase subunit M (LD-M) which possesses affinity for streptokinase where said method comprises:

(a) contacting said sample with a solution comprising streptokinase;

(b) allowing said streptokinase to form a complex with said LD-M subunit and said antistreptokinase antibodies;

(c) detecting and/or quantitating said complex between said LD-M streptokinase, and antistreptokinase antibodies; and

(d) detecting and/or quantitating said antistreptokinase antibodies from the presence or amount of said complex.

5,342,756

TYPE III COLLAGEN DEGRADATION ASSAY

Juha Risteli, and Leila Risteli, both of Oulu, Finland, assignors to Orion-Yhtyma Oy, Turku, Finland

PCT No. PCT/FI88/00066, § 371 Date Dec. 5, 1989, § 102(e) Date Dec. 5, 1989, PCT Pub. No. WO88/08980, PCT Pub. Date Nov. 17, 1988

PCT Filed May 2, 1988, Ser. No. 435,369

Claims priority, application United Kingdom, May 8, 1987, 8710925

Int. Cl.[5] C12Q *1/00;* G01N *33/53, 33/566, 33/551, 33/543, 33/541;* A61K *35/14, 37/04;* C07K *3/00, 13/00, 15/00, 17/00*

U.S. Cl. 435—7.21 7 Claims

1. A method for quantitatively determining the degradation of mammalian type III collagen, comprising the steps of:

contacting a sample of a body fluid which may contain an amino-terminal telopeptide degradation product with an antibody specific to type III collagen amino-terminal telopeptide and a label, said label being conjugated to either said antibody or to type III collagen amino-terminal telopeptide, under conditions such that said label becomes bound in an amount which depends on the amount of amino-terminal telopeptide degradation product present in said sample;

separating the unbound starting materials; and

assaying the bound and/or unbound label as a measure of the degradation of type III collagen in said sample.

5,342,757

MONOCLONAL ANTIBODIES WHICH SPECIFICALLY BINDS TO ENDOSIALIN, A 165 KD GLYCOPROTEIN FOUND ON TUMOR VASCULAR ENDOTHELIUM, AND USES THEREOF

Pilar Garin-Chesa; Wolfgang J. Rettig, and Lloyd J. Old, all of New York, N.Y., assignors to Ludwig Institute for Cancer Research and Memorial Sloan-Kettering Cancer Center, both of New York, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,405

Int. Cl.[5] G01N *33/574;* A61K *39/395;* C07K *15/28*

U.S. Cl. 435—7.21 10 Claims

1. Monoclonal antibody which specifically binds to an antigen expressed by vascular endothelium associated with a tumor and does not bind to normal vascular endothelium, wherein said antigen is specifically bound by monoclonal antibody produced by hybridoma cell line ATCC 11190, is a sialylated glycoprotein having a molecular weight of about 165 kilodaltons as determined by SDS-PAGE, the protein portion of which has a molecular weight of about 95 kilodaltons as determined by SDS-PAGE, and has oligosaccharides linked thereto by O-linked glycosylation.

5,342,758

Patent Not Issued For This Number

5,342,759

SIMULTANEOUS CALIBRATION HETEROGENEOUS IMMUNOASSAY

David J. Litman, Mountain View, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation of Ser. No. 736,493, May 21, 1985, Pat. No. 4,843,000, which is a continuation of Ser. No. 374,849, May 4, 1982, Pat. No. 4,533,629, which is a continuation-in-part of Ser. No. 255,022, Apr. 17, 1981, Pat. No. 4,391,904, which is a continuation of Ser. No. 106,620, Dec. 26, 1979, Pat. No. 4,299,916. This application Apr. 3, 1989, Ser. No. 333,745

The portion of the term of this patent subsequent to Jul. 18, 2006, has been disclaimed.

Int. Cl.[5] G01N *33/543*

U.S. Cl. 435—7.92 41 Claims

1. In a method for determining the presence or amount in a sample of an analyte, which analyte is a member of a specific binding pair ("mip") consisting of ligand and receptor ("antiligand"),

said method employing at least one catalyst including a catalyst bound to a mip ("catalyst-bound-mip") and a solute which is catalytically transformed by a catalyst bound to a mip-containing measurement first surface to produce a detectable signal at said first surface in proportion to the amount of catalyst-bound-mip bound to said first surface, wherein contacting of said first surface with said sample and said catalyst-bound-mip results in binding of said catalyst-bound-mip to said first surface in proportion to the amount of analyte in said sample,

the improvement which comprises

having adjacent to said first surface on a common underlying structure a calibration second surface to which said catalyst becomes bound, by the intermediacy of specific binding pair complex formation involving a determinant site other than that involved in the binding of the catalyst-bound-mip to said first surface, in an amount to produce a signal level at said second surface and said analyte in said sample is determined by comparing the intensity of the signal at said second surface to the intensity of the signal at said first surface.

5,342,760

DETERMINATION OF ESTRADIOL BY COMPETITIVE IMMUNOASSAY

Harold N. Baker; Katherine K. Eng, both of Libertyville; William D. Garner, Chicago; Michael K. Massei, Lake Villa; Necklaws: Elizabeth C., Grayslake; Eugene W. Osikowicz, Lake Zurich; Sally K. Ramp, and Paula Trach, both of Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

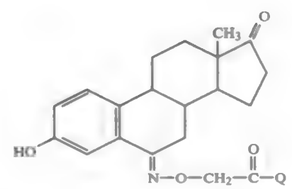
Filed Jun. 10, 1992, Ser. No. 896,269

Int. Cl.[5] G01N *33/547, 33/548*

U.S. Cl. 435—7.92 11 Claims

1. A method of determining the amount of estradiol in a blood sample comprising:

a. incubating a mixture of a blood sample suspected of containing estradiol, a solid phase coupled to an antibody specific for estradiol, and a conjugate of the formula



wherein Q is a label, to form estradiol/antibody complexes and conjugate/antibody complexes on said solid phase;

b. separating said solid phase from said mixture;

c. measuring the amount of label present in said mixture or on said solid phase; and

d. determining the amount of estradiol in said sample from the amount of label.

5,342,761

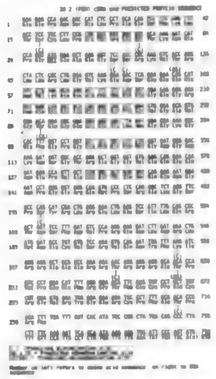
ONCOFETAL GENE, GENE PRODUCT AND USES THEREFOR

Carol L. MacLeod, San Diego, Calif., assignor to Research Development Foundation, Carson City, Nev.

Filed Oct. 1, 1990, Ser. No. 590,894

Int. Cl.[5] C12N *15/00;* A61K *39/00;* C12P *21/06;* C07K *15/00*

U.S. Cl. 435—69.1 9 Claims



1. A cDNA probe comprising the nucleotide sequence shown in Seq. id No. 1.

5,342,762

FIBRONECTIN PURIFICATION VECTOR

Deane F. Mosher, and Jane M. Sottile, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 3, 1991, Ser. No. 637,250

Int. Cl.[5] C12N *15/11, 15/66;* C07K *3/12, 3/18*

U.S. Cl. 435—69.1 5 Claims

1. A recombinant protein purification vector, comprising:

a nucleotide sequence coding for a portion of fibronectin that binds to gelatin, wherein the nucleotide sequence is present in nucleotides 823–1808 of the fibronectin gene according to SEQ ID NO: 8; and

a nucleotide sequence coding for a foreign protein linked to the fibronectin coding nucleotide sequence such that when the foreign protein coding nucleotide sequence is expressed it produces a product which is the foreign protein fused to said fibronectin protein wherein the foreign protein coding nucleotide sequence is upstream from said fibronectin coding nucleotide sequence and wherein there is a nucleotide sequence coding for a protease cleavage site between the foreign protein coding nucleotide sequence and the fibronectin protein nucleotide sequence, and wherein the protease cleavage site is one that naturally occurs in fibronectin protein; and

wherein the vector further comprises a leader nucleotide sequence coding for a fibronectin pre-prosequence upstream from the nucleotide sequence coding for a foreign protein.

5,342,763

METHOD FOR PRODUCING POLYPEPTIDE VIA BACTERIAL FERMENTATION

James R. Swartz, Menlo Park, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Filed Nov. 23, 1992, Ser. No. 989,844

Int. Cl.[5] C12D *21/00*

U.S. Cl. 435—69.1 9 Claims

1. A process for producing an exogenous polypeptide of interest from a fermentation of *E. coli* host cells, which process comprises conducting the fermentation using *E. coli* host cells transformed with nucleic acid encoding the polypeptide, which host cells have an impaired ability to switch between cytochrome o oxidase and cytochrome d oxidase, whereby during the fermentation, there are no repetitive, regular oscillations in dissolved oxygen (DO_2) concentration in the fermentation medium, wherein the cytochrome o oxidase or cytochrome d oxidase transfers electrons from substrate molecules to molecular oxygen to promote oxygen utilization within the bacterial host, and in the wild-type bacterial host cytochrome o oxidase can function independently of cytochrome d oxidase.

5,342,764

RECOMBINANT EXPRESSION SYSTEM FOR HUMAN ANTI-INFLAMMATORY PHOSPHOLIPASE INHIBITOR PROTEIN

Lorin K. Johnson, Pleasanton, and John P. Longenecker, Mountain View, both of Calif., assignors to Scios Nova Inc., Mountain View, Calif.

Division of Ser. No. 871,577, Apr. 20, 1992, Pat. No. 5,264,550, which is a continuation of Ser. No. 538,692, Jun. 14, 1990, abandoned, which is a continuation of Ser. No. 883,598, Jul. 9, 1986, abandoned, which is a continuation-in-part of Ser. No. 723,046, Apr. 15, 1985, abandoned. This application Sep. 1, 1993, Ser. No. 115,316

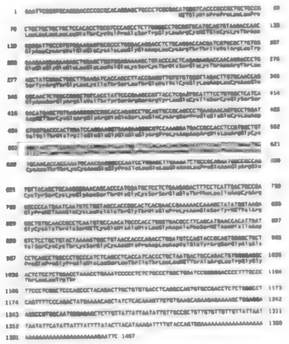
Int. Cl.[5] C12P *21/06;* C12N *1/20, 15/00;* C07H *17/00*

U.S. Cl. 435—69.1 8 Claims

1. A recombinant expression system for human phospholi-

VOL 1165 ISS 5 AG 30 1994 UMI

pase inhibitory protein (hPIP), which system comprises an isolated DNA molecule encoding a protein having a primary



amino acid sequence identical to that of the hPIP sequence of FIG. 13.

5,342,765

METHOD OF PRODUCING EXTRACELLULAR PRODUCTS FROM AEROBIC MICROORGANISMS

Robert L. Irvine, Notre Dame, Ind., and Rajagopalan Venkatadri, Argonne, Ill., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Aug. 1, 1991, Ser. No. 739,043

Int. Cl.[5] C12P *21/04, 1/02;* **C12N** *11/08, 9/08*

U.S. Cl. 435—71.1 **10 Claims**

1. A method of producing a peroxidase comprising

(1) growing an aerobic fungus that produces a peroxidase extracellularly on the outside of an oxygen-permeable tubing, in an aqueous medium containing growth-stimulating nutrients;

(2) maintaining an oxygen-containing gas in said tubing;

(3) stimulating the repeated production of said peroxidase by alternatively providing and reducing the amount of said nutrients supplied to said fungus; and

(4) collecting said peroxidase from said aqueous medium.

5,342,766

PROCESS FOR PRODUCING L-THREONINE BY FERMENTATION WITH *P. RETTGERI.*

Katsuhige Yamada, and Kyousuke Yotsumoto, both of Aichi, Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 660,909, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 913,668, Sep. 3, 1986, abandoned. This application Jan. 11, 1993, Ser. No. 3,840

The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.

Int. Cl.[5] C12P *13/08;* **C12N** *1/20*

U.S. Cl. 435—115 **2 Claims**

1. A process for producing L-threonine by fermentation comprising

(a) culturing *Providencia rettgeri* FERM BP-871(TY-1) in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances and

(b) recovering the L-threonine from the culture broth.

5,342,767

***LACTOBACILLUS KEFIR* ALCOHOL DEHYDROGENASE**

Chi-Huey Wong, Rancho Santa Fe, and Curt W. Bradshaw, San Diego, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 841,701, Feb. 26, 1992, Pat. No. 5,225,339. This application Jun. 30, 1993, Ser. No. 85,347

Int. Cl.[5] C12P *9/00, 11/00, 17/12, 7/26*

U.S. Cl. 435—122 **6 Claims**

1. A process for transferring a hydride ion from an R-alcohol to the pro-R position of NADP comprising

(a) forming a reaction mixture in a liquid medium by admixing (i) NADP, (ii) a catalytic amount of the alcohol dehydrogenase enzyme from *Lactobacillus kefir,* ATCC designation 35411, and (iii) an R-alcohol of formula II, below:



II

wherein

R^5 is selected from the group consisting of phenyl, furanyl, thiophenyl, pyridyl, indoyl, biphenylyl, C_1–C_3 alkylenephenyl, C_2–C_3 alkenylenephenyl, C_2–C_3 oxaalkylenephenyl, C_1–C_6 alkenyl, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_1–C_6 oxoalkyl, C_1–C_6 halooxoalkyl, and C_1–C_3 alkylenecarboxylate;

R^4 is hydrogen, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_1–C_6 azaalkyl, C_1–C_6 oxaalkyl, C_1–C_6 alkoxy carbonyl, C_1–C_6 acyl and C_1–C_6 oxoalkyl;

or R^4 and R^5 together form a 5-, 6- or 7-membered saturated or monoethylenically unsaturated ring;

R^6 is hydrogen, deuterium or tritium; the total chain length of a substrate of formula II is three to about 10 carbon atoms; and

(b) maintaining said reaction mixture under biological conditions and for a time period sufficient to transfer said hydride ion from said R-configured alcohol to NADP and form NADPH and a ketone of the corresponding formula.

5,342,768

IMMOBILIZATION OF THERMOSTABLE MICROBIAL LIPASE BY ADSORPTION TO MACROPOROUS INORGANIC CARRIER PARTICLES

Sven Pedersen, Gentofte, and Tomas T. Hansen, Allerod, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK89/00270, § 371 Date Apr. 24, 1991, § 102(e) Date Apr. 24, 1991, PCT Pub. No. WO90/05778, PCT Pub. Date May 31, 1990

PCT Filed Nov. 15, 1989, Ser. No. 678,342

Claims priority, application Denmark, Nov. 16, 1988, 6386/88

Int. Cl.[5] C12P *7/64, 7/62;* **C12N** *11/14*

U.S. Cl. 435—134 **18 Claims**

1. A particulate immobilized microbial lipase consisting essentially of a thermostable lipase isolated from a microorganism selected from the group consisting of a species of the Humicola genus, *Candida antarctica and Rhizomucor miehei* and wherein the lipase is adsorbed on particles of a macroporous carrier material, which material consists of at least 65% silica or silicates, wherein an excess of 90% of the particles have particle sizes between 100 and 1000 μm, wherein an excess of 80% of the pores in the particles exhibit a diameter between 12 and 45 times the diameter of a lipase molecule, and wherein the water content of the particulate immobilized lipase is between 1 and 20%.

5,342,769

MICROBIAL DEHALOGENATION USING METHANOSARCINA

Robert M. Hunter, and Frank M. Stewart, both of Bozeman, Mont., assignors to Yellowstone Environmental Science, Inc., Bozeman, Mont.

Filed Sep. 4, 1992, Ser. No. 940,439

Int. Cl.[5] C12P *5/02, 1/04;* **C02F** *3/30*

U.S. Cl. 435—166 **4 Claims**

1. A process for the microbial dehalogenation of tetrachloroethylene and trichloroethylene comprising at least one of said compounds to a microorganism capable of dehalogenating both tetrachloroethylene and trichloroethylene wherein the microorganism is selected from the group consisting of *Methanosarcina barkeri* ATCC 43241, *Methanosarcina vacuolata* ATCC 35090, and mutants thereof.

5,342,770

CONJUGATE INCLUDING A SUGAR AND PEPTIDE LINKER

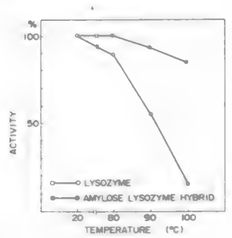
Nobuyuki Yamasaki, Fukuokaken, Japan, assignor to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 568,062, Aug. 16, 1990, abandoned. This application May 11, 1993, Ser. No. 60,038

Claims priority, application Japan, Aug. 25, 1989, 218885

Int. Cl.[5] C12N *11/10, 11/02;* **C07K** *17/10*

U.S. Cl. 435—178 **16 Claims**



1. A conjugate in essentially pure form comprising a sugar linked to a protein through a peptide linker, wherein said sugar has a reducing terminal and is free of carboxyl groups, and wherein the reducing terminal of said sugar is linked to the peptide linker.

5,342,771

FUNCTIONALIZED IMIDAZOLINONE HAPTENS AND PROTEIN CONJUGATES THEREOF USEFUL IN ASSAYS FOR THE DETECTION OF IMIDAZOLINONE HERBICIDES

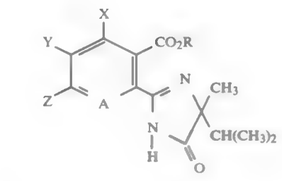
Rosie B. Wong, Piscataway; Zareen Ahmed, Princeton Junction, and Milon W. Bullock, Skillman, all of N.J., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 621,479, Dec. 3, 1990, abandoned. This application Feb. 25, 1993, Ser. No. 23,231

Int. Cl.[5] C12N *9/96, 11/06;* **C07K** *17/02;* **A61K** *39/385;* **C07D** *401/04, 403/04, 235/04*

U.S. Cl. 435—188 **10 Claims**

1. An antigen for producing an antibody against an imidazolinone having the structure



wherein

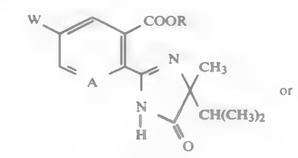
A is N or CH;

R is H or CH_3;

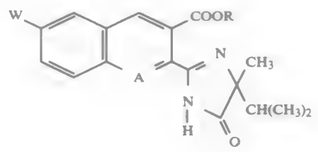
X is H, halogen, methyl or hydroxyl; and

Y and Z are each independently hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, nitro, cyano; or Y and Z are taken together to represent —CH=CH—CH=CH—;

which comprises an imidazolinone hapten having the structural formula



or



wherein

W is



E is —NH—N=CH— or —NH—CH_2—;

B is C_2 alkyl or C_2 alkenyl;

n is an integer of 0, 1 or 2;

Z is a protein;

A is N or CH; and

R is H or CH_3.

5,342,772

PROCESS FOR ENZYME IMMOBILIZATION ON A FLUOROCARBON SURFACE

Rene Arenzen, Wilmington, Del.; Patrick Boivin, Nancy, France; Robert K. Kobos, Wilmington, Del.; William H. Scouten, Hewitt, Tex., and Bruce E. Smart, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del. and Baylor University, Waco, Tex.

Continuation of Ser. No. 586,183, Sep. 21, 1990, abandoned. This application Feb. 10, 1993, Ser. No. 15,939

Int. Cl.[5] C12N *11/06, 11/08;* **G01N** *33/549;* **C07K** *17/00*

U.S. Cl. 435—181 **4 Claims**

1. A process for immobilizing an enzyme on a fluorocarbon surface comprising the steps of:

(a) activating the fluorocarbon surface by contacting the surface with a reactive poly(fluoroalkyl) sugar reagent containing a polyhydroxy sugar to which are attached a

VOL 1165 ISS 5 AG 30 1994 UMI

plurality of fluoroalkyl anchor groups and a reactive group to produce an activated fluorocarbon surface; then (b) contacting the activated fluorocarbon surface with a solution of an enzyme, in the presence of a neutral fluoroalkyl-polyoxyethylene fluorosurfactant to covalently bond the enzyme to the reactive group of the poly(-fluoroalkyl) sugar reagent to immobilize the enzyme on the fluorocarbon surface.

5,342,773

ENDOGLYCANASE ISOLATED FROM BACILLUS ATCC 55294

Linda P. Thorne, Palomar; Richard W. Armentrout, La Jolla; Thomas J. Pollock, San Diego, and Marcia J. Mikolajczak, Encinitas, all of Calif., assignors to Shin-Etsu Bio, Inc., San Diego, Calif. and Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

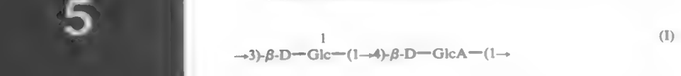
Continuation-in-part of Ser. No. 837,822, Feb. 18, 1992, abandoned. This application Feb. 11, 1993, Ser. No. 16,357

Int. Cl.[5] **C12N** *9/24, 1/20, 1/00*

U.S. Cl. 435—200 **2 Claims**

1. An isolated endoglycanase obtained from Bacillus ATCC 55294, said endoglycanase having the following properties:

a) endolytic activity against polysaccharides having the subunit backbone structure:



$$\rightarrow 3)\text{-}\beta\text{-D-Glc-}(1\rightarrow 4)\text{-}\beta\text{-D-GlcA-}(1\rightarrow \quad (1)$$



$$4)\text{-}\beta\text{-D-Glc-}(1\rightarrow 4)\text{-}\alpha\text{-L-X-}(1\rightarrow;$$

b) a molecular weight of about 110,000±10,000 daltons; and

c) a most useful pH range from about 4.5 to 9.

5,342,774

NUCLEOTIDE SEQUENCE ENCODING THE TUMOR REJECTION ANTIGEN PRECURSOR, MAGE-1

Thierry Boon; Pierre van der Bruggen; Benoît Van den Eynde; Aline Van Pel; Etienne De Plaen; Christophe Lurquin; Patrick Chomez, all of Brussels, Belgium, and Catia Traversari, Milan, Italy, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 764,364, Sep. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 728,838, Jul. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 705,702, May 23, 1991, abandoned. This application Dec. 12, 1991, Ser. No. 807,043

Int. Cl.[5] **C12P** *21/02, 19/34;* **C12N** *15/00, 7/00, 5/00, 1/21, 1/16, 1/18;* **C07K** *3/00;* **C07H** *15/12*

U.S. Cl. 435—240.2 **18 Claims**

1. An isolated nucleic acid molecule which codes for the MAGE tumor rejection antigen precursor as set forth in SEQ. ID. NO. 8.

11. A host cell transfected with the nucleic acid molecule of claim 1.

12. The host cell of claim 11, wherein said host cell is a mammalian cell.

5,342,775

PLASMINOGEN ACTIVATOR

Shigeyoshi Yasumura, Tokyo, Japan; Tatsunari Nishi, Los Angeles, Calif., and Seiga Ito, Kanagawa, Japan, assignors to Kyowa Hakko Kogyo Co. Ltd., Tokyo, Japan

Division of Ser. No. 538,270, Jun. 14, 1990, Pat. No. 5,160,735. This application Jun. 16, 1992, Ser. No. 899,634

Claims priority, application Japan, Jun. 19, 1989, 1-156302

Int. Cl.[5] **C12N** *5/10, 1/21, 15/85, 15/58*

U.S. Cl. 435—240.2 **3 Claims**

1. A purified deoxyribonucleic acid (DNA) which codes for the plasminogen activator which is identical in peptide sequence to naturally occurring human prourokinase except that the 155th amino acid from serine, the N-terminal amino acid, is threonine and the 153rd amino acid is selected from the group consisting of leucine, serine and asparagine.

5,342,776

AVIAN HEMOPOIETIC PROGENITOR CELLS

Marie C. N. Boinet, 1021-103 Nicholwood Dr., Raleigh, N.C. 27605, and Francoise A. Dieterlen-Lievre, 6 rue de Bellechasse, 75007 Paris, France

Filed Sep. 4, 1992, Ser. No. 940,665

Int. Cl.[5] **C12N** *5/00*

U.S. Cl. 435—240.2 **20 Claims**

1. In a method of culturing avian hemopoietic cells in a culture medium, the improvement comprising:

including arian embryo extract in said culture medium so that hemopoietic progenitor cells of an earlier ontogenic stage are obtained than those hemopoietic progenitor cells obtained when avian embryo extract is not included in said culture medium, wherein said earlier stage hemopoietic cells are:

intensely basophilic after May-Grünwald-Giemsa staining; and

essentially free of hemopoietic differentiation markers for granulocytic colony-forming cells (G-CFC), monocytic colony-forming cells (/M-CFC), and granulocytic/-monocytic colony-forming cells (CM-CFC) after May-Grünwald-Giemsa staining.

5,342,777

CELL CULTURE MEDIUM FOR HUMAN LIVER EPITHELIAL CELL LINE

Katharine H. Cole, Dayton; John F. Lechner, and Curtis C. Harris, both of Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Dept. of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 284,331, Dec. 14, 1988, abandoned. This application Mar. 3, 1992, Ser. No. 844,873

Int. Cl.[5] **C12N** *1/00, 5/00, 15/00;* **C12Q** *1/00*

U.S. Cl. 435—240.31 **15 Claims**

1. A cell culturing medium suitable for primary culture of normal human hepatocytes comprising the following ingredients:

an effective amount of ornithine to allow proliferation of human hepatocytes;

an effective cell growth promoting amount of growth factor inactivated serum;

retinoic acid at concentration of 1 to 300 nM;

an effective amount of calcium ions, which is represented by a concentration from 0.2 to 1 mM, high enough to promote human hepatocyte cell growth but low enough to avoid the inducement of terminal cellular differentiation;

an effective cell growth promoting amount of glucose;

an effective amount of insulin to aid cells in glucose uptake;

an effective cell growth promoting amount of hydrocortisone;

an effective amount of epidermal growth factor to bind epidermal growth factor receptor on cells;

an effective amount of transferrin to increase DNA synthesis in cells;

an effective amount of cholera toxin to increase DNA synthesis in cells;

an effective amount of triiodothyronine to increase DNA synthesis in cells;

an effective growth promoting amount of mammalian hormones; and an effective cell growth promoting amount of lipoprotein, cholesterol, phospholipids and fatty acids,

wherein said medium contains no arginine and has a low endotoxin concentration, thereby providing a culture medium which supports the growth of normal human hepatocyte cells and does not support the growth of fibroblast cells.

5,342,778

MICROORGANISM BELONGING TO THE GENUS FLAVOBACTERIUM DESIGNATED FERM BP-4010

Kazuhito Moriya, and Koki Horikoshi, both of Tokyo, Japan, assignors to Japan Marine Science and Technology Center, Yokosuka and Hokkaido Sugar Co., Ltd., Tokyo, both of Japan, a part interest

Filed Sep. 25, 1992, Ser. No. 950,586

Claims priority, application Japan, Sep. 30, 1991, 3-252195; Sep. 30, 1991, 3-252196

Int. Cl.[5] **C12N** *1/26, 1/00, 1/20;* **D06M** *16/00*

U.S. Cl. 435—252.1 **2 Claims**

1. A biologically pure culture of a microorganism belonging to the genus Flavobacterium, designated FERM BP-4010 having the ability to decompose hydrocarbons and having tolerance to salinity, organic solvents, sulfurous acids and pressure.

5,342,779

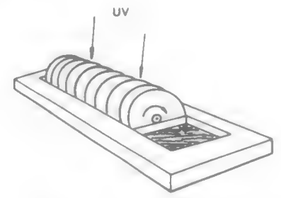
PHOTOCHEMICALLY ENHANCED MICROBIAL DEGRADATION OF ENVIRONMENTAL POLLUTANTS

Fumio Matsumura, Davis, Calif., and Arata Katayama, Chikusa, Japan, assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 18, 1991, Ser. No. 687,368

Int. Cl.[5] **B09B** *3/00;* **D06M** *16/00;* **C12N** *1/14, 13/00*

U.S. Cl. 435—262.5 **11 Claims**



1. A method of degrading a halogenated organic compound in a medium contaminated with said compound, wherein said compound is selected from the group consisting of endosulfan, dichlorodiphenyltrichlorethane, dieldrin, dioxin, heptachlor, 3,4,3',4'-tetrachlorobiphenyl, and toxaphene, and wherein said medium is capable of supporting growth of *Phenerochaete chrysosporium*, comprising the steps:

(a) contacting the medium with *Phanerochaete chrysosporium* strain ATCC 74046 or mutants thereof possessing all of the identifying characteristics of the parent strain under conditions such that the *Phanerochaete chrysosporium* can degrade said compound; and

(b) exposing the medium to ultraviolet light at an intensity that is sufficient to photochemically decay said compound but is nonlethal to the *Phanerochaete chrysosporium;*

wherein step a and step b occur simultaneously.

5,342,780

METHODS OF ENZYMATICALLY SEPARATING STEREOISOMERS OF A RACEMIC MIXTURE OF A REACTIVE ESTER

Cary J. Morrow, and Joe S. Wallace, both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Division of Ser. No. 470,670, Jan. 26, 1990, abandoned. This application Sep. 3, 1992, Ser. No. 940,129

Int. Cl.[5] **C07C** *67/00;* **C12P** *7/62;* **C12N** *9/20*

U.S. Cl. 435—280 **8 Claims**

1. A method of separating the stereoisomers of a racemic mixture of a compound of the following formula:



$$R^1\text{—}\overset{O}{\overset{\|}{C}}\text{—}R\text{—}CH(\text{—}R^2)(\text{—}R^3)$$

wherein R is selected from the group consisting of a carbon-carbon single bond, CH_2, C_2H_4, O, OCH_2 and OC_2H_4; R^1 is selected from the group consisting of —OH, —O(C_1–C_6) alkyl, —O(C_2–C_{15}) alkenyl, —O(C_2–C_{15}) alkynyl, —O(C_3–C_{15}) cycloalkyl, and —O(C_6–C_{22}) aryl, all of which groups containing more than one carbon may contain N, S or O in the chain or ring structure, and all of which may be further substituted with one or more (C_1–C_4) alkyl, OH, NO_2 or halogen; R^2 is selected from the group consisting of OH, —O(C_1–C_{12}) alkyl, —O(C_2–C_{12}) alkenyl, —O(C_2–C_{12}) alkynyl, (C_3–C_{12}) cycloalkyl, (C_3–C_{12})cycloalkenyl, (C_4–C_{22}) aryl, (C_5–C_{23}) alkylaryl and (C_5–C_{23}) arylalkyl, all of which groups containing more than one carbon may be substituted in the ring or chain with O, N or S; and R^3 is selected from the group consisting of the R^2 moieties, NH_2, OR^2, NHR^2, SR^2, O(C_1–C_6) acyl or aroyl, NH—(C_1–C_6) acyl or aroyl, —CH(R^2) (—R—COR^1) and halogen, provided that R^3 is different from R^2; or wherein R^2 and R^3 may form a ring selected from the group consisting of (C_3–C_{12}) cycloalkyl and (C_3–C_{12}) cycloalkenyl, each of which may have one or more ring carbons replaced with O, NH or S,

said method comprising obtaining a racemic mixture of a reactive ester of the formula



$$R^1\text{—}\overset{O}{\overset{\|}{C}}\text{—}R\text{—}CH(\text{—}R^2)(\text{—}R^3)$$

wherein R, R^1, R^2 and R^3 are as defined above;

reacting the reactive ester with a poly(ethylene glycol) of average molecular weight of about 100 to 5,000 Daltons and an enzyme which selectively transesterifies one enantiomer of an ester function which is proximate to a chiral isomeric site, the reactive ester, the poly(ethylene glycol) and the enzyme being reacted in a medium, in proportions and under conditions effective to form a chiral site proximate poly(ethylene glycol) ester, wherein the enzyme is porcine pancreatic lipase; and

separating the chiral site proximate poly(ethylene glycol) ester(s) from the reaction medium, the reactive ester, the poly(ethylene glycol) and the enzyme.

5,342,781

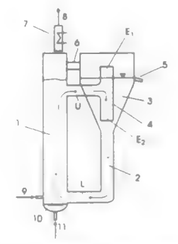
EXTERNAL-LOOP PERFUSION AIR-LIFT BIOREACTOR

Wei-Wen W. Su, 47-673 Alawiki St., Kaneohe, Hi. 96744

Filed Jul. 15, 1993, Ser. No. 92,235

Int. Cl.[5] **C12M** *1/04*

U.S. Cl. 435—313 **7 Claims**



1. An external-loop perfusion bioreactor for cell culture comprising:

(a) a riser conduit;

(b) cell culture medium inlet in said riser conduit;

VOL 1165 ISS 5 AG 30 1994 UMI

(c) an inlet for an oxygen-containing gas in said riser conduit;
(d) a downcomer conduit, having an upper portion and a lower portion, said upper portion of said downcomer conduit being in the shape of a truncated cone;
(e) an upper transfer conduit connecting an upper portion of said riser conduit to said upper portion of said downcomer conduit;
(f) a lower transfer conduit connecting said lower portion of said downcomer conduit to a lower portion of said riser conduit;
(g) a spent medium outlet port defining a liquid level surface in said upper portion of said downcomer conduit; and
(h) baffle means comprising a fluid impermeable wall defining a settling zone in said upper portion of said downcomer conduit, wherein said fluid impermeable wall comprises a generally T-shaped baffle conduit having a baffle conduit inlet connected to said upper transfer conduit and two baffle conduit outlets, a first one of said baffle outlets extending through said upper portion of said downcomer conduit and above said liquid level surface, and a second one of said baffle outlets extending downward from said liquid surface.

5,342,782

TIGHTLY REGULATED EXPRESSION SYSTEM FOR EUCARYOTIC CELLS

Robert E. Thach, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Filed Feb. 24, 1992, Ser. No. 840,767
Int. Cl.[5] C12N *15/85*
U.S. Cl. 435—320.1 **10 Claims**

1. A DNA construct for the expression of a desired non-ferritin gene, which construct comprises a transcriptional promoter operably linked to a first DNA sequence which is the reverse transcript of an inducible translational regulator, which regulator is the iron-responsive element (IRE) region of ferritin light-chain mRNA, and which first DNA is operably linked to a second DNA sequence which is a reverse transcript of a stabilizing element, said stabilizing element being the message-masking element (MME) of the ferritin light-chain mRNA and said second DNA sequence being operably linked to a third DNA sequence comprising the coding region of the desired gene,

wherein said gene encodes chloramphenicol acetyl transferease (CAT) or wherein said gene is the portion of the Encephalomyocarditis virus genome designated 3 A'BCD'.

5,342,783

METHOD FOR DETECTING A REACTION ZONE IN A CATALYTIC CONVERTER

Helmut Swars, Bergisch Gladbach; Rolf Brück, Overath, and Wolfgang Maus, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

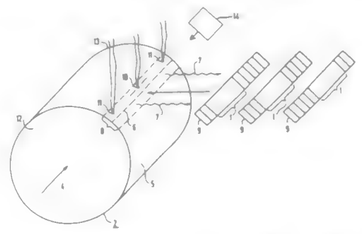
Filed Jun. 7, 1993, Ser. No. 73,105
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1990, 4038829
Int. Cl.[5] G01N *31/10*
U.S. Cl. 436—37 **12 Claims**

1. In a method for detecting a reaction zone in a catalytic converter, including providing a catalytic converter comprising:

a) an inner region, a jacket surface surrounding the inner region and being disposed approximately parallel to a given flow direction;
b) the inner region conducting a flow through the inner region in the given flow direction of a fluid containing ingredients to be converted in the inner region by a catalyzed exothermic reaction; and
c) a reaction zone being defined as a part of the inner region in which the catalyzed exothermic reaction predominantly takes place;

the improvement which comprises:

measuring a distribution of temperature over the jacket surface along a measurement path being aligned approximately parallel to the given flow direction;
defining a limit value of a temperature deviation; and



determining the reaction zone by locating a segment of the measurement path at which the temperature deviates by less than the limit value from a maximum value of the temperature along the measurement path.

5,342,784

ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE

Jun Yamada, and Seiji Shinohara, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Apr. 7, 1992, Ser. No. 864,946
Claims priority, application Japan, Apr. 12, 1991, 3-108632
Int. Cl.[5] G03G *13/28*
U.S. Cl. 430—49 **6 Claims**

1. An electrophotographic photoreceptor which comprises the following:

an electrically conductive support and a photoconductive layer of 5 g/m^2 or less comprising at least an organic photoconductive compound and an alkali and/or alcohol soluble binder resin provided on said support wherein the weight ratio of the photoconductive compound to the binder resin in the photoconductive layer is 1/20 or higher, said photoreceptor being used for making a lithographic printing plate therefrom by electrophotographically forming a toner image and decoating the photoconductive layer of non-image portion other than the toner image portion by contacting with an alkaline decoating solution, wherein an arithmetical means deviation of profile (Ra_1) of the surface of said electrically conductive support having said photoconductive layer thereon is 0.3–1.0 μm and a ratio of Ra_2/Ra_1 of an arithmetical means deviation of profile (Ra_2) of the surface of said photoconductive layer and the (Ra_1) is 0.5–1.0.

5,342,785

METHOD FOR DETERMINING PYROGEN CONTENT

Tetsuya Tosa, Kyoto; Tadashi Sato, Takatsuki; Taizo Watanabe, Nagaokakyo, and Satoshi Minobe, Otsu, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Continuation of Ser. No. 876,829, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 374,819, Jul. 3, 1989, abandoned. This application Oct. 26, 1993, Ser. No. 141,689
Claims priority, application Japan, Jul. 5, 1988, 63-168063; Oct. 28, 1988, 63-274249
Int. Cl.[5] G01N *33/00*
U.S. Cl. 436—178 **5 Claims**

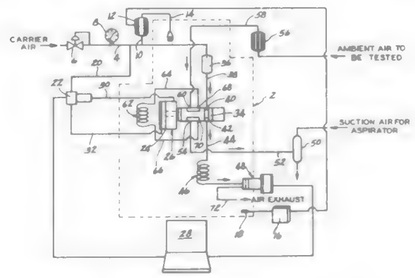
1. A method for the detection of the presence of a pyrogen in a specimen, which comprises bringing the specimen into contact with an adsorbent composed of a nitrogen-containing heterocyclic compound said compound being histidine, or adenine, bonded to agarose through hexamethylenediamine, and, without eluting the pyrogen adsorbed ont he adsorbent, detecting whetehr there is any adsorbed pyrogen on the adsorbent by directly subjecting the adsorbent to a Limulus test.

5,342,786

METHOD FOR DETECTING A VAPOR OF AN ALKYL ESTER OF PHOSPHORIC ACID IN AMBIENT AIR

Italo A. Capuano, Orange, and Kenneth E. Creasy, Wallingford, both of Conn., assignors to Olin Corporation, Stamford, Conn.

Filed Apr. 8, 1993, Ser. No. 43,708
Int. Cl.[5] G01N *33/00*
U.S. Cl. 436—103 **10 Claims**



1. A method of detecting the presence of a vapor of an alkyl ester of phosphoric acid in ambient air comprising the steps of:

a. taking a sample of ambient air,
b. heating said sample to convert any alkyl ester of phosphoric acid to an alkene, and
c. detecting the presence of said alkene in said sample.

5,342,787

METHOD FOR SOLUBILIZING SILICA

Judy H. Bardsley, Salford, and William M. Hann, Gwynedd, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 24, 1993, Ser. No. 36,594
Int. Cl.[5] G01N *37/00*
U.S. Cl. 436—179 **9 Claims**

1. A method of solubilizing silica in an aqueous system comprising:

diluting an aqueous silica-containing sample to provide an expected detectable silica level; and
adding one or more chelants; wherein the pH of the sample is above 10.0.

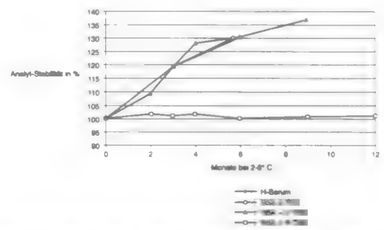
5,342,788

METHOD AND STANDARD SOLUTION FOR THE DETERMINATION OF THYROXINE (T_4) OR TRIIODOTHYRONINE (T_3)

Albert Kunst, Pfungstadt; Helmut Rehner, Weilheim; Peter Stegmüller, Augsburg; Helmut Lenz, Tutzing; Peter Bialk, Eberfing, and Nicholas Hoyle, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 337,353, Apr. 13, 1989, abandoned. This application Dec. 29, 1992, Ser. No. 998,463
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1988, 3812609; Aug. 14, 1992, 4226949
Int. Cl.[5] G01N *33/78, 33/96*
U.S. Cl. 436—500 **13 Claims**

1. Method for determining the total amount of a substance selected from the group consisting of thyroxine (T4) and triiodothyronine (T3) in serum comprising assaying a serum sample and calibrating said assay by assaying a first serum-free standard solution under conditions identical to conditions employed in assaying said serum sample, wherein said first serum-free standard solution contains a known amount of bovine thyroxine-binding globulin (TBG), a known amount of albumin and a known amount of a substance selected from the group consisting of thyroxine and triiodothyronine, and a buffer, and assaying at least a second additional serum-free



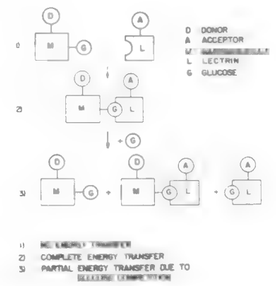
standard solution under said identical conditions which contains the same amount of bovine thyroxine-binding globulin as said first serum-free standard solution, a known amount of albumin and neither thyroxine or triiodothyronine in a buffer containing solution.

5,342,789

METHOD AND DEVICE FOR DETECTING AND QUANTIFYING GLUCOSE IN BODY FLUIDS

William L. Chick, Wellesley; David E. Wolf, Hudson, and Richard A. Cardullo, Milford, all of Mass., assignors to Sensor Technologies, Inc., Hingham, Mass.

Filed Dec. 14, 1989, Ser. No. 452,122
Int. Cl.[5] G01N *33/566, 33/542;* A61B *5/00;* A61K *49/00*
U.S. Cl. 436—501 **28 Claims**



1. A method of quantifying glucose in a body fluid sample, comprising the steps of:

a) contacting the body fluid with a specific binding pair comprising a first member which is a glucose-binding ligand labelled with a first light-absorbing material and a second member which is a glycoconjugate labelled with a second light-absorbing material, the excited state energy level of the first light-absorbing material overlapping with the excited state energy level of the second light-absorbing material,

said ligand and said glycoconjugate being chosen such that over the range of physiological concentrations of glucose found in body fluids ranging from 0.05 mg.mL to 5.0 mg/mL they reversibly bind to each other such that glucose present in said body fluid sample can displace said glycoconjugate and reversibly bind to said ligand;

b) determining the extent to which non-radiative fluorescence resonance energy transfer occurs between the first light-absorbing and the second light-absorbing material in

VOL 1165 ISS 5 AG 30 1994 UMI

the presence of the glycoconjugate displaced by glucose and the ligand reversibly bound to glucose; and

c) comparing the result of step (b) with the relationship between the extent of non-radiative energy transfer between the first light-absorbing material and the second light-absorbing material and glucose concentration in the body fluid determined in a calibration step.

5,342,790

APPARATUS FOR INDIRECT FLUORESCENT ASSAY OF BLOOD SAMPLES

Robert A. Levine, Guilford; Stephen C. Wardlaw, Old Saybrook, both of Conn.; Leon W. M. M. Terstappen, Palo Alto, Calif.; Thomas J. Mercolino, Stockton, N.J., and Diether J. Recktenwald, Cupertino, Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Oct. 30, 1992, Ser. No. 969,379

Int. Cl.[5] G01N *33/536*

U.S. Cl. 436—523 **7 Claims**

1. Paraphernalia for use in centrifugally analyzing a biological fluid sample for the presence or absence of a target analyte, said paraphernalia comprising:

a) a transparent tube having a bore for receiving the fluid sample;

b) means for forming a local constriction in said tube bore;

c) a quantity of target analyte-specific antibody and/or antigen-coupled density-markers in said tube; and

d) means for forming a density gradient layer in said tube into which the density markers sink during centrifugation of the sample in said tube.

5,342,791

Patent Not Issued For This Number

5,342,792

METHOD OF MANUFACTURING SEMICONDUCTOR MEMORY ELEMENT

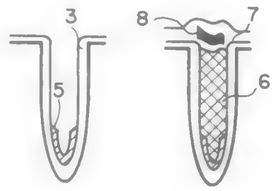
Takao Yonehara, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 713,608, Jun. 11, 1991, abandoned, which is a continuation of Ser. No. 581,086, Sep. 12, 1990, abandoned, which is a continuation of Ser. No. 153,551, Feb. 4, 1988, abandoned, which is a continuation of Ser. No. 21,746, Mar. 4, 1987, abandoned. This application Aug. 31, 1992, Ser. No. 936,738

Claims priority, application Japan, Mar. 7, 1986, 61-48680

Int. Cl.[5] H01L *21/20, 21/62*

U.S. Cl. 437—24 **5 Claims**



1. A method of manufacturing a semiconductor memory element, comprising the steps of:

forming a trench structure in a semiconductor substrate;

forming a continuous oxide film in a bottom and a side wall of the trench and a surface of the substrate;

forming a selective deposition film on only the oxide film at the bottom of the trench, wherein the selective deposition film comprises a surface denatured area obtained by implanting silicon ions in a surface of the oxide film at the bottom and selectively growing polysilicon on only the selective deposition film, thereby forming a trench capacitor.

2. A method of manufacturing a semiconductor memory element, comprising the steps of:

forming a trench structure in a semiconductor substrate;

forming a continuous oxide film in a bottom and a side wall of the trench and a surface of the substrate;

forming a selective deposition film on only the oxide film at the bottom of the trench, wherein the selective deposition film comprises a surface denatured area obtained by implanting nitrogen ions in a surface of the oxide film at the bottom and selectively growing polysilicon on only the selective deposition film, thereby forming a trench capacitor.

5,342,793

PROCESS FOR OBTAINING MULTI-LAYER METALLIZATION OF THE BACK OF A SEMICONDUCTOR SUBSTRATE

Antonello Santangelo, Belpasso CT; Carmelo Margo, Catania CT, and Paolo Lanza, Cassaro SR, all of Italy, assignors to SGS-Thomson Microelectronics, S.R.L., Agrate Brianza MI, Italy

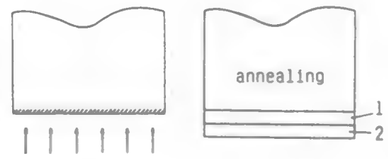
Continuation-in-part of Ser. No. 651,621, Feb. 7, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 88,113

Claims priority, application European Pat. Off., Feb. 20, 1990, 90830062.7

Int. Cl.[5] H01L *21/283*

U.S. Cl. 437—25 **12 Claims**

7. Process for metallizing the back of a semiconductor substrate, by depositing a series of metal layers, after ion implantation of dopant on the surface of the semiconductor which acts as an interface with the first layer of metal, characterized by the fact that the step of ion implantation of dopant is carried out in such a way as to amorphize the surface of the semiconductor substrate, and is followed by the deposition of one or more layers of metal of the aforesaid series, and then by thermal annealing under vacuum or in an inert atmosphere, at a temperature considerably lower than 500° C. and for a period considerably shorter than 60 minutes; wherein the first of said series of metal layers comprises a metal which fails to form an alloy in the liquid state with the semiconductor at temperatures below 500° C.



5,342,794

METHOD FOR FORMING LATERALLY GRADED DEPOSIT-TYPE EMITTER FOR BIPOLAR TRANSISTOR

Yi-Hen Wei, Saratoga, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 943,072, Sep. 10, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 73,843

Int. Cl.[5] H01L *21/265, 29/70*

U.S. Cl. 437—31 **4 Claims**

1. In a method for forming an integrated circuit including a bipolar transistor, the steps of:

masking a monocrystalline layer having an upper surface;

while said masking is in effect, implanting a base-type dopant by directing it orthogonally toward said upper surface and into said crystalline layer;

while said masking is in effect, implanting an emitter-type dopant by directing it at an angle of at least 30° relative to an orthogonal to said upper surface and into said crystalline layer so that said emitter-type dopant extends partially under said masking to define an emitter buffer;

while said masking is in effect and after said base and emitter implanting have been effected, growing an oxide on the unmasked areas of said crystalline layer;

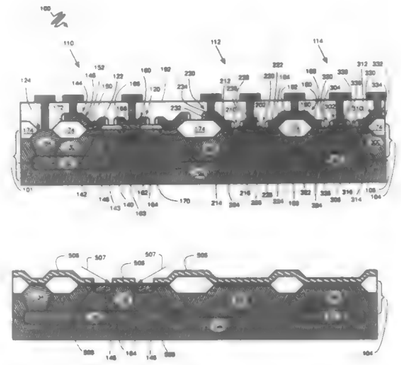
removing said masking;

depositing polysilicon over said upper surface and said oxide;

patterning said polysilicon to define a polycrystalline contact structure for a deposit-type emitter, said patterning involving etching said polysilicon to said oxide so that said contact structure contacts said upper surface and also contacts said oxide directly over at least a portion of said emitter buffer; and

implanting emitter dopant into said contact structure so as to define a deposit-type emitter contact section by rendering said contact structure conductive; and

driving the emitter dopant in said contact structure into said monocrystalline layer so that it contacts said emitter buffer, thereby defining a deposit-type emitter substrate section.



5,342,795

METHOD OF FABRICATING POWER VFET GATE-REFILL

Han-Tzong Yuan; Donald L. Plumton; Tae S. Kim, all of Dallas, and Jau-Yuann Yang, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 78,388, Jun. 17, 1993, which is a continuation-in-part of Ser. No. 876,252, Apr. 30, 1992, Pat. No. 5,231,037. This application Nov. 15, 1993, Ser. No. 153,121

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—40 **13 Claims**

1. A method of forming a vertical transistor device comprising:

forming a n-type first drain/source layer over a substrate;

patterning a portion of said first drain/source layer to form a channel and a trench;

forming a p-type carbon doped gate structure in said trench;

forming a n-type second drain/source layer over said gate structure and said channel;

contacting said gate structure;

forming p-ohmic contact to said gate structure;

forming n-ohmic source contact; and

forming n-ohmic drain contact.

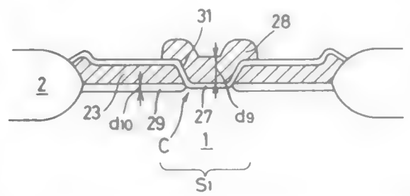
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,796

METHOD FOR CONTROLLING GATE SIZE FOR SEMICONDUCTION PROCESS

Sung T. Ahn, and Shigeki Hayashida, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 27, 1992, Ser. No. 887,753
Claims priority, application Japan, May 28, 1991, 3-123957; Jun. 25, 1991, 3-153418
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 2 Claims



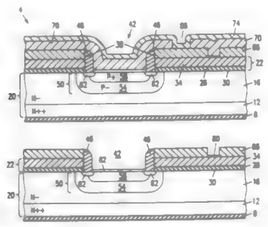
1. A method for preparing a semiconductor device comprising the following steps:
(I') depositing at least a polysilicon layer and a nitride film on a semiconductor substrate having a field oxide film,
(II') removing a portion of the nitride film from a gate-formation region to form an opening at the nitride film for exposing the polysilicon layer,
(III') thereafter forming by selective oxidation a vertically projecting oxide film on the substrate and the polysilicon layer at the opening portion, the vertically projecting oxide film having a thickness of about 0.1 to 0.3 micrometers, and preferably 0.15 to 0.3 micrometers,
(IV') then removing the nitride film in an active region and doping an impurity ion into the polysilicon layer, the impurity ion being doped at about 40 to 80 KeV and about 1×10^{14} to 1×10^{16} ions/cm^2,
(V') removing the oxide film to form a dug part of the substrate in the gate formation region, the dug part having a depth of about 0.07 to 0.2 micrometers,
(VI') providing, in order, on the dug part, a gate oxide film and a gate electrode, and
(VII') applying heat treatment to the substrate to form an impurity-diffused region.

5,342,797

METHOD FOR FORMING A VERTICAL POWER MOSFET HAVING DOPED OXIDE SIDE WALL SPACERS

Steven P. Sapp, Felton; Neil Wylie, Rohnert Park, and Eugene J. C. Chen, Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 252,845, Oct. 3, 1988, abandoned. This application Nov. 17, 1992, Ser. No. 978,303
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 15 Claims



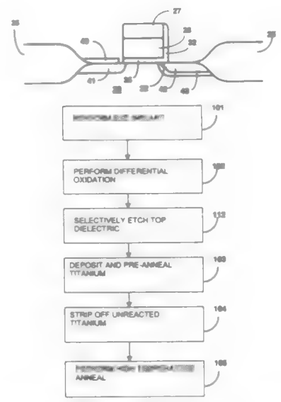
1. A method of fabricating a field effect transistor of the type having a semiconductor layer doped for defining a first conductivity type drain region, a first oxide layer on the semiconductor layer, and a polycrystalline silicon layer on the first oxide layer for defining a gate electrode, wherein side edges of the first oxide layer and the polycrystalline layer define an opening for exposing a portion of the semiconductor layer that is doped for defining a second conductivity type region which extends laterally beneath the gate electrode, the method comprising the steps of:
depositing a conformal second oxide layer doped with first conductivity type impurity;
anisotropically etching the second oxide layer for forming spacers on the side edges of the first oxide layer and the polycrystalline silicon layer;
out-diffusing the first conductivity type impurity from the spacers into the semiconductor layer for forming first conductivity type source regions in the semiconductor layer, the source regions laterally extending into the exposed portion of the semiconductor layer; and
wherein portions of the second conductivity type region between the source regions and the drain region define channel regions for the field effect transistor.

5,342,798

METHOD FOR SELECTIVE SALICIDATION OF SOURCE/DRAIN REGIONS OF A TRANSISTOR

Tiao-Yuan Huang, Cupertino, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Nov. 23, 1993, Ser. No. 156,166
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 20 Claims



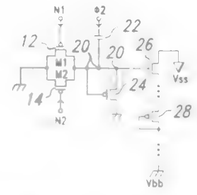
1. A method for selective salicidation of source/drain regions of a transistor, the method comprising the steps of:
(a) performing an implant into a first plurality of transistor source/drain regions on an integrated circuit, so that doping density of the first plurality of transistor source/drain regions is greater than doping density of a second plurality of transistor source/drain regions on the integrated circuit;
(b) heating the integrated circuit to a heating temperature sufficient to produce oxidation regions immediately over the first plurality of transistor source/drain regions and the second plurality of transistor source/drain regions, the heating temperature being chosen so that the oxidation regions immediately over the first plurality of transistor source/drain regions are thicker than the oxidation regions immediately over the second plurality of transistor source/drain regions;
(c) depositing a metal layer on the oxidation regions produced over the first plurality of transistor source/drain regions and the second plurality of transistor source/drain regions;
(d) annealing the metal layer deposited in step (c), the annealing being done at a temperature such that the metal reacts to form metal-silicide over the second plurality of transistor source/drain regions, but not over the first plurality of transistor source/drain regions; and,
(e) stripping off the unreacted metal from over the first plurality of transistor source/drain regions.

5,342,799

SUBSTRATE SLEW CIRCUIT PROCESS

Darryl Walker, and Daniel F. McLaughlin, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1993, Ser. No. 20,486
Int. Cl.[5] H01L *21/335*
U.S. Cl. 437—51 15 Claims



1. A method of making an electronic device, comprising:
providing a semiconductor substrate;
connecting one of a source/drain of a first transistor to a reference voltage, connecting the other of said source/drain of said first transistor to said substrate;
coupling one of a source/drain of a second transistor and one of a source/drain of a third transistor to said substrate, the gate of said second transistor coupled to receive a first voltage signal from a substrate pump and the gate of said third transistor coupled to receive a second voltage signal from said substrate pump;
the other of the source/drain of said second transistor and the other of the source/drain of said third transistor coupled to the gate of said first transistor, coupled to a first plate of a capacitor, and coupled to the gate and one of a source/drain of a fourth transistor; and
the second plate of said capacitor coupled to receive a clock signal, and the other of said source/drain of said fourth transistor connected to said substrate.

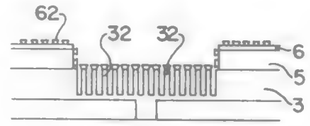
4. A method of employing a substrate slew circuit in an integrated circuit having a substrate pump, comprising:
providing a semiconductor substrate;
connecting one of a source/drain of a first transistor to a reference voltage and the other of said source/drain of said first transistor to the substrate;
coupling one of a source/drain of a second transistor and one of a source/drain of a third transistor to said substrate, the gate of said second transistor coupled to receive a first voltage signal from a substrate pump and the gate of said third transistor coupled to receive a second voltage signal from said substrate pump;
coupling the other of the source/drain of said second transistor and the other of the source/drain of said third transistor to the gate of said first transistor, to a first plate of a capacitor and to the gate and one of a source/drain of a fourth transistor; and
coupling the second plate of said capacitor to receive a clock signal, and connecting the other of said source/drain of said fourth transistor to said substrate.

5,342,800

METHOD OF MAKING MEMORY CELL CAPACITOR

Young-Kwon Jun, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Nov. 12, 1992, Ser. No. 975,232
Claims priority, application Rep. of Korea, Nov. 12, 1991, 91-20031
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 4 Claims



1. A method for making a memory cell capacitor having a capacitor storage electrode connected to a source/drain region in a semiconductor substrate, comprising the steps of:
(1) depositing an insulation layer on the semiconductor substrate and etching a predetermined portion of the insulating layer to form a capacitor node contact hole for contact with the source/drain region;
(2) depositing a doped polysilicon layer, wherein the doped polysilicon layer is connected to the source/drain region through the capacitor node contact hole;
(3) depositing a silicon nitride layer and a first silicon oxide layer, and opening a window in the silicon nitride layer and the first silicon oxide layer at a position where the capacitor storage electrode is to be formed;
(4) depositing a hemispherical polysilicon layer having peaks and valleys on the exposed surfaces of the polysilicon layer, the silicon nitride layer, and the first silicon oxide layer;
(5) depositing a second silicon oxide layer and etching back the second silicon oxide layer, wherein the second silicon oxide layer selectively remains in the valleys of the hemispherical polysilicon layer;
(6) forming a plurality of polysilicon projections by etching the hemispherical polysilicon layer and the polysilicon layer, wherein the remaining portions of the second silicon oxide layer serve as a mask;
(7) removing the first and second oxide layers;
(8) depositing a polyimide layer and etching back the polyimide layer so as to expose the surface of the silicon nitride layer;
(9) forming a capacitor storage electrode by removing the silicon nitride layer, etching the polysilicon layer wherein the polyimide layer serves as a mask, and removing the polyimide layer; and
(10) forming a dielectric layer on the capacitor storage electrode, and forming a capacitor plate electrode on the dielectric layer.

5,342,801

CONTROLLABLE ISOTROPIC PLASMA ETCHING TECHNIQUE FOR THE SUPPRESSION OF STRINGERS IN MEMORY CELLS

Jeffrey R. Perry, Sunnyvale; S. M. Reza Sadjadi, and Kristen A. Luttinger, both of San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 8, 1993, Ser. No. 28,026
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 8 Claims

1. In the manufacture of a group of memory cells on an oxide coated top surface such that the cells are arranged in rows and columns with row and column spaces separating the individual

VOL 1165 ISS 5 AG 30 1994 UMI

cells from one another, each of said cells including an array of different layers on the oxide coated top surface including a first polysilicon film layer and a second polysilicon film layer, a method for preventing the formation of film stringers extending between adjacent cells in a given column during the cells' manufacture, said method comprising the steps of:

before forming said second polysilicon film layer, forming said columns;

after established said columns, forming said second polysilicon film layer and thereafter selectively etching said columns and between columns to form said rows and thereby form said cells, each of which having cell sidewalls including said first and second polysilicon film layers, wherein said selective etching of said column is performed by an etching plasma consisting essentially of a hydrogen bromide gas and chlorine gas combination having a ratio of greater than about 1:1 and includes etching away segments of said first and second polysilicon layers in a way which prevents the formation of said stringers.

5,342,802

METHOD OF MANUFACTURING A COMPLEMENTARY MIS TRANSISTOR

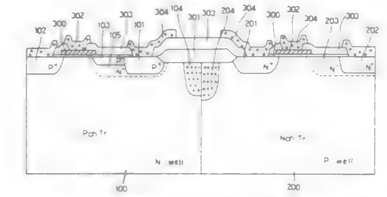
Ryoichi Kubokoya; Hiroyuki Yamane, both of Anjo, and Yasushi Higuchi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 680,148, Apr. 3, 1991, Pat. No. 5,216,272. This application Feb. 24, 1993, Ser. No. 47,543

Claims priority, application Japan, Apr. 13, 1990, 2-97898; Jan. 22, 1991, 3-5974

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—57 **13 Claims**



1. A method of manufacturing a CMOS transistor, comprising the steps of:

(a) preparing a semiconductor substrate having a first region and a second region, said first region having a first conductivity type, said second region having a second conductivity type;

(b) forming an insulating film covering surfaces of said first and said second regions;

(c) forming a first gate electrode and a second gate electrode on said insulating film over said first and said second regions respectively;

(d) implanting a first conductivity type impurity into said first and said second regions to form first diffusion regions, wherein said first and said second gate electrodes are used as a mask, an impurity concentration of said first diffusion region in said first region being higher than an impurity concentration of said first region other than said first diffusion region, said first diffusion region in said second region having said first conductivity type;

(e) implanting a second conductivity type impurity into at least one of said first diffusion regions in said first region to form an offset region, said offset region having said second conductivity type, said one of said first diffusion regions being a double offset region, at least a portion of said double offset region overlapping with said offset region;

(f) implanting a second conductivity type impurity into said first region to form a first source region and a first drain region, wherein said first source region and said first drain region have said second conductivity type, an impurity concentration of said offset region being lower than an impurity concentration of said first drain region, and said first drain region connected to said offset region, said offset region being disposed between said first gate electrode and said first drain region; and

(g) implanting a first conductivity type impurity into said second region to form a second source region and a second drain region, an impurity concentration of said second source region and said second drain region being higher than an impurity concentration of said first diffusion regions, said second source region and said second drain region having said first conductivity type, said first diffusion region in said second region being disposed between said second gate electrode and said second drain region.

5,342,803

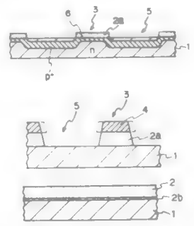
METHOD FOR ISOLATING CIRCUIT ELEMENTS FOR SEMICONDUCTOR DEVICE

Noriyuki Shimoji, Kyoto, Japan, assignor to Rohm, Co., Ltd., Kyoto, Japan

Filed Feb. 3, 1993, Ser. No. 14,826

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—70 **6 Claims**



1. A method for isolating semiconductor devices which comprises steps of:

(a) forming an insulating film on a semiconductor substrate;

(b) selectively removing the insulating film located on a region of the semiconductor substrate to be an active region by etching to form a device insulator region having a field insulator film which is retained after the etching, wherein said etching is carried out employing an anisotropic etching technique with use of a resist film, having tapered openings, as a mask; and

(c) implanting ions of an impurity into the semiconductor substrate through the field insulator film to form a channel stop region, the impurity serving to prevent inversion of a conductive type of the semiconductor substrate in the device insulator region.

5,342,804

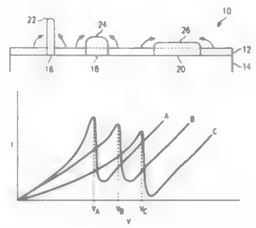
METHOD OF FABRICATION OF DEVICES WITH DIFFERENT OPERATING CHARACTERISTICS THROUGH A SINGLE SELECTIVE EPITAXIAL GROWTH PROCESS

Edward A. Beam, III, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 19, 1993, Ser. No. 64,777

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—89 **8 Claims**



1. A method of producing similar devices having different operating characteristics in a single selective epitaxial growth, comprising the steps of:

forming a substrate layer;

selectively masking the substrate layer to form a mask on the substrate layer, the mask having at least a first and a second opening;

growing an epitaxial layer within each opening with a different epitaxial layer thickness in said openings; and

forming a similar device within each opening, each similar device having different operating characteristics due to a variance in epitaxial layer thickness between each opening.

5,342,805

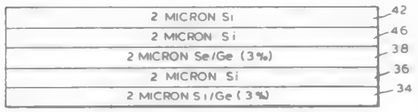
METHOD OF GROWING A SEMICONDUCTOR MATERIAL BY EPILAXY

Joseph Y. Chan, Kings Park; Larry Laterza, Miller Place; Dennis Garbis, Huntington Station, all of N.Y., and William G. Einthoven, Belle Mead, N.J., assignors to G.I. Corporation, Hatboro, Pa.

Filed Jul. 1, 1993, Ser. No. 82,951

Int. Cl.[5] H01L *21/20*

U.S. Cl. 117—89 **11 Claims**



1. A method for fabricating an epitaxial material in a CVD reactor by growing an epitaxial layer on a silicon wafer under conditions which result in the formation of region containing misfit dislocations, the water being at a given temperature, the method comprising the steps of:

lowering the temperature of the Si water about 50° C. from the original temperature; introducing a germanium containing gas into the reactor to grow a silicon layer containing about 2 or 3 percent of germanium; purging the chamber; heating the wafers to the original temperature; growing a first substantially Ge-free Si layer; purging the chamber, growing a second substantially Ge-free Si layer; etching the surface of the said second Ge-free Si layer and removing a part of said second Ge-free Si layer and purging the chamber.

5,342,806

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE HAVING A CONDUCTOR STRUCTURE WITH A PLATED LAYER

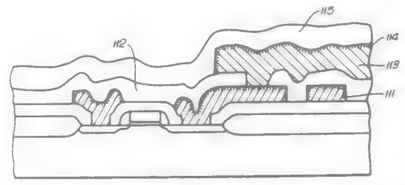
Michio Asahina, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 151,361, Feb. 2, 1988, abandoned. This application Oct. 22, 1991, Ser. No. 780,455

Claims priority, application Japan, Feb. 2, 1987, 62-22001; May 21, 1987, 62-124912; May 21, 1987, 62-124913; Dec. 17, 1987, 62-319221

Int. Cl.[5] H01L *21/44, 21/48*

U.S. Cl. 437—195 **3 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:

providing a substrate having a doped semiconductor region, and a gate wiring, forming a lower conductor structure, and contacting the metal plating layer and forming an insulating layer overlying said lower structure, and contacting the metal plating layer and having at least one through opening extending to said lower conductor structure; and

forming an upper conductor structure which also includes a metal plating layer on the insulating layer and causing the upper conductor structure to be connected to the lower conductor structure via the through opening;

wherein each said step of forming a conductor structure is carried out by:

forming at least one layer of a metal, a metal silicide, a metal nitride, a metal carbide, or a conductive oxide film; and

performing a plating operation in order to form the metal plating layer on the at least one layer, so that the metal plating layer adheres to the at least one layer; and

wherein said steps of forming a lower conductor structure and an upper conductor structure are carried out so that the at least one layer of the upper conductor structure contacts the metal plating layer of the lower conductor structure.

5,342,807

SOFT BOND FOR SEMICONDUCTOR DIES

Larry D. Kinsman; Derek J. Gochnour; Alan G. Wood, all of Boise, and Warren M. Farnworth, Nampa, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 889,008, May 26, 1992, Pat. No. 5,173,451, which is a continuation-in-part of Ser. No. 788,065, Nov. 5, 1991, which is a continuation-in-part of Ser. No. 709,858, Jun. 4, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,093

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **29 Claims**

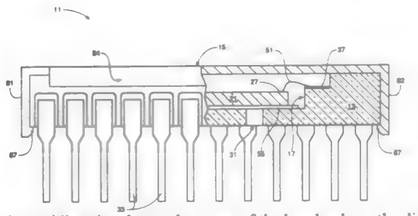
1. Method for temporarily connecting a semiconductor circuit die to external equipment for testing purposes in order to generate reliability and test data concerning the die, whereby the die may be subsequently disconnected, characterized by:

a) placing the die in a die carrier having a die receiving portion thereon, said die carrier having a plurality of

VOL 1165 ISS 5 AG 30 1994 UMI

connectors thereon for connection to test circuitry, and said die carrier having a plurality of bondpads in close proximity of the die receiving portion;

b) attaching leadwires to the die at bondpads on the die and attaching the leadwires to the bondpads on the die carrier, said attachment of leadwires to the bondpads on the die being with sufficient bonding force to provide an electrical connection and to retain the leadwires on the bondpads on the die during a test sequence, and said bonding force being less than an attachment force of the bondpads on the die to the die and less than the tensile strength to separate the leadwires from the bondpads;



c) providing signals to at least one of the bondpads on the die carrier in response to signals to at least one of the connectors, and providing signals to at least one of the connectors in response to signals which are present at least one of the bondpads;

d) removing the leadwires from the bondpads on the die, resulting in the detachment of the leadwires to the bondpads on the die, wherein during said removal of the leadwires, bond attachment of the leadwires to the bondpads on the die is removed while the bondpads remain intact on the die; and

e) removing the die from the die carrier.

5,342,808

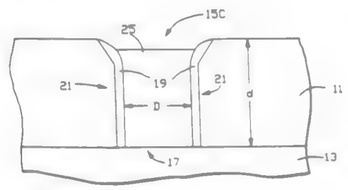
APERTURE SIZE CONTROL FOR ETCHED VIAS AND METAL CONTACTS

Kristen Brigham, Palo Alto, and Gary W. Ray, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 849,934, Mar. 12, 1992, abandoned. This application Mar. 9, 1993, Ser. No. 28,643

Int. Cl.[5] H01L *21/302, 21/311*

U.S. Cl. 437—228 **7 Claims**



5. A method for forming an aperture having a desired diameter D and a desired depth d in a layer of insulator material, the method comprising the steps of:

providing an insulator layer on an electrically conductive underlayer, the insulator layer having a horizontal upper surface;

selecting a value D'' that is greater than the value D of the desired diameter;

forming a first aperture in the insulator layer such that opposed sides of said aperture along a substantial portion of the height thereof are separated by a distance approximately equal to the value D'' and such that said aperture has a horizontal bottom surface wherein in the distance from the horizontal upper surface to the horizontal bottom surface has a maximum value equal to the desired depth d;

uniformly depositing a conformal layer of conformal insulating material onto the horizontal bottom surface and sides wherein the thickness of the conformal layer along the sides is based on the selectivity of etching the uniform conformal layer on the horizontal bottom surface relative to etching the uniform conformal layer on the sides; and

anisotropically etching the uniform conformal layer on the horizontal bottom surface and sides to remove conformal insulating material at the horizontal bottom surface to expose the electrically conductive underlayer and to remove a fraction of the thickness of uniform conformal insulating material disposed on the sides so that a major portion of the sides has the desired diameter D.

5,342,809

PROCESS FOR THE SYNTHESIS OF FLUORIDE GLASS BY THE SOL - GEL METHOD AND OPTICAL FIBRE PRODUCED FROM THE FLUORIDE GLASS OBTAINED ACCORDING TO THIS PROCESS

Marcel Poulain, and Mohammed Saad, both of Rennes, France, assignors to France Telecom Etablissement Autonome de Droit Public, Paris, France

Filed Apr. 6, 1993, Ser. No. 43,781

Claims priority, application France, Apr. 8, 1992, 92 04300

Int. Cl.[5] C03C *3/32, 13/04*

U.S. Cl. 501—12 **17 Claims**

1. A process for the synthesis of fluoride glass by the sol-gel method, comprising the steps of:

i) preparing a wet oxygenated gel from precursors containing all of the cations which constitute said fluoride glass;

ii) hydrolyzing said gel;

iii) drying said gel; and then

iv) treating said dried gel by a fluorinating agent in the vapor phase at a temperature below the crystallization temperature of the glass, said fluorinating agent being selected from the group consisting of hydrogen fluoride, gaseous fluorine, chlorine trifluoride and bromine trifluoride.

5,342,810

ZINC-CONTAINING, LEAD- AND CADMIUM-FREE GLASS FRITS, METHOD OF THEIR PRODUCTION AND THEIR USE

Bernard Merigaud, Saint-Léonard-de-Noblat, and Michel Claus, Solignac, both of France, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,235

Claims priority, application France, Mar. 2, 1992, 92 02457

Int. Cl.[5] C03C *8/14*

U.S. Cl. 501—26 **14 Claims**

1. A zinc-containing, lead- and cadmium-free glass frit comprising 31 to 50 mole % ZnO, 10 to 44 mole % SiO_2, 11 to 35 mole % B_2O_3, 11 to 25 mole % Na_2O, 0 to 4 mole % Li_2O, 0 to 10 mole % TiO_2, 0 to 25 mole % ZrO_2, 0 to 12 mole % CaO, 0 to 12 mole % SrO, 0 to 12 mole % BaO, 0 to 8 mole % F, wherein the sum of CaO, SrO and BaO is equal to or less than 12 mole %, wherein said glass frit has a softening point of less than 510° C.; wherein said glass frit contains less than 1 mole % of other metal oxides.

5,342,811

COMPOSITION AND METHOD FOR PRODUCING BORON CARBIDE/TITANIUM DIBORIDE COMPOSITE CERAMIC POWDERS USING A BORON CARBIDE SUBSTRATE

Bijan Khazai, and William G. Moore, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 198,969, May 26, 1988, Pat. No. 5,108,962. This application May 10, 1991, Ser. No. 698,435

Int. Cl.[5] C04B *35/56, 35/58*

U.S. Cl. 501—87 **3 Claims**

1. A composite ceramic powder consisting essentially of boron carbide and titanium diboride particles averaging less than about 20 microns in diameter, at least a portion of the boron carbide particles forming substrates to which at least a portion of the titanium diboride particles are physically attached.

5,342,812

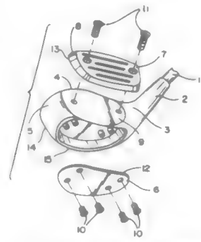
COMPOSITE GOLF CLUB HEAD

Paul W. Niskanen, Newark, Del.; Danny R. White, Elkton, Md.; Mark G. Mortenson, North East, Md., and Stanislav Antolin, Elkton, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 820,018, Jan. 13, 1992, Pat. No. 5,154,425, which is a continuation of Ser. No. 600,421, Oct. 19, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 959,203

Int. Cl.[5] A63B *53/04*

U.S. Cl. 501—127 **12 Claims**



1. A method for forming a macrocomposite golf club head comprising the steps of:

providing a first mass of substantial nonreactive filler material in the shape of a golf club head, said first mass having a receiving surface for receiving a golf club insert;

infiltrating substantially completely said first mass of filler material with an oxidation reaction product of a parent metal and at least one oxidant to form a ceramic matrix composite golf club head having a receiving surface for a golf club insert;

providing a second mass of substantially nonreactive filler material in the shape of a golf club insert;

spontaneously infiltrating with molten matrix metal said second mass of filler material to form a metal matrix composite golf club insert; and

placing said metal matrix composite insert into contact with said receiving surface of said ceramic matrix composite golf club head and, utilizing a fastening said, fastening together said metal matrix composite insert and said ceramic matrix composite golf club head to produce a macrocomposite golf club head.

5,342,813

CATALYST FOR POLYMERIZING AROMATIC VINYL COMPOUND AND PROCESS FOR PRODUCING POLYMER OF AROMATIC VINYL COMPOUND

Akira Miyashita, Saitama, Japan, assignor to Tosoh Corporation, Shinnanyo, Japan

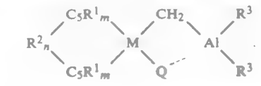
Filed Oct. 14, 1992, Ser. No. 960,705

Claims priority, application Japan, Oct. 14, 1991, 3-291978

Int. Cl.[5] C08F *4/64;* **B01J** *31/00*

U.S. Cl. 502—117 **9 Claims**

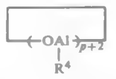
1. A catalyst for polymerizing aromatic vinyl compound composed of a catalyst component (A) and a catalyst component (B), the catalyst component (A) being a reaction product derived by reacting an organic transition metal compound having a substituted or unsubstituted cyclopentadienyl group, with an alkylaluminum compound, and represented by the general formula (I):



(I)

where $C_5R^1{}_m$ is a substituted or unsubstituted cyclopentadienyl group; R^1 is hydrogen or a hydrocarbon group having 1 to 20 carbons, each R_1 being independent; R^2 is an alkylene group having 1 to 4 carbons, a dialkylsilicon group, a dialkylgermanium group, an alkylphosphine group, or an alkylamine group, the alkylene or alkyl group, and R^2 crosslinks the two ($C_5R^1{}_m$) rings; m is an integer of 0 to 5; n is 0 or 1; when n=0, m=5, Q is an alkyl group or a halogen atom; R^3 is a hydrocarbon group having 1 to 18 carbons; and M is a metal of Group IVB of Periodic Table; and the catalyst component (B) being an aluminoxane represented by the general formula (II) or (III):

(II)



(III)

where p is an integer of 4 to 30, and R^4 is a hydrocarbon group.

5,342,814

EXTRUDED CATALYST BASED ON SILICA/ALUMINA GEL, AND PROCESS FOR PREPARING IT

Stefano Peratello, Nova Milanese; Carlo Perego, Carnate, and Giuseppe Bellussi, Piacenza, all of Italy, assignors to Enaricerche S.p.A.; Euron S.p.A. and Snamprogetti, S.p.A., all of Milan, Italy

Filed Dec. 3, 1992, Ser. No. 985,552

Claims priority, application Italy, Dec. 6, 1991, MI91A003276

Int. Cl.[5] B01J *21/12, 37/00*

U.S. Cl. 502—263 **17 Claims**

1. A catalyst consisting essentially of:

an inert binding agent, and,

as a catalytically active portion,

an amorphous silica/alumina gel, with the silica to alumina being in a molar ratio from 30:1 to 500:1, having a total pore volume of from 0.3 to 0.6 ml/g, and being substantially free from pores having an average diameter of greater than 30 Angstrom, wherein the inert binding agent is an alumina selected from the group consisting of bohemite pseudobohemite, and mixture thereof.

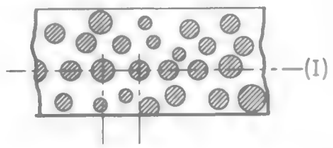
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,815

REVERSIBLE THERMOSENSITIVE RECORDING MATERIAL AND METHOD FOR PRODUCING THE SAME

Kunitoshi Sugiyama; Hideyuki Kobori; Shuji Hanai, all of Numazu, and Tsutomu Kagawa, Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,557
Claims priority, application Japan, Aug. 26, 1992, 4-250705
Int. Cl.[5] B41M *5/26*
U.S. Cl. 503—217 4 Claims



1. A reversible thermosensitive recording material comprising:

a support, and

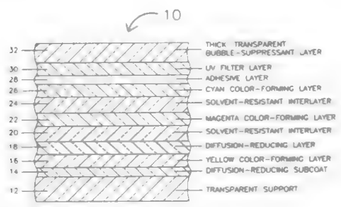
a reversible thermosensitive recording layer formed on said support, comprising a matrix resin and an organic low-molecular-weight material, said organic low-molecular-weight material being dispersed in the form of discrete domains in said matrix resin, thereby constituting a phase-separation structure, with the periodic distance of said phase-separation structure of said reversible thermosensitive recording layer being 1.3 μm or less.

5,342,816

IMAGING MEDIUM WITH BUBBLE-SUPPRESSANT LAYER

Edward P. Lindholm, Brookline; Stephen J. Telfer, Arlington; Michael J. Zuraw, Arlington, all of Mass., and Bernard L. Hirschbein, San Francisco, Calif., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 695,641, May 6, 1991, abandoned. This application Aug. 18, 1993, Ser. No. 108,893
Int. Cl.[5] B41M *5/40*
U.S. Cl. 503—226 25 Claims



1. An imaging medium capable of being imaged to form a transparency and comprising:

a substantially transparent support having a thickness of at least about 20 μm;

a color-forming layer superposed on the support and adapted to undergo a change of color upon increase in the temperature of the color-forming layer above a color-forming temperature for a color-forming time, the color-forming layer comprising a color-forming compound which undergoes a change of color upon heating above the color-forming temperature for the color-forming time, and an absorber capable of absorbing actinic radiation and thereby generating heat in the color-forming layer; and

a bubble-suppressant layer superposed on the color-forming layer and having a thickness of at least about 10 μm,

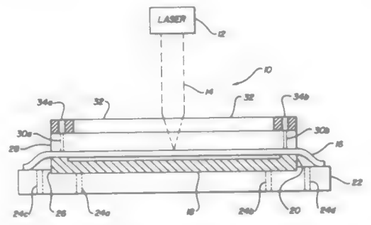
such that, upon imagewise exposure of the imaging medium to actinic radiation absorbed by the absorber and consequent imagewise increase in the temperature of the color-forming compound above the color-forming temperature for the color-forming time, in heated regions the color-forming compound undergoes its change of color but the color-forming layer remains essentially free from bubbles.

5,342,817

NONCONTACT DONOR AND RECEIVER HOLDER FOR THERMAL PRINTING

Sanwal P. Sarraf, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1992, Ser. No. 906,197
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 11 Claims



9. A method for forming a laser induced thermal dye transfer comprising:

forming a ridge along a periphery of a dye receiving element, said dye receiving element having a support with a polymeric dye image receiving layer thereon;

contacting said ridge of said dye receiving element with at least one dye donor element, said dye donor element having a support with a dye layer thereon and an infrared absorbing material, said dye donor and dye receiver being separated by a finite distance to create a space other than along said periphery; and

heating said dye donor element by means of a laser and image-wise transferring a dye image to said dye receiving element to form a laser induced thermal dye transfer image.

5,342,818

THERMAL DYE TRANSFER PRINTING METHOD, INTERMEDIATE MEDIA AND TRANSFER MEDIA THEREFOR

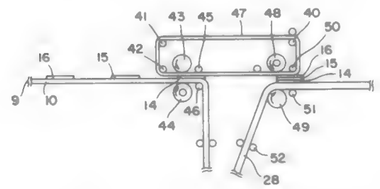
Akihiro Imai, Ikoma; Hiroyuki Matsuo, Neyagawa; Yasuo Fukui, Kadoma; Soichiro Mima, Nishinomiya, and Nobuyoshi Taguchi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1992, Ser. No. 946,856
Claims priority, application Japan, Sep. 18, 1991, 3-237698
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 15 Claims

1. A thermal dye transfer printing method comprising:

transferring each color image by printing head from a transfer medium A onto an intermediate medium wherein said transfer medium A has at least one color ink block consisting of color ink layers each of which contains different color ink, said intermediate medium has image receiving layers, whereby each image receiving layer on the intermediate medium contains one color image, and

transferring each color image receiving layer onto an imaging sheet from the intermediate medium, so that one image receive portion of the imaging sheet contains the image receiving layers corresponding to one color ink block, and



fixing said image receiving layers on the imaging sheet by heat and/or pressure.

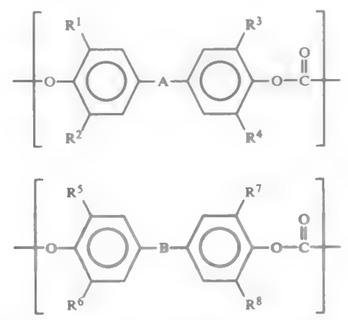
5,342,819

THERMAL TRANSFER IMAGE-RECEIVING SHEET

Ryohei Takiguchi; Hitoshi Saito; Masanori Torii, and Jun Hasegawa, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Nov. 6, 1992, Ser. No. 972,034
Claims priority, application Japan, Nov. 12, 1991, 3-322426; Dec. 13, 1991, 3-351299
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 11 Claims

1. A thermal transfer image-receiving sheet comprising a substrate sheet and a dye-receiving layer formed on at least one surface of the substrate sheet, wherein said dye-receiving layer comprises an aromatic polyester resin and a random copolycarbonate resin having structural units represented by the following general formulae (1) and (2), the molar ratio of the structural unit represented by the general formula (1) to the structural unit represented by the general formula (2) being 30:70 to 70:30



wherein R^1 to R^8 stand for hydrogen, a halogen or an alkyl group having 1 to 4 carbon atoms, A stands for a straight-chain, branched or cyclic alkylidene group having 1 to 10 carbon atoms, an aryl group or a sulfonyl group and B stands for an oxygen atom or a sulfur atom.

5,342,820

DYE-DONOR ELEMENT FOR USE ACCORDING TO THERMAL DYE SUBLIMATION TRANSFER

Geert Defieuw, Kessel-Lo, and Emiel Verdonck, Berlaar, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Apr. 12, 1993, Ser. No. 45,096
Claims priority, application European Pat. Off., Jun. 4, 1992, 92201621.7
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 11 Claims

11. Thermal sublimation transfer process comprising the steps of:

placing a dye layer on the support of a dye donor element in face to face contact with a dye receiving layer of a receiver sheet and

image-wise heating said dye donor element from its back characterized in that said dye layer or a layer of said dye donor element adjacent thereto contains a toluene sulfonamide formaldehyde condensation product.

5,342,821

DYE MIGRATION BARRIER LAYER FOR DUAL LAMINATE PROCESS FOR THERMAL COLOR PROOFING

Glenn T. Pearce, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1993, Ser. No. 145,893
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 17 Claims

1. A process for forming a color image comprising:

(a) forming a thermal dye transfer image in a polymeric dye image-receiving layer of an intermediate dye-receiving element by imagewise-heating a dye-donor element and transferring a dye image to said dye image-receiving layer,

(b) applying a dye-migration barrier layer having a given thickness to one surface of a paper substrate, and

(c) transferring the imaged polymeric dye image-receiving layer to said surface of said paper substrate having said dye-migration barrier layer applied thereon;

said dye-migration barrier layer comprising:

(I) crosslinked polymeric particles whose average diameter is equal to or less than about one-half the thickness of said dye-migration barrier layer; or

(II) a polymer containing a polymeric crystallizable plasticizer that is at least partially compatible with said polymer and which has a crystalline melting point of less than about 135° C.

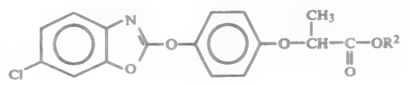
5,342,822

HERBICIDAL AGENTS

Hans Schumacher, Flörsheim am Main, and Hans P. Huff, Eppstein/Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Franfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 768,344, Sep. 30, 1991, Pat. No. 5,231,071, which is a continuation of Ser. No. 216,175, Jul. 7, 1988, abandoned. This application May 28, 1993, Ser. No. 69,132
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1987, 3722801
Int. Cl.[5] A01N *43/64, 43/36*
U.S. Cl. 504—134 3 Claims

1. A herbicidal composition containing an effective amount of a combination of a compound of the formula I, a salt or a stereoisomer thereof,



VOL 1165 ISS 5 AG 30 1994 UMI

wherein

R^2 is hydrogen or (C_1–C_4) alkyl, and a sulfonylurea compound, which is methyl 3-[4-methoxy-6-methyl-1,3,5-triazin-2-yl)-aminocarbonyl-aminosulfonyl]-2-thiophenecarboxylate, wherein said compound of formula I and said sulfonyl urea compound are in a ratio by weight of from 10:1 to 2:1.

5,342,823

SULFONYLUREAS

Rainer Kühlmeyer, Ihringen, Fed. Rep. of Germany; Werner Töpfl, Dornach, and Werner Föry, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

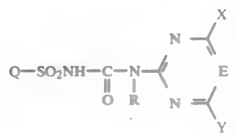
Filed Feb. 17, 1993, Ser. No. 18,603

Claims priority, application Switzerland, Feb. 20, 1992, 522/92-7

Int. Cl.[5] **C07D** *407/14;* **A01N** *43/54*

U.S. Cl. 504—215 **19 Claims**

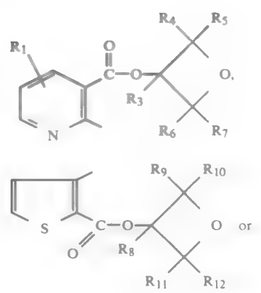
1. A compound of formula I



(I)

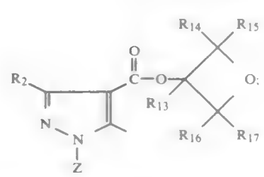
wherein

Q is



(Q_1)

(Q_2)



(Q_3)

R is hydrogen or methyl;

R_1 is hydrogen, fluoro, chloro, C_1–C_4alkyl or methoxy;

R_2 is hydrogen, fluoro or chloro;

R_3, R_4, R_5, R_6 and R_7 are each independently of one another hydrogen or C_1–C_4alkyl;

R_8, R_9, R_{10}, R_{11} and R_{12} are each independently of one another hydrogen or C_1–C_4alkyl;

R_{13}, R_{14}, R_{15}, R_{16} and R_{17} are each independently of one another hydrogen or C_1–C_4alkyl;

Z is methyl or 2-pyridyl;

E is methine

X is C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, C_1–C_4haloalkylthio, C_1–C_4alkylthio, C_2–C_5alkoxyalkyl, C_2–C_5alkoxyalkoxy, C_2–C_5alkylthioalkyl or cyclopropyl;

Y is C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, C_1–C_4haloalkyl, C_1–C_4haloalkylthio, C_1–C_4alkylthio, halogen, C_2–C_5alkoxyalkyl, C_2–C_5alkoxyalkoxy, amino, C_1–C_3alkylamino or di-(C_1–C_3alkyl)amino;

or a salt thereof.

5,342,824

N-ARYLTETRAHYDROPHTHALIMIDE COMPOUNDS

Lothar Rueb, Speyer; Karl Eicken, Wachenheim; Peter Plath, Frankenthal; Barbara Schwalge, Ludwigshafen; Karl-Otto Westphalen, Speyer; Bruno Wuerzer, Otterstadt, and Norbert Meyer, Ladenburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

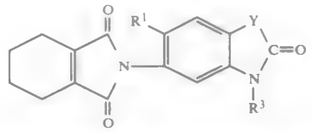
Continuation of Ser. No. 761,187, Sep. 17, 1991, Pat. No. 5,213,605, which is a division of Ser. No. 464,639, Jan. 5, 1990, Pat. No. 5,080,710, which is a continuation of Ser. No. 315,128, Feb. 24, 1989, abandoned. This application Sep. 30, 1992, Ser. No. 953,627

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1988, 3807295

Int. Cl.[5] **C07D** *417/02;* **A01N** *43/84*

U.S. Cl. 504—221 **4 Claims**

1. An N-aryltetrahydrophthalimide compound of the formula I



I

wherein the substitutents and indices have the following meanings: R^1 is hydrogen or halogen, Y is -SCR^4R^5-, R^5-, R^4 and R^5 independently of one another being hydrogen or C_1–C_3-alkyl, R^3 is hydrogen, C_1–C_5-alkyl, C_3- or C_4-alkenyl, C_3- or C_4-alkynyl, C_1–C_4-haloalkyl, C_3- or C_4 -haloalkenyl, C_1- or C_2-alkoxy-C_1- or C_2-alkyl, C_1 or C_2-alkoxy-C_1-, C_2-alkoxy-C_1- or C_2-alkyl, or C_1–C_4-alkoxycarbonyl-substituted C_1–C_3-alkyl.

5,342,825

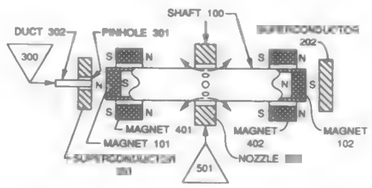
PASSIVE SUPERCONDUCTING BEARING SYSTEM

Victor Iannello, Roanoke, Va.; Michael H. Hall, Piermont, N.H., and Sukhvinder S. Kang, Rochester, Minn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 16, 1993, Ser. No. 93,128

Int. Cl.[5] **H01B** *12/00*

U.S. Cl. 505—166 **8 Claims**



1. A bearing system, for providing nonmechanical support to a rotating shaft, said bearing system comprising:

a means for producing a radial force which floats said rotating shaft radially without mechanical support; and a means for adjustably generating axial force to center said rotating shaft above said producing means without mechanical support, wherein said shaft has a first and second end which respectively houses first and second axial permanent magnets which respectively force the first and second permanent shaft magnets to float said shaft therebetween, wherein said generating means further comprises: a supply of an axial stream of gas which outputs said axial stream of gas with an adjustable pressure; and indent a means for directing said axial stream of gas against said first end of said shaft to provide thereby an axial force, said axial force being adjusted as said adjustable pressure is adjusted so that said axial force pushes said shaft so that it is centered over said producing means.

5,342,826

BI-SR-CA-CU-O SUPERCONDUCTING THIN FILM

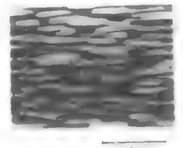
Nobuhiko Kubota; Tsunemi Sugimoto; Kazushi Sugawara, and Yuh Shiohara, all of Tokyo, Japan, assignors to International Superconductivity Technology center; Ishikawajima-Harima Heavy Industries Co., Ltd. and Sharp Corporation, all of Japan

Filed Sep. 24, 1992, Ser. No. 950,127

Claims priority, application Japan, Oct. 2, 1991, 3-255206; Dec. 2, 1991, 3-317858; Feb. 18, 1992, 4-030672; Jun. 29, 1992, 4-170556

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 505—238 **4 Claims**



1. A Bi-Sr-Ca-Cu-O system superconducting thin film formed on a substrate comprising (110) single crystals of an ABO_3 oxide having a perovskite structure and selected from the group consisting of $SrTiO_3$, $NdGaO_3$, $LaAlO_3$ and $YAlO_3$, in which a (119) face is selectively grown relative to a substrate surface, said substrate surface being inclined by 2° to 10° in a <110> direction relative to (110).

5,342,827

Patent Not Issued For This Number

5,342,828

SUPERCONDUCTING TL-PB-SR-CA-CU-O THIN FILM

Dennis J. Kountz, Wilmington, Del., and Frank M. Pellicone, North East, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 710,888, Jun. 6, 1991. This application Jan. 29, 1993, Ser. No. 27,737

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 505—238 **3 Claims**

1. A superconducting Tl—Pb—Sr—Ca—Cu—O thin film comprising at least one phase of the formula $Tl_{0.5}Pb_{0.5}Sr_2Ca_{1+n}Cu_{2+n}O_{7+2n}$ where n=0, 1 or 2, prepared by the process comprising

(a) sputtering an oxide film onto a dielectric substrate from a target formed by

(1) heating a mixture of Pb, Sr, Ca, and Cu oxides wherein the atomic ratio of Pb:Sr:Ca:Cu is b:c:d:e, wherein b is about 0.5, c is about 2, d is about 2, e is about 3, and

(2) compressing and heating said mixture,

(b) placing said substrate having said oxide film thereon and a source of thallium oxide and lead oxide in an inert container with an oxygen-containing atmosphere, the amount of thallium and lead contained in said source being at least 100 times the amount of thallium and lead necessary to convert said oxide film to $Tl_{0.5}Pb_{0.5}Sr_2Ca_{1+n}Cu_{2+n}O_{7+2n}$,

(c) heating said container to a temperature of from about 850° C. to about 950° C. and maintaining said temperature for at least about 10 minutes, and

(d) cooling said container and yielding the superconducting Tl —Pb—Sr—Ca—Cu—O thin film on said dielectric substrate.

5,342,829

DIISOPROPYL ADIPATE AS A SOLVENT FOR FRAGRANCE EXTRACTS

Mark Banwer, Great Neck, N.Y., assignor to Alan Kesten, East Hills, N.Y.

Filed Mar. 16, 1993, Ser. No. 31,588

Int. Cl.[5] **A61K** *7/46*

U.S. Cl. 512—2 **6 Claims**

1. A fragrance composition consisting essentially of a perfume oil and diisopropyl adipate.

5,342,830

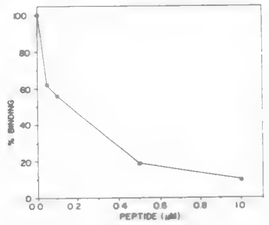
ANTITHROMBOSIS AGENTS

Robert M. Scarborough, Belmont, Calif., assignor to Cor Therapeutics, Inc., South San Francisco, Calif.

Filed Nov. 16, 1990, Ser. No. 614,443

Int. Cl.[5] **A61K** *37/02;* **C07K** *3/02, 15/08*

U.S. Cl. 514—12 **11 Claims**



1. A platelet antiadhesive peptide which inhibits binding of vWF to GPIb-IX receptors, but no binding of Fg to GPIIb-IIIa receptors in purified and isolated form obtainable from a snake venom selected from the group consisting of: *Agkistrodon acutus, Agkistrodon halys blomhoffi, Agkistrodon contortrix mokasen, Bitis arietans, Bitis caudalis, Bitis gabonica, Bitis g. rhinoceros, Bothrops asper, Bothrops alternata, Bothrops atrox, Bothrops cotiara, Bothrops jararaca, Bothrops newiedi, Bothrops medusa, Bothrops schlegli, Cerastes cerastes, Cerastes vipera, Crotalus adamanteus, C. atrox, C. basilicus, C. durissus totonatacus, C. h. horridus, C. m. molossus, C. ruber, C. scutalatus, C. v. cereberus, C. v. helleri, C. v. lutosus, C. v. oreganus, Echis carinatus sochurecki, Eristicophis macmahoni, Pseudocerastes persicus, Sistrurus m. barbouri, Sistrurus c. terqeminus, Trimeresurus flavoviridis, Trimeresurus gramineus, Vipera lebetina, Vipera ammondytes, Vipera palastinae,* and *Vipera r. russelli.*

5,342,831

EPITHELIOCYTE GROWTH ACCELERATOR

Toshikazu Nakamura, 11-6, Midorigaoka 3-chome, Higashi-ku, Fukuoka-shi, Fukuoka 813, and Kunio Matsumoto, 11-5-308, Hakozaki 5-chome, Higashi-ku, Fukuoka-shi, Fukuoka 812, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka and Toshikazu Nakamura, Osaka, both of Japan

Filed Dec. 27, 1991, Ser. No. 815,333

Claims priority, application Japan, Dec. 28, 1990, 2-419158

Int. Cl.[5] **C07K** *13/00;* **A61K** *37/02, 37/66*

U.S. Cl. 514—12 **8 Claims**

1. A method for accelerating growth of epitheliocytes, which comprises administering an effective, accelerating amount of a native sequence mammalian hepatocyte growth factor (HGF) to a mammalian patient in need of such treatment.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,832

USE OF MONO AND DI INOSITOLPHOSPHATES FOR TREATING INFLAMMATION

Matti Siren, Helsinki, Finland, assignor to Perstorp AB, Perstorp, Sweden

PCT No. PCT/SE90/00842, § 371 Date Aug. 21, 1992, § 102(e) Date Aug. 21, 1992, PCT Pub. No. WO91/09601, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 18, 1990, Ser. No. 862,564
Claims priority, application Sweden, Dec. 21, 1989, 8904355
The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/66*
U.S. Cl. 514—103 6 Claims

1. A method of treating an inflammatory disorder in a human or an animal comprising administering to a human or an animal in need thereof an inflammatory disorder pharmaceutically effective amount of at least one isomer of an inositol monophosphate, inositol diphosphate or a salt thereof.

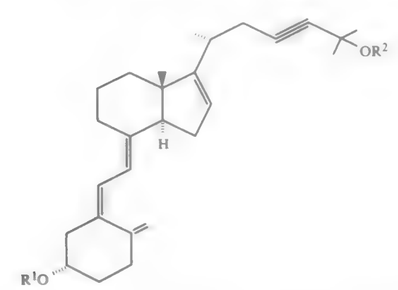
5,342,833

VITAMIN D3 ANALOGS

Thomas I. Doran, West Orange, N.J.; John A. McLane, New Haven, Conn.; Masami Okabe, Nutley, N.J.; Michelangelo Scalone, Birsfelden, Switzerland, and Milan R. Uskokovic, Upper Montclair, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 979,133, Nov. 20, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 155,663
Int. Cl.[5] C07C *401/00*
U.S. Cl. 514—167 6 Claims

1. A compound of the formula



wherein R^1 and R^2 are hydrogen or acyl; provided that only one of R^1 or R^2 is hydrogen.

5,342,834

METHOD FOR ANDROGEN SUPPLEMENTATION

C. Wayne Bardin, New York, N.Y., and Carl Monder, Teaneck, N.J., assignors to The Population Council, Inc., New York, N.Y.

Continuation of Ser. No. 335,039, Apr. 7, 1989, abandoned. This application Oct. 15, 1992, Ser. No. 962,043
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—178 6 Claims

1. A method for providing androgen hormone supplementation to a human male patient in need of such supplementation without stimulating abnormal growth of the prostate, comprising administering to the patient an effective androgenic amount of a testosterone derivative having a methyl substituent in the 6α or 7α position, wherein the substituent prevents conversion to the 5α reduced form of the testosterone derivative.

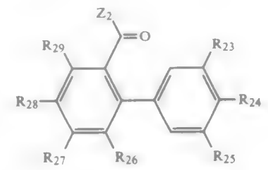
5,342,835

ANTIFUNGAL AGENTS BASED ON AMIDES CONTAINING A PHENYL GROUP

Regis Pepin, Rilleux la Pape; Christian Schmitz, Anse; Guy-Bernard Lacroix, Lyons; Philippe Dellis, St. Didier au Mont d'Or, and Christine Veyrat, St. Cyr au Mont d'Or, all of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Continuation of Ser. No. 401,939, Sep. 1, 1989, abandoned. This application Jan. 3, 1992, Ser. No. 816,678
Claims priority, application France, Sep. 1, 1988, 88 11665; Apr. 25, 1989, 89 05774; Jul. 3, 1989, 89 09150; Jul. 13, 1989, 89 09742
Int. Cl.[5] A61K *31/165;* C07C *235/46*
U.S. Cl. 514—227.5 73 Claims

1. A compound having the formula



(III)

wherein:

Z_2 is $NR_{21}R_{22}$ wherein:

R_{21} and R_{22}, which are identical or different, each represent: a lower alkyl or lower alkoxy radical (at least one of R_{21} and R_{22} being other than alkoxy), or a cycloalkyl radical having from 3 to 7 carbon atoms, which radicals are optionally substituted by halogen, hydroxyl, lower alkoxy, (lower)alkoxy-(lower)alkyl, lower acyloxy or phenyl, or an amino group which is mono- or disubstituted by lower alkyl; or

an alkenyl or alkynyl radical having from 3 to 7 carbon atoms;

or R_{21} and R_{22} together with the nitrogen atom to which they are attached form a morpholino, thiomorpholino or pyrrolidino radical, optionally substituted by lower alkyl, lower alkoxy, hydroxyl, oxo, halogen or (lower)alkoxy-(lower)alkyl;

R_{23} is methoxy and R_{24} is methoxy;

R_{25} represents:

a hydrogen or halogen atom;

an amino group which is optionally substituted by one or two lower alkyl groups; or

a lower alkyl, lower alkoxy, (lower)alkoxy-(lower)alkyl or lower alkylthio group, each of which is optionally halogenated or hydroxylated;

R_{26} and R_{27}, which are identical or different, each represent: hydrogen or halogen, at least one of R_{26} and R_{27} being other than hydrogen;

cyano, nitro, thiocyanato, hydroxyl or carboxyl;

alkyl, cycloalkyl, alkenyl, alkynyl, alkyl-S(O)$_n$ (wherein n is 0, 1 or 2), alkoxy, cycloalkoxy, alkenyloxy or alkynyloxy, each of which has up to 8 carbon atoms and is optionally substituted by one or more halogen atoms;

phenyl, naphthyl, phenyl-S(O)$_n$ (wherein n is 0, 1 or 2), phenoxy, phenyl-(lower)alkyl, phenyl-(lower)alkyl-S(O)$_n$ (wherein n is 0, 1 or 2), phenyl-(lower)alkoxy or thienyl, the phenyl or thienyl rings being unsubstituted or substituted by:

halogen;

nitro, cyano, carboxyl, hydroxyl, mercapto, thiocyanato, (lower)alkoxy-carbonyl, —CO—NR′R″, —NR′R″, —N(R′)—CO—R″, —O—CO—R′ or —O—CO—NR′R″;

lower alkyl, lower alkoxy, (lower)alkyl-S(O)$_n$ (wherein n is 0, 1 or 2), cycloalkyl having 3 to 7 carbon atoms, phenyl, phenoxy, phenyl-S(O)$_n$ (wherein n is 0, 1 or 2), phenylalkyl, phenylalkoxy or phenylalkyl-S(O)$_n$ (wherein n is 0, 1 or 2), which is optionally halogenated and has 1 to 4 carbon atoms in the alkyl portion; or

(lower)alkoxy-carbonyl, CO—NR′R″, NR′R″, N(R′)—CO—R″, O—CO—R′ or O—CO—NR′R″;

R′ and R″, which are identical or different, each represent hydrogen; lower alkyl; cycloalkyl having 3 to 7 carbon atoms; optionally halogenated phenyl; optionally halogenated phenyl-(lower)alkyl; alkenyl or alkynyl having 3 to 7 carbon atoms; or alkoxyalkyl having 3 to 8 carbon atoms; and

R_{28} and R_{29}, which are identical or different, each represent hydrogen or halogen; hydroxyl; lower alkyl; lower alkoxy; (lower)alkoxy-(lower)alkyl; or (lower)alkoxycarbonyl.

5,342,836

NITROGEN-BASED STABILIZERS FOR 3-ISOTHIAZOLONES

Paul F. D. Reeve, Le Plan de Grasse, France, assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 11, 1992, Ser. No. 929,899
Int. Cl.[5] A01N *43/36, 43/38;* C07D *275/02*
U.S. Cl. 514—242 7 Claims

1. A method of protecting against chemical degradation an isothiazolone of the formula:

I

wherein

Y is (C_1–C_{18})alkyl or (C_3–C_{12})cycloalkyl each optionally substituted with one or more of hydroxy, halo, cyano, alkylamino, dialkylamine, arylamino, carboxy, carbalkoxy, alkoxy, aryloxy, alkylthio, arylthio, haloalkoxy, cycloaklylamino, carbamoxy, or isothiazolonyl; an unsubstituted or halo-substituted (C_2–C_8) alkenyl or alkynyl; a (C_7–C_{10})aralkyl optionally substituted with one or more of halogen, (C_1–C_4)alkyl or (C_1–C_4)alkoxy; or an aryl optionally substituted with one or more of halogen, nitro, (C_1–C_4)alkyl, (C_1–C_4)alkyl-acylamino, carb(C_1–C_4)alkoxy or sulfamyl; and R and R^1 are each independently H, halogen, (C_1–C_4)alkyl, (C_4–C_8) cycloalkyl or joined together to form a phenyl; comprising incorporating therewith an effective stabilizing amount of a compound selected from the group consisting of s-triazine, dimethyl oxime, pyridine, and pyridine-N-oxide.

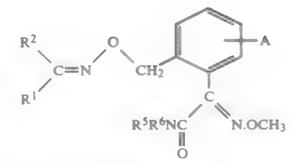
5,342,837

FUNGICIDES DIZINYL OXIME ETHERS

John M. Clough, Marlow; Christopher R. A. Godfrey, Bracknell; Paul J. de Fraine, and Ian R. Matthews, both of Wokingham, all of England, assignors to Imperial Chemical Industries PLC, Millbank, England

Division of Ser. No. 827,236, Jan. 29, 1992, Pat. No. 5,221,691. This application Jan. 22, 1993, Ser. No. 87,706
Int. Cl.[5] A61K *31/50, 31/505;* C07D *237/06, 239/24*
U.S. Cl. 514—247 10 Claims

1. A compound having the formula (I):



(I)

and stereoisomers thereof, wherein A is hydrogen, halo, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, phenoxy, nitro or cyano; R^1 is an optionally substituted six-membered heterocycle containing two nitrogen atoms; R^2 is hydrogen, optionally substituted alkyl, optionally substituted cycloalkyl, optionally substituted cycloalkylalkyl, optionally substituted aralkyl, optionally substituted aryloxyalkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted alkoxy, optionally substituted aryl optionally substituted aryloxy, nitro, halo, cyano, —NR^3R^4, —CO_2R^3, —$CONR^3R^4$, —COR^3, —$S(O)_nR^3$ wherein n is 0, 1 or 2, or $(CH_2)_mPO(OR^3)_2$, wherein m is 0 or 1, R^3 and R^4, which are the same or different, are hydrogen, optionally substituted alkyl, optionally substituted aralkyl, optionally substituted alkenyl, optionally substituted alkynyl, or optionally substituted aryl; and R^5 and R^6 are independently hydrogen or C_{1-4} alkyl.

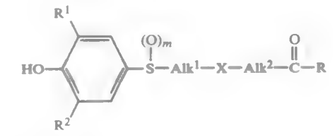
5,342,838

PHENOLIC THIOETHERAMIDES

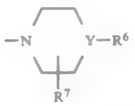
Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 943,166, Sep. 10, 1992, Pat. No. 5,298,514, which is a continuation of Ser. No. 579,124, Sep. 7, 1990, abandoned. This application Dec. 9, 1993, Ser. No. 164,498
Int. Cl.[5] A61K *31/50;* C07D *279/12, 295.08, 211.32*
U.S. Cl. 514—252 18 Claims

1. A compound of the formula:



wherein R^1 and R^2 are the same or different and independently represent tert-alkyl or phenyl; Alk^1 represents straight or branched chain alkylene of 1 to 10 carbon atoms; X represents sulfur or oxygen; Alk^2 represents straight or branched chain alkylene of 1 to 4 carbon atoms; m is 0 or 1; and R represents:



wherein Y is CH, N, O, or S; R^6 is hydrogen, lower alkyl, phenyl, substituted phenyl, benzyl, substituted benzyl, or a heterocyclic amine; and R^7 is hydrogen or alkyl of 1 to 4 carbon atoms, or a pharmaceutically acceptable salt or stereoisomer or geometric isomer thereof.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,839

2-HYDROXY-3-PHENOXY-PROPYL-SUBSTITUTED PIPERAZINES, THEIR PREPARATION AND USE

Hans-Joerg Treiber, Bruehl; Hans P. Hofmann, Limburgerhof; Laszlo Szabo, Heidelberg; Liliane Unger, Ludwigshafen, and Manfred Raschack, Weisenheim am Sand, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP89/01058, § 371 Date Mar. 18, 1991, § 102(e) Date Mar. 18, 1991, PCT Pub. No. WO90/03371, PCT Pub. Date Apr. 5, 1990

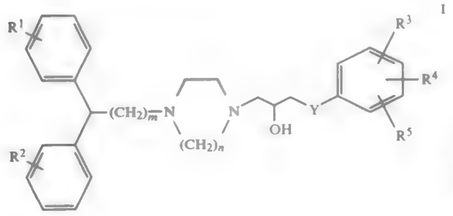
PCT Filed Sep. 12, 1989, Ser. No. 659,365

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1988, 3831993

Int. Cl.[5] A61K *31/495, 31/55;* **C07D** *295/088, 243/08*

U.S. Cl. 514—255 **6 Claims**

1. A piperazine of the formula I



in which

R^1 and R^2 denote hydrogen, fluorine or chlorine atoms,

R^3, R^4 and R^5 denote hydrogen, fluorine or chlorine atoms,

Y denotes an oxygen or sulfur atom,

m denotes 3 and

n denotes 2,

or the salts thereof with physiologically tolerated acids.

5,342,840

CYCLOPROPANE DERIVATIVE

Satoshi Hatsuya; Takaaki Sekiyama; Takashi Tsuji; Satoshi Iwayama, and Masahiko Okunishi, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

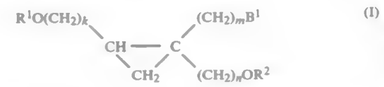
Filed Mar. 5, 1992, Ser. No. 846,615

Claims priority, application Japan, Mar. 5, 1991, 3-123239; Jul. 24, 1991, 3-184709

Int. Cl.[5] A61K *31/52;* **C07D** *473/00*

U.S. Cl. 514—262 **13 Claims**

1. A cyclopropane of the formula (I)



having antiherpes viral activity, wherein B^1 is a purine residue selected from the group consisting of guanine, adenine, 2-amino-6-chloropurine, 2-aminopurine, 2,6-diaminopurine, xanthine and 2-amino-6-alkoxypurine, R^1 and R^2 are, independently hydrogen or a hydroxyl protecting group and each of k, m and n is, independently, an integer of 1 or 2, or a pharmaceutically acceptable salt thereof.

5,342,841

XANTHINE DERIVATIVES

Fumio Suzuki, Mishima; Junichi Shimada, Shizuoka; Akira Karasawa, Shizuoka; Hideaki Mizumoto, Shizuoka; Hiroshi Kase, Koganei, and Hiromi Nonaka, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

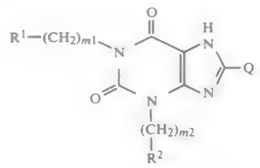
Filed Mar. 10, 1993, Ser. No. 29,069

Claims priority, application Japan, Mar. 12, 1992, 4-053385

Int. Cl.[5] A61K *31/52;* **C07D** *473/02*

U.S. Cl. 514—263 **4 Claims**

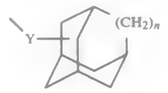
1. A xanthine derivative of the formula (I):



wherein R^1 and R^2 age the same or different and are alicyclic alkyl which is optionally substituted with one to three substituents independently selected from the group consisting of alkyl having 1–6 carbon atoms, hydroxy, alkoxy having 1–6 carbon atoms, halogen, nitro and amino; m1 and m2 are the same or different and represent an integer of 0 to 2; and Q represents



wherein R^3 and R^4 are the same or different and are alicyclic alkyl which is optionally substituted with one to three substituents independently selected from the group consisting of alkyl having 1–6 carbon atoms, hydroxy, alkoxy having 1–6 carbon atoms, halogen, nitro and amino, or



wherein n is 0 or 1 and Y is a single bond or alkylene; or a pharmaceutically acceptable salt thereof.

5,342,842

PYRIMIDONE DERIVATIVES AND ANALOGS IN THE TREATMENT OF ASTHMA OR CERTAIN SKIN DISORDERS

John B. Cheng, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

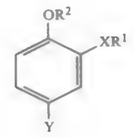
PCT No. PCT/US90/02162, § 371 Date May 8, 1992, § 102(e) Date May 8, 1992, PCT Pub. No. WO91/07178, PCT Pub. Date May 30, 1991

PCT Filed Apr. 20, 1990, Ser. No. 855,046

Int. Cl.[5] A61K *31/505, 31/415*

U.S. Cl. 514—274 **11 Claims**

1. A method for relieving skin disease in a human which comprises administering to said human an asthma, airway or skin inflammation relieving amount of an optically active or racemic compound having the formula

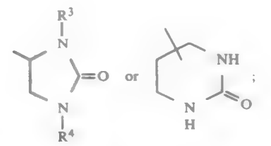


wherein R^1 is a polycycloalkyl group having from 7 to 11 carbon atoms;

R^2 is methyl or ethyl;

X is O or NH;

Y is



R^3 is hydrogen, (C_1–C_3) alkyl, (C_2–C_3) alkenyl, benzyl or phenethyl; and

R^4 is hydrogen, (C_1–C_3) alkyl or (C_2–C_3) alkanoyl; or a pharmaceutically acceptable acid addition salt thereof when X is NH.

5,342,843

THIENOIMIDAZOPPYRIDONE DERIVATIVES

Fumio Suzuki, Mishima; Yoshikazu Miwa, Sunto; Takeshi Kuroda, Itano; Shigeto Kitamura, Machida, and Haruhiko Manabe, Sunto, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01602, § 371 Date Aug. 6, 1993, § 102(e) Date Aug. 6, 1993, PCT Pub. No. WO93/12116, PCT Pub. Date Jun. 24, 1993

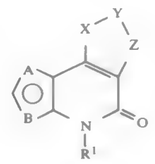
PCT Filed Dec. 8, 1992, Ser. No. 98,329

Claims priority, application Japan, Dec. 12, 1991, 3-329154

Int. Cl.[5] C07D *491/12;* **A61K** *31/44*

U.S. Cl. 514—293 **4 Claims**

1. A thienoimidazopyridone derivative represented by formula (I):



wherein A and B independently represent —S— or —CH=, X-Y-Z represents —N(R^2) —CH=N— or —N=CH—N(R^2)— wherein R^2 is hydrogen, lower alkyl or —CH(R^3)—(CH_2)$_n$—R^4 wherein R^4 is phenyl, n is 0 or 1, and R^3 is hydrogen or lower alkyl, and R^1 represents lower alkyl, or a pharmaceutically acceptable salt thereof.

5,342,844

7-SUBSTITUTED QUINOLONES AND NAPHTHYRIDONES AS ANTIBACTERIAL AGENTS

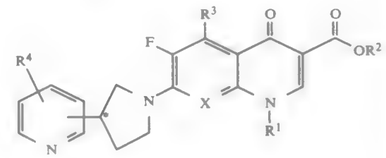
Edgardo Laborde, Canton, and Mel Schroeder, Dexter, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 832,188, Feb. 6, 1992, Pat. No. 5,221,676. This application Feb. 5, 1993, Ser. No. 14,286

Int. Cl.[5] A61K *31/44;* **C07D** *227/08, 471/04*

U.S. Cl. 514—300 **19 Claims**

1. A compound of the formula



wherein * denotes an asymmetric carbon;

X is C—H, C—F, C—Cl, C—OCH_3, C—CF_3, or N;

R^1 is a C_1–C_4-alkyl, C_3–C_6-cycloalkyl, or phenyl substituted by one or more halogen atoms;

R^2 is hydrogen, alkyl of 1 to 4 carbon atoms, or a cation;

R^3 is hydrogen, amino, or methyl;

R^4 is hydrogen or one, two or three substituents independently selected from C_1–C_4-alkyl, halo-substituted C_1–C_4-alkyl, hydroxy-substituted C_1–C_4-alkyl, halogen, hydroxy, C_1–C_4-alkoxy, mercapto, amino, mono-(C_1–C_4-alkyl)amino, di-(C_1–C_4-alkyl)amino, formamido, mono-(C_1–C_4-alkyl)amide, di-(C_1–C_4-alkyl)amido, cyano, nitro, C_1–C_4-alkoxycarbonyl, carboxyl, aminomethyl, mono-(C_1–C_4-alkyl)aminomethyl, di-(C_1–C_4-alkyl-)aminomethyl, wherein free hydroxy and amino groups may be protected;

or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

5,342,845

INDOLE DERIVATIVES AND DRUGS

Shoichi Chokai, Kyoto; Tomiyoshi Aoki, and Yojiro Ukai, both of Shiga, all of Japan, assignors to Nippon Shinyaku Company Limited, Japan

PCT No. PCT/JP91/01148, § 371 Date Feb. 26, 1993, § 102(e) Date Feb. 26, 1993, PCT Pub. No. WO92/04347, PCT Pub. Date Mar. 19, 1992

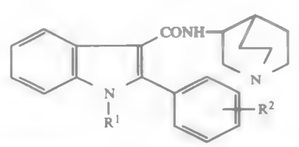
PCT Filed Aug. 29, 1991, Ser. No. 983,513

Claims priority, application Japan, Aug. 31, 1990, 2-231030; Oct. 2, 1990, 2-265847

Int. Cl.[5] A61K *31/435;* **C07D** *453/02*

U.S. Cl. 514—305 **35 Claims**

1. A compound of the formula [I]



or a pharmaceutically acceptable salt thereof wherein

R^1 is lower alkyl and

R^2 is hydrogen, halogen, lower alkyl or lower alkoxy.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,846

7-SUBSTITUTED-6-FLUORO-1,4-DIHYDRO-4-OXO-QUINOLINE-3-CARBOXYLIC ACID COMPOUNDS AND 7-(SUBSTITUTED TRIAZOLYL PYRROLIDIN-1-YL) 4-OXOQUINOLINE-3-CARBOXYLIC ACID DERIVATIVES USEFUL AS ANTIBACTERIAL AGENTS

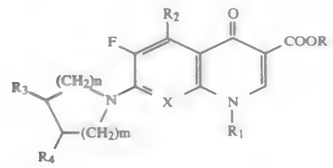
Rajeshwar Singh; Rakhshandeh Fathi-Afshar; Inder P. Singh; George Thomas; Thomas R. Doerksen; Maya P. Singh, all of Edmonton, and Ronald G. Micetich, Sherwood Park, all of Canada, assignors to SynPhar Laboratories, Inc., Alberta, Canada

Continuation-in-part of Ser. No. 621,716, Dec. 5, 1990, abandoned, Ser. No. 802,665, Dec. 5, 1991, abandoned, and Ser. No. 891,262, Jun. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 802,665, Jun. 1, 1992, which is a continuation-in-part of Ser. No. 621,716, Jun. 1, 1992. This application Jul. 14, 1992, Ser. No. 913,505

Int. Cl.[5] **A61K** *31/47;* **C07D** *401/14*

U.S. Cl. 514—312 **68 Claims**

1. A 7-substituted-6-fluoro-1,4-dihydro-4-oxo-quinoline-3-carboxylic acid compound of the formula:



I

wherein R is hydrogen or C_1–C_4 alkyl group; R_1 is (i) a C_3–C_6 cycloalkyl group which may be substituted with one or two halogen atoms, (ii) a phenyl group which may be substituted with one or two halogen atoms, or (iii) a C_1–C_4 alkyl group which may be substituted with one or two halogen atoms; R_2 is hydrogen, a halogen atom, a C_1–C_4 alkyl group, a hydroxy group or an amino group;

R_3 is hydrogen, a hydroxy or an amino group;

R_4 is a 1,2,3-triazol-1-yl group, a 1,2,4-triazol-1-yl group, a 1,2,3,4-tetrazol-1-yl group or a 1,2,3,4-tetrazol-2-yl group, each of which may have 1 to 2 substituents selected from the group consisting of C_1–C_4 alkyl, COOH, CH_2NH_2, amino and phenyl groups; and X is CH, C—F or C—OCH_3; m is 1 or 2; n is 0, 1 or 2;

or a pharmaceutically acceptable salt of any compound, recited above.

5,342,847

SPECIFIC 1,4-DIHYDROPYRIDINE-3,5-DICARBOXYLIC ACID ESTER AND ITS PHARMACEUTICAL USE

Otto Behner; Hartmund Wollweber; Siegfried Goldmann, all of Wuppertal; Bruno Rosen, Wülfrath, and Siegfried Zaiss, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1993, Ser. No. 1,017

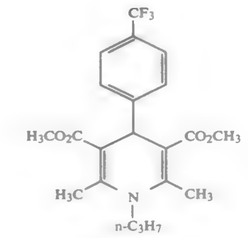
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1992, 4200714

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[5] **C07D** *211/86;* **A61K** *31/455*

U.S. Cl. 514—356 **3 Claims**

1. The compound dimethyl 2,6-dimethyl-1-n-propyl-4-(4trifluoromethylphenyl) 1,4-dihydropyridine-3,5-dicarboxylate of the formula (I)



(I)

5,342,848

THIOFORMAMIDE DERIVATIVES

Terance W. Hart, and Bernard Y. J. Vacher, both of Dagenham, United Kingdom, assignors to Rhone-Poulenc Rorer Limited, Eastbourne, England

PCT No. PCT/EP91/00247, § 371 Date Aug. 7, 1992, § 102(e) Date Aug. 7, 1992, PCT Pub. No. WO91/12242, PCT Pub. Date Aug. 22, 1991

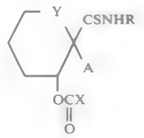
PCT Filed Feb. 8, 1991, Ser. No. 917,025

Claims priority, application United Kingdom, Feb. 8, 1990, 9002879

Int. Cl.[5] **C07D** *213/16, 213/18, 401/02;* **A61K** *31/44*

U.S. Cl. 514—357 **7 Claims**

1. A compound of the formula



wherein

R is alkyl;

A is pyrid-4-yl or pyrid-4-yl substituted by alkyl, alkoxy or halogen;

Y is ethylene, methylene or a bond;

X is:

a) phenyl, pyridyl, furyl or thienyl, each of which may be substituted by one or more substituents selected from halogen, hydroxy, straight- or branched-chain C_{1-4}alkyl, C_{2-4}alkenyl, C_{1-4}alkoxy, phenoxy, tetrahydropyranyloxy, alkanoyl, benzoyl, cyano, nitro, trifluoromethyl, carboxy, amino, C_{1-4}alkylamino, hydroxy C_{1-4}alkylamino, di-C_{1-4}alkylamino, di-C_{1-4}alkylamino substituted by hydroxy, tri-C_{1-4}alkylammonio, C_{1-4}alkoxycarbonyl, alkanoylamino, benzoylamino, alkanoyloxy, C_{1-4}alkoxycarbonyl, carbamoyl, mono- or di-C_{1-4}alkylcarbamoyl, mono- and di-C_{1-4}alkylcarbamoyl substituted by hydroxy or by straight- or branched-chain divalent groups of about 4 to about 6 carbon atoms in the chain which may further contain a hetero atom; or

b) straight- or branched-chain alkyl of 1 to about 6 carbon atoms, alkenyl of 2 to about 6 carbon atoms or cycloalkyl of 3 to about 6 carbon atoms, each of which may be substituted by one or more substituents selected from halogen, hydroxy, C_{2-4}-alkenyl, C_{1-4}alkoxy, phenoxy, tetrahydropyranyloxy, alkanoyl, benzoyl, cyano, nitro, carboxy, amino, C_{1-4}alkylamino, hydroxy C_{1-4} alkylamino, di-C_{1-4}alkylamino, di-C_{1-4}alkylamino substituted by hydroxy, tri-C_{1-4}alkylammonio, C_{1-4}alkoxycarbonylamino, alkanoylamino, benzoylamino, alkanoyloxy, C_{1-4}alkoxycarbonyl, carbamoyl, mono- or di-C_{1-4}alkylcarbamoyl, mono- and di-C_{1-4}alkylcarbamoyl substituted by hydroxy or by straight- or branched-chain divalent groups of about 4 to about 6 carbon atoms in the chain which may further contain a hetero atom; and

pharmaceutically acceptable salts thereof.

5,342,849

PHENOXYALKYL-SUBSTITUTED HETEROAROMATICS AND A METHOD FOR CONTROLLING PESTS

Joachim Leyendecker, Ladenburg; Hans-Juergen Neubauer, Muenster-Hiltrup; Uwe Kardorff, Mannheim; Christoph Kuenast, Otterstadt; Wolfgang Krieg, Weingarten, and Peter Hofmeister, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

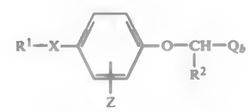
Division of Ser. No. 658,241, Feb. 20, 1990, Pat. No. 5,212,194, which is a division of Ser. No. 379,956, Jul. 14, 1989, Pat. No. 5,013,847. This application Sep. 9, 1992, Ser. No. 942,387

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1988, 3825821; Jul. 29, 1988, 3825822

Int. Cl.[5] **C07D** *277/24, 285/12;* **A01N** *43/78, 43/82*

U.S. Cl. 514—/361 **11 Claims**

1. Phenoxyalkyl-substituted heteroaromatics of the formula (I)



(I)

where the substituents have the following meanings:

R^1 C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl, C_2–C_{12}-alkynyl, C_1–C_{12}-haloalkyl, C_2–C_{12}-haloalkenyl, C_2–C_{12}-haloalkynyl, C_3–C_{12}-alkoxyalkyl, C_3–C_8-cycloalkyl, C_4–C_{12}-cycloalkylalkyl, C_3–C_8-halocycloalkyl, C_4–C_{12}-halocycloalkylalkyl, C_4–C_{12}-cycloalkylhaloalkyl or C_4–C_{12}-halocycloalkylhaloalkyl;

X O, S or SO_2;

Z hydrogen, halogen or C_1–C_4-alkyl;

R^2 hydrogen or C_1–C_4-alkyl; and

Q_b thiazol-4-yl, 1,3,4-thiadiazol-2-yl, 1,3,4-oxadiazol-2-yl or 1,2,4-oxadiazol-3-yl, unsubstituted or monosubstituted or polysubstituted by halogen, C_1–C_8-alkyl, C_2–C_8-alkenyl, C_1–C_4-haloalkyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, C_2–C_8-alkoxyalkyl or C_3–C_{10}-cycloalkyl.

5,342,850

THIAZOLIDINE-2,4-DIONE DERIVATIVES, THEIR SALTS AND THEIR PREPARATION PROCESSES

Michiro Ohnota, Nogi; Kyuya Okamura; Yoshihiro Hirata, both of Ohmiya; Koji Murakami, Nogi, and Mitsuo Ohashi, Ohmiya, all of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00189, § 371 Date Oct. 22, 1992, § 102(e) Date Oct. 22, 1992, PCT Pub. No. WO92/14719, PCT Pub. Date Sep. 3, 1992

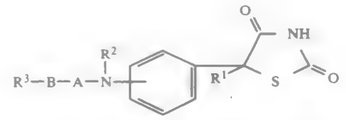
PCT Filed Feb. 24, 1992, Ser. No. 934,519

Claims priority, application Japan, Feb. 25, 1991, 3-053275; Feb. 21, 1992, 4-072496

Int. Cl.[5] **C07D** *277/34;* **A01K** *31/425*

U.S. Cl. 514—369 **14 Claims**

1. Thiazolidine-2,4-dione derivatives represented by formula (1)



(1)

where R^1 and R^2 each independently represent hydrogen atoms or C_{1-6} alkyl groups;

R^3 denotes a phenyl group, napthyl group, benzoyl group or saturated or unsaturated monocyclic or polycyclic heterocyclic group containing one or more nitrogen, oxygen or sulfur atoms, all of said R^3 groups being optionally substituted with one or more substituents selected form the group consisting of hydrogen, fluorine, chlorine, bromine, iodine, C_{1-6} alkyl groups, hydroxyl, C_{1-6} alkoxy groups, nitro, amino which itself may optionally be substituted with a C_{1-6} alkyl group or a C_{1-4} alkanoyl group or a benzoyl group, phenyl which itself may be substituted with fluorine or chlorine or bromine or iodine or a C_{1-6} alkyl group or a C_{1-6} alkoxy group, C_{1-4} alkanoyloxy, carboxyl, methylenedioxy, sulfamoyl which may itself be substituted with a C_{1-6} alkyl group, and trifluoromethyl;

A denotes a carbonyl group, a sulfonyl group or a single bond; and

B denotes a C_{1-6} alkylene, C_{2-6} alkenylene or a single bond; and salts thereof.

5,342,851

SUBSTITUTED THIAZOLE DERIVATIVES USEFUL AS PLATELET AGGREGATION INHIBITORS

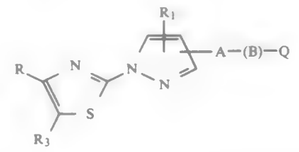
Pauline J. Sanfilippo, Chester Springs, Pa.; Maud Urbanski, Belle Mead, N.J.; John R. Carson, Norristown, and Richard J. Carmosin, Quakertown, both of Pa., assignors to McNeil-PPC, Inc., Milltown, N.J.

Filed Oct. 7, 1992, Ser. No. 958,193

Int. Cl.[5] **C07D** *417/04;* **A61K** *31/425*

U.S. Cl. 514—370 **14 Claims**

1. A compound of the formula:



I

wherein

R and R_3 are the same or different and are selected from hydrogen, hydroxy, carboxy, alkylcarboxy (C_1–C_4), alkyl (C_1–C_8), trifluoromethyl, halogen, phenyl or substituted

VOL 1165 ISS 5 AG 30 1994 UMI

phenyl, where the phenyl substituents are selected from the group consisting of cyano, nitro, trifluoromethyl, carboxy, amino, carboxamido, tosyl, halogen, alkyl (C_1–C_4), carboalkoxy (C_1–C_4), and alkoxy (C_1–C_4), or heteroaryl wherein the heteroaryl contains 1–4 heteroatoms selected from nitrogen or sulfur or R and R_3 are taken together to form a ring, except for formula III, selected from benzene or substituted benzene wherein such substituents are selected from the group consisting of cyano, nitro, trifluoromethyl, carboxy, amino, carboxamido, halogen, alkylcarboxy, alkyl or alkoxy wherein the halogen, alkoxy, alkylcarboxy and alkyl groups are as defined above;

R_1 is selected from the group consisting of hydrogen, halogen, hydroxy, carboxy, alkylcarboxy (C_1–C_4), alkyl (C_1–C_5), trifluoromethyl, phenyl or substituted phenyl wherein where the phenyl substituents are selected from the group consisting of cyano, nitro, trifluoromethyl, carboxy, amino, carboxamido, tosyl, halogen, alkyl (C_1–C_4), carboalkoxy (C_1–C_4), and alkoxy (C_1–C_4);

R_2 is hydrogen or alkyl (C_1–C_5);

A is selected from the group consisting of carbonyl, carboxyl, carboxamido, amido, oxymethyl, aminomethyl, or methylene;

B is selected from alkyl (C_1–C_9), branched alkyl (C_1–C_9), phenyl or aralkyl (C_1–C_5); and

Q is selected from hydroxy, alkoxy (C_1–C_5), halogen, cyano, carboxy, alkoxycarbonyl (C_1–C_5), or NR_4R_5 where R_4 and R_5 are independently selected from the group consisting of hydrogen, alkyl (C_1–C_5), cycloalkyl (C_3–C_8), or NR_4R_5 is taken together to form a heterocyclic ring selected from piperidine, pyrrolidine, pyrrolidinone, piperidinone, phthalimide, imidazole, piperazine, substituted piperazine or morpholine and their benzo fused analogues selected from 2,6-dihydro-isoindole and benzimidazole and any N-oxides thereof selected from 2-oxo-2,6-dihydro-isoindole or NR_4R_5 is guanidine, urea, thiourea, hydrazine, amidine, or substituted amidine wherein the substituents are selected from the group consisting of alkyl (C_1–C_4), hydroxyl and amino; and

pharmaceutically acceptable salts thereof.

5,342,852

MACROCYCLIC LACTONE ANTIBACTERIAL ANTIBIOTIC COMPOUNDS

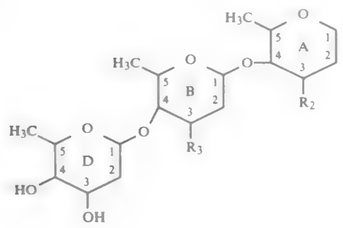
Vinod R. Hegde, Rockaway; Ann C. Horan, Summit, both of N.J.; Joseph A. Marquez, Evergreen, Colo., and Mahesh G. Patel, Verona, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Sep. 20, 1993, Ser. No. 123,656

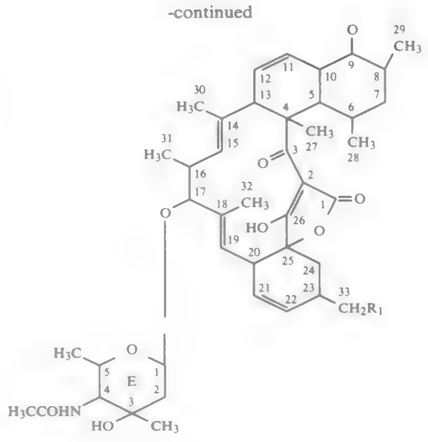
Int. Cl.[5] A61K *31/34;* **C07D** *307/93*

U.S. Cl. 514—461 **19 Claims**

1. A compound represented by formula I



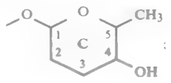
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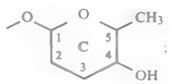
wherein

R_1=CH_2CH_3, R_2=H, and R_3=

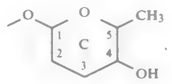
R_1=CH_3, R_2=OH, and R_3=



R_1=CH_2CH_3, R_2=OH, and R_3=



R_1=Ch_3, R_2=H, and R_3=OH;
R_1=CH_3, R_2=H, and R_3=



or R_1=CH_2CH_3, R_2=H, and R_3=OH.

5,342,853

METHOD OF USING NOR-VERAPAMIL AND NOR-GALLOPAMIL AS ANTI-ARTERIOSCLEROTICS

Claus D. Mueller, Viernheim, and Liliane Unger, Ludwigshafen, both of Fed. Rep. of Germany, assignors to Knoll AG, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 12, 1991, Ser. No. 784,426

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1989, 3921006

Int. Cl.[5] A61K *31/275*

U.S. Cl. 514—523 **3 Claims**

1. A method for treating patients suffering from arteriosclerosis, which comprises administering orally an antiarteriosclerotic dose of nor-verapamil or nor-gallopamil to said patients.

5,342,854

POLYESTER DISSOLUTION FOR POLYESTER/COTTON BLEND RECYCLE

Susan L. Serad, Charlotte, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jul. 28, 1993, Ser. No. 98,556

Int. Cl.[5] C08J *11/04, 11/28*

U.S. Cl. 521—48 **20 Claims**

1. A process for recycling polyester and cotton blend fabrics comprising the steps of:

providing a polyester and cotton blend fabric;

charging said blend in a sulfone solvent;

dissolving the polyester in said sulfone solvent;

separating the dissolved polyester and sulfone solvent solution from the cotton fabric;

allowing the dissolved polyester solution to phase out on its own with time;

filtering the cotton fabric as to obtain the isolated, cotton fabric.

5,342,855

STABLE DISPERSIONS OF POLYHYDRAZODICARBONAMIDES USEFUL IN THE PREPARATION OF POLYURETHANE PRODUCTS HAVING IMPROVED LOAD-BEARING CAPACITY

Michael A. Lucarelli, New Martinsville, W. Va.; Richard E. Keegan, McMurray; Mark A. Koshute, Beaver, both of Pa.; Hans-Albrecht Freitag, Bergisch Gladbach, and Geza Avar, Leverkusen, both of Fed. Rep. of Germany, assignors to Miles Inc., Pittsburgh, Pa.

Filed Jan. 23, 1990, Ser. No. 468,535

Int. Cl.[5] C08J *9/00*

U.S. Cl. 521—50 **3 Claims**

1. A polyurethane foam prepared by a process comprising reacting

(A) an organic isocyanate;

(B) a dispersion of a hydroxyl-containing polyhydrazodicarbonamide in a hydroxyl-group-containing compound comprising the reaction product of

(a) an organic isocyanate;

(b) a compound containing at least two isocyanate-reactive hydrogen atoms and having a molecular weight in the range from 400 to 10,000;

(c) a compound containing at least two isocyanate-reactive hydrogen atoms and having a molecular weight in the range from 32 to 700, wherein said compound is different from the compound of component (b), in a quantity of from 1 to 8 percent by weight based on the amount of component (b); and

(d) a hydrazine, a hydrazide, or a mixture thereof; wherein the ratio of the NCO equivalents of component (a) to the total amine equivalents of the dispersion is from 0.95 to 1.10.

5,342,856

PROCESS FOR PRODUCING INTEGRAL SKIN MOLDED FOAMS

Christian Weber, and Hartwig Grammes, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 2, 1992, Ser. No. 908,700

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1991, 4122872

Int. Cl.[5] C08J *9/08;* **C08K** *5/09*

U.S. Cl. 521—51 **8 Claims**

1. In a process for the preparation of an integral skin foam having a maximum gross density of 500 kg/m^3 by foaming a reaction mixture in a closed mold in the absence of physical blowing agents, said reaction mixture comprising:

a) one or more polyisocyanates having aromatically bound isocyanate groups,

b) one or more polyether polyols having molecular weights of from 500 to 12,000 and containing from 2 to 4 alcoholic hydroxyl groups,

c) one or more divalent or trivalent alcohols having molecular weights of from 62 to 499, and containing primary and/or secondary hydroxyl groups,

the improvement wherein said reaction mixture contains the following additional components:

d) a solution of

d1) 100 parts by weight of a zinc salt of a straight chain or branched chain, saturated or unsaturated fatty acid having from 8 to 24 carbon atoms in

d2) from 40 to 200 parts by weight of an aliphatic polyamine having a molecular weight of from 131 to 500 and having a total of 2 to 4 primary, secondary and/or tertiary amine nitrogen atoms, and

e) water,

and wherein the total amount of said zinc salt is from 0.2 to 2.5% by weight, based on the weight of component b), and the total amount of components is such that the isocyanate index is from 70 to 150.

5,342,857

PROCESS FOR PRODUCING POLYSTYRENE FOAM

Michael E. Reedy, Keyport, N.J., and Edward W. Rider, Jr., Slate Hill, N.Y., assignors to Reedy International Corporation, Keyport, N.J. and Genpak Corporation, Glen Falls, N.Y.

Division of Ser. No. 61,670, May 14, 1993, Pat. No. 5,302,624, which is a division of Ser. No. 891,866, Jun. 1, 1992, Pat. No. 5,218,006. This application Jan. 18, 1994, Ser. No. 184,073

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[5] C08J *9/08*

U.S. Cl. 521—76 **7 Claims**

1. A masterbatch mix for the preparation of polystyrene foams, said masterbatch mix comprising:

(A) stoichiometric amounts of monosodium citrate and sodium bicarbonate encapsulated in vegetable oil;

(B) styrene-ethylene/butylene-styrene block copolymer;

(C) poly alpha methyl styrene;

(D) white mineral oil; and

(E) silica.

5,342,858

ELASTOMERIC ADHESIVE FOAM

John J. Litchholt, Harrison, and Richard W. Lodge, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 30, 1993, Ser. No. 85,537

Int. Cl.[5] C08J *9/00;* **C08L** *9/00*

U.S. Cl. 521—98 **15 Claims**

1. An elastomeric, adhesive foam comprising an elastomeric, hot-melt, adhesive material having cells; said adhesive material comprising:

(a) an A-B-A block copolymer, wherein the A block is an

VOL 1165 ISS 5 AG 30 1994 UMI

alkenylarene polymer and the B block is selected from the group consisting of (i) a polymer of a 4 to 6 carbon conjugated aliphatic diene and (ii) a polymer of a linear 2 to 6 carbon alkene;

(b) an aromatic modified hydrocarbon resin which associates with both the A blocks and the B block of said copolymer, said resin being a single resin vehicle selected from the group consisting of aromatic petroleum hydrocarbon resins and hydrogenated versions of aromatic petroleum hydrocarbon resins; and

(c) optionally a processing oil.

5,342,859

METHOD OF PRODUCING RIGID FOAMS AND PRODUCTS PRODUCED THEREFROM

Robert H. Blaspied, and Richard L. Donald, both of Meridian, Miss., assignors to Atlas Roofing Corporation, Meridian, Miss.

Continuation-in-part of Ser. No. 720,735, Jun. 25, 1991, Pat. No. 5,252,625, and a continuation-in-part of Ser. No. 851,889, Mar. 16, 1992, Pat. No. 5,254,600, and a continuation-in-part of Ser. No. 18,304, Feb. 16, 1993, Pat. No. 5,294,677, and a continuation-in-part of Ser. No. 40,032, Mar. 30, 1993, abandoned. This application Sep. 16, 1993, Ser. No. 121,428

Int. Cl.[5] C08G *18/18, 18/22;* C08J *9/08*

U.S. Cl. 521—125 19 Claims

1. A method of producing a rigid thermosetting foam, the method comprising the steps of:

(1) preparing a first of two foam forming blends using a multi-isocyanate functional compound chosen from the group consisting of polymeric polymethylene polyphelyisocyanate, and a prepolymer made therefrom;

(2) preparing a second of two foam forming blends by mixing together:

(a) a polyol;

(b) a first blowing agent which is not carbon dioxide derived from water;

(c) an alkali metal organo-salt catalyst of a minimum concentration of about 63% in an aqueous solution free of aliphatic glycols;

(d) optionally an additional amount of water for producing carbon dioxide as a second blowing agent;

(3) mixing together the first and second foaming blends to cause a polymerization reaction producing the rigid foam such that the total amount of water utilized is less than 1% by weight of the total foam.

5,342,860

RADIATION CURABLE ALK-1-ENYL ETHER POLYESTER PREPOLYMERS

Jeffrey S. Plotkin, Monsey, N.Y., and Mark M. Miller, Ridgewood, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Aug. 18, 1993, Ser. No. 107,867

Int. Cl.[5] C08F *2/50, 16/32;* C07C *69/347, 69/767*

U.S. Cl. 522—31 19 Claims

1. A polyalk-1-enyl polyester prepolymer having the formula

$$(R_6CH{=}CHOR_4O{\rightarrow}_{\overline{2}}[(COACO{-}OR_1CHO)_mCOACO]{-}\underset{\displaystyle R_2OCH{=}CHR_5}{|}$$

wherein

m has a value of from 1 to 25;

A is C_2 to C_{12} alkylene, C_6 to C_{14} aryl, both groups optionally substituted with lower alkyl, halo lower alkyl, alkyleneoxy, halogen or aryl;

R_1 is alkylene containing from 1 to 6 carbon atoms;

R_2 is a saturated or unsaturated divalent radical containing from 1 to 14 carbon atoms and is selected from the group of alkylene, alkenylene and arylene, each group optionally substituted with oxygen, halogen, lower alkyl and/or hydroxy;

R_3 is hydrogen or C_1 to C_6 alkyl;

R_4 is C_1 to C_6 alkylene, C_6 to C_{14} arylene, lower alkyl substituted phenylene or xylylene

R_5 is hydrogen or C_1 to C_4 alkyl,

R_6 is hydrogen or C_1 to C_4 alkyl.

5,342,861

HOT MELT WETNESS INDICATOR

Gary Raykovitz, Flemington, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 669,175, Mar. 14, 1991, abandoned. This application Oct. 22, 1993, Ser. No. 142,628

Int. Cl.[5] A61F *13/15, 13/20;* C08L *57/10, 51/08*

U.S. Cl. 523—111 11 Claims

1. A disposable absorbent article comprising a moisture absorbent substrate, and a water resistant covering for said absorbent substrate, at least one portion of the inner surface of the water resistant covering coated with a wetness indicating hot melt adhesive composition consisting essentially of:

a) a graft copolymer of

i. about 40–80% by weight of vinyl monomer selected from the group consisting of vinyl acetate, methyl acrylate, ethyl acrylate and mixtures thereof; and

ii. about 20–60% by weight of water soluble polyalkylene oxide polymer having a weight average molecular weight of about 3,000–20,000 and a polymerized ethylene oxide content of at least 50% by weight;

b) an effective amount of a wetness indicating agent; and

c) 0–90% by weight of a compatible tackifying resin.

5,342,862

PROCESS FOR CONTROLLING THE PHOTODEGRADATION OF MULCH FILM

Murray H. Reich, Princeton, N.J., assignor to Biolan Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 86,519, Jul. 1, 1993, which is a continuation of Ser. No. 630,558, Dec. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 492,955, Mar. 13, 1990, abandoned. This application Dec. 13, 1993, Ser. No. 166,358

Int. Cl.[5] C08K *3/04, 5/34.35;* C08L *23/12*

U.S. Cl. 523—125 18 Claims

1. Process of controlling the photodegradation by sunlight of a film of polypropylene, or propylene copolymers, said film having a thickness of about 1.25 mils or less by forming a composition comprising carbon black as the sole UV light absorbing stabilizer, said carbon black comprising about 0.5% to about 2.4% by weight of said film and said carbon black having a particle size of about 15 nm to about 120 nm; hindered amine light stabilizer for interrupting the free radical chain degradation mechanism, said hindered amine light stabilizer comprising about 0.02% to about 0.4% by weight of said film; an impact modifier for enhancing the photodegradability of said film, said impact modifier comprising about 1% to about 40% by weight of said film; and forming a film from said composition.

5,342,863

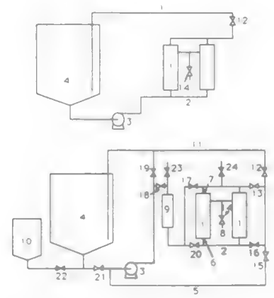
ULTRAFILTRATION PROCESSES FOR THE RECOVERY OF POLYMERIC LATICES FROM WHITEWATER

Randall G. Buckley, Mt. Laurel, N.J.; George L. Eastburn, Pineville; Marion C. Schmitz, Richboro, both of Pa.; Barry R. Breslau, Acton, and Shawn P. Tansey, Westford, both of Mass., assignors to Rohm and Haas Company

Division of Ser. No. 695,863, May 6, 1991, Pat. No. 5,171,767. This application Jul. 15, 1992, Ser. No. 914,288

Int. Cl.[5] B01D *21/24, 63/08*

U.S. Cl. 523—310 7 Claims



1. An apparatus for concentrating whitewater emulsions which comprises

(a) one or more ultrafiltration cartridges (1) having disposed therein one or more ultrafiltration membranes having an active membrane side, the cartridges further having a whitewater inlet (6) and a whitewater outlet (7) such that a liquid flowing between the inlet and outlet will flow, in the laminar domain, in contact with the active membrane side of the membrane, and the cartridges further having a permeate outlet, the membrane separating the permeate outlet from liquid flowing between the whitewater outlet and the whitewater inlet,

(b) a whitewater inlet line for the flow of liquid, the line having a discharge end and an input end, the discharge end being connected to the whitewater inlet of the ultrafiltration cartridges,

(c) a pumping means (3) for a liquid, the pumping means having an inlet and an outlet, the outlet of the pumping means being connected to the input end of the whitewater inlet line and the inlet of the pumping means being connected to a source of whitewater (4), thereby providing a flow of whitewater from the source of whitewater sequentially through the pumping means (3), the whitewater inlet line, the whitewater inlet (6), the ultrafiltration cartridge and the whitewater outlet (7),

(d) a return line (5) for the flow of whitewater connected from the whitewater outlet (7), of the ultrafiltration cartridges to the source of whitewater (4), the inlet of the pumping means (3), or the connection between them, thereby providing a path for liquid flow sequentially from the inlet of the pumping means through the pumping means (3), the whitewater inlet line, the ultrafiltration cartridges (1) from the whitewater inlet (6) to the whitewater outlet (7) of the cartridges and thence through the return line (5) back to the source of whitewater, the inlet of the pumping means, or the connection between them, forming a recirculation loop, and

(e) a first pressure control means disposed within the recirculation loop between the inlet of the pumping means and the whitewater inlet of the cartridges for controlling the pressure differential between the whitewater inlet and the whitewater outlet of the cartridges to maintain flow across the ultrafiltration membranes in the laminar domain and to maintain a total shear on the whitewater emulsion in the entire apparatus below a level which will destabilize the whitewater emulsion.

5,342,864

LOW VOC, HIGH MOLECULAR WEIGHT EPOXY EMULSION COATINGS

Gary P. Craun, Berea, and Daniel Bode, Cleveland, both of Ohio, assignors to The Glidden Company, Cleveland, Ohio

Division of Ser. No. 900,924, Jun. 12, 1992, Pat. No. 5,252,637. This application May 20, 1993, Ser. No. 64,632

Int. Cl.[5] C08K *3/20;* C08L *63/02*

U.S. Cl. 523—403 11 Claims

1. A process for producing a coating composition containing a stable aqueous emulsion of high molecular weight epoxy resin binder produced by the steps comprising:

dispersing into water low molecular weight epoxy resin having a number average molecular weight between about 360 and 2,000 to provide an aqueous dispersion of low molecular weight epoxy resin;

advancing the molecular weight of the low molecular weight epoxy resin in the presence of a catalyst by reacting with a coreactive difunctional phenol at temperatures above about 105° C. and at pressures above about 5 psig, in the presence of a combination of anionic and nonionic surfactants to provide an aqueous dispersed high molecular weight epoxy resin having a number average molecular weight between about 2,000 and 20,000.

5,342,865

SOLVENT SYSTEM

Jan J. Zwinselman, Siebnen, Switzerland; John P. Everett, Bühl-Waldmatt, and Karin Wanzl-Dacho, Karlsruhe, both of Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 20, 1993, Ser. No. 50,696

Claims priority, application United Kingdom, Apr. 24, 1992, 9209955.6

Int. Cl.[5] C08K *3/20;* C08L *63/00*

U.S. Cl. 523—414 19 Claims

1. A solution comprising

i) a solvent system comprising methoxy acetone and water, wherein the amount of methoxy acetone is from 40 to 95 percent and the amount of water is from 2 to 30 percent, based on the total weight of the solvent system, and the water, methoxy acetone, and, if present, an oxygen-containing solvent other than methoxy acetone together comprise 90 percent or more by weight of the solvent system and

ii.) from 3 to 12 percent of dicyandiamide, based on the weight of the solvent system.

5,342,866

OXIDIZED ASPHALT RUBBER SYSTEM

David C. Trumbore, LaGrange; Michael R. Franzen, Lombard, both of Ill., and Charles R. Wilkinson, State College, Pa., assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Dec. 30, 1992, Ser. No. 998,718

Int. Cl.[5] C08L *95/00*

U.S. Cl. 524—68 10 Claims

1. A method for producing an asphalt composition comprising:

preheating the asphalt to a temperature of at least about 350° F.;

mixing into the asphalt from about 1 to about 15%, by weight based on the weight of the asphalt composition, styrene-based block copolymer and, optionally from about 0 to about 0.5%, by weight, ferric chloride asphalt catalyst to form an asphalt-block copolymer mixture;

charging the asphalt-block copolymer mixture into an asphalt air blowing converter;

heating the mixture to a temperature of from about 400° to

VOL 1165 ISS 5 AG 30 1994 UMI

about 475° F. while maintaining the pressure in the converter under about 2 psig; and,

blowing through the mixture air, oxygen, or an oxygen-inert gas mixture for sufficient time to cause the asphalt-block copolymer mixture to reach a pre-selected softening point and forming a chemically grafted asphalt-polymer system.

5,342,867

ADHESION PROMOTERS

Glen R. Ryan, Cambridge; Steven A. Allen, Suffolk, and David A. Taylor, Cambridge, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 30, 1993, Ser. No. 129,703

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1992, 9220988

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—101 **14 Claims**

1. An adhesive composition comprising a polyurethane resin and, as adhesion promoter, a compound of formula I:



I

$$(Y{=}C{=}N)_n{-}Z[{-}NHC{-}X{-}R_1{-}Si(OR_2)_{3-q}(R_3)_q]_m$$

in which Z is an organic radical which is derived from an aliphatic, aromatic or heterocyclic polyisocyanate containing m+n isocyanate groups; m is a value greater than or equal to 1; n is a value greater than or equal to 0; m+n is a value greater than or equal to 2; Y is O or S; X is O, S or N—C_1–C_4 alkyl; R_1 is C_1–C_8 alkylene; R_2 is C_1–C_4 alkyl or two groups R_2 together for m a C_1–C_4 alkylene residue; R_3 is C_1–C_4 alkyl or phenyl; and q is a value from 0 to 2.

5,342,868

CRYSTALLINE SYNTHETIC RESIN COMPOSITION

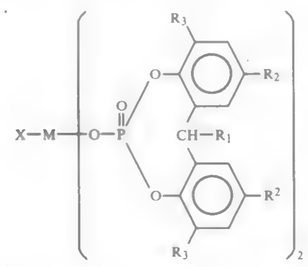
Ryoji Kimura; Tetuo Tuboi, and Kazunori Nishikawa, all of Saitama, Japan, assignors to Asahi Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,479

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—108 **8 Claims**

1. A crystalline synthetic resin composition comprising 100 parts by weight of a crystalline synthetic resin selected from the group consisting of polyolefins, thermoplastic linear polyesters, polyphenylene sulfide, polycaprolactone and linear polyamides compounded with (a) 0.01 to 5 parts by weight of at least one selected from the group consisting of alkali metal carboxylates, alkali metal β-diketonates and alkali metal salts of β-ketoacetic esters and (b) 0.01 to 5 parts by weight of at least one of basic polyvalent metal salts of cyclic organophosphoric esters of the following formula (I):



(I)

wherein R_1 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R_2 and R_3 each represent a hydrogen atom or an alkyl group having 1 to 12 carbon atoms, M represents a group III or IV metal atom of the periodic table, and X represent OH—when M represents a group III metal atom of the periodic table and X represents O= or $(OH)_2$—when M represents a group IV metal atom of the periodic table.

5,342,869

STABILIZED POLYMERIC COMPOSITIONS

Klaus Stoll, Rümmingen, Fed. Rep. of Germany, and Rainer Wolf, Allschwil, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jul. 6, 1992, Ser. No. 909,547

Claims priority, application United Kingdom, Jul. 3, 1991, 9114430

Int. Cl.[5] C08K *5/5393;* **C07F** *9/48*

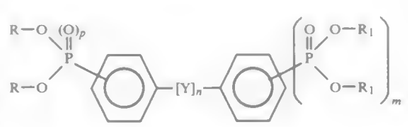
U.S. Cl. 524—125 **10 Claims**

1. A polymeric material composition comprising:

a diphosphonate of formula I in which m=1 and p=1;

a monophosphonate of formula I in which m=0 and p=1; and

a phosphonate-phosphonite of formula I in which m=1 and p=0 in which formula I has the structure:



[1]

in which

each R, independently, is a monovalent significance of R, a group derived from an aliphatic, alicyclic or aromatic alcohol containing one or two —OH groups; whereby the two —OH groups are not positioned to be able to form a P-containing ring;

or a divalent significance of R, where both groups R form a group derived from an alphatic, alicyclic or aromatic alcohol containing two OH groups in such a position that they can form a cyclic group with a single phosphorus atom;

each R_1 independently, is a monovalent significance of R_1, a group derived from an aliphatic, alicyclic or aromatic alcohol containing one or two OH groups; whereby the two —OH groups are not positioned to be able to form a P-containing ring;

or a divalent significance of R_1, where both groups R_1 form a group derived from an aliphatic, alicyclic or aromaic alcohol containing two OH groups in such a position that they can form a cyclic group with a single phosphorous atom;

n is 0 or 1;

Y is —O—, —S—, —$C(R_5)$— or —C_6H_4—;

where R_5 is hydrogen or $C_{1\text{-}8}$alkyl or $COOR_6$ and R_6 is $C_{1\text{-}8}$alkyl.

5,342,870

ADDITION-CURABLE SILICONE ADHESIVE COMPOSITIONS, AND BISTRIALKOXYSILYLALKYLENEOXY-CARBONYLALKYLENE) AMINE ADHESION PROMOTERS

Judith Stein; Joseph A. King, Jr., and Andrew J. Caruso, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1993, Ser. No. 166,853

Int. Cl.[5] C08K *5/54;* **C07F** *7/04*

U.S. Cl. 524—188 **7 Claims**

1. An addition-curable composition, comprising by weight,

(A) 100 parts of a vinyl-containing polydiorganosiloxane composition comprising:

(1) about 50 to about 100 parts of an essentially cyclic-free vinyl-terminated polydiorganosiloxane having the general formula,

$$(R)_2V_iSiO[(R)_2SiO]m[RV_iSiO]_nS_i(R)_2V_i,$$

where Vi is a vinyl radical, R is selected from the class consisting of alkyl radicals having 1 to 8 carbon atoms, phenyl radicals, fluoroalkyl radicals having 3 to 10 carbon atoms and mixtures thereof, "m+n" has a value sufficient to provide a polydiorganosiloxane viscosity of 100 to about 100,000 centipoise at 25° C., and a polydiorganosiloxane vinyl content of from about 0.02 to about 2.0 weight %, and

(2) from about 0 to about 50 parts of a solid, benzene-soluble vinyl-containing resin copolymer comprising,

$(R^1)_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units,

where R^1 is a vinyl radical, or a monovalent hydrocarbon radical free of aliphatic unsaturation and containing no more than six carbon atoms, the ratio of $(R^1)_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units being from about 0.5:1 to about 1.5:1, and the resin having a vinyl content of from about 1.5 to about 3.5% by weight,

(B) from about 1 to about 20 parts of a hydrogen-containing polysiloxane having an average unit formula,

$$R^2_aH_bSiO_{(4-a-b)/2},$$

where R^2 is a monovalent hydrocarbon radical, or halogenated monovalent hydrocarbon radical having from 1 to about 10 carbon atoms and free of aliphatic unsaturation, "a" has a value of from about 0 to about 3, "b" has a value of from about 0 to about 3, and the sum of "a"+"b" has a value of from 0 to 3,

(C) a catalytic amount of a hydrosilylation catalyst,

(D) an amount of a bis(trialkoxysilylalkyleneoxycarbonylalkylene)amine having the formula,

$$NH[R^3C(O)OR^4Si(OR^5)_3]2,$$

which is effective as an adhesion promoter, where R^3 and R^4 are selected from the same or different $C_{(2\text{-}8)}$ alkylene radicals,and R^5 is selected from the same or different $C_{(1\text{-}4)}$ alkyl radicals,

(E) from about 0 to about 200 parts of an extending filler, and

(F) from about 0 to about 50 parts of a reinforcing filler, and in the absence of (A)(2), an amount effective for reinforcement.

5,342,871

CLEAR HYDROPHILIC COATING FOR HEAT EXCHANGER FINS

David D. Clinnin, Schaumburg; Ronald J. Lewarchik, Sleepy Hollow, both of Ill., and Dexter F. Sunderman, Hartselle, Ala., assignors to Morton International, Inc., Chicago, Ill.

Division of Ser. No. 867,585, Apr. 13, 1992, Pat. No. 5,211,989. This application Feb. 12, 1993, Ser. No. 17,227

Int. Cl.[5] C08K *5/05, 5/17;* **B05D** *3/02*

U.S. Cl. 524—238 **10 Claims**

1. A coating composition consisting essentially of water, a water miscible alkanol, an ethylene/acrylic acid copolymer, and an amine salt of a fatty acid.

5,342,872

PEELABLE AND RECOVERABLE AQUEOUS FILM-FORMING COMPOSITION

Mortimer J. Huber, White Bear Lake, Minn., assignor to Quality Manufacturing Incorporated, St. Paul, Minn.

Filed Nov. 2, 1992, Ser. No. 969,998

Int. Cl.[5] C08K *5/52*

U.S. Cl. 428—294 **4 Claims**

1. A peelable, self-adhesive, protective tape consisting essentially of a single tape layer comprising:

(a) about 70 to 99 wt-% of a polyvinyl acetate resin;

(b) about 0.1 to 15 wt-% of a water soluble polysaccharide gum;

(c) about 0.1 to 15 wt-% of a carboxyvinyl polymer; and

(d) about 0.01 to 5 wt-% of a release agent to render a film formed from an aqueous composition peelable from a substrate;

wherein the tape adheres to smooth, glassy surfaces and is deformable and capable of forming smooth curves having compound radii on surfaces having compound curves.

5,342,873

REACTIVE HOT-MELT ADHESIVE

Peter W. Merz, Rüschlikon; Lutz Zabel, Birmensdorf, and Christian Fischer, Zürich, all of Switzerland, assignors to Sika AG, vorm. Kaspar Winkler & Co., Zurich, Switzerland

Continuation of Ser. No. 47,003, May 5, 1987, abandoned. This application Nov. 19, 1993, Ser. No. 154,485

Claims priority, application Switzerland, May 9, 1986, 1902/86

Int. Cl.[5] C08K *3/26, 3/36;* **C08L** *75/04*

U.S. Cl. 524—425 **5 Claims**

1. A thixotropic, thermoplastic, reactive hot-melt adhesive composition which is cross-linkable by reaction with water, is non-sag upon application, is soft at elevated temperatures but loses its thermoplastic behavior upon cross-linkage, and is plastically moldable, said adhesive comprising from 20 to 90 percent by weight of at least one polyurethane thermoplastic material., 5 to 40 percent by weight of at least one prepolymeric binder having reactive isocyanate groups, wherein the isocyanate content with reference to the total reactive hot-melt mixture is within the range from 0.1 to 10 percent by weight and wherein the isocyanate groups are reactable with water to cross-link the adhesive composition and render the adhesive non-thermoplastic, and from 3 to 30 percent by weight of at least one thixotropic agent to render the adhesive composition non-sag upon application.

5,342,874

FLAME RETARDANT POLYMER FORMULATION

Dominic Chaplin, London, and Rosemary Tingley, Slough, both of England, assignors to Alcan International Limited, Montreal, Canada

Continuation of Ser. No. 807,869, Feb. 27, 1992, abandoned. This application Apr. 29, 1993, Ser. No. 54,956

Claims priority, application United Kingdom, Jul. 21, 1989, 8916670.6

Int. Cl.[5] C08K *3/22, 3/20*

U.S. Cl. 524—430 **5 Claims**

1. A halogenated polymer formulation having flame retardant properties, said formulation containing a synergistic flame retardant combination consisting of 10–400 phr of an aluminum or magnesium hydroxide and 0.5–80 phr of a tetravalent tin compound which is a tin oxide or a metal stannate or hydroxystannate.

5,342,875

POLYCATIONIC LATEX WET STRENGTH AGENT

Isao Noda, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

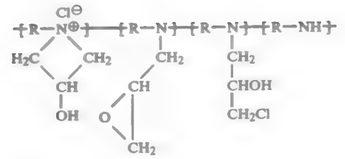
Continuation of Ser. No. 814,740, Dec. 27, 1991, abandoned, which is a division of Ser. No. 516,602, Apr. 30, 1990, Pat. No. 5,122,577. This application Apr. 7, 1993, Ser. No. 45,278

Int. Cl.[5] C08J *3/02*

U.S. Cl. 524—457 **4 Claims**

1. A water-insoluble latex composition comprising the reaction product of a cationic wet-strength resin containing the following repeat units;

VOL 1165 ISS 5 AG 30 1994 UMI



wherein R is



and a carboxylate reactant selected from the group consisting of acrylic acid, methacrylic acid, glycidyl methacrylate, vinyl benzoic acid itaconic acid, oleic acid, linoleic acid, 3-bromopropyl acrylate, dimethylaminopropyl acrylate, acrylolyl chloride, itaconic anhydride, the methyl ester of acrylic acid, and mixtures thereof, said reaction product being co-polymerized with latex-forming polymerizable monomers or oligomers selected from the group consisting of styrene, 1,3-butadiene, isoprene, propylene, ethylene, methyl acrylate, vinyl acetate, methyl methacrylate, t-butyl methacrylate, and mixtures thereof.

5,342,876

SPHERICAL GRANULES OF POROUS SILICA OR SILICATE, PROCESS FOR THE PRODUCTION THEREOF, AND APPLICATIONS THEREOF

Kiyoshi Abe; Kazuhiko Suzaki, both of Shibata; Hiroshi Ogawa, and Masaichi Kikuchi, both of Nakajo, all of Japan, assignors to Misuzawa Industrial Chemicals, Ltd., Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,545

Claims priority, application Japan, Jan. 24, 1992, 4-032915; Dec. 3, 1992, 4-350493

Int. Cl.[5] C08K *3/36;* **C01B** *33/12*

U.S. Cl. 524—493 **21 Claims**

1. A process for producing porous and spherical silica granules comprising mixing an aqueous solution of an alkali silicate, an acrylamide polymer and an aqueous solution of an acid of a partly neutralizing amount together, leaving the mixture solution to stand to form a granular material composed of a partly neutralized product of the alkali silicate, and separating the granular material followed by neutralization with an acid.

5,342,877

BLENDS OF POLYESTERS AND ALKYLHYDROXY (METH)ACRYLATE COMPOUNDS

Mark D. Clark, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Jul. 6, 1992, Ser. No. 909,375

Int. Cl.[5] C08L *67/00*

U.S. Cl. 524—513 **15 Claims**

1. An aqueous dispersion comprising:

(a) a polyester (A) consisting essentially of about 5 to about 40% by weight of a linear, water-dissipatable polymer having carbonyloxy linking groups in the linear molecular structure wherein up to 80% of the linking groups are carbonylamido linking groups, the polymer having an inherent viscosity of at least about 0.1 measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25° C. and at a concentration of about 0.25 gram of polymer in 100 ml of the solvent, the polymer containing substantially equimolar proportions of acid equivalents (100 mole percent) to hydroxy and amino equivalents (100 mole percent), the polymer comprising the reaction products of (1), (2), (3) and (4) from the following components or ester forming or esteramide forming derivatives thereof:

(1) at least one aromatic, saturated aliphatic or saturated alicyclic dicarboxylic acid;

(2) from about 4 to about 25 mole percent, based on a total of all acid and hydroxyl equivalents being equal to 200 mole percent, of at least one difunctional sulfomonomer containing at least one metal sulfonate group attached to an aromatic nucleus wherein the two functional groups of said difunctional sulfomonomer are selected from hydroxy and carboxyl;

(3) at least one reactant selected from a glycol or a mixture of a glycol and diamine having two —NRH groups, the glycol containing two

—CH_2—OH

groups; and

(4) from none to at least one reactant selected from the group consisting of a hydroxycarboxylic acid having one —CR_2—OH, an aminocarboxylic acid having one —NRH group, an amino-alcohol having one

—CR_2—OH

group and one —NRH group, and mixtures of said reactants,

wherein each R is an H atom or an alkyl group of 1 to 4 carbon atoms;

and

(b) 95 to 60% by weight of a polymer (B) having repeat units from

(1) about 20 to about 80% by weight of styrene or one or more derivatives of styrene;

(2) about 15 to about 50% by weight of hydroxyalkyl (meth)acrylate, with the proviso that said hydroxyalkyl methacrylate is not hydroxypropyl methacrylate; and

(3) about 0 to about 60% by weight of alkyl (meth)acrylate wherein said alkyl (meth)acrylate is not component 1(b)(2), said aqueous dispersion containing about 95–60% of said polymer (B) and about 5–40% of said polyester (A), both said percentages being based on the combined weight of (A) and (B).

5,342,878

BASE NEUTRALIZED, STABLE, AQUEOUS DISPERSION OF A HYDROXYL FUNCTIONAL ACRYLIC POLYMER AND COATING COMPOSITIONS PREPARED THEREFROM

Saryya K. Das, Pittsburgh, and Soner Kilic, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 814,658, Dec. 30, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 13,139

Int. Cl.[5] C08L *31/00*

U.S. Cl. 524—558 **4 Claims**

1. A base neutralized, stable, aqueous dispersion of a hydroxyl functional acrylic polymer containing less than 1 percent acid and having a number average molecular weight ranging from about 500 to about 4500 and having an acid value of at least about 1.5 and no greater than about 10, synthesized from a vinyl monomer component comprising at least about 50 percent of 2-hydroxyethyl acrylate and at least one other comonomer, the percentages based upon the total weight of the vinyl monomer component, the proportion of each monomer and the acid value being adapted to provide a polymer which forms a stable dispersion in water without externally added surfactant.

5,342,879

FLUOROSILICONE RUBBER COMPOSITION

Masaharu Takahashi; Ken-ichi Takita, and Shinichi Sato, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,065

Claims priority, application Japan, Jan. 10, 1992, 4-021892

Int. Cl.[5] C08L *83/00*

U.S. Cl. 524—588 **12 Claims**

1. A fluorosilicone rubber composition comprising

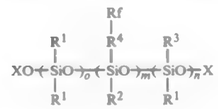
(A) **100** parts by weight of an organopolysiloxane represented by the following average composition formula (1):



(1)

wherein R represents an unsubstituted monovalent hydrocarbon group and a and b are numbers that satisfy $b/(a+b)=0.4$ to 0.6 and $a+b=1.95$ to 2.05,

(B) 5 to 50 parts by weight of an organopolysiloxane represented by the following general formula (2):



(2)

wherein R^1 and R^2, which may be the same or different, each represent an unsubstituted or substituted monovalent hydrocarbon group having no aliphatic unsaturated bond, R^3represents a monovalent aliphatic unsaturated group, R^4represents a bivalent hydrocarbon group containing no aliphatic unsaturated bond or a group represented by the following formula (3):



(3)

wherein R^5 and R^6 each represent a bivalent hydrocarbon group containing no aliphatic unsaturated bond, Rf represents a perfluoroalkyl ether group having 4 or more carbon atoms, X represents a hydrogen atom or a group represented by the following formula (4):



(4)

wherein R^7 to R^9, which may be the same or different, each represent an unsubstituted or substituted monovalent hydrocarbon group, o and n each represent an integer of 0 or greater, and m is an integer of 1 or greater, and

(C) 5 to 500 parts by weight of a silica filler.

5,342,880

PHENOLIC RESOL PLYWOOD RESIN, MANUFACTURE AND USE

Norman A. Chappelle, Springfield, Oreg., assignor to Neste Resins Corporation, Eugene, Oreg.

Filed Mar. 20, 1992, Ser. No. 855,549

Int. Cl.[5] C08K *3/26*

U.S. Cl. 524—596 **4 Claims**

1. A process for the manufacture of an aqueous phenol-formaldehyde resin solution for use in preparing an adhesive binder comprising the steps of:

preparing an aqueous solution of phenol and formaldehyde,

adding a polymerization catalyst comprising alkali metal hydroxide, at least a portion of such alkali metal hydroxide consisting of potassium hydroxide,

providing for cool-down of the resin solution when the level of exothermic energy releases due to the catalytically induced polymerization reaction have subsided to the point where the resin has polymerized to a soluble and fusible phase in the aqueous solution; then

controlling the temperature of the resin solution to be in the range of about 10° C. to about 30° C.;

adding to the resin solution by selection from the group consisting of:

(i) adding potassium carbonate during the cool-down of the resin solution;

(ii) adding potassium carbonate to the temperature-controlled resin solution prior to use of the resin solution for preparation of the adhesive binder; and

(iii) combinations thereof;

such manufacture of the resin solution being carried out with the addition of potassium hydroxide to the resin solution as a polymerization catalyst being limited to consist of less than 1% by weight of the resin solution,

the addition of potassium carbonate to the resin solution being in the range of about 0.1% to about 0.75% by weight of the resin solution; and

the potassium carbonate as added is selected from the group consisting of:

(a) a liquid solution of potassium carbonate,

(b) potassium carbonate as a comminuted solid, and

(c) combinations thereof.

5,342,881

PROCESS FOR THE STANDARDIZATION AND STABILIZATION OF ORGANIC POLYISOCYANATES AND THE STABLE PRODUCTS OF THIS PROCESS

Hanns-Peter Müller, Odenthal; Hans-Joachim Scholl, Cologne, and Manfred Kapps, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 20, 1993, Ser. No. 65,251

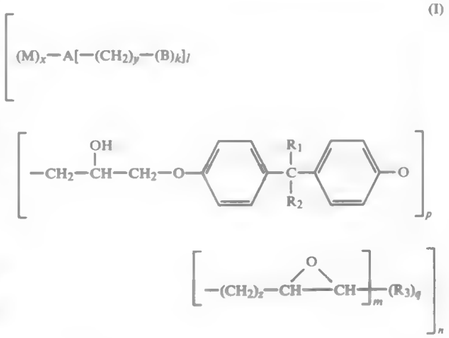
Claims priority, application Fed. Rep. of Germany, May 27, 1992, 4217525

Int. Cl.[5] C08K *5/54, 5/56;* **C08J** *3/00*

U.S. Cl. 524—700 **15 Claims**

1. A stabilized organic polyisocyanate composition comprising an organic polyisocyanate to which has been added

(I)



in which

x represents a number from 0 to 1,

y represents a number from 0 to 4,

z represents a number from 0 to 6,

k represents a number from 0 to 1,

l represents a number from 0 to 8,

m represents a number from 0.5 to 4,

VOL 1165 ISS 5 AG 30 1994 UMI

n represents a number from 1 to 10,
p represents a number from 0 to 15,
q represents a number from 0 to 1,
A represents hydrogen, a monovalent saturated alkyl group, a multivalent saturated alkyl group, a monovalent unsaturated alkyl group, a multivalent unsaturated alkyl group, a monovalent saturated cyclic alkyl group, a multivalent saturated cyclic alkyl group, a monovalent unsaturated cyclic alkyl group, a multivalent unsaturated cyclic alkyl group, a monovalent aryl group, a monovalent aryl group with substituents, a multivalent aryl group, a multivalent aryl group with substituents, an acyl group, or an N-acyl group,
B represents oxygen, sulfur or nitrogen,
M represents



in which
R_1 and R_2 each represents hydrogen or a C_1–C_4 alkyl group,
R_3 represents hydrogen or a C_1–C_4 alkyl group, and
b) 0.01 to 1 wt % of a silylated acid represented by the formula



(II)

in which
X represents an acidic group obtained by the removal of an acidic hydrogen atom from an acid with a pK_a value of not more than 2 and
a represents an integer of from 1 to 3.

5,342,882

AQUEOUS COATING COMPOUND, A PROCESS FOR ITS PREPARATION AND ITS USE IN PROCESSES FOR MULTILAYERED LACQUERING

Armin Göbel, Dortmund; Hans-Peter Patzschke, Wuppertal, and Jürgen Doebert, Sprockhövel, all of Fed. Rep. of Germany, assignors to Herberts GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jul. 22, 1993, Ser. No. 95,959
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1992, 4224617
Int. Cl.[5] C08L 75/00
U.S. Cl. 524—832 9 Claims

1. An aqueous coating composition, containing a binder which comprises
(I) from 60% to 100% wt. of a mixture of
(i) from 5% to 95% wt. solids basis based on(I) of an aqueous dispersion of one or more self-emulsifying polyurethane resins having a number average molecular weight of from 30,000 to 300,000 and containing carboxyl groups corresponding to an acid number of from 5 to 50, said resins having been obtained by chain lengthening in water a water-dispersible polyurethane prepolymer having more than one free isocyanate group per molecule, and
(ii) from 95% to 5% wt. solids basis based on (I) of an aqueous dispersion of at least one acrylated polyester, or at least one acrylated polyurethane, or at least one acrylated polyester and at least one acrylated polyurethane, and
(II) from 0 to 40% wt. of one or more formaldehyde condensation resin, one or more blocked polyisocyanate, or one or more formaldehyde condensation resin and one or more blocked polyisocyanate.

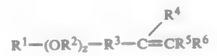
5,342,883

POLYMERS CONTAINING MACROMONOMERS

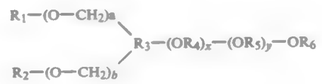
Richard D. Jenkins, Hurricane; David R. Bassett, Charleston, both of W. Va., and Gregory D. Shay, Cary, N.C., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 887,647, May 29, 1992, Pat. No. 5,292,843.
This application Dec. 7, 1993, Ser. No. 163,487
Int. Cl.[5] C08L 79/00
U.S. Cl. 524—845 6 Claims

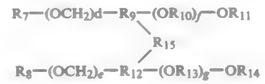
1. An aqueous latex containing the neutralized aqueous polymer comprising the reaction product of:
(a) about 1–99.9 weight percent of one or more alpha, betamonoethylenically unsaturated carboxylic acids;
(b) about 0–98.9 weight percent of one or more monoethylenically unsaturated monomers;
(c) about 0.1–99 weight percent of one or more complex hydrophobe-containing monoethylenically unsaturated macromonomers; and
(d) about 0–20 weight percent or greater of one or more polyethenically unsaturated monomers:
wherein said complex hydrophobe-containing monoethylenically unsaturated macromonomer is represented by the formula:



wherein:
R^1 is a monovalent residue of a substituted or unsubstituted complex hydrophobe compound;
each R^2 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue;
R^3 is a substituted or unsubstituted divalent hydrocarbon residue;
R^4, R^5 and R^6 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue; and
z is a value of 0 or greater; in which said substituted or unsubstituted complex hydrophobe compound is represented by the formula selected from:



wherein R_1 and R_3 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_3 is a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_4 is the same or different and is substituted or unsubstituted divalent hydrocarbon residue, each R_5 is the same or different and is a substituted or unsubstituted monovalent hydrocarbon residue, R_6 is hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, a and b are the same or different and are a value of 0 or 1, and x and y are the same or different and are a value of 0 or greater; provided at least two of R_1, R_2, R_3, R_4, R_5, and R_6 are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_1, R_2, and R_6 or having greater than 2 pendant carbon atoms in the case of R_3, R_4 and R_5; and



wherein R_7 and R_8 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_9 and R_{12} are the same or different and are a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_{10} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_{13} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_{11} and R_{14} are the same or different and are hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, R_{15} is a substituted or unsubstituted divalent hydrocarbon residue, d and e are the same or different and are a value of 0 or 1, and f and g are the same or different and are a value of 0 or greater; provided at least two of R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, and R_{15} are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_7, R_8, R_{11} an R_{14} or having greater than 2 pendant carbon atoms in the case of R_9, R_{10}, R_{12}, R_{13}, and R_{15}.

5,342,884

COMPOSITIONS PREPARED USING FINELY-DIVIDED ISOCYANATE BASED THERMOSET POLYMERS

Ricky L. Tabor; Roy E. Morgan, Jr., and Melissa J. Zawisza, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 528,012, May 23, 1990, abandoned.
This application Aug. 20, 1993, Ser. No. 110,027
Int. Cl.[5] C08L 23/04, 51/06, 75/02, 75/04
U.S. Cl. 525—64 40 Claims

1. A composition comprising (a) a non-isocyanate based thermoplastic polymer; (b) as a filler, a finely divided isocyanate based thermoset polymer; and (c) a compatibilizing adhesive polymer.

5,342,885

EPOXY RESIN COATING WITH COOH-GRATED HYDROGENATED BLOCK COPOLYMER

David J. St. Clair, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 8, 1989, Ser. No. 448,189
Int. Cl.[5] C08L 33/14, 63/02, 63/04
U.S. Cl. 525—65 10 Claims

1. A coating composition comprising:
a) 100 parts by weight of an epoxy resin; and
b) from about 0.5 to about 80 parts by weight of rubber having a number average particle diameter of less than 2 microns derived from a modified hydrogenated block copolymer comprising at least one polymeric block comprising predominantly monoalkenyl aromatic hydrocarbon monomer units and at least one polymeric block comprising, prior to hydrogenation, predominantly conjugated diolefin monomer units wherein the modified hydrogenated block copolymer is functionalized with from 0.1 to about 20% by weight, as —COOH, of functional groups, the functional groups being substantially grafted to the block comprising predominantly conjugated diolefin monomer units and the functional groups are derived from compounds selected from the group consisting of monocarboxylic acids, dicarboxylic acids, carboxylic acid anhydrides and mixtures thereof, wherein an amount of the functionality of the modified hydrogenated block copolymer has reacted with epoxy groups of the epoxy resin to crosslink the rubber particles and to result in stable dispersion of the crosslinked modified block copolymer rubber particles in the epoxy resin.

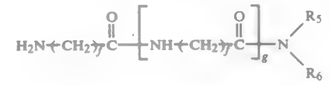
5,342,886

ALPHA-MONOOLEFINIC GRAFT COPOLYMERS

Michel Glotin, Serquigny; Roland Parsy, Le Havre, and Patrick Abadie, Bernay, all of France, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 698,190, May 6, 1991, abandoned, which is a continuation of Ser. No. 328,450, Mar. 24, 1989, abandoned. This application Dec. 11, 1991, Ser. No. 806,773
Claims priority, application France, Mar. 24, 1988, 88 03877
Int. Cl.[5] C08L 77/00
U.S. Cl. 525—66 4 Claims

1. A polymer alloy comprising a polyamide, a polyolefin incompatible with the polyamide and a compatibilizing amount of a graft copolymer having the formula $A_aM_bX_cP_d$ in which:
A_aM_b is the (co)polymer backbone;
X_cP_d denotes the polymers grafted on the (co)polymer backbone;
A is a recurring unit of an α-monoolefin containing from 2 to 8 carbon atoms;
M is selected from among:
(i) recurring units of an α-monoolefin containing from 2 to 8 carbon atoms; or
(ii) recurring units of a plurality of α-monoolefins as defined above;
X is a recurring unit of a monomer which can be grafted by a free-radical mechanism onto an α-monoolefin homo- or copolymer and containing a functional group which is reactive with an amino-substituted recurring unit;
P is derived from a polyamide oligomer of the formula:



in which f is a number ranging from 3 to 11; g is a number ranging from 5 to 80; R^5 is hydrogen or a linear or branched chain alkyl radical containing up to 20 carbon atoms; and R^6 is a linear or branched chain alkyl or alkenyl group containing up to 20 carbon atoms, a saturated or unsaturated cycloaliphatic radical, an aromatic radical, or combination thereof;
a is a number ranging from 0 to 5,000;
b is a number from 0 to 45,000 and the sum a+b ranges from 350 to 45,000;
c is a number such that the ratio by weight of the monomer X grafted on the (co)polymer backbone to the copolymer grafted with X ranges from 500 ppm to 10%; and
d is a number other than zero or less than or equal to C.

5,342,887

DYNAMICALLY CROSSLINKED POLYOLEFIN COMPOSITION

Christer Bergström, Espoo, and Gunilla Krook, Kulloo, both of Finland, assignors to Neste Oy, Kulloo, Finland

Filed Dec. 23, 1992, Ser. No. 996,082
Claims priority, application Finland, Dec. 30, 1991, 916163
Int. Cl.[5] C08L 23/06, 23/04, 23/12
U.S. Cl. 525—108 9 Claims

1. A thermoelastic composition comprising
(A) 5 to 95% by weight of crystalline polyolefin selected from the group consisting of polyethylene, polypropylene and crystalline ethylene/propylene copolymers and
(B) 95 to 5% by weight of a crosslinked ethylene copolymer formed by the crosslinking reaction of a copolymer of ethylene selected from the group consisting of
(1) a copolymer of ethylene and hydroxyethyl acrylate,

VOL 1165 ISS 5 AG 30 1994 UMI

(2) a copolymer of ethylene and hydroxyethyl methacrylate, and
(3) a copolymer of ethylene, vinyl acetate and hydroxyethyl methacrylate, with a crosslinking agent selected from the group consisting of
(i) toluene diisocyanate, diphenylmethane diisocyanate, naphthalene diisocyanate and hexamethylene diisocyanate,
(ii) oxalic acid, malonic acid, succinic acid, methylsuccinic acid, adipic acid, maleic acid, phthalic acid and terephthalic acid,
(iii) phthalic anhydride, hexahydrophthalic anhydride, maleic anhydride, pyromellitic anhydride, trimellitic anhydride and nadic anhydride, and
iv) ethylene glycol diglycidyl ether, diethylene glycol diglycidyl ether and bisphenol A diglycidyl ether and novolac polyaromatic diglycidyl ethers.

5,342,888

COATING COMPOSITION

Nobuhisa Sudo, Kanagawa, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 783,223, Oct. 28, 1991, abandoned. This application Oct. 29, 1993, Ser. No. 143,381
Int. Cl.[5] C08L *31/00, 61/28*
U.S. Cl. 525—124 7 Claims

1. A method for producing a coating composition containing a vehicle as a major component, which comprises a step of mixing an acryl resin having a number-average molecular weight of from 1,800 to 8,000, a hydroxyl value of from 60 to 120, and an acid value of from 1 to 25 with a blocked alicyclic polyfunctional isocyanate hardener and then adding an alkyl-etherified melamine resin to the resulting mixture wherein the acryl resin is first mixed with the blocked alicyclic polyfunctional isocyanate and then the alkyl-etherified melamine resin is added.

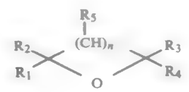
5,342,889

CHAIN EXTENDED LOW MOLECULAR WEIGHT POLYOXIRANES FOR ELECTROSTATIC APPLICATIONS

Francis R. Sullivan, Cleveland Heights; Elaine A. Mertzel, Rocky River, and Edmond G. Kolycheck, Lorain, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 461,606, Jan. 5, 1990, abandoned. This application Jul. 10, 1991, Ser. No. 729,865
Int. Cl.[5] C08L *27/06, 75/08*
U.S. Cl. 525—127 30 Claims

1. An electrostatic dissipative polymeric composition comprising:
(I) from about 3 parts to about 100 parts by weight of a chain extended polymer having electrostatic dissipative properties said chain extended polymer consisting essentially of:
(A) a low molecular weight polyether oligomer having two reactive moieties which are hydroxyl group and an average molecular weight from about 200 to about 10,000 wherein the oligomer is a homopolymer of ethylene oxide or a copolymer of ethylene oxide and at least one other copolymerizable cyclic ether monomer having the formula:



wherein
R_1, R_2, R_3, R_4, and R_5 are independently hydrogen, unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, aralkyl or alkaryl, the substituents are OR_6, SR_6, CN, $COOR_6$, or halogens;
R_6 is hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, aralkyl, alkaryl, or carboxyl; and
n is 0, 1, 2, or 4;
(B) from about 0 moles to about 35 moles of a modifier, wherein said modifier is a diol for each mole of low molecular weight polyether; and
(C) a diisocyanate chain extender; with the proviso that the number of moles of chain extender per mole of the sum of the number of moles of low molecular weight polyether oligomer plus the number of moles of modifier is from about 0.95 to about 1.06; and
(II) 100 parts by weight of at least one matrix polymer;
wherein said composition will be essentially free of amine or ammonium groups.

5,342,890

COATING COMPOSITIONS WITH IMPROVED ADHESION TO PLASTICS

Kirkor Sirinyan, Bergisch Gladbach; Joachim Petzoldt, Düsseldorf, both of Fed. Rep. of Germany, and Wolfgang Henning, Amagasaki, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. No. 23,233
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1992, 4206511
Int. Cl.[5] C08F *8/30*
U.S. Cl. 525—130 12 Claims

1. A coating composition which is suitable for coating plastics and comprises a one- or two-component polyurethane binder and, as an adhesion promoter, a chemically modified crystalline, chlorine-free polyolefin, which has an average molecular weight of 1,000 to 8,000, a non-uniformity of 1.0 to 6.5 and a content of nitrogen, oxygen, sulphur and/or silicon in the form of chemically incorporated functional groups of 1.5 to 17.5 wt % in total, and is selected from the group consisting of polypropylene and copolymers of propylene with up to 25 wt % of other olefinically unsaturated monomers, based on the weight of the monomers used to prepare the copolymers.

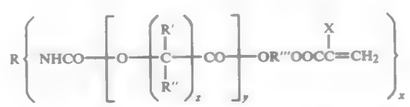
5,342,891

(N-SUBSTITUTED CARBAMOYLOXY) ALKANOYLOXYALKYL ACRYLATE POLYMERS AND COMPOSITIONS MADE THEREFROM

Joseph V. Koleske, Charleston, W. Va.; Donald F. Smith, Jr., Bridgewater, and Robert J. Weber, Jr., Neshanic, both of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 373,548, Jun. 30, 1989, Pat. No. 5,115,025, which is a continuation-in-part of Ser. No. 67,828, Jun. 30, 1987, Pat. No. 4,847,329. This application Mar. 5, 1992, Ser. No. 846,138
The portion of the term of this patent subsequent to Jul. 11, 2006, has been disclaimed.
Int. Cl.[5] C08L *29/02, 61/28*
U.S. Cl. 525—162 13 Claims

1. A curable composition comprising a prepolymer of molecular weight of about 400 to about 150,000, obtained by reacting:
(a) an (N-substituted carbamoyloxy) alkanoyloxyalkyl acrylate monomer of the following average formula:



(I)

wherein R is an unsubstituted or substituted (i) linear or branched alkyl group having from 1 to 10 carbon atoms, or (ii) aryl, alkaryl or aralkyl group having 6 to 10 ring carbon atoms, or (iii) cycloalkyl group having from 5 to 8 ring carbon atoms when x is 1, and polyvalent alkylene, arylene, alkarylene or cycloalkylene having carbon atom values defined for (i) to (iii) supra and a valence equal to the value of x when x is greater than 1; wherein the substituents on the R group are not reactive with the isocyanato radical; R′ and R″ are hydrogen, phenyl, or alkyl or alkoxy having from 1 to 6 carbon atoms; R‴ is a linear or branched divalent alkylene of 1 to 10 carbon atoms, divalent cycloalkylene of 5 to 12 carbon atoms, or divalent arylene of 6 to 10 ring carbon atoms; X is hydrogen, methyl or cyano; x has a value of from 1 to 4; y is an integer having an average value of from 1 to 20, and z is an integer having a value of from 3 to about 10;
(b) 0 to about 90 weight percent of a lactone acrylate monomer of the following average formula:



wherein R^5 is a divalent radical, R^2 is hydrogen, methyl, or cyano, each of R^3 or R^4 is hydrogen, phenyl, or lower alkyl having 1 to about 6 carbon atoms, x is an integer having a value of up to about 10, and y is an integer having a value of up to about 20; and
(c) a crosslinker compound reactive with either (a) or (b), and, optionally, a catalyst for the crosslinker compound.

iii) comprises residues derived from a monomer selected from an alkyl acrylate and an alkyl alkacrylate,
iv) has an acid value of no more than 10, and
v) is present in an amount of from 2 to 6% by weight of the total weight of the composition.

5,342,894

GRAFT POLYMERS OF ϵ-CAPROLACTAM

Lloyd M. Robeson, Macungie; Robert K. Pinschmidt, Jr., Allentown, and Dilip R. Abayasekara, Catasauqua, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 463,714, Jan. 11, 1990, abandoned. This application Mar. 13, 1992, Ser. No. 852,366
Int. Cl.[5] C08L *77/00*
U.S. Cl. 525—183 5 Claims

1. A graft copolymer consisting essentially of a copolymer backbone of one or more aliphatic acrylates and an ethylenically unsaturated carboxylic acid selected from the group consisting of acrylic and methacrylic acid, and having grafted thereto polymerized ϵ-caprolactam units, said graft copolymer prepared by reacting said one or more aliphatic acrylates with said ethylenically unsaturated carboxylic acid to form said copolymer backbone and then graft polymerizing ϵ-caprolactam monomer units to said copolymer to form said graft copolymer.

5,342,892

POLYPROPYLENE-GRAFT-UNSATURATED POLYESTER COMPOSITIONS AND PROCESS FOR THE PRODUCTION THEREOF

Jeffrey J. Vanderbilt, Longview, Tex., and Max F. Meyer, Jr., Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 31, 1992, Ser. No. 999,052
Int. Cl.[5] C08L *67/06;* C08G *63/52;* C08F *255/02*
U.S. Cl. 525—168 28 Claims

1. A polypropylene-graft-unsaturated polyester comprising the reaction product of
(a) about 1 to 99 wt. % of a polypropylene homopolymer or α-olefin propylene copolymer containing at least 70 wt. % propylene;
(b) about 1 to 99 wt. % of an unsaturated polyester derived from an α, β-ethylenically unsaturated dicarboxylic acid, saturated dicarboxylic acid, and saturated aliphatic polyol; and
(c) a free radical initiator in an amount of about 0.33 to 0.37 weight percent.

5,342,893

ANTIPOPPING AGENTS FOR POWDER COATING COMPOSITIONS

Roy R. Wilkinson, Wellingborough, and Anthony Phillips, Thrapston, both of Great Britain, assignors to Scott Bader Company Limited, Wellingborough, England

Filed Mar. 10, 1993, Ser. No. 29,657
Claims priority, application United Kingdom, Mar. 10, 1992, 9205137
Int. Cl.[5] C08L *67/02*
U.S. Cl. 525—176 11 Claims

11. In a thermosetting powder coating composition containing a solid saturated polyester having carboxylic acid groups and curable by a hydroxyalkyl amide curing agent capable of reacting with the carboxylic acid groups, and additionally containing an antipopping agent, the improvement comprising the use, as the antipopping agent, of a thermoplastic polymer which
i) is solid,
ii) has a Tg of from 30° C. to 100° C. inclusive,

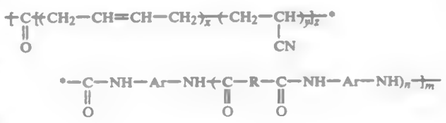
5,342,895

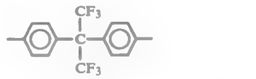
BLOCK COPOLYMER AND METHOD OF PRODUCING THE SAME

Toshio Tagami, Shizuoka; Yoshio Imai, Tokyo; Masaaki Kakimoto, Yokohama; Osamu Kiyohara, and Hitoshi Narushima, both of Shizuoka, all of Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

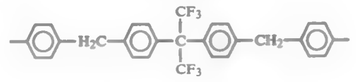
Continuation of Ser. No. 495,140, Mar. 19, 1990, abandoned. This application Jan. 28, 1993, Ser. No. 11,845
Claims priority, application Japan, Mar. 17, 1989, 1-63493; Apr. 24, 1989, 1-101774; Feb. 9, 1990, 2-28309
Int. Cl.[5] C08L *77/00*
U.S. Cl. 525—183 6 Claims

1. A polyamide/polybutadiene based block copolymer comprising a polycondensate which comprises a reaction product of a polyamide having an aminoaryl group at each terminal thereof and produced by polycondensation between an aromatic dicarboxylic acid and a fluorine-containing aromatic diamine and a polybutadiene polymer or polybutadiene/acrylonitrile copolymer having a carboxyl group at each terminal thereof, and which is represented by the formula (Ib)





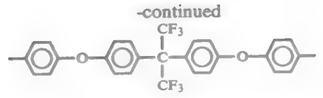
(1)



(2)

VOL 1165 ISS 5 AG 30 1994 UMI

-continued



(3)

x, y, z, m and n each represent mean degree of polymerization and are integers in the ranges of x=3 to 7, y=0 to 4, z=5 to 15, n=1 to 30, and m=2 to 20, respectively.

5,342,896

COMB POLYMERS HAVING A HALOBUTYL RUBBER BACKBONE

George Jalics, Akron, and Richard G. Bauer, Kent, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 749,787, Aug. 26, 1991, Pat. No. 5,221,716, which is a division of Ser. No. 498,676, Mar. 26, 1990, abandoned. This application Jun. 10, 1993, Ser. No. 47,638

Int. Cl.[5] C08F *236/16, 236/18*

U.S. Cl. 525—193 14 Claims

1. A process for grafting a lithium terminated vinyl aromatic polymer onto a halobutyl rubber which comprises: (1) capping the lithium terminated vinyl aromatic polymer with a diene monomer to produce a lithium terminated diene capped vinyl aromatic polymer, and (2) reacting the lithium terminated diene capped vinyl aromatic polymer with the halobutyl rubber to produce a halobutyl rubber having vinyl aromatic side-chains grafted thereto.

5,342,897

AQUEOUS POLYMER DISPERSIONS AND POLYMER POWDERS PREPARED THEREFROM BY SPRAY DRYING

Gernot Franzmann, Bobenheim; Rolf Petri, Pierstrasse, and Walter Pitteroff, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 725,605, Jul. 3, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 34,215

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1990, 4021216

Int. Cl.[5] C08L *33/04*

U.S. Cl. 525—221 4 Claims

1. A polymer powder, obtained by spray-drying an aqueous polymer dispersion comprising:

I) as the disperse phase, a film-forming dispersion polymer having a glass transition temperature less than 50° C., and

II) in the aqueous phase, from 5 to 40% by weight, based on the total dry mass of I and II, of a completely or partially neutralized water-soluble copolymer of

a) from 50 to 80 mol % of an α-olefinically unsaturated mono- or dicarboxylic acid, or an anhydride of these acids or a mixture of these monomers,

b) from 20 to 50 mol % of a C_3-C_{12}-alkene, or styrene or a mixture of these monomers; and

c) from 0 to 10 mol % of further monomers which can be subjected to free radical polymerization, said copolymer II differing from polymer I.

5,342,898

PARTICULATE GRAFT POLYMER, AND THERMOPLASTIC MOLDING MATERIAL PRODUCED THEREFROM HAVING IMPROVED TOUGHNESS

Friedrich Seitz, Friedelsheim; Karl Ruppmich, Ludwigshafen; Norbert Guentherberg, Mainz, and Norbert Niessner, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 681,065, Apr. 5, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 82,165

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1990, 4011163

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] C08F *265/02, 265/04, 271/02, 279/02*

U.S. Cl. 525—281 8 Claims

1. A particulate graft polymer comprising

A: from 30 to 80% by weight of one or more elastomeric polymers A having a mean particle size of from 30 to 1000 nm, comprising, based on A,

A1: from 85 to 99.8% by weight of one or more alkyl acrylates A1 having from 1 to 8 carbon atoms in the alkyl radical,

A2: from 0.1 to 5% by weight of one or more polyfunctional, crosslinking monomers A2, and

A3: from 0.1 to 10% by weight of one or more monomers A3 containing one or more α,β-olefinically unsaturated acid groups, or

A11: from 80 to 99.8-0% by weight of a diene A11,

A12: from 0 to 20% by weight of one or more vinylaromatic monomers A12,

A13: from 0.2 to 10% by weight of one or more monomers A13 containing one or more α,β-olefinically unsaturated acid groups, as the graft base, and

B: from 20 to 70% by weight of a shell B grafted onto the elastomeric polymer A and comprising, based on B,

B1: from 50 to 89.9% by weight of one or more vinylaromatic monomers B1,

B2: from 10 to 49.9% by weight of one or more polar, copolymerizable, ethylenically unsaturated monomers B2, and

B3: from 0.1 to 10% by weight of one or more monomers B3 containing one or more basic groups, wherein said basic group is an aminoalkyl acrylate or methacrylate containing one or more amino groups in the alkyl radical or a copolymerizable, ethylenically unsaturated compound having a nitrogen-containing heterocyclic substituent.

5,342,899

PROCESS FOR RECYCLING AQUEOUS FLUID ABSORBENTS FINES TO A POLYMERIZER

Andrew T. Graham, Midland, Mich., and Herbert Gartner, Baden Baden, Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Filed May 16, 1991, Ser. No. 701,232

Int. Cl.[5] C08F *265/02, 267/02*

U.S. Cl. 525—301 12 Claims

1. A process for recycling dry aqueous fluid absorbent polymer fines into a process that includes a polymerization step for making said aqueous fluid absorbent polymers, comprising:

recovering dry polymer fines from said aqueous fluid absorbent polymer;

mixing said fines with a polymerizable monomer solution for making said aqueous fluid absorbent polymer; and

polymerizing said mixture of fines and monomer to form said aqueous fluid absorbent polymer.

5,342,900

PROCESS FOR THE PREPARATION OF DIENE RUBBER VULCANIZATES

Jürgen Wolpers, Haltern; Dieter Zerpner, and Karl-Heinz Nordsiek, both of Marl, all of Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 937,109

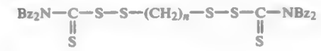
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128869; Aug. 4, 1992, 4225684

Int. Cl.[5] C08C *19/22, 19/20*

U.S. Cl. 525—329.3 6 Claims

1. A vulcanized rubber, prepared by a process, comprising vulcanizing a diene rubber at a temperature of from 140° to 200° C. in the presence of:

a) 1 to 4.5 parts of a cross linker of the formula



wherein n is 2 or 6 and Bz is benzyl;

(b) 0.05 to 0.3 parts of sulfur; and

(c) 0.3 to 2.5 parts of a mercapto accelerator and 0.1 to 0.8 parts of a sulfenamide accelerator, wherein the mercapto accelerator is zinc 2-mercaptobenzothiazole, 2-mercaptobenzothiazole or dibenzylthiazyl disulfide, and the sulfenamide accelerator is N-tert.butyl-2-benzothiazylsulfenamide, and

wherein all parts are relative to 100 parts of said diene rubber.

5,342,901

FILM-FORMABLE, CHELATE-FORMING RESIN, PROCESS FOR PREPARATION THEREOF, USE THEREOF AND METHOD FOR FORMING ELECTROPHORETIC COATING

Hideo Kogure, Atsugi; Heihachi Murase, Kanagawa, and Masafumi Kume, Hiratsuka, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

PCT No. PCT/JP92/00113, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/13902, PCT Pub. Date Aug. 20, 1992

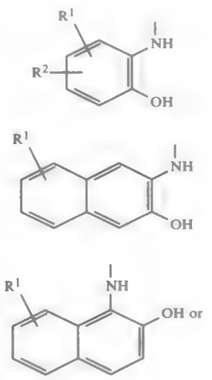
PCT Filed Feb. 5, 1992, Ser. No. 930,524

Claims priority, application Japan, Feb. 5, 1991, 3-102182; Feb. 13, 1991, 3-042475; Mar. 1, 1991, 3-035935

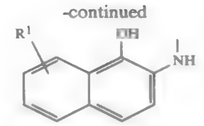
Int. Cl.[5] C08F *8/32, 26/02*

U.S. Cl. 525—330.5 7 Claims

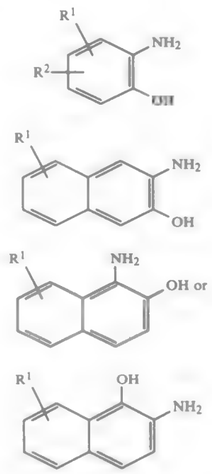
1. A film-formable, chelate-forming resin having, per 1000 g of the resin, about 0.2 to about 3.5 moles of a chelate-forming group of the formula:



-continued



wherein R^1 and R^2 are the same or different and each represents a hydrogen atom, a halogen atom, a nitro group, a nitroso group, a cyano group, a hydrocarbon group having up to 18 carbon atoms, or an alkoxyalkyl group having up to 12 carbon atoms, said resin having been prepared by the addition of an amine of formula:



wherein R^1 and R^2 are as defined above, to a resin or a compound having a polymerizable double bond to attach the amino group to the polymerizable double bond.

5,342,902

POLY(ESTER-ETHER) COMPOSITIONS HAVING INCREASED THERMAL STABILITY

W. Ronald Darnell, Weber City, Va., and W. J. Jackson, Jr., Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Sep. 7, 1993, Ser. No. 117,588

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—437 25 Claims

1. A poly(ester-ether) composition having improved thermal stability consisting essentially of repeat units from the reaction of

(1) 10 to 175 mole percent based on the repeat units of the polyester, component (2), of at least one dihydroxy aromatic compound, with

(2) a polyester consisting essentially of repeat units from:

(a) at least one dicarboxylic acid; and

(b) at least one diol selected from the group consisting of aliphatic and cycloaliphatic diols, provided that at least 50 mole percent of the diol is an aliphatic diol having 2 to 20 carbon atoms, based on 100 mole percent dicarboxylic acid and 100 mole percent diol.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,903

PROCESS FOR THE PREPARATION OF ADDUCTS OF EPOXIDES AND ALCOHOLS

Heinz Wolleb, Marly; Andreas Hafner, Laupen, both of Switzerland, and William M. Rolfe, Baisham, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 30, 1993, Ser. No. 55,656

Claims priority, application Switzerland, May 6, 1992, 1455/92-1

Int. Cl.[5] **C07C** *41/03*; **C07D** *301/28, 303/04*

U.S. Cl. 525—407 **12 Claims**

1. A process for the for the preparation of an adduct by reacting an alcohol with an epoxy compound in the presence of a catalyst, which comprises reacting an alcohol of formula I

$$A\text{+}OH]_r \quad (I)$$

wherein A is an aliphatic, cycloaliphatic or araliphatic radical and r is a number from 1 to 10, with a mono- or diepoxide in the equivalent ratio of 1:20 to 20:1, based on the hydroxyl and epoxy groups, in the presence of a metal complex of formula II as catalyst

$$[M^{n+}(L_1)_x(L_2)_y(L_3{}^{m-})_z][X^{k-}]_{(n-zm/k} \quad (II),$$

wherein

M is a metal,

L_1 is a nitrile, isonitrile, thioether, phosphine, ether, aldehyde, ketone or a sp^2-nitrogen-containing compound,

L_2 is a water molecule, a nitrile, isonitrile, thioether, phosphine, ether, aldehyde, ketone or a sp^2-nitrogen-containing compound,

L_3 is a phosphine, phosphite, phosphonite, halide, cyanide, alcoholate, thiolate, carboxylate, acetylacetonate, a cyclopentadienyl or sp^2-nitrogen-containing compound which is unsubstituted or substituted by one or more than one C_1–C_8alkyl or tri(C_1–C_8alkyl)silyl group,

X is an anion of the formula BF_4^-, PF_6^-, AsF_6^-, SbF_6^-, ClO_4^-, IO_4^- or NO_3^- or is the sulfonate radical of a perfluorinated alkanesulfonic acid,

n is an integer from 1 to 6,

m is 0 or an integer from 1 to 6,

k is 1 or 2,

x is an integer form 1 to 1000,

y is 0 or an integer from 1 to 1000, and

z is 0 or an integer from 1 to 6.

5,342,904

POLYMER MODIFIED ADDUCTS OF EPOXY RESINS AND ACTIVE HYDROGEN CONTAINING COMPOUNDS CONTAINING MESOGENIC MOIETIES

Robert E. Hefner, Jr., and Jimmy D. Earls, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 562,787, Aug. 3, 1990, Pat. No. 5,235,008. This application Apr. 7, 1993, Ser. No. 44,429

Int. Cl.[5] **C08F** *283/10*; **C08L** *61/00, 63/00, 79/00, 81/00*

U.S. Cl. 525—488 **22 Claims**

1. A polymer modified adduct containing one or more rodlike mesogenic moieties which is prepared by

(A) reacting

(1) one or more epoxy resins containing an average of more than one vicinal epoxide group per molecule; with

(2) one or more compounds containing two or more hydrogen atoms which are reactive with an epoxide group selected from the group consisting of

(a) di- and polyphenols,

(b) di- and polycarboxylic acids,

(c) di- and polymercaptans,

(d) di- and polyamines,

(e) primary monoamines,

(f) sulfonamides,

(g) aminophenols,

(h) aminocarboxylic acids,

(i) phenolic hydroxyl containing carboxylic acids,

(j) sulfanilamides, ad

(k) any combination of any two or more of the aforementioned compounds (a), (b), (c), (d), (e), (f), (g), (h), (i), or (j);

thereby formign an adduct essentially free of epoxy groups and containing active hydrogen atoms reactive with an epoxy group;

(B) partially vinylizing the resulting adduct from step (A) by reacting from about 0.005 to about 10 mole percent of the reactive hydrogen atoms contained in said adduct with a compound containing (1) a group reactive with said reactive hydrogen atoms and (2) a polymerizable ethylenic unsatruated group; and

(C) copolymerizig the partially vinylized adduct from step (B) with (3) one or more polymerizable ethylenically unsaturated monomers and

wherein one or more components (1), (2), or (3) contain one or more rodlike mesogenic moieties, said monomer being employed in an amount of from about 0.1 to about 60 percent by weight based on the combined weight of said monomers and adduct.

5,342,905

PROCESS FOR MAKING AN ESTER CONTAINING POLYETHER SULFONE

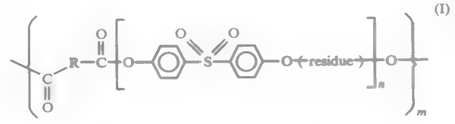
Robert J. Kumpf, Pittsburgh; Aaron D. Meltzer, Carnegie, and Harald Pielartzik, Pittsburgh, all of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Filed Jan. 29, 1993, Ser. No. 10,736

Int. Cl.[5] **C08G** *8/02, 69/32*

U.S. Cl. 525—534 **9 Claims**

1. A process for the preparation of a high molecular weight ester group-containing polyether sulfone conforming to

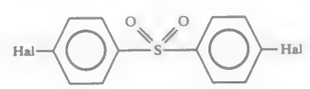


(I)

wherein

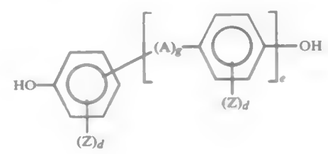
R is a hydrocarbon residue of a carboxylic acid, n is an integer of about 5 to 50 and m is an integer of about 2 to 40, comprising

(i) reacting a dihalogenodiphenyl sulfone conforming to



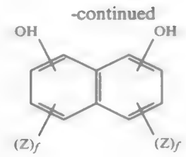
wherein

hal denotes a halogen, with excess amount of an aromatic dihydroxy compound conforming to formulae (1) or (2)



(1)

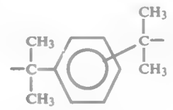
-continued



(2)

wherein

A denotes an alkylene group with 1 to 8 carbon atoms, an alkylidene group with 2 to 8 atoms, a cycloalkylene group with 5 to 15 carbon atoms, a cycloalkylidene group with 5 to 15 carbon atoms, a carbonyl group, an oxygen atom, a sulfur atom or —SO— or a radical conforming to



e and g both denote the number 0 to 1;

Z denoted F, CL, Br or C_1–C_4-alkyl and if several Z radicals are substituents in one aryl radical, they may be identical or different from one another;

d denotes an integer of from 0 to 4; and

f denotes an integer of from 0 to 3,

and in the presence of a base to produce a product, and (ii) reacting the product of said (i) with a dicarboxylic acid or its derivative to produce an ester group-containing polyether sulfone, said excess amount being sufficient to react with said acid or its derivative to form the corresponding ester, said molecular weight being about 10,000 to 40,000.

5,342,906

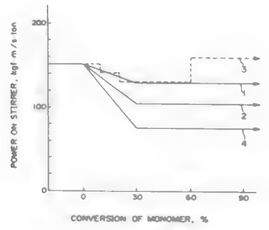
METHOD FOR THE SUSPENSION POLYMERIZATION OF VINYL CHLORIDE MONOMER

Tadashi Amano, and Toshimichi Koga, both of Ibaraki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 861,527, Apr. 1, 1992, abandoned. This application May 11, 1993, Ser. No. 60,596

Int. Cl.[5] **C08F** *2/20, 2/18*

U.S. Cl. 526—88 **1 Claim**



1. In a method for the suspension polymerization of vinyl chloride or a monomer mixture mainly composed of vinyl chloride in an aqueous medium containing a dispersing agent in the presence of a monomer-soluble polymerization initiator comprising the steps of introducing from 110 to 200 parts by weight of water and from 0.02 to 0.15 part by weight of a dispersing agent, which is a partially saponified polyvinyl alcohol having a degree of saponification of 60 to 80% and an average degree of polymerization of 500 to 1000 to give a 4% by weight aqueous solution having a viscosity not exceeding 15 centipoise at 20° C. and a 1% by weight aqueous solution having an absorbance of light of at least 4 at a wavelength of 280 nm for an optical path length of 1 cm, into a polymerization reactor equipped with a stirrer and a reflux condenser to form a polymerization medium, deaerating the polymerization medium by reducing the pressure, introducing 100 parts by weight of the vinyl chloride monomer or monomer mixture, introducing the polymerization initiator into the polymerization medium under agitation with the stirrer to form a polymerization mixture, increasing the temperature of the polymerization mixture to a polymerization temperature to start the polymerization reaction under continuous agitation of the polymerization mixture with the stirrer driven with a power sufficient to suspend the monomer droplets in the polymerization medium and continuing agitation of the polymerization mixture until the end of the polymerization reaction, the improvement which comprises:

(a) driving the stirrer with a power thereon in the range from 100 to 200 kgf.m/s per 1000 kg of the polymerization mixture at least until the start of the polymerization reaction;

(b) decreasing the power on the stirrer either step-wise or continuously during the period from the start of the polymerization reaction to the moment when conversion of the monomer or monomer mixture into polymer is 17% down to a value in the range from 96 to 84% of the value before the start of the polymerization reaction;

(c) bringing the reflux condenser into operation at a moment when conversion of the monomer or monomer mixture into polymer is in the range from 5 to 20%, after the moment when conversion of the monomer or monomer mixture into polymer is higher by at least 3% than the conversion at the moment when the power on the stirrer is decreased in step (b) and the power on the stirrer is in the range from 96 to 80% of the power before the start of the polymerization reaction; and

(d) further decreasing the power on the stirrer either step-wise or continuously during the period from the start of the operation of the reflux condenser to the moment when the conversion of the monomer or monomer mixture is 30% by a decrement in the range from 4 to 20% based on the power at the start of the polymerization reaction so that the power on the stirrer is in the range from 90 to 60% based on the power before the start of the polymerization reaction.

5,342,907

ETHYLENE/PROPYLENE COPOLYMER RUBBERS

Kevin J. Cann, Rocky Hill, N.J.; Fathi D. Hussein, Cross Lanes, W. Va.; Kiu H. Lee, So. Charleston, W. Va.; Daniel P. Zilker, Jr., Charleston, W. Va.; James W. Nicoletti, and Xinlai Bai, both of Piscataway, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 28, 1993, Ser. No. 83,616

The portion of the term of this patent subsequent to Jul. 26, 2011, has been disclaimed.

Int. Cl.[5] **C08F** *4/68*

U.S. Cl. 526—129 **13 Claims**

1. A process comprising contacting a mixture comprising ethylene, propylene, and, optionally, a diene, in the gas phase, under polymerization conditions, with a catalyst system comprising:

(a) a catalyst precursor, in independent or prepolymer form, consisting of vanadium (acetylacetonate)$_3$;

(b) optionally, a support for said precursor;

(c) a cocatalyst consisting essentially of (i) an alkylaluminum halide having the formula $AlR_{(3-a)}X_a$ wherein each R is independently alkyl having 1 to 14 carbon atoms; each X is independently chlorine, bromine, or iodine; and a is 1 or 2, and (ii) optionally, a trialkylaluminum provided that the molar ratio of alkylaluminum halide to trialkylaluminum is at least about 1.5:1; and

(d) a promoter, which is a chlorinated ester having at least 2 chlorine atoms; a saturated or unsaturated aliphatic halocarbon having at least 3 carbon atoms and at least 6 halogen atoms; or a haloalkyl substituted aromatic hydrocar-

VOL 1165 ISS 5 AG 30 1994 UMI

bon wherein the haloalkyl substituent has at least 3 halogen atoms.

5,342,908

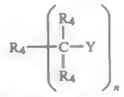
PROCESS FOR PREPARING HALOBUTYL-TYPE POLYMER

Akhtar Osman, Sarnia, Canada, assignor to Polysar Rubber Corporation, Sarnia, Canada

Filed Feb. 5, 1993, Ser. No. 14,295
Int. Cl.[5] C08F *2/06*
U.S. Cl. 526—135 **2 Claims**

1. A process for the preparation of a chlorinated polymer analogous to chlorinated butyl rubber comprising the steps of:

(A) introducing into a suitable reaction vessel a monomer charge comprising from about 80 to about 95 weight percent of isobutylene and from about 5 to about 20 weight percent 2-chloromethyl-4-methyl-1,3-pentadiene based on a total of 100 weight percent of said isobutylene and 2-chloromethyl-4-methyl-1,3-pentadiene, from about 1×10^{-2} to about 1×10^{-1} moles of isoprene per mole of isobutylene, an initiator having the formula



wherein each R_4 may be the same or different and is an alkyl, aryl or aralkyl group of 1 to 8 carbon atoms, Y is a carobxyl, alkoxyl, hydroxyl, halogen, hydroperoside, peroxide or peroxy ester group and n is a positive whole number for 1 to 3 in an amount of from about 1×10^{-4} to about 1×10^{-2} moles per mole of said isobutylene and an inert organic solvent comprising a mixture of methyl chloride and hexane at a temperature of from about −90° C. to about 0° C.,

(B) adding a solution of from about 4×10^{-4} to about 1×10^{-1} moles of titanium tetrachloride per mole of isobutylene in methylene chloride to the reaction mixture of (A) at said temperature and polymerizing the monomers to form said chlorinated polymer, and

(C) recovering the chlorinated polymer from the solution.

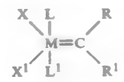
5,342,909

RUTHENIUM AND OSMIUM METAL CARBENE COMPLEXES FOR OLEFIN METATHESIS POLYMERIZATION

Robert H. Grubbs, South Pasadena, Calif.; Lynda K. Johnson, Carrboro, N.C., and Sonbinh T. Nguyen, Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 863,606, Apr. 3, 1992. This application Aug. 13, 1993, Ser. No. 106,292
Int. Cl.[5] C08F *4/80, 32/04, 32/08;* **C07F** *15/00*
U.S. Cl. 526—171 **5 Claims**

1. In the process of metathesis polymerization of cyclic olefins, the improvement comprising carrying out the polymerization in the presence of a catalyst of the formula



in the presence of a solvent, wherein:

M is Os or Ru;

R and R^1 are independently selected from hydrogen; C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_2–C_{20} alkynyl, C_2–C_{20} alkoxycarbonyl, aryl, C_1–C_{20} carboxylate, C_1–C_{20} alkoxy, C_2–C_{20} alkenyloxy, C_2–C_{20} alkynyloxy or aryloxy; each optionally substituted with C_1–C_5 alkyl, halogen, C_1–C_6 alkoxy or with a phenyl group substituted with halogen, C_1–C_5 alkyl or C_1–C_5 alkoxy;

X and X^1 are independently selected from an anionic ligand; and

L and L^1 are independently selected from neutral electron donor.

5,342,910

PROCESS FOR PREPARING VINYLIDENE CHLORIDE OR VINYL CHLORIDE POLYMER BY SUSPENSION POLYMERIZATION

Susan M. Kling, and Nitis Sarkar, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 18, 1992, Ser. No. 993,217
Int. Cl.[5] C08F *4/12, 2/20*
U.S. Cl. 526—195 **13 Claims**

1. A process for preparing a vinylidene chloride polymer or vinyl chloride polymer from polymerizable monomers by suspension polymerization whereby foam formation during removal of residual monomers is inhibited which comprises:

(A) providing a polymerizable monomer mixture having an aqueous phase comprising a suspending agent and a monomer phase comprising at least one suspension polymerizable monomer;

(B) polymerizing the polymerizable monomer mixture to form an aqueous slurry of polymer and residual monomer;

(C) adding at least one salt of an inorganic acid having an anionic valency of at least 2 to the polymer slurry formed after polymerization of the monomer mixture in step (B);

(D) removing the residual monomer from the polymer slurry containing the salt of an inorganic acid in step (C); and

(E) drying the slurry to form a dry polymer or copolymer.

5,342,911

CROSSLINKED POLYACRYLIC ACIDS HAVING LOW SOLVENT RESIDUE, A PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF AS THICKENING AGENTS

Angelo Bresciani, Bergamo, Italy, assignor to 3V Inc., Weehawkin, N.J.

Filed Aug. 25, 1993, Ser. No. 111,742
Int. Cl.[5] C08F *2/00*
U.S. Cl. 526—216 **6 Claims**

1. A crosslinked acrylic acid polymer consisting of at least 80% of acrylic acid and containing less than 5 ppm of methylene chloride obtained by a process comprising the radicalic polymerization of monomers in a solvent mixture consisting of a mixture of methylene chloride and at least one cosolvent selected from the group consisting of:

(A) a carboxylic ester having formula

$$R—COO—R_1$$

wherein R is hydrogen, methyl or ethyl group, R_1 is C_1–C_3 alkyl group, and

(B) dimethyl or diethylcarbonate,

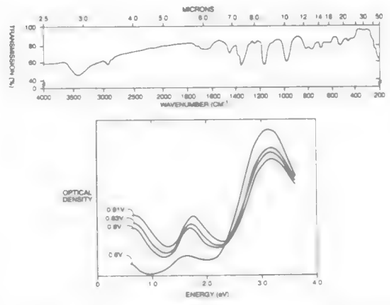
and wherein said solvent mixture consists of 60–75% v/v of methylene chloride and 40–25% v/v of the cosolvent, said solvent mixture comprising, a crosslinking agent in an amount from 0.3 to 4% w/w, calculated on the monomer, and a free radical initiator as catalyst, said polymerization being carried out at a temperature ranging from 35° C. and reflux temperature.

5,342,912

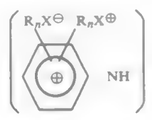
SELF-DOPED ZWITTERIONIC ANILINE POLYMERS

Fred Wudl, 4539 Via Maria, Santa Barbara, Calif. 93111, and Alan Heeger, 1042 Los Alturas, Santa Barbara, Calif. 94101

Division of Ser. No. 607,851, Nov. 1, 1990, which is a continuation of Ser. No. 156,928, Dec. 14, 1987, abandoned. This application Jan. 2, 1991, Ser. No. 636,915
Int. Cl.[5] C08G *83/00, 73/00*
U.S. Cl. 528—292 **5 Claims**



1. A water-soluble, self-doped, zwitterionic polymer comprised of from about 100 to about 500 monomer units, wherein 0.01 to 100% of the monomer units have the structure



wherein n is 0 or 1, R is a linear or branched alkyl, ester, ether or amide moiety having between 1 and about 10 carbon atoms, and X is a Bronsted acid anion.

5,342,913

SILICON RUBBER COMPOSITION HAVING EXCELLENT DURABILITY IN REPEATED MOLD RELEASE

Toshio Takago; Hiroshi Inomata; Shinichi Sato, and Hitoshi Kinami, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 798,100, Nov. 27, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 92,807
Claims priority, application Japan, Nov. 29, 1990, 2-331209
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[5] C08G *77/06*
U.S. Cl. 528—15 **6 Claims**

1. A silicone rubber composition comprising:

(a) an organopolysiloxane containing at least two alkenyl groups in its molecule and having the following general formula (1):

wherein s and t are each an integer from 0 to 10,000 such that s+t has a value in the range from 100 to 10,000, and R^1 to R^3 may be the same or different from each other and each are an unsubstituted monovalent hydrocarbon group of from 1 to 9 carbon atoms;

(b) an organohydrogenpolysiloxane having at least five Si—H bonds and containing at least one unit of the following general formula (2):

wherein a is an integer from 0 to 2, J is a divalent hydrocarbon group of from 2 to4 carbon atoms, and Rf is a divalent perfluoropolyether group of from 6 to 36 carbon atoms, in its molecule; and

(c) an addition reaction catalyst.

5,342,914

CURABLE COMPOSITION

Hiroshi Iwakiri; Masayuki Fujita, and Takashi Hasegawa, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 7, 1993, Ser. No. 43,865
Claims priority, application Japan, Apr. 8, 1992, 4-114319
Int. Cl.[5] C08G *77/20*
U.S. Cl. 528—32 **3 Claims**

1. A curable composition essentially comprising an oxyalkylene polymer having a silicon-containing hydrolyzable group represented by formula:

$$(CH_3O)_2Si(CH_3)CH_2CH_2CH_2-,$$

in which the composition contains a low-molecular silicon compound having a hydrolyzable group bonded to a silicon atom represented by the formula:

$$CH_2=CHSi(OCH_3)_3,$$

which is more reactive to H_2O than the oxyalkylene polymer is, with the mole number of the total hydrolyzable groups in said low-molecular silicon compound being not more than that of the hydrolyzable groups in said oxyalkylene polymer.

5,342,915

AQUEOUS POLYURETHANE DISPERSIONS

Ulrike Licht, Mannheim; Karl Haeberle, Neustadt; Erich Gulbins, Heidelberg; Maria G. Rau, Bad Durkheim; Gernot Franzmann, Bobenheim, and Michael Portugall, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 9, 1992, Ser. No. 987,602
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140486
Int. Cl.[5] C08G *18/28, 18/70*
U.S. Cl. 528—71 **13 Claims**

1. An aqueous dispersion containing a polyurethane which consists essentially of:

(a) organic polyisocyanates,

(b) dihydroxy compounds having a molecular weight of from more than 500 to 10,000 g/mol and at least 2 carboxyl or carboxylate groups in the molecule which are obtained by reacting dihydroxy compounds having a molecular weight of from more than 500 to 5,000 with tetracarboxylic dianhydrides in a molar ration of from 2:1 to 1.05:1;

(c) optionally, polyhydroxy compounds having a molecular weight of from more than 500 to 5,000 g/mol and containing no ionic groups or groups convertible into ionic groups:

(d) optionally, compounds having at least one group which is reactive toward isocyanate and at least one anionic group or group convertible into an anionic group and having a molecular weight of from 60 to 500 g/mol; and

(e) optionally, compounds having at least two groups which are reactive toward isocyanate and a molecular weight of from 60 to 500 g/mol and containing no ionic groups or groups convertible into ionic groups.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,916

CONDENSATION POLYMERS OF SULFONATED PHENOLS, UREA, OTHER ORGANIC NITROGEN-BASES, AND FORMALDEHYDE, AND THEIR USE AS TANNING AGENTS AND AS SPRAYING AIDS FOR REDISPERSIBLE POLYMER POWDERS

Juergen Weiser, Schriesheim; Wolfgang Reuther, Heidelberg; Karl Stork, Weisenheim a. Berg; Ortwin Schaffer, Ludwigshafen; Gernot Franzmann, Bobenheim; Thomas Schwerzel, Meckenheim; Maximilian Angel, Mutterstadt; Joachim Pakusch, Ludwigshafen, and Brigitte Wegner, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 28, 1992, Ser. No. 889,631

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1991, 4118007

Int. Cl.[5] C08G 8/04

U.S. Cl. 528—150 7 Claims

1. A condensation polymer of sulfonated phenol, urea, other organic nitrogen bases and formaldehyde consisting essentially of the reaction products obtained by:

(A) sulfonation of phenols with from 1.0 to 1.5 mols of sulfuric acid per mole of phenol; and

(B) acid catalyzed condensation of the product of sulfonation of said phenols with

a) from 0.5 to 1.8 moles of urea per mole of phenol,

b) from 0.001 to 0.5 mole of at least one other organic nitrogen base per mole of phenol, said other organic nitrogen base is selected from the group consisting of melamine, hydroxy-(C_{2-20}-alkyl)-melamine, bis-hydroxy-(C_{2-20}-alkyl)-melamine, tris-hydroxy (C_{2-20}-alkyl) melamine, hydroxyaryl melamine and poly(alkylene oxide)-substituted melamine, melem, hydroxy(C_{2-20}-alkyl)melem, poly(alkylene oxide) substituted melem, guanamine, N-hydroxy(C_{2-20}-alkyl)guanamine, poly-(alkylene oxide) substituted guanamine dicyanodiamide, and mixtures thereof, and

c) from 1.0 to 3.0 moles of formaldehyde per mole of phenol,

said acid catalyzed condensation proceeding by initially adding components a) and b) in any order to the sulfonated phenol (A) and then subsequently adding formaldehyde component c) and conducting the condensation reaction as formaldehyde is added to the reaction mixture.

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Patent Not Issued For This Number

5,342,918

CARBOXYL-TERMINATED POLYETHERAMINES

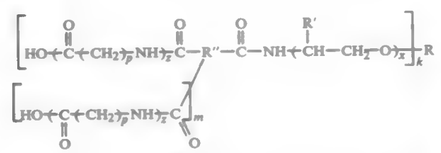
Richele T. Howelton, and George P. Speranza, both of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Apr. 30, 1993, Ser. No. 54,165

Int. Cl.[5] C08G 69/14

U.S. Cl. 528—318 15 Claims

1. A non-gelled, carboxyl-terminated polyetheramide of the formula:



where

R is a moiety from an alcohol initiator having a valence of k;

R′ is independently hydrogen or lower alkyl from 1 to 4 carbon atoms;

R″ is independently a straight or branched alkylene or aromatic moiety averaging from about 2 to 36 carbon atoms;

x independently averages from about 2 to 100;

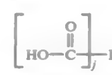
z independently averages from about 20 to about 250;

k averages from about 1 to 8;

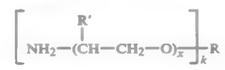
m is independently 0 or 1; and

p is independently 5 to 11; made by a process comprising the steps of:

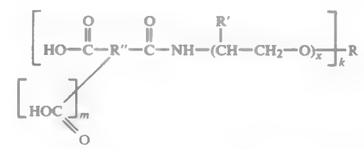
(1) reacting a carboxylic acid with a polyetheramine to form a polyetheramide, where the carboxylic acid has the formula:



where averages from 2 to 3 and R″ is as defined above with a valence of j; where the polyether amine has the formula:

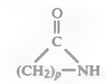


where R, R′, x and k are defined as above; and where the resulting polyetheramide has the formula:



where R, R′, R″, x, k and m are defined as above; and

(2) reacting the polyetheramide with a cyclic lactam having the formula:



where p is defined as above, to give the liquid, non-gelled, carboxyl-terminated polyetheramide.

5,342,919

SINTERABLE SEMI-CRYSTALLINE POWDER AND NEAR-FULLY DENSE ARTICLE FORMED THEREWITH

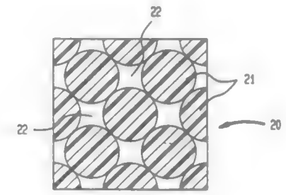
Elmer D. Dickens, Jr., Richfield; Bling Lin Lee, Broadview Heights; Glenn A. Taylor, Twinsburg; Angelo J. Magistro, Brecksville, and Hendra Ng, E. Cleveland, all of Ohio, assignors to DTM Corporation, Auston, Tex.

Filed Nov. 23, 1992, Ser. No. 980,004

Int. Cl.[5] C08G 69/14; B27N 3/00

U.S. Cl. 528—323 16 Claims

1. A laser-sinterable powder product, adapted to be sintered in a selective laser sintering machine to form a sintered part, said powder consisting essentially of an unblended .polymer which provides signs of crystalline order under X-ray examination, and shows a crystalline melting point Tm as well as a glass transition temperature Tg, said polymer having a two-tier particle size distribution said powder having the following properties: (a) freely-flowable semi-crystalline powder having a crystallinity in the range from 10–90% measured by [DSC] differential scanning calorimetry; (b) a major portion by weight of the powder having a sphericity in the range from greater than 0.5 to 0.9, and a two-tier distribution in which substantially no primary particles has an average diameter greater than 180μm, provided further that the number average ratio of particles smaller than 53μm is greater than 80%, the remaining larger particles being in the size range from 53μm to 180μm; a layer of said powder no more than 250μm deep absorbing essentially all infra-red energy beamed therethrough at a wavelength of 10.6μm, and a layer of said powder no more than 180μm thick absorbing more than 50% of said energy; (c)



a number average molecular weight in the range from about 30,000 to 500,000, and a molecular weight distribution M_w/M_n in the range from 1 to 5; and, (d) a windowof sinterability in the temperature range from near said powder's softening temperature T_s to said powder's caking temperature T_c; whereby when said powder is sintered layer-wise in said window of sinterability to form a slice, it will not curl.

5,342,920

PROCESS FOR THE PREPARATION OF POLYARYLENE SULFIDE AND AN APPARATUS FOR THE PREPARATION THEREOF

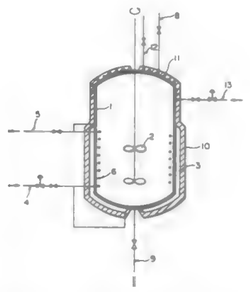
Yoichi Imai, Icihara; Toshiyuki Hirano, Kimitsu; Osamu Komiyama, and Hidenori Yamanaka, both of Icihara, all of Japan, assignors to Tonen Chemical Corporation, Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 992,860

Claims priority, application Japan, Dec. 17, 1991, 3-352990; Oct. 7, 1992, 4-291908; Oct. 7, 1992, 4-291909; Nov. 18, 1992, 4-331264

Int. Cl.[5] C08G 75/16

U.S. Cl. 528—388 5 Claims



1. A process for the preparation of polyarylene sulfide comprised of conducting a polymerization reaction in a reactor provided with cooling means by polymerizing an alkali metal sulfide with a dihaloaromatic compound in an organic amide solvent, wherein a part of a gaseous phase in the reactor is cooled by the cooling means to thereby condense part of a gaseous phase in the reactor to a liquid, and the condensed liquid is refluxed to a liquid phase in the reactor.

5,342,921

SUPEROXIDE DISMUTASE FUSION POLYPEPTIDES FOR EXPRESSION OF MAMMALIAN PROTEINS

Lawrence S. Cousens; Patricia A. Tekamp-Olson, both of San Francisco; Jeffrey R. Shuster, Walnut Creek, and James P. Merryweather, Berkeley, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 169,833, Mar. 17, 1988, abandoned, which is a division of Ser. No. 845,737, Mar. 28, 1986, Pat. No. 4,751,180, which is a continuation-in-part of Ser. No. 717,209, Mar. 28, 1985, abandoned. This application Mar. 29, 1991, Ser. No. 680,046

Int. Cl.[5] C07K 3/00, 13/00

U.S. Cl. 530—324 9 Claims

1. A fusion polypeptide consisting essentially of human copper zinc superoxide dismutase joined to a polypeptide having 15 to 300 amino acids.

5,342,922

INHIBITORS OF RETROVIRAL PROTEASE

Garland R. Marshall, and Mihaly V. Toth, both of Clayton, Mo., assignors to Washington University, St. Louis, Mo.

Filed Mar. 8, 1989, Ser. No. 320,742

Int. Cl.[5] C07K 7/06; A61K 37/02

U.S. Cl. 530—329 2 Claims

1. An inhibitor of HIV protease of claim 1 selected from the group consisting of

Ac-Gln-Asn-Tyr-Ψ[CH_2N]-Pro-Ile-Val-NH_2,

Ac-Gly-Asn-Tyr-Ψ[CH_2N]-Pro-Val-Gln-NH_2,

Ac-Thr-Ile-Met-Ψ[CH_2NH]-Met-Gln-Arg-NH_2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-Nle-Gln-Arg-NH_2,
Ac-Thr-Ile-Leu-Ψ[CH_2NH]-Leu-Gln-Arg-NH2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-Leu-Gln-Arg-NM_2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-Cha-Gln-Arg-NH_2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-Phe-Gln-Arg-NH_2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-Cle-Gln-Arg-NH_2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-MeNle-Gln-Arg-NH_2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-Nle-Gln-D-Arg-NH_2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-Ile-Gln-Arg-NH_2,
Ac-D-Thr-Ile-Nle-Ψ[CH_2NH]-Nle-Gln-Arg-NH_2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-Nle-Gln-Nva-NH_2,
Ac-Arg-Gln-Nle-Ψ[CH_2NH]-Nle-Ile-Thr-NH_2,
Ac-Thr-Ile-Nle-Ψ[CH_2NH]-Nle-Gln-NH_2,
Ac-Ile-Nle-Ψ[CH_2NH]-Nle-Gln-Arg-NH_2,

Ac-Phe-Asn-Phe-Ψ[CH_2N]-Pro-Gln-Ile-NH_2,
Ac-Ser-Phe-Asn-Phe-Ψ[CH_2N]-Pro-Gln-Ile-NH_2,
Ac-Leu-Ala-Ala-Ψ[CH_2N]-Pro-Gln-Phe-NH_2,

Ac-Leu-Asn-Phe-Ψ[CH_2N]-Pro-Ile-Ser-OH,
H_2N-Thr-Leu-Asn-Phe-Ψ[CH_2N]-Pro-Ile-Ser-OH,
Ac-Leu-Asn-Leu-Ψ[CH_2N]-Pro-Val-Ala-NH_2, and
H_2N-Ser-Leu-Asn-Leu-Ψ[CH_2N]-Pro-Val-Ala-OH.

5,342,923

PROCESS FOR REFINING ZEIN

Hidekazu Takahashi, and Norimasa Yanai, both of Funabashi, Japan, assignors to Showa Sangyo Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1992, Ser. No. 874,864

Claims priority, application Japan, Jan. 16, 1992, 4-024387

Int. Cl.[5] C07G 7/00; A23J 1/12

U.S. Cl. 530—373 6 Claims

1. A process for refining a zein, which comprises steps of dispersing a solution containing crude zein into a solution comprising acetone in which said zein is insoluble; thereby precipitating a zein component as porous solids; separating said porous solids; and drying said solids.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,924

EXTRACELLULAR SEGMENTS OF HUMAN EPSILON IMMUNOGLOBULIN ANCHORING PEPTIDES AND ANTIBODIES SPECIFIC THEREFOR

Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 973,321, Oct. 29, 1992, Pat. No. 5,254,671, which is a continuation-in-part of Ser. No. 515,604, Apr. 27, 1990, Pat. No. 5,274,075, which is a continuation-in-part of Ser. No. 468,766, Jan. 23, 1990, Pat. No. 5,260,416, which is a continuation-in-part of Ser. No. 369,625, Jun. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 272,243, Nov. 16, 1988, Pat. No. 5,091,313, which is a continuation-in-part of Ser. No. 229,178, Aug. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 226,421, Jun. 29, 1988, which is a continuation-in-part of Ser. No. 140,036, Dec. 31, 1987, abandoned. This application Jul. 9, 1993, Ser. No. 90,527

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] C07K *15/28;* C12N *5/12*

U.S. Cl. 530—387.9 3 Claims

1. An antibody which specifically binds the peptides of SEQ ID NO: 2 or SEQ ID NO: 3.

5,342,925

RADIOACTIVE COMPOSITIONS FOR SOFT TISSUE TUMORS

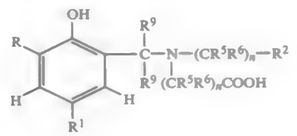
David A. Wilson, Richwood; R. Keith Frank; Joseph R. Garlich, both of Lake Jackson, and Jaime Simon, Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 30, 1991, Ser. No. 648,493

Int. Cl.[5] A61K *43/00;* C07C *229/14;* C07F *5/00, 15/02*

U.S. Cl. 534—10 11 Claims

1. A radioactive metal-phenolic carboxylate ligand complex wherein the metal ion is ^{153}Sm, ^{166}Ho, ^{90}Y, ^{165}Dy, ^{159}Gd, ^{177}Lu, ^{111}In, ^{115m}In, ^{175}Yb, ^{47}Sc, ^{52}Fe, ^{72}Ga, ^{67}Ga, or ^{68}Ga and the ligand is of the formula



(I)

wherein:

R represents hydrogen, or



R^1 independently represents hydrogen, C_1–C_{18} alkyl, $—N(R^4)_2$, $—NR^8C(O)CR^5R^6R^7$, $—NR^5C(O)NR^6R^7$, $—NO_2$, $—N{=}CR^5R^6$, —NCS, —N=O, or $—N^+R^5R^6R^7$;

where R^4 represents hydrogen, C_1–C_{18} alkyl, or $—CO(CH_2)_yCH_3$, where y is an integer from 0 to 17;

R^5, R^6, R^7 and R^8 independently represent hydrogen, C_1–C_{18} alkyl, aryl or aryl-C_1–C_4 alkyl;

R^2 represents —COOH, $—CH_2OH$ or $—CH(CH_3)OH$;

R^9 independently represents hydrogen, C_1–C_{18} alkyl, aryl or aryl-C_1–C_4 alkyl;

n is an integer of 1, 2 or 3;

or a pharmaceutically acceptable salt thereof;

with the proviso that the ligand to metal ratio is at least 20:1.

5,342,926

ANALOGS OF CYTOCHALASIN B AS RADIOPHARMACEUTICALS FOR NUCLEAR IMAGING OF TRANS-MEMBRANE GLUCOSE TRANSPORT

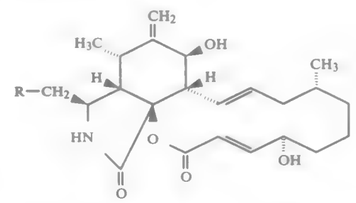
Robert S. Hattner, Mill Valley, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Jun. 8, 1993, Ser. No. 73,848

Int. Cl.[5] C07F *13/00;* C07D *491/02*

U.S. Cl. 534—10 7 Claims

1. A compound having the formula



in which R is a member selected from the group consisting of:

a radionuclide,

an aliphatic or alicyclic group containing a radionuclide,

a phenyl ring substituted with a radionuclide, and

a chelate of a radionuclide

said radionuclide being selected from the group consisting of ^{121}I, ^{122}I, ^{123}I, ^{124}I, ^{125}I, ^{131}I, ^{74}Br, ^{75}Br, ^{76}Br, ^{77}Br, ^{34m}CL, ^{18}F, ^{211}At, ^{99m}Tc, ^{111}In, ^{113m}In and ^{67}Ga.

5,342,927

REACTIVE DYESTUFFS FOR THE DYEING AND PRINTING OF HYDROXYL-OR AMINO-CONTAINING MATERIALS

Wolfram Reddig, Bergisch Gladbach, and Karl-Josef Herd, Odenthal-Holz, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

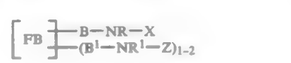
Filed Jul. 21, 1992, Ser. No. 917,548

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125266

Int. Cl.[5] C09B *62/002, 62/022;* D06P *1/382*

U.S. Cl. 534—618 9 Claims

1. A reactive dyestuff of the formula



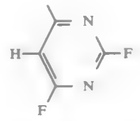
(1)

where

FB is the radical of a dyestuff from the mono- or polyazo, metal complex azo, anthraquinone, phthalocyanine, formazan, azomethine, dioxazine, phenazine, stilbene, triphenylmethane, xanthene, thioxanthone, nitroaryl, naphthoquinone, pyrenequinone or perylenetetracarbimide series,

B and B^1, independently of one another, are a direct bond or a bridging member on a ring C atom of an aromatic-carbocyclic or on a ring C atom or ring N atom of an aromatic-heterocyclic ring in FB,

X is



Z is a heterocyclic fibre-reactive radical and

R and R^1, independently of one another, are H, substituted or unsubstituted C_1–C_6-alkyl.

5,342,928

BENZISOTHIAZOLE- AND BENZOTHIOPHENE-AZO DYES WITH A COUPLING COMPONENT OF THE ANILINE SERIES

Thomas Roetsch, Ludwigshafen; Helmut Hagen, Frankenthal; Helmut Reichelt, Neustadt, and Clemens Grund, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

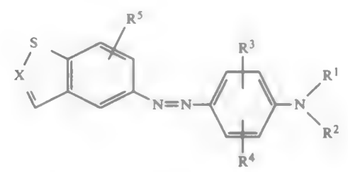
Filed Apr. 30, 1993, Ser. No. 54,230

Claims priority, application Fed. Rep. of Germany, May 11, 1992, 4215392

Int. Cl.[5] C09B *29/033, 29/045, 29/09;* D06P *1/18*

U.S. Cl. 534—788 11 Claims

1. An azo dye of the formula I:



(I)

wherein

X is nitrogen or a radical of the formula CR^6, where R^6 is C_1–C_4-alkoxycarbonyl or C_1–C_6-alkanoyl,

R^1 and R^2 are identical or different and each is independently of the other C_1–C_{10}-alkyl or C_1–C_{10}-alkyl ether having one or two oxygen atoms, unsubstituted or phenyl-, cyano-, hydroxyl-, C_1–C_4-alkoxycarbonyl-, C_1–C_4-alkoxycarbonyloxy- or C_1–C_4-alkanoyloxy-substituted, or unsubstituted or chlorine-substituted C_3–C_4-alkenyl, or additionally in the case of R^1 hydrogen,

R^3 is hydrogen or C_1–C_1-alkoxy,

R^4 is C_1–C_6-alkyl or C_1–C_4-alkoxy, unsubstituted or halogen-,cyano-, hydroxyl-, C_1–C_4-alkoxy-, phenoxy or C_1–C_4-alkanoyloxy-substituted, C_1–C_8-alkanoylamino, C_1–C_4-alkyl sulfonyl amino, C_3–C_4-alkenoylamino or unsubstituted or alkoxy-substituted C_1–C_4-alkoxycarbonylamino, and

R^5 is cyano.

5,342,929

PROCESS FOR THE PREPARATION OF GLYCOSIDES

Beat Ernst, Magden, Switzerland; Michael Heneghan, Salford, England, and Andreas Hafner, Frenkendorf, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 31, 1992, Ser. No. 937,818

Claims priority, application Switzerland, Sep. 4, 1991, 2603/91

Int. Cl.[5] C07H *15/04, 17/00*

U.S. Cl. 536—18.6 62 Claims

1. A process for preparing a glycoside, which process comprises reacting, in an inert solvent, an anomeric hydroxyl group containing protected sugar with an aglycon, alone or together with an orthoester, in the presence of a catalytic amount of a metal complex salt, wherein the anomeric hydroxyl group containing protected sugar is a protected monosaccharide having an anomeric hydroxyl group, or a derivative thereof, or a protected oligosaccharide having an anomeric hydroxyl group, or a derivative thereof; the aglycon is selected from the group consisting of an aliphatic alcohol, a cycloaliphatic alcohol, an aromatic alcohol, an aromatic-aliphatic alcohol, a non-anomeric hydroxyl group containing protected monosaccharide, or a derivative thereof, and a non-anomeric hydroxyl group containing protected oligosaccharide, or a derivative thereof; and wherein the metal complex salt comprises a metal cation, a ligand which is a monodentate ligand or a polydentate ligand and a non-nucleophilic anion, wherein the metal cation is a cation of a lanthanide metal or a metal selected from the group consisting of Mg, Ca, Sr, Ba, B, Al, Ga, In, Sn, Pb, Sb, Bi, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir and Pt, and the non-nucleophilic anion is an anion of an oxyacid, BF_4, PF_6, AsF_6 or SbF_6.

5,342,930

ISOLATED DNA OF HUMAN PAPILLOMAVIRUS TYPE 54(HPV54)

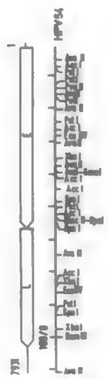
Gérard Orth, Sceaux; Michel Favre; Dina Kremsdorf, both of Paris, and Gérard Pehau-Arnaudet, Montreuil, all of France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 351,125, May 12, 1989, abandoned. This application Sep. 25, 1992, Ser. No. 951,118

Claims priority, application France, May 13, 1988, 88 06486; Jun. 21, 1988, 88 08324

Int. Cl.[5] C07H *17/00;* C12N *15/00*

U.S. Cl. 536—23.72 3 Claims



1. Isolated and essentially pure DNA having the nucleotide reside sequence of HPV 54 having Accession number C.N.C.M. I-756.

5,342,931

PROCESS FOR PURIFYING DNA ON HYDRATED SILICA

Daniel L. Woodard, Raleigh; Adriann J. Howard, Durham, and James A. Down, Cary, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 835,179, Feb. 13, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 51,596

Int. Cl.[5] C12P *19/34;* C12Q *1/68;* C07H *21/00, 21/04*

U.S. Cl. 536—25.4 3 Claims

1. A process for purifying DNA which comprises:

a) binding the DNA to a hydrated silica compound in the presence of water or physiological buffers, wherein the hydrated silica compound is produced by the process of refluxing a mixture of SiO_2 and sodium hydroxide or potassium hydroxide at a molar ratio of about 2:1 to 10: 1 for at least about 48 hours;

b) separating and washing the hydrated silica compound and the DNA bound thereto; and

c) eluting the DNA from the hydrated silica compound in a heated physiological buffer or in heated water.

VOL 1165 ISS 5 AG 30 1994 UMI

5,342,932

PROCESS FOR PREPARING NON-HYDROXYPROPYLATED, DEFLAVORED, CROSSLINKED, PREGELATINIZED, STARCH AND PRODUCT

Jay H. Katcher, Chestnut Ridge, N.Y., and Charles W. Bertalan, New Brunswick, N.J., assignors to Kraft General Foods, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 17,711, Feb. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 823,510, Jan. 21, 1992, Pat. No. 5,187,272. This application Jul. 15, 1993, Ser. No. 92,158

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] **C08B** *31/08, 33/04;* **A23L** *1/05, 1/187*

U.S. Cl. 536—102 **15 Claims**

1. A process for preparing a deflavored, non-hydroxypropylated, croslinked, pregelatized starch comprising:

a) obtaining raw starch from cereal grain, by means of a refining process;

b) washing the refined starch with water which contains from 0.01 to 2.0% of an emulsifier having an HLB value greater than 1.0;

c) dispersing and agitating raw, refined cereal starch in water to form a homogeneous slurry containing at least 25% starch;

d) adding a base to adjust the slurry pH to at least 11.0;

e) washing the starch solids of step (c) with water to remove flavor while maintaining the starch pH above 11.0 and while maintaining the starch solids concentration at least 25% or more;

f) croslinking the deflavored starch using any food-acceptable procedure;

g) neutralizing the starch with a food grade acid to pH 5.0 to 9.0; and

h) gelatinizing and drying the neutralized starch using a process selected from the group consisting of spray-drying using a two-fluid nozzle, drum drying, and cooking in a water-miscible solvent at high temperature and pressure followed by drying, with the proviso that the starch is not hydroxypropylated.

5,342,933

CATIONIC-2-HETEROARYLPHENYL-CARBAPENEM ANTIBACTERIAL AGENTS

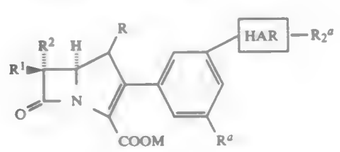
Frank DiNinno, Old Bridge; Susan M. Schmitt, Scotch Plains, and Ravindra N. Guthikonda, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 28, 1992, Ser. No. 937,618

Int. Cl.[5] **C07D** *487/00*

U.S. Cl. 540—302 **4 Claims**

1. A compound of the formula:



(I)

wherein:

R is H or CH_3;

R^1 is hydrogen;

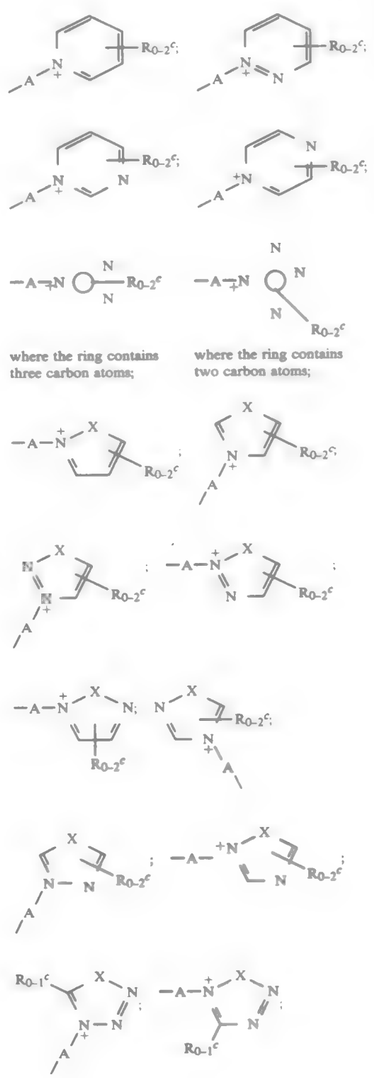
R^2 is (R)—$CH_3CH(OH)$— or (R)—$CH_3CH(F)$—;



is a 5- or 9-membered mono- or bicyclic heteroaryl ring system wherein 1 atom is O or S, or an 8-membered bicyclic heteroaryl ring system wherein 2 atoms are O and/or S;

R^a is each independently selected from the group consisting of hydrogen, Type I substituent and Type II substituent, provided that one and only one R^a is a Type I substituent;

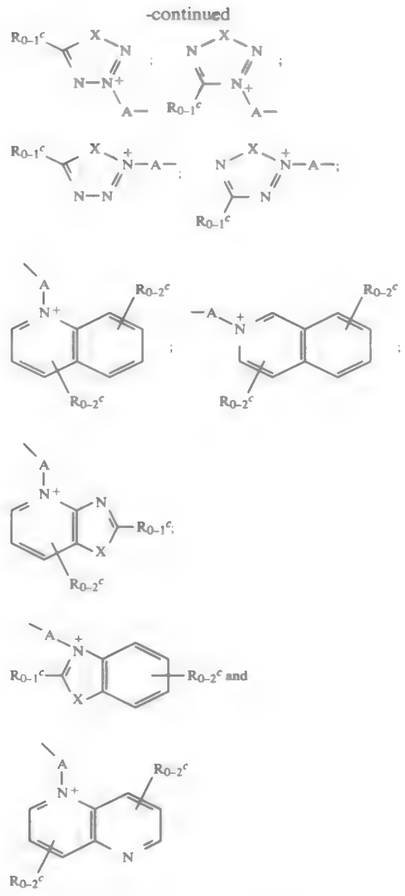
Type I substituent is a Type I a) substituent selected from the group consisting of:



where the ring contains three carbon atoms;

where the ring contains two carbon atoms;

-continued



where X=O, S, or NR^c; and

A is $(CH_2)_m$—Q—$(CH_2)_n$, where m is 0 to 6 and n is 1 to 6 and Q is a covalent bond, O, S, SO, SO_2, NH, —SO_2NH—, —$NHSO_2$—, —COHN—, —NHCO—, —$SO_2N(C_1$–C_4 alkyl)—, —$N(C_1$–C_4 alkyl) SO_2—, —$CON(C_1$–C_4 alkyl)—, —$N(C_1$–C_4 alkyl)CO—, —CH=CH—, —CO—, 'OC(O)—, —C(O)O— or $N(C_1$–C_4 alkyl) and $(CH_2)_m$ is attached to the phenyl aromatic moiety;

R^c is R^a as defined under II below, hydrogen, or —NR^yR^z (where R^y and R^z are defined in II below), but independently selected from R^a and from each other if more than one R^c is present, and is attached to a carbon ring atom or a nitrogen heteroatom the valency of which is not satisfied by the ring bonds;

Type II substituent is selected from the group consisting of

IIa) a trifluoromethyl group: —CF_3;

IIb) a halogen atom: —Br, —Cl, —F, or —I;

IIc) C_1–C_4 alkoxy radial: —OC_{1-4} alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

R^q is a member selected from the group consisting of —OH, —OCH_3, —CN, —C(O)NH_2, —OC(O)NH_2, CHO, —OC(O)$N(CH_3)_2$, —SO_2NH_2, —$SO_2N(CH_3)_2$, —$SOCH_3$, —SO_2CH_3, —F, —CF_3, —$COOM^a$ (where M^a is hydrogen, alkali metal, methyl or phenyl), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above) and —SO_3M^b (where M^b is hydrogen or an alkali metal);

IId) a hydroxy group: —OH;

IIe) a carbonyloxy radical: —O(C=O)R^z, where

R^z is C_1–C_4 alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above or tri-substituted with —F;

IIf) a carbamoyloxy radical: —O(C=O)$N(R^y)R^z$, where

R^y and R^z are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 3- or 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)—, —$S(O)_2$— or —NR^e—, to form a ring (where R^3 is hydrogen, C_1–C_4 alkyl, and C_1–C_4 alkyl mono-substituted with R^q and the ring is optionally mono-substituted with r^q as defined above);

IIg) a sulfur radical: —$S(O)_n$—R^z where n=0–2, and R^2 is defined above;

IIh) a sulfamoyl group: —$SO_2N(R^y)R^z$ where R^y and R^z are as defined above;

IIi) azido: N_3

IIj) a formamido group: —$N(R^t)$—C(O)H, where

R^t is H or C_1–C_4 alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;

IIk) a (C_1–C_4 alkyl)carbonylamino radical: —$N(R^t)$—C(O)C_1–C_4 alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

IIl) a (C_1–C_4 alkoxy) carbonylamino radical: —$N(R^t)$—C(O)OC_1–C_4 alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

IIm) a ureido group: —$N(R^t)$—C(O)$N)(R^y)R^z$ where R^t, R^y and R^z are as defined above;

IIn) a sulfonamido group: —$N(R^t)SO_2R^s$, where r^s and R^t are as defined above;

IIo) a cyano group: —CN;

IIp) a formyl or acetalized formyl radical: —C(O)H or —$C(OCH_3)_2H$;

IIq) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is acetalized: —$C(OCH_3)_2C_1$–C_4 alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

IIr) carbonyl radical: —C(O)R^z, where R^z is as defined above;

IIs) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group: —$C(R^y$=NOR^z where R^y and R^z are as defined above, except they may not be joined together to form a ring;

IIt) a (C_1–C_4 alkoxy)carbonyl radical: —C(O)OC_{1-4} alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

IIu) a carbamoyl radical: —C(O)$N(R^y)R^z$ where R^y and R^z are as defined above;

IIv) an N-hydroxycarbamoyl or $N(C_1$–C_4 alkoxy)carbamoyl racial in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group: —(C=O)—N(O$R^y)R^z$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

IIw) a thiocarbamoyl group: —C(S)$N(R^y)R^z$) where R^y and R^z are as defined above;

IIx) carboxyl: —$COOM^b$, where M^b is as defined above;

IIy) thiocyanate: —SCN;

IIz) trifluoromethylthio: —SCF_3;

IIaa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;

IIab) an anionic function selected from the group consisting of: phosphono [P=O$(OM^b)_2$]; alkylphosphono

VOL 1165 ISS 5 AG 30 1994 UMI

{P═O(OM^b)—[O(C$_1$–C$_4$ alkyl)]}; alkylphosphinyl [P═O()M^b)—(C$_1$–C$_4$ alkyl)]; phosphoramido [P═O-(OM^b)N(R^y)R^z and P═O(OM^b)NHR^z];sulfino (SO$_2$M^b); sulfo (SO$_3$M^b); acylsulfonamides selected from the structures CONM^{b}SO$_2$R^z, CONM^{b}SO$_2$N-(R^y)R^z, SO$_2$NM^{b}CONOR^y)R^z; and SO$_2$NM^{b}CN, where

R^z is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has ben replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S in the case of a 5-membered ring, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^6 and R^z are as defined above;

IIac) C$_5$–C$_7$ cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or N(C$_1$–C$_4$ alkyl) and in which one additional carbon atom may be replaced by NH or N(C$_1$–C$_4$ alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;

IIad) C$_2$–C$_4$ alkenyl radical, optionally mono-substituted by one of the substituents a) to ac) above and phenyl which is optionally substituted by R^q as defined above;

IIae) C$_2$–C$_4$ alkynyl radical, optionally mono-substituted by one of the substituents a) to ac) above;

IIaf) C$_1$–C$_4$ alkyl radical;

IIag) C$_1$–C$_4$ alkyl mono-substituted by one of the substituents a)–ac) above;

IIah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from —S— and NR^t(where R^{t}is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents a) to ag) above; and

M is selected from:

i) hydrogen;

ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group;

iii) an alkali metal or other pharmaceutically acceptable cation; or

iv) a negative charge which is balanced by a positively charged group.

5,342,934

ENANTIOSELECTIVE RECEPTOR FOR AMINO ACID DERIVATIVES, AND OTHER COMPOUNDS

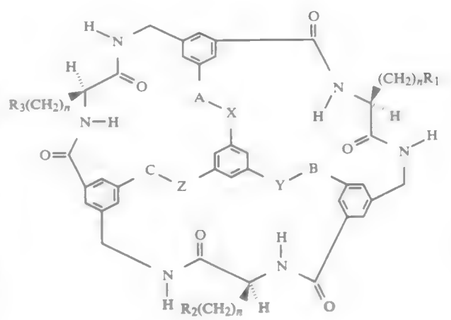
W. Clark Still, New York, N.Y.; Julian A. Simon, and Joog-In Hong, both of Cambridge, Mass., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jun. 19, 1992, Ser. No. 901,401

Int. Cl.^{5} C07D *487/18, 513/18, 498/18;* **C07B** *57/00*

U.S. Cl. 540—456 **11 Claims**

1. A composition of matter having the structure:



wherein each of A, B, C, X, Y, and Z is independently O, NH, N(CH$_2$)$_m$CH$_3$, N(C═O)(CH$_2$)$_m$CH$_3$, CH$_2$, S, or Se; each of R$_1$, R$_2$, and R$_3$ is independently phenyl, 4-hydroxyphenyl, pyridyl, pyrrolyl, indolyl, naphthyl, (C═O)(CH$_2$)$_p$CH$_3$, NH(C═O)(CH$_2$)$_p$CH$_3$, OH, COOH, NH$_2$, or SH; and m, n, and p are integers between 0 and 5.

5,342,935

ANTAGONISTS OF IMMUNOSUPPRESSIVE MACROLIDES

Thomas R. Beattie, Scotch Plains; Matthew J. Wyvratt, Mountainside, and Francis J. Dumont, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 766,708, Sep. 26, 1991, Pat. No. 5,190,950, which is a continuation of Ser. No. 551,811, Jun. 25, 1990, abandoned. This application Dec. 2, 1992, Ser. No. 985,088

Int. Cl.^{5} C07D *267/00*

U.S. Cl. 540—456 **2 Claims**

1. A compound which is: 17-ethyl-1,14-dihydroxy-12-[2'-(4''-hydroxy-3''-methoxycyclohexyl)-1'-methylvinyl]-23,25-dimethoxy-13,19,21,27-tetramethyl-11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3,10,16,20-pentaone.

5,342,936

TETRA-AZA MACROCYCLES AND PROCESSES FOR THEIR PREPARATION

David Parker, 12 East Atherton Street, Durham DH1 4DG, and Michael A. W. Eaton, Nethercote, Chinner Road, Aston Rowante, Oxfordshire OX9 5SH, both of United Kingdom

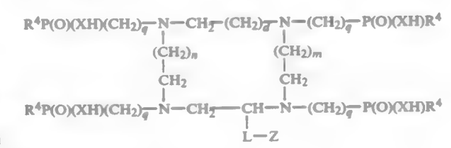
Continuation of Ser. No. 826,669, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 601,705, Oct. 30, 1990, abandoned. This application Oct. 2, 1992, Ser. No. 964,117

Claims priority, application United Kingdom, Feb. 10, 1989, 8903023.2

Int. Cl.^{5} C07D *255/02*

U.S. Cl. 540—474 **17 Claims**

1. A compound of the formula:



wherein

m has a value of from 0 to 3;

n has a value of from 0 to 3;

d has a value of from 0 to 3;

q has a value of from 0 to 6;

X is oxygen or sulphur;

R^4 is hydrogen, alkyl, or alkoxy;

L is a linker group; and

Z is a reactive functional group;

and metal complexes and/or salts thereof.

5,342,937

HETEROCYCLIC THIONE

Peter W. Austin, Bury; Peter M. Quan, Rochdale; Peter A. Tasker, Oldham, and Derek Thorp, Heywood, all of England, assignors to Zeneca, Limited, London, England and Nerco, Inc., Portland, Oreg.

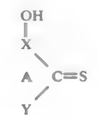
Division of Ser. No. 544,282, Jun. 26, 1990, Pat. No. 5,074,911. This application Oct. 7, 1991, Ser. No. 773,386

Claims priority, application United Kingdom, Jul. 12, 1989, 8915959

Int. Cl.^{5} C07D *211/36, 277/04, 285/16*

U.S. Cl. 544—8 **7 Claims**

1. A heterocyclic thione which has the general formula (I):



wherein

X is C and Y is N—R; or

X is N and Y is C—R, N, N—R, O or S;

each R is independently H or a substituent which does not interfere with stripping or extraction; and

A is a mono- or bicyclic ring system having 5- or 6-membered rings comprising the group —X(OH)—CS—Y— as part of the ring, said monocyclic ring system being selected from dihydropyridothione, dihydropyrazothione, dihydropyrimidothione, dihydropyridazathione, dihydropyrazolothione, dihydrothiazolothione, dihydroisothiazolothione, dihydrothiadiazolothione, dihydrooxazolothione, dihydrooxadiazolothione, dihydroimidazolothione and dihydrotriazolothione rings and said bicyclic ring system being selected from the benzo-fused analogues of said monocyclic rings, said heterocyclic thione being substituted by one or more aliphatic hydrocarbyl groups containing a total of from 6 to 40 carbon atoms.

5,342,938

BENZOXAZINE INTERMEDIATES

Toyohiko Kume, Hino; Toshio Goto, Shimotsuga; Atsumi Kamochi, Oyama; Hidenori Hayakawa, Oyama; Akihiko Yanagi, Oyama, and Tadao Asami, Oyama, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

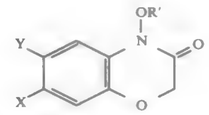
Division of Ser. No. 761,199, Sep. 16, 1991, Pat. No. 5,207,818. This application Feb. 5, 1993, Ser. No. 14,022

Claims priority, application Japan, Sep. 25, 1990, 2-251839

Int. Cl.^{5} C07D *265/36*

U.S. Cl. 544—105 **4 Claims**

1. A benzoxazine of the formula (IX)



(IX)

wherein Y represents a hydrogen atom, nitro group, or amino group,

X represents fluorine atom and

R′ represents C$_{1-5}$ alkyl group, C$_{3-4}$ alkenyl group, C$_{3-4}$ alkynyl group, cyclopropylmethyl group, C$_{2-3}$ cyanoalkyl group, C$_{1-2}$ alkoxy-C$_{1-2}$ alkyl group, or C$_{1-2}$ alkylthio-C$_{1-2}$ alkyl group.

5,342,939

2-AMINO-4-FLUOROALKOXY-1,3,5-TRIAZINES AND THE PREPARATION THEREOF

Gerhard Hamprecht, Weinheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 733,844, Jul. 22, 1991, Pat. No. 5,214,143. This application Feb. 17, 1993, Ser. No. 18,414

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1990, 4024761

Int. Cl.^{5} C07D *251/42, 251/46*

U.S. Cl. 544—194 **2 Claims**

1. 2-Amino-4-fluoro-6-trifluoromethoxy-1,3,5-triazine.

2. 2-Methylamino-4-fluoro-6-trifluoromethoxy-1,3,5-triazine.

5,342,940

POLYETHYLENE GLYCOL DERIVATIVES, PROCESS FOR PREPARING THE SAME

Keiichi Ono, Sakai; Yoshiyuki Kai, Kobe, and Hiroo Maeda, Takatsuki, all of Japan, assignors to Sumitomo Pharmaceuticals Company, Limited, Osaka and Seikagaku Corporation, Tokyo, both of Japan

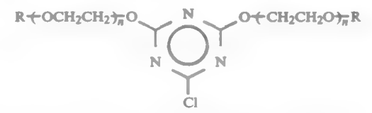
Division of Ser. No. 950,774, Sep. 24, 1992, which is a continuation of Ser. No. 525,671, May 21, 1990, abandoned. This application Sep. 13, 1993, Ser. No. 119,821

Claims priority, application Japan, May 27, 1989, 1-134191; May 27, 1989, 1-134192

Int. Cl.^{5} C07D *251/26*

U.S. Cl. 544—218 **2 Claims**

1. A process for preparing a polyethylene glycol derivative represented by formula (I):



(I)

wherein R represents an alkyl group and n represents an optionally variable positive integer, which comprises reacting a polyethylene glycol mono-alkyl ether compound represented by the formula (II):



(II)

wherein R and n have the same significances as described above, with cyanuric chloride in the presence of an oxide of a metal belonging to Group IIB.

5,342,941

NAPHTHALENE DERIVATIVES, PROCESSES FOR PREPARING THE SAME, AND SYNTHETIC INTERMEDIATES THEREFOR

Tameo Iwasaki, Nishinomiya; Kazuhiko Kondo, Osaka; Katsuo Ikezawa, Urawa; Hideo Kikkawa, Okegawa, and Shinsuke Yamagata, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Feb. 19, 1993, Ser. No. 19,885

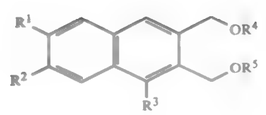
Claims priority, application Japan, Feb. 20, 1992, 4-085118

Int. Cl.^{5} A61K *31/44*

U.S. Cl. 514—337 **9 Claims**

1. A naphthalene compound of the formula (I):

VOL 1165 ISS 5 AG 30 1994 UMI



(I)

wherein R^1 and R^2 are the same or different and are (1) a hydrogen atom, (2) a hydroxy group, (3) a cyclopentyloxy group, (4) a lower alkoxy group which may optionally be substituted by a group selected from a hydroxy group, a lower alkoxy group, a lower alkoxy-lower alkoxy group, a lower alkoxycarbonyl group and a phenyl group, or (5) both combine to form a lower alkylenedioxy group, R^3 is a heterocyclic group selected from the group consisting of pyridin-2(or 6)-yl group, pyridin-3(or 5)-yl group, pyridin-4-yl group, (pyridine N-oxide)-2(or 6)-yl group, (pyridine N-oxide)-3(or 5)-yl group, (pyridine N-oxide)-4-yl group, 2(1H)-pyridon-3-yl group, 2(1H)-pyridon-4-yl group, 2(1H)-pyridon-5-yl group and 2(1H)-pyridon-6-yl group, said heterocyclic group optionally being substituted by a group selected from a fluorine atom, an alkoxy group and an alkyl group, wherein said alkoxy group and said alkyl group may optionally be substituted by a group selected from a hydroxy group, a lower alkoxy group, a lower alkoxy-lower alkoxy group, a lower alkylthio group, a lower alkenyl group, a cyano group, a carboxyl group, a lower alkoxycarbonyl group, an aminocarbyl group, a di-lower alkylamino group, a lower alkanoyl group, a phenyl group, a furyl group, a tetrahydrofuryl group and an oxazolyl group, and groups of the formulae: $—OR^4$ and $—OR^5$ are the same or different and are a protected or unprotected hydroxy group, or a pharmaceutically acceptable salt thereof.

5,342,942

PYRAZOLOQUINAZOLONE DERIVATIVES AS NEUROTROPHIC AGENTS

Juan C. Jaen, Plymouth, and Bradley W. Caprathe, Redford, both of Mich., assignors to Warner-Lambert Company, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 895,979, Jun. 9, 1992, abandoned. This application Mar. 29, 1993, Ser. No. 38,374

Int. Cl.[5] C07D *487/04, 487/14, 491/147, 495/14*

U.S. Cl. 544—250 **18 Claims**

1. The compound having the name 4,9-dihydro-4-methyl-9-oxo-7-[(4-methoxybenzoyl)-amino]pyrazolo[5,1b]quinazoline-2-carboxylic acid.

2. The compound having the name 7-[(4-chlorobenzoyl-)amino]-4,9-dihydro-4-methyl-9-oxopyrazolo[5,1-b]quinazoline-2-carboxylic acid.

3. The compound having the name 4,9-dihydro-4-methyl-9-oxo-7-[(phenylacetyl)amino]pyrazolo[5,1-b]quinazoline-2-carboxylic acid.

4. The compound having the name 7-[(3,4-dichlorobenzoyl-)amino]-4,9-dihydro-4-methyl-9-oxopyrazolo[5,1-b]quinazoline-2-carboxylic acid.

5. The compound having the name 4,9-dihydro-4-methyl-9-oxo-7-[(phenylamino)carbonyl]amino]pyrazolo[5,1-b]quinazoline-2-carboxylic acid.

5,342,943

PREPARATION OF 1H PYRAZOLO [3,2-C]-S-TRIAZOLE COMPOUNDS

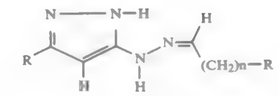
Philip T. S. Lau, and Ping-Wah Tang, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 782,695, Oct. 25, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 25,499

Int. Cl.[5] C07D *487/04, 487/02*

U.S. Cl. 548—262.4 **7 Claims**

1. Process for the formation of a pyrazolotriazole coupler, said process comprising reacting a compound:

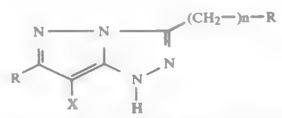


(I)

with a halogen and a base, said halogen being chlorine or bromine, and said base being either (i) an alkali metal salt of a lower alkyl carboxylic acid or (ii) a tertiary amine, such that:

when said base is said alkali metal salt, said halogen is reacted with said Compound (I) in the presence of said base, and

when said base is said tertiary amine, said halogen is reacted with said Compound (I) and subsequently the reaction product thereby produced is reacted with said tertiary amine, whereby said pyrazolotriazole coupler:



(II)

is produced; said process being further characterized by X in the above formula being Cl or Br, n in the above formulas being an integer having a value of 0 to about 6, and each R in said formulas being alike or different and selected from alkyl of aryl groups having up to about 20 carbon atoms.

5,342,944

PROCESS FOR THE PREPARATION OF 2-ALKYL-3,5,6,7-OR 8-SUBSTITUTED-4(3H)-QUINAZOLINONES

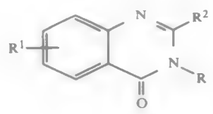
Arthur G. Mohan, Somerville, and Joseph D'Antuono, III, Three Bridges, both of N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Jul. 19, 1993, Ser. No. 92,850

Int. Cl.[5] C07D *239/90, 239/91*

U.S. Cl. 544—284 **6 Claims**

1. A process for producing substituted quinazolinone compounds of Formula I:



I

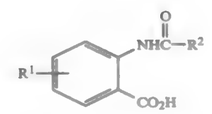
wherein

R is selected from H, straight or branched alkyl of 1 to 9 carbon atoms, phenyl, substituted phenyl (substitution selected from mono lower alkyl of 1 to 3 carbon atoms, $-CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms, halogen and $-NH_2$), benzyl and substituted benzyl (substitution selected from H, halogen, phenyl and substituted phenyl (substitution selected from halogen, -CN, carboxy, carboalkoxy, tetrazole and protected tetrazole));

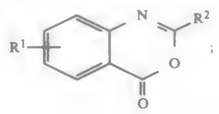
R^1 is a straight or branched alkyl of 1 to 9 carbon atoms, optionally substituted with a substituent selected from H, straight chain alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono lower alkyl of 1 to 3 carbon atoms, $-CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms, and NH_2), pyridine, thiophene, furan, O-straight chain alkyl of 1 to 4 carbon atoms, -OH and O-acyl with a straight chain alkyl of 1 to 4 carbon atoms and halogen;

R^2 is a straight chain alkyl of 1 to 6 carbon atoms which comprises:

a. reacting an N-aroyl or N-acyl substituted anthranilic acid of the formula:



with ethyl chloroformate to produce an intermediate of the formula:



b. which is further reacted, without isolation, with aqueous ammonia or a primary amine, and

c. recovering the substituted quinazolinone compound of Formula I so produced.

5,342,945

ANTI-NEOPLASTIC, ANTI-VIRAL OR ANTI-RETROVIRAL SPERMINE DERIVATIVES

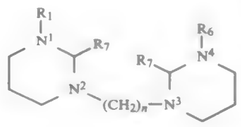
Raymond J. Bergeron, Gainesville, Fla., assignor to University of Florida Research Foundation, Inc., Gainesville, Fla.

Division of Ser. No. 210,520, Jun. 23, 1988, Pat. No. 5,091,576, which is a continuation-in-part of Ser. No. 66,227, Jun. 25, 1987, abandoned, which is a continuation-in-part of Ser. No. 936,835, Dec. 2, 1986, abandoned. This application Feb. 12, 1992, Ser. No. 834,345

Int. Cl.[5] C07C *211/14*; C07D *403/06, 403/14*; A61K *31/505*

U.S. Cl. 544—296 **9 Claims**

1. A compound having the formula:



(III)

Wherein:

R_1 and R_6 may be the same or different and are alkyl or aralkyl having from 1 to 12 carbon atoms;

R_7 is H, alkyl, aryl or aralkyl having from 1 to 12 carbon atoms;

n is an integer from 3 to 6, inclusive, or a salt thereof with an acid.

5,342,946

PHOSPHONOALKYLQUINOLIN-2-ONES AS NOVEL ANTAGONISTS OF NON-NMDA IONOTROPIC EXCITATORY AMINO ACID RECEPTORS

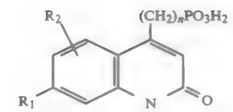
Gregory S. Hamilton, Catonsville, Md., assignor to Guilford Pharmaceuticals Inc., Baltimore, Md.

Filed Dec. 2, 1992, Ser. No. 984,453

Int. Cl.[5] C07D *215/14, 215/18, 215/227*; A61K *31/675*

U.S. Cl. 546—23 **11 Claims**

1. A compound having the formula:



wherein n is 0, 1, 2, or 3; R1 and R2 are independently selected from the group consisting of hydrogen, halogen, halomethyl, nitro, amino, alkoxy, hydroxyl, hydroxymethyl, C_1 to C_6 lower alkyl and C_7 to C_{12} higher alkyl, aryl and aralkyl; and the pharmaceutically acceptable salts thereof.

5,342,947

PREPARATION OF WATER SOLUBLE CAMPTOTHECIN DERIVATIVES

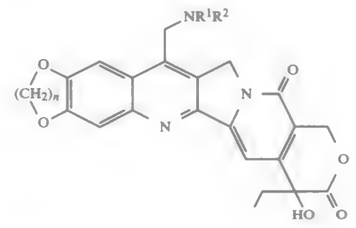
Karen Lackey, Durham, and Daniel D. Sternbach, Chapel Hill, both of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

Filed Oct. 9, 1992, Ser. No. 960,498

Int. Cl.[5] C07D *491/147*

U.S. Cl. 546—41 **5 Claims**

1. A method of preparing a compound of formula (I),



(I)

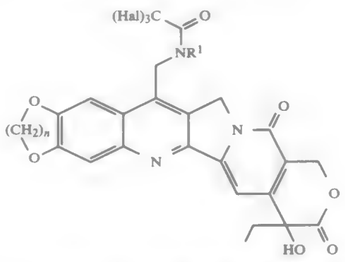
wherein:

n represents the integer 1 or 2;

R^1 represents independently, hydrogen, lower alkyl, (C_{3-7})cycloalkyl, (C_{3-7})cycloalkyl lower alkyl, lower alkenyl, hydroxy lower alkyl or lower alkoxy lower alkyl; and

R^2 represents hydrogen, comprising:

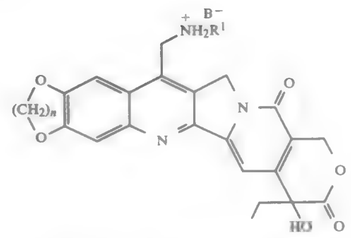
a) treating a compound of formula (IVb),



(IVb)

wherein Hal represents fluoro, chloro, bromo or iodo, with hydrochloric or sulfuric acid to yield a compound of formula (1b);

VOL 1165 ISS 5 AG 30 1994 UMI



(Ib)

wherein B- is a hydrochloride or sulfuric acid anion;

b) treatment of a compound formula (Ib), with or without isolation, with about one equivalent of an alkali metal hydroxide or alkali metal carbonate.

5,342,948

PROCESS FOR THE PREPARATION OF 17β-SUBSTITUTED-4-AZA-5α-ANDROSTAN-3-ONE DERIVATIVES

Achille Panzeri, Merate; Lucio Ceriani, Parabiago; Pierluigi Griggi, Monza, and Marcella Nesi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

PCT No. PCT/EP92/01620, § 371 Date Mar. 19, 1993, § 102(e) Date Mar. 19, 1993

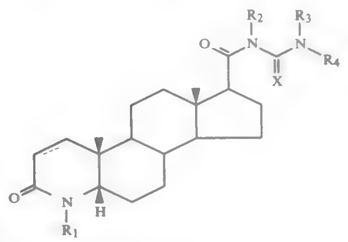
PCT Filed Jul. 16, 1992, Ser. No. 27,164

Claims priority, application United Kingdom, Jul. 19, 1991, 9115676

Int. Cl.[5] **C07D** *221/02;* **C07J** *73/00*

U.S. Cl. 546—77 **8 Claims**

1. A process for the preparation of a compound of formula (I)



(I)

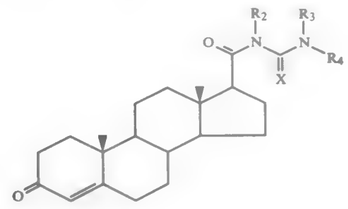
wherein X is oxygen or sulphur;

R_1 is hydrogen or C_1–C_6 alkyl;

each of R_2 and R_3 is, independently, hydrogen, C_1–C_6 alkyl, C_5–C_6 cycloalkyl or C_6–C_9 cycloalkylalkyl;

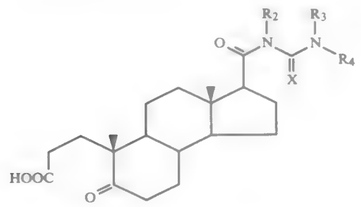
R_4 is hydrogen, C_1–C_6 alkyl, C_5–C_6 cycloalkyl, C_6–C_9 cycloalkylalkyl or aryl; and the symbol represents a single or a double bond; the process comprising the steps of:

a) oxidizing a compound of formula (II)



(II)

wherein X, R_2, R_3 and R_4 are as defined above, to obtain a compound of formula (III)



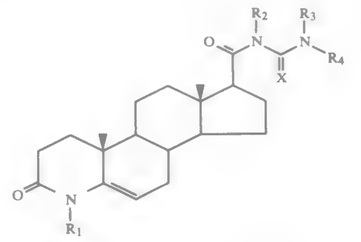
(III)

wherein X, R_2, R_3, and R_4 are as defined above;

b) reacting a compound of formula (III), as defined above, with a compound of formula (IV)

R_2—NH_2 (IV)

wherein R_1 is as defined above, to obtain a compound of formula (V)



(V)

wherein X, R_1, R_2, R_3 and R_4 are as defined above;

c) reducing a compound of formula (V), as defined above, to obtain a compound of formula (I) wherein . . . is a single bond and X, R_1, R_2, R_3 and R_4 are as defined above; and

d) optionally dehydrogenating a compound of formula (I) wherein . . . is a single bond and X, R_1, R_2, R_3 and R_4 are as defined above to obtain a compound of formula (I) wherein . . . is a double bond and X, R_1, R_2, R_3 and R_4 are as defined above.

5,342,949

2 STEP PROCESS FOR PREPARING BIOLOGICALLY ACTIVE TROPANE DERIVATIVES AND STARTING MATERIAL THEREFORE

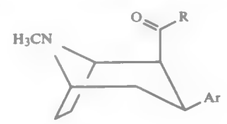
Huw M. L. Davies, Clemmons; Elie Saikali, and Steven R. Childers, both of Winston-Salem, all of N.C., assignors to Wake Forest University, Winston-Salem, N.C.

Division of Ser. No. 851,090, Mar. 13, 1990, Pat. No. 5,262,428. This application Nov. 17, 1992, Ser. No. 977,535

Int. Cl.[5] **C07D** *451/02*

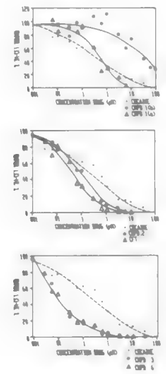
U.S. Cl. 546—124 **16 Claims**

1. A method of preparing 3-aryltropane derivatives of the formula:

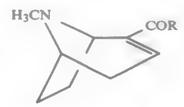


wherein R equals C_1 to C_8 alkyl and Ar is an aromatic ring moiety said aromatic ring moiety being selected from the

group consisting of phenyl, substituted phenyl, said process comprising:



(a) reacting an anhydroecgonine of the formula:



wherein R is selected from the group consisting of C_1 to C_8 oxyalkyl with an aryl Grignard reagent wherein the aryl group is selected from the group consisting of phenyl, substituted phenyl, and naphthyl in the presence of a catalytically effective amount of a copper (I or II) salt.

5,342,950

PREPARATION OF QUINOPHTHALONE DERIVATIVES

Gerhard Kilpper, Carlsberg, and Helmut Hoch, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP90/02036, § 371 Date Feb. 27, 1992, § 102(e) Date Feb. 27, 1992, PCT Pub. No. WO91/08264, PCT Pub. Date Jun. 13, 1991

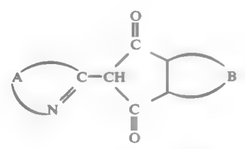
PCT Filed Nov. 28, 1990, Ser. No. 835,986

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1989, 3940348

Int. Cl.[5] **C07D** *215/06*

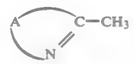
U.S. Cl. 546—171 **4 Claims**

1. A process for preparing quinophthalone derivatives of the formula I



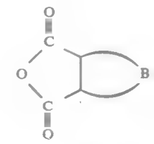
I

wherein the group A completes substituted or unsubstituted heteroaromatic rings and the group B completes a substituted or unsubstituted aromatic ring, by reacting a methyl-substituted heterocyclic compound of the formula II



II

with an anhydride of an aromatic dicarboxylic acid of the formula III



III

or the corresponding free dicarboxylic acid (IIIa) in the presence of an acid selected from the group consisting of an inorganic acid, an aliphatic C_{1-12} carboxylic acid, phenylacetic acid, toluic acid and benzoic acid and of the organic solvent, which comprises using an alkyl benzoate as the organic solvent in an amount from 3 to 20 times the weight of said methyl-substituted heterocyclic compound II.

5,342,951

2- AND 3-SULFUR DERIVATIVES OF 1,5-IMINOSUGARS

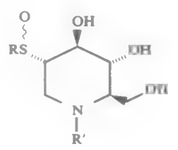
Francis J. Koszyk, Prospect Heights, and Richard A. Mueller, Glencoe, both of Ill., assignors to G.D. Searle & Co., Skokie, Ill.

Division of Ser. No. 942,572, Sep. 9, 1992, Pat. No. 5,268,482, and a continuation-in-part of Ser. No. 861,696, Apr. 1, 1992, Pat. No. 5,206,251. This application Aug. 2, 1993, Ser. No. 100,788

Int. Cl.[5] **C07D** *211/54, 211/42, 211/44, 211/46*

U.S. Cl. 546—217 **2 Claims**

1. A compound of the formula



wherein

R=C_1–C_4 alkyl or phenyl

R′=H or butyl.

5,342,952

PROCESS FOR TRANS-6-[2-(SUBSTITUTED-PYRROL-1-YL)ALKYL]PYRAN-2-ONE INHIBITORS OF CHOLESTEROL SYNTHESIS

Donald E. Butler, Holland; Tung V. Le, Jenison, and Thomas N. Nanninga, Holland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

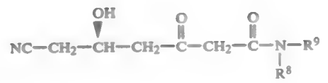
Division of Ser. No. 25,701, Mar. 3, 1993, Pat. No. 5,298,627. This application Oct. 12, 1993, Ser. No. 135,385

Int. Cl.[5] **C07D** *211/10, 207/06, 265/30;* **C07C** *255/26*

U.S. Cl. 546—245 **10 Claims**

1. A compound of Formula IX

VOL 1165 ISS 5 AG 30 1994 UMI



IX

wherein
R^8 or R^9 is independently
alkyl of from one to ten carbon atoms,
cyclopropyl,
cyclobutyl,
cyclopentyl,
cyclohexyl,
benzyl or
phenyl or
R^8 and R^9 together are

$-(CH_2)_4-$,

$-(CH_2)_5-$,

$-(CH(R^{10})-CH_2)_3-$,

$-(CH(R^{10})-CH_2)_4-$,

$-(CH(R^{10})-(CH_2)_2-CH(R^{10}))-$,

$-(CH(R^{10})-(CH_2)_3-CH(R^{10}))-$,

$-CH_2-CH_2-O-CH_2-CH_2-$,

$-CH(R^{10})-CH_2-O-CH_2-CH_2-$,

$-CH(R^{10})-CH_2-O-CH_2-CH(R^{10})-$,

wherein R^{10} is alkyl of from one to four carbon atoms provided R^8 and R^9 are not both methyl; and
R^{11} or R^{12} is independently
alkyl of from one to three carbon atoms or
phenyl or
R^{11} and R^{12} are taken together as $-(CH_2)_n-$ wherein n is 4 or 5.

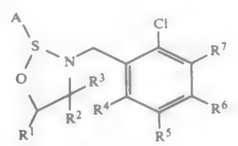
5,342,953

N-2-CHLOROBENZYL-2-OXO AND N-2-CHLOROBENZYL-2,2-DIOXO-1,2,3-OXATHIAZOLIDINE DERIVATIVES, THEIR PREPARATION AND SYNTHESIS OF THIENO[3,2-C]PYRIDINE DERIVATIVES THEREFROM

Gary F. Cooper, Portola Valley, and Keith E. McCarthy, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jan. 31, 1991, Ser. No. 648,117
Int. Cl.[5] C07D *241/04*
U.S. Cl. 548—122 **6 Claims**

1. A compound of the formula:



wherein:
A is oxo or dioxo;
R^1, R^2 and R^3 are independently hydrogen or lower alkyl of one to six carbon atoms;
R^4, R^5, R^6 and R^7 are independently hydrogen, lower alkyl of one to six carbon atoms, alkoxy, acyl or halo.

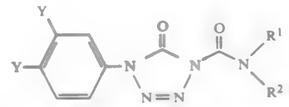
5,342,954

HERBICIDAL 1-(3-HALO-4-SUBSTITUTED PHENYL)TETRAZOLINONES

Toshio Goto; Hidenori Hayakawa, both of Tochigi; Yukiyoshi Watanabe, Saitama, and Akihiko Yanagi, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

Filed May 26, 1993, Ser. No. 67,374
Claims priority, application Japan, Jun. 3, 1992, 4-166772
Int. Cl.[5] C07D *257/02;* A01N *43/713*
U.S. Cl. 548—251 **9 Claims**

1. A 1-(3-halo-4-substituted phenyl)tetrazolinone of the formula



(I)

wherein
X represents halogen,
Y represents isopropyl or isopropoxy,
R^1 represents ethyl, propyl, isopropyl or allyl, and
R^2 represents ethyl, propyl, isopropyl or allyl.

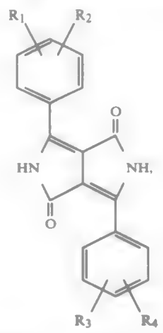
5,342,955

DIKETOPYRROLOPYRROLES

Gary Wooden, Oberschrot; Guy de Weck, Basel, and Olof Wallquist, Marly, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 870,986, Apr. 20, 1992, Pat. No. 5,200,528. This application Dec. 16, 1992, Ser. No. 991,676
Claims priority, application Switzerland, Apr. 26, 1991, 1250/91
Int. Cl.[5] C07D *403/14;* C09B *7/00*
U.S. Cl. 548—255 **5 Claims**

1. A 1,4-diketopyrrolo[3,4-c]pyrrole of formula



(I)

wherein R_1, R_2, R_3 and R_4 are each independently of one another hydrogen, Cl, Br, CH_3, OCH_3CN or phenyl, and at least one of the substituents R_1, R_2, R_3 and R_4 is a group

$-O(CH_2)_nX$ or $-O(CH_2CH_2O)_pCH_2CH_2X$

wherein
n is an integer from 2 to 12, and
p is an integer from 1 to 3,
X is a heterocyclic radical selected from the group consisting of imidazolyl, pyrazolyl, triazolyl, benzimidazolyl and benzotriazolyl, which radical is unsubstituted or substituted by one or two methyl groups.

5,342,956

Patent Not Issued For This Number

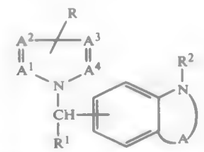
5,342,957

BENZIMIDAZOLES USEFUL IN TREATING EPITHELIAL DISORDERS

Jean P. F. Van Wauwe, and Alfons H. M. Raeymaekers, both of Beerse, Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 434,962, Nov. 13, 1989, Pat. No. 5,157,046, which is a continuation-in-part of Ser. No. 277,152, Nov. 29, 1988, abandoned. This application Aug. 10, 1992, Ser. No. 927,571
The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.
Int. Cl.[5] C07D *249/08, 235/08, 235/26*
U.S. Cl. 548—266.4 **3 Claims**

1. A chemical compound having the formula



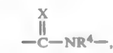
(I)

a pharmaceutically acceptable acid addition salt thereof or a stereochemically isomeric form thereof, wherein
R, R^1, R^2, $-A^1=A^2-A^3=A^4-$ and A in formula (I) have the following meaning $-A^1=A^2-A^3=A^4-$ is a bivalent radical having the formula
$-CH=N-CH=CH-$ (x);
$-CH=N-CH=N-$ (y); or
$-CH=N-N=CH-$ (z);
R is hydrogen or C_{1-6}alkyl;
R^1 is hydrogen; C_{1-10}alkyl; C_{3-7}cycloalkyl; Ar^1 or Ar^1-C_{1-6}alkyl;
R^2 is hydrogen; C_{3-7}cycloalkyl; Ar^1; C_{1-10}alkyl; C_{1-6}alkyl substituted with Ar^1 or C_{3-7}cycloalkyl; hydroxy; C_{1-10}alkyloxy; C_{1-6}alkyloxy substituted with Ar^1 or C_{3-7}cycloalkyl; C_{2-6}alkenyloxy optionally substituted with Ar^2; C_{3-6}alkynyloxy optionally substituted with Ar^2; or Ar^1-oxy;
A is a bivalent radical having the formula



(a)

or



(b)

wherein the carbon atom in the bivalent radical (a) and (b) is connected to $-NR^2$;
said R^3 being hydrogen; halo; C_{1-4}alkyl substituted with up to 4 halo atoms; C_{3-7}cycloalkyl; Ar^1; quinolinyl; indolinyl; C_{1-10}alkyl; C_{1-6}alkyl substituted with Ar^1, C_{3-7}cycloalkyl, quinolinyl, indolinyl or hydroxy; C_{1-10}alkyloxy; C_{1-6}alkyloxy substituted with Ar^1 or C_{3-7}cycloalkyl; C_{3-6}alkenyl optionally substituted with Ar^1; Ar^2-oxy; C_{1-6}alkyloxycarbonyl; carboxyl; C_{1-6}alkylcarbonyl; Ar^1-carbonyl or Ar^1—(CHOH)—;
said X being O or S;
said R^4 being hydrogen, C_{1-6}alkyl or Ar^2-C_{1-6}alkyl;
wherein Ar^1 is phenyl, substituted phenyl, pyridinyl, aminopyridinyl, imidazolyl, thienyl, halothienyl, furanyl, halofuranyl or thiazolyl; and Ar^2 is phenyl or substituted phenyl; said substituted phenyl in Ar^1 and Ar^2 being phenyl substituted with 1,2, or 3 substituents each independently selected from halo, hydroxy, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, cyano, amino, mono- and di(C_{1-6}alkyl)amino, nitro, carboxyl formyl and C_{1-6}alkyloxycarbonyl;
provided that R is other than hydrogen when $A^1=A^2-A^3=A^4-$ is a bivalent radical of formula (x).

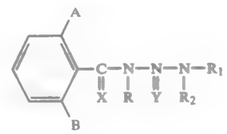
5,342,958

ORGANIC COMPOUNDS DERIVED FROM UREA OR THIOUREA

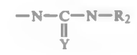
Kobus Wellinga, and Rudolf Mulder, both of Weesp, Netherlands, assignors to Solvay Duphar International Research B.V., Weesp, Netherlands

Division of Ser. No. 892,365, Jun. 3, 1992, Pat. No. 5,245,071, which is a division of Ser. No. 882,723, Jul. 7, 1986, Pat. No. 5,142,064, which is a division of Ser. No. 665,508, Oct. 30, 1984, Pat. No. 4,607,044, which is a continuation of Ser. No. 302,591, Sep. 15, 1981, abandoned, which is a continuation of Ser. No. 35,978, May 4, 1979, abandoned, which is a division of Ser. No. 717,633, Aug. 19, 1976, Pat. No. 4,166,124, which is a division of Ser. No. 522,058, Nov. 8, 1974, Pat. No. 3,989,842, which is a division of Ser. No. 354,393, Apr. 25, 1973, Pat. No. 3,933,908, which is a division of Ser. No. 143,668, May 14, 1971, Pat. No. 3,748,356. This application Aug. 11, 1993, Ser. No. 104,645
Claims priority, application Netherlands, May 15, 1970, 70-07040
Int. Cl.[5] C07D *233/96*
U.S. Cl. 548—317.5 **5 Claims**

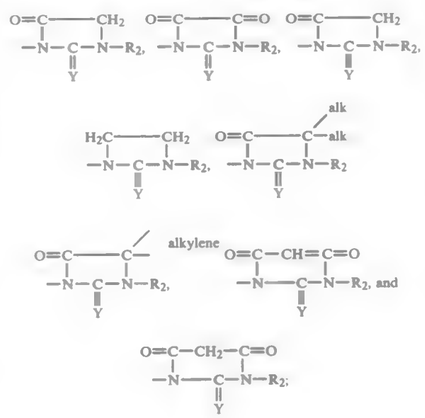
1. A compound of the formula



wherein:
A is a hydrogen atom, a halogen atom,a methyl group, or a methoxy group;
B is a hydrogen atom, a halogen atom, a methyl group, or a methoxy group, with the proviso that A and B are not both a hydrogen atom;
X and Y each are an oxygen atom or a sulfur atom;
R and R_1 together with the group



indicated in the above formula form a ring system selected from the group consisting of



and

VOL 1165 ISS 5 AG 30 1994 UMI

R_2 is a substituted or unsubstituted phenyl group or pyridyl group that may be substituted with halogen, with nitro, with cyano, or with halgoenated alkyl.

5,342,959

PROCESS FOR PREPARING CHIRAL [[(2-BROMOETHYL)-AMINO]METHYL]-2-NITRO-1H-IMIDAZOL-1-ETHANOL AND RELATED COMPOUNDS

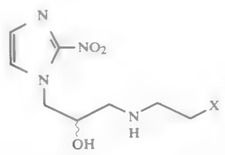
Vladimir Genukh Beylin; Anthony D. Sercel; Howard D. H. Showalter, all of Ann Arbor, Mich.; Gerald E. Adams, Wheatley, Great Britain; Edward M. Fielden, Blewbury, Great Britain; Matthew A. Naylor, Woking, Great Britain, and Ian J. Stratford, Faringdon, Great Britain, assignors to Warner-Lambert Company, Morris Plains, N.J. and British Tech. Group, London, England

Continuation of Ser. No. 923,209, Jul. 31, 1992, abandoned. This application Aug. 5, 1993, Ser. No. 102,658

Int. Cl.[5] **C07D** *233/61*

U.S. Cl. 548—327.5 **2 Claims**

1. A process for preparing a chiral compound of the formula



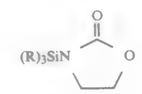
or a pharmaceutically acceptable salt thereof, wherein the compound takes the (R) - or (S)- form dependent upon the configuration of the group



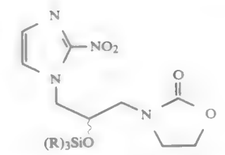
and X represents halogen,



wherein R_1 is OH, methyl, phenyl or phenyl substituted with lower alkyl having from 1 to 4 carbon atoms, lower alkoxy having from 1 to 4 carbon atoms, hydroxy, halogen, nitro, amino, or trifluoromethyl, which comprises reacting chiral 2-nitro-1-(2-oxiranylmethyl)-1H-imidazole with a 2-oxazolidinone of the formula



wherein R is a lower alkyl group having from 1 to 4 carbon atoms, phenyl, or phenyl substituted with lower alkyl having from 1 to 4 carbon atoms, lower alkoxy having from 1 to 4 carbon atoms, hydroxy, halogen, nitro, amino, or trifluoromethyl, in the presence of a suitable catalyst to give a chiral compound of the formula



wherein R has the meaning defined above which is:

(a) hydrolyzed to give chiral 3-[2-hydroxy-3-(2-nitro-1H-imidazol-1-yl)propyl]-2-oxazolidinone which is treated with an acid of formula HX wherein X is as defined above, or

(b) treated in one step with said acid.

5,342,960

AZOMETHINES AGONIST COMPOUNDS OF THE HISTAMINE H_3 RECEPTOR FOR THERAPEUTIC USE, PHARMACEUTICAL COMPOSITIONS ACTING AS AGONISTS OF THE SAID RECEPTOR AND PREPARATION PROCESS

Monique Garbarg, Paris; Jean-Michel Arrang, Gif sur Yvette, both of France; Walter Schunack, Berlin, Fed. Rep. of Germany; Ralph Lipp, Berlin, Fed. Rep. of Germany; Holger Stark, Berlin, Fed. Rep. of Germany; Jeanne-Marie Lecomte, and Jean-Charles Schwartz, both of Paris, France, assignors to Institut National de la Sante et de la Recherche Medicale and Societe Civile Bioprojet, both of Paris, France

PCT No. PCT/FR91/00384, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/17146, PCT Pub. Date Nov. 14, 1991

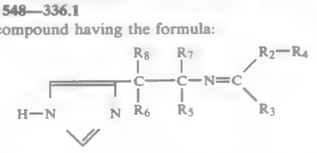
PCT Filed May 10, 1991, Ser. No. 828,936

Claims priority, application France, May 9, 1990, 90 05776

Int. Cl.[5] **A61K** *31/415;* **C07D** *233/64, 233/80*

U.S. Cl. 548—336.1 **9 Claims**

1. A compound having the formula:



wherein

R_5, R_6, R_7 and R_8 each denote hydrogen or methyl, R_5 and R_6 taken together form methylene and R_5, R_6, R_7 and R_8 do not simultaneously denote hydrogen,

R_2 is phenyl or imidazolyl, unsubstituted, monosubstituted or polysubstituted with R_4, and R_2 is unattached to R_3 or is attached to R_3,

R_3 is H, or has the meaning of R_2 or R_4, and

R_4 is H, OR_3, $COOR_3$, halogen, CF_3 or unsubstituted, monosubstituted or polysubstituted alkyl,

or a pharmaceutically acceptable salt thereof.

5,342,961

PROCESS FOR THE PRODUCTION OF LOW-VISCOSITY IMIDAZOLINIUM SURFACTANTS BY QUATERNIZATION OF 1-HYDROXYETHYL-2-ALKYL IMIDAZOLINES

Guenter Uphues, Monheim; Sven Jaensch, Duesseldorf; Uwe Ploog, Haan, and Udo Steinberner, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/02254, § 371 Date Aug. 6, 1993, § 102(e) Date Aug. 6, 1993, PCT Pub. No. WO92/10481, PCT Pub. Date Jun. 25, 1992

PCT Filed Nov. 28, 1991, Ser. No. 70,411

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1990, 4038983

Int. Cl.[5] **C07D** *233/04*

U.S. Cl. 548—352.1 **8 Claims**

1. A process for preparing a low-viscosity imidazolinium surfactant which comprises the steps of: (1) adding a 1-hydroxyethyl-2-alkyl imidazoline to an aqueous solution comprised of a quaternizing agent and from about 0.025 to 0.5 moles of a carboxylic acid per mole of said quaternizing agent such that the molar ratio of said imidazoline to said quaternizing agent is from about 1:1.5 to about 1:3; (2) maintaining the reaction mixture formed in step (1) at a temperature of from about 70° C. to about 85° C. for from about 30 to about 120 minutes; (3) adding to the reaction mixture formed in step (2) from about 0.85 to about 1.0 moles of an alkali metal hydroxide per mole of said quaternizing agent over a period of from about 30 to about 120 minutes at a temperature of from about 75° C. to 85° C.; (4) maintaining the temperature of the reaction mixture formed in step (3) at a temperature of from about 75° C. to about 90° C. for from about 140 to about 220 minutes; (5) adding to the reaction mixture formed in step (4) an amount of a carboxylic acid sufficient to yield a pH value of from about 7 to about 10 when the reaction mixture is diluted to a product concentration of about 10% by weight.

5,342,962

Patent Not Issued For This Number

5,342,963

OPTICALLY ACTIVE PYRROLIDINE DERIVATIVE

Kuniya Sakurai; Kunisuke Izawa; Hiroyuki Izawa; Takashi Ineyama, all of Kawasaki; Tomihisa Ohta, and Shigeo Nozoe, both of Sendai, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

PCT No. PCT/JP91/01619, § 371 Date Sep. 15, 1992, § 102(e) Date Sep. 15, 1992, PCT Pub. No. WO92/09605, PCT Pub. Date Jun. 11, 1992

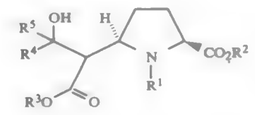
PCT Filed Nov. 26, 1991, Ser. No. 915,808

Claims priority, application Japan, Nov. 27, 1990, 2-324761; Nov. 28, 1990, 2-327681

Int. Cl.[5] **C07D** *207/00, 405/00, 401/00, 487/00*

U.S. Cl. 548—532 **3 Claims**

1. Optically active pyrrolidine derivatives represented by the following formula (XI):



(XI)

wherein R^1 represents a benzyl group, R^2 represents an alkyl group having 1 to 6 carbon atoms, R^3 represents an alkyl group having 1 to 6 carbon atoms, a benzyl group or an allyl group, R^4 is selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 6 carbon atoms which may be substituted with a protected hydroxyl group, a vinyl group, a phenyl group which may be substituted, a benzyl group which may be substituted, and a heterocyclic ring having 1 to 4 nitrogen or/and oxygen atoms, and R^5 represents a hydrogen atom or a methyl group.

5,342,964

PROCESS FOR OBTAINING THE ISOMERIC COMPOUND 1-VINYL-3(E)-ETHYLIDENE PYRROLIDONE

Susan Y. Tseng, Staten Island, N.Y., and Philip F. Wolf, Bridgewater, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Mar. 31, 1993, Ser. No. 40,805

Int. Cl.[5] **C07D** *207/267, 207/263*

U.S. Cl. 548—552 **7 Claims**

1. A process for obtaining the isomeric compound 1-vinyl-3(E)-ethylidene pyrrolidone comprising

(a) providing a 2-phase reaction mixture comprising an organic phase and an aqueous phase, wherein the organic phase is vinylpyrrolidone in an amount of about 25–90% by weight of the reaction mixture, and an aqueous phase which is an aqueous solution containing 2–50 wt. % of a strong base selected from sodium hydroxide, potassium hydroxide and a tetraalkyl ammonium hydroxide, under vigorous agitation, in an inert atmosphere,

(b) heating said reaction mixture at about 120°–170° C. for about 0.5–10 hours to provide a reaction product comprising a top layer which is an organic layer which is predominately vinylpyrrolidone with a lesser amount of said isomeric compound and a bottom layer which is an aqueous layer,

(c) separating the organic layer from the aqueous layer,

(d) fractionally distilling the organic layer under vacuum, and

(e) isolating the desired isomeric compound.

5,342,965

PROCESS FOR PRODUCING BRANCHED FATS

Arno Behr, and Hans-Peter Handwerk, both of Duesseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/02427, § 371 Date Jul. 29, 1993, § 102(e) Date Jul. 29, 1993, PCT Pub. No. WO92/12955, PCT Pub. Date Aug. 6, 1992

PCT Filed Dec. 17, 1991, Ser. No. 94,121

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1991, 4102500

Int. Cl.[5] **C07D** *307/60*

U.S. Cl. 549—233 **20 Claims**

1. A process for the production of branched fats by addition of maleic anhydride onto unsaturated fatty acids or lower alkyl esters thereof, maleic anhydride is reacted with fatty acids having 16 to 24 carbon atoms and 1, 2, 3, 4 or 5 double bonds, or with esters thereof with alcohols having 1 to 4 carbon atoms, in the presence of at least one rhodium or platinum catalyst.

5,342,966

PURIFICATION OF STABLEWATER-SOLUBLE DIOXETANES

Brooks Edwards, and John C. Voyta, both of Cambridge, Mass., assignors to Tropix, Inc., Bedford, Mass.

Division of Ser. No. 244,006, Sep. 16, 1988, Pat. No. 4,931,569. This application May 1, 1990, Ser. No. 517,322

Int. Cl.[5] **C07D** *321/00;* **C07F** *9/12*

U.S. Cl. 549—221 **22 Claims**

1. A method of preparing a purified chemiluminescent water-soluble derivative of 1,2-dioxetane comprising subjecting the corresponding impure 1,2-dioxethane derivative, as an alkali metal or quanternary ammonium salt, at an alkaline pH, to liquid chromatography on an alkali-stable stationary phase, wherein said stationary phase has the chromatographic characteristics of a reversed phase adsorbent, using a mobile phase comprising at least one water-miscible organic solvent for the 1,2-dioxetane derivative, the method being carried out at a concentration of organic or inorganic moieties containing

VOL 1165 ISS 5 AG 30 1994 UMI

unshared pairs of electrons as low as can practically be achieved.

5,342,967

CRYSTAL MODIFICATIONS OF 2-M-TOLUIDINO-3-METHYL-6-DI-N-BUTYLAMINOFLUORAN, PROCESS FOR PREPARING THEREOF, AND RECORDING MATERIALS CONTAINING SAID CRYSTAL MODIFICATIONS

Shigeo Fujita, Osaka; Mansuke Matsumoto, Hyogo; Yojiro Kumagae, Osaka; Sayuri Wada, Osaka, and Shuichi Hashimoto, Osaka, all of Japan, assignors to Yamamoto Chemicals, Inc., Osaka, Japan

Filed Jul. 31, 1992, Ser. No. 922,847

Claims priority, application Japan, Aug. 1, 1991, 3-193246

Int. Cl.[5] C07D *311/88*

U.S. Cl. 549—226 **10 Claims**

1. An α-type crystal modification of 2-m-toluidino-3-methyl-6-di-n-butylaminofluoran that is characterized by characteristic peaks at diffraction angles at 2θ±0.2° of 8.4°, 9.8°, 17.7°, 21.0° and 22.8° on X-ray diffractiometry using Cu-Kα rays.

5,342,968

PROCESS FOR PRODUCING SULFONYLBIS (PHTHALIC ANHYDRIDE)

Stephen P. Brugge; Juergen K. Holzhauer, both of Naperville, and Thomas E. Wolff, Lisle, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jun. 22, 1990, Ser. No. 542,742

Int. Cl.[5] C07D *307/83*

U.S. Cl. 549—241 **39 Claims**

1. A method for producing sulfonyl bis(phthalic anhydride) comprising the steps of:

(a) combining, in an oxidation reactor, a liquid admixture of:

3,3',4,4'-tetramethyl diphenyl sulfone;

an oxidation solvent comprising an aliphatic carboxylic acid having from 2 to 6 carbon atoms per molecule; and

an oxidation catalyst soluble in said oxidation solvent and constituted by cobalt, manganese, zirconium, and bromine, at a reactor temperature in the range of about 275° F. to about 440° F. and at a reactor pressure in the range of about 100 to about 400 psig, and maintaining the resulting admixture at said temperature and pressure in the presence of a molecular oxygen-containing gas until a reaction mixture enriched in sulfonyl bis(phthalic acid) is produced;

(b) recovering sulfonyl bis(phthalic acid) from the resulting reaction mixture by cooling said reaction mixture to crystallize at least some of the sulfonyl bis(phthalic acid) present and separating therefrom solid crystalline sulfonyl bis(phthalic acid); and

(c) dehydrating said so recovered solid sulfonyl bis(phthalic acid) at an elevated temperature in the range of about 370° F. to about 500° F. by maintaining the recovered sulfonyl bis(phthalic acid) at said elevated temperature for a time sufficient to convert said solid sulfonyl bis(phthalic acid) to sulfonyl bis(phthalic anhydride).

5,342,969

RECOVERY OF HYDROXYCARBOXYLIC ACID VALUES FROM POLY(HYDROXYCARBOXYLIC ACIDS)

Thomas M. Ford, Greenville, Del., and James V. Tarnell, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 3, 1993, Ser. No. 25,923

Int. Cl.[5] C07D *319/12*

U.S. Cl. 349—274 **22 Claims**

1. In a process for depolymerizing a poly(alpha-hydroxycarboxylic acid) to its corresponding dimeric cyclic ester, the process comprising:

(i) depolymerizing the poly(alpha-hydroxycarboxylic acid) to its corresponding dimeric cyclic ester by heating the poly(alpha-hydroxycarboxylic acid) in a reaction zone at a temperature and pressure at which the poly(alpha-hydroxycarboxylic acid) is molten;

(ii) forming a vapor product stream containing the dimeric cyclic ester;

(iii) removing the vapor product stream from the reaction zone; and

(iv) recovering the dimeric cyclic ester from the product stream; the

improvement comprising: adding the dimeric cyclic ester to step (i) in the ratio of 0.01 to 0.5 part by weight of dimeric cyclic ester per part by weight of the poly(alpha-hydroxycarboxylic acid).

5,342,970

HYDROSOLUBLE COUMARIN DERIVATIVES, THEIR PREPARATION AND THEIR USE AS AN ENZYME SUBSTRATE OR FOR THE PREPARATION OF SUCH SUBSTRATES

Joseph Chalom, Paris; Christine Griffoul, Rosny Sous Bois; Michel Tod, Margerrey, and Stéphane Reveilleau, Paris, all of France, assignors to Laboratoires Eurobio, France

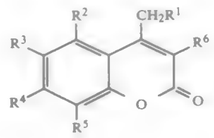
Filed May 22, 1992, Ser. No. 887,767

Claims priority, application France, May 30, 1991, 91 06551

Int. Cl.[5] C07D *311/04*

U.S. Cl. 549—288 **8 Claims**

1. Coumarin compound having the formula:



in which

1°) R^1 represents a substituent of the formulas

$$+OCH_2CH_2)_mOCH_2R^7, \text{ or}$$
$$+OCH(CH_3)CH_2)_mOCH_2R^7$$

wherein m is an integer from 1 to 30 and R^7 represents a hydrogen atom, COOH, $CONHNH_2$, or $COOR^9$, with R^9 being C_1–C_{10} alkyl, NH_4, or $M_{1/v}$ with M being a metal of valence v and R^{10} being C_1–C_{10} alkyl,

2°) R^3 represents a hydrogen atom, OH, or OR^8 with R^8 being C_1–C_{10} alkyl,

R^4 represents a hydrogen atom, NH_2, NHR^8 NR^8R^{10}, OH, or OR^8, and

4°) R^2, R^5, and R^6 each represents a hydrogen atom.

5,342,971

PROCESS FOR THE PREPARATION OF DIBENZOIB,DIPYRANS

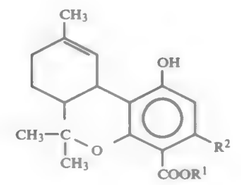
Tony J. Herit, Rivett, Australia; Peter L. MacDonald, Gentilino, Switzerland, and Rodney W. Rickards, Weetangara, Australia, assignors to The Australian National University, Canberra, Australia

Filed Dec. 29, 1992, Ser. No. 998,046

Int. Cl.[5] C07D *311/80*

U.S. Cl. 549—390 **8 Claims**

1. Process for the preparation of a dibenzo[b,d]pyran of the formula:

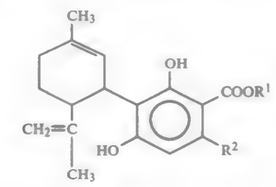


wherein

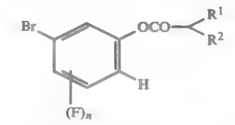
R^1 is a carboxylic acid protecting group and

R^2 is a straight or branched chain alkyl group of 1 to 10 carbon atoms,

which comprises heating a dihydroxybenzoic acid derivative of the formula:

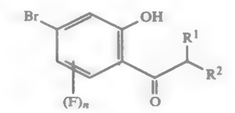


in which R^1 and R^2 are as herein defined, in the presence of a Lewis acid catalyst and an inert non-polar solvent in which the dihydroxybenzoic acid is soluble but in which the Lewis acid catalyst is insoluble or very slightly soluble.



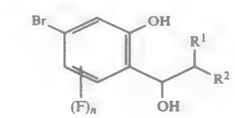
IIIa

by means of a Fries shift in the presence of a Lewis acid, subsequently reducing the resultant 2-acylphenol of the formula IVa



IVa

and cyclicizing the resultant 2-hydroxybenzyl alcohol of the formula IIa



IIa

to give the 2,2-disubstituted 2,3-dihydrobenzofuran Ia wherein the cyclization of the 2-hydroxybenzyl alcohol of the formula IIa is carried out in an inert organic solvent in the presence of an acidic ion exchanger resin and in the presence of an inert inorganic desiccant.

5,342,972

PREPARATION OF 6-BROMO-2,2-DIALKYL-2,3-DIHYDROBENZOFURANS WHICH ARE OPTIONALLY FLUORO-SUBSTITUTED

Albrecht Harreus, Ludwigshafen; Bernd Wolf, Fussgoenheim, and Jochen Wild, Ruppertsberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

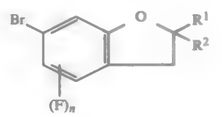
Division of Ser. No. 956,909, Oct. 2, 1992, Pat. No. 5,229,530, which is a division of Ser. No. 750,347, Aug. 27, 1991, Pat. No. 5,200,532. This application Feb. 19, 1993, Ser. No. 19,685

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1990, 4027573

Int. Cl.[5] C07D *307/79*

U.S. Cl. 549—462 **1 Claim**

1. A process for the preparation of a 2,2-disubstituted 2,3-dihydrobenzofuran of the formula Ia



Ia

where

R^1 and R^2, independently of one another, are C_1–C_6-alkyl, and

n is 0 or 1, which comprises rearranging a phenol ester of the formula IIIa

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5,342,973

PROCESS FOR PREPARING SILVER SALT SOLUTIONS

Mitchell Becker, Teaneck, and Kindtoken H. Liu, Park Ridge, both of N.J., assignors to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation of Ser. No. 46,680, May 7, 1987, abandoned, which is a division of Ser. No. 832,099, Feb. 24, 1986, Pat. No. 4,663,303. This application May 13, 1991, Ser. No. 700,894

The portion of the term of this patent subsequent to May 5, 2004, has been disclaimed.

Int. Cl.[5] B01J *23/50*

U.S. Cl. 549—534 **20 Claims**

1. A process for preparing ethylene oxide comprising the steps of:

(a) mixing a least a stoichiometric amount of a silver compound with a unit amount of a neo-acid having 7 or more carbon atoms in at least sufficient solvent to dissolve the silver salt to be formed;

(b) reacting the mixture of (a) at the boiling temperature of said mixture under a pressure in the range of 0.01 to 0.08 for a period of time sufficient to react at least 90% of the neo-acid with said silver compound;

(c) impregnating a porous support having a surface area of about 0.2 to 1.5 M^2/gm with the reacted mixture of (b);

(d) activating the impregnated support of (c) by heating for a period of time sufficient to produce an active ethylene oxide catalyst; and

(e) passing ethylene and molecular oxygen in the vapor phase over said active ethylene oxide catalyst at reaction conditions sufficient to react at least a portion of said ethylene with said molecular oxygen to produce ethylene oxide.

VOL 1165 ISS 5 AG 30 1994 UMI

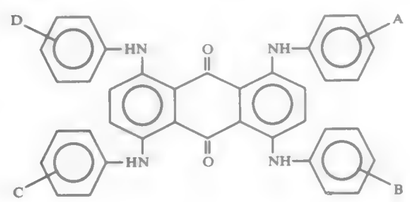
5,342,974

HALOGENATED ANTHRAQUINONE AND THEIR USE AS NEAR INFRARED RAYS ABSORBING OPTICAL FILTERS

Tsukasa Ohyama; Shizuo Kuroda; Keisuke Takuma, and Hiroshi Aiga, all of Fukuoka, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 28, 1988, Ser. No. 291,028
Claims priority, application Japan, Dec. 28, 1987, 62-330163
Int. Cl.[5] C07C *50/20*
U.S. Cl. 552—259 12 Claims

1. A method for preparing a high purity an anthraquinone represented by the formula



wherein A, B, C and D are a hydrogen atom, a halogen atom, lower alkyl, cycloalkyl, lower alkoxy, trifluoromethyl, phenoxy or hydroxyl, at least one thereof being a halogen atom, which comprises the steps of reacting 1,4,5,8-tetrachloroanthraquinone of at least 95% purity with a monohalogenated aniline or a mixture of at least one molar equivalent thereof and another aniline of the formula



wherein R is a hydrogen atom, lower alkyl, cycloalkyl, lower alkoxy, trifluoromethyl, phenoxy or hydroxyl, in the presence of a salt of an aliphatic carboxylic acid, a benzyl alcohol derivative and an amount of base effective to react with the ionic halogen thus produced, at a temperature 80° to 170° C. for a period of time sufficient for the reaction to go to completion; and isolating the desired reaction product from the reaction mixture by at least one of cooling and dilution with a liquid in which the desired reaction product is at most sparingly soluble.

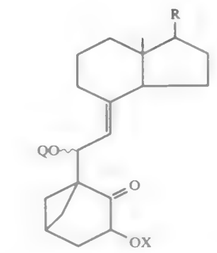
5,342,975

19-NOR-VITAMIN D COMPOUNDS

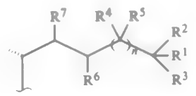
Hector F. DeLuca, Deerfield; Heinrich K. Schnoes; Kato L. Perlman, both of Madison, all of Wis.; Rafal R. Sicinski, Warsaw, Poland, and Jean M. Prahl, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 960,241, Oct. 13, 1992, Pat. No. 5,246,925, which is a continuation of Ser. No. 879,706, May 5, 1992, abandoned, which is a continuation of Ser. No. 557,400, Jul. 23, 1990, abandoned, which is a division of Ser. No. 481,354, Feb. 16, 1990, Pat. No. 5,237,110, which is a continuation-in-part of Ser. No. 321,030, Mar. 9, 1989, abandoned. This application Sep. 17, 1993, Ser. No. 123,485
Int. Cl.[5] C07C *401/00*
U.S. Cl. 552—653 5 Claims

1. Compounds having the formula



where R is a side chain selected from the group consisting of alkyl, hydrogen, hydroxyalkyl, fluoroalkyl and a side chain of the formula



wherein R^1 represents hydrogen, hydroxy or O-acyl, R^2 and R^3 are each selected from the group consisting of alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group—$(CH_2)_m$—where m is an integer having a value of from 2 to 5, R^4 is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R^5 is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, or, R^4 and R^5 taken together represent double-bonded oxygen, R^6 and R^7 are each selected from the group consisting of hydrogen, hydroxy, O-acyl, fluorine and alkyl, or, R^6 and R^7 taken together form a carbon-carbon double bond, and wherein n is an integer having a value of from 1 to 5 and wherein the carbon at any one of positions 20, 22, or 23 in the side chain may be replaced by an O atom, Q represents an alkyl and X is selected from the group consisting of hydrogen, acyl, alkylsilyl and alkoxyalkyl.

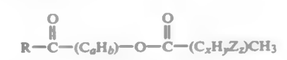
5,342,976

SKIN TREATMENT COMPOSITION

Paul A. Bowser, Merseyside, England; Albert Froling, Vlaardingen, Netherlands; Lammert Heslinga, Maassluis, Netherlands; Udo M. T. Houtsmuller, Vlaardingen, Netherlands; Diederik H. Nugteren, Rhoon, Netherlands; Hendrik J. J. Pabon, Louise de Colignylaan, Netherlands, and Colin Prottey, Merseyside, England, assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Division of Ser. No. 541,993, Jun. 21, 1990, Pat. No. 5,202,357, which is a continuation-in-part of Ser. No. 505,005, Jun. 16, 1983, Pat. No. 4,950,688. This application Oct. 27, 1992, Ser. No. 966,771
Claims priority, application United Kingdom, Jun. 16, 1982, 8217413; Jun. 16, 1982, 8217414; Jul. 14, 1982, 8220442
Int. Cl.[5] C07G *11/00;* C09F *7/00;* C11C *3/00*
U.S. Cl. 554—36 6 Claims

1. A synthetic or purified ester having the structure (40):



(40)

where
R is selected from the group consisting of HO—, N-sphingosyl and N-(glycosylsphingosyl);
z is —OH, or an epoxy oxygen;
a is an integer of from 7 to 49;
b is an integer of from 10 to 98;

x is an integer of from 16 to 20;
y is an integer of from 24 to 36; and
z is O, or an integer of from 1 to 4;
the substructure



being an all-cis n-6,9 fatty acid.

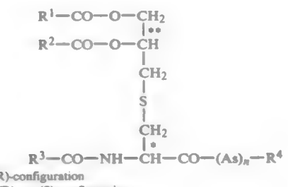
5,342,977

AMINOSULFONIC ACID DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Gerhard Baschang, Bettingen, and Albert Hartmann, Grenzach, both of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Filed Dec. 17, 1992, Ser. No. 991,938
Claims priority, application Switzerland, Dec. 19, 1991, 3776/91
Int. Cl.[5] C07C *233/45*
U.S. Cl. 554—48 10 Claims

1. A pharmaceutically acceptable salt of a aminosulfonic acid derivative of formula I



(I)

*(R)-configuration
**(R)- or (S)-configuration

wherein
R^1, R^2 and R^3 are each independently of the others an aliphatic hydrocarbon radical having from 7 to 21 carbon atoms,
n is 0 or 1,
As is the amidically bonded residue of a (D)- or (L)-amino acid or of a (D)- or (L)-amino acid derivative from the group consisting of Gly, Ala, Ser, Thr, Asp, Asp(R^5), Glu, Glu(R^5), Gla, Gla(R^5) and Gla(R^5)$_2$, and
R^4 and R^5 are each independently of the other the amidically bonded radical of an unsubstituted or carboxy-substituted ω-amino-C_2–C_3alkanesulfonic acid.

5,342,978

ORGANIC PHOSPHITE ESTER COMPOSITIONS CONTAINING HINDERED PIPERDINYL LIGHT STABILIZERS

William P. Enlow, Belpre, Ohio, and Leo L. Valdiserri, Roswell, Ga., assignors to General Electric Company, Pittsfield, Mass.

Filed May 24, 1993, Ser. No. 66,695
Int. Cl.[5] C07F *9/02*
U.S. Cl. 554—78 9 Claims

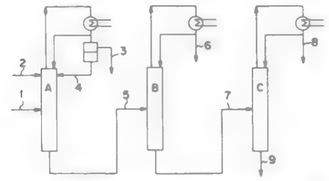
1. An organo phosphite ester composition comprising:
(a) organic phosphite ester present at a level of from 80 weight percent to 99.9 weight percent based on the total weight of the composition; and
(b) a hindered piperidinyl light stabilizer in an amount sufficient to improve the hydrolytic stability of the phosphite ester, said piperidinyl light stabilizer being present at a level of from 0.1 weight percent to 20 weight percent based on the total weight of the composition.

5,342,979

PRODUCTION OF TERTIARY CARBOXYLIC ACIDS

Wolfgang H. E. Mueller, and Manfred Hartmann, both of Marl, Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 648,700, Jan. 31, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,555
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1990, 4003232
Int. Cl.[5] C11B *3/00*
U.S. Cl. 554—206 21 Claims



1. In a process conducted in a reaction zone for the production of tertiary carboxylic acids from carbon monoxide, at least one olefin, and water in contact with an acid catalyst, the improvement which comprises removing byproducts comprising oligomers of the starting material olefin(s) and/or alcohols and/or esters and/or carbonyl compounds and/or paraffins and/or other olefins from the resultant reaction mixture by azeotropic rectification with an alkanediol as an entrainer.

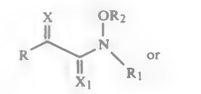
5,342,980

FUNGICIDAL AGENTS

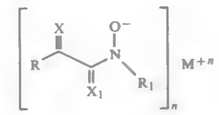
Gregory J. Haley, Langhorne, assignor to American Cyanamid Company, Wayne, N.J.

Filed Dec. 30, 1992, Ser. No. 998,499
Int. Cl.[5] C07F *1/08*
U.S. Cl. 556—117 20 Claims

1. A compound having the structural formula



or



wherein
X and X_1 are each independently O or S;
R is C_1–C_6 alkyl optionally substituted with one or more halogen atoms, or
C_3–C_{12} cycloalkyl or polycycloalkyl optionally substituted with one or more C_1–C_4 alkyl groups;
R_1 is C_3–C_8 cycloalkyl,
C_1–C_8 alkyl optionally substituted with one or more halogen atoms,
benzyl optionally substituted with one or more halogen, CN, NO_2, C_1–C_4 alkyl or C_1–C_4 haloalkyl groups;
phenyl optionally substituted with one or more halogen, CN, NO_2, C_1–C_4 alkyl or C_1–C_4 haloalkyl groups;
R_2 is hydrogen or

VOL 1165 ISS 5 AG 30 1994 UMI



R_3 is hydrogen,
OR_4,
NR_5R_6,
C_1–C_6 alkyl optionally substituted with one or more halogen atoms,
C_3–C_8 cycloalkyl optionally substituted with one or more halogen atoms,
C_2–C_6 alkenyl optionally substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more halogen, CN, NO_2, C_1–C_4 alkyl, C_1–C_4 alkoxy or C_1–C_4 haloalkyl groups;
R_4 is C_1–C_6 alkyl;
R_5 and R_6 are each independently hydrogen, C_1–C_6 alkyl, or phenyl optionally substituted with one or more halogen, CN, NO_2, C_1–C_4 alkyl or C_1–C_4 haloalkyl groups;
n is an integer of 1, 2, 3 or 4; and
M is an alkali metal, an alkaline earth metal, a transition metal other than one selected from the lanthanides, boron or aluminum.

5,342,981

SUBSTANTIALLY ISOMERICALLY PURE HEXANE OR HEXENE COMPOUNDS

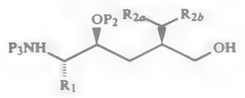
Daniel J. Plata, Waukegan; Anthony K. L. Fung; Howard E. Morton, both of Gurnee; Robert Leanna, Mundelein; William R. Baker, Libertyville, all of Ill., and John K. Pratt, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 795,415, Nov. 20, 1991, Pat. No. 5,229,518, which is a continuation-in-part of Ser. No. 665,635, Mar. 6, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 15,186

Int. Cl.[5] *C07F 7/02*

U.S. Cl. 556—420 **8 Claims**

1. The substantially isomerically pure compound of the formula:



wherein P_2 is an O-protecting group, P_3 is an N-protecting group, R_{2a} is hydrogen or loweralkyl, R_{2b} is hydrogen, loweralkyl, cycloalkyl or phenyl and R_1 is cycloalkyl, cycloalkylalkyl, phenyl or benzyl.

5,342,982

SILICON-CONTAINING ORGANIC COMPOUNDS AND PROCESS FOR PREPARING SAME

Masaki Minami, Yokohama; Keizo Ikai, Kanagawa, and Mitsuo Matsuno, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

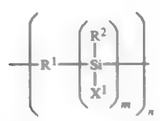
Filed Jun. 24, 1993, Ser. No. 82,033

Claims priority, application Japan, Jun. 25, 1992, 4-206923

Int. Cl.[5] *C07F 7/08*

U.S. Cl. 556—431 **6 Claims**

1. A silicon-containing organic compound represented by the following general formula [1]:



(I)

where R^1 is a π conjugated type divalent organic group having 2 to 30 carbon atoms, R^2 is a hydrocarbon group having 1 to 30 carbon atoms, X^1 is a halogen atom, m and n satisfy the conditions of $1 \leqq m \leqq 2$ and $n \geqq 2$, respectively.

5,342,983

ORGANIC SILICON COMPOUNDS

Toshio Yamazaki; Hideki Sugahara; Shoji Ichinohe, all of Annaka; Toshinobu Ishihara, and Toharu Kubota, both of Joetsu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

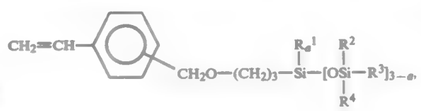
Filed Mar. 5, 1993, Ser. No. 26,792

Claims priority, application Japan, Mar. 5, 1992, 4-083438

Int. Cl.[5] *C07F 7/08, 7/10, 7/18*

U.S. Cl. 556—445 **10 Claims**

1. Organic silicon compounds of the chemical formula (I):



(I)

wherein
R^1 is a monovalent hydrocarbon group of 1 to 8 carbon atoms;
R^2, R^3 and R^4 are independently either a monovalent hydrocarbon group of 1 to 8 carbon atoms or a siloxyl group of the formula



wherein R^5, R^6 and R^7 are independently a monovalent hydrocarbon group of 1 to 8 carbon atoms; and
a is either 0, 1 or 2,
the monovalent hydrocarbon groups of R^1, R^2, R^3, R^4, R^5, R^6 and R^7 being optionally substituted by halogen, cyano, amino, nitro, glyceryl or mercapto group(s).

5,342,984

TRIORGANOMONOHALOGENOSILANE

Toharu Kubota, and Mikio Endo, both of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 83,288

Claims priority, application Japan, Jul. 3, 1992, 4-176527

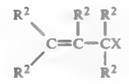
Int. Cl.[5] *C07F 7/08*

U.S. Cl. 556—477 **6 Claims**

1. A method for preparing a triorganomonohalogenosilane comprising the step of reacting a triorganomonohydrosilane represented by the following general formula (I):

(I)

(wherein the substituents R^1's may be identical to or different from one another and each represents a monovalent organic group with a hologenated allyl compound represented by the following general formula (II):



(II)

wherein the substituents R^2's may be identical to or different from one another and each represents a hydrogen atom or a monovalent alkyl group and X represents a chlorine, bromine or iodine atom in the presence of metal palladium, or a salt or complex of palladium to replace the hydrogen atom directly bonded to the silicon atom of the triorganomonohydrosilane with a halogen atom.

5,342,985

ORGANIC DERIVATIVES OF RHENIUM OXIDES AND THEIR PREPARATION AND USE FOR THE METATHESIS OF OLEFINS

Wolfgang A. Herrmann, Freising; Werner Wagner, Munich, and Ursula Volkhardt, Freising, all of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 320,404, Mar. 8, 1989, abandoned. This application Aug. 20, 1990, Ser. No. 569,614

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1988, 3841733; Jan. 31, 1989, 3902787; Mar. 28, 1990, 4009910

Int. Cl.[5] *C07F 7/08, 7/18*

U.S. Cl. 556—482 **17 Claims**

1. A process for the metathesis of olefins which comprises reacting an olefin of the formula

$$YCZ{=}CZ{-}(CX_2)_nR^2 \quad (II)$$

wherein n is an integer from 1 to 28,
X represents H or F,
Y represents H or alkyl having from 1 to 10 carbon atoms and
Z represents H or a non-aromatic hydrocarbon group having from 1 to 6 carbon atoms and
R^2 represents H, alkyl, halogen, $COOR^3$ or OR^4, wherein R^3 and R^4 represent alkyl having from 1 to 15 carbon atoms or phenyl which is unsubstituted or contains from 1 to 3 substituents or wherein R^4 is trialkylsilyl $R^5{}_3Si$, wherein R^5 represents alkyl having from 1 to 5 carbon atoms, at a catalyst comprising an oxidic carrier charged with a rhenium compound of the general formula $R^1{}_aRe_bO_c$, wherein a is an integer from 1 to 6, b is an integer from 1 to 4 and c is an integer from 1 to 14 and the sum of a, b and c conforms to the 5- to 7-valency of rhenium with the proviso that c does not exceed 3.b, and wherein R^1 represents alkyl having from 1 to 9 carbon atoms, cycloalkyl having from 5 to 10 carbon atoms or aralkyl having from 7 to 9 carbon atoms and wherein R^1 is unsubstituted or at least partially fluorinated, said compounds containing not more than three compounds of more than 6 carbon atoms per rhenium atom and containing a hydrogen atom bound to the carbon atom in a α-position to the rhenium atom wherein the reaction is carried out in the absence of $AlCl_3$.

5,342,986

FLUORINATED CARBOXYLIC ACID ESTERS OF PHOSPHONOCARBOXYLIC ACIDS AND PHOSPHINOCARBOXYLIC ACIDS AND USE THEREOF

Klaus Pohmer, Köln; Rainer Weber, Odenthal; Hans-Dieter Block, Leverkusen; Cornelia Dörzbach-Lange, Körzbach-Bacben, and Hans-Heinrich Moretto, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

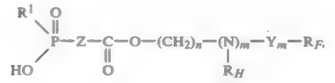
Filed Nov. 24, 1993, Ser. No. 157,820

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1992, 4241478

Int. Cl.[5] *C07F 9/30, 9/38*

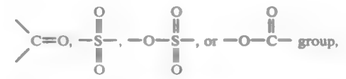
U.S. Cl. 558—45 **6 Claims**

1. Fluoroalkyl group-containing carboxylic acid esters of phosphonocarboxylic acids or phosphinocarboxylic acids of the general formula (I)

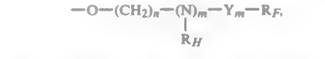


(I)

wherein
R^1 is a hydroxyl group, a methyl group, an ethyl group or a phenyl radical,
R_F is a branched or straight-chain fluoroalkyl radical having from 1 to 18 carbon atoms or a fluorinated, branched or straight-chain monoether or polyether having from 1 to 18 carbon atoms,
R_H is a branched or straight-chain alkyl radical having from 1 to 10 carbon atoms,
Y is a



group,
Z is a straight or branched-chain alkylene radical having from 1 to 20 carbon atoms, or a straight or branched-chain alkylene radical having from 1 to 20 carbon atoms interrupted by amino groups which may themselves be substituted by C_1- to C_{10}—alkyl groups or aryl groups, or a straight or branched-chain alkylene radical having from 1 to 20 carbon atoms, which is substituted by one or more groups of the structure $-COR^2$, or a straight or branched-chain alkylene radical having from 1 to 20 carbon atoms, which is substituted by one or more groups of the structure $-PO_3HR^1$, wherein
R^1 has the same meaning as above,
m is O or 1,
n is an integer from 0 to 6 and
R^2 is a hydroxyl radical or a radical of the structure



or a straight or branched-chain alkoxy radical having from 1 to 20 carbon atoms, wherein n, m, R_H, R_F and Y have the same meanings as above, and salts of said fluoroalkyl group-containing carboxylic acid esters.

5,342,987

ALKENYL ALKANOATE PRODUCTION

William J. Bartley, Charleston, W. Va., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 793,129, Nov. 18, 1991, Pat. No. 5,179,057, which is a continuation-in-part of Ser. No. 696,215, May 6, 1991, Pat. No. 5,185,308. This application Sep. 28, 1992, Ser. No. 952,280

Int. Cl.[5] *C07C 67/05*

U.S. Cl. 560—245 **1 Claim**

1. A process for producing an alkenyl alkanoate which comprises reacting an alkene, an alkanoic acid and an oxygen-containing gas in the presence of a catalytic amount of a catalyst that is useful in catalyzing the reaction of an alkene, an alkanoic acid and an oxygen-containing gas to produce an alkenyl alkanoate and that comprises support particles which are capable of exchanging cations and which are impregnated with precipitated and reduced palladium and gold and a potassium promoter, any sodium in the catalyst being present in an amount no more than 0.3 weight precent based on the weight of the catalyst.

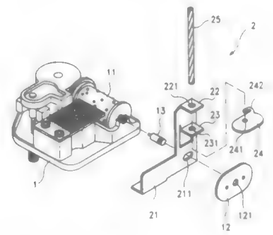
VOL 1165 ISS 5 AG 30 1994 UMI

5,342,988

STRUCTURE OF MUSIC BOX

Feng-Hsiang Hsu, Fl. 7, No. 9, Lane 100, Ho Chiang St., and Ching-Fa Huang, Fl. 2, No. 4, Lane 90, Sec. 1, Chih Yuan I Rd., both of Taipei, Taiwan

Filed Apr. 21, 1993, Ser. No. 49,357
Int. Cl.[5] G10F *1/06*
U.S. Cl. 84—95.1 4 Claims



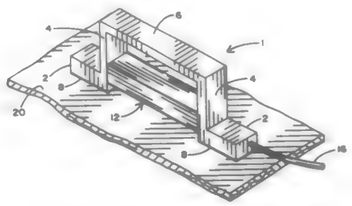
1. A music box comprising:
a pinned barrel having a central shaft in the center thereof, and produces music when driven by a clock-work;
an extension axle longitudinally coupled to said central shaft of the pinned barrel;
a cam having a center hole fits with the opposite end of said extension axle;
an upright frame is fastened to the music box at one side, having an opening, through which said extension axle extends and connects to said cam, an upper horizontal plate at the top which has a through hole, and a lower horizontal plate between said upper horizontal plate and said opening, which has a through hole aligned with said through hole on said upper horizontal plate; and
a round rod is inserted into said through holes and fitted into a moving device, said moving device is located above said cam.

5,342,989

PLANAR WAVE TRANSDUCER ASSEMBLY

Lester M. Barcus, Huntington Beach, Calif., assignor to BBE Sound, Inc., Huntington Beach, Calif.

Filed May 14, 1993, Ser. No. 62,116
Int. Cl.[5] G01H *1/00, 3/00*
U.S. Cl. 84—730 12 Claims



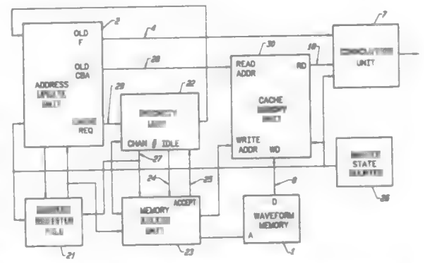
1. A planar wave transducer assembly to be connected to a planar surface and comprising:
first and second legs;
means for attaching said first and second legs to the planar surface so that said legs are spaced from one another, one of said legs moving along said planar surface relative to the other leg in response to wave motion produced in the planar surface;
means extending between said first and second legs for sensing a compressive force applied thereto when said one leg moves towards said other leg; and
means for converting the compressive force into an electrical signal representative of said planar wave motion.

5,342,990

DIGITAL SAMPLING INSTRUMENT EMPLOYING CACHE-MEMORY

David P. Rossum, Aptos, Calif., assignor to E-mu Systems, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 462,392, Jan. 5, 1990, Pat. No. 5,111,727. This application May 11, 1992, Ser. No. 882,178
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] G10H *7/10, 7/12*
U.S. Cl. 84—603 11 Claims



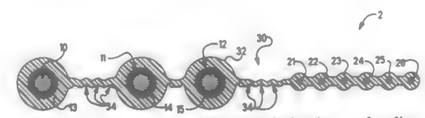
1. A digital sampling instrument for the multichannel Nth order interpolative playback as output samples of digital audio data samples stored in a waveform memory comprising:
coefficient logic means for generating N coefficients for each channel for each of said output samples,
cache memory means for storing at least N waveform memory data samples for each channel,
convolution means for computing a sum of N products of the contents of said cache memory means times said coefficients for each of several ones of said channels, and
means for outputting said sum of products for each of said channels.

5,342,991

FLEXIBLE HYBRID BRANCH CABLE

Wills J. Xu, Johnston, R.I., and Michael W. Bricker, Brodbecks, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 3, 1993, Ser. No. 25,536
Int. Cl.[5] H01B *7/08*
U.S. Cl. 174—117 R 26 Claims



1. An improvement in a ribbon cable having a plurality of conductors parallely maintained in a spaced side-by-side relationship by a flexible insulative binder ribbon, said binder ribbon enveloping each of said conductors and bridging adjacent conductors, the improvement comprising:
a pattern of corrugations formed in at least one bridging section of said binder ribbon to facilitate folding of said binder ribbon for further enclosure within a tubular outer casing.

17. A bundled cable comprising:
a plurality of conductors;

VOL 1165 ISS 5 AG 30 1994 UMI

a binder ribbon for binding said plurality of conductors in a parallel side-by-side relationship, the binder ribbon comprising a flexible insulative ribbon enveloping each of said conductors and bridge adjacent conductors, and said binder ribbon further having a pattern of corrugations formed in at least one bridging section thereof to facilitate folding of said binder ribbon; and

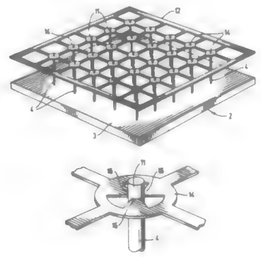
a tubular outer casing around a folded length of said binder ribbon.

5,342,992

PIN GRID ARRAY PACKAGE WITH PIN THROUGH PLATING

Kazuyoshi Noto, San Diego, Calif., assignor to Kyocera Internatinoal, Inc., San Diego, Calif.

Filed Oct. 11, 1991, Ser. No. 775,230
Int. Cl.[5] H01L *23/02*
U.S. Cl. 174—52.4 6 Claims



1. A pin grid array package assembly comprising:

a. a pin grid array package for housing an electronic device therein;

b. a plurality of conductive leads, each lead having a first end disposed within the pin grid array package and a second end disposed outside of the pin grid array package; and

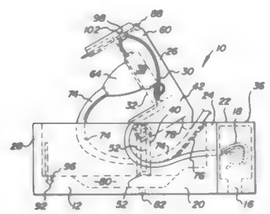
c. an electrically conductive plate detachably mounted near the second ends of the leads wherein the plate further comprises a plurality of pin-clasp contacts, each for friction-fitting around the second end of a corresponding one of the leads, thereby providing electrical continuity to each lead.

5,342,993

WEATHER-PROOF FLOOR OUTLET AND METHOD

Steven L. Siems, 1491 SW. 21st Ave., Ft. Lauderdale, Fla. 33314

Filed Jan. 4, 1993, Ser. No. 12
Int. Cl.[5] H02G *3/12*
U.S. Cl. 174—48 12 Claims



1. An electric outlet apparatus for outdoor use, comprising:

a housing having a top portion and an opening in said top portion,

a receptacle panel structure having a first face and including a receptacle circuit,

a receptacle mounted in said first face of said receptacle panel structure,

means for movably connecting said panel to said housing so that said panel can move between a position wherein said panel first face is directed essentially downward inside said housing and an open position wherein said panel extends out of the top opening,

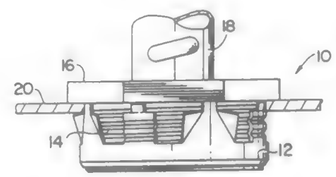
a substantially air tight compartment defined below said first face of said receptacle panel structure for preventing water collected within said housing from rising to meet said receptacle panel structure.

5,342,994

ELECTRICAL CONNECTOR FOR MOUNTING TO ELECTRICAL ENCLOSURES

Edward E. Pratesi, Middletown, Conn., assignor to Bridgeport Fittings, Inc., Stratford, Conn.

Continuation of Ser. No. 618,157, Nov. 26, 1990, Pat. No. 5,189,258. This application Jan. 29, 1993, Ser. No. 11,280
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] H02G *3/22*
U.S. Cl. 174—65 R 7 Claims



1. An electrical connector for mounted, interlocked secure, engagement with an electrical wire conduit/cable and for securely and safely mounting the electrical wire conduit/cable in an opening formed in an electrical box, housing, or enclosure, said connector comprising:

A. a first member incorporating

a. cylindrically shaped body portion having

1. an outer surface diameter smaller than the diameter of the opening in the box housing or enclosure, and comprising threads formed thereon, and

2. an inner diameter dimensioned for peripherally surrounding interconnected engagement with the outer peripheral surface of the electrical wire conduit/cable for positioning and securely mounting said electrical wire conduit/cable to the electrical box, housing, or enclosure, and

b. a first flange extending from the outer diameter surface of the body portion and comprising a diameter greater than the diameter of the opening, and

B. a second locking member comprising

a. a body

1. constructed for secure, substantially peripheral surrounding engagement with the cylindrical body portion of the first member, and

2. comprising a hollow, substantially cylindrical shape formed with free juxtaposed, spaced, cooperating edges each being movable relative to the other, for enabling the overall diameter of the second locking member to be adjustable for secure, mounted interengagement about the body portion of the first member, and

b. a plurality of clamping tabs outwardly extending from the body and constructed for passing through the opening in the housing when moved in a first direction and fastening said connector to the housing when force is applied to move the connector in the opposite direction; and

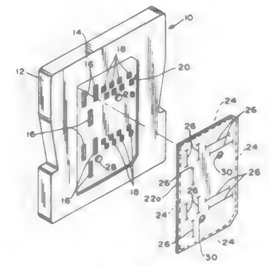
C. holding means constructed for maintaining the second locking member securely mounted to the first member and comprising engagement tabs formed on the body of the second locking member and constructed for mating, locking interengagement with said threads to provide the frictional interengagement therewith, thereby assuring secure, retained, substantially peripheral surrounding engagement of the second locking member with the first member.

5,342,995

PROTECTIVE COVER SYSTEM FOR ELECTRICAL RECEPTACLES

Joseph D. Comerci, Elmhurst; Mark M. Data, Bolingbrook, and Robert DeRoos, Naperville, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 790,955, Nov. 12, 1991, abandoned. This application Sep. 16, 1993, Ser. No. 122,874
Int. Cl.[5] H01R *13/44*
U.S. Cl. 174—67 10 Claims



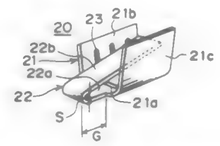
1. In an electrical receptacle having a generally flat front face with openings to receive prongs of an electrical plug, the improvement comprising a protective cover having an adhesive backing for adhering to the front face of the receptacle and aperture means for alignment with the openings, locating projections separate from said openings protruding from and integral with the receptacle front face, said protective cover having locating holes therein corresponding to locating projections, said locating holes registering with the locating projections on the receptacle front face to properly locate the cover thereon.

5,342,996

INTER-CONNECTING TERMINAL

Akira Ito, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Nov. 20, 1992, Ser. No. 979,259
Claims priority, application Japan, Nov. 26, 1991, 3-096976[U]
Int. Cl.[5] H01R *4/18*
U.S. Cl. 174—84 C 5 Claims



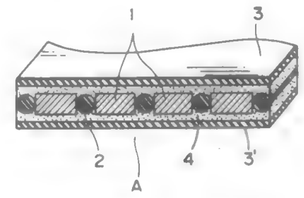
1. An inter-connecting terminal comprising a barrel having a U-shaped sectional configuration with side walls and a bottom, into which a core wire exposed at an intermediate portion of a first electric wire and a core wire exposed at an end of a second electric wire are inserted, said side walls of said barrel being pressed against said core wires inserted into said barrel so as to fix and contact said barrel with said core wires, further comprising a V-shaped stopper formed integrally with said terminal and extending from a front end of said bottom of said barrel and bent backwardly, such that said end portion of the core wire of said second electric wire is inserted into said V-shaped stopper, wherein said stopper extends backwardly into a space surrounded with the side walls of said barrel so that the core wire of said first electric wire is inserted into a space above said stopper and between said side walls; and the core wire of said second electric wire is inserted into the space between said stopper and said bottom.

5,342,997

TAPE WIRE AND A METHOD OF MANUFACTURE THEREOF

Toshiaki Kanno; Akira Ikegaya, and Tsuneyuki Horiike, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jan. 6, 1993, Ser. No. 1,557
Claims priority, application Japan, Jan. 31, 1992, 4-016493
Int. Cl.[5] H01B *7/08, 13/06*
U.S. Cl. 174—117 FF 6 Claims



1. A tape wire comprising:

a plurality of parallelly arranged conductors;

insulating tapes holding the conductors therebetween from both the upper and lower sides;

an adhesive layer interposed between the facing insulating tapes; and

insulating members almost circular or oval in cross section, the insulating members each having the outer diameter almost equal to the thickness of the conductor, the insulating members being arranged in such a way as to be alternated with the conductors.

6. A method of manufacturing a tape wire comprising the steps of:

feeding to press-forming rollers a plurality of parallelly arranged conductors, insulating members and two insulating tapes in such a way that the insulating members are alternated with the conductors, the insulating members being almost circular or oval in cross section and having an outer diameter almost equal to the thickness of the conductors;

holding the conductors and the insulating members between the two insulating tapes from both sides thereof by the press-forming rollers; and

pressing the two insulating tapes against the conductors and the insulating members by the press-forming rollers, with an adhesive layer interposed between the two opposing insulating tapes.

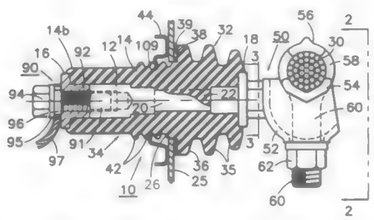
VOL 1165 ISS 5 AUG 30 1994 UMI

5,342,998

TERMINAL BUSHING FOR ELECTRICAL APPARATUS COMPRISING A POLYMERIC SHELL MOLDED ABOUT A CENTRAL CONDUCTOR

Michael G. Nolte, Hickory; Gary D. Davis, Taylorsville; Ronny D. Jergenson, Hickory; Robert W. Schen, Newton, and Timothy G. Tillery, Hickory, all of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1992, Ser. No. 862,449
Int. Cl.[5] H01B *17/26*
U.S. Cl. 174—152 R 9 Claims



1. A terminal bushing for electrical apparatus, comprising:
(a) an elongated central conductor made by a powder metallurgy process from metal particles sintered together at elevated temperatures after being compacted under pressure,
(b) a tubular shell of polymeric electrical insulating material molded under high pressure about said central conductor and forming a joint with said central conductor that has a high resistance to leakage along said conductor, and in which:
(c) the central conductor includes at opposite ends of said molded tubular insulating shell mold-interface regions that are formed by said powder metallurgy process and are located to be adapted to interface with and to fit tightly within a mold used for molding said insulating shell,
(d) said central conductor at opposite ends of said molded tubular insulating shell further comprises flanges having outer peripheries that constitute said mold-interface regions.

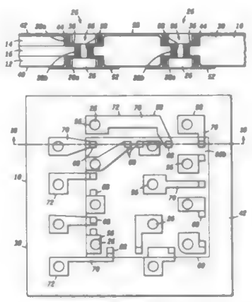
5,342,999

APPARATUS FOR ADAPTING SEMICONDUCTOR DIE PADS AND METHOD THEREFOR

John K. Frei, and Kenneth Brice-Heames, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1992, Ser. No. 994,380
Int. Cl.[5] H05K *1/09*
U.S. Cl. 174—266 9 Claims

1. An apparatus for attachment to a semiconductor die having N bond-pads, where N is an integer number, comprising:
an insulating substrate having opposed first and second sides and N holes extending there between, wherein portions of said substrate protrude into said holes in central regions thereof, so that said central regions of said holes have smaller diameters than regions of said holes adjacent said first and second surfaces;
N first conductive pads positioned substantially in a first predetermined pad constellation wherein said N first pads of the constellation correspond in location with said N bond-pads of the semiconductor die, said first pads residing on said first side of said substrate;
N electrically conductive regions electrically coupled to corresponding ones of said first pads, said electrically conductive regions extending through said holes in said substrate between said first and second sides, and substantially conformally covering said portions of said substrate which protrude into said holes; and
N second conductive pads positioned in a second predetermined pad constellation different from said first pad constellation, said second pads being formed on said second side of said substrate and electrically coupled to corresponding ones of said electrically conductive regions; and,
wherein said electrically conductive regions are formed of metal, a first portion of said metal having a first composition extending from said first surface into said holes and onto said protrusions and a second portion of said metal having a second composition different than said first composition extending into said holes from said second surface and onto said protrusions.

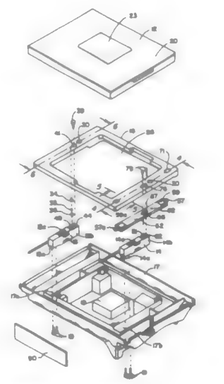


5,343,000

MULTIPLE LOAD CELL WEIGHING APPARATUS

Neil C. Griffen, Westerville, and James F. Million, Worthington, both of Ohio, assignors to Mettler-Toledo, Inc., Worthington, Ohio

Filed Dec. 22, 1992, Ser. No. 994,938
Int. Cl.[5] G01G *19/00, 21/24*
U.S. Cl. 177—145 6 Claims



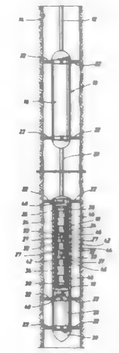
1. Weighing apparatus comprising,
a base,
first and second load cells spaced apart and supported by said base, each load cell having a fixed end fastened rigidly to said base and a free end and having a longitudinal axis passing through said fixed and free ends and a transverse axis normal to said longitudinal axis,
weight receiving means for receiving a load to be weighed and having a first side and a second side,
first load transmitting means connecting the first side of said weight receiving means to the free end of said first load cell to transmit a portion of the weight of said load thereto while preventing the transmission of moments about either of said longitudinal and transverse axes, and
second load transmitting means including an elongated member connecting the second side of said weight receiving means to the free end of said second load cell to transmit a portion of the weight of said load thereto while restricting the movement of the weight receiving means in the horizontal and vertical directions, said elongated member including mating surfaces each freely rotatable with respect to the other about an axis parallel to only one of said longitudinal or transverse axes to allow the transmission of moments to said second load cell about one of said axes while preventing the transmission of moments about the other of said axes.

5,343,001

ACOUSTIC MULTI-MODE LOGGING DEVICE ADAPTED TO DECOUPLE NOISE WITHIN A SEMI-RIGID RECEIVER ARRAY

Christopher S. Cowles, Houston; Jacques P. Leveille, Bellaire; Paul J. Hatchell, Houston; Jesus A. Mireles, Sugar Land, and Robert D. Clifton, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1992, Ser. No. 960,166
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] G01V *1/40*
U.S. Cl. 181—102 43 Claims



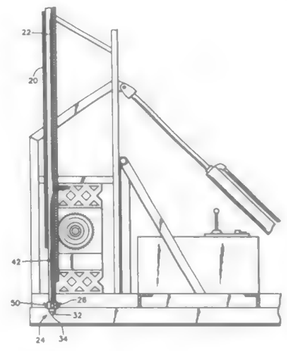
13. A receiver sonde adapted for reducing the effects of noise on composite signals that are detected by the sonde in a liquid containing borehole, the noise affecting the composite signals in the borehole includes at least one of two types of noise, the two types of noise being a road-noise and a tool-mode noise, the receiver sonde comprising:
a top bulkhead and a bottom bulkhead;
a semi-rigid receiver array, the semi-rigid receiver array including receiver stations and compliant spacers;
each said receiver station having a chassis with transducers attached thereon, each transducer of the transducers being functional to produce an output response signal from an input acoustic signal;
the compliant spacers are in contact with and separate the chassis from the top bulkhead, the bottom bulkhead, and each other, the compliant spacers maintaining the chassis in an approximately fixed longitudinal position between the top bulkhead and the bottom bulkhead and enabling the receiver array to be semi-rigid, each compliant spacer of the compliant spacers being functional to decouple the noise propagating within the semi-rigid receiver array by acting as a vibration isolator to absorb the noise at it propagates across each said compliant spacer and by forming a junction having a large disparity in elastic properties where each said compliant spacer contacts the chassis, each said junction scattering the noise to reduce the amount of noise which propagates across the junction, whereby, the amount of noise that reaches the transducers is reduced, thereby, reducing the amount of noise that is coupled to each output response signal; and
a composite signal means for combining the output response signal of each said transducer to provide a composite signal for each said receiver station.

5,343,002

DISPOSABLE POINT WITH EXPLOSIVE CHARGE FOR SEISMIC EXPLORATION

Richard A. Gremillion, Cut Off, La., assignor to Ernest J. Gremillion, Cut Off, La., a part interest

Filed Nov. 3, 1992, Ser. No. 970,855
Int. Cl.[5] G01V *1/06*
U.S. Cl. 181—116 16 Claims



1. A disposable point with explosive charge for mounting on the lower end of a non-rotatable vertically supported, reciprocally mounted, elongated, rigid hole forming member which forms a hole by displacing earth laterally by compressing the earth as the hole forming member is driven downwardly, said point including a generally cylindrical body, an explosive charge connected to and protected by said body, said body including an end recess telescopically and detachably mounted on said hole forming member for separation of the point from said hole forming member when said hole forming member is retracted thereby leaving the point and explosive charge in said hole.

5,343,003

RECALIBRATION OF HITCH LOAD WEIGHING USING DYNAMIC TARE

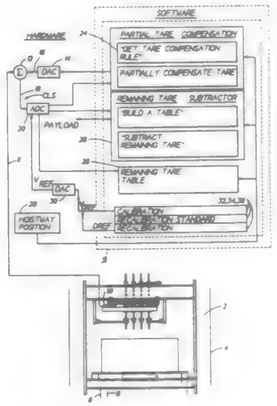
Eric K. Jamieson, Farmington; Richard C. McCarthy, Simsbury, and Young S. Yoo, Avon, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed May 29, 1992, Ser. No. 891,482
Int. Cl.[5] B66B *3/00;* G01G *19/14, 19/52*
U.S. Cl. 187—131 2 Claims

1. A method of calibrating an analog to digital converter within an elevator hitch load weighing system, comprising:
providing an analog load signal, indicative of the weight on an elevator load hitch, from a load sensor;
providing an analog to digital converter responsive to an analog reference signal and said analog load signal for providing a digital load signal;
providing dynamic tare of said elevator load weighing system based upon said analog load signal provided by said

VOL 1165 ISS 5 AG 30 1994 UMI

load sensor which is responsive to the weight on the elevator car hitch;



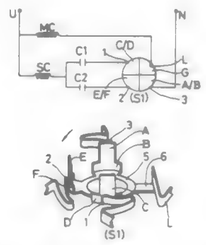
calibrating said analog to digital converter by adjusting said analog reference voltage until said digital load signal is equal to said dynamic tare.

5,343,004

NON-SPARKING ROTATABLE SWITCH APPARATUS

Cheng-Nan Chen, No. 12, 18th Road Industry Park, Taichung, Taiwan

Filed Sep. 15, 1992, Ser. No. 945,245
Int. Cl.[5] H01H *19/52, 21/72*
U.S. Cl. 200—11 R 5 Claims



1. A rotatable switch apparatus for a multi-speed fan, comprising:

four stationary contacts each in the form of an elastic sheet, said contacts being arranged to be connected with different components in the fan; and

a planar selector sheet arranged to be rotatable in the plane of the selector sheet to electrically connect different ones of the contacts with each other through said selector sheet, and thereby to electrically connect any components to which the contacts are connected with each other,

wherein said contacts are positioned around a perimeter of said sheet at two different levels, a higher level being at a further distance from said sheet than a lower level,

wherein said rotatable selector sheet includes upwardly extending contact sheets, at least one of which extends only to said lower level to engage only contacts positioned at said lower level, and a second one of which extends to said higher level to engage contacts positioned at both said lower and higher levels; and

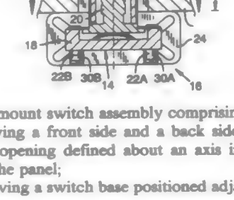
wherein at least a portion of the contact sheet which extends to the higher level has a different width than the contact sheet which extends to the lower level such that, as the selector sheet is rotated, a time of engagement between a higher level contact and one of the contact sheets is different from a time of engagement between a lower level contact and one of the contact sheets.

5,343,005

HYDRAULIC MASTER CYLINDER SWITCH

David F. Salzmann, South Lyon, Mich., assignor to Automotive Products plc, Warwickshire, England

Filed Apr. 2, 1993, Ser. No. 42,353
Int. Cl.[5] H01H *3/14*
U.S. Cl. 200—61.89 20 Claims



1. A hydraulic master cylinder assembly including a master cylinder, a piston mounted in the master cylinder, a push rod projecting at its forward end into the rear end of the master cylinder for connection to the piston, and a switch assembly positioned on the push rod and including a hollow switch housing defining axially spaced first and second switch means and a plunger assembly mounted for sliding movement in the housing in response to forward movement of the push rod to sequentially coact with the first and second switch means to actuate the first and second switch means to generate sequential first and second control signals, characterized in that:

in the initial increment of forward movement of the push rod the plunger assembly acts to actuate the first switch means;

in the second increment of forward movement of the push rod the push rod moves forwardly relative to the plunger assembly; and

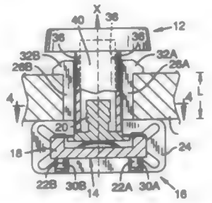
in the third increment of forward movement of the push rod the plunger assembly moves forwardly with the push rod to actuate the second switch means.

5,343,006

PANEL MOUNT SWITCH ASSEMBLY

Gary L. Moffett, Vancouver, Wash., assignor to Thrustmaster, Inc., Tigard, Oreg.

Filed Mar. 24, 1993, Ser. No. 36,141
Int. Cl.[5] H01H *9/08*
U.S. Cl. 200—296 17 Claims



1. A panel mount switch assembly comprising:

a panel having a front side and a back side and a switch actuator opening defined about an axis intersecting the sides of the panel;

a switch having a switch base positioned adjacent the back-

side of the panel and a switch actuator stem for actuating the switch extending axially along the axis;

a switch base holder having the switch base slidably received therein adjacent the back side of the panel;

a pair of legs connected to the base holder, each having a distal end positioned to protrude through the actuator opening beyond the front side of the panel along opposite sides of the actuator stem; and

engagement means for securing the legs to the panel to resist a downward force applied to the switch actuator stem when the switch is actuated, the engagement means including protrusions formed at the distal ends of the legs to engage the legs with the frontside of the panel to resist a downward force applied to the actuator stem when the switch is actuated; and

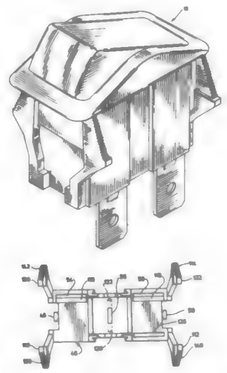
a switch plunger having a top side for depressing, a plunger member sized to extend through the actuator opening and a bottom side, the bottom side of the plunger member adapted for engaging the actuator stem, the plunger member inserted between the pair of legs such that the opening in the bottom side of the plunger member engages the actuator stem when the switch is received in the switch base holder and sized to fit between the pair of legs so as to prevent withdrawal of the protrusions from engagement with the frontside of the panel.

5,343,007

ROCKER SWITCH

Thomas Roeser, Barrington, and Michael J. Crawford, Crystal Lake, both of Ill., assignors to Otto Engineering, Inc., Carpentersville, Ill.

Continuation of Ser. No. 881,788, May 12, 1992, abandoned.
This application Jun. 18, 1993, Ser. No. 80,063
Int. Cl.[5] H01H *21/08*
U.S. Cl. 200—296 23 Claims



1. A sealed electrical rocker switch adapted for installation in an aperture in a mounting panel, comprising:

a case configured to fit in the panel aperture;

a button rotatably mounted in the case and having a lever terminating in a cylindrical end;

a base adapted to snap into the case, the base having a plurality of retention wings which are normally biased outwardly from the base and are compressible to permit the switch to be inserted into the panel aperture;

a first blade contact extending through the base;

a spring blade;

a center blade contact rigidly connected to the spring blade and extending through the base;

an actuator pivotally mounted in the case and being adapted to move the spring blade into and out of contact with the first blade contact;

a plunger slidably mounted around the cylindrical end and being adapted to engage and pivot the actuator in response to rotation of the button with respect to the case; and

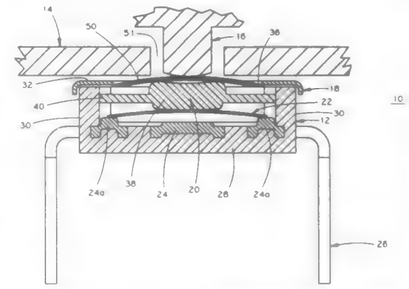
a spring being adapted to bias the plunger against the actuator.

5,343,008

SEALED SWITCH

Ralph G. Ipcinski, 295 Silver Lake Rd., Hollis, N.H. 03049

Continuation of Ser. No. 837,147, Feb. 19, 1992, abandoned.
This application Jun. 7, 1993, Ser. No. 73,270
Int. Cl.[5] H01H *13/06*
U.S. Cl. 200—302.002 3 Claims



1. A sealed electric switch comprising a base, a retainer, an actuator, a secondary actuator, a movable contact, a central fixed contact, a pair of fixed contacts and terminals connected to said pair of fixed contacts; the base, includes a base portion having a plurality of peripheral edges including two opposite edges and having an upper surface, a wall extending from each peripheral edge, the two opposite walls includes a centrally positioned projection and a top edge,

the actuator positioned in superposed relation to the secondary actuator,

the retainer comprises a top portion having a wing extending integrally from two opposite sides thereof and an aperture formed centrally there through, each of the wings includes a centrally positioned, rectangular through opening whose lower side provides an engagement bar,

the secondary actuator comprises a plastic support portion which is centered in a disk, the support portion includes an upper surface, a side surface and a lower surface, the disk having an upper face and a lower face, the upper surface lying on a different plane than the lower face and the disk extends integrally from the side surface,

the movable contact is formed of a flexible current carrying material, has a concave surface defining an arced portion, and has a perimeter edge,

the central fixed contact being centrally positioned over the upper surface of the base portion and the pair of fixed contacts being positioned on the upper surface of the base portion, in spaced relation to each other, and in bracketing spaced relation to the central fixed contact, the movable contact being located with its perimeter edge abutting the fixed contacts and its concave surface spaced from and facing the central fixed contact, the support portion of the secondary actuator is positioned on the arced portion of the movable contact with the peripheral edge of the disk in close proximity to the inside surface of the opposite walls, a substantially impermeable film abuts the upper surface of the support portion and covers top edges of at least two walls, the retainer is placed on top of the film and each of the centrally positioned projections is passed

VOL 1165 ISS 5 AG 30 1994 UMI

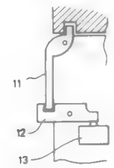
through the rectangular through opening of the retainer and engaged by the engagement bar, to complete the assembly.

5,343,009

DATA PROCESSING DEVICE AND PLUG-IN PACKAGE

Manabu Arooka, Hitachi; Yoshiaki Takahashi, Mito; Atsushi Shikama; Yoshihiro Miyazaki, both of Hitachi; Tomoaki Nakamura, Katsuta, and Masayuki Sakata, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Process Computer Engineering, Inc., Hitachi, both of Japan

Filed Dec. 17, 1991, Ser. No. 808,610
Claims priority, application Japan, Dec. 17, 1990, 2-402717
Int. Cl.[5] H01H 9/20
U.S. Cl. 200—322 4 Claims



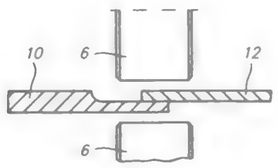
1. A data processing device comprising:
a plug-in package including an electronic circuit module which is adapted to fit into a slot of the data processing device and is adapted to be operable with power supplied from a power source of the device, said package having a package removing lever mounted thereon for manually removing said package from said device;
a mounting unit containing said slot for mounting said plug-in package thereon;
said plug-in package further including a releasable locking means for mechanically locking said package removing lever so as to prevent movement of said lever and removal of said package from said device without first manually releasing said locking means from a locked position, and a switch means adapted to be activated, in response to a release operation of said locking means, for generating a power-off request; and
said mounting unit having means for stopping supply of power to said plug-in package in response to the power-off request from said switch means.

5,343,010

PROCESS FOR SEAM WELDING OF SHEET METAL BLANKS

Werner Urech, Kaiserstuhl, Switzerland, assignor to Elpatronic AG, Zug, Switzerland

Filed Apr. 1, 1992, Ser. No. 861,571
Claims priority, application Switzerland, Apr. 9, 1991, 01045/91-8
Int. Cl.[5] B23K 11/06
U.S. Cl. 219—83 5 Claims



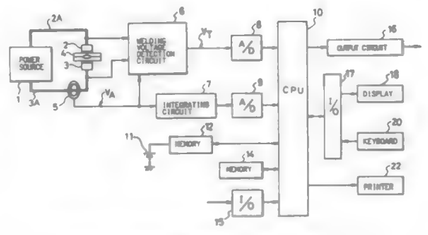
1. A method of seam welding sheet metal blanks of unequal thickness, characterized in that, as preparation for the welding operation, at least the thicker of two sheet metal blanks is treated by removing material in an edge region which is to be welded in order to reduce the edge region to a thickness approximately equal to that of the thinner of the two sheet metal blanks, and thereafter the reduced thickness edge region of the thicker of the two sheet metal blanks and the edge region of the thinner of the two sheet metal blanks are placed in overlapping relationship with the thinner of the sheet metal blanks overlapping less than all of the reduced thickness edge region of the thicker of the two sheet metal blanks, and then the overlapping sheet metal blanks are mash seam welded to form a weld region between the blanks whereby the reduced thickness edge region of at least the thicker of the two sheet metal sheets is larger than the weld region.

5,343,011

RESISTANCE WELDING MONITOR

Koji Fujii, Osaka; Yasuhiro Goto, Hyogo; Makoto Ryudo, Sakai, and Hideki Ihara, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 30, 1993, Ser. No. 99,360
Claims priority, application Japan, Jul. 31, 1992, 4-204639; Sep. 24, 1992, 4-253329; Sep. 29, 1992, 4-258724; Dec. 1, 1992, 4-321615
Int. Cl.[5] B23K 11/25
U.S. Cl. 219—109 11 Claims



1. A resistance welding monitor comprising:
input means for inputting data representing material characteristics of a material of a work to be welded, data representing a thickness of said work and data representing the shape of a pair of electrodes of a resistance welder,
a current sensor for detecting a welding current in welding operation,
welding voltage detection means for detecting a welding voltage which is a true output voltage of a power source of said resistance welder, on the basis of said welding current and said interelectrode voltage, detected by interelectrode voltage measuring means for measuring an interelectrode voltage received through a pair of coupling wire from said pair of electrodes,
calculation means for deriving a contact diameter which is a diameter of a current-pass between said electrode and work and an interplate current-pass diameter which is a diameter of a contact part of plural plates of said work, on the basis of an electrode resistance of the resistance of said electrode, a contact resistance of a resistance between said electrode and the surface of the work and a work resistance which is a ratio between said welding voltage and said welding current,
means for deriving a temperature distribution in said work on the basis of said welding voltage, welding current, contact diameter and interplate current pass diameter,
nugget diameter calculation means for deriving a nugget diameter which is formed between said plural plates on the basis of said temperature distribution,
input means for inputting data of a reference nugget diameter of a target diameter, and

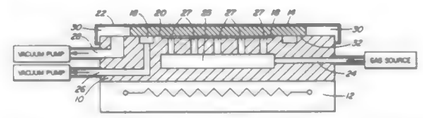
comparison means for comparing said nugget diameter with said reference nugget diameter and for outputting a comparison result.

5,343,012

DIFFERENTIALLY PUMPED TEMPERATURE CONTROLLER FOR LOW PRESSURE THIN FILM FABRICATION PROCESS

Walter N. Hardy, and Qiyuan Ma, both of The University of British Columbia Office of Research Services and Industry Liaison, 2194 Health Sciences Mall, Room 331, I.R.C. Building, Vancouver, British Columbia, Canada V6T 1W5

Filed Oct. 6, 1992, Ser. No. 956,958
Int. Cl.[5] C23C 14/00; H05B 3/00
U.S. Cl. 219—443 6 Claims



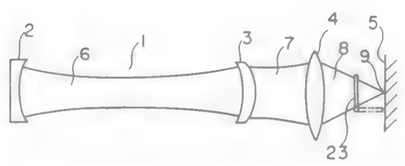
1. A method of controlling the temperature of a substrate for thin film fabrication on said substrate in a low pressure environment, said method comprising the steps of:
a) supporting said substrate on a heater block rim to define:
(i) a first region between said substrate and said heater block inside said rim;
(ii) a second region between said substrate and said heater block outside said rim, said second region surrounding said first region;
b) heating said heater block;
c) introducing an inert gas of high thermal conductivity into said first region through said heater block at a controlled first pressure;
d) withdrawing gas from said second region by applying a second pressure substantially less than said first pressure to said second region; and
e) withdrawing gas from a third region surrounding said second region by applying a third pressure substantially less than said second pressure to said third region.

5,343,013

LASER BEAM MACHINE

Norio Karube, Machida, and Yasuyuki Morita, Minamitsuru, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP91/01495, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO92/08570, PCT Pub. Date May 29, 1992
PCT Filed Oct. 31, 1991, Ser. No. 860,520
Claims priority, application Japan, Nov. 13, 1990, 2-306683
Int. Cl.[5] B23K 26/00
U.S. Cl. 219—121.61 4 Claims



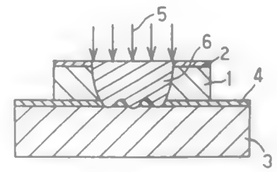
1. A laser beam machine for carrying out a machining operation by converging a laser beam emitted from a laser resonator and irradiating the converged laser beam onto a workpiece, the machine comprising:
a beam interceptor arranged across a light path extending from a total reflection mirror of the laser resonator to a surface of the workpiece, the beam interceptor having a small inertia; and
means for controlling a position of the beam interceptor at a high speed based on an electric discharge that feeds energy into the laser resonator, said electric discharge including a full-scale discharge and a seed discharge, to permit the laser beam to pass along the light path during the full-scale discharge and to intercept the laser beam during the seed discharge.

5,343,014

METHOD OF WELDING METALS OF DIFFERENT KIND BY LASER

Akihiko Ogino, Chita; Yoshiyuki Miyase; Shuuzi Sakou, both of Okazaki, and Shinzi Shibata, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

PCT No. PCT/JP91/00913, § 371 Date Mar. 12, 1992, § 102(e) Date Mar. 12, 1992, PCT Pub. No. WO92/00828, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 8, 1991, Ser. No. 838,304
Claims priority, application Japan, Jul. 12, 1990, 2-184686; Apr. 19, 1991, 3-088793
Int. Cl.[5] B23K 26/00
U.S. Cl. 219—121.64 11 Claims



1. A method of welding metals of different kind by laser, comprising the steps of:
putting a first metal member having a first laser reflection factor on top of a second metal member having a second laser reflection factor lower than the first laser reflection factor, through a metal layer which is more difficult to melt than the second metal member and prevents energy of said laser from being abruptly inputted into the second metal member; and
irradiating a laser output onto a side of said first metal member to form an alloy consisting of said first metal member, said metal layer, and said second metal member and extending across said first metal member, said metal layer and said second metal member so that said first member is welded to said second metal member.

5,343,015

LASER ASSISTED HIGH FREQUENCY WELDING

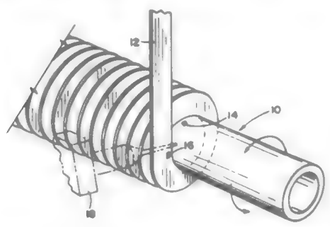
Jerry E. Ryan, Tulsa, Okla., assignor to Flntube Limited Partnership, Tulsa, Okla.

Filed Nov. 6, 1992, Ser. No. 972,336
Int. Cl.[5] B73K 26/00
U.S. Cl. 219—121.64 11 Claims

1. A method comprising:
helically winding a metallic strip under tension around the outer surface of a rotating tube;
inducing an electrical current between a first electrode in contact with the tube and a second electrode in contact with the strip to produce heat in the rotating tube and in the strip;
directing a laser beam toward the tube between the first

VOL 1165 ISS 5 AG 30 1994 UMI

electrode and where the strip comes into contact with the rotating tube to produce additional heat in the tube; and



forging the heated strip to the heated tube to form fins on the tube.

5,343,016

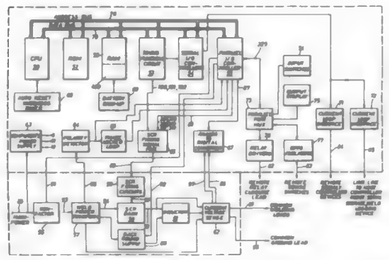
MICROPROCESSOR CONTROLLED WELDING APPARATUS

Clint A. Davis, League City, and Melvin P. Trail, Houston, both of Tex., assignors to Texas Industrial Gas, Houston, Tex.

Continuation of Ser. No. 256,401, Oct. 11, 1988, Pat. No. 5,149,940, which is a continuation of Ser. No. 879,318, Jun. 27, 1986, Pat. No. 4,812,202, which is a continuation of Ser. No. 817,258, Jan. 8, 1986, abandoned, which is a continuation of Ser. No. 762,696, Aug. 5, 1985, abandoned, which is a continuation of Ser. No. 469,519, Feb. 24, 1983, Pat. No. 4,561,059. This application Sep. 22, 1992, Ser. No. 950,193

Int. Cl.[5] B23K *9/095*

U.S. Cl. 219—130.4 6 Claims



1. A method for touch starting a microprocessor controlled welding power supply operating in a TIG mode, comprising the steps of:

setting a small voltage between a work piece and a welding lead;

moving the tip of the welding torch toward the work piece;

sensing when the tip of the welding torch touches the work piece;

initiating under microprocessor control a welding current flow at low current sufficient to create an arc of welding current, but sufficiently low to avoid contamination of the work piece, responsive to the sensed touching of the welding torch to the work piece;

withdrawing the tip of the welding torch slightly from the work piece in order to draw an arc of welding current;

sensing the current or voltage to determine whether an arc has been successfully drawn between the welding torch and the work piece;

if an arc has been successfully drawn, then gradually increasing under microprocessor control the welding current to an operator determined magnitude for welding.

5,343,017

ARC WELDER WITH TIMED CONTROL OF ARCING RECOVERY AND MEANS FOR REDUCING WEIGHT, SIZE, AND POWER LOSS IN THE WELDER

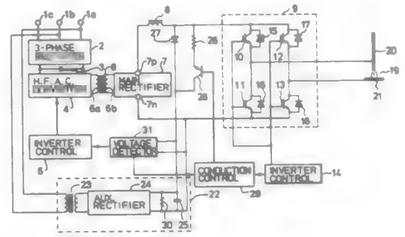
Kunio Karino, Suita; Toshikazu Fujiyoshi, Kawanishi; Kenzo Danjo, Kizu; Atsushi Kinoshita, Osaka, and Haruo Moriguchi, Itami, all of Japan, assignors to Sansha Electric Manufacturing Co., Ltd., Osaka, Japan

Filed Sep. 13, 1993, Ser. No. 120,049

Claims priority, application Japan, Sep. 11, 1992, 4-269464

Int. Cl.[5] B23K *9/073*

U.S. Cl. 219—130.4 3 Claims



1. In an arc welder having

main d.c. power supply means for preparing a main d.c. voltage for welding,

convertor means for converting said main d.c. voltage into a low frequency square waveform a.c. voltage to apply the same to a welding load, thereby forming normal and inverse polarity periods of application of said square waveform a.c. voltage said welding load, auxiliary power supply means for preparing an auxiliary d.c. voltage for arcing recovery, which auxiliary voltage is higher than said main d.c. voltage, said auxiliary d.c. power supply means having a smoothing capacitor, and

arcing recovery promotion means for applying said auxiliary d.c. voltage to said convertor means in order to superpose the auxiliary d.c. voltage upon said main d.c. voltage, the improvement comprising:

said arcing recovery promotion means having timing means for limiting application of said auxiliary d.c. voltage within a predetermined arcing recovery time period following each transition of polarity of said welding load from said normal to said inverse polarity periods, said arcing recovery time period being shorter than each of said inverse polarity periods,

a diode means, operatively connected between said capacitor and an input of said convertor means, for conducting in response to an excessive transient voltage induced at an input of said convertor means at a time of each said transition of the polarity of said load in order to facilitate absorbing of said transient voltage by said capacitor,

said timing means having means for detecting a voltage across said capacitor and producing a detection signal in response thereto, and

means for changing a length of said arcing recovery time period in response to said detection signal.

5,343,018

MICROSCOPE LENS AND STAGE HEATER WITH FLEXIBLE OBJECTIVE LENS CASING HEATER SLEEVE

Steven T. Limbach, Sun Prairie, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 30, 1992, Ser. No. 969,656

Int. Cl.[5] H05B *3/00*

U.S. Cl. 219—200 6 Claims

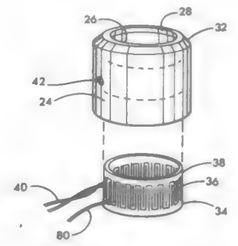
1. A microscope stage heating system comprising in combination:

a. a microscope having an objective lens;

b. a platform stage that supports a specimen to be examined by the microscope;

c. a heating device placed on the objective lens of the microscope and providing heat to the lens, comprising:

i. a flexible sleeve frictionally fitting over the objective, the heat sleeve including an outside surface, an interior surface, a distal objective lens aperture, and a proximal aperture; and



ii. an electric heating element adjacent the interior surface of the heat sleeve, the heating element being positioned to substantially surround the objective when the objective lens heater is in place on the objective; and

iii. power controlling means electrically connected to the heating element for generating and controlling heat in the heating element; and

d. a temperature-controlled stage heater disposed adjacent the stage to provide heat to the stage.

5,343,019

IMAGE FORMING APPARATUS COPING WITH POWER SUPPLY VOLTAGE DRIFT

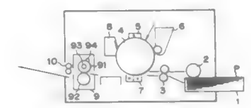
Yasumasa Nashida, Kawasaki; Toshio Yoshimoto, and Yasuhiro Nakata, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

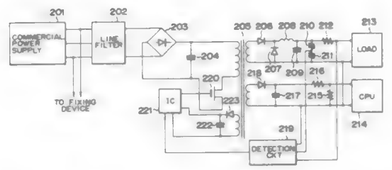
Filed Feb. 25, 1993, Ser. No. 22,169

Claims priority, application Japan, Feb. 28, 1992, 4-075877

Int. Cl.[5] H05B *1/02;* G03G *15/20*

U.S. Cl. 219—216 5 Claims





1. An image forming apparatus comprising:

image forming means for forming an unfixed image on a record medium;

fixing means for heating and fixing the unfixed image on the record medium, said fixing means including a fixing heater driven by a voltage supplied from a commercial power supply;

alternating to direct current converting means for converting an alternating voltage from the commercial power supply into direct voltage of a predetermined value, said alternating to direct current converting means including a transformer for transforming the voltage from the commercial power supply into the direct voltage;

a semiconductor element driven by the direct voltage converted by said alternating to direct current converting means; and

digital control means for detecting the voltage transformed by said transformer to control energization to said fixing heater.

5,343,020

STOVE WITH A CAPACITIVE SAILING SENSOR AND SENSOR-CONTROLLED STARTING OF PYROLYSIS

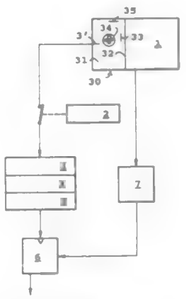
Helmut Waigand, St. Georgen, and Gottfried Wallner, Tengling, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 19, 1992, Ser. No. 932,306

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1991, 4127388

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—413 13 Claims



1. A stove with pyrolytic self-cleaning, comprising:

an oven having an oven space, at least one wall region, a heating element disposed in said at least one wall region, a forced-air blower for venting said oven, and means for pyrolytic self-cleaning;

a sensor system disposed in said oven space for detecting operationally dictated oven soiling values and issuing input values, said sensor system including a predominantly capacitively acting sensor having at least two conductor tracks being insulated from one another and an enameled metal chip on which said conductor tracks are disposed;

an evaluation circuit having an input connected to said sensor system for frequency-converting the input values, for digitizing the input values, for counting the input values, for storing the input values, and for concatenating the input values, and said evaluation circuit having an output side signaling a degree of soiling.

5,343,021

HEATER MOUNTED ON A SUBSTRATE HAVING A HOLE PENETRATING THROUGH THE SUBSTRATE

Shigehiro Sato, Yokohama; Yoshiyuki Matsunaga, Yokosuka, and Tsuyoshi Ono, Tokyo, all of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Continuation of Ser. No. 791,373, Nov. 14, 1991. This application Apr. 27, 1993, Ser. No. 53,319

Claims priority, application Japan, Nov. 20, 1990, 2-315037

Int. Cl.[5] H05B *3/08*

U.S. Cl. 219—541 17 Claims

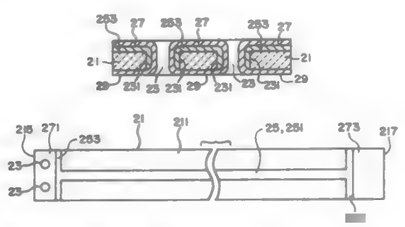
1. A heater, comprising:

a substrate having a first side surface on a first side and a second side surface on an opposite second side thereof and having a first end and a second end, and formed with at least two sets of inner surfaces at one end defining at least

VOL 1165 ISS 5 AG 30 1994 UMI

two holes penetrating from said first side to said second side;

a heating film mounted on said first side surface and extending between said first end and said second end for generating heat, said heating film being made of electrically conductive material and formed into a shape having a first end part and a second end part said holes being located adjacent one of said end parts;



first and second end films respectively coated on said first and second side surfaces and each electrically connected with said heating film for supplying electrical power to respective ends of said heating film, said end film having a higher electrical conductivity than said heating film; and

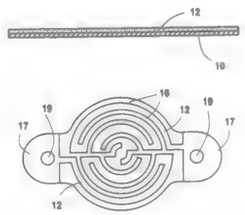
means provided at said holes for supplying the electric power between said first and second end films.

5,343,022

PYROLYTIC BORON NITRIDE HEATING UNIT

Michael H. Gilbert, Sr., North Olmsted, and Timothy J. Hejl, Parma, both of Ohio, assignors to Advanced Ceramics Corporation, Lakewood, Ohio

Filed Sep. 29, 1992, Ser. No. 953,156
Int. Cl.[5] C23C *14/00*; H05B *3/10*
U.S. Cl. 219—552 **5 Claims**



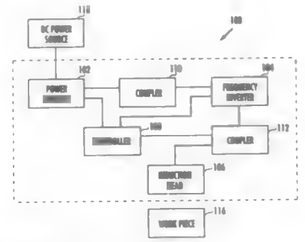
1. A pyrolytic boron nitride heating unit for use in a reactive atmosphere comprising a dielectric base of boron nitride, a heating element of pyrolytic graphite superimposed upon said base and arranged in a serpentine pattern with said heating element having a pair of contact ends for providing a series electrical path through said pyrolytic graphite between the contact ends thereof and a contact assembly for connecting said contact ends to an external power supply with said contact assembly comprising a graphite post for each contact end of said heating element with one end of said graphite post attached to a corresponding contact end of said heating element and having an opposite end spaced a predetermined distance from said one end for attachment to said external power supply and a pyrolytic boron nitride coating encapsulating said heating element and covering each graphite post so as to form an integral pyrolytic boron nitride covering except at the ends of said graphite posts for attachment to said external power supply.

5,343,023

INDUCTION HEATER HAVING A POWER INVERTER AND A VARIABLE FREQUENCY OUTPUT INVERTER

Steven J. Geissler, Appleton, Wis., assignor to Miller Electric Mfg. Co., Appleton, Wis.

Filed Aug. 23, 1991, Ser. No. 749,048
Int. Cl.[5] H05B *6/08*
U.S. Cl. 219—661 **32 Claims**



1. An induction heater comprising:

a first inverter having a first inverter output;

a variable frequency output inverter having a variable frequency inverter input;

a first coupling circuit in electrical communication between said first inverter output and said variable frequency output inverter input, wherein said variable frequency output inverter is cascaded with said inverter;

an induction head; and

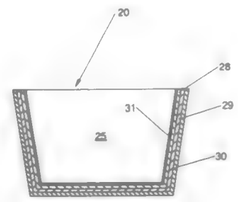
a second coupling circuit in electrical communication between said variable frequency output inverter and said induction head.

5,343,024

MICROWAVE SUSCEPTOR INCORPORATING A COATING MATERIAL HAVING A SILICATE BINDER AND AN ACTIVE CONSTITUENT

Robert L. Prosise, Cincinnati, Ohio; Christopher W. Widenhouse, Gainesville, Fla.; Andrew J. Wnuk, Wyoming, Ohio; Paul R. Bunke, and Joseph A. Milenkevich, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 632,432, Dec. 21, 1990. This application Jul. 28, 1993, Ser. No. 98,768
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—730 **28 Claims**



1. A microwave susceptor comprising:

a) a microwave active coating material including an active constituent dispersed in an alkali metal silicate binder; wherein the weight ratio of silicate to the active constituent is from about 98:2 to about 40:60; and

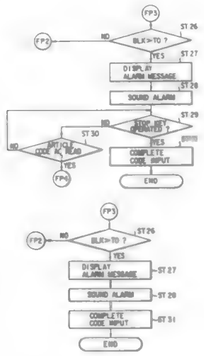
b) a dielectric substrate having a dry layer of the microwave active coating material overlaying at least a portion of the substrate, the dry layer being electrically continuous and having a surface concentration of the active constituent of at least about 1.0 gram per square meter.

5,343,025

CHECK-OUT DEVICE WITH ACTIVITY SENSOR TERMINATING ARTICLE INPUT

Mitsuaki Usui, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1992, Ser. No. 998,911
Claims priority, application Japan, Jan. 7, 1992, 4-000491
Int. Cl.[5] G06K *15/00*; G06F *15/22*
U.S. Cl. 235—383 **11 Claims**



1. A check-out device comprising:

input means, having a customer operating panel, for performing an input operation of sequentially inputting article codes of articles to be purchased, a start and a termination of the input operation being controlled by the customer operating panel;

settlement means spaced apart from said input means, for performing a registration and a settlement of the articles to be purchased according to the article codes input for each input operation performed by said input means; and

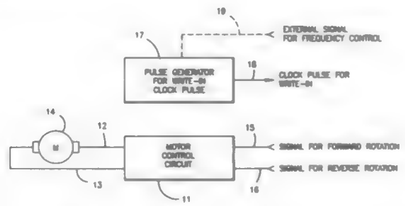
control means for controlling a termination of said input operation in place of said customer operating panel, said control means being enabled after a blank time period, during which no article code is input from said input means, exceeds a preset time period.

5,343,026

MAGNETIC CARD READER/WRITER WITH SELECTABLE FREQUENCIES RELATIVE TO MOTOR SPEED FOR VARIABLE RECORDING DENSITIES

Yasuo Tanaka, Moriyama, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Mar. 26, 1992, Ser. No. 858,017
Claims priority, application Japan, Mar. 26, 1991, 3-026733
Int. Cl.[5] G06K *7/08, 13/00, 13/08*
U.S. Cl. 235—449 **4 Claims**



1. A magnetic card reader/writer comprising:

a reversible motor for conveying a magnetic card in a forward and reverse direction;

means for controlling said motor to operate in forward and reverse rotation to thereby convey said card in said forward and reverse directions, respectively;

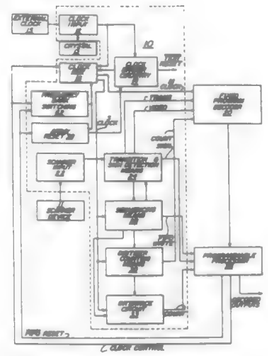
means for generating clock pulses for writing information on said card, said generating means generating clock pulses at a selectable frequency independent of a rotation speed of said motor, said selectable frequency creating a desired recording density for said magnetic card that is changeable relative to the rotational speed of said motor.

5,343,027

MULTI-PORT DIGITAL SIGNAL DECODER

Carl H. Knowles, Moorestown, and George Kolis, Pennsauken, both of N.J., assignors to Metrologic Instruments, Inc., Blackwood, N.J.

Continuation of Ser. No. 424,303, Dec. 12, 1986, Pat. No. 5,081,342. This application Jan. 13, 1992, Ser. No. 819,700
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **41 Claims**



1. A digital signal processing device capable of decoding a plurality of digital data signals, wherein each said digital data signal is produced as output from a scanning device and has first and second signal levels of variable time duration which undergo signal level transitions in accordance with a bar code symbol being scanned by said scanning device, said digital signal processing device comprising:

(a) a plurality of data input ports, each said data input port being operably connectable to one said scanning device, for supplying one said digital data signal to one said data input port for processing;

(b) signal level transition detection means for detecting the signal level transitions in the digital data signal supplied to any one of said plurality of data input ports, and producing signal level transition data for the supplied digital data signal;

(c) connection means for operably connecting said data input ports to said signal level transition detection means;

(d) common timing means for measuring the time duration of the first and second signal levels between detected signal level transitions in the supplied digital data signal, and producing digital data related to the time duration of the first and second signal levels in the supplied digital data signal;

(e) common control means for controlling the operation of said common timing means in response to signal level transition data produced from said signal level transition detection means;

(f) common data processing means operably associated with said common timing means and programmed for processing said digital data from the supplied digital data signal, so as to produce decoded symbol data representative of

VOL 1165 ISS 5 AG 30 1994 UMI

the bar code symbol being scanned by said scanning device producing the supplied digital signal; and

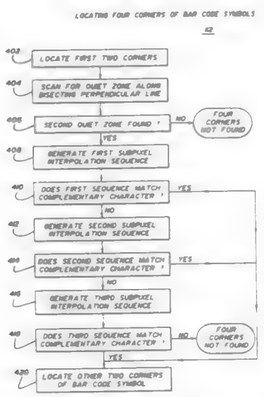
(g) a data output port operably associated with said common data processing means and for providing the decoded symbol data to a host device operably connectable to said data output port.

5,343,028

METHOD AND APPARATUS FOR DETECTING AND DECODING BAR CODE SYMBOLS USING TWO-DIMENSIONAL DIGITAL PIXEL IMAGES

Luis Figarella, Waterbury, and Mihael Klancnik, Brookfield, both of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Aug. 10, 1992, Ser. No. 927,910
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—462 42 Claims



1. A method for detecting a bar code symbol with a bar code symbol reader, comprising the steps of:

(a) receiving a two-dimensional image containing said symbol, wherein said bar code symbol reader has no a priori knowledge of the orientation of said symbol in said image;

(b) scanning said image in one dimension to locate a quiet zone for said symbol; and

(c) searching said image in one dimension to identify a start/-stop character of said symbol using subpixel interpolation.

5,343,029

OPTICAL SCANNER HAVING LASER DIODE AS LIGHT SOURCE

Hiroaki Katoh; Toshimasa Miyazaki, both of Kawasaki; Tamotsu Takahashi, Tokyo; Takeshi Ishii, Tokyo; Yoshihiro Oyama, Tokyo, and Tatsuo Sasaki, Tokyo, all of Japan, assignors to Fujitsu Ltd., Kawasaki and Copal Co., Ltd., Tokyo, both of Japan

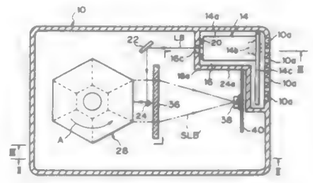
Filed Apr. 24, 1992, Ser. No. 873,028
Claims priority, application Japan, Apr. 26, 1991, 3-097408
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—467 14 Claims

1. An optical scanner comprising:

a light source including a laser diode for emitting a laser beam;

an optical deflector for deflecting the laser beam to thereby produce a scanning laser beam;

a protection arrangement for protecting the laser diode of said light source from being overheated, said protection arrangement including a partition wall structure defining a heat insulating chamber in which said light source is located, said partition wall structure including a wall having a hole therein through which the laser beam emitted from said light source passes; and



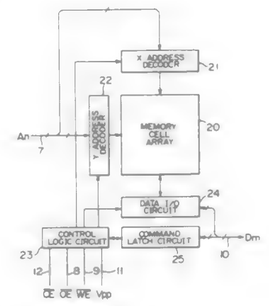
an annular sealing element provided between a portion of said partition wall surrounding said hole and an end face of said light source from which the laser beam is emitted.

5,343,030

IC CARD HAVING FLASH ERASE MEANS

Yoshikado Sanemitsu, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,488
Claims priority, application Japan, Apr. 12, 1991, 3-079391
Int. Cl.[5] G06K 19/06
U.S. Cl. 235—492 5 Claims



1. An IC card comprising:

a plurality of semiconductor memory elements having operating modes determined by commands input from outside the IC card for electrically storing data in and erasing stored data from said plurality of semiconductor memory elements;

an address decoder for decoding a card signal in response to an address signal to selectively output a chip enable signal to one of said plurality of semiconductor memory elements; and

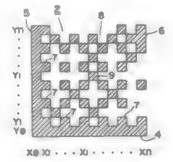
decode inhibiting means for inhibiting said address decoder from decoding a card signal when a predetermined command is input from outside the IC card and a card enable signal is simultaneously supplied as the chip enable signal to all of said semiconductor memory elements, all data stored in all of said plurality of semiconductor memory elements being simultaneously erased in response to the predetermined command, wherein said address decoder includes a decode inhibiting signal input terminal and supplies the card enable signal as the chip enable signal to all of said semiconductor memory elements when a decode inhibiting signal is input to said decode inhibiting signal input terminal, and said decode inhibiting means includes a command decoder for decoding commands input from outside the IC card and for outputting the decode inhibiting signal in response to the predetermined command and a latch circuit for latching the decode inhibiting signal from said command decoder and outputting the decode inhibiting signal to said decode inhibiting signal input terminal of said address decoder.

5,343,031

METHOD OF DECODING A TWO-DIMENSIONAL CODE SYMBOL MARK

Hirokazu Yoshida, Osaka, Japan, assignor to Teiryo Sangyo Co., Ltd., Osaka, Japan

Filed Dec. 31, 1992, Ser. No. 999,130
Claims priority, application Japan, Apr. 6, 1992, 4-114023
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—494 13 Claims



1. A method of decoding a two-dimensional code symbol mark an information area defined by an X-axis side indication line and a Y-axis side indication line for determining a reading range of the two-dimensional code symbol mark and reading a binary signal of the code symbol mark recorded in the information area, thereby decoding the code symbol mark, wherein the X-axis side indication line or the Y-axis side indication line of the information area, and the division marks recorded on the X-axis side indication line or the Y-axis side indication line are detected by a code reader said method comprising the steps of:

(a) calculating intervals of the divisional marks at every point of the intervals dividing the detection marks up to an end part of the Y-axis side indication line or X-axis side indication line, by dividing a distance between them by a specified integer,

(b) reading and digitally storing the binary signals of the code symbol mark, and

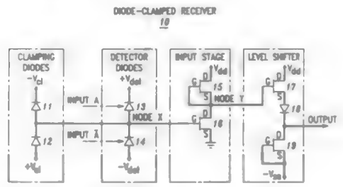
(c) digitally decoding and processing the digitally stored code symbol mark recorded in each region formed in a square of which one side is a length defined by the intervals of the division marks or a division mark spacing divided by an integer value.

5,343,032

DIODE-CLAMPED OPTICAL RECEIVER

Leo M. F. Chirovsky, Bridgewater, N.J., and Anthony L. Lentine, St. Charles, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 8, 1993, Ser. No. 45,006
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—208.2 19 Claims



1. Apparatus comprising

first and second detector means connected in series at a first electrical node, said first detector means responsive to an optical input signal beam and said second detector means responsive to an optical beam that is complementary to said optical input signal beam, said first and second detector means for developing a voltage at said first electrical node in response to said optical input signal beam and said complementary optical beam,

means connected to said first electrical node for clamping said voltage within a predefined voltage range, and

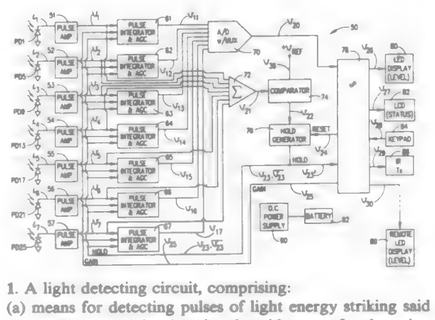
means responsive to said clamped voltage for generating an electrical, output signal.

5,343,033

METHOD AND APPARATUS FOR DETECTING LASER LIGHT HAVING A PLURALITY OF PULSE INTEGRATOR AND AUTOMATIC GAIN CONTROL CIRCUITS

Gary L. Cain, Springfield, Ohio, assignor to Apache Technology Inc., Dayton, Ohio

Filed Jun. 22, 1993, Ser. No. 81,404
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—208.2 22 Claims



1. A light detecting circuit, comprising:

(a) means for detecting pulses of light energy striking said light detecting circuit, wherein said means for detecting pulses of light energy includes a plurality of light-sensitive elements arranged in an array, thereby creating a plurality of first electrical signals, wherein the magnitude of each of said plurality of first electrical signals is proportional to the power of light striking its corresponding light-sensitive element;

(b) means for amplifying and integrating each of said plurality of first electrical signals, thereby creating a plurality of second electrical signals, wherein the gain of said means for amplifying and integrating each of said plurality of first electrical signals is automatically controlled so as to keep said plurality of second electrical signals within the active dynamic range of said light detecting circuit, and wherein the peak magnitude of each of said plurality of second electrical signals is proportional to the power and to the duration time of light striking its corresponding light-sensitive element;

(c) means for converting each of said plurality of second electrical signals into corresponding numeric values, thereby creating a first plurality of numeric values, each of which is proportional to the magnitude of its corresponding individual signal of said plurality of second electrical signals;

(d) means for calculating, from said first plurality of numeric values, a second numeric value indicative of the physical location that substantially the center of said light energy is striking said array of light-sensitive elements;

(e) means for converting said second numeric value into a corresponding discrete location indicative of the actual physical location, in comparison to the desired physical location, that substantially the center of said light energy is striking said array of light-sensitive elements; and

(f) means for displaying said discrete location.

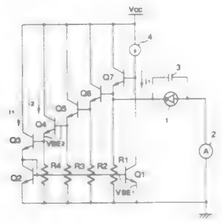
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,034

BIAS CIRCUIT FOR PHOTODIODE HAVING LEVEL SHIFT CIRCUITRY

Toshiaki Sato, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 43,932
Claims priority, application Japan, Apr. 10, 1992, 4-118197
Int. Cl.[5] G05F *5/00*
U.S. Cl. 250—214 C **24 Claims**



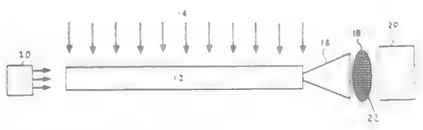
1. A bias circuit for a photodiode, comprising:
a first load element;
a first transistor for receiving a current generated by said first load element at a collector thereof;
a second transistor, a base of which is commonly connected to a base of said first transistor to constitute a current mirror circuit; and
a level shift circuit connected between the base of an output transistor of said current mirror circuit and the collector of said first transistor, and constituted by a transistor or a combination of a constant voltage element with a transistor, and a second load element different from said first load element,
wherein an anode or cathode of said photodiode is connected to a desired potential node of said level shift circuit.

5,343,035

STRAIN SENSOR COMPRISING A STRAIN SENSITIVE, TWO-MODE OPTICAL

Claudio O. Egalon, and Robert S. Rogowski, both of Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1992, Ser. No. 999,696
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.14 **6 Claims**



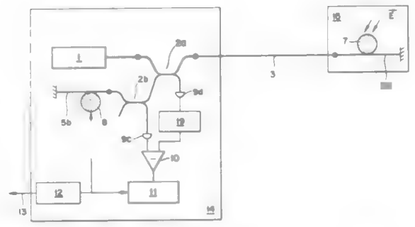
1. A strain sensor, comprising:
a strain sensitive, two-mode optical fiber;
a least one strain insensitive optical fiber disposed to transmit light passing through said strain sensitive, two-mode optical fiber;
light supply means for supplying the light passing through said strain sensitive, two-mode optical fiber and transmitted by said at least one strain insensitive optical fiber; and
light detection means for detecting the light passing through said strain sensitive, two-mode optical fiber and transmitted by said at least one strain insensitive optical fiber.

5,343,036

OPTICAL MEASUREMENT OF ELECTRICAL QUANTITIES USING INVERSE PIEZOELECTRIC EFFECT WITH DUAL DOUBLE-MODE FIBER

Klaus Bohnert, Niederrohrdorf, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Apr. 9, 1993, Ser. No. 44,478
Claims priority, application Fed. Rep. of Germany, May 15, 1992, 4216152
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.19 **21 Claims**



1. A fiber-optic sensor for alternating electric fields and voltages, comprising:
(a) a light source;
(b) a piezoelectric sensor element;
(c) a first double-mode fiber having an input end and another end, in which fiber an LP_{01} fundamental mode and an even LP_{11} mode can propagate, and which fiber is fixed at least partially to the sensor element such that a dimensional alteration of the sensor element in an electric field leads to a length alteration in the fiber;
(d) means for measuring the field-dependent length alteration of the fiber; wherein
(e) the light source is a multimode laser diode;
(f) the measuring means comprises a second double-mode fiber;
(g) parameters of the first and second double-mode fibers and thus relative path differences, which accumulate in the individual double-mode fibers, are tuned to coherence properties of the light source so that interference contrast for the said path differences and for the sum of these path differences is in each instance approximately equal to zero and for the difference of the said path differences adopts an absolute or relative maximum;
(h) said another end of the first double-mode fiber is mirrored;
(i) a monomode fiber is provided for transmission of light between the light source and the measuring means on the one hand and the input end of the first double-mode fiber on the other hand; and
(j) means are provided for coupling-in light from the light source into the monomode fiber and for coupling-out light reflected at said another end of the first double-mode fiber from the monomode fiber into the second double-mode fiber.

5,343,037

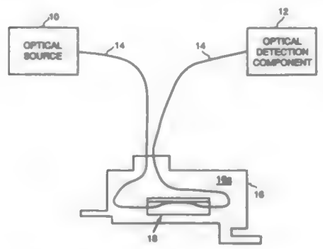
ENVIRONMENTAL AND PHYSICAL PARAMETER SENSORS INCORPORATING POLYMER-COVERED FIBER FIELD ACCESS BLOCKS

Ertugrul Berkcan, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 21, 1993, Ser. No. 79,764
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.21 **18 Claims**

1. An apparatus for detecting presence of a measurand, comprising:
a fiber field access block;

a measurand sensitive layer overlying said fiber field access block; and
means for detecting changes in a parameter selected from the group of thickness and index of refraction of said measurand sensitive layer caused by interaction with said measurand; and



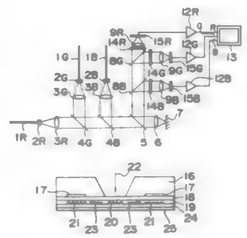
wherein said fiber field access block has a clad fiber positioned such that a portion of said fiber is exposed to said measurand sensitive layer and any cladding on said portion of said fiber is thinner than required to prevent an evanescent wave from escaping said fiber.

5,343,038

SCANNING LASER MICROSCOPE WITH PHOTO COUPLING AND DETECTING UNIT

Seiji Nishiwaki; Junichi Asada, and Shinji Uchida, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 10, 1992, Ser. No. 988,972
Claims priority, application Japan, Dec. 12, 1991, 3-328726
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—234 **9 Claims**



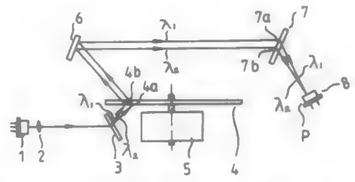
1. A scanning laser microscope comprising: laser light source means,
objective lens means for focusing light from said laser light source means on a specimen,
condenser means for condensing light from said specimen,
light receiving means arranged to receive light condensed by said condenser means,
light coupling means arranged on said light receiving means which excites a guided light when said condensed light is incident to said light receiving means, and
a photodetector for detecting said guided light having been excited by said light coupling means.

5,343,039

SCAN START DETECTING DEVICE FOR LASER BEAM PRINTER HAVING A WAVELENGTH VARIATION CORRECTING MEANS

Young S. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 17, 1993, Ser. No. 78,412
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—235 **3 Claims**



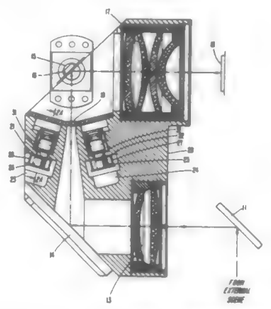
1. A scan start detecting device for a laser beam printer, comprising:
light source means adapted to laser beams;
scanning means adapted to scan the laser beams emitted from the light source, the scanning means including a hologram and a motor;
wavelength variation correcting means adapted to diffract the laser beams at different angles, depending on a variation in wavelength of the laser beams emitted from the light source means, transmit the diffracted laser beams to the scanning means, and correct optical paths of the laser beams from the scanning means, the optical paths having been differently varied depending on the variation in wavelength, and transmit the corrected laser beams to the same point on a detector of scan start detecting means; and
light source controlling circuit adapted to control the light source means, based on a signal outputted from the scan start detecting means.

5,343,040

THERMAL REFERENCE TECHNIQUE FOR FLIR SENSORS

Gary E. Wiese, Orlando; J. Donald Lee, Longwood, and G. Edward Newberg, Winter Springs, all of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 10, 1993, Ser. No. 74,656
Int. Cl.[5] G01D *18/00*
U.S. Cl. 250—252.1 **8 Claims**



1. An improved forward looking infrared sensor of the type having a first moveable mirror for reflecting infrared energy of an external scene along an optical path toward an infrared detector, wherein the improvement comprises:

VOL 1165 ISS 5 AG 30 1994 UMI

a second moveable mirror, disposed in the optical path, for reflecting infrared energy onto the infrared detector;

a first thermal reference source, disposed along one side of the optical path and viewable by the second moveable mirror, for providing thermal energy having a first predetermined temperature;

a second thermal reference source, disposed along the opposite side of the optical path and viewable by the second moveable mirror, for providing thermal energy having a second predetermined temperature; and

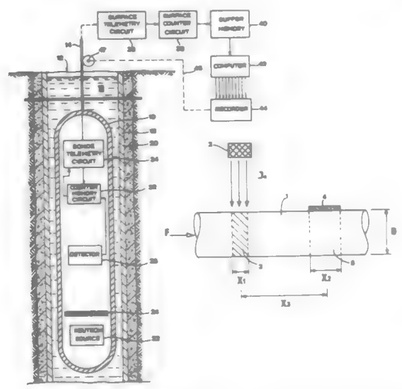
means for moving the second moveable mirror to predetermined positions such that the infrared detector selectively views the infrared energy from the external scene, the first thermal reference source, and the second thermal reference source in a predetermined order.

5,343,041

METHOD AND APPARATUS FOR DETERMINING THE PHYSICAL CHARACTERISTICS OF A WATER FLOW

Mario Ruscev, Orsay, and Marc A. Pinto, Sceaux, both of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Jun. 23, 1993, Ser. No. 81,527
Int. Cl.[5] G01V *5/10*; G01F *1/708*
U.S. Cl. 250—270 **28 Claims**



1. A method of studying a flow of water along a well, the method comprising the steps of:

irradiating said flow by means of a source of neutrons at an energy sufficient for the interaction between the emitted neutrons and the oxygen atoms of the water to create an activation reaction $O^{16}(n,p)N^{16}$;

detecting gamma rays emitted during said activation reaction in at least one zone that is longitudinally spaced apart from said source;

counting during a given length of time (detection duration), the respective numbers of gamma rays detected during each time unit in said duration;

establishing a general spectrum g(t) of said numbers as a function of time over said detection duration;

extracting a special spectrum f(t) representative of said flow from said general spectrum g(t);

multiplying said special spectrum f(t) by a function h(t) representative firstly of the time drop in the gamma emission and secondly of the transit time of oxygen atoms between the source and the at least one zone; and

integrating the product f(t).h(t) with respect to time between two instants t1 and t2 belonging to said detection duration, the result of the integration containing the information relating to the flow of water.

5,343,042

SELECTIVE MODIFICATION OF INDIVIDUAL NANOMETER AND SUBNAMOMETER STRUCTURES IN THE SURFACE OF A SOLID

Harald Fuchs, Carlsberg, and Thomas Schimmel, Hof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 4, 1992, Ser. No. 894,133
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1991, 4120365
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—307 **4 Claims**



1. A process for the selective modification and reversible removal of extremely fine structures having dimensions of down to the nanometer and subnanometer range from the surface of a solid, which comprises moving at about room temperature and pressure the fine tip of a probe, which is located at a distance in the Ångstrom range above the surface or is in contact with the surface, over the structure at essentially the same height and thus causing a change in this structure; wherein the atomic order of the atomic lattice of the surface is not disturbed or destroyed, even locally at the site of modification by an intervention.

5,343,043

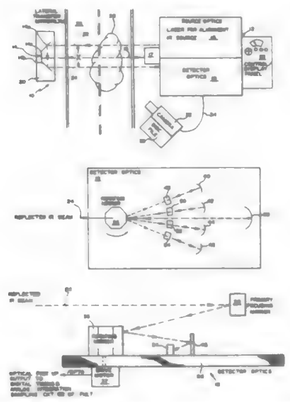
REMOTE SENSOR DEVICE FOR MONITORING MOTOR VEHICLE EXHAUST SYSTEMS WITH HIGH SPEED SAMPLING

James H. Johnson, Woodstock, Ill., assignor to Envirotest Syst. Corp., Tucson, Ariz. and Colorado Seminary, Denver, Colo.

Continuation of Ser. No. 45,211, Apr. 13, 1993. This application Sep. 13, 1993, Ser. No. 120,069
Int. Cl.[5] G01N *21/61, 21/25, 21/01*
U.S. Cl. 250—338.5 **6 Claims**

1. Apparatus for high speed detection of pollutants in an exhaust plume of a motor vehicle, wherein an IR beam is directed through said exhaust plume and interacts with said pollutants, said apparatus comprising: optical means including a rotating mirror for receiving the IR beam after transit through the exhaust plume, wherein said rotating mirror includes N reflecting side walls and rotates at an angular velocity V; a plurality of IR detectors each adapted to detect a specific pollutant in the exhaust plume, wherein said IR detectors are arranged in a spaced array adjacent to said rotating mirror and adapted to receive the IR beam reflected from the side walls of said rotating mirror, wherein the IR beam reflected from one of the side walls of said rotating mirror is sequentially directed onto each of said detectors and wherein each of said IR detectors receives said IR beam as a series of IR pulses; and digital timing means coupled to said rotating mirror and responsive to the angular velocity V thereof and further coupled to each of said IR detectors for actuating said IR detectors in a timed

manner, wherein each of said IR detectors samples the IR beam upon receipt of an IR pulse at predetermined time inter-



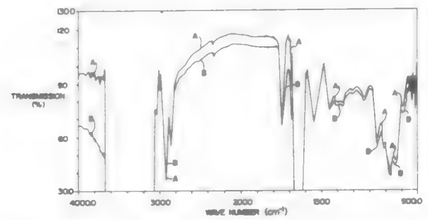
vals determined by the angular velocity V of said rotating mirror.

5,343,044

INFRARED ATTENUATION MEASURING SYSTEM

Lars-Ove Sjaunja, Uppsala, Sweden; Steen K. Andersen, Hvidovre, Denmark; Börkur Aravidarson, Niva, Denmark; Niels Brems, Virum, Denmark; Torben Lapp, Birkerod, Denmark, and Lars Nygaard, Graested, Denmark, assignors to A/S Foss Electric, Hillerod, Denmark

Continuation of Ser. No. 767,653, Sep. 30, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,016
Claims priority, application Denmark, Sep. 27, 1991, 1653/91
Int. Cl.[5] G01N *33/06, 21/35*
U.S. Cl. 250—339.09 **42 Claims**



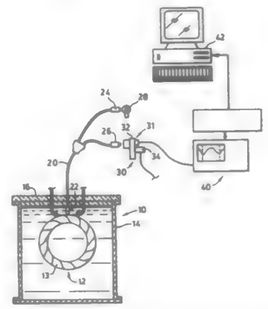
1. A method for the quantitative determination of the concentration of one or more components in an aqueous fat-containing sample by an infrared attenuation measuring technique, the method comprising measuring the infrared attenuation of a sample in one or more wavebands and calculating the concentrations of the components of the fat-containing sample from the measured infrared attenuation values of the sample using a set of waveband-related parameters, the parameter set containing information ensuring that the calculated concentrations are substantially independent of the degree of homogenization of the fat-containing sample, said information being derived from a calibration with aqueous fat-containing samples having different degrees of homogenization.

5,343,045

METHOD AND DEVICE FOR MEASURING MOISTURE CONTENT

Bal K. Gupta, Etobicoke, Canada, assignor to Ontario Hydro, Toronto, Canada

Filed Jun. 11, 1993, Ser. No. 75,093
Int. Cl.[5] G01N *21/49*
U.S. Cl. 250—339.1 **12 Claims**



1. A device for measuring moisture content of an absorbent material, comprising

an optical waveguide having a probe end optically coupled to source and detection ends,

a source of electromagnetic radiation optically coupled to the source end of the optical waveguide, and

means for measuring the flux of selected wavelengths optically coupled to the detection end of the optical waveguide, including a detector for measuring and means for displaying, recording or conveying a measurement of the flux of electromagnetic radiation emitted from the detection end of the waveguide at the selected wavelengths,

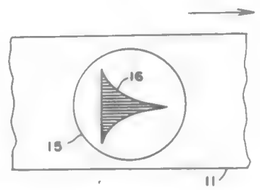
wherein the means for measuring the flux comprises an optical chopper provided with a first optical filter for transmitting a first wavelength of electromagnetic radiation to the detector and a second optical filter for transmitting a second wavelength of electromagnetic radiation to the detector, the first wavelength being a wavelength at which absorption by water molecules is low and the second wavelength being a wavelength at which absorption by water molecules is high, the optical chopper including means for alternately interposing the first filter and the second filter between the detection end of the optical waveguide and the detector.

5,343,046

DETECTOR COLLIMATOR FOR MOVING FILTER MEDIA

David L. Smith, 303 Hudson Ave., Beacon, N.Y. 12508

Filed Nov. 4, 1992, Ser. No. 970,684
Int. Cl.[5] G01T *7/00*
U.S. Cl. 250—432 R **17 Claims**



1. Apparatus for monitoring the amount of particles contain-

VOL 1165 ISS 5 AG 30 1994 UMI

ing a radioactive element being deposited over time on a moving web of filter material to detect changes in the rate of particle deposition, comprising a radiation detector facing an area of the web upon the entirety of which area particles are being deposited and having a view of said area of the web upon the entirety of which area particles are being deposited so that radiation detection and particle deposition proceed simultaneously throughout the entire area and a collimator disposed between the detector and the web for limiting the view of the detector, the collimator permitting passage of radiation from the web to the detector only through an aperture which has a width that decreases generally exponentially in the direction of web movement so that there is a constant fractional rate of removal of deposited particles from the view of the detector caused by movement of the web whereby detection is sensitive to quantitative changes in the rate of deposition of particles on the moving web.

5,343,047

ION IMPLANTATION SYSTEM

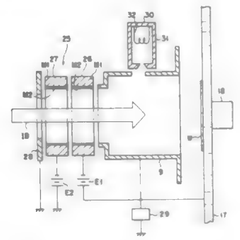
Hiroo Ono; Shuji Kikuchi, both of Yamanashi; Masayuki Tomoyasu, Nirasaki; Naoki Takayama, Kofu, and Riki Tomoyoshi, Nirasaki, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Jun. 25, 1993, Ser. No. 82,454

Claims priority, application Japan, Jun. 27, 1992, 4-193352; Jun. 29, 1992, 4-196474; Jun. 29, 1992, 4-196475

Int. Cl.[5] H01J *37/317*

U.S. Cl. 250—492.21 19 Claims



1. A system for implanting ions into an object to be processed in vacuum atmosphere, comprising:

support means for supporting the object;

an ion source device for generating plasma in which ions to be used are included;

means for extracting the ions, as an ion beam, from the plasma;

guide means for accelerating and shooting the ion beam to the object supported by the support means;

a Faraday cup located adjacent to the support means to enclose the object for measuring the amount of ions implanted on the basis of secondary electrons generated from the object at the time of ion implantation;

a suppressor electrode for suppressing the flow-out of the secondary electrons from the Faraday cup and having a main surface exposed to the secondary electrons and made of a high resistance conductive material whose resistance value is in a range of 10^{-2} Ωcm–10^{5} Ωcm; and

a power source for adding negative potential to the suppressor electrode.

5,343,048

CONTOUR COLLIMATOR FOR RADIATION THERAPY

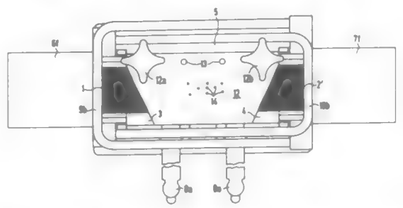
Otto Pastyr, Liemen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 11,858

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203610

Int. Cl.[5] G21K *1/02*

U.S. Cl. 250—505.1 11 Claims



1. A contour collimator for shaping a radiation beam comprising:

a holder;

two sets of radiation-impermeable lamellae disposed in said holder, each lamella in each set being individually movable toward and away from a corresponding lamella in the other set;

each lamella having a displacement element engager;

two spring means, coupled to and respectively acting on said two sets of lamellae, for generating a spring force for normally urging all lamellae in a set toward the lamellae in the other set;

two displacement elements respectively engaging said displacement element engagers of said lamellae in said sets of lamellae; and

two user-manipulable means, on which said displacement elements are respectively mounted, operable in a first manner for moving said displacement elements so as to collectively displace said sets of lamellae away from each other against said spring force and operable in a second manner for releasing said sets of lamellae so as to permit said spring force to act thereon and urge all lamella in a set toward the lamella in the other set.

5,343,049

OPTICAL METHOD FOR DETERMINING RELATIVE POSITIONS OF TWO PIECES AND DEVICE FOR ITS IMPLEMENTATION

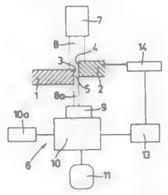
Aimé Vareille, Echirolles; André Schiltz, Saint Ismier, and Jean C. Hauuy, Crolles, all of France, assignors to France Telecom, Paris, France

Filed Feb. 26, 1993, Ser. No. 23,687

Claims priority, application France, Feb. 28, 1992, 92 02397

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 12 Claims



1. A device for positioning a first piece opposite or in an opening in second piece, comprising:

(a) a light emitter for emitting a substantially parallel light beam during use,

(b) a light beam intensity detector,

(c) a zone selector for selecting a beam zone during use,

(d) an intensity comparer for comparing intensity signals of the light beam passing through the zone during use, and

(e) a mover adapted to move the two pieces with respect to each other, the mover being controlled in response to information obtained from the light beam intensity detector and/or intensity comparer during use.

5,343,050

ORGANIC ELECTROLUMINESCENT DEVICE WITH LOW BARRIER HEIGHT

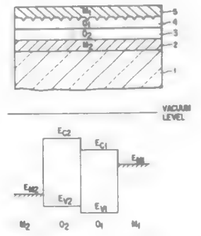
Syun Egusa, and Yoko Watanabe, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 5, 1993, Ser. No. 884

Claims priority, application Japan, Jan. 7, 1992, 4-001016; Mar. 27, 1992, 4-068959; Mar. 27, 1992, 4-071638; Jul. 17, 1992, 4-190353

Int. Cl.[5] H01L *29/28, 33/00*

U.S. Cl. 257—40 10 Claims



1. An organic electroluminescent device, comprising a multilayered structure consisting of an organic film for electron injection and an organic film for hole injection, at least one of which consists of a plurality of layers, and an organic film serving as a light-emitting layer interposed therebetween, a first electrode for electron injection formed on the side of the organic film for electron injection of the multilayered structure, and a second electrode for hole injection formed on the side of the organic film for hole injection of the multilayered structure, wherein a barrier height against electron injection at each interface between layers present from the first electrode to the organic film serving as the light-emitting layer is not more than 0.6 eV, and a barrier height against hole injection at each interface between layers present from the second electrode to the organic film serving as the light-emitting layer is not more than 0.6 eV.

5,343,051

THIN-FILM SOI MOSFET

Yasuo Yamaguchi, and Tadashi Nishimura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 753,285, Aug. 30, 1991, which is a continuation of Ser. No. 439,680, Nov. 22, 1989, Pat. No. 5,125,007. This application May 10, 1993, Ser. No. 58,814

Claims priority, application Japan, Nov. 25, 1988, 63-299136

The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.

Int. Cl.[5] H01L *29/04, 27/108, 27/01*

U.S. Cl. 257—66 8 Claims

1. An MOS field effect transistor comprising:

an insulation layer,

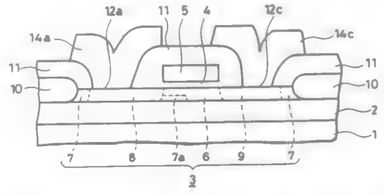
a semiconductor layer formed on said insulation layer,

a channel region of a first conductivity type,

a source region of a second conductivity type formed in contact with a surface of said insulation layer and being in contact with one side of said channel region,

a drain region of the second conductivity type formed in contact with the surface of said insulation layer and being in contact with the other side of said channel region,

a body region of the first conductivity type having a higher impurity concentration than that of said channel region and being formed in contact with the surface of said insulation layer and being in lateral contact with at least a part of said channel region and being only in lateral contact with at least a part of a periphery of at least one of the source region and drain region in said semiconductor



layer, said body region further extending along a boundary between said channel region and said source region, and the channel region, source region, drain region and body region having substantially coplanar lower surfaces formed in contact with said insulation layer,

a gate dielectric thin film formed on said channel region,

a gate electrode formed on said dielectric thin film, and

conductors connected to said source region, said drain region, said body region and said gate electrode.

5,343,052

LATERAL INSULATED GATE BIPOLAR TRANSISTOR

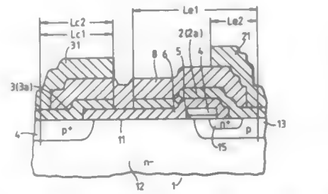
Tosifumi Oohata; Mutsuhiro Mori, and Naoki Sakurai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 917,990

Claims priority, application Japan, Jul. 25, 1991, 3-186106

Int. Cl.[5] H01L *21/76, 27/38, 21/425*

U.S. Cl. 257—141 14 Claims



1. A lateral insulated-gate bipolar transistor, comprising:

a first semiconductor region of a first conductivity type having a main surface;

second and third semiconductor regions each of a second conductivity type, each extending into said first semiconductor region from said main surface, said second and third semiconductor regions being elongate in a predetermined direction and being spaced apart transverse to said predetermined direction,

a fourth semiconductor region extending into said second semiconductor region from said main surface;

an insulated-gate structure on said main surface and extending over said first, second and fourth semiconductor regions;

a first main electrode electrically connected to said second and fourth semiconductor regions, said first main electrode being elongate in said predetermined direction; and

a second main electrode electrically connected to said third semiconductor region, said second main electrode being elongate in said predetermined direction;

VOL 1165 ISS 5 AUG 30 1994 UMI

wherein the ratio of resistances per unit length in the predetermined direction of the first and second main electrodes is in a range of 0.5 to 2.0, and

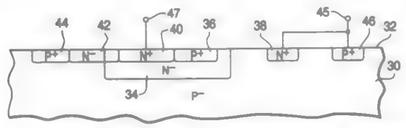
wherein at least one of said first and second main electrodes comprises a multi-layer wiring structure having a main part and an auxiliary part, the main and auxiliary parts being electrically connected to one another and at least partially being separated from one another by an insulating layer.

5,343,053

SCR ELECTROSTATIC DISCHARGE PROTECTION FOR INTEGRATED CIRCUITS

Leslie R. Avery, Flemington, N.J., assignor to David Sarnoff Research Center Inc., Princeton, N.J. and Sharp Corporation, Osaka, Japan

Filed May 21, 1993, Ser. No. 65,150
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—173 27 Claims



1. A protection circuit for an integrated circuit comprising:

a silicon controlled rectifier (SCR) having a clamping voltage;

an electronic triggering means for triggering the SCR to its on-state electrically connected in parallel with said SCR; and

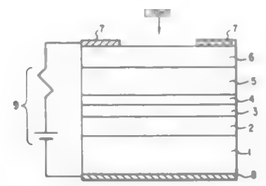
a first zener diode electrically connected in series with the SCR to control the clamping voltage of the SCR.

5,343,054

SEMICONDUCTOR LIGHT-DETECTION DEVICE WITH RECOMBINATION RATES

James T. Maroney, III, and Hideto Furuyama, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 14, 1993, Ser. No. 120,410
Claims priority, application Japan, Sep. 14, 1992, 4-271206
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—184 14 Claims



1. A semiconductor device comprising:

a first layer essentially consisting of a semiconductor of a first conductivity type;

a semiconductor recombination layer, joined to said first layer, for controlling a recombination rate of carriers;

a second layer essentially consisting of a semiconductor of a second conductivity type and joined to said recombination layer on a side opposite to said first layer;

a third layer essentially consisting of one of a semiconductor of the first conductivity type and an intrinsic semiconductor and joined to said second layer on a side opposite to said recombination layer, said third layer operating as a layer for absorbing detection light;

a first electrode connected to said first layer;

a second electrode connected to said third layer; and

a power supply for applying a reverse bias voltage across said first and second electrodes,

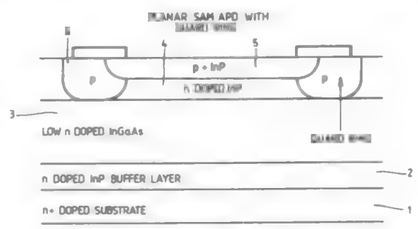
wherein a rate at which carriers of a first polarity injected from said first layer to said recombination layer and carriers of a second polarity injected from said third layer to said recombination layer are recombined with each other and disappear in a state wherein the detection light is not incident is higher than that in a state wherein the detection light is incident.

5,343,055

AVALANCHE PHOTODIODE STRUCTURE WITH MG DOPING AND METHOD

Lynn Davis, Leeds, and Myles MacBean, Stowmarket, both of England, assignors to British Telecommunications public limited company, London, England

PCT No. PCT/GB89/00855, § 371 Date Feb. 6, 1991, § 102(e) Date Feb. 6, 1991, PCT Pub. No. WO90/01217, PCT Pub. Date Feb. 8, 1990
PCT Filed Jul. 27, 1989, Ser. No. 651,228
Claims priority, application United Kingdom, Jul. 27, 1988, 8817886
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—186 8 Claims



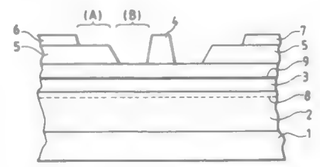
1. A method of making avalanche photodiodes comprising growing a light absorption layer and a multiplication layer by metal organic vapor phase epitaxy and subsequently forming a magnesium doped guard ring structure therein by dopant diffusion from a metal-organic vapor magnesium diffusion source.

5,343,056

COMPOUND SEMICONDUCTOR DEVICE

Yoshikazu Nakagawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Aug. 17, 1992, Ser. No. 931,042
Claims priority, application Japan, Oct. 29, 1991, 3-311827
Int. Cl.[5] H01L *29/205, 29/80, 29/161*
U.S. Cl. 257—191 6 Claims



1. A compound semiconductor device comprising: an undoped semiconductor layer; a doped semiconductor layer formed on said undoped semiconductor layer and having

smaller electron affinity than said undoped semiconductor conductor layer; a gate electrode formed on said doped semiconductor layer; and a source electrode conductor and a drain electrode conductor respectively formed on the doped semiconductor layer at both sides of said gate electrode, the source electrode conductor being spaced from the gate electrode by a selected spacing,

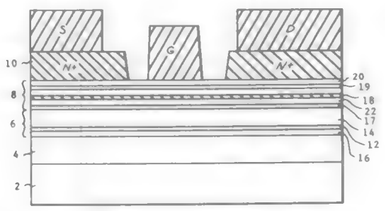
wherein an impurity concentration of said doped semiconductor layer is selected such that, under the conditions of intended use of the device, a portion of said doped semiconductor layer located immediately below said gate electrode is not completely depleted in a state in which a gate voltage is not applied to said gate electrode, and is completely depleted in a state in which a negative voltage is applied to the gate electrode while avoiding depletion in the selected spacing for minimizing noise during operation of the device.

5,343,057

THIN FILM, FIELD EFFECT TRANSISTOR WITH A CONTROLLED ENERGY BAND

Jean-Michel Gerard, Paris, and Jacques Favre, Versailles, both of France, assignors to France Telecom Etablissement Autonome de Droit Public, Paris, France

Filed Jul. 2, 1992, Ser. No. 907,826
Claims priority, application France, Jul. 8, 1991, 91 08544
Int. Cl.[5] H01L *29/38*
U.S. Cl. 257—192 12 Claims



1. A field effect transistor comprising:

a. a semiinsulating substrate,

b. at least one first stack (6) of semiconductive conduction layers with a first concentration of carriers, said first stack forming a conduction channel,

c. at least one second stack (8) of semiconductive, mobile electric charge donor layers, said second stack having a second concentration of carriers and comprising a single highly doped thin film (18) giving to said second stack a donor character, at least two potential barriers (17, 19) located in said second stack, respectively on either side of the highly doped thin film in order to reduce the second concentration of carriers in said second stack, and other layers (20, 22) in said second stack, each barrier (17, 19) comprising at least one semiconductive monolayer of a material having a forbidden energy band greater than those of the other layers (20, 22) of the second stack, said first and second stacks being superimposed on the substrate (2),

d. a metal gate (G) formed on the second stack to modify the first concentration of charge carries in the first stack,

e. two ohmic contacts (S, D) placed on one of the stacks, on either side of the gate, and serving respectively as a source and a drain, and

f. at least one potential well (12) in said first stack in order to increase the first concentration of carries in the first stack, said well (12) comprising at least one semiconductor monolayer of a material having a forbidden energy band below those of the other layers (14, 16) of the first stack,

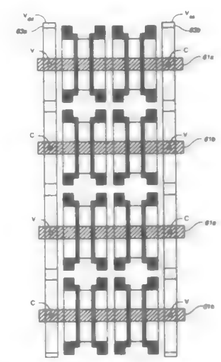
and wherein the substrate (2) comprises GaAs, said other layers (14, 16) of the first stack (6), other than the potential well (12) comprise $In_xGa_{1-x}As$ with $x \leqq x \leqq 1$, the potential well (12) comprises $In_{xo}Ga_{1-xo}As$ with $x < xo \leqq 1$, said other layers (20, 22) of the second stack, other than the potential barriers, comprise $Al_yGa_{1-y}As$ with $0 < y \leqq 1$, and the potential barriers (17, 19) comprise $Al_{yo}Ga_{1-yo}As$ with $y < yo \leqq 1$.

5,343,058

GATE ARRAY BASES WITH FLEXIBLE ROUTING

James D. Shiffer, II, Fremont, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 793,917, Nov. 18, 1991. This application Jun. 22, 1992, Ser. No. 902,183
Int. Cl.[5] H01L *27/10, 23/48*
U.S. Cl. 257—204 7 Claims



1. A circuit comprising:

a gate array base having multiple transistor rows, each transistor row containing multiple transistors of a given type, alternate rows containing transistors of opposite types formed in wells of opposite-type diffusion, said wells having defined therein well tie-down regions;

a first metal layer including first power supply busses for supplying operating and reference voltages to said transistors, said first power supply busses extending in a row direction and at least partially overlapping said well tie-down regions;

a second metal layer including second power supply busses for supplying operating and reference voltages to said transistors, said second power supply busses extending a column direction and at least partially overlapping said well tie-down regions and said first power supply busses;

vias connecting said first and second power supply busses each supplying a same one of said operating voltage and said reference voltage; and

contacts connecting ones of said first power supply busses and ones of said well tie-down regions;

of said vias and contacts, only said vias being formed where first and second power supply busses each supplying a same one of said operating voltage and said reference voltage overlap and only said contacts being formed where first and second power supply busses each supplying a different one of said operating voltage and said reference voltage overlap.

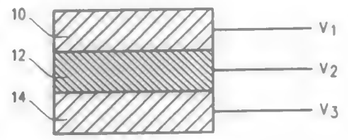
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,059

METHOD AND APPARATUS FOR REDUCING BLOOMING IN OUTPUT OF A CCD IMAGE SENSOR

George M. Blaszczynski, Arlington, Mass., assignor to Leaf Systems, Inc., Southboro, Mass.

Filed Mar. 30, 1993, Ser. No. 38,470
Int. Cl.[5] H01L 27/14
U.S. Cl. 257—223 3 Claims



1. A method for reducing bloom in an output of a charge coupled device (CCD) image sensor comprising the step of:

toggling at least two phases of said CCD after exposure of said CCD until an amount of charge stored in each element of said CCD is at a desired level,

reading out data stored in said CCD after said step of toggling has concluded, wherein said step of reading out is performed in accordance with a desired read-out mode and wherein said desired level is generally close to a full well level associated with said read-out mode,

wherein said read-out mode is the multi-phased pinned (MPP) mode, and

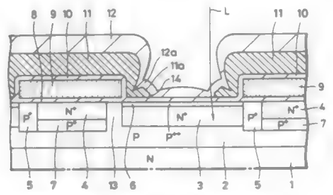
wherein said step of toggling is performed with first high and low voltages, said step of reading charge out is performed with second high and low voltages and said first high voltage is different from said second high voltage.

5,343,060

APPARATUS FOR REDUCING MIRROR IN A SOLID STATE IMAGING DEVICE WHEREIN A LIGHT INTERCEPTING LAYER SHIELDS A TRANSFER MEANS FROM INSTANT LIGHT AND HAS AN EDGE WHICH SLOPES TOWARD THE LIGHT SENSING REGION

Hideshi Abe, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,936
Claims priority, application Japan, Jan. 23, 1992, 4-010074
Int. Cl.[5] H01L 29/78, 27/14; G11C 19/28
U.S. Cl. 257—229 5 Claims



1. A solid state imaging device comprising:

a semiconductor substrate;

a light sensing region formed on said semiconductor substrate;

a transfer means formed on said semiconductor substrate and formed adjacent to said light sensing region;

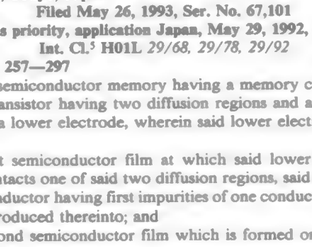
a light intercepting means for shielding said transfer means from incident light having an edge which has a narrow portion on said light sensing region and which has an edge which sticks out toward said light sensing region and wherein said edge is tapered so that its end has a slope that extends downwardly toward said light sensing region, and a passivation layer covering said transfer means and said light sensing region.

5,343,061

SOLID-STATE IMAGING DEVICE SUPPRESSING DARK-CURRENT NOISE

Hirofumi Yamashita, Kawasaki, and Yoshiyuki Matsunaga, Kamakura, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 27, 1993, Ser. No. 67,966
Claims priority, application Japan, May 27, 1992, 4-135187
Int. Cl.[5] H01L 29/78, 27/14, 31/00
U.S. Cl. 257—229 12 Claims



1. A solid-state imaging device comprising a semiconductor substrate in which a specific array of signal charge storage diode portions of one conductivity type and signal charge read-out portions are formed, a solid-state imaging element in which an element isolating region whose conductivity is opposite to that of the diode portions is formed between two of said storage diode portions and pixel electrodes being electrically connected to said storage diode portions are formed on the imaging element, a photoconductive film stacked above said solid-stage imaging element, and a transparent electrode formed above said photoconductive film, wherein:

a drain for charge injection is further formed in aid semiconductor substrate; and

by injecting a specified amount of charge from said drain into a specified region forming said storage diode portion, the potential of a specified region forming each of said storage diode portions is set to a value equal to or higher than the potential of said element isolating region immediately before the accumulation of the signal charge in said specified region forming said storage diode portions; and

during the accumulation of the signal charge, the potential applied to said transparent electrode is set to a value higher than the potential of said storage diode portion set immediately before the accumulation of the signal charge.

5,343,062

SEMICONDUCTOR MEMORY HAVING A MEMORY CELL INCLUDING A CAPACITOR WITH A TWO-LAYER LOWER ELECTRODE

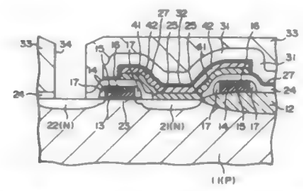
Yugo Tomioka, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed May 26, 1993, Ser. No. 67,101
Claims priority, application Japan, May 29, 1992, 4-164056
Int. Cl.[5] H01L 29/68, 29/78, 29/92
U.S. Cl. 257—297 10 Claims

1. A semiconductor memory having a memory cell including a transistor having two diffusion regions and a capacitor having a lower electrode, wherein said lower electrode comprises:

a first semiconductor film at which said lower electrode contacts one of said two diffusion regions, said first semiconductor having first impurities of one conductivity type introduced thereinto; and

a second semiconductor film which is formed on said first semiconductor film, said second semiconductor film having second impurities introduced thereinto which have the same conductivity type as that of said first impurities and different physical properties than said first impurities.

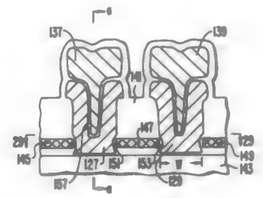


5,343,063

DENSE VERTICAL PROGRAMMABLE READ ONLY MEMORY CELL STRUCTURE AND PROCESSES FOR MAKING THEM

Jack H. Yuan, Cupertino; Gheorghe Samachisa, San Jose; Daniel C. Guterman, Fremont, and Eliyahou Harari, Los Gatos, all of Calif., assignors to SunDisk Corporation, Santa Clara, Calif.

Filed Dec. 18, 1990, Ser. No. 629,250
Int. Cl.[5] H01L 29/68, 29/78
U.S. Cl. 257—317 43 Claims



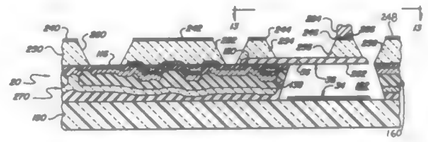
1. In an electrically programmable memory device including an electrically conductive floating gate having a given surface area positioned over at least a portion of a channel region in a substantially planar surface of a semiconductor substrate between source and drain diffusion therein and insulated from the substrate surface by a gate dielectric layer therebetween, and an electrically conductive control gate having a surface area capacitively coupled through a control gate dielectric layer to an opposing surface area of said floating gate, said floating gate being characterized by controlling the amount of conduction in said at least a portion of channel region in proportion to the floating gate electrical potential level, the improvement wherein at least thirty-five percent of the opposing surface areas of said floating and control gates constituting said capacitive coupling are oriented substantially perpendicular to said substrate surface and extend away therefrom in a region of said floating gate given surface area, said floating and control gates being positioned in a trench with the floating gate extending from the gate dielectric along opposing sidewalls of the trench to terminate in edges on the outside of the trench on either side thereof, whereby an amount of area of said substrate that is occupied by said memory device is minimized, and wherein said floating gate given surface area extends over only a portion of the distance between the source and drain diffusions and said control gate extends the rest of the distance therebetween over the channel region with the gate dielectric layer therebetween, whereby said device is a split channel type of memory cell.

5,343,064

FULLY INTEGRATED SINGLE-CRYSTAL SILICON-ON-INSULATOR PROCESS, SENSORS AND CIRCUITS

Leland J. Spangler, 1974 Traver Rd., Apt. No. 208, and Kensall D. Wise, 3670 Charter Pl., both of Ann Arbor, Mich. 48105

Filed Mar. 18, 1988, Ser. No. 169,788
Int. Cl.[5] H01L 29/84, 29/96, 27/01
U.S. Cl. 257—350 8 Claims



1. A microelectronic structure having a plurality of electronic devices, comprising:

a solid-state circuit structure having at least two distinct electronic devices electrically interconnected to one another, each of the devices having at least one active region of single-crystal semiconductor material formed from a common layer of unrecrystallized bulk, epitaxially grown single-crystal semiconductor material;

a support substrate; and

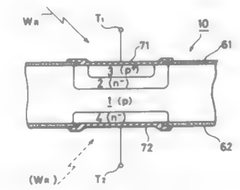
insulating means disposed permanently and rigidly between the circuit structure and the support substrate, the insulating means being permanently joined to the circuit structure and electrostatically bonded to the support substrate, and including therein means for enabling the insulating means while permanently joined to the circuit structure to be electrostatically bonded to the support substrate without subjecting the active regions of the devices to a damaging electric field.

5,343,065

METHOD OF CONTROLLING SURGE PROTECTION DEVICE HOLD CURRENT

Takashi Saitou, Yokohama, Japan, assignor to Sankosha Corporation, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,360
Claims priority, application Japan, Dec. 2, 1991, 3-341767
Int. Cl.[5] H01L 29/92
U.S. Cl. 257—355 10 Claims



1. A method of controlling surge protection device hold current in a surge protection device which breaks over upon application across a pair of terminals thereof of a surge of a voltage higher than its breakover voltage, absorbs surge current while shifting the voltage across the pair of terminals to a clamp voltage lower than the breakover voltage and, after breakover, turns off when device current flowing between the pair of terminals falls to or below a hold current, the method comprising irradiating the surge protection device with electromagnetic radiation from the exterior so as to increase its hold current.

VOL 1165 ISS 5 AG 30 1994 UMI

5,343,066

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

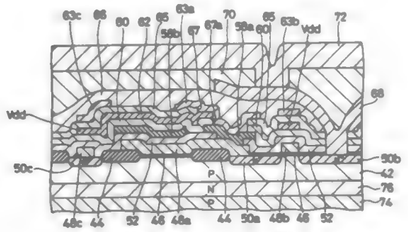
Yutaka Okamoto, Tokyo; Makoto Yamada, Kanagawa, and Masataka Shingun, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 33,369

Claims priority, application Japan, Mar. 30, 1992, 4-103577; Mar. 31, 1992, 4-105406

Int. Cl.[5] H01L 27/01, 27/02

U.S. Cl. 257—393 1 Claim



1. A semiconductor device, comprising:

a thin film transistor formed by a gate insulator film stacked on a first gate electrode layer and a semiconductor layer stacked on the gate insulator film;

a portion of said semiconductor layer being electrically connected by a conductive layer to a second gate electrode layer through a contact hole formed in said gate insulator layer; and

an insulator layer inserted between a portion of said conductive layer and said semiconductor layer; and

said thin film transistor comprising a load transistor of a SRAM memory cell, one end of said semiconductor layer merging into a power supply line connected to said load transistor, and an additional conductive layer portion arranged over said power supply line comprising a shunt line of the power supply line.

5,343,067

HIGH BREAKDOWN VOLTAGE SEMICONDUCTOR DEVICE

Akio Nakagawa, Hiratsuka; Norio Yasuhara, Yokohama, and Tomoko Matsudai, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 642,565, Jan. 18, 1991, Pat. No. 5,241,210, which is a continuation-in-part of Ser. No. 236,746, Aug. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 161,102, Feb. 26, 1988, abandoned. This application Jan. 31, 1992, Ser. No. 829,214

Claims priority, application Japan, Feb. 26, 1987, 62-43564; Jul. 29, 1987, 62-189420; Jul. 4, 1988, 63-166403; Jan. 31, 1991, 3-031720; Mar. 28, 1991, 3-090068; Apr. 16, 1991, 3-109605; Sep. 20, 1991, 3-268970

Int. Cl.[5] H01L 29/74

U.S. Cl. 257—487 36 Claims

1. A high breakdown voltage semiconductor device comprising:

a substrate, a surface of which is made of an insulating material;

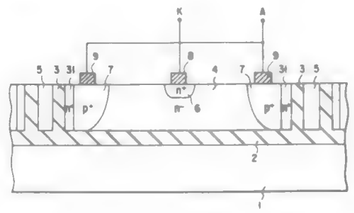
a high resistance semiconductor layer directly formed on said substrate;

an isolation region formed in said high resistance semiconductor layer;

an element region formed in said high-resistance semiconductor layer isolated by said isolation region in a lateral direction;

a first low resistance region of a first conductivity type formed in a central surface portion of said element region; and

a second low resistance region of a second conductivity type formed in a peripheral surface portion of said element region and reaching said substrate, a dose of impurities



being set in said element region such that a portion of said element region between said first low resistance region and said second low resistance region is completely depleted when voltage is applied between said first and second low resistance regions.

5,343,068

INTEGRATED BIPOLAR POWER DEVICE AND A FAST DIODE

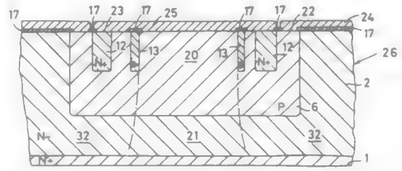
Ferruccio Frisina, and Giuseppe Ferla, both of Catania, Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania and SGS-Thomson Microelectronics S.R.L., Agrate Brianza Milano, both of Italy

Filed Mar. 18, 1992, Ser. No. 852,310

Claims priority, application Italy, Mar. 28, 1991, MI 91 A 000846

Int. Cl.[5] H02L 27/082, 27/102, 29/70

U.S. Cl. 257—578 9 Claims



1. An integrated structure for a bipolar device having high current density and a fast diode having a first electrode and a second electrode electrically connected to an emitter region and to a collector region of said bipolar device, respectively, comprising: a chip of semiconductor material having a substrate of semiconductor material with dopant of a first type, an epitaxial layer with dopant of the first type superimposed over said substrate and constituting, together with said substrate, the collector region of the bipolar device, a base region with dopant of a second type extending from a top surface of the chip inside the epitaxial layer and a region with dopant of the first type extending from said top surface inside said base region to constitute the emitter region of said bipolar device, the entire structure containing impurities suitable for raising the lifetime of the minority carriers, wherein there is at least one annular region with dopant of the first type extending from said top surface inside said base region and suitable for laterally delimiting at least an upper part of a portion of said base region which constitutes the first electrode of the fast diode and which is doped with ions suitable for reducing the lifetime of the minority carriers, said ions also being present in an underlying portion of the epitaxial layer constituting the second electrode of said fast diode.

5,343,069

ELECTRONIC SWITCH WITH A DEFINITE BREAKDOWN VOLTAGE

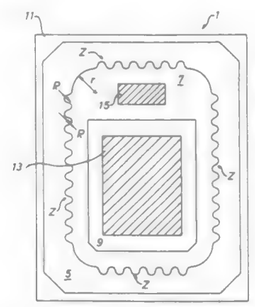
Christian Pluntke, Hechingen, and Alfred Goerlach, Kusterdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 26, 1993, Ser. No. 27,162

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1990, 4035500

Int. Cl.[5] H01L 29/72, 29/90

U.S. Cl. 257—583 10 Claims



1. Electronic switch comprising a semiconductor body (3) of a predetermined doping type having an upper surface and a doping zone (7) introduced in said upper surface and of a predetermined doping type opposite from said predetermined doping type of the semiconductor body, said doping zone (7) forming a pn-junction in said semiconductor body (3), said pn-junction having an edge region at said upper surface,

wherein said pn-junction has at least one voltage limiting zone (Z) arranged in the edge region and having at least one curved region of a radius of curvature (R), said radius of curvature (R) being not greater than a thickness (X_{JB}) of the doping zone (7).

5,343,070

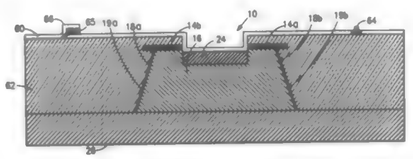
MESA TYPE PIN DIODE

Joel L. Goodrich, Westford, and Christopher C. Souchuns, Ashland, both of Mass., assignors to M/A-COM, Inc., Lowell, Mass.

Division of Ser. No. 981,278, Nov. 25, 1992, Pat. No. 5,268,310. This application Aug. 2, 1993, Ser. No. 101,893

Int. Cl.[5] H01L 29/06, 29/12

U.S. Cl. 257—594 14 Claims



4. A semiconductor PIN diode, and comprising:

a substrate having an N-type conductivity;

b. an intrinsic material mesa-shaped structure disposed upon said substrate and having a top surface and side-walls;

c. a junction formed in said top surface of said mesa-shaped structure and having an area that is less than the area of said top surface; and

d. a highly-doped, N-type conducting layer formed in said side-walls of said mesa-shaped structure.

5,343,071

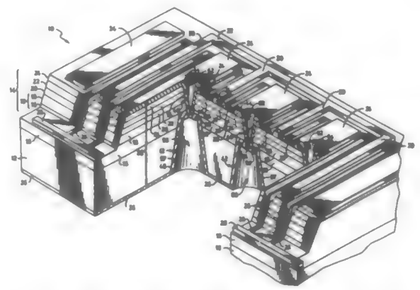
SEMICONDUCTOR STRUCTURES HAVING DUAL SURFACE VIA HOLES

Thomas E. Kazior, Sudbury, and John C. Huang, Cambridge, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 28, 1993, Ser. No. 54,380

Int. Cl.[5] H01L 29/06

U.S. Cl. 257—621 17 Claims



1. A semiconductor structure, comprising:

an electrically conductive layer disposed over one surface of the structure;

an electrode disposed over an opposite surface of the structure;

a conductor section passing through the semiconductor structure between the electrode and the conductive layer, the conductor section comprising: a first metal conductive element having a first end connected to the electrode and a second end terminated in the semiconductor structure; and a second metal conductive element having a first end connected to the conductive layer and another end disposed on and connected to the second end of the first metal conductive element.

5,343,072

METHOD AND LEADFRAME FOR MAKING ELECTRONIC COMPONENTS

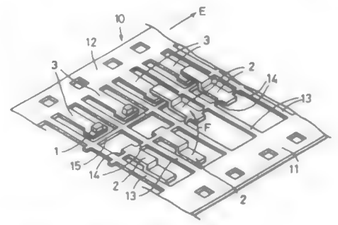
Hiroshi Imai; Tadashi Murakami; Tetsuya Mimura, all of Kyoto; Masao Yamamoto, Takatsuki; Yuji Kosumi, Uji; Masashi Asai, and Yasunori Aoki, both of Kyoto, all of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 737,143, Jul. 29, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,667

Claims priority, application Japan, Aug. 20, 1990, 2-219394; Mar. 4, 1991, 3-064035; Jun. 7, 1991, 3-136751

Int. Cl.[5] H01L 23/48

U.S. Cl. 257—666 18 Claims



1. A leadframe comprising:

a plurality of first leads extending transversely of the leadframe, each of the first leads having a free end portion;

VOL 1165 ISS 5 AG 30 1994 UMI

a plurality of second leads integral with and extending transversely of the leadframe, the second leads being initially spaced from but arranged substantially in alignment with the respective first leads transversely of the leadframe to form pairs with the respective first leads, each of the second leads having a tip portion; wherein

the respective first leads are rendered integral with the leadframe only via twistable segments extending transversely of the respective first leads, the free end portion of each first lead being spaced from corresponding ones of the twistable segments by a distance which causes the free end portion of said each first lead to overlap the tip portion of a corresponding second lead when said each first lead is turned over toward said corresponding second lead by twisting the twistable segments.

5,343,073

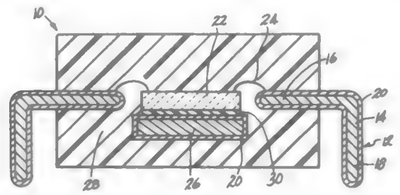
LEAD FRAMES HAVING A CHROMIUM AND ZINC ALLOY COATING

Arvind Parthasarathi, North Branford, and Deepak Mahulikar, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 822,373, Jan. 17, 1992. This application Jan. 6, 1993, Ser. No. 1,014

Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/62*

U.S. Cl. 257—666 **14 Claims**



1. A leadframe comprising:

an electrically conductive metal substrate being a copper base alloy and formed into a plurality of leads, said substrate coated with at least one metallic layer, the outer most layer containing a mixture of chromium and zinc.

5,343,074

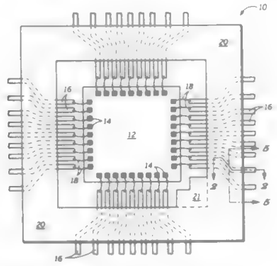
SEMICONDUCTOR DEVICE HAVING VOLTAGE DISTRIBUTION RING(S) AND METHOD FOR MAKING THE SAME

Leo M. Higgins, III, and Aubrey K. Sparkman, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1993, Ser. No. 131,167

Int. Cl.[5] H01L *23/48, 21/60*

U.S. Cl. 257—668 **27 Claims**



1. A semiconductor device comprising:

a semiconductor die having a periphery, a surface, and a plurality of bond pads on the surface and along the periphery;

a single layer metal lead frame having a plurality of substantially co-planar leads offset from and surrounding the die periphery and electrically coupled to the plurality of bond pads;

a voltage distribution ring offset from and surrounding the periphery of the die, the ring being an insulative polymer-based tape having a single metallized surface and being adhesively bonded to the plurality of leads to aid in maintaining lead planarity; and

means for electrically coupling the metallized surface of the ring to a selected bond pad of the die.

5,343,075

COMPOSITE STACKED SEMICONDUCTOR DEVICE WITH CONTACT PLATES

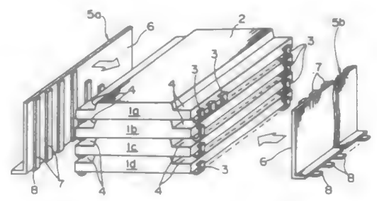
Tomoki Nishino, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Jun. 22, 1992, Ser. No. 901,846

Claims priority, application Japan, Jun. 29, 1991, 3-185626

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—686 **6 Claims**



1. A composite semiconductor device comprising:

a wiring board;

a plurality of resin-sealed semiconductor devices, each contained within a respective resin package and having external leads projecting from opposite sides thereof, said resin packages being stacked on each other to form a stack, said stack being supported on the wiring board; and

a pair of contact plates having wiring lines on the inner surfaces thereof and supported on the wiring board, each of said pair of contact plates being positioned proximate to one of the opposite sides of the resin-sealed semiconductor devices of said stack, said contact plates having disposed thereon wiring lines wherein said external leads are formed whereby external leads of the stack of resin-sealed semiconductor devices resiliently contact and form an electrical connection with selected wiring lines of said contact plates.

5,343,076

SEMICONDUCTOR DEVICE WITH AN AIRTIGHT SPACE FORMED INTERNALLY WITHIN A HOLLOW PACKAGE

Shigeru Katayama; Kaoru Tominaga, and Junichi Yoshitake, all of Sodegaura, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 731,979, Jul. 18, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 155,539

Claims priority, application Japan, Jul. 21, 1990, 2-193617; Feb. 21, 1991, 3-027106; Jun. 13, 1991, 3-142056

Int. Cl.[5] H01L *23/48, 23/02, 23/12, 29/40*

U.S. Cl. 257—717 **5 Claims**

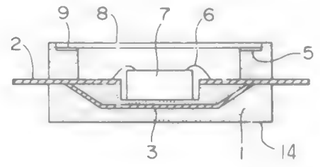
1. A semiconductor device comprising:

a hollow package including an airtight space formed in a central portion of said hollow package;

a semiconductor chip; and

a vapor-impermeable moistureproof plate including an island portion connected to a lead frame by a support lead, said island portion provided in an area greater than or equal to a bottom surface of said semiconductor chip at a position lower than a surface of the lead frame and at a position lower than a bottom surface of said semiconductor chip;

wherein said island portion is provided close to the bottom portion of said hollow package and at least 100 μm from



a bonding surface for securing said semiconductor chip to the support lead;

wherein said semiconductor chip is bonded on an inner surface of a bottom portion of said hollow package, and said vapor-impermeable moistureproof plate is placed between an outer surface and an inner surface of the bottom portion of said hollow package with a residual thickness toward the inner surface.

5,343,077

ELECTRIC POWER SUPPLY CONTROL DEVICE FOR VEHICLE

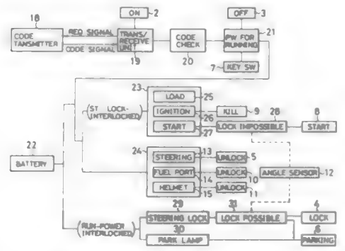
Susumu Yoshida, Wako; Munemitsu Ebihara, Miyazaki; Tsutomu Kurita, Miyazaki, and Masahiko Sueyoshi, Miyazaki, all of Japan, assignors to Honda Giken Kogyo KK, Tokyo and Honda Lock MFG. Co., Ltd., Miyazaki, both of Japan

Continuation of Ser. No. 541,118, Jun. 20, 1990, Pat. No. 5,124,565. This application May 13, 1992, Ser. No. 882,603

Claims priority, application Japan, Jun. 20, 1989, 1-157122; Aug. 31, 1989, 1-226877

Int. Cl.[5] B60R *25/02, 25/04;* **B62H** *5/02*

U.S. Cl. 307—9.1 **1 Claim**



1. An electric power supply control device for a vehicle comprising:

a steering lock circuit for actuating a lock actuator for driving a steering lock device of a vehicle,

a circuit for a vehicle running system for actuating an engine of said vehicle,

a power supply circuit for supplying electric power to said steering lock circuit and said circuit for the vehicle running system,

a locking operation switch for outputting an operation instruction signal for actuating said lock actuator in the direction of locking said steering lock device,

a code transmitter means carried by a driver for transmitting a predetermined inherent code signal upon receiving a predetermined request signal,

a transmitting/receiving circuit disposed on the vehicle for transmitting said predetermined request signal to said code transmitter means and for receiving said predetermined inherent code signal transmitted from said code transmission means,

a code comparison circuit for comparing said received predetermined inherent code signal with a predetermined code previously stored in said code comparison circuit,

a running operation switch means disposed on the vehicle for actuating said transmitting/receiving circuit and connecting said vehicle running system circuit with said power supply circuit when said received inherent code signal coincides with said stored predetermined code, and

an off switch disposed on the vehicle to be operated for disconnecting said power supply circuit for vehicle running from a power source and turning said power supply circuit to off,

wherein said circuit for vehicle running system and said steering lock circuit are connected to a power supply circuit so that said running system circuit cannot be actuated when said steering lock circuit is enabled and said steering lock circuit cannot be actuated when said running system circuit is enabled.

5,343,078

ARRANGEMENT FOR PROVIDING A CURRENT-REGULATED CONTROL OF SEVERAL ACTUATORS WITH A CONTROL COMPUTER

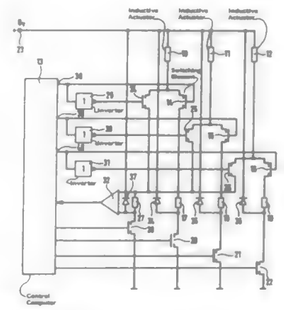
Wolfgang Bullmer, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart

Filed Oct. 13, 1993, Ser. No. 135,802

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1992, 4234421

Int. Cl.[5] H02J *4/00;* **G01R** *19/00*

U.S. Cl. 307—41 **13 Claims**



1. An arrangement for providing a current-regulated control of several actuators, the arrangement comprising:

a plurality of first control transistors corresponding to respective ones of said actuators;

a measuring and control arrangement for all of said actuators which includes a single measuring resistor for detecting respective actual current values in corresponding ones of said actuators and an ancillary control transistor connected in series with said measuring resistor;

said measuring resistor having a predetermined resistance value;

a plurality of first resistors connected in series with respective ones of said first control transistors;

each of said first resistors having a resistance value corresponding to said predetermined resistance value of said measuring resistor;

a plurality of switchover devices connected between respec-

VOL 1165 ISS 5 AUG 30 1994 UMI

tive ones of said actuators and respective ones of said first control transistors;

each of said switchover devices being switchable between a first state wherein the actuator and the first control transistor corresponding thereto are connected in series and a second state wherein the actuator is connected in series with said measuring and control arrangement;

a control computer connected to said switchover devices for sequentially switching said switching devices into said second state for a pregiven measuring and control time; and,

said control computer also being connected to said first control transistors for applying a control signal sequence to each of said first control transistors with each of said control signal sequences being adjusted at the ancillary control transistor during the pregiven measuring and control time for the actuator corresponding thereto.

5,343,079

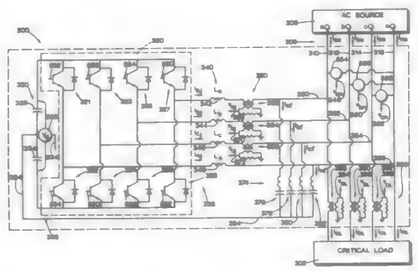
STANDBY POWER SUPPLY WITH LOAD-CURRENT HARMONICS NEUTRALIZER

Ned Mohan, St. Paul; Maximilian R. Peterson, Rochester, and Conor A. Quinn, St. Paul, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 661,341, Feb. 25, 1991, Pat. No. 5,172,009. This application Dec. 15, 1992, Ser. No. 991,091

Int. Cl.[5] H02J *3/01*

U.S. Cl. 307—105 **22 Claims**



15. An apparatus for delivering sinusoidal currents to an electrical load, comprising:

a power converter having an AC side and a DC side, with the AC side coupled in parallel with an AC power source providing power to the electrical load with a three-phase four wire system including three-phase conductors and a neutral conductor, and the DC side coupled to a DC storage system;

a plurality of voltage sensors for generating source voltage sensor signals corresponding to distorted line-to-neutral voltage signals of the three-phase conductors of the AC source;

a DC storage system voltage detector for generating a DC voltage signal in response to a DC voltage across the DC storage system; and

a controller responsive to said source voltage sensor signals and said DC voltage signal to cause the power converter to generate harmonic neutralized three-phase sinusoidal currents on said three-phase four wire system.

5,343,080

HARMONIC CANCELLATION SYSTEM

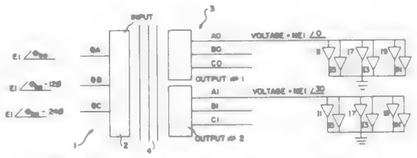
John B. Kammeter, Richmond, Va., assignor to Power Distribution, Inc., Sandston, Va.

Continuation of Ser. No. 992,061, Dec. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 792,893, Nov. 15, 1991, Pat. No. 5,206,539. This application Feb. 14, 1994, Ser. No. 196,813

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] H02J *3/01*

U.S. Cl. 307—105 **27 Claims**



1. A harmonic cancellation system, comprising:

an input power source;

at least one transformer core;

a three-phase primary winding inductively coupled with said core and connected to said power source;

at least two three-phase wye-connected output windings inductively coupled with said core, wherein said output windings are phase-shifted relative to each other to cause magnetic flux vectors generated in said core by harmonic currents present in the output windings to add to zero for respective orders of selected harmonic currents and thereby prevent the selected harmonic currents present in the output windings from being induced in said input windings; and

a load connected to said output windings.

5,343,081

SYNAPSE CIRCUIT WHICH UTILIZES BALLISTIC ELECTRON BEAMS IN TWO-DIMENSIONAL ELECTRON GAS

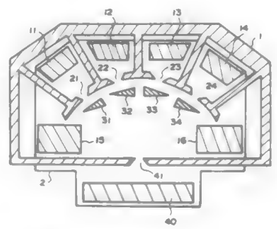
Kazuo Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 933,118

Claims priority, application Japan, Aug. 23, 1991, 3-211271

Int. Cl.[5] G06G *7/12;* **H01J** *17/36*

U.S. Cl. 307—201 **7 Claims**



1. A semiconductor synapse circuit comprising:

a semiconductor, having an electrically charged carrier gas is, provided with a plurality of input channels each providing a first narrowed area for restricting an emitting direction of the electrically charged carrier, said input channels being each electrically isolated,

electrodes for applying and electrostatic potential for changing a traveling direction of the carrier emitted from said input channels,

a single second narrowed area positioned opposed to the first narrowed areas of said plural input channels for passing through only carriers traveling in the restricted emitting direction, and

an acceptor electrode for collecting the carriers passing through said single second narrowed area.

5,343,082

ADDRESS TRANSITION DETECTION CIRCUIT

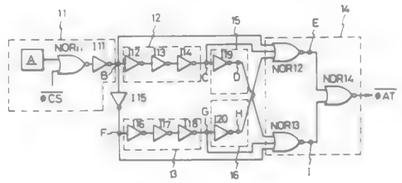
Gwang-Ma Han, and Gyu-Suk Kim, both of Kyoungki, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki, Rep. of Korea

Filed Dec. 29, 1992, Ser. No. 998,020

Claims priority, application Rep. of Korea, Dec. 31, 1991, 91-25784

Int. Cl.[5] H03K *5/153*

U.S. Cl. 307—234 **6 Claims**



1. An address transition detection circuit, comprising:

an input control unit comprising a first NOR gate and a first inverter, said first NOR gate having a first input electrically connected to an address input signal source and a second input electrically connected to a chip select signal source, said first NOR gate having an output electrically connected to an input of said first inverter wherein receipt of said address input and chip select signals by said first NOR gate causes a signal to be sent from said output of said first NOR gate to said input of said first inverter for inversion therein;

a first delay/inversion unit electrically connected to an output of said first inverter for receiving said inverted signal from said first inverter, said first delay/inversion unit delaying and inverting said signal from said first inverter;

a first control unit electrically connected to an output of said first delay/inversion unit for receiving said delayed and inverted signal from said first delay/inversion unit, said first control unit inverting said signal from said first delay-/inversion unit;

an intermediate inverter electrically connected to said output of said first inverter for receiving said signal from said first inverter, said intermediate inverter inverting said signal from said first inverter;

a second delay/inversion unit electrically connected to an output of said intermediate inverter for receiving said inverted signal from said intermediate inverter, said second delay/inversion unit delaying and inverting said signal from said intermediate inverter;

a second control unit electrically connected to an output of said second delay/inversion unit for receiving said delayed and inverted signal from said second delay/inversion unit, said second control unit inverting said signal from said second delay/inversion unit; and

a logic combination unit electrically connected to outputs of said first and second control units, in a cross coupled arrangement, said logic combination unit be further connected to said first and second delay/inversion units, said input control unit and said intermediate inverter wherein said signals from said input control unit and first delay/inversion unit are combined with a signal from said second control unit, and wherein signals from said intermediate inverter and second delay/inversion unit are combined with a signal from said first control unit to produce an ATD pulse signal.

5,343,083

ANALOG/DIGITAL HYBRID MASTERSLICE IC

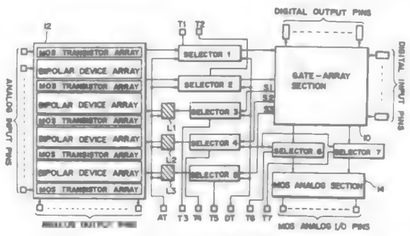
Mamoru Fuse, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 3, 1993, Ser. No. 12,736

Claims priority, application Japan, Feb. 3, 1992, 4-017399

Int. Cl.[5] H03K *7/56*

U.S. Cl. 307—242 **5 Claims**



1. An analog/digital hybrid masterslice IC comprising:

an analog master section in which basic blocks each having a cell formed by a bipolar device and having a MOS transistor connected to said cell are arranged in array form;

an analog section which, together with said analog master section, constitutes an analog circuit section;

a digital logic circuit section which operates under a power source voltage lower than that supplied to said analog circuit section;

a selector circuit which is disposed between said digital logic circuit section and said analog circuit section and operates for testing said analog circuit section and said digital logic circuit section independently from each other; and

a level shift circuit which amplifies a level of an output signal from said digital logic circuit section, said level shift circuit being disposed between said selector circuit and said analog circuit section and fixedly built-in in a master-wafer substrate as a hard-macro.

5,343,084

VARIABLE LEVEL PERIODIC EXCITATION CIRCUIT FOR A CAPACITIVE LOAD

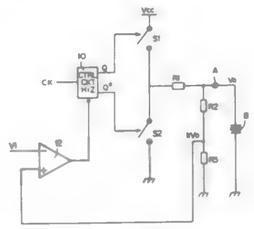
Marc Gens, Saint Martin D'Uriage, France, assignor to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Apr. 29, 1992, Ser. No. 875,773

Claims priority, application France, Apr. 30, 1991, 91 05774

Int. Cl.[5] H03K *17/56, 5/00, 17/687*

U.S. Cl. 307—246 **9 Claims**



1. A predetermined frequency and adjustable level excitation circuit for a capacitive load having a first terminal con-

VOL 1165 ISS 5 AG 30 1994 UMI

nected to a first supply voltage, said predetermined frequency and adjustable level excitation circuit comprising:

two switches connected in series between a second supply voltage and said first supply voltage, a junction of said two switches being coupled to a second terminal of the load, said two switches not being simultaneously closed;

a control circuit for periodically controlling the operation of the two switches, wherein said control circuit comprises:

(a) a periodic logic control signal input,

(b) a first output controlling a first of the switches in phase with the periodic logic control signal,

(c) a second output controlling the other switch in phase opposition to the periodic logic control signal,

(d) a high impedance setting input for receiving a high impedance setting signal,

(e) means responsive to said high impedance setting signal for causing one of the switches to be opened at least until a next state transition of the control signal, and

(f) for each switch, a means for detecting current in the switch and opening the other of said switches if the current exceeds a predetermined value; and

regulation means for triggering the control circuit to open said one of the switches when a voltage across the load reaches a predetermined value.

5,343,085

POWER-ON RESET SYSTEM AND A SEMICONDUCTOR MEMORY DEVICE INCORPORATING SAME

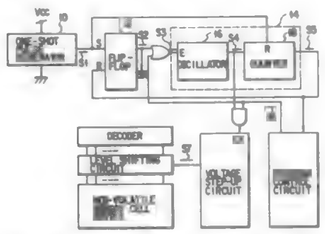
Takuya Fujimoro, Kawasaki, and Yukio Wada, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 8, 1993, Ser. No. 44,172

Claims priority, application Japan, Apr. 9, 1992, 4-088600

Int. Cl.[5] H03K *17/28*

U.S. Cl. 307—272.3 **12 Claims**



1. A semiconductor memory device provided with a power-on reset system comprising:

a flip-flop having a set input for receiving a set signal when a power supply voltage is initially supplied to the device, reset input, and a flip-flop output;

oscillation means, having an enable input, for generating oscillation signals;

counter means for sending a count-end signal to the reset input when the number of oscillation signals reaches a given number;

voltage step-up means having an input responsive to the oscillation signals and an output for transmitting stepped up potential signals;

control means, having an input responsive to the count-end signal, for generating an enable signal to write data into a memory cell of the device;

a memory cell matrix;

a decoder for transmitting a decoded signal;

means coupled to the output of the voltage step-up means for shifting the level of the decoded signal and sending a shifted signal to the memory cell matrix;

a first logic gate for forwarding the oscillation signals from the oscillation means to the voltage step-up means upon receiving the enable signal; and

a second logic gate having a first input responsive to the flip-flop output, a second input responsive to the enable signal from the control means, and an output coupled to the enable input of the oscillation means.

5,343,086

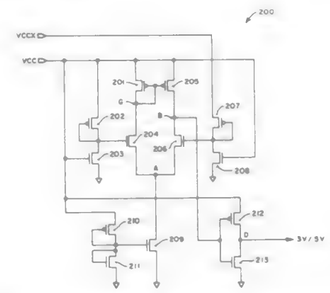
AUTOMATIC VOLTAGE DETECTOR CONTROL CIRCUITRY

Wing-Cho Fung, Fremont; Yim Pun, and Eric B. Selvin, both of San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 6, 1992, Ser. No. 972,760

Int. Cl.[5] G05F *1/565*

U.S. Cl. 307—296.1 **16 Claims**



1. A circuit for detecting voltage on a integrated circuit comprising:

differential amplifier means for comparing a first voltage supply and a second voltage supply, wherein the first voltage supply is a predetermined voltage supply level and the second voltage supply is capable of being the predetermined voltage supply level or at least one other voltage supply level, and further wherein said differential amplifier means magnifies the difference between the first voltage supply and the second voltage supply to accentuate the difference between the predetermined voltage supply and the second voltage supply, said differential amplifier outputting a first signal in a first logic state if the first and second voltage supplies are equal and outputting the first signal in a second logic state if the first and second voltage supplies are not equal;

output means coupled and responsive to the first signal from the differential amplifier means, such that the output means outputs a second signal indicative of the voltage supply level in response to the first signal.

5,343,087

SEMICONDUCTOR DEVICE HAVING A SUBSTRATE BIAS GENERATOR

Tohru Furuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 520,057, May 3, 1990, abandoned. This application Jun. 10, 1991, Ser. No. 713,014

Claims priority, application Japan, May 24, 1989, 1-130710

Int. Cl.[5] H03K *3/01*

U.S. Cl. 307—296.2 **13 Claims**

1. A semiconductor device including a reference voltage, comprising:

a substrate region of a first conductivity type;

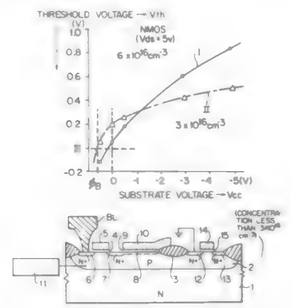
a bias generating circuit, coupled to the substrate region, including means for biasing the substrate region toward a predetermined voltage; and

a MOS transistor, juxtaposed to the substrate region, including

a source region of a second conductivity type coupled to the reference voltage, the source region defining a P-N junction with the substrate region,

a gate electrode, and

a drain region of the second conductivity type, the substrate region having an impurity concentration within a range causing the MOS transistor to be of the enhancement type at times when the difference between a voltage in the substrate region and the reference voltage is substantially equal to a built-in potential of the P-N junction.



5,343,088

CHARGE PUMP CIRCUIT FOR A SUBSTRATE VOLTAGE GENERATOR OF A SEMICONDUCTOR MEMORY DEVICE

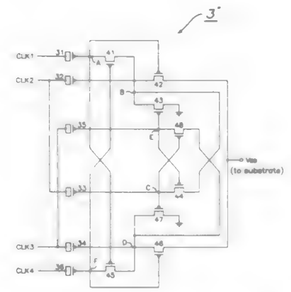
Jun-Young Jeon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Mar. 30, 1993, Ser. No. 38,097

Claims priority, application Rep. of Korea, Mar. 30, 1992, 5285/1992

Int. Cl.[5] H03K *3/01*

U.S. Cl. 307—296.2 **12 Claims**



1. A charge pump circuit in a substrate bias voltage generator for pumping a bias charge to a voltage output terminal twice during a complete clock cycle so as to maintain a substantially constant negative voltage level thereto, said charge pump circuit comprising:

first and second pump capacitors for respectively receiving first and second in-phase rectangular wave signals, of different pulse width from one another, at a respective end thereof;

third and fourth pump capacitors for respectively receiving in-phase third and fourth rectangular wave signals, of different pulse width from one another, at a respective end thereof;

a first transistor having a channel connected between a first pumping node and the voltage output terminal, and a control terminal connected to said first pump capacitor, said first pumping node being electrically coupled to said second pumping capacitor;

a second transistor connected between said first pumping node and a ground voltage terminal;

a third transistor having its channel connected between a second pumping node and said voltage output terminal, and a control terminal connected to said fourth pump capacitor, said second pumping node being electrically coupled to said third pumping capacitor;

a fourth transistor connected between said second pumping node and said ground voltage terminal;

first means connected to said first pump capacitor and to said fourth pump capacitor for electrically isolating said first pumping node from said second pumping node;

second means connected to a control terminal of said second transistor and to a control terminal of said fourth transistor for controlling the operation of said second and fourth transistors; and

third means connected to said first and second pumping nodes and to said control terminal of said second transistor and to said control terminal of said fourth transistor, for complementarily operating said second and fourth transistors in response to a signal from said second means.

5,343,089

SAMPLE-AND-HOLD CIRCUIT DEVICE

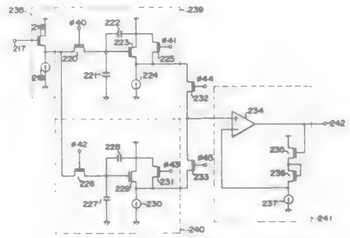
Tetsuro Itakura, Fujisawa, and Takeshi Shima, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 963,451, Oct. 19, 1992, abandoned, which is a division of Ser. No. 636,427, Dec. 28, 1990, Pat. No. 5,162,670. This application Nov. 23, 1993, Ser. No. 155,905

Claims priority, application Japan, Jan. 26, 1990, 2-17299

Int. Cl.[5] G11C *27/02*

U.S. Cl. 307—353 **10 Claims**



1. A sample-and-hold circuit device comprising:

first sample-and-hold means for sampling and holding an input signal;

second sample-and-hold means for sampling and holding the input signal;

first buffer means including first source follower circuit means connected to said first sample-and-hold means and an output terminal, for receiving an output from said first sample-and-hold means;

second buffer means including second source follower circuit means connected to said second sample-and-hold means and an output terminal, for receiving an output from said second sample-and-hold means;

an internal terminal;

first and second switch means which are alternately opened or closed to selectively connect the output terminals of said first and second buffer means to said internal terminal; and

VOL 1165 ISS 5 AG 30 1994 UMI

third buffer means including an input terminal connected to said internal terminal and voltage follower circuit means having a feedback loop containing a level shift circuit.

5,343,090

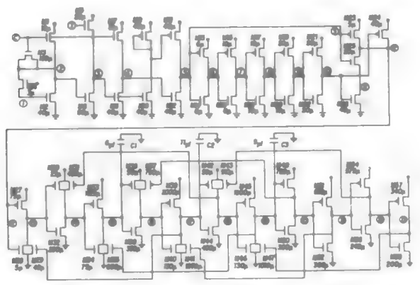
SPEED ENHANCEMENT TECHNIQUE FOR CMOS CIRCUITS

Robert J. Proebsting, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 821,890, Jan. 15, 1992, abandoned, which is a continuation of Ser. No. 704,685, May 17, 1991, abandoned, which is a continuation of Ser. No. 586,849, Sep. 24, 1990, abandoned, which is a continuation of Ser. No. 515,769, Apr. 24, 1990, Pat. No. 4,985,643. This application Aug. 11, 1993, Ser. No. 105,768

Int. Cl.[5] H03K *17/04*

U.S. Cl. 307—443 27 Claims



1. A circuit comprising:

a plurality of cascaded stages, each stage being capable of being placed in one of a set state or a reset state,

wherein the set state of a particular stage is established by using a majority of charge supplied from an immediately preceding stage, and the reset state of the particular stage is established by using a minority of charge supplied directly from a subsequent stage.

5,343,091

SEMICONDUCTOR LOGIC INTEGRATED CIRCUIT HAVING IMPROVED NOISE MARGIN OVER DCFL CIRCUITS

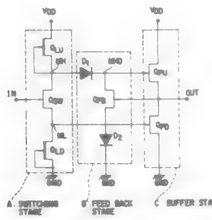
Toshiyuki Terada, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 29, 1993, Ser. No. 11,155

Claims priority, application Japan, Jan. 31, 1992, 4-016657; Sep. 3, 1992, 4-236112

Int. Cl.[5] H03K *17/08*

U.S. Cl. 307—448 8 Claims



1. A semiconductor logic integrated circuit powered by at least a first through fifth power supplies and having a first logic input terminal and a logic output terminal, comprising:

a switching stage which contains a first load with a first end and a second end, the first end being connected to the first power supply, a second load with a first end and a second end, the first end being connected to the second power supply, and a first junction gate field-effect transistor having a drain connected to the second end of said first load, a source connected to the second end of said second load, and a gate connected to said first logic input terminal;

a buffer stage which contains a second junction gate field-effect transistor having a drain connected to the third power supply, a source connected said logic output terminal, and a gate, and a third junction gate field-effect transistor having a drain connected to said logic output terminal, a source connected to the fourth power supply, and a gate connected to the source of said first junction gate field-effect transistor; and

a feedback stage which contains a level shift element having a first end connected to the drain of said first junction gate field-effect transistor and a second end connected to the gate of said second junction gate field-effect transistor, and a fourth junction gate field-effect transistor having a drain connected to the second end of said level shift element, and a gate connected to said logic output terminal, and a source connected to the fifth power supply.

5,343,092

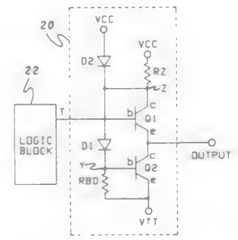
SELF-BIASED FEEDBACK-CONTROLLED ACTIVE PULL-DOWN SIGNAL SWITCHING

Sang H. Dhong, and Hyun J. Shin, both of Mahopac, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1992, Ser. No. 874,784

Int. Cl.[5] H03K *17/16, 5/08*

U.S. Cl. 307—455 30 Claims



1. An emitter coupled logic circuit comprising:

a bipolar transistor pull-up circuit having a base comprising a single input terminal of the emitter coupled logic circuit connected to a previous logic stage circuit, and having an emitter-collector circuit connected between a circuit output terminal and a first power signal, said bipolar transistor pull-up circuit providing a first signal level to said output terminal in response to a first logic state applied to said single input terminal by said previous logic stage circuit; and

a bipolar transistor pull-down circuit having a base connected to a feedback control circuit coupling said bipolar transistor pull-up and pull-down circuits such that the collector of said bipolar transistor pull-up circuit and the base of said bipolar transistor pull-down circuit are coupled, said bipolar transistor pull-down circuit further having a collector-emitter circuit connected between said output terminal and a second power signal, said bipolar transistor pull-down circuit providing a second signal level at said output terminal in response to a second logic state applied from said previous logic stage circuit to said single input terminal comprising the base of said bipolar transistor pull-up circuit, whereby during switching of said logic stage circuit output from one of said logic states to the other of said logic states, said bipolar transistor pull-up circuit and said bipolar transistor pull-down circuit cooperate to actively switch the signal level at said output terminal to the associated one of said first signal level and said second signal level.

5,343,093

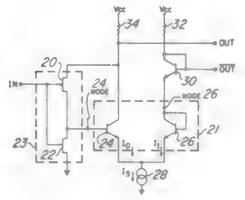
SELF REFERENCING MOS TO ECL LEVEL CONVERSION CIRCUIT

Hien V. Tran, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 199,558, May 27, 1988, abandoned. This application Oct. 16, 1992, Ser. No. 962,422

Int. Cl.[5] H03K *17/12*

U.S. Cl. 307—475 7 Claims



1. A MOS, including CMOS, to ECL level conversion circuit comprising:

a current source;

a first and second transistor comprising a differential pair connected to said current source, said first transistor being configured as a diode and being self-referencing, independent of the input to said circuit, so as to supply its own reference voltage level; and

an inverter connected to the input of said second transistor.

5,343,094

LOW NOISE LOGIC AMPLIFIER WITH NONDIFFERENTIAL TO DIFFERENTIAL CONVERSION

Thai M. Nguyen, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 13, 1993, Ser. No. 4,136

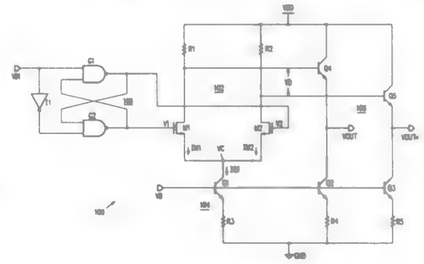
Int. Cl.[5] H03K *19/092, 17/16*

U.S. Cl. 307—475 52 Claims

1. A logic amplifier for converting a nondifferential logic signal to a differential logic signal, comprising:

differential logic amplifier means for receiving a bias current and a first differential logic signal, and in accordance therewith generating a second differential logic signal, wherein said differential logic amplifier means includes a plurality of output signal current paths of which each is selectively conductive for said bias current; and

input converter means coupled to said differential logic amplifier means for receiving and converting a nondifferential logic signal to provide said first differential logic signal;



wherein said first differential logic signal includes a plurality of signal phases with high and low logic levels having high-to-low and low-to-high logic transitions between said high and low logic levels, and further wherein at least one of said plurality of output signal current paths is conductive for said bias current uninterruptedly during said high-to-low and low-to-high logic transitions.

5,343,095

Patent Not Issued For This Number

5,343,096

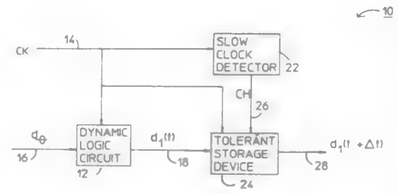
SYSTEM AND METHOD FOR TOLERATING DYNAMIC CIRCUIT DECAY

Craig A. Heikes, Ft. Collins, and Robert H. Miller, Jr., Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 19, 1992, Ser. No. 885,584

Int. Cl.[5] H03K *19/003*

U.S. Cl. 307—480 18 Claims



1. A system for preserving data outputs from dynamic logic circuits which are precharged and which are subject to decay, the system comprising:

a dynamic logic circuit having a data output, said dynamic logic circuit for receiving a clock signal having first and second clock states, said dynamic logic circuit being periodically precharged by said clock signal;

VOL 1165 ISS 5 AG 30 1994 UMI

a slow clock detector means for receiving said clock signal and for generating a clock halt output, said slow clock detector means for generating first and second logic states on said clock halt output, said second logic state being generated during a halt condition, said halt condition beginning after said clock signal has remained at said second clock state for a predetermined time period until said clock signal exhibits said first clock state, said first logic state being generated in the absence of said halt condition; and

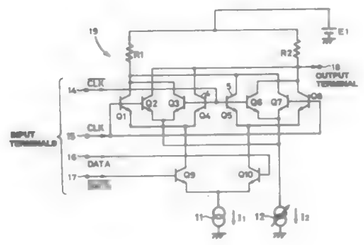
a tolerant storage means for receiving said data output, said clock signal, and said clock halt output, said tolerant storage means for storing said data output when said second logic state is received on said clock halt output and for storing said data output when said first clock state is received from said clock signal.

5,343,097

PHASE COMPARATOR CIRCUIT AND PHASE LOCKED LOOP (PLL) CIRCUIT USING THE SAME

Hiroshi Takeuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,415
Claims priority, application Japan, Sep. 13, 1991, 3-234210
Int. Cl.[5] H03K *5/26;* **HO3L** *7/00*
U.S. Cl. 307—514 **6 Claims**



1. A phase comparator circuit comprising:

an output terminal, data input terminals for receiving input data signals, and clock input terminals for receiving clock signals;

a quadrant multiplier circuit which outputs at its positive phase and negative phase output nodes, respectively, phase differences between said input data signals and said clock signals; and

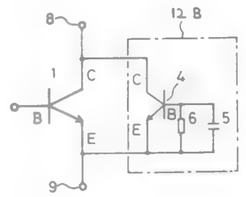
a DC compensation circuit having a variable current source and two pairs of transistors whose collectors are connected to said positive phase and negative phase output nodes, respectively, of said quadrant multiplier circuit, whose emitters are commonly grounded through said variable current source, and whose bases are connected to said clock input terminals, respectively.

5,343,098

SNUBBER CIRCUIT FOR A POWER SEMICONDUCTOR DEVICE

Tadashi Miyasaka, Matumoto, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 7, 1990, Ser. No. 623,347
Claims priority, application Japan, Dec. 7, 1989, 1-318466
Int. Cl.[5] H03K *17/60, 5/00*
U.S. Cl. 307—570 **1 Claim**



1. A snubber system, for suppressing voltage spikes applied to a switching circuit comprising:

a power semiconductor device, having anode, cathode and control electrodes, which is subject to undesirable voltage spikes applied between said anode and cathode electrodes;

snubber semiconductor means, comprising a bipolar transistor having anode and cathode electrodes respectively connected to the corresponding electrodes of said power semiconductor device, for providing a low inductance coupled junction capacitance responsive to the steeply rising leading edge of said voltage spikes for causing said snubber semiconductor means to rapidly turn on to suppress said voltage spikes;

resistive means, connected between said cathode electrode and a control electrode of said snubber semiconductor means, for providing a junction capacitance resistive discharge path determinative of the turn-off time of said bipolar transistor; and

a capacitor connected in parallel with said resistive means;

whereby, improved suppression efficiency is provided by rapid turn-on in the absence of excess inductance and resistance controlled turn-off of the snubber semiconductor means.

5,343,099

OUTPUT DEVICE CAPABLE OF HIGH SPEED OPERATION AND OPERATING METHOD THEREOF

Daisuke Shichinohe, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,910
Claims priority, application Japan, Oct. 14, 1991, 3-264635
Int. Cl.[5] H03K *17/04, 17/687*
U.S. Cl. 307—571 **15 Claims**

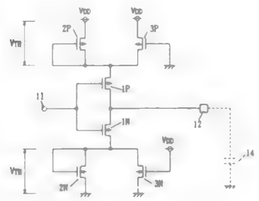
1. An output device formed on a semiconductor substrate, comprising:

an input terminal for receiving an input signal;

a reference voltage terminal for receiving a reference voltage;

an output terminal connected to a load;

a first transistor means having its drain electrode connected to said output terminal and its gate electrode connected to said input terminal, said first transistor means being switched in response to said input signal such that the potential on said output terminal is brought to said reference voltage level;



a second transistor means having its drain electrode and gate electrode connected to the source electrode of said first transistor means and its source electrode connected to said reference voltage terminal, said second transistor means being turned off when the level of the output signal supplied through said first transistor means exceeds a predetermined threshold; and

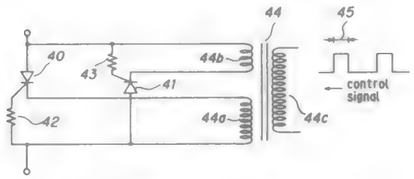
current limitation means connected in parallel with said second transistor means for limiting the amount of current passing through said first transistor means when said second transistor means is turned off.

5,343,100

THYRISTOR IGNITION CIRCUIT

Seiji Kawaberi, Kanagawa, and Takeshi Shoji, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 956,346
Claims priority, application Japan, Oct. 14, 1991, 3-293739
Int. Cl.[5] H03K *17/72, 17/723*
U.S. Cl. 307—646 **4 Claims**



1. A thyristor ignition circuit comprising:

a first signal terminal;

a second signal terminal;

a first thyristor having an anode connected to said first signal terminal, a gate connected to said second signal terminal, and a cathode;

a second thyristor having an anode connected to said second signal terminal, a gate connected to said first signal terminal, and a cathode; and

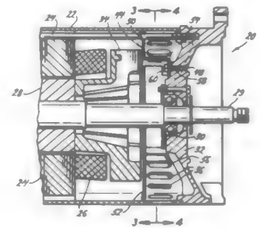
a transformer comprising a primary winding for receiving an ignition signal, and a first secondary winding having one end connected to said cathode of the first thyristor and another end connected to said second signal terminal, said transformer further including a second secondary winding having one connected to said cathode of the second thyristor and the other end connected to said first signal terminal, whereby said first thyristor and said second thyristor are cross-coupled with each other between said first signal terminal and said second signal terminal and said first signal terminal is connected to said second signal terminal via a signal path including said anode and said gate of said first thyristor, and said first thyristor is ignited by said cathode in response to said ignition signal applied to said primary winding and said second signal terminal is connected to said terminal via a signal path including said anode and said gate of said second thyristor, and said second thyristor is ignited by said cathode in response to said ignition signal applied to said primary winding.

5,343,101

PLASTIC AIR DEFLECTOR FOR ROTATING DYNAMOELECTRIC MACHINE

Madhavsinh A. Matani, Chesterfield, Mo., assignor to MagneTek Century Electric, Inc., St. Louis, Mo.

Filed Feb. 25, 1992, Ser. No. 840,844
Int. Cl.[5] H02K *9/00, 9/06*
U.S. Cl. 310—58 **14 Claims**



1. In a rotating dynamoelectric machine, said machine including a generally cylindrically shaped shell having a plurality of ventilating holes to permit the free passage of cooling air therethrough, a stator having a plurality of windings, a rotor having a plurality of windings located within said stator and a plurality of blades for blowing air axially through and past said stator windings for cooling purposes, means for supporting said rotor to permit its free rotation within said stator, and a pair of end brackets enclosing the ends of said shell,

the improvement comprising:

a one-piece deflector for attachment solely to one of said end brackets, said deflector having at least one opening through which cooling air is drawn and means for deflecting the cooling air drawn through said ventilating holes and said one opening directly to said rotor blades and axially through said machine and substantially preventing the diversion of said cooling air therefrom, said deflector including a shroud portion for substantially surrounding a rotating edge of said blades to thereby define a restricted flow path for said cooling air, a mounting ring portion to facilitate the attachment of said deflector to bracket, and a connector portion extending between said shroud portion and said mounting ring portion.

5,343,102

MINIATURE MOTOR

Kazuichi Mabuchi, and Yutaka Nishida, both of Matsudo, Japan, assignors to Mabuchi-Motor Co., Ltd., Matsudo, Japan

Filed Oct. 21, 1992, Ser. No. 964,218
Claims priority, application Japan, Oct. 25, 1991, 3-279652
Int. Cl.[5] H02K *11/00*
U.S. Cl. 310—71 **6 Claims**

1. A miniature motor, comprising:

an electrically conductive motor case having a hollow cylindrical shape with an open end and an inner surface;

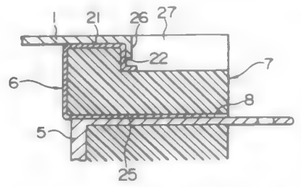
a magnet fixedly fitted to said inner surface;

a non-electrically conductive case cover having an outer circumferential surface and an outer end surface and holding a brushgear including a brush terminal piece, said

VOL 1165 ISS 5 AG 30 1994 UMI

brush terminal piece protruding through said outer end surface on opposite said non-electrically conductive case cover, said case cover having a groove formed in said outer circumferential surface extending to said outer end surface, a portion of said inner surface of said conductive motor case being engaged with said outer circumferential surface of said non-electrically conductive case cover with a portion of said electrically conductive motor case, at said open end, being plastically deformed, extending into said groove according to a shape of said groove;

ground terminal means for providing electrical connection between said motor case and said brush terminal piece,



said ground terminal means being formed into a U shape to provide a case contacting piece and an electrically conductive part contacting piece, said case contacting piece being pressed between said outer surface of said case cover and said inner surface of said motor case by engaging said case cover into said motor case, said case contacting piece having a tip, said tip being plastically deformed extending into said groove according to said shape of said groove, said electrically conductive part contacting piece being brought into contact with and being fixedly fitted to said brush terminal piece of said brushgear, thereby providing electrical connection between a brush of said brushgear and said motor case.

5,343,103

POWER SUPPLYING UNIT FOR SUBMERGED MOTOR

Nobuo Aoki, Kawasaki; Ikuo Aizawa, Yokohama; Keisuke Yokoi, Syowamachi, and Hideo Negishi, Hiratsuka, all of Japan, assignors to Tokyo Gas Co., Ltd. and Furukawa Electric Co., Ltd., both of Toyko, Japan

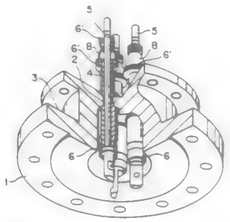
PCT No. PCT/JP90/00269, § 371 Date Dec. 12, 1990, § 102(e) Date Dec. 12, 1990, PCT Pub. No. WO90/10330, PCT Pub. Date Sep. 7, 1990

PCT Filed Mar. 1, 1990, Ser. No. 651,413

Claims priority, application Japan, Mar. 3, 1989, 1-51064

Int. Cl.[5] H02K *5/10*; H02G *15/02*

U.S. Cl. 310—87 **6 Claims**



1. A power supplying unit comprising:

a flange having a first side and a second side;

a ceramic sleeve passing through said flange from said first side to said second side, an outside of said ceramic sleeve being sealed to said flange in an air tight manner, said ceramic sleeve having a length expanding and contracting with temperature;

a conductor passing through said ceramic sleeve from said first side of said flange to said second side of said flange, said conductor having a length expanding and contracting with temperature;

first connection means for connecting said conductor to said ceramic sleeve in an air tight manner on said first side of said flange;

second connection means for connecting said conductor to said ceramic sleeve in an air tight manner on said second side of said flange, said second connection means including a bellow made of elastic material and having a semispherical structure in cross section, said bellow being deformable by a maximum difference in said length of said conductor and said ceramic sleeve, said bellow being in a substantially maximum expansion state and connected to said ceramic sleeve and said conductor when said difference in said length of said conductor and said ceramic sleeve is a maximum during normal operating conditions.

5,343,104

FAN MOTOR

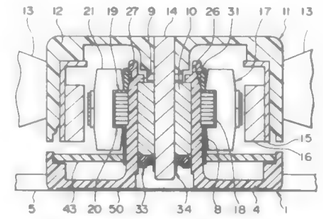
Shuji Takahashi; Eiji Yanai, and Fumihiro Morikawa, all of Yonago, Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Filed May 27, 1993, Ser. No. 67,843

Claims priority, application Japan, May 27, 1992, 4-162146; Jul. 30, 1992, 4-224831

Int. Cl.[5] H02K *7/14, 7/08*

U.S. Cl. 310—90 **16 Claims**



1. A fan motor including a housing, a cylindrical bearing race projected from the center portion of the housing, an impeller having a rotor magnet attached thereto and having a plurality of blades on its outer circumference, a shaft attached to the axial center of the impeller and inserted through a bearing into the bearing race, a stator fitted around an outer circumferential surface of the bearing race and facing the rotor magnet attached to the impeller, said fan motor comprising, as said bearing, a sleeve bearing for rotatably supporting said shaft, the shaft being inserted into the sleeve bearing, a thrust plate which is disposed to the end portion of the shaft projected out of the sleeve bearing, and a stopper which is pressed fitted to the end portion of the shaft against the thrust plate, whereby the stopper is in contact with the thrust plate a on circular contact area near the inner circumference of the thrust plate, said stopper being formed of a short cylindrical portion to be press fit onto the shaft and an umbrella-like disk portion projecting radially outwardly and making an acute inclined angle with the cylindrical portion, whereby an inner rim of the disk portion constitutes said circular contact area.

5,343,105

AC GENERATOR FOR VEHICLES

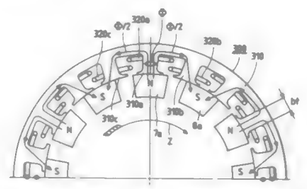
Shigekazu Sakabe, and Yutaka Kitamura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 676,587, Mar. 28, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,119

Claims priority, application Japan, Mar. 28, 1990, 2-79632

Int. Cl.[5] H02K *1/00, 3/28, 3/00*

U.S. Cl. 310—179 **3 Claims**



1. An AC generator for use in motor vehicles, comprising:

a stator winding for each phase of said generator, wherein each stator winding comprises at least a pair of stator coils; and

a stator core having tooth portions which form a plurality of stator slots in an inner periphery thereof, wherein

$$\frac{\text{(No. of stator slots)}}{\text{(No. of rotor poles)(No. of generator phases)}} = 0.5,$$

each of said stator coils is wound around a corresponding individual one of said tooth portions thereof, and

each of said tooth portions has one of said stator coils wound around it.

5,343,106

SMALL SIZE ELECTRIC MOTOR WITH HOUSING PROVIDED WITH OPENING

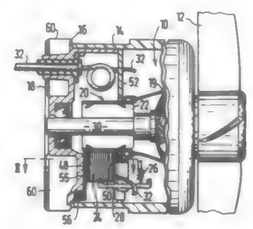
Cornelia Lungu, Buehlertal, and Hugo Herrmann, Lauf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 18, 1992, Ser. No. 885,161

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 9106978[U]

Int. Cl.[5] H02K *5/14, 13/00*

U.S. Cl. 310—239 **16 Claims**



1. A small size electric motor comprising a housing having an opening; a heat conductive bearing shield arranged to close said opening; a commutating device provided with commutator brushes in said housing, said bearing shield having a first guiding wall and at least one second guiding wall arranged at a distance from one another for guiding said commutator brushes; and a heat conductive isolating layer located between said guiding walls and said commutator brushes which are guided on said guiding walls with a small play, said heat conductive isolating layer being composed of rubber so as to perform heat isolating and dampening functions simultaneously, while the bearing shield having said guiding walls being composed of a light metal and at its side opposite to said commutator being cooled by air which surrounds said motor.

5,343,107

SURFACE ACOUSTIC WAVE ELEMENT AND METHOD OF MANUFACTURING THE SAME

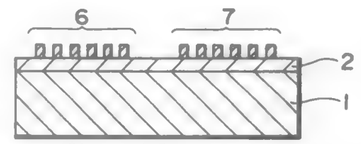
Shinichi Shikata; Akihiro Hachigo; Hideaki Nakahata, and Kenjiro Higaki, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 3, 1993, Ser. No. 117,226

Claims priority, application Japan, Sep. 11, 1992, 4-243319

Int. Cl.[5] H01L *41/16*

U.S. Cl. 310—313 A **3 Claims**



1. A surface acoustic wave element comprising a diamond layer, a piezoelectric thin film formed on said diamond layer, and a pair of electrodes for generating a surface acoustic wave having a specific wavelength and extracting the surface acoustic wave,

wherein one or both of said electrodes are copper electrodes epitaxially grown on a surface of said diamond layer.

5,343,108

ULTRASONIC STEP MOTOR

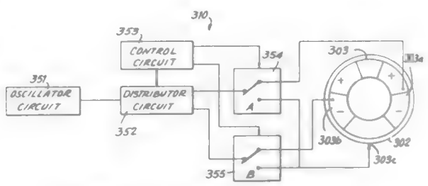
Osamu Miyazawa; Tsuneaki Furukawa, and Jouji Kitahara, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 17, 1992, Ser. No. 822,485

Claims priority, application Japan, Jan. 17, 1991, 3-003924; Apr. 3, 1991, 3-070882; May 7, 1991, 3-101260; Aug. 28, 1991, 3-217072

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—323 **9 Claims**



1. An ultrasonic step motor comprising:

a first member, including an elastic member, having portions selectively displaceable in a first direction;

vibrator means mounted on a first member including a plurality of vibrator elements, said vibrator elements being operatively coupled to said selectively displaceable portions of said first member for displacing said displaceable portions of said first member in said first direction;

a second member, in frictional contact with said first member, said second member being movable in a second direction substantially orthogonal to said first direction;

driving means for outputting a voltage to a respective vibrator element causing said vibrator element to displace an associated displaceable portion of said elastic member causing said elastic member to induce a vibration mode in said first member in a predetermined direction to selec-

VOL 1165 ISS 5 AG 30 1994 UMI

tively move said second member in said second direction, said vibrator elements being divided into at least a first set and a second set, said driving means selectively outputting a voltage to said first set of vibrator elements simultaneously with each other forming a first driving phase and said second set of vibrator elements simultaneously with each other forming a second driving phase, said first member having an axis, said vibrator elements of said first driving phase being disposed on said vibrator means in axial symmetry with said vibrator elements of said second driving phase;

said vibrator means inducing a standing vibrating wave on said elastic member, said vibrating wave forming at least two nodes and a loop on said elastic member, and said set of vibrator elements receiving said voltage input being axially symmetric with a position of the loop formed in the vibrating wave produced on the elastic member within the range of a half wavelength of the vibrating wave.

5,343,109

ULTRASONIC TRANSDUCER FOR MEASURING THE TRAVEL TIME OF ULTRASONIC PULSES IN A GAS

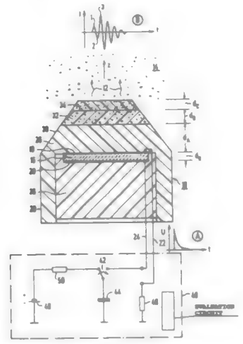
Thomas Möckl, Coburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 8, 1993, Ser. No. 27,716

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1990, 4028315

Int. Cl.[5] **H01L** *41/08; G01N 29/00*

U.S. Cl. 310—334 **17 Claims**



1. An ultrasonic transducer for measuring the travel time of ultrasonic pulses in a gas, comprising:

a) a piezoelectric radial oscillator having two sides, electrodes each being disposed on a respective one of said sides for receiving a spike pulse voltage;

b) a first adaptation layer being applied to one of said sides of said radial oscillator, said first adaptation layer having a thickness ^{d}A less than one-fourth of a characteristic wavelength of the transducer;

c) a second adaptation layer applied to said first adaptation layer, said second adaptation layer also having a thickness ^{d}B less than one-fourth of the characteristic wavelength of the transducer, and said thicknesses d_A and d_B following the statement $d_A + d_B \approx \lambda/4$;

d) a damping body mounted on the other of said sides of said radial oscillator; and

e) said radial oscillator and said adaptation layers forming a sandwich executing a thickness oscillation as a consequence of a radial-thickness coupling, as soon as the spike pulse voltage is applied, and the characteristic wavelength of the transducer being a wavelength resulting from natural resonance in the thickness oscillation.

5,343,110

ELECTRON EMISSION ELEMENT

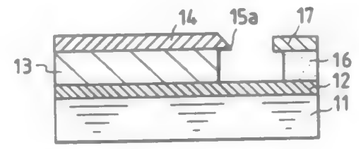
Akira Kaneko, Tokyo; Toru Kanno, and Keiko Morishita, both of Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 2, 1992, Ser. No. 889,938

Claims priority, application Japan, Jun. 4, 1991, 3-132633; Jan. 27, 1992, 4-11777; Feb. 20, 1992, 4-33086

Int. Cl.[5] **H01J** *1/13, 1/16*

U.S. Cl. 313—309 **22 Claims**



1. An electron emission element comprising:

a substrate;

a base electrode formed on the substrate;

an emitter connecting portion formed on a part of the base electrode and being electrically conductive;

an emitter formed on the emitter connecting portion and having a wedge, the wedge having a mesa shape in section, the wedge having an upper surface and a lower surface which is wider than the upper surface, the wedge having an edge which has a lower corner of an acute angle in section;

an insulating layer formed on the substrate and spaced from the wedge of the emitter by a given gap; and

a control electrode formed on the insulating layer for enabling electrons to be emitted from the edge of the emitter.

5,343,111

CATHODE RAY TUBE AND DEGAUSSING COIL EMPLOYED THEREIN

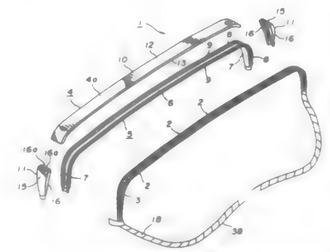
Toru Miwa, Aichi; Yasuyuki Yamasaki, Kanagawa, and Akihiko Yamagishi, Nagano, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 9, 1992, Ser. No. 959,095

Claims priority, application Japan, Oct. 9, 1991, 3-289441

Int. Cl.[5] **H04N** *9/29*

U.S. Cl. 313—313 **10 Claims**



1. A cathode ray tube having a degaussing coil arranged on an outer periphery of a funnel part of a main body of the cathode ray tube formed by a glass vessel, said degaussing coil comprising: a bundle of copper wires partially contained within a plastic casing including an elongated flattened part extended along an outer front surface at a front side of the funnel part, and first and second transition parts, said transition parts arranged at respective ends of said elongated flattened part and interconnecting the ends of the flattened part and a

circular part of said coil and being changed in cross-section shape from a flattened rectangle to a circle.

5,343,112

CATHODE ARRANGEMENT

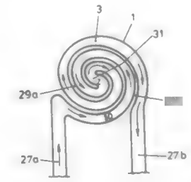
Urs Wegmann, Oberschan, and Albert Koller, Sargans, both of Switzerland, assignors to Balzers Aktiengesellschaft, Blazers, Liechtenstein

Continuation-in-part of Ser. No. 449,547, Dec. 12, 1989, abandoned. This application Jun. 1, 1992, Ser. No. 892,623

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1989, 3901337

Int. Cl.[5] **H01J** *1/16, 19/10*

U.S. Cl. 313—346 R **17 Claims**



1. In an electron beam source for electron beam evaporation, which source comprises an electron emission cathode for electron optical picturing without distortion when the cathode is heated and cooled, said electron emission cathode, comprising:

an electro-conductive emission body defining an emission surface, said emission body having at least two spaced conductive terminals for applying an electric current through said emission body for heating said emission body by Joule heat, and said emission body having a slit pattern therein formed by two helically arranged slits running substantially one beside the other from a periphery of said body toward a central area of said body defining said emission surface, said slit pattern forming out of said emission body a helical current path to be heated by said Joule heat and extending between said spaced conductive terminals at said periphery for receiving electric current, said conductive terminals being at opposite ends of said helical path and at the periphery, said conductive terminals also being near each other on one side of said body with respect to a diameter of said body, and said conductive terminals being off-set with respect to each other, at said periphery of said body and by the diameter across said body.

5,343,113

CATHODE RAY TUBE APPARATUS WITH REDUCED BEAM SPOT SIZE

Kern K. N. Chang, 91 Adams Dr., Princeton, N.J. 08540

Filed Aug. 28, 1992, Ser. No. 937,227

Int. Cl.[5] **H01J** *29/48, 29/58*

U.S. Cl. 313—414 **20 Claims**

1. A cathode-ray tube apparatus, comprising:

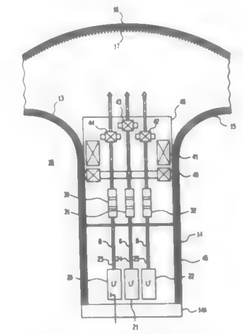
a glass envelope and a laminar flow electron gun disposed in said glass envelope for producing a parallel electron beam,

deflection means disposed within said glass envelope for deflecting said beam in the X and Y directions,

an einzel lens assembly disposed in said glass envelope and positioned between said gun and said deflections means,

said einzel lens assembly having a first electrode assembly located near said gun,

a central electrode and a second electrode located near said deflections means, with said first and second electrodes adapted to receive a DC biasing potential and with said central electrode adapted to receive a modulating potential for modulating said parallel electron beam without significantly changing the effective beam spot size.



5,343,114

HIGH-PRESSURE GLOW DISCHARGE LAMP

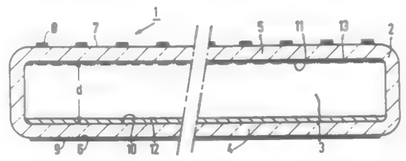
Claus Beneking; Horst Dannert, both of Aachen; Manfred Neiger, Karlsruhe; Volker Schorpp, Bietigheim, and Klaus Stockwald, Karlsruhe, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1992, Ser. No. 906,932

Claims priority, application European Pat. Off., Jul. 1, 1991, 91201680.5

Int. Cl.[5] **H01J** *65/04, 61/16;* **H01S** *3/00*

U.S. Cl. 313—485 **22 Claims**

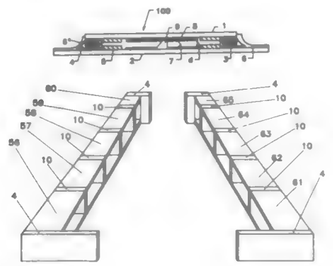


1. A high-pressure glow discharge lamp having a planar discharge vessel sealed in a vacuumtight manner and enclosing a discharge space, said discharge vessel including parallel walls of a dielectric material, the parallel walls having exterior wall surfaces remote from the discharge space, parallel electrodes on each of the exterior surfaces of the planar walls, at least one of said walls with its associated electrode being at least translucent to radiation generated by the discharge vessel, and a gas mixture within the discharge space which forms excimers during lamp operation, the gas mixture comprising a rare gas selected from a first group consisting of Xe, Kr and Ar and a halogen selected from the group consisting of I_2, Br_2, Cl_2 and F_2, characterized in that:

the partial pressure of the rare gas from the first group is at least 10 and at most 600 mbar for each of Xe and Kr and at least 10 and at most 1000 mbar for Ar, in that the partial pressure of the halogen is between 0.05 and 5% of the partial pressure of the rare gas from the first group, and in that the atomic mass of the rare gas from the first group is greater than the atomic mass of the halogen.

VOL 1165 ISS 5 AG 30 1994 UMI

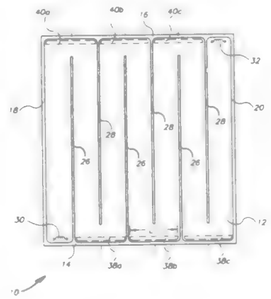
5,343,115
EFFICIENT LARGE AREA MULTI-CHANNEL FLAT FLUORESCENT LAMP
Munisamy Anandan, Wayne, and Douglas Ketchum, Rockaway, both of N.J., assignors to Thomas Electronics Incorporated, Wayne, N.J.
Filed May 15, 1992, Ser. No. 883,183
Int. Cl.[5] H01J *63/02*
U.S. Cl. 313—491 **28 Claims**



1. An improved electrode structure for a flat fluorescent lamp, comprising:
a first plurality of N thick-film conductors arranged in two groups of N/2 first substrate conductors arranged one group on each edge of a first substrate;
a second plurality of N thick-film conductors arranged in two groups of N/2 second substrate conductors arranged one group on each edge of a second substrate;
said two groups of N/2 first substrate conductors and said two groups of N/2 second substrate conductors being located on their respective substrates so as to be substantially in alignment with respect to each other;
a plurality of dielectric isolators, each dielectric isolator being disposed between adjacent conductors in each group of the aligned conductors to form two groups of N/2 closed hollow electrically isolated electrodes; and
means for externally electrically connecting each of the conductors on the first substrate with the corresponding aligned conductor on the second substrate, whereby each conductor in a group is electrically isolated from the other conductors in the same group.

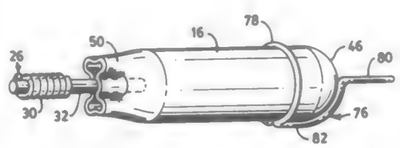
5,343,116
PLANAR FLUORESCENT LAMP HAVING A SERPENTINE CHAMBER AND SIDEWALL ELECTRODES
Mark D. Winsor, 314-1/2 Capitol Way N., Olympia, Wash. 98501
Filed Dec. 14, 1992, Ser. No. 990,068
Int. Cl.[5] H01J *17/04, 61/067*
U.S. Cl. 313—493 **18 Claims**

1. A planar fluorescent lamp comprising:
a sealed chamber formed by a pair of sidewalls, a pair of end walls, a top plate, and a bottom plate, the sealed chamber having a gas therein;
a plurality of divider walls extending from each of said sidewalls and from the bottom plate to the top plate to create a serpentine path within the sealed chamber;
a electrode at each end of the serpentine path of the sealed chamber positioned for creating an electric plasma arc within the sealed chamber; and
a plurality of sidewall electrodes positioned adjacent each sidewall, each sidewall electrode being positioned between two adjacent divider walls that extend from a respective sidewall, each sidewall electrode having an electric terminal that is adapted to be connected to a voltage source for modifying the shape of the electric plasma arc within the sealed chamber to increase the light emitted from the lamp at turns in the serpentine paths resulting in



an overall increase of the uniformity of the lumens of light emitted across the surface of the lamp.

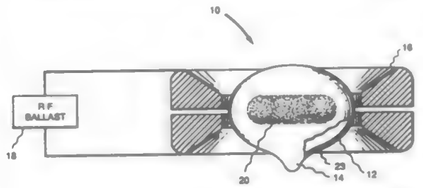
5,343,117
ELECTRODE FEEDTHROUGH CONNECTION STRAP FOR ARC DISCHARGE LAMP
Elliot Wyner, Peabody; Robert White, Beverly; Semyon Makhlis, Brookline, and Ernest Davey, Jr., Salem, all of Mass., assignors to OSRAM Sylvania Inc., Danvers, Mass.
Continuation of Ser. No. 450,651, Dec. 14, 1989, abandoned.
This application Apr. 19, 1993, Ser. No. 47,341
Int. Cl.[5] H01J *61/36, 9/32*
U.S. Cl. 313—623 **10 Claims**



1. A ceramic arc tube assembly comprising: a ceramic arc tube having an opening in at least one end; an electrode feedthrough sealed in said opening, said electrode feedthrough comprising a conductive tube closely matched in thermal characteristics to said arc tube and having a central axis; a conductive strap electrically and mechanically coupled to said conductive tube outside said arc tube, said conductive strap including a first section that at least partially encircles said conductive tube and is attached thereto, a second section extending coincident with said central axis of said conductive tube, and a third section that interconnects said first and second sections; and an electrode assembly coupled to said electrode feedthrough in an interior of said arc tube.

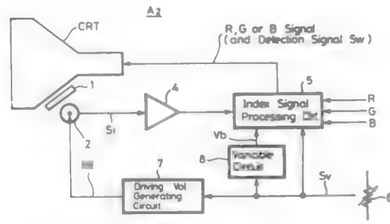
5,343,118
IODINE GETTER FOR A HIGH INTENSITY METAL HALIDE DISCHARGE LAMP
Hsueh-Rong Chang, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 814,522, Dec. 30, 1991, abandoned.
This application Jul. 16, 1993, Ser. No. 92,539
Int. Cl.[5] H01J *17/20, 61/18*
U.S. Cl. 313—637 **5 Claims**

1. An electrodeless high intensity discharge lamp, comprising:
a light-transmissive arc tube for containing a plasma arc discharge;
a fill disposed in said arc tube, said fill including an inert starting gas and at least one rare earth metal iodide;
said fill further comprising an additional metal selected from the group consisting of indium and thallium, including combinations thereof, in a sufficient quantity to combine



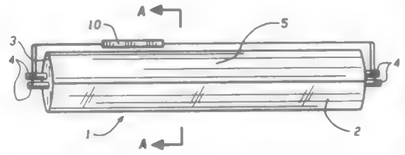
with free iodine to form a stable iodide during lamp operation and thereby avoid a substantial buildup of said free iodine: said free iodine resulting from dissociation and ionization of the metal iodide of said fill: said additional metal emitting visible light during lamp operation.

5,343,119
INDEX TYPE CRT HAVING A PHOTOSENSOR WITH A FUNCTION OF AMPLIFIER
Hirokazu Takuma, Kanagawa, Japan, assignor to Sony Corporation, Shinagawa, Japan
Filed Jan. 11, 1993, Ser. No. 2,543
Claims priority, application Japan, Jan. 10, 1992, 4-003297
Int. Cl.[5] H01J *31/26*
U.S. Cl. 315—10 **5 Claims**



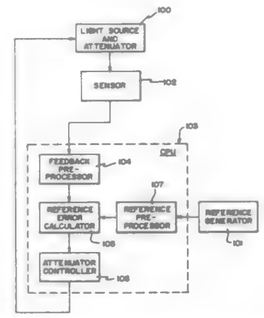
1. A display device comprising:
a beam index type cathode ray tube having a fluorescent screen on which red, green and blue fluorescent materials are formed in strip configurations and on which index fluorescent materials are formed in strip configurations with a predetermined pitch;
a photomultiplier receiving a driving voltage for converting light generated from the index fluorescent materials into an electric signal in accordance with a multiplication ratio when an electron beam of the cathode ray tube horizontally scans the fluorescent screen and the electron beam impinges on the index fluorescent material, and for producing an output signal having a level responsive to said driving voltage;
an index signal processing circuit for switching red, green and blue signals in accordance with said output signal from said photomultiplier, and for controlling luminance of said cathode ray tube in accordance with a luminance level control signal fed thereto; and
a driving voltage generating circuit for controlling said driving voltage applied to said photomultiplier in an inverse relationship relative to said luminance level control signal to thereby control said multiplication ratio of said photomultiplier.

5,343,120
DEVICE APPLICABLE TO FLUORESCENT TUBES REDUCING THE CONSUMPTION OF ENERGY WITHOUT VARIANCE OF THE LUMINOSITY
Norberto M. Mulieri, Buenos Aires, Argentina, assignor to Compania Kelmas S.A., Argentina
Filed Oct. 9, 1992, Ser. No. 959,067
Claims priority, application Argentina, Oct. 9, 1991, 320880
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—58 **12 Claims**



1. A device for gaseous discharge lamps, with UV radiation generation, said device comprising:
a reflective screen in the form of an arc in physical contact with said lamp, said screen having an internal diameter at least coincident with the external diameter of the lamp, said screen increasing the flow of light from said lamp over the flow of light without said screen; and
a power limiter fastened to terminals of the lamp, said limiter reducing the energy to said lamp, to prevent said lamp from rising in temperature, and to extend the life of said lamp.

5,343,121
NATURALISTIC ILLUMINATION SYSTEM
Michael Terman, 14 E. Fourth St., New York, N.Y. 10003; Bill Perlman, 865 W. End Ave. 10025, New York, N.Y. 10025, and Stephen Fairhurst, 230 Riverside Dr., New York, N.Y. 10032
Continuation of Ser. No. 250,967, Sep. 23, 1988, abandoned, which is a continuation of Ser. No. 916,872, Oct. 9, 1986, abandoned. This application May 22, 1990, Ser. No. 526,784
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—158 **23 Claims**



1. A naturalistic illumination system for a space for producing a changing total illumination level in the space corresponding to a predetermined portion of a day-night light cycle to adjust the circadian rhythm of a subject in the space comprising
light source means;
control means for controlling the amount of light produced by said light source means to be received by the subject in the space;

VOL 1165 ISS 5 AG 30 1994 UMI

photosensitive means for measuring the current level of light produced by said light source means;

feedback means for providing data of light measurement from said photosensitive means to said control means; and

reference means for providing on a continuously changing basis for a predetermined time period changing data for said selected predetermined time period of an estimated momentary light level data which is continuously changing corresponding to repeatedly calculated momentary solar and lunar altitude and light levels for a particular latitude based on empirical constants and time and continuously advancing said changing data with respect to a given time reference of said selected predetermined time period, said reference means also providing the sum of said solar and lunar light levels, and providing the sum thereof to said control means as said continuously changing estimated momentary light level;

said control means repeatedly determining the difference between said estimated momentary light level and said current level of light and, if there is a difference therebetween, adjusting the amount of light produced by said light source means such that new current level of light will be produced which will substantially equal said estimated momentary level of light.

5,343,122

LUMINAIRE USING INCANDESCENT LAMP AS LUMINOUS SOURCE

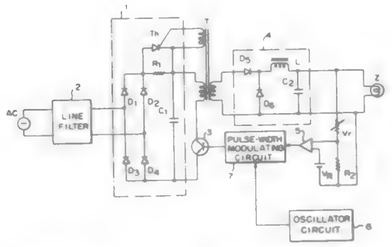
Hideo Sugimori, Kyoto; Kazumi Masaki, Osaka, and Osamu Matsuda, Okayama, all of Japan, assignors to Ken Hayashibara, Okayama, Japan

Continuation-in-part of Ser. No. 557,043, Jul. 25, 1990, Pat. No. 5,126,636. This application Aug. 9, 1991, Ser. No. 743,066

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] H05B *39/04*

U.S. Cl. 315—209 R **10 Claims**



1. A luminaire using at least one incandescent lamp as a luminous source, which comprises a switching power supply circuit capable of supplying from an ac source to said incandescent lamp a direct current(dc) voltage of about 105–130% of the rating of said lamp so that said incandescent lamp is energized with said dc voltage to emit a light with a color temperature of about 2,900 K. or higher.

5,343,123

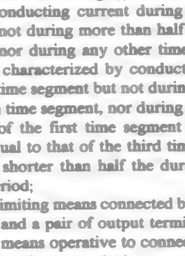
SERIES-RESONANT INVERTER BALLAST

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 798,869, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 357,797, May 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 20,478, Mar. 2, 1987, Pat. No. 4,857,806, which is a continuation-in-part of Ser. No. 262,542, May 5, 1981, Pat. No. 4,895,943, which is a division of Ser. No. 178,107, Aug. 14, 1980, Pat. No. 4,902,516, which is a continuation-in-part of Ser. No. 973,741, Dec. 28, 1978, which is a continuation-in-part of Ser. No. 890,586, Mar. 20, 1978, Pat. No. 4,184,128. This application Aug. 24, 1992, Ser. No. 933,891

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—219 **18 Claims**



1. A lamp assembly operable to be inserted into and held by an ordinary Edison-type lamp socket; the lamp socket having socket electrodes at which is provided an AC power line voltage; the lamp assembly comprising:

a gas discharge lamp having lamp terminals;

base means operable to be inserted into and held by the Edison-type lamp socket; the base means having base electrodes operable to make electrical contact with the socket electrodes; the base means also including a combination of:

(a) rectifier means connected with the base electrodes and operative, whenever the base means is indeed inserted into the Edison-type lamp socket, to provide a DC voltage at a set of DC terminals;

(b) inverter means connected with the DC terminals and operative to provide an inverter voltage from a pair of inverter terminals; the inverter voltage having a fundamental period consisting of four time segments: (i) a first time segment during which the magnitude of the inverter voltage remains at a first substantially constant level, (ii) a second time segment during which the magnitude of the inverter voltage increases in a substantially gradual manner, (iii) a third time segment during which the magnitude of the inverter voltage remains at a third substantially constant level, and (iv) a fourth time segment during which the magnitude of the inverter voltage decreases in a substantially gradual manner; the inverter means including: (i) a first transistor characterized by conducting current during the first time segment but not during more than half of the second time segment, nor during any other time, and (ii) a second transistor characterized by conducting current during the third time segment but not during more than half of the fourth time segment, nor during any other time; the duration of the first time segment being: (i) approximately equal to that of the third time segment, and (ii) distinctly shorter than half the duration of the fundamental period;

(c) current-limiting means connected between the inverter terminals and a pair of output terminals; and

(d) connect means operative to connect the output terminals with the lamp terminals.

5,343,124

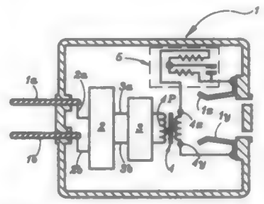
SHOCK-HAZARD-FREE LIGHTING MEANS

Ole K. Nilssen, Ceasar Dr., Rte. 5, Barrington, Ill. 60010

Continuation of Ser. No. 708,985, Mar. 6, 1985, abandoned, and a continuation-in-part of Ser. No. 47,944, Apr. 16, 1993, and Ser. No. 62,329, May 17, 1993, said Ser. No. 47,944, is a continuation-in-part of Ser. No. 955,229, Oct. 1, 1992, which is a continuation-in-part of Ser. No. 607,271, Oct. 31, 1990, which is a continuation-in-part of Ser. No. 787,692, Oct. 15, 1985, which is a continuation of Ser. No. 644,155, Aug. 27, 1984, which is a continuation of Ser. No. 555,426, Nov. 23, 1983, which is a continuation of Ser. No. 178,107, Aug. 14, 1980, said Ser. No. 62,329, is a continuation of Ser. No. 700,049, May 8, 1991, which is a continuation of Ser. No. 489,096, Apr. 27, 1983, which is a continuation-in-part of Ser. No. 178,107, Aug. 14, 1980. This application Jun. 17, 1993, Ser. No. 77,260

Int. Cl.[5] H05B *37/00, 39/00*

U.S. Cl. 315—224 **16 Claims**



1. An arrangement comprising:

a pair of prongs adapted to be inserted into and held by an ordinary household electrical outlet;

rectifier means connected with the pair of prongs and, provided said prongs are indeed inserted into said electrical outlet, operative to provide a DC voltage at a DC output;

inverter means connected with the DC output and operative to provide a high-frequency output voltage at an inverter output; the fundamental frequency of the high-frequency output voltage being at least two times higher than that of the power line voltage ordinarily present at an ordinary electric utility power line;

a pair of power supply output terminals;

current limiting means connected in circuit between the inverter output and the power supply output terminals; the current limiting means being operative to prevent the magnitude of any current drawn from the power supply output terminals from exceeding: (i) a first predetermined level for longer than a first brief period of time, and (ii) a second predetermined level for longer than a second brief period of time; the first predetermined level being higher than the second predetermined level by a factor of at least 1.5; the first brief period of time being shorter than the second brief period of time by a factor of at least 1.5; and

lamp means disconnectably connected with the power supply output terminals.

5,343,125

HIGH-PRESSURE DISCHARGE LAMP WITH PULSED INVERTER OPERATING CIRCUIT, AND METHOD OF OPERATING A DISCHARGE LAMP

Franz Beraitz, Unterhaching; Andreas Huber, Maisach, and Frank Hansmann, Barzinghausen, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft feur elektrische Gluehlampen mbH, Munich, Fed. Rep. of Germany

Filed Nov. 1, 1991, Ser. No. 786,502

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1990, 9015674[U]

Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—245 **18 Claims**

1. A power supply circuit for a discharge lamp (L) comprising

an inverter forming an inverter energy supply circuit for said lamp (L) and being connected between a d-c power supply source and said lamp, said inverter energy supply circuit including

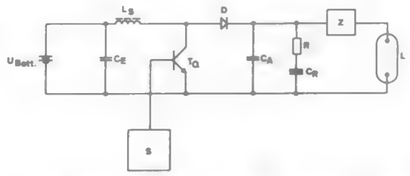
means (S) for providing an oscillating switching control signal;

a switching semiconductor (T_Q);

energy storage means (L_S, C_A); and

a rectifier means (D),

said switching semiconductor (T_Q) being controlled by said switching control signal providing means (S) for alternatingly changing between conductive and blocking state, and wherein said energy storage means includes a storage capacitor (C_A) connected for providing operating current



to said lamp (L) when the rectifier means (D) blocks current flow to the lamp (L) in a direction that would discharge said storage capacitor and having a first terminal connected to said rectifier means and a second terminal connected directly to said lamp;

circuit means comprising a said power supply circuit further comprising series resistor/capacitor (R/C_R) circuit connected in parallel to said storage capacitor (C_A) for ensuring starting of ignition of the lamp upon initial energization of said inverter, whereby said starting ensuring circuit means, being coupled to said lamp, extends the time of current flow to said lamp after initial current flow from said storage capacitor (C_A) to said lamp upon initial energization of the inverter.

5,343,126

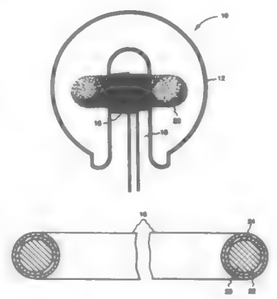
EXCITATION COIL FOR AN ELECTRODELESS FLUORESCENT LAMP

George A. Farrall, Rexford; John P. Cocoma, Clifton Park; Joseph C. Borowiec, Schenectady, and Robert F. Pashley, Ballston Spa, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,494

Int. Cl.[5] H01J *61/54*

U.S. Cl. 315—248 **12 Claims**



1. An electrodeless fluorescent lamp, comprising:

a light-transmissive envelope containing an ionizable, gaseous fill for sustaining an arc discharge when subjected to a radio frequency magnetic field and for emitting ultraviolet radiation as a result thereof, said envelope having an

VOL 1165 ISS 5 AG 30 1994 UMI

interior phosphor coating for emitting visible radiation when excited by said ultraviolet radiation, said envelope having a slope so as to define a re-entrant cavity portion therein;

an excitation coil removably contained within said re-entrant cavity portion, said excitation coil comprising a first metal of sufficiently low thermal conductivity so as to avoid deformation of said coil due to heating during lamp operation, said excitation coil further having a metal plating of low resistivity disposed over said first metal and an insulating coating disposed over said metal plating, said metal plating being sufficiently thick to carry a radio frequency current in said excitation coil, thereby providing said radio frequency magnetic field while avoiding high resistive losses in said excitation coil.

5,343,127

START-UP PROCEDURE FOR A BRUSH-LESS, SENSORLESS MOTOR

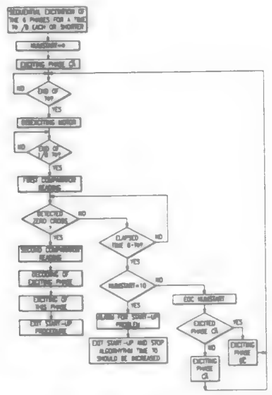
Giuseppe Maiocchi, Villa Guardia, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Oct. 30, 1992, Ser. No. 969,693

Claims priority, application Italy, Oct. 31, 1991, VA91A0040

Int. Cl.[5] H02P *1/00*

U.S. Cl. 318—254 **26 Claims**



1. A method for starting-up a motor having multiple stator winding excitation phases separately excitable in a predetermined sequence corresponding to a forward direction of rotation of a rotor, comprising the steps of:

(a.) providing current to said windings, for a first maximum time duration, to excite an initial phase thereof; wherein said first duration is sufficiently short that the rotor travels, during said first duration, through no more than one-half of the angular separation between two adjacent ones of the equilibrium positions, stable or unstable, of all of said phases;

(b.) monitoring back electromotive force (back EMF) on multiple ones of said windings, and generating digital signals accordingly;

(c.) IF a zero-crossing of back EMF occurs on any one of said windings within at most a second time duration, then using said digital signals to determine an optimal phase for excitation, and exciting said optimal phase; and

(d.) if NO zero-crossing of back EMF occurs on any one of said windings within said second time duration, then repeating said step

(a) with a different initial phase which is not adjacent to said first initial phase in said predetermined sequence of excitation phases;

whereby said motor is started and operated without requiring sensor inputs to ascertain rotor position, and with minimal backward rotation at the time of startup.

5,343,128

DRIVE ASSISTANCE DEVICE FOR A GOLF BUGGY

Carlo L. Beltrame, 13 York Street, East Ivanhoe, 3079 Victoria, and Arthur J. Barnes, 33 Carthy Street, North Altona, 3025 Victoria, both of Australia

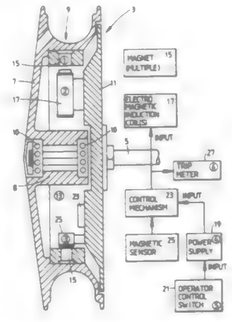
PCT No. PCT/AU91/00137, § 371 Date Oct. 9, 1992, § 102(e) Date Oct. 9, 1992, PCT Pub. No. WO91/16755, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 12, 1991, Ser. No. 934,743

Claims priority, application Australia, Apr. 12, 1990, PJ9619

Int. Cl.[5] H02K *7/14*

U.S. Cl. 318—3 **7 Claims**



1. A device for at least partially driving a golf buggy which is adapted to be pushed or pulled by an operator in a forward or a reverse direction, the device comprising:

(a) a wheel adapted to rotate about an axle of the golf buggy, the wheel having an internal chamber;

(b) an electromagnetic assembly located in the chamber to provide drive for the golf buggy, the electromagnetic assembly comprising, (i) a plurality of spaced-apart magnets arranged in a circular array for rotation with the wheel, and (ii) an electromagnetic field coil for generating a magnetic field located in a stationary position with respect to the magnets between the axle and the magnets, the electromagnetic field coil being positioned so that there is an annular gap between the electromagnetic field coil and the magnets, the electromagnetic field coil being adapted to generate a plurality of magnetic fields of opposite polarity around an outer surface of the electromagnetic field coil that faces the magnets, the electromagnetic field coil comprising a continuous coil of wire, a first plate extending across one side of the wire coil and terminating in a series of spaced-apart fingers which form a part of the outer surface of the electromagnetic field coil, and a second plate extending across the other side of the wire coil and terminating in a series of spaced-apart fingers which form another part of the outer surface of the electromagnetic field coil, the fingers of the first plate alternating with the fingers of the second plate, whereby in use, when a direct current is passed through the wire coil, the magnetic field generated is transferred to the plates with the result that the polarity of the magnetic field of the fingers of the first plate is opposite to that of the fingers of the second plate; and

(c) a dc power source connected to the electromagnetic field coil to energize the electromagnetic field coil to generate the magnetic field.

5,343,129

DRIVE CIRCUIT FOR A BRUSHLESS DIRECT-CURRENT MOTOR

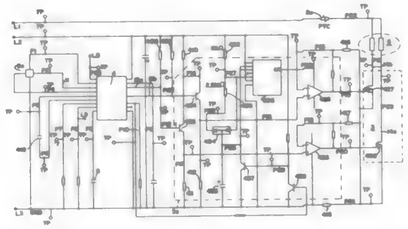
Helmut Hans, St. Georgen, and Mojtaba Moini, Königsfeld, both of Fed. Rep. of Germany, assignors to Papst Licensing GmbH, Spaichingen, Fed. Rep. of Germany

Continuation of Ser. No. 932,737, Aug. 25, 1992, Pat. No. 5,220,258. This application Jun. 14, 1993, Ser. No. 76,720

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1990, 4019338

Int. Cl.[5] H02P *1/18*

U.S. Cl. 318—431 **1 Claim**



1. A restart circuit that is supplied with trigger pulses of a predetermined minimal rate, the output signal of which is one predetermined voltage level in case the trigger pulses have a sufficient rate or frequency and is of another predetermined voltage level in case the trigger pulses have less than a predetermined frequency, the restart circuit comprising a timing integrated circuit (**555**), a charging resistor (**432**), a discharging resistor (**433**) a capacitor (**435**), decoupling diodes (**434**), discharging means (**437**) and amplifying means (**438**).

5,343,130

CONTROL SYSTEM FOR AUTOMATICALLY HALTING THE MOVEMENT OF A MACHINE IN THE MINE WORKING

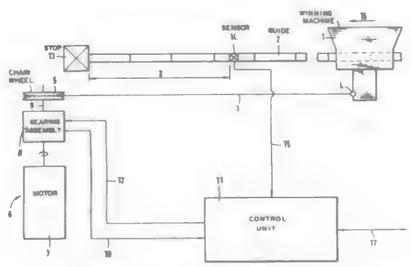
Ulrich Paschedag, Werne, and Gerhard Merten, Lunen, both of Fed. Rep. of Germany, assignors to Westfalia Becorit Industrietechnik GmbH, Lunen, Fed. Rep. of Germany

Filed Apr. 22, 1993, Ser. No. 52,105

Claims priority, application Fed. Rep. of Germany, May 2, 1992, 4214688

Int. Cl.[5] F16D *7/02*

U.S. Cl. 318—434 **10 Claims**



1. A control system for automatically halting the movement of a chain-driven mining machine moved back and forth along a path defined between end limits alongside a mineral face; said system comprising:

at least one drive means for driving the chain and the machine along said path,

overload protection means with a mechanism for automatically disconnecting the drive means in the event of an overload,

a control means which receives an electrical signal indicative of an overload and provides an electrical stop signal to actuate the mechanism and to disconnect the drive means, and

a sensor spaced along the path from one of the end limits by a predetermined distance, the sensor serving to generate an electrical detection signal which is fed to the control means when the machine is detected in the vicinity of the sensor and is approaching the one end limit so as to cause the control means to provide the stop signal at a time to ensure the movement of the machine will cease at or near said one end limit.

5,343,131

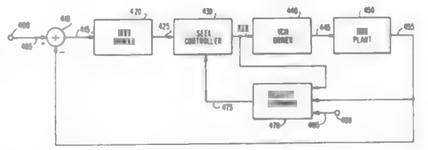
METHOD AND APPARATUS FOR SELF-SYNCHRONIZING SEEK DECELERATION

Todd D. Baumann, Berthoud, Colo., assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 27, 1993, Ser. No. 9,773

Int. Cl.[5] G05B *11/06*

U.S. Cl. 318—561 **24 Claims**



1. A method for decelerating a disk drive head being moved by a motor, comprising the steps of:

reading servo data from a track on a disk over which said head is passing at a predetermined sampling interval to provide a position sample,

determining a deceleration current level for said motor as a function of the position sample and a reference value of a feed-forward profile which is temporally advanced by one half of said sampling interval relative to a desired deceleration profile, and

controlling said motor in accordance with said deceleration current level.

5,343,132

BACKLASH ACCELERATION CONTROL METHOD

Yasusuke Iwashita, Yamanashi, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

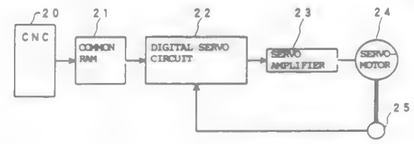
PCT No. PCT/JP92/00852, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO93/01534, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 6, 1992, Ser. No. 971,970

Claims priority, application Japan, Jul. 4, 1991, 3-189526

Int. Cl.[5] G05B *11/01*

U.S. Cl. 318—630 **4 Claims**



1. A backlash acceleration control method designed to be applicable when a direction of movement of a machine driven by a servomotor is reversed, comprising the steps of:

obtaining an acceleration of a servomotor driving a machine

VOL 1165 ISS 5 AG 30 1994 UMI

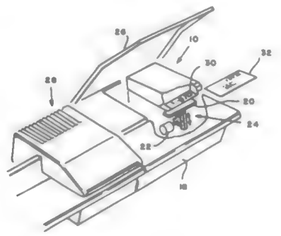
based on move commands distributed from a numerical control device at a time when a direction of movement of said servomotor based on one of said move commands of a present distribution period of said numerical control device and a direction of movement of said servomotor based on one of said move commands of a subsequent distribution period to said present distribution period are in a reverse relationship; and applying a backlash acceleration correction to said servomotor at a point of time when a value proportional to said obtained acceleration equals a velocity command.

5,343,133

ELECTRONIC POSTAGE METER HAVING MICROCOMPUTER-CONTROLLED MOTOR-PRINTWHEEL ALIGNMENT

Richard A. Malin, and Arno Muller, both of Westport, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 24, 1991, Ser. No. 782,212
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—696 **4 Claims**



1. A postage meter comprising:
a housing, stepper motor fixably mounted to said housing having a rotor, at least one print wheel rotatively mounted in said housing having a plurality of characters formed on the peripheral surface of said print wheel in respective character positions, said print wheel being mounted such that each of said character positions can be respectively aligned to a reference position of said housing in response to actuation of said stepper motor rotor,
a non-volatile memory and
a microcomputer communicating with said non-volatile memory,
said microcomputer being operatively coupled to a stepper motor, said stepper motor having a rotor, said non-volatile memory having stored therein a value corresponding to a predetermined pulse width required for pulsing a coil of the stepper motor to an incremental position between said reference position,
means for monitoring the position of said print wheel relative to said reference and communicating said position to said microcomputer, and,
said microcomputer being programmed to pulsing said stepper motor coil with a plurality of pulse width serially until said stepper motor rotor is pulse to cause one of said printwheel character to be aligned to said reference position.

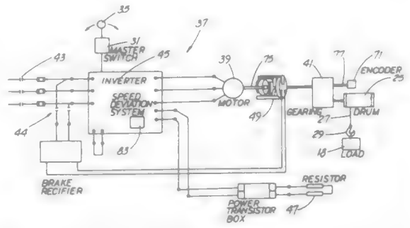
5,343,134

METHOD FOR CHECKING BRAKE TORQUE

David C. Wendt, Hubertus; Robert J. Lapota, Greenfield, and Karl T. Flierl, Port Washington, all of Wis., assignors to Harnischfeger Corporation, Brookfield, Wis.

Filed May 3, 1993, Ser. No. 55,744
Int. Cl.[5] H02P *3/18*
U.S. Cl. 318—757 **17 Claims**

1. A method for checking brake torque in an AC inverter drive connected to an AC induction motor for moving a load in hoisting or lowering directions, the motor being equipped with a spring-set load brake, the method including the steps of:
decelerating the motor toward zero speed;
setting the brake;



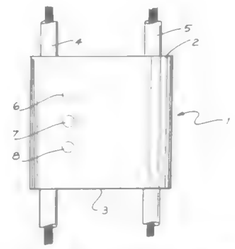
applying full wave electrical power to the motor at a power level sufficient to prevent the load from lowering;
changing current flowing to the motor by changing the magnitude of the voltage applied to the motor; and
checking for motor rotation.

5,343,135

VOLTAGE LIMITING AND INDICATING DEVICE

Eian Mathieson, Kiama, Australia, assignor to Matson Automotive Industries Pty Ltd, Greenacre, Australia

Filed Nov. 14, 1991, Ser. No. 602,313
Claims priority, application Australia, May 20, 1988, P18451
Int. Cl.[5] H02J *7/10*
U.S. Cl. 320—2 **16 Claims**



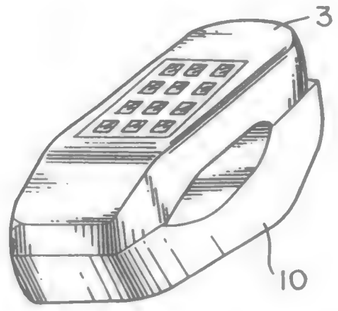
1. A voltage monitoring and transient voltage limiting device adapted for attachment between a power source and a power discharge terminal, the device comprising:
means for detecting incorrect connection polarity or reverse voltage conditions at the terminals of the power source to which the device is attached, the detecting means including a first series circuit having a resistor, a reverse voltage blocking diode, and a first light emitting diode;
means for indicating whether the voltage level in the power source is below or at a first predetermined value, the indicating means including a second series circuit having a resistor, a first zener diode, and a second light emitting diode;
means for limiting of voltage spikes beyond a second predetermined value from the power source; and
the means for indicating whether the voltage in the power source is at the first predetermined value further including a voltage measuring circuit, a current limiting resistor, a third light emitting diode, a switching transistor and a second zener diode, the voltage measuring circuit being positioned in parallel with the current limiting resistor, the third light emitting diode, the switching transistor and the second zener diode.

5,343,136

CHARGER FOR CHARGING A RECHARGEABLE BATTERY

Shuji Yamaguchi, Tokyo, and Koichi Ito, Hino, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 472,123, Jan. 30, 1990, abandoned. This application May 2, 1991, Ser. No. 696,275
Claims priority, application Japan, Jan. 31, 1989, 1-21195
Int. Cl.[5] H02J *7/00*; H01M *10/46*; H04M *1/02*
U.S. Cl. 320—2 **4 Claims**



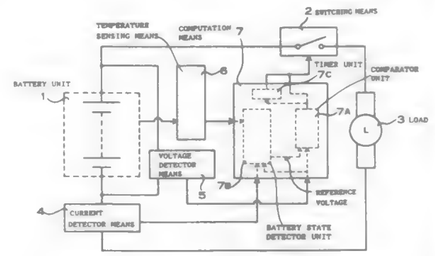
1. An electronic apparatus, comprising:
a mobile electronic device having a first rechargeable battery;
a charger detachable from and connectable to said mobile electronic device for charging said first rechargeable battery of the charger, said charger including:
a plug connectable to an alternating current power source,
means coupled to the plug for converting alternating current power to direct current power,
a second rechargeable battery coupled to said converting means for holding said direct current power therein, and
output terminal means coupled to said converting means and said second rechargeable battery for providing said direct current power to charge the first rechargeable battery of the mobile electronic device;
diode means in said mobile electronic device and coupled between said first and second rechargeable batteries for preventing a reverse current from the first rechargeable battery to the second rechargeable battery when the mobile electronic device is connected to the output terminal means of the charger,
wherein said converting means charges both the first rechargeable battery of the mobile electronic device and the second rechargeable battery of the charger during the time when the plug of the charger is connected to the alternating current power source and the mobile electronic device is connected to the output terminal means of the charger, and wherein the second rechargeable battery of the charger charges the first rechargeable battery of the mobile electronic device during the time when the plug of the charger is disconnected from the alternating current power source and the mobile electronic device is connected to the output terminal means of the charger;
means coupled to said output terminal means for detecting whether a voltage at the output terminal means is below a predetermined value; and
means in the mobile electronic device and coupled to said detecting means for indicating a detection result to the user of the mobile electronic device.

5,343,137

APPARATUS TO PREVENT COMPLETE BATTERY DISCHARGE

Kazuhiro Kitaoka; Akihiro Furuse; Fumiki Takesue, and Tsukasa Ito, all of Sumoto, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jan. 27, 1993, Ser. No. 9,635
Claims priority, application Japan, Jan. 28, 1992, 4-013136
Int. Cl.[5] H02H *7/18*; H02J *7/00*
U.S. Cl. 320—13 **3 Claims**



1. An apparatus for preventing complete discharge of a battery electrically connected in series with a load, said apparatus comprising:
current detector means, connected in series with the battery, for detecting a battery current flowing through the battery;
voltage detector means, connected in parallel with the battery, for detecting a battery voltage of the battery;
switching means, connected between the load and the battery, for selectively closing and opening an electrical connection between the load and the battery; and,
computation means for controlling said switching means in accordance with the battery current detected by said current detector means and the battery voltage detected by said voltage detector means;
wherein said computation means includes
(a) battery state detecting means for generating a reference voltage having a voltage level dependent on the battery current detected by said current detector means, said battery state detecting means responsive to said current detector means to decrease the reference voltage when the battery current increases and to increase the reference voltage when the battery current decreases,
(b) comparator means for comparing the reference voltage generated by said battery state detecting means with the battery voltage detected by said voltage detector means, and for generating a first output signal when the battery voltage detected by said voltage detector means becomes less than the reference voltage generated by said battery state detecting means, and
(c) timer means for detecting a discharge state in which the first output signal is generated by said comparator means for more than a predetermined time period, and for controlling said switching means to open the electrical connection between the load and the battery upon detecting the discharge state.

5,343,138

BATTERY DISCHARGING AND CHARGING

Steven Ainsworth, Boulder City, Nev., assignor to Harvey W. O'Connor, Weston, Mass.

Continuation-in-part of Ser. No. 573,623, Aug. 27, 1990, abandoned. This application Oct. 18, 1991, Ser. No. 779,400
Int. Cl.[5] H02J *7/10*
U.S. Cl. 320—14 **9 Claims**

1. A discharge and charge circuit for a storage battery with

VOL 1165 ISS 5 AG 30 1994 UMI

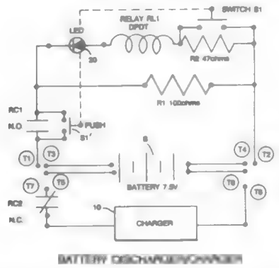
a detector for fully discharging and then fully charging the storage battery to prolong the storage battery life comprising,

a detector for providing an indication of when the storage battery is substantially fully discharged,

first and second input terminals connected to the detector and for connection to the storage battery for delivering energy from the storage battery to the detector to produce the indication when the storage battery is substantially fully discharged,

a load impedance,

a charging source,



BATTERY DISCHARGE/CHARGER

and a switch for first connecting said load impedance between said first and second input terminals for discharging the storage battery and developing a signal representative of the state of charge of the storage battery and then connecting said charging source between said first and second input terminals for fully charging the storage battery immediately after the storage battery is fully discharged,

wherein said detector comprises an LED and further comprising,

a full-wave rectifier circuit coupling said first and second input terminals to said LED.

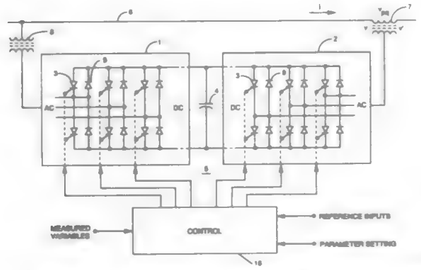
5,343,139

GENERALIZED FAST, POWER FLOW CONTROLLER

Laszlo Gyugyi, Penn Hills Township, Allegheny County, and Colin D. Schauder, Murrysville Boro, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Int. Cl.[5] G05F *5/00*

U.S. Cl. 323—207 16 Claims



1. A power flow controller for controlling the flow of electric power in an alternating current transmission system including a transmission line having two ends and carrying alternating current at a selected transmission line voltage and fundamental frequency between said two ends, said controller comprising:

switching power converter means generating an alternating voltage at said fundamental frequency of the said alternating current with controllable magnitude and phase angle relative to said transmission line voltage;

means coupling the alternating voltage generated by said switching power converter means in series with said transmission line voltage; and

control means controlling the controllable magnitude and phase angle of the alternating voltage generated by said switching power converter means at said fundamental frequency to a magnitude and any phase angle relative to said transmission line voltage to selectively adjust, individually and in coordination, effective impedance of said transmission line, effective phase angle between voltages at said two ends of said transmission line, and transmission line voltage magnitude to thereby control the power flow in said transmission line.

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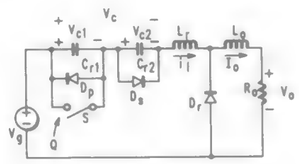
ZERO-VOLTAGE-SWITCHING QUASI-RESONANT CONVERTERS WITH MULTI-RESONANT BIPOLAR SWITCH

Joel P. Gegner, Oak Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 2, 1992, Ser. No. 984,153

Int. Cl.[5] G05F *1/618;* H02M *3/335*

U.S. Cl. 323—222 6 Claims



1. A variable frequency, zero-voltage switched, multi-resonant converter for receiving power from a power source and providing power to a load, said converter including rectifying means for directing power from the power source to the load and optionally including at least one of a filtering inductor and a filtering capacitor, said converter comprising:

(a) a resonant switch means (S) for connecting and disconnecting said power source to and from said load;

(b) a first diode (D_p) in parallel with said switch means (S);

(c) a second diode (D_s) in series with said switch means (S);

(d) a first resonant capacitor (C_{r1});

(e) a second resonant capacitor (C_{r2});

(f) a resonant inductor (L_r);

wherein said first resonant capacitor (C_{r1}) is operatively connected to said resonant switch means (S) such that any voltage change across said first resonant capacitor (C_{r1}) necessitates a corresponding voltage change across said resonant switch means (S) such that

$$\frac{dv_S}{dt} = \frac{dv_{Cr1}}{dt}$$

and wherein said second resonant capacitor (C_{r2}) is operatively connected to said second diode (D_s) such that any voltage change across said second resonant capacitor (C_{r2}) necessitates a corresponding voltage change across said second diode (D_s) such that

$$\frac{dv_{Ds}}{dt} = \frac{dv_{Cr2}}{dt}$$

and wherein said resonant inductor (L_r) is operatively connected in series with said resonant switch means (S) such that any current change through said resonant inductor (L_r) necessitates a corresponding change in a sum of currents flowing through said first resonant capacitor (C_{r1}), said first diode (D_p), and said resonant switch means (S);

and wherein any current change through said resonant inductor (L_r) necessitates a corresponding change in a sum of currents flowing through said second resonant capacitor (C_{r2}) and said second diode (D_s), such that

$$\frac{di_{Lr}}{dt} = \frac{d}{dt}(i_{Cr1} + i_s + i_{Dp})$$

and

$$\frac{di_{Lr}}{dt} = \frac{d}{dt}(i_{Cr2} + i_{Ds});$$

and wherein the sum of instantaneous currents flowing through C_{r2} and D_s always equals the sum of currents flowing through C_{r1}, S, and D_p when said converter is operatively connected to said power source.

5,343,141

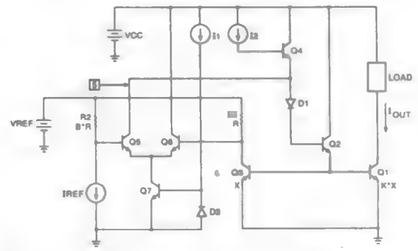
TRANSISTOR OVERCURRENT PROTECTION CIRCUIT

John G. Metro, Kingston, and Denis P. Galipeau, Woonsocket, both of R.I., assignors to Cherry Semiconductor Corporation, East Greenwich, R.I.

Filed Jun. 9, 1992, Ser. No. 896,049

Int. Cl.[5] G05F *1/56;* H02H *7/00*

U.S. Cl. 323—288 41 Claims



20. A transistor protection circuit comprising:

an output transistor including a collector, a base and an emitter;

a driver transistor having a collector, a base and an emitter, the emitter being coupled to the base of said output transistor;

a reference voltage source;

a current sensing transistor including a collector, a base and an emitter arranged in said protection circuit so as to have a collector current that is a measure of the collector current of said output transistor;

a current sense resistor connected between said reference voltage source and the collector of said current sensing transistor;

a source of control current coupled to the base of said driver transistor;

means for deriving a threshold voltage from said reference voltage source; and

an error amplifier having a first input connected to the threshold voltage, a second input coupled to the collector of said current sensing transistor and an output coupled to said source of control current such that when the collector voltage of said current sensing transistor falls below the threshold voltage the control current reaching the base of said driver transistor is reduced.

5,343,142

SHEET SIZE DETECTION DEVICE

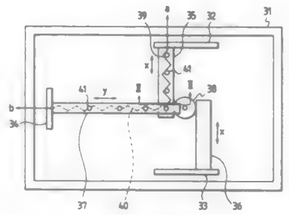
Toshinori Sasaki; Akira Kanazawa; Kenji Hara; Tomoo Fukao; Masahiko Ishizaka; Masatomo Yamada; Naoto Sugimura, and Michiaki Yoshihara, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,053

Claims priority, application Japan, Oct. 15, 1991, 3-266360

Int. Cl.[5] G01N *27/04;* G01R *27/02*

U.S. Cl. 324—71.1 5 Claims



1. A sheet size detection device for detecting a size of sheets which are held in a cassette body, comprising:

first guide means for defining a position of said sheets in a first direction of said sheets, said first guide means being movable in accordance with the size of sheets;

second guide means for defining a position of said sheets in a second direction of said sheets, said second direction being orthogonal to said first direction, said second guide means being movable in accordance with the size of sheets;

first arm means having a first resistor movable with said first guide means;

second arm means having a second resistor movable with said second guide means, said first and second resistors constituting a variable resistor whose resistance value changes depending on the position of said first arm and the position of said second arm; and

size detection means for detecting the size of said sheets on the basis of the resistance value of said variable resistor.

5,343,143

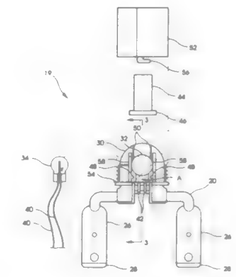
SHIELDED CURRENT SENSING DEVICE FOR A WATTHOUR METER

John T. Voisine; Christopher L. Anderson; Robert E. Slaven, all of Lafayette, and Ronald C. Tate, Battle Ground, all of Ind., assignors to Landis & Gyr Metering, Inc., Lafayette, Ind.

Filed Feb. 11, 1992, Ser. No. 833,738

Int. Cl.[5] G01R *11/48*

U.S. Cl. 324—142 25 Claims



14. A device for detecting AC current flowing in a conductor, said device comprising:

VOL 1165 ISS 5 AUG 30 1994 UMI

a coil having a first lead and a second lead extending therefrom, said coil having an axis about which the coil is wound;

a curved conductor located in close proximity with said coil, said conductor disposed in a plane substantially perpendicular to said axis wherein current flowing in said conductor induces a proportional current signal in said coil;

a non-ferromagnetic metallic shield interposed between said coil and said conductor and substantially surrounding said coil, wherein said shield is electrically connected to said first lead, and said second lead is insulated from and extends through said shield, and wherein said metallic shield is a closed cylinder including an opening through which said first and said second leads are inserted and wherein said shield includes means for preventing eddy currents in said shield; and

flux guide means encircling said shield, said conductor and said coil, said flux guide means diverting flux produced by current flowing in said conductor towards said coil and wherein said flux guide means is constructed of a ferromagnetic material.

5,343,144

ELECTRONIC DEVICE

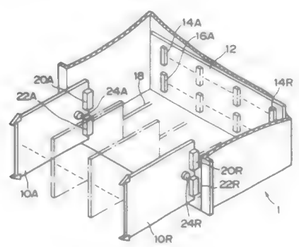
Yuji Kobayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 838,874

Claims priority, application Japan, Feb. 28, 1991, 3-058155; Feb. 28, 1991, 3-058156

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—158.1 **6 Claims**



1. An electronic device comprising:

a plurality of sub-wiring boards each having mounted thereon at least one circuit block with an operational setting and a memory circuit for storing operational setting data for said at least one circuit block;

a temperature detection element included in each of said sub-wiring boards for measuring a temperature of said each sub-wiring board; and

a main-wiring board respectively connected to said sub-wiring boards, said main-wiring board having a control circuit for controlling said operational setting of said at least one circuit block mounted on each of said plurality of sub-wiring boards on the basis of said operational setting data stored in said memory circuit on the respective sub-wiring board, and said control circuit corrects said operational setting data on the basis of the temperature measured by said temperature detection element.

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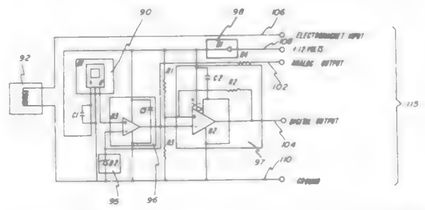
METHOD AND APPARATUS FOR MONITORING THE PROPER OPERATION OF A HALL EFFECT DEVICE USED IN DETECTING BURIED MAGNETS IN A CONTROL SYSTEM FOR MATERIALS HANDLING VEHICLES

Timothy A. Wellman, Coldwater; Ned E. Dammeyer, New Bremen, and Walter Conley, III, St. Marys, all of Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio

Filed Apr. 9, 1991, Ser. No. 682,284

Int. Cl.[5] G01R *35/00, 33/06;* **G05D** *3/00*

U.S. Cl. 324—202 **4 Claims**



1. Method of testing the operability of an end of aisle control system wherein a plurality of sensors are positioned on an operator controlled materials handling vehicle for sensing floor mounted magnets, the method comprising the steps of

initiating a testing sequence at predetermined occasions,

during each testing sequence determining whether any sensor has an output representing the presence of a magnet and indicating such sensor as being active,

testing each sensor not indicated as being active by

creating a momentary test magnetic field in the presence of each sensor,

determining the strength of magnetic field detected by each sensor, and

determining whether the sensor output is above a predetermined level,

for any sensor previously indicating active, reinitiating said testing sequence for that sensor after the vehicle has traveled a predetermined distance, and

disabling the end of aisle control system if any sensor output is determined to be below said predetermined level.

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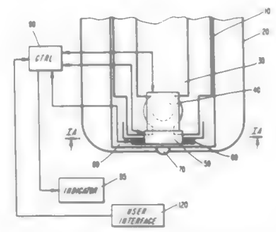
COMBINATION COATING THICKNESS GAUGE USING A MAGNETIC FLUX DENSITY SENSOR AND AN EDDY CURRENT SEARCH COIL

Frank J. Koch; Leon C. Vandervalk, and David J. Beamish, all of Ogdensburg, N.Y., assignors to De Felsko Corporation, Ogdensburg, N.Y.

Filed Oct. 5, 1992, Ser. No. 956,280

Int. Cl.[5] G01B *7/10;* **G01R** *33/12;* **G01N** *27/72*

U.S. Cl. 324—230 **20 Claims**



1. A coating thickness gauge for measuring both a nonferrous coating on a ferrous substrate and a nonconductive coating on a conductive nonferrous substrate, comprising:

a permanent magnet having a pole face;

a magnetic flux density sensor disposed near the pole face of said permanent magnet so as to sense a magnetic field in a neighborhood of said pole face;

an eddy current search coil disposed around the neighborhood of said pole face; and

control means for receiving inputs from said magnetic flux density sensor and said eddy current search coil, selecting one of said inputs for calculating a coating thickness, and calculating a coating thickness based on the selected input.

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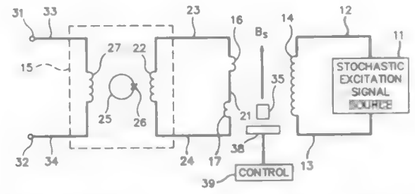
METHOD AND APPARATUS FOR USING STOCHASTIC EXCITATION AND A SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE (SAUID) TO PERFORM WIDEBAND FREQUENCY RESPONSE MEASUREMENTS

Ronald E. Sager, Carlsbad, and Michael B. Simmonds, Del Mar, both of Calif., assignors to Quantum Magnetics, Inc., San Diego, Calif.

Filed Sep. 8, 1992, Ser. No. 941,527

Int. Cl.[5] G01R *33/12, 33/035, 33/46*

U.S. Cl. 324—239 **15 Claims**



9. Apparatus for obtaining frequency response measurements from a sample, said apparatus comprising:

a stochastic signal source;

an excitation coil connected to said stochastic signal source, the sample being positioned with respect to said excitation coil so that the magnetic field of said excitation coil is applied to the sample, thereby causing the sample to generate an oscillating magnetic field;

detection coil means adjacent to the sample such that the oscillating magnetic field from the sample inductively couples to said detection coil, thereby causing currents to flow in said detection coil;

a superconducting input coil connected to said detection coil means such that the currents flowing in said detection coil also flow in said input coil; and

a SQUID sensor, said input coil being coupled to said SQUID sensor such that the currents flowing in said input coil cause said SQUID sensor to generate an output voltage where the frequency response of the sample is contained in the oscillating output voltage.

5,343,148

GRADIENT COIL SYSTEM

Michael Westphal, Offenbach; Bertold Knüttel, Rheinstetten-Mörsch, and Hartmut Schmidt, Karlsruhe, all of Fed. Rep. of Germany, assignors to Bruker Analytische Mebtechnik GmbH, Fed. Rep. of Germany

Filed Dec. 16, 1992, Ser. No. 992,901

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142263

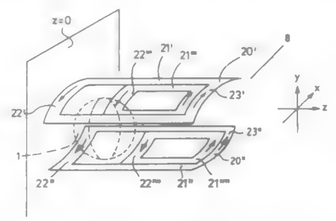
Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **16 Claims**

1. An apparatus for the production of nuclear magnetic resonance (NMR) comprising:

(a) a field coil for the production of a homogeneous magnetic field B_z in the direction of a z-axis, said homogeneous field having a measurement volume whose center lies on the z axis;

(b) a transverse gradient coil for the production of a magnetic field gradient in a direction perpendicular to the z axis, said transverse gradient coil being constructed to be unsymmetric with respect to a z=0 plane perpendicular to



the z axis through the center of the measurement volume; and

(c) an axial gradient coil for the production of a magnetic field gradient G_z in the direction of the z axis, said axial gradient coil being arranged cylindrically symmetric with respect to the z axis and unsymmetric with respect to the z=0 plane.

5,343,149

MAGNETIC RESONANCE IMAGING SYSTEM

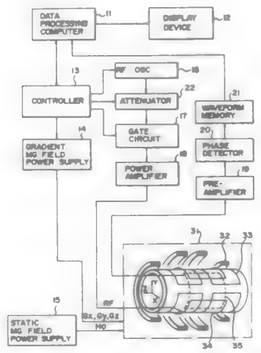
Masatoshi Hanawa, Foster City, Calif., assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 644,530, Jan. 23, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 94,916

Claims priority, application Japan, Jan. 24, 1990, 2-12471

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—314 **9 Claims**



1. A magnetic resonance imaging system comprising:

static magnetic field generating means for generating a static magnetic field in a predetermined imaging region in which an object to be examined is placed;

gradient magnetic field applying means for applying a predetermined gradient magnetic field to said imaging region;

radio frequency (RF) pulse applying means for applying a uniform RF pulse to said imaging region, a field intensity of said RF pulse being nonuniform outside of said imaging region;

sequence control means for controlling said gradient magnetic field applying means and said RF pulse applying

VOL 1165 ISS 5 AG 30 1994 UMI

means in accordance with a predetermined pulse sequence so as to cause said gradient magnetic field applying means and said RF pulse applying means to respectively apply said predetermined gradient magnetic field and said RF pulse to said imaging region for causing a magnetic resonance phenomenon in said imaging region;

receiving means for receiving a magnetic resonance signal generated by said magnetic resonance phenomenon within a given slice in said imaging region; and

imaging processing means for obtaining a magnetic resonance image of a slice portion of said object which is along a longitudinal axis of said object and does not intersect said longitudinal axis, by performing predetermined processing, including image reconstruction processing, of said magnetic resonance signal received by said receiving means;

wherein said sequence control means comprises adjusting means for adjusting a power value of an RF pulse for imaging prior to imaging processing, said adjusting means comprising:

first means for exciting magnetic resonance at a slice portion of said object which crosses said longitudinal axis of said object regardless of an orientation of the magnetic resonance image obtained by said imaging processing means, the field intensity of said RF pulse being uniform within said slice portion excited by said first means;

second means for operating said first means, with said power value of said RF pulse being variously set, for detecting magnetic resonance signals without applying an encode gradient magnetic field, and for obtaining a relationship between said power value of said RF pulse and peak values of said magnetic resonance signals detected; and

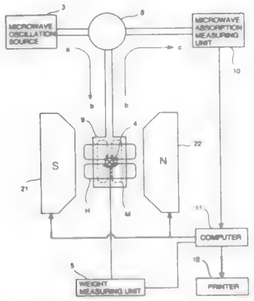
means for determining a power value of said RF pulse for imaging processing on the basis of said relationship obtained by said second means so as to set a desired flip angle.

5,343,150

APPARATUS AND METHOD FOR MEASURING A PHYSICAL PROPERTY OF A SAMPLE USING AN ELECTRON SPIN RESONANCE SPECTRUM OF THE SAMPLE

Seiji Nakahata; Kouichi Sogabe, and Akira Yamakawa, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 26, 1993, Ser. No. 98,116
Claims priority, application Japan, Aug. 6, 1992, 4-209988
Int. Cl.[5] G01V *3/00*; **G01R** *33/20*; **G01N** *24/10, 25/18*
U.S. Cl. 324—316 **31 Claims**



1. An apparatus for measuring a physical property value of a material to be tested, said apparatus comprising a microwave oscillation source which generates microwaves, a magnetic field generator which applies a magnetic field to the test material, a radiation guide which guides said microwaves to irradiate the test material, a microwave measuring device which measures an amount of microwaves absorbed by the test material, an analyzer which determines a concentration of unpaired electrons in the test material using said measured amount of microwave absorption and using a predetermined standard relation between microwave absorption and concentration of unpaired electrons in standard materials of the same type as the test material, and a data converter which converts said concentration of unpaired electrons into the physical property value to be measured.

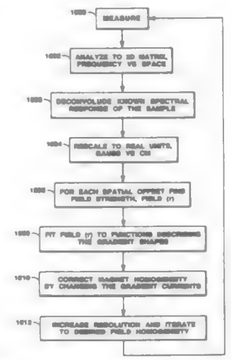
17. A method of measuring a physical property value of a material to be tested, said physical property measuring method comprising the steps of: providing a test material; generating microwaves; generating a magnetic field; applying said magnetic field to the test material; guiding said microwaves to irradiate the test material while applying said magnetic field to said test material; measuring an amount of microwaves absorbed by said test material; determining a concentration of unpaired electrons in the test material by using said measured amount of microwave absorption and using a predetermined standard relation between microwave absorption and concentration of unpaired electrons in standard materials of the same type as the test material; and converting said concentration of unpaired electrons into the physical property value to be measured.

5,343,151

METHOD FOR AUTOMATICALLY SHIMMING A HIGH RESOLUTION NMR MAGNET

David G. Cory, Boston, and Peter Sprenger, Lexington, both of Mass., assignors to Bruker Instruments, Inc., Billerica, Mass.

Filed Mar. 11, 1993, Ser. No. 29,906
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—320 **25 Claims**



1. In an NMR spectrometer having coils for generating a main magnetic field having a direction over a sample volume, means for passing field current through the coils, a gradient coil, means for passing a gradient current through the gradient coil to generate a magnetic field gradient along a predetermined direction within the sample volume, a method for correcting the main magnetic field to a spatially uniform field along the predetermined direction over the sample volume by selectively adjusting the magnitude of the field current, the method comprising the steps of:

A. inserting a material sample containing NMR-active nuclei into the sample volume;

B. setting the gradient current to a predetermined value;

C. performing an NMR experiment to acquire a frequency spectrum data set of the sample while the gradient current remains at the predetermined value set in step B;

D. adjusting the gradient current to a new value to change the gradient field;

E. repeating steps C and D a predetermined number of times to acquire multiple frequency spectrum data sets with different times and gradient field magnitudes;

F. manipulating the frequency spectrum data sets acquired in step E to produce a new data set relating field strength to spatial position; and

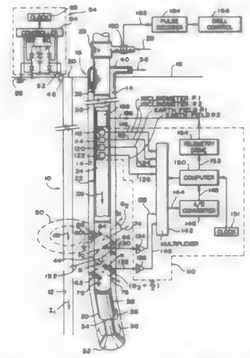
G. using the new data set produced in step F to adjust the magnitude of the field current.

5,343,152

ELECTROMAGNETIC HOMING SYSTEM USING MWD AND CURRENT HAVING A FUNAMENTAL WAVE COMPONENT AND AN EVEN HARMONIC WAVE COMPONENT BEING INJECTED AT A TARGET WELL

Arthur F. Kuckes, Ithaca, N.Y., assignor to Vector Magnetics, Ithaca, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,048
Int. Cl.[5] G01V *3/26, 3/24*
U.S. Cl. 324—346 **16 Claims**



1. A method of measuring while drilling the magnetic fields produced by a current flowing in or around an electrically contrasting target well casing to permit continuous unambiguous determination of the direction to the target from a borehole being drilled, comprising:

securing a housing incorporating a magnetic field detector within a non-magnetic drill string section forming a part of, and located near the bottom of, a drill string located in a borehole being drilled, said detector including means for measuring X and Y component values of ambient magnetic fields;

aligning the detector with respect to a drill bit in said drill string;

positioning an electrode near a target well having a casing;

supplying two-component low frequency alternating current including a fundamental wave component and an even harmonic wave component to said electrode to produce a resultant alternating current flow in said target well casing and to thereby produce a corresponding alternating magnetic field in the earth around said target well;

measuring with said magnetic field detector X and Y component values of the alternating magnetic field produced in the earth by said resultant alternating current flow;

converting said measured component values to digital information representing said alternating magnetic field;

accumulating said component value digital information within said housing and determining from said accumulated digital information the vectorial distance and direction to said target well from said detector, the determination being made in synchronization with said fundamental wave component to eliminate phase ambiguity in the determination of the direction;

supplying data representing said distance and direction to transmitter means in said drill string; and

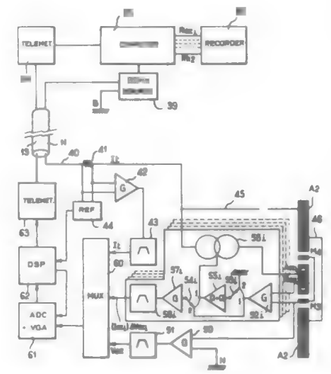
transmitting said distance and direction data to the surface of the earth.

5,343,153

WELL LOGGING METHOD AND APPARATUS USING PASSIVE AZIMUTHAL ELECTRODES

Dylan H. Davies, Viroflay, and Pierre-Marie Petit, Saint-Thibault des Vignes, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jan. 4, 1993, Ser. No. 52
Claims priority, application France, Jan. 14, 1992, 92 00283
Int. Cl.[5] G01V *3/20*
U.S. Cl. 324—366 **24 Claims**



4. Apparatus for evaluating the resistivity of earth formations through which a borehole passes, the apparatus comprising:

an elongate body adapted to be displaced along the borehole;

an array of circumferentially spaced apart azimuthal electrodes disposed on the body;

two annular current electrodes longitudinally disposed on the body on either side of said array of azimuthal electrodes;

a return electrode remotely disposed from said annular current electrodes;

means for emitting electrical currents between the current electrodes and the return electrode;

means for detecting the potentials caused by said currents on said azimuthal electrodes with respect to an electrode longitudinally spaced apart on said body from said azimuthal electrodes; and

means responsive to said detected potentials to generate output signals representative of the resistivity of the formations in a plurality of directions around the borehole.

5,343,154

DIAGNOSTIC DEVICE FOR GAS TURBINE IGNITION SYSTEM

John R. Fras, Jacksonville, Fla., assignor to Unison Industries, Inc., Jacksonville, Fla.

Continuation of Ser. No. 557,973, Jul. 26, 1990, Pat. No. 5,155,437. This application Oct. 7, 1992, Ser. No. 958,644
Int. Cl.[5] F02D *17/00*
U.S. Cl. 324—399 **4 Claims**

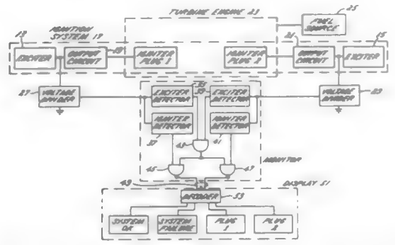
1. An apparatus for diagnosing the health of an ignition system for a turbine engine, where the ignition system includes an exciter providing high energy pulses to an igniter plug for

VOL 1165 ISS 5 AG 30 1994 UMI

igniting the fuel of the turbine engine, the apparatus comprising:

an exciter detector for detecting voltage levels for the high energy pulses that are less than a predetermined value representing a nominal minimum voltage generated by the exciter when it is healthy;

an igniter plug detector for detecting whether the high energy pulses produce sparks at the igniter plug; and



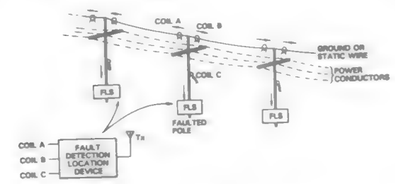
a diagnostic circuit responsive to the exciter and igniter plug detectors for reporting a failure of the igniter plug only when the detectors indicate the exciter is healthy and the sparks are not being produced at the igniter plug, the diagnostic circuit including an output for reporting the state of the health of the ignition system.

5,343,155

FAULT DETECTION AND LOCATION SYSTEM FOR POWER TRANSMISSION AND DISTRIBUTION LINES

Murari L. Kejariwal; Baldev Thapar; Victor Gerez, and Daniel March, all of Bozeman, Mont., assignors to The Research and Development Institute, Inc. at Montana State University, Bozeman, Mont.

Filed Dec. 20, 1991, Ser. No. 810,410
Int. Cl.[5] G01R *31/08;* **H02H** *3/00*
U.S. Cl. 324—522 **1 Claim**



1. A system for detecting and locating faults on a power transmission/distribution system having line supports carrying power lines and a ground line, comprising:

sensing means on said ground line at each said line support in said power transmission/distribution system arranged on each side of each said line support for determining a direction of ground current flow on said ground line;

fault detection means on each said line support in said transmission/distribution system for detecting an orthogonal current component at each respective line support due to a line to line fault;

transmission means on each said line support in said transmission/distribution system for sending an identification number of a line support at which a fault is detected; and

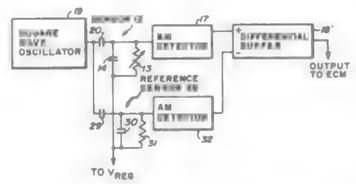
a plurality of repeater means arranged throughout said power transmission/distribution system for receiving and sending to a central location identification numbers of the supports at which faults are detected.

5,343,156

IC FOR PRODUCING AN OUTPUT VOLTAGE RELATED TO FUEL COMPOSITION IN A CAPACITIVE FUEL SENSOR

Nick M. Johnson, 11663 Par Ave., Los Altos, Calif. 94024, and Chun-Foong Cheah, 1420 Turk St., #905, San Francisco, Calif. 94115

Filed Apr. 15, 1992, Ser. No. 868,604
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—672 **8 Claims**



1. A capacitive fuel sensor circuit for responding to the fuel sensitive capacitance developed in a fuel sensor configured to produce a fuel composition output and in which the effects of shunt resistance that results from fuel contamination are circumvented, said circuit comprising:

a square wave oscillator having its output coupled to said fuel sensor;

a first amplitude modulation detector having an input coupled to said fuel sensor and having an output related to its input;

a dummy sensor having components that simulate those of said fuel sensor;

means for coupling said output of said square wave oscillator to said dummy sensor;

a second amplitude modulation detector having an input coupled to said dummy sensor and having an output related to its input; and

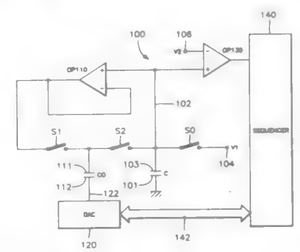
an output buffer having a first input coupled to said output of said first amplitude modulation detector and a second input coupled to said output of said second amplitude modulation detector whereby said fuel composition output is produced from the combined first and second amplitude modulation detector outputs.

5,343,157

METHOD AND APPARATUS FOR MEASURING AN UNKNOWN CAPACITANCE USING A KNOWN REFERENCE CAPACITANCE

Hervé Deschamps, Suresnes, France, assignor to Marelli Autronica, Nanterre, France

Filed Apr. 17, 1992, Ser. No. 870,468
Claims priority, application France, Apr. 18, 1991, 91 04786
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—678 **32 Claims**



1. A method of measuring a capacitance of a capacitor, the

method making use of a reference capacitor having a reference capacitance in addition to the capacitance of the capacitor to be measured, the reference capacitor and the capacitor to be measured each having first and second electrodes on opposite sides thereof, the method comprising the following steps:

(a) precharging a second electrode of a first one of the capacitors to a first predetermined potential, said first capacitor having its first electrode connected to ground;

(b) charging the first electrode of the second one of the capacitors to the same potential as the second electrode of the first capacitor without changing the potential on said second electrode of the first capacitor;

(c) electrically connecting the first electrode of the second capacitor to the second electrode of the first capacitor so that the potential on the second electrode of the first capacitor is equal to the potential on the first electrode of the second capacitor, and switching the potential on the second electrode of the second capacitor between a first predetermined value and a second predetermined value; and

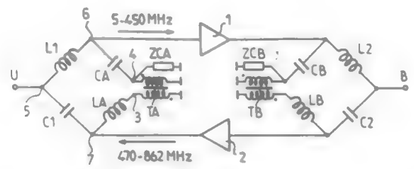
(d) comparing the potential on the second electrode of the first capacitor with a reference potential, disconnecting the first electrode of the second capacitor with the second electrode of the first capacitor and iterating above steps (b) and (c) until the potential on the second electrode of the first capacitor passes through a level corresponding to the reference potential, and counting the number of iterations, said number of iterations being indicative of the ratio of capacitance between the two capacitors and consequently of the capacitance of the capacitor to be measured when the reference capacitance is known.

5,343,158

AMPLIFIER DEVICE FOR A CABLE TELEVISION DISTRIBUTION NETWORK

Joël Gris, Louviers, and François Charpail, Paris, both of, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 21, 1992, Ser. No. 933,286
Claims priority, application France, Aug. 28, 1991, 91 10671
Int. Cl.[5] H04N *1/00, 7/10;* **H04H** *1/06*
U.S. Cl. 328—103 **7 Claims**



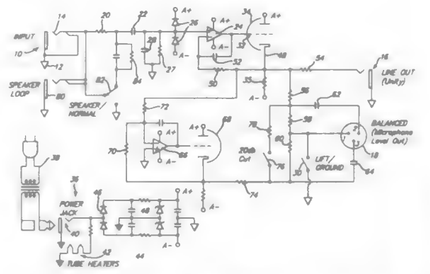
1. An amplifier device intended for incorporation in a cable of a cable television distribution network, comprising two parallel paths each having their ends interconnected for always forming an input/output terminal, the first path being provided with an amplifier operating in a first frequency band, the second path being provided with an amplifier operating in a direction opposite to that of the first amplifier and in a second frequency band other than the first band, having taken in a direction from each terminal a first filter element having a characteristic of a first type and a second filter element having a characteristic of a second type complementary to the first type for transmitting the signals of the second path, characterized in that the two paths are joined together by means of an assembly composed of the series arrangement of elements and comprising, considered from the first path, a third filter element having a characteristic of the second type and a fourth filter element having a characteristic of the first type and in that the junction point of the third and fourth filter elements is connected to ground via a matched load, that is to say in principle a resistance equal to the characteristic impedance of the cable, and in that a signal polarity inverting element is arranged in series between the two filter elements.

5,343,159

DIRECT BOX EMPLOYING HYBRID VACUUM TUBE AND SOLID STATE CIRCUITRY

Brent K. Butler, 6806 S. Norfolk St., Aurora, Colo. 80016

Filed Feb. 16, 1993, Ser. No. 17,764
Int. Cl.[5] H03F *5/00*
U.S. Cl. 330—3 **9 Claims**



4. A circuit for coupling a high impedance audio source to a low impedance audio destination, comprising:

at least one operational amplifier with first and second input ports of opposite polarity and with an output port and having a feedback loop to establish the gain of said operational amplifier;

at least one vacuum tube with cathode, plate and grid;

the grid of said vacuum tube being coupled to the operational amplifier output port;

an input terminal for coupling to said high impedance audio source and an output terminal for coupling to said low impedance audio destination;

said input terminal being coupled to said first input port of said operational amplifier, and the output terminal being coupled to the cathode of said vacuum tube;

feedback means coupled between the cathode of said vacuum tube and the second input port of said operational amplifier thereby placing said vacuum tube in the feedback loop of said operational amplifier;

wherein said vacuum tube and said operational amplifier are powered by the same DC voltage rails.

5,343,160

FULLY BALANCED TRANSIMPEDANCE AMPLIFIER WITH LOW NOISE AND WIDE BANDWIDTH

Stewart S. Taylor, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Oct. 21, 1992, Ser. No. 964,173
Int. Cl.[5] H03F *1/14, 3/08*
U.S. Cl. 330—9 **42 Claims**

1. A balanced transimpedance amplifier circuit comprising:

a first amplifier circuit for amplifying a first signal at a first input line;

a second amplifier circuit for amplifying a second signal at a second input line;

a first capacitor coupled between said first input line and an input node of said first amplifier circuit;

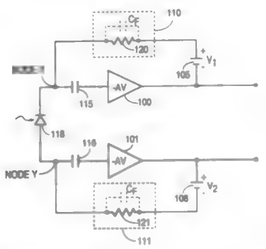
a second capacitor coupled between said second input line and an input node of said second amplifier circuit;

a first feedback network coupled between an output line of said first amplifier circuit and said first input line;

a second feedback network coupled between an output line of said second amplifier circuit and said second input line;

VOL 1165 ISS 5 AG 30 1994 UMI

a first voltage offset means coupled in series with said first feedback network; and



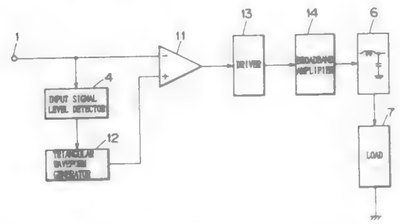
a second voltage offset means coupled in series with said second feedback network.

5,343,161

POWER AMPLIFIER APPARATUS

Akio Tokumo, and Masayuki Kato, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 13, 1993, Ser. No. 60,056
Claims priority, application Japan, May 14, 1992, 4-121724
Int. Cl.[5] H03F *3/393, 1/36, 3/217, 21/00*
U.S. Cl. 330—10 **1 Claim**



1. A power amplifier apparatus comprising:
an operational amplifier having two input terminals, an input signal being inputted to one of said input terminals;
a triangular waveform generator for outputting voltage with triangular waveform;
an input signal level detecting circuit for applying said voltage with triangular waveform from said triangular waveform generator to the other input terminal of said operational amplifier;
a broadband power amplifier for amplifying an output of said operational amplifier; and
a low-pass filter connected to an output terminal of said broadband power amplifier.

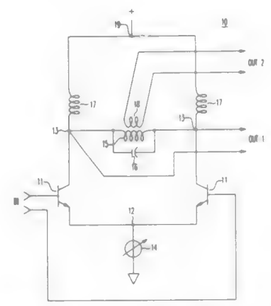
5,343,162

RF VARIABLE GAIN TUNED OUTPUT AMPLIFIER WHICH MAINTAINS HIGH Q IN SATURATION

Paul C. Davis, Muhlenberg Township, Berks County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 6, 1993, Ser. No. 43,511
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—252 **6 Claims**

1. An amplifier for amplifying to an output RF signals applied to an input, CHARACTERIZED BY:
a differential pair of transistors having a common output and two outputs and two inputs, the inputs coupling to the input of the amplifier and the two outputs coupling to the output of the amplifier;
a current source coupling to the common output of the transistors;
a resonant circuit connected between the two outputs of the transistors; and



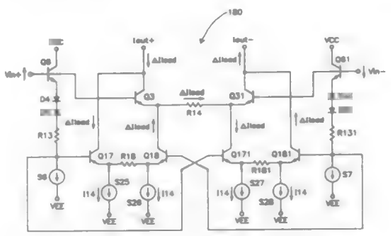
high impedance means having a high impedance to RF signals connected between the two outputs of the transistors and a power supply terminal to provide a path for current to the transistors;
wherein RF signals on the two outputs of the differential pair of transistors are not bypassed to ground.

5,343,163

SINGLE-ENDED AND DIFFERENTIAL TRANSISTOR AMPLIFIER CIRCUITS WITH FULL SIGNAL MODULATION COMPENSATION TECHNIQUES WHICH ARE TECHNOLOGY INDEPENDENT

Lloyd F. Linder, Agora Hills, and Dwight D. Birdsall, Norwalk, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 871,861, Apr. 20, 1992, Pat. No. 5,250,911. This application Jun. 21, 1993, Ser. No. 80,269
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—252 **4 Claims**



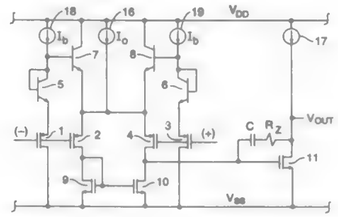
1. A differential amplifier circuit, comprising:
main differential amplifier means including first and second differentially connected main transistors and a transfer function having a non-linear error; and
differential compensation amplifier means for producing and applying first and second differential compensating current signals to the main differential amplifier means which are equal and opposite to the signal current developed across a degeneration resistor in the main differential amplifier means and which cancel respective current variations in the first and second main transistors caused by said non-linear error respectively thereby maintaining a constant base emitter voltage in the first and second differentially connected main transistors.

5,343,164

OPERATIONAL AMPLIFIER CIRCUIT WITH SLEW RATE ENHANCEMENT

Todd E. Holmdahl, Bothell, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Mar. 25, 1993, Ser. No. 36,983
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 **13 Claims**



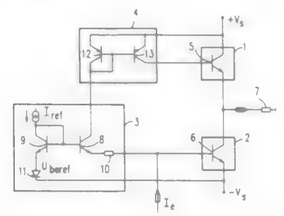
1. A differential amplifier with performance enhancement, comprising:
first and second differential FETs having gates providing plus and minus terminals of a differential input and receiving current from a common bias current node,
each of said plus and minus terminals being coupled to respective current enhancement means which provide additional current to said common bias current node as the voltage magnitude of a differential voltage at the differential input exceeds a predetermined threshold, wherein each of said current enhancement means includes:
a sensing FET having its gate coupled to the respective terminal of the differential input and providing an output voltage from its source,
a voltage shifting means for coupling the output voltage, with a voltage shift, from the source of said sensing transistor to an enhancement control node, and
current enhancement transistor means for supplying additional current to said common bias current node in accordance with the voltage shifted output voltage received at said enhancement control node relative the voltage at said common bias current node.

5,343,165

AMPLIFIER HAVING A SYMMETRICAL OUTPUT CHARACTERISTIC

Jürgen Kordts, Norderstedt; Axel Näthe, and Paul Sonnenberger, both of Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,630
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136605
Int. Cl.[5] H03F *3/26*
U.S. Cl. 330—262 **25 Claims**



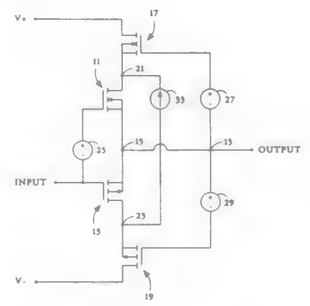
1. An amplifier comprising: a current mirror circuit, a current splitting circuit which splits up an input signal applied to the amplifier dependent upon the signal polarity, wherein negative and positive input currents flow out of and into the amplifier, respectively, and the negative input currents are applied to the current mirror circuit whose controlled output current is applied to a control input of a first current amplifier circuit arranged in the amplifier, characterized in that the positive input currents are applied to a control input of a second current amplifier circuit arranged in the amplifier, which second current amplifier circuit has the same structure as the first current amplifier circuit, in that the first current amplifier circuit is connected to a positive power supply voltage and the second current amplifier circuit is connected to a negative power supply voltage, and in that the first and second current amplifier circuits operate into a common load at their output ends.

5,343,166

EFFICIENT HIGH FIDELITY AUDIO POWER AMPLIFIER

Nelson S. Pass, Foresthill, Calif., assignor to Pass Laboratories, Inc., Foresthill, Calif.

Filed Aug. 26, 1993, Ser. No. 112,430
Int. Cl.[5] H03F *3/26*
U.S. Cl. 330—264 **11 Claims**



1. A power amplifier circuit comprising,
a configuration of transistors including at least one gain transistor and at least one cascode transistor, said gain transistor having a gate coupled to a signal input, said cascode transistor configuration connected across a pair of power supply terminals and having an output terminal,
means for biasing said gain transistor for Class-A or Class-AB amplifier operation, and
an isolated high impedance current source connected directly across said gain transistor so as to provide an alternate path for bias current other than through said cascode transistor.

5,343,167

ONE-SHOT CONTROL CIRCUIT FOR TRACKING A VOLTAGE-CONTROLLED OSCILLATOR

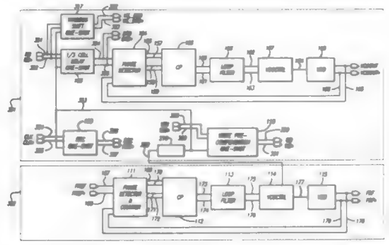
Rodney T. Masumoto, Tustin, and Jean-Gang Chern, Yorba Linda, both of Calif., assignors to Silicon Systems, Inc., Tustin, Calif.

Filed Feb. 3, 1993, Ser. No. 13,006
Int. Cl.[5] H03L *7/06, 7/07, 7/08*
U.S. Cl. 331—2 **18 Claims**

1. A circuit comprising:
a first data input for receiving a data signal;
a first phase locked loop (PLL) coupled to said first data input, for tracking said data signal;
a frequency reference input for receiving a frequency reference signal;
a second PLL coupled to said frequency reference input, for

VOL 1165 ISS 5 AG 30 1994 UMI

tracking said frequency reference signal and for providing a one-shot duration control signal; and



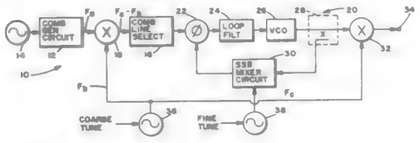
a first one-shot coupled to said second PLL for receiving said one-shot control signal and for providing an first output pulse, said first output pulse dependent on said data signal.

5,343,168

HARMONIC FREQUENCY SYNTHESIZER WITH ADJUSTABLE FREQUENCY OFFSET

Warren E. Guthrie, Glen Ellyn, Ill., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jul. 9, 1993, Ser. No. 89,955
Int. Cl.[5] H03L *7/06, 7/16*
U.S. Cl. 331—16 **7 Claims**



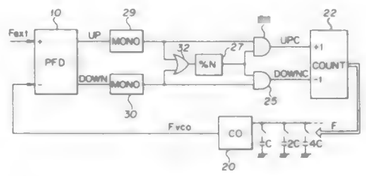
1. A frequency synthesizer, comprising:
a reference signal source which generates a reference signal having a reference frequency;
a comb-frequency generator connected to said reference signal source and thereby receiving said reference signal, said comb-frequency generator outputting a plurality of comb spectrum signals characterized by respective comb spectrum frequencies which are respective integer multiples of said reference frequency;
filter means, connected to said comb-frequency generator and thereby receiving said plurality of said comb spectrum frequencies, for selecting one signal from said plurality of comb spectrum signals, said one signal being at one frequency of said comb spectrum frequencies, said filter means outputting said one signal; and,
a phase locked loop having
a phase detector connected to said filter means and thereby receiving said one signal, said phase detector outputting a control signal,
a voltage controlled oscillator (VCO) connected to said phase detector and thereby receiving said control signal, said VCO outputting a VCO output signal having an output power,
a coupler connected to said VCO and thereby receiving said VCO output signal, said coupler outputting a first coupler output signal having substantially all of said output power, said coupler outputting a second coupler output signal having a remainder portion of said output power, and
a single sideband (SSB) mixer circuit connected to said coupler and thereby receiving said second coupler output signal, said SSB mixer circuit outputting a feedback signal, said SSB mixer circuit being connected to said phase detector, whereby said phase detector receives said feedback signal.

5,343,169

FREQUENCY LOCKED LOOP

Pascal Debaty, Domene, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Mar. 25, 1993, Ser. No. 37,352
Claims priority, application France, Mar. 31, 1992, 92 04261
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—17 **19 Claims**



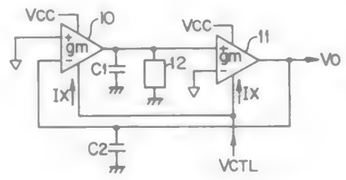
1. A frequency locked loop comprising:
a phase comparator receiving first and second periodic signals and providing, during each period of the first or second periodic signal, a phase error signal representative of a phase difference between the first and second periodic signals;
an oscillator, coupled to the phase comparator, and providing the second periodic signal to the phase comparator;
a sampling circuit, coupled to the phase comparator and the oscillator, receiving the phase error signal and providing the phase error signal to the oscillator only at each Nth period of the first or second periodic signal, wherein N is an integer greater than one; and
a processing circuit, coupled to the oscillator and the sampling circuit, and including a counter receiving the phase error signal, wherein a state of the counter fixes a frequency of the oscillator.

5,343,170

VOLTAGE CONTROLLED OSCILLATOR PROVIDED WITH NEGATIVE FEEDBACK BIASING

Junseong Lee, Incheon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Jan. 8, 1993, Ser. No. 2,266
Claims priority, application Rep. of Korea, Jan. 8, 1992, 92-161
Int. Cl.[5] H03B *5/00;* **H03H** *11/00*
U.S. Cl. 331—132 **20 Claims**



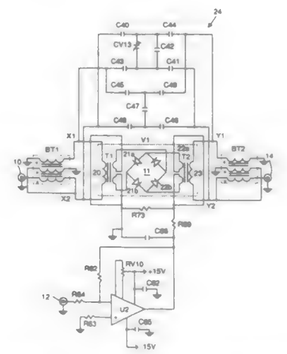
1. A variable frequency oscillating circuit including first and second variable trans-conductance (gm) amplifying stages whose non-inverting (+) and inverting (−) terminals are respectively coupled to ground, said first and second transconductance (gm) amplifying stages changing a corresponding transconductance (gm) value associated therewith in response to a variable direct current input signal, and selectively outputting a frequency signal from said second transconductance (gm) amplifying stage in response to said variable direct current input signal, said variable frequency oscillating circuit further comprising:
a negative-resistive circuit for providing negative feedback connected to a node between said first and second variable transconductance (gm) amplifying stages.

5,343,171

CIRCUIT FOR IMPROVING CARRIER REJECTION IN A BALANCED MODULATOR

Timothy R. Fox, Chicago, and Jerry C. Posluszny, Stickney, both of Ill., assignors to Kabushiki Kaish Toshiba, Kanagawa, Japan

Filed Sep. 28, 1992, Ser. No. 951,273
Int. Cl.[5] H03C *1/54*
U.S. Cl. 332—167 **23 Claims**



21. A carrier rejection circuit for improving carrier rejection in a balanced modulator, the balanced modulator including a carrier signal port for receiving a carrier signal, a modulating signal port for receiving a modulating signal, and modulating means for modulating the carrier signal according to the modulating signal to generate a modulated signal at a modulated signal port, the carrier rejection circuit comprising:
balance means, coupled to the carrier signal port and the modulated signal port, for balancing the carrier signal and the modulated signal with respect to a ground potential, the balance means reducing parasitic carrier leakage between the carrier signal port and the modulated signal port by reducing the average voltages at the carrier signal port and the modulated signal port.

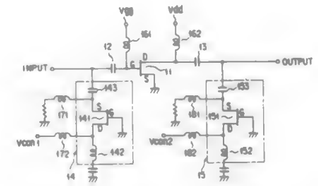
5,343,172

VARIABLE REACTANCE CIRCUIT FOR MICROWAVE OR MILLIMETER WAVE BAND AND VARIABLE MATCHING CIRCUIT USING VARIABLE REACTANCE CIRCUIT

Junsi Utsu, Ooba; Seishin Mikami, Toyota, and Masao Kodera, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 23, 1992, Ser. No. 997,305
Claims priority, application Japan, Dec. 24, 1991, 3-340776; Dec. 4, 1992, 4-325178
Int. Cl.[5] H03H *7/38;* **H03F** *3/16*
U.S. Cl. 333—32 **11 Claims**

1. A variable reactance circuit for a microwave or millimeter wave band, comprising:
a gate-grounded field effect transistor having an inherent resistive component and an inherent gate-source capacitance, where said inherent gate-source capacitance changes in accordance with a level of bias voltage applied to said transistor;
an inductive load arranged between a drain electrode of said transistor and a ground point, where said inductive load combines with said inherent resistive component of said transistor to substantially generate a purely reactive input impedance;



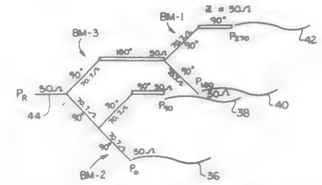
a source capacitor connected to a source electrode of said transistor; and
adjustable bias voltage applying means for setting a bias voltage applied to said field effect transistor, thereby adjusting said substantially reactive impedance generated by said combination of said inductive load and said transistor.

5,343,173

PHASE SHIFTING NETWORK AND ANTENNA AND METHOD

Miroslaw Balodis, Garden Grove, and Hassan Zamat, Hacienda Hts., both of Calif., assignors to MESC Electronic Systems, Inc., Fort Wayne, Ind.

Filed Jun. 28, 1991, Ser. No. 722,701
Int. Cl.[5] H01P *1/213, 5/12*
U.S. Cl. 333—126 **40 Claims**



1. A phase shift network for phase shifting signals between an antenna and a radio comprising:
signal transmission paths extending between a terminal for connection to a radio and each of a plurality of terminals for connection to each of four antenna elements;
the transmission paths each having progressively equally different effective electrical lengths to provide a predetermined equal phase shift of the signal progressively through the transmission paths;
the transmission paths commencing separately from the point of connection at each antenna element, the transmission paths having combiner line segments and having adjacent path pairs being progressively joined at combiner nodes of equal power division by shunt connection of said combiner line segments such that the power at each antenna terminal is equal to the power at the radio connector terminal divided by the number of antenna terminals and absent any isolation resistor between said combiner line segments;
the transmission paths being impedance matched between the antenna element connection points and the radio connection point; and
wherein there are four of said transmission paths and a first set of said combiner line segments in each of adjacent pairs of transmission paths joined at two first combiner nodes,

VOL 1165 ISS 5 AG 30 1994 UMI

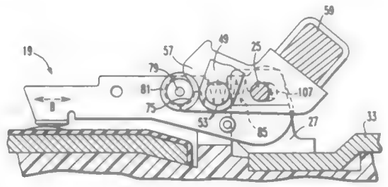
one of said transmission paths of each of said pair of transmission paths having a 90° phase shift segment, and a second set of combiner line segments one from each of the two first combiner nodes of the first set with a 180° second phase shift segment between one of said second combiner line segments and the associated first combiner node whereby each transmission path is 90° phase shifted relative to its adjacent transmission paths.

5,343,174

ELECTRICAL CIRCUIT INTERRUPTING DEVICE WITH MEANS TO BREAK WELDED CONTACTS

David C. Turner, North Fayette, and William G. Eberts, Moon, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 7, 1993, Ser. No. 72,376
Int. Cl.[5] H01H *9/00*
U.S. Cl. 335—172 2 Claims



1. An electrical circuit interrupting device comprising:
a pair of separable contacts comprising a fixed contact and a moveable contact;
a moveable contact arm structure comprising an elongated, moveable contact arm having said moveable contact mounted adjacent a first end thereof, a pivot member, and mounting means adjacent a second end of said moveable contact arm and mounting said moveable contact arm for rotation about said pivot member to open and close said separable contacts; and
an operating mechanism connected to said moveable contact arm for rotating said moveable contact arm about said pivot member to open and close said separable contacts, said mounting means characterized by means permitting generally longitudinal translation as well as said rotation of said second end of said moveable contact arm relative to said pivot member by said operating mechanism to apply a shear force between the contacts to break any weld between said separable contacts.

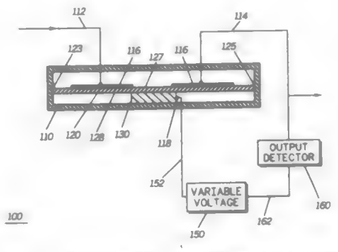
5,343,175

MECHANICALLY TUNED SAW DEVICE AND METHOD OF TUNING SAME

Roger A. Davenport, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 7, 1993, Ser. No. 116,625
Int. Cl.[5] H03H *9/64*
U.S. Cl. 333—193 16 Claims

1. A surface acoustic wave device having a tunable output, comprising:
a piezoelectric substrate having a surface wave propagation structure thereon; and
deformation means, mechanically coupled to said substrate, for mechanically deforming said substrate thereby tuning the device output, said deformation means being responsive to a control signal for controlling the deformation of the substrate.

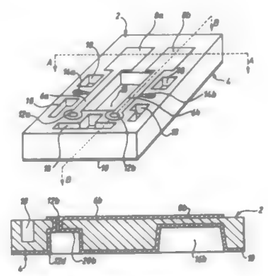


5,343,176

RADIO FREQUENCY FILTER HAVING A SUBSTRATE WITH RECESSED AREAS

Raymond J. Hasler, Milton Maisor, United Kingdom, assignor to Applied Radiation Laboratories, Northants, England

Filed Feb. 10, 1993, Ser. No. 15,908
Claims priority, application United Kingdom, Aug. 10, 1992, 9216915.0
Int. Cl.[5] H01P *1/203, 3/08*
U.S. Cl. 333—204 26 Claims



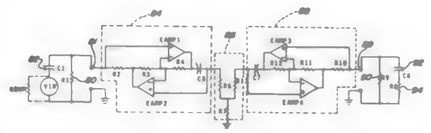
1. A radio frequency filter comprising:
an electrically insulative substrate substantially in the form of a plate of dielectric material;
an electrically conductive ground plane formed on a first major face of said plate of dielectric material;
a metallization pattern formed on a second major face of said plate of dielectric material;
wherein said metallization pattern, said plate of dielectric material and said electrically conductive ground plane conjoin to form a plurality of interconnected reactive elements;
wherein said plate of dielectric material has a portion of lesser thickness in a region of a part of said metallization pattern associated with at least one of the reactive elements, said metallization pattern and said electrically conductive ground plane being closer together in said region than in other portions of said plate of dielectric material;
said plurality of interconnected reactive elements comprise a plurality of transmission line resonators providing a coupled line filter, each transmission line resonator comprising an inductance and a capacitance;
each inductance comprising a transmission line inductance of less than $\lambda_g/4$ in length, where λ_g is an operating wavelength of said radio frequency filter; and
said electrically conductive ground plane has a non-conductive trimming break portion in a region where said first major face is recessed.

5,343,177

SIMULATED COUPLED INDUCTORS USING GENERALIZED IMPEDANCE CONVERTERS

Austin M. Williams, Diamond Bar, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 1, 1992, Ser. No. 983,937
Int. Cl.[5] H03H *11/04*
U.S. Cl. 333—213 6 Claims



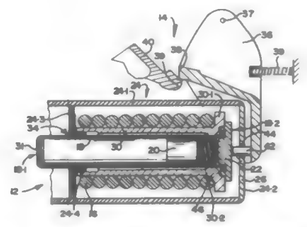
1. An electronic device for shaping frequency response, comprising:
a) a first Generalized Impedance Converter including resistors, capacitors and operational amplifiers with an input and an output, said first Generalized Impedance Converter comprising at least four impedance elements and two operational amplifiers interconnected to simulate the frequency response of an inductor or a capacitor; and
b) a second Generalized Impedance Converter including resistors, capacitors and operational amplifiers with an input and an output, said second Generalized Impendance Converter comprising at least four impedance elements and two operational amplifiers interconnected to simulate the frequency response of an inductor or a capacitor; and
c) a coupler means including a plurality of resistors with one node of said coupler means connected to the output of said first Generalized Impedance Converter and with a second node of said coupler means connecting to the output of said second Generalized Impedance Converter and a third node of said coupler means connected to ground such that said resistors of said coupler means define the degree of coupling between said first Generalized Impedance Converter and said second Generalized Impedance Converter.

5,343,178

ELECTRIC CIRCUIT BREAKER

Dante Bagalini, Johannesburg, South Africa, assignor to Circuit Breaker Industries Limited, Johannesburg, South Africa

Filed Sep. 13, 1993, Ser. No. 120,670
Claims priority, application South Africa, Jul. 9, 1993, 93/4961
Int. Cl.[5] H01H *7/00*
U.S. Cl. 335—59 8 Claims



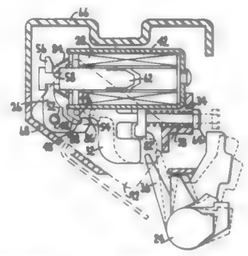
1. A current monitoring assembly which includes
a tube that is of a non-magnetic material and which is slidably mounted to be movable between first and second positions;
a coil around the tube;
a core within the tube, the core being of a magnetic material and being slidably housed within the tube;
a retarding fluid contained in the tube for retarding movement of the core;
a core spring within the tube for urging the core towards a first end of the tube;
a first pole piece mounted on the tube at a second end thereof;
a magnetic circuit defining means, for defining a magnetic circuit around the coil, which has a second pole piece aligned with the first pole piece and being positioned relative to the first pole piece such that the first pole piece is movable into and out of contact with the second pole piece on movement of the tube between its first and second positions; and
an urging means for urging the tube towards its first position.

5,343,179

MINIATURIZED SOLENOID OPERATED TRIP DEVICE

Charles W. Pipich, Monroeville; David W. Fugate, Pittsburgh, and James M. Marks, Trafford, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 29, 1993, Ser. No. 11,065
Int. Cl.[5] H01H *9/20*
U.S. Cl. 335—167 14 Claims



1. A trip apparatus for an electrical contactor having circuit breaker means operable to couple and decouple electrical contacts, the trip apparatus comprising:
a base;
an actuator arranged on the base, the actuator being extendable to contact said circuit breaker means and retractable from said circuit breaker means, for breaking and making the electrical contacts, respectively;
at least one spring coupled between the actuator and the base, the spring being operable to bias the actuator toward the circuit breaker means;
a solenoid having an element that is electromagnetically displaceable upon application of power to the solenoid, and means for returning said element to a home position upon cessation of the power;
a trigger coupled to the actuator and to the displaceable element of the solenoid, the trigger being arranged to release the actuator for movement toward the circuit breaker means upon application of power to the solenoid; and
wherein the trigger and the actuator each comprise complementary latch surfaces, the trigger being rotatably mounted on an axis for movement by the solenoid between two positions, and wherein in one of the two positions the trigger engages the actuator to block movement of the actuator by engagement of the complementary latch surfaces, and in another of the two positions the trigger disengages the complementary latch surfaces to release the actuator.

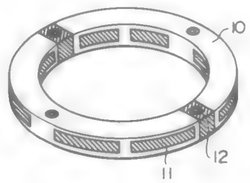
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,180

COIL STRUCTURE AND COIL CONTAINER

Hideaki Fukumoto; Yoko Kameoka, both of Hitachi; Ken Yoshioka, Hitachiota; Teruhiro Takizawa, Hitachi; Tadasi Sonobe, Iwaki; Fumio Suzuki; Naoki Kasahara, both of Hitachi; Fumihiko Goto, Katsuta; Shigeru Sakamoto, Chiyodamachi, and Masayuki Shibata, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Hitachi, both of Japan

Filed Mar. 25, 1992, Ser. No. 857,251
Claims priority, application Japan, Mar. 25, 1991, 3-059958
Int. Cl.[5] H01F *1/00, 5/00;* F25B *19/00*
U.S. Cl. 335—216 21 Claims



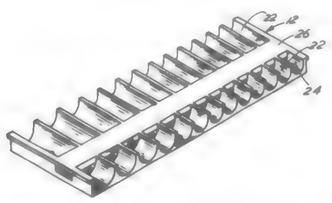
1. A coil structure comprising:
a ring-shaped superconducting coil;
a hollow ring-shaped coil container for enclosing the superconducting coil and cooling the superconducting coil to a low temperature, wherein the coil container is made of electrically conductive material and has at least one support region; and
a support structure for supporting the coil container at the at least one support region;
wherein the coil container includes at least one low resistivity portion made of electrically conductive material and having a low resistivity, and at least one high resistivity portion made of electrically conductive material and having a high resistivity higher than the low resistivity;
wherein the at least one low resistivity portion constitutes a major portion of the coil container;
wherein the at least one high resistivity portion includes at least one high resistivity portion forming a closed loop oriented such that the superconducting coil passes through the closed loop.

5,343,181

MAGNETIC SOCKET HOLDER

Joel A. Negus, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa

Continuation-in-part of Ser. No. 1,534, Jan. 7, 1993. This application Jun. 4, 1993, Ser. No. 72,478
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[5] H01F *7/20;* A45F *5/00;* A45C *11/26;* B25B *11/00*
U.S. Cl. 335—285 17 Claims



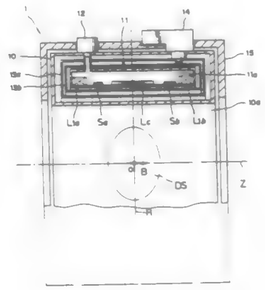
1. An improved magnetic socket holder comprising, in combination:
a non-magnetic material tray having opposite ends, a plurality of generally parallel troughs, the top of each trough being open to receive a socket, an integral handle at on end of the tray generally parallel to the troughs, said tray further including a transverse, magnet support channel abutting one end of each trough, said channel being open at said one end of each trough; and
a first magnet in the magnet support channel, said first magnet having a top surface, a bottom surface, and a longitudinal dimension generally transverse to said one end of the trough, said first magnet extending across the one end of all the troughs, said first magnet having one pole along the top surface and another pole along the bottom surface whereby a socket of magnetically responsive material in any trough will bridge the poles and form a closed magnetic circuit.

5,343,182

MAGNET DEVICE FOR GENERATING STATIC MAGNETIC FIELD IN MRI

Tadatoshi Ohta, Tachikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 23, 1992, Ser. No. 824,504
Claims priority, application Japan, Jan. 23, 1991, 3-006486
Int. Cl.[5] H01F *5/00, 7/22*
U.S. Cl. 335—299 9 Claims



1. A magnet device of a magnetic resonance imaging system which has a cylindrical space wherein a central point is determined in axial and radial directions of the cylindrical space and which generates a static magnetic field in the cylindrical space, the magnet device being a superconducting magnet device provided with a liquid helium container having an inner cylindrical wall portion, the magnet device comprising:
a reel means for forming the cylindrical space therein, the reel means being the inner cylindrical wall portion having a single-plate structure in the radial direction;
a main coil assembly including three or more ring-like main coils formed as superconducting coils within the liquid helium container and wound around and in contact with the inner cylindrical wall portion at axial positions of the inner cylindrical wall portion, the axial positions being symmetric with respect to the central point;
a sub-coil assembly including at least one pair of ring-like sub-coils formed as superconducting coils within the liquid helium container and wound around and in contact with the inner cylindrical wall portion at axially inner positions of the inner cylindrical wall portion with respect to axially outermost main coils of the main coils of the main coil assembly; and
a coil driving means for providing the main coils with magnetomotive forces so as to cause the main coils to generate a main magnetic field along the axial direction and for providing the sub-coils with magnetomotive forces so as to cause the sub-coils to generate an inverse magnetic field having a direction opposite to the main magnetic field, the main magnetic field and inverse magnetic field being superimposed on each other to form a diagnostic space having a uniform static magnetic strength,

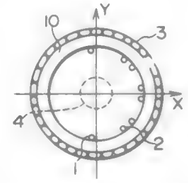
wherein the sub-coils are disposed so as to generate the inverse magnetic field suppressing high order components in a series expansion of an axial component of the main magnetic field and the axial positions and magnetomotive forces of the main coils and sub-coils are adjusted so as to form the diagnostic space having an axis extending in the radial direction which is longer than an axis extending in the axial direction and having a cross-sectional ellipsoidal shape.

5,343,183

MAGNETIC FIELD CORRECTION DEVICE

Uji Shimada, and Tatuya Oue, both of Ako, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 789,891, Nov. 12, 1991. This application Apr. 30, 1993, Ser. No. 54,827
Claims priority, application Japan, Nov. 9, 1990, 2-302782
Int. Cl.[5] G01V *3/00;* G01R *33/20*
U.S. Cl. 335—301 3 Claims



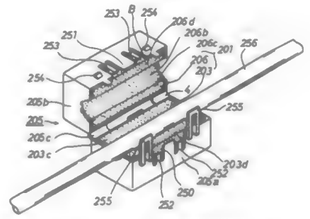
1. A magnetic field correction device for generating a uniform field within a hollow cylinder-shaped coil, comprising:
a plurality of non-magnetic tubes disposed on an internal surface of a cylinder of a predetermined radius disposed coaxially within said coil, each of said non-magnetic tubes extending along an axial direction of said coil and disposed at predetermined angles around a circumference of said cylinder; and
a plurality of magnetic members removably inserted into said plurality of non-magnetic tubes, each of said magnetic members comprising two components arranged in overlapping relation and having predetermined lengths and predetermined transverse sectional area ratio, such that each of said components forms a predetermined inner end angle and a predetermined outer end angle when inserted into respective non-magnetic tubes, wherein said non-magnetic tubes are disposed at circumferential angles $(\pi/2)(\pm\frac{1}{4}\pm\frac{1}{4}\pm\frac{1}{4})$, $(\pi/2)(\pm\frac{1}{4}\pm\frac{1}{4}\pm\frac{1}{4})+\pi$, $(\pi/2)(\pm\frac{1}{4}\pm\frac{1}{4}\pm\frac{1}{4})+(\frac{1}{4})\pi$, or $(\pi/2)(\pm\frac{1}{4}\pm\frac{1}{4}\pm\frac{1}{4})+(3/2)\pi$ of said cylinder to accommodate respective magnetic members; and
wherein said magnetic members are inserted into respective non-magnetic tubes such that a sum of said predetermined inner end angle and said predetermined outer angle of each of the two components of said magnetic members with respect to an origin at a center of a uniform field region are equal to π; and
wherein said magnetic members are inserted into respective non-magnetic tubes such that transverse cross sectional area A_1 and A_2 and inner end angles α_1 and α_2, with respect to said origin, of the two components of said magnetic members satisfy:
$(A_2/A_1)=-P^1{}_4(\cos\alpha 1)\sin^5\alpha 1/P^1{}_4(\cos\alpha 2)\sin^5\alpha 2$, wherein: $P^1{}_4$ is an associated Legendre polynomial; and $\alpha 1$ and $\alpha 2$ are two distinct angles such that $g(\alpha 1)=g(\alpha 2)$, where $g(\alpha)=P^1{}_6(\cos\alpha)\sin^2\alpha/P^1{}_4(\cos\alpha)$, $P^1{}_6$ and $P^1{}_4$ being associated Legendre polynomials.

5,343,184

ELECTRIC NOISE ABSORBER

Kazuhiro Matsui, and Hiroji Kitagawa, both of Aichi, Japan, assignors to Kitagawa Industries Co., Ltd., Nagoyashi, Japan

Continuation of Ser. No. 669,358, Mar. 14, 1991, abandoned, which is a division of Ser. No. 527,005, May 22, 1990, abandoned. This application Oct. 16, 1992, Ser. No. 962,067
Claims priority, application Japan, May 29, 1989, 1-62227; Nov. 29, 1989, 1-309958
Int. Cl.[5] H01F *17/06, 27/02, 27/26*
U.S. Cl. 336—92 6 Claims



1. An electric noise absorber for attenuating electric noise on an electric cable, the noise absorber comprising:
two bodies of magnetic material movable relative to each other, each magnetic body having an abutment surface which is movable towards and away from the abutment surface of the other magnetic body;
fastening means including (i) lockable engagement means for, when locked, attaching the bodies of magnetic material together around an electric cable with the abutment surfaces facing each other and (ii) means for unlocking the fastening means to detach the bodies of magnetic material from around an electric cable and thereby to allow the abutment surfaces to move away from facing each other; and
means comprising a deformable magnetic coating for, when deformed, providing a smooth abutment plane for the abutment surfaces, the deformable magnetic coating including at least one coating on one of the abutment surfaces, the deformable magnetic coating being in contact with both of the abutment surfaces when the abutment surfaces face each other and the bodies of magnetic material are attached together around an electric cable to deform the magnetic coating between the abutment surfaces, the deformable magnetic coating in the form of a nonhardening, liquid colloidal solution which does not change state being in contact with each of the abutment surfaces when the bodies of magnetic material are detached from around an electric cable and the abutment surfaces are moved away from facing each other.

5,343,185

TIME DELAY FUSE WITH MECHANICAL OVERLOAD DEVICE

Jerry L. Mosesian, Newburyport, Mass., and Clyde D. Reid, South Hampton, N.H., assignors to Gould Electronics Inc., Eastlake, Ohio

Filed Jul. 19, 1993, Ser. No. 94,609
Int. Cl.[5] H01H *85/04*
U.S. Cl. 337—163 18 Claims

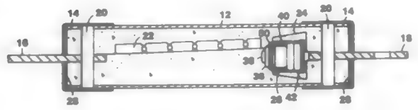
1. A fuse subassembly comprising
first and second blade-shaped terminals having flat faces,
a short circuit fusible element attached to said first terminal,
a heater attached to said second terminal, and
a time delay overcurrent trigger mechanism electrically connecting said fusible element and said heater to each other in series in an electrical path between said blade-shaped terminals, said mechanism being connected to receive heat from said heater and to mechanically inter-

VOL 1165 ISS 5 AG 30 1994 UMI

rupt said electrical path when said heater heats up under low overcurrent conditions,

said trigger mechanism comprising a housing having a front, sides and a back, a spring in said housing, and a plunger that is biased by said spring and secured in a triggered position by a mass of solder, said plunger having an end extending from said front of said housing,

said heater comprising a strip of sheet metal that has a first section with an opening through which said end of said



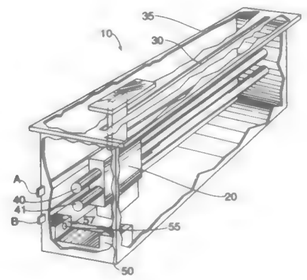
plunger extends, second and third sections that are bent with respect to said first section and extend along said sides of said housing, a fourth section that is connected to said second section and bent with respect to it and extends along said back of said housing, a fifth section that is bent with respect to said fourth section and is parallel to a flat face of said terminal, and a sixth section that is connected to said third section and is parallel to said fifth section, said fifth and sixth sections being attached to said second terminal.

5,343,186

VARIABLE RESISTOR HAVING THE CAPACITY TO PRODUCE A FADER START SIGNAL OUTPUT

Michael Zampini, Boca Raton; Joseph S. Dombrowski, Hollywood, and Donald E. Davis, Margate, all of Fla., assignors to Sony Electronics Inc., Park Ridge, N.J.

Filed Apr. 29, 1993, Ser. No. 54,577
Int. Cl.[5] H01L *31/08*
U.S. Cl. 338—15 **22 Claims**



1. A fader comprising:

an electrically resistive track;

a movable slider having a conductive wiper for making electrical contact with said electrically resistive track;

a guide track for supporting and guiding said movable slider along a path of travel;

and

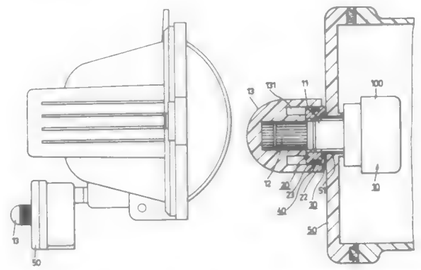
photo sensitive switch responsive to a single predetermined position of said movable slider along said path of travel.

5,343,187

ELECTRIC CONTROL DEVICE FOR AN OUTDOOR LAMP

Hsuan-Sen Shiao, No. 15-1, Lane 369, Min-Chuan Rd., Taichung City, Taiwan

Filed Jul. 1, 1993, Ser. No. 85,594
Int. Cl.[5] H01C *10/10, 10/42*
U.S. Cl. 338—70 **2 Claims**



1. An electric control device for an outdoor lamp, comprising:

a control box having a side wall that is formed with a through hole;

a rotary-type variable resistance switch having a main switch housing that is disposed inside said control box and an externally threaded tubular sleeve that extends frontwardly from said main switch housing and through said through hole of said control box, said switch further having a rotatable switch arm which extends axially and rotatably from an interior of said main switch housing and through said tubular sleeve;

a nut for retaining said switch on said control box, said nut being threaded internally to engage said tubular sleeve and having an outer peripheral surface which is formed with at least one annular peripheral groove;

a resilient washer provided on a rear face of said nut and pressed by said nut to contact tightly said side wall of said control box to prevent water seepage into said control box via said through hole; and

an O-ring provided on said nut in each said annular peripheral groove;

said switch further including a cap with a rear end that is formed with a recess, said switch arm extending into said recess and being mounted securely to said cap, said nut being confined within said recess of said cap such that each said O-ring is in tight contact with an inner wall surface of said cap to prevent water leakage into said tubular sleeve via said recess, said cap being rotated so as to rotate therewith said switch arm in order to activate said outdoor lamp and vary the intensity of light output of said outdoor lamp.

5,343,188

SLIDE RHEOSTAT TYPE LINEAR CHARACTERISTIC SENSOR

Keiji Yasuda, Kariya; Yukihisa Oda, Chiryu; Satoru Tagawa, Takahama, and Masahiro Kimura, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 22, 1993, Ser. No. 35,180
Claims priority, application Japan, Mar. 27, 1992, 4-071183
Int. Cl.[5] H01C *10/16*
U.S. Cl. 338—129 **8 Claims**

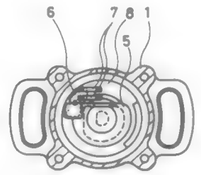
1. A slide rheostat type linear characteristic sensor, comprising:

a brush mounted for movement along a fixed moving locus;

an insulator substrate disposed opposite to the brush;

a detecting resistor disposed on the substrate so that the brush slides on the detecting resistor within a range of the moving locus; and

at least one clamping resistor disposed at a position separate from the moving locus of the brush on the substrate, the clamping resistor being made of a same material as the



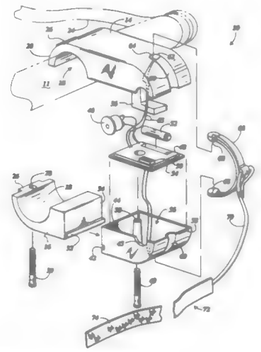
detecting resistor and having one end electrically connected with one end of the detecting resistor while having another end supplied with a source voltage or grounded, whereby the clamping resistor supplies a clamping voltage, at the one end, which is lower than the source voltage or higher than a ground voltage, without contact with the brush.

5,343,189

SIGNAL ASSEMBLY REMOVABLY ATTACHABLE TO HANDLE OF SKI TOW ROPE

Ronald S. Alley, Sr., 5100 Old Alabama Rd., Alpharetta, Ga. 30207

Filed Nov. 10, 1992, Ser. No. 974,136
Int. Cl.[5] G08B *1/08*
U.S. Cl. 340—539 **10 Claims**



1. A signaling device, comprising:

a casing comprising an upper housing matingly joinable to a lower housing to define at a first end a passage for receiving therethrough a handle for a ski tow rope;

means for securely joining the lower housing and the upper housing together;

a C-shaped clip detachably received at a second end of the casing and operatively engaged to at least one switch biased to a first position and movable to a second position in response to separation of the clip from the casing;

means for coupling the clip to a skier,

whereby a water skier, having fallen into the water during skiing, separates the clip from the casing which moves the switch to the second position; and

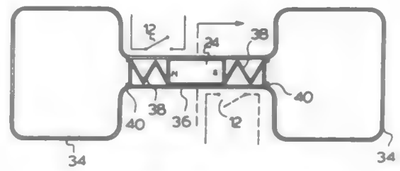
means responsive to the switch being in the second position for sending a signal.

5,343,190

SIGNALLING FOOTWEAR

Nicholas A. Rodgers, 15 Blair Lane, R.R. #1, Perkinsfield, Ontario, Canada L0L 2J0

Filed Sep. 15, 1992, Ser. No. 944,923
Int. Cl.[5] G08B *23/00;* **A43B** *23/00;* **H01H** *35/02*
U.S. Cl. 340—573 **9 Claims**



1. A footwear signalling system, comprising:

an article of footwear,

a circuit mounted in said article and comprising a normally open reed switch connected in series with a battery and with signalling means,

said signalling means being adapted, on closure of said reed switch, to emit a signal exteriorly of said article,

a permanent magnet mounted in said article to move relative to said article between an ON position where said magnet closes said sreed switch and an OFF position where said magnet allows said reed switch to open,

wherein said article includes a bladder opening into a cylindrical bore, wherein said magnet is shaped to act as a piston adapted to slide in said bore, said article further comprising means adapted to bias said magnet toward said bladder, wherein said bladder is designed to alternately expand and contract when said article is flexed and unflexed,

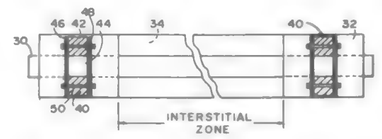
wherein said magnet, which is under the influence of said biasing means and of the pressure existing within said bladder is adapted to assume said OFF position when said article is unflexed and to pass through said ON position when said article is flexed.

5,343,191

PIPELINE LEAK DETECTION SYSTEM

Dennis E. McAtamney, Roseville, Mich., assignor to Nibco, Inc., Elkhart, Ind.

Filed Jan. 8, 1993, Ser. No. 1,810
Int. Cl.[5] G01M *3/18*
U.S. Cl. 340—605 **24 Claims**



1. A system for detecting leaks in a pipeline, said system comprising:

an outer containment pipe surrounding said pipeline and defining an interstitial space therewith;

a plurality of dividers disposed within said containment pipe for dividing said interstitial space into a plurality of zones;

a plurality of external sensors attached to said containment pipe at each of said zones for detecting the presence of a fluid contained within said pipeline which has leaked into the interstitial space of one of said zones;

a well joined to said containment pipe within one of said zones, one of said sensors being attached to said well; and

output means operably connected to said sensors for provid-

VOL 1165 ISS 5 AG 30 1994 UMI

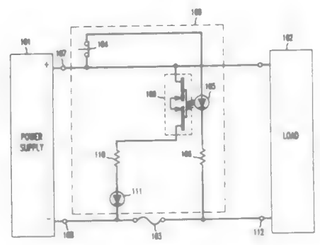
ing an indication of the detection of a leak by any one of said sensors.

5,343,192

FUSE OR CIRCUIT BREAKER STATUS INDICATOR

Osman M. Yenisey, Manalapan, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 10, 1992, Ser. No. 942,878
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—639 14 Claims



1. In an electrical system including a power source having a first output terminal and a second output terminal, a load having a first input terminal and a second input terminal, a connection between said first output terminal of said power source and said first input terminal of said load, and a fuse serially connected between said second output terminal of said power source and said second input terminal of said load, an apparatus for monitoring the status of said fuse, comprising:

a light source connected between said first output terminal of said power source and said second input terminal of said load so that said light source is illuminated when said fuse is intact, and not illuminated when said fuse has failed;

means adapted to momentarily prevent current from flowing through said light source without preventing the flow of current through said fuse, and thereby simulate the failure of said fuse;

indicator means responsive to the flow of current; and

switching means linking said indicator means and said power supply, said switching means optically coupled to said light source, and adapted to prevent current from flowing from said power supply to said indicator means in response to light generated by said light source.

5,343,193

MATRIX SWITCHER APPARATUS

Akihiko Shoda, Tokyo; Yoshinobu Usui, and Tomoji Mizutani, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 673,668, Mar. 22, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,324
Claims priority, application Japan, Mar. 28, 1990, 2-080302
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.79 7 Claims

1. A matrix switcher apparatus having at least first and second matrix switcher units for selectively distributing input signals from a plurality of input channels to a plurality of output channels, each said matrix switcher unit comprising:

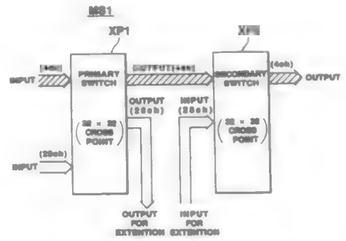
first input means for receiving the input signals from a respective group of said input channels;

a first cross point matrix for selectively distributing said input signals from said input means to a plurality of output terminals coupled to respective ones of said output channels;

output means receiving said input signals directly from said input means for outputting the received input signals to each other matrix switcher unit;

second input means for receiving input signals from said output means of each other matrix switcher unit; and

a second cross point matrix receiving the input signals from said second input means for supplying such received input



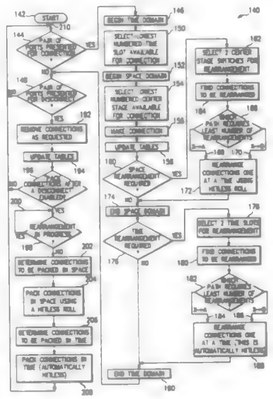
signals to said first cross point matrix so as to selectively distribute said input signals from said each other matrix switcher unit received by said second input means to said output terminals.

5,343,194

METHODS AND SYSTEM FOR IMMEDIATELY CONNECTING AND RESWITCHING DIGITAL CROSS-CONNECT NETWORKS

Edward K. Bowdon, Plano, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed May 14, 1992, Ser. No. 882,920
Int. Cl.[5] H04Q *1/22*; H04L *1/22*
U.S. Cl. 340—827 6 Claims



1. A method for immediately connecting and reswitching a communications matrix connection configuration, the communications matrix comprising a plurality of input stage switches having a plurality of input lines for receiving input signals, a plurality of center stage switches comprising a plurality of switching elements, and a plurality of output stage switches for sending output signals, the communications matrix having a plurality of preexisting matrix connections the method comprising the steps of:

immediately connecting an input line in the presence of a rearrangeably blocked condition through the communications matrix to an output line through a dedicated switching element;

detecting said rearrangeably blocked condition;

selecting a set of switching element pairs from said switching

elements, said switching element pair set forming a plurality of possible connection configurations from predetermined one of said input stage switches through said center stage switch, excluding said dedicated switching element, to a predetermined one of said output stage switches;

searching for a minimum rearrangement connection configuration for connecting said input lines through said center stage switches, excluding said dedicated switching element, to said output lines, said minimum rearrangement connection configuration requiring a minimum number of rearrangements of pre-existing matrix connections; and

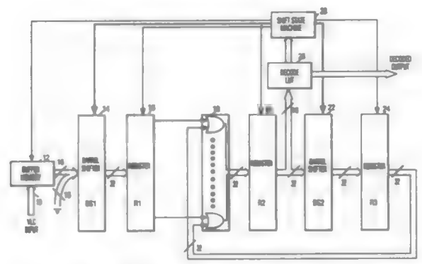
reswitching the matrix according to said minimum rearrangement connection configuration while maintaining all signal flow from the input stage switches through the center stage switches and to said output stage switch and removing signal flow through said dedicated switching element.

5,343,195

VARIABLE LENGTH CODEWORD DECODING APPARATUS

Jeffrey A. Cooper, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Dec. 18, 1992, Ser. No. 995,404
Int. Cl.[5] H03M *7/40*
U.S. Cl. 341—67 4 Claims



1. A variable length decoding apparatus comprising:

a source of variable length encoded signal codewords configured in parallel-bit samples of constant sample bit-width X, said signal codewords having a maximum bit-width Z, X and Z being integers;

a first bit shifter arranged to receive said parallel-bit samples, having a control input terminal and W parallel output terminals, where W is an integer greater than Z;

a plurality of two-input ORing circuits having respective first input terminals coupled to respective ones of the output terminals of said first bit shifter, having respective second input terminals, and having respective output terminals;

register means having parallel input terminals respectively coupled to the respective output terminals of said ORing circuits, and having parallel output terminals, said register means for temporarily storing sample bits provided by said ORing circuits;

a second bit shifter having parallel input terminals respectively coupled to the respective output terminals of said register means, having a control input terminal, and having parallel output terminals respectively coupled to the respective second input terminals of said ORing circuits;

variable length decoding means having at least Z parallel input terminals coupled to respective ones of the parallel output terminals of said register means for providing decoded values representing respective variable length codewords, and for providing values, WL, representing the number of bits included in respective variable length codewords;

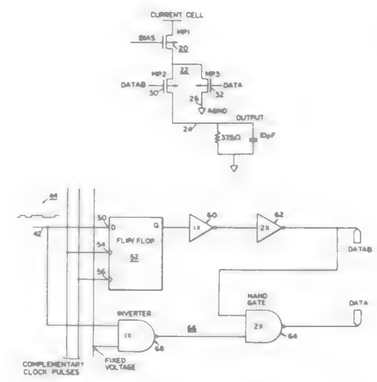
a shift state machine, responsive to said values WL for generating and applying shift control signals to said first and second bit shifters.

5,343,196

D/A CONVERTER WITH REDUCED POWER CONSUMPTION

Stephen W. Harston, Limerick, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Filed Dec. 4, 1992, Ser. No. 986,146
Int. Cl.[5] H03M *1/06*, *1/66*
U.S. Cl. 341—136 12 Claims



1. An integrated circuit chip formed with a plurality of transistors arranged as a D/A converter and comprising:

a plurality of current sources;

a plurality of switch means for said current sources respectively;

each switch means comprising first and second transistor switches connected between the associated current source and an output line and a reference line respectively;

signal means for producing a series of pulses for each of said switch means to control in sequence the on/off states of said transistor switches, said series of pulses including successive pulses identified as present pulse and following pulse;

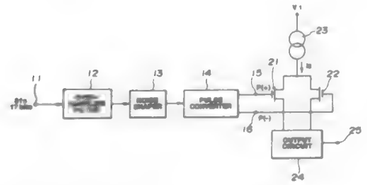
switch control means for each of said switch means and responsive to the corresponding series of said pulses for producing control signals for directing the on/off condition of the associated transistor switches in accordance with a digital input to said D/A converter so as to produce a corresponding analog output current;

each switch control means comprising logic means for examining the state of the present pulse and the following pulse in the corresponding series of pulses;

said logic means including means operable in response to said examination to turn off both the first and the second transistor switches for the corresponding current source upon determining that both the present and the following pulse are of a predetermined state directing that said first transistor switch be turned off to prevent flow of current from said current source to said output line.

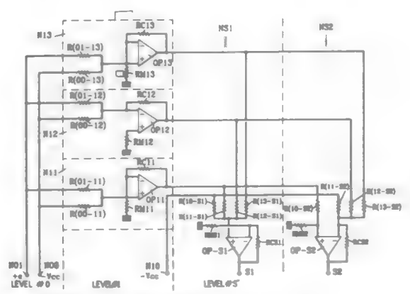
VOL 1165 ISS 5 AUG 30 1994 UMI

5,343,197
DIGITAL-TO-ANALOG CONVERTER
Takashi Kansi, Chiba, and Toshihiko Masuda, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jun. 2, 1993, Ser. No. 70,618
Claims priority, application Japan, Jun. 12, 1992, 4-153672
Int. Cl.[5] H03M 1/82
U.S. Cl. 341—152 5 Claims



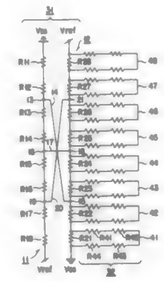
1. A digital-to-analog converter comprising:
converting means for converting input digital data into a corresponding pulse waveform including a pair of output signals which are inverted relative to each other,
a pair of field effect transistors in a common drain configuration, each having a gate supplied with one of said pair of output signals of said converting means,
a constant current source for supplying a constant current to the common drain of said field effect transistors, and
an output circuit for supplying output signals from at least one of said field effect transistors.

5,343,198
NEURON ANALOG-TO-DIGITAL CONVERTER
Daniel Collobert, Ploulec'h, and Olivier Collin, Lannion, both of France, assignors to France Telecom, Paris, France
Filed Nov. 20, 1992, Ser. No. 978,232
Claims priority, application France, Nov. 22, 1991, 91 14435
Int. Cl.[5] H03M 1/36, 1/58
U.S. Cl. 341—159 21 Claims



1. Analog-to-digital converter, comprising:
means for inputting analog signals;
a reference voltage source;
processing means for combined processing of an input analog signal and a reference voltage, including at least one level of processing operator means for carrying out a non-linear calculation from inputs thereof, and
coding means for supplying a digital output signal as a function of results of said processing, including one level of output operators, each of said output operators having as many inputs as there are outputs in a last level of said processing operator means; wherein transfer functions of said processing operator means and said output operators are chosen to allow an optimum analog-to-digital conversion over a given range of input signals.

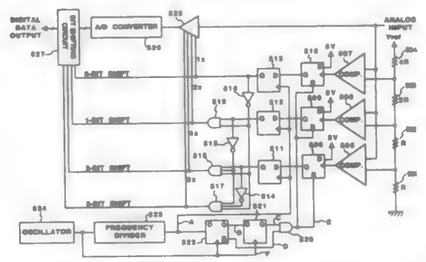
5,343,199
RESISTOR STRING CIRCUIT FOR USE IN D/A CONVERTER OR A/D CONVERTER
Naoki Sugawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 28, 1993, Ser. No. 10,200
Claims priority, application Japan, Jan. 29, 1992, 4-013906
Int. Cl.[5] H03M 1/36
U.S. Cl. 341—159 5 Claims



1. A resistor string circuit comprising:
a first resistor string including a plurality of resistor elements connected in series, said first resistor string having one end connected to a first power supply and another end connected to a second power supply;
a second resistor string arranged adjacent to the first resistor string and including a plurality of resistor elements connected in series, said second resistor string having one end connected to the second power supply and another end connected to the first power supply; and
at least one wiring means for connecting those nodes of the first and second resistor strings which are equal in potential level.

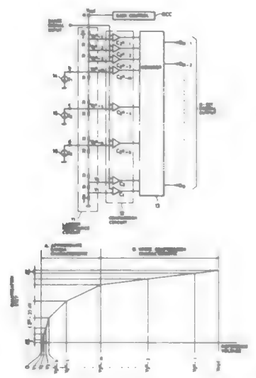
5,343,200
ANALOG/DIGITAL CONVERTER WITH DIGITAL AUTOMATIC GAIN CONTROL
Hisayoshi Matsui, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 974,339, Nov. 10, 1992, abandoned, which is a continuation of Ser. No. 753,056, Aug. 30, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 82,512
Claims priority, application Japan, Aug. 31, 1990, 2-227971; Feb. 22, 1991, 3-028224
Int. Cl.[5] H03M 1/18
U.S. Cl. 341—139 18 Claims

1. An analog/digital converter comprising:
a register for temporarily storing a digital data converted by an analog/digital converter;
arithmetic means for calculating an average value of absolute values of a set number of samplings from the digital data stored in said register; and
shifting means for shifting the data, which has been stored in said register, in dependence upon the average value calculated by said arithmetic means,
wherein said arithmetic means comprises output means for outputting the digital data stored in said register or an inverted data based on the digital data stored in said register in accordance with sign bits in said register, and adding means for adding the output of said output means, and



wherein said shifting means shifts the digital data in dependence upon an output of said adding means.

5,343,201
A-D CONVERTER
Tsutomu Takayama, Kawasaki, and Kan Takaiwa, Hachioji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 31, 1989, Ser. No. 331,171
Claims priority, application Japan, Apr. 7, 1988, 63-86813; Apr. 7, 1988, 63-86814; Apr. 19, 1988, 63-97431
Int. Cl.[5] H03M 1/36, 1/18; H04N 9/64
U.S. Cl. 341—200 14 Claims



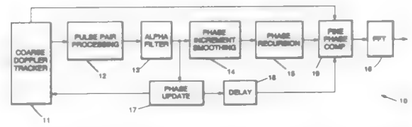
1. An analog to digital converter comprising quantizing means for quantizing an image signal in quantization steps according to the level of the image signal, weighting means for selectively weighting each of the quantization steps, and a digital decoder for producing digital signals corresponding to outputs from the quantizing means,
wherein said weighting means if structured and arranged to set a weight for each of the quantization steps in accordance with a gamma characteristic and a white compression characteristic of the image signal.

5,343,202
RADAR REFLECTOR
Stephen W. Bell, Woodbridge, Great Britain, assignor to GEC Marconi Limited, Stanmore, United Kingdom
PCT No. PCT/GB91/00712, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO91/17587, PCT Pub. Date Nov. 14, 1991
PCT Filed May 3, 1991, Ser. No. 969,858
Claims priority, application United Kingdom, May 8, 1990, 9010279
Int. Cl.[5] H01Q 15/00
U.S. Cl. 342—5 16 Claims



1. A radar reflector comprising a plurality of rigid reflector elements, each element having at least a confronting surface reflective of radar radiation, said reflector having
(a) an erected configuration in which the confronting surfaces of each adjacent pair of said reflector elements extend orthogonally, and
(b) a collapsed configuration in which the confronting surfaces of each adjacent pair of said reflector elements lie in coplanar contiguous relationships;
a thin flexible member connecting adjacent ones of each adjacent pair or said reflector elements, said thin flexible member serving as a hinge permitting movement of said confronting surfaces between their orthogonal and contiguous coplanar relationships, said thin flexible member forming an integral part of at least one of said adjacent pairs of said reflector elements and extending coplanar with said confronting surface of said at least one of said adjacent pairs of said reflector elements.

5,343,203
DOPPLER TRACKING METHOD FOR OBJECT IMAGING FROM RADAR RETURNS
Ernest C. Chen, San Pedro, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 24, 1992, Ser. No. 949,920
Int. Cl.[5] G01S 13/00
U.S. Cl. 342—25 4 Claims



1. A Doppler tracking method that provides for object imaging from radar return signals, said method comprising the steps of:
tracking an object by means of a coarse Doppler tracker that

VOL 1165 ISS 5 AG 30 1994 UMI

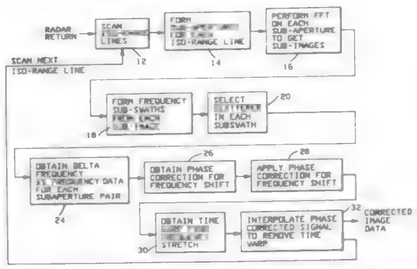
processes the radar return signals and removes translational motion of the object;
pulse pair processing output signals from the coarse Doppler tracker to produce an estimate of the Doppler centroid of the object;
filtering output signals from the pulse pair processing step with a predetermined low pass filter that is used to smooth out phase increments generated in the pulse pair processing step;
smoothing output signals from the filtering step with a predetermined smooth curve;
recursively filtering output signals from the smoothing step to produce a phase history;
differencing the recursively filtered phase history with the updated phases that have been appropriately delayed;
compensating the difference phases from radar return from the coarse Doppler tracker,
Fourier transforming the phase compensated signals to produce a Fourier transformed (FFT) image;
phase updating the output signals from the filtering step to integrate the output of the filtering step to update the phase history of the object based on phase increments derived from the filtering step;
delaying output signals from the phase updating step to match in timing the phases provided by the phase update step with those from the phase recursion step; and
feeding back output signals from the phase updating step formed by the coarse Doppler tracker.

5,343,204

AUTO-FOCUSING CORRECTION FOR ROTATIONAL ACCELERATION EFFECTS ON INVERSE SYNTHETIC APERTURE RADAR IMAGES

Michael E. Farmer, Eagan, and John D. Hatlestad, Burnsville, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 29, 1993, Ser. No. 98,917
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—25 **12 Claims**



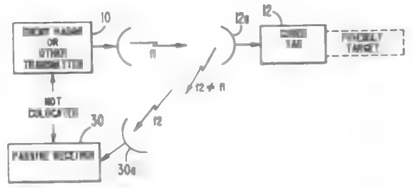
1. A method for improving an inverse synthetic aperture radar image by enhancing the radar return image signals that are utilized to form an image of a target that is undergoing rotational acceleration and that may also be undergoing range change and translational acceleration so that range change, translational acceleration and rotational acceleration distortion components that result from the relative target motion may be present in said radar return image signals comprising the steps of:
(a) sampling said radar return image signals at a plurality of initially equal time intervals to provide a plurality of digital sub-image data representations of said radar return image signals wherein said sub-images collectively span said image of said target,
(b) forming a plurality of sub-aperture digital data storage areas for each of said sub-images into which said digital sub-image data representations are respectively collected over said image of said target,
(c) computing a frequency spectrum for each sub-aperture to produce a magnitude versus frequency data plot for each sub-aperture,
(d) subdividing said frequency spectrum of each sub-image into a plurality of magnitude versus frequency plots of sub-swaths which collectively span said associated sub-image,
(e) estimating and storing change-of-frequency data in each sub-swath between selected pairs of sub-apertures,
(f) generating a change-of-frequency versus frequency data plot for all of said selected sub-swaths for each selected pair of sub-apertures,
(g) selecting a plurality of times each of which is a mid-point time for a selected sub-aperture pair,
(h) curve-fitting said change-of-frequency versus frequency data to form a plurality of data plots which are each associated with one of said mid-point times,
(i) measuring the change-of-frequency intercept value for each of said data plots on the change-of frequency axis of said change-of-frequency versus frequency data plot,
(j) measuring the slope value of each of said data plots of the change-of-frequency versus frequency data plot,
(k) providing a polynomial fitting of the polynomial represented by said intercept values versus scan-time,
(l) providing a polynominal fitting of the polynominal representation by said slope values,
(m) twice integrating said intercept polynomials and slope polynomials with respect to time, and
(n) replacing said radar return image signals with image signals that have:
(1) range change and translational acceleration distortion components eliminated by utilizing the values obtained from the twice-integrated change-of-frequency intercept values versus time data plots to develop phase correction signals for said radar return image signals, and
(2) rotational acceleration distortion components eliminated by utilizing the values obtained from the twice-integrated slope values versus time data plot to modify said initial equal sampling time intervals to compensate for frequency-stretch errors of said radar return image signals.

5,343,205

ENEMY SIGNAL DETECTION AND WARNING SYSTEM

Markus Nowogrodzki, Sussex, N.J., assignor to General Electric Company, Syracuse, N.Y.

Filed May 30, 1986, Ser. No. 868,993
Int. Cl.[5] G01S *13/78*
U.S. Cl. 342—45 **7 Claims**



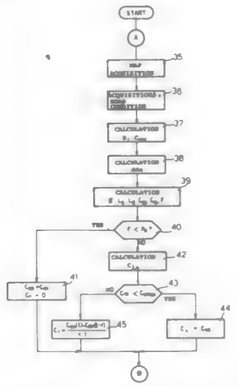
1. An enemy signal detection and warning system for detecting illumination of a friendly forces target by an enemy transmitter with signal at frequency f1 comprising, in combination;
a coded tag adapted for mounting on said friendly forces target and adapted to receive a signal at frequency f1 from said enemy transmitter and in response thereto transmit a coded signal at an arbitrary carrier frequency f2 unequal to f1, said tag having an oscillator for generating the carrier frequency f2; and
means under control of friendly forces for receiving the signal at frequency f2 from said tag for thereby determining (a) the fact that said tag has been illuminated by the enemy signal and (b) which particular tag has been illuminated by the enemy signal.

5,343,206

METHOD AND MEANS FOR AVOIDING COLLISION BETWEEN A MOTOR VEHICLE AND OBSTACLES

Ermanno Ansaldi, Turin; Stefano Re Florentin, Grugliasco, and Andrea Saroldi, Turin, all of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Continuation of Ser. No. 725,014, Jul. 3, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 1,395
Claims priority, application Italy, Jul. 5, 1990, 67499-A/90
Int. Cl.[5] G01S *13/93*
U.S. Cl. 342—70 **22 Claims**



1. In a method for avoiding collision between a human driven motor vehicle and at least one obstacle comprising the stages of: searching for at least one obstacle (120) in an environment in front of the motor vehicle (100) along a presumed path (119) for the motor vehicle, calculating the distance (d_{obst}) and the relative speed (V_{obst}) of the obstacle, and indicating the obstacle with an indication of its hazard level, these stages being repeated cyclicly, the improvement in that the stage of searching for the obstacle comprises:
generating a map (115) of the environment in front of the motor vehicle (100) by scanning the environment;
reconstructing the geometry of a road (116) on the basis of the map (115);
reconstructing the presumed path (119) of the motor vehicle on the basis of the reconstructed geometry of the road; and
searching for the obstacle (120) within the reconstructed presumed path.

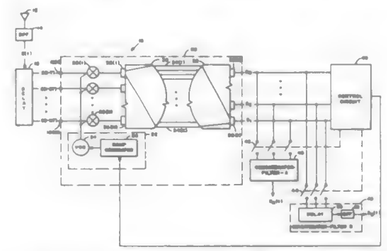
5,343,207

REAL-TIME WIDE-BAND COMPRESSIVE-RECEIVER SYSTEM

Chester E. Stromswold, Nashua, and John T. Apostolos, Merrimack, both of N.H., assignors to Lockheed Sanders, Inc., Nashua, N.H.

Filed Sep. 30, 1986, Ser. No. 913,436
Int. Cl.[5] G01S *7/40*; G01R *23/175*
U.S. Cl. 342—192 **5 Claims**

1. For individually monitoring narrow-band components in a wide-band signal, an apparatus comprising:
A. an imaging two-dimensional dispersive delay line having delay-line input ports disposed at different physical locations on the two-dimensional dispersive delay line and having a delay-line output port associated with each delay-line input port and disposed at the image point of the delay-line input associated therewith so that signals introduced at a given delay-line input port are received at the delay-line output port associated therewith substantially to the exclusion of the other output ports; and
B. frequency-translation means, operating in successive sweeps, for generating from a received signal a plurality of chirped signals, each chirped signal being associated with a different one of the input ports, and for applying each chirped signal to its associated input port, each chirped signal being a progressively frequency-translated version of a time segment of the received signal within each sweep, the beginning of which time segment is offset in time from those of the time segments of which the other chirped signals are frequency-translated versions, the progressive frequency translation of each signal segment being so related to the dispersion of the dispersive delay line as to cause the components in the chirped signals



caused by narrow-band signals in the wide-band signal to be compressed in propagating between the input and output ports of the dispersive delay line so that the frequency of a narrow-band component of the wide-band signal is indicated by the times of the occurrences at the output ports of the compressed versions that that component causes, whereby the outputs of successive output ports at times that indicate a given frequency represent compressed versions of progressively delayed segments of a narrow-band component of the wide-band signal having the frequency associated with the given time so that all of the information in the narrow-band component can be extracted if the time increments between the beginnings of the signal segments are less than or equal to the Nyquist rate for the width of the narrow-band component and enough ports and chirped signals are provided to span the sweep time of the means for generating chirped signals.

5,343,208

RADAR WITH INDIVIDUALLY OPTIMIZED DOPPLER FILTERS

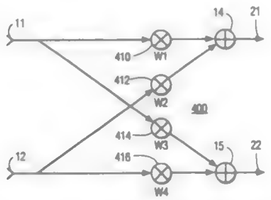
Donald E. Chesley, Maple Shade, N.J., assignor to Martin Marietta Corporation, Moorestown, N.J.

Filed Aug. 28, 1993, Ser. No. 113,040
Int. Cl.[5] G01S *7/295*; G06F *15/332*
U.S. Cl. 342—196 **2 Claims**

1. An array of weighted FFT butterflies, the array comprising;
first, second, third and fourth array input ports adapted for receiving signals to be processed, and first, second, third and fourth array output ports;
first, second, third and fourth weighted butterflies, each of said first, second, third and fourth weighted butterflies including first and second weighted butterfly input terminals and first and second weighted butterfly output terminals; and
coupling means for coupling (a) said first input terminal of said first butterfly to said first input port of said array, (b) said first input terminal of said second weighted butterfly to said second input port of said array; (c) said second

VOL 1165 ISS 5 AG 30 1994 UMI

input terminal of said first weighted butterfly to said third input port of said array; (d) said second input terminal of said second weighted butterfly to said fourth input port of said array; (e) said first input terminal of said third weighted butterfly to said first output terminal of said first weighted butterfly; (f) said second input terminal of said third butterfly to said first output terminal of said second weighted butterfly; (g) said first input terminal of said fourth butterfly to said second output terminal of said first butterfly; (h) said second input terminal of said fourth butterfly to said second output port of said second butterfly; (i) said first output port of said third butterfly to said first output port of said array; (j) said second output terminal of said third butterfly to said second output port of said array; (k) said first output terminal of said fourth butterfly to said third output port of said array; (l) said second output terminal of said fourth butterfly to said fourth output port of said array; and



wherein each said weighted butterfly comprises: (a) first and second weighting means coupled to said first input terminal of said weighted butterfly for multiplying signals applied to said first input terminal by first and second weights for forming first and second weighted signals, respectively; (b) third and fourth weighting means coupled to said second input terminal of said weighted butterfly for multiplying signals applied to said second input terminal by third and fourth weights, respectively, for forming third and fourth weighted signals; (c) first summing means coupled to said first and third weighting means for summing together said first and third weighted signals for generating a first summed signal at said first output terminal of said weighted butterfly; (d) second summing means coupled to said second and fourth weighting means for summing together said second and fourth weighted signals for generating a second summed signal at said second output terminal of said weighted butterfly.

5,343,209

NAVIGATION RECEIVER WITH COUPLED SIGNAL-TRACKING CHANNELS

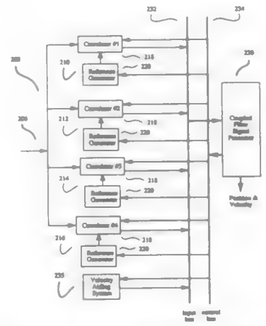
James W. Seanott, 418 N. Linden St., Bloomington, Ill. 61701, and David Seaffner, 1104 N. Orange St., Peoria, Ill. 61606

Filed May 7, 1992, Ser. No. 880,135

Int. Cl.[5] G01S *5/02, 1/08;* **G01C** *21/00*

U.S. Cl. 342—357 **34 Claims**

1. A navigation receiver for use on platforms or vehicles of a variety of types, some types of said platforms being equipped with platform velocity sensors that provide velocity inputs to said receiver, said velocity sensors being characterized by a velocity bias parameter, some types of said platforms being equipped with attitude reference systems that provide inputs to said receiver of heading in some cases, heading and elevation in other cases, and heading, elevation, and yaw in still other cases, all of said attitude data being referenced to an earth-fixed coordinate system, said platforms being characterized by platform dynamics characterization data comprising platform velocity random process correlation time, platform rotation rate random process correlation time, platform velocity random process state noise disturbance power, and platform rotation rate random process state noise disturbance power, said receiver being capable of receiving a plurality of signals, said signals being transmitted by a plurality of spatially-distributed transmitters with known positions and velocities and being propagated to said receiver over a plurality of line-of-sight paths, said transmitted signals being modulated sinusoidal carriers, said transmitted signals being particular functions of time, said time being maintained in synchronized transmitter clocks, said transmitted signals being received through at least one of a plurality of spatially-distributed receiver ports, said received signals being characterized by signal parameters comprising carrier phase, carrier frequency, modulation phase, modulation phase rate-of-change, and carrier amplitude, said receiver having a clock, said receiver clock being maintained in synchronism with said transmitter clocks, said navigation receiver comprising:



a means for periodically measuring the correlations of each of said plurality of received signals with a plurality of reference signals, said measured correlations having noise components characterized by a correlation measurement noise covariance matrix; and

a means for periodically estimating the values of a plurality of said signal parameters for each of said plurality of received signals, said estimating means utilizing said correlation measurements for a plurality of said received signals in obtaining said estimated signal parameter values for each of said received signals thereby obtaining more reliable estimates of said signal parameter values for each of said received signals than could be obtained by direct measurements of said signal parameters for each of said received signals or by estimates of said signal parameters based only on information derived from the received signal to which each pertains.

5,343,210

SATELLITE RADIONAVIGATION RECEIVER

Alain Marcuard, Elancourt, France, assignor to Thomson-CSF, Puteaux, France

PCT No. PCT/FR91/00210, § 371 Date Sep. 9, 1992, § 102(e) Date Sep. 9, 1992

PCT Filed Mar. 15, 1991, Ser. No. 924,039

Claims priority, application France, Mar. 16, 1990, 90 03387

Int. Cl.[5] H04B *7/185, 15/00*

U.S. Cl. 342—352 **9 Claims**

1. A satellite radionavigation receiver for receiving satellite signals comprising a signal spectrum of a plurality of lines transmitted by a satellite, comprising:

a single-frequency conversion stage for frequency converting the received satellite signal spectrum signals;

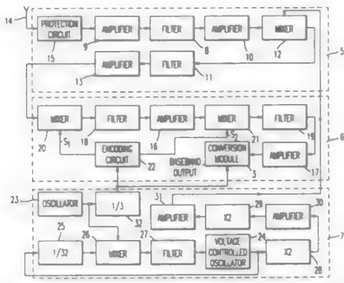
an amplifier stage for receiving signal spectrum signals output by the single-frequency conversion stage and comprising:

a first mixer;

a first amplifier for receiving signal spectrum signals output by the first mixer;

a second mixer for receiving signal spectrum signals output by the first amplifier; and

a second amplifier for receiving signal spectrum signals output by the second mixer;



an encoding circuit for outputting encoding control signals to the first and second mixers for controlling encoding of the signal spectrum signals output by the first and second mixers and modifying a location of each line of the signal spectrum signals output by the first and second mixers; and

a navigation processor for receiving signals output by the amplifier stage.

5,343,211

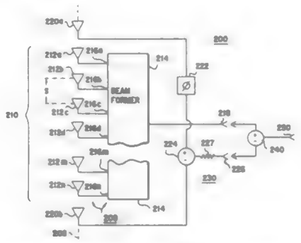
PHASED ARRAY ANTENNA WITH WIDE NULL

Michael A. Kott, Medford, N.J., assignor to General Electric Co., Moorestown, N.J.

Filed Jan. 22, 1991, Ser. No. 644,358

Int. Cl.[5] G01S *3/16, 5/02*

U.S. Cl. 342—379 **4 Claims**



1. A phased-array antenna system, comprising:

a line array of antenna elements;

line array feed means coupled to said elements of said line array for producing a scannable directive antenna array beam and plural sidelobes;

interferometer means including at least two additional antenna elements, said additional antenna elements being mutually spaced and fed by difference feed means connected to at least two of said additional antenna elements for feeding said two of said antenna elements in phase opposition, so as to produce an interferometer beam defining a plurality of lobes;

interconnection means coupled to said line array feed means and to said interferometer means for feeding said line array feed means and said interferometer means in phase opposition; and

phase control means coupled to said interferometer means for adjusting the locations of said plurality of lobes, whereby one of said plurality of lobes of said interferometer means may be superposed upon one of said plural sidelobes for cancellation of at least a portion thereof.

5,343,212

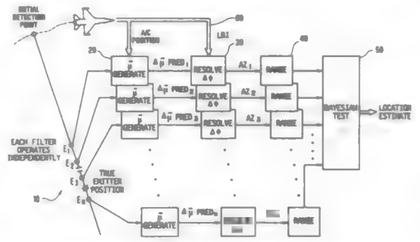
(AOA/LBI) EMITTER RANGING METHOD AND APPARATUS

Conrad M. Rose, Dahlgren, Va., and Jeffrey J. Drude, Jessup, Md., assignors to Litton Industries, Inc., Beverly Hills, Calif.

Filed Dec. 11, 1992, Ser. No. 992,965

Int. Cl.[5] G01S *5/02, 3/02*

U.S. Cl. 342—424 **1 Claim**



1. A method for determining an emitter range using a long baseline interferometer (LBI), comprising the steps of:

(i) determining a single angle of arrival (AOA) of an emitter signal with an AOA detection device and outputting an AOA signal;

(ii) generating a plurality of initial range partitions, each partition having an initial assumed emitter position along said angle of arrival, using said AOA signal output from said AOA detection device;

(iii) performing an initial prediction of phase change of said emitter signal between elements of said LBI based on said initial plurality of assumed emitter positions;

(iv) measuring sequential LBI phase changes with phase change circuitry, said circuitry receiving emitter signals from said elements of said LBI;

(v) differentially resolving each of said measured LBI phase changes with said predicted LBI phase changes and generating a plurality of resolved phase signals, thereby providing an azimuth for each of said partitions;

(vi) at each measured phase change, generating a signal representing an estimated emitter location for each of said assumed emitter positions;

(vii) predicting subsequent LBI phase changes for each said estimated emitter location using said estimated emitter location;

(viii) differentially resolving said measured LBI phase changes with said subsequent LBI phase changes, generating a new azimuth for each partition and repeating steps vi, vii and viii, until a predetermined range criterion is met; and

(ix) generating a signal indicating a best range estimate as the emitter location from the plurality of estimated emitter locations generated.

5,343,213

SNAP-IN ANTENNA ASSEMBLY

Wilfried E. Kottke, Miami, and Jill C. Olkoski, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 22, 1991, Ser. No. 781,544

Int. Cl.[5] H01Q *1/24, 1/36*

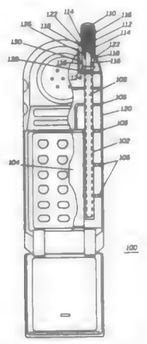
U.S. Cl. 343—702 **6 Claims**

1. An extendable antenna assembly, for a communication device enclosed in a housing, the housing including an antenna housing portion having an antenna retention area, the extendable antenna assembly comprising:

VOL 1165 ISS 5 AG 30 1994 UMI

a helical antenna, the helical antenna including an antenna section having a helical winding and antenna input terminal, the helical antenna further including an antenna support coupled to the antenna section, said antenna support including a resilient leg member having a snap which engages to the antenna retention area;

an extendable antenna extending through the helical winding, the extendable antenna being capacitively coupled to the helical antenna when extended from the antenna housing section; and



an antenna guide tube residing inside of the housing for collecting the extendable antenna when the extendable antenna is retracted into the antenna housing section; and

the resilient leg member has a chamfered end portion and the antenna guide tube has a flared top portion for gathering and compressing the resilient leg member when the antenna guide tube is pressed against the resilient leg member.

5,343,214

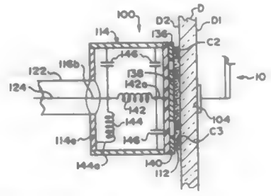
CELLULAR MOBILE COMMUNICATIONS ANTENNA

James Hadzoglou, Mayfield Heights, Ohio, assignor to The Allen Telecom Group, Inc., Solon, Ohio

Continuation of Ser. No. 711,347, Jun. 4, 1991, abandoned, which is a continuation of Ser. No. 593,492, Oct. 3, 1990, abandoned, which is a continuation of Ser. No. 22,888, Mar. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 799,202, Nov. 19, 1987, Pat. No. 4,839,660, which is a continuation of Ser. No. 535,273, Sep. 23, 1983, abandoned. This application Jul. 24, 1992, Ser. No. 919,618

Int. Cl.[5] H01Q *1/32*

U.S. Cl. 343—713 **80 Claims**



1. A communications antenna system usable to radiate radio frequency energy generated by a transceiver at frequencies in excess of 800 MHz and attachable to a dielectric member of a selected thickness, the dielectric member including at least spaced apart, adjacent first and second conducting members having a predetermined spacing therebetween, the antenna system comprising:

an elongated radiating member attached at one end to a supporting member, said supporting member having a planar metal coupling member with a first dimension less than the predetermined spacing between the adjacent conducting members with said coupling member positionable between the first and second conducting members, including means for affixing said supporting member to the dielectric member;

a coupling system affixable to the dielectric member, juxtaposed with said supporting member, said coupling system including,

means for coupling radio frequency energy in excess of 800 MHz through the dielectric member to said radiating member, said means including first and second spaced-apart means for decoupling the antenna system from the first and second conducting members and a second planar metal coupling member carried between said decoupling means with said second coupling member positionable adjacent said planar metal coupling member between the first and second conducting members and spaced from those conducting members

with said first decoupling means overlying the first conducting member spaced therefrom and with said second decoupling means overlying the second conducting member spaced therefrom and

conductive means, coupled to said decoupling means, defining a counterpoise for the antenna system with said counterpoise including a shaped metal housing defining an interior volume with said coupling means contained at least in part therein.

5,343,215

AC REFRESH TYPE PLASMA DISPLAY SYSTEM UNIFORMLY ILLUMINATING PIXELS

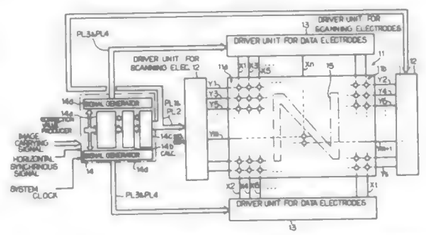
Akio Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 917,410

Claims priority, application Japan, Jul. 29, 1991, 3-188498

Int. Cl.[5] G09G *3/28*

U.S. Cl. 345—63 **14 Claims**



1. An AC refresh type plasma display system for reproducing visual images represented by visual information, comprising:

a) a plasma display panel unit having a plurality of scanning electrodes respectively associated with a plurality of scanning lines, and a plurality of data electrodes for forming a plurality of addressable pixels, said visual information having pieces of visual information respectively assigned to said scanning lines, each of said pieces of visual information designating pixels on the associated scanning line to be illuminated;

b) a first driver unit coupled with said plurality of scanning electrodes, and responsive to a first address pulse signal and a hold pulse signal for sequentially driving said plurality of scanning electrodes;

c) a second driver unit couoled with said plurality of data electrodes, and responsive to a second address pulse signal for selectively driving said plurality of data electrodes, thereby selectively illuminating said plurality of pixels for reproducing said visual images;

d) a controlling unit coupled with said first and second driver units for distributing said first address pulse signal, said hold pulse signal and said second address pulse signal, and comprising

a correction value producing means responsive to each of said pieces of visual information, and operative to calculate a correction value from said each of said pieces of visual information,

a calculating means supplied with said correction value and an initial value indicative of a standard frequency of a standard hold pulse signal, and operative to calculate a modified frequency for modifying said standard frequency of said standard hold pulse signal, and

a signal generating means coupled with said calculating means for producing said hold pulse signal.

5,343,216

ACTIVE MATRIX SUBSTRATE AND ACTIVE MATRIX DISPLAY APPARATUS

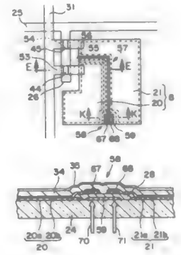
Mikio Katayama, Ikoma; Hiroaki Kato, Nara; Takayoshi Nagayasu, Nara; Akihiko Imaya, Nara; Hidenori Negoto, Ikoma; Yuzuru Kanemori, Tenri, and Toshihiko Hirobe, Sakai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 864,534, Apr. 7, 1992, abandoned, and Ser. No. 472,604, Jan. 30, 1990, Pat. No. 5,151,807. This application Mar. 1, 1993, Ser. No. 24,806

Claims priority, application Japan, Jan. 31, 1989, 1-23486; Jun. 21, 1989, 1-159901; Aug. 14, 1989, 1-209769

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—92 **17 Claims**



1. An active matrix substrate comprising:

transparent picture element electrodes disposed in a matrix on an insulating substrate, each of said picture element electrodes being composed of a plurality of divided electrodes;

a gate bus wiring and a source bus wiring intersecting with each other and being connected to each of said divided electrodes through a switching element; and

an electrically conductive film being of the same material as said gate bus wiring, on which a portion of each of two of said divided electrodes that are adjacent to each other is superposed, each of said portions of the two divided electrodes and said electrically conductive film being disposed in a nonconductive state with an insulating film sandwiched therebetween, resulting in a connection portion;

wherein a pair of metal pieces, respectively, are disposed between one of said portions of the two divided electrodes and said insulating film and between the other of said portions of the two divided electrodes and said insulating film at edge portions of said divided electrodes;

wherein a hole is formed for said insulating film in a portion thereof positioned between one of said pair of metal pieces and said electrically conductive film;

wherein said connection portion is covered with a protective coat so as to be confined between said protective coat and said insulating substrate; and

wherein one of said two divided electrodes detected as a defect is capable of being electrically connected with the other of said two divided electrodes by irradiating said edge portions of the divided electrodes with laser from outside of said insulating substrate.

5,343,217

METHOD FOR DRIVING A FERROELECTRIC LIQUID CRYSTAL DISPLAYS AND BIAS VOLTAGE CIRCUIT THEREFOR

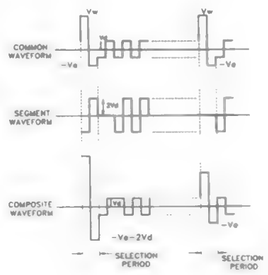
Yeong-ho Kim, Suwon, Rep. of Korea, assignor to Samsung Electron Devices, Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 14, 1993, Ser. No. 4,399

Claims priority, application Rep. of Korea, Apr. 30, 1992, 92-7403

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—95 **6 Claims**



1. A method for driving a ferroelectric liquid crystal displays which have a plurality of cells in matrix driving mode comprising the steps of:

supplying a first composite voltage of a first polarity during the first half of pixel period, and supplying a second composite voltage of a second polarity which changes the alignment of the liquid crystal into a first state during the latter half of pixel period, to the liquid crystal cell which exists in the selected line and displays a first data;

supplying a third composite voltage of said first polarity which changes the alignment of the liquid crystal cell into a second state during the first half of pixel period, and supplying a fourth composite voltage of the second polarity which doesn't change the alignment of the liquid crystal cell during the latter half of pixel period, to the liquid crystal cell which exists in the selected line and displays the second data; and

supplying a fifth composite voltage of said first polarity which doesn't change the alignment of the liquid crystal during the first half of pixel period, and supplying a sixth composite voltage of said second polarity which doesn't change the alignment of the liquid crystal during the latter half of pixel period, or supplying sixth composite voltage during the first half of pixel period and supplying said fifth composite voltage during the latter half of pixel period, in dependence upon the data displayed, to the crystal cell which exists in the non-selected line, wherein said fourth composite voltage is −2 Vd, provided that said sixth composite voltage is −Vd.

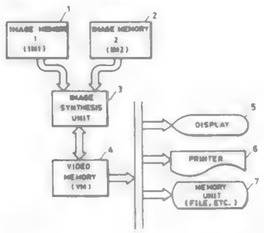
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,218

METHOD AND APPARATUS FOR FORMING SYNTHESIZED IMAGE

Mitsuru Maeda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 532,233, Jun. 4, 1990, abandoned, which is a continuation of Ser. No. 932,015, Nov. 18, 1986, abandoned. This application Feb. 7, 1992, Ser. No. 830,478
Claims priority, application Japan, Dec. 13, 1985, 60-281623
Int. Cl.[5] G09G *1/00, 3/00*
U.S. Cl. 345—116 28 Claims



26. An apparatus for forming a synthesized images, said apparatus comprising:

first image memory means for storing a first image including a plurality of first partial images;

second image memory means for storing a second image including a plurality of second partial images;

a video memory; and

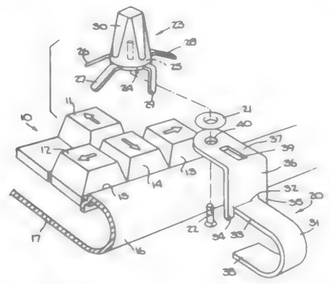
controlling means for storing each of the plurality of first partial images and each of the plurality of second partial images under first and second memory addresses in said video memory, respectively.

5,343,219

CURSOR KEY ACTUATING ASSEMBLY

Clayton DuBosque, Jr., 302 Canoe Hill Rd., New Canaan, Conn. 06840

Filed Nov. 23, 1992, Ser. No. 980,505
Int. Cl.[5] G09G *5/08*
U.S. Cl. 345—160 8 Claims



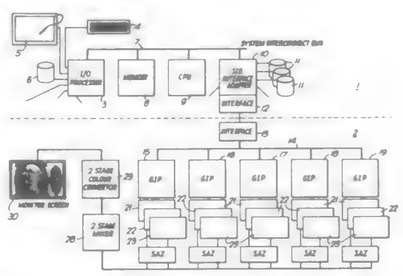
1. A cursor key actuating assembly for providing joystick control of four computer keyboard cursor control keys that are arranged in proximity to the front of a computer keyboard housing in an inverted "T" array with a "DOWN" key at the cross-arm/stem junction, a "RIGHT" and "LEFT" key to either side of side "DOWN" key, and an "UP" key adjacent said "DOWN" key on the side remote from said front of said keyboard housing, said assembly comprising in combination: a mounting structure for attaching said assembly to said keyboard housing adjacent said "T" array, said mounting structure including a spring clip portion and a support member, said support member having a support arm portion which contains a first aperture and which is disposed relative to said clip portion for being positioned over in line with and spaced above said "DOWN" key when said clip portion is applied to embrace said front of said keyboard housing in line with said "DOWN" key; a toggle assembly including a lever member and four key actuating arms with said arms extending laterally from a common intersection at a first end of said lever member at right angles to each other and then downwardly relative to said lever member in a configuration resembling a quadrate cross to terminate in respective free ends, said toggle assembly being disposed above said support arm portion with said key actuating arms extending downwardly below said support arm portion for positioning said free ends of the key actuating arms in proximity to a corresponding one of said four cursor control keys, the key actuating arm that approaches said "DOWN" key extending through said aperture in said support arm portion which aperture is diemsioned to confine said last mentioned key actuating arm and prevent rotation of said key actuating arms about an axis perpendicular to said support arm portion; and means joining the center of said toggle assembly to said support arm portion for enabling atriculation of said toggle assembly relative to said support arm portion sufficient to depress a selected cursor control key to actuate the latter when said lever member is manipulated to rock said toggle assembly selectably in the direction of a selected one of said cursor control keys to actuate selectably one of said cursor control keys; said toggle assembly being joined to said support arm portion for locating said intersection of said key actuating arm over said "DOWN" key substantially centered laterally relative to said "DOWN" key but offset from the center of the top of said "DOWN" key into proximity with the rear edge of the top thereof; and said key actuating arm which is located for engaging said "DOWN" key extends laterally from said intersection of said arms a lesser distance than said other key actuating arms which lesser distance is less than the front to back dimension of the top of said "DOWN" key.

5,343,220

FORCE MONITOR OF AN ELECTRONIC PAINT BRUSH APPARATUS

Julian F. Veasy, Bucks, and Stephen Freeman, Bedfordshire, both of England, assignors to Crosfield Electronics Limited, Stevenage, United Kingdom

Continuation of Ser. No. 687,798, Apr. 19, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 31,915
Claims priority, application United Kingdom, Apr. 20, 1990, 9008946
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—199 7 Claims



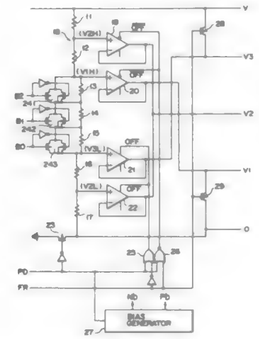
1. Image processing apparatus comprising an input device including an indicator and means defining a surface over which said indicator is moved; position determining means for determining the position of said indicator on said surface; a force monitor for monitoring the force with which said indicator is pressed onto said surface; a frame store for storing digital data defining the color component content of an image; a memory storing at least one lookup table of a plurality of color components that collectively define a color selection function, said memory being coupled to an output of said force monitor, and outputting a color component of the color selection function in direct response to the output of said force monitor; and processing means connected to said input device, said memory, and said frame store for simulating an electronic paint brush carrying paint which is laid down in said frame store at locations corresponding to the positions of said indicator on said surface and whose characteristics, including hue, brightness, and saturation, are determined at least in part in accordance with color components output by said memory.

5,343,221

POWER SUPPLY APPARATUS USED FOR DRIVING LIQUID-CRYSTAL DISPLAY AND CAPABLE OF PRODUCING A PLURALITY OF ELECTRODE-DRIVING VOLTAGES OF INTERMEDIATE LEVELS

Takashi Arakawa, Nagoya, and Hiroyuki Motegi, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 769,838, Oct. 2, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 82,429
Claims priority, application Japan, Oct. 5, 1990, 2-266365
Int. Cl.[5] G09G *3/00*
U.S. Cl. 345—211 8 Claims



1. A power supply apparatus used for driving a liquid-crystal display and capable of producing a plurality of electrode-driving voltages of intermediate levels, said power supply apparatus comprising:

a voltage dividing circuit, including a plurality of resistors connected in series, for producing voltages of different intermediate levels V2H, V1H, V3L and V2L;

first to fourth operational amplifiers which are applied with the voltages of the intermediate levels V2H, V1H, V3L and V2L, respectively, said first to fourth operational amplifiers being classified into two groups in accordance with the intermediate levels of the voltages, one of said two groups including the first and second operational amplifiers, and the other of said two groups including the third and fourth operational amplifiers;

operational amplifier controlling means for controlling the first to fourth operational amplifiers by means of switching signals used for alternating-current-driving the liquid-crystal display, such that the operational amplifiers of one group and the operational amplifiers of the other group are selectively et in an active state and in an inactive non operating state; and

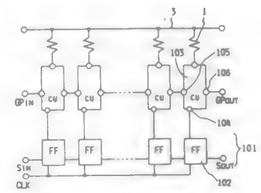
driving voltage output means, connected to a segment electrode and a common electrode of the liquid-crystal display, for supplying outputs of the operational amplifiers of one group set in an active state to both the segment electrode and the common electrode, said operational amplifier control means producing switching signals alternately controlling a first group of said first and second operational amplifiers and a second group of said third and fourth operational amplifiers, such that each amplifier of one of said first and second groups is enabled to said active state while the other of said first and second groups is disabled to said inactive non operating state, corresponding to frame signals (FR) reversed for one frame.

5,343,222

DRIVING METHOD OF HEAT ELEMENT ARRAY

Yoshiaki Saita; Norimitsu Sanbongi, and Yoshinori Sato, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Oct. 23, 1991, Ser. No. 781,745
Claims priority, application Japan, Oct. 24, 1990, 2-286615
Int. Cl.[5] B41J *2/35*
U.S. Cl. 346—76 PH 13 Claims



1. A method for driving a thermal head having a plurality of heat generating units each comprised of a heat resistance element for generating heat by current supply and an electrode for supplying a current to the heat resistance element such that an electrical resistance of each of said heat generating units increases according to a temperature rise of the heat resistance element due to the current supply through the electrode so as to suppress an amount of the current supply, and a plurality of switching elements each for controlling the current supply to a corresponding heat generating unit, the method comprising: a first step of detecting reduction of the current supply in one of the heat generating units which has generated heat; and a second step of starting a switching element associated with a next heat generating unit which is to generate heat next, after the detection of the reduction in the current supply to said one heat generating unit, to thereby sequentially drive the heat generating units.

5,343,223

IMAGE FORMING APPARATUS

Yoshio Tohyama; Takayuki Ogawa, both of Kawasaki; Tatsuya Eguchi, Toyohashi; Norio Tamada, Tondabayashi; Satoshi Yoshida, Machida; Hirofumi Hasegawa, Hadano; Hitoshi Sekino, Chigasaki; Katsuyuki Taima, Hiratsuka; Akihito Ikegawa, Sakai; Kazuyoshi Hara, Isehara; Yasuhiro Matsumura, Atsugi, and Hiroshi Mizuno, Machida, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 20, 1991, Ser. No. 795,011
Claims priority, application Japan, Nov. 23, 1990, 2-319598; Nov. 23, 1990, 2-319599; Nov. 23, 1990, 2-319600; Nov. 23, 1990, 2-319603
Int. Cl.[5] H04N *1/21;* B41J *24/435*
U.S. Cl. 346—108 19 Claims

1. An image forming apparatus comprising:

a body of the apparatus;

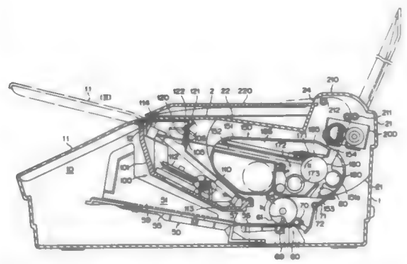
said body having a front side, said front side being the side of the apparatus at which an operator is intended to be during operation of the image forming apparatus;

means for storing sheets therein along a bottom of the body of the apparatus;

means for feeding the sheets stored in the sheet storing

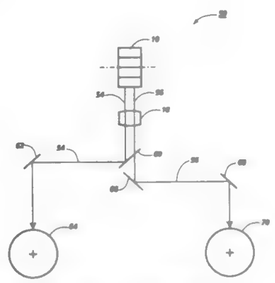
VOL 1165 ISS 5 AG 30 1994 UMI

means one by one out of the sheet storing means in a direction toward a rear side of the body of the apparatus;
a sheet path for leading each sheet fed by the sheet feeding means upward;



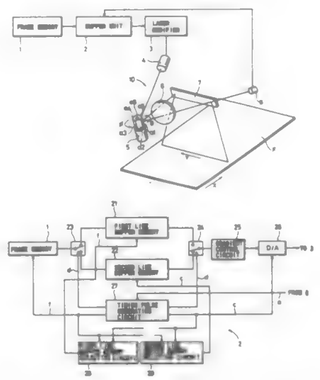
means for forming an image on the sheet traveling in the sheet path; and
means for ejecting the image-formed sheet toward the front side of the apparatus onto a sheet receiving portion disposed on an upper side of the body.

5,343,224
DIODE LASER MULTIPLE OUTPUT SCANNING SYSTEM
Thomas L. Paoli, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Sep. 22, 1992, Ser. No. 948,531
Int. Cl.[5] B41J *2/435*
U.S. Cl. 346—108 90 Claims



1. A raster output scanner, comprising:
means for producing coaxially overlapping, orthogonally polarized first and second laser beams on a first optical path;
means for sweeping said coaxially overlapping, orthogonally polarized first and second laser beams onto a second optical path; and
an optical polarized beam separator disposed on said second optical path, said optical polarized beam separator for directing said first laser beam onto a third optical path and for directing said second laser beam onto a fourth optical path.

5,343,225
BUFFERING METHOD
Akira Yamaguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 9, 1992, Ser. No. 958,818
Claims priority, application Japan, Oct. 11, 1991, 3-264131
Int. Cl.[5] H04N *1/21*
U.S. Cl. 346—108 3 Claims

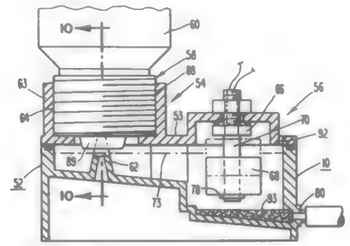


1. A buffering method in which stored data in a frame memory is readout, and the readout data is written onto a recording medium on a line-by-line basis at a writing speed m (m is an integer) times as large as the speed of the reading, the method comprising steps of:
changing-over sides of two buffer memories one of which is assigned interchangeably to a reading side and the other to a writing side, each having capacity for a single record line on a recording medium;
reading stored data corresponding to the single record line in size from the frame memory and writing the readout data to the writing side buffer memory at the same speed as the speed of reading the stored data from the frame memory; and
reading m times repeatedly, during said step of writing, data having been stored immediately before in the reading side buffer memory and supplying the readout data to a writing unit at the same speed as speed of writing in the writing unit.

5,343,226
INK JET INK SUPPLY APPARATUS
John F. Niedermeyer, Sandy Hook, Conn.; Viacheslav B. Maltsev, Stormville, N.Y., and Robert L. Rogers, Sandy Hook, Conn., assignors to Dataproducts Corporation, Woodland Hills, Calif.
Filed Sep. 28, 1990, Ser. No. 590,169
Int. Cl.[5] B41J *2/175*
U.S. Cl. 347—85 4 Claims

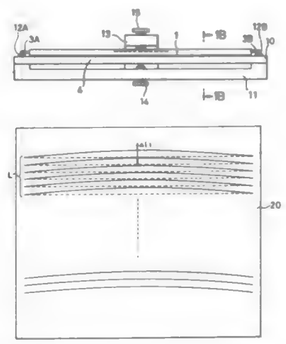
1. An impulse ink jet system, comprising:
an impulse ink jet head;
a supply base comprising a reservoir for ink having an opening facing upwardly, base coupling means for connecting a supply of ink to said supply base and a valve actuating means for controlling the flow of ink by said supply base;
means for coupling said impulse ink jet head to said supply base; and
an ink supply apparatus comprising
a container for storing ink jet ink having a container opening juxtaposed to the opening of said supply base for releasing ink and a container coupling means adapted to engage said

base coupling means when said container is mounted above said supply base;
a valve member mounted in the container opening,
spring means coupled to the valve member for biasing the valve member closed so as to prevent ink flow from the container when the supply apparatus is not mounted on the ink jet system; and
a valve actuating surface connected to said valve member



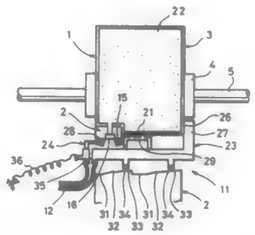
and exposed through said container opening, said actuating surface engaging said valve actuating means when the supply apparatus is mounted on said supply base for opening said valve so as to permit the flow of ink from said container opening into said reservoir when said actuating surface is engaged,
wherein said container includes a projection extending into said reservoir with said container opening extending therethrough.

5,343,227
INK JET RECORDING APPARATUS AND INK JET RECORDING HEAD WITH MEANS REDUCING THE AMOUNT OF WARP
Toshiaki Hirosawa, Hiratsuka; Torachika Osada; Jiro Moriyama, both of Yokohama; Hidemi Kubota, Komae; Yutaka Koizumi, Yokohama; Mineo Kaneko; Yasushi Murayama, both of Tokyo; Yasushi Miura, Kawasaki, and Haruhiko Moriguchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 1, 1991, Ser. No. 649,724
Claims priority, application Japan, Feb. 2, 1990, 2-22181; Apr. 6, 1990, 2-90106
Int. Cl.[5] B41J *2/155, 29/377*
U.S. Cl. 349—42 16 Claims



1. An ink jet recording apparatus having a frame, the apparatus comprising:
means for feeding a recording medium in a predetermined feeding direction;
a full-line type ink jet recording head extending in a direction perpendicular to the predetermined feeding direction so as to have a recording width which is perpendicular to the predetermined feeding direction of the recording medium, said full-line type ink jet recording head being fixedly supported by said frame at opposite ends thereof for recording on the recording medium within the recording width; and
displacing means for reducing an amount of warp of said full-line type ink jet recording head parallel to the predetermined feeding direction of the recording medium by applying opposing forces to a central portion of said full-line type ink jet recording head located between the opposite ends thereof, wherein said displacing means displaces said full-line type ink jet recording head in the predetermined feeding direction of the recording medium by adjusting said opposing forces.

5,343,228
SUCTION RECOVERY MECHANISM AND INK JET RECORDING APPARATUS USING SAME
Hideaki Takada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 1, 1991, Ser. No. 769,390
Claims priority, application Japan, Oct. 1, 1990, 2-263511
Int. Cl.[5] G01D *15/16*
U.S. Cl. 347—29 43 Claims



1. An ink jet recording apparatus for recording using a recording head for discharging ink from an ink discharge opening, said ink jet recording apparatus comprising:
a holding member for holding an ink jet recording head having an ink discharge opening for discharging ink;
a suction system for applying negative pressure to said discharge opening to suck ink therefrom to recover proper discharge of ink;
a first capping member for capping said discharge opening, said first capping member being connected to said suction system to apply negative pressure to said discharge opening when said discharge opening is capped by said first capping member;
an ink retaining portion for retaining ink to be fed to said recording head;
a vent opening provided in said ink retaining portion for communicating the interior thereof with the atmosphere;
a second capping member for capping said vent opening; and
operating means for operating said first and second capping members in a first mode in which said first capping member does not cap said ink discharge opening and said second capping member does not cap said vent opening, a second mode in which said first capping member caps said ink discharge opening and said second capping member does not cap said vent opening, and a third mode in which said first capping member caps said discharge opening and said second capping member caps said vent opening.

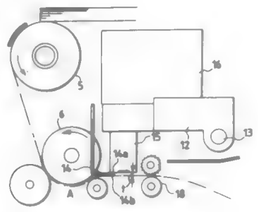
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,229

INK JET PRINTER

Keiichi Ohshima, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 17, 1992, Ser. No. 899,851
Claims priority, application Japan, Jun. 18, 1991, 3-174655
Int. Cl.[5] B41J *11/20*
U.S. Cl. 347—8 2 Claims



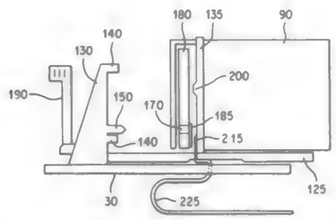
1. An ink jet printer including:
an ink jet head;
a sheet feed roller, a pinch member proximate the sheet feed roller; and
a gap regulating member having an upper surface for guiding travel of said ink jet head and a lower surface for guiding a recording medium, said gap regulating member having a generally planar portion having one edge disposed adjacent to a start end of an upwardly rotating region on said sheet feed roller and extending away from said sheet feed roller toward said ink jet head in such a manner that said planar portion of said gap regulating member intersects a circumferential surface of said sheet feed roller at a small angle, whereby after said recording medium is forcibly upwardly curved toward said lower surface of said gap regulating member by said pinch member, said recording mediums is guided toward said ink jet head so as to be printed upon by said ink jet head without a platen.

5,343,230

ELECTRICAL INTERCONNECT ACTUATION WHICH INTERACTS WITH CAP STATION ARTICULATION

Steven J. Dietl, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 20, 1992, Ser. No. 979,034
Int. Cl.[5] B41J *2/165*
U.S. Cl. 347—31 18 Claims



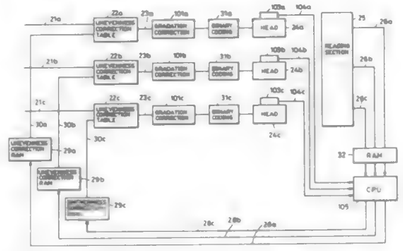
1. An ink jet printing system comprising:
a carriage which traverses across a printing area and a home area in a longitudinal direction along a length of at least one guide rail;
a sliding connector plate slidably affixed to said carriage for movement in the longitudinal direction relative to said carriage;
a printhead cartridge removably mounted on said sliding connector plate, said cartridge having a front face containing nozzles;
a maintenance station located in said home area;
a capping station located at said maintenance station, said capping station including a cap seal and being movable within said maintenance station in the longitudinal direction and normal to the longitudinal direction, between a cartridge install position and a capping position;
guide means for guiding said capping station between said cartridge install position and said capping position, said cap seal being in direct contact with said front face when in said capping position and said cap seal being spaced from said front face when said capping station is in said cartridge install position; and
a latch located adjacent to said sliding connector plate for allowing sliding movement of said sliding connector plate when said latch is open and for retaining said sliding connector plate in fixed position on said carriage when said latch is closed.

5,343,231

IMAGE RECORDING APPARATUS CAPABLE OF CORRECTING DENSITY UNEVENNESS

Akio Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 751,952, Aug. 29, 1991, abandoned.
This application Jan. 15, 1993, Ser. No. 3,992
Claims priority, application Japan, Aug. 31, 1990, 2-228396
Int. Cl.[5] B41J *2/05*
U.S. Cl. 347—14 22 Claims



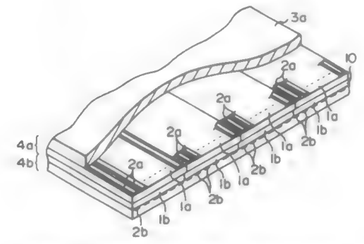
1. An image recording apparatus comprising:
input means for inputting image signals;
recording means having a plurality of image recording elements for recording an image on a recording material by driving said plurality of image recording elements in accordance with the image signals, wherein a predetermined image recorded by said plurality of image recording elements is representative of density unevenness in accordance with a change in a temperature or a variation in a recording characteristic of said plurality of image recording elements;
data generating means for generating data based on predetermined image density unevenness recorded by said recording means;
temperature detection means for detecting the temperature of said recording means and outputting a temperature detection result;
correction data calculation means for outputting common density unevenness correction data for correcting density unevenness in accordance with a temperature detection result output from said temperature detection means and the data based on the density unevenness output from said data generating means; and
correction means for making a correction to each of the image signals input from said input means based on the common density unevenness correction data output from said correction data calculation means and outputting corrected image signals to said recording means, wherein said correction means corrects the image signals in such a manner that an image recorded at a uniform density can be produced when the image signals input from said input means to said plurality of image recording elements are at a uniform level.

5,343,232

MULTIPLE-NEEDLE ELECTRODE HEAD

Noboru Ueno, Nagano, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,850
Claims priority, application Japan, Jun. 7, 1991, 3-163609
Int. Cl.[5] B41J *2/395, 2/385, 2/41*
U.S. Cl. 346—155 11 Claims



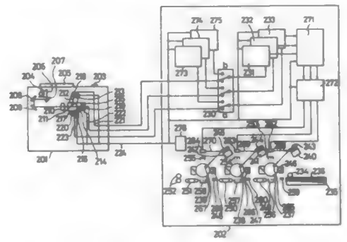
1. A multiple-needle electrode head comprising:
a first head half body including a first side plate and a plurality of electrode substrates adhered to said first side plate, each of said electrode substrates having needle-shaped electrodes formed in a row on one surface of said each electrode substrate and insulated from each other, said plurality of electrode substrates being joined in a direction of the row of the electrodes;
a second head half body including a second side plate and a plurality of electrode substrates adhered to said second side plate, each of said electrode substrates having needle-shaped electrodes formed in a row on one surface of said each electrode substrate and insulated from each other, said plurality of electrode substrates being joined in a direction of the row of the electrodes;
means for coupling said first and second head half bodies in a manner such that said plurality of electrode substrates of each of said head half bodies are located inside and the electrodes of the first head half body are insulated from the electrodes of the second head half body;
wherein the electrodes formed on each of said plurality of electrode substrates in each of said head half bodies are arranged in the row direction at equal intervals with a predetermined pitch and a distance between one end of at least one of adjacent two of said plurality of electrode substrates in each of said head half bodies, which one end is in contact with one end of the other of said adjacent two electrode substrates, and a center of one of the electrodes formed on said one of said adjacent two electrode substrates and closest to said one end, is smaller than a half of said pitch.

5,343,233

IMAGE REPRODUCING SYSTEM HAVING MEANS FOR GENERATING A PATTERN SIGNAL INCLUDING A PLURALITY OF MEMORIES

Shunichi Abe, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 391,314, Aug. 9, 1989, Pat. No. 5,191,361, which is a division of Ser. No. 323,162, Mar. 15, 1989, Pat. No. 4,888,636, which is a continuation of Ser. No. 586,774, Mar. 6, 1984, abandoned. This application Sep. 10, 1992, Ser. No. 943,801
Claims priority, application Japan, Mar. 8, 1983, 58-37709; Mar. 8, 1983, 58-37710; Mar. 8, 1983, 58-37711
Int. Cl.[5] G03G *15/01;* G03F *3/08*
U.S. Cl. 346—157 5 Claims



1. An image forming system comprising:
generating means for generating a pattern signal with a plurality of tonality levels;
image forming means movable in relation to an image forming medium, comprising a plurality of image forming stations sequentially arranged, for each of a plurality of color components, in a relative movement direction of the image forming medium, each of said image forming stations forming an image for each color component on the basis of the pattern signal generated by said generating means;
discriminating means for discriminating a reproduction condition of tonality in accordance with the color image formed by said image forming means; and
control means for controlling a color balance of the color image formed by said image forming means, in accordance with the result of discrimination by said discriminating means,
wherein said generating means comprises a plurality of memories for storing a pattern signal for each color component and said plurality of image forming stations form an image for each color component on the basis of the pattern signal read out from said plurality of memories, respectively.

5,343,234

DIGITAL COLOR PROOFING SYSTEM AND METHOD FOR OFFSET AND GRAVURE PRINTING

Manfred R. Knehale, P.O. Box 1020, Waldesruh, Rte. 103A, New London, N.H. 03257

Continuation of Ser. No. 792,808, Nov. 15, 1991, abandoned.
This application Jan. 21, 1993, Ser. No. 6,827
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—159 15 Claims

1. A proofing system comprising
an image member having a dielectric outer surface and a continuous conductive layer under said outer surface;
a write head for writing a pattern of electrostatic image dots on said outer surface, said write head including
an array of at least one micro-tunnel, each micro-tunnel having a mouth disposed opposite said outer surface and a wall defining each micro-tunnel,
a field emission ionization electrode in each micro-tunnel,

VOL 1165 ISS 5 AG 30 1994 UMI

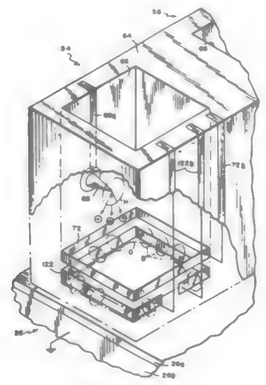
a gate electrode extending around the wall of each micro-tunnel near the mouth thereof, and

an aperture electrode extending around the wall of each micro-tunnel near the mouth thereof;

means for providing a potential difference between each ionization electrode and said conductive layer so that ions are produced which propagate as a tiny beam toward said outer surface;

first control means responsive to incoming digital data representing an original document for providing a variable potential difference between each gate electrode and said conductive layer thereby to charge said outer surface opposite the mouth of each micro-tunnel to a variable charge level to produce a pattern of image dots on said outer surface having variable field strengths;

second control means responsive to said incoming digital



data for providing a variable current flow in each aperture electrode which varies in accordance with said digital data so as to provide a variable electromagnetic field at the mouth of each micro-tunnel which controls the ion beam propagating from each micro-tunnel to produce a pattern of image dots of each outer surface having variable dot sizes;

means for presenting electostatic ink to said surface whereby said surface acquires ink only at the image dots thereon in amounts proportional to the field strengths of the image dots;

support means for supporting a printing substrate, and

means for pressing said surface and said substrate together so that the ink is released from said surface to the substrate thereby producing a proof copy of the original document consisting of a pattern of print dots with variable gray scale values and sizes.

5,343,235

APPARATUS AND METHOD FOR FORMING AN IMAGE INCLUDING CORRECTION FOR LASER BEAM SIZE

Kazuyuki Fukui, Toyohashi, and Takanobu Yamada, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 19, 1991, Ser. No. 671,963

Claims priority, application Japan, Mar. 20, 1990, 2-71405; Mar. 20, 1990, 2-71406; Mar. 20, 1990, 2-71407; Mar. 20, 1990, 71408; Mar. 20, 1990, 2-71409

Int. Cl.[5] G01D *15/14*

U.S. Cl. 346—160 **57 Claims**

1. An apparatus for forming an image, comprising:

(a) a photoconductor layer;

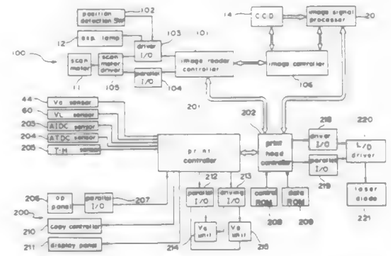
(b) a charger which sensitizes said photoconductor layer to a desired initial electric potential;

(c) transformation means for transforming a digital signal to an analog signal, wherein both said analog signal and said digital signal represent a density of a pixel of an image to be formed;

(d) amplification means for amplifying the analog signal with a predetermined gain;

(e) exposure means for exposing said photoconductor layer sensitized to the predetermined initial electric potential to form an electrostatic latent image;

(f) first exposure control means for controlling an intensity of light illuminating said photoconductor layer by said exposure means in correspondence with the analog signal amplified by said amplification means;



(g) a development device for developing said electrostatic latent image formed on said photoconductor layer to form a toner image;

(h) second exposure control means for controlling said exposure means so as to expose a part of said photoconductor layer to a predetermined intensity of light;

(i) detection means for detecting a surface electric potential of said part of said photoconductor layer exposed to the predetermined intensity of light; and

(i) means for changing the gain of said amplification means in correspondence with the surface electric potential of the photoconductor layer detected by the detection means.

5,343,236

AUTOMATIC CABLE ATTENUATION COMPENSATION SYSTEM

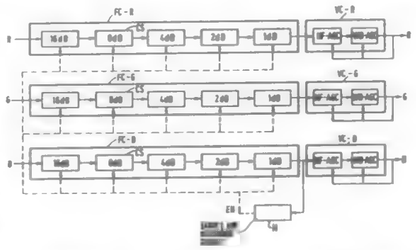
Rudolf P. Koppe, and Nicolaas J. H. Eck, both of Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 1, 1993, Ser. No. 69,883

Claims priority, application European Pat. Off., Jun. 3, 1992, 92201596.1

Int. Cl.[5] H04N *7/10*

U.S. Cl. 348—6 **4 Claims**



1. An automatic cable attenuation compensation system for use in compensating for cable attenuation losses in a signal transmitted in a cable, comprising:

means for generating and adding at least one test signal to

the signal being transmitted in the cable at one end of the cable;

a fixed compensation part (FC-R/G/B) coupled to another end of the cable, said fixed compensation part having a plurality of fixed compensation sections thereby providing a stepwise adjustable attenuation compensation for substantially compensating cable attenuation over an entire predetermined range of compensation, said fixed compensation part further including a measuring and setting circuit for measuring the test signal and for activating selective ones of the plurality of fixed compensation sections until a level of said at least one test signal reaches a predetermined reference level, the stepwise adjustable attenuation compensation of the fixed compensation part being set after power-up; and

an adaptive compensation part (VC-R/G/B) coupled to an output of said fixed compensation part, said adaptive compensation part including a means for measuring said test signal and for generating a control signal based on the level of said at least one test signal, and automatic gain control means coupled to said measuring means for providing a continuously active compensation, equivalent to one of said stepwise adjustable attenuation compensation of said fixed compensation part, for a further compensation of the cable attenuation based on said control signal.

5,343,237

SYSTEM FOR DETECTING AND WARNING AN ILLEGALLY PARKED VEHICLE

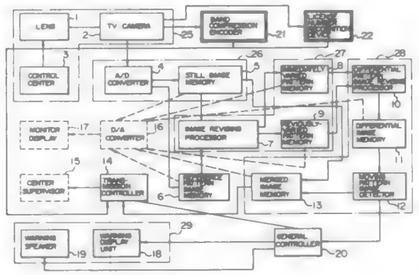
Kazuo Morimoto, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 1, 1991, Ser. No. 769,380

Claims priority, application Japan, Oct. 8, 1990, 2-270837

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—143 **4 Claims**



1. A system for detecting and warning an illegally parked vehicle, comprising:

a television (TV) camera for imaging a prescribed roadside zone where parking is prohibited at a prescribed time interval and producing a still TV image;

means for storing said produced still TV image;

means for storing a TV image of a prescribed pattern painted on said roadside zone without any vehicle present, as a reference image;

means for comparing said still TV image with said reference so as to periodically produce vehicle presence images indicative of a presence of a vehicle in said roadside zone based upon a shape and position of a portion of said prescribed pattern which is hidden by said vehicle and storing said vehicle presence information image;

means for detecting a move-off of said vehicle by comparing said vehicle presence images at a prescribed time interval;

means for warning said vehicle upon detecting that the vehicle has not moved off before expiration of a prescribed time; and means for transmitting information of said vehicle to an external control center.

5,343,238

WIDE-SCREEN TELEVISION RECEIVER WITH ASPECT RATIO CONVERSION FUNCTION AND METHOD OF DISPLAYING A RANGE TO BE MAGNIFIED AND DISPLAYED

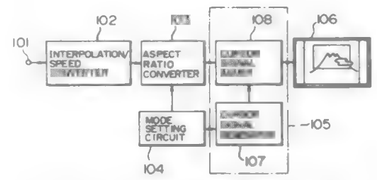
Haruki Takata, Chigasaki; Kenji Katsumata, Yokohama; Shigeru Hirahata, Yokohama; Mitsu Konno, Yokohama; Kouichi Ishibashi, Chigasaki, and Sunao Suzuki, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video Information System, Inc., Yokohama, both of Japan

Filed May 22, 1992, Ser. No. 886,856

Claims priority, application Japan, May 23, 1991, 3-146491; May 23, 1991, 3-146492; Aug. 30, 1991, 3-244185

Int. Cl.[5] H04N *5/44, 5/46*

U.S. Cl. 348—556 **22 Claims**



20. A method of converting an input video signal of a non-wide aspect ratio into a wide aspect ratio video signal and displaying the normal image of said converted video signal of a wide aspect ratio on a wide aspect ratio screen of a television receiver, comprising the steps of:

displaying the image of said input video signal of a non-wide aspect ratio directly on said screen with said aspect ratio not converted;

generating a cursor on said screen so as to select part of said displayed image; and

magnifying said part of image specified by said cursor and displaying said magnified part of image on said screen of said wide aspect ratio.

5,343,239

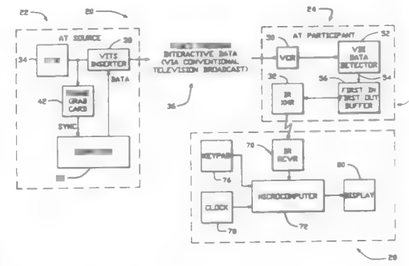
TRANSACTION BASED INTERACTIVE TELEVISION SYSTEM

John P. Lappington, Lawrenceville, Ga., and Susan K. Marshall, Greenwood Village, Colo., assignors to Zing Systems, L.P., Englewood, Colo.

Filed Nov. 20, 1991, Ser. No. 796,085

Int. Cl.[5] H04H *1/00;* **H04N** *7/087, 7/14*

U.S. Cl. 348—12 **60 Claims**



1. An interactive presentation system comprising:

VOL 1165 ISS 5 AG 30 1994 UMI

means for receiving interactive data in association with a presentation of a first interactive event and one or more interactive aspects of said first interactive event;

said receiving means including means for defining and updating transaction structures (1) for allowing said interactive data to be communicated only as needed for the first interactive event and for each of said one or more interactive aspects of the first interactive event and through the first interactive event and (2) for allowing the first event and said each of said one or more interactive aspects of the first event to be interleaved with at least a second interactive event or an interactive aspect of the second event while maintaining interactivity with each of said first and second interactive events and said each interactive aspect thereof, such that a participant can selectively choose to interact with less than all the first and second events and said interactive aspects thereof and still maintain interactivity with those events and interactive aspects chosen; and

said receiving means including means responsive to said interactive data for presenting the participant with the selectively chosen events and interactive aspects.

5,343,240

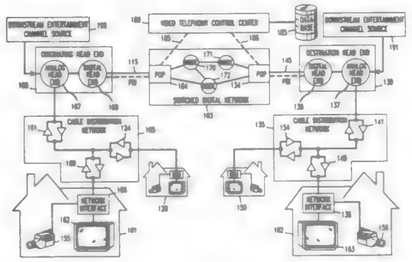
BIDIRECTIONAL VIDEO TELEPHONY USING SHARED CHANNELS ON COAXIAL CABLE NETWORKS

Cheng D. Yu, Scotch Plains, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 4, 1991, Ser. No. 787,436

Int. Cl.[5] H04N *7/14;* H04M *11/00*

U.S. Cl. 348—14 44 Claims



1. A system for making a video telephone call by transmitting a video telephone signal from an originating location to a destination location via first and second cable distribution networks, said first cable network having an associated originating side head end and said second cable network having an associated destination side head end, said system comprising

means in said origination location for transmitting a first modulated signal generated by modulating a carrier having a first associated carrier frequency with said video telephone signal generated at said originating location, to said originating side head end via said first cable distribution network, said first carrier frequency corresponding to the frequency of an available upstream video telephone communication channel on said first cable distribution network,

means for transmitting said video telephone signal from said originating side head end to said destination side head end connected to said second cable distribution network,

means in said destination side head end responsive to said last mentioned means for transmitting a second modulated signal generated by modulating a carrier having a second associated carrier frequency with said video telephone signal, to said destination location, said second carrier frequency corresponding to the frequency of an available downstream video telephone communication channel on said second cable distribution network, and

means in said destination location for recovering said video information generated at said originating location,

wherein said system further includes means for assigning available ones of said upstream and downstream video telephone communication channels only for the duration of said video telephone call.

5,343,241

DIGITAL VIDEO SIGNAL WITH INCREASED MOTION BLUR CHARACTERISTIC

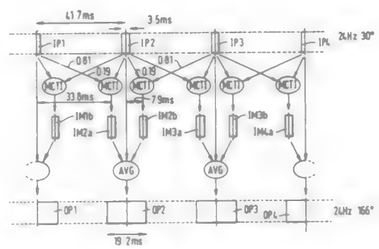
John W. Richards, Stockbridge, and Clive H. Gillard, Basingstoke, both of United Kingdom, assignors to Sony United Kingdom Limited

Filed Oct. 21, 1992, Ser. No. 964,050

Claims priority, application United Kingdom, Dec. 20, 1991, 9127122

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—97 12 Claims



1. A method of processing an input digital video signal having input frames and a motion blur characteristic, comprising the steps of:

producing at least two intermediate frames or fields by motion compensated temporal interpolation between adjacent input frames, a pair of said at least two intermediate frames or fields having complementary interpolation ratios relative to said adjacent input frames; and

combining at least two frames or fields chosen from the group consisting of said adjacent input frames and said at least two intermediate frames or fields to form an output frame having a motion blur characteristic greater than the motion blur characteristic of said adjacent input frames.

5,343,242

TESTING VIDEO EQUIPMENT

Christopher N. Rowsell, Basing, and Stuart R. Monksfield, Camberley, both of United Kingdom, assignors to Sony United Kingdom Limited, Staines, United Kingdom

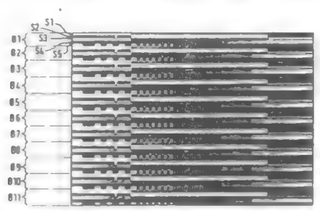
Filed Mar. 29, 1993, Ser. No. 38,805

Claims priority, application United Kingdom, May 6, 1992, 9209782.3

Int. Cl.[5] H04N *17/00*

U.S. Cl. 348—181 32 Claims

1. A compound video test signal for testing video apparatus, the compound video test signal comprising at least three blocks wherein each block comprises a plurality of segments, each segment occupying a predetermined number of scan lines, the scan lines in a segment having a constituent video test signal selected from a set of constituent video test signals, one of the constituent video signals in a respective block being different from at least another of the constituent video signals in said respective block.



5,343,244

VIDEO SIGNAL PROCESSING APPARATUS FOR USE WITH A VIDEO CAMERA

Masatoshi Sase, and Makoto Onga, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

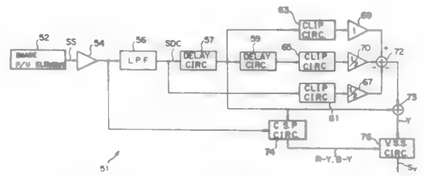
Division of Ser. No. 895,557, Jun. 8, 1992, Pat. No. 5,260,794.

This application Sep. 16, 1993, Ser. No. 122,903

Claims priority, application Japan, Oct. 18, 1989, 1-270771; Oct. 18, 1989, 1-270773

Int. Cl.[5] H04N *9/64*

U.S. Cl. 348—222 10 Claims



9. The apparatus of claim 6 wherein said clipping means comprises a clipping circuit for coupling said averaged image signals to said delay means and to said subtracting means.

5,343,245

DIGITAL CLAMP CIRCUIT FOR CLAMPING BASED ON THE LEVEL OF AN OPTICAL BLACK PERIOD OF A PICTURE SIGNAL

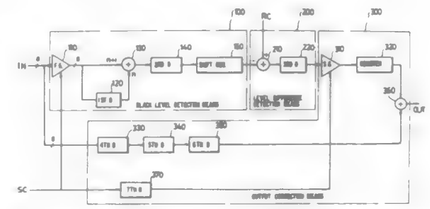
Ki-Yong Kim, Kyonggi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyongki-do, Rep. of Korea

Filed Dec. 7, 1992, Ser. No. 986,577

Claims priority, application Rep. of Korea, Dec. 5, 1991, 91-21758

Int. Cl.[5] H04N *5/18*

U.S. Cl. 348—257 6 Claims



6. A digital clamp circuit of a digital video camera comprising:

black level detection means, coupled to receive a picture signal that has been converted to a digital signal, for obtaining a level of an optical black period from the picture signal, said black level detection means being operable only during the optical black period;

level difference detection means for obtaining a difference between the level detected from said black level detection means and a predetermined clamp reference value; and

output correction means for correcting entire levels of the picture signal in accordance with the difference obtained from said level difference detection means, and wherein said level difference detection means comprises:

a subtracter for obtaining a level difference between the predetermined clamp reference value and the black level detected by said black level detection means; and

a delayer for delaying the level difference obtained from said subtracter.

5,343,243

DIGITAL VIDEO CAMERA

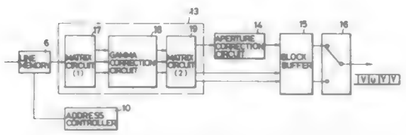
Eiichi Maeda, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,448

Claims priority, application Japan, Jan. 7, 1992, 4-000934; Jan. 8, 1992, 4-001586; Nov. 26, 1992, 4-317280

Int. Cl.[5] H04N *9/04*

U.S. Cl. 348—222 14 Claims



1. A digital video camera including an image sensor, comprising:

line memory means for storing a plurality of digitized raster scanning data transferred from the image sensor; and

processing means for reading out a plurality of data in the form of block or matrix from said line memory means and converting the data into luminance data every block or matrix, and wherein said line memory means comprises two line memories each storing a plurality of digitized raster scanning data and a switch circuit connected to said two line memories for connecting said two line memories with said processing means alternately, and wherein said processing means includes a camera process circuit receiving block data with N rows and M columns and converting the block data into luminance block data with L rows and L columns, and an aperture correction circuit connected to said camera process circuit for putting in aperture correction on the luminance block data.

VOL 1165 ISS 5 AG 30 1994 UMI

5,343,246

IMAGE SENSING APPARATUS

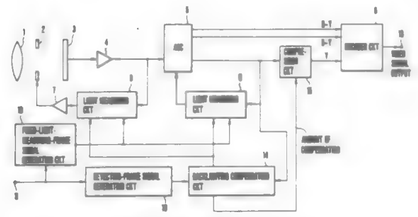
Hideyuki Arai; Hirofumi Suda, and Kitahiro Kaneda, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 633,973, Dec. 26, 1990. This application Feb. 25, 1993, Ser. No. 23,487

Claims priority, application Japan, Dec. 29, 1989, 1-343135

Int. Cl.[5] H04N *5/232, 5/238*

U.S. Cl. 348—363 31 Claims



1. An image sensing apparatus comprising:

(A) light measuring means for performing a weighted light measurement on the basis of a light measuring frame set in a predetermined position within an image sensing plane of an image sensor;

(B) detecting means for detecting luminance signal levels obtained from a plurality of detecting areas set on the image sensing plane;

(C) compensating means for compensating a light measuring result of said light measuring means to compensate a backlighting photographic state in the case where the object state is discriminated to be a backlighting photographic state; and

(D) compression means for compressing a high-luminance signal in an output signal of said image sensor in accordance with an amount of compensation of said compensating means in said backlighting photographic state.

5,343,247

FILTER CIRCUIT FOR PREPROCESSING A VIDEO SIGNAL TO BE CODED

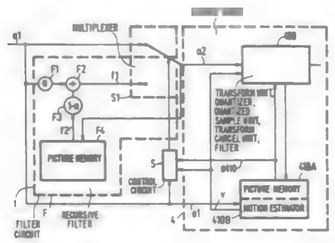
Peter Vogel, Diepersdorf, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1992, Ser. No. 914,990

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1991, 4125566

Int. Cl.[5] H04N *7/133*

U.S. Cl. 348—402 5 Claims



1. An apparatus for preprocessing a video signal prior to its input to a digital coding circuit, wherein said digital coding circuit generates motion vectors as part of a digital coding process, said apparatus comprising:

filter means for receiving as an input said video signal and for filtering said video signal so as to derive a filtered video signal, said filter means comprising switching means for switchably providing as a filter means output to said digital coding circuit, said video signal or said filtered video signal in response to a control signal; and

control means, coupled to said digital coding circuit and said switching means, for providing said control signal in response to said motion vectors.

5,343,248

MOVING IMAGE COMPRESSING AND RECORDING MEDIUM AND MOVING IMAGE DATA ENCODER AND DECODER

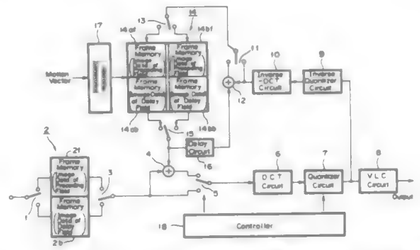
Yasushi Fujinami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 913,816

Claims priority, application Japan, Jul. 26, 1991, 3-209916

Int. Cl.[5] H04N *7/01, 7/08*

U.S. Cl. 348—452 11 Claims



1. A moving image data decoder for receiving and decoding a data stream including frames of compressed moving image video data, said compressed moving image video data representing an interlace-scanned moving image video signal, each said frame having odd-numbered lines and even-numbered lines said frames including frames of a first type and frames of a second type, each said frame of the first type having odd-numbered lines that represent a field of said interlace-scanned video signal that is earlier in time than a field of said interlace-scanned video signal represented by the even-numbered lines of said frame of the first type, each said frame of the second type having even-numbered lines that represent a field of said interlace-scanned video signal that is earlier in time than a field of said interlace-scanned video signal represented by the odd-numbered lines of said frame of the second type, said data stream including a respective flag associated with each of said frames for indicating whether the frame with which said flag is associated is of the first type or of the second type, said decoder comprising:

means for detecting said flag associated with each of said frames included in said video data stream; and

means responsive to said means for detecting for processing the frame with which said detected flag is associated in a first operation mode if said detected flag is indicative of a frame of the first type and for processing the frame with which said detected flag is associated in a second operation mode if said detected flag is indicative of a frame of the second type.

2. Apparatus for encoding an interlace-scanned moving image video signal to form a video data stream, comprising:

frame means for forming frames from adjacent fields of said interlaced-scanned moving image video signal, each of said fields being either an odd field which represents odd-numbered lines of said moving image signal or an even field which represents even-numbered lines of said moving image signal, each of said frames being composed of an odd field and an even field, said frame means operating to selectively form frames of a first type and frames of a second type, wherein each frame of the first type has a respective odd field that is earlier in time than a respective even field of said frame of the first type, and each frame of the second type has a respective even field that is earlier in time than a respective odd field of said frame of the second type;

means for encoding said frames formed by said frame means in a progressive-scan fashion to produce corresponding frames of digital video data; and

means for outputting said frames of digital video data as said video data stream.

7. A method of encoding an interlace-scanned moving image video signal to form a video data stream, comprising the steps of:

forming frames from adjacent fields of said interlace-scanned moving image video signal, each of said fields being either an odd field which represents odd-numbered lines of said moving image signal or an even field which represents even-numbered lines of said moving image signal, each of said frames being composed of an odd field an even field, said forming step including selectively forming each frame as a frame of a first type or a frame of a second type, wherein each frame of the first type has a respective odd field that is earlier in time than a respective even field of said frame of the first type, and each frame of the second type has a respective even field that is earlier in time than a respective odd field of said frame of the second type;

encoding the frames of the first and second types in a progressive-scan fashion to produce corresponding frames of digital video data; and

outputting said frames of digital video data as said video data stream.

5,343,249

APPARATUS FOR PREVENTING THE SIMULTANEOUS AND OVERLAPPING DISPLAY OF CHARACTERS ON A TELEVISION RECEIVER MONITOR

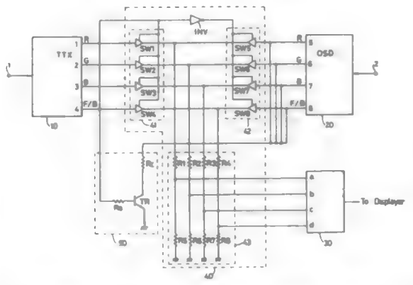
Yang C. Moon, Kungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 24, 1992, Ser. No. 933,708

Claims priority, application Rep. of Korea, Aug. 23, 1991, 91-14611

Int. Cl.[5] H04N *7/08, 5/445*

U.S. Cl. 348—564 12 Claims



1. An apparatus for preventing simultaneous display of teletext (TTX) characters and on-screen display (OSD) characters on a TV receiver monitor, comprising:

a TTX data generating circuit for generating and outputting a first color signal and a first binary signal corresponding to TTX information received, said first color signal being representative of the TTX characters;

an OSD data generating circuit for generating and outputting a second color signal and a second binary signal corresponding to an OSD message, said second color signal being representative of the OSD characters;

a selecting circuit, coupled to said TTX data generating circuit and said OSD data generating circuit, for selectively outputting one of said first color signals and binary signal, and said second color signals and binary signal, in accordance with said first binary signal; and

a matrix circuit for mixing and outputting said color and binary signals outputted from said selecting circuit for display on the TV receiver monitor.

5,343,250

MULTIPLE PICTURE/SOUND SIGNALS DECODING APPARATUS

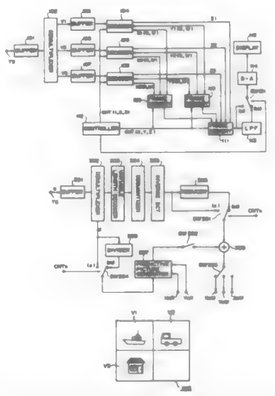
Ryuichi Iwamura, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Apr. 13, 1993, Ser. No. 47,109

Claims priority, application Japan, Apr. 16, 1992, 4-096743

Int. Cl.[5] H04N *5/45, 7/13*

U.S. Cl. 348—564 10 Claims



1. An apparatus for decoding multiple moving picture input signals and multiple sound input signals read out from a recording medium or those received via transmission lines, said apparatus comprising:

decoding means for curtailing the decoded multiple moving picture input signals at a predetermined interval to produce horizontally and vertically reduced multiple picture signals, the decoding means comprising means for separating motion vectors from the multiple moving picture input signals, means for generating the reduced multiple picture signals, means for reducing the motion vectors in conformity with the reduction rate of the picture signals and means for generating a predictive picture on the basis of the reduced picture signals and the reduced motion vectors;

frame memories connected to said decoding means;

display means for simultaneously displaying the reduced multiple pictures corresponding to the reduced multiple picture signals stored in the frame memories; and

means for controlling the operations of the decoding means and the display means.

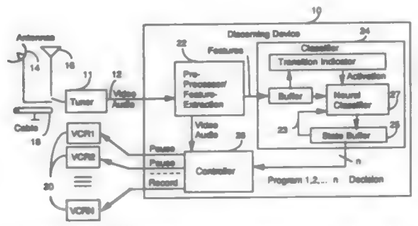
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,251

METHOD AND APPARATUS FOR CLASSIFYING PATTERNS OF TELEVISION PROGRAMS AND COMMERCIALS BASED ON DISCERNING OF BROADCAST AUDIO AND VIDEO SIGNALS

John Nafeh, Portola Valley, Calif., assignor to Pareto Partners, Inc., Portola Valley, Calif.

Filed May 13, 1993, Ser. No. 62,458
Int. Cl.[5] H04N *5/76, 5/91, 5/222*
U.S. Cl. 348—571 **21 Claims**



1. Apparatus for processing electromagnetic signals capable of being separated into a first group and a second group comprising:

means for receiving said signals as a signal stream;

means coupled with the receiving means for forming the signal stream into segments which can be represented as parameters, with the groups being mixed together;

means coupled with said forming means for storing the signal parameters after they have been formed;

means coupled with said storing means for classifying the segments into the first and second groups, said classifying means being operable to generate at least one decisional index representative of at least one signal segment and its parameters of at least one of the said groups of signals;

means for storing past decisions and for coupling the last-mentioned storing means to the classifying means to allow such past decisions to be included in the classifying decisions to determine which signal groups the signal segments belong to; and

a signal controller coupled with the classifying means for receiving and being responsive to a decisional index therefrom, said controller being operable to control a signal sensitive structure adapted for directing and transforming said groups of signals to respective end use locations.

5,343,252

METHOD AND APPARATUS FOR COMPOSITING VIDEO IMAGES

Arpag Dadourian, Northridge, Calif., assignor to Ultimatte Corporation, Chatsworth, Calif.

Filed Apr. 15, 1993, Ser. No. 48,750
Int. Cl.[5] H04N *9/74*
U.S. Cl. 348—586 **11 Claims**

1. A system for compositing video signals having red, blue and green components for a foreground scene and a background scene wherein the foreground scene includes a foreground subject disposed between a colored backing and a video camera, said system comprising:

a) means (1, 11) for generating a control signal having a level proportional to the brightness and visibility of the colored backing, said control signal being generated such that when equal to zero for portions of foreground subjects which are green or flesh tone, said control signal is not simultaneously reduced for grey scale subjects, whereby print-through is eliminated;

b) means (3) for adjusting the level of the control signal to match the video signal level of the red, blue and green color components of the video signal for the backing for each line of video;

c) means (111, 112, 113) for subtracting the level matched control signal from the foreground video color signals;

d) means (121, 122, 123) for controlling the level of the background scene video signal as a linear function of the control signal;

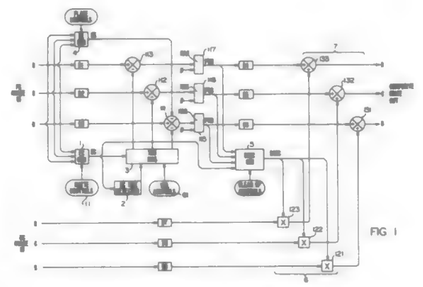


FIG 1

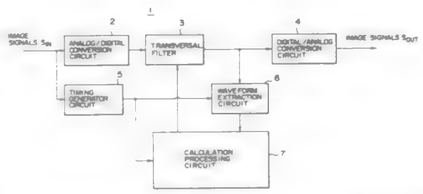
e) means (131, 132, 133) for combining the foreground scene video signal, the color components of the backing thereof having been removed independently on each line of video, with the background scene video signal, the level of which has been controlled by the control signal.

5,343,253

GHOST REMOVAL APPARATUS FOR TELEVISION RECEIVER USING CHANGED AND ADAPTIVE GHOST DETECTION COEFFICIENTS

Yuji Nishi, Iwai, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 27, 1992, Ser. No. 982,714
Claims priority, application Japan, Nov. 28, 1991, 3-339965
Int. Cl.[5] H04N *5/21*
U.S. Cl. 348—614 **12 Claims**



1. A ghost cancelling apparatus for removing ghost by using ghost cancellation reference (GCR) signals inserted into image signals, comprising:

an analog/digital conversion circuit for converting analog image signals into digital data;

a transversal filter for performing weighted calculation in accordance with a tap gain coefficient to erase ghost and thereby remove ghost from image signals which have been converted into digital data by said analog/digital conversion circuit;

a digital/analog conversion circuit for converting into analog data the digital data which has had ghost removed and which is output from said transversal filter;

a waveform extraction circuit for extracting and holding a predetermined period of said digital data which include GCR signals for ghost cancellation and which have been output from said transversal filter;

a calculation processing circuit comprising:

means for judging the predetermined period of digital data extracted by said waveform extraction circuit and generating an output indicating the digital data is acceptable;

means for transforming the predetermined period of digital data and adding a sync thereto and generating a transformed output; and means for comparing an ideal reference waveform with the output of the transformed output to generate a cumulative addition average of error signal trains;

a multiplication ratio setting circuit which comprises detection means, ghost detection coefficient setting means and multiplication ratio setting means for outputting a multiplication ratio setting signal from the cumulative addition average of the error signal trains, and

a tap gain setting circuit which performs calculation processing for said error signal trains and said multiplication ratio setting signal and outputs a tap gain coefficient supplied to said transversal filter;

said detection means detecting a time at a start of ghost removal processing and when a signal/noise ratio (S/N) is below a predetermined level and for which an erroneous detection of a random noise component occurs;

said ghost detection coefficient setting means setting a ghost detection coefficient to a value to prevent erroneous detection of the random noise component when the start of ghost removal processing and a below a predetermined level are detected, and setting the ghost detection coefficient to gradually lower values concurrent with the progress of ghost removal processing; and

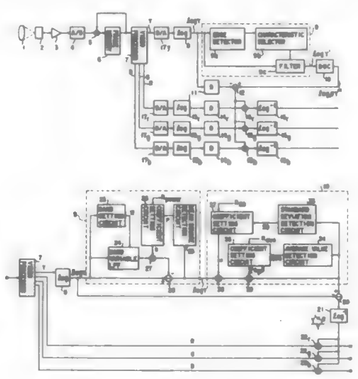
said multiplication ratio setting means outputting a tap gain multiplication ratio to said tap gain setting circuit on the basis of a ghost coefficient which has been variably set by said ghost detection coefficient setting means.

5,343,254

IMAGE SIGNAL PROCESSING DEVICE CAPABLE OF SUPPRESSING NONUNIFORMITY OF ILLUMINATION

Toru Wada; Yasuhiro Komiya, both of Tokyo, and Tatsuo Nagasaki, Yokohama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,441
Claims priority, application Japan, Apr. 25, 1991, 3-095872; Oct. 14, 1991, 3-264995; Feb. 27, 1992, 4-041451
Int. Cl.[5] H04N *5/21*
U.S. Cl. 348—627 **16 Claims**



1. An image signal processing device comprising:

logarithmic compression means for subjecting an input image signal containing a color signal to logarithmic compression;

filtering means for filtering the input image signal which is subjected to the logarithmic compression by said logarithmic compression means;

filtering characteristic setting means for space-variantly setting a band pass characteristic of said filtering means within one frame of the image signal according to a feature portion of the input image signal; and

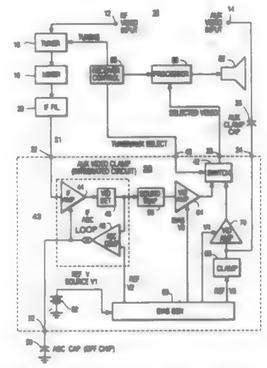
dynamic range/gain control means for controlling a dynamic range and a gain of the input image signal which is filtered by said filtering means.

5,343,255

VIDEO PROCESSING CIRCUIT WITH IF AGC LOOP, AUXILIARY VIDEO CLAMP AND SHARED REFERENCE VOLTAGE SOURCE FORMED ON COMMON INTEGRATED CIRCUIT

William A. Lagoni, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Sep. 17, 1992, Ser. No. 948,206
Int. Cl.[5] H04N *5/52, 5/16*
U.S. Cl. 348—678 **6 Claims**



4. A method for providing IF AGC control and auxiliary video clamping in a television receiver having tuner and auxiliary video sources, comprising:

forming, in an integrated circuit, an IF AGC control loop including means for (i) amplifying a video signal provided by said tuner, for (ii) detecting said video signal to provide a baseband video signal, for (iii) comparing said baseband video signal with an AGC reference voltage to produce an AGC gain control signal and for (iv) varying the amplification of said video signal in accordance with said AGC gain control signal;

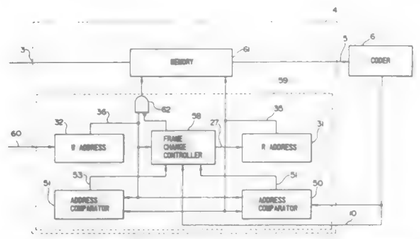
forming, in said integrated circuit, an auxiliary video input signal clamp including means for (i) receiving an auxiliary video input signal provided by said auxiliary video source, for (ii) providing a clamped auxiliary video output signal and for (iii) controlling the clamping level of said clamped auxiliary video output signal in accordance with a clamp reference voltage applied to said clamp reference voltage input;

forming, in said integrated circuit, a video switch for selecting the video signals provided by said IF AGC loop and said clamp circuit; and

forming, in said integrated circuit, a reference voltage source and a bias generator for deriving said AGC reference voltage and said clamp reference voltage.

VOL 1165 ISS 5 AG 30 1994 UMI

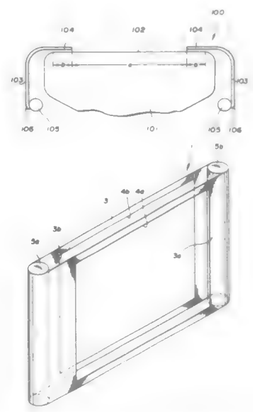
5,343,256
IMAGE CODING APPARATUS
Jun-ichi Kimura, Hachioji, and Masaaki Takizawa, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 24, 1992, Ser. No. 873,164
Claims priority, application Japan, Apr. 26, 1991, 3-096799
Int. Cl.[5] H04N 7/01
U.S. Cl. 348—718 10 Claims



1. An image coding apparatus for sequentially coding an input image signal, which is supplied at a predetermined frame rate, at a rate that is independent of said frame rate and for obtaining a coding image signal for transmission from which frames are thinned out, comprising:
a frame memory having a recording area corresponding to one frame of the input image signal to store said input image signal;
a write address generator to sequentially generate write addresses in the frame memory in correspondence to said input image signal;
coding means for executing a coding process by using a signal which is read out from the frame memory and for generating a frame change request;
a read address generator to sequentially generate read addresses in the frame memory in response to said frame change request; and
write limiting means for comparing said write addresses and said read addresses, for stopping a subsequent writing operation of the image signal frame written in the frame memory when a particular write address approaches a particular read address, and for restarting the writing operation from the head of the next frame.

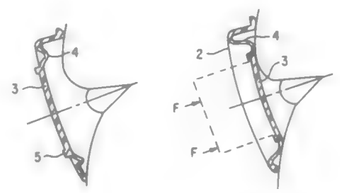
5,343,257
SCREEN COVER OPENING/CLOSING DEVICE FOR TELEVISION RECEIVER
Fumio Kohno; Hisashi Suwa, and Seizi Sato, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Apr. 23, 1992, Ser. No. 872,348
Claims priority, application Japan, Apr. 30, 1991, 3-124652
Int. Cl.[5] H04N 5/65, 5/72, 5/64
U.S. Cl. 348—842 8 Claims

1. A screen cover opening/closing device arranged at a front side of a screen of a television receiver adapted for selectively displaying plural different aspect ratio signals and for opening and closing left and right side panel portions of the screen, comprising;
two vertically extending rolls arranged at laterally outer sides of left and right lateral sides of said screen,
a cover sheet endlessly wrapped around said rolls and formed with two windows at longitudinally spaced apart positions, and



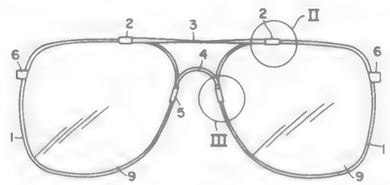
cover sheet running means for running said cover sheet by rotating said rolls.

5,343,258
SAFETY GLASSES
Leigh J. Lachman, 17 Stratford Dr., Livingston, N.J. 07039, and Reid A. Lachman, 6 Robin Ct., Morristown, N.J. 07960
Filed Feb. 1, 1993, Ser. No. 11,885
Int. Cl.[5] G02C 1/00; A61F 9/00
U.S. Cl. 351—41 9 Claims



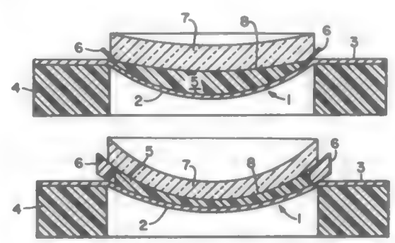
1. Safety glasses for use with fiber optical surgical devices, comprising:
a frame;
a first lens portion fixed to said frame;
a second lens portion having an inner surface and an outer surface;
means for connecting said second lens portion to said first lens portion so that said second lens portion is inwardly displaceable toward a wearer's eye when an inwardly directed external force is applied against the outer surface of said second lens portion, said connecting means causing said second lens portion to move outwardly away from the wearer's eye when the external force is removed.

5,343,259
GLASSES
Eiichi Nakanishi, Ashiya, Japan, assignor to Nakanishi Optical Co., Ltd., Osaka, Japan
Continuation of Ser. No. 409,092, Sep. 19, 1989, abandoned, which is a continuation of Ser. No. 328,816, Feb. 24, 1989, abandoned, which is a continuation of Ser. No. 96,409, Sep. 15, 1987, abandoned. This application Sep. 30, 1991, Ser. No. 768,360
Claims priority, application Japan, Oct. 2, 1986, 61-151945[U]
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.[5] G02C 5/02
U.S. Cl. 351—124 5 Claims



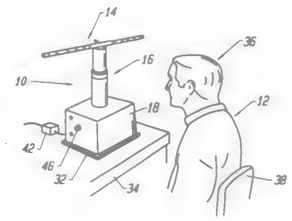
1. A frame for glasses, comprising:
two lens frames side by side each having a bridge element receiving sleeve integrally secured directly to the top thereof, said lens frames and said receiving sleeves being of materials which can be integrally joined by welding;
an upper bridge element of a material other than a material which can be joined to said lens frames by welding;
said upper bridge element extending between the two bridge element receiving sleeves with the ends of the upper bridge element within the bridge element receiving sleeves and the bridge element receiving sleeves being deformed for securing the ends of the upper bridge element therein.

5,343,260
COMPOSITE OPHTHALMIC LENSES AND THEIR MANUFACTURE
David Henry, Saint Michel Sur Orge; Andre J. Vachet, La Genevraye, and Jacques J. Vial, Noisy Sur Ecole, all of France, assignors to Corning Incorporated, Corning, N.Y.
Filed Jul. 1, 1992, Ser. No. 907,110
Claims priority, application France, Feb. 17, 1992, 92 01745
Int. Cl.[5] G02C 7/02
U.S. Cl. 351—159 16 Claims



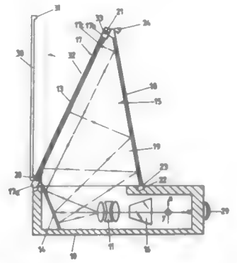
1. A composite lens consisting of a transparent thermoset polymer with an index of refraction of at least 1.58 and a thin glass element with essentially constant thickness which sticks to the anterior surface of the lens made of thermoset polymer, without the use of an intermediate adhesive, wherein:
the thermoset polymer is a thermoset aromatic epoxy resin; and
the thin glass element has an essentially constant thickness of 0.15–0.3 mm.

5,343,261
DEVICE FOR INDUCING SACCADIC EYE MOVEMENT
David L. Wilson, 616 Azalea, Redding, Calif. 96002
Filed Jan. 9, 1992, Ser. No. 818,355
Int. Cl.[5] A61B 3/00
U.S. Cl. 351—203 10 Claims



1. A device for inducing saccadic eye movement in a subject, comprising:
a. a source of power;
b. a multiplicity of visual signaling elements arranged in a predetermined substantially linear alignment, said visual signaling elements being activated by said source of power;
c. a mounting structure for said visual signaling elements, said mounting structure placing said aligned visual signaling elements at a certain level relative to the eye of the subject; and
d. means for sequentially and repeatedly activating each of said aligned visual signaling elements to produce a cyclic back and forth visual pattern.

5,343,262
PORTABLE LCD PROJECTOR
Hong C. Park, Seoul, Rep. of Korea, assignor to Goldstar, Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 30, 1992, Ser. No. 998,748
Claims priority, application Rep. of Korea, Dec. 30, 1991, 25257/1991
Int. Cl.[5] G03D 21/10
U.S. Cl. 353—119 33 Claims

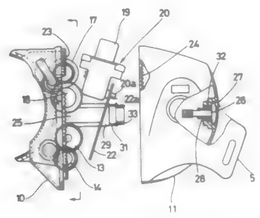


1. A portable LCD projector, comprising:
lighting means .for converting light emitted from a light source into parallel light;
a liquid crystal display (LCD) for controlling transmission of the parallel light from said lighting means;

VOL 1165 ISS 5 AG 30 1994 UMI

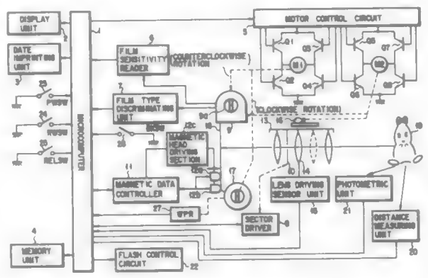
first conversion means for changing a path of an image formed by said LCD;
a projection lens for magnifying the image from said first conversion means at a predetermined rate;
second conversion means for reflecting the image magnified by said projection lens at a predetermined angle;
a screen for forming the image reflected by said second conversion means; and
a housing for containing therein said lighting means, LCD, first conversion means, projection lens, second conversion means, and said screen; wherein said second conversion means is hingedly attached to said housing.

5,343,263
LENS GRIP COUPLING AND POSITIONING MECHANISM
Hisao Takemae; Tadamasa Manome, and Keiji Kaneko, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan
Filed May 8, 1992, Ser. No. 879,917
Claims priority, application Japan, May 10, 1991, 3-133402; Jan. 24, 1992, 4-032966
Int. Cl.[5] G03B *17/02, 17/50, 29/00*
U.S. Cl. 354—82 5 Claims



1. A lens grip for a shoulder camera, which comprises:
a housing which includes a fixed base member for being fixedly attached to a lens assembly of said camera and a cover member adjustably coupled with said base member, said cover and base members each including joining portions formed with at least a partially circular shape, and a plurality of drive members located in said housing, said drive members including a lens drive motor and a lens position sensor mechanism,
a plurality of operating members connected to said drive members for controlling operation of said drive members, and
an electric circuit board connected between said drive members and operating members through wiring cables,
a coupling mechanism located at a substantially center portion of circular sections of each said joining portions for coupling said base and cover members with each other in such a manner as to permit angular adjustments of said cover member relative to said base member; and
a positioning mechanism provided in proximity with said joining portions of said base and cover members for fixing said cover member in a desired angular position relative to said base member wherein said coupling mechanism comprises a connector rod positioned on said base member and a connector bolt threaded into said connector rod through said cover member and wherein said positioning mechanism comprises rows of positioning teeth formed on joining faces of said partially circularly shaped portions of said base and cover members for meshing engagement with each other.

5,343,264
CAMERA USING FILM HAVING MAGNETIC RECORDING PORTION
Junichi Itoh; Masahiro Doi, and Yoji Watanabe, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 21, 1993, Ser. No. 80,227
Claims priority, application Japan, Jan. 25, 1992, 4-167463
Int. Cl.[5] G03B *17/24, 29/00, 17/26, 17/00*
U.S. Cl. 354—106 43 Claims

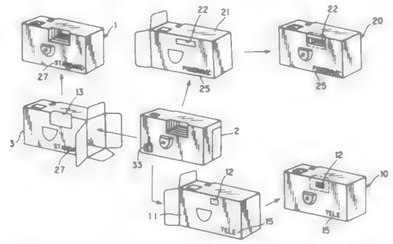


1. A camera using a film having a magnetic recording portion, comprising:
a magnetic head for recording photographic data on said magnetic recording portion;
cleaning film detecting means for detecting that a cleaning film for cleaning said magnetic head is loaded;
cleaning control means for cleaning said magnetic head by using said cleaning film when said cleaning film detecting means detects that said cleaning film is loaded;
storage means for counting frames which have undergone photography and storing a cumulative frame count;
comparing means for comparing the cumulative frame count stored in said storage means with a predetermined value;
means for performing a warning display or inhibiting a release operation when said comparing means determines that the cumulative frame count exceeds the predetermined value; and
reset means for resetting the cumulative frame count stored in said storage means upon completion of the cleaning operation.

5,343,265
LENS-FITTED PHOTOGRAPHIC FILM PACKAGE AND PRODUCTION METHOD THEREFOR
Nakao Oi, Kanagawa, and Hiroshi Komatsuzaki, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 11, 1992, Ser. No. 849,536
Claims priority, application Japan, Mar. 11, 1991, 3-070567
Int. Cl.[5] G03B *13/10*
U.S. Cl. 354—222 4 Claims

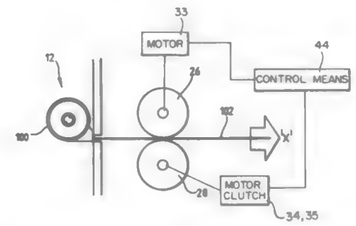
1. A method for producing a lens-fitted photographic film package, comprising the steps of:
loading a photographic film in a film cassette in a package body having a taking lens, an exposure mechanism and a film winding mechanism which are adapted to photograph picture frames of a standard size, said package body having a viewfinder; and
encasing said package body in an outer casing which has an opening overlying said viewfinder but which opening has

margins masking a portion of the field of view of the viewfinder thereby to display to a user of the film package



a field of view of a photography type other than standard photography.

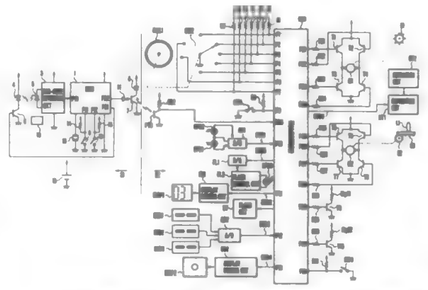
5,343,266
FILM EXTRACTION UNIT
Leslie J. H. Pummell, Rickmansworth; Paul C. Ward, Oxhey; Stephen J. Kingdon, St. Albans, and James A. Oldfield, Nags Head Lane, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 24, 1993, Ser. No. 36,563
Claims priority, application United Kingdom, Mar. 24, 1992, 9206347
Int. Cl.[5] G03D *13/08, 13/10*
U.S. Cl. 354—340 3 Claims



1. A film extraction unit for extracting a film strip from its cassette, the unit comprising:
support means for supporting the cassette as the film strip is extracted;
engagement means for engaging the film strip and drawing it out of the cassette;
drive means for driving the engagement means; and
control means for controlling the drive means;
characterized in that the drive means comprises a motor and a clutch arrangement, the clutch arrangement transmitting drive to the engagement means and being arranged to slip as the motor current rises as the film is fully extracted, the control means is operable to monitor a motor current and to distinguish between short term effects and long term effects on the motor current.

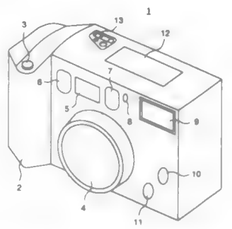
5,343,267
CAMERA
Jiro Kazumi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 920,920
Claims priority, application Japan, Jul. 31, 1991, 3-191992
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—410 18 Claims

1. A camera system comprising:
a camera body; and
an information supply device,
wherein said camera body comprises:
selection means, including an operation member, for selecting, by operating said operation member, a prestored set of a plurality of control items for photographing;
input means for inputting correction information from said information supply device; and
correction means for correcting at least one control items of the prestored set of a plurality of control items currently selected by said selection means, on the basis of the correction information inputted from said information supply device, and



wherein said information supply device comprises:
information forming means for forming the correction information to be used for correcting at least one control item of the prestored set of a plurality of control items selected by said selection means of said camera body; and
supply means for supplying the correction information to said camera body.

5,343,268
CAMERA WITH STROBE CAPABLE OF ADJUSTING LIGHT EMITTING AMOUNT
Hiroshi Takahashi, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan
Filed Oct. 12, 1993, Ser. No. 134,678
Claims priority, application Japan, Nov. 9, 1992, 4-323587
Int. Cl.[5] G03B *15/05, 7/16*
U.S. Cl. 354—416 2 Claims



1. A camera comprising:
(a) photometry means for measuring a luminance of an object;
(b) a strobe unit capable of varying an amount of light emission thereof, for automatically emitting a flash light when the measured luminance is less than a predetermined luminance;
(c) a range finding means for measuring a distance between an object and said camera;
(d) a memory having a flashmatic calculation table in which

VOL 1165 ISS 5 AG 30 1994 UMI

F-numbers in accordance with a distance measured by said range finding means are set based on a reference guide number;

(e) a calculating means for calculating a desired F-number by changing a guide number based on a reference F-number in said table obtained by measurement by said range finding means; and

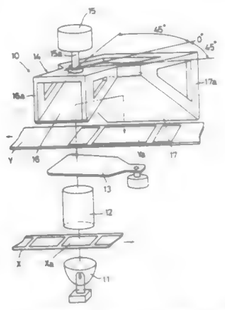
(f) control means for controlling an emission of the strobe light of said strobe unit, based on the desired F-number calculated by said calculating means.

5,343,269

IMAGE PRINTING METHOD AND APPARATUS

Yuji Yamamoto, and Ikuhiro Tamaki, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed May 27, 1993, Ser. No. 67,600
Claims priority, application Japan, May 29, 1992, 4-138804
Int. Cl.[5] G03B 27/52, 27/70
U.S. Cl. 355—43 14 Claims



1. A method of printing images, comprising the steps of feeding a web of printing material parallel to a negative film fed in a predetermined direction, emitting light from one side of the negative film, reflecting the light that has passed through the negative film by a pair of mirrors provided opposite to each other so that the light will hit upon the printing material, with the optical path of the light rotated by a predetermined angle from a reference position which is perpendicular to the negative film and the printing material, thereby printing an image obtained by rotating the image on the negative film by a predetermined angle about the optical axis, on the printing material.

5,343,270

PROJECTION EXPOSURE APPARATUS

Yasuyuki Sakakibara, Ichikawa; Susumu Makinouchi, Zama; Nobutaka Magome, and Naomasa Shiraishi, both of Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 946,013, Sep. 15, 1992, which is a continuation of Ser. No. 820,244, Jan. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 709,278, Jun. 3, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 986,630
Claims priority, application Japan, Oct. 30, 1990, 2-293162; Sep. 11, 1991, 3-231530; Dec. 12, 1991, 3-328907
Int. Cl.[5] G03B 27/42
U.S. Cl. 355—53 14 Claims

1. A projection exposure apparatus comprising:

an illuminating system for illuminating a mask formed with a predetermined pattern;

a shutter for changing over the supplying of illumination light to said mask and the intercepting of the illumination light;

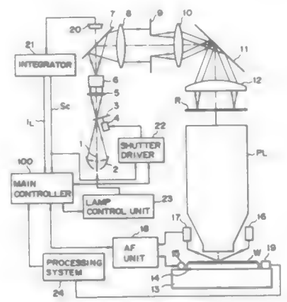
a projection optical system for projecting the pattern image of said mask;

a movable stage holding a photosensitive substrate near the projection image plane of said projection optical system and capable of moving said photosensitive substrate in the direction of the optic axis while said shutter is open;

stage control means for controlling said movable stage with a predetermined operational characteristic;

shutter control means for controlling the opening-closing of said shutter on the basis of the quantity of the illumination light to said mask; and

interlocking means for interlocking the operations of said



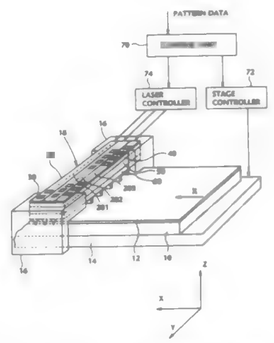
shutter control means and said stage control means so that on the basis of the operational characteristic of said shutter and the operational characteristic of said movable stage, the distribution of an exposure amount provided to said photosensitive substrate from the opening operation starting point of time till the closing operation completing point of time of said shutter, with respect to the direction of the optic axis, may assume substantially equal maximum values at least two locations in the direction of the optic axis.

5,343,271

EXPOSURE APPARATUS FOR DRAWING PATTERNS ON SUBSTRATES

Yukio Morishige, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 23, 1993, Ser. No. 96,725
Claims priority, application Japan, Jul. 28, 1992, 4-200726
Int. Cl.[5] G03B 27/42
U.S. Cl. 355—53 8 Claims



1. An exposure apparatus for drawing a pattern on a photoresist layer on a substrate, comprising:

a movable stage on which the substrate is placed;

a laser array unit which is held above said movable stage

such that the substrate passes under the laser array unit when said stage is horizontally moved in a predetermined direction and comprises an array of a plurality of semiconductor lasers;

optical means for shaping a laser light beam emitted from each of said semiconductor laser and projecting a beam spot of a predetermined shape on the substrate on said table from each of said semiconductor lasers;

stage control means for controlling the movement of said stage in said predetermined direction;

laser control means for exciting and deexciting each of said semiconductor lasers independently of the others; and

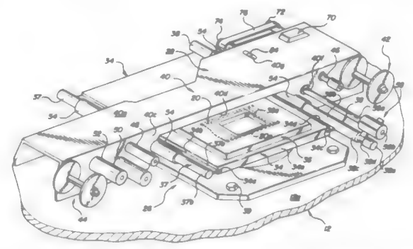
primary control means of synchronously operating said stage control means and said laser control means on the basis of prescribed exposure pattern data.

5,343,272

FILM DRIVE ASSEMBLY

Ray Hicks, 2605 Corunna Rd., Flint, Mich. 48503

Continuation-in-part of Ser. No. 919,914, Jul. 27, 1992, Pat. No. 5,257,066. This application May 20, 1993, Ser. No. 63,651
Int. Cl.[5] G03B 27/62
U.S. Cl. 355—75 12 Claims



1. A film drive mechanism for use with photographic equipment of the type including an optical stage defining an optical center line, the assembly comprising:

a film drive assembly including a frame member, a feed spool mounted on the frame member, a take up spool mounted on the frame member, and guide means for moving the film between the spools along a longitudinal feed path;

a mount base assembly defining a central aperture therein adapted to be positioned proximate the optical stage of the photographic equipment;

mounting means including means mounting the film drive assembly on the mount base assembly with the longitudinal path of the film passing over the mount base assembly aperture and means mounting the film drive assembly for lateral movement on the mount base assembly to move the longitudinal center line of the film path relative to the optical center of the photographic equipment;

a selector mechanism including coacting interengaging means on the mount base assembly and on the film drive assembly having a plurality of selectable interengaged positions providing a respective plurality of gross lateral positions of the film drive assembly relative to the mount base assembly corresponding to a respective plurality of film width sizes; and

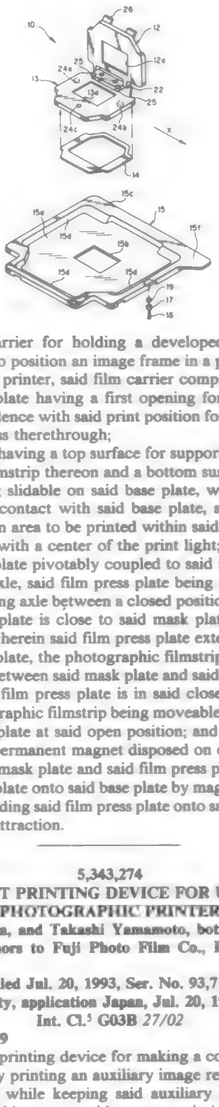
vernier means operative in any interengaged position of the coacting interengaging means to move the film drive assembly relative to the coacting interengaging means to finely adjust the lateral position of the film drive assembly relative to the optical center line of the photographic equipment for each frame of the film.

5,343,273

FILM CARRIER FOR PHOTOGRAPHIC PRINTER

Takashi Yamamoto, and Yoshio Ozawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 13, 1993, Ser. No. 90,455
Claims priority, application Japan, Jul. 13, 1992, 4-185459
Int. Cl.[5] G03B 27/62
U.S. Cl. 355—75 14 Claims



1. A film carrier for holding a developed photographic filmstrip so as to position an image frame in a print position of a photographic printer, said film carrier comprising:

a steel base plate having a first opening formed therein in correspondence with said print position for allowing print light to pass therethrough;

a mask plate having a top surface for supporting said photographic filmstrip thereon and a bottom surface, said mask plate being slidable on said base plate, with said bottom surface in contact with said base plate, so as to bring a center of an area to be printed within said image frame in alignment with a center of the print light;

a film press plate pivotably coupled to said mask plate by a coupling axle, said film press plate being pivotable about said coupling axle between a closed position, wherein said film press plate is close to said mask plate, and an open position, wherein said film press plate extends away from said mask plate, the photographic filmstrip being held flat and even between said mask plate and said film press plate when said film press plate is in said closed position, and the photographic filmstrip being moveable with respect to said mask plate at said open position; and

at least one permanent magnet disposed on one of said base plate, said mask plate and said film press plate for holding said mask plate onto said base plate by magnetic attraction and for holding said film press plate onto said base plate by magnetic attraction.

5,343,274

CONTACT PRINTING DEVICE FOR USE IN A PHOTOGRAPHIC PRINTER

Takashi Yoshida, and Takashi Yamamoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 20, 1993, Ser. No. 93,712
Claims priority, application Japan, Jul. 20, 1992, 4-192283
Int. Cl.[5] G03B 27/02
U.S. Cl. 355—79 10 Claims

1. A contact printing device for making a composite photographic print by printing an auxiliary image recorded on photographic film, while keeping said auxiliary film in contact with photographic paper, said contact printing device comprising:

a contact printing plate holding said auxiliary film;

VOL 1165 ISS 5 AG 30 1994 UMI

a plate guide member having a plate guide surface defined thereon for guiding said contact printing plate, through a plate guide path, into a printing position and holding said contact printing plate in tight contact with said photographic paper in said printing position;

an arresting lever pivotally mounted on said plate guide member and urged to protrude into said plate guide path, said arresting lever being disposed in the vicinity of an entrance of said plate guide path through which said contact printing plate is inserted;

at least a pushing surface defined on said contact printing

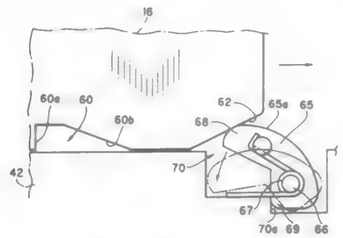


plate to push said arresting lever to a position wherein said arresting lever is displaced from said plate guide path as said contact printing plate is inserted into said plate guide member; and

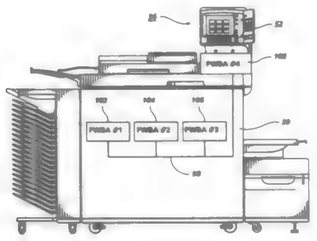
a notch formed in said contact printing plate, such that when said contact printing plate is inserted in a proper state into said plate guide path, said notch is on the opposite side of said contact printing plate with respect to said arresting lever, but if said contact printing plate is inserted in a reversed state, said arresting lever engages in said notch and prevents said contact printing plate from moving further along said plate guide path.

5,343,275

JOB PROGRAMMING DURING MACHINE QUALITY ADJUST

Shelly D. Saleneki, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1992, Ser. No. 939,765
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—202 14 Claims



1. In an image processing apparatus having image processing components for forming images on a medium, a controller for directing the operation of the image processing components including an image quality monitoring element, an operator interface with screen display connected to the controller, the method of pre-programming the image processing apparatus comprising the steps of:

monitoring the operation of the image processing apparatus relative to image quality,

determining a deviation from image quality standards, responding to the deviation from the quality standards to initiate a quality adjustment, and

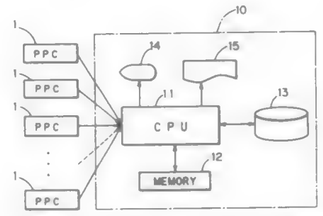
programming the image processing apparatus to execute a job during the quality adjustment, including the steps of interacting with the screen display to input programming data to the controller concurrently with the controller running an image quality adjustment.

5,343,276

MANAGEMENT SYSTEM OF IMAGE FORMING APPARATUSES

Yuji Yamashita; Masanobu Takahashi; Katsunori Masai; Hiroyuki Inesaka; Masahiro Sako; Yasuhiro Hashimoto, and Hideaki Tomita, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 26, 1993, Ser. No. 67,138
Claims priority, application Japan, May 27, 1992, 4-162121
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—202 16 Claims



1. A management system for image forming apparatus, comprising:

means for transmitting maintenance information about each of a plurality of image forming apparatuses from each of the image forming apparatuses to a centralized management apparatus, and

means for calculating scheduled dates for maintenance on the image forming apparatuses, and determining a visitation order for visitation for maintenance of certain image forming apparatuses which have been scheduled for maintenance on a same date or on proximate dates, on the basis of the information about maintenance which is transmitted from the image forming apparatuses to the centralized management apparatus.

5,343,277

CLEANING SYSTEM FOR AN IMAGE TRANSFER DEVICE

Johannes P. J. C. Rooijakkers, Veldhoven; Andreas M. G. Boogers, Ittervoort, and Gerardus J. Vosbeek, Velden, all of Netherlands, assignors to OCE-Nederland, B.V., Ma Venlo, Netherlands

Filed Aug. 7, 1992, Ser. No. 926,027
Claims priority, application Netherlands, Aug. 16, 1991, 9101395
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—271 4 Claims

1. An imaging device for transferring a toner image to a receiving material comprising

an image forming medium,

means for developing a toner image on said image forming medium

an endless intermediate movable in a transport direction which intermediate is in contact with said image forming medium in a first transfer zone such that said toner image is transferred to said movable intermediate,

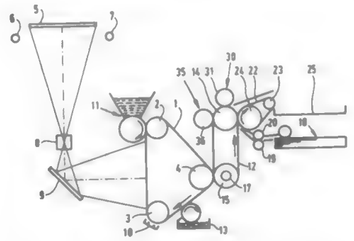
means for heating said toner image on said intermediate,

a pressure member in contact with said intermediate in a second transfer zone for transferring said toner image from said intermediate to said receiving material,

conveying means for conveying said receiving material through said second transfer zone,

a first cleaning member serving to substantially remove high-melt impurities, provided with a cleaning surface to which toner adheres better than to said intermediate, which first cleaning member is in contact with a surface of said intermediate following said second transfer zone,

a second cleaning member serving to substantially remove



low-melt impurities, which is in contact with said surface of said intermediate between said first cleaning member and said first transfer zone, and

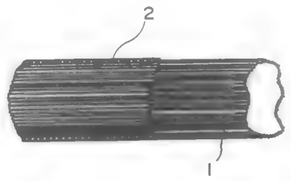
cooling means to withdraw heat energy from said second cleaning member, said cooling means being adjusted such that a surface of said second cleaning member is kept at such a low temperature, at least just before a contact zone with said intermediate, viewed in said transport direction, so that impurities, which have not been removed by said first cleaning member, will be picked up by said second cleaning member.

5,343,278

CLEANING ROLL MATERIAL AND FIXING APPARATUS

Akira Nakabayashi, Urawa, and Kenji Maeda, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 767,470, Sep. 30, 1991, Pat. No. 5,218,410. This application Feb. 22, 1993, Ser. No. 20,535
Claims priority, application Japan, Dec. 29, 1990, 2-416028
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—283 6 Claims



1. A cleaning roll material for cleaning the surface of a fixing roll of a toner image forming apparatus, said cleaning roll material comprising a thermally bonded fabric sheet having a parallel fiber arrangement structure, including at least

(a) 5 to 70% by weight of electroless plated heat-resistant synthetic fibers having an electroless plated metal layer of 0.2 μm or less in thickness on the heat-resistant synthetic fibers having a surface formed with longitudinal stripe-like grooves, macrovoids, fine irregularities or a modified cross-section,

(b) non-plated heat resistant synthetic fibers having a surface

formed with longitudinal stripe-like grooves, macrovoids, fine irregularities or a modified cross-section, and

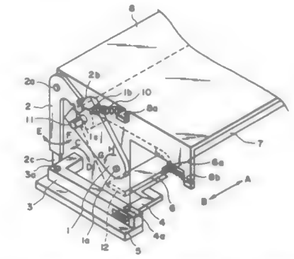
(c) up to including 40% by weight of undrawn synthetic fibers.

5,343,279

LATERAL SHIFT PREVENTING MECHANISM FOR ENDLESS BELT

Tsunetoshi Nagata, and Nobukazu Sasaki, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,323
Claims priority, application Japan, Jun. 20, 1991, 3-148648
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 6 Claims



1. A lateral shift preventing mechanism, comprising:

a rotatable endless belt having a thickness of not more than 100 microns and provided with a rib at its lateral position;

a tension member for applying a tension to the endless belt;

a receiving member for receiving lateral shifting force from the endless belt, said receiving member contactable with the rib; and

displacing means for converting a moving force to said receiving member to a displacing force to said tension member to displace said tension member.

5,343,280

IMAGE FIXING APPARATUS

Hiromitsu Hirabayashi, Yokohama; Kensaku Kusaka, Kawasaki; Atsushi Arai, Kasukabe, and Yoshiaki Takayanagi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 847,323, Mar. 6, 1992, which is a division of Ser. No. 668,333, Mar. 14, 1991, Pat. No. 5,149,941, which is a continuation of Ser. No. 206,767, Jun. 15, 1988, abandoned. This application Oct. 12, 1993, Ser. No. 135,130
Claims priority, application Japan, Jun. 16, 1987, 62-147884; Jan. 22, 1988, 63-012069; Apr. 15, 1988, 63-091267; Apr. 15, 1988, 63-091268; Apr. 15, 1988, 63-091269; Apr. 15, 1988, 63-091270; Apr. 15, 1988, 63-091271; Apr. 15, 1988, 63-091272; Apr. 15, 1988, 63-091274; May 6, 1988, 63-109192; May 6, 1988, 63-109193
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 2 Claims

1. An image forming apparatus comprising:

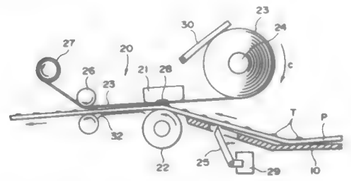
an accommodator for accommodating a recording material;

means for forming a visualized image on the recording material supplied from said accommodator;

fixing means for heating and fixing the visualized image, said fixing means including each of (i) a heat generating resistor layer, (ii) a protection layer covering said heat generating resistor layer, and (iii) a sheet movable with the recording material in sliding contact with said protection layer, wherein the visualized image is heated by heat from said heat generating resistor layer through said sheet;

VOL 1165 ISS 5 AUG 30 1994 UMI

a position detector for detecting a position of the recording material; and



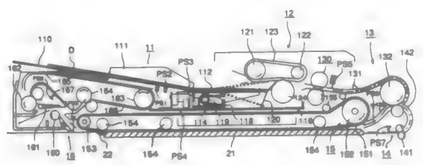
power supply means for starting power supply to said heat generating resistor layer in accordance with an output of said position detector.

5,343,281

AUTOMATIC DOCUMENT CONVEYANCE DEVICE

Yasuhi Yamada, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,905
Claims priority, application Japan, Dec. 13, 1991, 3-330736
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—320 6 Claims



1. An automatic document conveying device comprising:
(a) a first stacker on which a stack of documents is stacked, each document having a first and a second face, each document also having an image on said first face or on said first face and said second face thereof, said documents being stacked in a given order on said first stacker;
(b) a feeder for separating and feeding said documents, one by one, from said first stacker;
(c) at least a pair of conveyance rollers positioned in a downstream feeding direction, downstream of said feeder, for conveying a separated one of said documents;
(d) a reading position, provided in said downstream feeding direction, downstream of said pair of conveyance rollers, where image information on said separated one of said documents is read by a reader including an optical system;
(e) conveying means for conveying said separated one of said documents in said downstream feeding direction, while pressing said first face of said separated one of said documents toward said reader;
(f) a discharged paper inversion section for discharging a previously separated one of said documents that was separated from said stack of documents immediately prior to the separated one of said documents, from said automatic document conveying device after a reversal of said first and second faces of said previously separated one of said documents, said discharging of said previously separated one of said documents occurring while said first face of said separated one of said documents is being read by said reader;
(g) reversing means provided adjacent to said reading position and said conveying means, for reversing said first and second faces of said separated one of said documents, whereby said second face of said separated one of said documents is readable at said reading position by said reader;
(h) a second stacker on which each separated one of said documents is stacked, said second stacker being positioned in said downstream feeding direction, downstream of said reading position;
(i) said discharged paper inversion section being provided in said downstream feeding direction, downstream of said reading position and said conveying means, said discharged paper inversion section discharging documents in said given order to said second stacker; and
(j) control means, for controlling a movement of each document of said stack of documents on said first stacker of said automatic document conveying device such that when a two-sided copying mode is selected:
said control means controls a first movement of a first document having an image on each of said first and second faces thereof, so that said first document is fed from said first stacker and is conveyed by said conveyance rollers and said conveying means to said reading position at a location downstream of said reversing means, without being reversed by said reversing means, so that said first face of said first document is readable at said reading position by said reader while said previously separated one of said documents is being discharged after a reversal thereof by said discharged paper inversion section; and
before a reading of said second face of said first document by said reader occurs, said first and second faces of said first document are reversed by said reversing means, whereby said second face of said first document is readable at said reading position by said reader, while said control means concurrently controls a first movement of a succeeding document so that said succeeding document is moved to and stopped at a waiting position located in an upstream direction, upstream of said reading position, before a reading of said second face of said first document by said reader at said reading position is completed; and
then after said second face of said first document is read at said reading position by said reader, said control means controls a second movement of said first document so that said first document is conveyed to and discharged by said discharged paper inversion section, at least while said first face of said succeeding document is being read at said reading position by said reader; and
before a reading of said second face of said succeeding document is completed, said control means controls a first movement of a further succeeding document so that said further succeeding document is moved to and stopped at said waiting position; and wherein:
said control means controls a movement of each of a remaining plurality of documents, stacked on said first stacker, through said automatic document conveying device until all image information on said remaining plurality of documents, stacked on said first stacker, is read at said reading position by said reader and all of said remaining plurality of documents are discharged by said discharging means.

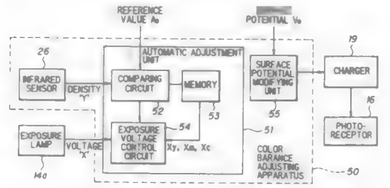
5,343,282

COLOR BALANCE ADJUSTING APPARATUS FOR FULL-COLOR COPIER

Yuichi Kazaki, Yamatokoriyama; Yasutaka Maeda, Ikoma; Hiroshi Kawamoto, Nara; Hideyuki Nishimura, and Katsuhiro Nagayama, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 30, 1993, Ser. No. 99,739
Claims priority, application Japan, Aug. 6, 1992, 4-209844
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—326 R 4 Claims

1. A color balance adjusting apparatus for use in a full color copier in which an original image is illuminated by a light source; the illuminated image is exposed onto a photoreceptor to form electrostatic latent images corresponding to first, second and third colors for creating a color image; and each of the formed electrostatic latent images is developed into a visualized toner image, said color balance-adjusting apparatus comprising:
an infrared sensor for detecting toner density of said toner image formed with a toner having any one color of said first, second and third colors; and



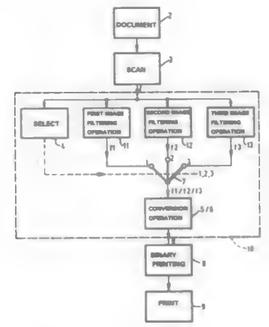
automatic adjustment means, determining a relation of light intensity to toner density detected for one color by varying light intensity of said light source, and determining optimal light intensity for the other two colors as predetermined functions of obtained optimal light intensity.

5,343,283

SCAN/PRINT SYSTEM FOR PERFORMING IMAGE PROCESSING AND AN IMAGE SELECTION UNIT FOR USE IN THE SCAN/PRINT SYSTEM

Etienne L. M. E. van Dorsselaer, El Sintjansteen, and Johannes P. H. Oyen, BL Swalmen, both of Netherlands, assignors to OCE-Nederland, B.V., Venlo, Netherlands

Filed Feb. 18, 1992, Ser. No. 836,360
Claims priority, application Netherlands, Feb. 18, 1991, 9100275
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—445 22 Claims



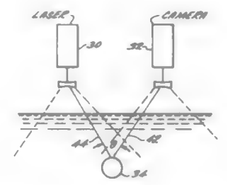
1. A method of processing a series of image signals obtained by photoelectrically scanning a document, wherein each image signal represents the optical density of an image dot on the document, comprising:
generating a selection signal by reference to said series of image signals, the value of said selection signal being dependent upon differences between optical densities of adjacent image dotes;
performing at least two mutually different image processing operations on said series of image signals, each image processing operation yielding a group of processed image signals; and
selecting, by reference to said selection signal, processed image signals from one of said groups of processed image signals, wherein said at least two image processing operations are image filtering operations and the processed image signals are filtered image signals, the selected filtered image signals being subjected to one and the same conversion operation for converting multi-value image signals into binary raster signals suitable for printing by a printing device, at least one of said at least two image filtering operations comprising successively an averaging operation and an edge sharpness enhancement operation.

5,343,284

IMAGING LIDAR SYSTEM EMPLOYING BISTATIC OPERATION

R. Norris Keeler, McLean, Va., and Bobby L. Ulich, Tucson, Ariz., assignors to Kaman Aerospace Corporation, Bloomfield, Conn.

Continuation-in-part of Ser. No. 602,727, Oct. 24, 1990, abandoned. This application Oct. 22, 1992, Ser. No. 968,940
Int. Cl.[5] G01C *3/08*; H04N *7/18*
U.S. Cl. 356—5 20 Claims



1. An apparatus for detecting and imaging an object enveloped by water from an airborne platform comprising:
transmitter means mounted on an airborne platform for selectively generating pulses of light;
projecting means for projecting said pulses of light toward the water at an object enveloped by the water;
receiver means for receiving said pulses of light reflected back from said object after a time delay corresponding to the round-trip propagation time of said light pulses to and from said object; and
converting means for converting said received pulses of light to a video image of said object;
said receiver means being positioned at a first location to receive said pulses of light reflected back from said object at an angle which is in the range of 179.45° to 150° relative to said projected light pulses.

5,343,285

ELECTRICAL CIRCUIT FOR MEASURING THE FREQUENCY OF LASER DOPPLER SIGNALS

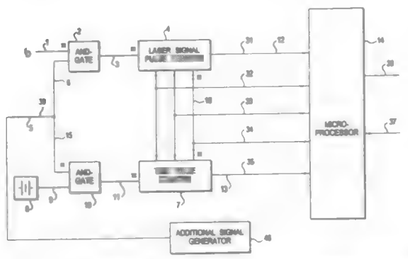
Uwe Gondrum, Datteln; Martin Fütterer, Schwerte; Frank Milbradt, Dortmund, and Volker Grebe, Bochum, all of Fed. Rep. of Germany, assignors to Mesacon Gesellschaft fur Mebtechnik mbH, Fed. Rep. of Germany

PCT No. PCT/EP92/00500, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO92/15888, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 6, 1992, Ser. No. 941,130
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1991, 9102669[U]
Int. Cl.[5] G01C *3/08*; G01P *3/36*; G01R *19/00*
U.S. Cl. 356—28.5 18 Claims

1. An electrical circuit for measuring the frequency of laser Doppler signals, comprising:
a laser pulse counter for counting laser signal pulses;
a blocking element, controlled by an additional signal, in series with said laser signal pulse counter, for controlling said laser signal pulse counter;
a time pulse counter for determining a measuring interval, said time pulse counter receiving pulses from a pulse generator, and determining the measuring interval based on the presence of a predetermined number of pulses;

VOL 1165 ISS 5 AG 30 1994 UMI

a microprocessor for receiving a count from said laser pulse counter at the end of said predetermined measuring interval and outputting an indication of the frequency of said laser signal pulses.

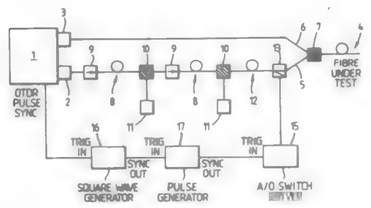


5,343,286

OTDR HAVING OPTICALLY SWITCHED AMPLIFIED OUTPUT ONTO TEST FIBRE TO SUPPRESS OPTICAL AMPLIFIER NOISE BETWEEN OTDR PLUSES

Peter J. Keeble; Christopher J. Rowe, both of Ipswich, and David M. Spirit, Woodbridge, all of England, assignors to British Telecommunications public limited company, London, England

Filed Oct. 14, 1992, Ser. No. 938,218
Claims priority, application United Kingdom, Feb. 15, 1990, 9003441; Sep. 10, 1990, 9019764
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—73.1 26 Claims



26. A method for testing a fibre comprising:
generating a light pulse, amplifying said light pulse and passing it through an optical switch to a test fibre; and
controlling said optical switch to pass amplified light signals only during the occurrence of a light pulse input to an amplifier thereby blocking amplifier-related optical noise from the test fibre at other times.

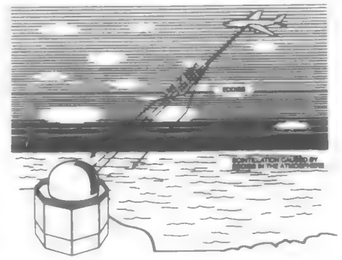
5,343,287

INTEGRATED ATMOSPHERIC TRANSVERSE COHERENCE LENGTH/LASER RADIATION ANGLE-OF-ARRIVAL MEASUREMENT SYSTEM

Gary D. Wilkins, New Carlisle, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 5, 1993, Ser. No. 43,115
Int. Cl.[5] G01B *11/26;* G01C *1/00*
U.S. Cl. 356—141.3 1 Claim

1. A system used to measure the quality of the optical path through the atmosphere, by measuring the atmospheric transverse coherence length (also known as Fried's parameter or the diffraction limited aperture of the atmosphere), and the angle-of-arrival of incident optical radiation, said system comprising a high resolution camera having a charge coupled device (CCD) array mounted at the focal plane of a telescope and interfaced with a high resolution frame grabber and computer, wherein incident optical radiation is focused by the telescope to form a focused spot on the CCD array; means for



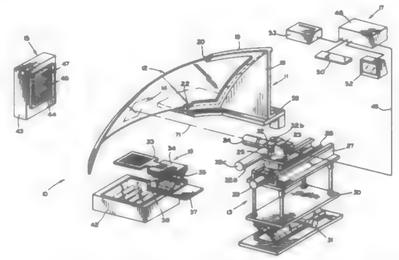
transferring a picture frame from the camera to tile frame grabber; and means in the computer for determining a size of the focused spot, a position of the spot in pixel coordinates, the atmospheric transverse coherence length, and the angle-of-arrival.

5,343,288

OPTICAL EVALUATION OF AUTOMOTIVE GLASS

Brian E. Cohen, Toledo; William M. Greenberg, Oregon; William V. Pagryzinski, Toledo, and Brian E. Smith, Sylvania, all of Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Nov. 23, 1992, Ser. No. 980,556
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—239 16 Claims



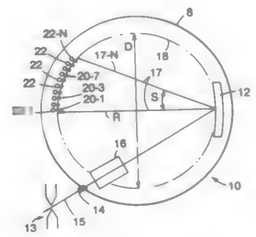
1. A method of evaluating a transparent sheet having spaced first and second major surfaces for optical quality comprising:
supporting the sheet in a fixed position, directing a first plurality of narrow elongated beams of light spaced at known distances from one another at an angle against the first major surface of said sheet, whereby primary and secondary images of said beams are formed at a virtual image plane by reflection from said first and second surfaces, respectively, scanning said first and second images with a line scan array to generate signals indicative of the apparent positions of said first and second images of said elongated beams, storing the signals indicative of said apparent positions, directly scanning a pattern of said elongated beams of light at the virtual image plane similar to said first plurality of beams in the absence of said transparent sheet to generate signals indicative of the positions of said beams of incident light at the virtual image plane of an ideal transparent sheet, and comparing the signals indicative of the observed positions of the reflected primary and secondary light beams to the signals indicative of the ideal positions of the light beams to evaluate the optical quality of said transparent sheet.

5,343,289

SPECTROMETER ASSEMBLY WITH POST DISPERSER ASSEMBLY

Richard L. Crawford, Attleborough; Garry C. Kunselman, Stow; Albert Angelucci, Billerica; Bruce C. Fitz-Patrick, Franklin, and Richard S. Ferreira, North Dighton, all of Mass., assignors to Thermo Jarrell Ash Corporation, Waltham, Mass.

Continuation of Ser. No. 840,403, Feb. 24, 1992, abandoned.
This application Jul. 20, 1993, Ser. No. 93,899
Int. Cl.[5] G01J *3/20*
U.S. Cl. 356—328 20 Claims



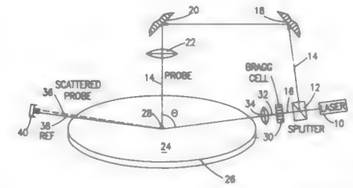
1. A spectrometer system comprising
entrance aperture defining structure for passing a beam of radiation from sample material excited to spectral emissive levels,
dispersing structure for dispersing said beam of radiation,
structure defining a plurality of exit apertures for concurrent passing of radiation dispersed by said dispersing structure at a number of different wavelengths,
detector structure associated with each said exit aperture, and
a post disperser assembly disposed between a said exit aperture and its associated detector structure, said post disperser assembly including a reflective diffraction grating disposed adjacent said exit aperture and mask structure disposed between said diffraction grating and its said detector structure.

5,343,290

SURFACE PARTICLE DETECTION USING HETERODYNE INTERFEROMETER

John S. Batchelder, Somers; Donald M. DeCain, New York; Philip C. D. Hobbs, Briarcliff Manor, and Marc A. Taubenblatt, Pleasantville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1992, Ser. No. 897,198
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—349 26 Claims



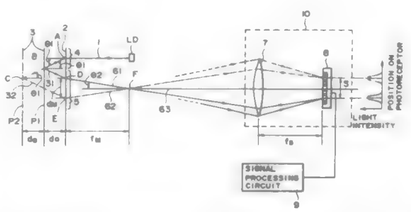
1. A surface particle detection apparatus comprising:
means for generating a probe beam and a reference beam at different wavelengths and for illuminating a surface with said probe beam; and
detector means for detecting a scattered probe beam arising from said probe beam intersecting a particle on the surface, and for simultaneously detecting a second beam spatially coherent with said scattered probe beam, said second beam comprising one of: (a) a real reference beam arising from said reference beam intercepting the surface at a grazing angle, and (b) a virtual reference beam arising from said reference beam bypassing the surface when at least one of said probe beam and scattered probe beam intercepts the surface at a grazing angle, said detector means generating a beat frequency signal resulting from interference of the detected beams at the detector means, said beat frequency signal being indicative of the presence of a particle on the surface.

5,343,291

METHOD AND APPARATUS FOR MEASURING AN INTERVAL BETWEEN TWO OBJECTS

Mitsutoshi Ohwada, Yokohama; Masakazu Matsugu, Atsugi; Shigeyuki Suda, Yokohama; Minoru Yoshii, Tokyo; Yukichi Niwa, Narashino; Noriyuki Nose, Machida; Kenji Saitoh, Yokohama, and Masanobu Hasegawa, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 770,138, Oct. 2, 1991, abandoned, which is a continuation of Ser. No. 630,759, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 311,131, Feb. 15, 1989, abandoned. This application Mar. 16, 1992, Ser. No. 851,109
Claims priority, application Japan, Feb. 16, 1988, 63-033206; Sep. 9, 1988, 63-225810
Int. Cl.[5] G01B *11/02*
U.S. Cl. 356—356 34 Claims



1. A device for measuring an interval between first and second objects, comprising:
means for projecting light to the first object;
means for detecting the position of incidence, upon a predetermined surface, of light having been deflected by a first diffraction grating of the first object, having been reflected by the second object and then having been deflected by a second diffraction grating of the first object; and
means for determining the interval between the first and second objects on the basis of the detection by said detecting means.

5,343,292

METHOD AND APPARATUS FOR ALIGNMENT OF SUBMICRON LITHOGRAPHIC FEATURES

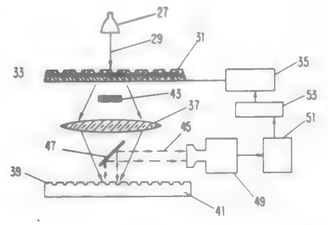
Steven R. J. Brueck, and Saleem H. Zaidi, both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Filed Oct. 19, 1990, Ser. No. 599,949
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—363 14 Claims

1. In the manufacture of microelectronic and optoelectronic integrated circuitry, the method of enabling alignment of submicron lithographic features on surfaces at each level of the circuitry to within about one-third the critical dimension or less comprising the steps of:
a) establishing a pattern of images corresponding to waves diffracted from the surface of the level containing the lithographic features by passing a beam of radiation through a first diffraction grating associated with a refer-

VOL 1165 ISS 5 AG 30 1994 UMI

ence body, said grating having a first periodicity characteristic, and impinging said pattern on a specimen diffraction grating of a periodicity different from that of said first diffraction grating, said specimen diffraction grating being located on the level of circuitry containing the lithographic features, changes in said pattern of images occur-



ring at a rate which is a multiple of the rate of change of the relative displacement of the level of circuitry from a reference body, and

b) analyzing the changes in the pattern of images to determine the extent of actual displacement between the reference body and the level of circuitry to thereby enable alignment of the level with the body.

5,343,293

ELLIPSOMETER

Rudolf Berger, Marloffstein; Heiner Ryssel, Spordorf; Claus Schneider, Möhrendorf, and Wolfgang Aderhold, Nürnberg, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten, Munich, Fed. Rep. of Germany

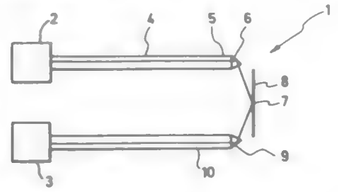
PCT No. PCT/DE91/00345, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO91/16600, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 24, 1991, Ser. No. 940,903

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1990, 4013211

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—369 **13 Claims**



1. An ellipsometer used for in-situ measurement of the film thickness of films applied to or deposited on an object within an oven, comprising:

an analyzer unit;

a beam deflection device;

a paddle having arranged thereon the object;

the beam deflection device including a first prism arranged in front of said object to deflect an incident beam from the polarizer unit to said object and a second prism arranged in front of said object, to deflect to the analyzer unit a beam reflected from said object;

the prisms, the analyzer unit and the polarizer unit being arranged on the paddle;

a first tube extending from said polarizer unit toward, and holding, said first prism;

a second tube extending from said analyzer unit toward, and holding, said second prism.

5,343,294

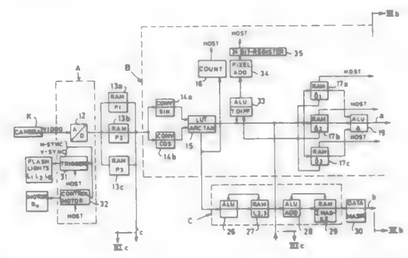
METHOD FOR ANALYZING PERIODIC BRIGHTNESS PATTERNS

Michael Kuchel, Oberkochen, and Albrecht Hof, Aalelf, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 666,247, Mar. 8, 1991, Pat. No. 5,135,309, and a continuation-in-part of Ser. No. 666,363, Mar. 8, 1991, Pat. No. 5,135,308. This application Jun. 15, 1992, Ser. No. 898,158

Int. Cl.[5] G01B *9/00*

U.S. Cl. 356—376 **16 Claims**



8. A computer for evaluating the phase relations of several camera-recorded periodic brightness patterns with phases shifted relative to each other, said computer comprising:

a. a first circuit system arranged for computing the phase relations of the brightness patterns in object points from individual camera images separately;

b. a subtractor arranged for generating the difference of the phases of two brightness patterns with phases shifted relative to each other;

c. a second circuit system arranged for computing the phase relations of the brightness patterns for individual image points of at least three video images having brightness patterns with phases shifted relative to each other; and

d. said second circuit system being provided with the differences of the phase values generated by the first circuit system and the subtractor.

5,343,295

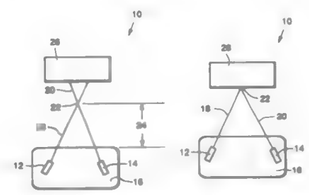
OPTICAL SYSTEM FOR ELECTRIC VEHICLE DOCKING

Jess D. Lara, Alhambra, and Mario Palombo, Manhattan Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 18, 1992, Ser. No. 992,393

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—399 **16 Claims**



1. An optical docking system for providing accurate positioning of an electric powered vehicle in relation to an electric recharging unit, said optical docking system comprising:

first visual indicator means for generating a first visible beam, said first visual indicator means positioned on a front of the electric powered vehicle;

second visual indicator means for generating a second visible beam, said second visual indicator means also positioned on the front of the electric powered vehicle, wherein the first visible beam and the second visible beam intersect at an intersection point remote from the electric powered vehicle; and

target means for receiving the first visible beam and the second visible beam, said target means positioned on the electric recharging unit, wherein the target means provides a visual target for aligning the intersection point of the first visible beam and the second visible beam to position the electric powered vehicle at a predetermined distance and a predetermined position relative to the electric recharging unit.

5,343,296

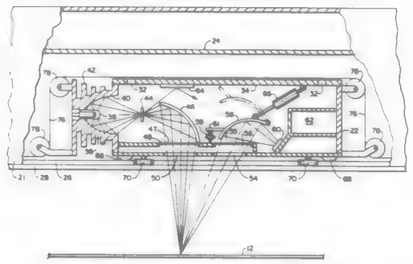
OPTICAL SCANNER WITH SELF CONTAINED STANDARDIZATION MEANS

Ake A. Hellstrom, Columbus, Ohio, assignor to ABB Process Automation Inc., Columbus, Ohio

Filed Feb. 4, 1993, Ser. No. 13,565

Int. Cl.[5] G01N *21/17, 21/86*

U.S. Cl. 356—431 **20 Claims**



1. In a system for measuring optical properties of a moving web of sheet material by projecting electromagnetic radiation onto the moving web and detecting the electromagnetic radiation after interaction with the moving web comprising:

a first beam mounted to extend parallel to one face of the moving web in a cross-machine direction, said beam being generally hollow and including an elongated opening through the side of said first beam adjacent the moving web;

an electromagnetic radiation source module mounted entirely inside of said first beam adjacent said elongated opening; and

means for traversing said source module back and forth within said first beam along said elongated opening, and wherein said source module comprises:

a. a housing having an aperture adjacent said elongated opening for passing electromagnetic radiation through said aperture and said elongated opening;

b. a source of electromagnetic radiation within said housing; and

c. optical means within said housing including an elliptical mirror to receive and focus said radiation from said source through said aperture and through said elongated opening onto the moving web.

5,343,297

CHARGE AMPLIFIER WITH PRECISE, INTEGER GAIN

Jerome J. Tiemann, Schenectady; Gerald J. Michon, Waterford, and Harold W. Tomlinson, Jr., Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 17, 1992, Ser. No. 946,116

Int. Cl.[5] H04N *3/14, 5/335*

U.S. Cl. 348—301 **21 Claims**

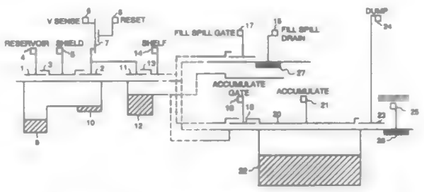
1. In an array of rows and columns of charge injection device (CID) detectors, said array being situated on a semiconductor body, each of said CID detectors being coupled, respectively, to a charge amplifier with a gain of N for integer amplification, N being a selectable number, said amplifier comprising:

a clocked reservoir electrode which during a first charge replication clock phase produces a surface potential high enough to expel charge from a reservoir charge storage well in said semiconductor body beneath said reservoir electrode, said reservoir electrode defining said reservoir charge storage well during a second charge replication clock phase;

a sense electrode for defining a sense charge storage well in said semiconductor body beneath said sense electrode that is capable of receiving the charge expelled from said reservoir charge storage well, said sense electrode being coupled to a magnitude capacitor associated with a respective one of said CID detectors of said array and being responsive to a sense signal for resetting the amplifier;

a magnitude capacitor electrode connected to said sense electrode for defining a magnitude capacitor charge storage well in said semiconductor body beneath said magnitude capacitor electrode, said magnitude capacitor charge storage well having a charge storage capacity determined by the sense electrode potential;

means for precharging said sense and magnitude capacitor electrodes to a predetermined reset voltage during said first charge replication clock phase;



means coupled to said magnitude capacitor electrode and operative during said second charge replication clock phase for filling to substantially full capacity said magnitude capacitor charge storage well;

a charge accumulation electrode;

a charge accumulation well situated in said semiconductor body beneath said charge accumulation electrode; and

charge transfer means for transferring charge from said reservoir charge storage well to said sense charge storage well and from said magnitude capacitor charge storage well to said charge accumulation well during said first charge replication clock phase and for transferring charge from said sense storage well to said reservoir charge storage well during said second charge replication clock phase, thereby making available charge storage capacity in said sense charge storage well in an amount equal to the transferred charge, whereupon said means for filling said magnitude capacitor charge storage well again fills said magnitude capacitor charge storage well and said charge transfer means again transfers charge so that, over repeated cycles of charge transfer, a charge proportional to N times the charge originally in said reservoir charge storage well is accumulated in said charge accumulation well.

5,343,298

CORRELATION OF A WAVEFORM TO A VIDEO IMAGE

James K. Larson, 3222 NE. 52nd St., Portland, Oreg. 97213, and Daniel G. Teichmer, 3561 NE. 120th, Portland, Oreg. 97220

Filed Aug. 24, 1992, Ser. No. 933,543

Int. Cl.[5] H04N *17/00*

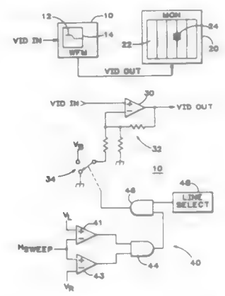
U.S. Cl. 348—184 **7 Claims**

1. An apparatus for correlating a portion of a video input signal being displayed as a waveform on a waveform display

VOL 1165 ISS 5 AG 30 1994 UMI

device to a corresponding portion of the video input signal being displayed as a video image on a monitor comprising:

means for determining the portion of the video input signal being displayed as the waveform to produce a control signal; and



means for inserting a bright-up feature into the video input signal in response to the control signal so that the video image displays the bright-up feature in the video image at a position and with a length corresponding to the waveform.

5,343,299

TELEVISION SIGNAL CONVERTING APPARATUS

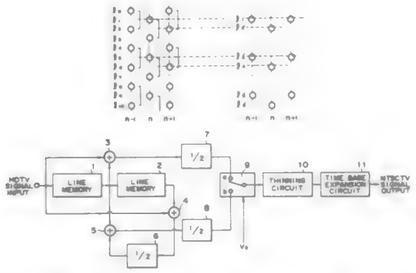
Hisashi Ishikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 686,585, Apr. 17, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 999,460

Claims priority, application Japan, Apr. 26, 1990, 2-108912

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—445 **12 Claims**



1. A television signal conversion apparatus for converting a first television signal into a second television signal with a fewer number of horizontal scanning lines than in said first television signal, comprising:

A) first horizontal scanning line signal forming means for forming a horizontal scanning line signal corresponding to the horizontal scanning line of the second television signal, by performing an average value operation processing using horizontal scanning line signals corresponding to the horizontal scanning lines of an even number positioned mutually close on the image plane, among the plural horizontal scanning lines of the first television signal;

B) second horizontal scanning line signal forming means for forming a horizontal scanning line signal corresponding to the horizontal scanning line of the second television signal, by using an average value operation processing using horizontal scanning line signals corresponding to the horizontal scanning lines of an odd number positioned mutually close on the image plane, among the plural horizontal scanning lines of the first television signal; and

C) horizontal scanning line signal output means for alternately selecting and outputting, every vertical synchronization period, the horizontal scanning line signal released from said first horizontal scanning line signal forming means and that formed by said second horizontal scanning line signal forming means.

5,343,300

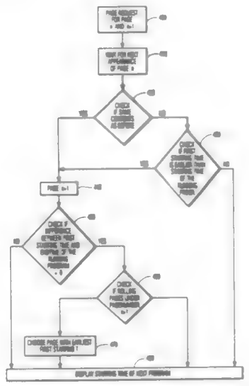
APPARATUS FOR PROVIDING TV PROGRAM INFORMATION

Bruno E. Hennig, Zurich, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Nov. 27, 1991, Ser. No. 801,775

Int. Cl.[5] H04N *7/087*

U.S. Cl. 348—478 **8 Claims**



1. In a television signal processing system wherein the television signals include image representative information and a plurality of accompanying segments of supplementary information including program identification information, and a listing of program title information, program starting times, and program source information, the supplementary information being encoded during vertical blanking intervals of the broadcast signal with at least the program identification information being disposed within vertical blanking intervals of related image-representative information and further being included within said listing, signal processing apparatus comprising:

tuning means for selectively receiving television signals transmitted by individual program sources, the received signals including image-representative information and accompanying segments of supplementary information;

first signal decoder means for decoding said listing and said included program identification information;

memory means for storing and retrieving at least said program title information and included starting time information for the current program and starting time information for the next program decoded by said first signal decoder means;

a first controller means coupled to said first decoder means for selectively transferring said segments of supplementary information among said memory means, said first decoder means and said first controller means;

second signal decoder means for decoding said program identification information disposed within blanking intervals of related image-representative information;

said first controller means, upon initial reception of signals from an individual program source by said tuning means, sequentially causing said second signal decoder means to decode said program identification information accompanying related image-representative information, thereafter causing said first signal decoder means to identify the same program identification information within said listing and to store at least program title information of said listing in said memory means, said first controller means thereafter transferring said program title information from said memory means for display thereof along with related image-representative information;

said program identification information may appear on a page of data n of m pages of data, and may continue onto one of a second page also designated n and a further page designated n+1, said second signal decoder means searches said pages and decodes said program information to retrieve one of

a) the starting time and ending time of the current program; and

b) the starting time of the current program and the starting time of a subsequent program;

said first signal decoder thereafter deriving and displaying one of said ending time of the current program and the time remaining in the current program.

5,343,301

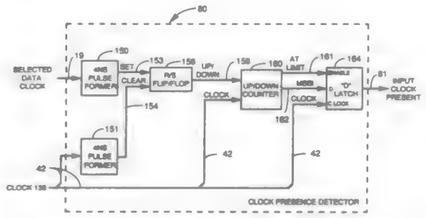
INPUT CLOCK PRESENCE DETECTOR FOR A DIGITAL VIDEO INPUT

Jan S. Wesolowski, Redwood City, Calif., assignor to Ampex Systems Corporation, Redwood City, Calif.

Filed Nov. 5, 1992, Ser. No. 972,040

Int. Cl.[5] H04N *5/04*

U.S. Cl. 348—500 **6 Claims**



1. Apparatus for detecting presence of the input data clock signal accompanying an incoming digital video signal, said apparatus comprising:

a flip-flop for receiving, as a first input, said input data clock signal, and, as a second input, a reference clock signal, said signals being such that said reference clock signal precedes an input data clock signal in normal operation with both signals present, and wherein said reference clock signal has a rate less than the rate of said input data clock signal;

counter means responsive to said reference signal and the output of said flip-flop for counting in a first direction to a first limit in response to presence of said input data clock signal and for counting in the opposite direction to a second limit in response to absence of said input data clock signal, said counter means providing one of first and second outputs indicative of one of said first and second limits being reached;

latch means responsive to one of said first and second outputs of said counter means for indicating the presence or absence of said input data clock signal.

5,343,302

VIDEO CAMERA WITH IMPROVED SHADING CORRECTION USING CLIPPED PARABOLIC WAVE SIGNAL

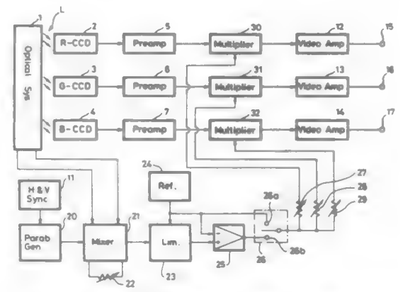
Masahiro Yamashita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 9, 1992, Ser. No. 973,740

Claims priority, application Japan, Nov. 15, 1991, 3-300816

Int. Cl.[5] H04N *5/243, 5/16*

U.S. Cl. 348—251 **8 Claims**



1. A video camera including an optical system having a variable optical characteristic, image pickup means receiving light incident thereon from said optical system for generating an image signal, and a shading correction circuit comprising:

means for generating a parabolic wave signal;

means for adjusting a level of said parabolic wave signal in accordance with said optical characteristic of said optical system, and for outputting an adjusted parabolic wave signal;

limiting means for clipping said adjusted parabolic wave signal in accordance with a predetermined reference level to form a correction signal; and

means for receiving said correction signal and for correcting said image signal in accordance with said correction signal.

5,343,303

DEVICE FOR ASSISTANCE IN THE OPTICAL FOCUSING OF A TELEVISION CAMERA, AND CAMERA PROVIDED WITH SUCH A DEVICE

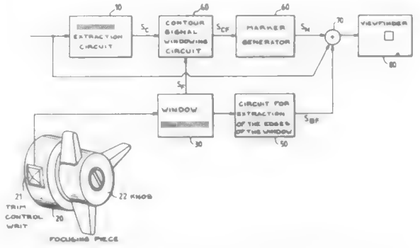
Francis Delmas, Herblay, France, assignor to Thomson Broadcast, Cergy St Christophe, France

Filed Sep. 12, 1991, Ser. No. 758,583

Claims priority, application France, Sep. 19, 1990, 90 11553

Int. Cl.[5] H04N *5/232*

U.S. Cl. 348—346 **6 Claims**



1. A device for assistance in the optical focusing of a television camera, comprising an objective lens in which focusing can be adjusted by a focusing knob, electronic processing

VOL 1165 ISS 5 AG 30 1994 UMI

circuits to obtain a video signal, and a viewfinder to check an output image, during shooting, on the basis of the video signal, said device comprising:

means for extracting from the video signal of the electronic processing circuits of the camera, a contour signal corresponding to a second derivative of the video picture and having an amplitude that varies with the focusing error of the objective lens,

a marker generator, coupled with the extracting means to generate a marker video signal, from the contour signal that varies with the focusing error, said marker video signal characterizing an image of a marker, the position of which in the output image varies along an axis as a function of an amplitude of the contour signal;

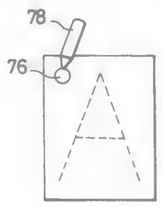
and a mixing circuit, the inputs of which are connected to the video signal output, on the one hand, and to the output of the marker generator, on the other hand, and the output of which is connected to the signal input of the viewfinder, to inscribe the marker in the output image the optical focusing being controlled by adjusting the focusing knob so that the marker video signal indicates a minimum focusing error.

5,343,304

IMAGE FORMING APPARATUS CONTROLLING THE ORIENTATION OF THE IMAGE ON A SHEET FOR AUTOMATIC POST-PROCESSING

Yasuhiro Nakai, Soraku, and Shoichiro Yoshiura, Yamato-Koriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 27, 1992, Ser. No. 858,993
Claims priority, application Japan, Mar. 29, 1991, 3-066774
Int. Cl.[5] H04N *1/38*; B42B *4/00*; G03G *15/00*
U.S. Cl. 358—296 **6 Claims**



1. An image forming apparatus provided with a post-processing device for performing a post-processing on an image formed sheet of paper, the apparatus comprising:

reading means for reading respective locations of an image and a mark on a mark sheet, said mark being written by an operator on said mark sheet for specifying a location of said post-processing, said mark sheet being placed on a bundle of originals; and

forming means for forming an image data read by said reading means on a sheet of paper by performing a predetermined processing on the read image data,

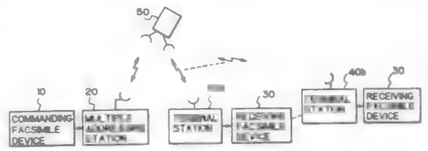
said forming means moves a location of said image data formed on said sheet of paper, such that a location of said mark in accord with a mark read by said reading means which corresponds to the specified location of said post-processing device.

5,343,305

MULTIPLE ADDRESSING FACSIMILE SYSTEM

Michio Shirasagawa, and Hiroshi Konishi, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd. and Rikei Corp., both of Tokyo, Japan

PCT No. PCT/JP91/01461, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO92/08312, PCT Pub. Date May 14, 1992
PCT Filed Oct. 25, 1991, Ser. No. 861,854
Claims priority, application Japan, Oct. 25, 1990, 2-287589; Oct. 25, 1990, 2-287590
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—407 **20 Claims**



1. A facsimile communications system wherein a facsimile signal of the same content is simultaneously transmitted to multiple terminal stations, comprising

a transmitting station for transmitting a facsimile signal via a satellite communications circuit, and multiple receiving stations for receiving electromagnetic waves from the satellite communications circuit,

wherein, at the time of transmitting said facsimile signal to said receiving stations via the satellite communications circuit, said transmitting station transmits a prefix information comprising a control signal for switching said receiving stations to facsimile reception and an identification signal for identifying which of said receiving stations the facsimile signal is addressed to, and

said receiving stations receive said control signal from said transmitting station and switch to a configuration for facsimile reception from said satellite communication circuit, receive the identification signal, and said receiving stations designated by said identification signal conduct a facsimile receiving operation.

10. A reception system for receiving signals sent via a communications circuit having multiple audio channels, comprising

a facsimile device for receiving a facsimile signal coupled to a receiver device through a switching means, the receiver device receiving the multiple audio channels and the switching means switching among the multiple audio channels for selecting at least one audio signal sent via the communications circuit,

said switching means coupling any of the multiple audio channels received by said receiver device to said facsimile device on the basis of a control signal contained in a signal received by said receiving device, so that said facsimile device receives the facsimile signal through said coupled audio channel.

14. A facsimile communication system, comprising:

a receiver for receiving a facsimile signal from a satellite and outputting an output facsimile signal, the output facsimile signal including a control signal and an identification signal;

a first switching circuit, coupled to an output of the receiver, for switching the output facsimile signal;

a facsimile device coupled to the first switching circuit; and

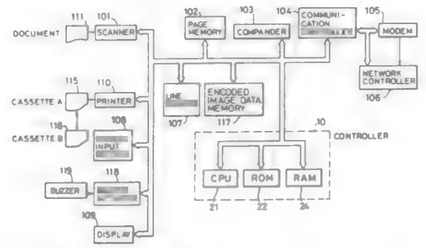
a control circuit coupled to the receiver and responsive to the control signal for controlling the first switching circuit to switch the output facsimile signal to the facsimile device, and for controlling a facsimile operation of the facsimile device when the received identification signal designates the facsimile device.

5,343,306

FACSIMILE MACHINE USING CUT SHEETS OF PAPER OF MULTIPLE SIZES

Fumiyo Oshita, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1992, Ser. No. 818,270
Claims priority, application Japan, Jan. 14, 1991, 3-16079
Int. Cl.[5] H04N *1/21*
U.S. Cl. 358—441 **12 Claims**



1. A facsimile machine, comprising:

means for receiving image data transmitted over a communication medium, said image data being arranged by page and containing page-end information indicating the end of a page;

means for holding cut sheets of recording paper of any one of a plurality of predetermined sizes;

means for printing an image represented by said received image data on said cut sheets of recording paper held in said holding means;

image memory means for storing said received image data;

page length determining means for determining the length of a page of said received image data in conjunction with said page-end information;

alarm means for providing an alarm indication to an operator of said facsimile machine; and

control means for causing received image data having at least one determined page length longer than said cut sheets of recording paper held by said holding means to be accumulated in said image memory means, actuating said alarm means to alert said operator to the fact that image data has been received having a page length longer than said held sheets of recording paper, and halting printing of said image by said printing means until further action has been taken by said operator.

5,343,307

ON-SCREEN DISPLAY APPARATUS

Takao Mizuno, Takatsuki, and Michihiro Fujiyama, Daito, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 26, 1992, Ser. No. 904,700
Claims priority, application Japan, Jun. 28, 1991, 3-158986
Int. Cl.[5] H04N *5/445*
U.S. Cl. 358—444 **3 Claims**

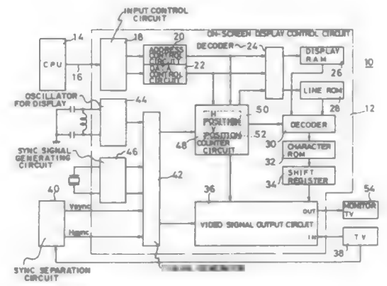
1. An on-screen display apparatus in which font data of each character is read-out from a character memory for display on a display screen of a monitor, comprising:

a line memory for fixedly storing character data of a plurality of character trains each of which is composed of a series of characters, wherein at least one of the plurality of character trains includes at least one specific character representative of at least one variable character;

address designating means for designating an address of said line memory in which character data of a head character constituting said character train is stored;

position data generating means for generating position data of a position on the display screen;

first reading means for reading-out the font data of said series of characters from said character memory on the basis of said position data from said position data generating means and said address designated by said address designating means; and



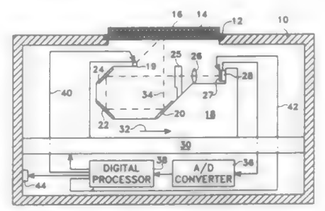
converting means for converting said font data into a video signal.

5,343,308

EXTENDED DYNAMIC RANGE IMAGE DIGITIZING APPARATUS

Gregory E. Johnston, Redondo Beach, Calif., assignor to X-Ray Scanner Corporation, Torrance, Calif.

Filed Apr. 12, 1991, Ser. No. 684,238
Int. Cl.[5] H04N *1/40, 1/04, 1/06*
U.S. Cl. 358—445 **11 Claims**



1. An image digitizing apparatus for converting images recorded in two-dimensional media as variations in either reflectivity or transmissivity into digital data, said image digitizing apparatus having an image medium support means capable of holding an image-containing medium composed of a plurality of pixels, each of said pixels being characterized by a transmissivity and a reflectivity, a light source having at least one predetermined light intensity level, said light intensity level being independent of the transmissivity and reflectivity of said image-containing medium pixels, said light source having an input port for receiving a light intensity control signal, said light source being so arranged as to illuminate a portion of said pixels, the illuminated pixels thereby emitting light, a plurality of light detectors having dynamic ranges and having periods of sensitivity to light, the time period during the detector sensitivity periods when light enters said detectors being called exposure time, said light detectors having at least one predetermined sensitivity period duration, said light detectors producing responses to incident light that are functions of the energy of the light entering the detectors during the sensitivity period, said light detectors having input ports for receiving a sensitivity period duration control signal, a lens system that images at least a portion of the emitted light from the illuminated pixels on said light detectors, a transport means for moving said light source, said lens system and said light detectors in an arbitrary direction relative to said image medium support means, said

VOL 1165 ISS 5 AG 30 1994 UMI

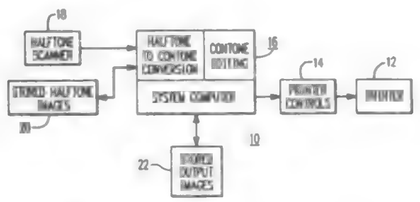
transport means having an input port for receiving control signals that control the motion of said transport means, an analog-to-digital conversion means for converting the responses of said light detectors, and a digital processing means for controlling said apparatus and converting the analog-to-digital converted detector responses into either image reflectivity or transmissivity data, the operations of said digital processing means being controlled by a stored program, said digital processing means supplying to said light source a signal that selects a predetermined light intensity level as specified by the stored program during the execution of the stored program, said digital processing means supplying to said light detectors a signal that selects a predetermined sensitivity period duration as specified by the stored program during the execution of the stored program, the operations performed by said digital processing means in accordance with said stored program resulting in a plurality of responses from each of said detectors for each pixel in said image-containing medium, said responses appearing at the output ports of said detectors, the plurality of responses from each of said detectors resulting from said detectors receiving exposures to the emitted light from said imaged pixels at a plurality of different combinations of intensity levels and sensitivity period durations, at least one of said exposures producing a response from each of said detectors that is within the dynamic range of said detectors, a response that is within the dynamic range of said detectors being called a valid response, said digital processing means obtaining reflectivity/transmissivity data from scaled valid responses, a scaled valid response being a valid response divided by the light energy emitted by said light source during said exposure time.

5,343,309

IMAGE PROCESSING SYSTEM AND METHOD EMPLOYING ADAPTIVE FILTERING TO PROVIDE IMPROVED RECONSTRUCTION OF CONTINUOUS TONE IMAGES FROM HALFTONE IMAGES INCLUDING THOSE WITHOUT A SCREEN STRUCTURE

Paul G. Roetling, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 12, 1992, Ser. No. 928,388
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 10 Claims



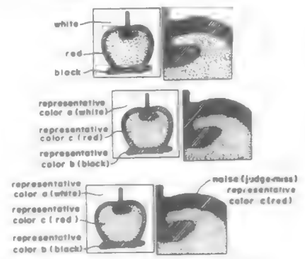
1. An image processing system for converting halftone images to continuous tone images, said system comprising:
means for sequentially generating value data for successive pixels of a halftone image;
means for sequentially and adaptively filtering each of the pixels in accordance with a filter selected from a plurality of predetermined filters;
means for low-pass filtering the halftone image pixels to generate a first approximation image (FAI);
means for generating a spatial gradient value for each pixel in the FAI;
means for controlling said adaptive filter means to apply one of said predetermined filters to each pixel as a function of the associated pixel spatial gradient from said spatial gradient generating means; and
means for generating an output continuous tone image containing the adaptively filtered pixels.

5,343,310

PICTURE IMAGE COLOR SEPARATING APPARATUS

Koji Tasaki, Yao; Toshimitsu Asai, Osaka, and Kenneth M. Jones, Yao, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 9, 1991, Ser. No. 773,209
Claims priority, application Japan, Oct. 16, 1990, 2-278513; Aug. 30, 1991, 3-219693
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—515 5 Claims



1. A picture image color separating apparatus for separating colors in an original picture image into a plurality of representative colors to produce color separated picture images, said apparatus comprising: a representative color selecting means for selecting a plurality of selected representative colors for said picture image
a representative color correlated information means for determining representative color correlated information data identifying areas on color space for each of said selected representative colors;
a color separating means for correlating the colors on said original picture image to corresponding colors of said selected representative colors; wherein in said representative color correlated information means allocates an area in color space to each of said representative colors such that said area does not include a straight line segment connecting an adjacent two other representative colors on the color space when the representative color is near the adjacent two other representative colors on the original picture image.

5,343,311

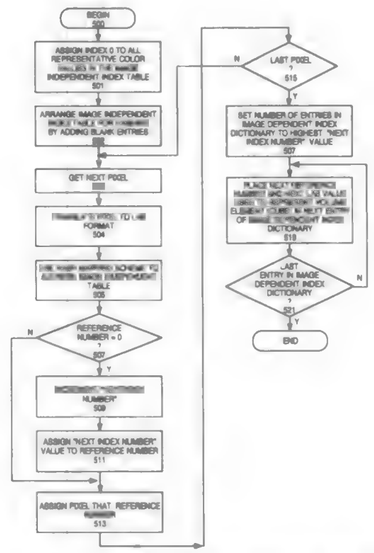
INDEXED PROCESSING OF COLOR IMAGE DATA

Guy Morag, Sunnyvale; Jacob Aizikowitz, Cupertino, and Efraim Arazi, San Francisco, all of Calif., assignors to Electronics For Imaging, Inc., San Mateo, Calif.

Filed Apr. 14, 1992, Ser. No. 868,728
Int. Cl.[5] H04N *1/46*; G03F *3/08, 3/10*
U.S. Cl. 358—518 52 Claims

1. An apparatus for handling color information of an image in a digital image processing system, said image having a plurality of pixels, said apparatus comprising:
A) means for translating the color components of the color value of each pixel in the image to the color space of a plurality of volume elements which together contain at least a portion of said color space;
B) means for determining a representative color value for each pixel in said image, each representative color value being within a volume element of said plurality of volume elements which together contain at least a portion of said color space;
C) means for creating a first table of representative color values, said first table consisting of at least one entry for each distinct representative color value that is determined for each pixel in said image, each entry in said first table comprising:
i) a representative color value, and

ii) an index value,
such that each pixel in said image has a representative color value in an entry of said first table;
D) means for assigning
i) to said representative color value in said each entry of said first table, and
ii) to said image pixels for which said representative color value is determined
an index value in said each entry of said first table such that each distinct representative color value in said entry of said first table is assigned a unique index value;
wherein said means for determining a representative color value for each pixel in said image and said means for assigning an index value to said representative color value of said each pixel and to said each pixel further comprises of:
E) means for creating a base table with at least one entry per



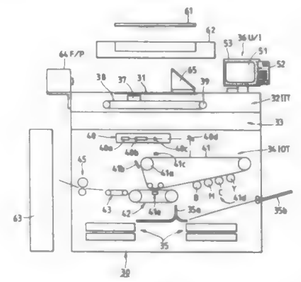
volume element of said plurality, each said entry comprising the representative color value of said volume element and an index value initially set to a unique initial value;
F) means for translating the color components of the color value of each pixel in the image to the color space of the said base table if the color components of the color values of the pixels in said image are not in the said color space of the representative color values of the said base table;
G) means using, for each pixel in said image, said pixel's color components in said color space to search said base table until an entry is found such that the color value of said found entry is in the same volume element in said color space as said pixel's color;
H) means for setting, if the index value at said found entry is equal to said initial value, said index value equal to a value representing a representative color value within one of said volume elements;
I) means for assigning said index value of said found entry in said base table to said pixel, in said image.

5,343,312

COLOR IMAGE OUTPUTTING SYSTEM FOR AN IMAGE PROCESSING APPARATUS

Yoshiharu Hibi, and Yoshihiro Terada, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 537,623, Jun. 13, 1990, Pat. No. 5,187,570.
This application Jun. 9, 1992, Ser. No. 895,814
Claims priority, application Japan, Jun. 14, 1989, 1-152778
Int. Cl.[5] H04N *1/00*; G03F *3/08*
U.S. Cl. 358—520 3 Claims



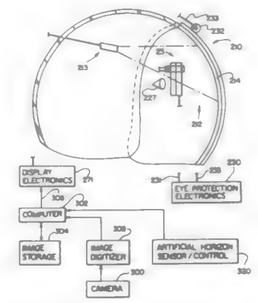
1. An image processing apparatus having a monochrome image producing system, comprising:
an input section for receiving an input signal;
means for converting said input signal into a first luminous signal;
means for linearly compressing said first luminous signal and generating a second luminous signal;
means for producing a recording signal based on said second luminous signal and a specified color signal; and
output means for forming a monochrome image on a paper in accordance with the recording signal and the specified color signal.

5,343,313

EYE PROTECTION SYSTEM WITH HEADS UP DISPLAY

James L. Fergason, Atherton, Calif., assignor to James L. Fergason, Atherton, Calif.

Continuation of Ser. No. 496,447, Mar. 20, 1990, abandoned.
This application Sep. 2, 1993, Ser. No. 115,353
Int. Cl.[5] G02F *1/1333*; A42B *3/00*; G02B *27/14*
U.S. Cl. 359—83 29 Claims



1. A system for protecting the eyes of a wearer while permitting information to be conveyed to said eyes, comprising
first polarizer means for selectively passing incident electromagnetic energy toward said eyes as a function of a polarization characteristic of said electromagnetic energy,
second polarizer means for selectively passing incident elec-

VOL 1165 ISS 5 AG 30 1994 UMI

tromagnetic energy passed by said first polarizer means toward said eyes as a function of the polarization of said electromagnetic energy,

goggle means mountable over said eyes of said wearer and including changing means for rapidly changing the polarization characteristic of said incident electromagnetic energy received from said first polarizer means in response to an input to effect a cooperation between said first polarizer means and said second polarizer means to change the intensity of the electromagnetic energy received by said eyes, and

heads up display means having an operative portion located to form an image between said first polarizer means and said second polarizer means and focused effectively at infinity with respect to said eyes of said wearer to provide said image viewable by said eyes of said wearer to convey information to said eyes of said wearer independently of the operative mode of said changing means, said heads up display means comprising projection means for projecting said image toward said first polarizer means for reflection to and viewing by said eyes.

5,343,314

OPTICAL FIBER COMMUNICATION METHOD AND MULTIMEDIA OPTICAL FIBER NETWORK USING THE SAME

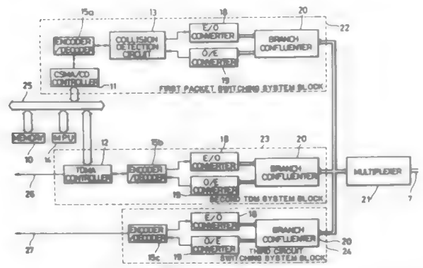
Kenji Nakamura, Hadano; Masao Majima, Atsugi, and Noboru Yamamoto, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 415,764, Oct. 2, 1989. This application Jun. 12, 1992, Ser. No. 897,482

Claims priority, application Japan, Oct. 4, 1988, 63-251452; Dec. 16, 1988, 63-316498; Sep. 18, 1989, 1-240074

Int. Cl.[5] H04J *14/00*

U.S. Cl. 359—123 **76 Claims**



1. A data terminal, connected to an optical fiber network, for conducting a circuit switching communication via said optical fiber, comprising:

first communication means for conducting a packet switching communication with another data terminal using a first optical wavelength;

second communication means for conducting the circuit switching communication with another data terminal using a second optical wavelength:

storage means for storing a state of the circuit switching communication using said second optical wavelength; and

control means for controlling the circuit switching communication of said second communication means in accordance with a content of said storage means.

5,343,315

INTERACTIVE OPTICAL TRANSMISSION SYSTEM

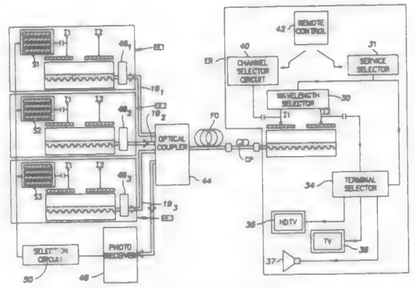
René Auffret, Perros Guirec; Mouhammad Chawki, Lannion, and Louis Berthou, Rospez, all of France, assignors to France Telecom, Establissement Autonome De Droit Public, France

Filed Apr. 7, 1993, Ser. No. 44,244

Claims priority, application France, Apr. 21, 1992, 92 04848

Int. Cl.[5] H04B *10/00;* **H01S** *3/08*

U.S. Cl. 359—152 **20 Claims**



1. Optical transmission system incorporating:

A) at least one transmitter assembly (EE) having a first distributed feedback (DFB) semiconductor laser (**10**), which has a first (E1) and a second (E2) supply electrode, two current sources adapted to supply polarizing currents (I1,I2) and a source (S) adapted to supply a current S_i digitally encoded by information, said source being connected to the first electrode and frequency shift keying (FSK) the optical beam transmitted by the laser;

B) an optical transmission line (FO) for receiving and transmitting said optical beam (**19**);

C) at least one receiver assembly (ER) incorporating a second laser (**20**), identical to the first laser (**10**) and having a first (E1) and a second (E2) electrode, said second laser (**20**) operating as a receiver and supplying the second electrode (E2) of said second laser (**20**) with a voltage (V), whose variations represent the information used in the source (S) of the transmitter assembly (EE) for the frequency modulation of the transmitted beam, and a terminal (**38**) restoring said information, wherein said system also comprises means for remote control of the source (S) of the transmitter assembly (EE) from the receiver assembly (ER), said remote control means incorporating:

D) in the receiver assembly (ER):

a polarizing circuit (**I1, I2**) adapted to tune the wavelength of the reception filter laser to that of the transmitter, a channel selection circuit (**40**) connected to the first electrode (E1) of the second laser (**20**) and adapted to supply the latter with current above a threshold in order to make it operate as an amplitude shift keying transmitter, said circuit (**40**) supplying an amplitude-encoded current (Ica) and the second laser (**20**) thus transmitting an amplitude shift keyed optical beam (**29**), which is transmitted to the transmitter assembly (EE) across the optical transmission line (FO),

E) in the transmitter assembly (EE):

a photoreceiver (**48**) sensitive to amplitude shift keying and receiving the amplitude shift keyed optical beam (**29**) from the second laser (**20**), said photoreceiver (**48**) supplying a voltage (Vca) restoring the code used for the amplitude shift keying of the second laser (**20**),

a selection circuit (**50**) controlled by the detection voltage (Vca) and controlling the source (S), which comprises several information channels (C1, C2, etc.), the selection circuit (**50**) selecting one of these channels as a function of the code received.

5,343,316

PHOSPHOR FOR USE IN A CATHODE-RAY TUBE AND DISPLAY DEVICE USING ONE

Kouji Morimoto; Miyuki Sumitomo, and Katsunori Uchimura, all of Anan, Japan, assignors to Nichia Chemical Industries, Ltd., Tokushima, Japan

Filed Jun. 29, 1993, Ser. No. 83,269

Claims priority, application Japan, Jun. 30, 1992, 4-197894

Int. Cl.[5] G02F *1/1335;* **C09K** *11/80*

U.S. Cl. 359—90 **15 Claims**

1. A red and infrared-emitting phosphor represented by the formula:

$$(Y_{1-x-y}Cr_xGd_y)_3(Al_{1-z}Ga_z)_5O_{12}$$

where

$0.0005 \leqq x \leqq 0.05$,

$0 \leqq y \leqq 1$, and

$0 \leqq x \leqq 1$,

and containing at least one alkali earth metal selected from a group consisting of Ba, Sr, Mg and Ca in an amount of 10 ppm to 0.5% on the basis of the total amount of said phosphor and exhibiting a larger increase in brightness with an increase in current density excitation than said phosphor absent said alkali earth metal.

13. A liquid crystal light valve CRT comprising:

a liquid crystal light valve including a photosensitive layer consisting essentially of a hydrogenated α-silicon photoconductor, and

a cathode ray tube having a phosphor screen containing a red and infrared-emitting phosphor represented by the formula:

$$(Y_{1-x-y}Cr_xGd_y)_3(Al_{1-z}Ga_z)_5O_{12}$$

where,

$0.0005 \leqq x \leqq 0.05$,

$0 \leqq y \leqq 1$, and

$0 \leqq z \leqq 1$,

and containing at least one alkali earth metal selected from a group consisting of Ba, Sr, Mg and Ca in an amount of 10 ppm to 0.5% on the basis of the total amount of said phosphor, and exhibiting a larger increase in brightness with an increase in current density excitation than said phosphor absent said alkali earth metal.

5,343,317

OPTICALLY COMPENSATING FILM, OPTICAL COMPENSATOR, AND LIQUID CRYSTAL DISPLAY INCORPORATING THE SAME

Hiroshi Wada; Shinji Wada; Osamu Okumura, all of Suwa; Rinjiro Ichikawa, Tokyo; Kenji Hashimoto, Tokyo, and Takashi Yamada, Tokyo, all of Japan, assignors to Seiko Epson Corporation and Fujimori Kogyo Co., Tokyo, Japan

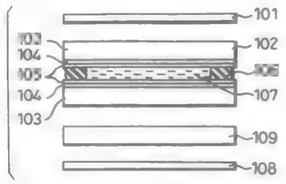
PCT No. PCT/JP92/00763, § 371 Date Apr. 14, 1993, § 102(e) Date Apr. 14, 1993, PCT Pub. No. WO92/22837, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 15, 1992, Ser. No. 969,158

Claims priority, application Japan, Jun. 17, 1991, 3-173184

Int. Cl.[5] G02F *1/1335*

U.S. Cl. 359—73 **10 Claims**



1. An optically compensating film comprising at least one oriented film obtained by stretching, in at least one axis, a film formed from a mixture of a polymer (A) and a polymer (B),

wherein the polymer (A) is one member selected from the group of polymers which form a film having a refractive index $n_D \geqq 1.60$, an Abbe number $\nu_D \leqq 30.0$ and a glass transition temperature Tg=60° to 160° C., and

wherein the polymer (B) is one member selected from the group consisting of polymers which form a film having a refractive index $n_D < 1.60$, and wherein the blending ratio of polymers (A) and (B) is 20:80 to 95:5.

5,343,318

LIQUID CRYSTAL CELL HAVING AN ALIGNMENT LAYER WITH A TEMPERATURE DEPENDENT TILT ANGLE

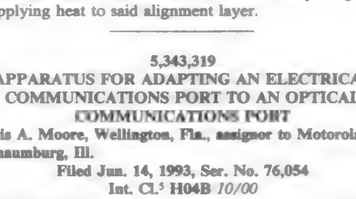
Naci Basturk, Hauterive, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed May 28, 1992, Ser. No. 856,973

Claims priority, application France, Sep. 21, 1990, 90-11782

Int. Cl.[5] G02F *1/1337, 1/13*

U.S. Cl. 359—75 **24 Claims**



1. A thermosensitive liquid crystal cell having a first plate, a second plate and a sealed frame disposed between the two plates to thereby form a sealed volume in which is contained an optically active material, said material comprising at least one liquid crystal, said cell further comprising control means for reversibly switching said optically active material between a first and a second optically distinguishable state, said control means comprising an alignment layer which changes its tilt angle as a function of temperature covering at least one of said plates and being composed of a polymer belonging to the family of soluble halogenated ethylenic polymers of the substituted ethylenic cycloaliphatic or hetero cycloaliphatic type, the optically distinguishable state of said optically active material being determined by the temperature of said alignment layer and said active material, and further comprising means for applying heat to said alignment layer.

5,343,319

APPARATUS FOR ADAPTING AN ELECTRICAL COMMUNICATIONS PORT TO AN OPTICAL COMMUNICATIONS PORT

Morris A. Moore, Wellington, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 14, 1993, Ser. No. 76,054

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—152 **18 Claims**

13. A communication system, comprising:

a first electronic device having an optical communications port;

a second electronic device having an electrical communications port; and

an apparatus for coupling said first and second electronic devices, said apparatus comprising:

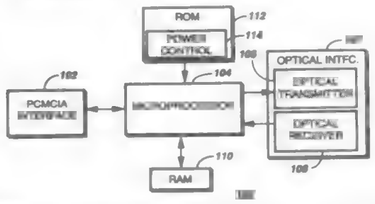
an electrical interface functionally compatible with the electrical communications port;

an optical interface functionally compatible with the optical communications port and electrically coupled to said electrical interface for communicating with said electrical interface; and

VOL 1165 ISS 5 AG 30 1994 UMI

a power control element coupled to said electrical interface and to said optical interface,

wherein said electrical interface and said optical interface provide communications between the electrical communications port and the optical communications port when said electrical interface is electrically coupled to the electrical communications port, and said optical interface is optically coupled to the optical communications port, and



wherein said power control element reduces power consumption by said apparatus in response to an absence of communications activity in said electrical interface and in said optical interface, and

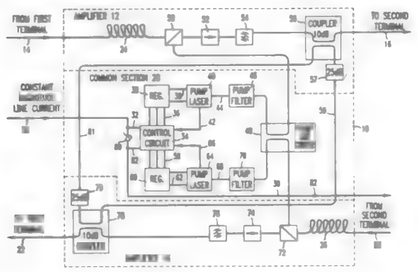
wherein said power control element restores full functional power to said apparatus in response to communications activity in at least one of said electrical interface and said optical interface.

5,343,320

PUMP LASER CONTROL CIRCUIT FOR AN OPTICAL TRANSMISSION SYSTEM

Cleo D. Anderson, Colts Neck, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1992, Ser. No. 926,629
Int. Cl.[5] G02B *6/26;* **H01S** *3/00*
U.S. Cl. 359—160 **4 Claims**



1. An optical transmission system, comprising:

a controllable line current source for producing a substantially constant current of a predetermined magnitude;

an optical fiber amplifier which amplifies optical communications signals carried by the transmission system;

a circuit responsive to the magnitude of the line current comprising a pump laser for controlling the gain of the fiber amplifier in substantial proportion to the predetermined magnitude of the constant current in which the pump laser produces an optical power output which is directed to a section of doped fiber in the optical fiber amplifier;

the circuit controlling the gain of the fiber amplifier further comprising:

a current reference circuit which produces a current signal having a magnitude proportional to the magnitude of the constant current;

a circuit for producing a current signal having a magnitude representing the magnitude of the optical power output produced by the pump laser; and

a regulator for controlling the optical power output of the laser in accordance with any difference between the magnitude of the current signals produced by the current reference circuit and the circuit for producing a current signal representing the magnitude of the optical power output of the pump laser.

5,343,321

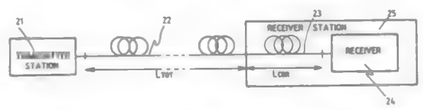
Patent Not Issued For This Number

5,343,322

SYSTEM OF VERY-LONG-DISTANCE DIGITAL TRANSMISSION BY OPTICAL FIBER WITH COMPENSATION FOR DISTORTIONS AT RECEPTION

Francis Pirio, and Jean Thomine, both of Paris, France, assignors to France Telecom, Paris, France

Filed Dec. 23, 1992, Ser. No. 995,816
Claims priority, application France, Dec. 31, 1991, 91 16488
Int. Cl.[5] H04B *10/12, 10/00*
U.S. Cl. 359—173 **12 Claims**



1. A system for a very-long-distance transmission of a digital signal between a transmitter station and a receiver station, wherein said transmitter and receiver stations are connected by a monomode optical fiber with negative chromatic dispersion at an operating wavelength of the system, having a length of at least one thousand kilometers, said optical fiber inducing a negative chromatic dispersion and non-linear effects, a combination of said non-linear effects and of said negative chromatic dispersion giving distortions to the digital signal received by said receiver station, and wherein said receiver station comprises compensation means for compensating for said distortions, said compensation means being connected to said monomode optical fiber, said compensation means carrying out a positive chromatic dispersion of said received signal, an amplitude of said positive chromatic dispersion being a function notably of an amplitude of the negative chromatic dispersion induced by said optical fiber as well as of a mean on-line optical power of said digital signal transmitted on said optical fiber.

5,343,323

LAN ELECTRO-OPTICAL INTERFACE

Mark A. Lynn, Warren, Ohio, and Gregory D. Miller, Stanford, Calif., assignors to General Motors Corporation, Detroit, Mich.

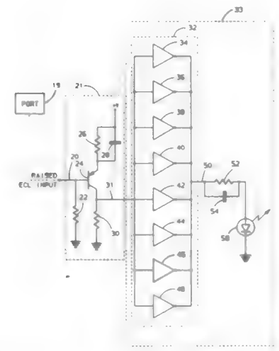
Filed Oct. 24, 1991, Ser. No. 782,176
Int. Cl.[5] H04B *10/04*
U.S. Cl. 359—180 **14 Claims**

1. A transmitter for a LAN electro-optical interface, comprising:

a transmitting LED for transmitting optical data, the transmitting LED characterized by a dominant junction capacitance;

means for improving leading edge response time of the transmitting LED, comprising a resistor and a capacitor connected in a first parallel circuit having two ends, one end connected to the transmitting LED and the other end connected to a drive circuit; and

the drive circuit including an output connected to the first parallel circuit providing a high current drive signal in response to a data signal, wherein, in response to the drive signal, the transmitting LED transmits an optical signal and wherein the means for improving leading edge response time and the drive circuit enable a fast response time of the transmitting LED, enabling high speed data transmission, in a range greater than 10 MBd, from the transmitting LED characterized by the dominant junction capacitance.

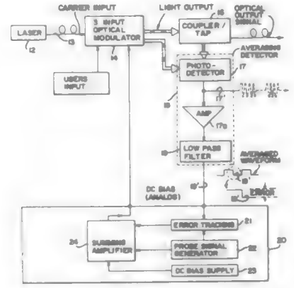


5,343,324

BIAS CONTROL AND METHOD FOR ELECTRO-OPTIC MODULATORS

Phat Le, Anaheim, and Xin Cheng, Los Angeles, both of Calif., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 15, 1991, Ser. No. 794,719
Int. Cl.[5] H04B *10/04*
U.S. Cl. 359—184 **12 Claims**



1. An electro-optical modulation system that comprises:

5,343,325

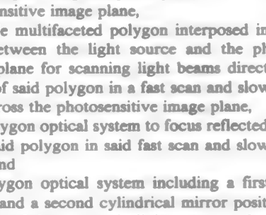
OPTICAL SCANNING SYSTEM WITH TILT CORRECTION FUNCTION

Hiromitsu Yamakawa, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Sep. 30, 1992, Ser. No. 954,880
Claims priority, application Japan, Feb. 5, 1992, 4-019937
Int. Cl.[5] G02B *26/08, 13/18, 9/04*
U.S. Cl. 359—205 **16 Claims**

1. An optical scanning system with a tilt correction function including a first focusing optical system for focusing a light beam from a light source in the form of a line image upon or, adjacent to, the deflecting surface of a deflecting means, and a second focusing optical system for focusing, on an image plane, an image of said line image, wherein the improvement comprises;

the second focusing optical system including, respectively from the deflecting means, a first single lens and a second single lens, the first single lens, with a positive refracting power in a plane of scan, having a toric surface and the second single lens, with a negative refracting power in the scan plane, having an aspherical surface with a radius of curvature in the scan plane which changes with distance from the optical axis of the second focusing optical system.

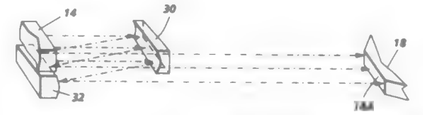


5,343,326

COMPACT ROS IMAGING SYSTEM

Kenneth R. Ossman, Macedon, and Susan E. Dunn, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1993, Ser. No. 100,809
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—216 **5 Claims**



1. A raster output scanner (ROS) imaging system comprising:

a light source for generating a coherent collimated light beam output along an optical path,

a photosensitive image plane,

a rotatable multifaceted polygon interposed in the optical path between the light source and the photosensitive image plane for scanning light beams directed onto the facets of said polygon in a fast scan and slow scan direction across the photosensitive image plane,

a post polygon optical system to focus reflected light beams from said polygon in said fast scan and slow scan directions, and

a pre-polygon optical system including a first cylindrical mirror and a second cylindrical mirror positioned in the optical path between said light source and said polygon, said first cylindrical mirror reflecting, the light beams onto the second cylindrical mirror, the second cylindrical mirror reflecting the reflected light beams to said polygon, said first and second cylindrical mirrors creating a focused light beam in the cross scan axis of the polygon while maintaining the collimation of the focused light beam in the perpendicular or scanning axis.

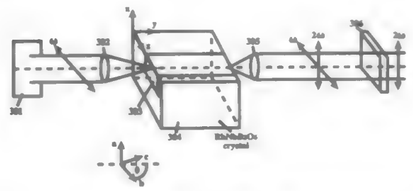
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,327

$RBNBB_2O_6$ CRYSTAL AND ITS NONLINEAR OPTICAL DEVICES

Bruce H. T. Chai, Oviedo, Fla., and John F. H. Nicholls, Glaskow, Scotland, assignors to University of Central Florida, Orlando, Fla.

Filed Nov. 5, 1993, Ser. No. 147,795
Int. Cl.[5] G02F *1/35*
U.S. Cl. 359—330 15 Claims



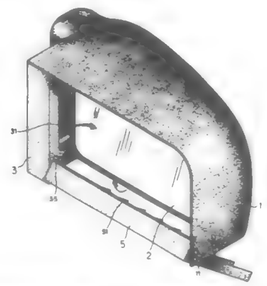
1. A nonlinear optical device comprising means to direct at least one incident beam of electromagnetic radiation into at least one crystal possessing nonlinear properties whereby electromagnetic radiation emerging from the same crystal contains at least one frequency different from the frequency of any incident beam of radiation, wherein the crystal comprises:
a single crystal of $RbNbB_2O_6$.

5,343,328

STRUCTURE OF AUTOMOBILE REAR-VIEW MIRROR

Shih-Pan Chang, No. 29, Wan Lien Lane, Wan Lien Li, Yuan Lin Town, Changhua, Taiwan

Filed Sep. 2, 1993, Ser. No. 114,624
Int. Cl.[5] B60R *1/06;* G02B *7/18;* B60S *1/56*
U.S. Cl. 359—507 1 Claim



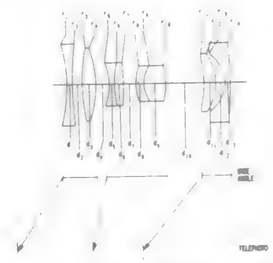
1. An automobile rear-view mirror of the type having a mirror fastened within a casing installed on an automobile for seeing traffic approaching from behind, the improvement comprising a ventilation box fastened to said casing and attached to said mirror at one side nearest the automobile, a flow guide member connected between said ventilation box and said casing and horizontally attached to said mirror at the bottom, a motor drive comprised of a miniature motor and a transmission gear and controlled to turn said flow guide member on a longitudinal axis thereof to change its angular position relative to said mirror, said ventilation box having a front opening disposed on a vertical front side thereof adjacent to said mirror and a bottom opening disposed on a horizontal bottom thereof communicated with said front opening, said flow guide member comprising a flow guide surface portion formed of a series of slopes respectively sloping downward toward said automobile, each slope having one end curved upward toward said mirror, whereby a current of air passes through said ventilation box from said bottom opening to said front opening as the automobile is moving, and then is guided by said flow guide member to flow toward said mirror to further carry moisture from said mirror.

5,343,329

ZOOM LENS SYSTEM

Takayuki Ito, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1992, Ser. No. 958,783
Claims priority, application Japan, Oct. 11, 1991, 3-329415
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—689 3 Claims



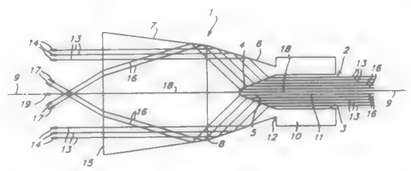
1. In a zoom lens system comprising at least three lens groups which are arranged, in order from the object side, as a first lens group having a positive focal length, a second lens group having a positive focal length and a third lens group having a negative focal length, wherein, when zooming is carried out from the extreme wide-angle to the extreme narrow-angle end, said first, second and third lens groups are moved towards the object so that the distance between said first and second lens groups is increased whereas the distance between said second and third lens groups is decreased, each of said first and second lens groups has at least one aspheric surface.

5,343,330

DOUBLE REFRACTION AND TOTAL REFLECTION SOLID NONIMAGING LENS

Marc Hoffman, St-Lambert, and Georges P. Dick, Verdun, both of Canada, assignors to Rousseau Sauve Warren Inc., Montreal, Canada

Continuation-in-part of Ser. No. 765,191, Sep. 25, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 33,794
Int. Cl.[5] G02B *3/02*
U.S. Cl. 359—708 20 Claims



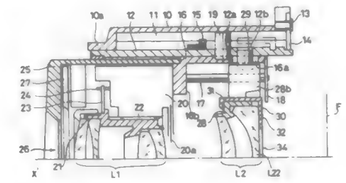
1. A traffic signal light comprising:
a plurality of nonimaging lens mounted laterally adjacent to each other; and
a plurality of light beam sources (a) each producing a directional light beam formed of generally parallel light rays and (b) each associated with one of said nonimaging lens;
wherein each of said nonimaging lens comprises a solid body of light-propagating material defining:
a first light-refracting surface receiving the directional light beam of the associated source and having a configuration adapted to cause divergence of the generally parallel light rays of the received light beam by refraction, the divergent light rays propagating within the solid body; and
a second light-reflecting surface positioned to receive the divergent light rays and having a configuration adapted to reflect said divergent light rays;
wherein the configuration of said light-refracting surface and the configuration of said light-reflecting surface are selected to redirect the generally parallel light rays from the associated light beam source into an enlarged light beam propagating in a given direction and visible over a given viewing angle.

5,343,331

LIGHT INTERCEPTING FRAME OF LENS

Shinsuke Kohmoto, and Hiroshi Nomura, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1990, Ser. No. 478,153
Claims priority, application Japan, Feb. 9, 1989, 1-14483[U]
Int. Cl.[5] G02B *7/02, 27/00*
U.S. Cl. 359—823 24 Claims



1. A light intercepting frame of a photographing optical device including an image forming optical system, said image forming optical system including a final lens and means for moving said final lens along an optical axis of the image forming optical system, said frame comprising a light intercepting wall which is located in the vicinity of a final lens surface of the final lens of the image forming optical system for movement together with said final lens, and which has an opening which has a predetermined shape to form a shape of a profile of usable light which is transmitted through said final lens to define an imaged area, and an annular portion extending from said light intercepting wall in a direction transverse to said light intercepting wall, said annular portion encompassing a periphery of said final lens and including at least one cut-out portion permitting accommodation of a lens supporting structure for said final lens.

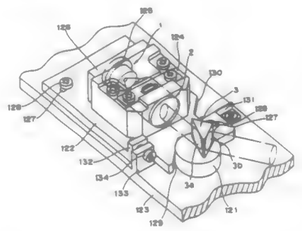
5,343,332

APPARATUS FOR ADJUSTING OPTICAL AXIS INCLUDING A BEAM SHAPING PRISM

Masahiro Oono; Koichi Maruyama; Makoto Iki; Hitoshi Kimura, and Masahiko Sasaki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 770,342, Oct. 3, 1991, Pat. No. 5,237,452.
This application Apr. 14, 1993, Ser. No. 45,703
Claims priority, application Japan, Oct. 4, 1990, 2-104707[U]; Oct. 4, 1990, 2-104708[U]; Oct. 4, 1990, 2-104709[U]
Int. Cl.[5] G02B *5/04, 7/18, 13/10*
U.S. Cl. 359—837 19 Claims

1. An optical axis adjusting apparatus comprising:
a beam shaping prism having an incident surface and an emission surface which together define a predetermined apex angle;
a support on which said beam shaping prism is secured;
a movable substrate adapted to move with respect to said support, a laser beam source being positioned on said movable substrate, said laser beam source comprising means for emitting a laser beam towards said incident surface of said beam shaping prism wherein said support includes a circular disk having a center axis passing through said incident surface of said beam shaping prism; and
rotation adjusting means for rotatably adjusting said movable substrate with respect to the incident surface of said beam shaping prism;



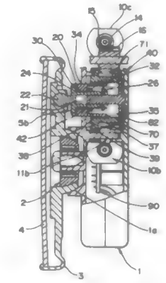
wherein the movable substrate has a generally V-shaped recess which is adapted to continuously contact an outer peripheral surface of said support, said laser beam source being positioned along a plane which substantially bisects said V-shaped recess.

5,343,333

ELECTRICALLY REMOTE-CONTROLLED MIRROR ASSEMBLY

Yoshiron Nagayama; Yoshihiro Kubo, both of Isehara, and Takao Sekino, Hiratsuka, all of Japan, assignors to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 931,486
Claims priority, application Japan, Aug. 19, 1991, 3-206741
Int. Cl.[5] G02B *7/18;* B60R *1/06*
U.S. Cl. 359—874 6 Claims



1. An electrically remote-controlled mirror assembly, comprising:
a mirror;
a mirror body supporting said mirror;
a casing having a ball-and-socket joint which supports said mirror pivotably;
a pair of plungers coupled with said mirror body and so disposed within said casing as to be moved forward and backward, respectively, by a pair of motors via reduction gear trains, each gear train comprising a plurality of gears, respectively, to tilt the mirror body horizontally and vertically within respective predetermined angles; and
at least one driving mechanism for moving at least one of the plungers forward and backward to tilt the mirror body horizontally and vertically beyond said predetermined angles;
said driving mechanism including:
an external thread formed on the circumference of one of said plungers;
a nut member so provided in said casing as to be blocked

VOL 1165 ISS 5 AG 30 1994 UMI

against rotation relative to said casing, and having an internal thread formed along the center line thereof which is engaged with said external thread of said plunger;

a rotary member provided in said casing, which is shaped in the form of a disk having upper and lower surfaces, and having a drive shaft provided on the upper surface thereof, which is slidable with respect to but blocked against pivoting relative to said plunger;

a motor for rotating said rotary member;

a control circuit means for stopping and changing rotational direction of said motor in response to the rotation of said rotary member;

said circuit means including:

an electrically conductive ball disposed between an internal surface of said casing and the lower surface of said rotary member so as to roll on a predetermined track; and

two pairs of electric contacts disposed on the internal surface of said casing, one of said pairs being disposed at a first position corresponding to one end of the rolling track of said ball, and the other pair being disposed at a second position corresponding to the other end of said rolling track of said ball.

5,343,334

VIDEO TAPE THAT RECORDS, PLAYS BACK, AND RERECORDS VIDEO SIGNALS TO OVERCOME DROPOUTS

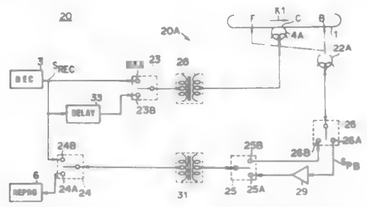
Kozo Kaminaga; Kazuo Ike; Tetsuro Makise; Yoshio Fujiwara; Kiyoshi Yamakawa, and Kiyoshi Sawakata, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 660,008

Claims priority, application Japan, Feb. 28, 1990, 2-47524; Feb. 28, 1990, 2-47525; Feb. 28, 1990, 2-47526

Int. Cl.[5] H04N *5/78*

U.S. Cl. 360—38.1 **2 Claims**



1. A video tape apparatus for recording video signals on recording tracks formed diagonally one after the other on a magnetic tape to be scanned in a predetermined direction and for reproducing video signals from the magnetic tape, said apparatus comprising:

recording means including first and second recording heads for recording a video signal, said first recording head being arranged to follow said second head in a direction of tape travel wherein after one of said first and second recording heads underwrites and records a portion of said video signal on predetermined recording tracks of said recording medium, the other of said first and second recording heads superimposes and rerecords the same portion of said video signal on the same predetermined recording tracks, wherein said first recording head serves both as a recording head and as a reproducing head, and wherein during an overwriting and recording mode means are provided for moving said first recording head to a position before said second recording head in the direction of tape travel, thereby recording and scanning said recording tracks which are to be later recorded and scanned by said second recording head.

5,343,335

SIGNAL PROCESSING SYSTEM HAVING INTERSYMBOL-INTERFERENCE CANCELLING MEANS AND METHOD OF SAME

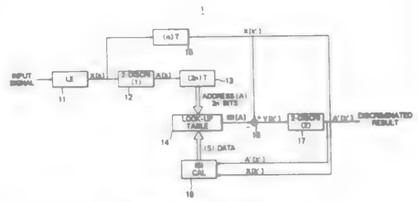
Masaaki Hara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 6, 1993, Ser. No. 103,030

Claims priority, application Japan, Aug. 26, 1992, 4-250801

Int. Cl.[5] G11B *5/00, 5/09*

U.S. Cl. 360—45 **32 Claims**



1. A signal processing system, comprising:

linear equalization means for linearly equalizing an input continuous source signal and outputting a linearly equalized signal therefrom;

nonlinear cancellation means including memory means which stores intersymbol interference among bits of digital data from reproduction of a reference source signal as a predetermined plurality of intersymbol interference data, address producing means comprised of first ternary discrimination means which discriminates by ternary said linearly equalized signal output by said linear equalization means and partial response class IV decoding means which decodes a ternary discriminated signal output by said first ternary discrimination means in accordance with partial response class IV rules to produce an address for reading out intersymbol interference data stored in said memory means, timing adjustment means which delays said linearly equalized signal by a delay time exactly until said address is produced by said address producing means, and subtraction means which subtracts from a delayed linearly equalized signal adjusted in timing by said timing adjustment means intersymbol interference data read out from said memory means using said address produced by said address producing means, for cancelling intersymbol interference in said linearly equalized signal by using said intersymbol interference data at said address of said memory means;

decoding means including second ternary discrimination means which discriminates by ternary values data output by said subtraction means and second partial response class IV decoding means which decodes ternary discriminated data output by said second ternary discrimination means in accordance with said partial response class IV rules to produce decoded time series digital data corresponding to said input source signal;

means for monitoring fluctuations of said linearly equalized signal; and

intersymbol interference data updating means for producing new intersymbol interference data based on a difference between said delayed linearly equalized signal and said ternary discriminated data output by said second ternary discrimination means, and updating intersymbol interference data stored in said memory means at an update address designated by said digital decoded data output by said second partial response class IV decoding means by using said produced new intersymbol interference data.

5,343,336

MAGNETIC RECORDING REPRODUCING APPARATUS WITH TIME CODE RECORDING

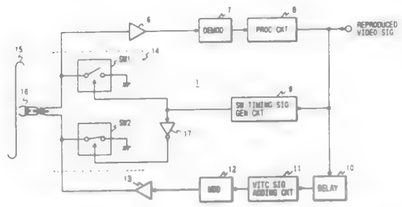
Yasutaka Sasajima, Yokosuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 11, 1992, Ser. No. 989,312

Claims priority, application Japan, Dec. 13, 1991, 3-352471

Int. Cl.[5] G11B *5/02, 27/02*

U.S. Cl. 360—55 **7 Claims**



1. A magnetic recording/reproducing apparatus comprising,

(a) magnetic head means for reproducing a video signal including vertical and horizontal synchronizing signals, recorded on a magnetic tape, in a reproducing mode or writing an information-signal-added horizontal synchronizing signal on said magnetic tape in a recording model;

(b) synchronizing signal separation means for separating said horizontal synchronizing signal from said reproduced video signal;

(c) vertical synchronizing signal detection means for detecting said vertical synchronizing signal from said reproduced video signal;

(d) timing signal generation means responsive to said vertical synchronizing signal for generating a timing signal indicative of a predetermined interval with a predetermined delay from said detected vertical synchronizing signal;

(e) switching means responsive to said timing signal for switching said mode of said magnetic head means from said reproducing mode to said recording mode; and

(f) signal generation means responsive to said vertical synchronizing signal, said horizontal synchronizing signal, and a command signal, having: delay means; information signal generation means for generating an information signal in response to said command signal; and signal adding means for adding said information signal to said horizontal synchronizing signal; wherein said signal generation means outputs said information-signal-added horizontal synchronizing signal for said predetermined interval using said delay means.

5,343,337

CONTROL CIRCUITRY FOR MAGNETORESISTIVE (MR) TAPE HEADS USING GROUP SELECT SWITCHES AND HEAD SELECT MULTIPLEXER

Joe K. Jurneke, Brighton, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 17, 1992, Ser. No. 947,029

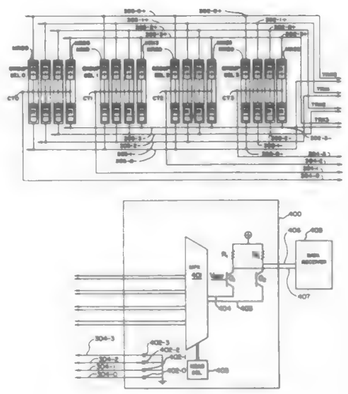
Int. Cl.[5] G11B *15/12*

U.S. Cl. 360—63 **6 Claims**

3. The apparatus of claim 2 wherein said apparatus further comprises:

a data receiver;

said multiplexer being effective for receiving said data signals read by said selected MR head for extending said data signals to said data receiver.



5,343,338

TAPE DRIVE APPARATUS

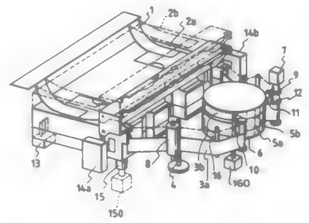
Shigeki Murata, Nara; Haruo Isaka, Kyoto; Kenji Matsuura, Nara, and Yasushi Sogabe, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 26, 1992, Ser. No. 858,004

Claims priority, application Japan, Apr. 16, 1991, 3-083816

Int. Cl.[5] G11B *15/18, 17/00*

U.S. Cl. 360—69 **8 Claims**



6. A tape driving apparatus selectively driving a plurality of cassettes having different tape widths, comprising:

tape transporting means for feeding a tape at a predetermined speed;

head means for recording signals on and reproducing signals from the tape;

cassette kind detecting means for detecting a kind of a cassette, said cassette kind detecting means being engageable with a cassette to discriminate what kind cassette is used; and

cassette supporting means for supporting a bottom of the cassette, said cassette supporting means including a cassette positioning boss whose height is changeable in accordance with an output of said cassette kind detecting means; and

positioning means for shifting said positioning boss in an up-and-down direction.

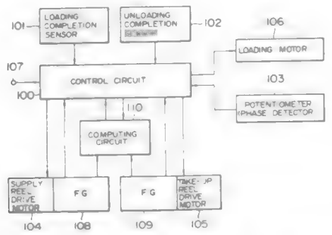
VOL 1165 ISS 5 AUG 30 1994 UMI

5,343,339

TAPE LOADING DEVICE WITH SELECTIVE TAPE LOADING CHARACTERISTIC FOR MAGNETIC RECORDING/REPRODUCING APPARATUS

Atsushi Inoue, Chigasaki; Nobuyuki Kaku, Kanagawa; Takashi Sasaki, Yokohama; Yasuyuki Niguchi, and Yasuo Inagaki, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,836
Claims priority, application Japan, Nov. 8, 1991, 3-319617
Int. Cl.[5] G11B *15/18*
U.S. Cl. 360—71 9 Claims



1. A tape loading device for a magnetic recording/reproducing apparatus in which a tape is drawn out of a cassette and wound around a rotary head drum and recording onto and reproduction from the tape are made through a relative movement between the tape and magnetic heads on the rotary head drum, the tape loading device comprising:

tape guide means for drawing the tape out of the cassette and defining a running path for the tape;

means for driving said tape guide means;

means for driving two reels of the cassette respectively to apply back tension to the tape;

means for detecting directions and speeds of rotation of said two reels and computing at least one of a tape wind diameter ratio and a reel inertia ratio between the reels; and

means for controlling operation of said driving means and said back tension applying means, said control means storing a plurality of control characteristics determined for a plurality of values of the tape wind diameter ratio or the reel inertia ratio between said reels to effectively suppress undue rotations of the reels due to inertia, said control means operating said back tension applying means after loading of the cassette onto the magnetic recording-/reproducing apparatus and before loading of the tape onto the rotary head drum to apply the same torque to both the reels, said control means selecting a control characteristic from the stored control characteristics in accordance with a result of computation by said detecting and computing means while the same torque is applied to said reels, and said control means controlling at least one of said driving means and said back tension applying means in accordance with the selected control characteristic when loading and unloading of the tape.

5,343,340

DIGITAL SERVO SIGNAL DEMODULATION METHOD AND APPARATUS UTILIZING A PARTIAL-RESPONSE MAXIMUM-LIKELIHOOD (PRML) CHANNEL IN A DISK FILE

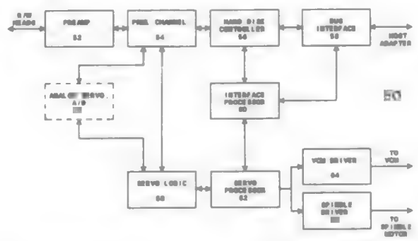
Zine-Eddine Boutaghou; Dana H. Brown; Kevin J. Erickson, and Richard Greenberg, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,309
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.08 11 Claims

1. A method of servo signal demodulation using a servo processor and a digitizing data channel in a disk file, said method comprising the steps of:

identifying a servo burst timing window with the digitizing data channel;

detecting a plurality of digital samples with the digitizing data channel responsive to identifying said servo burst timing window;



accumulating sequential sets of said detected digital samples with the digitizing data channels;

transmitting said accumulated digital samples to the servo processor;

processing said digital samples with the servo processor for providing servo phase information; and

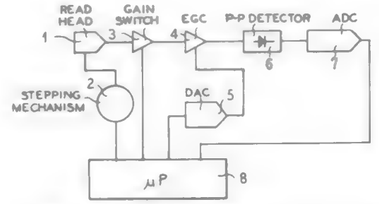
converting said servo phase information to position information for providing position control signals for the disk file.

5,343,341

METHOD FOR SEEKING THE CENTER OF A RECORDED DATA TRACK

Rolf Jahren, Oslo, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Oct. 15, 1992, Ser. No. 962,320
Int. Cl.[5] G11B *5/584*
U.S. Cl. 360—77.12 5 Claims



1. A method for reading data from a data track on a magnetic tape comprising the steps of:

transporting a tape having data tracks thereon past a read head in a tape transport direction, said tape exhibiting periodic tape wander as said tape is transported;

moving said read head in equal steps in a direction perpendicular to said tape transport direction to a first edge position partially over a first edge of a data track as said tape is transported and operating said read head to obtain an average output of said read head over an integral number of tape wander periods constituting a first output value;

moving said read head in equal steps in said direction perpendicular to said tape transport direction to a second edge position partially over a second edge of said data track as said tape is transported and operating said read head to obtain an average output of said read head over an integral number of tape wander periods constituting a second output value;

moving said read head in equal steps in said direction perpendicular to said tape transport direction to a position approximately midway between said first and second edge positions as said tape is transported and operating sid read head to obtain an average output of said read head constituting a center output value;

dividing said center output value by the width of said read head to obtain an output versus position value;

correcting one of said first or second edge positions by dividing the difference between said first and second output values by said output versus position value to obtain a quotient and adding said quotient to the one of said first or second edge positions to be corrected, to obtain a corrected edge position and thereby leaving the other of said first or second edge positions as an uncorrected edge position;

identifying a center of said data track by adding said corrected edge position to said uncorrected edge position to obtain a sum, and dividing said sum by two; and

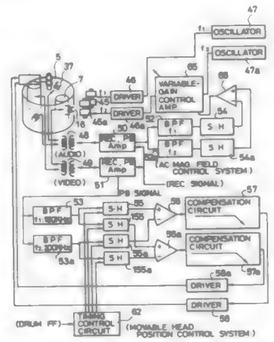
moving said read head in equal steps in said direction perpendicular to said tape transport direction to position said read head relative to said center and operating said read head to read data contained in said data track.

5,343,342

MAGNETIC RECORDING AND PLAYBACK SYSTEM WITH FEEDBACK CONTROL OF A MOVABLE TRANSDUCER HEAD

Yuji Kanagawa; Masato Nagasawa; Eiji Yokoyama; Kimihide Nakatsu, and Toshiharu Miyago, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1991, Ser. No. 672,876
Claims priority, application Japan, Mar. 27, 1990, 2-77575
Int. Cl.[5] G11B *21/02*
U.S. Cl. 360—77.16 39 Claims



32. A magnetic recording/playback system comprising:

a rotary drum having a rotary axis about which it rotates;

AC magnetic field generating means for producing an AC magnetic field which varies along the direction of said rotary axis;

a magnetic head disposed within and mounted to said rotary drum, movable parallel to said rotary axis, for sensing the AC magnetic field to produce a field detection signal dependent on the AC magnetic field which said magnetic head senses;

magnetic head driving means for moving said magnetic head parallel to said rotary axis;

position information generating means for generating information on the position of said magnetic head in accordance with said detection signal; and

position control means for controlling the position of said magnetic head by feeding said position information back to said magnetic head driving means,

said AC magnetic field generating means including first and second AC magnetic field gnerators respectively producing magnetic fields of frequencies different from each other which vary along the direction of said rotary axis,

said magnetic head sensing the magnetic fields from said AC magnetic field generators and producing first and second detection signals dependent on the respective magnetic fields, said field detection signal comprising said first and second detection signals,

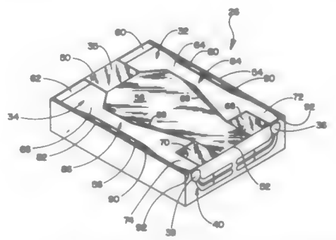
said position information generating means, responsive to said first and second detection signals, generating said position information.

5,343,343

AIR BEARING SLIDER WITH RELIEVED RAIL ENDS

Robert E. Chapin, Burnsville, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 715,453, Jun. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,925, May 25, 1990, Pat. No. 5,128,822, and Ser. No. 528,936, May 25, 1990, Pat. No. 5,062,017. This application Apr. 8, 1993, Ser. No. 44,926
Int. Cl.[5] G11B *21/21*
U.S. Cl. 360—103 29 Claims



1. A slider configured for supporting a transducer proximate a rotating disk, the slider comprising:

a slider body;

first and second raised air bearing surfaces which are positioned on the slider body and are generally parallel to one another, the first and second raised air bearing surfaces each having leading and trailing edges and inside and outside edges;

first and second trailing edge reliefs extending into the first and second raised air bearing surfaces, respectively, from the trailing edges toward the leading edges and communicating with one of the inside and outside edges, the first and second trailing edge reliefs forming third and fourth raised air bearing surfaces, respectively, which interact with the disc as the disc rotates proximate to the slider, wherein the third and fourth raised air bearing surfaces are raised from the slider body, extend in a plane which is parallel to the first and second raised air bearing surfaces, and are recessed from the first and second air bearing surfaces by a substantially constant depth; and

wherein the transducer is positioned along the trailing edges of one of the first and second air bearing surfaces.

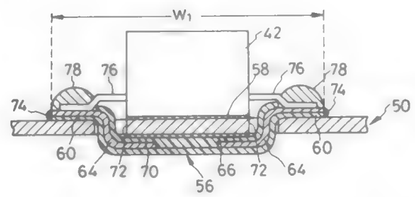
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,344

CONNECTION OF TRANSDUCER LEADS TO A PRINTED CIRCUIT BOARD IN ROTATING DISK DATA STORAGE APPARATUS

Fumio Nagase, Tama, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,454
Claims priority, application Japan, May 8, 1991, 3-041301[U]
Int. Cl.[5] G11B *5/48, 5/52*
U.S. Cl. 360—104 6 Claims



4. An apparatus for data transfer with a disk cassette including a data storage disk rotatably housed in an envelope having a first pair of generally rectangular apertures of predetermined width to expose radial portions of opposite sides of the disk, the envelope having a sliding shutter with a second pair of apertures formed therein which come into and out of register with the first pair of apertures, the second pair of apertures being of approximately the same shape and size as the first pair of apertures, the apparatus comprising:

(a) drive means for imparting rotation to the data storage disk of the disk cassette being held in a preassigned data transfer position within the apparatus;

(b) carriage means movable radially of the data storage disk in the data transfer position;

(c) a pair of substantially planar flexure seats mounted to the carriage means and disposed on both sides of the data storage disk in the data transfer position, each flexure seat having a first side directed toward the data storage disk and a second side directed away from the data storage disk;

(d) there being a pair of spaced slots in each flexure seat;

(e) a pair of flexible printed circuit boards each generally disposed on the second side of one flexure seat and each having a pair of planar end portions which extends respectively through the pair of slots in one flexure seat and which are disposed on the first side of one flexure seat; and

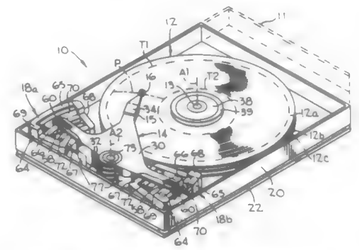
(f) a pair of transducers mounted respectively to the first sides of the flexure seats for data transfer with the opposite sides of the data storage disk through the first and the second pairs of apertures, each transducer being disposed between the pair of slots in one flexure seat and having leads which extend in opposite directions therefrom and which are soldered respectively to the planar end portions of one flexible printed circuit board on the first side of one flexure seat, each transducer inclusive of soldered joints of the leads thereof to the planar end portions of one flexible printed circuit board having a width less than the width of each of the first and the second pairs of apertures, whereby a reduced overall height or thickness of the apparatus is achieved.

5,343,345

MAGNETIC DISK STORAGE APPARATUS WITH MULTIPLE SETS OF ACTUATOR ARMS FOR READ/WRITE OPERATIONS AT DIFFERENT CIRCUMFERENTIAL LOCATIONS WITHIN THE DISK STACK

Paul A. Gilovich, 100 Buckingham Dr. #203, Santa Clara, Calif. 95051

Filed May 1, 1992, Ser. No. 877,092
Int. Cl.[5] G11B *5/48, 5/55*
U.S. Cl. 360—104 12 Claims



1. Magnetic disk storage apparatus comprising a stack of closely spaced magnetic disks each having opposed flat faces for carrying magnetically encoded data, means for rotating said disks, a plurality of actuator arms each mounted for pivotal movement at one end thereof about an actuator pivot axis extending adjacent said stack of disks and parallel to the axis of rotation of the disks so that the arms extend within the stack between the spaced disks, each of said arms having a distal end opposite to said one end, a magnetic transducer head carried by each of the arms at its distal end, means for jointly pivoting said arms so that each of said heads traverses an arcuate path adjacent one of said faces of a disk with each disk having one head traversing a path adjacent each of its faces, the arms of each pair of actuator arms which extend between a pair of adjacent disks to traverse the opposed faces thereof being angularly offset from each other about the pivot axis in a plane parallel to the planes of the disks so that the paths traversed by the magnetic heads carried by such actuator arms are located on opposite sides of a plane through the actuator pivot axis and the axis of rotation of the stack of disks, said plane of the actuator arms between adjacent disks being parallel to the planes of the disks and passing through both arms so as to minimize the required spacing between disks in the disk stack, a pair of motors positioned at opposite sides of said plane through the actuator pivot axis and the axis of rotation of the stack of disks, a dive arm connected between each motor and said actuator arms for moving said heads on their arcuate paths across said disk faces, each drive arm being affixed to the actuator arms to rotate therewith about said pivot axis, and each of said motors being operatively connected to its respective drive arms at a position spaced from said actuator pivot axis so that the line of applied force of the motor passes through the center of percussion of those actuator arms located on the same side of said plane through the actuator pivot axis.

5,343,346

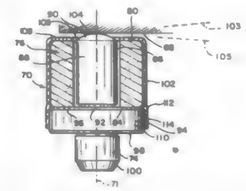
SINGLE POINT MAGNETIC CONTACT HATCH ASSEMBLY

William F. Blecke, Fort Wayne, Ind., assignor to Xolox Corporation, Fort Wayne, Ind.

Filed May 6, 1993, Ser. No. 58,479
Int. Cl.[5] G11B *5/54;* A44B *1/04;* E05C *17/56;* H01F *7/20*
U.S. Cl. 360—105 21 Claims

17. A memory storage device having a magnetic contact latch assembly for use in positioning and securing a read/write arm of the memory storage device during off power conditions, comprising:

a housing;
a data storage disk mounted within the housing;
a data-free area on the disk;
a head assembly having at least one read/write head for reading information from and writing information to the disk;
an actuator assembly for moving the head assembly over the disk;
a ferromagnetic strike plate on the actuator assembly and having a substantially planar contact surface;
a permanent magnet having a bore and first and second magnetic poles;



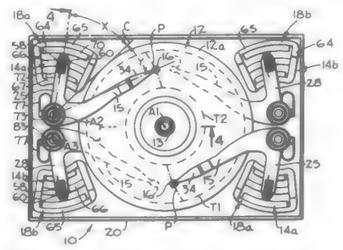
a core, a portion of which is positioned to lie within the bore of the magnet, said core extending along a central axis which intersects the planar contact surface of the strike plate, and said core having an end surface facing the contact surface of the strike plate and extending radially outwardly from the core axis, said end surface having a substantially continuous curvature such that, upon contact with the planar surface of the strike plate, said surfaces intersect at a point of tangency; and
means for mounting the magnet and core to the housing.

5,343,347

MAGNETIC DISK STORAGE MODULE WITH MULTIPLE SETS OF ACTUATOR ARMS FOR SIMULTANEOUS READ/WRITE OPERATIONS AT DIFFERENT CIRCUMFERENTIAL LOCATION WITHIN THE DISK STACK

Paul A. Gilovich, 100 Buckingham Dr. #203, Santa Clara, Calif. 95051

Continuation-in-part of Ser. No. 877,092, May 1, 1992. This application Sep. 14, 1992, Ser. No. 944,283
Int. Cl.[5] G11B *5/55*
U.S. Cl. 360—106 21 Claims



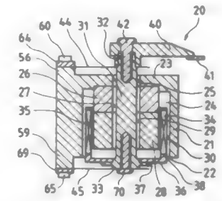
1. Magnetic disk storage apparatus comprising a stack of closely spaced magnetic disks each having opposed flat faces for carrying magnetically encoded data, means for rotating said disks, a first set of actuator arms each having a fixed end and a distal end, each of said arms being pivotably mounted at its fixed end for joint pivotal movement about a first actuator pivot axis extending adjacent to said stack of disks and parallel to the axis of rotation of the disks so that the arms extend within the stack between the spaced disks, a second set of actuator arms each having a fixed end and a distal end, each of said arms of the second set being pivotably mounted at its fixed end for joint pivotal movement independent of said first set of actuator arms about a second actuator pivot axis extending adjacent to said stack of disks and parallel to the axis of rotation of the disks so that the arms extend within the stack between the spaced disks, said second actuator pivot axis being separate and spaced from said first actuator pivot axis, a magnetic transducer head carried by each of said arms of both said first and second sets at its distal end for recording magnetically encoded data on or reading magnetically encoded data from one of the faces of one of the disks with each face of each disk having one head in read/write communication therewith, at least one of said actuator arms of each set having a drive arm rigidly attached thereto at the fixed end thereof and with the longitudinal axis of the drive arm extending away from the actuator arm along a line at an angle about the associated actuator pivot axis with the longitudinal axis of the actuator arm, and means carried by the distal end of each of said drive arms for providing pivotal movement thereto, said angle between the longitudinal axis of each drive arm and the longitudinal axis of the actuator arm from which it projects being less than 90 degrees so that the drive arm and actuator arm are generally arranged at acute angles with a plane that passes through said actuator pivot axis tangentially to the edges of said disks, said drive arms extending in opposed directions outwardly of said stack of disks so that said first set of actuator arms records on or reads from disk faces at one circumferential location on the disks and the second set of actuator arms records on or reads from disk faces at a second circumferential location on the disks angularly spaced from the first circumferential location about the axis of rotation of the disk stack.

5,343,348

ACTUATOR FOR DISPLACING A MAGNETIC HEAD

Ryo Nishima, Yokosuka; Hisao Kinjo, Yokohama; Yoshio Mizuno, Kamakura; Katsuyuki Shudo, Yokosuka, and Shigeru Kawase, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 3, 1992, Ser. No. 863,565
Claims priority, application Japan, Apr. 3, 1991, 3-029925[U]; Jul. 6, 1991, 3-060674[U]; Aug. 31, 1991, 3-077586[U]; Nov. 19, 1991, 3-0102923[U]
Int. Cl.[5] G11B *5/592*
U.S. Cl. 360—109 18 Claims



1. An actuator for displacing a magnetic head, comprising:
a hollow yoke having a closed end and an open end;
magnetic means fixedly mounted in said hollow yoke for providing a magnetic circuit in combination with said hollow yoke, said magnetic circuit having an annular air gap;
a support shaft axially movably extending through said hollow yoke and having opposite ends positioned outside of said closed and open ends, respectively, of said hollow yoke;
a coil bobbin attached to the end of said support shaft which is positioned outside of said open end of said hollow yoke, said coil bobbin supporting a coil which is axially movably positioned in said air gap;
a pair of parallel resilient suspension support wings mounted on said yoke and attached respectively to said opposite ends of said support shaft; and

VOL 1165 ISS 5 AG 30 1994 UMI

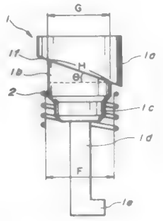
a magnetic head holder supporting a magnetic head thereon, said magnetic head bolder being mounted on the end of said support shaft near said closed end of said hollow yoke with said magnetic head holder and said magnetic head being positioned outside said closed end of said hollow yoke.

5,343,349

TAPE CASSETTE WITH ERASURE PREVENTING PLUG HAVING A HEAD PORTION WITH A SLANTED BOTTOM SURFACE

Takashi Ota; Osamu Taguchi, and Hiromichi Itahashi, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 989,654
Claims priority, application Japan, Dec. 18, 1991, 3-334625
Int. Cl.[5] G11B *23/02*
U.S. Cl. 360—132 13 Claims



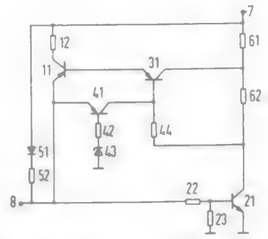
1. A tape cassette comprising:
an upper casing including a first circular opening having a first cylindrical wall extending therethrough, said first cylindrical wall having a first projecting portion attached to one side thereof;
a lower casing including a second circular opening having a second cylindrical wall extending therethrough, said second cylindrical wall having a second projecting portion attached at a position thereof substantially opposite said one side of said first cylindrical wall;
an erasure preventing plug arranged in said first and second circular openings, said erasure preventing plug including a head portion adapted to receive a pressure applied by an operator and having a first diameter and a bottom surface which is slanted at a predetermined angle θ relative to a horizontal reference line, a first leg portion having a second diameter D2 which is less than said first diameter and extending from the slanted bottom surface such that said first leg has a diametric length $H=D_2/\cos\theta$ at the location where said first leg extends from said slanted bottom surface, a second leg portion having a third diameter less than said second diameter D_2, and a locking projection extending substantially perpendicular to said second leg portion, said locking projection engageable with said first projecting portion at a first operational position thereof and with said second projecting portion at a second operational position thereof; and
a coil spring arranged around said first and second leg portions of said erasure preventing plug within said first cylindrical opening, said coil spring having an upper portion thereof and an inner diameter substantially equal to said diametric length H, said upper portion of said coil spring contacting said slanted bottom surface and contained within a periphery defined by said slanted bottom surface when said pressure is applied to said head portion of said erasure preventing plug.

5,343,350

CIRCUIT CONFIGURATION FOR PROTECTING THE ON-BOARD ELECTRICAL SYSTEM OF A MOTOR VEHICLE

Klaus Pohl, augsburg, and Alfons Fisch, Falkenstein, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 30, 1992, Ser. No. 860,091
Claims priority, application European Pat. Off., Mar. 28, 1991, 91105065.6
Int. Cl.[5] H02H *9/02*
U.S. Cl. 361—18 4 Claims



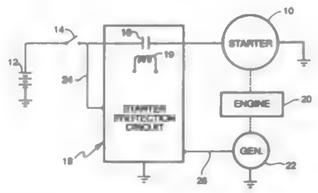
1. A circuit configuration for protecting the on-board electrical system of a motor vehicle, comprising:
an input connected to a voltage source;
an output connected to a load;
a ground connection being common to both said input and said output;
a current stabilizer connected between said input and said output for regulating an output current;
a switch connected to said current stabilizer for controlling said current stabilizer as a function of the output current;
a current limiter connected to said current stabilizer;
an excess voltage switch connected to said switch; and
an overload switch connected to said current limiter and to said excess voltage switch;
said overload switch carrying an overload current from said input through said current limiter to said output upon the appearance of an overload at said output, whereby the overload current is limited by said current limiter; and
said overload switch carrying a short-circuit current from said output through said excess voltage switch to ground upon a short circuit at said output to an overvoltage.

5,343,351

STARTER MOTOR PROTECTION CIRCUIT WITH RELAY PROTECTION

Chester C. Quantz, Valley Mills, Tex., assignor to Electro-Tech, Inc., Westland, Mich.

Continuation of Ser. No. 793,474, Nov. 18, 1991, abandoned. This application Jul. 7, 1993, Ser. No. 88,610
Int. Cl.[5] H02H *3/07*
U.S. Cl. 361—33 6 Claims



1. A starter motor protection circuit for protecting a starter

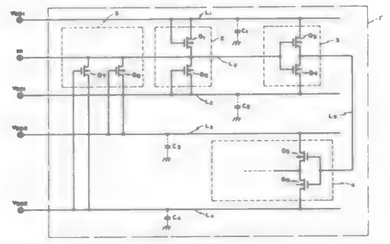
motor and relay coil over a wide range of coil voltages during starter operation, comprising:
low voltage sensing means for de-energizing the relay coil in response to a low coil voltage to protect the starter motor; and
a relay protection circuit for reducing the average current through the relay coil in response to a high coil voltage to protect the relay coil.

5,343,352

INTEGRATED CIRCUIT HAVING TWO CIRCUIT BLOCKS ENERGIZED THROUGH DIFFERENT POWER SUPPLY SYSTEMS

Hisayuki Nagamine, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 956,590, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 789,620, Nov. 8, 1991, abandoned, which is a continuation of Ser. No. 467,949, Jan. 22, 1990, abandoned. This application Mar. 26, 1993, Ser. No. 38,556
Claims priority, application Japan, Jan. 20, 1989, 1-12809
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—56 2 Claims



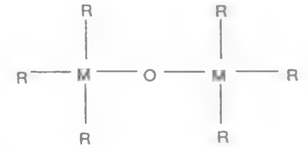
1. A semiconductor integrated circuit comprising first and second high power terminals, first and second low power terminals, an external signal terminal, a first circuit block coupled between said first high power terminal and said first low power terminal and energized by a first power voltage supplied therebetween, said first circuit block including a first transistor to be protected which is connected to said external signal terminal, a second circuit block coupled between said second high power terminal and said second low power terminal and energized by a second power voltage supplied therebetween, a first protective element connected between said external signal terminal and said first high power terminal, a second protective element connected between said external signal terminal and said first low power terminal, a third protective element connected between said external signal terminal and said second high power terminal, and a fourth protective element connected between said external signal terminal and said second low power terminal, said first protective element being connected between said external signal terminal and said first high power terminal without an intervention of any one of said second, third and fourth protective elements to operatively discharge electrostatic charges applied to said external signal terminal to said first high power terminal without an intervention of any one of said second, third and fourth protective elements, said second protective element being connected between said external signal terminal and said first low power terminal without an intervention of any one of said first, third and fourth protective elements to operatively discharge electrostatic charges applied to said external signal terminal to said first low power terminal without an intervention of any one of said first, third and fourth protective elements, said third protective element being connected between said external signal terminal and said second high power terminal without an intervention of any one of said first, second and fourth protective elements to operatively discharge electrostatic charges applied to said external signal terminal to said second high power terminal without an intervention of any one of said first, second and fourth protective elements, and said fourth protective element and being connected between said external signal terminal and said second low power terminal without an intervention of any one of said first, second and third protective elements to operatively discharge electrostatic charges applied to said external signal terminal to said second low power terminal without an intervention of any one of said first, second and third protective elements.

5,343,353

SEMICONDUCTOR DEVICE AND PROCESS OF PRODUCING THE SAME

Hiroshi Miki, Kokubunji; Yuzuru Ohji, Tokyo; Shinichi Tachi, and Keiichi Kanehori, both of Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1992, Ser. No. 929,918
Claims priority, application Japan, Aug. 28, 1991, 3-216891
Int. Cl.[5] H01G *4/10, 7/00;* B05D *5/12*
U.S. Cl. 361—322 51 Claims



38. A method of forming an electronic device, comprising the steps of:
providing a body in a reactor;
supplying an organic compound, having each molecule comprising at least a first kind of metal atom and a second kind of metal atom different from the first kind, onto the body within the reactor;
heating the organic compound and thereby decomposing the organic compound molecule for thereby forming a dielectric film having the first kind of metal atom and second kind of metal atom in substantially the same ratio as they existed in the organic compound molecule;
wherein said step of supplying further supplies a carrier gas for the organic compound molecule;
said forming further comprising reacting a first kind of metal atom with a second kind of metal atom to form a metallic compound in the dielectric film that is different from the organic compound;
said step of supplying, heating, reacting, forming, and decomposing form the dielectric film as a ferroelectric film containing more than 90% of Perovskite type oxide comprising at least one kind of atom in each molecule selected from the group consisting of Pb, Ca, Ba, Sr and one or more kinds of atoms selected from the group consisting of Zr, Ti, Sn, Hf, and as a ferroelectric film with a thickness of less than 0.1 μm;
said step of providing including forming a first conductive film on the body; and
after all of said steps, forming a second conductive film on the dielectric film to form a capacitor as at least a part of the electronic device.

VOL 1165 ISS 5 AG 30 1994 UMI

5,343,354

STACKED TRENCH CAPACITOR AND A METHOD FOR MAKING THE SAME

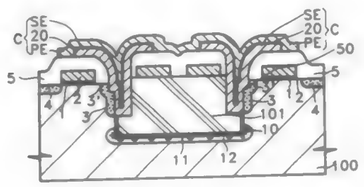
Tae-woo Lee, Seoul; Seon-jun Kim, Kyungki, and Yang-ku Lee, Seoul, all of Rep. of Korea, assignors to Samsung ELectronics Co., Ltd., Kyungki, Rep. of Korea

Filed Jun. 11, 1993, Ser. No. 74,892

Claims priority, application Rep. of Korea, Jun. 11, 1992, 92 [illegible]

Int. Cl.[5] H01G *4/10*

U.S. Cl. 361—322 20 Claims



1. A stacked trench capacitor, comprising:

a first trench having a first depth and a first width formed in a semiconductor substrate, said first trench having a bottom surface and sidewalls;

an isolation insulating layer substantially filling said first trench and defining an isolation region of said substrate;

a second trench having a second depth and a second width formed in said first trench, said second trench having inner and outer sidewalls and a bottom surface, said outer sidewall being in contact with said substrate, and said second depth being less than said first depth and said second width being less than said first width;

a storage electrode formed on said inner and outer sidewalls and bottom surface of said second trench;

a thin dielectric film formed on said storage electrode; and,

a plate electrode formed on said thin dielectric film.

5,343,355

SAFETY SHUTTER DEVICE FOR DRAWOUT TYPE SWITCH GEAR

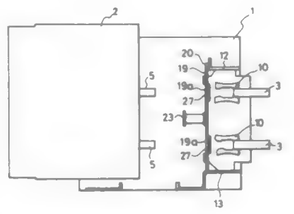
Takayoshi Ishikawa, Fukuyama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,770

Claims priority, application Japan, Jun. 30, 1992, 4-172343

Int. Cl.[5] H02B *1/14*

U.S. Cl. 361—617 4 Claims



1. A drawout type switch gear comprising:

a base frame,

a circuit breaker which is movably mounted on said base frame in a manner to be drawn out of or pushed into said base frame when transferred between a drawout position and a pushed-in position,

at least a pair of breaker-side main circuit lead conductors provided on said circuit breaker and corresponding pair of base frame-side main circuit lead conductors provided on said base frame, said breaker-side main circuit lead conductors being arranged to connect to said base frame-side main circuit lead conductors in said pushed-in position through a pair of contact fingers provided on said base frame, and

a safety shutter device which is provided on said base frame and including:

at least one lead conductor-carrying member provided on said base frame, leaving at least one insertion space between said lead conductor-carrying members or between the side wall of said base frame and one of said lead conductor-carrying members,

at least one fixed shutter blade provided on the front face of said lead conductor-carrying member and each having a pair of openings for permitting said breaker-side main circuit lead conductors to pass therethrough, and

at least one shutter driving unit accommodated in said insertion space and secured there by said fixed shutter blade, each of which includes, and

a pair of movable shutter blades provided in front of said shutter driving unit, which are capable of a limited vertical movement by said drawout and pushed-in operation of said circuit breaker and, when said shutter driving unit is accommodated in said insertion space, are located behind said fixed shutter blades to constitute a shutter-closed state for the switch gear in combination with said fixed shutter blades.

5,343,356

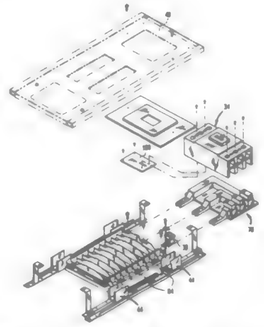
PANELBOARD

Drew S. Hancock, Zebulon, N.C., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Dec. 31, 1992, Ser. No. 999,448

Int. Cl.[5] H02B *1/20*

U.S. Cl. 361—637 22 Claims



1. A panelboard for distribution of electrical power from a feed line to branch power lines comprising:

a. at least one neutral/bus support assembly having:

i. at least one insulating member, and

ii. a conductive neutral tie strap attached to the insulating member for conduction of neutral phase current, providing an attachment point for a neutral lug, and for structural support of the neutral/bus support assembly in conjunction with the insulating member;

b. at least one neutral rail connected to the neutral tie strap, for connection of the neutral conduction path of branch power lines distributed from the panelboard;

c. at least one busbar disposed over the neutral/bus support assembly, defining a hole therein, the busbar adapted for transferring electrical power from a feed line to a line end of a branch circuit breaker connectable to the busbar;

d. a top barrier disposed over the busbar and coupled with the neutral/bus support assembly for capturing the busbar therebetween, the top barrier having a top surface adapted for placement of branch circuit breaker thereon; and

e. a locating pin projecting from at least one of the neutral/-bus support assembly and top barrier for capture within the hole defined by the busbar.

5,343,357

DISK ARRAY SUBSYSTEM FOR USE IN A DATA PROCESSING SYSTEM

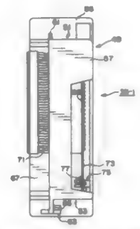
Edward K. Driscoll, Westwood; Arthur R. Nigro, Hopkinton, both of Mass., and Thomas D. Fillio, Newton, N.H., assignors to Data General Corp., Westboro, Mass.

Division of Ser. No. 935,110, Aug. 19, 1992, Pat. No. 5,247,427.

This application Jun. 24, 1993, Ser. No. 80,310

Int. Cl.[5] H05K *7/10*; H01R *13/64*

U.S. Cl. 361—685 10 Claims



1. A disk drive module adapted for use in a data processing system having a first disk drive module guide plate, said disk drive module comprising:

a) an elongated frame, said elongated frame including a guide bar matingly receivable in the first disk drive module guide plate for use in aligning said elongated frame in the data processing system, said elongated frame further including a plurality of bosses;

b) a disk drive mounted on said elongated frame; and

c) a regulator card electrically connected to said disk drive and electrically connectable to said data processing system, said regulator card being provided with a plurality of oversized holes through which said bosses are inserted, said oversized holes and said bosses being appropriately sized and shaped so that said regulator card is movably mounted in two perpendicular directions in the plane of said regulator card relative to said elongated frame.

5,343,358

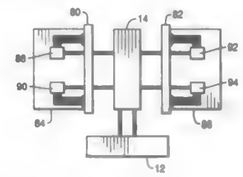
APPARATUS FOR COOLING ELECTRONIC DEVICES

Johan O. Hilbrink, Cincinnati, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 26, 1993, Ser. No. 51,958

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—700 12 Claims



1. An electronic assembly, comprising:

an electronic circuit component;

a circuit board on which said electronic circuit component is mounted;

cooling apparatus for providing a cooling medium for cooling said electronic circuit component, said cooling apparatus having a body and a housing surrounding the body, said housing having an aperture therein, said body having a socket coaxial with the aperture and larger than the aperture, a collet positioned within said socket and having an internal axial bore partially therethrough, and a spring positioned within the socket and urging the collet against the housing;

a support structure to which said circuit board is detachably connected; and

a heat pipe connected to said electronic component, mounted on said circuit board, and having an end of said heat pipe extending through said housing aperture and into the internal axial bore of said collet, the collet being shiftable within the socket to accommodate movement of the heat pipe which results from temperature-induced expansion and contraction.

5,343,359

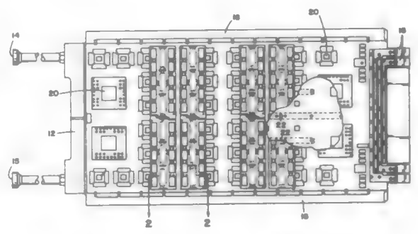
APPARATUS FOR COOLING DAUGHTER BOARDS

David M. Morton, Eau Claire, and Stephen A. Bowen, Chippewa Falls, both of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Filed Nov. 19, 1992, Ser. No. 983,086

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—707 6 Claims



1. An apparatus for conductively cooling an electrical devices attached to a daughterboard which is electrically connected to a motherboard, said apparatus comprising:

a) a motherboard having first and second sides, said second side having a plurality of electrical devices attached thereto, said motherboard further comprising a plurality of apertures formed through said first and second sides;

b) a cold plate adjacent said first side of said motherboard and attached thereto said plurality of apertures in said motherboard exposing a portion of said cold plate;

c) a daughterboard having first and second sides, each of first and second sides having an electrical device attached thereto, said first side of said daughterboard adjacent and substantially parallel to said second side of said motherboard, said electrical device attached to said first side of said daughterboard being removed from direct contact with said motherboard and said cold plate; and

d) conductive heat transfer means for conductively transferring heat energy from said electrical devices on said daughterboard sides to said cold plate through said daughterboard, said conductive heat transfer means comprising a metallic conductive structure located on said first side of said daughterboard, said conductive structure in conductive communication with said cold plate through said plurality of apertures in said motherboard.

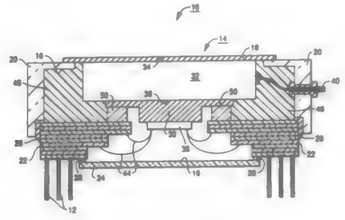
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,360

CONTAINING AND COOLING APPARATUS FOR AN INTEGRATED CIRCUIT DEVICE HAVING A THERMAL INSULATOR

Ikuo J. Sanwo, San Marcos, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 31, 1993, Ser. No. 40,688
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—707 13 Claims



1. An integrated circuit package, comprising:

a first container closed on all sides and defining an enclosed chamber, a first portion of said container including a first heat sink;

a second heat sink positioned within the enclosed chamber;

an integrated circuit device positioned within the enclosed chamber and secured to said second heat sink;

a cooling device interposed between the first heat sink and the second heat sink; and

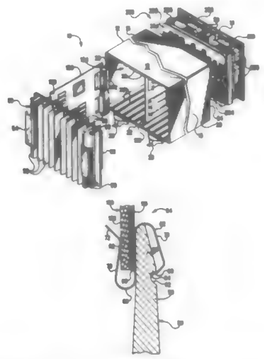
an insulator positioned within the enclosed chamber so as to provide thermal isolation between said container and said integrated circuit device.

5,343,361

THERMAL JUNCTION FOR CARD EDGES IN A CARD CAGE AND GROUND CLIP THEREFOR

William J. Rudy, Jr., Annville; Howard R. Shaffer, Millersburg, and Daniel E. Stahl, Hummelstown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 11, 1993, Ser. No. 76,614
Int. Cl.[5] H05K 7/20, 9/00
U.S. Cl. 361—710 16 Claims



1. A junction box for a plurality of electrical interconnections of circuits of circuit cards with electrical conductors extending into the junction box at an input/output interface, comprising:

a body member defining opposed side walls and opposed top and bottom walls extending from a front face to a rear wall, a front panel member securable to said front face to define a front wall traversing a card-receiving opening, and a backplane assembly proximate and affixed to said rear wall and including a transverse interior wall positioned rearwardly of a card-receiving region proximate said front panel, all generally defining a card cage;

said side walls and top wall and bottom wall and rear wall and front panel member being formed of thermally and electrically conductive material of substantial thickness and being substantially free of openings, said side walls and said top and bottom walls adjoined to edges of adjacent ones thereof and said rear wall being adjoined to rear edges of said opposed side walls and said top and bottom walls in a manner to eliminate any gap thereat through which electromagnetic and radiofrequency energy could otherwise pass;

said rear wall including an array of electrical input/output connectors mounted thereon adapted to be mated with complementary electrical connectors and defining an input/output interface, said rear wall including shield sections surrounding respective said input/output connectors in a manner eliminating any gap peripherally thereabout through which electromagnetic and radiofrequency energy could otherwise pass,

said interior wall including an array of card connectors mounted thereon to mate with corresponding connectors of a plurality of circuit cards insertable into said body member, and one of said opposing side walls or said top and bottom walls including pairs of card guide means extending from front edges thereof to said interior wall and cooperating to guide movement of respective said circuit cards during insertion and removal, with said card connectors aligned with respect to respective said pairs of card guide means to mate with complementary connectors along leading ends of respective said circuit cards during card insertion;

said backplane assembly defining an array of electrical circuits connecting terminals of said card connectors mounted on said interior wall to terminals of said input-/output connectors mounted on said rear wall;

said front panel member being securable to said body member to tightly abut front edges of said opposed side walls and said top and bottom walls in a manner to eliminate any gap thereat through which electromagnetic and radiofrequency energy could otherwise pass, and securable in a manner facilitating removal thereof to permit insertion and removal of a said circuit card;

said front panel member including an array of fins extending into said card-receiving region to facilitate absorption of thermal energy therefrom, said fins being associated with respective circuit cards and extending to card-proximate ends adjacent to trailing edges of said cards and having secured therealong respective spring clips each defining an edge-receiving entrance therealong aligned with a said pair of card guide means to become at least thermally connected to substantial length of a said trailing edge of a respective said circuit card inserted along said pair of card guide means, upon securing said front panel member to said front face of said body member,

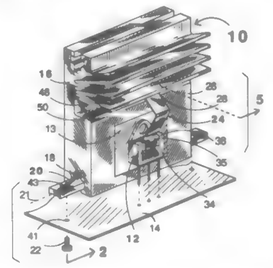
whereby a compact card cage of robust construction is defined adapted to shield said circuit cards and electrical interconnections thereof with said electrical conductors from electromagnetic and radiofrequency interference and to facilitate dissipation of thermal energy therefrom.

5,343,362

HEAT SINK ASSEMBLY

Terry B. Solberg, Golden Valley, Minn., assignor to Zytec Corporation, Eden Prairie, Minn.

Filed Jan. 7, 1994, Ser. No. 178,928
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—710 8 Claims



1. A heat sink assembly for mounting an electronic component comprising:

a heat sink body, having a planar component mounting surface, and having a rail mounting groove, and having a component, clip mounting channel proximate said planar component mounting surface;

a mounting rail positioned within said rail mounting groove, said mounting rail defining a mounting axis;

a component clip having a spring arm and having an anchor arm, said anchor arm position in said component clip mounting channel, said spring arm coupled to said anchor arm by a bend;

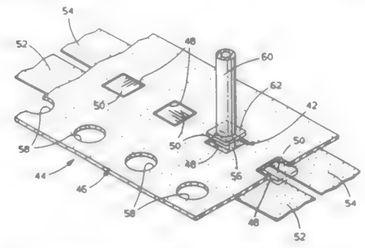
whereby a component placed under said spring arm deflects said bend into contact with a portion of said clip mounting channel causing said bend to act a fulcrum and thereby elastically deflecting said component clip producing a clamping force to hold the component against said planar surface.

5,343,363

SPLIT BACKED PRESSURE SENSITIVE DIE CARRIER TAPE

Michael R. Greeson, Kokomo, Ind.; James C. Baar, Logansport, Mich.; Jerry D. Haines, Greentown, and James J. Tepe, Kokomo, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 21, 1992, Ser. No. 993,567
Int. Cl.[5] H05K 1/00
U.S. Cl. 361—749 4 Claims



1. A die carrier tape system comprising:

a flexible carrier having a top surface and a bottom surface and a plurality of holes formed in the carrier extending between the top surface and the bottom surface; and

a pair of parallel pressure sensitive adhesive strips for retaining die in said holes, each having an adhesive surface adhered to a back surface of the carrier and covering a portion of each of said holes formed in the carrier, and said strips being spaced apart a distance which allows a poke up needle to pass between the strips and directly contact the die to facilitate die removal.

5,343,364

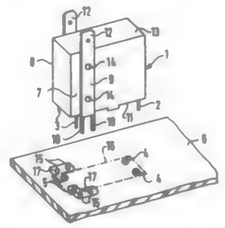
Patent Not Issued For This Number

5,343,365

PCB RELAY HAVING AN IMPROVED TERMINAL STRUCTURE

Klaus Lueneburger, Evansville, Ind., assignor to Potter & Brumfield, Inc., Princeton, Ind.

Filed Sep. 23, 1992, Ser. No. 950,389
Int. Cl.[5] H01R 9/00
U.S. Cl. 361—773 14 Claims



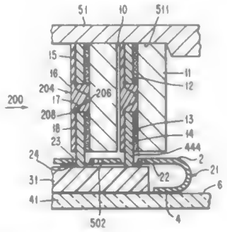
1. In a printed circuit board relay comprising a housing having a bottom side, a top side and a circumferential wall and terminal pins protruding from said bottom side for being contacted to a printed circuit board, wherein the improvement comprises: at least two conducting strips fastened to and extending along said circumferential wall of said housing from said bottom side to said top side, said conducting strips forming soldering pins at the bottom ends thereof and quick connect terminals at the top ends thereof.

5,343,366

PACKAGES FOR STACKED INTEGRATED CIRCUIT CHIP CUBES

Thoas M. Cipolla, Katonah; Paul W. Coteus, Yorktown Heights, both of N.Y.; Ioannis Damianakis, Montreal, Canada; Glen W. Johnson, Yorktown Heights, N.Y.; Peter G. Ledermann, Peekskill; Linda C. Matthew, Peekskill, N.Y., and Lawrence S. Mok, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,838
Int. Cl.[5] H01R 23/68
U.S. Cl. 361—785 39 Claims



1. A structure comprising:

at least one first substrate;

said at least one first substrate has a first side and a second side;

said first side of said at least one first substrate has a plurality of electrical conductors disposed thereon;

at least one electronic device is disposed in electrical connec-

VOL 1165 ISS 5 AG 30 1994 UMI

tion with at least a part of said plurality of said electrical conductors to form at least one assembly;
said electrical conductors extend to a first edge of said at least one substrate;
said conductors at said edge being substantially linear and free of bends;
a second substrate having a plurality of conductors disposed on at least a first side thereof;
said second substrate has a second side which is disposed adjacent a first side of a resilient member and;
said conductors at said edge of said at least one first substrate being disposed adjacent to at least a part of said plurality of conductors on said second substrate and being electrically connected thereto.

5,343,367

PROJECTION HEADLAMP SYSTEM HAVING DIRECT OPTICAL COUPLING OF LIGHT DISTRIBUTION ELEMENTS WITH DISCHARGE ARC LIGHT SOURCE

John M. Davenport, Lyndhurst; Richard L. Hansler, Pepper Pike, and Kenneth S. King, Willoughby Hills, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1992, Ser. No. 990,400
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 13 Claims

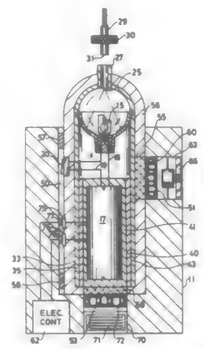
1. A projection headlamp system for a vehicle comprising:
(a) an arc discharge light source for generating light;
(b) a pair of arrangements for receiving light at spaced preselected lighting positions and for projecting the light in desired light patterns;
(c) a pair of elongated light distributing conductors each having an input end and an output end, said light conductors receiving light at said input ends thereof and distributing the light at said output ends thereof to said projecting arrangements at said lighting positions;
(d) a pair of solid optical coupler devices constructed of a material having a high transmittance value in the visible light range, each of said coupler device having an input end and an output end, said output end of each said coupler device being coupled to said input end of one of said light distributing conductors, said input ends of said coupler devices together defining a cavity receiving said arc discharge light source so as to couple said light source to said coupler devices such that light from said light source is transmitted directly into said solid optical coupler devices; and,
(e) wherein each said solid optical coupler device includes a body having said opposite input and output ends and a pair of opposite sides extending between and interconnecting said opposite ends, said opposite sides of said body including successive flat planar surfaces which converge toward one another going from said output end to said input end of said device, and further, wherein said each succeeding side surface is angularly displaced from a plane of a preceding side surface by an angle of less than twenty degrees.

5,343,368

THERMALLY NEUTRAL PORTABLE POWER SOURCES

William R. Miller, Skaneateles Falls, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jan. 22, 1993, Ser. No. 9,313
Int. Cl.[5] F21V *8/00, 29/00*
U.S. Cl. 362—32 18 Claims



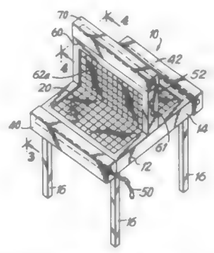
1. A portable device that includes a housing,
an energy source mounted within said housing,
an energizeable load mounted within said housing being connected to said energy source which when energized converts at least some of the source energy into heat,
thermal means disposed entirely in said housing, said thermal means being in heat transfer relationship with the load and the housing that contains a phase change material which changes state at a desired temperature to maintain the housing in a thermally neutral condition wherein the housing neither rejects or accepts heat energy from its surrounding environment, and
means for initializing the phase change material to a desired state.

5,343,369

LIGHT TABLE FOR TEACHING GEOMETRIC PRINCIPLES

Robert E. Mason, IV, 6700 192nd St., Apt. 512, Fresh Meadows, N.Y. 11365

Filed Nov. 24, 1992, Ser. No. 980,889
Int. Cl.[5] G01D *11/28*
U.S. Cl. 362—33 6 Claims



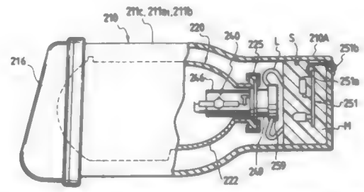
1. The light table as claimed in claim 1, A light table comprising a housing extending in a horizontal direction having legs extending downwardly therefrom to support said housing above a floor, said housing defining X- and Y axes, said housing including a glass panel and an engraved plastic panel having an X-Y grid pattern engraved thereon and visible from above said housing, first light means supported by said housing for illuminating said grid pattern, and a frame connecting to and extending vertically upwards from said housing, said frame defining a Z-axis and having another engraved plastic panel having an X-Z grid pattern formed thereon, and second light means supported on said frame for illuminating the X-Z grid pattern thereon, and said glass panel supported over said engraved plastic.

5,343,370

MOTOR VEHICLE HEADLAMP

Hideki Ohashi; Hisayoshi Murai, and Hiroyuki Makita, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1991, Ser. No. 779,278
Claims priority, application Japan, Oct. 23, 1990, 2-283551; Mar. 20, 1991, 3-056762; Mar. 20, 1991, 3-056763; Mar. 20, 1991, 3-056764
Int. Cl.[5] B60Q *1/04*
U.S. Cl. 362—61 9 Claims



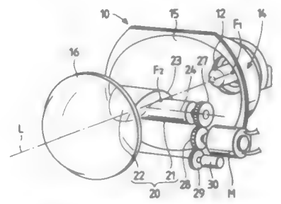
1. A motor vehicle headlamp having a discharge lamp as a light source, comprising:
an electrically conductive lamp body;
a discharge bulb lighting circuit for producing a high voltage for continuously operating said discharge lamp, said discharge bulb lighting circuit being mounted within said electrically conductive lamp body, said discharge bulb lighting circuit comprising a ground terminal; and
a conductor for connecting said ground terminal directly to said electrically conductive lamp body, wherein radiation of electromagnetic noise from said headlamp is prevented.

5,343,371

VEHICULAR PROJECTION-TYPE HEADLAMP

Shoji Kobayashi, and Masaaki Ishikawa, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 94,216
Claims priority, application Japan, Jul. 24, 1992, 4-052243[U]
Int. Cl.[5] B60Q *1/04*
U.S. Cl. 362—61 15 Claims



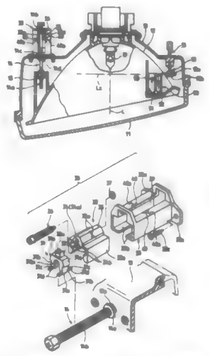
1. A projection type headlamp for an automobile, comprising:
a substantially elliptic reflector having a reflecting surface on an inner surface thereof;
a light source fitted into said reflector, said light source being located at a first focal point of said reflector;
a projection lens disposed in front of said reflector; and
shade means for cutting at a predetermined position a part of light beam emitted from said light source and reflected by said reflector, said shade means being provided between said reflector and said projection lens in the vicinity of a second focal point of said reflector and substantially at a focal point of said projection lens, said shade means rotating along a horizontal axis thereof for forming variable light distribution patterns, said shade means deviating in a horizontal direction in response to its rotation, said shade means comprising a first tubular shade member, a second tubular shade member having a diameter smaller than said first shade member, and a step portion disposed between said first and second shade members, said step portion Spirally extending on a circumferential outer surface of said tubular shade member in the axial direction.

5,343,372

VEHICULAR HEADLAMP ASSEMBLY

Katutada Shirai; Hideharu Mochizuki, and Hironori Tsukamoto, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,804
Claims priority, application Japan, Apr. 3, 1992, 4-082128; Jul. 13, 1992, 4-184995; Jul. 24, 1992, 4-198215
Int. Cl.[5] B60Q *1/06*
U.S. Cl. 362—66 27 Claims

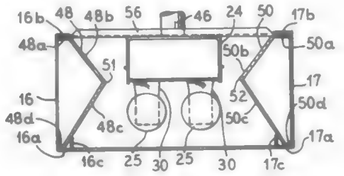


1. A vehicular headlamp assembly of a tilting member type in which a tilting member including a reflecting surface is supported on a reference member by a pivot, a horizontal aiming screw, and a vertical aiming screw, a light beam angle of said headlamp being adjusted by turning said horizontal and vertical aiming screws so that said tilting member is horizontally and vertically tilted with respect to said reference member, said vehicular headlamp assembly comprising a tilt measuring device for measuring an amount of tilt of said tilting member in said horizontal direction, said tilt measuring device protruding rearward of the reference member and the reference member, and said tilt measuring device comprising:
a fixed holder fixed to said reference member and covering at least a portion of a protruding portion of said horizontal aiming screw protruding rearward of said reference member, an elongated groove being formed in said fixed holder extending parallel to said horizontal aiming screw;
nut means received in said fixed holder and longitudinally slidable relative to said fixed holder, said nut means threadedly engaging said protruding portion of said horizontal aiming screw, a portion of said nut means being exposed through said elongated groove of said fixed holder; and
a scale cooperating with said portion of said nut means exposed through said elongated groove for indicating an

VOL 1165 ISS 5 AG 30 1994 UMI

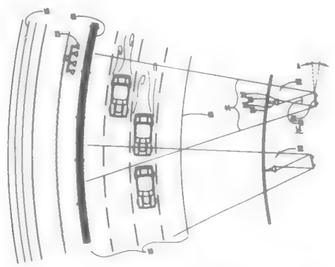
amount of displacement of said nut means relative to said fixed holder.

5,343,373
SUSPENDED UP/DOWN LIGHT
Kevin Tillotson, Tupelo, Miss., assignor to Thomas Industries, Inc., Tupelo, Miss.
Filed Feb. 19, 1993, Ser. No. 20,305
Int. Cl.[5] F21V *7/12*
U.S. Cl. 362—217 23 Claims



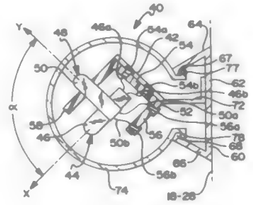
1. A housing for holding at least one tubular lamp, comprising:
a first side wall;
a second side wall;
end walls connecting said first and second side walls forming an enclosed perimeter having a top opening and a bottom opening;
said first and second side walls each having inwardly turned angled off top and bottom flanges; and
a first V-shaped reflector and a second V-shaped reflector arranged on opposite lateral sides of the at least one tubular lamp held by the housing with apices generally pointing toward the at least one tubular lamp, said first and second reflectors resiliently held between the inwardly turned top and bottom flanges of said first and second side walls respectively.

5,343,374
MEANS AND METHOD FOR HIGHLY CONTROLLABLE LIGHTING
Myron K. Gordin, and Joe P. Crookham, both of Oskaloosa, Iowa, assignors to Musco Corporation, Oskaloosa, Iowa
Division of Ser. No. 820,486, Jan. 14, 1992. This application Jan. 14, 1993, Ser. No. 4,693
Int. Cl.[5] E01F *9/00*
U.S. Cl. 362—153.1 24 Claims



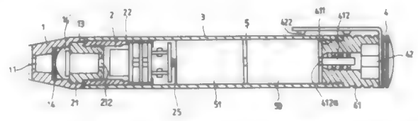
1. A method of lighting a race track comprising:
placing a reflecting means a distance from but facing one side of the race track;
placing a plurality of light sources between the reflecting means and the race track, aiming light energy produced by the light sources generally away from the track and at least partially unto the reflecting means;
adjusting the following relationships;
a) the distance between light sources and the reflecting means;
b) the size of the light sources;
c) the size of the reflecting means;
d) the shape of the reflecting means;
e) the vertical and horizontal orientation of the reflecting means to the light energy;
to create control lighting to the race track which uniformly lights the race track in a limited space above the race track without spilling light outside the race track or the limited space above the race track.

5,343,375
EMERGENCY EGRESS ILLUMINATOR AND MARKER LIGHT STRIP
H. Gerald Gross, Santa Ana, Calif., and Stephen B. Oliver, Worthing, United Kingdom, assignors to H. Koch & Sons Company, Anaheim, Calif.
Filed Jan. 28, 1993, Ser. No. 984,707
Int. Cl.[5] F21V *1/00*
U.S. Cl. 362—248 31 Claims



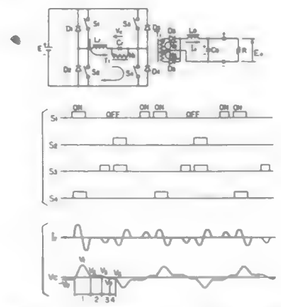
1. An emergency egress lighting strip for illuminating an emergency egress path on a passageway floor during conditions of reduced visibility, comprising an elongated transparent housing mounted on a passageway wall and an elongated string of narrow cone angle L.E.D.s mounted within the housing with their beam axes angled outwardly from the wall, each L.E.D. being an intense point source of light which emits light along its beam axis at a narrow cone angle not greater than 45° to provide discrete projected point sources of light to mark the path on the passageway floor.

5,343,376
STRUCTURE OF LASER POINTER
Chao C. Huang, 10F, No. 185, Yung Chi Rd., Taipei, Taiwan
Filed Mar. 11, 1993, Ser. No. 29,482
Int. Cl.[5] F21K *7/00*
U.S. Cl. 362—259 3 Claims



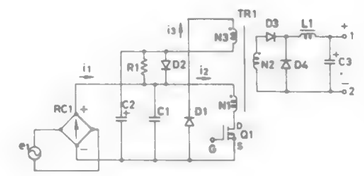
1. A laser pointer comprising a laser module fitted into a cylindrical casing and attached with a laser firing lens assembly and connected to a battery set and controlled by a switch to fire a laser beam for pointing, wherein
said laser firing lens assembly is made in the shape of a hollow, truncated cone having a laser firing hole on a front end thereof, and a lens supported on an O-ring inside a stepped inside wall thereof;
said laser module comprises a cylindrical shell inserted in said cylindrical casing to hold a focus control element, a laser diode, a rubber cushion, a printed circuit board, and a spring, said focus control element comprising a hollow screw rod threaded into an inner thread on said cylindrical shell and a small hole on the hollow screw rod for passing the laser beam, said rubber cushion being disposed between said laser diode and said printed circuit board, said laser diode being electrically connected to said printed circuit board;
said cylindrical casing is made from a conductive material to hold said battery set, having a smooth front end, into which said laser module fits, and a rear end with an inner thread;
said switch comprises an insulative stepped socket and a cap, said insulative stepped socket having an outer thread threaded into the inner thread on the rear end of said cylindrical casing, a stepped axle hole through the longitudinal center terminated to a small taper orifice, said cap being made from a conductive material having a plug rod fitted into the stepped axle hole on said insulative stepped socket and a clip-like press rod for switching control, said clip-like press rod having a raised contact reversibly pressed to contact said cylindrical casing in electrically connecting the said battery set to said laser diode; and
said battery set has the positive pole inserted in the taper orifice and electrically connected to said cap, and the negative pole connected to said spring.

5,343,377
METHOD OF CONTROLLING SWITCHING REGULATOR
Juichi Tanaka; Itsuo Yuzurihara, and Takashi Watanabe, all of Yokohama, Japan, assignors to Kyosan Electric Mfg. Co., Ltd., Yokohama, Japan
Filed Oct. 30, 1992, Ser. No. 969,140
Claims priority, application Japan, Nov. 13, 1991, 3-297371
Int. Cl.[5] H02M *3/337, 7/5387*
U.S. Cl. 363—17 5 Claims



1. A method of controlling a current resonant parallel switching regulator comprising a plurality of switches arranged in a bridge configuration and a resonant circuit connected between output poles of said bridge configuration, said method comprising the steps of:
providing a current circulating circuit, including one of said switches of said bridge configuration and said resonant circuit, for preventing a circuit loss increasing phenomenon from occurring due to an increase in a resonant current caused by an increase in a resonant voltage when an output load current of said resonant parallel switching regulator is reduced, and
once in between switching phases of said bridge configuration, forming a closed circuit between opposite polarity terminals of said resonant circuit by closing said switch of said current circulating circuit.

5,343,378
POWER CIRCUIT
Hirokazu Tohya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jan. 28, 1993, Ser. No. 10,196
Claims priority, application Japan, Jan. 30, 1992, 4-014949; Jan. 30, 1992, 4-014950
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 4 Claims



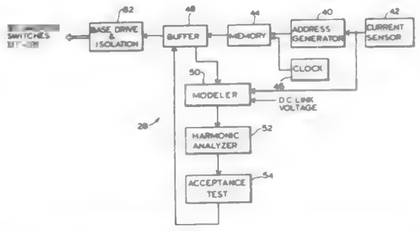
1. A power circuit comprising:
rectifying means for rectifying an alternating current input;
smoothing capacitor means for smoothing a rectified output;
switching means for switching a smoothed direct current output, said switching means comprising a single switching element connected in series to a primary winding;
transformer means for receiving a switching output at said primary winding and transferring the received output to a secondary winding as an alternating current power;
means for converting said alternating current power into a stable direct current power;
second capacitor means provided in parallel to said smoothing capacitor,
said second capacitor means comprising a series circuit of a capacitor and a charging resistor therefor; and
control means comprising
a tertiary winding provided in said transformer means,
a selective supply means for selectively supplying the exciting current generated on said tertiary winding to said smoothing capacitor means or said second capacitor means depending upon the levels of voltages of said smoothing capacitor means and said second capacitor means,
an exciting current supply means for selectively supplying the exciting current form one of said smoothing capacitor means and said second capacitor means to said primary winding depending upon the level of the voltage of said smoothing capacitor means and the second capacitor means,
a first diode having a cathode connected to one end of said tertiary winding and an anode connected to a negative voltage terminal of said rectifying means, and
a second diode having an anode connected to the other end of said tertiary winding and a cathode connected to a positive voltage terminal of said rectifying means,
the series junction of said series circuit being connected to the anode of said second diode,
said control means capable of operating in such a manner that
when a charging voltage of said smoothing capacitor means is larger than that of said second capacitor and thus energy is discharged from said smoothing capacitor means, accumulation of exciting energy of said transformer means in said second capacitor during OFF state of said switching means is controlled, and
when the charge voltage of said smoothing capacitor means is smaller than that of said second capacitor and energy is discharged from said second capacitor, accumulation of exciting energy of said transformer in said smoothing capacitor during OFF state of said switching means is controlled.

VOL 1165 ISS 5 AG 30 1994 UMI

5,343,379
CONTROL METHOD FOR INVERTERS HAVING DWELL TIMES BETWEEN SWITCH CONDUCTION PERIODS

Maurice A. Kirchberg, Dubuque, Iowa, and Alexander Cook, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 6, 1992, Ser. No. 973,120
Int. Cl.[5] H02M *1/08, 1/12*
U.S. Cl. 363—41 23 Claims



1. In a method of modeling a response of an inverter having a pair of switches which are alternately operated to alternately connect first and second voltages to an inverter output to develop an inverter output voltage wherein a dwell period is interposed between turn-off of one switch and turn-on of the other switch, the improvement comprising the steps of:

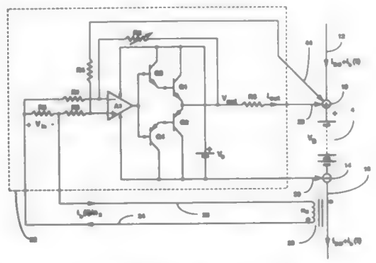
(a.) assuming that the inverter output voltage level is substantially at or between the first and second voltages during the dwell interval; and

(b.) modeling the inverter response based upon the assumed inverter output voltage level.

5,343,380
METHOD AND APPARATUS FOR SUPPRESSING TIME-VARYING SIGNALS IN BATTERIES UNDERGOING CHARGING OR DISCHARGING

Keith S. Champlin, 5437 Elliot Ave. South, Minneapolis, Minn. 55417

Filed Nov. 17, 1992, Ser. No. 977,560
Int. Cl.[5] H02J *7/10*
U.S. Cl. 363—46 8 Claims



1. An electronic device for reducing a time-varying current component passing through a dc power source, said dc power source a part of a circuit carrying said time-varying current component comprising:

means for sensing said time-varying current component flowing in said circuit and for producing a signal proportional thereto;

means for amplifying said signal and for producing an output signal proportional thereto between a pair of amplifier output terminals;

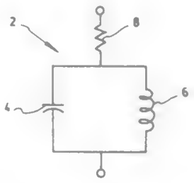
means for resistively coupling said amplifier output terminals to said dc power source and for passing a time-varying amplifier output current through said dc power source in phase opposition to said time-varying current component passing through said dc power source; and,

means for sensing the voltage across said dc power source and for regulating the voltage between said pair of amplifier output terminals therewith to prevent excessive dc current from flowing through said means for resistively coupling said amplifier output terminals to said dc power source.

5,343,381
ELECTRICAL DAMPENING CIRCUIT FOR DAMPENING RESONANCE OF A POWER SIGNAL IN A POWER DISTRIBUTION NETWORK

Léonard Boldnc, Ste-Julie, and Grégoire Paré, St-Bruno, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed Feb. 25, 1993, Ser. No. 22,320
Int. Cl.[5] H02M *1/12;* H02H *7/06*
U.S. Cl. 363—47 11 Claims



1. An electrical dampening circuit for dampening resonance of a power signal in a power distribution network, comprising a capacitor C, an inductance L connected in parallel to said capacitor C, and a resistance R connected in series with said capacitor C and inductance L, values of said capacitor C and inductance L being calculated so that:

$$(2\pi f)^2 LC = 1,$$

where f is frequency of said power signal; value of R being calculated so that:

$$3\sqrt{L/C} < R < (2/3)\sqrt{L/C},$$

whereby dampening of said resonance is obtained.

5,343,382
ADAPTIVE CURRENT CONTROL

Edward L. Hale, Carmel; David D. Moller, Kokomo, and Robert R. McConnell, West Lafayette, all of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Apr. 5, 1993, Ser. No. 43,086
Int. Cl.[5] H02M *7/5387*
U.S. Cl. 363—98 7 Claims

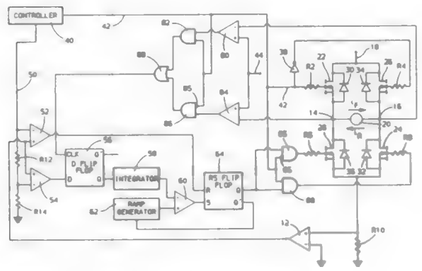
1. A method for controlling electrical current through a load by repeatedly applying a predetermined voltage across the load for a controlled charge time during which the electrical current passes through a current measuring device, and removing the predetermined voltage from the load for a controlled discharge time during which the electrical current by-passes said current measuring device, comprising the steps of:

establishing a minimum and a maximum commanded current through the load;

measuring said electrical current during the charge time using said current measuring device;

sampling the measured current when it is at a minimum current level during the charge time to provide an estimate of minimum current occurring during the discharge time;

comparing the sampled current to the minimum commanded current; and

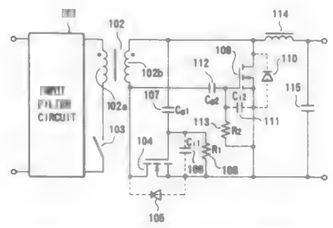


adjusting a subsequent controlled discharge time in a direction to drive the sampled current toward the minimum commanded current.

5,343,383
RECTIFIER FOR DC/DC CONVERTER

Yohsuke Shinada, and Hidetake Nakamura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 26,695
Claims priority, application Japan, Mar. 5, 1992, 4-083203
Int. Cl.[5] H02M *7/217*
U.S. Cl. 363—127 4 Claims



1. A rectifier for a DC/DC converter, comprising:

a first FET connected in series with a secondary winding of a main transformer of said DC/DC converter;

a second FET connected in parallel with a series circuit constituted by the secondary winding of said main transformer and said first FET;

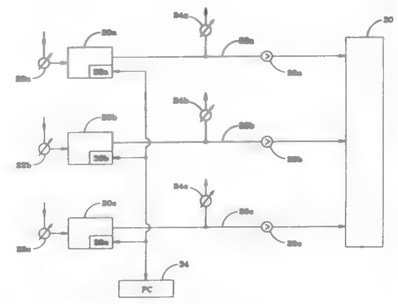
first and second capacitors respectively connected between a gate of said first FET and a drain of said second FET and between a gate of said second FET and a drain of said first FET; and

first and second resistors respectively connected between the gate and source of said first FET and between the gate and source of said second FET.

5,343,384
METHOD AND APPARATUS FOR CONTROLLING A SYSTEM OF COMPRESSORS TO ACHIEVE LOAD SHARING

Alvin J. Fisher, Murray; Troy S. Smoot, and Daniel E. Kincer, both of Mayfield, all of Ky., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 13, 1992, Ser. No. 960,076
Int. Cl.[5] G05B *15/00;* G05D *23/32;* F04B *41/06*
U.S. Cl. 364—133 7 Claims



1. A compressed air system comprising:

a plurality of centrifugal compressors, each one having an inlet valve and a bypass valve;

means for storing compressed air at a predetermined system pressure, the compressed air storage means being disposed in fluid receiving relation with the plurality of centrifugal compressors;

at least one control means for controlling a set point pressure for each centrifugal compressor;

means for sensing the system pressure communicating with the at least one control means;

means for identifying a predetermined centrifugal compressor to be unloaded from the compressed air system, the identifying means having a logic routine which ranks each centrifugal compressor with respect to the total time of compressor operation, and wherein the logic routine determines the lowest ranked centrifugal compressor having a bypass valve which has a position exceeding the bypass valve maximum position set point, and identifies said centrifugal compressor as the centrifugal compressor to be unloaded; and

computer means for testing the identified centrifugal compressor to determine whether said centrifugal compressor should be unloaded from the compressed air system, the computer means communicating with the at least one control means and including a timing means which is activated upon identifying said predetermined centrifugal compressor, and whereupon deactivation, the computer means causes the at least one control means to decrease the set point pressure of said compressor until a predetermined test significant event occurs.

5,343,385
INTERFERENCE-FREE INSERTION OF A SOLID BODY INTO A CAVITY

Leo Joskowicz, Bronx, and Russell H. Taylor, Yorktown, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 17, 1993, Ser. No. 108,027
Int. Cl.[5] G06F *15/46, 15/20*
U.S. Cl. 364—167.01 33 Claims

1. A method for determining an interference-free insertion trajectory of a moving solid body within a cavity, the body being described by a body surface, the cavity being described

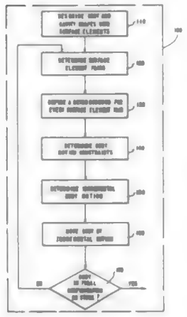
VOL 1165 ISS 5 AG 30 1994 UMI

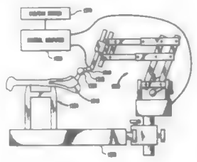
by cavity surface, the body having configurations with respect to the cavity, the configurations having a position and orientation, and moving the body from a start configuration, through intermediate configurations, to a final configuration, the method comprising the steps of:

(a) describing the body surface by a finite set of body surface elements and the cavity surface by a finite set of cavity surface elements;

(b) determining a set of surface element pairs at the body start configuration, each pair comprising a body surface element and a corresponding cavity surface element, the body and cavity surface elements being paired such that the distance between the body surface element of the pair and the cavity element of the pair is smaller than the distance between the body element of the pair and any other cavity element;

(c) defining a neighborhood for every surface element pair





so that the neighborhood contains the body and cavity surface elements in the pair but no other surface elements or parts of surface elements belonging another surface element pair;

(d) determining body motion constraints for every surface element pair so that each paired body and the cavity surface element do not interpenetrate and that the body movement does not cause the body surface element in the pair to leave the neighborhood;

(e) determining an incremental movement of the body so that the incremental movement satisfies the body motion constraints and the incremental movement is along a defined preferred motion direction;

(f) moving the body to a new body configuration by moving the body the incremental body movement; and

(g) repeating steps (b) through (f) with the new body configuration until the final body configuration is reached or until a stuck body configuration is attained.

5,343,386

APPARATUS FOR MAKING ELECTRONICALLY-PRODUCED POSTCARDS AND METHOD OF OPERATING SAME

Pamela L. Barber, Del Mar, Calif., assignor to Imageware Software, Inc., San Diego, Calif.

Continuation of Ser. No. 397,172, Aug. 21, 1989, abandoned. This application Sep. 10, 1992, Ser. No. 943,131

Int. Cl.[5] G06F *15/66;* H04N *7/18*

U.S. Cl. 364—400 **29 Claims**

1. Apparatus for automatically producing printed pictures incorporating a self-portrait of a user comprising:

a) an initiation device for producing electronic signals in response to a user input;

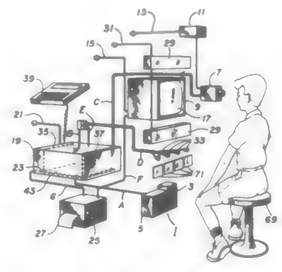
b) a computer connected to said initiation device and programmed with a set of instructions that define a series of operating sequences in response to the signals received from said initiation device;

c) digitizing means within said computer for converting a series of pictorial backgrounds into digitized electronic impulses, such that said digitized electronic impulses for each of said pictorial backgrounds are held in separate files in a memory in said computer for selective withdrawal;

d) an analog video camera operably mounted to view the user and receive a video impression thereof and to convert said view to a series of electrical impulses, said electrical impulses further converted to a set of digitized electronic impulses by said digitizing means;

e) a video monitor including a monitor screen mounted within view of the user, for receiving a real time image of the user;

f) first means, mounted within reach of the user, for selecting a pictorial background from said memory having files, for later presentation in visual form on said monitor screen;



g) second means in said computer, activated by said first means, for digitally combining said set of digitized electronic impulses from the video camera view of the user with said digitized electronic impulses of the pictorial background selected by the user so as to define a digitized electronic representation of the user's image integrated into the pictorial background and transferring said impulses in an electronic array to said video monitor for display to the user;

h) a color video printer, loaded with an inventory of electronically-printable papers and activated in sequence by means responsive to said set of computer instructions, for receiving said electronic array of impulses, comprising the pictorial background and a fixed pose of the user, and printing, in response thereto, a finished color representation of the user, integrated in said selected background, on one side of one of said papers as a finished picture; and

i) a source of light positioned adjacent the user to illuminate the user to facilitate receiving a video impression of the user by said video camera.

5,343,387

CYCLIC MAINTENANCE WORK SCHEDULE TABLE PREPARATION SYSTEM

Masaki Honma; Akio Nakano; Kouzou Mabuti; Isamu Asahi, all of Tokyo; Setsuo Tsuruta; Nobuhiro Fujino, both of Kawasaki, and Nobuhisa Kobayashi, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Building Systems and Engineering Service Co., both of Japan

Filed Nov. 27, 1991, Ser. No. 799,064

Claims priority, application Japan, Nov. 27, 1990, 2-321145

Int. Cl.[5] C06F *15/22*

U.S. Cl. 364—401 **6 Claims**

1. A cyclic maintenance work schedule table preparation computerized system retained by a contractor having concluded a contract with persons owning or managing buildings to have workers conduct maintenance of equipment installed in the buildings, said system having a display unit for showing

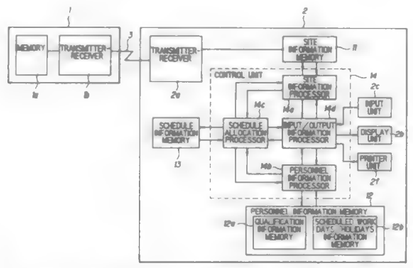
thereon boxes wherein dates in a desired period, the names of individuals workers, and the names of the buildings allocated to the boxes to allocate the individual workers to the contracted buildings are displayed, said system comprising:

worker data memory means for storing scheduled work information of the individual workers during the period and work qualifications of the individual workers as to whether they can perform a two-man maintenance job or a one-man maintenance job;

building data memory means for storing the building names work details including whether each job is a two-man maintenance job or a one-man maintenance job, last working dates, and contracted frequencies of maintenance work of building to be worked during the period;

first means for computing the remaining working time of each worker in each box allocated with one or more buildings;

second means for computing working dates in the period for non-scheduled buildings whose working dates have not yet been designated, on the basis of the contracted frequencies of maintenance work stored in the building data memory means;



first means for allocating the buildings, whose working dates have been designated, to boxes of qualified workers on the designated working dates;

second means for allocating the names of two-man job buildings out of the non-scheduled building to the boxes on the basis of the data of the worker data memory means, the data of the building data memory means, and results from the said first and said second means for computing and, when the remaining working time of the workers whose names were allocated to the boxes becomes insufficient, the remaining two-man job buildings are allocated to other boxes; and

third means for subsequently allocating to boxes the names of one-man job buildings out of the non-scheduled buildings on the basis of the data of the worker data memory means, the data of the building memory means, results of said first and said second computing means, and when the remaining working time of the workers in these boxes becomes, insufficient, the remaining one-man job buildings are allocated to unallocated boxes.

5,343,388

METHOD AND APPARATUS FOR OPTIMALLY ALLOCATING RESOURCES

Dag Wedelin, Iskällareliden 9A, S-416 55 Gothenburg, Sweden

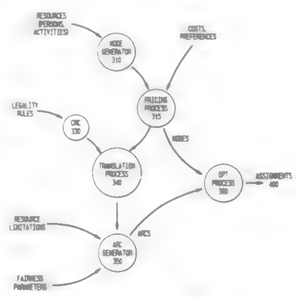
Continuation of Ser. No. 576,216, Aug. 31, 1990, abandoned. This application Oct. 29, 1993, Ser. No. 143,235

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—402 **7 Claims**

1. A method of outputting the assignment of available personnel to the plurality of tasks so as to effectively accomplish the tasks, using an apparatus for outputting an optimized assignment of available personnel to a plurality of tasks so as to reduce the cost of accomplishing the tasks using a programmed computer, the apparatus comprising preprocessor means for inputting a plurality of legality constraints and outputting a plurality of capacity constraints and variables which are influenced by the capacity constraints, the preprocessor means including a node generator for generating a plurality of nodes representing each possible assignment, a translator for translating a plurality of legality constraints into compatable q-functions, and an arc generator for generating a plurality of arcs forming constraints on the assignments, wherein the variables represent the nodes and the constraints represent the arcs, the method comprising the steps of:

determining the plurality of tasks to be filled by the available personnel;



assigning costs for each of said tasks;

outputting the plurality of variables and influences on said variables in the form of the capacity constraints, from said plurality of tasks and costs using said preprocessor means;

iteratively updating the influences on said variables using a probabilistic relaxation network technique so as to minimize the total of the costs of said tasks;

terminating said iterative updating steps when the influences remain stable for a predetermined number of iterations;

assigning said personnel to said tasks in accordance with the updated influences; and

outputting the assignment of personnel to said tasks.

5,343,389

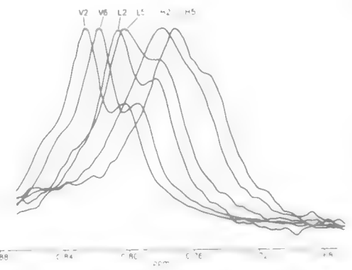
METHOD AND APPARATUS FOR MEASURING CLASSES AND SUBCLASSES OF LIPOPROTEINS

James D. Otvos, Apex, N.C., assignor to North Carolina State University, Raleigh, N.C.

Continuation of Ser. No. 738,052, Jul. 30, 1991, abandoned. This application Jun. 17, 1993, Ser. No. 79,223

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.09 **14 Claims**



1. A method of measuring the lipoprotein constituents of blood, comprising:

storing the NMR spectra of a plurality of lipoprotein classes as reference spectra for said classes, said storing step further comprising storing the NMR spectra of a plurality

VOL 1165 ISS 5 AG 30 1994 UMI

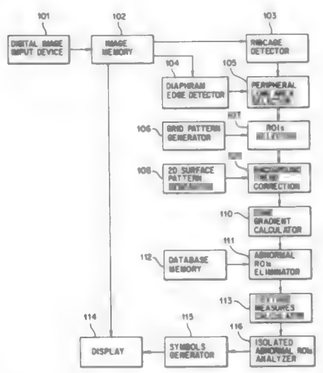
of subclasses for at least one of said lipoprotein classes as reference spectra for the subclasses of said lipoprotein class;
acquiring an NMR signal produced by a plasma or serum sample in an NMR spectrometer;
producing an NMR spectrum of the sample by transforming the acquired signal;
aligning a control peak in the sample spectrum to a corresponding control peak in the reference spectra wherein said control peak responds to the environmental variables in the same manner as the lipoproteins;
producing a calculated lineshape by adding together the stored reference spectra in amounts determined by respective non-negative reference spectrum coefficients; and
adjusting the reference coefficients to fit the calculated lineshape to the NMR spectrum of the sample.

5,343,390

METHOD AND SYSTEM FOR AUTOMATED SELECTION OF REGIONS OF INTEREST AND DETECTION OF SEPTAL LINES IN DIGITAL CHEST RADIOGRAPHS

Kunio Doi, Willowbrook; Xuan Chen, and Shigehiko Katsuragawa, both of Chicago, all of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Filed Feb. 28, 1992, Ser. No. 843,721
Int. Cl.[5] G06F *15/00, 15/42;* **H04N** *5/30, 1/40*
U.S. Cl. 364—413.16 **42 Claims**



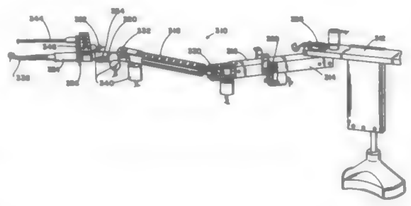
1. A computer implemented method for automated detection of abnormalities in digital chest radiographs comprising:
identifying peripheral lung areas of a digital chest radiograph, stored in an image memory in a computer, to be analyzed;
preselecting, using said computer, a sample of numerous contiguous regions of interest (ROIs) included in said peripheral lung areas;
performing a background trend correction, using said computer, on each of the ROIs of said preselected sample so as to produce corrected image data;
performing an edge gradient analysis, using said computer, on each of the ROIs of said preselected sample in order to distinguish sharp-edged ROIs from ROIs with sharp edges;
removing a portion of said sharp-edged ROIs from said preselected sample; and
performing texture measurements on the remaining ROIs of said preselected sample which have not been removed in said removing step.

5,343,391

DEVICE FOR OBTAINING THREE DIMENSIONAL CONTOUR DATA AND FOR OPERATING ON A PATIENT AND RELATED METHOD

David R. Mushabac, 919 Ocean Ave., Brooklyn, N.Y. 11226

Continuation-in-part of Ser. No. 743,103, Aug. 9, 1991, Ser. No. 694,446, May 1, 1991, and Ser. No. 507,162, Apr. 10, 1990, said Ser. No. 743,103, is a continuation-in-part of Ser. No. 694,446, Apr. 10, 1990, and Ser. No. 507,162, Apr. 10, 1990, said Ser. No. 694,446, is a continuation-in-part of Ser. No. 507,162, Apr. 10, 1990. This application Feb. 12, 1992, Ser. No. 834,462
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.28 **68 Claims**



1. A device for use in a dental or medical application to obtain three-dimensional contour information, comprising:
a multiplicity of arm segments;
first mounting means for connecting said arm segments to one another to form an articulated assembly of said arm segments;
second mounting means for fixing said articulated assembly relative to a person's head;
third mounting means for attaching a diagnostic or medical treatment instrument to said articulated assembly at a point spaced from said second mounting means; and
feedback means operatively coupled with at least some of said arm segments for providing electrical signal feedback data as to positions of said arm segments relative to one another, thereby providing information as to the position of said instrument relative to the person's head.

5,343,392

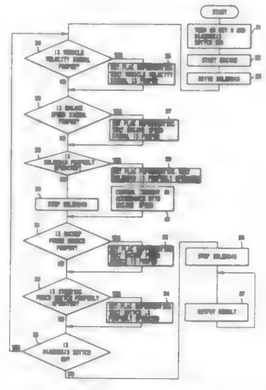
METHOD OF DIAGNOSING POWER STEERING SYSTEM

Kouichi Ishizaka, and Yoshio Asami, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 911,254, Jul. 7, 1992, abandoned, which is a continuation of Ser. No. 538,190, Jun. 14, 1990, abandoned. This application Aug. 23, 1993, Ser. No. 110,816
Claims priority, application Japan, Jun. 28, 1989, 1-163684
Int. Cl.[5] B62D *5/00*
U.S. Cl. 364—424.03 **4 Claims**

1. A method for diagnosing a power steering system of a vehicle, the power steering system comprising a power steering pump coupled to an engine of the vehicle for causing a flow of oil from the pump to both a power steering shaft and a solenoid valve under control of a solenoid during rotation of the engine, the power steering system further comprising a controller for receiving as input an engine speed signal from the engine and a vehicle velocity signal from a vehicle velocity sensor coupled to the engine, the controller outputting a current to the solenoid for operating the solenoid valve to control a reactive pressure in a steering force chamber of a control valve coupled to the solenoid valve in response to the current supplied from the controller, the method comprising the steps of:
(a) turning a key switch of the vehicle to an ignition position to supply electric power to the engine;
(b) turning a diagnosis switch ON;

(c) turning the key switch of the vehicle to a starter position to start the engine;
(d) checking whether the engine speed signal input to the controller properly corresponds to an actual speed of rotation of the engine;
(e) checking whether the solenoid is operating properly in response to the current input to the solenoid from the controller; and
(f) supplying the current from the controller to the solenoid



having a magnitude corresponding to the engine speed signal to control the solenoid in accordance with the actual engine speed of the engine during diagnosis of the power steering system such that changes in the reactive pressure can be diagnosed without causing the vehicle to travel, wherein the current supplied from the controller to the solenoid has a magnitude which increase at a faster rate than a rate of change of the actual engine speed to permit diagnosis of the power steering system at low engine speeds.

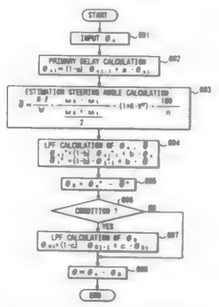
5,343,393

STEERING ANGLE DETECTING APPARATUS FOR MOTOR VEHICLES BASED ON THE PHASE DIFFERENCE BETWEEN A STEERING ANGLE DETECTION SIGNAL AND STEERING ANGLE EXTIMATED SIGNAL

Hiroyuki Hirano, Kariya; Yoshihiko Tsuzaki, Toyota; Satoshi Haseda, Okazaki; Akira Fukushima, Kariya; Hideo Inoue, Ashigarakami, and Osamu Takeda, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 4, 1991, Ser. No. 710,179
Claims priority, application Japan, Jun. 4, 1990, 2-146417
Int. Cl.[5] G06F *15/50;* **B62D** *6/00, 15/02*
U.S. Cl. 364—424.05 **13 Claims**

9. A steering angle detecting apparatus for determining an angle of a steering wheel of a motor vehicle comprising:
means for detecting an angle corresponding to the steering wheel;
means for estimating an angle corresponding to the steering wheel based on turning conditions of the vehicle;
means for correcting a phase difference between the angle detected by said detecting means and the angle estimated by said estimating means, where said phase difference is caused by a time lag between a steering operation of the steering wheel and a reaction time corresponding to when the vehicle begins to turn; and
means for determining a neutral angular position of the steering wheel based on the angle corrected by said correcting means and the angle estimated by said estimating

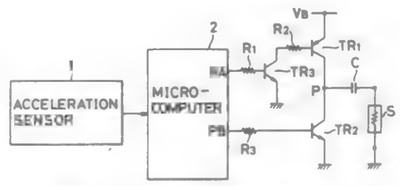


5,343,394

SYSTEM FOR CONTROLLING SAFETY DEVICE FOR VEHICLE

Kunihiro Takeuchi, and Masami Okano, both of Gumma, Japan, assignors to Airbag Systems Company Ltd., Gumma, Japan

Filed Mar. 26, 1993, Ser. No. 37,446
Claims priority, application Japan, Apr. 3, 1992, 4-110784
Int. Cl.[5] B60R *21/32*
U.S. Cl. 364—424.05 **8 Claims**



1. A system for controlling a safety device for a vehicle, comprising:
(a) first and second switching means connected in series in this order from a power source toward the ground;
(b) a condenser interposed between a connecting point for said first and second switching means and the ground, and arranged in parallel relation to said second switching means, an actuating element of said vehicle safety device being connected in serial relation to said condenser between said connecting point and the ground; and
(c) electric current supply control means for periodically effecting ON/OFF control operations over said first and second switching means, each cycle for effecting said ON/OFF control operation over said first and second switching means including a time period where said first switching means is in an ON-state and said second switching means is in an OFF-state as well as a time period where said first switching means is in an OFF-state and said second switching means is in an ON-state, thereby supplying an alternating current to the actuating element of said vehicle safety device.
wherein in which a coil is interposed between said connecting point and the ground in such a manner as to be in serial relation to said condenser and said actuating element, said electric current supply control means controlling said first and second switching means at a resonance frequency of said condenser and said actuating element.

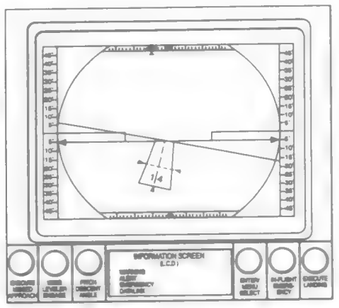
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,395

AIRCRAFT LANDING GUIDANCE SYSTEM AND METHOD

Alan B. Watts, 203 Joachim Dr., Gulf Breeze, Fla. 32561

Filed Aug. 26, 1992, Ser. No. 935,438
Int. Cl.[5] G05D *1/06;* **G06F** *15/50*
U.S. Cl. 364—428 **18 Claims**



1. A navigational facilitation system for use with apparatus which at least periodically provides aircraft current situational information for an aircraft, the system comprising:

a memory for storing, for each of a plurality of runways, runway display-generation information sufficient to generate a display of a runway perimeter;

an input device for selecting a destination runway from the plurality of runways;

a video display for simulating a view from a cockpit of the aircraft;

processor connected to the aircraft situational location apparatus, to the memory, to the input device, and to the video display, for using the current situational information and the runway information for the destination runway for periodically generating display signals for the video display whereby the video display provides a simulated three dimensional view of a perimeter of the destination runway from a perspective of the cockpit of the aircraft, the simulated view of the perimeter of the destination runway being scaled and updated on the basis of the periodically provided aircraft current situational information.

5,343,396

SENSOR MALFUNCTION DETECTION

Richard J. Youngblood, 242 Easthill Dr., Battle Creek, Mich. 49017

Filed Apr. 29, 1992, Ser. No. 875,995
Int. Cl.[5] G01M *19/00;* **G06F** *15/20;* **B60T** *17/22*
U.S. Cl. 364—426.01 **9 Claims**

1. A method for checking and controlling the quality of sensor output signals generated by wheel speed sensors of vehicles equipped with an automatic braking system, the method comprising the steps of:

(a) defining wheel deceleration above a specific level as being an automatic braking system condition;

(b) defining a maximum period after which a continuously received sensor output signal from a wheel speed sensor indicating that the automatic braking system condition exists is defined as indicating that the wheel speed sensor is malfunctioning;

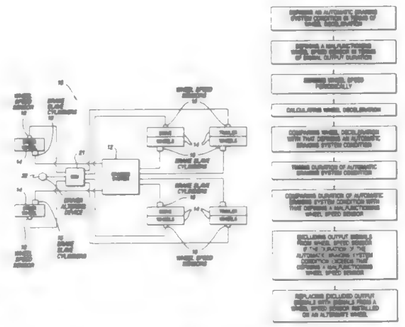
(c) sensing the speed of each of a plurality of vehicle wheels at predetermined and periodic intervals and generating a sensor output signal representative thereof;

(d) calculating from successive sensor output signals the level of any deceleration of each wheel;

(e) comparing the calculated level of deceleration of each wheel with the level defining the automatic braking system condition and generating an automatic braking system condition signal if such a condition exists;

(f) timing any period during which the automatic braking system condition signal is being generated;

(g) comparing the period during which the automatic braking system condition signal is being generated with the period defining a wheel speed sensor malfunction and



generating a sensor malfunction signal if the former period exceeds the latter period;

(h) excluding the sensor output signal from any wheel speed sensor responsible for the generation of the sensor malfunction signal; and

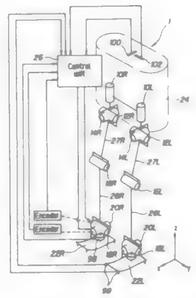
(i) replacing the excluded sensor output signal with an output signal from a wheel speed sensor associated with an alternate wheel.

5,343,397

SYSTEM FOR CONTROLLING LOCOMOTION OF LEGGED WALKING ROBOT

Ryutaro Yoshino, and Hideo Takahashi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 766,629
Claims priority, application Japan, Sep. 28, 1990, 2-259839
Int. Cl.[5] B62D *57/02*
U.S. Cl. 364—424.02 **21 Claims**



1. A system for controlling locomotion of a legged walking robot having a linkage including a body link and two articulated leg linkages each connected to the body link through a hip drive joint and each having a thigh link and a crus link connected by a knee drive joint and a foot connected to the crus link by an ankle drive joint, comprising:

servo motors for driving the drive joints of the robot;

first means for detecting at least one of absolute angle and angular velocity of the body link relative to the gravitational direction;

second means for detecting at least one of relative angles and angular velocities between the links;

third means for determining, based on a predetermined walking pattern, a target posture of the robot in terms of at least one of target angles and angular velocities of the links, relative to the gravitational direction using at least one of the detected absolute angle and angular velocity of the body link and relative angles and angular velocities of the drive joints;

fourth means for determining a deviation between at least one of the target and actual link angles and angular velocities of the robot; and

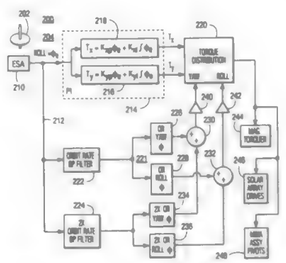
control means for determining control values of the servo motors, for decreasing the deviation.

5,343,398

SPACECRAFT ROLL-YAW COMPENSATOR WITH ORBIT-RATE AND HARMONIC BANDPASS FILTERS

Neil E. Goodzeit, East Windsor; Michael A. Paluszek, Lawrenceville; Kidambi V. Raman, East Windsor, all of N.J., and Eric V. Wallar, New York, N.Y., assignors to General Electric Co., East Windsor

Filed Apr. 23, 1992, Ser. No. 872,960
Int. Cl.[5] G06F *15/50;* **B64G** *1/36*
U.S. Cl. 364—434 **20 Claims**



1. An attitude control system for a spacecraft orbiting a heavenly body, said spacecraft being associated with pitch, roll and yaw axes, said spacecraft comprising:

wheel means coupled to said spacecraft, for providing momentum bias along the pitch axis of said spacecraft;

torquing means coupled to said spacecraft for creating control torques about at least said yaw axis of said spacecraft;

roll angle sensing means coupled to said spacecraft, for generating signals representative of roll angle;

first control means coupled to said roll angle sensing means and to said torquing means for providing at least proportional feedback for control of said yaw of said spacecraft;

orbit rate bandpass filter means tuned to a frequency corresponding to one of the fundamental and a harmonic of the orbital rate of said spacecraft about said heavenly body, for generating an orbit rate filtered signal; and

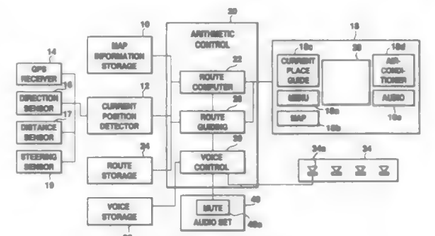
coupling means coupled to said roll angle sensing means, and to said torquing means, for forming a high gain feedback control loop by which said orbit rate filtered signals are applied to said torquing means with phase selected for reducing at least said yaw of said spacecraft.

5,343,399

VEHICLE NAVIGATION SYSTEM

Shoji Yokoyama, Anjo; Kyomi Morimoto, Nishio; Akimasa Nanba; Kiyohide Katoh, both of Chiryu; Kenji Kuroda, Sabae; Hiroshi Kishi, Toyota, and Toru Ito, Nagoya, all of Japan, assignors to Aisin Aw Co., Ltd., Anjo, Japan

Filed Jul. 23, 1993, Ser. No. 95,440
Claims priority, application Japan, Jul. 23, 1992, 4-195779; Jul. 31, 1992, 4-204598; Jul. 31, 1992, 4-204697; Aug. 19, 1992, 4-220116
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **4 Claims**



1. A vehicle navigation system comprising:

(a) map information storage means;

(b) route computing means for searching a route to an intended destination of a vehicle using the map information stored in said map information storage means;

(c) route guide and control means for displaying the computed route on a display screen and for outputting voice guidance via a speaker;

(d) on-off selecting means for selecting whether or not the voice guidance should be output;

(e) inhibition means for inhibiting outputting of the voice guidance if said on-off selecting means selects that the voice guidance should not be output;

(f) input means for inputting a request for outputting the voice guidance;

(g) voice guidance creating means for creating the voice guidance in response to the output request from said input means; and

(h) voice guidance output means for releasing the inhibition status of said inhibition means for a predetermined period of time to output the voice guidance created by said voice guidance creating means.

5,343,400

METHOD FOR DETECTING RELATIVE TRAVEL DIRECTION OF A VEHICLE

Masataka Ishikawa, Higashimatsuyama, Japan, assignor to Zexel Corporation, Saitama, Japan

PCT No. PCT/JP91/01175, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992
PCT Filed Sep. 2, 1991, Ser. No. 863,282
Claims priority, application Japan, Sep. 4, 1990, 2-234236
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—450 **8 Claims**

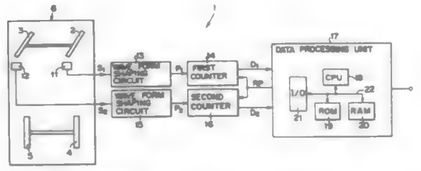
1. A method for detecting the relative travel direction of a vehicle, said method comprising:

a calculating step for calculating travel locus vectors of the vehicle on the basis of data related to the rotational angle of a pair of wheels of the vehicle, said calculation step being carried out at time intervals having a prescribed value for a predetermined range of values of at least one traveling condition of the vehicle selected from its traveling speed and its turning angle;

a detecting step for detecting said traveling condition of the vehicle; and,

VOL 1165 ISS 5 AG 30 1994 UMI

a setting step for changing said prescribed value of the time intervals in response to a value of said traveling condition



of the vehicle outside of said predetermined range of values.

5,343,401

EMBROIDERY DESIGN SYSTEM

Brian J. Goldberg, York, and Anastasios Tsouis, Waterloo, both of Canada, assignors to Pulse Microsystems Ltd., Ontario, Canada

Filed Sep. 17, 1992, Ser. No. 946,753
Int. Cl.[5] G06F 15/46; D05C 5/02
U.S. Cl. 364—470 9 Claims



1. A method for converting an alphanumeric embroidery pattern to a bridge-format embroidery pattern in a data processing system, said data processing system comprising display means capable of displaying an embroidery pattern thereon, and scaling means for scaling embroidery pattern data provided thereto in accordance with a designated scaling factor for varying said displayed embroidery pattern, each embroidery pattern being in an outline data format, said alphanumeric embroidery pattern comprising at least one alphanumeric embroidery character, said at least one embroidery character comprising a plurality of x-y coordinate outline data points, said method comprising:

interactively selecting a first placement point on said display means for defining a starting point for said bridge-format embroidery pattern;

interactively selecting a second point on said display means spaced from said first point, said spacing being equal to a desired width for said bridge-format embroidery pattern;

interactively defining on said display means a height, said height corresponding to a desired height for said bridge-format embroidery pattern at said first and last placement points;

interactively communicating said desired width and height to said scaling means; scaling said alphanumeric embroidery pattern x-y coordinate points to correspond to said bridge-format embroidery pattern desired height and width; displaying said scaled alphanumeric embroidery pattern on said display means;

interactively defining on said display means an arc corresponding to a desired arc for said bridge-format embroidery pattern;

interactively providing said scaling means with said desired arc, said scaling means determining a scaling factor at each x-coordinate point of said scaled alphanumeric embroidery pattern for scaling each corresponding y-coordinate point of said scaled alphanumeric embroidery pattern for transposing said alphanumeric embroidery pattern to correspond with said desired arc, and scaling said alphanumeric embroidery pattern y-coordinate data points to correspond with said desired arc for generating said bridge-format embroidery pattern; and

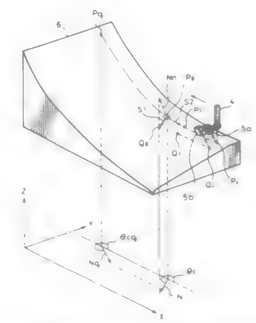
displaying said generated bridge-format embroidery pattern on said visual display means.

5,343,402

NON-CONTACT DIGITIZING CONTROL UNIT

Hitoshi Matsuura, Hachiouji, and Eiji Matsumoto, Yamanashi, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP92/00122, § 371 Date Oct. 2, 1992, § 102(e) Date Oct. 2, 1992, PCT Pub. No. WO92/13677, PCT Pub. Date Aug. 19, 1992
PCT Filed Feb. 6, 1992, Ser. No. 930,533
Claims priority, application Japan, Feb. 6, 1991, 3-36897
Int. Cl.[5] G06F 15/46; B23Q 35/127; G01B 21/20
U.S. Cl. 364—474.03 9 Claims



1. Non-contact digitizing control unit obtaining tracing data by sampling coordinates of a plurality of points (Pi, Qi) from a model surface by means of a non-contact distance detecting means (105) of which attitude is controlled and directed to the most appropriate direction to the model surface, characterized in that it comprises,

a memory means (101) for memorizing coordinates of the sampled plurality of points,

a point selecting means (102) for selecting 3 points to compose a triangle most similar to a regular triangle from triangles composed of 3 arbitrary points of said coordinates,

a vector determining means (103) for determining a normal vector on the model surface based on said coordinates of 3 points selected by said point selecting means (102), and

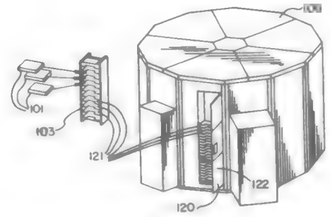
an attitude control means (104) for controlling attitudes of the non-contact distance detecting means (105) so as to direct the detecting means (105) to be normal to the model surface based on said normal vector.

5,343,403

METHOD FOR HOST-INDEPENDENT CARTRIDGE ENTRY IN AN AUTOMATED LIBRARY SYSTEM

David A. Beidle, 8059 Meadowdale Sq., Longmont, Colo. 80503; Karen L. Fields, 3090 W. 133rd Ave., Broomfield, Colo. 80020; Catherine L. Griffith, 548 Lincoln Ave., Louisville, Colo. 80027, and Frederick G. Munro, 2315 Ridge Cir., Broomfield, Colo. 80020

Filed Aug. 14, 1991, Ser. No. 745,015
Int. Cl.[5] G11B 15/00, 17/22
U.S. Cl. 364—478 12 Claims



1. A method for controlling the loading of at least one computer-readable media cartridge into an access port of an automated media cartridge library having a plurality of host computers connected thereto, said method comprising the steps of:

(a) reserving exclusive control of said access port to a controlling one of said host computers after at least one said media cartridge has been loaded into said access port;

(b) moving each said media cartridge from said access port to a storage location in said media cartridge library; and

(c) releasing said access port from said exclusive control of said controlling one of said host computers;

wherein the step of reserving includes

broadcasting, to each of said host connected to said media cartridge library, a message indicating that said access port is available for said reserving; and

in the situation wherein concurrent to reserve said access port are made by more than one of said host computers, selecting one of said host computers to acquire said exclusive control of said access port;

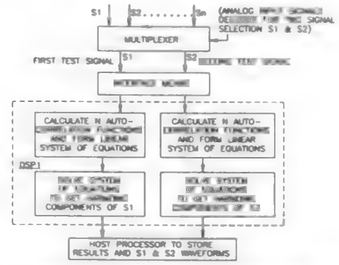
wherein said steps reserving, moving, and releasing are performed by said media cartridge library.

5,343,404

PRECISION DIGITAL MULTIMETER AND WAVEFORM SYNTHESIZER FOR MULTI-SIGNALS WITH DISTORED WAVEFORMS EMBEDDED IN NOISE

Girgis A. Girgis, Omaha, Nebr., assignor to Maritec Corp., Omaha, Nebr.

Filed Nov. 12, 1992, Ser. No. 975,470
Int. Cl.[5] G01R 13/00; G06F 15/20
U.S. Cl. 364—484 33 Claims



20. An apparatus for measuring the phase angles between two test signals wherein at least one test signal is a distorted test signal embedded in noise harmonic components and being comprising:

multiplexer means for selectively choosing a first and second test signal from a plurality of incoming test signals;

a signal processing means;

interface means electrically connected to said signal processing means and to said multiplexer means for converting said selected first and second test signals for input to said signal processing means;

computation control means electrically connected to said interface means and said signal processing means for controlling the input of said first and second test signals to said signal processing means and the processing of said test signals by said signal processing means;

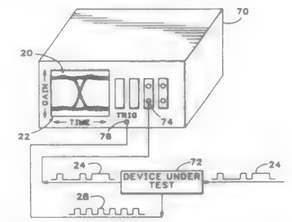
function control means electrically connected to said computation control means for providing control to said signal processing means and for display of said processed signal data, wherein said first and second test signals are processed by said signal processing means allowing computation of various relationships between said first and second test signals thereby allowing the retrieval and display of data contained within said first and second test signals otherwise obscured by noise.

5,343,405

AUTOMATIC EXTRACTION OF PULSE-PARAMETRICS FROM MULTI-VALUED FUNCTIONS

Dennis W. Kucera, Beaverton, and Paul S. Meyers, Aloha, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 498,231, Mar. 23, 1990, abandoned.
This application Nov. 1, 1991, Ser. No. 784,085
Int. Cl.[5] G06F 15/74; G01R 29/02
U.S. Cl. 364—486 16 Claims



1. A method of automatically characterizing a digital communication signal having a first state, a second state and transitions therebetween that produces an eye pattern on a waveform display device, the method comprising:

initializing a data array, defined in terms of a time axis and an amplitude axis, having a plurality of elements such that each element holds a common reference value;

monitoring the digital communication signal during a sample period to obtain a time-amplitude representation of the digital communication signal during said sample period, said time-amplitude representation being in the form of a sequence of time-amplitude data points;

addressing an element of said data array for each time-amplitude data point obtained using said data point as addressing data and incrementing the value in each addressed element;

repeating the steps of monitoring and addressing for a plurality of sample periods; and

summing the values held in selected elements of said data array along a selected one of the axes to characterize said digital communication signal.

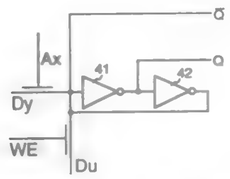
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,406

DISTRIBUTED MEMORY ARCHITECTURE FOR A CONFIGURABLE LOGIC ARRAY AND METHOD FOR USING DISTRIBUTED MEMORY

Ross H. Freeman, San Jose, and Hung-Cheng Hsieh, Sunnyvale, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Jul. 28, 1989, Ser. No. 387,566
Int. Cl.[5] G06F *7/38;* H03K *19/00*
U.S. Cl. 364—490 **7 Claims**



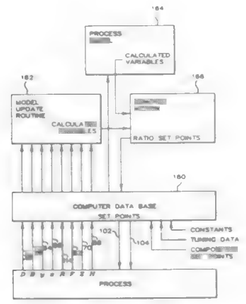
1. A configurable logic array having a configurable logic block comprising a memory cell, said memory cell being electrically connected by a first address line to a first data line for receiving a first data signal during initial configuration of said configurable logic block, and electrically connected by a second address line to a second data line for receiving second data signals during operation of said configurable logic array.

5,343,407

NONLINEAR MODEL BASED DISTILLATION CONTROL

Martin H. Beauford, and Jackie C. Watts, both of Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 1, 1991, Ser. No. 786,670
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—501 **8 Claims**



1. A method of binary distillation column control, utilizing a computer programmed for implementing composition control for dual products of a binary distillation column, wherein said column employs a liquid overhead reflux stream (R), a heating stream (S) for generating a reboil vapor stream (V), wherein an essentially binary separation of components contained in a feed stream (F) is effected in said column, which then yields a distillate product stream (D) and bottoms product stream (B), said method comprising:

(a) storing a nonlinear steady state distillation model based on tray-to-tray calculations for said column in said computer;

(b) receiving and storing measurement data in said computer for a plurality of process variables from said column;

(c) periodically updating a parameter of said model to keep said model in pace with changing with operating conditions of said column;

(d) utilizing said model for calculating distillation flow rates which will satisfy target compositions for (B) and (D);

(e) generating a pair of control signals based on flow calculations of paragraph (d) for individually manipulating external flows coupled to said column so as to simultaneously move compositions of both (B) and (D) toward set points;

(f) detecting a constraint condition for said manipulated external flows coupled to said column;

(g) specifying which of the dual products of said column is more valuable; and

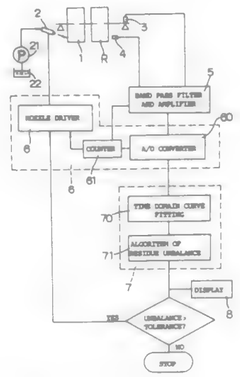
(h) substituting constraining values for a plurality of process variables in said nonlinear steady state model based on tray-to-tray calculations if said constraint is encountered.

5,343,408

DEVICE FOR ON-LINE AUTOMATIC FLUID INJECTION BALANCING SYSTEM

Chan-Ming Chen; Jia-Ruey Wu; Chi-Maw Shieh, and Wen-Pin Chang, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Aug. 9, 1991, Ser. No. 743,232
Int. Cl.[5] G06F *15/46;* G01M *1/20*
U.S. Cl. 364—508 **5 Claims**



1. An automatic dynamic balancing device for balancing a rotary shaft and rotor comprising:

a compensation rotor having correction chambers secured to said rotary shaft;

an injection nozzle adjacent said compensation rotor for injecting a fluid into said compensation rotor correction chambers;

a transducer for detecting vibrations of said rotary shaft;

a revolution detector for generating signals representing revolutions of said rotary shaft;

a bandpass filter and amplifier connected to receive signals from said transducer and revolution detector;

a digital dynamic balancing close-loop controller for generating digital time domain data for controlling the amount of flow and duration of fluid flow from said injection nozzle; and,

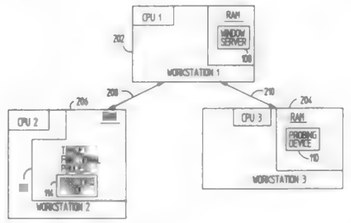
a calculating unit including a time domain curve fitting and algorithm residue of unbalance for calculating an amount and location of rotor unbalance, and for generating from signals received from said bandpass filter and amplifier an input signal for said digital dynamic close-loop controller for controlling said injection nozzle to inject an appropriate amount of fluid into said correction chambers arranged on said compensation rotor to compensate and eliminate the unbalance present in said rotary shaft and said rotor provided thereon.

5,343,409

SYSTEM AND METHOD FOR PROBING OBJECT RESOURCES IN A WINDOW SERVER ENVIRONMENT

Wade J. Satterfield, and Robert A. Morsan, both of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 29, 1991, Ser. No. 751,919
Int. Cl.[5] G06F *7/00*
U.S. Cl. 364—514 **9 Claims**



1. An object probing system for probing a target object, the target object having a name, within a target functional process to obtain resource information of the target object, comprising:

(a) a device for generating a probe command, the name of the target object and a resource request;

(b) probe means for forwarding said probe command, the name of the target object and said resource request to the target functional process;

(c) a window server for facilitating the transfer of said probe command, the name of the target object and said resource request between said probe means and the target functional process;

(d) interception means for intercepting said probe command, the name of the target object and said resource request;

(e) conversion means for obtaining the resource information from the target object using the name of the target object and said resource request;

(f) resource information retrieval means for forwarding the resource information obtained from said conversion means to said probe means.

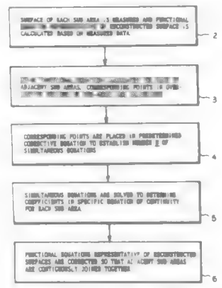
5,343,410

METHOD FOR DIVISIONAL MEASUREMENT OF OBJECT SURFACE, AND METHOD FOR JOINING OBJECT SURFACE SUB-AREAS MEASURED BY SAME

Jumpei Tsujiuchi, Kanagawa, and Katsuyuki Okada, Tokyo, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Mar. 17, 1992, Ser. No. 852,595
Claims priority, application Japan, Mar. 19, 1991, 3-105015; Mar. 19, 1991, 3-105016; Mar. 19, 1991, 3-105017; Mar. 19, 1991, 3-105018; Mar. 19, 1991, 3-105019
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—525 **6 Claims**

1. An improved method for divisional measurement of an object, having a surface wider than a measuring aperture of a form measuring means, by measuring each of a plurality of sub-areas resulting from division of the object surface, wherein the improvement comprises the steps of setting each of the sub-areas so as to partially overlap the peripheral edges of the adjacent sub-areas; effecting a predetermined measurement of each of the sub-areas; and calculating mathematically images



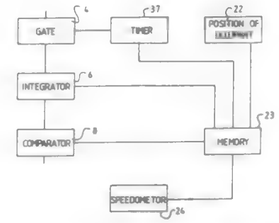
of each of the adjoining sub-areas from data of said predetermined measurement to join said images of adjacent sub-areas.

5,343,411

ACCELEROMETER ARRANGEMENT

Jan Olsson, Partille, Sweden, assignor to General Engineering (Netherlands) B.V., Utrecht, Netherlands

PCT No. PCT/SE91/00171, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO91/13784, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 6, 1991, Ser. No. 778,136
Claims priority, application United Kingdom, Mar. 8, 1990, 9005168
Int. Cl.[5] G01P *15/02*
U.S. Cl. 364—566 **17 Claims**



1. An accelerometer arrangement comprising:

accelerometer means for producing a signal representative of the acceleration or deceleration of a vehicle;

processing means for processing the signal from the accelerometer means by one of integrating and differentiating to produce a processed signal;

comparing means for comparing the processed signal with at least one reference signal including output means for providing an output signal when the reference signal is exceeded by the processed signal;

wherein the processing of the signal from the accelerometer means by the processing means varies in a predetermined manner with time.

VOL 1165 ISS 5 AG 30 1994 UMI

5,343,412

METHOD AND APPARATUS FOR DISPLAYING PROCESS ENDPOINT SIGNAL BASED ON EMISSION CONCENTRATION WITHIN A PROCESSING CHAMBER

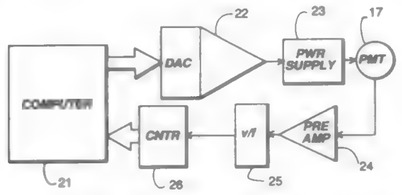
Manoocher Birang, Los Gatos, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 799,693, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 464,836, Jan. 16, 1990, Pat. No. 5,097,430. This application Jun. 9, 1992, Ser. No. [illegible],318

The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.

Int. Cl.[5] G04F 15/20

U.S. Cl. 364—572 11 Claims



4. An apparatus for displaying a signal which represents the variation of light intensity in a processing chamber over time comprising:

(a) detecting means, coupled to the processing chamber, for detecting the light intensity within the process chamber to produce a voltage signal with a voltage amplitude varying with the light intensity within the processing chamber;

(b) sampling means coupled to the detecting means for digitally sampling the voltage amplitude of the voltage signal at a sampling interval (I) to obtain samples values (S_X);

(c) display means for displaying in a graph sequential values of the voltage signal along a y-axis versus time along an x-axis and for highlighting a change in the slope of the graph; and

(d) means for changing the processing conditions within said chamber in response to step (c).

5,343,413

LEADING ONE ANTICIPATOR AND FLOATING POINT ADDITION/SUBTRACTION APPARATUS

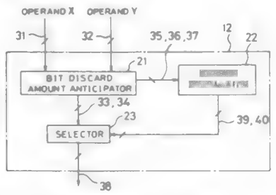
Genichiro Inoue, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 1, 1993, Ser. No. 84,125

Claims priority, application Japan, Jul. 6, 1992, 4-178000

Int. Cl.[5] G06F 7/00

U.S. Cl. 364—715.04 5 Claims



1. A leading one anticipator, comprising:

first means for generating an anticipated bit-discard amount within a 1-bit error;

second means for generating information on borrow propagation from a lower bit side;

third means for handling the anticipated bit-discard amount, using the borrow propagation information,

wherein said third means outputs a bit shift amount for normalizing a mantissa value in which the bit-discard occurs based on an anticipated bit-discard amount obtained by said first means according to the presence of the borrow.

5,343,414

APPARATUS FOR ADAPTIVELY TUNING TO A RECEIVED PERIODIC SIGNAL

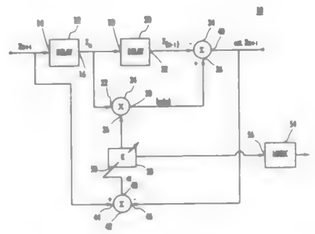
Safdar M. Asghar, and Yan Zhou, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 796,318, Nov. 22, 1991. This application Apr. 28, 1993, Ser. No. 54,408

The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.

Int. Cl.[5] G06F 15/31

U.S. Cl. 364—724.06 4 Claims



1. An apparatus for adaptively tuning to a received signal, said received signal varying periodically at a received frequency; the apparatus comprising:

an oscillator means for generating an estimated signal, said estimated signal being algorithmically derived from said received signal, said algorithmic derivation involving a plurality of factors; said algorithmic derivation occurring according to the following relationship:

$$est.x_{n+1} = Kx_n - x_{n-1}$$

where:

$est.x_{n+1}$ = said estimated output signal

$x_{n+1} = \cos((n+1)+\Delta)$

$x_n = \cos((n)\Delta)$

$x_{n-1} = \cos((n-1)\Delta)$

K = a constant representing

$K = 2\cos\Delta$

where

$$\Delta = \frac{2\pi f}{f_s}$$

f = an estimate of frequency of said received signal

f_s = sampling frequency of the apparatus; and

a difference determining means for determining a difference between two signals, said difference determining means comparing said received signal with said estimated signal and generating at least one error signal representative of said difference between said estimated signal and said received signal;

said at least one error signal being operatively supplied to said oscillator means appropriately to affect at least one factor of said plurality of factors to alter said estimated signal to reduce said difference; said at least one factor being initially set to an at least one initial value to establish said estimated signal at a predetermined initial estimation of said received frequency.

5,343,415

LOGARITHMIC POLAR COORDINATE TRANSFORMING METHOD, VISION RECOGNIZING METHOD, AND OPTICAL INFORMATION PROCESSING APPARATUS

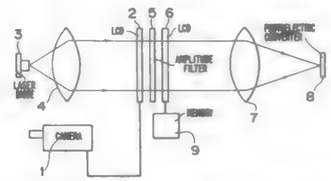
Masami Itoh, Takarazuka; Kanji Nishii, Osaka; Hiroyuki Kawamura, Katano, and Atsushi Fukui, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 750,486, Aug. 27, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 962,655

Claims priority, application Japan, Aug. 31, 1990, 2-231708

Int. Cl.[5] G06F 7/38; G06K 9/36

U.S. Cl. 364—725 5 Claims



1. A logarithmic polar coordinate transforming method comprising the steps of:

picking up an image of an object using an image pick-up device and storing the picked-up image f1(x, y) as an input image;

optically generating as an amplitude and phase information of coherent light complex amplitude information f1(x, y)A(x, y)T(x, y) by multiplying the input image by a product of phase information A(x, y) for performing a logarithmic polar coordinate transformation and amplitude information T(x, y), an amplitude of which changes according to distance between each point composing the amplitude information T(x, y) and origin or logarithmic polar coordinate to correct uneven intensity distribution generated in the logarithmic polar coordinate transformation using the phase information A(x, y);

optically Fourier-transforming the complex amplitude information f1(x, y)A(x, y)T(x, y) using a Fourier-transforming optical system; and

picking up a Fourier-transformed image using an image pick-up device.

5,343,416

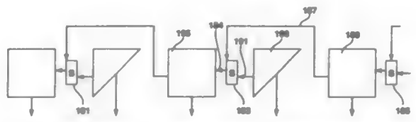
METHOD AND APPARATUS FOR RE-CONFIGURING A PARTIAL PRODUCT REDUCTION TREE

David Eisig, and Jehoshua S. Rotstain, both of Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 2, 1992, Ser. No. 970,297

Int. Cl.[5] G06F 7/52

U.S. Cl. 364—757 6 Claims



4. An apparatus for re-configuring a partial product reduction tree, wherein the partial product reduction tree is comprised of a plurality of carry-save adders, the apparatus comprising:

a partial product reduction tree arranged in a plurality of rectangular groupings of carry-save adders and a plurality of triangular groupings of carry-save adders, wherein for each rectangular grouping of carry-save adders a corresponding triangular grouping of carry-save adders exists to form a plurality of pairs of groupings of carry-save adders;

a switch in each pair of groupings of carry-save adders between the rectangular grouping of carry-save adders and the triangular grouping of carry-save adders such that each switch has an adjacent rectangular grouping of carry-save adders and an adjacent triangular grouping of carry-save adders;

a first signal line between each switch and the switch's adjacent rectangular grouping of carry-save adders;

a second signal line between each switch and the switch's adjacent triangular grouping of carry-save adders;

a third signal line between at least one of the switches of one of the pairs of groupings of carry-save adders and another rectangular grouping of carry-save adders of another one of the pairs of groupings of carry-save adders which is at a lower-order position to the switch; and

means for directing each of the switches to switch between the second and third signal lines connected to the switch.

5,343,417

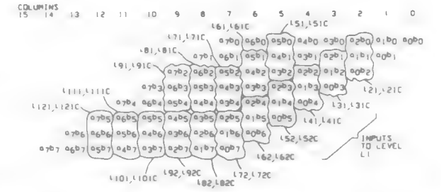
FAST MULTIPLIER

Laurence P. Flora, Valley Center, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 20, 1992, Ser. No. 979,548

Int. Cl.[5] G06F 7/52

U.S. Cl. 364—758 19 Claims



10. In a binary multiplier circuit for multiplying an n-bit multiplicand by an m-bit multiplier to produce a multiple-bit product, a combination comprising:

an initial binary multiplier to which signals representing the bits of said multiplier and multiplicand are applied for producing m+n partial product signals, each partial product signal being in a respective column and each column corresponding to a respective product bit; and

adder circuit means to which said partial product signals are applied, said adder circuit means comprising a plurality of adder levels for successively reducing the number of column inputs until a final set of inputs are produced having no more than two inputs remaining to be added in any column;

said adder circuit means performing addition at each level in accordance with the following rules:

a) for each column at each level, three-input groups are added until less than three inputs remain in the column at that level;

b) if only two inputs remain in a column after performing a) or if the column originally has only two inputs, then these two inputs must be added when both of the following apply:

(1) the adjacent less significant column will produce a carry into this column, and

(2) this two-input addition is needed to a achieve a 3-to-2 reduction rounded-down to a nearest integral ratio for that level.

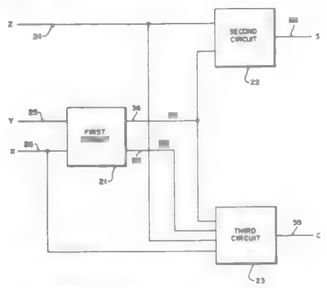
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,418

THREE-TO-TWO CARRY SAVE ADDER CELL

Ron Zinger, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 25, 1992, Ser. No. 934,943
Int. Cl.[5] G06F 7/50
U.S. Cl. 364—784 4 Claims



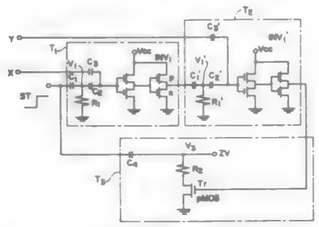
1. An adder comprising:
a first circuit coupled to a first input and a second input for providing a first intermediate output representing a sum of said first and second inputs;
a first inverter coupled to receive said first intermediate output for providing a second intermediate output representing a sum of said first and second inputs;
a second circuit for providing a first adder output representing a sum of a third input and said second intermediate output, said second circuit including an input inverter, an output inverter, and a plurality of transistors each coupled directly to receive said third input, each of said plurality of transistors being coupled directly to said input inverter and said output inverter, said output inverter providing the first adder output, said second circuit being coupled to said first circuit; and
a third circuit coupled directly to said first input, said third input, and said first intermediate output for providing a second adder output by selecting between said first and said third input as a function of said first intermediate output.

5,343,419

ANALOG CALCULATION CIRCUIT USING TIMERS

Guoliang Shu; Weikang Yang; Wiwat Wongwarawipat; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan, Inc., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,157
Claims priority, application Japan, Sep. 25, 1992, 4-280792; Oct. 6, 1992, 4-292137; Oct. 8, 1992, 4-298110; Oct. 9, 1992, 4-298044; Oct. 16, 1992, 4-304944
Int. Cl.[5] G06G 7/00
U.S. Cl. 364—807 26 Claims



1. A calculating circuit comprising:
a circuit input for receiving a first input voltage;
a circuit output;
a first timer; and
a second timer; wherein said first timer comprises:
a first RC circuit for outputting a first RC circuit output voltage which is based upon a second input voltage and changes according to a first exponential function of time;
a first capacitive coupler for outputting a first capacitive coupler output voltage based upon said first input voltage and said first RC circuit output voltage; and
first threshold means, having a first threshold input terminal, for outputting a first timer output voltage based on a comparison of said first capacitive coupler output voltage and a first predetermined threshold level;
wherein said first capacitive coupler comprises:
a first capacitive coupler input connected to said circuit input;
a second capacitive coupler input; and
a first capacitive coupler output, connected to said first threshold input terminal, for outputting said first capacitive coupler output voltage; and
wherein said first RC circuit comprises:
a first resistance;
a first capacitance coupled to said first resistance;
a first RC input, coupled to at least one of said first resistance and said first capacitance, for receiving said second input voltage; and
a first RC output, connected to at least one of said first resistance and said first capacitance, and to said second capacitive coupler input, for outputting said first RC circuit output voltage; and
wherein said second timer comprises:
second threshold means, connected to said first threshold means, for outputting a second timer output voltage based on a comparison of said first timer output voltage and a second predetermined threshold level; and
a second RC circuit for outputting a circuit output voltage which is based upon a third input voltage and said second timer output voltage, and changes according to a second exponential function of time;
wherein said second RC circuit comprises:
a second resistance;
a second capacitance coupled to said second resistance;
a second RC input, coupled to at least one of said second resistance and said second capacitance, for receiving said third input voltage; and
a second RC output, connected to at least one of said second resistance and said second capacitance, and to said circuit output, for outputting said circuit output voltage.

5,343,420

SIGNAL DISCRIMINATION CIRCUIT

Yasumoto Murata, Ikoma; Syuuichi Yoshikawa, and Michio Ikeuchi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1993, Ser. No. 144,446
Claims priority, application Japan, Nov. 2, 1992, 4-294618
Int. Cl.[5] G06G 7/02; G06F 15/31
U.S. Cl. 364—825 27 Claims



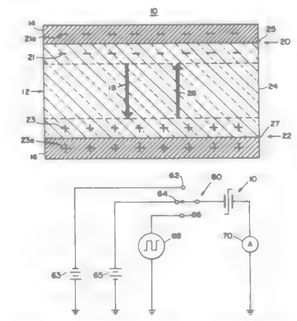
1. A signal discrimination circuit comprising:
prediction means for receiving input signals in succession, and for releasing a prediction signal that is formed by predicting an incoming input signal based on a delay signal that is formed by delaying the input signal in a predetermined period of time;
differential operation means for receiving the input signal and the prediction signal related to the input signal in succession, and for calculating the difference between those signals so as to release a predicted remainder in succession; and
decision means for receiving the predicted remainder in succession and calculating variations between the predicted remainders, and for determining whether or not the degree of variation, which changes in response to a correlation between the input signals successively inputted therein, is maintained within a predetermined range.

5,343,421

SELF-BIASED FERROELECTRIC SPACE CHARGE CAPACITOR MEMORY

Ciaran J. Brennan, Arlington, Mass., assignor to The Charles Stark Draper Laboratories, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 630,038, Dec. 19, 1990, Pat. No. 5,140,548, and a continuation-in-part of Ser. No. 792,945, Nov. 15, 1991, and a continuation-in-part of Ser. No. 792,432, Nov. 15, 1991, and a continuation-in-part of Ser. No. 792,888, Nov. 19, 1991, and a continuation-in-part of Ser. No. 630,027, Dec. 19, 1990, Pat. No. 5,151,877. This application May 25, 1993, Ser. No. 66,870
Int. Cl.[5] G11C 11/22
U.S. Cl. 365—145 33 Claims



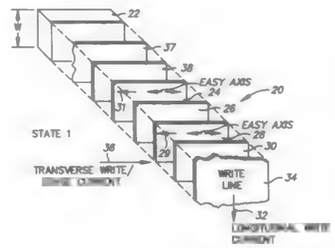
1. A self-biased ferroelectric space charge capacitor memory device having a plurality of polarization states represented by a like plurality of different capacitive levels comprising:
a ferroelectric dielectric having a coercive voltage, plurality of polarization states, and a positive and negative poles;
a first electrode attached to said dielectric and a second electrode spaced from said first electrode and attached to said dielectric;
self biasing means, intrinsic to the structure of the electrodes and the dielectric, for providing a differential contact electrical potential between each of the two electrodes and the dielectric which defines two capacitive levels, one representative of each of two polarization states, and produces an electric field which is less than a coercive electric field of said dielectric;
means for applying a coercive voltage to said dielectric to write said dielectric into one of two polarization states and to establish in each polarization state proximate the interface between said dielectric and each electrode a space charge region having a charge opposite to that applied to the electrode with a neutral region between the space charge regions, the relative sizes of said neutral and space charge regions defining the capacitance of the dielectric, said neutral region having an internal polarization field opposite to that represented by the space charge regions;
means for introducing to said dielectric a read signal at a rate faster than the rate of space charge formation which together with the internal bias voltage is less than the coercive voltage; and
means, responsive to the introduction of the read signal to said dielectric, for determining the capacitance level representative of one of said polarization states.

5,343,422

NONVOLATILE MAGNETORESISTIVE STORAGE DEVICE USING SPIN VALVE EFFECT

Kenneth T. Kung, San Jose; Denny D. Tang, Saratoga, and Po-Kang Wang, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1993, Ser. No. 21,413
Int. Cl.[5] G11C 11/15
U.S. Cl. 365—173 15 Claims



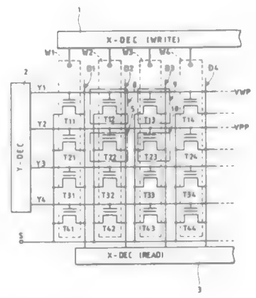
1. A nonvolatile magnetoresistive storage element comprising a substrate and a rectangular multilayered structure deposited thereon and including two layers of ferromagnetic material separated by a layer of nonmagnetic metallic conducting material, the magnetization easy axis of both ferromagnetic layers being oriented substantially lengthwise of the storage element, the magnetization of one of the ferromagnetic layers being fixed in one direction substantially lengthwise of the storage element, and the magnetization of the other ferromagnetic layer being free to change direction between substantially parallel and substantially antiparallel to said fixed one direction in response to an applied magnetic field.

5,343,423

FET MEMORY DEVICE

Noriyuki Shimoji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 23, 1991, Ser. No. 813,136
Claims priority, application Japan, May 29, 1991, 3-155821
Int. Cl.[5] G11C 11/34, 7/00
U.S. Cl. 365—182 5 Claims



1. A memory device comprising:

VOL 1165 ISS 5 AG 30 1994 UMI

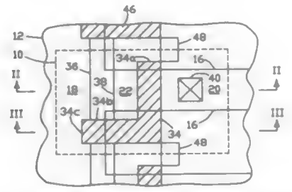
a semiconductor substrate;
a plurality of wells formed in the substrate so as to be electrically isolated from each other;
a plurality of memory cells arranged in the wells to constitute a memory matrix having rows and columns, and having respective control electrodes;
a plurality of control lines connected to the respective control electrodes;
first voltage application means for applying controllable first voltages to the respective wells; and
second voltage application means for applying controllable second voltages to the respective control lines;
the first voltage application means and the second voltage application means being arranged to produce a potential difference between the well and the control electrode of a memory cell which is sufficient to write or erase data therein wherein source or drain regions associated with the memory cell are allowed to float,
wherein the memory cells are selectively rendered in a writing state or an erasing state by controlling the first and second voltages.

5,343,424

SPLIT-GATE FLASH EEPROM CELL AND ARRAY WITH LOW VOLTAGE ERASURE

Chen-Chi P. Chang, Newport Beach, and Mei F. Li, Mission Viejo, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 16, 1993, Ser. No. 47,134
Int. Cl.[5] H01L *29/68;* G11C *11/34*
U.S. Cl. 365—185 14 Claims



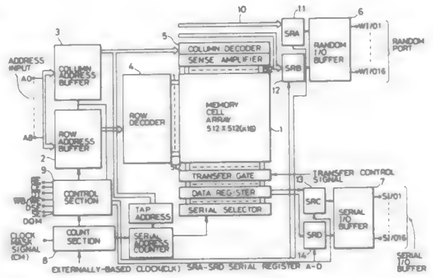
1. An electrically erasable programmable read-only memory (EEPROM) cell, comprising:
a semiconductor substrate;
a source and a drain formed in the substrate;
a channel which is formed in the substrate and has a programming region extending from the drain toward the source and a gap region between the source and said programming region;
a tunnel insulating layer formed over the substrate;
a floating gate which is formed over the tunnel insulating layer and includes:
a program section overlying said programming region of the channel; and
an erase section which extends from said program section and overlaps the source;
a gate insulating layer formed over said program section of the floating gate and said gap region of the channel; and
a control gate which is formed over the gate insulating layer and overlies said program and erase sections of the floating gate and said gap region of the channel.

5,343,425

SEMICONDUCTOR VIDEO MEMORY HAVING MULTI-PORTS

Shozo Saito, and Haruki Toda, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 3, 1993, Ser. No. 25,564
Claims priority, application Japan, Mar. 30, 1992, 4-074642
Int. Cl.[5] G11C *19/28*
U.S. Cl. 365—189.01 5 Claims



1. A semiconductor memory device, comprising:
a memory cell array arranged in matrix form comprising a plurality of memory cells;
first data input/output (I/O) means for implementing random input and output of data for one of the memory cells based on an externally-supplied random I/O signal;
second data I/O means for implementing serial input and output of the data for the memory cell;
counter means for counting the number of cycles of a basic clock signal externally-supplied; and
control means for controlling the I/O of the data for the memory cell in accordance with the number of the cycles of the basic clock signal,
inputting at least one or more types of designation signals externally supplied,
generating a designation control signal for designating a specified cycle which is a count starting cycle for the basic clock signal at each of the designation signals,
generating instructions for starting count of the number of cycles of the basic clock signal in the counter means based on the designated control signal, and
synchronously controlling designation of addresses based on the number of cycles of the basic clock signal counted by the counter means and the I/O operations of the first data I/O means and the second data I/O means from the specified cycle of the designated basic clock signal.

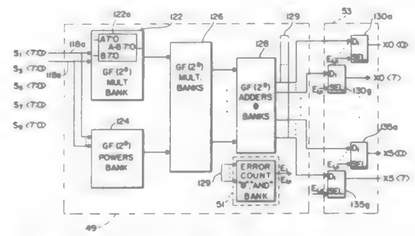
5,343,426

DATA FORMATER/CONVERTER FOR USE WITH SOLID-STATE DISK MEMORY USING STORAGE DEVICES WITH DEFECTS

Charles Cassidy, and Paul Kemp, both of Northboro, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 11, 1992, Ser. No. 897,164
Int. Cl.[5] H03M *13/00*
U.S. Cl. 365—189.02 6 Claims

1. A data formatting apparatus comprising:
an array of a plurality of memory elements arranged in a first plurality of rows and a second plurality of columns, each of said memory elements further comprising:
a memory cell; and
a multiplexer having at least two inputs, an output terminal coupled to the memory cells and a control terminal fed by control signals for selectively coupling one of said inputs to said output;
wherein cells of said array of memory elements in a first column of said second plurality of columns have one of the inputs of each multiplexer of said cells coupled to an external terminal of said array and with succeeding columns of said cells having one of the inputs of the multiplexer of each element coupled to a corresponding cell in a succeeding one of said columns of cells, and with cells in a first row of said first plurality of rows having one of the



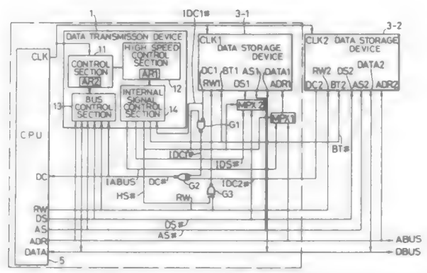
inputs of the multiplexer of each of said cells coupled to an external terminal of said array and with succeeding rows of said cells having an input of the multiplexer of each of said cells coupled to a corresponding cell in a succeeding one of said rows of cells; and
means for providing said control signals to the multiplexer of each element to chose which input of said multiplexer is coupled to the memory cell.

5,343,427

DATA TRANSFER DEVICE

Tatsuo Teruyama, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 13, 1992, Ser. No. 976,409
Claims priority, application Japan, Nov. 14, 1991, 3-299107
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—189.04 6 Claims



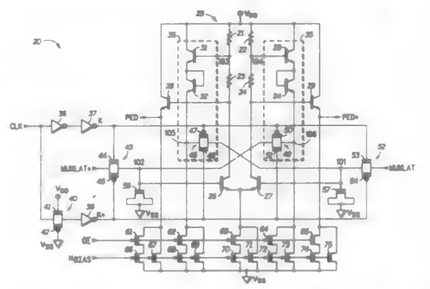
1. A data transfer device for controlling data transfer among data storage means comprising a first data storage means and a second data storage means which are connected through data buses and address buses, the address buses including a first address bus and a second address bus, comprising:
first bus control means for transferring addresses to the first data storage means through the first address bus, and for controlling input and output of a group of first control signals required to access the first data storage means;
second bus control means for transferring addresses in the second data storage means through the second address bus, and for controlling input and output of a group of second control signals required to access the second data storage means; and
control means for inputting addresses on the first address bus, addresses on the second address bus, the group of first control signals and the group of second control signals, and selecting one of the addresses on the first address bus and the second address bus based on a control signal from the first bus control means to supply the first data storage means, and for executing data transfer in one cycle by simultaneously indicating the address specification in the first bus control means and the second bus control means,
wherein the first control signal group includes a high speed transfer mode signal for activating data transfer between the first data storage means and the second data storage means during the data transfer in one cycle;
the control means selects a first address bus value as an address corresponding to the first data storage means during activation of the high speed transfer mode signal; and
when a read-out or write-in operation is specified to the second data storage means, a converse operation with respect to the first data storage means is specified.

5,343,428

MEMORY HAVING A LATCHING BICMOS SENSE AMPLIFIER

Harold Pilo, and John D. Porter, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 5, 1992, Ser. No. 956,230
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 17 Claims



1. A memory having a plurality of memory cells coupled to word lines and bit line pairs, each memory cell providing data to the bit line pair to which it is coupled, when the word line to which it is coupled is enabled, comprising:
a differential amplifier, having first and second resistors, and first and second bipolar transistors, the first resistor being coupled between a first power supply voltage terminal and a collector of the first bipolar transistor, the second resistor being coupled between the first power supply voltage terminal and a collector of the second bipolar transistor, the differential amplifier for receiving first and second data signals corresponding to data from a selected bit line pair, and in response, providing third and fourth data signals;
latch means for feeding back the third and fourth data signals to a base of each of the second and first bipolar transistors, respectively, in response to a clock signal transitioning from a first logic state to a second logic state; and
transfer gate means for preventing the differential amplifier from receiving the first and second data signals in response to the clock signal transitioning from the first logic state to the second logic state.

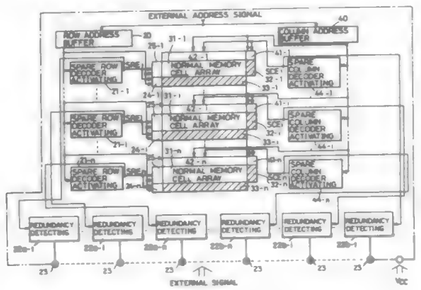
VOL 1165 ISS 5 AG 30 1994 UMI

5,343,429

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANT CIRCUIT AND METHOD OF TESTING TO SEE WHETHER OR NOT REDUNDANT CIRCUIT IS USED THEREIN

Akio Nakayama, and Kazutoshi Hirayama, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1992, Ser. No. 919,415
Claims priority, application Japan, Dec. 6, 1991, 3-322734
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 **31 Claims**



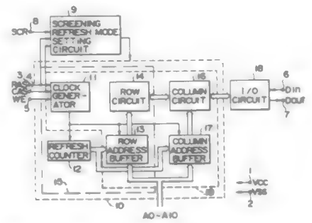
27. A semiconductor memory device, comprising:
a normal memory cell array having a plurality of normal memory cells;
a spare memory cell array having spare memory cells each being capable of replacing any one of said plurality of normal memory cells;
normal selection means for selecting any one of said plurality of normal memory cells for writing and reading data;
spare selection means for selecting one of said spare memory cells in place of any one of said plurality of normal memory cells;
control signal providing means for providing a control signal which activates said spare selection means and deactivates said normal selection means to use said spare memory cell array; and
electric circuit means which is set to provide a particular electric signal to a predetermined external terminal in response to said control signal;
wherein said electric circuit means includes:
means responsive to said control signal for holding a signal at a predetermined logic level; and
means responsive to said signal at the predetermined logic level held by said holding means for providing said particular electric signal to said predetermined external terminal,
said providing means includes application potential switching means for applying a potential at a first logic level to said predetermined external terminal when a signal held in said holding means is a signal at said predetermined logic level and applying a potential at a second logic level to said predetermined external terminal when said held signal is a signal at another logic level,
said application potential switching means includes first switching means coupled between a potential at said first logic level and said predetermined external terminal, second switching means coupled between a potential at said second logic level and said predetermined external terminal, and control means responsive to said signal held in said holding means for controlling said first and second switching means,
said control means is responsive to said signal at the predetermined logic level held in said holding means for turning on said first switching means and turning off said second switching means,
said control means is activated in response to a predetermined activating signal, and includes:
first logical circuit means for forming a logical product signal of said signal held in said holding means and said predetermined activating signal;
inverter means for inverting said signal held in said holding means; and
second logical circuit means for forming a logical product signal of said signal inverted by said inverter means and said predetermined activating signal,
wherein said first switching means is controlled by said signal formed by said first logical circuit means, and said second switching means is controlled by said signal formed by said second logic circuit means.

5,343,430

METHOD AND CIRCUITRY FOR SCREENING A DYNAMIC MEMORY DEVICE FOR DEFECTIVE CIRCUITS

Tohru Furuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 3, 1991, Ser. No. 695,014
Claims priority, application Japan, May 11, 1990, 2-119949
Int. Cl.[5] G11C *7/00, 29/00*
U.S. Cl. 365—201 **21 Claims**



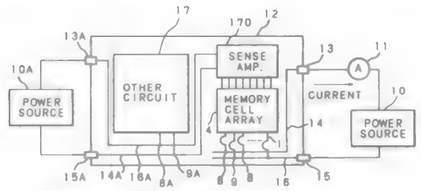
1. A dynamic memory device with power and ground terminals and having a row address buffer and a column address buffer, the device comprising:
a refresh counter connected to the row and column address buffers;
a row circuit connected to the row address buffer;
a column circuit connected to the column address buffer; and
control circuitry receiving a screening signal and controlling the dynamic memory device to operate in a designated mode according to the screening signal, the designated mode including one of a normal mode and a screening refresh mode, the normal mode including one of a CBR (CAS Before ROR) mode and an ROR (RAS Only Refresh) mode, the screening refresh mode applying a dynamic stress uniformly to and exposing latent defects in the dynamic memory device, the control circuitry combining the screening signal with at least one of an RAS(-Row Address Strobe) and a CAS (Column Address Strobe) to designate the screening refresh mode, the control circuitry activating the refresh counter, the row circuit and the column circuit when the screening refresh mode is designated and power is applied between the power and ground terminals at a supply voltage greater than a normal working voltage.

5,343,431

SEMICONDUCTOR MEMORY APPARATUS, TEST APPARATUS THEREFOR AND METHOD FOR RELIEVING SEMICONDUCTOR MEMORY APPARATUS FROM SHORT CIRCUIT

Takahiro Ohtsuka, and Shozo Shirota, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1993, Ser. No. 43,225
Claims priority, application Japan, Apr. 21, 1992, 4-128134
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—201 **12 Claims**



1. A semiconductor memory apparatus, comprising:
a memory cell array in which memory cells are arranged in the form of matrix in column direction × row direction;
a plurality of column direction memory cell select lines each which is commonly connected to memory cells of each column of said memory cell array; and
a plurality of row direction memory cell select lines each which is commonly connected to memory cells of each row of said memory cell array;
wherein data is read out from the memory cell which is commonly selected by one of said column direction memory cell select line and one of said row direction memory cell select line,
further comprising a plurality of switching elements which are disposed to connect adjacent ones of said column direction memory cell select lines and/or adjacent ones of said row direction memory cell select lines successively to a power source potential line and a ground potential line respectively.

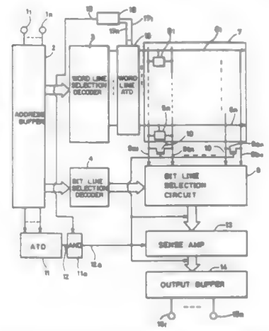
5,343,432

SEMICONDUCTOR MEMORY DEVICE HAVING EQUALIZATION TERMINATED IN DIRECT RESPONSE TO A CHANGE IN WORD LINE SIGNAL

Ryuichi Matsuo; Ryuichi Kosugi; Nobuhiro Tsuda, and Osamu Ishizaki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1991, Ser. No. 669,725
Claims priority, application Japan, Mar. 23, 1990, 2-75123
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—203 **9 Claims**

1. A semiconductor memory device comprising:
an array of memory cells arranged in rows and columns,
a plurality of word lines connected to the rows of said memory cells,
a plurality of bit lines connected to the columns of said memory cells,
word line selections means operatively connected to said plurality of word lines and responsive to an externally applied address signal for selecting one of said word lines,
bit line selection means operatively connected to said plurality of bit lines and responsive to said externally applied address signal for selecting at least one of said bit lines, and
equalizing means operatively connected to said plurality of bit lines for equalizing said plurality of bit lines to a desired voltage level in direct response to a change of said externally applied address signal, and for terminating said equalizing in direct response to a change of a signal on said word line in accordance with the change of said address signal.

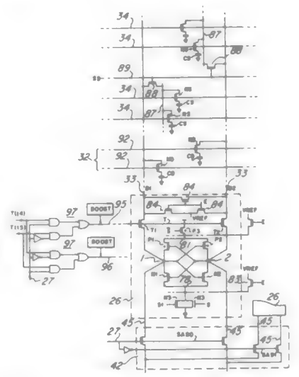


5,343,433

CMOS SENSE AMPLIFIER

Charvaka Duvvury, Missouri City, and Adin E. Hyslop, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 363,439, Jun. 7, 1989, abandoned, which is a continuation of Ser. No. 45,721, Apr. 27, 1987, abandoned, which is a continuation of Ser. No. 636,938, Aug. 2, 1984, abandoned. This application Jul. 26, 1990, Ser. No. 559,435
Int. Cl.[5] G11C *7/00, 11/24*
U.S. Cl. 365—205 **12 Claims**



1. A CMOS amplifier circuit for a memory device comprising:
a pair of bit lines, and a plurality of dynamic memory cells separately connected to each of said pair of bit lines,
a cross-coupled flip-flop circuit including a first pair of N-channel transistors and a second pair of P-channel transistors, each transistor having a source-to-drain path and a gate, the source-to-drain paths of the first pair of transistors connected between a pair of sense nodes and a grounding node, the source-to-drain paths of the second pair of P-channel transistors connected between said sense nodes and a voltage supply node,
a pair of coupling transistors having source-to-drain paths

VOL 1165 ISS 5 AG 30 1994 UMI

separately connecting said pair of sense nodes to said pair of bit lines, and having gates connected to control circuitry,

a third pair of N-channel transistors each having a source-to-drain path and a gate, the source-to-drain paths of the third pair of N-channel transistors being connected in parallel between said grounding node and a ground terminal of a voltage supply, the gates of said third pair of N-channel transistors being connected to said control circuitry,

a P-channel pull-up transistor having a source-to-drain path connecting said voltage supply node to a positive voltage supply, and having a gate connected to said control circuitry,

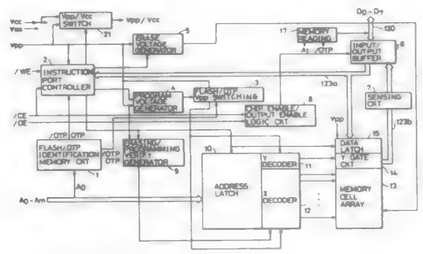
said control circuitry applying activating voltages in sequence to said gates of said third pair of N-channel transistors, and applying an activating voltage to said gate of said P-channel pull-up transistor, and applying an activating voltage to said gates of said coupling transistors in an active cycle during a time period that said memory cells are activated for coupling to said bit lines, then applying a deactivating voltage of substantially zero to said gates of said coupling transistors in said active cycle during a time period that at least one of said gates of said third pair of N-channel transistors is activated by said control circuitry, and thereafter applying an activating voltage again to said gates of the coupling transistors.

5,343,434

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE AND MANUFACTURING METHOD AND TESTING METHOD THEREOF

Kenji Noguchi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 4,030
Claims priority, application Japan, Apr. 2, 1992, 4-080973
Int. Cl.[5] G11C *16/06*
U.S. Cl. 365—218 **8 Claims**



1. A nonvolatile semiconductor memory device including an array in which a plurality of memory cells each comprised of a floating gate type transistor are arranged, comprising:

memory type storage means for storing information indicating whether an electrically over-erased memory cell present in said array is brought into an erase state or not by irradiation with an energy beam;

program control means for controlling an erasing and writing operation of data on a selected memory cell in said array; and

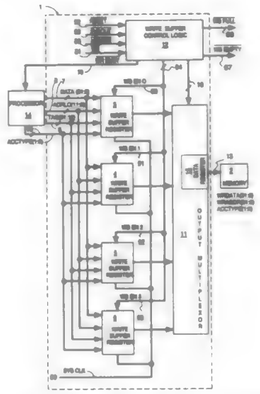
memory type setting means responsive to the information of said memory type storage means for setting the operation of said program control means in either an operation prohibited state or an operable state.

5,343,435

USE OF A DATA REGISTER TO EFFECTIVELY INCREASE THE EFFICIENCY OF AN ON-CHIP WRITE BUFFER

Philip A. Bourekas, San Jose; Danh L. Ngoc, Saratoga, and Scott Revak, Castro Valley, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Jun. 14, 1991, Ser. No. 715,293
Int. Cl.[5] G11C *19/28*
U.S. Cl. 365—221 **2 Claims**



1. A first in first out (FIFO) structure comprising:

a plurality of registers, each register having an address portion and a data portion for storing address and data information, respectively, received from a central processing unit, wherein said registers are coupled to said central processing unit via a common address and data bus;

control logic means coupled to said plurality of registers for selecting one of said plurality of registers to be loaded with said address and data information from said central processing unit during a FIFO write cycle, and for selecting one of said plurality of registers having said data information to be transferred to an external memory; and

transfer means coupled between said plurality of registers and said external memory for transferring said data information from said selected register having said data information to be transferred to said external memory, wherein said transfer means includes a separate data register for capturing and storing said data information from said selected register having said data information and wherein said transfer means further includes means for isolating said separate data register from said plurality of registers thereby deepening said plurality of registers by freeing up said address and data portions of said selected register before a next FIFO write cycle initiated by said central processing unit.

5,343,436

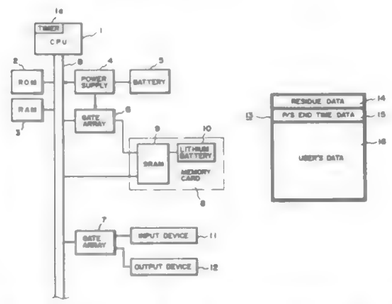
ELECTRONIC APPARATUS HAVING BACKUP POWER SOURCE

Hidetaka Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1991, Ser. No. 664,226
Claims priority, application Japan, Mar. 13, 1990, 2-59852
Int. Cl.[5] G11C *14/00*
U.S. Cl. 365—228 **15 Claims**

3. An electronic apparatus comprising:

memory means having a first memory area to store an end time of a power source supplied from an apparatus main body and a second memory area to store information regarding a residue time of backup power supply means provided in said apparatus; and



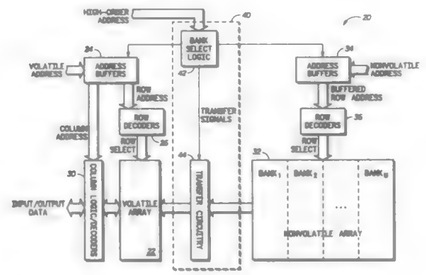
the backup power supply means for supplying the power source to said memory means for a period of time when no power source is supplied from the apparatus main body to the memory means.

5,343,437

MEMORY HAVING NONVOLATILE AND VOLATILE MEMORY BANKS

Mark J. Johnson, Algonquin, Ill., and Brian D. Branson, Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Feb. 19, 1993, Ser. No. 19,492
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.03 **25 Claims**



1. An integrated circuit memory, comprising:

a nonvolatile memory array having a plurality of banks of nonvolatile memory cells, each nonvolatile memory cell coupled to a bit line and a word line;

a volatile memory array having a plurality of volatile memory cells, each volatile memory cell coupled to a word line and a bit line pair, said volatile memory array having the same number of memory cells as a single bank of said plurality of banks of nonvolatile memory cells; and

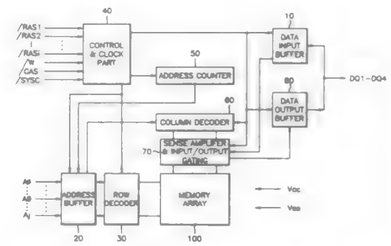
a transfer circuit, coupled to said nonvolatile memory array and to said volatile memory array, said transfer circuit receiving an address signal and selectively transferring data from a bank of said nonvolatile memory cell array to said volatile memory cell array.

5,343,438

SEMICONDUCTOR MEMORY DEVICE HAVING A PLURALITY OF ROW ADDRESS STROBE SIGNALS

Yun-Ho Choi, Kyungki-do; Dae-Je Chin, Seoul; Ejaz U. Haq, Seoul, and Soo-In Cho, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 1, 1993, Ser. No. 9,475
Claims priority, application Rep. of Korea, Jan. 31, 1992, 1992-1461
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—233 **6 Claims**



1. A dynamic random access memory (DRAM) comprising:

a plurality of memory array groups each having a number of memory cells organized in a row and column matrix form;

a plurality of row address strobe signal input terminals being the same in number as the number of said plurality of memory array groups for receiving row address strobe signals and supplying said row address strobe signals to said memory array groups;

a clock signal input terminal for receiving a clock signal from the exterior and supplying said clock signal to said memory array groups; and

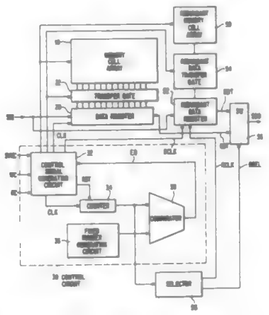
output means for successively generating data synchronized with said clock signal from a memory array group corresponding to an active cycle of said row address strobe signals sequentially activated.

5,343,439

MEMORY APPARATUS

Yasuharu Hoshino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1991, Ser. No. 779,087
Claims priority, application Japan, Oct. 19, 1990, 2-282826
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—240 **4 Claims**



1. A memory apparatus comprising:

a memory cell array for storing a data of bits;

a shift register for receiving an input serial data to be stored

VOL 1165 ISS 5 AG 30 1994 UMI

in said memory cell array and supplying an output serial data to be read from said memory cell array;

a transfer gate which is positioned between said memory cell array and said shift register to transfer said data of bits in parallel therebetween; and

a control circuit for controlling said shift register to shift said input serial data;

wherein said control circuit controls said shift register to shift said input serial data until a first bit thereof reaches to a final step of said shift register, and then controls said transfer gate to transfer said input serial data in parallel to be stored in said memory cell array.

5,343,440

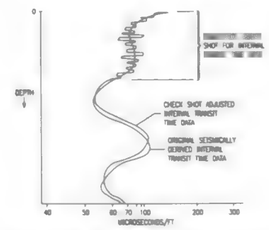
GEOPRESSURE ANALYSIS SYSTEM

Tze-Kong Kan, Plano; Sandy M. Zacker, Richardson; Matthew L. Greenberg, Dallas, and William J. Lamb, Plano, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 845,305, Mar. 3, 1992, Pat. No. 5,233,568. This application Apr. 9, 1993, Ser. No. 44,450

Int. Cl.[5] G01V *1/28;* **E21B** *49/00*

U.S. Cl. 367—27 **1 Claim**



1. A method of look ahead pressure assessment, comprising the steps of:

(a) seismically estimating interval transit times as a function of depth at a proposed well location;

(b) partially drilling a well at said well location;

(c) measuring from inside said partially drilled well interval transit times as a function of depth;

(d) replacing said seismically estimated interval transit times with corresponding measured interval transit times;

(e) reestimating said seismically estimated interval transit times which were not replaced in step (d); and

(f) comparing said reestimated interval transit times to a compaction trend to access pressure.

5,343,441

MULTISOURCE MULTIRECEIVER METHOD AND SYSTEM FOR GEOPHYSICAL EXPLORATION

Richard M. Alford, Broken Arrow, Okla., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 432,107, Nov. 3, 1989, Pat. No. 5,029,146, which is a continuation of Ser. No. 206,053, Jun. 10, 1988, Pat. No. 4,903,244, which is a continuation of Ser. No. 633,160, Jun. 20, 1984, Pat. No. 4,803,666. This application Mar. 7, 1991, Ser. No. 666,158

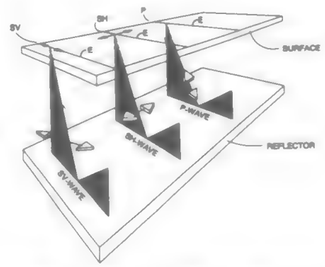
The portion of the term of this patent subsequent to Feb. 7, 2006, has been disclaimed.

Int. Cl.[5] G01V *1/00*

U.S. Cl. 367—75 **6 Claims**

1. A method for shear wave exploration of the earth's subterranean formations comprising the steps of:

(a) imparting shear wave energy into the earth's subterranean formations; and



(b) recording a concord of signals representative of the earth's response to the imparted shear wave energy.

5,343,442

PROCESS AND DEVICE FOR CATCHING FISH

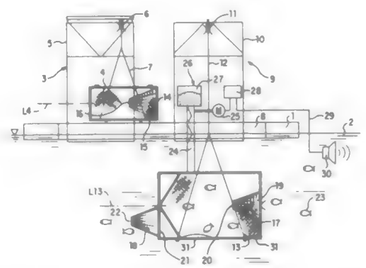
Johann Vielberth, Weichser Weg 5, 8400 Regensburg, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 946,076

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 9111693[U]; Oct. 12, 1991, 9112715[U]; May 12, 1992, 4215531

Int. Cl.[5] A01K *69/06;* **H04B** *1/02*

U.S. Cl. 367—139 **27 Claims**



1. A process for catching fish including the steps of:

introducing a substantially enclosed food container into a body of water provided with fish, said food container provided with a first opening for the ingress of fish and a second opening for the egress of fish;

training the fish to enter said first opening and exit said second opening by producing a signal in the body of water for a period of time and dispensing food into said food container during the time said signal is produced, wherein said signal is discontinued after the completion of said period of time;

repeating said training step a plurality of times;

lowering a substantially enclosed catch container having an access opening into the body of water;

aligning said access opening of said catch container with said second opening of said food container;

producing the signal in the body of water and dispensing food into said food container in a manner substantially similar to that of said training steps, such that fish will enter said food container through said first opening and move to said catch container through said second opening of said food container and said access opening of said catch container;

removing said catch container containing fish from the body of water; and

emptying the fish from said catch container.

5,343,443

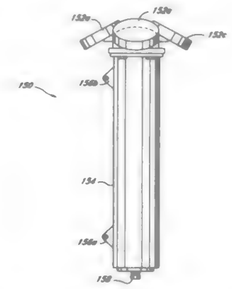
BROADBAND ACOUSTIC TRANSDUCER

Ray Merewether, La Jolla, Calif., assignor to Rowe, Deines Instruments, Inc., San Diego, Calif.

Continuation of Ser. No. 827,838, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 597,429, Oct. 15, 1990, abandoned. This application Jun. 9, 1992, Ser. No. 894,175

Int. Cl.[5] H04R *17/00*

U.S. Cl. 367—152 **49 Claims**



1. An acoustic transducer, comprising:

a plate of a selected size and thickness formed from a piezoelectric material so as to transduce between an electrical signal and a selected acoustic signal, said plate having a first face and a second face;

a first conductor in electrical contact with the first face of said plate and a second conductor in electrical contact with the second face of said plate so as to conduct said electrical signal; and

an anisotropic material containing similar numbers of oriented fibers disposed evenly in any two selected perpendicular directions along a layer on the first face of said plate over said first conductor, wherein said anisotropic material has a width and a thickness and said oriented fibers provide a radially uniform coefficient of thermal expansion in any two selected perpendicular directions along the width direction that is different from the coefficient of thermal expansion in the thickness direction.

5,343,444

PNEUMATIC TIMER

Juan Agut Sanz, Terrassa, Spain, assignor to Agut, S.A., Terrassa, Spain

Filed Mar. 23, 1993, Ser. No. 35,454

Claims priority, application Spain, Mar. 25, 1992, 9200951

Int. Cl.[5] G09F *1/00;* **F01B** *29/08;* **F16F** *9/04*

U.S. Cl. 368—1 **8 Claims**

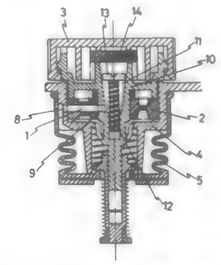
1. A pneumatic timer for electric contactors comprising:

a base having a first hole;

a bellows having an open end and a closed end, said open end being attached to said base to form a first cavity therebetween;

an adjustment knob having a core and a second cavity formed therebetween, said core having an intake hole;

a flange disposed between said core and said base, said flange having an outer peripheral surface, said peripheral surface includes a transverse groove, said flange includes a radial throughhole, said flange having means for fixedly connecting said adjustment knob to said flange, said transverse groove faces said first hole in said base, said flange and said adjustment knob being rotatably movable with respect to said base to vary a length of said transverse groove between said intake hole and said first hole;



said second cavity, said intake hole, said radial hole, said transverse groove, said first hole and said first cavity being in fluid communication.

5,343,445

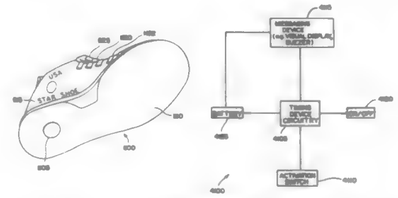
ATHLETIC SHOE WITH TIMING DEVICE

Erik B. Cherdak, Silver Spring, Md., assignor to David Stern and James Thompson, both of Rockville, Md.

Filed Jul. 6, 1993, Ser. No. 85,936

Int. Cl.[5] G04B *47/00;* **A43B** *3/00;* **G04F** *8/00*

U.S. Cl. 368—10 **23 Claims**



1. A method for indicating hang time off the ground and in the air during a jump by a person wearing an athletic shoe, said method comprising the steps:

(a) sensing, within said shoe, when said shoe leaves the ground during said jump;

(b) sensing, within said shoe, when said shoe returns to the ground at the end of said jump; and

(c) activating a hang time indicator on said shoe during the time interval between said shoe leaving and returning to the ground as sensed in steps (a) and (b), respectively, said indicator providing an indication of hang time in a manner perceptible to said person.

5,343,446

PLATOON SCHEDULE WATCH AND METHOD OF PROVIDING A SCHEDULE FOR A USER OF SHIFT START TIMES BOTH PROSPECTIVE AND RETROSPECTIVE

John F. Simmons, Santa Ana, Calif., and Terrence Chen, Tsuen Wan, Taiwan, assignors to Firetime, Inc., Santa Ana, Calif.

Filed Mar. 30, 1992, Ser. No. 860,317

Int. Cl.[5] G04C *21/16;* **G04F** *7/00*

U.S. Cl. 368—251 **27 Claims**

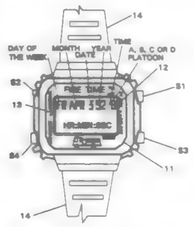
1. A user programmable scheduling watch for recording and allowing access to a regular schedule of shifts, both prospective and retrospective comprising:

timing means for producing a series of regular clock pulses;

memory means for storing a calendar covering a plurality of years;

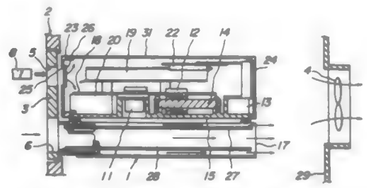
VOL 1165 ISS 5 AG 30 1994 UMI

display means for displaying day, date and time functions coupled to said timing means and said memory means;
first user controlled input means for inputting into said memory means user selected number of intervals of time into which each 24 hour day period is divided;
second user controlled input means for inputting into said memory means an indicia representing a repeating designation with one designation assigned to each user selected time interval throughout a calendar period in said memory means;
third user controlled input means for inputting an arbitrary



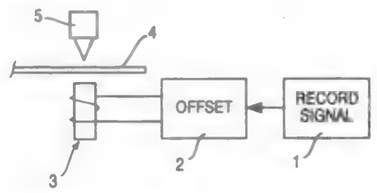
user selected duty cycle period of days for said repeating designation;
and means responsive to said second user controlled input means for assigning a repeating designation to each time interval selected by the user throughout said calendar period in said memory means;
one of said user controlled input means being operative for inputting any date and time period in said calendar period; and
means for controlling said display means to display an indicia representing the repeating designation assigned to said selected date and time period.

5,343,447
SELF-COOLING OPTOMAGNETIC DISK DEVICE WITH LOCKING INTERNAL MECHANISM
Satoshi Okabe, Hachioji, and Sunao Aoki, Higashimurayama, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 22, 1991, Ser. No. 704,106
Claims priority, application Japan, May 23, 1990, 2-131130; May 23, 1990, 2-131131; May 25, 1990, 2-133881
Int. Cl.[5] G11B *11/00*
U.S. Cl. 369—13 **23 Claims**



1. An apparatus for information recording medium in which an opto-magnetic disc is used as an information recording medium, comprising:
driving means for rotating said opto-magnetic disc; and
field coil means for applying a magnetic field on said opto-magnetic disc, said field coil means being positioned to face the information recording surface of said opto-magnetic disc when said opto-magnetic disc is disposed in said apparatus; and said base plate comprising first and second openings in a vicinity of said field coil, said first and second openings being shaped and positioned so as to form part of a path of air current generated by a rotation of said opto-magnetic disc;
said path comprising said first opening, a space between said field coil and said opto-magnetic disc, when said opto-magnetic disc is disposed in said apparatus, and said second opening.

5,343,448
EXTERNAL MAGNETIC FIELD DEVICE FOR A MAGNETOOPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS
Tomoyuki Miyake, Tenri; Hiroyuki Katayama; Junichiro Nakayama, both of Nara; Takahiro Miyake, Tenri; Kenji Ohta, and Shozo Kobayashi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 734,049, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 382,861, Jul. 20, 1989, abandoned. This application Sep. 22, 1992, Ser. No. 949,335
Claims priority, application Japan, Jul. 20, 1988, 63-180711
Int. Cl.[5] G11B *11/00, 11/10*
U.S. Cl. 369—13 **8 Claims**

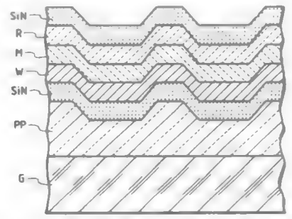


1. In an external magnetic field device for a magnetooptical information recording and reproducing apparatus in which an external magnetic field is applied to a magnetooptical information recording medium thereby performing a direct overwrite of information when said field is modulated by recording information by supplying to a magnetic field generating means an alternate current according to said recording information, an improvement being that said device comprises an offset means for producing an offset in said alternate current having one of either a level having a polarity or a different level having an opposite polarity, said offset being so produced that said alternate current supplied to said magnetic field generating means is decreased when said supplying according to recording information is such that a direction of magnetization of said information recording medium be aligned with an initial direction of magnetization of said recording medium.

5,343,449
OVER-WRITE CAPABLE MAGNETOOPTICAL RECORDING MEDIUM HAVING READING LAYER
Kazutomo Miyata, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Sep. 17, 1993, Ser. No. 128,766
Claims priority, application Japan, Sep. 18, 1992, 4-249134
Int. Cl.[5] G11B *11/00*
U.S. Cl. 369—13 **1 Claim**

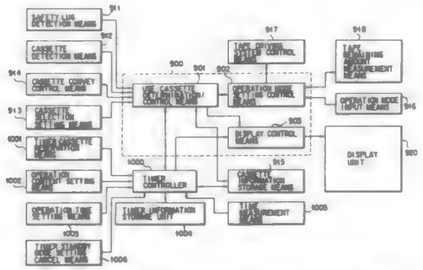
1. A magnetooptical recording/reproduction medium which can perform an overwrite operation in an optical modulation scheme, comprising:
a reading layer (R layer);
a memory layer (M layer); and
a writing layer (W layer), said R layer, said M layer, and said W layer being exchange-coupled to each other to form a three- layered structure,
wherein said medium satisfies the following conditions at room temperature and during reproduction
i) $2M_{SR}H_{CR}t_R < \sigma_{WR1}$
ii) $2M_{SR}H_{CR}t_R + 2M_{S1}H_{C1}t_1 > \sigma_{W12}$

iii) $Hb < (\sigma_{WR1}/2M_{SR}t_R) + H_{CR}$
where t_R is a film thickness of said R layer, t_1 is a film thickness of said M layer, M_{SR} is saturation magnetization of said R



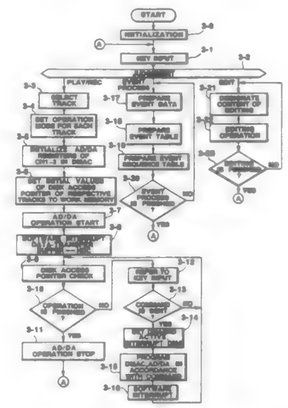
layer, M_{S1} is saturation magnetization of said M layer, H_{CR} is a coercivity of said R layer, H_{C1} is a coercivity of said M layer, σ_{WR1} is an exchange coupling force between said R layer and said M layer, σ_{W12} is an exchange coupling force between said M layer and said W layer, and Hb is a recording magnetic field.

5,343,450
TIMER OPERATION MANAGEMENT APPARATUS
Keiji Hamada, Fukaya; Jun Yoshikawa; Takeo Yamada, both of Kumagaya; Isamu Odane, Gunma; Masahiro Ito, Fukaya; Yoshimasa Noudan, Kumagaya; Hideo Kunii; Hirofumi Kanai, both of Fukaya, and Masashi Yasuzato, Saitama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 28, 1992, Ser. No. 843,744
Claims priority, application Japan, Feb. 28, 1991, 3-034368; Mar. 4, 1991, 3-060994; Apr. 15, 1991, 3-111028; May 1, 1991, 3-099940; May 31, 1991, 3-129527
Int. Cl.[5] G11B *15/68, 23/26*
U.S. Cl. 369—19 **22 Claims**



1. A timer operation management apparatus comprising:
cassette information storage means for storing cassette information, said cassette information including presence/absence information corresponding to a plurality of cassettes; and
timer information input/storage means capable of inputting and storing timer information for cassette selection, said timer information including cassette designation information corresponding to a given cassette to be subjected to timer reservation, timing information corresponding to said given cassette, and operation content information indicating a recording or replay mode for operation corresponding to said given cassette,
wherein said cassette designation information includes individual designation information for designating individual cassettes, and all designation information for designating cassettes based on one of a group consisting of said cassette information stored in said cassette information storage means and said plurality of cassettes in a predetermined sequence, whereby said predetermined sequence of designated cassettes may be loaded before recording or playback are effected.

5,343,451
DIGITAL RECORDER
Nobuo Iizuka, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Oct. 23, 1992, Ser. No. 965,180
Claims priority, application Japan, Nov. 14, 1991, 3-326411
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—32 **18 Claims**



1. A digital recorder comprising:
audio input/output means for performing an input/output operation of an audio signal;
memory medium means for storing an audio signal, and being accessed in predetermined units having a constant length corresponding to a plurality of sampling intervals;
event defining means for dividing the audio signal stored in said memory medium means into a plurality of events;
temporary storing means for temporarily storing audio signals which are input from said audio input/output means at sampling intervals and supplying the audio signal in the predetermined units to said memory medium means, and for temporarily storing the audio signal in the predetermined units input from said memory medium means and supplying the audio signal in sampling units to said audio input/out means; and
access control means for effecting a fine-adjustment of access to the audio signal in said temporary storing means when the audio signal supplied from said memory medium means is temporarily stored in said temporary storing means in correspondence with a leading portion and an ending portion of the event, thereby allowing the audio signal of respective events to be reproduced at the sampling intervals.

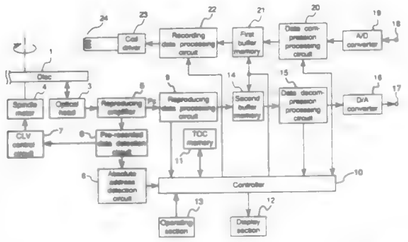
VOL 1165 ISS 5 AUG 30 1994 UMI

5,343,452

DATA RECORDING/REPRODUCING APPARATUS OF SIMULTANEOUSLY PERFORMING BOTH REPRODUCING AND RECORDING FROM AND IN A SINGLE RECORDING MEDIUM

Shigemi Maeda, Yamatokooriyama; Kunio Kojima, Nara, and Jun Akiyama, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 19, 1992, Ser. No. 979,066
Claims priority, application Japan, Nov. 28, 1991, 3-340417
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—32 3 Claims



1. A data recording/reproducing apparatus for recording and/or reproducing audio data onto or from a recording medium having absolute address data, the apparatus comprising:

a first memory for recording;

a second memory for reproducing;

a first reproducing means for reading audio data on the recording medium by the block and storing them in the second memory at a first transfer rate;

a second reproducing means for sequentially reading the audio data stored in the second memory at a second transfer rate lower than the first transfer rate and sequentially outputting them;

a first recording means for sequentially storing audio data, which is inputted from external, in the first memory at the second transfer rate;

a second recording means for reading the audio data stored in the first memory at the first transfer rate and recording them in the recording medium by the block; and

control means for controlling the apparatus so that writing operation into the second memory by the first reproducing means and reading operation from the first memory by the second recording means are alternately repeated.

5,343,453

METHOD FOR ACCESSING DESIRED TRACK ON DISK WITH PLURALITY OF RECORDING ZONES WITH HEAD, AND APPARATUS THEREFORE

Tsukasa Ogino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 443,672, Nov. 30, 1989, abandoned. This application Nov. 22, 1993, Ser. No. 155,563
Claims priority, application Japan, Dec. 1, 1988, 63-302292; Dec. 1, 1988, 63-302293; Mar. 8, 1989, 1-55857; Nov. 9, 1989, 1-290[illegible]
Int. Cl.[5] G11B 7/085
U.S. Cl. 369—44.28 13 Claims

1. An apparatus for recording and/or reproducing information with respect to a disk-like recording having a recording surface divided into a plurality of concentric circular zones each including a plurality of tracks with an address recorded thereon at an angular velocity or frequency varying with the individual zones, comprising:

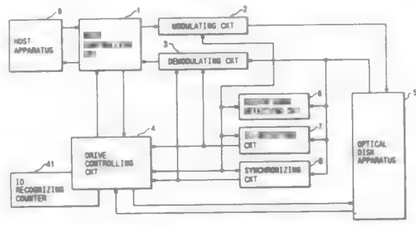
instruction means for outputting an instruction indicative of an angular velocity or frequency corresponding to a zone to which a desired track among the plurality of tracks belong;

means for scanning said tracks for recording and/or reproducing information;

means for detecting an address of a track being scanned by said recording and/or reproducing means on the basis of the angular velocity or frequency instructed by said instruction means;

means for shifting said recording and/or reproducing means from a track being scanned to another track;

means for accessing the desired track with said recording and/or reproducing means such that said recording and/or reproducing means is shifted toward the desired track by said shifting means and an address of a track to which said recording and/or reproducing means is shifted is detected by said detection means on the basis of the angular velocity or frequency instructed by said instruction means, wherein said accessing operation is finished when the track to which said recording and/or reproducing means is shifted is identical with the desired track, and said accessing operation is continued when the track to which said recording and/or reproducing means is shifted is not identical with the desired track; and



control means for controlling said apparatus such that in said accessing operation, when said recording and/or reproducing mean is erroneously shifted to a track belonging to a zone different from the zone to which the desired track belongs and an address of the track can not be detected due to a different angular velocity or frequency of the address recorded on the track to which said recording and/or reproducing means is shifted from that instructed by said instruction means, said recording and/or reproducing means is shifted toward another zone by said shifting means.

5,343,454

TRACKING CONTROL APPARATUS FOR CORRECTING TRACKING ERROR SIGNAL ACCORDING TO APPROXIMATE EQUATION OF A FUNCTION OF TRACK ADDRESS

Katsuya Watanabe, Suita; Masayuki Shibano, Izumisano; Hiroyuki Yamaguchi; Yasuaki Edahiro, both of Hirakata, and Mitsuro Moriya, Ikomo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 23, 1992, Ser. No. 980,560
Claims priority, application Japan, Nov. 22, 1991, 3-307347; Dec. 9, 1991, 3-324431
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—44.32 17 Claims

1. A tracking control apparatus comprising:

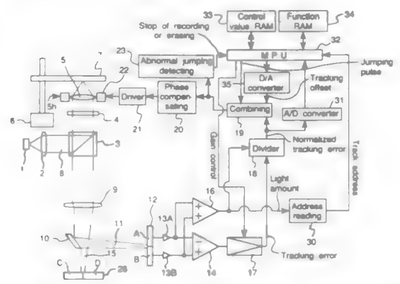
light source means for generating and projecting a beam of light through an optical head onto a disk-shaped recording medium in which a plurality of tracks to be recorded or reproduced are formed in a shape of a spiral or concentric circles;

optical detecting means for detecting a reflected light from said recording medium;

tracking error detecting means for detecting a positional shift of a beam of light projected onto said recording medium from a track to be recorded or reproduced based on said reflected light detected by said optical detecting means, and for generating a tracking error signal having a level of said detected positional shift;

tracking control means for controlling said optical head so that said beam of light scans on said track to be recorded or reproduced based on said tracking error signal generated by said tracking error detecting means;

offset detecting means for detecting direct-current offset values of said tracking error signal on adjustment tracks predetermined among a plurality of tracks of said recording medium;



first approximate function calculating means for calculating coefficients of a predetermined first approximate equation approximately representing an offset value characteristic on said track of said recording medium based on said direct-current offset values detected by said offset detecting means;

offset value calculating means for calculating a direct-current offset value corresponding to said track to be recorded or reproduced based on said first approximate equation with said calculated coefficients; and

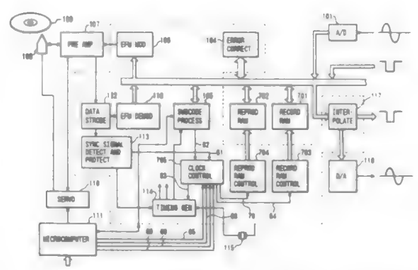
offset value correcting means for correcting a direct-current offset value of said tracking error signal based on said direct-current offset value calculated by said offset value calculating means.

5,343,455

DIGITAL SIGNAL OVERLAPPED OR JOINED RECORDING METHOD AND APPARATUS

Toshifumi Takeuchi; Takao Arai; Yutaka Nagai, and Izumi Kimura, all of Kanagawa, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1991, Ser. No. 677,767
Claims priority, application Japan, Apr. 5, 1990, 2-89081; Apr. 5, 1990, 2-89082
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—59 18 Claims



1. A digital signal recording method for recording first digital data and second digital data on a writable disc without an interleave discrepancy therebetween wherein the first digital data is previously recorded and the second digital data is at least one of overlapped and joined with the first digital data on the writable disc, comprising the steps of:

performing interleave processing on the second digital data by rearranging the order of words in every block comprising N words of the second digital data by delaying the words by delay times different form each other, N being a positive integer;

recording the second digital data onto the writable disc over the first digital data having completed interleave processing and being previously stored on the writable disc so that no interleave discrepancy occurs between the first and second recorded digital data on the writable disc;

setting an edit point at which overlap recording of the second digital data onto the writable disc is to be started;

selecting a block having words stored on both sides of the edit point among blocks of the first digital data stored on the writable disc;

reproducing a portion of the first digital data including all words of the selected block;

performing deinterleave processing on the reproduced portion of the first digital data by restoring words in every block of the reproduced portion to an original order of the words by delaying the words by delay times different from each other and storing the restored words of the selected block of the reproduced portion in a memory unit;

reading back the restored words of the first digital data from the memory unit and appending the second digital data to the restored words of the first digital data read from the memory unit;

performing the interleave processing on the restored words of the first digital data together with the appended second digital data; and

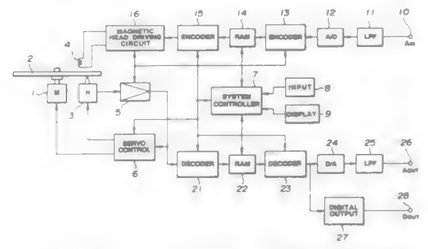
recording words of the first digital data long with the appended second digital data onto the writable disc so that the words of the first digital data are recorded into locations on the writable disc in the same position of the first digital data prior to reproduction of the first digital data so that the first and second data are joined at the edit point without an interleave discrepancy.

5,343,456

DIGITAL AUDIO SIGNAL REPRODUCING APPARATUS

Yasuaki Maeda, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed May 21, 1992, Ser. No. 887,174
Claims priority, application Japan, May 25, 1991, 3-149369
Int. Cl.[5] H04N 5/76
U.S. Cl. 369—59 10 Claims



1. An apparatus for reproducing audio signals digitally recorded on a disc shaped recording medium comprising:

driving means for rotating a disc shaped recording medium;

reading means for reading in bursts from the recording medium digitally recorded audio signals, the reading

VOL 1165 ISS 5 AG 30 1994 UMI

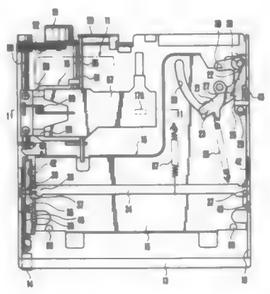
means generating at a first transfer rate playback data corresponding to the digitally recorded audio signals;
memory means for sequentially storing the playback data;
readout means for sequentially reading at a second transfer rate playback data stored in the memory means, the second transfer rate less than the first transfer rate;
playback control means operative to cause the reading means to generate playback data when the volume of playback data stored in the memory means is less than a predetermined volume;
selection input means for generating access data representative of selected digitally recorded audio signals; and
control means operative, in response to access data representative of newly selected digitally recorded audio signals, to terminate reading by the reading means of the digitally encoded audio signals from a first location of the recording medium, to delete playback data read from the first location and stored within the memory means, to sequentially store within the memory means data representative of substantially silent audio signals, and to commence reading by the reading means of digitally encoded audio signals from a second location of the recording medium, the second location corresponding to the newly selected digitally recorded audio signals.

5,343,457

DISK DRIVE APPARATUS

Akio Hoshi, Saitama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1992, Ser. No. 924,856
Claims priority, application Japan, Aug. 19, 1991, 3-230921; Aug. 19, 1991, 3-230922; Aug. 19, 1991, 3-230923; Aug. 19, 1991, 3-230924; Dec. 20, 1991, 3-338612
Int. Cl.[5] G11B *17/04*
U.S. Cl. 369—77.2 **22 Claims**



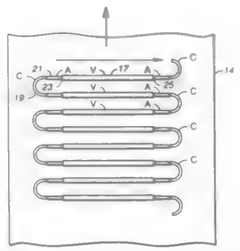
1. A disk drive apparatus capable of recording or reproducing information on or from a disk-shaped recording medium, comprising:
(a) a base;
(b) an operating member turnably supported on said base; and
(c) a recording medium holding part for holding the disk-shaped recording medium within said disk drive apparatus in such a manner as to cause the recording medium to selectively move to a first location where the recording medium can be inserted or ejected and to a second location where information can be recorded or reproduced on or from the recording medium;
wherein said recording medium holding part moves with an insertion of the recording medium, in a direction of the insertion of the recording medium, while said operating member turns in a predetermined direction in association with said recording medium holding part moving in the direction of the insertion of the recording medium, and when said operating member turns through a predetermined angle, said recording medium holding part reaches the second location.

5,343,458

METHOD OF STORING DIGITAL VIDEO, AUDIO AND CONTROL INFORMATION ON AN AN OPTICAL STORAGE MEDIUM

Louis F. Schaefer, Palo Alto; Hugh E. Frohbach, Sunnyvale; Gerald A. Pierce, Redwood City, and Norman A. Peppers, Belmont, all of Calif., assignors to SamSung Electronics Co., Ltd., Rep. of Korea

Filed Sep. 15, 1992, Ser. No. 944,977
Int. Cl.[5] G11B *7/20*
U.S. Cl. 369—97 **18 Claims**



10. Method for recording digital video information on an optical recording medium comprising the steps of:
moving said optical recording medium in a first direction;
scanning a beam of light over said moving optical recording medium in a second direction to form a scan path which is substantially perpendicular to said first direction;
storing video information of a first frequency bandwidth in a substantially central, linear portion of said scan path on said optical recording medium;
storing audio information associated with said video signal in a second portion of said scan path adjacent said first portion; and
storing control information associated with said video signal in a third non-linear portion of said scan path, said second and third portions being located between consecutive first portions of said scan path.

5,343,459

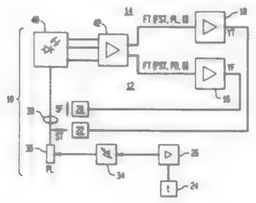
VARYING A SCANNING BEAM AS A FUNCTION OF BEARING TEMPERATURE OF AN OPTICAL LENS ACTUATOR

Andreas Roesinger, Hanover, and Guenter Noetzel, Diekholzen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00746, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO92/07357, PCT Pub. Date Apr. 30, 1992
PCT Filed Sep. 19, 1991, Ser. No. 39,265
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1990, 4032871
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—116 **4 Claims**

1. A circuit for recording/reading an optical recording medium, comprising
a scanning device (10), said scanning device having
a first control circuit (12) for focusing a light beam directed on an information level of the recording medium and
a second control circuit (14) for directing the light beam along an information track at said information level, wherein
a temperature sensor (24) detects the temperature of bearings of an optical element of the scanning device (10), the

mechanical mobility of which bearings is temperature-dependent, and wherein
servo amplifiers (16, 18) of the control circuits (12, 14) trigger a first actuator (20) for focusing and a second actuator (22) for tracking,
wherein



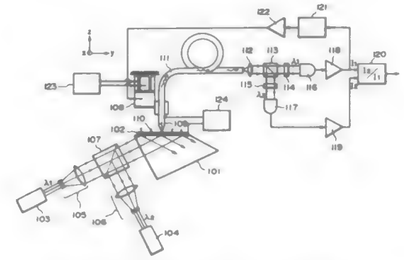
the first and second actuators (20, 22) mechanically guide the optical element (38) of the scanning device (10), and
a beam power controlling device (34) is provided, by means of which the intensity (PL) of the light beam directed on the recording medium is varied as a function of the temperature detected by the temperature sensor (24).

5,343,460

INFORMATION PROCESSING DEVICE AND INFORMATION PROCESSING METHOD

Toshihiko Miyazaki, Hiratsuka; Kunihiro Sakai, Isehara; Hiroyasu Nose, Zama; Etsuro Kishi, Kawasaki, and Ryo Kuroda, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,427
Claims priority, application Japan, Aug. 3, 1990, 2-206617
Int. Cl.[5] G11B *9/00*
U.S. Cl. 369—126 **13 Claims**



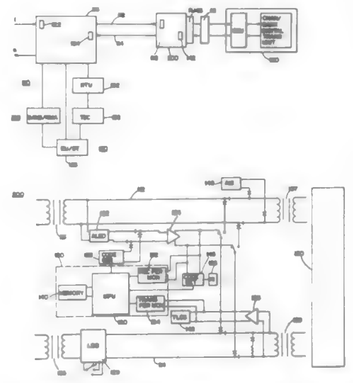
2. An information processing device comprising:
an electroconductive substrate for transmitting electromagnetic waves;
a recording layer provided on a surface of said substrate;
an electroconductive optical probe arranged proximate to said recording layer, said electroconductive optical probe including a pointed tip end having a radius of curvature of at most 1 μm;
means for applying a recording voltage between said substrate and said optical probe as an input signal;
means for irradiating at least two electromagnetic waves having different wavelengths into said substrate, the electromagnetic waves undergoing total reflection at the surface of the substrate and oozing out through the surface and said recording layer as evanescent lights;
detecting means for detecting the respective evanescent lights entering said optical probe through the pointed tip end; and
means for calculating an intensity ratio of the detected evanescent lights as an output signal,
wherein said recording layer exhibits a first absorbance for one of the evanescent lights which changes by application of the recording voltage and a second absorbance for another one of the evanescent lights which is unchanged by application of the recording voltage.

5,343,461

FULL DUPLEX DIGITAL TRANSMISSION FACILITY LOOP-BACK TEST, DIAGNOSTICS AND MAINTENANCE SYSTEM

John C. Barton, Naperville; William J. Hanby, Bloomingdale; Bruce R. Kuhn, Bollingbrook; Michael F. Lathrope, Naperville; Christopher F. Simanonis, Wheaton, and Arthur J. Varga, West Dundee, all of Ill., assignors to Ameritech Services, Inc., Hoffman Estates, Ill.

Filed Aug. 27, 1991, Ser. No. 750,407
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—13 **28 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 19 Pages)



1. A full duplex digital transmission facility loop-back test, diagnostics and maintenance system, said system capable of initiating a facility loop-back test and predetermined diagnostics for a predetermined digital transmission span and customer premises equipment at the location of the network interface for a specified end-user, said system comprising in combination:
(A) a digital transmission facility and transmission medium comprising in combination:
(i) means for originating a high-capacity digital signal of at least 1.544 Mbps from a predetermined location over a plurality of digital communications channels, the digital signal having multiple predetermined performance characteristics inherent thereto, said digital transmission facility having an originating first end and a terminating second end, said first end and said second end being operatively coupled by a plurality of digital transmission spans of predetermined lengths;
(ii) means for transmitting said high-capacity digital signal over said digital communications channel including any predetermined digital transmission span to a single end-user location selected from a plurality of end-user locations;
(iii) means for receiving said high-capacity digital signal from said digital communications channel by a predetermined single end-user location selected from a plurality of end-user locations; and
(B) at least one microprocessor-based facility loop-back diagnostics interface, said interface having a performance

VOL 1165 ISS 5 AG 30 1994 UMI

monitoring mode of operation and a maintenance mode of operation, said facility loop-back diagnostics interface comprising:

(i) means for operatively locating the interface at any predetermined location selected from a plurality of available end-user locations;

(ii) means for continuous and nonintrusive monitoring of a plurality of predetermined performance characteristics relating to a digital DS1 communications channel, thereafter producing an output signal corresponding to each of said multiple performance characteristics, said output signal having associated binary content in response to the performance characteristics;

(iii) means for storing the binary content of each of said output signals for a predetermined period of time;

(iv) means responsive to adapting predetermined protocols pertaining to said digital DS1 communications channel and to the transmission and reception of digital signals within said digital DS1 communications channel, said protocol being selected from a plurality of available protocols;

(v) means responsive to adapting a particular syntax pertaining to a first and a second set of predetermined command codes for the particular protocol utilized;

(vi) means for receiving said first set of predetermined command codes from any predetermined location of a digital DS1 communications channel to place said interface into a predetermined mode of operation, said interface thereafter responding by initiating a facility loop-back test from any predetermined location within the DS1 communications channel to the location of the network interface;

(vii) means for receiving said second set of predetermined command codes from any predetermined location of said digital DS1 communications channel; and

(viii) means responsive to said second set of predetermined command codes for down-loading said stored binary content to a predetermined location within the digital DS1 communications channel.

5,343,462

FAULT NOTIFYING SYSTEM FOR ASYNCHRONOUS TRANSFER MODE COMMUNICATION SYSTEM

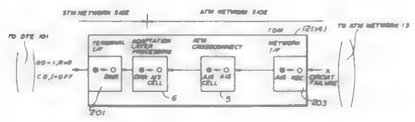
Osamu Sekihata; Susumu Eda; Katsumi Oomuro; Ryuji Hyodo; Kenji Tanaka; Hiroyuki Hatta, and Reiko Furuya, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1992, Ser. No. 853,625

Claims priority, application Japan, Mar. 20, 1991, 3-57274

Int. Cl.[5] H04J *1/16, 3/14*

U.S. Cl. 370—13 **13 Claims**



1. A fault notifying system for notifying a fault in an asynchronous transfer mode network to at least one data terminating equipment, said fault notifying system comprising:

a network interface, coupled to the asynchronous transfer mode network, for outputting an alarm indication signal when a fault is generated in the asynchronous transfer mode network;

an asynchronous transfer mode crossconnect part, coupled to the network interface, for generating an alarm indication signal cell having a predetermined signal format in response to the alarm indication signal;

an adaptation layer processing part, coupled to the asynchronous transfer mode crossconnect part, including means for forming asynchronous transfer mode cells and disassembling asynchronous transfer mode cells and for outputting a data circuit-terminating equipment not ready code in response to the alarm indication signal cell; and

a terminal interface, coupled to the data terminating equipment, for notifying the fault in the asynchronous transfer mode network to the data terminating equipment in response to the data circuit-terminating equipment not ready code,

said alarm indication signal cell having a cell format identical to an asynchronous transfer mode cell format but having predetermined information in a specific part of the asynchronous transfer mode cell format to distinguish the alarm indication signal cell from the asynchronous transfer mode cell, the specific part of the alarm indication signal cell being an asynchronous transfer mode header of the asynchronous transfer mode cell format, and a fixed value being assigned to parts of the alarm indication signal cell other than the specific part excluding a header error control of the asynchronous transfer mode cell format.

5,343,463

PERFORMANCE MEASUREMENT SYSTEM FOR A TELECOMMUNICATION PATH AND DEVICE USED THEREIN

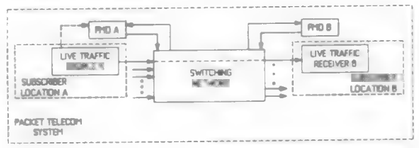
Johannes A. M. van Tetering, Zevenbergen, Netherlands, and Frank L. Deniseen, Boom, Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Aug. 18, 1992, Ser. No. 931,874

Claims priority, application European Pat. Off., Aug. 19, 1991, 91202107.8

Int. Cl.[5] H04J *3/14;* **H04L** *12/56*

U.S. Cl. 370—13 **16 Claims**



1. Performance measurement system for at least one communication path between a first and a second subscriber location of a telecommunication packet switching network, said system including a test packet generation means (PMDA-VCG) for generating test packets and for transmitting them through said switching network by applying them to a first end of said communication path associated with said first subscriber location, and a packet analyzer means (PMDB-DBA) for receiving said test packets at a second end of said communications path associated with said second subscriber location and for measuring the performance characteristics of said communication path, characterized in that said test packet generation means (PMDA-VCG) are adapted to receive live data communication packets from a live traffic source located at said first subscriber location and to convert said live packets to said test packets.

5,343,464

SWITCHING SYSTEM BETWEEN WORKING TRANSMISSION LINES AND PROTECTION TRANSMISSION LINE

Hatsumi Iino, and Takeo Fukushima, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 13, 1992, Ser. No. 851,480

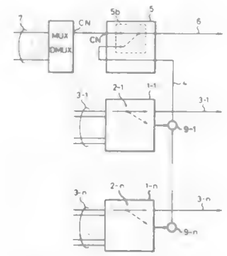
Claims priority, application Japan, Mar. 14, 1991, 3-074638

Int. Cl.[5] H04L *1/22*

U.S. Cl. 370—16 **11 Claims**

1. A switching system including a protection switch for switching over one of a plurality of working transmission lines to a protection transmission line and switching over an optional transmission line to the protection transmission line, selectively, said protection switch comprising:

first converting means and second converting means for converting between signals at a lower rate and a higher rate, and operatively connected to said working transmission lines and said protection transmission line, respectively; and



add-drop means, operatively connected between said first and second converting means, for performing, at the lower rate, a through operation to connect said first and second converting means with each other and, alternatively performing an add-drop operation to connect said second converting means with the optional transmission line.

5,343,465

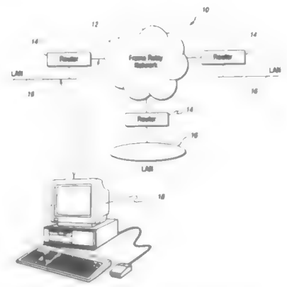
METHOD AND SYSTEM FOR REAL-TIME BURSTINESS ANALYSIS OF NETWORK TRAFFIC

Khalid M. Khalil, Piscataway, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Jun. 11, 1993, Ser. No. 75,252

Int. Cl.[5] H04J *3/26;* **H04L** *12/56*

U.S. Cl. 370—17 **10 Claims**



1. A method, for use with a communications network, for measuring and analyzing the burstiness of network traffic which includes at least one data burst, each data burst including a plurality of data packets travelling over the network, each data packet having an associated interarrival time upon arrival at the network, the method comprising:

determining a ratio of a first packet interarrival time and a second packet interarrival time, the first packet interarrival time being associated with a first data packet belonging to the at least one data burst, the second packet interarrival time being associated with a second data packet, the data packets consecutively arriving at the network;

comparing the ratio of the interarrival times to at least one predetermined constant; and

determining whether the second data packet belongs to the at least one data burst based on the comparison.

5,343,466

PATH ROUTING SYSTEM FOR COMMUNICATION NETWORK

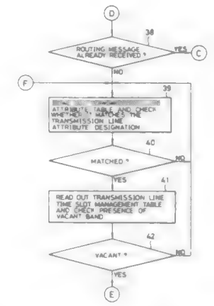
Hajime Kawamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 20,332

Claims priority, application Japan, Feb. 21, 1992, 4-035258

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—54 **12 Claims**



1. A path routing system for a communication network comprising a plurality of nodes and a plurality of transmission lines, said path routing system comprising:

an originate node including means for transmitting a routing message with a transmission line attribute designation to a bypass node for establishing a path between said originate node and a terminal node;

a repeater node including means for searching for a transmission line having the same attribute as said transmission line attribute designation upon receipt of said routing message with the transmission line attribute designation, and means for transmitting said message to an adjacent node through the searched transmission line,

whereby, a path from said originate node to said terminal node is autonomously selected to pass through transmission lines having the desired attribute by repeatably searching the transmission lines and transmitting the message between nodes disposed between said originate node and said terminal node.

5,343,467

SPACE/TIME SWITCHING ELEMENT HAVING INPUT/OUTPUT CIRCUITS EACH SEPARATELY SWITCHABLE BETWEEN TWO OR MORE BIT RATES

Peter Wöhr, Stuttgart, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed May 29, 1992, Ser. No. 891,285

Claims priority, application Fed. Rep. of Germany, May 31, 1991, 4117869

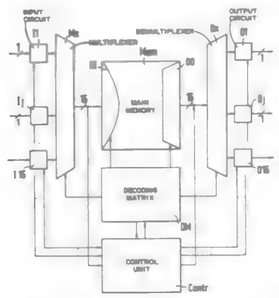
Int. Cl.[5] H04Q *11/04;* **H04L** *12/52, 12/56;* **H04J** *3/22*

U.S. Cl. 370—59 **11 Claims**

1. A space/time switching element comprising a plurality of input circuits (I1, . . . , I16) each associated with one of a plurality of input lines on each of which a plurality of input signals are receivable in a time-division multiplex mode, a plurality of output circuits (O1, . . . , O16) each associated with one of a plurality of output lines on each of which a plurality of output signals are placeable in a time-division multiplex mode, and switching means (Mx, Mem, Dx) for selectively

VOL 1165 ISS 5 AG 30 1994 UMI

assigning all input signals and all output signals to one another, characterized in that each input circuit (I1, . . . , I16) and each



output circuit (O1, . . . , O16) are separately switchable between two or more bit rates.

5,343,468

METHOD AND CIRCUIT ARRANGEMENT FOR TRANSMITTING A CONTINUOUS BIT STREAM UPON INVOLVEMENT OF AN ATM NETWORK

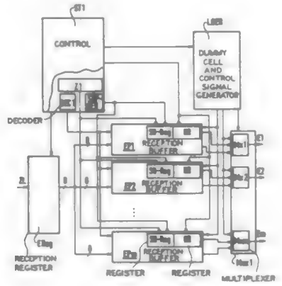
Peter Rau, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 28, 1993, Ser. No. 82,376

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1992, 4221477

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60 **6 Claims**



1. A method for transmitting a continuous bit stream with a first transmission bit rate via an ATM network that operates according to an asynchronous transfer mode, the ATM network having at least one ATM communication equipment with a plurality of inputs and outputs, said inputs and said outputs capable of inputting and outputting, respectively, message cells that have a cell header and an information part and that have a second transmission bit rate that is less than the first transmission bit rate, comprising the steps of:

subdividing the continuous bit stream into successive signal sections whose respective bit plurality of uniformly set, such that for each signal section said respective bit plurality plus a defined plurality of information bits correspond to a plurality of bits that are transmittable as useful signals in the information part of a message cell;

inserting a respective signal section of a plurality of signal sections, corresponding to a bit ratio of the first transmission bit rate to the second transmission bit rate, into a respective information part of a message cell and entering a continuously varying signal section sequence number into said plurality of information bits of the respective information part;

successively distributing message cells appearing during a control cycle onto a plurality of appertaining inputs of the plurality of inputs of the ATM network, the plurality of appertaining inputs corresponding in number to the bit rate ratio, and transmitting the message cells via the appertaining inputs to a plurality of appertaining outputs of the plurality of outputs of the ATM network allocated thereto;

removing from message cells appearing at the appertaining outputs signal sections respectively contained therein as well as respective signal section sequence numbers belonging thereto; and

reattaching the individual signal sections to one another to form a further continuous bit stream according to respective signal section sequence numbers.

5,343,469

COMMUNICATION SYSTEM AND COMMUNICATION DEVICES HAVING LOCK FUNCTION

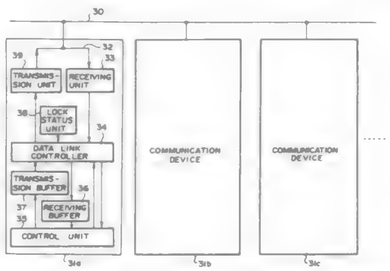
Izumi Ohshima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 11, 1991, Ser. No. 713,963

Claims priority, application Japan, Jun. 14, 1990, 2-155884; Nov. 14, 1990, 2-307694

Int. Cl.[5] H04L *12/40;* **H04J** *3/24*

U.S. Cl. 370—85.1 **5 Claims**



1. In a communication system comprising a transmission path, at least one master communication device capable of executing a communication, and at least one slave communication device to be a communication partner to said master communication device for performing data transfer therebetween using communication packets which include at least control bits indicative of at least locking, data length bits indicative of the size of a message to be transferred, and the message, wherein the improvement comprises:

first means in said slave communication device which is temporarily locked by said master communication device when said slave communication device receives said control bits indicative of locking, and

second means in said slave communication device for unlocking said first means when said slave communication device successfully receives a message having a data length specified by said data length bits after said control bits indicative of locking have been received by said slave communication device.

5,343,470

MULTIPLEX TRANSMISSION SYSTEM

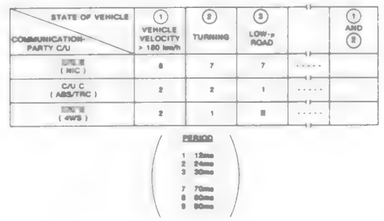
Masao Hideshima; Osamu Michihira, both of Hiroshima; Yoshikazu Nobutoki, Higashihiroshima, and Akira Sone, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 760,020, Sep. 13, 1991, abandoned. This application Aug. 6, 1993, Ser. No. 102,953

Claims priority, application Japan, Sep. 13, 1990, 2-241277; Sep. 20, 1990, 2-248724; Sep. 20, 1990, 2-248725

Int. Cl.[5] H04L *12/40, 12/42*

U.S. Cl. 370—85.1 **18 Claims**



1. A multiplex transmission system, for use in an automotive vehicle, in which a plurality of control units connected in decentralized fashion to a common transmission line transmit and receive information to and from one another at a prescribed period, comprising:

informing means for informing each control unit of the travelling state of the vehicle by providing the each control unit with the information; and

transmission control means for changing the period in which the information is transmitted among the plurality of control units, the change being made by referring to a map which contains both the travelling state of the vehicle and corresponding information transmission periods.

5,343,471

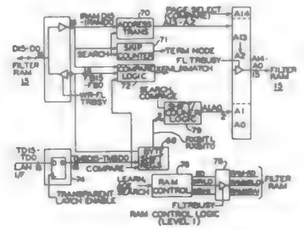
ADDRESS FILTER FOR A TRANSPARENT BRIDGE INTERCONNECTING LOCAL AREA NETWORKS

Robert Cassagnol, Silver Spring, Md., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 11, 1992, Ser. No. 880,857

Int. Cl.[5] H04L *12/46*

U.S. Cl. 370—85.13 **10 Claims**



1. An Address filter for an adaptive transparent bridge connecting a first local area network to a second local area network, whereby data frames including source addresses and destination addresses may be transferred from one of said local area networks to the other, said address filter comprising:

a memory partitioned into search tree nodes and a compare node, said compare node containing addresses which are known to belong to stations connected to said first local area network, said search tree nodes being formed into a plurality of links, each node including pointer data pointing to a subsequent node or to a location in said compare node and including a skip count identifying a pair of address bits;

means for addressing said linked node with pairs of bits of an address being filtered, the first of said pairs of bits identifying a first of said linked search tree nodes to obtain a skip count identifying a subsequent pair of address bits, as well as the identity of a subsequent pair of address bits, as well as the identity of a subsequently linked node to be addressed by said subsequent pair of address bits, said means addressing additional search tree nodes with additional pairs of address bits identified by a skip count of a previously addressed search node until a location in said compare node is obtained; and,

means for comparing said address contained in said compare node with said address being filtered, whereby the presence or absence of said address being filtered on said first local area network is determined.

5,343,472

MULTIPLEX TRANSMISSION SYSTEM FOR USE IN VEHICLES

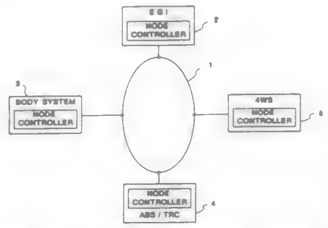
Osamu Michihira; Masao Hideshima, and Akira Sone, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 28, 1991, Ser. No. 676,283

Claims priority, application Japan, Mar. 30, 1990, 2-81411

Int. Cl.[5] H04J *3/02, 3/16*

U.S. Cl. 370—85.6 **15 Claims**



1. A multiplex transmission system for a vehicle having a shared multiplex transmission line, and a plurality of communication nodes of a first group and a second group interconnected via the shared multiplex transmission line, frequency of access of the communication nodes of said first group to said shared multiplex transmission line being lower than frequency of access of the communication nodes of said second group to said shared multiplex transmission line, the system comprising:

time-dividing means for dividing a time period during which said plurality of communication nodes are capable of accessing said shared multiplex transmission line into a first plurality of main time slots and a second plurality of main time slots, the time positions of the first plurality of main time slots within a time period and the time positions of the second plurality of main time slots within the time period being fixed, the number of said first plurality of main time slots being smaller than that of said second plurality of main time slots; and

assigning means for assigning all communication nodes of said first group to said first plurality of main time slots and all communication nodes of said second group to said second plurality of main time slots.

VOL 1165 ISS 5 AG 30 1994 UMI

5,343,473

METHOD OF DETERMINING WHETHER TO USE PREEMPT/RESUME OR ALTERNATE PROTOCOL FOR DATA TRANSMISSION

Israel Cidon, Haifa, Israel; Richard M. Doney, Durham, N.C.; John E. Drake, Jr., Pittsboro, N.C.; Elizabeth A. Hervatic, Apex, N.C.; Kenneth H. Potter, Jr., Raleigh, N.C., and Theodore E. Tedijanto, Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 7, 1992, Ser. No. 927,697

Int. Cl.[5] H04Q *1/39*

U.S. Cl. 370—85.6 **1 Claim**

FIELD IN LINK ACTIVATION CONTROL MESSAGE	CONTROL MESSAGE A → B	CONTROL MESSAGE B → A	LINK DIRECTION DESCRIBED BY FIELD IN CONTROL MESSAGE	RESOLUTION	COMMENT
HIGH-PRIORITY TRAFFIC SUPPORTED	YES	YES	A → B	YES	HIGH-PRIORITY PACKETS WILL BE SUPPORTED ON THIS LINK, SINCE BOTH ENDS SUPPORT IT.
MAXIMUM LOW-PRIORITY PACKET SIZE SUPPORTED	RECEIVE = 6KB	TRANSMIT = 1KB	B → A	1KB	B WILL TRANSMIT A MAXIMUM LOW-PRIORITY PACKET SIZE OF 1KB, WHICH IS MIN (6KB, 1KB).
MAXIMUM LOW-PRIORITY PACKET SIZE SUPPORTED	TRANSMIT = 6KB	RECEIVE = 6KB	A → B	6KB	A WILL TRANSMIT A MAXIMUM LOW-PRIORITY PACKET SIZE OF 6KB, WHICH IS MIN (6KB, 6KB).

1. For use in a multi-system network in which data may be transmitted in either low-priority data packets or high-priority data packets, a method for determining whether to use a preempt/resume protocol or an alternate protocol for transmitting data packets from a local system to a remote system over a connecting communications link having a known line speed, said method being practiced at the local system and comprising steps of:

a) sending a message to the remote system, said sent message containing fields indicating 1) whether the local system supports use of a preempt/resume protocol and 2) the size of the largest low-priority data packet the local system can send;

b) receiving a message from the remote system, said received message indicating 1) whether the remote system supports use of a preempt/resume protocol and 2) the size of the largest low-priority data packet the remote system can receive;

c) if the sent and received messages indicate that either or both of the local and remote systems do not support use of a preempt/resume protocol, then choosing an alternate protocol; and

d) if the sent and received messages indicate that both of the system support use of a preempt/resume protocol

1) using field values in the sent and received messages, comparing the size of the largest low-priority data packet the local system can send to the size of the largest low-priority data packet the remote system can receive and selecting the lesser of the two sizes,

2) based on the known line speed and the selected size, determining whether transmission of a low-priority data packet of the selected size from the local system would delay transmission of a subsequent data packet by more than a predetermined amount of time, and

3) initiating use of a preempt/resume protocol only where the preceding step indicates transmission of a low-priority data packet of the selected size would delay transmission of a subsequent data packet by more than the predetermined amount of time.

5,343,474

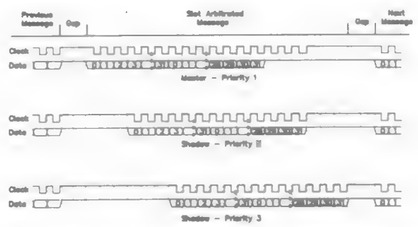
SLOTTED ARBITRATION WITHOUT TIME JITTER IN A TABLE DRIVEN PROTOCOL

Kevin R. Driscoll, Maple Grove, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 31, 1993, Ser. No. 39,873

Int. Cl.[5] H04L *12/40*

U.S. Cl. 370—85.3 **2 Claims**



1. A method for allocating access to a communications bus among a plurality of users for repeatable time frames comprising the steps of:

dividing each of said time frames into a predetermined number of time slots, each of said times slots having a fixed, predetermined duration,

for designated ones of said predetermined time slots, assigning at least two of said users to each of said designated time slots,

assigning a priority to each of said at least two users, thereby creating prioritized users; and

allowing each of said prioritized users, in the order of priority, access to said communications bus only if a predetermined time has elapsed, and none of said prioritized users having a higher priority is transmitting.

5,343,475

MULTIPLEX TRANSMISSION SYSTEM

Yutaka Matsuda; Hiroo Morise, both of Hiratsuka; Yoshikazu Nobutoki, Higashihiroshima; Seiji Hirano, Hiroshima, and Hiroaki Sakamoto, Fukuyama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Mazda Motor Corp., Hiroshima, both of Japan

Filed Mar. 31, 1992, Ser. No. 860,896

Claims priority, application Japan, Apr. 2, 1991, 3-070031

Int. Cl.[5] H04J *3/24, 3/02;* **H04L** *1/18*

U.S. Cl. 370—94.1 **15 Claims**



1. A multiplex transmission system comprising:

a plurality of multiplex nodes;

a common multiplex transmission line means for interconnecting said plurality of multiplex nodes and for transmitting a frame of data among the multiplex nodes through the common multiplex transmission line;

said multiplex nodes including means for sending out an acknowledge signal, when a data transmission of a frame of data is properly carried out, for indicating a proper completion of the data transmission, and for returning said acknowledge signal to an acknowledge signal area provided in the frame of data corresponding to the respective multiplex nodes;

wherein the frame of data further includes a group identifier specifying more than one group of predetermined combinations of multiplex nodes from which an acknowledge signal is to be returned, and an acknowledge signal area having locations thereof assigned to said multiplex nodes from which the acknowledge signal is to be returned, the acknowledge signal area having a length which is variable depending on the group identifier;

the multiplex nodes, which belong to a specified group specified by the group identifier, each including means for returning an acknowledge signal in accordance with the group identifier in the transmitted frame of data; and

wherein the multiplex nodes which do not belong to the specified group do not return the acknowledge signal.

5,343,476

TRANSMISSION SYSTEM FOR THE SYNCHRONOUS DIGITAL HIERARCHY

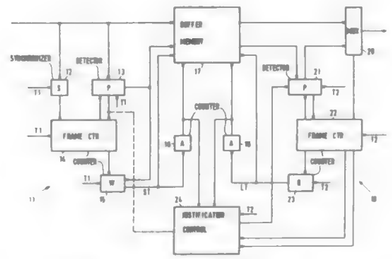
Ralph Urbansky, Schwaig, Fed. Rep. of Germany, assignor to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 857,358, Mar. 25, 1992, abandoned. This application Nov. 5, 1993, Ser. No. 148,017

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1991, 4110933

Int. Cl.[5] H04J *3/06;* **H04L** *7/04*

U.S. Cl. 370—102 **25 Claims**



1. A transmitter for synchronous digital signals to be transmitted as a series of containers, comprising

a buffer into which newly arrived data for one of said containers are written, and from which stored data for said one container are read,

a write address generator and a read address generator, for respectively providing write addresses and read addresses of locations in the buffer where said newly arrived data are to be written and said stored data are to be read, respectively,

means for detecting the presence of positive and negative justification locations in said newly arrived data, and generating location presence signals responsive to detection of presence of such locations,

an output circuit receiving said stored data read from said buffer, and

a justification decision circuit comprising subtractor means for determining a difference between said write addresses and said read addresses; low-pass filter means receiving said location presence signals, and providing a low-pass filtered location presence value; and means for combining said difference and said low-pass filtered location presence value, and forming a justification signal based thereon,

responsive to said justification signal, said output circuit inserting justification locations in said stored data read from said buffer.

5,343,477

DATA PROCESSING SYSTEM WITH DATA TRANSMISSION FAILURE RECOVERY MEASURES

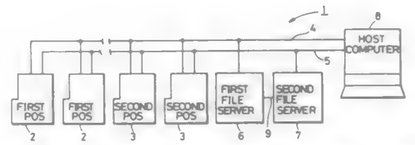
Kazutoshi Yamada, Shiga, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Sep. 12, 1991, Ser. No. 758,108

Claims priority, application Japan, Sep. 17, 1990, 2-248172

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—8.2 **5 Claims**



1. A data processing system with data transmission failure recovery measures, comprising:

first and second storing means for storing files having identical contents,

a first transmission line connected to said first storing means,

a second transmission line connected to said second storing means,

a plurality of first terminals connected to said first and second transmission lines, and

a plurality of second terminals connected to said first and second transmission lines;

wherein each of said first and second terminals comprises:

first transmission control means for transmitting data to and from said first storing means only via said first transmission line, and

second transmission control means for transmitting data to and from said second storing means via only said second transmission line,

wherein each of said first terminals further comprises first switching means for selecting said first transmission control means during normal transmission, and for selecting said second transmission control means if a failure in a transmission controlled by said first transmission control means occurs and,

wherein each of said second terminals further comprises second switching means for selecting said second transmission control means during normal transmission, and for selecting said first transmission control means if a failure in a transmission controlled by said second transmission control means occurs,

such that said first and second terminals communicate over different transmission lines during normal transmission and over a same transmission line if a failure in transmission over one of said first and second transmission lines occurs.

5,343,478

COMPUTER SYSTEM CONFIGURATION VIA TEST BUS

Larry C. James, West Columbia; Carl W. Kagy, Lexington; Jeffrey F. Gates, Newberry; Jeffrey A. Hawkey; Thomas F. Heil, both of Easley, and David L. Simpson, West Columbia, all of S.C., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 27, 1991, Ser. No. 800,901

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—22.3 **10 Claims**

1. A method of operating a computer system test bus to configure a computer system including said test bus, said method comprising the steps of:

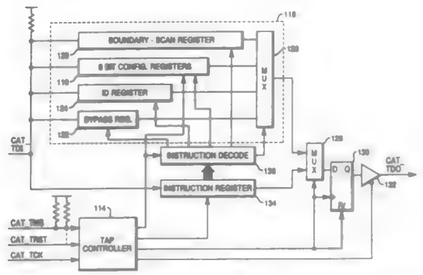
maintaining configuration information for said computer system;

providing configuration register means for receiving said configuration information;

VOL 1165 ISS 5 AG 30 1994 UMI

interfacing said configuration register means with said test bus;

defining a write operation for said test bus to write said configuration register means via said test bus; and



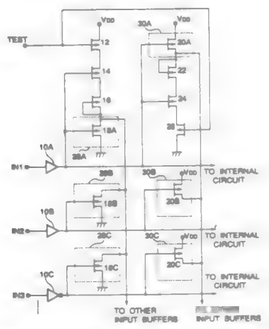
performing said write operation to transfer said configuration information to said configuration means to thereby configure said computer system.

5,343,479

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING THEREIN CIRCUIT FOR DETECTING ABNORMALITY OF LOGICAL LEVELS OUTPUTTED FROM INPUT BUFFERS

Noboru Kiyozaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 31, 1990, Ser. No. 606,952
Claims priority, application Japan, Oct. 31, 1989, 1-283923
Int. Cl.[5] H04B *17/00*
U.S. Cl. 371—22.5 17 Claims



14. An apparatus for detecting defective voltage threshold levels comprising:

a semiconductor integrated circuit including:

an abnormality indicating output,

a plurality of external input pins,

a plurality of input buffers, each having an input, an output, a minimum input high level voltage, and a maximum input low level voltage, the inputs of the plurality of input buffers being respectively connected to the input pins;

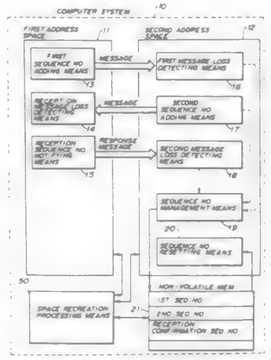
abnormality detection means, connected to the outputs of the plurality of input buffers, for outputting an abnormality signal on the abnormality indicating output (a) when a first pattern of input signals, each of which has either the maximum input low level voltage or the minimum input high level voltage for bringing the outputs of all of the input buffers to a logical high level, are respectively input on the external input pins, the abnormality detection means detecting an input buffer that is defective whenever an output of the input buffer that is defective is lower than a normal high level voltage, and (b) when a second pattern of input signals, each of which has either the maximum input low level voltage or the minimum input high level voltage for bringing the outputs of all of the input buffers into a logical low level, are respectively input on the external input pins, the abnormality detection means detecting an input buffer that is defective whenever an output of the input buffer that is defective is higher than a normal low level voltage.

5,343,480

SYSTEM FOR DETECTING LOSS OF MESSAGE

Syuichi Hasegawa, Numazu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 550,693, Jul. 10, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,349
Claims priority, application Japan, Jul. 10, 1989, 1-177450
Int. Cl.[5] H04L *1/14*
U.S. Cl. 371—34 8 Claims



1. A system for detecting a loss of at least one of transmission, reception and response messages which is transmitted between first and second address spaces of a computer system, which loss may be caused by a fault, said system capable of using a request form the first address space, a response message, and a comparison, said system comprising:

first sequence number adding means for adding a first sequence number to the transmission message which is transmitted from the first address space to the second address space;

reception message loss detecting means for detecting the loss of the reception message which is received from the second address space by the first address space based on a second sequence number which is added to the reception message;

reception sequence number notifying means for notifying the second address space of the second sequence number which is added to the reception message as the response message given automatically or in response to the request from the first address space;

second sequence number adding means for adding the second sequence number to the reception message which is transmitted from the second address space to the first address space;

sequence number management means for controlling storage of the first and second sequence numbers;

a non-volatile memory for storing the first and second sequence numbers received from said sequence number management means;

sequence number resetting means for reading the first and second sequence numbers from said non-volatile memory when the second address space is destroyed by the fault and recreated thereafter;

first message loss detecting means for detecting the loss of the transmission message which is transmitted from the first address space based on the first sequence number which is added to the transmission message; and

second message loss detecting means for detecting the loss of the reception message which is transmitted from the second address space based on the comparison of the second sequence number which is stored in said non-volatile memory and the second sequence number which is notified by the response message which is transmitted from the first address space;

said first sequence number adding means, said reception message loss detecting means and said reception sequence number notifying means being included in the first address space,

said second sequence number adding means, said sequence number management means, said sequence number resetting means and said first and second message loss detecting means being included in the second address space,

the first address space storing at least the first sequence number of the transmission message, and

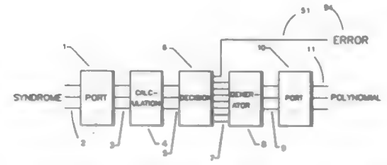
the second address space storing at least the second sequence number of the reception message.

5,343,481

BCH ERROR-LOCATION POLYNOMIAL DECODER

Clifford H. Kraft, 320 Robin Hill Dr., Naperville, Ill. 60540

Continuation of Ser. No. 637,694, Jan. 7, 1991, abandoned. This application Jun. 4, 1993, Ser. No. 73,606
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 2 Claims



1. An apparatus for producing electrical signals representative of coefficients of an error location polynomial corresponding to a received signal vector from a three-error correcting BCH code comprising:

An input port for receiving and storing syndrome component signals;

a logic tree traversal circuit adapted to produce control bits that indicate a chosen path through a binary tree with levels, by combining syndrome component signals at each level to choose a path to a next level;

means for connecting the input port to the logic tree traversal circuit;

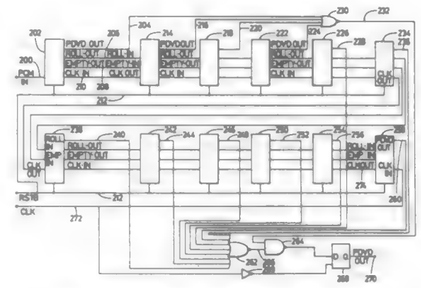
a polynomial generator circuit responsive to said control bits, coupled to the logic tree traversal circuit, adapted to produce signals corresponding to a third order error location polynomial representing the chosen path through the binary tree.

5,343,482

METHOD AND APPARATUS FOR DETECTING PULSE DENSITY VIOLATIONS IN T1 TRANSMISSION

Gordon A. Penner, Port Moody; Winston K. C. Mok; Steven F. Lang, both of Vancouver, and Charles K. Huscroft, Coquitlam, all of Canada, assignors to PMC-Sierra, Inc., Burnaby, Canada

Filed Jul. 16, 1991, Ser. No. 730,536
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—57.2 11 Claims



5. Apparatus for detecting a pulse density violation in the T1 transmission of digital data where it is required that there be a minimum of "N" "ones" in each and every time window of k (N+1) time slots of bits, comprising:

a) means for counting bits in sets of "k", successively, in "N+1" serial stages;

b) means for generating an empty-out signal on detection of an "empty" set of "k" bits;

c) means for generating a pulse density violation on detecting a second set of "k" zero bits in the "N+1" stages of bits at a time when the empty-out signal is present; and

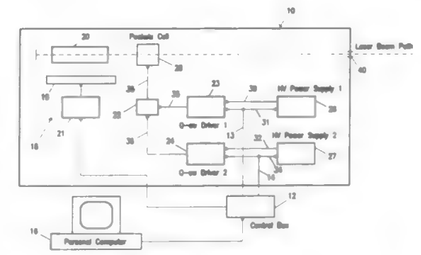
d) means for advancing a "one" in a given stage to the next stage and placing a "one" in the first bit location of the given stage, upon a second "one" following a first "one" in the given stage and separated by less than k "zeroes".

5,343,483

HIGH VOLTAGE FAST PULSE CONTROL FOR A Q-SWITCHED LASER

Patrick V. Farrell, Madison, Wis.; Janghee Lee, Seoul, Rep. of Korea, and Andrew B. Beal, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 19, 1993, Ser. No. 34,855
Int. Cl.[5] H01S *3/11*
U.S. Cl. 372—10 14 Claims



1. A Q-switched laser system comprising:

(a) a laser light source including a laser rod, flash lamp, flash lamp power supply, and a Q-switch including an electro-

VOL 1165 ISS 5 AG 30 1994 UMI

optical cell for controlling the release of light from the laser in response to a voltage signal;

(b) first Q-switch driver means for producing an output voltage pulse in response to a control signal for operating the electro-optical cell of the Q-switch, and a high voltage power supply for providing a high voltage to the first Q-switch driver means;

(c) second Q-switch driver means for providing an output voltage pulse in response to a control signal for operating the electro-optical cell of the Q-switch, and a second high voltage power supply providing a high voltage to the second Q-switch driver means;

(d) an interface circuit connected to receive the outputs of the first and second Q-switch driver means and connected to provide its output to the electro-optical cell, the interface circuit including means for passing an output voltage pulse from either one of the Q-switch driver means to its output while isolating the other Q-switch driver means from the voltage provided to the electro-optical cell;

(e) control means for controlling the first and second Q-switch driver means and the flash lamp power supply to provide a control signal to the flash lamp power supply to fire the flash lamp, then providing a control signal to the first Q-switch driver means to cause it to provide an output pulse, and thereafter supplying a control signal to the second Q-switch driver means to cause it to provide an output pulse a selected period of time after the output pulse from the first Q-switch driver means.

5,343,484

SHG (SECOND-HARMONIC GENERATION) DEVICE

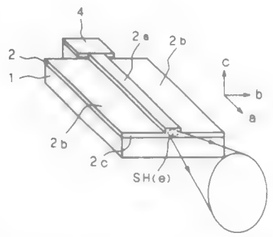
Kazushi Mori, Hirakata; Mitsuaki Matsumoto, Higashiosaka; Tadao Toda, Soraku; Hideyuki Nonaka, Tsuzuki, and Takao Yamaguchi, Ibaraki, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Aug. 12, 1992, Ser. No. 930,190

Claims priority, application Japan, Aug. 20, 1991, 3-234123

Int. Cl.[5] G02F *1/37*; H01S *3/109*

U.S. Cl. 372—22 **19 Claims**



1. An SHG device for generating a second harmonic wave by applying nonlinear optics to a fundamental wave of a coherent light having a fundamental wavelength comprising:

a substrate;

a waveguide layer, which is optically nonlinear, formed of a $KNbO_3$ single crystal on said substrate;

said substrate having a refractive index smaller than a refractive index of said waveguide layer and a lattice spacing substantially equivalent to that of said waveguide layer;

a cladding layer on said waveguide layer;

said waveguide layer having a ridged channel and flat portions adjoining opposing sides of said ridged channel;

said flat portions having a thickness t_f;

said ridged channel having a thickness t_r thicker than said thickness t_f;

said thickness t_f being selected such that an effective refractive index at said fundamental wavelength is less than an effective refractive index at said second harmonic wavelength as determined by a three-layer slab waveguide characteristic applied to said flat portions;

said thickness t_r being selected such that an effective refractive index at said fundamental wavelength is greater than an effective refractive index at said second harmonic wavelength as determined by a three-layer slab waveguide characteristic applied to said ridged channel; and

said waveguide layer having a c-axis oriented perpendicular to a contacting surface of said substrate and an a-axis oriented parallel to said ridged channel such that guided mode phase matching is achieved wherein a zeroth-order mode of said second harmonic wave is phase matched to a zeroth-order mode of said fundamental wave.

5,343,485

LASER DIODE PUMPED SOLID STATE LASER

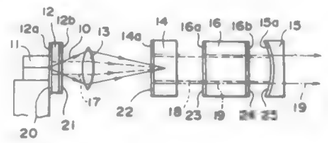
Yoji Okazaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 1, 1992, Ser. No. 937,970

Claims priority, application Japan, Sep. 11, 1991, 3-231739

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—22 **3 Claims**



1. A laser diode pumped solid state laser, comprising a primary solid state laser medium containing a rare earth metal which is pumped by a semiconductor laser, and wherein a wavelength of a laser beam having been obtained from the solid state laser oscillation is converted by a nonlinear optical material into a different wavelength, and

means for producing injection locking in a single longitudinal mode, said means comprising a second solid state laser medium for injection locking, which is located between said primary solid state laser medium and said semiconductor laser, said second solid state laser medium for injection locking being pumped by said semiconductor laser and producing a laser beam for injection locking through solid state laser oscillation in the single longitudinal mode, such that said laser beam for injection locking impinges upon said primary solid state laser medium.

5,343,486

SEMICONDUCTOR LASER DEVICE

Kazuhiko Itaya, Tokyo; Genichi Hatakoshi, and Koichi Nitta, both of Yokoyama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 19, 1992, Ser. No. 962,725

Claims priority, application Japan, Oct. 21, 1991, 3-272910

Int. Cl.[5] H01S *3/15*

U.S. Cl. 372—43 **30 Claims**

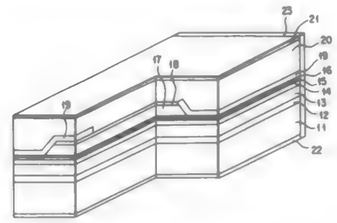
1. A semiconductor laser device including:

a compound semiconductor substrate;

a double hetero structure that is formed on said compound semiconductor substrate and having an active layer and first and second cladding layers which sandwich said active layer, said double hetero structure having opposing first and second facets;

a current blocking region formed on said double hetero

structure and on one facet side that is nearer to the first facet than to the second facet;



reflecting means arranged on the second facet and having a reflectance that is higher than that of a natural cleavage surface.

5,343,487

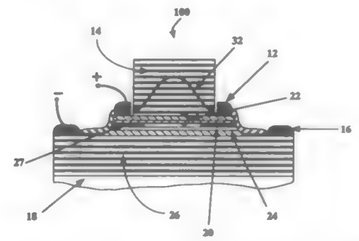
ELECTRICAL PUMPING SCHEME FOR VERTICAL-CAVITY SURFACE-EMITTING LASERS

Jeffery W. Scott, Carpinteria, and Larry A. Coldren, Santa Barbara, both of Calif., assignors to Optical Concepts, Inc., Lompac, Calif.

Filed Oct. 1, 1992, Ser. No. 955,562

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—46 **23 Claims**



1. A vertical-cavity surface emitting laser device (VCSEL), said VCSEL device having an active region, first and second mirror stacks forming a resonant cavity, a radial like electrode configuration with a first electrode disposed largely around a base of the first mirror stack near a first side of the active region, a second electrode on an opposing second side of the active region, a first contacting region and a second contacting region on each first and second side of the active region in contact with said respective first electrode and said second electrode, each one of said contacting regions providing a current path for distributed current through the active region, the improvement comprising:

a nonlinear increasing resistivity profile in at least one of said contacting regions between at least one of said first or second electrodes and said active region where said increasing resistivity is such that the resistivity adjacent to said active region is at least one order of magnitude greater that the resistivity in contact with said first or second electrode to minimize current crowding at perimeter edges of said active region.

5,343,488

INSTALLATION FOR THE FORMATION OF A LASER BEAM SUITABLE FOR ISOTOPE SEPARATION

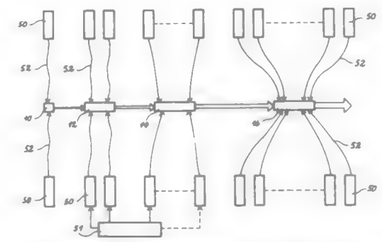
Jean Guyot, Cernay la Ville, and Etienne Pochon, Clamart, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 14, 1992, Ser. No. 960,798

Claims priority, application France, Oct. 18, 1991, 91 12894

Int. Cl.[5] H01S *3/09*

U.S. Cl. 372—69 **7 Claims**



1. An installation for the formation of a laser beam suitable for isotope separation in an atomic vapor, comprising:

at least one dye laser chain comprising an oscillator stage and at least one amplifier stage arranged in series;

an optical pumping means for said at least one dye laser chain, comprising a plurality of solid matrix lasers, all operating in parallel, for outputting pulses lasting less than 100 ns, at a wavelength in the visible range;

optical fibers for guiding the pulses emitted by said plurality of solid matrix lasers to the oscillator stage and at least one amplifier stage of the dye laser chain, each oscillator stage and amplifier stage thus being pumped by the pulses output from the plurality of solid matrix lasers.

5,343,489

ARRANGEMENT FOR SHAPING A LASER BEAM AND FOR REDUCING THE COHERENCE THEREOF

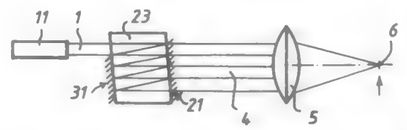
Johannes Wangler, Königsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jul. 13, 1992, Ser. No. 912,277

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1991, 4124311

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—93 **10 Claims**



1. An arrangement for shaping a laser beam having a predetermined coherence length and for reducing the coherence thereof, the laser beam having a first cross section and the arrangement comprising:

a transparent carrier block having two mutually opposite planar surfaces approximately parallel to each other and at an angle to the laser beam and said planar surfaces being disposed at a distance from each other which is greater than half of said coherence length;

first and second mirrors being applied to corresponding ones of said planar surfaces to reflect said laser beam therebetween;

VOL 1165 ISS 5 AG 30 1994 UMI

said first mirror being fully reflective and said second mirror being partially reflective and partially transmissive so as to multiply reflect said laser beam between said first and second mirrors and to transmit a component beam through said second mirror with each reflection with no gap between mutually adjacent component beams transmitted through said second mirror and which are reflected a different number of times in said arrangement accompanied by a corresponding intensity change for each reflection;

said component beams conjointly defining a composite beam of reduced coherence exiting from said second mirror and having a second cross section greater than said first cross section; and,

said second mirror being reflectively coated in varying amounts over the width thereof to compensate for said intensity change with each reflection thereby making said composite beam more homogeneous across said second cross section.

5,343,490

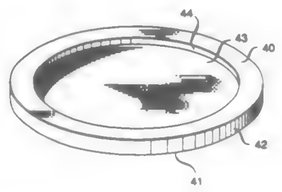
WHISPERING MODE MICRO-RESONATOR

Samuel L. McCall, Chatham, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 761,207, Sep. 17, 1991, abandoned. This application Sep. 11, 1992, Ser. No. 943,943

Int. Cl.[5] H01S *3/05*

U.S. Cl. 372—94 **27 Claims**



1. Apparatus comprising at least one element providing for cavitation of electromagnetic energy with cavitation being primarily dependent upon whispering gallery modes in accordance with which modal path is defined within a body of high refractive index for such energy relative to refractive index of surrounding ambient at an interface between such body and ambient, such path being polygonal and of at least three sides with retention being primarily due to incidence of cavitating wave energy at or below the critical angle defined at such interface

Characterized in that the said element, at least over a region corresponding with a substantial portion of such cavitation path, has a dimension of a maximum of $\lambda/2n_{eff}$ as measured in a direction normal to the plane of the path, in which λ is the wavelength of cavitating energy as measured in a vacuum and n_{eff} is the actual refractive index for such cavitating energy, such value accounting both for variation in bulk index for the medium of the body and for such variation on such bulk index as is introduced due to constraining surfaces, and in which such interface is of refractive index contrast for cavitating energy which is numerically equal to at least 1.5, such value yielded by the fraction n_{eff}/n_s in which n_{eff} is the effective refractive index for cavitating energy within the said body and n_s is the refractive index for such energy outside the defining interface of such body.

5,343,491

METHOD OF SUPPRESSING DUST AND FUMES DURING ELECTRIC STEEL PRODUCTION

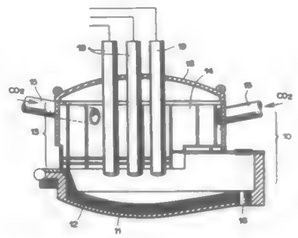
Georges Herren, Rossháusern, and Dieter Reiber, Gerlafingen, both of Switzerland, assignors to Carbagas and Von Roll AG, Switzerland

Filed Nov. 25, 1992, Ser. No. 981,614

Claims priority, application European Pat. Off., Nov. 28, 1991, 91810930.7

Int. Cl.[5] F27D *17/00*

U.S. Cl. 373—8 **12 Claims**



1. A method of suppressing dust and fumes in the production of steel in an electric melting furnace from unmelted iron scrap products containing combustible constituents, the method comprising charging the iron scrap products in a melting vessel containing metal which is partly molten, and introducing solid carbon dioxide into the melting vessel before, during and after charging the iron scrap products to prevent explosive burning of the combustible constituents, oxygen present in the melting vessel being displaced before, during and after charging the iron scrap products by expanding gaseous carbon dioxide produced from the solid carbon dioxide.

5,343,492

CLOSED INDUCTION FURNACE FOR THE MELTING AND CASTING OF SUBSTANCES

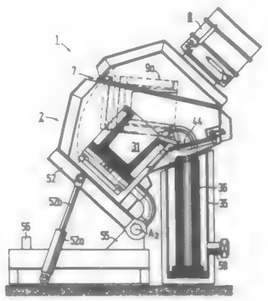
Alfred Henn, Rodenbach, Fed. Rep. of Germany, assignor to Leybold Durferrit GmbH, Cologne, Fed. Rep. of Germany

Filed May 5, 1993, Ser. No. 57,653

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1992, 4229764

Int. Cl.[5] F27D *3/00*

U.S. Cl. 373—143 **10 Claims**



1. Closed induction furnace for melting and casting of materials, said furnace comprising

a furnace chamber having a first opening surrounded by a first sealing flange and closure means for making said furnace chamber gas tight,

a crucible surrounded by an induction coil in said furnace chamber, said crucible being tiltable relative to said chamber about a first tilt axis to pour molten material through said first opening,

a receiving chamber having a second opening surrounded by a second sealing flange and containing a receiving vessel which receives said molten metal,

means for tilting said furnace chamber about a second tilt axis from a melting position to a pouring position so that said first sealing flange comes sealingly into a contact with said second sealing flange when said furnace chamber is in the pouring position.

5,343,493

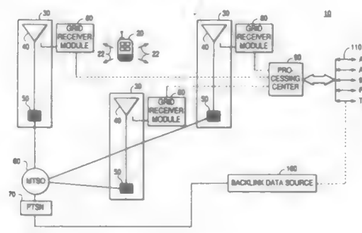
PERSONAL ASSISTANCE SYSTEM AND METHOD FOR USE WITH A CELLULAR COMMUNICATION SYSTEM

Khalid Karimullah, San Diego, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 16, 1993, Ser. No. 33,673

Int. Cl.[5] H04L *27/30*

U.S. Cl. 375—1 **15 Claims**



1. A personal assistance system for use with a cellular communication system operating over a cellular communication band and having a plurality of cell-sites, said personal assistance system comprising:

a transceiver, said transceiver including

transmitting means for transmitting to said plurality of cell-sites a spread spectrum burst of pulses including a service request codeword indicating a request for service from a service provider, and

receiving means for receiving a response from said service provider to said request for service, said response being transmitted by at least one of said plurality of cell-sites;

a plurality of grid receiver modules, each of said grid receiver modules including

coupling means for coupling said grid receiver module to a respective one of said plurality of cell-sites, and

proxy cell-phone means for originating a cellular call on said cellular communication system to a destination number of said service provider and on behalf of said transceiver upon receipt of said destination number of said service provider; and

processing center means coupled to said plurality of grid receiver modules for, in response to said request for service, informing said service provider of said request for service, designating one of said plurality of cell-sites as a preferred cell-site, and sending said destination number of said service provider to said proxy cell-phone means of said preferred cell-site to cause said proxy cell-phone means of said preferred cell-site to originate said cellular call and thereby create a cellular communication link between said transceiver means and said service provider.

5,343,494

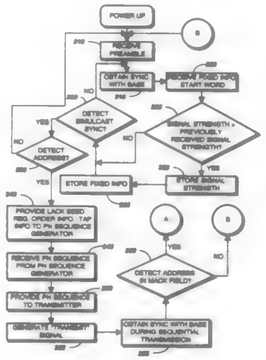
CODE DIVISION MULTIPLE ACCESS (CDMA) INBOUND MESSAGING SYSTEM UTILIZING OVER-THE-AIR PROGRAMMING

Douglas I. Averst, Delray Beach; Stephen R. Carsello, Boca Raton, and Warren P. Glotzbach, West Palm Beach, all of Fla., assignors to Motorola, Inc., Schamburg, Ill.

Filed Jan. 13, 1993, Ser. No. 4,160

Int. Cl.[5] H04L *9/00, 27/30*

U.S. Cl. 375—1 **31 Claims**



24. A method for providing data to a portable transceiver included in a communication system, the communication system further comprising a plurality of base stations for providing the data to the portable transceiver, the method comprising the steps of:

(a) the plurality of base stations transmitting information signals comprising an address associated with the portable transceiver and a plurality of seeds, wherein each base station included in the plurality of base stations transmits at least first and second unique seeds included in the plurality of seeds, and wherein the first and second unique seeds are associated, respectively, with first and second predetermined responses;

(b) the portable transceiver receiving the information signals transmitted by base stations having coverage areas in which the portable transceiver is located;

(c) the portable transceiver selecting a base station having a coverage area in which the portable transceiver is located;

(d) the portable transceiver decoding the information signal transmitted by the selected base station to recover the first and second unique seeds included in the information signal transmitted by the selected base station; and

(e) the portable transceiver utilizing the first and second unique seeds to generate first and second pseudo-noise (PN) sequences in accordance with the first and second unique seeds, wherein the first and second PN sequences are indicative of the first and second predetermined responses, respectively.

5,343,495

METHOD OF MULTIPATH DSSS COMMUNICATIONS

John W. Lovell, Sherborn; Karen M. Sebramm, Needham, and William E. DeLisle, Milford, all of Mass., assignors to GTE Government Systems Corporation, Waltham, Mass.

Filed Dec. 31, 1992, Ser. No. 999,038

Int. Cl.[5] H04L *27/30*

U.S. Cl. 375—1 **1 Claim**

1. A method of recovering a plurality of multipath direct sequence spread spectrum signal components having an expected received time span in spread-spectrum communications, comprising the steps; modulating digital data comprised

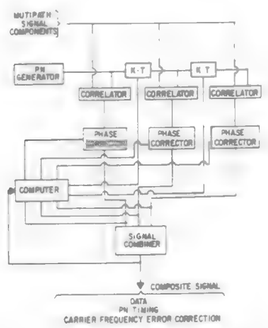
VOL 1165 ISS 5 AG 30 1994 UMI

of data bits having a data bit rate with a pseudo-noise code having a code repetation period and consisting of a sequence of chips having a chip rate greater than the data bit rate, and each chip having a chip duration;

modulating a carrier frequency with the pseudo-noise modulated data, wherein said sequence of chips has a code repetition period equal or greater than the expected received time span of multipath direct sequence spread spectrum signal components;

transmitting and receiving a plurality of multipath direct sequence spread spectrum signal components;

generating a sequence of time increments, each time increment equal to a chip duration or less, said sequence of time increments equal to the code repetition period of the pseudo-noise code;



testing for the presence of a first signal component of predefined signal strength in each of the time increments in said sequence of time increments until said first signal component is detected;

measuring the strength of the signal component at each timing increment;

selecting signal components having the highest strengths as selected signal components;

phase correcting said selected signal components with respect to said first signal component to obtain phase corrected signal components; and

summing said phase corrected signal components to obtain a composite received signal.

5,343,496

INTERFERENCE SUPPRESSION IN CDMA SYSTEMS

Michael L. Honig, Bloomfield, and Upamanyu Madhow, Morristown, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Sep. 24, 1993, Ser. No. 127,384

Int. Cl.[5] H04L *27/30, 1/00;* **H04B** *1/10*

U.S. Cl. 375—1 **15 Claims**

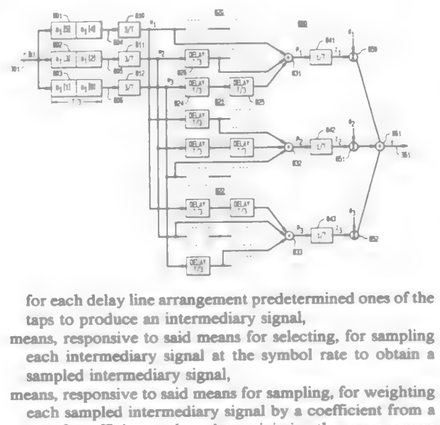
14. Circuitry for demodulating an incoming channel signal propagating in a DS/SS CDMA system with a receiver having a given CDMA signature sequence to generate a detected symbol which estimates a transmitted symbol, wherein the signature sequence is also assigned to a corresponding source, the source and receiver being synchronized, wherein the system has a pre-determined processing gain and a concomitant chip rate determined by the processing gain and the symbol rate of the system, and wherein the incoming channel signal is sampled at the chip rate to produce an incoming sampled signal, the circuitry comprising

a bank of at least two sub-filters for receiving the incoming sampled signal, each sub-filter in the bank being selected as a partitioned version of the matched filter used to detect the CDMA signature sequence of the receiver, wherein the number of filters in the bank and each sub-filter in the bank are configured with reference to a predetermined number of samples per symbol selected for processing,

means, responsive to the bank, for selecting the output of each sub-filter in the bank at an output rate commensurate with the number of filters in the bank to produce a sampled output for each sub-filter and a set of sampled outputs for the bank,

means, responsive to said means for selecting, for supplying the set of sampled outputs to a set of tapped delay line arrangements, the number of delay line arrangements being equal to the number of sub-filters,

means, responsive to said means for supplying, for selecting



for each delay line arrangement predetermined ones of the taps to produce an intermediary signal,

means, responsive to said means for selecting, for sampling each intermediary signal at the symbol rate to obtain a sampled intermediary signal,

means, responsive to said means for sampling, for weighting each sampled intermediary signal by a coefficient from a set of coefficients selected to minimize the mean square error between the transmitted symbol and the detected symbol to produce a weighted sampled output, and

means, responsive to said means for weighting, for summing each weighted sampled output to thereby generate the detected symbol.

5,343,497

METHOD AND DEVICE FOR THE SYNCHRONIZATION BETWEEN A BASE RADIO STATION AND A MOBILE RADIO STATION IN A DIGITAL RADIOMOBILE SYSTEM

Claudio Canosi, Valle Salimbene, and Giancarlo Rosina, Sedriano, both of Italy, assignors to Italtel Societa Italiana Telecommunicazioni S.p.A., Milan, Italy

Filed Aug. 14, 1992, Ser. No. 859,473

Claims priority, application Italy, Dec. 22, 1989, 22842 A/89

Int. Cl.[5] H04L *7/10;* **H04J** *3/06*

U.S. Cl. 375—111 **21 Claims**

20. An apparatus for synchronizing a mobile radio station having a local oscillator, oscillating at a local oscillator frequency, and a base station in a digital radio system, where the base station transmits a signal including modulated bits transmitted at a bit transmission frequency, in at least a first timeslot, a sinusoid having a frequency equal to 1/p, p being an integer, of the bit transmission frequency and in a second timeslot a preamble known by the mobile station, the apparatus comprising:

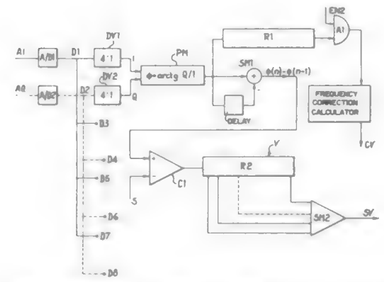
a demodulator, demodulating said signal to produce a demodulated signal;

a sampler, sampling the demodulated signal with a frequency equal to 1/p of the bit transmission frequency to produce samplings;

a measurer, measuring the phase increases between two samplings;

a comparator, comparing the phase increases with a first threshold value and assigning a first binary value to each of the phase increases when an increase is larger than the first threshold value and assigning a second binary value when an increase is not larger than the first threshold value;

a register, storing a vector formed with a number n of said binary values assigned to each of said phase increases, n being an integer;



an adder, summing the n binary values stored in said register creating a sum, and updating the sum at each new sampling;

means for identifying a minimum of a function of the sum with respect to time;

means for calculating a frequency offset of the local oscillator frequency responsive to the identifying means.

5,343,498

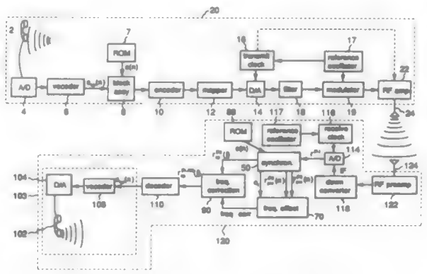
SAMPLE TIMING SELECTION AND FREQUENCY OFFSET CORRECTION FOR U.S. DIGITAL CELLULAR MOBILE RECEIVERS

Raymond L. Toy; Ravinder D. Koilpillai, both of Latham, and Sandeep Chennakeshu, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 8, 1993, Ser. No. 28,016

Int. Cl.[5] H04L *27/00*

U.S. Cl. 375—37 **9 Claims**



1. A digital communication system comprising:

a) a transmitter having a transmit clock, the transmitter for transmitting in a communication signal, a plurality of N_p reference symbols and N_s data symbols as a data slot with an initial phase governed by the transmit clock; and

b) a receiver comprising:

i. a down converter for receiving the transmitted reference and data symbols;

ii. a receive clock;

iii. an analog-to-digital (A/D) converter coupled to the receive clock, and down converter for sampling the transmitted reference symbols and data symbols to generate a received reference sample set $r_{pr}^{(k)}(n)$ $(n=1,2,3,\ldots N_p)$ and a data sample set $r_p^{(k)}(j)$ $(j=1,2,3,\ldots N_s)$ for each of a plurality of different values of sample timing k;

iv. a reference symbol storage unit for providing a set of stored reference symbols s(n) $(n=1,2,3,\ldots N_p)$;

v. a synchronizer coupled to the reference symbol storage unit, and the A/D converter for estimating channel impulse response (CIR) coefficients c_i (where i is from 1 to the channel tap length, L), creating a set of estimated reference symbols $r^{(k)}(n)$ $(n=1,2,3,\ldots N_p)$ from the set of stored reference symbols s(n) and the CIR coefficients c_i, selecting a plurality of values for sample timing k, and determining a sample timing b and a selected set of samples $r_{pre}^{(b)}(n)$ corresponding to sample timing b, which minimizes error between the estimated reference symbols $r^{(b)}(n)$ and the selected set of samples $r_{pre}^{(b)}(n)$;

v. a decoder for receiving and decoding the data sample set $r_{sp}^{(b)}(j)$ from the synchronizer into digital information; and

vi. an output device for utilizing the digital information.

5,343,499

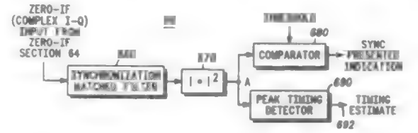
QUADRATURE AMPLITUDE MODULATION SYNCHRONIZATION METHOD

Steven C. Jasper, Hoffman Estates, and James A. Butler, Elgin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 537,199, Jun. 12, 1990, abandoned. This application Jan. 9, 1992, Ser. No. 818,327

Int. Cl.[5] H04L *5/12*

U.S. Cl. 375—39 **9 Claims**



1. In a multicarrier information system wherein information in a first information signal is subdivided into N secondary information signals, each of said N secondary information signals including a substantially periodic stream of discrete samples of the information in said first information signal and occupying separate frequency ranges, each of said N secondary information signals carrying a fractional amount of the information in said first information signal and modulating a carrier signal using quadrature-amplitude modulation (QAM) forming thereby N QAM subchannels substantially centered about a center frequency, each channel carrying discrete and periodic QAM symbols, each QAM symbol representing a portion of said first information signal, an improved method of providing timing and frequency synchronization information to a QAM receiver, said method comprising the steps of:

providing QAM signal synchronizing symbol sequences to substantially each of said N secondary information signals, accompanying transmission of information from said first information signal such that the QAM receiver can detect QAM signal timing and frequency synchronization for said QAM subchannels from said QAM signal synchronizing symbol sequences;

when N is even, arranging an even number of said N QAM subchannels into a number of pairs of frequency bands, said pairs of frequency bands displaced evenly about said center frequency; and

when N is odd, arranging an even number of said N QAM subchannels into a number of paired frequency bands, said paired frequency bands centered about a predetermined frequency, an unpaired QAM subchannel being substantially centered about said center frequency.

VOL 1165 ISS 5 AG 30 1994 UMI

5,343,500

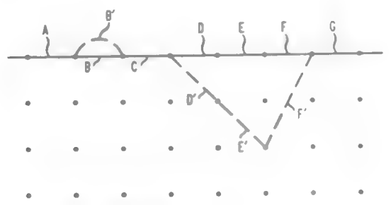
NON-LINEAR ENCODER AND DECODER FOR INFORMATION TRANSMISSION THROUGH NON-LINEAR CHANNELS

William L. Betts, St. Petersburg, Fla.; Arthur R. Calderbank, Maplewood, and Barton R. Saltzberg, Middletown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 754,107, Sep. 3, 1991, Pat. No. 5,265,127. This application Jul. 9, 1992, Ser. No. 910,800

Int. Cl.[5] H04L *5/12;* **H04M** *1/22;* **H03M** *7/50*

U.S. Cl. 375—39 **6 Claims**



1. Apparatus comprising

means for receiving a stream of data,

means for trellis encoding at least a portion of said stream of data using a predetermined trellis code, said trellis code being of a type in which the dominant error event is a trellis path error,

means for generating a sequence of warped signal points which represent the trellis encoded data, each of the warped signal points being related to a respective signal point of a predetermined base constellation in accordance with a predetermined warp function, and

means for applying the sequence of warped signal points to a transmission channel having a characteristic which is, at least in part, a non-linear function of magnitude, the warp function being substantially the inverse of that non-linear function.

5,343,501

ORTHOGONAL TRANSFORM APPARATUS FOR VIDEO SIGNAL PROCESSING

Shinya Kadono; Masakazu Nishino; Tatsuro Juri; Hiroshi Horikane, and Iwao Hidaka, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 18, 1992, Ser. No. 836,660

Claims priority, application Japan, Feb. 19, 1991, 3-24421

Int. Cl.[5] H04L *27/06;* **G06F** *7/38*

U.S. Cl. 375—94 **11 Claims**

1. An orthogonal transform apparatus coupled to receive successive data values of an input digital signal, said data values occurring with a fixed sample period, the apparatus comprising:

first reordering means (1) for reordering a sequence of data values within each of successive sets of eight of said data values;

first butterfly operational means (2) for executing a butterfly operation consisting of addition and subtraction of output data values produced from said first reordering means;

second reordering means (3) for reordering a sequence of output data values produced from said first butterfly operational means;

first delay means (30) for delaying each output data value produced from said second reordering means by a fixed time delay;

first selector means (6) for selecting one out of three output data values consisting of an output data value of said first delay means (30), an output data value of a multiplier means (32) and an output data value of an adder means (34);

second butterfly operational means (7) for executing a butterfly operation on output data values produced from said first selector means (6);

third reordering means (8) for reordering a sequence of output data values produced from said second butterfly operational means;

second delay means (35) for delaying each output data value produced from said third reordering means by a fixed time delay;

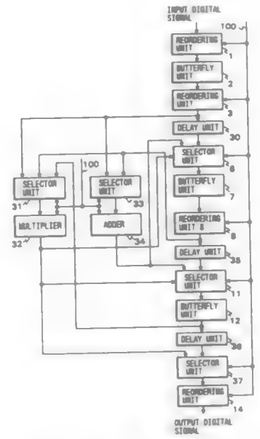
second selector means (11) for selecting one out of three output data values consisting of an output from said second delay means (35), an output from said multiplier means (32), and an output of said adder means (34);

third butterfly operational means (12) for executing a butterfly operation on output data values from said second selector means (11);

third delay means (36) for delaying each output data value produced from said third butterfly operational means by a fixed time delay;

third selector means (37) for selecting one out of two output data values consisting of an output from said third delay means (36) and an output from said multiplier means (32);

fourth reordering means (14) for reordering a sequence of output data values produced from said third selector means to obtain orthogonally transformed data values;



fourth selector means (31) for selecting one out of three output data values consisting of an output data value from said second reordering means (3), an output data value from said third reordering means (8), and an output data value of said third butterfly operational means (12);

said multiplier means (32) multiplying output data values from said fourth selector means (31) by respective ones of a plurality of predetermined coefficients;

fifth selector means (33) for selecting one of two output data values consisting of an output data value from said second reordering means and an output data value from said third reordering means; and

said adder means (34) executing addition of output data values produced from said fifth selector means;

wherein said apparatus executes a specific orthogonal transform computation on each of said sets of 8 successive data values of said input digital signal, by time division multiplex operation of said multiplier means and said adder means, wherein said specific orthogonal transform is a 2-dimensional cosine transform consisting of a 2 points cosine transform and a 4 points cosine transform.

5,343,502

SYMBOL TIMING DETECTING CIRCUIT

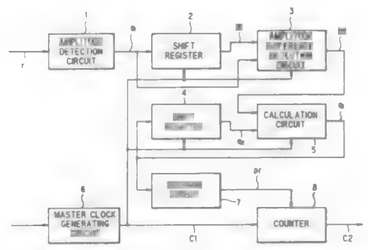
Toshifumi Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 982,950

Claims priority, application Japan, Nov. 29, 1991, 3-316942

Int. Cl.[5] H04L *7/027*

U.S. Cl. 375—106 **3 Claims**



1. A symbol synchronism circuit, comprising:

an amplitude detecting circuit for detecting an amplitude of a received signal of a TDMA signal modulated by $\pi/4$ shift OPSK to generate an amplitude signal;

a master clock generating circuit for multiplying a symbol rate by N which is a predetermined positive integer to generate a master clock signal;

a first N stage shift register for storing said amplitude signal in accordance with said master clock signal;

an amplitude difference detection circuit for calculating a difference between said amplitude signal and an output signal of said first N stage shift register in accordance with said master clock signal;

a second N stage shift register for storing an amplitude difference accumulation value in accordance with said master clock signal;

an amplitude difference calculation circuit for adding an output signal of said amplitude difference detection circuit and an output signal of said second N stage shift register in accordance with said mater clock signal to generate said amplitude difference accumulation value;

a decision circuit for deciding a sampling timing in accordance with said amplitude difference accumulation value to generate a preset signal; and

an N counter for dividing said master clock signal by said preset signal to generate a symbol clock signal; and

wherein said amplitude difference calculation circuit comprises an N-decinormal constant multiplication circuit for multiplying said output signal of said second N stage shift register by a time constant value, prior to an addition thereof to said amplitude difference signal.

5,343,503

METHOD AND APPARATUS FOR CLOCK AND DATA DELIVERY ON A BUS

Allen B. Goodrich, Palo Alto, Calif., assignor to Next, Inc., Redwood City, Calif.

Division of Ser. No. 557,556, Jun. 24, 1990. This application Nov. 22, 1991, Ser. No. 796,010

Int. Cl.[5] H04L *23/00*

U.S. Cl. 375—121 **4 Claims**

1. A method of transmitting data on a transmission line comprising the steps of:

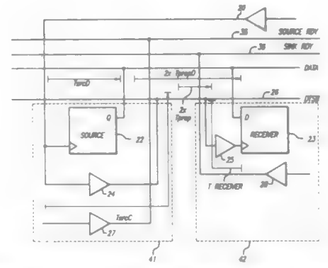
identifying a device for transmitting data on said transmission line as a source device;

identifying a device for receiving data from said transmission line as a sink device;

providing a source ready line from said source device to said sink device;

providing a sink ready line from said sink device to said source device;

asserting said source ready line at a first rate when said source can transmit data;



asserting said sink ready line at said first rate when said sink device can receive data;

transmitting said data from said source device to said sink device at a second rate.

5,343,504

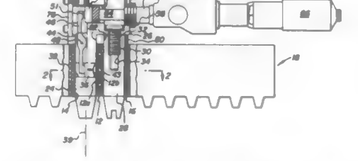
NUCLEAR FUEL BUNDLE SPACER SPRING CONSTANT GAUGE

William B. Gaylord, Jr.; Donald F. Butzin, and Robert K. Williams, all of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 25, 1993, Ser. No. 22,233

Int. Cl.[5] G21C *17/00*

U.S. Cl. 376—247 **10 Claims**



1. A gauge for measuring the spring constants of double-acting springs assembled with different pairs of ferrules in a spacer of a nuclear fuel bundle, wherein each spring has a first resilient side acting in a first ferrule of each pair to exert a fuel rod centering force and a second resilient side acting in a second ferrule of each pair to exert a separate fuel rod centering force, said gauge comprising, in combination:

an alignment rod for insertion into the first ferrule of a selected pair of ferrules to simulate the presence of a fuel rod and thus load the first resilient side of a spring assembled with the selected pair of ferrules;

a probe for insertion into the second ferrule of the selected pair of ferrules to simulate the presence of a fuel rod;

a force measuring device included in said probe in mechanically coupled relation with the second resilient side of the spring to indicate a magnitude of the centering force exerted by the second resilient side of the spring in the second ferrule;

a deflection measuring device mechanically coupled with the second resilient side of the spring and operable to produce plural measured deflections of the second resilient side of the spring; and

VOL 1165 ISS 5 AG 30 1994 UMI

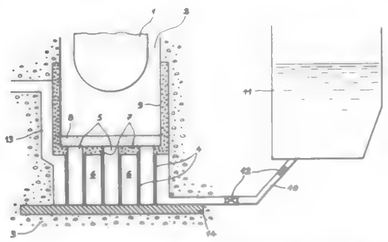
means connected and responsive to said force measuring device and said deflection measuring device for indicating a spring constant of the second resilient side of the spring.

5,343,505

DEVICE FOR THE RECOVERY OF A MOLTEN CORE OF A NUCLEAR REACTOR

Georges Serviere, Lissieu, France, assignor to Electricite de France Service National, France

Filed May 19, 1993, Ser. No. 64,816
Claims priority, application France, May 21, 1992, 92 06208
Int. Cl.[5] G21C *9/016*
U.S. Cl. 376—280 **11 Claims**



1. Device for the recovery of a molten nuclear reactor core, comprising beneath the core (1) vertical partitions (4) defining separate volumes (5,6), certain of the volumes (5) being empty and the other of the volumes (6) being filled with coolant, the coolant-filled volumes being surmounted by a refractory material layer (7), wherein the partitions (4) are generally parallel, the coolant-filled volumes (6) forming channels in which the coolant circulates substantially horizontally.

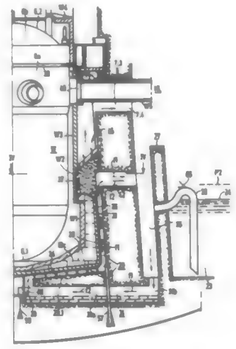
5,343,506

NUCLEAR REACTOR INSTALLATION WITH A CORE CATCHER DEVICE AND METHOD FOR EXTERIOR COOLING OF THE LATTER BY NATURAL CIRCULATION

Josef Artnik, Brüuningshof; Dietmar Bittermann, Füth; Jürgen Eyink, Erlangen; Ulrich Fischer, Hannberg; Andreas Göbel, Neukirchen A. Brand; Sieghard Hellmann, Erlangen; Wolfgang Köhler, Kalchreuth; Walter Korn, Niedernadorf; Hermann Plank, Adelsdorf; Manfred Scholz, Erlangen, and Horst Weisshäupl, Herzogenaurach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 21, 1993, Ser. No. 80,405
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 4041295
Int. Cl.[5] G21C *15/18, 9/016*
U.S. Cl. 376—280 **27 Claims**

1. A nuclear reactor installation, comprising:
a reactor pressure vessel, a reactor core in said reactor pressure vessel;
a supporting and protective structure supporting said reactor pressure vessel and surrounding said reactor pressure vessel on the bottom and laterally, said supporting and protective structure having a bottom region and a circumferential wall;
a core catcher device for said reactor core having a collecting basin for a core melt being installed below said reactor pressure vessel, said collecting basin having a bottom wall and a jacket wall being respectively separated from said bottom region and said circumferential wall of said supporting and protective structure by a spacing gap;
cooling channels disposed in said spacing gap at said bottom wall and said jacket wall for exterior cooling of said collecting basin with a cooling liquid; and turbulence bodies disposed in a surface region of said bottom wall for generating a turbulent flow of the cooling liquid



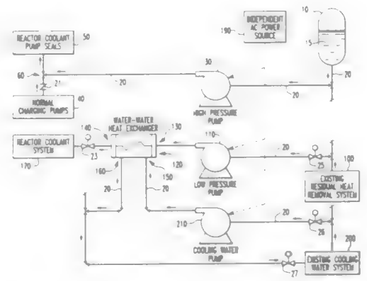
flowing from the inside to the outside over said bottom wall toward said jacket wall.

5,343,507

SHUTDOWN COOLING SYSTEM FOR OPERATION DURING LAPSE OF POWER

Edward C. Arnold, Plum, Pa., and Milan M. Guina, Braine-L'Alleud, Belgium, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sep. 30, 1993, Ser. No. 129,827
Int. Cl.[5] G21C *15/18*
U.S. Cl. 376—298 **16 Claims**



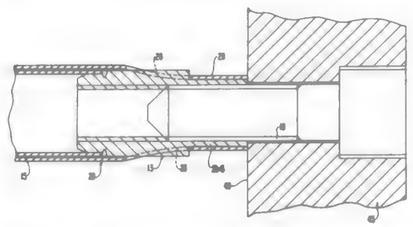
8. An integrated emergency shutdown power and cooling system for maintaining cooling functions in a nuclear reactor during power failure conditions, comprising:
a high pressure pump in fluid communication with a reactor coolant pump seal, the high pressure pump being operable to pump water to the reactor coolant pump seal;
a water storage tank containing water and being in fluid communication with the high pressure pump such that water is pumped from the tank to the reactor coolant pump seal, thereby cooling the reactor coolant pump seal;
a low pressure pump in fluid communication with a residual heat removal system, the low pressure pump being operable to pump water from the residual heat removal system;
a cooling water pump in fluid communication with the existing cooling water system, the cooling water pump being operable to pump water from the existing cooling water system;
a water to water heat exchanger having a primary circuit and a secondary circuit, the primary circuit being in fluid communication with the low pressure pump and an existing reactor coolant system, the low pressure pump being operable to pump water from the residual heat removal system through the primary circuit to the reactor coolant system, the secondary circuit being in fluid communication with the cooling water pump and the existing cooling water system, the cooling water pump being operable to pump waer from the existing cooling water system though the secondary circuit such that heat from water circulated though the primary circuit is transferred to the water circulated though the secondary circuit, thereby reducing the temperature of the cooling water circulated through the primary circuit;
an independent power source controllably coupleable to the high pressure pump and the low pressure pump such that power is supplied from the independent power source to the high pressure pump and the low pressure pump when regular and emergency power are lost, the independent power source, high pressure pump and low pressure pump being provided in addition to cooling means operative from said regular and emergency power;
whereby during a power fail condition the high pressure pump, in combination with the water in the water storage tank, cools the reactor coolant pump seal when the reactor is hot and pressurized, and the low pressure pump, in combination with with the heat exchanger, cools the reactor coolant system when the reactor is shut down.

5,343,508

SPACER GRID RETAINER

Stephen C. Hatfield, Granby, Conn., assignor to Combustion Engineering, Inc., Conn.

Filed Sep. 28, 1992, Ser. No. 951,853
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—449 **16 Claims**



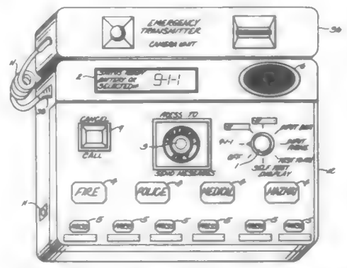
1. In a nuclear reactor fuel assembly having top and bottom nozzles and nuclear fuel rod spacer grids therebetween for supporting at least one nuclear fuel rod and at least one guide tube fastened to the top and bottom nozzles, a device for retaining a nuclear fuel rod spacer grid on the guide tube and the top and bottom nozzles comprising:
a tubular retainer means having a first end and a second end and a lumen extending longitudinally therethrough;
said retainer means having an upper portion located at said first end for retaining said spacer grid, and a lower portion located at said second end for retaining at least one of said guide tubes;
said lower portion having an aperture communicating with said lumen whereby said guide tube is inserted through said lumen of said retainer means and a shoulder portion on said guide tube extends through said aperture to retain said lower portion of said retainer means between the shoulder of said guide tube and a surface of said bottom nozzle when said guide tube is attached to said nozzle, thereby retaining said spacer grid on said guide tube and bottom nozzle, said lower portion having a flattened portion and an enlarged portion, said flattened portion mating with the guide tube, and said enlarged portion being retained between the shoulder portion and a surface of said bottom nozzle.

5,343,509

EMERGENCY INFORMATION FACSIMILE TRANSMITTER

Gregory F. Dounies, 1221 Eighteenth St., Bakersfield, Calif. 93309

Filed Aug. 30, 1991, Ser. No. 753,384
Int. Cl.[5] H04M *1/64, 11/04*
U.S. Cl. 379—40 **6 Claims**



1. An emergency data telephone apparatus for transmitting in conventional facsimile transmission format previously stored emergency information to a corresponding previously designated emergency service, said apparatus comprising:
a plurality of manually operated switches each corresponding to a different type of emergency;
first correlation means for correlating each of said switches with a respective emergency number;
second correlation means for correlating each said switches with respective emergency data;
an autodialer;
a memory for storing said respective emergency data in facsimile message format;
an autodialer responsive to an activated one of said switches for establishing a telephone connection to at least one said respective emergency number correlated with said activated switch;
a facsimile data transmitter responsive to said activated switch, to said autodialer, to said second means and to said memory for transmitting the particular emergency data correlated with said activated switch after said autodialer has established said telephone connection;
means for sensing the end of transmission of the particular emergency data;
a digital camera and flash unit for recording into said memory a contemporary visible condition or event as part of said emergency data;
a voice transmit and receive circuit; and
transfer means responsive to said sensing means for connecting said voice transmit and receive circuit to said telephone connection after said respective emergency information has been transmitted to said emergency number.

5,343,510

WIRELESS TELEPHONE

Satoshi Fukui, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

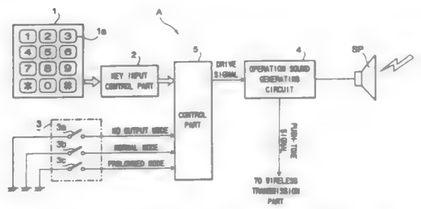
Filed Mar. 23, 1992, Ser. No. 855,065
Claims priority, application Japan, Mar. 29, 1991, 3-028718
Int. Cl.[5] H04M *11/00, 1/00, 3/00*
U.S. Cl. 379—58 **15 Claims**

1. A wireless telephone comprising:
a key input control part for outputting a key operation signal corresponding to a pressed operation key;
a push-tone signal mode selection switch for switching and

VOL 1165 ISS 5 AG 30 1994 UMI

setting a push-tone signal mode in response to a key pressing operation into one of a no push-tone output mode, a normal push-tone output mode and a prolonged push-tone output mode, and for outputting a mode selection signal;

a operation sound generating circuit for generating an operation sound; and



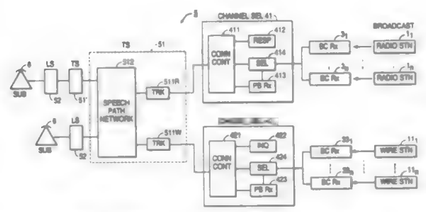
a control part for sensing an operation sound signal to the operation sound generating circuit in response to a reception of the key operation signal nd the mode selection signal, the operation sound signal corresponding to a selected signal output mode.

5,343,511

METHOD FOR SELECTING A BROADCAST VOICE CHANNEL SERVED IN A TELEPHONE SWITCHING NETWORK, AND A SYSTEM THEREOF

Noriko Osada, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 8, 1992, Ser. No. 880,597
Claims priority, application Japan, May 10, 1991, 3-105301
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 7 Claims



1. A method performed by subscribers in a telephone network, for selecting a broadcast voice channel from broadcast voice channels provided in the telephone network which includes switches operatively connected to the subscribers and broadcast signal receivers each converting a broadcast signal sent from a broadcast station, to a broadcast voice signal, said method comprising the steps of:

accessing the switch by dialing a designated dialing number for designating the switch;

receiving a response signal sent from channel selection means provided between the switch and the broadcast receivers, said response signal being sent to the subscriber in response to the dialing performed in said step of accessing and comprising an inquiring signal for inquiring of the subscriber to send a channel selecting signal to the channel selection means through the telephone network, and said channel selecting signal being a signal for selecting one of the broadcast voice signals of the broadcast stations;

sending the channel selecting signal to the channel selection means through the telephone network, by dialing a channel selecting number while holding a connection between the subscriber and the switch, after receiving the response signal from the channel selection means; and

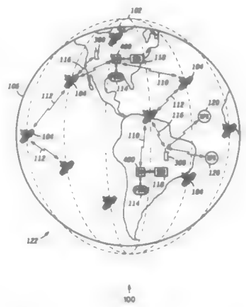
receiving the broadcast voice signal selected at the channel selection means in accordance with the channel selecting signal sent from the subscriber.

5,343,512

CALL SETUP METHOD FOR USE WITH A NETWORK HAVING MOBILE END USERS

Theresa C. Y. Wang, Scottsdale, Ariz.; Raymond J. Leopold, Colorado Springs, Colo., and Steven H. Moritz, Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1992, Ser. No. 859,206
Int. Cl.[5] H04M *11/00*; H04B *7/185, 1/00*; G01S *3/02*
U.S. Cl. 379—59 35 Claims



10. A method of operating a mobile unit for communication to facilitate setting up calls between said mobile unit and other mobile units for communication which are accessible through a communications network, said method comprising steps of:

determining a location of said mobile unit;

reporting said location of said mobile unit to said communication network over a communication channel;

receiving a log-on message by said mobile unit, said log-on message transmitted from said communication network over said communication channel, said log-on message informing said mobile unit that said mobile unit may engage in said setting up calls;

wherein said mobile unit includes a user input device for identifying said other units and for identifying when to place an outgoing call to one of said other mobile units;

losing synchronization with said communication channel;

monitoring said user input device to detect a command for placing an outgoing call;

gaining synchronization with said communication channel of said communication network; and

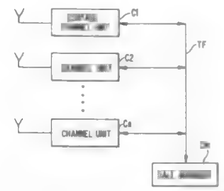
sending an outgoing-call message to said communication network, said outgoing-call message informing said communication network of a request to place a call from said mobile unit and of an identify of one of said other mobile units.

5,343,513

CHANNEL COMPRESSION AND DYNAMIC REPARTITIONING FOR DUAL MODE CELLULAR RADIO

Stanley E. Kay, Rockville; George D. Farmer, Frederick; Hans Bhatia, Germantown; Ashok D. Mehta, North Potomac; Christopher J. Kain, Damascus, and Nicholas P. Sampson, Clarksburg, all of Md., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 20, 1992, Ser. No. 870,976
Int. Cl.[5] H04M *11/00*; H04Q *7/00*; H04J *3/16*
U.S. Cl. 379—59 29 Claims



1. A method of operating a given cell of a cellular telephone system comprising the steps of:

a) at a first time, establishing for a set of n radio frequency carriers available within the given cell, a first subset n(a1) of carriers operating as analog carriers and a second subset n(d1) of carriers operating as digital carriers, where each digital carrier supports from 1 to x channels on a time multiplexed basis, where

n(a#) represents a number of analog carriers at a time identified by the index #,

n(d#) represents a number of digital carriers at a time identified by the index #,

n represents a number of carriers at the cell,

n, n(a#) and n(d#) is less than or equal to n, and

x is an integer greater than or equal to two,

b) at a second time, later than the first time,

b1) examining each of the digital carriers to locate those digital carriers supporting less than x channels,

b2) selecting channels from among a group of the digital carriers located in step b1) and rearranging the selected channels to occupy unused channels of digital carriers located in step b1) which are not within the digital carrier group, and

c) at a third time, later than the first time, selecting at least one digital carrier supporting no channels and removing said selected digital carrier from the second subset of carriers operating as digital carriers and inserting the removed carrier into the first subset of carriers operating as analog carriers so that the first subset of carriers at the third time n(a3) is greater than the first subset of carriers n(a1) at the first time.

5,343,514

TELEPHONE LINE POWERED SYSTEM

Gary K. Snyder, 1011 E. Calle Monte Vista Dr., Tempe, Ariz. 85284

Filed Dec. 10, 1993, Ser. No. 164,922
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—93 7 Claims

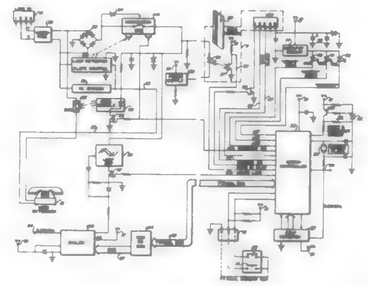
1. A telephone line powered system for use with a telephone connected with said telephone line for operation therewith, said system including in combination;

a normally open hookswitch;

an auxiliary control system connected to said telephone line in parallel with said telephone through said hookswitch;

a first hookswitch control operated by said telephone in an off-hook condition to close said hookswitch and supply power from said telephone line to said auxiliary control system to operate said auxiliary control system to a standby mode at a relatively low power consumption;

a data input device for supplying data to said telephone line coupled with said auxiliary control system for switching said auxiliary control system to a higher power mode in response to a predetermined operation of said data input device; and



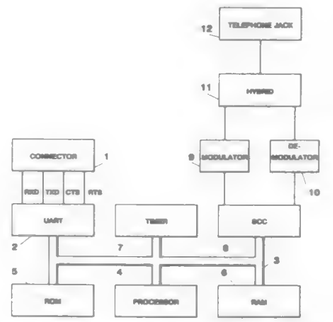
a second hookswitch control operated by said auxiliary control system in said higher power mode to close said hookswitch transferring control of said telephone line from said telephone to said auxiliary control system and said data input device.

5,343,515

HIGH SPEED MODEM

Remco V. Treffkorn, 870 Clubhouse Dr., Aptos, Calif. 95003

Filed Sep. 13, 1991, Ser. No. 759,408
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—97 7 Claims



1. A modem for switching between a plurality of protocols and for connecting digital data terminal equipment to an analog communication link, the modem comprising in operative combination;

a first connector coupled to the data terminal equipment for receiving first serial signals from the data terminal equipment;

a receiver transmitter coupled to the first connector for receiving and converting the first serial signals to parallel signals;

an organized plurality of signal lines coupled to the receiver transmitter for transferring the parallel signals;

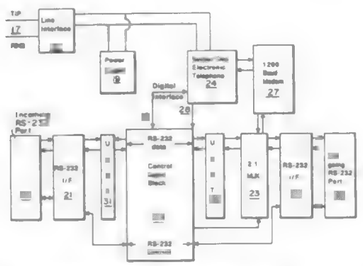
a processor coupled to the organized plurality of signal lines for receiving the parallel signals;

a controller coupled to the organized plurality of signal lines for receiving the parallel signals;

VOL 1165 ISS 5 AG 30 1994 UMI

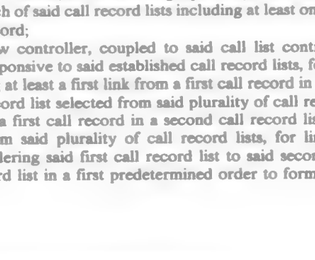
a first memory coupled to the organized plurality of signal lines for receiving the parallel signals;
a second memory coupled to the organized plurality of signal lines for storing the plurality of protocols for operation of the modem;
a timer coupled to the organized plurality of signal lines for providing timing signals to the processor through the organized plurality of signal lines;
the processor for receiving the timing signals and the parallel signals for determining a rate of data from the data terminal equipment, the processor further for providing a first control signal when the rate of data is greater than a first predetermined value, the first control signal for providing one of the plurality of protocols for operation of the modem;
the controller for converting the parallel signals into data blocks and for converting the data blocks into second serial signals; and
a modulator coupled to the controller for receiving the second serial signals and for converting the second serial signals to first analog signals, the modulator further coupled for receiving the first control signal, the modulator selectively operable at a plurality of modulation rates, the modulator for selected operation at a first determined modulation rate due to the first control signal and the one of the plurality of protocols, the modulator for converting the second serial signals to the first analog signals at the first determined modulation rate; and
transfer means for transferring the first analog signals to the analog communication link.

5,343,516
COMPUTER TELECOMMUNICATIONS SIGNALLING INTERFACE
David Callele, and Donald Cruickshank, both of Saskatoon, Canada, assignors to Digital Systems Group, Inc., Saskatchewan, Canada
Continuation-in-part of Ser. No. 588,941, Sep. 27, 1990, Pat. No. 5,117,452. This application Feb. 13, 1992, Ser. No. 834,855
The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—98 **45 Claims**



1. A telephone interface for connecting a computer to a telephone line for use in telephone systems employing information signalling during the silent interval between rings comprising:
line interface means for interfacing the telephone interface with the telephone line,
first computer interface means for interfacing the telephone interface with a computer, and
data demodulation means connected with the line interface means and with the first computer interface means for receiving data transmitted over the telephone line during a silent interval after a ringing signal,
whereby in operation data present on the telephone line during the silent interval is retransmitted through the first computer interface means.

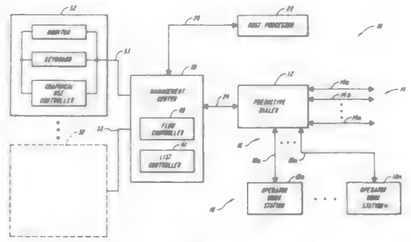
5,343,517
USE-CODE BASED CALL-TREATMENT SELECTION
Frank J. Bogart, Boulder; Bruce D. Butterfield, Deaver; David L. Chavez, Jr., Northglenn; Henry C. Dittmer, Westminster; Frederick R. Fix, Arvada; Larry J. Hardouin, Westminster; Nancy K. Schmidt, Broomfield, and Linda L. Thomson, Westminster, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 31, 1991, Ser. No. 786,163
Int. Cl.[5] H04M *7/00, 11/00, 15/00, 3/42*
U.S. Cl. 379—219 **24 Claims**



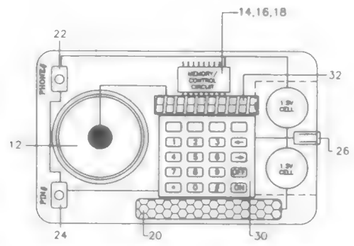
1. A call-processing arrangement comprising:
means for storing definitions of influences of individual ones of a plurality of use codes on selection of routes or destinations for calls in a telecommunications network;
means responsive to receipt of a call-originating symbol-sequence for a call, comprising a called number and a use code representing a use of the call that is being originated, the received use code lacking correspondence to any element of the telecommunications network, for determining from the definitions stored by the storing means an influence of the received use code on selection of route or a destination for the call in the telecommunications network; and
means responsive to the determination for selecting a route and a destination for the call in the telecommunications network on a basis of the received call-originating symbol-sequence, including selecting the route or the destination for the call under the determined influence of the received use code.

5,343,518
SYSTEM AND METHOD FOR CONTROLLING THE DIALING ORDER OF CALL RECORD LISTS IN AN AUTOMATED DIALING SYSTEM
F. Paul Kneipp, Nashua, N.H., assignor to Davox Corporation, Westford, Mass.
Filed Jan. 14, 1993, Ser. No. 5,481
Int. Cl.[5] H04M *3/00*
U.S. Cl. 379—355 **19 Claims**

19. A predictive dialing system comprising:
a call list controller, responsive to a source of call records, each call record including at least one telephone number to be called, for establishing a plurality of call record lists, each of said call record lists including at least one said call record;
a flow controller, coupled to said call list controller and responsive to said established call record lists, for providing at least a first link from a first call record in a first call record list selected from said plurality of call record lists, to a first call record in a second call record list selected from said plurality of call record lists, for linking and ordering said first call record list to said second call record list in a first predetermined order to form at least a first list flow campaign, and for applying said at least first list flow campaign to a predictive dialer, and for providing at least a third link from a first call record in a third call record list selected from said plurality of call record lists, to a fourth call record in a fourth call record list selected from said plurality of call record lists, for linking and ordering said third call record list to said fourth call record list in a first predetermined order to form at least a second list flow campaign, and for applying said second list flow campaign to said predictive dialer;
said flow controller responsive to at least said first and second list flow campaigns and to at least one list flow controller list flow control command, for joining and reordering said at least first and second list flow campaigns in a second predetermined order once applied to said predictive dialer; and
a predictive dialer, coupled to at least said flow controller, and responsive to said at least first and second list flow campaigns, for dialing at least one telephone number included in each call record of said plurality of linked call record lists forming said at least first and second list flow campaigns according to said predetermined order of linked call record lists and list flows.

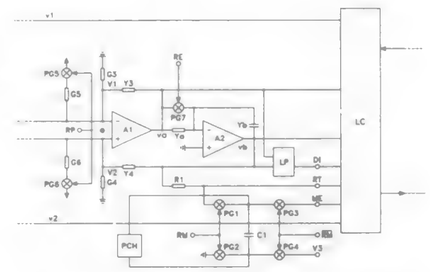


5,343,519
AUTODIALER WITH PIN FEATURE
Peter Feldman, 254 W. 103 St., New York, N.Y. 10025
Filed Sep. 7, 1993, Ser. No. 117,893
Int. Cl.[5] H04M *1/00, 1/26*
U.S. Cl. 379—355 **2 Claims**



1. An autodialer assembly for accessing a special exchange comprising;
a credit card sized carrier;
an audio transducer mounted to the carrier and activatable to produce tones that are comprehensible as discreet numerals and symbols by a touch-tone dialing system;
memory means in said carrier for storing at least a first sequence of numbers representing a telephone number of a special exchange and a second sequence of numbers representing a personal code;
control means operatively connected to said memory means and to said audio transducer for reading said first and second sequence of numbers and for driving said audio transducer to generate tones corresponding to each number in each number sequence;
a power supply mounted in said carrier and connected to said control means, said memory means and said audio transducer for powering said control means, memory means and audio transducer;
a first activator switch connected to said control means for controlling said control means to read said first sequence of numbers only and generate tones in the audio transducer corresponding to the first sequence of numbers;
a second activator switch spaced and separator from said first activator switch, said second activator switch being connected to said control means for controlling the control means to select the second sequence of numbers only and to activate the audio transducer according to the second sequence of numbers;
a carrier connector connected to the memory and control means for programming the memory with the first and second sequence of numbers; and
a central programming station including a multiplicity of station connectors each connectable to the carrier connector of a separate carrier for programming all of the memories with the same first sequence numbers corresponding to the telephone number of the special exchange, and with second sequences of numbers corresponding to unique personal codes each identifiable with a separate and distinct user having an account at the special exchange.

5,343,520
IMPEDANCE SYNTHESIS MULTILE LOOP USING FILTERING MEANS
Eddie L. M. Willocx, Willebroek; Pierre-Paul F. M. M. Guebels, Edegem, and Elve D. J. Moons, Lummen, all of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands
Filed May 13, 1991, Ser. No. 699,954
Claims priority, application European Pat. Off., May 11, 1990, 90201196.4
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—399 **9 Claims**



1. An impedance synthesis multiple loop circuit of the type having a common loop part and separate DC and AC loop parts fed from the common loop part, said circuit be adapted for use with dialing pulses in the form of a fundamental dialling pulse frequency signal and associated harmonic dialling pulse frequency signals, the fundamental dialling pulse frequency being below a predetermined first frequency and the associated harmonic dialling pulse frequencies being above said predetermined first frequency and below a second predetermined frequency, said circuit also being adapted for use with telephone metering pulse bursts at frequencies above said second predetermined frequency, said circuit comprising:
an input stage cascaded with an output stage, said input and output stages each having an input and an output;
an overall negative feedback loop from the output of the output stage to the input of the input stage;
means associated with a first stage of said input and output

VOL 1165 ISS 5 AG 30 1994 UMI

stages for providing to the AC loop part a first output signal from which is excluded DC and low frequency components below said first predetermined frequency, said first output signal including said associate harmonic frequency signals and said metering pulse bursts;

means associated with a second stage of said input and output stages for providing to the DC loop part a second output signal which includes only DC and low frequency components below said first predetermined frequency said second output signal including said fundamental dialling pulse frequency signal;

a double input low pass filter having first and second inputs and an output, said filter having an associated passband with a predetermined cut off frequency higher than said first predetermined frequency and below said second predetermined frequency;

means for coupling said first and second output signals to the respective first and second inputs of said filter; and

means responsive to a low frequency signal appearing at said output of the low pass filter and including both said fundamental dialling pulse frequency signal and said associated harmonic dialling pulse frequency signals but not including said telephone metering pulse bursts, for detecting said dialing pulses.

5,343,521

DEVICE FOR PROCESSING ECHO, PARTICULARLY ACOUSTIC ECHO IN A TELEPHONE LINE

Jean-Pascal Jullien, Pleumeur-Bodou, and Grégoire Le Tourneur, St-Quay-Perros, Both of France, assignors to French State, represented by the Minister of the Post, Telecommunications and Space, (Centre National d'Etudes des Telecommunications), Issy-Les Moulineaux, France

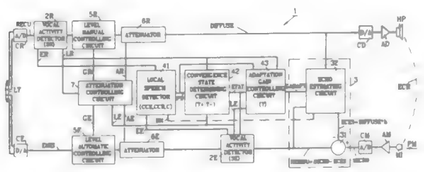
PCT No. PCT/FR90/00621, § 371 Date Apr. 16, 1991, § 102(e) Date Apr. 16, 1991, PCT Pub. No. WO91/03116, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 20, 1990, Ser. No. 678,282

Claims priority, application France, Aug. 18, 1989, 89 11026

Int. Cl.[5] H04M *9/08*

U.S. Cl. 379—410 **20 Claims**



1. A device for processing a real echo between first and second transmission channels, said device comprising

echo cancellation means coupled to said first channel to be responsive to a first signal in said first channel and coupled to said second channel to be responsive to a second signal and said real echo in said second channel for producing a third signal containing components representing said second signal and a difference between said real echo and an estimated echo, said estimated echo resulting from a real echo identified by adaptive filtration in said echo cancellation means from said first and third signals,

means for detecting in said third signal said components representing the difference between the real echo and estimated echo and said second signal only in response to the level of said third signal being greater than a first threshold, said components representing the difference between the real echo and estimated echo and said second signal being detected by correlation of said first and third signals and

adaptation gain controlling means for gain-controlling the adaptation in the filtration of said echo cancelling means for modifying the adaptation gain while the second signal is detected as not being present in the second channel and for inhibiting filtration modification while said second signal is detected as being present in the second channel.

5,343,522

ADAPTIVE SPARSE ECHO CANCELLER USING A SUB-RATE FILTER FOR ACTIVE TAP SELECTION

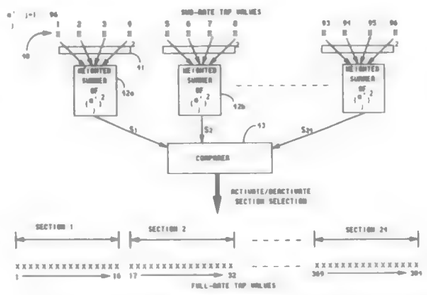
Paul M. Yatrou, Montreal, and Douglas J. Millar, Verdun, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 4, 1992, Ser. No. 894,377

Claims priority, application Canada, Feb. 5, 1992, 2060667

Int. Cl.[5] H04B *3/23*

U.S. Cl. 379—410 **3 Claims**



2. An echo canceller adapted to reduce computation time necessary to cancel echo impulses having active and dormant regions, comprising:

a) a sub-rate non-sparse echo canceller for receiving band pass filtered, sub-sampled echo impulses, said echo canceller having a quarter rate sub-sampled 96-tap adaptive filter and a sub-rate least means square adaptor for use in adapting sub-rate taps in selection of active regions;

b) an active tap selection circuit connected to said least means square adaptor, wherein said sub-rate taps are divided into multiple contiguous regions, each contiguous region comprising an equal number of sub-rate taps, a magnitude of each sub-rate tap is squared and summed for each contiguous region and a largest sum S_i for each dormant region and a smallest sum to each other sum S_j for each active region is found by comparing each sum; and

c) an adaptive sparse echo canceller having a full-rate 80-tap sparse adaptive filter connected to a full-rate least means square adaptor for providing echo path estimation and cancellation, wherein said adaptive sparse echo canceller is adjusted according to active taps selected by the active tap selection circuit, wherein active regions found to have the smallest sum are deactivated and dormant regions found to have the largest sum are activated, if S_i is greater than S_j.

5,343,523

TELEPHONE HEADSET STRUCTURE FOR REDUCING AMBIENT NOISE

Charles S. Bartlett, Clinton, Md.; Roger D. Benning, Long Valley; John B. Hunter, Basking Ridge, both of N.J., and Michael A. Zuniga, Fairfax, Va., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1992, Ser. No. 923,654

Int. Cl.[5] H04M *1/05, 1/19;* **A61F** *11/06*

U.S. Cl. 379—430 **10 Claims**

1. In a telephonic headset comprising a speech transmitter, at least one speech-receiving ear-mounted speaker and an error microphone including a directional port for receiving ambient noise, the improvement comprising:

a substantially cylindrical housing for mounting said error microphone and said speaker, said housing comprising

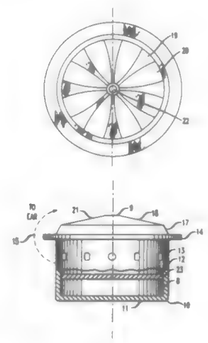
a bottom chamber

a top chamber separated by a baffle from said lower chamber and comprising

a cylindrical wall,

a plurality of port openings in said wall,

an exterior flange encircling said top chamber above said ports;



a domed extension of said top chamber rising above said flange, said extension comprising a plurality of spokes, the space between said spokes defining voids for passing of desired speech and noise-cancelling signals;

a flattened platform in the center of said dome having an opening for exposing said error microphone into direct physical presence in the user's ear; and

means for mounting said speaker and error microphone in said top chamber such that said directional port of said microphone is aligned substantially perpendicular to the axis of propagation of said speaker.

5,343,524

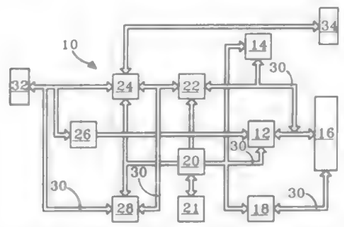
INTELLIGENT SECURITY DEVICE

Xiao-Chun Mu, 19070 Dagmar Dr., Saratoga, Calif. 95070; Kai J. Chin, 41069 Bairo Ct., Fremont, Calif. 94539, and Feiying Chen, 771 Woodhams Rd., Santa Clara, Calif. 95051

Filed Jun. 21, 1991, Ser. No. 718,603

Int. Cl.[5] H04L *9/04*

U.S. Cl. 380—4 **7 Claims**



1. A software protection device for connection to a communications port of a host computer, comprising:

a memory for storing data therein in an encoded form;

processing means for encoding data to be stored in said memory, and further for decoding data to be retrieved from said memory, and further for performing calculations on the data;

data level conversion means for connecting said processing means to the host computer such that data output from the host computer is converted into a form usable by said processing means, and further such that data output from said processing means is converted into a form usable by said host computer; and

power isolation means for interconnecting the software protection device to the host computer such that the software protection device draws operating power from the host computer, wherein;

said processing means uses a data encryption scheme stored in said memory to encode and to decode the data;

a code is required to access said data encryption scheme

said memory and said processing means being components of the software protection device provided for supplementing the computer which are housed together in a unitary integrated circuit device package such that data contained within said memory can only be retrieved in usable form by the operation of decoding the data through said processing means.

5,343,525

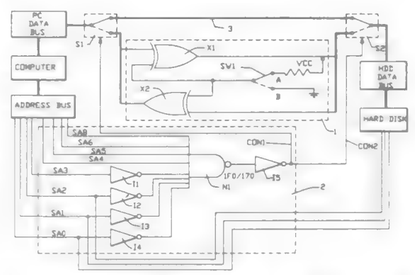
HARD DISK DATA SECURITY DEVICE

Chan-Chi Hung, Hsinchu; Sheng-Yuan Lee, Chupei, and Yao-Jung Kuo, Hsinchu, all of Taiwan, assignors to Value Technology Inc., Hsin-Chu, Taiwan

Filed Aug. 5, 1992, Ser. No. 924,950

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **7 Claims**



1. A hard disk data security device for a computer wherein said computer comprises a computer address bus, a computer data bus and a hard disk with a hard disk data bus connected between said computer data bus and said hard disk, said security device comprising a control circuit and a data enciphering-/deciphering circuit actuated by said control circuit when detecting an I/O address of data register for the hard disk present on the address bus, said data enciphering/deciphering circuit receiving a first data byte from said computer data bus and generating a second data byte or receiving the second data byte and converting the second data byte into the first data byte.

5,343,526

METHOD FOR ESTABLISHING LICENSOR CHANGEABLE LIMITS ON SOFTWARE USAGE

Harold A. Lassers, Elmhurst, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 30, 1992, Ser. No. 968,693

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **13 Claims**

11. In a telephone switching system, said system having a plurality of features, wherein one of more of said features is accessible by a plurality of users, a system for providing licen-

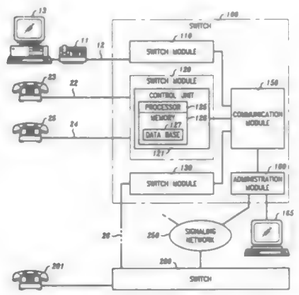
VOL 1165 ISS 5 AG 30 1994 UMI

sor control of a maximum number of users accessing one or more features without requiring reference to information stored outside of said features, said control system comprising:

means responsive to a request for access to one of said features for decrypting a portion of a previously encrypted alphanumeric string provided by said licensor in said one feature to establish a limit value defining said maximum number of users;

means for determining a count of users;

means responsive to said decrypted limit value for comparing said limit value to said count of users currently using



said feature, wherein said comparing means denies access to said feature if said count is greater than said limit, and allows access to said feature if said count is less than said limit; and

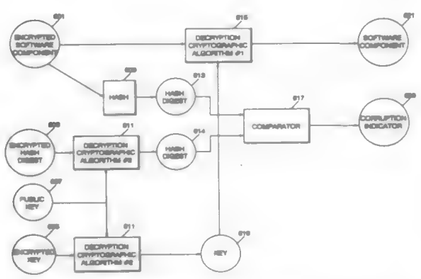
means for changing said encrypted alphanumeric string that replaces said encrypted alphanumeric string in said one feature with a further encrypted alphanumeric string containing a new limit value after said licensor informs said licensee of said further encrypted string so that said limit value is changeable by said licensor without said licensor having physical access to said system.

5,343,527

HYBRID ENCRYPTION METHOD AND SYSTEM FOR PROTECTING REUSABLE SOFTWARE COMPONENTS

James W. Moore, Potomac, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1993, Ser. No. 141,735
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—4 **20 Claims**



1. In a network of computers comprising at least one computer, the method for reusing software components that maintains the integrity and authenticity of the software components, said method comprising:

generating an software component record using the following substeps:

(a) encrypting a plaintext representation of a software component into a encrypted software component with a first cryptographic algorithm using first key;

(b) hashing the encrypted software component to generate a first hash digest;

(c) encrypting the first hash digest and the first key using a second cryptographic algorithm with a second key, wherein said second cryptographic algorithm is of a public key type and said second key is the private key associated with at least one public key, said software component record consisting of the encrypted software component, the encrypted hash digest, and the encrypted first key; storing the software component record in a reuse library;

retrieving the software component record from the reuse library;

generating the plaintext representation of the software component using the following substeps:

(a) obtaining a public key associated with the second key from a public key directory;

(b) decrypting the encrypted hash digest and the encrypted first key into the decrypted first key and the decrypted first hash digest using the public key and the second cryptographic algorithm;

(c) hashing the encrypted software component to generate a second hash digest;

(d) comparing the second hash digest with the decrypted first hash digest, and if not identical indicating that the software component is corrupted, if identical indicating that the software is not corrupted;

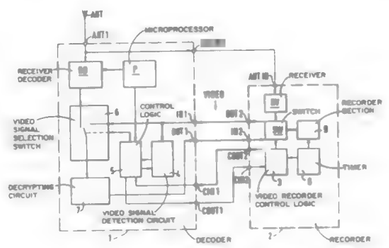
(e) decrypting the encrypted software component into the plaintext representation using the decrypted first key and the first encryption algorithm.

5,343,528

PROCEDURE AND DECODER FOR DECRYPTING A CODED VIDEO SIGNAL

Ari Heikkinen, Salo, Finland, assignor to Nokia Technology GmbH, Pforzheim, Fed. Rep. of Germany

Filed Mar. 9, 1993, Ser. No. 28,652
Claims priority, application Finland, Mar. 11, 1992, 921056
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—20 **8 Claims**



1. A method for decrypting a coded video signal at a given point of time, in which a decoder (1) is tuned to a certain reception channel at a given point of time using a channel selection and timer system of a video recorder (2) electrically coupled to the decoder (1) by video connection means (VIDEO), comprising the steps of:

tuning the decoder (1) to a home channel when it is in a stand-by mode for receiving decryption data from the home channel;

switching a coded video signal to a decryption circuits (7) in the decoder (1) when it is detected from the video recorder (2) at an input (IN1) of the video connection means (VIDEO); and

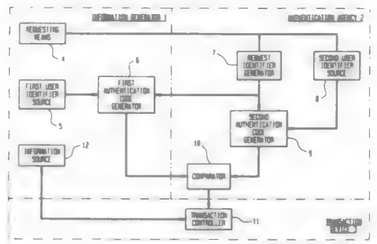
switching the home channel to the decryption circuits (7) when the coded video signal is no longer detected from the video recorder (2) at the input (IN1) of the video connection means (VIDEO).

5,343,529

TRANSACTION AUTHENTICATION USING A CENTRALLY GENERATED TRANSACTION IDENTIFIER

Milton Goldfine, 201 Ootsima Way, Loudon, Tenn. 37774; Marvin Perlman, 11000 Dempsey Ave., Granada Hills, Calif. 91344, and Robert A. Montgomery, 306 Chuniloti Cir., Loudon, Tenn. 37774-2607

Filed Sep. 28, 1993, Ser. No. 127,893
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—23 **37 Claims**



13. An authenticating information transmission system comprising an information generator, an authentication agency and a primary transmission path, the information generator communicating with the authentication agency, said agency controlling the primary transmission path, wherein the information generator comprises:

requesting means for presenting a transmission request to the authentication agency;

a first authentication code generator comprising a first user identifier access port, a first request identifier access port, a first transformer for combining a first user identifier and a first request identifier transmitted to the respective access port to produce a first authentication code, and a first transmitter for transmitting the first authentication code to the authentication agency; and

an information source for introducing information into the primary transmission path,

wherein the authentication agency comprises:

a request identifier generator comprising a first transmission request access port and a second transmitter for transmitting the request identifier to the first authentication code generator and to a second authentication code generator;

a user identifier source comprising a second transmission request access port and a third transmitter for transmitting a second user identifier to the second authentication code generator;

the second authentication code generator comprising a second request identifier access port, a second user identifier access port, a second transformer for combining the second request identifier and the second user identifier, transmitted to the respective access port to produce a second authentication code, and a fourth transmitter for transmitting the second authentication code to a comparator; and

the comparator comprising a first authentication code access port, a second authentication code access port, a comparing means for comparing the first authentication code and the second authentication code, transmitted to the respective access port, and producing a permit signal only if the first authentication code and the second authentication code, when compared by the comparing means, are equal, indicating a matching condition between the first and second authentication codes, and a fifth transmitter for transmitting the permit signal to the primary transmission path; and

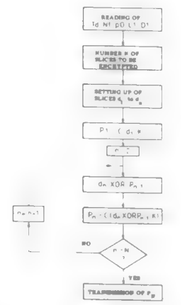
wherein the primary transmission path comprises a transmission controller with a permit signal access port for authorizing transmission when the permit signal is transmitted to the permit signal access port.

5,343,530

METHOD FOR THE AUTHENTICATION OF DATA

Gilles Viricel, Roquevaire, France, assignor to Gemplus Card International, Gemenos, France

Filed Aug. 27, 1992, Ser. No. 936,595
Claims priority, application France, Sep. 3, 1991, 91 10886
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—23 **9 Claims**



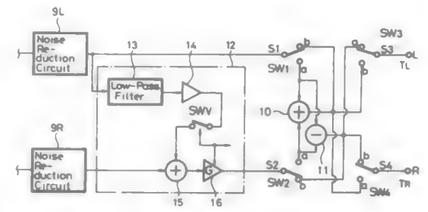
1. A method of encryption that uses data elements to be authenticated in the form of a block of data elements contained at a determined location of a determined file of a memory, and an encryption program that brings into play, as data to be encrypted, logic address of the file, position and length of the block, as well as the contents of the block said length being variable.

5,343,531

AUDIO REPRODUCING APPARATUS

Yoshiro Murnoka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,654
Claims priority, application Japan, Nov. 8, 1991, 3-293260
Int. Cl.[5] H04S *1/00*
U.S. Cl. 381—1 **6 Claims**



1. An audio reproducing apparatus in which a sum signal and a difference signal of left and right signals of a stereophonic signal are supplied, a left signal and a right signal are obtained from said sum signal and said difference signal and said left signal and said right signal are respectively supplied to a left signal output terminal and a right signal output terminal, comprising:

switching means for supplying said difference signal to said left and right signal output terminals;

said switching means is switched such that said sum signal

VOL 1165 ISS 5 AG 30 1994 UMI

and said difference signal are selectively supplied to an adder and a subtractor at which said left signal and said right signal are generated and output to said output terminals; and

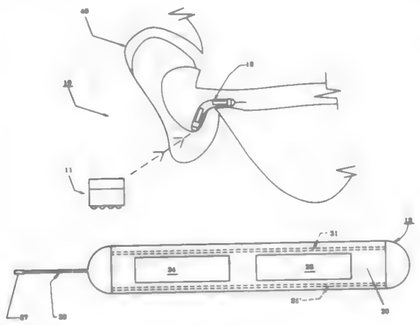
when said difference signal is supplied to said output terminals, a low frequency component of said sum signal is extracted and superimposed upon said difference signal.

5,343,532

HEARING AID DEVICE

M. Wilbert Shugart, III, P.O. Box 892, Yadkinville, N.C. 27055

Filed Mar. 9, 1992, Ser. No. 848,320
Int. Cl.[5] H04R 25/00
U.S. Cl. 381—68.6 13 Claims



1. A hearing aid device comprising in combination:

(a) a transmitter assembly, said transmitter assembly for detecting audible sounds, and

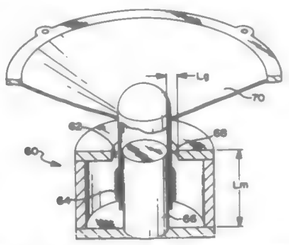
(b) a receiver assembly, said receiver assembly in remote communication with said transmitter assembly, said receiver assembly comprising a pliable housing, a transducer, a bendable wire, said bendable wire embedded in said housing and said transducer attached to said pliable housing, said receiver assembly positionable in the outer ear of the wearer with the transducer within the auditory canal whereby said auditory canal is substantially open and unblocked.

5,343,533

TRANSDUCER FLUX OPTIMIZATION

Earl R. Geddes, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 864,094, Apr. 6, 1992, Pat. No. 5,210,805. This application Mar. 25, 1993, Ser. No. 37,797
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] G10K 11/16
U.S. Cl. 381—71 12 Claims



1. Method for optimizing transducer flux throughout an identified temperature range of an acoustic reproduction transducer magnet comprising:

selecting a material for constructing the magnet;

identifying a B/H load K at which both flux and demagnetizing force of a magnetic field applied to the selected material increase as a function of increasing temperature throughout the temperature range of the transducer;

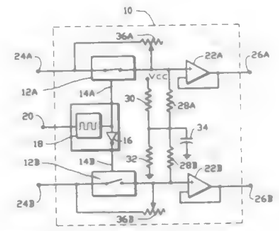
constructing a magnet of the selected material with an air gap configured with $Ag/Lg \div Am/Lm = K$ where Ag is the area of the gap, Lg is the length of the gap, Am is the area of the magnet and Lm is the length of the magnet.

5,343,534

SEQUENTIAL AUDIO SWITCHER

Michael L. Dorrough, 5221 Collier Pl., Woodland Hills, Calif. 91364, and Robert R. Conger, 1047 E. Angelo Ave., Burbank, both of Calif. 91501

Filed Dec. 7, 1992, Ser. No. 986,553
Int. Cl.[5] H02B 1/00
U.S. Cl. 381—123 16 Claims



1. A sequential audio switcher comprising:

a first solid state audio switching device, interposed in a first audio channel receiving a first audio signal;

a second solid State audio switching device, interposed in a second audio channel receiving a second audio signal;

timing means operating at a supersonic rate and connected to control inputs of said first and second audio switching devices so as to repetitiously enable and inhibit signal transmission through each channel in an alternating sequential manner such that whenever transmission in one of the channels is enabled transmission in the other Channel is inhibited.

first and second buffers receiving input from said first and second switch devices respectively and providing, as output, first and second switched signals respectively, said buffers being made to have relatively high input impedance and low output impedance;

a first variable resistor connected between an input node of said first switch device and an output node thereof;

a first fixed resistor connected between the output node of the first switch device and a signal ground node;

a second variable resistor connected between an input node of said second switch device and an output node thereof; and

a second fixed resistor connected between the output node of the second switch device and the signal ground node;

whereby a controlled proportion of the first audio signal, as determined by resistance values of said first variable and fixed resistors, is transmitted to the first output node between time periods when the first channel is fully enabled and whereby a controlled proportion of the second audio signal, as determined by resistance values of said second variable and fixed resistors, is transmitted to the second output node between time periods when the second channel is fully enabled.

5,343,535

LOUDSPEAKER DEVICE

Ronald N. Marshall, 2908 Payne Rd., Des Moines, Iowa 50310

Filed May 7, 1993, Ser. No. 57,893
Int. Cl.[5] H04R 25/00
U.S. Cl. 381—159 6 Claims



1. A loudspeaker system, comprising:

a folded resonant pipe having a predetermined length and including a first end and a second end open to a listening space, the pipe including a plurality of 90° folds disposed between the first and second ends; and

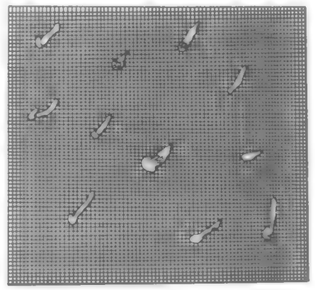
a pair of full range audio electric transducers electrically connected in phase, each of the transducers including a front surface and a back surface for radiating sound waves, the pair of transducers being mounted within the pipe in back-to-back coaxial relationship at one of said 90° folds and disposed such that one of the transducers is directed through a mounting opening in the pipe in communication with the listening space and wherein the other transducer has both its surfaces in communication with the pipe.

5,343,536

METHOD OF USING IMAGE ANALYSIS UNDER CROSS-POLARIZED LIGHT TO EVALUATE FOLLICULAR BIOPSY SLIDES

David G. Groh, Grand Rapids, Mich., assignor to Amway Corporation, Ada, Mich.

Filed Nov. 20, 1992, Ser. No. 979,700
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—6 10 Claims



1. A method of evaluating skin samples taken from a human subject comprising the steps of:

applying a film of adhesive to the skin of the subject;

applying a microscopic slide to said adhesive and allowing said adhesive to set;

removing said slide and said film with comedones and other materials of the skin attached thereto from the subject thereby yielding a skin specimen;

placing said skin specimen under a compound microscope;

subjecting said skin specimen to cross-polarized light;

digitally scanning said skin specimen;

digitally capturing and storing a binary image of said skin specimen;

executing a computer program to evaluate said binary image;

recording and storing data taken from said evaluation; and

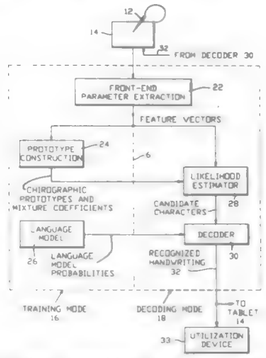
accessing said data using said computer program and thereafter performing an analysis of said skin specimen therewith for automatically evaluating the number of comedones contained in said skin specimen.

5,343,537

STATISTICAL MIXTURE APPROACH TO AUTOMATIC HANDWRITING RECOGNITION

Eveline J. Bellegarda; Jerome R. Bellegarda, both of Goldens Bridge; David Nahamoo, White Plains, and Krishna S. Nathan, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1991, Ser. No. 785,642
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—13 12 Claims



1. A handwriting recognition system comprising:

an electronic tablet for measuring the value of at least one feature of a handwriting stroke on the tablet at each of a plurality of different positions along the stroke to produce a set of feature vector signals representing the handwriting stroke;

means for storing a plurality of prototype signals, each prototype signal having at least one parameter value;

means for storing, for each character in an alphabet of characters and for each prototype signal, an estimate of the probability of occurrence of the prototype signal given the occurrence of the character;

means for generating a component character match score for a character and for a feature vector signal and a prototype signal, said component character match score comprising an estimate of the probability of occurrence of the feature vector signal given the occurrence of the prototype signal, combined with the probability of occurrence of the prototype signal given the occurrence of the character;

means for generating a partial character match score for a character and a feature vector signal, said partial character match score comprising a combination of the component character match scores for the character and the feature vector signal for all prototype signals;

means for generating a full character match score for a character and for all feature vector signals representing the handwriting stroke, said full character match score comprising a combination of the partial character match scores for the character and for all feature vector signals in the handwriting stroke;

means for identifying at least one best candidate character having the best full character match score; and

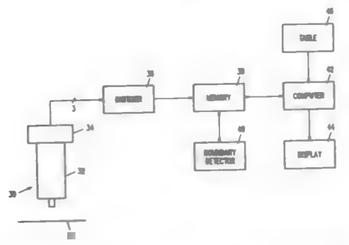
means for outputting at least one best candidate character.

VOL 1165 ISS 5 AG 30 1994 UMI

5,343,538
METHOD AND AN APPARATUS FOR IDENTIFYING AN OBJECT USING QUANTILE PARTITIONS

Harvey L. Kasdan, Van Nuys, Calif., assignor to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed Oct. 2, 1992, Ser. No. 956,056
Int. Cl.[5] G06K *9/46*
U.S. Cl. 382—18 **48 Claims**



1. A method of identifying an object under examination, said object has a discernible boundary; said method comprising the steps of:

a) forming an image of said object;

b) segmenting said image to form a plurality of pixels;

c) detecting the boundary of said object under examination in said image;

d) measuring a parameter, P, for each pixel inside the boundary detected, resulting in a plurality of values for the parameter P measured;

e) forming an ordered sequence, having a form $P_1 \ldots P_k \ldots P_N$ wherein P_1 represents a first value of the ordered sequence of measured parameter P; P_N represents a last value of the ordered sequence of measured parameter P where N represents a total number of pixels inside the boundary detected; P_k represents a kth value of the ordered sequence of measured parameter P having a value between P_1 and P_N, where k represents an index to the N pixels;

f) determining one or more values of k from a relationship of the form,

$$\frac{i-1}{M} < \frac{k}{N} \leq \frac{i}{M}$$

where M represents a total number of quantile partitions for the measured parameter P; represents an ith fraction of partition or i^{th} quantile partition for the measured parameter P;

g) determining the value of P_k from the one or more values of k determined in step (f); and

h) identifying said object under examination, based upon the value(s) of P_k determined from step associated with said object.

5,343,539
METHOD FOR SPATIAL DOMAIN IMAGE COMPRESSION

Yin K. Chan, Flat 5A, Block 10 88 Tat Chee Avenue, Kowloon Tong, Kowloon, Hong Kong

Filed Jul. 27, 1992, Ser. No. 919,866
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **28 Claims**

1. A method of spatial domain image compression comprising:

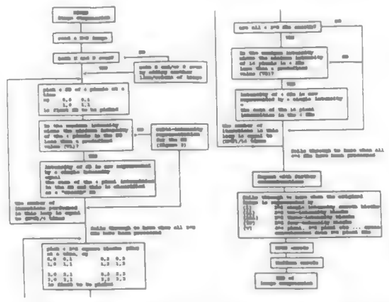
a. taking a stored record of an image consisting of a plurality of pixels, each pixel having a respective stored intensity value:

b. for a sub-block b_1 having p_1 pixels, determining the amount of variability between the p_1 pixel intensities within the sub-block;

c. compressing the sub-block b_1,

c1. by using a single intensity value I_1 to represent the intensities of the p_1 pixels in sub-block b_1 if the absolute difference between the intensity of each p_1 pixel is less than a first predetermined value; otherwise,

c2. by using two intensity values I_1, I_2 to represent the intensities of the pixels in sub-block b_1 if a first sum of



squares of differences of the p_1 pixels is less than a second predetermined value; otherwise,

c3. by using intensity values from I_3 to $I_{(p1-1)}$ to represent the intensities of the p_1 pixels in sub-block b_1 up until a corresponding sum of squares of differences of the p_1 pixels is less than a corresponding value,

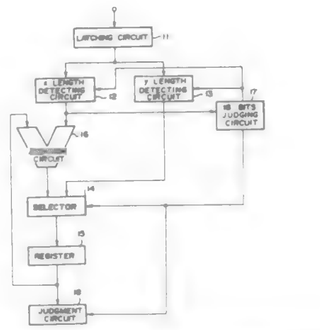
c4. recording values representative of q_1 intensities;

d. repeating steps b and c through c4 for successive sub-blocks $b_2, b_3 \ldots$ of respectively of $p_2, p_3 \ldots$ pixels until the entire image has been processed.

5,343,540
METHOD FOR DETECTING POSITIONS OF CONSECUTIVE BITS SET TO PREDETERMINED CODES

Yasushi Mitani, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 993,470, Dec. 15, 1992, which is a continuation of Ser. No. 651,088, Feb. 6, 1991. This application Jul. 12, 1993, Ser. No. 89,605
Claims priority, application Japan, Feb. 7, 1990, 2-28000
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **12 Claims**



1. A method for detecting a position of consecutive bits set to a predetermined code from a signal constituted of a plurality of words, the position being in the signal at which a predetermined number of consecutive bits are set to a predetermined code, said predetermined number of consecutive bits having a length not less than a word bit length which constitutes a signal word,

the method comprising the steps of:

latching a first word from the plurality of words;

counting in a first direction starting with the least significant bit of said first word the number of consecutive bits corresponding to said predetermined code, and continue counting toward the most significant bit of said first word so as to detect a first bit length,

latching a second word from the plurality of words;

counting in a second direction starting with the most significant bit of said second word the number of consecutive bits corresponding to said predetermined code, and continue counting toward the least significant bit of said second word so as to detect a second bit length, the most significant bits of said second word being adjacent to said least significant bits of said first word,

calculating a sum bit length by adding said second bit length to said first bit length,

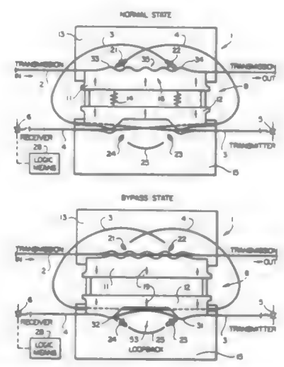
comparing said sum bit length with said word bit length, and

determining from the results of the comparison, the position in the signal at which consecutive bits correspond to said predetermined code.

5,343,541
OPTICAL BYPASS SWITCH

William D. Uken, Fremont, and Akira Tomita, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 551,117, Jul. 11, 1990, abandoned, which is a division of Ser. No. 455,200, Dec. 20, 1989, Pat. No. 4,961,620. This application May 7, 1992, Ser. No. 856,035
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—16 **7 Claims**



1. A method of selectively accessing a transmission optical fiber, comprising the steps of:

withdrawing a first optical signal from a first bend in a transmission optical fiber at a first location and transmitting the first optical signal to a receiver;

injecting a second optical signal from a transmitter into the transmission optical fiber at a second location downstream of the first location on the transmission optical fiber;

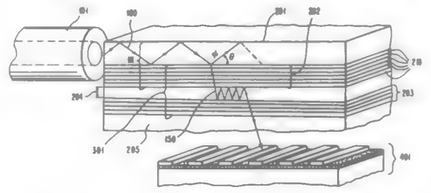
disengaging couplers for withdrawing the first signal and for injecting the second signal from and into the transmission optical fiber when a bypass state is desired so that the first optical signal can be transmitted in the transmission optical fiber without being withdrawn and the second signal is not injected into the transmission optical fiber;

connecting the transmitter with the receiver so that signals transmitted by the transmitter can be detected by the receiver when in the bypass state.

5,343,542
TAPERED FABRY-PEROT WAVEGUIDE OPTICAL DEMULTIPLEXER

Jeffrey A. Kash, Pleasantville, N.Y.; Bardia Pezeshki, Bridgeport, and Franklin F. Tong, Stamford, both of Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 22, 1993, Ser. No. 52,343
Int. Cl.[5] G02B *6/10*; **H01S** *3/19*; **G01B** *9/02*
U.S. Cl. 385—31 **8 Claims**



1. An apparatus for obtaining at least one selected optical frequency from a plurality of optical frequencies, comprising:

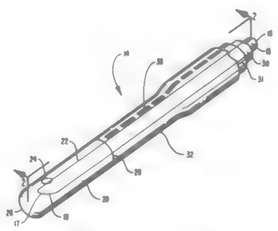
a. a waveguide having a partial mirror along its length to reflect transmitted said optical frequencies within said guide; and

b. an optical resonator, having an optical thickness for optical resonance, with one of its resonating mirrors being said partial mirror with said selected frequency being extracted from said guide and resonated in said resonator.

5,343,543
SIDE-FIRING LASER FIBER WITH DIRECTIONAL INDICATOR AND METHODS OF USE IN DETERMINING THE ORIENTATION OF RADIATION TO BE EMITTED FROM THE SIDE-FIRING LASER FIBER

John P. Novak, Jr., San Jose, and Barbara A. Eichorn, Campbell, both of Calif., assignors to Heraeus Surgical, Inc., Milpitas, Calif.

Filed May 27, 1993, Ser. No. 68,245
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—31 **30 Claims**



1. A side-firing laser fiber capable of emitting radiation, the laser fiber comprising:

a) a laser fiber through which laser radiation is directed, the laser fiber having an emitting tip;

b) means for redirecting radiation at the emitting tip to a substantially side-firing angle from the longitudinal axis of the laser fiber; and

c) a linear marking associated with said laser fiber, said linear

VOL 1165 ISS 5 AG 30 1994 UMI

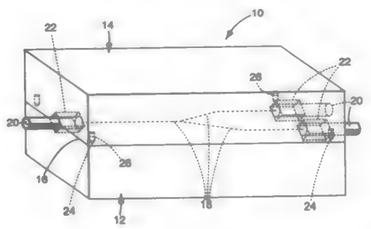
marking extending a sufficient distance proximally from a position near the emitting tip so as to provide a reference with respect to the direction of radiation emitted from the emitting tip and to be visible even if the emitting tip is not itself visible during use, said linear marking being formed of a plurality of spaced-apart segments so as to permit measurement of the depth of insertion of the laser fiber into tissue and measurements within the surgical site.

5,343,544

INTEGRATED OPTICAL FIBER COUPLER AND METHOD OF MAKING SAME

Gary T. Boyd; Tzu-Chen Lee, both of Woodbury; Bruce A. Svastek; Elisa M. Cross, both of St. Paul, and Laura A. Weller-Brophy, White Bear Township, Ramsey County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 2, 1993, Ser. No. 87,503
Int. Cl.[5] G02B *6/30*; B29D *11/00*
U.S. Cl. 385—46 **40 Claims**



1. An integrated n×m optical coupler comprising a polymeric housing which is a unitary structure formed by joining a substrate and a covering which encloses

(a) n input optical fibers,

(b) n waveguide entry channels formed in at least one of said substrate and said covering, which divide or converge into m waveguide exit channels, also formed in at least one of said substrate and said covering, and

(c) m output optical fibers,

wherein n and m are, independently, integers between 1 and 1024 inclusive, each of said n waveguide entry channels being aligned to the core of the respective n input optical fibers and each of said m waveguide exit channels being aligned to the core of the respective m output optical fibers by means of precisely aligned grooves in said housing, said waveguide channels being filled by at least one polymerizable monomer which is capable of being cured to provide waveguiding cores.

36. A method for making a mold for the microreplication of polymeric integrated optical coupler housings comprising the steps:

a) photolithographically etching a silicon wafer so as to form fiber-alignment grooves;

b) coating said wafer with a photo-resist material;

c) patterning in said photo-resist waveguiding channels which are aligned with said fiber-alignment grooves;

d) electroplating said patterned wafer with a layer of a metal to provide a metallic complement to said wafer; and

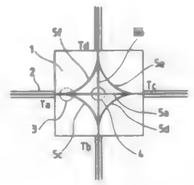
e) separating said metallic complement from said wafer.

5,343,545

INTERCONNECTABLE MULTI-TERMINAL STAR COUPLER

Takeshi Ota, Kanagawa; Mitsuo Arii, Tokyo; Masukazu Hirata, Tokyo, and Yasunari Kawabata, Tokyo, all of Japan, assignors to Fuji Xerox Co., Ltd. and Mitsubishi Gas Chemical Company, Inc., both of Tokyo, Japan

Filed Jul. 13, 1993, Ser. No. 90,955
Claims priority, application Japan, Jul. 14, 1992, 4-187065
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—46 **7 Claims**



1. An interconnectable multi-terminal star coupler comprising:

a substrate;

terminals, the number N of which is not smaller than four, provided on said substrate; and

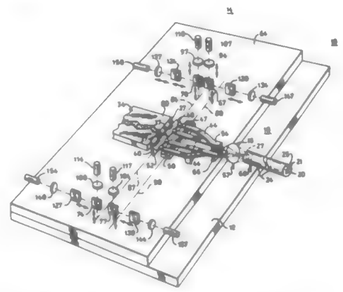
a circuit, connected to said terminals, including optical waveguides and N couplers for one-to-(N-1) branching from any one of said terminals to the others of said terminals on said substrate, each optical waveguide from any one of said terminals to another of said terminals which is not adjacent to said one terminal including an intersection portion where said each optical waveguide intersects at least one waveguide from others of said terminals.

5,343,546

MICROBENCH

David V. Cronin, Peabody, and Louis J. Brozyna, Somerville, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 26, 1993, Ser. No. 37,273
Int. Cl.[5] G02B *6/30*
U.S. Cl. 385—52 **10 Claims**



1. A position control mechanism comprising:

a mechanical structure having at least two members of different stiffnesses connected so that at least portions of said members can be moved in a first direction with respect to one another while other portions cannot;

a structural framework, said other unmovable portions of said member being fixedly mounted to said structural framework such that said movable portions of said members can be positioned relative thereto; and

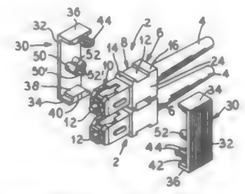
means for adjusting the spacing between said movable portions of said members to provide for their controlled movement with respect to said structural framework, said movable portions of said members moving in said one direction at different rates with respect to said structural framework in accordance with their stiffnesses and the spacing imposed between them with the stiffer of said two members moving the least for a given spacing, said adjusting means including a coarse adjustment and a fine adjustment to provide for vernier positioning of said movable portions of said members with respect to said structural framework with the finest position control being of the movable portion of the stiffer of said members.

5,343,547

OVERCONNECTOR ASSEMBLY

Vincent J. Palecek, 3036 S. Forrest Ave., Brookfield, Ill. 60513; James W. McGinley, 105 N. Summit Dr., Schaumburg, Ill. 60194, and Philip W. Schofield, 1218 W. Euclid Ave., Oak Park, Ill. 60302

Filed May 4, 1993, Ser. No. 57,696
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 375—76 **10 Claims**



1. An overconnector assembly for mounting a pair of simplex connectors to form a duplex connector comprising, in combination, a pair of overconnector half sections, each half section including a base and a pair of perpendicularly extending walls, one at each end of said base, each of said half sections having latching means thereon so said half sections are interconnectable for mounting a pair of simplex connector housing portions in side-by-side orientation, and at least one post equally spaced from said walls and extending perpendicularly from a first overconnector half section base toward a second overconnector half section base to separate said connector housing portions and control the spacing therebetween, said post being dimensioned to permit pivotal movement between said connector housing portions.

5,343,548

METHOD AND APPARATUS FOR BATCH, ACTIVE ALIGNMENT OF LASER ARRAYS TO FIBER ARRAYS

Shawn A. Hall, Pleasantville; Ramon Lane, Crompond, and Han-chung Wang, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1992, Ser. No. 990,865
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—89 **15 Claims**

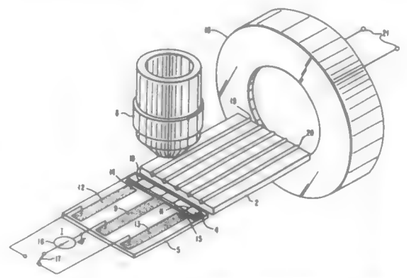
1. Apparatus for aligning a substantially co-linear array of lasers with a substantially co-linear array of optical fibers comprising;

a. a single carrier having a slot for receiving both the array of lasers and the array of optical fibers;

b. a first support plate having both a first holding means for holding said array of lasers in place with respect to said first support plate, and means for electrically coupling to selected ones of said lasers in said array of lasers;

c. a second support plate having a second holding means for holding the array of fibers in rough alignment with the array of lasers; and

d. means for positioning said carrier with respect to said first holding means and said second holding means so that when said holding means are activated, said array of lasers



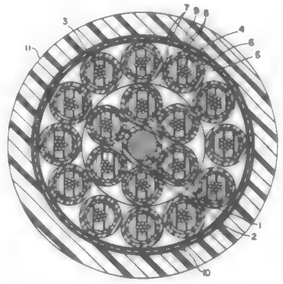
and said array of fibers are held in approximate alignment without said carrier.

5,343,549

RISER OPTICAL CABLE HAVING FILLING COMPOUND

Samuel D. Navé, Conover, and Harvey R. McDowell, III, Hickory, both of N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Aug. 25, 1993, Ser. No. 111,753
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—103 **6 Claims**



1. A light waveguide cable for riser applications, comprising:

a central strength member overcoated by a flame resistant plastic;

at least one layer of buffer tubes stranded around the central member, each buffer tube containing a plurality of light waveguides and a filling compound;

a flame resistant tape and at least one layer of tensile fibers surrounding the buffer tube layer or layers; and,

an outer flame resistant jacket.

5,343,550

TRANSVERSELY POLARIZED SOURCE CLADDING FOR AN OPTICAL FIBER

Claudio O. Egalon, and Robert S. Rogowski, both of Hampton, Va., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

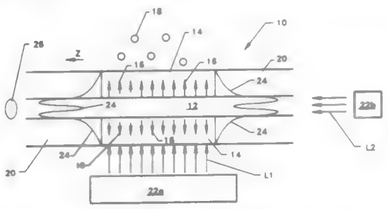
Filed Feb. 25, 1993, Ser. No. 22,582
Int. Cl.[5] G02B *6/16*
U.S. Cl. 385—123 **6 Claims**

1. An optical fiber having an improved power efficiency comprising:

VOL 1165 ISS 5 AG 30 1994 UMI

a fiber core having a longitudinal axis;

an active cladding surrounding a portion of said fiber core, the active cladding containing light-producing sources



each having a dipole moment and oriented such that the dipole moments of the light-producing sources are transverse to the longitudinal axis of said fiber core.

5,343,551

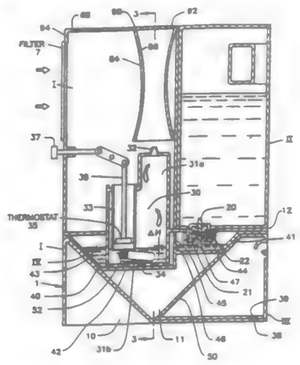
PORTABLE WARM AIR HUMIDIFIER

Dov Z. Glucksman, Wenham, Mass.

Continuation of Ser. No. 843,542, Feb. 28, 1992, which is a continuation-in-part of Ser. No. 606,938, Oct. 31, 1990, Pat. No. 5,111,529, which is a continuation of Ser. No. 287,330, Dec. 21, 1988, Pat. No. 5,014,338. This application May 7, 1993, Ser. No. 60,200

Int. Cl.[5] F24F 6/00; F22B 1/28; H05B 1/02, 3/28

U.S. Cl. 392—405 13 Claims



1. A portable warm air humidifier, comprising:

a water container having a discharge opening,

a top portion housing having a portion defining an evaporation chamber for collecting vapor, said top portion housing having a vapor outlet opening for discharging vapor collected from said evaporation chamber,

a heating element provided within said evaporation chamber, and

a base having a main compartment and a filling compartment in communication with each other,

said water container and said top portion housing supported and accommodated on said base in cooperative relationship with said main and said filling compartments,

said water container and said top portion housing being disposed in juxtaposition with each other and movable and displaceable with and with respect to said compartments on said base so as to provide access to said compartments and said heating element,

said water container having said discharge opening projecting into said filling compartment to supply water thereto and to said top portion housing projecting into said main compartment to immerse said heating element in water in said main compartment to effect the vaporization of water into vapor, said top portion housing when moved and displaced in a direction away from said main compartment effecting the withdrawal of said heating element from said main compartment to permit access to said heating element and to the interior of said main compartment, and

said evaporation chamber defining a restricted enclosure enclosing said heating element, an open bottom end portion of said evaporation chamber defining a passageway providing water communication between said main compartment and said restricted enclosure and physical access to said heating element so as to permit cleaning thereof.

5,343,552

DEVICE AND METHOD FOR BOILING WATER

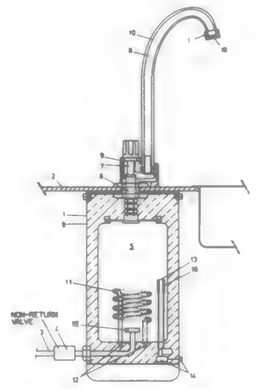
Henri B. Peteri, Rozenburglaan 31, 3062 EB Rotterdam, and Niels T. Peteri, Essenburgsingel 44b, 3021 AR Rotterdam, both of Netherlands

Filed Jul. 17, 1991, Ser. No. 731,453

Claims priority, application Netherlands, Jul. 18, 1990, 9001631

Int. Cl.[5] F24D 17/00; F24H 1/20

U.S. Cl. 392—451 17 Claims



1. A device suitable for supplying boiling water, comprising:

a thermally insulated compression resistant water reservoir,

an electric heating element located in said reservoir and of such power that the water present is heated to a temperature above its atmospheric boiling point,

a temperature control, with which the temperature of the water is adjusted to a temperature which would be above the boiling temperature under atmospheric pressure,

a water inlet which is connected to the water mains and which supplies an inlet flow to said reservoir which is at least equal to a maximum delivery flow of the device, and a discharge conduit for boiling water which is joined directly to the reservoir and connected to a top thereof,

the water inlet terminating under an underside of the heating element,

wherein a discharge valve is mounted at a point in the discharge conduit between an outlet orifice and a discharge opening in the reservoir and

wherein there is arranged adjacent to the outlet orifice, means for decelerating the outflow of water and steam;

said water being heated to a temperature above its atmospheric boiling point substantially eliminates remaining water and steam in said discharge conduit following said discharge valve when said discharge valve is closed.

5,343,553

DIGITAL FUZZY INFERENCE SYSTEM USING LOGIC CIRCUITS

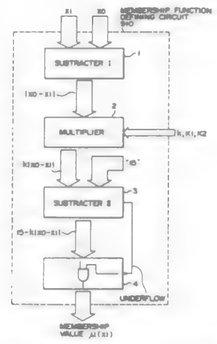
Azuma Miyazawa, Mitaka; Takashi Suzuki, and Kozi Mizobuchi, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 426,576, Oct. 24, 1989, abandoned. This application Feb. 16, 1993, Ser. No. 18,465

Claims priority, application Japan, Nov. 4, 1988, 63-278797; Dec. 28, 1988, 63-333502; Dec. 28, 1988, 63-333503; Aug. 9, 1989, 1-204761

Int. Cl.[5] G06F 9/44

U.S. Cl. 395—3 18 Claims



1. An if-part membership function generating apparatus for use in a digital fuzzy inference system, for obtaining an inferential result using an if-part membership function which responds to binary input data and a then-part membership function which responds to a value of the if-part membership function with respect to the binary input data, comprising:

means for inputting binary data;

means for inputting parameters for the if-part membership function represented as a line having a combination of gradients, each parameter including a tangent of a gradient and a point of change at which the gradient of the line changes;

means for producing an if-part membership value for the binary data inputted by said binary data inputting means which has said point of change and said tangent of a gradient set by the parameters inputted by said parameters inputting means, wherein said if-part membership value producing means comprises:

a first subtracter having means for calculating output $|xo-xi|$ from the point of change xo and the binary data xi;

a multiplier coupled to the first subtracter and having means for calculating $k\cdot|xo-xi|$ from the output of said first subtracter and the tangent k; and

a second subtracter coupled to the multiplier for calculating $C-k\cdot|xo-xi|$ from the output of said multiplier and a predetermined value C, the output of said second subtracter serving as the if-part membership value.

5,343,554

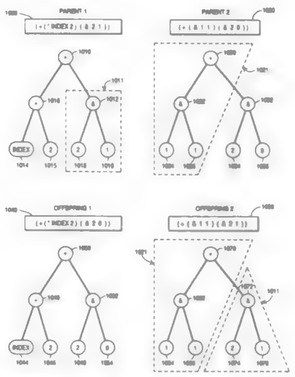
NON-LINEAR GENETIC PROCESS FOR DATA ENCODING AND FOR SOLVING PROBLEMS USING AUTOMATICALLY DEFINED FUNCTIONS

John R. Koza, 25372 La Rena La., Los Altos, Calif. 94022, and James P. Rice, Redwood City, Calif., assignors to John R. Koza, Los Altos, Calif.

Continuation-in-part of Ser. No. 787,748, Nov. 5, 1991, which is a continuation of Ser. No. 500,791, Mar. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 196,973, May 20, 1988, Pat. No. 4,935,877. This application May 11, 1992, Ser. No. 881,507

Int. Cl.[5] G06F 15/00

U.S. Cl. 395—13 61 Claims



1. In a computing system having at least one processor and at least one memory, a computer implemented process for solving a problem comprising the steps of:

creating a population of programmatic entities having sub-entities, wherein at least one of said sub-entities is externally invocable and at least one of said programmatic entities in the population has at least one internally invocable sub-entity, said at least one externally invocable sub-entity including at least one invocation of an internally invocable sub-entity; and

evolving said population, including the step of executing the population of programmatic entities, wherein said at least one externally invocable sub-entity invokes said at least one internally invocable sub-entity to produce results and, wherein said step of evolving further includes the step of generating at least one new programmatic entity in response to the results.

5,343,555

ARTIFICIAL NEURON WITH SWITCHED-CAPACITOR SYNAPSES USING ANALOG STORAGE OF SYNAPTIC WEIGHTS

Gökçe Yayla, La Jolla; Ashok V. Krishnamoorthy, San Diego, and Sadik C. Esener, Solana Beach, all of Calif., assignors to The Regents of the University of California, Alameda, Calif.

Filed Jul. 6, 1992, Ser. No. 909,563

Int. Cl.[5] G06F 15/18

U.S. Cl. 395—24 17 Claims

1. An artificial neural network circuit comprising:

a plurality of synapse means, each

for receiving an associated pulse-width-modulated, PWM, input signal from another, preceding, neural circuit, and

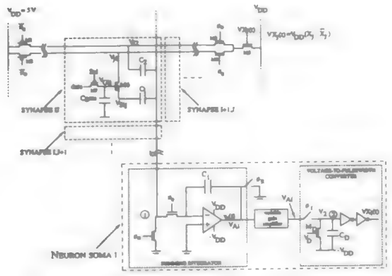
for producing as the product of (i) the received PWM input signal and (ii) a stored synaptic weight a time- and amplitude-modulated synaptic signal;

a synapses-to-neuron soma channel means for transmitting

VOL 1165 ISS 5 AG 30 1994 UMI

the time- and amplitude-modulated signals produced by the plurality of synapse means to a neuron soma means;

a neuron soma means for receiving a plurality of time- and amplitude-modulated synaptic signals from the plurality of synapse means via the synapses-to-neuron soma channel means, and for summing and for integrating the received plurality of



time- and amplitude-modulated synaptic signals to produce a pulse-width-modulated, PWM, output signal; and

a neuron soma-to-synapse channel means for communicating the pulse-width-modulated, PWM, output signal from the neuron soma means to a plurality of synapse means of another, succeeding, neural network circuit as the input signals thereof.

5,343,556

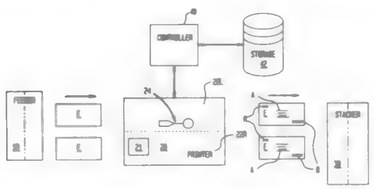
SYSTEM FOR ADDRESSING ENVELOPES

Morton Silverberg, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 20, 1991, Ser. No. 747,581

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—111 **15 Claims**



1. An envelope printing system, comprising

a) printing means for simultaneously printing n envelopes; and,

b) control means for subordering a sequence of M consecutive addresses into ni subsequences of N consecutive addresses, where i is an integer, N is an integer greater than 1, n is an integer greater than 1, and niN is less than or equal to M, and controlling said printing means to print n selected ones of said subsequences on said envelopes to concurrently form n groups of N envelopes printed with consecutive addresses, wherein,

c) said subsequences are selected from said sequence so that adjacent ones of said groups can be concatenated to form larger groups of envelopes printed with consecutive addresses, whereby said groups may readily be combined to correspond to said sequence.

5,343,557

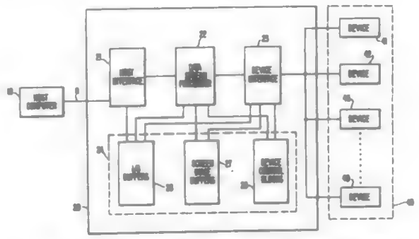
WORKSTATION CONTROLLER WITH FULL SCREEN WRITE MODE AND PARTIAL SCREEN WRITE MODE

Harvey G. Kiel; Ricky M. Peterson, and Lawrence D. Whitley, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 103,136, Sep. 28, 1987, abandoned. This application Aug. 10, 1989, Ser. No. 391,693

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—118 **20 Claims**



1. In a data processing system having a host computer, a controller, and a plurality of devices, a method of processing a data stream to efficiently send data to one of said plurality of devices comprising the steps of:

searching said data steam for a clear device command;

operating in full screen write mode upon detection of said clear device command in said data stream, said full screen write mode comprising the steps of:

processing a write to device command in said data stream by sending the data contained in said write to device command to a screen image buffer in said controller;

repeating said processing step until there is not more data in said data stream to process; and

transferring the contents of said screen image buffer to said device; and

operating in partial screen write mode of said clear device command is not detected.

5,343,558

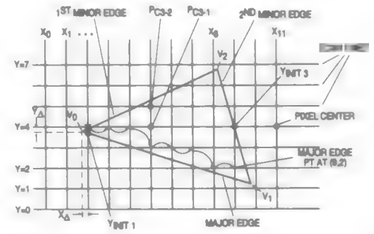
METHOD FOR SCAN CONVERTING SHADED TRIANGULAR POLYGONS

Kurt Akeley, Union City, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Filed Feb. 19, 1991, Ser. No. 657,087

Int. Cl.[5] G06F *15/62, 15/72*

U.S. Cl. 395—126 **18 Claims**



1. In a computer controlled display system with a processor and a scanned display device having an array of pixels, a computer implemented method for scan converting an arbitrarily positioned triangular polygon for display, wherein each pixel within said triangular polygon is set to a shade corresponding

to parameter values stored in memory, said method comprising:

reading information representative of parameter values at each vertex of said triangular polygon;

selecting an edge of said triangular polygon to provide a selected edge;

calculating parameter values for a first pixel center adjacent to said selected edge, wherein said first pixel center may be on either side of said selected edge;

moving along said selected edge to a next pixel center adjacent to said selected edge;

calculating parameter values for said next pixel center adjacent to said selected edge;

repeating said steps of moving and of calculating parameter values for said next pixel center until all parameter values for pixel centers adjacent to said selected edge have been calculated;

for each line in a set of lines parallel to an orthogonal axis of said display device, interpolating parameter values for pixel centers on said line within said triangular polygon which have not been calculated, wherein said interpolating is performed according to parameter values determined in said calculating steps which correspond to pixel centers adjacent to said selected edge;

storing said parameter values in said memory;

reading said parameter values from said memory;

generating an electrical signal to actuate said pixels of said triangular polygon on the display device at shades indicated by said parameter values stored in said memory;

displaying said triangular polygon on said display device.

5,343,559

MEMORY SYSTEM ADAPTED TO STORE TWO ASSOCIATED SETS OF DATA ITEMS

Robert I. Lee, Gatley, England, assignor to Microcomputer Technical Services Limited, Gatley, United Kingdom

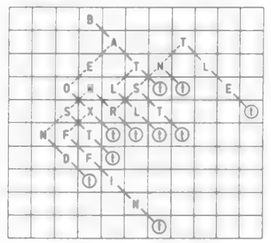
PCT No. PCT/GB89/01305, § 371 Date Jul. 2, 1991, § 102(e) Date Jul. 2, 1991, PCT Pub. No. WO90/05343, PCT Pub. Date May 17, 1990

PCT Filed Nov. 1, 1989, Ser. No. 679,011

Claims priority, application United Kingdom, Mar. 11, 1990, 8925780.3

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **10 Claims**



1. In a system having a memory comprising a plurality of cells, a method for storing a first data series and a second data series and accessing the first data series in response to an input of the second data series, the first data series comprising a plurality of data items and the second data series comprising a plurality of data items including a last data item, the method comprising:

storing the first data series in the memory wherein at least one of the data items in the first data series is stored in a corresponding one of the cells together with a relative address identifying a cell in which a subsequent data item in the first data series is stored, whereby the first data series is stored in a series of cells defining a first route,

generating a code describing the first route in terms of the relative addresses stored in the cells of the first route,

storing the second data series in the memory wherein at least one of the data items in the second data series is stored in a corresponding one of the cells together with a relative address identifying a cell in which a subsequent data item in the second data series is stored, whereby the second data series is stored in a series of cells defining a second route,

storing a further relative address in the cell in which the last data item of the second data series is stored, the further relative address identifying at least one further cell,

storing the code describing the first route in the at least one further cell,

searching the plurality of cells in response to the input of the second data series to locate the second route,

reading the further relative address from the cell in which the last data item of the second data series is stored,

reading the content of the at least one cell identified by the further relative address to obtain the code describing the first route; and

reading the data stored in the cells identified by the code describing the first route to give access to the first data series.

5,343,560

IMAGE DATA DISPLAY SYSTEM

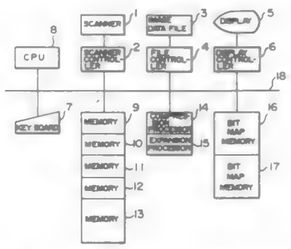
Haruo Takeda, Kawasaki, and Kuniaki Tabata, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 437,106, Nov. 16, 1989, Pat. No. 5,150,462, which is a continuation of Ser. No. 67,014, Jun. 29, 1987, abandoned. This application Mar. 11, 1992, Ser. No. 851,679

Claims priority, application Japan, Jun. 27, 1986, 61-149510

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—166 **22 Claims**



1. An image data display system for displaying image data frames specified by a user comprising:

file means for storing a plurality of image data frames of variable length image data in compressed form and for permitting random access;

access means for reading out image data frames in compressed image data form specified by the user one after another from said file means in a time period TR for one frame, the time period TR being variable depending on the contents of each image data frame;

means for expanding image data frames in the compressed image data form read out by said access means from the compressed image data form to an uncompressed expanded image data form in a time period TE for one frame, the time period TE being variable depending on the contents of the image data frames to be expanded and the time period TE overlapping in time with the time period TR for a succeeding frame;

screen means for displaying the image data expanded by said expanding means in the uncompressed expanded image data form; and

control means for holding a frame of image data in said

VOL
1165
ISS
5
AG
30
1994
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screen means a period of time t after the previous frame of image data has been displayed in said screen means, wherein the period of time t overlaps in time with the time period TE of the succeeding frame, and wherein TR+TE>t>TE for each frame, and for controlling the access means, processing means and screen means to iterate the reading, expanding, displaying and holding until either a halt command is inputted or all image data frames specified are displayed, wherein the time periods TR and TE start for each frame prior to the end of the period of time t for a preceding frame.

DESIGN PATENTS

GRANTED AUG. 30, 1994

ERRATA

For CLASS	See PATENT NO.
016-234	D 350,106

VOL
1165
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AG
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350,011
BOOTJACK
Paul Edwards, Twin Acres, 5033 S. Main St., Anderson, Ind. 46013
Filed Jan. 8, 1993, Ser. No. 3,371
Term of patent 14 years
U.S. Cl. D2—642



350,012
PATIENT EXAMINATION GOWN
Diana Christy, and Bob Christy, both of 1035 Wellers Ct., Roswell, Ga. 30076
Filed Oct. 26, 1992, Ser. No. 769
Term of patent 14 years
U.S. Cl. D2—720



350,013
SNEAKER SHOE WITH CROSS STRAP
Lyuba Gitelman, Hamden, Conn., assignor to Fila U.S.A. Inc., Hunter Valley, Md.
Filed May 10, 1993, Ser. No. 8,078
Term of patent 14 years
U.S. Cl. D2—902

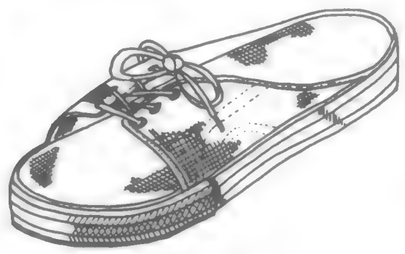


350,014
BOOT
Irene Ivanyshyn, 75 Don Valley Drive, Toronto, Ontario, Canada M4K 2J3
Filed Dec. 26, 1991, Ser. No. 812,957
Term of patent 14 years
U.S. Cl. D2—910

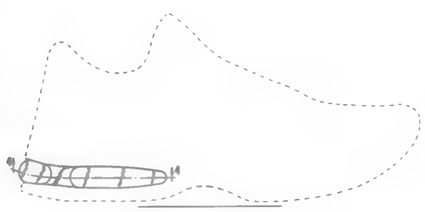


VOL 1165 ISS 5 AG 30 1994 UMI

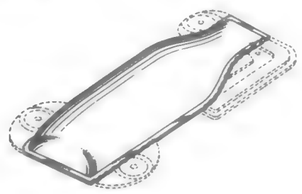
350,015
TENNIS SHOE SANDAL
J. Bart Buckner, 4707 Everhart Rd., #205, Corpus Christi, Tex. 78411
Filed Jun. 22, 1992, Ser. No. 902,059
The portion of the term of this patent subsequent to Aug. 9, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—916



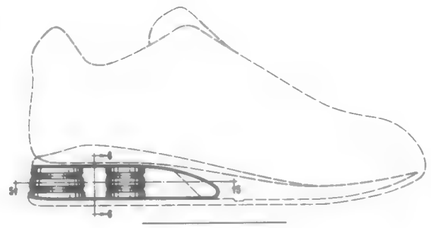
350,016
ELEMENT OF A SHOE SOLE
Joel L. Passke, Portland, Oreg.; David M. Forland, Battle Ground, Wash.; Robert J. Lucas, and Michael T. Donaghu, both of Portland, Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Sep. 1, 1993, Ser. No. 12,387
Term of patent 14 years
U.S. Cl. D2—946



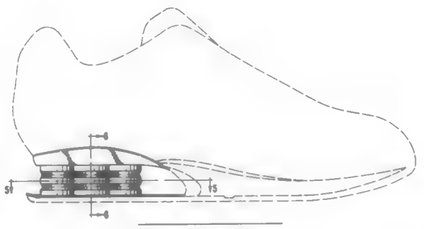
350,017
BLADDER FOR A SHOE SOLE
Larry R. Sarkinen, Vancouver, Wash., assignor to Nike, Inc., Beaverton, Oreg.
Filed Apr. 20, 1993, Ser. No. 7,934
Term of patent 14 years
U.S. Cl. D2—961



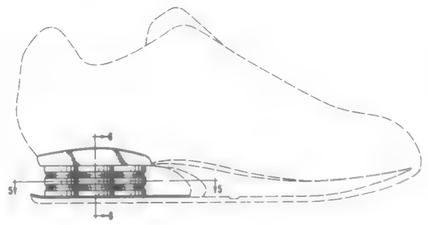
350,018
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,930, Nov. 1, 1991, Pat. No. Des. 344,398. This application Jan. 19, 1994, Ser. No. 17,646
Term of patent 14 years
U.S. Cl. D2—964



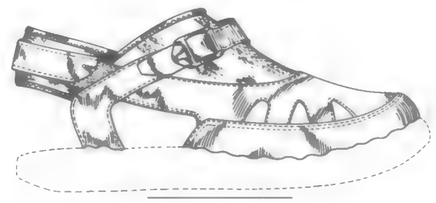
350,019
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,927, Nov. 1, 1991, Pat. No. Des. 344,174. This application Jan. 19, 1994, Ser. No. 17,626
Term of patent 14 years
U.S. Cl. D2—965



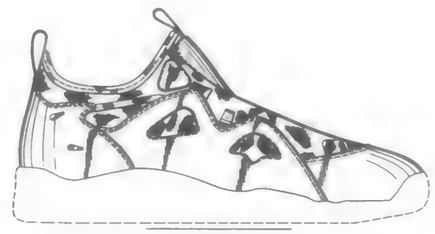
350,020
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,927, Nov. 1, 1991, Pat. No. Des. 344,174. This application Jan. 19, 1994, Ser. No. 17,647
Term of patent 14 years
U.S. Cl. D2—965



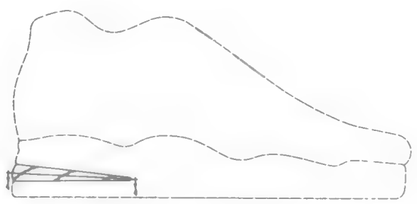
350,021
SHOE UPPER
Sherry Stein, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Feb. 25, 1994, Ser. No. 19,237
Term of patent 14 years
U.S. Cl. D2—969



350,022
SHOE UPPER
John D. Bell, and William J. Worthington, both of Portland, Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Mar. 1, 1994, Ser. No. 19,415
Term of patent 14 years
U.S. Cl. D2—969



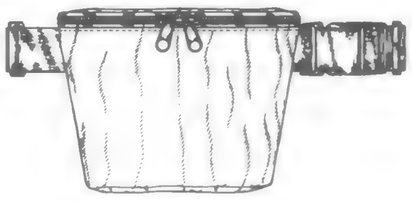
350,023
ELEMENT FOR A SHOE SOLE
Tinker L. Hatfield, and Steven C. McDonald, both of Portland, Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Continuation of Ser. No. 5,420, Mar. 4, 1993, abandoned, which is a division of Ser. No. 897,548, Jun. 12, 1992, abandoned. This application Nov. 30, 1993, Ser. No. 15,846
Term of patent 14 years
U.S. Cl. D2—977



350,024
COMBINATION WATER BOTTLE CARRIER AND PURSE
Lori E. Ryker, 1021 7th Ave. N., Apt. No. 4, Fargo, N. Dak. 58102
Filed Mar. 8, 1993, Ser. No. 5,511
Term of patent 14 years
U.S. Cl. D3—202

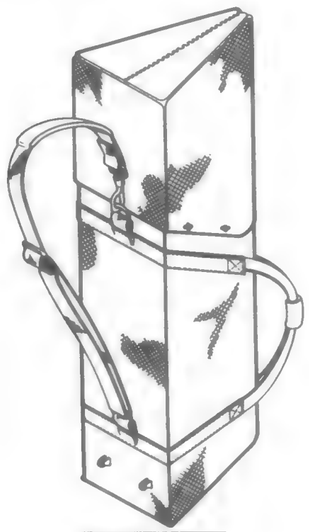


350,025
COIN HOLDER POUCH
Reno R. Rolle, 123 Malvern Ct., Mt. Laurel, N.J. 08054
Filed Jul. 22, 1992, Ser. No. 919,106
Term of patent 14 years
U.S. Cl. D3—226

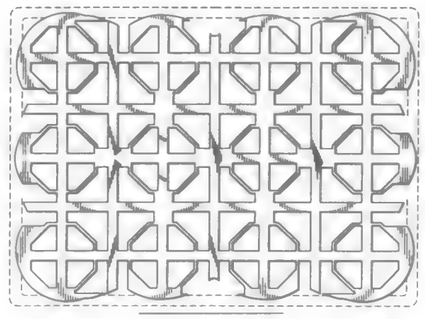


VOL 1165 ISS 5 AG 30 1994 UMI

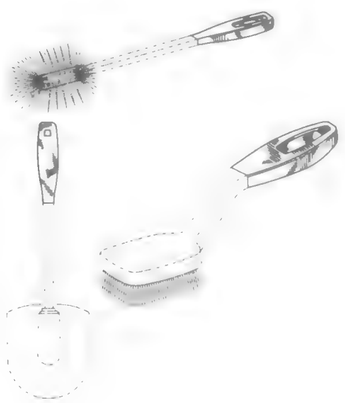
350,028
GOLF BAG
Chu-Chen Lin, 2F, No. 10-1, Nung 2, Lane 781, Min-Sheng East Road, Taipei, Taiwan
Filed May 18, 1993, Ser. No. 8,427
Term of patent 14 years
U.S. Cl. D3—255



350,028
FLOOR CONSTRUCTION FOR FULL DEPTH CRATE
William P. Apps, Anaheim, Calif., assignor to Rehrig Pacific Company, Inc., Los Angeles, Calif.
Division of Ser. No. 1,587, Nov. 19, 1992. This application Nov. 25, 1992, Ser. No. 1,889
Term of patent 14 years
U.S. Cl. D3—314



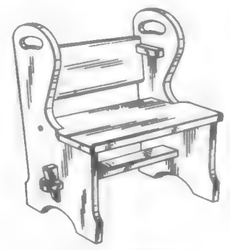
350,029
BRUSH HANDLE
Kent W. Murphy, Wooster, Ohio, and Joseph Lapin, Montreal, Canada, assignors to Rubbermaid Incorporated, Wooster, Ohio
Division of Ser. No. 548,728, Jul. 2, 1990, Pat. No. D. 336,992. This application Oct. 19, 1992, Ser. No. 1,351
Term of patent 14 years
U.S. Cl. D4—138



350,027
EARRING AND BROOCH ORGANIZER
Glenn W. Downes, and Peggy W. Downes, both of 507 S. 46th St., Baltimore, Md. 21224
Filed Jan. 8, 1993, Ser. No. 3,387
Term of patent 14 years
U.S. Cl. D3—278



350,030
STEP CHAIR
Allan M. Abrams, 4720 Flower Valley Dr., Rockville, Md. 20853
Filed Apr. 28, 1992, Ser. No. 875,131
Term of patent 14 years
U.S. Cl. D6—335



350,031
BENCH
Bruno Lehoux, Maison Landel Anse L'Etang Tartane, and Philippe Lopez, 64 Fond Bazil Tartane, both of 97220 Trinite, Martinique, France
Filed Dec. 4, 1992, Ser. No. 2,156
Term of patent 14 years
U.S. Cl. D6—351



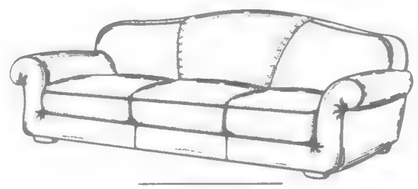
350,032
CHAIR
Jocelyn Beaulieu, 156 Brammar St., Newmarket, Ontario, Canada
Filed Jan. 31, 1992, Ser. No. 828,822
Term of patent 14 years
U.S. Cl. D6—366



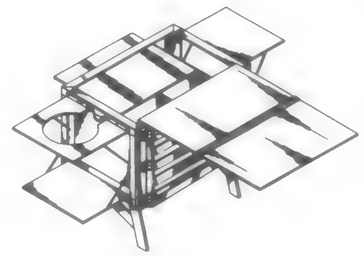
350,033
CHAIR
Jocelyn Beaulieu, 156 Brammar St., Newmarket, Ontario, Canada
Filed Jan. 31, 1992, Ser. No. 828,828
Term of patent 14 years
U.S. Cl. D6—366



350,034
SEAT
Pasquale Natuzzi, Santeramo In Colle, and Domenico Abbruzzese, Gioia del Colle, both of Italy, assignors to Industrie Natuzzi S.p.A., Bari, Italy
Filed Aug. 7, 1992, Ser. No. 927,179
Term of patent 14 years
U.S. Cl. D6—381



350,035
CAMPER BOX
Alan Stacey, Box 5, Grp. 7, RR1, East Selkirk, Manitoba R0E-0M0, Canada
Filed Dec. 17, 1992, Ser. No. 2,708
Term of patent 14 years
U.S. Cl. D6—397

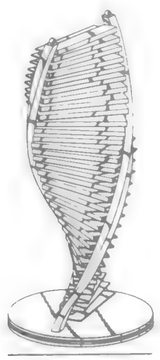


VOL 1165 ISS 5 AG 30 1994 UMI

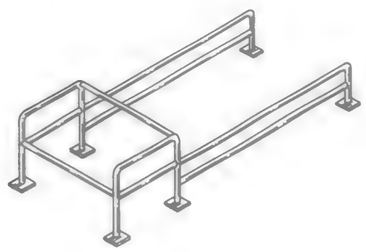
350,036
DRESSER
Andrew R. Willemsen, 39 Liberty St., Newburyport, Mass. 01950
Filed Sep. 8, 1992, Ser. No. 939,884
Term of patent 14 years
U.S. Cl. D6—434



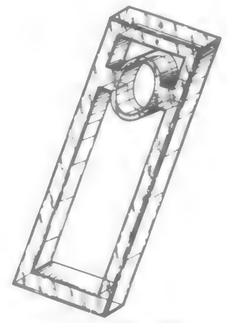
350,037
SPIRALING RACK
Hung Van Tran, 1810 Dresden Dr., Atlanta, Ga. 30319
Filed Jun. 30, 1993, Ser. No. 10,182
Term of patent 14 years
U.S. Cl. D6—460



350,038
SINGLE ENTRY SHOPPING CART HOLDER
Robert S. Buckley, P.O. Box 246, Keene, N.H. 03431
Filed Jul. 22, 1993, Ser. No. 10,914
Term of patent 14 years
U.S. Cl. D6—462



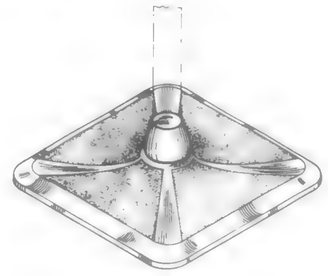
350,039
BOTTLE STAND
Albert M. Gener, 8671 N.W. 66 St., Miami, Fla. 33166
Filed Jul. 19, 1993, Ser. No. 10,840
Term of patent 14 years
U.S. Cl. D6—466



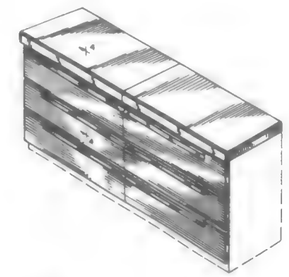
350,040
TABLE
Emanuela F. Magnusson, 350 E. 57th St., New York, N.Y. 10022
Filed Sep. 21, 1992, Ser. No. 948,875
Term of patent 14 years
U.S. Cl. D6—484

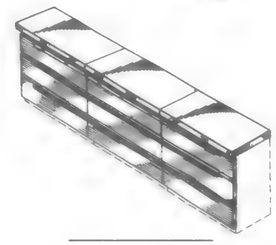


350,041
BASE FOR A STAND
Josef W. Schwarzli, Stouffville, Canada, assignor to Machine-O-Matic Limited, Newmarket, Canada
Filed Feb. 23, 1993, Ser. No. 5,237
Claims priority, application Canada, Sep. 28, 1992, 28-09-92-3
Term of patent 14 years
U.S. Cl. D6—495

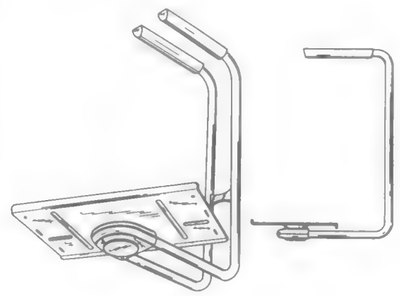


350,042
FRONT AND TOP FOR A CABINET
Donald A. Shepherd, Spring Lake, Mich., assignor to Meridian, Inc., Zeeland, Mich.
Division of Ser. No. 694,280, May 1, 1991, Pat. No. Des. 341,737. This application Nov. 24, 1992, Ser. No. 1,919
Term of patent 14 years
U.S. Cl. D6—509

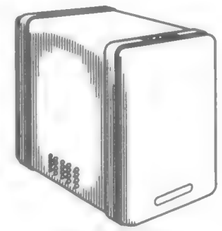




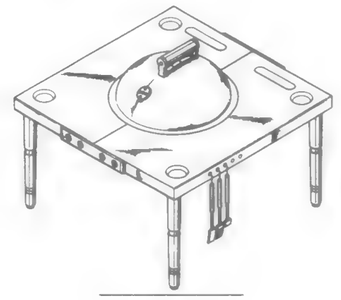
350,043
TV CEILING SUPPORT
Henricus H. Vogels, Eindhoven, Netherlands, assignor to Vogel's Holding B.V., Eindhoven, Netherlands
Filed Nov. 22, 1993, Ser. No. 15,579
Claims priority, application Hague, Jul. 7, 1993, DMA/001109
Term of patent 14 years
U.S. Cl. D6—513



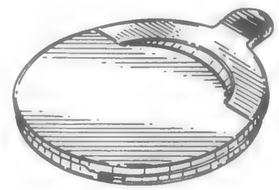
350,044
CASE FOR COMPACT DISCS
Jerry M. Long, Stockton; Christopher G. Palmer, Tracy, and Peter J. Palmer, San Jose, all of Calif., assignors to Creative Point, Inc., Fremont, Calif.
Filed Sep. 21, 1992, Ser. No. 934,342
Term of patent 14 years
U.S. Cl. D6—632



350,045
COMBINED TABLE, ROASTING POT AND COOKING UTENSILS
Hor-Chen C. Stuart, Suite 1, 11F, 95-8 Chang Ping Road Sec. 1, Taichung, Taiwan, Taiwan
Filed Oct. 19, 1992, Ser. No. 592
Term of patent 14 years
U.S. Cl. D7—332

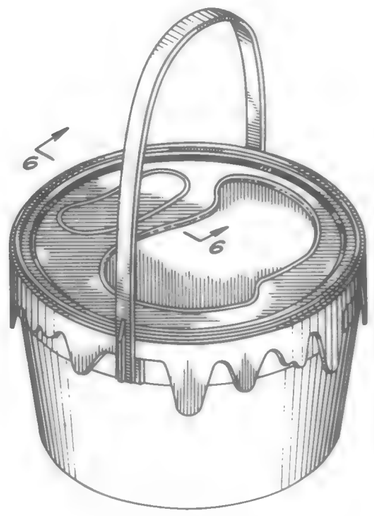


350,046
COVER
Larry G. Zimmerman, Champaign, Ill., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Aug. 1, 1991, Ser. No. 740,206
Term of patent 14 years
U.S. Cl. D7—392

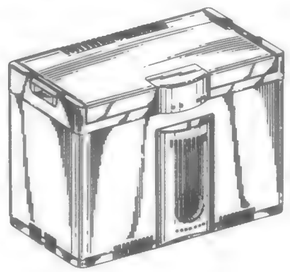


VOL 1165 ISS 5 AG 30 1994 UMI

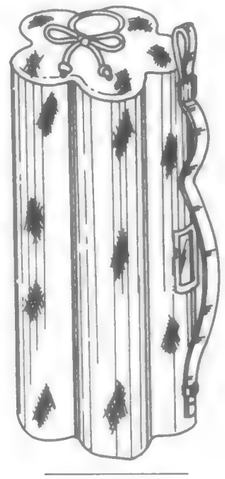
350,047
PAIL WITH A LID
Jerrilyn C. Kiyokane, Seal Beach, Calif., assignor to Namkung Promotions Inc., Costa Mesa, Calif.
Filed Nov. 9, 1992, Ser. No. 1,299
Term of patent 14 years
U.S. Cl. D7—601



350,048
THERMOELECTRIC CONTAINER
W. Henry Kahl, Wooster, Ohio, and Neil R. Taylor, Alameda, Calif., assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 14, 1992, Ser. No. 930,219
Term of patent 14 years
U.S. Cl. D7—605



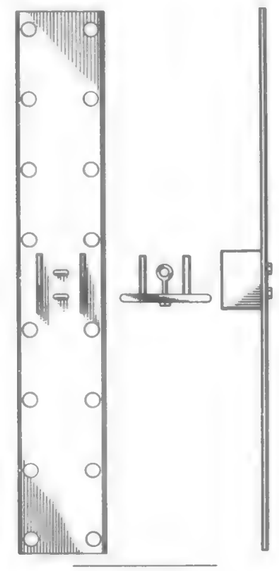
350,049
BEVERAGE CAN CARRIER
Dennis Johnson, Bloomfield Hills, Mich., assignor to The Simply Convenient Corporation, Bloomfield Hills, Mich.
Filed Nov. 30, 1992, Ser. No. 2,024
Term of patent 14 years
U.S. Cl. D7—619



350,050
TONGS
Joyce A. Klunder, 2315 Jasper Ave., New Hampton, Iowa 50659
Filed Mar. 19, 1993, Ser. No. 6,485
Term of patent 14 years
U.S. Cl. D7—686



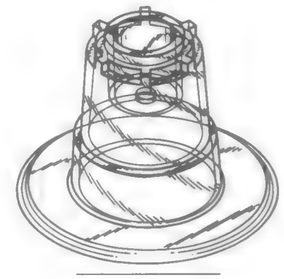
350,051
RAKE HEAD FOR REMOVING LEAVES FROM A SWIMMING POOL COVER
Anthony R. Nevelle, P.O. Box 15824, Honolulu, Hi. 96830-5824, assignor to Anthony Robert Nevelle, Honolulu, Hi.
Filed Oct. 25, 1993, Ser. No. 14,540
Term of patent 14 years
U.S. Cl. D8—1



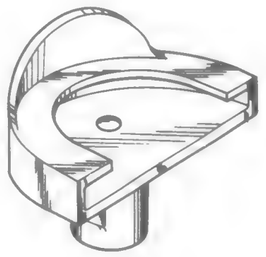
350,052
HARROW
Han-Chin Sun, 43, Ta An Road, Tieng Chung Shen, Changhua, Taiwan
Filed Jan. 29, 1993, Ser. No. 4,249
Term of patent 14 years
U.S. Cl. D8—13



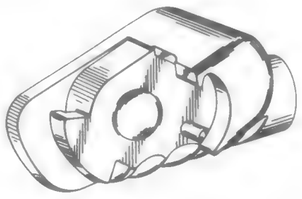
350,053
COAXIAL CABLE CONNECTOR INSTALLATION TOOL
Corey McMills, Los Altos, and John Mattis, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Jun. 6, 1990, Ser. No. 534,206
Term of patent 14 years
U.S. Cl. D8—14



350,054
COUPLER LOCK
Karl E. Richter, Muskego, Wis., assignor to Fulton Performance Products, Inc., Mosinee, Wis.
Filed Jun. 22, 1992, Ser. No. 903,536
Term of patent 14 years
U.S. Cl. D8—331

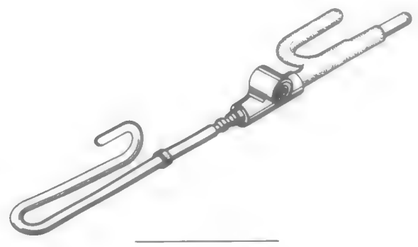


350,055
GLAD HAND SECURITY LOCK
Jeffrey P. Few, West Hills, Calif., assignor to Norco Industries, Inc., Compton, Calif.
Filed May 10, 1993, Ser. No. 8,086
Term of patent 14 years
U.S. Cl. D8—331

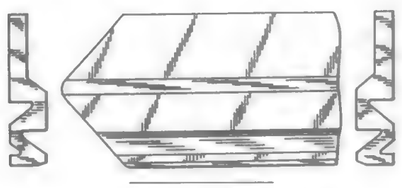


VOL 1165 ISS 5 AG 30 1994 UMI

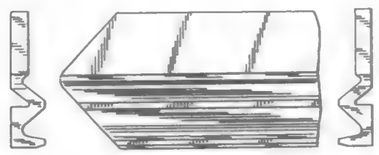
350,056
STEERING WHEEL LOCK
Chih-Nan Lin, No. 63, Min-Chu Rd., Hsin-Hsing Dist., Kaohsiung City, Taiwan
Filed Aug. 19, 1993, Ser. No. 11,983
Term of patent 14 years
U.S. Cl. D8—331



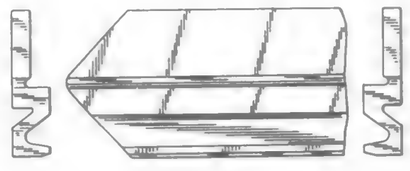
350,057
PORTION OF A KEY BLADE BLANK
Robert E. Kearns, San Francisco, Calif., assignor to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,300
Term of patent 14 years
U.S. Cl. D8—347



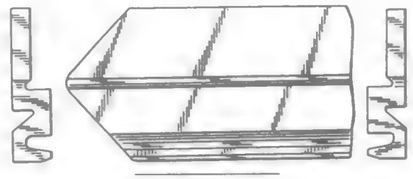
350,058
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,301
Term of patent 14 years
U.S. Cl. D8—347



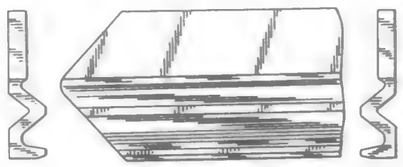
350,059
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,306
Term of patent 14 years
U.S. Cl. D8—347



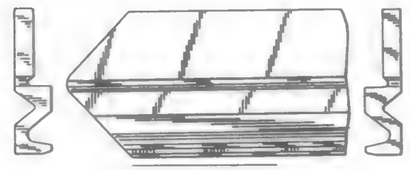
350,060
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,307
Term of patent 14 years
U.S. Cl. D8—347



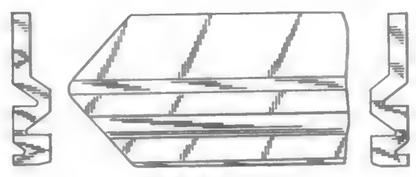
350,061
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,756
Term of patent 14 years
U.S. Cl. D8—347



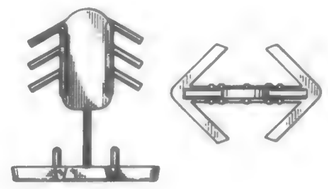
350,062
PORTION OF KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,758
Term of patent 14 years
U.S. Cl. D8—347



350,063
PORTION OF A KEY BLADE BLANK
Robert E. Kearns, San Francisco, Calif., assignor to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,760
Term of patent 14 years
U.S. Cl. D8—347



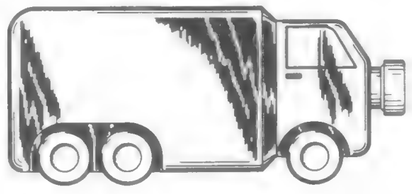
350,064
MUNTIN END CONNECTOR
Stephen D. Crawley, Bloomington, Minn., assignor to Lake Country Sales, Inc., Elysian, Minn.
Filed Nov. 10, 1992, Ser. No. 1,325
Term of patent 14 years
U.S. Cl. D8—382



350,065
PORTABLE, DISPOSABLE HOT AND COLD BEVERAGE CONTAINER
Virginia L. Edge, and Wendolyn L. Marshall, both of 21 Lynne Ave., Tyngsboro, Mass. 01879
Filed May 24, 1993, Ser. No. 8,637
Term of patent 14 years
U.S. Cl. D9—302

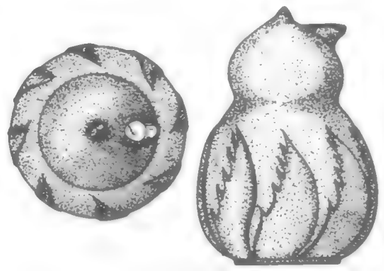


350,066
OIL BOTTLE
Juan F. Silva, and Juana E. Silva, both of 7913 6th St., Downey, Calif. 90242
Filed Feb. 24, 1993, Ser. No. 5,134
Term of patent 14 years
U.S. Cl. D9—308



VOL 1165 ISS 5 AG 30 1994 UMI

350,067
BOTTLE
Cecilia Ortega, Miami, Fla., assignor to Porfidio Destillerie, Kirchdorf/Inn., Fed. Rep. of Germany
Filed Feb. 8, 1993, Ser. No. 4,533
Term of patent 14 years
U.S. Cl. D9—335



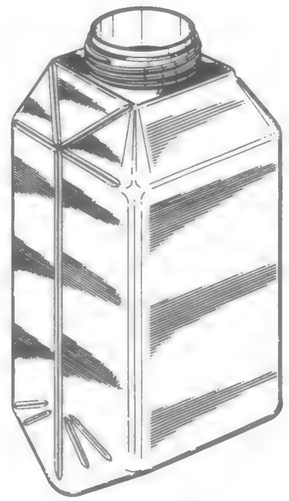
350,068
COMBINED TAMPERPROOF CONTAINER AND CLOSURE
James H. Schwartzburg, Douglas County, Kans., assignor to Packer Plastics, Inc., Lawrence, Kans.
Filed May 24, 1991, Ser. No. 705,146
Term of patent 14 years
U.S. Cl. D9—434



350,069
HANDLE FOR A BEVERAGE CAN
Craig D. Quarberg, 6908 Candlewood Cir., Brooklyn Park, Minn. 55369; James C. Harwood, 17500 Weaver Lake Dr., Maple Grove, Minn. 55369, and Dennis Long, Rte. 3, Box C-132, Buffalo, Minn. 55313
Filed Jun. 19, 1992, Ser. No. 902,277
Term of patent 14 years
U.S. Cl. D9—455



350,070
BOTTLE
Heiner Ophardt, Vineland, Canada, assignor to Hygiene-Technik Inc., Beamsville, Canada
Filed Apr. 12, 1993, Ser. No. 6,975
Claims priority, application Canada, Feb. 5, 1993, 0502931
Term of patent 14 years
U.S. Cl. D9—521



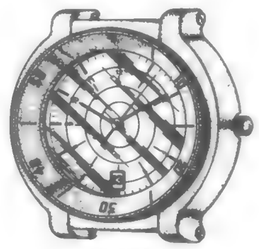
350,071
WATCH
Barbara Giardiello, Naples, Italy, assignor to Lucien Rochat SA, Bienne, Switzerland
Filed Mar. 10, 1992, Ser. No. 849,133
Claims priority, application Int'l Pat. Institute, Sep. 11, 1991, DMA/001586
Term of patent 14 years
U.S. Cl. D10—32



350,072
WRISTWATCH
Steve Hitter, Ostermundingen, Switzerland, assignor to Sportime Watches AG, Lengnau, Switzerland
Filed Sep. 11, 1992, Ser. No. 943,216
Claims priority, application World Int. Prop. O., Mar. 12, 1992, DM/022 273
Term of patent 14 years
U.S. Cl. D10—32



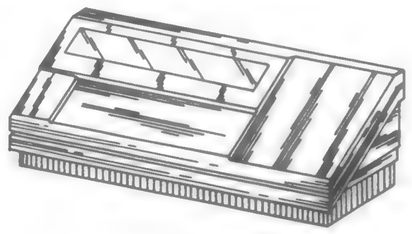
350,073
WATCH
Eddy Burgener, Moutier, Switzerland, assignor to Vuarnet Watches S.A., Collonge-Bellerive, Switzerland
Filed Mar. 19, 1992, Ser. No. 854,952
Claims priority, application Int'l Pat. Institute, Sep. 25, 1991, DM/020 742
Term of patent 14 years
U.S. Cl. D10—39



350,074
WATCH
Barbara Giardiello, Naples, Italy, assignor to Artime S.A., Neuchatel, Switzerland
Filed Jun. 2, 1992, Ser. No. 892,371
Claims priority, application Int'l Pat. Institute, Dec. 19, 1991, DM/021 472
Term of patent 14 years
U.S. Cl. D10—39



350,075
REMOVABLE KEYBOARD FOR WEIGHING SCALE
Paul A. Reeder, Columbus, Ohio, assignor to Mettler-Toledo, Inc., Worthington, Ohio
Filed Jun. 10, 1993, Ser. No. 9,308
Term of patent 14 years
U.S. Cl. D10—94



350,076
LEVEL GAUGE
Richard W. Frederick, Richardson, and Michael A. Yarrish, Grapevine, both of Tex., assignors to Rotaquip Inc., Dallas, Tex.
Filed Jul. 8, 1993, Ser. No. 10,475
Term of patent 14 years
U.S. Cl. D10—96



VOL 1165 ISS 5 AG 30 1994 UMI

350,077
BELL
Chung-Shyan Huang, No. 1-1, Chang Mar Street, Hsiu Shui Hsiang, Chang Hua Hsien, Taiwan
Filed Oct. 25, 1993, Ser. No. 14,578
Term of patent 14 years
U.S. Cl. D10—116



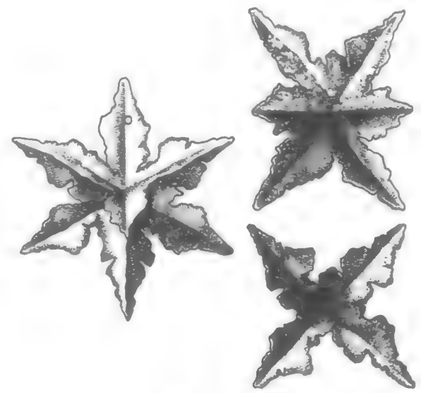
350,078
BRACELET
Gary R. Isroff, Akron, Ohio, assignor to IGI Corp., Akron, Ohio
Filed Sep. 16, 1992, Ser. No. 948,840
Term of patent 14 years
U.S. Cl. D11—4



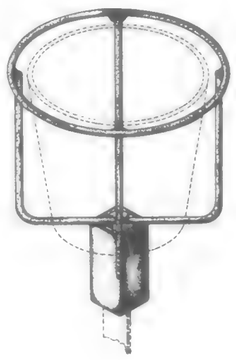
350,079
BRACELET
Stephen F. Wepner, 292 W. Hudson Ave., Englewood, N.J. 07631, and Giuseppe Bruzzi, 251 Hickory Ave., Bergenfield, N.J. 07621
Filed Jul. 20, 1993, Ser. No. 10,852
Term of patent 14 years
U.S. Cl. D11—6



350,080
CHRISTMAS TREE ORNAMENT
Leonhardt J. Andersen, 4518 Palmyra, New Orleans, La. 70119
Filed Dec. 14, 1992, Ser. No. 2,614
Term of patent 14 years
U.S. Cl. D11—121



350,081
POST-SUPPORTED FLOWER POT HOLDER
Carey M. May, 6112 University Dr., Huntsville, Ala. 35806
Filed Oct. 30, 1992, Ser. No. 978
Term of patent 14 years
U.S. Cl. D11—148



350,082
SKULL FIGURE
Christopher A. Tietz, Burbank, Oscar W. Lange, Jr., Sun Valley, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Mar. 20, 1992, Ser. No. 854,957
Term of patent 14 years
U.S. Cl. D11—157



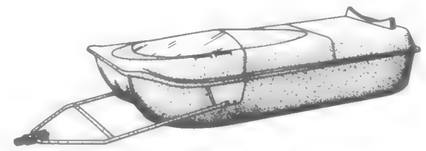
350,083
FIGURINE
Norwood D. Oliver, Mantoloking, N.J., and Karen Wenzel-Murphy, Yardley, Pa., assignors to Kinney Shoe Corporation, New York, N.Y.
Filed Nov. 17, 1992, Ser. No. 1,583
Term of patent 14 years
U.S. Cl. D11—160



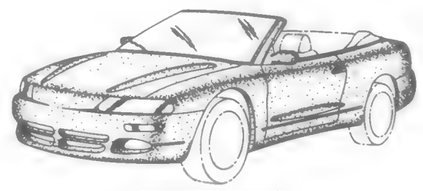
350,084
FLAG STAFF MOUNTING BASE
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.
Filed Apr. 6, 1993, Ser. No. 6,752
Term of patent 14 years
U.S. Cl. D11—182



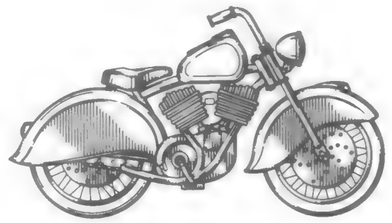
350,085
COVERED SLED FOR TRANSPORTING A PERSON IN LYING POSITION
William H. Stanton, Winnipeg, Canada, assignor to Equinox Industries Ltd., Winnipeg, Canada
Filed May 21, 1993, Ser. No. 8,574
Term of patent 14 years
U.S. Cl. D12—11



350,086
AUTOMOBILE BODY
Richard C. Kong, LaCosta, Calif.; Dennis Myles, W. Bloomfield, Mich.; Erich O. Kugler, Royal Oak, Mich.; Robert J. Janosko, Bloomfield Hills, Mich.; Timothy W. Anness, San Diego, Calif., and Daniel J. Sims, Lake Forrest, Calif., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 17, 1992, Ser. No. 870,709
The portion of the term of this patent subsequent to May 24, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—92

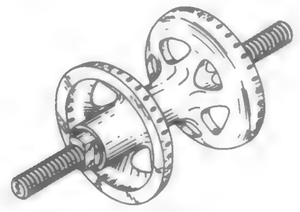


350,087
BICYCLE
Jim V. Sanborn, 1223 SE. 13th Ter., Fort Lauderdale, Fla. 33316
Filed Jul. 7, 1993, Ser. No. 10,453
Term of patent 14 years
U.S. Cl. D12—111

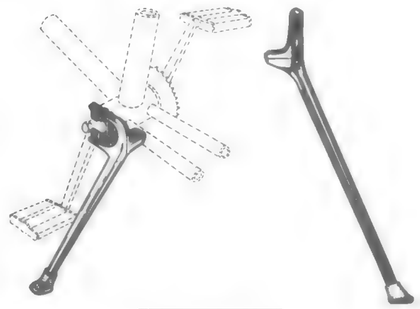


VOL 1165 ISS 5 AG 30 1994 UMI

350,088
BICYCLE HUB
Shujiro Inatani, Osaka, Japan, assignor to Rays Engineering Co., Ltd., Osaka, Japan
Filed Jun. 30, 1993, Ser. No. 10,108
Claims priority, application Japan, Jan. 13, 1993, 5-764
Term of patent 14 years
U.S. Cl. D12—115



350,089
PORTABLE REMOVABLE BICYCLE STAND
Peter Greenfield, Freeport, N.Y., assignor to Greenfield Industries, Inc., Freeport, N.Y.
Continuation-in-part of Ser. No. 73,734, Jun. 8, 1993. This application Sep. 3, 1993, Ser. No. 12,524
Term of patent 14 years
U.S. Cl. D12—120



350,090
AUTOMOBILE TIRE
Sonoko Sugimoto, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jan. 19, 1993, Ser. No. 3,826
Claims priority, application Japan, Jul. 21, 1992, 4-21892
Term of patent 14 years
U.S. Cl. D12—146



350,091
AUTOMOBILE TIRE
Kouji Shibata, Uji, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Feb. 2, 1993, Ser. No. 4,367
Claims priority, application Japan, Aug. 3, 1992, 4-23269
Term of patent 14 years
U.S. Cl. D12—147



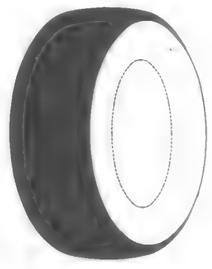
350,092
TIRE TREAD
Randall R. Brayer, North Canton; Rudy E. Consolacion, Copley, both of Ohio; Maurice Graas, Reichlange, Luxembourg, and Beale A. Robinson, North Canton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 26, 1993, Ser. No. 5,313
Term of patent 14 years
U.S. Cl. D12—147



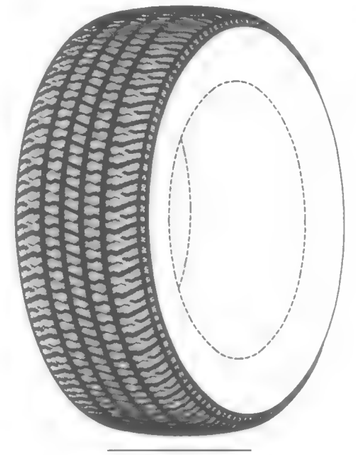
350,093
AUTOMOBILE TIRE
Masaharu Fukushima, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Mar. 3, 1993, Ser. No. 5,409
Claims priority, application Japan, Sep. 18, 1992, 4-27279
Term of patent 14 years
U.S. Cl. D12—147



350,094
TIRE TREAD
Norman D. Anderson, Uniontown; John S. Attinello, Hartville; Dale G. Freygang, Akron; Samuel P. Landers, Uniontown, all of Ohio, and Kevin A. Reid, Asheville, N.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 8, 1993, Ser. No. 5,593
Term of patent 14 years
U.S. Cl. D12—147



350,095
TIRE TREAD
Norman D. Anderson, Uniontown; John S. Attinello, Hartville; Dale G. Freygang, Akron; Samuel P. Landers, Uniontown, all of Ohio, and Kevin A. Reid, Asheville, N.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 8, 1993, Ser. No. 5,697
Term of patent 14 years
U.S. Cl. D12—147

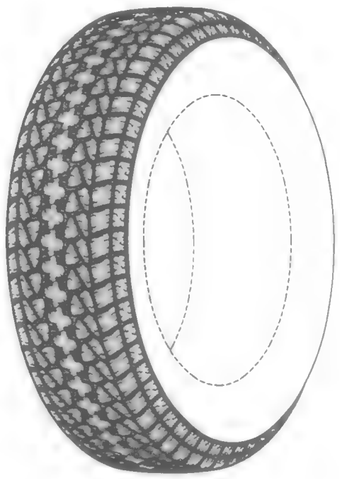


350,096
TIRE TREAD
Robert A. Brightwell, Uniontown; Richard L. Galainte, Akron; Jay K. Lawrence, Uniontown, and Terry J. Waibel, Wadsworth, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 29, 1993, Ser. No. 6,527
Term of patent 14 years
U.S. Cl. D12—147



VOL 1165 ISS 5 AG 30 1994 UMI

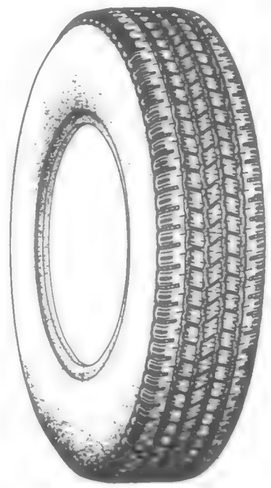
350,097
TIRE TREAD
John S. Attinello, Hartville, and William E. Glover, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 29, 1993, Ser. No. 6,528
Term of patent 14 years
U.S. Cl. D12—147



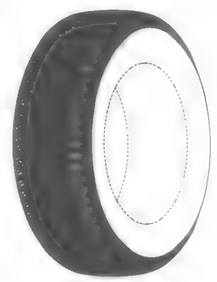
350,098
TIRE TREAD
John S. Attinello, Hartville, and William E. Glover, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 2, 1993, Ser. No. 6,606
Term of patent 14 years
U.S. Cl. D12—147



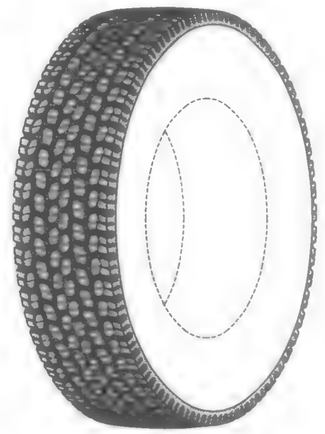
350,099
TIRE
Miroslav Manestar, Barberton, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Jun. 1, 1993, Ser. No. 9,061
Term of patent 14 years
U.S. Cl. D12—147



350,100
TIRE TREAD
Jan H. van Tuyl, Ettelbruck, Luxembourg, assignor to The Gooyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 23, 1993, Ser. No. 9,866
Term of patent 14 years
U.S. Cl. D12—147



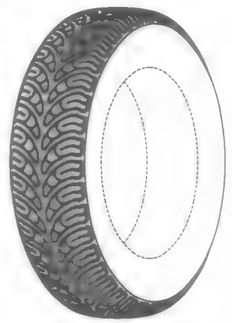
350,101
TIRE TREAD
Olivier de Barsy, Mersch, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 28, 1993, Ser. No. 9,987
Term of patent 14 years
U.S. Cl. D12—147



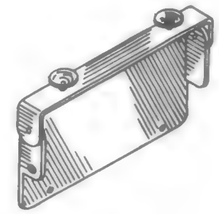
350,102
TIRE
Bruno Evraert, Taylors, and Stephen Lash, Simpsonville, both of S.C., assignors to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Jun. 30, 1993, Ser. No. 10,245
Term of patent 14 years
U.S. Cl. D12—147



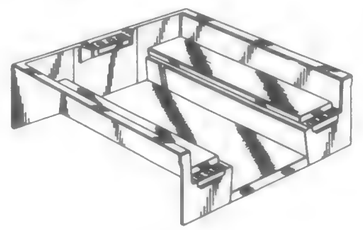
350,103
TIRE TREAD
Maurice Graas, Reichlange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 7, 1993, Ser. No. 9,207
Term of patent 14 years
U.S. Cl. D12—151



350,104
DISPLAY HOLDER FOR VEHICLES
William B. Lee, 1820 Erie St., Charlotte, N.C. 28216
Filed Dec. 4, 1992, Ser. No. 2,206
Term of patent 14 years
U.S. Cl. D12—193

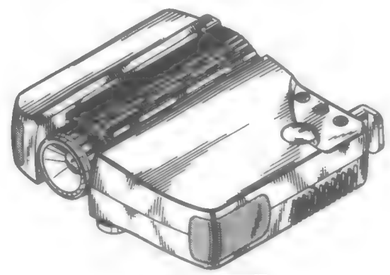


350,105
INTERIOR LINER AND SEATING UNIT FOR THE BED OF A PICKUP TRUCK
Hartmut W. Schroeder, Rossmoor, Calif., assignor to Custom Fibreglass Mfg. Co., Inc., Long Beach, Calif.
Filed Jan. 6, 1993, Ser. No. 3,452
Term of patent 14 years
U.S. Cl. D12—221

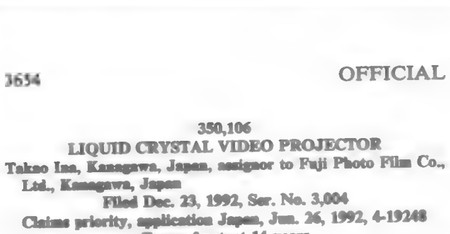


VOL 1165 ISS 5 AG 30 1994 UMI

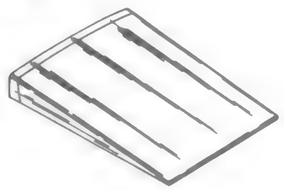
350,106
LIQUID CRYSTAL VIDEO PROJECTOR
Takao Ina, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 23, 1992, Ser. No. 3,004
Claims priority, application Japan, Jun. 26, 1992, 4-19248
Term of patent 14 years
U.S. Cl. D16—234



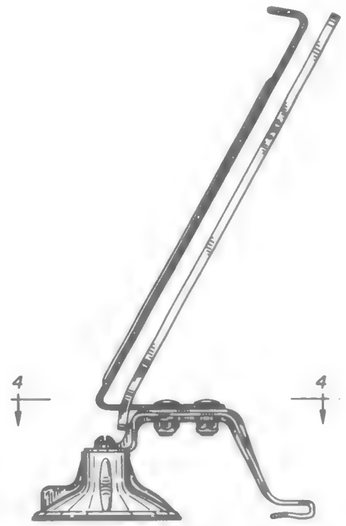
350,107
AUTOMOBILE TONNEAU COVER
Lorenzo Ramaciotti, Moncalieri, Italy, assignor to S.p.A. Ferrari, Modena, Italy
Filed Oct. 23, 1992, Ser. No. 750
Claims priority, application Italy, Apr. 27, 1992, TO92000099
Term of patent 14 years
U.S. Cl. D12—401



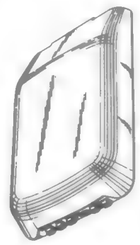
350,108
COVER FOR THE BED OF A PICKUP TRUCK
Kenneth S. Blanchard, 3632 Esquire Dr., Canal Winchester, Ohio 43110
Filed Aug. 16, 1993, Ser. No. 11,781
Term of patent 14 years
U.S. Cl. D12—401



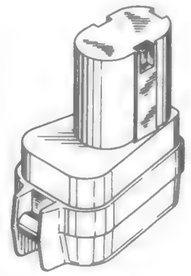
350,109
WINDOW MOUNT SNOWBOARD RACK
Ralph J. Ruffolo, Jr., Kenosha, Wis., assignor to Ruffolo Enterprise, Inc., Kenosha, Wis.
Filed Feb. 11, 1993, Ser. No. 4,737
Term of patent 14 years
U.S. Cl. D12—406



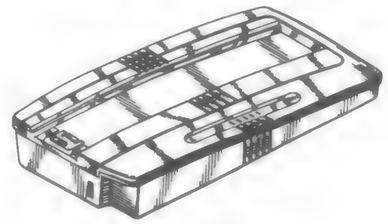
350,110
BATTERY HOUSING FOR A PORTABLE TELEPHONE
Terry Johnson, Fleet, England, assignor to Nokia Mobile Phones (U.K.) Ltd., Surrey, England
Filed Aug. 17, 1992, Ser. No. 930,049
Claims priority, application United Kingdom, Apr. 8, 1992, 2012218
Term of patent 14 years
U.S. Cl. D13—103



350,111
BATTERY PACK
Michio Okumura, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Sep. 29, 1993, Ser. No. 13,642
Claims priority, application Japan, Apr. 12, 1993, 5-10780
Term of patent 14 years
U.S. Cl. D13—103



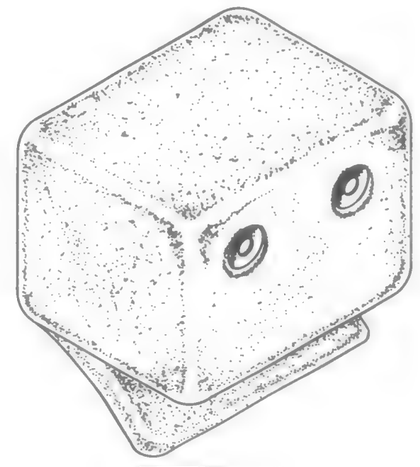
350,112
CELLULAR PHONE BATTERY CHARGER
Yao-tang Lin, Taipei, Taiwan, assignor to Aeolus Electronic Co., Ltd., Taipei, Taiwan
Filed Mar. 16, 1993, Ser. No. 5,990
Term of patent 14 years
U.S. Cl. D13—108



350,113
BATTERY CHARGER TRANSFORMER FOR A PORTABLE TELEPHONE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 26, 1993, Ser. No. 12,243
Term of patent 14 years
U.S. Cl. D13—110



350,114
VEHICLE BATTERY BLANKET
Ed Wales, 1205 Green Ave. #120, Gillette, Wyo. 82716
Filed Feb. 18, 1993, Ser. No. 5,020
Term of patent 14 years
U.S. Cl. D13—119

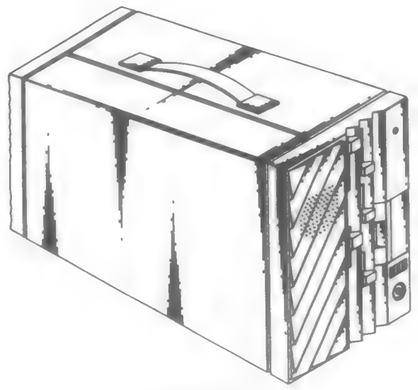


350,115
CARTRIDGE WITH A 1.8 INCH FORM FACTOR FOR A REMOVABLE CARTRIDGE DISK DRIVE
Syed H. Iftikar, Fremont; Herbert E. Thompson, Los Gatos, and Albert J. Guerini, Gilroy, all of Calif., assignors to SyQuest Technology, Inc., Fremont, Calif.
Filed Nov. 13, 1992, Ser. No. 1,411
Term of patent 14 years
U.S. Cl. D14—114

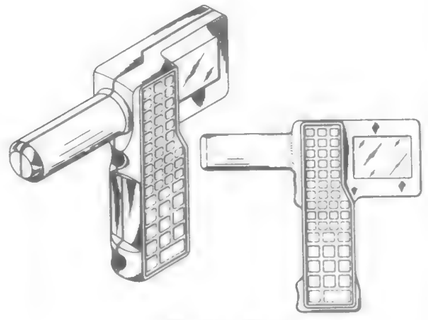


VOL 1165 ISS 5 AG 30 1994 UMI

350,116
COMPUTER FOR VISUALLY IMPAIRED PERSONS
James M. Zeiszler, Palo Alto, Calif., assignor to Arkenstone, Inc., Sunnyvale, Calif.
Filed Oct. 16, 1991, Ser. No. 778,717
Term of patent 14 years
U.S. Cl. D14—100



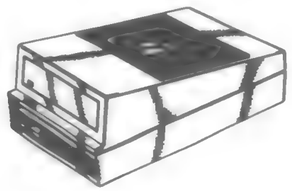
350,118
GRIP HELD DATA ENTRY COMPUTER HAVING AN AUTOMATIC IDENTIFICATION READER AND MODIFIED DISPLAY
Rajendra Kumar, and John W. Morrison, II, both of Akron, Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio
Filed Nov. 24, 1992, Ser. No. 1,818
Term of patent 14 years
U.S. Cl. D14—100



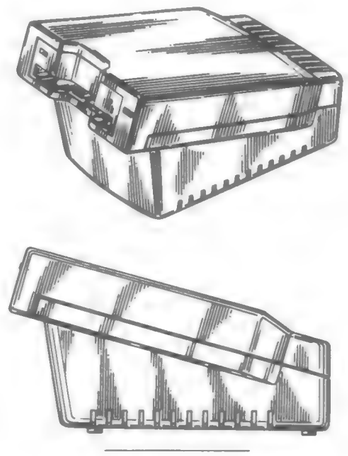
350,119
PORTABLE DATA ENTRY TERMINAL WITH DISPLAY A AND SCANNER MODULE
Rajendra Kumar, and John W. Morrison, II, both of Akron, Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio
Filed May 7, 1993, Ser. No. 8,067
Term of patent 14 years
U.S. Cl. D14—100



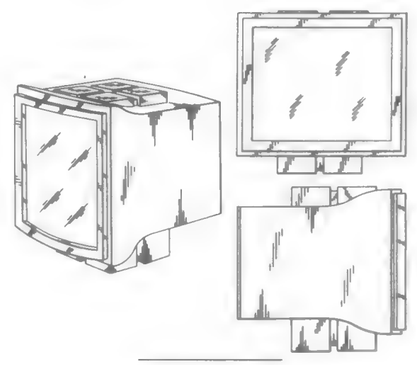
350,117
HOUSING FOR A DATA STORAGE DEVICE
Henry L. C. Lim, Singapore, Singapore, assignor to Conion Electronic(s) PTE Limited, Singapore, Singapore
Filed Jul. 6, 1992, Ser. No. 909,449
Claims priority, application United Kingdom, Jan. 4, 1992, 2019968
Term of patent 14 years
U.S. Cl. D14—100



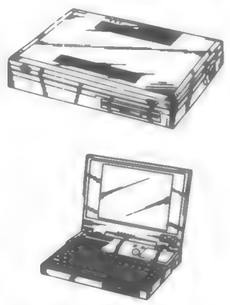
350,120
COMBINED READER AND WRITER FOR INFORMATION RECORDING CARDS
Hideki Tsuboi, Koganei, and Akihiko Koano, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 24, 1993, Ser. No. 5,468
Claims priority, application Japan, Aug. 24, 1992, 4-24715
Term of patent 14 years
U.S. Cl. D14—105



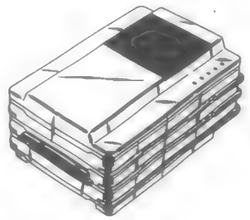
350,122
DISPLAY MONITOR
Joerg Ratzlaff, Altensteig, Fed. Rep. of Germany, assignor to International Business Machines Corp., Armonk, N.Y.
Filed Jul. 15, 1992, Ser. No. 914,694
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1992, M9200317.6
Term of patent 14 years
U.S. Cl. D14—113



350,121
COMPUTER
Takuji Kaneko, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan
Filed May 13, 1992, Ser. No. 882,627
Claims priority, application Japan, Nov. 14, 1991, 3-34424
Term of patent 14 years
U.S. Cl. D14—106

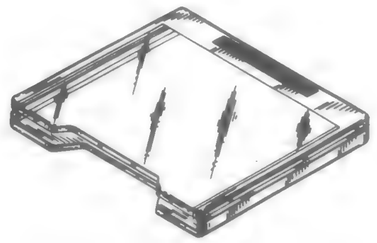


350,123
IN-CIRCUIT EMULATOR
Shinbo Makoto, Hachioji; Hagimo Akihiro, Mitaka, and Asami Hiromi, Sagamihara, all of Japan, assignors to Sophia Systems Co., Ltd., Tokyo, Japan
Filed May 20, 1992, Ser. No. 886,648
Term of patent 14 years
U.S. Cl. D14—114

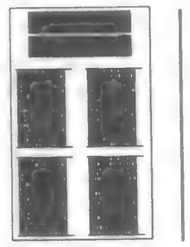


VOL 1165 ISS 5 AUG 30 1994 UMI

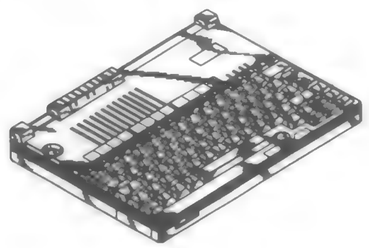
350,124
CASE FOR AN OPTICAL DISC CARTRIDGE
Hiroshi Nakaizumi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 915,372
Claims priority, application Japan, Jan. 31, 1992, 4-2422
Term of patent 14 years
U.S. Cl. D14—114



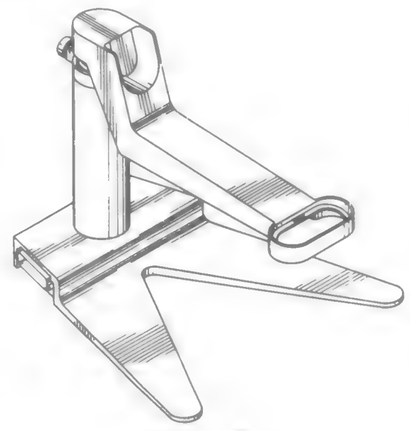
350,125
DATA CONTAINING ROCKET CARD
Shoichi Saitoh, Tokyo, Japan, assignor to Sanko Krei, Tokyo, Japan
Filed Oct. 15, 1992, Ser. No. 473
Claims priority, application Japan, Apr. 24, 1992, 4-12478; Apr. 24, 1992, 4-12479
Term of patent 14 years
U.S. Cl. D14—114



350,126
COMPUTER KEYBOARD WITH BUILT-IN TRACKBALL
Chee-Chun Leung, Taipei, Taiwan, assignor to Ouanta Computer Inc., Taipei, Taiwan
Filed Jan. 19, 1993, Ser. No. 3,824
Term of patent 14 years
U.S. Cl. D14—115



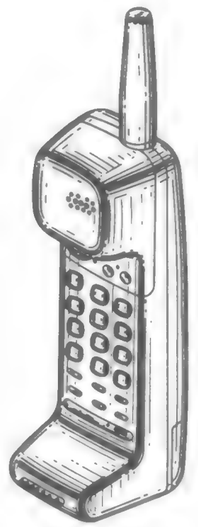
350,127
STAND FOR A HANDHELD LASER SCANNER
Phillip C. Gammeson, Eugene, and Jose Bravo, Tigard, both of Oreg., assignors to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.
Filed Dec. 21, 1992, Ser. No. 2,832
Term of patent 14 years
U.S. Cl. D14—116



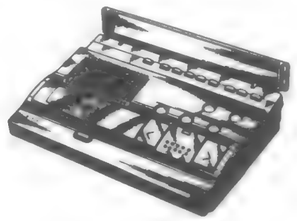
350,128
PERSONAL RADIO COMMUNICATION DEVICE
Leonid Soren, Lincolnwood, and Albert L. Nagele, Wilmette, both of Ill., assignors to Motorola, Inc., Schamburg, Ill.
Filed Mar. 9, 1992, Ser. No. 849,305
Term of patent 14 years
U.S. Cl. D14—137



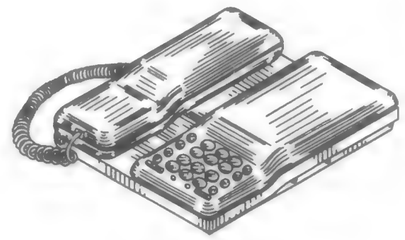
350,129
CORDLESS TELEPHONE
Ichiroh Hino, and Tomoyuki Shudoh, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 915,192
Claims priority, application Japan, Jan. 21, 1991, 4-1209
The portion of the term of this patent subsequent to May 24, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—138



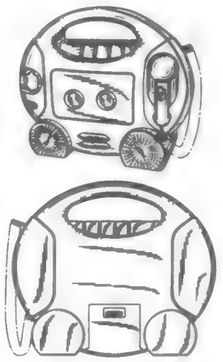
350,130
AUTOMATIC TELEPHONE MESSAGE RECORDER
Isamu Yoshitake, Tokyo, and Toshio Igo, Tokorozawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed May 4, 1993, Ser. No. 7,907
Term of patent 14 years
U.S. Cl. D14—141



350,131
TELEPHONE
Chan Wai Keung, Kowloon, Hong Kong, assignor to Dialfone, Ltd., Kowloon, Hong Kong
Filed Nov. 4, 1992, Ser. No. 1,126
Term of patent 14 years
U.S. Cl. D14—151

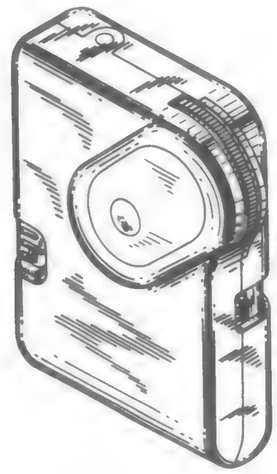


350,132
CHILD'S CASSETTE RECORDER AND PLAYER COMBINATION
Dan Klitsner, Oakland; Mark Eastwood, San Francisco, both of Calif., and Richard R. Neitz, Sugarland, Tex., assignors to Diversified Specialists, Inc., Houston, Tex.
Filed Apr. 3, 1992, Ser. No. 864,915
Term of patent 14 years
U.S. Cl. D14—165

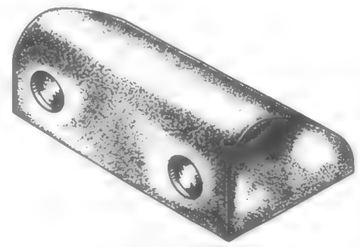


VOL 1165 ISS 5 AG 30 1994 UMI

350,133
RADIO RECEIVER
Ryuta Kanno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 12, 1992, Ser. No. 897,560
Claims priority, application Japan, Dec. 12, 1991, 3-37536
Term of patent 14 years
U.S. Cl. D14—198



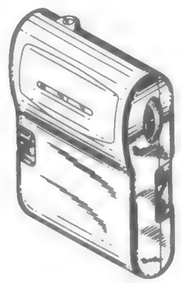
350,135
ENCLOSED SPEAKER FOR VEHICLE USE
Matthew S. Polk, Jr., Baltimore, and William E. Rupert, Bel Air, both of Md., assignors to Polk Investment Corporation, Wilmington, Del.
Filed Jan. 31, 1992, Ser. No. 830,189
Term of patent 14 years
U.S. Cl. D14—204



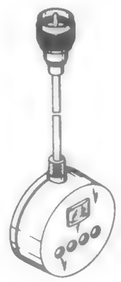
350,136
SPEAKER FOR A TELEVISION SET
Tai B. Kim, Seoul, D.P.R. of Korea, assignor to Goldstar Co., Ltd., Seoul, D.P.R. of Korea
Filed Jan. 8, 1992, Ser. No. 817,838
Claims priority, application D.P.R. of Korea, Aug. 22, 1991, 12505
Term of patent 14 years
U.S. Cl. D14—211



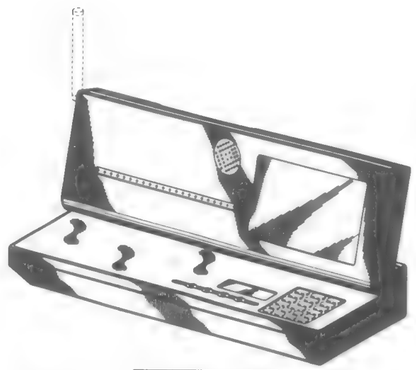
350,134
RADIO RECEIVER
Ryuta Kanno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 12, 1992, Ser. No. 897,965
Claims priority, application Japan, Dec. 12, 1991, 3-37535
Term of patent 14 years
U.S. Cl. D14—198



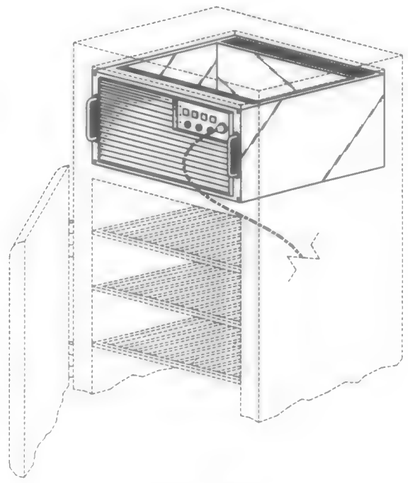
350,137
INTERIOR MOUNT FOR AN AUTOMOBILE ANTENNA
Hironobu Watanabe, Itabashi, Japan, assignor to Dai-Ichi Denpa Kogyo Co., Ltd., Tokyo, Japan
Filed Dec. 8, 1992, Ser. No. 2,312
Term of patent 14 years
U.S. Cl. D14—238



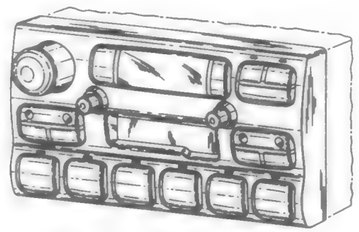
350,138
RADIO PACKET MODEM DEVICE
William E. Fenton, Surrey; Roman P. Rak, Delta, both of Canada, and Albert Nagele, Wilmette, Ill., assignors to Motorola, Inc.,, Schaumburg, Ill.
Filed Apr. 2, 1993, Ser. No. 6,604
Term of patent 14 years
U.S. Cl. D14—242



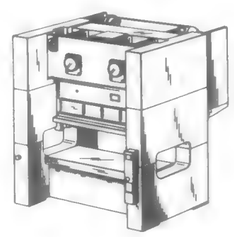
350,140
SLIDE-IN REFRIGERATION UNIT
Ut Van Le, and Lieu Lam, both of 1324 Crater Ave., Modesto, Calif. 95351
Filed Jul. 30, 1993, Ser. No. 11,295
Term of patent 14 years
U.S. Cl. D15—79



350,139
CONTROL PANEL FOR AN AUTOMOBILE RADIO/CASSETTE
James H. Fowler, Dearborn, and Nevenka Schumaker, Bloomfield Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 14, 1992, Ser. No. 929,561
The portion of the term of this patent subsequent to Feb. 1, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—258

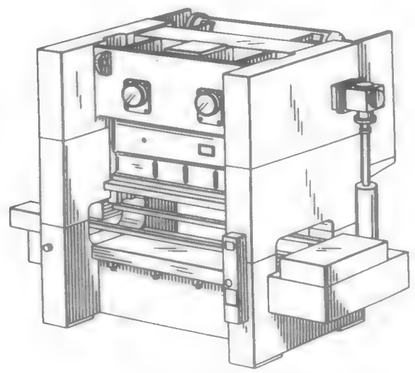


350,141
MECHANICAL PRESS
Shozo Imanishi, and Yasuhiro Horie, both of Sagamihara, Japan, assignors to Aida Engineering, Ltd., Kanagawa, Japan
Filed May 4, 1993, Ser. No. 7,830
Claims priority, application Rep. of Korea, Dec. 11, 1992, 1992 21003
Term of patent 14 years
U.S. Cl. D15—123



VOL 1165 ISS 5 AG 30 1994 UMI

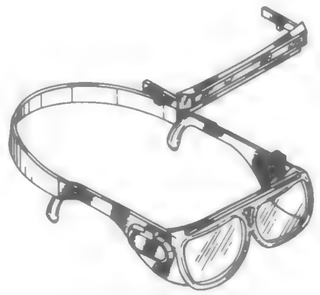
350,142
MECHANICAL PRESS
Shozo Imanishi, and Yasuhiro Horie, both of Sagamihara, Japan, assignors to Aida Engineering, Ltd., Kanagawa, Japan
Filed May 4, 1993, Ser. No. 7,851
Claims priority, application D.P.R. of Korea, Dec. 11, 1992, 21004
Term of patent 14 years
U.S. Cl. D15—123



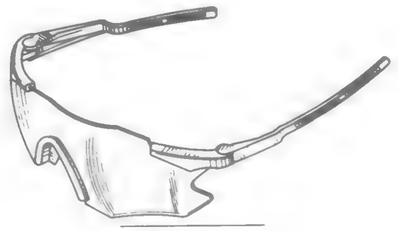
350,143
FUEL FUNNEL
Wade N. Zimmerman, 3009 Black Hills Ct., Westlake Village, Calif. 91362
Filed Nov. 19, 1992, Ser. No. 1,661
The portion of the term of this patent subsequent to Jun. 28, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—150



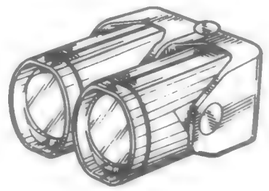
350,144
LIGHTED SAFETY GLASSES
Stephen Vasko, 118 N. Holland Ave., Pankin, Pa. 15104
Filed Jun. 16, 1993, Ser. No. 9,751
Term of patent 14 years
U.S. Cl. D16—309



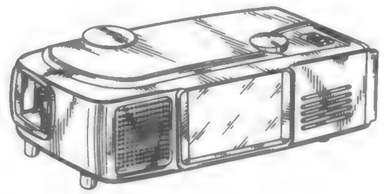
350,145
SUNGLASSES
Tamenobu Yamamoto, Osaka, Japan, assignor to Yamamoto Kogaku Co., Ltd., Osaka, Japan
Filed Dec. 4, 1992, Ser. No. 2,227
Claims priority, application Japan, Jun. 5, 1992, 4-16688
Term of patent 14 years
U.S. Cl. D16—314



350,146
BINOCULARS
Shouji Wakayama, and Akio Akiyama, both of Tokyo, Japan, assignors to Young Optical Co., Ltd., Tokyo, Japan
Filed Mar. 17, 1992, Ser. No. 853,314
Claims priority, application Japan, Sep. 17, 1991, 28016
Term of patent 14 years
U.S. Cl. D16—133



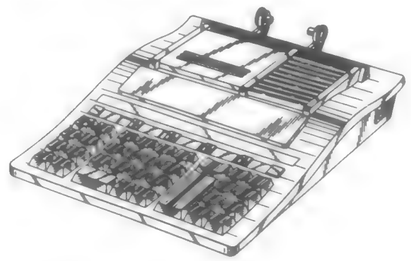
350,147
LIQUID CRYSTAL VIDEO PROJECTOR
Takao Ina, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jan. 14, 1993, Ser. No. 3,767
Claims priority, application Japan, Jul. 15, 1992, 4-21217
Term of patent 14 years
U.S. Cl. D16—230



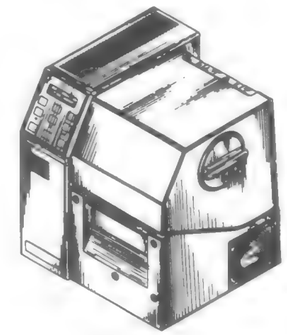
350,148
ELECTRONIC CALCULATOR
Takahisa Yubisui, and Makiko Yoshimura, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 19, 1992, Ser. No. 931,487
Claims priority, application Japan, Feb. 19, 1992, 4-4542
Term of patent 14 years
U.S. Cl. D18—7



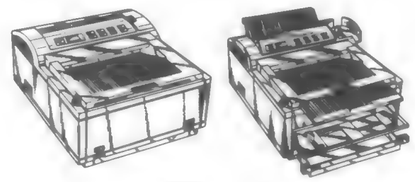
350,149
ELECTRONIC CALCULATOR
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Jan. 5, 1993, Ser. No. 3,199
Claims priority, application Italy, Jul. 13, 1992, TO920 000157
Term of patent 14 years
U.S. Cl. D18—7



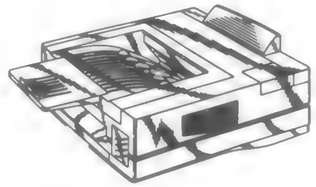
350,150
LABEL PRINTER
Erick W. Weitkamp, Edmonds, Wash., assignor to Intermec Corporation, West Everett, Wash.
Filed Apr. 5, 1991, Ser. No. 681,209
Term of patent 14 years
U.S. Cl. D18—50



350,151
PRINTER FOR AN ELECTRONIC COMPUTER
Koki Sugawara, and Kazuo Yoshida, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jan. 15, 1993, Ser. No. 3,531
Claims priority, application Japan, Jul. 31, 1992, 4-22770
Term of patent 14 years
U.S. Cl. D18—55

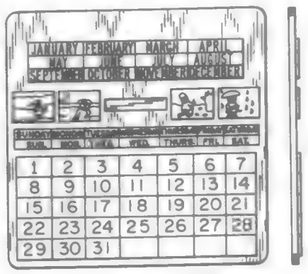


350,152
PRINTER
Makoto Tsuchida; Seiichi Miyaji, and Kaneatsu Uchiyama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 18, 1993, Ser. No. 15,507
Claims priority, application Japan, May 24, 1993, 5-15020
Term of patent 14 years
U.S. Cl. D18—55

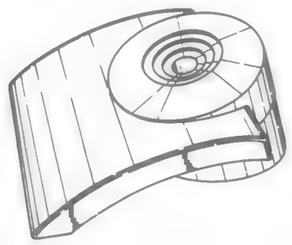


VOL 1165 ISS 5 AG 30 1994 UMI

350,153
CHILD'EDUCATIONAL CALENDAR
Najat Jabber, #1 Leon Way, Atherton, Calif. 94027
Filed Nov. 16, 1992, Ser. No. 1,561
Term of patent 14 years
U.S. Cl. D19—20



350,154
DESK TYPE HOLDER FOR BALL POINT PENS
Hans M. Höhner, Wolfach, Fed. Rep. of Germany, assignor to Klio Eterna Schreibgerate GmbH & Co. KG, Wolfach, Fed. Rep. of Germany
Filed May 19, 1993, Ser. No. 8,592
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1993, M9300265
Term of patent 14 years
U.S. Cl. D19—84



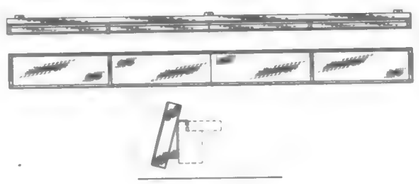
350,155
CORNER JOINT SUPPORT FOR A HANGING FILE FRAME
Bobby Fotioo, Helena, Ark., assignor to B & L Products, Inc., Hot Springs, Ark.
Filed Feb. 10, 1992, Ser. No. 832,495
Term of patent 14 years
U.S. Cl. D19—99



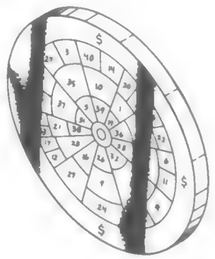
350,156
GASOLINE TANK DIRECTIONAL LABEL
David Adiv, 35 Morristown Rd., Bernardsville, N.J. 07924
Filed May 10, 1993, Ser. No. 8,090
Term of patent 14 years
U.S. Cl. D20—11



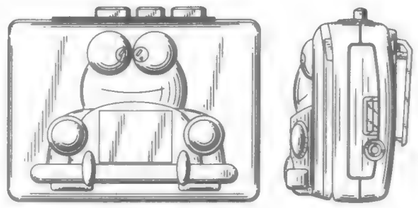
350,157
DISPLAY CABINET FOR ATTACHMENT TO A STORAGE RACK
Douglas M. Hart, Sacramento, Calif., assignor to Orepac Building Products, Wilsonville, Oreg.
Filed Mar. 16, 1993, Ser. No. 6,000
Term of patent 14 years
U.S. Cl. D20—43



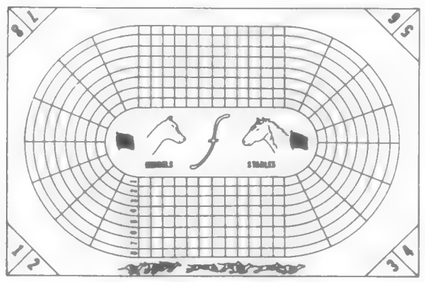
350,158
LOTTO DART BOARD
Stephen Daneault, 157 Buck St., Suncook, N.H. 03275
Filed Dec. 21, 1992, Ser. No. 2,579
Term of patent 14 years
U.S. Cl. D21—6



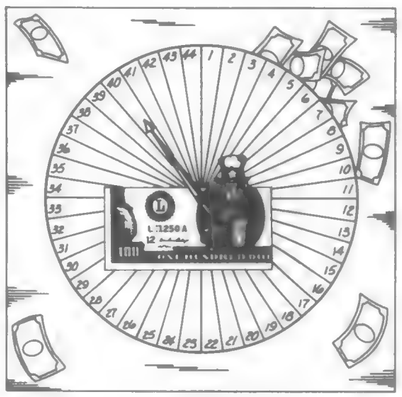
350,159
CASSETTE PLAYER WITH A LCD GAME
Kam W. Chu, New Territories, Hong Kong, assignor to Intertronics Industrial Company Limited, Kowloon, Hong Kong
Filed Aug. 24, 1992, Ser. No. 934,812
Term of patent 14 years
U.S. Cl. D21—13



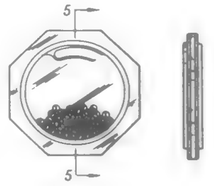
350,160
GAME BOARD
Donna J. Dunnavan, and James F. Dunnavan, both of 1307 - 6th Ave., Apt. #1, Rockford, Ill. 61104
Filed Sep. 21, 1992, Ser. No. 949,010
Term of patent 14 years
U.S. Cl. D21—27



350,161
LOTTERY SELECTOR BOARD
Merlin S. McCormick, 1036 Caffin Ave., New Orleans, La. 70117
Filed Mar. 1, 1993, Ser. No. 5,277
Term of patent 14 years
U.S. Cl. D21—37

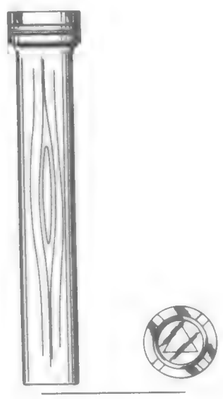


350,162
COMBINED COASTER AND SINGLE TRAP LOTTERY PICKER
Robert Adell, 31800 S. Brandingham, Franklin, Mich. 48025
Filed Oct. 18, 1993, Ser. No. 14,247
The portion of the term of this patent subsequent to Apr. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—37



VOL 1165 ISS 5 AG 30 1994 UMI

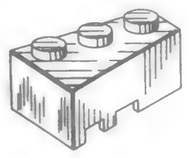
350,163
KALEIDOSCOPE
Jim Jones, No. 6, Lexington La., Hendersonville, N.C. 28739
Filed May 4, 1990, Ser. No. 518,871
Term of patent 14 years
U.S. Cl. D21—60



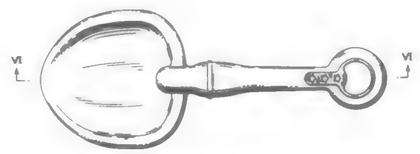
350,164
SET OF PUZZLE PIECES
Guy Ophir, 517 East 82nd St., New York, N.Y. 10028
Filed Sep. 17, 1992, Ser. No. 948,820
Term of patent 14 years
U.S. Cl. D21—104



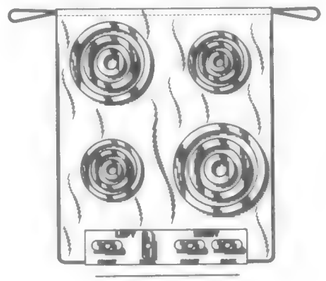
350,165
ELEMENT FOR A TOY BUILDING SET
Arne Refsing, Billund, Denmark, assignor to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,288
Term of patent 14 years
U.S. Cl. D21—108



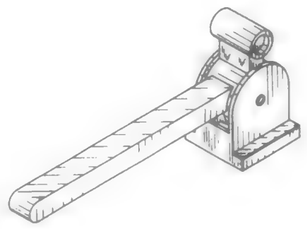
350,166
TOY SHOVEL
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,961
Claims priority, application Japan, May 29, 1992, 4-16028; May 29, 1992, 4-16029; May 29, 1992, 4-16030; May 29, 1992, 4-16031
Term of patent 14 years
U.S. Cl. D21—120



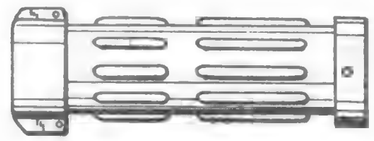
350,167
COMBINED TOTE BAG AND TOY STOVE
Michele P. Klawitter, 43 Hager Rd., Rochester, N.Y. 14616
Filed Sep. 8, 1992, Ser. No. 948,752
Term of patent 14 years
U.S. Cl. D21—122



350,168
BARRIER FOR A TOY TRAIN SET
Ede F. Ruzicki, Kobenhavn N, Denmark, assignor to Interlego, A. G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,914
Term of patent 14 years
U.S. Cl. D21—143



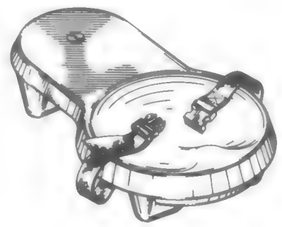
350,169
TOY WEAPON MAGAZINE
Avi Arad, Westport, Conn., and Finn Turaquist, Warren, N.J., assignors to Toy Biz, Inc., New York, N.Y.
Filed Dec. 31, 1992, Ser. No. 3,227
Term of patent 14 years
U.S. Cl. D21—146



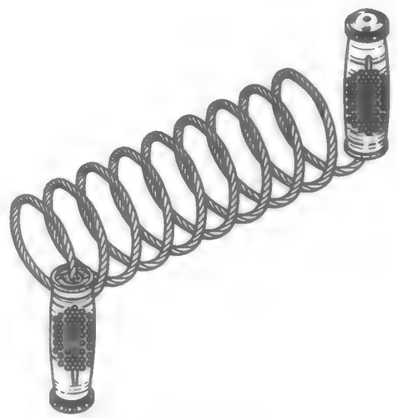
350,170
TOY PENGUIN FIGURE
Jay M. Bro, and Philip M. Baereswald, both of Plano, Tex., assignors to Today's Kids, Inc., Boonesville, Ark.
Filed Feb. 5, 1993, Ser. No. 4,447
Term of patent 14 years
U.S. Cl. D21—160



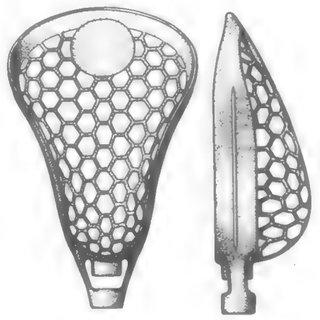
350,171
PHYSICAL EXERCISER
Anthony P. Kunewalder, 2700 N. Cahuenga #9319, Los Angeles, Calif. 90068; Carol J. Land, Studio City, Calif.; Peter R. Bieler, Los Angeles, Calif.; Pippa Scott, Santa Monica, Calif.; Ravi Sawhney, Calabassas, Calif., and Robson Splane, Granada Hills, Calif., assignors to Anthony P. Kunewalder, Los Angeles, Calif.
Filed Dec. 30, 1992, Ser. No. 3,219
Term of patent 14 years
U.S. Cl. D21—191



350,172
EXERCISE SPRING
Ellen R. Rusk, 9803 Dearfield Cir., Carmel, Ind. 46032
Filed Oct. 14, 1992, Ser. No. 442
Term of patent 14 years
U.S. Cl. D21—198

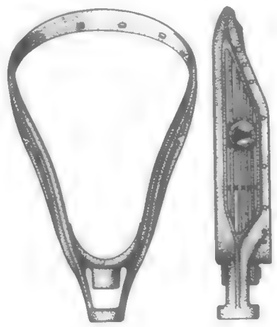


350,173
LACROSSE STICK HEAD
Richard B. C. Tucker; William C. Crawford, both of Baltimore; Fielding H. Lewis, Jr., Queenstown, and Jackie L. Davis, Aberdeen, all of Md., assignors to Stx, Inc., Baltimore, Md.
Filed Jan. 7, 1993, Ser. No. 3,351
Term of patent 14 years
U.S. Cl. D21—210



VOL 1165 ISS 5 AG 30 1994 UMI

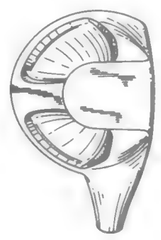
350,174
LACROSSE STICK HEAD
Richard B. C. Tucker; William C. Crawford, both of Baltimore; Fielding H. Lewis, Jr., Queenstown, and Jackie L. Davis, Aberdeen, all of Md., assignors to Stx, Inc., Baltimore, Md.
Filed Jan. 7, 1993, Ser. No. 3,352
Term of patent 14 years
U.S. Cl. D21—210



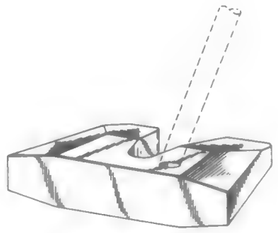
350,175
GOLF CLUB HEAD
Yoshihiro Motoki, Saitama, Japan, assignor to Somar Corporation, Tokyo, Japan
Filed Sep. 29, 1992, Ser. No. 952,778
Claims priority, application Japan, Mar. 31, 1992, 4-9090; Apr. 8, 1992, 4-10156
Term of patent 14 years
U.S. Cl. D21—214



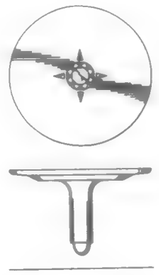
350,176
WOOD TYPE GOLF CLUB HEAD
Anthony J. Antonious, 7738 Calle Facil, Sarasota, Fla. 34238
Filed Nov. 16, 1992, Ser. No. 1,517
Term of patent 14 years
U.S. Cl. D21—214



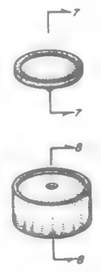
350,177
GOLF CLUB PUTTER HEAD
Stan L. Ramirez, 7005 Santa Rita Ct., Fort Worth, Tex. 76133, and Louis P. Spartin, P.O. Box 16704, Fort Worth, Tex. 76162, assignors to Specialty Materials and Manufacturing Inc.; John E. Carbaugh, Jr., both of Rosslyn, Va.; Stan L. Ramirez and Louis P. Spartin, both of Forth Worth, Tex.
Filed Aug. 21, 1992, Ser. No. 933,477
Term of patent 14 years
U.S. Cl. D21—217



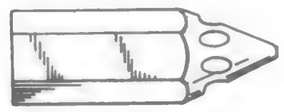
350,178
GOLF BALL MARKER
Edmin A. Kristovich, 167 N.E. 12th Ave., Hillsboro, Oreg. 97124
Filed Jun. 25, 1993, Ser. No. 10,083
Term of patent 14 years
U.S. Cl. D21—234



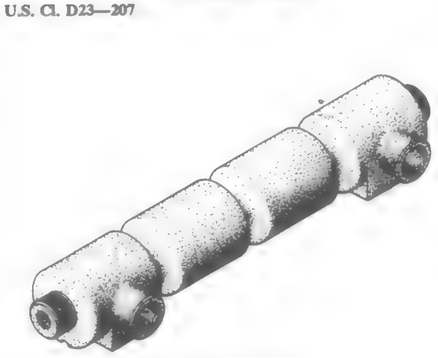
350,179
COMBINED GOLF BALL MARKER AND HOLDER
Jay M. Johnson, 5278 Magnolia Ave., Riverside, Calif. 92506
Filed Dec. 10, 1993, Ser. No. 16,237
Term of patent 14 years
U.S. Cl. D21—234



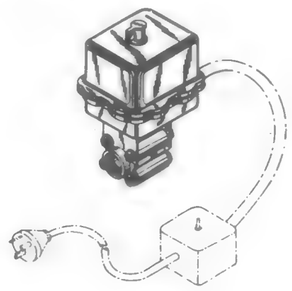
350,180
ARITIFICAL FISHING LURE
James Marshall, 18014 Glenledi Dr., Houston, Tex. 77084
Filed Jun. 8, 1992, Ser. No. 895,823
Term of patent 14 years
U.S. Cl. D22—126



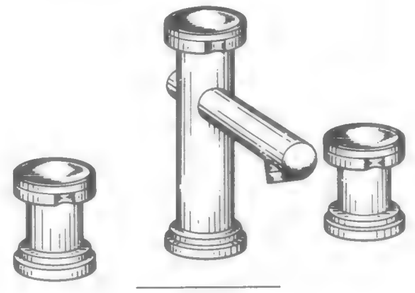
350,181
ULTRAVIOLET WATER STERILIZER FOR HOT TUBS, SWIMMING POOLS AND SPAS
Lawrence A. MacNeal, 1288 Fletcher Way, Port Coquitlam, British Columbia, Canada V3C 6B5
Filed Jul. 6, 1992, Ser. No. 909,452
Term of patent 14 years
U.S. Cl. D23—207



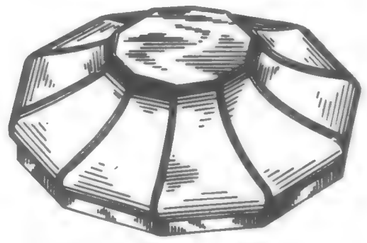
350,182
ELECTRICALLY ACTUATED VALVE
Geoffery T. Barton, Queensland, Australia, assignor to Logform Industries Pty Ltd., Kilcoy, Australia
Filed Jun. 18, 1991, Ser. No. 717,102
Claims priority, application Australia, Dec. 19, 1990, 4117/90
Term of patent 14 years
U.S. Cl. D23—248



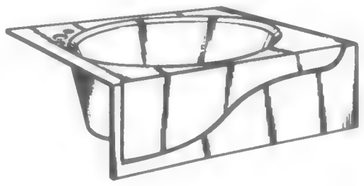
350,183
LAVATORY FAUCET SET
Gerhard E. Joerger, Ingenieur, Schauinsland 29, D-6905 Schriesheim, Fed. Rep. of Germany
Filed Aug. 18, 1992, Ser. No. 932,038
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1992, 9201430
Term of patent 14 years
U.S. Cl. D23—242



350,184
HANDLE FOR A PLUMBING FITTING
Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 14, 1993, Ser. No. 3,781
Term of patent 14 years
U.S. Cl. D23—250

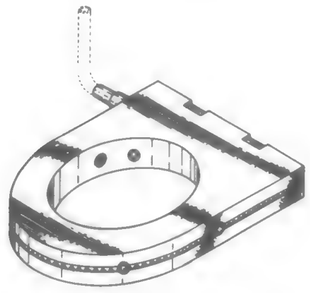


350,185
BATHTUB
Carolynn L. Clark, Memphis, and Fred W. Dierks, Adamsville, both of Tenn., assignors to Aqua Glass Corporation, Adamsville, Tenn.
Filed Jul. 24, 1992, Ser. No. 920,211
Term of patent 14 years
U.S. Cl. D23—277

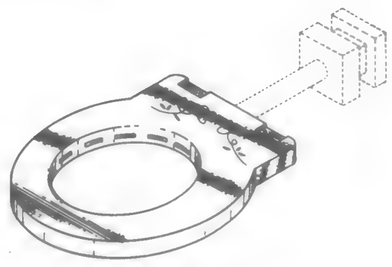


VOL 1165 ISS 5 AG 30 1994 UMI

350,186
COMMODE DEODORIZING UNIT
Clifford M. Cook, 304 Parkway Dr., Chattanooga, Tenn. 37406
Filed Feb. 21, 1992, Ser. No. 838,001
Term of patent 14 years
U.S. Cl. D23—309



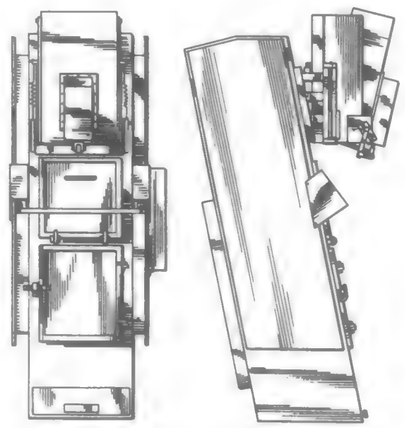
350,187
VENTILATED TOILET SEAT
Rock A. Landes, 3384 Hamilton Mill Rd., Buford, Ga. 30518
Filed Mar. 6, 1992, Ser. No. 845,485
Term of patent 14 years
U.S. Cl. D23—311



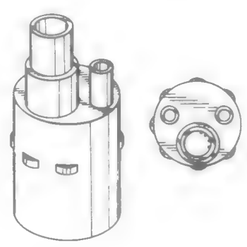
350,188
FLUSH TANK
David J. McNeill, Nailsworth, Australia, assignor to Caroma Industries Limited, Australia
Filed Apr. 7, 1993, Ser. No. 6,796
Claims priority, application Australia, Oct. 20, 1992, 2908/92
Term of patent 14 years
U.S. Cl. D23—313



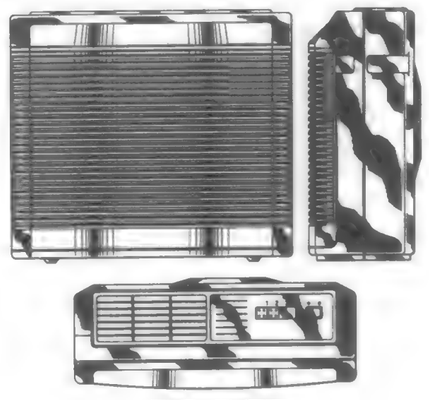
350,189
FRONT AND SIDE PANELS OF A FIREBOX WITH AUTOMATIC FEED HOPPER
Leslie Blevins, Jr., R.R. #1, Lawrence, Kans. 66044
Continuation-in-part of Ser. No. 724,781, Jul. 2, 1991, and a continuation-in-part of Ser. No. 724,964, Jul. 2, 1991. This application Apr. 29, 1992, Ser. No. 875,442
Term of patent 14 years
U.S. Cl. D23—329



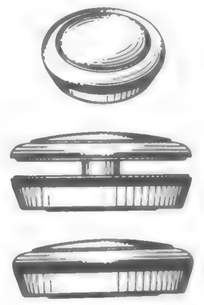
350,190
HUMIDIFIER MANIFOLD FOR A VENTILATOR BREATHING CIRCUIT
Burrell E. Clawson, 2425 Sunset Dr., and James Weigl, 18815 Hermosa St., both of Riverside, Calif. 92506
Filed Jun. 29, 1993, Ser. No. 10,125
Term of patent 14 years
U.S. Cl. D23—358



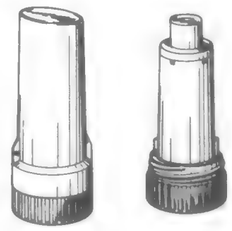
350,191
ROOM AIR CLEANER
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Oct. 27, 1993, Ser. No. 14,679
Term of patent 14 years
U.S. Cl. D23—364



350,192
DISPENSER FOR AIR TREATING MATERIAL
Manhar K. Patel, Saddle Brook, and John M. Paulovitch, Hewitt, both of N.J., assignors to Reckitt & Colman Inc., Wayne, N.J.
Filed Jun. 30, 1993, Ser. No. 10,242
Term of patent 14 years
U.S. Cl. D23—369



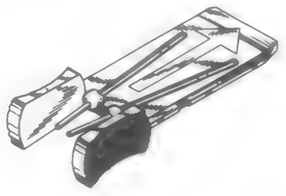
350,193
COMBINED INHALER AND COVER
Charles M. Huck, Pottersville; Charles R. Ashley, Pattenberg, both of N.J.; Ken Wilkinson, Round Lake, Ill., and Henry R. Sochon, Clifton, N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Jun. 11, 1992, Ser. No. 897,506
Term of patent 14 years
U.S. Cl. D24—110



350,194
COMBINED SUCTION AND IRRIGATION SURGICAL INSTRUMENT
Joseph A. Marino, Apple Valley; John R. Moberg, Lakeville, and Thomas M. Grimm, Robbinsdale, all of Minn., assignors to Biomedical Dynamics Corporation, Burnsville, Minn.
Continuation-in-part of Ser. No. 948,983, Sep. 21, 1992, abandoned. This application Feb. 17, 1993, Ser. No. 4,962
Term of patent 14 years
U.S. Cl. D24—112

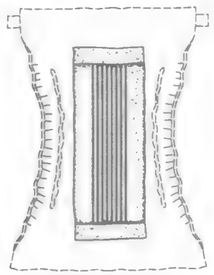


350,195
CAPILLARY TUBE HOLDER FOR DRAWING BLOOD
Jens U. Poulsen, Copenhagen, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark
Filed Mar. 14, 1991, Ser. No. 669,326
Claims priority, application Denmark, Sep. 14, 1990, 11021990
Term of patent 14 years
U.S. Cl. D24—113

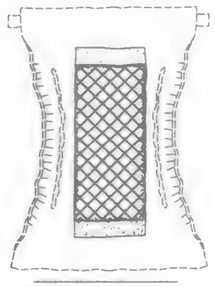


VOL 1165 ISS 5 AG 30 1994 UMI

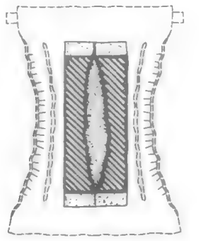
350,196
INSERT PAD FOR A DIAPER OR PANT
Gloria Huffman, Federal Way, Wash., assignor to Paragon Trade Brands, Inc., Federal Way, Wash.
Filed Aug. 12, 1991, Ser. No. 744,212
Term of patent 14 years
U.S. Cl. D24—124



350,197
INSERT PAD FOR A DIAPER OR PANT
Gloria Huffman, Federal Way, Wash., assignor to Paragon Trade Brands, Inc., Federal Way, Wash.
Filed Aug. 12, 1991, Ser. No. 744,213
Term of patent 14 years
U.S. Cl. D24—124



350,198
INSERT PAD FOR A DIAPER OR PANT
Gloria Huffman, Federal Way, Wash., assignor to Paragon Trade Brands, Inc., Federal Way, Wash.
Filed Aug. 12, 1991, Ser. No. 744,215
Term of patent 14 years
U.S. Cl. D24—124



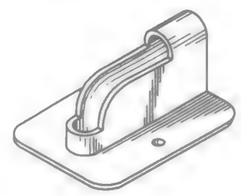
350,199
SANITARY PAD
Gerd W. Gerhartl, Bichwil, Switzerland, assignor to Flawa Schweizer Verbandstoff-und Wattefabriken AG, Flawil, Switzerland
Filed Apr. 29, 1992, Ser. No. 875,708
Term of patent 14 years
U.S. Cl. D24—125



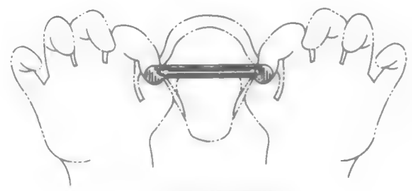
350,200
SANITARY PAD
Gerd W. Gerhartl, Bichwil, Switzerland, assignor to Flawa Schweizer Verbandstoff-und Wattefabriken AG, Flawil, Switzerland
Filed Jun. 8, 1992, Ser. No. 893,361
Term of patent 14 years
U.S. Cl. D24—125



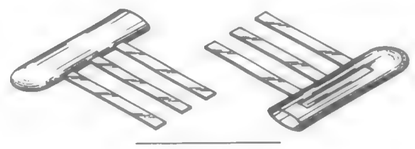
350,201
EXTERNAL RETAINING DEVICE FOR A FEEDING TUBE
William H. Hirsch, Columbus, and Donald J. Goldhardt, Grove City, both of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Oct. 8, 1992, Ser. No. 197
Term of patent 14 years
U.S. Cl. D24—128



350,202
TONGUE CLEANER
Hooshang Kashani, San Juan Capistrano, Calif., assignor to Cashew Consulting, Inc., Irvine, Calif.
Filed May 22, 1992, Ser. No. 887,780
Term of patent 14 years
U.S. Cl. D24—147



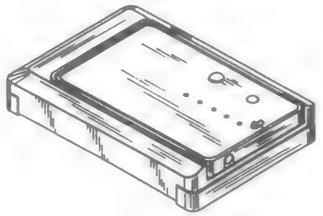
350,203
PROTECTIVE COVER FOR A SURGICAL TABLE ARMBOARD
John P. Russell, Center Point, Ala., assignor to Infection Control Products, Inc., Gardendale, Ala.
Filed Aug. 19, 1991, Ser. No. 747,255
Term of patent 14 years
U.S. Cl. D24—184



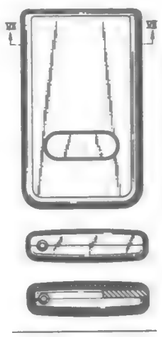
350,204
FOOT SUPPORT
Cornelius J. Mance, 5309 Inlet View La., Hixson, Tenn. 37343
Filed Nov. 5, 1992, Ser. No. 3,841
Term of patent 14 years
U.S. Cl. D24—192



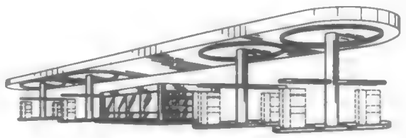
350,205
COMBINED LOW FREQUENCY MUSCLE RELAXER AND STORAGE CASE
Yoshikiyo Yamasaki, Sakai, and Shinichiro Fujimoto, Osaka, both of Japan, assignors to Kabushiki Kaisha Japan Health and Kabushiki Kaisha Fuji Iryoki, both of Osaka, Japan
Filed May 15, 1991, Ser. No. 700,642
Term of patent 14 years
U.S. Cl. D24—200



350,206
LOW FREQUENCY THERAPEUTIC INSTRUMENT
Taro Mochida, Hirakata, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jun. 22, 1992, Ser. No. 901,981
Claims priority, application Japan, Dec. 24, 1991, 3-39063
Term of patent 14 years
U.S. Cl. D24—200

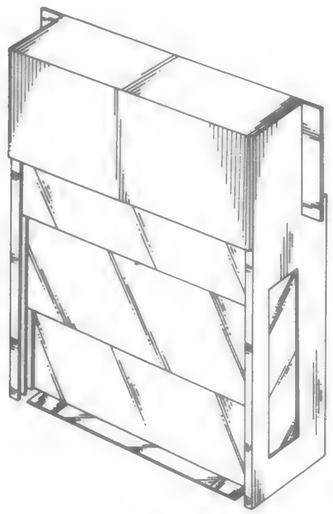


350,207
COMBINED SERVICE STATION AND CANOPY
Alan E. Goldberg, New Caanan, Conn., assignor to Mobil Oil Corp., Fairfax, Va.
Filed Jan. 10, 1992, Ser. No. 819,525
Term of patent 14 years
U.S. Cl. D25—34

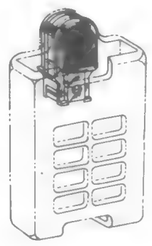


VOL 1165 ISS 5 AG 30 1994 UMI

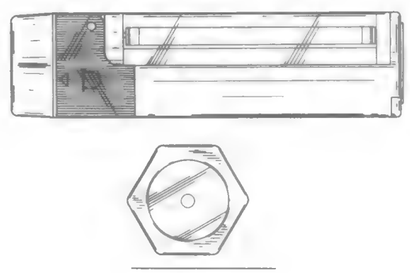
350,208
TOLLBOOTH WINDOW
Bozena Zajac, Maywood, N.J., assignor to Meta-Lite Inc., Maywood, N.J.
Filed Sep. 28, 1992, Ser. No. 952,171
Term of patent 14 years
U.S. Cl. D25—52



350,209
NIGHT LIGHT INSERT FOR A FRAGRANCE DIFFUSER UNIT
John Martin, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Mar. 18, 1992, Ser. No. 853,316
Term of patent 14 years
U.S. Cl. D26—26



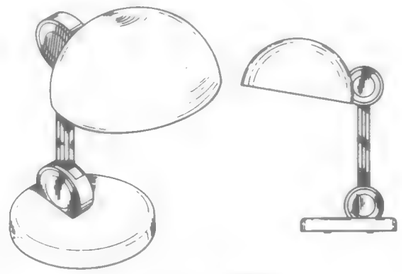
350,210
COMBINED INCANDESCENT LIGHT AND FLUORESCENT LAMP
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Aug. 31, 1992, Ser. No. 938,477
Claims priority, application United Kingdom, May 22, 1992, 2023087
Term of patent 14 years
U.S. Cl. D26—42



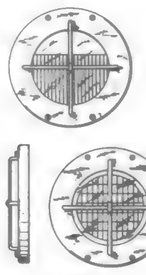
350,211
CLAMP-ON ADJUSTABLE LIGHT FOR A BARBECUE GRILL
Brad L. Clasby, 3604 Stonebrook Farms Ct., Greensboro, N.C. 27406
Filed Sep. 14, 1992, Ser. No. 945,357
Term of patent 14 years
U.S. Cl. D26—60



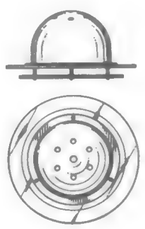
350,212
ADJUSTABLE DESK LAMP
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed May 6, 1993, Ser. No. 8,059
Claims priority, application United Kingdom, Nov. 25, 1992, 2027393
Term of patent 14 years
U.S. Cl. D26—65



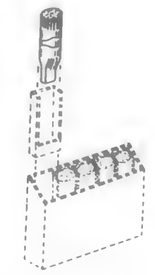
350,213
COVER FOR RECESSED WALL LUMINAIRE
James B. Druffel, and Larry L. Routh, both of Santa Barbara, Calif., assignors to Bega Lighting, Carpinteria, Calif.
Filed Dec. 22, 1992, Ser. No. 2,908
Term of patent 14 years
U.S. Cl. D26—74



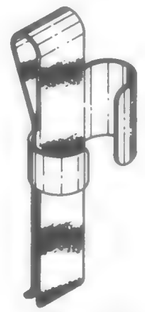
350,214
LAMPSHADE
Barry L. Kramer, 6180 S. St. Andrews Pl., Los Angeles, Calif. 90047
Division of Ser. No. 902,058, Jun. 22, 1992. This application Sep. 7, 1993, Ser. No. 12,698
Term of patent 14 years
U.S. Cl. D26—128



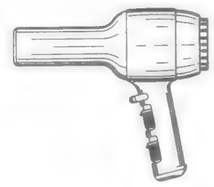
350,215
SMOKELESS CIGARS
Henry C. Bondy, 108 Washington Ave., Vernon, Mich. 48476
Filed Jun. 14, 1993, Ser. No. 9,433
Term of patent 14 years
U.S. Cl. D27—101



350,216
DISPOSABLE LIGHTER SUPPORTING CLIP
Nowell G. Heaton, 8659 Rosena, Fontana, Calif. 92335
Filed Mar. 15, 1993, Ser. No. 5,882
Term of patent 14 years
U.S. Cl. D27—144



350,217
HAIR DRYER
Leandro P. Rizzuto, Jr., Stamford, Conn., assignor to Conair Corporation, Stamford, Conn.
Filed May 27, 1992, Ser. No. 889,301
Term of patent 14 years
U.S. Cl. D28—13



VOL
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ISS
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350,218

NAIL FILE WITH A SCABBARD

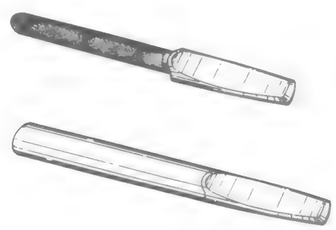
Dieter Thomas, Solingen, Fed. Rep. of Germany, assignor to J. A. Henckels Zwillingswerk, Solingen, Fed. Rep. of Germany

Filed Sep. 8, 1992, Ser. No. 939,877

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, M 92 03 181.1

Term of patent 14 years

U.S. Cl. D28—59



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF AUGUST, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Hyppanen, Timo, 5,341,766, Cl. 122-4.00D.

A-Dec, Inc.: *See*—
LaPlante, Pierre M., 5,342,007, Cl. 248-131.000.

A.M.R.P. Handels AG: *See*—
Martelli, Guglielmo, 5,341,621, Cl. 53-377.500.

A/S Foss Electric: *See*—
Sjaunja, Lars-Ove; Andersen, Steen K.; Arnvidarson, Borkur; Brems, Niels; Lapp, Torben; and Nygaard, Lars, 5,343,044, Cl. 250-339.090.

Abadie, Patrick: *See*—
Glotin, Michel; Parsy, Roland; and Abadie, Patrick, 5,342,886, Cl. 525-66.000.

Abayasekara, Dilip R.: *See*—
Robeson, Lloyd M.; Pinschmidt, Robert K., Jr.; and Abayasekara, Dilip R., 5,342,894, Cl. 525-183.000.

ABB Process Automation Inc.: *See*—
Hellstrom, Ake A., 5,343,296, Cl. 356-431.000.

ABB Vetco Gray Inc.: *See*—
Bridges, Charles D., 5,341,885, Cl. 166-382.000.

Abbott Laboratories: *See*—
Baker, Harold N.; Eng, Katherine K.; Gurner, William D.; Massei, Michael K.; Necklaws: Elizabeth C.; Osikowicz, Eugene W.; Ramp, Sally K.; and Trach, Paula, 5,342,760, Cl. 435-7.920.
Manosalva, Edgar G.; Ross, Jeffrey R.; and Goldhardt, Donald J., 5,341,823, Cl. 128-898.000.
Plata, Daniel J.; Fung, Anthony K. L.; Morton, Howard E.; Leanna, Robert; Baker, William R.; and Pratt, John K., 5,342,981, Cl. 556-420.000.

Abdul, Abdul S.; Gibson, Thomas L.; and Glasson, William A., to General Motors Corporation. Method and apparatus for in situ removal of a spilled fluid from the earth's subsurface. 5,341,877, Cl. 166-272.000.

Abe, Hideshi, to Sony Corporation. Apparatus for reducing mirror in a solid state imaging device wherein a light intercepting layer shields a transfer means from instant light and has an edge which slopes toward the light sensing region. 5,343,060, Cl. 257-229.000.

Abe, Kazutoshi: *See*—
Ohtsuka, Hiroshi; Abe, Kazutoshi; and Taguchi, Takashi, 5,342,713, Cl. 430-5.000.

Abe, Kiyoshi; Suzuki, Kazuhiko; Ogawa, Hiroshi; and Kikuchi, Masaichi, to Misuzawa Industrial Chemicals, Ltd. Spherical granules of porous silica or silicate, process for the production thereof, and applications thereof. 5,342,876, Cl. 524-493.000.

Abe, Masahiko; Iwata, Yasuo; and Masuda, Shoji, to Honda Giken Kogyo Kabushiki Kaisha. Fuel injection control device for internal combustion engine. 5,341,786, Cl. 123-486.000.

Abe, Shunichi, to Canon Kabushiki Kaisha. Image reproducing system having means for generating a pattern signal including a plurality of memories. 5,343,233, Cl. 346-157.000.

Abe, Tomoji: *See*—
Iwai, Yoshio; Takahashi, Kazuyuki; Hirota, Takeshi; Abe, Tomoji; and Imanishi, Isao, 5,342,687, Cl. 428-402.000.

Abondance, Roger, to Skis Rossignol S.A. Snow surfboard having asymmetric characteristics. 5,342,077, Cl. 280-602.000.

Abrams, Robert M.; Chan, Randy S.; Burpee, Janet W.; and Teoh, Clifford, to Advanced Cardiovascular Systems, Inc. Guidewire with superelastic distal portion. 5,341,818, Cl. 128-772.000.

Academy of Sciences of the Czech Republic: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,342,585, Cl. 422-131.000.

Accamark Partnership: *See*—
Accardo, Carl A.; and Marks, Kenneth J., 5,341,969, Cl. 222-465.100.

Accardo, Carl A.; and Marks, Kenneth J., to Accamark Partnership. Container accommodating paint, roller and brush and lid therefor. 5,341,969, Cl. 222-465.100.

Accu-Sport International, Inc.: *See*—
Rankin, David B.; Roberts, Edgar P., Jr.; and Kluttz, James W., 5,342,051, Cl. 273-185.00A.

Achurch, Nicholas E.: *See*—
Rowe, Christopher J.; Mortimore, David B.; Wilkinson, Iain J.; and Achurch, Nicholas E., 5,342,425, Cl. 65-501.000.

Ackers, Stanley: *See*—
Krzewki, Rudolf J.; and Ackers, Stanley, 5,342,619, Cl. 424-411.000.

Ackroyd, Rand H., to Watts Investment Company. Temperature control flow valve. 5,341,987, Cl. 236-12.210.

Acute Ideas, Inc.: *See*—
Schaefer, Joseph H., 5,341,841, Cl. 137-561.00A.

Adachi, Arihiro: *See*—
Usui, Hiroaki; Hirao, Shozo; Konishi, Satoru; Ishikawa, Hiroyuki; Oonisi, Kenji; and Adachi, Arihiro, 5,342,651, Cl. 427-209.000.

Adachi, Kiyoshi; Uda, Yasuaki; and Suzuki, Masayuki, to Takeda Chemical Industries, Ltd. Water-purifying material, a process for manufacturing the same and a process for purifying water. 5,342,528, Cl. 210-668.000.

Adams, Gerald E.: *See*—
Beylin, Vladimir Genukh; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,342,959, Cl. 548-327.500.

Adams, Ronald L.; and Blomquist, James E. Striking device. 5,342,267, Cl. 482-83.000.

Adams, Roy E.; Parris, Warran M.; and Bania, Paul J., to Titanium Metals Corporation. All beta processing of alpha-beta titanium alloy. 5,342,458, Cl. 148-670.000.

Adams, Victor J.; Griest, Sidney H.; and Hart, John W., Jr., to Motorola, Inc. Pressure sensor built into a cable connector. 5,341,684, Cl. 73-756.000.

Addeo, Antonio; Vitali, Mario; and Bonari, Roberto, to Centro Sviluppo Settori Impiego S.r.l. Process for producing shaped articles by starting from reinforced thermoplastic sheets. 5,342,463, Cl. 156-156.000.

Adelberg, Kenneth: *See*—
Grossman, Michael D.; Eder, Jerome M.; Hurley, Jewelanne; Siegel, Bernard; Adelberg, Kenneth; and Adelberg, Marvin, 5,342,328, Cl. 604-317.000.

Adelberg, Marvin: *See*—
Grossman, Michael D.; Eder, Jerome M.; Hurley, Jewelanne; Siegel, Bernard; Adelberg, Kenneth; and Adelberg, Marvin, 5,342,328, Cl. 604-317.000.

Aderhold, Wolfgang: *See*—
Berger, Rudolf; Ryssel, Heiner; Schneider, Claus; and Aderhold, Wolfgang, 5,343,293, Cl. 356-369.000.

Adler, Meryle D.; and Shafer, Harold G., Jr., to Corning Incorporated. Method and apparatus for machining substrate plates for magnetic memory disks. 5,342,067, Cl. 279-3.000.

Adriaenssens, Frank, to Volvo Car Sint-Truiden, naamloze vennootschap. Transmission unit for motor vehicles. 5,342,247, Cl. 474-16.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Abrams, Robert M.; Chan, Randy S.; Burpee, Janet W.; and Teoh, Clifford, 5,341,818, Cl. 128-772.000.
Eury, Robert P., 5,342,621, Cl. 424-423.000.
Michaels, Mary B.; Robinson, Janine C.; Claude, John P.; and Alden, Donald L., 5,342,298, Cl. 604-65.000.
Tacklind, Christopher A.; Sun, Vae E.; and Au, Nelson S., 5,342,304, Cl. 604-99.000.
Wu, Robin, 5,342,018, Cl. 251-250.000.

Advanced Ceramics Corporation: *See*—
Gilbert, Michael H., Sr.; and Hejl, Timothy J., 5,343,022, Cl. 219-552.000.

Advanced Magnetics, Inc.: *See*—
Josephson, Lee, 5,342,607, Cl. 424-9.000.

Advanced Micro Devices, Inc.: *See*—
Asghar, Safdar M.; and Zhou, Yan, 5,343,414, Cl. 364-724.060.

Advanced Polymers Incorporated: *See*—
Saab, Mark A., 5,342,301, Cl. 604-96.000.

AE Piston Products Limited: *See*—
Munro, Robert, 5,341,866, Cl. 164-98.000.

Aercology, Inc.: *See*—
Avondoglio, Leo, 5,342,433, Cl. 95-282.000.

AFA Products: *See*—
Maas, Wilhelmus J. J.; and Hurkmans, Petrus L. W., 5,341,965, Cl. 222-340.000.

Aften, Carl W.; and Gabel, Robert K., to Nalco Chemical Company. Clay stabilizer. 5,342,530, Cl. 252-8.551.

Agari, Norimasa, to Nippon Thompson Co., Ltd. Linear motion rolling guide unit. 5,342,127, Cl. 384-15.000.

Agency of Industrial Science & Technology: *See*—
Tamura, Hikari; and Higuchi, Shunichi, 5,342,711, Cl. 429-197.000.

AGFA-Gevaert N.V.: *See*—
Defieuw, Geert; and Verdonck, Emiel, 5,342,820, Cl. 503-227.000.

Aggen, Marshall J.: *See*—
Berry, David L.; Johnson, J. Edward; and Aggen, Marshall J., 5,342,109, Cl. 297-191.000.

Agrawal, Arun K.; and Hindin, Barry, to Gas Research Institute. Corrosion inhibition of ammonia-water absorption chillers. 5,342,578, Cl. 422-13.000.

Agrawal, Rakesh; Langston, Jeffrey S.; Rodgers, Paul; and Xu, Jianguo, to Air Products and Chemicals, Inc. Triple column distillation

VOL 1165 ISS 5 AG 30 1994 UMI

system for oxygen and pressurized nitrogen production. 5,341,646, Cl. 62-25.000.
Agulnek, Aaron; and Agulnek, Martin. Guiding system for athletes. 5,342,041, Cl. 273-1.50A.
Agulnek, Martin: *See*—
Agulnek, Aaron; and Agulnek, Martin, 5,342,041, Cl. 273-1.50A.
Agut Sanz, Juan, to Agut, S.A. Pneumatic timer. 5,343,444, Cl. 368-1.000.
Agut, S.A.: *See*—
Agut Sanz, Juan, 5,343,444, Cl. 368-1.000.
Ahls, Hermann W.; and Von Herz, Alfons, to Otis Elevator Company. Linear wheel escalator handrail drive. 5,341,909, Cl. 198-335.000.
Ahmed, Bashire M.; and Broadbent, Ronald W., to Henkel Corporation. Treating an autodeposited coating with an alkaline material. 5,342,694, Cl. 428-461.000.
Ahmed, Zareen: *See*—
Wong, Rosie B.; Ahmed, Zareen; and Bullock, Milon W., 5,342,771, Cl. 435-188.000.
Ahn, Sung T.; and Hayashida, Shigeki, to Sharp Kabushiki Kaisha. Method for controlling gate size for semiconduction process. 5,342,796, Cl. 437-41.000.
Aiga, Hiroshi: *See*—
Ohyama, Tsukasa; Kuroda, Shizuo; Takuma, Keisuke; and Aiga, Hiroshi, 5,342,974, Cl. 552-259.000.
Ainsworth, Steven, to O'Conor, Harvey W. Battery discharging and charging. 5,343,138, Cl. 320-14.000.
Air Products and Chemicals, Inc.: *See*—
Agrawal, Rakesh; Langston, Jeffrey S.; Rodgers, Paul; and Xu, Jianguo, 5,341,646, Cl. 62-25.000.
Bonner, Brian B.; Garg, Diwakar; Eichelberger, Donald P.; and Bowe, Donald J., 5,342,455, Cl. 148-208.000.
Robeson, Lloyd M.; Pinschmidt, Robert K., Jr.; and Abayasekara, Dilip R., 5,342,894, Cl. 525-183.000.
Airbag Systems Company Ltd.: *See*—
Takeuchi, Kunihiro; and Okano, Masami, 5,343,394, Cl. 364-424.050.
Airflow Research and Manufacturing Corporation: *See*—
Rosseau, Todd D., 5,342,167, Cl. 415-119.000.
Aisin Aw Co., Ltd.: *See*—
Yokoyama, Shoji; Morimoto, Kyomi; Nanba, Akimasa; Katoh, Kiyohide; Kuroda, Kenji; Kishi, Hiroshi; and Ito, Toru, 5,343,399, Cl. 364-449.000.
Aisin Seiki Kabushiki Kaisha: *See*—
Ito, Sadao; and Nawa, Hiroshi, 5,342,013, Cl. 248-429.000.
Miura, Yasushi; and Aoki, Kongo, 5,341,777, Cl. 123-90.170.
Yasuda, Keiji; Oda, Yukihisa; Tagawa, Satoru; and Kimura, Masahiro, 5,343,188, Cl. 338-129.000.
Aitchison, David J.; and Dunn, Donald C., to Corrosion Engineering, Inc. Multiple deck vibrating screen apparatus. 5,341,939, Cl. 209-319.000.
Aizawa, Ikuo: *See*—
Aoki, Nobuo; Aizawa, Ikuo; Yokoi, Keisuke; and Negishi, Heido, 5,343,103, Cl. 310-87.000.
Aizikowitz, Jacob: *See*—
Morag, Guy; Aizikowitz, Jacob; and Arazi, Efraim, 5,343,311, Cl. 358-518.000.
Ajaji, Lamia A. A. Board game apparatus. 5,342,056, Cl. 273-237.000.
Ajinomoto Co., Inc.: *See*—
Hatsuya, Satoshi; Sekiyama, Takaaki; Tsuji, Takashi; Iwayama, Satoshi; and Okunishi, Masahiko, 5,342,840, Cl. 514-262.000.
Sakurai, Kuniya; Izawa, Kunisuke; Izawa, Hiroyuki; Ineyama, Takashi; Ohta, Tomihisa; and Nozoe, Shigeo, 5,342,963, Cl. 548-532.000.
Akamatsu, Shoji, to Dow Corning Toray Silicone Co., Ltd. Silicone resin composition for use as a carrier coating. 5,342,721, Cl. 430-108.000.
Akeley, Kurt, to Silicon Graphics, Inc. Method for scan converting shaded triangular polygons. 5,343,558, Cl. 395-126.000.
Akhavain, Mohammad; and Economy, Ken W., to Unisys Corporation. Method of fabricating integrated circuit module. 5,341,564, Cl. 29-832.000.
Akiyama, Jun: *See*—
Maeda, Shigemi; Kojima, Kunio; and Akiyama, Jun, 5,343,452, Cl. 369-32.000.
Akutsgawa, Keizo: *See*—
Hashimoto, Takatsugu; Akutagawa, Keizo; Yagawa, Kazuo; Tanaka, Makoto; Yamagishi, Junichi; and Hachiya, Kazuo, 5,341,862, Cl. 152-209.00R.
Akzo Nobel nv: *See*—
Guersen, Herman J.; and Willemsen, Stephanus, 5,342,686, Cl. 428-378.000.
Al-Saleh, Abdul A. A. Salt free evaporative air conditioning. 5,341,655, Cl. 62-304.000.
Aladdin Steel Products: *See*—
Henry, Daniel S.; and Hoteling, G. Michael, 5,341,794, Cl. 126-77.000.
Albert Frankenthal Aktiengesellschaft: *See*—
Weisbrod, Norbert G., 5,341,733, Cl. 101-148.000.
Albert, Lars G., to Nestec S.A. Apparatus and process for transferring products. 5,341,858, Cl. 141-173.000.
Alberta Research Council: *See*—
Zezulka, Bohuslav J.; Voss, Henry H.; and Fincati, Anne M., 5,341,854, Cl. 141-1.000.
Alcan International Limited: *See*—
Chaplin, Dominic; and Tingley, Rosemary, 5,342,874, Cl. 524-430.000.
Randall, David J., 5,342,590, Cl. 423-89.000.
ALCATEL CIT: *See*—
Baret, Gilles; and Gevaud, Roland, 5,341,671, Cl. 73-40.700.
Alcatel Network Systems, Inc.: *See*—
Bowdon, Edward K., 5,343,194, Cl. 340-827.000.
Alcatel N.V.: *See*—
van Tetering, Johannes A. M.; and Denissen, Frank L., 5,343,463, Cl. 370-13.000.
Willocx, Eddie L. M.; Guebels, Pierre-Paul F. M. M.; and Moons, Elve D. J., 5,343,520, Cl. 379-399.000.
Wohr, Peter, 5,343,467, Cl. 370-59.000.
Alcon Laboratories, Inc.: *See*—
Chowhan, Masood, 5,342,620, Cl. 424-422.000.
Alden, Donald L.: *See*—
Michaels, Mary B.; Robinson, Janine C.; Claude, John P.; and Alden, Donald L., 5,342,298, Cl. 604-65.000.
Alexander, Jeffery C., to Edmeston AB. Apparatus for cullet preheating and polluting emission reduction in the glass manufacturing process. 5,342,427, Cl. 65-27.000.
Alfa Laval Separation Inc.: *See*—
Cooperstein, Joseph L., 5,342,279, Cl. 494-9.000.
Alford, Richard M., to Amoco Corporation. Multisource multireceiver method and system for geophysical exploration. 5,343,441, Cl. 367-75.000.
Alford, Sidney; and Cook, Graham M., to EEV Limited. Firing arrangements. 5,341,742, Cl. 102-202.800.
Alfred University: *See*—
Stangle, Gregory C.; and Williams, William C., 5,342,572, Cl. 419-45.000.
Ali, Mahfuza B.: *See*—
Kitchin, Jonathon P.; Miller, Alan G.; Ali, Mahfuza B.; and Farooq, Omar, 5,342,688, Cl. 428-402.000.
Allaire, Michael J.; and Stone, Jeffrey W., to NDM Acquisition Corp. Electrocardiograph monitor system and adaptor. 5,341,812, Cl. 128-696.000.
Allegheny-Singer Research Institute: *See*—
Cano, Gerald G., 5,341,811, Cl. 128-696.000.
Allen, Michael J.: *See*—
Bibona, Donald S.; Allen, Michael J.; and Girard, Jean C., 5,342,473, Cl. 156-394.100.
Allen, Paul M. System for laser treatment of the female urethra and bladder. 5,342,353, Cl. 606-14.000.
Allen, Steven A.: *See*—
Ryan, Glen R.; Allen, Steven A.; and Taylor, David A., 5,342,867, Cl. 524-101.000.
Allen Telecom Group, Inc., The: *See*—
Hadzoglou, James, 5,343,214, Cl. 343-713.000.
Allen, William C. Biopsy device. 5,341,816, Cl. 128-754.000.
Allergan, Inc.: *See*—
Zanger, Frank, 5,342,293, Cl. 604-22.000.
Alley, Ronald S., Sr. Signal assembly removably attachable to handle of ski tow rope. 5,343,189, Cl. 340-539.000.
Allied-Signal, Inc.: *See*—
Minh, Nguyen Q.; and Armstrong, Timothy R., 5,342,705, Cl. 429-32.000.
AlliedSignal Inc.: *See*—
Burke, David, 5,341,546, Cl. 24-641.000.
Conviser, Stephen A.; and Woltz, Claude C, Jr., 5,342,579, Cl. 514-475.000.
Hulsing, Rand H., II, 5,341,682, Cl. 73-505.000.
Rogerson, William, 5,342,081, Cl. 280-728.00A.
Sobczak, Greg; and Sturza, Mark R., 5,342,090, Cl. 280-732.000.
Alt, Eckhard; Matula, Marcus; and Mestre, Edgar, to Intermedics, Inc. Implantable medical interventional device. 5,342,404, Cl. 607-6.000.
Aluminum Company of America: *See*—
Klemp, Thomas J.; Hohman, David W.; and Schuster, Richard A., 5,342,459, Cl. 148-690.000.
Knapp, David J., 5,341,663, Cl. 72-8.000.
Seksaria, Dinesh; and Fuller, Charles I., 5,342,243, Cl. 464-134.000.
Yu, Ho; and Stevens, Judith G., 5,342,429, Cl. 75-680.000.
Aluotto, Peter A.; and Gulardo, John A. Stock extender. 5,341,586, Cl. 42-7.000.
ALZA Corporation: *See*—
Enscore, David J.; Campbell, Patricia S.; Osborne, James L.; Smart, Melinda K.; and Yum, Su I., 5,342,623, Cl. 424-448.000.
Amacker, Joseph A. Safety harness for tree climbers. 5,341,896, Cl. 182-9.000.
Amada Company, Limited: *See*—
Fujiwara, Takayuki; and Ito, Shigeru, 5,342,276, Cl. 483-29.000.
Amano, Tadashi; and Koga, Toshimichi, to Shin-Etsu Chemical Co., Ltd. Method for the suspension polymerization of vinyl chloride monomer. 5,342,906, Cl. 526-88.000.
Amano, Yoshinari; Omati, Masahiro; and Matsumura, Junzo, to Sumitomo Electric Industries, Ltd. Method of producing a tungsten heavy alloy product. 5,342,573, Cl. 419-38.000.
Amborn, Peter; and Hildebrandt, Wolfgang, to Viscodrive GmbH. Differential gear system. 5,342,256, Cl. 475-252.000.
Amdahl, Keith L.; and Muellner, James M., to Just Two Bikes, Inc. Dual recumbent vehicle. 5,342,074, Cl. 280-209.000.
American BioMed, Inc.: *See*—
Summers, David P., 5,342,387, Cl. 606-198.000.
American Cardiac Ablation Co., Inc.: *See*—
Nardella, Paul C., 5,341,807, Cl. 128-642.000.
Nardella, Paul C., 5,342,357, Cl. 606-40.000.

American Cyanamid Company: *See*—
Daley, Michael J.; Steber, William D.; Furda, Gary J.; Johnston, Paul A.; and Oldham, Elizabeth R., 5,342,612, Cl. 424-85.100.
Haley, Gregory J., 5,342,980, Cl. 556-117.000.
Jarrett, Peter K.; Casey, Donald J.; and Rosati, Louis, 5,342,395, Cl. 606-219.000.
Mohan, Arthur G.; and D'Antuono, Joseph, III, 5,342,944, Cl. 544-284.000.
Wong, Rosie B.; Ahmed, Zareen; and Bullock, Milon W., 5,342,771, Cl. 435-188.000.
American Dental Technologies, Inc.: *See*—
Vassiliadis, Arthur; Myers, William D.; and Myers, Terry D., 5,342,198, Cl. 433-215.000.
American Safety Razor Company: *See*—
Prochaska, Frank H., 5,341,571, Cl. 30-50.000.
American Standard Inc.: *See*—
Rein, Alan D.; and Foye, David M., 5,341,988, Cl. 236-49.300.
Roach, Jerome C.; and Andersen, Garry E., 5,341,658, Cl. 62-468.000.
Schmidt, A. Robert; Yuhas, Drew J.; and Barndt, Ronald D., 5,341,527, Cl. 4-592.000.
Ameritech Services, Inc.: *See*—
Barton, John C.; Hanby, William J.; Kuhn, Bruce R.; Lathrope, Michael F.; Simanonis, Christopher F.; and Varga, Arthur J., 5,343,461, Cl. 370-13.000.
Amick, Larry D.: *See*—
Rust, Raymond A., Jr.; and Amick, Larry D., 5,341,656, Cl. 62-324.600.
Amiel, Jean. Method of endoscopically treating lithiases with a multichannel probe suitable for draining the treated lithiases. 5,342,350, Cl. 606-2.500.
Amoco Corporation: *See*—
Alford, Richard M., 5,343,441, Cl. 367-75.000.
Brugge, Stephen P.; Holzhauer, Juergen K.; and Wolff, Thomas E., 5,342,968, Cl. 549-241.000.
Le, Phat; and Cheng, Xin, 5,343,324, Cl. 359-184.000.
Ampex Systems Corporation: *See*—
Wesolowski, Jan S., 5,343,301, Cl. 348-500.000.
Amsted Industries Incorporated: *See*—
Christie, C. Dale, 5,341,904, Cl. 188-251.00R.
Amway Corporation: *See*—
Groh, David G., 5,343,536, Cl. 382-6.000.
Analog Devices, Inc.: *See*—
Harston, Stephen W., 5,343,196, Cl. 341-136.000.
Anandan, Munisamy; and Ketchum, Douglas, to Thomas Electronics Incorporated. Efficient large area multi-channel flat fluoreacent lamp. 5,343,115, Cl. 313-491.000.
Anchor Hocking Packaging Co.: *See*—
Hayes, Thomas H., 5,341,949, Cl. 215-253.000.
Anco Collector Supplies, Inc.: *See*—
Counts, May C.; and Zimmerman, Harry, Jr., 5,341,930, Cl. 206-459.500.
Andersen, Garry E.: *See*—
Roach, Jerome C.; and Andersen, Garry E., 5,341,658, Cl. 62-468.000.
Andersen, Steen K.: *See*—
Sjaunja, Lars-Ove; Andersen, Steen K.; Arnvidarson, Borkur; Brems, Niels; Lapp, Torben; and Nygaard, Lars, 5,343,044, Cl. 250-339.090.
Anderson, Christopher L.: *See*—
Voisine, John T.; Anderson, Christopher L.; Slaven, Robert E.; and Tate, Ronald C., 5,343,143, Cl. 324-142.000.
Anderson, Cleo D., to AT&T Bell Laboratories. Pump laser control circuit for an optical transmission system. 5,343,320, Cl. 359-160.000.
Anderson, David G.: *See*—
Carlotta, Michael; and Anderson, David G., 5,342,039, Cl. 271-236.000.
Anderson, Donald D., to Horn, J. A., a part interest. Blower dryer pulsed airflow generating mechanism. 5,341,578, Cl. 34-97.000.
Anderson, Gary J., to Copeland Corporation. Muffler plate for scroll machine. 5,342,185, Cl. 418-55.400.
Anderson, Marc A.; Webster, Elizabeth T.; and Xu, Qunyin, to Wisconsin Alumni Research Foundation. Metal oxide membranes for gas separation. 5,342,431, Cl. 95-45.000.
Anderson, Marc A.: *See*—
Yahnke, Mark S.; Shlomo, Golan; and Anderson, Marc A., 5,342,709, Cl. 429-162.000.
Anderson, Richard N.: *See*—
Fraser, Donald E.; and Anderson, Richard N., 5,341,865, Cl. 160-176.100.
Andrews, Chris: *See*—
Dohring, Klaus; Boardman, Tom; and Andrews, Chris, 5,341,772, Cl. 123-184.210.
Angeion Corporation: *See*—
Kroll, Mark W., 5,342,399, Cl. 607-5.000.
Angel, Maximilian: *See*—
Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, 5,342,916, Cl. 528-150.000.
Angelucci, Albert: *See*—
Crawford, Richard L.; Kunselman, Garry C.; Angelucci, Albert; Fitz-Patrick, Bruce C.; and Ferreira, Richard S., 5,343,289, Cl. 356-328.000.
Ansaldi, Ermanno; Re Fiorentin, Stefano; and Saroldi, Andrea, to Fiat Auto S.p.A. Method and means for avoiding collision between a motor vehicle and obstacles. 5,343,206, Cl. 342-70.000.
Ansart, Denis R. H.; Desaulty, Michel A. A.; and Sandelis, Denis J. M., to Societe National d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.). Fuel/oxidizer premixing combustion chamber. 5,341,645, Cl. 60-737.000.
Antolin, Stanislav: *See*—
Niskanen, Paul W.; White, Danny R.; Mortenson, Mark G.; and Antolin, Stanislav, 5,342,812, Cl. 501-127.000.
Aochi, Tak; and Pyle, Robert J., to Lockheed Missiles & Space Company, Inc. Grid structures. 5,342,679, Cl. 428-257.000.
Aoike, Tatsuyuki: *See*—
Saito, Keishi; and Aoike, Tatsuyuki, 5,342,452, Cl. 136-256.000.
Aoki, Kongo: *See*—
Miura, Yasushi; and Aoki, Kongo, 5,341,777, Cl. 123-90.170.
Aoki, Nobuo; Aizawa, Ikuo; Yokoi, Keisuke; and Negishi, Heido, to Tokyo Gas Co., Ltd.; and Furukawa Electric Co., Ltd. Power supplying unit for submerged motor. 5,343,103, Cl. 310-87.000.
Aoki, Sunao: *See*—
Okabe, Satoshi; and Aoki, Sunao, 5,343,447, Cl. 369-13.000.
Aoki, Tomiyoshi: *See*—
Chokai, Shoichi; Aoki, Tomiyoshi; and Uksi, Yojiro, 5,342,845, Cl. 514-305.000.
Aoki, Yasunori: *See*—
Imai, Hiroshi; Murakami, Tadashi; Mimura, Tetsuya; Yamamoto, Masao; Kosumi, Yuji; Asai, Masashi; and Aoki, Yasunori, 5,343,072, Cl. 257-666.000.
Aono, Toshiaki, to Fuji Photo Film Co., Ltd. Dye fixing element with protective layer containing borate compound. 5,342,729, Cl. 430-203.000.
AOS Holding Company: *See*—
Smith, Herbert E., 5,341,767, Cl. 122-14.000.
Aoyama, Akimasa; Katayama, Tetsuya; Moritani, Takeshi; Yamauchi, Junnosuke; and Hirofuji, Satoshi, to Kuraray Co., Ltd. Multilayered container. 5,342,662, Cl. 428-34.800.
Aoyama, Kenji: *See*—
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, 5,341,672, Cl. 73-64.540.
Apache Technology Inc.: *See*—
Cain, Gary L., 5,343,033, Cl. 250-208.200.
Apostolos, John T.: *See*—
Stromswold, Chester E.; and Apostolos, John T., 5,343,207, Cl. 342-192.000.
Appenzeller, Gerhard, to Ibau Hamburg Ingenieurgesellschaft Industriebau mbH. Arrangement for conveying dust-like bulk goods, particularly cement, by means of suction and pressure. 5,341,856, Cl. 141-67.000.
Applied Materials, Inc.: *See*—
Birang, Manoocher, 5,343,412, Cl. 364-572.000.
Applied Medical Research, Inc.: *See*—
Picha, George J., 5,342,628, Cl. 424-484.000.
Applied Radiation Laboratories: *See*—
Hasler, Raymond J., 5,343,176, Cl. 333-204.000.
AptarGroup, Inc.: *See*—
Lay, Dieter, 5,341,960, Cl. 222-153.000.
Aquarian Accessories Corporation: *See*—
Donohoe, David G., 5,341,716, Cl. 84-422.400.
Arai, Atsushi: *See*—
Hirabayashi, Hiromitsu; Kusaka, Kensaku; Arai, Atsushi; and Takayanagi, Yoshiaki, 5,343,280, Cl. 355-285.000.
Arai, Hideyuki; Suda, Hirofumi; and Kaneda, Kitahiro, to Canon Kabushiki Kaisha. Image sensing apparatus. 5,343,246, Cl. 348-363.000.
Arai, Takao: *See*—
Takeuchi, Toshifumi; Arai, Takao; Nagai, Yutaka; and Kimura, Izumi, 5,343,455, Cl. 369-59.000.
Arakawa, Takashi; and Motegi, Hiroyuki, to Kabushiki Kaisha Toshiba. Power supply apparatus used for driving liquid-crystal display and capable of producing a plurality of electrode-driving voltages of intermediate levels. 5,343,221, Cl. 345-211.000.
Arsoka, Manabu; Takahashi, Yoshiaki; Shikama, Atsushi; Miyazaki, Yoshihiro; Nakamura, Tomoaki; and Sakata, Masayuki, to Hitachi, Ltd.; and Hitachi Process Computer Engineering, Inc. Data processing device and plug-in package. 5,343,009, Cl. 200-322.000.
Arasim, James D., to Westerm Publishing Co., Inc. Premium package. 5,341,923, Cl. 206-214.000.
Arazi, Efraim: *See*—
Morag, Guy; Aizikowitz, Jacob; and Arazi, Efraim, 5,343,311, Cl. 358-518.000.
Arch Development Corporation: *See*—
Doi, Kunio; Chen, Xuan; and Katsuragawa, Shigehiko, 5,343,390, Cl. 364-413.160.
Arenzen, Rene; Boivin, Patrick; Kobos, Robert K.; Scouten, William H.; and Smart, Bruce E., to Du Pont de Nemours, E. I., and Company; and Baylor University. Process for enzyme immobilization on a fluorocarbon surface. 5,342,772, Cl. 435-181.000.
Arhelger, Gunther: *See*—
Unkelbach, Karl-Heinz; Arhelger, Gunther; and Buettner, Rolf, 5,342,281, Cl. 494-53.000.
Arii, Mitsuzo: *See*—
Ota, Takeshi; Arii, Mitsuzo; Hirata, Masukazu; and Kawabata, Yasunari, 5,343,545, Cl. 385-46.000.
Armbrust, Bernard F., Jr., to Reynolds Metals Company. Process for preparing ultra-white alumina trihydrate. 5,342,485, Cl. 162-181.500.

VOL 1165 ISS 5 AG 30 1994 UMI

Armentrout, Richard W.: *See*—
Thorne, Linda P.; Armentrout, Richard W.; Pollock, Thomas J.; and Mikolajczak, Marcia J., 5,342,773, Cl. 435-200.000.

Armstrong, Timothy R.: *See*—
Minh, Nguyen Q.; and Armstrong, Timothy R., 5,342,705, Cl. 429-32.000.

Arnaud, Jean-Claude; and Prudence, Bernard P., to Compagnie Generale Des Establissements Michelin-Michelin & Cie. Steel wire having a structure of a strain-hardened lower bainite type and method for producing such wire. 5,342,700, Cl. 428-625.000.

Arnold, Edward C.; and Guina, Milan M., to Westinghouse Electric Corporation. Shutdown cooling system for operation during loss of power. 5,343,507, Cl. 376-298.000.

Arnvidarson, Borkur: *See*—
Sjaunja, Lars-Ove; Andersen, Steen K.; Arnvidarson, Borkur; Brems, Niels; Lapp, Torben; and Nygaard, Lars, 5,343,044, Cl. 250-339.090.

Arrang, Jean-Michel: *See*—
Garbarg, Monique; Arrang, Jean-Michel; Schunack, Walter; Lipp, Ralph; Stark, Holger; Lecomte, Jeanne-Marie; and Schwartz, Jean-Charles, 5,342,960, Cl. 548-336.100.

Artjushenko, Vjacheslav G.; Neuberger, Wolfgang; Nabatov, Alexey O.; and Kuzin, Eugene F., to CeramOptec, Inc. Method of making infrared crystalline fiber. 5,342,022, Cl. 264-1.210.

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Asada, Junichi: *See*—
Nishiwaki, Seiji; Asada, Junichi; and Uchida, Shinji, 5,343,038, Cl. 250-234.000.

Asahi Denka Kogyo Kabushiki Kaisha: *See*—
Kimura, Ryoji; Tuboi, Tetuo; and Nishikawa, Kazunori, 5,342,868, Cl. 524-108.000.
Naito, Tomijiro; Sato, Yumiko; Yukinari, Toshiro; Shibata, Toshihiro; Kimura, Masaki; and Shinada, Yukari, 5,342,544, Cl. 252-299.600.

Asahi, Isamu: *See*—
Honma, Masaki; Nakano, Akio; Mabuti, Kouzou; Asahi, Isamu; Tsuruta, Setsuo; Fujino, Nobuhiro; and Kobayashi, Nobuhisa, 5,343,387, Cl. 364-401.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Ito, Takayuki, 5,343,329, Cl. 359-689.000.
Kohmoto, Shinsuke; and Nomura, Hiroshi, 5,343,331, Cl. 359-823.000.
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,343,332, Cl. 359-837.000.

Asahina, Michio, to Seiko Epson Corporation. Method for fabricating a semiconductor device having a conductor structure with a plated layer. 5,342,806, Cl. 437-195.000.

Asai, Masashi: *See*—
Imai, Hiroshi; Murakami, Tadashi; Mimura, Tetsuya; Yamamoto, Masao; Kosumi, Yuji; Asai, Masashi; and Aoki, Yasunori, 5,343,072, Cl. 257-666.000.

Asai, Toshimitsu: *See*—
Tasaki, Koji; Asai, Toshimitsu; and Jones, Kenneth M., 5,343,310, Cl. 358-515.000.

Asami, Tadao: *See*—
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Hayakawa, Hidenori; Yanagi, Akihiko; and Asami, Tadao, 5,342,938, Cl. 544-105.000.

Asami, Yoshio: *See*—
Ishizaka, Kouichi; and Asami, Yoshio, 5,343,392, Cl. 364-424.030.

Asea Brown Boveri Ltd.: *See*—
Bohnert, Klaus, 5,343,036, Cl. 250-227.190.
Elvekjaer, Peter; and Schreiber, Walter, 5,342,170, Cl. 415-192.000.
Muller, Ferdinand, 5,342,169, Cl. 415-160.000.
Nazmy, Mohamed; and Staubli, Markus, 5,342,577, Cl. 420-418.000.

Asghar, Safdar M.; and Zhou, Yan, to Advanced Micro Devices, Inc. Apparatus for adaptively tuning to a received periodic signal. 5,343,414, Cl. 364-724.060.

Ashmore, Leslie R.: *See*—
Rowe, C. Daniel; Ashmore, Leslie R.; Carroll, Chad C.; Schwemberger, Richard F.; Schuler, Norman F.; and Collins, John M., 5,342,315, Cl. 604-167.000.

Asselin (Societe Anonyme): *See*—
Jean, Robert; Chatelet, Bernard; and Jourde, Bernard, 5,341,543, Cl. 19-163.000.

Asulab S.A.: *See*—
Basturk, Naci, 5,343,318, Cl. 359-75.000.

AT&T Bell Laboratories: *See*—
Anderson, Cleo D., 5,343,320, Cl. 359-160.000.
Bartlett, Charles S.; Benning, Roger D.; Hunter, John B.; and Zuniga, Michael A., 5,343,523, Cl. 379-430.000.
Betts, William L.; Calderbank, Arthur R.; and Saltzberg, Burton R., 5,343,500, Cl. 375-39.000.
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittmer, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,343,517, Cl. 379-219.000.
Chirovsky, Leo M. F.; and Lentine, Anthony L., 5,343,032, Cl. 250-208.200.
Davis, Paul C., 5,343,162, Cl. 330-252.000.
Lassers, Harold A., 5,343,526, Cl. 380-4.000.
McCall, Samuel L., 5,343,490, Cl. 372-94.000.
Yenisey, Osman M., 5,343,192, Cl. 340-639.000.
Yu, Cheng D., 5,343,240, Cl. 348-14.000.

Atlantic Richfield Company: *See*—
Brook, Robert A.; Crews, Gary A.; and Perrell, Susan M., 5,341,670, Cl. 73-40.50A.
Kan, Tze-Kong; Zucker, Sandy M.; Greenberg, Matthew L.; and Lamb, William J., 5,343,440, Cl. 367-27.000.

Atlas Roofing Corporation: *See*—
Blanpied, Robert H.; and Donald, Richard L., 5,342,859, Cl. 521-125.000.

Atochem: *See*—
Glotin, Michel; Parsy, Roland; and Abadie, Patrick, 5,342,886, Cl. 525-66.000.

ATOS Medical AB: *See*—
Persson, Jan-Ove; Lejdeborn, Lars; and Berg, Olle, 5,342,296, Cl. 604-49.000.

Au, Nelson S.: *See*—
Tacklind, Christopher A.; Sun, Vae E.; and Au, Nelson S., 5,342,304, Cl. 604-99.000.

Auffret, Rene ; Chawki, Mouhammad; and Berthou, Louis, to France Telecom, Establissement Autonome De Droit Public. Interactive optical transmission system. 5,343,315, Cl. 359-152.000.

Ausimont S.p.A.: *See*—
Burzio, Fulvio; Beck, Roland; and Mentech, Julio, 5,342,542, Cl. 252-186.390.

Austin, Peter W.; Quan, Peter M.; Tasker, Peter A.; and Thorp, Derek, to Zeneca, Limited; and Nerco, Inc. Heterocyclic thione. 5,342,937, Cl. 544-8.000.

Australian National University, The: *See*—
Herlt, Tony J.; MacDonald, Peter L.; and Rickards, Rodney W., 5,342,971, Cl. 549-390.000.

Automated Packaging Systems, Inc.: *See*—
Kramer, James D., 5,341,625, Cl. 53-459.000.

Automotive Products plc: *See*—
Salzmann, David P., 5,343,005, Cl. 200-61.890.

Avar, Geza: *See*—
Lucarelli, Michael A.; Keegan, Richard E.; Koshute, Mark A.; Freitag, Hans-Albrecht; and Avar, Geza, 5,342,855, Cl. 521-50.000.

Averst, Douglas I.; Carsello, Stephen R.; and Glotzbach, Warren P., to Motorola, Inc. Code division multiple access (CDMA) inbound messaging system utilizing over-the-air programming. 5,343,494, Cl. 375-1.000.

Avery, Leslie R., to David Sarnoff Research Center Inc.; and Sharp Corporation. SCR electrostatic discharge protection for integrated circuits. 5,343,053, Cl. 257-173.000.

Avitan, Isaac, to Raymond Corporation, The. Material handling vehicle carriage height measurement. 5,341,695, Cl. 73-1.00J.

AVL Gesellschaft fuer Verbrennungskraftmaschinen und Messtechnik mbh. Prof. Dr. Dr. h.c. Hans List: *See*—
Kunzfeld, Wilhelm, 5,341,674, Cl. 73-116.000.

Avondoglio, Leo, to Aercology, Inc. Dust collector with bimodal shaker. 5,342,433, Cl. 95-282.000.

Axicon Gear Company: *See*—
Rouverol, William S., 5,341,699, Cl. 74-462.000.

Axis USA, Inc.: *See*—
Luciani, Sabatino, 5,341,997, Cl. 242-1.10R.

Azuma, Junzou: *See*—
Hamamura, Yuuichi; Haraichi, Satoshi; Shimase, Akira; Azuma, Junzou; Itoh, Fumikazu; Yamada, Toshio; Koizumi, Yasuhiro; and Mizumura, Michinobu, 5,342,448, Cl. 118-723.0FI.

Azuma, Seiichiro: *See*—
Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, 5,342,480, Cl. 156-648.000.

B. Braun Medical, Inc.: *See*—
Peppel, Peter; and Raines, Kenneth C., 5,342,326, Cl. 604-284.000.

B. Braun SSC AG: *See*—
Odermatt, Erich; and Sulzberger, Robert, 5,341,622, Cl. 53-429.000.

B. F. Goodrich Company, The: *See*—
Sullivan, Francis R.; Mertzel, Elaine A.; and Kolycheck, Edmond G., 5,342,889, Cl. 525-127.000.

B. F. Wehmer, Medical Instrument Division: *See*—
Klein, Walter F.; Cooper, Ira J.; and Cooper, Leon M., 5,341,513, Cl. 2-9.000.

Baar, James C.: *See*—
Greeson, Michael R.; Baar, James C.; Haines, Jerry D.; and Tepe, James J., 5,343,363, Cl. 361-749.000.

Baba, Haruki, to Brother Kogyo Kabushiki Kaisha. Machine tool having partition plates for preventing splash of cutting fluid. 5,342,156, Cl. 409-134.000.

Baba, Haruki: *See*—
Yanase, Shugo; and Baba, Haruki, 5,342,275, Cl. 483-1.000.

Baba, Yoshinari: *See*—
Inoue, Katsutoshi; Yoshizuka, Kazuharu; Baba, Yoshinari; and Tazaki, Masato, 5,342,526, Cl. 210-634.000.

Babcock & Wilcox Company, The: *See*—
Kidaloski, Raymond G.; and Detzel, Roger A., 5,341,869, Cl. 165-67.000.

Bachle, Walter W.; and Chase, Raymond, to General Signal Corporation. Connector with captive sealing ring. 5,342,096, Cl. 285-23.000.

Bagalini, Dante, to Circuit Breaker Industries Limited. Electric circuit breaker. 5,343,178, Cl. 335-59.000.

Bagfilla Overseas Limited: *See*—
Ellis, Peter J., 5,341,959, Cl. 222-105.000.

Bahner, Frank; and Mann, Stephan, to Rasmussen GmbH. Fluid coupling with condition indicator. 5,342,099, Cl. 285-93.000.

Bai, Xinlai: *See*—
Cann, Kevin J.; Hussein, Fathi D.; Lee, Kiu H.; Zilker, Daniel P., Jr.; Nicoletti, James W.; and Bai, Xinlai, 5,342,907, Cl. 526-129.000.

Baird, Michael R.: *See*—
Wass, Lloyd G.; and Baird, Michael R., 5,341,844, Cl. 137-613.000.

Baird, William C., Jr.; Swan, George A., III; Boyle, Joseph P.; and Mon, Eduardo, to Exxon Research and Engineering Company. Reforming using a PT-low RE catalyst in the lead reacto. 5,342,506, Cl. 208-65.000.

Baker, Harold N.; Eng, Katherine K.; Gurner, William D.; Massei, Michael K.; Necklaws: Elizabeth C.; Osikowicz, Eugene W.; Ramp, Sally K.; and Trach, Paula, to Abbott Laboratories. Determination of estradiol by competitive immunoassay. 5,342,760, Cl. 435-7.920.

Baker, William R.: *See*—
Plata, Daniel J.; Fung, Anthony K. L.; Morton, Howard E.; Leanna, Robert; Baker, William R.; and Pratt, John K., 5,342,981, Cl. 556-420.000.

Bakshi, Amarjit S.; and Khatri, Lakho L. Process for modifying a fibrous bulking agent. 5,342,636, Cl. 426-302.000.

Baldwin Filters, Inc.: *See*—
Brown, Gene W.; and McConaughey, Troy, 5,342,511, Cl. 210-137.000.

Bales, Thomas O., Jr.: *See*—
Slater, Charles R.; and Bales, Thomas O., Jr., 5,342,390, Cl. 606-205.000.

Ball Corporation: *See*—
Roller, Kent G.; Scott, Bradley A.; and LeBlanc, Timothy C., 5,342,655, Cl. 427-372.200.

Bally Gaming International, Inc.: *See*—
Heidel, Raymond; and Snider, Richard E., 5,342,047, Cl. 273-85.0CP.

Balodis, Miroslaw; and Zamat, Hassan, to MESC Electronic Systems, Inc. Phase shifting network and antenna and method. 5,343,173, Cl. 333-126.000.

Baltronis, Joseph F.; and Kennedy, Thomas J., to Lisco, Inc. Split weight bladder football. 5,342,043, Cl. 273-65.0EC.

Balzers Aktiengesellschaft: *See*—
Wegmann, Urs; and Koller, Albert, 5,343,112, Cl. 313-346.00R.

Bamford, David A.: *See*—
Snider, Sheri R.; Bamford, David A.; Vebeliunas, Rimas V.; Halle, Roy T.; and Strack, Robert D., 5,342,509, Cl. 208-351.000.

Bangerter, Ulrich; Beh, Beng H.; Calis, Alfred B.; and Pilkington, Ian J., to Nestec S.A. Treatment of cocoa beans for improving fermentation. 5,342,632, Cl. 426-45.000.

Bania, Paul J.: *See*—
Adams, Roy E.; Parris, Warran M.; and Bania, Paul J., 5,342,458, Cl. 148-670.000.

Banome, Anthony, to Sun Stix Incorporated. Sun lotion applicator. 5,341,538, Cl. 15-210.100.

Banu, John, to Ocean Test Equipment, Inc. Double wall sampler. 5,341,693, Cl. 73-864.670.

Banwer, Mark, to Kesten, Alan. Diisopropyl adipate as a solvent for fragrance extracts. 5,342,829, Cl. 512-2.000.

Bany, Stephen W.: *See*—
Carpenter, Theresa L.; Sipinen, Alan J.; and Bany, Stephen W., 5,342,339, Cl. 604-385.100.

Barber Industries Ltd.: *See*—
Johnson, Clarence W., 5,341,837, Cl. 137-458.000.

Barber, Pamela L., to Imageware Software, Inc. Apparatus for making electronically-produced postcards and method of operating same. 5,343,386, Cl. 364-400.000.

Barber, Rodney I.: *See*—
Walters, David K.; and Barber, Rodney I., 5,342,531, Cl. 252-32.500.

Barbotte, Michel: *See*—
Marsault, Jean-Jacques; Barbotte, Michel; and Baudel, Jean-Pierre, 5,342,016, Cl. 248-610.000.

Barcus, Lester M., to BBE Sound, Inc. Planar wave transaducer assembly. 5,342,989, Cl. 84-730.000.

Bardin, C. Wayne; and Monder, Carl, to Population Council, Inc., The. Method for androgen supplementation. 5,342,834, Cl. 514-178.000.

Bardot, Colette; Carles, Maurice; Desplantes, Rene ; and Shrive, Luc, to Commissariat a l'Energie Atomique. Reverse osmosis or nanofiltration membrane and its production process. 5,342,521, Cl. 210-490.000.

Bardot, James P. Swim training device. 5,342,232, Cl. 441-115.000.

Bardsley, Judy H.; and Hann, William M., to Rohm and Haas Company. Method for solubilizing silica. 5,342,787, Cl. 436-179.000.

Baret, Gilles; and Gevaud, Roland, to ALCATEL CIT. Helium leak detector. 5,341,671, Cl. 73-40.700.

Barkus, Steven C. Board game playing piece and method of play. 5,342,060, Cl. 273-288.000.

Barmag AG: *See*—
Berges, Dietrich; Fuhrer, Robert; and Lentz, Harald, 5,342,000, Cl. 242-155.00M.

Barndt, Ronald D.: *See*—
Schmidt, A. Robert; Yuhas, Drew J.; and Barndt, Ronald D., 5,341,527, Cl. 4-592.000.

Barnes, Arthur J.: *See*—
Beltrame, Carlo L.; and Barnes, Arthur J., 5,343,128, Cl. 318-3.000.

Barnes, Steven R., to Caretaker Systems, Inc. Anti-vortex drain. 5,341,523, Cl. 4-507.000.

Barri, Sami A. I.; Howard, Philip; and Telford, Clive D., to British Petroleum Company Limited, The. Process for making theta-1 zeolite. 5,342,596, Cl. 423-710.000.

Barten, Brian L.: *See*—
Halstead, Gary A.; and Barten, Brian L., 5,341,978, Cl. 228-42.000.

Barth, Gunther; von Langsdorff, Fritz; and von Langsdorff, Harald, to F. von Langsdorff Licensing Limited. Angular paving stone for paving areas. 5,342,142, Cl. 404-41.000.

Bartlett, Charles S.; Benning, Roger D.; Hunter, John B.; and Zuniga, Michael A., to AT&T Bell Laboratories. Telephone headset structure for reducing ambient noise. 5,343,523, Cl. 379-430.000.

Bartlett, Robert H.: *See*—
Montoya, Jean P.; Merz, Scott I.; and Bartlett, Robert H., 5,342,182, Cl. 417-477.00R.

Bartley, William E.: *See*—
Griggs, Steven H.; Bartley, William E.; and Rule, Adrian O., III, 5,341,595, Cl. 47-60.000.

Bartley, William J., to Union Carbide Chemicals & Plastics Technology Corporation. Alkenyl alkanoate production. 5,342,987, Cl. 560-245.000.

Barton, John C.; Hanby, William J.; Kuhn, Bruce R.; Lathrope, Michael F.; Simanonis, Christopher F.; and Varga, Arthur J., to Ameritech Services, Inc. Full duplex digital transmission facility loop-back test, diagnostics and maintenance system. 5,343,461, Cl. 370-13.000.

Baschang, Gerhard; and Hartmann, Albert, to Ciba-Geigy Corp. Aminosulfonic acid derivatives and processes for their preparation. 5,342,977, Cl. 554-48.000.

BASF Aktiengesellschaft: *See*—
Franzman, Gernot; Petri, Folf; and Pitteroff, Walter, 5,342,897, Cl. 525-221.000.
Fuchs, Harald; and Schimmel, Thomas, 5,343,042, Cl. 250-307.000.
Goech, Hans-Juergen; Rust, Harald; Fischer, Rolf; Hechler, Claus; and Pinkos, Rolf, 5,342,488, Cl. 203-80.000.
Hamprecht, Gerhard, 5,342,939, Cl. 544-194.000.
Harreus, Albrecht; Wolf, Bernd; and Wild, Jochen, 5,342,972, Cl. 549-462.000.
Kilpper, Gerhard; and Hoch, Helmut, 5,342,950, Cl. 546-171.000.
Leyendecker, Joachim; Neubauer, Hans-Juergen; Kardorff, Uwe; Kuenast, Christoph; Krieg, Wolfgang; and Hofmeister, Peter, 5,342,849, Cl. 514-/361.000.
Licht, Ulrike; Haeberle, Karl; Gulbins, Erich; Rau, Maria G.; Franzmann, Gernot; and Portugall, Michael, 5,342,915, Cl. 528-71.000.
Roetsch, Thomas; Hagen, Helmut; Reichelt, Helmut; and Grund, Clemens, 5,342,928, Cl. 534-788.000.
Rueb, Lothar; Eicken, Karl; Plath, Peter; Schwalge, Barbara; Westphalen, Karl-Otto; Wuerzer, Bruno; and Meyer, Norbert, 5,342,824, Cl. 504-221.000.
Seitz, Friedrich; Ruppmich, Karl; Guentherberg, Norbert; and Niessner, Norbert, 5,342,898, Cl. 525-281.000.
Sterzel, Hans-Josef; and Meyer, Marion, 5,342,561, Cl. 264-49.000.
Treiber, Hans-Joerg; Hofmann, Hans P.; Szabo, Laszlo; Unger, Liliane; and Raschack, Manfred, 5,342,839, Cl. 514-255.000.
Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, 5,342,916, Cl. 528-150.000.

BASF Corp.: *See*—
Burke, John J.; and MacDonald, Joanne P., 5,342,550, Cl. 252-548.000.
Conville, John J.; Lyon, James T.; and Turcotte, David E., 5,342,537, Cl. 252-174.240.

Bass, Mark: *See*—
Comparin, Robert J.; Clendenin, Harry B.; Logan, Kent E.; Bass, Mark; Fairbanks, Steven C.; and Caillat, Jean-Luc, 5,342,184, Cl. 418-55.200.
Rafalovich, Alexander P.; Bass, Mark; and Caillat, Jean-Luc, 5,342,183, Cl. 418-15.000.

Bassett, David R.: *See*—
Jenkins, Richard D.; Bassett, David R.; and Shay, Gregory D., 5,342,883, Cl. 524-845.000.

Basturk, Naci, to Asulab S.A. Liquid crystal cell having an alignment layer with a temperature dependent tilt angle. 5,343,318, Cl. 359-75.000.

Batchelder, John S.; DeCain, Donald M.; Hobbs, Philip C. D.; and Taubenblatt, Marc A., to International Business Machines Corporation. Surface particle detection using heterodyne interferometer. 5,343,290, Cl. 356-349.000.

Batesko, Barbara: *See*—
Marozzi, John; Rochon, Greg; Patel, Urmil; and Dambly, Ben, 5,341,737, Cl. 101-216.000.

Baudel, Jean-Pierre: *See*—
Marsault, Jean-Jacques; Barbotte, Michel; and Baudel, Jean-Pierre, 5,342,016, Cl. 248-610.000.

Bauer, David J., to Tip Engineering Group. Deployment door patterns for an air bag safety system. 5,342,088, Cl. 280-728.00B.

Bauer, Richard G.: *See*—
Jalics, George; and Bauer, Richard G., 5,342,896, Cl. 525-193.000.

Baumann, Todd D., to Fujitsu Limited. Method and apparatus for self-synchronizing seek deceleration. 5,343,131, Cl. 318-561.000.

Baxter International Inc.: *See*—
Ghaerzadeh, Kambiz, 5,342,303, Cl. 604-96.000.
Nita, Henry; and Pflueger, Russell, 5,342,292, Cl. 604-22.000.

Baxter, John R.: *See*—
Candy, Bruce H.; and Baxter, John R., 5,342,042, Cl. 273-31.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Bayat, Daniel J.: *See*—
Bayat, John J.; and Bayat, Daniel J., 5,341,958, Cl. 222-63.000.
Bayat, John J.; and Bayat, Daniel J. Power operated caulking tool. 5,341,958, Cl. 222-63.000.
Bayer AG: *See*—
Pohmer, Klaus; Weber, Rainer; Block, Hans-Dieter; Dorzbach-Lange, Cornelia; and Moretto, Hans-Heinrich, 5,342,986, Cl. 558-45.000.
Bayer Aktiengesellschaft: *See*—
Behner, Otto; Wollweber, Hartmund; Goldmann, Siegfried; Rosen, Bruno; and Zaiss, Siegfried, 5,342,847, Cl. 514-356.000.
Harnisch, Horst; and Roschger, Peter, 5,342,444, Cl. 106-493.000.
Muller, Hanns-Peter; Scholl, Hans-Joachim; and Kapps, Manfred, 5,342,881, Cl. 524-700.000.
Reddig, Wolfram; and Herd, Karl-Josef, 5,342,927, Cl. 534-618.000.
Sirinyan, Kirkor; Petzoldt, Joachim; and Henning, Wolfgang, 5,342,890, Cl. 525-130.000.
Traubel, Harro; Weisser, Jurgen; and Reiff, Helmut, 5,342,556, Cl. 264-4.700.
Weber, Christian; and Grammes, Hartwig, 5,342,856, Cl. 521-51.000.
Baylor University: *See*—
Arenzen, Rene; Boivin, Patrick; Kobos, Robert K.; Scouten, William H.; and Smart, Bruce E., 5,342,772, Cl. 435-181.000.
Baziuk, Morris. Foldable boom for mounting on a roof of a building. 5,341,898, Cl. 182-142.000.
BBE Sound, Inc.: *See*—
Barcus, Lester M., 5,342,989, Cl. 84-730.000.
Beal, Andrew B.: *See*—
Farrell, Patrick V.; Lee, Janghee; and Beal, Andrew B., 5,343,483, Cl. 372-10.000.
Beam, Edward A., III, to Texas Instruments Incorporated. Method of fabrication of devices with different operating characteristics through a single selective epitaxial growth process. 5,342,804, Cl. 437-89.000.
Beamish, David J.: *See*—
Koch, Frank J.; Vandervalk, Leon C.; and Beamish, David J., 5,343,146, Cl. 324-230.000.
Beattie, Thomas R.; Wyvratt, Matthew J.; and Dumont, Francis J., to Merck & Co., Inc. Antagonists of immunosuppressive macrolides. 5,342,935, Cl. 540-456.000.
Beautiful Bouquet Company Limited, The: *See*—
Bishopp, Derek A., 5,341,992, Cl. 239-34.000.
Beck, Niels J.; Pena, James A.; Roach, Alan R.; and Johnston, Bevan H., to Servojet Electronic Systems, Ltd. Accumulator fuel injection system. 5,341,783, Cl. 123-446.000.
Beck, Roland: *See*—
Burzio, Fulvio; Beck, Roland; and Mentech, Julio, 5,342,542, Cl. 252-186.390.
Beck, Scott A.; Mills, Rex R.; and Waterman, Timothy J., to Carrier Corporation. Turn in place mounting. 5,341,796, Cl. 126-110.00R.
Becker, Mitchell; and Liu, Kindtoken H., to Scientific Design Company, Inc. Process for preparing silver salt solutions. 5,342,973, Cl. 549-534.000.
Beckmann, Harald, to Maschinenfabrik Alfred Schmermund GmbH & Co. Cartoning method and apparatus. 5,341,626, Cl. 53-566.000.
Becton, Dickinson and Company: *See*—
Hausser, Roderick J., 5,342,309, Cl. 604-110.000.
Levine, Robert A.; Wardlaw, Stephen C.; Terstappen, Leon W. M. M.; Mercolino, Thomas J.; and Recktenwald, Diether J., 5,342,790, Cl. 436-523.000.
Woodard, Daniel L.; Howard, Adriann J.; and Down, James A., 5,342,931, Cl. 536-25.400.
Beh, Beng H.: *See*—
Bangerter, Ulrich; Beh, Beng H.; Callis, Alfred B.; and Pilkington, Ian J., 5,342,632, Cl. 426-45.000.
Behner, Otto; Wollweber, Hartmund; Goldmann, Siegfried; Rosen, Bruno; and Zaiss, Siegfried, to Bayer Aktiengesellschaft. Specific 1,4-dihydropyridine-3,5-dicarboxylic acid ester and its pharmaceutical use. 5,342,847, Cl. 514-356.000.
Behr, Arno; and Handwerk, Hans-Peter, to Henkel Kommanditgesellschaft auf Aktien. Process for producing branched fats. 5,342,965, Cl. 549-233.000.
Beidle, David A.; Fields, Karen L.; Griffith, Catherine L.; and Munro, Frederick G. Method for host-independent cartridge entry in an automated library system. 5,343,403, Cl. 364-478.000.
Belgium Spray Accessory Factory: *See*—
Vandoninck, Alfons, 5,341,968, Cl. 222-396.000.
Bell Communications Research, Inc.: *See*—
Honig, Michael L.; and Madhow, Upamanyu, 5,343,496, Cl. 375-1.000.
Khalil, Khalid M., 5,343,465, Cl. 370-17.000.
Bell Sports, Inc.: *See*—
Newbold, Dixon; and Gilley, Ian, 5,341,971, Cl. 224-39.000.
Bell, Stephen W., to GEC Marconi Limited. Radar reflector. 5,343,202, Cl. 342-5.000.
Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., to International Business Machines Corporation. Statistical mixture approach to automatic handwriting recognition. 5,343,537, Cl. 382-13.000.
Bellegarda, Jerome R.: *See*—
Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,343,537, Cl. 382-13.000.
Bellussi, Giuseppe: *See*—
Peratello, Stefano; Perego, Carlo; and Bellussi, Giuseppe, 5,342,814, Cl. 502-263.000.
Beltrame, Carlo L.; and Barnes, Arthur J. Drive assistance device for a golf buggy. 5,343,128, Cl. 318-3.000.
Bendel, Lee P.: *See*—
Cofone, Mark A.; and Bendel, Lee P., 5,341,815, Cl. 128-749.000.
Bene, Bernard: *See*—
Chevallet, Jacques; and Bene, Bernard, 5,342,527, Cl. 210-646.000.
Benedikt, Georg; and Urech, Werner, to Elpatronic AG. Process and device for producing a peel or tear test specimen on a welded compound sheet. 5,341,696, Cl. 73-827.000.
Beneking, Claus; Dannert, Horst; Neiger, Manfred; Schorpp, Volker; and Stockwald, Klaus, to U.S. Philips Corporation. High-pressure glow discharge lamp. 5,343,114, Cl. 313-485.000.
Benning, Roger D.: *See*—
Bartlett, Charles S.; Benning, Roger D.; Hunter, John B.; and Zuniga, Michael A., 5,343,523, Cl. 379-430.000.
Bentley-Harris Manufacturing Company, The: *See*—
Moyer, James D., 5,341,601, Cl. 49-493.100.
Beppu, Yukiharu: *See*—
Kondo, Yasuo; Beppu, Yukiharu; and Tagawa, Kazuo, 5,342,533, Cl. 252-68.000.
Berg, Olle: *See*—
Persson, Jan-Ove; Lejdeborn, Lars; and Berg, Olle, 5,342,296, Cl. 604-49.000.
Berger, Rudolf; Ryssel, Heiner; Schneider, Claus; and Aderhold, Wolfgang, to Fraunhofer-Gesellschaft zur Forderung der angewandten. Ellipsometer. 5,343,293, Cl. 356-369.000.
Bergeron, Raymond J., to University of Florida Research Foundation, Inc. Anti-neoplastic, anti-viral or anti-retroviral spermine derivatives. 5,342,945, Cl. 544-296.000.
Berges, Dietrich; Fuhrer, Robert; and Lentz, Harald, to Barmag AG. Strand braking apparatus. 5,342,000, Cl. 242-155.00M.
Bergstrom, Christer; and Krook, Gunilla, to Neste Oy. Dynamically crosslinked polyolefin composition. 5,342,887, Cl. 525-108.000.
Berkcan, Ertugrul, to General Electric Company. Environmental and physical parameter sensors incorporating polymer-covered fiber field access blocks. 5,343,037, Cl. 250-227.210.
Berktold, Klaus; and Eberhard, Ernst, to Sulzer Reuti AG. Loom having at least two sectional warp beams. 5,341,851, Cl. 139-103.000.
Bernitz, Franz; Huber, Andreas; and Hansmann, Frank, to Patent-Treuhand-Gesellschaft feur elektrische Gluehlampen mbH. High-pressure discharge lamp with pulsed inverter operating circuit, and method of operating a discharge lamp. 5,343,125, Cl. 315-245.000.
Berry, David L.; Johnson, J. Edward; and Aggen, Marshall J., to Turnbull, Inc. Seat having life jacket contained therein. 5,342,109, Cl. 297-191.000.
Berry, Gaylord: *See*—
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, J. D.; and Berry, Gaylord, 5,342,693, Cl. 428-447.000.
Bertalan, Charles W.: *See*—
Katcher, Jay H.; and Bertalan, Charles W., 5,342,932, Cl. 536-102.000.
Berthou, Louis: *See*—
Auffret, Rene ; Chawki, Mouhammad; and Berthou, Louis, 5,343,315, Cl. 359-152.000.
Berveglieri, Fabrizio, to Mira Lanza S.p.A. Dispenser-disbributor for liquid detergent for washing machines. 5,341,660, Cl. 68-17.00R.
Bettge, Paul D.: *See*—
Chavez, Johnny, Jr.; Farnum, Andrew S.; Nace, Vaughn M.; Plepys, Raymond A.; Whitmire, Randall K.; Kent, Van A.; Bettge, Paul D.; and Friedli, Hans R., 5,342,541, Cl. 252-182.270.
Betts, William L.; Calderbank, Arthur R.; and Saltzberg, Burton R., to AT&T Bell Laboratories. Non-linear encoder and decoder for information transmission through non-linear channels. 5,343,500, Cl. 375-39.000.
Betz Laboratories, Inc.: *See*—
Forester, David R., 5,342,505, Cl. 208-48.0AA.
Perez, Libardo A., 5,342,540, Cl. 252-181.000.
Yorke, William J.; and Bockowski, Edmund J., 5,342,548, Cl. 252-391.000.
Beuers, Joerg: *See*—
Weise, Wolfgang; Voelcker, Alexander; Kaufmann, Dieter; Malikowski, Willi; Beuers, Joerg; and Krappitz, Harald, 5,341,981, Cl. 228-262.900.
Beverly, James A.: *See*—
Smith, G. Fred; Caron, LaVerne A.; and Beverly, James A., 5,342,119, Cl. 303-113.200.
Beylin, Vladimir Genukh; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., to Warner-Lambert Company; and British Tech. Group. Process for preparing chiral [[(2-bromoethyl)-amino]-methyl]-2-nitro-1H-imidazol-1-ethanol and related compounds. 5,342,959, Cl. 548-327.500.
Bhagwat, Suda G.: *See*—
Schafer, Karl K.; Melzer, Gerhard M.; Scriba, Jorg; Bhagwat, Suda G.; and Eisses, James, 5,342,566, Cl. 264-102.000.
Bhatia, Hans: *See*—
Kay, Stanley E.; Farmer, George D.; Bhatia, Hans; Mehta, Ashok D.; Kain, Christopher J.; and Sampson, Nicholas P., 5,343,513, Cl. 379-59.000.
Bialk, Peter: *See*—
Kunst, Albert; Rehner, Helmut; Stegmuller, Peter; Lenz, Helmut; Bialk, Peter; and Hoyle, Nicholas, 5,342,788, Cl. 436-500.000.
Bibona, Donald S.; Allen, Michael J.; and Girard, Jean C., to NRM Steelastic, Inc. Apparatus for applying hot cushion gum to a tire carcass. 5,342,473, Cl. 156-394.100.

Bieg, Lothar F., to United States of America, Energy. Coordinate measuring machine test standard apparatus and method. 5,341,574, Cl. 33-502.000.
Biehle, Edward J., IV: *See*—
Stefanchik, David; and Biehle, Edward J., IV, 5,342,373, Cl. 606-142.000.
Billings, John D.: *See*—
Doherty, Kenneth W.; Honjo, Susumu; and Billings, John D., 5,341,834, Cl. 137-599.100.
Biocircuits Corporation: *See*—
Ribi, Hans O., 5,342,692, Cl. 428-420.000.
Biolan Corporation: *See*—
Reich, Murray H., 5,342,862, Cl. 523-125.000.
Biomagnetic Technologies, Inc.: *See*—
Warden, Laurence; and Esser, Keith, 5,341,555, Cl. 29-469.500.
Biomet, Inc.: *See*—
Whiteside, Leo A.; and Wiley, Roy C., 5,342,366, Cl. 606-86.000.
Birang, Manoocher, to Applied Materials, Inc. Method and apparatus for displaying process endpoint signal based on emission concentration within a processing chamber. 5,343,412, Cl. 364-572.000.
Bird, Stuart L.: *See*—
Palansky, Bruce J.; Greene, Thomas L.; Daubenmier, John A.; Smith, Paul F.; Kock, Karl H.; Bird, Stuart L.; and McCall, Gavin F., 5,341,703, Cl. 477-65.000.
Birdsall, Dwight D.: *See*—
Linder, Lloyd F.; and Birdsall, Dwight D., 5,343,163, Cl. 330-252.000.
Bishopp, Derek A., to Beautiful Bouquet Company Limited, The. Container. 5,341,992, Cl. 239-34.000.
Bittermann, Dietmar: *See*—
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weisshaupl, Horst, 5,343,506, Cl. 376-280.000.
Black & Decker Inc.: *See*—
Cuneo, Giuseppe; and Bonacina, Sergio, 5,341,751, Cl. 108-143.000.
Blackford, Damon J.: *See*—
Graef, Harry T.; Blackford, Damon J.; and Crewe, Timothy R., 5,342,165, Cl. 414-788.900.
Blaha, Erich; Poxleitner, Martin; and Hanemann, Gerhard, to Carl Zeiss-Stiftung. Beam positioning device for an ophthalmological instrument. 5,342,351, Cl. 606-4.000.
Blanke, Hans-Jurgen, to Kluber Lubrication Munchen KG. Inflatable seal arrangement. 5,342,065, Cl. 277-34.000.
Blankmeiser, Wilhelm; and Spuerck, Peter, to Kloeckner-Humboldt-Deutz AG. Cellular wheel sluice for pressure vessels. 5,341,966, Cl. 222-370.000.
Blanpied, Robert H.; and Donald, Richard L., to Atlas Roofing Corporation. Method of producing rigid foams and products produced therefrom. 5,342,859, Cl. 521-125.000.
Blaszczynski, George M., to Leaf Systems, Inc. Method and apparatus for reducing blooming in output of a CCD image sensor. 5,343,059, Cl. 257-223.000.
Bleakley, Ian S.; and Jones, Thomas R., to ECC International Limited. Precipitated calcium carbonate. 5,342,600, Cl. 423-432.000.
Bledsoe, J. Daren: *See*—
Powers, Daniel J.; Cyrus, Judith; Kootstra, Steve; Burkhalter, Art; Bledsoe, J. Daren; Shultheis, David C.; and Jordan, Dan, 5,342,403, Cl. 607-5.000.
Bleeke, William F., to Xolox Corporation. Single point magnetic contact hatch assembly. 5,343,346, Cl. 360-105.000.
Block, Hans-Dieter: *See*—
Pohmer, Klaus; Weber, Rainer; Block, Hans-Dieter; Dorzbach-Lange, Cornelia; and Moretto, Hans-Heinrich, 5,342,986, Cl. 558-45.000.
Blomquist, James E.: *See*—
Adams, Ronald L.; and Blomquist, James E., 5,342,267, Cl. 482-83.000.
Bloom, Stuart J., to Pockets of Learning. Free-standing stuffed toy. 5,342,234, Cl. 446-327.000.
Blui, Allison M.: *See*—
Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., 5,341,680, Cl. 73-379.060.
Blumauer, Johannes, to Voest-Alpine Eisenbahnsysteme Gesellschaft m.b.H. Method for the production of a switch diamond. 5,342,457, Cl. 148-534.000.
Bly, Robert R., to Invacare Corporation. Portable commode. 5,341,517, Cl. 4-236.000.
Board of Regents, The: *See*—
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., 5,341,676, Cl. 73-147.000.
Board of Regents, The University of Texas System: *See*—
Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, 5,342,606, Cl. 424-09.000.
Boardman, Tom: *See*—
Dohring, Klaus; Boardman, Tom; and Andrews, Chris, 5,341,772, Cl. 123-184.210.
Bobbitt, Percy J., to Eagle Aerospace, Inc. Airfoil trailing flap. 5,342,004, Cl. 244-212.000.
Bobst SA: *See*—
Varidel, Charly; and Yerly, Marcel, 5,341,558, Cl. 29-450.000.
Bocek, Joseph M.: *See*—
deCoriolis, Paul E.; Siegman, Craig S.; and Bocek, Joseph M., 5,342,408, Cl. 607-32.000.
Bockowski, Edmund J.: *See*—
Yorke, William J.; and Bockowski, Edmund J., 5,342,548, Cl. 252-391.000.
Bode, Daniel: *See*—
Craun, Gary P.; and Bode, Daniel, 5,342,864, Cl. 523-403.000.
Bodford, Carl A.; Chester, Stephen O.; and Nayak, Rahul K., to Poly-Bond, Inc. Method of making a composite with discontinuous adhesive structure. 5,342,469, Cl. 156-244.220.
Boehringer Mannheim GmbH: *See*—
Kunst, Albert; Rehner, Helmut; Stegmuller, Peter; Lenz, Helmut; Bialk, Peter; and Hoyle, Nicholas, 5,342,788, Cl. 436-500.000.
Boeing Company, The: *See*—
Cross, Dan A., 5,341,998, Cl. 242-47.000.
Boesman, Peter; and Derdeyn, Marc, to N. V. Bekaert S.A. Double-twisting device with magnetic device for elevating axial forces. 5,341,631, Cl. 57-58.830.
Bofors AB: *See*—
Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, 5,341,720, Cl. 89-45.000.
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittmer, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., to AT&T Bell Laboratories. Use-code based call-treatment selection. 5,343,517, Cl. 379-219.000.
Bohmer, Walter: *See*—
Wirtz, Ulrich; Grecksch, Hans; Irmen, Wolfgang; Hensen, Helmuth; and Bohmer, Walter, 5,341,549, Cl. 28-298.000.
Bohnert, Klaus, to Asea Brown Boveri Ltd. Optical measurement of electrical quantities using inverse piezoelectric effect with dual double-mode fiber. 5,343,036, Cl. 250-227.190.
Boiko, Robert S. Corrosion control of dissimilar metals. 5,342,493, Cl. 204-196.000.
Boivin, Patrick: *See*—
Arenzen, Rene; Boivin, Patrick; Kobos, Robert K.; Scouten, William H.; and Smart, Bruce E., 5,342,772, Cl. 435-181.000.
Bolduc, Leonard; and Pare, Gregoire, to Hydro-Quebec. Electrical dampening circuit for dampening resonance of a power signal in a power distribution network. 5,343,381, Cl. 363-47.000.
Bolf, Jan: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,342,585, Cl. 422-131.000.
Bolling, Ingo: *See*—
Kotai, Ference; Zurek, Rudolf; and Bolling, Ingo, 5,341,721, Cl. 99-46.000.
Bolnet, Marie C. N.; and Dieterlen-Lievre, Francoise A. Avian hemopoietic progenitor cells. 5,342,776, Cl. 435-240.200.
Bolstad, Roger T.: *See*—
Reid, Leonard F.; and Bolstad, Roger T., 5,341,559, Cl. 29-523.000.
Bonacina, Sergio: *See*—
Cuneo, Giuseppe; and Bonacina, Sergio, 5,341,751, Cl. 108-143.000.
Bonari, Roberto: *See*—
Addeo, Antonio; Vitali, Mario; and Bonari, Roberto, 5,342,463, Cl. 156-156.000.
Bond, David, to Klein Tools, Inc. Head indicia to indicate tool type. 5,341,707, Cl. 81-436.000.
Bondurant, John P., III. Removable screen for animal litter box. 5,341,763, Cl. 119-166.000.
Bongers, Andreas M. G.: *See*—
Rooijakkers, Johannes P. J. C.; Bongers, Andreas M. G.; and Vosbeek, Gerardus J., 5,343,277, Cl. 355-271.000.
Bonner, Brian B.; Garg, Diwakar; Eichelberger, Donald P.; and Bowe, Donald J., to Air Products and Chemicals, Inc. In-situ generation of heat treating atmospheres using a mixture of non-cryogenically produced nitrogen and a hydrocarbon gas. 5,342,455, Cl. 148-208.000.
Boon, Thierry; van der Bruggen, Pierre; Van den Eynde, Benoit; Van Pel, Aline; De Plaen, Etienne; Lurquin, Christophe; Chomez, Patrick; and Traversari, Catia, to Ludwig Institute for Cancer Research. Nucleotide sequence encoding the tumor rejection antigen precursor, MAGE-1. 5,342,774, Cl. 435-240.200.
Booth, William M.: *See*—
Lun, Warren D.; Rom, Paul F.; and Booth, William M., 5,342,325, Cl. 604-272.000.
Borgianini, Stephen A.: *See*—
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,341,692, Cl. 73-864.630.
Borowiec, Joseph C.: *See*—
Farrall, George A.; Cocoma, John P.; Borowiec, Joseph C.; and Pashley, Robert F., 5,343,126, Cl. 315-248.000.
Bortoli, Giulio: *See*—
Corain, Luciano; Maitan, Gianni; and Bortoli, Giulio, 5,341,852, Cl. 139-448.000.
Bosch-Siemens Hausgeraete GmbH: *See*—
Waigand, Helmut; and Wallner, Gottfried, 5,343,020, Cl. 219-413.000.
Boschetti, Vittorio, to BRIEF S.r.l. Single-use syringe with retractable needle. 5,342,308, Cl. 604-110.000.
Bosses, Mark D., to Home Care Industries, Inc. Optional deodorant dispenser for vacuum cleaner. 5,342,420, Cl. 55-279.000.
Boundary Healthcare Products Corporation: *See*—
DeHart, Henry, 5,341,821, Cl. 128-849.000.
Bourekas, Philip A.; Ngoc, Danh L.; and Revak, Scott, to Integrated Device Technology, Inc. Use of a data register to effectively increase the efficiency of an on-chip write buffer. 5,343,435, Cl. 365-221.000.
Boutaghou, Zine-Eddine; Brown, Dana H.; Erickson, Kevin J.; and Greenberg, Richard, to International Business Machines Corpora-

VOL 1165 ISS 5 AG 30 1994 UMI

tion. Digital servo signal demodulation method and apparatus utilizing a partial-response maximum-likelihood (PRML) channel in a disk file. 5,343,340, Cl. 360-77.080.
Bowald, Staffan: *See*—
Hirschberg, Jakub; Neubauer, Heinz; Gilljam, Nina; Bowald, Staffan; and Lindegren, Ulf, 5,342,413, Cl. 607-126.000.
Bowdon, Edward K., to Alcatel Network Systems, Inc. Methods and system for immediately connecting and reswitching digital cross-connect networks. 5,343,194, Cl. 340-827.000.
Bowe, Donald J.: *See*—
Bonner, Brian B.; Garg, Diwakar; Eichelberger, Donald P.; and Bowe, Donald J., 5,342,455, Cl. 148-208.000.
Bowen, Stephen A.: *See*—
Morton, David M.; and Bowen, Stephen A., 5,343,359, Cl. 361-707.000.
Bowman, Jane; Daniel, Ed; Henn, Bob; Levy, Jennifer; and Vakharia, Neville, to W. L. Gore & Associates, Inc. Sterilizable packaging material. 5,342,673, Cl. 428-198.000.
Bowser, Paul A.; Froling, Albert; Heslinga, Lammert; Houtsmuller, Udo M. T.; Nugteren, Diederik H.; Pabon, Hendrik J. J.; and Prottey, Colin, to Elizabeth Arden Co., Division of Conopco, Inc. Skin treatment composition. 5,342,976, Cl. 554-36.000.
Boyd, Gary T.; Lee, Tzu-Chen; Sventek, Bruce A.; Cross, Elisa M.; and Weller-Brophy, Laura A., to Minnesota Mining and Manufacturing Company. Integrated optical fiber coupler and method of making same. 5,343,544, Cl. 385-46.000.
Boyle, Joseph P.: *See*—
Baird, William C., Jr.; Swan, George A., III; Boyle, Joseph P.; and Mon, Eduardo, 5,342,506, Cl. 208-65.000.
Bradford-White Corporation: *See*—
Lannes, Eric M., 5,341,770, Cl. 122-383.000.
Bradshaw, Curt W.: *See*—
Wong, Chi-Huey; and Bradshaw, Curt W., 5,342,767, Cl. 435-122.000.
Brandeis University: *See*—
Perlman, Daniel, 5,341,557, Cl. 29-446.000.
Branson, Brian D.: *See*—
Johnson, Mark J.; and Branson, Brian D., 5,343,437, Cl. 365-230.030.
Brasted, Lee K.: *See*—
Huete, David A.; Brasted, Lee K.; and Rodenbusch, George, 5,342,148, Cl. 405-223.100.
Braun, Hermann; and Ruetz, Georg, to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH. Throttle flap construction for an exhaust gas duct of an internal combustion engine. 5,342,019, Cl. 251-305.000.
Braverman, Eric. Apparatus and method for increasing the amplitude of P300 waves in the human brain. 5,342,410, Cl. 607-58.000.
Bravo, Sergio M. Gasoline containment systems with leak-resistant plastic fittings. 5,341,857, Cl. 141-88.000.
Brems, Niels: *See*—
Sjaunja, Lars-Ove; Andersen, Steen K.; Arnvidarson, Borkur; Brems, Niels; Lapp, Torben; and Nygaard, Lars, 5,343,044, Cl. 250-339.090.
Brennan, Ciaran J., to Charles Stark Draper Laboratories, Inc., The. Self-biased ferroelectric space charge capacitor memory. 5,343,421, Cl. 365-145.000.
Brenner, Alan. Apparatus and method for measuring the amount of gas adsorbed on or desorbed from a solid and reactions of a gas with a solid. 5,342,580, Cl. 422-92.000.
Bresciani, Angelo, to 3V Inc. Crosslinked polyacrylic acids having low solvent residue, a process for the preparation thereof and the use thereof as thickening agents. 5,342,911, Cl. 526-216.000.
Breslau, Barry R.: *See*—
Buckley, Randall G.; Eastburn, George L.; Schmitz, Marion C.; Breslau, Barry R.; and Tansey, Shawn P., 5,342,863, Cl. 523-310.000.
Bretthauer, Hans-Jurgen: *See*—
Focke, Heinz; and Bretthauer, Hans-Jurgen, 5,341,912, Cl. 198-415.000.
Breu, Fred A., to Wayne Technology, Inc. Pyrolytic gas treatment system. 5,342,421, Cl. 55-222.000.
Brice-Heames, Kenneth: *See*—
Frei, John K.; and Brice-Heames, Kenneth, 5,342,999, Cl. 174-266.000.
Bricker, Michael W.: *See*—
Xu, Wills J.; and Bricker, Michael W., 5,342,991, Cl. 174-117.00R.
Bricmanage, Inc.: *See*—
Bricmont, Francis H.; and Carr, Hugh B., 5,341,568, Cl. 29-895.320.
Bricmont, Francis H.; and Carr, Hugh B., to Bricmanage, Inc. Insulated furnace roller and method of manufacture. 5,341,568, Cl. 29-895.320.
Bridgeport Fittings, Inc.: *See*—
Pratesi, Edward E., 5,342,994, Cl. 174-65.00R.
Bridges, Charles D., to ABB Vetco Gray Inc. Internal tubing hanger lockdown. 5,341,885, Cl. 166-382.000.
Bridgestone Corporation: *See*—
Hashimoto, Takatsugu; Akutagawa, Keizo; Yagawa, Kazuo; Tanaka, Makoto; Yamagishi, Junichi; and Hachiya, Kazuo, 5,341,862, Cl. 152-209.00R.
Bridgestone/Firestone, Inc.: *See*—
Hoffman, Keith E., 5,342,139, Cl. 403-405.100.
BRIEF S.r.l.: *See*—
Boschetti, Vittorio, 5,342,308, Cl. 604-110.000.
Briem, Steven W.; and Figliomeni, Joseph A. Bowling board game apparatus. 5,342,059, Cl. 273-277.000.
Brigham, Kristen; and Ray, Gary W., to Hewlett-Packard Company. Aperture size control for etched vias and metal contacts. 5,342,808, Cl. 437-228.000.
Brigham & Women's Hospital: *See*—
Sugarbaker, David J., 5,342,384, Cl. 606-191.000.
Brinkerhoff, Ronald J.; Mills, Earl J.; Parkhurst, Harry C.; and Madden, Martin, to Ethicon, Inc. Surgical trocar. 5,342,382, Cl. 606-184.000.
British Petroleum Company Limited, The: *See*—
Barri, Sami A. I.; Howard, Philip; and Telford, Clive D., 5,342,596, Cl. 423-710.000.
British Tech. Group: *See*—
Beylin, Vladimir Genukh; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,342,959, Cl. 548-327.500.
British Technology Group Ltd.: *See*—
McNeill, Marion E.; Rashid, Abdul; and Stevens, Howard N. E., 5,342,624, Cl. 424-451.000.
British Telecommunications public limited company: *See*—
Davis, Lynn; and MacBean, Myles, 5,343,055, Cl. 257-186.000.
Keeble, Peter J.; Rowe, Christopher J.; and Spirit, David M., 5,343,286, Cl. 356-73.100.
Welbourn, Anthony D., 5,342,478, Cl. 156-643.000.
Brizzi, Marco: *See*—
Gamberini, Antonio; Brizzi, Marco; and Carboni, Salvatore, 5,341,911, Cl. 198-409.000.
Broadbent, Ronald W.: *See*—
Ahmed, Bashire M.; and Broadbent, Ronald W., 5,342,694, Cl. 428-461.000.
Brocar Products, Inc.: *See*—
Helmsderfer, John A.; and McRoberts, T. Michael, 5,341,830, Cl. 137-15.000.
Brockman, Thomas R.; and Dillon, Mark, to Fairborn USA Inc. Storage terminal shelter, including side curtain assembly for truck/trailer hinge gap closure. 5,341,613, Cl. 52-173.200.
Broderick, Kevin B.: *See*—
Yatka, Robert J.; Reed, Michael A.; and Broderick, Kevin B., 5,342,631, Cl. 426-3.000.
Broeksteeg, Johannes M., to Whitaker Corporation, The. Shielded back plane connector. 5,342,211, Cl. 439-108.000.
Bronowicki, Allen J.; and Kaplan, Abner, to TRW Inc. Viscoelastic damping structures and related manufacturing method. 5,342,465, Cl. 156-175.000.
Brook, Robert A.; Crews, Gary A.; and Perrell, Susan M., to Atlantic Richfield Company. Method and apparatus for locating seepage from tanks. 5,341,670, Cl. 73-40.50A.
Brooks, Dwight D., to Motorola, Inc. Battery pinned enclosure snap wall. 5,342,707, Cl. 429-97.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Baba, Haruki, 5,342,156, Cl. 409-134.000.
Yanase, Shugo; and Baba, Haruki, 5,342,275, Cl. 483-1.000.
Brown, Charles R.; Robertson, Robert J.; Buckley, Dandridge W., Jr.; and Milchuck, Frank A., to Kennametal Inc. Universal turret system for quick-change lathe tooling. 5,341,551, Cl. 29-40.000.
Brown, Dana H.: *See*—
Boutaghou, Zine-Eddine; Brown, Dana H.; Erickson, Kevin J.; and Greenberg, Richard, 5,343,340, Cl. 360-77.080.
Brown, Gene W.; and McConaughey, Troy, to Baldwin Filters, Inc. Oil filter with inner and outer coaxial filter elements. 5,342,511, Cl. 210-137.000.
Brown, George E.: *See*—
Schwab, Edward C.; Thomas, Kristin L.; Brown, George E.; and Harrington, Terry R., 5,342,635, Cl. 426-241.000.
Brown, Keith R.: *See*—
Grizzard, Bennett C., Jr.; and Brown, Keith R., 5,341,731, Cl. 100-100.000.
Brown, Michael C., to Lottery Enterprises, Inc. Apparatus for dispensing tickets. 5,341,955, Cl. 221-197.000.
Brown, Roger A.; Pilling, Richard L.; and Young, Donald C., to Union Oil Company of California. Preservation of wood chips. 5,342,629, Cl. 424-696.000.
Brown, Thomas J. Drawer attachment for barbecue grills. 5,341,793, Cl. 126-41.00R.
Brownlee, Steven: *See*—
Burton, Paul; and Brownlee, Steven D., 5,342,015, Cl. 248-478.000.
Brownlee, Steven D.: *See*—
Burton, Paul; and Brownlee, Steven D., 5,342,015, Cl. 248-478.000.
Brozyna, Louis J.: *See*—
Cronin, David V.; and Brozyna, Louis J., 5,343,546, Cl. 385-52.000.
Brucher, Erno: *See*—
Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, 5,342,606, Cl. 424-09.000.
Bruck, Rolf: *See*—
Swars, Helmut; Bruck, Rolf; and Maus, Wolfgang, 5,342,783, Cl. 436-37.000.
Brueck, Steven R. J.; and Zaidi, Saleem H., to University of New Mexico. Method and apparatus for alignment of submicron lithographic features. 5,343,292, Cl. 356-363.000.
Bruemmer, Mary A.: *See*—
Tanzer, Richard W.; Bruemmer, Mary A.; and Gossens, Anthonette A., 5,342,333, Cl. 604-359.000.
Brugge, Stephen P.; Holzhauer, Juergen K.; and Wolff, Thomas E., to Amoco Corporation. Process for producing sulfonylbis (phthalic anhydride). 5,342,968, Cl. 549-241.000.
Bruker Analytische Mebtechnik GmbH: *See*—
Westphal, Michael; Knuttel, Bertold; and Schmidt, Hartmut, 5,343,148, Cl. 324-309.000.

Bruker Instruments, Inc.: *See*—
Cory, David G.; and Sprenger, Peter, 5,343,151, Cl. 324-320.000.
Brunninger, Manfred: *See*—
Theurer, Josef; and Brunninger, Manfred, 5,341,746, Cl. 105-355.000.
Brunswick Corporation: *See*—
Magee, Phillip D.; Eick, Edward C.; and Meisenburg, Gary L., 5,342,228, Cl. 440-76.000.
BT&D Technologies Limited: *See*—
Rowe, Christopher J.; Mortimore, David B.; Wilkinson, Iain J.; and Achurch, Nicholas E., 5,342,425, Cl. 65-501.000.
Buckley, Dandridge W., Jr.: *See*—
Brown, Charles R.; Robertson, Robert J.; Buckley, Dandridge W., Jr.; and Milchuck, Frank A., 5,341,551, Cl. 29-40.000.
Buckley, Randall G.; Eastburn, George L.; Schmitz, Marion C.; Breslau, Barry R.; and Tansey, Shawn P., to Rohm and Haas Company. Ultrafiltration processes for the recovery of polymeric latices from whitewater. 5,342,863, Cl. 523-310.000.
Budd Company, The: *See*—
Kulczycki, Stanley, 5,342,130, Cl. 384-585.000.
Budjinski, Joseph F.; Campbell, Steven M.; and Ward, E. Theodore, to Philip Morris Incorporated. Apparatus and method for applying fluid to a moving continuous web. 5,342,657, Cl. 427-424.000.
Buettner, Rolf: *See*—
Unkelbach, Karl-Heinz; Arhelger, Gunther; and Buettner, Rolf, 5,342,281, Cl. 494-53.000.
Bukac, Hubert: *See*—
Hewette, Chip; and Bukac, Hubert, 5,341,654, Cl. 62-296.000.
Bullis, Stephen J.; Perrin, David P.; and Wolff, Peter C., to General Electric Company. Multi-layer composite gun barrel. 5,341,719, Cl. 89-16.000.
Bullmer, Wolfgang, to Robert Bosch GmbH. Arrangement for providing a current-regulated control of several actuators with a control computer. 5,343,078, Cl. 307-41.000.
Bullock, Milon W.: *See*—
Wong, Rosie B.; Ahmed, Zareen; and Bullock, Milon W., 5,342,771, Cl. 435-188.000.
Buma, Shuuichi, to Toyota Jidosha Kabushiki Kaisha. Control apparatus for vehicle suspension mechanism. 5,342,079, Cl. 280-707.000.
Bunke, Paul R.: *See*—
Prosise, Robert L.; Widenhouse, Christopher W.; Wnuk, Andrew J.; Bunke, Paul R.; and Milenkevich, Joseph A., 5,343,024, Cl. 219-730.000.
Burgess, Robert M.: *See*—
Gorsuch, Jan; Ennis, Mark R.; and Burgess, Robert M., 5,341,609, Cl. 51-399.000.
Burk, W. Miachel: *See*—
Quinn, Robert E.; and Burk, W. Miachel, 5,342,563, Cl. 264-63.000.
Burke, David, to AlliedSignal Inc. Seat belt buckle. 5,341,546, Cl. 24-641.000.
Burke Gibson, Inc.: *See*—
Gibson, Scott S., 5,341,945, Cl. 211-184.000.
Burke, John J.; and MacDonald, Joanne P., to BASF Corp. Solid delivery systems for toilet tanks, urinals and condensate water. 5,342,550, Cl. 252-548.000.
Burke, Olive L.; and Lewis, Jesse G. Convertible rolling chair and changing table for adult. 5,342,114, Cl. 297-344.200.
Burkhalter, Art: *See*—
Powers, Daniel J.; Cyrus, Judith; Kootstra, Steve; Burkhalter, Art; Bledsoe, J. Daren; Shultheis, David C.; and Jordan, Dan, 5,342,403, Cl. 607-5.000.
Burndy Corporation: *See*—
Lefavour, John, 5,342,224, Cl. 439-781.000.
Burns, James L.; Dicus, Bryan J.; Jasti, Jayanthi K.; Kendall, Jerry J.; Olmos, Jose L.; and Zambrano, Luis G., to Mobil Oil Corporation. Below fracture pressure pulsed gel injection method. 5,341,876, Cl. 166-263.000.
Burns, Michael J.; and Holbrook, Noel M., to University of Florida. Method and device for monitoring of moisture in soil. 5,341,673, Cl. 73-73.000.
Burpee, Janet W.: *See*—
Abrams, Robert M.; Chan, Randy S.; Burpee, Janet W.; and Teoh, Clifford, 5,341,818, Cl. 128-772.000.
Burton, Paul; and Brownlee, Steven D., to Brownlee, Steven; and Farmer's Factory Company. Apparatus for mounting rear view mirrors on a tractor. 5,342,015, Cl. 248-478.000.
Burzio, Fulvio; Beck, Roland; and Mentech, Julio, to Ausimont S.p.A. Process for increasing the bleaching efficiency of persalts by using a partially acetylated sucrose as a bleach activator. 5,342,542, Cl. 252-186.390.
Butler, Brent K. Direct box employing hybrid vacuum tube and solid state circuitry. 5,343,159, Cl. 330-3.000.
Butler, Donald E.; Le, Tung V.; and Nanninga, Thomas N., to Warner-Lambert Company. Process for trans-6-[2-(substituted-pyrrol-1-yl)alkyl]pyran-2-one inhibitors of cholesterol synthesis. 5,342,952, Cl. 546-245.000.
Butler, James A.: *See*—
Jasper, Steven C.; and Butler, James A., 5,343,499, Cl. 375-39.000.
Butterfield, Bruce D.: *See*—
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittmer, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,343,517, Cl. 379-219.000.
Buttgen, Heinz: *See*—
Stephan, Hilmer; Molz, Gerhard; and Buttgen, Heinz, 5,341,585, Cl. 38-77.500.
Butzin, Donald F.: *See*—
Gaylord, William B., Jr.; Butzin, Donald F.; and Williams, Robert K., 5,343,504, Cl. 376-247.000.
BWG Bergwerk- und Walzwerk-Maschinenbau GmbH: *See*—
Noe, Rolf; and Noe, Andreas, 5,341,664, Cl. 72-161.000.
Byler, Tom E.; Orbanic, Robert S.; and Suchar, Kimberly J., to Osram Sylvania Inc. Method for high speed continuous wire plating. 5,342,503, Cl. 205-138.000.
Cabot Corporation: *See*—
Tunison, Donald E., III, 5,342,597, Cl. 423-335.000.
Cacheris, William P.: *See*—
Meeh, Linda; and Cacheris, William P., 5,342,609, Cl. 424-9.000.
Cadence Environmental Energy, Inc.: *See*—
Way, Peter F.; and Petitjean, William L., 5,341,962, Cl. 222-248.000.
Caillat, Jean-Luc: *See*—
Comparin, Robert J.; Clendenin, Harry B.; Logan, Kent E.; Bass, Mark; Fairbanks, Steven C.; and Caillat, Jean-Luc, 5,342,184, Cl. 418-55.200.
Rafalovich, Alexander P.; Bass, Mark; and Caillat, Jean-Luc, 5,342,183, Cl. 418-15.000.
Cailloutte, James C.: *See*—
Silber, Arthur L.; Ng, Raymond C.; and Cailloutte, James C., 5,342,331, Cl. 604-330.000.
Cain, Frederick W.; Cebula, Dryck J.; and Hargreaves, Neil G., to Van den Bergh Foods Co., Division of Conopco, Inc. Production of tempered confectionery. 5,342,644, Cl. 426-660.000.
Cain, Gary L., to Apache Technology Inc. Method and apparatus for detecting laser light having a plurality of pulse integrator and automatic gain control circuits. 5,343,033, Cl. 250-208.200.
Cain, John L., to VLSI Technology, Inc. Reduction of polycide residues through helium backside pressure control during dry etching. 5,342,476, Cl. 136-643.000.
CalComp Inc.: *See*—
Freudenberger, Richard, 5,341,689, Cl. 73-862.541.
Calderbank, Arthur R.: *See*—
Betts, William L.; Calderbank, Arthur R.; and Saltzberg, Burton R., 5,343,500, Cl. 375-39.000.
Caldone Pty. Limited: *See*—
Candy, Bruce H.; and Baxter, John R., 5,342,042, Cl. 273-31.000.
Calebaugh, John D. Endotracheal tube stabilizing device. 5,341,802, Cl. 128-207.170.
California Institute of Technology: *See*—
Grubbs, Robert H.; Johnson, Lynda K.; and Nguyen, Sonbinh T., 5,342,909, Cl. 526-171.000.
California R & D Center: *See*—
Jones, Lawrence T.; and May, Richard L., 5,342,048, Cl. 273-[illegible].000H.
Callaghan, Roberta L.: *See*—
Serbinski, Andrew; Mork, Steve O.; and Callaghan, Roberta L., 5,341,534, Cl. 15-22.100.
Callele, David; and Cruickshank, Donald, to Digital Systems Group, Inc. Computer telecommunications signalling interface. 5,343,516, Cl. 379-98.000.
Callis, Alfred B.: *See*—
Bangerter, Ulrich; Beh, Beng H.; Callis, Alfred B.; and Pilkington, Ian J., 5,342,632, Cl. 426-45.000.
Callis, James B.: *See*—
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., 5,341,676, Cl. 73-147.000.
Callis, John M.: *See*—
Callis, Rex D.; and Callis, John M., 5,341,691, Cl. 73-863.830.
Callis, Rex D.; and Callis, John M. Dual use pressurized and unpressurized oil sampling apparatus. 5,341,691, Cl. 73-863.830.
Calvert, Jeffrey M.: *See*—
Georger, Jacque H., Jr.; Peckerar, Martin C.; Rebbert, Milton L.; Calvert, Jeffrey M.; and Hickman, James J., 5,342,737, Cl. 430-324.000.
Cameron, Craig P.; and Rice, Roy W., to W. R. Grace & Co.-Conn. Reaction processing of A1N/SiC composites and solid solutions. 5,342,562, Cl. 264-63.000.
Cameron, Robert W. Hypodermic syringe having shielding to prevent accidental injury following use. 5,342,320, Cl. 604-192.000.
Campana, Donna L.: *See*—
Kenyon, Roger R.; Landes, Mark D.; Campana, Donna L.; Geremakis, Perry A.; Dock, Ted L.; and Ondrla, Jeffrey M., 5,342,362, Cl. 606-79.000.
Campbell, Charles N., II: *See*—
Dai, Pei-Shing E.; Campbell, Charles N., II; Martin, Bobby R.; and Sherwood, David E., Jr., 5,342,507, Cl. 208-111.000.
Campbell, Patricia S.: *See*—
Enscore, David J.; Campbell, Patricia S.; Osborne, James L.; Smart, Melinda K.; and Yum, Su I., 5,342,623, Cl. 424-448.000.
Campbell, Robert E.; Kuliaz, Andre A.; and Migachyov, Valery, to Infusion Technologies Corporation. Fluid pump for a flexible, variable geometry reservoir. 5,342,313, Cl. 604-153.000.
Campbell, Steven M.: *See*—
Budjinski, Joseph F.; Campbell, Steven M.; and Ward, E. Theodore, 5,342,657, Cl. 427-424.000.
Canard Resources Inc.: *See*—
Spann, Thomas S., 5,342,094, Cl. 283-81.000.
Candy, Bruce H.; and Baxter, John R., to Caldone Pty. Limited. Ball location system. 5,342,042, Cl. 273-31.000.
Canfield, Brian P., to Hewlett-Packard Company. Paper moving system for a printer/plotter. 5,342,133, Cl. 400-635.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Cann, Gordon L.; and Shepard, Cecil B., Jr., to Celestech, Inc. Method for plasma jet deposition. 5,342,660, Cl. 427-577.000.

Cann, Kevin J.; Hussein, Fathi D.; Lee, Kiu H.; Zilker, Daniel P., Jr.; Nicoletti, James W.; and Bai, Xinlai, to Union Carbide Chemicals & Plastics Technology Corporation. Ethylene/propylene copolymer rubbers. 5,342,907, Cl. 526-129.000.

Cano, Gerald G., to Allegheny-Singer Research Institute. Method and apparatus for observation of ventricular late potentials. 5,341,811, Cl. 128-696.000.

Canon Kabushiki Kaisha: *See*—
Abe, Shunichi, 5,343,233, Cl. 346-157.000.
Arai, Hideyuki; Suda, Hirofumi; and Kaneda, Kitahiro, 5,343,246, Cl. 348-363.000.
Hirabayashi, Hiromitsu; Kusaka, Kensaku; Arai, Atsushi; and Takayanagi, Yoshiaki, 5,343,280, Cl. 355-285.000.
Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, 5,343,227, Cl. 349-42.000.
Hoshi, Akio, 5,343,457, Cl. 369-77.200.
Ishikawa, Hisashi, 5,343,299, Cl. 348-445.000.
Iwata, Masakatsu; and Kobeshi, Takeyoshi, 5,342,033, Cl. 270-53.000.
Kazumi, Jiro, 5,343,267, Cl. 354-410.000.
Maeda, Mitsuru, 5,343,218, Cl. 345-116.000.
Matsui, Hisayoshi, 5,343,200, Cl. 341-139.000.
Miyazaki, Toshihiko; Sakai, Kunihiro; Nose, Hiroyasu; Kishi, Etsuro; and Kuroda, Ryo, 5,343,460, Cl. 369-126.000.
Nagata, Tsunetoshi; and Sasaki, Nobukazu, 5,343,279, Cl. 355-285.000.
Nakamura, Kenji; Majima, Masao; and Yamamoto, Noboru, 5,343,314, Cl. 359-123.000.
Nashida, Yasumasa; Yoshimoto, Toshio; and Nakata, Yasuhiro, 5,343,019, Cl. 219-216.000.
Ogino, Tsukasa, 5,343,453, Cl. 369-44.280.
Ohwada, Mitsutoshi; Matsugu, Masakazu; Suda, Shigeyuki; Yoshii, Minoru; Niwa, Yukichi; Nose, Noriyuki; Saitoh, Kenji; and Hasegawa, Masanobu, 5,343,291, Cl. 356-356.000.
Saito, Keishi; and Aoike, Tatsuyuki, 5,342,452, Cl. 136-256.000.
Sato, Toshiaki, 5,343,034, Cl. 250-214.00C.
Suzuki, Akio, 5,343,231, Cl. 347-14.000.
Suzuki, Hidetaka, 5,343,436, Cl. 365-228.000.
Takada, Hideaki, 5,343,228, Cl. 347-29.000.
Takayama, Tsutomu; and Takaiwa, Kan, 5,343,201, Cl. 341-200.000.
Yonehara, Takao, 5,342,792, Cl. 437-24.000.

Canosi, Claudio; and Rosina, Giancarlo, to Italtel Societa Italiana Telecommunicazioni S.p.A. Method and device for the synchronization between a base radio station and a mobile radio station in a digital radiomobile system. 5,343,497, Cl. 375-111.000.

Caprathe, Bradley W.: *See*—
Jaen, Juan C.; and Caprathe, Bradley W., 5,342,942, Cl. 544-250.000.

Capuano, Italo A.; and Creasy, Kenneth E., to Olin Corporation. Method for detecting a vapor of an alkyl ester of phosphoric acid in ambient air. 5,342,786, Cl. 436-103.000.

Carbagas and Von Roll AG: *See*—
Herren, Georges; and Reiber, Dieter, 5,343,491, Cl. 373-8.000.

Carboni, Salvatore: *See*—
Gamberini, Antonio; Brizzi, Marco; and Carboni, Salvatore, 5,341,911, Cl. 198-409.000.

Cardiac Pacemakers, Inc.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,342,407, Cl. 607-129.000.

Cardiac Pathways Corporation: *See*—
Imran, Mir A., 5,342,295, Cl. 604-43.000.

Cardiopulmonics, Inc.: *See*—
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, J. D.; and Berry, Gaylord, 5,342,693, Cl. 428-447.000.

Cardullo, Richard A.: *See*—
Chick, William L.; Wolf, David E.; and Cardullo, Richard A., 5,342,789, Cl. 436-501.000.

Carespodi, Dennis L., to R. J. Reynolds Tobacco Company. Polymeric die-cuttable lidding materials. 5,342,684, Cl. 428-347.000.

Caretaker Systems, Inc.: *See*—
Barnes, Steven R., 5,341,523, Cl. 4-507.000.

Carl Freudenberg, Firma: *See*—
Dohring, Klaus; Boardman, Tom; and Andrews, Chris, 5,341,772, Cl. 123-184.210.
Gruber, Walter, 5,342,128, Cl. 384-203.000.
Zabeck, Sebastian; and Sausner, Andreas, 5,341,787, Cl. 123-520.000.

Carl Schenck AG: *See*—
Schafer, Karl K.; Melzer, Gerhard M.; Scriba, Jorg; Bhagwat, Suda G.; and Eissea, James, 5,342,566, Cl. 264-102.000.

Carl Zeiss-Stiftung: *See*—
Blaha, Erich; Poxleitner, Martin; and Hanemann, Gerhard, 5,342,351, Cl. 606-4.000.
Kuchel, Michael; and Hof, Albrecht, 5,343,294, Cl. 356-376.000.
Wangler, Johannes, 5,343,489, Cl. 372-93.000.

Carles, Maurice: *See*—
Bardot, Colette; Carles, Maurice; Desplantes, Rene ; and Shrive, Luc, 5,342,521, Cl. 210-490.000.

Carlotta, Michael; and Anderson, David G., to Xerox Corporation. Sheet handling device and method for transporting sheets. 5,342,039, Cl. 271-236.000.

Carmosin, Richard J.: *See*—
Sanfilippo, Pauline J.; Urbanski, Maud; Carson, John R.; and Carmosin, Richard J., 5,342,851, Cl. 514-370.000.

Carney, William V.; and Fasano, Michael, to Porta Systems Corp. Connector strip assembly with ground connection. 5,342,209, Cl. 439-92.000.

Caron, LaVerne A.: *See*—
Smith, G. Fred; Caron, LaVerne A.; and Beverly, James A., 5,342,119, Cl. 303-113.200.

Carpenter, Robert E.: *See*—
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,341,692, Cl. 73-864.630.

Carpenter, Theresa L.; Sipinen, Alan J.; and Bany, Stephen W., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesive closure for disposable diaper. 5,342,339, Cl. 604-385.100.

Carr, Hugh B.: *See*—
Bricmont, Francis H.; and Carr, Hugh B., 5,341,568, Cl. 29-895.320.

Carrier Corporation: *See*—
Beck, Scott A.; Mills, Rex R.; and Waterman, Timothy J., 5,341,796, Cl. 126-110.00R.
Chou, Rudy S.; Larsen, Michael J.; Ramshankar, Rengasamy; Rieke, Larry D.; and Waterman, Timothy J., 5,341,795, Cl. 126-110.00R.
Rust, Raymond A., Jr.; and Amick, Larry D., 5,341,656, Cl. 62-324.600.

Carroll, Chad C.: *See*—
Rowe, C. Daniel; Ashmore, Leslie R.; Carroll, Chad C.; Schwemberger, Richard F.; Schuler, Norman F.; and Collins, John M., 5,342,315, Cl. 604-167.000.

Carsello, Stephen R.: *See*—
Averst, Douglas L; Carsello, Stephen R.; and Glotzbach, Warren P., 5,343,494, Cl. 375-1.000.

Carson, John R.: *See*—
Sanfilippo, Pauline J.; Urbanski, Maud; Carson, John R.; and Carmosin, Richard J., 5,342,851, Cl. 514-370.000.

Carter, Robert L., to Chrysler Corporation. Suspension strut upper mount. 5,342,029, Cl. 267-220.000.

Carter, Thurman B.; and Schnitker, Mark W., to Weatherford U.S., Inc. Method and apparatus for deviated drilling. 5,341,873, Cl. 166-117.500.

Caruso, Andrew J.: *See*—
Stein, Judith; King, Joseph A., Jr.; and Caruso, Andrew J., 5,342,870, Cl. 524-188.000.

Caruthers, Scott, to DAR Products Corporation. Exercise devices. 5,342,268, Cl. 482-108.000.

Casamento, Michael J. Anti-skid and leveling device for ladders. 5,341,899, Cl. 182-205.000.

Casey, Donald J.: *See*—
Jarrett, Peter K.; Casey, Donald J.; and Rosati, Louis, 5,342,395, Cl. 606-219.000.

Casio Computer Co., Ltd.: *See*—
Iizuka, Nobuo, 5,343,451, Cl. 369-32.000.

Cassagnol, Robert, to Hughes Aircraft Company. Address filter for a transparent bridge interconnecting local area networks. 5,343,471, Cl. 370-85.130.

Cassidy, Charles; and Kemp, Paul, to Digital Equipment Corporation. Data formater/converter for use with solid-state disk memory using storage devices with defects. 5,343,426, Cl. 365-189.020.

Castex Products Limited: *See*—
Whitehead, Derek J., 5,342,576, Cl. 420-413.000.

Caterpillar Inc.: *See*—
Tietje, Mark E., 5,341,903, Cl. 188-71.600.

Cates, D. Michael: *See*—
Cockrell, John R., Jr.; La Cosse, Gerald E.; and Cates, D. Michael, 5,342,450, Cl. 134-3.000.

Cathel, Frank; and Leshofs, Robert, to Stratagene Cloning Systems. Electrophoresis system. 5,342,497, Cl. 204-299.00R.

Catheter Imaging Systems: *See*—
Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., 5,342,299, Cl. 604-95.000.

Cathey, David A., to Micron Display Technology, Inc. Low resistance electrodes useful in flat panel displays. 5,342,477, Cl. 156-643.000.

Cavanna S.p.A.: *See*—
Francioni, Renzo, 5,341,913, Cl. 198-418.400.

Cawlfield, David W.; and Mendiratta, Sudhir K., to Olin Corporation. Process for producing chlorine dioxide. 5,342,601, Cl. 423-478.000.

Cawthorne, Chris E.; Portwood, Gary; and Siracki, Michael A., to Smith International, Inc. Ultra hard insert cutters for heel row rotary cone rock bit applications. 5,341,890, Cl. 175-374.000.

Cebula, Dryck J.: *See*—
Cain, Frederick W.; Cebula, Dryck J.; and Hargreaves, Neil G., 5,342,644, Cl. 426-660.000.

Cedars-Sinai Medical Center: *See*—
Stavridi, Marigo; and Grundfest, Warren S., 5,341,805, Cl. 128-633.000.

Celestech, Inc.: *See*—
Cann, Gordon L.; and Shepard, Cecil B., Jr., 5,342,660, Cl. 427-577.000.

Cello Corporation: *See*—
Ruckle, Thomas, 5,342,551, Cl. 252-548.000.

Centre Natinal De La Recherche Scientifique: *See*—
Van De Velde, Jean-Claude; and Constant, Eugene, 5,341,814, Cl. 128-736.000.

Centro Sviluppo Settori Impiego S.r.l.: *See*—
Addeo, Antonio; Vitali, Mario; and Bonari, Roberto, 5,342,463, Cl. 156-156.000.

CeramOptec, Inc.: *See*—
Artjuahenko, Vjacheslav G.; Neuberger, Wolfgang; Nabatov, Alexey O.; and Kuzin, Eugene F., 5,342,022, Cl. 264-1.210.

Ceriani, Lucio: *See*—
Panzeri, Achille; Ceriani, Lucio; Griggi, Pierluigi; and Nesi, Marcella, 5,342,948, Cl. 546-77.000.

Cerwin, Robert; Trew, Cheryl; and Gibbs, Robert J., to Ethicon, Inc. Peelable foil suture packaging. 5,341,922, Cl. 206-63.300.

Cesana, Massimo: *See*—
Rigamonti, Marco; Marciandi, Franco; and Cesana, Massimo, 5,342,683, Cl. 428-331.000.

Chaen, Yoshinobu: *See*—
Sato, Masanori; Goto, Kazuyoshi; Hiyama, Katsuyuki; and Chaen, Yoshinobu, 5,342,104, Cl. 294-74.000.

Chai, Bruce H. T.; and Nicholls, John F. H., to University of Central Florida. $RbNbB_2O_6$ crystal and its nonlinear optical devices. 5,343,327, Cl. 359-330.000.

Chai, Wen L. Vertically disposed water meter. 5,341,686, Cl. 73-861.330.

Chalifoux, Paul R. Dental post and bur construction. 5,342,200, Cl. 433-220.000.

Chalom, Joseph; Griffoul, Christine; Tod, Michel; and Reveilleau, Stephane, to Laboratoires Eurobio. Hydrosoluble coumarin derivatives, their preparation and their use as an enzyme substrate or for the preparation of such substrates. 5,342,970, Cl. 549-288.000.

Champalle, Patrice: *See*—
Green, Anthony; Champalle, Patrice; and Liska, Jean-Louis, 5,342,708, Cl. 429-145.000.

Champlin, Keith S. Method and apparatus for suppressing time-varying signals in batteries undergoing charging or discharging. 5,343,380, Cl. 363-46.000.

Chan, Joseph Y.; Laterza, Larry; Garbis, Dennis; and Einthoven, William G., to G.I. Corporation. Method of growing a semiconductor material by epilaxy. 5,342,805, Cl. 117-89.000.

Chan, Randy S.: *See*—
Abrams, Robert M.; Chan, Randy S.; Burpee, Janet W.; and Teoh, Clifford, 5,341,818, Cl. 128-772.000.

Chan, Yiu K. Method for spatial domain image compression. 5,343,539, Cl. 382-56.000.

Chaney, Raymond J.; and Graham, Jeffrey, to Renishaw Transducer Systems Limited. Apparatus for calibration of an angular displacement. 5,341,702, Cl. 74-821.000.

Chang, Chen-Chi P.; and Li, Mei F., to Hughes Aircraft Company. Split-gate flash EEPROM cell and array with low voltage erasure. 5,343,424, Cl. 365-185.000.

Chang, Chi-Ming, to Giant Manufacturing Co., Ltd. Exercise bicycle. 5,342,263, Cl. 482-62.000.

Chang, Dane: *See*—
Christiansen, Steven H.; Chang, Dane; and Wilson, David A., 5,342,593, Cl. 423-242.600.

Chang, Hsueh-Rong, to General Electric Company. Iodine getter for a high intensity metal halide discharge lamp. 5,343,118, Cl. 313-637.000.

Chang, Kern K. N. Cathode ray tube apparatus with reduced beam spot size. 5,343,113, Cl. 313-414.000.

Chang, Philip L.; Flood, Gary S.; Kirkes, Kent W.; and Smith, Edwin R., to Timecap, Inc. Gold practice apparatus. 5,342,054, Cl. 273-186.100.

Chang, Shih-Pan. Structure of automobile rear-view mirror. 5,343,328, Cl. 359-507.000.

Chang, Tse W., to Tanox Biosystems, Inc. Extracellular segments of human epsilon immunoglobulin anchoring peptides and antibodies specific therefor. 5,342,924, Cl. 530-387.900.

Chang, Wen-Pin: *See*—
Chen, Chan-Ming; Wu, Jia-Ruey; Shieh, Chi-Maw; and Chang, Wen-Pin, 5,343,408, Cl. 364-508.000.

Chapin, Robert E., to Seagate Technology, Inc. Air bearing slider with relieved rail ends. 5,343,343, Cl. 360-103.000.

Chaplin, Dominic; and Tingley, Rosemary, to Alcan International Limited. Flame retardant polymer formulation. 5,342,874, Cl. 524-430.000.

Chapman, Laurel R.: *See*—
Nevitt, James N.; and Chapman, Laurel R., 5,341,649, Cl. 62-126.000.

Chappelie, Norman A., to Neste Resins Corporation. Phenolic resol plywood resin, manufacture and use. 5,342,880, Cl. 524-596.000.

Charles, Harlan W., to General Motors Corporation. Retractable seat. 5,342,111, Cl. 297-232.000.

Charles, Kirk W.: *See*—
Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., 5,342,299, Cl. 604-95.000.

Charles Machine Works, Inc., The: *See*—
Deken, Arthur D.; and Sewell, Cody L., 5,341,887, Cl. 175-62.000.

Charles Stark Draper Laboratories, Inc., The: *See*—
Brennan, Ciaran J., 5,343,421, Cl. 365-145.000.

Charpail, Francois: *See*—
Gris, Joel; and Charpail, Francois, 5,343,158, Cl. 328-103.000.

Chase, Raymond: *See*—
Bachle, Walter W.; and Chase, Raymond, 5,342,096, Cl. 285-23.000.

Chatelet, Bernard: *See*—
Jean, Robert; Chatelet, Bernard; and Jourde, Bernard, 5,341,543, Cl. 19-163.000.

Chavez, David L., Jr.: *See*—
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittmer, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,343,517, Cl. 379-219.000.

Chavez, Johnny, Jr.; Farnum, Andrew S.; Nace, Vaughn M.; Plepys, Raymond A.; Whitmire, Randall K.; Kent, Van A.; Bettge, Paul D.; and Friedli, Hans R., to Dow Chemical Company, The. Purified hydroxy-functional polyether compounds. 5,342,541, Cl. 252-182.270.

Chawki, Mouhammad: *See*—
Auffret, Rene ; Chawki, Mouhammad; and Berthou, Louis, 5,343,315, Cl. 359-152.000.

Cheah, Chun-Foong: *See*—
Johnson, Nick M.; and Cheah, Chun-Foong, 5,343,156, Cl. 324-672.000.

Chemello, Jean-Pierre: *See*—
Paris, Jean; and Chemello, Jean-Pierre, 5,341,584, Cl. 36-117.000.

Chemonics Industries, Inc.: *See*—
Yost, Garnet R., 5,342,163, Cl. 414-607.000.

Chen, Chan-Ming; Wu, Jia-Ruey; Shieh, Chi-Maw; and Chang, Wen-Pin, to Industrial Technology Research Institute. Device for on-line automatic fluid injection balancing system. 5,343,408, Cl. 364-508.000.

Chen, Cheng-Nan. Non-sparking rotatable switch apparatus. 5,343,004, Cl. 200-11.00R.

Chen, Chi-yu R.; and Weber, Paul J., to Rhone-Poulenc AG Company. Aqueous formulations. 5,341,932, Cl. 206-524.700.

Chen, Colin; Oliver, Hoover, Jr.; and Zurfluh, Thomas, to Fel-Pro Incorporated. Beam functioning fire ring. 5,341,779, Cl. 123-193.300.

Chen, Ernest C., to Hughes Aircraft Company. Doppler tracking method for object imaging from radar returns. 5,343,203, Cl. 342-25.000.

Chen, Eugene J. C.: *See*—
Sapp, Steven P.; Wylie, Neil; and Chen, Eugene J. C., 5,342,797, Cl. 437-41.000.

Chen, Feiying: *See*—
Mu, Xiao-Chun; Chin, Kai J.; and Chen, Feiying, 5,343,524, Cl. 380-4.000.

Chen, Ker-Ming; Wang, Tsung-Hsiung; King, Shing-Shing; and Lee, Tzong-Ming, to Industrial Technology Research Institute. Method of wet etching of polyimide. 5,342,736, Cl. 430-323.000.

Chen, Lien-Tai: *See*—
Chen, Wei-Liang; Lee, Dah-Ming; Chen, Lien-Tai; and Yeh, Ming-Tao, 5,342,567, Cl. 264-203.000.

Chen, Terrence: *See*—
Simmons, John F.; and Chen, Terrence, 5,343,446, Cl. 368-251.000.

Chen, Wei-Liang; Lee, Dah-Ming; Chen, Lien-Tai; and Yeh, Ming-Tao, to Industrial Technology Research Institute. Process for producing high tenacity and high modulus polyethylene fibers. 5,342,567, Cl. 264-203.000.

Chen, Wen-Jer: *See*—
Su, Der-Tarng; Chen, Wen-Jer; Wu, Jeng-Yue; and Wu, Ming-Chu, 5,342,717, Cl. 430-55.000.

Chen, Xuan: *See*—
Doi, Kunio; Chen, Xuan; and Katsuragawa, Shigehiko, 5,343,390, Cl. 364-413.160.

Cheng, Chen-Kuang. Tire automatic pneumatic pump device. 5,342,177, Cl. 417-233.000.

Cheng, John B., to Pfizer Inc. Pyrimidone derivatives and analogs in the treatment of asthma or certain skin disorders. 5,342,842, Cl. 514-274.000.

Cheng, Xin: *See*—
Le, Phat; and Cheng, Xin, 5,343,324, Cl. 359-184.000.

Chennakeshu, Sandeep: *See*—
Toy, Raymond L.; Koilpillai, Ravinder D.; and Chennakeshu, Sandeep, 5,343,498, Cl. 375-37.000.

Cherdak, Erik B., to Stern, David; and Thompson, James. Athletic shoe with timing device. 5,343,445, Cl. 368-10.000.

Chern, Jenn-Gang: *See*—
Masumoto, Rodney T.; and Chern, Jenn-Gang, 5,343,167, Cl. 331-2.000.

Cherry Semiconductor Corporation: *See*—
Metro, John G.; and Galipeau, Denis P., 5,343,141, Cl. 323-288.000.

Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See*—
Miner, Philip E.; and Rose, Walter, 5,342,536, Cl. 252-162.000

Chesley, Donald E., to Martin Marietta Corporation. Radar with individually optimized doppler filters. 5,343,208, Cl. 342-196.000.

Chester, Stephen O.: *See*—
Bodford, Carl A.; Chester, Stephen O.; and Nayak, Rahul K., 5,342,469, Cl. 156-244.220.

Chevallet, Jacques; and Bene, Bernard, to Hospal Industrie. Method for the calibration of a pair of sensors placed in a dialysis circuit. 5,342,527, Cl. 210-646.000.

Chick, William L.; Wolf, David E.; and Cardullo, Richard A., to Sensor Technologies, Inc. Method and device for detecting and quantifying glucose in body fluids. 5,342,789, Cl. 436-501.000.

Chicony Electronics Co., Ltd.: *See*—
Hsu, Kun T., 5,341,934, Cl. 206-591.000.

Chih, Ming-Niu; and Johnston, Michael H., to Ford Motor Company. Bottom mount fuel tank module for an automobile. 5,341,842, Cl. 137-574.000.

Childers, Steven R.: *See*—
Davies, Huw M. L.; Saikali, Elie; and Childers, Steven R., 5,342,949, Cl. 546-124.000.

Chin, Dae-Je: *See*—
Choi, Yun-Ho; Chin, Dae-Je; Haq, Ejaz U.; and Cho, Soo-In, 5,343,438, Cl. 365-233.000.

Chin, Kai J.: *See*—
Mu, Xiao-Chun; Chin, Kai J.; and Chen, Feiying, 5,343,524, Cl. 380-4.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Chiron Corporation: *See—*
Cousens, Lawrence S.; Tekamp-Olson, Patricia A.; Shuster, Jeffrey R.; and Merryweather, James P., 5,342,921, Cl. 530-324.000.
Chirovsky, Leo M. F.; and Lentine, Anthony L., to AT&T Bell Laboratories. Diode-clamped optical receiver. 5,343,032, Cl. 250-208.200.
Chisso Corporation: *See—*
Katou, Kouichi; Maeda, Hirotoshi; and Kunimune, Kouichi, 5,342,739, Cl. 430-325.000.
Yamasaki, Nobuyuki, 5,342,770, Cl. 435-178.000.
Chisum, Finis L. Apparatus to gather, display, and/or print vehicle chassis measurement data for accurate repair of collision damaged vehicles. 5,341,575, Cl. 33-608.000.
Cho, Soo-In: *See—*
Choi, Yun-Ho; Chin, Dae-Je; Haq, Ejaz U.; and Cho, Soo-In, 5,343,438, Cl. 365-233.000.
Choi, Yun-Ho; Chin, Dae-Je; Haq, Ejaz U.; and Cho, Soo-In, to Samsung Electronics Co., Ltd. Semiconductor memory device having a plurality of row address strobe signals. 5,343,438, Cl. 365-233.000.
Chokai, Shoichi; Aoki, Tomiyoshi; and Ukai, Yojiro, to Nippon Shinyaku Company Limited. Indole derivatives and drugs. 5,342,845, Cl. 514-305.000.
Chomez, Patrick: *See—*
Boon, Thierry; van der Bruggen, Pierre; Van den Eynde, Benoit; Van Pel, Aline; De Plaen, Etienne; Lurquin, Christophe; Chomez, Patrick; and Traversari, Catia, 5,342,774, Cl. 435-240.200.
Chopra, Sham K.; Nangia, Avinash K.; Lee, David; and Molloy, Thomas P., to Glaxo Canada Inc. Controlled release device. 5,342,627, Cl. 424-473.000.
Chou, Rudy S.; Larsen, Michael J.; Ramshankar, Rengasamy; Rieke, Larry D.; and Waterman, Timothy J., to Carrier Corporation. Inducer for condensing furnace. 5,341,795, Cl. 126-110.00R.
Chowhan, Masood, to Alcon Laboratories, Inc. Use of borate-polyol complexes in ophthalmic compositions. 5,342,620, Cl. 424-422.000.
Christian, Robert E.: *See—*
Lemon, J. Robert; Evans, William T.; and Christian, Robert E., 5,342,284, Cl. 601-141.000.
Christiansen, Steven H.; Chang, Dane; and Wilson, David A., to Dow Chemical Company, The. Process for absorption of sulfur compounds from fluids. 5,342,593, Cl. 423-242.600.
Christie, C. Dale, to Amsted Industries Incorporated. Railroad brake shoe. 5,341,904, Cl. 188-251.00R.
Christophel, Bernard G.; Dautremont, Jean M.; Fert, Pierre H.; and Harmegnies, Guy R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Tool system for an annular sheet metal part. 5,341,665, Cl. 72-166.000.
Chrysler Corporation: *See—*
Carter, Robert L., 5,342,029, Cl. 267-220.000.
Chung, Daniel K.; and Warrick, Steven B., to Nalco Canada, Inc. Liquid suspension of polyethylene oxide for use in treating paper and pulp wastewater. 5,342,538, Cl. 252-180.000.
Church & Dwight Co., Inc.: *See—*
Jones, Keith A., 5,342,630, Cl. 424-717.000.
Churyo Engineering Kabushiki Kaisha: *See—*
Katou, Naoyoshi; Tamiya, Seiki; and Takahara, Masateru, 5,341,620, Cl. 53-287.000.
Ciba-Geigy Corp.: *See—*
Baschang, Gerhard; and Hartmann, Albert, 5,342,977, Cl. 554-48.000.
Ernst, Beat; Heneghan, Michael; and Hafner, Andreas, 5,342,929, Cl. 536-18.600.
Kuhlmeyer, Rainer; Topfl, Werner; and Fory, Werner, 5,342,823, Cl. 504-215.000.
Ryan, Glen R.; Allen, Steven A.; and Taylor, David A., 5,342,867, Cl. 524-101.000.
Wolleb, Heinz; Hafner, Andreas; and Rolfe, William M., 5,342,903, Cl. 525-407.000.
Wooden, Gary; de Weck, Guy; and Wallquist, Olof, 5,342,955, Cl. 548-255.000.
Cidon, Israel; Doney, Richard M.; Drake, John E., Jr.; Hervatic, Elizabeth A.; Potter, Kenneth H., Jr.; and Tedijanto, Theodore E., to International Business Machines Corporation. Method of determining whether to use preempt/resume or alternate protocol for data transmission. 5,343,473, Cl. 370-85.600.
Cincinnati Milacron Inc.: *See—*
McCalmont, Paul E.; Curless, Richard A.; and Loretta, Miles E., Jr., 5,342,017, Cl. 248-632.000.
Cipolla, Thoas M.; Coteus, Paul W.; Damianakis, Ioannis; Johnson, Glen W.; Ledermann, Peter G.; Matthew, Linda C.; and Mok, Lawrence S., to International Business Machines Corporation. Packages for stacked integrated circuit chip cubes. 5,343,366, Cl. 361-785.000.
Circuit Breaker Industries Limited: *See—*
Bagalini, Dante, 5,343,178, Cl. 335-59.000.
Citizen Watch Co., Ltd.: *See—*
Naito, Tomijiro; Sato, Yumiko; Yukinari, Toshiro; Shibata, Toshihiro; Kimura, Masaki; and Shinada, Yukari, 5,342,544, Cl. 252-299.600.
Sato, Hisato; Naito, Tomijiro; and Tuji, Yasunobu, 5,342,546, Cl. 252-299.600.
CKD Trakce A.S.: *See—*
Schorm, Josef; Zych, Otakar; and Deutschmann, Gottfried, 5,341,561, Cl. 29-596.000.
Clare, Jean, executor: *See—*
Wolf, Peter A.; Clare, Kenneth, deceased; and Kuo, Kun P., 5,342,643, Cl. 426-590.000.
Clare, Kenneth, deceased: *See—*
Wolf, Peter A.; Clare, Kenneth, deceased; and Kuo, Kun P., 5,342,643, Cl. 426-590.000.
Clark, Andrew R.; and Hart, John L., to Fisons plc. Medicament inhalation device and formulation. 5,341,800, Cl. 128-203.150.
Clark, Bennett: *See—*
Jenneman, Gary E.; and Clark, Bennett, 5,341,875, Cl. 166-246.000.
Clark, Mark D., to Eastman Chemical Company. Blends of polyesters and alkylhydroxy (meth)acrylate compounds. 5,342,877, Cl. 524-513.000.
Clarke, Iain J.: *See—*
Williams, Alan H.; Staples, Linton D.; Thiel, William J.; Oppenheim, Richard C.; and Clarke, Iain J., 5,342,622, Cl. 424-425.000.
Claude, John P.: *See—*
Michaels, Mary B.; Robinson, Janine C.; Claude, John P.; and Alden, Donald L., 5,342,298, Cl. 604-65.000.
Claus, Michel: *See—*
Merigaud, Bernard; and Claus, Michel, 5,342,810, Cl. 501-26.000.
Clayton, R. Dallas: *See—*
Grenci, Charles A.; and Clayton, R. Dallas, 5,341,567, Cl. 29-890.141.
Claywell, Harry M. Intravenous needle anchors. 5,342,317, Cl. 604-179.000.
Clements Industries: *See—*
Iwai, Yoshio; Takahashi, Kazuyuki; Hirota, Takeshi; Abe, Tomoji; and Imanishi, Isao, 5,342,687, Cl. 428-402.000.
Clendenin, Harry B.: *See—*
Comparin, Robert J.; Clendenin, Harry B.; Logan, Kent E.; Bass, Mark; Fairbanks, Steven C.; and Caillat, Jean-Luc, 5,342,184, Cl. 418-55.200.
Clifton, Robert D.: *See—*
Cowles, Christopher S.; Leveille, Jacques P.; Hatchell, Paul J.; Mireles, Jesus A.; and Clifton, Robert D., 5,343,001, Cl. 181-102.000.
Clinnin, David D.; Lewarchik, Ronald J.; and Sunderman, Dexter F., to Morton International, Inc. Clear hydrophilic coating for heat exchanger fins. 5,342,871, Cl. 524-238.000.
Close, Darrell R. Movable surface paving apparatus and method for using the same. 5,342,141, Cl. 404-28.000.
Clough, John M.; Godfrey, Christopher R. A.; de Fraine, Paul J.; and Matthews, Ian R., to Imperial Chemical Industries PLC. Fungicides dizinyl oxime ethers. 5,342,837, Cl. 514-247.000.
CMI Corporation: *See—*
Swisher, George W., Jr., 5,342,124, Cl. 366-66.000.
Cockrell, John R., Jr.; La Cosse, Gerald E.; and Cates, D. Michael, to Kay Chemical Company. Use of noncorrosive chemical composition for the removal of soils originating from an animal or vegetable source from a stainless steel surface. 5,342,450, Cl. 134-3.000.
Cocoma, John P.: *See—*
Farrall, George A.; Cocoma, John P.; Borowiec, Joseph C.; and Pashley, Robert F., 5,343,126, Cl. 315-248.000.
Codatto, Antonio, to Sapim Amada S.p.A. Device for handling the blades of a press for bending sheets. 5,341,666, Cl. 72-323.000.
Coffey, Wayne R.: *See—*
Mueller, Wayne E.; and Coffey, Wayne R., 5,341,901, Cl. 184-6.120.
Cofone, Mark A.; and Bendel, Lee P., to Ethicon, Inc. Endoscopic surgical pouch. 5,341,815, Cl. 128-749.000.
Cohen, Adam F., to Wellcome Foundation Limited, The. Method of administering tissue plasminogen activator. 5,342,616, Cl. 424-94.640.
Cohen, Albert D. System for producing surfing waves for tube riding or wind surfing. 5,342,145, Cl. 405-79.000.
Cohen, Brian E.; Greenberg, William M.; Pagryzinski, William V.; and Smith, Brian E., to Libbey-Owens-Ford Co. Optical evaluation of automotive glass. 5,343,288, Cl. 356-239.000.
Cohen, Robert A., to Dignity Wear, Ltd. Medical examination garment. 5,341,515, Cl. 2-400.000.
Colbow, Konrad: *See—*
Miremadi, Bijan K.; Singh, Ravi C.; Morrison, Stanley R.; and Colbow, Konrad, 5,342,701, Cl. 428-701.000.
Coldren, Larry A.: *See—*
Scott, Jeffery W.; and Coldren, Larry A., 5,343,487, Cl. 372-46.000.
Coldrick, Philip J.; and Pich, Julia, to Eastman Kodak Company. Photographic high contrast silver halide materials. 5,342,732, Cl. 430-264.000.
Cole, Katharine H.; Lechner, John F.; and Harris, Curtis C., to United States of America, Health and Human Services. Cell culture medium for human liver epithelial cell line. 5,342,777, Cl. 435-240.310.
Cole, Phill D.; and Southworth, David E., to International Business Machines Corp. Detented frame door assembly. 5,342,123, Cl. 312-319.200.
Colgate-Palmolive Company: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,341,537, Cl. 15-167.100.
Collin, Olivier: *See—*
Collobert, Daniel; and Collin, Olivier, 5,343,198, Cl. 341-159.000.
Collins, Gregory J.: *See—*
Miller, Douglas R.; Wiener, Timothy J.; and Collins, Gregory J., 5,342,070, Cl. 280-11.220.
Collins, John M.: *See—*
Rowe, C. Daniel; Ashmore, Leslie R.; Carroll, Chad C.; Schwemberger, Richard F.; Schuler, Norman F.; and Collins, John M., 5,342,315, Cl. 604-167.000.
Collobert, Daniel; and Collin, Olivier, to France Telecom. Neuron analog-to-digital converter. 5,343,198, Cl. 341-159.000.

Colon, Luis A.: *See—*
Dadoo, Rajeev; Zare, Richard N.; and Colon, Luis A., 5,342,492, Cl. 204-180.100.
Colorado Seminary: *See—*
Johnson, James H., 5,343,043, Cl. 250-338.500.
Columbia University in the City of New York, The Trustees of: *See—*
Still, W. Clark; Simon, Julian A.; and Hong, Jong-In, 5,342,934, Cl. 540-456.000.
Combustion Engineering, Inc.: *See—*
Hatfield, Stephen C., 5,343,508, Cl. 376-449.000.
Comerci, Joseph D.; Data, MArk M.; and DeRoss, Robert, to Molex Incorporated. Protective cover system for electrical receptacles. 5,342,995, Cl. 174-67.000.
Commins, Alfred D.: *See—*
Dunagan, Brian D.; and Commins, Alfred D., 5,341,619, Cl. 52-702.000.
Commissariat a l'Energie Atomique: *See—*
Bardot, Colette; Carles, Maurice; Desplantes, Rene ; and Shrive, Luc, 5,342,521, Cl. 210-490.000.
Guyot, Jean; and Pochon, Etienne, 5,343,488, Cl. 372-69.000.
Compagnie Generale Des Establissements Michelin-Michelin & Cie: *See—*
Arnaud, Jean-Claude; and Prudence, Bernard P., 5,342,700, Cl. 428-625.000.
Compania Kelmas S.A.: *See—*
Mulieri, Norberto M., 5,343,120, Cl. 315-58.000.
Comparin, Robert J.; Clendenin, Harry B.; Logan, Kent E.; Bass, Mark; Fairbanks, Steven C.; and Caillat, Jean-Luc, to Copeland Corporation. Scroll machine sound attenuation. 5,342,184, Cl. 418-55.200.
Conger, Robert R.: *See—*
Dorrough, Michael L.; and Conger, Robert R., 5,343,534, Cl. 381-123.000.
Conley, Walter, III: *See—*
Wellman, Timothy A.; Dammeyer, Ned E.; and Conley, Walter, III, 5,343,145, Cl. 324-202.000.
Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno: *See—*
Frisina, Ferruccio; and Ferla, Giuseppe, 5,343,068, Cl. 257-578.000.
Constant, Eugene: *See—*
Van De Velde, Jean-Claude; and Constant, Eugene, 5,341,814, Cl. 128-736.000.
Constitutional Corporation of the State of Michigan: *See—*
Montoya, Jean P.; Merz, Scott I.; and Bartlett, Robert H., 5,342,182, Cl. 417-477.00R.
Conville, John J.; Lyon, James T.; and Turcotte, David E., to BASF Corporation. Rapid cooling system cleaning formulations. 5,342,537, Cl. 252-174.240.
Conviser, Stephen A.; and Woltz, Claude C, Jr., to AlliedSignal Inc. Sterilant mixture. 5,342,579, Cl. 514-475.000.
Cook, Alexander: *See—*
Kirchberg, Maurice A.; and Cook, Alexander, 5,343,379, Cl. 363-41.000.
Cook, Graham M.: *See—*
Alford, Sidney; and Cook, Graham M., 5,341,742, Cl. 102-202.800.
Cook Incorporated: *See—*
Welter, Lawrence H.; Downey, Scott D.; and Hall, Todd A., 5,342,371, Cl. 606-113.000.
Cook, James K.: *See—*
Morris, Clarence H.; and Cook, James K., 5,342,543, Cl. 252-190.000.
Cook, John O.; and Peterson, Ray D., to Reynolds Metals Company. Separation of free lead from aluminum beverage cans. 5,342,428, Cl. 75-401.000.
Cook, Melvin S. Staples. 5,342,396, Cl. 606-219.000.
Cooper Equipment Company: *See—*
Cooper, George A., 5,342,146, Cl. 405-128.000.
Cooper, Gary F.; and McCarthy, Keith E., to Syntex (U.S.A.) Inc. N-2-chlorobenzyl-2-oxo and N-2-chlorobenzyl-2,2-dioxo-1,2,3-oxathiazolidine derivatives, their preparation and synthesis of thieno[3,2-c]pyridine derivatives therefrom. 5,342,953, Cl. 548-122.000.
Cooper, George A., to Cooper Equipment Company. Method and apparatus for treatment of contaminated soil particles. 5,342,146, Cl. 405-128.000.
Cooper, Ira J.: *See—*
Klein, Walter F.; Cooper, Ira J.; and Cooper, Leon M., 5,341,513, Cl. 2-9.000.
Cooper, Jeffrey A., to Thompson Consumer Electronics, Inc. Variable length codeword decoding apparatus. 5,343,195, Cl. 341-67.000.
Cooper, Leon M.: *See—*
Klein, Walter F.; Cooper, Ira J.; and Cooper, Leon M., 5,341,513, Cl. 2-9.000.
Cooper, Terry C.: *See—*
Dausch, Mark E.; Whipple, Walter, III; Cooper, Terry C.; and Schneider, David A., 5,341,661, Cl. 68-207.000.
Cooperstein, Joseph L., to Alfa Laval Separation Inc. Decanter centrifuge having dual motor drive. 5,342,279, Cl. 494-9.000.
Copal Co. Ltd: *See—*
Katoh, Hiroaki; Miyazaki, Toshimasa; Takahashi, Tamotsu; Ishii, Takeshi; Oyama, Yoshihiro; Oyama, Yoshihiro; and Sasaki, Tatsuo, 5,343,029, Cl. 235-467.000.
Copeland Corporation: *See—*
Anderson, Gary J., 5,342,185, Cl. 418-55.400.
Comparin, Robert J.; Clendenin, Harry B.; Logan, Kent E.; Bass, Mark; Fairbanks, Steven C.; and Caillat, Jean-Luc, 5,342,184, Cl. 418-55.200.
Hewette, Chip; and Bukac, Hubert, 5,341,654, Cl. 62-296.000.
Rafalovich, Alexander P.; Bass, Mark; and Caillat, Jean-Luc, 5,342,183, Cl. 418-15.000.
Cor Therapeutics, Inc.: *See—*
Scarborough, Robert M., 5,342,830, Cl. 514-12.000.
Corain, Luciano; Maitan, Gianni; and Bortoli, Giulio, to Nuovopignone Industrie Meccaniche e Fonderia SpA. Taker gripper for loom use. 5,341,852, Cl. 139-448.000.
Corcoran, John; Hower, Joseph W.; and Moseley, William A., to Manhole Adjusting Contractors Inc. System and method for controlling emissions created by spraying liquids from moving vehicles. 5,342,143, Cl. 404-72.000.
Cordia, Joseph R.; Dalrymple, Bruce H.; Hennig, William G.; McReady, Robert W.; and Metraw, John J., to Kliklok Corporation. Article phasing, transfer and squaring system for packaging line. 5,341,915, Cl. 198-460.000.
Cordis Corporation: *See—*
Shonk, Robert S., 5,342,305, Cl. 604-101.000.
Trotta, Thomas, 5,342,386, Cl. 606-194.000.
Viera, Fernando M., 5,341,817, Cl. 128-772.000.
Corey, Thomas J. Method of fabricating a five-piece expanding pocket. 5,342,467, Cl. 156-227.000.
Cormaci, Alice M., to Procter & Gamble Company, The. Making dry coffee aroma gas with improved aroma characteristics. 5,342,639, Cl. 426-386.000.
Corning Incorporated: *See—*
Adler, Meryle D.; and Shafer, Harold G., Jr., 5,342,067, Cl. 279-3.000.
Dumbaugh, William H., Jr., 5,342,426, Cl. 65-23.000.
Henry, David; Vachet, Andre J.; and Vial, Jacques J., 5,343,260, Cl. 351-159.000.
Mack, Alfred N.; and Tobey, Stephen L., 5,341,668, Cl. 72-379.400.
Corrosion Engineering, Inc.: *See—*
Aitchison, David J.; and Dunn, Donald C., 5,341,939, Cl. 209-319.000.
Cory, David G.; and Sprenger, Peter, to Bruker Instruments, Inc. Method for automatically shimming a high resolution NMR magnet. 5,343,151, Cl. 324-320.000.
Costa, Peter, to Taphorn, Joseph B., a part interest. Cavity putter. 5,342,052, Cl. 273-167.00H.
Coteus, Paul W.: *See—*
Cipolla, Thoas M.; Coteus, Paul W.; Damianakis, Ioannis; Johnson, Glen W.; Ledermann, Peter G.; Matthew, Linda C.; and Mok, Lawrence S., 5,343,366, Cl. 361-785.000.
Coudray, Xavier G. A.; Derrien, Mischael F. L.; and Pichon, Philippe M. P., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA". Cooled turbo-machine vane. 5,342,172, Cl. 416-97.00R.
Coulter Corporation: *See—*
Maples, John A.; Raynor, Robert H.; Siiman, Olavi; Stiglitz, Melissa J.; and Healy, Stephen F., Jr., 5,342,754, Cl. 435-2.000.
Counts, May C.; and Zimmerman, Harry, Jr., to Anco Collector Supplies, Inc.; and Zim's Bagging Company, Inc. Package having separable overlay. 5,341,930, Cl. 206-459.500.
Cousens, Lawrence S.; Tekamp-Olson, Patricia A.; Shuster, Jeffrey R.; and Merryweather, James P., to Chiron Corporation. Superoxide dismutase fusion polypeptides for expression of mammalian proteins. 5,342,921, Cl. 530-324.000.
Covert, William J. Article transfer device. 5,341,918, Cl. 198-659.000.
Cowles, Christopher S.; Leveille, Jacques P.; Hatchell, Paul J.; Mireles, Jesus A.; and Clifton, Robert D., to Shell Oil Company. Acoustic multi-mode logging device adapted to decouple noise within a semi-rigid receiver array. 5,343,001, Cl. 181-102.000.
Cox, Charles E. Replacement vehicle window attachment. 5,341,599, Cl. 49-375.000.
Coyner, Vincent E. Golf grip heater for golf bag. 5,341,927, Cl. 206-315.300.
CPC International Inc.: *See—*
Gaeta, Stephen A., 5,341,948, Cl. 215-232.000.
Craun, Gary P.; and Bode, Daniel, to Glidden Company, The. Low VOC, high molecular weight epoxy emulsion coatings. 5,342,864, Cl. 523-403.000.
Crawford, John C.: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,341,537, Cl. 15-167.100.
Crawford, Michael J.: *See—*
Roeser, Thomas; and Crawford, Michael J., 5,343,007, Cl. 200-296.000.
Crawford, Richard L.; Kunselman, Garry C.; Angelucci, Albert; Fitz-Patrick, Bruce C.; and Ferreira, Richard S., to Thermo Jarrell Ash Corporation. Spectrometer assembly with post disperser assembly. 5,343,289, Cl. 356-328.000.
Cray Research, Inc.: *See—*
Morton, David M.; and Bowen, Stephen A., 5,343,359, Cl. 361-707.000.
Creasy, Kenneth E.: *See—*
Capuano, Italo A.; and Creasy, Kenneth E., 5,342,786, Cl. 436-103.000.
Creaven, Patrick J.; Hori, Kazuyoshi; and Ishimaru, Hiroshi, to Health Research Inc. Pharmaceutical compositions and use thereof in the treatment of psoriasis. 5,342,613, Cl. 424-85.100.
Creelman, Kevin; and Jacobs, Terry G. Mogol skiing simulating exercise apparatus with variable resistance. 5,342,265, Cl. 482-71.000.
Crewe, Timothy R.: *See—*
Graef, Harry T.; Blackford, Damon J.; and Crewe, Timothy R., 5,342,165, Cl. 414-788.900.

VOL 1165 ISS 5 AG 30 1994 UMI

Crews, Gary A.: *See*—
Brook, Robert A.; Crews, Gary A.; and Perrell, Susan M., 5,341,670, Cl. 73-40.50A.
Crichton, Ian J. Starting block. 5,342,259, Cl. 482-19.000.
Cronin, David V.; and Brozyna, Louis J., to Polaroid Corporation. Microbench. 5,343,546, Cl. 385-52.000.
Crookham, Joe P.: *See*—
Gordin, Myron K.; and Crookham, Joe P., 5,343,374, Cl. 362-153.100.
Croquevielle, Raul J., to Inmed Ltda. Portable disposable device for post-surgical suction. 5,342,329, Cl. 604-319.000.
Crosfield Electronics Limited: *See*—
Veasy, Julian F.; and Freeman, Stephen, 5,343,220, Cl. 345-199.000.
Crosman Corporation: *See*—
Ebert, Gary F., 5,341,790, Cl. 124-69.000.
Cross, Dan A., to Boeing Company, The. Pin hub for wire reel. 5,341,998, Cl. 242-47.000.
Cross, Elisa M.: *See*—
Boyd, Gary T.; Lee, Tzu-Chen; Sventek, Bruce A.; Cross, Elisa M.; and Weller-Brophy, Laura A., 5,343,544, Cl. 385-46.000.
Crown Equipment Corporation: *See*—
Wellman, Timothy A.; Dammeyer, Ned E.; and Conley, Walter, III, 5,343,145, Cl. 324-202.000.
Cruickshank, Donald: *See*—
Callele, David; and Cruickshank, Donald, 5,343,516, Cl. 379-98.000.
Cryopharm Corporation: *See*—
Platz, Matthew S.; Goodrich, Raymond P., Jr.; and Wong, Victoria A., 5,342,752, Cl. 435-2.000.
Cullan, George E.: *See*—
Norelli, Robert A.; Jelinek, Edward H.; and Cullan, George E., 5,342,385, Cl. 606-193.000.
Cully, Jan; and Vollbrecht, Heinz-Rudiger, to SKW Trostberg Aktiengesellschaft. Process for the production of egg yolk with reduced cholesterol content. 5,342,633, Cl. 426-47.000.
Cummins Power Generation, Inc.: *See*—
Slone, Ralph J., 5,342,599, Cl. 423-365.000.
Cuneo, Giuseppe; and Bonacina, Sergio, to Black & Decker Inc. Workcenter and supports. 5,341,751, Cl. 108-143.000.
Curless, Richard A.: *See*—
McCalmont, Paul E.; Curless, Richard A.; and Loretta, Miles E., Jr., 5,342,017, Cl. 248-632.000.
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., to Colgate-Palmolive Company. Plaque removing toothbrush. 5,341,537, Cl. 15-167.100.
Cusenza, Vincent P. Sanitary flexible toilet seat handle. 5,341,519, Cl. 4-246.100.
Cutright, Edwin L.; Scott, G. Robert; and Vogt, Howard W., to Philip Morris Incorporated. Method and apparatus for making banded smoking article wrappers. 5,342,484, Cl. 162-139.000.
Cyrus, Judith: *See*—
Powers, Daniel J.; Cyrus, Judith; Kootstra, Steve; Burkhalter, Art; Bledsoe, J. Daren; Shultheis, David C.; and Jordan, Dan, 5,342,403, Cl. 607-5.000.
CYTEC Technology Corp.: *See*—
Panzer, Hans P.; and Giovanni, Lino, 5,342,552, Cl. 252-582.000.
D & H Heat Technology: *See*—
Daly, Howard J., III, 5,342,650, Cl. 427-178.000.
D&R Recyclers, Inc.: *See*—
Rutherford, Darrel, Sr., 5,341,996, Cl. 241-69.000.
Dadoo, Rajeev; Zare, Richard N.; and Colon, Luis A., to Leland Stanford Junior University, The Board of Trustees of the. System for electrokinetic separation and detection where detection is performed at other than separation electric field. 5,342,492, Cl. 204-180.100.
Dadourian, Arpag, to Ultimatte Corporation. Method and apparatus for compositing video images. 5,343,252, Cl. 348-586.000.
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., to Cardiac Pacemakers, Inc. Body implantable defibrillation system. 5,342,407, Cl. 607-129.000.
Dai, Masahiro: *See*—
Itoh, Junichi; Dai, Masahiro; and Watanabe, Yoji, 5,343,264, Cl. 354-106.000.
Dai Nippon Printing Co., Ltd.: *See*—
Takiguchi, Ryohei; Saito, Hitoshi; Torii, Masanori; and hasegawa, Jun, 5,342,819, Cl. 503-227.000.
DAI Nippon Toryo Co., Ltd.: *See*—
Furuya, Akio; Tsuji, Toshimoto; and Sato, Takayuki, 5,341,562, Cl. 29-825.000.
Dai, Pei-Shing E.; Campbell, Charles N., II; Martin, Bobby R.; and Sherwood, David E., Jr., to Texaco Inc. Mild hydrocracking process employing catalysts containing dealuminated y-zeolites. 5,342,507, Cl. 208-111.000.
Daido Tokushuko Kabushiki Kaisha: *See*—
Kasai, Yasuaki; Yamada, Hiyoshi; and Yoshikawa, Norio, 5,342,574, Cl. 419-61.000.
Daikin Industries, Ltd.: *See*—
Tani, Nobuyuki; and Yamaguchi, Tenzo, 5,341,722, Cl. 91-43.000.
Daikuzono, Norio, to S.L.T. Japan Co., Ltd. Apparatus for operation by laser energy. 5,342,358, Cl. 606-45.000.
Dailey, Robert M., to Dailey Sports, Inc. Slalom ski trainer. 5,342,266, Cl. 482-71.000.
Dailey Sports, Inc.: *See*—
Dailey, Robert M., 5,342,266, Cl. 482-71.000.
Dale, Thomas E. Jacket extender to enlargen the circumference of a jacket. 5,341,514, Cl. 2-96.000.
Daley, Michael J.; Steber, William D.; Furda, Gary J.; Johnston, Paul A.; and Oldham, Elizabeth R., to American Cyanamid Company. Compositions for the treatment of mammalian diseases. 5,342,612, Cl. 424-85.100.
Dalla-Serra, Lionel: *See*—
Roussel, Herve; Hermant, Jean-Jacques; and Dalla-Serra, Lionel, 5,342,640, Cl. 426-479.000.
Dalrymple, Bruce H.: *See*—
Cordia, Joseph R.; Dalrymple, Bruce H.; Hennig, William G.; McReady, Robert W.; and Metraw, John J., 5,341,915, Cl. 198-460.000.
Daly, Howard J., III, to D & H Heat Technology. Heat resistant silicate coated fabrics for insulating driver against high heat sources. 5,342,650, Cl. 427-178.000.
Dambly, Ben: *See*—
Marozzi, John; Rochon, Greg; Patel, Urmil; and Dambly, Ben, 5,341,737, Cl. 101-216.000.
Damianakis, Ioannis: *See*—
Cipolla, Thoas M.; Coteus, Paul W.; Damianakis, Ioannis; Johnson, Glen W.; Ledermann, Peter G.; Matthew, Linda C.; and Mok, Lawrence S., 5,343,366, Cl. 361-785.000.
Damico, Gwen: *See*—
Djerf, Tobin; and Damico, Gwen, 5,341,935, Cl. 209-3.000.
Dammel, Ralph: *See*—
Vicari, Richard; Gordon, Douglas J.; Hinsberg, William D.; McKean, Dennis R.; Willson, Carlton G.; and Dammel, Ralph, 5,342,727, Cl. 430-157.000.
Dammeyer, Ned E.: *See*—
Wellman, Timothy A.; Dammeyer, Ned E.; and Conley, Walter, III, 5,343,145, Cl. 324-202.000.
Daniel, Ed: *See*—
Bowman, Jane; Daniel, Ed; Henn, Bob; Levy, Jennifer; and Vakharia, Neville, 5,342,673, Cl. 428-198.000.
Danjo, Kenzo: *See*—
Karino, Kunio; Fujiyoshi, Toshikazu; Danjo, Kenzo; Kinoshita, Atsushi; and Moriguchi, Haruo, 5,343,017, Cl. 219-130.400.
Dannert, Horst: *See*—
Beneking, Claus; Dannert, Horst; Neiger, Manfred; Schorpp, Volker; and Stockwald, Klaus, 5,343,114, Cl. 313-485.000.
Dant Corporation: *See*—
Merrick, Bruce C., 5,342,110, Cl. 297-232.000.
D'Antuono, Joseph, III: *See*—
Mohan, Arthur G.; and D'Antuono, Joseph, III, 5,342,944, Cl. 544-284.000.
Daoud, Adib G., to IVAC Corporation. Pump mechanism having a drive motor with an external rotor. 5,342,180, Cl. 417-412.000.
DAR Products Corporation: *See*—
Caruthers, Scott, 5,342,268, Cl. 482-108.000.
D'Arcy, John W. Band saw column assembly. 5,341,712, Cl. 83-808.000.
Dardel, Eric, to Sulzer Medizinaltechnik AG. Sterile puncturing device for blood vessels with a non-sterile ultrasound probe, and apparatus for preparing the device. 5,341,810, Cl. 128-662.050.
Darnell, W. Ronald; and Jackson, W. J., Jr., to Eastman Chemical Company. Poly(ester-ether) compositions having increased thermal stability. 5,342,902, Cl. 525-437.000.
Das, Suryya K.; and Kilic, Soner, to PPG Industries, Inc. Base neutralized, stable, aqueous dispersion of a hydroxyl functional acrylic polymer and coating compositions prepared therefrom. 5,342,878, Cl. 524-558.000.
Data General Corp.: *See*—
Driscoll, Edward K.; Nigro, Arthur R.; and Fillio, Thomas D., 5,343,357, Cl. 361-685.000.
Data, MArk M.: *See*—
Comerci, Joseph D.; Data, MArk M.; and DeRoss, Robert, 5,342,995, Cl. 174-67.000.
Data Medical Associates, Inc.: *See*—
Morris, Clarence H.; and Cook, James K., 5,342,543, Cl. 252-190.000.
Dataproducts Corporation: *See*—
Niedermeyeyr, John F.; Maltsev, Viacheslav B.; and Rogers, Robert L., 5,343,226, Cl. 347-85.000.
Datascope Investment Corp.: *See*—
Schock, Robert B.; and Leschinsky, Boris, 5,342,181, Cl. 417-476.000.
Daubenmier, John A.: *See*—
Palansky, Bruce J.; Greene, Thomas L.; Daubenmier, John A.; Smith, Paul F.; Kock, Karl H.; Bird, Stuart L.; and McCall, Gavin F., 5,341,703, Cl. 477-65.000.
Dausch, Mark E.; Whipple, Walter, III; Cooper, Terry C.; and Schneider, David A., to General Electric Company. Sensor holder having a container with a projection for collecting fluid samples in a machine for cleansing articles. 5,341,661, Cl. 68-207.000.
Dautremont, Jean M.: *See*—
Christophel, Bernard G.; Dautremont, Jean M.; Fert, Pierre H.; and Harmegnies, Guy R., 5,341,665, Cl. 72-166.000.
Davenport, John M.; Hansler, Richard L.; and King, Kenneth S., to General Electric Company. Projection headlamp system having direct optical coupling of light distribution elements with discharge arc light source. 5,343,367, Cl. 362-32.000.
Davenport, Roger A., to Motorola, Inc. Mechanically tuned SAW device and method of tuning same. 5,343,175, Cl. 333-193.000.
Davey, Ernest, Jr.: *See*—
Wyner, Elliot; White, Robert; Makhlis, Semyon; and Davey, Ernest, Jr., 5,343,117, Cl. 313-623.000.
David Sarnoff Research Center Inc.: *See*—
Avery, Leslie R., 5,343,053, Cl. 257-173.000.

Davidovics, Michel: *See*—
Davidovits, Joseph; Davidovics, Michel; and Davidovits, Nicolas, 5,342,595, Cl. 423-328.100.
Davidovits, Joseph; Davidovics, Michel; and Davidovits, Nicolas. Process for obtaining a geopolymeric alumino-silicate and products thus obtained. 5,342,595, Cl. 423-328.100.
Davidovits, Nicolas: *See*—
Davidovits, Joseph; Davidovics, Michel; and Davidovits, Nicolas, 5,342,595, Cl. 423-328.100.
Davies, Dylan H.; and Petit, Pierre-Marie, to Schlumberger Technology Corporation. Well logging method and apparatus using passive azimuthal electrodes. 5,343,153, Cl. 324-366.000.
Davies, Huw M. L.; Saikali, Elie; and Childers, Steven R., to Wake Forest University. 2 step process for preparing biologically active tropane derivatives and starting material therefore. 5,342,949, Cl. 546-124.000.
Davis, Clint A.; and Trail, Malvin P., to Texas Industrial Gas. Microprocessor controlled welding apparatus. 5,343,016, Cl. 219-130.400.
Davis, Daniel W.: *See*—
Scholz, Matthew T.; Delmore, Michael D.; and Davis, Daniel W., 5,342,291, Cl. 602-41.000.
Davis, Don. Tire valve cap. 5,341,833, Cl. 137-232.000.
Davis, Donald E.: *See*—
Zampini, Michael; Dombrowski, Joseph S.; and Davis, Donald E., 5,343,186, Cl. 338-15.000.
Davis, Gary D.: *See*—
Nolte, Michael G.; Davis, Gary D.; Jergenson, Ronny D.; Scheu, Robert W.; and Tillery, Timothy G., 5,342,998, Cl. 174-152.00R.
Davis, Geoffrey C.: *See*—
McIntire, Allen J.; and Davis, Geoffrey C., 5,342,464, Cl. 156-172.000.
Davis, James D.: *See*—
Warren, Bobby G., Jr.; and Davis, James D., 5,342,159, Cl. 414-339.000.
Davis, Lynn; and MacBean, Myles, to British Telecommunications public limited company. Avalanche photodiode structure with Mg doping and method. 5,343,055, Cl. 257-186.000.
Davis, Paul C., to AT&T Bell Laboratories. RF variable gain tuned output amplifier which maintains high Q in saturation. 5,343,162, Cl. 330-252.000.
Davis, Warren; Wasserman, David; and Mathews, Richard R. Dental syringe tip and adaptor. 5,342,195, Cl. 433-80.000.
Davis, Wayne S.; Whiteman, Robert N., Jr.; and Shirk, Michael E., to Whitaker Corporation, The. Jackscrew mechanism. 5,342,216, Cl. 439-362.000.
Davox Corporation: *See*—
Kneipp, F. Paul, 5,343,518, Cl. 379-355.000.
Dawes, Kerry G.; and Early, Robert J., to Eagle Gear. Anatomic low profile pack system with quick release fire shelter. 5,341,973, Cl. 224-196.000.
Dawson, Brian D.; and Hartz, Richard D., to Isco, Inc. Composite wastewater sampler. 5,341,690, Cl. 73-863.610.
Day, Richard L.: *See*—
West, Neil L.; Hall, James W.; Stickler, Mark F.; and Day, Richard L., 5,342,239, Cl. 460-69.000.
Dayco Products, Inc.: *See*—
Gardner, David E.; and Novak, David B., 5,342,249, Cl. 474-135.000.
De Felsko Corporation: *See*—
Koch, Frank J.; Vandervalk, Leon C.; and Beamish, David J., 5,343,146, Cl. 324-230.000.
De La Rue Giori S.A.: *See*—
Sauer, Hartmut K., 5,341,910, Cl. 198-403.000.
Dean, Robert H., to Midland Manufacturing Corp. Valve including resilient mount for pin. 5,342,026, Cl. 251-85.000.
Debaty, Pascal, to SGS-Thomson Microelectronics S.A. Frequency locked loop. 5,343,169, Cl. 331-17.000.
De Bont, Johannes M.: *See*—
Kusters, Arnoldus P. M.; and De Bont, Johannes M., 5,342,637, Cl. 426-312.000.
DeCain, Donald M.: *See*—
Batchelder, John S.; DeCain, Donald M.; Hobbs, Philip C. D.; and Taubenblatt, Marc A., 5,343,290, Cl. 356-349.000.
deCoriolis, Paul E.; Siegman, Craig S.; and Bocek, Joseph M., to InControl, Inc. Telemetry system for an implantable cardiac device. 5,342,408, Cl. 607-32.000.
Deere & Company: *See*—
West, Neil L.; Hall, James W.; Stickler, Mark F.; and Day, Richard L., 5,342,239, Cl. 460-69.000.
DeFeo, Paul J.: *See*—
Pai, Damodar M.; Yanus, John F.; DeFeo, Paul J.; Toth, Alan E. J.; Mychajlowskij, Walter; and Popovic, Zoran, 5,342,719, Cl. 430-59.000.
Defieuw, Geert; and Verdonck, Emiel, to AGFA-Gevaert N.V. Dye-donor element for use according to thermal dye sublimation transfer. 5,342,820, Cl. 503-227.000.
De Filippo, Emilio, to Gestind-M.B. "Manifattura Di Bruzolo" S.p.A. Arm rest for motor vehicle seats. 5,342,115, Cl. 297-411.320.
de Fraine, Paul J.: *See*—
Clough, John M.; Godfrey, Christopher R. A.; de Fraine, Paul J.; and Matthews, Ian R., 5,342,837, Cl. 514-247.000.
Degussa Aktiengesellschaft: *See*—
Merigaud, Bernard; and Claus, Michel, 5,342,810, Cl. 501-26.000.
Weise, Wolfgang; Voelcker, Alexander; Kaufmann, Dieter; Malikowski, Willi; Beuers, Joerg; and Krappitz, Harald, 5,341,981, Cl. 228-262.900.
Zimmer, Gerhard; Kinz, Heike; and Sextl, Elfriede, 5,342,602, Cl. 423-584.000.
DeHart, Henry, to Boundary Healthcare Products Corporation. Surgical drape and method of making a surgical drape. 5,341,821, Cl. 128-849.000.
Deken, Arthur D.; and Sewell, Cody L., to Charles Machine Works, Inc., The. Directional multi-blade boring head. 5,341,887, Cl. 175-62.000.
Delair Droogtechniek en Luchtbehandeling B.V.: *See*—
Kusters, Arnoldus P. M.; and De Bont, Johannes M., 5,342,637, Cl. 426-312.000.
Delco Electronics Corporation: *See*—
Greeson, Michael R.; Baar, James C.; Haines, Jerry D.; and Tepe, James J., 5,343,363, Cl. 361-749.000.
Hale, Edward L.; Moller, David D.; and McConnell, Robert R., 5,343,382, Cl. 363-98.000.
DeLisle, William E.: *See*—
Lovell, John W.; Sebramm, Karen M.; and DeLisle, William E., 5,343,495, Cl. 375-1.000.
Dellis, Philippe: *See*—
Pepin, Regis; Schmitz, Christian; Lacroix, Guy-Bernard; Dellis, Philippe; and Veyrat, Christine, 5,342,835, Cl. 514-227.500.
Delmas, Francis, to Thomson Broadcast. Device for assistance in the optical focusing of a television camera, and camera provided with such a device. 5,343,303, Cl. 348-346.000.
Delmore, Michael D.: *See*—
Scholz, Matthew T.; Delmore, Michael D.; and Davis, Daniel W., 5,342,291, Cl. 602-41.000.
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; Sicinski, Rafal R.; and Prahl, Jean M., to Wisconsin Alumni Research Foundation. 19-nor-vitamin D compounds. 5,342,975, Cl. 552-653.000.
DeMars, Jimmy A.; Ruhter, Virgil, Jr.; Warner, John; and Schmidt, William G., to Pillsbury Company, The. Device for feeding corn. 5,341,914, Cl. 198-418.600.
Denco, Inc.: *See*—
Spencer, Dudley W. C., 5,342,345, Cl. 604-408.000.
Denis, Gerard; and La Barre, Paul, to Sidel. Blow molding process for the manufacture of polyethylene terephthalate containers. 5,342,558, Cl. 264-25.000.
Denissen, Frank L.: *See*—
van Tetering, Johannes A. M.; and Denissen, Frank L., 5,343,463, Cl. 370-13.000.
Dennis, Mahlon D.: *See*—
Dennis, Thomas M.; and Dennis, Mahlon D., 5,342,129, Cl. 384-420.000.
Dennis, Thomas M.; and Dennis, Mahlon D., to Dennis Tool Company. Bearing assembly with sidewall-brazed PCD plugs. 5,342,129, Cl. 384-420.000.
Dennis Tool Company: *See*—
Dennis, Thomas M.; and Dennis, Mahlon D., 5,342,129, Cl. 384-420.000.
De Plaen, Etienne: *See*—
Boon, Thierry; van der Bruggen, Pierre; Van den Eynde, Benoit; Van Pel, Aline; De Plaen, Etienne; Lurquin, Christophe; Chomez, Patrick; and Traversari, Catia, 5,342,774, Cl. 435-240.200.
Derdeyn, Marc: *See*—
Boesman, Peter; and Derdeyn, Marc, 5,341,631, Cl. 57-58.830.
Deremince, Veronique; and Vogels, Claude, to Interox International. Process for the manufacture of hydrogen peroxide. 5,342,603, Cl. 423-588.000.
Derham, Stanley D.: *See*—
Turner, Andrew D.; Derham, Stanley D.; and Lovegrove, Peter C., 5,342,514, Cl. 210-193.000.
Dermagraphics, Inc.: *See*—
Ruff, Gregory L., 5,342,376, Cl. 606-151.000.
DeRoss, Robert: *See*—
Comerci, Joseph D.; Data, MArk M.; and DeRoss, Robert, 5,342,995, Cl. 174-67.000.
Derrien, Mischael F. L.: *See*—
Coudray, Xavier G. A.; Derrien, Mischael F. L.; and Pichon, Philippe M. P., 5,342,172, Cl. 416-97.00R.
Desaulty, Michel A. A.: *See*—
Ansart, Denis R. H.; Desaulty, Michel A. A.; and Sandelis, Denis J. M., 5,341,645, Cl. 60-737.000.
Deschamps, Herve , to Marelli Autronica. Method and apparatus for measuring an unknown capacitance using a known reference capacitance. 5,343,157, Cl. 324-678.000.
Deschutter, Rene, to Diamant Boart Stratabit S.A. Drilling tool intended to widen a well. 5,341,888, Cl. 175-323.000.
Deshayes, Marie-Josephe. Method for modelling cranio-facial architecture. 5,342,202, Cl. 434-270.000.
Desplantes, Rene : *See*—
Bardot, Colette; Carles, Maurice; Desplantes, Rene ; and Shrive, Luc, 5,342,521, Cl. 210-490.000.
Detzel, Roger A.: *See*—
Kidaloski, Raymond G.; and Detzel, Roger A., 5,341,869, Cl. 165-67.000.
Deutschmann, Gottfried: *See*—
Schorm, Josef; Zych, Otakar; and Deutschmann, Gottfried, 5,341,561, Cl. 29-596.000.
Device Labs, Inc.: *See*—
Tucker, Elton M., 5,342,324, Cl. 604-264.000.
DeVilbiss, E. David: *See*—
Leonhardt, Barbara A.; DeVilbiss, E. David; and Mastro, Victor C., 5,342,618, Cl. 424-409.000.

VOL 1165 ISS 5 AG 30 1994 UMI

de Weck, Guy: *See—*
Wooden, Gary; de Weck, Guy; and Wallquist, Olof, 5,342,955, Cl. 548-255.000.

DeWitte, Marc; and Van Raemdonck, Walther, to N. V. Bekaert S.A. Steel substrate for reinforcement of elastomers. 5,342,699, Cl. 428-625.000.

Dezern, Julie N.: *See—*
Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., 5,341,680, Cl. 73-379.060.

Dhong, Sang H.; and Shin, Hyun J., to International Business Machines Corporation. Self-biased feedback-controlled active pull-down signal switching. 5,343,092, Cl. 307-455.000.

Diamant Boart Stratabit S.A.: *See—*
Deschutter, Rene, 5,341,888, Cl. 175-323.000.

Diatec Polymers, doing business as Diatec Environmental: *See—*
Nagan, Leo E., 5,342,539, Cl. 252-180.000.

Dick, Daniel W.: *See—*
Heindel, Timothy R.; Garvey, Michael J.; Dick, Daniel W.; Keller, Richard F.; Jordan, Mary P.; and Schleinz, Alan F., 5,342,647, Cl. 427-2.310.

Dick, Georges P.: *See—*
Hoffman, Marc; and Dick, Georges P., 5,343,330, Cl. 359-708.000.

Dick, James B. Twin piston power cylinder. 5,341,725, Cl. 92-66.000.

Dickens, Elmer D., Jr.; Lee, Biing Lin; Taylor, Glenn A.; Magistro, Angelo J.; and Ng, Hendra, to DTM Corporation. Sinterable semi-crystalline powder and near-fully dense article formed therewith. 5,342,919, Cl. 528-323.000.

Dickie, Robert G.: *See—*
Stein, Volker W.; and Dickie, Robert G., 5,342,197, Cl. 433-155.000.

Dickson, J. Douglas, to Gas Research Institute. Positioning mechanism. 5,341,727, Cl. 99-335.000.

Dicus, Bryan J.: *See—*
Burns, James L.; Dicus, Bryan J.; Jasti, Jayanthi K.; Kendall, Jerry J.; Olmos, Jose L.; and Zambrano, Luis G., 5,341,876, Cl. 166-263.000.

Diebold, Incorporated: *See—*
Graef, Harry T.; Blackford, Damon J.; and Crewe, Timothy R., 5,342,165, Cl. 414-788.900.

Dieterlen-Lievre, Francoise A.: *See—*
Bolnet, Marie C. N.; and Dieterlen-Lievre, Francoise A., 5,342,776, Cl. 435-240.200.

Dietl, Steven J., to Xerox Corporation. Electrical interconnect actuation which interacts with cap station articulation. 5,343,230, Cl. 347-31.000.

Dietz, Erwin: *See—*
Macholdt, Hans-Tobias; Schiebler, Siegfried; Gitzel, Jorg; and Dietz, Erwin, 5,342,723, Cl. 430-110.000.

Digiacomo, Don A. Vertically adjusting mooring device. 5,341,757, Cl. 114-230.000.

Digital Equipment Corporation: *See—*
Cassidy, Charles; and Kemp, Paul, 5,343,426, Cl. 365-189.020.
Jurneke, Joe K., 5,343,337, Cl. 360-63.000.

Digital Systems Group, Inc.: *See—*
Callele, David; and Cruickshank, Donald, 5,343,516, Cl. 379-98.000.

Dignity Wear, Ltd.: *See—*
Cohen, Robert A., 5,341,515, Cl. 2-400.000.

Diley, Mark J. Golf putting training device. 5,342,055, Cl. 273-187.200.

Dillon, Mark: *See—*
Brockman, Thomas R.; and Dillon, Mark, 5,341,613, Cl. 52-173.200.

DiNinno, Frank; Schmitt, Susan M.; and Guthikonda, Ravindra N., to Merck & Co., Inc. Cationic-2-heteroarylphenyl-carbapenem antibacterial agents. 5,342,933, Cl. 540-302.000.

Diperstein, David. Method for repairing a cracked metal part using repair plugs coated with a surface layer of zinc. 5,341,554, Cl. 29-402.170.

Dirina, John G. Skin shield for protection against accidental needle puncture. 5,342,311, Cl. 604-116.000.

Dittmar, Mark B.; and Scheiderer, Paul E., to Tosoh SMD, Inc. Method for producing sputtering target for deposition of titanium, aluminum and nitrogen coatings, sputtering target made thereby, and method of sputtering with said targets. 5,342,571, Cl. 419-13.000.

Dittmer, Henry C.: *See—*
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittmer, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,343,517, Cl. 379-219.000.

Ditto, William L.: *See—*
Spano, Mark L.; Ditto, William L.; Garfinkel, Alan; and Weiss, James N., 5,342,401, Cl. 607-5.000.

Djerf, Tobin; and Damico, Gwen, to Evergreen Global Resources, Inc. Method of separating resource materials from solid waste. 5,341,935, Cl. 209-3.000.

DLP, Incorporated: *See—*
Lun, Warren D.; Rom, Paul F.; and Booth, William M., 5,342,325, Cl. 604-272.000.

Doane, Martin R., to Rapistan Corporation. Controlled spacing induction. 5,341,916, Cl. 198-460.000.

Dobkins, Edward L. Portable drill support with a work surface engaging base. 5,342,153, Cl. 408-1.00R.

Dock, Ted L.: *See—*
Kenyon, Roger R.; Landes, Mark D.; Campana, Donna L.; Geremakis, Perry A.; Dock, Ted L.; and Ondrla, Jeffrey M., 5,342,362, Cl. 606-79.000.

Doebert, Jurgen: *See—*
Gobel, Armin; Patzschke, Hans-Peter; and Doebert, Jurgen, 5,342,882, Cl. 524-832.000.

Doerksen, Thomas R.: *See—*
Singh, Rajeshwar; Fathi-Afshar, Rakhshandeh; Singh, Inder P.; Thomas, George; Doerksen, Thomas R.; Singh, Maya P.; and Micetich, Ronald G., 5,342,846, Cl. 514-312.000.

Doherty, Kenneth W.; Honjo, Susumu; and Billings, John D., to McLane Research Laboratories, Inc. Multiport valve for fluid transfer systems. 5,341,834, Cl. 137-599.100.

Doherty, Terrance M. Hands free weed & feed. 5,341,836, Cl. 137-268.000.

Dohring, Klaus; Boardman, Tom; and Andrews, Chris, to Carl Freudenberg, Firma. Intake manifold for an internal combustion engine having a cylinder head. 5,341,772, Cl. 123-184.210.

Doi, Kunio; Chen, Xuan; and Katsuragawa, Shigehiko, to Arch Development Corporation. Method and system for automated selection of regions of interest and detection of septal lines in digital chest radiographs. 5,343,390, Cl. 364-413.160.

Dolan, Shawn E., to Henkel Corporation. Process for coating metal surfaces to protect against corrosion. 5,342,456, Cl. 148-247.000.

Dombrowski, Joseph S.: *See—*
Zampini, Michael; Dombrowski, Joseph S.; and Davis, Donald E., 5,343,186, Cl. 338-15.000.

Dominguez, Rafael; and Dominguez, Tina M. Process for simulating a chaotic pattern on a surface by applying to the surface a nonuniform multilayered coating. 5,342,670, Cl. 428-161.000.

Dominguez, Tina M.: *See—*
Dominguez, Rafael; and Dominguez, Tina M., 5,342,670, Cl. 428-161.000.

Don Michael, T. Anthony. Adjustable catheter device. 5,342,306, Cl. 604-101.000.

Donald, Richard L.: *See—*
Blanpied, Robert H.; and Donald, Richard L., 5,342,859, Cl. 521-125.000.

Donaldson Company, Inc.: *See—*
Friedmann, Francis A.; and Wagner, Wayne M., 5,342,519, Cl. 210-232.000.

Doney, Richard M.: *See—*
Cidon, Israel; Doney, Richard M.; Drake, John E., Jr.; Hervatic, Elizabeth A.; Potter, Kenneth H., Jr.; and Tedijanto, Theodore E., 5,343,473, Cl. 370-85.600.

Donohoe, David G., to Aquarian Accessories Corporation. Plastic-clad wooden drumstick and method of making. 5,341,716, Cl. 84-422.400.

Doran, Thomas I.; McLane, John A.; Okabe, Masami; Scalone, Michelangelo; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Vitamin D3 analogs. 5,342,833, Cl. 514-167.000.

Dorrough, Michael L.; and Conger, Robert R. Sequential audio switcher. 5,343,534, Cl. 381-123.000.

Dorzhach-Lange, Cornelia: *See—*
Pohmer, Klaus; Weber, Rainer; Block, Hans-Dieter; Dorzhach-Lange, Cornelia; and Moretto, Hans-Heinrich, 5,342,986, Cl. 558-45.000.

Dounies, Gregory F. Emergency information facsimile transmitter. 5,343,509, Cl. 379-40.000.

Dow Chemical Company, The: *See—*
Chavez, Johnny, Jr.; Farnum, Andrew S.; Nace, Vaughn M.; Plepys, Raymond A.; Whitmire, Randall K.; Kent, Van A.; Bettge, Paul D.; and Friedli, Hans R., 5,342,541, Cl. 252-182.270.
Christiansen, Steven H.; Chang, Dane; and Wilson, David A., 5,342,593, Cl. 423-242.600.
Graham, Andrew T.; and Gartner, Herbert, 5,342,899, Cl. 525-301.000.
Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,342,904, Cl. 525-488.000.
Khazai, Bijan; and Moore, William G., 5,342,811, Cl. 501-87.000.
Kling, Susan M.; and Sarkar, Nitis, 5,342,910, Cl. 526-195.000.
Tabor, Ricky L.; Morgan, Roy E., Jr.; and Zawisza, Melissa J., 5,342,884, Cl. 525-64.000.
Wilson, David A.; Garlich, Joseph R.; Frank, R. Keith; McMillan, Kenneth; and Simon, Jaime, 5,342,604, Cl. 424-1.650.
Wilson, David A.; Frank, R. Keith; Garlich, Joseph R.; and Simon, Jaime, 5,342,925, Cl. 534-10.000.
Zwinselman, Jan J.; Everett, John P.; and Wanzl-Dacho, Karin, 5,342,865, Cl. 523-414.000.

Dow Corning Toray Silicone Co., Ltd.: *See—*
Akamatsu, Shoji, 5,342,721, Cl. 430-108.000.

Dowbrands Inc.: *See—*
Silvenis, Scott A., 5,341,967, Cl. 222-376.000.

Down, James A.: *See—*
Woodard, Daniel L.; Howard, Adriann J.; and Down, James A., 5,342,931, Cl. 536-25.400.

Downey, Scott D.: *See—*
Welter, Lawrence H.; Downey, Scott D.; and Hall, Todd A., 5,342,371, Cl. 606-113.000.

Drake, John E., Jr.: *See—*
Cidon, Israel; Doney, Richard M.; Drake, John E., Jr.; Hervatic, Elizabeth A.; Potter, Kenneth H., Jr.; and Tedijanto, Theodore E., 5,343,473, Cl. 370-85.600.

Draska, David J.: *See—*
Fogt, Eric J.; Kelley, James F.; Kerns, Ralph M.; Duffy, Timothy J.; and Draska, David J., 5,341,804, Cl. 128-633.000.

Dreiman, Nelik I., to Tecumseh Products Company. Compressor shock absorbing mount assembly. 5,342,179, Cl. 417-363.000.

Driscoll, Edward K.; Nigro, Arthur R.; and Fillio, Thomas D., to Data General Corp. Disk array subsystem for use in a data processing system. 5,343,357, Cl. 361-685.000.

Driscoll, Kevin R., to Honeywell Inc. Slotted arbitration without time jitter in a table driven protocol. 5,343,474, Cl. 370-85.300.

Drotloff, Hans-Otto; and Herrmann-Schonherr, Otto, to Hoechst Aktiengesellschaft. Alloys made from partly crystalline and amorphous poly (aryl ether ketone) compounds. 5,342,664, Cl. 428-36.900.

Drude, Jeffrey J.: *See—*
Rose, Conrad M.; and Drude, Jeffrey J., 5,343,212, Cl. 342-424.000.

DTM Corporation: *See—*
Dickens, Elmer D., Jr.; Lee, Biing Lin; Taylor, Glenn A.; Magistro, Angelo J.; and Ng, Hendra, 5,342,919, Cl. 528-323.000.

Du Pont Canada Inc.: *See—*
Zboril, Vaclav G., 5,342,499, Cl. 204-409.000.

DuBosque, Clayton, Jr. Cursor key actuating assembly. 5,343,219, Cl. 345-160.000.

Duesel, Bernard F., Jr. Leachate evaporation system. 5,342,482, Cl. 159-2G..

Duffy, Timothy J.: *See—*
Fogt, Eric J.; Kelley, James F.; Kerns, Ralph M.; Duffy, Timothy J.; and Draska, David J., 5,341,804, Cl. 128-633.000.

Duke University: *See—*
Stack, Richard S., 5,342,393, Cl. 606-213.000.

Dumbaugh, William H., Jr., to Corning Incorporated. Making glass sheet with defect-free surfaces and alkali metal-free soluble glasses therefor. 5,342,426, Cl. 65-23.000.

Dumont, Francis J.: *See—*
Beattie, Thomas R.; Wyvratt, Matthew J.; and Dumont, Francis J., 5,342,935, Cl. 540-456.000.

Dunagan, Brian D.; and Commins, Alfred D., to Simpson Strong-Tie Company, Inc. Truss girder hanger connection. 5,341,619, Cl. 52-702.000.

Duncan, James L., to Siemens Pacesetter, Inc. System and method for selecting a mode of operation of a dual-chamber pacemaker. 5,342,405, Cl. 607-17.000.

Dunn, Donald C.: *See—*
Aitchison, David J.; and Dunn, Donald C., 5,341,939, Cl. 209-319.000.

Dunn, Susan E.: *See—*
Ossman, Kenneth R.; and Dunn, Susan E., 5,343,326, Cl. 359-216.000.

Du Pont de Nemours, E. I., and Company: *See—*
Arenzen, Rene; Boivin, Patrick; Kobos, Robert K.; Scouten, William H.; and Smart, Bruce E., 5,342,772, Cl. 435-181.000.
Ford, Thomas M.; and Hockessin, James V., 5,342,969, Cl. 349-274.000.
Kountz, Dennis J.; and Pellicone, Frank M., 5,342,828, Cl. 505-238.000.
Ward, Michael D.; and Ebersole, Richard C., 5,342,791, Cl. 436-525.000.

Duracell Inc.: *See—*
Mieczkowska, Jola E.; and Markfort, Simon P., 5,342,712, Cl. 429-224.000.

Duvvury, Charvaka; and Hyslop, Adin E., to Texas Instruments Incorporated. CMOS sense amplifier. 5,343,433, Cl. 365-205.000.

Dye, Duane K.: *See—*
Krom, Lynn C.; and Dye, Duane K., 5,341,701, Cl. 74-499.000.

Dye, John F., to Kendall Company, The. Adapter for devices for applying compressive pressure to the limbs. 5,342,285, Cl. 601-151.000.

E-mu Systems, Inc.: *See—*
Rossum, David P., 5,342,990, Cl. 84-603.000.

Eagle Aerospace, Inc.: *See—*
Bobbitt, Percy J., 5,342,004, Cl. 244-212.000.

Eagle Gear: *See—*
Dawea, Kerry G.; and Early, Robert J., 5,341,973, Cl. 224-196.000.

Earls, Jimmy D.: *See—*
Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,342,904, Cl. 525-488.000.

Early, Robert J.: *See—*
Dawea, Kerry G.; and Early, Robert J., 5,341,973, Cl. 224-196.000.

Eastburn, George L.: *See—*
Buckley, Randall G.; Eastburn, George L.; Schmitz, Marion C.; Breslau, Barry R.; and Tansey, Shawn P., 5,342,863, Cl. 523-310.000.

Eastman Chemical Company: *See—*
Clark, Mark D., 5,342,877, Cl. 524-513.000.
Darnell, W. Ronald; and Jackson, W. J., Jr., 5,342,902, Cl. 525-437.000.
Vanderbilt, Jeffrey J.; and Meyer, Max F., Jr., 5,342,892, Cl. 525-168.000.

Eastman Kodak Company: *See—*
Coldrick, Philip J.; and Pich, Julia, 5,342,732, Cl. 430-264.000.
Henzel, Richard F., 5,342,728, Cl. 430-200.000.
Jongsma, Ronald; Lammes, Larry R.; Lewis, Gifford J.; and Wahlers, Robert A., 5,342,446, Cl. 118-65.000.
Lau, Philip T. S.; and Tang, Ping-Wah, 5,342,943, Cl. 548-262.400.
Pearce, Glenn T., 5,342,821, Cl. 503-227.000.
Pummell, Leslie J. H.; Ward, Paul C.; Kingdon, Stephen J.; and Oldfield, James A., 5,343,266, Cl. 354-340.000.
Sarraf, Sanwal P., 5,342,817, Cl. 503-227.000.
Skrobala, Catherine J.; Edgett, Keith J.; and Siracusa, Paul A., 5,342,534, Cl. 252-91.000.
Stephenson, Stanley W., 5,342,671, Cl. 428-195.000.
Walls, John E., 5,342,435, Cl. 106-2.000.
Welter, Thomas R.; and Texter, John, 5,342,730, Cl. 430-213.000.
Wilson, John C., 5,342,724, Cl. 430-114.000.
Zengerle, Paul L.; Rothrock, Richard K.; and Johnson, Chris; J., 5,342,746, Cl. 430-546.000.

Eaton Corporation: *See—*
Pipich, Charles W.; Fugate, David W.; and Marks, James M., 5,343,179, Cl. 335-167.000.
Quitschau, Algird R.; and Seals, Dennis K., 5,341,566, Cl. 29-890.035.
Slesinski, Steven G.; and Muselin, Bruce A., 5,342,255, Cl. 475-231.000.
Smith, G. Fred; Caron, LaVerne A.; and Beverly, James A., 5,342,119, Cl. 303-113.200.
Turner, David C.; and Eberts, William G., 5,343,174, Cl. 335-172.000.

Eaton, Michael A. W.: *See—*
Parker, David; and Eaton, Michael A. W., 5,342,936, Cl. 540-474.000.

Eberhard, Ernst: *See—*
Berktold, Klaus; and Eberhard, Ernst, 5,341,851, Cl. 139-103.000.

Eberle, Theodore F., Jr.: *See—*
Vailliencourt, Dwayne G.; and Eberle, Theodore F., Jr., 5,341,946, Cl. 215-1.00C.

Ebersole, Richard C.: *See—*
Ward, Michael D.; and Ebersole, Richard C., 5,342,791, Cl. 436-525.000.

Ebert, Gary F., to Crosman Corporation. Gun powered by pressurized gas and/or pressurized air. 5,341,790, Cl. 124-69.000.

Eberts, William G.: *See—*
Turner, David C.; and Eberts, William G., 5,343,174, Cl. 335-172.000.

Ebihara, Munemitsu: *See—*
Yoshida, Susumu; Ebihara, Munemitsu; Kurita, Tsutomu; and Sueyoshi, Masahiko, 5,343,077, Cl. 307-9.100.

Eby, David. Fly guard. 5,341,627, Cl. 54-80.200.

ECC International Limited: *See—*
Bleakley, Ian S.; and Jones, Thomas R., 5,342,600, Cl. 423-432.000.

Echigo, Fumio; Saida, Masahiro; Mizuno, Naoko N. F.; Hatanaka, Hideo; and Enoki, Yoshio, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium having improved electromagnetic conversion characteristics and durability. 5,342,668, Cl. 428-64.000.

Echlin, Inc.: *See—*
Meaney, John D., 5,341,785, Cl. 123-452.000.

ECIA-Equipements et Composants Pour l'Industrie Automobile: *See—*
Vera, Jean-Claude, 5,342,173, Cl. 416-169.00A.

Eck, Nicolaas J. H.: *See—*
Koppe, Rudolf P.; and Eck, Nicolaas J. H., 5,343,236, Cl. 348-6.000.

Ecolab Inc.: *See—*
Fritz, Barbara L.; Olson, John T.; Morganson, Stephen A.; and Sullivan, William E., 5,342,584, Cl. 422-124.000.

Economy, Ken W.: *See—*
Akhavain, Mohammad; and Economy, Ken W., 5,341,564, Cl. 29-832.000.

Eda, Susumu: *See—*
Sekihata, Osamu; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Tanaka, Kenji; Hatta, Hiroyuki; and Furuya, Reiko, 5,343,462, Cl. 370-13.000.

Edahiro, Yasuaki: *See—*
Watanabe, Katsuya; Shibano, Masayuki; Yamaguchi, Hiroyuki; Edahiro, Yasuaki; and Moriya, Mitsuro, 5,343,454, Cl. 369-44.320.

Edelman, Laura H.: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,341,537, Cl. 15-167.100.

Eden, Todd R.; and Ludwig, Jerome H., to h.e.r.c. Incorporated. Water control system using oxidation reduction potential sensing. 5,342,510, Cl. 210-96.100.

Eder, Jerome M.: *See—*
Grossman, Michael D.; Eder, Jerome M.; Hurley, Jewelanne; Siegel, Bernard; Adelberg, Kenneth; and Adelberg, Marvin, 5,342,328, Cl. 604-317.000.

Edgett, Keith J.: *See—*
Skrobala, Catherine J.; Edgett, Keith J.; and Siracusa, Paul A., 5,342,534, Cl. 252-91.000.

Edmeston AB: *See—*
Alexander, Jeffery C., 5,342,427, Cl. 65-27.000.

Edmonston, William H. Carburetor. 5,342,555, Cl. 261-44.300.

Edwards, Brooks; and Voyta, John C., to Tropix, Inc. Purification of stablewater-soluble dioxetanes. 5,342,966, Cl. 549-221.000.

EEV Limited: *See—*
Alford, Sidney; and Cook, Graham M., 5,341,742, Cl. 102-202.800.

Egalon, Claudio O.; and Rogowski, Robert S., to United States of America, National Aeronautics and Space Administration. Strain sensor comprising a strain sensitive, two-mode optical. 5,343,035, Cl. 250-227.140.

Egalon, Claudio O.; and Rogowski, Robert S., to United States of America, National Aeronautics and Space Administration. Transversely polarized source cladding for an optical fiber. 5,343,550, Cl. 385-123.000.

Eguchi, Tatsuya: *See—*
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi;

VOL 1165 ISS 5 AG 30 1994 UMI

Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.
Egusa, Syun; and Watanabe, Yoko, to Kabushiki Kaisha Toshiba. Organic electroluminescent device with low barrier height. 5,343,050, Cl. 257-40.000.
Egyed, Mark J., to Motion Sciences Inc. Combinational incrementally variable transmissions and other gearing arrangements allowing maximum kinematic degrees of freedom. 5,342,258, Cl. 475-281.000.
Eichelberger, Donald P.: *See*—
Bonner, Brian B.; Garg, Diwakar; Eichelberger, Donald P.; and Bowe, Donald J., 5,342,455, Cl. 148-208.000.
Eichler, Jutta: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,342,585, Cl. 422-131.000.
Eichorn, Barbara A.: *See*—
Novak, John P., Jr.; and Eichorn, Barbara A., 5,343,543, Cl. 385-31.000.
Eick, Edward C.: *See*—
Magee, Phillip D.; Eick, Edward C.; and Meisenburg, Gary L., 5,342,228, Cl. 440-76.000.
Eicken, Karl: *See*—
Rueb, Lothar; Eicken, Karl; Plath, Peter; Schwalge, Barbara; Westphalen, Karl-Otto; Wuerzer, Bruno; and Meyer, Norbert, 5,342,824, Cl. 504-221.000.
Eidenbenz, Stefan; and Nowak, Claude, to Mikrona Technologie A.G. Blank for the production of a dental mould part. 5,342,696, Cl. 428-542.800.
Eidson, Carson J., to Harry, Don A., Jr.; and Lilly, Eugene O. Device for applying a strip of sealant to a surface. 5,342,466, Cl. 156-179.000.
Einthoven, William G.: *See*—
Chan, Joseph Y.; Lateras, Larry; Garbis, Dennis; and Einthoven, William G., 5,342,805, Cl. 117-89.000.
Eisele, John F.; Smith, Terrance P.; and Palazzotto, Michael C., to Minnesota Mining and Manufacturing Company. Metal complex/-cyanoacrylate compositions useful in latent fingerprint development. 5,342,645, Cl. 42.7-1.000.
Eisig, David; and Rotstain, Jehoshua S., to Intel Corporation. Method and apparatus for re-configuring a partial product reduction tree. 5,343,416, Cl. 364-757.000.
Eissa, James: *See*—
Schafer, Karl K.; Melzer, Gerhard M.; Scriba, Jorg; Bhagwat, Suda G.; and Eissa, James, 5,342,566, Cl. 264-102.000.
Ejiri, Susumu; and Hiraoka, Hajime, to Paloma Kogyo Kabushiki Kaisha. Alarm device for telling end-of-cooking timing. 5,341,728, Cl. 99-336.000.
Eklund, Ante: *See*—
Segerpalm, Hans; and Eklund, Ante, 5,342,238, Cl. 454-136.000.
Electricite de France Service National: *See*—
Serviere, Georges, 5,343,505, Cl. 376-280.000.
Electro-Tech, Inc.: *See*—
Quantz, Chester C., 5,343,351, Cl. 361-33.000.
Electro-Wire Products, Inc.: *See*—
Hayes, Earl J.; and Volpe, Christopher J., 5,342,226, Cl. 439-845.000.
Electronics For Imaging, Inc.: *See*—
Morag, Guy; Aizikowitz, Jacob; and Arazi, Efraim, 5,343,311, Cl. 358-518.000.
Elf Atochem Italia S.r.l.: *See*—
Rigamonti, Marco; Marciandi, Franco; and Cesana, Massimo, 5,342,683, Cl. 428-331.000.
Elizabeth Arden Co., Division of Conopco, Inc.: *See*—
Bowser, Paul A.; Froling, Albert; Healinga, Lammert; Houtsmuller, Udo M. T.; Nugteren, Diederik H.; Pabon, Hendrik J. J.; and Prottey, Colin, 5,342,976, Cl. 554-36.000.
Lombardi, Michael H.; and Vaccaro, John, 5,342,134, Cl. 401-78.000.
Ellis, Peter J., to Bagfilla Overseas Limited. Bag emptying arrangement. 5,341,959, Cl. 222-105.000.
Ellison, Thomas M.; and Keith, Brian M., to Rexham Industries Corp. Injection molded plastic article with integral weatherable pigmented film surface. 5,342,666, Cl. 428-46.000.
Ellman, Alan G.; and Garito, Jon C. Electrical coupling unit for electrosurgery. 5,342,356, Cl. 606-32.000.
Elpatronic AG: *See*—
Benedikt, Georg; and Urech, Werner, 5,341,696, Cl. 73-827.000.
Urech, Werner, 5,343,010, Cl. 219-83.000.
Elvekjaer, Peter; and Schreiber, Walter, to Asea Brown Boveri Ltd. Axial-flow turbine. 5,342,170, Cl. 415-192.000.
Emitec Gesellschaft fuer Emissionstechnologie mbH: *See*—
Humpolik, Bohumil, 5,342,588, Cl. 422-311.000.
Swars, Helmut; Bruck, Rolf; and Maus, Wolfgang, 5,342,783, Cl. 436-37.000.
Emoto, Ikuo: *See*—
Tsurutani, Iwao; Manabe, Takafumi; Emoto, Ikuo; Nagayasu, Isao; and Okada, Yoshitaka, 5,342,695, Cl. 428-516.000.
Emrich, Helmut; and Guba, Reinhold, to MAN Roland Druckmaschinen AG. Device for transporting sheets within a printing machine. 5,341,738, Cl. 101-232.000.
Enami, Yoshihide: *See*—
Kamakura, Mitsutoshi; Shioda, Akihiko; Enami, Yoshihide; and Go, Hisao, 5,341,563, Cl. 29-743.000.
Endo, Mikio: *See*—
Kubota, Tohru; and Endo, Mikio, 5,342,984, Cl. 556-477.000.
Eng, Katherine K.: *See*—
Baker, Harold N.; Eng, Katherine K.; Gurner, William D.; Massei, Michael K.; Necklaws: Elizabeth C.; Osikowicz, Eugene W.; Ramp, Sally K.; and Trach, Paula, 5,342,760, Cl. 435-7.920.
Engelhard Corporation: *See*—
Forbus, Ellen S.; Gantt, George E.; Willis, Mitchell J.; and Young, Raymond H., 5,342,443, Cl. 106-488.000.
Enitricerche S.p.A.: *See*—
Peratello, Stefano; Perego, Carlo; and Bellussi, Giuseppe, 5,342,814, Cl. 502-263.000.
Enlow, William P.; and Valdiserri, Leo L., to General Electric Company. Organic phosphite ester compositions containing hindered piperdinyl light stabilizers. 5,342,978, Cl. 554-78.000.
Ennis, Mark R.: *See*—
Gorsuch, Jan; Ennis, Mark R.; and Burgess, Robert M., 5,341,609, Cl. 51-399.000.
Enoki, Yoshio: *See*—
Echigo, Fumio; Saida, Masahiro; Mizuno, Naoko N. F.; Hatanaka, Hideo; and Enoki, Yoshio, 5,342,668, Cl. 428-64.000.
Enokido, Kazunori: *See*—
Mizobe, Tatsutoshi; Mishima, Hidehiko; Enokido, Kazunori; and Marusue, Toshihisa, 5,342,253, Cl. 475-128.000.
Enscore, David J.; Campbell, Patricia S.; Osborne, James L.; Smart, Melinda K.; and Yum, Su I., to ALZA Corporation. Subsaturated transdermal therapeutic system having improved release characteristics. 5,342,623, Cl. 424-448.000.
Enviro Shop Corp., The: *See*—
Munro, James, 5,341,522, Cl. 4-415.000.
Environmental Growth Chambers: *See*—
Grigga, Steven H.; Bartley, William E.; and Rule, Adrian O., III, 5,341,595, Cl. 47-60.000.
Envirotest Syst. Corp.: *See*—
Johnson, James H., 5,343,043, Cl. 250-338.500.
Epstein, David L. Eye bottle. 5,342,327, Cl. 604-295.000.
Erb, Albert R., to Rotary-Grip TM , Inc. Interlocking rigid, split grip for softball and baseball bats. 5,342,046, Cl. 273-72.00R.
Erickson, Frederick L. Self supercharged two stroked cycle and engine having migrating combustion chambers. 5,341,774, Cl. 123-61.00R.
Erickson, Kevin J.: *See*—
Boutaghou, Zine-Eddine; Brown, Dana H.; Erickson, Kevin J.; and Greenberg, Richard, 5,343,340, Cl. 360-77.080.
Ericson, Folke C. G., to Mitab Montage & Industriteknik AB. Method and apparatus for atomizing liquids. 5,341,991, Cl. 239-8.000.
Ernst, Beat; Heneghan, Michael; and Hafner, Andreas, to Ciba-Geigy Corporation. Process for the preparation of glycosides. 5,342,929, Cl. 536-18.600.
Esener, Sadik C.: *See*—
Yayla, Gokce; Krishnamoorthy, Ashok V.; and Esener, Sadik C., 5,343,555, Cl. 395-24.000.
Eshita, Yoshiyuki: *See*—
Komori, Takashi; Eshita, Yoshiyuki; Ohtomo, Tsuyoshi; and Hirota, Hajime, 5,342,611, Cl. 424-70.000.
Esser, Keith: *See*—
Warden, Laurence; and Esser, Keith, 5,341,555, Cl. 29-469.500.
ETG Environmental, Inc.-MWR Division: *See*—
Payne, Frederick C.; and Kilmer, Galen L., 5,342,147, Cl. 405-128.000.
Ethicon, Inc.: *See*—
Brinkerhoff, Ronald J.; Mills, Earl J.; Parkhurst, Harry C.; and Madden, Martin, 5,342,382, Cl. 606-184.000.
Cerwin, Robert; Trew, Cheryl; and Gibbs, Robert J., 5,341,922, Cl. 206-63.300.
Cofone, Mark A.; and Bendel, Lee P., 5,341,815, Cl. 128-749.000.
Guido, Ronald, 5,342,397, Cl. 606-222.000.
Rowe, C. Daniel; Ashmore, Leslie R.; Carroll, Chad C.; Schwemberger, Richard F.; Schuler, Norman F.; and Collins, John M., 5,342,315, Cl. 604-167.000.
Stefanchik, David; and Biehle, Edward J., IV, 5,342,373, Cl. 606-142.000.
Ethyl Petroleum Additives Limited: *See*—
Walters, David K.; and Barber, Rodney I., 5,342,531, Cl. 252-32.500.
Eurocollection Canada Ltd.: *See*—
Fuchs, Mike M., 5,341,750, Cl. 108-64.000.
Euron S.p.A.: *See*—
Peratello, Stefano; Perego, Carlo; and Bellussi, Giuseppe, 5,342,814, Cl. 502-263.000.
Eury, Robert P., to Advanced Cardiovascular Systems, Inc. Antithrombogenic surface. 5,342,621, Cl. 424-423.000.
Euteneuer, Charles L.; and Keith, Peter T., to SciMed Life Systems, Inc. Dilatation catheter with tri-fold balloon. 5,342,307, Cl. 604-103.000.
EuWe Eugen Wexler GmbH: *See*—
Lehner, Heinz, 5,342,009, Cl. 248-311.200.
Evans, William T.: *See*—
Lemon, J. Robert; Evans, William T.; and Christian, Robert E., 5,342,284, Cl. 601-141.000.
Everest Medical Corporation: *See*—
Rydell, Mark A., 5,342,359, Cl. 606-51.000.
Tidemand, Kevin K., 5,342,381, Cl. 606-174.000.
Everett, John P.: *See*—
Zwinselman, Jan J.; Everett, John P.; and Wanzl-Dacho, Karin, 5,342,865, Cl. 523-414.000.
Evergreen Global Resources, Inc.: *See*—
Djerf, Tobin; and Damico, Gwen, 5,341,935, Cl. 209-3.000.

Expert Disposal Service, Inc.: *See*—
Kinney, Russell C.; Kinney, Donald C.; Paullin, Lyle; Paullin, Richard; Parrott, Jeffrey W.; and Smith, Donald, 5,342,164, Cl. 414-786.000.
Exxon Chemical Patents Inc.: *See*—
Snider, Sheri R.; Bamford, David A.; Vebeliunas, Rimas V.; Halle, Roy T.; and Strack, Robert D., 5,342,509, Cl. 208-351.000.
Exxon Research and Engineering Company: *See*—
Baird, William C., Jr.; Swan, George A., III; Boyle, Joseph P.; and Mon, Eduardo, 5,342,506, Cl. 208-65.000.
Eyink, Jurgen: *See*—
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weisshaupl, Horst, 5,343,506, Cl. 376-280.000.
F. von Langsdorff Licensing Limited: *See*—
Barth, Gunther; von Langsdorff, Fritz; and von Langsdorff, Harald, 5,342,142, Cl. 404-41.000.
Faccioli, Giovanni; and Venturini, Daniele, to Orthofix S.r.l. Clamping coupling for an external fixator. 5,342,360, Cl. 606-59.000.
Fairbanks, Steven C.: *See*—
Comparin, Robert J.; Clendenin, Harry B.; Logan, Kent E.; Bass, Mark; Fairbanks, Steven C.; and Caillat, Jean-Luc, 5,342,184, Cl. 418-55.200.
Fairborn USA Inc.: *See*—
Brockman, Thomas R.; and Dillon, Mark, 5,341,613, Cl. 52-173.200.
Fairhurst, Stephen: *See*—
Terman, Michael; Perlman, Bill; and Fairhurst, Stephen, 5,343,121, Cl. 315-158.000.
Fanuc Ltd.: *See*—
Iwashita, Yasusuke, 5,343,132, Cl. 318-630.000.
Kamiguchi, Masao; and Kobayashi, Minoru, 5,342,559, Cl. 264-40.100.
Karube, Norio; and Morita, Yasuyuki, 5,343,013, Cl. 219-121.610.
Matsuura, Hitoshi; and Matsumoto, Eiji, 5,343,402, Cl. 364-474.030.
Farmer, Douglas A., Jr.: *See*—
Gavin, David F.; Hani, Rahim; Waldron, Craig; and Farmer, Douglas A., Jr., 5,342,437, Cl. 106-18.330.
Farmer, George D.: *See*—
Kay, Stanley E.; Farmer, George D.; Bhatia, Hans; Mehta, Ashok D.; Kain, Christopher J.; and Sampson, Nicholas P., 5,343,513, Cl. 379-59.000.
Farmer, Michael E.; and Hatlestad, John D., to Unisys Corporation. Auto-focusing correction for rotational acceleration effects on inverse synthetic aperture radar images. 5,343,204, Cl. 342-25.000.
Farmer, Peter H.: *See*—
Simon, Robert H. M.; and Farmer, Peter H., 5,342,653, Cl. 427-256.000.
Farmer's Factory Company: *See*—
Burton, Paul; and Brownlee, Steven D., 5,342,015, Cl. 248-478.000.
Winterton, Dean A., 5,341,754, Cl. 111-139.000.
Farmitalia Carlo Erba S.R.L.: *See*—
Panzeri, Achille; Ceriani, Lucio; Griggi, Pierluigi; and Nesi, Marcella, 5,342,948, Cl. 546-77.000.
Farnum, Andrew S.: *See*—
Chavez, Johnny, Jr.; Farnum, Andrew S.; Nace, Vaughn M.; Plepys, Raymond A.; Whitmire, Randall K.; Kent, Van A.; Bettge, Paul D.; and Friedli, Hans R., 5,342,541, Cl. 252-182.270.
Farnworth, Warren M.: *See*—
Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., 5,342,807, Cl. 437-209.000.
Farooq, Omar: *See*—
Kitchin, Jonathon P.; Miller, Alan G.; Ali, Mahfuza B.; and Farooq, Omar, 5,342,688, Cl. 428-402.000.
Farr, John A.; and Leatherman, R. Dwight. Bandage cutter and remover. 5,341,822, Cl. 128-898.000.
Farr, Raymond C., to Walt Disney Company, The. Electrical connector for pyrotechnic applications. 5,342,225, Cl. 439-817.000.
Farrall, George A.; Cocoma, John P.; Borowiec, Joseph C.; and Pashley, Robert F., to General Electric Company. Excitation coil for an electrodeless fluorescent lamp. 5,343,126, Cl. 315-248.000.
Farrell, Patrick V.; Lee, Janghee; and Beal, Andrew B., to Wisconsin Alumni Research Foundation. High voltage fast pulse control for a Q-switched laser. 5,343,483, Cl. 372-10.000.
Fasano, Michael: *See*—
Carney, William V.; and Fasano, Michael, 5,342,209, Cl. 439-92.000.
Fathi-Afshar, Rakhshandeh: *See*—
Singh, Rajeshwar; Fathi-Afshar, Rakhshandeh; Singh, Inder P.; Thomas, George; Doerksen, Thomas R.; Singh, Maya P.; and Micetich, Ronald G., 5,342,846, Cl. 514-312.000.
Fatigue Technology, Inc.: *See*—
Reid, Leonard F.; and Bolstad, Roger T., 5,341,559, Cl. 29-523.000.
Faulkner, Robie L. Turbojet engine with afterburner and thrust augmentation ejectors. 5,341,640, Cl. 60-251.000.
Favre, Jacques: *See*—
Gerard, Jean-Michel; and Favre, Jacques, 5,343,057, Cl. 257-192.000.
Favre, Michel: *See*—
Orth, Gerard; Favre, Michel; Kremsdorf, Dina; and Pehau-Arnaudet, Gerard, 5,342,930, Cl. 536-23.720.
Feeney, Brian P., to LISCO, Inc. Reverse sunburst string pattern for racquetball rackets. 5,342,045, Cl. 273-73.00D.
Feinberg, Melvin: *See*—
Molny, Marvin J.; and Feinberg, Melvin, 5,341,681, Cl. 73-382.00G.
Fel-Pro Incorporated: *See*—
Chen, Colin; Oliver, Hoover, Jr.; and Zurfluh, Thomas, 5,341,779, Cl. 123-193.300.
Feldman, Peter. Autodialer with pin feature. 5,343,519, Cl. 379-355.000.
Feldman, Richard L. Tolerance compensating assembly/positioning system and method of use. 5,341,717, Cl. 86-32.000.
Feldman, Richard L. Dental imaging matrix band for making or setting crowns and bridges on prepared teeth. 5,342,194, Cl. 433-39.000.
Fenster, Aaron: *See*—
Rickey, Daniel W.; and Fenster, Aaron, 5,341,808, Cl. 128-660.010.
Ferag AG: *See*—
Meier, Jacques, 5,342,032, Cl. 270-37.000.
Fergason, James L.: *See*—
Ferguson, James L., 5,343,313, Cl. 359-83.000.
Ferguson, James L., to Fergason, James L. Eye protection system with heads up display. 5,343,313, Cl. 359-83.000.
Ferguson, John H., Sr. Truck tire washing. 5,341,828, Cl. 134-123.000.
Ferla, Giuseppe: *See*—
Frisina, Ferruccio; and Ferla, Giuseppe, 5,343,068, Cl. 257-578.000.
Fermenta Animal Health Company: *See*—
Krzewki, Rudolf J.; and Ackers, Stanley, 5,342,619, Cl. 424-411.000.
Fernandez, Claude A.: *See*—
Wichinsky, Michael; Gutknecht, Leroy H.; and Fernandez, Claude A., 5,342,049, Cl. 273-119.00R.
Ferrante, Joseph M.; Fichera, Alfred J.; and Whiteside, Leo A., to Wright Medical Technology, Inc. Rotationally and angularly adjustable tibial cutting guide and method of use. 5,342,367, Cl. 606-86.000.
Ferreira, Richard S.: *See*—
Crawford, Richard L.; Kunselman, Garry C.; Angelucci, Albert; Fitz-Patrick, Bruce C.; and Ferreira, Richard S., 5,343,289, Cl. 356-328.000.
Fert, Pierre H.: *See*—
Christophel, Bernard G.; Dautremont, Jean M.; Fert, Pierre H.; and Harmegnies, Guy R., 5,341,665, Cl. 72-166.000.
Fetterman, D. Bruce; and Smith, Stephen W., to Trinity Industries, Inc. Railway gondola car. 5,341,747, Cl. 105-406.100.
Fiat Auto S.p.A.: *See*—
Ansaldi, Ermanno; Re Fiorentin, Stefano; and Saroldi, Andrea, 5,343,206, Cl. 342-70.000.
Fichera, Alfred J.: *See*—
Ferrante, Joseph M.; Fichera, Alfred J.; and Whiteside, Leo A., 5,342,367, Cl. 606-86.000.
Fielden, Edward M.: *See*—
Beylin, Vladimir Genukh; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,342,959, Cl. 548-327.500.
Fields, Karen L.: *See*—
Beidle, David A.; Fields, Karen L.; Griffith, Catherine L.; and Munro, Frederick G., 5,343,403, Cl. 364-478.000.
Fifield, Charles C.; Pohl, Rudolph L.; and Yokoyama, Wako, to Hercules Incorporated. Urethane polymers for printing plate compositions. 5,341,799, Cl. 528-49.000.
Figarella, Luis; and Klancnik, Mihael, to United Parcel Service of America, Inc. Method and apparatus for detecting and decoding bar code symbols using two-dimensional digital pixel images. 5,343,028, Cl. 235-462.000.
Figliomeni, Joseph A.: *See*—
Briem, Steven W.; and Figliomeni, Joseph A., 5,342,059, Cl. 273-277.000.
Fillio, Thomas D.: *See*—
Driscoll, Edward K.; Nigro, Arthur R.; and Fillio, Thomas D., 5,343,357, Cl. 361-685.000.
Fincati, Anne M.: *See*—
Zezulka, Bohuslav J.; Voss, Henry H.; and Fincati, Anne M., 5,341,854, Cl. 141-1.000.
Fink, Michael F.; and Hoagland, Larry D., to Ideatech, Inc. Combined air bag device and steering column for vehicles. 5,342,089, Cl. 280-731.000.
Fintube Limited Partnership: *See*—
Ryan, Jerry E., 5,343,015, Cl. 219-121.640.
Firetime, Inc.: *See*—
Simmons, John F.; and Chen, Terrence, 5,343,446, Cl. 368-251.000.
Fisch, Alfons: *See*—
Pohl, Klaus; and Fisch, Alfons, 5,343,350, Cl. 361-18.000.
Fischer, Artur, to fischerwerke Artur Fischer GmbH & Co. KG. Impact-type expansible plug for anchoring in a cylindrical drilled hole. 5,342,157, Cl. 411-60.000.
Fischer, Carl J., to Four Winds International Corporation. Shock-absorbing vehicle frame/chassis mounting system. 5,342,106, Cl. 296-204.000.
Fischer, Christian: *See*—
Merz, Peter W.; Zabel, Lutz; and Fischer, Christian, 5,342,873, Cl. 524-425.000.
Fischer, Jens-Dieter; and Siol, Werner, to Rohm GmbH Chemische Fabrik. Polyester-polycarbonate substrate coated with UV protecting layer. 5,342,691, Cl. 428-412.000.
Fischer, Rolf: *See*—
Gosch, Hans-Juergen; Rust, Harald; Fischer, Rolf; Hechler, Claus; and Pinkos, Rolf, 5,342,488, Cl. 203-80.000.
Fischer, Ulrich: *See*—
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weisshaupl, Horst, 5,343,506, Cl. 376-280.000.

VOL 1165 ISS 5 AG 30 1994 UMI

fischerwerke Artur Fischer GmbH & Co. KG: *See*—
Fischer, Artur, 5,342,157, Cl. 411-60.000.

Fisher, Alvin J.; Smoot, Troy S.; and Kincer, Daniel E., to Ingersoll-Rand Company. Method and apparatus for controlling a system of compressors to achieve load sharing. 5,343,384, Cl. 364-133.000.

Fisher, Douglas D.: *See*—
Rau, Charles B.; and Fisher, Douglas D, 5,341,780, Cl. 123-192.100.

Fiskars Oy Ab: *See*—
Linden, Erkki O.; Ronnholm, Karl S.; and Holm, Carl-Olof J., 5,341,573, Cl. 30-254.000.

Fisons plc: *See*—
Clark, Andrew R.; and Hart, John L., 5,341,800, Cl. 128-203.150.

Fitz-Patrick, Bruce C.: *See*—
Crawford, Richard L.; Kunselman, Garry C.; Angelucci, Albert; Fitz-Patrick, Bruce C.; and Ferreira, Richard S., 5,343,289, Cl. 356-328.000.

Fix, Frederick R.: *See*—
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittmer, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,343,517, Cl. 379-219.000.

Fleenor, J. Jerome; and Wilder, Duane C., to Philip Morris Incorporated. Cigarette hardpack having rounded corners and lid retaining flaps. 5,341,925, Cl. 206-268.000.

Fletcher, Thomas A.; and Longest, H. Cary, Jr., to Philip Morris Incorporated. Method and apparatus for inspecting and controlling tipping paper perforation. 5,341,824, Cl. 131-281.000.

Flierl, Karl T.: *See*—
Wendt, David C.; Lapota, Robert J.; and Flierl, Karl T., 5,343,134, Cl. 318-757.000.

Flood, Gary S.: *See*—
Chang, Philip L.; Flood, Gary S.; Kirkes, Kent W.; and Smith, Edwin R., 5,342,054, Cl. 273-186.100.

Flora, Laurence P., to Unisys Corporation. Fast multiplier. 5,343,417, Cl. 364-758.000.

Flynn, Robert A.: *See*—
King, Michael J.; Flynn, Robert A.; and Torrez, Henry, 5,342,462, Cl. 156-96.000.

FMC Corporation: *See*—
Henley, Ronald W.; Quates, Ronald D.; Williams, Michael R.; and Wong, Henry, 5,342,066, Cl. 277-116.200.

Focke & Co. (GmbH & Co.): *See*—
Focke, Heinz; and Bretthauer, Hans-Jurgen, 5,341,912, Cl. 198-415.000.

Focke, Heinz; and Bretthauer, Hans-Jurgen, to Focke & Co. (GmbH & Co.). Apparatus for turning (cigarette) packs. 5,341,912, Cl. 198-415.000.

Fogle, James C., to Riverwood International Corporation. Carton with reclosable side pour opening. 5,341,984, Cl. 229-215.000.

Fogt, Eric J.; Kelley, James F.; Kerns, Ralph M.; Duffy, Timothy J.; and Draska, David J., to Medtronic, Inc. System for disabling oximeter in presence of ambient light. 5,341,804, Cl. 128-633.000.

Foley, Michael G., to Williams International Corporation. Apparatus for improved slurry polishing. 5,341,602, Cl. 51-2.00R.

Forbus, Ellen S.; Gantt, George E.; Willis, Mitchell J.; and Young, Raymond H., to Engelhard Corporation. Method for bleaching kaolin clay. 5,342,443, Cl. 106-488.000.

Ford Motor Company: *See*—
Chih, Ming-Niu; and Johnston, Michael H., 5,341,842, Cl. 137-574.000.
Geddes, Earl R., 5,343,533, Cl. 381-71.000.
Hamburg, Douglas R.; Logothetis, Eleftherios M.; Soltis, Richard E.; and Visser, Jacobus H., 5,341,643, Cl. 60-276.000.
Palansky, Bruce J.; Greene, Thomas L.; Daubenmier, John A.; Smith, Paul F.; Kock, Karl H.; Bird, Stuart L.; and McCall, Gavin F., 5,341,703, Cl. 477-65.000.
Platts, Dennis R., 5,342,690, Cl. 428-410.000.
Schulte, Paul J.; and Gandolfo, Catherine A., 5,341,773, Cl. 123-184.610.

Ford, Thomas M.; and Hockessin, James V., to Du Pont de Nemours, E. I., and Company. Recovery of hydroxycarboxylic acid values from poly(hydroxycarboxylic acids). 5,342,969, Cl. 349-274.000.

Foreman, Colin: *See*—
Strandli, Kare R.; and Foreman, Colin, 5,341,745, Cl. 102-499.000.

Foreman, Howard R. Plant support. 5,341,593, Cl. 47-47.000.

Forester, David R., to Betz Laboratories, Inc. Use of polyalkenyl succinimides-glycidol reaction products as antifoulants in hydrocarbon process media. 5,342,505, Cl. 208-48.0AA.

Forester, Mary C. Partitioned cereal bowl. 5,341,953, Cl. 220-575.000.

Forte, Robin. Vehicle safety support system. 5,341,861, Cl. 152-158.000.

Fory, Werner: *See*—
Kuhlmeyer, Rainer; Topfl, Werner; and Fory, Werner, 5,342,823, Cl. 504-215.000.

Foshee, David L.; and Lynch, Robert S., to Linvatec Corporation. Cleanable endoscopic surgical instrument. 5,342,391, Cl. 606-205.000.

Foster, Clark B.: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,341,993, Cl. 239-331.000.
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,342,389, Cl. 606-205.000.

Foster, Robert F.; and Srinivas, Damodaran, to Materials Research Corporation. Method of nucleating tungsten on titanium nitride by CVD without silane. 5,342,652, Cl. 427-253.000.

Foster Valve Corporation: *See*—
Lanning, William W., II, 5,341,835, Cl. 137-246.220.

Four Winds International Corporation: *See*—
Fischer, Carl J., 5,342,106, Cl. 296-204.000.

Fourgaut, Luc R.: *See*—
Ledoux, Patrick R.; and Fourgaut, Luc R., 5,342,570, Cl. 264-566.000.

Foust, Harry D. Device and method for the combustion of waste oil. 5,341,832, Cl. 137-202.000.

Fox, Timothy R.; and Posluszny, Jerry C., to Kabushiki Kaish Toshiba. Circuit for improving carrier rejection in a balanced modulator. 5,343,171, Cl. 332-167.000.

Foye, David M.: *See*—
Rein, Alan D.; and Foye, David M., 5,341,988, Cl. 236-49.300.

Framberg, Norman S., to Mead Fluid Dynamics, Inc. Valve stack assembly. 5,341,846, Cl. 137-884.000.

France Telecom: *See*—
Collobert, Daniel; and Collin, Olivier, 5,343,198, Cl. 341-159.000.
Pirio, Francis; and Thomine, Jean, 5,343,322, Cl. 359-173.000.
Vareille, Aime ; Schiltz, Andre ; and Hauuy, Jean C., 5,343,049, Cl. 250-561.000.

France Telecom, Etablissement Autonome De Droit Public: *See*—
Auffret, Rene ; Chawki, Mouhammad; and Berthou, Louis, 5,343,315, Cl. 359-152.000.
Gerard, Jean-Michel; and Favre, Jacques, 5,343,057, Cl. 257-192.000.

France Telecom Etablissement Autonome de Droit Public: *See*—
Poulain, Marcel; and Saad, Mohammed, 5,342,809, Cl. 501-12.000.

France, Timothy T.: *See*—
Ngo, Viet H.; Poole, Warren D.; Hancock, Sean J.; and France, Timothy T., 5,342,512, Cl. 210-151.000.

Francioni, Renzo, to Cavanna S.p.A. Device for forming piles of articles, particularly for automatic packaging plants. 5,341,913, Cl. 198-418.400.

Francis, Joseph N. Electrical plug protective apparatus. 5,342,212, Cl. 439-149.000.

Frank, R. Keith: *See*—
Wilson, David A.; Garlich, Joseph R.; Frank, R. Keith; McMillan, Kenneth; and Simon, Jaime, 5,342,604, Cl. 424-1.650.
Wilson, David A.; Frank, R. Keith; Garlich, Joseph R.; and Simon, Jaime, 5,342,925, Cl. 534-10.000.

Franken, Peter A.; and Hill, Alan E. Laser debridement of wounds. 5,342,352, Cl. 606-9.000.

Franks, John: *See*—
Tame, Omar; and Franks, John, 5,342,103, Cl. 292-341.170.

Franz Plasser Bahn Baumaschinen- Industriegeeselschaft m.b.H.: *See*—
Theurer, Josef; and Brunninger, Manfred, 5,341,746, Cl. 105-355.000.

Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, to Bofors AB. System for reducing the effects of powder temperature sensitivity on firing with guns. 5,341,720, Cl. 89-45.000.

Franzen, Michael R.: *See*—
Trumbore, David C.; Franzen, Michael R.; and Wilkinson, Charles R., 5,342,866, Cl. 524-68.000.

Franzman, Gernot; Petri, Folf; and Pitteroff, Walter, to BASF Aktiengesellschaft. Aqueous polymer dispersions and polymer powders prepared therefrom by spray drying. 5,342,897, Cl. 525-221.000.

Franzmann, Gernot: *See*—
Licht, Ulrike; Haeberle, Karl; Gulbins, Erich; Rau, Maria G.; Franzmann, Gernot; and Portugall, Michael, 5,342,915, Cl. 528-71.000.
Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, 5,342,916, Cl. 528-150.000.

Fraser, Donald E.; and Anderson, Richard N., to Hunter Douglas Inc. Tilter mechanisms for a venetian blind. 5,341,865, Cl. 160-176.100.

Fraser, Richard J. Decorative stand for compact discs. 5,341,943, Cl. 211-40.000.

Fraunhofer-Gesellschaft zur Forderung der angewandten: *See*—
Berger, Rudolf; Ryssel, Heiner; Schneider, Claus; and Aderhold, Wolfgang, 5,343,293, Cl. 356-369.000.

Fredriksson, Lars-Berno: *See*—
Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, 5,341,720, Cl. 89-45.000.

Freeman, Ross H.; and Hsieh, Hung-Cheng, to Xilinx, Inc. Distributed memory architecture for a configurable logic array and method for using distributed memory. 5,343,406, Cl. 364-490.000.

Freeman, Stephen: *See*—
Veasy, Julian F.; and Freeman, Stephen, 5,343,220, Cl. 345-199.000.

Frei, John K.; and Brice-Heames, Kenneth, to Motorola, Inc. Apparatus for adapting semiconductor die pads and method therefor. 5,342,999, Cl. 174-266.000.

Freitag, Hans-Albrecht: *See*—
Lucarelli, Michael A.; Keegan, Richard E.; Koshute, Mark A.; Freitag, Hans-Albrecht; and Avar, Geza, 5,342,855, Cl. 521-50.000.

Freitag, Rainer: *See*—
Zimmer, Richard; Gautsch, Wolfgang; Muller, Armin; and Freitag, Rainer, 5,342,120, Cl. 303-113.200.

French State, represented by the Minister of the Post, Telecommunications and Space, (Centre National d'Etudes des Telecommunications): *See*—
Jullien, Jean-Pascal; and Le Tourneur, Gregoire, 5,343,521, Cl. 379-410.000.

Freudenberger, Richard, to CalComp Inc. Pen force gage for a pen plotter. 5,341,689, Cl. 73-862.541.

Freyer, Norbert: *See*—
Jeschke, Willi; and Freyer, Norbert, 5,341,734, Cl. 101-148.000.

Friedli, Hans R.: *See*—
Chavez, Johnny, Jr.; Farnum, Andrew S.; Nace, Vaughn M.; Plepys, Raymond A.; Whitmire, Randall K.; Kent, Van A.; Bettge, Paul D.; and Friedli, Hans R., 5,342,541, Cl. 252-182.270.

Friedmann, Francis A.; and Wagner, Wayne M., to Donaldson Company, Inc. Fluid filter cartridge with replaceable filter element. 5,342,519, Cl. 210-232.000.

Friedmann, Jacob, to Iscar Ltd. Cutting insert having a circular cutting edge with a chip former. 5,342,151, Cl. 407-116.000.

Frisina, Ferruccio; and Ferla, Giuseppe, to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno; and SGS-Thomson Microelectronics S.R.L. Integrated bipolar power device and a fast diode. 5,343,068, Cl. 257-578.000.

Fritz, Barbara L.; Olson, John T.; Morganson, Stephen A.; and Sullivan, William E., to Ecolab Inc. Air freshener device and cartridge with battery. 5,342,584, Cl. 422-124.000.

Frohbach, Hugh E.: *See*—
Schaefer, Louis F.; Frohbach, Hugh E.; Pierce, Gerald A.; and Peppers, Norman A., 5,343,458, Cl. 369-97.000.

Froling, Albert: *See*—
Bowser, Paul A.; Froling, Albert; Heslinga, Lammert; Houtsmuller, Udo M. T.; Nugteren, Diederik H.; Pabon, Hendrik J. J.; and Prottey, Colin, 5,342,976, Cl. 554-36.000.

Froment, Jean-Paul; and Pages, Jean-Pierre, to S.A. des Etablissements Staubli. Heddle frame levelling apparatus for a rocking lever cam drive. 5,341,850, Cl. 139-79.000.

Frus, John R., to Unison Industries, Inc. Diagnostic device for gas turbine ignition system. 5,343,154, Cl. 324-399.000.

Fuchs, Harald; and Schimmel, Thomas, to BASF Aktiengesellschaft. Selective modification of individual nanometer and subnamometer structures in the surface of a solid. 5,343,042, Cl. 250-307.000.

Fuchs, Mike M., to Eurocollection Canada Ltd. Extendable table. 5,341,750, Cl. 108-64.000.

Fuel Tech Europe Ltd.: *See*—
Peter-Hoblyn, Jeremy D.; and Grimard, Francois X., 5,342,592, Cl. 423-235.000.

Fugate, David W.: *See*—
Pipich, Charles W.; Fugate, David W.; and Marks, James M., 5,343,179, Cl. 335-167.000.

Fuhrer, Robert: *See*—
Berges, Dietrich; Fuhrer, Robert; and Lentz, Harald, 5,342,000, Cl. 242-155.00M.

Fuji Electric Co., Ltd.: *See*—
Miyasaka, Tadashi, 5,343,098, Cl. 307-570.000.

Fuji Oil Co., Ltd.: *See*—
Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, 5,342,641, Cl. 426-549.000.

Fuji Photo Film Co., Ltd.: *See*—
Aono, Toshiaki, 5,342,729, Cl. 430-203.000.
Goto, Masatoshi; and Ishikawa, Takatoshi, 5,342,740, Cl. 430-393.000.
Goto, Takahiro; and Inoue, Nobuaki, 5,342,743, Cl. 430-507.000.
Kanetake, Satoshi; Yasuda, Tomokazu; Muramatsu, Yuzou; and Naoi, Takashi, 5,342,733, Cl. 430-264.000.
Kato, Eiichi; and Kasai, Seishi, 5,342,716, Cl. 430-49.000.
Kato, Eiichi, 5,342,725, Cl. 430-115.000.
Mitani, Yasushi, 5,343,540, Cl. 382-56.000.
Morigaki, Masakazu; Yoshioka, Yasuhiro; and Seto, Nobuo, 5,342,747, Cl. 430-551.000.
Morimoto, Kiyoshi; Morishima, Shin-ichi; and Hayakawa, Hiroshi, 5,342,741, Cl. 430-490.000.
Morita, Kiyoo, 5,342,002, Cl. 242-347.000.
Naruse, Hideaki; Suzuki, Makoto; and Sato, Takehiko, 5,342,742, Cl. 430-503.000.
Nishiyama, Shingo; Mukunoki, Yasuo; and Yoneyama, Masakazu, 5,342,751, Cl. 430-637.000.
Oi, Nakao; and Komatsuzaki, Hiroshi, 5,343,265, Cl. 354-222.000.
Okazaki, Yoji, 5,343,485, Cl. 372-22.000.
Sakanoue, Kei; and Kimura, Keizo, 5,342,749, Cl. 430-558.000.
Sasaki, Hirotomo; Fujimori, Toru; Mifune, Hiroyuki; and Morimura, Kimiyasu, 5,342,750, Cl. 430-603.000.
Wariishi, Koji, 5,342,744, Cl. 430-522.000.
Yamaguchi, Akira, 5,343,225, Cl. 346-108.000.
Yamamoto, Takashi; and Ozawa, Yoshio, 5,343,273, Cl. 355-75.000.
Yoshida, Takashi; and Yamamoto, Takashi, 5,343,274, Cl. 355-79.000.

Fuji Photo Optical Co., Ltd.: *See*—
Takemae, Hisao; Manome, Tadamasa; and Kaneko, Keiji, 5,343,263, Cl. 354-82.000.
Tsujiuchi, Jumpei; and Okada, Katsuyuki, 5,343,410, Cl. 364-525.000.
Yamakawa, Hiromitsu, 5,343,325, Cl. 359-205.000.

Fuji Xerox Co., Ltd.: *See*—
Hibi, Yoshiharu; and Terada, Yoshihiro, 5,343,312, Cl. 358-520.000.
Ota, Takeshi; Arii, Mitsuzo; Hirata, Masukazu; and Kawabata, Yasunari, 5,343,545, Cl. 385-46.000.
Sasaki, Toshinori; Kanazawa, Akira; Hara, Kenji; Fukao, Tomoo; Ishizuka, Masahiko; Yamada, Masatomo; Sugimura, Naoto; and Yoshihara, Michiaki, 5,343,142, Cl. 324-71.100.

Fujihara, Masayuki: *See*—
Murata, Susumu; Sano, Masako; Takeuchi, Yasuo; Fujihara, Masayuki; Yokoo, Hisahiko; Nakanishi, Kenjiro; Miura, Tetsuo; and Shimizu, Yoshio, 5,342,634, Cl. 426-113.000.

Fujii, Koji; Goto, Yasuhiro; Ryudo, Makoto; and Ihara, Hideki, to Matsushita Electric Industrial Co., Ltd. Resistance welding monitor. 5,343,011, Cl. 219-109.000.

Fujimori Kogyo Co.: *See*—
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,343,317, Cl. 359-73.000.

Fujimori, Toru: *See*—
Sasaki, Hirotomo; Fujimori, Toru; Mifune, Hiroyuki; and Morimura, Kimiyasu, 5,342,750, Cl. 430-603.000.

Fujimoro, Takuya; and Wada, Yukio, to Kabushiki Kaisha Toshiba. Power-on reset system and a semiconductor memory device incorporating same. 5,343,085, Cl. 307-272.300.

Fujinami, Yasushi, to Sony Corporation. Moving image compressing and recording medium and moving image data encoder and decoder. 5,343,248, Cl. 348-452.000.

Fujino, Nobuhiro: *See*—
Honma, Masaki; Nakano, Akio; Mabuti, Kouzou; Asahi, Isamu; Tsuruta, Setsuo; Fujino, Nobuhiro; and Kobayashi, Nobuhisa, 5,343,387, Cl. 364-401.000.

Fujisawa, Yoshihiro: *See*—
Kimura, Kazuya; Kayukawa, Hiroaki; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,342,178, Cl. 417-269.000.

Fujisawa, Yoshikazu; Tsuji, Makoto; Narishge, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, to Honda Giken Kogyo Kabushiki Kaisha. Slide bearing. 5,342,698, Cl. 428-612.000.

Fujita, Masayuki: *See*—
Iwakiri, Hiroshi; Fujita, Masayuki; and Hasegawa, Takashi, 5,342,914, Cl. 528-32.000.

Fujita, Shigeo; Matsumoto, Mansuke; Kumagae, Yojiro; Wada, Sayuri; and Hashimoto, Shuichi, to Yamamoto Chemicals, Inc. Crystal modifications of 2-M-toluidino-3-methyl-6-di-N-butylaminofluoran, process for preparing thereof, and recording materials containing said crystal modifications. 5,342,967, Cl. 549-226.000.

Fujitsu Limited: *See*—
Baumann, Todd D., 5,343,131, Cl. 318-561.000.
Hasegawa, Syuichi, 5,343,480, Cl. 371-34.000.
Iino, Hatsumi; and Fukushima, Takeo, 5,343,464, Cl. 370-16.000.
Katoh, Hiroaki; Miyazaki, Toshimasa; Takahashi, Tamotsu; Ishii, Takeshi; Oyama, Yoshihiro; Oyama, Yoshihiro; and Sasaki, Tatsuo, 5,343,029, Cl. 235-467.000.
Nozaki, Koji, 5,342,735, Cl. 430-270.000.
Osada, Noriko, 5,343,511, Cl. 379-58.000.
Sekihata, Osamu; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Tanaka, Kenji; Hatta, Hiroyuki; and Furuya, Reiko, 5,343,462, Cl. 370-13.000.

Fujiwara, Ryuji: *See*—
Iwase, Masanori; Fujiwara, Ryuji; and Mochizuki, Ryo, 5,342,489, Cl. 204-153.180.

Fujiwara, Takayuki; and Ito, Shigeru, to Amada Company, Limited. Turret punch press with a die exchanging device. 5,342,276, Cl. 483-29.000.

Fujiwara, Toru; and Itoh, Yoshinori, to Tsubakimoto Chain Co. Toothed belt. 5,342,252, Cl. 474-266.000.

Fujiwara, Yoshio: *See*—
Kaminaga, Kozo; Ike, Kazuo; Makise, Tetsuro; Fujiwara, Yoshio; Yamakawa, Kiyoshi; and Sawakata, Kiyoshi, 5,343,334, Cl. 360-38.100.

Fujiyama, Michihiro: *See*—
Mizuno, Takao; and Fujiyama, Michihiro, 5,343,307, Cl. 358-444.000.

Fujiyoshi, Toshikazu: *See*—
Karino, Kunio; Fujiyoshi, Toshikazu; Danjo, Kenzo; Kinoshita, Atsushi; and Moriguchi, Haruo, 5,343,017, Cl. 219-130.400.

Fukami, Masaaki, to Kabushiki Kaisha Allco. Writing instrument with exchangeable ink refill. 5,342,136, Cl. 401-135.000.

Fukao, Tomoo: *See*—
Sasaki, Toshinori; Kanazawa, Akira; Hara, Kenji; Fukao, Tomoo; Ishizuka, Masahiko; Yamada, Masatomo; Sugimura, Naoto; and Yoshihara, Michiaki, 5,343,142, Cl. 324-71.100.

Fukasawa, Kazuo; and Suetsugu, Masachika, to Tokyo Electron Yamanashi Limited. Plasma processing apparatus including condensation preventing means. 5,342,471, Cl. 156-345.000.

Fukuda, Bunjiro: *See*—
Hayakawa, Yasuyuki; Nishiike, Ujihiro; Fukuda, Bunjiro; Yamada, Masataka; Iida, Yoshiaki; Takeuchi, Fumihiko; and Komatsubara, Michiro, 5,342,454, Cl. 148-113.000.

Fukui, Atsushi: *See*—
Itoh, Masami; Nishii, Kanji; Kawamura, Hiroyuki; and Fukui, Atsushi, 5,343,415, Cl. 364-725.000.

Fukui, Kazuyuki; and Yamada, Takanobu, to Minolta Camera Kabushiki Kaisha. Apparatus and method for forming an image including correction for laser beam size. 5,343,235, Cl. 346-160.000.

Fukui, Satoshi, to Murata Kikai Kabushiki Kaisha. Wireless telephone. 5,343,510, Cl. 379-58.000.

Fukui, Tetsu; Oota, Yoshimi; and Hasegawa, Shigekazu, to Kubota Corporation. Four wheel drive working vehicle having transmission clutches separately operable for driving right and left rear wheels. 5,341,893, Cl. 180-245.000.

Fukui, Yasuo: *See*—
Imai, Akihiro; Matsuo, Hiroyuki; Fukui, Yasuo; Mima, Soichiro; and Taguchi, Nobuyoshi, 5,342,818, Cl. 503-227.000.

Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, to Hitachi,

VOL 1165 ISS 5 AG 30 1994 UMI

Ltd.; and Hitachi Engineering Co., Ltd. Coil structure and coil container. 5,343,180, Cl. 335-216.000.

Fukushima, Akira: *See*—
Hirano, Hiroyuki; Tsuzuki, Yoshihiko; Haseda, Satoshi; Fukushima, Akira; Inoue, Hideo; and Takeda, Osamu, 5,343,393, Cl. 364-424.050.

Fukushima, Takeo: *See*—
Iino, Hatsumi; and Fukushima, Takeo, 5,343,464, Cl. 370-16.000.

Fulkerson, Terrence M.; and Pallante, Robert R., to Nordson Corporation. Electrostatic powder spray gun with hose purge adaptor. 5,341,989, Cl. 239-3.000.

Fuller, Charles I.: *See*—
Seksaria, Dinesh; and Fuller, Charles I., 5,342,243, Cl. 464-134.000.

Fuller, James M. Beverage cooler and container apparatus. 5,341,657, Cl. 62-389.000.

Fumei, John: *See*—
Sturm, Wilfried; and Fumei, John, 5,342,560, Cl. 264-45.900.

Fung, Anthony K. L.: *See*—
Plata, Daniel J.; Fung, Anthony K. L.; Morton, Howard E.; Leanna, Robert; Baker, William R.; and Pratt, John K., 5,342,981, Cl. 556-420.000.

Fung, Wing-Cho; Pun, Yim; and Selvin, Eric B., to Intel Corporation. Automatic voltage detector control circuitry. 5,343,086, Cl. 307-296.100.

Furda, Gary J.: *See*—
Daley, Michael J.; Steber, William D.; Furda, Gary J.; Johnston, Paul A.; and Oldham, Elizabeth R., 5,342,612, Cl. 424-85.100.

Furneaux, David M., to Mars Incorporated. Method and apparatus for testing coins. 5,341,908, Cl. 194-317.000.

Furukawa Electric Co., Ltd.: *See*—
Aoki, Nobuo; Aizawa, Ikuo; Yokoi, Keisuke; and Negishi, Heido, 5,343,103, Cl. 310-87.000.
Matsuda, Yutaka; Moriue, Hiroo; Nobutoki, Yoshikazu; Hirano, Seiji; and Sakamoto, Hiroaki, 5,343,475, Cl. 370-94.100.
Yoshida, Seikoh; and Kikuta, Toshio, 5,342,475, Cl. 117-83.000.

Furukawa, Tsuneaki: *See*—
Miyazawa, Osamu; Furukawa, Tsuneaki; and Kitahara, Jouji, 5,343,108, Cl. 310-323.000.

Furumoto, Hideyuki: *See*—
Shimoichi, Kouji; and Furumoto, Hideyuki, 5,342,161, Cl. 414-416.000.

Furuse, Akihiro: *See*—
Kitaoka, Kazuhiro; Furuse, Akihiro; Takesue, Fumiki; and Ito, Tsukasa, 5,343,137, Cl. 320-13.000.

Furuya, Akio; Tsuji, Toshimoto; and Sato, Takayuki, to DAI Nippon Toryo Co., Ltd. Method for preventing corrosion of a reinforced concrete structure. 5,341,562, Cl. 29-825.000.

Furuya, Reiko: *See*—
Sekihata, Osamu; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Tanaka, Kenji; Hatta, Hiroyuki; and Furuya, Reiko, 5,343,462, Cl. 370-13.000.

Furuyama, Hideto: *See*—
Maroney, James T., III; and Furuyama, Hideto, 5,343,054, Cl. 257-184.000.

Furuyama, Tohru, to Kabushiki Kaisha Toshiba. Semiconductor device having a substrate bias generator. 5,343,087, Cl. 307-296.200.

Furuyama, Tohru, to Kabushiki Kaisha Toshiba. Method and circuitry for screening a dynamic memory device for defective circuits. 5,343,430, Cl. 365-201.000.

Fuse, Mamoru, to NEC Corporation. Analog/digital hybrid masterslice IC. 5,343,083, Cl. 307-242.000.

Futagawa, Hitoshi: *See*—
Kikuchi, Toshihiro; Ikeda, Koji; and Futagawa, Hitoshi, 5,342,347, Cl. 604-415.000.

Futterer, Martin: *See*—
Gondrum, Uwe; Futterer, Martin; Milbradt, Frank; and Grebe, Volker, 5,343,285, Cl. 356-28.500.

Future Controls, Inc.: *See*—
Nevitt, James N.; and Chapman, Laurel R., 5,341,649, Cl. 62-126.000.

G.D. Searle & Co.: *See*—
Koszyk, Francis J.; and Mueller, Richard A., 5,342,951, Cl. 546-217.000.
Mueller, Richard A.; and Partis, Richard A., 5,342,838, Cl. 514-252.000.

G. D. Societa' per Azioni: *See*—
Gamberini, Antonio; Brizzi, Marco; and Carboni, Salvatore, 5,341,911, Cl. 198-409.000.

G.I. Corporation: *See*—
Chan, Joseph Y.; Laterza, Larry; Garbis, Dennis; and Einthoven, William G., 5,342,805, Cl. 117-89.000.

G.T. Products, Inc.: *See*—
Walkowski, Paul D.; and Schliebe, Duane M., 5,341,679, Cl. 73-317.000.

Gabel, Robert K.: *See*—
Aften, Carl W.; and Gabel, Robert K., 5,342,530, Cl. 252-8.551.

Gabor, Dieter. Process for mechanical treatment of media in liquid to thin-slurry form. 5,342,529, Cl. 210-741.000.

Gaddy, James L. Performance of anaerobic digesters. 5,342,524, Cl. 210-610.000.

Gadsby, Peter D.; Paeth, David S.; Gross, Stephen W.; and Lyster, Thomas D., to Physio-Control Corporation. Multiple electrode strip. 5,341,806, Cl. 128-640.000.

Gaeta, Stephen A., to CPC International Inc. Tamper evident seal. 5,341,948, Cl. 215-232.000.

Gal, Chava: *See*—
Lazarus, Richard M.; Grunwald, John J.; Gal, Chava; and Hirsch, Shulamit, 5,342,734, Cl. 430-270.000.

Galba, Mark A.; and Gallas, Gus N. Control circuit and device for humidifying air in a heating system. 5,341,986, Cl. 236-11.000.

Galipeau, Denis P.: *See*—
Metro, John G.; and Galipeau, Denis P., 5,343,141, Cl. 323-288.000.

Gallas, Gus N.: *See*—
Galba, Mark A.; and Gallas, Gus N., 5,341,986, Cl. 236-11.000.

Gallery, Jean: *See*—
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., 5,341,676, Cl. 73-147.000.

Gamberini, Antonio; Brizzi, Marco; and Carboni, Salvatore, to G. D. Societa' per Azioni. Method and device for feeding a succession of reels to a pickup station. 5,341,911, Cl. 198-409.000.

Gamma-Metrics: *See*—
Isaacson, Chris A., 5,342,158, Cl. 414-146.000.

Gandolfo, Catherine A.: *See*—
Schulte, Paul J.; and Gandolfo, Catherine A., 5,341,773, Cl. 123-184.610.

Gantt, George E.: *See*—
Forbus, Ellen S.; Gantt, George E.; Willis, Mitchell J.; and Young, Raymond H., 5,342,443, Cl. 106-488.000.

Garbarg, Monique; Arrang, Jean-Michel; Schunack, Walter; Lipp, Ralph; Stark, Holger; Lecomte, Jeanne-Marie; and Schwartz, Jean-Charles, to Institut National de la Sante et de la Recherche Medicale; and Societe Civile Bioprojet. Azomethines agonist compounds of the histamine H_3 receptor for therapeutic use, pharmaceutical compositions acting as agonists of the said receptor and preparation process. 5,342,960, Cl. 548-336.100.

Garbis, Dennis: *See*—
Chan, Joseph Y.; Laterza, Larry; Garbis, Dennis; and Einthoven, William G., 5,342,805, Cl. 117-89.000.

Gardner, David E.; and Novak, David B., to Dayco Products, Inc. Belt tensioning system and method of making. 5,342,249, Cl. 474-135.000.

Garfinkel, Alan: *See*—
Spano, Mark L.; Ditto, William L.; Garfinkel, Alan; and Weiss, James N., 5,342,401, Cl. 607-5.000.

Garg, Diwakar: *See*—
Bonner, Brian B.; Garg, Diwakar; Eichelberger, Donald P.; and Bowe, Donald J., 5,342,455, Cl. 148-208.000.

Garin-Chesa, Pilar; Rettig, Wolfgang J.; and Old, Lloyd J., to Ludwig Institute for Cancer Research; and Memorial Sloan-Kettering Cancer Center. Monoclonal antibodies which specifically binds to endosialin, a 165 Kd glycoprotein found on tumor vascular endothelium, and uses thereof. 5,342,757, Cl. 435-7.210.

Garito, Jon C.: *See*—
Ellman, Alan G.; and Garito, Jon C., 5,342,356, Cl. 606-32.000.

Garlich, Joseph R.: *See*—
Wilson, David A.; Garlich, Joseph R.; Frank, R. Keith; McMillan, Kenneth; and Simon, Jaime, 5,342,604, Cl. 424-1.650.
Wilson, David A.; Frank, R. Keith; Garlich, Joseph R.; and Simon, Jaime, 5,342,925, Cl. 534-10.000.

Gartner, Herbert: *See*—
Graham, Andrew T.; and Gartner, Herbert, 5,342,899, Cl. 525-301.000.

Garvey, Michael J.: *See*—
Heindel, Timothy R.; Garvey, Michael J.; Dick, Daniel W.; Keller, Richard F.; Jordan, Mary P.; and Schleinz, Alan F., 5,342,647, Cl. 427-2.310.

Gas Research Institute: *See*—
Agrawal, Arun K.; and Hindin, Barry, 5,342,578, Cl. 422-13.000.
Dickson, J. Douglas, 5,341,727, Cl. 99-335.000.

Gates, Jeffrey F.: *See*—
James, Larry C.; Kagy, Carl W.; Gates, Jeffrey F.; Hawkey, Jeffrey A.; Heil, Thomas F.; and Simpson, David L., 5,343,478, Cl. 371-22.300.

Gautsch, Wolfgang: *See*—
Zimmer, Richard; Gautsch, Wolfgang; Muller, Armin; and Freitag, Rainer, 5,342,120, Cl. 303-113.200.

Gavin, David F.; Hani, Rahim; Waldron, Craig; and Farmer, Douglas A., Jr., to Olin Corporation. Gel-free paint containing zinc pyrithione cuprous oxide and carboxylic acid. 5,342,437, Cl. 106-18.330.

Gaylord, William B., Jr.; Butzin, Donald F.; and Williams, Robert K., to General Electric Company. Nuclear fuel bundle spacer spring constant gauge. 5,343,504, Cl. 376-247.000.

GEC Marconi Limited: *See*—
Bell, Stephen W., 5,343,202, Cl. 342-5.000.

Geddes, Earl R., to Ford Motor Company. Transducer flux optimization. 5,343,533, Cl. 381-71.000.

Gegner, Joel P., to Motorola, Inc. Zero-voltage-switching quasi-resonant converters with multi-resonant bipolar switch. 5,343,140, Cl. 323-222.000.

Geib, Lawrence E., to Molex Incorporated. Electrical connector with terminal position assurance device. 5,342,223, Cl. 439-752.000.

Geiger, Scott A.: *See*—
Heston, Jeffrey W.; Polanka, Marc D.; Rock, Jeffrey A.; and Geiger, Scott A., 5,342,126, Cl. 374-208.000.

Geissler, Steven J., to Miller Electric Mfg. Co. Induction heater having a power inverter and a variable frequency output inverter. 5,343,023, Cl. 219-661.000.

Gemplus Card International: *See*—
Viricel, Gilles, 5,343,530, Cl. 380-23.000.

GenCorp Inc.: *See*—
McBain, Douglas S.; LaJudice, Kevin P.; and Melby, Earl G., 5,342,554, Cl. 523-466.000.

Genentech, Inc.: *See*—
Swartz, James R., 5,342,763, Cl. 435-69.100.

General Electric Company: *See*—
Berkcan, Ertugrul, 5,343,037, Cl. 250-227.210.
Bullis, Stephen J.; Perrin, David P.; and Wolff, Peter C., 5,341,719, Cl. 89-16.000.
Chang, Hsueh-Rong, 5,343,118, Cl. 313-637.000.
Dausch, Mark E.; Whipple, Walter, III; Cooper, Terry C.; and Schneider, David A., 5,341,661, Cl. 68-207.000.
Davenport, John M.; Hansler, Richard L.; and King, Kenneth S., 5,343,367, Cl. 362-32.000.
Enlow, William P.; and Valdiserri, Leo L., 5,342,978, Cl. 554-78.000.
Farrall, George A.; Cocoma, John P.; Borowiec, Joseph C.; and Pashley, Robert F., 5,343,126, Cl. 315-248.000.
Gaylord, William B., Jr.; Butzin, Donald F.; and Williams, Robert K., 5,343,504, Cl. 376-247.000.
Goodzeit, Neil E.; Paluszek, Michael A.; Raman, Kidambi V.; and Wallar, Eric V., 5,343,398, Cl. 364-434.000.
Kast, Kevin H.; and Myers, William J., Jr., 5,341,635, Cl. 60-39.030.
Kervinen, John A., 5,341,678, Cl. 73-150.00R.
Kott, Michael A., 5,343,211, Cl. 342-379.000.
Nolte, Michael G.; Davis, Gary D.; Jergenson, Ronny D.; Scheu, Robert W.; and Tillery, Timothy G., 5,342,998, Cl. 174-152.00R.
Nowogrodzki, Markus, 5,343,205, Cl. 342-45.000.
Pollock, R. A.; and Van Nest, J. F., 5,341,603, Cl. 51-73.00R.
Stein, Judith; King, Joseph A., Jr.; and Caruso, Andrew J., 5,342,870, Cl. 524-188.000.
Tiemann, Jerome J.; Michon, Gerald J.; and Tomlinson, Harold W., Jr., 5,343,297, Cl. 348-301.000.
Toy, Raymond L.; Koilpillai, Ravinder D.; and Chennakeshu, Sandeep, 5,343,498, Cl. 375-37.000.

General Engineering (Netherlands) B.V.: *See*—
Olsson, Jan, 5,343,411, Cl. 364-566.000.

General Mills, Inc.: *See*—
Schwab, Edward C.; Thomas, Kristin L.; Brown, George E.; and Harrington, Terry R., 5,342,635, Cl. 426-241.000.
Zimmermann, Craig E., 5,342,188, Cl. 425-235.000.

General Motors Corporation: *See*—
Abdul, Abdul S.; Gibson, Thomas L.; and Glasson, William A., 5,341,877, Cl. 166-272.000.
Charles, Harlan W., 5,342,111, Cl. 297-232.000.
Halstead, Gary A.; and Barten, Brian L., 5,341,978, Cl. 228-42.000.
Heston, Jeffrey W.; Polanka, Marc D.; Rock, Jeffrey A.; and Geiger, Scott A., 5,342,126, Cl. 374-208.000.
Krom, Lynn C.; and Dye, Duane K., 5,341,701, Cl. 74-499.000.
Ladd, Barry L.; and Pociask, Michael B., 5,342,242, Cl. 464-98.000.
Lynn, Mark A.; and Miller, Gregory D., 5,343,323, Cl. 359-180.000.
Richter, Thomas L.; and Jary, Michael W., 5,341,544, Cl. 24-289.000.
Shah, Suresh D.; and Hlavaty, David G., 5,342,191, Cl. 425-533.000.
Stelzer, Sean R., 5,341,871, Cl. 165-121.000.
Sula, Daniel J., 5,342,254, Cl. 475-230.000.
Swain, James C., 5,342,186, Cl. 418-55.500.

General Signal Corporation: *See*—
Bachle, Walter W.; and Chase, Raymond, 5,342,096, Cl. 285-23.000.

Genpak Corporation: *See*—
Reedy, Michael E.; and Rider, Edward W., Jr., 5,342,857, Cl. 521-76.000.

Gens, Marc, to SGS-Thomson Microelectronics S.A. Variable level periodic excitation circuit for a capacitive load. 5,343,084, Cl. 307-246.000.

Gentile, David P.; Synor, Jeffrey C.; and Lee, Chien H., to TRW Vehicle Safety Systems Inc. Vehicle occupant restraint apparatus. 5,342,083, Cl. 280-728.00A.

Geo-Centers, Inc.: *See*—
Georger, Jacque H., Jr.; Peckerar, Martin C.; Rebbert, Milton L.; Calvert, Jeffrey M.; and Hickman, James J., 5,342,737, Cl. 430-324.000.

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Georgetown University: *See*—
Podlasek, Stanley J.; and McPherson, Richard A., 5,342,755, Cl. 435-7.100.

Georgia-Pacific Corporation: *See*—
Randall, Brian G., 5,342,680, Cl. 428-285.000.

Gerace, Michael A.: *See*—
Van Name, Frederick W.; Gerace, Michael A.; Singer, Victor; and Walsh, Brendan M., 5,341,638, Cl. 60-204.000.

Gerard, Jean-Michel; and Favre, Jacques, to France Telecom Etablissement Autonome de Droit Public. Thin film, field effect transistor with a controlled energy band. 5,343,057, Cl. 257-192.000.

Gerber Optical, Inc.: *See*—
Wood, Kenneth O., 5,341,604, Cl. 51-165.710.

Geremakis, Perry A.: *See*—
Kenyon, Roger R.; Landes, Mark D.; Campana, Donna L.; Geremakis, Perry A.; Dock, Ted L.; and Ondrla, Jeffrey M., 5,342,362, Cl. 606-79.000.

Gerez, Victor: *See*—
Kejariwal, Murari L.; Thapar, Baldev; Gerez, Victor; and March, Daniel, 5,343,155, Cl. 324-522.000.

Gerhardt, Todd, to Kohler Co. Reduced component internal combustion engine. 5,341,781, Cl. 123-195.00R.

Gerro Plast GmbH: *See*—
Sturm, Wilfried; and Fumei, John, 5,342,560, Cl. 264-45.900.

Gestind-M.B. "Manifattura Di Bruzolo" S.p.A.: *See*—
De Filippo, Emilio, 5,342,115, Cl. 297-411.320.

Gevaud, Roland: *See*—
Baret, Gilles; and Gevaud, Roland, 5,341,671, Cl. 73-40.700.

Ghaerzadeh, Kambiz, to Baxter International Inc. Balloon catheters, scopes and related medical devices having non-occluding balloon inflation-deflation apertures. 5,342,303, Cl. 604-96.000.

Giant Manufacturing Co., Ltd.: *See*—
Chang, Chi-Ming, 5,342,263, Cl. 482-62.000.

Giat Industries: *See*—
Redaud, Christophe, 5,341,743, Cl. 102-384.000.

Gibbs, Robert J.: *See*—
Cerwin, Robert; Trew, Cheryl; and Gibbs, Robert J., 5,341,922, Cl. 206-63.300.

Gibson, Carl: *See*—
Robinette, Larry; and Gibson, Carl, 5,342,162, Cl. 414-483.000.

Gibson, Scott S., to Burke Gibson, Inc. Shelf divider system. 5,341,945, Cl. 211-184.000.

Gibson, Thomas L.: *See*—
Abdul, Abdul S.; Gibson, Thomas L.; and Glasson, William A., 5,341,877, Cl. 166-272.000.

Gilbert, Michael H., Sr.; and Hejl, Timothy J., to Advanced Ceramics Corporation. Pyrolytic boron nitride heating unit. 5,343,022, Cl. 219-552.000.

Gillard, Clive H.: *See*—
Richards, Clive H.; and Gillard, Clive H., 5,343,241, Cl. 348-97.000.

Gillespie, Edward S., to Imtec Corporation. Cylindrical dental implant. 5,342,199, Cl. 433-173.000.

Gillette Company, The: *See*—
Tucker, William E., 5,342,135, Cl. 401-116.000.

Gilley, Ian: *See*—
Newbold, Dixon; and Gilley, Ian, 5,341,971, Cl. 224-39.000.

Gilljam, Nina: *See*—
Hirschberg, Jakub; Neubauer, Heinz; Gilljam, Nina; Bowald, Staffan; and Lindegren, Ulf, 5,342,413, Cl. 607-126.000.

Gilovich, Paul A. Magnetic disk storage apparatus with multiple sets of actuator arms for read/write operations at different circumferential locations within the disk stack. 5,343,345, Cl. 360-104.000.

Gilovich, Paul A. Magnetic disk storage module with multiple sets of actuator arms for simultaneous read/write operations at different circumferential location within the disk stack. 5,343,347, Cl. 360-106.000.

Gilpin, David W.: *See*—
Trine, David R.; and Gilpin, David W., 5,342,210, Cl. 439-95.000.

Giovannetti, Rafael. Red tape a game of skill and chance. 5,342,058, Cl. 273-243.000.

Giovanni, Lino: *See*—
Panzer, Hans P.; and Giovanni, Lino, 5,342,552, Cl. 252-582.000.

Girard, Jean C.: *See*—
Bibona, Donald S.; Allen, Michael J.; and Girard, Jean C., 5,342,473, Cl. 156-394.100.

Giraud, Clarence E.; and Koepnick, Russell G., to Micro Precision Instrument Company. Sectioning device for lamellar surgery. 5,342,378, Cl. 606-166.000.

Girgis, Girgis A., to Maritec Corp. Precision digital multimeter and waveform synthesizer for multi-signals with distored waveforms embedded in noise. 5,343,404, Cl. 364-484.000.

Gitzel, Jorg: *See*—
Macholdt, Hans-Tobias; Schiebler, Siegfried; Gitzel, Jorg; and Dietz, Erwin, 5,342,723, Cl. 430-110.000.

Glass, Geoffrey M., to Plasticade Products Corporation. Flasher light mounting assembly for traffic barricades. 5,342,140, Cl. 404-9.000.

Glasson, William A.: *See*—
Abdul, Abdul S.; Gibson, Thomas L.; and Glasson, William A., 5,341,877, Cl. 166-272.000.

Glaxo Canada Inc.: *See*—
Chopra, Sham K.; Nangia, Avinash K.; Lee, David; and Molloy, Thomas P., 5,342,627, Cl. 424-473.000.

Glaxo Inc.: *See*—
Lackey, Karen; and Sternbach, Daniel D., 5,342,947, Cl. 546-41.000.

Glidden Company, The: *See*—
Craun, Gary P.; and Bode, Daniel, 5,342,864, Cl. 523-403.000.

Glotin, Michel; Parsy, Roland; and Abadie, Patrick, to Atochem. Alpha-monoolefinic graft copolymers. 5,342,886, Cl. 525-66.000.

Glotzbach, Warren P.: *See*—
Averst, Douglas I.; Carsello, Stephen R.; and Glotzbach, Warren P., 5,343,494, Cl. 375-1.000.

Glucksman, Dov Z. Humidifier with removable vaporizing unit for ready access to heating element and evaporation chamber. 5,343,551, Cl. 392-405.000.

Go, Hisao: *See*—
Kamakura, Mitsutoshi; Shioda, Akihiko; Enami, Yoshihide; and Go, Hisao, 5,341,563, Cl. 29-743.000.

Gobel, Andreas: *See*—
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weissbaupl, Horst, 5,343,506, Cl. 376-280.000.

Gobel, Armin; Patzschke, Hans-Peter; and Doebert, Jurgen, to Herberts GmbH. Aqueous coating compound, a process for its prepara-

VOL 1165 ISS 5 AG 30 1994 UMI

tion and its use in processes for multilayered lacquering. 5,342,882, Cl. 524-832.000.
Gobran, Ramsis, to Minnesota Mining and Manufacturing Company. Hot-melt-coatable adhesives. 5,342,685, Cl. 428-355.000.
Gochnour, Derek J.: *See*—
Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., 5,342,807, Cl. 437-209.000.
Godfrey, Christopher R. A.: *See*—
Clough, John M.; Godfrey, Christopher R. A.; de Fraine, Paul J.; and Matthews, Ian R., 5,342,837, Cl. 514-247.000.
Goerlach, Alred: *See*—
Pluntke, Christian; and Goerlach, Alred, 5,343,069, Cl. 257-583.000.
Goglio, Luigi. Rigid container for interchangeable flexible packs. 5,341,952, Cl. 220-408.000.
Gold, Marvin H., to Medical Polymers,Inc. Water-based human tissue lubricant. 5,342,617, Cl. 424-405.000.
Goldberg, Brian J.; and Tsonis, Anastasios, to Pulse Microsystems Ltd. Embroidery design system. 5,343,401, Cl. 364-470.000.
Goldberg, Michael S.; and Horres, Charles R., Jr. Apparatus and method for monitoring gastric fluid pH. 5,341,803, Cl. 128-632.000.
Goldfine, Milton; Perlman, Marvin; and Montgomery, Robert A. Transaction authentication using a centrally generated transaction identifier. 5,343,529, Cl. 380-23.000.
Goldhardt, Donald J.: *See*—
Manosalva, Edgar G.; Ross, Jeffrey R.; and Goldhardt, Donald J., 5,341,823, Cl. 128-898.000.
Goldmann, Siegfried: *See*—
Behner, Otto; Wollweber, Hartmund; Goldmann, Siegfried; Rosen, Bruno; and Zaiss, Siegfried, 5,342,847, Cl. 514-356.000.
Goldstar Co., Ltd.: *See*—
Kim, Young S., 5,343,039, Cl. 250-235.000.
Park, Hong C., 5,343,262, Cl. 353-119.000.
Goldstar Electron Co., Ltd.: *See*—
Jun, Young-Kwon, 5,342,800, Cl. 437-52.000.
Golicz, Roman M., to Roll Systems, Inc. High capacity sheet feeders for high volume printers. 5,342,036, Cl. 271-3.100.
Gondrum, Uwe; Futterer, Martin; Milbradt, Frank; and Grebe, Volker, to Meascon Gesellschaft fur Mebtechnik mbH. Electrical circuit for measuring the frequency of laser Doppler signals. 5,343,285, Cl. 356-28.500.
Good, Roger R. Endocurietherapy. 5,342,283, Cl. 600-8.000.
Goodhue, William V. Angle plates for transverse duct flanges. 5,342,100, Cl. 285-363.000.
Goodrich, Allen B., to Next, Inc. Method and apparatus for clock and data delivery on a bus. 5,343,503, Cl. 375-121.000.
Goodrich, Joel L.; and Souchuns, Christopher C., to M/A-COM, Inc. Mesa type PIN diode. 5,343,070, Cl. 257-594.000.
Goodrich, Raymond P., Jr.: *See*—
Platz, Matthew S.; Goodrich, Raymond P., Jr.; and Wong, Victoria A., 5,342,752, Cl. 435-2.000.
Goodyear Tire & Rubber Company, The: *See*—
Jalics, George; and Bauer, Richard G., 5,342,896, Cl. 525-193.000.
Sandstrom, Paul H.; and Roennau, Raymond B., 5,341,863, Cl. 152-209.00R.
Stan, Aurel V., 5,341,687, Cl. 73-862.046.
Goodzeit, Neil E.; Paluszek, Michael A.; Raman, Kidambi V.; and Wallar, Eric V., to General Electric Co. Spacecraft roll-yaw compensator with orbit-rate and harmonic bandpass filters. 5,343,398, Cl. 364-434.000.
Gordin, Myron K.; and Crookham, Joe P., to Musco Corporation. Means and method for highly controllable lighting. 5,343,374, Cl. 362-153.100.
Gordon, Douglas J.: *See*—
Vicari, Richard; Gordon, Douglas J.; Hinsberg, William D.; McKean, Dennis R.; Willson, Carlton G.; and Dammel, Ralph, 5,342,727, Cl. 430-157.000.
Gordon, Edward A., to Sony Electronics Inc. Display and storage holder for tape cassettes. 5,342,122, Cl. 312-9.480.
Gordon, Joel D. Aerobic exercise device. 5,342,264, Cl. 482-70.000.
Goren, Jacob. Method for manufacturing simulated granite. 5,342,565, Cl. 264-74.000.
Gorsuch, Jan; Ennis, Mark R.; and Burgess, Robert M., to Minnesota Mining and Manufacturing Company. Abrasive belts and their manufacture. 5,341,609, Cl. 51-399.000.
Gosch, Hans-Juergen; Rust, Harald; Fischer, Rolf; Hechler, Claus; and Pinkos, Rolf, to BASF Aktiengesellschaft. Separation of 1,4-butanediol from hydrogenation mixtures. 5,342,488, Cl. 203-80.000.
Gossens, Anthonette A.: *See*—
Tanzer, Richard W.; Bruemmer, Mary A.; and Gossens, Anthonette A., 5,342,333, Cl. 604-359.000.
Goto, Fumihiko: *See*—
Fukumoto, Hideahi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.
Goto, Kazuyoshi: *See*—
Sato, Masanori; Goto, Kazuyoshi; Hiyama, Katsuyuki; and Chaen, Yoshinobu, 5,342,104, Cl. 294-74.000.
Goto, Masatoshi; and Ishikawa, Takatoshi, to Fuji Photo Film Co., Ltd. Method of processing silver halide color photographic material. 5,342,740, Cl. 430-393.000.
Goto, Takahiro; and Inoue, Nobuaki, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,342,743, Cl. 430-507.000.
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, to Nihon Bayer Agrochem K.K. Herbicidal 1-(3-halo-4-substituted phenyl)tetrazolinones. 5,342,954, Cl. 548-251.000.
Goto, Toshio: *See*—
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Hayakawa, Hidenori; Yanagi, Akihiko; and Asami, Tadao, 5,342,938, Cl. 544-105.000.
Goto, Yasuhiro: *See*—
Fujii, Koji; Goto, Yasuhiro; Ryudo, Makoto; and Ihara, Hideki, 5,343,011, Cl. 219-109.000.
Gould Electronics Inc.: *See*—
Mosesian, Jerry L.; and Reid, Clyde D., 5,343,185, Cl. 337-163.000.
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., to Board of Regents, The. Surface pressure measurement by oxygen quenching of luminescence. 5,341,676, Cl. 73-147.000.
Grabbe, Dimitry G.; and Korsunsky, Iosif, to Whitaker Corporation, The. Socket for direct electrical connection to an integrated circuit chip. 5,342,206, Cl. 439-71.000.
Graber, Heinz, to KWC AG. Control cartridge for a single-lever mixer fitting. 5,341,845, Cl. 137-625.410.
Graef, Harry T.; Blackford, Damon J.; and Crewe, Timothy R., to Diebold, Incorporated. Sheet handling apparatus. 5,342,165, Cl. 414-788.900.
Graham, Andrew T.; and Gartner, Herbert, to Dow Chemical Company, The. Process for recycling aqueous fluid absorbents fines to a polymerizer. 5,342,899, Cl. 525-301.000.
Graham, Jeffrey: *See*—
Chaney, Raymond J.; and Graham, Jeffrey, 5,341,702, Cl. 74-821.000.
Grammes, Hartwig: *See*—
Weber, Christian; and Grammes, Hartwig, 5,342,856, Cl. 521-51.000.
Graves, Jeffrey A.; Sherman, Marshall L.; Leader, Matthew J.; and Sin, Kee V. Electronic wiring substrate. 5,342,498, Cl. 204-408.000.
Great Lakes Feedscrews, Inc.: *See*—
Myers, Jeffrey A., 5,342,125, Cl. 366-89.000.
Greater Glasgow Health Board: *See*—
Maxted, Kenneth J.; and Mountford, Neville, 5,342,411, Cl. 607-107.000.
Grebe, Volker: *See*—
Gondrum, Uwe; Futterer, Martin; Milbradt, Frank; and Grebe, Volker, 5,343,285, Cl. 356-28.500.
Grecksch, Hans: *See*—
Wirtz, Ulrich; Grecksch, Hans; Irmen, Wolfgang; Hensen, Helmuth; and Bohmer, Walter, 5,341,549, Cl. 28-298.000.
Green, Anthony; Champalle, Patrice; and Liska, Jean-Louis, to Saft. Separator for an alkaline storage cell. 5,342,708, Cl. 429-145.000.
Greenberg, Matthew L.: *See*—
Kan, Tze-Kong; Zucker, Sandy M.; Greenberg, Matthew L.; and Lamb, William J., 5,343,440, Cl. 367-27.000.
Greenberg, Richard: *See*—
Boutaghou, Zine-Eddine; Brown, Dana H.; Erickson, Kevin J.; and Greenberg, Richard, 5,343,340, Cl. 360-77.080.
Greenberg, William M.: *See*—
Cohen, Brian E.; Greenberg, William M.; Pagryzinski, William V.; and Smith, Brian E., 5,343,288, Cl. 356-239.000.
Greene, Thomas L.: *See*—
Palansky, Bruce J.; Greene, Thomas L.; Daubenmier, John A.; Smith, Paul F.; Kock, Karl H.; Bird, Stuart L.; and McCall, Gavin F., 5,341,703, Cl. 477-65.000.
Greenwood, Mark H.: *See*—
Straub, Mariann C.; and Greenwood, Mark H., 5,341,531, Cl. 5-655.000.
Greeson, Michael R.; Baar, James C.; Haines, Jerry D.; and Tepe, James J., to Delco Electronics Corporation. Split backed pressure sensitive die carrier tape. 5,343,363, Cl. 361-749.000.
Gremillion, Ernest J.: *See*—
Gremillion, Richard A., 5,343,002, Cl. 181-116.000.
Gremillion, Richard A., to Gremillion, Ernest J., a part interest. Disposable point with explosive charge for seismic exploration. 5,343,002, Cl. 181-116.000.
Grenci, Charles A.; and Clayton, R. Dallas. Method of making clean socket fit connection. 5,341,567, Cl. 29-890.141.
Griest, Sidney H.: *See*—
Adams, Victor J.; Griest, Sidney H.; and Hart, John W., Jr., 5,341,684, Cl. 73-756.000.
Griffen, Neil C.; and Million, James F., to Mettler-Toledo, Inc. Multiple load cell weighing apparatus. 5,343,000, Cl. 177-145.000.
Griffith, Catherine L.: *See*—
Beidle, David A.; Fields, Karen L.; Griffith, Catherine L.; and Munro, Frederick G., 5,343,403, Cl. 364-478.000.
Griffoul, Christine: *See*—
Chalom, Joseph; Griffoul, Christine; Tod, Michel; and Reveilleau, Stephane, 5,342,970, Cl. 549-288.000.
Griggi, Pierluigi: *See*—
Panzeri, Achille; Ceriani, Lucio; Griggi, Pierluigi; and Nesi, Marcella, 5,342,948, Cl. 546-77.000.
Griggs, Steven H.; Bartley, William E.; and Rule, Adrian O., III, to Environmental Growth Chambers. Environmental chamber for plant growth analysis. 5,341,595, Cl. 47-60.000.
Grimard, Francois X.: *See*—
Peter-Hoblyn, Jeremy D.; and Grimard, Francois X., 5,342,592, Cl. 423-235.000.
Grinberg, Eugene Y.; and Gullan, Charles E., to Ingersoll-Rand Company. Movable control console. 5,341,895, Cl. 180-326.000.
Gris, Joel; and Charpail, Francois, to U.S. Philips Corporation. Amplifier device for a cable television distribution network. 5,343,158, Cl. 328-103.000.

Grizzard, Bennett C., Jr.; and Brown, Keith R., to Brown, Keith R. Mobile compactor of drum contents. 5,341,731, Cl. 100-100.000.
Grocela-Kathe, Teresa A.; and Shade, Ray W. Passivation of methylchlorosilane fines. 5,342,430, Cl. 75-746.000.
Groh, David G., to Amway Corporation. Method of using image analysis under cross-polarized light to evaluate follicular biopsy slides. 5,343,536, Cl. 382-6.000.
Groner, Karl: *See*—
Schiel, Christian; Kotitschke, Gerhard; and Groner, Karl, 5,341,579, Cl. 34-115.000.
Gross, Charles E. Collapsible and retractable step apparatus. 5,341,897, Cl. 182-88.000.
Gross, H. Gerald; and Oliver, Stephen B., to H. Koch & Sons Company. Emergency egress illuminator and marker light strip. 5,343,375, Cl. 362-248.000.
Gross, Stephen W.: *See*—
Gadsby, Peter D.; Paeth, David S.; Gross, Stephen W.; and Lyster, Thomas D., 5,341,806, Cl. 128-640.000.
Groesman, Michael D.; Eder, Jerome M.; Hurley, Jewelanne; Siegel, Bernard; Adelberg, Kenneth; and Adelberg, Marvin. Medical body fluid sampler device and method. 5,342,328, Cl. 604-317.000.
Grounauer, Pierre-Alain. Retractor device for human or animal tissue. 5,341,798, Cl. 128-20.000.
Grubbs, Robert H.; Johnson, Lynda K.; and Nguyen, Sonbinh T., to California Institute of Technology. Ruthenium and osmium metal carbene complexes for olefin metathesis polymerization. 5,342,909, Cl. 526-171.000.
Gruber, Kenneth P.: *See*—
Laughlin, Timothy E.; Scepanski, William H.; and Gruber, Kenneth P., 5,342,587, Cl. 422-266.000.
Gruber, Walter, to Carl Freudenberg, Firma. Pivot bearing. 5,342,128, Cl. 384-203.000.
Grund, Clemens: *See*—
Roetsch, Thomas; Hagen, Helmut; Reichelt, Helmut; and Grund, Clemens, 5,342,928, Cl. 534-788.000.
Grundfest, Warren S.: *See*—
Stavridi, Marigo; and Grundfest, Warren S., 5,341,805, Cl. 128-633.000.
Grunwald, John J.: *See*—
Lazarus, Richard M.; Grunwald, John J.; Gal, Chava; and Hirsch, Shulamit, 5,342,734, Cl. 430-270.000.
GTE Government Systems Corporation: *See*—
Lovell, John W.; Sebramm, Karen M.; and DeLisle, William E., 5,343,495, Cl. 375-1.000.
Guaraldi, Glenn A., to Heidelberg Harris Inc. High speed ink feed mechanism. 5,341,740, Cl. 101-350.000.
Guba, Reinhold: *See*—
Emrich, Helmut; and Guba, Reinhold, 5,341,738, Cl. 101-232.000.
Guebels, Pierre-Paul F. M. M.: *See*—
Willocx, Eddie L. M.; Guebels, Pierre-Paul F. M. M.; and Moons, Elve D. J., 5,343,520, Cl. 379-399.000.
Guentherberg, Norbert: *See*—
Seitz, Friedrich; Ruppmich, Karl; Guentherberg, Norbert; and Niessner, Norbert, 5,342,898, Cl. 525-281.000.
Guersen, Herman J.; and Willemsen, Stephanus, to Akzo Nobel nv. Superabsorbent-coated aramid yarn and a process for manufacturing such a yarn. 5,342,686, Cl. 428-378.000.
Guido, Ronald, to Ethicon, Inc. Cutting edge and tapercut needles having a blunt tip. 5,342,397, Cl. 606-222.000.
Guilford Pharmaceuticals Inc.: *See*—
Hamilton, Gregory S., 5,342,946, Cl. 546-23.000.
Guina, Milan M.: *See*—
Arnold, Edward C.; and Guina, Milan M., 5,343,507, Cl. 376-298.000.
Gulardo, John A.: *See*—
Aluotto, Peter A.; and Gulardo, John A., 5,341,586, Cl. 42-7.000.
Gulbins, Erich: *See*—
Licht, Ulrike; Haeberle, Karl; Gulbins, Erich; Rau, Maria G.; Franzmann, Gernot; and Portugall, Michael, 5,342,915, Cl. 528-71.000.
Gullan, Charles E.: *See*—
Grinberg, Eugene Y.; and Gullan, Charles E., 5,341,895, Cl. 180-326.000.
Gunji, Takahiro: *See*—
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishge, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,342,698, Cl. 428-612.000.
Guntly, Leon A.: *See*—
Hughes, Gregory G.; Guntly, Leon A.; Welker, John B.; Hill, David; Rogers, C. James; Henkes, Jerome P.; and Reinke, Michael J., 5,341,870, Cl. 165-110.000.
Gupta, Bal K., to Ontario Hydro. Method and device for measuring moisture content. 5,343,045, Cl. 250-339.100.
Gupta, Debabrata, to Motorola, Inc. Method of bonding a semiconductor substrate to a support substrate and structure therefore. 5,341,979, Cl. 228-111.000.
Gurner, William D.: *See*—
Baker, Harold N.; Eng, Katherine K.; Gurner, William D.; Massei, Michael K.; Necklaws: Elizabeth C.; Osikowicz, Eugene W.; Ramp, Sally K.; and Trach, Paula, 5,342,760, Cl. 435-7.920.
Guterman, Daniel C.: *See*—
Yuan, Jack H.; Samachisa, Gheorghe; Guterman, Daniel C.; and Harari, Eliyahou, 5,343,063, Cl. 257-317.000.
Guthikonda, Ravindra N.: *See*—
DiNinno, Frank; Schmitt, Susan M.; and Guthikonda, Ravindra N., 5,342,933, Cl. 540-302.000.
Guthrie, Warren E., to Northrop Grumman Corporation. Harmonic frequency synthesizer with adjustable frequency offset. 5,343,168, Cl. 331-16.000.
Gutierrez, Manuel. Fishing rod holder and stand. 5,341,589, Cl. 43-17.000.
Gutknecht, Leroy H.: *See*—
Wichinsky, Michael; Gutknecht, Leroy H.; and Fernandez, Claude A., 5,342,049, Cl. 273-119.00R.
Guyot, Jean; and Pochon, Etienne, to Commissariat a l'Energie Atomique. Installation for the formation of a laser beam suitable for isotope separation. 5,343,488, Cl. 372-69.000.
Gyugyi, Laszlo; and Schauder, Colin D., to Westinghouse Electric Corporation. Generalized fast, power flow controller. 5,343,139, Cl. 323-207.000.
h.e.r.c. Incorporated: *See*—
Eden, Todd R.; and Ludwig, Jerome H., 5,342,510, Cl. 210-96.100.
H. Koch & Sons Company: *See*—
Gross, H. Gerald; and Oliver, Stephen B., 5,343,375, Cl. 362-248.000.
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., to Habley Hills Technology Corporation. Topical sprayer with remotely actuated spray tip. 5,341,993, Cl. 239-331.000.
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., to Habley Medical Technology Corporation. Tissue manipulator. 5,342,389, Cl. 606-205.000.
Habley Hills Technology Corporation: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,341,993, Cl. 239-331.000.
Habley Medical Technology Corporation: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,342,389, Cl. 606-205.000.
Hachigo, Akihiro: *See*—
Shikata, Shinichi; Hachigo, Akihiro; Nakahata, Hideaki; and Higaki, Kenjiro, 5,343,107, Cl. 310-313.00A.
Hachiya, Kazuo: *See*—
Hashimoto, Takatsugu; Akutagawa, Keizo; Yagawa, Kazuo; Tanaka, Makoto; Yamagishi, Junichi; and Hachiya, Kazuo, 5,341,862, Cl. 152-209.00R.
Hadzoglou, James, to Allen Telecom Group, Inc., The. Cellular mobile communications antenna. 5,343,214, Cl. 343-713.000.
Haeberle, Karl: *See*—
Licht, Ulrike; Haeberle, Karl; Gulbins, Erich; Rau, Maria G.; Franzmann, Gernot; and Portugall, Michael, 5,342,915, Cl. 528-71.000.
Hafner, Andreas: *See*—
Ernst, Beat; Heneghan, Michael; and Hafner, Andreas, 5,342,929, Cl. 536-18.600.
Wolleb, Heinz; Hafner, Andreas; and Rolfe, William M., 5,342,903, Cl. 525-407.000.
Hagen, Helmut: *See*—
Roetsch, Thomas; Hagen, Helmut; Reichelt, Helmut; and Grund, Clemens, 5,342,928, Cl. 534-788.000.
Hagen, Karluf: *See*—
Thorstensen, Egil; and Hagen, Karluf, 5,341,880, Cl. 166-278.000.
Hahn, Stephen J.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,342,407, Cl. 607-129.000.
Haines, Jerry D.: *See*—
Greeson, Michael R.; Baar, James C.; Haines, Jerry D.; and Tepe, James J., 5,343,363, Cl. 361-749.000.
Haining, Michael L. Retractable needle syringe and capping system. 5,342,323, Cl. 604-195.000.
Hajek, Josef, to MAN Roland Druckmaschinen AG. Rotary printing machine system with synchronized multiple printing machine units or stations. 5,341,735, Cl. 101-181.000.
Hale, Arthur H., to Shell Oil Company. Well drilling cuttings disposal. 5,341,882, Cl. 166-293.000.
Hale, Edward L.; Moller, David D.; and McConnell, Robert R., to Delco Electronics Corp. Adaptive current control. 5,343,382, Cl. 363-98.000.
Haley, Gregory J., to American Cyanamid Company. Fungicidal agents. 5,342,980, Cl. 556-117.000.
Hall, David: *See*—
Wasinger, Eric; and Hall, David, 5,342,415, Cl. 8-111.000.
Hall, James W.: *See*—
West, Neil L.; Hall, James W.; Stickler, Mark F.; and Day, Richard L., 5,342,239, Cl. 460-69.000.
Hall, Michael H.: *See*—
Iannello, Victor; Hall, Michael H.; and Kang, Sukhvinder S., 5,342,825, Cl. 505-166.000.
Hall, Shawn A.; Lane, Ramon; and Wang, Han-chung, to International Business Machines Corporation. Method and apparatus for batch, active alignment of laser arrays to fiber arrays. 5,343,548, Cl. 385-89.000.
Hall, Todd A.: *See*—
Welter, Lawrence H.; Downey, Scott D.; and Hall, Todd A., 5,342,371, Cl. 606-113.000.
Halle, Roy T.: *See*—
Snider, Sheri R.; Bamford, David A.; Vebeliunas, Rimas V.; Halle, Roy T.; and Strack, Robert D., 5,342,509, Cl. 208-351.000.
Hallenbeck, Barry, to Tretorn AB. Sport or leisure shoe with a central closure. 5,341,583, Cl. 36-50.100.
Halliburton Company: *See*—
Ringgenberg, Paul D., 5,341,883, Cl. 166-324.000.
Rodrigues, Klein A., 5,341,881, Cl. 166-293.000.
Thorstensen, Egil; and Hagen, Karluf, 5,341,880, Cl. 166-278.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Halstead, Gary A.; and Barten, Brian L., to General Motors Corporation. Braze furnace with improved inert gas system. 5,341,978, Cl. 219-47.000.

Halvorson, June G.: *See*—
Kane, Patricia B.; and Halvorson, June G., 5,342,330, Cl. 604-329.000.

Hamamura, Yuuichi; Haraichi, Satoshi; Shimase, Akira; Azuma, Junzou; Itoh, Fumikazu; Yamada, Toshio; Koizumi, Yasuhiro; and Mizumura, Michinobu, to Hitachi, Ltd. Apparatus for processing a sample using a charged beam and reactive gases. 5,342,448, Cl. 118-723.0FI.

Hambleton, Brian. Security safe with improved door locking features. 5,341,752, Cl. 109-59.00R.

Hamburg, Douglas R.; Logothetis, Eleftherios M.; Soltis, Richard E.; and Visser, Jacobus H., to Ford Motor Company. Feedback control system. 5,341,643, Cl. 60-276.000.

Hamilton, Gregory S., to Guilford Pharmaceuticals Inc. Phosphonoalkylquinolin-2-ones as novel antagonists of non-NMDA ionotropic excitatory amino acid receptors. 5,342,946, Cl. 546-23.000.

Hammett, Anthony. Patient treatment apparatus including a mattress and a treatment chamber, and method for treatment of the patient. 5,341,820, Cl. 128-845.000.

Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, to Kabushiki Kaisha Toshiba. Timer operation management apparatus. 5,343,450, Cl. 369-19.000.

Hamprecht, Gerhard, to BASF Aktiengesellschaft. 2-amino-4-fluoroalkoxy-1,3,5-triazines and the preparation thereof. 5,342,939, Cl. 544-194.000.

Hamrick, Joseph T. System for burning biomass to fuel a gas turbine. 5,341,637, Cl. 60-39.464.

Han, Gwang-Ma; and Kim, Gyu-Suk, to Hyundai Electronics Industries Co., Ltd. Address transition detection circuit. 5,343,082, Cl. 307-234.000.

Hanai, Shuji: *See*—
Sugiyama, Kunitoshi; Kobori, Hideyuki; Hanai, Shuji; and Kagawa, Tsutomu, 5,342,815, Cl. 503-217.000.

Hanawa, Masatoshi, to Kabushiki Kaisha Toshiba. Magnetic resonance imaging system. 5,343,149, Cl. 324-314.000.

Hanby, William J.: *See*—
Barton, John C.; Hanby, William J.; Kuhn, Bruce R.; Lathrope, Michael F.; Simanonis, Christopher F.; and Varga, Arthur J., 5,343,461, Cl. 370-13.000.

Hancock, Drew S., to Siemens Energy & Automation, Inc. Panelboard. 5,343,356, Cl. 361-637.000.

Hancock, Michael T., to Torrington Company, The. Energy absorbing steering assembly. 5,342,091, Cl. 280-777.000.

Hancock, Sean J.: *See*—
Ngo, Viet H.; Poole, Warren D.; Hancock, Sean J.; and France, Timothy T., 5,342,512, Cl. 210-151.000.

Handwerk, Hans-Peter: *See*—
Behr, Arno; and Handwerk, Hans-Peter, 5,342,965, Cl. 549-233.000.

Hanemann, Gerhard: *See*—
Blaha, Erich; Poxleitner, Martin; and Hanemann, Gerhard, 5,342,351, Cl. 606-4.000.

Hanes, Dallas D.: *See*—
Manea, Ion; and Hanes, Dallas D., 5,341,917, Cl. 198-475.100.

Hani, Rahim: *See*—
Gavin, David F.; Hani, Rahim; Waldron, Craig; and Farmer, Douglas A., Jr., 5,342,437, Cl. 106-18.330.

Hann, William M.: *See*—
Bardsley, Judy H.; and Hann, William M., 5,342,787, Cl. 436-179.000.

Hannan, Edward J.; and Schneider, George H., to Keystone Friction Hinge Co. Anti-tip hinge device and method. 5,341,542, Cl. 16-289.000.

Hans, Helmut; and Moini, Mojtaba, to Papst Licensing GmbH. Drive circuit for a brushless direct-current motor. 5,343,129, Cl. 318-431.000.

Hans Huber GmbH: *See*—
Huber, Hans G.; and Neger, Anton, 5,341,826, Cl. 134-65.000.

Hansen, Mark D. Vertically-disposed exercise machine. 5,342,262, Cl. 482-62.000.

Hansen, Tomas T.: *See*—
Pedersen, Sven; and Hansen, Tomas T., 5,342,768, Cl. 435-134.000.

Hansler, Richard L.: *See*—
Davenport, John M.; Hansler, Richard L.; and King, Kenneth S., 5,343,367, Cl. 362-32.000.

Hansmann, Frank: *See*—
Bernitz, Franz; Huber, Andreas; and Hansmann, Frank, 5,343,125, Cl. 315-245.000.

Hanson, Richard W., to MDT Corporation. Quick disconnect multi-line connector in a dental system. 5,342,097, Cl. 285-25.000.

Hanson, William J.: *See*—
Teare, Peter R.; Hanson, William J.; and Smits, Matthijs, 5,341,813, Cl. 128-733.000.

Haq, Ejaz U.: *See*—
Choi, Yun-Ho; Chin, Dae-Je; Haq, Ejaz U.; and Cho, Soo-In, 5,343,438, Cl. 365-233.000.

Hara, Kazuyoshi: *See*—
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Hara, Kenji: *See*—
Sasaki, Toshinori; Kanazawa, Akira; Hara, Kenji; Fukao, Tomoo; Ishizuka, Masahiko; Yamada, Masatomo; Sugimura, Naoto; and Yoshihara, Michiaki, 5,343,142, Cl. 324-71.100.

Hara, Masaaki, to Sony Corporation. Signal processing system having intersymbol-interference cancelling means and method of same. 5,343,335, Cl. 360-45.000.

Hara, Tadayuki: *See*—
Wada, Shunichi; Hara, Tadayuki; Naito, Yasuo; Kohge, Shinichi; and Nishino, Kazuhisa, 5,341,891, Cl. 180-79.100.

Harada, Fukuzo: *See*—
Ueno, Koichi; Tsukamoto, Akio; Tori, Tamotsu; Nishimura, Hiroo; Konishi, Keizo; and Harada, Fukuzo, 5,341,769, Cl. 122-367.300.

Harada, Masahide: *See*—
Nishikawa, Toru; Satoh, Ryohei; Harada, Masahide; Hayashida, Tetsuya; and Shirai, Mitugu, 5,341,980, Cl. 228-205.000.

Harada, Yuji: *See*—
Yamada, Masahiko; Harada, Yuji; and Shigetoyo, Hidemi, 5,341,867, Cl. 164-502.000.

Haraichi, Satoshi: *See*—
Hamamura, Yuuichi; Haraichi, Satoshi; Shimase, Akira; Azuma, Junzou; Itoh, Fumikazu; Yamada, Toshio; Koizumi, Yasuhiro; and Mizumura, Michinobu, 5,342,448, Cl. 118-723.0FI.

Harari, Eliyahou: *See*—
Yuan, Jack H.; Samachisa, Gheorghe; Guterman, Daniel C.; and Harari, Eliyahou, 5,343,063, Cl. 257-317.000.

Hardouin, Larry J.: *See*—
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittmer, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,343,517, Cl. 379-219.000.

Hardy, Walter N.; and Ma, Qiyuan. Differentially pumped temperature controller for low pressure thin film fabrication process. 5,343,012, Cl. 219-443.000.

Hargreaves, Neil G.: *See*—
Cain, Frederick W.; Cebula, Dryck J.; and Hargreaves, Neil G., 5,342,644, Cl. 426-660.000.

Harmegnies, Guy R.: *See*—
Christophel, Bernard G.; Dautremont, Jean M.; Fert, Pierre H.; and Harmegnies, Guy R., 5,341,665, Cl. 72-166.000.

Harnden, Eric F.: *See*—
Okabayashi, Kiyoshi, 5,342,501, Cl. 205-50.000.

Harnisch, Horst; and Roschger, Peter, to Bayer Aktiengesellschaft. Dyestuffs and their use for mass-coloration of plastics. 5,342,444, Cl. 106-493.000.

Harnischfeger Corporation: *See*—
Wendt, David C.; Lapota, Robert J.; and Flierl, Karl T., 5,343,134, Cl. 318-757.000.

Harreus, Albrecht; Wolf, Bernd; and Wild, Jochen, to BASF Aktiengesellschaft. Preparation of 6-bromo-2,2-dialkyl-2,3-dihydrobenzofurans which are optionally fluoro-substituted. 5,342,972, Cl. 549-462.000.

Harrington, Terry R.: *See*—
Schwab, Edward C.; Thomas, Kristin L.; Brown, George E.; and Harrington, Terry R., 5,342,635, Cl. 426-241.000.

Harris, Bradley D.; and Soderquist, Quin, to Morton International, Inc. Closure for an inflatable restraint system. 5,342,086, Cl. 280-728.00B.

Harris, Curtis C.: *See*—
Cole, Katharine H.; Lechner, John F.; and Harris, Curtis C., 5,342,777, Cl. 435-240.310.

Harroun Enterprises: *See*—
Harroun, Hugh, 5,342,155, Cl. 409-131.000.

Harroun, Hugh, to Harroun Enterprises. Spindle extension with self-contained pull-stud draw bar assembly. 5,342,155, Cl. 409-131.000.

Harry, Don A., Jr.: *See*—
Eidson, Carson J., 5,342,466, Cl. 156-179.000.

Harryman, Douglas T., II, to University of Washington, The Board of Regents of the. System for repair of bankart lesions. 5,342,369, Cl. 606-96.000.

Harston, Stephen W., to Analog Devices, Inc. D/A converter with reduced power consumption. 5,343,196, Cl. 341-136.000.

Hart, John L.: *See*—
Clark, Andrew R.; and Hart, John L., 5,341,800, Cl. 128-203.150.

Hart, John W., Jr.: *See*—
Adams, Victor J.; Griest, Sidney H.; and Hart, John W., Jr., 5,341,684, Cl. 73-756.000.

Hart, Terance W.; and Vacher, Bernard Y. J., to Rhone-Poulenc Rorer Limited. Thioformamide derivatives. 5,342,848, Cl. 514-357.000.

Hartmann, Albert: *See*—
Baschang, Gerhard; and Hartmann, Albert, 5,342,977, Cl. 554-48.000.

Hartmann, Manfred: *See*—
Mueller, Wolfgang H. E.; and Hartmann, Manfred, 5,342,979, Cl. 554-206.000.

Hartz, Richard D.: *See*—
Dawson, Brian D.; and Hartz, Richard D., 5,341,690, Cl. 73-863.610.

Haseda, Satoshi: *See*—
Hirano, Hiroyuki; Tsuzuki, Yoshihiko; Haseda, Satoshi; Fukushima, Akira; Inoue, Hideo; and Takeda, Osamu, 5,343,393, Cl. 364-424.050.

Hasegawa, Hirofumi: *See*—
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

hasegawa, Jun: *See*—
Takiguchi, Ryohei; Saito, Hitoshi; Torii, Masanori; and hasegawa, Jun, 5,342,819, Cl. 503-227.000.

Hasegawa, Masanobu: *See*—
Ohwada, Mitsutoshi; Matsugu, Masakazu; Suda, Shigeyuki; Yoshii, Minoru; Niwa, Yukichi; Nose, Noriyuki; Saitoh, Kenji; and Hasegawa, Masanobu, 5,343,291, Cl. 356-356.000.

Hasegawa, Nobuyuki: *See*—
Inamura, Akira; Kaneko, Masafumi; and Hasegawa, Nobuyuki, 5,342,189, Cl. 425-461.000.

Hasegawa, Shigekazu: *See*—
Fukui, Tetsu; Oota, Yoshimi; and Hasegawa, Shigekazu, 5,341,893, Cl. 180-245.000.

Hasegawa, Syuichi, to Fujitsu Limited. System for detecting loss of message. 5,343,480, Cl. 371-34.000.

Hasegawa, Takashi: *See*—
Iwakiri, Hiroshi; Fujita, Masayuki; and Hasegawa, Takashi, 5,342,914, Cl. 528-32.000.

Hashiguchi, Osamu, to Japan Aviation Electronics Industry, Limited. Electric connector in which a plurality of contact members can be readily assembled to an insulator. 5,342,205, Cl. 439-66.000.

Hashimoto, Hideki: *See*—
Nishikawa, Hirotaka; Kurachi, Yoshio; Kogiso, Takashi; Sekiya, Shigeki; Sato, Teruhiko; Hashimoto, Hideki; Ohmori, Makoto; and Sasaki, Kenji, 5,341,633, Cl. 57-264.000.

Hashimoto, Iori; Numata, Motoki; Nishizawa, Jun; and Kamada, Tomiyuki, to Mitsubishi Kasei Corporation. Drying method of and drying apparatus for powder and granular material. 5,341,577, Cl. 34-493.000.

Hashimoto, Junichiro: *See*—
Nousho, Shinji; Seto, Mitsuru; Hashimoto, Junichiro; and Rokutanzono, Takashi, 5,342,718, Cl. 430-58.000.

Hashimoto, Kenji: *See*—
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,343,317, Cl. 359-73.000.

Hashimoto, Shuichi: *See*—
Fujita, Shigeo; Matsumoto, Mansuke; Kumagae, Yojiro; Wada, Sayuri; and Hashimoto, Shuichi, 5,342,967, Cl. 549-226.000.

Hashimoto, Takatsugu; Akutagawa, Keizo; Yagawa, Kazuo; Tanaka, Makoto; Yamagishi, Junichi; and Hachiya, Kazuo, to Bridgestone Corporation. Flame-retardant rubber tires. 5,341,862, Cl. 152-209.00R.

Hashimoto, Yasuhiro: *See*—
Yamashita, Yuji; Takahashi, Masanobu; Masai, Katsunori; Inenaka, Hiroyuki; Sako, Masahiro; Hashimoto, Yasuhiro; and Tomita, Hideaki, 5,343,276, Cl. 355-202.000.

Hasler, Raymond J., to Applied Radiation Laboratories. Radio frequency filter having a substrate with recessed areas. 5,343,176, Cl. 333-204.000.

Hatakoshi, Genichi: *See*—
Itaya, Kazuhiko; Hatakoshi, Genichi; and Nitta, Koichi, 5,343,486, Cl. 372-43.000.

Hatanaka, Hideo: *See*—
Echigo, Fumio; Saida, Masahiro; Mizuno, Naoko N. F.; Hatanaka, Hideo; and Enoki, Yoshio, 5,342,668, Cl. 428-64.000.

Hatchell, Paul J.: *See*—
Cowles, Christopher S.; Leveille, Jacques P.; Hatchell, Paul J.; Mireles, Jesus A.; and Clifton, Robert D., 5,343,001, Cl. 181-102.000.

Hatfield, Stephen C., to Combustion Engineering, Inc. Spacer grid retainer. 5,343,508, Cl. 376-449.000.

Hatlestad, John D.: *See*—
Farmer, Michael E.; and Hatlestad, John D., 5,343,204, Cl. 342-25.000.

Hatsuya, Satoshi; Sekiyama, Takaaki; Tsuji, Takashi; Iwayama, Satoshi; and Okunishi, Masahiko, to Ajinomoto Co., Inc. Cyclopropane derivative. 5,342,840, Cl. 514-262.000.

Hatta, Hiroyuki: *See*—
Sekihata, Osamu; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Tanaka, Kenji; Hatta, Hiroyuki; and Furuya, Reiko, 5,343,462, Cl. 370-13.000.

Hattner, Robert S., to University of California, The Regents of the. Analogs of cytochalasin B as radiopharmaceuticals for nuclear imaging of trans-membrane glucose transport. 5,342,926, Cl. 534-10.000.

Hattori, Mitsuru, to NGK Insulators, Ltd. Ceramic gas-turbine nozzle with cooling fine holes and method for preparing the same. 5,342,166, Cl. 415-115.000.

Haubs, Michael; and Prass, Werner, to Hoechst Aktiengesellschaft. Composite membrane, process for its production and its use. 5,342,432, Cl. 95-47.000.

Hauer, Birgit; Meinzer, Armin; Posanski, Ulrich; and Richter, Friedrich, to Sandoz Ltd. Pharmaceutical compositions comprising cyclosporins. 5,342,625, Cl. 424-455.000.

Hausam, Leonard P. Coffee dispenser with agitator. 5,341,961, Cl. 222-217.000.

Hausser, Roderick J., to Becton, Dickinson and Company. Syringe having safety shield. 5,342,309, Cl. 604-110.000.

Hauuy, Jean C.: *See*—
Vareille, Aime ; Schiltz, Andre ; and Hauuy, Jean C., 5,343,049, Cl. 250-561.000.

Hawkey, Jeffrey A.: *See*—
James, Larry C.; Kagy, Carl W.; Gates, Jeffrey F.; Hawkey, Jeffrey A.; Heil, Thomas F.; and Simpson, David L., 5,343,478, Cl. 371-22.300.

Hayakawa, Hidenori: *See*—
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, 5,342,954, Cl. 548-251.000.
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Hayakawa, Hidenori; Yanagi, Akihiko; and Asami, Tadao, 5,342,938, Cl. 544-105.000.

Hayakawa, Hiroshi: *See*—
Morimoto, Kiyoshi; Morishima, Shin-ichi; and Hayakawa, Hiroshi, 5,342,741, Cl. 430-490.000.

Hayakawa, Yasuyuki; Nishiike, Ujihiro; Fukuda, Bunjiro; Yamada, Masataka; Iida, Yoshiaki; Takeuchi, Fumihiko; and Komatsubara, Michiro, to Kawasaki Steel Corporation. Method of producing grain oriented silicon steel sheet having low iron loss. 5,342,454, Cl. 148-113.000.

Hayasaka, Hiroshi: *See*—
Niinai, Yoshitaka; Nagata, Akio; Sagawa, Norihisa; Shinohara, Shigeru; Nakayama, Eiji; Yotsuyanagi, Mitsutoshi; Hayasaka, Hiroshi; and Tokunaga, Kazuyoshi, 5,342,280, Cl. 494-10.000.

Hayashi, Ryosuke: *See*—
Kobayashi, Hiroshi; Hayashi, Ryosuke; Inokuchi, Shoji; and Muroya, Yukihiro, 5,341,839, Cl. 137-505.130.

Hayashibara, Ken: *See*—
Sugimori, Hideo; Masaki, Kazumi; and Matsuda, Osamu, 5,343,122, Cl. 315-209.00R.

Hayashida, Shigeki: *See*—
Ahn, Sung T.; and Hayashida, Shigeki, 5,342,796, Cl. 437-41.000.

Hayashida, Tetsuya: *See*—
Nishikawa, Toru; Satoh, Ryohei; Harada, Masahide; Hayashida, Tetsuya; and Shirai, Mitugu, 5,341,980, Cl. 228-205.000.

Hayes, Earl J.; and Volpe, Christopher J., to Electro-Wire Products, Inc. Female blade terminal. 5,342,226, Cl. 439-845.000.

Hayes, Thomas H., to Anchor Hocking Packaging Co. Press-on pry-off closure. 5,341,949, Cl. 215-253.000.

Health Care Keyboard Co., Inc.: *See*—
Szmanda, Jeffrey P.; and Szmanda, William J., 5,342,005, Cl. 248-118.000.

Health Research Inc.: *See*—
Creaven, Patrick J.; Hori, Kazuyoshi; and Ishimaru, Hiroshi, 5,342,613, Cl. 424-85.100.

Healy, Stephen F., Jr.: *See*—
Maples, John A.; Raynor, Robert H.; Siiman, Olavi; Stiglitz, Melissa J.; and Healy, Stephen F., Jr., 5,342,754, Cl. 435-2.000.

Hechler, Claus: *See*—
Gosch, Hans-Juergen; Rust, Harald; Fischer, Rolf; Hechler, Claus; and Pinkos, Rolf, 5,342,488, Cl. 203-80.000.

Heeger, Alan: *See*—
Wudl, Fred; and Heeger, Alan, 5,342,912, Cl. 528-292.000.

Hefner, Robert E., Jr.; and Earls, Jimmy D., to Dow Chemical Company, The. Polymer modified adducts of epoxy resins and active hydrogen containing compounds containing mesogenic moieties. 5,342,904, Cl. 525-488.000.

Hegde, Vinod R.; Horan, Ann C.; Marquez, Joseph A.; and Patel, Mahesh G., to Schering Corporation. Macrocyclic lactone antibacterial antibiotic compounds. 5,342,852, Cl. 514-461.000.

Heian, Glenn A.: *See*—
Nechvatal, Timothy M.; and Heian, Glenn A., 5,342,442, Cl. 106-409.000.

Heidel, Raymond; and Snider, Richard E., to Bally Gaming International, Inc. Touch screen video gaming machine. 5,342,047, Cl. 273-85.0CP.

Heidelberg Harris Inc.: *See*—
Guaraldi, Glenn A., 5,341,740, Cl. 101-350.000.

Heidelberger Druckmaschinen AG: *See*—
Jeschke, Willi; and Freyer, Norbert, 5,341,734, Cl. 101-148.000.

Heikes, Craig A.; and Miller, Robert H., Jr., to Hewlett-Packard Company. System and method for tolerating dynamic circuit decay. 5,343,096, Cl. 307-480.000.

Heikkinen, Ari, to Nokia Technology GmbH. Procedure and decoder for decrypting a coded video signal. 5,343,528, Cl. 380-20.000.

Heil, John E.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,342,407, Cl. 607-129.000.

Heil, Thomas F.: *See*—
James, Larry C.; Kagy, Carl W.; Gates, Jeffrey F.; Hawkey, Jeffrey A.; Heil, Thomas F.; and Simpson, David L., 5,343,478, Cl. 371-22.300.

Heindel, Timothy R.; Garvey, Michael J.; Dick, Daniel W.; Keller, Richard F.; Jordan, Mary P.; and Schleinz, Alan F., to Kimberly-Clark Corporation. Sprayed adhesive diaper construction. 5,342,647, Cl. 427-2.310.

Heinzelman, Bert D.: *See*—
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,341,537, Cl. 15-167.100.

Hejl, Timothy J.: *See*—
Gilbert, Michael H., Sr.; and Hejl, Timothy J., 5,343,022, Cl. 219-552.000.

Helle, Richard D. Connected articles. 5,342,697, Cl. 428-547.000.

Hellmann, Sieghard: *See*—
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weisshaupl, Horst, 5,343,506, Cl. 376-280.000.

Hellstrom, Ake A., to ABB Process Automation Inc. Optical scanner with self contained standardization means. 5,343,296, Cl. 356-431.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Helmsderfer, John A.; and McRoberts, T. Michael, to Brocar Products, Inc. Cover assembly and method for covering undersink piping. 5,341,830, Cl. 137-15.000.

Heneghan, Michael: *See*—
Ernst, Beat; Heneghan, Michael; and Hafner, Andreas, 5,342,929, Cl. 536-18.600.

Henkel Corporation: *See*—
Ahmed, Bashire M.; and Broadbent, Ronald W., 5,342,694, Cl. 428-461.000.
Dolan, Shawn E., 5,342,456, Cl. 148-247.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Behr, Arno; and Handwerk, Hans-Peter, 5,342,965, Cl. 549-233.000.
Uphues, Guenter; Jaensch, Sven; Ploog, Uwe; and Steinberner, Udo, 5,342,961, Cl. 548-352.100.

Henkes, Jerome P.: *See*—
Hughes, Gregory G.; Guntly, Leon A.; Welker, John B.; Hill, David; Rogers, C. James; Henkes, Jerome P.; and Reinke, Michael J., 5,341,870, Cl. 165-110.000.

Henley, Ronald W.; Quates, Ronald D.; Williams, Michael R.; and Wong, Henry, to FMC Corporation. Non-extrusion device for split annuler casing/tubing hanger compression seals. 5,342,066, Cl. 277-116.200.

Henn, Alfred, to Leybold Durferrit GmbH. Closed induction furnace for the melting and casting of substances. 5,343,492, Cl. 373-143.000.

Henn, Bob: *See*—
Bowman, Jane; Daniel, Ed; Henn, Bob; Levy, Jennifer; and Vakharia, Neville, 5,342,673, Cl. 428-198.000.

Hennig, Bruno E., to RCA Thomson Licensing Corporation. Apparatus for providing TV program information. 5,343,300, Cl. 348-478.000.

Hennig, William G.: *See*—
Cordia, Joseph R.; Dalrymple, Bruce H.; Hennig, William G.; McReady, Robert W.; and Metraw, John J., 5,341,915, Cl. 198-460.000.

Henning, Wolfgang: *See*—
Sirinyan, Kirkor; Petzoldt, Joachim; and Henning, Wolfgang, 5,342,890, Cl. 525-130.000.

Henns, John A. Self adjusting water ski assembly. 5,342,231, Cl. 441-79.000.

Henry, Daniel S.; and Hoteling, G. Michael, to Aladdin Steel Products. Combustion device for stoves and fireplaces. 5,341,794, Cl. 126-77.000.

Henry, David; Vachet, Andre J.; and Vial, Jacques J., to Corning Incorporated. Composite ophthalmic lenses and their manufacture. 5,343,260, Cl. 351-159.000.

Hensen, Helmuth: *See*—
Wirtz, Ulrich; Grecksch, Hans; Irmen, Wolfgang; Hensen, Helmuth; and Bohmer, Walter, 5,341,549, Cl. 28-298.000.

Hensey, Paul S.: *See*—
Thomas, John F.; and Hensey, Paul S., 5,341,617, Cl. 52-547.000.

Henzel, Richard P., to Eastman Kodak Company. Stabilizers for dye-donor element used in thermal dye transfer. 5,342,728, Cl. 430-200.000.

Heppner, Thomas J., to Marvin Lumber and Cedar Co. Sliding door sill construction. 5,341,600, Cl. 49-471.000.

Hepworth, Allen; Smith, Gordon; and Johb, Walter. Carrying case for fly fishing rod and reel. 5,341,590, Cl. 43-26.000.

Heraeus Surgical, Inc.: *See*—
Novak, John P., Jr.; and Eichorn, Barbara A., 5,343,543, Cl. 385-31.000.

Herberg, Friedrich: *See*—
Kampf, Klaus; Langen, Hans-Jurgen; and Herberg, Friedrich, 5,341,675, Cl. 73-118.100.

Herberts GmbH: *See*—
Gobel, Armin; Patzschke, Hans-Peter; and Doebert, Jurgen, 5,342,882, Cl. 524-832.000.

Hercules Incorporated: *See*—
Fifield, Charles C.; Pohl, Rudolph L.; and Yokoyama, Wako, 5,341,799, Cl. 528-49.000.

Herd, Karl-Josef: *See*—
Reddig, Wolfram; and Herd, Karl-Josef, 5,342,927, Cl. 534-618.000.

Herlt, Tony J.; MacDonald, Peter L.; and Rickards, Rodney W., to Australian National University, The. Process for the preparation of dibenzoib,dipyrans. 5,342,971, Cl. 549-390.000.

Herma AG: *See*—
Och, Mathias, 5,342,204, Cl. 439-39.000.

Hermant, Jean-Jacques: *See*—
Roussel, Herve; Hermant, Jean-Jacques; and Dalla-Serra, Lionel, 5,342,640, Cl. 426-479.000.

Herold, Wolfgang, to MATO Maschinen-und Metallwarenfabrik Curt. Matthaei GmbH & Co. KG. Belt fastening arrangement. 5,341,545, Cl. 24-33.00P.

Herren, Georges; and Reiber, Dieter, to Carbagas and Von Roll AG. Method of suppressing dust and fumes during electric steel production. 5,343,491, Cl. 373-8.000.

Herrmann, Hugo: *See*—
Lungu, Corneliu; and Herrmann, Hugo, 5,343,106, Cl. 310-239.000.

Herrmann-Schonherr, Otto: *See*—
Drotloff, Hans-Otto; and Herrmann-Schonherr, Otto, 5,342,664, Cl. 428-36.900.

Herrmann, Wolfgang A.; Wagner, Werner; and Volkhardt, Ursula, to Hoechst AG. Organic derivatives of rhenium oxides and their preparation and use for the metathesis of olefins. 5,342,985, Cl. 556-482.000.

Hervatic, Elizabeth A.: *See*—
Cidon, Israel; Doney, Richard M.; Drake, John E., Jr.; Hervatic, Elizabeth A.; Potter, Kenneth H., Jr.; and Tedijanto, Theodore E., 5,343,473, Cl. 370-85.600.

Herzhauser, Ludwig. Impeller puller. 5,341,553, Cl. 29-261.000.

Heslinga, Lammert: *See*—
Bowser, Paul A.; Froling, Albert; Heslinga, Lammert; Houtsmuller, Udo M. T.; Nugteren, Diederik H.; Pabon, Hendrik J. J.; and Prottey, Colin, 5,342,976, Cl. 554-36.000.

Heston, Jeffrey W.; Polanka, Marc D.; Rock, Jeffrey A.; and Geiger, Scott A., to General Motors Corporation. Twist lock attachment for a thermal probe. 5,342,126, Cl. 374-208.000.

Hewette, Chip; and Bukac, Hubert, to Copeland Corporation. Suction gas conduit. 5,341,654, Cl. 62-296.000.

Hewlett-Packard Company: *See*—
Brigham, Kristen; and Ray, Gary W., 5,342,808, Cl. 437-228.000.
Canfield, Brian P., 5,342,133, Cl. 400-635.000.
Heikes, Craig A.; and Miller, Robert H., Jr., 5,343,096, Cl. 307-480.000.
Satterfield, Wade J.; and Morain, Robert A., 5,343,409, Cl. 364-514.000.

Hewlett-Packard Corporation: *See*—
Lauw, Hiang P., 5,342,439, Cl. 106-22.00H.
Powers, Daniel J.; Cyrus, Judith; Kootstra, Steve; Burkhalter, Art; Bledsoe, J. Daren; Shultheis, David C.; and Jordan, Dan, 5,342,403, Cl. 607-5.000.
Wickramanayake, Palitha, 5,342,440, Cl. 106-22.00R.

Hibbard, Louis D., to Minnesota Mining and Manufacturing Company. Abrasive composites having a controlled rate of erosion, articles incorporating same, and methods of making and using same. 5,342,419, Cl. 51-308.000.

Hibi, Yoshiharu; and Terada, Yoshihiro, to Fuji Xerox Co., Ltd. Color image outputting system for an image processing apparatus. 5,343,312, Cl. 358-520.000.

Hickman, James J.: *See*—
Georger, Jacque H., Jr.; Peckerar, Martin C.; Rebbert, Milton L.; Calvert, Jeffrey M.; and Hickman, James J., 5,342,737, Cl. 430-324.000.

Hicks, Carl E. Planer board. 5,341,591, Cl. 43-43.130.

Hicks, Ray. Film drive assembly. 5,343,272, Cl. 355-75.000.

Hidaka, Iwao: *See*—
Kadono, Shinya; Nishino, Masakazu; Juri, Tatsuro; Horikane, Hiroshi; and Hidaka, Iwao, 5,343,501, Cl. 375-94.000.

Hidaka, Shigeyuki: *See*—
Kimura, Kazuya; Kayukawa, Hiroaki; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,342,178, Cl. 417-269.000.

Hidese, Wataru, to Matsushita Electric Industrial Co., Ltd. Outer lead bonding apparatus. 5,342,460, Cl. 156-64.000.

Hideshima, Masao; Michihira, Osamu; Nobutoki, Yoshikazu; and Sone, Akira, to Mazda Motor Corporation. Multiplex transmission system. 5,343,470, Cl. 370-85.100.

Hideshima, Masao: *See*—
Michihira, Osamu; Hideshima, Masao; and Sone, Akira, 5,343,472, Cl. 370-85.600.

Higaki, Kenjiro: *See*—
Shikata, Shinichi; Hachigo, Akihiro; Nakahata, Hideaki; and Higaki, Kenjiro, 5,343,107, Cl. 310-313.00A.

Higgins, Leo M., III; and Sparkman, Aubrey K., to Motorola, Inc. Semiconductor device having voltage distribution ring(s) and method for making the same. 5,343,074, Cl. 257-668.000.

Higuchi, Shunichi: *See*—
Tamura, Hikari; and Higuchi, Shunichi, 5,342,711, Cl. 429-197.000.

Higuchi, Yasushi: *See*—
Kubokoya, Ryoichi; Yamane, Hiroyuki; and Higuchi, Yasushi, 5,342,802, Cl. 437-57.000.

Hikes, Dale J., to Mobil Oil Corporation. Open gear set lubrication system. 5,341,900, Cl. 184-6.120.

Hilbrink, Johan O., to NCR Corporation. Apparatus for cooling electronic devices. 5,343,358, Cl. 361-700.000.

Hildebrandt, Wolfgang: *See*—
Amborn, Peter; and Hildebrandt, Wolfgang, 5,342,256, Cl. 475-252.000.

Hill, Alan E.: *See*—
Franken, Peter A.; and Hill, Alan E., 5,342,352, Cl. 606-9.000.

Hill, David: *See*—
Hughes, Gregory G.; Guntly, Leon A.; Welker, John B.; Hill, David; Rogers, C. James; Henkes, Jerome P.; and Reinke, Michael J., 5,341,870, Cl. 165-110.000.

Hill, David L. Scrubbing device. 5,341,536, Cl. 15-98.000.

Hindin, Barry: *See*—
Agrawal, Arun K.; and Hindin, Barry, 5,342,578, Cl. 422-13.000.

Hinsberg, William D.: *See*—
Vicari, Richard; Gordon, Douglas J.; Hinsberg, William D.; McKean, Dennis R.; Willson, Carlton G.; and Dammel, Ralph, 5,342,727, Cl. 430-157.000.

Hinze, Donald. Storage means for watercraft. 5,341,756, Cl. 114-54.000.

Hirabayashi, Hiromitsu; Kusaka, Kensaku; Arai, Atsushi; and Takayanagi, Yoshiaki, to Canon Kabushiki Kaisha. Image fixing apparatus. 5,343,280, Cl. 355-285.000.

Hirabayashi, Toshihiko, to Kyokuei Kenmakako Kabushiki Kaisha. Device for cutting and grinding a doughnut shaped substrate and a method therefor. 5,341,606, Cl. 51-283.00R.

Hirahata, Shigeru: *See*—
Takata, Haruki; Katsumata, Kenji; Hirahata, Shigeru; Konno, Mituo; Ishibashi, Kouichi; and Suzuki, Sunao, 5,343,238, Cl. 348-556.000.

Hirai, Toshiyuki: *See*—
Yamada, Nobuaki; Hirai, Toshiyuki; Onishi, Noriaki; and Kohzaki, Shuichi, 5,342,545, Cl. 252-299.010.

Hirai, Yoshikatsu: *See*—
Nakai, Satoru; and Hirai, Yoshikatsu, 5,342,614, Cl. 424-85.200.
Nakai, Satoru; and Hirai, Yoshikatsu, 5,342,615, Cl. 424-85.200.

Hirano, Hideo, to Meito Corporation. Cooking burner. 5,342,192, Cl. 431-284.000.

Hirano, Hiroyuki; Tsuzuki, Yoshihiko; Haseda, Satoshi; Fukushima, Akira; Inoue, Hideo; and Takeda, Osamu, to Nippondenso Co., Ltd. Steering angle detecting apparatus for motor vehicles based on the phase difference between a steering angle detection signal and steering angle estimated signal. 5,343,393, Cl. 364-424.050.

Hirano, Seiji: *See*—
Matsuda, Yutaka; Moriue, Hiroo; Nobutoki, Yoshikazu; Hirano, Seiji; and Sakamoto, Hiroaki, 5,343,475, Cl. 370-94.100.

Hirano, Sinmei: *See*—
Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, 5,342,480, Cl. 156-648.000.

Hirano, Tomio; and Tsukamoto, Masaaki, to Yazaki Corporation. Palladium-nickel alloy plating solution. 5,342,504, Cl. 205-257.000.

Hirano, Toshiyuki: *See*—
Imai, Yoichi; Hirano, Toshiyuki; Komiyama, Osamu; and Yamanaka, Hidenori, 5,342,920, Cl. 528-388.000.

Hirao, Shozo: *See*—
Usui, Hiroaki; Hirao, Shozo; Konishi, Satoru; Ishikawa, Hiroyuki; Oonisi, Kenji; and Adachi, Arihiro, 5,342,651, Cl. 427-209.000.

Hiraoka, Hajime: *See*—
Ejiri, Susumu; and Hiraoka, Hajime, 5,341,728, Cl. 99-336.000.

Hirashima, Isao; Umeki, Tetsuya; Maeta, Hiroshi; and Kohno, Shigefumi, to Mazda Motor Corporation. Air bag apparatus for automotive vehicle. 5,342,085, Cl. 280-728.00B.

Hirata, Masukazu: *See*—
Ota, Takeshi; Arii, Mitsuzo; Hirata, Masukazu; and Kawabata, Yasunari, 5,343,545, Cl. 385-46.000.

Hirata, Yoshihiro: *See*—
Ohnota, Michiro; Okamura, Kyuya; Hirata, Yoshihiro; Murakami, Koji; and Ohashi, Mitsua, 5,342,850, Cl. 514-369.000.

Hirayama, Kazutoshi: *See*—
Nakayama, Akio; and Hirayama, Kazutoshi, 5,343,429, Cl. 365-200.000.

Hirobe, Toshihiko: *See*—
Katayama, Mikio; Kato, Hiroaki; Nagayasu, Takayoshi; Imaya, Akihiko; Negoto, Hidenori; Kanemori, Yuzuru; and Hirobe, Toshihiko, 5,343,216, Cl. 345-92.000.

Hirofuji, Satoshi: *See*—
Aoyama, Akimasa; Katayama, Tetsuya; Moritani, Takeshi; Yamauchi, Junnosuke; and Hirofuji, Satoshi, 5,342,662, Cl. 428-34.800.

Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, to Canon Kabushiki Kaisha. Ink jet recording apparatus and ink jet recording head with means reducing the amount of warp. 5,343,227, Cl. 349-42.000.

Hirose, Yasuo; and Yamaguchi, Yukifumi, to Sanyo Electric Cco., Ltd. Motor and pedal driven bicycle. 5,341,892, Cl. 180-220.000.

Hirota, Hajime: *See*—
Komori, Takashi; Eshita, Yoshiyuki; Ohtomo, Tsuyoshi; and Hirota, Hajime, 5,342,611, Cl. 424-70.000.

Hirota, Takeshi: *See*—
Iwai, Yoshio; Takahashi, Kazuyuki; Hirota, Takeshi; Abe, Tomoji; and Imanishi, Isao, 5,342,687, Cl. 428-402.000.

Hirotec Corporation: *See*—
Shimoichi, Kouji; and Furumoto, Hideyuki, 5,342,161, Cl. 414-416.000.

Hirsch, Shulamit: *See*—
Lazarus, Richard M.; Grunwald, John J.; Gal, Chava; and Hirsch, Shulamit, 5,342,734, Cl. 430-270.000.

Hirschbein, Bernard L.: *See*—
Lindholm, Edward P.; Telfer, Stephen J.; Zuraw, Michael J.; and Hirschbein, Bernard L., 5,342,816, Cl. 503-226.000.

Hirschberg, Jakub; and Obel, Martin, to Siemens Aktiengesellschaft. Defibrillator/cardioverter. 5,342,400, Cl. 607-5.000.

Hirschberg, Jakub; Neubauer, Heinz; Gilljam, Nina; Bowald, Staffan; and Lindegren, Ulf, to Siemens-Elema AB. Medical electrode arrangement. 5,342,413, Cl. 607-126.000.

Hitachi Building Systems and Engineering Service Co.: *See*—
Honma, Masaki; Nakano, Akio; Mabuti, Kouzou; Asahi, Isamu; Tsuruta, Setsuo; Fujino, Nobuhiro; and Kobayashi, Nobuhisa, 5,343,387, Cl. 364-401.000.

Hitachi Engineering Co., Ltd.: *See*—
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.

Hitachi Koki Company Limited: *See*—
Niinai, Yoshitaka; Nagata, Akio; Sagawa, Norihisa; Shinohara, Shigeru; Nakayama, Eiji; Yotsuyanagi, Mitsutoshi; Hayasaka, Hiroshi; and Tokunaga, Kazuyoshi, 5,342,280, Cl. 494-10.000.

Hitachi, Ltd.: *See*—
Araoka, Manabu; Takahashi, Ysohiaki; Shikama, Atsushi; Miyazaki, Yoshihiro; Nakamura, Tomoaki; and Sakata, Masayuki, 5,343,009, Cl. 200-322.000.
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.
Hamamura, Yuuichi; Haraichi, Satoshi; Shimase, Akira; Azuma, Junzou; Itoh, Fumikazu; Yamada, Toshio; Koizumi, Yasuhiro; and Mizumura, Michinobu, 5,342,448, Cl. 118-723.0FI.
Honma, Masaki; Nakano, Akio; Mabuti, Kouzou; Asahi, Isamu; Tsuruta, Setsuo; Fujino, Nobuhiro; and Kobayashi, Nobuhisa, 5,343,387, Cl. 364-401.000.
Inoue, Atsushi; Kaku, Nobuyuki; Sasaki, Takashi; Niguchi, Yasuyuki; and Inagaki, Yasuo, 5,343,339, Cl. 360-71.000.
Katakura, Kageyoshi, 5,341,809, Cl. 128-661.090.
Kimura, Jun-ichi; and Takizawa, Masaaki, 5,343,256, Cl. 348-718.000.
Kurihara, Nobuo; Ishii, Toshio; Mukaihira, Takashi; Kawano, Kazuya; and Takaku, Yutaka, 5,341,642, Cl. 60-276.000.
Miki, Hiroshi; Ohji, Yuzuru; Tachi, Shinichi; and Kanehori, Keiichi, 5,343,353, Cl. 361-322.000.
Nishikawa, Toru; Satoh, Ryohei; Harada, Masahide; Hayashida, Tetsuya; and Shirai, Mitugu, 5,341,980, Cl. 228-205.000.
Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, 5,342,480, Cl. 156-648.000.
Oohata, Tosifumi; Mori, Mutsuhiro; and Sakurai, Naoki, 5,343,052, Cl. 257-141.000.
Takata, Haruki; Katsumata, Kenji; Hirahata, Shigeru; Konno, Mituo; Ishibashi, Kouichi; and Suzuki, Sunao, 5,343,238, Cl. 348-556.000.
Takeda, Haruo; and Tabata, Kuniaki, 5,343,560, Cl. 395-166.000.
Takeuchi, Toshifumi; Arai, Takao; Nagai, Yutaka; and Kimura, Izumi, 5,343,455, Cl. 369-59.000.
Tanei, Hirayoshi; and Iwanaga, Shoichi, 5,342,674, Cl. 428-209.000.

Hitachi Process Computer Engineering, Inc.: *See*—
Araoka, Manabu; Takahashi, Yoshiaki; Shikama, Atsushi; Miyazaki, Yoshihiro; Nakamura, Tomoaki; and Sakata, Masayuki, 5,343,009, Cl. 200-322.000.

Hitachi Video Information System, Inc.: *See*—
Takata, Haruki; Katsumata, Kenji; Hirahata, Shigeru; Konno, Mituo; Ishibashi, Kouichi; and Suzuki, Sunao, 5,343,238, Cl. 348-556.000.

Hitachi VLSI Engineering Corp.: *See*—
Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, 5,342,480, Cl. 156-648.000.

Hiyama, Katsuyuki: *See*—
Sato, Masanori; Goto, Kazuyoshi; Hiyama, Katsuyuki; and Chaen, Yoshinobu, 5,342,104, Cl. 294-74.000.

Hlavaty, David G.: *See*—
Shah, Suresh D.; and Hlavaty, David G., 5,342,191, Cl. 425-533.000.

Hoagland, Larry D.: *See*—
Fink, Michael F.; and Hoagland, Larry D., 5,342,089, Cl. 280-731.000.

Hobbs, Philip C. D.: *See*—
Batchelder, John S.; DeCain, Donald M.; Hobbs, Philip C. D.; and Taubenblatt, Marc A., 5,343,290, Cl. 356-349.000.

Hoch, Helmut: *See*—
Kilpper, Gerhard; and Hoch, Helmut, 5,342,950, Cl. 546-171.000.

Hochdanninger, Franz; and Peherstorfer, Helmut, to Rosenbauer International Aktiengesellschaft. Fire brigade truck. 5,341,999, Cl. 242-397.100.

Hockessin, James V.: *See*—
Ford, Thomas M.; and Hockessin, James V., 5,342,969, Cl. 349-274.000.

Hodges, Ronald R.; and Weller, George V., to Steelcase Inc. Utility panel system. 5,341,615, Cl. 52-220.700.

Hoechst AG: *See*—
Herrmann, Wolfgang A.; Wagner, Werner; and Volkhardt, Ursula, 5,342,985, Cl. 556-482.000.

Hoechst Aktiengesellschaft: *See*—
Drotloff, Hans-Otto; and Herrmann-Schonherr, Otto, 5,342,664, Cl. 428-36.900.
Haubs, Michael; and Prass, Werner, 5,342,432, Cl. 95-47.000.
Macholdt, Hans-Tobias; Schiebler, Siegfried; Gitzel, Jorg; and Dietz, Erwin, 5,342,723, Cl. 430-110.000.
Rotgers, Andre , 5,342,677, Cl. 428-222.000.
Schumacher, Hans; and Huff, Hans P., 5,342,822, Cl. 504-134.000.

Hoechst Celanese Corporation: *See*—
Serad, Susan L., 5,342,854, Cl. 521-48.000.
Vicari, Richard; Gordon, Douglas J.; Hinsberg, William D.; McKean, Dennis R.; Willson, Carlton G.; and Dammel, Ralph, 5,342,727, Cl. 430-157.000.

Hof, Albrecht: *See*—
Kuchel, Michael; and Hof, Albrecht, 5,343,294, Cl. 356-376.000.

Hoffman, Keith E., to Bridgestone/Firestone, Inc. Snap mounted attachment device. 5,342,139, Cl. 403-405.100.

Hoffman, Marc; and Dick, Georges P., to Rousseau Sauve Warren Inc. Double refraction and total reflection solid nonimaging lens. 5,343,330, Cl. 359-708.000.

Hoffmann-La Roche Inc.: *See*—
Doran, Thomas I.; McLane, John A.; Okabe, Masami; Scalone, Michelangelo; and Uskokovic, Milan R., 5,342,833, Cl. 514-167.000.

Hofmann, George, to SWF Auto-Electric GmbH. Electric switch unit, in particular for automotive vehicles. 5,342,217, Cl. 439-459.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Hofmann, Hans P.: *See*—
Treiber, Hans-Joerg; Hofmann, Hans P.; Szabo, Laszlo; Unger, Liliane; and Raschack, Manfred, 5,342,839, Cl. 514-255.000.

Hofmeister, Peter: *See*—
Leyendecker, Joachim; Neubauer, Hans-Juergen; Kardorff, Uwe; Kuenast, Christoph; Krieg, Wolfgang; and Hofmeister, Peter, 5,342,849, Cl. 514-/361.000.

Hohman, David W.: *See*—
Klemp, Thomas J.; Hohman, David W.; and Schuster, Richard A., 5,342,459, Cl. 148-690.000.

Hokkaido Sugar Co., Ltd.: *See*—
Moriya, Kazuhito; and Horikoshi, Koki, 5,342,778, Cl. 435-252.100.

Holbein, Bruce E.; and Kidby, Denis K. Process for the decontamination of toxic, heavy-metal containing soils. 5,342,449, Cl. 134-2.000.

Holbrook, Noel M.: *See*—
Burns, Michael J.; and Holbrook, Noel M., 5,341,673, Cl. 73-73.000.

Holm, Carl-Olof J.: *See*—
Linden, Erkki O.; Ronnholm, Karl S.; and Holm, Carl-Olof J., 5,341,573, Cl. 30-254.000.

Holmdahl, Todd E., to John Fluke Mfg. Co., Inc. Operational amplifier circuit with slew rate enhancement. 5,343,164, Cl. 330-253.000.

Holzer, Peter, to Robert Bosch GmbH. Hand machine tool with tool holder. 5,342,154, Cl. 408-240.000.

Holzhauer, Juergen K.: *See*—
Brugge, Stephen P.; Holzhauer, Juergen K.; and Wolff, Thomas E., 5,342,968, Cl. 549-241.000.

Home Care Industries, Inc.: *See*—
Bossen, Mark D., 5,342,420, Cl. 55-279.000.

Honda Giken Kogyo KK: *See*—
Yoshida, Susumu; Ebihara, Munemitsu; Kurita, Tsutomu; and Sueyoshi, Masahiko, 5,343,077, Cl. 307-9.100.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Abe, Masahiko; Iwata, Yasuo; and Masuda, Shoji, 5,341,786, Cl. 123-486.000.
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishge, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,342,698, Cl. 428-612.000.
Hotta, Takashi; Morita, Yukio; Kojima, Yoichi; Kikuchi, Kimihiko; Niiyama, Tsunefumi; Kumagai, Yorinori; and Nakayama, Hiroshi, 5,342,257, Cl. 475-275.000.
Kanehara, Shigeru; and Nakaoka, Masashi, 5,342,251, Cl. 474-242.000.
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiki, 5,342,023, Cl. 267-64.170.
Tajiri, Akihiro; and Hotta, Yoshihko, 5,341,652, Cl. 62-244.000.
Yoshino, Ryutaro; and Takahashi, Hideo, 5,343,397, Cl. 364-424.020.

Honda Lock MFG. Co., Ltd.: *See*—
Yoshida, Susumu; Ebihara, Munemitsu; Kurita, Tsutomu; and Sueyoshi, Masahiko, 5,343,077, Cl. 307-9.100.

Honda, Minoru; Iwasa, Masanobu; Miyamoto, Tetuzi; Ikeda, Koji; and Kikuchi, Toshihiro, to Nisaho Corporation. Fluid container. 5,342,346, Cl. 604-413.000.

Honeywell Inc.: *See*—
Driscoll, Kevin R., 5,343,474, Cl. 370-85.300.

Hong, Jong-In: *See*—
Still, W. Clark; Simon, Julian A.; and Hong, Jong-In, 5,342,934, Cl. 540-456.000.

Hong, Young J.; Kim, Jin B.; and Yeo, Jong K., to Lucky Limited. Abrasion resistant silicone coating composition. 5,342,658, Cl. 427-515.000.

Honig, Michael L.; and Madhow, Upamanyu, to Bell Communications Research, Inc. Interference suppression in CDMA systems. 5,343,496, Cl. 375-1.000.

Honjo, Susumu: *See*—
Doherty, Kenneth W.; Honjo, Susumu; and Billings, John D., 5,341,834, Cl. 137-599.100.

Honma, Masaki; Nakano, Akio; Mabuti, Kouzou; Asahi, Isamu; Tsuruta, Setsuo; Fujino, Nobuhiro; and Kobayashi, Nobuhisa, to Hitachi, Ltd.; and Hitachi Building Systems and Engineering Service Co. Cyclic maintenance work schedule table preparation system. 5,343,387, Cl. 364-401.000.

Hood, Larry L. Ultrasonic knife. 5,342,380, Cl. 606-169.000.

Hood, Roger W. Sea bird deterrent for boats and navigation aids. 5,341,759, Cl. 114-255.000.

Hoover Universal, Inc.: *See*—
Vailliencourt, Dwayne G.; and Eberle, Theodore F., Jr., 5,341,946, Cl. 215-1.00C.

Horan, Ann C.: *See*—
Hegde, Vinod R.; Horan, Ann C.; Marquez, Joseph A.; and Patel, Mahesh G., 5,342,852, Cl. 514-461.000.

Hori, Kazuyoshi: *See*—
Creaven, Patrick J.; Hori, Kazuyoshi; and Ishimaru, Hiroshi, 5,342,613, Cl. 424-85.100.

Horiba Instruments, Inc.: *See*—
Mott, Steven C.; and Wright, Craig A., 5,341,963, Cl. 222-287.000.

Horiike, Tsuneyuki: *See*—
Kanno, Toshiaki; Ikegaya, Akira; and Horiike, Tsuneyuki, 5,342,997, Cl. 174-117.0FF.

Horikane, Hiroshi: *See*—
Kadono, Shinya; Nishino, Masakazu; Juri, Tatsuro; Horikane, Hiroshi; and Hidaka, Iwao, 5,343,501, Cl. 375-94.000.

Horikoshi, Koki: *See*—
Moriya, Kazuhito; and Horikoshi, Koki, 5,342,778, Cl. 435-252.100.

Horn, J. A.: *See*—
Anderson, Donald D., 5,341,578, Cl. 34-97.000.

Horn, Klaus; Lingnau, Juergen; and Weiler, Horst, to Morton International, Inc. Apparatus for reprocessing special waste. 5,342,582, Cl. 422-105.000.

Horowitz, Carl; Sanduja, Mohan; and Thottathil, Paulose, to Polymer Research Corp. of America. Method of grafting polymerizable monomers onto substrates. 5,342,659, Cl. 427-553.000.

Horres, Charles R., Jr.: *See*—
Goldberg, Michael S.; and Horres, Charles R., Jr., 5,341,803, Cl. 128-632.000.

Hoshi, Akio, to Canon Kabushiki Kaisha. Disk drive apparatus. 5,343,457, Cl. 369-77.200.

Hoshino, Yasuharu, to NEC Corporation. Memory apparatus. 5,343,439, Cl. 365-240.000.

Hospal Industrie: *See*—
Chevallet, Jacques; and Bene, Bernard, 5,342,527, Cl. 210-646.000.

Hoteling, G. Michael: *See*—
Henry, Daniel S.; and Hoteling, G. Michael, 5,341,794, Cl. 126-77.000.

Hotta, Takashi; Morita, Yukio; Kojima, Yoichi; Kikuchi, Kimihiko; Niiyama, Tsunefumi; Kumagai, Yorinori; and Nakayama, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Planetary gear transmission. 5,342,257, Cl. 475-275.000.

Hotta, Yoshihko: *See*—
Tajiri, Akihiro; and Hotta, Yoshihko, 5,341,652, Cl. 62-244.000.

Housekeeper, John. Convertible table. 5,342,108, Cl. 297-125.000.

Houtsmuller, Udo M. T.: *See*—
Bowser, Paul A.; Froling, Albert; Healinga, Lammert; Houtsmuller, Udo M. T.; Nugteren, Diederik H.; Pabon, Hendrik J. J.; and Prottey, Colin, 5,342,976, Cl. 554-36.000.

Howa Machinery, Ltd.: *See*—
Nishikawa, Hirotaka; Kurachi, Yoshio; Kogiso, Takashi; Sekiya, Shigeki; Sato, Teruhiko; Hashimoto, Hideki; Ohmori, Makoto; and Sasaki, Kenji, 5,341,633, Cl. 57-264.000.

Howard, Adriann J.: *See*—
Woodard, Daniel L.; Howard, Adriann J.; and Down, James A., 5,342,931, Cl. 536-25.400.

Howard, Philip: *See*—
Barri, Sami A. I.; Howard, Philip; and Telford, Clive D., 5,342,596, Cl. 423-710.000.

Howelton, Richele T.; and Speranza, George P., to Texaco Chemical Company. Carboxyl-terminated polyetheramines. 5,342,918, Cl. 528-318.000.

Hower, Joseph W.: *See*—
Corcoran, John; Hower, Joseph W.; and Moseley, William A., 5,342,143, Cl. 404-72.000.

Howseman, William E., Jr. Dispensing cartridge filling system. 5,341,859, Cl. 141-198.000.

Hoyle, Nicholas: *See*—
Kunst, Albert; Rehner, Helmut; Stegmuller, Peter; Lenz, Helmut; Bialk, Peter; and Hoyle, Nicholas, 5,342,788, Cl. 436-500.000.

Hoyt, Robert A.: *See*—
Stay, Francis E., Jr.; and Hoyt, Robert A., 5,341,711, Cl. 83-425.000.

Hsiao, Fang-Jung; and Hsieh, Ming-Lung. Adjustable forearm crutches. 5,341,829, Cl. 135-68.000.

Hsieh, Hung-Cheng: *See*—
Freeman, Ross H.; and Hsieh, Hung-Cheng, 5,343,406, Cl. 364-490.000.

Hsieh, Ming-Lung: *See*—
Hsiao, Fang-Jung; and Hsieh, Ming-Lung, 5,341,829, Cl. 135-68.000.

Hsu, Feng-Chien. IC socket. 5,342,214, Cl. 439-342.000.

Hsu, Feng-Hsiang; and Huang, Ching-Fa. Structure of music box. 5,342,988, Cl. 84-95.100.

Hsu, Kun T., to Chicony Electronics Co., Ltd. Shock-absorbing, compression-protective packing device for cartons. 5,341,934, Cl. 206-591.000.

Huang, Chao C. Structure of laser pointer. 5,343,376, Cl. 362-259.000.

Huang, Ching-Fa: *See*—
Hsu, Feng-Hsiang; and Huang, Ching-Fa, 5,342,988, Cl. 84-95.100.

Huang, Chiu-Feng, to Yamchen Industrial Co., Ltd. Clamping device for an elongated piece. 5,342,010, Cl. 248-316.300.

Huang, John C.: *See*—
Kazior, Thomas E.; and Huang, John C., 5,343,071, Cl. 257-621.000.

Huang, Kinger. Compression cooling system of shoe midsole. 5,341,581, Cl. 36-3.00B.

Huang, Richard; and Lin, Lien F. Arm oscillating exerciser. 5,342,269, Cl. 482-95.000.

Huang, Tiao-Yuan, to VLSI Technology, Inc. Method for selective salicidation of source/drain regions of a transistor. 5,342,798, Cl. 437-41.000.

Huber, Andreas: *See*—
Bernitz, Franz; Huber, Andreas; and Hansmann, Frank, 5,343,125, Cl. 315-245.000.

Huber, Hans G.; and Neger, Anton, to Hans Huber GmbH. Apparatus for compressing and washing contaminated raked-off or screened material, particularly in sewage treatment plants. 5,341,826, Cl. 134-65.000.

Huber, Mortimer J., to Quality Manufacturing Incorporated. Peelable and recoverable aqueous film-forming composition. 5,342,872, Cl. 428-294.000.

Hucek, Raymond R. Guitar pick with stepped ledge finger grip. 5,341,715, Cl. 84-322.000.

Huels Aktiengesellschaft: *See*—
Mueller, Wolfgang H. E.; and Hartmann, Manfred, 5,342,979, Cl. 554-206.000.

Huete, David A.; Brasted, Lee K.; and Rodenbusch, George, to Shell Oil Company. Method and system for developing offshore hydrocarbon reserves. 5,342,148, Cl. 405-223.100.

Huff, Hans P.: *See*—
Schumacher, Hans; and Huff, Hans P., 5,342,822, Cl. 504-134.000.

Hughes Aircraft Company: *See*—
Cassagnol, Robert, 5,343,471, Cl. 370-85.130.
Chang, Chen-Chi P.; and Li, Mei F., 5,343,424, Cl. 365-185.000.
Chen, Ernest C., 5,343,203, Cl. 342-25.000.
Karimullah, Khalid, 5,343,493, Cl. 375-1.000.
Kay, Stanley E.; Farmer, George D.; Bhatia, Hans; Mehta, Ashok D.; Kain, Christopher J.; and Sampson, Nicholas P., 5,343,513, Cl. 379-59.000.
Lara, Jess D.; and Palombo, Mario, 5,343,295, Cl. 356-399.000.
Linder, Lloyd F.; and Birdsall, Dwight D., 5,343,163, Cl. 330-252.000.
Sobhani, Mohi, 5,342,207, Cl. 439-74.000.
Williams, Austin M., 5,343,177, Cl. 333-213.000.

Hughes, Gregory G.; Guntly, Leon A.; Welker, John B.; Hill, David; Rogers, C. James; Henkes, Jerome P.; and Reinke, Michael J., to Modine Manufacturing Company. Evaporator or evaporator/condenser. 5,341,870, Cl. 165-110.000.

Huls Aktiengesellschaft: *See*—
Wolpers, Jurgen; Zerpner, Dieter; and Nordsiek, Karl-Heinz, 5,342,900, Cl. 525-329.300.

Hulsing, Rand H., II, to AlliedSignal Inc. Micromachined rate and acceleration sensor. 5,341,682, Cl. 73-505.000.

Humpolik, Bohumil, to Emitec Gesellschaft fuer Emissionstechnologie mbH. Meter support matrix for a catalytic reactor. 5,342,588, Cl. 422-311.000.

Hung, Chan-Chi; Lee, Sheng-Yuan; and Kuo, Yao-Jung, to Value Technology Inc. Hard disk data security device. 5,343,525, Cl. 380-4.000.

Hung, Michael. Reciprocating pneumatic motor for hydraulics. 5,341,723, Cl. 91-224.000.

Hunker, Richard E. Multi-purpose exercise device. 5,342,274, Cl. 482-140.000.

Hunter Douglas Inc.: *See*—
Fraser, Donald E.; and Anderson, Richard N., 5,341,865, Cl. 160-176.100.

Hunter, John B.: *See*—
Bartlett, Charles S.; Benning, Roger D.; Hunter, John B.; and Zuniga, Michael A., 5,343,523, Cl. 379-430.000.

Hunter, Robert M.; and Stewart, Frank M., to Yellowstone Environmental Science, Inc. Microbial dehalogenation using methanosarcina. 5,342,769, Cl. 435-166.000.

Hurkmans, Petrus L. W.: *See*—
Maas, Wilhelmus J. J.; and Hurkmans, Petrus L. W., 5,341,965, Cl. 222-340.000.

Hurley, Jewelanne: *See*—
Grossman, Michael D.; Eder, Jerome M.; Hurley, Jewelanne; Siegel, Bernard; Adelberg, Kenneth; and Adelberg, Marvin, 5,342,328, Cl. 604-317.000.

Huscroft, Charles K.: *See*—
Penner, Gordon A.; Mok, Winston K. C.; Lang, Steven F.; and Huscroft, Charles K., 5,343,482, Cl. 371-57.200.

Hussein, Fathi D.: *See*—
Cann, Kevin J.; Hussein, Fathi D.; Lee, Kiu H.; Zilker, Daniel P., Jr.; Nicoletti, James W.; and Bai, Xinlai, 5,342,907, Cl. 526-129.000.

Hwang, Jiann-Yang, to Magnetic Separation Engineering, Inc. Process for deinking paper using water-soluble alcohols. 5,342,483, Cl. 162-5.000.

Hwang, Shao-Ken. Magnetic control-type flow control valve. 5,342,025, Cl. 251-65.000.

Hydro-Quebec: *See*—
Bolduc, Leonard; and Pare, Gregoire, 5,343,381, Cl. 363-47.000.

Hyodo, Ryuji: *See*—
Sekihata, Osamu; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Tanaka, Kenji; Hatta, Hiroyuki; and Furuya, Reiko, 5,343,462, Cl. 370-13.000.

Hyppanen, Timo, to A. Ahlstrom Corporation. Method and apparatus for operating a circulating fluidized bed system. 5,341,766, Cl. 122-4.00D.

Hyslop, Adin E.: *See*—
Duvvury, Charvaka; and Hyslop, Adin E., 5,343,433, Cl. 365-205.000.

Hyundai Electronics Industries Co., Ltd.: *See*—
Han, Gwang-Ma; and Kim, Gyu-Suk, 5,343,082, Cl. 307-234.000.

Hyvarinen, Tuomo, to Karhu-Titan OY. Method and device for the selection of an insole and/or of a shoe that adjusts the posture of the foot. 5,341,819, Cl. 128-779.000.

Iannello, Victor; Hall, Michael H.; and Kang, Sukhvinder S., to United States of America, Air Force. Passive superconducting bearing system. 5,342,825, Cl. 505-166.000.

Ibau Hamburg Ingenieurgesellschaft Industriebau mbH: *See*—
Appenzeller, Gerhard, 5,341,856, Cl. 141-67.000.

Ichikawa, Rinjiro: *See*—
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,343,317, Cl. 359-73.000.

Ichikawa, Yukio: *See*—
Koizumi, Tomoyoshi; and Ichikawa, Yukio, 5,342,654, Cl. 427-307.000.

Ichikoh Industries, Ltd.: *See*—
Nagayama, Yoshirou; Kubo, Yoshihiro; and Sekino, Takao, 5,343,333, Cl. 359-874.000.

Ichinohe, Shoji: *See*—
Yamazaki, Toshio; Sugahara, Hideki; Ichinohe, Shoji; Ishihara, Toshinobu; and Kubota, Tohru, 5,342,983, Cl. 556-445.000.

Ide, Tatsunori, to NEC Corporation. Method for recording, erasing and reproducing data on an optical data recording medium. 5,342,714, Cl. 430-19.000.

Ideatech, Inc.: *See*—
Fink, Michael F.; and Hoagland, Larry D., 5,342,089, Cl. 280-731.000.

Igaue, Takamitsu; Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; Sasaki, Tohru; Shimakawa, Taiji; and Yamamoto, Hiroki, to Uni-Charm Corporation. Disposable garments and method for attachment of elastic members around leg-holes thereof. 5,342,341, Cl. 604-385.200.

Ihara, Hideki: *See*—
Fujii, Koji; Goto, Yasuhiro; Ryudo, Makoto; and Ihara, Hideki, 5,343,011, Cl. 219-109.000.

Iida, Yoshiaki: *See*—
Hayakawa, Yasuyuki; Nishiike, Ujihiro; Fukuda, Bunjiro; Yamada, Masataka; Iida, Yoshiaki; Takeuchi, Fumihiko; and Komatsubara, Michiro, 5,342,454, Cl. 148-113.000.

Iino, Hatsumi; and Fukushima, Takeo, to Fujitsu Limited. Switching system between working transmission lines and protection transmission line. 5,343,464, Cl. 370-16.000.

Iizuka, Nobuo, to Casio Computer Co., Ltd. Digital recorder. 5,343,451, Cl. 369-32.000.

Ikai, Keizo: *See*—
Minami, Masaki; Ikai, Keizo; and Matsuno, Mitsuo, 5,342,982, Cl. 556-431.000.

Ikari, Tokuo: *See*—
Yoshikawa, Tadao; Okamoto, Kyoko; and Ikari, Tokuo, 5,342,669, Cl. 428-64.000.

Ike, Kazuo: *See*—
Kaminaga, Kozo; Ike, Kazuo; Makise, Tetsuro; Fujiwara, Yoshio; Yamakawa, Kiyoshi; and Sawakata, Kiyoshi, 5,343,334, Cl. 360-38.100.

Ikeda, Koji: *See*—
Honda, Minoru; Iwasa, Masanobu; Miyamoto, Tetuzi; Ikeda, Koji; and Kikuchi, Toshihiro, 5,342,346, Cl. 604-413.000.
Kikuchi, Toshihiro; Ikeda, Koji; and Futagawa, Hitoshi, 5,342,347, Cl. 604-415.000.

Ikeda, Rikio, to Sony Corporation. Resist film developing method and an apparatus for carrying out the same. 5,342,738, Cl. 430-325.000.

Ikeda, Yoshihiro: *See*—
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, 5,341,672, Cl. 73-64.540.

Ikegawa, Akihito: *See*—
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Ikegaya, Akira: *See*—
Kanno, Toshiaki; Ikegaya, Akira; and Horiike, Tsuneyuki, 5,342,997, Cl. 174-117.0FF.

Ikeuchi, Michio: *See*—
Murata, Yasumoto; Yoshikawa, Syuuichi; and Ikeuchi, Michio, 5,343,420, Cl. 364-825.000.

Ikezawa, Katsuo: *See*—
Iwasaki, Tameo; Kondo, Kazuhiko; Ikezawa, Katsuo; Kikkawa, Hideo; and Yamagata, Shinsuke, 5,342,941, Cl. 514-337.000.

Iki, Makoto: *See*—
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,343,332, Cl. 359-837.000.

Ikuta, Takeshi: *See*—
Sugawara, Kenichi; Ikuta, Takeshi; and Yoshikawa, Osamu, 5,342,003, Cl. 242-231.000.

Illig, Carl R., to Sterling Winthrop Inc. Polymeric X-ray compositions containing iodinated polymeric beads. 5,342,605, Cl. 424-5.000.

Imageware Software, Inc.: *See*—
Barber, Pamela L., 5,343,386, Cl. 364-400.000.

Imaginative Research Associates Inc.: *See*—
Ramirez, Jose E.; and Vishnupad, Mohan, 5,342,535, Cl. 252-135.000.

Imahashi, Isaei; and Ishii, Nobuo, to Tokyo Electron Limited. Plasma processing apparatus. 5,342,472, Cl. 156-345.000.

Imai, Akihiro; Matsuo, Hiroyuki; Fukui, Yasuo; Mima, Soichiro; and Taguchi, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Thermal dye transfer printing method, intermediate media and transfer media therefor. 5,342,818, Cl. 503-227.000.

Imai, Hiroshi; Murakami, Tadashi; Mimura, Tetsuya; Yamamoto, Masao; Kosumi, Yuji; Asai, Masashi; and Aoki, Yasunori, to Rohm Co., Ltd. Method and leadframe for making electronic components. 5,343,072, Cl. 257-666.000.

Imai, Yoichi; Hirano, Toshiyuki; Komiyama, Osamu; and Yamanaka, Hidenori, to Tonen Chemical Corporation. Process for the preparation of polyarylene sulfide and an apparatus for the preparation thereof. 5,342,920, Cl. 528-388.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Imai, Yoshio: *See*—
Tagami, Toshio; Imai, Yoshio; Kakimoto, Masaaki; Kiyohara, Osamu; and Narushima, Hitoshi, 5,342,895, Cl. 525-183.000.

Imanishi, Isao: *See*—
Iwai, Yoshio; Takahashi, Kazuyuki; Hirota, Takeshi; Abe, Tomoji; and Imanishi, Isao, 5,342,687, Cl. 428-402.000.

Imaya, Akihiko: *See*—
Katayama, Mikio; Kato, Hiroaki; Nagayasu, Takayoshi; Imaya, Akihiko; Negoto, Hidenori; Kanemori, Yuzuru; and Hirobe, Toshihiko, 5,343,216, Cl. 345-92.000.

Imperial Chemical Industries PLC: *See*—
Clough, John M.; Godfrey, Christopher R. A.; de Fraine, Paul J.; and Matthews, Ian R., 5,342,837, Cl. 514-247.000.

Imran, Mir A., to Cardiac Pathways Corporation. Catheter assembly, catheter and multi-port introducer for use therewith. 5,342,295, Cl. 604-43.000.

Imtec Corporation: *See*—
Gillespie, Edward S., 5,342,199, Cl. 433-173.000.

Imtec, Inc.: *See*—
Murphy, William J., 5,342,461, Cl. 156-64.000.

Inagaki, Motoshi: *See*—
Ito, Hirokazu; Itoh, Masahiro; Inagaki, Motoshi; Takahiro, Syuji; and Yoshida, Keiji, 5,342,722, Cl. 430-109.000.

Inagaki, Yasuo: *See*—
Inoue, Atsushi; Kaku, Nobuyuki; Sasaki, Takashi; Niguchi, Yasuyuki; and Inagaki, Yasuo, 5,343,339, Cl. 360-71.000.

Inamura, Akira; Kaneko, Masafumi; and Hasegawa, Nobuyuki, to Mitsubishi Aluminum Co., Ltd.; and Thermalex, Inc. Extrusion dies. 5,342,189, Cl. 425-461.000.

Inanaga, Kazuhiko; Ota, Hitoshi; Yamauchi, Shiro; and Kawabata, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Interfacial component detection apparatus. 5,342,500, Cl. 204-421.000.

InControl, Inc.: *See*—
deCoriolis, Paul E.; Siegman, Craig S.; and Bocek, Joseph M., 5,342,408, Cl. 607-32.000.

Industrial Technology Research Institute: *See*—
Chen, Chan-Ming; Wu, Jia-Ruey; Shieh, Chi-Maw; and Chang, Wen-Pin, 5,343,408, Cl. 364-508.000.
Chen, Ker-Ming; Wang, Tsung-Hsiung; King, Shing-Shing; and Lee, Tzong-Ming, 5,342,736, Cl. 430-323.000.
Chen, Wei-Liang; Lee, Dah-Ming; Chen, Lien-Tai; and Yeh, Ming-Tao, 5,342,567, Cl. 264-203.000.
Peng, Yu-Min; Wang, Jih-Wen; Liue, Chun-Ying; and Yeh, Shinn-Horng, 5,342,502, Cl. 205-109.000.
Su, Der-Tarng; Chen, Wen-Jer; Wu, Jeng-Yue; and Wu, Ming-Chu, 5,342,717, Cl. 430-55.000.

Inenaka, Hiroyuki: *See*—
Yamashita, Yuji; Takahashi, Masanobu; Masai, Katsunori; Inenaka, Hiroyuki; Sako, Masahiro; Hashimoto, Yasuhiro; and Tomita, Hideaki, 5,343,276, Cl. 355-202.000.

Ineyama, Takashi: *See*—
Sakurai, Kuniya; Izawa, Kunisuke; Izawa, Hiroyuki; Ineyama, Takashi; Ohta, Tomihisa; and Nozoe, Shigeo, 5,342,963, Cl. 548-532.000.

Infusion Technologies Corporation: *See*—
Campbell, Robert E.; Kulisz, Andre A.; and Migachyov, Valery, 5,342,313, Cl. 604-153.000.

Ingersoll-Rand Company: *See*—
Fisher, Alvin J.; Smoot, Troy S.; and Kincer, Daniel E., 5,343,384, Cl. 364-133.000.
Grinberg, Eugene Y.; and Gullan, Charles E., 5,341,895, Cl. 180-326.000.
Lyon, Leland H., 5,342,520, Cl. 210-251.000.
Young, Douglas L. G., 5,341,936, Cl. 209-17.000.

Ingus, George A. Method of tyre cord sheet construction. 5,342,678, Cl. 428-229.000.

Inmed Ltda.: *See*—
Croquevielle, Raul J., 5,342,329, Cl. 604-319.000.

Inno-Tech Plastics, Inc.: *See*—
Robbins, Gary L., 5,341,612, Cl. 52-95.000.

Innovadent Technologies Ltd.: *See*—
Stein, Volker W.; and Dickie, Robert G., 5,342,197, Cl. 433-155.000.

Inokuchi, Shoji: *See*—
Kobayashi, Hiroshi; Hayashi, Ryosuke; Inokuchi, Shoji; and Muroya, Yukihiro, 5,341,839, Cl. 137-505.130.

Inomata, Hiroshi: *See*—
Takago, Toshio; Inomata, Hiroshi; Sato, Shinichi; and Kinami, Hitoshi, 5,342,913, Cl. 528-15.000.

Inoue, Atsuo, to Sanden Corporation. Control apparatus for use in automotive air conditioning system. 5,341,651, Cl. 62-225.000.

Inoue, Atsushi; Kaku, Nobuyuki; Sasaki, Takashi; Niguchi, Yasuyuki; and Inagaki, Yasuo, to Hitachi, Ltd. Tape loading device with selective tape loading characteristic for magnetic recording/reproducing apparatus. 5,343,339, Cl. 360-71.000.

Inoue, Genichiro, to Matsushita Electric Industrial Co., Ltd. Leading one anticipator and floating point addition/subtraction apparatus. 5,343,413, Cl. 364-715.040.

Inoue, Hideo: *See*—
Hirano, Hiroyuki; Tsuzuki, Yoshihiko; Haseda, Satoshi; Fukushima, Akira; Inoue, Hideo; and Takeda, Osamu, 5,343,393, Cl. 364-424.050.

Inoue, Katsutoshi; Yoshizuka, Kazuharu; Baba, Yoshinari; and Tazaki, Masato, to Tanaka Kikinzoku Kogyo K.K. Extraction agent for palladium and platinum and process of extracting same. 5,342,526, Cl. 210-634.000.

Inoue, Nobuaki: *See*—
Goto, Takahiro; and Inoue, Nobuaki, 5,342,743, Cl. 430-507.000.

Inoue, Yoshihisa: *See*—
Saji, Tomohide; Inoue, Yoshihisa; and Kii, Asajiro, 5,342,107, Cl. 296-210.000.

Institut National de la Sante et de la Recherche Medicale: *See*—
Garbarg, Monique; Arrang, Jean-Michel; Schunack, Walter; Lipp, Ralph; Stark, Holger; Lecomte, Jeanne-Marie; and Schwartz, Jean-Charles, 5,342,960, Cl. 548-336.100.

Institut Pasteur: *See*—
Orth, Gerard; Favre, Michel; Kremsdorf, Dina; and Pehau-Arnaudet, Gerard, 5,342,930, Cl. 536-23.720.

Institute of Gas Technology: *See*—
Marianowski, Leonard G.; and Petri, Randy J., 5,342,706, Cl. 429-35.000.

Integrated Device Technology, Inc.: *See*—
Bourekas, Philip A.; Ngoc, Danh L.; and Revak, Scott, 5,343,435, Cl. 365-221.000.

Integrated Energy Development Corp.: *See*—
MacGregor, Norman J., 5,342,702, Cl. 429-13.000.

Intel Corporation: *See*—
Eisig, David; and Rotstain, Jehoshua S., 5,343,416, Cl. 364-757.000.
Fung, Wing-Cho; Pun, Yim; and Selvin, Eric B., 5,343,086, Cl. 307-296.100.
Zinger, Ron, 5,343,418, Cl. 364-784.000.

Intermec Corporation: *See*—
Trine, David R.; and Gilpin, David W., 5,342,210, Cl. 439-95.000.

Intermedics, Inc.: *See*—
Alt, Eckhard; Matula, Marcus; and Mestre, Edgar, 5,342,404, Cl. 607-6.000.

International Business Machines Corporation: *See*—
Batchelder, John S.; DeCain, Donald M.; Hobbs, Philip C. D.; and Taubenblatt, Marc A., 5,343,290, Cl. 356-349.000.
Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,343,537, Cl. 382-13.000.
Boutaghou, Zine-Eddine; Brown, Dana H.; Erickson, Kevin J.; and Greenberg, Richard, 5,343,340, Cl. 360-77.080.
Cidon, Israel; Doney, Richard M.; Drake, John E., Jr.; Hervatic, Elizabeth A.; Potter, Kenneth H., Jr.; and Tedijanto, Theodore E., 5,343,473, Cl. 370-85.600.
Cipolla, Thoss M.; Coteus, Paul W.; Damianakis, Ioannis; Johnson, Glen W.; Ledermann, Peter G.; Matthew, Linda C.; and Mok, Lawrence S., 5,343,366, Cl. 361-785.000.
Cole, Phill D.; and Southworth, David E., 5,342,123, Cl. 312-319.200.
Dhong, Sang H.; and Shin, Hyun J., 5,343,092, Cl. 307-455.000.
Hall, Shawn A.; Lane, Ramon; and Wang, Han-chung, 5,343,548, Cl. 385-89.000.
Joskowicz, Leo; and Taylor, Russell H., 5,343,385, Cl. 364-167.010.
Kash, Jeffrey A.; Pezeshki, Bardia; and Tong, Franklin F., 5,343,542, Cl. 385-31.000.
Kiel, Harvey G.; Peterson, Ricky M.; and Whitley, Lawrence D., 5,343,557, Cl. 395-118.000.
Kung, Kenneth T.; Tang, Denny D.; and Wang, Po-Kang, 5,343,422, Cl. 365-173.000.
Moore, James W., 5,343,527, Cl. 380-4.000.
Vicari, Richard; Gordon, Douglas J.; Hinsberg, William D.; McKean, Dennis R.; Willson, Carlton G.; and Dammel, Ralph, 5,342,727, Cl. 430-157.000.

International Paper Company: *See*—
Sarokin, Steven D., 5,342,649, Cl. 427-150.000.

International Remote Imaging Systems, Inc.: *See*—
Kasdan, Harvey L., 5,343,538, Cl. 382-18.000.

International Superconductivity Technology center: *See*—
Kubota, Nobuhiko; Sugimoto, Tsunemi; Sugawara, Kazushi; and Shiohara, Yuh, 5,342,826, Cl. 505-238.000.

Interox International: *See*—
Deremince, Veronique; and Vogels, Claude, 5,342,603, Cl. 423-588.000.

Invacare Corporation: *See*—
Bly, Robert R., 5,341,517, Cl. 4-236.000.

Ipcinski, Ralph G. Sealed switch. 5,343,008, Cl. 200-302.002.

Iraco Filtration Systems, Inc.: *See*—
Posner, Mark A.; and McQueen, Al, 5,342,518, Cl. 210-232.000.

Irmen, Wolfgang: *See*—
Wirtz, Ulrich; Grecksch, Hans; Irmen, Wolfgang; Hensen, Helmuth; and Bohmer, Walter, 5,341,549, Cl. 28-298.000.

Irvine, Robert L.; and Venkatadri, Rajagopalan, to Occidental Chemical Corporation. Method of producing extracellular products from aerobic microorganisms. 5,342,765, Cl. 435-71.100.

Isaacson, Chris A., to Gamma-Metrics. Handling and deploying radioactive sources. 5,342,158, Cl. 414-146.000.

Isafrance: *See*—
Voumard, Bertrand P., 5,341,552, Cl. 29-179.000.

Isaka, Haruo: *See*—
Murata, Shigeki; Isaka, Haruo; Matsuura, Kenji; and Sogabe, Yasushi, 5,343,338, Cl. 360-69.000.

Iscar Ltd.: *See*—
Friedmann, Jacob, 5,342,151, Cl. 407-116.000.

Isco, Inc.: *See*—
Dawson, Brian D.; and Hartz, Richard D., 5,341,690, Cl. 73-863.610.

Ishibashi, Kouichi: *See*—
Takata, Haruki; Katsumata, Kenji; Hirahata, Shigeru; Konno, Mituo; Ishibashi, Kouichi; and Suzuki, Sunao, 5,343,238, Cl. 348-556.000.

Ishihara, Toshinobu: *See*—
Yamazaki, Toshio; Sugahara, Hideki; Ichinohe, Shoji; Ishihara, Toshinobu; and Kubota, Tohru, 5,342,983, Cl. 556-445.000.

Ishii, Nobuo: *See*—
Imahashi, Issei; and Ishii, Nobuo, 5,342,472, Cl. 156-345.000.

Ishii, Saburo: *See*—
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, 5,341,672, Cl. 73-64.540.

Ishii, Takeshi: *See*—
Katoh, Hiroaki; Miyazaki, Toshimasa; Takahashi, Tamotsu; Ishii, Takeshi; Oyama, Yoshihiro; Oyama, Yoshihiro; and Sasaki, Tatsuo, 5,343,029, Cl. 235-467.000.

Ishii, Toshio: *See*—
Kurihara, Nobuo; Ishii, Toshio; Mukaihira, Takashi; Kawano, Kazuya; and Takaku, Yutaka, 5,341,642, Cl. 60-276.000.

Ishikawa, Hiroyuki: *See*—
Usui, Hiroaki; Hirao, Shozo; Konishi, Satoru; Ishikawa, Hiroyuki; Oonisi, Kenji; and Adachi, Arihiro, 5,342,651, Cl. 427-209.000.

Ishikawa, Hisashi, to Canon Kabushiki Kaisha. Television signal converting apparatus. 5,343,299, Cl. 348-445.000.

Ishikawa, Masaaki: *See*—
Kobayashi, Shoji; and Ishikawa, Masaaki, 5,343,371, Cl. 362-61.000.

Ishikawa, Masataka, to Zexel Corporation. Method for detecting relative travel direction of a vehicle. 5,343,400, Cl. 364-450.000.

Ishikawa, Takatoshi: *See*—
Goto, Masatoshi; and Ishikawa, Takatoshi, 5,342,740, Cl. 430-393.000.

Ishikawa, Takayoshi, to Mitsubishi Denki Kabushiki Kaisha. Safety shutter device for drawout type switch gear. 5,343,355, Cl. 361-617.000.

Ishikawajima-Harima Heavy Industries Co., Ltd.: *See*—
Kubota, Nobuhiko; Sugimoto, Tsunemi; Sugawara, Kazushi; and Shiohara, Yuh, 5,342,826, Cl. 505-238.000.

Ishimaru, Hiroshi: *See*—
Creaven, Patrick J.; Hori, Kazuyoshi; and Ishimaru, Hiroshi, 5,342,613, Cl. 424-85.100.

Ishizaka, Kouichi; and Asami, Yoshio, to Jidosha Kiki Co., Ltd. Method of diagnosing power steering system. 5,343,392, Cl. 364-424.030.

Ishizaki, Osamu: *See*—
Matsuo, Ryuichi; Kosugi, Ryuichi; Tsuda, Nobuhiro; and Ishizaki, Osamu, 5,343,432, Cl. 365-203.000.

Ishizuka, Masahiko: *See*—
Sasaki, Toshinori; Kanazawa, Akira; Hara, Kenji; Fukao, Tomoo; Ishizuka, Masahiko; Yamada, Masatomo; Sugimura, Naoto; and Yoshihara, Michiaki, 5,343,142, Cl. 324-71.100.

Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft: *See*—
Schorm, Josef; Zych, Otakar; and Deutschmann, Gottfried, 5,341,561, Cl. 29-596.000.

Isozumi, Shuzo, to Mitsubishi Denki Kabushiki Kaisha. Shift lever supporting device for starter motor. 5,341,697, Cl. 74-7.00A.

ISP Investments Inc.: *See*—
Plotkin, Jeffrey S.; and Miller, Mark M., 5,342,860, Cl. 522-31.000.
Tseng, Susan Y.; and Wolf, Philip F., 5,342,964, Cl. 548-552.000.

Itahashi, Hiromichi: *See*—
Ota, Takashi; Taguchi, Osamu; and Itahashi, Hiromichi, 5,343,349, Cl. 360-132.000.

Itakura, Tetsuro; and Shima, Takeshi, to Kabushiki Kaisha Toshiba. Sample-and-hold circuit device. 5,343,089, Cl. 307-353.000.

Italtel Societa Italiana Telecommunicazioni S.p.A.: *See*—
Canosi, Claudio; and Rosina, Giancarlo, 5,343,497, Cl. 375-111.000.

Itaya, Kazuhiko; Hatakoshi, Genichi; and Nitta, Koichi, to Kabushiki Kaisha Toshiba. Semiconductor laser device. 5,343,486, Cl. 372-43.000.

Ito, Akira, to Sumitomo Wiring Systems, Ltd. Inter-connecting terminal. 5,342,996, Cl. 174-84.00C.

Ito, Hirokazu; Itoh, Masahiro; Inagaki, Motoshi; Takahiro, Syuji; and Yoshida, Keiji, to Mitsubishi Rayon Company Ltd. Toner resin composition and process for preparing same. 5,342,722, Cl. 430-109.000.

Ito, Koichi: *See*—
Yamaguchi, Shuji; and Ito, Koichi, 5,343,136, Cl. 320-2.000.

Ito, Masahiro: *See*—
Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, 5,343,450, Cl. 369-19.000.

Ito, Sadao; and Nawa, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Seat sliding device for vehicle. 5,342,013, Cl. 248-429.000.

Ito, Seiga: *See*—
Yasumura, Shigeyoshi; Nishi, Tatsunari; and Ito, Seiga, 5,342,775, Cl. 435-240.200.

Ito, Shigenori: *See*—
Kawasaki, Shinji; Ito, Shigenori; and Yoshioka, Katsuki, 5,342,703, Cl. 429-30.000.

Ito, Shigeru: *See*—
Fujiwara, Takayuki; and Ito, Shigeru, 5,342,276, Cl. 483-29.000.

Ito, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens system. 5,343,329, Cl. 359-689.000.

Ito, Toru: *See*—
Yokoyama, Shoji; Morimoto, Kyomi; Nanba, Akimasa; Katoh, Kiyohide; Kuroda, Kenji; Kishi, Hiroshi; and Ito, Toru, 5,343,399, Cl. 364-449.000.

Ito, Tsukasa: *See*—
Kitaoka, Kazuhiro; Furuse, Akihiro; Takesue, Fumiki; and Ito, Tsukasa, 5,343,137, Cl. 320-13.000.

Itoh, Fumikazu: *See*—
Hamamura, Yuuichi; Haraichi, Satoshi; Shimase, Akira; Azuma, Junzou; Itoh, Fumikazu; Yamada, Toshio; Koizumi, Yasuhiro; and Mizumura, Michinobu, 5,342,448, Cl. 118-723.0FI.

Itoh, Junichi; Dai, Masahiro; and Watanabe, Yoji, to Olympus Optical Co., Ltd. Camera using film having magnetic recording portion. 5,343,264, Cl. 354-106.000.

Itoh, Kensuke: *See*—
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, 5,341,672, Cl. 73-64.540.

Itoh, Masahiro: *See*—
Ito, Hirokazu; Itoh, Masahiro; Inagaki, Motoshi; Takahiro, Syuji; and Yoshida, Keiji, 5,342,722, Cl. 430-109.000.

Itoh, Masami; Nishii, Kanji; Kawamura, Hiroyuki; and Fukui, Atsushi, to Matsushita Electric Industrial Co., Ltd. Logarithmic polar coordinate transforming method, vision recognizing method, and optical information processing apparatus. 5,343,415, Cl. 364-725.000.

Itoh, Yoshinori: *See*—
Fujiwara, Toru; and Itoh, Yoshinori, 5,342,252, Cl. 474-266.000.

ITT Corporation: *See*—
Klinger, Gary; and Pontbriand, Duane, 5,342,095, Cl. 285-18.000.

IVAC Corporation: *See*—
Daoud, Adib G., 5,342,180, Cl. 417-412.000.

Iwai, Yoshio; Takahashi, Kazuyuki; Hirota, Takeshi; Abe, Tomoji; and Imanishi, Isao, to Kyowa Limited; and Clements Industries. Coreless twist-ties. 5,342,687, Cl. 428-402.000.

Iwakiri, Hiroshi; Fujita, Masayuki; and Hasegawa, Takashi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable composition. 5,342,914, Cl. 528-32.000.

Iwamura, Ryuichi, to Sony Corporation. Multiple picture/sound signals decoding apparatus. 5,343,250, Cl. 348-564.000.

Iwanaga, Shoichi: *See*—
Tanei, Hirayoshi; and Iwanaga, Shoichi, 5,342,674, Cl. 428-209.000.

Iwasa, Masanobu: *See*—
Honda, Minoru; Iwasa, Masanobu; Miyamoto, Tetuzi; Ikeda, Koji; and Kikuchi, Toshihiro, 5,342,346, Cl. 604-413.000.

Iwasaki, Tameo; Kondo, Kazuhiko; Ikezawa, Katsuo; Kikkawa, Hideo; and Yamagata, Shinsuke, to Tanabe Seiyaku Co., Ltd. Naphthalene derivatives, processes for preparing the same, and synthetic intermediates therefor. 5,342,941, Cl. 514-337.000.

Iwase, Masanori; Fujiwara, Ryuji; and Mochizuki, Ryo, to Yamari Electronite Kabushikigaisha. Method of measuring oxygen activities in slag. 5,342,489, Cl. 204-153.180.

Iwashita, Yasusuke, to Fanuc Ltd. Backlash acceleration control method. 5,343,132, Cl. 318-630.000.

Iwata, Masakatsu; and Kobashi, Takeyoshi, to Canon Kabushiki Kaisha. Control method for sheet discharger with stapler. 5,342,033, Cl. 270-53.000.

Iwata, Yasuo: *See*—
Abe, Masahiko; Iwata, Yasuo; and Masuda, Shoji, 5,341,786, Cl. 123-486.000.

Iwayama, Satoshi: *See*—
Hatsuya, Satoshi; Sekiyama, Takaaki; Tsuji, Takashi; Iwayama, Satoshi; and Okunishi, Masahiko, 5,342,840, Cl. 514-262.000.

Izawa, Hiroyuki: *See*—
Sakurai, Kuniya; Izawa, Kunisuke; Izawa, Hiroyuki; Ineyama, Takashi; Ohta, Tomihisa; and Nozoe, Shigeo, 5,342,963, Cl. 548-532.000.

Izawa, Kunisuke: *See*—
Sakurai, Kuniya; Izawa, Kunisuke; Izawa, Hiroyuki; Ineyama, Takashi; Ohta, Tomihisa; and Nozoe, Shigeo, 5,342,963, Cl. 548-532.000.

J&J Sports Products: *See*—
Jones, Allan L.; and James, Lane, 5,341,928, Cl. 206-315.500.

J. M. Voith GmbH: *See*—
Schiel, Christian; Kotitschke, Gerhard; and Groner, Karl, 5,341,579, Cl. 34-115.000.
Steiner, Karl; and Matuschczyk, Uwe, 5,342,277, Cl. 492-56.000.

J. P. Tool, Inc.: *See*—
Peuterbaugh, Bruce G., 5,341,710, Cl. 409-234.000.

Jacks, R. Benton. Wrist watch wallet. 5,341,972, Cl. 224-165.000.

Jackson, W. J., Jr.: *See*—
Darnell, W. Ronald; and Jackson, W. J., Jr., 5,342,902, Cl. 525-437.000.

Jacobs, Terry G.: *See*—
Creelman, Kevin; and Jacobs, Terry G., 5,342,265, Cl. 482-71.000.

Jaen, Juan C.; and Caprathe, Bradley W., to Warner-Lambert Company. Pyrazoloquinazolone derivatives as neurotrophic agents. 5,342,942, Cl. 544-250.000.

Jaensch, Sven: *See*—
Uphues, Guenter; Jaensch, Sven; Ploog, Uwe; and Steinberner, Udo, 5,342,961, Cl. 548-352.100.

Jahren, Rolf, to Tandberg Data A/S. Method for seeking the center of a recorded data track. 5,343,341, Cl. 360-77.120.

Jalics, George; and Bauer, Richard G., to Goodyear Tire & Rubber Company, The. Comb polymers having a halobutyl rubber backbone. 5,342,896, Cl. 525-193.000.

James, Lane: *See*—
Jones, Allan L.; and James, Lane, 5,341,928, Cl. 206-315.500.

James, Larry C.; Kagy, Carl W.; Gates, Jeffrey F.; Hawkey, Jeffrey A.; Heil, Thomas F.; and Simpson, David L., to NCR Corporation. Computer system configuration via test bus. 5,343,478, Cl. 371-22.300.

James, William D., Jr. Apparatus for supporting and displaying objects. 5,341,942, Cl. 211-40.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Jamieson, Eric K.; McCarthy, Richard C.; and Yoo, Young S., to Otis Elevator Company. Recalibration of hitch load weighing using dynamic tare. 5,343,003, Cl. 187-131.000.

Janda, Pavel: *See*—
Lever, Alfred B. P.; Tse, Yu-Hong; and Janda, Pavel, 5,342,490, Cl. 204-153.190.

Jang, G. David. Bailout receptacle for angioplasty catheter. 5,342,297, Cl. 604-53.000.

Janssen Pharmaceutica N.V.: *See*—
Van Wauwe, Jean P. F.; and Raeymaekers, Alfons H. M., 5,342,957, Cl. 548-266.400.

Japan Aviation Electronics Industry, Limited: *See*—
Hashiguchi, Osamu, 5,342,205, Cl. 439-66.000.

Japan Marine Science and Technology Center: *See*—
Moriya, Kazuhito; and Horikoshi, Koki, 5,342,778, Cl. 435-252.100.

Jarrett, Peter K.; Casey, Donald J.; and Rosati, Louis, to American Cyanamid Co. Absorbable surgical repair devices. 5,342,395, Cl. 606-219.000.

Jary, Michael W.: *See*—
Richter, Thomas L.; and Jary, Michael W., 5,341,544, Cl. 24-289.000.

Jasper, Steven C.; and Butler, James A., to Motorola, Inc. Quadrature amplitude modulation synchronization method. 5,343,499, Cl. 375-39.000.

Jasti, Jayanthi K.: *See*—
Burns, James L.; Dicus, Bryan J.; Jasti, Jayanthi K.; Kendall, Jerry J.; Olmos, Jose L.; and Zambrano, Luis G., 5,341,876, Cl. 166-263.000.

Jatco Corporation: *See*—
Mori, Kyosuke, 5,342,246, Cl. 474-1.000.

Jean, Robert; Chatelet, Bernard; and Jourde, Bernard, to Asselin (Societe Anonyme). Spreading and lap-forming machine. 5,341,543, Cl. 19-163.000.

Jean Walterscheid GmbH: *See*—
Kampf, Klaus, 5,342,241, Cl. 464-37.000.

Jeffery, John; Kaniuka, Leslie Y.; and Sayers, Ian C., to Scapa Group PLC. Endless belt for extended nip dewatering presses. 5,342,486, Cl. 162-358.400.

Jehnicka, Jiri : *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,342,585, Cl. 422-131.000.

Jelinek, Edward H.: *See*—
Norelli, Robert A.; Jelinek, Edward H.; and Cullan, George E., 5,342,385, Cl. 606-193.000.

Jenkins, Richard D.; Bassett, David R.; and Shay, Gregory D., to Union Carbide Chemicals & Plastics Technology Corporation. Polymers containing macromonomers. 5,342,883, Cl. 524-845.000.

Jenkins, Robert S.: *See*—
Kelly, Joseph L.; and Jenkins, Robert S., 5,342,286, Cl. 602-3.000.

Jenneman, Gary E.; and Clark, Bennett, to Phillips Petroleum Company. Injection of phosphorus nutrient sources under acid conditions for subterranean microbial processes. 5,341,875, Cl. 166-246.000.

Jeon, Jun-Young, to Samsung Electronics Co. Ltd. Charge pump circuit for a substrate voltage generator of a semiconductor memory device. 5,343,088, Cl. 307-296.200.

Jerabek, Jeff J.: *See*—
Shubin, Jack A.; Oliver, Gene S.; and Jerabek, Jeff J., 5,341,556, Cl. 29-448.000.

Jergenson, Ronny D.: *See*—
Nolte, Michael G.; Davis, Gary D.; Jergenson, Ronny D.; Scheu, Robert W.; and Tillery, Timothy G., 5,342,998, Cl. 174-152.00R.

Jernoiu, Justin. Watertight wound protector. 5,342,287, Cl. 602-3.000.

Jeschke, Willi; and Freyer, Norbert, to Heidelberger Druckmaschinen AG. Method and device for regulating a supply of dampening solution in an offset printing press. 5,341,734, Cl. 101-148.000.

Jesse, Albert H. Method of making pelletized fuel. 5,342,418, Cl. 44-589.000.

Jidosha Kiki Co., Ltd.: *See*—
Ishizaka, Kouichi; and Asami, Yoshio, 5,343,392, Cl. 364-424.030.

Johb, Walter: *See*—
Hepworth, Allen; Smith, Gordon; and Johb, Walter, 5,341,590, Cl. 43-26.000.

John Fluke Mfg. Co., Inc.: *See*—
Holmdahl, Todd E., 5,343,164, Cl. 330-253.000.

Johnson, Chris; J.: *See*—
Zengerle, Paul L.; Rothrock, Richard K.; and Johnson, Chris; J., 5,342,746, Cl. 430-546.000.

Johnson, Clarence W., to Barber Industries Ltd. Two line pilot valve. 5,341,837, Cl. 137-458.000.

Johnson, Glen W.: *See*—
Cipolla, Thoas M.; Coteus, Paul W.; Damianakis, Ioannis; Johnson, Glen W.; Ledermann, Peter G.; Matthew, Linda C.; and Mok, Lawrence S., 5,343,366, Cl. 361-785.000.

Johnson, J. Edward: *See*—
Berry, David L.; Johnson, J. Edward; and Aggen, Marshall J., 5,342,109, Cl. 297-191.000.

Johnson, James H., to Envirotest Syst. Corp.; and Colorado Seminary. Remote sensor device for monitoring motor vehicle exhaust systems with high speed sampling. 5,343,043, Cl. 250-338.500.

Johnson, Lorin K.; and Longenecker, John P., to Scios Nova Inc. Recombinant expression system for human anti-inflammatory phospholipase inhibitor protein. 5,342,764, Cl. 435-69.100.

Johnson, Lynda K.: *See*—
Grubbs, Robert H.; Johnson, Lynda K.; and Nguyen, Sonbinh T., 5,342,909, Cl. 526-171.000.

Johnson, Mark J.; and Branson, Brian D., to Motorola Inc. Memory having nonvolatile and volatile memory banks. 5,343,437, Cl. 365-230.030.

Johnson, Nick M.; and Cheah, Chun-Foong. IC for producing an output voltage related to fuel composition in a capacitive fuel sensor. 5,343,156, Cl. 324-672.000.

Johnson, Paul: *See*—
O'Brien, Daniel P.; and Johnson, Paul, 5,341,761, Cl. 114-365.000.

Johnston, Bevan H.: *See*—
Beck, Niels J.; Pena, James A.; Roach, Alan R.; and Johnston, Bevan H., 5,341,783, Cl. 123-446.000.

Johnston, Gary. Adjustable cycling apparatus. 5,342,261, Cl. 482-57.000.

Johnston, Gregory E., to X-Ray Scanner Corporation. Extended dynamic range image digitizing apparatus. 5,343,308, Cl. 358-445.000.

Johnston, Michael H.: *See*—
Chih, Ming-Niu; and Johnston, Michael H., 5,341,842, Cl. 137-574.000.

Johnston, Paul A.: *See*—
Daley, Michael J.; Steber, William D.; Furda, Gary J.; Johnston, Paul A.; and Oldham, Elizabeth R., 5,342,612, Cl. 424-85.100.

Jones, Allan L.; and James, Lane, to J&J Sports Products. Add-on pocket for golf bags. 5,341,928, Cl. 206-315.500.

Jones, Arthur A. Exercise machine for upper torso. 5,342,270, Cl. 482-98.000.

Jones, H. Joseph, Jr.: *See*—
Woodall, Robert C., Jr.; Jones, S. Kyle; and Jones, H. Joseph, Jr., 5,341,718, Cl. 89-1.110.

Jones, Keith A., to Church & Dwight Co., Inc. Environmentally safe pesticide compositions. 5,342,630, Cl. 424-717.000.

Jones, Kenneth M.: *See*—
Tasaki, Koji; Asai, Toshimitsu; and Jones, Kenneth M., 5,343,310, Cl. 358-515.000.

Jones, Lawrence T.; and May, Richard L., to California R & D Center. Wall mounted slot car track with moving accessories. 5,342,048, Cl. 273-86.00B.

Jones, S. Kyle: *See*—
Woodall, Robert C., Jr.; Jones, S. Kyle; and Jones, H. Joseph, Jr., 5,341,718, Cl. 89-1.110.

Jones, Thomas R.: *See*—
Bleakley, Ian S.; and Jones, Thomas R., 5,342,600, Cl. 423-432.000.

Jongsma, Ronald; Lammes, Larry R.; Lewis, Gifford J.; and Wahlers, Robert A., to Eastman Kodak Company. Apparatus for coating a continuous web. 5,342,446, Cl. 118-65.000.

Jordan, Dan: *See*—
Powers, Daniel J.; Cyrus, Judith; Kootstra, Steve; Burkhalter, Art; Bledsoe, J. Daren; Shultheis, David C.; and Jordan, Dan, 5,342,403, Cl. 607-5.000.

Jordan, Mary P.: *See*—
Heindel, Timothy R.; Garvey, Michael J.; Dick, Daniel W.; Keller, Richard F.; Jordan, Mary P.; and Schleinz, Alan F., 5,342,647, Cl. 427-2.310.

Josephson, Lee, to Advanced Magnetics, Inc. Receptor mediated endocytosis type magnetic resonance imaging contrast agents. 5,342,607, Cl. 424-9.000.

Josephson, Paul F.: *See*—
Rupel, John D.; and Josephson, Paul F., 5,341,864, Cl. 160-84.10B.

Joshua Group Ltd.: *See*—
Markland, Max C., 5,342,260, Cl. 482-51.000.

Joskowicz, Leo; and Taylor, Russell H., to International Business Machines Corporation. Interference-free insertion of a solid body into a cavity. 5,343,385, Cl. 364-167.010.

Jouan: *See*—
Letourneur, Jean-Claude, 5,342,282, Cl. 494-82.000.

Jourde, Bernard: *See*—
Jean, Robert; Chatelet, Bernard; and Jourde, Bernard, 5,341,543, Cl. 19-163.000.

Jullien, Jean-Pascal; and Le Tourneur, Gregoire, to French State, represented by the Minister of the Post, Telecommunications and Space, (Centre National d'Etudes des Telecommunications). Device for processing echo, particularly acoustic echo in a telephone line. 5,343,521, Cl. 379-410.000.

Jun, Young-Kwon, to Goldstar Electron Co., Ltd. Method of making memory cell capacitor. 5,342,800, Cl. 437-52.000.

Jung, Emmanuel; and Raffin, Christine, to Rhone-Poulenc Fibres. Yarn with the appearance of a spun yarn, made from polyamide-based fibres. 5,341,632, Cl. 57-208.000.

Junkers, John K. Method of elongating and relaxing a stud. 5,341,560, Cl. 29-525.100.

Juri, Tatsuro: *See*—
Kadono, Shinya; Nishino, Masakazu; Juri, Tatsuro; Horikane, Hiroshi; and Hidaka, Iwao, 5,343,501, Cl. 375-94.000.

Jurneke, Joe K., to Digital Equipment Corporation. Control circuitry for magnetoresistive (MR) tape heads using group select switches and head select multiplexer. 5,343,337, Cl. 360-63.000.

Just Two Bikes, Inc.: *See*—
Amdahl, Keith L.; and Muellner, James M., 5,342,074, Cl. 280-209.000.

Kabushiki Kaish Toshiba: *See*—
Fox, Timothy R.; and Posluszny, Jerry C., 5,343,171, Cl. 332-167.000.

Kabushiki Kaisha Allco: *See*—
Fukami, Masaaki, 5,342,136, Cl. 401-135.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Ueno, Koichi; Tsukamoto, Akio; Tori, Tamotsu; Nishimura, Hiroo; Konishi, Keizo; and Harada, Fukuzo, 5,341,769, Cl. 122-367.300.

Kabushiki Kaisha Toshiba: *See*—
Arakawa, Takashi; and Motegi, Hiroyuki, 5,343,221, Cl. 345-211.000.
Egusa, Syun; and Watanabe, Yoko, 5,343,050, Cl. 257-40.000.
Fujimoro, Takuya; and Wada, Yukio, 5,343,085, Cl. 307-272.300.
Furuyama, Tohru, 5,343,087, Cl. 307-296.200.
Furuyama, Tohru, 5,343,430, Cl. 365-201.000.
Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, 5,343,450, Cl. 369-19.000.
Hanawa, Masatoshi, 5,343,149, Cl. 324-314.000.
Itakura, Tetsuro; and Shima, Takeshi, 5,343,089, Cl. 307-353.000.
Itaya, Kazuhiko; Hatakoshi, Genichi; and Nitta, Koichi, 5,343,486, Cl. 372-43.000.
Maroney, James T., III; and Furuyama, Hideto, 5,343,054, Cl. 257-184.000.
Nagasawa, Atsushi; Morita, Keiichi; Yamazaki, Masaya; Katagami, Yoshinori; Shinoda, Masaru; Matsuo, Takeshi; and Misawa, Masaru, 5,341,650, Cl. 62-180.000.
Nakagawa, Akio; Yasuhara, Norio; and Matsudai, Tomoko, 5,343,067, Cl. 257-487.000.
Ohta, Tadatoshi, 5,343,182, Cl. 335-299.000.
Saito, Shozo; and Toda, Haruki, 5,343,425, Cl. 365-189.010.
Sugawa, Naoki, 5,343,199, Cl. 341-159.000.
Terada, Toshiyuki, 5,343,091, Cl. 307-448.000.
Teruyama, Tatsuo, 5,343,427, Cl. 365-189.040.
Yamaguchi, Shuji; and Ito, Koichi, 5,343,136, Cl. 320-2.000.
Yamashita, Hirofumi; and Matsunaga, Yoshiyuki, 5,343,061, Cl. 257-229.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kimura, Kazuya; Kayukawa, Hiroaki; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,342,178, Cl. 417-269.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Morikawa, Takeshi; Tsukada, Kouji; Nonomura, Yutaka; and Omura, Yoshiteru, 5,341,688, Cl. 73-862.680.

Kadomura, Shingo, to Sony Corporation. Dry etching method. 5,342,481, Cl. 156-659.100.

Kadono, Shinya; Nishino, Masakazu; Juri, Tatsuro; Horikane, Hiroshi; and Hidaka, Iwao, to Matsushita Electric Industrial Co., Ltd. Orthogonal transform apparatus for video signal processing. 5,343,501, Cl. 375-94.000.

Kagawa, Tsutomu: *See*—
Sugiyama, Kunitoshi; Kobori, Hideyuki; Hanai, Shuji; and Kagawa, Tsutomu, 5,342,815, Cl. 503-217.000.

Kagy, Carl W.: *See*—
James, Larry C.; Kagy, Carl W.; Gates, Jeffrey F.; Hawkey, Jeffrey A.; Heil, Thomas F.; and Simpson, David L., 5,343,478, Cl. 371-22.300.

Kai Fa Industry Co., Ltd.: *See*—
Lu, Fu-Chung, 5,341,905, Cl. 188-320.000.

Kai, Yoshiyuki: *See*—
Ono, Keiichi; Kai, Yoshiyuki; and Maeda, Hiroo, 5,342,940, Cl. 544-218.000.

Kaida, Hiroaki, to Myrata Manufacturing Co., Ltd. Method of manufacturing a piezoelectric tuning fork resonator. 5,341,550, Cl. 29-25.350.

Kain, Christopher J.: *See*—
Kay, Stanley E.; Farmer, George D.; Bhatia, Hans; Mehta, Ashok D.; Kain, Christopher J.; and Sampson, Nicholas P., 5,343,513, Cl. 379-59.000.

Kajikawa, Akira: *See*—
Kiyomoto, Masayuki; Kajikawa, Akira; Murakado, Toru; Sakurai, Hiroshi; Mano, Motokazu; and Sizume, Kazutika, 5,342,445, Cl. 106-789.000.

Kajiwara, Makoto: *See*—
Miyoshi, Masanobu; Kajiwara, Makoto; and Onodera, Makoto, 5,342,748, Cl. 430-558.000.

Kakimoto, Masaaki: *See*—
Tagami, Toshio; Imai, Yoshio; Kakimoto, Masaaki; Kiyohara, Osamu; and Narushima, Hitoshi, 5,342,895, Cl. 525-183.000.

Kaku, Nobuyuki: *See*—
Inoue, Atsushi; Kaku, Nobuyuki; Sasaki, Takashi; Niguchi, Yasuyuki; and Inagaki, Yasuo, 5,343,339, Cl. 360-71.000.

Kalousek, Jan: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,342,585, Cl. 422-131.000.

Kamada, Tomiyuki: *See*—
Hashimoto, Iori; Numata, Motoki; Nishizawa, Jun; and Kamada, Tomiyuki, 5,341,577, Cl. 34-493.000.

Kamakura, Mitsutoshi; Shioda, Akihiko; Enami, Yoshihide; and Go, Hisao, to Sumitomo Electric Industries, Ltd. Apparatus for manufacturing optical module. 5,341,563, Cl. 29-743.000.

Kaman Aerospace Corporation: *See*—
Keeler, R. Norris; and Ulich, Bobby L., 5,343,284, Cl. 356-5.000.

Kamath, Venhatesh H.; and Wong, Lam F., to Xerox Corporation. Color printer having reduced first copy out time and extended photoreceptor life. 5,342,715, Cl. 430-44.000.

Kameoka, Yoko: *See*—
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.

Kamiguchi, Masao; and Kobayashi, Minoru, to Fanuc Ltd. Method of controlling electrically operated injection molding machine. 5,342,559, Cl. 264-40.100.

Kaminaga, Kozo; Ike, Kazuo; Makise, Tetsuro; Fujiwara, Yoshio; Yamakawa, Kiyoshi; and Sawakata, Kiyoshi, to Sony Corporation. Video tape that records, plays back, and rerecords video signals to overcome dropouts. 5,343,334, Cl. 360-38.100.

Kammeter, John B., to Power Distribution, Inc. Harmonic cancellation system. 5,343,080, Cl. 307-105.000.

Kamochi, Atsumi: *See*—
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Hayakawa, Hidenori; Yanagi, Akihiko; and Asami, Tadao, 5,342,938, Cl. 544-105.000.

Kampf, Klaus; Langen, Hans-Jurgen; and Herberg, Friedrich. Assembly for identifying the direction of power in the case of torque transmission. 5,341,675, Cl. 73-118.100.

Kampf, Klaus, to Jean Walterscheid GmbH. Torque limiting coupling with driving members and switching cams having complementary faces. 5,342,241, Cl. 464-37.000.

Kampfmann, Wolfgang; Schmitt, Hubert; and Voges, Dieter, to Lucas Industries public limited company. Anti-lock braking method to retard the wheels of a vehicle. 5,342,118, Cl. 303-97.000.

Kan, Tze-Kong; Zucker, Sandy M.; Greenberg, Matthew L.; and Lamb, William J., to Atlantic Richfield Company. Geopressure analysis system. 5,343,440, Cl. 367-27.000.

Kanagawa, Yuji; Nagasawa, Masato; Yokoyama, Eiji; Nakatsu, Kimihide; and Miyago, Toshiharu, to Mitsubishi Denki Kabushiki Kaisha. Magnetic recording and playback system with feedback control of a movable transducer head. 5,343,342, Cl. 360-77.160.

Kanai, Hirofumi: *See*—
Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, 5,343,450, Cl. 369-19.000.

Kanai, Takashi; and Masuda, Toshihiko, to Sony Corporation. Digital-to-analog converter. 5,343,197, Cl. 341-152.000.

Kanazawa, Akira: *See*—
Sasaki, Toshinori; Kanazawa, Akira; Hara, Kenji; Fukao, Tomoo; Ishizuka, Masahiko; Yamada, Masatomo; Sugimura, Naoto; and Yoshihara, Michiaki, 5,343,142, Cl. 324-71.100.

Kane, Patricia B.; and Halvorson, June G. Assemblies for collecting urine and other body fluids. 5,342,330, Cl. 604-329.000.

Kanebo, Ltd.: *See*—
Murata, Susumu; Sano, Masako; Takeuchi, Yasuo; Fujihara, Masayuki; Yokoo, Hisahiko; Nakanishi, Kenjiro; Miura, Tetsuo; and Shimizu, Yoshio, 5,342,634, Cl. 426-113.000.

Kaneda, Kitahiro: *See*—
Arai, Hideyuki; Suda, Hirofumi; and Kaneda, Kitahiro, 5,343,246, Cl. 348-363.000.

Kanegafuchi Chemical Industry Co., Ltd.: *See*—
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, 5,341,672, Cl. 73-64.540.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Iwakiri, Hiroshi; Fujita, Masayuki; and Hasegawa, Takashi, 5,342,914, Cl. 528-32.000.

Kanehara, Shigeru; and Nakaoka, Masashi, to Honda Giken Kogyo Kabushiki Kaisha. Metallic block for detecting force operating on metallic V-belt and system for detection of operating force using the same. 5,342,251, Cl. 474-242.000.

Kanehori, Keiichi: *See*—
Miki, Hiroshi; Ohji, Yuzuru; Tachi, Shinichi; and Kanehori, Keiichi, 5,343,353, Cl. 361-322.000.

Kaneko, Akira; Kanno, Toru; and Morishita, Keiko, to Matsushita Electric Industrial Co., Ltd. Electron emission element. 5,343,110, Cl. 313-309.000.

Kaneko, Keiji: *See*—
Takemae, Hisao; Manome, Tadamasa; and Kaneko, Keiji, 5,343,263, Cl. 354-82.000.

Kaneko, Masafumi: *See*—
Inamura, Akira; Kaneko, Masafumi; and Hasegawa, Nobuyuki, 5,342,189, Cl. 425-461.000.

Kaneko, Mineo: *See*—
Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, 5,343,227, Cl. 349-42.000.

Kanemori, Yuzuru: *See*—
Katayama, Mikio; Kato, Hiroaki; Nagayasu, Takayoshi; Imaya, Akihiko; Negoto, Hidenori; Kanemori, Yuzuru; and Hirobe, Toshihiko, 5,343,216, Cl. 345-92.000.

Kanetake, Satoshi; Yasuda, Tomokazu; Muramatsu, Yuzou; and Naoi, Takashi, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,342,733, Cl. 430-264.000.

Kang, Sukhvinder S.: *See*—
Iannello, Victor; Hall, Michael H.; and Kang, Sukhvinder S., 5,342,825, Cl. 505-166.000.

Kaniuka, Leslie Y.: *See*—
Jeffery, John; Kaniuka, Lealie Y.; and Sayers, Ian C., 5,342,486, Cl. 162-358.400.

Kanno, Toru: *See*—
Kaneko, Akira; Kanno, Toru; and Morishita, Keiko, 5,343,110, Cl. 313-309.000.

Kanno, Toshiaki; Ikegaya, Akira; and Horiike, Tsuneyuki, to Yazaki Corporation. Tape wire and a method of manufacture thereof. 5,342,997, Cl. 174-117.0FF.

Kansai Paint Company, Limited: *See*—
Kogure, Hideo; Murase, Heihachi; and Kume, Masafumi, 5,342,901, Cl. 525-330.500.

VOL 1165 ISS 5 AG 30 1994 UMI

Kao Corporation: *See*—
Komori, Takashi; Ebita, Yoshiyuki; Ohtomo, Tsuyoshi; and Hirota, Hajime, 5,342,611, Cl. 424-70.000.
Kao, Hsin-Lin. Automatic water supply device for potted plants. 5,341,596, Cl. 47-79.000.
Kaplan, Aaron V. Method and device for treating and enlarging body lumens. 5,342,348, Cl. 604-891.100.
Kaplan, Abner: *See*—
Bronowicki, Allen J.; and Kaplan, Abner, 5,342,465, Cl. 156-175.000.
Kaplan, George R., to Lizare Kaplan International, Inc. Diamond anvil having diamonds with curved edges. 5,341,694, Cl. 73-864.910.
Kappa, Manfred: *See*—
Muller, Hanns-Peter; Scholl, Hans-Joachim; and Kappa, Manfred, 5,342,881, Cl. 524-700.000.
Karasawa, Akira: *See*—
Suzuki, Fumio; Shimada, Junichi; Karasawa, Akira; Mizumoto, Hideaki; Kase, Hiroshi; and Nonaka, Hiromi, 5,342,841, Cl. 514-263.000.
Kardorff, Uwe: *See*—
Leyendecker, Joachim; Neubauer, Hans-Juergen; Kardorff, Uwe; Kuenast, Christoph; Krieg, Wolfgang; and Hofmeister, Peter, 5,342,849, Cl. 514-/361.000.
Karhu-Titan OY: *See*—
Hyvarinen, Tuomo, 5,341,819, Cl. 128-779.000.
Karimullah, Khalid, to Hughes Aircraft Company. Personal assistance system and method for use with a cellular communication system. 5,343,493, Cl. 375-1.000.
Karino, Kunio; Fujiyoshi, Toshikazu; Danjo, Kenzo; Kinoshita, Atsushi; and Moriguchi, Haruo, to Sansha Electric Manufacturing Co., Ltd. Arc welder with timed control of arcing recovery and means for reducing weight, size, and power loss in the welder. 5,343,017, Cl. 219-130.400.
Karube, Norio; and Morita, Yasuyuki, to Fanuc Ltd. Laser beam machine. 5,343,013, Cl. 219-121.610.
Kasahara, Naoki: *See*—
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.
Kasai, Seishi: *See*—
Kato, Eiichi; and Kasai, Seishi, 5,342,716, Cl. 430-49.000.
Kasai, Yasuaki; Yamada, Hiyoshi; and Yoshikawa, Norio, to Daido Tokushuko Kabushiki Kaisha. Method for producing anisotropic rare earth magnet. 5,342,574, Cl. 419-61.000.
Kasdan, Harvey L., to International Remote Imaging Systems, Inc. Method and an apparatus for identifying an object using quantile partitions. 5,343,538, Cl. 382-18.000.
Kase, Hiroshi: *See*—
Suzuki, Fumio; Shimada, Junichi; Karasawa, Akira; Mizumoto, Hideaki; Kase, Hiroshi; and Nonaka, Hiromi, 5,342,841, Cl. 514-263.000.
Kash, Jeffrey A.; Pezeshki, Bardia; and Tong, Franklin F., to International Business Machines Corporation. Tapered fabry-perot waveguide optical demultiplexer. 5,343,542, Cl. 385-31.000.
Kast, Kevin H.; and Myers, William J., Jr., to General Electric Company. Fuel circulation control method. 5,341,635, Cl. 60-39.030.
Katabuchi, Kenjiro: *See*—
Kobayashi, Tetsuya; Katabuchi, Kenjiro; and Suzuki, Yumiko, 5,342,208, Cl. 439-79.000.
Katagami, Yoshinori: *See*—
Nagasawa, Atsushi; Morita, Keiichi; Yamazaki, Masaya; Katagami, Yoshinori; Shinoda, Masaru; Matsuo, Takeshi; and Misawa, Masaru, 5,341,650, Cl. 62-180.000.
Katakura, Kageyoshi, to Hitachi, Ltd. Ultrasonic flowmeter. 5,341,809, Cl. 128-661.090.
Katayama, Arata: *See*—
Matsumura, Fumio; and Katayama, Arata, 5,342,779, Cl. 435-262.500.
Katayama, Hiroyuki: *See*—
Miyake, Tomoyuki; Katayama, Hiroyuki; Nakayama, Junichiro; Miyake, Takahiro; Ohta, Kenji; and Kobayashi, Shozo, 5,343,448, Cl. 369-13.000.
Katayama, Mikio; Kato, Hiroaki; Nagayasu, Takayoshi; Imaya, Akihiko; Negoto, Hidenori; Kanemori, Yuzuru; and Hirobe, Toshihiko, to Sharp Kabushiki Kaisha. Active matrix substrate and active matrix display apparatus. 5,343,216, Cl. 345-92.000.
Katayama, Shigeru; Tominaga, Kaoru; and Yoshitake, Junichi, to Mitsui Petrochemical Industries, Ltd. Semiconductor device with an airtight space formed internally within a hollow package. 5,343,076, Cl. 257-717.000.
Katayama, Tetsuya: *See*—
Aoyama, Akimasa; Katayama, Tetsuya; Moritani, Takeshi; Yamauchi, Junnosuke; and Hirofuji, Satoshi, 5,342,662, Cl. 428-34.800.
Katcher, Jay H.; and Bertalan, Charles W., to Kraft General Foods, Inc. Process for preparing non-hydroxypropylated, deflavored, crosslinked, pregelatinized, starch and product. 5,342,932, Cl. 536-102.000.
Kato, Eiichi; and Kasai, Seishi, to Fuji Photo Film Co., Ltd. Electrophotographic lithographic printing plate precursor. 5,342,716, Cl. 430-49.000.
Kato, Eiichi, to Fuji Photo Film Co., Ltd. Liquid developer for electrostatic photography. 5,342,725, Cl. 430-115.000.
Kato, Hiroaki: *See*—
Katayama, Mikio; Kato, Hiroaki; Nagayasu, Takayoshi; Imaya, Akihiko; Negoto, Hidenori; Kanemori, Yuzuru; and Hirobe, Toshihiko, 5,343,216, Cl. 345-92.000.
Kato, Masayuki: *See*—
Tokumo, Akio; and Kato, Masayuki, 5,343,161, Cl. 330-10.000.
Katoh, Hiroaki; Miyazaki, Toshimasa; Takahashi, Tamotsu; Ishii, Takeshi; Oyama, Yoshihiro; Oyama, Yoshihiro; and Sasaki, Tatsuo, to Fujitsu Ltd.; and Copal Co. Ltd. Optical scanner having laser diode as light source. 5,343,029, Cl. 235-467.000.
Katoh, Kiyohide: *See*—
Yokoyama, Shoji; Morimoto, Kyomi; Nanba, Akimasa; Katoh, Kiyohide; Kuroda, Kenji; Kishi, Hiroshi; and Ito, Toru, 5,343,399, Cl. 364-449.000.
Katoh, Mikiko; Uehara, Keiichi; and Takata, Sadaki, to Shiseido Co., Ltd. Benzophenone derivative, ultraviolet absorbent and external preparation for skin. 5,342,610, Cl. 424-59.000.
Katou, Kouichi; Maeda, Hirotoshi; and Kunimune, Kouichi, to Chisso Corporation. Method of preparing a negative pattern utilizing photosensitive polymer composition containing quinonediazide compound and a poly(amido)imide precursor. 5,342,739, Cl. 430-325.000.
Katou, Naoyoshi; Tamiya, Seiki; and Takahara, Masateru, to Mitsubishi Jukogyo Kabushiki Kaisha; and Churyo Engineering Kabushiki Kaisha. Can feeding apparatus for a can seamer. 5,341,620, Cl. 53-287.000.
Katsumata, Kenji: *See*—
Takata, Haruki; Katsumata, Kenji; Hirahata, Shigeru; Konno, Mituo; Ishibashi, Kouichi; and Suzuki, Sunao, 5,343,238, Cl. 348-556.000.
Katsuragawa, Shigehiko: *See*—
Doi, Kunio; Chen, Xuan; and Katsuragawa, Shigehiko, 5,343,390, Cl. 364-413.160.
Katz, Wolfgang, to Ready Tools, Inc. Rotary bending tool with continuous lubrication. 5,341,669, Cl. 72-387.000.
Kaufman, David W., to Sorenson Laboratories, Inc. Apparatus and system for coordinating a surgical plume evacuator and power generator. 5,342,349, Cl. 606-1.000.
Kaufmann, Dieter: *See*—
Weise, Wolfgang; Voelcker, Alexander; Kaufmann, Dieter; Malikowski, Willi; Beuers, Joerg; and Krappitz, Harald, 5,341,981, Cl. 228-262.900.
Kavandi, Janet L.: *See*—
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., 5,341,676, Cl. 73-147.000.
Kawabata, Takashi: *See*—
Inanaga, Kazuhiko; Ota, Hitoshi; Yamauchi, Shiro; and Kawabata, Takashi, 5,342,500, Cl. 204-421.000.
Kawabata, Toshimasa, to Sanden Corporation. Damper position control device for automotive air conditioning system. 5,342,027, Cl. 251-129.130.
Kawabata, Yasunari: *See*—
Ota, Takeshi; Arii, Mitsuzo; Hirata, Masukazu; and Kawabata, Yasunari, 5,343,545, Cl. 385-46.000.
Kawaberi, Seiji; and Shoji, Takeshi, to Sony Corporation. Thyristor ignition circuit. 5,343,100, Cl. 307-646.000.
Kawaguchi, Jun: *See*—
Kobayashi, Hiroaki; Muromachi, Takashi; and Kawaguchi, Jun, 5,342,675, Cl. 428-216.000.
Kawaji, Mikinori: *See*—
Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, 5,342,480, Cl. 156-648.000.
Kawamata, Toshimasa: *See*—
Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, 5,342,641, Cl. 426-549.000.
Kawamoto, Hiroshi: *See*—
Kazaki, Yuichi; Maeda, Yasutaka; Kawamoto, Hiroshi; Nishimura, Hideyuki; and Nagayama, Katsuhiro, 5,343,282, Cl. 355-326.00R.
Kawamura, Hajime, to NEC Corporation. Path routing system for communication network. 5,343,466, Cl. 370-54.000.
Kawamura, Hiroyuki: *See*—
Itoh, Masami; Nishii, Kanji; Kawamura, Hiroyuki; and Fukui, Atsushi, 5,343,415, Cl. 364-725.000.
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, to Kanegafuchi Chemical Industry Co., Ltd.; and Snow Brand Milk Products Co., Ltd. Method for measurement of polymer molecular weight based upon a temperature difference. 5,341,672, Cl. 73-64.540.
Kawano, Kazuya: *See*—
Kurihara, Nobuo; Ishii, Toshio; Mukaihira, Takashi; Kawano, Kazuy-, and Takaku, Yutaka, 5,341,642, Cl. 60-276.000.
Kawasaki, Kiyoshi, to Tachi-S Co., Ltd. Automated multiple-needle sewing machine. 5,341,755, Cl. 112-163.000.
Kawasaki, Shinji; Ito, Shigenori; and Yoshioka, Katsuki, to NGK Insulators, Ltd. Solid electrolyte type fuel cell and method for producing the same. 5,342,703, Cl. 429-30.000.
Kawasaki Steel Corporation: *See*—
Hayakawa, Yasuyuki; Nishiike, Ujihiro; Fukuda, Bunjiro; Yamada, Masataka; Iida, Yoshiaki; Takeuchi, Fumihiko; and Komatsubara, Michiro, 5,342,454, Cl. 148-113.000.
Kawase, Shigeru: *See*—
Nishima, Ryo; Kinjo, Hisao; Mizuno, Yoshio; Shudo, Katsuyuki; and Kawase, Shigeru, 5,343,348, Cl. 360-109.000.
Kawashima, Masahiro: *See*—
Matsuno, Kiyotaka; Kawashima, Masahiro; and Nakada, Akio, 5,342,394, Cl. 606-213.000.

Kawashima, Toshiharu: *See*—
Onodera, Shinya; and Kawashima, Toshiharu, 5,342,219, Cl. 439-595.000.
Kawate, Yosuke: *See*—
Takahashi, Shuji; Yanai, Eiji; Morikawa, Fumihiro; and Kawate, Yosuke, 5,343,104, Cl. 310-90.000.
Kawazoe, Shozo; and Okano, Hidehito, to Nitto Denko Corporation. Joint forming sheet or tape and method for joint formation using the same. 5,342,468, Cl. 156-233.000.
Kay Chemical Company: *See*—
Cockrell, John R., Jr.; La Cosse, Gerald E.; and Cates, D. Michael, 5,342,450, Cl. 134-3.000.
Kay, Derek J. Attachment for a ladder. 5,342,008, Cl. 248-238.000.
Kay, Stanley E.; Farmer, George D.; Bhatia, Hans; Mehta, Ashok D.; Kain, Christopher J.; and Sampson, Nicholas P., to Hughes Aircraft Company. Channel compression and dynamic repartitioning for dual mode cellular radio. 5,343,513, Cl. 379-59.000.
Kaye, Stephen, to Thiele Engineering Co. Panel placer. 5,341,624, Cl. 53-254.000.
Kayukawa, Hiroaki: *See*—
Kimura, Kazuya; Kayukawa, Hiroaki; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,342,178, Cl. 417-269.000.
Kazaki, Yuichi; Maeda, Yasutaka; Kawamoto, Hiroshi; Nishimura, Hideyuki; and Nagayama, Katsuhiro, to Sharp Kabushiki Kaisha. Color balance adjusting apparatus for full-color copier. 5,343,282, Cl. 355-326.00R.
Kazior, Thomas E.; and Huang, John C., to Raytheon Company. Semiconductor structures having dual surface via holes. 5,343,071, Cl. 257-621.000.
Kazumi, Jiro, to Canon Kabushiki Kaisha. Camera. 5,343,267, Cl. 354-410.000.
Keeble, Peter J.; Rowe, Christopher J.; and Spirit, David M., to British Telecommunications public limited company. OTDR having optically switched amplified output onto test fibre to suppress optical amplifier noise between OTDR pluses. 5,343,286, Cl. 356-73.100.
Keegan, Richard E.: *See*—
Lucarelli, Michael A.; Keegan, Richard E.; Koshute, Mark A.; Freitag, Hans-Albrecht; and Avar, Geza, 5,342,855, Cl. 521-50.000.
Keeler, R. Norris; and Ulich, Bobby L., to Kaman Aerospace Corporation. Imaging lidar system employing bistatic operation. 5,343,284, Cl. 356-5.000.
Keim, Eric. Goggle support system. 5,341,516, Cl. 2-452.000.
Keith, Brian M.: *See*—
Ellison, Thomas M.; and Keith, Brian M., 5,342,666, Cl. 428-46.000.
Keith, Peter T.: *See*—
Euteneuer, Charles L.; and Keith, Peter T., 5,342,307, Cl. 604-103.000.
Kejariwal, Murari L.; Thapar, Baldev; Gerez, Victor; and March, Daniel, to Research and Development Institute, Inc. at Montana State University, The. Fault detection and location system for power transmission and distribution lines. 5,343,155, Cl. 324-522.000.
Kellcover, Inc.: *See*—
Kelly, Joseph L.; and Jenkins, Robert S., 5,342,286, Cl. 602-3.000.
Keller, Richard F.: *See*—
Heindel, Timothy R.; Garvey, Michael J.; Dick, Daniel W.; Keller, Richard F.; Jordan, Mary P.; and Schleinz, Alan F., 5,342,647, Cl. 427-2.310.
Kelley, James F.: *See*—
Fogt, Eric J.; Kelley, James F.; Kerns, Ralph M.; Duffy, Timothy J.; and Draska, David J., 5,341,804, Cl. 128-633.000.
Kelly, Joseph L.; and Jenkins, Robert S., to Kellcover, Inc. Waterproof covering. 5,342,286, Cl. 602-3.000.
Kelly, Neal F.; and Langlais, Eugene L., to Polaroid Corporation. Laminar thermal imaging medium actuatable in response to intense image-forming radiation utilizing polymeric hardenable adhesive layer that reduces tendency for delamination. 5,342,731, Cl. 430-253.000.
Kemp, James H.: *See*—
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,341,537, Cl. 15-167.100.
Kemp, Paul: *See*—
Cassidy, Charles; and Kemp, Paul, 5,343,426, Cl. 365-189.020.
Kendall Company, The: *See*—
Dye, John F., 5,342,285, Cl. 601-151.000.
Kendall, Jerry J.: *See*—
Burns, James L.; Dicus, Bryan J.; Jasti, Jayanthi K.; Kendall, Jerry J.; Olmos, Jose L.; and Zambrano, Luis G., 5,341,876, Cl. 166-263.000.
Kennametal Inc.: *See*—
Brown, Charles R.; Robertson, Robert J.; Buckley, Dandridge W., Jr.; and Milchuck, Frank A., 5,341,551, Cl. 29-40.000.
Kennedy, John, to United States Surgical Corporation. Process for preparing polymer particles. 5,342,557, Cl. 264-8.000.
Kennedy, Linda J. Personal hygiene care unit. 5,341,526, Cl. 4-584.000.
Kennedy, Thomas J.: *See*—
Baltronis, Joseph F.; and Kennedy, Thomas J., 5,342,043, Cl. 273-65.0EC.
Kent, Van A.: *See*—
Chavez, Johnny, Jr.; Farnum, Andrew S.; Nace, Vaughn M.; Plepys, Raymond A.; Whitmire, Randall K.; Kent, Van A.; Bettge, Paul D.; and Friedli, Hans R., 5,342,541, Cl. 252-182.270.
Kenyon, Roger R.; Landes, Mark D.; Campana, Donna L.; Geremakis, Perry A.; Dock, Ted L.; and Ondria, Jeffrey M., to Zimmer Inc. System and instrumentation for torsionally testing femoral rasp and hip stem implant including motion indicator. 5,342,362, Cl. 606-79.000.
Kerns, Ralph M.: *See*—
Fogt, Eric J.; Kelley, James F.; Kerns, Ralph M.; Duffy, Timothy J.; and Draska, David J., 5,341,804, Cl. 128-633.000.
Kervinen, John A., to General Electric Company. Method for determining thickness of ferromagnetic material deposition on nuclear fuel rods. 5,341,678, Cl. 73-150.00R.
Kesten, Alan: *See*—
Banwer, Mark, 5,342,829, Cl. 512-2.000.
Ketchum, Douglas: *See*—
Anandan, Munisamy; and Ketchum, Douglas, 5,343,115, Cl. 313-491.000.
Keystone Friction Hinge Co.: *See*—
Hannan, Edward J.; and Schneider, George H., 5,341,542, Cl. 16-289.000.
Khalil, Khalid M., to Bell Communications Research, Inc. Method and system for real-time burstiness analysis of network traffic. 5,343,465, Cl. 370-17.000.
Khatri, Lakho L.: *See*—
Bakshi, Amarjit S.; and Khatri, Lakho L., 5,342,636, Cl. 426-302.000.
Khazai, Bijan; and Moore, William G., to Dow Chemical Company, The. Composition and method for producing boron carbide/titanium diboride composite ceramic powders using a boron carbide substrate. 5,342,811, Cl. 501-87.000.
Kichefski, Conrad M.; Madryga, Mary B.; Madryga, Kurt R.; Struble, Christopher G.; and Madryga, Kathleen A., to New World Diaper Service. Reusable diaper. 5,342,340, Cl. 604-385.100.
Kidaloski, Raymond G.; and Detzel, Roger A., to Babcock & Wilcox Company, The. Top supported high temperature heating surface module with permanent structural frame. 5,341,869, Cl. 165-67.000.
Kidby, Denis K.: *See*—
Holbein, Bruce E.; and Kidby, Denis K., 5,342,449, Cl. 134-2.000.
Kiel, Harvey G.; Peterson, Ricky M.; and Whitley, Lawrence D., to International Business Machines Corporation. Workstation controller with full screen write mode and partial screen write mode. 5,343,557, Cl. 395-118.000.
Kii, Asajiro: *See*—
Saji, Tomohide; Inoue, Yoshihisa; and Kii, Asajiro, 5,342,107, Cl. 296-210.000.
Kikkawa, Hideo: *See*—
Iwasaki, Tameo; Kondo, Kazuhiko; Ikezawa, Katsuo; Kikkawa, Hideo; and Yamagata, Shinsuke, 5,342,941, Cl. 514-337.000.
Kikuchi, Kimihiko: *See*—
Hotta, Takashi; Morita, Yukio; Kojima, Yoichi; Kikuchi, Kimihiko; Niiyama, Tsunefumi; Kumagai, Yorinori; and Nakayama, Hiroshi, 5,342,257, Cl. 475-275.000.
Kikuchi, Masaichi: *See*—
Abe, Kiyoshi; Suzuki, Kazuhiko; Ogawa, Hiroshi; and Kikuchi, Masaichi, 5,342,876, Cl. 524-493.000.
Kikuchi, Shuji: *See*—
Ono, Hiroo; Kikuchi, Shuji; Tomoyasu, Masayuki; Takayama, Naoki; and Tomoyoshi, Riki, 5,343,047, Cl. 250-492.210.
Kikuchi, Toshihiro; Ikeda, Koji; and Futagawa, Hitoshi, to Nissho Corporation. Drug container and dual container system for fluid therapy employing the same. 5,342,347, Cl. 604-415.000.
Kikuchi, Toshihiro: *See*—
Honda, Minoru; Iwasa, Masanobu; Miyamoto, Tetuzi; Ikeda, Koji; and Kikuchi, Toshihiro, 5,342,346, Cl. 604-413.000.
Kikuta, Toshio: *See*—
Yoshida, Seikoh; and Kikuta, Toshio, 5,342,475, Cl. 117-83.000.
Kilic, Soner: *See*—
Das, Suryya K.; and Kilic, Soner, 5,342,878, Cl. 524-558.000.
Killey, Edward J., to Weber Marking Systems, Inc. Holographic thermal transfer ribbon. 5,342,672, Cl. 428-195.000.
Kilmer, Galen L.: *See*—
Payne, Frederick C.; and Kilmer, Galen L., 5,342,147, Cl. 405-128.000.
Kilpper, Gerhard; and Hoch, Helmut, to BASF Aktiengesellschaft. Preparation of quinophthalone derivatives. 5,342,950, Cl. 546-171.000.
Kim, Dong J. Automatic flushing device for urinal. 5,342,024, Cl. 251-40.000.
Kim, Gyu-Suk: *See*—
Han, Gwang-Ma; and Kim, Gyu-Suk, 5,343,082, Cl. 307-234.000.
Kim, Jin B.: *See*—
Hong, Young J.; Kim, Jin B.; and Yeo, Jong K., 5,342,658, Cl. 427-515.000.
Kim, Ki-Yong, to Samsung Electronics Co., Ltd. Digital clamp circuit for clamping based on the level of an optical black period of a picture signal. 5,343,245, Cl. 348-257.000.
Kim, Seon-jun: *See*—
Lee, Tae-woo; Kim, Seon-jun; and Lee, Yang-ku, 5,343,354, Cl. 361-322.000.
Kim, Shin-Yong, to Samsung Electronics Co., Ltd. Drying duct of dishwasher. 5,341,827, Cl. 134-107.000.
Kim, Tae S.: *See*—
Yuan, Han-Tzong; Plumton, Donald L.; Kim, Tae S.; and Yang, Jau-Yuann, 5,342,795, Cl. 437-40.000.
Kim, Yeong-ho, to Samsung Electron Devices, Co., Ltd. Method for driving a ferroelectric liquid crystal displays and bias voltage circuit therefor. 5,343,217, Cl. 345-95.000.
Kim, Young S., to Goldstar Co., Ltd. Scan start detecting device for laser beam printer having a wavelength variation correcting means. 5,343,039, Cl. 250-235.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Kimberly-Clark Corporation: *See*—
Heindel, Timothy R.; Garvey, Michael J.; Dick, Daniel W.; Keller, Richard F.; Jordan, Mary P.; and Schleinz, Alan F., 5,342,647, Cl. 427-2.310.
Meirowitz, Randy E.; Padmanabhan, Sriram; Phelan, Robert J.; and Tang, Kim T., 5,342,336, Cl. 604-378.000.
Rhim, Hannong, 5,342,335, Cl. 604-367.000.
Tanzer, Richard W.; Bruemmer, Mary A.; and Gossens, Anthonette A., 5,342,333, Cl. 604-359.000.

Kimura, Hitoshi: *See*—
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,343,332, Cl. 359-837.000.

Kimura, Izumi: *See*—
Takeuchi, Toshifumi; Arai, Takao; Nagai, Yutaka; and Kimura, Izumi, 5,343,455, Cl. 369-59.000.

Kimura, Jun-ichi; and Takizawa, Masaaki, to Hitachi, Ltd. Image coding apparatus. 5,343,256, Cl. 348-718.000.

Kimura, Kazuya; Kayukawa, Hiroaki; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Coolant gas guiding mechanism in compressor. 5,342,178, Cl. 417-269.000.

Kimura, Keizo: *See*—
Sakanoue, Kei; and Kimura, Keizo, 5,342,749, Cl. 430-558.000.

Kimura, Masahiro: *See*—
Yasuda, Keiji; Oda, Yukihisa; Tagawa, Satoru; and Kimura, Masahiro, 5,343,188, Cl. 338-129.000.

Kimura, Masaki: *See*—
Naito, Tomijiro; Sato, Yumiko; Yukinari, Toshiro; Shibata, Toshihiro; Kimura, Masaki; and Shinada, Yukari, 5,342,544, Cl. 252-299.600.

Kimura, Ryoji; Tuboi, Tetuo; and Nishikawa, Kazunori, to Asahi Denka Kogyo Kabushiki Kaisha. Crystalline synthetic resin composition. 5,342,868, Cl. 524-108.000.

Kinami, Hitoshi: *See*—
Takago, Toshio; Inomata, Hiroshi; Sato, Shinichi; and Kinami, Hitoshi, 5,342,913, Cl. 528-15.000.

Kincer, Daniel E.: *See*—
Fisher, Alvin J.; Smoot, Troy S.; and Kincer, Daniel E., 5,343,384, Cl. 364-133.000.

Kinetic Systems, Inc.: *See*—
Pope, Ralph E., 5,341,768, Cl. 122-26.000.

King, Joseph A., Jr.: *See*—
Stein, Judith; King, Joseph A., Jr.; and Caruso, Andrew J., 5,342,870, Cl. 524-188.000.

King, Kenneth S.: *See*—
Davenport, John M.; Hansler, Richard L.; and King, Kenneth S., 5,343,367, Cl. 362-32.000.

King, Michael J.; Flynn, Robert A.; and Torrez, Henry, to Oliver Rubber Company. Method and apparatus for retreading a tire. 5,342,462, Cl. 156-96.000.

King, Shing-Shing: *See*—
Chen, Ker-Ming; Wang, Tsung-Hsiung; King, Shing-Shing; and Lee, Tzong-Ming, 5,342,736, Cl. 430-323.000.

Kingdon, Stephen J.: *See*—
Pummell, Leslie J. H.; Ward, Paul C.; Kingdon, Stephen J.; and Oldfield, James A., 5,343,266, Cl. 354-340.000.

Kinjo, Hisao: *See*—
Nishima, Ryo; Kinjo, Hisao; Mizuno, Yoshio; Shudo, Katsuyuki; and Kawase, Shigeru, 5,343,348, Cl. 360-109.000.

Kinney, Donald C.: *See*—
Kinney, Russell C.; Kinney, Donald C.; Paullin, Lyle; Paullin, Richard; Parrott, Jeffrey W.; and Smith, Donald, 5,342,164, Cl. 414-786.000.

Kinney, Russell C.; Kinney, Donald C.; Paullin, Lyle; Paullin, Richard; Parrott, Jeffrey W.; and Smith, Donald, to Expert Disposal Service, Inc. Waste collection method. 5,342,164, Cl. 414-786.000.

Kinoshita, Atsushi: *See*—
Karino, Kunio; Fujiyoshi, Toshikazu; Danjo, Kenzo; Kinoshita, Atsushi; and Moriguchi, Haruo, 5,343,017, Cl. 219-130.400.

Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., to Micron Technology, Inc. Soft bond for semiconductor dies. 5,342,807, Cl. 437-209.000.

Kinz, Heike: *See*—
Zimmer, Gerhard; Kinz, Heike; and Sextl, Elfriede, 5,342,602, Cl. 423-584.000.

Kioritz Corporation: *See*—
Yokocho, Yoetsu; and Kobayashi, Fujio, 5,341,907, Cl. 192-75.000.

Kirchberg, Maurice A.; and Cook, Alexander, to Sundstrand Corporation. Control method for inverters having dwell times between switch conduction periods. 5,343,379, Cl. 363-41.000.

Kiribai Chemical Industry Co., Ltd.: *See*—
Ueki, Akio, 5,342,412, Cl. 607-114.000.

Kirkes, Kent W.: *See*—
Chang, Philip L.; Flood, Gary S.; Kirkes, Kent W.; and Smith, Edwin R., 5,342,054, Cl. 273-186.100.

Kishi, Etsuro: *See*—
Miyazaki, Toshihiko; Sakai, Kunihiro; Nose, Hiroyasu; Kishi, Etsuro; and Kuroda, Ryo, 5,343,460, Cl. 369-126.000.

Kishi, Hiroshi: *See*—
Yokoyama, Shoji; Morimoto, Kyomi; Nanba, Akimasa; Katoh, Kiyohide; Kuroda, Kenji; Kishi, Hiroshi; and Ito, Toru, 5,343,399, Cl. 364-449.000.

Kitagawa, Hiroji: *See*—
Matsui, Kazuhiro; and Kitagawa, Hiroji, 5,343,184, Cl. 336-92.000.

Kitagawa Industries Co., Ltd.: *See*—
Matsui, Kazuhiro; and Kitagawa, Hiroji, 5,343,184, Cl. 336-92.000.

Kitahara, Jouji: *See*—
Miyazawa, Osamu; Furukawa, Tsuneaki; and Kitahara, Jouji, 5,343,108, Cl. 310-323.000.

Kitajima, Takahiro: *See*—
Mohara, Masayuki; and Kitajima, Takahiro, 5,342,474, Cl. 156-584.000.

Kitamura, Shigeto: *See*—
Suzuki, Fumio; Miwa, Yoshikazu; Kuroda, Takeshi; Kitamura, Shigeto; and Manabe, Haruhiko, 5,342,843, Cl. 514-293.000.

Kitamura, Yutaka: *See*—
Sakabe, Shigekazu; and Kitamura, Yutaka, 5,343,105, Cl. 310-179.000.

Kitaoka, Hideaki, to Uni-Charm Corporation. Disposable diapers. 5,342,342, Cl. 604-385.200.

Kitaoka, Hideaki; and Sasaki, Tohru, to Uni-Charm Corporation. Disposable training pants. 5,342,343, Cl. 604-385.200.

Kitaoka, Kazuhiro; Furuse, Akihiro; Takesue, Fumiki; and Ito, Tsukasa, to Sanyo Electric Co., Ltd. Apparatus to prevent complete battery discharge. 5,343,137, Cl. 320-13.000.

Kitchen, Chris D., to Mountainland Support, Inc. Collapsible crib mining support column. 5,342,150, Cl. 405-288.000.

Kitchin, Jonathon P.; Miller, Alan G.; Ali, Mahfuza B.; and Farooq, Omar, to Minnesota Mining and Manufacturing Company. Ink-receptive sheet. 5,342,688, Cl. 428-402.000.

Kiyohara, Osamu: *See*—
Tagami, Toshio; Imai, Yoshio; Kakimoto, Masaaki; Kiyohara, Osamu; and Narushima, Hitoshi, 5,342,895, Cl. 525-183.000.

Kiyomoto, Masayuki; Kajikawa, Akira; Murakado, Toru; Sakurai, Hiroshi; Mano, Motokazu; and Sizume, Kazutika, to Nippon Kayaku Kabushiki Kaisha. Hydraulic compositions and high-strength composite materials. 5,342,445, Cl. 106-789.000.

Kiyozuka, Noboru, to NEC Corporation. Semiconductor integrated circuit having therein circuit for detecting abnormality of logical levels outputted from input buffers. 5,343,479, Cl. 371-22.500.

Klancnik, Mihael: *See*—
Figarella, Luis; and Klancnik, Mihael, 5,343,028, Cl. 235-462.000.

Kleese, Wolfgang; Kraemer, Dieter; Petereit, Hans-Ulrich; Lehmann, Klaus; and Siol, Werner, to Rohm GmbH. Method for making carrier systems for biologically active materials. 5,342,646, Cl. 427-2.100.

Klein, Robert I. Cover seal unit, for an air conditioner having a peripheral frame. 5,341,860, Cl. 150-165.000.

Klein Tools, Inc.: *See*—
Bond, David, 5,341,707, Cl. 81-436.000.

Klein, Walter F.; Cooper, Ira J.; and Cooper, Leon M., to B. F. Wehmer, Medical Instrument Division. Medical shield with headlight mounting. 5,341,513, Cl. 2-9.000.

Klemm, Robert W., to Milwaukee Electric Tool Corporation. Depth adjustment assembly for power tool. 5,341,704, Cl. 81-429.000.

Klemp, Thomas J.; Hohman, David W.; and Schuster, Richard A., to Aluminum Company of America. Aluminum alloy extruded and cold worked products having fine grain structure and their manufacture. 5,342,459, Cl. 148-690.000.

Kliklok Corporation: *See*—
Cordia, Joseph R.; Dalrymple, Bruce H.; Hennig, William G.; McReady, Robert W.; and Metraw, John J., 5,341,915, Cl. 198-460.000.

Kling, Susan M.; and Sarkar, Nitis, to Dow Chemical Company, The. Process for preparing vinylidene chloride or vinyl chloride polymer by suspension polymerization. 5,342,910, Cl. 526-195.000.

Klinger, Gary; and Pontbriand, Duane, to ITT Corporation. High pressure quick connector. 5,342,095, Cl. 285-18.000.

Kloeckner-Humboldt-Deutz AG: *See*—
Blankmeiser, Wilhelm; and Spuerck, Peter, 5,341,966, Cl. 222-370.000.
Unkelbach, Karl-Heinz; Arhelger, Gunther; and Buettner, Rolf, 5,342,281, Cl. 494-53.000.

Kluber Lubrication Munchen KG: *See*—
Blanke, Hans-Jurgen, 5,342,065, Cl. 277-34.000.

Kluttz, James W.: *See*—
Rankin, David B.; Roberts, Edgar P., Jr.; and Kluttz, James W., 5,342,051, Cl. 273-185.00A.

Knapp, David J., to Aluminum Company of America. Automatic process control and noise suppression. 5,341,663, Cl. 72-8.000.

Kneipp, F. Paul, to Davox Corporation. System and method for controlling the dialing order of call record lists in an automated dialing system. 5,343,518, Cl. 379-355.000.

Knoll AG: *See*—
Mueller, Claus D.; and Unger, Liliane, 5,342,853, Cl. 514-523.000.

Knowles, Carl H.; and Kolis, George, to Metrologic Instruments, Inc. Multi-port digital signal decoder. 5,343,027, Cl. 235-462.000.

Knuttel, Bertold: *See*—
Westphal, Michael; Knuttel, Bertold; and Schmidt, Hartmut, 5,343,148, Cl. 324-309.000.

Kobashi, Takeyoshi: *See*—
Iwata, Masakatsu; and Kobashi, Takeyoshi, 5,342,033, Cl. 270-53.000.

Kobayashi, Fujio: *See*—
Yokocho, Yoetsu; and Kobayashi, Fujio, 5,341,907, Cl. 192-75.000.

Kobayashi, Hiroaki; Muromachi, Takashi; and Kawaguchi, Jun, to Nippon Sheet Glass Co., Ltd. Heat-screening glass. 5,342,675, Cl. 428-216.000.

Kobayashi, Hiroshi; Hayashi, Ryosuke; Inokuchi, Shoji; and Muroya, Yukihiro, to Toto Ltd. Water flow control system. 5,341,839, Cl. 137-505.130.

Kobayashi, Masahiko, to Minnesota Mining and Manufacturing Company. IC socket. 5,342,213, Cl. 439-268.000.

Kobayashi, Minoru: *See*—
Kamiguchi, Masao; and Kobayashi, Minoru, 5,342,559, Cl. 264-40.100.

Kobayashi, Nobuhisa: *See*—
Honma, Masaki; Nakano, Akio; Mabuti, Kouzou; Asahi, Isamu; Tsuruta, Setsuo; Fujino, Nobuhiro; and Kobayashi, Nobuhisa, 5,343,387, Cl. 364-401.000.

Kobayashi, Satoshi, to Nippon Steel Corporation. Liquid overflow tank combined with partition isolating two chambers. 5,341,825, Cl. 134-61.000.

Kobayashi, Shoji; and Ishikawa, Masaaki, to Koito Manufacturing Co., Ltd. Vehicular projection-type headlamp. 5,343,371, Cl. 362-61.000.

Kobayashi, Shozo: *See*—
Miyake, Tomoyuki; Katayama, Hiroyuki; Nakayama, Junichiro; Miyake, Takahiro; Ohta, Kenji; and Kobayashi, Shozo, 5,343,448, Cl. 369-13.000.

Kobayashi, Tetsuya; Katabuchi, Kenjiro; and Suzuki, Yumiko, to NEC Corporation. Package connector apparatus. 5,342,208, Cl. 439-79.000.

Kobayashi, Yuji, to Sony Corporation. Electronic device. 5,343,144, Cl. 324-158.100.

Kobori, Hideyuki: *See*—
Sugiyama, Kunitoshi; Kobori, Hideyuki; Hanai, Shuji; and Kagawa, Tsutomu, 5,342,815, Cl. 503-217.000.

Kobos, Robert K.: *See*—
Arenzen, Rene; Boivin, Patrick; Kobos, Robert K.; Scouten, William H.; and Smart, Bruce E., 5,342,772, Cl. 435-181.000.

Koch, Frank J.; Vandervalk, Leon C.; and Beamish, David J., to De Felsko Corporation. Combination coating thickness gauge using a magnetic flux density sensor and an eddy current search coil. 5,343,146, Cl. 324-230.000.

Koch, Peter, to Nestec S.A. Process for transferring coffee aromas to an oil. 5,342,638, Cl. 426-386.000.

Kock, Karl H.: *See*—
Palansky, Bruce J.; Greene, Thomas L.; Daubenmier, John A.; Smith, Paul F.; Kock, Karl H.; Bird, Stuart L.; and McCall, Gavin F., 5,341,703, Cl. 477-65.000.

Kodama, Hiromitsu, to Whitaker Corporation, The. Electrical connector with electrostatic discharge protection. 5,342,220, Cl. 439-607.000.

Kodera, Masao: *See*—
Utsu, Junsi; Mikami, Seishin; and Kodera, Masao, 5,343,172, Cl. 333-32.000.

Koeberle, Yves; and Tranier, Jean-Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Porcess and apparatus for the production of high pressure nitrogen and oxygen. 5,341,647, Cl. 62-39.000.

Koenig & Bauer Aktiengesellschaft: *See*—
Schneider, Georg; Reder, Wolfgang O.; and Reinhart, Dieter, 5,341,741, Cl. 101-365.000.

Koepnick, Russell G.: *See*—
Giraud, Clarence E.; and Koepnick, Russell G., 5,342,378, Cl. 606-166.000.

Koga, Toshimichi: *See*—
Amano, Tadashi; and Koga, Toshimichi, 5,342,906, Cl. 526-88.000.

Kogiso, Takashi: *See*—
Nishikawa, Hirotaka; Kurachi, Yoshio; Kogiso, Takashi; Sekiya, Shigeki; Sato, Teruhiko; Hashimoto, Hideki; Ohmori, Makoto; and Sasaki, Kenji, 5,341,633, Cl. 57-264.000.

Kogure, Hideo; Murase, Heihachi; and Kume, Masafumi, to Kansai Paint Company, Limited. Film-formable, chelate-forming resin, process for preparation thereof, use thereof and method for forming electrophoretic coating. 5,342,901, Cl. 525-330.500.

Kohge, Shinichi: *See*—
Wada, Shunichi; Hara, Tadayuki; Naito, Yasuo; Kohge, Shinichi; and Nishino, Kazuhisa, 5,341,891, Cl. 180-79.100.

Kohler Co.: *See*—
Gerhardt, Todd, 5,341,781, Cl. 123-195.00R.

Kohler, Wolfgang: *See*—
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weisshaupl, Horst, 5,343,506, Cl. 376-280.000.

Kohmoto, Shinsuke; and Nomura, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light intercepting frame of lens. 5,343,331, Cl. 359-823.000.

Kohno, Fumio; Suwa, Hisashi; and Sato, Seizi, to Sony Corporation. Screen cover opening/closing device for television receiver. 5,343,257, Cl. 348-842.000.

Kohno, Shigefumi: *See*—
Hirashima, Isso; Umeki, Tetsuya; Maeta, Hiroshi; and Kohno, Shigefumi, 5,342,085, Cl. 280-728.00B.

Kohzaki, Shuichi: *See*—
Yamada, Nobuaki; Hirai, Toshiyuki; Onishi, Noriaki; and Kohzaki, Shuichi, 5,342,545, Cl. 252-299.010.

Koilpillai, Ravinder D.: *See*—
Toy, Raymond L.; Koilpillai, Ravinder D.; and Chennakeshu, Sandeep, 5,343,498, Cl. 375-37.000.

Koito Manufacturing Co., Ltd.: *See*—
Kobayashi, Shoji; and Ishikawa, Masaaki, 5,343,371, Cl. 362-61.000.
Ohashi, Hideki; Murai, Hisayoshi; and Makita, Hiroyuki, 5,343,370, Cl. 362-61.000.
Shirai, Katutada; Mochizuki, Hideharu; and Tsukamoto, Hironori, 5,343,372, Cl. 362-66.000.

Koizumi, Tomoyoshi; and Ichikawa, Yukio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Surface roughening of resin molded articles for metallizing. 5,342,654, Cl. 427-307.000.

Koizumi, Yasuhiro: *See*—
Hamamura, Yuuichi; Haraichi, Satoshi; Shimase, Akira; Azuma, Junzou; Itoh, Fumikazu; Yamada, Toshio; Koizumi, Yasuhiro; and Mizumura, Michinobu, 5,342,448, Cl. 118-723.0FI.

Koizumi, Yutaka: *See*—
Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, 5,343,227, Cl. 349-42.000.

Kojima, Kunio: *See*—
Maeda, Shigemi; Kojima, Kunio; and Akiyama, Jun, 5,343,452, Cl. 369-32.000.

Kojima, Yoichi: *See*—
Hotta, Takashi; Morita, Yukio; Kojima, Yoichi; Kikuchi, Kimihiko; Niiyama, Tsunefumi; Kumagai, Yorinori; and Nakayama, Hiroshi, 5,342,257, Cl. 475-275.000.

Kokolis, Edward N., to Kokolis, Edward N. Catenary rigid top troughing assembly. 5,341,921, Cl. 198-825.000.

Koksbang, Rene, to Valence Technology, Inc. Lakyer for stabilization of lithium anode. 5,342,710, Cl. 429-192.000.

Koleske, Joseph V.; Smith, Donald F., Jr.; and Weber, Robert J., Jr., to Union Carbide Chemicals & Plastics Technology Corporation. (N-substituted carbamoyloxy) alkanoyloxyalkyl acrylate polymers and compositions made therefrom. 5,342,891, Cl. 525-162.000.

Kolis, George: *See*—
Knowles, Carl H.; and Kolis, George, 5,343,027, Cl. 235-462.000.

Kolkman, Albert, to Machinefabriek Meyn B.V. Apparatus for dressing a slaughtered bird. 5,342,237, Cl. 452-174.000.

Koller, Albert: *See*—
Wegmann, Urs; and Koller, Albert, 5,343,112, Cl. 313-346.00R.

Kolycheck, Edmond G.: *See*—
Sullivan, Francis R.; Mertzel, Elaine A.; and Kolycheck, Edmond G., 5,342,889, Cl. 525-127.000.

Komatsubara, Michiro: *See*—
Hayakawa, Yasuyuki; Nishiike, Ujihiro; Fukuda, Bunjiro; Yamada, Masataka; Iida, Yoshiaki; Takeuchi, Fumihiko; and Komatsubara, Michiro, 5,342,454, Cl. 148-113.000.

Komatsuzaki, Hiroshi: *See*—
Oi, Nakao; and Komatsuzaki, Hiroshi, 5,343,265, Cl. 354-222.000.

Komiya, Yasuhiro: *See*—
Wada, Toru; Komiya, Yasuhiro; and Nagasaki, Tatsuo, 5,343,254, Cl. 348-627.000.

Komiyama, Osamu: *See*—
Imai, Yoichi; Hirano, Toshiyuki; Komiyama, Osamu; and Yamanaka, Hidenori, 5,342,920, Cl. 528-388.000.

Komori Corporation: *See*—
Sugiyama, Hiroyuki; and Takeuchi, Tetsuya, 5,342,035, Cl. 271-11.000.

Komori, Takashi; Eshita, Yoshiyuki; Ohtomo, Tsuyoshi; and Hirota, Hajime, to Kao Corporation. Hair cleansing composition. 5,342,611, Cl. 424-70.000.

Kondo, Kazuhiko: *See*—
Iwasaki, Tameo; Kondo, Kazuhiko; Ikezawa, Katsuo; Kikkawa, Hideo; and Yamagata, Shinsuke, 5,342,941, Cl. 514-337.000.

Kondo, Kiyotaka: *See*—
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, 5,341,672, Cl. 73-64.340.

Kondo, Yasuo; Beppu, Yukiharu; and Tagawa, Kazuo, to Mitsubishi Oil Co., Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Refrigerator oil composition. 5,342,533, Cl. 252-68.000.

Koni, Shinichi: *See*—
Ueyama, Ukio; and Koni, Shinichi, 5,342,310, Cl. 604-110.000.

Konica Corporation: *See*—
Miyoshi, Masanobu; Kajiwara, Makoto; and Onodera, Makoto, 5,342,748, Cl. 430-558.000.
Tai, Akiyoshi; and Takada, Shun, 5,342,745, Cl. 430-538.000.
Takahashi, Hiroshi, 5,343,268, Cl. 354-416.000.
Yamada, Yasuhi, 5,343,281, Cl. 355-320.000.

Konieczynski, Ronald D., to Nordson Corporation. Apparatus and method for dispensing electrically conductive coating material including a pneumatic/mechanical control. 5,341,990, Cl. 239-3.000.

Konishi, Hiroshi: *See*—
Shiraogawa, Michio; and Konishi, Hiroshi, 5,343,305, Cl. 358-407.000.

Konishi, Keizo: *See*—
Ueno, Koichi; Tsukamoto, Akio; Tori, Tamotsu; Nishimura, Hiroo; Konishi, Keizo; and Harada, Fukuzo, 5,341,769, Cl. 122-367.300.

Konishi, Satoru: *See*—
Usui, Hiroaki; Hirao, Shozo; Konishi, Satoru; Ishikawa, Hiroyuki; Oonisi, Kenji; and Adachi, Arihiro, 5,342,651, Cl. 427-209.000.

Konno, Mituo: *See*—
Takata, Haruki; Katsumata, Kenji; Hirahata, Shigeru; Konno, Mituo; Ishibashi, Kouichi; and Suzuki, Sunao, 5,343,238, Cl. 348-556.000.

Konno, Toshikazu, to Sony Corporation. Tape cassette having a reel-locking or lid-locking device. 5,342,001, Cl. 242-338.300.

Konya, Kazumi; Shimizu, Nobuyoshi; and Miki, Wataru, to Marine Biotechnology Institute Co., Ltd. Agents for controlling underwater fouling organisms. 5,342,547, Cl. 252-380.000.

Koopmann, Dietmar: *See*—
Rogge, Dieter; and Koopmann, Dietmar, 5,341,739, Cl. 101-247.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Kootstra, Steve: *See*—
Powers, Daniel J.; Cyrus, Judith; Kootstra, Steve; Burkhalter, Art; Bledsoe, J. Daren; Shultheis, David C.; and Jordan, Dan, 5,342,403, Cl. 607-5.000.

Kopf, Henry B. Filtration cassette article, and filter comprising same. 5,342,517, Cl. 210-228.000.

Koppe, Rudolf P.; and Eck, Nicolaas J. H., to U.S. Philips Corporation. Automatic cable attenuation compensation system. 5,343,236, Cl. 348-6.000.

Kordts, Jurgen; Nathe, Axel; and Sonnenberger, Paul, to U.S. Philips Corporation. Amplifier having a symmetrical output characteristic. 5,343,165, Cl. 330-262.000.

Korejwo, Richard: *See*—
Wiest, Peter P.; and Korejwo, Richard, 5,342,294, Cl. 604-26.000.

Koria, Brian. Antiseptic containment for biohazardous material. 5,342,121, Cl. 312-1.000.

Korn, Walter: *See*—
Artmik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Wesshaupl, Horst, 5,343,506, Cl. 376-280.000.

Korsunsky, Iosif: *See*—
Grabbe, Dimitry G.; and Korsunsky, Iosif, 5,342,206, Cl. 439-71.000.

Koshute, Mark A.: *See*—
Lucarelli, Michael A.; Keegan, Richard E.; Koshute, Mark A.; Freitag, Hans-Albrecht; and Avar, Geza, 5,342,855, Cl. 521-50.000.

Kosugi, Ryuichi: *See*—
Matsuo, Ryuichi; Kosugi, Ryuichi; Tsuda, Nobuhiro; and Ishizaki, Osamu, 5,343,432, Cl. 365-203.000.

Kosumi, Yuji: *See*—
Imai, Hiroshi; Murakami, Tadashi; Mimura, Tetsuya; Yamamoto, Masao; Kosumi, Yuji; Asai, Masashi; and Aoki, Yasunori, 5,343,072, Cl. 257-666.000.

Koszyk, Francis J.; and Mueller, Richard A., to G.D. Searle & Co. 2- and 3-sulfur derivatives of 1,5-iminosugars. 5,342,951, Cl. 546-217.000.

Kotai, Ference; Zurek, Rudolf; and Bolling, Ingo, to Krauss-Maffei A.G. Ammunition drum for a large caliber weapon. 5,341,721, Cl. 89-46.000.

Kotitschke, Gerhard: *See*—
Schiel, Christian; Kotitschke, Gerhard; and Groner, Karl, 5,341,579, Cl. 34-115.000.

Kott, Michael A., to General Electric Co. Phased array antenna with wide null. 5,343,211, Cl. 342-379.000.

Kottke, Wilfried E.; and Olkoski, Jill C., to Motorola, Inc. Snap-in antenna assembly. 5,343,213, Cl. 343-702.000.

Kountz, Dennis J.; and Pellicone, Frank M., to Du Pont de Nemours, E. I., and Company. Superconducting Tl-Pb-Sr-Ca-Cu-O thin film. 5,342,828, Cl. 505-238.000.

Koza, John R.; and Rice, James P., to Koza, John R. Non-linear genetic process for data encoding and for solving problems using automatically defined functions. 5,343,554, Cl. 395-13.000.

Kraemer, Dieter: *See*—
Kleese, Wolfgang; Kraemer, Dieter; Petereit, Hans-Ulrich; Lehmann, Klaus; and Siol, Werner, 5,342,646, Cl. 427-2.100.

Kraft, Clifford H. BCH error-location polynomial decoder. 5,343,481, Cl. 371-37.100.

Kraft General Foods, Inc.: *See*—
Katcher, Jay H.; and Bertalan, Charles W., 5,342,932, Cl. 536-102.000.

Kramer, James D., to Automated Packaging Systems, Inc. Bagging control apparatus and method. 5,341,625, Cl. 53-459.000.

Krappitz, Harald: *See*—
Weise, Wolfgang; Voelcker, Alexander; Kaufmann, Dieter; Malikowski, Willi; Beuers, Joerg; and Krappitz, Harald, 5,341,981, Cl. 228-262.900.

Krauss-Maffei A.G.: *See*—
Kotai, Ference; Zurek, Rudolf; and Bolling, Ingo, 5,341,721, Cl. 89-46.000.

Krawitz, Daniel S. Bulletin board with adhesive attachment strips for mounting items thereon. 5,342,665, Cl. 428-40.000.

Krech, Roger I.: *See*—
Zwadlo, Gregory L.; and Krech, Roger I., 5,342,720, Cl. 430-66.000.

Kremsdorf, Dina: *See*—
Orth, Gerard; Favre, Michel; Kremsdorf, Dina; and Pehau-Arnaudet, Gerard, 5,342,930, Cl. 536-23.720.

Krieg, Wolfgang: *See*—
Leyendecker, Joachim; Neubauer, Hans-Juergen; Kardorff, Uwe; Kuenast, Christoph; Krieg, Wolfgang; and Hofmeister, Peter, 5,342,849, Cl. 514-/361.000.

Kriel, Roger C.: *See*—
Willows, Barry L., 5,341,933, Cl. 206-554.000.

Krishnamoorthy, Ashok V.: *See*—
Yayla, Gokce; Krishnamoorthy, Ashok V.; and Esener, Sadik C., 5,343,555, Cl. 395-24.000.

Kriska, Thomas M.; Lauritzen, Donald R.; and Rose, Larry D., to Morton International, Inc. Airbag reaction canister having softened edges. 5,342,082, Cl. 280-728.00A.

Kroll, Mark W., to Angeion Corporation. Implantable defibrillator system having a small capacitance valve. 5,342,399, Cl. 607-5.000.

Krom, Lynn C.; and Dye, Duane K., to General Motors Corporation. Steering gear for motor vehicle. 5,341,701, Cl. 74-499.000.

Krook, Gunilla: *See*—
Bergstrom, Christer; and Krook, Gunilla, 5,342,887, Cl. 525-108.000.

Krzewki, Rudolf J.; and Ackers, Stanley, to Fermenta Animal Health Company. Polyurethane insecticidal ear tag, methods of use and preparation. 5,342,619, Cl. 424-411.000.

Kubo, Yoshihiro: *See*—
Nagayama, Yoshirou; Kubo, Yoshihiro; and Sekino, Takao, 5,343,333, Cl. 359-874.000.

Kubokoya, Ryoichi; Yamane, Hiroyuki; and Higuchi, Yasushi, to Nippondenso Co., Ltd. Method of manufacturing a complementary MIS transistor. 5,342,802, Cl. 437-57.000.

Kubota Corporation: *See*—
Fukui, Tetsu; Oota, Yoshimi; and Hasegawa, Shigekazu, 5,341,893, Cl. 180-245.000.

Kubota, Hidemi: *See*—
Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, 5,343,227, Cl. 349-42.000.

Kubota, Nobuhiko; Sugimoto, Tsunemi; Sugawara, Kazushi; and Shiohara, Yuh, to International Superconductivity Technology center; Ishikawajima-Harima Heavy Industries Co., Ltd.; and Sharp Corporation. Bi-Sr-Ca-Cu-O superconducting thin film. 5,342,826, Cl. 505-238.000.

Kubota, Tohru; and Endo, Mikio, to Shin-Etsu Chemical Co., Ltd. Triorganomonohalogenosilane. 5,342,984, Cl. 556-477.000.

Kubota, Tohru: *See*—
Yamazaki, Toshio; Sugahara, Hideki; Ichinohe, Shoji; Ishihara, Toshinobu; and Kubota, Tohru, 5,342,983, Cl. 556-445.000.

Kucera, Dennis W.; and Meyers, Paul S., to Tektronix, Inc. Automatic extraction of pulse-parametrics from multi-valued functions. 5,343,405, Cl. 364-486.000.

Kuchel, Michael; and Hof, Albrecht, to Carl-Zeiss-Stiftung. Method for analyzing periodic brightness patterns. 5,343,294, Cl. 356-376.000.

Kuckes, Arthur F., to Vector Magnetics. Electromagnetic homing system using MWD and current having a funamental wave component and an even harmonic wave component being injected at a target well. 5,343,152, Cl. 324-346.000.

Kuehnle, Manfred R. Digital color proofing system and method for offset and gravure printing. 5,343,234, Cl. 346-159.000.

Kuenast, Christoph: *See*—
Leyendecker, Joachim; Neubauer, Hans-Juergen; Kardorff, Uwe; Kuenast, Christoph; Krieg, Wolfgang; and Hofmeister, Peter, 5,342,849, Cl. 514-/361.000.

Kuhlmeyer, Rainer; Topfl, Werner; and Fory, Werner, to Ciba-Geigy Corporation. Sulfonylureas. 5,342,823, Cl. 504-215.000.

Kuhn, Bruce R.: *See*—
Barton, John C.; Hanby, William J.; Kuhn, Bruce R.; Lathrope, Michael F.; Simanonis, Christopher F.; and Varga, Arthur J., 5,343,461, Cl. 370-13.000.

Kulczycki, Stanley, to Budd Company, The. Bearing retainer ring. 5,342,130, Cl. 384-585.000.

Kulisz, Andre A.: *See*—
Campbell, Robert E.; Kulisz, Andre A.; and Migachyov, Valery, 5,342,313, Cl. 604-153.000.

Kumagae, Yojiro: *See*—
Fujita, Shigeo; Matsumoto, Mansuke; Kumagae, Yojiro; Wada, Sayuri; and Hashimoto, Shuichi, 5,342,967, Cl. 549-226.000.

Kumagai, Yorinori: *See*—
Hotta, Takashi; Morita, Yukio; Kojima, Yoichi; Kikuchi, Kimihiko; Niiyama, Tsunefumi; Kumagai, Yorinori; and Nakayama, Hiroshi, 5,342,257, Cl. 475-275.000.

Kumakawa, Tatsuaki, to Takara Co., Ltd. Spring driven shaver. 5,341,570, Cl. 30-43.600.

Kume, Masafumi: *See*—
Kogure, Hideo; Murase, Heihachi; and Kume, Masafumi, 5,342,901, Cl. 525-330.500.

Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Hayakawa, Hidenori; Yanagi, Akihiko; and Asami, Tadao, to Nihon Bayer Agrochem K.K. Benzoxazine intermediates. 5,342,938, Cl. 544-105.000.

Kumpf, Robert J.; Meltzer, Aaron D.; and Pielartzik, Harald, to Miles Inc. Process for making an ester containing polyether sulfone. 5,342,905, Cl. 525-534.000.

Kung, Kenneth T.; Tang, Denny D.; and Wang, Po-Kang, to International Business Machines Corporation. Nonvolatile magnetoresistive storage device using spin valve effect. 5,343,422, Cl. 365-173.000.

Kunii, Hideo: *See*—
Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, 5,343,450, Cl. 369-19.000.

Kunimune, Kouichi: *See*—
Katou, Kouichi; Maeda, Hirotoshi; and Kunimune, Kouichi, 5,342,739, Cl. 430-325.000.

Kunselman, Garry C.: *See*—
Crawford, Richard L.; Kunselman, Garry C.; Angelucci, Albert; Fitz-Patrick, Bruce C.; and Ferreira, Richard S., 5,343,289, Cl. 356-328.000.

Kunst, Albert; Rehner, Helmut; Stegmuller, Peter; Lenz, Helmut; Bialk, Peter; and Hoyle, Nicholas, to Boehringer Mannheim GmbH. Method and standard solution for the determination of thyroxine (T_4) *or triiodothyronine* (T_3). 5,342,788, Cl. 436-500.000.

Kunzfeld, Wilhelm, to AVL Gesellschaft fuer Verbrennungskraftmaschinen und Messtechnik mbh. Prof. Dr. Dr. h.c. Hans List. Method and arrangement for warming up internal combustion engines on a testing stand. 5,341,674, Cl. 73-116.000.

Kuo, Kun P.: *See*—
Wolf, Peter A.; Clare, Kenneth, deceased; and Kuo, Kun P., 5,342,643, Cl. 426-590.000.

Kuo, Lewis J. H.: *See*—
Vasilow, Theodore R.; Kuo, Lewis J. H.; and Ruka, Roswell J., 5,342,704, Cl. 429-31.000.

Kuo, Yao-Jung: *See*—
Hung, Chan-Chi; Lee, Sheng-Yuan; and Kuo, Yao-Jung, 5,343,525, Cl. 380-4.000.

Kurachi, Yoshio: *See*—
Nishikawa, Hirotaka; Kurachi, Yoshio; Kogiso, Takashi; Sekiya, Shigeki; Sato, Teruhiko; Hashimoto, Hideki; Ohmori, Makoto; and Sasaki, Kenji, 5,341,633, Cl. 57-264.000.

Kurandt, Fritz, to System Kurandt GmbH. Apparatus for the on-line control of folding box blanks. 5,342,278, Cl. 493-16.000.

Kuraray Co., Ltd.: *See*—
Aoyama, Akimasa; Katayama, Tetsuya; Moritani, Takeshi; Yamauchi, Junnosuke; and Hirofuji, Satoshi, 5,342,662, Cl. 428-34.800.
Yoshikawa, Tadao; Okamoto, Kyoko; and Ikari, Tokuo, 5,342,669, Cl. 428-64.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Koizumi, Tomoyoshi; and Ichikawa, Yukio, 5,342,654, Cl. 427-307.000.

Kurihara, Nobuo; Ishii, Toshio; Mukaihira, Takashi; Kawano, Kazuya; and Takaku, Yutaka, to Hitachi, Ltd. System for diagnosing engine exhaust gas purifying device and system for diagnosing sensor. 5,341,642, Cl. 60-276.000.

Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiki, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic control device for active suspension system. 5,342,023, Cl. 267-64.170.

Kurita, Tsutomu: *See*—
Yoshida, Susumu; Ebihara, Munemitsu; Kurita, Tsutomu; and Sueyoshi, Masahiko, 5,343,077, Cl. 307-9.100.

Kuroda, Kenji: *See*—
Yokoyama, Shoji; Morimoto, Kyomi; Nanba, Akimasa; Katoh, Kiyohide; Kuroda, Kenji; Kishi, Hiroshi; and Ito, Toru, 5,343,399, Cl. 364-449.000.

Kuroda, Ryo: *See*—
Miyazaki, Toshihiko; Sakai, Kunihiro; Nose, Hiroyasu; Kishi, Etsuro; and Kuroda, Ryo, 5,343,460, Cl. 369-126.000.

Kuroda, Shizuo: *See*—
Ohyama, Tsukasa; Kuroda, Shizuo; Takuma, Keisuke; and Aiga, Hiroshi, 5,342,974, Cl. 552-259.000.

Kuroda, Takeshi: *See*—
Suzuki, Fumio; Miwa, Yoshikazu; Kuroda, Takeshi; Kitamura, Shigeto; and Manabe, Haruhiko, 5,342,843, Cl. 514-293.000.

Kuryliw, William. Method of securing a filter element to a blade of a fan. 5,341,565, Cl. 29-889.721.

Kusaka, Kensaku: *See*—
Hirabayashi, Hiromitsu; Kusaka, Kensaku; Arai, Atsushi; and Takayanagi, Yoshiaki, 5,343,280, Cl. 355-285.000.

Kusters, Arnoldus P. M.; and De Bont, Johannes M., to Delair Droogtechniek en Luchtbehandeling B.V. Method for conditioning the atmosphere in a storage chamber for organic harvested produce. 5,342,637, Cl. 426-312.000.

Kuwashima, Hiroshi. Miscellaneous drain water purifying method and miscellaneous drain water pruifying device. 5,342,523, Cl. 210-605.000.

Kuzin, Eugene F.: *See*—
Artjushenko, Vjacheslav G.; Neuberger, Wolfgang; Nabatov, Alexey O.; and Kuzin, Eugene F., 5,342,022, Cl. 264-1.210.

KWC AG: *See*—
Graber, Heinz, 5,341,845, Cl. 137-625.410.

Kwon, Tae-Gab: *See*—
Yoon, Chun; Song, Han-Chul; and Kwon, Tae-Gab, 5,342,416, Cl. 8-639.000.

Kyocera Internatinoal, Inc.: *See*—
Noto, Kazuyoshi, 5,342,992, Cl. 174-52.400.

Kyokuei Kenmakako Kabushiki Kaisha: *See*—
Hirabayashi, Toshihiko, 5,341,606, Cl. 51-283.00R.

Kyorin Pharmaceutical Co., Ltd.: *See*—
Ohnota, Michiro; Okamura, Kyuya; Hirata, Yoshihiro; Murakami, Koji; and Ohashi, Mitsua, 5,342,850, Cl. 514-369.000.

Kyosan Electric Mfg. Co., Ltd.: *See*—
Tanaka, Juichi; Yuzurihara, Itsuo; and Watanabe, Takashi, 5,343,377, Cl. 363-17.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Suzuki, Fumio; Shimada, Junichi; Karasawa, Akira; Mizumoto, Hideaki; Kase, Hiroshi; and Nonaka, Hiromi, 5,342,841, Cl. 514-263.000.
Suzuki, Fumio; Miwa, Yoshikazu; Kuroda, Takeshi; Kitamura, Shigeto; and Manabe, Haruhiko, 5,342,843, Cl. 514-293.000.
Yasumura, Shigeyoshi; Nishi, Tatsunari; and Ito, Seiga, 5,342,775, Cl. 435-240.200.

Kyowa Limited: *See*—
Iwai, Yoshio; Takahashi, Kazuyuki; Hirota, Takeshi; Abe, Tomoji; and Imanishi, Isao, 5,342,687, Cl. 428-402.000.

L.C.C. Consultants Co., Ltd.: *See*—
Sato, Hisato; Naito, Tomijiro; and Tuji, Yasunobu, 5,342,546, Cl. 252-299.600.

La Barre, Paul: *See*—
Denis, Gerard; and La Barre, Paul, 5,342,558, Cl. 264-25.000.

Laboratoires Eurobio: *See*—
Chalom, Joseph; Griffoul, Christine; Tod, Michel; and Reveilleau, Stephane, 5,342,970, Cl. 549-288.000.

Laborde, Edgardo; and Schroeder, Mel, to Warner-Lambert Company. 7-substituted quinolones and naphthyridones as antibacterial agents. 5,342,844, Cl. 514-300.000.

Lachman, Leigh J.; and Lachman, Reid A. Safety glasses. 5,343,258, Cl. 351-41.000.

Lachman, Reid A.: *See*—
Lachman, Leigh J.; and Lachman, Reid A., 5,343,258, Cl. 351-41.000.

Lackey, Karen; and Sternbach, Daniel D., to Glaxo Inc. Preparation of water soluble camptothecin derivatives. 5,342,947, Cl. 546-41.000.

La Cosse, Gerald E.: *See*—
Cockrell, John R., Jr.; La Cosse, Gerald E.; and Cates, D. Michael, 5,342,450, Cl. 134-3.000.

Lacroix, Guy-Bernard: *See*—
Pepin, Regis; Schmitz, Christian; Lacroix, Guy-Bernard; Dellis, Philippe; and Veyrat, Christine, 5,342,835, Cl. 514-227.500.

Ladd, Barry L.; and Pociask, Michael B., to General Motors Corporation. Engine/transmission rotary connection. 5,342,242, Cl. 464-98.000.

Lafforthun, David. Bat elimination and containment device. 5,341,592, Cl. 43-66.000.

Lagoni, William A., to Thomson Consumer Electronics, Inc. Video processing circuit with IF AGC loop, auxiliary video clamp and shared reference voltage source formed on common integrated circuit. 5,343,255, Cl. 348-678.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Koeberle, Yves; and Tranier, Jean-Pierre, 5,341,647, Cl. 62-39.000.

LaJudice, Kevin P.: *See*—
McBain, Douglas S.; LaJudice, Kevin P.; and Melby, Earl G., 5,342,554, Cl. 523-466.000.

Lamb, William J.: *See*—
Kan, Tze-Kong; Zucker, Sandy M.; Greenberg, Matthew L.; and Lamb, William J., 5,343,440, Cl. 367-27.000.

Lammes, Larry R.: *See*—
Jongsma, Ronald; Lammes, Larry R.; Lewis, Gifford J.; and Wahlers, Robert A., 5,342,446, Cl. 118-65.000.

Lamond, Donald R.: *See*—
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,341,537, Cl. 15-167.100.

Lancaster, E. Peter; and Young, Richard H., to Paragon Trade Brands, Inc. Disposable diaper with refastenable mechanical fastening system. 5,342,344, Cl. 604-387.000.

Lance, Alan G., to Lance Land & Livestock Ltd. Gallery, silhouette, and target system which is easily resettable, collapsible, and portable 5,342,062, Cl. 273-391.000.

Lance Land & Livestock Ltd.: *See*—
Lance, Alan G., 5,342,062, Cl. 273-391.000.

Landers, Norman R. Impeller gun safety trigger mechanism. 5,341,732, Cl. 101-3.100.

Landes, Mark D.: *See*—
Kenyon, Roger R.; Landes, Mark D.; Campana, Donna L.; Geremakis, Perry A.; Dock, Ted L.; and Ondrla, Jeffrey M., 5,342,362, Cl. 606-79.000.

Landis & Gyr Metering, Inc.: *See*—
Voisine, John T.; Anderson, Christopher L.; Slaven, Robert E.; and Tate, Ronald C., 5,343,143, Cl. 324-142.000.

Lane, Ramon: *See*—
Hall, Shawn A.; Lane, Ramon; and Wang, Han-chung, 5,343,548, Cl. 385-89.000.

Lang, Douglas J.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,342,407, Cl. 607-129.000.

Lang, Steven F.: *See*—
Penner, Gordon A.; Mok, Winston K. C.; Lang, Steven F.; and Huscroft, Charles K., 5,343,482, Cl. 371-57.200.

Langdon, Fred M.: *See*—
Thompson, Hugh A.; and Langdon, Fred M., 5,342,334, Cl. 604-366.000.

Langen, Hans-Jurgen: *See*—
Kampf, Klaus; Langen, Hans-Jurgen; and Herberg, Friedrich, 5,341,675, Cl. 73-118.100.

Langlais, Eugene L.: *See*—
Kelly, Neal F.; and Langlais, Eugene L., 5,342,731, Cl. 430-253.000.

Langston, Jeffrey S.: *See*—
Agrawal, Rakesh; Langston, Jeffrey S.; Rodgers, Paul; and Xu, Jianguo, 5,341,646, Cl. 62-25.000.

Lannes, Eric M., to Bradford-White Corporation. Integral lime inhibitor. 5,341,770, Cl. 122-383.000.

Lanning, William W., II, to Foster Valve Corporation. Lubrication system for valve seat of a gate valve. 5,341,835, Cl. 137-246.220.

Lanxide Technology Company, LP: *See*—
Niskanen, Paul W.; White, Danny R.; Mortenson, Mark G.; and Antolin, Stanislav, 5,342,812, Cl. 501-127.000.

Lanza, Paolo: *See*—
Santangelo, Antonello; Margo, Carmelo; and Lanza, Paolo, 5,342,793, Cl. 437-25.000.

LaPlante, Pierre M., to A-Dec, Inc. Frame for post-supported dental equipment. 5,342,007, Cl. 248-131.000.

Lapota, Robert J.: *See*—
Wendt, David C.; Lapota, Robert J.; and Flierl, Karl T., 5,343,134, Cl. 318-757.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Lapp, Torben: *See—*
Sjaunja, Lars-Ove; Andersen, Steen K.; Arnvidarson, Borkur; Brems, Niels; Lapp, Torben; and Nygaard, Lars, 5,343,044, Cl. 250-339.090.

Lappington, John P.; and Marshall, Susan K., to Zing Systems, L.P. Transaction based interactive television system. 5,343,239, Cl. 348-12.000.

Lara, Jess D.; and Palombo, Mario, to Hughes Aircraft Company Optical system for electric vehicle docking. 5,343,295, Cl. 356-399.000.

Large, Jeffrey L., to Texas Instruments Incorporated. Laminar flow vacuum chuck. 5,342,068, Cl. 279-3.000.

Larsen, Michael J.: *See—*
Chou, Rudy S.; Larsen, Michael J.; Ramshankar, Rengasamy; Rieke, Larry D.; and Waterman, Timothy J., 5,341,795, Cl. 126-110.00R.

Larson, James K.; and Teichmer, Daniel G. Correlation of a waveform to a video image. 5,343,298, Cl. 348-184.000.

Larsson, Larseric: *See—*
Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, 5,341,720, Cl. 89-45.000.

Laser Centers of America: *See—*
Long, Gary, 5,342,355, Cl. 606-27.000.

Lasko Metal Products, Inc.: *See—*
Litvin, Charles, 5,342,174, Cl. 416-246.000.

Lassers, Harold A., to AT&T Bell Laboratories. Method for establishing licensor changeable limits on software usage. 5,343,526, Cl. 380-4.000.

Laterza, Larry: *See—*
Chan, Joseph Y.; Laterza, Larry; Garbis, Dennis; and Einthoven, William G., 5,342,805, Cl. 117-89.000.

Lathrope, Michael F.: *See—*
Barton, John C.; Hanby, William J.; Kuhn, Bruce R.; Lathrope, Michael F.; Simanonis, Christopher F.; and Varga, Arthur J., 5,343,461, Cl. 370-13.000.

Latino, Richard M., to Wright Line, Inc. Modular library system with stationary and mobile racks for storage of computer catridges. 5,341,944, Cl. 21-162.000.

Lau, Philip T. S.; and Tang, Ping-Wah, to Eastman Kodak Company. Preparation of 1H pyrazolo [3,2-c]-S-triazole compounds. 5,342,943, Cl. 548-262.400.

Laughlin, Timothy E.; Scepanski, William H.; and Gruber, Kenneth P., to Sunburst Chemicals, Inc. Detergent dispenser for use with solid cast detergent. 5,342,587, Cl. 422-266.000.

Lauritzen, Donald R.: *See—*
Kriska, Thomas M.; Lauritzen, Donald R.; and Rose, Larry D., 5,342,082, Cl. 280-728.00A.
Rose, Larry D.; and Lauritzen, Donald R., 5,342,084, Cl. 280-728.00A.

Lauw, Hiang P., to Hewlett-Packard Corporation. Bleed resistance of dyes by counter-ion substitution. 5,342,439, Cl. 106-22.00H.

Laws, Elizabeth M., to Salford University Business Services Limited. Flow conditioner. 5,341,848, Cl. 138-44.000.

Lay, Dieter, to AptarGroup, Inc. Toggle-action dispensing closure with capture structure for severable actuation-prevention abutment. 5,341,960, Cl. 222-153.000.

Lazar, Istvan: *See—*
Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, 5,342,606, Cl. 424-09.000.

Lazar, Vladimir F. Variable twin cycle water metering machine. 5,341,520, Cl. 4-325.000.

Lazarus, Richard M.; Grunwald, John J.; Gal, Chava; and Hirsch, Shulamit, to Morton International, Inc. Deep UV sensitive photoresist resistant to latent image decay. 5,342,734, Cl. 430-270.000.

Lazerson, Howard E. Rotating blade capsulotomy instrument and method of performing a capsulotomy. 5,342,377, Cl. 606-166.000.

Le, Phat; and Cheng, Xin, to Amoco Corporation. Bias control and method for electro-optic modulators. 5,343,324, Cl. 359-184.000.

Le, Tung V.: *See—*
Butler, Donald E.; Le, Tung V.; and Nanninga, Thomas N., 5,342,952, Cl. 546-245.000.

Leader, Matthew J.: *See—*
Graves, Jeffrey A.; Sherman, Marshall L.; Leader, Matthew J.; and Sin, Kee V., 5,342,498, Cl. 204-408.000.

Leaf Systems, Inc.: *See—*
Blaszczynski, George M., 5,343,059, Cl. 257-223.000.

Leanna, Robert: *See—*
Plata, Daniel J.; Fung, Anthony K. L.; Morton, Howard E.; Leanna, Robert; Baker, William R.; and Pratt, John K., 5,342,981, Cl. 556-420.000.

Leatch, Alfred T. Relocatable irrigator. 5,341,995, Cl. 239-729.000.

Leatherman, R. Dwight: *See—*
Farr, John A.; and Leatherman, R. Dwight, 5,341,822, Cl. 128-898.000.

Leben, David G. Container for carrying and transporting computer tape cartridges. 5,341,926, Cl. 206-307.000.

Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, to Academy of Sciences of the Czech Republic. Apparatus for making multiple synthesis of peptides on solid support. 5,342,585, Cl. 422-131.000.

LeBlanc, Timothy C.: *See—*
Roller, Kent G.; Scott, Bradley A.; and LeBlanc, Timothy C., 5,342,655, Cl. 427-372.200.

Lechner, John F.: *See—*
Cole, Katharine H.; Lechner, John F.; and Harris, Curtis C., 5,342,777, Cl. 435-240.310.

Lecomte, Jeanne-Marie: *See—*
Garbarg, Monique; Arrang, Jean-Michel; Schunack, Walter; Lipp, Ralph; Stark, Holger; Lecomte, Jeanne-Marie; and Schwartz, Jean-Charles, 5,342,960, Cl. 548-336.100

Ledermann, Peter G.: *See—*
Cipolla, Thoas M.; Coteus, Paul W.; Damianakis, Ioannis; Johnson, Glen W.; Ledermann, Peter G.; Matthew, Linda C.; and Mok, Lawrence S., 5,343,366, Cl. 361-785.000.

Ledoux, Patrick R.; and Fourgaut, Luc R., to Pipe Liners, Inc. Method and apparatus for deforming reformable tubular pipe liners. 5,342,570, Cl. 264-566.000

Lee, Biing Lin: *See—*
Dickens, Elmer D., Jr.; Lee, Biing Lin; Taylor, Glenn A.; Magistro, Angelo J.; and Ng, Hendra, 5,342,919, Cl. 528-323.000.

Lee, Chien H.: *See—*
Gentile, David P.; Synor, Jeffrey C.; and Lee, Chien H., 5,342,083, Cl. 280-728.00A.

Lee, Dah-Ming: *See—*
Chen, Wei-Liang; Lee, Dah-Ming; Chen, Lien-Tai; and Yeh, Ming-Tao, 5,342,567, Cl. 264-203.000.

Lee, David: *See—*
Chopra, Sham K.; Nangia, Avinash K.; Lee, David; and Molloy, Thomas P., 5,342,627, Cl. 424-473.000.

Lee, Harry W., Jr., to Reynolds Metals Company. Container bottom wall reforming apparatus and method. 5,341,667, Cl. 72-379.400.

Lee, J. Donald: *See—*
Wiese, Gary E.; Lee, J. Donald; and Newberg, G. Edward, 5,343,040, Cl. 250-252.100.

Lee, Janghee: *See—*
Farrell, Patrick V.; Lee, Janghee; and Beal, Andrew B., 5,343,483, Cl. 372-10.000.

Lee, Junseong, to Samsung Electronics Co., Ltd. Voltage controlled oscillator provided with negative feedback biasing. 5,343,170, Cl. 331-132.000.

Lee, Kiu H.: *See—*
Cann, Kevin J.; Hussein, Fathi D.; Lee, Kiu H.; Zilker, Daniel P., Jr.; Nicoletti, James W.; and Bai, Xinlai, 5,342,907, Cl 526-129.000.

Lee, Robert I., to Microcomputer Technical Services Limited. Memory system adapted to store two associated sets of data items. 5,343,559, Cl. 395-425.000.

Lee, Roger; and Martin, Paul. Traction splint. 5,342,288, Cl. 602-5.000.

Lee, Sheng-Yuan: *See—*
Hung, Chan-Chi; Lee, Sheng-Yuan; and Kuo, Yao-Jung, 5,343,525, Cl. 380-4.000.

Lee, Tae-woo; Kim, Seon-jun; and Lee, Yang-ku, to Samsung ELectronics Co., Ltd. Stacked trench capacitor and a method for making the same. 5,343,354, Cl. 361-322.000.

Lee, Tzong-Ming: *See—*
Chen, Ker-Ming; Wang, Tsung-Hsiung; King, Shing-Shing; and Lee, Tzong-Ming, 5,342,736, Cl. 430-323.000.

Lee, Tzu-Chen: *See—*
Boyd, Gary T.; Lee, Tzu-Chen; Sventek, Bruce A.; Cross, Elisa M.; and Weller-Brophy, Laura A., 5,343,544, Cl. 385-46.000.

Lee, William: *See—*
Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, 5,342,370, Cl. 606-107.000.

Lee, Yang-ku: *See—*
Lee, Tae-woo; Kim, Seon-jun; and Lee, Yang-ku, 5,343,354, Cl. 361-322.000.

Lefavour, John, to Burndy Corporation. Parallel street light tap connector. 5,342,224, Cl. 439-781.000.

Legeais, Jean-Marc: *See—*
Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, 5,342,370, Cl. 606-107.000.

Lehmann, Klaus: *See—*
Kleese, Wolfgang; Kraemer, Dieter; Petereit, Hans-Ulrich; Lehmann, Klaus; and Siol, Werner, 5,342,646, Cl. 427-2.100.

Lehner, Heinz, to EuWe Eugen Wexler GmbH. Holding device for drink containers. 5,342,009, Cl. 248-311.200.

Lejdeborn, Lars: *See—*
Persson, Jan-Ove; Lejdeborn, Lars; and Berg, Olle, 5,342,296, Cl. 604-49.000

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Dadoo, Rajeev; Zare, Richard N.; and Colon, Luis A., 5,342,492, Cl. 204-180.100

Lemma Corporation, The: *See—*
Ngo, Viet H.; Poole, Warren D.; Hancock, Sean J.; and France, Timothy T., 5,342,512, Cl. 210-151.000.

Lemole, Gerald M. Needle gripping apparatus. 5,342,375, Cl. 606-148.000.

Lemon, J. Robert; Evans, William T.; and Christian, Robert E., to Professional Dental Technologies, Inc. Soft brush gum stimulator. 5,342,284, Cl. 601-141.000.

Lentine, Anthony L.: *See—*
Chirovsky, Leo M. F.; and Lentine, Anthony L., 5,343,032, Cl. 250-208.200.

Lentz, Harald: *See—*
Berges, Dietrich; Fuhrer, Robert; and Lentz, Harald, 5,342,000, Cl. 242-155.00M.

Lenz, Helmut: *See—*
Kunst, Albert; Rehner, Helmut; Stegmuller, Peter; Lenz, Helmut; Bialk, Peter; and Hoyle, Nicholas, 5,342,788, Cl. 436-500.000.

Leonhardt, Barbara A.; DeVilbiss, E. David; and Mastro, Victor C., to United States of America, Agriculture. PVC/twine dispenser for (+)-disparlure. 5,342,618, Cl. 424-409.000.

Leopold, Raymond J.: *See—*
Wang, Theresa C. Y.; Leopold, Raymond J.; and Moritz, Steven H., 5,343,512, Cl. 379-59.000.

Leschinsky, Boris: *See—*
Schock, Robert B.; and Leschinsky, Boris, 5,342,181, Cl. 417-476.000.

Leshofs, Robert: *See—*
Cathel, Frank; and Leshofs, Robert, 5,342,497, Cl. 204-299.00R.

Le Tourneur, Gregoire: *See—*
Jullien, Jean-Pascal; and Le Tourneur, Gregoire, 5,343,521, Cl. 379-410.000.

Letourneur, Jean-Claude, to Jouan. Centrifuge including a rotor drive-shaft with an elastic damping seal and corresponding shaft. 5,342,282, Cl. 494-82.000.

Leveille, Jacques P.: *See—*
Cowles, Christopher S.; Leveille, Jacques P.; Hatchell, Paul J.; Mireles, Jesus A.; and Clifton, Robert D., 5,343,001, Cl. 181-102.000.

Lever, Alfred B. P.; Tse, Yu-Hong; and Janda, Pavel, to Lever, Alfred B. P. Electrolytic detection of sulfur. 5,342,490, Cl. 204-153.190.

Levine, Robert A.; Wardlaw, Stephen C.; Terstappen, Leon W. M. M.; Mercolino, Thomas J.; and Recktenwald, Diether J., to Becton Dickinson and Company. Apparatus for indirect fluorescent assay of blood samples. 5,342,790, Cl. 436-523.000.

Levy, Jennifer: *See—*
Bowman, Jane; Daniel, Ed; Henn, Bob; Levy, Jennifer; and Vakharia, Neville, 5,342,673, Cl. 428-198.000.

Lewarchik, Ronald J.: *See—*
Clinnin, David D.; Lewarchik, Ronald J.; and Sunderman, Dexter F., 5,342,871, Cl. 524-238.000

Lewis, Gifford J.: *See—*
Jongsma, Ronald; Lammes, Larry R.; Lewis, Gifford J.; and Wahlers, Robert A., 5,342,446, Cl. 118-65.000.

Lewis, Jesse G.: *See—*
Burke, Olive L.; and Lewis, Jesse G., 5,342,114, Cl. 297-344.200.

Lewis, Robert C., to Spokane Structures, Inc. Structural framing system for buildings. 5,341,611, Cl. 52-90.100.

Leybold Durferrit GmbH: *See—*
Henn, Alfred, 5,343,492, Cl. 373-143.000.

Leyendecker, Joachim; Neubauer, Hans-Juergen; Kardorff, Uwe; Kuenast, Christoph; Krieg, Wolfgang; and Hofmeister, Peter, to BASF Aktiengesellschaft. Phenoxyalkyl-substituted heteroaromatics and a method for controlling pests. 5,342,849, Cl. 514-/361.000.

Li, Mei F.: *See—*
Chang, Chen-Chi P.; and Li, Mei F., 5,343,424, Cl. 365-185.000.

Liautaud, Jeffrey, to Sherpa, Inc. Anti-slip device for footwear. 5,341,582, Cl. 36-76.000.

Libbey-Owens-Ford Co.: *See—*
Cohen, Brian E.; Greenberg, William M.; Pagryzinski, William V.; and Smith, Brian E., 5,343,288, Cl. 356-239.000.

Liberty Mutual Insurance Co.: *See—*
Teare, Peter R.; Hanson, William J.; and Smits, Matthijs, 5,341,813, Cl. 128-733.000.

Licht, Ulrike; Haeberle, Karl; Gulbins, Erich; Rau, Maria G.; Franzmann, Gernot; and Portugall, Michael, to BASF Aktiengesellschaft. Aqueous polyurethane dispersions. 5,342,915, Cl. 528-71.000.

Lilly, Eugene O.: *See—*
Eidson, Carson J., 5,342,466, Cl. 156-179.000.

Lima-Marques, Luis, to MAN Roland Druckmaschinen AG. Method of transfer of image deposits from ferro electric recording member surfaces. 5,342,726, Cl. 430-126.000.

Limbach, Steven T., to Wisconsin Alumni Research Foundation. Microscope lens and stage heater with flexible objective lens casing heater sleeve. 5,343,018, Cl. 219-200.000.

Lin, Chih-I: *See—*
Yuan, Hansen A.; and Lin, Chih-I, 5,342,361, Cl. 606-61.000.

Lin, Lien F.: *See—*
Huang, Richard; and Lin, Lien F., 5,342,269, Cl. 482-95.000.

Lin, Ming-Chen. Assembly screw driver. 5,341,705, Cl. 81-438.000.

Lincoln, David G.: *See—*
Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., 5,342,299, Cl. 604-95.000.

Lindauer Dornier Gesellschaft mbH: *See—*
Rutz, Andreas, 5,341,547, Cl. 26-72.000.

Lindegren, Ulf: *See—*
Hirschberg, Jakub; Neubauer, Heinz; Gilljam, Nina; Bowald, Staffan; and Lindegren, Ulf, 5,342,413, Cl. 607-126.000.

Linden, Erkki O.; Ronnholm, Karl S.; and Holm, Carl-Olof J., to Fiskars Oy Ab. Pivoted tool having a self-compensating unitary pivot member. 5,341,573, Cl. 30-254.000.

Linder, Lloyd F.; and Birdsall, Dwight D., to Hughes Aircraft Company. Single-ended and differential transistor amplifier circuits with full signal modulation compensation techniques which are technology independent. 5,343,163, Cl. 330-252.000.

Lindholm, Edward P.; Telfer, Stephen J.; Zuraw, Michael J.; and Hirschbein, Bernard L., to Polaroid Corporation. Imaging medium with bubble-suppressant layer. 5,342,816, Cl. 503-226.000.

Lingnau, Juergen: *See—*
Horn, Klaus; Lingnau, Juergen; and Weiler, Horst, 5,342,582, Cl. 422-105.000.

Linvatec Corporation: *See—*
Foshee, David L.; and Lynch, Robert S., 5,342,391, Cl 606-205.000.

Lipp, Ralph: *See—*
Garbarg, Monique; Arrang, Jean-Michel; Schunack, Walter; Lipp, Ralph; Stark, Holger; Lecomte, Jeanne-Marie; and Schwartz, Jean-Charles, 5,342,960, Cl. 548-336.100.

Lisco, Inc.: *See—*
Baltronis, Joseph F.; and Kennedy, Thomas J., 5,342,043, Cl. 273-65.0EC.
Feeney, Brian P., 5,342,045, Cl. 273-73.00D.

Liska, Jean-Louis: *See—*
Green, Anthony; Champalle, Patrice; and Liska, Jean-Louis, 5,342,708, Cl. 429-145.000.

Lisle Corporation: *See—*
Negus, Joel A., 5,343,181, Cl. 335-285.000.

Litchholt, John J.; and Lodge, Richard W., to Procter & Gamble Company, The. Elastomeric adhesive foam. 5,342,858, Cl. 521-98.000.

Litman, David J.; and Ullman, Edwin F., to Syva Company. Simultaneous calibration heterogeneous immunoassay. 5,342,759, Cl. 435-7.920.

Littau, Eugene G. Catcher plate assembly for a harvester. 5,341,630, Cl. 56-330.000.

Litton Industries, Inc.: *See—*
Rose, Conrad M.; and Drude, Jeffrey J., 5,343,212, Cl. 342-424.000.

Litvin, Charles, to Lasko Metal Products, Inc. Foot for fans. 5,342,174, Cl. 416-246.000.

Liu, Cheng-Chia. Stackable pallet. 5,341,748, Cl. 108-53.300.

Liu, Kindtoken H.: *See—*
Becker, Mitchell; and Liu, Kindtoken H., 5,342,973, Cl. 549-534.000.

Liue, Chun-Ying: *See—*
Peng, Yu-Min; Wang, Jih-Wen; Liue, Chun-Ying; and Yeh, Shinn-Horng, 5,342,502, Cl. 205-109.000.

Lizare Kaplan International, Inc.: *See—*
Kaplan, George R., 5,341,694, Cl. 73-864.910.

Lizotte, Quentin. Portable ice fishing hut. 5,341,588, Cl. 43-1.000.

Lockheed Missiles & Space Company, Inc.: *See—*
Aochi, Tak; and Pyle, Robert J., 5,342,679, Cl. 428-257.000.

Lockheed Sanders, Inc.: *See—*
Stromswold, Chester E.; and Apostolos, John T., 5,343,207, Cl. 342-192.000.

Lodge, Richard W.: *See—*
Litchholt, John J.; and Lodge, Richard W., 5,342,858, Cl. 521-98.000.

Logan, Kent E.: *See—*
Comparin, Robert J.; Clendenin, Harry B.; Logan, Kent E.; Bass, Mark; Fairbanks, Steven C.; and Caillat, Jean-Luc, 5,342,184, Cl. 418-55.200.

Logothetis, Eleftherios M.: *See—*
Hamburg, Douglas R.; Logothetis, Eleftherios M.; Soltis, Richard E.; and Visser, Jacobus H., 5,341,643, Cl. 60-276.000.

Lombardi, Michael H.; and Vaccaro, John, to Elizabeth Arden Co., Division of Conopco, Inc. Lipstick article. 5,342,134, Cl. 401-78.000.

Loney, Carol; and VandenEinde, David A., to SciMed Life Systems, Inc. Balloon dilatation catheter having a torsionally soft component. 5,342,302, Cl. 604-96.000.

Long-Airdox Company: *See—*
Riffe, Shirley D., 5,341,920, Cl. 198-825.000.

Long, Gary, to Laser Centers of America. Energy delivering cap element for end of optic fiber conveying laser energy. 5,342,355, Cl. 606-27.000

Long, Terry L. Sound abating stack plate systems. 5,342,271, Cl. 482-98.000.

Longenecker, John P.: *See—*
Johnson, Lorin K.; and Longenecker, John P., 5,342,764, Cl. 435-69.100.

Longest, H. Cary, Jr.: *See—*
Fletcher, Thomas A.; and Longest, H. Cary, Jr., 5,341,824, Cl. 131-281.000.

Loretta, Miles E., Jr.: *See—*
McCalmont, Paul E.; Curless, Richard A.; and Loretta, Miles E., Jr., 5,342,017, Cl. 248-632.000.

Lottery Enterprises, Inc.: *See—*
Brown, Michael C., 5,341,955, Cl. 221-197.000.

Louis, Olivier, to Unitor A/S. Water survival device. 5,342,230, Cl. 441-42.000.

Lousiana Pacific Corporation: *See—*
Schafer, Karl K.; Melzer, Gerhard M.; Scriba, Jorg; Bhagwat, Suda G.; and Eisses, James, 5,342,566, Cl. 264-102.000.

Lovegrove, Peter C.: *See—*
Turner, Andrew D.; Derham, Stanley D.; and Lovegrove, Peter C., 5,342,514, Cl. 210-193.000.

Lovell, John W.; Sebramm, Karen M.; and DeLisle, William E., to GTE Government Systems Corporation. Method of multipath dsss communications. 5,343,495, Cl. 375-1.000.

Lu, Fu-Chung, to Kai Fa Industry Co., Ltd. Shock absorber with variable damping force. 5,341,905, Cl. 188-320.000.

Lubrizol Corporation, The: *See—*
Quinn, Robert E.; and Burk, W. Miachel, 5,342,563, Cl. 264-63.000.

Lucarelli, Michael A.; Keegan, Richard E.; Koshute, Mark A.; Freitag, Hans-Albrecht; and Avar, Geza, to Miles Inc. Stable dispersions of polyhydrazodicarbonamides useful in the preparation of polyurethane products having improved load-bearing capacity. 5,342,855, Cl. 521-50.000.

Lucas Industries public limited company: *See—*
Kampfmann, Wolfgang; Schmitt, Hubert; and Voges, Dieter, 5,342,118, Cl. 303-97.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Lucia, Vita M.: *See*—
Plendl, Mathew E.; and Lucia, Vita M., 5,342,273, Cl. 482-126.000.
Luciani, Sabatino, to Axis USA, Inc. Two-wire stator winding machine. 5,341,997, Cl. 242-1.10R.
Lucky Limited: *See*—
Hong, Young J.; Kim, Jin B.; and Yeo, Jong K., 5,342,658, Cl. 427-515.000.
Yoon, Chun; Song, Han-Chul; and Kwon, Tae-Gab, 5,342,416, Cl. 8-639.000.
Ludwig Institute for Cancer Research: *See*—
Boon, Thierry; van der Bruggen, Pierre; Van den Eynde, Benoit; Van Pel, Aline; De Plaen, Etienne; Lurquin, Christophe; Chomez, Patrick; and Traversari, Catia, 5,342,774, Cl. 435-240.200.
Garin-Chesa, Pilar; Rettig, Wolfgang J.; and Old, Lloyd J., 5,342,757, Cl. 435-7.210.
Ludwig, Jerome H.: *See*—
Eden, Todd R.; and Ludwig, Jerome H., 5,342,510, Cl. 210-96.100.
Luecke, Mark: *See*—
Williamson, Craig; Luecke, Mark; Wildman, John R.; and O'Patka, Dennis J., 5,342,064, Cl. 273-447.000.
Lueneburger, Klaus, to Potter & Brumfield, Inc. PCB relay having an improved terminal structure. 5,343,365, Cl. 361-773.000.
Lun, Warren D.; Rom, Paul F.; and Booth, William M., to DLP, Incorporated. Introducer needle and catheter assembly. 5,342,325, Cl. 604-272.000.
Lungu, Corneliu; and Herrmann, Hugo, to Robert Bosch GmbH. Small size electric motor with housing provided with opening. 5,343,106, Cl. 310-239.000.
Lurquin, Christophe: *See*—
Boon, Thierry; van der Bruggen, Pierre; Van den Eynde, Benoit; Van Pel, Aline; De Plaen, Etienne; Lurquin, Christophe; Chomez, Patrick; and Traversari, Catia, 5,342,774, Cl. 435-240.200.
Luttinger, Kristen A.: *See*—
Perry, Jeffrey R.; Sadjadi, S. M. Reza; and Luttinger, Kristen A., 5,342,801, Cl. 437-52.000.
Lyco Manufacturing, Inc.: *See*—
Zittel, David R., 5,341,729, Cl. 99-348.000.
Lynch, Robert S.: *See*—
Foshee, David L.; and Lynch, Robert S., 5,342,391, Cl 606-205.000.
Lynn, Mark A.; and Miller, Gregory D., to General Motors Corporation. Lan electro-optical interface. 5,343,323, Cl. 359-180.000.
Lyon, James T.: *See*—
Conville, John J.; Lyon, James T.; and Turcotte, David E., 5,342,537, Cl. 252-174.240.
Lyon, Leland H., to Ingersoll-Rand Company. Filter for a rockdrill. 5,342,520, Cl. 210-251.000.
Lyster, Thomas D.: *See*—
Gadsby, Peter D.; Paeth, David S.; Gross, Stephen W.; and Lyster, Thomas D., 5,341,806, Cl. 128-640.000.
M/A-COM, Inc.: *See*—
Goodrich, Joel L.; and Souchuns, Christopher C., 5,343,070, Cl. 257-594.000.
Ma, Qiyuan: *See*—
Hardy, Walter N.; and Ma, Qiyuan, 5,343,012, Cl. 219-443.000.
Maas, Wilhelmus J. J.; and Hurkmans, Petrus L. W., to AFA Products. Plastic spring assembly for trigger sprayer. 5,341,965, Cl. 222-340.000.
Mabuchi, Kazuichi; and Nishida, Yutaka, to Mabuchi-Motor Co., Ltd. Miniature motor. 5,343,102, Cl. 310-71.000.
Mabuchi-Motor Co., Ltd.: *See*—
Mabuchi, Kazuichi; and Nishida, Yutaka, 5,343,102, Cl. 310-71.000.
Mabuti, Kouzou: *See*—
Honma, Masaki; Nakano, Akio; Mabuti, Kouzou; Asahi, Isamu; Tsuruta, Setsuo; Fujino, Nobuhiro; and Kobayashi, Nobuhisa, 5,343,387, Cl. 364-401.000.
MacBean, Myles: *See*—
Davis, Lynn; and MacBean, Myles, 5,343,055, Cl. 257-186.000.
MacDonald, Joanne P.: *See*—
Burke, John J.; and MacDonald, Joanne P., 5,342,550, Cl. 252-548.000.
MacDonald, Peter L.: *See*—
Herlt, Tony J.; MacDonald, Peter L.; and Rickards, Rodney W., 5,342,971, Cl. 549-390.000.
MacDonald, Sumner B. Key holder. 5,341,662, Cl. 70-456.00R.
MacGregor, Norman J., to Integrated Energy Development Corp. Synergistic process for the production of carbon dioxide using a cogeneration reactor. 5,342,702, Cl. 429-13.000.
Machen, Edmund H.: *See*—
Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., 5,341,680, Cl. 73-379.060.
Machen, James R.: *See*—
Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., 5,341,680, Cl. 73-379.060.
Macherey, Nagel & Co.: *See*—
Radmacher, Edmund, 5,342,515, Cl. 210-198.200.
Machida, Hiromi, to Tokico, Ltd. Vehicle height control system. 5,342,080, Cl. 280-708.000.
Machinefabriek Bollegraaf Appingedam B.V.: *See*—
Vos, Dirk J., 5,341,937, Cl. 209-38.000.
Machinefabriek Meyn B.V.: *See*—
Kolkman, Albert, 5,342,237, Cl. 452-174.000.
Macholdt, Hans-Tobias; Schiebler, Siegfried; Gitzel, Jorg; and Dietz, Erwin, to Hoechst Aktiengesellschaft. Biscationic acid amide and acid imide derivatives as charge controllers. 5,342,723, Cl. 430-110.000.
Mack, Alfred N.; and Tobey, Stephen L., to Corning Incorporated. Method of forming a vessel pouring spout. 5,341,668, Cl. 72-379.400.
MacKenzie, John D.; Xu, Ren; and Xu, Yuhuan, to University of California, The Regents of the. Method for forming amorphous ferroelectric materials. 5,342,648, Cl. 427-126.300.
MacLeod, Carol L., to Research Development Foundation. Oncofetal gene, gene product and uses therefor. 5,342,761, Cl. 435-69.100.
Madden, Martin: *See*—
Brinkerhoff, Ronald J.; Mills, Earl J.; Parkhurst, Harry C.; and Madden, Martin, 5,342,382, Cl. 606-184.000.
Madhow, Upamanyu: *See*—
Honig, Michael L.; and Madhow, Upamanyu, 5,343,496, Cl. 375-1.000.
Madryga, Kathleen A.: *See*—
Kichefski, Conrad M.; Madryga, Mary B.; Madryga, Kurt R.; Struble, Christopher G.; and Madryga, Kathleen A., 5,342,340, Cl. 604-385.100.
Madryga, Kurt R.: *See*—
Kichefski, Conrad M.; Madryga, Mary B.; Madryga, Kurt R.; Struble, Christopher G.; and Madryga, Kathleen A., 5,342,340, Cl. 604-385.100.
Madryga, Mary B.: *See*—
Kichefski, Conrad M.; Madryga, Mary B.; Madryga, Kurt R.; Struble, Christopher G.; and Madryga, Kathleen A., 5,342,340, Cl. 604-385.100.
Maeda, Eiichi, to Ricoh Company, Ltd. Digital video camera. 5,343,243, Cl. 348-222.000.
Maeda, Hirokazu: *See*—
Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, 5,342,641, Cl. 426-549.000.
Maeda, Hiroo: *See*—
Ono, Keiichi; Kai, Yoshiyuki; and Maeda, Hiroo, 5,342,940, Cl. 544-218.000.
Maeda, Hirotoshi: *See*—
Katou, Kouichi; Maeda, Hirotoshi; and Kunimune, Kouichi, 5,342,739, Cl. 430-325.000.
Maeda, Kenji: *See*—
Nakabayashi, Akira; and Maeda, Kenji, 5,343,278, Cl. 355-283.000.
Maeda, Mitsuru, to Canon Kabushiki Kaisha. Method and apparatus for forming synthesized image. 5,343,218, Cl. 345-116.000.
Maeda, Shigemi; Kojima, Kunio; and Akiyama, Jun, to Sharp Kabushiki Kaisha. Data recording/reproducing apparatus of simultaneously performing both reproducing and recording from and in a single recording medium. 5,343,452, Cl. 369-32.000.
Maeda, Yasuaki, to Sony Corporation. Digital audio signal reproducing apparatus. 5,343,456, Cl. 369-59.000.
Maeda, Yasutaka: *See*—
Kazaki, Yuichi; Maeda, Yasutaka; Kawamoto, Hiroshi; Nishimura, Hideyuki; and Nagayama, Katsuhiro, 5,343,282, Cl. 355-326.00R.
Maeta, Hiroshi: *See*—
Hirashima, Isao; Umeki, Tetsuya; Maeta, Hiroshi; and Kohno, Shigefumi, 5,342,085, Cl. 280-728.00B.
Magee, Phillip D.; Eick, Edward C.; and Meisenburg, Gary L., to Brunswick Corporation. Marine drive anode. 5,342,228, Cl. 440-76.000.
Magistro, Angelo J.: *See*—
Dickens, Elmer D., Jr.; Lee, Biing Lin; Taylor, Glenn A.; Magistro, Angelo J.; and Ng, Hendra, 5,342,919, Cl. 528-323.000.
MagneTek Century Electric, Inc.: *See*—
Matani, Madhavsinh A., 5,343,101, Cl. 310-58.000.
Magnetic Separation Engineering, Inc.: *See*—
Hwang, Jiann-Yang, 5,342,483, Cl. 162-5.000.
Magome, Nobutaka: *See*—
Sakakibara, Yasuyuki; Makinouchi, Susumu; Magome, Nobutaka; and Shiraishi, Naomasa, 5,343,270, Cl. 355-53.000.
Mahulikar, Deepak: *See*—
Parthasarathi, Arvind; and Mahulikar, Deepak, 5,343,073, Cl. 257-666.000.
Mains, Gilbert L., Jr. Method and apparatus for material removal. 5,341,608, Cl. 51-320.000.
Maiocchi, Giuseppe, to SGS-Thomson Microelectronics, S.r.l. Start-up procedure for a brush-less, sensorless motor. 5,343,127, Cl. 318-254.000.
Maitan, Gianni: *See*—
Corain, Luciano; Maitan, Gianni; and Bortoli, Giulio, 5,341,852, Cl. 139-448.000.
Majima, Masao: *See*—
Nakamura, Kenji; Majima, Masao; and Yamamoto, Noboru, 5,343,314, Cl. 359-123.000.
Makhlis, Semyon: *See*—
Wyner, Elliot; White, Robert; Makhlis, Semyon; and Davey, Ernest, Jr., 5,343,117, Cl. 313-623.000.
Makinouchi, Susumu: *See*—
Sakakibara, Yasuyuki; Makinouchi, Susumu; Magome, Nobutaka; and Shiraishi, Naomasa, 5,343,270, Cl. 355-53.000.
Makise, Tetsuro: *See*—
Kaminaga, Kozo; Ike, Kazuo; Makise, Tetsuro; Fujiwara, Yoshio; Yamakawa, Kiyoshi; and Sawakata, Kiyoshi, 5,343,334, Cl. 360-38.100.

Makita, Hiroyuki: *See*—
Ohashi, Hideki; Murai, Hisayoshi; and Makita, Hiroyuki, 5,343,370, Cl. 362-61.000.
Makosch, Manfred; and Reichel, Klaus T., to Man Roland Druckmaschinen AG. Safety device at cylinders with a feed gap in web-fed rotary printing machines. 5,341,736, Cl. 101-212.000.
Malikowski, Willi: *See*—
Weise, Wolfgang; Voelcker, Alexander; Kaufmann, Dieter; Malikowski, Willi; Beuers, Joerg; and Krappitz, Harald, 5,341,981, Cl. 228-262.900.
Malin, Richard A.; and Muller, Arno, to Pitney Bowes Inc. Electronic postage meter having microcomputer-controlled motor-printwheel alignment. 5,343,133, Cl. 318-696.000.
Mallinckrodt Medical, Inc.: *See*—
Meeh, Linda; and Cacheris, William P., 5,342,609, Cl. 424-9.000.
Malone, Steven, to Martin Marietta Corporation. Method and apparatus for non-destructive testing of inner lead tab bonds and semiconductor chips. 5,341,685, Cl. 73-827.000.
Maltsev, Viacheslav B.: *See*—
Niedermeyeyr, John F.; Maltsev, Viacheslav B.; and Rogers, Robert L., 5,343,226, Cl. 347-85.000.
MAN Roland Druckmaschinen AG: *See*—
Emrich, Helmut; and Guba, Reinhold, 5,341,738, Cl. 101-232.000.
Hajek, Josef, 5,341,735, Cl. 101-181.000.
Lima-Marques, Luis, 5,342,726, Cl. 430-126.000.
Makosch, Manfred; and Reichel, Klaus T., 5,341,736, Cl. 101-212.000.
Manabe, Haruhiko: *See*—
Suzuki, Fumio; Miwa, Yoshikazu; Kuroda, Takeshi; Kitamura, Shigeto; and Manabe, Haruhiko, 5,342,843, Cl. 514-293.000.
Manabe, Takafumi: *See*—
Tsurutani, Iwao; Manabe, Takafumi; Emoto, Ikuo; Nagayasu, Isao; and Okada, Yoshitaka, 5,342,695, Cl. 428-516.000.
Mandai, Yoshinobu; Nagatomi, Kohji; Minamigawa, Kazuhiko; and Sugihara, Fumihito, to Nitta Gelatin Inc. Biologically compatible hardening material for dental or medical applications. 5,342,441, Cl. 106-35.000.
Mandel, Barry P.; and Van Dongen, Richard A., to Xerox Corporation. Mailbox/compiler architecture. 5,342,034, Cl. 270-53.000.
Manea, Ion; and Hanes, Dallas D. Timed retention conveying apparatus. 5,341,917, Cl. 198-475.100.
Mang, Warren, to Markel Corporation. Fuel system conduit. 5,341,849, Cl. 138-133.000.
Manhole Adjusting Contractors Inc.: *See*—
Corcoran, John; Hower, Joseph W.; and Moseley, William A., 5,342,143, Cl. 404-72.000.
Mann, Stephan: *See*—
Bahner, Frank; and Mann, Stephan, 5,342,099, Cl. 285-93.000.
Mano, Motokazu: *See*—
Kiyomoto, Masayuki; Kajikawa, Akira; Murakado, Toru; Sakurai, Hiroshi; Mano, Motokazu; and Sizume, Kazutika, 5,342,445, Cl. 106-789.000.
Manome, Tadamasa: *See*—
Takemae, Hisao; Manome, Tadamasa; and Kaneko, Keiji, 5,343,263, Cl. 354-82.000.
Manosalva, Edgar G.; Ross, Jeffrey R.; and Goldhardt, Donald J., to Abbott Laboratories. Method for loading a T-shaped tension device into a slotted needle. 5,341,823, Cl. 128-898.000.
Manson, Ronald J.; and Partridge, Charles C., to Tom Wheatley Valve Company. Bonnetless swing check valve. 5,341,840, Cl. 137-527.800.
Maples, John A.; Raynor, Robert H.; Siiman, Olavi; Stiglitz, Melissa J.; and Healy, Stephen F., Jr., to Coulter Corporation. Preserved, non-infectious control cell for use in the identification of a disease through blood testing. 5,342,754, Cl. 435-2.000.
March, Daniel: *See*—
Kejariwal, Murari L.; Thapar, Baldev; Gerez, Victor; and March, Daniel, 5,343,155, Cl. 324-522.000.
Marciandi, Franco: *See*—
Rigamonti, Marco; Marciandi, Franco; and Cesana, Massimo, 5,342,683, Cl. 428-331.000.
Marcuard, Alain, to Thomson-CSF. Satellite radionavigation receiver. 5,343,210, Cl. 342-352.000.
Marelli Autronica: *See*—
Deschamps, Herve , 5,343,157, Cl. 324-678.000.
Margo, Carmelo: *See*—
Santangelo, Antonello; Margo, Carmelo; and Lanza, Paolo, 5,342,793, Cl. 437-25.000.
Marianowski, Leonard G.; and Petri, Randy J., to Institute of Gas Technology. Fully internal manifolded fuel cell stack. 5,342,706, Cl. 429-35.000.
Marine Biotechnology Institute Co., Ltd.: *See*—
Konya, Kazumi; Shimizu, Nobuyoshi; and Miki, Wataru, 5,342,547, Cl. 252-380.000.
Marinescu, Ilie. Combination tool pouch and clip assembly. 5,341,975, Cl. 224-252.000.
Marion, Robert L.: *See*—
Tillman, Dorothy M.; and Marion, Robert L., 5,341,525, Cl. 4-579.000.
Maris, John M. Method of aerodynamic stall-turbulence indication. 5,341,677, Cl. 73-147.000.
Maritec Corp.: *See*—
Girgis, Girgis A., 5,343,404, Cl. 364-484.000.
Mark IV Transportation Products Corporation: *See*—
Reddy, Redreddy S., 5,341,598, Cl. 49-362.000.
Markel Corporation: *See*—
Mang, Warren, 5,341,849, Cl. 138-133.000.
Marker Deutschland GmbH: *See*—
Stepanek, Premek; Wagner, Ludwig; and Schuhbauer, Johannes, 5,342,078, Cl. 280-602.000.
Markfort, Simon P.: *See*—
Mieczkowska, Jola E.; and Markfort, Simon P., 5,342,712, Cl. 429-224.000.
Markgraf, Wilhelm, to Mathias Bauerle GmbH. Turning device for sheets of paper in a feed web. 5,342,040, Cl. 271-251.000.
Markland, Max C., to Joshua Group Ltd. Bumper attachment assembly for lateral movement trainer. 5,342,260, Cl. 482-51.000.
Markowitz, Edward. Inflatable stuffing for footwear. 5,341,532, Cl. 12-114.400.
Marks, James M.: *See*—
Pipich, Charles W.; Fugate, David W.; and Marks, James M., 5,343,179, Cl. 335-167.000.
Marks, Kenneth J.: *See*—
Accardo, Carl A.; and Marks, Kenneth J., 5,341,969, Cl. 222-465.100.
Marlor, Thomas W. Combined storage and exercise-therapy apparatus. 5,341,941, Cl. 211-13.000.
Maroney, James T., III; and Furuyama, Hideto, to Kabushiki Kaisha Toshiba. Semiconductor light-detection device with recombination rates. 5,343,054, Cl. 257-184.000.
Marozzi, John; Rochon, Greg; Patel, Urmil; and Dambly, Ben, to Marozzi, John; Pugh, Theresa; and Batesko, Barbara. Flexographic printing system. 5,341,737, Cl. 101-216.000.
Marquez, Joseph A.: *See*—
Hegde, Vinod R.; Horan, Ann C.; Marquez, Joseph A.; and Patel, Mahesh G., 5,342,852, Cl. 514-461.000.
Mars Incorporated: *See*—
Furneaux, David M., 5,341,908, Cl. 194-317.000.
Marsault, Jean-Jacques; Barbotte, Michel; and Baudel, Jean-Pierre, to Stein Industrie. Device for supporting, on a fixed framework, a mass which is cantilevered out from a moving element. 5,342,016, Cl. 248-610.000.
Marshall, Garland R.; and Toth, Mihaly V., to Washington University. Inhibitors of retroviral protease. 5,342,922, Cl. 530-329.000.
Marshall, Ronald N. Loudspeaker device. 5,343,535, Cl. 381-159.000.
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Lappington, John P.; and Marshall, Susan K., 5,343,239, Cl. 348-12.000.
Marsman, Eric H.; Vlekke, Garardus J. F. M.; Urlings, Leonardus G. C. M.; and Reitsma, Berend A. H., to Tauw Milieu B.V. Method for the treatment of sewage. 5,342,522, Cl. 210-605.000.
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Martin, Bobby R.: *See*—
Dai, Pei-Shing E.; Campbell, Charles N., II; Martin, Bobby R.; and Sherwood, David E., Jr., 5,342,507, Cl. 208-111.000.
Martin, Kathleen M., to Xerox Corporation. Feed roll wear compensation scheme. 5,342,037, Cl. 271-111.000.
Martin Marietta Corporation: *See*—
Chesley, Donald E., 5,343,208, Cl. 342-196.000.
Malone, Steven, 5,341,685, Cl. 73-827.000.
Wiese, Gary E.; Lee, J. Donald; and Newberg, G. Edward, 5,343,040, Cl. 250-252.100.
Martin, Paul: *See*—
Lee, Roger; and Martin, Paul, 5,342,288, Cl. 602-5.000.
Martinez, Rosendo: *See*—
Wan, Shaw P.; and Martinez, Rosendo, 5,342,374, Cl. 606-148.000.
Marusue, Toshihisa: *See*—
Mizobe, Tatsutoshi; Mishima, Hidehiko; Enokido, Kazunori; and Marusue, Toshihisa, 5,342,253, Cl. 475-128.000.
Maruyama, Koichi: *See*—
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,343,332, Cl. 359-837.000.
Maruyama, Noboru. Liquid heating apparatus. 5,341,797, Cl. 126-373.000.
Marvin Lumber and Cedar Co.: *See*—
Heppner, Thomas J., 5,341,600, Cl. 49-471.000.
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Tsutomu, Ono; and Masaaki, Nosaka, 5,341,576, Cl. 34-263.000.
Masai, Katsunori: *See*—
Yamashita, Yuji; Takahashi, Masanobu; Masai, Katsunori; Inenaka, Hiroyuki; Sako, Masahiro; Hashimoto, Yasuhiro; and Tomita, Hideaki, 5,343,276, Cl. 355-202.000.
Masaki, Kazumi: *See*—
Sugimori, Hideo; Masaki, Kazumi; and Matsuda, Osamu, 5,343,122, Cl. 315-209.00R.
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Takei, Mitsuhiko; Yoshida, Toshio; Nagai, Yoshiaki; and Masamizu, Koji, 5,342,532, Cl. 252-45.000.
Maschinenfabrik Alfred Schmermund GmbH & Co.: *See*—
Beckmann, Harald, 5,341,626, Cl. 53-566.000.
Maschinenfabrik Reinartz GmbH & Co. KG: *See*—
Tydiks, B., 5,341,730, Cl. 100-37.000.
Mason, Robert E., IV. Light table for teaching geometric principles. 5,343,369, Cl. 362-33.000.
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Baker, Harold N.; Eng, Katherine K.; Gurner, William D.; Massei, Michael K.; Necklaws: Elizabeth C.; Osikowicz, Eugene W.; Ramp, Sally K.; and Trach, Paula, 5,342,760, Cl. 435-7.920.
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Leonhardt, Barbara A.; DeVilbiss, E. David; and Mastro, Victor C., 5,342,618, Cl. 424-409.000.

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Abe, Masahiko; Iwata, Yasuo; and Masuda, Shoji, 5,341,786, Cl. 123-486.000.

Masuda, Toshihiko: *See*—
Kanai, Takashi; and Masuda, Toshihiko, 5,343,197, Cl. 341-152.000.

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Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, to Fuji Oil Co., Ltd.; and San-Ei Chemical Industries, Ltd. Food additive comprising water-soluble hemicelluloae. 5,342,641, Cl. 426-549.000.

Matani, Madhavsinh A., to MagneTek Century Electric, Inc. Plastic air deflector for rotating dynamoelectric machine. 5,343,101, Cl. 310-58.000.

Materials Research Corporation: *See*—
Foster, Robert F.; and Srinivas, Damodaran, 5,342,652, Cl. 427-253.000.

Mathews, Richard R.: *See*—
Davis, Warren; Wasserman, David; and Mathews, Richard R., 5,342,195, Cl. 433-80.000.

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Markgraf, Wilhelm, 5,342,040, Cl. 271-251.000.

Mathieson, Eian, to Matson Automotive Industries Pty Ltd. Voltage limiting and indicating device. 5,343,135, Cl. 320-2.000.

MATO Maschinen-und Metallwarenfabrik Curt. Matthaei GmbH & Co. KG: *See*—
Herold, Wolfgang, 5,341,545, Cl. 24-33.00P.

Matson Automotive Industries Pty Ltd: *See*—
Mathieson, Eian, 5,343,135, Cl. 320-2.000.

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Sugimori, Hideo; Masaki, Kazumi; and Matsuda, Osamu, 5,343,122, Cl. 315-209.00R.

Matsuda, Yutaka; Moriue, Hiroo; Nobutoki, Yoshikazu; Hirano, Seiji; and Sakamoto, Hiroaki, to Furukawa Electric Co., Ltd., The; and Mazda Motor Corp. Multiplex transmission system. 5,343,475, Cl. 370-94.100.

Matsudai, Tomoko: *See*—
Nakagawa, Akio; Yasuhara, Norio; and Matsudai, Tomoko, 5,343,067, Cl. 257-487.000.

Matsugu, Masakazu: *See*—
Ohwada, Mitsutoshi; Matsugu, Masakazu; Suda, Shigeyuki; Yoshii, Minoru; Niwa, Yukichi; Nose, Noriyuki; Saitoh, Kenji; and Hasegawa, Masanobu, 5,343,291, Cl. 356-356.000.

Matsui, Hisayoshi, to Canon Kabushiki Kaisha. Analog/digital converter with digital automatic gain control. 5,343,200, Cl. 341-139.000.

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Tsutomu, Ono; and Masaaki, Nosaka, 5,341,576, Cl. 34-263.000.

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Matsuura, Hitoshi; and Matsumoto, Eiji, 5,343,402, Cl. 364-474.030.

Matsumoto, Kunio: *See*—
Nakamura, Toshikazu; and Matsumoto, Kunio, 5,342,831, Cl. 514-12.000.

Matsumoto, Mansuke: *See*—
Fujita, Shigeo; Matsumoto, Mansuke; Kumagae, Yojiro; Wada, Sayuri; and Hashimoto, Shuichi, 5,342,967, Cl. 549-226.000.

Matsumoto, Mitsuaki: *See*—
Mori, Kazushi; Matsumoto, Mitsuaki; Toda, Tadao; Nonaka, Hideyuki; and Yamaguchi, Takao, 5,343,484, Cl. 372-22.000.

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Matsumura, Junzo: *See*—
Amano, Yoshinari; Omati, Masahiro; and Matsumura, Junzo, 5,342,573, Cl. 419-38.000.

Matsunaga, Yoshiyuki: *See*—
Sato, Shigehiro; Matsunaga, Yoshiyuki; and Ono, Tsuyoshi, 5,343,021, Cl. 219-541.000.
Yamashita, Hirofumi; and Matsunaga, Yoshiyuki, 5,343,061, Cl. 257-229.000.

Matsuno, Kiyotaka; Kawashima, Masahiro; and Nakada, Akio, to Olympus Optical Co., Ltd. Apparatus for blocking a vein branch and method of blocking a vein branch. 5,342,394, Cl. 606-213.000.

Matsuno, Mitsuo: *See*—
Minami, Masaki; Ikai, Keizo; and Matsuno, Mitsuo, 5,342,982, Cl. 556-431.000.

Matsuo, Hiroyuki: *See*—
Imai, Akihiro; Matsuo, Hiroyuki; Fukui, Yasuo; Mima, Soichiro; and Taguchi, Nobuyoshi, 5,342,818, Cl. 503-227.000.

Matsuo, Ryuichi; Kosugi, Ryuichi; Tsuda, Nobuhiro; and Ishizaki, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having equalization terminated in direct response to a change in word line signal. 5,343,432, Cl. 365-203.000.

Matsuo, Takeshi: *See*—
Nagasawa, Atsushi; Morita, Keiichi; Yamazaki, Masaya; Katagami, Yoshinori; Shinoda, Masaru; Matsuo, Takeshi; and Misawa, Masaru, 5,341,650, Cl. 62-180.000.

Matsura, Yoshinori: *See*—
Igaue, Takamitsu; Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; Sasaki, Tohru; Shimakawa, Taiji; and Yamamoto, Hiroki, 5,342,341, Cl. 604-385.200.

Matsushita Electric Industrial Co., Ltd.: *See*—
Echigo, Fumio; Saida, Masahiro; Mizuno, Naoko N. F.; Hatanaka, Hideo; and Enoki, Yoshio, 5,342,668, Cl. 428-64.000.
Fujii, Koji; Goto, Yasuhiro; Ryudo, Makoto; and Ihara, Hideki, 5,343,011, Cl. 219-109.000.
Imai, Akihiro; Matsuo, Hiroyuki; Fukui, Yasuo; Mima, Soichiro; and Taguchi, Nobuyoshi, 5,342,818, Cl. 503-227.000.
Inoue, Genichiro, 5,343,413, Cl. 364-715.040.
Itoh, Masami; Nishii, Kanji; Kawamura, Hiroyuki; and Fukui, Atsushi, 5,343,415, Cl. 364-725.000.
Kadono, Shinya; Nishino, Masakazu; Juri, Tatsuro; Horikane, Hiroshi; and Hidaka, Iwao, 5,343,501, Cl. 375-94.000.
Kaneko, Akira; Kanno, Toru; and Morishita, Keiko, 5,343,110, Cl. 313-309.000.
Morimoto, Kazuo, 5,343,237, Cl. 348-143.000.
Murata, Shigeki; Isaka, Haruo; Matsuura, Kenji; and Sogabe, Yasushi, 5,343,338, Cl. 360-69.000.
Nakabayashi, Akira; and Maeda, Kenji, 5,343,278, Cl. 355-283.000.
Nishiwaki, Seiji; Asada, Junichi; and Uchida, Shinji, 5,343,038, Cl. 250-234.000.
Watanabe, Katsuya; Shibano, Masayuki; Yamaguchi, Hiroyuki; Edahiro, Yasuaki; and Moriya, Mitsuro, 5,343,454, Cl. 369-44.320.

Matsushita Electric Industrial Co., Ltd: *See*—
Hidese, Wataru, 5,342,460, Cl. 156-64.000.

Matsushita Electric Works, Ltd.: *See*—
Usui, Hiroaki; Hirao, Shozo; Konishi, Satoru; Ishikawa, Hiroyuki; Oonisi, Kenji; and Adachi, Arihiro, 5,342,651, Cl. 427-209.000.

Matsuura, Hitoshi; and Matsumoto, Eiji, to Fanuc Ltd. Non-contact digitizing control unit. 5,343,402, Cl. 364-474.030.

Matsuura, Kenji: *See*—
Murata, Shigeki; Isaka, Haruo; Matsuura, Kenji; and Sogabe, Yasushi, 5,343,338, Cl. 360-69.000.

Matsuura, Yasuhiro: *See*—
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Matthew, Linda C.: *See*—
Cipolla, Thoas M.; Coteus, Paul W.; Damianakis, Ioannis; Johnson, Glen W.; Ledermann, Peter G.; Matthew, Linda C.; and Mok, Lawrence S., 5,343,366, Cl. 361-785.000.

Matthews, Ian R.: *See*—
Clough, John M.; Godfrey, Christopher R. A.; de Fraine, Paul J.; and Matthews, Ian R., 5,342,837, Cl. 514-247.000.

Mattis, John S.: *See*—
McMills, Corey; and Mattis, John S., 5,342,218, Cl. 439-578.000.

Matula, Marcus: *See*—
Alt, Eckhard; Matula, Marcus; and Mestre, Edgar, 5,342,404, Cl. 607-6.000.

Matuschczyk, Uwe: *See*—
Steiner, Karl; and Matuschczyk, Uwe, 5,342,277, Cl. 492-56.000.

Maus, Wolfgang: *See*—
Swars, Helmut; Bruck, Rolf; and Maus, Wolfgang, 5,342,783, Cl. 436-37.000.

Max Frank GmbH & Co KG: *See*—
Penzkofer, Ludwig, 5,341,616, Cl. 52-340.000.

Maxted, Kenneth J.; and Mountford, Neville, to Greater Glasgow Health Board. Scalp cooling device. 5,342,411, Cl. 607-107.000.

May, Richard L.: *See*—
Jones, Lawrence T.; and May, Richard L., 5,342,048, Cl. 273-86.00B.

Mazda Motor Corporation: *See*—
Hideshima, Masao; Michihira, Osamu; Nobutoki, Yoshikazu; and Sone, Akira, 5,343,470, Cl. 370-85.100.
Hirashima, Isao; Umeki, Tetsuya; Maeta, Hiroshi; and Kohno, Shigefumi, 5,342,085, Cl. 280-728.00B.
Matsubara, Taiji; and Yamagata, Naoyuki, 5,342,248, Cl. 474-69.000.
Matsuda, Yutaka; Moriue, Hiroo; Nobutoki, Yoshikazu; Hirano, Seiji; and Sakamoto, Hiroaki, 5,343,475, Cl. 370-94.100.
Michihira, Osamu; Hideshima, Masao; and Sone, Akira, 5,343,472, Cl. 370-85.600.
Mizobe, Tatsutoshi; Mishima, Hidehiko; Enokido, Kazunori; and Marusue, Toshihisa, 5,342,253, Cl. 475-128.000.
Oda, Yoshio, 5,342,087, Cl. 280-728.00R.

Mazziotti, Philip J., to Zeller Corporation, The. High capacity universal joint. 5,342,240, Cl. 464-11.000.

McAtamney, Dennis E., to Nibco, Inc. Pipeline leak detection system. 5,343,191, Cl. 340-605.000.

McBain, Douglas S.; LaJudice, Kevin P.; and Melby, Earl G., to Gen-Corp Inc. Vinyl-terminated polyesters and polycarbonates for flexibilizing and improving the toughness of compositions from unsaturated polyesters and fiber reinforced plastics made from them. 5,342,554, Cl. 523-466.000.

McCabe Brothers, Inc.: *See*—
McCabe, Howard W.; and McCabe, William E., 5,342,149, Cl. 405-269.000.

McCabe, Howard W.; and McCabe, William E., to McCabe Brothers, Inc. Long hole chemical grout injector system. 5,342,149, Cl. 405-269.000.

McCabe, William E.: *See*—
McCabe, Howard W.; and McCabe, William E., 5,342,149, Cl. 405-269.000.

McCall, Gavin F.: *See*—
Palansky, Bruce J.; Greene, Thomas L.; Daubenmier, John A.; Smith, Paul F.; Kock, Karl H.; Bird, Stuart L.; and McCall, Gavin F., 5,341,703, Cl. 477-65.000.

McCall, Samuel L., to AT&T Bell Laboratories. Whispering mode micro-resonator. 5,343,490, Cl. 372-94.000.

McCall, W. Biswell; and Merrill, Gerald L., to McCall, W. Biswell. Rotary internal combustion engine. 5,341,782, Cl. 123-246.000.

McCalmont, Paul E.; Curless, Richard A.; and Loretta, Miles E., Jr., to Cincinnati Milacron Inc. Damped cantilevered support arm assembly. 5,342,017, Cl. 248-632.000.

McCarthy, Edward J. Stormwater control system. 5,342,144, Cl. 405-39.000.

McCarthy, Keith E.: *See*—
Cooper, Gary F.; and McCarthy, Keith E., 5,342,953, Cl. 548-122.000.

McCarthy, Richard C.: *See*—
Jamieson, Eric K.; McCarthy, Richard C.; and Yoo, Young S., 5,343,003, Cl. 187-131.000.

McComb, Darlene D. Protective garment for animal front legs. 5,341,765, Cl. 119-850.000.

McConaughey, Troy: *See*—
Brown, Gene W.; and McConaughey, Troy, 5,342,511, Cl. 210-137.000.

McConnell, Robert R.: *See*—
Hale, Edward L.; Moller, David D.; and McConnell, Robert R., 5,343,382, Cl. 363-98.000.

McDade, Christine; Phadke, Makarand D.; and Weir, William D., to Rohm and Haas Compnay. Distillation process. 5,342,487, Cl. 203-6.000

McDowell, Harvey R., III: *See*—
Nave, Samuel D.; and McDowell, Harvey R., III, 5,343,549, Cl. 385-103.000.

McElroy, James F.: *See*—
Shane, Eric M.; and McElroy, James F., 5,342,494, Cl. 204-252.000.

McGinley, James W.: *See*—
Palecek, Vincent J.; McGinley, James W.; and Schofield, Philip W., 5,343,547, Cl. 375-76.000.

McGrath, Stephen E. Locking join for boxes. 5,341,983, Cl. 229-98.200.

McIntire, Allen J.; and Davis, Geoffrey C., to United Technologies Corporation. Bonding of thermoplastic composite structures to metal structures. 5,342,464, Cl. 156-172.000.

McKean, Dennis R.: *See*—
Vicari, Richard; Gordon, Douglas J.; Hinsberg, William D.; McKean, Dennis R.; Willson, Carlton G.; and Dammel, Ralph, 5,342,727, Cl. 430-157.000.

McLane, John A.: *See*—
Doran, Thomas I.; McLane, John A.; Okabe, Masami; Scalone, Michelangelo; and Uskokovic, Milan R., 5,342,833, Cl. 514-167.000.

McLane Research Laboratories, Inc.: *See*—
Doherty, Kenneth W.; Honjo, Susumu; and Billings, John D., 5,341,834, Cl. 137-599.100.

McLaughlin, Daniel F.: *See*—
Walker, Darryl; and McLaughlin, Daniel F., 5,342,799, Cl. 437-51.000.

McMillan, Kenneth: *See*—
Wilson, David A.; Garlich, Joseph R.; Frank, R. Keith; McMillan, Kenneth; and Simon, Jaime, 5,342,604, Cl. 424-1.650.

McMills, Corey; and Mattis, John S., to Raychem Corporation. Coaxial cable connector with mandrel spacer and method of preparing coaxial cable. 5,342,218, Cl. 439-578.000.

McNeil-PPC, Inc.: *See*—
Sanfilippo, Pauline J.; Urbanski, Maud; Carson, John R.; and Carmosin, Richard J., 5,342,851, Cl. 514-370.000.

McNeill, Marion E.; Rashid, Abdul; and Stevens, Howard N. E., to British Technology Group Ltd. Dispensing device. 5,342,624, Cl. 424-451.000.

McPherson, Richard A.: *See*—
Podlasek, Stanley J.; and McPherson, Richard A., 5,342,755, Cl. 435-7.100.

McQueen, Al: *See*—
Posner, Mark A.; and McQueen, Al, 5,342,518, Cl. 210-232.000.

McReady, Robert W.: *See*—
Cordia, Joseph R.; Dalrymple, Bruce H.; Hennig, William G.; McReady, Robert W.; and Metraw, John J., 5,341,915, Cl. 198-460.000.

McRoberts, T. Michael: *See*—
Helmsderfer, John A.; and McRoberts, T. Michael, 5,341,830, Cl. 137-15.000.

MDT Corporation: *See*—
Hanson, Richard W., 5,342,097, Cl. 285-25.000.

Mead Fluid Dynamics, Inc.: *See*—
Framberg, Norman S., 5,341,846, Cl. 137-884.000.

Meaney, John D., to Echlin, Inc. Fuel delivery system for internal combustion engines. 5,341,785, Cl. 123-452.000.

Medeksza, Ludwik A. Method and apparatus for forming intermittent chips while machining holes with a rotating tool. 5,342,152, Cl. 408-1.00R.

Medical Polymers,Inc.: *See*—
Gold, Marvin H., 5,342,617, Cl. 424-405.000.

Medtronic, Inc.: *See*—
Fogt, Eric J.; Kelley, James F.; Kerns, Ralph M.; Duffy, Timothy J.; and Draska, David J., 5,341,804, Cl. 128-633.000.
Mehra, Rahul, 5,342,414, Cl. 607-127.000.
Mullett, Keith R., 5,342,409, Cl. 607-46.000.
Olson, Walter H.; and Peterson, David K., 5,342,402, Cl. 607-5.000.
Thompson, David L., 5,342,406, Cl. 607-22.000.

Medved, Gary E., to Milbar Corporation. Cartridge bias assembly for dispensing device. 5,341,964, Cl. 222-327.000.

Meeh, Linda; and Cacheris, William P., to Mallinckrodt Medical, Inc. Microfluidization of calcium/oxyanion-containing particles. 5,342,609, Cl. 424-9.000.

Mehaffey, David E.: *See*—
Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., 5,341,680, Cl. 73-379.060.

Mehra, Rahul, to Medtronic, Inc. Transvenous defibrillation lead. 5,342,414, Cl. 607-127.000.

Mehta, Ashok D.: *See*—
Kay, Stanley E.; Farmer, George D.; Bhatia, Hans; Mehta, Ashok D.; Kain, Christopher J.; and Sampson, Nicholas P., 5,343,513, Cl. 379-59.000.

Meier, Jacques, to Ferag AG. Apparatus for wire-stapling multi-component printed products. 5,342,032, Cl. 270-37.000.

Meinzer, Armin: *See*—
Hauer, Birgit; Meinzer, Armin; Posanski, Ulrich; and Richter, Friedrich, 5,342,625, Cl. 424-455.000.

Meirana, Giovanni, to MKM S.R.L. Method and apparatus for welding of plastic pipe elements. 5,342,470, Cl. 156-304.200.

Meirowitz, Randy E.; Padmanabhan, Sriram; Phelan, Robert J.; and Tang, Kim T., to Kimberly-Clark Corporation. Absorbent structure for masking and distributing a liquid. 5,342,336, Cl. 604-378.000.

Meisenburg, Gary L.: *See*—
Magee, Phillip D.; Eick, Edward C.; and Meisenburg, Gary L., 5,342,228, Cl. 440-76.000.

Meito Corporation: *See*—
Hirano, Hideo, 5,342,192, Cl. 431-284.000.

Melber, George E.; Wolinski, Leon E.; and Oswald, William A., to Pierce & Stevens Corporation. Thermoplastic microspheres. 5,342,689, Cl. 428-402.220.

Melby, Earl G.: *See*—
McBain, Douglas S.; LaJudice, Kevin P.; and Melby, Earl G., 5,342,554, Cl. 523-466.000.

Meltzer, Aaron D.: *See*—
Kumpf, Robert J.; Meltzer, Aaron D.; and Pielartzik, Harald, 5,342,905, Cl. 525-534.000.

Melzer, Gerhard M.: *See*—
Schafer, Karl K.; Melzer, Gerhard M.; Scriba, Jorg; Bhagwat, Suda G.; and Eisses, James, 5,342,566, Cl. 264-102.000.

Memorial Sloan-Kettering Cancer Center: *See*—
Garin-Chesa, Pilar; Rettig, Wolfgang J.; and Old, Lloyd J., 5,342,757, Cl. 435-7.210.

Mendiratta, Sudhir K.: *See*—
Cawlfield, David W.; and Mendiratta, Sudhir K., 5,342,601, Cl. 423-478.000.

Mentech, Julio: *See*—
Burzio, Fulvio; Beck, Roland; and Mentech, Julio, 5,342,542, Cl. 252-186.390.

Mercedes-Benz AG: *See*—
Zimmer, Richard; Gautsch, Wolfgang; Muller, Armin; and Freitag, Rainer, 5,342,120, Cl. 303-113.200.

Merck & Co., Inc.: *See*—
Beattie, Thomas R.; Wyvratt, Matthew J.; and Dumont, Francis J., 5,342,935, Cl. 540-456.000.
DiNinno, Frank; Schmitt, Susan M.; and Guthikonda, Ravindra N., 5,342,933, Cl. 540-302.000.
Winston, Philip E., Jr.; Miskiel, Frank J.; and Valli, Raymond C., 5,342,626, Cl. 424-461.000.

Mercolino, Thomas J.: *See*—
Levine, Robert A.; Wardlaw, Stephen C.; Terstappen, Leon W. M. M.; Mercolino, Thomas J.; and Recktenwald, Diether J., 5,342,790, Cl. 436-523.000.

Mercurio, Carlo V., to Valeo Engine Cooling Inc. Heat exchanger and manifold therefor, and method of assembly thereof. 5,341,872, Cl. 165-173.000.

Merewether, Ray, to Rowe, Deines Instruments, Inc. Broadband acoustic transducer. 5,343,443, Cl. 367-152.000.

Merigaud, Bernard; and Claus, Michel, to Degussa Aktiengesellschaft. Zinc-containing, lead- and cadmium-free glass frits, method of their production and their use. 5,342,810, Cl. 501-26.000.

Merrick, Bruce C., to Dant Corporation. Stadium chair seating system. 5,342,110, Cl. 297-232.000.

Merrill, Gerald L.: *See*—
McCall, W. Biswell; and Merrill, Gerald L., 5,341,782, Cl. 123-246.000.

Merryweather, James P.: *See*—
Cousens, Lawrence S.; Tekamp-Olson, Patricia A.; Shuster, Jeffrey R.; and Merryweather, James P., 5,342,921, Cl. 530-324.000.

Merten, Gerhard: *See*—
Paschedag, Ulrich; and Merten, Gerhard, 5,343,130, Cl. 318-434.000.

Mertzel, Elaine A.: *See*—
Sullivan, Francis R.; Mertzel, Elaine A.; and Kolycheck, Edmond G., 5,342,889, Cl. 525-127.000.

Merving, Hans. Tree treatment capsule with volumes for sequentially discharging fluid. 5,341,594, Cl. 47-57.500.

Merz, Peter W.; Zabel, Lutz; and Fischer, Christian, to Sika AG, vorm. Kaspar Winkler & Co. Reactive hot-melt adhesive. 5,342,873, Cl. 524-425.000.

VOL 1165 ISS 5 AG 30 1994 UMI

VOL 1165 ISS 5 AG 30 1994 UMI

Merz, Scott I.: *See*—
Montoya, Jean P.; Merz, Scott I.; and Bartlett, Robert H., 5,342,182, Cl. 417-477.00R.

Mesacon Gesellschaft fur Mebtechnik mbH: *See*—
Gondrum, Uwe; Futterer, Martin; Milbradt, Frank; and Grebe, Volker, 5,343,285, Cl. 356-28.500.

MESC Electronic Systems, Inc.: *See*—
Balodis, Miroslaw; and Zamat, Hassan, 5,343,173, Cl. 333-126.000.

Mestre, Edgar: *See*—
Alt, Eckhard; Matula, Marcus; and Mestre, Edgar, 5,342,404, Cl. 607-6.000.

Metraw, John J.: *See*—
Cordia, Joseph R.; Dalrymple, Bruce H.; Hennig, William G.; McReady, Robert W.; and Metraw, John J., 5,341,915, Cl. 198-460.000.

Metro, John G.; and Galipeau, Denis P., to Cherry Semiconductor Corporation. Transistor overcurrent protection circuit. 5,343,141, Cl. 323-288.000.

Metrologic Instruments, Inc.: *See*—
Knowles, Carl H.; and Kolis, George, 5,343,027, Cl. 235-462.000.

Mettler-Toledo, Inc.: *See*—
Griffen, Neil C.; and Million, James F., 5,343,000, Cl. 177-145.000.

Meyer, Marion: *See*—
Sterzel, Hans-Josef; and Meyer, Marion, 5,342,561, Cl. 264-49.000.

Meyer, Max F., Jr.: *See*—
Vanderbilt, Jeffrey J.; and Meyer, Max F., Jr., 5,342,892, Cl. 525-168.000.

Meyer, Norbert: *See*—
Rueb, Lothar; Eicken, Karl; Plath, Peter; Schwalge, Barbara; Westphalen, Karl-Otto; Wuerzer, Bruno; and Meyer, Norbert, 5,342,824, Cl. 504-221.000.

Meyers, Paul S.: *See*—
Kucera, Dennis W.; and Meyers, Paul S., 5,343,405, Cl. 364-486.000.

Micetich, Ronald G.: *See*—
Singh, Rajeshwar; Fathi-Afshar, Rakhshandeh; Singh, Inder P.; Thomas, George; Doerksen, Thomas R.; Singh, Maya P.; and Micetich, Ronald G., 5,342,846, Cl. 514-312.000.

Michael, Daniel W., to Procter & Gamble Company, The. Hard surface liquid detergent compositions containing hydrocarbyl-amidoalkylenebetaine. 5,342,549, Cl. 252-546.000.

Michaels, Mary B.; Robinson, Janine C.; Claude, John P.; and Alden, Donald L., to Advanced Cardiovascular Systems, Inc. Automated fluid pressure control system. 5,342,298, Cl. 604-65.000.

Michelson, Yigal. Hydraulic pruning tool. 5,341,572, Cl. 30-228.000.

Michihira, Osamu; Hideshima, Masao; and Sone, Akira, to Mazda Motor Corporation. Multiplex transmission system for use in vehicles. 5,343,472, Cl. 370-85.600.

Michihira, Osamu: *See*—
Hideshima, Masao; Michihira, Osamu; Nobutoki, Yoshikazu; and Sone, Akira, 5,343,470, Cl. 370-85.100.

Michon, Gerald J.: *See*—
Tiemann, Jerome J.; Michon, Gerald J.; and Tomlinson, Harold W., Jr., 5,343,297, Cl. 348-301.000.

Micro Precision Instrument Company: *See*—
Giraud, Clarence E.; and Koepnick, Russell G., 5,342,378, Cl. 606-166.000.

Microcomputer Technical Services Limited: *See*—
Lee, Robert I., 5,343,559, Cl. 395-425.000.

Micron Display Technology, Inc.: *See*—
Cathey, David A., 5,342,477, Cl. 156-643.000.

Micron Technology, Inc.: *See*—
Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., 5,342,807, Cl. 437-209.000.

Midland Manufacturing Corp.: *See*—
Dean, Robert H., 5,342,026, Cl. 251-85.000.

Midwest Research Institute: *See*—
Olson, Jerry M., 5,342,453, Cl. 136-262.000.

Mieczkowska, Jola E.; and Markfort, Simon P., to Duracell Inc. Additives for primary electrochemical cells having manganese dioxide cathodes. 5,342,712, Cl. 429-224.000.

Mifune, Hiroyuki: *See*—
Sasaki, Hirotomo; Fujimori, Toru; Mifune, Hiroyuki; and Morimura, Kimiyasu, 5,342,750, Cl. 430-603.000.

Migachyov, Valery: *See*—
Campbell, Robert E.; Kulisz, Andre A.; and Migachyov, Valery, 5,342,313, Cl. 604-153.000.

Mikami, Seishin: *See*—
Utsu, Junsi; Mikami, Seishin; and Kodera, Masao, 5,343,172, Cl. 333-32.000.

Mikhail, W. E. Michael. Patellar implant stem trimmer. 5,342,364, Cl. 606-79.000.

Miki, Hiroshi; Ohji, Yuzuru; Tachi, Shinichi; and Kanehori, Keiichi, to Hitachi, Ltd. Semiconductor device and process of producing the same. 5,343,353, Cl. 361-322.000.

Miki, Wataru: *See*—
Konya, Kazumi; Shimizu, Nobuyoshi; and Miki, Wataru, 5,342,547, Cl. 252-380.000.

Mikolajczak, Marcia J.: *See*—
Thorne, Linda P.; Armentrout, Richard W.; Pollock, Thomas J.; and Mikolajczak, Marcia J., 5,342,773, Cl. 435-200.000.

Mikrosa Technologie A.G.: *See*—
Eidenbenz, Stefan; and Nowak, Claude, 5,342,696, Cl. 428-542.800.

Milbar Corporation: *See*—
Medved, Gary E., 5,341,964, Cl. 222-327.000.

Milbradt, Frank: *See*—
Gondrum, Uwe; Futterer, Martin; Milbradt, Frank; and Grebe, Volker, 5,343,285, Cl. 356-28.500.

Milchuck, Frank A.: *See*—
Brown, Charles R.; Robertson, Robert J.; Buckley, Dandridge W., Jr.; and Milchuck, Frank A., 5,341,551, Cl. 29-40.000.

Milenkevich, Joseph A.: *See*—
Prosise, Robert L.; Widenhouse, Christopher W.; Wnuk, Andrew J.; Bunke, Paul R.; and Milenkevich, Joseph A., 5,343,024, Cl. 219-730.000.

Miles Inc.: *See*—
Kumpf, Robert J.; Meltzer, Aaron D.; and Pielartzik, Harald, 5,342,905, Cl. 525-534.000.
Lucarelli, Michael A.; Keegan, Richard E.; Koshute, Mark A.; Freitag, Hans-Albrecht; and Avar, Geza, 5,342,855, Cl. 521-50.000.

Miles, Mark R. Ramp and endgate for pickup truck. 5,342,105, Cl. 296-61.000.

Millar, Douglas J.: *See*—
Yatrou, Paul M.; and Millar, Douglas J., 5,343,522, Cl. 379-410.000.

Miller, Alan G.: *See*—
Kitchin, Jonathon P.; Miller, Alan G.; Ali, Mahfuza B.; and Farooq, Omar, 5,342,688, Cl. 428-402.000.

Miller, Douglas R.; Wiener, Timothy J.; and Collins, Gregory J., to Rollerblade, Inc. In-line skate with molded joe box. 5,342,070, Cl. 280-11.220.

Miller Electric Mfg. Co.: *See*—
Geissler, Steven J., 5,343,023, Cl. 219-661.000.

Miller, Gregory D.: *See*—
Lynn, Mark A.; and Miller, Gregory D., 5,343,323, Cl. 359-180.000.

Miller, Mark M.: *See*—
Plotkin, Jeffrey S.; and Miller, Mark M., 5,342,860, Cl. 522-31.000.

Miller, Robert H., Jr.: *See*—
Heikes, Craig A.; and Miller, Robert H., Jr., 5,343,096, Cl. 307-480.000.

Miller, William R., to Welch Allyn, Inc. Thermally neutral portable power sources. 5,343,368, Cl. 362-32.000.

Million, James F.: *See*—
Griffen, Neil C.; and Million, James F., 5,343,000, Cl. 177-145.000.

Mills, Earl J.: *See*—
Brinkerhoff, Ronald J.; Mills, Earl J.; Parkhurst, Harry C.; and Madden, Martin, 5,342,382, Cl. 606-184.000.

Mills, Rex R.: *See*—
Beck, Scott A.; Mills, Rex R.; and Waterman, Timothy J., 5,341,796, Cl. 126-110.00R.

Milton Industries, Inc.: *See*—
Repisky, Milan; and Tur, Anton, 5,342,236, Cl. 452-149.000.

Milwaukee Electric Tool Corporation: *See*—
Klemm, Robert W., 5,341,704, Cl. 81-429.000.

Mima, Soichiro: *See*—
Imai, Akihiro; Matsuo, Hiroyuki; Fukui, Yasuo; Mima, Soichiro; and Taguchi, Nobuyoshi, 5,342,818, Cl. 503-227.000.

Mimura, Tetsuya: *See*—
Imai, Hiroshi; Murakami, Tadashi; Mimura, Tetsuya; Yamamoto, Masao; Kosumi, Yuji; Asai, Masashi; and Aoki, Yasunori, 5,343,072, Cl. 257-666.000.

Minami, Masaki; Ikai, Keizo; and Matsuno, Mitsuo, to Nippon Oil Company, Limited. Silicon-containing organic compounds and process for preparing same. 5,342,982, Cl. 556-431.000.

Minamigawa, Kazuhiko: *See*—
Mandai, Yoshinobu; Nagatomi, Kohji; Minamigawa, Kazuhiko; and Sugihara, Fumihito, 5,342,441, Cl. 106-35.000.

Miner, Philip E.; and Rose, Walter, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Nail polish remover with gelatin. 5,342,536, Cl. 252-162.000.

Minh, Nguyen Q.; and Armstrong, Timothy R., to Allied-Signal, Inc. Monolithic fuel cell having a multilayer interconnect. 5,342,705, Cl. 429-32.000.

Minnesota Mining and Manufacturing Company: *See*—
Boyd, Gary T.; Lee, Tzu-Chen; Sventek, Bruce A.; Cross, Elisa M.; and Weller-Brophy, Laura A., 5,343,544, Cl. 385-46.000.
Carpenter, Theresa L.; Sipinen, Alan J.; and Bany, Stephen W., 5,342,339, Cl. 604-385.100.
Eisele, John F.; Smith, Terrance P.; and Palazzotto, Michael C., 5,342,645, Cl. 42.7-1.000.
Gobran, Ramsis, 5,342,685, Cl. 428-355.000.
Gorsuch, Jan; Ennis, Mark R.; and Burgess, Robert M., 5,341,609, Cl. 51-399.000.
Hibbard, Louis D., 5,342,419, Cl. 51-308.000.
Kitchin, Jonathon P.; Miller, Alan G.; Ali, Mahfuza B.; and Farooq, Omar, 5,342,688, Cl. 428-402.000.
Kobayashi, Masahiko, 5,342,213, Cl. 439-268.000.
Scholz, Matthew T.; Delmore, Michael D.; and Davis, Daniel W., 5,342,291, Cl. 602-41.000.
Tsakanikas, Peter D.; and Osborne, Joseph M., 5,342,589, Cl. 423-53.000.
Vogelgesang, Peter J.; and Wirth, Wayne M., 5,342,682, Cl. 428-325.000.
Zwadlo, Gregory L.; and Krech, Roger L., 5,342,720, Cl. 430-66.000.

Minobe, Satoshi: *See*—
Tosa, Tetsuya; Sato, Tadashi; Watanabe, Taizo; and Minobe, Satoshi, 5,342,785, Cl. 436-178.000.

Minolta Camera Kabushiki Kaisha: *See*—
Fukui, Kazuyuki; and Yamada, Takanobu, 5,343,235, Cl. 346-160.000.

Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Mintel, Thomas E.: *See*—
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,341,537, Cl. 15-167.100.

Mira Lanza S.p.A.: *See*—
Berveglieri, Fabrizio, 5,341,660, Cl. 68-17.00R.

Mirai Industries Co., Ltd.: *See*—
Shimizu, Shohachi, 5,341,614, Cl. 52-220.100.

Mireles, Jesus A.: *See*—
Cowles, Christopher S.; Leveille, Jacques P.; Hatchell, Paul J.; Mireles, Jesus A.; and Clifton, Robert D., 5,343,001, Cl. 181-102.000.

Miremadi, Bijan K.; Singh, Ravi C.; Morrison, Stanley R.; and Colbow, Konrad, to 410261 B.C. Ltd. Transition metal oxide films and gas sensors thereof. 5,342,701, Cl. 428-701.000.

Misawa, Masaru: *See*—
Nagasawa, Atsushi; Morita, Keiichi; Yamazaki, Masaya; Katagami, Yoshinori; Shinoda, Masaru; Matsuo, Takeshi; and Misawa, Masaru, 5,341,650, Cl. 62-180.000.

Mishima, Hidehiko: *See*—
Mizobe, Tatsutoshi; Mishima, Hidehiko; Enokido, Kazunori; and Marusue, Toshihisa, 5,342,253, Cl. 475-128.000.

Miskiel, Frank J.: *See*—
Winston, Philip E., Jr.; Miskiel, Frank J.; and Valli, Raymond C., 5,342,626, Cl. 424-461.000.

Misuzawa Industrial Chemicals, Ltd.: *See*—
Abe, Kiyoshi; Suzuki, Kazuhiko; Ogawa, Hiroshi; and Kikuchi, Masaichi, 5,342,876, Cl. 524-493.000.

Mita Industrial Co., Ltd.: *See*—
Yamashita, Yuji; Takahashi, Masanobu; Masai, Katsunori; Inenaka, Hiroyuki; Sako, Masahiro; Hashimoto, Yasuhiro; and Tomita, Hideaki, 5,343,276, Cl. 355-202.000.

Mitab Montage & Industriteknik AB: *See*—
Ericsson, Folke C. G., 5,341,991, Cl. 239-8.000.

Mitani, Yasushi, to Fuji Photo Film Co., Ltd. Method for detecting positions of consecutive bits set to predetermined codes. 5,343,540, Cl. 382-56.000.

Mitsubishi Aluminum Co., Ltd.: *See*—
Inamura, Akira; Kaneko, Masafumi; and Hasegawa, Nobuyuki, 5,342,189, Cl. 425-461.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Inanaga, Kazuhiko; Ota, Hitoshi; Yamauchi, Shiro; and Kawabata, Takashi, 5,342,500, Cl. 204-421.000.
Ishikawa, Takayoshi, 5,343,355, Cl. 361-617.000.
Isozumi, Shuzo, 5,341,697, Cl. 74-7.00A.
Kanagawa, Yuji; Nagasawa, Masato; Yokoyama, Eiji; Nakatsu, Kimihide; and Miyago, Toshiharu, 5,343,342, Cl. 360-77.160.
Kondo, Yasuo; Beppu, Yukiharu; and Tagawa, Kazuo, 5,342,533, Cl. 252-68.000.
Matsuo, Ryuichi; Kosugi, Ryuichi; Tsuda, Nobuhiro; and Ishizaki, Osamu, 5,343,432, Cl. 365-203.000.
Nakayama, Akio; and Hirayama, Kazutoshi, 5,343,429, Cl. 365-200.000.
Noguchi, Kenji, 5,343,434, Cl. 365-218.000.
Ohtsuka, Takahiro; and Shirota, Shozo, 5,343,431, Cl. 365-201.000.
Oshita, Fumiyo, 5,343,306, Cl. 358-441.000.
Sakabe, Shigekazu; and Kitamura, Yutaka, 5,343,105, Cl. 310-179.000.
Sanemitsu, Yoshikado, 5,343,030, Cl. 235-492.000.
Shichinohe, Daisuke, 5,343,099, Cl. 307-571.000.
Shimada, Uji; and Que, Tatuya, 5,343,183, Cl. 335-301.000.
Wada, Shunichi; Hara, Tadayuki; Naito, Yasuo; Kohge, Shinichi; and Nishino, Kazuhisa, 5,341,891, Cl. 180-79.100.
Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,343,051, Cl. 257-66.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Ota, Takeshi; Arii, Mitsuzo; Hirata, Masukazu; and Kawabata, Yasunari, 5,343,545, Cl. 385-46.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Katou, Naoyoshi; Tamiya, Seiki; and Takahara, Masateru, 5,341,620, Cl. 53-287.000.
Okamoto, Arifumi; and Shibayama, Ikuo, 5,341,713, Cl. 83-865.000.

Mitsubishi Kasei Corporation: *See*—
Hashimoto, Iori; Numata, Motoki; Nishizawa, Jun; and Kamada, Tomiyuki, 5,341,577, Cl. 34-493.000.

Mitsubishi Oil Co., Ltd.: *See*—
Kondo, Yasuo; Beppu, Yukiharu; and Tagawa, Kazuo, 5,342,533, Cl. 252-68.000.

Mitsubishi Paper Mills Limited: *See*—
Yamada, Jun; and Shinohara, Seiji, 5,342,784, Cl. 430-49.000.

Mitsubishi Rayon Company Ltd.: *See*—
Ito, Hirokazu; Itoh, Masahiro; Inagaki, Motoshi; Takahiro, Syuji; and Yoshida, Keiji, 5,342,722, Cl. 430-109.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Katayama, Shigeru; Tominaga, Kaoru; and Yoshitake, Junichi, 5,343,076, Cl. 257-717.000.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Ohyama, Tsukasa; Kuroda, Shizuo; Takuma, Keisuke; and Aiga, Hiroshi, 5,342,974, Cl. 552-259.000.

Miura, Tetsuo: *See*—
Murata, Susumu; Sano, Masako; Takeuchi, Yasuo; Fujihara, Masayuki; Yokoo, Hisahiko; Nakanishi, Kenjiro; Miura, Tetsuo; and Shimizu, Yoshio, 5,342,634, Cl. 426-113.000.

Miura, Yasushi; and Aoki, Kongo, to Aisin Seiki Kabushiki Kaisha. Valve operation control system. 5,341,777, Cl. 123-90.170.

Miura, Yasushi: *See*—
Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, 5,343,227, Cl. 349-42.000.

Miwa, Toru; Yamasaki, Yasuyuki; and Yamagishi, Akihiko, to Sony Corporation. Cathode ray tube and degaussing coil employed therein. 5,343,111, Cl. 313-313.000.

Miwa, Yoshikazu: *See*—
Suzuki, Fumio; Miwa, Yoshikazu; Kuroda, Takeshi; Kitamura, Shigeto; and Manabe, Haruhiko, 5,342,843, Cl. 514-293.000.

Miyago, Toshiharu: *See*—
Kanagawa, Yuji; Nagasawa, Masato; Yokoyama, Eiji; Nakatsu, Kimihide; and Miyago, Toshiharu, 5,343,342, Cl. 360-77.160.

Miyake, Takahiro: *See*—
Miyake, Tomoyuki; Katayama, Hiroyuki; Nakayama, Junichiro; Miyake, Takahiro; Ohta, Kenji; and Kobayashi, Shozo, 5,343,448, Cl. 369-13.000.

Miyake, Tomoyuki; Katayama, Hiroyuki; Nakayama, Junichiro; Miyake, Takahiro; Ohta, Kenji; and Kobayashi, Shozo, to Sharp Kabushiki Kaisha. External magnetic field device for a magnetooptical information recording and reproducing apparatus. 5,343,448, Cl. 369-13.000.

Miyamae, Masatoshi: *See*—
Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, 5,342,641, Cl. 426-549.000.

Miyamoto, Tetuzi: *See*—
Honda, Minoru; Iwasa, Masanobu; Miyamoto, Tetuzi; Ikeda, Koji; and Kikuchi, Toshihiro, 5,342,346, Cl. 604-413.000.

Miyasaka, Tadashi, to Fuji Electric Co., Ltd. Snubber circuit for a power semiconductor device. 5,343,098, Cl. 307-570.000.

Miyase, Yoshiyuki: *See*—
Ogino, Akihiko; Miyase, Yoshiyuki; Sakou, Shuuzi; and Shibata, Shinzi, 5,343,014, Cl. 219-121.640.

Miyashita, Akira, to Tosoh Corporation. Catalyst for polymerizing aromatic vinyl compound and process for producing polymer of aromatic vinyl compound. 5,342,813, Cl. 502-117.000.

Miyata, Kazutomo, to Nikon Corporation. Over-write capable magnetooptical recording medium having reading layer. 5,343,449, Cl. 369-13.000.

Miyazaki, Seizo: *See*—
Takamizawa, Toru; and Miyazaki, Seizo, 5,341,569, Cl. 29-898.090.

Miyazaki, Toshihiko; Sakai, Kunihiro; Nose, Hiroyasu; Kishi, Etsuro; and Kuroda, Ryo, to Canon Kabushiki Kaisha. Information processing device and information processing method. 5,343,460, Cl. 369-126.000.

Miyazaki, Toshimasa: *See*—
Katoh, Hiroaki; Miyazaki, Toshimasa; Takahashi, Tamotsu; Ishii, Takeshi; Oyama, Yoshihiro; Oyama, Yoshihiro; and Sasaki, Tatsuo, 5,343,029, Cl. 235-467.000.

Miyazaki, Yoshihiro: *See*—
Araoka, Manabu; Takahashi, Ysohiaki; Shikama, Atsushi; Miyazaki, Yoshihiro; Nakamura, Tomoaki; and Sakata, Masayuki, 5,343,009, Cl. 200-322.000.

Miyazawa, Azuma; Suzuki, Takashi; and Mizobuchi, Kozi, to Olympus Optical Co., Ltd. Digital fuzzy inference system using logic circuits. 5,343,553, Cl. 395-3.000.

Miyazawa, Osamu; Furukawa, Tsuneaki; and Kitahara, Jouji, to Seiko Epson Corporation. Ultrasonic step motor. 5,343,108, Cl. 310-323.000.

Miyoshi, Masanobu; Kajiwara, Makoto; and Onodera, Makoto, to Konica Corporation. Color photographic light-sensitive material for printing use. 5,342,748, Cl. 430-558.000.

Mizobe, Tatsutoshi; Mishima, Hidehiko; Enokido, Kazunori; and Marusue, Toshihisa, to Mazda Motor Corporation. Automatic transmission control system. 5,342,253, Cl. 475-128.000.

Mizobuchi, Kozi: *See*—
Miyazawa, Azuma; Suzuki, Takashi; and Mizobuchi, Kozi, 5,343,553, Cl. 395-3.000.

Mizumoto, Hideaki: *See*—
Suzuki, Fumio; Shimada, Junichi; Karasawa, Akira; Mizumoto, Hideaki; Kase, Hiroshi; and Nonaka, Hiromi, 5,342,841, Cl. 514-263.000.

Mizumura, Michinobu: *See*—
Hamamura, Yuuichi; Haraichi, Satoshi; Shimase, Akira; Azuma, Junzou; Itoh, Fumikazu; Yamada, Toshio; Koizumi, Yasuhiro; and Mizumura, Michinobu, 5,342,448, Cl. 118-723.0FI.

Mizuno, Hiroshi: *See*—
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Mizuno, Katsuo. Pipe conveyor. 5,341,919, Cl. 198-716.000.

Mizuno, Naoko N. F.: *See*—
Echigo, Fumio; Saida, Masahiro; Mizuno, Naoko N. F.; Hatanaka, Hideo; and Enoki, Yoshio, 5,342,668, Cl. 428-64.000.

Mizuno, Takao; and Fujiyama, Michihiro, to Sanyo Electric Co., Ltd. On-screen display apparatus. 5,343,307, Cl. 358-444.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Mizuno, Yoshio: *See—*
Nishima, Ryo; Kinjo, Hisao; Mizuno, Yoshio; Shudo, Katsuyuki; and Kawase, Shigeru, 5,343,348, Cl. 360-109.000.

Mizutani, Tomoji: *See—*
Shoda, Akihiko; Usui, Yoshinobu; and Mizutani, Tomoji, 5,343,193, Cl. 340-825.790.

MKM S.R.L.: *See—*
Meirana, Giovanni, 5,342,470, Cl. 156-304.200.

Mobil Oil Corporation: *See—*
Burns, James L.; Dicus, Bryan J.; Jasti, Jayanthi K.; Kendall, Jerry J.; Olmos, Jose L.; and Zambrano, Luis G., 5,341,876, Cl. 166-263.000.
Hikes, Dale J., 5,341,900, Cl. 184-6.120.

Mochizuki, Hideharu: *See—*
Shirai, Katutada; Mochizuki, Hideharu; and Tsukamoto, Hironori, 5,343,372, Cl. 362-66.000.

Mochizuki, Ryo: *See—*
Iwase, Masanori; Fujiwara, Ryuji; and Mochizuki, Ryo, 5,342,489, Cl. 204-153.180.

Mockl, Thomas, to Siemens Aktiengesellschaft. Ultrasonic transducer for measuring the travel time of ultrasonic pulses in a gas. 5,343,109, Cl. 310-334.000.

Modern Metal Products, Inc.: *See—*
Tame, Omar; and Franks, John, 5,342,103, Cl. 292-341.170.

Modine Manufacturing Company: *See—*
Hughes, Gregory G.; Guntly, Leon A.; Welker, John B.; Hill, David; Rogers, C. James; Henkes, Jerome P.; and Reinke, Michael J., 5,341,870, Cl. 165-110.000.

Moffett, Gary L., to Thrustmaster, Inc. Panel mount switch assembly. 5,343,006, Cl. 200-296.000.

Moguel, Guillermo: *See—*
Valenzuela, Ulises M.; and Moguel, Guillermo, 5,341,938, Cl. 209-164.000.

Mohan, Arthur G.; and D'Antuono, Joseph, III, to American Cyanamid Company. Process for the preparation of 2-alkyl-3,5,6,7- or 8-substituted-4(3H)-quinazolinones. 5,342,944, Cl. 544-284.000.

Mohan, Ned; Peterson, Maximilian R.; and Quinn, Conor A., to University of Minnesota, Regents of the. Standby power supply with load-current harmonics neutralizer. 5,343,079, Cl. 307-105.000.

Mohara, Masayuki; and Kitajima, Takahiro, to Sanyo Electric Co., Ltd. Parts feeder. 5,342,474, Cl. 156-584.000.

Moini, Mojtaba: *See—*
Hans, Helmut; and Moini, Mojtaba, 5,343,129, Cl. 318-431.000.

Mok, Lawrence S.: *See—*
Cipolla, Thoas M.; Coteus, Paul W.; Damianakis, Ioannis; Johnson, Glen W.; Ledermann, Peter G.; Matthew, Linda C.; and Mok, Lawrence S., 5,343,366, Cl. 361-785.000.

Mok, Winston K. C.: *See—*
Penner, Gordon A.; Mok, Winston K. C.; Lang, Steven F.; and Huscroft, Charles K., 5,343,482, Cl. 371-57.200.

Molex Incorporated: *See—*
Comerci, Joseph D.; Data, MArk M.; and DeRoss, Robert, 5,342,995, Cl. 174-67.000.
Geib, Lawrence E., 5,342,223, Cl. 439-752.000.
Peterson, Bruce A., 5,342,221, Cl. 439-677.000.
Silbernagel, Raymond A.; and Sommer, Edward S., 5,342,215, Cl. 439-357.000.

Moller, David D.: *See—*
Hale, Edward L.; Moller, David D.; and McConnell, Robert R., 5,343,382, Cl. 363-98.000.

Molloy, Thomas P.: *See—*
Chopra, Sham K.; Nangia, Avinash K.; Lee, David; and Molloy, Thomas P., 5,342,627, Cl. 424-473.000.

Molnlycke AB: *See—*
Runeman, Bo; and Ronnberg, Peter, 5,342,337, Cl. 604-378.000.

Molny, Marvin J.; and Feinberg, Melvin, to Unisys Corporation. Stepped gravity gradiometer. 5,341,681, Cl. 73-382.00G.

Moltech Invent S.A.: *See—*
Sekhar, Jainagesh A., 5,342,491, Cl. 204-243.00R.

Molz, Gerhard: *See—*
Stephan, Hilmer; Molz, Gerhard; and Buttgen, Heinz, 5,341,585, Cl. 38-77.500.

Mon, Eduardo: *See—*
Baird, William C., Jr.; Swan, George A., III; Boyle, Joseph P.; and Mon, Eduardo, 5,342,506, Cl. 208-65.000.

Monash Medical Centre: *See—*
Williams, Alan H.; Staples, Linton D.; Thiel, William J.; Oppenheim, Richard C.; and Clarke, Iain J., 5,342,622, Cl. 424-425.000.

Monder, Carl: *See—*
Bardin, C. Wayne; and Monder, Carl, 5,342,834, Cl. 514-178.000.

Monier Roof Tile Inc.: *See—*
Thomas, John F.; and Hensey, Paul S., 5,341,617, Cl. 52-547.000.

Monksfield, Stuart R.: *See—*
Rowsell, Christopher N.; and Monksfield, Stuart R., 5,343,242, Cl. 348-181.000.

Monneret Jouets: *See—*
Thompson, Robert C., 5,342,050, Cl. 273-126.00R.

Monsanto Company: *See—*
Simon, Robert H. M.; and Farmer, Peter H., 5,342,653, Cl. 427-256.000.

Mont-Bell Co., Ltd.: *See—*
Robinson, Doug; and Tatsuno, Isamu, 5,341,974, Cl. 224-215.000.

Montague, Edgar B.: *See—*
Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., 5,341,680, Cl. 73-379.060.

Montgomery, Robert A.: *See—*
Goldfine, Milton; Perlman, Marvin; and Montgomery, Robert A., 5,343,529, Cl. 380-23.000.

Montoya, Jean P.; Merz, Scott I.; and Bartlett, Robert H., to University of Michigan, The Regents of the; and Constitutional Corporation of the State of Michigan. Self regulating blood pump with controlled suction. 5,342,182, Cl. 417-477.00R.

Moon, Yang C., to Samsung Electronics Co., Ltd. Apparatus for preventing the simultaneous and overlapping display of characters on a television receiver monitor. 5,343,249, Cl. 348-564.000.

Moons, Elve D. J.: *See—*
Willocx, Eddie L. M.; Guebels, Pierre-Paul F. M. M.; and Moons, Elve D. J., 5,343,520, Cl. 379-399.000.

Moore Business Forms, Inc.: *See—*
Peterson, Michael A., 5,341,985, Cl. 229-305.000.

Moore, James W., to International Business Machines Corporation. Hybrid encryption method and system for protecting reusable software components. 5,343,527, Cl. 380-4.000.

Moore, Katherine L., to Procter & Gamble Company, The. Pie or pastry crust. 5,342,642, Cl. 426-556.000.

Moore, Morris A., to Motorola, Inc. Apparatus for adapting an electrical communications port to an optical communications port. 5,343,319, Cl. 359-152.000.

Moore, William G.: *See—*
Khazai, Bijan; and Moore, William G., 5,342,811, Cl. 501-87.000.

Morag, Guy; Aizikowitz, Jacob; and Arazi, Efraim, to Electronics For Imaging, Inc. Indexed processing of color image data. 5,343,311, Cl. 358-518.000.

Morain, Robert A.: *See—*
Satterfield, Wade J.; and Morain, Robert A., 5,343,409, Cl. 364-514.000.

Moretto, Hans-Heinrich: *See—*
Pohmer, Klaus; Weber, Rainer; Block, Hans-Dieter; Dorzhach-Lange, Cornelia; and Moretto, Hans-Heinrich, 5,342,986, Cl. 558-45.000.

Morgan, Roy E., Jr.: *See—*
Tabor, Ricky L.; Morgan, Roy E., Jr.; and Zawisza, Melissa J., 5,342,884, Cl. 525-64.000.

Morganson, Stephen A.: *See—*
Fritz, Barbara L.; Olson, John T.; Morganson, Stephen A.; and Sullivan, William E., 5,342,584, Cl. 422-124.000.

Mori, Kazushi; Matsumoto, Mitsuaki; Toda, Tadao; Nonaka, Hideyuki; and Yamaguchi, Takao, to Sanyo Electric Co., Ltd. SHG (second-harmonic generation) device. 5,343,484, Cl. 372-22.000.

Mori, Kyosuke, to Jatco Corporation. Automatic transmission control system for automotive vehicle. 5,342,246, Cl. 474-1.000.

Mori, Mutsuhiro: *See—*
Oohata, Tosifumi; Mori, Mutsuhiro; and Sakurai, Naoki, 5,343,052, Cl. 257-141.000.

Morigaki, Masakazu; Yoshioka, Yasuhiro; and Seto, Nobuo, to Fuji Photo Film Co., Ltd. Silver halide color photographic material comprising a pyrrolotriazole cyan coupler and a specific lipophilic compound. 5,342,747, Cl. 430-551.000.

Moriguchi, Haruhiko: *See—*
Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, 5,343,227, Cl. 349-42.000.

Moriguchi, Haruo: *See—*
Karino, Kunio; Fujiyoshi, Toshikazu; Danjo, Kenzo; Kinoshita, Atsushi; and Moriguchi, Haruo, 5,343,017, Cl. 219-130.400.

Morikawa, Fumihiro: *See—*
Takahashi, Shuji; Yanai, Eiji; Morikawa, Fumihiro; and Kawate, Yosuke, 5,343,104, Cl. 310-90.000.

Morikawa, Takeshi; Tsukada, Kouji; Nonomura, Yutaka; and Omura, Yoshiteru, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Force transducer. 5,341,688, Cl. 73-862.680.

Morimoto, Kazuo, to Matsushita Electric Industrial Co., Ltd. System for detecting and warning an illegally parked vehicle. 5,343,237, Cl. 348-143.000.

Morimoto, Kiyoshi; Morishima, Shin-ichi; and Hayakawa, Hiroshi, to Fuji Photo Film Co., Ltd. Method of processing silver halide photographic material and composition for processing. 5,342,741, Cl. 430-490.000.

Morimoto, Kouji; Sumitomo, Miyuki; and Uchimura, Katsunori, to Nichia Chemical Industries, Ltd. Phosphor for use in a cathode-ray tube and display device using one. 5,343,316, Cl. 359-50.000.

Morimoto, Kyomi: *See—*
Yokoyama, Shoji; Morimoto, Kyomi; Nanba, Akimasa; Katoh, Kiyohide; Kuroda, Kenji; Kishi, Hiroshi; and Ito, Toru, 5,343,399, Cl. 364-449.000.

Morimura, Kimiyasu: *See—*
Sasaki, Hirotomo; Fujimori, Toru; Mifune, Hiroyuki; and Morimura, Kimiyasu, 5,342,750, Cl. 430-603.000.

Morinaga & Co., Ltd.: *See—*
Umemura, Shin-ichi; and Yashiro, Sadao, 5,341,648, Cl. 62-73.000.

Morishige, Yukio, to NEC Corporation. Exposure apparatus for drawing patterns on substrates. 5,343,271, Cl. 355-53.000.

Morishima, Shin-ichi: *See—*
Morimoto, Kiyoshi; Morishima, Shin-ichi; and Hayakawa, Hiroshi, 5,342,741, Cl. 430-490.000.

Morishita, Keiko: *See—*
Kaneko, Akira; Kanno, Toru; and Morishita, Keiko, 5,343,110, Cl. 313-309.000.

Morita, Keiichi: *See—*
Nagasawa, Atsushi; Morita, Keiichi; Yamazaki, Masaya; Katagami, Yoshinori; Shinoda, Masaru; Matsuo, Takeshi; and Misawa, Masaru, 5,341,650, Cl. 62-180.000.

Morita, Kiyoo, to Fuji Photo Film Co., Ltd. Magnetic tape cassette and method for manufacturing magnetic tape cassette. 5,342,002, Cl. 242-347.000.

Morita, Yasuyuki: *See—*
Karube, Norio; and Morita, Yasuyuki, 5,343,013, Cl. 219-121.610.

Morita, Yukio: *See—*
Hotta, Takashi; Morita, Yukio; Kojima, Yoichi; Kikuchi, Kimihiko; Niiyama, Tsunefumi; Kumagai, Yorinori; and Nakayama, Hiroshi, 5,342,257, Cl. 475-275.000.

Moritani, Takeshi: *See—*
Aoyama, Akimasa; Katayama, Tetsuya; Moritani, Takeshi; Yamauchi, Junnosuke; and Hirofuji, Satoshi, 5,342,662, Cl. 428-34.800.

Moritz, Steven H.: *See—*
Wang, Theresa C. Y.; Leopold, Raymond J.; and Moritz, Steven H., 5,343,512, Cl. 379-59.000.

Moriue, Hiroo: *See—*
Matsuda, Yutaka; Moriue, Hiroo; Nobutoki, Yoshikazu; Hirano, Seiji; and Sakamoto, Hiroaki, 5,343,475, Cl. 370-94.100.

Moriya, Kazuhito; and Horikoshi, Koki, to Japan Marine Science and Technology Center; and Hokkaido Sugar Co., Ltd., a part interest. Microorganism belonging to the genus flavobacterium designated ferm BP-4010. 5,342,778, Cl. 435-252.100.

Moriya, Mitsuro: *See—*
Watanabe, Katsuya; Shibano, Masayuki; Yamaguchi, Hiroyuki; Edahiro, Yasuaki; and Moriya, Mitsuro, 5,343,454, Cl. 369-44.320.

Moriya, Tadashi; Seki, Masahiro; and Nakamura, Toshiomi, to Nippon Paint Co., Ltd. Gas containing contrast agent particles having external magnetic layer. 5,342,608, Cl. 424-9.000.

Moriyama, Jiro: *See—*
Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, 5,343,227, Cl. 349-42.000.

Mork, Steve O.: *See—*
Serbinski, Andrew; Mork, Steve O.; and Callaghan, Roberta L., 5,341,534, Cl. 15-22.100.

Morris, Clarence H.; and Cook, James K., to Data Medical Associates, Inc. Neutralizing absorbent for acids and bases. 5,342,543, Cl. 252-190.000.

Morrison, Stanley R.: *See—*
Miremadi, Bijan K.; Singh, Ravi C.; Morrison, Stanley R.; and Colbow, Konrad, 5,342,701, Cl. 428-701.000.

Morrone, James V. Media storage apparatus. 5,341,924, Cl. 206-232.000.

Morrow, Cary J.; and Wallace, Joe S., to University of New Mexico. Methods of enzymatically separating stereoisomers of a racemic mixture of a reactive ester. 5,342,780, Cl. 435-280.000.

Mortensen, J. D.: *See—*
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, J. D.; and Berry, Gaylord, 5,342,693, Cl. 428-447.000.

Mortenson, Mark G.: *See—*
Niskanen, Paul W.; White, Danny R.; Mortenson, Mark G.; and Antolin, Stanislav, 5,342,812, Cl. 501-127.000.

Mortimore, David B.: *See—*
Rowe, Christopher J.; Mortimore, David B.; Wilkinson, Iain J.; and Achurch, Nicholas E., 5,342,425, Cl. 65-501.000.

Morton, David M.; and Bowen, Stephen A., to Cray Research, Inc. Apparatus for cooling daughter boards. 5,343,359, Cl. 361-707.000.

Morton, Howard E.: *See—*
Plata, Daniel J.; Fung, Anthony K. L.; Morton, Howard E.; Leanna, Robert; Baker, William R.; and Pratt, John K., 5,342,981, Cl. 556-420.000.

Morton International, Inc.: *See—*
Clinnin, David D.; Lewarchik, Ronald J.; and Sunderman, Dexter F., 5,342,871, Cl. 524-238.000.
Harris, Bradley D.; and Soderquist, Quin, 5,342,086, Cl. 280-728.00B.
Horn, Klaus; Lingnau, Juergen; and Weiler, Horst, 5,342,582, Cl. 422-105.000.
Kriska, Thomas M.; Lauritzen, Donald R.; and Rose, Larry D., 5,342,082, Cl. 280-728.00A.
Lazarus, Richard M.; Grunwald, John J.; Gal, Chava; and Hirsch, Shulamit, 5,342,734, Cl. 430-270.000.
Rose, Larry D.; and Lauritzen, Donald R., 5,342,084, Cl. 280-728.00A.

Moseley, William A.: *See—*
Corcoran, John; Hower, Joseph W.; and Moseley, William A., 5,342,143, Cl. 404-72.000.

Mosesian, Jerry L.; and Reid, Clyde D., to Gould Electronics Inc. Time delay fuse with mechanical overload device. 5,343,185, Cl. 337-163.000.

Mosher, Deane F.; and Sottile, Jane M., to Wisconsin Alumni Research Foundation. Fibronectin purification vector. 5,342,762, Cl. 435-69.100.

Moss, C. William. Portable dome-shaped structure. 5,341,610, Cl. 52-82.000.

Motegi, Hiroyuki: *See—*
Arakawa, Takashi; and Motegi, Hiroyuki, 5,343,221, Cl. 345-211.000.

Motion Sciences Inc.: *See—*
Egyed, Mark J., 5,342,258, Cl. 475-281.000.

Motive Holdings Limited: *See—*
Riley, Michael B., 5,341,771, Cl. 123-48.0AA.

Motorola, Inc.: *See—*
Adams, Victor J.; Griest, Sidney H.; and Hart, John W., Jr., 5,341,684, Cl. 73-756.000.
Averst, Douglas I.; Carsello, Stephen R.; and Glotzbach, Warren P., 5,343,494, Cl. 375-1.000.
Brooks, Dwight D., 5,342,707, Cl. 429-97.000.
Davenport, Roger A., 5,343,175, Cl. 333-193.000.
Frei, John K.; and Brice-Heames, Kenneth, 5,342,999, Cl. 174-266.000.
Gegner, Joel P., 5,343,140, Cl. 323-222.000.
Gupta, Debabrata, 5,341,979, Cl. 228-111.000.
Higgins, Leo M., III; and Sparkman, Aubrey K., 5,343,074, Cl. 257-668.000.
Jasper, Steven C.; and Butler, James A., 5,343,499, Cl. 375-39.000.
Johnson, Mark J.; and Branson, Brian D., 5,343,437, Cl. 365-230.030.
Kottke, Wilfried E.; and Olkoski, Jill C., 5,343,213, Cl. 343-702.000.
Moore, Morris A., 5,343,319, Cl. 359-152.000.
Pilo, Harold; and Porter, John D., 5,343,428, Cl. 365-189.050.
Wang, Theresa C. Y.; Leopold, Raymond J.; and Moritz, Steven H., 5,343,512, Cl. 379-59.000.

Mott, Steven C.; and Wright, Craig A., to Horiba Instruments, Inc. Apparatus for dispensing dry particles. 5,341,963, Cl. 222-287.000.

Mountainland Support, Inc.: *See—*
Kitchen, Chris D., 5,342,150, Cl. 405-288.000.

Mountford, Neville: *See—*
Maxted, Kenneth J.; and Mountford, Neville, 5,342,411, Cl. 607-107.000.

Moyer, James D., to Bentley-Harris Manufacturing Company, The. Gaskets for sealing a space between surfaces and clips for mounting gaskets to surfaces. 5,341,601, Cl. 49-493.100.

MTU Motoren- und Turbinen-Union Friedrichshafen GmbH: *See—*
Braun, Hermann; and Ruetz, Georg, 5,342,019, Cl. 251-305.000.

MTU Motoren- Und Turbinen-Union GmbH: *See—*
Weigel, Albrecht; and Schmidt-Eisenlohr, Uwe, 5,342,168, Cl. 415-148.000.

Mu, Xiao-Chun; Chin, Kai J.; and Chen, Feiying. Intelligent security device. 5,343,524, Cl. 380-4.000.

Mudra, Petr: *See—*
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,342,585, Cl. 422-131.000.

Mueller, Claus D.; and Unger, Liliane, to Knoll AG. Method of using nor-verapamil and nor-gallopamil as anti-arteriosclerotics. 5,342,853, Cl. 514-523.000.

Mueller, Richard A.; and Partis, Richard A., to G. D. Searle & Co. Phenolic thioetheramides. 5,342,838, Cl. 514-252.000.

Mueller, Richard A.: *See—*
Koszyk, Francis J.; and Mueller, Richard A., 5,342,951, Cl. 546-217.000.

Mueller, Wayne E.; and Coffey, Wayne R., to New Venture Gear, Inc. Fluted insert for lubrication systems in power transmission devices. 5,341,901, Cl. 184-6.120.

Mueller, Wolfgang H. E.; and Hartmann, Manfred, to Huels Aktiengesellschaft. Production of tertiary carboxylic acids. 5,342,979, Cl. 554-206.000.

Muellner, James M.: *See—*
Amdahl, Keith L.; and Muellner, James M., 5,342,074, Cl. 280-209.000.

Mukaihira, Takashi: *See—*
Kurihara, Nobuo; Ishii, Toshio; Mukaihira, Takashi; Kawano, Kazuya; and Takaku, Yutaka, 5,341,642, Cl. 60-276.000.

Mukunoki, Yasuo: *See—*
Nishiyama, Shingo; Mukunoki, Yasuo; and Yoneyama, Masakazu, 5,342,751, Cl. 430-637.000.

Mulder, Rudolf: *See—*
Wellinga, Kobus; and Mulder, Rudolf, 5,342,958, Cl. 548-317.500.

Mulieri, Norberto M., to Compania Kelmas S.A. Device applicable to fluorescent tubes reducing the consumption of energy without variance of the luminosity. 5,343,120, Cl. 315-58.000.

Muller, Armin: *See—*
Zimmer, Richard; Gautsch, Wolfgang; Muller, Armin; and Freitag, Rainer, 5,342,120, Cl. 303-113.200.

Muller, Arno: *See—*
Malin, Richard A.; and Muller, Arno, 5,343,133, Cl. 318-696.000.

Muller, Ferdinand, to Asea Brown Boveri Ltd. Axial flow turbine. 5,342,169, Cl. 415-160.000.

Muller, Hanns-Peter; Scholl, Hans-Joachim; and Kapps, Manfred, to Bayer Aktiengesellschaft. Process for the standardization and stabilization of organic polyisocyanates and the stable products of this process. 5,342,881, Cl. 524-700.000.

Mullett, Keith R., to Medtronic, Inc. Position-responsive neuro stimulator. 5,342,409, Cl. 607-46.000.

Multinail Truss System Pty., Ltd.: *See—*
Taylor, Peter W., 5,342,030, Cl. 269-37.000.

Munny, Kurt. Hyperextension orthesis with movable front pad. 5,342,289, Cl. 602-19.000.

Munro, Frederick G.: *See—*
Beidle, David A.; Fields, Karen L.; Griffith, Catherine L.; and Munro, Frederick G., 5,343,403, Cl. 364-478.000.

Munro, James, to Enviro Shop Corp., The. Water conservation device for use in toilet tanks. 5,341,522, Cl. 4-415.000.

Munro, Robert, to AE Piston Products Limited. Method for the incorporation of a component into a piston. 5,341,866, Cl. 164-98.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Murai, Hisayoshi: *See*—
Ohashi, Hideki; Murai, Hisayoshi; and Makita, Hiroyuki, 5,343,370, Cl. 362-61.000.

Murakado, Toru: *See*—
Kiyomoto, Masayuki; Kajikawa, Akira; Murakado, Toru; Sakurai, Hiroshi; Mano, Motokazu; and Sizume, Kazutika, 5,342,445, Cl. 106-789.000.

Murakami, Koji: *See*—
Ohnota, Michiro; Okamura, Kyuya; Hirata, Yoshihiro; Murakami, Koji; and Ohashi, Mitsua, 5,342,850, Cl. 514-369.000.

Murakami, Tadashi: *See*—
Imai, Hiroshi; Murakami, Tadashi; Mimura, Tetsuya; Yamamoto, Masao; Kosumi, Yuji; Asai, Masashi; and Aoki, Yasunori, 5,343,072, Cl. 257-666.000.

Muramatsu, Yuzou: *See*—
Kanetake, Satoshi; Yasuda, Tomokazu; Muramatsu, Yuzou; and Naoi, Takashi, 5,342,733, Cl. 430-264.000.

Muraoka, Yoshiro, to Sony Corporation. Audio reproducing apparatus. 5,343,531, Cl. 381-1.000.

Murasaki, Ryuichi, to Yoshida Kogyo K.K. Method of attaching a fastening tape to a molded article. 5,342,569, Cl. 264-259.000.

Murase, Heihachi: *See*—
Kogure, Hideo; Murase, Heihachi; and Kume, Masafumi, 5,342,901, Cl. 525-330.500.

Murata Kikai Kabushiki Kaisha: *See*—
Fukui, Satoshi, 5,343,510, Cl. 379-58.000.

Murata, Shigeki; Isaka, Haruo; Matsuura, Kenji; and Sogabe, Yasushi, to Matsushita Electric Industrial Co., Ltd. Tape drive apparatus. 5,343,338, Cl. 360-69.000.

Murata, Susumu; Sano, Masako; Takeuchi, Yasuo; Fujihara, Masayuki; Yokoo, Hisahiko; Nakanishi, Kenjiro; Miura, Tetsuo; and Shimizu, Yoshio, to Kanebo, Ltd. Encased instantly cookable pasta. 5,342,634, Cl. 426-113.000.

Murata, Yasumoto; Yoshikawa, Syuuichi; and Ikeuchi, Michio, to Sharp Kabushiki Kaisha. Signal discrimination circuit. 5,343,420, Cl. 364-825.000.

Murayama, Yasushi: *See*—
Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, 5,343,227, Cl. 349-42.000.

Muromachi, Takashi: *See*—
Kobayashi, Hiroaki; Muromachi, Takashi; and Kawaguchi, Jun, 5,342,675, Cl. 428-216.000.

Muroya, Yukihiro: *See*—
Kobayashi, Hiroshi; Hayashi, Ryosuke; Inokuchi, Shoji; and Muroya, Yukihiro, 5,341,839, Cl. 137-505.130.

Murphy, William J., to Imtec, Inc. High speed continuous conveyor printer/applicator. 5,342,461, Cl. 156-64.000.

Musco Corporation: *See*—
Gordin, Myron K.; and Crookham, Joe P., 5,343,374, Cl. 362-153.100.

Muselin, Bruce A.: *See*—
Slesinski, Steven G.; and Muselin, Bruce A., 5,342,255, Cl. 475-231.000.

Mushabac, David R. Device for obtaining three dimensional contour data and for operating on a patient and related method. 5,343,391, Cl. 364-413.280.

Mychajlowkij, Walter: *See*—
Pai, Damodar M.; Yanus, John F.; DeFeo, Paul J.; Toth, Alan E. J.; Mychajlowkij, Walter; and Popovic, Zoran, 5,342,719, Cl. 430-59.000.

Myers, Jeffrey A., to Great Lakes Feedscrews, Inc. Feedscrew for injection molding and extrusion. 5,342,125, Cl. 366-89.000.

Myers, Terry D.: *See*—
Vassiliadis, Arthur; Myers, William D.; and Myers, Terry D., 5,342,198, Cl. 433-215.000.

Myers, William D.: *See*—
Vassiliadis, Arthur; Myers, William D.; and Myers, Terry D., 5,342,198, Cl. 433-215.000.

Myers, William J., Jr.: *See*—
Kast, Kevin H.; and Myers, William J., Jr., 5,341,635, Cl. 60-39.030.

Myrata Manufacturing Co., Ltd.: *See*—
Kaida, Hiroaki, 5,341,550, Cl. 29-25.350.

N. V. Bekaert S.A.: *See*—
Boesman, Peter; and Derdeyn, Marc, 5,341,631, Cl. 57-58.830.
DeWitte, Marc; and Van Raemdonck, Walther, 5,342,699, Cl. 428-625.000.

Nabatov, Alexey O.: *See*—
Artjushenko, Vjacheslav G.; Neuberger, Wolfgang; Nabatov, Alexey O.; and Kuzin, Eugene F., 5,342,022, Cl. 264-1.210.

Nace, Vaughn M.: *See*—
Chavez, Johnny, Jr.; Farnum, Andrew S.; Nace, Vaughn M.; Plepys, Raymond A.; Whitmire, Randall K.; Kent, Van A.; Bettge, Paul D.; and Friedli, Hans R., 5,342,541, Cl. 252-182.270.

Nafeh, John, to Pareto Partners, Inc. Method and apparatus for classifying patterns of television programs and commercials based on discerning of broadcast audio and video signals. 5,343,251, Cl. 348-571.000.

Nagai, Yoshiaki: *See*—
Takei, Mitsuhiko; Yoshida, Toshio; Nagai, Yoshiaki; and Masamizu, Koji, 5,342,532, Cl. 252-45.000.

Nagai, Yoshitaka, to Yoshida Kogyo K.K. Process for producing billet of powdery alloy by special arrangement of powders. 5,342,575, Cl. 419-67.000.

Nagai, Yutaka: *See*—
Takeuchi, Toshifumi; Arai, Takao; Nagai, Yutaka; and Kimura, Izumi, 5,343,455, Cl. 369-59.000.

Nagamine, Hisayuki, to NEC Corporation. Integrated circuit having two circuit blocks energized through different power supply systems. 5,343,352, Cl. 361-56.000.

Nagan, Leo E., to Diatec Polymers, doing business as Diatec Environmental, a part interest. Polyacrylamide-phosphonate flocculants and methods of making. 5,342,539, Cl. 252-180.000.

Nagasaki, Tatsuo: *See*—
Wada, Toru; Komiya, Yasuhiro; and Nagasaki, Tatsuo, 5,343,254, Cl. 348-627.000.

Nagasawa, Atsushi; Morita, Keiichi; Yamazaki, Masaya; Katagami, Yoshinori; Shinoda, Masaru; Matsuo, Takeshi; and Misawa, Masaru, to Kabushiki Kaisha Toshiba. Air conditioning apparatus having a plurality of inlets for taking in indoor air at a plurality of portions of main body thereof. 5,341,650, Cl. 62-180.000.

Nagasawa, Masato: *See*—
Kanagawa, Yuji; Nagasawa, Masato; Yokoyama, Eiji; Nakatsu, Kimihide; and Miyago, Toshiharu, 5,343,342, Cl. 360-77.160.

Nagase, Fumio, to Teac Corporation. Connection of transducer leads to a printed circuit board in rotating disk data storage apparatus. 5,343,344, Cl. 360-104.000.

Nagata, Akio: *See*—
Niinai, Yoshitaka; Nagata, Akio; Sagawa, Norihisa; Shinohara, Shigeru; Nakayama, Eiji; Yotsuyanagi, Mitsutoshi; Hayasaka, Hiroshi; and Tokunaga, Kazuyoshi, 5,342,280, Cl. 494-10.000.

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Nagatomi, Kohji: *See*—
Mandai, Yoshinobu; Nagatomi, Kohji; Minamigawa, Kazuhiko; and Sugihara, Fumihito, 5,342,441, Cl. 106-35.000.

Nagayama, Katsuhiro: *See*—
Kazaki, Yuichi; Maeda, Yasutaka; Kawamoto, Hiroshi; Nishimura, Hideyuki; and Nagayama, Katsuhiro, 5,343,282, Cl. 355-326.00R.

Nagayama, Yoshirou; Kubo, Yoshihiro; and Sekino, Takao, to Ichikoh Industries, Ltd. Electrically remote-controlled mirror assembly. 5,343,333, Cl. 359-874.000.

Nagayasu, Isao: *See*—
Tsurutani, Iwao; Manabe, Takafumi; Emoto, Ikuo; Nagayasu, Isao; and Okada, Yoshitaka, 5,342,695, Cl. 428-516.000.

Nagayasu, Takayoshi: *See*—
Katayama, Mikio; Kato, Hiroaki; Nagayasu, Takayoshi; Imaya, Akihiko; Negoto, Hidenori; Kanemori, Yuzuru; and Hirobe, Toshihiko, 5,343,216, Cl. 345-92.000.

Nahamoo, David: *See*—
Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,343,537, Cl. 382-13.000.

Naito, Tomijiro; Sato, Yumiko; Yukinari, Toshiro; Shibata, Toshihiro; Kimura, Masaki; and Shinada, Yukari, to Asahi Denka Kogyo Kabushiki Kaisha; and Citizen Watch Co., Ltd. Liquid crystal composition. 5,342,544, Cl. 252-299.600.

Naito, Tomijiro: *See*—
Sato, Hisato; Naito, Tomijiro; and Tuji, Yasunobu, 5,342,546, Cl. 252-299.600.

Naito, Yasuo: *See*—
Wada, Shunichi; Hara, Tadayuki; Naito, Yasuo; Kohge, Shinichi; and Nishino, Kazuhisa, 5,341,891, Cl. 180-79.100.

Nakabayashi, Akira; and Maeda, Kenji, to Matsushita Electric Industrial Co., Ltd. Cleaning roll material and fixing apparatus. 5,343,278, Cl. 355-283.000.

Nakada, Akio: *See*—
Matsuno, Kiyotaka; Kawashima, Masahiro; and Nakada, Akio, 5,342,394, Cl. 606-213.000.

Nakagawa, Akio; Yasuhara, Norio; and Matsudai, Tomoko, to Kabushiki Kaisha Toshiba. High breakdown voltage semiconductor device. 5,343,067, Cl. 257-487.000.

Nakagawa, Tooru: *See*—
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, 5,341,672, Cl. 73-64.540.

Nakagawa, Yoshikazu, to Rohm Co., Ltd. Compound semiconductor device. 5,343,056, Cl. 257-191.000.

Nakahata, Hideaki: *See*—
Shikata, Shinichi; Hachigo, Akihiro; Nakahata, Hideaki; and Higaki, Kenjiro, 5,343,107, Cl. 310-313.00A.

Nakahata, Seiji; Sogabe, Kouichi; and Yamakawa, Akira, to Sumitomo Electric Industries, Ltd. Apparatus and method for measuring a physical property of a sample using an electron spin resonance spectrum of the sample. 5,343,150, Cl. 324-316.000.

Nakai, Satoru; and Hirai, Yoshikatsu, to Otsuka Pharmaceutical Co., Ltd. Method of treating arthritus or inflammation with IL-1β or derivatives thereof. 5,342,614, Cl. 424-85.200.

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Nakai, Yasuhiro; and Yoshiura, Shoichiro, to Sharp Kabushiki Kaisha. Image forming apparatus controlling the orientation of the image on a sheet for automatic post-processing. 5,343,304, Cl. 358-296.000.

Nakajima Seisakusho Co., Ltd.: *See*—
Nakajima, Shigeji, 5,342,160, Cl. 414-412.000.

Nakajima, Shigeji, to Nakajima Seisakusho Co., Ltd. Opener for irradiation capsule. 5,342,160, Cl. 414-412.000.

Nakajima, Takeshi; Shiratori, Kazuhide; and Uehara, Masahiro, to Sony Corporation. Tension balancer device for ink ribbon. 5,342,131, Cl. 400-120.010.

Nakajima, Yuki; and Uchida, Masaaki, to Nissan Motor Co., Ltd. Dual sensor type air fuel ratio control system for internal combustion engine. 5,341,641, Cl. 60-274.000.

Nakamura, Hidetake: *See*—
Shinada, Yohsuke; and Nakamura, Hidetake, 5,343,383, Cl. 363-127.000.

Nakamura, Kazuo, to NEC Corporation. Synapse circuit which utilizes ballistic electron beams in two-dimensional electron gas. 5,343,081, Cl. 307-201.000.

Nakamura, Kenji; Majima, Masao; and Yamamoto, Noboru, to Canon Kabushiki Kaisha. Optical fiber communication method and multimedia optical fiber network using the same. 5,343,314, Cl. 359-123.000.

Nakamura, Tomoaki: *See*—
Araoka, Manabu; Takahashi, Ysohiaki; Shikama, Atsushi; Miyazaki, Yoshihiro; Nakamura, Tomoaki; and Sakata, Masayuki, 5,343,009, Cl. 200-322.000.

Nakamura, Toshikazu; and Matsumoto, Kunio, to Toyo Boseki Kabushiki Kaisha; and Nakamura, Toshikazu. Epitheliocyte growth accelerator. 5,342,831, Cl. 514-12.000.

Nakamura, Toshiomi: *See*—
Moriya, Tadashi; Seki, Masahiro; and Nakamura, Toshiomi, 5,342,608, Cl. 424-9.000.

Nakanishi, Eiichi, to Nakanishi Optical Co., Ltd. Glasses. 5,343,259, Cl. 351-124.000.

Nakanishi, Kenjiro: *See*—
Murata, Susumu; Sano, Masako; Takeuchi, Yasuo; Fujihara, Masayuki; Yokoo, Hisahiko; Nakanishi, Kenjiro; Miura, Tetsuo; and Shimizu, Yoshio, 5,342,634, Cl. 426-113.000.

Nakanishi Optical Co., Ltd.: *See*—
Nakanishi, Eiichi, 5,343,259, Cl. 351-124.000.

Nakano, Akio: *See*—
Honma, Masaki; Nakano, Akio; Mabuti, Kouzou; Asahi, Isamu; Tsuruta, Setsuo; Fujino, Nobuhiro; and Kobayashi, Nobuhisa, 5,343,387, Cl. 364-401.000.

Nakaoka, Masashi: *See*—
Kanehara, Shigeru; and Nakaoka, Masashi, 5,342,251, Cl. 474-242.000.

Nakata, Futoshi, to Zexel Corporation. Operating device for air-conditioner. 5,341,868, Cl. 165-11.100.

Nakata, Yasuhiro: *See*—
Nashida, Yasumasa; Yoshimoto, Toshio; and Nakata, Yasuhiro, 5,343,019, Cl. 219-216.000.

Nakatsu, Kimihide: *See*—
Kanagawa, Yuji; Nagasawa, Masato; Yokoyama, Eiji; Nakatsu, Kimihide; and Miyago, Toshiharu, 5,343,342, Cl. 360-77.160.

Nakayama, Akio; and Hirayama, Kazutoshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having redundant circuit and method of testing to see whether or not redundant circuit is used therein. 5,343,429, Cl. 365-200.000.

Nakayama, Eiji: *See*—
Niinai, Yoshitaka; Nagata, Akio; Sagawa, Norihisa; Shinohara, Shigeru; Nakayama, Eiji; Yotsuyanagi, Mitsutoshi; Hayasaka, Hiroshi; and Tokunaga, Kazuyoshi, 5,342,280, Cl. 494-10.000.

Nakayama, Hiroshi: *See*—
Hotta, Takashi; Morita, Yukio; Kojima, Yoichi; Kikuchi, Kimihiko; Niiyama, Tsunefumi; Kumagai, Yorinori; and Nakayama, Hiroshi, 5,342,257, Cl. 475-275.000.

Nakayama, Junichiro: *See*—
Miyake, Tomoyuki; Katayama, Hiroyuki; Nakayama, Junichiro; Miyake, Takahiro; Ohta, Kenji; and Kobayashi, Shozo, 5,343,448, Cl. 369-13.000.

Nalco Canada, Inc.: *See*—
Chung, Daniel K.; and Warrick, Steven B., 5,342,538, Cl. 252-180.000.

Nalco Chemical Company: *See*—
Aften, Carl W.; and Gabel, Robert K., 5,342,530, Cl. 252-8.551.

Nanba, Akimasa: *See*—
Yokoyama, Shoji; Morimoto, Kyomi; Nanba, Akimasa; Katoh, Kiyohide; Kuroda, Kenji; Kishi, Hiroshi; and Ito, Toru, 5,343,399, Cl. 364-449.000.

Nangia, Avinash K.: *See*—
Chopra, Sham K.; Nangia, Avinash K.; Lee, David; and Molloy, Thomas P., 5,342,627, Cl. 424-473.000.

Nanninga, Thomas N.: *See*—
Butler, Donald E.; Le, Tung V.; and Nanninga, Thomas N., 5,342,952, Cl. 546-245.000.

Naoi, Takashi: *See*—
Kanetake, Satoshi; Yasuda, Tomokazu; Muramatsu, Yuzou; and Naoi, Takashi, 5,342,733, Cl. 430-264.000.

Nardella, Paul C., to American Cardiac Ablation Co., Inc. Ablation catheter positioning system. 5,341,807, Cl. 128-642.000.

Nardella, Paul C., to American Cardiac Ablation Co., Inc. Fluid cooled electrosurgical cauterization system. 5,342,357, Cl. 606-40.000.

Narishge, Takeshi: *See*—
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishge, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,342,698, Cl. 428-612.000.

Naruse, Hideaki; Suzuki, Makoto; and Sato, Takehiko, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material comprising a pyrrolotriazole cyan coupler and a specific yellow coupler. 5,342,742, Cl. 430-503.000.

Narushima, Hitoshi: *See*—
Tagami, Toshio; Imai, Yoshio; Kakimoto, Masaaki; Kiyohara, Osamu; and Narushima, Hitoshi, 5,342,895, Cl. 525-183.000.

Narvestad, Stein, to Stein Narvestad A.S. Ring clamp for a cutter ring in a tunnel drilling machine. 5,341,889, Cl. 175-373.000.

Nashida, Yasumasa; Yoshimoto, Toshio; and Nakata, Yasuhiro, to Canon Kabushiki Kaisha. Image forming apparatus coping with power supply voltage drift. 5,343,019, Cl. 219-216.000.

Nathan, Krishna S.: *See*—
Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,343,537, Cl. 382-13.000.

Nathan, Rasa N.; and Thomas, Paul, to Nathan, Rasa N. Needle cover assembly for syringes. 5,342,322, Cl. 604-192.000.

Nathe, Axel: *See*—
Kordts, Jurgen; Nathe, Axel; and Sonnenberger, Paul, 5,343,165, Cl. 330-262.000.

National Semiconductor: *See*—
Shay, Michael J., 5,343,095, Cl. 307-475.000.

National Semiconductor Corporation: *See*—
Nguyen, Thai M., 5,343,094, Cl. 307-475.000.
Perry, Jeffrey R.; Sadjadi, S. M. Reza; and Luttinger, Kristen A., 5,342,801, Cl. 437-52.000.
Proebsting, Robert J., 5,343,090, Cl. 307-443.000.
Sapp, Steven P.; Wylie, Neil; and Chen, Eugene J. C., 5,342,797, Cl. 437-41.000.

National Starch and Chemical Investment Holding Corporation: *See*—
Raykovitz, Gary, 5,342,861, Cl. 523-111.000.

Nave, Samuel D.; and McDowell, Harvey R., III, to Siecor Corporation. Riser optical cable having filling compound. 5,343,549, Cl. 385-103.000.

Nawa, Hiroshi: *See*—
Ito, Sadao; and Nawa, Hiroshi, 5,342,013, Cl. 248-429.000.

Nayak, Rahul K.: *See*—
Bodford, Carl A.; Chester, Stephen O.; and Nayak, Rahul K., 5,342,469, Cl. 156-244.220.

Naylor, Matthew A.: *See*—
Beylin, Vladimir Genukh; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,342,959, Cl. 548-327.500.

Nazmy, Mohamed; and Staubli, Markus, to Asea Brown Boveri Ltd. High temperature alloy for machine components based on doped tial. 5,342,577, Cl. 420-418.000.

NC Dept. of Human Resources, Division of Vocational Rehabilitation Services: *See*—
Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., 5,341,680, Cl. 73-379.060.

NCR Corporation: *See*—
Hilbrink, Johan O., 5,343,358, Cl. 361-700.000.
James, Larry C.; Kagy, Carl W.; Gates, Jeffrey F.; Hawkey, Jeffrey A.; Heil, Thomas F.; and Simpson, David L., 5,343,478, Cl. 371-22.300.
Sanwo, Ikuo J., 5,343,360, Cl. 361-707.000.

NDM Acquisition Corp.: *See*—
Allaire, Michael J.; and Stone, Jeffrey W., 5,341,812, Cl. 128-696.000.

NEC Corporation: *See*—
Fuse, Mamoru, 5,343,083, Cl. 307-242.000.
Hoshino, Yasuharu, 5,343,439, Cl. 365-240.000.
Ide, Tatsunori, 5,342,714, Cl. 430-19.000.
Kawamura, Hajime, 5,343,466, Cl. 370-54.000.
Kiyozuka, Noboru, 5,343,479, Cl. 371-22.500.
Kobayashi, Tetsuya; Katabuchi, Kenjiro; and Suzuki, Yumiko, 5,342,208, Cl. 439-79.000.
Morishige, Yukio, 5,343,271, Cl. 355-53.000.
Nagamine, Hisayuki, 5,343,352, Cl. 361-56.000.
Nakamura, Kazuo, 5,343,081, Cl. 307-201.000.
Ohshima, Izumi, 5,343,469, Cl. 370-85.100.
Sato, Toshifumi, 5,343,502, Cl. 375-106.000.
Shinada, Yohsuke; and Nakamura, Hidetake, 5,343,383, Cl. 363-127.000.
Takeuchi, Hiroshi, 5,343,097, Cl. 307-514.000.
Tanaka, Akio, 5,343,215, Cl. 345-63.000.
Tohya, Hirokazu, 5,343,378, Cl. 363-21.000.

Nechvatal, Timothy M.; and Heian, Glenn A., to Wisconsin Electric Power Company. Lightweight aggregate from flyash and sewage sludge. 5,342,442, Cl. 106-409.000.

Necklaws: Elizabeth C.: *See*—
Baker, Harold N.; Eng, Katherine K.; Gurner, William D.; Massei, Michael K.; Necklaws: Elizabeth C.; Osikowicz, Eugene W.; Ramp, Sally K.; and Trach, Paula, 5,342,760, Cl. 435-7.920.

Neger, Anton: *See*—
Huber, Hans G.; and Neger, Anton, 5,341,826, Cl. 134-65.000.

Negishi, Heido: *See*—
Aoki, Nobuo; Aizawa, Ikuo; Yokoi, Keisuke; and Negishi, Heido, 5,343,103, Cl. 310-87.000.

Negoto, Hidenori: *See*—
Katayama, Mikio; Kato, Hiroaki; Nagayasu, Takayoshi; Imaya, Akihiko; Negoto, Hidenori; Kanemori, Yuzuru; and Hirobe, Toshihiko, 5,343,216, Cl. 345-92.000.

Negus, Joel A., to Lisle Corporation. Magnetic socket holder. 5,343,181, Cl. 335-285.000.

Neiger, Manfred: *See*—
Beneking, Claus; Dannert, Horst; Neiger, Manfred; Schorpp, Volker; and Stockwald, Klaus, 5,343,114, Cl. 313-485.000.

Nelson, Bill. Power plant for generation of electrical power and pneumatic pressure. 5,341,644, Cl. 60-627.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Nelson, Kevin R. Human-powered gyroscope. 5,342,244, Cl. 472-14.000.

Nerco, Inc.: *See*—
Austin, Peter W.; Quan, Peter M.; Tasker, Peter A.; and Thorp, Derek, 5,342,937, Cl. 544-8.000.

Nesi, Marcella: *See*—
Panzeri, Achille; Ceriani, Lucio; Griggi, Pierluigi; and Nesi, Marcella, 5,342,948, Cl. 546-77.000.

Neste Oy: *See*—
Bergstrom, Christer; and Krook, Gunilla, 5,342,887, Cl. 525-108.000.

Neste Resins Corporation: *See*—
Chappelle, Norman A., 5,342,880, Cl. 524-596.000.

Nestec S.A.: *See*—
Albert, Lars G., 5,341,858, Cl. 141-173.000.
Bangerter, Ulrich; Beh, Beng H.; Callis, Alfred B.; and Pilkington, Ian J., 5,342,632, Cl. 426-45.000.
Koch, Peter, 5,342,638, Cl. 426-386.000.
Rosse, Meinrad; and Servaux, Jean, 5,341,947, Cl. 215-230.000.

Neubauer, Hans-Juergen: *See*—
Leyendecker, Joachim; Neubauer, Hans-Juergen; Kardorff, Uwe; Kuenast, Christoph; Krieg, Wolfgang; and Hofmeister, Peter, 5,342,849, Cl. 514-/361.000.

Neubauer, Heinz: *See*—
Hirschberg, Jakub; Neubauer, Heinz; Gilljam, Nina; Bowald, Staffan; and Lindegren, Ulf, 5,342,413, Cl. 607-126.000.

Neuberger, Wolfgang: *See*—
Artjushenko, Vjacheslav G.; Neuberger, Wolfgang; Nabatov, Alexey O.; and Kuzin, Eugene F., 5,342,022, Cl. 264-1.210.

Nevitt, James N.; and Chapman, Laurel R., to Future Controls, Inc. Heat transfer system method and apparatus. 5,341,649, Cl. 62-126.000.

Nevrekar, Venkatesh R. Expanding valve assembly. 5,342,028, Cl. 251-163.000.

New Venture Gear, Inc.: *See*—
Mueller, Wayne E.; and Coffey, Wayne R., 5,341,901, Cl. 184-6.120.

New World Diaper Service: *See*—
Kichefski, Conrad M.; Madryga, Mary B.; Madryga, Kurt R.; Struble, Christopher G.; and Madryga, Kathleen A., 5,342,340, Cl. 604-385.100.

Newberg, G. Edward: *See*—
Wiese, Gary E.; Lee, J. Donald; and Newberg, G. Edward, 5,343,040, Cl. 250-252.100.

Newbold, Dixon; and Gilley, Ian, to Bell Sports, Inc. Composite bicycle rack. 5,341,971, Cl. 224-39.000.

Newell, Philip B., to Osram Sylvania Inc. Methods for removing contaminants from arc discharge lamps. 5,342,233, Cl. 445-6.000.

Next, Inc.: *See*—
Goodrich, Allen B., 5,343,503, Cl. 375-121.000.

Ng, Hendra: *See*—
Dickens, Elmer D., Jr.; Lee, Biing Lin; Taylor, Glenn A.; Magistro, Angelo J.; and Ng, Hendra, 5,342,919, Cl. 528-323.000.

Ng, Raymond C.: *See*—
Silber, Arthur L.; Ng, Raymond C.; and Caillouette, James C., 5,342,331, Cl. 604-330.000.

NGK Insulators, Ltd.: *See*—
Hattori, Mitsuru, 5,342,166, Cl. 415-115.000.
Kawasaki, Shinji; Ito, Shigenori; and Yoshioka, Katsuki, 5,342,703, Cl. 429-30.000.

Ngo, Viet H.; Poole, Warren D.; Hancock, Sean J.; and France, Timothy T., to Lemma Corporation, The. Floating aquatic plant treatment system with porous system. 5,342,512, Cl. 210-151.000.

Ngoc, Danh L.: *See*—
Bourekas, Philip A.; Ngoc, Danh L.; and Revak, Scott, 5,343,435, Cl. 365-221.000.

Nguyen, Sonbinh T.: *See*—
Grubbs, Robert H.; Johnson, Lynda K.; and Nguyen, Sonbinh T., 5,342,909, Cl. 526-171.000.

Nguyen, Thai M., to National Semiconductor Corporation. Low noise logic amplifier with nondifferential to differential conversion. 5,343,094, Cl. 307-475.000.

Nibco, Inc.: *See*—
McAtamney, Dennis E., 5,343,191, Cl. 340-605.000.

Nichia Chemical Industries, Ltd.: *See*—
Morimoto, Kouji; Sumitomo, Miyuki; and Uchimura, Katsunori, 5,343,316, Cl. 359-50.000.

Nicholls, John F. H.: *See*—
Chai, Bruce H. T.; and Nicholls, John F. H., 5,343,327, Cl. 359-330.000.

Nick, Edward V. Fastener support apparatus. 5,341,708, Cl. 81-451.000.

Nicoletti, James W.: *See*—
Cann, Kevin J.; Hussein, Fathi D.; Lee, Kiu H.; Zilker, Daniel P., Jr.; Nicoletti, James W.; and Bai, Xinlai, 5,342,907, Cl. 526-129.000.

Niedermeyeyr, John F.; Maltsev, Viacheslav B.; and Rogers, Robert L., to Dataproducts Corporation. Ink jet ink supply apparatus. 5,343,226, Cl. 347-85.000.

Niessner, Norbert: *See*—
Seitz, Friedrich; Ruppmich, Karl; Guentherberg, Norbert; and Niessner, Norbert, 5,342,898, Cl. 525-281.000.

Nigro, Arthur R.: *See*—
Driscoll, Edward K.; Nigro, Arthur R.; and Fillio, Thomas D., 5,343,357, Cl. 361-685.000.

Niguchi, Yasuyuki: *See*—
Inoue, Atsushi; Kaku, Nobuyuki; Sasaki, Takashi; Niguchi, Yasuyuki; and Inagaki, Yasuo, 5,343,339, Cl. 360-71.000.

Nihon Bayer Agrochem K.K.: *See*—
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, 5,342,954, Cl. 548-251.000.
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Hayakawa, Hidenori; Yanagi, Akihiko; and Asami, Tadao, 5,342,938, Cl. 544-105.000.

Nihon Chemical Research Co., Ltd.: *See*—
Ueyama, Ukio; and Koni, Shinichi, 5,342,310, Cl. 604-110.000.

Niinai, Yoshitaka; Nagata, Akio; Sagawa, Norihisa; Shinohara, Shigeru; Nakayama, Eiji; Yotsuyanagi, Mitsutoshi; Hayasaka, Hiroshi; and Tokunaga, Kazuyoshi, to Hitachi Koki Company Limited. System for management of body rotation of centrifuge. 5,342,280, Cl. 494-10.000.

Niiyama, Tsunefumi: *See*—
Hotta, Takashi; Morita, Yukio; Kojima, Yoichi; Kikuchi, Kimihiko; Niiyama, Tsunefumi; Kumagai, Yorinori; and Nakayama, Hiroshi, 5,342,257, Cl. 475-275.000.

Nikko Tokki Co., Ltd.: *See*—
Watanabe, Yasushi, 5,342,235, Cl. 452-141.000.

Nikon Corporation: *See*—
Miyata, Kazutomo, 5,343,449, Cl. 369-13.000.
Sakakibara, Yasuyuki; Makinouchi, Susumu; Magome, Nobutaka; and Shiraishi, Naomasa, 5,343,270, Cl. 355-53.000.

Nilssen, Ole K. Series-resonant inverter ballast. 5,343,123, Cl. 315-219.000.

Nilssen, Ole K. Shock-hazard-free lighting means. 5,343,124, Cl. 315-224.000.

Nilsson, Neile: *See*—
Franzen, Arne; Larsson, Larseric; Nilsson, Neile; and Fredriksson, Lars-Berno, 5,341,720, Cl. 89-45.000.

Nippon Densan Corporation: *See*—
Takahashi, Shuji; Yanai, Eiji; Morikawa, Fumihiro; and Kawate, Yosuke, 5,343,104, Cl. 310-90.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Kiyomoto, Masayuki; Kajikawa, Akira; Murakado, Toru; Sakurai, Hiroshi; Mano, Motokazu; and Sizume, Kazutika, 5,342,445, Cl. 106-789.000.

Nippon Oil Company, Limited: *See*—
Minami, Masaki; Ikai, Keizo; and Matsuno, Mitsuo, 5,342,982, Cl. 556-431.000.
Takei, Mitsuhiko; Yoshida, Toshio; Nagai, Yoshiaki; and Masamizu, Koji, 5,342,532, Cl. 252-45.000.

Nippon Paint Co., Ltd.: *See*—
Moriya, Tadashi; Seki, Masahiro; and Nakamura, Toshiomi, 5,342,608, Cl. 424-9.000.
Sudo, Nobuhisa, 5,342,888, Cl. 525-124.000.

Nippon Sheet Glass Co., Ltd.: *See*—
Kobayashi, Hiroaki; Muromachi, Takashi; and Kawaguchi, Jun, 5,342,675, Cl. 428-216.000.

Nippon Shinyaku Company Limited: *See*—
Chokai, Shoichi; Aoki, Tomiyoshi; and Ukai, Yojiro, 5,342,845, Cl. 514-305.000.

Nippon Steel Corporation: *See*—
Kobayashi, Satoshi, 5,341,825, Cl. 134-61.000.
Tomioka, Yugo, 5,343,062, Cl. 257-297.000.
Ueno, Noboru, 5,343,232, Cl. 346-155.000.

Nippon Thompson Co., Ltd.: *See*—
Agari, Norimasa, 5,342,127, Cl. 384-15.000.

Nippondenso Co., Ltd.: *See*—
Hirano, Hiroyuki; Tsuzuki, Yoshihiko; Haseda, Satoshi; Fukushima, Akira; Inoue, Hideo; and Takeda, Osamu, 5,343,393, Cl. 364-424.050.
Kubokoya, Ryoichi; Yamane, Hiroyuki; and Higuchi, Yasushi, 5,342,802, Cl. 437-57.000.
Ogino, Akihiko; Miyase, Yoshiyuki; Sakou, Shuuzi; and Shibata, Shinzi, 5,343,014, Cl. 219-121.640.
Utsu, Junsi; Mikami, Seishin; and Kodera, Masao, 5,343,172, Cl. 333-32.000.

Nishi, Tatsunari: *See*—
Yasumura, Shigeyoshi; Nishi, Tatsunari; and Ito, Seiga, 5,342,775, Cl. 435-240.200.

Nishi, Yuji, to Victor Company of Japan, Ltd. Ghost removal apparatus for television receiver using changed and adaptive ghost detection coefficients. 5,343,253, Cl. 348-614.000.

Nishida, Yutaka: *See*—
Mabuchi, Kazuichi; and Nishida, Yutaka, 5,343,102, Cl. 310-71.000.

Nishii, Kanji: *See*—
Itoh, Masami; Nishii, Kanji; Kawamura, Hiroyuki; and Fukui, Atsushi, 5,343,415, Cl. 364-725.000.

Nishiike, Ujihiro: *See*—
Hayakawa, Yasuyuki; Nishiike, Ujihiro; Fukuda, Bunjiro; Yamada, Masataka; Iida, Yoshiaki; Takeuchi, Fumihiko; and Komatsubara, Michiro, 5,342,454, Cl. 148-113.000.

Nishikawa, Hirotaka; Kurachi, Yoshio; Kogiso, Takashi; Sekiya, Shigeki; Sato, Teruhiko; Hashimoto, Hideki; Ohmori, Makoto; and Sasaki, Kenji, to Howa Machinery, Ltd. Apparatus for winding a roving applied to a roving frame. 5,341,633, Cl. 57-264.000.

Nishikawa, Kazunori: *See*—
Kimura, Ryoji; Tuboi, Tetuo; and Nishikawa, Kazunori, 5,342,868, Cl. 524-108.000.

Nishikawa Rubber Co., Ltd.: *See*—
Saji, Tomohide; Inoue, Yoshihisa; and Kii, Asajiro, 5,342,107, Cl. 296-210.000.

Nishikawa, Toru; Satoh, Ryohei; Harada, Masahide; Hayashida, Tetsuya; and Shirai, Mitugu, to Hitachi, Ltd. Method of fabricating electronic circuit device and apparatus for performing the same method. 5,341,980, Cl. 228-205.000.

Nishima, Ryo; Kinjo, Hisao; Mizuno, Yoshio; Shudo, Katsuyuki; and Kawase, Shigeru, to Victor Company of Japan, Ltd. Actuator for displacing a magnetic head. 5,343,348, Cl. 360-109.000.

Nishimura, Hideyuki: *See*—
Kazaki, Yuichi; Maeda, Yasutaka; Kawamoto, Hiroshi; Nishimura, Hideyuki; and Nagayama, Katsuhiro, 5,343,282, Cl. 355-326.00R.

Nishimura, Hiroo: *See*—
Ueno, Koichi; Tsukamoto, Akio; Tori, Tamotsu; Nishimura, Hiroo; Konishi, Keizo; and Harada, Fukuzo, 5,341,769, Cl. 122-367.300.

Nishimura, Tadashi: *See*—
Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,343,051, Cl. 257-66.000.

Nishimura, Yoshihide, to Teijin Seiki Company Limited. Yarn drawing-in nozzle. 5,341,977, Cl. 226-97.000.

Nishino, Kazuhisa: *See*—
Wada, Shunichi; Hara, Tadayuki; Naito, Yasuo; Kohge, Shinichi; and Nishino, Kazuhisa, 5,341,891, Cl. 180-79.100.

Nishino, Masakazu: *See*—
Kadono, Shinya; Nishino, Masakazu; Juri, Tatsuro; Horikane, Hiroshi; and Hidaka, Iwao, 5,343,501, Cl. 375-94.000.

Nishino, Tomoki, to Sony Corporation. Composite stacked semiconductor device with contact plates. 5,343,075, Cl. 257-686.000.

Nishiwaki, Seiji; Asada, Junichi; and Uchida, Shinji, to Matsushita Electric Industrial Co., Ltd. Scanning laser microscope with photo coupling and detecting unit. 5,343,038, Cl. 250-234.000.

Nishiyama, Shingo; Mukunoki, Yasuo; and Yoneyama, Masakazu, to Fuji Photo Film Co., Ltd. Silver halide photosensitive material. 5,342,751, Cl. 430-637.000.

Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corp. Method of manufacturing a semiconductor integrated circuit device. 5,342,480, Cl. 156-648.000.

Nishizawa, Jun: *See*—
Hashimoto, Iori; Numata, Motoki; Nishizawa, Jun; and Kamada, Tomiyuki, 5,341,577, Cl. 34-493.000.

Niskanen, Paul W.; White, Danny R.; Mortenson, Mark G.; and Antolin, Stanislav, to Lanxide Technology Company, LP. Composite golf club head. 5,342,812, Cl. 501-127.000.

Nissan Motor Co., Ltd.: *See*—
Nakajima, Yuki; and Uchida, Masaki, 5,341,641, Cl. 60-274.000.
Uchida, Masaaki, 5,341,788, Cl. 123-692.000.

Nissei ASB Machine Co., Ltd.: *See*—
Yokobayashi, Kazuyuki, 5,342,663, Cl. 428-35.700.

Nissho Corporation: *See*—
Honda, Minoru; Iwasa, Masanobu; Miyamoto, Tetuzi; Ikeda, Koji; and Kikuchi, Toshihiro, 5,342,346, Cl. 604-413.000.
Kikuchi, Toshihiro; Ikeda, Koji; and Futagawa, Hitoshi, 5,342,347, Cl. 604-415.000.

Nita, Henry; and Pflueger, Russell, to Baxter International Inc. Ultrasonic ablation device adapted for guidewire passage. 5,342,292, Cl. 604-22.000.

Nitta Gelatin Inc.: *See*—
Mandai, Yoshinobu; Nagatomi, Kohji; Minamigawa, Kazuhiko; and Sugihara, Fumihito, 5,342,441, Cl. 106-35.000.

Nitta, Koichi: *See*—
Itaya, Kazuhiko; Hatakoshi, Genichi; and Nitta, Koichi, 5,343,486, Cl. 372-43.000.

Nitto Denko Corporation: *See*—
Kawazoe, Shozo; and Okano, Hidehito, 5,342,468, Cl. 156-233.000.

Nitto Mokuzai Sangyo Kabushiki Kaisha: *See*—
Saito, Rikuro; and Yagi, Kiyoyuki, 5,342,138, Cl. 403-189.000.

Niwa, Yukichi: *See*—
Ohwada, Mitsutoshi; Matsugu, Masakazu; Suda, Shigeyuki; Yoshii, Minoru; Niwa, Yukichi; Nose, Noriyuki; Saitoh, Kenji; and Hasegawa, Masanobu, 5,343,291, Cl. 356-356.000.

Noakes, Laura A., to Steelcase Inc. Ganging leg and swing plate construction for tables. 5,341,749, Cl. 108-64.000.

Noble, Casey. Vision limiting device. 5,341,512, Cl. 2-6.200.

Nobutoki, Yoshikazu: *See*—
Hideshima, Masao; Michihira, Osamu; Nobutoki, Yoshikazu; and Sone, Akira, 5,343,470, Cl. 370-85.100.
Matsuda, Yutaka; Moriue, Hiroo; Nobutoki, Yoshikazu; Hirano, Seiji; and Sakamoto, Hiroaki, 5,343,475, Cl. 370-94.100.

Noda, Isao, to Procter & Gamble Company, The. Polycationic latex wet strength agent. 5,342,875, Cl. 524-457.000.

Noe, Andreas: *See*—
Noe, Rolf; and Noe, Andreas, 5,341,664, Cl. 72-161.000.

Noe, Rolf; and Noe, Andreas, to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH. Roll set for thin metal strip. 5,341,664, Cl. 72-161.000.

Noetzel, Guenter: *See*—
Roesinger, Andreas; and Noetzel, Guenter, 5,343,459, Cl. 369-116.000.

Noguchi, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Nonvolatile semiconductor memory device and manufacturing method and testing method thereof. 5,343,434, Cl. 365-218.000.

Nokia Technology GmbH: *See*—
Heikkinen, Ari, 5,343,528, Cl. 380-20.000.

Nolte, Michael G.; Davis, Gary D.; Jergenson, Ronny D.; Scheu, Robert W.; and Tillery, Timothy G., to General Electric Company. Terminal bushing for electrical apparatus comprising a polymeric shell molded about a central conductor. 5,342,998, Cl. 174-152.00R.

Nomura, Hironori: *See*—
Igaue, Takamitsu; Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; Sasaki, Tohru; Shimakawa, Taiji; and Yamamoto, Hiroki, 5,342,341, Cl. 604-385.200.

Nomura, Hiroshi: *See*—
Kohmoto, Shinsuke; and Nomura, Hiroshi, 5,343,331, Cl. 359-823.000.

Nonaka, Hideyuki: *See*—
Mori, Kazushi; Matsumoto, Mitsuaki; Toda, Tadao; Nonaka, Hideyuki; and Yamaguchi, Takao, 5,343,484, Cl. 372-22.000.

Nonaka, Hiromi: *See*—
Suzuki, Fumio; Shimada, Junichi; Karasawa, Akira; Mizumoto, Hideaki; Kase, Hiroshi; and Nonaka, Hiromi, 5,342,841, Cl. 514-263.000.

Nonomura, Yutaka: *See*—
Morikawa, Takeshi; Tsukada, Kouji; Nonomura, Yutaka; and Omura, Yoshiteru, 5,341,688, Cl. 73-862.680.

Nordsiek, Karl-Heinz: *See*—
Wolpers, Jurgen; Zerpner, Dieter; and Nordsiek, Karl-Heinz, 5,342,900, Cl. 525-329.300.

Nordson Corporation: *See*—
Fulkerson, Terrence M.; and Pallante, Robert R., 5,341,989, Cl. 239-3.000.
Konieczynski, Ronald D., 5,341,990, Cl. 239-3.000.

Norelli, Robert A.; Jelinek, Edward H.; and Cullan, George E. Fluid-expandable surgical retractor. 5,342,385, Cl. 606-193.000.

Noritsu Koki Co., Ltd.: *See*—
Yamamoto, Yuji; and Tamaki, Ikuhiro, 5,343,269, Cl. 355-43.000.

Noro, Yoshiki: *See*—
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiki, 5,342,023, Cl. 267-64.170.

North Carolina State University: *See*—
Otvos, James D., 5,343,389, Cl. 364-413.090.

Northern Telecom Limited: *See*—
Yatrou, Paul M.; and Millar, Douglas J., 5,343,522, Cl. 379-410.000.

Northrop Grumman Corporation: *See*—
Guthrie, Warren E., 5,343,168, Cl. 331-16.000.

Norton Company: *See*—
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,341,692, Cl. 73-864.630.

Nose, Hiroyasu: *See*—
Miyazaki, Toshihiko; Sakai, Kunihiro; Nose, Hiroyasu; Kishi, Etsuro; and Kuroda, Ryo, 5,343,460, Cl. 369-126.000.

Nose, Noriyuki: *See*—
Ohwada, Mitsutoshi; Matsugu, Masakazu; Suda, Shigeyuki; Yoshii, Minoru; Niwa, Yukichi; Nose, Noriyuki; Saitoh, Kenji; and Hasegawa, Masanobu, 5,343,291, Cl. 356-356.000.

Noto, Kazuyoshi, to Kyocera Internatinoal, Inc. Pin grid array package with pin through plating. 5,342,992, Cl. 174-52.400.

Noudan, Yoshimasa: *See*—
Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, 5,343,450, Cl. 369-19.000.

Nousho, Shinji; Seto, Mitsuru; Hashimoto, Junichiro; and Rokutanzono, Takashi, to RICOH Company, Ltd. Electrophotographic photoconductor with overlayer of polyol-curing polyurethane resin. 5,342,718, Cl. 430-58.000.

Novak, David B.: *See*—
Gardner, David E.; and Novak, David B., 5,342,249, Cl. 474-135.000.

Novak, John P., Jr.; and Eichorn, Barbara A., to Heraeus Surgical, Inc. Side-firing laser fiber with directional indicator and methods of use in determining the orientation of radiation to be emitted from the side-firing laser fiber. 5,343,543, Cl. 385-31.000.

Novo Nordisk A/S: *See*—
Pedersen, Sven; and Hansen, Tomas T., 5,342,768, Cl. 435-134.000.

Nowak, Claude: *See*—
Eidenbenz, Stefan; and Nowak, Claude, 5,342,696, Cl. 428-542.800.

Nowogrodzki, Markus, to General Electric Company. Enemy signal detection and warning system. 5,343,205, Cl. 342-45.000.

Nozaki, Koji, to Fujitsu Limited. Photoresist compositions containing a copolymer of an aliphatic polycyclic monomer having alpha, beta-unsaturated nitrile with another polymerizable monomer. 5,342,735, Cl. 430-270.000.

Nozoe, Shigeo: *See*—
Sakurai, Kuniya; Izawa, Kunisuke; Izawa, Hiroyuki; Ineyama, Takashi; Ohta, Tomihisa; and Nozoe, Shigeo, 5,342,963, Cl. 548-532.000.

NRM Steelastic, Inc.: *See*—
Bibona, Donald S.; Allen, Michael J.; and Girard, Jean C., 5,342,473, Cl. 156-394.100.

NSK Ltd.: *See*—
Takamizawa, Toru; and Miyazaki, Seizo, 5,341,569, Cl. 29-898.090.

Nudo, Alexander S.; Nudo, Timothy; and Nudo, Patrick R., to Nudo Products, Inc. Paint guide. 5,342,447, Cl. 118-504.000.

Nudo, Patrick R.: *See*—
Nudo, Alexander S.; Nudo, Timothy; and Nudo, Patrick R., 5,342,447, Cl. 118-504.000.

Nudo Products, Inc.: *See*—
Nudo, Alexander S.; Nudo, Timothy; and Nudo, Patrick R., 5,342,447, Cl. 118-504.000.

Nudo, Timothy: *See*—
Nudo, Alexander S.; Nudo, Timothy; and Nudo, Patrick R., 5,342,447, Cl. 118-504.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Nugteren, Diederik H.: *See*—
Bowser, Paul A.; Froling, Albert; Heslinga, Lammert; Houtsmuller, Udo M. T.; Nugteren, Diederik H.; Pabon, Hendrik J. J.; and Prottey, Colin, 5,342,976, Cl. 554-36.000.

Nugues, Francois; and Robic, Pierre H. Method for destroying aerosol cans. 5,341,853, Cl. 141-7.000.

Numata, Motoki: *See*—
Hashimoto, Iori; Numata, Motoki; Nishizawa, Jun; and Kamada, Tomiyuki, 5,341,577, Cl. 34-493.000.

Nuovopignone Industrie Meccaniche e Fonderia SpA: *See*—
Corain, Luciano; Maitan, Gianni; and Bortoli, Giulio, 5,341,852, Cl. 139-448.000.

Nygaard, Lars: *See*—
Sjaunja, Lars-Ove; Andersen, Steen K.; Arnvidarson, Borkur; Brems, Niels; Lapp, Torben; and Nygaard, Lars, 5,343,044, Cl. 250-339.090.

Obel, Martin: *See*—
Hirschberg, Jakub; and Obel, Martin, 5,342,400, Cl. 607-5.000.

O'Brien, Brendan J.; and Ross, Michael A. Apparatus for a ball game. 5,342,063, Cl. 273-396.000.

O'Brien, Daniel P.; and Johnson, Paul. Evacuation system. 5,341,761, Cl. 114-365.000.

O'Brien, George A. Window scraper. 5,341,535, Cl. 15-22.400.

Occidental Chemical Corporation: *See*—
Irvine, Robert L.; and Venkatadri, Rajagopalan, 5,342,765, Cl. 435-71.100.

OCE-Nederland, B.V.: *See*—
Rooijakkers, Johannes P. J. C.; Bongers, Andreas M. G.; and Vosbeek, Gerardus J., 5,343,277, Cl. 355-271.000.
van Dorsselaer, Etienne L. M. E.; and Oyen, Johannes P. H., 5,343,283, Cl. 358-445.000.

Ocean Test Equipment, Inc.: *See*—
Banu, John, 5,341,693, Cl. 73-864.670.

Och, Mathias, to Herma AG. Low voltage busbar lighting apparatus. 5,342,204, Cl. 439-39.000.

O'Conor, Harvey W.: *See*—
Ainsworth, Steven, 5,343,138, Cl. 320-14.000.

Oda, Yoshio, to Mazda Motor Corporation. Air bag for vehicle safety device. 5,342,087, Cl. 280-728.00R.

Oda, Yukihisa: *See*—
Yasuda, Keiji; Oda, Yukihisa; Tagawa, Satoru; and Kimura, Masahiro, 5,343,188, Cl. 338-129.000.

Odane, Isamu: *See*—
Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, 5,343,450, Cl. 369-19.000.

Oden, Agneta, to Sandvik AB. Method of manufacturing ceramic artifical tooth restorations. 5,342,201, Cl. 433-223.000.

Odermatt, Erich; and Sulzberger, Robert, to B. Braun SSC AG. Method of folding of pack for holding suture material. 5,341,622, Cl. 53-429.000.

Ogawa, Hiroshi: *See*—
Abe, Kiyoshi; Suzuki, Kazuhiko; Ogawa, Hiroshi; and Kikuchi, Masaichi, 5,342,876, Cl. 524-493.000.

Ogawa, Takayuki: *See*—
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Ogino, Akihiko; Miyase, Yoshiyuki; Sakou, Shuuzi; and Shibata, Shinzi, to Nippondenso Co., Ltd. Method of welding metals of different kind by laser. 5,343,014, Cl. 219-121.640.

Ogino, Tsukasa, to Canon Kabushiki Kaisha. Method for accessing desired track on disk with plurality of recording zones with head, and apparatus therefore. 5,343,453, Cl. 369-44.280.

Ohanesian, Harout, to U.S. Polymers, Inc. Extrusion system having after/former means for reshaping tube of extrudant. 5,342,187, Cl. 425-70.000.

Ohashi, Hideki; Murai, Hisayoshi; and Makita, Hiroyuki, to Koito Manufacturing Co., Ltd. Motor vehicle headlamp. 5,343,370, Cl. 362-61.000.

Ohashi, Mitsua: *See*—
Ohnota, Michiro; Okamura, Kyuya; Hirata, Yoshihiro; Murakami, Koji; and Ohashi, Mitsua, 5,342,850, Cl. 514-369.000.

Ohji, Yuzuru: *See*—
Miki, Hiroshi; Ohji, Yuzuru; Tachi, Shinichi; and Kanehori, Keiichi, 5,343,353, Cl. 361-322.000.

Ohmi Forschung und Ingenieurstechnik GmbH: *See*—
Transfeld, Peter, 5,342,508, Cl. 208-299.000.

Ohmori, Makoto: *See*—
Nishikawa, Hirotaka; Kurachi, Yoshio; Kogiso, Takashi; Sekiya, Shigeki; Sato, Teruhiko; Hashimoto, Hideki; Ohmori, Makoto; and Sasaki, Kenji, 5,341,633, Cl. 57-264.000.

Ohnishi, Hirofumi: *See*—
Igaue, Takamitsu; Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; Sasaki, Tohru; Shimakawa, Taiji; and Yamamoto, Hiroki, 5,342,341, Cl. 604-385.200.

Ohnota, Michiro; Okamura, Kyuya; Hirata, Yoshihiro; Murakami, Koji; and Ohashi, Mitsua, to Kyorin Pharmaceutical Co., Ltd. Thiazolidine-2,4-dione derivatives, their salts and their preparation processes. 5,342,850, Cl. 514-369.000.

Ohsaki, Seiji: *See*—
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiki, 5,342,023, Cl. 267-64.170.

Ohshima, Izumi, to NEC Corporation. Communication system and communication devices having lock function. 5,343,469, Cl. 370-85.100.

Ohshima, Keiichi, to Seiko Epson Corporation. Ink jet printer. 5,343,229, Cl. 347-8.000.

Ohta, Kenji: *See*—
Miyake, Tomoyuki; Katayama, Hiroyuki; Nakayama, Junichiro; Miyake, Takahiro; Ohta, Kenji; and Kobayashi, Shozo, 5,343,448, Cl. 369-13.000.

Ohta, Tadatoshi, to Kabushiki Kaisha Toshiba. Magnet device for generating static magnetic field in MRI. 5,343,182, Cl. 335-299.000.

Ohta, Tomihisa: *See*—
Sakurai, Kuniya; Izawa, Kunisuke; Izawa, Hiroyuki; Ineyama, Takashi; Ohta, Tomihisa; and Nozoe, Shigeo, 5,342,963, Cl. 548-532.000.

Ohtomo, Tsuyoshi: *See*—
Komori, Takashi; Eshita, Yoshiyuki; Ohtomo, Tsuyoshi; and Hirota, Hajime, 5,342,611, Cl. 424-70.000.

Ohtsuka, Hiroshi; Abe, Kazutoshi; and Taguchi, Takashi, to Oki Electric Industry Co., Ltd. Phase shifting mask. 5,342,713, Cl. 430-5.000.

Ohtsuka, Takahiro; and Shirota, Shozo, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory apparatus, test apparatus therefor and method for relieving semiconductor memory apparatus from short circuit. 5,343,431, Cl. 365-201.000.

Ohwada, Mitsutoshi; Matsugu, Masakazu; Suda, Shigeyuki; Yoshii, Minoru; Niwa, Yukichi; Nose, Noriyuki; Saitoh, Kenji; and Hasegawa, Masanobu, to Canon Kabushiki Kaisha. Method and apparatus for measuring an interval between two objects. 5,343,291, Cl. 356-356.000.

Ohyama, Tsukasa; Kuroda, Shizuo; Takuma, Keisuke; and Aiga, Hiroshi, to Mitsui Toatsu Chemicals, Incorporated. Halogenated anthraquinone and their use as near infrared rays absorbing optical filters. 5,342,974, Cl. 552-259.000.

Oi, Nakao; and Komatsuzaki, Hiroshi, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film package and production method therefor. 5,343,265, Cl. 354-222.000.

Okabayashi, Kiyoshi, to Harnden, Eric F. Method for electroplating metal onto a non-conductive substrate treated with basic accelerating solutions for metal plating. 5,342,501, Cl. 205-50.000.

Okabe, Masami: *See*—
Doran, Thomas I.; McLane, John A.; Okabe, Masami; Scalone, Michelangelo; and Uskokovic, Milan R., 5,342,833, Cl. 514-167.000.

Okabe, Satoshi; and Aoki, Sunao, to Olympus Optical Co., Ltd. Self-cooling optomagnetic desk device with locking internal mechanism. 5,343,447, Cl. 369-13.000.

Okada, Katsuyuki: *See*—
Tsujiuchi, Jumpei; and Okada, Katsuyuki, 5,343,410, Cl. 364-525.000.

Okada, Yoshitaka: *See*—
Tsurutani, Iwao; Manabe, Takafumi; Emoto, Ikuo; Nagayasu, Isao; and Okada, Yoshitaka, 5,342,695, Cl. 428-516.000.

Okamoto, Arifumi; and Shibayama, Ikuo, to Mitsubishi Jukogyo Kabushiki Kaisha. Cutting apparatus for corrugated cardboard sheets. 5,341,713, Cl. 83-865.000.

Okamoto, Kazuhisa: *See*—
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishge, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,342,698, Cl. 428-612.000.

Okamoto, Kyoko: *See*—
Yoshikawa, Tadao; Okamoto, Kyoko; and Ikari, Tokuo, 5,342,669, Cl. 428-64.000.

Okamoto, Yutaka; Yamada, Makoto; and Shinguu, Masataka, to Sony Corporation. Semiconductor device and method of manufacturing same. 5,343,066, Cl. 257-393.000.

Okamura, Kyuya: *See*—
Ohnota, Michiro; Okamura, Kyuya; Hirata, Yoshihiro; Murakami, Koji; and Ohashi, Mitsua, 5,342,850, Cl. 514-369.000.

Okano, Hidehito: *See*—
Kawazoe, Shozo; and Okano, Hidehito, 5,342,468, Cl. 156-233.000.

Okano, Masami: *See*—
Takeuchi, Kunihiro; and Okano, Masami, 5,343,394, Cl. 364-424.050.

Okazaki, Yoji, to Fuji Photo Film Co., Ltd. Laser diode pumped solid state laser. 5,343,485, Cl. 372-22.000.

Oki Electric Industry Co., Ltd.: *See*—
Ohtsuka, Hiroshi; Abe, Kazutoshi; and Taguchi, Takashi, 5,342,713, Cl. 430-5.000.
Shiraogawa, Michio; and Konishi, Hiroshi, 5,343,305, Cl. 358-407.000.

Okumoto, Victor H.: *See*—
Tung, Francisca; and Okumoto, Victor H., 5,342,495, Cl. 204-297.00R.

Okumura, Osamu: *See*—
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,343,317, Cl. 359-73.000.

Okunishi, Masahiko: *See*—
Hatsuya, Satoshi; Sekiyama, Takaaki; Tsuji, Takashi; Iwayama, Satoshi; and Okunishi, Masahiko, 5,342,840, Cl. 514-262.000.

Old, Lloyd J.: *See*—
Garin-Chesa, Pilar; Rettig, Wolfgang J.; and Old, Lloyd J., 5,342,757, Cl. 435-7.210.

Oldfield, James A.: *See*—
Pummell, Leslie J. H.; Ward, Paul C.; Kingdon, Stephen J.; and Oldfield, James A., 5,343,266, Cl. 354-340.000.

Oldham, Elizabeth R.: *See*—
Daley, Michael J.; Steber, William D.; Furda, Gary J.; Johnston, Paul A.; and Oldham, Elizabeth R., 5,342,612, Cl. 424-85.100.

Olin Corporation: *See*—
Capuano, Italo A.; and Creasy, Kenneth E., 5,342,786, Cl. 436-103.000.
Cawlfield, David W.; and Mendiratta, Sudhir K., 5,342,601, Cl. 423-478.000.
Gavin, David F.; Hani, Rahim; Waldron, Craig; and Farmer, Douglas A., Jr., 5,342,437, Cl. 106-18.330.
Parthasarathi, Arvind; and Mahulikar, Deepak, 5,343,073, Cl. 257-666.000.

Oliver, Gene S.: *See*—
Shubin, Jack A.; Oliver, Gene S.; and Jerabek, Jeff J., 5,341,556, Cl. 29-448.000.

Oliver, Hoover, Jr.: *See*—
Chen, Colin; Oliver, Hoover, Jr.; and Zurfluh, Thomas, 5,341,779, Cl. 123-193.300.

Oliver Rubber Company: *See*—
King, Michael J.; Flynn, Robert A.; and Torrez, Henry, 5,342,462, Cl. 156-96.000.

Oliver, Stephen B.: *See*—
Gross, H. Gerald; and Oliver, Stephen B., 5,343,375, Cl. 362-248.000.

Olkoski, Jill C.: *See*—
Kottke, Wilfried E.; and Olkoski, Jill C., 5,343,213, Cl. 343-702.000.

Olmos, Jose L.: *See*—
Burns, James L.; Dicus, Bryan J.; Jasti, Jayanthi K.; Kendall, Jerry J.; Olmos, Jose L.; and Zambrano, Luis G., 5,341,876, Cl. 166-263.000.

Olson, Jerry M., to Midwest Research Institute. Heterojunction solar cell. 5,342,453, Cl. 136-262.000.

Olson, John T.: *See*—
Fritz, Barbara L.; Olson, John T.; Morganson, Stephen A.; and Sullivan, William E., 5,342,584, Cl. 422-124.000.

Olson, Walter H.; and Peterson, David K., to Medtronic, Inc. Method and apparatus for detection and treatment of tachycardia and fibrillation. 5,342,402, Cl. 607-5.000.

Olsson, Jan, to General Engineering (Netherlands) B.V. Accelerometer arrangement. 5,343,411, Cl. 364-566.000.

Olympus Optical Co., Ltd.: *See*—
Itoh, Junichi; Dai, Masahiro; and Watanabe, Yoji, 5,343,264, Cl. 354-106.000.
Matsuno, Kiyotaka; Kawashima, Masahiro; and Nakada, Akio, 5,342,394, Cl. 606-213.000.
Miyazawa, Azuma; Suzuki, Takashi; and Mizobuchi, Kozi, 5,343,553, Cl. 395-3.000.
Okabe, Satoshi; and Aoki, Sunao, 5,343,447, Cl. 369-13.000.
Wada, Toru; Komiya, Yasuhiro; and Nagasaki, Tatsuo, 5,343,254, Cl. 348-627.000

Omati, Masahiro: *See*—
Amano, Yoshinari; Omati, Masahiro; and Matsumura, Junzo, 5,342,573, Cl. 419-38.000.

Omron Corporation: *See*—
Tanaka, Yasuo, 5,343,026, Cl. 235-449.000.
Yamada, Kazutoshi, 5,343,477, Cl. 371-8.200.

Omura, Yoshiteru: *See*—
Morikawa, Takeshi; Tsukada, Kouji; Nonomura, Yutaka; and Omura, Yoshiteru, 5,341,688, Cl. 73-862.680.

Ondrla, Jeffrey M.: *See*—
Kenyon, Roger R.; Landes, Mark D.; Campana, Donna L.; Geremakis, Perry A.; Dock, Ted L.; and Ondrla, Jeffrey M., 5,342,362, Cl. 606-79.000.

Onet, S.A.: *See*—
Soupert, Jean-Louis D. C.; and Poujon, Joel O. P., 5,341,540, Cl. 15-319.000.

Onga, Makoto: *See*—
Sase, Masatoshi; and Onga, Makoto, 5,343,244, Cl. 348-222.000.

Onishi, Noriaki: *See*—
Yamada, Nobuaki; Hirai, Toshiyuki; Onishi, Noriaki; and Kohzaki, Shuichi, 5,342,545, Cl. 252-299.010.

Ono, Hiroo; Kikuchi, Shuji; Tomoyasu, Masayuki; Takayama, Naoki; and Tomoyoshi, Riki, to Tokyo Electron Limited. Ion implantation system. 5,343,047, Cl. 250-492.210.

Ono, Keiichi; Kai, Yoshiyuki; and Maeda, Hiroo, to Sumitomo Pharmaceuticals Company, Limited; and Seikagaku Corporation. Polyethylene glycol derivatives, process for preparing the same. 5,342,940, Cl. 544-218.000.

Ono, Tsuyoshi: *See*—
Sato, Shigehiro; Matsunaga, Yoshiyuki; and Ono, Tsuyoshi, 5,343,021, Cl. 219-541.000.

Onodera, Makoto: *See*—
Miyoshi, Masanobu; Kajiwara, Makoto; and Onodera, Makoto, 5,342,748, Cl. 430-558.000.

Onodera, Shinya; and Kawashima, Toshiharu, to Yazaki Corporation. Terminal-locking construction. 5,342,219, Cl. 439-595.000.

Ontario Hydro: *See*—
Gupta, Bal K., 5,343,045, Cl. 250-339.100.

Oohata, Tosifumi; Mori, Mutsuhiro; and Sakurai, Naoki, to Hitachi, Ltd. Lateral insulated gate bipolar transistor. 5,343,052, Cl. 257-141.000.

Oomuro, Katsumi: *See*—
Sekihata, Osamu; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Tanaka, Kenji; Hatta, Hiroyuki; and Furuya, Reiko, 5,343,462, Cl. 370-13.000.

Oonisi, Kenji: *See*—
Usui, Hiroaki; Hirao, Shozo; Konishi, Satoru; Ishikawa, Hiroyuki; Oonisi, Kenji; and Adachi, Arihiro, 5,342,651, Cl. 427-209.000.

Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for adjusting optical axis including a beam shaping prism. 5,343,332, Cl. 359-837.000.

Oota, Yoshimi: *See*—
Fukui, Tetsu; Oota, Yoshimi; and Hasegawa, Shigekazu, 5,341,893, Cl. 180-245.000.

O'Patka, Dennis J.: *See*—
Williamson, Craig; Luecke, Mark; Wildman, John R.; and O'Patka, Dennis J., 5,342,064, Cl. 273-447.000.

Oppenheim, Richard C.: *See*—
Williams, Alan H.; Staples, Linton D.; Thiel, William J.; Oppenheim, Richard C.; and Clarke, Iain J., 5,342,622, Cl. 424-425.000.

Optex Biomedical, Inc.: *See*—
Salter, James R., 5,342,190, Cl. 425-469.000.

Optical Concepts, Inc.: *See*—
Scott, Jeffery W.; and Coldren, Larry A., 5,343,487, Cl. 372-46.000.

Orbanic, Robert S.: *See*—
Byler, Tom E.; Orbanic, Robert S.; and Suchar, Kimberly J., 5,342,503, Cl. 205-138.000.

Oriental Construction Company: *See*—
Yokota, Tsutomu, 5,342,568, Cl. 264-228.000.

Orion-Yhtyma Oy: *See*—
Risteli, Juha; and Risteli, Leila, 5,342,756, Cl. 435-7.210.

Orth, Gerard; Favre, Michel; Kremsdorf, Dina; and Pehau-Arnaudet, Gerard, to Institut Pasteur. Isolated DNA of human papillomavirus type 54(HPV54). 5,342,930, Cl. 536-23.720.

Orthofix S.r.l.: *See*—
Faccioli, Giovanni; and Venturini, Daniele, 5,342,360, Cl. 606-59.000.

Osada, Noriko, to Fujitsu Limited. Method for selecting a broadcast voice channel served in a telephone switching network, and a system thereof. 5,343,511, Cl. 379-58.000.

Osada, Torachika: *See*—
Hirosawa, Toshiaki; Osada, Torachika; Moriyama, Jiro; Kubota, Hidemi; Koizumi, Yutaka; Kaneko, Mineo; Murayama, Yasushi; Miura, Yasushi; and Moriguchi, Haruhiko, 5,343,227, Cl. 349-42.000

Osborne, James L.: *See*—
Enscore, David J.; Campbell, Patricia S.; Osborne, James L.; Smart, Melinda K.; and Yum, Su I., 5,342,623, Cl. 424-448.000.

Osborne, Joseph M.: *See*—
Tsakanikas, Peter D.; and Osborne, Joseph M., 5,342,589, Cl. 423-53.000.

Oshita, Fumiyo, to Mitsubishi Denki Kabushiki Kaisha. Facsimile machine using cut sheets of paper of multiple sizes. 5,343,306, Cl. 358-441.000.

Osikowicz, Eugene W.: *See*—
Baker, Harold N.; Eng, Katherine K.; Gurner, William D.; Massei, Michael K.; Necklaws: Elizabeth C.; Osikowicz, Eugene W.; Ramp, Sally K.; and Trach, Paula, 5,342,760, Cl. 435-7.920.

Osman, Akhtar, to Polysar Rubber Corporation. Process for preparing halobutyl-type polymer. 5,342,908, Cl. 526-135.000.

Osram Sylvania Inc.: *See*—
Byler, Tom E.; Orbanic, Robert S.; and Suchar, Kimberly J., 5,342,503, Cl. 205-138.000.
Newell, Philip B., 5,342,233, Cl. 445-6.000.
Wyner, Elliot; White, Robert; Makhlis, Semyon; and Davey, Ernest, Jr., 5,343,117, Cl. 313-623.000.

Ossman, Kenneth R.; and Dunn, Susan E., to Xerox Corporation. Compact ros imaging system. 5,343,326, Cl. 359-216.000.

Osterloh, William T., to Texaco Inc. Fatty acid salts as steam foaming agents. 5,341,878, Cl. 166-272.000.

Oswald, William A.: *See*—
Melber, George E.; Wolinski, Leon E.; and Oswald, William A., 5,342,689, Cl. 428-402.220.

Ota, Hitoshi: *See*—
Inanaga, Kazuhiko; Ota, Hitoshi; Yamauchi, Shiro; and Kawabata, Takashi, 5,342,500, Cl. 204-421.000.

Ota, Takashi; Taguchi, Osamu; and Itahashi, Hiromichi, to Sony Corporation. Tape cassette with erasure preventing plug having a head portion with a slanted bottom surface. 5,343,349, Cl. 360-132.000.

Ota, Takeshi; Arii, Mitsuzo; Hirata, Masukazu; and Kawabata, Yasunari, to Fuji Xerox Co., Ltd.; and Mitsubishi Gas Chemical Company, Inc. Interconnectable multi-terminal star coupler. 5,343,545, Cl. 385-46.000.

Otis Elevator Company: *See*—
Ahls, Hermann W.; and Von Herz, Alfons, 5,341,909, Cl. 198-335.000.
Jamieson, Eric K.; McCarthy, Richard C.; and Yoo, Young S., 5,343,003, Cl. 187-131.000.

Otsuka Pharmaceutical Co., Ltd.: *See*—
Nakai, Satoru; and Hirai, Yoshikatsu, 5,342,614, Cl. 424-85.200.
Nakai, Satoru; and Hirai, Yoshikatsu, 5,342,615, Cl. 424-85.200.

Otto Engineering, Inc.: *See*—
Roeser, Thomas; and Crawford, Michael J., 5,343,007, Cl. 200-296.000.

Otvos, James D., to North Carolina State University. Method and apparatus for measuring classes and subclasses of lipoproteins. 5,343,389, Cl. 364-413.090.

Oue, Tatuya: *See*—
Shimada, Uji; and Oue, Tatuya, 5,343,183, Cl. 335-301.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Owens-Corning Fiberglas Technology Inc.: *See—*
Trumbore, David C.; Franzen, Michael R.; and Wilkinson, Charles R., 5,342,866, Cl. 524-68.000.

Oyama, Yoshihiro: *See—*
Katoh, Hiroaki; Miyazaki, Toshimasa; Takahashi, Tamotsu; Ishii, Takeshi; Oyama, Yoshihiro; Oyama, Yoshihiro; and Sasaki, Tatsuo, 5,343,029, Cl. 235-467.000.
Katoh, Hiroaki; Miyazaki, Toshimasa; Takahashi, Tamotsu; Ishii, Takeshi; Oyama, Yoshihiro; Oyama, Yoshihiro; and Sasaki, Tatsuo, 5,343,029, Cl. 235-467.000.

Oyen, Johannes P. H.: *See—*
van Dorsselaer, Etienne L. M. E.; and Oyen, Johannes P. H., 5,343,283, Cl. 358-445.000.

Ozawa, Yoshio: *See—*
Yamamoto, Takashi; and Ozawa, Yoshio, 5,343,273, Cl. 355-75.000.

Pabon, Hendrik J. J.: *See—*
Bowser, Paul A.; Froling, Albert; Heslinga, Lammert; Houtsmuller, Udo M. T.; Nugteren, Diederik H.; Pabon, Hendrik J. J.; and Prottey, Colin, 5,342,976, Cl. 554-36.000.

Pacifici, Joseph A.; and Sims, Daniel G. Method of treating cationic dyeable nylon fibers to inhibit cold water bleed. 5,342,417, Cl. 8-685.000.

Padgett Instruments, Inc.: *See—*
Waldman, Joel N., 5,342,365, Cl. 606-85.000.

Padmanabhan, Sriram: *See—*
Meirowitz, Randy E.; Padmanabhan, Sriram; Phelan, Robert J.; and Tang, Kim T., 5,342,336, Cl. 604-378.000.

Padovan, Alessandro. Assembly for a chair with adjustable seat back and leg-rest. 5,342,112, Cl. 297-362.130.

Paeth, David S.: *See—*
Gadsby, Peter D.; Paeth, David S.; Gross, Stephen W.; and Lyster, Thomas D., 5,341,806, Cl. 128-640.000.

Pages, Jean-Pierre: *See—*
Froment, Jean-Paul; and Pages, Jean-Pierre, 5,341,850, Cl. 139-79.000.

Paglis, John. Arrow rest with integrated arrow holder. 5,341,789, Cl. 124-44.500.

Pagryzinski, William V.: *See—*
Cohen, Brian E.; Greenberg, William M.; Pagryzinski, William V.; and Smith, Brian E., 5,343,288, Cl. 356-239.000.

Pai, Damodar M.; Yanus, John F.; DeFeo, Paul J.; Toth, Alan E. J.; Mychajlowskij, Walter; and Popovic, Zoran, to Xerox Corporation. Imaging members having a hydroxy aryl amine charge transport layer. 5,342,719, Cl. 430-59.000.

Pakusch, Joachim: *See—*
Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, 5,342,916, Cl. 528-150.000.

Palansky, Bruce J.; Greene, Thomas L.; Daubenmier, John A.; Smith, Paul F.; Kock, Karl H.; Bird, Stuart L.; and McCall, Gavin F., to Ford Motor Company. Performance mode and economy mode shift scheduling in an automatic transmission. 5,341,703, Cl. 477-65.000.

Palazzotto, Michael C.: *See—*
Eisele, John F.; Smith, Terrance P.; and Palazzotto, Michael C., 5,342,645, Cl. 42.7-1.000.

Palecek, Vincent J.; McGinley, James W.; and Schofield, Philip W. Overconnector assembly. 5,343,547, Cl. 375-76.000.

Pallante, Robert R.: *See—*
Fulkerson, Terrence M.; and Pallante, Robert R., 5,341,989, Cl. 239-3.000.

Paloma Kogyo Kabushiki Kaisha: *See—*
Ejiri, Susumu; and Hiraoka, Hajime, 5,341,728, Cl. 99-336.000.

Palombo, Mario: *See—*
Lara, Jess D.; and Palombo, Mario, 5,343,295, Cl. 356-399.000.

Paluszek, Michael A.: *See—*
Goodzeit, Neil E.; Paluszek, Michael A.; Raman, Kidambi V.; and Wallar, Eric V., 5,343,398, Cl. 364-434.000.

Panzer, Hans P.; and Giovanni, Lino, to CYTEC Technology Corp. Narrow band radiation filter films. 5,342,552, Cl. 252-582.000.

Panzeri, Achille; Ceriani, Lucio; Griggi, Pierluigi; and Nesi, Marcella, to Farmitalia Carlo Erba S.R.L. Process for the preparation of 17β-substituted-4-aza-5α-androstan-3-one derivatives. 5,342,948, Cl. 546-77.000.

Paoli, Thomas L., to Xerox Corporation. Diode laser multiple output scanning system. 5,343,224, Cl. 346-108.000.

Papst Licensing GmbH: *See—*
Hans, Helmut; and Moini, Mojtaba, 5,343,129, Cl. 318-431.000.

Paragon Trade Brands, Inc.: *See—*
Lancaster, E. Peter; and Young, Richard H., 5,342,344, Cl. 604-387.000.

Pare, Gregoire: *See—*
Bolduc, Leonard; and Pare, Gregoire, 5,343,381, Cl. 363-47.000.

Parel, Jean-Marie: *See—*
Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, 5,342,370, Cl. 606-107.000.

Pareto Partners, Inc.: *See—*
Nafeh, John, 5,343,251, Cl. 348-571.000.

Paris, Jean; and Chemello, Jean-Pierre, to Salomon S.A. Ski boot having a closure device. 5,341,584, Cl. 36-117.000.

Park, Hong C., to Goldstar, Co., Ltd. Portable LCD projector. 5,343,262, Cl. 353-119.000.

Park, Jong H., to Samsung Electronics Co., Ltd. Combustion efficiency enhancing apparatus of liquid fuel. 5,342,586, Cl. 422-211.000.

Parker, David; and Eaton, Michael A. W. Tetra-aza macrocycles and processes for their preparation. 5,342,936, Cl. 540-474.000.

Parkhurst, Harry C.: *See—*
Brinkerhoff, Ronald J.; Mills, Earl J.; Parkhurst, Harry C.; and Madden, Martin, 5,342,382, Cl. 606-184.000.

Parris, Warran M.: *See—*
Adams, Roy E.; Parris, Warran M.; and Bania, Paul J., 5,342,458, Cl. 148-670.000.

Parrott, Jeffrey W.: *See—*
Kinney, Russell C.; Kinney, Donald C.; Paullin, Lyle; Paullin, Richard; Parrott, Jeffrey W.; and Smith, Donald, 5,342,164, Cl. 414-786.000.

Parsy, Roland: *See—*
Glotin, Michel; Parsy, Roland; and Abadie, Patrick, 5,342,886, Cl. 525-66.000.

Parthasarathi, Arvind; and Mahulikar, Deepak, to Olin Corporation. Lead frames having a chromium and zinc alloy coating. 5,343,073, Cl. 257-666.000.

Partis, Richard A.: *See—*
Mueller, Richard A.; and Partis, Richard A., 5,342,838, Cl. 514-252.000.

Partridge, Charles C.: *See—*
Manson, Ronald J.; and Partridge, Charles C., 5,341,840, Cl. 137-527.800.

Paschedag, Ulrich; and Merten, Gerhard, to Westfalia Becorit Industrietechnik GmbH. Control system for automatically halting the movement of a machine in the mine working. 5,343,130, Cl. 318-434.000.

Pashley, Robert F.: *See—*
Farrall, George A.; Cocoma, John P.; Borowiec, Joseph C.; and Pashley, Robert F., 5,343,126, Cl. 315-248.000.

Pass Laboratories, Inc.: *See—*
Pass, Nelson S., 5,343,166, Cl. 330-264.000.

Pass, Nelson S., to Pass Laboratories, Inc. Efficient high fidelity audio power amplifier. 5,343,166, Cl. 330-264.000.

Pastyr, Otto, to Siemens Aktiengesellschaft. Contour collimator for radiation therapy. 5,343,048, Cl. 250-505.100.

Patel, Mahesh G.: *See—*
Hegde, Vinod R.; Horan, Ann C.; Marquez, Joseph A.; and Patel, Mahesh G., 5,342,852, Cl. 514-461.000.

Patel, Urmil: *See—*
Marozzi, John; Rochon, Greg; Patel, Urmil; and Dambly, Ben, 5,341,737, Cl. 101-216.000.

Patent-Treuhand-Gesellschaft feur elektrische Gluehlampen mbH: *See—*
Bernitz, Franz; Huber, Andreas; and Hansmann, Frank, 5,343,125, Cl. 315-245.000.

Patton, Bob J. System for controlled drilling of boreholes along planned profile. 5,341,886, Cl. 175-24.000.

Patton Electric Company, Inc.: *See—*
Patton, Noel T., 5,342,175, Cl. 416-247.00R.

Patton, Noel T., to Patton Electric Company, Inc. Grill. 5,342,175, Cl. 416-247.00R.

Patzschke, Hans-Peter: *See—*
Gobel, Armin; Patzschke, Hans-Peter; and Doebert, Jurgen, 5,342,882, Cl. 524-832.000.

Paul, Marius A. Gas turbine engine operating method. 5,341,636, Cl. 60-39.030.

Paullin, Lyle: *See—*
Kinney, Russell C.; Kinney, Donald C.; Paullin, Lyle; Paullin, Richard; Parrott, Jeffrey W.; and Smith, Donald, 5,342,164, Cl. 414-786.000.

Paullin, Richard: *See—*
Kinney, Russell C.; Kinney, Donald C.; Paullin, Lyle; Paullin, Richard; Parrott, Jeffrey W.; and Smith, Donald, 5,342,164, Cl. 414-786.000.

Payne, Frederick C.; and Kilmer, Galen L., to ETG Environmental, Inc.-MWR Division. Method of recovering subsurface contaminants. 5,342,147, Cl. 405-128.000.

Pearce, Glenn T., to Eastman Kodak Company. Dye migration barrier layer for dual laminate process for thermal color proofing. 5,342,821, Cl. 503-227.000.

Pearson, Kenneth C.: *See—*
Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., 5,341,680, Cl. 73-379.060.

Peckerar, Martin C.: *See—*
Georger, Jacque H., Jr.; Peckerar, Martin C.; Rebbert, Milton L.; Calvert, Jeffrey M.; and Hickman, James J., 5,342,737, Cl. 430-324.000.

Pedersen, Sven; and Hansen, Tomas T., to Novo Nordisk A/S. Immobilization of thermostable microbial lipase by adsorption to macroporous inorganic carrier particles. 5,342,768, Cl. 435-134.000.

Pehau-Arnaudet, Gerard: *See—*
Orth, Gerard; Favre, Michel; Kremsdorf, Dina; and Pehau-Arnaudet, Gerard, 5,342,930, Cl. 536-23.720.

Peherstorfer, Helmut: *See—*
Hochdanninger, Franz; and Peherstorfer, Helmut, 5,341,999, Cl. 242-397.100.

Pellicone, Frank M.: *See—*
Kountz, Dennis J.; and Pellicone, Frank M., 5,342,828, Cl. 505-238.000.

Pena, James A.: *See—*
Beck, Niels J.; Pena, James A.; Roach, Alan R.; and Johnston, Bevan H., 5,341,783, Cl. 123-446.000.

Pendleton, William B.: *See—*
Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., 5,341,680, Cl. 73-379.060.

Peng, Chih-Wen. Swing arm. 5,342,137, Cl. 403-164.000.

Peng, Yu-Min; Wang, Jih-Wen; Liue, Chun-Ying; and Yeh, Shinn-Horng, to Industrial Technology Research Institute. Method of preparing silicon carbide particles dispersed in an electrolytic bath for composite electroplating of metals. 5,342,502, Cl. 205-109.000.

Penner, Erich R. Hinged-blade roadside mower. 5,341,629, Cl. 56-15.200.

Penner, Gordon A.; Mok, Winston K. C.; Lang, Steven F.; and Huscroft, Charles K., to PMC-Sierra, Inc. Method and apparatus for detecting pulse density violations in T1 transmission. 5,343,482, Cl. 371-57.200.

Penzkofer, Ludwig, to Max Frank GmbH & Co KG. Concrete insert element and concrete structure having at least one concrete insert element. 5,341,616, Cl. 52-340.000.

Pepin, Regis; Schmitz, Christian; Lacroix, Guy-Bernard; Dellis, Philippe; and Veyrat, Christine, to Rhone-Poulenc Agrochimie. Antifungal agents based on amides containing a phenyl group. 5,342,835, Cl. 514-227.500.

Peppel, Peter; and Raines, Kenneth C., to B. Braun Medical, Inc. Capless medical valve. 5,342,326, Cl. 604-284.000.

Peppers, Norman A.: *See—*
Schaefer, Louis F.; Frohbach, Hugh E.; Pierce, Gerald A.; and Peppers, Norman A., 5,343,458, Cl. 369-97.000.

PepsiCo Inc.: *See—*
Wolf, Peter A.; Clare, Kenneth, deceased; and Kuo, Kun P., 5,342,643, Cl. 426-590.000.

Peratello, Stefano; Perego, Carlo; and Bellussi, Giuseppe, to Eniricerche S.p.A.; Euron S.p.A.; and Snamprogetti, S.p.A. Extruded catalyst based on silica/alumina gel, and process for preparing it. 5,342,814, Cl. 502-263.000.

Perego, Carlo: *See—*
Peratello, Stefano; Perego, Carlo; and Bellussi, Giuseppe, 5,342,814, Cl. 502-263.000.

Perez, Libardo A., to Betz Laboratories, Inc. Compositions for controlling scale formation in aqueous system. 5,342,540, Cl. 252-181.000.

Perlman, Bill: *See—*
Terman, Michael; Perlman, Bill; and Fairhurst, Stephen, 5,343,121, Cl. 315-158.000.

Perlman, Daniel, to Brandeis University. Use of non-adhesive stretch-film as a laboratory container closure. 5,341,557, Cl. 29-446.000.

Perlman, Kato L.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; Sicinski, Rafal R.; and Prahl, Jean M., 5,342,975, Cl. 552-653.000.

Perlman, Marvin: *See—*
Goldfine, Milton; Perlman, Marvin; and Montgomery, Robert A., 5,343,529, Cl. 380-23.000.

Perneczky, George C. Method and apparatus for polishing hot strip mill run-out table rolls. 5,341,607, Cl. 51-289.00R.

Perrell, Susan M.: *See—*
Brook, Robert A.; Crews, Gary A.; and Perrell, Susan M., 5,341,670, Cl. 73-40.50A.

Perretta, Frederick A.; and Yednasty, Joseph S., to United Technologies Corporation. Low profile backshell/wiring integration and interface system. 5,342,203, Cl. 439-76.000.

Perrin, David P.: *See—*
Bullis, Stephen J.; Perrin, David P.; and Wolff, Peter C., 5,341,719, Cl. 89-16.000.

Perry, Jeffrey R.; Sadjadi, S. M. Reza; and Luttinger, Kristen A., to National Semiconductor Corporation. Controllable isotropic plasma etching technique for the suppression of stringers in memory cells. 5,342,801, Cl. 437-52.000.

Persello, Jacques, to Rhone-Poulenc Chimie. Precipitated silica particulates having controlled porosity. 5,342,598, Cl. 423-339.000.

Persson, Jan-Ove; Lejdeborn, Lars; and Berg, Olle, to ATOS Medical AB. Method for draining antrum. 5,342,296, Cl. 604-49.000.

Perstorp AB: *See—*
Siren, Matti, 5,342,832, Cl. 514-103.000.

Peter-Hoblyn, Jeremy D.; and Grimard, Francois X., to Fuel Tech Europe Ltd. Lance-type injection apparatus for introducing chemical agents into flue gases. 5,342,592, Cl. 423-235.000.

Petereit, Hans-Ulrich: *See—*
Kleese, Wolfgang; Kraemer, Dieter; Petereit, Hans-Ulrich; Lehmann, Klaus; and Siol, Werner, 5,342,646, Cl. 427-2.100.

Peteri, Henri B.; and Peteri, Niels T. Device and method for boiling water. 5,343,552, Cl. 392-451.000.

Peteri, Niels T.: *See—*
Peteri, Henri B.; and Peteri, Niels T., 5,343,552, Cl. 392-451.000.

Petersen, Robert L., to Viprotec. Ultrasonic pest control device and method for constructing the same. 5,341,762, Cl. 116-137.00A.

Petersen, Thomas D. Intramedullary universal proximal tibial resector guide. 5,342,368, Cl. 606-88.000.

Peterson, Bruce A., to Molex Incorporated. Keying system for electrical connectors. 5,342,221, Cl. 439-677.000.

Peterson, David K.: *See—*
Olson, Walter H.; and Peterson, David K., 5,342,402, Cl. 607-5.000.

Peterson, Maximilian R.: *See—*
Mohan, Ned; Peterson, Maximilian R.; and Quinn, Conor A., 5,343,079, Cl. 307-105.000.

Peterson, Michael A., to Moore Business Forms, Inc. Business form assembly with integrated mailer and return envelope. 5,341,985, Cl. 229-305.000.

Peterson, Ray D.: *See—*
Cook, John O.; and Peterson, Ray D., 5,342,428, Cl. 75-401.000.

Peterson, Ricky M.: *See—*
Kiel, Harvey G.; Peterson, Ricky M.; and Whitley, Lawrence D., 5,343,557, Cl. 395-118.000.

Petit, Pierre-Marie: *See—*
Davies, Dylan H.; and Petit, Pierre-Marie, 5,343,153, Cl. 324-366.000.

Petitjean, William L.: *See—*
Way, Peter F.; and Petitjean, William L., 5,341,962, Cl. 222-248.000.

Petri, Folf: *See—*
Franzman, Gernot; Petri, Folf; and Pitteroff, Walter, 5,342,897, Cl. 525-221.000.

Petri, Randy J.: *See—*
Marianowski, Leonard G.; and Petri, Randy J., 5,342,706, Cl. 429-35.000.

Petroleo Brasileiro S.A.: *See—*
Silva, Jose E., 5,341,884, Cl. 166-347.000.

Petzoldt, Joachim: *See—*
Sirinyan, Kirkor; Petzoldt, Joachim; and Henning, Wolfgang, 5,342,890, Cl. 525-130.000.

Peuterbaugh, Bruce G., to J. P. Tool, Inc. Coupling structure and method. 5,341,710, Cl. 409-234.000.

Pezeshki, Bardia: *See—*
Kash, Jeffrey A.; Pezeshki, Bardia; and Tong, Franklin F., 5,343,542, Cl. 385-31.000.

Pfeffer, Jack R. Method of forming composite of glass fibers of various filament diameters into a fibrous mat. 5,342,424, Cl. 65-450.000.

Pfefferle, William C. Catalytic method. 5,342,591, Cl. 423-210.000.

Pfizer Inc.: *See—*
Cheng, John B., 5,342,842, Cl. 514-274.000.

Pflueger, Russell: *See—*
Nita, Henry; and Pflueger, Russell, 5,342,292, Cl. 604-22.000.

Phadke, Makarand D.: *See—*
McDade, Christine; Phadke, Makarand D.; and Weir, William D., 5,342,487, Cl. 203-6.000.

Phelan, Robert J.: *See—*
Meirowitz, Randy E.; Padmanabhan, Sriram; Phelan, Robert J.; and Tang, Kim T., 5,342,336, Cl. 604-378.000.

Phelps, Harold E. Fuel supply system. 5,341,776, Cl. 123-73.00C.

Philip Morris Incorporated: *See—*
Budjinski, Joseph F.; Campbell, Steven M.; and Ward, E. Theodore, 5,342,657, Cl. 427-424.000.
Cutright, Edwin L.; Scott, G. Robert; and Vogt, Howard W., 5,342,484, Cl. 162-139.000.
Fleenor, J. Jerome; and Wilder, Duane C., 5,341,925, Cl. 206-268.000.
Fletcher, Thomas A.; and Longest, H. Cary, Jr., 5,341,824, Cl. 131-281.000.

Phillips, Anthony: *See—*
Wilkinson, Roy R.; and Phillips, Anthony, 5,342,893, Cl. 525-176.000.

Phillips, Jonathan W., Jr., to Phillips and Rodgers, Inc. Ejector and cartridge positioner. 5,341,587, Cl. 42-68.000.

Phillips Petroleum Company: *See—*
Jenneman, Gary E.; and Clark, Bennett, 5,341,875, Cl. 166-246.000.
Watts, Jackie C., 5,343,407, Cl. 364-501.000.

Phillips and Rodgers, Inc.: *See—*
Phillips, Jonathan W., Jr., 5,341,587, Cl. 42-68.000.

Physio-Control Corporation: *See—*
Gadsby, Peter D.; Paeth, David S.; Gross, Stephen W.; and Lyster, Thomas D., 5,341,806, Cl. 128-640.000.

Pich, Julia: *See—*
Coldrick, Philip J.; and Pich, Julia, 5,342,732, Cl. 430-264.000.

Picha, George J., to Applied Medical Research, Inc. Drug diffusion polymer system and method. 5,342,628, Cl. 424-484.000.

Pichon, Philippe M. P.: *See—*
Coudray, Xavier G. A.; Derrien, Mischael F. L.; and Pichon, Philippe M. P., 5,342,172, Cl. 416-97.00R.

Pidcock, Ralph M. Apparatus for the retrieval and refiling of documents in flat file storage drawers. 5,341,940, Cl. 209-702.000.

Pielartzik, Harald: *See—*
Kumpf, Robert J.; Meltzer, Aaron D.; and Pielartzik, Harald, 5,342,905, Cl. 525-534.000.

Pierce, Gerald A.: *See—*
Schaefer, Louis F.; Frohbach, Hugh E.; Pierce, Gerald A.; and Peppers, Norman A., 5,343,458, Cl. 369-97.000.

Pierce & Stevens Corporation: *See—*
Melber, George E.; Wolinski, Leon E.; and Oswald, William A., 5,342,689, Cl. 428-402.220.

Pilkington, Ian J.: *See—*
Bangerter, Ulrich; Beh, Beng H.; Callis, Alfred B.; and Pilkington, Ian J., 5,342,632, Cl. 426-45.000.

Pilling, Richard L.: *See—*
Brown, Roger A.; Pilling, Richard L.; and Young, Donald C., 5,342,629, Cl. 424-696.000.

Pillsbury Company, The: *See—*
DeMars, Jimmy A.; Ruhter, Virgil, Jr.; Warner, John; and Schmidt, William G., 5,341,914, Cl. 198-418.600.

Pilo, Harold; and Porter, John D., to Motorola Inc. Memory having a latching BICMOS sense amplifier. 5,343,428, Cl. 365-189.050.

Pinkos, Rolf: *See—*
Gosch, Hans-Juergen; Rust, Harald; Fischer, Rolf; Hechler, Claus; and Pinkos, Rolf, 5,342,488, Cl. 203-80.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Pinschmidt, Robert K., Jr.: *See—*
Robeson, Lloyd M.; Pinschmidt, Robert K., Jr.; and Abayasekara, Dilip R., 5,342,894, Cl. 525-183.000.

Pinto, Marc A.: *See—*
Ruscev, Mario; and Pinto, Marc A., 5,343,041, Cl. 250-270.000.

Pioneer Electronic Corporation: *See—*
Tokumo, Akio; and Kato, Masayuki, 5,343,161, Cl. 330-10.000.

Piotrowski, Barnard, Jr.: *See—*
Van Gorder, John E., Jr.; Piotrowski, Gary A.; and Piotrowski, Barnard, Jr., 5,341,894, Cl. 180-271.000.

Piotrowski, Gary A.: *See—*
Van Gorder, John E., Jr.; Piotrowski, Gary A.; and Piotrowski, Barnard, Jr., 5,341,894, Cl. 180-271.000.

Pipe Liners, Inc.: *See—*
Ledoux, Patrick R.; and Fourgaut, Luc R., 5,342,570, Cl. 264-566.000.

Pipich, Charles W.; Fugate, David W.; and Marks, James M., to Eaton Corporation. Miniaturized solenoid operated trip device. 5,343,179, Cl. 335-167.000.

Pirio, Francis; and Thomine, Jean, to France Telecom. System of very-long-distance digital transmission by optical fiber with compensation for distortions at reception. 5,343,322, Cl. 359-173.000.

Pitney Bowes Inc.: *See—*
Malin, Richard A.; and Muller, Arno, 5,343,133, Cl. 318-696.000.
Silverberg, Morton, 5,343,556, Cl. 395-111.000.

Pitteroff, Walter: *See—*
Franzman, Gernot; Petri, Folf; and Pitteroff, Walter, 5,342,897, Cl. 525-221.000.

Pittroff, Mark D. Load distribution device for weight lifting. 5,342,272, Cl. 482-106.000.

Plank, Hermann: *See—*
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weisshaupl, Horst, 5,343,506, Cl. 376-280.000.

Plasticade Products Corporation: *See—*
Glass, Geoffrey M., 5,342,140, Cl. 404-9.000.

Plata, Daniel J.; Fung, Anthony K. L.; Morton, Howard E.; Leanna, Robert; Baker, William R.; and Pratt, John K., to Abbott Laboratories. Substantially isomerically pure hexane or hexene compounds. 5,342,981, Cl. 556-420.000.

Plath, Peter: *See—*
Rueb, Lothar; Eicken, Karl; Plath, Peter; Schwalge, Barbara; Westphalen, Karl-Otto; Wuerzer, Bruno; and Meyer, Norbert, 5,342,824, Cl. 504-221.000.

Platts, Dennis R., to Ford Motor Company. Reticular glass surface. 5,342,690, Cl. 428-410.000.

Platz, Matthew S.; Goodrich, Raymond P., Jr.; and Wong, Victoria A., to Cryopharm Corporation. Method of inactivation of viral blood contaminants using acridine deriatives. 5,342,752, Cl. 435-2.000.

Plendl, Mathew E.; and Lucia, Vita M. Isokinetic exercise hoop. 5,342,273, Cl. 482-126.000.

Plepys, Raymond A.: *See—*
Chavez, Johnny, Jr.; Farnum, Andrew S.; Nace, Vaughn M.; Plepys, Raymond A.; Whitmire, Randall K.; Kent, Van A.; Bettge, Paul D.; and Friedli, Hans R., 5,342,541, Cl. 252-182.270.

Ploog, Uwe: *See—*
Uphues, Guenter; Jaensch, Sven; Ploog, Uwe; and Steinberner, Udo, 5,342,961, Cl. 548-352.100.

Plotkin, Jeffrey S.; and Miller, Mark M., to ISP Investments Inc. Radiation curable alk-1-enyl ether polyester prepolymers. 5,342,860, Cl. 522-31.000.

Plumton, Donald L.: *See—*
Yuan, Han-Tzong; Plumton, Donald L.; Kim, Tae S.; and Yang, Jau-Yuann, 5,342,795, Cl. 437-40.000.

Pluntke, Christian; and Goerlach, Alred, to Robert Bosch GmbH. Electronic switch with a definite breakdown voltage. 5,343,069, Cl. 257-583.000.

PMC-Sierra, Inc.: *See—*
Penner, Gordon A.; Mok, Winston K. C.; Lang, Steven F.; and Huscroft, Charles K., 5,343,482, Cl. 371-57.200.

Pochon, Etienne: *See—*
Guyot, Jean; and Pochon, Etienne, 5,343,488, Cl. 372-69.000.

Pociask, Michael B.: *See—*
Ladd, Barry L.; and Pociask, Michael B., 5,342,242, Cl. 464-98.000.

Pockets of Learning: *See—*
Bloom, Stuart J., 5,342,234, Cl. 446-327.000.

Podlasek, Stanley J.; and McPherson, Richard A., to Georgetown University. Method for the detection of anti-streptokinase antibodies. 5,342,755, Cl. 435-7.100.

Pohl, Klaus; and Fisch, Alfons, to Siemens Aktiengesellschaft. Circuit configuration for protecting the on-board electrical system of a motor vehicle. 5,343,350, Cl. 361-18.000.

Pohl, Rudolph L.: *See—*
Fifield, Charles C.; Pohl, Rudolph L.; and Yokoyama, Wako, 5,341,799, Cl. 528-49.000.

Pohmer, Klaus; Weber, Rainer; Block, Hans-Dieter; Dorzhach-Lange, Cornelia; and Moretto, Hans-Heinrich, to Bayer AG. Fluorinated carboxylic acid esters of phosphonocarboxylic acids and phosphinocarboxylic acids and use thereof. 5,342,986, Cl. 558-45.000.

Pokorny, Vit: *See—*
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,342,585, Cl. 422-131.000.

Polanka, Marc D.: *See—*
Heston, Jeffrey W.; Polanka, Marc D.; Rock, Jeffrey A.; and Geiger, Scott A., 5,342,126, Cl. 374-208.000.

Polaroid Corporation: *See—*
Cronin, David V.; and Brozyna, Louis J., 5,343,546, Cl. 385-52.000.
Kelly, Neal F.; and Langlais, Eugene L., 5,342,731, Cl. 430-253.000.
Lindholm, Edward P.; Telfer, Stephen J.; Zuraw, Michael J.; and Hirschbein, Bernard L., 5,342,816, Cl. 503-226.000.

Pollock, R. A.; and Van Nest, J. F., to General Electric Company. External hone. 5,341,603, Cl. 51-73.00R.

Pollock, Thomas J.: *See—*
Thorne, Linda P.; Armentrout, Richard W.; Pollock, Thomas J.; and Mikolajczak, Marcia J., 5,342,773, Cl. 435-200.000.

Polston, Henry B.: *See—*
Sheppard, Sheron R.; and Polston, Henry B., 5,341,539, Cl. 15-302.000.

Poly-Bond, Inc.: *See—*
Bodford, Carl A.; Chester, Stephen O.; and Nayak, Rahul K., 5,342,469, Cl. 156-244.220.

Polymer Research Corp. of America: *See—*
Horowitz, Carl; Sanduja, Mohan; and Thottathil, Paulose, 5,342,659, Cl. 427-553.000.

Polysar Rubber Corporation: *See—*
Osman, Akhtar, 5,342,908, Cl. 526-135.000.

Pontbriand, Duane: *See—*
Klinger, Gary; and Pontbriand, Duane, 5,342,095, Cl. 285-18.000.

Poole, Ray L. Retractable step for motor vehicles. 5,342,073, Cl. 280-166.000.

Poole, Warren D.: *See—*
Ngo, Viet H.; Poole, Warren D.; Hancock, Sean J.; and France, Timothy T., 5,342,512, Cl. 210-151.000.

Pope, Ralph E., to Kinetic Systems, Inc. Apparatus for frictionally heating liquid. 5,341,768, Cl. 122-26.000.

Popovic, Zoran: *See—*
Pai, Damodar M.; Yanus, John F.; DeFeo, Paul J.; Toth, Alan E. J.; Mychajlowskij, Walter; and Popovic, Zoran, 5,342,719, Cl. 430-59.000.

Population Council, Inc., The: *See—*
Bardin, C. Wayne; and Monder, Carl, 5,342,834, Cl. 514-178.000.

Porta Systems Corp.: *See—*
Carney, William V.; and Fasano, Michael, 5,342,209, Cl. 439-92.000.

Porter, John D.: *See—*
Pilo, Harold; and Porter, John D., 5,343,428, Cl. 365-189.050.

Portugall, Michael: *See—*
Licht, Ulrike; Haeberle, Karl; Gulbins, Erich; Rau, Maria G.; Franzmann, Gernot; and Portugall, Michael, 5,342,915, Cl. 528-71.000.

Portwood, Gary: *See—*
Cawthorne, Chris E.; Portwood, Gary; and Siracki, Michael A., 5,341,890, Cl. 175-374.000.

Posanski, Ulrich: *See—*
Hauer, Birgit; Meinzer, Armin; Posanski, Ulrich; and Richter, Friedrich, 5,342,625, Cl. 424-455.000.

Posluszny, Jerry C.: *See—*
Fox, Timothy R.; and Posluszny, Jerry C., 5,343,171, Cl. 332-167.000.

Posner, Mark A.; and McQueen, Al, to Iraco Filtration Systems, Inc. Filtration system and mount for beverage dispensers and automatic beverage brewing machines. 5,342,518, Cl. 210-232.000.

Potter & Brumfield, Inc.: *See—*
Lueneburger, Klaus, 5,343,365, Cl. 361-773.000.

Potter, Kenneth H., Jr.: *See—*
Cidon, Israel; Doney, Richard M.; Drake, John E., Jr.; Hervatic, Elizabeth A.; Potter, Kenneth H., Jr.; and Tedijanto, Theodore E., 5,343,473, Cl. 370-85.600.

Potter, Laurence A., to Teleflex, Inc. Low profile gastrostomy catheter. 5,342,321, Cl. 604-174.000.

Poujon, Joel O. P.: *See—*
Soupert, Jean-Louis D. C.; and Poujon, Joel O. P., 5,341,540, Cl. 15-319.000.

Poulain, Marcel; and Saad, Mohammed, to France Telecom Etablissement Autonome de Droit Public. Process for the synthesis of fluoride glass by the sol - gel method and optical fibre produced from the fluoride glass obtained according to this process. 5,342,809, Cl. 501-12.000.

Powell, Walter W. Direct spring pressure operated valve. 5,341,838, Cl. 137-478.000.

Power Distribution, Inc.: *See—*
Kammeter, John B., 5,343,080, Cl. 307-105.000.

Powers, Daniel J.; Cyrus, Judith; Kootstra, Steve; Burkhalter, Art; Bledsoe, J. Daren; Shultheis, David C.; and Jordan, Dan, to Hewlett-Packard Corporation. Integrated defibrillator/monitor architecture with defibrillator-only fail-safe mode of operation. 5,342,403, Cl. 607-5.000.

Poxleitner, Martin: *See—*
Blaha, Erich; Poxleitner, Martin; and Hanemann, Gerhard, 5,342,351, Cl. 606-4.000.

PPG Industries, Inc.: *See—*
Das, Suryya K.; and Kilic, Soner, 5,342,878, Cl. 524-558.000.

Prahl, Jean M.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; Sicinski, Rafal R.; and Prahl, Jean M., 5,342,975, Cl. 552-653.000.

Prasad, Romeo. Baby walker having safety interlock. 5,342,072, Cl. 280-87.051.

Prass, Werner: *See—*
Haubs, Michael; and Prass, Werner, 5,342,432, Cl. 95-47.000.

Pratesi, Edward E., to Bridgeport Fittings, Inc. Electrical connector for mounting to electrical enclosures. 5,342,994, Cl. 174-65.00R.

Pratt, John K.: *See—*
Plata, Daniel J.; Fung, Anthony K. L.; Morton, Howard E.; Leanna, Robert; Baker, William R.; and Pratt, John K., 5,342,981, Cl. 556-420.000.

Praxair Technology, Inc.: *See—*
Stanko, Michael J., 5,342,171, Cl. 415-228.000.

Price, Thomas D.; and Roberts, James C. Brake pulsing apparatus. 5,342,117, Cl. 303-3.000.

Prochaska, Frank H., to American Safety Razor Company. Movable blade shaving cartridge or the like. 5,341,571, Cl. 30-50.000.

Prochaska, Gerhard W.; and Southam, Edwin F. Package liner for rectangular object. 5,341,931, Cl. 206-485.000.

Procter & Gamble Company, The: *See—*
Cormaci, Alice M., 5,342,639, Cl. 426-386.000.
Litchholt, John J.; and Lodge, Richard W., 5,342,858, Cl. 521-98.000.
Michael, Daniel W., 5,342,549, Cl. 252-546.000.
Moore, Katherine L., 5,342,642, Cl. 426-556.000.
Noda, Isao, 5,342,875, Cl. 524-457.000.
Prosise, Robert L.; Widenhouse, Christopher W.; Wnuk, Andrew J.; Bunke, Paul R.; and Milenkevich, Joseph A., 5,343,024, Cl. 219-730.000.
Roe, Donald C., 5,342,338, Cl. 604-383.000.
Thompson, Hugh A.; and Langdon, Fred M., 5,342,334, Cl. 604-366.000.

Proebsting, Robert J., to National Semiconductor Corporation. Speed enhancement technique for CMOS circuits. 5,343,090, Cl. 307-443.000.

Professional Dental Technologies, Inc.: *See—*
Lemon, J. Robert; Evans, William T.; and Christian, Robert E., 5,342,284, Cl. 601-141.000.

Prosise, Robert L.; Widenhouse, Christopher W.; Wnuk, Andrew J.; Bunke, Paul R.; and Milenkevich, Joseph A., to Procter & Gamble Company, The. Microwave susceptor incorporating a coating material having a silicate binder and an active constituent. 5,343,024, Cl. 219-730.000.

Proton Societe Anonyme: *See—*
Roussel, Herve; Hermant, Jean-Jacques; and Dalla-Serra, Lionel, 5,342,640, Cl. 426-479.000.

Prottey, Colin: *See—*
Bowser, Paul A.; Froling, Albert; Heslinga, Lammert; Houtsmuller, Udo M. T.; Nugteren, Diederik H.; Pabon, Hendrik J. J.; and Prottey, Colin, 5,342,976, Cl. 554-36.000.

Prudence, Bernard P.: *See—*
Arnaud, Jean-Claude; and Prudence, Bernard P., 5,342,700, Cl. 428-625.000.

Pucillo, Anthony D. Archery bow and appurtenance. 5,341,792, Cl. 124-89.000.

Pugh, Theresa: *See—*
Marozzi, John; Rochon, Greg; Patel, Urmil; and Dambly, Ben, 5,341,737, Cl. 101-216.000.

Pulse Microsystems Ltd.: *See—*
Goldberg, Brian J.; and Tsonis, Anastasios, 5,343,401, Cl. 364-470.000.

Pummell, Leslie J. H.; Ward, Paul C.; Kingdon, Stephen J.; and Oldfield, James A., to Eastman Kodak Company. Film extraction unit. 5,343,266, Cl. 354-340.000.

Pun, Yim: *See—*
Fung, Wing-Cho; Pun, Yim; and Selvin, Eric B., 5,343,086, Cl. 307-296.100.

Pyle, Robert J.: *See—*
Aochi, Tak; and Pyle, Robert J., 5,342,679, Cl. 428-257.000.

Pyropower Corporation: *See—*
Russell, David B., 5,341,753, Cl. 122-4.00D.

Quality Manufacturing Incorporated: *See—*
Huber, Mortimer J., 5,342,872, Cl. 428-294.000.

Quan, Peter M.: *See—*
Austin, Peter W.; Quan, Peter M.; Tasker, Peter A.; and Thorp, Derek, 5,342,937, Cl. 544-8.000.

Quantum Magnetics, Inc.: *See—*
Sager, Ronald E.; and Simmonds, Michael B., 5,343,147, Cl. 324-239.000.

Quantz, Chester C., to Electro-Tech, Inc. Starter motor protection circuit with relay protection. 5,343,351, Cl. 361-33.000.

Quates, Ronald D.: *See—*
Henley, Ronald W.; Quates, Ronald D.; Williams, Michael R.; and Wong, Henry, 5,342,066, Cl. 277-116.200.

Quinn, Conor A.: *See—*
Mohan, Ned; Peterson, Maximilian R.; and Quinn, Conor A., 5,343,079, Cl. 307-105.000.

Quinn, Robert E.; and Burk, W. Miachel, to Lubrizol Corporation, The. Methods of preparing sintered shapes and green bodies used therein. 5,342,563, Cl. 264-63.000.

Quitschau, Algird R.; and Seals, Dennis K., to Eaton Corporation. Conduit attachment. 5,341,566, Cl. 29-890.035.

R. J. Reynolds Tobacco Company: *See—*
Carespodi, Dennis L., 5,342,684, Cl. 428-347.000.

Rabinovich, Joshua E. Vapor recovery nozzle. 5,341,855, Cl. 141-59.000.

Rachak, Alexander L. Biological waste conversion system. 5,342,516, Cl. 210-218.000.

Radmacher, Edmund, to Macherey, Nagel & Co. Chromatographic column. 5,342,515, Cl. 210-198.200.

Raeymaekers, Alfons H. M.: *See—*
Van Wauwe, Jean P. F.; and Raeymaekers, Alfons H. M., 5,342,957, Cl. 548-266.400.

Rafalovich, Alexander P.; Bass, Mark; and Caillat, Jean-Luc, to Copeland Corporation. Scroll compressor with discharge diffuser. 5,342,183, Cl. 418-15.000.

Rafeld, Karl, to Rafeld Kunststofftechnik GmbH u. Co. KG. Plumbing and heating pipe system for water supply purposes, made either completely or mainly of plastic material, especially of polypropylene. 5,341,843, Cl. 137-343.000.

Rafeld Kunststofftechnik GmbH u. Co. KG.: *See—*
Rafeld, Karl, 5,341,843, Cl. 137-343.000.

Raffin, Christine: *See—*
Jung, Emmanuel; and Raffin, Christine, 5,341,632, Cl. 57-208.000.

Raines, Kenneth C.: *See—*
Peppel, Peter; and Raines, Kenneth C., 5,342,326, Cl. 604-284.000.

Raman, Kidambi V.: *See—*
Goodzeit, Neil E.; Paluszek, Michael A.; Raman, Kidambi V.; and Wallar, Eric V., 5,343,398, Cl. 364-434.000.

Ramasamy, Ravichandran: *See—*
Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, 5,342,606, Cl. 424-09.000.

Ramirez, Jose E.; and Vishnupad, Mohan, to Imaginative Research Associates Inc. Compositions containing kurroll's salt. 5,342,535, Cl. 252-135.000.

Ramp, Sally K.: *See—*
Baker, Harold N.; Eng, Katherine K.; Gurner, William D.; Massei, Michael K.; Necklaws: Elizabeth C.; Osikowicz, Eugene W.; Ramp, Sally K.; and Trach, Paula, 5,342,760, Cl. 435-7.920.

Ramshankar, Rengasamy: *See—*
Chou, Rudy S.; Larsen, Michael J.; Ramshankar, Rengasamy; Rieke, Larry D.; and Waterman, Timothy J., 5,341,795, Cl. 126-110.00R.

Randall, Brian G., to Georgia-Pacific Corporation. Glass mat with reinforcing binder. 5,342,680, Cl. 428-285.000.

Randall, David J., to Alcan International Limited. Method of making alkali metal stannates. 5,342,590, Cl. 423-89.000.

Rankin, David B.; Roberts, Edgar P., Jr.; and Kluttz, James W., to Accu-Sport International, Inc. Apparatus and method for tracking the flight of a golf ball. 5,342,051, Cl. 273-185.00A.

Rapistan Corporation: *See—*
Doane, Martin R., 5,341,916, Cl. 198-460.000.

Raschack, Manfred: *See—*
Treiber, Hans-Joerg; Hofmann, Hans P.; Szabo, Laszlo; Unger, Liliane; and Raschack, Manfred, 5,342,839, Cl. 514-255.000.

Rashid, Abdul: *See—*
McNeill, Marion E.; Rashid, Abdul; and Stevens, Howard N. E., 5,342,624, Cl. 424-451.000.

Rasmussen GmbH: *See—*
Bahner, Frank; and Mann, Stephan, 5,342,099, Cl. 285-93.000.

Rau, Charles B.; and Fisher, Douglas D. Device to suppress firing impulse torque induced vibrations in internal combustion engines. 5,341,780, Cl. 123-192.100.

Rau, Maria G.: *See—*
Licht, Ulrike; Haeberle, Karl; Gulbins, Erich; Rau, Maria G.; Franzmann, Gernot; and Portugall, Michael, 5,342,915, Cl. 528-71.000.

Rau, Peter, to Siemens Aktiengesellschaft. Method and circuit arrangement for transmitting a continuous bit stream upon involvement of an ATM network. 5,343,468, Cl. 370-60.000.

Rauma-Repola Oy: *See—*
Sarkomaa, Pertti J., 5,342,594, Cl. 423-244.080.

Ray, Gary W.: *See—*
Brigham, Kristen; and Ray, Gary W., 5,342,808, Cl. 437-228.000.

Raychem Corporation: *See—*
McMills, Corey; and Mattis, John S., 5,342,218, Cl. 439-578.000.
Uken, William D.; and Tomita, Akira, 5,343,541, Cl. 385-16.000.

Raykovitz, Gary, to National Starch and Chemical Investment Holding Corporation. Hot melt wetness indicator. 5,342,861, Cl. 523-111.000.

Raymond Corporation, The: *See—*
Avitan, Isaac, 5,341,695, Cl. 73-1.00J.
Springston, Eric, 5,341,951, Cl. 220-371.000.

Raynor, Robert H.: *See—*
Maples, John A.; Raynor, Robert H.; Siiman, Olavi; Stiglitz, Melissa J.; and Healy, Stephen F., Jr., 5,342,754, Cl. 435-2.000.

Raytheon Company: *See—*
Kazior, Thomas E.; and Huang, John C., 5,343,071, Cl. 257-621.000.

RCA Thomson Licensing Corporation: *See—*
Hennig, Bruno E., 5,343,300, Cl. 348-478.000.

Ready Tools, Inc.: *See—*
Katz, Wolfgang, 5,341,669, Cl. 72-387.000.

Rebbert, Milton L.: *See—*
Georger, Jacque H., Jr.; Peckerar, Martin C.; Rebbert, Milton L.; Calvert, Jeffrey M.; and Hickman, James J., 5,342,737, Cl. 430-324.000.

Recktenwald, Diether J.: *See—*
Levine, Robert A.; Wardlaw, Stephen C.; Terstappen, Leon W. M. M.; Mercolino, Thomas J.; and Recktenwald, Diether J., 5,342,790, Cl. 436-523.000.

Redaud, Christophe, to Giat Industries. Directed-effect munition. 5,341,743, Cl. 102-384.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Reddig, Wolfram; and Herd, Karl-Josef, to Bayer Aktiengesellschaft. Reactive dyestuffs for the dyeing and printing of hydroxyl-or amino-containing materials. 5,342,927, Cl. 534-618.000.

Reddy, Redreddy S., to Mark IV Transportation Products Corporation. Power door drive and door support having motor operated locks. 5,341,598, Cl. 49-362.000.

Reder, Wolfgang O.: *See—*
Schneider, Georg; Reder, Wolfgang O.; and Reinhart, Dieter, 5,341,741, Cl. 101-365.000.

Redford, Daniel S. Environmentally controlled standard toilet. 5,341,521, Cl. 4-348.000.

Redlich, Robert W., to Sunpower, Inc. Method and apparatus for measuring piston position in a free piston compressor. 5,342,176, Cl. 417-212.000.

Reed, Michael A.: *See—*
Yatka, Robert J.; Reed, Michael A.; and Broderick, Kevin B., 5,342,631, Cl. 426-3.000.

Reedy International Corporation: *See—*
Reedy, Michael E.; and Rider, Edward W., Jr., 5,342,857, Cl. 521-76.000.

Reedy, Michael E.; and Rider, Edward W., Jr., to Reedy International Corporation; and Genpak Corporation. Process for producing polystyrene foam. 5,342,857, Cl. 521-76.000.

Reeve, Paul F. D., to Rohm and Haas Company. Nitrogen-based stabilizers for 3-isothiazolones. 5,342,836, Cl. 514-242.000.

Re Fiorentin, Stefano: *See—*
Ansaldi, Ermanno; Re Fiorentin, Stefano; and Saroldi, Andrea, 5,343,206, Cl. 342-70.000.

Rehner, Helmut: *See—*
Kunst, Albert; Rehner, Helmut; Stegmuller, Peter; Lenz, Helmut; Bialk, Peter; and Hoyle, Nicholas, 5,342,788, Cl. 436-500.000.

Reiber, Dieter: *See—*
Herren, Georges; and Reiber, Dieter, 5,343,491, Cl. 373-8.000.

Reich, Murray H., to Biolan Corporation. Process for controlling the photodegradation of mulch film. 5,342,862, Cl. 523-125.000.

Reichel, Klaus T.: *See—*
Makosch, Manfred; and Reichel, Klaus T., 5,341,736, Cl. 101-212.000.

Reichelt, Helmut: *See—*
Roetsch, Thomas; Hagen, Helmut; Reichelt, Helmut; and Grund, Clemens, 5,342,928, Cl. 534-788.000.

Reid, Clyde D.: *See—*
Mosesian, Jerry L.; and Reid, Clyde D., 5,343,185, Cl. 337-163.000.

Reid, Leonard F.; and Bolstad, Roger T., to Fatigue Technology, Inc. Method and apparatus for securing a tubular bushing in a circular opening. 5,341,559, Cl. 29-523.000.

Reiff, Helmut: *See—*
Traubel, Harro; Weisser, Jurgen; and Reiff, Helmut, 5,342,556, Cl. 264-4.700.

Rein, Alan D.; and Foye, David M., to American Standard Inc. Wireless air balancing system. 5,341,988, Cl. 236-49.300.

Reinhart, Dieter: *See—*
Schneider, Georg; Reder, Wolfgang O.; and Reinhart, Dieter, 5,341,741, Cl. 101-365.000.

Reinke, Michael J.: *See—*
Hughes, Gregory G.; Guntly, Leon A.; Welker, John B.; Hill, David; Rogers, C. James; Henkes, Jerome P.; and Reinke, Michael J., 5,341,870, Cl. 165-110.000.

Reitsma, Berend A. H.: *See—*
Marsman, Eric H.; Vlekke, Garardus J. F. M.; Urlings, Leonardus G. C. M.; and Reitsma, Berend A. H., 5,342,522, Cl. 210-605.000.

Renishaw Transducer Systems Limited: *See—*
Chaney, Raymond J.; and Graham, Jeffrey, 5,341,702, Cl. 74-821.000.

Repisky, Milan; and Tur, Anton, to Milton Industries, Inc. Meat cutter. 5,342,236, Cl. 452-149.000.

Research Development Foundation: *See—*
MacLeod, Carol L., 5,342,761, Cl. 435-69.100.

Research and Development Institute, Inc. at Montana State University, The: *See—*
Kejariwal, Murari L.; Thapar, Baldev; Gerez, Victor; and March, Daniel, 5,343,155, Cl. 324-522.000.

Rettig, Wolfgang J.: *See—*
Garin-Chesa, Pilar; Rettig, Wolfgang J.; and Old, Lloyd J., 5,342,757, Cl. 435-7.210.

Reuther, Wolfgang: *See—*
Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, 5,342,916, Cl. 528-150.000.

Revak, Scott: *See—*
Bourekas, Philip A.; Ngoc, Danh L.; and Revak, Scott, 5,343,435, Cl. 365-221.000.

Reveilleau, Stephane: *See—*
Chalom, Joseph; Griffoul, Christine; Tod, Michel; and Reveilleau, Stephane, 5,342,970, Cl. 549-288.000.

Rexham Industries Corp.: *See—*
Ellison, Thomas M.; and Keith, Brian M., 5,342,666, Cl. 428-46.000.

Reynolds Metals Company: *See—*
Armbrust, Bernard F., Jr., 5,342,485, Cl. 162-181.500.
Cook, John O.; and Peterson, Ray D., 5,342,428, Cl. 75-401.000
Lee, Harry W., Jr., 5,341,667, Cl. 72-379.400.

Rhim, Hannong, to Kimberly-Clark Corporation. Nonwoven web of poly(vinyl alcohol) fibers. 5,342,335, Cl. 604-367.000.

Rhone-Poulenc AG Company: *See—*
Chen, Chi-yu R.; and Weber, Paul J., 5,341,932, Cl. 206-524.700.

Rhone-Poulenc Agrochimie: *See—*
Pepin, Regis; Schmitz, Christian; Lacroix, Guy-Bernard; Dellis, Philippe; and Veyrat, Christine, 5,342,835, Cl. 514-227.500.

Rhone-Poulenc Chimie: *See—*
Persello, Jacques, 5,342,598, Cl. 423-339.000.

Rhone-Poulenc Fibres: *See—*
Jung, Emmanuel; and Raffin, Christine, 5,341,632, Cl. 57-208.000.

Rhone-Poulenc Rorer Limited: *See—*
Hart, Terance W.; and Vacher, Bernard Y. J., 5,342,848, Cl. 514-357.000.

Ribi, Hans O., to Biocircuits Corporation. Lipid-protein compositions and articles and methods for their preparation. 5,342,692, Cl. 428-420.000.

Rice, James P.: *See—*
Koza, John R.; and Rice, James P., 5,343,554, Cl. 395-13.000.

Rice, Roy W.: *See—*
Cameron, Craig P.; and Rice, Roy W., 5,342,562, Cl. 264-63.000.

Richards, Clive H.; and Gillard, Clive H., to Sony United Kingdom Limited. Digital video signal with increased motion blur characteristic. 5,343,241, Cl. 348-97.000.

Richelsoph, Marc E., to Wright Medical Technology, Inc. Medical instrument and procedure. 5,342,363, Cl. 606-79.000.

Richter, Friedrich: *See—*
Hauer, Birgit; Meinzer, Armin; Posanski, Ulrich; and Richter, Friedrich, 5,342,625, Cl. 424-455.000.

Richter, Thomas L.; and Jary, Michael W., to General Motors Corporation. Fastener assembly for detachably connecting a door trim panel. 5,341,544, Cl. 24-289.000.

Rickards, Rodney W.: *See—*
Herlt, Tony J.; MacDonald, Peter L.; and Rickards, Rodney W., 5,342,971, Cl. 549-390.000.

Rickey, Daniel W.; and Fenster, Aaron, to University Hospital (London) Development Corporation. Doppler ultrasound clutter and sensitivity phantom. 5,341,808, Cl. 128-660.010.

Ricoh Company, Ltd.: *See—*
Maeda, Eiichi, 5,343,243, Cl. 348-222.000.
Nousho, Shinji; Seto, Mitsuru; Hashimoto, Junichiro; and Rokutanzono, Takashi, 5,342,718, Cl. 430-58.000.
Sugiyama, Kunitoshi; Kobori, Hideyuki; Hanai, Shuji; and Kagawa, Tsutomu, 5,342,815, Cl. 503-217.000.

Rider, Donald C. Speed square holder. 5,341,976, Cl. 224-269.000.

Rider, Edward W., Jr.: *See—*
Reedy, Michael E.; and Rider, Edward W., Jr., 5,342,857, Cl. 521-76.000.

Rieke, Larry D.: *See—*
Chou, Rudy S.; Larsen, Michael J.; Ramshankar, Rengasamy; Rieke, Larry D.; and Waterman, Timothy J., 5,341,795, Cl. 126-110.00R.

Riffe, Shirley D., to Long-Airdox Company. Load sensitive conveyor training apparatus. 5,341,920, Cl. 198-825.000.

Rigamonti, Marco; Marciandi, Franco; and Cesana, Massimo, to Elf Atochem Italia S.r.l. Water spreading films or plates consisting of acrylic polymers and process for their preparation. 5,342,683, Cl. 428-331.000.

Rikei Corp.: *See—*
Shiraogawa, Michio; and Konishi, Hiroshi, 5,343,305, Cl. 358-407.000.

Riley, Michael B., to Motive Holdings Limited. Internal combustion engine with variable combustion chambers and increased expansion cycle. 5,341,771, Cl. 123-48.0AA.

Ringgenberg, Paul D., to Halliburton Company. Pressure test and bypass valve with rupture disc. 5,341,883, Cl. 166-324.000.

Risdon Corporation: *See—*
Van Brocklin, Owen F., 5,341,956, Cl. 222-1.000.

Rissik, George V.; and Vickers, Wilbraham C. K. Underwater cleaning apparatus. 5,341,847, Cl. 137-875.000.

Risteli, Juha; and Risteli, Leila, to Orion-Yhtyma Oy. Type III collagen degradation assay. 5,342,756, Cl. 435-7.210.

Risteli, Leila: *See—*
Risteli, Juha; and Risteli, Leila, 5,342,756, Cl. 435-7.210.

Riverwood International Corporation: *See—*
Fogle, James C., 5,341,984, Cl. 229-215.000.

Roach, Alan R.: *See—*
Beck, Niels J.; Pena, James A.; Roach, Alan R.; and Johnston, Bevan H., 5,341,783, Cl. 123-446.000.

Roach, Jerome C.; and Andersen, Garry E., to American Standard Inc. Fail safe mechanical oil shutoff arrangement for screw compressor. 5,341,658, Cl. 62-468.000.

Robbins, Gary L., to Inno-Tech Plastics, Inc. Baffle vent structure. 5,341,612, Cl. 52-95.000.

Robert Bosch GmbH: *See—*
Bullmer, Wolfgang, 5,343,078, Cl. 307-41.000.
Holzer, Peter, 5,342,154, Cl. 408-240.000.
Lungu, Corneliu; and Herrmann, Hugo, 5,343,106, Cl. 310-239.000.
Pluntke, Christian; and Goerlach, Alred, 5,343,069, Cl. 257-583.000.
Roesinger, Andreas; and Noetzel, Guenter, 5,343,459, Cl. 369-116.000.

Roberts, Edgar P., Jr.: *See—*
Rankin, David B.; Roberts, Edgar P., Jr.; and Kluttz, James W., 5,342,051, Cl. 273-185.00A.

Roberts, James C.: *See—*
Price, Thomas D.; and Roberts, James C., 5,342,117, Cl. 303-3.000.

Robertson, Robert J.: *See—*
Brown, Charles R.; Robertson, Robert J.; Buckley, Dandridge W., Jr.; and Milchuck, Frank A., 5,341,551, Cl. 29-40.000.

Robeson, Lloyd M.; Pinschmidt, Robert K., Jr.; and Abayasekara, Dilip R., to Air Products and Chemicals, Inc. Graft polymers of ε-caprolactam. 5,342,894, Cl. 525-183.000.

Robic, Pierre H.: *See—*
Nugues, Francois; and Robic, Pierre H., 5,341,853, Cl. 141-7.000.

Robinette, Larry; and Gibson, Carl. Tow dolly. 5,342,162, Cl. 414-483.000.

Robinson, Doug; and Tatsuno, Isamu, to Mont-Bell Co., Ltd. Back bag. 5,341,974, Cl. 224-215.000.

Robinson, Janine C.: *See—*
Michaels, Mary B.; Robinson, Janine C.; Claude, John P.; and Alden, Donald L., 5,342,298, Cl. 604-65.000.

Rochon, Greg: *See—*
Marozzi, John; Rochon, Greg; Patel, Urmil; and Dambly, Ben, 5,341,737, Cl. 101-216.000.

Rock, Jeffrey A.: *See—*
Heston, Jeffrey W.; Polanka, Marc D.; Rock, Jeffrey A.; and Geiger, Scott A., 5,342,126, Cl. 374-208.000.

Rodenbusch, George: *See—*
Huete, David A.; Brasted, Lee K.; and Rodenbusch, George, 5,342,148, Cl. 405-223.100.

Rodgers, Nicholas A. Signalling footwear. 5,343,190, Cl. 340-573.000.

Rodgers, Paul: *See—*
Agrawal, Rakesh; Langston, Jeffrey S.; Rodgers, Paul; and Xu, Jianguo, 5,341,646, Cl. 62-25.000.

Rodrigues, Klein A., to Halliburton Company. Cement set retarding additives, compositions and methods. 5,341,881, Cl. 166-293.000.

Roe, Donald C., to Procter & Gamble Company, The. Disposable absorbent article for low-viscosity fecal material. 5,342,338, Cl. 604-383.000.

Roennau, Raymond B.: *See—*
Sandstrom, Paul H.; and Roennau, Raymond B., 5,341,863, Cl. 152-209.00R.

Roeser, Thomas; and Crawford, Michael J., to Otto Engineering, Inc. Rocker switch. 5,343,007, Cl. 200-296.000.

Roesinger, Andreas; and Noetzel, Guenter, to Robert Bosch GmbH. Varying a scanning beam as a function of bearing temperature of an optical lens actuator. 5,343,459, Cl. 369-116.000.

Roetling, Paul G., to Xerox Corporation. Image processing system and method employing adaptive filtering to provide improved reconstruction of continuous tone images from halftone images including those without a screen structure. 5,343,309, Cl. 358-455.000.

Roetsch, Thomas; Hagen, Helmut; Reichelt, Helmut; and Grund, Clemens, to BASF Aktiengesellschaft. Benzisothiazole- and benzothiophene-azo dyes with a coupling component of the aniline series. 5,342,928, Cl. 534-788.000.

Rogers, C. James: *See—*
Hughes, Gregory G.; Guntly, Leon A.; Welker, John B.; Hill, David; Rogers, C. James; Henkes, Jerome P.; and Reinke, Michael J., 5,341,870, Cl. 165-110.000.

Rogers, Robert L.: *See—*
Niedermeyeyr, John F.; Maltsev, Viacheslav B.; and Rogers, Robert L., 5,343,226, Cl. 347-85.000.

Rogerson, William, to AlliedSignal Inc. Air bag module with top mounted bag. 5,342,081, Cl. 280-728.00A.

Rogge, Dieter; and Koopmann, Dietmar, to Windmoller & Holscher. Apparatus for displacing two bearing blocks mounted on carriages. 5,341,739, Cl. 101-247.000.

Rogowski, Robert S.: *See—*
Egalon, Claudio O.; and Rogowski, Robert S., 5,343,035, Cl. 250-227.140.
Egalon, Claudio O.; and Rogowski, Robert S., 5,343,550, Cl. 385-123.000.

Rohm Co., Ltd.: *See—*
Imai, Hiroshi; Murakami, Tadashi; Mimura, Tetsuya; Yamamoto, Masao; Kosumi, Yuji; Asai, Masashi; and Aoki, Yasunori, 5,343,072, Cl. 257-666.000.
Nakagawa, Yoshikazu, 5,343,056, Cl. 257-191.000.
Shimoji, Noriyuki, 5,342,803, Cl. 437-70.000.
Shimoji, Noriyuki, 5,343,423, Cl. 365-182.000.

Rohm GmbH: *See—*
Kleese, Wolfgang; Kraemer, Dieter; Petereit, Hans-Ulrich; Lehmann, Klaus; and Siol, Werner, 5,342,646, Cl. 427-2.100.

Rohm GmbH Chemische Fabrik: *See—*
Fischer, Jens-Dieter; and Siol, Werner, 5,342,691, Cl. 428-412.000.

Rohm and Haas Company: *See—*
Bardsley, Judy H.; and Hann, William M., 5,342,787, Cl. 436-179.000.
Buckley, Randall G.; Eastburn, George L.; Schmitz, Marion C.; Breslau, Barry R.; and Tansey, Shawn P., 5,342,863, Cl. 523-310.000.
Reeve, Paul F. D., 5,342,836, Cl. 514-242.000.

Rohm and Haas Compnay: *See—*
McDade, Christine; Phadke, Makarand D.; and Weir, William D., 5,342,487, Cl. 203-6.000.

Rokutanzono, Takashi: *See—*
Nousho, Shinji; Seto, Mitsuru; Hashimoto, Junichiro; and Rokutanzono, Takashi, 5,342,718, Cl. 430-58.000.

Rolfe, William M.: *See—*
Wolleb, Heinz; Hafner, Andreas; and Rolfe, William M., 5,342,903, Cl. 525-407.000.

Roll Systems, Inc.: *See—*
Golicz, Roman M., 5,342,036, Cl. 271-3.100.

Roller, Kent G.; Scott, Bradley A.; and LeBlanc, Timothy C., to Ball Corporation. Solid film lubricant. 5,342,655, Cl. 427-372.200.

Rollerblade, Inc.: *See—*
Miller, Douglas R.; Wiener, Timothy J.; and Collins, Gregory J., 5,342,070, Cl. 280-11.220.

Rom, Paul F.: *See—*
Lua, Warren D.; Rom, Paul F.; and Booth, William M., 5,342,325, Cl. 604-272.000.

Ronnberg, Peter: *See—*
Runeman, Bo; and Ronnberg, Peter, 5,342,337, Cl. 604-378.000.

Ronnholm, Karl S.: *See—*
Linden, Erkki O.; Ronnholm, Karl S.; and Holm, Carl-Olof J., 5,341,573, Cl. 30-254.000.

Rooijakkers, Johannes P. J. C.; Bongers, Andreas M. G.; and Vosbeek, Gerardus J., to OCE-Nederland, B.V. Cleaning system for an image transfer device. 5,343,277, Cl. 355-271.000.

Rosati, Louis: *See—*
Jarrett, Peter K.; Casey, Donald J.; and Rosati, Louis, 5,342,395, Cl. 606-219.000.

Roschger, Peter: *See—*
Harnisch, Horst; and Roschger, Peter, 5,342,444, Cl. 106-493.000.

Rose, Conrad M.; and Drude, Jeffrey J., to Litton Industries, Inc. (AOA/LBI) emitter ranging method and apparatus. 5,343,212, Cl. 342-424.000.

Rose, Larry D.; and Lauritzen, Donald R., to Morton International, Inc. Retention structure for a flange based inflator of an airbag restraint assembly. 5,342,084, Cl. 280-728.00A.

Rose, Larry D.: *See—*
Kriska, Thomas M.; Lauritzen, Donald R.; and Rose, Larry D., 5,342,082, Cl. 280-728.00A.

Rose, Walter: *See—*
Miner, Philip E.; and Rose, Walter, 5,342,536, Cl. 252-162.000.

Rosen, Bruno: *See—*
Behner, Otto; Wollweber, Hartmund; Goldmann, Siegfried; Rosen, Bruno; and Zaiss, Siegfried, 5,342,847, Cl. 514-356.000.

Rosenbauer International Aktiengesellschaft: *See—*
Hochdanninger, Franz; and Peherstorfer, Helmut, 5,341,999, Cl. 242-397.100.

Rosina, Giancarlo: *See—*
Canosi, Claudio; and Rosina, Giancarlo, 5,343,497, Cl. 375-111.000.

Ross, Jeffrey R.: *See—*
Manosalva, Edgar G.; Ross, Jeffrey R.; and Goldhardt, Donald J., 5,341,823, Cl. 128-898.000.

Ross, Michael A.: *See—*
O'Brien, Brendan J.; and Ross, Michael A., 5,342,063, Cl. 273-396.000.

Rosse, Meinrad; and Servaux, Jean, to Nestec S.A. Tamper-evident device for container closures. 5,341,947, Cl. 215-230.000.

Rosseau, Todd D., to Airflow Research and Manufacturing Corporation. Low noise fan. 5,342,167, Cl. 415-119.000.

Rossum, David P., to E-mu Systems, Inc. Digital sampling instrument employing cache-memory. 5,342,990, Cl. 84-603.000.

Rotary-Grip TM , Inc.: *See—*
Erb, Albert R., 5,342,046, Cl. 273-72.00R.

Rotgers, Andre , to Hoechst Aktiengesellschaft. Composites with polyether ketone yarn. 5,342,677, Cl. 428-222.000.

Rothrock, Richard K.: *See—*
Zengerle, Paul L.; Rothrock, Richard K.; and Johnson, Chris; J., 5,342,746, Cl. 430-546.000.

Rotstain, Jehoshua S.: *See—*
Eisig, David; and Rotstain, Jehoshua S., 5,343,416, Cl. 364-757.000.

Roulet, Paul-Antoine. Shoulder support for violin. 5,341,714, Cl. 84-278.000.

Rousseau Sauve Warren Inc.: *See—*
Hoffman, Marc; and Dick, Georges P., 5,343,330, Cl. 359-708.000.

Roussel, Herve; Hermant, Jean-Jacques; and Dalla-Serra, Lionel, to Protion Societe Anonyme. Process and apparatus for peeling food products such as fish, fruits or vegetables. 5,342,640, Cl. 426-479.000.

Rouverol, William S., to Axicon Gear Company. Zero dynamic inoesement gearing. 5,341,699, Cl. 74-462.000.

Rowe, C. Daniel; Ashmore, Leslie R.; Carroll, Chad C.; Schwemberger, Richard F.; Schuler, Norman F; and Collins, John M., to Ethicon, Inc. Trocar seal/protector assemblies. 5,342,315, Cl. 604-167.000.

Rowe, Christopher J.; Mortimore, David B.; Wilkinson, Iain J.; and Achurch, Nicholas E., to BT&D Technologies Limited. Fabrication of fused fibre devices. 5,342,425, Cl. 65-501.000.

Rowe, Christopher J.: *See—*
Keeble, Peter J.; Rowe, Christopher J.; and Spirit, David M., 5,343,286, Cl. 356-73.100.

Rowe, Deines Instruments, Inc.: *See—*
Merewether, Ray, 5,343,443, Cl. 367-152.000.

Rowenta-Werke GmbH: *See—*
Stephan, Hilmer; Molz, Gerhard; and Buttgen, Heinz, 5,341,585, Cl. 38-77.500.

Rowley, David S.: *See—*
Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., 5,342,299, Cl. 604-95.000.

Rowsell, Christopher N.; and Monksfield, Stuart R., to Sony United Kingdom Limited. Testing video equipment. 5,343,242, Cl. 348-181.000.

Rowsell, Farrell D. Method for aiding microbial degradation of spilled oil. 5,342,525, Cl. 210-611.000.

Ruckle, Thomas, to Cello Corporation. Noncaustic floor finish remover. 5,342,551, Cl. 252-548.000.

Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., to Whitaker Corporation, The. Thermal junction for card edges in a card cage and ground clip therefor. 5,343,361, Cl. 361-710.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Rueb, Lothar; Eicken, Karl; Plath, Peter; Schwalge, Barbara; Westphalen, Karl-Otto; Wuerzer, Bruno; and Meyer, Norbert, to BASF Aktiengesellschaft. N-aryltetrahydrophthalimide compounds. 5,342,824, Cl. 504-221.000.

Ruetz, Georg: *See—*
Braun, Hermann; and Ruetz, Georg, 5,342,019, Cl. 251-305.000.

Ruff, Gregory L., to Dermagraphics, Inc. Inserting device for a barbed tissue connector. 5,342,376, Cl. 606-151.000.

Ruhter, Virgil, Jr.: *See—*
DeMara, Jimmy A.; Ruhter, Virgil, Jr.; Warner, John; and Schmidt, William G., 5,341,914, Cl. 198-418.600.

Ruiz, Rene A., Sr.; and Spector, George. Energy saver elevator. 5,341,902, Cl. 187-19.000.

Ruka, Roswell J.: *See—*
Vasilow, Theodore R.; Kuo, Lewis J. H.; and Ruka, Roswell J., 5,342,704, Cl. 429-31.000.

Rule, Adrian O., III: *See—*
Griggs, Steven H.; Bartley, William E.; and Rule, Adrian O., III, 5,341,595, Cl. 47-60.000.

Runeman, Bo; and Ronnberg, Peter, to Molnlycke AB. Disposable absorbent article which comprises a hose-like absorption body. 5,342,337, Cl. 604-378.000.

Rupel, John D.; and Josephson, Paul F., to Springs Window Fashions Division, Inc. Adjustable expandable and collapsible shade. 5,341,864, Cl. 160-84.10B.

Ruppmich, Karl: *See—*
Seitz, Friedrich; Ruppmich, Karl; Guentherberg, Norbert; and Niessner, Norbert, 5,342,898, Cl. 525-281.000.

Ruscev, Mario; and Pinto, Marc A., to Schlumberger Technology Corporation. Method and apparatus for determining the physical characteristics of a water flow. 5,343,041, Cl. 250-270.000.

Russell, David B., to Pyropower Corporation. Circulating fluidized bed power plant with improved mixing of sorbents with combustion gases. 5,341,753, Cl. 122-4.00D.

Rust, Harald: *See—*
Gosch, Hans-Juergen; Rust, Harald; Fischer, Rolf; Hechler, Claus; and Pinkos, Rolf, 5,342,488, Cl. 203-80.000.

Rust, Raymond A., Jr.; and Amick, Larry D., to Carrier Corporation Combination expansion and flow distributor device. 5,341,656, Cl. 62-324.600.

Rustogi, Kedar N.: *See—*
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Lamond, Donald R.; and Edelman, Laura H., 5,341,537, Cl. 15-167.100.

Rutherford, Darrel, Sr., to D&R Recyclers, Inc. Apparatus for separating components of rubber vehicle tires. 5,341,996, Cl. 241-69.000.

Rutz, Andreas, to Lindauer Dornier Gesellschaft mbH. Apparatus for the treatment and biaxial stretching and axial shrinking of thermoplastic film web. 5,341,547, Cl. 26-72.000.

Ryan, Glen R.; Allen, Steven A.; and Taylor, David A., to Ciba-Geigy Corporation. Adhesion promoters. 5,342,867, Cl. 524-101.000.

Ryan, Jerry E., to Fintube Limited Partnership. Laser assisted high frequency welding. 5,343,015, Cl. 219-121.640.

Rydell, Mark A., to Everest Medical Corporation. Bipolar coagulation device. 5,342,359, Cl. 606-51.000.

Ryssel, Heiner: *See—*
Berger, Rudolf; Ryssel, Heiner; Schneider, Claus; and Aderhold, Wolfgang, 5,343,293, Cl. 356-369.000.

Ryu, Chang-Keun. Height adjusting mechanism for swivel chair. 5,342,012, Cl. 248-406.200.

Ryudo, Makoto: *See—*
Fujii, Koji; Goto, Yasuhiro; Ryudo, Makoto; and Ihara, Hideki, 5,343,011, Cl. 219-109.000.

S.L.T. Japan Co., Ltd.: *See—*
Daikuzono, Norio, 5,342,358, Cl. 606-45.000

Saab, Mark A., to Advanced Polymers Incorporated. Multi-lumen balloons and catheters made therewith. 5,342,301, Cl. 604-96.000.

Saad, Mohammed: *See—*
Poulain, Marcel; and Saad, Mohammed, 5,342,809, Cl. 501-12.000.

Sadjadi, S. M. Reza: *See—*
Perry, Jeffrey R.; Sadjadi, S. M. Reza; and Luttinger, Kristen A., 5,342,801, Cl. 437-52.000.

Saft: *See—*
Green, Anthony; Champalle, Patrice; and Liska, Jean-Louis, 5,342,708, Cl. 429-145.000.

Sagawa, Norihisa: *See—*
Niinai, Yoshitaka; Nagata, Akio; Sagawa, Norihisa; Shinohara, Shigeru; Nakayama, Eiji; Yotsuyanagi, Mitsutoshi; Hayasaka, Hiroshi; and Tokunaga, Kazuyoshi, 5,342,280, Cl. 494-10.000.

Sager, Ronald E.; and Simmonds, Michael B., to Quantum Magnetics, Inc. Method and apparatus for using stochastic excitation and a superconducting quantum interference device (SAUID) to perform wideband frequency response measurements. 5,343,147, Cl. 324-239.000.

Saida, Masahiro: *See—*
Echigo, Fumio; Saida, Masahiro; Mizuno, Naoko N. F.; Hatanaka, Hideo; and Enoki, Yoshio, 5,342,668, Cl. 428-64.000.

Saikali, Elie: *See—*
Davies, Huw M. L.; Saikali, Elie; and Childers, Steven R., 5,342,949, Cl. 546-124.000.

Saiki, Yukihiro: *See—*
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, 5,341,672, Cl. 73-64.540.

St. Clair, David J., to Shell Oil Company. Epoxy resin coating with COOH-grated hydrogenated block copolymer. 5,342,885, Cl. 525-65.000.

Saint-Gobain Vitrage International: *See—*
Zagdoun, Georges, 5,342,676, Cl. 428-216.000.

Saita, Yoshiaki; Sanbongi, Norimitsu; and Sato, Yoshinori, to Seiko Instruments Inc. Driving method of heat element array. 5,343,222, Cl. 346-76.0PH.

Saito, Hitoshi: *See—*
Taiiguchi, Ryohei; Saito, Hitoshi; Torii, Masanori; and hasegawa, Jun, 5,342,819, Cl. 503-227.000.

Saito, Keishi; and Aoike, Tatsuyuki, to Canon Kabushiki Kaisha. Photovoltaic device. 5,342,452, Cl. 136-256.000.

Saito, Rikuro; and Yagi, Kiyoyuki, to Nitto Mokuzai Sangyo Kabushiki Kaisha. Connectors for structural members. 5,342,138, Cl. 403-189.000.

Saito, Shozo; and Toda, Haruki, to Kabushiki Kaisha Toshiba. Semiconductor video memory having multi-ports. 5,343,425, Cl. 365-189.010.

Saitoh, Kenji: *See—*
Ohwada, Mitsutoshi; Matsugu, Masakazu; Suda, Shigeyuki; Yoshii, Minoru; Niwa, Yukichi; Nose, Noriyuki; Saitoh, Kenji; and Hasegawa, Masanobu, 5,343,291, Cl. 356-356.000.

Saitou, Takashi, to Sankosha Corporation. Method of controlling surge protection device hold current. 5,343,065, Cl. 257-355.000.

Saji, Tomohide; Inoue, Yoshihisa; and Kii, Asajiro, to Suzuki Motor Corporation; and Nishikawa Rubber Co., Ltd. Vehicular roof drip moulding. 5,342,107, Cl. 296-210.000.

Sakabe, Shigekazu; and Kitamura, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. AC generator for vehicles. 5,343,105, Cl. 310-179.000.

Sakai, Kunihiro: *See—*
Miyazaki, Toshihiko; Sakai, Kunihiro; Nose, Hiroyasu; Kishi, Etsuro; and Kuroda, Ryo, 5,343,460, Cl. 369-126.000.

Sakakibara, Yasuyuki; Makinouchi, Susumu; Magome, Nobutaka; and Shiraishi, Naomasa, to Nikon Corporation. Projection exposure apparatus. 5,343,270, Cl. 355-53.000.

Sakamoto, Hiroaki: *See—*
Matsuda, Yutaka; Moriue, Hiroo; Nobutoki, Yoshikazu; Hirano, Seiji; and Sakamoto, Hiroaki, 5,343,475, Cl. 370-94.100.

Sakamoto, Shigeru: *See—*
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.

Sakanoue, Kei; and Kimura, Keizo, to Fuji Photo Film Co., Ltd. Silver halide color photographic materials. 5,342,749, Cl. 430-558.000.

Sakata, Masayuki: *See—*
Araoka, Manabu; Takahashi, Ysohiaki; Shikama, Atsushi; Miyazaki, Yoshihiro; Nakamura, Tomoaki; and Sakata, Masayuki, 5,343,009, Cl. 200-322.000.

Sako, Masahiro: *See—*
Yamashita, Yuji; Takahashi, Masanobu; Masai, Katsunori; Inenaka, Hiroyuki; Sako, Masahiro; Hashimoto, Yasuhiro; and Tomita, Hideaki, 5,343,276, Cl. 355-202.000.

Sakou, Shuuzi: *See—*
Ogino, Akihiko; Miyase, Yoshiyuki; Sakou, Shuuzi; and Shibata, Shinzi, 5,343,014, Cl. 219-121.640.

Sakurai, Hiroshi: *See—*
Kiyomoto, Masayuki; Kajikawa, Akira; Murakado, Toru; Sakurai, Hiroshi; Mano, Motokazu; and Sizume, Kazutika, 5,342,445, Cl. 106-789.000.

Sakurai, Kuniya; Izawa, Kunisuke; Izawa, Hiroyuki; Ineyama, Takashi; Ohta, Tomihisa; and Nozoe, Shigeo, to Ajinomoto Co., Inc. Optically active pyrrolidine derivative. 5,342,963, Cl. 548-532.000.

Sakurai, Naoki: *See—*
Oohata, Tosifumi; Mori, Mutsuhiro; and Sakurai, Naoki, 5,343,052, Cl. 257-141.000.

Salford University Business Services Limited: *See—*
Laws, Elizabeth M., 5,341,848, Cl. 138-44.000.

Salomon S.A.: *See—*
Paris, Jean; and Chemello, Jean-Pierre, 5,341,584, Cl. 36-117.000

Salter, James R., to Optex Biomedical, Inc. Apparatus for emplacing viscous material in a cavity. 5,342,190, Cl. 425-469.000.

Saltzberg, Burton R.: *See—*
Betts, William L.; Calderbank, Arthur R.; and Saltzberg, Burton R., 5,343,500, Cl. 375-39.000

Salzmann, David F., to Automotive Products plc. Hydraulic master cylinder switch. 5,343,005, Cl. 200-61.890.

Samachisa, Gheorghe: *See—*
Yuan, Jack H.; Samachisa, Gheorghe; Guterman, Daniel C.; and Harari, Eliyahou, 5,343,063, Cl. 257-317.000.

Sampson, Nicholas P.: *See—*
Kay, Stanley E.; Farmer, George D.; Bhatia, Hans; Mehta, Ashok D.; Kain, Christopher J.; and Sampson, Nicholas P., 5,343,513, Cl. 379-59.000.

Samsung Electron Devices, Co., Ltd.: *See—*
Kim, Yeong-ho, 5,343,217, Cl. 345-95.000.

Samsung Electronics Co., Ltd.: *See—*
Choi, Yun-Ho; Chin, Dae-Je; Haq, Ejaz U.; and Cho, Soo-In, 5,343,438, Cl. 365-233.000.
Jeon, Jun-Young, 5,343,088, Cl. 307-296.200.
Kim, Ki-Yong, 5,343,245, Cl. 348-257.000.
Kim, Shin-Yong, 5,341,827, Cl. 134-107.000.
Lee, Junseong, 5,343,170, Cl. 331-132.000.
Lee, Tae-woo; Kim, Seon-jun; and Lee, Yang-ku, 5,343,354, Cl. 361-322.000.

Moon, Yang C., 5,343,249, Cl. 348-564.000.
Park, Jong H., 5,342,586, Cl. 422-211.000.
Schaefer, Louis F.; Frohbach, Hugh E.; Pierce, Gerald A.; and Peppers, Norman A., 5,343,458, Cl. 369-97.000.

San-Ei Chemical Industries, Ltd.: *See—*
Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, 5,342,641, Cl. 426-549.000.

Sanadi, Ashok R. Apparatus for preventing cross-contamination of multi-well test plates. 5,342,581, Cl. 422-101.000.

Sanbongi, Norimitsu: *See—*
Saita, Yoshiaki; Sanbongi, Norimitsu; and Sato, Yoshinori, 5,343,222, Cl. 346-76.0PH.

Sandelis, Denis J. M.: *See—*
Ansart, Denis R. H.; Desaulty, Michel A. A.; and Sandelis, Denis J. M., 5,341,645, Cl. 60-737.000.

Sanden Corporation: *See—*
Inoue, Atsuo, 5,341,651, Cl. 62-225.000.
Kawabata, Toshimasa, 5,342,027, Cl. 251-129.130.

Sanders, Clifton G.: *See—*
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, J. D.; and Berry, Gaylord, 5,342,693, Cl. 428-447.000.

Sanders, Ronald W. Process for the manufacture of an endless transfer belt. 5,342,250, Cl. 474-249.000.

Sandoz Ltd.: *See—*
Hauer, Birgit; Meinzer, Armin; Posanski, Ulrich; and Richter, Friedrich, 5,342,625, Cl. 424-455.000.
Stoll, Klaus; and Wolf, Rainer, 5,342,869, Cl. 524-125.000.
Zechner, Kurt, 5,341,801, Cl. 128-203.150.

Sandstrom, Paul H.; and Roennau, Raymond B., to Goodyear Tire & Rubber Company, The. Tire with tread composition. 5,341,863, Cl. 152-209.00R.

Sanduja, Mohan: *See—*
Horowitz, Carl; Sanduja, Mohan; and Thottathil, Paulose, 5,342,659, Cl. 427-553.000.

Sandvik AB: *See—*
Oden, Agneta, 5,342,201, Cl. 433-223.000.

Sanemitsu, Yoshikado, to Mitsubishi Denki Kabushiki Kaisha. IC card having flash erase means. 5,343,030, Cl. 235-492.000.

Sanfilippo, Pauline J.; Urbanski, Maud; Carson, John R.; and Carmosin, Richard J., to McNeil-PPC, Inc. Substituted thiazole derivatives useful as platelet aggregation inhibitors. 5,342,851, Cl. 514-370.000.

Sankosha Corporation: *See—*
Saitou, Takashi, 5,343,065, Cl. 257-355.000.

Sankyu Inc.: *See—*
Sato, Masanori; Goto, Kazuyoshi; Hiyama, Katsuyuki; and Chaen, Yoshinobu, 5,342,104, Cl. 294-74.000.

Sano, Masako: *See—*
Murata, Susumu; Sano, Masako; Takeuchi, Yasuo; Fujihara, Masayuki; Yokoo, Hisahiko; Nakanishi, Kenjiro; Miura, Tetsuo; and Shimizu, Yoshio, 5,342,634, Cl. 426-113.000.

Sansha Electric Manufacturing Co., Ltd.: *See—*
Karino, Kunio; Fujiyoshi, Toshikazu; Danjo, Kenzo; Kinoshita, Atsushi; and Moriguchi, Haruo, 5,343,017, Cl. 219-130.400.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Suganuma, Noboru, 5,342,227, Cl. 440-38.000.

Santangelo, Antonello; Margo, Carmelo; and Lanza, Paolo, to SGS-Thomson Microelectronics, S.R.L. Process for obtaining multi-layer metallization of the back of a semiconductor substrate. 5,342,793, Cl. 437-25.000.

Santora, Scott: *See—*
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,341,692, Cl. 73-864.630.

Sanwo, Ikuo J., to NCR Corporation. Containing and cooling apparatus for an integrated circuit device having a thermal insulator. 5,343,360, Cl. 361-707.000.

Sanyo Electric Cco., Ltd.: *See—*
Hirose, Yasuo; and Yamaguchi, Yukifumi, 5,341,892, Cl. 180-220.000.

Sanyo Electric Co., Ltd.: *See—*
Kitaoka, Kazuhiro; Furuse, Akihiro; Takesue, Fumiki; and Ito, Tsukasa, 5,343,137, Cl. 320-13.000.
Mizuno, Takao; and Fujiyama, Michihiro, 5,343,307, Cl. 358-444.000.
Mohara, Masayuki; and Kitajima, Takahiro, 5,342,474, Cl. 156-584.000.
Mori, Kazushi; Matsumoto, Mitsuaki; Toda, Tadao; Nonaka, Hideyuki; and Yamaguchi, Takao, 5,343,484, Cl. 372-22.000.

Sapim Amada S.p.A.: *See—*
Codatto, Antonio, 5,341,666, Cl. 72-323.000.

Sapp, Steven P.; Wylie, Neil; and Chen, Eugene J. C., to National Semiconductor Corporation. Method for forming a vertical power MOSFET having doped oxide side wall spacers. 5,342,797, Cl. 437-41.000.

Sarkar, Nitis: *See—*
Kling, Susan M.; and Sarkar, Nitis, 5,342,910, Cl. 526-195.000.

Sarkomaa, Pertti J., to Rauma-Repola Oy. Fluidized bed process for SO_2 removal. 5,342,594, Cl. 423-244.080.

Sarokin, Steven D., to International Paper Company. Coated base paper for use in the manufacture of low heat thermal printing paper. 5,342,649, Cl. 427-150.000.

Saroldi, Andrea: *See—*
Ansaldi, Ermanno; Re Fiorentin, Stefano; and Saroldi, Andrea, 5,343,206, Cl. 342-70.000.

Sarraf, Sanwal P., to Eastman Kodak Company. Noncontact donor and receiver holder for thermal printing. 5,342,817, Cl. 503-227.000.

Sasajima, Yasutaka, to Victor Company of Japan, Ltd. Magnetic recording reproducing apparatus with time code recording. 5,343,336, Cl. 360-55.000.

Sasaki, Hirotomo; Fujimori, Toru; Mifune, Hiroyuki; and Morimura, Kimiyasu, to Fuji Photo Film Co., Ltd. Silver halide photographic material containing a tellurium compound. 5,342,750, Cl. 430-603.000.

Sasaki, Kenji: *See—*
Nishikawa, Hirotaka; Kurachi, Yoshio; Kogiso, Takashi; Sekiya, Shigeki; Sato, Teruhiko; Hashimoto, Hideki; Ohmori, Makoto; and Sasaki, Kenji, 5,341,633, Cl. 57-264.000.

Sasaki, Masahiko: *See—*
Oono, Masahiro; Maruyama, Koichi; Iki, Makoto; Kimura, Hitoshi; and Sasaki, Masahiko, 5,343,332, Cl. 359-837.000.

Sasaki, Nobukazu: *See—*
Nagata, Tsunetoshi; and Sasaki, Nobukazu, 5,343,279, Cl. 355-285.000.

Sasaki, Takashi: *See—*
Inoue, Atsushi; Kaku, Nobuyuki; Sasaki, Takashi; Niguchi, Yasuyuki; and Inagaki, Yasuo, 5,343,339, Cl. 360-71.000.

Sasaki, Tatsuo: *See—*
Katoh, Hiroaki; Miyazaki, Toshimasa; Takahashi, Tamotsu; Ishii, Takeshi; Oyama, Yoshihiro; Oyama, Yoshihiro; and Sasaki, Tatsuo, 5,343,029, Cl. 235-467.000.

Sasaki, Tohru: *See—*
Igaue, Takamitsu; Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; Sasaki, Tohru; Shimakawa, Taiji; and Yamamoto, Hiroki, 5,342,341, Cl. 604-385.200.
Kitaoka, Hideaki; and Sasaki, Tohru, 5,342,343, Cl. 604-385.200.

Sasaki, Toshinori; Kanazawa, Akira; Hara, Kenji; Fukao, Tomoo; Ishizuka, Masahiko; Yamada, Masatomo; Sugimura, Naoto; and Yoshihara, Michiaki, to Fuji Xerox Co., Ltd. Sheet size detection device. 5,343,142, Cl. 324-71.100.

Sase, Masatoshi; and Onga, Makoto, to Sony Corporation. Video signal processing apparatus for use with a video camera. 5,343,244, Cl. 348-222.000.

Sato, Hisato; Naito, Tomijiro; and Tuji, Yasunobu, to L.C.C. Consultants Co., Ltd.; and Citizen Watch Co., Ltd. 1,4-substituted dihydrobenzene derivatives. 5,342,546, Cl. 252-299.600.

Sato, Masanori; Goto, Kazuyoshi; Hiyama, Katsuyuki; and Chaen, Yoshinobu, to Sankyu Inc. Automatic lifting angle adjuster for lifting wire rope. 5,342,104, Cl. 294-74.000.

Sato, Seizi: *See—*
Kohno, Fumio; Suwa, Hisashi; and Sato, Seizi, 5,343,257, Cl. 348-842.000.

Sato, Shigehiro; Matsunaga, Yoshiyuki; and Ono, Tsuyoshi, to Toshiba Lighting & Technology Corporation. Heater mounted on a substrate having a hole penetrating through the substrate. 5,343,021, Cl. 219-541.000.

Sato, Shinichi: *See—*
Takago, Toshio; Inomata, Hiroshi; Sato, Shinichi; and Kinami, Hitoshi, 5,342,913, Cl. 528-15.000.
Takahashi, Masaharu; Takita, Ken-ichi; and Sato, Shinichi, 5,342,879, Cl. 524-588.000.

Sato, Tadashi: *See—*
Tosa, Tetsuya; Sato, Tadashi; Watanabe, Taizo; and Minobe, Satoshi, 5,342,785, Cl. 436-178.000.

Sato, Takayuki: *See—*
Furuya, Akio; Tsuji, Toshimoto; and Sato, Takayuki, 5,341,562, Cl. 29-825.000.

Sato, Takehiko: *See—*
Naruse, Hideaki; Suzuki, Makoto; and Sato, Takehiko, 5,342,742, Cl. 430-503.000.

Sato, Teruhiko: *See—*
Nishikawa, Hirotaka; Kurachi, Yoshio; Kogiso, Takashi; Sekiya, Shigeki; Sato, Teruhiko; Hashimoto, Hideki; Ohmori, Makoto; and Sasaki, Kenji, 5,341,633, Cl. 57-264.000.

Sato, Toshiaki, to Canon Kabushiki Kaisha. Bias circuit for photodiode having level shift circuitry. 5,343,034, Cl. 250-214.00C.

Sato, Toshifumi, to NEC Corporation. Symbol timing detecting circuit. 5,343,502, Cl. 375-106.000.

Sato, Yoshinori: *See—*
Saita, Yoshiaki; Sanbongi, Norimitsu; and Sato, Yoshinori, 5,343,222, Cl. 346-76.0PH.

Sato, Yumiko: *See—*
Naito, Tomijiro; Sato, Yumiko; Yukinari, Toshiro; Shibata, Toshihiro; Kimura, Masaki; and Shinada, Yukari, 5,342,544, Cl. 252-299.600.

Satoh, Ryohei: *See—*
Nishikawa, Toru; Satoh, Ryohei; Harada, Masahide; Hayashida, Tetsuya; and Shirai, Mitugu, 5,341,980, Cl. 228-205.000.

Satterfield, Wade J.; and Morain, Robert A., to Hewlett-Packard Company. System and method for probing object resources in a window server environment. 5,343,409, Cl. 364-514.000.

Sauer, Hartmut K., to De La Rue Giori S.A. Apparatus for turning flat objects. 5,341,910, Cl. 198-403.000.

Sausner, Andreas: *See—*
Zabeck, Sebastian; and Sausner, Andreas, 5,341,787, Cl. 123-520.000.

Sawakata, Kiyoshi: *See—*
Kaminaga, Kozo; Ike, Kazuo; Makise, Tetsuro; Fujiwara, Yoshio; Yamakawa, Kiyoshi; and Sawakata, Kiyoshi, 5,343,334, Cl. 360-38.100.

VOL 1165 ISS 5 AG 30 1994 UMI

Sayers, Ian C.: *See—*
Jeffery, John; Kaniuka, Leslie Y.; and Sayers, Ian C., 5,342,486, Cl. 162-358.400.

Scalone, Michelangelo: *See—*
Doran, Thomas I.; McLane, John A.; Okabe, Masami; Scalone, Michelangelo; and Uskokovic, Milan R., 5,342,833, Cl. 514-167.000.

Scapa Group PLC: *See—*
Jeffery, John; Kaniuka, Leslie Y.; and Sayers, Ian C., 5,342,486, Cl. 162-358.400.

Scarborough, Robert M., to Cor Therapeutics, Inc. Antithrombosis agents. 5,342,830, Cl. 514-12.000.

Scavuzzo, William S.: *See—*
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,341,692, Cl. 73-864.630.

Scepanski, William H.: *See—*
Laughlin, Timothy E.; Scepanski, William H.; and Gruber, Kenneth P., 5,342,587, Cl. 422-266.000.

Schaaf, Cecil F.; and Schaaf, Craig R. Non-rectangular block and wall. 5,341,618, Cl. 52-608.000.

Schaaf, Craig R.: *See—*
Schaaf, Cecil F.; and Schaaf, Craig R., 5,341,618, Cl. 52-608.000.

Schaefer, Joseph H., to Acute Ideas, Inc. Fluid distribution device. 5,341,841, Cl. 137-561.00A.

Schaefer, Louis F.; Frohbach, Hugh E.; Pierce, Gerald A.; and Peppers, Norman A., to SamSung Electronics Co., Ltd. Method of storing digital video, audio and control information on an an optical storage medium. 5,343,458, Cl. 369-97.000.

Schafer, Karl K.; Melzer, Gerhard M.; Scriba, Jorg; Bhagwat, Suda G.; and Eisses, James, to Carl Schenck AG; and Lousiana Pacific Corporation. Method of manufacturing fiber gypsum board. 5,342,566, Cl. 264-102.000.

Schaffer, Ortwin: *See—*
Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, 5,342,916, Cl. 528-150.000.

Schauder, Colin D.: *See—*
Gyugyi, Laszlo; and Schauder, Colin D., 5,343,139, Cl. 323-207.000.

Scheiderer, Paul E.: *See—*
Dittmar, Mark B.; and Scheiderer, Paul E., 5,342,571, Cl. 419-13.000.

Schering Corporation: *See—*
Hegde, Vinod R.; Horan, Ann C.; Marquez, Joseph A.; and Patel, Mahesh G., 5,342,852, Cl. 514-461.000.

Scheu, Robert W.: *See—*
Nolte, Michael G.; Davis, Gary D.; Jergenson, Ronny D.; Scheu, Robert W.; and Tillery, Timothy G., 5,342,998, Cl. 174-152.00R.

Schiebler, Siegfried: *See—*
Macholdt, Hans-Tobias; Schiebler, Siegfried; Gitzel, Jorg; and Dietz, Erwin, 5,342,723, Cl. 430-110.000.

Schiel, Christian; Kotitschke, Gerhard; and Groner, Karl, to J. M. Voith GmbH. Device for removing a web from a drying cylinder. 5,341,579, Cl. 34-115.000.

Schiltz, Andre : *See—*
Vareille, Aime ; Schiltz, Andre ; and Hauuy, Jean C., 5,343,049, Cl. 250-561.000.

Schimmel, Thomas: *See—*
Fuchs, Harald; and Schimmel, Thomas, 5,343,042, Cl. 250-307.000.

Schleinz, Alan F.: *See—*
Heindel, Timothy R.; Garvey, Michael J.; Dick, Daniel W.; Keller, Richard F.; Jordan, Mary P.; and Schleinz, Alan F., 5,342,647, Cl. 427-2.310.

Schliebe, Duane M.: *See—*
Walkowski, Paul D.; and Schliebe, Duane M., 5,341,679, Cl. 73-317.000.

Schlumberger Technology Corporation: *See—*
Davies, Dylan H.; and Petit, Pierre-Marie, 5,343,153, Cl. 324-366.000.
Ruscev, Mario; and Pinto, Marc A., 5,343,041, Cl. 250-270.000.

Schmidt, A. Robert; Yuhas, Drew J.; and Barndt, Ronald D., to American Standard Inc. Bathtub with integrally formed leveling base. 5,341,527, Cl. 4-592.000.

Schmidt-Eisenlohr, Uwe: *See—*
Weigel, Albrecht; and Schmidt-Eisenlohr, Uwe, 5,342,168, Cl. 415-148.000.

Schmidt, Hartmut: *See—*
Westphal, Michael; Knuttel, Bertold; and Schmidt, Hartmut, 5,343,148, Cl. 324-309.000.

Schmidt, Nancy K.: *See—*
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittmer, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,343,517, Cl. 379-219.000.

Schmidt, William G.: *See—*
DeMara, Jimmy A.; Ruhter, Virgil, Jr.; Warner, John; and Schmidt, William G., 5,341,914, Cl. 198-418.600.

Schmitt, Hubert: *See—*
Kampfmann, Wolfgang; Schmitt, Hubert; and Voges, Dieter, 5,342,118, Cl. 303-97.000.

Schmitt, Susan M.: *See—*
DiNinno, Frank; Schmitt, Susan M.; and Guthikonda, Ravindra N., 5,342,933, Cl. 540-302.000.

Schmitz, Christian: *See—*
Pepin, Regis; Schmitz, Christian; Lacroix, Guy-Bernard; Dellis, Philippe; and Veyrat, Christine, 5,342,835, Cl. 514-227.500.

Schmitz, Marion C.: *See—*
Buckley, Randall G.; Eastburn, George L.; Schmitz, Marion C.; Breslau, Barry R.; and Tansey, Shawn P., 5,342,863, Cl. 523-310.000.

Schneider, Claus: *See—*
Berger, Rudolf; Ryssel, Heiner; Schneider, Claus; and Aderhold, Wolfgang, 5,343,293, Cl. 356-369.000.

Schneider, David A.: *See—*
Dausch, Mark E.; Whipple, Walter, III; Cooper, Terry C.; and Schneider, David A., 5,341,661, Cl. 68-207.000.

Schneider, Georg; Reder, Wolfgang O.; and Reinhart, Dieter, to Koenig & Bauer Aktiengesellschaft. Doctor blade bar for a short inking system. 5,341,741, Cl. 101-365.000.

Schneider, George H.: *See—*
Hannan, Edward J.; and Schneider, George H., 5,341,542, Cl. 16-289.000.

Schnitker, Mark W.: *See—*
Carter, Thurman B.; and Schnitker, Mark W., 5,341,873, Cl. 166-117.500.

Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; Sicinski, Rafal R.; and Prahl, Jean M., 5,342,975, Cl. 552-653.000.

Schock, Robert B.; and Leschinsky, Boris, to Datascope Investment Corp. Single roller blood pump and pump/oxygenator system using same. 5,342,181, Cl. 417-476.000.

Schofield, Philip W.: *See—*
Palecek, Vincent J.; McGinley, James W.; and Schofield, Philip W., 5,343,547, Cl. 375-76.000.

Scholl, Hans-Joachim: *See—*
Muller, Hanns-Peter; Scholl, Hans-Joachim; and Kapps, Manfred, 5,342,881, Cl. 524-700.000.

Scholz, Manfred: *See—*
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Heilmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weisshaupl, Horst, 5,343,506, Cl. 376-280.000.

Scholz, Matthew T.; Delmore, Michael D.; and Davis, Daniel W., to Minnesota Mining and Manufacturing Company. Printed woven fiber materials and method. 5,342,291, Cl. 602-41.000.

Schorm, Josef; Zych, Otakar; and Deutschmann, Gottfried, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft; and CKD Trakce A.S. Process for producing the electric insulation of electric machine windings. 5,341,561, Cl. 29-596.000.

Schorpp, Volker: *See—*
Beneking, Claus; Dannert, Horst; Neiger, Manfred; Schorpp, Volker; and Stockwald, Klaus, 5,343,114, Cl. 313-485.000.

Schreiber, Walter: *See—*
Elvekjaer, Peter; and Schreiber, Walter, 5,342,170, Cl. 415-192.000.

Schroeder, Mel: *See—*
Laborde, Edgardo; and Schroeder, Mel, 5,342,844, Cl. 514-300.000.

Schubert, David M., to U. S. Borax Inc. Process of making zinc borate and fire-retarding compositions thereof. 5,342,553, Cl. 252-609.000.

Schuellein, Stephen C. Appliance for improved radiographic visualization of the cervical spine. 5,342,290, Cl. 602-36.000.

Schuhbauer, Johannes: *See—*
Stepanek, Premek; Wagner, Ludwig; and Schuhbauer, Johannes, 5,342,078, Cl. 280-602.000.

Schuler, Norman F.: *See—*
Rowe, C. Daniel; Ashmore, Leslie R.; Carroll, Chad C.; Schwemberger, Richard F.; Schuler, Norman F.; and Collins, John M., 5,342,315, Cl. 604-167.000.

Schulte, Paul J.; and Gandolfo, Catherine A., to Ford Motor Company. Joint for an automative air induction system. 5,341,773, Cl. 123-184.610.

Schumacher, Guenter: *See—*
Schumacher, Gustav, II; and Schumacher, Guenter, 5,341,628, Cl. 56-10.20E.

Schumacher, Gustav, II; and Schumacher, Guenter. Control device for an oscillatingly supported machine structure of an agricultural machine. 5,341,628, Cl. 56-10.20E.

Schumacher, Hans; and Huff, Hans P., to Hoechst Aktiengesellschaft. Herbicidal agents. 5,342,822, Cl. 504-134.000.

Schunack, Walter: *See—*
Garbarg, Monique; Arrang, Jean-Michel; Schunack, Walter; Lipp, Ralph; Stark, Holger; Lecomte, Jeanne-Marie; and Schwartz, Jean-Charles, 5,342,960, Cl. 548-336.100.

Schuster, Richard A.: *See—*
Klemp, Thomas J.; Hohman, David W.; and Schuster, Richard A., 5,342,459, Cl. 148-690.000.

Schwab, Edward C.; Thomas, Kristin L.; Brown, George E.; and Harrington, Terry R., to General Mills, Inc. Puffed edible foams and high intensity microwave method of preparation. 5,342,635, Cl. 426-241.000.

Schwalge, Barbara: *See—*
Rueb, Lothar; Eicken, Karl; Plath, Peter; Schwalge, Barbara; Westphalen, Karl-Otto; Wuerzer, Bruno; and Meyer, Norbert, 5,342,824, Cl. 504-221.000.

Schwartz, Jean-Charles: *See—*
Garbarg, Monique; Arrang, Jean-Michel; Schunack, Walter; Lipp, Ralph; Stark, Holger; Lecomte, Jeanne-Marie; and Schwartz, Jean-Charles, 5,342,960, Cl. 548-336.100.

Schwemberger, Richard F.: *See—*
Rowe, C. Daniel; Ashmore, Leslie R.; Carroll, Chad C.; Schwemberger, Richard F.; Schuler, Norman F.; and Collins, John M., 5,342,315, Cl. 604-167.000.

Schwerzel, Thomas: *See—*
Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, 5,342,916, Cl. 528-150.000.

Scientific Design Company, Inc.: *See—*
Becker, Mitchell; and Liu, Kindtoken H., 5,342,973, Cl. 549-534.000.

SciMed Life Systems, Inc.: *See—*
Euteneuer, Charles L.; and Keith, Peter T., 5,342,307, Cl. 604-103.000.
Loney, Carol; and VandenEinde, David A., 5,342,302, Cl. 604-96.000.

Scios Nova Inc.: *See—*
Johnson, Lorin K.; and Longenecker, John P., 5,342,764, Cl. 435-69.100.

Scott Bader Company Limited: *See—*
Wilkinson, Roy R.; and Phillips, Anthony, 5,342,893, Cl. 525-176.000.

Scott, Bradley A.: *See—*
Roller, Kent G.; Scott, Bradley A.; and LeBlanc, Timothy C., 5,342,655, Cl. 427-372.200.

Scott, G. Robert: *See—*
Cutright, Edwin L.; Scott, G. Robert; and Vogt, Howard W., 5,342,484, Cl. 162-139.000.

Scott, Jeffery W.; and Coldren, Larry A., to Optical Concepts, Inc. Electrical pumping scheme for vertical-cavity surface-emitting lasers. 5,343,487, Cl. 372-46.000.

Scouten, William H.: *See—*
Arenzen, Rene; Boivin, Patrick; Kobos, Robert K.; Scouten, William H.; and Smart, Bruce E., 5,342,772, Cl. 435-181.000.

Scriba, Jorg: *See—*
Schafer, Karl K.; Melzer, Gerhard M.; Scriba, Jorg; Bhagwat, Suda G.; and Eisses, James, 5,342,566, Cl. 264-102.000.

Scripps Research Institute, The: *See—*
Wong, Chi-Huey; and Bradshaw, Curt W., 5,342,767, Cl. 435-122.000.

Seagate Technology, Inc.: *See—*
Chapin, Robert E., 5,343,343, Cl. 360-103.000.

Seals, Dennis K.: *See—*
Quitschau, Algird R.; and Seals, Dennis K., 5,341,566, Cl. 29-890.035.

Searle, Donald S. Dynamic rail longitudinal stress measuring system. 5,341,683, Cl. 73-597.000.

Sebramm, Karen M.: *See—*
Lovell, John W.; Sebramm, Karen M.; and DeLisle, William E., 5,343,495, Cl. 375-1.000.

Segerpalm, Hans; and Eklund, Ante. Air filtering apparatus. 5,342,238, Cl. 454-136.000.

Seikagaku Corporation: *See—*
Ono, Keiichi; Kai, Yoshiyuki; and Maeda, Hiroo, 5,342,940, Cl. 544-218.000.

Seiko Epson Corporation: *See—*
Asahina, Michio, 5,342,806, Cl. 437-195.000.
Miyazawa, Osamu; Furukawa, Tsuneaki; and Kitahara, Jouji, 5,343,108, Cl. 310-323.000.
Ohshima, Keiichi, 5,343,229, Cl. 347-8.000.
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,343,317, Cl. 359-73.000.

Seiko Instruments Inc.: *See—*
Saita, Yoshiaki; Sanbongi, Norimitsu; and Sato, Yoshinori, 5,343,222, Cl. 346-76.0PH.

Seitz, Friedrich; Ruppmich, Karl; Guentherberg, Norbert; and Niessner, Norbert, to BASF Aktiengesellschaft. Particulate graft polymer, and thermoplastic molding material produced therefrom having improved toughness. 5,342,898, Cl. 525-281.000.

Seitz, Jack. Modular ramp. 5,341,533, Cl. 14-69.500.

Sekhar, Jainagesh A., to Moltech Invent S.A. Bonding of bodies of refractory hard materials to carbonaceous supports. 5,342,491, Cl. 204-243.00R.

Seki, Masahiro: *See—*
Moriya, Tadashi; Seki, Masahiro; and Nakamura, Toshiomi, 5,342,608, Cl. 424-9.000.

Sekihata, Osamu; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Tanaka, Kenji; Hatta, Hiroyuki; and Furuya, Reiko, to Fujitsu Limited. Fault notifying system for asynchronous transfer mode communication system. 5,343,462, Cl. 370-13.000.

Sekine, Yasusi: *See—*
Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, 5,342,480, Cl. 156-648.000.

Sekino, Hitoshi: *See—*
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Sekino, Takao: *See—*
Nagayama, Yoshirou; Kubo, Yoshihiro; and Sekino, Takao, 5,343,333, Cl. 359-874.000.

Sekiya, Shigeki: *See—*
Nishikawa, Hirotaka; Kurachi, Yoshio; Kogiso, Takashi; Sekiya, Shigeki; Sato, Teruhiko; Hashimoto, Hideki; Ohmori, Makoto; and Sasaki, Kenji, 5,341,633, Cl. 57-264.000.

Sekiyama, Takaaki: *See—*
Hatsuya, Satoshi; Sekiyama, Takaaki; Tsuji, Takashi; Iwayama, Satoshi; and Okunishi, Masahiko, 5,342,840, Cl. 514-262.000.

Seksaria, Dinesh; and Fuller, Charles I., to Aluminum Company of America. Universal joint yoke. 5,342,243, Cl. 464-134.000.

Selvin, Eric B.: *See—*
Fung, Wing-Cho; Pun, Yim; and Selvin, Eric B., 5,343,086, Cl. 307-296.100.

Senffner, David: *See—*
Sennott, James W.; and Senffner, David, 5,343,209, Cl. 342-357.000.

Sennott, James W.; and Senffner, David. Navigation receiver with coupled signal-tracking channels. 5,343,209, Cl. 342-357.000.

Sensor Technologies, Inc.: *See—*
Chick, William L.; Wolf, David E.; and Cardullo, Richard A., 5,342,789, Cl. 436-501.000.

Serad, Susan L., to Hoechst Celanese Corporation. Polyester dissolution for polyester/cotton blend recycle. 5,342,854, Cl. 521-48.000.

Serbinski, Andrew; Mork, Steve O.; and Callaghan, Roberta L., to Teledyne Industries, Inc. Electric toothbrush. 5,341,534, Cl. 15-22.100.

Sercel, Anthony D.: *See—*
Beylin, Vladimir Genukh; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,342,959, Cl. 548-327.500.

Serrano, Fabian A. Adaptable assembly for a soapy water operated toilet system. 5,341,529, Cl. 4-665.000.

Servaux, Jean: *See—*
Rosse, Meinrad; and Servaux, Jean, 5,341,947, Cl. 215-230.000.

Servicios Corporativos Frisco, S.A. de C.V.: *See—*
Valenzuela, Ulises M.; and Moguel, Guillermo, 5,341,938, Cl. 209-164.000.

Serviere, Georges, to Electricite de France Service National. Device for the recovery of a molten core of a nuclear reactor. 5,343,505, Cl. 376-280.000.

Servojet Electronic Systems, Ltd.: *See—*
Beck, Niels J.; Pena, James A.; Roach, Alan R.; and Johnston, Bevan H., 5,341,783, Cl. 123-446.000.

Seto, Mitsuru: *See—*
Nousho, Shinji; Seto, Mitsuru; Hashimoto, Junichiro; and Rokutanzono, Takashi, 5,342,718, Cl. 430-58.000.

Seto, Nobuo: *See—*
Morigaki, Masakazu; Yoshioka, Yasuhiro; and Seto, Nobuo, 5,342,747, Cl. 430-551.000.

Sewell, Cody L.: *See—*
Deken, Arthur D.; and Sewell, Cody L., 5,341,887, Cl. 175-62.000.

Sextl, Elfriede: *See—*
Zimmer, Gerhard; Kinz, Heike; and Sextl, Elfriede, 5,342,602, Cl. 423-584.000.

SGS-Thomson Microelectronics S.R.L.: *See—*
Frisina, Ferruccio; and Ferla, Giuseppe, 5,343,068, Cl. 257-578.000.
Maiocchi, Giuseppe, 5,343,127, Cl. 318-254.000.
Santangelo, Antonello; Margo, Carmelo; and Lanza, Paolo, 5,342,793, Cl. 437-25.000.

SGS-Thomson Microelectronics S.A.: *See—*
Debaty, Pascal, 5,343,169, Cl. 331-17.000.
Gens, Marc, 5,343,084, Cl. 307-246.000.

Shade, Ray W.: *See—*
Grocela-Kathe, Teresa A.; and Shade, Ray W., 5,342,430, Cl. 75-746.000.

Shafer, Gary J., to Shafer, Gary J. Bow sight apparatus. 5,341,791, Cl. 124-87.000.

Shafer, Harold G., Jr.: *See—*
Adler, Meryle D.; and Shafer, Harold G., Jr., 5,342,067, Cl. 279-3.000.

Shaffer, Howard R.: *See—*
Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., 5,343,361, Cl. 361-710.000.

Shah, Suresh D.; and Hlavaty, David G., to General Motors Corporation. Plastics injection molding device with multipositioning construction for gas assisted molding. 5,342,191, Cl. 425-533.000.

Sham, John C. K. Portable steam vacuum cleaner. 5,341,541, Cl. 15-320.000.

Shane, Eric M.; and McElroy, James F., to United Technologies Corporation. High purity hydrogen and oxygen production and apparatus therefor. 5,342,494, Cl. 204-252.000.

Sharber, Norman G. Electric fish barrier. 5,341,764, Cl. 119-220.000.

Sharp Corporation: *See—*
Avery, Leslie R., 5,343,053, Cl. 257-173.000.
Kubota, Nobuhiko; Sugimoto, Tsunemi; Sugawara, Kazushi; and Shiohara, Yuh, 5,342,826, Cl. 505-238.000.

Sharp Kabushiki Kaisha: *See—*
Miyake, Tomoyuki; Katayama, Hiroyuki; Nakayama, Junichiro; Miyake, Takahiro; Ohta, Kenji; and Kobayashi, Shozo, 5,343,448, Cl. 369-13.000.

Sharp Kabushiki Kaisha: *See—*
Ahn, Sung T.; and Hayashida, Shigeki, 5,342,796, Cl. 437-41.000.
Katayama, Mikio; Kato, Hiroaki; Nagayasu, Takayoshi; Imaya, Akihiko; Negoto, Hidenori; Kanemori, Yuzuru; and Hirobe, Toshihiko, 5,343,216, Cl. 345-92.000.
Kazaki, Yuichi; Maeda, Yasutaka; Kawamoto, Hiroshi; Nishimura, Hideyuki; and Nagayama, Katsuhiro, 5,343,282, Cl. 355-326.00R.

VOL 1165 ISS 5 AG 30 1994 UMI

Maeda, Shigemi; Kojima, Kunio; and Akiyama, Jun, 5,343,452, Cl. 369-32.000.
Murata, Yasumoto; Yoshikawa, Syuuichi; and Ikeuchi, Michio, 5,343,420, Cl. 364-825.000.
Nakai, Yasuhiro; and Yoshiura, Shoichiro, 5,343,304, Cl. 358-296.000.
Tasaki, Koji; Asai, Toshimitsu; and Jones, Kenneth M., 5,343,310, Cl. 358-515.000.
Yamada, Nobuaki; Hirai, Toshiyuki; Onishi, Noriaki; and Kohzaki, Shuichi, 5,342,545, Cl. 252-299.010.

Shay, Gregory D.: *See*—
Jenkins, Richard D.; Bassett, David R.; and Shay, Gregory D., 5,342,883, Cl. 524-845.000.

Shay, Michael J., to National Semiconductor. Tristate driver for interfacing to a bus subject to overvoltage conditions. 5,343,095, Cl. 307-475.000.

Shell Oil Company: *See*—
Cowles, Christopher S.; Leveille, Jacques P.; Hatchell, Paul J.; Mireles, Jesus A.; and Clifton, Robert D., 5,343,001, Cl. 181-102.000.
Hale, Arthur H., 5,341,882, Cl. 166-293.000.
Huete, David A.; Brasted, Lee K.; and Rodenbusch, George, 5,342,148, Cl. 405-223.100.
St. Clair, David J., 5,342,885, Cl. 525-65.000.

Shepard, Cecil B., Jr.: *See*—
Cann, Gordon L.; and Shepard, Cecil B., Jr., 5,342,660, Cl. 427-577.000.

Sheppard, Sheron R.; and Polston, Henry B. Apparatus for cleaning waste collection system. 5,341,539, Cl. 15-302.000.

Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., to Norton Company. Device for taking, preserving and transporting a fluid sample for analysis. 5,341,692, Cl. 73-864.630.

Sherman, Marshall L.: *See*—
Graves, Jeffrey A.; Sherman, Marshall L.; Leader, Matthew J.; and Sin, Kee V., 5,342,498, Cl. 204-408.000.

Sherpa, Inc.: *See*—
Liautaud, Jeffrey, 5,341,582, Cl. 36-76.000.

Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, to Board of Regents, The University of Texas System. Polyazamacrocyclic compounds for complexation of metal ions. 5,342,606, Cl. 424-09.000.

Sherwood, David E., Jr.: *See*—
Dai, Pei-Shing E.; Campbell, Charles N., II; Martin, Bobby R.; and Sherwood, David E., Jr., 5,342,507, Cl. 208-111.000.

Sherwood Medical Company: *See*—
Short, Leland H., 5,342,011, Cl. 248-318.000.

Shi, Xiao. Cleaning shell for firearms. 5,341,744, Cl. 102-442.000.

Shiao, Hsuan-Sen. Electric control device for an outdoor lamp. 5,343,187, Cl. 338-70.000.

Shibano, Masayuki: *See*—
Watanabe, Katsuya; Shibano, Masayuki; Yamaguchi, Hiroyuki; Edahiro, Yasuaki; and Moriya, Mitsuro, 5,343,454, Cl. 369-44.320.

Shibata, Masayuki: *See*—
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.

Shibata, Shinzi: *See*—
Ogino, Akihiko; Miyase, Yoshiyuki; Sakou, Shuuzi; and Shibata, Shinzi, 5,343,014, Cl. 219-121.640.

Shibata, Toshihiro: *See*—
Naito, Tomijiro; Sato, Yumiko; Yukinari, Toshiro; Shibata, Toshihiro; Kimura, Masaki; and Shinada, Yukari, 5,342,544, Cl. 252-299.600.

Shibayama, Ikuo: *See*—
Okamoto, Arifumi; and Shibayama, Ikuo, 5,341,713, Cl. 83-865.000.

Shibue, Hideaki: *See*—
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiki, 5,342,023, Cl. 267-64.170.

Shichinohe, Daisuke, to Mitsubishi Denki Kabushiki Kaisha. Output device capable of high speed operation and operating method thereof. 5,343,099, Cl. 307-571.000.

Shieh, Chi-Maw: *See*—
Chen, Chan-Ming; Wu, Jia-Ruey; Shieh, Chi-Maw; and Chang, Wen-Pin, 5,343,408, Cl. 364-508.000.

Shiffer, James D., II, to VLSI Technology, Inc. Gate array bases with flexible routing. 5,343,058, Cl. 257-204.000

Shigetoyo, Hidemi: *See*—
Yamada, Masahiko; Harada, Yuji; and Shigetoyo, Hidemi, 5,341,867, Cl. 164-502.000.

Shih, Nan C. Lock latch. 5,342,101, Cl. 292-165.000.

Shikama, Atsushi: *See*—
Araoka, Manabu; Takahashi, Ysohiaki; Shikama, Atsushi; Miyazaki, Yoshihiro; Nakamura, Tomoaki; and Sakata, Masayuki, 5,343,009, Cl. 200-322.000.

Shikata, Shinichi; Hachigo, Akihiro; Nakahata, Hideaki; and Higaki, Kenjiro, to Sumitomo Electric Industries, Ltd. Surface acoustic wave element and method of manufacturing the same. 5,343,107, Cl. 310-313.00A.

Shima, Takeshi: *See*—
Itakura, Tetsuro; and Shima, Takeshi, 5,343,089, Cl. 307-353.000.

Shimada, Junichi: *See*—
Suzuki, Fumio; Shimada, Junichi; Karasawa, Akira; Mizumoto, Hideaki; Kase, Hiroshi; and Nonaka, Hiromi, 5,342,841, Cl. 514-263.000.

Shimada, Uji; and Oue, Tatuya, to Mitsubishi Denki Kabushiki Kaisha. Magnetic field correction device. 5,343,183, Cl. 335-301.000.

Shimakawa, Taiji: *See*—
Igaue, Takamitsu; Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; Sasaki, Tohru; Shimakawa, Taiji; and Yamamoto, Hiroki, 5,342,341, Cl. 604-385.200.

Shimano Inc.: *See*—
Sugawara, Kenichi; Ikuta, Takeshi; and Yoshikawa, Osamu, 5,342,003, Cl. 242-231.000.

Shimase, Akira: *See*—
Hamamura, Yuuichi; Haraichi, Satoshi; Shimase, Akira; Azuma, Junzou; Itoh, Fumikazu; Yamada, Toshio; Koizumi, Yasuhiro; and Mizumura, Michinobu, 5,342,448, Cl. 118-723.0FI.

Shimizu, Nobuyoshi: *See*—
Konya, Kazumi; Shimizu, Nobuyoshi; and Miki, Wataru, 5,342,547, Cl. 252-380.000.

Shimizu, Shohachi, to Mirai Industries Co., Ltd. Floor system for laying cables and pipes underneath the floor. 5,341,614, Cl. 52-220.100.

Shimizu, Yoshio: *See*—
Murata, Susumu; Sano, Masako; Takeuchi, Yasuo; Fujihara, Masayuki; Yokoo, Hisahiko; Nakanishi, Kenjiro; Miura, Tetsuo; and Shimizu, Yoshio, 5,342,634, Cl. 426-113.000.

Shimoichi, Kouji; and Furumoto, Hideyuki, to Hirotec Corporation. Holder changer. 5,342,161, Cl. 414-416.000.

Shimoji, Noriyuki, to Rohm, Co., Ltd. Method for isolating circuit elements for semiconductor device. 5,342,803, Cl. 437-70.000.

Shimoji, Noriyuki, to Rohm Co., Ltd. FET memory device. 5,343,423, Cl. 365-182.000.

Shin-Etsu Bio, Inc.: *See*—
Thorne, Linda P.; Armentrout, Richard W.; Pollock, Thomas J.; and Mikolajczak, Marcia J., 5,342,773, Cl. 435-200.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Amano, Tadashi; and Koga, Toshimichi, 5,342,906, Cl. 526-88.000.
Kubota, Tohru; and Endo, Mikio, 5,342,984, Cl. 556-477.000.
Takago, Toshio; Inomata, Hiroshi; Sato, Shinichi; and Kinami, Hitoshi, 5,342,913, Cl. 528-15.000.
Takahashi, Masaharu; Takita, Ken-ichi; and Sato, Shinichi, 5,342,879, Cl. 524-588.000.
Thorne, Linda P.; Armentrout, Richard W.; Pollock, Thomas J.; and Mikolajczak, Marcia J., 5,342,773, Cl. 435-200.000.
Yamazaki, Toshio; Sugahara, Hideki; Ichinohe, Shoji; Ishihara, Toshinobu; and Kubota, Tohru, 5,342,983, Cl. 556-445.000.

Shin, Hyun J.: *See*—
Dhong, Sang H.; and Shin, Hyun J., 5,343,092, Cl. 307-455.000.

Shinada, Yohsuke; and Nakamura, Hidetake, to NEC Corporation. Rectifier for DC/DC converter. 5,343,383, Cl. 363-127.000.

Shinada, Yukari: *See*—
Naito, Tomijiro; Sato, Yumiko; Yukinari, Toshiro; Shibata, Toshihiro; Kimura, Masaki; and Shinada, Yukari, 5,342,544, Cl. 252-299.600.

Shinguu, Masataka: *See*—
Okamoto, Yutaka; Yamada, Makoto; and Shinguu, Masataka, 5,343,066, Cl. 257-393.000.

Shinoda, Masaru: *See*—
Nagasawa, Atsushi; Morita, Keiichi; Yamazaki, Masaya; Katagami, Yoshinori; Shinoda, Masaru; Matsuo, Takeshi; and Misawa, Masaru, 5,341,650, Cl. 62-180.000.

Shinohara, Seiji: *See*—
Yamada, Jun; and Shinohara, Seiji, 5,342,784, Cl. 430-49.000.

Shinohara, Shigeru: *See*—
Niinai, Yoshitaka; Nagata, Akio; Sagawa, Norihisa; Shinohara, Shigeru; Nakayama, Eiji; Yotsuyanagi, Mitsutoshi; Hayasaka, Hiroshi; and Tokunaga, Kazuyoshi, 5,342,280, Cl. 494-10.000.

Shioda, Akihiko: *See*—
Kamakura, Mitsutoshi; Shioda, Akihiko; Enami, Yoshihide; and Go, Hisao, 5,341,563, Cl. 29-743.000.

Shiohara, Yuh: *See*—
Kubota, Nobuhiko; Sugimoto, Tsunemi; Sugawara, Kazushi; and Shiohara, Yuh, 5,342,826, Cl. 505-238.000.

Shirai, Katutada; Mochizuki, Hideharu; and Tsukamoto, Hironori, to Koito Manufacturing Co., Ltd. Vehicular headlamp assembly. 5,343,372, Cl. 362-66.000.

Shirai, Mitugu: *See*—
Nishikawa, Toru; Satoh, Ryohei; Harada, Masahide; Hayashida, Tetsuya; and Shirai, Mitugu, 5,341,980, Cl. 228-205.000.

Shiraishi, Naomasa: *See*—
Sakakibara, Yasuyuki; Makinouchi, Susumu; Magome, Nobutaka; and Shiraishi, Naomasa, 5,343,270, Cl. 355-53.000.

Shirasogawa, Michio; and Konishi, Hiroshi, to Oki Electric Industry Co., Ltd.; and Rikei Corp. Multiple addressing facsimile system. 5,343,305, Cl. 358-407.000.

Shiratori, Kazuhide: *See*—
Nakajima, Takeshi; Shiratori, Kazuhide; and Uehara, Masahiro, 5,342,131, Cl. 400-120.010.

Shirk, Michael E.: *See*—
Davis, Wayne S.; Whiteman, Robert N., Jr.; and Shirk, Michael E., 5,342,216, Cl. 439-362.000.

Shirota, Shozo: *See*—
Ohtsuka, Takahiro; and Shirota, Shozo, 5,343,431, Cl. 365-201.000.

Shiseido Co., Ltd.: *See*—
Katoh, Mikiko; Uehara, Keiichi; and Takata, Sadaki, 5,342,610, Cl. 424-59.000.

Shlomo, Golan: *See*—
Yahnke, Mark S.; Shlomo, Golan; and Anderson, Marc A., 5,342,709, Cl. 429-162.000.

Shober, Robert C., Jr.: *See*—
Watson, Robert L.; and Shober, Robert C., Jr., 5,342,319, Cl. 604-180.000.

Shoda, Akihiko; Usui, Yoshinobu; and Mizutani, Tomoji, to Sony Corporation. Matrix switcher apparatus. 5,343,193, Cl. 340-825.790.

Shoji, Takeshi: *See*—
Kawaberi, Seiji; and Shoji, Takeshi, 5,343,100, Cl. 307-646.000.

Shonk, Robert S., to Cordis Corporation. Variable distention angioplasty balloon assembly. 5,342,305, Cl. 604-101.000.

Short, Leland H., to Sherwood Medical Company. Fluid container attachment adaptor for an ambulatory fluid delivery system. 5,342,011, Cl. 248-318.000.

Showa Electric Wire & Cable Co., Ltd.: *See*—
Yamada, Masahiko; Harada, Yuji; and Shigetoyo, Hidemi, 5,341,867, Cl. 164-502.000.

Showa Sangyo Co., Ltd.: *See*—
Takahashi, Hidekazu; and Yanai, Norimasa, 5,342,923, Cl. 530-373.000.

Showalter, Howard D. H.: *See*—
Beylin, Vladimir Genukh; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,342,959, Cl. 548-327.500.

Shrive, Luc: *See*—
Bardot, Colette; Carles, Maurice; Desplantes, Rene ; and Shrive, Luc, 5,342,521, Cl. 210-490.000.

Shu, Guoliang; Yang, Weikang; Wongwarawipat, Wiwat; Takatori, Sunao; and Yamamoto, Makoto, to Yozan, Inc. Analog calculation circuit using timers. 5,343,419, Cl. 364-807.000.

Shubin, Jack A.; Oliver, Gene S.; and Jerabek, Jeff J., to United States of America, Air Force. Method and apparatus for manufacture of reinforced panels. 5,341,556, Cl. 29-448.000.

Shudo, Katsuyuki: *See*—
Nishima, Ryo; Kinjo, Hisao; Mizuno, Yoshio; Shudo, Katsuyuki; and Kawase, Shigeru, 5,343,348, Cl. 360-109.000.

Shugart, M. Wilbert, III. Hearing aid device. 5,343,532, Cl. 381-68.600.

Shultheis, David C.: *See*—
Powers, Daniel J.; Cyrus, Judith; Kootstra, Steve; Burkhalter, Art; Bledsoe, J. Daren; Shultheis, David C.; and Jordan, Dan, 5,342,403, Cl. 607-5.000.

Shuster, Jeffrey R.: *See*—
Cousens, Lawrence S.; Tekamp-Olson, Patricia A.; Shuster, Jeffrey R.; and Merryweather, James P., 5,342,921, Cl. 530-324.000.

Sicinski, Rafal R.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; Sicinski, Rafal R.; and Prahl, Jean M., 5,342,975, Cl. 552-653.000.

Sidel: *See*—
Denis, Gerard; and La Barre, Paul, 5,342,558, Cl. 264-25.000.

Siecor Corporation: *See*—
Nave, Samuel D.; and McDowell, Harvey R., III, 5,343,549, Cl. 385-103.000.

Siegel, Bernard: *See*—
Grossman, Michael D.; Eder, Jerome M.; Hurley, Jewelanne; Siegel, Bernard; Adelberg, Kenneth; and Adelberg, Marvin, 5,342,328, Cl. 604-317.000.

Siegel, Martin, to Weldotron of Delaware, Inc. Film sealing and packaging method and apparatus with adjustable seal quality. 5,341,623, Cl. 53-433.000.

Siegman, Craig S.: *See*—
deCoriolis, Paul E.; Siegman, Craig S.; and Bocek, Joseph M., 5,342,408, Cl. 607-32.000.

Siemens Aktiengesellschaft: *See*—
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weisshaupl, Horst, 5,343,506, Cl. 376-280.000.
Hirschberg, Jakub; and Obel, Martin, 5,342,400, Cl. 607-5.000.
Mockl, Thomas, 5,343,109, Cl. 310-334.000.
Pastyr, Otto, 5,343,048, Cl. 250-505.100.
Pohl, Klaus; and Fisch, Alfons, 5,343,350, Cl. 361-18.000.
Rau, Peter, 5,343,468, Cl. 370-60.000.

Siemens Automotive L.P.: *See*—
Wakeman, Russell J., 5,341,994, Cl. 239-585.500.

Siemens-Elema AB: *See*—
Hirschberg, Jakub; Neubauer, Heinz; Gilljam, Nina; Bowald, Staffan; and Lindegren, Ulf, 5,342,413, Cl. 607-126.000.

Siemens Energy & Automation, Inc.: *See*—
Hancock, Drew S., 5,343,356, Cl. 361-637.000.

Siemens Pacesetter, Inc.: *See*—
Duncan, James L., 5,342,405, Cl. 607-17.000.

Siems, Steven L. Weather-proof floor outlet and method. 5,342,993, Cl. 174-48.000.

Siiman, Olavi: *See*—
Maples, John A.; Raynor, Robert H.; Siiman, Olavi; Stiglitz, Melissa J.; and Healy, Stephen F., Jr., 5,342,754, Cl. 435-2.000.

Sika AG, vorm. Kaspar Winkler & Co.: *See*—
Merz, Peter W.; Zabel, Lutz; and Fischer, Christian, 5,342,873, Cl. 524-425.000.

Silber, Arthur L.; Ng, Raymond C.; and Caillouette, James C. Toxicity resistant tampon structure. 5,342,331, Cl. 604-330.000.

Silbernagel, Raymond A.; and Sommer, Edward S., to Molex Incorporated. Releasable latching system for electrical connectors. 5,342,215, Cl. 439-357.000.

Silicon Graphics, Inc.: *See*—
Akeley, Kurt, 5,343,558, Cl. 395-126.000.

Silicon Systems, Inc.: *See*—
Masumoto, Rodney T.; and Chern, Jenn-Gang, 5,343,167, Cl. 331-2.000.

Silva, Jose E., to Petroleo Brasileiro S.A. Subsea production method for line connection between a manifold and adjacent satellite mells. 5,341,884, Cl. 166-347.000.

Silvenis, Scott A., to Dowbrands Inc. Trigger sprayer for upright or inverted dispensing without leakage. 5,341,967, Cl. 222-376.000.

Silverberg, Morton, to Pitney Bowes Inc. System for addressing envelopes. 5,343,556, Cl. 395-111.000.

Simanonis, Christopher F.: *See*—
Barton, John C.; Hanby, William J.; Kuhn, Bruce R.; Lathrope, Michael F.; Simanonis, Christopher F.; and Varga, Arthur J., 5,343,461, Cl. 370-13.000.

Simmonds, Michael B.: *See*—
Sager, Ronald E.; and Simmonds, Michael B., 5,343,147, Cl. 324-239.000.

Simmons, John F.; and Chen, Terrence, to Firetime, Inc. Platoon schedule watch and method of providing a schedule for a user of shift start times both prospective and retrospective. 5,343,446, Cl. 368-251.000.

Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, to University of Miami. Method and apparatus for implanting an artifical meshwork in glaucoma surgery. 5,342,370, Cl. 606-107.000.

Simon, Jaime: *See*—
Wilson, David A.; Garlich, Joseph R.; Frank, R. Keith; McMillan, Kenneth; and Simon, Jaime, 5,342,604, Cl. 424-1.650.
Wilson, David A.; Frank, R. Keith; Garlich, Joseph R.; and Simon, Jaime, 5,342,925, Cl. 534-10.000.

Simon, Julian A.: *See*—
Still, W. Clark; Simon, Julian A.; and Hong, Jong-In, 5,342,934, Cl. 540-456.000.

Simon, Robert H. M.; and Farmer, Peter H., to Monsanto Company. Method of producing polyvinyl butyral sheet having a desired level of glass adhesion. 5,342,653, Cl. 427-256.000.

Simpson, David L.: *See*—
James, Larry C.; Kagy, Carl W.; Gates, Jeffrey F.; Hawkey, Jeffrey A.; Heil, Thomas F.; and Simpson, David L., 5,343,478, Cl. 371-22.300.

Simpson Strong-Tie Company, Inc.: *See*—
Dunagan, Brian D.; and Commins, Alfred D., 5,341,619, Cl. 52-702.000.

Sims, Daniel G.: *See*—
Pacifici, Joseph A.; and Sims, Daniel G., 5,342,417, Cl. 8-685.000.

Sin, Kee V.: *See*—
Graves, Jeffrey A.; Sherman, Marshall L.; Leader, Matthew J.; and Sin, Kee V., 5,342,498, Cl. 204-408.000.

Singer, Victor: *See*—
Van Name, Frederick W.; Gerace, Michael A.; Singer, Victor; and Walsh, Brendan M., 5,341,638, Cl. 60-204.000.

Singh, Inder P.: *See*—
Singh, Rajeshwar; Fathi-Afshar, Rakhshandeh; Singh, Inder P.; Thomas, George; Doerksen, Thomas R.; Singh, Maya P.; and Micetich, Ronald G., 5,342,846, Cl. 514-312.000.

Singh, Maya P.: *See*—
Singh, Rajeshwar; Fathi-Afshar, Rakhshandeh; Singh, Inder P.; Thomas, George; Doerksen, Thomas R.; Singh, Maya P.; and Micetich, Ronald G., 5,342,846, Cl. 514-312.000.

Singh, Rajeshwar; Fathi-Afshar, Rakhshandeh; Singh, Inder P.; Thomas, George; Doerksen, Thomas R.; Singh, Maya P.; and Micetich, Ronald G., to SynPhar Laboratories, Inc. 7-substituted-6-fluoro-1,4-dihydro-4-oxo-quinoline-3-carboxylic acid compounds and 7-(substituted triazolyl pyrrolidin-1-yl) 4-oxoquinoline-3-carboxylic acid derivatives useful as antibacterial agents. 5,342,846, Cl. 514-312.000.

Singh, Ravi C.: *See*—
Miremadi, Bijan K.; Singh, Ravi C.; Morrison, Stanley R.; and Colbow, Konrad, 5,342,701, Cl. 428-701.000.

Sinz, Dirk-Peter. Transport container. 5,341,950, Cl. 220-6.000.

Siol, Werner: *See*—
Fischer, Jens-Dieter; and Siol, Werner, 5,342,691, Cl. 428-412.000.
Kleese, Wolfgang; Kraemer, Dieter; Petereit, Hans-Ulrich; Lehmann, Klaus; and Siol, Werner, 5,342,646, Cl. 427-2.100.

Sipinen, Alan J.: *See*—
Carpenter, Theresa L.; Sipinen, Alan J.; and Bany, Stephen W., 5,342,339, Cl. 604-385.100.

Siracki, Michael A.: *See*—
Cawthorne, Chris E.; Portwood, Gary; and Siracki, Michael A., 5,341,890, Cl. 175-374.000.

Siracusa, Paul A.: *See*—
Skrobala, Catherine J.; Edgett, Keith J.; and Siracusa, Paul A., 5,342,534, Cl. 252-91.000.

Siren, Matti, to Perstorp AB. Use of mono and di inositolphosphates for treating inflammation. 5,342,832, Cl. 514-103.000.

Sirinyan, Kirkor; Petzoldt, Joachim; and Henning, Wolfgang, to Bayer Aktiengesellschaft. Coating compositions with improved adhesion to plastics. 5,342,890, Cl. 525-130.000.

Sizemore, Sean S. Cup-type vending system and method for dispensing beverages. 5,341,957, Cl. 222-2.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Sizume, Kazutika: *See—*
Kiyomoto, Masayuki; Kajikawa, Akira; Murakado, Toru; Sakurai, Hiroshi; Mano, Motokazu; and Sizume, Kazutika, 5,342,445, Cl. 106-789.000.

Sjaunja, Lars-Ove; Andersen, Steen K.; Arnvidarson, Borkur; Brems, Niels; Lapp, Torben; and Nygaard, Lars, to A/S Foss Electric., Infrared attenuation measuring system. 5,343,044, Cl. 250-339.090.

Skis Rossignol S.A.: *See—*
Abondance, Roger, 5,342,077, Cl. 280-602.000.

Skrobala, Catherine J.; Edgett, Keith J.; and Siracusa, Paul A., to Eastman Kodak Company. Hard surface cleaner. 5,342,534, Cl. 252-91.000.

SKW Trostberg Aktiengesellschaft: *See—*
Cully, Jan; and Vollbrecht, Heinz-Rudiger, 5,342,633, Cl. 426-47.000.

Slater, Charles R.; and Bales, Thomas O., Jr., to Symbiosis Corporation. Thumb-activated actuating member for imparting reciprocal motion to a push rod of a disposable laparoscopic surgical instrument. 5,342,390, Cl. 606-205.000.

Slaven, Robert E.: *See—*
Voisine, John T.; Anderson, Christopher L.; Slaven, Robert E.; and Tate, Ronald C., 5,343,143, Cl. 324-142.000.

Slesinski, Steven G.; and Muselin, Bruce A., to Eaton Corporation. Locking mechanism for driving axle differential. 5,342,255, Cl. 475-231.000.

Slone, Ralph J., to Cummins Power Generation, Inc. Surface stabilized sources of isocyanic acid. 5,342,599, Cl. 423-365.000.

Smart, Bruce E.: *See—*
Arenzen, Rene; Boivin, Patrick; Kobos, Robert K.; Scouten, William H.; and Smart, Bruce E., 5,342,772, Cl. 435-181.000.

Smart, Edwin D.; Dezern, Julie N.; Pendleton, William B.; Pearson, Kenneth C.; Blui, Allison M.; Machen, James R.; Mehaffey, David E.; Machen, Edmund H.; and Montague, Edgar B., to NC Dept. of Human Resources, Division of Vocational Rehabilitation Services. Disabled driver assessment system. 5,341,680, Cl. 73-379.060.

Smart, Melinda K.: *See—*
Enscore, David J.; Campbell, Patricia S.; Osborne, James L.; Smart, Melinda K.; and Yum, Su I., 5,342,623, Cl. 424-448.000.

Smedley, William H.: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,341,993, Cl. 239-331.000.
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,342,389, Cl. 606-205.000.

Smith, Brian E.: *See—*
Cohen, Brian E.; Greenberg, William M.; Pagryzinski, William V.; and Smith, Brian E., 5,343,288, Cl. 356-239.000.

Smith, Bruce A. Product dispenser for a vending machine. 5,341,954, Cl. 221-85.000.

Smith, Clinton L. Golf putting apparatus. 5,342,053, Cl. 273-185.00R.

Smith, David L. Detector collimator for moving filter media. 5,343,046, Cl. 250-432.00R.

Smith, Donald: *See—*
Kinney, Russell C.; Kinney, Donald C.; Paullin, Lyle; Paullin, Richard; Parrott, Jeffrey W.; and Smith, Donald, 5,342,164, Cl. 414-786.000.

Smith, Donald F., Jr.: *See—*
Koleske, Joseph V.; Smith, Donald F., Jr.; and Weber, Robert J., Jr., 5,342,891, Cl. 525-162.000.

Smith, Edwin R.: *See—*
Chang, Philip L.; Flood, Gary S.; Kirkes, Kent W.; and Smith, Edwin R., 5,342,054, Cl. 273-186.100.

Smith, G. Fred; Caron, LaVerne A.; and Beverly, James A., to Eaton Corporation. Traction control system valve. 5,342,119, Cl. 303-113.200.

Smith, Gordon: *See—*
Hepworth, Allen; Smith, Gordon; and Johb, Walter, 5,341,590, Cl. 43-26.000.

Smith, Herbert E., to AOS Holding Company. Combustion air inlet diverter plate for a water heater. 5,341,767, Cl. 122-14.000.

Smith International, Inc.: *See—*
Cawthorne, Chris E.; Portwood, Gary; and Siracki, Michael A., 5,341,890, Cl. 175-374.000.

Smith, Paul F.: *See—*
Palansky, Bruce J.; Greene, Thomas L.; Daubenmier, John A.; Smith, Paul F.; Kock, Karl H.; Bird, Stuart L.; and McCall, Gavin F., 5,341,703, Cl. 477-65.000.

Smith, Stephen W.: *See—*
Fetterman, D. Bruce; and Smith, Stephen W., 5,341,747, Cl. 105-406.100.

Smith, Terrance P.: *See—*
Eisele, John F.; Smith, Terrance P.; and Palazzotto, Michael C., 5,342,645, Cl. 42.7-1.000.

Smith, William I., Jr. Blood collecting tube with blood factor antibodies as anticoagulant. 5,342,753, Cl. 435-2.000.

Smits, Matthijs: *See—*
Teare, Peter R.; Hanson, William J.; and Smits, Matthijs, 5,341,813, Cl. 128-733.000.

Smoot, Troy S.: *See—*
Fisher, Alvin J.; Smoot, Troy S.; and Kincer, Daniel E., 5,343,384, Cl. 364-133.000.

Snamprogetti, S.p.A.: *See—*
Peratello, Stefano; Perego, Carlo; and Bellussi, Giuseppe, 5,342,814, Cl. 502-263.000.

Snap-Tite, Inc.: *See—*
Wilkins, Steve, 5,342,098, Cl. 285-26.000.

Snider, Richard E.: *See—*
Heidel, Raymond; and Snider, Richard E., 5,342,047, Cl. 273-85.0CP.

Snider, Sheri R.; Bamford, David A.; Vebeliunas, Rimas V.; Halle, Roy T.; and Strack, Robert D., to Exxon Chemical Patents Inc. Fouling reducing dual pressure fractional distillator. 5,342,509, Cl. 208-351.000.

Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., to Catheter Imaging Systems. Steerable catheter. 5,342,299, Cl. 604-95.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Kawanami, Norio; Kondo, Kiyotaka; Ikeda, Yoshihiro; Nakagawa, Tooru; Itoh, Kensuke; Saiki, Yukihiro; Ishii, Saburo; and Aoyama, Kenji, 5,341,672, Cl. 73-64.540.

Snyder, Gary K. Telephone line powered system. 5,343,514, Cl. 379-93.000.

Sobczak, Greg; and Sturza, Mark R., to AlliedSignal Inc. Passenger air bg module with means for retaining an air bag deployment door to a housing. 5,342,090, Cl. 280-732.000.

Sobhani, Mohi, to Hughes Aircraft Company. Electrical interconnection method and apparatus utilizing raised connecting means. 5,342,207, Cl. 439-74.000.

S.A. des Etablissements Staubli: *See—*
Froment, Jean-Paul; and Pages, Jean-Pierre, 5,341,850, Cl. 139-79.000.

Societe Civile Bioprojet: *See—*
Garbarg, Monique; Arrang, Jean-Michel; Schunack, Walter; Lipp, Ralph; Stark, Holger; Lecomte, Jeanne-Marie; and Schwartz, Jean-Charles, 5,342,960, Cl. 548-336.100.

Societe National d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.): *See—*
Ansart, Denis R. H.; Desaulty, Michel A. A.; and Sandelis, Denis J. M., 5,341,645, Cl. 60-737.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See—*
Christophel, Bernard G.; Dautremont, Jean M.; Fert, Pierre H.; and Harmegnies, Guy R., 5,341,665, Cl. 72-166.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA": *See—*
Coudray, Xavier G. A.; Derrien, Mischael F. L.; and Pichon, Philippe M. P., 5,342,172, Cl. 416-97.00R.

Soderquist, Quin: *See—*
Harris, Bradley D.; and Soderquist, Quin, 5,342,086, Cl. 280-728.00B.

Sogabe, Kouichi: *See—*
Nakahata, Seiji; Sogabe, Kouichi; and Yamakawa, Akira, 5,343,150, Cl. 324-316.000.

Sogabe, Yasushi: *See—*
Murata, Shigeki; Isaka, Haruo; Matsuura, Kenji; and Sogabe, Yasushi, 5,343,338, Cl. 360-69.000.

Solberg, Terry B., to Zytec Corporation. Heat sink assembly. 5,343,362, Cl. 361-710.000.

Solen, Kenneth A.: *See—*
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, J. D.; and Berry, Gaylord, 5,342,693, Cl. 428-447.000.

Soltis, Richard E.: *See—*
Hamburg, Douglas R.; Logothetis, Eleftherios M.; Soltis, Richard E.; and Visser, Jacobus H., 5,341,643, Cl. 60-276.000.

Solvay Duphar International Research B.V.: *See—*
Wellinga, Kobus; and Mulder, Rudolf, 5,342,958, Cl. 548-317.500.

Sommer, Edward S.: *See—*
Silbernagel, Raymond A.; and Sommer, Edward S., 5,342,215, Cl. 439-357.000.

Son, Jong E. Patient's stool and urine disposing apparatus. 5,342,583, Cl. 422-107.000.

Sone, Akira: *See—*
Hideshima, Masao; Michihira, Osamu; Nobutoki, Yoshikazu; and Sone, Akira, 5,343,470, Cl. 370-85.100.
Michihira, Osamu; Hideshima, Masao; and Sone, Akira, 5,343,472, Cl. 370-85.600.

Song, Han-Chul: *See—*
Yoon, Chun; Song, Han-Chul; and Kwon, Tae-Gab, 5,342,416, Cl. 8-639.000.

Sonnenberger, Paul: *See—*
Kordts, Jurgen; Nathe, Axel; and Sonnenberger, Paul, 5,343,165, Cl. 330-262.000.

Sonobe, Tadasi: *See—*
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.

Sony Corporation: *See—*
Abe, Hideshi, 5,343,060, Cl. 257-229.000.
Fujinami, Yasushi, 5,343,248, Cl. 348-452.000.
Hara, Masaaki, 5,343,335, Cl. 360-45.000.
Ikeda, Rikio, 5,342,738, Cl. 430-325.000.
Iwamura, Ryuichi, 5,343,250, Cl. 348-564.000.
Kadomura, Shingo, 5,342,481, Cl. 156-659.100.
Kaminaga, Kozo; Ike, Kazuo; Makise, Tetsuro; Fujiwara, Yoshio; Yamakawa, Kiyoshi; and Sawakata, Kiyoshi, 5,343,334, Cl. 360-38.100.
Kanai, Takashi; and Masuda, Toshihiko, 5,343,197, Cl. 341-152.000.
Kawaberi, Seiji; and Shoji, Takeshi, 5,343,100, Cl. 307-646.000.
Kobayashi, Yuji, 5,343,144, Cl. 324-158.100.
Kohno, Fumio; Suwa, Hisashi; and Sato, Seizi, 5,343,257, Cl. 348-842.000.

Konno, Toshikazu, 5,342,001, Cl. 242-338.300.
Maeda, Yasuaki, 5,343,456, Cl. 369-59.000.
Miwa, Toru; Yamasaki, Yasuyuki; and Yamagishi, Akihiko, 5,343,111, Cl. 313-313.000.
Muraoka, Yoshiro, 5,343,531, Cl. 381-1.000.
Nakajima, Takeshi; Shiratori, Kazuhide; and Uehara, Masahiro, 5,342,131, Cl. 400-120.010.
Nishino, Tomoki, 5,343,075, Cl. 257-686.000.
Okamoto, Yutaka; Yamada, Makoto; and Shinguu, Masataka, 5,343,066, Cl. 257-393.000.
Ota, Takashi; Taguchi, Osamu; and Itahashi, Hiromichi, 5,343,349, Cl. 360-132.000.
Sase, Masatoshi; and Onga, Makoto, 5,343,244, Cl. 348-222.000.
Shoda, Akihiko; Usui, Yoshinobu; and Mizutani, Tomoji, 5,343,193, Cl. 340-825.790.
Takuma, Hirokazu, 5,343,119, Cl. 315-10.000.
Yamashita, Masahiro, 5,343,302, Cl. 348-251.000.

Sony Electronics Inc.: *See—*
Gordon, Edward A., 5,342,122, Cl. 312-9.480.
Zampini, Michael; Dombrowski, Joseph S.; and Davis, Donald E., 5,343,186, Cl. 338-15.000.

Sony United Kingdom Limited: *See—*
Richards, Clive H.; and Gillard, Clive H., 5,343,241, Cl. 348-97.000.
Rowsell, Christopher N.; and Monksfield, Stuart R., 5,343,242, Cl. 348-181.000.

Soo, Mike. In-line roller skate brake assembly. 5,342,071, Cl. 280-11.220.

Sorenson Laboratories, Inc.: *See—*
Kaufman, David W., 5,342,349, Cl. 606-1.000.

Sorkoram, Paul O. Interactive, tabletop signage assembly. 5,342,057, Cl. 273-239.000.

Sottile, Jane M.: *See—*
Mosher, Deane F.; and Sottile, Jane M., 5,342,762, Cl. 435-69.100.

Souchuns, Christopher C.: *See—*
Goodrich, Joel L.; and Souchuns, Christopher C., 5,343,070, Cl. 257-594.000.

Soupert, Jean-Louis D. C.; and Poujon, Joel O. P., to Onet, S.A. Process and autonomous apparatus for the automatic cleaning of ground areas through the performance of programmed tasks. 5,341,540, Cl. 15-319.000.

Southam, Edwin F.: *See—*
Prochaska, Gerhard W.; and Southam, Edwin F., 5,341,931, Cl. 206-485.000.

Southworth, David E.: *See—*
Cole, Phill D.; and Southworth, David E., 5,342,123, Cl. 312-319.200.

Spangler, Leland J.; and Wise, Kensall D. Fully integrated single-crystal silicon-on-insulator process, sensors and circuits. 5,343,064, Cl. 257-350.000.

Spann, Thomas S., to Canard Resources Inc. Checking and statement system. 5,342,094, Cl. 283-81.000.

Spano, Mark L.; Ditto, William L.; Garfinkel, Alan; and Weiss, James N., to University of California, The Regents of the. Real time cardiac arrhythmia stabilizing system. 5,342,401, Cl. 607-5.000.

Sparkman, Aubrey K.: *See—*
Higgins, Leo M., III; and Sparkman, Aubrey K., 5,343,074, Cl. 257-668.000.

Spartan Health Care Products, Inc.: *See—*
Tillman, Dorothy M.; and Marion, Robert L., 5,341,525, Cl. 4-579.000.

Spector, George: *See—*
Ruiz, Rene A., Sr.; and Spector, George, 5,341,902, Cl. 187-19.000.

Spencer, Dudley W. C., to Denco, Inc. Solution bag with plastic connecting tube. 5,342,345, Cl. 604-408.000.

Speranza, George P.: *See—*
Howelton, Richele T.; and Speranza, George P., 5,342,918, Cl. 528-318.000.

Speranza, Richard A.: *See—*
Speranza, Richard J.; and Speranza, Richard A., 5,341,700, Cl. 74-479.0MF.
Speranza, Richard J.; and Speranza, Richard A., 5,341,709, Cl. 82-1.110.

Speranza, Richard J.; and Speranza, Richard A., to Speranza Specialty Machining. X-Y movement mechanism. 5,341,700, Cl. 74-479.0MF.

Speranza, Richard J.; and Speranza, Richard A., to Speranza Specialty Machining. Portable vertical boring machine. 5,341,709, Cl. 82-1.110.

Speranza Specialty Machining: *See—*
Speranza, Richard J.; and Speranza, Richard A., 5,341,700, Cl. 74-479.0MF.
Speranza, Richard J.; and Speranza, Richard A., 5,341,709, Cl. 82-1.110.

Spirit, David M.: *See—*
Keeble, Peter J.; Rowe, Christopher J.; and Spirit, David M., 5,343,286, Cl. 356-73.100.

Spokane Structures, Inc.: *See—*
Lewis, Robert C., 5,341,611, Cl. 52-90.100.

Sprenger, Peter: *See—*
Cory, David G.; and Sprenger, Peter, 5,343,151, Cl. 324-320.000.

Springs Window Fashions Division, Inc.: *See—*
Rupel, John D.; and Josephson, Paul P., 5,341,864, Cl. 160-84.10B.

Springston, Eric, to Raymond Corporation, The. Air-filtering hydraulic reservoir breather cap. 5,341,951, Cl. 220-371.000.

Spuerck, Peter: *See—*
Blankmeiser, Wilhelm; and Spuerck, Peter, 5,341,966, Cl. 222-370.000.

Srinivas, Damodaran: *See—*
Foster, Robert F.; and Srinivas, Damodaran, 5,342,652, Cl. 427-253.000.

Stack, Richard S., to Duke University. Method and device for vascular repair. 5,342,393, Cl. 606-213.000.

Stahl, Daniel E.: *See—*
Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., 5,343,361, Cl. 361-710.000.

Stan, Aurel V., to Goodyear Tire & Rubber Company, The. 3-dimensional pressure sensor. 5,341,687, Cl. 73-862.046.

Stangle, Gregory C.; and Williams, William C., to Alfred University. Combustion synthesis process utilizing an ignitable primer which is ignited after application of pressure. 5,342,572, Cl. 419-45.000.

Stanko, Michael J., to Praxair Technology, Inc. Impeller blade with reduced stress. 5,342,171, Cl. 415-228.000.

Staples, Linton D.: *See—*
Williams, Alan H.; Staples, Linton D.; Thiel, William J.; Oppenheim, Richard C.; and Clarke, Iain J., 5,342,622, Cl. 424-425.000.

Stark, Holger: *See—*
Garbarg, Monique; Arrang, Jean-Michel; Schunack, Walter; Lipp, Ralph; Stark, Holger; Lecomte, Jeanne-Marie; and Schwartz, Jean-Charles, 5,342,960, Cl. 548-336.100.

State of Victoria, The: *See—*
Williams, Alan H.; Staples, Linton D.; Thiel, William J.; Oppenheim, Richard C.; and Clarke, Iain J., 5,342,622, Cl. 424-425.000.

Staubli, Markus: *See—*
Nazmy, Mohamed; and Staubli, Markus, 5,342,577, Cl. 420-418.000.

Stavridi, Marigo; and Grundfest, Warren S., to Cedars-Sinai Medical Center. Glucose fluorescence monitor and method. 5,341,805, Cl. 128-633.000.

Stay, Francis E., Jr.; and Hoyt, Robert A. Fingersaver. 5,341,711, Cl. 83-425.000.

Steber, William D.: *See—*
Daley, Michael J.; Steber, William D.; Furda, Gary J.; Johnston, Paul A.; and Oldham, Elizabeth R., 5,342,612, Cl. 424-85.100.

Steelcase Inc.: *See—*
Hodges, Ronald R.; and Weller, George V., 5,341,615, Cl. 52-220.700.
Noakes, Laura A., 5,341,749, Cl. 108-64.000.

Stefanadis, Christodoulos I.; and Tovtouzas, Pavlos K. Steerable stent catheter. 5,342,300, Cl. 604-95.000.

Stefanchik, David; and Biehle, Edward J., IV, to Ethicon, Inc. Sterile clips and instrument for their placement. 5,342,373, Cl. 606-142.000.

Stefancin, Ronald J., Jr. Keyboard tray assembly. 5,341,929, Cl. 206-320.000.

Stegmuller, Peter: *See—*
Kunst, Albert; Rehner, Helmut; Stegmuller, Peter; Lenz, Helmut; Bialk, Peter; and Hoyle, Nicholas, 5,342,788, Cl. 436-500.000.

Stein Industrie: *See—*
Marsault, Jean-Jacques; Barbotte, Michel; and Baudel, Jean-Pierre, 5,342,016, Cl. 248-610.000.

Stein, Judith; King, Joseph A., Jr.; and Caruso, Andrew J., to General Electric Company. Addition-curable silicone adhesive compositions, and bis(trialkoxysilylalkyleneoxy-carbonylalkylene) amine adhesion promoters. 5,342,870, Cl. 524-188.000.

Stein Narvestad A.S.: *See—*
Narvestad, Stein, 5,341,889, Cl. 175-373.000.

Stein, Volker W.; and Dickie, Robert G., to Innovadent Technologies Ltd. Dental matrix retainer clamp. 5,342,197, Cl. 433-155.000.

Steinberner, Udo: *See—*
Uphues, Guenter; Jaensch, Sven; Ploog, Uwe; and Steinberner, Udo, 5,342,961, Cl. 548-352.100.

Steiner, Karl; and Matuschczyk, Uwe, to J. M. Voith GmbH. Roll with separate shell and roll core. 5,342,277, Cl. 492-56.000.

Stellrecht, David E., to Tosoh SMD, Inc. Method of welding sputtering target/backing plate assemblies. 5,342,496, Cl. 204-298.120.

Stelzer, Sean R., to General Motors Corporation. Engine cooling fan assembly with snap-on retainers. 5,341,871, Cl. 165-121.000.

Stepanek, Premek; Wagner, Ludwig; and Schuhbauer, Johannes, to Marker Deutschland GmbH. Support plate for a safety ski binding. 5,342,078, Cl. 280-602.000.

Stephan, Hilmer; Molz, Gerhard; and Buttgen, Heinz, to Rowenta-Werke GmbH. Steam iron with pump and pressure reservoir. 5,341,585, Cl. 38-77.500.

Stephens, William D., to United States of America, Army. Fullerene rocket fuels. 5,341,639, Cl. 60-204.000.

Stephenson, Stanley W., to Eastman Kodak Company. Encoded dye receiver. 5,342,671, Cl. 428-195.000.

Sterling Winthrop Inc.: *See—*
Illig, Carl R., 5,342,605, Cl. 424-5.000.

Stern, David: *See—*
Cherdak, Erik B., 5,343,445, Cl. 368-10.000.

Sternbach, Daniel D.: *See—*
Lackey, Karen; and Sternbach, Daniel D., 5,342,947, Cl. 546-41.000.

Sterzel, Hans-Josef; and Meyer, Marion, to BASF Aktiengesellschaft. Thermoplastic processing of unplastifiable polymers. 5,342,561, Cl. 264-49.000.

Stevens, Howard N. E.: *See—*
McNeill, Marion E.; Rashid, Abdul; and Stevens, Howard N. E., 5,342,624, Cl. 424-451.000.

Stevens, Judith G.: *See—*
Yu, Ho; and Stevens, Judith G., 5,342,429, Cl. 75-680.000.

Stewart, Frank M.: *See—*
Hunter, Robert M.; and Stewart, Frank M., 5,342,769, Cl. 435-166.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Stickler, Mark F.: *See*—
West, Neil L.; Hall, James W.; Stickler, Mark F.; and Day, Richard L., 5,342,239, Cl. 460-69.000.

Stierandova, Alena: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,342,585, Cl. 422-131.000.

Stiglitz, Melissa J.: *See*—
Maples, John A.; Raynor, Robert H.; Siiman, Olavi; Stiglitz, Melissa J.; and Healy, Stephen F., Jr., 5,342,754, Cl. 435-2.000.

Still, W. Clark; Simon, Julian A.; and Hong, Jong-In, to Columbia University in the City of New York, The Trustees of. Enantioselective receptor for amino acid derivatives, and other compounds. 5,342,934, Cl. 540-456.000.

Stockwald, Klaus: *See*—
Beneking, Claus; Dannert, Horst; Neiger, Manfred; Schorpp, Volker; and Stockwald, Klaus, 5,343,114, Cl. 313-485.000.

Stoll, Klaus; and Wolf, Rainer, to Sandoz Ltd. Stabilized polymeric compositions. 5,342,869, Cl. 524-125.000.

Stoltenberg, Donald A. Power operated garage door. 5,341,597, Cl. 49-199.000.

Stone, Jeffrey W.: *See*—
Allaire, Michael J.; and Stone, Jeffrey W., 5,341,812, Cl. 128-696.000.

Stone, Richard J. Speed controller for drilling rig traveling block. 5,342,020, Cl. 254-269.000.

Stone, William B. Fine filtration system. 5,341,879, Cl. 166-278.000.

Stork, Karl: *See*—
Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, 5,342,916, Cl. 528-150.000.

Strack, Robert D.: *See*—
Snider, Sheri R.; Bamford, David A.; Vebeliunas, Rimas V.; Halle, Roy T.; and Strack, Robert D., 5,342,509, Cl. 208-351.000.

Straight, Christian L. Interlocking link chain. 5,341,634, Cl. 59-80.000.

Strandli, Kare R.; and Foreman, Colin. Grenade containing an incendiary element. 5,341,745, Cl. 102-499.000.

Stratagene Cloning Systems: *See*—
Cathel, Frank; and Leshofs, Robert, 5,342,497, Cl. 204-299.00R.

Stratford, Ian J.: *See*—
Beylin, Vladimir Genukh; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,342,959, Cl. 548-327.500.

Straub, Mariann C.; and Greenwood, Mark H. Bolster structure for infant side sleeping support. 5,341,531, Cl. 5-655.000.

Strickland, David A. Surfing rope. 5,341,758, Cl. 114-253.000.

Stromswold, Chester E.; and Apostolos, John T., to Lockheed Sanders, Inc. Real-time wide-band compressive-receiver system. 5,343,207, Cl. 342-192.000.

Struble, Christopher G.: *See*—
Kichefski, Conrad M.; Madryga, Mary B.; Madryga, Kurt R.; Struble, Christopher G.; and Madryga, Kathleen A., 5,342,340, Cl. 604-385.100.

Sturm, Wilfried; and Fumei, John, to Gerro Plast GmbH. Method for the production of foamed polystyrene films. 5,342,560, Cl. 264-45.900.

Sturza, Mark R.: *See*—
Sobczak, Greg; and Sturza, Mark R., 5,342,090, Cl. 280-732.000.

Su, Der-Tarng; Chen, Wen-Jer; Wu, Jeng-Yue; and Wu, Ming-Chu, to Industrial Technology Research Institute. Charging component for electrophotographic process containing a protective layer of conductive carbon black particles in polyether-ester-amide block copolymer. 5,342,717, Cl. 430-55.000.

Su, Wei-Wen W. External-loop perfusion air-lift bioreactor. 5,342,781, Cl. 435-313.000.

Suchar, Kimberly J.: *See*—
Byler, Tom E.; Orbanic, Robert S.; and Suchar, Kimberly J., 5,342,503, Cl. 205-138.000.

Suda, Hirofumi: *See*—
Arai, Hideyuki; Suda, Hirofumi; and Kaneda, Kitahiro, 5,343,246, Cl. 348-363.000.

Suda, Shigeyuki: *See*—
Ohwada, Mitsutoshi; Matsugu, Masakazu; Suda, Shigeyuki; Yoshii, Minoru; Niwa, Yukichi; Nose, Noriyuki; Saitoh, Kenji; and Hasegawa, Masanobu, 5,343,291, Cl. 356-356.000.

Sudo, Nobuhisa, to Nippon Paint Co., Ltd. Coating composition. 5,342,888, Cl. 525-124.000.

Suetsugu, Masachika: *See*—
Fukasawa, Kazuo; and Suetsugu, Masachika, 5,342,471, Cl. 156-345.000.

Sueyoshi, Masahiko: *See*—
Yoshida, Susumu; Ebihara, Munemitsu; Kurita, Tsutomu; and Sueyoshi, Masahiko, 5,343,077, Cl. 307-9.100.

Sugahara, Hideki: *See*—
Yamazaki, Toshio; Sugahara, Hideki; Ichinohe, Shoji; Ishihara, Toshinobu; and Kubota, Tohru, 5,342,983, Cl. 556-445.000.

Suganuma, Noboru, to Sanshin Kogyo Kabushiki Kaisha. Water jet propulsion unit. 5,342,227, Cl. 440-38.000.

Sugarbaker, David J., to Brigham & Women's Hospital. Surgical dilator. 5,342,384, Cl. 606-191.000.

Sugawa, Naoki, to Kabushiki Kaisha Toshiba. Resistor string circuit for use in D/A converter or A/D converter. 5,343,199, Cl. 341-159.000.

Sugawara, Kazushi: *See*—
Kubota, Nobuhiko; Sugimoto, Tsunemi; Sugawara, Kazushi; and Shiohara, Yuh, 5,342,826, Cl. 505-238.000.

Sugawara, Kenichi; Ikuta, Takeshi; and Yoshikawa, Osamu, to Shimano Inc. Spinning reel. 5,342,003, Cl. 242-231.000.

Sugihara, Fumihito: *See*—
Mandai, Yoshinobu; Nagatomi, Kohji; Minamigawa, Kazuhiko; and Sugihara, Fumihito, 5,342,441, Cl. 106-35.000.

Sugimori, Hideo; Masaki, Kazumi; and Matsuda, Osamu, to Hayashibara, Ken. Luminaire using incandescent lamp as luminous source. 5,343,122, Cl. 315-209.00R.

Sugimoto, Tsunemi: *See*—
Kubota, Nobuhiko; Sugimoto, Tsunemi; Sugawara, Kazushi; and Shiohara, Yuh, 5,342,826, Cl. 505-238.000.

Sugimura, Naoto: *See*—
Sasaki, Toshinori; Kanazawa, Akira; Hara, Kenji; Fukao, Tomoo; Ishizuka, Masahiko; Yamada, Masatomo; Sugimura, Naoto; and Yoshihara, Michiaki, 5,343,142, Cl. 324-71.100.

Sugiyama, Hiroyuki; and Takeuchi, Tetsuya, to Komori Corporation. Paper feed apparatus for sheet-fed press. 5,342,035, Cl. 271-11.000.

Sugiyama, Kunitoshi; Kobori, Hideyuki; Hanai, Shuji; and Kagawa, Tsutomu, to Ricoh Company, Ltd. Reversible thermosensitive recording material and method for producing the same. 5,342,815, Cl. 503-217.000.

Sula, Daniel J., to General Motors Corporation. End-of-arm tooling device. 5,342,254, Cl. 475-230.000.

Sulenski, Shelly D., to Xerox Corporation. Job programming during machine quality adjust. 5,343,275, Cl. 355-202.000.

Sullivan, Francis R.; Mertzel, Elaine A.; and Kolycheck, Edmond G., to B. F. Goodrich Company, The. Chain extended low molecular weight polyoxiranes for electrostatic applications. 5,342,889, Cl. 525-127.000.

Sullivan, William E.: *See*—
Fritz, Barbara L.; Olson, John T.; Morganson, Stephen A.; and Sullivan, William E., 5,342,584, Cl. 422-124.000.

Sultzbaugh, Caroline. Foot rest for use in a shower. 5,341,528, Cl. 4-611.000.

Sulzbach, Frank C., to Texas Instruments Incorporated. Absorbing, low reflecting coating for visible and infrared light. 5,342,681, Cl. 428-310.500.

Sulzberger, Robert: *See*—
Odermatt, Erich; and Sulzberger, Robert, 5,341,622, Cl. 53-429.000.

Sulzer Medizinaltechnik AG: *See*—
Dardel, Eric, 5,341,810, Cl. 128-662.050.

Sulzer Reuti AG: *See*—
Berktold, Klaus; and Eberhard, Ernst, 5,341,851, Cl. 139-103.000.

Sumitomo Electric Industries, Ltd.: *See*—
Amano, Yoshinari; Omati, Masahiro; and Matsumura, Junzo, 5,342,573, Cl. 419-38.000.
Kamakura, Mitsutoshi; Shioda, Akihiko; Enami, Yoshihide; and Go, Hisao, 5,341,563, Cl. 29-743.000.
Nakahata, Seiji; Sogabe, Kouichi; and Yamakawa, Akira, 5,343,150, Cl. 324-316.000.
Shikata, Shinichi; Hachigo, Akihiro; Nakahata, Hideaki; and Higaki, Kenjiro, 5,343,107, Cl. 310-313.00A.

Sumitomo, Miyuki: *See*—
Morimoto, Kouji; Sumitomo, Miyuki; and Uchimura, Katsunori, 5,343,316, Cl. 359-50.000.

Sumitomo Pharmaceuticals Company, Limited: *See*—
Ono, Keiichi; Kai, Yoshiyuki; and Maeda, Hiroo, 5,342,940, Cl. 544-218.000.

Sumitomo Wiring Systems, Ltd.: *See*—
Ito, Akira, 5,342,996, Cl. 174-84.00C.
Tanaka, Toshiharu, 5,342,222, Cl. 439-708.000.

Summers, David P., to American BioMed, Inc. Artificial support for a blood vessel. 5,342,387, Cl. 606-198.000.

Summers, James A. Tarpaulin drainage apparatus. 5,341,760, Cl. 114-361.000.

Sun, Ping-Chang. Pacifier with internal knurled teething member. 5,342,398, Cl. 606-235.000.

Sun Stix Incorporated: *See*—
Banome, Anthony, 5,341,538, Cl. 15-210.100.

Sun, Vae E.: *See*—
Tacklind, Christopher A.; Sun, Vae E.; and Au, Nelson S., 5,342,304, Cl. 604-99.000.

Sunburst Chemicals, Inc.: *See*—
Laughlin, Timothy E.; Scepanski, William H.; and Gruber, Kenneth P., 5,342,587, Cl. 422-266.000.

Sunderman, Dexter F.: *See*—
Clinnin, David D.; Lewarchik, Ronald J.; and Sunderman, Dexter F., 5,342,871, Cl. 524-238.000.

SunDisk Corporation: *See*—
Yuan, Jack H.; Samachisa, Gheorghe; Guterman, Daniel C.; and Harari, Eliyahou, 5,343,063, Cl. 257-317.000.

Sundstrand Corporation: *See*—
Kirchberg, Maurice A.; and Cook, Alexander, 5,343,379, Cl. 363-41.000.

Sunpower, Inc.: *See*—
Redlich, Robert W., 5,342,176, Cl. 417-212.000.

Suter, Walter. Apparatus for gathering individual sheets into a bundle. 5,342,038, Cl. 271-198.000.

Suwa, Hisashi: *See*—
Kohno, Fumio; Suwa, Hisashi; and Sato, Seizi, 5,343,257, Cl. 348-842.000.

Suzuki, Akio, to Canon Kabushiki Kaisha. Image recording apparatus capable of correcting density unevenness. 5,343,231, Cl. 347-14.000.

Suzuki, Fumio; Shimada, Junichi; Karasawa, Akira; Mizumoto, Hideaki; Kase, Hiroshi; and Nonaka, Hiromi, to Kyowa Hakko Kogyo Co., Ltd. Xanthine derivatives. 5,342,841, Cl. 514-263.000.

Suzuki, Fumio; Miwa, Yoshikazu; Kuroda, Takeshi; Kitamura, Shigeto; and Manabe, Haruhiko, to Kyowa Hakko Kogyo Co., Ltd. Thienoimidazoppyridone derivatives. 5,342,843, Cl. 514-293.000.

Suzuki, Fumio: *See*—
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.

Suzuki, Hidetaka, to Canon Kabushiki Kaisha. Electronic apparatus having backup power source. 5,343,436, Cl. 365-228.000.

Suzuki Kabushiki Kaisha: *See*—
Yamauchi, Kosaku, 5,341,775, Cl. 123-65.0PE.

Suzuki, Kazuhiko: *See*—
Abe, Kiyoshi; Suzuki, Kazuhiko; Ogawa, Hiroshi; and Kikuchi, Masaichi, 5,342,876, Cl. 524-493.000.

Suzuki, Makoto: *See*—
Naruse, Hideaki; Suzuki, Makoto; and Sato, Takehiko, 5,342,742, Cl. 430-503.000.

Suzuki, Masayuki: *See*—
Adachi, Kiyoshi; Uda, Yasuaki; and Suzuki, Masayuki, 5,342,528, Cl. 210-668.000.

Suzuki Motor Corporation: *See*—
Saji, Tomohide; Inoue, Yoshihisa; and Kii, Asajiro, 5,342,107, Cl. 296-210.000.

Suzuki, Sunao: *See*—
Takata, Haruki; Katsumata, Kenji; Hirahata, Shigeru; Konno, Mituo; Ishibashi, Kouichi; and Suzuki, Sunao, 5,343,238, Cl. 348-556.000.

Suzuki, Takashi: *See*—
Miyazawa, Azuma; Suzuki, Takashi; and Mizobuchi, Kozi, 5,343,553, Cl. 395-3.000.

Suzuki, Yumiko: *See*—
Kobayashi, Tetsuya; Katabuchi, Kenjiro; and Suzuki, Yumiko, 5,342,208, Cl. 439-79.000.

Sventek, Bruce A.: *See*—
Boyd, Gary T.; Lee, Tzu-Chen; Sventek, Bruce A.; Cross, Elisa M.; and Weller-Brophy, Laura A., 5,343,544, Cl. 385-46.000.

Swain, James C., to General Motors Corporation. Axial actuator for unloading an orbital scroll type fluid material handling machine. 5,342,186, Cl. 418-55.500.

Swan, George A., III: *See*—
Baird, William C., Jr.; Swan, George A., III; Boyle, Joseph P.; and Mon, Eduardo, 5,342,506, Cl. 208-65.000.

Swanson, David K.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,342,407, Cl. 607-129.000.

Swars, Helmut; Bruck, Rolf; and Maus, Wolfgang, to Emitec Gesellschaft fuer Emissionstechnologie mbH. Method for detecting a reaction zone in a catalytic converter. 5,342,783, Cl. 436-37.000.

Swartz, James R., to Genentech, Inc. Method for producing polypeptide via bacterial fermentation. 5,342,763, Cl. 435-69.100.

SWF Auto-Electric GmbH: *See*—
Hofmann, George, 5,342,217, Cl. 439-459.000.

Swindall, Jackie J. Gooseneck trailer hitch. 5,342,076, Cl. 280-479.200.

Swisher, George W., Jr., to CMI Corporation. Mixer having blades arranged in a discontinuous helical pattern. 5,342,124, Cl. 366-66.000.

Syers, Charles S. File folder having horizontal and vertical stowage. 5,341,982, Cl. 229-1.50R.

Symbiosis Corporation: *See*—
Slater, Charles R.; and Bales, Thomas O., Jr., 5,342,390, Cl. 606-205.000.

Synor, Jeffrey C.: *See*—
Gentile, David P.; Synor, Jeffrey C.; and Lee, Chien H., 5,342,083, Cl. 280-728.00A.

SynPhar Laboratories, Inc.: *See*—
Singh, Rajeshwar; Fathi-Afshar, Rakhshandeh; Singh, Inder P.; Thomas, George; Doerksen, Thomas R.; Singh, Maya P.; and Micetich, Ronald G., 5,342,846, Cl. 514-312.000.

Syntex (U.S.A.) Inc.: *See*—
Cooper, Gary F.; and McCarthy, Keith E., 5,342,953, Cl. 548-122.000.

System Kurandt GmbH: *See*—
Kurandt, Fritz, 5,342,278, Cl. 493-16.000.

Syva Company: *See*—
Litman, David J.; and Ullman, Edwin F., 5,342,759, Cl. 435-7.920.

Szabo, Laszlo: *See*—
Treiber, Hans-Joerg; Hofmann, Hans P.; Szabo, Laszlo; Unger, Liliane; and Raschack, Manfred, 5,342,839, Cl. 514-255.000.

Szmanda, Jeffrey P.; and Szmanda, William J., to Health Care Keyboard Co., Inc. Arm support apparatus for keyboard and other apparatus requiring repetitive hand operation. 5,342,005, Cl. 248-118.000.

Szmanda, William J.: *See*—
Szmanda, Jeffrey P.; and Szmanda, William J., 5,342,005, Cl. 248-118.000.

Tabata, Kuniaki: *See*—
Takeda, Haruo; and Tabata, Kuniaki, 5,343,560, Cl. 395-166.000.

Tabor, Ricky L.; Morgan, Roy E., Jr.; and Zawisza, Melissa J., to Dow Chemical Company, The. Compositions prepared using finely-divided isocyanate based thermoset polymers. 5,342,884, Cl. 525-64.000.

Tachi-S Co., Ltd.: *See*—
Kawasaki, Kiyoshi, 5,341,755, Cl. 112-163.000.

Tachi, Shinichi: *See*—
Miki, Hiroshi; Ohji, Yuzuru; Tachi, Shinichi; and Kanehori, Keiichi, 5,343,353, Cl. 361-322.000.

Tacklind, Christopher A.; Sun, Vae E.; and Au, Nelson S., to Advanced Cardiovascular Systems, Inc. Inflation device for dilatation catheters. 5,342,304, Cl. 604-99.000.

Tada, Shigeaki: *See*—
Tanaka, Hideshi; Takanashi, Itsuo; Tada, Shigeaki; and Takahashi, Toshinori, 5,342,132, Cl. 400-120.180.

Taft, Andrew A. Air filter for an HVAC system and method of manufacturing same. 5,342,423, Cl. 55-483.000.

Tagami, Toshio; Imai, Yoshio; Kakimoto, Masaaki; Kiyohara, Osamu; and Narushima, Hitoshi, to Tomoegawa Paper Co., Ltd. Block copolymer and method of producing the same. 5,342,895, Cl. 525-183.000.

Tagawa, Kazuo: *See*—
Kondo, Yasuo; Beppu, Yukiharu; and Tagawa, Kazuo, 5,342,533, Cl. 252-68.000.

Tagawa, Satoru: *See*—
Yasuda, Keiji; Oda, Yukihisa; Tagawa, Satoru; and Kimura, Masahiro, 5,343,188, Cl. 338-129.000.

Taguchi, Kenji: *See*—
Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, 5,342,641, Cl. 426-549.000.

Taguchi, Nobuyoshi: *See*—
Imai, Akihiro; Matsuo, Hiroyuki; Fukui, Yasuo; Mima, Soichiro; and Taguchi, Nobuyoshi, 5,342,818, Cl. 503-227.000.

Taguchi, Osamu: *See*—
Ota, Takashi; Taguchi, Osamu; and Itahashi, Hiromichi, 5,343,349, Cl. 360-132.000.

Taguchi, Takashi: *See*—
Ohtsuka, Hiroshi; Abe, Kazutoshi; and Taguchi, Takashi, 5,342,713, Cl. 430-5.000.

Tai, Akiyoshi; and Takada, Shun, to Konica Corporation. Light-sensitive silver halide color photographic material. 5,342,745, Cl. 430-538.000.

Taima, Katsuyuki: *See*—
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Tajiri, Akihiro; and Hotta, Yoshihko, to Honda Gikeu Kogyo Kabushiki Kaisha. Air-conditioning system for vehicle. 5,341,652, Cl. 62-244.000.

Takada, Hideaki, to Canon Kabushiki Kaisha. Suction recovery mechanism and ink jet recording apparatus using same. 5,343,228, Cl. 347-29.000.

Takada, Shun: *See*—
Tai, Akiyoshi; and Takada, Shun, 5,342,745, Cl. 430-538.000.

Takagi, Haruo, to Toyo Techno Co., Ltd. Screw-driving device. 5,341,706, Cl. 81-434.000.

Takago, Toshio; Inomata, Hiroshi; Sato, Shinichi; and Kinami, Hitoshi, to Shin-Etsu Chemical Co., Ltd. Silicon rubber composition having excellent durability in repeated mold release. 5,342,913, Cl. 528-15.000.

Takahara, Masateru: *See*—
Katou, Naoyoshi; Tamiya, Seiki; and Takahara, Masateru, 5,341,620, Cl. 53-287.000.

Takahashi, Hidekazu; and Yansi, Norimasa, to Showa Sangyo Co., Ltd. Process for refining zein. 5,342,923, Cl. 530-373.000.

Takahashi, Hideo: *See*—
Yoshino, Ryutaro; and Takahashi, Hideo, 5,343,397, Cl. 364-424.020.

Takahashi, Hiroshi, to Konica Corporation. Camera with strobe capable of adjusting light emitting amount. 5,343,268, Cl. 354-416.000.

Takahashi, Kazuyuki: *See*—
Iwai, Yoshio; Takahashi, Kazuyuki; Hirota, Takeshi; Abe, Tomoji; and Imanishi, Isao, 5,342,687, Cl. 428-402.000.

Takahashi, Masaharu; Takita, Ken-ichi; and Sato, Shinichi, to Shin-Etsu Chemical Co., Ltd. Fluorosilicone rubber composition. 5,342,879, Cl. 524-588.000.

Takahashi, Masanobu: *See*—
Yamashita, Yuji; Takahashi, Masanobu; Massi, Katsunori; Inenaka, Hiroyuki; Sako, Masahiro; Hashimoto, Yasuhiro; and Tomita, Hideaki, 5,343,276, Cl. 355-202.000.

Takahashi, Shuji; Yansi, Eiji; Morikawa, Fumihiro; and Kawate, Yosuke, to Nippon Densan Corporation. Fan motor. 5,343,104, Cl. 310-90.000.

Takahashi, Tamotsu: *See*—
Katoh, Hiroaki; Miyazaki, Toshimasa; Takahashi, Tamotsu; Ishii, Takeshi; Oyama, Yoshihiro; Oyama, Yoshihiro; and Sasaki, Tatsuo, 5,343,029, Cl. 235-467.000.

Takahashi, Toshinori: *See*—
Tanaka, Hideshi; Takanashi, Itsuo; Tada, Shigeaki; and Takahashi, Toshinori, 5,342,132, Cl. 400-120.180.

Takahashi, Yoshiaki: *See*—
Araoka, Manabu; Takahashi, Yoshiaki; Shikama, Atsushi; Miyazaki, Yoshihiro; Nakamura, Tomoaki; and Sakata, Masayuki, 5,343,009, Cl. 200-322.000.

Takahiro, Syuji: *See*—
Ito, Hirokazu; Itoh, Masahiro; Inagaki, Motoshi; Takahiro, Syuji; and Yoshida, Keiji, 5,342,722, Cl. 430-109.000.

Takaiwa, Kan: *See*—
Takayama, Tsutomu; and Takaiwa, Kan, 5,343,201, Cl. 341-200.000.

Takaku, Yutaka: *See*—
Kurihara, Nobuo; Ishii, Toshio; Mukaihira, Takashi; Kawano, Kazuya; and Takaku, Yutaka, 5,341,642, Cl. 60-276.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Takamizawa, Toru; and Miyazaki, Seizo, to NSK Ltd. Preloading method for preload-adjustable rolling bearing and manufacturing method of the same. 5,341,569, Cl. 29-898.090.

Takanashi, Itsuo: *See*—
Tanaka, Hideshi; Takanashi, Itsuo; Tada, Shigeaki; and Takahashi, Toshinori, 5,342,132, Cl. 400-120.180.

Takara Co., Ltd.: *See*—
Kumakawa, Tatsuaki, 5,341,570, Cl. 30-43.600.

Takata, Haruki; Katsumata, Kenji; Hirahata, Shigeru; Konno, Mituo; Ishibashi, Kouichi; and Suzuki, Sunao, to Hitachi, Ltd.; and Hitachi Video Information System, Inc. Wide-screen television receiver with aspect ratio conversion function and method of displaying a range to be magnified and displayed. 5,343,238, Cl. 348-556.000.

Takata, Sadaki: *See*—
Katoh, Mikiko; Uehara, Keiichi; and Takata, Sadaki, 5,342,610, Cl. 424-59.000.

Takatori, Sunao: *See*—
Shu, Guoliang; Yang, Weikang; Wongwarawipat, Wiwat; Takatori, Sunao; and Yamamoto, Makoto, 5,343,419, Cl. 364-807.000.

Takayama, Naoki: *See*—
Ono, Hiroo; Kikuchi, Shuji; Tomoyasu, Masayuki; Takayama, Naoki; and Tomoyoshi, Riki, 5,343,047, Cl. 250-492.210.

Takayama, Tsutomu; and Takaiwa, Kan, to Canon Kabushiki Kaisha. A-D converter. 5,343,201, Cl. 341-200.000.

Takayanagi, Yoshiaki: *See*—
Hirabayashi, Hiromitsu; Kusaka, Kensaku; Arai, Atsushi; and Takayanagi, Yoshiaki, 5,343,280, Cl. 355-285.000.

Takeda Chemical Industries, Ltd.: *See*—
Adachi, Kiyoshi; Uda, Yasuaki; and Suzuki, Masayuki, 5,342,528, Cl. 210-668.000.

Takeda, Haruo; and Tabata, Kuniaki, to Hitachi, Ltd. Image data display system. 5,343,560, Cl. 395-166.000.

Takeda, Osamu: *See*—
Hirano, Hiroyuki; Tsuzuki, Yoshihiko; Haseda, Satoshi; Fukushima, Akira; Inoue, Hideo; and Takeda, Osamu, 5,343,393, Cl. 364-424.050.

Takei, Mitsuhiko; Yoshida, Toshio; Nagai, Yoshiaki; and Masamizu, Koji, to Nippon Oil Company, Ltd. Lubricating oil composition comprising alkylnaphthalene and benzothiophene. 5,342,532, Cl. 252-45.000.

Takemae, Hisao; Manome, Tadamasa; and Kaneko, Keiji, to Fuji Photo Optical Co., Ltd. Lens grip coupling and positioning mechanism. 5,343,263, Cl. 354-82.000.

Takesue, Fumiki: *See*—
Kitsoka, Kazuhiro; Furuse, Akihiro; Takesue, Fumiki; and Ito, Tsukasa, 5,343,137, Cl. 320-13.000.

Takeuchi, Fumihiko: *See*—
Hayakawa, Yasuyuki; Nishiike, Ujihiro; Fukuda, Bunjiro; Yamada, Masataka; Iida, Yoshiaki; Takeuchi, Fumihiko; and Komatsubara, Michiro, 5,342,454, Cl. 148-113.000.

Takeuchi, Hiroshi, to NEC Corporation. Phase comparator circuit and phase locked loop (PLL) circuit using the same. 5,343,097, Cl. 307-514.000.

Takeuchi, Kunihiro; and Okano, Masami, to Airbag Systems Company Ltd. System for controlling safety device for vehicle. 5,343,394, Cl. 364-424.050.

Takeuchi, Tetsuya: *See*—
Sugiyama, Hiroyuki; and Takeuchi, Tetsuya, 5,342,035, Cl. 271-11.000.

Takeuchi, Toshifumi; Arai, Takao; Nagai, Yutaka; and Kimura, Izumi, to Hitachi, Ltd. Digital signal overlapped or joined recording method and apparatus. 5,343,455, Cl. 369-59.000.

Takeuchi, Yasuo: *See*—
Murata, Susumu; Sano, Masako; Takeuchi, Yasuo; Fujihara, Masayuki; Yokoo, Hisahiko; Nakanishi, Kenjiro; Miura, Tetsuo; and Shimizu, Yoshio, 5,342,634, Cl. 426-113.000.

Takigen Manufacturing Co. Ltd.: *See*—
Takimoto, Kazuhide, 5,342,102, Cl. 292-228.000.

Takiguchi, Ryohei; Saito, Hitoshi; Torii, Masanori; and hasegawa, Jun, to Dai Nippon Printing Co., Ltd. Thermal transfer image-receiving sheet. 5,342,819, Cl. 503-227.000.

Takimoto, Kazuhide, to Takigen Manufacturing Co. Ltd. Latch assembly for sliding door. 5,342,102, Cl. 292-228.000.

Takita, Ken-ichi: *See*—
Takahashi, Masaharu; Takita, Ken-ichi; and Sato, Shinichi, 5,342,879, Cl. 524-588.000.

Takizawa, Masaaki: *See*—
Kimura, Jun-ichi; and Takizawa, Masaaki, 5,343,256, Cl. 348-718.000.

Takizawa, Teruhiro: *See*—
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.

Takuma, Hirokazu, to Sony Corporation. Index type CRT having a photosensor with a function of amplifier. 5,343,119, Cl. 315-10.000.

Takuma, Keisuke: *See*—
Ohyama, Tsukasa; Kuroda, Shizuo; Takuma, Keisuke; and Aiga, Hiroshi, 5,342,974, Cl. 552-259.000.

Tamada, Norio: *See*—
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Tamaki, Ikuhiro: *See*—
Yamamoto, Yuji; and Tamaki, Ikuhiro, 5,343,269, Cl. 355-43.000.

Tame, Omar; and Franka, John, to Modern Metal Products, Inc. Striker bar assembly. 5,342,103, Cl. 292-341.170.

Tamiya, Seiki: *See*—
Katou, Naoyoshi; Tamiya, Seiki; and Takahara, Masateru, 5,341,620, Cl. 53-287.000.

Tamura, Hikari; and Higuchi, Shunichi, to Agency of Industrial Science & Technology. Rechargeable battery with nonaqueous electrolyte. 5,342,711, Cl. 429-197.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Iwasaki, Tameo; Kondo, Kazuhiko; Ikezawa, Katsuo; Kikkawa, Hideo; and Yamagata, Shinsuke, 5,342,941, Cl. 514-337.000.
Tosa, Tetsuya; Sato, Tadashi; Watanabe, Taizo; and Minobe, Satoshi, 5,342,785, Cl. 436-178.000.

Tanaka, Akio, to NEC Corporation. AC refresh type plasma display system uniformly illuminating pixels. 5,343,215, Cl. 345-63.000.

Tanaka, Hideshi; Takanashi, Itsuo; Tada, Shigeaki; and Takahashi, Toshinori, to Victor Company of Japan, Ltd. Method for transferring hot-melt ink to a recording medium. 5,342,132, Cl. 400-120.180.

Tanaka, Juichi; Yuzurihara, Itsuo; and Watanabe, Takashi, to Kyosan Electric Mfg. Co., Ltd. Method of controlling switching regulator. 5,343,377, Cl. 363-17.000.

Tanaka, Kazuo: *See*—
Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, 5,342,480, Cl. 156-648.000.

Tanaka, Kenji: *See*—
Sekihata, Osamu; Eda, Susumu; Oomuro, Katsumi; Hyodo, Ryuji; Tanaka, Kenji; Hatta, Hiroyuki; and Furuya, Reiko, 5,343,462, Cl. 370-13.000.

Tanaka Kikinzoku Kogyo K.K.: *See*—
Inoue, Katsutoshi; Yoshizuka, Kazuharu; Baba, Yoshinari; and Tazaki, Masato, 5,342,526, Cl. 210-634.000.

Tanaka, Makoto: *See*—
Hashimoto, Takatsugu; Akutagawa, Keizo; Yagawa, Kazuo; Tanaka, Makoto; Yamagishi, Junichi; and Hachiya, Kazuo, 5,341,862, Cl. 152-209.00R.

Tanaka, Toshiharu, to Sumitomo Wiring Systems, Ltd. Earth end attaching member in a formed protector for a wire harness. 5,342,222, Cl. 439-708.000.

Tanaka, Yasuo, to Omron Corporation. Magnetic card reader/writer with selectable frequencies relative to motor speed for variable recording densities. 5,343,026, Cl. 235-449.000.

Tandberg Data A/S: *See*—
Jahren, Rolf, 5,343,341, Cl. 360-77.120.

Tanei, Hirayoshi; and Iwanaga, Shoichi, to Hitachi, Ltd. Ceramic composition and ceramic circuit board. 5,342,674, Cl. 428-209.000.

Tang, Denny D.: *See*—
Kung, Kenneth T.; Tang, Denny D.; and Wang, Po-Kang, 5,343,422, Cl. 365-173.000.

Tang, Kim T.: *See*—
Meirowitz, Randy E.; Padmanabhan, Sriram; Phelan, Robert J.; and Tang, Kim T., 5,342,336, Cl. 604-378.000.

Tang, Ping-Wah: *See*—
Lau, Philip T. S.; and Tang, Ping-Wah, 5,342,943, Cl. 548-262.400.

Tani, Nobuyuki; and Yamaguchi, Tenzo, to Daikin Industries, Ltd. Positioning apparatus used for machine tools etc. 5,341,722, Cl. 91-43.000.

Tanox Biosystems, Inc.: *See*—
Chang, Tse W., 5,342,924, Cl. 530-387.900.

Tansey, Shawn P.: *See*—
Buckley, Randall G.; Eastburn, George L.; Schmitz, Marion C.; Breslau, Barry R.; and Tansey, Shawn P., 5,342,863, Cl. 523-310.000.

Tanzer, Richard W.; Bruemmer, Mary A.; and Gossens, Anthonette A., to Kimberly-Clark Corporation. Absorbent article containing an anhydrous deodorant. 5,342,333, Cl. 604-359.000.

Taphorn, Joseph B.: *See*—
Costa, Peter, 5,342,052, Cl. 273-167.00H.

Tasaki, Koji; Asai, Toshimitsu; and Jones, Kenneth M., to Sharp Kabushiki Kaisha. Picture image color separating apparatus. 5,343,310, Cl. 358-515.000.

Tasikas, James. Dual mode floor sander. 5,341,605, Cl. 51-174.000.

Tasker, Peter A.: *See*—
Austin, Peter W.; Quan, Peter M.; Tasker, Peter A.; and Thorp, Derek, 5,342,937, Cl. 544-8.000.

Tate, Ronald C.: *See*—
Voisine, John T.; Anderson, Christopher L.; Slaven, Robert E.; and Tate, Ronald C., 5,343,143, Cl. 324-142.000.

Tatsuno, Isamu: *See*—
Robinson, Doug; and Tatsuno, Isamu, 5,341,974, Cl. 224-215.000.

Taubenblatt, Marc A.: *See*—
Batchelder, John S.; DeCain, Donald M.; Hobbs, Philip C. D.; and Taubenblatt, Marc A., 5,343,290, Cl. 356-349.000.

Tauw Milieu B.V.: *See*—
Marsman, Eric H.; Vlekke, Garardus J. F. M.; Urlings, Leonardus G. C. M.; and Reitsma, Berend A. H., 5,342,522, Cl. 210-605.000.

Taylor, David A.: *See*—
Ryan, Glen R.; Allen, Steven A.; and Taylor, David A., 5,342,867, Cl. 524-101.000.

Taylor, Glenn A.: *See*—
Dickens, Elmer D., Jr.; Lee, Biing Lin; Taylor, Glenn A.; Magistro, Angelo J.; and Ng, Hendra, 5,342,919, Cl. 528-323.000.

Taylor, Peter W., to Multinail Truss System Pty., Ltd. Truss jigging system. 5,342,030, Cl. 269-37.000.

Taylor, Russell H.: *See*—
Joskowicz, Leo; and Taylor, Russell H., 5,343,385, Cl. 364-167.010.

Taylor, Stewart S., to TriQuint Semiconductor, Inc. Fully balanced transimpedance amplifier with low noise and wide bandwidth. 5,343,160, Cl. 330-9.000.

Tazaki, Masato: *See*—
Inoue, Katsutoshi; Yoshizuka, Kazuharu; Baba, Yoshinari; and Tazaki, Masato, 5,342,526, Cl. 210-634.000.

Teac Corporation: *See*—
Nagase, Fumio, 5,343,344, Cl. 360-104.000.

Teal, William B. Method for drying wood strands. 5,341,580, Cl. 34-446.000.

Teare, Peter R.; Hanson, William J.; and Smits, Matthija, to Liberty Mutual Insurance Co. Prosthetics electrode array diagnostic system. 5,341,813, Cl. 128-733.000.

Technion Research and Development Foundation Ltd.: *See*—
Zur, Benjamin, 5,341,831, Cl. 137-78.300.

Tecumseh Products Company: *See*—
Dreiman, Nelik I., 5,342,179, Cl. 417-363.000.

Tedijanto, Theodore E.: *See*—
Cidon, Israel; Doney, Richard M.; Drake, John E., Jr.; Hervatic, Elizabeth A.; Potter, Kenneth H., Jr.; and Tedijanto, Theodore E., 5,343,473, Cl. 370-85.600.

Teichmer, Daniel G.: *See*—
Larson, James K.; and Teichmer, Daniel G., 5,343,298, Cl. 348-184.000.

Teijin Seiki Company Limited: *See*—
Nishimura, Yoshihide, 5,341,977, Cl. 226-97.000.

Teiryo Sangyo Co., Ltd.: *See*—
Yoshida, Hirokazu, 5,343,031, Cl. 235-494.000.

Tekamp-Olson, Patricia A.: *See*—
Cousens, Lawrence S.; Tekamp-Olson, Patricia A.; Shuster, Jeffrey R.; and Merryweather, James P., 5,342,921, Cl. 530-324.000.

Tektronix, Inc.: *See*—
Kucera, Dennis W.; and Meyers, Paul S., 5,343,405, Cl. 364-486.000.

Teledyne Industries, Inc.: *See*—
Serbinski, Andrew; Mork, Steve O.; and Callaghan, Roberta L., 5,341,534, Cl. 15-22.100.

Teleflex, Inc.: *See*—
Potter, Laurence A., 5,342,321, Cl. 604-174.000.

Telfer, Stephen J.: *See*—
Lindholm, Edward P.; Telfer, Stephen J.; Zuraw, Michael J.; and Hirschbein, Bernard L., 5,342,816, Cl. 503-226.000.

Telford, Clive D.: *See*—
Barri, Sami A. I.; Howard, Philip; and Telford, Clive D., 5,342,596, Cl. 423-710.000.

Teoh, Clifford: *See*—
Abrams, Robert M.; Chan, Randy S.; Burpee, Janet W.; and Teoh, Clifford, 5,341,818, Cl. 128-772.000.

Tepe, James J.: *See*—
Greeson, Michael R.; Baar, James C.; Haines, Jerry D.; and Tepe, James J., 5,343,363, Cl. 361-749.000.

Terada, Toshiyuki, to Kabushiki Kaisha Toshiba. Semiconductor logic integrated circuit having improved noise margin over DCFL circuits. 5,343,091, Cl. 307-448.000.

Terada, Yoshihiro: *See*—
Hibi, Yoshiharu; and Terada, Yoshihiro, 5,343,312, Cl. 358-520.000.

Terman, Michael; Perlman, Bill; and Fairhurst, Stephen. Naturalistic illumination system. 5,343,121, Cl. 315-158.000.

Terstappen, Leon W. M. M.: *See*—
Levine, Robert A.; Wardlaw, Stephen C.; Terstappen, Leon W. M. M.; Mercolino, Thomas J.; and Recktenwald, Diether J., 5,342,790, Cl. 436-523.000.

Teruyama, Tatsuo, to Kabushiki Kaisha Toshiba. Data transfer device. 5,343,427, Cl. 365-189.040.

Texaco Chemical Company: *See*—
Howelton, Richele T.; and Speranza, George P., 5,342,918, Cl. 528-318.000.

Texaco Inc.: *See*—
Dai, Pei-Shing E.; Campbell, Charles N., II; Martin, Bobby R.; and Sherwood, David E., Jr., 5,342,507, Cl. 208-111.000.
Osterloh, William T., 5,341,878, Cl. 166-272.000.

Texas Industrial Gas: *See*—
Davis, Clint A.; and Trail, Malvin P., 5,343,016, Cl. 219-130.400.

Texas Instruments Incorporated: *See*—
Beam, Edward A., III, 5,342,804, Cl. 437-89.000.
Duvvury, Charvaka; and Hyslop, Adin E., 5,343,433, Cl. 365-205.000.
Large, Jeffrey L., 5,342,068, Cl. 279-3.000.
Sulzbach, Frank C., 5,342,681, Cl. 428-310.500.
Tran, Hien V., 5,343,093, Cl. 307-475.000.
Walker, Darryl; and McLaughlin, Daniel F., 5,342,799, Cl. 437-51.000.
Yuan, Han-Tzong; Plumton, Donald L.; Kim, Tae S.; and Yang, Jau-Yuann, 5,342,795, Cl. 437-40.000.

Texter, John: *See*—
Welter, Thomas R.; and Texter, John, 5,342,730, Cl. 430-213.000.

Thach, Robert E., to Washington University. Tightly regulated expression system for eucaryotic cells. 5,342,782, Cl. 435-320.100.

Thapar, Baldev: *See*—
Kejariwal, Murari L.; Thapar, Baldev; Gerez, Victor; and March, Daniel, 5,343,155, Cl. 324-522.000.

Thermalex, Inc.: *See*—
Inamura, Akira; Kaneko, Masafumi; and Hasegawa, Nobuyuki, 5,342,189, Cl. 425-461.000.

Thermo Jarrell Ash Corporation: *See*—
Crawford, Richard L.; Kunselman, Garry C.; Angelucci, Albert; Fitz-Patrick, Bruce C.; and Ferreira, Richard S., 5,343,289, Cl. 356-328.000.

Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahn Baumaschinen- Industriegeesellschaft m.b.H. Transport wagon comprising a wagon frame supported on on-track undercarriages. 5,341,746, Cl. 105-355.000.

Thiel, William J.: *See*—
Williams, Alan H.; Staples, Linton D.; Thiel, William J.; Oppenheim, Richard C.; and Clarke, Iain J., 5,342,622, Cl. 424-425.000.

Thiele Engineering Co.: *See*—
Kaye, Stephen, 5,341,624, Cl. 53-254.000.

Thiokol Corporation: *See*—
Van Name, Frederick W.; Gerace, Michael A.; Singer, Victor; and Walsh, Brendan M., 5,341,638, Cl. 60-204.000.

Thomas Electronics Incorporated: *See*—
Anandan, Munisamy; and Ketchum, Douglas, 5,343,115, Cl. 313-491.000.

Thomas, George: *See*—
Singh, Rajeshwar; Fathi-Afshar, Rakhshandeh; Singh, Inder P.; Thomas, George; Doerksen, Thomas R.; Singh, Maya P.; and Micetich, Ronald G., 5,342,846, Cl. 514-312.000.

Thomas Industries, Inc.: *See*—
Tillotson, Kevin, 5,343,373, Cl. 362-217.000.

Thomas, John F.; and Hensey, Paul S., to Monier Roof Tile Inc. Roof tile fastening arrangement. 5,341,617, Cl. 52-547.000.

Thomas, Joseph J., to Thomas Medical Products, Inc. Soft tip obturator. 5,342,383, Cl. 606-190.000.

Thomas, Kristin L.: *See*—
Schwab, Edward C.; Thomas, Kristin L.; Brown, George E.; and Harrington, Terry R., 5,342,635, Cl. 426-241.000.

Thomas Medical Products, Inc.: *See*—
Thomas, Joseph J., 5,342,383, Cl. 606-190.000.

Thomas, Paul: *See*—
Nathan, Rasa N.; and Thomas, Paul, 5,342,322, Cl. 604-192.000.

Thomine, Jean: *See*—
Pirio, Francis; and Thomine, Jean, 5,343,322, Cl. 359-173.000.

Thompson Consumer Electronics, Inc.: *See*—
Cooper, Jeffrey A., 5,343,195, Cl. 341-67.000.

Thompson, David L., to Medtronic, Inc. Oxygen sensor based capture detection for a pacer. 5,342,406, Cl. 607-22.000.

Thompson, Hugh A.; and Langdon, Fred M., to Procter & Gamble Company, The. Coextruded three-dimensional fluid-pervious plastic web. 5,342,334, Cl. 604-366.000.

Thompson, James: *See*—
Cherdak, Erik B., 5,343,445, Cl. 368-10.000.

Thompson, Robert C., to Monneret Jouets. Board game with air-cushioned floating pucks. 5,342,050, Cl. 273-126.00R.

Thomson Broadcast: *See*—
Delmas, Francis, 5,343,303, Cl. 348-346.000.

Thomson Consumer Electronics, Inc.: *See*—
Lagoni, William A., 5,343,255, Cl. 348-678.000.

Thomson-CSF: *See*—
Marcuard, Alain, 5,343,210, Cl. 342-352.000.

Thomson, Linda L.: *See*—
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittmer, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,343,517, Cl. 379-219.000.

Thorne, Linda P.; Armentrout, Richard W.; Pollock, Thomas J.; and Mikolajczak, Marcia J., to Shin-Etsu Bio, Inc.; and Shin-Etsu Chemical Co., Ltd. Endoglycanase isolated from bacillus ATCC 55294. 5,342,773, Cl. 435-200.000.

Thorp, Derek: *See*—
Austin, Peter W.; Quan, Peter M.; Tasker, Peter A.; and Thorp, Derek, 5,342,937, Cl. 544-8.000.

Thorstensen, Egil; and Hagen, Karluf, to Halliburton Company. Sand screen structure with quick connection section joints therein. 5,341,880, Cl. 166-278.000.

Thottathil, Paulose: *See*—
Horowitz, Carl; Sanduja, Mohan; and Thottathil, Paulose, 5,342,659, Cl. 427-553.000.

Thrasher, John K. Composition for protecting and sealing articles. 5,342,436, Cl. 106-10.000.

Thrustmaster, Inc.: *See*—
Moffett, Gary L., 5,343,006, Cl. 200-296.000.

Tice: Mary. Arm rest. 5,342,006, Cl. 248-118.000.

Tidemand, Kevin K., to Everest Medical Corporation. Combination bipolar scissors and forceps instrument. 5,342,381, Cl. 606-174.000.

Tiemann, Jerome J.; Michon, Gerald J.; and Tomlinson, Harold W., Jr., to General Electric Company. Charge amplifier with precise, integer gain. 5,343,297, Cl. 348-301.000.

Tietje, Mark E., to Caterpillar Inc. Fluid conduit arrangement. 5,341,903, Cl. 188-71.600.

Tillery, Timothy G.: *See*—
Nolte, Michael G.; Davis, Gary D.; Jergenson, Ronny D.; Scheu, Robert W.; and Tillery, Timothy G., 5,342,998, Cl. 174-152.00R.

Tillman, Dorothy M.; and Marion, Robert L., to Spartan Health Care Products, Inc. Shower lounge chair. 5,341,525, Cl. 4-579.000.

Tillotson, Kevin, to Thomas Industries, Inc. Suspended up/down light. 5,343,373, Cl. 362-217.000.

Timecap, Inc.: *See*—
Chang, Philip L.; Flood, Gary S.; Kirkes, Kent W.; and Smith, Edwin R., 5,342,054, Cl. 273-186.100.

VOL 1165 ISS 5 AG 30 1994 UMI

Tingley, Rosemary: *See—*
Chaplin, Dominic; and Tingley, Rosemary, 5,342,874, Cl. 524-430.000.

Tip Engineering Group: *See—*
Bauer, David J., 5,342,088, Cl. 280-728.00B.

Tippmann, Joseph R.; and Tippmann, Vincent P. Apparatus and method for disposing of condensate from evaporator drip pans. 5,341,653, Cl. 62-288.000.

Tippmann, Vincent P.: *See—*
Tippmann, Joseph R.; and Tippmann, Vincent P., 5,341,653, Cl. 62-288.000.

Titanium Metals Corporation: *See—*
Adams, Roy E.; Parris, Warran M.; and Bania, Paul J., 5,342,458, Cl. 148-670.000.

Tobey, Stephen L.: *See—*
Mack, Alfred N.; and Tobey, Stephen L., 5,341,668, Cl. 72-379.400.

Tod, Michel: *See—*
Chalom, Joseph; Griffoul, Christine; Tod, Michel; and Reveilleau, Stephane, 5,342,970, Cl. 549-288.000.

Toda, Haruki: *See—*
Saito, Shozo; and Toda, Haruki, 5,343,425, Cl. 365-189.010.

Toda, Tadao: *See—*
Mori, Kazushi; Matsumoto, Mitsuaki; Toda, Tadao; Nonaka, Hideyuki; and Yamaguchi, Takao, 5,343,484, Cl. 372-22.000.

Tohya, Hirokazu, to NEC Corporation. Power circuit. 5,343,378, Cl. 363-21.000.

Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsuura, Yasuhiro; and Mizuno, Hiroshi, to Minolta Camera Kabushiki Kaisha. Image forming apparatus. 5,343,223, Cl. 346-108.000.

Tokico, Ltd.: *See—*
Machida, Hiromi, 5,342,080, Cl. 280-708.000.

Tokumo, Akio; and Kato, Masayuki, to Pioneer Electronic Corporation. Power amplifier apparatus. 5,343,161, Cl. 330-10.000.

Tokunaga, Kazuyoshi: *See—*
Niinai, Yoshitaka; Nagata, Akio; Sagawa, Norihisa; Shinohara, Shigeru; Nakayama, Eiji; Yotsuyanagi, Mitsutoshi; Hayasaka, Hiroshi; and Tokunaga, Kazuyoshi, 5,342,280, Cl. 494-10.000.

Tokyo Electric Co., Ltd.: *See—*
Usui, Mitsuaki, 5,343,025, Cl. 235-383.000.

Tokyo Electron Limited: *See—*
Imahashi, Issei; and Ishii, Nobuo, 5,342,472, Cl. 156-345.000.
Ono, Hiroo; Kikuchi, Shuji; Tomoyasu, Masayuki; Takayama, Naoki; and Tomoyoshi, Riki, 5,343,047, Cl. 250-492.210.

Tokyo Electron Yamanashi Limited: *See—*
Fukasawa, Kazuo; and Suetsugu, Masachika, 5,342,471, Cl. 156-345.000.

Tokyo Gas Co., Ltd.: *See—*
Aoki, Nobuo; Aizawa, Ikuo; Yokoi, Keisuke; and Negishi, Heido, 5,343,103, Cl. 310-87.000.

Toller, Sonia. Method and apparatus for sealing luminal tissue. 5,342,388, Cl. 606-201.000.

Tom Wheatley Valve Company: *See—*
Manson, Ronald J.; and Partridge, Charles C., 5,341,840, Cl. 137-527.800.

Tominaga, Kaoru: *See—*
Katayama, Shigeru; Tominaga, Kaoru; and Yoshitake, Junichi, 5,343,076, Cl. 257-717.000.

Tomioka, Yugo, to Nippon Steel Corporation. Semiconductor memory having a memory cell including a capacitor with a two-layer lower electrode. 5,343,062, Cl. 257-297.000.

Tomita, Akira: *See—*
Uken, William D.; and Tomita, Akira, 5,343,541, Cl. 385-16.000.

Tomita, Hideaki: *See—*
Yamashita, Yuji; Takahashi, Masanobu; Masai, Katsunori; Inenaka, Hiroyuki; Sako, Masahiro; Hashimoto, Yasuhiro; and Tomita, Hideaki, 5,343,276, Cl. 355-202.000.

Tomlinson, Harold W., Jr.: *See—*
Tiemann, Jerome J.; Michon, Gerald J.; and Tomlinson, Harold W., Jr., 5,343,297, Cl. 348-301.000.

Tomoegawa Paper Co., Ltd.: *See—*
Tagami, Toshio; Imai, Yoshio; Kakimoto, Masaaki; Kiyohara, Osamu; and Narushima, Hitoshi, 5,342,895, Cl. 525-183.000.

Tomoyasu, Masayuki: *See—*
Ono, Hiroo; Kikuchi, Shuji; Tomoyasu, Masayuki; Takayama, Naoki; and Tomoyoshi, Riki, 5,343,047, Cl. 250-492.210.

Tomoyoshi, Riki: *See—*
Ono, Hiroo; Kikuchi, Shuji; Tomoyasu, Masayuki; Takayama, Naoki; and Tomoyoshi, Riki, 5,343,047, Cl. 250-492.210.

Tonen Chemical Corporation: *See—*
Imai, Yoichi; Hirano, Toshiyuki; Komiyama, Osamu; and Yamanaka, Hidenori, 5,342,920, Cl. 528-388.000.

Tong, Franklin F.: *See—*
Kash, Jeffrey A.; Pezeshki, Bardia; and Tong, Franklin F., 5,343,542, Cl. 385-31.000.

Topfl, Werner: *See—*
Kuhlmeyer, Rainer; Topfl, Werner; and Fory, Werner, 5,342,823, Cl. 504-215.000.

Toray Industries, Inc.: *See—*
Yamada, Katsushige; and Yotsumoto, Kyousuke, 5,342,766, Cl. 435-115.000.

Tori, Tamotsu: *See—*
Ueno, Koichi; Tsukamoto, Akio; Tori, Tamotsu; Nishimura, Hiroo; Konishi, Keizo; and Harada, Fukuzo, 5,341,769, Cl. 122-367.300.

Torii, Masanori: *See—*
Takiguchi, Ryohei; Saito, Hitoshi; Torii, Masanori; and hasegawa, Jun, 5,342,819, Cl. 503-227.000.

Torrez, Henry: *See—*
King, Michael J.; Flynn, Robert A.; and Torrez, Henry, 5,342,462, Cl. 156-96.000.

Torrington Company, The: *See—*
Hancock, Michael T., 5,342,091, Cl. 280-777.000.

Tosa, Tetsuya; Sato, Tadashi; Watanabe, Taizo; and Minobe, Satoshi, to Tanabe Seiyaku Co., Ltd. Method for determining pyrogen content. 5,342,785, Cl. 436-178.000.

Toshiba Lighting & Technology Corporation: *See—*
Sato, Shigehiro; Matsunaga, Yoshiyuki; and Ono, Tsuyoshi, 5,343,021, Cl. 219-541.000.

Toshitake, Takayuki: *See—*
Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, 5,342,480, Cl. 156-648.000.

Tosoh Corporation: *See—*
Miyashita, Akira, 5,342,813, Cl. 502-117.000.

Tosoh SMD, Inc.: *See—*
Dittmar, Mark B.; and Scheiderer, Paul E., 5,342,571, Cl. 419-13.000.
Stellrecht, David E., 5,342,496, Cl. 204-298.120.

Toth, Alan E. J.: *See—*
Pai, Damodar M.; Yanus, John F.; DeFeo, Paul J.; Toth, Alan E. J.; Mychajlowskij, Walter; and Popovic, Zoran, 5,342,719, Cl. 430-59.000.

Toth, Mihaly V.: *See—*
Marshall, Garland R.; and Toth, Mihaly V., 5,342,922, Cl. 530-329.000.

Toto Ltd.: *See—*
Kobayashi, Hiroshi; Hayashi, Ryosuke; Inokuchi, Shoji; and Muroya, Yukihiro, 5,341,839, Cl. 137-505.130.

Tovtouzas, Pavlos K.: *See—*
Stefanadis, Christodoulos I.; and Tovtouzas, Pavlos K., 5,342,300, Cl. 604-95.000.

Toy, Raymond L.; Koilpillai, Ravinder D.; and Chennakeshu, Sandeep, to General Electric Company. Sample timing selection and frequency offset correction for U.S. digital cellular mobile receivers. 5,343,498, Cl. 375-37.000.

Toyama, Tomoyuki: *See—*
Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, 5,342,641, Cl. 426-549.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Nakamura, Toshikazu; and Matsumoto, Kunio, 5,342,831, Cl. 514-12.000.

Toyo Techno Co., Ltd.: *See—*
Takagi, Haruo, 5,341,706, Cl. 81-434.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Buma, Shuuichi, 5,342,079, Cl. 280-707.000.

Trach, Paula: *See—*
Baker, Harold N.; Eng, Katherine K.; Gurner, William D.; Massei, Michael K.; Necklaws: Elizabeth C.; Osikowicz, Eugene W.; Ramp, Sally K.; and Trach, Paula, 5,342,760, Cl. 435-7.920.

Trail, Malvin P.: *See—*
Davis, Clint A.; and Trail, Malvin P., 5,343,016, Cl. 219-130.400.

Tran, Hien V., to Texas Instruments Incorporated. Self referencing MOS to ECL level conversion circuit. 5,343,093, Cl. 307-475.000.

Tranier, Jean-Pierre: *See—*
Koeberle, Yves; and Tranier, Jean-Pierre, 5,341,647, Cl. 62-39.000.

Transfeld, Peter, to Ohmi Forschung und Ingenieurstechnik GmbH. Method of adsorptive purification of vegetable and/or mineral oils and fats. 5,342,508, Cl. 208-299.000.

Traubel, Harro; Weisser, Jurgen; and Reiff, Helmut, to Bayer Aktiengesellschaft. Microcapsules made of isocyanates with groups containing polyethylene oxide. 5,342,556, Cl. 264-4.700.

Traversari, Catia: *See—*
Boon, Thierry; van der Bruggen, Pierre; Van den Eynde, Benoit; Van Pel, Aline; De Plaen, Etienne; Lurquin, Christophe; Chomez, Patrick; and Traversari, Catia, 5,342,774, Cl. 435-240.200.

Treffkorn, Remco V. High speed modem. 5,343,515, Cl. 379-97.000.

Treiber, Hans-Joerg; Hofmann, Hans P.; Szabo, Laszlo; Unger, Liliane; and Raschack, Manfred, to BASF Aktiengesellschaft. 2-hydroxy-3-phenoxy-propyl-substituted piperazines, their preparation and use. 5,342,839, Cl. 514-255.000.

Tretorn AB: *See—*
Hallenbeck, Barry, 5,341,583, Cl. 36-50.100.

Trew, Cheryl: *See—*
Cerwin, Robert; Trew, Cheryl; and Gibbs, Robert J., 5,341,922, Cl. 206-63.300.

Trine, David R.; and Gilpin, David W., to Intermec Corporation. Connector for a bar code scanner. 5,342,210, Cl. 439-95.000.

Trinity Industries, Inc.: *See—*
Fetterman, D. Bruce; and Smith, Stephen W., 5,341,747, Cl. 105-406.100.

TriQuint Semiconductor, Inc.: *See—*
Taylor, Stewart S., 5,343,160, Cl. 330-9.000.

Tropix, Inc.: *See—*
Edwards, Brooks; and Voyta, John C., 5,342,966, Cl. 549-221.000.

Trotta, Thomas, to Cordis Corporation. Catheter with multiple flexibilities along the shaft. 5,342,386, Cl. 606-194.000.

Trumbore, David C.; Franzen, Michael R.; and Wilkinson, Charles R., to Owens-Corning Fiberglas Technology Inc. Oxidized asphalt rubber system. 5,342,866, Cl. 524-68.000.

TRW Inc.: *See—*
Bronowicki, Allen J.; and Kaplan, Abner, 5,342,465, Cl. 156-175.000.

TRW Vehicle Safety Systems Inc.: *See—*
Gentile, David P.; Synor, Jeffrey C.; and Lee, Chien H., 5,342,083, Cl. 280-728.00A.

Tsakanikas, Peter D.; and Osborne, Joseph M., to Minnesota Mining and Manufacturing Company. Process for converting chromium dioxide magnetic pigment particles into nonmagnetic chromium (III) oxide. 5,342,589, Cl. 423-53.000.

Tse, Yu-Hong: *See—*
Lever, Alfred B. P.; Tse, Yu-Hong; and Janda, Pavel, 5,342,490, Cl. 204-153.190.

Tseng, Sheng-Tsai. Full meshing gear type variable speed transmission for electric cars. 5,341,698, Cl. 74-359.000.

Tseng, Susan Y.; and Wolf, Philip F., to ISP Investments Inc. Process for obtaining the isomeric compound 1-vinyl-3(E)-ethylidene pyrrolidone. 5,342,964, Cl. 548-552.000.

Tsonis, Anastasios: *See—*
Goldberg, Brian J.; and Tsonis, Anastasios, 5,343,401, Cl. 364-470.000.

Tsubakimoto Chain Co.: *See—*
Fujiwara, Toru; and Itoh, Yoshinori, 5,342,252, Cl. 474-266.000.

Tsuda, Nobuhiro: *See—*
Matsuo, Ryuichi; Kosugi, Ryuichi; Tsuda, Nobuhiro; and Ishizaki, Osamu, 5,343,432, Cl. 365-203.000.

Tsuji, Makoto: *See—*
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishge, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,342,698, Cl. 428-612.000.

Tsuji, Takashi: *See—*
Hatsuya, Satoshi; Sekiyama, Takaaki; Tsuji, Takashi; Iwayama, Satoshi; and Okunishi, Masahiko, 5,342,840, Cl. 514-262.000.

Tsuji, Toshimoto: *See—*
Furuya, Akio; Tsuji, Toshimoto; and Sato, Takayuki, 5,341,562, Cl. 29-825.000.

Tsujiuchi, Jumpei; and Okada, Katsuyuki, to Fuji Photo Optical Co., Ltd. Method for divisional measurement of object surface, and method for joining object surface sub-areas measured by same. 5,343,410, Cl. 364-525.000.

Tsukada, Kouji: *See—*
Morikawa, Takeshi; Tsukada, Kouji; Nonomura, Yutaka; and Omura, Yoshiteru, 5,341,688, Cl. 73-862.680.

Tsukamoto, Akio: *See—*
Ueno, Koichi; Tsukamoto, Akio; Tori, Tamotsu; Nishimura, Hiroo; Konishi, Keizo; and Harada, Fukuzo, 5,341,769, Cl. 122-367.300.

Tsukamoto, Hironori: *See—*
Shirai, Katutada; Mochizuki, Hideharu; and Tsukamoto, Hironori, 5,343,372, Cl. 362-66.000.

Tsukamoto, Masaaki: *See—*
Hirano, Tomio; and Tsukamoto, Masaaki, 5,342,504, Cl. 205-257.000.

Tsuruta, Setsuo: *See—*
Honma, Masaki; Nakano, Akio; Mabuti, Kouzou; Asahi, Isamu; Tsuruta, Setsuo; Fujino, Nobuhiro; and Kobayashi, Nobuhisa, 5,343,387, Cl. 364-401.000.

Tsurutani, Iwao; Manabe, Takafumi; Emoto, Ikuo; Nagayasu, Isao; and Okada, Yoshitaka, to Ube Rexene Corporation; and Ube Industries, Ltd. Laminated films. 5,342,695, Cl. 428-516.000.

Tsutomu, Ono; and Masaaki, Nosaka, to Matsui Manufacturing Co., Ltd. Method and apparatus for drying granular materials. 5,341,576, Cl. 34-263.000.

Tsuzuki, Yoshihiko: *See—*
Hirano, Hiroyuki; Tsuzuki, Yoshihiko; Haseda, Satoshi; Fukushima, Akira; Inoue, Hideo; and Takeda, Osamu, 5,343,393, Cl. 364-424.050.

Tuboi, Tetuo: *See—*
Kimura, Ryoji; Tuboi, Tetuo; and Nishikawa, Kazunori, 5,342,868, Cl. 524-108.000.

Tucker, Elton M., to Device Labs, Inc. Needle device. 5,342,324, Cl. 604-264.000.

Tucker, William E., to Gillette Company, The. Writing instrument having advance-retract mechanism. 5,342,135, Cl. 401-116.000.

Tuji, Yasunobu: *See—*
Sato, Hisato; Naito, Tomijiro; and Tuji, Yasunobu, 5,342,546, Cl. 252-299.600.

Tung, Francisca; and Okumoto, Victor H., to VLSI Technology, Inc. Structure for holding integrated circuit dies to be electroplated. 5,342,495, Cl. 204-297.00R.

Tunison, Donald E., III, to Cabot Corporation. Process for uniformly moisturizing fumed silica. 5,342,597, Cl. 423-335.000.

Tur, Anton: *See—*
Repisky, Milan; and Tur, Anton, 5,342,236, Cl. 452-149.000.

Turcotte, David E.: *See—*
Conville, John J.; Lyon, James T.; and Turcotte, David E., 5,342,537, Cl. 252-174.240.

Turnbull, Inc.: *See—*
Berry, David L.; Johnson, J. Edward; and Aggen, Marshall J., 5,342,109, Cl. 297-191.000.

Turner, Andrew D.; Derham, Stanley D.; and Lovegrove, Peter C., to United Kingdom Atomic Energy Authority. Electrical filter. 5,342,514, Cl. 210-193.000.

Turner, David C.; and Eberts, William G., to Eaton Corporation. Electrical circuit interrupting device with means to break welded contacts. 5,343,174, Cl. 335-172.000.

Tursso Companies, Inc.: *See—*
Weernink, William C., 5,342,093, Cl. 285-81.000.

Tydiks, B., to Maschinenfabrik Reinartz GmbH & Co. KG. Screw press having a plurality of throttle points and at least one cam movable transyersely thereto. 5,341,730, Cl. 100-37.000.

Ube Industries, Ltd.: *See—*
Tsurutani, Iwao; Manabe, Takafumi; Emoto, Ikuo; Nagayasu, Isao; and Okada, Yoshitaka, 5,342,695, Cl. 428-516.000.

Ube Rexene Corporation: *See—*
Tsurutani, Iwao; Manabe, Takafumi; Emoto, Ikuo; Nagayasu, Isao; and Okada, Yoshitaka, 5,342,695, Cl. 428-516.000.

Uchida, Masaaki, to Nissan Motor Co., Ltd. Air-fuel ratio controller for multiple cylinder bank engine. 5,341,788, Cl. 123-692.000.

Uchida, Masaaki: *See—*
Nakajima, Yuki; and Uchida, Masaaki, 5,341,641, Cl. 60-274.000.

Uchida, Shinji: *See—*
Nishiwaki, Seiji; Asada, Junichi; and Uchida, Shinji, 5,343,038, Cl. 250-234.000.

Uchimura, Katsunori: *See—*
Morimoto, Kouji; Sumitomo, Miyuki; and Uchimura, Katsunori, 5,343,316, Cl. 359-50.000.

Uda, Yasuaki: *See—*
Adachi, Kiyoshi; Uda, Yasuaki; and Suzuki, Masayuki, 5,342,528, Cl. 210-668.000.

Uehara, Keiichi: *See—*
Katoh, Mikiko; Uehara, Keiichi; and Takata, Sadaki, 5,342,610, Cl. 424-59.000.

Uehara, Masahiro: *See—*
Nakajima, Takeshi; Shiratori, Kazuhide; and Uehara, Masahiro, 5,342,131, Cl. 400-120.010.

Ueki, Akio, to Kiribai Chemical Industry Co., Ltd. Disposable body warmer. 5,342,412, Cl. 607-114.000.

Ueno, Koichi; Tsukamoto, Akio; Tori, Tamotsu; Nishimura, Hiroo; Konishi, Keizo; and Harada, Fukuzo, to Kabushiki Kaisha Kobe Seiko Sho. Vaporizer for liquefied natural gas. 5,341,769, Cl. 122-367.300.

Ueno, Noboru, to Nippon Steel Corporation. Multiple-needle electrode head. 5,343,232, Cl. 346-155.000.

Ueyama, Ukio; and Koni, Shinichi, to Nihon Chemical Research Co., Ltd. Syringe with needle-hangaring mechanism. 5,342,310, Cl. 604-110.000.

Uhl, James R. Commode seat lift apparatus. 5,341,518, Cl. 4-236.000.

Ukai, Yojiro: *See—*
Chokai, Shoichi; Aoki, Tomiyoshi; and Ukai, Yojiro, 5,342,845, Cl. 514-305.000.

Uken, William D.; and Tomita, Akira, to Raychem Corporation. Optical bypass switch. 5,343,541, Cl. 385-16.000.

Ulich, Bobby L.: *See—*
Keeler, R. Norris; and Ulich, Bobby L., 5,343,284, Cl. 356-5.000.

Ullman, Edwin F.: *See—*
Litman, David J.; and Ullman, Edwin F., 5,342,759, Cl. 435-7.920.

Ultimatte Corporation: *See—*
Dadourian, Arpag, 5,343,252, Cl. 348-586.000.

Umeki, Tetsuya: *See—*
Hirashima, Isao; Umeki, Tetsuya; Maeta, Hiroshi; and Kohno, Shigefumi, 5,342,085, Cl. 280-728.00B.

Umemura, Shin-ichi; and Yashiro, Sadao, to Morinaga & Co., Ltd. Process for producing ices. 5,341,648, Cl. 62-73.000.

Unger, Liliane: *See—*
Mueller, Claus D.; and Unger, Liliane, 5,342,853, Cl. 514-523.000.
Treiber, Hans-Joerg; Hofmann, Hans P.; Szabo, Laszlo; Unger, Liliane; and Raschack, Manfred, 5,342,839, Cl. 514-255.000.

Uni-Charm Corporation: *See—*
Igaue, Takamitsu; Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; Sasaki, Tohru; Shimakawa, Taiji; and Yamamoto, Hiroki, 5,342,341, Cl. 604-385.200.
Kitaoka, Hideaki, 5,342,342, Cl. 604-385.200.
Kitaoka, Hideaki; and Sasaki, Tohru, 5,342,343, Cl. 604-385.200.

Union Carbide Chemicals & Plastics Technology Corporation: *See—*
Bartley, William J., 5,342,987, Cl. 560-245.000.
Cann, Kevin J.; Hussein, Fathi D.; Lee, Kiu H.; Zilker, Daniel P., Jr.; Nicoletti, James W.; and Bai, Xinlai, 5,342,907, Cl. 526-129.000.
Jenkins, Richard D.; Bassett, David R.; and Shay, Gregory D., 5,342,883, Cl. 524-845.000.
Koleske, Joseph V.; Smith, Donald F., Jr.; and Weber, Robert J., Jr., 5,342,891, Cl. 525-162.000.

Union Oil Company of California: *See—*
Brown, Roger A.; Pilling, Richard L.; and Young, Donald C., 5,342,629, Cl. 424-696.000.

Unison Industries, Inc.: *See—*
Frus, John R., 5,343,154, Cl. 324-399.000.

Unisys Corporation: *See—*
Akhavain, Mohammad; and Economy, Ken W., 5,341,564, Cl. 29-832.000.
Farmer, Michael E.; and Hatlestad, John D., 5,343,204, Cl. 342-25.000.
Flora, Laurence P., 5,343,417, Cl. 364-758.000.
Molny, Marvin J.; and Feinberg, Melvin, 5,341,681, Cl. 73-382.00G.

United Kingdom Atomic Energy Authority: *See—*
Turner, Andrew D.; Derham, Stanley D.; and Lovegrove, Peter C., 5,342,514, Cl. 210-193.000.

VOL 1165 ISS 5 AG 30 1994 UMI

United Parcel Service of America, Inc.: *See*—
Figarella, Luis; and Klancnik, Mihael, 5,343,028, Cl. 235-462.000.
U. S. Borax Inc.: *See*—
Schubert, David M., 5,342,553, Cl. 252-609.000.
United States of America
Agriculture: *See*—
Leonhardt, Barbara A.; DeVilbiss, E. David; and Mastro, Victor C., 5,342,618, Cl. 424-409.000.
Air Force: *See*—
Iannello, Victor; Hall, Michael H.; and Kang, Sukhvinder S., 5,342,825, Cl. 505-166.000.
Shubin, Jack A.; Oliver, Gene S.; and Jerabek, Jeff J., 5,341,556, Cl. 29-448.000.
Wilkins, Gary D., 5,343,287, Cl. 356-141.300.
Army: *See*—
Stephens, William D., 5,341,639, Cl. 60-204.000.
Energy: *See*—
Bieg, Lothar F., 5,341,574, Cl. 33-502.000.
Health and Human Services: *See*—
Cole, Katharine H.; Lechner, John F.; and Harris, Curtis C., 5,342,777, Cl. 435-240.310.
National Aeronautics and Space Administration: *See*—
Egalon, Claudio O.; and Rogowski, Robert S., 5,343,035, Cl. 250-227.140.
Egalon, Claudio O.; and Rogowski, Robert S., 5,343,550, Cl. 385-123.000.
Navy: *See*—
Georger, Jacque H., Jr.; Peckerar, Martin C.; Rebbert, Milton L.; Calvert, Jeffrey M.; and Hickman, James J., 5,342,737, Cl. 430-324.000.
Woodall, Robert C., Jr.; Jones, S. Kyle; and Jones, H. Joseph, Jr., 5,341,718, Cl. 89-1.110.
U.S. Philips Corporation: *See*—
Beneking, Claus; Dannert, Horst; Neiger, Manfred; Schorpp, Volker; and Stockwald, Klaus, 5,343,114, Cl. 313-485.000.
Gris, Joel; and Charpail, Francois, 5,343,158, Cl. 328-103.000.
Koppe, Rudolf P.; and Eck, Nicolaas J. H., 5,343,236, Cl. 348-6.000.
Kordts, Jurgen; Nathe, Axel; and Sonnenberger, Paul, 5,343,165, Cl. 330-262.000.
Urbansky, Ralph, 5,343,476, Cl. 370-102.000.
Vogel, Peter, 5,343,247, Cl. 348-402.000.
U.S. Polymers, Inc.: *See*—
Ohanesian, Harout, 5,342,187, Cl. 425-70.000.
United States Surgical Corporation: *See*—
Kennedy, John, 5,342,557, Cl. 264-8.000.
United Technologies Corporation: *See*—
McIntire, Allen J.; and Davis, Geoffrey C., 5,342,464, Cl. 156-172.000.
Perretta, Frederick A.; and Yednasty, Joseph S., 5,342,203, Cl. 439-76.000.
Shane, Eric M.; and McElroy, James F., 5,342,494, Cl. 204-252.000.
Unitor A/S: *See*—
Louis, Olivier, 5,342,230, Cl. 441-42.000.
University Hospital (London) Development Corporation: *See*—
Rickey, Daniel W.; and Fenster, Aaron, 5,341,808, Cl. 128-660.010.
University of California, The Regents of the: *See*—
Hattner, Robert S., 5,342,926, Cl. 534-10.000.
Matsumura, Fumio; and Katayama, Arata, 5,342,779, Cl. 435-262.500.
Spano, Mark L.; Ditto, William L.; Garfinkel, Alan; and Weiss, James N., 5,342,401, Cl. 607-5.000.
Yayla, Gokce; Krishnamoorthy, Ashok V.; and Esener, Sadik C., 5,343,555, Cl. 395-24.000.
University of Central Florida: *See*—
Chai, Bruce H. T.; and Nicholls, John F. H., 5,343,327, Cl. 359-330.000.
University of Florida: *See*—
Burns, Michael J.; and Holbrook, Noel M., 5,341,673, Cl. 73-73.000.
University of Florida Research Foundation, Inc.: *See*—
Bergeron, Raymond J., 5,342,945, Cl. 544-296.000.
University of Miami: *See*—
Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, 5,342,370, Cl. 606-107.000.
University of Michigan, The Regents of the: *See*—
Montoya, Jean P.; Merz, Scott I.; and Bartlett, Robert H., 5,342,182, Cl. 417-477.00R.
University of Minnesota, Regents of the: *See*—
Mohan, Ned; Peterson, Maximilian R.; and Quinn, Conor A., 5,343,079, Cl. 307-105.000.
University of New Mexico: *See*—
Brueck, Steven R. J.; and Zaidi, Saleem H., 5,343,292, Cl. 356-363.000.
Morrow, Cary J.; and Wallace, Joe S., 5,342,780, Cl. 435-280.000.
University of Washington, The Board of Regents of the: *See*—
Harryman, Douglas T., II, 5,342,369, Cl. 606-96.000.
Universty of California, The Regents of the: *See*—
MacKenzie, John D.; Xu, Ren; and Xu, Yuhuan, 5,342,648, Cl. 427-126.300.
Unkelbach, Karl-Heinz; Arbelger, Gunther; and Buettner, Rolf, to Kloeckner-Humboldt-Deutz AG. Apparatus and method for wet-mechanical processing of solids. 5,342,281, Cl. 494-53.000.
Uphues, Guenter; Jaensch, Sven; Ploog, Uwe; and Steinberner, Udo, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of low-viscosity imidazolinium surfactants by quaternization of 1-hydroxyethyl-2-alkyl imidazolines. 5,342,961, Cl. 548-352.100.
Urbanski, Maud: *See*—
Sanfilippo, Pauline J.; Urbanski, Maud; Carson, John R.; and Carmosin, Richard J., 5,342,851, Cl. 514-370.000.
Urbansky, Ralph, to U. S. Philips Corporation. Transmission system for the synchronous digital hierarchy. 5,343,476, Cl. 370-102.000.
Urech, Werner, to Elpatronic AG. Process for seam welding of sheet metal blanks. 5,343,010, Cl. 219-83.000.
Urech, Werner: *See*—
Benedikt, Georg; and Urech, Werner, 5,341,696, Cl. 73-827.000.
Urlings, Leonardus G. C. M.: *See*—
Marsman, Eric H.; Vlekke, Garardus J. F. M.; Urlings, Leonardus G. C. M.; and Reitsma, Berend A. H., 5,342,522, Cl. 210-605.000.
Uskokovic, Milan R.: *See*—
Doran, Thomas I.; McLane, John A.; Okabe, Masami; Scalone, Michelangelo; and Uskokovic, Milan R., 5,342,833, Cl. 514-167.000.
Usui, Hiroaki; Hirao, Shozo; Konishi, Satoru; Ishikawa, Hiroyuki; Oonisi, Kenji; and Adachi, Arihiro, to Matsushita Electric Works, Ltd. Method for manufacturing modified wood. 5,342,651, Cl. 427-209.000.
Usui, Mitsuaki, to Tokyo Electric Co., Ltd. Check-out device with activity sensor terminating article input. 5,343,025, Cl. 235-383.000.
Usui, Yoshinobu: *See*—
Shoda, Akihiko; Usui, Yoshinobu; and Mizutani, Tomoji, 5,343,193, Cl. 340-825.790.
Utsu, Junsi; Mikami, Seishin; and Kodera, Masao, to Nippondenso Co., Ltd. Variable reactance circuit for microwave or millimeter wave band and variable matching circuit using variable reactance circuit. 5,343,172, Cl. 333-32.000.
Vaccaro, John: *See*—
Lombardi, Michael H.; and Vaccaro, John, 5,342,134, Cl. 401-78.000.
Vacher, Bernard Y. J.: *See*—
Hart, Terrance W.; and Vacher, Bernard Y. J., 5,342,848, Cl. 514-357.000.
Vachet, Andre J.: *See*—
Henry, David; Vachet, Andre J.; and Vial, Jacques J., 5,343,260, Cl. 351-159.000.
Vailliencourt, Dwayne G.; and Eberle, Theodore F., Jr., to Hoover Universal, Inc. Hot fill plastic container having reinforced pressure absorption panels. 5,341,946, Cl. 215-1.00C.
Vakharia, Neville: *See*—
Bowman, Jane; Daniel, Ed; Henn, Bob; Levy, Jennifer; and Vakharia, Neville, 5,342,673, Cl. 428-198.000.
Valdiserri, Leo L.: *See*—
Enlow, William P.; and Valdiserri, Leo L., 5,342,978, Cl. 554-78.000.
Valence Technology, Inc.: *See*—
Koksbang, Rene, 5,342,710, Cl. 429-192.000.
Valenite Inc.: *See*—
Wei, George C.; and Walsh, John, 5,342,564, Cl. 264-63.000.
Valenzuela, Ulises M.; and Moguel, Guillermo, to Servicios Corporativos Frisco, S.A. de C.V. Method of separating materials in a flotation reactor. 5,341,938, Cl. 209-164.000.
Valeo Engine Cooling Inc.: *See*—
Mercurio, Carlo V., 5,341,872, Cl. 165-173.000.
Valli, Raymond C.: *See*—
Winston, Philip E., Jr.; Miskiel, Frank J.; and Valli, Raymond C., 5,342,626, Cl. 424-461.000.
Valso, Arve. Flame retarding and smoke retarding mixture. 5,342,656, Cl. 427-394.000.
Value Technology Inc.: *See*—
Hung, Chan-Chi; Lee, Sheng-Yuan; and Kuo, Yao-Jung, 5,343,525, Cl. 380-4.000.
Van den Bergh Foods Co., Division of Conopco, Inc.: *See*—
Cain, Frederick W.; Cebula, Dryck J.; and Hargreaves, Neil G., 5,342,644, Cl. 426-660.000.
Van Brocklin, Owen F., to Risdon Corporation. Method for assembling a dispensing container. 5,341,956, Cl. 222-1.000.
VandenEinde, David A.: *See*—
Losey, Carol; and VandenEinde, David A., 5,342,302, Cl. 604-96.000.
Van den Eynde, Benoit: *See*—
Boon, Thierry; van der Bruggen, Pierre; Van den Eynde, Benoit; Van Pel, Aline; De Plaen, Etienne; Lurquin, Christophe; Chomez, Patrick; and Traversari, Catia, 5,342,774, Cl. 435-240.200.
Vanderbilt, Jeffrey J.; and Meyer, Max F., Jr., to Eastman Chemical Company. Polypropylene-graft-unsaturated polyester compositions and process for the production thereof. 5,342,892, Cl. 525-168.000.
van der Bruggen, Pierre: *See*—
Boon, Thierry; van der Bruggen, Pierre; Van den Eynde, Benoit; Van Pel, Aline; De Plaen, Etienne; Lurquin, Christophe; Chomez, Patrick; and Traversari, Catia, 5,342,774, Cl. 435-240.200.
Vandervalk, Leon C.: *See*—
Koch, Frank J.; Vandervalk, Leon C.; and Beamish, David J., 5,343,146, Cl. 324-230.000.
Van De Velde, Jean-Claude; and Constant, Eugene, to Centre Natinal De La Recherche Scientifique. Method for measuring the temperature of a material by using microwave radiation. 5,341,814, Cl. 128-736.000.
Van Dongen, Richard A.: *See*—
Mandel, Barry P.; and Van Dongen, Richard A., 5,342,034, Cl. 270-53.000.

Vandoninck, Alfons, to Belgium Spray Accessory Factory. Spray can incorporating a discharge pressure regulating system. 5,341,968, Cl. 222-396.000.
van Dorsselaer, Etienne L. M. E.; and Oyen, Johannes P. H., to OCE-Nederland, B.V. Scan/print system for performing image processing and an image selection unit for use in the scan/print system. 5,343,283, Cl. 358-445.000.
Van Gorder, John E., Jr.; Piotrowski, Gary A.; and Piotrowski, Barnard, Jr. Golf cart for ambulatory disadvantaged golfers. 5,341,894, Cl. 180-271.000.
Van Hale, Gregory L. Dental hand piece. 5,342,196, Cl. 433-82.000.
Van Name, Frederick W.; Gerace, Michael A.; Singer, Victor; and Walsh, Brendan M., to Thiokol Corporation. Low cost segmented structure for pressure vessels, rocket motors, piping. 5,341,638, Cl. 60.204.000.
Van Nest, J. F.: *See*—
Pollock, R. A.; and Van Nest, J. F., 5,341,603, Cl. 51-73.00R.
Van Pel, Aline: *See*—
Boon, Thierry; van der Bruggen, Pierre; Van den Eynde, Benoit; Van Pel, Aline; De Plaen, Etienne; Lurquin, Christophe; Chomez, Patrick; and Traversari, Catia, 5,342,774, Cl. 435-240.200.
Van Raemdonck, Walther: *See*—
DeWitte, Marc; and Van Raemdonck, Walther, 5,342,699, Cl. 428-625.000.
van Tetering, Johannes A. M.; and Denissen, Frank L., to Alcatel N.V. Performance measurement system for a telecommunication path and device used therein. 5,343,463, Cl. 370-13.000.
Van Wauwe, Jean P. F.; and Raeymaekers, Alfons H. M., to Janssen Pharmaceutica N.V. Benzimidazoles useful in treating epithelial disorders. 5,342,957, Cl. 548-266.400.
Vareille, Aime ; Schiltz, Andre ; and Hauuy, Jean C., to France Telecom. Optical method for determining relative positions of two pieces and device for its implementation. 5,343,049, Cl. 250-561.000.
Varga, Arthur J.: *See*—
Barton, John C.; Hanby, William J.; Kuhn, Bruce R.; Lathrope, Michael F.; Simanonis, Christopher F.; and Varga, Arthur J., 5,343,461, Cl. 370-13.000.
Varian Associates, Inc.: *See*—
Virshup, Gary, 5,342,451, Cl. 136-244.000.
Varidel, Charly; and Yerly, Marcel, to Bobst SA. Method of assembling a movable upper tool for separating blanks. 5,341,558, Cl. 29-450.000.
Vasilow, Theodore R.; Kuo, Lewis J. H.; and Ruka, Roswell J., to Westinghouse Electric Corporation. Method of making an air electrode material having controlled sinterability. 5,342,704, Cl. 429-31.000.
Vassiliadis, Arthur; Myers, William D.; and Myers, Terry D., to American Dental Technologies, Inc. Dental laser. 5,342,198, Cl. 433-215.000.
Vatel, Bronislav. Pneumatic telescoping cylinder and method. 5,341,724, Cl. 92-53.000.
Veasy, Julian F.; and Freeman, Stephen, to Crosfield Electronics Limited. Force monitor of an electronic paint brush apparatus. 5,343,220, Cl. 345-199.000.
Vebeliunas, Rimas V.: *See*—
Snider, Sheri R.; Bamford, David A.; Vebeliunas, Rimas V.; Halle, Roy T.; and Strack, Robert D., 5,342,509, Cl. 208-351.000.
Vector Magnetics: *See*—
Kuckes, Arthur F., 5,343,152, Cl. 324-346.000.
Venkatadri, Rajagopalan: *See*—
Irvine, Robert L.; and Venkatadri, Rajagopalan, 5,342,765, Cl. 435-71.100.
Venturini, Daniele: *See*—
Faccioli, Giovanni; and Venturini, Daniele, 5,342,360, Cl. 606-59.000.
Vera, Jean-Claude, to ECIA-Equipements et Composants Pour l'Industrie Automobile. Cowl for fan and its application to a vehicle motorized fan unit. 5,342,173, Cl. 416-169.00A.
Verdonck, Emiel: *See*—
Defieuw, Geert; and Verdonck, Emiel, 5,342,820, Cl. 503-227.000.
Veyrat, Christine: *See*—
Pepin, Regis; Schmitz, Christian; Lacroix, Guy-Bernard; Dellis, Philippe; and Veyrat, Christine, 5,342,835, Cl. 514-227.500.
Vial, Jacques J.: *See*—
Henry, David; Vachet, Andre J.; and Vial, Jacques J., 5,343,260, Cl. 351-159.000.
Vicari, Richard; Gordon, Douglas J.; Hinsberg, William D.; McKean, Dennis R.; Willson, Carlton G.; and Dammel, Ralph, to Hoechst Celanese Corp.; and International Business Machines Corporation. Copolymers of 4-hydroxystyrene and alkyl substituted-4-hydroxystyrene in admixture with a photosensitizer to form a photosensitive composition. 5,342,727, Cl. 430-157.000.
Vickers, Wilbraham C. K.: *See*—
Rissik, George V.; and Vickers, Wilbraham C. K., 5,341,847, Cl. 137-875.000.
Victor Company of Japan, Ltd.: *See*—
Nishi, Yuji, 5,343,253, Cl. 348-614.000.
Nishima, Ryo; Kinjo, Hisao; Mizuno, Yoshio; Shudo, Katsuyuki; and Kawase, Shigeru, 5,343,348, Cl. 360-109.000.
Sasajima, Yasutaka, 5,343,336, Cl. 360-55.000.
Tanaka, Hideshi; Takanashi, Itsuo; Tada, Shigeaki; and Takahashi, Toshinori, 5,342,132, Cl. 400-120.180.
Victorian College of Pharmacy Ltd.: *See*—
Williams, Alan H.; Staples, Linton D.; Thiel, William J.; Oppenheim, Richard C.; and Clarke, Iain J., 5,342,622, Cl. 424-425.000.
Vielberth, Johann. Process and device for catching fish. 5,343,442, Cl. 367-139.000.
Viera, Fernando M., to Cordis Corporation. Elongated guidewire for use in dilation procedures. 5,341,817, Cl. 128-772.000.
Viprotec: *See*—
Petersen, Robert L., 5,341,762, Cl. 116-137.00A.
Viricel, Gilles, to Gemplus Card International. Method for the authentication of data. 5,343,530, Cl. 380-23.000.
Virshup, Gary, to Varian Associates, Inc. Semiconductor optical power receiver. 5,342,451, Cl. 136-244.000.
Viscodrive GmbH: *See*—
Amborn, Peter; and Hildebrandt, Wolfgang, 5,342,256, Cl. 475-252.000.
Vishnupad, Mohan: *See*—
Ramirez, Jose E.; and Vishnupad, Mohan, 5,342,535, Cl. 252-135.000.
Visser, Jacobus H.: *See*—
Hamburg, Douglas R.; Logothetis, Eleftherios M.; Soltis, Richard E.; and Visser, Jacobus H., 5,341,643, Cl. 60-276.000.
Vitali, Mario: *See*—
Addeo, Antonio; Vitali, Mario; and Bonari, Roberto, 5,342,463, Cl. 156-156.000.
Vlekke, Garardus J. F. M.: *See*—
Marsman, Eric H.; Vlekke, Garardus J. F. M.; Urlings, Leonardus G. C. M.; and Reitsma, Berend A. H., 5,342,522, Cl. 210-605.000.
VLSI Technology, Inc.: *See*—
Cain, John L., 5,342,476, Cl. 136-643.000.
Huang, Tiao-Yuan, 5,342,798, Cl. 437-41.000.
Shiffer, James D., II, 5,343,058, Cl. 257-204.000.
Tung, Francisca; and Okumoto, Victor H., 5,342,495, Cl. 204-297.00R.
Wei, Yi-Hen, 5,342,794, Cl. 437-31.000.
Voelcker, Alexander: *See*—
Weise, Wolfgang; Voelcker, Alexander; Kaufmann, Dieter; Malikowski, Willi; Beuers, Joerg; and Krappitz, Harald, 5,341,981, Cl. 228-262.900.
Voest-Alpine Eisenbahnsysteme Gesellschaft m.b.H.: *See*—
Blumauer, Johannes, 5,342,457, Cl. 148-534.000.
Vogel, Peter, to U.S. Philips Corporation. Filter circuit for preprocessing a video signal to be coded. 5,343,247, Cl. 348-402.000.
Vogelgesang, Peter J.; and Wirth, Wayne M., to Minnesota Mining and Manufacturing Company. Method of molding optical recording drums. 5,342,682, Cl. 428-325.000.
Vogels, Claude: *See*—
Deremince, Veronique; and Vogels, Claude, 5,342,603, Cl. 423-588.000.
Voges, Dieter: *See*—
Kampfmann, Wolfgang; Schmitt, Hubert; and Voges, Dieter, 5,342,118, Cl. 303-97.000.
Vogt, Howard W.: *See*—
Cutright, Edwin L.; Scott, G. Robert; and Vogt, Howard W., 5,342,484, Cl. 162-139.000.
Voisine, John T.; Anderson, Christopher L.; Slaven, Robert E.; and Tate, Ronald C., to Landis & Gyr Metering, Inc. Shielded current sensing device for a watthour meter. 5,343,143, Cl. 324-142.000.
Volinsky, Fredric G. Safety scalpel. 5,342,379, Cl. 606-167.000.
Volkhardt, Ursula: *See*—
Herrmann, Wolfgang A.; Wagner, Werner; and Volkhardt, Ursula, 5,342,985, Cl. 556-482.000.
Vollbrecht, Heinz-Rudiger: *See*—
Cully, Jan; and Vollbrecht, Heinz-Rudiger, 5,342,633, Cl. 426-47.000.
Volpe, Christopher J.: *See*—
Hayes, Earl J.; and Volpe, Christopher J., 5,342,226, Cl. 439-845.000.
Volvo Car Sint-Truiden, naamloze vennootschap: *See*—
Adriaenssens, Frank, 5,342,247, Cl. 474-16.000.
Von Herz, Alfons: *See*—
Ahls, Hermann W.; and Von Herz, Alfons, 5,341,909, Cl. 198-335.000.
von Langsdorff, Fritz: *See*—
Barth, Gunther; von Langsdorff, Fritz; and von Langsdorff, Harald, 5,342,142, Cl. 404-41.000.
von Langsdorff, Harald: *See*—
Barth, Gunther; von Langsdorff, Fritz; and von Langsdorff, Harald, 5,342,142, Cl. 404-41.000.
Vos, Dirk J., to Machinefabriek Bollegraaf Appingedam B.V. Apparatus for separating recyclable waste. 5,341,937, Cl. 209-38.000.
Vosbeek, Gerardus J.: *See*—
Rooijakkers, Johannes P. J. C.; Bongers, Andreas M. G.; and Vosbeek, Gerardus J., 5,343,277, Cl. 355-271.000.
Voss, Henry H.: *See*—
Zezulka, Bohuslav J.; Voss, Henry H.; and Fincati, Anne M., 5,341,854, Cl. 141-1.000.
Voumard, Bertrand P., to Isafrance. Watch with watchband attachment. 5,341,552, Cl. 29-179.000.
Voyta, John C.: *See*—
Edwards, Brooks; and Voyta, John C., 5,342,966, Cl. 549-221.000.
W. L. Gore & Associates, Inc.: *See*—
Bowman, Jane; Daniel, Ed; Henn, Bob; Levy, Jennifer; and Vakharia, Neville, 5,342,673, Cl. 428-198.000.
Wu, Huey S., 5,342,434, Cl. 96-13.000.
W. R. Grace & Co.-Conn.: *See*—
Cameron, Craig P.; and Rice, Roy W., 5,342,562, Cl. 264-63.000.

VOL 1165 ISS 5 AG 30 1994 UMI

W. Schlafhorst AG & Co.: *See*—
Wirtz, Ulrich; Greckach, Hans; Irmen, Wolfgang; Hensen, Helmuth; and Bohmer, Walter, 5,341,549, Cl. 28-298.000.

Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, to Seiko Epson Corporation; and Fujimori Kogyo Co. Optically compensating film, optical compensator, and liquid crystal display incorporating the same. 5,343,317, Cl. 359-73.000.

Wada, Sayuri: *See*—
Fujita, Shigeo; Matsumoto, Mansuke; Kumagae, Yojiro; Wada, Sayuri; and Hashimoto, Shuichi, 5,342,967, Cl. 549-226.000.

Wada, Shinji: *See*—
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,343,317, Cl. 359-73.000.

Wada, Shunichi; Hara, Tadayuki; Naito, Yasuo; Kohge, Shinichi; and Nishino, Kazuhisa, to Mitsubishi Denki Kabushiki Kaisha. Motor-driven power steering apparatus and method. 5,341,891, Cl. 180-79.100.

Wada, Toru; Komiya, Yasuhiro; and Nagasaki, Tatsuo, to Olympus Optical Co., Ltd. Image signal processing device capable of suppressing nonuniformity of illumination. 5,343,254, Cl. 348-627.000.

Wada, Yukio: *See*—
Fujimoro, Takuya; and Wada, Yukio, 5,343,085, Cl. 307-272.300.

Wagner, Ludwig: *See*—
Stepanek, Premek; Wagner, Ludwig; and Schuhbauer, Johannes, 5,342,078, Cl. 280-602.000.

Wagner, Wayne M.: *See*—
Friedmann, Francis A.; and Wagner, Wayne M., 5,342,519, Cl. 210-232.000.

Wagner, Werner: *See*—
Herrmann, Wolfgang A.; Wagner, Werner; and Volkhardt, Ursula, 5,342,985, Cl. 556-482.000.

Wahlers, Robert A.: *See*—
Jongsma, Ronald; Lammes, Larry R.; Lewis, Gifford J.; and Wahlers, Robert A., 5,342,446, Cl. 118-65.000.

Waigand, Helmut; and Wallner, Gottfried, to Bosch-Siemens Hausgerate GmbH. Stove with a capacitive sailing sensor and sensor-controlled starting of pyrolysis. 5,343,020, Cl. 219-413.000.

Wake Forest University: *See*—
Davies, Huw M. L.; Saikali, Elie; and Childers, Steven R., 5,342,949, Cl. 546-124.000.

Wakeman, Russell J., to Siemens Automotive L.P. Spoked solenoid armature for an electromechanical valve. 5,341,994, Cl. 239-585.500.

Waldman, Joel N., to Padgett Instruments, Inc. Surgical rasp. 5,342,365, Cl. 606-85.000.

Waldron, Craig: *See*—
Gavin, David F.; Hani, Rahim; Waldron, Craig; and Farmer, Douglas A., Jr., 5,342,437, Cl. 106-18.330.

Walker, Darryl; and McLaughlin, Daniel F., to Texas Instruments Incorporated. Substrate slew circuit process. 5,342,799, Cl. 437-51.000.

Walkowski, Paul D.; and Schliebe, Duane M., to G.T. Products, Inc. Resistor card fuel level sender with float arm actuator. 5,341,679, Cl. 73-317.000.

Wall, Edward L.; and Wall, Frank L., to Wall, Edward L.; and Wall, Frank Lee. Multipurpose pool skimmer. 5,342,513, Cl. 210-169.000.

Wall, Frank L.: *See*—
Wall, Edward L.; and Wall, Frank L., 5,342,513, Cl. 210-169.000.

Wall, Frank Lee: *See*—
Wall, Edward L.; and Wall, Frank L., 5,342,513, Cl. 210-169.000.

Wallace, Henry G. Resealable sampling port. 5,342,316, Cl. 604-167.000.

Wallace, Joe S.: *See*—
Morrow, Cary J.; and Wallace, Joe S., 5,342,780, Cl. 435-280.000.

Wallar, Eric V.: *See*—
Goodzeit, Neil E.; Paluszek, Michael A.; Raman, Kidambi V.; and Wallar, Eric V., 5,343,398, Cl. 364-434.000.

Wallner, Gottfried: *See*—
Waigand, Helmut; and Wallner, Gottfried, 5,343,020, Cl. 219-413.000.

Wallquist, Olof: *See*—
Wooden, Gary; de Weck, Guy; and Wallquist, Olof, 5,342,955, Cl. 548-255.000.

Walls, John E., to Eastman Kodak Company. Scratch remover and desensitizer composition for use with lithographic printing plates. 5,342,435, Cl. 106-2.000.

Walsh, Brendan M.: *See*—
Van Name, Frederick W.; Gerace, Michael A.; Singer, Victor; and Walsh, Brendan M., 5,341,638, Cl. 60-204.000.

Walsh, John: *See*—
Wei, George C.; and Walsh, John, 5,342,564, Cl. 264-63.000.

Walt Disney Company, The: *See*—
Farr, Raymond C., 5,342,225, Cl. 439-817.000.

Walters, David K.; and Barber, Rodney I., to Ethyl Petroleum Additives Limited. Polyalkylene glycol lubricant compositions. 5,342,531, Cl. 252-32.500.

Walton, Charles A. Programmer's anti-slump chair with knee support. 5,342,116, Cl. 297-466.000.

Wan, Shaw P.; and Martinez, Rosendo. Suture guiding device and method of use. 5,342,374, Cl. 606-148.000.

Wang, Han-chung: *See*—
Hall, Shawn A.; Lane, Ramon; and Wang, Han-chung, 5,343,548, Cl. 385-89.000.

Wang, Jih-Wen: *See*—
Peng, Yu-Min; Wang, Jih-Wen; Liue, Chun-Ying; and Yeh, Shinn-Horng, 5,342,502, Cl. 205-109.000.

Wang, Po-Kang: *See*—
Kung, Kenneth T.; Tang, Denny D.; and Wang, Po-Kang, 5,343,422, Cl. 365-173.000.

Wang, Theresa C. Y.; Leopold, Raymond J.; and Moritz, Steven H., to Motorola, Inc. Call setup method for use with a network having mobile end users. 5,343,512, Cl. 379-59.000.

Wang, Tsung-Hsiung: *See*—
Chen, Ker-Ming; Wang, Tsung-Hsiung; King, Shing-Shing; and Lee, Tzong-Ming, 5,342,736, Cl. 430-323.000.

Wangler, Johannes, to Carl-Zeiss-Stiftung. Arrangement for shaping a laser beam and for reducing the coherence thereof. 5,343,489, Cl. 372-93.000.

Wanzl-Dacho, Karin: *See*—
Zwinselman, Jan J.; Everett, John P.; and Wanzl-Dacho, Karin, 5,342,865, Cl. 523-414.000.

Ward, E. Theodore: *See*—
Budjinski, Joseph F.; Campbell, Steven M.; and Ward, E. Theodore, 5,342,657, Cl. 427-424.000.

Ward, Michael D.; and Ebersole, Richard C., to Du Pont de Nemours, E. I., and Company. Piezoelectric specific binding assay with mass amplified reagents. 5,342,791, Cl. 436-525.000.

Ward, Paul C.: *See*—
Pummell, Leslie J. H.; Ward, Paul C.; Kingdon, Stephen J.; and Oldfield, James A., 5,343,266, Cl. 354-340.000.

Ward, Raymond. Inflatable crib with carrying straps. 5,341,530, Cl. 5-93.100.

Warden, Laurence; and Esser, Keith, to Biomagnetic Technologies, Inc. Method of preparing film adhesive thermal foil. 5,341,555, Cl. 29-469.500.

Wardlaw, Stephen C.: *See*—
Levine, Robert A.; Wardlaw, Stephen C.; Terstappen, Leon W. M. M.; Mercolino, Thomas J.; and Recktenwald, Diether J., 5,342,790, Cl. 436-523.000.

Wariishi, Koji, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,342,744, Cl. 430-522.000.

Warner, John: *See*—
DeMars, Jimmy A.; Ruhter, Virgil, Jr.; Warner, John; and Schmidt, William G., 5,341,914, Cl. 198-418.600.

Warner-Lambert Company: *See*—
Beylin, Vladimir Genukh; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,342,959, Cl. 548-327.500.
Butler, Donald E.; Le, Tung V.; and Nanninga, Thomas N., 5,342,952, Cl. 546-245.000.
Jaen, Juan C.; and Caprathe, Bradley W., 5,342,942, Cl. 544-250.000.
Laborde, Edgardo; and Schroeder, Mel, 5,342,844, Cl. 514-300.000.

Warren, Bobby G., Jr.; and Davis, James D. Access and support apparatus for loading and unloading gondola cars. 5,342,159, Cl. 414-339.000.

Warrick, Steven B.: *See*—
Chung, Daniel K.; and Warrick, Steven B., 5,342,538, Cl. 252-180.000.

Washington University: *See*—
Marshall, Garland R.; and Toth, Mihaly V., 5,342,922, Cl. 530-329.000.
Thach, Robert E., 5,342,782, Cl. 435-320.100.

Wasinger, Eric; and Hall, David, to Wasinger, Eric. Ozone decolorization of garments. 5,342,415, Cl. 8-111.000.

Wass, Lloyd G.; and Baird, Michael R. Crash proof solenoid controlled valve with manual override valve. 5,341,844, Cl. 137-613.000.

Wasserman, David: *See*—
Davis, Warren; Wasserman, David; and Mathews, Richard R., 5,342,195, Cl. 433-80.000.

Watanabe, Katsuya; Shibano, Masayuki; Yamaguchi, Hiroyuki; Edahiro, Yasuaki; and Moriya, Mitsuro, to Matsushita Electric Industrial Co., Ltd. Tracking control apparatus for correcting tracking error signal according to approximate equation of a function of track address. 5,343,454, Cl. 369-44.320.

Watanabe, Taizo: *See*—
Tosa, Tetsuya; Sato, Tadashi; Watanabe, Taizo; and Minobe, Satoshi, 5,342,785, Cl. 436-178.000.

Watanabe, Takashi: *See*—
Tanaka, Juichi; Yuzurihara, Itsuo; and Watanabe, Takashi, 5,343,377, Cl. 363-17.000.

Watanabe, Yasushi, to Nikko Tokki Co., Ltd. Meat processing machine. 5,342,235, Cl. 452-141.000.

Watanabe, Yoji: *See*—
Itoh, Junichi; Dai, Masahiro; and Watanabe, Yoji, 5,343,264, Cl. 354-106.000.

Watanabe, Yoko: *See*—
Egusa, Syun; and Watanabe, Yoko, 5,343,050, Cl. 257-40.000.

Watanabe, Yukiyoshi: *See*—
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, 5,342,954, Cl. 548-251.000.

Waterman, Timothy J.: *See*—
Beck, Scott A.; Mills, Rex R.; and Waterman, Timothy J., 5,341,796, Cl. 126-110.00R.
Chou, Rudy S.; Larsen, Michael J.; Ramshankar, Rengasamy; Rieke, Larry D.; and Waterman, Timothy J., 5,341,795, Cl. 126-110.00R.

Watson, David. Decorative form for chain link fences. 5,342,021, Cl. 256-1.000.

Watson, M. Burnell. Piston for tank. 5,341,726, Cl. 92-80.000.

Watson, Robert L.; and Shober, Robert C., Jr. Transdermal injection appliance. 5,342,319, Cl. 604-180.000.

Watts, Alan B. Aircraft landing guidance system and method. 5,343,395, Cl. 364-428.000.

Watts, Eudell, III. Simulated baseball game. 5,342,061, Cl. 273-341.000.

Watts Investment Company: *See*—
Ackroyd, Rand H., 5,341,987, Cl. 236-12.210.

Watts, Jackie C., to Phillips Petroleum Company. Nonlinear model based distillation control. 5,343,407, Cl. 364-501.000.

Way, Peter F.; and Petitjean, William L., to Cadence Environmental Energy, Inc. Swing arm feeder. 5,341,962, Cl. 222-248.000.

Wayne Technology, Inc.: *See*—
Breu, Fred A., 5,342,421, Cl. 55-222.000.

Weatherford U.S., Inc.: *See*—
Carter, Thurman B.; and Schnitker, Mark W., 5,341,873, Cl. 166-117.500.

Webb, Ted J., Jr. Bouncing swing. 5,342,245, Cl. 472-118.000.

Weber, Christian; and Grammes, Hartwig, to Bayer Aktiengesellschaft. Process for producing integral skin molded foams. 5,342,856, Cl. 521-51.000.

Weber Marking Systems, Inc.: *See*—
Killey, Edward J., 5,342,672, Cl. 428-195.000.

Weber, Paul J.: *See*—
Chen, Chi-yu R.; and Weber, Paul J., 5,341,932, Cl. 206-524.700.

Weber, Rainer: *See*—
Pohmer, Klaus; Weber, Rainer; Block, Hans-Dieter; Dorzhach-Lange, Cornelia; and Moretto, Hans-Heinrich, 5,342,986, Cl. 558-45.000.

Weber, Robert J., Jr.: *See*—
Koleske, Joseph V.; Smith, Donald F., Jr.; and Weber, Robert J., Jr., 5,342,891, Cl. 525-162.000.

Webster, Elizabeth T.: *See*—
Anderson, Marc A.; Webster, Elizabeth T.; and Xu, Qunyin, 5,342,431, Cl. 95-45.000.

Wedelin, Dag. Method and apparatus for optimally allocating resources. 5,343,388, Cl. 364-402.000.

Weernink, William C., to Tursso Companies, Inc. Wrap around label. 5,342,093, Cl. 285-81.000.

Wegmann, Urs; and Koller, Albert, to Balzers Aktiengesellschaft. Cathode arrangement. 5,343,112, Cl. 313-346.00R.

Wegner, Brigitte: *See*—
Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, 5,342,916, Cl. 528-150.000.

Wei, George C.; and Walsh, John, to Valenite Inc. Rapid sintering method for producing alumina-titanium carbide composites. 5,342,564, Cl. 264-63.000.

Wei, Yi-Hen, to VLSI Technology, Inc. Method for forming laterally graded deposit-type emitter for bipolar transistor. 5,342,794, Cl. 437-31.000.

Weigel, Albrecht; and Schmidt-Eisenlohr, Uwe, to MTU Motoren-Und Turbinen-Union GmbH. Adjustable radial-flow diffuser. 5,342,168, Cl. 415-148.000.

Weiler, Horst: *See*—
Horn, Klaus; Lingnau, Juergen; and Weiler, Horst, 5,342,582, Cl. 422-105.000.

Weir, William D.: *See*—
McDade, Christine; Phadke, Makarand D.; and Weir, William D., 5,342,487, Cl. 203-6.000.

Weisbrod, Norbert G., to Albert Frankenthal Aktiengesellschaft. Short inking apparatus for a rotary press. 5,341,733, Cl. 101-148.000.

Weise, Wolfgang; Voelcker, Alexander; Kaufmann, Dieter; Malikowski, Willi; Beuers, Joerg; and Krappitz, Harald, to Degussa Aktiengesellschaft. Use of a cadmium-free silver alloy as brazing solder (III). 5,341,981, Cl. 228-262.900.

Weiser, Juergen; Reuther, Wolfgang; Stork, Karl; Schaffer, Ortwin; Franzmann, Gernot; Schwerzel, Thomas; Angel, Maximilian; Pakusch, Joachim; and Wegner, Brigitte, to BASF Aktiengesellschaft. Condensation polymers of sulfonated phenols, urea, other organic nitrogen-bases, and formaldehyde, and their use as tanning agents and as spraying aids for redispersible polymer powders. 5,342,916, Cl. 528-150.000.

Weiss, James N.: *See*—
Spano, Mark L.; Ditto, William L.; Garfinkel, Alan; and Weiss, James N., 5,342,401, Cl. 607-5.000.

Weisser, Jurgen: *See*—
Traubel, Harro; Weisser, Jurgen; and Reiff, Helmut, 5,342,556, Cl. 264-4.700.

Weisshaupl, Horst: *See*—
Artnik, Josef; Bittermann, Dietmar; Eyink, Jurgen; Fischer, Ulrich; Gobel, Andreas; Hellmann, Sieghard; Kohler, Wolfgang; Korn, Walter; Plank, Hermann; Scholz, Manfred; and Weisshaupl, Horst, 5,343,506, Cl. 376-280.000.

Welbourn, Anthony D., to British Telecommunications public limited company. Self-aligned V-grooves and waveguides. 5,342,478, Cl. 156-643.000.

Welch Allyn, Inc.: *See*—
Miller, William R., 5,343,368, Cl. 362-32.000.

Weldotron of Delaware, Inc.: *See*—
Siegel, Martin, 5,341,623, Cl. 53-433.000.

Welker, John B.: *See*—
Hughes, Gregory G.; Guntly, Leon A.; Welker, John B.; Hill, David; Rogers, C. James; Henkes, Jerome P.; and Reinke, Michael J., 5,341,870, Cl. 165-110.000.

Wellach, Adolf. Tool holder for machine tools. 5,342,069, Cl. 279-16.000.

Wellcome Foundation Limited, The: *See*—
Cohen, Adam F., 5,342,616, Cl. 424-94.640.

Weller-Brophy, Laura A.: *See*—
Boyd, Gary T.; Lee, Tzu-Chen; Sventek, Bruce A.; Cross, Elisa M.; and Weller-Brophy, Laura A., 5,343,544, Cl. 385-46.000.

Weller, George V.: *See*—
Hodges, Ronald R.; and Weller, George V., 5,341,615, Cl. 52-220.700.

Wellinga, Kobus; and Mulder, Rudolf, to Solvay Duphar International Research B.V. Organic compounds derived from urea or thiourea. 5,342,958, Cl. 548-317.500.

Wellman, Timothy A.; Dammeyer, Ned E.; and Conley, Walter, III, to Crown Equipment Corporation. Method and apparatus for monitoring the proper operation of a hall effect device used in detecting buried magnets in a control system for materials handling vehicles. 5,343,145, Cl. 324-202.000.

Wells, Marvin H. Articular skeleton, insect protective garment. 5,341,511, Cl. 2-2.000.

Welter, Lawrence H.; Downey, Scott D.; and Hall, Todd A., to Cook Incorporated. Helical surgical snare. 5,342,371, Cl. 606-113.000.

Welter, Thomas R.; and Texter, John, to Eastman Kodak Company. Dye releasing couplers for color diffusion transfer elements with dye barrier layers. 5,342,730, Cl. 430-213.000.

Wendt, DaVid C.; Lapota, Robert J.; and Flierl, Karl T., to Harnischfeger Corporation. Method for checking brake torque. 5,343,134, Cl. 318-757.000.

Wesolowski, Jan S., to Ampex Systems Corporation. Input clock presence detector for a digital video input. 5,343,301, Cl. 348-500.000.

West, Michael H. Remedial wood preservative. 5,342,438, Cl. 106-18.300.

West, Neil L.; Hall, James W.; Stickler, Mark F.; and Day, Richard L., to Deere & Company. Operation parameters for an axial separator. 5,342,239, Cl. 460-69.000.

Westerm Publishing Co., Inc.: *See*—
Arasim, James D., 5,341,923, Cl. 206-214.000.

Western Publishing Co., Inc.: *See*—
Williamson, Craig; Luecke, Mark; Wildman, John R.; and O'Patka, Dennis J., 5,342,064, Cl. 273-447.000.

Westfalia Becorit Industrietechnik GmbH: *See*—
Paschedag, Ulrich; and Merten, Gerhard, 5,343,130, Cl. 318-434.000.

Westinghouse Electric Corporation: *See*—
Arnold, Edward C.; and Guina, Milan M., 5,343,507, Cl. 376-298.000.
Gyugyi, Laszlo; and Schauder, Colin D., 5,343,139, Cl. 323-207.000.
Vasilow, Theodore R.; Kuo, Lewis J. H.; and Ruka, Roswell J., 5,342,704, Cl. 429-31.000.

Westphal, Michael; Knuttel, Bertold; and Schmidt, Hartmut, to Bruker Analytische Mebtechnik GmbH. Gradient coil system. 5,343,148, Cl. 324-309.000.

Westphalen, Karl-Otto: *See*—
Rueb, Lothar; Eicken, Karl; Plath, Peter; Schwalge, Barbara; Westphalen, Karl-Otto; Wuerzer, Bruno; and Meyer, Norbert, 5,342,824, Cl. 504-221.000.

Wheeler, Alton D. Male disposable incontinence device. 5,342,332, Cl. 604-349.000.

Whipple, Walter, III: *See*—
Dausch, Mark E.; Whipple, Walter, III; Cooper, Terry C.; and Schneider, David A., 5,341,661, Cl. 68-207.000.

Whitaker Corporation, The: *See*—
Broeksteeg, Johannes M., 5,342,211, Cl. 439-108.000.
Davis, Wayne S.; Whiteman, Robert N., Jr.; and Shirk, Michael E., 5,342,216, Cl. 439-362.000.
Grabbe, Dimitry G.; and Korsunsky, Iosif, 5,342,206, Cl. 439-71.000.
Kodama, Hiromitsu, 5,342,220, Cl. 439-607.000.
Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., 5,343,361, Cl. 361-710.000.
Xu, Wills J.; and Bricker, Michael W., 5,342,991, Cl. 174-117.00R.

White, Danny R.: *See*—
Niskanen, Paul W.; White, Danny R.; Mortenson, Mark G.; and Antolin, Stanislav, 5,342,812, Cl. 501-127.000.

White, Paul F. Constant current wire crossing apparatus for overhead electrically operated vehicles. 5,341,906, Cl. 191-37.000.

White, Robert: *See*—
Wyner, Elliot; White, Robert; Makhlis, Semyon; and Davey, Ernest, Jr., 5,343,117, Cl. 313-623.000.

Whitehead, Derek J., to Castex Products Limited. Magnesium manganese alloy. 5,342,576, Cl. 420-413.000.

Whiteman, Robert N., Jr.: *See*—
Davis, Wayne S.; Whiteman, Robert N., Jr.; and Shirk, Michael E., 5,342,216, Cl. 439-362.000.

Whiteside, Leo A.; and Wiley, Roy C., to Biomet, Inc. Surgical instruments for hip revision. 5,342,366, Cl. 606-86.000.

Whiteside, Leo A.: *See*—
Ferrante, Joseph M.; Fichera, Alfred J.; and Whiteside, Leo A., 5,342,367, Cl. 606-86.000.

Whitley, Lawrence D.: *See*—
Kiel, Harvey G.; Peterson, Ricky M.; and Whitley, Lawrence D., 5,343,557, Cl. 395-118.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Whitmire, Randall K.: *See*—
Chavez, Johnny, Jr.; Farnum, Andrew S.; Nace, Vaughn M.; Plepys, Raymond A.; Whitmire, Randall K.; Kent, Van A.; Bettge, Paul D.; and Friedli, Hans R., 5,342,541, Cl. 252-182.270.
Whitt, Leonard A. Float tube anchor apparatus. 5,342,229, Cl. 441-6.000.
Wichinsky, Michael; Gutknecht, Leroy H.; and Fernandez, Claude A. Gaming machine with skill feature. 5,342,049, Cl. 273-119.00R.
Wickramanayake, Palitha, to Hewlett-Packard Corporation. Black-to-color bleed control in thermal ink-jet printing. 5,342,440, Cl. 106-22.00R.
Widenhouse, Christopher W.: *See*—
Prosise, Robert L.; Widenhouse, Christopher W.; Wnuk, Andrew J.; Bunke, Paul R.; and Milenkevich, Joseph A., 5,343,024, Cl. 219-730.000.
Wiener, Timothy J.: *See*—
Miller, Douglas R.; Wiener, Timothy J.; and Collins, Gregory J., 5,342,070, Cl. 280-11.220.
Wiese, Gary E.; Lee, J. Donald; and Newberg, G. Edward, to Martin Marietta Corporation. Thermal reference technique for flir sensors. 5,343,040, Cl. 250-252.100.
Wiest, Peter P.; and Korejwo, Richard. Gas connection device for insufflation equipment. 5,342,294, Cl. 604-26.000.
Wilcox, Donald R., II. Folding artificial Christmas tree. 5,342,661, Cl. 428-18.000.
Wild, Jochen: *See*—
Harreus, Albrecht; Wolf, Bernd; and Wild, Jochen, 5,342,972, Cl. 549-462.000.
Wilder, Duane C.: *See*—
Fleenor, J. Jerome; and Wilder, Duane C., 5,341,925, Cl. 206-268.000.
Wildman, John R.: *See*—
Williamson, Craig; Luecke, Mark; Wildman, John R.; and O'Patka, Dennis J., 5,342,064, Cl. 273-447.000.
Wiley, Roy C.: *See*—
Whiteside, Leo A.; and Wiley, Roy C., 5,342,366, Cl. 606-86.000.
Wilkins, Gary D., to United States of America, Air Force. Integrated atmospheric transverse coherence length/laser radiation angle-of-arrival measurement system. 5,343,287, Cl. 356-141.300.
Wilkins, Steve, to Snap-Tite, Inc. Multiple coupling device. 5,342,098, Cl. 285-26.000.
Wilkinson, Charles R.: *See*—
Trumbore, David C.; Franzen, Michael R.; and Wilkinson, Charles R., 5,342,866, Cl. 524-68.000.
Wilkinson, Iain J.: *See*—
Rowe, Christopher J.; Mortimore, David B.; Wilkinson, Iain J.; and Achurch, Nicholas E., 5,342,425, Cl. 65-501.000.
Wilkinson, Roy R.; and Phillips, Anthony, to Scott Bader Company Limited. Antipopping agents for powder coating compositions. 5,342,893, Cl. 525-176.000.
Willemsen, Stephanus: *See*—
Guersen, Herman J.; and Willemsen, Stephanus, 5,342,686, Cl. 428-378.000.
Wm. Wrigley Jr. Company: *See*—
Yatka, Robert J.; Reed, Michael A.; and Broderick, Kevin B., 5,342,631, Cl. 426-3.000.
Williams, Alan H.; Staples, Linton D.; Thiel, William J.; Oppenheim, Richard C.; and Clarke, Iain J., to State of Victoria, The; Victorian College of Pharmacy Ltd.; and Monash Medical Centre. Subdermal biocompatible implants. 5,342,622, Cl. 424-425.000.
Williams, Austin M., to Hughes Aircraft Company. Simulated coupled inductors using generalized impedance converters. 5,343,177, Cl. 333-213.000.
Williams, David. Variable speed drive for a bicycle. 5,342,075, Cl. 280-236.000.
Williams International Corporation: *See*—
Foley, Michael G., 5,341,602, Cl. 51-2.00R.
Williams, Michael R.: *See*—
Henley, Ronald W.; Quates, Ronald D.; Williams, Michael R.; and Wong, Henry, 5,342,066, Cl. 277-116.200.
Williams, Robert K.: *See*—
Gaylord, William B., Jr.; Butzin, Donald F.; and Williams, Robert K., 5,343,504, Cl. 376-247.000.
Williams, William C.: *See*—
Stangle, Gregory C.; and Williams, William C., 5,342,572, Cl. 419-45.000.
Williamson, Craig; Luecke, Mark; Wildman, John R.; and O'Patka, Dennis J., to Western Publishing Co., Inc. Acquisition game. 5,342,064, Cl. 273-447.000.
Willis, Mitchell J.: *See*—
Forbus, Ellen S.; Gantt, George E.; Willis, Mitchell J.; and Young, Raymond H., 5,342,443, Cl. 106-488.000.
Willocx, Eddie L. M.; Guebels, Pierre-Paul F. M. M.; and Moons, Elve D. J., to Alcatel N.V. Impedance synthesis multile loop using filtering means. 5,343,520, Cl. 379-399.000.
Willows, Barry L., to Kriel, Roger C. Dispensing device. 5,341,933, Cl. 206-554.000.
Willson, Carlton G.: *See*—
Vicari, Richard; Gordon, Douglas J.; Hinsberg, William D.; McKean, Dennis R.; Willson, Carlton G.; and Dammel, Ralph, 5,342,727, Cl. 430-157.000.
Wilson, Christopher C. Retrievable packer. 5,341,874, Cl. 166-196.000.
Wilson, David A.; Garlich, Joseph R.; Frank, R. Keith; McMillan, Kenneth; and Simon, Jaime, to Dow Chemical Company, The. Complexes possessing ortho ligating functionality. 5,342,604, Cl. 424-1.650.
Wilson, David A.; Frank, R. Keith; Garlich, Joseph R.; and Simon, Jaime, to Dow Chemical Company, The. Radioactive compositions for soft tissue tumors. 5,342,925, Cl. 534-10.000.
Wilson, David A.: *See*—
Christiansen, Steven H.; Chang, Dane; and Wilson, David A., 5,342,593, Cl. 423-242.600.
Wilson, David L. Device for inducing saccadic eye movement. 5,343,261, Cl. 351-203.000.
Wilson, John C., to Eastman Kodak Company. Toner manufacture using chain transfer polyesters. 5,342,724, Cl. 430-114.000.
Wilson, Malcolm A. Display system. 5,342,014, Cl. 248-476.000.
Wimbock Besitz GmbH: *See*—
Wimbock, Peter, 5,342,422, Cl. 55-444.000.
Wimbock, Peter, to Wimbock Besitz GmbH. Apparatus for separating particles, in particular oil or fat particles. 5,342,422, Cl. 55-444.000.
Windmoller & Holscher: *See*—
Rogge, Dieter; and Koopmann, Dietmar, 5,341,739, Cl. 101-247.000.
Winsor, Mark D. Planar fluorescent lamp having a serpentine chamber and sidewall electrodes. 5,343,116, Cl. 313-493.000.
Winston, Philip E., Jr.; Miskiel, Frank J.; and Valli, Raymond C., to Merck & Co., Inc. Composition and process for gelatin-free soft capsules. 5,342,626, Cl. 424-461.000.
Winters, Suzanne; Solen, Kenneth A.; Sanders, Clifton G.; Mortensen, J. D.; and Berry, Gaylord, to Cardiopulmonics, Inc. Multifunctional thrombo-resistant coating and methods of manufacture. 5,342,693, Cl. 428-447.000.
Winterton, Dean A., to Farmer's Factory Co., a part interest. Rotary row cleaner for a planter. 5,341,754, Cl. 111-139.000.
Wirth, Wayne M.: *See*—
Vogelgesang, Peter J.; and Wirth, Wayne M., 5,342,682, Cl. 428-325.000.
Wirtz, Ulrich; Grecksch, Hans; Irmen, Wolfgang; Hensen, Helmuth; and Bohmer, Walter, to W. Schlafhorst AG & Co. Apparatus for removing yarn remnants. 5,341,549, Cl. 28-298.000.
Wisconsin Alumni Research Foundation: *See*—
Anderson, Marc A.; Webster, Elizabeth T.; and Xu, Qunyin, 5,342,431, Cl. 95-45.000.
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; Sicinski, Rafal R.; and Prahl, Jean M., 5,342,975, Cl. 552-653.000.
Farrell, Patrick V.; Lee, Janghee; and Beal, Andrew B., 5,343,483, Cl. 372-10.000.
Limbach, Steven T., 5,343,018, Cl. 219-200.000.
Mosher, Deane F.; and Sottile, Jane M., 5,342,762, Cl. 435-69.100.
Yahnke, Mark S.; Shlomo, Golan; and Anderson, Marc A., 5,342,709, Cl. 429-162.000.
Wisconsin Electric Power Company: *See*—
Nechvatal, Timothy M.; and Heian, Glenn A., 5,342,442, Cl. 106-409.000.
Wise, Kensall D.: *See*—
Spangler, Leland J.; and Wise, Kensall D., 5,343,064, Cl. 257-350.000.
Wnuk, Andrew J.: *See*—
Prosise, Robert L.; Widenhouse, Christopher W.; Wnuk, Andrew J.; Bunke, Paul R.; and Milenkevich, Joseph A., 5,343,024, Cl. 219-730.000.
Wohr, Peter, to Alcatel N.V. Space/time switching element having input/output circuits each separately switchable between two or more bit rates. 5,343,467, Cl. 370-59.000.
Wolf, Bernd: *See*—
Harreus, Albrecht; Wolf, Bernd; and Wild, Jochen, 5,342,972, Cl. 549-462.000.
Wolf, David E.: *See*—
Chick, William L.; Wolf, David E.; and Cardullo, Richard A., 5,342,789, Cl. 436-501.000.
Wolf, Peter A.; Clare, Kenneth, deceased (by Clare, Jean, executor); and Kuo, Kun P., to PepsiCo Inc. Protein/alkylene glycol alginate complex as an emulsifier and stabilizer. 5,342,643, Cl. 426-590.000.
Wolf, Philip F.: *See*—
Tseng, Susan Y.; and Wolf, Philip F., 5,342,964, Cl. 548-552.000.
Wolf, Rainer: *See*—
Stoll, Klaus; and Wolf, Rainer, 5,342,869, Cl. 524-125.000.
Wolff, Peter C.: *See*—
Bullis, Stephen J.; Perrin, David P.; and Wolff, Peter C., 5,341,719, Cl. 89-16.000
Wolff, Thomas E.: *See*—
Brugge, Stephen P.; Holzhauer, Juergen K.; and Wolff, Thomas E., 5,342,968, Cl. 549-241.000.
Wolinski, Leon E.: *See*—
Melber, George E.; Wolinski, Leon E.; and Oswald, William A., 5,342,689, Cl. 428-402.220.
Wolleb, Heinz; Hafner, Andreas; and Rolfe, William M., to Ciba-Geigy Corporation. Process for the preparation of adducts of epoxides and alcohols. 5,342,903, Cl. 525-407.000.
Wollweber, Hartmund: *See*—
Behner, Otto; Wollweber, Hartmund; Goldmann, Siegfried; Rosen, Bruno; and Zaiss, Siegfried, 5,342,847, Cl. 514-356.000.
Wolpers, Jurgen; Zerpner, Dieter; and Nordsiek, Karl-Heinz, to Huls Aktiengesellschaft. Process for the preparation of diene rubber vulcanizates. 5,342,900, Cl. 525-329.300.
Woltz, Claude C, Jr.: *See*—
Conviser, Stephen A.; and Woltz, Claude C, Jr., 5,342,579, Cl. 514-475.000.
Wong, Chi-Huey; and Bradshaw, Curt W., to Scripps Research Institute, The. *Lactobacillus kefir* alcohol dehydrogenase. 5,342,767, Cl. 435-122.000.

Wong, Henry: *See*—
Henley, Ronald W.; Quates, Ronald D.; Williams, Michael R.; and Wong, Henry, 5,342,066, Cl. 277-116.200.
Wong, Lam F.: *See*—
Kamath, Venhatesh H.; and Wong, Lam F., 5,342,715, Cl. 430-44.000.
Wong, Rose B.; Ahmed, Zareen; and Bullock, Milon W., to American Cyanamid Company. Functionalized imidazolinone haptens and protein conjugates thereof useful in assays for the detection of imidazolinone herbicides. 5,342,771, Cl. 435-188.000.
Wong, Victoria A.: *See*—
Platz, Matthew S.; Goodrich, Raymond P., Jr.; and Wong, Victoria A., 5,342,752, Cl. 435-2.000.
Wongwarawipat, Wiwat: *See*—
Shu, Guoliang; Yang, Weikang; Wongwarawipat, Wiwat; Takatori, Sunao; and Yamamoto, Makoto, 5,343,419, Cl. 364-807.000.
Woo, Edward J. Optical disk with vibration dampening. 5,342,667, Cl. 428-64.000.
Wood, Alan G.: *See*—
Kinsman, Larry D.; Gochnour, Derek J.; Wood, Alan G.; and Farnworth, Warren M., 5,342,807, Cl. 437-209.000.
Wood, Kenneth O., to Gerber Optical, Inc. Single block mounting system for surfacing and edging of a lens blank and method therefor. 5,341,604, Cl. 51-165.710.
Woodall, Robert C., Jr.; Jones, S. Kyle; and Jones, H. Joseph, Jr., to United States of America, Navy. Launched torpedo decoy. 5,341,718, Cl. 89-1.110.
Woodard, Daniel L.; Howard, Adriann J.; and Down, James A., to Becton, Dickinson and Company. Process for purifying DNA on hydrated silica. 5,342,931, Cl. 536-25.400.
Wooden, Gary; de Weck, Guy; and Wallquist, Olof, to Ciba-Geigy Corporation. Diketopyrrolopyrroles. 5,342,955, Cl. 548-255.000.
Woods, John R. Acoustic ceiling patch spray. 5,341,970, Cl. 222-394.000.
Wright, Craig A.: *See*—
Mott, Steven C.; and Wright, Craig A., 5,341,963, Cl. 222-287.000.
Wright Line, Inc.: *See*—
Latino, Richard M., 5,341,944, Cl. 21-162.000.
Wright, Marilyn P. Multi-strand jewelry clasp. 5,341,659, Cl. 63-2.000.
Wright Medical Technology, Inc.: *See*—
Ferrante, Joseph M.; Fichera, Alfred J.; and Whiteside, Leo A., 5,342,367, Cl. 606-86.000.
Richelsoph, Marc E., 5,342,363, Cl. 606-79.000.
Wu, Chung-Tien. Multi-purpose baby rocking chair. 5,342,113, Cl. 297-260.000.
Wu, Huey S., to W. L. Gore & Associates, Inc. Gas permeable coated porous membranes. 5,342,434, Cl. 96-13.000.
Wu, Jeng-Yue: *See*—
Su, Der-Tarng; Chen, Wen-Jer; Wu, Jeng-Yue; and Wu, Ming-Chu, 5,342,717, Cl. 430-55.000.
Wu, Jia-Ruey: *See*—
Chen, Chan-Ming; Wu, Jia-Ruey; Shieh, Chi-Maw; and Chang, Wen-Pin, 5,343,408, Cl. 364-508.000.
Wu, Ming-Chu: *See*—
Su, Der-Tarng; Chen, Wen-Jer; Wu, Jeng-Yue; and Wu, Ming-Chu, 5,342,717, Cl. 430-55.000.
Wu, Robin, to Advanced Cardiovascular Systems, Inc. Single-handle faucet. 5,342,018, Cl. 251-250.000.
Wudl, Fred; and Heeger, Alan. Self-doped zwitterionic aniline polymers. 5,342,912, Cl. 528-292.000.
Wuerzer, Bruno: *See*—
Rueb, Lothar; Eicken, Karl; Plath, Peter; Schwalge, Barbara; Westphalen, Karl-Otto; Wuerzer, Bruno; and Meyer, Norbert, 5,342,824, Cl. 504-221.000.
Wylie, Neil: *See*—
Sapp, Steven P.; Wylie, Neil; and Chen, Eugene J. C., 5,342,797, Cl. 437-41.000.
Wyner, Elliot; White, Robert; Makhlis, Semyon; and Davey, Ernest, Jr., to OSRAM Sylvania Inc. Electrode feedthrough connection strap for arc discharge lamp. 5,343,117, Cl. 313-623.000.
Wyvratt, Matthew J.: *See*—
Beattie, Thomas R.; Wyvratt, Matthew J.; and Dumont, Francis J., 5,342,935, Cl. 540-456.000.
X-Ray Scanner Corporation: *See*—
Johnston, Gregory E., 5,343,308, Cl. 358-445.000.
Xerox Corporation: *See*—
Carlotta, Michael; and Anderson, David G., 5,342,039, Cl. 271-236.000.
Dietl, Steven J., 5,343,230, Cl. 347-31.000.
Kamath, Venhatesh H.; and Wong, Lam F., 5,342,715, Cl. 430-44.000.
Mandel, Barry P.; and Van Dongen, Richard A., 5,342,034, Cl. 270-53.000.
Martin, Kathleen M., 5,342,037, Cl. 271-111.000.
Ossman, Kenneth R.; and Dunn, Susan E., 5,343,326, Cl. 359-216.000.
Pai, Damodar M.; Yanus, John F.; DeFeo, Paul J.; Toth, Alan E. J.; Mychajlowskij, Walter; and Popovic, Zoran, 5,342,719, Cl. 430-59.000.
Paoli, Thomas L., 5,343,224, Cl. 346-108.000.
Roetling, Paul G., 5,343,309, Cl. 358-455.000.
Sulenski, Shelly D., 5,343,275, Cl. 355-202.000.
Xilinx, Inc.: *See*—
Freeman, Ross H.; and Hsieh, Hung-Cheng, 5,343,406, Cl. 364-490.000.
Xolox Corporation: *See*—
Bleeke, William F., 5,343,346, Cl. 360-105.000.
Xu, Jianguo: *See*—
Agrawal, Rakesh; Langston, Jeffrey S.; Rodgers, Paul; and Xu, Jianguo, 5,341,646, Cl. 62-25.000.
Xu, Qunyin: *See*—
Anderson, Marc A.; Webster, Elizabeth T.; and Xu, Qunyin, 5,342,431, Cl. 95-45.000.
Xu, Ren: *See*—
MacKenzie, John D.; Xu, Ren; and Xu, Yuhuan, 5,342,648, Cl. 427-126.300.
Xu, Wills J.; and Bricker, Michael W., to Whitaker Corporation, The. Flexible hybrid branch cable. 5,342,991, Cl. 174-117.00R.
Xu, Yuhuan: *See*—
MacKenzie, John D.; Xu, Ren; and Xu, Yuhuan, 5,342,648, Cl. 427-126.300.
Yagawa, Kazuo: *See*—
Hashimoto, Takatsugu; Akutagawa, Keizo; Yagawa, Kazuo; Tanaka, Makoto; Yamagishi, Junichi; and Hachiya, Kazuo, 5,341,862, Cl. 152-209.00R.
Yagi, Kiyoyuki: *See*—
Saito, Rikuro; and Yagi, Kiyoyuki, 5,342,138, Cl. 403-189.000.
Yahnke, Mark S.; Shlomo, Golan; and Anderson, Marc A., to Wisconsin Alumni Research Foundation. Battery utilizing ceramic membranes. 5,342,709, Cl. 429-162.000.
Yamada, Hiyoshi: *See*—
Kasai, Yasuaki; Yamada, Hiyoshi; and Yoshikawa, Norio, 5,342,574, Cl. 419-61.000.
Yamada, Jun; and Shinohara, Seiji, to Mitsubishi Paper Mills Limited. Electrophotographic lithographic printing plate. 5,342,784, Cl. 430-49.000.
Yamada, Katsushige; and Yotsumoto, Kyousuke, to Toray Industries, Inc. Process for producing L-threonine by fermentation with *P. rettgeri*. 5,342,766, Cl. 435-115.000.
Yamada, Kazutoshi, to Omron Corporation. Data processing system with data transmission failure recovery measures. 5,343,477, Cl. 371-8.200.
Yamada, Makoto: *See*—
Okamoto, Yutaka; Yamada, Makoto; and Shinguu, Masataka, 5,343,066, Cl. 257-393.000.
Yamada, Masahiko; Harada, Yuji; and Shigetoyo, Hidemi, to Showa Electric Wire & Cable Co., Ltd. Electromagnetic levitation type continuous metal casting apparatus. 5,341,867, Cl. 164-502.000.
Yamada, Masataka: *See*—
Hayakawa, Yasuyuki; Nishiike, Ujihiro; Fukuda, Bunjiro; Yamada, Masataka; Iida, Yoshiaki; Takeuchi, Fumihiko; and Komatsubara, Michiro, 5,342,454, Cl. 148-113.000.
Yamada, Masatomo: *See*—
Sasaki, Toshinori; Kanazawa, Akira; Hara, Kenji; Fukao, Tomoo; Ishizuka, Masahiko; Yamada, Masatomo; Sugimura, Naoto; and Yoshihara, Michiaki, 5,343,142, Cl. 324-71.100.
Yamada, Nobuaki; Hirai, Toshiyuki; Onishi, Noriaki; and Kohzaki, Shuichi, to Sharp Kabushiki Kaisha. Polymer dispersion type liquid crystal display element and reflection type liquid crystal display device. 5,342,545, Cl. 252-299.010.
Yamada, Takanobu: *See*—
Fukui, Kazuyuki; and Yamada, Takanobu, 5,343,235, Cl. 346-160.000.
Yamada, Takashi: *See*—
Wada, Hiroshi; Wada, Shinji; Okumura, Osamu; Ichikawa, Rinjiro; Hashimoto, Kenji; and Yamada, Takashi, 5,343,317, Cl. 359-73.000.
Yamada, Takeo: *See*—
Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, 5,343,450, Cl. 369-19.000.
Yamada, Toshio: *See*—
Hamamura, Yuuichi; Haraichi, Satoshi; Shimase, Akira; Azuma, Junzou; Itoh, Fumikazu; Yamada, Toshio; Koizumi, Yasuhiro; and Mizumura, Michinobu, 5,342,448, Cl. 118-723.0FI.
Nishizawa, Hirotaka; Azuma, Seiichiro; Toshitake, Takayuki; Tanaka, Kazuo; Kawaji, Mikinori; Hirano, Sinmei; Yamada, Toshio; and Sekine, Yasusi, 5,342,480, Cl. 156-648.000.
Yamada, Yasuhi, to Konica Corporation. Automatic document conveyance device. 5,343,281, Cl. 355-320.000.
Yamagata, Naoyuki: *See*—
Matsubara, Taiji; and Yamagata, Naoyuki, 5,342,248, Cl. 474-69.000.
Yamagata, Shinsuke: *See*—
Iwasaki, Tameo; Kondo, Kazuhiko; Ikezawa, Katsuo; Kikkawa, Hideo; and Yamagata, Shinsuke, 5,342,941, Cl. 514-337.000.
Yamagishi, Akihiko: *See*—
Miwa, Toru; Yamasaki, Yasuyuki; and Yamagishi, Akihiko, 5,343,111, Cl. 313-313.000.
Yamagishi, Junichi: *See*—
Hashimoto, Takatsugu; Akutagawa, Keizo; Yagawa, Kazuo; Tanaka, Makoto; Yamagishi, Junichi; and Hachiya, Kazuo, 5,341,862, Cl. 152-209.00R.
Yamaguchi, Akira, to Fuji Photo Film Co., Ltd. Buffering method. 5,343,225, Cl. 346-108.000.
Yamaguchi, Hiroyuki: *See*—
Watanabe, Katsuya; Shibano, Masayuki; Yamaguchi, Hiroyuki; Edshiro, Yasuaki; and Moriya, Mitsuro, 5,343,454, Cl. 369-44.320.
Yamaguchi, Shuji; and Ito, Koichi, to Kabushiki Kaisha Toshiba. Charger for charging a rechargeable battery. 5,343,136, Cl. 320-2.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Yamaguchi, Takao: *See*—
Mori, Kazushi; Matsumoto, Mitsuaki; Toda, Tadao; Nonaka, Hideyuki; and Yamaguchi, Takao, 5,343,484, Cl. 372-22.000.

Yamaguchi, Tenzo: *See*—
Tani, Nobuyuki; and Yamaguchi, Tenzo, 5,341,722, Cl. 91-43.000.

Yamaguchi, Yasuo; and Nishimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Thin-film SOI MOSFET. 5,343,051, Cl. 257-66.000.

Yamaguchi, Yukifumi: *See*—
Hirose, Yasuo; and Yamaguchi, Yukifumi, 5,341,892, Cl. 180-220.000.

Yamakawa, Akira: *See*—
Nakahata, Seiji; Sogabe, Kouichi; and Yamakawa, Akira, 5,343,150, Cl. 324-316.000.

Yamakawa, Hiromitsu, to Fuji Photo Optical Co., Ltd. Optical scanning system with tilt correction function. 5,343,325, Cl. 359-205.000.

Yamakawa, Kiyoshi: *See*—
Kaminaga, Kozo; Ike, Kazuo; Makise, Tetsuro; Fujiwara, Yoshio; Yamakawa, Kiyoshi; and Sawakata, Kiyoshi, 5,343,334, Cl. 360-38.100.

Yamamoto Chemicals, Inc.: *See*—
Fujita, Shigeo; Matsumoto, Mansuke; Kumagae, Yojiro; Wada, Sayuri; and Hashimoto, Shuichi, 5,342,967, Cl. 549-226.000.

Yamamoto, Hiroki: *See*—
Igaue, Takamitsu; Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; Sasaki, Tohru; Shimakawa, Taiji; and Yamamoto, Hiroki, 5,342,341, Cl. 604-385.200.

Yamamoto, Makoto: *See*—
Shu, Guoliang; Yang, Weikang; Wongwarawipat, Wiwat; Takatori, Sunao; and Yamamoto, Makoto, 5,343,419, Cl. 364-807.000.

Yamamoto, Masao: *See*—
Imai, Hiroshi; Murakami, Tadashi; Mimura, Tetsuya; Yamamoto, Masao; Kosumi, Yuji; Asai, Masashi; and Aoki, Yasunori, 5,343,072, Cl. 257-666.000.

Yamamoto, Noboru: *See*—
Nakamura, Kenji; Majima, Masao; and Yamamoto, Noboru, 5,343,314, Cl. 359-123.000.

Yamamoto, Takashi; and Ozawa, Yoshio, to Fuji Photo Film Co., Ltd. Film carrier for photographic printer. 5,343,273, Cl. 355-75.000.

Yamamoto, Takashi: *See*—
Yoshida, Takashi; and Yamamoto, Takashi, 5,343,274, Cl. 355-79.000.

Yamamoto, Yuji; and Tamaki, Ikuhiro, to Noritsu Koki Co., Ltd. Image printing method and apparatus. 5,343,269, Cl. 355-43.000.

Yamanaka, Hidenori: *See*—
Imai, Yoichi; Hirano, Toshiyuki; Komiyama, Osamu; and Yamanaka, Hidenori, 5,342,920, Cl. 528-388.000.

Yamane, Hiroyuki: *See*—
Kubokoya, Ryoichi; Yamane, Hiroyuki; and Higuchi, Yasushi, 5,342,802, Cl. 437-57.000.

Yamari Electronite Kabushikigaisha: *See*—
Iwase, Masanori; Fujiwara, Ryuji; and Mochizuki, Ryo, 5,342,489, Cl. 204-153.180.

Yamasaki, Nobuyuki, to Chisso Corporation. Conjugate including a sugar and peptide linker. 5,342,770, Cl. 435-178.000.

Yamasaki, Yasuyuki: *See*—
Miwa, Toru; Yamasaki, Yasuyuki; and Yamagishi, Akihiko, 5,343,111, Cl. 313-313.000.

Yamashita, Hirofumi; and Matsunaga, Yoshiyuki, to Kabushiki Kaisha Toshiba. Solid-state imaging device suppressing dark-current noise. 5,343,061, Cl. 257-229.000.

Yamashita, Masahiro, to Sony Corporation. Video camera with improved shading correction using clipped parabolic wave signal. 5,343,302, Cl. 348-251.000.

Yamashita, Yuji; Takahashi, Masanobu; Masai, Katsunori; Inenaka, Hiroyuki; Sako, Masahiro; Hashimoto, Yasuhiro; and Tomita, Hideaki, to Mita Industrial Co., Ltd. Management system of image forming apparatuses. 5,343,276, Cl. 355-202.000.

Yamauchi, Junnosuke: *See*—
Aoyama, Akimasa; Katayama, Tetsuya; Moritani, Takeshi; Yamauchi, Junnosuke; and Hirofuji, Satoshi, 5,342,662, Cl. 428-34.800.

Yamauchi, Kosaku, to Suzuki Kabushiki Kaisha. Exhaust timing controller for two-stroke cycle engine. 5,341,775, Cl. 123-65.0PE.

Yamauchi, Shiro: *See*—
Inamiga, Kazuhiko; Ota, Hitoshi; Yamauchi, Shiro; and Kawabata, Takashi, 5,342,500, Cl. 204-421.000.

Yamazaki, Masaya: *See*—
Nagasawa, Atsushi; Morita, Keiichi; Yamazaki, Masaya; Katagami, Yoshinori; Shinoda, Masaru; Matsuo, Takeshi; and Misawa, Masaru, 5,341,650, Cl. 62-180.000.

Yamazaki, Toshio; Sugahara, Hideki; Ichinohe, Shoji; Ishihara, Toshinobu; and Kubota, Tohru, to Shin-Etsu Chemical Co., Ltd. Organic silicon compounds. 5,342,983, Cl. 556-445.000.

Yamchen Industrial Co., Ltd.: *See*—
Huang, Chiu-Feng, 5,342,010, Cl. 248-316.300.

Yanagi, Akihiko: *See*—
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, 5,342,954, Cl. 548-251.000.
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Hayakawa, Hidenori; Yanagi, Akihiko; and Asami, Tadao, 5,342,938, Cl. 544-105.000.

Yanai, Eiji: *See*—
Takahashi, Shuji; Yanai, Eiji; Morikawa, Fumihiro; and Kawate, Yosuke, 5,343,104, Cl. 310-90.000.

Yanai, Norimasa: *See*—
Takahashi, Hidekazu; and Yanai, Norimasa, 5,342,923, Cl. 530-373.000.

Yanase, Shugo; and Baba, Haruki, to Brother Kogyo Kabushiki Kaisha. Tool breakage detecting method. 5,342,275, Cl. 483-1.000.

Yang, Jau-Yuann: *See*—
Yuan, Han-Tzong; Plumton, Donald L.; Kim, Tae S.; and Yang, Jau-Yuann, 5,342,795, Cl. 437-40.000.

Yang, Weikang: *See*—
Shu, Guoliang; Yang, Weikang; Wongwarawipat, Wiwat; Takatori, Sunao; and Yamamoto, Makoto, 5,343,419, Cl. 364-807.000.

Yanus, John F.: *See*—
Pai, Damodar M.; Yanus, John F.; DeFeo, Paul J.; Toth, Alan E. J.; Mychajlowskij, Walter; and Popovic, Zoran, 5,342,719, Cl. 430-59.000.

Yashiro, Sadao: *See*—
Umemura, Shin-ichi; and Yashiro, Sadao, 5,341,648, Cl. 62-73.000.

Yasuda, Keiji; Oda, Yukihisa; Tagawa, Satoru; and Kimura, Masahiro, to Aisin Seiki Kabushiki Kaisha. Slide rheostat type linear characteristic sensor. 5,343,188, Cl. 338-129.000.

Yasuda, Tomokazu: *See*—
Kanetake, Satoshi; Yasuda, Tomokazu; Muramatsu, Yuzou; and Naoi, Takashi, 5,342,733, Cl. 430-264.000.

Yasuhara, Norio: *See*—
Nakagawa, Akio; Yasuhara, Norio; and Matsudai, Tomoko, 5,343,067, Cl. 257-487.000.

Yasumura, Shigeyoshi; Nishi, Tatsunari; and Ito, Seiga, to Kyowa Hakko Kogyo Co. Ltd. Plasminogen activator. 5,342,775, Cl. 435-240.200.

Yasuzato, Masashi: *See*—
Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, 5,343,450, Cl. 369-19.000.

Yatka, Robert J.; Reed, Michael A.; and Broderick, Kevin B., to Wm. Wrigley Jr. Company. Wax-free chewing gum including special oligosaccharide binders. 5,342,631, Cl. 426-3.000.

Yatrou, Paul M.; and Millar, Douglas J., to Northern Telecom Limited. Adaptive sparse echo canceller using a sub-rate filter for active tap selection. 5,343,522, Cl. 379-410.000.

Yayla, Gokce; Krishnamoorthy, Ashok V.; and Esener, Sadik C., to University of California, The Regents of the. Artificial neuron with switched-capacitor synapses using analog storage of synaptic weights. 5,343,555, Cl. 395-24.000.

Yazaki Corporation: *See*—
Hirano, Tomio; and Tsukamoto, Masaaki, 5,342,504, Cl. 205-257.000.
Kanno, Toshiaki; Ikegaya, Akira; and Horiike, Tsuneyuki, 5,342,997, Cl. 174-117.0FF.
Onodera, Shinya; and Kawashima, Toshiharu, 5,342,219, Cl. 439-595.000.

Yednasty, Joseph S.: *See*—
Perretta, Frederick A.; and Yednasty, Joseph S., 5,342,203, Cl. 439-76.000.

Yeh, Ming-Tao: *See*—
Chen, Wei-Liang; Lee, Dah-Ming; Chen, Lien-Tai; and Yeh, Ming-Tao, 5,342,567, Cl. 264-203.000.

Yeh, Shinn-Horng: *See*—
Peng, Yu-Min; Wang, Jih-Wen; Liue, Chun-Ying; and Yeh, Shinn-Horng, 5,342,502, Cl. 205-109.000.

Yellowstone Environmental Science, Inc.: *See*—
Hunter, Robert M.; and Stewart, Frank M., 5,342,769, Cl. 435-166.000.

Yenisey, Osman M., to AT&T Bell Laboratories. Fuse or circuit breaker status indicator. 5,343,192, Cl. 340-639.000.

Yeo, Jong K.: *See*—
Hong, Young J.; Kim, Jin B.; and Yeo, Jong K., 5,342,658, Cl. 427-515.000.

Yerly, Marcel: *See*—
Varidel, Charly; and Yerly, Marcel, 5,341,558, Cl. 29-450.000.

Yokobayashi, Kazuyuki, to Nissei ASB Machine Co., Ltd. Preform for making a plastic can body. 5,342,663, Cl. 428-35.700.

Yokocho, Yoetsu; and Kobayashi, Fujio, to Kioritz Corporation. Centrifugal clutch. 5,341,907, Cl. 192-75.000.

Yokoi, Keisuke: *See*—
Aoki, Nobuo; Aizawa, Ikuo; Yokoi, Keisuke; and Negishi, Heido, 5,343,103, Cl. 310-87.000.

Yokoo, Hisahiko: *See*—
Murata, Susumu; Sano, Masako; Takeuchi, Yasuo; Fujihara, Masayuki; Yokoo, Hisahiko; Nakanishi, Kenjiro; Miura, Tetsuo; and Shimizu, Yoshio, 5,342,634, Cl. 426-113.000.

Yokota, Tsutomu, to Oriental Construction Company. Method for prestressing concrete. 5,342,568, Cl. 264-228.000.

Yokoyama, Eiji: *See*—
Kanagawa, Yuji; Nagasawa, Masato; Yokoyama, Eiji; Nakatsu, Kimihide; and Miyago, Toshiharu, 5,343,342, Cl. 360-77.160.

Yokoyama, Shoji; Morimoto, Kyomi; Nanba, Akimasa; Katoh, Kiyohide; Kuroda, Kenji; Kishi, Hiroshi; and Ito, Toru, to Aisin Aw Co., Ltd. Vehicle navigation system. 5,343,399, Cl. 364-449.000.

Yokoyama, Wako: *See*—
Fifield, Charles C.; Pohl, Rudolph L.; and Yokoyama, Wako, 5,341,799, Cl. 528-49.000.

Yonehara, Takao, to Canon Kabushiki Kaisha. Method of manufacturing semiconductor memory element. 5,342,792, Cl. 437-24.000.

Yonemitsu, Yoshiaki: *See*—
Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, 5,342,641, Cl. 426-549.000.

Yoneyama, Masakazu: *See*—
Nishiyama, Shingo; Mukunoki, Yasuo; and Yoneyama, Masakazu, 5,342,751, Cl. 430-637.000.

Yoo, Young S.: *See*—
Jamieson, Eric K.; McCarthy, Richard C.; and Yoo, Young S., 5,343,003, Cl. 187-131.000.

Yoon, Chun; Song, Han-Chul; and Kwon, Tae-Gab, to Lucky Limited. Blue dye composition. 5,342,416, Cl. 8-639.000.

Yorke, William J.; and Bockowski, Edmund J., to Betz Laboratories, Inc. Methods for inhibiting the corrosion and deposition of iron and iron-containing metals in aqueous systems. 5,342,548, Cl. 252-391.000.

Yoshida, Hirokazu, to Teiryo Sangyo Co., Ltd. Method of decoding a two-dimensional code symbol mark. 5,343,031, Cl. 235-494.000.

Yoshida, Keiji: *See*—
Ito, Hirokazu; Itoh, Masahiro; Inagaki, Motoshi; Takahiro, Syuji; and Yoshida, Keiji, 5,342,722, Cl. 430-109.000.

Yoshida Kogyo K.K.: *See*—
Murasaki, Ryuichi, 5,342,569, Cl. 264-259.000.
Nagai, Yoshitaka, 5,342,575, Cl. 419-67.000.

Yoshida, Satoshi: *See*—
Tohyama, Yoshio; Ogawa, Takayuki; Eguchi, Tatsuya; Tamada, Norio; Yoshida, Satoshi; Hasegawa, Hirofumi; Sekino, Hitoshi; Taima, Katsuyuki; Ikegawa, Akihito; Hara, Kazuyoshi; Matsura, Yasuhiro; and Mizuno, Hiroshi, 5,343,223, Cl. 346-108.000.

Yoshida, Seikoh; and Kikuta, Toshio, to Furukawa Electric Co., Ltd., The. Method of growing single crystal of compound semiconductor. 5,342,475, Cl. 117-83.000.

Yoshida, Susumu; Ebihara, Munemitsu; Kurita, Tsutomu; and Sueyoshi, Masahiko, to Honda Giken Kogyo KK; and Honda Lock MFG. Co., Ltd. Electric power supply control device for vehicle. 5,343,077, Cl. 307-9.100.

Yoshida, Takashi; and Yamamoto, Takashi, to Fuji Photo Film Co., Ltd. Contact printing device for use in a photographic printer. 5,343,274, Cl. 355-79.000.

Yoshida, Toshio: *See*—
Takei, Mitsuhiko; Yoshida, Toshio; Nagai, Yoshiaki; and Masamizu, Koji, 5,342,532, Cl. 252-45.000.

Yoshihara, Michiaki: *See*—
Sasaki, Toshinori; Kanazawa, Akira; Hara, Kenji; Fukao, Tomoo; Ishizuka, Masahiko; Yamada, Masatomo; Sugimura, Naoto; and Yoshihara, Michiaki, 5,343,142, Cl. 324-71.100.

Yoshii, Minoru: *See*—
Ohwada, Mitsutoshi; Matsugu, Masakazu; Suda, Shigeyuki; Yoshii, Minoru; Niwa, Yukichi; Nose, Noriyuki; Saitoh, Kenji; and Hasegawa, Masanobu, 5,343,291, Cl. 356-356.000.

Yoshikawa, Jun: *See*—
Hamoda, Keiji; Yoshikawa, Jun; Yamada, Takeo; Odane, Isamu; Ito, Masahiro; Noudan, Yoshimasa; Kunii, Hideo; Kanai, Hirofumi; and Yasuzato, Masashi, 5,343,450, Cl. 369-19.000.

Yoshikawa, Norio: *See*—
Kasai, Yasuaki; Yamada, Hiyoshi; and Yoshikawa, Norio, 5,342,574, Cl. 419-61.000.

Yoshikawa, Osamu: *See*—
Sugawara, Kenichi; Ikuta, Takeshi; and Yoshikawa, Osamu, 5,342,003, Cl. 242-231.000.

Yoshikawa, Syuuichi: *See*—
Murata, Yasumoto; Yoshikawa, Syuuichi; and Ikeuchi, Michio, 5,343,420, Cl. 364-825.000.

Yoshikawa, Tadao; Okamoto, Kyoko; and Ikari, Tokuo, to Kuraray Co., Ltd. Optical information recording medium. 5,342,669, Cl. 428-64.000.

Yoshimoto, Toshio: *See*—
Nashida, Yasumasa; Yoshimoto, Toshio; and Nakata, Yasuhiro, 5,343,019, Cl. 219-216.000.

Yoshino, Ryutaro; and Takahashi, Hideo, to Honda Giken Kogyo Kabushiki Kaisha. System for controlling locomotion of legged walking robot. 5,343,397, Cl. 364-424.020.

Yoshioka, Katsuki: *See*—
Kawasaki, Shinji; Ito, Shigenori; and Yoshioka, Katsuki, 5,342,703, Cl. 429-30.000.

Yoshioka, Ken: *See*—
Fukumoto, Hideshi; Kameoka, Yoko; Yoshioka, Ken; Takizawa, Teruhiro; Sonobe, Tadasi; Suzuki, Fumio; Kasahara, Naoki; Goto, Fumihiko; Sakamoto, Shigeru; and Shibata, Masayuki, 5,343,180, Cl. 335-216.000.

Yoshioka, Yasuhiro: *See*—
Morigaki, Masakazu; Yoshioka, Yasuhiro; and Seto, Nobuo, 5,342,747, Cl. 430-551.000.

Yoshitake, Junichi: *See*—
Katayama, Shigeru; Tominaga, Kaoru; and Yoshitake, Junichi, 5,343,076, Cl. 257-717.000.

Yoshiura, Shoichiro: *See*—
Nakai, Yasuhiro; and Yoshiura, Shoichiro, 5,343,304, Cl. 358-296.000.

Yoshizaki, Masahiro: *See*—
Masutake, Kenji; Maeda, Hirokazu; Kawamata, Toshimasa; Miyamae, Masatoshi; Taguchi, Kenji; Yonemitsu, Yoshiaki; Yoshizaki, Masahiro; and Toyama, Tomoyuki, 5,342,641, Cl. 426-549.000.

Yoshizuka, Kazuharu: *See*—
Inoue, Katsutoshi; Yoshizuka, Kazuharu; Baba, Yoshinari; and Tazaki, Masato, 5,342,526, Cl. 210-634.000.

Yost, Garnet R., to Chemonics Industries, Inc. Drum grasping device. 5,342,163, Cl. 414-607.000.

Yotsumoto, Kyousuke: *See*—
Yamada, Katsushige; and Yotsumoto, Kyousuke, 5,342,766, Cl. 435-115.000.

Yotsuyanagi, Mitsutoshi: *See*—
Niinai, Yoshitaka; Nagata, Akio; Sagawa, Norihisa; Shinohara, Shigeru; Nakayama, Eiji; Yotsuyanagi, Mitsutoshi; Hayasaka, Hiroshi; and Tokunaga, Kazuyoshi, 5,342,280, Cl. 494-10.000.

You, Chin-San. Game racket. 5,342,044, Cl. 273-73.00D.

Young, Donald C.: *See*—
Brown, Roger A.; Pilling, Richard L.; and Young, Donald C., 5,342,629, Cl. 424-696.000.

Young, Douglas L. G., to Ingersoll-Rand Company. Screening device for a fiber slurry, and a backwash means therefor. 5,341,936, Cl. 209-17.000.

Young, Raymond H.: *See*—
Forbus, Ellen S.; Gantt, George E.; Willis, Mitchell J.; and Young, Raymond H., 5,342,443, Cl. 106-488.000.

Young, Richard H.: *See*—
Lancaster, E. Peter; and Young, Richard H., 5,342,344, Cl. 604-387.000.

Youngblood, Richard J. Sensor malfunction detection. 5,343,396, Cl. 364-426.010.

Yozan, Inc.: *See*—
Shu, Guoliang; Yang, Weikang; Wongwarawipat, Wiwat; Takatori, Sunao; and Yamamoto, Makoto, 5,343,419, Cl. 364-807.000.

Yu, Cheng D., to AT&T Bell Laboratories. Bidirectional video telephony using shared channels on coaxial cable networks. 5,343,240, Cl. 348-14.000.

Yu-Fang, Ai. Hand-screwed clamp fixture with multi-directional opening. 5,342,031, Cl. 269-134.000.

Yu, Ho; and Stevens, Judith G., to Aluminum Company of America. Purification of molten aluminum using upper and lower impellers. 5,342,429, Cl. 75-680.000.

Yuan, Han-Tzong; Plumton, Donald L.; Kim, Tae S.; and Yang, Jau-Yuann, to Texas Instruments Incorporated. Method of fabricating power VFET gate-refill. 5,342,795, Cl. 437-40.000.

Yuan, Hansen A.; and Lin, Chih-I. Dual tier spinal locking and retrieving system and instrumentation for administering such system percutaneously. 5,342,361, Cl. 606-61.000.

Yuan, Jack H.; Samachisa, Gheorghe; Guterman, Daniel C.; and Harari, Eliyahou, to SunDisk Corporation. Dense vertical programmable read only memory cell structure and processes for making them. 5,343,063, Cl. 257-317.000.

Yuhas, Drew J.: *See*—
Schmidt, A. Robert; Yuhas, Drew J.; and Barndt, Ronald D., 5,341,527, Cl. 4-592.000.

Yukinari, Toshiro: *See*—
Naito, Tomijiro; Sato, Yumiko; Yukinari, Toshiro; Shibata, Toshihiro; Kimura, Masaki; and Shinada, Yukari, 5,342,544, Cl. 252-299.600.

Yum, Su I.: *See*—
Enscore, David J.; Campbell, Patricia S.; Osborne, James L.; Smart, Melinda K.; and Yum, Su I., 5,342,623, Cl. 424-448.000.

Yuzurihara, Itsuo: *See*—
Tanaka, Juichi; Yuzurihara, Itsuo; and Watanabe, Takashi, 5,343,377, Cl. 363-17.000.

Zabeck, Sebastian; and Sausner, Andreas, to Carl Freudenberg, Firma. Electromagnetically operated valve. 5,341,787, Cl. 123-520.000.

Zabel, Lutz: *See*—
Merz, Peter W.; Zabel, Lutz; and Fischer, Christian, 5,342,873, Cl. 524-425.000.

Zagdoun, Georges, to Saint-Gobain Vitrage International. Glass substrate provided with a low emissivity film. 5,342,676, Cl. 428-216.000.

Zaidi, Saleem H.: *See*—
Brueck, Steven R. J.; and Zaidi, Saleem H., 5,343,292, Cl. 356-363.000.

Zaiss, Siegfried: *See*—
Behner, Otto; Wollweber, Hartmund; Goldmann, Siegfried; Rosen, Bruno; and Zaiss, Siegfried, 5,342,847, Cl. 514-356.000.

Zamat, Hassan: *See*—
Balodis, Miroslaw; and Zamat, Hassan, 5,343,173, Cl. 333-126.000.

Zambrano, Luis G.: *See*—
Burns, James L.; Dicus, Bryan J.; Jasti, Jayanthi K.; Kendall, Jerry J.; Olmos, Jose L.; and Zambrano, Luis G., 5,341,876, Cl. 166-263.000.

Zampini, Michael; Dombrowski, Joseph S.; and Davis, Donald E., to Sony Electronics Inc. Variable resistor having the capacity to produce a fader start signal output. 5,343,186, Cl. 338-15.000.

Zanger, Frank, to Allergan, Inc. Variable vacuum/variable flow phacoemulsification method. 5,342,293, Cl. 604-22.000.

Zare, Richard N.: *See*—
Dadoo, Rajeev; Zare, Richard N.; and Colon, Luis A., 5,342,492, Cl. 204-180.100.

Zawisza, Melissa J.: *See*—
Tabor, Ricky L.; Morgan, Roy E., Jr.; and Zawisza, Melissa J., 5,342,884, Cl. 525-64.000.

Zboril, Vaclav G., to Du Pont Canada Inc. Monitoring and control of process streams at elevated temperatures. 5,342,499, Cl. 204-409.000.

Zechner, Kurt, to Sandoz Ltd. Inhaler. 5,341,801, Cl. 128-203.150.

Zeller Corporation, The: *See*—
Mazziotti, Philip J., 5,342,240, Cl. 464-11.000.

Zellner, Robert J. Roll-in bath tub. 5,341,524, Cl. 4-555.000.

Zeneca, Limited: *See*—
Austin, Peter W.; Quan, Peter M.; Tasker, Peter A.; and Thorp, Derek, 5,342,937, Cl. 544-8.000.

Zengerle, Paul L.; Rothrock, Richard K.; and Johnson, Chris; J., to Eastman Kodak Company. Method for the formation of color photographic materials with high coupling reactivity and reduced color developer PH sensitivity. 5,342,746, Cl. 430-546.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Zenisek, Karel: *See*—
Lebl, Michal; Eichler, Jutta; Pokorny, Vit; Jehnicka, Jiri ; Mudra, Petr; Zenisek, Karel; Stierandova, Alena; Kalousek, Jan; and Bolf, Jan, 5,342,585, Cl. 422-131.000.
Zerick, Jacquelyn J. Burial/cremation case for animals. 5,341,548, Cl. 27-28.000.
Zerpner, Dieter: *See*—
Wolpers, Jurgen; Zerpner, Dieter; and Nordsiek, Karl-Heinz, 5,342,900, Cl. 525-329.300.
Zexel Corporation: *See*—
Ishikawa, Masataka, 5,343,400, Cl. 364-450.000.
Nakata, Futoshi, 5,341,868, Cl. 165-11.100.
Zezulka, Bohuslav J.; Voss, Henry H.; and Fincati, Anne M., to Alberta Research Council. Robotic drug dispensing system. 5,341,854, Cl. 141-1.000.
Zhou, Yan: *See*—
Asghar, Safdar M.; and Zhou, Yan, 5,343,414, Cl. 364-724.060.
Zilker, Daniel P., Jr.: *See*—
Cann, Kevin J.; Hussein, Fathi D.; Lee, Kiu H.; Zilker, Daniel P., Jr.; Nicoletti, James W.; and Bai, Xinlai, 5,342,907, Cl. 526-129.000.
Zimmer, Gerhard; Kinz, Heike; and Sextl, Elfriede, to Degussa Aktiengesellschaft. Process for reducing the carbon content of aqueous hydrogen peroxide solutions. 5,342,602, Cl. 423-584.000.
Zimmer Inc.: *See*—
Kenyon, Roger R.; Landes, Mark D.; Campana, Donna L.; Geremakis, Perry A.; Dock, Ted L.; and Ondris, Jeffrey M., 5,342,362, Cl. 606-79.000.
Zimmer, Richard; Gautsch, Wolfgang; Muller, Armin; and Freitag, Rainer, to Mercedes-Benz AG. Road vehicle hydraulic service-brake system and activation process. 5,342,120, Cl. 303-113.200.
Zimmerman, Harry, Jr.: *See*—
Counts, May C.; and Zimmerman, Harry, Jr., 5,341,930, Cl. 206-459.500.
Zimmermann, Craig E., to General Mills, Inc. Device for crimping and cutting dough ropes. 5,342,188, Cl. 425-235.000.
Zim's Bagging Company, Inc.: *See*—
Counts, May C.; and Zimmerman, Harry, Jr., 5,341,930, Cl. 206-459.500.
Zing Systems, L.P.: *See*—
Lappington, John P.; and Marshall, Susan K., 5,343,239, Cl. 348-12.000.
Zinger, Ron, to Intel Corporation. Three-to-two carry save adder cell. 5,343,418, Cl. 364-784.000.
Zittel, David R., to Lyco Manufacturing, Inc. Discharge for rotating drum blanchers and coolers. 5,341,729, Cl. 99-348.000.
Zucker, Sandy M.: *See*—
Kan, Tze-Kong; Zucker, Sandy M.; Greenberg, Matthew L.; and Lamb, William J., 5,343,440, Cl. 367-27.000.
Zuniga, Michael A.: *See*—
Bartlett, Charles S.; Benning, Roger D.; Hunter, John B.; and Zuniga, Michael A., 5,343,523, Cl. 379-430.000.
Zur, Benjamin, to Technion Research and Development Foundation Ltd. Method and apparatus for irrigation control. 5,341,831, Cl. 137-78.300.
Zuraw, Michael J.: *See*—
Lindholm, Edward P.; Telfer, Stephen J.; Zuraw, Michael J.; and Hirschbein, Bernard L., 5,342,816, Cl. 503-226.000.
Zurek, Rudolf: *See*—
Kotai, Ference; Zurek, Rudolf; and Bolling, Ingo, 5,341,721, Cl. 89-46.000.
Zurfluh, Thomas: *See*—
Chen, Colin; Oliver, Hoover, Jr.; and Zurfluh, Thomas, 5,341,779, Cl. 123-193.300.
Zwadlo, Gregory L.; and Krech, Roger I., to Minnesota Mining and Manufacturing Company. Color proofing element and process for making the same. 5,342,720, Cl. 430-66.000.
Zwinselman, Jan J.; Everett, John P.; and Wanzl-Dacho, Karin, to Dow Chemical Company, The. Solvent system. 5,342,865, Cl. 523-414.000.
Zych, Otakar: *See*—
Schorm, Josef; Zych, Otakar; and Deutschmann, Gottfried, 5,341,561, Cl. 29-596.000.
Zytec Corporation: *See*—
Solberg, Terry B., 5,343,362, Cl. 361-710.000.
3V Inc.: *See*—
Bresciani, Angelo, 5,342,911, Cl. 526-216.000.
410261 B.C. Ltd.: *See*—
Miremadi, Bijan K.; Singh, Ravi C.; Morrison, Stanley R.; and Colbow, Konrad, 5,342,701, Cl. 428-701.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF AUGUST, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ando, Ryo: *See*—
Fujisawa, Hirotoshi; Ohmori, Takashi; and Ando, Ryo, Re. 34,710, Cl. 369-13.000.
Boegesoe, Klaus P.; and Perregaard, Jens K., to H. Lundbeck A/S. Pharmaceutically useful (+)-1-(3-dimethylaminopropyl)-1-(4'-fluorophenyl)-1,3-dihydroiso benzofuran-5-carbonitrile and non-toxic acid addition salts thereof. Re. 34,712, Cl. 514-469.000.
Burns, Gary R.: *See*—
Burns, William R.; Burns, Gary R.; and Burns, Paul W., Re. 34,714, Cl. 602-18.000.
Burns, Paul W.: *See*—
Burns, William R.; Burns, Gary R.; and Burns, Paul W., Re. 34,714, Cl. 602-18.000.
Burns, William R.; Burns, Gary R.; and Burns, Paul W. Cervical collar of laminate construction. Re. 34,714, Cl. 602-18.000.
Compagnon, Michel F., to Nokia-Maillefer SA. Device for feeding an extrusion head for plastic material. Re. 34,711, Cl. 425-131.100.
Dacral S.A.: *See*—
Marguier, Gilbert, Re. 34,707, Cl. 148-248.000.
Drake, Barney: *See*—
Hansma, Paul K.; and Drake, Barney, Re. 34,708, Cl. 250-306.000.
Fujisawa, Hirotoshi; Ohmori, Takashi; and Ando, Ryo, to Sony Corporation. Magneto-optical recording apparatus. Re. 34,710, Cl. 369-13.000.
GTY Industries: *See*—
Tyson, Glenn M., Re. 34,709, Cl. 362-96.000.
H. Lundbeck A/S: *See*—
Boegesoe, Klaus P.; and Perregaard, Jens K., Re. 34,712, Cl. 514-469.000.
Hansma, Paul K.; and Drake, Barney, to University of California, The Regents of the. Scanning ion conductance microscope. Re. 34,708, Cl. 250-306.000.
Itagaki, Takaharu; Shiraga, Mitsuaki; Sawayama, Shigeru; and Satoh, Kohichi, to Mitsubishi Kasei Corporation. Vinylamine copolymer flocculating agent etc. Re. 34,713, Cl. 525-328.400.
Marguier, Gilbert, to Dacral S.A. Anticorrosion coating composition with improved stability, and coated substrate. Re. 34,707, Cl. 148-248.000.
Mitsubishi Kasei Corporation: *See*—
Itagaki, Takaharu; Shiraga, Mitsuaki; Sawayama, Shigeru; and Satoh, Kohichi, Re. 34,713, Cl. 525-328.400.
Nokia-Maillefer SA: *See*—
Compagnon, Michel F., Re. 34,711, Cl. 425-131.100.
Ohmori, Takashi: *See*—
Fujisawa, Hirotoshi; Ohmori, Takashi; and Ando, Ryo, Re. 34,710, Cl. 369-13.000.
Perregaard, Jens K.: *See*—
Boegesoe, Klaus P.; and Perregaard, Jens K., Re. 34,712, Cl. 514-469.000.
Satoh, Kohichi: *See*—
Itagaki, Takaharu; Shiraga, Mitsuaki; Sawayama, Shigeru; and Satoh, Kohichi, Re. 34,713, Cl. 525-328.400.
Sawayama, Shigeru: *See*—
Itagaki, Takaharu; Shiraga, Mitsuaki; Sawayama, Shigeru; and Satoh, Kohichi, Re. 34,713, Cl. 525-328.400.
Shiraga, Mitsuaki: *See*—
Itagaki, Takaharu; Shiraga, Mitsuaki; Sawayama, Shigeru; and Satoh, Kohichi, Re. 34,713, Cl. 525-328.400.
Sony Corporation: *See*—
Fujisawa, Hirotoshi; Ohmori, Takashi; and Ando, Ryo, Re. 34,710, Cl. 369-13.000.
Tyson, Glenn M., to GTY Industries. Lighting system. Re. 34,709, Cl. 362-96.000.
University of California, The Regents of the: *See*—
Hansma, Paul K.; and Drake, Barney, Re. 34,708, Cl. 250-306.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Anders, Robert J.; Cerveny, John G.; and Milkowski, Andrew L., to Oscar Mayer Foods Corporation. Method for delaying Clostridium botulinum growth in fish and poultry. B1 4,798,729, 8-30-94, Cl. 426-326.000.
Atkinson, E. E., Jr.: *See*—
Stahly, Barbara C.; Lin, Ronny W.; and Atkinson, E. E., Jr., B1 4,990,658, Cl. 562-406.000.
Burndy Corp.: *See*—
Piorunneck, Heinz; and Eisenberg, Donald S., B1 4,996,766, Cl. 29-842.000.
Cerveny, John G.: *See*—
Anders, Robert J.; Cerveny, John G.; and Milkowski, Andrew L., B1 4,798,729, Cl. 426-326.000.
Comm/Scope Company: *See*—
Fox, Steve A.; Nelson, Larry W.; and Neville, Dave W., B1 4,472,595, Cl. 174-36.000.
Donaldson Company, Inc.: *See*—
Schuler, Frederick E., B1 4,395,269, Cl. 55-302.000.
Dunne, Bruce; and Stockham, Thomas G., Jr., to R.R. Donnelley & Sons Company. Method of converting scanner signals into colorimetric signals. B1 5,149,960, 8-30-94, Cl. 250-226.000.
Eisenberg, Donald S.: *See*—
Piorunneck, Heinz; and Eisenberg, Donald S., B1 4,996,766, Cl. 29-842.000.
Ethyl Corporation: *See*—
Stahly, Barbara C.; Lin, Ronny W.; and Atkinson, E. E., Jr., B1 4,990,658, Cl. 562-406.000.
Fibercast Company: *See*—
Martin, Carl E., B1 5,186,502, Cl. 285-133.100.
Fox, Steve A.; Nelson, Larry W.; and Neville, Dave W., to Comm/-Scope Company. Coaxial cable having enhanced handling and bending characteristics. B1 4,472,595, 8-30-94, Cl. 174-36.000.
Green, Michael J.: *See*—
Piwinski, John J.; Green, Michael J.; and Wong, Jesse, B1 5,151,423, Cl. 514-254.000.
Haslanger, Martin F.; Neustadt, Bernard R.; and Smith, Elizabeth M., to Schering Corporation. Mercapto-acylamino acid antihypertensives. B1 4,929,641, 8-30-94, Cl. 514-513.000.
Hoshino, Ryoichi; Sasaki, Hironaka; and Yasutake, Takayuki, to Showa Aluminum Corporation. Condenser for use in a car cooling system. B1 5,190,100, 8-30-94, Cl. 165-146.000.
Johnson, Alan W., to Sauer, Inc. Compact integrated transaxle. B1 5,156,576, 8-30-94, Cl. 475-72.000.
Knollenberg, Robert G., to Particle Measuring Systems, Inc. Particle size detection device having high sensitivity in high molecular scattering environment. B1 4,798,465, 8-30-94, Cl. 356-336.000.
Lin, Ronny W.: *See*—
Stahly, Barbara C.; Lin, Ronny W.; and Atkinson, E. E., Jr., B1 4,990,658, Cl. 562-406.000.
Martin, Carl E., to Fibercast Company. Double-containment pipe fittings and system. B1 5,186,502, 8-30-94, Cl. 285-133.100.
Mattis, John S.: *See*—
McMills, Corey J.; Mattis, John S.; and Milroy, James C., B1 4,674,818, Cl. 439-275.000.
McMills, Corey J.; Mattis, John S.; and Milroy, James C., to Raychem Corp. Method and apparatus for sealing a coaxial cable coupling assembly. B1 4,674,818, 8-30-94, Cl. 439-275.000.
Medical Products Development, Inc.: *See*—
Quaid, Joel, B1 5,007,929, Cl. 623-8.000.
Mercer, Frank B., to P. L. G. Research Limited. Plastic material mesh structure. B1 5,156,495, 8-30-94, Cl. 405-262.000.
Milkowski, Andrew L.: *See*—
Anders, Robert J.; Cerveny, John G.; and Milkowski, Andrew L., B1 4,798,729, Cl. 426-326.000.
Milroy, James C.: *See*—
McMills, Corey J.; Mattis, John S.; and Milroy, James C., B1 4,674,818, Cl. 439-275.000.
Nelson, Larry W.: *See*—
Fox, Steve A.; Nelson, Larry W.; and Neville, Dave W., B1 4,472,595, Cl. 174-36.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Neustadt, Bernard R.: *See*—
Haslanger, Martin F.; Neustadt, Bernard R.; and Smith, Elizabeth M., B1 4,929,641, Cl. 514-513.000.
Neville, Dave W.: *See*—
Fox, Steve A.; Nelson, Larry W.; and Neville, Dave W., B1 4,472,595, Cl. 174-36.000.
Oscar Mayer Foods Corporation: *See*—
Anders, Robert J.; Cerveny, John G.; and Milkowski, Andrew L., B1 4,798,729, Cl. 426-326.000.
P. L. G. Research Limited: *See*—
Mercer, Frank B., B1 5,156,495, Cl. 405-262.000.
Particle Measuring Systems, Inc.: *See*—
Knollenberg, Robert G., B1 4,798,465, Cl. 356-336.000.
Piorunneck, Heinz; and Eisenberg, Donald S., to Burndy Corp. Bi-level card connector and method of making the same. B1 4,996,766, 8-30-94, Cl. 29-842.000.
Piwinski, John J.; Green, Michael J.; and Wong, Jesse, to Schering Corp. Heterocyclic N-oxide derivatives of substituted benzo[5,6]cycloheptapyridines, compositions and methods of use. B1 5,151,423, 8-30-94, Cl. 514-254.000.
Quaid, Joel, to Medical Products Development, Inc. Open-cell silicone-elastomer medical implant. B1 5,007,929, 8-30-94, Cl. 623-8.000.
R.R. Donnelley & Sons Company: *See*—
Dunne, Bruce; and Stockham, Thomas G., Jr., B1 5,149,960, Cl. 250-226.000.
Raychem Corp.: *See*—
McMills, Corey J.; Mattis, John S.; and Milroy, James C., B1 4,674,818, Cl. 439-275.000.
Sasaki, Hironaka: *See*—
Hoshino, Ryoichi; Sasaki, Hironaka; and Yasutake, Takayuki, B1 5,190,100, Cl. 165-146.000.
Sauer, Inc.: *See*—
Johnson, Alan W., B1 5,156,576, Cl. 475-72.000.
Schering Corporation: *See*—
Haslanger, Martin F.; Neustadt, Bernard R.; and Smith, Elizabeth M., B1 4,929,641, Cl. 514-513.000.
Piwinski, John J.; Green, Michael J.; and Wong, Jesse, B1 5,151,423, Cl. 514-254.000.
Schuler, Frederick E., to Donaldson Company, Inc. Compact dust filter assembly. B1 4,395,269, 8-30-94, Cl. 55-302.000.
Showa Aluminum Corporation: *See*—
Hoshino, Ryoichi; Sasaki, Hironaka; and Yasutake, Takayuki, B1 5,190,100, Cl. 165-146.000.
Smith, Elizabeth M.: *See*—
Haslanger, Martin F.; Neustadt, Bernard R.; and Smith, Elizabeth M., B1 4,929,641, Cl. 514-513.000.
Stahly, Barbara C.; Lin, Ronny W.; and Atkinson, E. E., Jr., to Ethyl Corporation. Process for preparing ibuprofen and its alkyl esters. B1 4,990,658, 8-30-94, Cl. 562-406.000.
Stockham, Thomas G., Jr.: *See*—
Dunne, Bruce; and Stockham, Thomas G., Jr., B1 5,149,960, Cl. 250-226.000.
Wong, Jesse: *See*—
Piwinski, John J.; Green, Michael J.; and Wong, Jesse, B1 5,151,423, Cl. 514-254.000.
Yasutake, Takayuki: *See*—
Hoshino, Ryoichi; Sasaki, Hironaka; and Yasutake, Takayuki, B1 5,190,100, Cl. 165-146.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Hirsch, William H.; and Goldhardt, Donald J., 350,201, Cl. D24-128.000.
Abbruzzese, Domenico: *See*—
Natuzzi, Pasquale; and Abbruzzese, Domenico, 350,034, Cl. D6-381.000.
Abrams, Allan M. Step chair. 350,030, 8-30-94, Cl. D6-335.000.
Adell, Robert. Combined coaster and single trap lottery picker. 350,162, 8-30-94, Cl. D21-37.000.
Adiv, David. Gasoline tank directional label. 350,156, 8-30-94, Cl. D20-11.000.
Aeolus Electronic Co., Ltd.: *See*—
Lin, Yao-tang, 350,112, Cl. D13-108.000.
Aida Engineering, Ltd.: *See*—
Imanishi, Shozo; and Horie, Yasuhiro, 350,141, Cl. D15-123.000.
Imanishi, Shozo; and Horie, Yasuhiro, 350,142, Cl. D15-123.000.
Akihiro, Hagimo: *See*—
Makoto, Shinbo; Akihiro, Hagimo; and Hiromi, Asami, 350,123, Cl. D14-114.000.
Akiyama, Akio: *See*—
Wakayama, Shouji; and Akiyama, Akio, 350,146, Cl. D16-133.000.
Andersen, Leonhardt J. Christmas tree ornament. 350,080, 8-30-94, Cl. D11-121.000.
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., to Goodyear Tire & Rubber Company, The. Tire tread. 350,094, 8-30-94, Cl. D12-147.000.
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., to Goodyear Tire & Rubber Company, The. Tire tread. 350,095, 8-30-94, Cl. D12-147.000.
Anness, Timothy W.: *See*—
Kong, Richard C.; Myles, Dennis; Kugler, Erich O.; Janosko, Robert J.; Anness, Timothy W.; and Sims, Daniel J., 350,086, Cl. D12-92.000.
Antonious, Anthony J. Wood type golf club head. 350,176, 8-30-94, Cl. D21-214.000.
Apps, William P., to Rehrig Pacific Company, Inc. Floor construction for full depth crate. 350,028, 8-30-94, Cl. D3-314.000.
Aqua Glass Corporation: *See*—
Clark, Carolynn L.; and Dierks, Fred W., 350,185, Cl. D23-277.000.
Arad, Avi; and Turnquist, Finn, to Toy Biz, Inc. Toy weapon magazine. 350,169, 8-30-94, Cl. D21-146.000.
Arkenstone, Inc.: *See*—
Zeiszler, James M., 350,116, Cl. D14-109.000.
Artime S.A.: *See*—
Giardiello, Barbara, 350,074, Cl. D10-39.000.
Ashley, Charles R.: *See*—
Huck, Charles M.; Ashley, Charles R.; Wilkinson, Ken; and Sochon, Henry R., 350,193, Cl. D24-110.000.
Attinello, John S.; and Glover, William E., to Goodyear Tire & Rubber Company, The. Tire tread. 350,097, 8-30-94, Cl. D12-147.000.
Attinello, John S.; and Glover, William E., to Goodyear Tire & Rubber Company, The. Tire tread. 350,098, 8-30-94, Cl. D12-147.000.
Attinello, John S.: *See*—
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,094, Cl. D12-147.000.
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,095, Cl. D12-147.000.
B & L Products, Inc.: *See*—
Fotioo, Bobby, 350,155, Cl. D19-99.000.
Baerenwald, Philip M.: *See*—
Bro, Jay M.; and Baerenwald, Philip M., 350,170, Cl. D21-160.000.
Barton, Geoffery T., to Logform Industries Pty Ltd. Electrically actuated valve. 350,182, 8-30-94, Cl. D23-248.000.
Beaulieu, Jocelyn. Chair. 350,032, 8-30-94, Cl. D6-366.000.
Beaulieu, Jocelyn. Chair. 350,033, 8-30-94, Cl. D6-366.000.
Bega Lighting: *See*—
Druffel, James B.; and Routh, Larry L., 350,213, Cl. D26-74.000.
Bell, John D.; and Worthington, William J., to Nike, Inc. Shoe upper. 350,022, 8-30-94, Cl. D2-969.000.
Bellini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic calculator. 350,149, 8-30-94, Cl. D18-7.000.
Biomedical Dynamics Corporation: *See*—
Marino, Joseph A.; Moberg, John R.; and Grimm, Thomas M., 350,194, Cl. D24-112.000.
Blanchard, Kenneth S. Cover for the bed of a pickup truck. 350,108, 8-30-94, Cl. D12-401.000.
Bleler, Peter R.: *See*—
Kunewalder, Anthony P.; Land, Carol J.; Bleler, Peter R.; Scott, Pippa; Sawhney, Ravi; and Splane, Robson, 350,171, Cl. D21-191.000.
Blevins, Leslie, Jr. Front and side panels of a firebox with automatic feed hopper. 350,189, 8-30-94, Cl. D23-329.000.
Bondy, Henry C. Smokeless cigars. 350,215, 8-30-94, Cl. D27-101.000.
Bravo, Jose: *See*—
Gummeson, Phillip C.; and Bravo, Jose, 350,127, Cl. D14-116.000.
Brayer, Randall R.; Consolacion, Rudy E.; Graas, Maurice; and Robinson, Beale A., to Goodyear Tire & Rubber Company, The. Tire tread. 350,092, 8-30-94, Cl. D12-147.000.
Bridgestone Corporation: *See*—
Fukushima, Masaharu, 350,093, Cl. D12-147.000.
Brightwell, Robert A.; Galante, Richard L.; Lawrence, Jay K.; and Waibel, Terry J., to Goodyear Tire & Rubber Company, The. Tire tread. 350,096, 8-30-94, Cl. D12-147.000.
Bro, Jay M.; and Baerenwald, Philip M., to Today's Kids, Inc. Toy penguin figure. 350,170, 8-30-94, Cl. D21-160.000.
Bruzzi, Giuseppe: *See*—
Wepner, Stephen F.; and Bruzzi, Giuseppe, 350,079, Cl. D11-6.000.
Buckley, Robert S. Single entry shopping cart holder. 350,038, 8-30-94, Cl. D6-462.000.
Buckner, J. Bart. Tennis shoe sandal. 350,015, 8-30-94, Cl. D2-916.000.
Burgener, Eddy, to Vuarnet Watches S.A. Watch. 350,073, 8-30-94, Cl. D10-39.000.
Carbaugh, John E., Jr.: *See*—
Ramirez, Stan L.; and Spartin, Louis P., 350,177, Cl. D21-217.000.

Caroma Industries Limited: *See*—
McNeill, David J., 350,188, Cl. D23-313.000.
Cashew Consulting, Inc.: *See*—
Kashani, Hooshang, 350,202, Cl. D24-147.000.
Casio Computer Co., Ltd.: *See*—
Yoshitake, Isamu; and Igo, Toshio, 350,130, Cl. D14-141.000.
Chaenomeles, Inc.: *See*—
Willis, Tucker; and Cinquemani, James, Jr., 350,084, Cl. D11-182.000.
Christy, Bob: *See*—
Christy, Diana; and Christy, Bob, 350,012, Cl. D2-720.000.
Christy, Diana; and Christy, Bob. Patient examination gown. 350,012, 8-30-94, Cl. D2-720.000.
Chrysler Corporation: *See*—
Kong, Richard C.; Myles, Dennis; Kugler, Erich O.; Janosko, Robert J.; Anness, Timothy W.; and Sims, Daniel J., 350,086, Cl. D12-92.000.
Chu, Kam W., to Intertronics Industrial Company Limited. Cassette player with a LCD game. 350,159, 8-30-94, Cl. D21-13.000.
Cinquemani, James, Jr.: *See*—
Willis, Tucker; and Cinquemani, James, Jr., 350,084, Cl. D11-182.000.
Clark, Carolynn L.; and Dierks, Fred W., to Aqua Glass Corporation. Bathtub. 350,185, 8-30-94, Cl. D23-277.000.
Clasby, Brad L. Clamp-on adjustable light for a barbecue grill. 350,211, 8-30-94, Cl. D26-60.000.
Clawson, Burrell E.; and Weigl, James. Humidifier manifold for a ventilator breathing circuit. 350,190, 8-30-94, Cl. D23-358.000.
Conair Corporation: *See*—
Rizzuto, Leandro P., Jr., 350,217, Cl. D28-13.000.
Conion Electronic(s) PTE Limited: *See*—
Lim, Henry L. C., 350,117, Cl. D14-100.000.
Consolacion, Rudy E.: *See*—
Brayer, Randall R.; Consolacion, Rudy E.; Graas, Maurice; and Robinson, Beale A., 350,092, Cl. D12-147.000.
Cook, Clifford M. Commode deodorizing unit. 350,186, 8-30-94, Cl. D23-309.000.
Corbin Russwin, Inc.: *See*—
Hoffman, Anthony J.; and Kearns, Robert E., 350,058, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 350,059, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 350,060, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 350,061, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 350,062, Cl. D8-347.000.
Kearns, Robert E., 350,057, Cl. D8-347.000.
Kearns, Robert E., 350,063, Cl. D8-347.000.
Crawford, William C.: *See*—
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., 350,173, Cl. D21-210.000.
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., 350,174, Cl. D21-210.000.
Crawley, Stephen D., to Lake Country Sales, Inc. Muntin end connector. 350,064, 8-30-94, Cl. D8-382.000.
Creative Point, Inc.: *See*—
Long, Jerry M; Palmer, Christopher G.; and Palmer, Peter J., 350,044, Cl. D6-632.000.
Custom Fibreglass Mfg. Co., Inc.: *See*—
Schroeder, Hartmut W., 350,105, Cl. D12-221.000.
Dai-Ichi Denpa Kogyo Co., Ltd.: *See*—
Watanabe, Hironobu, 350,137, Cl. D14-238.000.
Daneault, Stephen. Lotto dart board. 350,158, 8-30-94, Cl. D21-6.000.
Dart Industries Inc.: *See*—
Zimmerman, Larry G., 350,046, Cl. D7-392.000.
Davis, Jackie L.: *See*—
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., 350,173, Cl. D21-210.000.
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., 350,174, Cl. D21-210.000.
de Barsy, Olivier, to Goodyear Tire & Rubber Company, The. Tire tread. 350,101, 8-30-94, Cl. D12-147.000.
Dialfone, Ltd.: *See*—
Keung, Chan Wai, 350,131, Cl. D14-151.000.
Dierks, Fred W.: *See*—
Clark, Carolynn L.; and Dierks, Fred W., 350,185, Cl. D23-277.000.
Diversified Specialists, Inc.: *See*—
Klitsner, Dan; Eastwood, Mark; and Neitz, Richard R., 350,132, Cl. D14-165.000.
Donaghu, Michael T.: *See*—
Passke, Joel L.; Forland, David M.; Lucas, Robert J.; and Donaghu, Michael T., 350,016, Cl. D2-946.000.
Downes, Glenn W.; and Downes, Peggy W. Earring and brooch organizer. 350,027, 8-30-94, Cl. D3-278.000.
Downes, Peggy W.: *See*—
Downes, Glenn W.; and Downes, Peggy W., 350,027, Cl. D3-278.000.
Druffel, James B.; and Routh, Larry L., to Bega Lighting. Cover for recessed wall luminaire. 350,213, 8-30-94, Cl. D26-74.000.
Dunnavan, Donna J.; and Dunnavan, James F. Game board. 350,160, 8-30-94, Cl. D21-27.000.
Dunnavan, James F.: *See*—
Dunnavan, Donna J.; and Dunnavan, James F., 350,160, Cl. D21-27.000.
Eastwood, Mark: *See*—
Klitsner, Dan; Eastwood, Mark; and Neitz, Richard R., 350,132, Cl. D14-165.000.
Edge, Virginia L.; and Marshall, Wendolyn L. Portable, disposable hot and cold beverage container. 350,065, 8-30-94, Cl. D9-302.000.
Edwards, Paul. Bootjack. 350,011, 8-30-94, Cl. D2-642.000.
Equinox Industries Ltd.: *See*—
Stanton, William H., 350,085, Cl. D12-11.000.
Evraert, Bruno; and Lash, Stephen, to Michelin Recherche et Technique S.A. Tire. 350,102, 8-30-94, Cl. D12-147.000.
Fenton, William E.; Rak, Roman P.; and Nagele, Albert, to Motorola, Inc,. Radio packet modem device. 350,138, 8-30-94, Cl. D14-242.000.
Ferrari, S.p.A.: *See*—
Ramaciotti, Lorenzo, 350,107, Cl. D12-401.000.
Few, Jeffrey P., to Norco Industries, Inc. Glad hand security lock. 350,055, 8-30-94, Cl. D8-331.000.
Fila U.S.A. Inc.: *See*—
Gitelman, Lyuba, 350,013, Cl. D2-902.000.
Flawa Schweizer Verbandstoff-und Wattefabriken AG: *See*—
Gerhartl, Gerd W., 350,199, Cl. D24-125.000.
Gerhartl, Gerd W., 350,200, Cl. D24-125.000.
Ford Motor Company: *See*—
Fowler, James H.; and Schumaker, Nevenka, 350,139, Cl. D14-258.000.
Forland, David M.: *See*—
Passke, Joel L.; Forland, David M.; Lucas, Robert J.; and Donaghu, Michael T., 350,016, Cl. D2-946.000.
Fotioo, Bobby, to B & L Products, Inc. Corner joint support for a hanging file frame. 350,155, 8-30-94, Cl. D19-99.000.
Fowler, James H.; and Schumaker, Nevenka, to Ford Motor Company. Control panel for an automobile radio/cassette. 350,139, 8-30-94, Cl. D14-258.000.
Frederick, Richard W.; and Yarrish, Michael A., to Rotaquip Inc. Level gauge. 350,076, 8-30-94, Cl. D10-96.000.
Freygang, Dale G.: *See*—
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,094, Cl. D12-147.000.
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,095, Cl. D12-147.000.
Fuji Photo Film Co., Ltd.: *See*—
Ina, Takao, 350,106, Cl. D16-234.000.
Ina, Takao, 350,147, Cl. D16-230.000.
Fujimoto, Shinichiro: *See*—
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 350,205, Cl. D24-200.000.
Fujitsu Limited: *See*—
Tsuchida, Makoto; Miyaji, Seiichi; and Uchiyama, Kaneatsu, 350,152, Cl. D18-55.000.
Fukushima, Masaharu, to Bridgestone Corporation. Automobile tire. 350,093, 8-30-94, Cl. D12-147.000.
Fulton Performance Products, Inc.: *See*—
Richter, Karl E., 350,054, Cl. D8-331.000.
Funai Electric Co., Ltd.: *See*—
Kaneko, Takuji, 350,121, Cl. D14-106.000.
Galante, Richard L.: *See*—
Brightwell, Robert A.; Galante, Richard L.; Lawrence, Jay K.; and Waibel, Terry J., 350,096, Cl. D12-147.000.
Gener, Albert M. Bottle stand. 350,039, 8-30-94, Cl. D6-466.000.
Gerhartl, Gerd W., to Flawa Schweizer Verbandstoff-und Wattefabriken AG. Sanitary pad. 350,199, 8-30-94, Cl. D24-125.000.
Gerhartl, Gerd W., to Flawa Schweizer Verbandstoff-und Wattefabriken AG. Sanitary pad. 350,200, 8-30-94, Cl. D24-125.000.
Giardiello, Barbara, to Lucien Rochat SA. Watch. 350,071, 8-30-94, Cl. D10-32.000.
Giardiello, Barbara, to Artime S.A. Watch. 350,074, 8-30-94, Cl. D10-39.000.
Gitelman, Lyuba, to Fila U.S.A. Inc. Sneaker shoe with cross strap. 350,013, 8-30-94, Cl. D2-902.000.
Glover, William E.: *See*—
Attinello, John S.; and Glover, William E., 350,097, Cl. D12-147.000.
Attinello, John S.; and Glover, William E., 350,098, Cl. D12-147.000.
Goldberg, Alan E., to Mobil Oil Corp. Combined service station and canopy. 350,207, 8-30-94, Cl. D25-34.000.
Goldhardt, Donald J.: *See*—
Hirsch, William H.; and Goldhardt, Donald J., 350,201, Cl. D24-128.000.
Goldstar Co., Ltd.: *See*—
Kim, Tai B., 350,136, Cl. D14-211.000.
Goodyear Tire & Rubber Company, The: *See*—
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,094, Cl. D12-147.000.
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,095, Cl. D12-147.000.
Attinello, John S.; and Glover, William E., 350,097, Cl. D12-147.000.
Attinello, John S.; and Glover, William E., 350,098, Cl. D12-147.000.
Brayer, Randall R.; Consolacion, Rudy E.; Graas, Maurice; and Robinson, Beale A., 350,092, Cl. D12-147.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Brightwell, Robert A.: Galante, Richard L.; Lawrence, Jay K.; and Waibel, Terry J., 350,096, Cl. D12-147.000.
de Barsy, Olivier, 350,101, Cl. D12-147.000.
Graas, Maurice, 350,103, Cl. D12-151.000.
Gooyear Tire & Rubber Company, The: *See*—
van Tuyl, Jan H., 350,100, Cl. D12-147.000.
Graas, Maurice, to Goodyear Tire & Rubber Company, The. Tire tread. 350,103, 8-30-94, Cl. D12-151.000.
Graas, Maurice: *See*—
Brayer, Randall R.; Consolacion, Rudy E.; Graas, Maurice; and Robinson, Beale A., 350,092, Cl. D12-147.000.
Greenfield Industries, Inc.: *See*—
Greenfield, Peter, 350,089, Cl. D12-120.000.
Greenfield, Peter, to Greenfield Industries, Inc. Portable removable bicycle stand. 350,089, 8-30-94, Cl. D12-120.000.
Grimm, Thomas M.: *See*—
Marino, Joseph A.; Moberg, John R.; and Grimm, Thomas M., 350,194, Cl. D24-112.000.
Guerini, Albert J.: *See*—
Iftikar, Syed H.; Thompson, Herbert E.; and Guerini, Albert J., 350,115, Cl. D14-114.000.
Gummeson, Phillip C.; and Bravo, Jose, to Spectra-Physics Scanning Systems, Inc. Stand for a handheld laser scanner. 350,127, 8-30-94, Cl. D14-116.000.
Hart, Douglas M., to Orepac Building Products. Display cabinet for attachment to a storage rack. 350,157, 8-30-94, Cl. D20-43.000.
Harwood, James C.: *See*—
Quarberg, Craig D.; Harwood, James C.; and Long, Dennis, 350,069, Cl. D9-455.000.
Hatfield, Tinker L.; and McDonald, Steven C., to Nike, Inc. Element for a shoe sole. 350,023, 8-30-94, Cl. D2-977.000.
Heaton, Nowell G. Disposable lighter supporting clip. 350,216, 8-30-94, Cl. D27-144.000.
Hino, Ichiroh; and Shudoh, Tomoyuki, to Sony Corporation. Cordless telephone. 350,129, 8-30-94, Cl. D14-138.000.
Hiromi, Asami: *See*—
Makoto, Shinbo; Akihiro, Hagimo; and Hiromi, Asami, 350,123, Cl. D14-114.000.
Hirsch, William H.; and Goldhardt, Donald J., to Abbott Laboratories. External retaining device for a feeding tube. 350,201, 8-30-94, Cl. D24-128.000.
Hitter, Steve, to Sportime Watches AG. Wristwatch. 350,072, 8-30-94, Cl. D10-32.000.
Hoffman, Anthony J.; and Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 350,058, 8-30-94, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 350,059, 8-30-94, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 350,060, 8-30-94, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 350,061, 8-30-94, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., to Corbin Russwin, Inc. Portion of key blade blank. 350,062, 8-30-94, Cl. D8-347.000.
Hohner, Hans M., to Klio Eterna Schreibgerate GmbH & Co. KG. Desk type holder for ball point pens. 350,154, 8-30-94, Cl. D19-[illegible].100.
Horie, Yasuhiro: *See*—
Imanishi, Shozo; and Horie, Yasuhiro, 350,141, Cl. D15-123.000.
Imanishi, Shozo; and Horie, Yasuhiro, 350,142, Cl. D15-123.000.
Huang, Chung-Shyan. Bell. 350,077, 8-30-94, Cl. D10-116.000.
Huck, Charles M.; Ashley, Charles R.; Wilkinson, Ken; and Sochon, Henry R., to Schering Corporation. Combined inhaler and cover. 350,193, 8-30-94, Cl. D24-110.000.
Huffman, Gloria, to Paragon Trade Brands, Inc. Insert pad for a diaper or pant. 350,196, 8-30-94, Cl. D24-124.000.
Huffman, Gloria, to Paragon Trade Brands, Inc. Insert pad for a diaper or pant. 350,197, 8-30-94, Cl. D24-124.000.
Huffman, Gloria, to Paragon Trade Brands, Inc. Insert pad for a diaper or pant. 350,198, 8-30-94, Cl. D24-124.000.
Hunter Fan Company: *See*—
Tsuji, Masao, 350,191, Cl. D23-364.000.
Hygiene-Technik Inc.: *See*—
Ophardt, Heiner, 350,070, Cl. D9-521.000.
Iftikar, Syed H.; Thompson, Herbert E.; and Guerini, Albert J., to SyQuest Technology, Inc. Cartridge with a 1.8 inch form factor for a removable cartridge disk drive. 350,115, 8-30-94, Cl. D14-114.000.
IGI Corp.: *See*—
Isroff, Gary R., 350,078, Cl. D11-4.000.
Igo, Toshio: *See*—
Yoshitake, Isamu; and Igo, Toshio, 350,130, Cl. D14-141.000.
Imanishi, Shozo; and Horie, Yasuhiro, to Aida Engineering, Ltd. Mechanical press. 350,141, 8-30-94, Cl. D15-123.000.
Imanishi, Shozo; and Horie, Yasuhiro, to Aida Engineering, Ltd. Mechanical press. 350,142, 8-30-94, Cl. D15-123.000.
Ina, Takao, to Fuji Photo Film Co., Ltd. Liquid crystal video projector. 350,106, 8-30-94, Cl. D16-234.000.
Ina, Takao, to Fuji Photo Film Co., Ltd. Liquid crystal video projector. 350,147, 8-30-94, Cl. D16-230.000.
Inatani, Shujiro, to Rays Engineering Co., Ltd. Bicycle hub. 350,088, 8-30-94, Cl. D12-115.000.
Industrie Natuzzi S.p.A.: *See*—
Natuzzi, Pasquale; and Abbruzzese, Domenico, 350,034, Cl. D6-381.000.
Infection Control Products, Inc.: *See*—
Russell, John P., 350,203, Cl. D24-184.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Bellini, Mario, 350,149, Cl. D18-7.000.
Interlego, A. G.: *See*—
Ruszkai, Ede F., 350,168, Cl. D21-143.000.
Interlego, A.G.: *See*—
Refsing, Arne, 350,165, Cl. D21-108.000.
Intermec Corporation: *See*—
Weitkamp, Erick W., 350,150, Cl. D18-50.000.
International Business Machines Corp.: *See*—
Ratzlaff, Joerg, 350,122, Cl. D14-113.000.
Intertronics Industrial Company Limited: *See*—
Chu, Kam W., 350,159, Cl. D21-13.000.
Isroff, Gary R., to IGI Corp. Bracelet. 350,078, 8-30-94, Cl. D11-4.000.
Ivanyshyn, Irene. Boot. 350,014, 8-30-94, Cl. D2-910.000.
J. A. Henckels Zwillingswerk: *See*—
Thomas, Dieter, 350,218, Cl. D28-59.000.
Jabbar, Najat. Child'educational calendar. 350,153, 8-30-94, Cl. D19-20.000.
Janosko, Robert J.: *See*—
Kong, Richard C.; Myles, Dennis; Kugler, Erich O.; Janosko, Robert J.; Anness, Timothy W.; and Sims, Daniel J., 350,086, Cl. D12-92.000.
Joerger, Gerhard E. Lavatory faucet set. 350,183, 8-30-94, Cl. D23-242.000.
John Manufacturing Limited: *See*—
Yuen, Se K., 350,210, Cl. D26-42.000.
Yuen, Se K., 350,212, Cl. D26-65.000.
Johnson, Dennis, to Simply Convenient Corporation, The. Beverage can carrier. 350,049, 8-30-94, Cl. D7-619.000.
Johnson, Jay M. Combined golf ball marker and holder. 350,179, 8-30-94, Cl. D21-234.000.
Johnson, Terry, to Nokia Mobile Phones (U.K.) Ltd. Battery housing for a portable telephone. 350,110, 8-30-94, Cl. D13-103.000.
Jones, Jim. Kaleidoscope. 350,163, 8-30-94, Cl. D21-60.000.
Kabushiki Kaisha Fuji Iryoki: *See*—
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 350,205, Cl. D24-200.000.
Kabushiki Kaisha Japan Health: *See*—
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 350,205, Cl. D24-200.000.
Kabushiki Kaisha Toshiba: *See*—
Tsuboi, Hideki; and Konno, Akihiko, 350,120, Cl. D14-105.000.
Kahl, W. Henry; and Taylor, Neil R., to Rubbermaid Incorporated. Thermoelectric container. 350,048, 8-30-94, Cl. D7-605.000.
Kaneko, Takuji, to Funai Electric Co., Ltd. Computer. 350,121, 8-30-94, Cl. D14-106.000.
Kanno, Ryuta, to Sony Corporation. Radio receiver. 350,133, 8-30-94, Cl. D14-198.000.
Kanno, Ryuta, to Sony Corporation. Radio receiver. 350,134, 8-30-94, Cl. D14-198.000.
Kashani, Hooshang, to Cashew Consulting, Inc. Tongue cleaner. 350,202, 8-30-94, Cl. D24-147.000.
Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 350,057, 8-30-94, Cl. D8-347.000.
Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 350,063, 8-30-94, Cl. D8-347.000.
Kearns, Robert E.: *See*—
Hoffman, Anthony J.; and Kearns, Robert E., 350,058, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 350,059, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 350,060, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 350,061, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 350,062, Cl. D8-347.000.
Keung, Chan Wai, to Dialfone, Ltd. Telephone. 350,131, 8-30-94, Cl. D14-151.000.
Khyber Technologies Corporation: *See*—
Kumar, Rajendra; and Morrison, John W., II, 350,118, Cl. D14-100.000.
Kumar, Rajendra; and Morrison, John W., II, 350,119, Cl. D14-100.000.
Kilgore, Bruce J., to Nike, Inc. Heel insert for a shoe sole. 350,018, 8-30-94, Cl. D2-964.000.
Kilgore, Bruce J., to Nike, Inc. Heel insert for a shoe sole. 350,019, 8-30-94, Cl. D2-965.000.
Kilgore, Bruce J., to Nike, Inc. Heel insert for a shoe sole. 350,020, 8-30-94, Cl. D2-965.000.
Kim, Tai B., to Goldstar Co., Ltd. Speaker for a television set. 350,136, 8-30-94, Cl. D14-211.000.
Kinney Shoe Corporation: *See*—
Oliver, Norwood D.; and Wenzel-Murphy, Karen, 350,083, Cl. D11-160.000.
Kino, Moriya, to Royal Co., Ltd. Toy shovel. 350,166, 8-30-94, Cl. D21-120.000.
Kiyokane, Jerrilyn C., to Namkung Promotions Inc. Pail with a lid. 350,047, 8-30-94, Cl. D7-601.000.
Klawitter, Michele P. Combined tote bag and toy stove. 350,167, 8-30-94, Cl. D21-122.000.
Klio Eterna Schreibgerate GmbH & Co. KG: *See*—
Hohner, Hans M., 350,154, Cl. D19-84.000.
Klitsner, Dan; Eastwood, Mark; and Neitz, Richard R., to Diversified Specialists, Inc. Child's cassette recorder and player combination. 350,132, 8-30-94, Cl. D14-165.000.

Klunder, Joyce A. Tongs. 350,050, 8-30-94, Cl. D7-686.000.
Kohler Co.: *See*—
Kohler, Herbert V., Jr., 350,184, Cl. D23-250.000.
Kohler, Herbert V., Jr., to Kohler Co. Handle for a plumbing fitting. 350,184, 8-30-94, Cl. D23-250.000.
Kong, Richard C.; Myles, Dennis; Kugler, Erich O.; Janosko, Robert J.; Anness, Timothy W.; and Sims, Daniel J., to Chrysler Corporation. Automobile body. 350,086, 8-30-94, Cl. D12-92.000.
Konno, Akihiko: *See*—
Tsuboi, Hideki; and Konno, Akihiko, 350,120, Cl. D14-105.000.
Kramer, Barry L. Lampshade. 350,214, 8-30-94, Cl. D26-128.000.
Kristovich, Edmin A. Golf ball marker. 350,178, 8-30-94, Cl. D21-234.000.
Kugler, Erich O.: *See*—
Kong, Richard C.; Myles, Dennis; Kugler, Erich O.; Janosko, Robert J.; Anness, Timothy W.; and Sims, Daniel J., 350,086, Cl. D12-92.000.
Kumar, Rajendra; and Morrison, John W., II, to Khyber Technologies Corporation. Grip held data entry computer having an automatic identification reader and modified display. 350,118, 8-30-94, Cl. D14-100.000.
Kumar, Rajendra; and Morrison, John W., II, to Khyber Technologies Corporation. Portable data entry terminal with display a and scanner module. 350,119, 8-30-94, Cl. D14-100.000.
Kunewalder, Anthony P.; Land, Carol J.; Bleler, Peter R.; Scott, Pippa; Sawhney, Ravi; and Splane, Robson, to Kunewalder, Anthony P. Physical exerciser. 350,171, 8-30-94, Cl. D21-191.000.
Lake Country Sales, Inc.: *See*—
Crawley, Stephen D., 350,064, Cl. D8-382.000.
Lam, Lieu: *See*—
Van Le, Ut; and Lam, Lieu, 350,140, Cl. D15-79.000.
Land, Carol J.: *See*—
Kunewalder, Anthony P.; Land, Carol J.; Bleler, Peter R.; Scott, Pippa; Sawhney, Ravi; and Splane, Robson, 350,171, Cl. D21-191.000.
Landers, Samuel P.: *See*—
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,094, Cl. D12-147.000.
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,095, Cl. D12-147.000.
Landes, Rock A. Ventilated toilet seat. 350,187, 8-30-94, Cl. D23-311.000.
Lapin, Joseph: *See*—
Murphy, Kent W.; and Lapin, Joseph, 350,029, Cl. D4-138.000.
Lash, Stephen: *See*—
Evraert, Bruno; and Lash, Stephen, 350,102, Cl. D12-147.000.
Lawrence, Jay K.: *See*—
Brightwell, Robert A.; Galante, Richard L.; Lawrence, Jay K.; and Waibel, Terry J., 350,096, Cl. D12-147.000.
Lee, William B. Display holder for vehicles. 350,104, 8-30-94, Cl. D12-193.000.
Lehoux, Bruno; and Lopez, Philippe. Bench. 350,031, 8-30-94, Cl. D6-351.000.
Leung, Chee-Chun, to Ouanta Computer Inc. Computer keyboard with built-in trackball. 350,126, 8-30-94, Cl. D14-115.000.
Lewis, Fielding H., Jr.: *See*—
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., 350,173, Cl. D21-210.000.
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., 350,174, Cl. D21-210.000.
Lim, Henry L. C., to Conion Electronic(s) PTE Limited. Housing for a data storage device. 350,117, 8-30-94, Cl. D14-100.000.
Lin, Chih-Nan. Steering wheel lock. 350,056, 8-30-94, Cl. D8-331.000.
Lin, Chu-Chen. Golf bag. 350,026, 8-30-94, Cl. D3-255.000.
Lin, Yao-tang, to Aeolus Electronic Co., Ltd. Cellular phone battery charger. 350,112, 8-30-94, Cl. D13-108.000.
Logform Industries Pty Ltd.: *See*—
Barton, Geoffery T., 350,182, Cl. D23-248.000.
Long, Dennis: *See*—
Quarberg, Craig D.; Harwood, James C.; and Long, Dennis, 350,069, Cl. D9-455.000.
Long, Jerry M; Palmer, Christopher G.; and Palmer, Peter J., to Creative Point, Inc. Case for compact discs. 350,044, 8-30-94, Cl. D6-632.000.
Lopez, Philippe: *See*—
Lehoux, Bruno; and Lopez, Philippe, 350,031, Cl. D6-351.000.
Lucas, Robert J.: *See*—
Passke, Joel L.; Forland, David M.; Lucas, Robert J.; and Donaghu, Michael T., 350,016, Cl. D2-946.000.
Lucien Rochat SA: *See*—
Giardiello, Barbara, 350,071, Cl. D10-32.000.
Machine-O-Matic Limited: *See*—
Schwarzli, Josef W., 350,041, Cl. D6-495.000.
MacNeal, Lawrence A. Ultraviolet water sterilizer for hot tubs, swimming pools and spas. 350,181, 8-30-94, Cl. D23-207.000.
Magnusson, Emanuela F. Table. 350,040, 8-30-94, Cl. D6-484.000.
Makita Corporation: *See*—
Okumura, Michio, 350,111, Cl. D13-103.000.
Makoto, Shinbo; Akihiro, Hagimo; and Hiromi, Asami, to Sophia Systems Co., Ltd. In-circuit emulator. 350,123, 8-30-94, Cl. D14-114.000.
Mance, Cornelius J. Foot support. 350,204, 8-30-94, Cl. D24-192.000.
Manestar, Miroslav, to Michelin Recherche et Technique S.A. Tire. 350,099, 8-30-94, Cl. D12-147.000.
Marino, Joseph A.; Moberg, John R.; and Grimm, Thomas M., to Biomedical Dynamics Corporation. Combined suction and irrigation surgical instrument. 350,194, 8-30-94, Cl. D24-112.000.
Marshall, James. Aritifical fishing lure. 350,180, 8-30-94, Cl. D22-126.000.
Marshall, Wendolyn L.: *See*—
Edge, Virginia L.; and Marshall, Wendolyn L., 350,065, Cl. D9-302.000.
Martin, John, to S. C. Johnson & Son, Inc. Night light insert for a fragrance diffuser unit. 350,209, 8-30-94, Cl. D26-26.000.
Matsushita Electric Works, Ltd.: *See*—
Mochida, Taro, 350,206, Cl. D24-200.000.
Mattis, John: *See*—
McMills, Corey; and Mattis, John, 350,053, Cl. D8-14.000.
May, Carey M. Post-supported flower pot holder. 350,081, 8-30-94, Cl. D11-148.000.
McCormick, Merlin S. Lottery selector board. 350,161, 8-30-94, Cl. D21-37.000.
McDonald, Steven C.: *See*—
Hatfield, Tinker L.; and McDonald, Steven C., 350,023, Cl. D2-977.000.
McMills, Corey; and Mattis, John, to Raychem Corporation. Coaxial cable connector installation tool. 350,053, 8-30-94, Cl. D8-14.000.
McNeill, David J., to Caroma Industries Limited. Flush tank. 350,188, 8-30-94, Cl. D23-313.000.
Meridian, Inc.: *See*—
Shepherd, Donald A., 350,042, Cl. D6-509.000.
Meta-Lite Inc.: *See*—
Zajac, Bozena, 350,208, Cl. D25-52.000.
Mettler-Toledo, Inc.: *See*—
Reeder, Paul A., 350,075, Cl. D10-94.000.
Michelin Recherche et Technique S.A.: *See*—
Evraert, Bruno; and Lash, Stephen, 350,102, Cl. D12-147.000.
Manestar, Miroslav, 350,099, Cl. D12-147.000.
Miyaji, Seiichi: *See*—
Tsuchida, Makoto; Miyaji, Seiichi; and Uchiyama, Kaneatsu, 350,152, Cl. D18-55.000.
Moberg, John R.: *See*—
Marino, Joseph A.; Moberg, John R.; and Grimm, Thomas M., 350,194, Cl. D24-112.000.
Mobil Oil Corp.: *See*—
Goldberg, Alan E., 350,207, Cl. D25-34.000.
Mochida, Taro, to Matsushita Electric Works, Ltd. Low frequency therapeutic instrument. 350,206, 8-30-94, Cl. D24-200.000.
Morrison, John W., II: *See*—
Kumar, Rajendra; and Morrison, John W., II, 350,118, Cl. D14-100.000.
Kumar, Rajendra; and Morrison, John W., II, 350,119, Cl. D14-100.000.
Motoki, Yoshihiro, to Somar Corporation. Golf club head. 350,175, 8-30-94, Cl. D21-214.000.
Motorola, Inc,.: *See*—
Fenton, William E.; Rak, Roman P.; and Nagele, Albert, 350,138, Cl. D14-242.000.
Nagele, Albert L., 350,113, Cl. D13-110.000.
Soren, Leonid; and Nagele, Albert L., 350,128, Cl. D14-137.000.
Murphy, Kent W.; and Lapin, Joseph, to Rubbermaid Incorporated. Brush handle. 350,029, 8-30-94, Cl. D4-138.000.
Myles, Dennis: *See*—
Kong, Richard C.; Myles, Dennis; Kugler, Erich O.; Janosko, Robert J.; Anness, Timothy W.; and Sims, Daniel J., 350,086, Cl. D12-92.000.
Nagele, Albert: *See*—
Fenton, William E.; Rak, Roman P.; and Nagele, Albert, 350,138, Cl. D14-242.000.
Nagele, Albert L., to Motorola, Inc. Battery charger transformer for a portable telephone. 350,113, 8-30-94, Cl. D13-110.000.
Nagele, Albert L.: *See*—
Soren, Leonid; and Nagele, Albert L., 350,128, Cl. D14-137.000.
Nakaizumi, Hiroshi, to Sony Corporation. Case for an optical disc cartridge. 350,124, 8-30-94, Cl. D14-114.000.
Namkung Promotions Inc.: *See*—
Kiyokane, Jerrilyn C., 350,047, Cl. D7-601.000.
Natuzzi, Pasquale; and Abbruzzese, Domenico, to Industrie Natuzzi S.p.A. Seat. 350,034, 8-30-94, Cl. D6-381.000.
Neitz, Richard R.: *See*—
Klitsner, Dan; Eastwood, Mark; and Neitz, Richard R., 350,132, Cl. D14-165.000.
Nevelle, Anthony R., to Nevelle, Anthony Robert. Rake head for removing leaves from a swimming pool cover. 350,051, 8-30-94, Cl. D8-1.000.
Nevelle, Anthony Robert: *See*—
Nevelle, Anthony R., 350,051, Cl. D8-1.000.
Nike, Inc.: *See*—
Bell, John D.; and Wörthington, William J., 350,022, Cl. D2-969.000.
Hatfield, Tinker L.; and McDonald, Steven C., 350,023, Cl. D2-977.000.
Kilgore, Bruce J., 350,018, Cl. D2-964.000.
Kilgore, Bruce J., 350,019, Cl. D2-965.000.
Kilgore, Bruce J., 350,020, Cl. D2-965.000.
Passke, Joel L.; Forland, David M.; Lucas, Robert J.; and Donaghu, Michael T., 350,016, Cl. D2-946.000.
Sarkinen, Larry R., 350,017, Cl. D2-961.000.
Stein, Sherry, 350,021, Cl. D2-969.000.

VOL 1165 ISS 5 AG 30 1994 UMI

Nokia Mobile Phones (U.K.) Ltd.: *See—*
Johnson, Terry, 350,110, Cl. D13-103.000.
Norco Industries, Inc.: *See—*
Few, Jeffrey P., 350,055, Cl. D8-331.000.
Novo Nordisk A/S: *See—*
Poulsen, Jens U., 350,195, Cl. D24-113.000.
Oki Electric Industry Co., Ltd.: *See—*
Sugawara, Koki; and Yoshida, Kazuo, 350,151, Cl. D18-55.000.
Okumura, Michio, to Makita Corporation. Battery pack. 350,111, 8-30-94, Cl. D13-103.000.
Oliver, Norwood D.; and Wenzel-Murphy, Karen, to Kinney Shoe Corporation. Figure. 350,083, 8-30-94, Cl. D11-160.000.
Ophardt, Heiner, to Hygiene-Technik Inc. Bottle. 350,070, 8-30-94, Cl. D9-521.000.
Ophir, Guy. Set of puzzle pieces. 350,164, 8-30-94, Cl. D21-104.000.
Orepac Building Products: *See—*
Hart, Douglas M., 350,157, Cl. D20-43.000.
Ortega, Cecilia, to Porfidio Destillerie. Bottle. 350,067, 8-30-94, Cl. D9-335.000.
Ouanta Computer Inc.: *See—*
Leung, Chee-Chun, 350,126, Cl. D14-115.000.
Packer Plastics, Inc.: *See—*
Schwartzburg, James H., 350,068, Cl. D9-434.000.
Palmer, Christopher G.: *See—*
Long, Jerry M; Palmer, Christopher G.; and Palmer, Peter J., 350,044, Cl. D6-632.000.
Palmer, Peter J.: *See—*
Long, Jerry M; Palmer, Christopher G.; and Palmer, Peter J., 350,044, Cl. D6-632.000.
Paragon Trade Brands, Inc.: *See—*
Huffman, Gloria, 350,196, Cl. D24-124.000.
Huffman, Gloria, 350,197, Cl. D24-124.000.
Huffman, Gloria, 350,198, Cl. D24-124.000.
Paske, Joel L.; Forland, David M.; Lucas, Robert J.; and Donaghu, Michael T., to Nike, Inc. Element of a shoe sole. 350,016, 8-30-94, Cl. D2-946.000.
Patel, Manhar K.; and Paulovitch, John M., to Reckitt & Colman Inc. Dispenser for air treating material. 350,192, 8-30-94, Cl. D23-369.000.
Paulovitch, John M.: *See—*
Patel, Manhar K.; and Paulovitch, John M., 350,192, Cl. D23-369.000.
Polk Investment Corporation: *See—*
Polk, Matthew S., Jr.; and Rupert, William E., 350,135, Cl. D14-204.000.
Polk, Matthew S., Jr.; and Rupert, William E., to Polk Investment Corporation. Enclosed speaker for vehicle use. 350,135, 8-30-94, Cl. D14-204.000.
Porfidio Destillerie: *See—*
Ortega, Cecilia, 350,067, Cl. D9-335.000.
Poulsen, Jens U., to Novo Nordisk A/S. Capillary tube holder for drawing blood. 350,195, 8-30-94, Cl. D24-113.000.
Quarberg, Craig D.; Harwood, James C.; and Long, Dennis. Handle for a beverage can. 350,069, 8-30-94, Cl. D9-455.000.
Rak, Roman P.: *See—*
Fenton, William E.; Rak, Roman P.; and Nagele, Albert, 350,138, Cl. D14-242.000.
Ramaciotti, Lorenzo, to Ferrari, S.p.A. Automobile tonneau cover. 350,107, 8-30-94, Cl. D12-401.000.
Ramirez, Stan L.; and Spartin, Louis P., to Specialty Materials and Manufacturing Inc.; Carbaugh, John E., Jr.; Ramirez, Stan L.; and Spartin, Louis P. Golf club putter head. 350,177, 8-30-94, Cl. D21-217.000.
Ratzlaff, Joerg, to International Business Machines Corp. Display monitor. 350,122, 8-30-94, Cl. D14-113.000.
Raychem Corporation: *See—*
McMills, Corey; and Mattis, John, 350,053, Cl. D8-14.000.
Rays Engineering Co., Ltd.: *See—*
Inatani, Shujiro, 350,088, Cl. D12-115.000.
Reckitt & Colman Inc.: *See—*
Patel, Manhar K.; and Paulovitch, John M., 350,192, Cl. D23-369.000.
Reeder, Paul A., to Mettler-Toledo, Inc. Removable keyboard for weighing scale. 350,075, 8-30-94, Cl. D10-94.000.
Refsing, Arne, to Interlego, A.G. Element for a toy building set. 350,165, 8-30-94, Cl. D21-108.000.
Rehrig Pacific Company, Inc.: *See—*
Apps, William P., 350,028, Cl. D3-314.000.
Reid, Kevin A.: *See—*
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,094, Cl. D12-147.000.
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; Landers, Samuel P.; and Reid, Kevin A., 350,095, Cl. D12-147.000.
Richter, Karl E., to Fulton Performance Products, Inc. Coupler lock. 350,054, 8-30-94, Cl. D8-331.000.
Rizzuto, Leandro P., Jr., to Conair Corporation. Hair dryer. 350,217, 8-30-94, Cl. D28-13.000.
Robinson, Beale A.: *See—*
Brayer, Randall R.; Consolacion, Rudy E.; Graas, Maurice; and Robinson, Beale A., 350,092, Cl. D12-147.000.
Rolle, Reno R. Coin holder pouch. 350,025, 8-30-94, Cl. D3-226.000.
Rotaquip Inc.: *See—*
Frederick, Richard W.; and Yarrish, Michael A., 350,076, Cl. D10-96.000.
Routh, Larry L.: *See—*
Druffel, James B.; and Routh, Larry L., 350,213, Cl. D26-74.000.
Royal Co., Ltd.: *See—*
Kino, Moriya, 350,166, Cl. D21-120.000.
Rubbermaid Incorporated: *See—*
Kahl, W. Henry; and Taylor, Neil R., 350,048, Cl. D7-605.000.
Murphy, Kent W.; and Lapin, Joseph, 350,029, Cl. D4-138.000.
Ruffolo Enterprise, Inc.: *See—*
Ruffolo, Ralph J., Jr., 350,109, Cl. D12-406.000.
Ruffolo, Ralph J., Jr., to Ruffolo Enterprise, Inc. Window mount snowboard rack. 350,109, 8-30-94, Cl. D12-406.000.
Rupert, William E.: *See—*
Polk, Matthew S., Jr.; and Rupert, William E., 350,135, Cl. D14-204.000.
Rusk, Ellen R. Exercise spring. 350,172, 8-30-94, Cl. D21-198.000.
Russell, John P., to Infection Control Products, Inc. Protective cover for a surgical table armboard. 350,203, 8-30-94, Cl. D24-184.000.
Ruszkai, Ede F., to Interlego, A. G. Barrier for a toy train set. 350,168, 8-30-94, Cl. D21-143.000.
Ryker, Lori E. Combination water bottle carrier and purse. 350,024, 8-30-94, Cl. D3-202.000.
S. C. Johnson & Son, Inc.: *See—*
Martin, John, 350,209, Cl. D26-26.000.
Saitoh, Shoichi, to Sento Krei. Data containing rocket card. 350,125, 8-30-94, Cl. D14-114.000.
Sanborn, Jim V. Bicycle. 350,087, 8-30-94, Cl. D12-111.000.
Sarkinen, Larry R., to Nike, Inc. Bladder for a shoe sole. 350,017, 8-30-94, Cl. D2-961.000.
Sawhney, Ravi: *See—*
Kunewalder, Anthony P.; Land, Carol J.; Bleler, Peter R.; Scott, Pippa; Sawhney, Ravi; and Splane, Robson, 350,171, Cl. D21-191.000.
Schering Corporation: *See—*
Huck, Charles M.; Ashley, Charles R.; Wilkinson, Ken; and Sochon, Henry R., 350,193, Cl. D24-110.000.
Schroeder, Hartmut W., to Custom Fibreglass Mfg. Co., Inc. Interior liner and seating unit for the bed of a pickup truck. 350,105, 8-30-94, Cl. D12-221.000.
Schumaker, Nevenka: *See—*
Fowler, James H.; and Schumaker, Nevenka, 350,139, Cl. D14-258.000.
Schwartzburg, James H., to Packer Plastics, Inc. Combined tamper-proof container and closure. 350,068, 8-30-94, Cl. D9-434.000.
Schwarzli, Josef W., to Machine-O-Matic Limited. Base for a stand. 350,041, 8-30-94, Cl. D6-495.000.
Scott, Pippa: *See—*
Kunewalder, Anthony P.; Land, Carol J.; Bleler, Peter R.; Scott, Pippa; Sawhney, Ravi; and Splane, Robson, 350,171, Cl. D21-191.000.
Sento Krei: *See—*
Saitoh, Shoichi, 350,125, Cl. D14-114.000.
Sharp Kabushiki Kaisha: *See—*
Yubisui, Takahisa; and Yoshimura, Makiko, 350,148, Cl. D18-7.000.
Shepherd, Donald A., to Meridian, Inc. Front and top for a cabinet. 350,042, 8-30-94, Cl. D6-509.000.
Shibata, Kouji, to Sumitomo Rubber Industries, Ltd. Automobile tire. 350,091, 8-30-94, Cl. D12-147.000.
Shudoh, Tomoyuki: *See—*
Hino, Ichiroh; and Shudoh, Tomoyuki, 350,129, Cl. D14-138.000.
Silva, Juan F.; and Silva, Juana E. Oil bottle. 350,066, 8-30-94, Cl. D9-308.000.
Silva, Juana E.: *See—*
Silva, Juan F.; and Silva, Juana E., 350,066, Cl. D9-308.000.
Simply Convenient Corporation, The: *See—*
Johnson, Dennis, 350,049, Cl. D7-619.000.
Sims, Daniel J.: *See—*
Kong, Richard C.; Myles, Dennis; Kugler, Erich O.; Janosko, Robert J.; Anness, Timothy W.; and Sims, Daniel J., 350,086, Cl. D12-92.000.
Sochon, Henry R.: *See—*
Huck, Charles M.; Ashley, Charles R.; Wilkinson, Ken; and Sochon, Henry R., 350,193, Cl. D24-110.000.
Somar Corporation: *See—*
Motoki, Yoshihiro, 350,175, Cl. D21-214.000.
Sony Corporation: *See—*
Hino, Ichiroh; and Shudoh, Tomoyuki, 350,129, Cl. D14-138.000.
Kanno, Ryuta, 350,133, Cl. D14-198.000.
Kanno, Ryuta, 350,134, Cl. D14-198.000.
Nakaizumi, Hiroshi, 350,124, Cl. D14-114.000.
Sophia Systems Co., Ltd.: *See—*
Makoto, Shinbo; Akihiro, Hagimo; and Hiromi, Asami, 350,123, Cl. D14-114.000.
Soren, Leonid; and Nagele, Albert L., to Motorola, Inc. Personal radio communication device. 350,128, 8-30-94, Cl. D14-137.000.
Spartin, Louis P.: *See—*
Ramirez, Stan L.; and Spartin, Louis P., 350,177, Cl. D21-217.000.
Specialty Materials and Manufacturing Inc.: *See—*
Ramirez, Stan L.; and Spartin, Louis P., 350,177, Cl. D21-217.000.
Spectra-Physics Scanning Systems, Inc.: *See—*
Gummeson, Phillip C.; and Bravo, Jose, 350,127, Cl. D14-116.000.
Splane, Robson: *See—*
Kunewalder, Anthony P.; Land, Carol J.; Bleler, Peter R.; Scott, Pippa; Sawhney, Ravi; and Splane, Robson, 350,171, Cl. D21-191.000.
Sportime Watches AG: *See—*
Hitter, Steve, 350,072, Cl. D10-32.000.

Stacey, Alan. Camper box. 350,035, 8-30-94, Cl. D6-397.000.
Stanton, William H., to Equinox Industries Ltd. Covered sled for transporting a person in lying position. 350,085, 8-30-94, Cl. D12-11.000.
Stein, Sherry, to Nike, Inc. Shoe upper. 350,021, 8-30-94, Cl. D2-969.000.
Stuart, Hor-Chen C. Combined table, roasting pot and cooking utensils. 350,045, 8-30-94, Cl. D7-332.000.
Stx, Inc.: *See—*
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., 350,173, Cl. D21-210.000.
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., 350,174, Cl. D21-210.000.
Sugawara, Koki; and Yoshida, Kazuo, to Oki Electric Industry Co., Ltd. Printer for an electronic computer. 350,151, 8-30-94, Cl. D18-55.000.
Sugimoto, Sonoko, to Sumitomo Rubber Industries, Ltd. Automobile tire. 350,090, 8-30-94, Cl. D12-146.000.
Sumitomo Rubber Industries, Ltd.: *See—*
Shibata, Kouji, 350,091, Cl. D12-147.000.
Sugimoto, Sonoko, 350,090, Cl. D12-146.000.
Sun, Han-Chin. Harrow. 350,052, 8-30-94, Cl. D8-13.000.
SyQuest Technology, Inc.: *See—*
Iftikar, Syed H.; Thompson, Herbert E.; and Guerini, Albert J., 350,115, Cl. D14-114.000.
Taylor, Neil R.: *See—*
Kahl, W. Henry; and Taylor, Neil R., 350,048, Cl. D7-605.000.
Thomas, Dieter, to J. A. Henckels Zwillingswerk. Nail file with a scabbard. 350,218, 8-30-94, Cl. D28-59.000.
Thompson, Herbert E.: *See—*
Iftikar, Syed H.; Thompson, Herbert E.; and Guerini, Albert J., 350,115, Cl. D14-114.000.
Tietz, Christopher A., to Walt Disney Company, The. Skull figure. 350,082, 8-30-94, Cl. D11-157.000.
Today's Kids, Inc.: *See—*
Bro, Jay M.; and Baerenwald, Philip M., 350,170, Cl. D21-160.000.
Toy Biz, Inc.: *See—*
Arad, Avi; and Turnquist, Finn, 350,169, Cl. D21-146.000.
Tsuboi, Hideki; and Konno, Akihiko, to Kabushiki Kaisha Toshiba. Combined reader and writer for information recording cards. 350,120, 8-30-94, Cl. D14-105.000.
Tsuchida, Makoto; Miyaji, Seiichi; and Uchiyama, Kaneatsu, to Fujitsu Limited. Printer. 350,152, 8-30-94, Cl. D18-55.000.
Tsuji, Masao, to Hunter Fan Company. Room air cleaner. 350,191, 8-30-94, Cl. D23-364.000.
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., to Stx, Inc. Lacrosse stick head. 350,173, 8-30-94, Cl. D21-210.000.
Tucker, Richard B. C.; Crawford, William C.; Lewis, Fielding H., Jr.; and Davis, Jackie L., to Stx, Inc. Lacrosse stick head. 350,174, 8-30-94, Cl. D21-210.000.
Turnquist, Finn: *See—*
Arad, Avi; and Turnquist, Finn, 350,169, Cl. D21-146.000.
Uchiyama, Kaneatsu: *See—*
Tsuchida, Makoto; Miyaji, Seiichi; and Uchiyama, Kaneatsu, 350,152, Cl. D18-55.000.
Van Le, Ut; and Lam, Lieu. Slide-in refrigeration unit. 350,140, 8-30-94, Cl. D15-79.000.
Van Tran, Hung. Spiraling rack. 350,037, 8-30-94, Cl. D6-460.000.
van Tuyl, Jan H., to Gooyear Tire & Rubber Company, The. Tire tread. 350,100, 8-30-94, Cl. D12-147.000.
Vasko, Stephen. Lighted safety glasses. 350,144, 8-30-94, Cl. D16-309.000.
Vogels, Henricus H., to Vogel's Holding B.V. TV ceiling support. 350,043, 8-30-94, Cl. D6-513.000.
Vogel's Holding B.V.: *See—*
Vogels, Henricus H., 350,043, Cl. D6-513.000.
Vuarnet Watches S.A.: *See—*
Burgener, Eddy, 350,073, Cl. D10-39.000.
Waibel, Terry J.: *See—*
Brightwell, Robert A.; Galante, Richard L.; Lawrence, Jay K.; and Waibel, Terry J., 350,096, Cl. D12-147.000.
Wakayama, Shouji; and Akiyama, Akio, to Young Optical Co., Ltd. Binoculars. 350,146, 8-30-94, Cl. D16-133.000.
Wales, Ed. Vehicle battery blanket. 350,114, 8-30-94, Cl. D13-119.000.
Walt Disney Company, The: *See—*
Tietz, Christopher A., 350,082, Cl. D11-157.000.
Watanabe, Hironobu, to Dai-Ichi Denpa Kogyo Co., Ltd. Interior mount for an automobile antenna. 350,137, 8-30-94, Cl. D14-238.000.
Weigl, James: *See—*
Clawson, Burrell E.; and Weigl, James, 350,190, Cl. D23-358.000.
Weitkamp, Erick W., to Intermec Corporation. Label printer. 350,150, 8-30-94, Cl. D18-50.000.
Wenzel-Murphy, Karen: *See—*
Oliver, Norwood D.; and Wenzel-Murphy, Karen, 350,083, Cl. D11-160.000.
Wepner, Stephen F.; and Bruzzi, Giuseppe. Bracelet. 350,079, 8-30-94, Cl. D11-6.000.
Wilkinson, Ken: *See—*
Huck, Charles M.; Ashley, Charles R.; Wilkinson, Ken; and Sochon, Henry R., 350,193, Cl. D24-110.000.
Willemsen, Andrew R. Dresser. 350,036, 8-30-94, Cl. D6-434.000.
Willis, Tucker; and Cinquemani, James, Jr., to Chaenomeles, Inc. Flag staff mounting base. 350,084, 8-30-94, Cl. D11-182.000.
Worthington, William J.: *See—*
Bell, John D.; and Worthington, William J., 350,022, Cl. D2-969.000.
Yamamoto Kogaku Co., Ltd.: *See—*
Yamamoto, Tamenobu, 350,145, Cl. D16-314.000.
Yamamoto, Tamenobu, to Yamamoto Kogaku Co., Ltd. Sunglasses. 350,145, 8-30-94, Cl. D16-314.000.
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, to Kabushiki Kaisha Japan Health; and Kabushiki Kaisha Fuji Iryoki. Combined low frequency muscle relaxer and storage case. 350,205, 8-30-94, Cl. D24-200.000.
Yarrish, Michael A.: *See—*
Frederick, Richard W.; and Yarrish, Michael A., 350,076, Cl. D10-96.000.
Yoshida, Kazuo: *See—*
Sugawara, Koki; and Yoshida, Kazuo, 350,151, Cl. D18-55.000.
Yoshimura, Makiko: *See—*
Yubisui, Takahisa; and Yoshimura, Makiko, 350,148, Cl. D18-7.000.
Yoshitake, Isamu; and Igo, Toshio, to Casio Computer Co., Ltd. Automatic telephone message recorder. 350,130, 8-30-94, Cl. D14-141.000.
Young Optical Co., Ltd.: *See—*
Wakayama, Shouji; and Akiyama, Akio, 350,146, Cl. D16-133.000.
Yubisui, Takahisa; and Yoshimura, Makiko, to Sharp Kabushiki Kaisha. Electronic calculator. 350,148, 8-30-94, Cl. D18-7.000.
Yuen, Se K., to John Manufacturing Limited. Combined incandescent light and fluorescent lamp. 350,210, 8-30-94, Cl. D26-42.000.
Yuen, Se K., to John Manufacturing Limited. Adjustable desk lamp. 350,212, 8-30-94, Cl. D26-65.000.
Zajac, Bozena, to Meta-Lite Inc. Tollbooth window. 350,208, 8-30-94, Cl. D25-52.000.
Zeiszler, James M., to Arkenstone, Inc. Computer for visually impaired persons. 350,116, 8-30-94, Cl. D14-100.000.
Zimmerman, Larry G., to Dart Industries Inc. Cover. 350,046, 8-30-94, Cl. D7-392.000.
Zimmerman, Wade N. Fuel funnel. 350,143, 8-30-94, Cl. D15-150.000.

LIST OF PLANT PATENTEES

Akerboom, Petrus J.: *See—*
Tvrtkovic-Sahin, Zelimir K.; and Akerboom, Petrus J., 8,874, Cl. 68.100.
Tvrtkovic-Sahin, Zelimir K.; and Akerboom, Petrus J., 8,875, Cl. 68.100.
Bear Creek Gardens, Inc.: *See—*
Kordes, Wilhelm, 8,871, Cl. 1.000.
Kordes, Wilhelm, 8,872, Cl. 1.000.
Blanken, Arie, to Conard-Pyle Company, The. *Ilex aquifolium* — Limsi cultivar. 8,873, 8-30-94, Cl. 65.000.
Conard-Pyle Company, The: *See—*
Blanken, Arie, 8,873, Cl. 65.000.
DeNachtvlinder B.V.: *See—*
Tvrtkovic-Sahin, Zelimir K.; and Akerboom, Petrus J., 8,874, Cl. 68.100.
Tvrtkovic-Sahin, Zelimir K.; and Akerboom, Petrus J., 8,875, Cl. 68.100.
Glicenstein, Leon, to Yoder Brothers, Inc. Chrysanthemum plant named Radiant Lynn. 8,877, 8-30-94, Cl. 76.000.
Kordes, Wilhelm, to Bear Creek Gardens, Inc. Shrub rose plant named Korissel. 8,871, 8-30-94, Cl. 1.000.
Kordes, Wilhelm, to Bear Creek Gardens, Inc. Shrub rose plant named KORfullwind. 8,872, 8-30-94, Cl. 1.000.
Stravers, Lambertus J. M., to Terra Nigra B.V. *Gerbera jamesonii* plant named Tertono. 8,876, 8-30-94, Cl. 68.100.
Terra Nigra B.V.: *See—*
Stravers, Lambertus J. M., 8,876, Cl. 68.100.
Tvrtkovic-Sahin, Zelimir K.; and Akerboom, Petrus J., to DeNachtvlinder B.V. Aster plant named Dark Blue Butterfly. 8,874, 8-30-94, Cl. 68.100.
Tvrtkovic-Sahin, Zelimir K.; and Akerboom, Petrus J., to DeNachtvlinder B.V. Aster plant named Casablanca. 8,875, 8-30-94, Cl. 68.100.
Yoder Brothers, Inc.: *See—*
Glicenstein, Leon, 8,877, Cl. 76.000.

VOL
1165
ISS
5
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30
1994
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 30, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 5,341,511
6.2 5,341,512
9 5,341,513
[illegible] 5,341,514
[illegible] 5,341,515
452 5,341,516

CLASS 4
236 5,341,517
5,341,518
246.1 5,341,519
325 5,341,520
348 5,341,521
415 5,341,522
507 5,341,523
555 5,341,524
579 5,341,525
584 5,341,526
592 5,341,527
611 5,341,528
665 5,341,529

CLASS 5
93.1 5,341,530
655 5,341,531

CLASS 8
111 5,342,415
639 5,342,416
685 5,342,417

CLASS 12
114.4 5,341,532

CLASS 14
69.5 5,341,533

CLASS 15
22.1 5,341,534
22.4 5,341,535
98 5,341,536
167.1 5,341,537
210.1 5,341,538
302 5,341,539
319 5,341,540
320 5,341,541

CLASS 16
289 5,341,542

CLASS [illegible]
163 5,341,543

CLASS 21
162 5,341,944

CLASS 24
33 P 5,341,545
289 5,341,544
[illegible] 5,341,546

CLASS 26
72 5,341,547

CLASS 27
[illegible] 5,341,548

CLASS [illegible]
298 5,341,549

CLASS [illegible]
25.35 5,341,550
40 5,341,551
179 5,341,552
261 5,341,553
402.17 5,341,554
[illegible] 5,341,557
[illegible] 5,341,556
450 5,341,558
469.5 5,341,555
523 5,341,559
525.1 5,341,560
596 5,341,561
743 5,341,563
825 5,341,562
832 5,341,564
[illegible] B1 4,996,766
889.721 5,341,565
[illegible] 5,341,566
890.141 5,341,567
895.32 5,341,568
[illegible] 5,341,569

CLASS [illegible]
43.6 5,341,570
50 5,341,571
228 5,341,572
254 5,341,573

CLASS 33
502 5,341,574
608 5,341,575

CLASS [illegible]
97 5,341,578
115 5,341,579
263 5,341,576
446 5,341,580
493 5,341,577

CLASS 36
3 B 5,341,581
50.1 5,341,583
76 5,341,582
117 5,341,584

CLASS [illegible]
77.5 5,341,585

CLASS 42
7 5,341,586
68 5,341,587

CLASS [illegible]
1 5,341,588
17 5,341,589
26 5,341,590
43.13 5,341,591
66 5,341,592

CLASS [illegible]
589 5,342,418

CLASS 47
47 5,341,593
57.5 5,341,594
60 5,341,595
79 5,341,596

CLASS [illegible]
199 5,341,597
362 5,341,598
375 5,341,599
471 5,341,600
493.1 5,341,601

CLASS 51
2 R 5,341,602
73 R 5,341,603
165.71 5,341,604
174 5,341,605
283 R 5,341,606
289 R 5,341,607
[illegible] 5,342,419
[illegible] 5,341,608
399 5,341,609

CLASS [illegible]
[illegible] 5,341,610
90.1 5,341,611
[illegible] 5,341,612
173.2 5,341,613
220.1 5,341,614
220.7 5,341,615
340 5,341,616
547 5,341,617
[illegible] 5,341,618
702 5,341,619

CLASS 53
254 5,341,624
287 5,341,620
377.5 5,341,621
[illegible] 5,341,622
433 5,341,623
459 5,341,625
[illegible] 5,341,626

CLASS [illegible]
80.2 5,341,627

CLASS [illegible]
222 5,342,421
279 5,342,420
302 B1 4,395,269
[illegible] 5,342,422
483 5,342,423

CLASS 56
10.2 E 5,341,628
15.2 5,341,629
330 5,341,630

CLASS 57
58.83 5,341,631
208 5,341,632
264 5,341,633

CLASS [illegible]
80 5,341,634

CLASS [illegible]
39.03 5,341,635
5,341,636
39.464 5,341,637
[illegible] 5,341,638
5,341,639
251 5,341,640
274 5,341,641
276 5,341,642
5,341,643
627 5,341,644
737 5,341,645

CLASS 62
25 5,341,646
39 5,341,647
73 5,341,648
126 5,341,649
180 5,341,650
225 5,341,651
244 5,341,652
288 5,341,653
296 5,341,654
304 5,341,655
324.6 5,341,656
389 5,341,657
468 5,341,658

CLASS [illegible]
2 5,341,659

CLASS [illegible]
23 5,342,426
27 5,342,427
450 5,342,424
501 5,342,425

CLASS [illegible]
17 R 5,341,660
207 5,341,661

CLASS 70
456 R 5,341,662

CLASS [illegible]
8 5,341,663
161 5,341,664
166 5,341,665
323 5,341,666
379.4 5,341,667
5,341,668
387 5,341,669

CLASS 73
1 J 5,341,695
40.5 A 5,341,670
40.7 5,341,671
64.54 5,341,672
73 5,341,673
116 5,341,674
118.1 5,341,675
147 5,341,676
5,341,677
150 R 5,341,678
317 5,341,679
379.06 5,341,680
382 G 5,341,681
[illegible] 5,341,682
597 5,341,683
756 5,341,684
827 5,341,685
5,341,696
861.33 5,341,686
862.046 5,341,687
862.541 5,341,689
[illegible] 5,341,688
863.61 5,341,690
863.83 5,341,691
864.63 5,341,692
864.67 5,341,693
864.91 5,341,694

CLASS 74
7 A 5,341,697
359 5,341,698
[illegible] 5,341,699
479 MF 5,341,700
[illegible] 5,341,701
821 5,341,702

CLASS 75
401 5,342,428
680 5,342,429
746 5,342,430

CLASS [illegible]
429 5,341,704
434 5,341,706
436 5,341,707
438 5,341,705
451 5,341,708

CLASS [illegible]
1.11 5,341,709

CLASS 83
425 5,341,711
808 5,341,712
865 5,341,713

CLASS [illegible]
95.1 5,342,988
278 5,341,714
322 5,341,715
422.4 5,341,716
[illegible] 5,342,990
730 5,342,989

CLASS [illegible]
32 5,341,717

CLASS [illegible]
1.11 5,341,718
16 5,341,719
45 5,341,720
46 5,341,721

CLASS 91
43 5,341,722
224 5,341,723

CLASS [illegible]
53 5,341,724
66 5,341,725
80 5,341,726

CLASS 95
45 5,342,431
47 5,342,432
282 5,342,433

CLASS [illegible]
13 5,342,434

CLASS 99
335 5,341,727
336 5,341,728
348 5,341,729

CLASS 100
37 5,341,730
100 5,341,731

CLASS 101
3.1 5,341,732
148 5,341,733
5,341,734
181 5,341,735
212 5,341,736
216 5,341,737
232 5,341,738
247 5,341,739
350 5,341,740
365 5,341,741

CLASS 102
202.8 5,341,742
384 5,341,743
442 5,341,744
499 5,341,745

CLASS 105
355 5,341,746
406.1 5,341,747

CLASS 106
2 5,342,435
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18.3 5,342,438
18.33 5,342,437
22 H 5,342,439
22 R 5,342,440
35 5,342,441
409 5,342,442
[illegible] 5,342,443
493 5,342,444
[illegible] 5,342,445

CLASS [illegible]
53.3 5,341,748
64 5,341,749
5,341,750
143 5,341,751

CLASS 109
59 R 5,341,752

CLASS [illegible]
139 5,341,754

CLASS 112
163 5,341,755

CLASS 114
54 5,341,756
230 5,341,757
253 5,341,758
255 5,341,759
361 5,341,760
365 5,341,761

CLASS 116
137 A 5,341,762

CLASS 117
83 5,342,475
[illegible] 5,342,805

CLASS [illegible]
65 5,342,446
504 5,342,447
723 FI 5,342,448

CLASS 119
[illegible] 5,341,763
220 5,341,764
[illegible] 5,341,765

CLASS 122
4 D 5,341,753
5,341,766
14 5,341,767
26 5,341,768
367.3 5,341,769
383 5,341,770

CLASS [illegible]
48 AA 5,341,771
61 R 5,341,774
65 PE 5,341,775
73 C 5,341,776
90.17 5,341,777
184.21 5,341,772
184.61 5,341,773
192.1 5,341,780
193.3 5,341,779
195 R 5,341,781
246 5,341,782
[illegible] 5,341,783
452 5,341,785
[illegible] 5,341,786
520 5,341,787
692 5,341,788

CLASS 124
44.5 5,341,789
69 5,341,790
[illegible] 5,341,791
[illegible] 5,341,792

CLASS 126
41 R 5,341,793
77 5,341,794
110 R 5,341,795
5,341,796
373 5,341,797

CLASS [illegible]
20 5,341,798
203.15 5,341,800
5,341,801
207.17 5,341,802
632 5,341,803
633 5,341,804
5,341,805
640 5,341,806
642 5,341,807
660.01 5,341,808
661.09 5,341,809
662.05 5,341,810
696 5,341,811
5,341,812
733 5,341,813
736 5,341,814
749 5,341,815
754 5,341,816
772 5,341,817
5,341,818
779 5,341,819
845 5,341,820
849 5,341,821
898 5,341,822
5,341,823

CLASS 131
281 5,341,824

CLASS [illegible]
2 5,342,449
3 5,342,450
[illegible] 5,341,825
[illegible] 5,341,826
107 5,341,827
123 5,341,828

CLASS 135
68 5,341,829

CLASS [illegible]
[illegible] 5,342,451
[illegible] 5,342,452
262 5,342,453
643 5,342,476

CLASS 137
15 5,341,830
78.3 5,341,831
[illegible] 5,341,832
232 5,341,833
246.22 5,341,835
[illegible] 5,341,836
343 5,341,843
[illegible] 5,341,837
478 5,341,838
505.13 5,341,839
527.8 5,341,840
561 A 5,341,841
574 5,341,842
599.1 5,341,834
613 5,341,844
625.41 5,341,845
875 5,341,847
[illegible] 5,341,846

CLASS [illegible]
44 5,341,848
133 5,341,849

CLASS [illegible]
79 5,341,850
103 5,341,851
448 5,341,852

CLASS 141
1 5,341,854
7 5,341,853
59 5,341,855
67 5,341,856
[illegible] 5,341,857
173 5,341,858
[illegible] 5,341,859

CLASS 148
113 5,342,454
[illegible] 5,342,455
247 5,342,456
[illegible] Re.34,707
534 5,342,457
[illegible] 5,342,458
690 5,342,459

CLASS [illegible]
165 5,341,860

VOL 1165 ISS 5 AG 30 1994 UMI

CLASS 152
158 5,341,861
209 R 5,341,862
5,341,863

CLASS 156
[illegible] 5,342,460
5,342,461
[illegible] 5,342,462
156 5,342,463
172 5,342,464
175 5,342,465
179 5,342,466
227 5,342,467
233 5,342,468
244.22 5,342,469
304.2 5,342,470
345 5,342,471
5,342,472
394.1 5,342,473
584 5,342,474
643 5,342,477
5,342,478
[illegible] 5,342,480
659.1 5,342,481

CLASS 159
DIG. 2 5,342,482

CLASS 160
84.1 B 5,341,864
176.1 5,341,865

CLASS 162
5 5,342,483
139 5,342,484
181.5 5,342,485
358.4 5,342,486

CLASS 164
98 5,341,866
502 5,341,867

CLASS 165
11.1 5,341,868
67 5,341,869
110 5,341,870
121 5,341,871
146 B1 5,190,100
173 5,341,872

CLASS 166
117.5 5,341,873
[illegible] 5,341,874
[illegible] 5,341,875
263 5,341,876
272 5,341,877
5,341,878
278 5,341,879
5,341,880
293 5,341,881
5,341,882
324 5,341,883
347 5,341,884
382 5,341,885

CLASS 174
36 B1 4,472,595
[illegible] 5,342,993
52.4 5,342,992
65 R 5,342,994
67 5,342,995
84 C 5,342,996
117 FF 5,342,997
117 R 5,342,991
152 R 5,342,998
266 5,342,999

CLASS 175
24 5,341,886
62 5,341,887
323 5,341,888
373 5,341,889
374 5,341,890

CLASS 177
145 5,343,000

CLASS 180
79.1 5,341,891
[illegible] 5,341,892
245 5,341,893
271 5,341,894
326 5,341,895

CLASS 181
102 5,343,001
116 5,343,002

CLASS 182
9 5,341,896
88 5,341,897
142 5,341,898
205 5,341,899

CLASS 184
6.12 5,341,900
5,341,901

CLASS 187
19 5,341,902
131 5,343,003

CLASS 188
71.6 5,341,903
251 R 5,341,904
320 5,341,905

CLASS 191
37 5,341,906

CLASS 192
75 5,341,907

CLASS 194
317 5,341,908

CLASS 196
335 5,341,909
403 5,341,910
409 5,341,911
415 5,341,912
418.4 5,341,913
418.6 5,341,914
460 5,341,915
5,341,916
475.1 5,341,917
659 5,341,918
716 5,341,919
825 5,341,920
5,341,921

CLASS 2.7
1 5,342,645

CLASS 200
11 R 5,343,004
61.89 5,343,005
296 5,343,006
5,343,007
302.002 5,343,008
322 5,343,009

CLASS 203
6 5,342,487
80 5,342,488

CLASS 204
153.18 5,342,489
153.19 5,342,490
180.1 5,342,492
[illegible] 5,342,493
243 R 5,342,491
252 5,342,494
297 R 5,342,495
298.12 5,342,496
299 R 5,342,497
[illegible] 5,342,498
[illegible] 5,342,499
421 5,342,500

CLASS 205
50 5,342,501
[illegible] 5,342,502
138 5,342,503
257 5,342,504

CLASS 206
63.3 5,341,922
214 5,341,923
232 5,341,924
268 5,341,925
307 5,341,926
315.3 5,341,927
315.5 5,341,928
320 5,341,929
459.5 5,341,930
485 5,341,931
524.7 5,341,932
554 5,341,933
591 5,341,934

CLASS 208
48 AA 5,342,505
65 5,342,506
111 5,342,507
299 5,342,508
351 5,342,509

CLASS 209
3 5,341,935
17 5,341,936
38 5,341,937
164 5,341,938
319 5,341,939
702 5,341,940

CLASS 210
96.1 5,342,510
137 5,342,511
151 5,342,512
169 5,342,513
193 5,342,514
198.2 5,342,515
218 5,342,516
228 5,342,517
232 5,342,518
5,342,519
251 5,342,520
490 5,342,521
605 5,342,522
5,342,523
610 5,342,524
611 5,342,525
634 5,342,526
[illegible] 5,342,527
[illegible] 5,342,528
741 5,342,529

CLASS 211
13 5,341,941
40 5,341,942
5,341,943
184 5,341,945

CLASS 215
1 C 5,341,946
230 5,341,947
232 5,341,948
253 5,341,949

CLASS 219
83 5,343,010
109 5,343,011
121.61 5,343,013
121.64 5,343,014
5,343,015
130.4 5,343,016
5,343,017
200 5,343,018
216 5,343,019
413 5,343,020
443 5,343,012
541 5,343,021
552 5,343,022
661 5,343,023
730 5,343,024

CLASS 220
6 5,341,950
371 5,341,951
408 5,341,952
575 5,341,953

CLASS 221
85 5,341,954
197 5,341,955

CLASS 222
1 5,341,956
2 5,341,957
63 5,341,958
105 5,341,959
153 5,341,960
217 5,341,961
248 5,341,962
287 5,341,963
327 5,341,964
340 5,341,965
370 5,341,966
376 5,341,967
394 5,341,970
396 5,341,968
465.1 5,341,969

CLASS 224
39 5,341,971
165 5,341,972
196 5,341,973
215 5,341,974
252 5,341,975
269 5,341,976

CLASS 234
97 5,341,977

CLASS 228
42 5,341,978
111 5,341,979
205 5,341,980
262.9 5,341,981

CLASS 229
1.5 R 5,341,982
98.2 5,341,983
215 5,341,984
305 5,341,985

CLASS 235
383 5,343,025
449 5,343,026
462 5,343,027
5,343,028
467 5,343,029
492 5,343,030
494 5,343,031

CLASS 236
11 5,341,986
12.21 5,341,987
49.3 5,341,988

CLASS 239
3 5,341,989
5,341,990
8 5,341,991
34 5,341,992
331 5,341,993
585.5 5,341,994
729 5,341,995

CLASS 241
69 5,341,996

CLASS 242
1.1 R 5,341,997
47 5,341,998
155 M 5,342,000
231 5,342,003
338.3 5,342,001
347 5,342,002
397.1 5,341,999

CLASS 244
212 5,342,004

CLASS 248
118 5,342,005
5,342,006
131 5,342,007
238 5,342,008
311.2 5,342,009
316.3 5,342,010
318 5,342,011
406.2 5,342,012
429 5,342,013
476 5,342,014
478 5,342,015
610 5,342,016
632 5,342,017

CLASS 250
208.2 5,343,032
5,343,033
214 C 5,343,034
226 B1 5,149,960
227.14 5,343,035
227.19 5,343,036
227.21 5,343,037
234 5,343,038
235 5,343,039
252.1 5,343,040
270 5,343,041
306 Re.34,708
307 5,343,042
338.5 5,343,043
339.09 5,343,044
339.1 5,343,045
432 R 5,343,046
492.21 5,343,047
505.1 5,343,048
561 5,343,049

CLASS 251
40 5,342,024
65 5,342,025
85 5,342,026
129.13 5,342,027
163 5,342,028
250 5,342,018
305 5,342,019

CLASS 252
8.551 5,342,530
32.5 5,342,531
45 5,342,532
68 5,342,533
91 5,342,534
135 5,342,535
162 5,342,536
174.24 5,342,537
170 5,342,538
5,342,539
181 5,342,540
182.27 5,342,541
186.39 5,342,542
190 5,342,543
299.01 5,342,545
299.6 5,342,544
5,342,546
380 5,342,547
391 5,342,548
546 5,342,549
[illegible] 5,342,550
5,342,551
582 5,342,552
609 5,342,553

CLASS 254
269 5,342,020

CLASS 256
1 5,342,021

CLASS 257
40 5,343,050
66 5,343,051
141 5,343,052
173 5,343,053
184 5,343,054
186 5,343,055
191 5,343,056
192 5,343,057
[illegible] 5,343,058
223 5,343,059
229 5,343,060
5,343,061
5,343,062
297 5,343,063
317 5,343,064
350 5,343,065
355 5,343,066
393 5,343,067
487 5,343,068
578 5,343,069
583 5,343,070
594 5,343,071
621 5,343,072
666 5,343,073
[illegible] 5,343,074
[illegible] 5,343,075
717 5,343,076

CLASS 261
44.3 5,342,555

CLASS 264
1.21 5,342,022
4.7 5,342,556
8 5,342,557
25 5,342,558
40.1 5,342,559
45.9 5,342,560
49 5,342,561
63 5,342,562
5,342,563
5,342,564
74 5,342,565
102 5,342,566
[illegible] 5,342,567
228 5,342,568
259 5,342,569
566 5,342,570

CLASS 267
64.17 5,342,023
220 5,342,029

CLASS 269
37 5,342,030
134 5,342,031

CLASS 270
37 5,342,032
53 5,342,033
5,342,034

CLASS 271
3.1 5,342,036
11 5,342,035
111 5,342,037
198 5,342,038
236 5,342,039
251 5,342,040

CLASS 273
1.5 A 5,342,041
31 5,342,042
65 EC 5,342,043
72 R 5,342,046
73 D 5,342,044
5,342,045
85 CP 5,342,047
[illegible] 5,342,048
119 R 5,342,049
126 R 5,342,050
167 H 5,342,052
185 A 5,342,051
185 R 5,342,053
186.1 5,342,054
187.2 5,342,055
237 5,342,056
239 5,342,057
243 5,342,058
277 5,342,059
[illegible] 5,342,060
341 5,342,061
391 5,342,062
396 5,342,063
447 5,342,064

CLASS 277
34 5,342,065
116.2 5,342,066

CLASS 279
3 5,342,067
5,342,068
16 5,342,069

CLASS 280
11.22 5,342,070
5,342,071
87.051 5,342,072
166 5,342,073
209 5,342,074
236 5,342,075
479.2 5,342,076
602 5,342,077
707 5,342,078
[illegible] 5,342,079
[illegible] 5,342,080
728 A 5,342,081
5,342,082
5,342,083
728 B 5,342,085
5,342,086
5,342,088
728 R 5,342,087
728A 5,342,084
731 5,342,089
732 5,342,090
777 5,342,091

CLASS 283
[illegible] 5,342,094

CLASS 285
[illegible] 5,342,095
23 5,342,096
25 5,342,097
26 5,342,098
[illegible] 5,342,093
93 5,342,099
133.1 B1 5,186,502
363 5,342,100

CLASS 291
165 5,342,101
228 5,342,102
341.17 5,342,103

CLASS 294
74 5,342,104

CLASS 296
61 5,342,105
204 5,342,106
210 5,342,107

CLASS 297
125 5,342,108
191 5,342,109
232 5,342,110
5,342,111
260 5,342,113
344.2 5,342,114
362.13 5,342,112
411.32 5,342,115
466 5,342,116

CLASS 303
3 5,342,117
97 5,342,118
113.2 5,342,119
5,342,120

CLASS 307
9.1 5,343,077
41 5,343,078
105 5,343,079
5,343,080
201 5,343,081
234 5,343,082
242 5,343,083
[illegible] 5,343,084
272.3 5,343,085
296.1 5,343,086
296.2 5,343,087
5,343,088
[illegible] 5,343,089
443 5,343,090
[illegible] 5,343,091
455 5,343,092
475 5,343,093
5,343,094
5,343,095
[illegible] 5,343,096
514 5,343,097
570 5,343,098
571 5,343,099
[illegible] 5,343,100

CLASS 310
[illegible] 5,343,101
71 5,343,102
87 5,343,103
90 5,343,104
179 5,343,105
239 5,343,106
313 A 5,343,107
323 5,343,108
334 5,343,109

CLASS 312
1 5,342,121
9.48 5,342,122
319.2 5,342,123

CLASS 313
309 5,343,110
313 5,343,111
346 R 5,343,112
414 5,343,113
485 5,343,114
491 5,343,115

493 5,343,116
623 5,343,117
637 5,343,118

CLASS 315
10 5,343,119
[illegible] 5,343,120
158 5,343,121
[illegible] 5,343,122
219 5,343,123
224 5,343,124
245 5,343,125
[illegible] 5,343,126

CLASS 318
3 5,343,128
254 5,343,127
431 5,343,129
434 5,343,130
561 5,343,131
[illegible] 5,343,132
696 5,343,133
757 5,343,134

CLASS 320
2 5,343,135
5,343,136
13 5,343,137
14 5,343,138

CLASS 323
207 5,343,139
222 5,343,140
288 5,343,141

CLASS 324
71.1 5,343,142
142 5,343,143
158.1 5,343,144
202 5,343,145
230 5,343,146
239 5,343,147
309 5,343,148
314 5,343,149
316 5,343,150
320 5,343,151
346 5,343,152
366 5,343,153
399 5,343,154
522 5,343,155
672 5,343,156
678 5,343,157

CLASS 330
103 5,343,158

CLASS 331
3 5,343,159
9 5,343,160
[illegible] 5,343,161
252 5,343,162
5,343,163
253 5,343,164
262 5,343,165
[illegible] 5,343,166

CLASS 331
2 5,343,167
16 5,343,168
17 5,343,169
132 5,343,170
5,343,171

CLASS 333
32 5,343,172
126 5,343,173
193 5,343,175
204 5,343,176
213 5,343,177

CLASS 335
59 5,343,178
167 5,343,179
172 5,343,174
216 5,343,180
285 5,343,181
299 5,343,182
301 5,343,183

CLASS 336
92 5,343,184

CLASS 337
163 5,343,185

CLASS 338
15 5,343,186
70 5,343,187
129 5,343,188

CLASS 340
539 5,343,189
573 5,343,190
605 5,343,191
639 5,343,192
825.79 5,343,193
[illegible] 5,343,194

CLASS 341
67 5,343,195
136 5,343,196
139 5,343,200
152 5,343,197
159 5,343,198
5,343,199
200 5,343,201

CLASS 342
5 5,343,202
25 5,343,203
5,343,204
85 5,343,205
[illegible] 5,343,206
192 5,343,207
[illegible] 5,343,208
352 5,343,210
357 5,343,209
379 5,343,211
424 5,343,212

CLASS 343
702 5,343,213
713 5,343,214

CLASS 340
63 5,343,215
92 5,343,216
95 5,343,217
116 5,343,218
160 5,343,219
199 5,343,220
211 5,343,221

CLASS 346
76 PH 5,343,222
[illegible] 5,343,223
5,343,224
5,343,225
155 5,343,232
157 5,343,233
159 5,343,234
[illegible] 5,343,235

CLASS 347
8 5,343,229
14 5,343,231
29 5,343,228
31 5,343,230
85 5,343,226

CLASS 348
[illegible] 5,343,236
[illegible] 5,343,239
14 5,343,240
97 5,343,241
143 5,343,237
[illegible] 5,343,242
[illegible] 5,343,298
222 5,343,243
5,343,244
251 5,343,302
257 5,343,245
[illegible] 5,343,297
[illegible] 5,343,303
363 5,343,246
[illegible] 5,343,247
[illegible] 5,343,299
452 5,343,248
478 5,343,300
[illegible] 5,343,301
556 5,343,238
[illegible] 5,343,249
5,343,250
571 5,343,251
[illegible] 5,343,252
614 5,343,253
627 5,343,254
[illegible] 5,343,255
718 5,343,256
[illegible] 5,343,257

CLASS 349
42 5,343,227
274 5,342,969

CLASS 351
41 5,343,258
124 5,343,259
159 5,343,260
203 5,343,261

CLASS 353
119 5,343,262

CLASS 354
82 5,343,263
[illegible] 5,343,264
222 5,343,265
[illegible] 5,343,266
410 5,343,267
416 5,343,268

CLASS 355
43 5,343,269
53 5,343,270
5,343,271
75 5,343,272
5,343,273
[illegible] 5,343,274
[illegible] 5,343,275
5,343,276
271 5,343,277
283 5,343,278
[illegible] 5,343,279
5,343,280
320 5,343,281
326 R 5,343,282

CLASS 356
5 5,343,284
28.5 5,343,285
73.1 5,343,286
141.3 5,343,287
239 5,343,288
[illegible] 5,343,289
[illegible] B1 4,798,465
349 5,343,290
356 5,343,291
[illegible] 5,343,292
[illegible] 5,343,293
376 5,343,294
[illegible] 5,343,295
431 5,343,296

CLASS 358
[illegible] 5,343,304
[illegible] 5,343,305
441 5,343,306
[illegible] 5,343,307
445 5,343,283
5,343,308
455 5,343,309
515 5,343,310
518 5,343,311
520 5,343,312

CLASS 359
50 5,343,316
73 5,343,317
75 5,343,318
[illegible] 5,343,313
123 5,343,314
152 5,343,315
5,343,319
[illegible] 5,343,320
173 5,343,322
180 5,343,323
[illegible] 5,343,324
205 5,343,325
216 5,343,326
330 5,343,327
[illegible] 5,343,328
689 5,343,329
[illegible] 5,343,330
823 5,343,331
837 5,343,332
[illegible] 5,343,333

CLASS 360
38.1 5,343,334
45 5,343,335
55 5,343,336
63 5,343,337
[illegible] 5,343,338
71 5,343,339
77.08 5,343,340
77.12 5,343,341
77.16 5,343,342
103 5,343,343
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5,343,345
105 5,343,346
[illegible] 5,343,347
[illegible] 5,343,348
132 5,343,349

CLASS 361
[illegible] 5,343,350
33 5,343,351
56 5,343,352
322 5,343,353
1 5,343,354
10 5,343,355
251 5,343,356
[illegible] 5,343,357
[illegible] 5,343,358
707 5,343,359
5,343,360
710 5,343,361
5,343,362
749 5,343,363
773 5,343,365
785 5,343,366

CLASS 362
32 5,343,367
5,343,368
33 5,343,369
61 5,343,370
5,343,371
66 5,343,372
96 Re.34,709
153.1 5,343,374
217 5,343,373
[illegible] 5,343,375
259 5,343,376

CLASS 363
17 5,343,377
21 5,343,378
[illegible] 5,343,379
[illegible] 5,343,380
47 5,343,381
[illegible] 5,343,382
127 5,343,383

CLASS 364
133 5,343,384
167.01 5,343,385
400 5,343,386
401 5,343,387
402 5,343,388
413.09 5,343,389
413.16 5,343,390
413.28 5,343,391
434.02 5,343,397
424.03 5,343,392
424.05 5,343,393
5,343,394
426.01 5,343,396
[illegible] 5,343,395
434 5,343,398
449 5,343,399
450 5,343,400
470 5,343,401
474.03 5,343,402
[illegible] 5,343,403
484 5,343,404
486 5,343,405
490 5,343,406
501 5,343,407
[illegible] 5,343,408
514 5,343,409
525 5,343,410
[illegible] 5,343,411
572 5,343,412
715.04 5,343,413
724.06 5,343,414
725 5,343,415
757 5,343,416
758 5,343,417
[illegible] 5,343,418
[illegible] 5,343,419
[illegible] 5,343,420

CLASS 365
145 5,343,421
173 5,343,422
[illegible] 5,343,423
185 5,343,424
189.01 5,343,425
189.02 5,343,426
189.04 5,343,427
189.05 5,343,428
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[illegible] 5,343,430
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205 5,343,433
218 5,343,434
221 5,343,435
228 5,343,436
230.03 5,343,437
233 5,343,438
[illegible] 5,343,439

CLASS 366
66 5,342,124
89 5,342,125

CLASS 367
27 5,343,440
75 5,343,441
139 5,343,442
152 5,343,443

CLASS 368
1 5,343,444
10 5,343,445
251 5,343,446

CLASS 369
13 Re.34,710
5,343,447
5,343,448
5,343,449
19 5,343,450
32 5,343,451
6 5,343,452
44.28 5,343,453
44.32 5,343,454
[illegible] 5,343,455
5,343,456
77.2 5,343,457
97 5,343,458
116 5,343,459
126 5,343,460

CLASS 370
13 5,343,461
5,343,462
5,343,463
16 5,343,464
17 5,343,465
34 5,343,466
59 5,343,467
[illegible] 5,343,468
85.1 5,343,469
5,343,470
85.13 5,343,471
85.3 5,343,474
85.6 5,343,472
5,343,473
94.1 5,343,475
102 5,343,476

CLASS 371
8.2 5,343,477
22.3 5,343,478
22.5 5,343,479
34 5,343,480
37.1 5,343,481
57.2 5,343,482

CLASS 372
10 5,343,483
22 5,343,484
5,343,485
43 5,343,486
46 5,343,487
69 5,343,488
93 5,343,489
[illegible] 5,343,490

CLASS 373
8 5,343,491
143 5,343,492

CLASS 374
208 5,342,126

CLASS 378
1 5,343,493
5,343,494
5,343,495
5,343,496
37 5,343,498
[illegible] 5,343,499
5,343,500
76 5,343,547
94 5,343,501
[illegible] 5,343,502
111 5,343,497
121 5,343,503

CLASS 376
247 5,343,504
280 5,343,505
5,343,506
298 5,343,507
449 5,343,508

CLASS 379
40 5,343,509
58 5,343,510
5,343,511
59 5,343,512
5,343,513
93 5,343,514
97 5,343,515
98 5,343,516
219 5,343,517
355 5,343,518
5,343,519
399 5,343,520
410 5,343,521
5,343,522
430 5,343,523

CLASS 380
4 5,343,524
5,343,525
5,343,526
5,343,527
5,343,528
23 5,343,529
5,343,530

CLASS 381
1 5,343,531
68.6 5,343,532
71 5,343,533
123 5,343,534
159 5,343,535

CLASS 382
6 5,343,536
13 5,343,537
18 5,343,538
56 5,343,539
5,343,540

CLASS 384
15 5,342,127
203 5,342,128
420 5,342,129
585 5,342,130

CLASS 385
16 5,343,541
31 5,343,542
5,343,543
46 5,343,544
5,343,545
52 5,343,546
89 5,343,548
103 5,343,549
123 5,343,550

CLASS 395
405 5,343,551
451 5,343,552

CLASS 399
3 5,343,553
13 5,343,554
24 5,343,555
111 5,343,556
118 5,343,557
126 5,343,558
166 5,343,560
425 5,343,559

CLASS 400
120.01 5,342,131
120.18 5,342,132
[illegible] 5,342,133

CLASS 401
78 5,342,134
116 5,342,135
135 5,342,136

CLASS 403
164 5,342,137
189 5,342,138
405.1 5,342,139

CLASS 404
9 5,342,140
28 5,342,141
41 5,342,142
72 5,342,143

CLASS 405
39 5,342,144
79 5,342,145
[illegible] 5,342,146
192 5,342,170
228 5,342,171

CLASS 414
97 R 5,342,172
169 A 5,342,173
246 5,342,174
247 R 5,342,175

CLASS 417
212 5,342,176
233 5,342,177
269 5,342,178
363 5,342,179
412 5,342,180
476 5,342,181
477 R 5,342,182

VOL 1165 ISS 5 AG 30 1994 UMI

CLASS 418
15 5,342,183
55.2 5,342,184
55.4 5,342,185
55.5 5,342,186
CLASS 419
13 5,342,571
38 5,342,573
45 5,342,572
61 5,342,574
67 5,342,575
413 5,342,576
5,342,577
CLASS 422
13 5,342,578
92 5,342,580
5,342,581
105 5,342,582
107 5,342,583
124 5,342,584
131 5,342,585
211 5,342,586
5,342,587
311 5,342,588
CLASS 423
53 5,342,589
89 5,342,590
210 5,342,591
235 5,342,592
5,342,593
5,342,594
328.1 5,342,595
335 5,342,597
339 5,342,598
5,342,599
432 5,342,600
5,342,601
5,342,602
5,342,603
710 5,342,596
CLASS 424
1.65 5,342,604
5,342,605
5,342,607
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5,342,609
5,342,606
5,342,610
70 5,342,611
85.1 5,342,612
5,342,613
5,342,614
5,342,615
94.64 5,342,616
405 5,342,617
5,342,618
411 5,342,619
5,342,620
423 5,342,621
425 5,342,622
5,342,623
451 5,342,624
5,342,625
5,342,626
473 5,342,627
5,342,628
5,342,629
717 5,342,630
CLASS 428
5,342,187
131.1 Re.34,711
235 5,342,188
5,342,189
5,342,190
533 5,342,191
CLASS 435
3 5,342,631
45 5,342,632
47 5,342,633
113 5,342,634
241 5,342,635
5,342,636
312 5,342,637
326 B1 4,798,729
5,342,638
5,342,639
479 5,342,640
5,342,641
556 5,342,642
590 5,342,643
5,342,644
CLASS 427
2.1 5,342,646
2.31 5,342,647
126.3 5,342,648
150 5,342,649
178 5,342,650
5,342,651
253 5,342,652
256 5,342,653
307 5,342,654
372.2 5,342,655
5,342,656
5,342,657
515 5,342,658
5,342,659
577 5,342,660
CLASS 428
5,342,661
5,342,662
35.7 5,342,663
36.9 5,342,664
40 5,342,665
5,342,666
5,342,667
5,342,668
5,342,669
161 5,342,670
195 5,342,671
5,342,672
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5,342,674
216 5,342,675
5,342,676
5,342,677
5,342,678
257 5,342,679
285 5,342,680
5,342,872
310.5 5,342,681
325 5,342,682
331 5,342,683
347 5,342,684
355 5,342,685
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410 5,342,690
412 5,342,691
5,342,692
5,342,693
461 5,342,694
516 5,342,695
5,342,696
547 5,342,697
612 5,342,698
5,342,699
5,342,700
701 5,342,701
CLASS 429
13 5,342,702
5,342,703
31 5,342,704
32 5,342,705
35 5,342,706
97 5,342,707
145 5,342,708
162 5,342,709
192 5,342,710
197 5,342,711
224 5,342,712
CLASS 436
5,342,713
19 5,342,714
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5,342,716
49 5,342,717
55 5,342,718
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59 5,342,720
5,342,721
109 5,342,722
110 5,342,723
114 5,342,724
115 5,342,725
126 5,342,726
157 5,342,727
5,342,728
203 5,342,729
213 5,342,730
253 5,342,731
5,342,732
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270 5,342,734
5,342,735
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324 5,342,738
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393 5,342,741
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503 5,342,743
507 5,342,744
522 5,342,745
538 5,342,746
551 5,342,747
5,342,748
5,342,749
5,342,750
637 5,342,751
CLASS 431
5,342,192
CLASS 433
39 5,342,194
80 5,342,195
82 5,342,196
155 5,342,197
173 5,342,199
215 5,342,198
220 5,342,200
223 5,342,201
CLASS 434
270 5,342,202
CLASS 438
5,342,752
5,342,753
5,342,754
7.1 5,342,755
7.21 5,342,756
5,342,757
7.92 5,342,759
5,342,760
69.1 5,342,761
5,342,762
5,342,763
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71.1 5,342,765
115 5,342,766
122 5,342,767
134 5,342,768
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178 5,342,770
5,342,772
5,342,771
5,342,773
240.2 5,342,774
5,342,775
5,342,776
240.31 5,342,777
252.1 5,342,778
262.5 5,342,779
280 5,342,780
313 5,342,781
320.1 5,342,782
CLASS 436
37 5,342,783
103 5,342,786
178 5,342,785
179 5,342,787
5,342,788
5,342,789
523 5,342,790
525 5,342,791
CLASS 437
5,342,792
25 5,342,793
31 5,342,794
40 5,342,795
41 5,342,796
5,342,797
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51 5,342,799
52 5,342,800
5,342,801
57 5,342,802
70 5,342,803
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195 5,342,806
5,342,807
5,342,808
CLASS 438
39 5,342,204
66 5,342,205
71 5,342,206
74 5,342,207
76 5,342,203
79 5,342,208
92 5,342,209
95 5,342,210
108 5,342,211
149 5,342,212
268 5,342,213
275 B1 4,674,818
342 5,342,214
357 5,342,215
362 5,342,216
459 5,342,217
578 5,342,218
595 5,342,219
607 5,342,220
677 5,342,221
708 5,342,222
752 5,342,223
781 5,342,224
817 5,342,225
845 5,342,226
CLASS 440
38 5,342,227
76 5,342,228
CLASS 441
5,342,229
42 5,342,230
5,342,231
115 5,342,232
CLASS 445
6 5,342,233
CLASS 446
327 5,342,234
CLASS 451
141 5,342,235
5,342,236
174 5,342,237
CLASS 454
136 5,342,238
CLASS 460
69 5,342,239
CLASS 464
5,342,240
37 5,342,241
98 5,342,242
134 5,342,243
CLASS 472
14 5,342,244
118 5,342,245
CLASS 474
1 5,342,246
5,342,247
5,342,248
135 5,342,249
242 5,342,251
5,342,250
5,342,252
CLASS 475
72 B1 5,156,576
5,342,253
230 5,342,254
231 5,342,255
252 5,342,256
275 5,342,257
5,342,258
CLASS 477
65 5,341,703
CLASS 482
19 5,342,259
51 5,342,260
57 5,342,261
62 5,342,262
5,342,263
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106 5,342,272
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126 5,342,273
5,342,274
CLASS 482
1 5,342,275
29 5,342,276
CLASS 492
56 5,342,277
CLASS 493
16 5,342,278
CLASS 494
9 5,342,279
10 5,342,280
53 5,342,281
82 5,342,282
CLASS 501
12 5,342,809
26 5,342,810
87 5,342,811
127 5,342,812
CLASS 502
5,342,813
117 5,342,814
263
CLASS 503
217 5,342,815
226 5,342,816
227 5,342,817
5,342,818
5,342,819
5,342,820
5,342,821
CLASS 504
134 5,342,822
215 5,342,823
221 5,342,824
CLASS 505
5,342,825
238 5,342,826
5,342,828
CLASS 511
2 5,342,829
CLASS 514
12 5,342,830
5,342,831
5,342,832
103 5,342,833
167 5,342,834
178 5,342,835
227.5 5,342,836
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247 5,342,838
252 B1 5,151,423
254 5,342,839
255 5,342,840
5,342,841
263 5,342,842
274 5,342,843
293 5,342,844
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312 5,342,846
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356 5,342,847
357 5,342,848
361 5,342,849
5,342,850
369 5,342,851
370 5,342,852
5,342,853
CLASS 521
48 5,342,854
50 5,342,855
51 5,342,856
76 5,342,857
98 5,342,858
125 5,342,859
31 5,342,860
CLASS 522
111 5,342,861
125 5,342,862
310 5,342,863
403 5,342,864
414 5,342,865
466 5,342,554
CLASS 524
5,342,866
101 5,342,867
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125 5,342,869
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425 5,342,873
430 5,342,874
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493 5,342,876
513 5,342,877
558 5,342,878
5,342,879
5,342,880
700 5,342,881
832 5,342,882
5,342,883
CLASS 525
5,342,884
5,342,885
5,342,886
108 5,342,887
124 5,342,888
127 5,342,889
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162 5,342,891
168 5,342,892
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183 5,342,894
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330.5 5,342,901
407 5,342,903
437 5,342,902
5,342,904
534 5,342,905
CLASS 534
88 5,342,906
129 5,342,907
135 5,342,908
171 5,342,909
195 5,342,910
216 5,342,911
CLASS 536
15 5,342,913
32 5,342,914
5,341,799
71 5,342,915
5,342,916
5,342,912
318 5,342,918
323 5,342,919
5,342,920
CLASS 540
324 5,342,921
329 5,342,922
373 5,342,923
387.9 5,342,924
CLASS 554
10 5,342,925
5,342,926
618 5,342,927
788 5,342,928
CLASS 556
18.6 5,342,929
23.72 5,342,930
25.4 5,342,931
102 5,342,932
CLASS 560
302 5,342,933
456 5,342,934
5,342,935
474 5,342,936
CLASS 564
8 5,342,937
105 5,342,938
194 5,342,939
218 5,342,940
250 5,342,942
284 5,342,944
296 5,342,945
CLASS 546
23 5,342,946
41 5,342,947
77 5,342,948
124 5,342,949
171 5,342,950
217 5,342,951
245 5,342,952
CLASS 548
122 5,342,953
251 5,342,954
255 5,342,955
262.4 5,342,943
266.4 5,342,957
317.5 5,342,958
327.5 5,342,959
336.1 5,342,960
352.1 5,342,961
532 5,342,963
552 5,342,964
CLASS 549
221 5,342,966
226 5,342,967
233 5,342,965
241 5,342,968
5,342,970
390 5,342,971
5,342,972
534 5,342,973
CLASS 552
259 5,342,974
653 5,342,975
CLASS 554
36 5,342,976
5,342,977
5,342,978
5,342,979
CLASS 556
117 5,342,980
5,342,981
431 5,342,982
5,342,983
477 5,342,984
482 5,342,985
CLASS 558
45 5,342,986
CLASS 560
245 5,342,987
5,342,396
5,342,397
235 5,342,398
CLASS 607
5,342,399
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5,342,402
5,342,403
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32 5,342,408
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58 5,342,410
5,342,411
114 5,342,412
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127 5,342,414
5,342,407
CLASS 625
8 B1 5,007,929

CLASS 862
406 B1 4,990,658
CLASS 600
8 5,342,283
CLASS 601
141 5,342,284
151 5,342,285
CLASS 602
3 5,342,286
5,342,287
5 5,342,288
18 Re.34,714
19 5,342,289
36 5,342,290
41 5,342,291
CLASS 604
22 5,342,292
5,342,293
26 5,342,294
43 5,342,295
49 5,342,296
53 5,342,297
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95 5,342,299
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96 5,342,301
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101 5,342,305
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103 5,342,307
110 5,342,308
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116 5,342,311
153 5,342,313
167 5,342,315
5,342,316
174 5,342,321
179 5,342,317
5,342,319
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317 5,342,328
319 5,342,329
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359 5,342,333
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378 5,342,336
5,342,337
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385.1 5,342,339
5,342,340
385.2 5,342,341
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387 5,342,344
408 5,342,345
413 5,342,346
415 5,342,347
891.1 5,342,348
CLASS 606
1 5,342,349
2.5 5,342,350
4 5,342,351
5 5,342,352
14 5,342,353
27 5,342,355
32 5,342,356
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96 5,342,369
107 5,342,370
113 5,342,371
142 5,342,373
148 5,342,374
5,342,375
151 5,342,376
166 5,342,377
5,342,378
167 5,342,379
169 5,342,380
174 5,342,381
184 5,342,382
190 5,342,383
191 5,342,384
193 5,342,385
194 5,342,386
198 5,342,387
201 5,342,388
203 5,342,389
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213 5,342,393
5,342,394
219 5,342,395

CLASSIFICATION OF DESIGNS

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703 350,012
902 350,013
910 350,014
916 350,015
946 350,016
961 350,017
964 350,018
965 350,019
350,020
980 350,021
350,022
977 350,023
D3— 303 350,024
226 350,025
255 350,026
278 350,027
314 350,028
D4— 138 350,029
D6— 335 350,030
351 350,031
366 350,032
350,033
381 350,034
397 350,035
434 350,036
607 350,037
662 350,038
665 350,039
684 350,040
495 350,041
809 350,042
513 350,043
632 350,044
D7— 332 350,045
D8— 1 350,051
13 350,052
14 350,053
331 350,054
350,055
350,056
347 350,057
350,058
350,059
350,060
350,061
350,062
350,063
382 350,064
D9— 302 350,065
308 350,066
335 350,067
434 D30,068
455 350,069
350,070
350,071
D10— 4 350,078
6 350,079
D11— 121 350,117
D12— 11 350,045
92 350,086
111 350,087
115 350,088
120 350,089
146 350,090
147 350,091
350,092
350,093
350,094
350,095
350,096
350,097
350,098
350,099
151 350,103
193 350,104
D13— 103 350,110
350,111
108 350,112
110 350,113
119 350,114
D14— 100 350,116
350,118
350,119
105 350,120
106 350,121
113 350,122
114 350,115
350,123
350,124
D19— 350,125
115 350,126
116 350,127
137 350,128
138 350,129
141 350,130
151 350,131
165 350,132
198 350,133
350,134
204 350,135
211 350,136
238 350,137
242 350,138
258 350,139
D15— 79 350,140
123 350,141
350,142
D16— 133 350,146
230 350,147
234 350,106
309 350,144
D23— 314 350,145
D18— 7 350,148
350,149
50 350,150
55 350,151
350,152
D19— 20 350,153
88 350,154
99 350,155
D20— 11 350,156
43 350,157
D21— 6 350,158
13 350,159
27 350,160
37 350,161
350,162
383 350,163
D24— 404 350,164
108 350,165
D30 350,166
122 350,167
143 350,168
186 350,169
D22— 160 350,170
191 350,171
198 350,172
210 350,173
350,174
214 350,175
350,176
217 350,177
234 350,178
350,179
D22— 126 350,180
D23— 207 350,181
242 350,183
248 350,182
250 350,184
277 350,185
D24— 309 350,186
311 350,187
313 350,188
329 350,189
358 350,190
364 350,191
369 350,192
D24— 110 350,193
112 350,194
113 350,195
124 350,196
350,197
350,198
125 350,199
350,200
D25— 350,201
147 350,202
184 350,203
192 350,204
D30 350,205
350,206
D25— 34 350,207
52 350,208
D26— 26 350,209
42 350,210
60 350,211
65 350,212
74 350,213
128 350,214
D27— 101 350,215
144 350,216
D28— 13 350,217
59 350,218

CLASSIFICATION OF PLANTS

P.— 1 8,871
8,872
65 8,873
68.1 8,874
8,875
8,876
76 8,877

VOL
1165
ISS
5
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30
1994
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 5,341,639	5,341,782	5,342,451	5,343,149	5,341,771	5,342,772
5,341,930	5,341,783	5,342,462	5,343,156	5,341,861	5,342,812
5,342,122	5,341,802	5,342,465	5,343,163	5,341,976	5,342,828
5,342,261	5,341,803	5,342,473	5,343,166	5,342,328	5,342,969
5,342,266	5,341,805	5,342,492	5,343,167	5,342,435	12 : 5,341,553
5,342,428	5,341,818	5,342,495	5,343,173	5,342,453	5,341,599
02 : 5,342,265	5,341,833	5,342,497	5,343,177	5,342,516	5,341,649
04 : 5,341,523	5,341,857	5,342,498	5,343,203	5,342,655	5,341,685
5,341,530	5,341,859	5,342,518	5,343,224	5,343,096	5,341,693
5,341,533	5,341,941	5,342,553	5,343,251	5,343,131	5,341,757
5,341,610	5,341,963	5,342,555	5,343,252	5,343,159	5,341,817
5,341,684	5,341,970	5,342,617	5,343,261	5,343,337	5,342,058
5,341,707	5,341,973	5,342,621	5,343,295	5,343,403	5,342,212
5,341,764	5,341,974	5,342,623	5,343,301	5,343,409	5,342,231
5,341,939	5,341,982	5,342,626	5,343,308	5,343,517	5,342,250
5,341,979	5,341,993	5,342,629	5,343,311	4,798,465	5,342,270
5,342,094	5,342,048	5,342,636	5,343,313	09 : 5,341,535	5,342,290
5,342,262	5,342,050	5,342,648	5,343,324	5,341,604	5,342,305
5,342,317	5,342,054	5,342,660	5,343,345	5,341,712	5,342,370
5,342,352	5,342,116	5,342,665	5,343,347	5,341,744	5,342,386
5,342,378	5,342,133	5,342,679	5,343,360	5,341,956	5,342,388
5,342,510	5,342,141	5,342,692	5,343,375	5,342,036	5,342,390
5,342,589	5,342,143	5,342,705	5,343,386	5,342,045	5,342,670
5,342,999	5,342,158	5,342,709	5,343,406	5,342,072	5,342,707
5,343,512	5,342,180	5,342,710	5,343,412	5,342,096	5,342,754
5,343,514	5,342,187	5,342,734	5,343,417	5,342,134	5,342,945
05 : 5,341,732	5,342,195	5,342,759	5,343,418	5,342,194	5,342,993
5,342,284	5,342,196	5,342,761	5,343,422	5,342,203	5,343,040
5,342,485	5,342,198	5,342,763	5,343,424	5,342,395	5,343,154
5,342,524	5,342,207	5,342,764	5,343,435	5,342,433	5,343,175
06 : Re.34,708	5,342,218	5,342,767	5,343,443	5,342,437	5,343,186
Re.34,709	5,342,225	5,342,773	5,343,446	5,342,464	5,343,213
5,341,516	5,342,229	5,342,779	5,343,458	5,342,494	5,343,319
5,341,520	5,342,232	5,342,794	5,343,487	5,342,535	5,343,327
5,341,521	5,342,273	5,342,797	5,343,493	5,342,536	5,343,395
5,341,555	5,342,288	5,342,798	5,343,503	5,342,552	5,343,494
5,341,556	5,342,292	5,342,801	5,343,509	5,342,557	5,343,500
5,341,564	5,342,293	5,342,808	5,343,515	5,342,786	13 : 5,341,512
5,341,617	5,342,295	5,342,830	5,343,524	5,342,790	5,341,515
5,341,627	5,342,297	5,342,909	5,343,534	5,342,842	5,341,608
5,341,634	5,342,298	5,342,912	5,343,538	5,342,994	5,341,763
5,341,636	5,342,303	5,342,921	5,343,541	5,343,003	5,341,768
5,341,640	5,342,304	5,342,926	5,343,543	5,343,028	5,341,915
5,341,644	5,342,306	5,342,953	5,343,554	5,343,073	5,341,984
5,341,673	5,342,322	5,342,989	5,343,555	5,343,133	5,342,236
5,341,678	5,342,331	5,342,990	5,343,558	5,343,219	5,342,299
5,341,689	5,342,348	5,342,992	4,674,818	5,343,226	5,342,335
5,341,699	5,342,368	5,343,058	5,007,929	5,343,508	5,342,405
5,341,716	5,342,371	5,343,063	08 : 5,341,567	5,343,556	5,342,443
5,341,753	5,342,377	5,343,086	5,341,574	4,996,766	5,342,680
5,341,760	5,342,380	5,343,090	5,341,578	10 : 5,341,638	5,343,189
5,341,762	5,342,389	5,343,094	5,341,589	5,342,345	5,343,239
5,341,780	5,342,424	5,343,147	5,341,752	5,342,434	15 : 5,342,781

VOL 1165 ISS 5 AG 30 1994 UMI

16 : 5,341,985
5,342,062
5,342,149
5,342,477
5,342,807
17 : 5,341,524
5,341,531
5,341,566
5,341,582
5,341,597
5,341,598
5,341,607
5,341,612
5,341,708
5,341,715
5,341,724
5,341,726
5,341,754
5,341,779
5,341,846
5,341,894
5,341,903
5,341,904
5,341,986
5,342,015
5,342,026
5,342,060
5,342,061
5,342,064
5,342,140
5,342,215
5,342,221
5,342,223
5,342,313
5,342,330
5,342,385
5,342,447
5,342,493
5,342,597
5,342,631
5,342,706
5,342,760
5,342,838
5,342,866
5,342,871
5,342,951
5,342,968
5,342,981
5,342,995
5,343,007
5,343,043
5,343,123
5,343,124
5,343,140
5,343,168
5,343,171
5,343,209
5,343,390
5,343,437
5,343,461
5,343,481
5,343,499
5,343,526
5,343,547
5,149,960
18 : 5,341,656
5,341,691
5,341,774
5,341,796
5,342,089
5,342,106
5,342,139
5,342,242
5,342,362
5,342,436
5,342,599
5,342,765
5,343,143
5,343,195
5,343,255
5,343,346
5,343,363
5,343,365
5,343,382
19 : 5,341,954
5,342,239
5,343,181
5,343,374
5,343,379
5,343,535
5,156,576
20 : 5,341,765
5,341,926
5,342,153
5,342,415
21 : 5,341,513
5,341,865
5,342,110
5,342,123
5,342,319
5,343,384
22 : 5,341,896
5,342,159
5,342,506
5,342,570
5,343,002

4,990,658
24 : 5,341,718
5,341,792
5,341,927
5,342,055
5,342,264
5,342,268
5,342,401
5,342,551
5,342,562
5,342,618
5,342,777
5,342,946
5,343,445
5,343,471
5,343,513
5,343,523
5,343,527
25 : 5,341,557
5,341,759
5,341,807
5,341,813
5,341,834
5,341,855
5,341,906
5,341,924
5,341,944
5,341,962
5,341,987
5,342,014
5,342,041
5,342,043
5,342,051
5,342,135
5,342,200
5,342,233
5,342,234
5,342,285
5,342,286
5,342,301
5,342,324
5,342,327
5,342,357
5,342,379
5,342,384
5,342,427
5,342,564
5,342,607
5,342,652
5,342,653
5,342,673
5,342,697
5,342,731
5,342,737
5,342,789
5,342,816
5,342,966
5,343,059
5,343,070
5,343,071
5,343,117
5,343,151
5,343,185
5,343,289
5,343,357
5,343,421
5,343,426
5,343,495
5,343,546
5,343,551
26 : 5,341,519
5,341,544
5,341,591
5,341,602
5,341,615
5,341,618
5,341,643
5,341,679
5,341,701
5,341,703
5,341,710
5,341,770
5,341,773
5,341,785
5,341,842
5,341,871
5,341,872
5,341,877
5,341,901
5,341,916
5,341,946
5,341,967
5,342,029
5,342,057
5,342,081
5,342,083
5,342,088
5,342,090
5,342,095
5,342,103
5,342,111
5,342,119
5,342,125
5,342,130
5,342,147
5,342,155

5,342,167
5,342,179
5,342,182
5,342,191
5,342,226
5,342,249
5,342,255
5,342,325
5,342,456
5,342,483
5,342,537
5,342,550
5,342,580
5,342,690
5,342,811
5,342,844
5,342,899
5,342,910
5,342,942
5,342,952
5,342,959
5,343,005
5,343,064
5,343,191
5,343,272
5,343,396
5,343,533
5,343,536
27 : 5,341,514
5,341,518
5,341,600
5,341,624
5,341,804
5,341,832
5,341,844
5,341,914
5,341,961
5,341,988
5,342,070
5,342,074
5,342,093
5,342,105
5,342,121
5,342,188
5,342,291
5,342,302
5,342,307
5,342,339
5,342,340
5,342,359
5,342,381
5,342,399
5,342,402
5,342,406
5,342,407
5,342,409
5,342,414
5,342,419
5,342,512
5,342,519
5,342,584
5,342,587
5,342,635
5,342,645
5,342,667
5,342,682
5,342,685
5,342,688
5,342,791
5,342,872
5,343,079
5,343,204
5,343,340
5,343,343
5,343,362
5,343,380
5,343,474
5,343,544
5,343,557
4,395,269
28 : 5,341,525
5,341,821
5,342,245
5,342,353
5,342,438
5,342,513
5,342,859
5,343,373
29 : 5,341,816
5,341,942
5,342,053
5,342,365
5,342,366
5,342,374
5,342,609
5,342,619
5,342,782
5,342,922
5,343,101
30 : 5,342,769
5,343,155
31 : 5,341,690
5,341,717
5,342,244
5,342,283
5,342,511

5,343,404
32 : 5,341,619
5,341,958
5,342,047
5,342,049
5,342,458
5,342,525
5,343,138
33 : 5,341,583
5,341,740
5,341,936
5,342,224
5,342,461
5,343,008
5,343,207
5,343,234
5,343,518
34 : 5,341,527
5,341,532
5,341,534
5,341,537
5,341,560
5,341,623
5,341,692
5,341,737
5,341,793
5,341,815
5,341,849
5,341,918
5,341,948
5,342,046
5,342,181
5,342,309
5,342,321
5,342,396
5,342,397
5,342,410
5,342,420
5,342,534
5,342,565
5,342,591
5,342,727
5,342,771
5,342,833
5,342,852
5,342,857
5,342,861
5,342,862
5,342,863
5,342,907
5,342,933
5,342,935
5,342,944
5,342,973
5,343,027
5,343,032
5,343,053
5,343,113
5,343,115
5,343,192
5,343,205
5,343,208
5,343,211
5,343,240
5,343,258
5,343,320
5,343,398
5,343,465
5,343,490
5,343,496
4,929,641
5,151,423
35 : 5,342,780
5,343,292
36 : 5,341,538
5,341,586
5,341,592
5,341,603
5,341,661
5,341,668
5,341,681
5,341,694
5,341,695
5,341,749
5,341,790
5,341,795
5,341,860
5,341,899
5,341,951
5,341,953
5,341,975
5,341,978
5,342,034
5,342,037
5,342,039
5,342,052
5,342,059
5,342,067
5,342,171
5,342,209
5,342,258
5,342,356
5,342,361
5,342,426
5,342,430
5,342,446

5,342,459
5,342,467
5,342,482
5,342,572
5,342,579
5,342,613
5,342,643
5,342,659
5,342,671
5,342,689
5,342,715
5,342,719
5,342,724
5,342,728
5,342,730
5,342,746
5,342,757
5,342,805
5,342,817
5,342,821
5,342,829
5,342,834
5,342,860
5,342,870
5,342,932
5,342,934
5,342,943
5,342,964
5,343,037
5,343,046
5,343,092
5,343,118
5,343,121
5,343,126
5,343,146
5,343,152
5,343,230
5,343,275
5,343,290
5,343,297
5,343,309
5,343,326
5,343,366
5,343,368
5,343,369
5,343,385
5,343,391
5,343,498
5,343,519
5,343,537
5,343,542
5,343,548
37 : 5,341,551
5,341,680
5,341,776
5,341,828
5,341,932
5,341,957
5,342,376
5,342,391
5,342,393
5,342,450
5,342,517
5,342,666
5,342,684
5,342,776
5,342,854
5,342,931
5,342,947
5,342,949
5,342,998
5,343,356
5,343,389
5,343,504
5,343,532
5,343,549
4,472,595
39 : 5,341,517
5,341,595
5,341,613
5,341,625
5,341,635
5,341,654
5,341,687
5,341,727
5,341,812
5,341,823
5,341,830
5,341,863
5,341,869
5,341,929
5,341,943
5,341,949
5,341,964
5,341,989
5,341,990
5,341,996
5,342,011
5,342,017
5,342,126
5,342,165
5,342,176
5,342,183
5,342,184
5,342,185
5,342,186

5,342,240
5,342,254
5,342,272
5,342,274
5,342,311
5,342,315
5,342,334
5,342,338
5,342,355
5,342,364
5,342,373
5,342,382
5,342,421
5,342,491
5,342,496
5,342,549
5,342,554
5,342,563
5,342,571
5,342,578
5,342,628
5,342,639
5,342,642
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5,342,864
5,342,875
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5,343,323
5,343,358
5,343,367
40 : 5,341,526
5,341,575
5,341,593
5,341,875
5,341,879
5,341,881
5,341,887
5,342,028
5,342,114
5,342,117
5,342,124
5,342,199
5,342,228
5,343,015
5,343,441
5,186,502
41 : 5,341,630
5,342,007
5,342,097
5,342,260
5,342,403
5,342,439
5,342,440
5,342,880
5,343,160
5,343,298
5,343,405
42 : 5,341,536
5,341,542
5,341,554
5,341,568
5,341,601
5,341,646
5,341,659
5,341,700
5,341,709
5,341,789
5,341,799
5,341,811
5,341,895
5,341,900
5,341,921
5,341,922
5,341,940
5,342,098
5,342,108
5,342,152
5,342,174
5,342,206
5,342,216
5,342,243
5,342,271
5,342,279
5,342,326
5,342,375
5,342,383
5,342,429
5,342,455
5,342,487
5,342,503
5,342,540
5,342,548
5,342,605

5,342,612
5,342,630
5,342,694
5,342,704
5,342,753
5,342,787
5,342,851
5,342,878
5,342,894
5,342,905
5,342,980
5,343,139
5,343,162
5,343,174
5,343,179
5,343,361
5,343,507
44 : Re.34,714
5,341,662
5,341,971
5,342,100
5,342,991
5,343,141
45 : 5,341,731
5,341,767
5,342,073
5,342,162
5,342,417
5,343,478
46 : 5,341,653
47 : 5,341,548
5,341,663
5,341,874
5,342,363

5,342,367
5,342,466
5,342,601
5,342,877
5,343,529
48 : 5,341,528
5,341,539
5,341,587
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5,342,129
5,342,146
5,342,148
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5,342,323

5,342,332
5,342,387
5,342,423
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5,342,541
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5,342,795
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5,342,892
5,342,904
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5,342,924
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5,343,001
5,343,016
5,343,074
5,343,093
5,343,095
5,343,194
5,343,351
5,343,407
5,343,414

5,343,428
49 : 5,342,082
5,342,084
5,342,086
5,342,150
5,342,349
5,342,693
50 : 5,341,719
51 : 5,341,511
5,341,571
5,341,637
5,341,667
5,341,711
5,341,791
5,341,824
5,341,897
5,341,925
5,341,994
5,342,004
5,342,469
5,342,484
5,342,520
5,342,581
5,342,657
5,342,755
5,342,825
5,342,902
5,343,035
5,343,080
5,343,212
5,343,284

5,343,550
53 : 5,341,559
5,341,580
5,341,611
5,341,676
5,341,682
5,341,758
5,341,794
5,341,806
5,341,917
5,341,928
5,341,945
5,341,972
5,341,998
5,342,109
5,342,144
5,342,210
5,342,320
5,342,344
5,342,369
5,342,408
5,342,539
5,343,006
5,343,116
5,343,164
54 : 5,341,822
5,341,920
5,342,661
5,342,855
5,342,883
5,342,891
5,342,987
55 : 5,341,658

5,341,704
5,341,729
5,341,756
5,341,781
5,341,836
5,341,841
5,341,864
5,341,870
5,341,923
5,341,960
5,341,969
5,342,005
5,342,164
5,342,333
5,342,336
5,342,418
5,342,431
5,342,442
5,342,647
5,342,649
5,342,650
5,342,672
5,342,720
5,342,762
5,342,975
5,343,018
5,343,023
5,343,134
5,343,359
5,343,483
4,798,729
56 : 5,341,683
5,342,267

DESIGN PATENTS

01 : 350,081
350,203
05 : 350,155
06 : 350,028
350,044
350,047
350,053
350,055
350,057
350,063
350,066
350,082
350,086
350,105
350,115
350,116
350,132
350,140
350,143
350,153
350,157
350,171
350,179

350,190
350,202
350,213
350,214
350,216
09 : 350,013
350,058
350,059
350,060
350,061
350,062
350,169
350,207
350,217
12 : 350,039
350,067
350,087
350,176
13 : 350,012
350,037
350,187
15 : 350,051
17 : 350,046

350,113
350,128
350,160
18 : 350,011
350,172
19 : 350,050
20 : 350,068
350,189
22 : 350,080
24 : 350,027
350,030
350,135
350,173
350,174
25 : 350,036
350,065
26 : 350,042
350,049
350,139
350,162
350,215

27 : 350,064
350,069
350,194
33 : 350,038
350,158
34 : 350,025
350,079
350,083
350,156
350,192
350,193
350,208
36 : 350,040
350,089
350,164
350,167
37 : 350,104
350,163
350,211
38 : 350,024
39 : 350,029
350,048

350,075
350,078
350,092
350,094
350,095
350,096
350,097
350,098
350,099
350,108
350,118
350,119
350,201
41 : 350,016
350,018
350,019
350,020
350,021
350,022
350,023
350,127
350,178

42 : 350,144
45 : 350,102
47 : 350,185
350,186
350,191
350,204
48 : 350,015
350,076
350,084
350,170
350,177
350,180
53 : 350,017
350,150
350,196
350,197
350,198
55 : 350,054
350,109
350,184
350,209
56 : 350,114

PLANT PATENTS

P8,876

8,877

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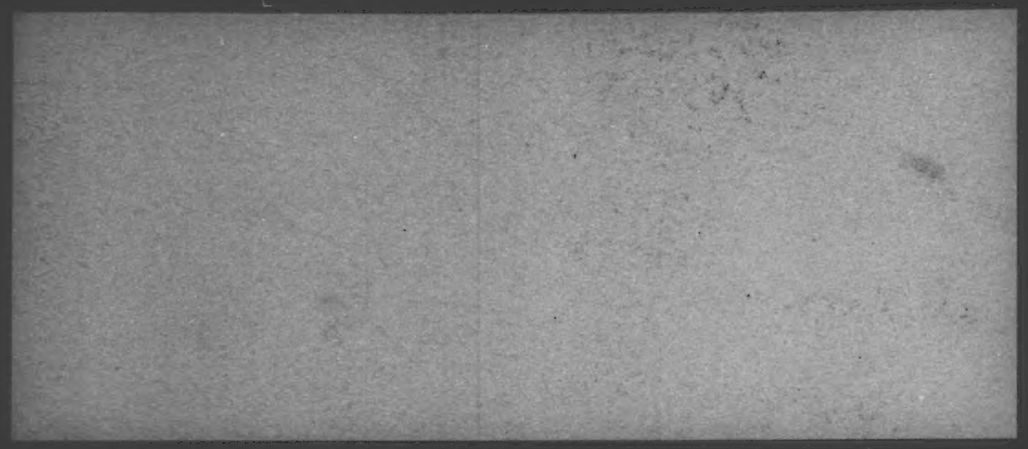
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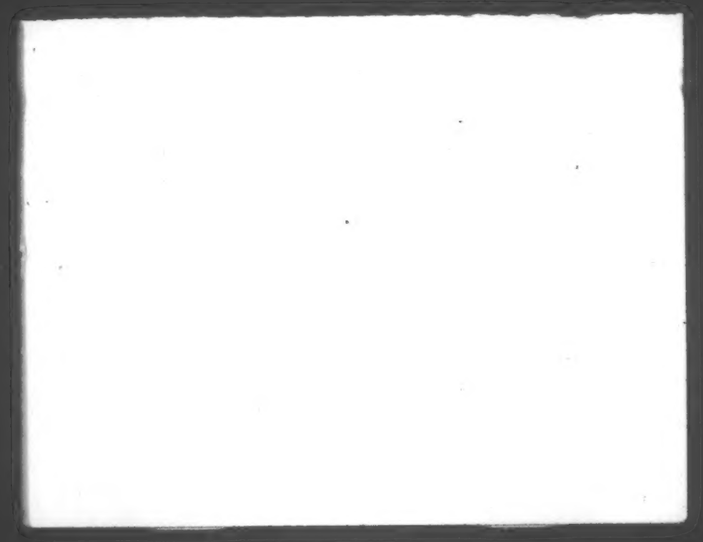
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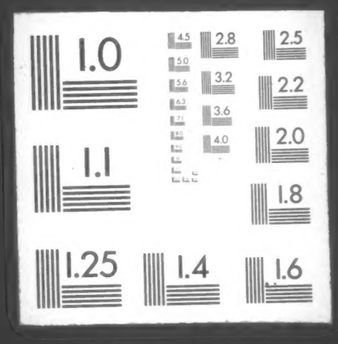
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